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

Illustrations may show optional equipment not supplied with standard unit or may depict similar models where a topic is identical.
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></th>
</tr>
</thead>
<tbody>
<tr>
<td>Serial Number</td>
<td></td>
</tr>
<tr>
<td>Machine Height</td>
<td></td>
</tr>
<tr>
<td>Machine Length</td>
<td></td>
</tr>
<tr>
<td>Machine Width</td>
<td></td>
</tr>
<tr>
<td>Machine Weight</td>
<td></td>
</tr>
<tr>
<td>Year of Construction</td>
<td></td>
</tr>
<tr>
<td>Delivery Date</td>
<td></td>
</tr>
<tr>
<td>First Operation</td>
<td></td>
</tr>
<tr>
<td>Accessories</td>
<td></td>
</tr>
</tbody>
</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

## Important Safety Information ................................................................. 1
   Safety Reflectors and Decals ............................................................. 5

## Introduction .................................................................................................... 11
   Document Family .................................................................................. 11
   Description of Unit ............................................................................... 11
   Intended Usage ...................................................................................... 11
   Models Covered ..................................................................................... 11
   Using This Manual ................................................................................ 11
   Definitions ............................................................................................. 11
   Owner Assistance ................................................................................... 12

## Preparation and Setup .................................................................................. 13
   Pre-Setup Checklist ............................................................................... 13
   Hitching ................................................................................................. 13
   Electrical Connections .......................................................................... 14
   Hydraulic Hose Hookup ........................................................................ 15
   Leveling the Drill ................................................................................... 16
      Leveling: Single-Wheel ....................................................................... 17
      Leveling: Offset-Single Wheel ............................................................ 18
      Leveling: Dual-Wheel ......................................................................... 19
   Options Setup ......................................................................................... 20
      Acremeter Installation ........................................................................ 20
   Shaft Monitor Cab Module ..................................................................... 20
   Marker Setup .......................................................................................... 21
      Marker Chain Adjustment ................................................................. 21
      Marker Extension Setup ..................................................................... 22
      Marker Extension Adjustment .......................................................... 22

## Operating Instructions ............................................................................... 23
   Pre-Start Checklist ................................................................................ 23
   Transporting ............................................................................................ 24
   Loading Materials ................................................................................ 25
   Marker Operations ................................................................................ 26
      Independent Markers .......................................................................... 26
      Dual Auto-Sequenced Markers .......................................................... 26
   Field Operation ....................................................................................... 27
   Shaft Monitor Operation ........................................................................ 27
   Parking ................................................................................................... 28
   Storage .................................................................................................... 28

## Adjustments .................................................................................................. 29
   Planting Depth ....................................................................................... 29
   Marker Adjustments .............................................................................. 30
      Marker Disk Angle ............................................................................. 30
      Marker Speed ..................................................................................... 30
   Material Rate Adjustments ................................................................... 31
   Revolutions Per Acre .............................................................................. 31
   Non-Standard Configurations ............................................................... 32
   Main Box Seed Rate .............................................................................. 32
   Small Seeds Attachment Rate ............................................................... 36
   Fertilizer Rate ......................................................................................... 38
   Row Unit Adjustments ......................................................................... 41
   Unit-Mounted Coulter Adjustments ....................................................... 42
   Row Unit Down Pressure ...................................................................... 44
   Row Unit Shut-Off ................................................................................ 46
   Disk Blade Adjustments ........................................................................ 47
   Seed Firmer Adjustments ..................................................................... 48
   Press Wheel Adjustments ..................................................................... 49

## Troubleshooting ............................................................................................ 50

## Maintenance and Lubrication ...................................................................... 52
   Marker Maintenance .............................................................................. 52
      Marker Shear Bolt .............................................................................. 52
      Marker Disk Grease Seal ................................................................. 52
      Bleeding Marker Hydraulics .............................................................. 53
      Marker Transport Carrier ................................................................. 54
   Seed Box Maintenance ........................................................................ 55
      Main Box Cleanout ........................................................................... 55
      Small Seeds Cleanout ....................................................................... 55
      Fertilizer Cleanout ............................................................................ 56
   Row Unit Maintenance .......................................................................... 56
      Disk Spreader-Scraper ...................................................................... 56
      Seed Flap Replacement ...................................................................... 57
   Lubrication .............................................................................................. 58

## Options .......................................................................................................... 63
   Accessory Hitches ................................................................................. 63
   Hitch Setback Kit .................................................................................. 63
   Gauge Wheels ......................................................................................... 63
   Markers .................................................................................................. 64
      Seed Tube Plugs ................................................................................ 64
      Fertilizer .............................................................................................. 65
      Fertilizer Box ...................................................................................... 65
      Shaft Monitor ..................................................................................... 65
   Small Seeds .......................................................................................... 66
   Small Seeds Attachment ...................................................................... 66
   Seed Firmers ........................................................................................ 67
      Keeton® Seed Firmer ......................................................................... 67
      Seed-Lok® Seed Firmer ...................................................................... 67

## Appendix ....................................................................................................... 68
   Specifications and Capacities ............................................................... 68
      15-Foot Model Specifications ............................................................ 68
      20-Foot Model Specifications ............................................................ 68
      25-Foot Model Specifications ............................................................ 69
   Tire Information ..................................................................................... 69
   Torque Values Chart ............................................................................. 70


Great Plains Manufacturing, Inc. provides this publication “as is” without warranty of any kind, either expressed or implied. While every precaution has been taken in the preparation of this manual, Great Plains Manufacturing, Inc. assumes no responsibility for errors or omissions. Neither is any liability assumed for damages resulting from the use of the information contained herein. Great Plains Manufacturing, Inc. reserves the right to revise and improve its products as it sees fit. This publication describes the state of this product at the time of its publication, and may not reflect the product in the future.

Registered Trademarks of Great Plains Manufacturing, Inc. include: Air-Pro, Clear-Shot, Discovator, Great Plains, Land Pride, MeterCone, Nutri-Pro, Seed-Lok, Solid Stand, Terra-Guard, Turbo-Chisel, Turbo-Chopper, Turbo-Max, Turbo-Till, Ultra-Till, Whirlfitter, and Yield-Pro. Brand and Product Names that appear and are owned by others are trademarks of their respective owners.

Printed in the United States of America
Hydraulic Diagrams .........................................................71
  Dual Independent Markers ........................................71
  Dual Marker Sequence Valve ....................................72
Chain Routing ..................................................................73
  Ground Drive and Main Seed Box Chains ....................73
  Option Box Drive Chains ..........................................74
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.

Be Familiar with Safety Decals

▲ Read and understand “Safety Reflectors and Decals” starting on page 5, thoroughly.
▲ Read all instructions noted on the decals.
▲ Keep decals clean. Replace damaged, faded and illegible decals.

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.
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, see a doctor immediately. If an accident occurs, seek immediate medical treatment from a physician familiar with this type of injury.

Wear Protective Equipment

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

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 when folding/unfolding, raising/lowering markers, raising/lowering openers, and transporting.

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 the drill.
Transport Machinery Safely

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

▲ Do not exceed 20 mph (32 kph). 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 national, regional and local laws.

▲ Follow your tractor manual recommendations for maximum hitch loads. Insufficient weight on tractor steering wheels will result in loss of control.

▲ Carry reflectors or flags to mark drill in case of breakdown on the road.

▲ Keep clear of overhead power lines and other obstructions when transporting. Refer to transport dimensions under “Specifications and Capacities” on page 68.

Check for Overhead Lines

Drill markers contacting overhead electrical lines can introduce lethal voltage levels on drill and tractor frames. A person touching almost any metal part can complete the circuit to ground, resulting in serious injury or death.

▲ Avoid overhead lines during seed loading/unloading and marker operations.

Handle Chemicals Properly

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

▲ Do not use liquid treatments with drill.

▲ Read and follow chemical manufacturer’s instructions.

▲ Wear protective clothing.

▲ Handle all chemicals with care.

▲ Avoid inhaling smoke from any type of chemical fire.

▲ Never drain, rinse or wash dispensers within 100 feet (30m) of a freshwater source, nor at a car wash.

▲ Store or dispose of unused chemicals as specified by chemical manufacturer.

▲ Dispose of empty chemical containers properly. Laws generally require power rinsing or rinsing three times, followed by perforation of the container to prevent re-use.

Shutdown and Storage

▲ Clean out and safely store or dispose of residual chemicals.

▲ Secure drill using blocks and transport locks.

▲ Store 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.
▲ Work in a clean, dry area.
▲ Put tractor in park, turn off engine, and remove key before performing maintenance.
▲ Make sure all moving parts have stopped and all system pressure is relieved.
▲ Disconnect battery ground cable (-) before servicing or adjusting electrical systems or before welding on drill.
▲ Inspect all parts. Make sure parts are in good condition and installed properly.
▲ Remove buildup of grease, oil or debris.
▲ Remove all tools and unused parts from drill before operation.

Tire Safety

Tire changing can be dangerous and should be performed by trained personnel using correct tools and equipment.
▲ When inflating tires, use a clip-on chuck and extension hose long enough for you to stand to one side—not in front of or over tire assembly. Use a safety cage if available.
▲ When removing and installing wheels, use wheel-handling equipment adequate for weight involved.

Safety At All Times

Thoroughly read and understand the instructions in this manual before operation. Read all instructions noted on the safety decals.
▲ Be familiar with all drill functions.
▲ Operate machinery from the driver’s seat only.
▲ Do not leave drill unattended with tractor engine running.
▲ Do not dismount a moving tractor. Dismounting a moving tractor could cause serious injury or death.
▲ Do not stand between the tractor and drill during hitching.
▲ Keep hands, feet and clothing away from power-driven parts.
▲ Wear snug-fitting clothing to avoid entanglement with moving parts.
▲ Watch out for wires, trees, etc., when folding and raising drill. Make sure all persons are clear of working area.
Safety Reflectors and Decals

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

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

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

Slow Moving Vehicle Reflector

818-003C

On rear face of left-hand seed box near machine center; 1 total

818-055C

On mount fastened to right-hand end of left-hand seed box; 1 total.
If the fertilizer option is installed, the slow moving vehicle reflector on the main seed box is obstructed. A new slow moving vehicle reflector is installed on the center rear edge of the walkboard; 1 total

If the small seeds option is installed, the slow moving vehicle reflector on the main seed box is obstructed. A new slow moving vehicle reflector is installed on the right-hand end of left-hand walkboard; 1 total

**Red Reflectors**

**838-266C**

On rear face of walkboard, each outside corner outboard of daytime reflectors; 2 total

On rear face of walkboard, each outside corner below daytime reflector; 2 total
Daytime Reflectors
838-267C

On rear face of walkboard, inboard of red reflectors; 2 total

On rear face of walkboard, each outside corner above red reflectors; 2 total

Amber Reflectors (large)
838-265C

On outside end faces of walkboards at ladder top, front top face of mainframe, each outside corner; 4 total

Amber Reflectors (small) Optional Marker
818-229C

On outside end faces of marker mounts; 1 total per marker
Amber Reflectors (large) Optional Marker
838-265C

On face of reflector mounting plate;
1 total per marker

Danger: Read Manual
848-512C

On tongue at hitch;
1 total

Danger: Crushing Hazard
818-590C

On front face of mainframe, right of 3-point hitch;
1 total

Warning: Excessive Speed Hazard
818-337C

On front face, top front of mainframe, above each gauge wheel assembly;
2 total
Warning: High Pressure Fluid
818-339C

On front face of mainframe, right of 3-point hitch; 1 total

Warning: Marker Pinch Crush
818-682C

On front and top faces, inner marker section, 2 per marker; 4 total

Warning: Falling Hazard
838-102C

On outside face of mainframe, forward of ladder; 2 total

Caution: Tires Not A Step
818-398C

On front face, top front of mainframe, above each gauge wheel assembly; 2 total
Caution: Read Manual
818-587C

On front face of mainframe, right of 3-point hitch; 1 total

Caution: 32 PSI Tire Pressure
818-751C

On rim of each 9.5L-15-6ply wheel; 2 total

Caution: 52 PSI Tire Pressure
818-752C

On rim of each 11L-15SL-12ply wheel; 2 total

Caution: 36 PSI Tire Pressure
818-855C

On rim of each 11L-15SL-8ply wheel; 4 total
Introduction

Great Plains welcomes you to its growing family of new product owners. Your 3-Point Drill 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.

Document Family

288-340M Operator Manual (this document)
288-340B Seed Rate Manual

Description of Unit

The 15-, 20- and 25-foot 3-point drills are equipped with HD10 Series row units. The HD10 Series has heavy duty parallel-arm openers. These row units are staggered for easy residue flow. Opener depth can be adjusted.

Intended Usage

Use this implement to seed production-agriculture crops in conventional or minimum tillage applications.

Models Covered

1510HDF-181015-Foot, 18-row, 10in spacing
1510HDF-247515-Foot, 24-row, 7.5in spacing
2010HDF-241020-Foot, 24-row, 10in spacing
2010HDF-327520-Foot, 32-row, 7.5in spacing
2510HDF-201525-Foot, 20-row, 15in spacing
2510HDF-20TR3025-Foot, 20-twin-row, 30in pairs
2510HDF-291025-Foot, 29-row, 10in spacing
2510HDF-407525-Foot, 40-row, 7.5in spacing

Using This Manual

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

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

Definitions

The following 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.

Notice

Paragraphs in this format present 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.

NOTE: Paragraphs in this format provide useful information related to the current topic.

Dealer QRC

The QR Code (Quick Response) to the left will take you to available dealers for the machine. Refer to the Parts Manual QR Locator for detailed instructions.
Owner Assistance

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

Refer to Figure 2

Your machine’s parts were specially designed and should only be replaced with Great Plains parts. Always use the serial and model number when ordering parts from your Great Plains dealer. The serial-number plate is located on the left side of the drill frame below the front of the main seed box.

Record your drill 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 product. If for any reason you do not understand any part of this manual or are otherwise dissatisfied, please take the following actions first:

1. Discuss the matter with your dealership service manager. Make sure they are aware of any problems so they can assist you.

2. If you are still unsatisfied, seek out the owner or general manager of the dealership.

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

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

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

This section helps you prepare your tractor and drill for use. Before using the drill in the field, you must hitch the drill to a suitable tractor and also setup the drill.

Pre-Setup Checklist

1. Read and understand “Important Safety Information” starting on page 1.

2. Check that all working parts are moving freely, bolts are tight, and cotter pins are spread.

3. Check that all grease fittings are in place and lubricated. “Lubrication” starting on page 58.

4. Check that all safety decals and reflectors are correctly located and legible. Replace if damaged. “Safety Reflectors and Decals” starting on page 5.

5. Inflate tires to pressure recommended and tighten wheel bolts as specified. “Appendix” on page 68.

Hitching

These instructions are for a direct 3-point hitch. If using an optional SSH hitch, consult the hitch manual.

**DANGER**

Crushing Hazard: You may be severely injured or killed by being crushed between the tractor and drill. Do not stand or place any part of your body between machines being hitched. Stop tractor and set parking brake before inserting hitch pins.

1. Raise or lower tractor three-point arms as needed and pin lower arms to drill.

2. Pin upper arm to drill.

   For category III and III-N tractors, install hitch pin in the lower hole.

   For category IV-N tractors, install hitch pin in the upper hole.


4. If drill has parking stands, pin them up.

5. Adjust top three-point link so that top edge of drill box is parallel with ground when drilling.

   **NOTE:** Do not use link to adjust opener depth. For opener adjustments, refer to “Leveling the Drill” on page 16 and “Adjustments” starting on page 29.

6. Set your tractor three-point-draft control to Float position.
Electrical Connections

Refer to Figure 3
7. Plug drill electrical lead into tractor seven-pin connector. If your tractor is not equipped with a seven-pin connector, contact your dealer for installation.

Refer to Figure 4
8. If the drill is equipped with the optional shaft monitor, mate the connector for the cab display.

See “Shaft Monitor Cab Module” on page 20 for installation.

See “Shaft Monitor” on page 65 for ordering information.
Hydraulic Hose Hookup

**WARNING**

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

**Current Style Color Coded Handle Grips**

*Refer to Figure 5*

Great Plains hydraulic hoses are 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.

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.

<table>
<thead>
<tr>
<th>Color</th>
<th>Hydraulic Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Green</td>
<td>Marker Cylinders</td>
</tr>
</tbody>
</table>

9. Connect marker hoses to tractor remote valve.

10. If this is the first time the drill has been hitched, bleed the marker hydraulics per the instructions on page 53.

**Older Style Hoses with Color Ties**

*Refer to Figure 6*

To distinguish hoses on the same hydraulic circuit, refer to plastic hose label. The hose under an extended-cylinder symbol feeds a cylinder base end. The hose under a retracted-cylinder symbol feeds a cylinder rod end.

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

<table>
<thead>
<tr>
<th>Color</th>
<th>Hydraulic Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Orange</td>
<td>Marker Cylinders</td>
</tr>
</tbody>
</table>
Leveling the Drill

For proper operation, and maximum compensation for varying ground conditions, the opener parallel arms need to be parallel to slightly up-hill in normal lowered field operation. This is controlled by two factors:

- the opener tool bar height, which is controlled by adjustments to the gauge wheels, and;
- front-to-back level, which is controlled by the 3-point hitch.

The procedure for setting initial drill height and checking front-to-back level is:

1. Set gauge wheel adjustments to bedded or non-bedded, via turnbuckle or link and block.
2. Lower drill onto gauge wheels with 3-point. Set circuit to Float.
3. Adjust 3-point to recommended initial opener tool bar height.
4. Verify front-to-back level, and adjust with 3-point. Re-check height.

The adjustment details are different for single gauge wheel vs. dual gauge wheel or offset single.

See the appropriate page for your drill:

- Single-Wheel page 17
- Dual- or Offset-Single Wheel page 18

Make the same adjustment on both gauge wheel assemblies.

Check that drill is still level side-to-side after setup.
Leveling: Single-Wheel

Refer to Figure 7

1. If operations are being changed between non-bedded and bedded planting, set the spring block 1 position before checking opener height.
   ② Lower hole Bedded planting
   ③ Upper hole Non-Bedded planting

2. Check the link length. The factory setting for link length ④, measured at centerlines, is:
   ④ Link Length 6 1/2 in (16.5cm)

3. Lower the drill in representative field conditions and set the 3-point hitch circuit to Float.

Refer to Figure 8

- NOTE: This presumes a planting depth of 1.75 in (44mm). If your depth is different, re-adjust the tool bar height when adjusting the press-wheel (page 49).

4. Initially adjust drill distance between bottom of opener tool bar and planting ground:
   ① Tool bar height 26 in (66cm)

Refer to Figure 7

5. To adjust link length, loosen jam nut ⑤. Turn spring linkage ⑥ to shorten or lengthen as necessary. When adjusting the linkage length, remember:
   + Lengthening linkage raises drill.
   - Shortening linkage lowers drill.
   Re-tighten jam nut when height is final.

Refer to Figure 9

6. Level drill with top of three-point link. Adjust so that row units are inclined slightly uphill, measured ⑧ at the ends of the parallel arms:
   ⑧ Arm inclination 1 in (2.5cm) maximum

The 1 in/2.5cm dimension shown is a general dimension that varies with planting conditions.

**NOTICE**
Ensure the opener mount is running higher than the opener body. This ensures ample reserve for opener upfloat if the opener strikes a rock or other object.
Leveling: Offset-Single Wheel

The offset-single gauge wheel adjusts for bedding by changing the turnbuckle length.

Refer to Figure 10
1. Check the link length. The factory setting for link length ①, measured at centerlines, is:
   ① 17 1/2 in (44.5 cm)
   This corresponds to an opener tool bar height of:
   ④ 26 in (66 cm)
   This is for non-bedded planting.

To adjust the drill for bedded planting:
2. Hitch it to a suitable tractor. Move it to representative bedded ground, with the wheels between beds.
3. Lower the drill to planting position and set the 3-point hitch circuit to Float.

Refer to Figure 11
④ NOTE: This presumes a planting depth of 1.75 in (44 mm). If your depth is different, re-adjust the tool bar height when adjusting the press-wheels (page 49).
4. Adjust drill distance between bottom of opener tool bar and planting ground (bed tops):
   ④ Tool bar height 26 in (66 cm)

Refer to Figure 10
5. To adjust turnbuckle length, loosen jam nut ②. Turn turnbuckle ③ to shorten or lengthen as necessary. When adjusting the turnbuckle length, remember:
   + Lengthening turnbuckle raises drill.
   - Shortening turnbuckle lowers drill.
   Re-tighten jam nut when height is final.
④ NOTE: Do not expose more than 3 in (7.6 cm) of thread at either end of turnbuckle.
6. Level drill with top three-point link.

Refer to Figure 12
7. Level drill with top of three-point link. Adjust so that row units are inclined slightly uphill, measured ⑦ at the ends of the parallel arms:
   ⑦ Arm inclination 1 in (2.5 cm) maximum

The 1 in/2.5 cm dimension shown is a general dimension that varies with planting conditions.

**NOTICE**

Ensure the opener mount is running higher than the opener body. This ensures ample reserve for opener upfloat if the opener strikes a rock or other object.
Leveling: Dual-Wheel

Refer to Figure 13

1. If operations are being changed between non-bedded and bedded planting, set the spring turnbuckle clevis position before checking length and opener height.
   - Lower hole Bedded planting
   - Upper hole Non-Bedded planting

2. Check the link length. The factory setting for link length 3, measured at centerlines, is:
   - Non-Bedded
   - Bedded
   - 3 17½in (44.5cm)
   - 20¾in (52.7cm)

3. Lower the drill in representative field conditions and set the 3-point hitch circuit to Float.

Refer to Figure 14

NOTE: This presumes a planting depth of 1.75in (44mm). If your depth is different, re-adjust the tool bar height when adjusting the press-wheel (page 49).

4. Initially adjust drill distance between bottom of opener tool bar and planting ground:
   - Tool bar height 26in (66cm)

Refer to Figure 13

5. To adjust turnbuckle length, loosen jam nut 5. Turn turnbuckle 5 to shorten or lengthen as necessary. When adjusting the turnbuckle length, remember:
   - Lengthening turnbuckle raises drill.
   - Shortening turnbuckle lowers drill.
   - Re-tighten jam nut when height is final.

6. Level drill with top three-point link.

Refer to Figure 15

7. Level drill with top of three-point link. Adjust so that row units are inclined slightly uphill, measured 7 at the ends of the parallel arms:
   - Arm inclination 1in (2.5cm) maximum

The 1in/2.5cm dimension shown is a general dimension that varies with planting conditions.

**NOTICE**

Ensure the opener mount is running higher than the opener body. This ensures ample reserve for opener upfloat if the opener strikes a rock or other object.
Options Setup

Prior to first use, install any optional equipment that was not factory- or dealer-installed.

Even if factory- or dealer-installed, some items may need setup for your specific requirements.

Acremeter Installation

Refer to Figure 16

The acremeter ① may be supplied from the factory in a separate carton, to minimize risk of shipping damage. Check to see if it has already been installed by your dealer. It is located on the outside end of the upper wheel arm pivot shaft ②. It may be installed on either the left or right gauge wheel.

If not already installed:
1. Slide the spacer tube ③ onto the shaft.
2. Slide the shaft adaptor ④ onto the shaft, aligning its cross-pin hole with the hole in the shaft.
3. Insert the clevis pin ⑤ through the adaptor and shaft and secure with cotter pin ⑥.
4. Screw the threaded end of the meter ① into the 1/2-20 tapped hole in the adaptor ④.

Tighten the threaded end only enough to prevent it from working loose from normal vibration. In use, there is no torque or tension that might tend to unscrew it.

The acremeter counts shaft rotations whenever the shaft is rotating - normally this is only with the drill lowered and in motion. The meter is geared to display rotations as acres, when using factory-specified tires and inflations.

Tally field acres by noting the meter reading prior to, and after planting. Subtract the starting from the ending readings.

Shaft Monitor Cab Module

If your drill has the Shaft Monitor option, the cab module may already have been installed by your dealer. If not, consult the installation instructions included with the option kit, and mount the module in a convenient location.

If the cab is particularly noisy, or the operator customarily wears a noise-cancelling headset, the alarms may not be audible. Mount the module where the status indicators are visible during planting operations.

See “Shaft Monitor Operation” on page 27 for operations.
Marker Setup

Marker Chain Adjustment

There are two, interrelated adjustments for the marker chain. Make these adjustments in the following order.

*Refer to Figure 18*

**Marker Lifting Slack**

1. Unfold marker.
2. Loosen jam nuts ① on both sides of channel at adjuster bolt ②.
3. Thread bolt in (up) until head is flush with inside jam nut and both are flush with inside of channel.
4. Slowly fold marker while observing disk. If marker disk drags across ground more than 12 in (30 cm) before lifting, the chain is too long.
5. Shorten chain one or two links by moving clevis bolt ③ up chain a few links. Check adjustment by repeating folding process.
6. If chain is too short when marker is unfolded, it will prevent end of marker from dropping into field depressions, causing skips in your marker line. Correct this condition by lengthening chain one or two links at clevis ③.

**Folding Slack**

1. Fold marker.
2. Extend adjustment bolt ② to take slack out of chain while marker is folded. Extend bolt until there is no chain slack.
3. Lock bolt in this position by tightening jam nuts ① on either side of upright channel.
Marker Extension Setup

If markers were ordered as a separate accessory, or not dealer-installed, mount them per the installation instructions supplied with the markers.

Check the marker extension. The installation instructions may not cover setting the correct marker length, or may specify a length not optimal for your row configuration.

Refer to Figure 19

10HDF drills have their row units spaced equally about machine centerline. Set the initial marker extension to equal the swath, measured from tool bar center to the mark left in the ground when the drill is lowered.

If you modify your row spacing by plugging seed meters, you may change the marker extension required.

Some changes can result in an asymmetric row spacing about machine centerline. This usually causes the marker extension to be different for left and right sides, depending on the direction of planting for each successive pass.

Making short practice passes may be the easier way to establish the correct marker extension.

<table>
<thead>
<tr>
<th>Drill Model</th>
<th>Marker Extension (Swath)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1510HDF-1810</td>
<td>180 in (457 cm)</td>
</tr>
<tr>
<td>1510HDF-2475</td>
<td>180 in (457 cm)</td>
</tr>
<tr>
<td>2010HDF-2410</td>
<td>240 in (610 cm)</td>
</tr>
<tr>
<td>2010HDF-3275</td>
<td>240 in (610 cm)</td>
</tr>
<tr>
<td>2510HDF-2015</td>
<td>300 in (762 cm)</td>
</tr>
<tr>
<td>2510HDF-20TR30</td>
<td>300 in (762 cm)</td>
</tr>
<tr>
<td>2510HDF-2910</td>
<td>290 in (737 cm)</td>
</tr>
<tr>
<td>2510HDF-4075</td>
<td>300 in (762 cm)</td>
</tr>
</tbody>
</table>

Marker Extension Adjustment

Refer to Figure 20

To adjust a marker width or disk pivot orientation:

1. Lower drill to field position and extend the marker side to be adjusted.
2. If disk angle or direction is to be changed, make that change before adjusting extension.
3. Pull forward to fully settle drill and leave a mark to check.
4. On telescoping outer marker tubes, loosen both jam nuts ① and both 1/2 in set screws ②.
5. Move marker disk tube in or out to get the desired mark placement. See page 22 for a table of suggested initial marker extensions, measured from drill centerline.
6. To change throw direction of marker, remove inner tube completely, and reinset at desired orientation.
7. Tighten both 1/2 in set screws ② and then both jam nuts ①.
8. Pull forward to check actual results and fold marker.

Other marker topics in this manual include:

Operations:
“Marker Operations” on page 26

Adjustments:
“Marker Disk Angle” on page 30
“Marker Speed” on page 30
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

**WARNING**

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

1. Carefully read “Important Safety Information” starting on page 1.
2. Lubricate drill as indicated in “Lubrication” starting on page 58.
3. Check all tires for proper inflation. See “25-Foot Model Specifications” on page 69.
4. Check all bolts, pins and fasteners. Torque as shown in “Torque Values Chart” on page 70.
5. Check drill for worn or damaged parts. Repair or replace parts before going to the field.
6. Check hydraulic hoses, fittings and cylinders for leaks. Repair or replace before going to the field.
7. Rotate both gauge wheels to see that the drive and meters are working properly and free from foreign material.
8. To reduce wear, remove chains for drive systems that will not be used at present.
Transporting

**WARNING**

*Loss of Control Hazard*: Towing the drill at high speeds or with a vehicle that is not heavy enough could lead to loss of vehicle control. Loss of vehicle control could lead to serious road accidents, injury and death. To reduce the hazard, do not exceed 20 mph (32 kph). Check that your tractor has enough ballast to handle the weight of the drill. Refer to your tractor operator’s manual for ballast requirements.

- **NOTE**: For transporting with drill attached to a hitch, refer to your hitch operator’s manual.

Before transporting the drill, follow and check these items:

1. Unload seed box. Unload seed box before transporting if at all possible. To do so:
   - Place tarp under drill or a bucket under each seed meter.
   - Use large bucket to empty box as much as possible. Make sure sliding seed tubes are in the open position. Open seed meter clean out to empty seed out of sliding seed tube and meter.
   - The drill can be transported with a full box of grain, but the added weight increases stopping distance and decreases maneuverability.
2. Fold up walkboard ladder(s) for maximum clearance.
   - **NOTE**: To maintain steering control, you may need to add ballast to your tractor front end. Refer to your tractor operator’s manual for ballast required.
3. Raise drill for transport.
4. Fold markers.
5. Use lights on drill.
6. Check that tools, documents (such as manuals) and accessories (such as seed plugs and baffles) will not be left behind.

**Road Rules**
Comply with all national, regional, state and local safety laws when traveling on public roads.

**Clearance**
Remember that the drill is wider than the tractor. Allow safe clearance.

**Transporting with Markers**
Always transport markers in the folded position.
Loading Materials

**WARNING**

To avoid serious injury or death:
- Watch your step when climbing ladder or walking on walkboard.

**Possible Chemical Hazard**

Some chemicals can cause serious burns, lung damage, and even death.

- **To avoid:**
  - Read and follow chemical manufacturer’s instructions
  - Avoid contact with skin or eyes. Wear proper protective equipment as required by chemical manufacturer.
  - Avoid prolonged breathing of chemical fumes. Wear respirator as required by chemical manufacturer.
  - Seek medical assistance immediately if accident occurs. Know what to do.

Great Plains recommends loading materials after the drill has been transported to the planting ground.

Seed is heavy. Pre-loading substantially increases transport hazards:

- Stopping distance increases.
- The center of gravity moves aft. Tractor steering wheels have less weight on them, reducing steering effectiveness.
- Even with effective steering, turns are more difficult to initiate and more difficult to stop, due to the inertia of the wide load.

In addition, material can leak through the meters in transport. Setting the rate adjusters to 0 does not necessarily completely close them against transport leakage, and zeroing the rate adjusters can upset the calibration.

To load materials:

1. Load only in dry conditions.
2. If the seed is treated, or if loading fertilizer, wear protective equipment recommended for the hazards.
3. Lower the drill.
4. Fold down the ladders.
5. Open the lids for the boxes to be used.
6. Remove any debris or obstructions from the boxes.
7. If used, insert seed plugs in unused rows.
8. Load seed and/or fertilizer. Load or spread it evenly across all partitions. Use a tool or gloved hand.
9. Make a note of the quantity loaded, for later confirmation of population or application density desired. Note also the acremeter reading.
10. Close the box lids.
11. Raise the ladders.
Marker Operations

Optional marker attachments are available from your Great Plains dealer. Before operating markers, make sure hydraulics are properly bled as described under “Bleeding Marker Hydraulics” on page 53.

Set hydraulic circuit lever to neutral when folding or unfolding is complete. When extended, Great Plains markers are self-floating over uneven ground. When folded, neutral locks the marker in the transport cradle.

Independent Markers

Supply oil to the cylinder base end of the marker you wish to extend. When fully extended, set the circuit lever to neutral.

Reverse the circuit to fold the marker. When fully resting in the transport cradle, set the circuit lever to neutral.

Dual Auto-Sequenced Markers

Dual markers on twin dedicated circuits operate the same as single markers, above.

Dual markers equipped with a sequence valve share the same hydraulic circuit.

Starting with both markers folded, activate (normally Extend) the circuit, then set the control to neutral. The folding sequence is:

- Activate lever - One side unfolds. The other stays folded.
- Reverse lever - Unfolded side retracts. The other stays folded.
- Activate lever again - Side that remained folded previously now unfolds. Original side remains folded.
- Reverse lever - Unfolded side retracts. Original side remains folded.
- Sequence repeats.

You can adjust dual marker folding speed. See “Marker Speed” on page 30, and adjust folding speed to a safe rate. Folding markers at high speed can damage markers.

Both Sides Extended (Sequenced)

1. Activate lever to extend one side.
2. Reverse lever as if to retract, and quickly reverse again.
3. Extend the other side.
Field Operation

**DANGER**

*Crushing Hazard:* You may be severely injured or killed by being crushed between the tractor and drill. Do not stand or place any part of your body between drill and moving tractor. Stop tractor engine and set park brake before installing pins.

1. Hitch drill to a suitable tractor or hitch. See "Hitching" on page 13, or your hitch operator’s manual.

2. Set and calibrate seeding rate as explained at “Material Rate Adjustments” starting on page 31. Check that meter rates and seed-cup-door handles are set the same across the drill.

   **NOTE:** If you notice excessive cracking on large seeds, adjust all seed-cup doors to a wider setting. Use the widest setting only for seed-cup clean out.

3. Setup row units for desired down-force and planting depth. See “Row Unit Adjustments” on page 41.

4. Enable or disable seed firmers as desired.

5. Load seed box with clean seed. Load fertilizer if used. Fold up ladders.

6. Record acremeter readout. Subtract initial reading from later readings to determine area drilled.

7. Pull forward, lower drill, set 3-point circuit to Float, and begin seeding.

8. Always lift drill out of the ground when turning at row ends and for other short-radius turns. Seeding stops automatically as drill is raised in the field.

Shaft Monitor Operation

The optional shaft monitor generates an alarm if either of the two main seed box meter shafts on the drill stop turning for more than 30 seconds.

**Refer to Figure 21**

Turn system on by activating on-off switch ① on monitor head. If seed-cup shafts are turning, both indicator lights ② are illuminated and no alarm sounds.

If any seed-cup shaft stops for 30 seconds, an alarm sounds and the indicator for that section flashes on the monitor, designating the failed shaft.

**NOTE:** The 30-second delay is to prevent nuisance alarms when turning at the end of the field.

**NOTE:** If a failure does occur and an alarm sounds, remember you have traveled for 30 seconds without planting with that drill section. If due to wheel lift or low tire pressure, you may have been planting at progressively lower populations before that.
Parking
For information on long-term storage, refer to “Storage”, next topic.

1. Empty seed box before unhitching drill to prevent drill from falling backward.

 NOTE: For parking with drill attached to an accessory hitch, refer to your hitch operator’s manual.

2. Unload seed box:

   Place tarp under drill or a bucket under each seed meter.

   Use a large bucket to empty box as much as possible. Make sure sliding seed tubes are in the open position. Open main seed box meter clean outs to empty seed out of sliding seed tube and meter.

   Thoroughly clean seed and seed-treatment residue from boxes and seed meters.

3. Park drill on a level, solid surface.

4. If drill is equipped with parking stands, install them.

5. Lower three-point hitch until drill is on the ground.

6. Disconnect electrical harnesses.

7. Set circuits to float and disconnect any hydraulic connections to the drill.

8. Extend or retract the top link of the tractor until top three-point pin is free. Remove pin.

9. Remove pins from lower links.

Storage

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

2. Perform the Parking checklist, above.

3. Plug or cap delivery tubes to prevent pest entry and nesting.

4. Remove any dirt and debris that can hold moisture and cause corrosion.

5. Lubricate and adjust all roller chains.

6. Lubricate areas noted at “Lubrication” starting on page 58.

7. Inspect drill for worn or damaged parts. Make repairs and service during the off season.

8. Use spray paint to cover scratches, chips and worn areas on the drill to protect the metal.

9. Cover with a tarp if stored outside.
To get full performance from your drill, you need an understanding of all component operations, and many provide adjustments for optimal field results.

The 1510HDF, 2010HDF & 2510HDF have double-disk parallel-arm openers with depth-controlling press wheels. This system provides accurate depth control and seed placement over uneven terrain.

Each opener is mounted on a floating opener frame, held parallel to the ground. Opener bodies are staggered for easy soil flow. A spring provides the down pressure necessary for opener double disks to open a seed furrow. The spring allows openers to float down into depressions and up over obstructions. Individual openers can be adjusted to account for tire tracks.

Even if your planting conditions rarely change, some of these adjustment items need periodic attention due to normal wear.

### Planting Depth

Setting nominal planting depth, and achieving it consistently, is affected by multiple adjustable drill functions, from greatest to least effect they are:

- Leveling the Drill
- Opener Depth (Press Wheel Height)
- Row Unit Down Pressure,
- Optional Accessory Hitch settings and Coulter Setup,
- Unit-Mounted Coulter Depth Adjustment,
- Disk Blade Adjustments (as row unit blades wear).

<table>
<thead>
<tr>
<th>Adjustment</th>
<th>Page</th>
<th>The Adjustment Affects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leveling the Drill</td>
<td>16</td>
<td>Consistent control of seeding depth</td>
</tr>
<tr>
<td>Marker Adjustments</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Marker Extension Setup</td>
<td>22</td>
<td>Pass alignments with no overlap or excessive gap</td>
</tr>
<tr>
<td>Marker Disk Angle</td>
<td>30</td>
<td>Visibility of mark for next pass</td>
</tr>
<tr>
<td>Marker Speed</td>
<td>30</td>
<td>Efficient marker operation at turns</td>
</tr>
<tr>
<td>Material Rate Adjustments</td>
<td>31</td>
<td></td>
</tr>
<tr>
<td>Main Box Seed Rate</td>
<td>32</td>
<td>Seed population</td>
</tr>
<tr>
<td>Drive Type</td>
<td>33</td>
<td>Coarse control of main box seed rate</td>
</tr>
<tr>
<td>Main Box Seed Rate Handle</td>
<td>34</td>
<td>Tuning seed rate for your specific seed</td>
</tr>
<tr>
<td>Seed Cup Door</td>
<td>34</td>
<td>Consistent delivery of certain seed sizes</td>
</tr>
<tr>
<td>Main Box Calibration</td>
<td>34</td>
<td>Precise control of main box seed rate</td>
</tr>
<tr>
<td>Small Seeds Attachment Rate</td>
<td>36</td>
<td>Small seed population</td>
</tr>
<tr>
<td>Small Seeds Rate Calibration</td>
<td>36</td>
<td>Tuning small seed rate for your specific seed</td>
</tr>
<tr>
<td>Fertilizer Rate</td>
<td>38</td>
<td>Material application rate</td>
</tr>
<tr>
<td>Fertilizer Density Correction</td>
<td>39</td>
<td>Quicker closure on a rate calibration</td>
</tr>
<tr>
<td>Fertilizer Rate Calibration</td>
<td>39</td>
<td>Tuning application rate for your specific material</td>
</tr>
<tr>
<td>Row Unit Adjustments</td>
<td>41</td>
<td></td>
</tr>
<tr>
<td>Unit-Mounted Coulter Adjustments</td>
<td>42</td>
<td>Depth of groove ahead of opener furrow</td>
</tr>
<tr>
<td>Row Unit Down Pressure</td>
<td>44</td>
<td>Consistent seeding depth in tire tracks</td>
</tr>
<tr>
<td>Disk Blade Adjustments</td>
<td>47</td>
<td>Consistent seeding depth</td>
</tr>
<tr>
<td>Seed Firmer Adjustments</td>
<td>48</td>
<td>Reliable seed placement at furrow bottom</td>
</tr>
<tr>
<td>Opener Depth (Press Wheel Height)</td>
<td>49</td>
<td>Seeding depth</td>
</tr>
</tbody>
</table>
Marker Adjustments

See other sections for these marker items:
Marker Setup:
“Marker Extension Setup” on page 22
Marker Maintenance:
“Bleeding Marker Hydraulics” on page 53
“Marker Chain Adjustment” on page 21
“Marker Transport Carrier” on page 54

Marker Disk Angle

Refer to Figure 22

To change angle of cut, and the width of the mark:
1. Loosen 1/2-inch bolts 2 holding the disk assembly.

   For a wider mark ⊙, increase the angle of the marker with respect to the tube ①. For a narrower mark ○, reduce the angle.

To change direction of cut (throw dirt out vs. in), invert disk blade on hub, or invert disk assembly on tube.
2. Tighten bolts ②.

Marker Speed

The folding speed of independent markers (on separate hydraulic circuits) is controlled by needle valves at the cylinders.

The folding speed of sequenced dual markers is controlled by an adjustment at the sequence valve.

Excessive folding speed can damage markers and void the warranty.

Folding Speed with Needle Valves

This applies only to markers plumbed separately (left and right are each on their own tractor hydraulic circuit).

Refer to Figure 23

A needle valve controls the folding speed. The needle valve is near the rod end of the marker cylinder. With tractor idling at a normal operating speed, adjust marker folding to a safe speed.

HELPFUL TIP

Do not adjust needle valve while marker is in motion.

Turn adjustment knob ① clockwise to reduce folding speed or counterclockwise to increase folding speed.

Folding Speed with Sequence Valve
There is one adjustment screw for unfolding speed ① and one for folding speed ②. You can identify adjustment screws by markings stamped in valve body.

**WARNING**

*Do not adjust sequence valve while marker is in motion.*

Turn adjustment screws clockwise (S: slower) to decrease [un]folding speed and counterclockwise (F: faster) to increase [un]folding speed.

With tractor idling at a normal operating speed, adjust marker folding to a safe speed. Excessive [un]folding speed could damage markers and void the warranty.

After adjusting the folding speed, tighten jam nuts on hex adjustment screws to hold settings.

### Material Rate Adjustments

<table>
<thead>
<tr>
<th>Adjustment</th>
<th>Main Seed Box</th>
<th>Small Seeds Attachment</th>
<th>Fertilizer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drive Type</td>
<td>Controls Coarse Rate</td>
<td>Unaffected by Drive Type</td>
<td>Unaffected by Drive Type</td>
</tr>
<tr>
<td>Adjuster Scale</td>
<td>Handle Controls Fine Rate</td>
<td>Handle Controls Rate</td>
<td>Knob Controls Rate</td>
</tr>
<tr>
<td>Meter Door</td>
<td>Controls Rate Consistency</td>
<td>No Adjustment Required</td>
<td>No Adjustment Required</td>
</tr>
<tr>
<td>See...</td>
<td>page 32</td>
<td>page 36</td>
<td>page 38</td>
</tr>
</tbody>
</table>

Material rates for each of the boxes are set independently.

Great Plains recommends calibration with your seed and fertilizer for most accurate results.

### Revolutions Per Acre

<table>
<thead>
<tr>
<th>Planted Row Spacing</th>
<th>1510HDF Drill</th>
<th>2010HDF Drill</th>
<th>2510HDF Drill</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Row Count</td>
<td>Revolutions</td>
<td>Row Count</td>
</tr>
<tr>
<td>71/2 in (19.1cm)</td>
<td>24</td>
<td>365/ac 902/Ha</td>
<td>32</td>
</tr>
<tr>
<td>10 in (25.4cm)</td>
<td>18</td>
<td>365/ac 902/Ha</td>
<td>24</td>
</tr>
<tr>
<td>15 in (38.1cm)</td>
<td></td>
<td></td>
<td>20</td>
</tr>
<tr>
<td>Twin Row 30 in (76.2cm)</td>
<td></td>
<td></td>
<td>20a</td>
</tr>
</tbody>
</table>

a. Each row of a twin-row is a pair of row units. The 2510HDF-20TR30 has 40 row units.

Calibrating any seed or fertilizer rate relies on the values in the table above. The values are for gauge wheel tire revolutions per acre (ac) or hectare (Ha).

Whether turning the tire, or the jackshaft, count tire revolutions, and use an rpm rate close to actual field rate. Turning too slowly or too rapidly has unreliable results.

Tire rpm:

55 rpm = 5 mph = 8 kph
Non-Standard Configurations

If you modify your row spacing by plugging seed meters, this may alter the revolutions per acre or hectare. Measure between the centerlines of the active end rows (the Span). If the change was to simulated twin-row, treat each pair as a single row, and measure to pair centerline.

\[ \text{RowSpacing} = \frac{\text{Span}}{\text{RowCount} - 1} \]

Main Box Seed Rate

Main seed box planting rate is controlled by:

- Drive Type sprocket set
- Seed Rate handle setting
- Seed Cup door setting

Before setting the rate, raise the drill and rotate the gauge wheels. Check that seed meters, seed tubes and drives are working properly and are free from foreign material.

The procedure for setting the main box rate is:

1. Consult chart for your crop in the Seed Rate manual. Note initial Drive Type and Rate Handle settings.
2. Configure Drive Type and Seed Rate handle on one or both sides of the drill.
3. Set the Seed Cup doors per advice on page 34.
4. Calibrate the drill for your specific seed.
5. Set both gauge wheels and rate handles identically.

\[ \text{UseRevolutions} = \frac{\text{TableRevolutions} \times \frac{\text{SpecSwath}}{\text{NewSwath}}}{\text{RowSpacing} \times \text{RowCount}} \]

If you are using markers, also re-check the marker extension. See page 22.

The new swath is the measurement times the new row count.

\[ \text{NewSwath} = \text{RowSpacing} \times \text{RowCount} \]
Drive Type

Before setting the Drive Type, rotate the gauge wheels. Check that seed meters, seed tubes and drives are working properly and free from foreign material.

Refer to Figure 25

1. Consult the rate charts in the Seed Rate manual, and determine the Drive Type required. If there are multiple choices (different Drive Types) for the same seed population, choose the one that has a rate handle setting closest to 50.

2. These Types correspond to the following pairings of Driving 1 and Driven 2 sprockets mounted on the right side of the gauge wheel assembly.

<table>
<thead>
<tr>
<th>Drive Type</th>
<th>Driving 1 Sprocket</th>
<th>Driven 2 Sprocket</th>
<th>Coarse Speed</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>14</td>
<td>44</td>
<td>Slowest</td>
</tr>
<tr>
<td>2</td>
<td>24</td>
<td>36</td>
<td>2.1x</td>
</tr>
<tr>
<td>3</td>
<td>24</td>
<td>24</td>
<td>3.1x</td>
</tr>
<tr>
<td>4</td>
<td>24</td>
<td>15</td>
<td>5.0x</td>
</tr>
</tbody>
</table>

If the Drive Type needs to be changed:


4. Exchange sprockets between drive shafts and towers, installing the correct sprockets on the DRIVER and DRIVEN shafts.

Refer to Figure 26

5. Reroute chain over sprockets and idlers. Make sure open end of chain clip faces away from direction of chain travel (shown by gray arrows).

6. Move idler into chain so chain has \( \frac{1}{4} \)in slack in its longest span. Tighten idler. Re-pin all three shafts.

7. Configure other gauge wheel to match.

NOTE: Each gauge wheel drives half of the drill. If a chain breaks or is removed, that drill half does not plant.
Main Box Seed Rate Handle
There are identical seed rate handles for each half of the drill. Generally, both need to be set identically. You can stop seed flow to one half of the drill by setting a handle to zero (for point-row planting, for example).
The seed rate handle controls the percent engagement of the seed sprocket in each seed cup.
Refer to Figure 27
1. Loosen wing nut ① under handle.
2. Set indicator ② to about 10 past value from Seed Rate Chart, then move handle back to target value.
3. Tighten wing nut.

Seed Cup Door
Refer to Figure 28, which depicts the seed cup door handle in position ③.
At each seed box seed tube, adjust the seed cup door handle ④ for the seed size.
The handle has three normal operating position detents:
① (top detent) is for the smallest seeds.
Use it for wheat and similar small seeds.
② (middle detent) is for larger seeds.
Use it for soybeans and similar larger seeds.
③ (bottom detent) is for oversize or fragile seeds.
If you experience excessive cracking with setting ②, use setting ③.

□ NOTE: Handle position ③ is used for cleanout, not planting. If set to this position with seed loaded, it may be difficult to reset it to a normal operating position.

Main Box Calibration
Refer to sample data and formulas at right.
1. As necessary, convert your target seed population to pounds per acre.
2. Set Drive Type, rate handle and seed cup door per the earlier instructions.
3. Record weight of an empty container large enough to hold seed metered for one acre for three rows.
4. Place several pounds of seed over three seed cups on an outside end of a drill box. Pull seed tubes off of these three opener's and route them to container.

For example:
Drill: 2510HDF-2910
Seed: Soybeans, 80,000 seed bag weight: 35 pounds
Target population: 210,000 seeds per acre
80000 ÷ 35 = 2286 seeds per pound
210000 ÷ 2286 = 92 pounds per acre
Drive Type: 3
Rate Handle: between 50 and 55, approximately 51
Assume empty ContainerWeight of:
2.5 pounds
5. Raise the drill.
6. Rotate gauge wheel or calibration crank a few turns 
to confirm gearbox has engaged and to confirm that 
the seed paths are free from foreign matter.
7. Turn gauge wheel several times to fill seed cups with 
seed. Turn wheel until seed falls from each cup. 
Place seed collected so far back in the box.
8. Rotate gauge wheel until one acre has been tallied 
(see table on page 31). Simulate field speed.
   \*\*\* NOTE: You can also rotate the gauge wheel jackshaft 
by means of a wrench or socket, on the drill side that 
does not have the acremeter. When turning the gauge 
wheel jackshaft, count tire rotations, as the axle and 
jackshaft sprockets are not 1:1.
9. Check that the three seed cups have ample seed 
coming into them.
10. Weigh metered seed.
11. Subtract initial weight of container (tare weight).

   \[ SeedWeight = TotalWeight - ContainerWeight \]

12. Divide by three.

   \[ PoundsPerCup = \frac{SeedWeight}{3} \]

13. Multiply by the number of openers on your drill to 
determine total pounds seeded per acre.

   \[ PoundsPerAcre = PoundsPerCup \times OpenerCount \]

14. If this figure is different than desired, set your seed 
rate adjustment handle accordingly.
   \*\*\* NOTE: You may want to repeat the calibration 
procedure if your results vary greatly from seed rate 
chart.

From table, rotations per acre is: 214

For a 25-foot drill, tire rpm for 5 mph is: 52

Assume container plus seed weighs: 12.6 pounds

\[ SeedWeight: \]

\[ 12.6 - 2.5 = 10.1 \]

\[ PoundsPerCup: \]

\[ 10.1 \div 3 = 3.36 \]

\[ PoundsPerAcre: \]

\[ 3.36 \times 29 = 97.5 \]

Target was 92. Result is 6% high.

Adjust handle down by 3 (6% of 51) 
to a Seed Rate Handle setting of: 48

When drilling, check seeding rate by noting acres drilled, 
amount of seed added to drill and seed level in drill box. 
If you are seeding more or less than desired, adjust 
seeding rate slightly to compensate for field conditions.
Small Seeds Attachment Rate
Small seeds attachment box planting rate is controlled by:

- Seed Rate handle setting

Small seeds rate is independent of the Drive Type used for main seed box planting. The small seeds cups do not have doors to adjust.

Before setting the rate, raise the drill and rotate the gauge wheels. Check that seed meters, seed tubes and drives are working properly and are free from foreign material.

The procedure for setting the main box rate is:
1. Consult the charts for your crop in the Seed Rate manual. That provides the initial Rate Handle settings.
2. Configure Seed Rate handle on one or both sides of the drill.
3. Calibrate the drill for your specific seed.
4. Set both rate handles identically.

Small Seeds Rate Handle

Refer to Figure 29
Position the small seeds seed cup lever to setting indicated on the Rate Chart in the Seed Rate manual.

To adjust:
1. Loosen wing nut 1 under handle 2.
2. Slide handle 2 until indicator is about 10 past the desired value, then move it back to the desired value.
3. Tighten wing nut.

Small Seeds Rate Calibration

- NOTE: You may need to increase seed cup setting for lighter than average seed or decrease seed cup setting for heavier than average seed.
- NOTE: The seed rate charts are based on cleaned, untreated seed of average size and test weight. For seed not listed on the charts, compare weight and size to those listed and use a similar setting.

Refer to sample data and formulas at right.

For example:
Drill: 2510HDF-2910
Seed: Millet
Target population: 5 pounds per acre
Rate Handle from chart: between 30 and 35, approximately 34
Assume empty ContainerWeight of: 0.8 pounds
5. Raise the drill.

6. Rotate gauge wheel or calibration crank a few turns to confirm gearbox has engaged and to confirm that the seed paths are free from foreign matter.

7. Turn gauge wheel several times to fill seed cups with seed. Turn wheel until seed falls from each cup. Place seed collected so far back in the box.

8. Rotate gauge wheel until one acre has been tallied (see table on page 31). Simulate field speed.

 NOTE: You can also rotate the gauge wheel jackshaft by means of a wrench or socket, on the drill side that does not have the acremeter. When turning the gauge wheel jackshaft, count tire rotations, as the axle and jackshaft sprockets are not 1:1.

9. Check that the three seed cups have ample seed coming into them.

10. Weigh metered seed.

11. Subtract initial weight of container (tare weight).

   \[ \text{SeedWeight} = \text{TotalWeight} - \text{ContainerWeight} \]

12. Divide by three.

   \[ \text{PoundsPerCup} = \frac{\text{SeedWeight}}{3} \]

13. Multiply by the number of openers on your drill to determine total pounds seeded per acre.

   \[ \text{PoundsPerAcre} = \text{PoundsPerCup} \times \text{OpenerCount} \]

14. If this figure is different than desired, set your seed rate adjustment handle accordingly.

15. Configure other Small Seeds box to match.

 NOTE: You may want to repeat the calibration procedure if your results vary greatly from seed rate chart.

When drilling, check seeding rate by noting acres drilled, amount of seed added to drill and seed level in drill box. If you are seeding more or less than desired, adjust seeding rate slightly to compensate for field conditions.

From table, rotations per acre is: 214

For a 25-foot drill, tire rpm for 5 mph is: 52

Assume container plus seed weighs: 1.25 pounds

\( \text{SeedWeight}: \text{pounds} \)

\[ 1.25 - 0.8 = 0.45 \]

\( \text{PoundsPerCup}: \)

\[ 0.5 ÷ 3 = 0.15 \]

\( \text{PoundsPerAcre}: \)

\[ 0.15 \times 29 = 4.35 \]

Target was 5.0 pounds per acre.
Result is 13% low.

Adjust handle up by 4 (13% of 34) to a Seed Rate Handle setting of: 38
Fertilizer Rate
Fertilizer rate is controlled by:

- **Rate adjuster setting**

Fertilizer rate is independent of the Drive Type used for main seed box planting. The fertilizer cups do not have doors to adjust.

Before setting the rate, raise the drill and rotate the gauge wheels. Check that meters, tubes and drives are working properly and are free from foreign material.

The procedure for setting the fertilizer rate is:

1. Know your material density. If it is substantially different from the material used to generate the charts, apply a correction factor before selecting the initial rate from the charts.
2. Consult the fertilizer rate chart for desired applications density (pounds/acre or kg/hectare). The chart provides the initial adjuster setting.
3. Configure the adjuster on one or both sides of the drill.
4. Calibrate the drill for your specific material.
5. Set both rate adjusters identically.

**Setting the Fertilizer Adjuster**

*Refer to Figure 30*

Each fertilizer box has its own adjuster, located near box center. Position the adjuster to the rate from the fertilizer Chart in the Seed Rate manual.

To adjust:

1. Rotate the adjuster knob ① located to the right of the scale ②. Rotate counter-clockwise to increase rate. The knob stays at your setting due to springs clamping a nut at the left end of the shaft.
2. Rotate the adjuster until indicator ② is about 10 past the desired value, then move it back to the desired value.

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

- Do not use liquid treatments with drill.
- Read and follow chemical manufacturer’s instructions.
- Wear protective clothing.
- Handle all chemicals with care.
- Avoid inhaling smoke from any type of chemical fire.
- Never drain, rinse or wash dispensers within 100 feet (30m) of a freshwater source, nor at a car wash.
- Store or dispose of unused chemicals as specified by chemical manufacturer.
- Dispose of empty chemical containers properly. Laws generally require power rinsing or rinsing three times, followed by perforation of the container to prevent re-use.

![Figure 30](image-url)
Fertilizer Density Correction

The Fertilizer Rate charts in the Seed Rate manual are based on a StandardDensity of:
65 pounds/cu-ft or 1.04 kg/liter.

If your material is substantially different, and/or if you don’t intend to calibrate, calculate a CorrectedRate before consulting the rate chart.

1. Obtain your material density from the packaging. If it is not documented, you will need to weigh a known volume of it, and convert the results to pounds-per-cubic-foot or kilograms-per-liter.
2. Compute the correction factor.
   \[CorrectionFactor = \frac{StandardDensity}{YourDensity}\]
3. Apply the correction factor to your desired application rate.
   \[CorrectedRate = ActualRate \times CorrectionFactor\]
4. Look up the setting for the CorrectedRate in the Fertilizer Rate chart.
5. The CorrectedRate is used only to obtain an initial setup for the rate adjuster. Calibrate to your real field rate (the ActualRate).

Fertilizer Rate Calibration

Calibration is strongly recommended. Fertilizer density and can granularity can be substantially different from the material used to generate the chart.

Refer to sample data and formulas at right.

1. Consult the rate chart for your material (after correcting for density, if that step was completed).
2. Set rate adjuster on one of the drill boxes.
3. Record weight of an empty container large enough to hold material metered for one acre for three rows.
4. Place several pounds of material over three fertilizer cups on an outside end of a drill box. Pull delivery tubes off of these three openers and route them to container.
5. Raise the drill.
6. Rotate gauge wheel or calibration crank a few turns to confirm gearbox has engaged and to confirm that the fertilizer paths are free from foreign matter.
7. Turn gauge wheel several times to fill fertilizer cups with material. Turn wheel until material falls from each cup. Place materials collected so far back in box.

Example Fertilizer Density Correction

Drill: 2010HDF-2410
Desired Application Rate (ActualRate): 60 lbs/ac

Fertilizer Density:
42 pounds per cubic foot.

CorrectionFactor:
\[65 \div 42 = 1.55\]

CorrectedRate:
\[60 \times 1.55 = 93 \text{ (pounds/acre)}\]

The closest chart rate to 93 is 92. Use adjuster setting: 50

For example:

Drill: 2010HDF-2410
Assuming the material density corrected earlier:
ActualRate: 60 (pounds/acre)
CorrectedRate: 93

Rate Adjuster setting from chart: 50

Assume empty ContainerWeight of:
1.1 pounds
8. Rotate gauge wheel until one acre has been tallied (see table on page 31). Simulate field speed.

**NOTE:** You can also rotate the gauge wheel jackshaft by means of a wrench or socket, on the drill side that does not have the acremeter. If turning the gauge wheel jackshaft, count tire rotations, as the axle and jackshaft sprockets are not 1:1.

9. Check that the three seed cups have ample seed coming into them.

10. Weigh metered seed.

11. Subtract initial weight of container (tare weight).

\[
SeedWeight = TotalWeight - ContainerWeight
\]

12. Divide by three.

\[
PoundsPerCup = \frac{SeedWeight}{3}
\]

13. Multiply by the number of openers on your drill to determine total pounds seeded per acre.

\[
PoundsPerAcre = PoundsPerCup \times OpenerCount
\]

14. If this figure is different than desired, set your fertilizer rate adjuster accordingly.

**NOTE:** You may want to repeat the calibration procedure if your results vary greatly from the rate chart.

When drilling, check material rate by noting acres drilled, amount of material added to drill and material level in drill box. If you are applying more or less than desired, adjust rate slightly to compensate for field conditions.

---

From table, rotations per acre is:

268

For a 20-foot drill, tire rpm for 5 mph is:

66

Assume container plus material weighs:

7.3 pounds

\[SeedWeight: 7.3 - 1.1 = 6.2\]

\[PoundsPerCup: 6.2 \div 3 = 2.1\]

\[PoundsPerAcre: 2.1 \times 24 = 49.6\]

Actual Target was 60 pounds per acre. Result is 17% low.

Change adjuster up by 8.5 (17% of 50) to a Fertilizer Rate Adjuster setting of: 59
Row Unit Adjustments

Refer to Figure 31
(which depicts a row unit fully populated with all optional accessories supported for use with the 1510HDF, 2010HDF & 2510HDF)

From front to back, a Great Plains 10HD Series row unit can include the following capabilities (some optional):

1. Unit-Mounted Coulter (UMC): optional
   UMCs are used instead of frame-mounted coulters and are often preferred where soils are not rocky.

2. Dual Down Pressure Springs: standard
   Each row unit is mounted on the drill via parallel arms which allow the row unit to independently move up and down while remaining parallel to the ground. The adjustable spring provides the force to get the row unit and attachments into the soil.

3. Row Unit Spring Cam: standard
   This adjustment sets the down-force used by the row unit. See “Row Unit Down Pressure” on page 44.

4. Row-Unit Lock-Up: hole standard, pin optional
   If rows are shut off with seed tube plugs, row unit wear can be reduced by locking them up. Row Unit Lock-Up.

5. Disc Blades: standard, 2 per row unit
   Double disc blades open a furrow, creating the seed bed. Spacers adjust the blades for a clean furrow. See “Disk Blade Adjustments” on page 47.

6. Scraper Separator: standard
   No adjustments are necessary.

7. Seed delivery tube: standard
   No adjustments are necessary.

8. Seed firmer:
   reduces seed bounce and aids emergence by pressing seed gently into the furrow.

A seed flap (not shown) is standard.

Keeton seed firmer (not shown)
Improves seed-soil contact, and provides a stable arm for a low-rate liquid fertilizer delivery tube. See “Keeton Seed Firmer Adjustment” on page 48.

Seed-Lok™ firming wheel (shown)
Improves seed-soil contact. See “Seed-Lok™ Seed Firmer Lock-Up” on page 48.

9. Press wheels: standard (choice of types)
   These close the seed trench. The wheels also support the free end of the row unit, and provide the primary control over seeding depth. See “Opener Depth (Press Wheel Height)” on page 49.

**NOTICE**

Certain Machine Damage: Do not back up with row units in the ground. To do so will cause severe damage and row unit plugging.
Unit-Mounted Coulter Adjustments

Unit-mounted coulters are an optional alternative to frame-mounted coulters. Only one type of coulter may be installed. See page 67 for ordering information.

**NOTE:** Unit-Mount Coulters are not factory-installed. Check alignment and depth prior to first use.

**Coulter Depth Adjustment**

The ideal operating depth for unit-mounted coulters is \( \frac{1}{4} \) in above opener depth. Although they may have originally been set to this depth, coulter (and opener) blades wear with time, and may need adjusting.

Adjusting the coulter depth is accomplished by re-mounting the coulter blade in one of the six mounting holes arranged in a staggered pattern in the coulter bracket.

**Refer to Figure 32 and Figure 33**

Raise drill and install cylinder locks before working on coulters. Row unit may be fully lowered or locked up. Do not attempt to move blade when the current or new position causes it to contact the ground during the adjustment. Be careful around the front end of row units. Coulter blades may be sharp.

To adjust coulter depth:

1. Determine the present opener and coulter depths.
2. Note which bracket hole the coulter is presently using.
3. Determine which new hole will position the coulter closer to the \( \frac{1}{4} \) in-above depth. See the table below.
4. Remove the \( \frac{5}{8} \)-11 x 4 in bolt, lock washer and nut (7 in Figure 32).
5. Move the blade to the new position. Insert the bolt, and tighten on the lock washer and nut.

<table>
<thead>
<tr>
<th>Hole No.</th>
<th>Depth of (new) coulter blade relative to (new) opener blades</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>1 in above</td>
</tr>
<tr>
<td>3</td>
<td>0.75 in above</td>
</tr>
<tr>
<td>5</td>
<td>0.25 in above</td>
</tr>
<tr>
<td>1</td>
<td>0 (factory standard hole)</td>
</tr>
<tr>
<td>4</td>
<td>0.25 in below</td>
</tr>
<tr>
<td>6</td>
<td>0.75 in below</td>
</tr>
</tbody>
</table>

If a worn coulter cannot be adjusted to satisfactory operating depth, replace the coulter blade.
Coulter Row Alignment

Refer to Figure 34

For both frame- and unit-mounted coulters, the ideal alignment is for the blade to prepare a furrow directly ahead of the opener discs.

As a check on coarse alignment, sight along the coulter blade centerline ①, the gap between the opener blades ②, and the centerline between the press wheels ③. If they are clearly out of alignment, either the coulter or the press wheels (or both) may be in need of adjustment.

The exacting test of correct alignment is field results. Operate the drill on some test ground (no seed required), and verify that the opener blades are in the groove opened by the coulter.

Refer to Figure 35

To adjust unit-mounted coulter alignment, loosen the four bolts ④ that attach its bracket to the row unit. The holes on the row unit are slotted, side-to-side, and allow the coulter bracket sideways and rotational adjustment.

Keep the coulter blade vertical while adjusting.

If the blade cannot be brought into alignment, check that the blade spindle itself is using the same hole location on each side of the bracket.
Row Unit Down Pressure

Refer to Figure 36

The ideal amount of down-force causes the press wheels to compress any loose surface soil, but not press a trench into subsoil.

To assess down-force, operate the drill for a short distance on typical ground (with or without seeding), and stop. Leave the drill lowered (row units in ground).

At several row units, inspect the furrow created by the opener discs and closed by the press wheels.

NOTE: Be sure to inspect rows both in and out of tire tracks.

Refer to Figure 37

1. If the press wheels are leaving no tracks, or light tracks, increase down-force.
2. If the wheels are compressing trash and loose soil, and leaving clear tracks right at the top of the subsoil, down-force is probably correct and needs no adjustment.
3. If the wheels are creating a trench into the subsoil, down-force is too high and needs to be reduced.

Adjusting Row Unit Down Force

The springs allow the row units to float down into depressions and up over obstructions.

With Frame-Mounted Coulters:

With frame-mounted coulters, the seed trench is primarily opened by the coulters. Row unit springs provide only additional assistance needed to make a furrow “V” shaped and ensure furrow closure by the press wheels.

Often, the rows may be run at the minimum spring setting, other than in tire tracks, which commonly need some adjustment.

If trench depth is not being achieved across all rows, adjust the force and/or depth of the coulters before making row unit spring adjustments.

With Unit-Mounted Coulters (or no coulters):

Without frame-mounted coulters, the row unit springs provide the primary down force for cutting through residue and opening the seed trench.
10HDP Series Down-Pressure

Refer to Figure 38

An adjuster cam sets row unit spring down pressure individually for each row unit. This is useful for penetrating hard soil and planting in tire tracks.

The notes in the left table below are based on a fluted feed drill without coulters. About 120 pounds (54 kg) of the down-force is the weight of the row unit itself. The additional force is due to the springs lifting against the mass of the fluted feed drill.

Test, without seeding, in your conditions, to determine optimal down-force settings.

To adjust down pressure, use an adjustable or open-end 1 1/8 inch (29 mm) wrench.

1. Raise the fluted feed drill. Although this adjustment can be made with the fluted feed drill lowered, the springs will be in tension, and will require more effort. The extra force required may also damage tools.
2. Put tractor in Park and shut it off.
3. Position wrench on hex nut weldment.
4. Pull upper spring link back.
5. Move the adjustment cam to the new setting on the spring adjust bar.

2-Spring 10HD Cam Down-Force Settings

These settings apply to 2009+ fluted feed drills, or updated older fluted feed drills, that have two parallel arm springs per row.

<table>
<thead>
<tr>
<th>Cam Notch</th>
<th>Pounds</th>
<th>Kilograms</th>
</tr>
</thead>
<tbody>
<tr>
<td>zero (out of notch)</td>
<td>Lock-Up &amp; Maintenance</td>
<td></td>
</tr>
<tr>
<td>one</td>
<td>125</td>
<td>55</td>
</tr>
<tr>
<td>two</td>
<td>140</td>
<td>60</td>
</tr>
<tr>
<td>three</td>
<td>155</td>
<td>70</td>
</tr>
<tr>
<td>four</td>
<td>185</td>
<td>85</td>
</tr>
<tr>
<td>five</td>
<td>215</td>
<td>100</td>
</tr>
<tr>
<td>six</td>
<td>245</td>
<td>110</td>
</tr>
<tr>
<td>tip</td>
<td>Do Not Use</td>
<td></td>
</tr>
</tbody>
</table>

4-Spring 10HD Cam Down-Force Settings

These settings apply to older fluted feed drills, not yet updated³, that have four parallel arm springs per row.

<table>
<thead>
<tr>
<th>Cam Notch</th>
<th>Pounds</th>
<th>Kilograms</th>
</tr>
</thead>
<tbody>
<tr>
<td>zero (out of notch)</td>
<td>Lock-Up &amp; Maintenance</td>
<td></td>
</tr>
<tr>
<td>one</td>
<td>250</td>
<td>115</td>
</tr>
<tr>
<td>two</td>
<td>275</td>
<td>125</td>
</tr>
<tr>
<td>three</td>
<td>310</td>
<td>140</td>
</tr>
<tr>
<td>four</td>
<td>370</td>
<td>170</td>
</tr>
<tr>
<td>five</td>
<td>430</td>
<td>195</td>
</tr>
<tr>
<td>six</td>
<td>490</td>
<td>220</td>
</tr>
<tr>
<td>tip</td>
<td>Do Not Use</td>
<td></td>
</tr>
</tbody>
</table>

³ NOTE: With 4-spring rows, do not set all rows so high that planting becomes uneven or gauge wheels lift off ground.

---

a. Contact your Great Plains dealer for update kit information.
Row Unit Shut-Off
To shut off seed flow to individual rows, such as to operate with half row spacing, there are three steps involved:

Refer to Figure 39
1. Block the seed flow to the row with an optional seed tube plug. See page 64 for ordering.
2. Re-calculate the drill’s swath, and check for any changes needed to:
   - marker extension (see page 22) and
   - calibration (revolutions per acre, see page 32).

Refer to Figure 40
3. Reduce needless wear on the unused rows by locking them up.

   NOTE: When not locked-up, store the pins in the top hole ① of the mount.

Row Unit Lock-Up
When seeding is blocked, individual row 10HD Series row units can be locked up to reduce wear. The opener shank has a hole ② in the opener shank that accepts an optional pin ③ to block parallel arm movement. See page 66 for pin ordering information.

1. Raise the drill. Although this adjustment can be made with the drill lowered, the springs will be in tension, and will require more effort. The extra force may also damage tools.
2. Set the down pressure springs to the minimum cam setting, per the instructions on page 44.

Crushing and Sharp Object Hazard:
Do not attempt to lift the row unit by hand. The weight of the unit, plus the force of the springs (even at minimum) is too great (plus, a free hand is needed for pin insertion). Even with multiple people lifting, hand-lifting is unsafe - there are numerous sharp edges, and the row unit will snap down violently if a grip is lost.

3. Raise the row unit high enough that the hole ② for the pin is above the lower parallel arm. This can be done in several ways, including:
   a. use a hoist at the rear of the shank ⑤
   b. use a jack under the shank extension
   c. place a block under the row, and lower drill
4. Remove the pin from the storage hole ①. Insert it in the lock-up hole ②. Secure it with the cotter pin ⑥.
5. Lower row unit until lower parallel arm rests on lock-up pin.
6. Repeat for all rows needing lock-up.

Pinch/Crush Hazard and Machine Damage Risk: Raising a row unit on a block by lowering the drill is risky. Full lowering can easily damage components, and hydraulic failure is a safety hazard.

Machine Damage Risk: Do not pin the row unit while it is in the lowered position. If the pin is inserted below the parallel arm, unit damage will occur when planting begins.
Disk Blade Adjustments

Opener disc angle and stagger is not adjustable, but disc-to-disc spacing is, and may need attention as discs experience normal wear. Spacers will need to be reset when blades are replaced.

**Refer to Figure 41**

The ideal spacing causes the blades to be in contact for about one inch. If you insert two pieces of notebook paper between the blades, the gap between them should be 0 to 1.75in (0-4.4cm).

If the contact region is significantly larger or smaller (or there is no contact at all), it needs to be adjusted by moving one or more spacer washers. If the contact region varies with blade rotation, one or both blades is likely bent and in need of replacement.

Adjusting Disc Contact

Row unit disk blades may be sharp. Use caution when making adjustments in this area.

**Refer to Figure 42**

1. Raise the drill and install the transport locks.
2. Remove the bolt retaining the opener disc on one side. Carefully remove the disc, noting how many spacers are outside the disk and inside the disk. Do not lose the hub components and spacer washers.
3. To reduce the spacing between the discs (the normal case), move one spacer washer from the inside to the outside of the disc.
4. Re-assemble and check disc contact.
Seed Firmer Adjustments

10HD Series row units include a seed flap, or one of two optional seed firmers.

The seed flap requires no adjustment, but may need to be replaced if worn, and may need to be shortened if an optional seed firmer is added after initial delivery.

_row unit disk blades may be sharp. Use caution when making adjustments in this area. To adjust the Keeton Seed Firmer, lower the drill until the disks of the row units are resting on the ground._

Keeton Seed Firmer Adjustment

The optional Keeton Seed Firmer is an engineered polymer shape that slides down the seed trench. It traps seeds as they exit the seed tube and firms them into the bottom of the “V”.

Refer to Figure 43

The Firmer is provided with a preset tension which is recommended for using the first year. The tension screw ① can be tightened in subsequent years according to your needs. Firmers should provide just enough tension to push seeds to the bottom of the trench.

Seed-Lok™ Seed Firmer Lock-Up

Optional Seed-Lok firming wheels provide additional seed-to-soil contact. The wheels are spring loaded and do not require adjusting. In some wet and sticky conditions the wheels may accumulate soil. To avoid problems associated with this, you can lock-up the firmers.

Refer to Figure 44 (which depicts a row unit with the opener blades removed for clarity)

To lock up Seed-Lock wheels:
1. Pull firming-wheel arm ① up as high as possible.
2. Flip the lock tip ② to hold the arm up.

Figure 43
Keeton Seed Firmer

Figure 44
Seed-Lok™ Lock-Up
Press Wheel Adjustments

Opener Depth (Press Wheel Height)

Seeding depth on 1510HDF, 2010HDF & 2510HDF is set by frame-mounted coulter depth (if installed) and row unit depth. Set frame height (page 16) before making row unit depth adjustments.

10HD Series press wheel height is a stop adjustment and not a spring adjustment. It establishes a fixed relationship between opener depth and the closed-furrow surface at the press wheel.

Refer to Figure 45

Set opener seeding depth by adjusting press-wheel height ①. To adjust, first raise openers slightly, then lift and slide T handles ② on top of openers. Initially adjust all press wheels to the same height. Individual rows running in tire tracks may need to be set deeper a.

• For more shallow seeding, slide T handles forward ⑤ toward drill.
• For deeper seeding, slide T handles backward ⑥ away from drill.

If press wheels are lifting off ground, check front-to-back level, and increase row unit spring down force.

If press wheels are digging into ground, reduce spring down force at the row units.

Press Wheel Spacing

Double V Press Wheel Adjustment

Refer to Figure 46

The double-V closing wheels ③ can be moved inward and outward to alter how they close the seed trench and press soil over the seed.

To move the wheels in toward the center of the trench, remove one of the 1/4 in (6.4mm) spacer bushings ② next to the press wheel arm and position it under the head of the hex head cap screw ③.

On wider row spacings the closing wheels can be moved outward by relocating the spacers to the inside, next to the press wheel arm ④.

---

a. If frame-mounted coulters are installed, adjust them for tire tracks before adjust T-handles. The coulter depth adjustment may be all that’s required to compensate for tracks.
## Troubleshooting

<table>
<thead>
<tr>
<th>Problem</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Uneven seed spacing or uneven stand</td>
<td>Check for plugging in seed cups.</td>
</tr>
<tr>
<td></td>
<td>Check for plugging in seed tubes.</td>
</tr>
<tr>
<td></td>
<td>Reduce ground speed.</td>
</tr>
<tr>
<td></td>
<td>Check if opener disks are turning freely.</td>
</tr>
<tr>
<td></td>
<td>Use faster drive type and position seed rate handle to a lower setting.</td>
</tr>
<tr>
<td></td>
<td>Increase opener spring pressure to penetrate low spots. See “Row Unit Down Pressure” on page 44.</td>
</tr>
<tr>
<td></td>
<td>Check for trash or mud build-up on Seed-Lok wheels.</td>
</tr>
<tr>
<td>Opener disks not turning freely</td>
<td>Check disk bearings.</td>
</tr>
<tr>
<td></td>
<td>Check spreader-scaper for mud build-up and that disks are not binding against it. See “Disk Spreader-Scraper” on page 56.</td>
</tr>
<tr>
<td></td>
<td>Check opener frame for damage.</td>
</tr>
<tr>
<td></td>
<td>If opener disks turn freely by hand but not in field, reduce down pressure on disk opener. See “Row Unit Down Pressure” on page 44.</td>
</tr>
<tr>
<td></td>
<td>Check press wheel adjustment. See “Press Wheel Adjustments” on page 49.</td>
</tr>
<tr>
<td>Actual metering rate is different than desired</td>
<td>Check tire pressure. Proper inflation is listed on the “25-Foot Model Specifications” on page 69.</td>
</tr>
<tr>
<td></td>
<td>Check tire size. See “Specifications and Capacities” on page 68.</td>
</tr>
<tr>
<td></td>
<td>Regularly clean seed treatment from seed cups.</td>
</tr>
<tr>
<td></td>
<td>Check drill box setting.</td>
</tr>
<tr>
<td></td>
<td>See “Material Rate Adjustments” on page 31.</td>
</tr>
<tr>
<td>Acremeter does not measure accurately</td>
<td>Check tire pressure. Proper inflation is listed on the “25-Foot Model Specifications” on page 69.</td>
</tr>
<tr>
<td></td>
<td>Check tire size. Proper size is 9.5L x 15 for 15 foot drills and 11L x 15 for 20 foot and 24 foot drills.</td>
</tr>
<tr>
<td></td>
<td>Check planting operation for excessive overlap or gaps between passes.</td>
</tr>
<tr>
<td></td>
<td>Consider soil conditions. Loose soil and slippage will cause variations in acres registered.</td>
</tr>
<tr>
<td></td>
<td>Check that acremeter is correct for width of drill. Refer to the parts manual.</td>
</tr>
<tr>
<td>Press wheels not compacting the soil as desired</td>
<td>Check press wheel adjustment. See “Press Wheel Adjustments” on page 49.</td>
</tr>
<tr>
<td></td>
<td>Increase down pressure on disk openers. See “Row Unit Down Pressure” on page 44.</td>
</tr>
<tr>
<td>Excessive seed cracking</td>
<td>Use slower drive type and position seed rate handle to higher setting.</td>
</tr>
<tr>
<td></td>
<td>Position seed cup handle to a lower notch.</td>
</tr>
<tr>
<td>Drill boxes not emptying evenly</td>
<td>Certain models do not have the same number of cups between each divider of bulkhead. The section with more cups will empty sooner.</td>
</tr>
<tr>
<td>Press wheel or openers plugging</td>
<td>Consider soil conditions - may be too damp or wet.</td>
</tr>
<tr>
<td></td>
<td>Reduce down pressure on openers. See “Row Unit Down Pressure” on page 44.</td>
</tr>
<tr>
<td></td>
<td>Do not back up or allow drill to roll backward with openers in the ground.</td>
</tr>
<tr>
<td></td>
<td>Check Seed-Lok wheels. If conditions are too wet, you may need to remove the wheels.</td>
</tr>
<tr>
<td>Problem</td>
<td>Solution</td>
</tr>
<tr>
<td>------------------------------------------------------------------------</td>
<td>------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Seed cup sprockets locked up or twisted seed cup drive shaft</td>
<td>Check for foreign material stuck in the seed cup sprockets. Check for dried liquid insecticide in seed cups. Remove the build-up by disassembling seed cups and scraping the foreign substance from the turning surfaces.</td>
</tr>
<tr>
<td>Drill is not pulling level (parallel to ground, front to rear)</td>
<td>Readjust top hitch link to level drill. If using pull-package or hitch equipped with a telescoping top link, increase opener spring pressure to rock drill forward. See “Row Unit Down Pressure” on page 44.</td>
</tr>
<tr>
<td>Gauge wheel leans to left or right</td>
<td>Realign brackets where gauge wheel is attached to main frame by adjusting U-bolts. Check if axle bearings are securely attached to gauge wheel arm.</td>
</tr>
<tr>
<td>Hydraulic marker functioning improperly</td>
<td>Check all hose fittings and connections for air or oil leaks. Check that the chain on the folding marker is slack when the marker is both fully extended and raised. See “Marker Chain Adjustment” on page 21. Check tractor hydraulic oil level. Check all bolts and fasteners. Open needle valve, cycle markers slowly and reset needle valve if plugged.</td>
</tr>
<tr>
<td>Marker blade does not mark</td>
<td>Check that the marker folding linkage has enough slack to allow the marker disk to drop into field depressions. Maximum down float should be limited by the slot at the rod end of the marker cylinder - not by the chain. See “Marker Setup” on page 21. Reverse the blade to pull or throw dirt. See “Marker Adjustments” on page 30.</td>
</tr>
<tr>
<td>Chain-debris/retainer clip</td>
<td>Be sure retainer clip is facing opposite way of chain travel.</td>
</tr>
</tbody>
</table>
Marker Maintenance

See also:

Setup:
“Marker Chain Adjustment” on page 21
“Marker Extension Setup” on page 22

Adjustments:
“Marker Disk Angle” on page 30
“Marker Extension Adjustment” on page 22
“Marker Speed” on page 30

Marker Shear Bolt

The marker arm is attached to marker body with a shear bolt ②, which is intended to fail if the marker strikes an obstruction, allowing the marker to swing back around a second bolt ③.

If the shear bolt breaks, replace it with an equivalent bolt, which is one of:

- 3/8-16x1 3/4 in Grade 2 bolt (Great Plains 802-253C) or
- 3/8-16x2 in Grade 2 bolt (Great Plains 802-266C).

If that size is not available in your local market, substitute an M10x1.5 Class 5.8 metric bolt and nut.

⚠️ NOTE: Replacing the bolt with a lower grade/class, or smaller size, can result in nuisance shears.

**NOTICE**

**Machine Damage Risk:** Replacing the bolt with a higher grade/class can result in marker damage.

Marker Disk Grease Seal

*Refer to Figure 48*

If grease-seal cap ① for marker-disk-hub bearings is damaged or missing, disassemble and clean hub. Repack with grease and install a new seal or grease cap.
Bleeding Marker Hydraulics

To function properly, the hydraulics must be free of air. If hydraulics have not been bled, they will operate with jerky, uneven motions and could cause markers to drop rapidly during folding or unfolding. If hydraulics were not bled during initial implement setup or if you replace a part in hydraulic system during the life of the drill, complete the following procedures.

**WARNING**

*High Pressure Fluid Hazard:* 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, see a doctor immediately. If an accident occurs, seek immediate medical treatment from a physician familiar with this type of injury.

**NOTICE**

Bleed only at:
- JIC (Joint Industry Conference, 37° flare) or
- NPT (National Pipe Thread, tapered thread) fittings.

Never bleed at:
- ORB (O-Ring Boss) or
- QD (Quick Disconnect) fittings.

**NOTICE**

*Machine Damage Risk:* JIC fittings do not require high torque. JIC and O-ring fittings do not require sealant. Always use liquid pipe sealant when adding or replacing (NPT) pipe-thread fittings. To avoid cracking hydraulic fittings from over tightening, and to keep tape fragments from clogging filters, do not use plastic sealant tape.
**Refer to Figure 49**

1. Extend a marker on one side.
2. Disconnect the rod end at the marker arm.
3. Support the cylinder so that the rod cannot strike anything over its full range of travel.
4. Supply oil until the rod is fully retracted.
5. Set circuit to neutral.
6. Carefully crack the JIC fitting at the base end inlet.
7. Supply oil to Extend until the fitting seeps. Set circuit to neutral and tighten fitting.
8. Supply oil until the rod is fully extended. Set circuit to neutral.
9. Carefully crack JIC fitting at rod end of cylinder.
10. Supply oil to Retract until fitting seeps. Set circuit to neutral and tighten fitting.
11. Adjust rod extension and re-pin.
12. Repeat bleeding for other marker side.

**Marker Transport Carrier**

When marker is folded, the second section should be centered in transport carrier saddle and be parallel with top of drill box.

**Refer to Figure 50**

To adjust height of saddle, loosen \( \frac{1}{8} \times 2 \) in U-bolts \( \circ \) that hold carrier tube to mounting bracket. Slide carrier tube up or down as needed.
Seed Box Maintenance

Main Box Cleanout

Refer to Figure 51, which depicts the seed cup door handle in a normal operating position.

1. Set the Seed Rate Handle to zero (0) for the section of the drill to be cleaned out. This moves the seed cup sprockets out of the seed path.
2. Position a tarp or bucket under each row or set of rows to be cleaned out.
3. At the seed cup for that row, pull the door handle out of the operating detent range, and swing it down to position 2.
4. Open the main seed box and use a small brush to sweep seed toward seed cups set to clean-out. If seed does not flow freely, inspect seed cup, hose and seed tubes for obstructions.
5. Wash out the seed box with high pressure water. Prop the lid slightly open until dry.

It is not necessary to operate the seed meter drive shaft for clean-out. With the Seed Rate set to zero, nothing moves inside the seed cups; however, an inspection of the flutes for excess wear and damage does require shaft rotation.

Set the Seed Rate Handles to 100. With openers raised, each gauge wheel can be slowly turned by one person, while another inspects the flutes from the open seed boxes.

Small Seeds Cleanout

1. Open lid of each box and scoop out as much seed as possible.
2. To recover remaining seed, place a collection tarp under the seed tubes at the openers.
3. Raise drill.
4. Set seed rate handles to 100.
5. Rotate gauge wheels until no seed flows.
6. If a vacuum cleaner is available, remove any residual seed from top of meters.
Fertilizer Cleanout

Fertilizers often contain chemicals corrosive to metal. Although stainless steel is used extensively in the fertilizer meter assembly, it is not used above it. After applying fertilizer, empty and clean drill boxes as soon as possible.

Clean out doors are provided.

Refer to Figure 52

1. With a small scoop or can, remove as much fertilizer as possible from drill boxes.
2. The clean-out releases material across the entire length of a section box. Have collection equipment prepared.
3. Release all clean-out latches on a drill section, and open clean-out door. Leave door open until after washout.
4. Wash inside of drill boxes with water under high pressure.
5. Let drill boxes dry before closing clean-out doors.

Row Unit Maintenance

Disk Spreader-Scraper

NOTE: It is normal for blade spreader to have some looseness in the holder and between the blades. Some looseness is required for proper operation.

Refer to Figure 53

To perform this inspection (and replacement), it may be necessary to remove one or both opener disk blades.

1. With unit raised, remove bolt ① holding on one or both blades.

NOTE: Keep the spacer washers ② on the outside of the disk on the bolt. Do not misplace the spacers ③ on the insider of the disk. They control disk-to-disk contact.

2. Check blade spreader ④ for wear. Replace spreader assembly if the lower section ⑤ ahead of the seed tube bracket is 1/2in (13mm) thick or narrower.

3. To replace, remove seed tube ⑥, drive out roll pins ⑦ and install new spreader.

4. When reinstalling disk blades, put spacers back on in same order as removed.
Seed Flap Replacement

Refer to Figure 54

To replace a seed flap ① use a needle nose or similar tool and squeeze the tabs ② together. Pull plastic seed flap ① down out of metal bracket ③.

Push new seed flap ① up through metal bracket ③ until tabs ② on seed flap snap in place.

Figure 54
Seed Tube Flap
Lubrication

**Gauge Wheel Arm Pivots**

<table>
<thead>
<tr>
<th></th>
<th>15</th>
</tr>
</thead>
</table>
| 2 zerks each pivot; | 4 total
| Type of Lubrication: Grease | Quantity: Until grease emerges

**Marker Hinge Points**

<table>
<thead>
<tr>
<th></th>
<th>25</th>
</tr>
</thead>
</table>
| 3 zerks per marker (at the center of each hinge tube); | 6 total
| Type of Lubrication: Grease | Quantity: Until grease emerges

**Main Seed Cup Drive Shaft Sprocket**

<table>
<thead>
<tr>
<th></th>
<th>50</th>
</tr>
</thead>
</table>
| 2 sliding sprockets per box - one each side; | 4 total
| Type of Lubrication: Oil | Quantity: Coat thoroughly
| Move the Seed Rate adjustment handle back and forth to get oil back into the square bore. Do this with no seed in seed box, or handle may be difficult to return to zero.
Small Seeds Meter Shaft Bearing

1 zerks per shaft, drive end; 2 total
Type of Lubrication: Grease
Quantity: Until grease emerges

Fertilizer Shaft Bearings

1 zerk at each shaft end, 2 per shaft; 4 total
Type of Lubrication: Grease
Quantity: Until grease emerges

Fertilizer Felt Barrier Seals

1 seal at each shaft end, 2 per shaft; 4 total
Type of Lubrication: Oil
Quantity: Soak seal
Gauge Wheel & Main Box Chains

4 chains, 1 each side; 8 total
Remove chain guard for access to lower chain.
Type of Lubrication: Chain Lube
Quantity = Coat thoroughly

NOTE: Lubricate chains any time there is a chance of moisture, and when being stored at the end of the planting season.

Second Box Chains

With Fertilizer or Small Seed
3 chains per side;
6 total
Type of Lubrication: Chain Lube
Quantity = Coat thoroughly

NOTE: Lubricate chains any time there is a chance of moisture, and when being stored at the end of the planting season.
Third Box Chains

Small Seed with Fertilizer also installed
2 chains per side;
4 total
Type of Lubrication: Chain Lube
Quantity = Coat thoroughly

NOTE: Lubricate chains any time there is a chance of moisture, and when being stored at the end of the planting season.

Single Gauge Wheel Bearings

2 races each wheel;
4 total
Type of Lubrication: Grease
Quantity: Repack
Offset Single Gauge Wheel Bearings

- 2 races each wheel;
- 4 total
- Type of Lubrication: Grease
- Quantity: Repack

Dual Gauge Wheel Bearings

- 2 races each gauge wheel assembly;
- 4 total
- Type of Lubrication: Grease
- Quantity: Repack

Marker Disk Bearings

- 2 races each marker;
- 4 total
- Type of Lubrication: Grease
- Quantity: Repack
Options

Accessory Hitches
An accessory hitch converts a 3-point drill to a pull-type drill. In addition to any other capabilities of the hitch, this allows use of the drill with a tractor that can pull the drill but not lift it, or a tractor that is not 3-point.

Accessory hitches also include or support other capabilities. The Sub-Soiler Hitch, model SSH, may be used with most 3-point drills.

Hitches are a separate product line, with options of their own. Consult your Great Plains dealer for detailed configuration and ordering information.

Operations are described in the Hitch Operator’s manual.

Hitch Setback Kit
This accessory extends the 3-point hitch to eliminate interference with the SSH auxiliary hitch when the drill has 25 Series or 10 Series HD openers with unit-mounted coulters.

<table>
<thead>
<tr>
<th>Description</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>25 SERIES SSH SETBACK KIT</td>
<td>118-130A</td>
</tr>
</tbody>
</table>

Gauge Wheels
Gauge wheel choices may include:
- Single-wheel,
- Offset single wheel, and;
- Dual-wheel.
Availability depends on drill model and row spacing, and whether the spacing is single or twin-row.

<table>
<thead>
<tr>
<th>Drill Model</th>
<th>Initial Order Option</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Single</td>
</tr>
<tr>
<td>1510HDF-1810</td>
<td>(55)</td>
</tr>
<tr>
<td>1510HDF-2475</td>
<td>N/A</td>
</tr>
<tr>
<td>2010HDF-2410</td>
<td>(55)</td>
</tr>
<tr>
<td>2010HDF-3275</td>
<td>(55)</td>
</tr>
<tr>
<td>2510HDF-2015</td>
<td>(55)</td>
</tr>
<tr>
<td>2510HDF-20TR30</td>
<td>(55)</td>
</tr>
<tr>
<td>2510HDF-2910</td>
<td>(55)</td>
</tr>
<tr>
<td>2510HDF-4075</td>
<td>(55)</td>
</tr>
</tbody>
</table>
Marketers

Dual independent markers and dual sequenced markers are available for all models. A kit is available to convert independent models to sequenced operation.

Drill-mounted markers may be incompatible with a PFH accessory hitch. For those PFH configurations, use a hitch-mounted marker, or a Hitch Offset kit.

<table>
<thead>
<tr>
<th>Marker Package</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>15-Foot Dual, Independent</td>
<td>113-703A</td>
</tr>
<tr>
<td>15-Foot Dual, Sequenced</td>
<td>113-692A</td>
</tr>
<tr>
<td>20-Foot Dual, Independent</td>
<td>113-803A</td>
</tr>
<tr>
<td>20-Foot Dual, Sequenced</td>
<td>113-611A</td>
</tr>
<tr>
<td>25-Foot Dual, Independent</td>
<td>113-703A</td>
</tr>
<tr>
<td>25-Foot Dual, Sequenced</td>
<td>113-704A</td>
</tr>
<tr>
<td>Sequence Valve Kit</td>
<td>133-466A</td>
</tr>
</tbody>
</table>

For operations, see:
“Marker Extension Setup” on page 22,
“Marker Operations” on page 26,
“Marker Adjustments” on page 30, and
“Marker Maintenance” on page 52.

Seed Tube Plugs

This plug stops seed flow from the main seed box at the top of a seed tube. It prevents flow independently of the sliding sprocket in the seed cup. Order one per row to set inactive.

<table>
<thead>
<tr>
<th>Description</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Seed tube plug</td>
<td>817-087C</td>
</tr>
</tbody>
</table>

If rows are shut off with seed tube plugs, you can reduce unnecessary wear on the unused row units by locking them up. See “Lock-Up Pins” on page 66.
Fertilizer

Fertilizer may be applied during planting in two ways:

1. Dry granular fertilizer, delivered in row, from an optional fertilizer box. This is available for 15- and 20-foot models only.

2. Liquid fertilizer from a leading hitch or a user-provisioned tractor-mounted system, delivered in row by tubing, such as via Keeton seed firmers (see page 48).

Fertilizer Box

1510HDF and 2010HDF models offer an optional box and independent metering system for dry granular fertilizer.

If installed on a drill with the optional Small Seeds Attachment (see page 66), the Small Seeds option must contain a Y-tube to deliver fertilizer.

Order the fertilizer box as an option on the original drill order. It is factory-installed.

<table>
<thead>
<tr>
<th>Drill Model</th>
<th>Fertilizer Option</th>
</tr>
</thead>
<tbody>
<tr>
<td>1510HDF-1810</td>
<td>(41)</td>
</tr>
<tr>
<td>1510HDF-2475</td>
<td>(41)</td>
</tr>
<tr>
<td>2010HDF-2410</td>
<td>(41)</td>
</tr>
<tr>
<td>2010HDF-3275</td>
<td>(41)</td>
</tr>
</tbody>
</table>

For operations, see:
“Loading Materials” on page 25
“Fertilizer Rate” on page 38
“Fertilizer Cleanout” on page 56

Shaft Monitor

This kit provides a cab alarm in the event that a main box seed meter shaft stops turning (which might result from excess down-pressure lifting a gauge wheel, low tire pressure, flat tire or chain break). Order one kit per drill.

<table>
<thead>
<tr>
<th>Description</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-Channel Shaft Monitor</td>
<td>116-120A</td>
</tr>
</tbody>
</table>

See “Shaft Monitor Operation” on page 27 for operations.
Small Seeds
The Small Seeds attachment is a separate seed box with independent drive and metering.
Order the Small Seeds Attachment as an option on the original drill order. The option code depends on whether or not Fertilizer is also installed on the same drill. The Small Seeds option is factory-installed.

<table>
<thead>
<tr>
<th>Drill Model</th>
<th>Fertilizer</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Without</td>
</tr>
<tr>
<td>1510HDF</td>
<td>(91)</td>
</tr>
<tr>
<td>2010HDF</td>
<td>(91)</td>
</tr>
<tr>
<td>2510HDF</td>
<td>(93)</td>
</tr>
</tbody>
</table>

For operations, see:
“Loading Materials” on page 25
“Small Seeds Attachment Rate” on page 36
“Small Seeds Cleanout” on page 55

Row Unit Options
Lock-Up Pins
If rows are shut off with seed tube plugs (page 64), you can reduce unnecessary wear on the unused row units by locking them up. One one per row unit locked-up.

<table>
<thead>
<tr>
<th>Description</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>PIN HITCH 1 X 6 W/HAIRPIN</td>
<td>805-033C</td>
</tr>
</tbody>
</table>

See “Row Unit Shut-Off” on page 46 for operations.
10HD Unit-Mounted Coulters

Unit-mount coulters (UMCs) attach directly to the 10HD row unit, and the coulter blade maintains a precise relationship to the opener disk (seeding) depth.

UMCs are suitable for lighter no-till and conventional tillage conditions. Their down-force is limited to what the 10HD row unit can provide. In challenging conditions, use an accessories hitch with frame-mounted coulters. UMCs are dealer-installed. Order one kit per row.

For operation, see “Unit-Mounted Coulter Adjustments” on page 42.

15in Coulters Blades

<table>
<thead>
<tr>
<th>Blade Description</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>COULTER BLADE (FLUTED) 15&quot; OD</td>
<td>820-331C</td>
</tr>
<tr>
<td>COULTER BLADE (TURBO) 15&quot; OD</td>
<td>820-327C</td>
</tr>
</tbody>
</table>

Seed Firmers

The standard 1510HDF, 2010HDF & 2510HDF includes seed flaps. A choice of firmers is an option in the product bundles, or may be field-installed. Only one type of seed firmer may be installed at the same time.

Keeton® Seed Firmer

For operations, see “Seed Firmer Adjustments” on page 48.

Seed-Lok® Seed Firmer

For operations, see “Seed Firmer Adjustments” on page 48.
## Specifications and Capacities

### 15-Foot Model Specifications

<table>
<thead>
<tr>
<th></th>
<th>1510HDF-1810</th>
<th>1510HDF-2475</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Openers</strong></td>
<td>10HD Series</td>
<td></td>
</tr>
<tr>
<td><strong>Rows</strong></td>
<td>18</td>
<td>24</td>
</tr>
<tr>
<td><strong>Row Spacing</strong></td>
<td>10in (25.4cm)</td>
<td>7.5in (19.1 cm)</td>
</tr>
<tr>
<td><strong>Swath</strong></td>
<td>180in</td>
<td>180in</td>
</tr>
<tr>
<td><strong>Capacities: Main Seed Box</strong></td>
<td></td>
<td>36 bu (1269 liter)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.24/ft 3.6 bu (127 liter)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>15 cu-ft (529 liter)</td>
</tr>
<tr>
<td><strong>Small Seeds Box</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Fertilizer</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Tractor Requirements</strong></td>
<td>Category III and IV-N 3-Point Tractors</td>
<td></td>
</tr>
<tr>
<td><strong>Hydraulic Circuits</strong></td>
<td>0 Standard, 1 or 2 w/Optional Markers</td>
<td></td>
</tr>
<tr>
<td><strong>Weight (empty, no markers or coulters)</strong></td>
<td>4200 lbs (1905 kg)</td>
<td>4950 lbs (2245 kg)</td>
</tr>
<tr>
<td><strong>Clearance</strong></td>
<td></td>
<td>(depends on 3-point hitch)</td>
</tr>
<tr>
<td><strong>Height</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Width</strong></td>
<td>15ft 1in (4.6m)</td>
<td></td>
</tr>
<tr>
<td><strong>Length</strong></td>
<td>9ft 9in (2.97m)</td>
<td></td>
</tr>
<tr>
<td><strong>Opener Travel</strong></td>
<td>0-10in (0-25.4cm)</td>
<td></td>
</tr>
<tr>
<td><strong>Opener Depth</strong></td>
<td>0-3.5in (0-8.9cm)</td>
<td></td>
</tr>
<tr>
<td><strong>Tire Size: Offset-Single Gauge Wheel</strong></td>
<td></td>
<td>9.5Lx15 8-Ply</td>
</tr>
</tbody>
</table>

### 20-Foot Model Specifications

<table>
<thead>
<tr>
<th></th>
<th>2010HDF-2410</th>
<th>2010HDF-3275</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Openers</strong></td>
<td>10HD Series</td>
<td></td>
</tr>
<tr>
<td><strong>Rows</strong></td>
<td>24</td>
<td>32</td>
</tr>
<tr>
<td><strong>Row Spacing</strong></td>
<td>10in (24.5cm)</td>
<td>7.5in (19.1 cm)</td>
</tr>
<tr>
<td><strong>Swath</strong></td>
<td>240in</td>
<td>240in</td>
</tr>
<tr>
<td><strong>Capacities: Main Seed Box</strong></td>
<td></td>
<td>48 bu (1691 liter)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.24/ft 4.8 bu (169 liter)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>20 cu-ft (705 liter)</td>
</tr>
<tr>
<td><strong>Small Seeds Box</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Fertilizer</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Tractor Requirements</strong></td>
<td>Category III and IV-N 3-Point Tractors</td>
<td></td>
</tr>
<tr>
<td><strong>Hydraulic Circuits</strong></td>
<td>0 Standard 1 or 2 w/Optional Markers</td>
<td></td>
</tr>
<tr>
<td><strong>Weight (empty, no markers or coulters)</strong></td>
<td>5860 lbs (2658 kg)</td>
<td>6820 lbs (3094 kg)</td>
</tr>
<tr>
<td><strong>Clearance</strong></td>
<td></td>
<td>(depends on 3-point hitch)</td>
</tr>
<tr>
<td><strong>Height</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Width</strong></td>
<td>21 ft (6.4m)</td>
<td></td>
</tr>
<tr>
<td><strong>Length</strong></td>
<td>9ft 9in (2.97m)</td>
<td></td>
</tr>
<tr>
<td><strong>Opener Travel</strong></td>
<td>0-6.5in (0-16.5cm)</td>
<td></td>
</tr>
<tr>
<td><strong>Opener Depth</strong></td>
<td>0-3.5in (0-8.9cm)</td>
<td></td>
</tr>
<tr>
<td><strong>Tire Size: Single Gauge Wheel</strong></td>
<td></td>
<td>11L-15SL 12-Ply Tubeless</td>
</tr>
<tr>
<td><strong>Dual Gauge Wheel</strong></td>
<td></td>
<td>11L-15SL 8-Ply</td>
</tr>
</tbody>
</table>
25-Foot Model Specifications

<table>
<thead>
<tr>
<th>Opener Type</th>
<th>2510HDF-2015</th>
<th>2510HDF-20TR30</th>
<th>2510HDF-2910</th>
<th>2510HDF-4075</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rows</td>
<td>20</td>
<td>20 Twin Pairs</td>
<td>29</td>
<td>40</td>
</tr>
<tr>
<td>Row Spacing</td>
<td>15in (38.1cm)</td>
<td>30in (76.2 cm)</td>
<td>10in (25.4cm)</td>
<td>7.5in (19.1 cm)</td>
</tr>
<tr>
<td>Swath</td>
<td>300in</td>
<td>300in</td>
<td>290in</td>
<td>300in</td>
</tr>
<tr>
<td>Capacities:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Main Seed Box</td>
<td></td>
<td></td>
<td>57 bu (2009 liter)</td>
<td></td>
</tr>
<tr>
<td>Small Seeds Box</td>
<td></td>
<td></td>
<td>0.24/ft 6.0 bu (211 liter)</td>
<td></td>
</tr>
<tr>
<td>Fertilizer</td>
<td></td>
<td></td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>Tractor Requirements</td>
<td>Category III and IV-N 3-Point Tractors</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hydraulic Circuits</td>
<td>0 Standard, 1 or 2 w/Optional Markers</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weight (empty, no markers or coulters)</td>
<td>6180 lbs (2803 kg)</td>
<td>6180 lbs (2803 kg)</td>
<td>7305 lbs (3313 kg)</td>
<td>8680 lbs (3937 kg)</td>
</tr>
<tr>
<td>Clearance</td>
<td>(depends on 3-point hitch)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Height</td>
<td>8 ft 4in (254 cm)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Width</td>
<td>25ft 2in (7.67m)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Length</td>
<td>9ft 9in (2.97m)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Opener Travel</td>
<td>0-6.5in (0-16.5cm)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Opener Depth</td>
<td>0-3.5in (0-8.9cm)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tire Size:</td>
<td>11L-15SL 12-Ply Tubeless</td>
<td>11L-15SL 8-Ply</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dual Gauge Wheel</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Tire Information

<table>
<thead>
<tr>
<th>Tire Size</th>
<th>Inflation</th>
<th>Tire Warranty Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>9.5Lx15 8-Ply</td>
<td>32 psi</td>
<td>All tires are warranted by the original manufacturer of the tire. Tire warranty information is found online at the manufacturer's websites listed below. For assistance or information, contact your nearest Authorized Farm Tire Retailer.</td>
</tr>
<tr>
<td></td>
<td>221 kPa</td>
<td>Manufacturer/Website: Firestone, <a href="http://www.firestoneag.com">www.firestoneag.com</a></td>
</tr>
<tr>
<td></td>
<td>248 kPa</td>
<td>Titan, <a href="http://www.titan-intl.com">www.titan-intl.com</a></td>
</tr>
<tr>
<td></td>
<td>359 kPa</td>
<td>Gleason, <a href="http://www.gleasonwheel.com">www.gleasonwheel.com</a></td>
</tr>
</tbody>
</table>
## Torque Values Chart

<table>
<thead>
<tr>
<th>Bolt Size</th>
<th>Bolt Head Identification</th>
<th>Bolt Size</th>
<th>Bolt Head Identification</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Grade 2</td>
<td>Grade 5</td>
<td>Grade 8</td>
</tr>
<tr>
<td>in-tpi</td>
<td>N-m</td>
<td>ft-lb</td>
<td>N-m</td>
</tr>
<tr>
<td>1/4-20</td>
<td>7.4</td>
<td>5.6</td>
<td>11</td>
</tr>
<tr>
<td>1/4-28</td>
<td>8.5</td>
<td>6</td>
<td>13</td>
</tr>
<tr>
<td>5/16-18</td>
<td>15</td>
<td>11</td>
<td>24</td>
</tr>
<tr>
<td>5/16-24</td>
<td>17</td>
<td>13</td>
<td>26</td>
</tr>
<tr>
<td>3/8-16</td>
<td>27</td>
<td>20</td>
<td>42</td>
</tr>
<tr>
<td>3/8-24</td>
<td>31</td>
<td>22</td>
<td>47</td>
</tr>
<tr>
<td>7/16-14</td>
<td>43</td>
<td>32</td>
<td>67</td>
</tr>
<tr>
<td>7/16-20</td>
<td>49</td>
<td>36</td>
<td>75</td>
</tr>
<tr>
<td>5/16-13</td>
<td>66</td>
<td>49</td>
<td>105</td>
</tr>
<tr>
<td>1/2-20</td>
<td>75</td>
<td>55</td>
<td>115</td>
</tr>
<tr>
<td>9/16-12</td>
<td>95</td>
<td>70</td>
<td>150</td>
</tr>
<tr>
<td>9/16-18</td>
<td>105</td>
<td>79</td>
<td>165</td>
</tr>
<tr>
<td>5/8-11</td>
<td>130</td>
<td>97</td>
<td>205</td>
</tr>
<tr>
<td>5/8-18</td>
<td>150</td>
<td>110</td>
<td>230</td>
</tr>
<tr>
<td>3/4-16</td>
<td>235</td>
<td>170</td>
<td>360</td>
</tr>
<tr>
<td>7/8-9</td>
<td>260</td>
<td>190</td>
<td>405</td>
</tr>
<tr>
<td>7/8-14</td>
<td>225</td>
<td>165</td>
<td>585</td>
</tr>
<tr>
<td>1-8</td>
<td>250</td>
<td>185</td>
<td>640</td>
</tr>
<tr>
<td>1-12</td>
<td>340</td>
<td>250</td>
<td>875</td>
</tr>
<tr>
<td>1-16</td>
<td>370</td>
<td>275</td>
<td>955</td>
</tr>
<tr>
<td>5/8-7</td>
<td>480</td>
<td>355</td>
<td>1080</td>
</tr>
<tr>
<td>1-16</td>
<td>540</td>
<td>395</td>
<td>1210</td>
</tr>
<tr>
<td>1-7</td>
<td>680</td>
<td>500</td>
<td>1520</td>
</tr>
<tr>
<td>1-12</td>
<td>750</td>
<td>555</td>
<td>1680</td>
</tr>
<tr>
<td>1&quot;</td>
<td>890</td>
<td>655</td>
<td>1990</td>
</tr>
<tr>
<td>1&quot;</td>
<td>1010</td>
<td>745</td>
<td>2270</td>
</tr>
<tr>
<td>1&quot;</td>
<td>1180</td>
<td>870</td>
<td>2640</td>
</tr>
<tr>
<td>1&quot;</td>
<td>1330</td>
<td>980</td>
<td>2970</td>
</tr>
</tbody>
</table>

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

Torque tolerance +0%, -15% of torquing values. Unless otherwise specified use torque values listed above.
Hydraulic Diagrams
Dual Independent Markers
Dual Marker Sequence Valve

TO TRACTOR
THESE HOSES ARE
TO BE PROVIDED
BY CUSTOMER

17524
Chain Routing
Ground Drive and Main Seed Box Chains

Offset Single-Wheel Drive

Single-Wheel Drive

Dual-Wheel Drive

Main Seed Box Drive
Option Box Drive Chains

Option Box Ground Drive

Fertilizer Drive

Small Seeds (with Fertilizer)

Small Seeds (without Fertilizer)
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
acremeter installation ........................................... 20
adjustments
  coulter depth ........................................... 42
disc contact ............................................. 47
disk blade .............................................. 46
press wheel .............................................. 49
row unit ................................................... 41
seed firmer ................................................ 48
unit mounted coulter ...................................... 42
B
bleeding marker hydraulics .................................. 53
C
calibration
  fertilizer rate ........................................... 39
  main box .............................................. 34
  small seeds rate ..................................... 36
cam down-force 2-spring ................................ 45
cam down-force 4-spring ................................ 45
CAUTION, defined ........................................ 1
cal: routing diagrams ..................................... 73
checklists
  pre-set-up ............................................ 13
color code, hose ........................................ 15
coulter row alignment .................................. 43
customer service ......................................... 12
cylinder symbols ........................................ 15
D
DANGER, defined ........................................... 1
decal
caut ions
  read manual ........................................... 10
  Tires Not A Step ..................................... 9
  32 psi .............................................. 10
  36 psi .............................................. 10
  52 psi .............................................. 10
danger
  crushing ............................................... 8
reflector
  amber, large .......................................... 7, 8
  amber, small ......................................... 7
daytime .................................................. 7
  red ...................................................... 6
slow moving vehicle ....................................... 5
slow moving vehicle (on plate) .......................... 5
warning
  excessive speed ....................................... 8
  falling hazard ....................................... 9
  high pressure ....................................... 9
  pinch crush ......................................... 9
decals .................................................... 5
Definitions ................................................ 11
disk spreader-scaper .................................... 56
down-force, 10HD ......................................... 45
down-pressure
  10HD .................................................. 45
  10HD Series ......................................... 45
drill adjustments ........................................ 29
dual sequenced markers .................................. 26
d
E
electrical connections ..................................... 14
F
fertilizer cleanout ....................................... 56
fertilizer rate .......................................... 38
field operation .......................................... 27
G
gauge wheels ........................................... 63
green, marker hose ..................................... 15
H
high pressure fluids ..................................... 2
hydraulic diagrams ...................................... 71
hydraulic hose hookup .................................. 15
K
Keeton® Seed Firmer ..................................... 67
L
Left-hand
  definition ............................................. 11
  leveling dual-wheel ................................ 19
  levelling the drill ................................... 16
Lights
safety ................................................... 2
loading materials ....................................... 25
lubrication ............................................. 58
M
main box cleanout ....................................... 55
main box seed rate ..................................... 32
main box seed rate handle .............................. 33
Maintenance
  safety ................................................ 4
  Maintenance and Lubrication ......................... 52
  marker
chain adjustment ....................................... 21
disk angle ............................................... 30
extension setup ........................................ 22
operations ............................................ 26
speed .................................................... 30
marker disk grease seal ................................ 52
marker shear bolt ...................................... 52
material rate adjustments .............................. 31
O
offset single gauge wheel ............................... 18
operating instructions .................................. 23
Options .................................................. 63
options setup .......................................... 20
orange, marker older style hose tie .................. 15
P
parking the drill ........................................ 28
parts ..................................................... 12
planting depth .......................................... 29
Press Wheel Height ...................................... 49
Press Wheel Spacing ................................... 49
R
revolutions per acre ..................................... 31
Right-hand
  definition ............................................. 11
row unit down pressure ................................ 44
row unit shut-off ....................................... 46
S
safety information ........................................ 1
Safety lights
  See Lights, safety
Seed Box Maintenance .................................... 55
seed cup door ............................................ 34
seed flap replacement .................................. 57
seed tube plugs ........................................ 64
Seed-Lok® Seed Firmer .................................. 67
Seed-Lok™ ............................................. 48
serial number .......................................... 12
Serial-number plate ..................................... 12
setting initial drill height ............................... 16
setting the drive type .................................. 33
shaft monitor cab module ............................... 20
Sliding seed tube
  definition ............................................. 11
small seeds cleanout ................................... 55
small seeds rate handle ................................. 36
Specifications and Capacities ........................... 68
Storage
  safety ................................................ 3
  storage of drill ....................................... 28
T	hree-point link .......................................... 13
Tire Inflation Chart ...................................... 69
Tire Warranty Information ............................... 69
torque values chart ..................................... 70
transporting ............................................. 24
Transporting, safety .................................... 3
Troubleshooting ......................................... 50
W
WARNING, defined .................................... 1
wrench size ............................................. 45
Numerics
81 8-855C ............................................... 10
818-003C ............................................. 5
818-055C ............................................. 5
818-229C ............................................. 7
818-337C ............................................. 8
818-339C ............................................. 9
818-398C ............................................. 9
818-557C, decal ....................................... 8
818-587C ............................................. 10
818-590C ...........................................8
818-682C ...........................................9
818-751C ...........................................10
818-752C ...........................................10
838-102C ...........................................9
838-265C ...........................................7, 8
838-266C ...........................................6
838-267C ...........................................7