Original Instructions 411-633M

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 Great Plains PL5500 front-fold planter is a pull-type implement with optional dry or liquid fertilizer capability. The planter includes 5000 Series openers with Air-Pro® meters. Optional unit-mounted coulters are available for light to moderate no-till conditions. The seed metering system is ground drive or electric drive.

**Intended Use Statement**

The PL5500 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. It is suitable for conventional till, min-till, and moderate no-till conditions.

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. 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.
- 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 the 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 ear protection like earmuffs or earplugs while working.

Optional 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.
5. PTO power should be disconnected from tractor battery whenever not in use; failure to do so may result in damages to tractor battery.

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 console 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 adjusting the hydraulic system.

Transport

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, ensure all materials have been removed from the planter.

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 the planter is in motion.

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 wings and secure wing hooks on the tongue stop.

3. Put tractor in park or set the parking brake. Turn off engine and remove key to prevent unauthorized starting.

4. Wait for all components to come to a complete stop before leaving the operator’s seat.

5. Detach the tractor. Secure the implement using blocks.

6. Disconnect PTO power from tractor battery if not already completed.

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 reflector at rear of machine.

**Red Reflectors (S/N D1031X-)**

838-266C

One reflector on each bracket on outside hopper frames when planter is folded.

**Red Reflectors (S/N D1032X+)**

838-266C

One reflector on each bracket on the rear frame; below the daytime reflector.
Amber Reflectors
838-265C
One reflector on each outside hopper frame when planter is folded, and one on each outside end of folded wings.

Daytime Reflectors (S/N D1031X-)
838-267C
One reflector on each bracket on outside hopper frames when planter is folded.

One reflector on each side of hitch.

Daytime Reflectors (S/N D1032X+)
838-267C
One reflector on each bracket on the rear frame; above the red reflector.
Excessive Speed Hazard
818-188C

**WARNING**

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

One decal on right-hand side of hitch.

High Pressure Hazard
818-339C

**WARNING**

HIGH PRESSURE FLUID HAZARD
To Prevent Serious Injury or Death:
• Belaying pressure on system before reposing, adjusting, or disassembling.
• Wear proper hand and eye protection when servicing hydraulic. Use special or cardboard instead of hands.
• Keep all components in good repair.

One decal on right-hand side of hitch.

Chemical Hazard
818-323C

**DANGER**

POSSIBLE CHEMICAL HAZARD
Use chemicals to clean service bars, are damage, oil and death.
• Read the label before using, and ensure the correct protection equipment is used.
• Chemical used is non-toxic, non-flammable, and safe for use.
• Keep area clean and free of debris.

One decal on front of each liquid fertilizer tank.

Falling Hazard
818-398C

**CAUTION**

To Avoid Injury from Unsecured Transport Tires:
• Never stand on or use transport tires as a step.
• Tires must be contact will the ground will slide easily.

One on each wheel mount.
Machine Operation
818-587C

**CAUTION**

- Read Owner’s Manual before using machine.
- Stand clear when folding and unfolding markers.
- Stand clear when raising and lowering machine.
- Keep all safety shields and devices in place.
- Keep hands, feet, and clothing away from moving chains and sprockets.
- Never ride on machine.
- Always lower or properly support machine BEFORE servicing.
- Escaping hydraulic fluid can cause serious injury.
- Review safety instructions with all operators annually.

One decal on right-hand side of hitch.

Tire Pressure/Wheel Bolt Torque
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.

One decal on each wheel arm assembly.

Warning: Hot Fluid (Option)
858-004C

**WARNING**

- Read Owner’s Manual BEFORE operating machine.
- Keep hands, feet, and clothing away from moving chains and sprockets.
- Review safety instructions with all operators annually.

One decal on the hydraulic reservoir.

Caution: 540 rpm PTO (Option)
818-130C

**WARNING**

To avoid injury or implement damage:
- Operate only with 540 rpm PTO.

One decal on the PTO hydraulic pump assembly.
Danger: Rotating Driveline (Option)
858-005C

One decal on the PTO hydraulic pump assembly.
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 the systems, and level the planter.

**Hitch Planter to Tractor**

**Crushing Hazard**

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

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

1. Use the jack to raise and lower the planter tongue.
2. After hitching the planter to the tractor, store the jack on the storage tube on top of planter tongue.
3. Secure the planter safety chain to an anchor on the tractor capable of pulling the unit.

**Planter Hitches**

**Hitch Failure Hazard**

Install the hitch base and assemble the parts as shown. Incorrect installation or assembly may lead to hitch failure which could result in a serious highway accident or severe machine damage.

There are four different hitches available for the planter.

**Single-Strap and Scharmüller Hitches**

1. Install the hitch assembly onto the tongue with 1-1/4 x 10 inch bolt (1), lock washer, and nut.
2. Assemble the safety chain, washer, and hitch spacers as shown. Secure with a 1-1/4 x 11-1/2 inch bolt (2), lock washer, and nut.
Category II and III Crossbar Hitches

1. Adjust the tractor 3-point arms and sway blocks to minimize side-to-side sway and assure proper tracking in the field and during transport. See your tractor’s operator manual for information.

2. Install the crossbar hitch onto the tongue with 1-1/4 x 10 inch bolt (1), lock washer, and nut.

3. Connect the tractor to the crossbar hitch.

4. Connect the hydraulic hoses to the tractor remotes.

Hydraulic Hose Connection

**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.

Hydraulic hoses have color coded handle grips to help when hooking 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>Marker/Fold</td>
</tr>
<tr>
<td>Blue</td>
<td>Lift</td>
</tr>
<tr>
<td>Black</td>
<td>Fan</td>
</tr>
</tbody>
</table>

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

Fan Hydraulic Connections

1. Connect the motor return line (1) to the remote circuit return (extend port) or to the sump.

2. Connect the motor inlet line (2) to a tractor remote capable of 5.3 gal/min (20 liter/min). If a priority remote is available, use it for the fan.

Electrical Connection

Make sure the tractor is shut down with accessory power off before making the following connections:

- lighting connector (1) to tractor outlet,
- console connector (2) to tractor harness, or
- any optional or after-market electrical connectors.

These connections can be made in any order, and must be made before moving the planter.
Planter Leveling

Crushing Hazard

To avoid sudden hitch failure risk, always have two bolts through the two holes on both hitch and tongue. Never rely on a single bolt. Failure to do so could cause the hitch to fail.

During initial setup and periodically throughout the season, check that the planter runs level. When planting, the top of the main frame should be parallel to the ground.

To level the planter, the distance from the bottom of the mainframe tube (1) to the ground, must be 26 in (66 cm) with the planter lowered into planting position.

With the openers in the ground, this frame height normally requires a hitch height (2) of 18.25 in (46 cm) measured from the bottom of the tongue to the ground.

To achieve the correct hitch height, remove the two hitch bolts and move the planter hitch to another hole location. Make sure to assemble the hitch parts and safety chain according to “Planter Hitches” on page 12.

Wheel Adjustment for Leveling

If the target tool bar height cannot be achieved with the frame level, relocate the wheel axles in the arms. To do so:

1. Block up the frame to remove weight from the tires.
2. Remove the bolts (1) securing the ground tire assembly to the unit.
3. Move the wheel assembly to one of the other holes and secure the assembly using the previously removed bolt.

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 instructions for your seed monitoring system.

Cross-check the monitor speed reading with the tractor speedometer.

Speed Sensor

The seed monitoring system uses a pickup wheel for measuring planter ground speed. The speed sensor should be set at 1/16 to 1/8 inch (1.6 to 3.2 mm) from the pickup wheel.
**Console Installation**

Install the console using the instructions provided in the console manual.

Once powered on, the main menu will display preprogrammed default settings. To reduce field time and errors, prior to field use, it may be beneficial to program additional settings in advance.

Refer to your seed monitoring system and/or console operator manuals for system information and operations.

**PTO (Option)**

*Entanglement and Crushing Hazard*

Use extreme caution in the hitch area when the PTO is operating. Check essential personnel for long hair, scarfs, cords, frays, loose flaps, and anything else that might become entangled.

Refer to your tractor manual for PTO operation; follow all PTO requirements and recommendations of the tractor manufacturer. Read, and understand, all decals and warning labels on the equipment being used. The PTO pump may be mounted before or after hitching the planter to the tractor.

**PTO Tractor Requirements**

The PTO pump assembly requires:

- a rear-facing ASABE or ASAE Type 1 PTO stub shaft (5) with master shield (6)
  1 3/8 inch (33 mm) 6-spline, clockwise rotation (as viewed from tractor rear, facing forward),
- a live or independent PTO drive system, that can be operated with the tractor stationary,
- a fixed or available shaft speed of 540 rpm, and an available PTO power output of 5 hp (3.7 kW),
- a drawbar (7) that engages the torque arm of the PTO pump assembly, and
- a chain anchor point (8) - a stable, non-moving component of the tractor, within reach of the pump’s torque arm chain.

**PTO Pump Clearance**

If the PTO is not known to conform to Type 1 specifications, check the following pump-specific clearance dimensions:

- Shaft to master shield top:
  3 1/2 inches (8.9 cm) minimum or hinged lid
- Shaft to master shield sides:
  5 inches (12.7 cm) minimum
- Shaft to drawbar top:
  9 inches (22.8 cm) minimum
  15 inches (38.1 cm) maximum
- Shaft to ground:
  16 inches (40.6 cm) minimum

If an offset drawbar is installed, or any clevis is relocated or removed, it may be necessary to invert an offset drawbar, or relocate or remove any clevis installed on the drawbar.
**Set-Up PTO Pump**

**Entanglement and Flailing Equipment Hazard**

Do not use a driveline, shaft extension, adapter, or external gearbox with the PTO pump. Extra fittings create entanglement hazards. Fitting also destabilize the shaft, and may make it impossible to adequately secure the pump against torque and shaft slip. Never alter and remove any existing guards on the tractor or PL5500 planter at any point of PTO pump assembly kit installation. Contact your Great Plains dealer for service.

**Entanglement Hazard**

Do NOT use any pins, cross-bolts, or wires to secure the PTO pump to the PTO shaft. Such fasteners are not required for safe PTO pump operation, and would add a needless entanglement hazard.

**Electrocution Hazard**

When disconnecting the electrical harness from the tractor battery, disconnect the negative terminal first and the positive terminal second. Ensure that the battery rings do not touch any other surfaces.

**Equipment Damage Hazard**

The oil cooler electrical harness should be disconnected from tractor battery whenever not in use. Failure to do so may result in damages to the tractor battery. If not properly disconnected when not in use or during maintenance, storage, and transport, the oil cooler may unexpectedly operate.

1. Back the tractor into close proximity to the planter; within pump hose reach of the PTO shaft. The planter may be hitched to the tractor before or after the PTO pump is mounted and secured.

2. Turn the tractor off and remove the key.

3. Make any necessary adjustment to the tractor drawbar (1).

4. Clear the PTO shaft (2) of any pins or wires that might prevent the PTO pump (3) from fully seating on the shaft.

5. With hydraulic hoses to the rear, and torque arm to right of drawbar, slide the pump assembly fully onto the PTO shaft (2).

6. With the torque arm firmly against the drawbar:
   a. loop the chain once (4) around the drawbar,
   b. then through the anchor point (5),
   c. then around the drawbar (4) at least once more,
   d. then through the keyhole slot (7) in the torque plate.

The drawbar loops prevent pump rotation. The anchor loop retains the pump on the PTO shaft.

7. At least one full chain link must be exposed at the keyhole slot (7) on the decal side of the torque arm plate.

If there are more than a few chains loops left at the plate keyhole, route any excess chain through the anchor point and/or around the drawbar.

8. Pull and twist the PTO pump assembly to verify that the chain is sufficiently taut to prevent excess pump rotation or sliding along the PTO shaft.

The PTO pump system is a closed system, so any visible fluid may be an indication of a leak.
9. Check the oil level on the PTO pump oil reservoir tank.
10. Check that all hydraulic fittings are tight and dry.
11. Inspect all hoses for damages, wear, and fatigue. Replace, as needed, before operation.
The PTO Pump assembly includes an oil cooler. The oil cooler has an electrical harness which needs to be connected to the tractor battery.
12. Inspect the tractor battery terminal posts, electrical wires, battery ring terminals, quick connections, etc. for any wear, damages, rust, or corrosion. Clean, repair, and replace, as necessary.

13. Grasp the positive battery ring terminal (a) and screw into the positive post terminal using the existing bolt on the corresponding battery post.

14. Grasp the negative battery ring terminal (a) and screw into the negative post terminal using the existing bolt on the corresponding battery post.

The tractor battery terminal posts will likely be marked with a (+) and/or colored red for positive and with a (-) and/or colored black for negative.

15. Secure the electrical harness so that it is not loose, dangling, or otherwise able to become tangled or dislodged by other moving parts.
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” beginning on page 2.
- Lubricate as indicated in “Maintenance Schedule” on page 52.
- Check all tires for proper inflation. See “Tire Information” on page 85.
- Check all bolts, pins, and fasteners. See “Torque Value Chart” on page 85.
- 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. 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.
- Check all tire pressures (page 85).
- Make sure planter is leveled (page 14).
- Make sure marker extension and marker disk angle are set correctly (page 48).
- Set up the seed meters for correct seed (page 32).
- Set planting rate. See the Material Rate manual.
- Set fertilizer rate, if required. See the Material Rate manual.
- Check console and observe any diagnostic messages.
- Check chain tension.
- 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 hopper lids.
- Set planting depth handles the same (page 39).
- Set down pressure springs the same except in tracks (page 38).
- Check coulter alignment to the row (page 43).
- Set press wheels the same except in tracks (page 42).
- Check fan operation (page 29).
- Set the lift valve selector lever FORWARD to activate all four lift cylinders; two on the main transport wheels and two on the wing gauge wheels. (page 19).

Begin Planting

- Unfold and line up the planter at the start of the first row.
- Prime the meters with seed (page 36). 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:
  - Fold the marker, raise the planter, and make the turn.
  - 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 cylinder locks (page 19).
- Fold the wings (page 21).
- Turn on lights for transport.
Seed Monitoring System

The seed monitoring system will report to an in-cab console. The reported information will help to identify potential issues during planting. The types of data collected and reported will be dependent on the installed seed monitoring system. Always refer to your seed monitoring system and/or console operator manuals for system information and operations.

Dickey-john PM300 (Option)

PM300 Seed Monitoring System will report the following basic information on the console:

- ground speed,
- up to two hopper levels, and
- seed rate at each row unit seed tube.

Medium and large seeds are individually counted with high accuracy. Small seeds, such as Milo, may be more difficult to sense, and instead, the seed monitoring system will indicate seed blockage.

For console operation instructions, see included Dickey-john Operator manual (11001-1372).

Dickey-john IntelliAg ISO6 (Option)

IntelliAg ISO6 Seed Monitoring System will report valuable information on the console. This system is included with the Individual Row Control (IRC) option. Refer to all accompanying operator manuals for the console and seed monitoring system for complete operating information.

It will be necessary to use the in-cab console to complete operations such as raising/lowering the planter and unfolding/folding the planter. Limited instructions may be found in this manual and will be noted as “with IRC”.

Cylinder Locks

Cylinder locks installed on the two main transport wheel lift cylinder rods will prevent the frame from lowering during transport, parking, and storage, and when completing adjustments and maintenance.

To install cylinder lock:

1. Remove the cylinder lock (1) from storage position (shown).
2. Place the cylinder lock on the fully raised lift cylinder rod and secure with pin.
3. Repeat both steps on the lift hydraulic cylinder on both main transport wheels.

Raising/Lowering the Planter

**Pinch Point, Cut, and Crushing Hazards**

Keep all persons away from wings and openers while raising or lowering the planter. Openers, wings, and other components will cut, pinch, or crush anything beneath them, and can result in serious injury or death.

**Machine Damage Risk**

If markers are installed, always fold markers before raising or lowering the planter or machine damage can occur.

The lift hydraulic system allows for raising and lowering of the planter. The system is designed to control the lift cylinders on the main transport and wing gauge wheels. A double selector valve will control which lift hydraulics are active. Selection allows for the lift cylinders to lower or raise the planter, raise the wing gauge wheels into transport position, or lower the wing gauge wheels into field position.

Raising/Lowering Planter without IRC

**Crushing Hazard**

A raised planter slowly lowers when held up by hydraulic circuit alone, resulting in serious injury for persons trapped beneath row units. Use hydraulic circuit to only hold the raised planter for brief periods, such as during field turns and cylinder lock installation. Cylinder locks should always be used during transport, parking, and storage, and when completing adjustments and maintenance.
Raising Planter without IRC

When the marker valve selector lever is set to DOWN - MARKER ON, the fold hydraulics are inactive.

1. Move the planter to level, even ground.
2. Place the tractor in park and/or set the park brake.
3. Make sure markers, if installed, are fully folded.
4. Set the tractor marker circuit lever to neutral to prepare to set the marker valve.
5. Set the tractor lift circuit lever to neutral to prepare to set the lift valve.
6. Set the marker valve selector lever to DOWN - MARKER ON.
7. Set the lift valve selector lever FORWARD to activate all four lift cylinders; two on the main transport wheels and two on the wing gauge wheels.
8. Extend tractor circuit lift lever until the lift cylinders are fully extended.
9. Set the tractor lift circuit lever to neutral to hold the planter at lift.
10. Install cylinder locks on the fully raised lift cylinder rods on both of the main transport wheels and secure with pins.

Lowering Planter without IRC

When the marker valve lever is set to DOWN - MARKER ON, the fold hydraulics are inactive.

1. Move the planter to level, even ground.
2. Place the tractor in park and/or set the park brake.
3. Make sure markers, if installed, are fully folded.
4. Set the tractor marker circuit lever to neutral to prepare to set the marker valve.
5. Set the tractor lift circuit lever to neutral to prepare to set the lift valve.
6. If installed, remove cylinder locks on the lift cylinder rods.
7. Set the marker selector valve lever to DOWN - MARKER ON.
8. Set the lift valve selector lever FORWARD to activate all four lift cylinders; two on the main transport wheels and two on the wing gauge wheels.
9. Retract tractor circuit lift lever until the lift cylinders are fully retracted.
10. Set the tractor lift circuit lever to neutral to briefly hold the planter.
Raising/Lowering Planter with IRC

Crushing Hazard

A raised planter slowly lowers when held up by hydraulic circuit alone, resulting in serious injury for persons trapped beneath row units. Use hydraulic circuit to only hold the raised planter for brief periods, such as during field turns and cylinder lock installation. Cylinder locks should always be used during transport, parking, and storage, and when completing adjustments and maintenance.

Raising Planter with IRC
1. Move the planter to level, even ground.
2. Place the tractor in park and/or set the park brake.
3. Make sure markers, if installed, are fully folded.
4. Extend tractor circuit lift lever until the lift cylinders are fully extended.
5. Set the tractor lift circuit lever to neutral to briefly hold the planter at lift.
6. Install cylinder locks on the fully raised lift cylinder rods on both of the main transport wheels and secure with pins.

Lowering Planter with IRC
1. Move the planter to level, even ground.
2. Place the tractor in park and/or set the park brake.
3. Make sure markers, if installed, are fully folded.
4. If installed, remove cylinder locks on the lift cylinder rods.
5. Retract tractor circuit lift lever until the lift cylinders are fully retracted.
6. Set the tractor lift circuit lever to neutral to briefly hold the planter.

Rephase Lift System
In typical use during a single planting operation, it is normal for the lift cylinders to become out of phase, resulting in uneven raising and lowering of the planter.

If rephasing without IRC, the lift valve selector lever must be set to FORWARD to rephase all four lift hydraulic cylinders; two on the main transport wheels and two on the wing gauge wheels.

Every 8 to 10 passes, rephase the lift cylinders:
1. Raise the planter fully.
2. Continue to extend tractor lift hydraulic lever for several seconds after the lift cylinders are fully extended.
3. When all of the lift cylinders are fully extended, briefly retract tractor hydraulic lever to lower the planter by 1/2 inch (13 mm).

Unfolding/Folding Planter

Pinch Point, Cut, and Crushing Hazards

Keep all persons away from wings and openers while unfolding or folding the planter. Openers, wings, and other components will cut, pinch, or crush anything beneath them, and can result in serious injury or death.

Machine Damage Risk
If markers are installed, always fold markers before unfolding or folding the planter or machine damage can occur.

Machine Damage Risk
The lift valve selector must be set to REARWARD to protect the machine from unintended movement before the unfolding operation has been completed. Prematurely lowering the wing gauge wheels will cause significant frame damage.

Unfolding the Planter
The planter width will increase while unfolding the wings from the transport position. It is important to ensure there is adequate overhead and side-to-side clearances for unfolding.

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

The planter width will decrease while folding the wings. It is important to make sure there is adequate overhead and side-to-side clearances for folding.

Unfolding Wings without IRC
1. Move the planter to level ground with adequate overhead and side-to-side clearances for unfolding/folding.
2. Place the tractor in park and/or set the park brake.
3. Make sure markers, if installed, are fully folded.
4. Set the tractor marker circuit lever to fully folded to prepare to set the marker valve.
5. Set the tractor lift circuit lever to neutral to prepare to set the lift valve.
6. Set the lift valve selector lever REARWARD to deactivate the lift hydraulics on the two wing gauge wheels.

7. Set the marker valve selector lever to UP - FOLD ON.

8. With the planter raised, extend tractor circuit fold lever until the left and right wings are in-line with the center frame.

9. Rephase the fold cylinders by continuing to extend and hold, the tractor circuit fold lever for an additional 30 seconds after the fold cylinders are fully extended.

10. Set the tractor lift circuit lever to neutral to prepare to set the lift valve.

11. Set the lift valve selector lever FORWARD to activate all four lift cylinders; two on the main transport wheels and two on the wing gauge wheels.

12. If installed, remove cylinder locks from the lift cylinder rods.

13. Extend the tractor circuit lift lever to fully lower the outer wing gauge wheels.

14. Set the tractor lift circuit lever to neutral.

15. Set the tractor marker circuit lever to neutral to prepare to set the marker valve.

16. Set the marker valve selector lever to DOWN - MARKER ON. The fold hydraulics will be inactive.

Folding Wings without IRC

1. Move the planter to level ground with adequate overhead and side-to-side clearances for unfolding/folding.

2. Place the tractor in park and/or set the park brake.

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

4. Set the tractor marker circuit lever to neutral to prepare to set the marker valve.

5. Set the tractor lift circuit lever to neutral to prepare to set the lift valve.

6. Set the marker valve selector lever to UP - FOLD ON.

7. Set the lift valve selector lever FORWARD to activate all four lift cylinders; two on the main transport wheels and two on the wing gauge wheels.
transport wheels and two on the wing gauge wheels.

8. Retract the tractor circuit lift lever to fully raise the outer wing gauge wheels and the planter frame.

9. Retract the tractor circuit fold lever to retract the fold cylinders (3) to bring the left and right wings forward until each wing hook (4) is resting on the tongue stop (5).

10. Set the tractor fold circuit lever to neutral.

11. Extend tractor circuit lift lever to ensure the lift cylinders are fully extended.

12. Set the tractor marker circuit lever to neutral to prepare to set the marker valve.

13. Set the tractor lift circuit lever to neutral to prepare to set the lift valve.

14. Install cylinder locks on the fully raised lift cylinder rods on both of the main transport wheels and secure with pins.

15. Set the marker valve selector lever to DOWN - MARKER ON. The fold hydraulics will be inactive.

16. Set the lift valve selector lever REARWARD to deactivate the lift hydraulics on the two wing gauge wheels.

Unfolding Wings with IRC

1. Move the planter to level ground with adequate overhead and side-to-side clearances for unfolding/folding.

2. Place the tractor in park and/or set the park brake.

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

While using the console, you may tap the HOME icon from almost any screen to return to the MAIN SCREEN.
4. On the console, on the MAIN SCREEN, tap the FOLD SEQUENCE icon.

5. On the console, on the FOLD SEQUENCE screen, tap FOLD icon.

6. After tapping the FOLD icon, the icon will change to a blue color, and it will change slightly in appearance, as shown. This will indicate the fold hydraulics are active, and are ready to be engaged.

7. With the blue icon indicating active fold hydraulics on the console, extend tractor circuit fold lever to fully extend the fold cylinders (3) until the left and right wings are in-line with the center frame.

8. Rephase the fold cylinders by continuing to extend and hold, the tractor circuit fold lever for an additional 30 seconds after the fold cylinders are fully extended.

9. Extend the tractor circuit lift lever to extend the lift cylinders until the planter is fully raised.

10. Set the tractor circuit lift lever to neutral to hold at a lift.

11. If installed, remove cylinder locks from the lift cylinder rods.

12. When unfolding is complete, the outer wing gauge wheels must be fully lower by extending the tractor circuit lift lever.

13. When the planter is in the correct position, with wings fully unfolded, the wing gauge wheels lowered to the ground, and the cylinder locks from the lift cylinder rods removed, tap the blue FOLD icon.

14. After tapping the FOLD icon, the icon will change to a gray color, and it will change slightly in
appearance, as shown. This will indicate the fold hydraulics are inactive.

Folding Wings with IRC
1. Move the planter to level ground with adequate overhead and side-to-side clearances for unfolding/folding.
2. Place the tractor in park and/or set the park brake.
3. Make sure markers, if installed, are fully folded.
5. Set the tractor circuit lift lever to neutral.

   While using the console, you may tap the HOME icon from almost any screen to return to the MAIN SCREEN.

6. On the console, on the MAIN SCREEN, tap the FOLD SEQUENCE icon.
7. On the console, on the FOLD SEQUENCE screen, tap FOLD icon.

8. After tapping the FOLD icon, the icon will change to a blue color, and it will change slightly in appearance, as shown. This will indicate the fold hydraulics are active, and are ready to be engaged.

9. Set the tractor circuit lift lever to neutral.
10. Install cylinder locks on the fully raised lift cylinder rods on both of the main transport wheels and secure with pins.
11. With the blue soft key indicating active fold hydraulics on the console, retract the tractor circuit lift lever to fully raise the outer wing gauge wheels.
12. Retract the tractor circuit fold lever until the fold cylinders (3) are fully retracted to bring the left
and right wings forward until each wing hook (4) is resting on the tongue stop (5).

13. Set the tractor circuit fold lever to neutral.
14. When the planter is in the correct position with, wing gauge wheels raised, wings fully folded, and the cylinder locks installed on the lift cylinder rods, tap the blue FOLD icon.

15. After tapping the FOLD icon, the icon will change to a gray color, and it will change slightly in appearance, as shown. This will indicate the fold hydraulics are inactive.

**Tongue Stop Adjustment**

If the wing hooks (1) do not capture the tongue stop correctly, adjust the tongue stop.

1. Loosen the four bolts (2).
2. Adjust the tongue stop (3) up or down as needed.
3. Tighten the bolts.

**Height Switch**

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

To adjust the height switch:

1. Lower the planter to the height at which seed delivery should begin.
2. Loosen the nut (1) on the height switch.
3. Rotate the switch until the spring actuator (2) touches the cylinder pin (3).
4. Rotate the switch in until it clicks. Tighten the nuts to secure the bracket.
Air System Operation

Equipment Damage Hazard

Use the special blank disk, and close the seed inlet shutter when a row is shut off. Running a seed disk with no seed, or with an open empty inlet, unbalances the air system. Doing either at a sensor row causes the gauge to report incorrectly.

--- shows air direction

The hydraulic fan (1) supplies air for meter operation. Fan rpm is operator-adjusted (page 29), normally with the tractor remote hydraulic flow control.

Dry fertilizer fan operation - a manually-adjusted butterfly valve (2) is provided at the fan outlet. See page 31 for butterfly valve adjustment.

The center planter frame (3) delivers fan air. Separate tubes (4) route air to each row unit.

Fan speed is controlled by the tractor circuit, not the seed monitoring system or in-cab console.
Seed is delivered from the hopper (5) by gravity to the seed meter.

Seed enters the meter at the seed inlet and forms a seed pool (6) at the base of the meter. The gate handle controls the seed inlet gate (7) and the size of the seed pool. The inlet gate also minimizes air loss back up the seed inlet tube. See page 34 for gate adjustments.

The meter disk is driven by a chain drive connected to the drive shaft or IRC.

At the meter, pressurized air exits the meter through the seed disk cells (8), and holds seed in the cells until released above the seed tube (9). Excess seed at a cell is picked off by the tufted brushes (10).

The strip (11) and drop (12) brushes block meter pressure air. Seeds passing the drop brush are free to fall into the seed tube.

The seed tube sensor (13) detects seeds passing and reports to the console. Medium size and large seeds are counted individually. For smaller seeds, the seed sensor acts as a blockage indicator.

Several rows have a pressure sensor port (14) for the meter pressure system. A line from each of these rows is connected to a pressure sensor chamber (15) to average the pressures.

The averaged pressure is reported by a pressure gauge. See “Fan Adjustment” on page 30 for using the gauge to make fan adjustments.

Do not operate in the ground with the fan shut off, or with insufficient air pressure. The meters will completely fill with seed. Meter clean-out may be required to resume normal operation.
**Fan Hydraulics**

Two hydraulic hoses to the fan must be properly connected for the fan to operate in the correct direction (1), at recommended speeds, and without damage.

Connect the motor return line (2) to the remote circuit return (extend port) or to the sump.

A pressure-relief quick-disconnect coupler for the return line prevents motor damage if the return line is not connected, or is connected incorrectly. However, an oil spill results if the return line is not correctly connected.

Connect the motor inlet line (3) to a tractor remote capable of 5 gal/min (20 liter/min). If a priority remote is available, use it for the fan.

A check valve (4) provides a relief path for oil at motor shutoff. If hydraulic hoses to the fan are reversed, flow through this valve results in low fan rpm.

If the 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 not capable of providing enough air flow for planting.

If a reversed fan is suspected, observe during shutoff since the direction of the motor is easier to see at lower rpms. Initial startup is nearly instantaneous, making observing at startup difficult.

Fan speed can change as oil heats to operating temperature. Check meter pressurization more often during early operations.

Stop the fan by setting the circuit to neutral or float. The check valve slows the blades to a stop by locally recirculating the oil.

**Fan Operation**

**Low Population Risk at Turns**

Aggressive lift operations and simultaneous marker operations can reduce fan rpm below that needed to pressurize meter disks. If seed falls out of cells, low population bands will occur shortly after turns.

Use tractor remote hydraulic valve flow control to set the fan speed. Always start the fan with a low flow setting. Observe fan rpm with the seed monitoring system.

Gradually bring the fan up to the recommended initial meter pressure.

The Material Rate manual provides initial values for meter pressurization. Normal gauge readings are in the 4/5 in. to 40 in. water pressure range and vary considerably with the crop.

If the tractor has marginal flow available, you may need to experiment with combinations of fan flow.

For any setup adjustment, operate the tractor engine at typical field rpms, and not at idle.

Dry fertilizer fan operation - preset the butterfly valve. Use any setting that you previously developed for the crop/disk/range. If the tractor has fine control of remote flow rates, and consistent flow at varying tractor engine rpm, initially set the butterfly valve to 30° or less. If the tractor has only coarse control of flow, initially set the butterfly valve to 45°. Fine tune meter pressure with the butterfly valve.

The fan requires up to 4.5 gal/min (17 liter/min). This does not include oil for lift/lower or for marker operation.

Unless the tractor has generous oil flow capacity, raise/fold markers before lift, and lift slowly. Watch meter pressure and tune operations to keep it at planting levels in turns.

At excessive rpm, too much air flow can cause oil heating or slow lift times.

If desired pressure cannot be reached, the fan may be running backwards. Reverse the inlet/return lines at the hitch.
Fan Adjustment

Adjust the fan to provide the meter pressure recommended for the seed disk, seed, and seed density. See the tables and charts in the Material Rate manual for recommended values.

Make sure the correct seed disks are installed (see seed rate charts), and the seed inlet gates are set for the proper seed.

1. With the fan off, check meter pressurization reported by the pressure gauge. Re-zero as needed (page 74).
2. Determine the recommended meter pressurization based on your own notes or the Material Rate manual.
3. Place the tractor in park and set the brakes.
4. Set tractor engine speed to typical field rpm. Lift the planter.
5. Start the fan. Gradually increase fan speed using the tractor hydraulic flow control for the circuit. Using hydraulic flow and the butterfly valve (if available), adjust meter pressurization to the developed or suggested value from step 2.
6. Fill the meters.
   a. For electric drive - Run a FILL DISK operation. See console manual for instructions for your seed monitoring system.
   b. For ground drive planters - Rotate the ground drive wheel to fill the meters. Meters are filled when seed begins emerging below two or more openers.
7. With the fan running, place the tractor in park and set the brake.
8. Walk behind the planter, remove several rain covers, and check for seed in the meters by looking through the clear disks.
9. Check meter pressurization. With the meters and disks filled, air loss through empty disk cells is reduced, and meter pressurization can change.
10. Begin planting. Troubleshoot any obvious problems or console alarms.
11. During the first pass, note the average populations reported through the seed monitoring system.
    If the population is only slightly low, the problem can be skips caused by empty disk cells. If slightly high, the problem can be doubles caused by cells with double seed. A meter pressurization adjustment may correct either condition.
    If the reported seed population varies from your desired rate by a significant amount, perform a furrow check. See “Furrow Check” on page 31.
    For serious rate variations, for which the source of the problem and the solution are not quickly determined, see “Seed Population Troubleshooting” on page 75.
12. Resume planting.
    A small population difference between rows is normal. 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 75.
13. Continue to observe meter pressurization.
    When oil reaches operating temperature, fan speed can change. Expect to make periodic adjustments to the fan circuit or butterfly valve (if available) to maintain ideal meter pressurization.

Adjusting for Skips

If everything else is correct, and the overall average population is running low, or there are gaps when doing a furrow check, seeds may be falling out of disk cells 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 cells. Be sure to rule out other causes such as skipping chains, meter starvation, or incorrect meter disks before adjusting meter pressurization to reduce skips.

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 cells at delivery to the seed tube. Decrease meter pressurization to correct this.

To decrease meter pressurization:
1. Adjust the tractor hydraulic flow.
2. Wait 5 to 10 seconds for the system to update while you continue planting.
3. Continue making small adjustments until the reported population levels out at the target value.
Be sure to rule out other causes, such as incorrect meter disks, before adjusting meter pressurization to reduce doubles.

**Alternate Skip/Doubles Check**

Small seeds, particularly milo, may not be sensed as skips or doubles by the seed tube sensors, and watching seed 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 the 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 a pass or less.
3. Stop the planter motion but leave the engine at field rpm and the fan running.
4. Inspect the seed disks closely. Look for empty seed cells (skips) and cells with multiple seeds (doubles).
5. Repeat step 2 through step 4 until limits are established. Record the limits and calculate an average.
6. Install the rain covers and plant with the calculated average.

**Furrow Check**

1. Expose several seeds in several rows, being careful not to move them.
2. Measure and average the distance between seeds.
3. Compare the average to the predicted seed spacing for the population in the Material Rate manual.
4. Any instances of no seed where expected may be a sign of skips. Two seeds at the same place indicates doubles.

**Fine-Tune Meter Pressurization**

After several passes of satisfactory planter operation, fine-tune meter pressurization. During longer passes, with fewer distractions:

1. Observe the current overall average population from the monitor.
2. Adjust the fan speed down in small increments. Wait 5 to 10 seconds between adjustments, until skips occur (population begins falling below target). Note the pressure where skips begin.
3. Restore the pressure to the initial value at step 1.
4. Adjust the fan speed up by small increments until doubles occur (population begins rising above target). Note the pressure where doubles begin.
5. Adjust meter pressurization to a value halfway between the limits from step 2 and step 4. This is the ideal value for your crop, disk, and population. Record this value for future use.

**Butterfly Valve (Dry Fertilizer)**

To adjust the butterfly valve, loosen the bolt (1) and rotate the handle (2). Tighten the bolt.

- 0° is wide open - maximum air flow.
- 90° is closed - minimum air flow.

The butterfly valve provides the most effect at settings between 20° and 70°.

Start at 45° on both butterfly valves and adjust as needed.

**Loading Hoppers**

**Agricultural Chemical Hazard**

Read and follow all supplier cautions for safe handling of treated seed.

**Irritant Exposure Hazard**

Do not mix lubricants into seed with hands or any part of body. Wear protective equipment. Use tools.

There are two different sizes of planter hoppers - 3.0 bushel and 1.6 bushel. The process for loading both hoppers are the same.

Release the hopper lid latch and raise the hopper lid. Leave the lid all the way open for loading.

1. Check that each hopper is correctly seated and mounting bolts are secured. Make sure the hopper discharge opening is aligned with the seed inlet tube.
2. Clean out any leftover seed and debris in the hopper. See “Seed Clean-Out” on page 55.

3. Install the correct seed disks (page 36).

4. Premix seed and Ezee Glide Plus lubricant. See “Seed Lubricants” on page 32.
   If unable to premix before loading, premix at least one gallon (4 liters) per hopper, and load this seed first. Fill the hoppers to half full with fresh seed. Add half the lubricant and stir with a tool. Complete filling the hoppers and sprinkle the remaining lubricant on top.

5. Add seed and lubricant to the hoppers.

6. Close and latch the lids.

Seed Lubricants

**Irritation 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, as specific concentrations 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.

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

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 one cup per 4 bushels or units (170 ml per 100 liter) of seed.
- For milo, cotton, and sunflowers, double the application to one cup, or more, per 2 bushels or units (335 ml per 100 liter) of seed.
- For canola or mustard, 1 cup per 30 lb (240 ml per 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 will affect accurate metering.

**Seed Meter Setup and Adjustments**

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

**Seed Meter Rain Cover**

The rain cover keeps side winds from pushing seed out of the disk cells. 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 58.

Seed Disk Installation

Incorrect Brush Seating Risk

If planting will not be done within an hour or two of disk installation, rotate the drive system a few turns to make sure that the brushes lean in the correct direction. This will improve meter performance and reduce air consumption.

Population Risk

Make sure to use the same disk in all active rows.

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

2. Before installing, inspect the disks. Do not install damaged or 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 (see page 56 for details).

5. Make sure the seed meter clamp (1) is aligned with the disk seat (2).

6. With the seed cell 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).

   With a new meter or new brushes, force the disk into the brushes to position the seed meter clamp. The brushes will be trained during initial rotations.

   With slightly used brushes, when a disk is first clamped, the disk hub may be flat with the disk seat only on the gate side. The disk should seat as it first turns. This condition will ease as the brushes are used.

8. Rotate disks forward after disk installation. This is particularly important for new brushes.

9. Set the seed inlet gate to the setting on the seed rate chart or to your own developed value.

10. On the console, select the new MATERIAL, seed disk CELL COUNT, and target population. See console manual for instructions for your seed monitoring system.

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 on the planter, to the seed meter or place a tarp under the row unit to collect the seed.
3. Hold the 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 container or on the tarp.

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

6. Clean the seed from all brushes. Inspect brushes for excess wear and damage, see "If an obvious groove is worn in the drop brush, replace the brush." on page 57.

7. Clean disk seat so new disks can fully seat.

8. Inspect removed disks for excess wear and damage, see "" on page 59. Set aside any disks requiring replacement.

9. Clean seed disks and place in storage.

10. Install the rain covers.

### Seed Inlet Gate Adjustment

The seed inlet gate (1) 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 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 (2) and move the gate up or down as necessary. There are four settings for the gate (I, II, III, IV).

<table>
<thead>
<tr>
<th>Setting</th>
<th>Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>X</td>
<td>Closed - row shut-off, meter refill</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>IV</td>
<td>Large corn, heavily treated corn</td>
</tr>
<tr>
<td>O</td>
<td>Wide open - clean-out</td>
</tr>
</tbody>
</table>
Seeds 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.
Adjust the seed inlet gate if the suggested setting does not work for your seed.
For medium size and smaller seeds that flow easily, the slope runs from just above the 8:00 position on the housing wall, down to one or two seeds deep at the base of the rear strip brush (1).

For medium size and larger, or heavily treated smaller seeds that flow less easily, the slope runs at or slightly above the 8:30 position on the housing wall, 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, and that just enough seeds are present to begin populating the cells.

Seed Meter Refill

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 caused the bridging. Remove the debris from the meter to eliminate the risk of an object lodging in a seed pocket and causing skips.

Once planting is underway with the seed pools set, bridging may occur at or above the seed inlet and cause the meter to run empty.
An empty meter causes a console Row Failure alarm with a report of the row number.
Row numbers are counted from the left, the outside row is row 1.

To correct the bridging issue:
1. Stop and place the tractor in park. Leave the fan running.
2. Locate the failed row. Remove the rain cover to make sure the meter is empty. Check the gate setting.
3. Temporarily open the gate one or two notches wider.
   a. If the problem was bridging at the gate, seed should flow into the meter immediately.
   b. If little or no seed flows into the meter with the gate open wider, 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. Make sure that all operating rows were at the correct initial gate setting. If so, reset the gates to the next higher opening.
Seed Meter Operation
1. Install disks for your crop/population range according to the Material Rate manual and the instructions beginning on page 36 of this manual.
2. Open the gate at the planting rows to the recommended initial setting from the seed rate charts. At unused rows, install a blank disk and close the inlet gate.
3. Operate the fan to achieve the suggested air pressure.
4. With all rows primed, rotate meters one turn to fill the cells to the edge of the drop brush. Rotate the drive shaft (top forward) with a 7/8 inch wrench, or raise and rotate the ground drive wheel (top forward).
5. Leave the fan running to keep seed in top cells.
6. Install rain covers.
7. Begin planting. Meter operation is automatic from this point on.

Planting Rate

Population Target Risk
Tire pressure is important for ground drive planters. Incorrect tire pressure causes incorrect or inconsistent seed metering.

Prepare seed meters, including disks, gates, and meter pressurization.
Check tire pressure.
Check planting rate.
Changes in seed rate do not affect fertilizer rate.
Full details on rate setting sprocket selection and installation are found in the Material Rate manual.

Seed Monitoring System Setup
The seed monitoring system must be set up with: (a) correct row count, (b) correct row spacing, (c) speed calibration, and (d) expected population limits for rate reports and useful alarms. See console manual for instructions for your seed monitoring system.
If you only plant with the factory configuration of the planter, you do not need to update row count and spacing. If any rows are unused, adjust the seed monitoring system setup. Speed calibration must be done before first use. After that, calibration is recommended periodically, particularly if soil conditions change. See the Material Rate manual and the console manual for instructions for your seed monitoring system. If any rows are unused, use the blank disks.

Ground Drive Setup
Adjust drive speed range sprockets and transmission sprockets.
See the console manual for instructions for setting up your seed monitoring system.

Range Sprockets
1. Select the range sprockets for your seed and rate from the charts in the Material Rate manual.
2. Loosen the idler (1) and remove the drive chain.
3. Remove the retaining pins from the sprockets (2) and storage towers.
4. Exchange the sprockets to match the seed rate chart.
5. Install the retaining pins on the sprockets. Store and pin the removed sprockets onto the storage towers.
6. Reroute the chain and tighten the idler.

Transmission Sprockets
1. Select the transmission sprockets for your seed and rate from the Material Rate manual.
2. Pull the idler handle (1) to remove the chain.
3. Remove the retaining pins from DRIVING (2) or DRIVEN (3) sprockets, and at the storage towers (4).

4. Exchange sprockets so the new DRIVING and DRIVEN sprocket tooth counts match the seed rate chart.

5. Install the retaining pins on the sprockets. Store and pin the removed sprockets onto the storage towers.

6. Reroute the chain and engage the idler.

Pressurization air inlet (2) - Pressure-regulated air enters the meter here and holds seed in the disk cells. See “Fan Adjustment” on page 30.

Seed inlet (3) - Gravity carries the seed into the meter at the seed inlet gate. There are no adjustments.

Seed meter (4) - See “Seed Meter Setup and Adjustments” on page 32.

Seed inlet gate (5) - 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 34.

Side depth wheel - The T-handle (6) sets the planting depth by controlling the height of the side depth wheels relative to the opener disks. See “Setting Planting Depth” on page 39.

Press wheels (7) - The press wheels close the furrow, pressing the soil over the seed to provide good seed to soil contact. See “Tighten the nut (1)” on page 41. A variety of single and dual press wheels are available, some are region-specific. Consult your Great Plains dealer.

Unit mount coulter (8) - Optional unit mount coulters cut remaining trash and begin opening the seed furrow. Working depth is set by row depth and a mounting hole selection. See “” on page 43.

Opener disks (9) - Row unit double disk openers create the seedbed furrow with adjustments for angle and spacing. See “Opener Disks” on page 39.

Seed tube with sensor (10) - Requires no adjustment.

Scrapers (11) - Optional inside scrapers require no adjustment. For side depth wheel scrapers, see “Depth Wheel Scrapers (Option)” on page 41.

Seed firmers (12) - The seed firmer minimizes seed bounce and improves soil contact. It may also deliver fertilizer. see “Coulter Row Alignment” on page 43.

Check Planting Rate
Always check seed delivery rate before planting.
The seed monitoring system can count most singulated seeds, but may not accurately count the smallest seeds, such as milo.
Rate checking is described in detail in the Material Rate manual.

■ 5000 Series Row Unit
Down-pressure cam (1) - A row unit is 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.
The seed flap is standard. The Keeton® seed firmer (shown) is optional.

(3) If the side depth wheels are creating a trench into the subsoil, down force is too high and needs to be reduced.

**Row Unit Down Pressure**

The ideal amount of down force causes the side depth 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).

---

**Down-Pressure Adjustment**

**Machine Damage Risk**

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.

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, adjust tractor tires so the tires are not ahead of the planter 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. Raise the planter and secure.
Although this adjustment can be made with the planter lowered, the springs will be in tension and will require more effort. This extra force may damage tools.

2. Use 1-1/8 inch (29 mm) open end wrench or the wrench stored on the left row unit of the center frame.

If using the supplied wrench, be sure the row unit is off the ground to fully relax the springs.

3. Position the wrench on the nut (1). Pull back and down.

4. Move the down-pressure cam (2) to the new setting.

Minimum setting (3) and maximum setting (4) are indicated by the position of the cam. Each notch on the cam will increase the down pressure on the row unit springs. Use the table below 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>255</td>
<td>115</td>
</tr>
<tr>
<td>2</td>
<td>265</td>
<td>120</td>
</tr>
<tr>
<td>3</td>
<td>285</td>
<td>130</td>
</tr>
<tr>
<td>4</td>
<td>315</td>
<td>145</td>
</tr>
<tr>
<td>5</td>
<td>345</td>
<td>155</td>
</tr>
<tr>
<td>6</td>
<td>375</td>
<td>170</td>
</tr>
</tbody>
</table>

Individual rows may be set higher if running in tire tracks.

### Opener Disks

**Sharp Object Hazard**

*Coulter and disk blades are sharp. To avoid serious injury, wear gloves when working in this area.*

**Crushing Hazard**

*Make sure machine is secure before working on it. A falling machine can result in severe injury or death.*

The openers have three adjustments:

1. Planting/seed depth
2. Openers disk to disk clearance
3. Depth wheel/opener disk clearance

### Setting Planting Depth

The T-handle sets planting depth by limiting how high the side depth 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:

- Move the T-handle forward (A) for shallower planting.
Move the T-handle back (B) or deeper planting.

Disk Contact Adjustment

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

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

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

To move spacer washers:
1. Raise the planter and install lift cylinder locks.
2. Remove the side depth wheels on the row unit needing adjustment.
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.

Side Depth Wheel Adjustments

For disk-to-wheel angle and clearance, the side depth 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 wedging between the disks.

The side depth wheels have two adjustments. Changing one requires at least checking the other. The two adjustments are:

- angle of side depth wheel, and
- distance between side depth wheels and disks.

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

For 2 in. (5 cm) planting depth, adjust the side depth 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 to 16 mm) at the top. Check with row units in the soil so wheels are held up.

At the same time, keep side depth wheels close to opener disks so openers do not plug with soil or trash. Wheels should be out far enough so disks and wheels turn freely.

To adjust the side depth wheels:
1. Raise the planter slightly, removing the weight from the side depth wheels.
2. Loosen the bolt (1).
3. Move the wheel and arm out on the O-ring bushing.
4. Loosen the pivot bolt (2).
5. Turn the 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 the wheel arm in so the side depth 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 in. (5 cm) planting depth. Lift wheel 2 in. (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 soil, 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.
8. Tighten the bolt as follows:
   - Grade 5 bolt - 76 lb ft (102 Nm)
   - Grade 8 bolt - 110 lb ft (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 lb ft (150 Nm).

- **Depth Wheel Scrapers (Option)**
  Side depth wheel scrapers may be useful in moist or sticky soils that tend to accumulate on side depth wheels reducing the intended planting depth.

To adjust depth wheel scrapers:
1. Loosen the nut (1).
2. Slide the depth wheel scraper (2) toward the depth wheel until the scraper touches the tire.
3. Slide the scraper away from the wheel leaving a 1/8 in. (3mm) 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**
  **Crushing Hazard**
  Make sure machine is secure before working on it. A falling machine can result in severe injury or death.

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.

Higher press wheel down pressures reduce the down force on the main row unit shank components, such as the openers. High press wheel settings may require an increase in overall row unit down pressure.

There are three adjustments on the press wheel assembly:

1. 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.
2. Wheel stagger - Factory setting is staggered for the best residue flow.
3. 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.

**Down Pressure**

To adjust the down pressure, move the adjustment handle (1):

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

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

**Press Wheel Stagger**

To change the press wheel stagger:

1. Raise the planter and secure with blocks.
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 wheel assembly needs to move to center the wheels.
2. Raise the planter and secure with blocks.
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.
## Unit Mount Coulters

**Sharp Object Hazard**

*Row cleaner tines, casting edges, and coulter blades are sharp. To avoid serious injury, wear gloves when working in this area.*

**Crushing Hazard**

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

The best operating depth for coulters is 1/4 in. (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.

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

1. Raise and secure 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. Determine the current opener and coulter depths.

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

<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>1/4 inch (6.4 mm) above opener</td>
</tr>
<tr>
<td>2</td>
<td>1/2 inch (3 mm) below opener</td>
</tr>
<tr>
<td>3</td>
<td>1/2 inch (13 mm) below opener</td>
</tr>
</tbody>
</table>

4. Remove bolt, lock washer, and nut (4).

5. Move the coulter blade to the new position.

6. Install the bolt and fasten the lock washer and nut.

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

**Coulter Row Alignment**

For unit-mount 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 “**Tighten the nut (1).**” on page 41.

To adjust coulter alignment, loosen the four bolts that attach the coulter bracket to the row unit. 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 Firmer

#### Sharp Object Hazard

Disk blades are sharp. To avoid serious injury, wear gloves when working in this area.

#### Keeton® Seed Firmer

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 year, 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. This distance should be 4 to 4 1/2 inch (10.2 to 11.4 cm).

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

### Liquid Fertilizer

#### 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

Load chemicals just before using. If fertilizer remains in the tanks for extended periods, settling of material and system plugging will occur.

#### Equipment Damage Risk

Do not run the pump when dry. Remove the pump drive chain if not applying fertilizer. Air rapidly corrodes the pump. When not pumping, fill the pump with clean water or RV antifreeze.

When not applying fertilizer, disengage the chain on the pump drive.

### Tank Loading Preparation

#### Equipment Damage Risk

- Wear protective equipment suitable for the material presently in or previously dispensed from the tanks.
- Be familiar with the location of plumbing valves.
- Remove the lid on each tank and inspect for left-over fertilizer not compatible with fertilizer you are adding, contaminants, debris that might clog filters, trapped animals, lost tools, etc.
- If it is necessary to flush a tank or remove debris too large to flush, see "" on page 62.
- Secure each lid.
- At first use each season and after extended use, check the strainer mounted under the pump. Clean the strainer before loading fertilizer.
- The standard strainer screen size is 80. Some orifice selections require changing the strainer.
- Determine how to monitor the tank fill level. If the day is bright, or loading at night with a bright light available, it is possible to see the fluid level through the tank walls. Otherwise, it is necessary to have an observer at the tank opening.
- Use the proper liquid fertilizer.
- Move the planter to level ground.
- See the Material Rate manual for rate setting details. Set the fertilizer drive sprockets and piston pump rate adjuster according to the rate charts.
- Install the recommended size orifice plate at each active drop line (see Material Rate manual).
Tank Loading Procedure

Use the quick-fill valve to fill the tanks. The quick-fill valve is located to the left of the fan, behind the left tank. Material will flow to both tanks when filling.

1. Close the quick-fill valve (1).
2. Open each tank valve (2).
3. Close the pump valve (3).
4. Connect the fertilizer supply to the quick-fill valve inlet (4).
5. Open the supply valve (if any) and check for leaks.
6. Tell the observer to watch the tank fill level.
   The tank lid can be removed to monitor fill level, but is not necessary. The lid is vented preventing back-pressure at normal fill and application rates.
7. Start the source pump (if any).
8. Open the quick-fill valve.
   If the ground is not level, one tank may fill faster than the other. Reduce the inlet rate to allow them to balance. If one tank becomes full before the other, close the tank valve to prevent overflow.
9. When both tanks are at the desired fill level, stop the source pump (if any), close the source valve (if any), and close the quick-fill valve.
10. Disconnect the supply line.
11. Close removed tank lids, if necessary.
12. If loading fertilizer before transport, close each tank valve.
13. Open the pump valve.

Tank Hatch Loading

If for any reason you cannot use the quick-fill valve to fill the fertilizer tanks, you can load material at the tank opening.

1. Close the quick-fill valve.
2. Open each tank valve.
3. Close the pump valve.
4. Remove the lid on the tank to load.
5. Route the supply line into the tank.
6. Start the fertilizer flow.
   With both tank valves open, one tank will load both tanks. To load separately, close one tank valve.
   On ground that is not level, one tank may fill faster than the other. Reduce the fill rate to allow them to balance.
7. When both tanks are at the desired fill level, stop the source supply.
8. Close the tank lid.
9. If loading fertilizer before transport, close each tank valve.
10. Open the pump valve.

Liquid Fertilizer Operation

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 adjust relief valve and a well maintained strainer ahead of the pump.
Great Plains recommends checking with your local agronomist, as soil conditions vary. Conditions in your area may need less or more fertilizer than is represented in the fertilizer charts.

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

When the planter is lowered and in motion, the pump operates, and fertilizer is applied based on fertilizer transmission sprockets and pump adjuster setting.

Coarse 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 and rates, see the Material Rate manual.

After fertilizer has been loaded and other setup items completed:

1. Make sure the quick-fill valve is closed.
2. Open the pump valve.
3. Open the tank valves.
4. If the relief valve has not been previously adjusted, perform the initial setting (see Material Rate manual).
5. Prime the fertilizer system before filling the seed meter disks to avoid wasting seed. It usually takes more than one meter revolution to fill the boom.
6. Shut off the fan.
7. Lower the planter.
8. Pull forward until the fertilizer gauge registers back-pressure from the boom.
9. Open the seed meter gates.
10. Monitor the fertilizer gauge. Make relief valve adjustments as necessary.
11. Be aware of the fertilizer tank levels while planting to confirm the expected rate, and to avoid running the pump dry.
12. If fertilizer is used up prematurely, reload fertilizer immediately. If fertilizer is not available, load clean water and continue planting with the pump operating to flush the system. Disconnect the pump drive before water is gone to keep the pump wet.

**Equipment Damage**

> Do not run pump dry. Air rapidly damages a pump. With all drive chains in place, the pump always runs when the planter is lowered and in motion. Disconnect a chain when not applying fertilizer.

13. If residual fertilizer is not recovered at the end of planting, apply it to the last field planted. Turn the fan off to prevent metering seed or remove a meter drive system chain. Optionally lock up rows to reduce row unit wear.

14. Clean out the fertilizer system. See "" on page 62.

**Vantage I Liquid Fertilizer Coulters**

The spring (1) is factory preset and requires no adjustment.

Adjust the shaft (2) to set the coulter for a running depth (3) of 4 to 4-1/2 in. (10.2 to 11.4 cm) below the ground level (4).

Adjust the tine height for a running depth (5) of 1 in. (2.5 cm) below ground level. Loosen the two hex flange nuts (6) and slide tine arm up or down as needed. Tighten the hex flange nuts after adjusting.
**Dry Fertilizer**

**Dry Fertilizer Hopper Loading**

*Agricultural Chemical Hazard*

⚠️ Wear protective equipment suitable for the material to be used, and the material previously dispensed from the hoppers. Avoid contact with skin or eyes. Avoid breathing dust.

Loading fertilizer before transport is not recommended. Although the meters are not turning during transport, it is possible for some material to spill through the meters, particularly on rough roads.

Use only dry granular fertilizer. Granules must flow freely.

1. Position the planter facing into the wind, so that you are facing downwind while loading fertilizer.
2. Open the tarp cover.
   a. Unlatch the tarp latches (1).
   b. Hold on to the tarp strap (2) and allow the tarp to roll back to the tarp rests (3).
3. Inspect the hopper for leftover materials and debris. Clean out as needed.
4. Fill the hopper with fertilizer.
5. Close the tarp cover.
   a. Pull on the tarp strap to pull the tarp cover closed.
   b. Secure all the latches.

**Dry Fertilizer Operation**

*Agricultural Chemical Hazard*

Read and follow all supplier instructions regarding safe handling and approved application of chemicals. Agricultural chemicals can be extremely hazardous.

Great Plains recommends checking with your local agronomist before setting the rate, as soil conditions vary. See the Material Rate manual for dry fertilizer calibration and rates.

The fertilizer meters are driven from the right-hand ground drive. When the planter is lowered and in motion, the meters operate, and fertilizer is applied.

The outlets of the fertilizer meters are normally connected to fertilizer drop tubes at the dry fertilizer coulters.

If fertilizer will not be applied, remove the drive chain near the fan.

**Dry Fertilizer Ground Drive Setup**

Adjust drive speed range sprockets and transmission sprockets.

See the seed monitoring system operator manual for console setup.

**Range Sprockets**

1. Select the range sprockets for your rate from the Material Rate manual.
2. Pull the idler handle (1) to remove the chain.
3. Remove the retaining pins from DRIVING (2) or DRIVEN (3) sprockets, and at the storage towers (4).
4. Exchange sprockets so the new DRIVING and DRIVEN sprocket tooth counts match the seed rate chart.
5. Install the retaining pins on the sprockets. Store and pin the removed sprockets onto the storage towers.

6. Install the chain and engage the idler.

**Transmission Sprockets**

1. Select the transmission sprockets for your rate from the charts in the Material Rate manual.
2. Loosen the idler (1) and remove the drive chain.
3. Remove the retaining pins from the sprockets (2) and storage towers.
4. Exchange the sprockets to match the seed rate charts.
5. Install the retaining pins on the sprockets. Store and pin the removed sprockets onto the storage towers.

6. Install the chain and tighten the idler.

**Dry Fertilizer Coulters**

Level the coulters and adjust coulter depth with the adjuster (1). Loosen the jam nut (2) and turn the turnbuckle (3) as necessary to achieve the desired results. Tighten the jam nut.

Adjust the spring tension of the coulter by removing the pin (4). Rotate the coulter opener and pin at the desired tension.

**Markers**

- **Electrocution Hazard**
  
  Machine is not grounded. 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.

- **Pinch, Crush, and Sharp Object Hazards**
  
  Markers can fall quickly and unexpectedly if hydraulics fail. Serious injury can result if caught or struck by a moving marker. Never allow anyone near the planter when folding or unfolding markers.

**Marker Extension**

Marker extension is the distance from the mark in the ground to the centerline (or furrow) of the end row unit.

Marker extension needs to be adjusted once for the initial planter setup and if changing row spacing.

To measure for marker width adjustment:

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

Due to the relatively steep arm angles of short markers, extension measurements are likely to be incorrect if the main tool bar is not at normal operating height of 26 inches (56 cm).
The table below provides suggested initial values.

<table>
<thead>
<tr>
<th>Model</th>
<th>-0830</th>
<th>-0870</th>
<th>-0875</th>
</tr>
</thead>
<tbody>
<tr>
<td>Row Spacing</td>
<td>30 inch</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td></td>
<td>76.2 cm</td>
<td>70 cm</td>
<td>75 cm</td>
</tr>
<tr>
<td>Span</td>
<td>210 inch</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td></td>
<td>533 cm</td>
<td>490 cm</td>
<td>525 cm</td>
</tr>
<tr>
<td>Swath</td>
<td>240 inch</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td></td>
<td>610 cm</td>
<td>560 cm</td>
<td>600 cm</td>
</tr>
</tbody>
</table>

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 achieve the proper adjustment.

![Diagram](18878A)

### Marker Disk Angle

**Sharp Object Hazard**

*Marker blades may be sharp. To avoid serious injury, wear gloves when working in this area.*

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.

    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 configuration.

![Diagram](11248)

**Marker Operation without IRC**

1. Move the planter to level ground with adequate overhead and side-to-side clearances for unfolding/folding markers.
2. Place the tractor in park and/or set the park brake.
3. Set the tractor marker circuit lever to neutral to prepare to set the marker valve.
4. Set the marker valve selector lever to DOWN - MARKER ON. The fold hydraulics will be inactive.
5. Extend the tractor marker circuit lever until the marker is unfolded or retract the tractor marker circuit lever until the marker is folded.

**Marker Operation with IRC**

1. Move the planter to level ground with adequate overhead and side-to-side clearances for unfolding/folding markers.
2. Place the tractor in park and/or set the park brake. While using the console, you may tap the HOME icon from almost any screen to return to the MAIN SCREEN.

3. On the console, on the MAIN SCREEN, tap the FOLD SEQUENCE icon.

4. On the console, on the FOLD SEQUENCE SCREEN, tap the MARKER icon.

5. Extend the tractor marker circuit lever until the marker is unfolded or retract the tractor marker circuit lever until the marker is folded.

### Transport

#### Loss of Control Hazard

Never tow an implement that weighs more than 1.5 times the weight of the tractor. Using an inadequate tow vehicle can result in loss of control, serious injury, and death.

#### Excessive Speed Hazard

To prevent serious injury or death, do not exceed 20 mph maximum transport speed. Loss of vehicle control and/or machine damage can result.

- Transport only with markers folded.
- Make sure the planter is securely hitched to a sufficient tractor.
- Always use a locking-style, minimum 1 in. (2.5 cm), heat-treated pin.
- Attach the safety chain to the tractor with enough slack to allow turning.
- Always transport the planter in the folded position.
- Ensure all cylinder locks are installed.
- Empty hoppers and tank(s) before transport, if at all possible. The planter can be transported with a fully material load, but the added weight increases stopping distance and decreases maneuverability.
- If any seed is in the hoppers or delivery hoses, close the seed inlet gates at the seed meters.
- Check that tires are properly inflated.
- Plan the route. Avoid steep hills.
- Verify that the lights operate correctly. Always have lights on for highway operation.
- Remember that the planter may be wider than the tractor. Allow safe clearance.
- Avoid uneven or rough terrain, if unavoidable travel slowly over uneven or rough terrain.

### Parking

#### 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.

Follow these steps when parking the planter for periods of less than 36 hours. For longer periods, see “Storage”.

1. Position the planter on firm, level ground.
2. Fold the markers.
3. If equipped with fertilizer, flush the system. Protect the liquid fertilizer pump against corrosion.
4. Raise and fold the planter, and secure.
5. To prevent rolling, block the planter tires securely.
6. Turn off the tractor and remove the key.
7. Close the tank valves at the fertilizer tanks.
8. Set the hydraulic circuits to float to relieve pressure in the lines.
9. Disconnect hydraulic lines from the tractor. Do not allow hose ends to rest on the ground.
10. Unplug the light harness and console harness. Protect the connections with any plugs or caps provided.
11. Move jack from storage position to park position. If the ground is soft, place a board or plate under the jack to increase contact area.
12. Slightly raise the tongue with the jack.
13. Unhitch the planter.
14. Start the tractor and pull away from the planter.

Storage

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.

Component Damage Risk
When cleaning the planter, to avoid damage to IRC components, do not power wash on or around these components.

Store the planter where children do not play. If possible, store inside for longer life of the planter.
1. Complete all instructions in “Parking”.
2. Empty all seed from the hoppers. See “Hydraulic System” on page 53.
3. Latch the hopper lids.
4. Remove the seed disks from the meters to relieve pressure on the brushes. Clean the disks of residue build-up (see “Cleaning and Storing Seed Disks” on page 59).
5. Thoroughly clean seed and seed treatment residue from the seed meters. See “Hydraulic System” on page 53, for more information.
6. Close the seed inlet gates on all meters, and tie or tape a small plastic bag over the ends of all seed delivery tubes to prevent pest from entering.
7. On planters with liquid fertilizer:
   a. The pump, strainer, and manifold system require special attention before storage. See “Liquid Fertilizer Maintenance” on page 62.
   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 the instructions in the pump manual.
   d. Remove any dirt and debris that can hold moisture and cause corrosion.
8. Clean the planter of mud, dirt, excess oil, and grease.
9. Lubricate all points listed in “Lubrication” beginning on page 63.
10. Apply grease to exposed cylinder rods to prevent rust.
11. Inspect the planter for worn or damaged parts. Make repairs and service during the off season.
12. Use spray paint to cover scratches, chips, and worn areas on the planter to protect the metal.
13. Cover the planter with a tarp if stored outside.
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.

**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.

**Crushing Hazard**
A falling planter can cause severe injury or death by crushing. Always have the two main transport wheel lift cylinder locks installed and secured on the lift cylinder rods. The frame must be blocked up when working on the planter.

**Spill Hazard/Tank Damage Risk**
Periodically check the tension of the straps for the fertilizer tank. Strap tension will change as outside air temperature changes. Adjust tension as necessary to prevent personal injury or damage to the fertilizer tank.

**Component Damage Risk**
When cleaning the planter, to avoid damage to IRC components, do not power-wash on or around these components.

### Maintenance Schedule

<table>
<thead>
<tr>
<th>Maintenance Point</th>
<th>Type of Maintenance</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wheel hardware (page 85)</td>
<td>Check torque</td>
<td>Daily</td>
</tr>
<tr>
<td>Coulter hub bearings (page 63)</td>
<td>Lubricate grease fittings</td>
<td>Every 8 hours</td>
</tr>
<tr>
<td>Wheel bearings (page 63)</td>
<td>Clean and pack</td>
<td>Seasonally</td>
</tr>
<tr>
<td>Chains (page 60)</td>
<td>Inspect and lubricate</td>
<td>Periodically</td>
</tr>
<tr>
<td>Chain slack (page 60)</td>
<td>Tighten as needed</td>
<td>Within first 8 hours, then seasonally</td>
</tr>
<tr>
<td>Seed meter disks (page 59)</td>
<td>Inspect for damage or wear</td>
<td>Each time seed disks are removed</td>
</tr>
<tr>
<td>Seed meter brushes (page 56)</td>
<td>Clean and inspect for wear</td>
<td>Each time seed disks are removed</td>
</tr>
<tr>
<td>Marker disk hubs (page 61)</td>
<td>Clean and pack</td>
<td>Seasonally</td>
</tr>
<tr>
<td>Liquid fertilizer hopper straps</td>
<td>Inspect tension</td>
<td>Frequently when new, then periodically</td>
</tr>
<tr>
<td>Liquid fertilizer strainer (page 62)</td>
<td>Clean</td>
<td>Several times per season, end of season</td>
</tr>
<tr>
<td>PTO pump assembly</td>
<td>Inspect hydraulics and check oil levels</td>
<td>Each use, then seasonally</td>
</tr>
</tbody>
</table>

### Regular Maintenance

- After using your 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 tires.
- Keep disk scrapers properly adjusted.
- Clean planter on a regular basis. Regular and thorough cleaning will lengthen equipment life and reduce maintenance and repair.
- Lubricate areas listed under **Lubrication** beginning on page 63.

Replace any worn, damaged, or illegible safety decals by obtaining new decals from your Great Plains dealer.
Hydraulic System

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.

High Pressure Fluid Hazard

Do not attempt to make hydraulic system repairs. Great Plains strongly recommends that all hydraulic system repairs to be completed by a trained professional who is knowledgeable about how to safely complete hydraulic system work. You should only maintain or adjust your hydraulic system as described within this manual. Compromising a closed hydraulic system can cause serious injury or death.

Pinch, Crush, and Sharp Object Hazard

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

The hydraulic system is a closed system and will come from the factory fully charged and bled.

Your planter is equipped with lift and fold hydraulic cylinders designed with rephasing ports which will allow for the release of air from the hydraulic system.

Hydraulic System Inspection

Routine hydraulic maintenance will require inspection of hydraulic lines, valves, fittings, and cylinders for any signs of damaged or worn parts, and the presence of hydraulic fluid. If you discover or suspect a leak, or damaged or worn parts, contact your Great Plains dealer for service on your hydraulic system by a trained professional.

Rephase Lift System

In typical use during a single planting operation, it is normal for the lift cylinders to become out of phase, resulting in uneven raising and lowering of the planter.

See “Rephase Lift System” on page 21 for instructions.

PTO Hydraulic System

Hot Surface and Hot Fluid Hazards

Assess the tank temperature before adjusting oil level. Draining excess hot oil could result in a severe burn. If the PTO has been operated recently, the oil temperature could be as high as 180°F (82°C).

Routine maintenance and care of the PTO pump assembly is necessary. Refer to the PTO 540 rpm Series Pump Parts Manual available from Prince Manufacturing Corp and follow all recommendations for maintenance for the PTO Pump system.

Check Oil Reservoir Level

The PTO pump oil reservoir level needs to be checked with each use. It is recommended to use 10W-30 good quality, mineral base hydraulic fluid, viscosity 70 to 250 SS at 210°F (100°C).

1. Verify that the planter is level front to back and side to side.
2. Inspect the sight gauge (1) on the PTO pump system reservoir tank. The oil level (2) must be aligned with the center border of the oil fill line decal (858-003C).

3. Add or drain oil, as needed, to obtain the correct amount. Some adjustment is normally required with the a new system, or after a filter change.

The fill level dimension from tank bottom is:
- a. 9 3/20 inches (23.2 cm)
If the oil fill line decal (858-003C) requires replacement, adjust the center border line to the height.

Inspect Hoses and Fittings
The PTO pump system is closed, any visible fluid may be an indication of a leak.
1. Check that all hydraulic fittings are tight and dry.
   Inspect all hoses for damage, wear, and fatigue.
   Replace as needed.

Oil and Filter Change
For an oil change, a dry or fully dry system may require as much as 6.5 gallons (25 liters) of oil to fill the oil cooler, pump, motor, hoses, filter, and valve, and leave 5.5 gallons (21 liters) in the oil reservoir. It is recommended to use 10W-30 good quality, mineral base hydraulic fluid, viscosity 70 to 250 SS at 210°F (100°C). An oil change should be completed after 25 hours of initial use and all subsequence oil changes should be completed whenever the oil filter is changed.

After the first oil change is completed after 25 hours of initial use, the oil filter should be changed every 150 hours or every 2 years. It is not necessary to replace the oil filter during the first oil change. Contact your Great Plains dealer to order replacement oil filters.

5. Thread the plug back into the bottom of the reservoir tank. Seating torque is 27 to 43 foot-pounds (37 to 58 N-m).
6. Add oil until the oil level in the tank, as observed on the sight gauge (3), reaches the fill line on the decal. It may take as much as 6.5 gallons (25 liters).

Flow Control Valve Adjustment
The flow control valve adjusts the percent of the PTO pump output that is supplied to the PL5500 planter hydraulic motors. The total pump flow, in gpm or liters/min, is also directly proportional to PTO shaft rpm.
An adjustment typically requires two persons. Pump oil flow is ideally adjusted with all motors active under simulated field workload, relying on Magnehelic® pressure gauge readout, and in some cases, the seed monitoring system rpm readout.

Setting Meter Pressurization
Entanglement and Crushing Hazard
Use extreme caution in the hitch area when the PTO is operating.

Meter pressurization is set as for a standard PL5500 planter, using the PTO kit valve rather than a lever for filter as required. Seat filter per instructions on filter.

1. Wait for the oil to cool.
2. Place a container under the drain plug (1) of the reservoir, with at least a capacity of:
   7 gallons (26 liters).
3. Carefully remove the drain plug.
4. Allow several minutes for oil in the filter (2) to drain into and out of the oil reservoir. Change
a tractor hydraulic remote. This adjustment is normally made with the seed meters full of seed.

1. Shut off the tractor and remove the key.
2. Consult your PL5500 planter Seed Rate Manual for the correct seed disk, meter inlet shutter setting, and recommended initial pressure as reported by Magnehelic® gauge (4). Check that the inlet butterfly valve handle is set to 30 (5). If not, loosen the pivot bolt, reset handle, and re-secure bolt.
3. Mount the PTO pump assembly and secure. See “PTO (Option)” on page 15.
4. Consult your PL5500 planter Material Rate manual for the intended crop, noting:
   - Range and Transmission sprockets required,
   - correct Air-Pro® seed disk (not shown),
   - initial inlet shutter setting (not shown), and
   - initial meter pressurization.
5. Install seed disks. Leave the rain covers off meters. See “Seed Disk Installation” on page 33.
6. Set meter inlet shutters per the Seed Rate manual.
7. Open any slide gates under hoppers.
8. Load enough seed to completely fill the meter inlet tubes, and at least partially fill every hopper.
9. Set out containers, under row unit seed tubes, to collect seed metered during setup.
10. Clear the hitch area of non-essential persons.

11. Check essential personnel for long hair, scarves, cords, frays, loose flaps, and anything else that might become entangled.
12. Clear the area of dangling or loose wires, straps, cords, and other lines that might become entangled and pull someone in.

### Seed Clean-Out

**Possible Dust and Chemical Fume Hazards**

Hopper 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.

A container for meter clean-out is stored at the right end of the planter center frame. 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 (3.49 cm) ID hose (2).
- A worm drive clamp (3) with a working diameter of 1-3/8 inch to 2-1/4 inch.
- 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) fully onto the funnel tip.
3. Secure with the clamp (3). Do not over-tighten the clamp or the funnel wall will be crushed.
**Meter Clean-Out**

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 the 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 (3).
6. Remove the seed disk.
7. Slowly open the seed inlet gate to empty the seed.
8. If the air system is running, there may be more seed than the container can hold. Use the seed inlet gate to turn off the 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 seed 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.

- Close the seed inlet gate.
- Release the disk clamp while holding the seed disk against the meter.
- Tip the top of the disk away from the meter.
- Insert the shop vacuum hose nozzle and remove the seed.
- 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 the 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.

- **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 console 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 require increasing fan speed over time. If recommended fan rpm ranges need to be exceeded, the 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 brushes may need replacement.

- If the seed drop brush (3) is worn or damaged, the anti-static effect may weaken, resulting 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

Fracture Risk

Do not tighten the fasteners to normal torque or the plate may fracture

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. Do not over-tighten.

Strip Brush Replacement
Do not loosen or remove any of the bolts (1) retaining the brush holder.

1. Insert the flat blade of a large screwdriver into the slots of the brush holder snaps (2).
2. Turn each snap clockwise to release the brush holder (3).
3. Be prepared to catch the drop brush (4) which will fall loose.
4. Slide the brush holder left and up to free the front edge from under the washer (5).
5. Remove the brush holder.
6. Remove used strip brushes (6) 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 (7) are at the bottom.

8. Insert the brush holder and check the strip brush positioning.
   a. The ends of the long brush must fit snugly into the meter housing grooves at the top (8) and lower rear (9).
   b. The bottom end of the short brush must fit snugly in the lower front housing groove (10).
   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 (4), and seat the brush holder (3).

10. Starting with the bottom snap, swing the snaps (2) back in place.

Seed Drop Brush Replacement
1. Insert the flat blade of a large screwdriver into the slots of the brush holder snaps (2).
2. Turn each snap clockwise to release the brush holder (3).

3. Prepare to catch the drop brush (4) which will fall loose.
4. Remove the drop brush.
5. Slide the brush holder left and up.
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 (2) back in place.

Knockout Brush Replacement
1. Remove the knockout brush (1) from the seed meter rain cover.
2. Position the new knockout brush under tabs (2) and snap in place.
**Seed Disks**

*Possible Chemical Hazard*

Seed disks will have talc and graphite residue, and may have residue of hazardous seed treatments. Wear a respirator for seed disk maintenance.

When removing seed disks, inspect for wear and damage. If there is any seed dust or treatment buildup in the cells (1), or along the raised wiper ridges (2), clean the disks and reinspect.

Replace the disks for:
- Chips at the outer edge (3) which will leak air.
- Chips at the edges or in surfaces of the cell pockets (1) which can leak air and/or affect singulation.
- Cracks over 2 in. (5 cm) long in the working face (4) of the disk, or any cracks in the ridges or grooves on the face.
- Warping - if any part of the disk does not press firmly on the seed drop brushes in operation.
- Wear - if a wiper ridge (2) is worn away.

If cells are worn through, or the air ports (5) have enlarged.

**Side Depth Wheels Maintenance**

*Sharp Object Hazard*

Disk blades are sharp. To avoid serious injury, wear gloves when working in this area.

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

Loosen the clamp bolt (1) and slide the depth wheel arm (2) in to take up the gap between the wheel and disk blade. If more adjustment is needed:

   a. Remove the bolt (3) and wheel (4).

   b. Remove the shims (5) from the inside of the wheel and place them on the outside of the wheel (6).

      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. Remove the depth wheel arm (2) from the row unit.

   d. Remove the bushing (7) from the sleeve (8) and check for wear. If necessary, replace the bushing.

   e. When reinstalling the depth wheels, align the tab on the hex adjustment (9) with the notch in the bushing. Install the bolt and tighten.

**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 risk of warps.

Any seed residue on disks may attract pests. Fully enclose dry disks to prevent rodent damage.
f. Adjust side depth wheels. See “Side Depth Wheel Adjustments” on page 40.

and wear. Replace the outside scrapers, as necessary.

---

**Disk Spreaders and Scrapers**

**Sharp Object Hazard**

*Disk blades are sharp. To avoid serious injury, wear gloves when working in this area.*

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

2. With the unit raised, check the blade spreader (1) for wear. Replace the spreader if it is 1/2 in. (13mm) wide or narrower. To replace:
   a. Remove the disk blade (2).
   b. Drive out the roll pins (3).
   c. Install the 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 hectares) of operation, check outside scrapers for proper adjustment.

---

**Seed Flap Replacement**

To replace a seed flap (1):

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 flap snaps into place with the T top resting on top of the bracket.

---

**Chain Maintenance**

**Chain Lubrication**

Inspect and lubricate chains regularly. Lubricate chains any time there is a chance of moisture and when stored at the end of the planting season. Use a multi-purpose spray lubricant.

When performing periodic lubrication, check chain condition. Replace chain if any frozen kinks are not corrected by lubrication.

**Chain Slack**

New chains may slack during the first few hours of operation.
Check chain slack at fixed idlers within the first 8 hours of operation. Tighten idlers as necessary.

Check chain slack at spring-operated idlers seasonally, and tighten idlers as needed.

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

2. Determine the ideal slack:

<table>
<thead>
<tr>
<th>Chain Type</th>
<th>Chain Slack</th>
</tr>
</thead>
<tbody>
<tr>
<td>Long chains over 36 in. (91 cm)</td>
<td>1/4 in/ft (2.1 cm/m)</td>
</tr>
<tr>
<td>Vertical short chains</td>
<td>1/4 in/ft (2.1 cm/m)</td>
</tr>
<tr>
<td>Horizontal short chains</td>
<td>1/2 in/ft (4.2 cm/m)</td>
</tr>
</tbody>
</table>

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.

Lift the spring off the idler assembly. Check that the idler pivots freely. Re-attach the spring.

### Markers

#### Equipment Damage Risk

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

#### Shear Bolt Replacement

The marker arm is attached to the marker body with a 3/8 x 4 inch Grade 5 shear bolt. If the shear bolt breaks, replace with Great Plains part number 802-223C or equivalent.

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

#### Marker Disk Lubrication

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

Chain Clips

Whenever mounting a chain, make sure the clip at the removable link is positioned to minimize snags.

Install the clip with the open end facing away from the direction of chain travel.

Meter Drive Chain

When performing seasonal checks, lower the planter to put the chain at minimum idler spring tension.
Liquid Fertilizer Maintenance

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.

Chemical Hazard
Store and dispose of unused chemicals as specified by the chemical manufacturer. Review all instructions on the material containers and material safety data sheets.

Proper attention to maintenance, end of the day clean-out, and end of season clean-out and winterizing, can substantially increase the life and reliability of your fertilizer system.

Protect the pump, clean the tanks, strainers, lines, and nozzles to 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.

Refer to the pump manual for detailed maintenance.

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, air entering the pump causes rapid and severe corrosion.

1. Flush the entire system with clean water. Do this at the field last treated, or other location compliant with the chemical supplier clean-up instructions.
2. Remove the strainer and drain it. Drain all lines and tanks completely to prevent freezing damage.
3. Flush the pump according to the pump operator manual. Fill the pump with RV antifreeze and cap off.
4. Wash all spilled fertilizer off the planter.

Tank Clean-Out
1. If the pump has already been filled with RV antifreeze for storage, close the pump valve.
2. Move the planter to a location suitable for draining the material. A site with access to rinse water is best.
3. Open the quick-fill valve to allow leftover material to drain.
4. Open the tank lids. Check for build-up, sedimentation, and foreign matter, particularly any large objects.
5. Clean one tank at a time.
6. Slowly open the tank valve handle.
7. Power-wash the inside of the tank from above.
8. When the tank is clean and drained, close the tank valve.
9. Close the tank lid.

Liquid Fertilizer Strainer
The fertilizer system uses an in-line strainer to keep damaging particulates out of the pump. The strainer can become 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 the 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. Clean the strainer and canister.

4. Drain the tanks and lines.

5. Reinstall the strainer and canister.

6. Add 2 pt (1 liter) of RV antifreeze to each tank.

7. Pump until the tank is just empty which will leave some fluid in the strainer.

8. Open the supply line above the pump inlet. Add RV antifreeze and operate the pump until it is filled.

### Dry Fertilizer Clean-Out

**Agricultural Chemical Hazard**

Wear all protective equipment specified for use with the most recent types of dry fertilizer used in the hoppers. Clean-out operations are likely to result in airborne dust, which could be contaminated with hazardous chemicals.

**Chemical Hazard**

Store and dispose of unused chemicals as specified by the chemical manufacturer. Review all instructions on the material containers and material safety data sheets.

1. Raise the planter.
2. Clean out seed or disconnect the drive chain.
3. Place a tarp, or multiple collection containers, under the dry fertilizer meters.
4. Remove the applicator hoses from the meters.
5. Operate the dry fertilizer ground drive wheel until the hopper is empty.
6. For extended storage, use a hose and clean water to wash out the hopper, meters, hoses, and applicator tubes.

### 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.

**Side Depth Wheel Bushing**

Apply grease only to the top two grease fittings on each side of each row unit until grease emerges.

**Vantage I Coulter Hubs**

Apply grease to one grease fitting on each coulter until grease emerges.

**Vantage I Coulter Pivot**

Apply grease to one grease fitting on each coulter until grease emerges.
Bearing
Wheel Bearings
Repack two bearings on each wheel.

Marker Disk Hub Bearings
Repack two bearings on each marker.

PTO Pump System
PTO Oil Filter and Oil
Oil filter should be changed every 150 hours. The oil should be changed with each filter change.

PTO Oil Reservoir
Check the level of the oil and fill, as necessary.

PTO Seal Kit
Replace seals as needed. Refer to the PTO 540 rpm Series Pump Parts Manual available from Prince Manufacturing Corp.
## Hydraulic Diagrams

Lift Hydraulics
IRC Lift Hydraulics
Fold/Marker Hydraulics with Dry Fertilizer

(1) Marker cylinder
(2) Fold cylinder
Fold/Marker Hydraulics with Liquid Fertilizer

(1) Marker cylinder
(2) Fold cylinder
Fold Hydraulics with Dry Fertilizer
Fold Hydraulics with Liquid Fertilizer

![Diagram of hydraulics](71353B)
Fan Hydraulics

PTO Pump System Hydraulics

Hydraulic hose connections in fan assembly.

Pressure Flow Valve Control with marked ports.
## Troubleshooting

### Planting Rate Problems

When starting with a new planter, a new crop, or a new population, it is important to physically check what the 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 only 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.

Also, during start up you may encounter alarms and readouts on the console that do not 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 console to eliminate nuisance alarms.

Before going to the troubleshooting charts to remedy a 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>1. Is the spacing on the ground correct?</th>
<th>No</th>
<th>Check the ground drive transmission and range sprocket selections.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes</td>
<td>Go to step 2.</td>
</tr>
<tr>
<td>2. Is the reported population 1/2 the actual population, or is the reported population too high by a factor of 2?</td>
<td>No</td>
<td>Go to step 3.</td>
</tr>
<tr>
<td></td>
<td>Yes</td>
<td>An incorrect row spacing value entered in the console can cause this. Example: 15 inches instead of 30 inches, Correct the row spacing error on the console. The system can also be off by a large factor if incorrect range sprockets are installed. Check seed rate charts against range and transmission sprockets on the planter.</td>
</tr>
<tr>
<td>3. Is the population on the console close to the target population?</td>
<td>No</td>
<td>Check seed rate charts against transmission sprockets selected.</td>
</tr>
<tr>
<td></td>
<td>Yes</td>
<td>If slightly under, see “Seed Population Too Low” on page 77. If slightly over, see “Seed Population Too High” on page 79.</td>
</tr>
</tbody>
</table>

### IRC Fuse Block Decal

![IRC Fuse Block Diagram](image)

- **5 AMP IRC ROW MODS**
- **25 AMP 12V AUX PWR**
- **5 AMP FCOM ECU**
- **15A PWR SOL WSMT**
- **25 AMP SPARE**
- **5 AMP SPARE**
- **IRC SOFT START**
- **5 AMP SOFT START**
- **5 AMP FCOM ECU**
- **15 AMP SOFT START**
- **15 AMP HARD START**
- **15A PWR SOL FCOM**
- **15 AMP SPARE**
- **RELAY**
- **FOLD RELAY**
- **SPARE**
- **SPARE**

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Great Plains | 411-633M | 10/14/2020
# Seed Pool Troubleshooting

The following illustration shows rear cross sections of the seed meter in normal and row-failed conditions.

**Normal: Filling**

Seed pool at the seed inlet gate prevents back-flow of meter pressurization air, allowing the seed to flow from the delivery system, filling the inlet to the top of the air release screen.

**Normal: Filled**

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.

**Delivery Blockage or Back-flow Starvation**

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
- meter never primed

**Bridging: Screen**

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.

**Bridging: Gate**

A bridge at the gate is blocking flow. Causes may include:
- oversize seed
- gate setting too low
- oversize matter in the seed

**Actions**

**Normal: Filling**

No action required. Continue planting.

**Normal: Filled**

No action required. Continue planting.

**Delivery Blockage or Back-flow Starvation**

1. Correct the cause of the blockage.
2. Perform a one-row seed pool recovery.
3. Resume planting.

**Bridging: Screen**

1. Close the seed inlet gate.
2. Disconnect the hose at the meter.
3. Tap on the air release screen and inspect.
4. Check the seed pool for foreign matter.
5. Perform a one-row seed pool recovery.
6. Resume planting.

**Bridging: Gate**

1. If the seed inlet gate is at the suggested opening, increase one notch.
2. Check the seed pool for foreign matter.
3. Resume planting.
Seed Pool Recovery
When a seed meter has been starved of seed, the back-flow of air through the open seed inlet 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.

1. Close the gate (1). This stops the air back-flow.
2. Clear the bridge (2) or blockage that caused the meter to run empty.
3. With the fan running, listen for seed to fall into the inlet (3).
4. Wait for seed fall (4) to taper off and stop.
5. Open the gate to the operating setting.
6. Start or resume planting.

Pressure Gauge Troubleshooting
If the Magnehelic® pressure gauge does not read zero with the fan off, inspect the gauge, and re-zero as needed.

<table>
<thead>
<tr>
<th>Problem</th>
<th>Cause</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-zero with fan off</td>
<td>Zero drift</td>
<td>Re-zero (see instructions below)</td>
</tr>
<tr>
<td>Gauge reading lower than sensor</td>
<td>Relief port plug missing or damaged</td>
<td>Replace plug</td>
</tr>
<tr>
<td></td>
<td>Breather line blocked or kinked</td>
<td>Clear breather line</td>
</tr>
<tr>
<td></td>
<td>Leak in sensing line</td>
<td>Check line to chamber</td>
</tr>
<tr>
<td></td>
<td>Gauge damaged</td>
<td>Check for loose cover, damaged O-ring</td>
</tr>
</tbody>
</table>

Port ID for troubleshooting:

Over-pressure relief port (1), with plug in place
Low-pressure port (2) - breather/atmospheric pressure
High-pressure port (3) - from manifold chamber
Alternate high/low ports are plugged.

Check for chamber and breather line problems before re-zero. Re-zero cannot accurately compensate for leaks and blockages.

Re-zero the Magnehelic® gauge on level ground with the fan off, and if possible, under no-wind conditions. Turn the set screw (4) on the meter face until it reads zero from the tractor driver’s viewing position.

Inaccurate Reading Hazard
Gauge readings may be inaccurate or sluggish below 20° F.
## 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 seed monitoring system setup with incorrect row count or spacing</td>
<td>Review planter configuration and seed monitoring system setup. See the console manual for instructions for your seed monitoring system.</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 1/16 to 1/8 inch (1.6 to 3.2 mm) gap from the wheel. An improper gap can cause an erratic speed signal causing the console to falsely report an improper planting rate.</td>
</tr>
<tr>
<td></td>
<td>Incorrect speed sensor constant</td>
<td>Perform <strong>SPEED CALIBRATION</strong> operation. See the console manual for instructions for your seed monitoring system.</td>
</tr>
<tr>
<td></td>
<td>Seed run-out. If planting across slopes, some rows will run out before others</td>
<td>Re-distribute seed to favor rows that have run out, and plan to refill shortly.</td>
</tr>
<tr>
<td><strong>Mismatch between reported and furrow population</strong></td>
<td>Small seeds, such as 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 scaling factor in the seed monitoring system to compensate for missed seeds. Remember to set this 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 console 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>Low population bands just after turns.</strong></td>
<td>Insufficient oil to the fan, meter pressures low, seeds falling from disks</td>
<td>Perform end-of-pass marker and lift operations separately. If already performing separately, lift more gradually.</td>
</tr>
<tr>
<td><strong>Excessive seed cracking</strong></td>
<td>Incorrect seed pocket size</td>
<td>Use correct disk for seed. Refer to Material Rate manual.</td>
</tr>
<tr>
<td></td>
<td>Damaged, old or dried-out seed</td>
<td>Use new seed.</td>
</tr>
<tr>
<td></td>
<td>Unclean seed</td>
<td>Use clean seed.</td>
</tr>
<tr>
<td></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><strong>Seed too shallow or scattered on ground from a single row</strong></td>
<td>Row not penetrating in tire tracks</td>
<td>Increase down force on parallel arm springs (page 38).</td>
</tr>
<tr>
<td></td>
<td>Opener depth too shallow</td>
<td>Change side depth wheel setting (page 40).</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 (page 48).</td>
</tr>
<tr>
<td></td>
<td>Incorrect speed calibration</td>
<td>Perform <strong>SPEED CALIBRATION</strong> operation. See the console manual for instructions for your seed monitoring system.</td>
</tr>
<tr>
<td>Problem</td>
<td>Cause</td>
<td>Solution</td>
</tr>
<tr>
<td>------------------------------------------</td>
<td>-----------------------------------------------------</td>
<td>--------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Seed consumption too high</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 (page 48).</td>
</tr>
<tr>
<td></td>
<td>Incorrect speed calibration</td>
<td>Perform SPEED CALIBRATION operation. See the console manual for instructions for your seed monitoring system.</td>
</tr>
<tr>
<td>Rows not planted</td>
<td>If not detected by the seed monitoring system, check for plugged seed tube</td>
<td>Lift planter, expose bottom of seed tube and clean out.</td>
</tr>
<tr>
<td>Skips and bare spots after turns</td>
<td>Fan was turned off at turns</td>
<td>Leave fan running. Meter pressurization must be maintained during turns, or seed will fall out of disk pockets.</td>
</tr>
</tbody>
</table>
|                                          | Insufficient hydraulic flow to keep fan running at speed required to maintain meter pressurization | Check tractor capability against requirements. If sufficient:  
|                                          |                                                     |   ● Fold markers before engaging lift.  
|                                          |                                                     |   ● Use a less aggressive lift rate.  
|                                          |                                                     |   ● Monitor meter pressurization during end-of-pass operations.          |
| Uneven seed spacing                      | Excessive field speed                               | Reduce field speed.                                                      |
|                                          | Unclean seed                                        | Use clean seed.                                                          |
|                                          | Damaged seed tube                                  | Check seed tubes for damage and replace as needed.                      |
|                                          | Row-unit disks not turning                         | See “Row unit disks not turning freely” in this Troubleshooting section. |
|                                          | Worn or rusted sprockets, chain idler, or bearings | Check and replace any worn or rusted sprockets or chain idlers.         |
|                                          | Plugged seed tube                                  | Lift up planter, expose bottom of seed tube and clean out.              |
|                                          | Lack of proper seed lubrication on seed             | See “Seed Lubricants” on page 32.                                       |
| Uneven seed depth                        | Excessive field speed                               | Reduce field speed.                                                      |
|                                          | Planting conditions too wet                         | Wait until drier weather.                                               |
|                                          | Incorrect coulter depth setting                     | See coulter manual or set unit mounted coulter (page 43).               |
|                                          | Excessive or improper row unit down pressure spring setting | See “Row Unit Down Pressure” on page 38.                                |
|                                          | Damaged seed tube                                  | Check seed tubes for damage and replace as needed                       |
|                                          | Row-unit not penetrating low spots                  | Adjust row unit (page 38).                                              |
|                                          | Rough planting conditions                          | Rework the field.                                                       |
|                                          | Seed firmer not in place and set to correct tension | See “Keeton® Seed Firmer” on page 44.                                   |
## Seed Population Too Low

<table>
<thead>
<tr>
<th>Problem</th>
<th>Cause</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low population, single row</td>
<td>Seed inlet gate opening too wide, interfering with meter pressurization</td>
<td>Adjust the gate to lower setting (page 34).</td>
</tr>
<tr>
<td></td>
<td>Seed inlet gate opening too narrow, starving meter of seed (low seed pool)</td>
<td>Adjust the gate to higher setting (page 34).</td>
</tr>
<tr>
<td></td>
<td>Meter starvation due to bridging at gate</td>
<td>Re-adjust for gate bridging (page 35). If the seed is treated, increase seed lubricant.</td>
</tr>
<tr>
<td></td>
<td>Meter starvation due to blockage above inlet</td>
<td>Clear blockage.</td>
</tr>
<tr>
<td></td>
<td>Meter starvation due to bridging above inlet, caused by high levels of seed treatment</td>
<td>Clear bridge. Increase seed lubricant.</td>
</tr>
<tr>
<td></td>
<td>Incorrect seed disk on one row</td>
<td>Install correct seed disk.</td>
</tr>
<tr>
<td></td>
<td>Chain skipping at one row</td>
<td>Check chain, idlers, chain slack, and sprocket condition.</td>
</tr>
<tr>
<td></td>
<td>Skips due to low meter pressurization at one or several rows</td>
<td>Check seed inlet gate setting. Check for excess wear on seed drop brush. Check for loose or leaking pressure hose.</td>
</tr>
<tr>
<td></td>
<td>Skips due to debris in disk cells</td>
<td>Remove rain covers. Inspect and clean out disks.</td>
</tr>
<tr>
<td></td>
<td>Row has blank disk installed</td>
<td>Replace with seeding disk.</td>
</tr>
<tr>
<td></td>
<td>Seed sensor obscured</td>
<td>Clean out seed tube.</td>
</tr>
<tr>
<td></td>
<td>Seed tube plugged</td>
<td>Raise planter, expose bottom of seed tube, and clean out.</td>
</tr>
<tr>
<td>Low or erratic seed flow</td>
<td>Seed meter plugged, due to operating with fan shut off, or manifold pressure too low</td>
<td>Close seed inlet gates. Clean out meters. Set fan for correct pressure. Resume planting.</td>
</tr>
<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 used</td>
<td>Check transmission sprocket or range sprocket tooth counts and DRIVING/DRIVEN locations (page 36).</td>
</tr>
<tr>
<td></td>
<td>Empty cells in seed disk due to insufficient air pressure</td>
<td>Slowly increase the meter pressurization (page 30).</td>
</tr>
<tr>
<td></td>
<td>Empty cells in seed disk due to sticky seed treatments not allowing seed to rapidly fill the cells</td>
<td>Increase seed lubricant (page 32).</td>
</tr>
<tr>
<td></td>
<td>Empty cells 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>Problem</td>
<td>Cause</td>
<td>Solution</td>
</tr>
<tr>
<td>---------------------------------</td>
<td>-----------------------------------------------------------------------</td>
<td>--------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Overall low population (continued)</td>
<td>Empty cells in seed disk due to seed pool too low, and seeds not filling every cell on the disk</td>
<td>Open seed inlet gate one notch.</td>
</tr>
<tr>
<td></td>
<td>Empty cells 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 seed disk.</td>
</tr>
<tr>
<td></td>
<td>Empty cells in seed disk due to 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 cells in seed disk due to seed too big for the cell</td>
<td>Select the correct disk for the seed size.</td>
</tr>
<tr>
<td></td>
<td>Seeds are not falling from seed disk and are 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 Easy Glide Plus and/or more thoroughly mix the lubricant into the seed (page 32).</td>
</tr>
<tr>
<td></td>
<td>Air pressure too low, as confirmed by gauge</td>
<td>Increase fan speed.</td>
</tr>
<tr>
<td></td>
<td>Air pressure too low, but gauge reading is within range or reading high</td>
<td>Inspect the lines from the row units to the sensor chamber for leaks. Make sure all non-planting rows have blank disks and gates are closed. Re-zero the gauge with the fan off. Check gauge vent line for kinks, pinches, or plugging.</td>
</tr>
<tr>
<td></td>
<td>Low fan speed - meter starvation due to meter pressurization not leaving enough air for seed delivery</td>
<td>Increase fan speed.</td>
</tr>
<tr>
<td></td>
<td>Tire pressure in contact drive wheel incorrect</td>
<td>Check for correct tire pressure (page 85).</td>
</tr>
<tr>
<td></td>
<td>Excess field speed</td>
<td>Plant within speed ranges from seed rate chart.</td>
</tr>
<tr>
<td></td>
<td>Pass gaps too large</td>
<td>Check marker extension (page 48). For GPS, check planter size programmed.</td>
</tr>
<tr>
<td></td>
<td>Actual field size is different</td>
<td>Population may be correct, and calculations are not.</td>
</tr>
<tr>
<td></td>
<td>Seed monitoring system console reporting excess area</td>
<td>Readings can vary with conditions (wheel slippage, and effective rolling radius in soft soils) and planting patterns.</td>
</tr>
<tr>
<td></td>
<td>Improper gap on speed sensor</td>
<td>Check speed sensor on planter (page 14). Adjust as needed.</td>
</tr>
<tr>
<td></td>
<td>Incorrect speed sensor constant</td>
<td>Perform SPEED CALIBRATION operation. See the console manual for instructions for your seed monitoring system.</td>
</tr>
</tbody>
</table>
# Seed Population Too High

<table>
<thead>
<tr>
<th>Problem</th>
<th>Cause</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Overall high population</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Incorrect seed rate</td>
<td>Check seed rate charts.</td>
<td></td>
</tr>
<tr>
<td>Incorrect ground drive transmission or range sprockets used</td>
<td>Check transmission and range sprocket tooth counts and DRIVING/DRIVEN locations (page 36).</td>
<td></td>
</tr>
<tr>
<td>Two seeds per cell on the disk due to excess meter pressurization</td>
<td>Decrease the controlled air to the meter (page 30).</td>
<td></td>
</tr>
<tr>
<td>Two seeds per cell on the disk due to cells too large for the seed</td>
<td>Select a disk with smaller cells.</td>
<td></td>
</tr>
<tr>
<td>The meter pressurization is too high, as confirmed by gauge</td>
<td>Reduce fan speed.</td>
<td></td>
</tr>
<tr>
<td>Air meter pressure too high due to pressure sensor not zeroed properly.</td>
<td>Re-zero the gauge with the fan off. Make sure the displayed pressure reads 0.00.</td>
<td></td>
</tr>
<tr>
<td>Air pressure too high, but gauge is within range or reading low</td>
<td>Compare the air pressure reported on the console to the mechanical gauge. If they do not match: ● Inspect the sample lines from the row units up to the sensor chamber for leaks. ● Re-zero the air pressure with the fan off.</td>
<td></td>
</tr>
<tr>
<td>False alarms or actual seed rate errors due to seed monitoring system setup with incorrect row count, spacing, or active rows</td>
<td>Review planter configuration and seed monitoring system setup. See the console manual for instructions for your seed monitoring system.</td>
<td></td>
</tr>
<tr>
<td>Incorrect cell count</td>
<td>Replace seed disks with correct disks, or reset rate for current disks, if within range.</td>
<td></td>
</tr>
<tr>
<td>Doubles due to incorrect disk for crop or seed size</td>
<td>Use recommended disk for crop and seed size. See Material Rate manual.</td>
<td></td>
</tr>
<tr>
<td>Sticky seeds from excess seed treatment</td>
<td>Increase seed lubricant (page 32).</td>
<td></td>
</tr>
<tr>
<td>Overlapping passes</td>
<td>Check marker extension (page 48). For GPS, check planter size programmed.</td>
<td></td>
</tr>
<tr>
<td>Actual field size is different</td>
<td>Population may be correct, and calculations are not.</td>
<td></td>
</tr>
<tr>
<td>Seed monitoring system under-reporting area</td>
<td>Readings can vary with conditions (wheel slippage, and effective rolling radius in soft soils) and planting patterns.</td>
<td></td>
</tr>
<tr>
<td><strong>High population, single row</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Excess meter pressurization causing doubles</td>
<td>Check seed inlet gate.</td>
<td></td>
</tr>
<tr>
<td>Worn seed-drop brush and/or strip brushes allowing excess seed to pass</td>
<td>Replace worn brushes (page 57).</td>
<td></td>
</tr>
<tr>
<td>Worn meter bearing causing seed disk wobble and doubles</td>
<td>Replace meter bearing.</td>
<td></td>
</tr>
<tr>
<td>Incorrect seed disk with higher cell count</td>
<td>Install correct disk.</td>
<td></td>
</tr>
</tbody>
</table>
## Planter Troubleshooting

<table>
<thead>
<tr>
<th>Problem</th>
<th>Cause</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Press wheel or row units plugging</td>
<td>Planting conditions too wet</td>
<td>Wait until drier weather.</td>
</tr>
<tr>
<td></td>
<td>Too much down pressure on row units</td>
<td>Reduce down pressure on row units.</td>
</tr>
<tr>
<td></td>
<td>Coulters set too deep, bringing 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 tool bar height (page 14).</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 (page 40).</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Problem</th>
<th>Cause</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Row unit disks not turning freely</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 depth wheel adjustment</td>
<td>Adjust side depth wheel (page 40).</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>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Problem</th>
<th>Cause</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Press wheels not compacting soil as desired</td>
<td>Incorrect spring handle setting</td>
<td>See “Setting Planting Depth” on page 39.</td>
</tr>
<tr>
<td></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 your 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>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Problem</th>
<th>Cause</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Press wheels not compacting soil as desired</td>
<td>Planter not level front to rear</td>
<td>See “Planter Leveling” on page 14.</td>
</tr>
<tr>
<td></td>
<td>Wheel stagger needs adjustment for conditions</td>
<td>See “” on page 42.</td>
</tr>
<tr>
<td></td>
<td>Too wet or cloddy</td>
<td>Wait until drier weather or rework ground.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Problem</th>
<th>Cause</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marker functioning improperly or not at all</td>
<td>Marker/Fold selector valve set to UP - FOLD ON</td>
<td>The selector valve must be set to DOWN - MARKER ON for markers to function. Set tractor remote circuit to neutral or float before changing 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. Fill as needed.</td>
</tr>
<tr>
<td></td>
<td>Loose or missing bolts or fasteners</td>
<td>Check all bolts and fasteners.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Problem</th>
<th>Cause</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marker disk does not mark</td>
<td>Disk angle too straight for soil conditions</td>
<td>Reverse marker disk to pull or throw dirt (page 48).</td>
</tr>
<tr>
<td></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 row end of the marker cylinder.</td>
</tr>
</tbody>
</table>
## Liquid Fertilizer Troubleshooting

<table>
<thead>
<tr>
<th>Problem</th>
<th>Cause</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>No fertilizer flow</td>
<td>Various possible pump issues</td>
<td>Refer to the pump manual.</td>
</tr>
<tr>
<td></td>
<td>Tank and/or pump valves closed</td>
<td>Check that tank and pump valves are open (page 45).</td>
</tr>
<tr>
<td></td>
<td>Chain missing at one or more drive</td>
<td>Check all chains from ground drive to pump.</td>
</tr>
<tr>
<td></td>
<td>stages</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Tank plugged</td>
<td>Dilute or clean out any material clogging discharge port (page 62).</td>
</tr>
<tr>
<td></td>
<td>Strainer plugged</td>
<td>Close all valves. Inspect strainer. Clean screen as needed (page 62).</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Switch to a larger screen size if materials clog strainer rapidly and</td>
</tr>
<tr>
<td></td>
<td></td>
<td>large size orifices are in use.</td>
</tr>
<tr>
<td></td>
<td>Pump setting at or near zero</td>
<td>Recommended pump adjuster settings are in the range 2 to 10. See Material</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Rate manual.</td>
</tr>
<tr>
<td></td>
<td>Material run-out</td>
<td>Check tank level.</td>
</tr>
<tr>
<td></td>
<td>Material low - loss of prime</td>
<td>Add material. When tank level is below pump inlet level, any air allowed</td>
</tr>
<tr>
<td></td>
<td></td>
<td>in the line can cause the pump to lose prime.</td>
</tr>
<tr>
<td></td>
<td>Air in pump due to slope</td>
<td>Add material, meter from one tank at a time, or close empty tank. When</td>
</tr>
<tr>
<td></td>
<td></td>
<td>planting across a slope, material can flow from one tank to the other.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>If an empty tank is open to the pump, the pump will not meter fertilizer.</td>
</tr>
<tr>
<td>Low rate</td>
<td>Fertilizer transmission in low range</td>
<td>Change sprockets. See Material Rate manual.</td>
</tr>
<tr>
<td></td>
<td>when high range was intended</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Various possible pump issues</td>
<td>Refer to the pump manual.</td>
</tr>
<tr>
<td>Low pressure at desired rate</td>
<td>Orifice size too large</td>
<td>Choose alternate orifice plate size based on charts in Material Rate</td>
</tr>
<tr>
<td></td>
<td>Orifices correct plate size, but</td>
<td>Manual.</td>
</tr>
<tr>
<td></td>
<td>holes are enlarged from use</td>
<td>Replace orifice plates. Discard worn plates. See Material Rate manual.</td>
</tr>
<tr>
<td></td>
<td>Rate may actually be low</td>
<td>Check fertilizer DRIVING/DRIVEN sprockets.</td>
</tr>
<tr>
<td>Uneven flow at desired rate</td>
<td>One or more orifice plates plugged</td>
<td>Clean and reinstall orifice plates. Check that materials are not too</td>
</tr>
<tr>
<td></td>
<td></td>
<td>viscous or granular for the orifice size. See Material Rate manual.</td>
</tr>
<tr>
<td></td>
<td>Plate sizes vary between rows</td>
<td>Check that all nozzles have the same size plates (with the possible</td>
</tr>
<tr>
<td></td>
<td></td>
<td>exception of outside rows serving zone coulters).</td>
</tr>
<tr>
<td>Pressure unstable</td>
<td>Strainer clogged</td>
<td>Close all valves. Inspect strainer. Clean screen as needed (page 62).</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Switch to a larger screen size if materials clog strainer rapidly and</td>
</tr>
<tr>
<td></td>
<td></td>
<td>large size orifices are in use.</td>
</tr>
<tr>
<td>Dumping at normal pressure</td>
<td>Relief valve setting too low</td>
<td>Review relief valve setting according to the Material Rate manual.</td>
</tr>
</tbody>
</table>
## Troubleshooting

<table>
<thead>
<tr>
<th>Problem</th>
<th>Cause</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>High pressure at desired rate</td>
<td>Orifice size too small</td>
<td>Review orifice sizing. If at recommended size, try the next large size. Charts are based on typical density/viscosity materials. See Material Rate manual.</td>
</tr>
<tr>
<td></td>
<td>Plugged nozzles</td>
<td>Inspect low-flow rows, or several nozzles. Clean plates. Consider smaller strainer screen size and/or large orifice plate size. Sedimentation, coagulation, particulates, foreign matter can also cause unusually high pressure.</td>
</tr>
<tr>
<td></td>
<td>Orifice plates upside down</td>
<td>Position plates with words facing the outlet. Orifice port holes are not symmetrical, and at smaller sizes this can cause slightly higher back-pressure with denser materials.</td>
</tr>
<tr>
<td>Very high flow</td>
<td>Fertilizer transmission in high range when low range was intended</td>
<td>Change sprockets. See Material Rate manual.</td>
</tr>
<tr>
<td></td>
<td>Possible pump issues</td>
<td>Refer to the pump manual.</td>
</tr>
<tr>
<td>Pump leaks</td>
<td>Possible pump issues</td>
<td>Refer to the pump manual.</td>
</tr>
<tr>
<td>Pump oil consumption</td>
<td>Pump seals or O-ring</td>
<td>Refer to the pump manual.</td>
</tr>
<tr>
<td>Noisy pump</td>
<td>Crankcase components worn</td>
<td>Refer to the pump manual.</td>
</tr>
</tbody>
</table>

### Dry Fertilizer Troubleshooting

<table>
<thead>
<tr>
<th>Problem</th>
<th>Cause</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>No fertilizer flow, all rows</td>
<td>Hopper empty</td>
<td>Fill hopper.</td>
</tr>
<tr>
<td></td>
<td>Chain missing at one or more drive stages</td>
<td>Check all chains.</td>
</tr>
<tr>
<td>No fertilizer flow, some rows</td>
<td>Hopper plugged</td>
<td>Clean out any material clogging discharge port.</td>
</tr>
<tr>
<td></td>
<td>Shaft disconnected</td>
<td>Check couplers along final drive shaft.</td>
</tr>
<tr>
<td>No fertilizer flow, one row</td>
<td>Applicator tube plugged with soil</td>
<td>Disconnect hose at top of applicator tube. Remove blockage from below. Raise release height.</td>
</tr>
<tr>
<td></td>
<td>Applicator tube plugged with fertilizer</td>
<td>Disconnect hose at top of applicator tube. Remove blockage from below. Use finer grained fertilizer, or dry out the fertilizer if coagulation is the problem.</td>
</tr>
<tr>
<td>Low flow</td>
<td>Field speed too high</td>
<td>Apply at a lower speed. Metering is lower at high speeds.</td>
</tr>
<tr>
<td></td>
<td>Ground drive wheel slipping</td>
<td>Check lowered tool bar height. Operate at a lower field speed. Field conditions may be too wet for reliable meter drive.</td>
</tr>
<tr>
<td></td>
<td>Meter flutes worn</td>
<td>Inspect meter flute. Replace as needed.</td>
</tr>
<tr>
<td>High flow</td>
<td>Field speed too low for transmission sprockets selected</td>
<td>Apply at a higher speed, or use a new sprocket pair for the actual rate and speed. Metering is higher at low speeds.</td>
</tr>
<tr>
<td>Fertilizer on surface</td>
<td>Release height too high</td>
<td>Lower release height.</td>
</tr>
<tr>
<td></td>
<td>Coulter depth too shallow</td>
<td>Increase coulter depth (page 48).</td>
</tr>
</tbody>
</table>
## PTO Troubleshooting

<table>
<thead>
<tr>
<th>Problem</th>
<th>Cause</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Seed meter pressure too low</td>
<td>Flow control adjusted too low</td>
<td>Increase flow control. “Flow Control Valve Adjustment” on page 54.</td>
</tr>
<tr>
<td></td>
<td>Fan butterfly valve closed or set at too high an angle</td>
<td>Reduce to 30.</td>
</tr>
<tr>
<td></td>
<td>PTO rpm too low</td>
<td>Bring up PTO rpm, but do not exceed 540 rpm.</td>
</tr>
<tr>
<td></td>
<td>Fan running in reverse (multiple possible causes)</td>
<td>See “Fan running in reverse” below.</td>
</tr>
<tr>
<td></td>
<td>Pump cavitating</td>
<td>Check oil level “Check Oil Reservoir Level” on page 53.</td>
</tr>
<tr>
<td></td>
<td>No blank disks in unused seed meters</td>
<td>Install blank disks to balance pressure.</td>
</tr>
<tr>
<td></td>
<td>Seed inlet shutters open too wide</td>
<td>Verify setting vs., rate charts. Adjust as need for actual seed pool.</td>
</tr>
<tr>
<td></td>
<td>Oil filter clogged</td>
<td>Replace oil filter and oil “Oil and Filter Change” on page 54.</td>
</tr>
<tr>
<td></td>
<td>Magnehelic® gauge disconnected or sample line(s) leaking</td>
<td>Check air gauge system.</td>
</tr>
<tr>
<td></td>
<td>Magnehelic® gauge uncalibrated</td>
<td>Re-zero. See “Pressure Gauge Troubleshooting” on page 74.</td>
</tr>
<tr>
<td></td>
<td>Flow control valve failure or malfunction</td>
<td>Repair or replace valve.</td>
</tr>
<tr>
<td></td>
<td>Fan seals damaged</td>
<td>Repair or replace fan motor.</td>
</tr>
<tr>
<td>Pressure correct on Magnehelic®, but skips or doubles</td>
<td>Pressure gauge disconnected or sample line(s) leaking</td>
<td>Check air gauge system.</td>
</tr>
<tr>
<td></td>
<td>Magnehelic® gauge uncalibrated</td>
<td>Re-zero. See “Pressure Gauge Troubleshooting” on page 74.</td>
</tr>
<tr>
<td></td>
<td>Seed variety may require adjustment</td>
<td>Check all other possible pressure errors, then fine tune pressure for one seed per disk cell.</td>
</tr>
<tr>
<td>Oil overheating</td>
<td>Oil filter clogged</td>
<td>Replace oil filter and oil “Oil and Filter Change” on page 54.</td>
</tr>
<tr>
<td></td>
<td>PTO rpm too high</td>
<td>Adjust system for ideal pressure at lower PTO rpm.</td>
</tr>
<tr>
<td></td>
<td>Fan butterfly valve angle too high</td>
<td>Reduce to 30. See “Butterfly Valve (Dry Fertilizer)” on page 31.</td>
</tr>
<tr>
<td>Fan running</td>
<td>PTO shaft turning counter-clockwise</td>
<td>Set tractor controls for clockwise PTO.</td>
</tr>
<tr>
<td></td>
<td>Hoses reversed</td>
<td>Check hose routing from pump to valve, to tank fan in Parts manual.</td>
</tr>
<tr>
<td>Fan doesn’t run at all</td>
<td>Low oil level in tank</td>
<td>Top off tank. Check system for leaks.</td>
</tr>
<tr>
<td></td>
<td>Battery connections are weak or poor</td>
<td>Clean or replace parts as needed to make a solid connection to the tractor battery.</td>
</tr>
<tr>
<td></td>
<td>Hoses are not properly connected</td>
<td>Check the hydraulic hose connections “Hydraulic Hose Connection” on page 13.</td>
</tr>
<tr>
<td>Tractor battery is dead</td>
<td>PTO pump electrical harness was not disconnected from the tractor battery</td>
<td>Unplug the PTO Pump electrical harness whenever the planter is not in use, storage, or transport. See “PTO (Option)” on page 15 for more information.</td>
</tr>
</tbody>
</table>
## Specifications

<table>
<thead>
<tr>
<th>Model Information</th>
<th>PL5500</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Model Information</strong></td>
<td>-0830 -0870 -0875</td>
</tr>
<tr>
<td>Models</td>
<td>8 8 8</td>
</tr>
<tr>
<td>Row Count</td>
<td>8 8 8</td>
</tr>
<tr>
<td>Row Spacing</td>
<td>30 in (76.2 cm) 27.6 in (70 cm) 29.5 in (75 cm)</td>
</tr>
<tr>
<td>Tractor Requirements</td>
<td>115 - 130 hp (86 - 97 kw)</td>
</tr>
<tr>
<td>Tires, transport</td>
<td>VF265/70R19.5</td>
</tr>
<tr>
<td>Tires, ground drive/fertilizer drive</td>
<td>13-5 x 6</td>
</tr>
<tr>
<td>Hydraulic Requirements</td>
<td>2 or 3 remotes, closed center</td>
</tr>
<tr>
<td>Weight, empty</td>
<td>6400 lb (2903 kg)</td>
</tr>
</tbody>
</table>

### Dimensions

| Field Width with markers extended      | 37 ft 6 in (11.4 m) |
| Field Width without markers           | 18 ft 6 in (5.6 m)  |
| Field Height                          | 4 ft 9 in (1.4 m)   |
| Field Length                          | 20 ft 6 in (6.2 m)  |
| Transport Width                       | 9 ft 9 in (3m)      |
| Transport Height with folded markers  | 11 ft 6 in (3.5 mm) |
| Transport Length                      | 20 ft 8 in (6.3 mm) |

### Capacities

| Seed - 3 bu hopper                    | 24 bu (864 liter) |
| Seed - 1.6 bu hopper                  | 12.8 bu (451 12.8 liter) |
| Liquid Fertilizer                     | 300 gal (1136 liter) |
| Dry Fertilizer                        | 53 cu ft (1500 liter) |
### Torque Value Chart

<table>
<thead>
<tr>
<th>Bolt Size</th>
<th>Torque Value Chart</th>
</tr>
</thead>
<tbody>
<tr>
<td>( \frac{1}{4} )-20</td>
<td>![Image of torque chart]</td>
</tr>
<tr>
<td>( \frac{1}{4} )-28</td>
<td>![Image of torque chart]</td>
</tr>
<tr>
<td>( \frac{5}{16} )-18</td>
<td>![Image of torque chart]</td>
</tr>
<tr>
<td>( \frac{5}{16} )-24</td>
<td>![Image of torque chart]</td>
</tr>
<tr>
<td>( \frac{3}{8} )-16</td>
<td>![Image of torque chart]</td>
</tr>
<tr>
<td>( \frac{3}{8} )-24</td>
<td>![Image of torque chart]</td>
</tr>
<tr>
<td>( \frac{7}{16} )-14</td>
<td>![Image of torque chart]</td>
</tr>
<tr>
<td>( \frac{7}{16} )-20</td>
<td>![Image of torque chart]</td>
</tr>
<tr>
<td>( \frac{1}{2} )-13</td>
<td>![Image of torque chart]</td>
</tr>
<tr>
<td>( \frac{1}{2} )-20</td>
<td>![Image of torque chart]</td>
</tr>
<tr>
<td>( \frac{9}{16} )-12</td>
<td>![Image of torque chart]</td>
</tr>
<tr>
<td>( \frac{9}{16} )-18</td>
<td>![Image of torque chart]</td>
</tr>
<tr>
<td>( \frac{5}{8} )-11</td>
<td>![Image of torque chart]</td>
</tr>
<tr>
<td>( \frac{5}{8} )-18</td>
<td>![Image of torque chart]</td>
</tr>
<tr>
<td>( \frac{3}{4} )-10</td>
<td>![Image of torque chart]</td>
</tr>
<tr>
<td>( \frac{3}{4} )-16</td>
<td>![Image of torque chart]</td>
</tr>
<tr>
<td>( \frac{7}{8} )-9</td>
<td>![Image of torque chart]</td>
</tr>
<tr>
<td>( \frac{7}{8} )-14</td>
<td>![Image of torque chart]</td>
</tr>
<tr>
<td>( \frac{1}{2} )-12</td>
<td>![Image of torque chart]</td>
</tr>
<tr>
<td>( \frac{7}{8} )-14</td>
<td>![Image of torque chart]</td>
</tr>
<tr>
<td>( \frac{3}{4} )-10</td>
<td>![Image of torque chart]</td>
</tr>
<tr>
<td>( \frac{3}{4} )-16</td>
<td>![Image of torque chart]</td>
</tr>
<tr>
<td>( \frac{7}{8} )-9</td>
<td>![Image of torque chart]</td>
</tr>
<tr>
<td>( \frac{7}{8} )-14</td>
<td>![Image of torque chart]</td>
</tr>
<tr>
<td>( \frac{1}{2} )-12</td>
<td>![Image of torque chart]</td>
</tr>
<tr>
<td>( \frac{1}{2} )-12</td>
<td>![Image of torque chart]</td>
</tr>
</tbody>
</table>

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

### Tire Information

<table>
<thead>
<tr>
<th>Tire Size</th>
<th>Maximum Tire Pressure</th>
<th>Wheel Bolt Torque</th>
</tr>
</thead>
<tbody>
<tr>
<td>VF265/70R19.5</td>
<td>75 psi (517 kPa)</td>
<td>240 lb ft (325 Nm)</td>
</tr>
<tr>
<td>13 - 5 x 6 Turf</td>
<td>40 psi (276 kPa)</td>
<td>-</td>
</tr>
</tbody>
</table>

### Tire Warranty Information

All tires are warranted by the original manufacturer of the tire. Tire warranty information is found online at the manufacturer’s websites listed below. For assistance or information, contact your nearest authorized farm tire retailer.

<table>
<thead>
<tr>
<th>Manufacturer</th>
<th>Website</th>
</tr>
</thead>
<tbody>
<tr>
<td>Firestone</td>
<td><a href="http://www.firestoneag.com">www.firestoneag.com</a></td>
</tr>
</tbody>
</table>
Options

■ Hitches
Each hitch kit includes the hitch assembly and safety chain.

■ Liquid Fertilizer System
A liquid fertilizer system includes two tanks, mounting kit, plumbing, drive contact wheel, and fan assembly.

<table>
<thead>
<tr>
<th>Ref</th>
<th>Description</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Single Strap Hitch</td>
<td>403-913A</td>
</tr>
<tr>
<td>2</td>
<td>Scharmuller Hitch</td>
<td>403-915A</td>
</tr>
<tr>
<td>3</td>
<td>Cat 2 Crossbar Hitch</td>
<td>403-924A</td>
</tr>
<tr>
<td>4</td>
<td>Cat 3 Crossbar Hitch</td>
<td>403-920A</td>
</tr>
</tbody>
</table>

■ Row Unit Press Wheels
The planter includes a choice of press wheels. Additional wheels are available, and may be field-installed.

This manual does not list kit part numbers as the available wheels are specific to a region. See your Great Plains dealer.

Fertilizer Orifice Plates
To order fertilizer orifice plates, use the following part numbers. Order one per row unit.

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

a. Sizes standard in many fertilizer bundles. Check your accessories before ordering.
VisaGage II
The VisaGage II controls flow rates for applying liquid fertilizer.

High-Rate Dribblers
Dribblers apply liquid fertilizer slightly to the side of the closed furrow behind the press wheel. Order one dribbler per row.

<table>
<thead>
<tr>
<th>Description</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Liquid Fertilizer Distribution</td>
<td>411-741A</td>
</tr>
</tbody>
</table>

Vantage I Coulter
Vantage I is a disk coulter with a liquid fertilizer applicator. Mounting is adjustable for zone or in-row application.

One kit contains 8 coulters.

<table>
<thead>
<tr>
<th>Description</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vantage 1 Kit with Fluted Coulter</td>
<td>204-792A</td>
</tr>
<tr>
<td>Vantage 1 Kit with Turbo Coulter</td>
<td>204-789A</td>
</tr>
</tbody>
</table>

Dry Fertilizer System
The dry fertilizer system includes a dry fertilizer hopper, mounting kit, hoses, dry fertilizer air splitter, drive contact wheel, and fan assembly.

<table>
<thead>
<tr>
<th>Description</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>FERTILIZER DRIBBLER ASSY RH</td>
<td>204-131A</td>
</tr>
<tr>
<td>FERTILIZER DRIBBLER ASSY LH</td>
<td>204-132A</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Description</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dry Fertilizer Option</td>
<td>411-612A</td>
</tr>
</tbody>
</table>
Adjustable Dry Fertilizer Coulter

A marker system includes marker arms and mounts for left and right side, hydraulic cylinders, hoses, and valve. The system is factory installed, but can be ordered separately.

Markers

Seed Lubricant

Seed lubricant is a dry lubricant that can be mixed with seeds to reduce excess moisture and static electricity and maximize the performance of seed meters.

<table>
<thead>
<tr>
<th>Description</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>EZEE-GLIDE PLUS LUBRICANT-5GAL</td>
<td>821-069C</td>
</tr>
<tr>
<td>BAYER FLUENCY POWDER-CASE QTY</td>
<td>821-074C</td>
</tr>
<tr>
<td>BAYER FLUENCY POWDER-4.4# PAIL</td>
<td>821-075C</td>
</tr>
</tbody>
</table>

Unit-Mount Coulter

<table>
<thead>
<tr>
<th>Description</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unit Mount Coulter Kit</td>
<td>204-788A</td>
</tr>
</tbody>
</table>

Coulter Mounted Row Cleaner

<table>
<thead>
<tr>
<th>Description</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coulter Mounted Double Row Kit</td>
<td>207-310S</td>
</tr>
</tbody>
</table>
### 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>

### Side Depth Wheel Scrapers
The scrapers mount on the bottom rear of the depth wheel arm. The slot in the scraper is long enough to clear the lower grease fitting, and allow adjustment as the wheel and scraper wear.

Order one part per wheel (2 per opener).

<table>
<thead>
<tr>
<th>Description</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>4-inch Depth Wheel Scraper Kit</td>
<td>404-825A</td>
</tr>
</tbody>
</table>

### Gauge Wheel Scrapers
The scrapers mount on the gauge wheels.

Order one part per wheel.

<table>
<thead>
<tr>
<th>Description</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gauge Wheel Scraper Kit</td>
<td>431-004A</td>
</tr>
</tbody>
</table>

### Seed Meter Disks
The seed meters accept a variety of seed disks, plus a special blank disk for row shut-off.

<table>
<thead>
<tr>
<th>Description</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blank Disk, 0 Cell (for row shut-off)</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 Disk Kit, 24 Cell (Includes 1 Round -Small, -Medium, -Large, and 1 Flat -Large.)</td>
<td>403-554A</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>Corn Disk Kit, 40 Cell (Includes 1 Round -Small, -Medium, -Large, and 1 Flat -Large.)</td>
<td>403-555A</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 Cell</td>
<td>837-386C</td>
</tr>
<tr>
<td>Hill Drop Cotton, 12 Cell</td>
<td>837-186C</td>
</tr>
<tr>
<td>Milo &amp; Pelletized Sugar Beet, 30 Cell</td>
<td>837-057C</td>
</tr>
<tr>
<td>Milo &amp; Pelletized Sugar Beet, 65 Cell</td>
<td>817-849C</td>
</tr>
<tr>
<td>Milo &amp; 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>
<tr>
<td>Sunflower Oil, 60 Cell (Small)</td>
<td>837-234C</td>
</tr>
<tr>
<td>Sunflower Oil, 60 Cell (Medium)</td>
<td>837-235C</td>
</tr>
<tr>
<td>Sunflower Oil, 24 Cell (Large)</td>
<td>817-851C</td>
</tr>
<tr>
<td>Wheat &amp; Rice, 84 Cell (Volumetric)</td>
<td>817-867C</td>
</tr>
</tbody>
</table>
Seed Firmer
The Keeton® Seed Firmer slides down the seed trench and firms the seeds at the bottom of the furrow. The firmer also supports low-rate fertilizer delivery. For this use, a liquid fertilizer system must also be installed.

Order one kit per opener.

<table>
<thead>
<tr>
<th>Description</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Keeton® Seed Firmer Kit</td>
<td>499-158S</td>
</tr>
</tbody>
</table>

PTO Pump
A PTO pump kit may be needed where:
- the tractor has an Open Center hydraulic system;
- the tractor has no remote port for the fan; or,
- the tractor is Closed Center, but the remotes offer insufficient oil flow to reliably operate the fan.

540 rpm is required.

<table>
<thead>
<tr>
<th>Description</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>PL5500 PTO Kit for Open Center</td>
<td>403-919A</td>
</tr>
</tbody>
</table>

Dickey-john PM300 Seed Monitoring System will report the following elements:
- ground speed,
- up to two hopper levels, and
- seed rate at each row unit seed tube.

Medium and large seeds are individually counted with high accuracy. Small seeds, such as Milo, may be more difficult to sense, and instead, the seed monitoring system will indicate seed blockage.

The standard magnetic pickup at the ground drive allows the seed monitoring system to calculate and report seed population after the seed monitoring system has been configured for the preferred material rates. The kit does not include, but will require, fasteners for the in-cab mounting brackets.

<table>
<thead>
<tr>
<th>Description</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>PL5500 PM300 Console</td>
<td>431-908A</td>
</tr>
<tr>
<td>PL5500 PM300 Console/Ground Drive</td>
<td>402-740A</td>
</tr>
</tbody>
</table>
Installation

■ Tongue Installation

If the tongue is not assembled to the planter, the following instructions will need to be done by the dealer before delivery.

Use a hoist or blocks to support the tongue during installation.

1. Install the tongue to the center frame with eight 1-inch bolts (1), flat washers, lock washers, and nuts.

2. Remove the pins from the hinges (2) where the center frame is locked to the wings.

3. Use the pins to secure the base ends of the fold cylinders (3) to the tongue.

4. The hydraulic hoses should be attached to and run through the tongue. See “Hydraulic Diagrams” beginning on page 65 for connecting the hoses.

■ Press Wheel Installation

To meet highway clearance requirements, press wheel arms and wheels may not be factory-installed.

To install press wheels:

1. Remove and save the 1/2 x 1 inch hex bolt and washer (2) at the back of an incomplete row unit (3).

   **Planter Damage Risk**

   There are four bolts at this location. Remove only the hex head bolts. Do not loosen or remove the square head bolts.

2. Remove and save the 1/2 x 1-1/2 inch hex head bolt (4), washer, and adjuster nut.

3. Align the 1/2 inch holes in the press wheel assembly with the 1/2 inch tapped holes in the row unit, loosely assemble with the 1/2 x 1 inch hex head bolt and washer (2).

4. Loosely screw in the 1/2 x 1-1/2 inch hex bolt (4), washer, and adjuster nut. Rotate the adjuster to align the press wheel assembly with the row unit, and tighten the bolts.
**Marker Installation**

1. Install the marker arm (1) to the marker mount with a hinge pin (2). Secure the pin with a 5/16 x 2-1/4 inch bolt (3) and lock nut.

2. Install the marker chain base (4) to the cylinder base lug (5) on the planter. Secure with two 3/8 x 2-1/4 inch bolts (6), lock washers, and nuts.

3. Install the marker cylinder (7) to the marker arm cylinder lugs (8). Secure with a 1 x 4.69 inch clevis pin (9) and four flat washers (10). Two flat washers go on the outside of the cylinder lugs and two on the inside, on each side of the cylinder rod end.

4. Install the other end of the marker cylinder to the planter base lug (11) with a 1 x 2.75 clevis pin (12) and cotter pin.

5. Repeat step 1 through step 4 for the other marker.

6. Install the valve mounting bracket (1) to the tongue side plates. Secure with four 5/16 x 1-1/4 inch hex flange bolts (2) and four hex flange nuts (3).

7. Install the marker valve (4) onto the mounting bracket and secure with two 3/8 x 2-3/4 inch bolts (5) and nuts (6).

8. Use the hydraulic diagram on page 66 to connect the hydraulic hoses to the marker cylinders and marker valve.
**Scraper Installation**

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 85. 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 to the 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.
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 call 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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