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.
### 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.

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### Dealer Contact Information

Name: __________________________

Street: _________________________

City/State: _____________________

Telephone: _____________________

Email: _________________________

Dealer's Customer No.: __________

---

⚠️ **WARNING:** Cancer and Reproductive Harm - www.P65Warnings.ca.gov
To our customer:

Congratulations on the purchase of your Great Plains product. Great Plains welcomes you to its growing family of new product owners. Your product has been designed and built by skilled workers using quality materials.

Your dealer has performed the necessary pre-delivery service to your machine, and will advise you of the proper maintenance and operating practices that will give you long, satisfactory use of your machine. Do not hesitate to contact your dealer when you have a question related to your machine.

Your machine has been designed to run efficiently in most operating conditions, and will perform relative to the service it receives. If you need customer service or repair parts, contact your dealer who has trained personnel, repair parts, and equipment specially designed for Great Plains products.

Read this manual carefully before using the machine. It will familiarize you with safety, operation, adjustments, and maintenance of your new equipment. This manual must always be kept with your machine.

Great Plains wants you to be satisfied with your 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 he is aware of any problems so he 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, USA 67402-5060

Great Plains reserves the right to revise and improve its products at any time. This publication describes the state of this product at the time of its publication, and may not reflect the product in the future. The content of this publication may be changed without notice.
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Introduction

The planter model PL5800 is a pull-type planting implement for use in conventional till, minimum-till, or light no-till conditions.

The planter has 5000 Series, side-depth-control row-units, and Air-Pro® Seed Metering System. Optional unit-mounted coulters are for light to moderate no-till conditions only. The planter folds for transport.

- **Intended Usage Statement**
  The PL5800 Planter with standard equipment and/or authorized attachments and options is intended to be used as a seeding/fertilizing machine when operated according to instructions and safety precautions in this manual, machine decals, or other information provided with the machine.

Use this planter to seed and fertilize production-agriculture crops only. Do not modify the planter for use with attachments other than Great Plains options and accessories specified for use with the planter.

Any other use, for example, using the machine as a grader or cultivator tool, is not permitted. The manufacturer and dealers are not liable for damage caused by improper use.

- **Prohibited Use**
  Do not use this machine for any purpose or in any way other than what is described in this manual, machine decals, or any other information provided with the machine by the manufacturer. These materials define the intended use of the machine.

Unauthorized modifications to the machine will relieve the manufacturer of all liability for any resulting injury or damage.

- **Machine Identification**
  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 dealer. Record your planter model and serial number on the inside cover of this manual for quick reference.

- **Target Group for Operator Manual**
  Simplified Illustrations
  Illustrations of the machine in the operator manual are shown without protective equipment - or with the protective equipment open - for better understanding. Be sure to observe the safety information and follow the handling instructions in the operator manual. Serious or fatal injury may be caused as a result.

This operator manual is aimed at trained agriculturists and persons who are otherwise qualified for agricultural activities and have received instruction in working with this machine.

**For your safety** - You must familiarize yourself with the contents of this operator manual before assembly or initial operation of the machine. In this way, you will achieve optimum work results and operational safety. The operator manual forms an integral part of the machine and must always be kept at hand. This will ensure that you:

- avoid accidents,
- comply with warranty conditions, and
- have a fully functional machine in good working order at all times.

- **Training and Instruction**
  Your dealer will provide instruction on operation and care of the machine.

**Information for the employer** - All personnel are to be regularly, at least once a year, instructed on the use of the machine, in accordance with the
regulations of the national organization for Health and Safety at Work. Untrained or unauthorized persons are not permitted to use the machine.

You are responsible for ensuring that the machine is operated and maintained safely. Make sure that you and all other persons that operate, maintain, or work in close proximity with the machine are familiar with the operating and maintenance regulations, as well as the corresponding safety instructions in this operator manual.
Safety Information

The safety symbol indicates a potential safety hazard to persons operating or near the machine and advises on how to avoid it.

The notice symbol indicates a potential for machine or property damage from operator error and advises on how to avoid misuse.

The information symbol indicates useful - but not crucial - information for machine operation, assembly, or adjustment.

Before Getting Started

1. Read this manual in its entirety before attempting to start and operate the machine.
2. Only use operators that are thoroughly trained by the owner or trained by someone with the owner’s consent. The operator must be familiar with all functions of the tractor and attachments, and be able to handle emergencies quickly.
3. Maintain attention on operation at all times. Do not operate if using a smart phone, tablet, or similar electronic device, and never operate machine while impaired by alcohol, medication, any controlled substance, or while fatigued.
4. Do not ever allow passengers to ride the machine at any time, for any reason.
5. Before operation, make sure that all tractor cab levers are in their neutral positions and that the parking brake is engaged.
6. Check brakes, link pins, and other mechanical parts for wear before using machine.
7. Never wear loose or bulky clothing around machine. Use additional safety equipment, such as hard hats, eye and ear protection, safety boots, etc., as needed.
8. Do not modify the machine. Unauthorized modification can result in unsafe conditions that lead to machine damage or personal injury.

Operation

1. Always stop the tractor, put in Park and turn off engine before leaving the cab. Dismounting from a moving tractor can cause serious injury or death.
2. Consider turning radius of tractor and implement in the field. Turning tractor too tight can cause hitched implement to ride up on wheels which can result in injury or equipment damage.
3. Pull machine only from the hitch at the end of the tongue. Never pull from jack stand, safety chain, or any point other than the hitch.
4. Never leave the tractor cab unattended while the implement is running. Remove key and turn off tractor before exiting the tractor cab.
5. Watch your surroundings at all times. Do not operate with bystanders nearby, and avoid contacting overhead obstructions.
6. Check that all guards and shields are undamaged, installed, and secure before operating implement.
7. Keep children out of the work area. Do not operate or turn on machine while children are in the area.
8. Do not operate near ditches, holes, steep slopes, embankments, or other surfaces which may collapse under the machine’s weight or tip the machine over.
9. Never stand between tractor and implement unless parking brake is applied.
Handling and Disposing of Chemicals

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

1. Read chemical manufacturer’s instructions carefully, and then take appropriate precautions before use.
2. Wear protective clothing.
3. Wash hands and face before eating after working with chemicals. Shower as soon as application is completed for the day.
4. Apply only with acceptable wind conditions. Make sure wind drift of chemicals will not affect any surrounding land, people or animals.
5. Dispose of unused chemicals and chemical waste as specified by the manufacturer. Observe all the local ordinances and regulations in your area.

Operation Noise Hazard

1. Use proper hearing protection like earmuffs or earplugs while working.

PTO

1. Wait until all moving components have completely stopped before adjusting, cleaning, or servicing any PTO driven equipment.
2. Before installing or using PTO driven equipment, read the tractor manual and review the safety labels attached to the equipment.
3. When operating stationary PTO driven equipment, always apply the parking brake and place chocks behind wheels.
4. Stay clear of and never step over any rotating parts.

Maintenance

1. Understand procedure before doing work. Use proper tools and equipment.
2. Work in a clean, dry area.
3. Lower the implement. Put tractor in Park, turn off engine. To prevent unauthorized starting, remove key before performing maintenance or service work.
4. If work must be performed with wings raised, set the wing tilt locks to the road position.
5. Make sure all moving parts have stopped and all system pressure is relieved.
6. Relieve hydraulic pressure before disconnecting hydraulic lines or performing any work on the system.
7. Do not work underneath any hydraulically supported components. Hydraulics can settle, leak, or be accidentally lowered. If working underneath hydraulically supported components is necessary, secure implement with stands or suitable blocking beforehand.
8. Disconnect electronic monitor and lighting harness from the tractor before servicing or adjusting electrical systems.
10. Remove buildup of grease, oil, or debris.
11. Check and replace worn brake lines as needed.
12. Remove all tools and unused parts from implement before operation.

Tire Safety

1. Check tires for cuts, bulges, and correct pressure. Replace worn or damaged tires.
2. Tire changing can be hazardous and must be performed by trained personnel using correct tools and equipment.
3. Tire explosion and/or serious injury can result from over inflation. Do not exceed tire inflation pressures.
4. When removing and installing wheels, use wheel-handling equipment adequate for weight involved.
5. Tighten wheel bolts only to the specified torque.
High Pressure Fluids

1. Escaping fluid from holes in hydraulic lines is difficult to spot. Do not use your hands or bare skin to search for suspected leaks; instead, use a piece of cardboard or wood. If injured by escaping hydraulic fluid, see a medical professional immediately. Exposure can result in gangrene or severe allergic reaction.
2. Check that hydraulic fittings are tight and all hydraulic hoses and lines are in good condition before applying pressure to the system.
3. Wear protective gloves and safety glasses or goggles when working with hydraulic systems.

Transporting

1. As with transporting any piece of heavy machinery, comply with all local laws and regulations before and during transport process.
2. Transport only at recommended transport speed for implement. Some rough terrains require a slower speed. Sudden braking can cause a towed load to swerve and upset.
3. Before towing implement on roads, make sure to empty out all material from the hoppers or boxes.
4. Know transport height and width of implement.
5. Do not tow an implement that, when fully loaded, weighs more than 1.5 times the weight of towing vehicle.
6. Keep clear of overhead power lines and other obstructions when transporting.
7. Do not fold or unfold the implement while the tractor is moving.
8. Reduce speed when turning, and make as wide a turn as possible. Turning tractor too tight can cause implement to tip over.
9. When towing on a trailer, secure implement with tie downs and chains.
10. When towing on a trailer, sudden braking can cause a trailer to swerve and upset. Reduce speed if trailer is not equipped with brakes.

Safety Chain

1. Use a chain with a strength rating equal to or greater than the gross weight of towed machinery.
2. Replace chain if any links or end fittings are broken, stretched or damaged.
3. Do not use safety chain for towing.

Safety Lights and Devices

1. Always use safety lighting. Slow-moving tractors and towed machinery can create a hazard when driven on public roads. They are difficult to see, especially at night.
2. If equipped, use flashing warning lights and turn signals whenever driving on public roads.
3. Use safety devices provided with implement.
4. Keep safety lights and signs clean and visible from front and rear of machine.
5. Keep lights in operating condition.

Shutdown and Storage

1. Park the tractor and implement on a solid, level surface where children normally do not play.
2. Fold and tilt wings.
3. Put tractor in park or set the parking brake. Turn off engine and remove switch key to prevent unauthorized starting.
4. Wait for all components to come to a complete stop before leaving the operator’s seat.
5. Turn lockout valve and wing lock levers to locked position to prevent the wings from lowering.
6. Detach the tractor. Secure the implement using blocks.

Proper Waste Disposal

1. Dispose of waste properly to avoid threatening the environment and ecology. Potential harmful waste includes oil, fuel, filters, and batteries.
2. Use a leak-proof container for draining fluids. Do not use a food or beverage container that may be mistaken for a consumable product.
3. Do not drain or pour waste onto the ground, down a drain, or into any water source.
4. Contact your local environmental or recycling center for the proper way to recycle or dispose of waste.
Safety Decals

Your implement comes equipped with safety reflectors and decals in place.

Read and follow decal directions. Keep all safety decals clean and legible. Replace all damaged, faded, 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:
- Clean the area on which the decal is to be placed.
- Peel backing from decal. Press firmly on surface, being careful not to cause air bubbles under decal.

Slow Moving Vehicle Reflector
818-055C

One decal - On back of walkboard.

Amber Reflector
838-265C

Eight reflectors - One on front of each light bar, one on each side of walkboard, and two on back of each wing.

Red Reflector
838-266C

Four reflectors - Two on back of walkboard and one on the back of each light bar.

Daytime Reflector
838-267C

Four reflectors - One on each side of walkboard, one on front of each light bar, and two on back of each wing.
Crushing Hazard
818-590C

Two decals - One on each side of hitch.

Rotating Driveline Hazard (Option)
858-030C

One decal - On PTO oil reservoir.

Pinch/Crushing Hazard
818-045C

Two decals - One on each side of each caster wheel; above the tires.

High Pressure Fluid Hazard
818-339C

One decal - On left side of hitch.

Overhead Hazard
818-580C

Two decals - One on each marker first section.
Warning: Pinch Point Hazard
818-579C

Two decals - One on each marker first section.

Excessive Speed Hazard
818-188C

One decal - On left side of hitch.

Hot Fluid Hazard (Option)
858-004C

One decal - On PTO oil reservoir.

1000 rpm PTO (Option)
818-240C

One decal - On left side of hitch.

Tires Not a Step
818-398C
Four decals - One on each side of each caster wheel; above the tires.

**Tire Pressure**

**844-125C**

*CAUTION*

To Avoid Injury or Machine Damage from Improper Tire Inflation or Torquing of Wheel Bolts:
- Maximum inflation pressure of tires is 75 psi
- Torque wheel bolts to 240 lb-ft

Two decals - One on each gauge wheel.

**General Information**

**838-995C**

*CAUTION*

To Avoid Injury or Machine Damage from Improper Tire Inflation or Torquing of Wheel Bolts:
- Maximum inflation pressure of tires is 25 psi (171 kPa)
- Torque wheel bolts to 295 ft-lb (427 N-m)

One decal - On left side of hitch.

**Read Operator Manual**

**848-512C**

One decal - On left side of hitch.

**Tire Pressure**

**844-070C**

*CAUTION*

To Avoid Injury or Machine Damage from Improper Tire Inflation or Torquing of Wheel Bolts:
- Maximum inflation pressure of tires is 30 psi (207 kPa)
- Torque wheel bolts to 295 ft-lb (427 N-m)

Two decals - One on each transport wheel.

One decal - On left side of hitch.
Preparation and Setup

This section helps to prepare your tractor and planter for use. Before using the planter in the field, you must hitch the planter to a suitable tractor, inspect systems, and level.

- **Pre-Planting Checklist**
  - Read and understand “Safety Information” on page 3.
  - Check that all working parts are moving freely, bolts are tight, and cotter pins are spread apart.
  - Check that all grease fittings are in place and lubricated. See “Lubrication” on page 61.
  - Check that all safety decals and reflectors are correctly placed and legible. If damaged, replace with new, legible decal and/or reflector. See “Safety Decals” on page 7.
  - Inflate tires to pressure recommended and tighten wheel bolts as specified. See “Tire Chart” on page 88.
  - Check the planter for worn or damaged parts. Repair or replace parts before going to the field.
  - If returning the planter to use from storage, remove any grease used to protect the cylinder rods.

- **Monitor Installation and Setup**
  The standard seed monitor system includes a terminal that must be mounted in the tractor cab. Refer to the monitor manual for installation and setup.

  Information specific to your planter model is in a separate Quick Start Guide. Configure the system with this information before the first use.

  The quick start guides are not specific to individual model row spacings. Use the following information:

<table>
<thead>
<tr>
<th>Model</th>
<th>Active Rows</th>
<th>Channel Width</th>
</tr>
</thead>
<tbody>
<tr>
<td>PL5800-1236</td>
<td>12</td>
<td>432 inches</td>
</tr>
<tr>
<td>PL5800-1630</td>
<td>16</td>
<td>480 inches</td>
</tr>
<tr>
<td>PL5800-1670</td>
<td>16</td>
<td>1120 cm</td>
</tr>
<tr>
<td>PL5800-2420</td>
<td>24</td>
<td>432 inches</td>
</tr>
<tr>
<td>PL5800-24TR36</td>
<td>24</td>
<td>432 inches</td>
</tr>
<tr>
<td>PL5800-3115</td>
<td>31</td>
<td>465 inches</td>
</tr>
<tr>
<td>PL5800-3135</td>
<td>31</td>
<td>465 inches</td>
</tr>
<tr>
<td>PL5800-32TR30</td>
<td>32</td>
<td>480 inches</td>
</tr>
<tr>
<td>PL5800-32TR70</td>
<td>32</td>
<td>1120 cm</td>
</tr>
<tr>
<td>PL5800-IR-1630</td>
<td>16</td>
<td>480 inches</td>
</tr>
</tbody>
</table>

- **Hitch Planter to Tractor**

  **Crushing Hazard**
  Do not stand or place any part or your body between planter and moving tractor. Keep others away. Failure to avoid may result in severe injury or death by being crushed between tractor and planter. Stop tractor engine and set park brake before attaching harnesses or hoses.

  **Hydraulic Hose Connections**

  **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. Use paper or cardboard, not body parts, and wear heavy gloves to check for suspected leaks. If injured, seek immediate medical attention from a physician familiar with this type of injury.

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

<table>
<thead>
<tr>
<th>Color</th>
<th>Hydraulic Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grey</td>
<td>Fold/Marker</td>
</tr>
<tr>
<td>Blue</td>
<td>Lift/Hitch</td>
</tr>
<tr>
<td>Black</td>
<td>Meter Pressure</td>
</tr>
<tr>
<td>Yellow</td>
<td>Drive/Fertilizer Pump</td>
</tr>
<tr>
<td>Red</td>
<td>Seed Delivery</td>
</tr>
</tbody>
</table>

To distinguish hoses on the same hydraulic circuit, refer to the symbol (1) feed cylinder base ends.
Hoses with a retracted cylinder symbol (2) feed cylinder rod ends.

For hydraulic fan and drive motors, connect the hoses with the retracted cylinder symbol to the pressure side of the motor. All motor returns combined in motor return hose.

The fan motor requires further hook up of a third line which returns hydraulic fluid from the fan motor case.

**Electrical Connections**

The planter is equipped with two standard electrical systems requiring separate connections. Optional equipment may required additional connections.

Before making connections, make sure the tractor is shut down with accessory power off.

The following connections can be made in any order, but all connections must be made before moving the planter.

- Planter light cable (1) to the tractor,
- console lead (2) to the console harness, and
- any optional harnesses.

**Hitching with 2-Point Hitch**

*Load Sway Hazard*

*Failure to adjust 3-point arms and sway blocks can result in injury.*

1. Adjust the tractor 3-point arms and sway blocks to minimize side-to-side sway and assure proper tracking in the field and when transporting. See your tractor operator’s manual for information.
2. Connect the tractor to the planter 2-point hitch. if using a quick hitch, be sure the planter locks into the hitch securely.
3. Raise the hitch enough to take pressure off the parking stands.
4. Remove each pin (1) and slide up the parking stand.
5. Install the pins in the bottom hole (2) of the parking stand.
6. Connect the hydraulic hoses to the tractor remotes.

**Hitching with Hydraulic Hitch (Option)**

Do not use the hydraulic hitch with a tractor equipped with a 3-point hitch.

1. Move the tractor close to the planter hitch.
2. Connect the hydraulic hoses for the tongue circuit in order to raise and lower the tongue. Allow slack for hitch movements.
3. Make the electrical connections for the planter console circuit to control the planter hydraulic systems.
4. Retract the hitch/lift circuit to set the hitch height enough to clear the drawbar.
5. Back the tractor to align the drawbar and hitch. Pin the planter to the drawbar.
6. Raise the hitch enough to take pressure off the parking stands.
7. Remove each pin (1) and slide up the parking stand.
8. Install lift lock channels.
9. Install the pins in the bottom hole (2) of the parking stand.
10. Connect the hydraulic hoses to the tractor remotes.

**Planter Leveling**

All frame sections must be level to maintain even planting depth. Before using the planter in the field, make sure the planter is level side-to-side.

Periodic frame leveling adjustments should not be necessary, but if there are problems with uneven depth, check the planter levelness and follow these procedures.

Before making any adjustments, make sure the lift cylinders are rephrased and operating properly.

1. Unfold the planter fully and set it down. Put the planter in the field position by lowering and pulling forward.
2. Lower the lift cylinders completely.
3. Set the 2-point hitch or hydraulic hitch so the top of the tongue tube 36 1/2 inches (93 cm) above the ground (A). This is the starting point for adjustments.
4. Adjust the hitch until the bottom of the frame tube at the end of each wing measures approximately 26 inches (66 cm) from the ground (B).
**Speed Calibration**
Calibrate the speed sensor the first time the planter is operated in the field (with or without planting). See the console manual for this procedure.
Cross-check the console speed reading with the tractor speedometer.

**Speed Sensor**
The console uses the pickup wheel for measuring planter ground speed. The speed sensor should be set 1/16 to 1/8 inch (1.6-3.2 mm) from the pickup wheel.
There are two sensors on IRC planters, one on each wing.

**Wing Alignment**
To check and adjust wing alignment:
1. Unfold the planter and place a block ahead of each wing gauge wheel. Pull the planter forward against the blocks to rock the frame back.
2. Check for proper alignment by running a string line across the back of the planter toward outer ends of wings. For proper alignment, the outside ends of wings are 0 to 1/4 inch (0 to 6 mm) ahead of the inside of the wings (B).
3. To adjust wing alignment, shorten or lengthen the eye-bolts (1) to change the length of the wing pull bar. Adjust eye-bolts in or out until the outside ends of wings are 0 to 1/4 inch (0 to 6 mm) ahead of the inside.
4. Make sure to adjust both wings equally or the planter will tend to pull sideways behind the tractor.

   - This illustration is viewed from the top of the planter, and the angle of the wings is exaggerated for clarity.

**Row-Pro Set-Up (Option)**
The factory default setting for down force is likely to differ from that required by the next field conditions. Before modifying the monitor setting for down force, determine what actual down force is ideal for the initial use of the planter. One method of determining an initial setting involves operating in the field (without seeding).
1. Set the planting depth with the T-handles.
2. Check the unit mount coulter depth relative to the opener depth and adjust as needed.
3. Start with the row unit down pressure springs in the lowest or second-lowest notch.
   - Adjustment to the spring pressure may need to be made if the depth is reset or the closing wheel down pressure is adjusted.
4. Operate in the field for a short distance.
5. Inspect the furrow.
6. Adjust the springs until depth and closure are near ideal. If the ideal setting is between two notch values, use the higher setting. Rows in wheel tracks may be higher.

7. Engage the Row-Pro system. Set the initial target weight at 80 pounds.

8. Operate in the field. Inspect the furrow and closing, and adjust Row-Pro force setting for the best results.

9. When verifying the final setting, and when planting, watch for Unable to Control alarms, which may indicate that the cams are a notch or more too high or too low.

   If the alarm indicates a value too high, reduce spring pressure. If the alarm indicates a value too low, increase spring pressure.

   The actual target rate can be different depending on the field conditions, soil type, and other factors. The best way to gauge where you want the setting is to operate the system for a short time, then go behind the planter and check the furrow.

## Marker Setup (Option)

Markers are factory or dealer installed, and may not be precisely adjusted for your planter configuration.

Before the first use, set the following:

- marker extension (See “Marker Extension” on page 15), and
- marker disk angle (See “Marker Disk Angle” on page 50).

### Marker Extension

Marker extension is the distance from the mark in the found to the centerline (or furrow) of the end row unit (whether the row is in use or not).

To measure for marker width adjustment:

1. Lower the planter in the field and drive forward a few feet.
2. Measure from the centerline of the outside active row to the mark in the ground made by the marker disk.
3. When correctly adjusted, there is a gap of one row space between passes as measured between centerlines of outside active rows for single row planter, or between centerlines of outside active twin row pairs.

To adjust marker extension:

1. Loosen the nuts (1) on the u-bolts (2).
2. Move the marker disk tube (3) in or out to get the proper adjustment.

The table below provides suggested initial values for various standard and altered configurations. When operating with rows locked up, measure to the outside row whether in use or not. Extension values may be different for the left-hand and right-hand sides, each pass in the opposite direction, and each pass in the same direction.

<table>
<thead>
<tr>
<th>Model</th>
<th>Rows</th>
<th>Row Spacing</th>
<th>Span</th>
<th>Swath</th>
</tr>
</thead>
<tbody>
<tr>
<td>YP16-2-1236</td>
<td>Standard</td>
<td>36.0 inch</td>
<td>91.41 cm</td>
<td>396.0 inch</td>
</tr>
<tr>
<td>YP16-2-1630</td>
<td>Standard</td>
<td>30.0 inch</td>
<td>76.2 cm</td>
<td>450.0 inch</td>
</tr>
<tr>
<td>YP16-2-2420</td>
<td>Standard</td>
<td>20.0 inch</td>
<td>50.8 cm</td>
<td>460.0 inch</td>
</tr>
<tr>
<td>YP16-2-3115</td>
<td>Standard</td>
<td>15.0 inch</td>
<td>38.1 cm</td>
<td>450.0 inch</td>
</tr>
<tr>
<td>YP16-2-3115</td>
<td>as 1630</td>
<td>30.0 inch</td>
<td>76.2 cm</td>
<td>450.0 inch</td>
</tr>
<tr>
<td>YP16-2-32TR</td>
<td>Standard</td>
<td>30.0 inch</td>
<td>76.2 cm</td>
<td>458.0 inch</td>
</tr>
<tr>
<td>YP2-16-32TR</td>
<td>as 1630</td>
<td>30.0 inch</td>
<td>76.2 cm</td>
<td>458.0 inch</td>
</tr>
<tr>
<td>YP16-2-24TR36</td>
<td>Standard</td>
<td>36.0 inch</td>
<td>91.4 cm</td>
<td>404.0 inch</td>
</tr>
<tr>
<td>YP16-2-24TR36</td>
<td>as 1236</td>
<td>36.0 inch</td>
<td>91.4 cm</td>
<td>404.0 inch</td>
</tr>
</tbody>
</table>
Operation

This section covers general operating procedures and adjustments necessary for the best field performance and results. Experience, machine familiarity, and the following information will lead to efficient operation and good working habits. Always operate farm machinery with safety in mind.

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

Pre-Start Checklist
- Read and understand “Safety Information” on page 3.
- Lubricate the planter as indicated. See “Lubrication” on page 61.
- Check all tires for proper inflation. See “Tire Chart” on page 88.
- Check all bolts, pins, and fasteners.
- Check the planter for worn or damaged parts. Repair or replace parts before going to the field.
- Check hydraulic hoses, fittings, and cylinders for leaks. Repair or replace before going to the field.

Field Operation

Electrocution Hazard

Keep clear of overhead power lines when unfolding, folding, operating, or transporting the planter. The machine is not grounded. At higher voltages, electrocution can occur without direct contact. Any line voltage present on planter or tractor can cause severe injury or death.

Before Planting Checklist
- Check electrical and hydraulic connections.
- Make sure planter is leveled (page 13).
- Make sure marker extension and marker disk are set correctly (page 15 and page 50).
- Set the seed meters for correct seed (page 42).
- Set planting rate. See the Material Rate manual.
- Set fertilizer rate, if required. See the Material Rate manual.
- Check the console and observe any diagnostic messages.
- Check the chain tension (page 57).
- Make sure meter inlet gates are open to chart value. See Material Rate manual.
- Make sure hoses are fully connected to meters.
- Close and latch all tank/hoppers lids.
- Set planting depth handles to the same (page 39).
- Set down pressure springs the same except in tracks (page 38).
- Check coulter alignment to the row (page 48).
- Set press wheels the same except in tracks (page 41).
- Check fan operation (page 32).

Begin Planting
- Unfold and line up the planter the start of the first row.
- Prime the meters with seed (page 42). Leave the fan running.
- Unfold the marker on the next-row side.
- Pull forward, lower the planter, and begin planting for a short distance.
- Stop and check the planting depth, seed spacing, press wheel operation, and fertilizer application (if in use).
- Make the necessary adjustments and resume planting.
- For turns:
  - Lower the planter, unfold the marker on the next-row side, and resume planting.
- After turning:
  - Lower the planter, unfold the marker on the next-row side, and resume planting.

End Planting
- Stop the tractor.
- Set the fan hydraulic circuit to float or neutral.
- Fold the marker.
- Raise the planter and install transport locks (page 17).
- Fold the wings (page 19).
- Turn on lights for transport.

Transport Locks

1. Transport hooks behind the wing pivots prevent the planter frame from fully lowering when folded. The planter frame is raised to allow the wings to clear the hooks.
2. Wing locks on the tongue and inside the gauge wheels prevent the planter from unfolding while in transport. The tongue is raised to allow the hooks to clear the locks.

3. A cylinder lock channel at each transport wheel cylinder prevents the frame from lowering during transport and maintenance. The lock channels are installed before folding and removed after unfolding.

For maintenance, two lock channels can be used on the wing wheels.

For transport information, See “Transporting” on page 29.

### Raising and Lowering

#### Crushing Hazard

Keep all persons away from wings and openers during lowering and raising. Openers and wings will cut or crush anything beneath them, and can result in serious injury or death.

#### Falling Hazard

Do not stand on tires when implement is raised or lowered. Gauge wheels may have little or no weight on them, and may turn suddenly and without warning if used as step, resulting in serious injury.

- The planter mainframe raises and lowers independently of the tongue.
- The planter may be fully raised at the any time (and must be raised for folding).
- The planter may be lowered onto transport lock channels at any time.
- The planter may be fully lowered, with lock channels removed, only when unfolded.

### Raising

#### Crushing Hazard

A raised planter slowly lowers when held up only by hydraulic circuit, resulting in serious injury for persons trapped beneath row units. Use hydraulic circuit to hold the raised planter only for brief periods, such as field turns and during channel lock installation. Use channel locks at all other times.

1. Move the lift/hitch circuit lever to extend the lift cylinders.
2. Set the circuit to neutral to hold the planter at lift.
3. Install lock channels if raising for transport, parking, storage, adjustments, or maintenance.

### Lowering

If lock channels are installed, the planter may be lowered at any time.

If lock channels are not installed, lower the planter only when unfolded, such as field turns.

#### Planter Damage Risk

Do not lower the planter when turning to prevent damage to the planter.

1. Move the lift/hitch circuit lever to retract the lift cylinders until settled on lock channels or fully lowered to the ground.
2. Set the lift circuit to neutral for field operation.

### Rephase Lift System

Over a period of normal use the cylinders may get out of phase. This will cause some planter sections to run higher than others. If this happens, rephase the lift cylinders.

To rephase the cylinders:

1. Raise the planter completely and hold the hydraulic remote lever for several seconds until all cylinders are fully extended. Do this every 8 to 10 times you raise the planter out of the ground.
2. When all cylinders are fully extended, momentarily reverse the hydraulic remote lever to retract the system 1/2 inch (1.3 cm) to maintain levelness.
Unfolding and Folding

Pinch Point, Crushing, and Moving Hazards

Moving parts can pinch or crush causing serious injury or death. Distance between tractor and planter will decrease when unfolding and increase when folding. Keep all persons away when folding or unfolding the planter.

Tire Damage Risk

Make sure the tractor is in neutral before folding or unfolding to avoid damage to tires.

Unfolding

The distance between the tractor and planter frame will decrease by about 10 ft (3 m) during unfolding. The planter and/or tractor will move during this operation.

1. Move the planter to level ground with adequate overhead and side-to-side clearances for the unfold operation.
2. Put the tractor in park and/or set the park brake.
3. Make sure markers, if installed, are fully folded.

Planter Damage Risk

Make sure the lift hydraulics are fully raised before unfolding or transport hook damage can occur.

4. Activate the lift hydraulics. Raise the planter until the lift hydraulics are fully raised and the wing frames are above the transport hooks.
5. Release the wing locks using one of these procedures, depending on hitch type:
   - For 2-point hitch, raise the hitch to disengage the wing locks.
   - For hydraulic hitch, tap the Hitch softkey under Working Hydraulics on the FOLD SEQUENCE screen, and raise the hydraulic hitch to disengage the wing locks.
6. On the WORK SCREEN, tap the Home softkey.
7. Tap the FOLD SEQUENCE softkey.
8. Under Fold Steps, tap the FOLD softkey.
9. During the folding process, the ACTIVE FOLD softkey will be blue.
   For partial unfolding, tap the STOP softkey during the process.
10. When unfolding is complete, tap the FOLD softkey again. The FOLD softkey will turn back to gray. Tap the Home softkey.

11. Press the WORK SCREEN softkey.

12. Rephase the fold cylinders by moving and extending the lever for an additional 30 seconds. This causes the wings to push against the tongue hooks. Rephasing should occur before unfolding.

It is necessary to rephase the fold system rephasing cylinders so the wing gauge wheels run in the fully rotated positions in front of the planter.

13. Unfolding is complete when the roller on top of the tongue is engaged by the tongue later (1).

---

**Planter Damage Risk**

Do not plant if the tongue latch is not fully down over the roller. Frame and opener damage is likely if the planter is operated with the latch open.

14. With the planter still in full lift, remove the gauge wheel cylinder channel locks, and store at the front of each caster.

15. Lower the planter.

**Folding**

Fold the planter for moves between fields, transport over public roads, parking, and storage.

For folding, the planter must be raised with lock channels installed. The tongue is raised and lowered during the sequence.

1. Set circuit levers for the seed box fan and optional hydraulic meter drive to neutral.

2. Move the planter to level ground with adequate overhead and side-to-side clearances for the fold operation.

3. Put the tractor in park and/or set the park brake.

4. Make sure markers, if installed, are fully folded.

5. Activate the circuit lever to extend the lift cylinders until the planter is fully raised.

6. Set the circuit lever to Neutral to hold at a lift.

7. Shut off the tractor and remove the key.

8. Remove the transport lock channels from storage and put the channels on the transport wheel cylinders.

10. Tap the **FOLD SEQUENCE** softkey.

11. Under **Fold Steps**, tap the **FOLD** softkey.

12. During the folding process, the **ACTIVE FOLD** softkey will be blue.

13. When folding is complete, tap **FOLD** again. The **FOLD** softkey will turn back to gray. Tap the **Home** softkey.

14. On the **Home** screen, tap the **WORK SCREEN** softkey.

15. Lower the 3-point hitch or hydraulic hitch until wing hook rest on wing locks.

---

**Material Loading**

Seed is loaded into the hopper from above. If the fertilizer option is installed, liquid fertilizer pumped from below with a quick-fill system, but may also be gravity loaded from above with the tank caps removed.

**Entrapment and Rapid Suffocation Hazards**

A hopper that is full, or appears full, can be an entrapment hazard. You can sink all the way into the grain and suffocate in a matter of seconds. Never enter a hopper for loading, unloading, or routine maintenance. Leave strainer in place except when instructed to remove it. Keep lid tightly closed during operation.
1. Lift the handle.

2. Swing the handle out until the hook (2) releases from the u-bolt latch (3).

3. Move the hook clear of the latch.

4. Lift lid slightly at the pivot end to clear the strainer (4).

5. Swing lid away.

6. Check that the strainer basket (4) is clean and in place.

7. Inspect the hopper to make sure it contains only the expected materials.

8. If using an auger to load seed the top section of the center walkboard railing can be swung down.

9. Load the seed.

10. If equipped, make sure the hopper level sensor is connected to the monitor harness.

11. Check the expected amount against the indicator marks on the hopper. Indicator marks are at 10 inches (25.4 cm) increments.

<table>
<thead>
<tr>
<th>Ref. No.</th>
<th>82 bu (2890 litre)</th>
<th>150 bu (5290 litre)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>82 bu (2890 litre)</td>
<td>150 bu (5290 litre)</td>
</tr>
<tr>
<td>2</td>
<td>69 bu (2400 litre)</td>
<td>132 bu (4650 litre)</td>
</tr>
<tr>
<td>3</td>
<td>47 bu (1660 litre)</td>
<td>94 bu (3310 litre)</td>
</tr>
<tr>
<td>4</td>
<td>26 bu (920 litre)</td>
<td>55 bu (1940 litre)</td>
</tr>
<tr>
<td>5</td>
<td>10 bu (350 litre)</td>
<td>22 bu (780 litre)</td>
</tr>
<tr>
<td>6</td>
<td>1.75 bu (60 litre)</td>
<td>6 bu (210 litre)</td>
</tr>
<tr>
<td>7</td>
<td>--</td>
<td>0.7 bu (20 litre)</td>
</tr>
</tbody>
</table>

12. Close an latch lid(s).

a. Swing lid over opening until the hook is centered on the u-bolt latch.
b. Open the handle and engage the hook on the latch.
c. Close the handle.

**Auxiliary Hydraulics (Option)**

![Image of auxiliary hydraulics]

The optional auxiliary hydraulic kit includes a manual valve that diverts the marker hydraulic circuit to a pair of quick-connect ports at the back of the seed cart.

1. Extend or fold any marker that is raised. Return the cab control for that circuit to OFF.
2. Close any shut-off valve on the auger and connect the auger to the auxiliary quick-connect ports at the back of the seed cart.
3. At the auxiliary selector valve, move the handle (1) from Fold to Auxiliary.
4. With no seed present, open the auger shutoff valve, and operate the cab control to determine which setting (Extend or Retract) turns the auger in the correct direction for seed lift.
5. Load the seed.
6. Shut off the cab circuit, then the auger.
7. Return the auxiliary selector valve handle to Fold.
8. Disconnect the auger hydraulic hoses at the auxiliary ports.

**Air System**

The air system consists of two hydraulic fans. One hydraulic fan supplies air for the seed delivery (1) and the other hydraulic fan supplies air for the meter operation (2).

Fan rpm is adjusted using the tractor remote hydraulic flow control.

A sensor from the WSMT measures and reports the air to the display in the cab.

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**Additional Information:**

In case of insufficient fan air or significant seed delivery air leaks, seed flow may be irregular or stop.

Some rows have lines to sample metering air pressure which is measured in a sensor chamber. The sensor reading is fed back to the WSMT for pressure control. Air pressure is adjusted to preset target in WSMT.

At the air box (3), air is mixed with seed from the hopper and flows out the air box manifold ports into seed hoses to the rows.

If seed delivery air flow is insufficient, the indication will be low seed rate alarms. If fan speed and direction are as recommended, check for air leaks in the seed delivery system.

A screen (4) above each seed meter vents the delivery air. The vent has two functions:

1. Releases delivery air while retaining the delivered seed.
2. Controls bulk seed delivery.

When the meter inlet is filled and seed fills the tube above the inlet, the screen becomes blocked by seed, shutting off the air flow to that meter. As the meter uses seed, the screen is exposed and air resumes flowing, carrying more seed to the meter.

It takes about a minute to initially fill the seed meters.

Separate pressurization tubes (5) provide air to the meters that holds the seed in disk cells until released to the seed tubes.

A sensor in each seed tube reports seed passage to the seed monitoring system which reports counts and rates on the console.
Twin Fan Hydraulics

Hydraulic hoses serve the fans and must be properly connected for the fans to operate in the correct direction, at recommended speeds, and without damage.

(1) Always connect the case drain hose first. The case drain hose protects the outer seal of the hydraulic motor. It is small line to the hitch, supplied with a specialize low-seep flat-face case drain quick disconnect. Pressure spikes during motor operation and pressure cycles due to temperature change are bled off by the case drain.

Motor Seal Damage Risk

Do not apply pressure to the case drain line. Do not change the special quick connector. A restricted or sealed case drain line will promptly result in motor seal damage.

(2) Pressure line from tractor retract.
(3) Return to tractor along right tool-bar.
(4) Pressure line from tractor retract fold/bulk value.
(5) Return from delivery fan to meter pressure fan.
(6) Case drain from meter pressure fan to delivery fan motor.

(7) Return bypass to motor tank port.

The fan hydraulic circuits include a check valve which provides a relief path for oil at motor shutoff. The resulting low fan rpm provides indication of reverse connection.

If a reversed fan is suspected, observe during shutoff since the direction of motor is easier to see at lower rpm rates.

Initial startup is nearly instantaneous, making observing at startup difficult.

If a fan is connected in reverse, it may not run at all due to no oil source at the return connection. If oil is present, oil bypass at the check valve prevents the fan from reaching operating rpms. A reversed fan is incapable of providing sufficient air flow for planting.

Fan Operation

Use the tractor remote hydraulic valve flow control to set fan speed. Always start the fans with a low flow setting. Monitor fan rpm with the seed monitor.

Gradually bring fans up to the recommended initial rpm. The recommended initial fan speed is 2800 rpm.

The monitor console can report meter pressurization. There is also a Magnehelic air pressure gauge. These two readings should not disagree by more than a few tenths of an inch.

The Seed Rate manual provides initial values for meter pressurization. Normal readings are in the 4/5 to 4 inches (2 to 10 cm) H2O and vary considerably with crop.

If the fans are running at suggested rpm or the meters are not getting seed, the fans may be running backward. Reverse the inlet/return lines at the hitch.

Fertilizer (Option)

Agricultural Chemical Hazard

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

Do not allow fertilizer to remain in the tanks for extended periods or settling of material and system plugging will occur.

Always fill fertilizer tanks to equal levels. If one tank fills more quickly, shut that tank valve off to raise the level in the other tank.

Material Loss Risk

Always close the valve at the in-line filter when filling or storing any liquid in the tanks. Failure to do so may allow material to run out of the manifold (boom) outlets causing contamination from spillage.

1. Connect the nurse tank hose to the quick-fill coupler (1) under the left-hand tank.
2. Lock the hose in place with cam lock levers.
3. Close the valve going to the in-line filter located just before the pump.

Electric Clutch

Electric clutches allow for turning planting off while the planter is lowered.

A clutch for each drive shaft allows for independent control of each side of the planter. The clutches are controlled with the WSMT.

Electric Clutch Lockup

In case of electric clutch failure, electric clutches can be locked in the engaged mode using the bolts stored in the brace plate above each clutch.

1. Remove the rubber plugs (1) from the oil shield (2) for access to the bolt holes (3).
2. Align the cutouts (4) at the plug holes (5).

Ground Drive Pump (Option)

This liquid fertilizer option uses a ground drive positive displacement pump. For pump operation and pump maintenance, refer to the pump manual supplied with the ground drive pump option package. For fertilizer rate settings, see the Seed Rate manual.

AccuShot Fertilizer System (Option)

This liquid fertilizer option uses the AccuShot system for application. For system operation, refer to the AccuShot manuals supplied with the AccuShot option package.

Electric Clutch Lockup

In case of electric clutch failure, electric clutches can be locked in the engaged mode using the bolts stored in the brace plate above each clutch.
3. Insert the bolts that are stored in the brace plate. When the entire cutout is visible, the bolts will install with minimal resistance.

 **Clutch Damage Risk**

Use only 14mm length bolts are provided or machine damage can occur. Longer bolts will damage the clutch. Shorter bolts may not affect the clutch properly.

4. Install the oil shield plugs.

 **Clutch Slippage Risk**

Keep the oil shield and oil shield plugs in place. Do not allow lubricant to enter the clutch when lubricating the planter. If the clutches slip, operate with clutch lockup until overhaul or replacement of clutches.

### Swath Command Clutch (Option)

The optional Swath Command system replaces the standard 2-section operator-controlled clutches with 8 sections of clutches under seed monitor control.

The Swath Command system automatically turns off rows when the row unit enters a non-planting area (as defined by pre-loaded information), or if the row enters an area already logged as planted during previous passes.

Refer to the Swath Command manual for setup and operation of the system.

### Hydraulic Drive (Option)

The hydraulic drive option replaces the standard contact wheel ground drive with a hydraulic motor (1) as the power source for meter rotation.

The drive requires a separate closed center hydraulic circuit capable of 4.5 gal/min (17 liters/min). A check valve (2) at the motor prevents reverse operation in case the connections are reversed at the tractor or the circuit lever reversed.

When the hydraulic circuit is active, a solenoid valve (3) controls flow to the motor as the “Planter Channel” of the seed monitor. Refer to the Planter Drill Control manual, User Level 2/3.

When the planter is raised in normal field operation, the lift switch causes the seed monitor to shut off hydraulic flow to the motor. Override this shut off and operate the drive while raised using special seed monitor modes as follows:

- In User Level 1, the FILL DISK operation run the motor for one meter disk revolution.
- In User Level 2, the 5 REV TEST operation runs the motor for five meter disk revolutions.

A filter (4) in the system requires periodic maintenance.

If there is slow flow, reverse meter rotation when expected, the circuit lever or connections may be reversed. Also, check for solenoid valve problems, such as a disconnected lead, and any seed monitoring system console diagnostic messages.

### Markers (Option)

**Electrocution Hazard**

Machine is not grounded. If markers contact power lines, the tractor and planter can become “hot”. A person standing on the ground and touching equipment can complete the circuit. To prevent serious injury or death, keep clear of overhead power lines when transporting, folding, unfolding, or operating all planter components. At higher voltages, electrocution can occur without direct contact.

Before operating the markers, set the selector valve (1) to Marker.
Markers are equipped with a manual selector switch and are actuated with the left circuit. Choose left or right or fold the appropriate marker.

■ **Row-Pro (Option)**

Row-Pro is a factory installed option for implements with 5000 series planters that are equipped with DICKEY-john IntelligAg. It provides an automatic adjustment for more consistent down pressure. Once the springs are set, Row-Pro pneumatically adjusts pressure on the openers.

There is one cylinder (1) for each row located between the parallel arms. Based on loading on the side depth wheels, Row-Pro adjusts air pressure in the air cylinders.

The main systems consist of:

1. An air compressor system:
   - one 12VDC air compressor (2),
   - air tank (3),
   - two extension cables (4), and
   - one fuse assembly (5).
2. A load sensing system:
   - a down pressure load cell module (DPLCM) (6), and
   - load cells (7).
3. An adjusting system:
   - valves (8), and

   The DPLCM and valves are mounted together on a plate and are connected to the wiring harness (10). Two leads on the wiring harness each connect to a load cell which is located in the opener body.

Four leads connect to the valve sets. There is one pair; one air intake and one exhaust for each valve.

The connector ends (11) connect the wiring harness to the planter’s CANbus.

The load cell provides feedback so the system can maintain the target pressure.

The DPLCM uses the readings from the load cell to regulate the air valves to increase or decrease pressure in the air cylinders.
**Air Compressor**

The 12VDC air compressor requires both an electrical connection and a mounting location.

Mount the compressor:
- as close to the tractor battery as possible using the least amount of electrical connections as possible to minimize voltage drop,
- on the tractor or planter where most convenient, and
- where cool, clean air can get to it.

The battery connection is equipped with one large 60 amp spade fuse (automotive type).

If your tractor has an on-board engine driven compressor capable of 150 psi, it can be used instead of the one supplied with the planter. Hook the on-board compressor to the air tank with line provided.

Place the air filter in the tractor cab where it can pull clean air from the cab. The remote air filter line should be as short as possible.

**Air Tank**

A horizontally mounted air tank is provided and mounted on the wing.

Open the air tank petcock (12) once daily to drain water accumulation.

The system is designed to run at 150 psi (1034 kPa). When the pressure drops to 135 psi (930 kPa), the compressor engages and builds back up to 150 psi (1034 kPa). Duty cycle varies based on air usage.

**Air Tank Lines**

The air tank has two lines. A 3/8 inch line (13) attaches the compressor (14) to the air tank (15). A 1/4 inch (16) splits at a “T” junction (17) and goes to the valves (18). The other end attaches to the compressor plate (19) where it activates the pressure switches.

If an on-board compressor is used, plug or bypass the pressure switch branch.

Before going to the field, check for air leaks:
1. Turn the compressor on to pressure up the primary system until it automatically shuts off. If the system loses pressure, check for leaks.
2. Use the Leak Test mode to cycle through the sections and check for leaks.

**Transporting**

**Loss of Control Hazard**

Do not exceed 20 mph (32 km/h) when transporting. Use a tractor rated for the load. Towing the planter at high speeds or with a vehicle that is not heavy enough can lead to loss of vehicle control resulting in serious injury or death.

The tractor must weigh at least 2/3 (67%) of the planter plus any materials loaded. See “Specifications” on page 86.

Before transporting, follow and check these items:
- Set the tractor 3-point hitch control for depth control operation. If the 3-point hitch control is set for load control, the auto load control response may
automatically adjust too high in some circumstances, causing the wing locks to disengage on the road.

- Empty seed box before transporting if at all possible. The planter can be transported with a full box of grain, but the added weight increases stopping distance and decrease maneuverability.
- Transport the planter only while in the folded position. Make sure all cylinder lock channels are in place.
- Always use warning lights when transporting the planter.
- Comply with all national, regional, and local safety laws when traveling on public roads.
- Remember that the planter is wider than the tractor. Allow safe clearance.
- Always transport markers in the folded position. Make sure second marker section rests securely on the transport carrier.

### Parking

Follow these steps when parking the drill for periods of less than 36 hours. For longer periods, see “Parking” on page 30.

1. Position the planter on firm, level ground.
2. If equipped with fertilizer, flush the system and protect the pump against corrosion.
3. Fold the planter.

**Roll-Away Hazard**

There is not enough weight on parking stands to anchor planter on a slope. Do not unhitch planter while on a steep slope. Always block tires when unhitching from tractor.

4. To prevent rolling, clock the tires securely.
5. If the ground is soft, place a board or plate under each stand to increase contact area.
6. Remove each pin (1), slide down the parking stand, and reinstall pins.
7. Lower the tractor 3-point or hydraulic hitch until the planter is resting on parking stands.
8. Set all implement hydraulic circuits to Float to relieve pressure in the lines.
9. Shut down hydraulics and unplug hydraulic lines from the tractor. Do not allow hose ends to rest on the ground.
10. Unplug light harness and monitor harness. Protect connections with any plugs or caps provided.
11. Unhitch the planter from the tractor.

### Storage

Store the planter where children do not play. If possible store inside for longer life of the planter.

1. Empty the hopper.
2. Close the hopper door.
3. Clean out the air system.
4. Unlatch the hopper lid(s) so that the seals are not in compression during storage. Route a chain or security cable through the hold-down U-bolt and the latch handle to prevent unauthorized entry, and prevent high winds from opening the lid.

**Possible Chemical Hazard**

Seed disks will have talc and graphite residue, and may have residue of hazardous seed treatments. Do not wash disks where food is prepared or where cookware and dinnerware is washed. Wear gloves when washing disks. Avoid spray.

5. Remove seed disks from seed meters to relieve pressure on the brushes. Clean the disks of residue buildup.
6. For planters equipped with the optional fertilizer package:
   a. The pump, trainer, and manifold system require special attention before storage. See “Fertilizer System” on page 60.
   b. Clean the tanks and application hoses. Be sure to follow the chemical manufacturer’s instructions when handling chemicals.
   c. Thoroughly clean the pump following instructions in the pump manual.
   d. Remove any dirt and debris that can hold moisture and cause corrosion.
7. Clean planter of mud, dirt, excess oil, and grease.
8. Lubricate all points according to “Lubrication” on page 61.
9. Apply grease to exposed cylinder rods to prevent rust.
10. Inspect the planter for worn or damaged parts. Make repairs and service during off season.
11. Use spray paint to cover scratches, chips, and worn areas on the planter to protect the metal.
12. Cover the planter with a tarp if stored outside.

■ Setting the Planting Rate
1. Set seed rate:
   a. For ground drive planter, adjust drive speed range sprockets, and transmission sprockets.
   b. For hydraulic drive or IRC planters, set monitor and drive control channel.
2. Prepare seed meters including disks, gates, and meter pressurization (page 42).
3. Check tire pressure (page 88).
4. Check planting rate (page 31).

Population Target Risk:
Tire pressure matters for both ground and hydraulic drives. Incorrect tire pressure causes incorrect ground speed readout. On ground drive, incorrect pressure causes incorrect or inconsistent seed metering.

Contact wheels turn in the opposite direction from main ground tires.

Drive Speed Range Sprockets

1. Select the range sprocket pairing for your seed and rate from the Seed Rate manual.
2. Loosen the range idler (1) and remove the chain.
3. Remove retaining pins from shafts and install speed range sprockets called for in the chart. Additional sprockets are on storage towers behind the reversing drive plate.

Population Target and Rate Risk:
Make sure the correct sprockets have been installed in the Driving (3) and Driven (4) locations.
Reroute the chain over the sprockets and idlers.

Transmission Sprockets
1. Select the transmission sprocket pairing for your seed and rate from the charts in the Seed Rate manual.
2. Loosen the idler (2) and remove the drive chain.
3. Remove the lynch pins from the shafts and install the sprockets according to the seed rate chart.
4. Reroute the drive chain over the sprockets and idlers.
5. Move idlers into chains for 1/4 inch (6 mm) slack in the longest spans.
6. Tighten idlers and install lynch pins.
7. Store and pin the removed sprockets on storage towers.

**Contact Drive Wheel**
Raise the planter and adjust wheel travel to obtain 1 1/2 inch (3.8 cm) clearance (A) above the transport tire.

Adjust the amount of travel for the contact wheel by loosening the jam nuts (2) and lengthening or shortening the threaded rod (3).

This adjustment controls the timing of the seed meter drive when raising and lowering the planter.

- Increasing the gap between the tires will cause seed flow to start and stop with the planter at a lower height.
- Decreasing the gap between the tires will cause seed flow to start and stop at a higher position.

Be sure to check for the spring bottoming out after making the adjustment.

If necessary, adjust the pressure on one or both springs (4) to adjust the down pressure that the contract wheel exerts. Do not adjust the spring so that it will bottom out.

**Fan and Meter Pressurization**
Make sure the correct seed disks are installed (see Seed Rate Charts), and the seed inlets gates are set for the seed.

1. With the fan off, check the meter pressurization on the seed monitor. Re-zero as needed (see seed monitoring system console manual).
2. Determine the recommended fan rpm.
3. Determine the recommended meter pressurization (see Seed Rate manual).
4. Start the fan. Gradually increase fan rpm using the tractor hydraulic flow control for the circuit.
5. Check that at least a small amount of pressure is being sensed at the meters and meter pressurization is near the suggested value.
7. Fill the meters:
   a. With the fan running, put the tractor in park and set the park brake.
   b. Walk behind the wings, remove several rain covers from the seed meters, and check for seed in the meters by looking through the clear disks. Rows to check are those with longer hoses and sharper hose bends.

If a meter runs completely out of seed (starved), back-pressure to the air box manifold may prevent prompt refill. To fill a starved meter, close the seed inlet gate for about 15 seconds, then restore it to the original setting.

8. Fill the disk pockets with seed:
   a. For electric drive and hydraulic drive, run a FILL DISK operation.
   b. For ground drive, use one of these options:
      - With RSM clutch switches off, use a 7/8 inch wrench to rotate the wing meter system drive shaft 1 1/2 turns (top forward).
      - Lower the planter and plant for a short distance. It takes a few feet before seed begins to drop from the meters.

9. Check control air system pressure. With meters and disks filled, meter pressurization should be at target value.

11. During the first pass, take note of the average populations reported on the seed monitor:

- **Screen 1 (first row above graphs), Average Overall Population**
  
  If the population is only slightly low, the problem can be skips (periodic empty disk pockets). If slightly high, the problem can be doubles (periodic pockets with double seed). A meter pressurization adjustment may correct either condition.

If the reported population varies from the desired population by a significant amount, perform the following check:

a. Expose several seeds in each of several rows, being careful not to disturb their relative positions.

b. Measure and average the distance between seeds.

c. Compare the average to the predicted seed spacing for the population in the Seed Rate manual.

Any instances of no seed where expected may be sign of skips. Two seeds at the same place indicates doubles.

12. Resume planting. During the next pass, note the following on the seed monitor:

- **Screen 1 (second row above graphs), Minimum Row Population**
- **Screen 1 (third row above graphs), Maximum Row Population**

A small variation of population between rows is normal. However, a row consistently running lower or higher than the other rows, could indicate a meter or seed sensor problem that needs attention. See “Seed Population Troubleshooting” on page 78.

**Skips**

If everything else is correct, and the overall average population is running low, or there are gaps when doing a furrow check, the cause may be seeds falling out of disk pockets before delivery to the seed tube. Increase meter pressurization to correct this.

Insufficient meter pressurization, or unusually rough fields can increase the incidence of empty pockets. Be sure to rule out other causes, such as skipping chains, meter starvation, or incorrect meter disks, before adjusting meter pressurization to reduce skips. Excess meter pressurization can increase the chance of doubles.

Meter pressurization can be adjusted with the planter in motion.

To increase meter pressurization:

1. Adjust hydraulic flow to meter pressure change.
2. Wait 5 to 10 seconds for the system to update while you continue planting.
3. Continue making small decrease adjustments until the reported population levels out at the target value.

**Doubles**

If everything else is correct, and the overall average population is running high, or there are double seeds when doing a furrow check, the cause may be two seeds in some disk pockets at delivery to the seed tube. Decrease meter pressurization to correct this.

To decrease meter pressurizations:

1. Adjust tractor hydraulic flow.
2. Wait 5 to 10 seconds for the system to update while you continue planting.
3. Continue making small decrease adjustments until the reported population levels out at the target value.

**Fine Tuning Meter Pressurization**

After several passes, if you are comfortable with the planter operation, optimize the meter pressurization. Do this during longer passes, so there are fewer distractions.

1. Observe the current overall average population reported by the monitor.
2. Adjust the meter pressurization down in small increments, waiting 5 to 10 seconds between adjustments, until skips occur. Not the pressure where skips begin.

3. Restore the pressure to the initial value at step 1.

4. Adjust the meter pressurization up by small increments until doubles occur. Note the pressure at which doubles begins.
   If unable to adjust up to doubles, or if skips happen instead, seed delivery is probably being starved of air.
   Increase fan rpm and repeat limit search.

5. Adjust meter pressurization to a value halfway between the limits established at step 2 and step 4. This is the ideal value for your crop, disk, and population, providing equal margin against skips and doubles. Record this value for future use.

Alternate Skips/Double Check

Small seeds (particularly milo), and high populations (particularly soybeans), may not be sensed as skips or doubles by the seed tube sensors, and watching monitor population is unlikely to locate the pressure limits. The following test can also be quicker for all seeds:

1. After planting a few passes with initial settings, remove the rain covers from several seed meters. Use rows with a variety of seed hose lengths and routes.
2. Make a meter pressurization adjustment, and resume planting for pass or less.
3. Stop the planter motion but leave the fan running.
4. Inspect the seed disks closely. Look for empty seed cells, skips, and cells with multiple seeds (doubles).
5. Repeat steps 2 through 4 until limits are established. Record the limits and calculate an average.
6. Install the rain covers and plant with the calculated average.

■ Planting Rate

Always check seed delivery rate before planting.

The seed monitor can count most singulated seeds, but may not reliably the smallest seeds, such as milo. It does not count individual volumetric seeds, and several factors can cause large seed singulated reports to be inaccurate (such as incorrect speed calibration, Sensor Constant, or Gear Ratio setup).

Methods of rate checking are described in detail in the Seed Rate manual. This is an overview of the general process, which varies with the seed type and planter meter drive type.

Methods of rate checking are described in detail in the Seed Rate manual. This is an overview of the general process, which varies with the seed type and planter meter drive type.

Before checking the rate, make sure the seed monitor is configured with an accurate Ground Speed Constant. The monitor may have an incorrect default value pre-loaded.

The monitor Quick Start Guide for your planter includes an initial value for this constant, but the value may not be the best one for your planter, and does not include any adjustment for tire wear over time.

For reliable monitor reports, at the start of each season, perform a GROUND SPEED CALIBRATION over a 400 ft (100 m) course, as described in the Planter/Drill Control manual. When completed and entered in the monitor, cross-check the reported implement speed against the tractor speedometer or other reference.

Singulated Rate

A furrow check is the most accurate way to verify the seeding is at the desired population value. This is done by planting for a short distance with one or two rows set to shallow depth and with press wheels tied up for no furrow closure. Seeds are counted in the furrow over as specific distance and the area rate is computed. Refer to the Seed Rate manual for details.

The seed monitor will also be counting the test. Compare the results.

If the checked rate varies from the chart rate, or for hydraulic drive from the programmed rate, it is likely there is a seed flow problem or planter malfunction (such as contact drive tire slippage) or a configuration error that requires correction. Do not calibrate to correct expected variations in singulated rates.

■ Fertilizer Rate

This is the only an overview of fertilizer rates and the fertilizer pump. Refer to the Seed Rate manual for details.
Agricultural Chemical Hazard

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

Fertilizer rate is controlled by pump rate. Consistent delivery across the planter is controlled by orifice size at the row unit drop-line points.

Consistent system operation also requires a correctly adjusted relief valve and a well maintained strainer ahead of the pump.

Great Plains recommends checking with your local agronomist as soil conditions can vary. Conditions in your area may need less or more amounts of fertilizer than represented in the charts.

Fertilizer Ground Drive

The ground drive fertilizer option uses a piston pump. For pump operation and pump maintenance refer to the pump manual supplied in the liquid fertilizer option.

The pump is driven by a ground contact wheel (1). The fertilizer rate is independent of seed rate.

Course fertilizer rate is set by a sprocket (2) on the ground drive. Fine rate is set by a dial (3) on the pump. For more information, see the Seed Rate manual.

Always disable the pump drive when not in use and use the ground wheel lock up, if installed. Do not operate the pump when not applying material.

Fertilizer Ground Drive Lock-up

Sharp Object and Crushing Hazard

The force required to lift the wheel is 90 lbs (41 kg). If you lose your grip before pinning or after pinning, the arm snaps down rapidly. The traction teeth and force of the wheel impact can inflict serious injury. Do not left or lower the wheel by a spoke or rim, use the handle only.

When not using the fertilizer ground drive, preserve the pump by locking up the ground wheel.

Do not operate the pump when not applying material.

To lock up the fertilizer drive:

1. Remove the clevis pin from the storage hole (3).
2. Release the lock arm (4).
3. Lift the handle (5) to left the ground wheel up and position it in the between lock arm.
4. Secure with clevis pin (6) and cotter pin.

Fertilizer Hydraulic Drive

The fertilizer hydraulic drive uses a fixed displacement pump driven by hydraulic motor under seed monitor control. Refer to the monitor manual for instructions.

Height Switch

The height switch informs the seed monitor if the planter is raised or lowered. On all planters, the monitor only counts seed when the planter is lowered and the drive is activated. On hydraulic and electric drive planters, the height switch also enables or disables the drive.

When the hydraulic drive planter is raised, the switch state is ignored during FILL DISK and 5 REV TEST operations.
To adjust the height switch:

1. Loosen the bolts holding the height switch bracket (1) and rotate the switch (2) and bracket away from the frame pivot (3).
2. Lower the planter to the height at which seed delivery should begin.
3. Rotate the switch toward the frame pivot until the spring actuator (4) touches the frame.
4. It may be necessary to loosen the screws holding the switch and rotate the switch slightly on the bracket.
5. Rotate the switch in until it clicks. Tighten the bolts to secure the bracket in place.
6. Make sure the frame tube will not crush the switch when the unit is fully loaded.

### Frame Mounted Row Accessories

#### Terra-Tine Row Cleaner Adjustment

All adjustments must be made with the unit in the fully raised position.

**Excess Wear Risk**

Check that the Terra-Tine row cleaner tines do not touch the coulter blade or any other attachments. At least 3/8 inch (13 mm) clearance is recommended. Tine contacts cause excess wear to all parts involved.

1. With the blade out of the soil, adjust the lock collar height to set the height of the tine fingers flush with the bottom of the coulter blade.
2. For side-to-side alignment, rotate the shank mount around the vertical shaft and tighten the square head set screw.
3. For forward and backward adjustment, add or remove the extension arm (1) to place the row cleaner to either side of the coulter hub (2), depending on the desired position or clearance between other attachments. Testing has shown better performance behind the hub, but available space may dictate the mounting position.

The top illustration shows the Terra-Tine in front of the hub. The bottom illustration shows the Terra-Tine behind the hub.

#### Frame Mounted Coulters

Adjust the coulter depth at the shaft (1) for a running depth (2) of 4 to 4 1/2 inches (10.2 to 11.4 cm) below ground level of off row. If on row, as a no-till coulter, operate at planting depth only (3). Refer to the Vantage I manual (207-376M) for more adjustments.

The spring (4) is factory pre-set. Do not adjust the spring tension.
Vantage I Application
Adjust the tine height at the back plate (1) for a running depth (2) of 1 inch (2.5 cm) below ground level (3). Refer to the Vantage I manual (204-376M) for further adjustments.

5000 Series Row Unit
(2) Row Unit Lock-up Hole (standard). Pins are standard on some models. With the row unit raised above level, the lock-up pin is inserted here. See “Row Shut-Off” on page 45.
(3) Down-pressure Cam (standard). Row units are mounted on parallel arms; allowing the row unit to move up and down while staying horizontal. Springs set by a cam add an adjustable force to the row weight. See “Row Unit Down Pressure” on page 38.
(4) Pressurization Air Inlet (standard). Pressure-regulated air enters the meter here and holds seed in the disk pockets. See “Fan and Meter Pressurization” on page 32.
(5) Seed Inlet (standard). Air carrying the bulk seed is vented at the bottom of the air release cone. Gravity then carries the seed into the meter at the seed inlet gate. Remove the hose for inspection. There are no adjustments.
(6) Seed Meter (standard with choice of disks). See “Seed Meter Setup and Adjustment” on page 42.
(7) Seed Inlet Gate (standard). This controls the level of bulk seed at the disk. There are four operating settings, plus fully closed for shut-off or storage. See “Seed Inlet Gate Adjustment” on page 43.
(8) Side Gauge Wheel Depth (standard). The T-handle sets the planting depth by controlling the height of the side gauge wheels relative to the opener disks. See “Setting Planting Depth” on page 39.
(9) Press Wheels (standard with choice of wheels). The press wheels close the furrow, pressing the soil over the seed to provide good seed to soil contact.
(10) Row Cleaner (option). Row cleaners clear trash from the row, to a depth set by an adjustment on the arms.
(11) Unit Mount Coulter (option). Coulters cut remaining trash and begin opening the seed furrow. Working depth is set by row depth and a mounting hold selection. See “Unit Mounted Coulters” on page 48.
(12) Opener Disks (standard). Row unit double disk openers create the seedbed furrow with adjustments for angle and spacing. See “Row Unit Opener Disks” on page 39.
(13) Seed Tube with Sensor (standard). Requires no adjustment.
(14) Scrapers (optional). Inside scrapers require no adjustment. For side gauge wheel scrapers, see “Side Gauge Wheel Scraper (Option)” on page 41.
(15) Seed Firmers (seed flap, standard, not shown; Keeton, optional, shown). The seed firmer minimizes seed bounce and improves soil contact. It may also deliver fertilizer. See “Coulter Row Adjustment” on page 48.
Row Unit Down Pressure

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

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

At several row units, inspect the furrow created by the opener disks, but before the furrow closing by the press wheels (A).

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

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

Down-Pressure Adjustment

Row unit springs provide the down pressure necessary for row unit disks to open a seed trench. The springs allow the row units to float down into depressions and up over obstructions. The springs also provide down force on coulters when using optional row mounted coulters.

You can adjust down pressure individually for each row unit. This is useful for penetrating hard soil and planting in tire tracks. For best results, always adjust tractor tires so theires are not ahead of 30 inch or 70 cm rows.

Use only enough down pressure to cut the seed trench and maintain proper soil-firming over seed. Excessive row unit down force will lead to premature wear on row unit components. Excessive down force will also cause uneven seed depth.

To adjust down pressure:

1. Use 1 1/8 inch (29 mm) open end wrench or the tool (1) stored under the walkboard.
2. Position the wrench or supplied tool on the nut (2). Pull back and down.
3. Move the adjustment cam (3) to the new setting.

Minimum setting (4) and maximum setting (5) are indicated by the position of the adjustment cam. Each notch on the adjustment cam will increase the down pressure on the row unit springs. Use the table as a setting reference.

<table>
<thead>
<tr>
<th>Cam Notch</th>
<th>Pounds</th>
<th>Kilograms</th>
</tr>
</thead>
<tbody>
<tr>
<td>out of notch</td>
<td>Lock-up and maintenance</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>320</td>
<td>145</td>
</tr>
<tr>
<td>2</td>
<td>355</td>
<td>160</td>
</tr>
<tr>
<td>3</td>
<td>385</td>
<td>175</td>
</tr>
<tr>
<td>4</td>
<td>435</td>
<td>200</td>
</tr>
<tr>
<td>5</td>
<td>485</td>
<td>220</td>
</tr>
<tr>
<td>6</td>
<td>535</td>
<td>245</td>
</tr>
</tbody>
</table>

Do not set all rows any higher than notch 4. Using settings above this on all rows will create uneven depth control and improper function.

Individual rows may be set higher if running in heavy tires tracks.

**Row Unit Opener Disks**

The 25 Series openers have three adjustments:

- planting seed depth,
- openers disk to disk clearance, and
- gauge wheel/opener disk clearance.

---

### Setting Planting Depth

The T-handle sets planting depth by limiting how high the side depth gauge wheels ride relative to the opener disks. The position of the seed tube is fixed relative to the disks and is not adjusted.

To adjust seed depth, pull the T-handle up and back and move it forward or back to another setting.

- For shallower planting, move the T-handle forward.
- For deeper planting, move the T-handle back.

### Disk-to-Disk Spacing

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

The ideal spacing causes the blades to be in contact for about 1 inch (2.5 cm) (A). If you insert two pieces of paper between the blades, the paper should slide from touching to 1 1/2 inch (3.8 cm) from each other.

If the contact area is significantly larger or there is a large gap, adjust by moving one or more spacer washers.

### Crushing Hazard

*Install lift cylinder locks when working on the machine. A falling machine can cause severe injury or death.*

1. Raise the planter and install lift cylinder locks.
2. Remove the side gauge wheels on the row unit needing adjustment.
Sharp Object Hazard
Opener disks are sharp and may result in injury. Wear hand protection when working in this area.

3. Remove the bolt (1) retaining the opener disk (2) on one side.
4. Carefully remove the disk. Do not lose the hub components and spacer washers (3 and 4).
5. To reduce the spacing between disks, move one spacer washer from the inside (3) to the outside (4) of the disk.
6. Reassemble and check the disk contact.

Gauge Wheel/Disk Clearance

For disk-to-wheel angle and clearance the side gauge wheel (1) should just be touching the opener disk (2) when the wheel is raised to planting depth.

The goal is to have both disks and wheels turn freely, but keep soil and trash from getting between them.

The side gauge wheel have two related adjustments. Changing one requires at least checking the other. The two adjustments are:
- angle of side gauge wheel, and
- distance between side gauge wheels and disks.

In addition to changing the disk angle due to changing depth or new field conditions, the two seeings may need attention over time as the disk and wheels wear from normal use. This adjustment will also need to be made when any opener components are replaced.

For 2 inch (5 cm) planting depth, adjust the side gauge wheel angle so the wheels contact the row unit disks at the bottom of the wheel and the gap is 3/8 to 5/8 inch (9.5 mm to 16 mm) at the top. Check with row units in the soil so wheels are held up.

At the same time, keep side gauge wheels close to opener disks so openers do not plug with soil or trash.

Wheels should be far enough so disks and wheels turn freely.

Crushing Hazard
Make sure machine is secure before working on the machine. A falling machine can cause severe injury or death.

To adjust the side gauge wheels:
1. Raise the planter slightly, removing the weight from the side gauge wheels.
2. Loosen the bolt (1).
3. Move the wheel and arm out on O-ring bushing.

**Sharp Objects Hazard**

*Opener disks are sharp and may result in injury. Wear hand protection when working in this area.*

4. Loosen the pivot bolt (2).
5. Turn hex adjuster (3) so the indicator notch (4) is at 5 o’clock to 7 o’clock. Use this as the starting point for adjustment.
6. Move wheel arm in so the side gauge wheel contacts the row unit disk.
7. Tighten the bolt (1) to clamp the arm around the bushing and shank.
8. Check wheel-to disk contact at 2 inch (5 cm) planting depth. Lift wheel 2 inch (5 cm), check the contact, and release. When let go, the wheel should fall freely.
   - If the wheel does not contact the disk at the bottom to the area where the blade leaves contact with the solid, move the hex adjuster until the wheel is angled for proper contact with the disk.
   - If the wheel does not fall freely, loosen the bolt (1) and slide the wheel arm out just until the wheel and arm move freely.
   - Tighten the bolts follows:
     - Grade 5 bolt - 76 ft-lb (105 Nm)
     - Grade 8 bolt - 110 ft-lb (150 Nm)
9. Keep turning the hex adjuster and moving the wheel arm until the wheel is adjusted properly.
10. When properly adjusted, tighten the pivot bolt (2) to 110 ft-lb (150 Nm).

**Side Gauge Wheel Scraper (Option)**

Side gauge wheel scrapers may be useful in moist or sticky soils that tend to accumulate on gauge wheels reducing the intended planting depth.

To adjust gauge wheel scraper:
1. Loosen the nut (1).
2. Slide the gauge wheel scraper (2) toward the gauge wheel until the scraper touches the tire.
3. Slide the scraper away from the wheel leaving a 1/2 inch (3 mm) gap (3).
4. Rotate the scraper left and right around the bolt, making sure it cannot touch the tire if bumped in the field. If it can touch the tire, back the scraper away from the wheel until it cannot.
5. Center the scraper angle on the bolt until the gap (3) is constant.
6. Tighten the nut (1).

**Press Wheel Adjustments**

Press wheels are attached to each row unit body. The press wheels close the seed trench and press soil over the seed.

To provide consistent seed firming, the press wheels are free to move downward from the normal operating position. This system maintains closing/pressing action even if the row unit arm is lifted when the disks encounter obstructions.

There are three adjustments on the press wheel assembly:
- **Down Pressure.** An adjustable spring in the press wheel mechanism creates the down pressure needed to close the seed trench. The amount of force needed will vary with field conditions.
- **Wheel Stagger.** The factory setting is staggered to achieve the best residue flow.
- **Centering.** Press wheels should be centered over the seed trench.

If the press wheel adjustments do not provide satisfactory furrow closing, your conditions may require alternate press wheels. A variety of press wheel assemblies are available. See your Great Plains dealer for information.
Press Wheel Down Pressure

To adjust the press wheels, move the adjustment T-handle (1).

- For less down pressure, move the T-handle forward (2) toward the planter.
- For more down pressure, move the T-handle back away (3) from the planter.

Increased press wheel spring force may require increased row unit down force to maintain depth.

Press Wheel Stagger

**Crushing Hazard**

Make sure machine is secure before working on the machine. A falling machine can cause severe injury or death.

To change the stagger:

1. Raise the planter.
2. Remove the bolt (1), lock washer (2), and spacers (3).
3. Reinstall the spacers, press wheel (4), and hardware to the other hole location (5).

Press Wheel Centering

If one press wheel is running in the seed trench, or the press wheels are not centered over the trench, the angle (1) of the press wheel assembly can be adjusted as follows:

1. Determine how far, and in which direction, the press wheels are not centered over the trench, the angle (1) of the press wheel assembly can be adjusted as follows:
2. Raise the planter.
3. Loosen the 1/2 inch bolts (2 and 3). Do not loosen the two front bolts (5).
4. Turn the hex head cam (4) under the bolt (2), and move the required amount.
5. Tighten both bolts.

**Seed Meter Setup and Adjustment**

The only seed meter adjustments are for the seed inlet gate and a choice of disks.

**Seed Metering Rain Cover**

The rain cover keeps side winds from unseating seed in disk pockets. It also keeps precipitation, sunlight, and field debris out of the meters. A knockout brush on the inside of the cover brushes loose seeds off the seed disk.
To remove the rain cover, unsnap the latches (1 and 2). Pivot the cover forward and down at the tab (3) and remove.

When removing a cover, inspect it for damage and missing parts. If a cover does not have both latches it can be lost during transport or field operations. Also, inspect the knockout brush for wear.

To replace a latch, slide the replacement latch onto the cover lugs from the meter side, then snap the other end down over the lugs.

To replace the knockout brush, See “Knockout Brush Replacement” on page 56.

**Seed Inlet Gate Adjustment**

The seed inlet gate (4) controls the volume of bulk seed at the seed disk. The settings vary with crop, seed size, and seed treatment. The gate has settings for row and seed treatment. The gate has settings for row shut-off (completely closed), and clean-out (wide open).

The seed rate charts include suggested initial gate settings. Refine these settings based on experience, and the slope of the seed pool at the bottom of the seed disk.

To adjust the seed inlet gate, squeeze the tabs (1) and move the gate up or down as necessary. There are four settings for the gate ("I", "II", "III", and "III"). Setting “O” opens the gate for clean-out. Setting “X” closes the gate and is commonly used for row shut-off and meter re-fills.

The table is a general summary of gate settings.

<table>
<thead>
<tr>
<th>Setting</th>
<th>Setting Typically Used For</th>
</tr>
</thead>
<tbody>
<tr>
<td>X</td>
<td>Closed - row shut-off, meter re-fill</td>
</tr>
<tr>
<td>I</td>
<td>Small seeds, such as milo, with little or no treatments</td>
</tr>
<tr>
<td>II</td>
<td>Small treated seeds and edible beans such as soybeans</td>
</tr>
<tr>
<td>III</td>
<td>Corn, round popcorn</td>
</tr>
<tr>
<td>O</td>
<td>Wide Open - clean-out</td>
</tr>
</tbody>
</table>

**Seed Pool Slopes**

The best seed pool slope results in the most consistent seeding with minimal skips and doubles. The illustrations below are found to be the best seed pool slopes for sample seeds.

If the suggested initial gate setting does not work for your seed, adjust the seed inlet gate.

For medium size and smaller seeds that flow easily, the slope runs from just above the 8:00 position on the housing wall, forward and down to one or two seeds deep at the base of the rear strip brush (1).
For medium size and larger, or heavily treated smallled seeds that flow less easily, the slope runs at or slightly above the 8:30 position on the housing wall, forward and down to three to six seeds deep at the base of the rear strip brush (1).

Keep the top left/rear end of the pool below the 9:00 position (meter horizontal center-line).

In general, the seeds at the base of the strip brush need to be deep enough that no air escapes there, and so that just enough seeds are present to begin populating the cells.

**Seed Meter Re-fill**

Once planting is underway with the seed pools set, it is occasionally possible for bridging at or above the seed inlet to starve the meter of seed.

An empty meter causes a seed monitor “Row Failure” alarm with a report of the row number.

Row numbers are counted from the left. The outside row is row 1.

1. Stop and put the tractor in park. Leave the fan running.
2. Locate the failed row, remove the rain cover, and verify that the meter is empty. Note the gate setting.
3. Temporarily open the gate one or two notches wider.
   a. If the problem was inlet bridging, seed should flow into the meter immediately.
   b. If inlet bridging is not the problem, little or no seed flows into the meter with the gate open wider. In this case, the problem is further up in the seed flow.
   Close the gate completely for about 15 seconds. This prevents meter pressurization air from opposing seed delivery. Gently tap on the seed inlet. Re-open the gate and see if seed now fills the meter.
4. If no obvious foreign object was the cause of the bridging, the gate setting may have been too small for the seed. Verify that this and other operating rows were at the correct initial gate setting. If so, reset the gates to the next higher opening.

**Foreign Object Risk**

After clearing a bridge, or a delivery blockage upstream, check the seed pool at the meter for any debris that might have been the original cause. Remove the debris from the meter before planting. This will eliminate the risk of an object lodging in a seed pocket and causing on-going skips.

**Seed Disk Installation**

1. Check the part number and description on the seed meter disks against the seed rate chart data.

2. Inspect the disks to be installed. Do not install damaged or excessively worn disks which can cause irregular seeding. Chips and cracks can increase brush wear.
3. Remove the meter rain cover.
4. Inspect the meter and brushes
5. Make sure the seed meter clamp (1) is aligned with the disk seat (2).
6. With the seed pocket side facing the meter housing, place the new seed disk on the disk seat.

7. Rotate the seed meter clamp (1) clockwise 45° to clamp the disk. The clamp will seat into the seed disk hub (2).

On a new meter, or with new brushes installed, force the disk into the brushes to allow the seed meter clamp to rotate. This condition eases as the brush fibers are trained during initial rotations.

With slightly used brushes, when a disk is first clamped, it is normal for the disk hub to be flat with the disk seat only on the inlet (rear) side. The disk fully seats as it first turns. This condition eases as the brushes are used.

Incorrect Brush Risk

Rotate disks forward shortly after disk installation. If planting is not anticipated within an hour or two of disk installation, rotate the drive system a few turns to make sure that meter brushes lean in the correct direction. Correct lean improves meter performance and reduces air consumption. This step is particularly important for new brushes.

8. Brush seating may be accomplished with or without seed present.

9. Reset the seed inlet gate to the setting recommended by the seed rate chart or to your own developed value.

10. On the seed monitoring system console, select the new Material, seed disk cell count, and target population.

11. Reinstall the rain cover.

Seed Disk Removal

1. Remove the rain cover. If seed is present, close the seed inlet gate to prevent more seed from entering the meter.

2. Attach the seed container, stored under the walkboard, to the seed meter or place a tarp under the row unit to collect the seed.

3. Hold seed disk and rotate the seed meter clamp (1) counterclockwise 45° to release the disk.

4. Tilt the top of the seed disk toward the meter and slowly remove the disk, allowing seed to collect in the funnel on the tarp.

5. Open the seed inlet gate to release the remaining seed.

6. Clean the seed from all brushes. Clean disk seat so new disks can seat fully. Inspect brushes for excess wear and damage. See “Seed Meter Brushes” on page 54.

7. Inspect removed disks for excess wear and damage. Set aside any disks requiring replacement. See “Seed Disks” on page 56.

8. Clean seed disks and place in storage.

9. Re-install the rain covers.

Row Shut-Off

Skip-row operations, such as planting from every other row when switching from 30 inch twin-row to 30 inch single-row, requires shutting down unused rows.

1. Identify the rows to shut off. On twin-row planters, openers are installed with short and long opener mounts. If locking up unused rows of a twin-row planter, shut off the front (short mount) rows.

On single-row planter with mid-length mounts, any rows may be locked up.
2. Fully close the seed inlet gate to prevent meter pressurization air from leading into the seed air system. This can result in lower pressures in other rows, which can cause skips.

To close the seed inlet gate, squeeze the tabs (1) and move the gate to the “X” setting (2). Release the tabs.

The gate also stops seed flow from a row as soon as the meter is empty. Bulk seed flow to the row falls to zero as soon as the seed backs up to the air release vent at the top of the meter.

3. Clean out the meter. Remove the seed disk and install a blank disk.

A blank disk is necessary in row shut-off to maintain consistent meter pressurization and to minimize wear on the seed disk and brushes.

**Irregular Seeding Risk**

Always use a blank disk in a shut-off row. Operating with no disk, or with a seed disk but no seed, destabilizes the regulated airflow, particularly at rows with pressure sensor lines.

4. If any shut-off rows have a Y-tube, close the valve (1) for the branch to that row. Rotate the valve cap until the indicator/handle is perpendicular to the tube.

Closing the Y-tube prevents seed from entering an unused hose, reducing waste, and simplifying clean-out.

**Crushing and Sharp Object Hazard**

Do not attempt to lift a row unit by hand. Numerous sharp edges, and the row unit snaps down violently if a grip is lost. The weight of the unit, plus the force of the springs is too great, even with multiple people lifting, and failing to follow these instructions can result in serious injury or death.

**Crushing Hazard**

Raising a row unit on a block by lowering the planter is risky. The potential for hydraulic failure creates a crushing hazard which could result in serious injury or death. Always use a jack or hoist.

**Machine Damage Risk**

Full lowering of the row unit can damage the components.

5. Lock up the row unit to reduce wear. Alternate twin-row units (front row units) can be locked up for single row spacing.

**Machine Damage Risk**

Do not lock up the rear row units on a twin-row planter. If rear row units are locked up, they will interfere with the air manifold system when the planter is folded, resulting in damage to the manifold and/or row units.

To lock up a row unit:
a. Raise the Planter:
   Although this adjustment can be made with the planter lowered, the springs will be in tension, and will require more effort. The extra force may also damage tools.

b. Set the down force spring cam to zero. See “Down-Pressure Adjustment” on page 38.

c. Raise the row unit high enough that the hole for the pin is above the lower parallel arm. This can be done by:
   - using a hoist at the rear of the shank (1), or
   - using a jack under the shank extension (2).

   **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, row unit damage occurs as soon as planting begins.

d. Remove the lock-up pin from the storage hole and insert it in the lock-up hole (3). Secure the pin.

   Lock-up pins are provided for every other row of twin-row configurations.

e. Lower row unit until lock-up pin rests on lower parallel arm.

6. Reset monitor active row pattern and row spacing to avoid nuisance alarms (see seed monitoring system console manual).

   Meter drive is not disabled on row units during shut-off.

**Unit Mount Row Cleaners (Option)**

Martin row cleaners are unit-mounted:

- **Unit-Mounted Row Cleaner**. Stand-alone.
- **Unit-Mounted Coulter Row Cleaner**. On coulter bracket, with or without a coulter disk present.

Refer to the Row Cleaner manual (204-085M-A) for further information on use, adjustment, and maintenance of row cleaners.

The unit-mount cleaner have two adjustments:

- Wheel placement for more or less aggressive cleaning, and
- wheel height adjusted by a stop. The cleaner arms float. The stop only sets the lowest position.

The row cleaners need to be adjusted for conditions, crop changes, and as coulters and openers wear. Ideally cleaners contact only the trash, and do not disturb the soil. If allowed to dig, row cleaners can reduce seed coverage.

The suggested initial depth is tine tips should be at ground level.

Make the adjustment with the planter raised.

**Sharp Object Hazard**

Row cleaner tines, casting edges, and coulter blades are sharp and may result in injury. Wear hand protection when working in this area.

To adjust the row cleaner:

1. Determine the height adjustment required. Measure from the lowest tine to the ground.
2. Support most or all of the weight of the arm to aid in the ease of the adjustment.
3. Adjust the arm:
   - **Unit-Mount Row Cleaner**:
     a. Remove the bent pin (1).
     b. Support the arm at the desired height.
     c. Slide the adjustment tube (2) until the cross-tube (3) contact the arm at the target height.
     d. Insert the bent pin (1) in whichever hole pair is most aligned with desired height.
   
   - **Unit-Mount Coulter Row Cleaner**:
     a. Loosen the bolts (4).
b. Slide the down-stop (5) on the arm (6) back toward the pivot for the shallower cleaning, or forward towards the tines for deeper cleaning.

c. Tighten the bolts. Each possible hole pairing adjusts the tine height by about 3/4 inch (19 mm).

Check bolt tightness before each planting session to avoid down-stop slippage.

d. Check the new height measurement.

■ Unit Mounted Coulters

The best operating depth for coulters is 1/4 inch (6 mm) above the opener depth. The coulters may have originally been set to this depth, but coulter and opener blades wear with time, and may need adjusting.

**Crushing Hazard**

Make sure machine is secure before working on the machine. A falling machine can cause severe injury or death.

**Sharp Objects Hazard**

Row cleaner tines, casting edges, and coulter blades are sharp and may result in injury. Wear hand protection when working in the area.

Adjust the coulter depth by mounting the coulter blade in one of the six mounting holes on the coulter bracket.

1. Raise the planter.

Row units may be fully lowered or locked up. Do not attempt to move the blade when the current or new position causes it to contact the ground during adjustment.

2. Dismount the row cleaner, if installed, to reduce risk of injury.

3. Determine the current opener and coulter depths.

4. Determine which new hole will position the coulter closer to the 1/4 inch (6 mm) depth by using the table.

<table>
<thead>
<tr>
<th>Hole Number</th>
<th>Depth of coulter blade relative to opener blade</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>2</td>
<td>1 inch (25 mm) above</td>
</tr>
<tr>
<td>3</td>
<td>5/8 inch (16 mm) above</td>
</tr>
<tr>
<td>4</td>
<td>3/8 inch (9.5 mm) below</td>
</tr>
<tr>
<td>5</td>
<td>1/4 inch (6 mm) above</td>
</tr>
<tr>
<td>6</td>
<td>3/4 inch (19 mm) below</td>
</tr>
</tbody>
</table>

5. Remove the 5/8 x 4 inch bolt, lock washer, and nut (7).

6. Move the coulter blade to the new position.

7. Install the bolt and washer locker with the nut.

8. Readjust row cleaners, if installed.

If a worn coulter cannot be adjusted to the proper operation depth, replace the coulter blade.

**Coulter Row Adjustment**

For unit-mounted coulters, the ideal alignment is for the blade to open a furrow directly ahead of the opener disks.

To check alignment, sight along the coulter blade centerline (1), the gap between the opener blades, and the centerline between the press wheels. If they
are out of alignment, either the coulter or the press wheels (or both) may need to be adjusted.

Operate the planter on test ground (no seed required), and verify that the opener blades are in the groove opened by the coulter, and that the press wheels are centered over the furrow. See “Press Wheel Adjustments” on page 41.

To adjust coulter alignment:

1. Loosen the four bolts that attach the coulter bracket to the row unit.
2. The holes on the row unit are slotted (2) for adjustment.
   Keep the coulter blade vertical while adjusting.
   If the blade cannot be aligned, check that the blade spindle is using the same hole location on each side of the bracket.

**Seed Firmers**

*Sharp Objects Hazard*

Disk blades are sharp and may result in injury. Wear hand protection when working in the area.

**Keeton Seed Firmers**

A Keeton seed firmer has a polymer shape that slides down the seed trench. It traps the seeds as they exit the seed tube and firms them into the bottom of the seed trench.

The Keeton seed firmer is provided with a preset tension which is recommended for the first year of planting. The tension screw (1) can be tightened after the first, according to your needs. The seed firmers should provide just enough tension to push seeds to the bottom of the trench.

Measure the distance from the ground to the head of the tension screw. The distance should be 4 to 4 1/2 inches (10.2 to 11.4 cm).

If an adjustment is necessary, loosen the bolts in the mounting bracket and select different holes until the proper measurement is reached.

**Seed-Lok Firming Wheels (Option)**

The optional Seed-Lok firming wheels provide additional seed-to-soil contact. The wheels are spring loaded and do not require adjusting.

In some wet and sticky conditions, the wheels may accumulate soil. To avoid this problem, you can lock up the firming wheels.

To lock up the firming wheels:

1. Raise the planter and insert lift assist cylinder locks.
2. Light the handle (1) until the lever stop (2) is free to rotate.
3. Rotate the lever stop to the side/idle position (3).
4. Release the lockup handle.
5. Push up on the firming wheel (4) until the wheel arm latches up (5).
To release a locked up firming wheel:

1. Insert a 1/4 inch tool drive tip in the tool hole (6) of the handle (1). Alternatively, lift up on the wheel (4).

2. Rotate the handle clockwise, with the handle arm up, until the firming wheel releases at the latch point (5) and falls free.

3. While holding the handle up, rotate the raised portion of the lever stop (2) under both sides of the handle at the arm end.

4. Remove the drive tool.

Engage the lever stop under the handle when the Seed-Lok is in use. If left disengaged (3), a furrow obstruction could cause unintended lockup.

### Markers (Option)

#### Pinch, Crush, and Sharp Objects Hazard

Markers can fall quickly and unexpectedly if the hydraulics fail. Serious injury can result if caught or struck by a folding or unfolding marker. Never allow anyone near the planter.

#### Marker Disk Angle

#### Sharp Objects Hazard

Marker blades are sharp and may result in injury. Wear hand protection when working in the area.

The direction of travel (5) tends to drive the disk angle wider. If the bolts are not tight enough, or loosen over time, the disk will slip into the wide configurations.

1. To change the angle of cut and the width of the mark, loosen the 1/2 inch bolts (1) holding the disk assembly.

2. For a wider mark, increase the angle (2) of the marker disk with respect to the tube (4). For a narrower mark reduce the angle (3).

3. Tighten the bolts.
Maintenance

Proper servicing and maintenance is the key to long implement life. With careful inspection, you can avoid costly maintenance, downtime, and repair.

Always turn off the tractor and remove the tractor key before making any adjustments or performing any maintenance.

**Crushing Hazard**

A falling implement can cause severe injury or death by crushing. Always have cylinder channel locks in place and the frame blocked up when working on the implement.

**High Pressure Fluid Hazard**

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

**Maintenance Checklist**

- After using the planter for several hours, check all bolts to be sure they are tight.
- Remove excess slack from chains. Clean and use chain lube on all roller chains, as needed.
- Maintain proper air pressure in the tires.
- Keep disk scrapers properly adjusted.
- Clean the planter on a regular basis. Regular and thorough cleaning will lengthen equipment life and reduce maintenance and repairs.
- Lubricate areas listed on page 61.
- Replace any worn, damaged, or illegible safety decals by obtaining new decals from your Great Plains dealer. See “Safety Decals” on page 7.

**Material Clean-Out**

- **Possible Dust and Chemical Fume Hazard**
  
  Clean-out can create dust and fumes from seed residue and seed treatment. Wear a respirator and any other protective equipment specified by the seed and/or seed treatment supplier.

- **Entrapment and Rapid Suffocation Hazard**

  A hopper that is full, or appears full, can be an entrapment hazard. You can sink all the way into the grain and suffocate in a matter of seconds. Never enter a hopper for loading, unloading, or routine maintenance. Leave strainer in place except when instructed to remove it. Keep lid tightly closed during operation.

When planting is completed, it is common that some seed remains in the hopper, airbox, hose lines, or meters.

To do a complete system clean-out:
1. Empty the airbox (and hopper, if desired).
2. Blow residual seed to the meters.
3. Clean out the meters with the fan running.

**Airbox Clean-Out**

- Perform hopper clean-out with the fan off.

To clean-out airbox:

1. Place a tarp or large container under the airbox clean-out to catch seed.
2. Open the clean-out door (1) on the bottom of the airbox. Seed in the airbox will immediately fall out of the airbox.
3. Tap on the sides of the hopper to dislodge any residual seed.
4. Close the airbox clean-out door.
5. Perform an air system clean-out to remove final amounts of residual seed from the airbox and all seed in the meters.
Air System Clean-Out
To clean-out air system:

1. Place a tarp or large container under the airbox clean-out to catch seed.
2. Shut off all Y-tubes (2).
3. Open the airbox clean-out door to empty seed from the manifold.
4. Close the airbox clean-out door.
5. Turn on the delivery air fan and let it run.
6. Start at one end of the planter; clean out the meters. Use a bucket or the funnel to catch the seed. See “Seed Meter Clean-Out” on page 53.
   a. Open the Y-tube gate feeding the meter and let the air blow seed out of the meter. Use the meter gate to start and stop seed flow if using a small container.
   b. Close the Y-tube gate and meter gate.
   c. Repeat the procedure for all meters.
7. During air system clean-out, it is common for a few seeds to dislodge and make their way to meters already cleaned. To avoid seed size causing problems for the next disk to be used, and to avoid crop mixing, open and close all meter gates to remove any stray seed.

Airbox Residue Clean-Out
Planting is extremely dusty conditions, particularly dusty and humid conditions, or otherwise sticky soils, can lead to air residue buildup the airbox. This residue can cause seed delivery blockages.

When opening the airbox clean-out door (1), inspect the inside of the airbox.

If any areas inside the airbox are partially or completely blocked, follow the clean-out instructions below.

1. Park the planter at a suitable location for clean-out.
2. Set out a tarp to recover any seed still in the airbox.
3. Open the airbox clean-out door.
4. Use a marker to identify the hoses on the seed hose ports.
5. Disconnect the clamps and remove the hoses.

Further disassembly of the airbox is not recommended. Joints are sealed with silicone adhesive, and would need to be cleaned and resealed.

6. Break up any buildup. Use a hooked tool or wire to clean out smaller fragments. Use a vacuum to clean out the rest.
7. Inspect the seed hose ports. Break up any deposits and vacuum out from the clean-out door.
8. With all ports and doors open, operate the planter fan to blow up any remaining loose residue.
9. Reconnect the seed hoses.
10. Close the clean-out door.

Flushing the airbox with water is not recommended. If this is done, make sure to operate the fan for an extended period to completely remove any moisture before storing or before field operations.
Seed Meter Clean-Out
The planter container for meter clean-out is stored at the right rear under the walkboard. This container can hold all the seed in a meter and inlet. The container can also be converted to a funnel for complete system clean-out.

Material and tools needed for the conversion are:
- A length of 1 3/8 inch (3.5 cm) ID hose (2)
- A worm drive clamp (3) with a working diameter of 1 3/8 to 2 1/4 inch (3.5 to 5.7 cm)
- A hacksaw with a fine-toothed blade

The funnel wall is thin ABS. Scissor-type pipe-cutting tools may fracture it. Rotary-type pipe cutting tools may slip off.

To convert the container (1):

1. Trim the sump (4) with the hacksaw.
2. Slide the hose (2) sully onto the funnel tip.
3. Secure with the clamp (3). Do not over-tighten the clamp or the funnel wall will be crushed.

Attach the container/funnel to the housing of the seed meter to free your hands for other tasks during clean-out.

1. Close the seed inlet gate on the meter to minimize the seed volume when the disk is removed.
2. Remove the rain cover. The container/funnel cannot be snapped in place with the rain cover installed.
3. Align the left (rear) end of th container/funnel lip (1) with the top of the lower (rear) rain cover latch ear.
4. Place the right (front) end of the container/funnel lip (2) between the meter housing and the seed tube.
5. Rotate the container/funnel forward until the slot engages a tab on the bottom center of the meter housing (2).
6. Remove the seed disk.
7. Slowly open the seed inlet gate to empty the seed up to the Y-tube or wing tube.
8. If the air system is running (with Y-tube open), there may be more seed than the container can hold. Use the seed inlet gate to turn off seed flow to empty the container.
9. Clean seed from all brushes. A shop vacuum is recommended to clean the brushes.
10. Inspect the brushes.
11. Rotate the container/funnel clockwise to remove and empty.
12. If the planter will be used again.
a. Install the next seed disk or blank disk for the operation.
b. Set the inlet gate for the seed.

13. If the planter will be stored:
   a. Close the seed inlet gate.
   b. Do not put a seed disk back in the meter.
   c. Reinstall the rain cover.

Alternate Meter Clean-Out
Use a shop vacuum cleaner with a narrow hose nozzle to clean out a meter.
1. Close the seed inlet gate.
2. Release the disk clamp while holding the seed disk against the meter.
3. Tip the top of the disk away from the meter.
4. Insert the shop vacuum hose nozzle and remove the seed.
5. Open the gate to allow seeds in the inlet and the drop hose to flow to the shop vacuum hose nozzle.

Seed Tube Clean-Out
The seed sensor in the seed tube can have a buildup of dust, dirt, and seed treatment which can cause false low population alarms.

If the seed meter is empty, remove the seed disk and insert seed tube brush (part number 891-259C) into the seed tube from above. With the planter raised, you can insert the brush from below, whether the meter is empty or not.

Seed Meter Brushes

Possible Chemical Hazard
Brushes will have talc and graphite residue, and may have residue of hazardous seed treatments. Wear a respirator for brush cleaning.

A HEPA vacuum cleaner is recommended for brush cleaning. Washing brushes is not recommended and may cause matting. Do not scrape the brushes with sharp instruments.

The first indications of excess brush wear or damage are normally observed on the seed monitor or in air system operation.

- If the tufted brushes (1) are worn or damaged, the seed doubles rate rises, increasing population. Finding an occasional cracked seed hung up on a tuft fiber is not uncommon, and is not an indicator that brush maintenance is required. Remove the seed and continue with operations.
- If the strip brushes (2) are worn or damaged, air pressure regulation may become unstable or required increasing fan speed over time. If recommended fan rpm ranges need to be exceeded, the regulated air system may be taking too much air due to meter leakage.
  In severe cases, seed may leak past the strip brushes, causing spikes in population. If seed is frequently seen between the strip brushes, one or both may need replacement.
- If the seed drop brush (3) is worn or damaged, its anti-static effect may fade, which can result in skips due to smaller seeds failing to release, and lower population. If an obvious groove is worn in the drop brush, replace the brush.
Seed Meter Brush Replacement
See the parts manual for current brush replacement part numbers.

**Tufted Brush Replacement**

1. Remove and save both bolts (1) and nuts.
2. Remove the tufted brush assembly (2), and replace with a new assembly.
3. Insert the bolts and start the nuts. Carefully tighten each nut just until there is no play under the screw heads.
4. Add a half turn to the nuts.

**Fracture Risk:**
Do not tighten the fasteners to normal torque or the plate may fracture.

**Strip Brush Replacement**

1. Insert the flat blade of a large screwdriver into the slots of the brush holder snaps (4).
2. Turn each snap clockwise to release the brush holder (5).
3. Be prepared to catch the drop brush (6) which will fall loose.
4. Slide the brush holder left and up to free the front edge from under the washer (7).
5. Remove the brush holder.
6. Remove used strip brushes (8) from the holder by sliding them down out of the grooves.
7. Insert replacement strip brushes in the grooves at the holder bottom so the notched ends (9) are at the bottom.
8. Insert the brush holder and check the strip brush positioning.

**Equipment Damage Risk:**
Do not loosen or remove any of the bolts (3) retaining the brush holder.

a. The ends of the long brush must fit snugly into the meter housing grooves at the top (10) and lower rear (11).
b. The bottom end of the short brush must fit snugly in the lower front housing groove (12).
c. If any significant force is required to seat the brush holder, a strip brush is likely too high or too low.
9. When the strip brushes fit correctly, position the drop brush (6) and seat the brush holder (5).
10. Starting with the bottom snap, swing the snaps (4) back into place.
Seed Drop Brush Replacement

1. Insert the flat blade of a large screwdriver into the slots of the brush holder snaps (1).
2. Turn each snap clockwise to release the brush holder (2).
3. Prepare to catch the drop brush (3) which will fall loose.
4. Slide the brush holder left and up.
5. Remove the drop brush.
6. Position a new drop brush so the brush is flat against the back of the meter housing and under ridges on the leading edge of the brush holder.
7. Slide the brush holder forward and down to engage the drop brush.
8. Starting with the bottom snap, swing the snaps (1) back in place.

Knockout Brush Replacement

1. Remove the knockout brush (4) from the seed meter rain cover.
2. Position the new knockout brush under tabs (5) and snap in place.

Seed Disks

When removing seed disks, inspect for wear and damage. If there is any seed dust or treatment buildup in the cells (6), or along the raised wiper ridges (7), clean the disks and reinspect. Disk replacement is necessary if:

- Chips at the outer edge (8). These chips will leak air.
- Chips at the edges or in surfaces of the cell pockets (6). These chips can leak air and/or adversely affect singulation.
- Cracks over 2 inch (5 cm) long in the working face (9) of the disk, or any cracks in the ridges or grooves on the face.
- Warping which occurs when any part of the disk does not press firmly on the seed drop brushes in operation, replace the disk.
- Wearing along a wiper ridge (7).
- Any wearing on the cells.
- If the air ports (10) have enlarged.

Cleaning and Storing Seed Disks

Possible Chemical Hazard

Seed disks will have talc and graphite residue, and may have residue of hazardous seed treatments. Do not wash disks where food is prepared or where cookware or dinnerware is washed. Wear gloves when washing disks. Avoid spray.

Use warm or hot water, mild soap, and a sponge or soft brush to remove buildup on seed disks.

If disks are washed, allow to dry completely before storage.

Keep original shipping cartons for disk storage. Otherwise, store on edge (not leaning), or stacked horizontally on a spindle, to eliminate any warping risks.
Any seed residue on disks may attract pests. Fully enclose dry disks to prevent rodent damage.

### Hydraulics

#### 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. Use paper or cardboard, not body parts, and wear heavy gloves to check for suspected leaks. If injured, seek immediate medical attention from a physician familiar with this type of injury.

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## Machine Damage Risk:

Do not fold or unfold without first raising the planter completely.

If the fold and hold procedure does not clear the problem, perform these steps:

1. Raise and unfold the planter.
2. Check fluid in the tractor hydraulic reservoir and fill to the proper level.
3. Unpin all fold cylinders (one at each gauge wheel).
4. Locate the rephase port (1) on each cylinder. The rephase port is on the rod end of the gauge wheel cylinders, and the base end of the center fold cylinders.
5. Wire or otherwise safely support the cylinder with the rephase port facing up, and that end of the cylinder elevated.
6. Fully extend all cylinders at low flow. Hold the circuit for one minute.
7. Fully retract all cylinders at low flow. Hold the circuit for one minute.
8. Set the circuit to neutral.
9. Check all hydraulic hoses, cylinders, and fittings for leaks. Recheck the tractor hydraulic reservoir. Fill to the proper level.
10. Re-pin all cylinders.

### Chains

Inspect and lubricate chains regularly. Lubricate chains any time there is a chance of moisture and when being stored at the end of the planting season. The slack of new chains tends to increase during the first hours of the operation due to seating.

Check the slack at fixed idlers within the first 8 hours of operation due to seating.

Check the slack at fixed idlers within the first 8 hours of operation and tighten idlers as necessary.

Check the slack at spring-operated idlers seasonally.

1. Measure the span (1) for allow able slack.
   
   Locate the longest span of each chain (usually the span which does not run through the idlers).

2. Determine the ideal slack.
   
   - **Long chains over 36 inch (91 cm)**: 1/4 in/ft (2.1 cm/m)
   - **Vertical short chains**: 1/4 in/ft (2.1 cm/m)
   - **Horizontal short chains**: 1/2 in/ft (4.2 cm/m)

3. Measure the current slack (2):
   
   At a right angle to the chain span at the center of the span, deflect the chain in both directions. The slack is the distance of the movement.

4. Adjust the idlers for ideal slack.
Whenever installing a chain, make sure the chain clip at the removable link is oriented to minimize snags.

5. Install the chain clip with the open end facing away from the direction of chain travel (3).

**Row Unit Side Gauge Wheels**

*Sharp Objects Hazard*

Disks are sharp and may result in injury. Wear hand protection when working in this area.

1. Lift the side gauge wheel off the ground.
   Move the tire in and out to check for end play.
   Check for roughness in the bearing by rotating the wheel. If the bearings are rough, inspect and replace, if necessary.

2. The side gauge wheels are preset at the factory. With normal wear, it may become necessary to make adjustments so the wheel remains close to the disk.

   Loose the clamp bolt (4) and slide the gauge wheel arm (5) in to take up the gap between the side wheel and disk blade.

   If more adjustment is needed:
   a. Remove the bolt (6) and wheel (7).
   b. Remove the shims (8) from the inside of the wheel and place them on the outside of the wheel (9).

   Always place removed shims from the inside to the outside. When installed, the wheel should turn freely and not hit the arm at the curve. Do not add any more shims than necessary.

   c. Disassemble the side gauge wheel arm (5) from the row unit.

   d. Remove the bushing (10) from the sleeve (11) and check for wear. If necessary, replace the bushing.

   e. When reinstalling the side gauge wheels, align the tab on the hex adjustment (12) with the notch in the bushing.

   f. Install the bolt and tighten.

   g. Adjust the side gauge wheels. See “Disk-to-Disk Spacing” on page 39.

**Disk Spreaders and Scrapers**

*Sharp Objects Hazard*

Disks are sharp and may result in injury. Wear hand protection when working in this area.

1. Remove the side gauge wheels from the arms to access row unit disks and scrapers.

2. With the unit raised, check the blade spreader (1) for wear. Replace spreader if it is 1/2 inch (13 mm) wide or narrower. To replace:
   a. Remove the disk blade (2).
   b. Drive out all pins (2).
   c. Install new spreader.

   For proper operation, the scraper separator must be a little loose in the holder and between the blades.

3. When reinstalling disk blades, put two shim washers (4) between the bearing and shank on each blade. Tighten the bolts.
You may need fewer inside shim washers on worn disks.

4. Check that outside disk scrapers (5) are formed to the disk blades to help remove any mud. Bend or twist the scrapers to fit the blades as necessary.

After every 200 acres (80 ha) of operation, check outside scrapers for proper adjustment and wear. Replace the outside scrapers, as necessary.

**Markers**

The marker arm is attached to the marker body with a 7/16 x 2 inch Grade 5 shear bolt. If the shear bolt breaks, replace shear bolt (part number 802-589C) or with an equivalent.

If an identical Grade 5 bolt is not immediately available, temporarily substitute a metric M12 x 1.5 x 6.4 mm Class 8.8 bolt and nut.

**Equipment Damage Risk:**

Replacing the shear bolt with a higher grade of bolt can result in marker damage.

Do not replace the shear bolt with a lower grade bolt, or a smaller bolt, or may experience nuisance shears.

If conditions are causing frequent shears, keep spare bolts in the storage holes of the marker shear base.

**Marker Disk**

If the grease seal cap (1) for the marker disk hub bearings is damaged or missing, disassembled and clean the hub. Repack with grease and install a new seal or grease cap.

**Hydraulic Drive**

**High Pressure Fluid Hazard**

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

Contamination is the most common cause of performance problems and premature wear in a hydraulic system. Make a special effort to properly clean quick couplers before attaching the hoses to the tractor.

All fluid is filtered through the high pressure filter (part number 850-066C), and it provides protection to the hydraulic components of the drive if properly maintained.

The high pressure filter is equipped with pop-out indicator when the replaceable element is clogged, and should be changed immediately. Normal service life of the element will vary based on the precautions taken minimize contamination at the couplers and route service of the tractor filtration.

To change the element:

1. Unscrew the lower canister from the filter, catching and disposing of the used fluid.
2. Remove and discard the element.
3. Install a new element (part number 850-075C).
4. Clean the canister threads and lube the O-ring with hydraulics fluid, then reinstall.
5. Reset the pop-out indicator, if necessary.

Keep a filter element on hand. Great Plains recommends changing the filter at least annually, or as needed.

### Fertilizer System

#### Agricultural Chemical Hazard

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

Proper attention to maintenance, end of the day clean-out, and winterization can substantially increase the life and reliability of your fertilizer system. Protect the pump, clean the tanks, strainers, lines, and nozzles, and avoid costly, and time consuming repairs at the next season.

Fertilizers are usually highly corrosive to metals other than stainless steel. Suspension fertilizers can clog system components in storage.

1. Flush the entire system with clean water.
2. Remove strainer and drain it. Drain all lines and tanks completely to prevent freezing damage.
3. Flush the pump according to the pump supplier manual. Fill the pump with RV antifreeze and cap off.

#### Pump Damage Risk:

Do not leave fertilizer or fertilizer residue in the pump. Do not allow air to enter the pump. Even for short periods of storage, the entrance of air into the pump causes RAPID and SEVERE corrosion.

4. Wash all spilled fertilizer off the planter.

#### Liquid Fertilizer Strainer

The fertilizer system uses an in-line strainer to keep damaging particulates out of the pump. The strainer becomes clogged over time, reducing the pump rate. Clean the strainer several times per season. Do not wait until application rates fall below target. Higher quality liquid fertilizers may require less frequent cleaning.

Disassemble and clean the strainer before storage to prevent caking.

#### In Season Filter Cleaning

1. Shut off the ball valve at the filter to minimize product spill.
2. Unscrew and remove the bottom canister (1) of the filter.
3. Wash the filter cartridge (2) with water or replace with new cartridge, if necessary.
4. Reinstall the cartridge, canister, and turn on the ball valve.

#### End of Season Filter Cleaning

1. Load 10 to 15 gallons (40 to 60 liters) of clean water in each tank.
2. Pump most of the water through the system. If doing this by hand-turning the ground drive wheel, first install the largest drop-line orifice size and set the pump adjuster to maximum to increase flow.
3. With the valves open, remove the filter canister.
4. Cleans the strainer and canister.
5. Drain the tank and lines.
6. Reinstall the strainer and canister.
7. Add 2 pt (1 liter) of RV antifreeze to each tank.
8. Open the supply line above the pump inlet.
9. Add RV antifreeze and operate the pump until it is filled.

**Seed Flap Replacement**

To replace a seed flap (1) (part number 816-302C):
1. Use a needle nose pliers or similar tool to grasp the “T” at the top of the flap.
2. Pull up to pull the flap up out of the metal bracket (2).
3. Push the new seed flap down through the metal bracket until the flaps into place with the “T” top resting on top of the bracket.

**Lubrication**

If any movable parts such as levers, pivots, and clamps are not moving smoothly due to rust or hindering material, do not attempt to force parts into motion. Instead, remove the rust or unwanted material and apply oil or grease on the relevant spot. Otherwise, machine may become damaged through impaired usage.

**Grease Fittings**

Lubricate with grease at the hourly interval indicated in the arrow. If you operate the machine in extremely wet and/or muddy conditions, lubricate grease fittings more frequently.

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**2-Point Hitch Pivot**

Grease one grease fitting under the 3-point hitch. Apply until grease emerges.

**2-Point Hitch to Tongue Pivot**

Grease one grease fitting at the tongue pivot. Apply until grease emerges.

**Gauge Wheel Caster Arm Pivot**

Grease one grease fitting on end of each wing. Apply until grease emerges.

**Gauge Wheel Parallel Pivot Arms**

Grease one grease fitting on each gauge wheel. Apply until grease emerges.
Gauge Wheel Cylinder Pins
Grease one grease fitting on each gauge wheel. Apply until grease emerges.

Gauge Wheel Pivot
Grease one grease fitting on each caster wheel. Apply until grease emerges.

Tongue Slide Roller
Grease one grease fitting at front of tongue. Apply until grease emerges.

Grease Bank
Grease the center lift mechanism. Apply until grease emerges.

Wing to Toolbar Pivot
Grease the fitting on each vertical wing pivot. Apply until grease emerges.

Wing to Toolbar Pivot
Grease the fitting on each horizontal wing pivot. Apply until grease emerges.

Row Unit Side Gauge Wheel Bushing
Grease fittings on each side of the each row unit. Apply until grease emerges.

Illustration is viewed from the bottom of the planter.

Illustration is viewed from the bottom of the planter.

Only the top grease fittings require grease.
Frame Mount Coulter Hub (Option)
One grease fitting per coulter. Apply until grease emerges.

Frame Mount Coulter Pivot (Option)
One grease fitting each swivel mount. Apply until grease emerges.

Wing Transfer Drive Shaft
Four grease fittings each side of drive shaft. Apply until grease emerges on joints. Apply 6 pumps on each shaft.

Transport Wheel Bearings
Two bearings on each wheel. Repack grease.

Gauge Wheel Bearings
Two bearings on each wheel. Repack grease.

Marker Disk Hubs
Two bearings on each marker. Repack grease.

Chains
Contact Drive: 3 chains at each contact wheel. Coat thoroughly with chain lube; as required.
Ground Drive: 2 chains connect wing drive to contact drives. Coat thoroughly with chain lube; as required.
Wing Drive: 1 chain on each wing. Coat thoroughly with chain lube; as required.
Seed Meter Drive: 1 chain on each seed meter. Coat thoroughly with chain lube; as required.
Hydraulic Drive (Option): 1 chain on center of planter under rockshaft. Coat thoroughly with chain lube; as required.
Fertilizer Pump Ground Drive (Option): 2 chains at fertilizer pump ground pump. Coat thoroughly with chain lube; as required.
Seed Lubricants

To maximize the performance of the metering systems, it is imperative to use Ezee Glide Plus or Bayer Seed Fluency Agent.

Irritation and Chronic Exposure Hazard
Seed lubricants may cause eye or skin irritation in high concentrations. Prolonged inhalation may cause lung injury. Product can become slippery when wet. Wear gloves and a respirator when transferring and mixing seed lubricant. Do not use bare hands or any part of your body to mix. Avoid breathing lubricant dust.

Dust and Explosion Hazard
Avoid creating dust in any confined space with ignition sources present in specific concentration can be explosive. Avoid exposure to dust when mixing this powder into seed. Consult the instruction booklet and Safety Data Sheet (SDS) for more information.

Ezee Glide Plus Talc and Graphite Mix
Ezee Glide Plus lubricant is suitable for all seeds, especially treated or inoculated seed, except where talc and graphite mixes are prohibited. Thorough mixing of seed and added lubricant is required.

Recommended usage:
- For clean seeds other than milo, cotton, and sunflowers, sprinkle 1 cup per 4 bushels or units (170 ml per 100 liter) of seed.
- For milo, cotton, and sunflowers, double the application to 1 cup per 2 bushels or units (335 ml per 100 liter) of seed.
- For canola or mustard, 1 cup (240 ml) per 30 lbs. (13.6 kg) bag is a minimum starting value. Mix the seed lubricant early during the seed loading. Use more lubricant in extremely dry conditions.

Adjust these rates as necessary so all seeds become coated while avoiding an accumulation of lubricant in the bottom of the hopper.

For seed with excessive treatment, or for humid planting environments, increase the rate as needed for smooth meter operation.

Bayer Seed Fluency Agent
This agent is required by regulation for certain crops in certain regions (such as corn and soybeans in Canada). It is an alternative to Ezee Glide Plus in other locales, for large seeds. It is not recommended for smaller seeds such as canola and milo.

Refer to the booklet attached to the bucket for recommended usage. Do not exceed those recommendations, as excess amounts adversely affect accurate metering.
Options

■ Hydraulic Hitch
A hydraulic hitch can be substituted for the standard 2-point hitch.

■ PTO Pump Kits
For tractors lacking a sufficient number of remotes with adequate continuous oil flow capability, kits are available to convert the hydraulic motor to tractor power take-off (PTO).

A 1000 rpm PTO is required with either:
- 1 7/8 inch (44.5 mm) 20-spline shaft, or
- 1 3/8 inch (35 mm) 21-spline shaft.

Order one kit and one coupler.

<table>
<thead>
<tr>
<th>Kits and Coupler</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ground Drive PTO Kit</td>
<td>401-937A</td>
</tr>
<tr>
<td>Hydraulic Drive PTO Kit</td>
<td>401-934A</td>
</tr>
<tr>
<td>1 3/4-20 PTO Coupler</td>
<td>826-777C</td>
</tr>
<tr>
<td>1 3/6-21 PTO Coupler</td>
<td>826-778C</td>
</tr>
</tbody>
</table>

Operation and installation of the PTO kits is described in the manual included with each kit.

■ Swath Command
Swath Command provides automatic section control. The three standard manually operated section clutches are replaced by individual row clutches. These row clutches are connected in pairs to the seed monitor CANBUS providing 12 sections under computer control.

Sections are automatically disabled when overrunning a previously planted area, or when entering a non-planting area as defined by a pre-loaded instruction.

Swath Command is available factory or field installed.

<table>
<thead>
<tr>
<th>Description</th>
<th>Option</th>
<th>Field Kit</th>
</tr>
</thead>
<tbody>
<tr>
<td>YP16-2-1236</td>
<td>57</td>
<td>402-706A</td>
</tr>
<tr>
<td>YP16-2-1630</td>
<td>57</td>
<td>402-688A</td>
</tr>
<tr>
<td>YP16-2-1670</td>
<td>57</td>
<td>402-705A</td>
</tr>
<tr>
<td>YP16-2-2420</td>
<td>57</td>
<td>402-703A</td>
</tr>
<tr>
<td>YP16-2-3115</td>
<td>57</td>
<td>402-704A</td>
</tr>
<tr>
<td>YP16-2-3135</td>
<td>57</td>
<td>402-689A</td>
</tr>
<tr>
<td>YP16-2-32TR70</td>
<td>57</td>
<td>402-707A</td>
</tr>
<tr>
<td>YP16-2-32TR30</td>
<td>57</td>
<td></td>
</tr>
<tr>
<td>YP16-2-24TR36</td>
<td>57</td>
<td></td>
</tr>
</tbody>
</table>

The kit does not include, but will require:
- a geolocation data source, such as a Trimble AgGPS262 receiver (available from Great Plains), and
- coordinate augmentation data source, such as Trimble AgGPS900 RTK rover radio (available from Great Plains).
### Hydraulic Drive

A hydraulic drive is available instead of the ground drive when ordering a new planter.

![Hydraulic Drive Image]

<table>
<thead>
<tr>
<th>Description</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydraulic Drive</td>
<td>402-716K</td>
</tr>
</tbody>
</table>

### Markers

Markers are a standard factory installed feature on the planter, but may be optionally deleted, for example, if all planting is done using GPS navigation.

![Marker Assembly Image]

<table>
<thead>
<tr>
<th>Description</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marker Assembly</td>
<td>113-977A</td>
</tr>
<tr>
<td>36 Inch Marker Assembly</td>
<td>113-971A</td>
</tr>
</tbody>
</table>

### 150 Bushel Seed Hopper

An optional top loading 150 bushel seed hopper is available.

<table>
<thead>
<tr>
<th>Option Package</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>150 Bushel Hopper</td>
<td>403-820L</td>
</tr>
</tbody>
</table>

The 150 bushel seed hopper cannot be used with the liquid fertilizer tank system.

### Fertilizer System

An optional fertilizer system is available for this planter, and is required if the optional Keeton seed firmers or Vantage I applicators are to be used for fertilizing.

For the users who already have tractor or cart-mounted systems, the fertilizer system is available as independent subsystems:

- Low or high rate manifold
- Tank system for seed cart
- Ground drive and pump system
- Hydraulic drive and pump system

The manifold and tank systems are normally installed when a planter is purchased, as field installation can be intensive.
Fertilizer Tanks

The VisaGage II monitors flow rates for applying liquid fertilizer.

Fertilizer Orifice Plates

The manifold systems include size 28, 34, and 48 orifice plates. To order orifice plates, use the following part numbers. Order one per row unit.

<table>
<thead>
<tr>
<th>Orifice Size</th>
<th>Part Number</th>
<th>Part Diameter</th>
<th>Port Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td>832-052C</td>
<td>0.020 inch</td>
<td>0.20 mm²</td>
</tr>
<tr>
<td>28*</td>
<td>832-056C</td>
<td>0.028 inch</td>
<td>0.40 mm²</td>
</tr>
<tr>
<td>34*</td>
<td>832-053C</td>
<td>0.034 inch</td>
<td>0.59 mm²</td>
</tr>
<tr>
<td>48*</td>
<td>832-054C</td>
<td>0.048 inch</td>
<td>1.17 mm²</td>
</tr>
<tr>
<td>59</td>
<td>832-057C</td>
<td>0.059 inch</td>
<td>1.76 mm²</td>
</tr>
<tr>
<td>80</td>
<td>832-055C</td>
<td>0.080 inch</td>
<td>3.24 mm²</td>
</tr>
<tr>
<td>98</td>
<td>832-059C</td>
<td>0.098 inch</td>
<td>4.87 mm²</td>
</tr>
</tbody>
</table>

*Sizes standard in many fertilizer bundles. Check your accessories before ordering.

VeriFlow Nozzles

To eliminate the need to change orifice plates, replace the standard nozzles with Spray Target VeriFlow nozzles. These nozzles contain a spring-loaded regulated that provides consistent back pressure over a wide range of rates and pressures.

Great Plains offers two models of VeriFlow nozzles. Order one nozzle for each active boom clamp.

<table>
<thead>
<tr>
<th>Description</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nozzle Hi-VeriFlow1 (0.25 to 2.8 gpm at 15 to 60 psi)</td>
<td>829-143C</td>
</tr>
<tr>
<td>Nozzle VeriFlow1 (0.15 to 1.5 gpm at 15 to 60 psi)</td>
<td>829-144C</td>
</tr>
</tbody>
</table>
**Fertilizer Section Control**

Fertilizer Section Control

Option Package | Part Number
---|---
Fertilizer Section Control | 427-015A

**Fertilizer Ground Drive**

Fertilizer Ground Drive

Option Package | Part Number
---|---
Ground Drive Fertilizer Pump Assembly | 427-026L

**Fertilizer Hydraulic Drive**

Fertilizer Hydraulic Drive

Option Package | Part Number
---|---
Hydraulic Drive Fertilizer Pump Assembly | 427-011A

**Fertilizer Dribblers**

Fertilizer Dribblers apply liquid fertilizer slightly to the side of the closed furrow behind the press wheel. Dribblers are available in left-hand and right-hand offsets, for use on twin rows. Order one dribbler per row.

Option Packages | Part Number
---|---
Right-Hand Fertilizer Dribbler Assembly | 204-131A
Left-Hand Fertilizer Dribbler Assembly | 204-132A
**Seed Lubricant**

- Ezee Glide Plus Talc and Graphite Mix
  - Description: 5 gal (18.9 liter) container
  - Part Number: 821-069C
- Bayer Fluency Powder
  - Description: case quantity
  - Part Number: 821-074C
- Bayer Fluency Powder
  - Description: single 4.4 pound bucket
  - Part Number: 821-075C

**Auxiliary Hydraulics**

When the planter is not in motion, auxiliary hydraulics enable the marker hydraulic circuit to be used to drive other equipment, such as a seed auger.

<table>
<thead>
<tr>
<th>Option Package</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Auxiliary Hydraulic Assembly</td>
<td>411-478A</td>
</tr>
</tbody>
</table>

**Frame Mounted Row Options**

No combination of unit mounted and frame mounted attachments may be mixed.

**Under Frame Attachment Kit**

The Terra-Tine row cleaners are available as either stand-alone (attached to the under frame attachment) or attached to frame mounted coulters.

**Terra-Tines**

<table>
<thead>
<tr>
<th>Description</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bayer Fluency Powder</td>
<td>821-074C</td>
</tr>
<tr>
<td>Bayer Fluency Powder</td>
<td>821-075C</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Description</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bayer Fluency Powder</td>
<td>821-074C</td>
</tr>
<tr>
<td>Bayer Fluency Powder</td>
<td>821-075C</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Description</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bayer Fluency Powder</td>
<td>821-074C</td>
</tr>
<tr>
<td>Bayer Fluency Powder</td>
<td>821-075C</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Description</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bayer Fluency Powder</td>
<td>821-074C</td>
</tr>
<tr>
<td>Bayer Fluency Powder</td>
<td>821-075C</td>
</tr>
</tbody>
</table>

**Coulter Mounted Packages**

- YP16-2-1630 (30 inch): 207-591A
- YP16-2-2420 (20 inch): 207-583A
- YP16-2-3115 (15 inch): 207-575A

**Stand-Alone Packages**

- YP16-2-32TR (30 inch double): 207-131A
- YP16-2-24TR (36 inch double): 207-132A
- YP16-2-1630 (30 inch single): 207-137A
- YP16-2-2420 (20 inch single): 207-135A
- YP16-2-3115 (15 inch single): 207-133A
Frame Mounted Coulter

Optional Martin row cleaners:
1. UMRC stand alone using a unit mount assembly, or
2. UMC-RC using a coulter disc mounting bracket, with or without a coulter disk.

Single row planters support single or double wheel unit mounted row cleaners.
Twin row planters support only single wheel unit mounted row cleaners, in alternating left/right cleaner hub orientations.

The packages include an instruction manual.

<table>
<thead>
<tr>
<th>Single Wheel, Coulter Mount</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>YP16-2-32TR (30 inch)</td>
<td>207-107A</td>
</tr>
<tr>
<td>YP16-2-24TR (36 inch)</td>
<td>207-108A</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Double Wheel, Coulter Mount</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>YP16-2 (30 inch)</td>
<td>207-113A</td>
</tr>
<tr>
<td>YP16-2 (15 inch on 30 inch rows)</td>
<td>207-113A</td>
</tr>
<tr>
<td>YP16-2 (20 inch)</td>
<td>207-119A</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Single Wheel, Stand Alone</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>YP16-2-32TR (30 inch)</td>
<td>207-111A</td>
</tr>
<tr>
<td>YP16-2-24TR (36 inch)</td>
<td>207-112A</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Double Wheel, Stand Alone</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>YP16-2 (30 inch)</td>
<td>207-129A</td>
</tr>
<tr>
<td>YP16-2 (15 inch on 30 inch rows)</td>
<td>207-117A</td>
</tr>
<tr>
<td>YP16-2 (20 inch)</td>
<td>207-123A</td>
</tr>
</tbody>
</table>

The following kits do not include a manual. Separately order the manual (part number 204-085M-A), if ordering one of the following kits.

<table>
<thead>
<tr>
<th>Individual Row Cleaners</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>UMRC Dual Wheel</td>
<td>207-213K</td>
</tr>
<tr>
<td>UMRC LH Single Wheel</td>
<td>207-215K</td>
</tr>
<tr>
<td>UMRC RH Single Wheel</td>
<td>207-216K</td>
</tr>
<tr>
<td>UMC-RC Dual Wheel</td>
<td>207-098S</td>
</tr>
<tr>
<td>UMC-RC LH Single Wheel</td>
<td>207-092S</td>
</tr>
<tr>
<td>UMC-RC RH Single Wheel</td>
<td>207-093S</td>
</tr>
</tbody>
</table>

Unit Mounted Row Cleaners

<table>
<thead>
<tr>
<th>Unit Mount Row Options</th>
<th>No combination of unit mounted and frame mounted attachments may be mixed.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coulter Only 15 Inch Blade Packages</td>
<td>Part Number</td>
</tr>
<tr>
<td>YP16-2-1630 (every row, fluted)</td>
<td>204-585A</td>
</tr>
<tr>
<td>YP16-2-1630 (30 inch rows, turbo)</td>
<td>204-587A</td>
</tr>
<tr>
<td>YP16-2-2420 (every row, fluted)</td>
<td>204-577A</td>
</tr>
<tr>
<td>YP16-2-2420 (30 inch rows, turbo)</td>
<td>204-579A</td>
</tr>
<tr>
<td>YP16-2-3115 (every row, fluted)</td>
<td>204-565A</td>
</tr>
<tr>
<td>YP16-2-3115 (30 inch rows, turbo)</td>
<td>204-567A</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Vantage I Coulter 17 Inch Blade Packages</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>YP16-2-32TR (between rows)</td>
<td>204-625A</td>
</tr>
<tr>
<td>YP16-2-24TR (between rows)</td>
<td>204-628A</td>
</tr>
<tr>
<td>YP16-2-1630 (every row)</td>
<td>204-589A</td>
</tr>
<tr>
<td>YP16-2-2420 (every row)</td>
<td>204-581A</td>
</tr>
<tr>
<td>YP16-2-3115 (30 inch rows)</td>
<td>204-573A</td>
</tr>
</tbody>
</table>
Unit Mounted Disk Coulters

Optional unit mount disk coulters are available with 15 inch fluted blades, 15 inch turbo blades, or 14 inch straight blades.

Complete coulters with unit mount and blade:

<table>
<thead>
<tr>
<th>15 Inch Fluted Blade Packages</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>YP16-2-32TR (30 inch)</td>
<td>204-527A</td>
</tr>
<tr>
<td>YP16-2-24TR (36 inch)</td>
<td>204-545A</td>
</tr>
<tr>
<td>YP16-2-1630 (30 inch)</td>
<td>204-551A</td>
</tr>
<tr>
<td>YP16-2-2420 (20 inch)</td>
<td>204-545A</td>
</tr>
<tr>
<td>YP16-2-3115 (15 inch, every row)</td>
<td>204-533A</td>
</tr>
<tr>
<td>YP16-2-3115 (15 inch, on 30 inch rows)</td>
<td>204-539A</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>15 Inch Turbo Blade Packages</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>YP16-2-32TR (30 inch)</td>
<td>204-529A</td>
</tr>
<tr>
<td>YP16-2-24TR (36 inch)</td>
<td>204-547A</td>
</tr>
<tr>
<td>YP16-2-1630 (30 inch)</td>
<td>204-553A</td>
</tr>
<tr>
<td>YP16-2-2420 (20 inch)</td>
<td>204-547A</td>
</tr>
<tr>
<td>YP16-2-3115 (15 inch, every row)</td>
<td>204-535A</td>
</tr>
<tr>
<td>YP16-2-3115 (15 inch, on 30 inch rows)</td>
<td>204-541A</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>14 Inch Straight Blade Packages</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>YP16-2-32TR (30 inch)</td>
<td>204-531A</td>
</tr>
<tr>
<td>YP16-2-24TR (36 inch)</td>
<td>204-549A</td>
</tr>
<tr>
<td>YP16-2-1630 (30 inch)</td>
<td>204-555A</td>
</tr>
<tr>
<td>YP16-2-2420 (20 inch)</td>
<td>204-549A</td>
</tr>
<tr>
<td>YP16-2-3115 (15 inch, on 30 inch rows)</td>
<td>204-543A</td>
</tr>
</tbody>
</table>

Coulter Blades

Replacement and alternate coulter blades (quantity is one per row unit).

<table>
<thead>
<tr>
<th>Description</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Turbo, 15 inch (20 flutes)</td>
<td>820-327C</td>
</tr>
<tr>
<td>Fluted, 15 inch (50 flutes)</td>
<td>820-331C</td>
</tr>
<tr>
<td>Straight, 14 inch</td>
<td>820-259C</td>
</tr>
</tbody>
</table>

Row Unit Press Wheel

The base planter includes a choice of press wheels. Additional press wheels are available and may be field installed.

The part numbers are not listed here because available press wheels are often region specific. See your Great Plains dealer.
### Inside Disk Scrapers

When planting in moist or sticky soils, the inside disk scraper is useful in preventing buildup that might impair opener disk performance. The carbide scraper is spring loaded and requires no adjustment.

<table>
<thead>
<tr>
<th>Description</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inside Disk Scraper</td>
<td>122-278S</td>
</tr>
</tbody>
</table>

The inside scraper cannot be used with Seed-Lok seed firmers, but are compatible with seed flaps and Keeton seed firmers.

### Gauge Wheel Scrapers

When planting in moist or sticky soils, the gauge wheel scrapers are useful in preventing buildup that might result in shallow planting. Order one part per wheel; two per opener.

<table>
<thead>
<tr>
<th>Description</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 3/8 inch Gauge Wheel Scraper</td>
<td>404-194D</td>
</tr>
<tr>
<td>3 inch Gauge Wheel Scraper</td>
<td>404-195D</td>
</tr>
<tr>
<td>4 inch Gauge Wheel Scraper</td>
<td>404-196D</td>
</tr>
</tbody>
</table>

The scrapers mount on the bottom rear of the depth wheel arm, using the existing bolt and lock washer. The slot in the scraper is long enough to clear the lower grease fitting and allow adjustment as the wheel and scraper wear.

### Seed-Lok Firming Wheel

The base planter does not include seed firmers. A choice of seed 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.

<table>
<thead>
<tr>
<th>Description</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Seed-Lok® Kit (per opener)</td>
<td>404-093K</td>
</tr>
</tbody>
</table>

### Keeton Seed Firmers

The base planter does not include seed firmers. A choice of seed 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.

<table>
<thead>
<tr>
<th>Description</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Keeton Seed Firmers</td>
<td>404-093K</td>
</tr>
</tbody>
</table>
The Keeton Seed Firmer also supports low-rate fertilizer delivery. For this use, the optional fertilizer system must be installed.

<table>
<thead>
<tr>
<th>Description</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Keeton® Seed Firmer (per opener)</td>
<td>890-840C</td>
</tr>
</tbody>
</table>

### Seed Meter Disks

The Air-Pro Seed Meters accept a variety of seed disks, each one for a specific seed, plus a blank disk for row shut off.

<table>
<thead>
<tr>
<th>Description</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blank, 0 Cell</td>
<td>817-841C</td>
</tr>
<tr>
<td>Canola, 250 Cell</td>
<td>817-991C</td>
</tr>
<tr>
<td>Canola, 150 Cell</td>
<td>837-148C</td>
</tr>
<tr>
<td>Corn, 24 Cell (Large; Flat)</td>
<td>817-836C</td>
</tr>
<tr>
<td>Corn, 24 Cell (Large; Round)</td>
<td>817-794C</td>
</tr>
<tr>
<td>Corn, 24 Cell (Medium)</td>
<td>837-126C</td>
</tr>
<tr>
<td>Corn, 24 Cell (Small; Round or Flat)</td>
<td>817-795C</td>
</tr>
<tr>
<td>Corn, 40 Cell (Large; Flat)</td>
<td>817-838C</td>
</tr>
<tr>
<td>Corn, 40 Cell (Large; Round)</td>
<td>817-796C</td>
</tr>
<tr>
<td>Corn, 40 Cell (Medium)</td>
<td>837-127C</td>
</tr>
<tr>
<td>Corn, 40 Cell (Small; Round or Flat)</td>
<td>817-797C</td>
</tr>
<tr>
<td>Cotton, 60 Cell</td>
<td>817-857C</td>
</tr>
<tr>
<td>Edible Bean, 56 Cell (Large)</td>
<td>817-967C</td>
</tr>
<tr>
<td>Edible Bean, 60 Cell (Medium)</td>
<td>837-065C</td>
</tr>
<tr>
<td>Industrial Hemp, 5 Cell</td>
<td>837-364C</td>
</tr>
<tr>
<td>Industrial Hemp, 30 Hemp</td>
<td>837-386C</td>
</tr>
<tr>
<td>Hill Drop Cotton, 12 Cell</td>
<td>837-186C</td>
</tr>
<tr>
<td>Milo, Pelletized Sugar Beet, 30 Cell</td>
<td>837-057C</td>
</tr>
<tr>
<td>Milo, Pelletized Sugar Beet, 65 Cell</td>
<td>817-849C</td>
</tr>
<tr>
<td>Milo, Pelletized Sugar Beet, 130 Cell</td>
<td>817-800C</td>
</tr>
<tr>
<td>Soybeans, 84 Cell (Medium)</td>
<td>817-798C</td>
</tr>
<tr>
<td>Soybeans, 168 Cell (Large)</td>
<td>403-551D</td>
</tr>
</tbody>
</table>

### Seed Meter Clean-Out Container

One seed meter clean-out container is provided with the planter and located under the walkboard. Use the following to order an additional or a replacement container.

<table>
<thead>
<tr>
<th>Description</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air Meter Clean Out Funnel</td>
<td>817-811C</td>
</tr>
</tbody>
</table>

### Seed Tube Brush

One brush is provided with the planter. Use the following to order an additional or a replacement brush.

<table>
<thead>
<tr>
<th>Description</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Great Plains | 411-474M | 10/14/2020  73
Timing Tool

A timing tool comes standard on twin row planters. It is used to shift the chain position by one tooth per tool rotation. For further information and directions on how to use the timing tool, see the Seed Rate manual.

For easy access, the timing tool can be ordered with hardware for mounting it under the walkboard.

<table>
<thead>
<tr>
<th>Description</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Timing Tool Assembly (contains one each of the following)</td>
<td>403-557S</td>
</tr>
<tr>
<td>Timing Tool Holder</td>
<td>403-556H</td>
</tr>
<tr>
<td>3/16 x 1 9/16 Long Lynch Pin</td>
<td>805-240C</td>
</tr>
<tr>
<td>Timing Tool, 19 Tooth</td>
<td>812-391C</td>
</tr>
</tbody>
</table>
Troubleshooting

When starting with a new planter, a new crop, or a new population, it is important to physically check what the seed monitoring system console is reporting by digging and observing seeds. This is to verify that the planter is set up correctly to plant the desired population. Do not rely solely on the population reported by the console. Plant a short distance and dig the seeds, or run with the closing wheels wired up to leave an open seed trench. Based on seeds found, determine an average distance between seeds. Compare the distance between seeds to the seed spacing listed in the charts for your population. This listed as “inches per seed”.

Also, during start up you may encounter alarms and readouts on the console that do not seem to make sense. It is critical to troubleshoot these alarms, not only to make sure the planter drive is set properly to hit the target population, but also to fix incorrect entries in the monitor to eliminate nuisance alarms. For seed monitor issues, also see the monitor operator manual.

Before going to the troubleshooting charts to remedy seed monitoring system console or population problem, use the following chart. Finding what is wrong comes from knowing what the planter is actually doing in the soil. Always dig and observe seed on the ground when checking populations.

<table>
<thead>
<tr>
<th>Step</th>
<th>Condition</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Is the spacing on the ground correct?</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td>2.</td>
<td>Is the reported population (\frac{3}{8}) the actual population, or is the reported population too high by a factor of 2?</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td>3.</td>
<td>Is the population on the monitor close to the target population?</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Yes</td>
</tr>
</tbody>
</table>

### Seed Pool

The following illustration shows rear cross sections of the seed meter in normal and row-failed conditions.
Seed Pool Recovery
When a seed meter has been starved of seed, the back-flow of air through the open gate reduces delivery air flow. This causes seed delivery to be slow. If you start or resume planting with an empty seed pool, the delivery flow may be too low to keep the meter supplied. The steps below quickly prime the meter by rebuilding the seed pool.

<table>
<thead>
<tr>
<th>Normal: Filling</th>
<th>Normal: Filled</th>
<th>Delivery Blockage or Back-flow Starvation</th>
<th>Bridging: Screen</th>
<th>Bridging: Gate</th>
</tr>
</thead>
</table>
| Seed pool at the gate prevents back-flow of meter pressurization air, allowing seed to flow from the delivery system, filling the inlet to the top of the air release screen. | Once the inlet is filled to the top of the air release screen, the air flow from the delivery system is blocked. No further seed arrives until planting reduces the backlog at the inlet. | No seed is arriving from the manifold. Air back-flow (1) is occurring. Causes may include:  
- low fan speed  
- seed hose blockage  
- no seed available  
- Y-tube closed  
- meter never primed | Oversize matter in the seed has caused a bridge at the top of the inlet. Air back-flow (1) is occurring. When the bridge is released, the seed pool will be insufficient to prevent back-flow. | A bridge at the gate is blocking flow. Causes may include:  
- oversize seed  
- gate setting too low  
- oversize matter in seed |

<table>
<thead>
<tr>
<th>Actions</th>
<th>Actions</th>
<th>Actions</th>
<th>Actions</th>
<th>Actions</th>
</tr>
</thead>
</table>
| No action required. Continue planting. | No action required. Continue planting. | 1. Correct the cause of the blockage.  
2. Perform a one-row seed pool recovery.  
2. Disconnect hose at the meter.  
3. Tap on air release screen and inspect.  
4. Check seed pool for foreign matter.  
5. Perform a one-row seed pool recovery.  
6. Resume planting. | 1. If the gate is at suggested opening, increase one notch.  
2. Check the seed pool for foreign matter.  
3. Resume planting. |

---

**IRC Fuse Block Decal**

<table>
<thead>
<tr>
<th>IRC SOFT START</th>
<th>IRC SOFT START</th>
</tr>
</thead>
<tbody>
<tr>
<td>SERVO 2 CLOSE</td>
<td>SERVO 2 OPEN</td>
</tr>
<tr>
<td>25 AMP 24V PWR LEFT</td>
<td>25 AMP 24V PWR LEFT</td>
</tr>
<tr>
<td>25 AMP 24V PWR RIGHT</td>
<td>25 AMP 24V PWR RIGHT</td>
</tr>
<tr>
<td>15A PWR SOL WSMT</td>
<td>5A 24V SOFT START</td>
</tr>
<tr>
<td>5 AMP WSMT ECU</td>
<td>10 AMP IRC ROW ECUs</td>
</tr>
</tbody>
</table>
## Hydraulic Drive Fuse Block Decal

<table>
<thead>
<tr>
<th>CLUTCH 1</th>
<th>CLUTCH 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>SERVO 2</td>
<td>SERVO 2</td>
</tr>
<tr>
<td>CLOSE</td>
<td>OPEN</td>
</tr>
</tbody>
</table>

- 5 AMP SPARE
- 15 AMP SPARE
- 15A PWR SOL WSMT
- 15A PWR SOL TCOM
- 5 AMP ACC ECU
- 5 AMP WCMT ECU
- 5 AMP TCOM ECU
- 5 AMP WSMB 18R ECU
## Seed Population Troubleshooting

<table>
<thead>
<tr>
<th>Problem</th>
<th>Cause</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Overall population alarms.</strong></td>
<td>False alarms or actual rate errors due to monitor setup with incorrect (active) row count or spacing</td>
<td>Review planter configuration and monitor setup.</td>
</tr>
<tr>
<td></td>
<td>Incorrect cell count</td>
<td>Replace seed disks with correct disks, or reset rate for current disks, if within range.</td>
</tr>
<tr>
<td></td>
<td>Improper gap on speed sensor</td>
<td>Check speed sensor on planter for $\frac{1}{16}$ to $\frac{1}{8}$ inch (1.6 to 3.2 mm) gap from the wheel. An improper gap can cause erratic speed signal causing the monitor to falsely report an improper planting rate.</td>
</tr>
<tr>
<td></td>
<td>Incorrect speed sensor constant</td>
<td>Perform speed calibration according to the monitor manual.</td>
</tr>
<tr>
<td><strong>Low population bands just after turns.</strong></td>
<td>Insufficient oil to fan, meter pressures low, seeds falling from disks</td>
<td>Perform end-of-pass marker and lift operations separately. If already performing separately, and/or lift more gradually.</td>
</tr>
<tr>
<td><strong>Mismatch between reported and furrow population.</strong></td>
<td>Small seeds (example: milo) are not reliably sensed in the seed tube</td>
<td>Run with rain covers in place to minimize ambient light intrusion. Use the population adjustment factor in the monitor system to compensate for missed seeds. For example, change the Population Adjustment values from 100% to 130% as needed. Remember to set this value back to 100% for large seeds.</td>
</tr>
<tr>
<td></td>
<td>Seed tube sensor is not counting all seeds</td>
<td>Clean the seed tube of graphite and dust buildup with seed tube brush. Replace sensors that malfunction.</td>
</tr>
<tr>
<td></td>
<td>Seeds or revolution value in the monitor setup does not match disk cell count</td>
<td>Correct the value in a setup screen or install correct cell count disk.</td>
</tr>
<tr>
<td><strong>Unable to adjust air pressure low enough.</strong></td>
<td>Lower limit reached in software</td>
<td>At User Level 2, reduce the controlled air lower limit in the software.</td>
</tr>
<tr>
<td></td>
<td>Fan speed too high, vane rotated to maximum</td>
<td>Reduce the fan speed.</td>
</tr>
<tr>
<td><strong>Seed too shallow or scattered on the ground from a single row.</strong></td>
<td>Bottom of seed tube damaged</td>
<td>Replace seed tube. Avoid setting the planter straight down. Use forward motion when lowering.</td>
</tr>
<tr>
<td></td>
<td>Row not penetrating in tire tracks</td>
<td>Increase down force on parallel arm springs.</td>
</tr>
<tr>
<td></td>
<td>Opener depth too shallow</td>
<td>Change side depth wheel setting.</td>
</tr>
<tr>
<td><strong>Twin rows were timed but became out of time.</strong></td>
<td>Timing will change when a population change has been made</td>
<td>Re-time meters from the population based timing chart.</td>
</tr>
<tr>
<td></td>
<td>Chain has jumped</td>
<td>Check sprockets and chain for excessive wear or rusty, stuck links.</td>
</tr>
<tr>
<td><strong>Excess seed remaining.</strong></td>
<td>Field size different</td>
<td>After ruling out population problems, re-check geography.</td>
</tr>
<tr>
<td></td>
<td>Excessive gaps between planter passes</td>
<td>Adjust marker.</td>
</tr>
<tr>
<td></td>
<td>Incorrect speed calibration</td>
<td>Perform speed calibration using the monitor manual.</td>
</tr>
<tr>
<td><strong>Seed consumption too high.</strong></td>
<td>Field size different</td>
<td>After ruling out population problems, re-check geography.</td>
</tr>
<tr>
<td></td>
<td>Excessive overlap, irregular shaped field</td>
<td>Adjust marker.</td>
</tr>
<tr>
<td></td>
<td>Incorrect speed calibration</td>
<td>Perform speed calibration using the monitor manual.</td>
</tr>
<tr>
<td><strong>Rows not planted.</strong></td>
<td>If not detected by the seed monitor, check for plugged seed tube</td>
<td>Lift the planter, expose bottom of seed tube, and clean out.</td>
</tr>
<tr>
<td>Problem</td>
<td>Cause</td>
<td>Solution</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>----------------------------------------------------------------------</td>
<td>---------------------------------------------------------------</td>
</tr>
<tr>
<td>Uneven seed spacing.</td>
<td>Electric or hydraulic meter drive motor rpm too low for reliable control by proportional valve</td>
<td>Increase field speed. Use a seed wheel with lower cell count.</td>
</tr>
<tr>
<td></td>
<td>Excessive field speed</td>
<td>Reduce field speed.</td>
</tr>
<tr>
<td></td>
<td>Unclean seed</td>
<td>Use clean seed.</td>
</tr>
<tr>
<td></td>
<td>Damaged seed tube</td>
<td>Inspect the seed tube and repair or replace.</td>
</tr>
<tr>
<td></td>
<td>Seed-Lok® plugging</td>
<td>Lock up the Seed-Lok.</td>
</tr>
<tr>
<td></td>
<td>Row unit disks not turning</td>
<td>See “Row unit disks not turning” on page 79.</td>
</tr>
<tr>
<td></td>
<td>Plugged seed tube</td>
<td>Lift up planter, expose bottom of seed tube and clean out.</td>
</tr>
<tr>
<td></td>
<td>Worn or rusted sprockets and/or chain idler or bearings</td>
<td>Check and replace any worn or rusted sprockets or chain idlers.</td>
</tr>
<tr>
<td></td>
<td>Lack of proper seed lubrication on seed</td>
<td>See “Seed Lubricants” on page 64.</td>
</tr>
</tbody>
</table>

### Seed Population Too Low

<table>
<thead>
<tr>
<th>Problem</th>
<th>Cause</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall low population.</td>
<td>Incorrect seed rate</td>
<td>Check seed rate charts.</td>
</tr>
<tr>
<td></td>
<td>Incorrect ground drive transmission or range sprockets or shafts used</td>
<td>Check transmission sprocket or range sprocket tooth counts and driving/driven locations.</td>
</tr>
<tr>
<td></td>
<td>Empty pockets in seed disk due to insufficient pressure</td>
<td>Increase controlled air to the meter. See “Fan and Meter Pressurization” on page 32.</td>
</tr>
<tr>
<td></td>
<td>Empty pockets in seed disk due to sticky seed treatments not allowing seed to rapidly fill the cells</td>
<td>Increase seed lubricant.</td>
</tr>
<tr>
<td></td>
<td>Empty pockets in seed disk due to rough field conditions causing seeds to fall from the disk</td>
<td>Decrease field speed or increase the air pressure in the meter.</td>
</tr>
<tr>
<td></td>
<td>Empty pockets in seed disk due to seed pool too low and seeds not filling every cell in the seed disk</td>
<td>Open the seed inlet gate one notch.</td>
</tr>
<tr>
<td></td>
<td>Empty pockets in seed disk due to disk speed too high and cells not filling</td>
<td>Decrease field speed or change to a higher cell count disk.</td>
</tr>
<tr>
<td></td>
<td>Empty pockets in seed disk due to singulation (4 tufted) brush too aggressive</td>
<td>Check for matted, stuck together fibers. Wash, scrape, clean, or replace as needed.</td>
</tr>
<tr>
<td></td>
<td>Empty pockets in seed disk due to seed too big for the cell</td>
<td>Select correct seed disk for seed size.</td>
</tr>
<tr>
<td>Low population, one wing.</td>
<td>Left-hand and right-hand ground drive transmission or range setup not matched</td>
<td>Make sure left-hand and right-hand range and transmission settings are identical, and that sprockets are on the proper driving/driven shafts.</td>
</tr>
<tr>
<td></td>
<td>Clutch slipping, due to contaminants in the clutch or wear</td>
<td>Lock up the clutch until it can be overhauled or replaced. See “Electric Clutch Lockup” on page 26.</td>
</tr>
<tr>
<td></td>
<td>Skipping chain from the drive to the wing</td>
<td>Check chain slack. Replace worn chain.</td>
</tr>
<tr>
<td>Problem</td>
<td>Cause</td>
<td>Solution</td>
</tr>
<tr>
<td>---------</td>
<td>-------</td>
<td>----------</td>
</tr>
<tr>
<td>Overall low population (cont'd).</td>
<td>Seeds are not falling from seed disk and get carried past drop zone. Static electricity can cause small, lightweight seeds to cling to the cell and not fall out.</td>
<td>The graphite component of Ezee Glide Plus addresses this issue. Increase the amount of Ezee Glide Plus and/or more thoroughly mix the lubricant into the seed.</td>
</tr>
</tbody>
</table>
| | Air pressure too low, false information driving the software. | Compare the air pressure reported on the monitor to the mechanical gauge. If they do not match:  
• inspect the 1/4 inch sample lines from the row units up to the sensor chamber for leaks.  
• Make sure all non-planting rows have blank disks.  
• Re-zero the air pressure with the fan off. |
<p>| Low fan speed - meter starvation due to meter pressurization leaving insufficient air for seed delivery | Increase the amount of Ezee Glide Plus and/or more thoroughly mix the lubricant into the seed. |
| Leaking meters in split row - meter starvation due to meter pressurization leaving insufficient air for seed delivery | Install blank disks and close gates on unused rows. |
| Inadequate contact wheel spring pressure | Increase fan speed. |
| Inadequate contact wheel spring pressure | Increase the amount of Ezee Glide Plus and/or more thoroughly mix the lubricant into the seed. |
| Tire pressure in contact wheel incorrect | Check for correct spring and gap setting. See &quot;Contact Drive Wheel&quot; on page 32. |
| Excess field speed | Check for correct spring and gap setting. See &quot;Contact Drive Wheel&quot; on page 32. |
| Improper gap on speed sensor | Check for correct tire air pressure. |
| Improper gap on speed sensor | Check for correct spring and gap setting. See &quot;Contact Drive Wheel&quot; on page 32. |
| Incorrect speed sensor constant | Check speed sensor on planter for 1.6 mm to 3.2 mm (1/16 to 1/8 inch) gap from wheel. Improper gap can cause erratic speed signal causing the monitor to falsely report improper planting rate. |
| Low population, single row. | Gate opening too wide, interfering with meter pressurization | Adjust the gate to lower setting. |
| Gate opening too wide, interfering with meter pressurization | Adjust the gate to lower setting. |
| Gate opening too narrow, starving the meter of seed (low seed pool) | Adjust the gate to higher setting. |
| Y-tube partially or completely closed, reducing bulk flow to the meter causing bridging | Open Y-tube for the row. |
| Meter starvation due to bridging at the gate | Readjust for gate bridging (see &quot;Seed Meter Re-fill&quot; on page 44). If the seed is treated, increase seed lubricant. |
| Meter starvation due to bridging at the gate | Readjust for gate bridging (see &quot;Seed Meter Re-fill&quot; on page 44). If the seed is treated, increase seed lubricant. |
| Skips due to low meter pressurization at one or several rows | Check the gate setting. Check for excess wear on the seed drop brush. Check for loose or leaking pressure hose. |
| Skips due to low meter pressurization at one or several rows | Check the gate setting. Check for excess wear on the seed drop brush. Check for loose or leaking pressure hose. |
| Skips due to skipping chain | Check for worn chain, worn idlers, and low chain slack. |
| Skips due to skipping chain | Check for worn chain, worn idlers, and low chain slack. |
| Skips due to debris in disk cells | Remove rain covers, inspect and clean out disks. |
| Skips due to debris in disk cells | Remove rain covers, inspect and clean out disks. |
| Row has blank disk installed | Replace with a seeding disk. |
| Row has blank disk installed | Replace with a seeding disk. |
| Seed sensor obscured | Replace with a seeding disk. |
| Seed sensor obscured | Replace with a seeding disk. |</p>
<table>
<thead>
<tr>
<th>Problem</th>
<th>Cause</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall high population.</td>
<td>Incorrect seed rate</td>
<td>Check seed rate charts.</td>
</tr>
<tr>
<td></td>
<td>Incorrect ground drive transmission or range sprockets or shafts used</td>
<td>Check transmission sprocket or range sprocket tooth counts and driving/driven locations.</td>
</tr>
<tr>
<td></td>
<td>Two seeds per cell in the seed disk due to excess meter pressurization</td>
<td>Decrease the controlled air to the meter. See “Fan and Meter Pressurization” on page 32.</td>
</tr>
<tr>
<td></td>
<td>Two seeds per cell in the seed disk due to cells too large for the seed</td>
<td>Select a disk with smaller cells.</td>
</tr>
<tr>
<td></td>
<td>Air meter pressure too high due to pressure sensor not zeroed properly</td>
<td>Re-zero the air pressure with the fan off. Make sure the displayed pressure reads 0.00.</td>
</tr>
</tbody>
</table>
|                                              | Air pressure too high, false information driving the software         | Compare the air pressure reported on the monitor to the mechanical gauge. If they do not match:  
|                                              |                                                                      |   • inspect the 1/4 inch sample lines from the row units up to the sensor chamber for leaks.  
|                                              |                                                                      |   • make sure all non-planting rows have blank disks.  
|                                              |                                                                      |   • re-zero the air pressure with the fan off.                                    |
|                                              | False alarms or actual seed rate errors due to monitor setup with incorrect row count, spacing, or active rows | Review planter configuration and monitor setup.                           |
|                                              | Incorrect cell count                                                  | Replace seed disks with correct disks, or reset rate for current disks (if within range). |
|                                              | Improper gap on speed sensor                                          | Check speed sensor on the planter for 1.6 to 3.2 mm (1/16 inch to 1/8 inch) gap from the wheel. An improper gap can cause erratic speed signal causing the monitor to falsely report an improper planting rate. |
|                                              | Incorrect speed sensor constant                                       | Perform speed calibration according to the monitor manual.                |
|                                              | Doubles due to incorrect disk for crop or seed size                   | Use the recommended disk for crop and seed size.                         |
|                                              | Sticky seeds, excess seed treatment                                   | Increase seed lubricant.                                                 |
| High population, one wing.                   | Ground drive only - left-hand and right-hand range or transmission setup not matched | Make sure left-hand and right-hand range and transmission settings are identical, and that sprockets are on the proper driving/driven shafts. |
| High population, single row.                | Excess meter pressurization causing doubles                           | Check gate.                                                              |
|                                              | Worn seed drop brush and/or strip brushes allowing excess seed to pass | Replace worn brushes.                                                   |
|                                              | Incorrect seed disk with higher cell count                            | Install correct disk.                                                   |
### Seed Delivery Problems

<table>
<thead>
<tr>
<th>Problem</th>
<th>Cause</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single row does not fill or keep up with other rows.</td>
<td>Y-tube is bent or angled off feed pipe</td>
<td>Loosen the pipe and spin so the bend is straight down and the Y-tube is not pointing to the front or rear of the air pipe.</td>
</tr>
<tr>
<td></td>
<td>Drop tube to the meter is too long causing seed to pool and plug the hose or Y-tube</td>
<td>Shorten the hose (with planter raised, but row units lowered, to make sure the hose is not too short).</td>
</tr>
<tr>
<td>Both rows on one meter outlet low or not keeping up with other rows.</td>
<td>Blockage in the air slot in top of airbox</td>
<td>Clear by using a long skinny tool and taking hose off through the hose outlet. It may be necessary to take the top off the airbox or use side access doors to clear junk from the slot.</td>
</tr>
<tr>
<td></td>
<td>Bad hose routing between delivery hose and airbox on wing</td>
<td>Correct the hose routing.</td>
</tr>
<tr>
<td>Multiple rows fail for lack of seed.</td>
<td>Fan speed too high or too low</td>
<td>Check and adjust the fan speed.</td>
</tr>
<tr>
<td></td>
<td>Out of seed</td>
<td>Add seed.</td>
</tr>
<tr>
<td>Single or multiple hoses plugging just ahead of airbox.</td>
<td>Fan speed too high or too low</td>
<td>Check and adjust the fan speed.</td>
</tr>
<tr>
<td></td>
<td>Possible air leak</td>
<td>Check for air leak downstream between the box and top of meter.</td>
</tr>
<tr>
<td>All rows fail.</td>
<td>Lack of seed</td>
<td>Fan speed too high. Adjust fan speed.</td>
</tr>
<tr>
<td></td>
<td>No performed Fill Disk</td>
<td>Extremely high populations may require slightly reduced field speed.</td>
</tr>
<tr>
<td>1, 2, 3, or more outlets fail. Outlets can be side-by-side or random.</td>
<td>Foreign matter in seed chamber in bottom of airbox</td>
<td>Clean out seed chamber.</td>
</tr>
<tr>
<td>Little or no seed to several rows with heavily treated seed.</td>
<td>Seed treatment sticky</td>
<td>Add Ezee Glide Plus to seed to dry out seed treatment.</td>
</tr>
<tr>
<td></td>
<td>Treatment mixed unevenly and plugging outlets</td>
<td>Clean out seed and re-mix.</td>
</tr>
</tbody>
</table>
## Planter Troubleshooting

<table>
<thead>
<tr>
<th>Problem</th>
<th>Cause</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Planter does not fold or unfold fully.</strong></td>
<td>Fold cylinders out of phase</td>
<td>Rephase the fold cylinders by moving and holding the lever for Fold in Fold direction (typically Extend) for 30 seconds.</td>
</tr>
<tr>
<td><strong>Uneven seed depth.</strong></td>
<td>Excessive field speed</td>
<td>Reduce field speed.</td>
</tr>
<tr>
<td></td>
<td>Planting conditions too wet</td>
<td>Wait until drier weather.</td>
</tr>
<tr>
<td></td>
<td>Incorrect coulter depth setting</td>
<td>See coulter manual or set unit mounted coulter. See “Unit Mounted Coulters” on page 48.</td>
</tr>
<tr>
<td></td>
<td>Excessive or improper row unit down pressure spring setting</td>
<td>See “Row Unit Down Pressure” on page 38.</td>
</tr>
<tr>
<td></td>
<td>Damaged seed tubes</td>
<td>Check seed tubes for damage.</td>
</tr>
<tr>
<td></td>
<td>Seed-Lok® building up with dirt</td>
<td>Lock up Seed-Lok®.</td>
</tr>
<tr>
<td></td>
<td>Row unit not penetrating low spots</td>
<td>Adjust row unit.</td>
</tr>
<tr>
<td></td>
<td>Rough planting conditions</td>
<td>Rework the field.</td>
</tr>
<tr>
<td></td>
<td>Seed firmer not in place or set to correct tension</td>
<td>See “Coulter Row Adjustment” on page 48.</td>
</tr>
<tr>
<td><strong>Air lines plugging between Y-tube and meter.</strong></td>
<td>Sag or kink in air hose</td>
<td>Check air tube placement in tube mount weldment. If correct, shorten any hose that has stretched due to age.</td>
</tr>
<tr>
<td></td>
<td>Meter is shut off but Y-tube is open</td>
<td>Shut off Y-tube.</td>
</tr>
<tr>
<td></td>
<td>Air tube assembly not positioned on correct tab</td>
<td>Move assembly to properly position Y-tubes over row meters.</td>
</tr>
<tr>
<td></td>
<td>Sag in air hose due to incorrect frame height</td>
<td>Raise or lower the tongue so center portion of the frame is level with the gauge wheel area.</td>
</tr>
<tr>
<td><strong>Press wheel or row units plugging.</strong></td>
<td>Planting conditions too wet</td>
<td>Wait until drier weather.</td>
</tr>
<tr>
<td></td>
<td>Too much pressure on row units</td>
<td>Reduce down pressure on row units.</td>
</tr>
<tr>
<td></td>
<td>Coulters set too deep, bring up excess dirt and moisture</td>
<td>Check coulter adjustment.</td>
</tr>
<tr>
<td></td>
<td>Planter not set to run level from front to rear</td>
<td>Check tongue height.</td>
</tr>
<tr>
<td></td>
<td>Backed up with planter in the ground</td>
<td>Clean out and check for damage.</td>
</tr>
<tr>
<td></td>
<td>Failed disk bearings</td>
<td>Replace disk bearings.</td>
</tr>
<tr>
<td></td>
<td>Disk blades worn</td>
<td>Replace disk blades.</td>
</tr>
<tr>
<td></td>
<td>Scraper worn or damaged. Side depth wheels not set correctly</td>
<td>Adjust side depth wheels.</td>
</tr>
<tr>
<td><strong>Row unit disks not turning freely.</strong></td>
<td>Row unit plugged with dirt</td>
<td>Clean row unit.</td>
</tr>
<tr>
<td></td>
<td>Planting conditions too wet</td>
<td>Wait until drier weather.</td>
</tr>
<tr>
<td></td>
<td>Incorrect side gauge wheel adjustment</td>
<td>Adjust side gauge wheel. See “Disk-to-Disk Spacing” on page 39.</td>
</tr>
<tr>
<td></td>
<td>Seed-Lok® is plugging row unit</td>
<td>Lock up Seed-Lok®.</td>
</tr>
<tr>
<td></td>
<td>Failed disk bearings</td>
<td>Replace disk bearings.</td>
</tr>
<tr>
<td></td>
<td>Bent or twisted row unit frame</td>
<td>Replace row unit frame.</td>
</tr>
<tr>
<td></td>
<td>Partially plugged seed tube</td>
<td>Lift up planter, expose bottom of seed tube and clean out.</td>
</tr>
<tr>
<td><strong>Press wheels not compacting soil as desired.</strong></td>
<td>Insufficient row unit down-force</td>
<td>See “Row Unit Down Pressure” on page 38.</td>
</tr>
<tr>
<td></td>
<td>Use of incorrectly shaped tire for conditions</td>
<td>Wedge shaped wheels work best on narrow spacings and in wet conditions. Round edge wheels work best in wider row spacings and drier conditions.</td>
</tr>
<tr>
<td></td>
<td>Planter not level front to rear</td>
<td>Check tongue height.</td>
</tr>
<tr>
<td>Problem</td>
<td>Cause</td>
<td>Solution</td>
</tr>
<tr>
<td>-------------------------------------------------------</td>
<td>-----------------------------------------------</td>
<td>--------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Air lines plugging between airbox and Y-tubes.</td>
<td>Fan too slow</td>
<td>Speed up fan.</td>
</tr>
<tr>
<td></td>
<td>Air leaks between airbox manifold and Y-tubes</td>
<td>Check for leaks and correct as needed.</td>
</tr>
<tr>
<td></td>
<td>Improper hose routing, sags, or kinks</td>
<td>With planter unfolded, hoses should form a gentle “S” shape through the holder, with no deep sags.</td>
</tr>
<tr>
<td>Marker functioning improperly, or not at all.</td>
<td>Marker switch not set correctly</td>
<td>Left or right not selected. Set tractor remote circuit to Neutral or Float before operating switch.</td>
</tr>
<tr>
<td></td>
<td>Marker/Aux valve set to Aux</td>
<td>On a planter with the optional auxiliary hydraulics, the selector valve must be set to Marker for markers to function. Set the tractor remote circuit to Neutral or Float before changing the valve.</td>
</tr>
<tr>
<td></td>
<td>Air or oil leaks in hose fittings or connections</td>
<td>Check all hose fittings and connections for air or oil leaks.</td>
</tr>
<tr>
<td></td>
<td>Low tractor hydraulic oil level</td>
<td>Check tractor hydraulic oil level.</td>
</tr>
<tr>
<td></td>
<td>Loose or missing bolts or fasteners</td>
<td>Check all bolts and fasteners.</td>
</tr>
<tr>
<td></td>
<td>Needle valve plugged</td>
<td>Open needle valve, cycle markers slowly and reset needle valves.</td>
</tr>
<tr>
<td></td>
<td>Needle valve(s) in sequence valve plugged</td>
<td>Open needle valve, cycle markers slowly and reset needle valves.</td>
</tr>
<tr>
<td>Marker disk does not mark.</td>
<td>Marker folding linkage does not have enough slack to allow marker disk to drop into field depressions</td>
<td>Maximum down float should be limited by the slot at the rod end of the marker cylinder.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Reverse marker disk to pull or throw dirt.</td>
</tr>
</tbody>
</table>
### Row-Pro Troubleshooting

<table>
<thead>
<tr>
<th>Problem</th>
<th>Cause</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Compressor will not turn on.</strong></td>
<td>Switch turned off</td>
<td>Turn switch on.</td>
</tr>
<tr>
<td></td>
<td>Poor electrical connection</td>
<td>Clean connections and reassemble.</td>
</tr>
<tr>
<td></td>
<td>Fuse blown</td>
<td>Replace fuse (60A).</td>
</tr>
<tr>
<td><strong>Compressor will not turn off, runs continuously.</strong></td>
<td>Section opener valves are installed in reverse</td>
<td>Install opener valves correctly.</td>
</tr>
<tr>
<td></td>
<td>Stuck pressure switch(es)</td>
<td>Replace pressure switch(es).</td>
</tr>
<tr>
<td><strong>Compressor cycles more than normal.</strong></td>
<td>Water buildup in air tank</td>
<td>Drain tank to keep reserve volume at proper level.</td>
</tr>
<tr>
<td><strong>Erratic down pressure reading.</strong></td>
<td>Poor electrical connection to load cell</td>
<td>Clean connection and reassemble.</td>
</tr>
<tr>
<td></td>
<td>Load cell malfunction</td>
<td>Replace load cell.</td>
</tr>
<tr>
<td><strong>Persistent high alarm.</strong></td>
<td>Row unit spring tension too high</td>
<td>Lower spring tension.</td>
</tr>
<tr>
<td></td>
<td>Air leak preventing cylinders from holding pressure</td>
<td>Fix air leak.</td>
</tr>
<tr>
<td><strong>Persistent low alarm.</strong></td>
<td>Row unit spring tension too low</td>
<td>Raise spring tension.</td>
</tr>
<tr>
<td></td>
<td>Air leak preventing cylinders from holding pressure</td>
<td>Fix air leak.</td>
</tr>
<tr>
<td><strong>System will not hold air pressure.</strong></td>
<td>Pinched or torn hose</td>
<td>Replace hose.</td>
</tr>
<tr>
<td></td>
<td>Hose not pushed into quick connect fitting far enough</td>
<td>Push hose in until fully seated.</td>
</tr>
<tr>
<td><strong>Voltage reads “0” on monitor or is unaffected by load on load cell.</strong></td>
<td>Signal wire grounded to frame</td>
<td>Inspect for pinched or broken wiring harness between the load cell and DPLCM. Replace damaged wiring.</td>
</tr>
</tbody>
</table>
# PL5800 Planter

## Specifications

<table>
<thead>
<tr>
<th>Model Information</th>
<th>PL5800</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Models</strong></td>
<td>1236 IR-1236</td>
</tr>
<tr>
<td><strong>Row count</strong></td>
<td>12</td>
</tr>
<tr>
<td><strong>Row spacing</strong></td>
<td>36 in</td>
</tr>
<tr>
<td><strong>Width, working</strong></td>
<td>36 ft</td>
</tr>
<tr>
<td><strong>Width, transport</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Length, working</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Length, transport</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Length, field</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Height, working</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Height, transport (w/ markers)</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Height, transport (w/o markers)</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Height, field (w/ markers)</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Transport clearance</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Tractor power required</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Hitch</strong></td>
<td>Standard - 2-point; Optional - hydraulic hitch</td>
</tr>
<tr>
<td><strong>Hydraulic circuit</strong></td>
<td>Closed-center, 3 remotes (4 with hydraulic drive), 2250 psi (155 bar), 25 gal/min (98 liters/min) fan circuit</td>
</tr>
<tr>
<td><strong>Weight, base planter</strong></td>
<td>15 800 lb (7 170 kg)</td>
</tr>
<tr>
<td><strong>Weight, empty standard</strong></td>
<td>7 560 kg (16 660 lb)</td>
</tr>
<tr>
<td><strong>Weight, full standard</strong></td>
<td>21 910 lb (9 040 kg)</td>
</tr>
<tr>
<td><strong>Weight, empty maximum</strong></td>
<td>18 720 lb (8 490 kg)</td>
</tr>
<tr>
<td><strong>Weight, full maximum</strong></td>
<td>28 770 lb (13 050 kg)</td>
</tr>
<tr>
<td><strong>Seed capacity</strong></td>
<td>82 bu (2 890 liter) hopper</td>
</tr>
<tr>
<td><strong>Transport tire size</strong></td>
<td>380/90R46 (14.9R46 R-1)</td>
</tr>
<tr>
<td><strong>Wing gauge wheel tire size</strong></td>
<td>480/45-17</td>
</tr>
<tr>
<td><strong>Fertilizer capacity</strong></td>
<td>Optional 400 gal (1514 liter), 2 tanks 200 gal (757 liter) each</td>
</tr>
</tbody>
</table>

---

a. Typical standard configuration is markers, 82 bushel hopper, no fertilizer, no coulters
b. Typical maximum configuration is markers, 82 bushel hopper, starter fertilizer system, unit mount coulters
## Specifications

<table>
<thead>
<tr>
<th>Model Information</th>
<th>PL5800 (Twin Row)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Models</strong></td>
<td>24TR36 IR-24TR36</td>
</tr>
<tr>
<td><strong>Row count</strong></td>
<td>12 (Twin Row)</td>
</tr>
<tr>
<td><strong>Row spacing</strong></td>
<td>36 in</td>
</tr>
<tr>
<td><strong>Width, working</strong></td>
<td>36 ft</td>
</tr>
<tr>
<td><strong>Width, transport</strong></td>
<td>13 ft 6 in (4.1 m)</td>
</tr>
<tr>
<td><strong>Length, working</strong></td>
<td>32 ft 4 in (9.9 m)</td>
</tr>
<tr>
<td><strong>Length, transport</strong></td>
<td>41 ft 4 in (12.6 m)</td>
</tr>
<tr>
<td><strong>Length, field</strong></td>
<td>31 ft 10 in (9.7 m)</td>
</tr>
<tr>
<td><strong>Height, working</strong></td>
<td>11 ft 3 in (3.5 m)</td>
</tr>
<tr>
<td><strong>Height, transport (w/ markers)</strong></td>
<td>11 ft 3 in (3.5 m)</td>
</tr>
<tr>
<td><strong>Height, transport (w/o markers)</strong></td>
<td>9 ft 11 in (3.0 m)</td>
</tr>
<tr>
<td><strong>Height, field (w/ markers)</strong></td>
<td>12 ft 1 in (3.7 m)</td>
</tr>
<tr>
<td><strong>Transport clearance</strong></td>
<td>22 in (56 cm)</td>
</tr>
<tr>
<td><strong>Tractor power required</strong></td>
<td>165-275 hp (123-205 kw)</td>
</tr>
<tr>
<td><strong>Hitch</strong></td>
<td>Standard - 2-point</td>
</tr>
<tr>
<td><strong>Hydraulic circuit</strong></td>
<td>Closed-center, 3 remotes (4 with hydraulic drive), 2250 psi (155 bar), 25 gal/min (98 liters/min) fan circuit</td>
</tr>
<tr>
<td><strong>Weight, base planter</strong></td>
<td>18 420 lb (8 355 kg)</td>
</tr>
<tr>
<td><strong>Weight, empty standarda</strong></td>
<td>19 280 lb (8 745 kg)</td>
</tr>
<tr>
<td><strong>Weight, full standarda</strong></td>
<td>24 530 lb (11 130 kg)</td>
</tr>
<tr>
<td><strong>Weight, empty maximumb</strong></td>
<td>22 050 lb (10 000 kg)</td>
</tr>
<tr>
<td><strong>Weight, full maximumb</strong></td>
<td>32 100 lb (14 560 kg)</td>
</tr>
<tr>
<td><strong>Seed capacity</strong></td>
<td>82 bu (2 890 liter) hopper</td>
</tr>
<tr>
<td><strong>Transport tire size</strong></td>
<td>380/90R46 (14.9R46 R-1)</td>
</tr>
<tr>
<td><strong>Wing gauge wheel tire size</strong></td>
<td>480/45-17</td>
</tr>
<tr>
<td><strong>Fertilizer capacity</strong></td>
<td>Optional 400 gal (1514 liter), 2 tanks 200 gal (757 liter) each</td>
</tr>
</tbody>
</table>

---

a. Typical standard configuration is markers, 82 bushel hopper, no fertilizer, no coulters
b. Typical maximum configuration is markers, 82 bushel hopper, starter fertilizer system, unit mount coulters
PL5800 Planter

**Torque Value Chart**

<table>
<thead>
<tr>
<th>Bolt Size</th>
<th>Bolt Head Identification</th>
<th>Grade 2</th>
<th>Grade 5</th>
<th>Grade 8</th>
</tr>
</thead>
<tbody>
<tr>
<td>5/16-18</td>
<td></td>
<td>N-m</td>
<td>ft-lb</td>
<td>N-m</td>
</tr>
<tr>
<td>3/8-24</td>
<td></td>
<td>15</td>
<td>11</td>
<td>24</td>
</tr>
<tr>
<td>7/16-14</td>
<td></td>
<td>17</td>
<td>13</td>
<td>26</td>
</tr>
<tr>
<td>1/2-13</td>
<td></td>
<td>27</td>
<td>20</td>
<td>42</td>
</tr>
<tr>
<td>1/2-20</td>
<td></td>
<td>31</td>
<td>22</td>
<td>47</td>
</tr>
<tr>
<td>9/16-12</td>
<td></td>
<td>43</td>
<td>32</td>
<td>67</td>
</tr>
<tr>
<td>9/16-18</td>
<td></td>
<td>49</td>
<td>36</td>
<td>75</td>
</tr>
<tr>
<td>5/8-11</td>
<td></td>
<td>66</td>
<td>49</td>
<td>105</td>
</tr>
<tr>
<td>5/8-18</td>
<td></td>
<td>75</td>
<td>55</td>
<td>115</td>
</tr>
<tr>
<td>3/4-10</td>
<td></td>
<td>95</td>
<td>70</td>
<td>150</td>
</tr>
<tr>
<td>3/4-16</td>
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<td>105</td>
<td>79</td>
<td>165</td>
</tr>
<tr>
<td>7/8-9</td>
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<td>130</td>
<td>97</td>
<td>205</td>
</tr>
<tr>
<td>7/8-14</td>
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<td>150</td>
<td>110</td>
<td>230</td>
</tr>
<tr>
<td>1-8</td>
<td></td>
<td>235</td>
<td>170</td>
<td>360</td>
</tr>
<tr>
<td>1-12</td>
<td></td>
<td>260</td>
<td>190</td>
<td>405</td>
</tr>
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<td>11/8-7</td>
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<td>325</td>
<td>250</td>
<td>475</td>
</tr>
<tr>
<td>11/8-12</td>
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<td>340</td>
<td>275</td>
<td>575</td>
</tr>
<tr>
<td>11/8-16</td>
<td></td>
<td>480</td>
<td>355</td>
<td>875</td>
</tr>
<tr>
<td>11/8-24</td>
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<td>540</td>
<td>395</td>
<td>1210</td>
</tr>
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<td>11/8-32</td>
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<td>680</td>
<td>500</td>
<td>1520</td>
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<td>11/8-40</td>
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<td>750</td>
<td>555</td>
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<td>11/8-48</td>
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<td>890</td>
<td>655</td>
<td>1990</td>
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<td>11/8-64</td>
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<td>745</td>
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<td>11/8-80</td>
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<td>11/8-100</td>
<td></td>
<td>1330</td>
<td>980</td>
<td>2970</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Bolt Size</th>
<th>Bolt Head Identification</th>
<th>Class 5.8</th>
<th>Class 8.8</th>
<th>Class 10.9</th>
</tr>
</thead>
<tbody>
<tr>
<td>M 5 X 0.8</td>
<td></td>
<td>4</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>M 6 X 1</td>
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<td>7</td>
<td>5</td>
<td>8</td>
</tr>
<tr>
<td>M 8 X 1.25</td>
<td></td>
<td>17</td>
<td>12</td>
<td>19</td>
</tr>
<tr>
<td>M 8 X 1</td>
<td></td>
<td>18</td>
<td>13</td>
<td>21</td>
</tr>
<tr>
<td>M10 X 1.5</td>
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<td>33</td>
<td>24</td>
<td>52</td>
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<td>M10 X 0.75</td>
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<td>29</td>
<td>61</td>
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<tr>
<td>M12 X 1.75</td>
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<td>58</td>
<td>42</td>
<td>91</td>
</tr>
<tr>
<td>M12 X 2.5</td>
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<td>90</td>
<td>66</td>
<td>105</td>
</tr>
<tr>
<td>M12 X 1</td>
<td></td>
<td>92</td>
<td>68</td>
<td>145</td>
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<td>M14 X 1.5</td>
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<td>73</td>
<td>155</td>
</tr>
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<td>M16 X 2</td>
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<td>225</td>
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<td>M16 X 1.5</td>
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<td>240</td>
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<tr>
<td>M18 X 2.5</td>
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<td>195</td>
<td>145</td>
<td>310</td>
</tr>
<tr>
<td>M18 X 1.5</td>
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<td>220</td>
<td>165</td>
<td>350</td>
</tr>
<tr>
<td>M20 X 2.5</td>
<td></td>
<td>280</td>
<td>205</td>
<td>440</td>
</tr>
<tr>
<td>M20 X 1.5</td>
<td></td>
<td>310</td>
<td>230</td>
<td>650</td>
</tr>
<tr>
<td>M22 X 3</td>
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<td>480</td>
<td>355</td>
<td>760</td>
</tr>
<tr>
<td>M24 X 2</td>
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<td>525</td>
<td>390</td>
<td>830</td>
</tr>
<tr>
<td>M30 X 3.5</td>
<td></td>
<td>960</td>
<td>705</td>
<td>1510</td>
</tr>
<tr>
<td>M30 X 2</td>
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<td>1060</td>
<td>875</td>
<td>1680</td>
</tr>
<tr>
<td>M36 X 3.5</td>
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<td>1730</td>
<td>1270</td>
<td>2650</td>
</tr>
<tr>
<td>M36 X 2</td>
<td></td>
<td>1880</td>
<td>1380</td>
<td>2960</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.

**Tire Chart**

<table>
<thead>
<tr>
<th>Tire Size</th>
<th>Maximum Tire Pressure</th>
<th>Wheel Bolt Torque</th>
</tr>
</thead>
<tbody>
<tr>
<td>14.9R46 R-1</td>
<td>49 psi (338 kPa)</td>
<td>295 lb ft (400 Nm)</td>
</tr>
<tr>
<td>480/45-17</td>
<td>58 psi (400 kPa)</td>
<td>170 lb ft (231 Nm)</td>
</tr>
</tbody>
</table>

**Tire Warranty Information**

All tires are warranted by the original manufacturer of the tire. Tire warranty information is found in the brochures included with your Operator and Parts Manuals or online at the manufacturer's websites listed below. For assistance or information, contact your nearest Authorized Farm Tire Retailer.

**Manufacturer** | **Web Site**
--- | ---
Titan | www.titan-intl.com
Goodyear | www.titan-intl.com
Firestone | www.firestoneag.com
BKT | www.bkt-tires.com/en
Pre-Delivery

This information covers setup tasks performed by the dealer before delivery.

**Pinch Point, Crushing, and Moving Hazard**

Unload the planter from the trailer before assembly. **Do not perform any assembly while the planter is on the trailer; failure to do so may causing serious injury or death.**

Make sure all workers that will be unloading the planter have reviewed the safety information in this manual.

- **Requirements for Unloading**
  - firm, level ground or pavement with enough room to unfold the planter,
  - planter Parts manual (411-474P),
  - two or more workers,
  - tractor or tug with a planter-compatible hitch,
  - small jack,
  - ladder,
  - basic hand tools, and
  - an overhead lifter (forklift or crane) capable of raising a marker arm. The arm may be over 12 ft (3.7 m) long and weigh up to 300 lb (135 kg).

- **Unloading the Trailer**

  Due to the overhanging main transport wheels (1), an end dock or pit dock is recommended for unloading. If a suitable dock is not available, contact the factory for hoist instructions.

  **Equipment Damage Risk**

  If the trailer bed will be fully depressed into a pit dock, release tie-downs except at wing casters (2) before the transport wheels contact the dock sides. If the planter is left fully tied down, it could sustain damage or lift the trailer from the tractor upon transport wheel contact.

1. With the trailer at the dock, remove all uncrated components shipped on the trailer deck. Crated components may be removed at any time.
2. Hitch the planter to a tractor or tug to prevent movement after tie-down release. If the planter has the optional hydraulic hitch, open the bypass valve on the hitch cylinder to provided local floating capability at the hitch.
3. Release all tie-downs.
4. Carefully tow the planter off the trailer deck.
5. Move the planter to a flat, lever location with enough room for unfolding.

- **Remove Shipping Wheels**

  The following steps may be performed with the planter folded.

  Do not remove the shipping wheels (1) until the planter is supported by its own main transport wheels (2).

  1. Support the weight of each shipping wheel at the axle (3). A tire jack will be sufficient.
  2. Remove the upper bolts (4) of the shipping wheel arm weldment.
  3. Lower the support jack, swinging the arm down until each shipping tire rests on the ground.
  4. Prepare for the arms to fall away from the seed cart frame. Use extra workers or provide support lines for the arms.
  5. Remove the lower shipping bolts (5).
6. Return the shipping wheels and fastener sets to the truck driver, or hold for later return to Great Plains.

7. Inspect the trailer deck for all needed planter components. Parts not found on the deck may be in a crate or a hopper.

**Press Wheel Installation**

There are two types of press wheel assemblies:

- Long mount assemblies (1) which are used on the front (short) row of a twin pair. These mounts have a series of notches (2) on the side.
- Mid-mount assemblies which are used on the rear (long) row of a twin pair. These mounts have smooth sides.

**To assemble press wheels:**

1. On the shank (3) remove the press wheel adjuster (4), the 1/2 x 1 inch bolt (5), 1/2 x 1 1/2 inch bolt (6), and lock washer (7).

   Do not disturb, loosen, or remove the front two bolts.

2. Align the 1/2 inch holes in the press wheel assembly with the tapped holes in the row unit.

3. Add a lock washer to the 1/2 x 1 inch bolt (5) and loosely screw into the rear hole.

4. Add a lock washer and the press wheel adjuster to the 1/2 x 1 1/2 inch bolt and loosely screw into the front hole.

5. Rotate the adjuster to visually align the press wheel assembly with the row unit.

6. Tighten the adjuster and bolts.
Marker Installation

Heavy Overhead Object Hazard

The marker section may weigh up to 300 lbs. (135 kg), and does not balance at the center. Losing control of the marker section can cause serious injury or death. Use adequate lifting equipment. Use multiple attachment points and extra personnel to control he load.

Starting with either the left-hand or right-hand wing, install the appropriate second and third marker sections (1).

1. Align the pivot tubes (2) on the second marker section with the pivot tube (4) on the first marker section (5).
2. Install the pin (6) and align the hole on the end of the pin to insert the 3/8 inch bolt (7). Secure the bolt with lock nut (8).
3. Align the rod end of the hydraulic cylinder (9) with the slot (10) in the second section.
4. Place a one inch washer (11) on the clevis pin (12) and insert through the slots and cylinder rod end. Secure with another one inch washer and cotter pin (13).
5. Attach the marker lift arm (14) to the first section with the 3/8 x 2 1/2 inch bolt (15). Secure with nylock nut (16).
6. Repeat the procedure for the other marker.
Option Installation

Scraper Installation
These instructions apply to installation of the scraper kit part number 122-278S.
Optional carbide disk scraper is not compatible with Seed-Lok seed firmer. If a Keeton seed firmer is installed, see the parts manual for assembly details.
Start with the left-hand row unit and repeat the following steps for each row unit.

1. Insert the 3/16 x 3 inch bolt (1) from the rear, through the lowest hole of the bracket (2).
2. Place the tube (3) over the bolt.
3. Place the spacer (4) on the bolt with the larger diameter toward the bolt head.
4. Put the left scraper blade (5) on the washer, followed by the right scraper blade (6).
5. Fasten the scraper assembly with a flat washer (7), lock washer (8), and nut (9).
6. Tight the nut to the correct torque from the "Torque Value Chart" on page 88. Make sure the blades pivot freely.
7. Install the spring (10) by connecting the spring between the blades using the small top holes.
8. Remove one or both opener disk blades to gain access the other opener frame (11).
9. Install the scraper assembly (12) between the middle four lower square holes (13) of the opener frame.
10. Secure with two 5/8 x 2 1/2 inch bolts (14) and whiz nuts (15).
11. Reinstall the disk blade.
WARRANTY

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

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

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

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

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

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

Effective July 15, 2020
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