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

Illustrations may show optional equipment not supplied with standard unit or may depict similar Great Plains implement name models where a topic is identical.
Machine Identification

Record your machine details in the log below. If you replace this manual, be sure to transfer this information to the new manual.

If you or the dealer have added options not originally ordered with the machine, or removed options that were originally ordered, the weights and measurements are no longer accurate for your machine. Update the record by adding the machine weight and measurements with the option(s) weight and measurements.

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

Dealer Contact Information

Name: __________________________
Street: _________________________
City/State: ____________________
Telephone: _____________________
Email: _________________________
Dealer's Customer No.: __________

⚠️ WARNING: Cancer and Reproductive Harm - www.P65Warnings.ca.gov
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Important Safety Information

Look for Safety Symbol

The SAFETY ALERT SYMBOL indicates there is a potential hazard to personal safety involved and extra safety precaution must be taken. When you see this symbol, be alert and carefully read the message that follows it. In addition to design and configuration of equipment, hazard control and accident prevention are dependent upon the awareness, concern, prudence and proper training of personnel involved in the operation, transport, maintenance and storage of equipment.

Be Aware of Signal Words

Signal words designate a degree or level of hazard seriousness.

DANGER indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury. This signal word is limited to the most extreme situations, typically for machine components that, for functional purposes, cannot be guarded.

WARNING indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury, and includes hazards that are exposed when guards are removed. It may also be used to alert against unsafe practices.

CAUTION indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices.

Prepare for Emergencies

▲ Be prepared if a fire starts
▲ Keep a first aid kit and fire extinguisher handy.
▲ Keep emergency numbers for doctor, ambulance, hospital and fire department near phone.

Be Familiar with Safety Decals

▲ Read and understand “Safety Decals” on page 6, thoroughly.
▲ Read all instructions noted on the decals.
▲ Keep decals clean. Replace damaged, faded and illegible decals.
PTO-Specific Hazards
Applies only to optional PTO pump.
Even if you are experienced in PTO operations, review the “Using PTO Safely” topic on page 2 of the PTO manual (411-015M). Topics in that manual dealing with PTO hazards include this PTO alert symbol.

PTO hazards include:
▲ **Entanglement:** resulting in abrasions, lacerations, crushing, dismemberment or death. Loose clothing, cuffs, frays, laces, coattails, drawstrings, hair or scarves are taken up by a PTO faster than you can react, and with overpowering torque.
▲ **Flailing machinery:** resulting from an unsecured torque arm, resulting in serious injury or death.
▲ **High pressure fluid sprays:** due to hydraulic hose failure, resulting from PTO shaft over-speed or damaged hoses.

**Wear Protective Equipment**
▲ Wear protective clothing and equipment.
▲ Wear clothing and equipment appropriate for the job. Avoid loose-fitting clothing.
▲ Because prolonged exposure to loud noise can cause hearing impairment or hearing loss, wear suitable hearing protection such as earmuffs or earplugs.

The optional PTO pump requires adjustment of a flow control valve with a hydraulic fan running. The valve is located near the fan, and the fan is loud.
▲ Because operating equipment safely requires your full attention, avoid wearing entertainment headphones while operating machinery.

**Handle Chemicals Properly**
Agricultural chemicals can be dangerous. Improper use can seriously injure persons, animals, plants, soil and property.
▲ Read and follow chemical manufacturer’s instructions.
▲ Wear protective clothing.
▲ Handle all chemicals with care.
▲ Avoid inhaling smoke from any type of chemical fire.
▲ Store or dispose of unused chemicals as specified by chemical manufacturer.
Use A Safety Chain
(Optional hydraulic hitch only. 3-Point has no chain.)
▲ Use a safety chain to help control drawn machinery should it separate from tractor draw-bar.
▲ Use a chain with a strength rating equal to or greater than the gross weight of towed machinery.
▲ Attach chain to tractor draw-bar support or other specified anchor location. Allow only enough slack in chain to permit turning.
▲ Replace chain if any links or end fittings are broken, stretched or damaged.
▲ Do not use safety chain for towing.

Avoid High Pressure Fluids
Escaping fluid under pressure can penetrate the skin, causing serious injury.
▲ Avoid the hazard by relieving pressure before disconnecting hydraulic lines.
▲ Use a piece of paper or cardboard, NOT BODY PARTS, to check for suspected leaks.
▲ Wear protective gloves and safety glasses or goggles when working with hydraulic systems.
▲ If an accident occurs, seek immediate medical assistance from a physician familiar with this type of injury.

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

Use Safety Lights and Devices
Slow-moving tractors and towed implements can create a hazard when driven on public roads. They are difficult to see, especially at night.
▲ Use flashing warning lights and turn signals whenever driving on public roads.

Use lights and devices provided with implement

Keep Riders Off Machinery
Riders obstruct the operator’s view. Riders could be struck by foreign objects or thrown from the machine.
▲ Never allow children to operate equipment.
▲ Keep all bystanders away from machine during operation.
Transport Machinery Safely

Maximum transport speed for implement is 20 mph (32 km/h).

Maximum speed when turning is 13 mph (22 km/h).

Maximum speed when backing is 3 mph (35 km/h).

Some rough terrains require a slower speed. Sudden braking can cause a towed load to swerve and upset.

▲ Do not exceed 20 mph. Never travel at a speed which does not allow adequate control of steering and stopping. Reduce speed if towed load is not equipped with brakes.

▲ Comply with state and local laws.

▲ Do not tow an implement that, when fully loaded, weighs more than 1.5 times the weight of towing vehicle.

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

▲ Keep clear of overhead power lines and other obstructions when transporting. Refer to transport dimensions under “Specifications and Capacities” on page 146.

▲ Do not fold or unfold the product while the tractor is moving.

Shutdown and Storage

▲ Lower product, put tractor in park, turn off engine, and remove the key.

▲ Secure product using blocks and supports provided.

▲ Detach and store product in an area where children normally do not play.
Practice Safe Maintenance

▲ Understand procedure before doing work. Use proper tools and equipment. Refer to this manual for additional information.
▲ Work in a clean, dry area.
▲ Lower the product, put tractor in park, turn off engine, and remove key before performing maintenance.
▲ Make sure all moving parts have stopped and all system pressure is relieved.
▲ Allow product to cool completely.
▲ Disconnect battery ground cable (-) before servicing or adjusting electrical systems or before welding on product.
▲ Inspect all parts. Make sure parts are in good condition and installed properly.
▲ Remove buildup of grease, oil or debris.
▲ Remove all tools and unused parts from product before operation.

Safety At All Times

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

Safety Reflectors and Decals

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

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

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

Slow Moving Vehicle Reflector

818-055C

On the back of the walkboard platform; 1 total

Red Reflectors

838-266C

On rear face of axle (below Daytime reflectors); two total
Daytime Reflectors

838-267C
On rear face of axle (above Red reflectors); two total

Amber Reflectors

838-265C
On the front of the center section front lower tool bars, on the rear of the wing tool bars, and on the sides of the seed box frame; six total.
Danger (in Spanish)
818-557C

Advising non-English readers to seek translation
On side of tongue; one total

Danger: Crushing Hazard
818-590C

Top center of 3-point hitch; one total
(not present with hydraulic tongue option)

Danger: Electrocution Hazard
838-599C

One each side of marker upright arm, each side;
four total
Danger: Rotating Driveline (Option)
858-030C

On front face of hydraulic reservoir; one total

Warning: Pinch/Crush
818-045C

On front faces of rockshaft, above gauge wheels, on inside and outside face, wing caster weldments, on side face of rear axle weldment; eight total

Warning: Speed
818-188C

On front of center section, one total
Warning: Pinch/Shear Hazard
818-579C

Front and rear faces of inner marker arms; four total

Warning: Overhead Marker
818-580C

Front and rear faces of inner marker arms; four total

Warning: High Pressure Fluid
838-094C

On side of tongue at hitch; one total
Warning: Hot Fluid (Option)  
858-004C

On front face of hydraulic reservoir; one total

Caution: 1000 rpm PTO (Option)  
818-240C

On front face of hydraulic reservoir; one total

Caution: Transport Locks  
818-351C

Hitch tongue; one total
Caution: Tires Not A Step
818-398C

One front face each wing gauge wheel,
One each side front center axle,
One each rear face of rear caster arms;
8 total

Caution: Read Operator's Manual
818-587C

On center tool bar; one total
Caution: Pressure and Torque
838-426C

On outside rim each transport tire; 10 total
Introduction

Great Plains welcomes you to its growing family of new product owners. The 40 Foot 3-Section Yield-Pro® Planter (YP4025A-48TR20 implement name) has been designed with care and built by skilled workers using quality materials. Proper setup, maintenance, and safe operating practices will help you get years of satisfactory use from the machine.

Models Covered
YP4025A-48TR20 48-Twin Row, 20 inch (51 cm)

Description of Unit
The YP4025A-48TR20 Planter is a pull-type implement with optional mounted or pull-behind fertilizer capability. The YP4025A-48TR20 includes 25 Series openers with Air-Pro® meters supporting a wide choice of seed disks. The product accepts optional unit mounted and frame-mounted row accessories. The product folds for transport.

Intended Usage
Use the YP4025A-48TR20 Planter to seed production-agriculture crops only. It is suitable for conventional till, min-till and moderate no-till conditions. Do not modify the product for use with attachments other than Great Plains options and accessories specified for use with the YP4025A-48TR20.

Document Family
ManualM # Operator Manual (this document)
ManualB # Seed and Fertilizer Rate Charts
ManualP # Parts Manual

DICKEY-john® IntelliAg® manuals:
11001-1662 Planter/Drill Control, User Level 1
11001-1501A Planter/Drill Control, User Level 2&3
110011651 Quick Start Guide YP4025A-48TR20
11001-1126 DICKEY-john® hopper level sensor install

Other row spacings of model Product # are covered by separate Operator and Material Rate manuals (401-627M and 401-627B).

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

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

Definitions
The following terms are used throughout this manual.

NOTICE
A crucial point of information related to the preceding topic. Read and follow the directions to remain safe, avoid serious damage to equipment and ensure desired field results.

Useful information related to the preceding topic.

Right-hand and left-hand as used in this manual are determined by facing the direction the machine will travel while in use unless otherwise stated. An orientation rose in some line art illustrations shows the directions of: Up, Back, Left, Down, Front, Right.
Owner Assistance

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

Refer to Figure 2

Your machine’s parts were specially designed and should only be replaced with Great Plains parts. Always use the serial and model number when ordering parts from your Great Plains dealer. The serial-number plate is located on the left end of the rear mainframe tool bar, near the highway lights.

Record your implement name model and serial number here for quick reference:
Model Number: YP4025A-48TR20
Serial Number: __________________________

Further Assistance

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

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

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

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

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

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

This section helps you prepare your tractor and YP4025A-48TR20 Planter for use, and covers tasks that need to be done seasonally, or when the tractor/product configuration changes.

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

Initial Setup

See "Appendix B - Initial Setup" on page 159 for pre-delivery items (normally completed by dealer), and first-time/infrequent setup tasks, including:

- Install seed monitor console in tractor (page 160).

Post-Delivery/Seasonal Setup

On initial delivery, use with a new tractor, and seasonally, check and as necessary, complete these items before continuing to the routine setup items:

- Wing leveling and alignment (page 113).
- Radar calibration (page 162).
- De-grease exposed cylinder rods if so protected at last storage.

Pre-Planting Setup

Complete this checklist before routine setup:

- Read and understand “Important Safety Information” on page 1.
- Check that all working parts are moving freely, bolts are tight, and cotter pins are spread.
- Check that all zerks are in place and lubricated. See "Lubrication" on page 120.
- Check that all safety decals and reflectors are correctly located and legible. Replace if damaged. See “Safety Decals” on page 6.
- Inflate tires to pressure recommended and tighten wheel bolts as specified. See “Tire Information” on page 147.
Hitching Tractor to Planter

**DANGER**

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

Hydraulic Hose Hookup

**WARNING**

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

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

If Weight Transfer is Installed

If the optional weight transfer system is not installed, or a PTO pump is installed, continue at “Color Coded Hose Handles” on page 18.

The weight transfer cylinders must be free to flex during all implement name movements where the system is not in active use.

To allow cylinder flex:
- connect at least the fan case drain and fan return lines to suitable receptacles (see page 18), or
- install the shipping links (see page 160).

**NOTICE**

**Machine Damage Risk:**
Do not move the implement name with a hydraulically locked weight transfer system. Relieve the system or install shipping links. If the cylinders are not free to flex, oil loss will result from even minor movement flexing.
Color Coded Hose Handles
If a PTO pump is installed, hitch hoses are not present for the fan and hydraulic drive functions.

<table>
<thead>
<tr>
<th>Color</th>
<th>Hydraulic Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gray</td>
<td>Wing Fold / Marker Fold / Auxiliary</td>
</tr>
<tr>
<td>Blue</td>
<td>Lift / (and Hitch if hydraulic tongue)</td>
</tr>
<tr>
<td>Black</td>
<td>Fan</td>
</tr>
<tr>
<td>Yellow</td>
<td>Hydraulic Drive (standard)</td>
</tr>
<tr>
<td></td>
<td>Weight Transfer (option)</td>
</tr>
<tr>
<td></td>
<td>Hydraulic Fertilizer Pump (option)</td>
</tr>
</tbody>
</table>

Refer to Figure 4

To distinguish hoses on the same hydraulic circuit, refer to the symbol molded into the handle grip. Hoses with an extended-cylinder symbol feed cylinder base ends. Hoses with a retracted-cylinder symbol feed cylinder rod ends.

For hydraulic fan and drive motors, connect the hose under the retracted cylinder symbol to the pressure side of the motor. Connect the hose under the extended cylinder symbol to the return side of the motor.

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

Protecting Fan Hydraulic Motor Seals
Low Pressure (Case) Drain Connection
1. Attach case drain hose to low pressure drain connection.
   - Case drain hose has the smaller 1/4 inch I.D. hose and small, flat-face, connector.
2. Connect low pressure motor return hose to low pressure return connector. It is distinguished by a large (1.06 inch/2.7 cm diameter) quick coupler.
3. Connect hydraulic hoses to tractor remotes.
   - If optional weight transfer is installed, the fan return and case drain lines are also used by the weight transfer system.

**NOTICE**

**Machine Damage Risk:**
Case Drain Hose must be attached first, prior to inlet and return hoses being connected.

**NOTICE**

**Machine Damage Risk:**
Case Drain Hose must be detached last, to prevent damage to the fan motor.

**NOTICE**

**Machine Damage Risk:**
DO NOT connect the case drain line to a power-beyond-port.
**Electrical Hookup**

*Refer to Figure 5*

Make sure tractor is shut down with accessory power off before making connections.

1. Mate lighting connector to tractor outlet.
2. Mate monitor connector to tractor harness.
3. Swath Command™ compressor (option).
4. Mate any optional or aftermarket electrical connectors.

Make connections prior to product movement. Some product hydraulic circuits are under monitor control.

---

**Hitching with 3-Point**

*Refer to Figure 6*

1. Connect your tractor 3-point to the product 3-point hitch. If using quick hitch be sure product locks into hitch securely.
2. Raise tractor 3-point enough to relieve pressure from parking stands.

---

![Load Sway Hazard](image)

**Load Sway Hazard:**

Adjust 3-point hitch arms and sway blocks to minimize any side-to-side sway to assure proper tracking in the field, and safe road travel.

---

**Markers**

Prior to first use, and whenever changing row spacings, set or reset:

- "Marker Extension" on page 161.

Prior to each planting session, check and adjust:

- "Marker Disk Adjustment" on page 69.
Hitching with Hydraulic Tongue (Option)

Refer to Figure 7

1. Move the tractor to near hitching position.
2. Connect the hydraulic hoses for the tongue circuit. This needs to be done before hitching in order to raise and lower the tongue. See “Hydraulic Hose Hookup” on page 17. Allow slack for hitch movements. Close the tongue cylinder bypass valve.
3. Make electrical connections for at least the implement name control circuit (necessary to control implement name hydraulic systems). See page 19.
4. Check that hitch local bypass valve 1 is closed.

Refer to Figure 8

5. Set the cab Clutch Folding Module Lift/Hitch switch 2 to Hitch.
6. Retract the Hitch/Lift circuit to set the tongue height to clear the draw-bar. Back the tractor into alignment and pin the draw-bar.
7. Connect safety chain to a suitable anchor point on the tractor.
8. Extend the Hitch/Lift circuit to raise the hydraulic tongue just enough to relieve pressure from the parking stand.

Local Float on Hydraulic Tongue

Refer to Figure 7

NOTICE

Equipment Damage Risk:
The hydraulic tongue must be in Float during implement name moves.

If it is necessary to move the implement name without first connecting it to a tractor that has a float-capable circuit for the hydraulic tongue, open the bypass valve 1 on the tongue cylinder. This provides local floating capability at the tongue.

Raising/Lowering Tongue

In addition to hitching, tongue raising and lowering is required during fold and unfold to engage and disengage the wing locks.

With the standard 3-point hitch, the product tongue is raised and lowered by raising and lowering the 3-point.

With the optional hydraulic tongue, the product tongue is raised by extending the hitch cylinder, and lowered by retracting the hitch cylinder.
Parking Stands

Store Main Parking Stand

Refer to Figure 9

1. Raise the tractor hitch slightly to lift parking stands off ground.
2. Remove the lower pin ① and the upper pin ② holding the parking stand ③.
3. Move the stand from under the tongue to an inverted position in the bracket ④ on the left side on the tongue. Pin in place.

Storing 3-Point Parking Stands

Refer to Figure 10 (shown without tractor for clarity)

1. For the standard 3-point hitch, store the two forward stands ⑤ by either of the following methods:
   - Remove the top pin ⑥, swing the stand ⑦ out, up and vertical around the bottom pin ⑧, and re-insert the top pin ⑥, or
   - Remove the bottom pin ⑤, swing the stand inward, to a horizontal position under the hitch, and insert the removed pin at hole ⑨ under the stand.

Refer to Figure 9

2. Adjust the top link of a 3-point long enough so the ball swivel ② does not bottom out when fully raised.
3. Secure hoses so they do not get caught in ball swivel ②. Failure to do so could cause hose to be crushed requiring hose replacement.
Tank Cart Hitching
If using a fertilizer cart, consult the cart manual for:
- hitching cart tongue to product
- connecting any pump or manifold control electronics to product
- connecting fertilizer feed hoses to product
Complete the tractor-product hook-up before making any tank cart connections.

**NOTICE**

Material Loss Risk:
Open hose and inlet valves when ready to begin planting. Close them when not in use. Damage to hoses when not applying material can result in rapid tank depletion.

### Fertilizer Connection Types

<table>
<thead>
<tr>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>1-section, product manifold and pump: Inlet only (bypass is local on SML cart; a user-provisioned cart may use the boom gauge line connection)</td>
</tr>
<tr>
<td>3</td>
<td>3-section, cart manifold and pump: Left, Center, Right inlets &amp; Gauge line</td>
</tr>
</tbody>
</table>

### Making Fertilizer Connections

**SML-500 or SML-735 tank cart, YP4025A-48TR20 Planter with Type 2 Manifold & Planter Pump**

<table>
<thead>
<tr>
<th>Planter Inlet</th>
<th>Type 2</th>
<th>Gauge Line</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>S</td>
<td>N/C</td>
</tr>
</tbody>
</table>

**User-provisioned supply and pump, YP4025A-48TR20 Planter with Type 2 and Type 3 Manifolds, & Planter Pump**

<table>
<thead>
<tr>
<th>Planter Inlet</th>
<th>Type 2</th>
<th>Gauge Line</th>
</tr>
</thead>
<tbody>
<tr>
<td>Left Type 3</td>
<td>S</td>
<td></td>
</tr>
<tr>
<td>Center Type 3</td>
<td>C</td>
<td></td>
</tr>
<tr>
<td>Right Type 3</td>
<td>R</td>
<td></td>
</tr>
</tbody>
</table>

**User-provisioned supply and pump, YP4025A-48TR20 Planter with Type 3 Manifold (only)**

<table>
<thead>
<tr>
<th>Planter Inlet</th>
<th>Type 2</th>
<th>Gauge Line</th>
</tr>
</thead>
<tbody>
<tr>
<td>Left Type 3</td>
<td>S</td>
<td></td>
</tr>
<tr>
<td>Center Type 3</td>
<td>C</td>
<td></td>
</tr>
<tr>
<td>Right Type 3</td>
<td>S</td>
<td></td>
</tr>
</tbody>
</table>
Heights and Leveling
All frame sections must be at the correct height and level to maintain even planting depth.
Periodic frame-leveling adjustments should not be necessary. If you are having problems with uneven depth, check product levelness and follow these procedures.

1. Before making any adjustments be sure the lift cylinders are re-phased and operating properly. If not, see “Rephasing Lift System” on page 29
2. Unfold the product fully (page 25).

Set Tongue Height
Planter must be unfolded for this procedure.

Refer to Figure 12
Set the initial tongue height, using 3-point or hydraulic tongue cylinder. Distance is measured at top of tongue to ground level.

• For standard 3-point hitch:
  Set depth stop to capture this working height. If desired height cannot be attained with normal range of hitch, swivel coupler weldment may be relocated in tongue bolt holes.

  Tractor 3-point control must be in Depth Control mode, and not Draft Control mode.

• For hydraulic tongue:
  Note the scale reading on the tongue for this height. [Re]set the tongue height to this value when planting.

Checking Planter Height
The product is designed to operate with all sections of the main tool bar nominally 26 inches (66 cm) above the planting surface. The height of the center section is not routinely adjustable. Set planting depth with row unit adjustments.

When lowering the product for the first time on the planting ground:
1. Completely lower the main tool bar. If necessary, first lift off transport locks, remove and stow locks.
2. Set hitch to planting height.
3. Pull forward a few feet or just over a meter.

NOTICE
Height Mis-adjustment Risk:
Fully lower implement name to field position (with openers into ground) and set hitch height before making side-to-side adjustments.
4. Check tool bar height across product. See page 113 for further detail and adjustment.
Operating Instructions

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

Pre-Start Checklist

Perform the following steps before transporting the YP4025A-48TR20 product to the field.

- Carefully read “Important Safety Information” on page 1.
- Install seed disks appropriate for crop. See “Air-Pro® Meter Disk Installation” on page 86.
- Lubricate product as indicated under “Lubrication” on page 120.
- Check all tires for proper inflation. See “Tire Information” on page 147.
- Check all bolts, pins, and fasteners. Torque as shown in “Torque Values Chart” on page 147.
- Check product 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.

Fold/Unfold Lock Overview

The YP4025A-48TR20 implement name includes five sets of locks for the frame, wings and casters:


2. Lift cylinder lock channels: These are operator-installed on a raised plater, these prevent lowering in transport or when parked. See page 29.

3. Fold cylinder and Caster swing arm cylinder lock valves: Switch-controlled solenoid valves prevent motion of the fold cylinders and caster swing arm cylinders, in transport and field. See page 148.

4. Tongue lock: This engages automatically at unfold, and lock the tongue/draw bar geometry for field operations. See page 26.

5. Caster pivot locks: operator-engaged after unfold, these prevent caster swiveling in the field, which aids in tracking across hillsides. See page 31.

High Pressure Fluid Hazard:

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

Figure 14
Fold/Unfold/Lift Locking Features
Unfolding Planter

The distance between the tractor and the seed structure decreases by 12 feet (3.7 m) during unfolding. Planter, tractor, or both will move during this operation.

**WARNING**

**Crushing, Pinch-Point and Overhead Hazards** - To prevent serious injury or death:

- Fold only on hard level ground. Allow ample room.
- If it is desired that the tractor not move, make sure tractor is in Park and/or has parking brakes set, otherwise the telescoping movement of the product is likely to result in tractor movement.
- Do not allow anyone to be on or near the product during unfolding.
- Stay clear of the wing sweep arcs. The sweep arcs of the wings have numerous pinch and crush points in the mechanism. Coulters and row openers are sharp.
- Allow no one near implement name. The seed structure usually moves forward during unfolding.
- Do not unfold with implement name lowered, or machine damage will result.
- Unfold only with markers resting in transport cradles.

1. Move to level ground.

**Refer to Figure 15**

2. On the Clutch Folding Module (CFM), set the following switches to OFF (down): MASTER switch 1 in the CLUTCH cluster 2, and Fert.Pump 3.

3. If the folded implement name is lowered, raise mainframe (See “Raising/Lowering Planter” on page 27).

4. If equipped with hydraulic hitch, the CFM Lift/Hitch switch 6 must be set to Hitch.

**Refer to Figure 28**

5. At each wing caster, check that lock control handles 5 and indicators 7 are in the ROAD position, allowing the casters to swivel. If they are not, set handle to ROAD position and fully raise and lower implement name to release load on lock plates to allow them to come open.

**Refer to Figure 15**

6. Set CFM Marker/Fold switch 4 to Fold. LED above switch blinks continuously.
7. Raise tractor 3-point hitch or extend (raise) product hydraulic tongue until tongue wing locks rise and disengage.

**NOTICE**

**Machine Damage Risk:**
Raise hitch before unfolding. If hitch is not raised, wing locks will remain in transport hooks. Wings will not unfold, and machine damage is possible.

8. Set CFM Marker/Fold switch to Fold. LED above switch blinks continuously.

9. Activate (normally Retract) tractor hydraulic circuit to unfold wings.

10. Operation is complete when the tongue lock engages.

 Refer to Figure 19

**NOTICE**

**Machine Damage Risk:**
Do not operate implement name when unfolded unless tongue lock is engaged. When unlocked, the pull bar system experiences excess loads. The openers may be damaged by not tracking straight forward.

11. When fully unfolded, set Marker/Fold hydraulic circuit to Neutral.

12. For imminent lowered operations, remove lift cylinder locks (see “Lift Cylinder Lock-Up” on page 29).

13. Set hitch height to planting position (“Raising/Lowering Tongue” on page 20).

**NOTICE**

**Machine Damage Risk:**
Unfold and fold slowly. Adjust hydraulic flow to take a minimum of 60 seconds to unfold or fold. Wings are massive, and damage can occur if they reach the end of travel at high speed. At lower speeds you also have time to check for hose pinching or kinking, as well as react to anything unexpected in the sweep arc.
Raising/Lowering Planter

Refer to Figure 20

Planter raising/lowering relies on the four lift cylinders at the mainframe and wing end gauge wheels.

The product must be raised for folding and unfolding.

The product will not lower if transport locks are installed. See “Lift Cylinder Lock-Up” on page 29.

When unfolded, if one or both markers are extended, they may drag or shove if left extended during raise or lower operations. To avoid this, fold markers prior to raise or lower.

**NOTICE**

Machine Damage Risk (Hydraulic Hitch Only):

Do not lower product while folded without using the special procedure on page 29 (this is a hydraulic hitch restriction - product may be lowered while folded with standard 3-point hitch).

**NOTICE**

Machine Damage Risk:

Do not lower while any product folding operations are underway or partially complete, with either hitch.

**NOTICE**

Machine Damage Risk:

Always raise the product for any reverse/backing operations.
Raising Planter

Refer to Figure 23

1. If the product has hydraulic hitch, set the Lift/Hitch switch ① to Lift.
   
   If the product has the standard 3-point hitch, this switch has no function. The hydraulic circuit is always in Lift (Raise/Lower) mode.

2. Move the cab lever to Extend the circuit for Lift/Hitch.

[CAUTION]
Pinch/Crush Risk:
Keep all personnel clear of center section and seed cart while raising tool bar. The wheels move inward.

[NOTICE]
Machine Damage Risk:
On tractors with electronic timer controls for hydraulic circuits, lift timers must be set to no more than 2 seconds longer than needed to fully raise product.

Do Not Set for Continuous Mode.
For transport, maintenance or storage, install lift cylinder locks. See “Lift Cylinder Lock-Up” on page 29.

Lowering Planter

Refer to Figure 24

1. If lift cylinder locks are installed, first fully raise the product, and remove the locks. See “Raising Planter” on page 28 and “Lift Cylinder Lock-Up” on page 29.

2. If equipped with hydraulic hitch, set the Lift/Hitch switch ① to Lift On 3-point hitch, this switch has no function and the circuit is in Lift mode at all times.

3. Move the cab lever to Retract the circuit for Lift/Hitch. When fully lowered, return lever to neutral.

[CAUTION]
Crushing Risk:
Keep all personnel clear of center section and seed cart while raising tool bar. The wheels move outward.

[NOTICE]
Machine Damage Risk (Hydraulic Hitch Only):
Never lower product while fully folded, if it is equipped with the hydraulic tongue hitch, or machine damage can occur unless a special procedure is followed (see page 29). A product with a 3-point hitch may be lowered while folded.

[NOTICE]
Machine Damage Risk:
Never lower product while partially unfolded (with either hitch). Wing row units can strike main transport wheels.
Installing Lift Cylinder Locks

When moving the raised product more than a short distance, or over any public road, or when performing adjustments or maintenance, do not rely solely on the lift cylinders to keep the mainframe raised.
Install lift cylinder locks.

Refer to Figure 25
1. If product is folded, confirm hitch is in Float.
   If product is unfolded, hitch may be in any configuration.
2. Raise the product mainframe. See "Raising/Lowering Planter" on page 27.
3. Remove the transport locks from their storage positions. Install the transport locks on the cylinder rods, securing them with the same pins used for storage.
4. Lower the lift cylinders onto the locks.

Rephasing Lift System

In typical use during a single planting operation, it is normal for the lift cylinders to get slightly out of phase, resulting in uneven raising and lowering of the Product # implement name.

Every 8 to 10 passes, or if lifting is uneven, rephase the cylinders with this procedure:
1. Raise the product completely, and hold the hydraulic lever or switch in Extend for several seconds after the product reaches full elevation, or until all cylinders are fully extended.
2. When all cylinders are fully extended, momentarily reverse (Retract) the control to lower the product 1/2 inch (13 mm).

Local Float on Hydraulic Tongue

A hydraulic hitch product may be raised or lowered while folded using the local float valve.
1. Float hitch circuit before lowering while folded. Float hitch circuit before raising while folded.
2. Set CFM Lift/Hitch switch to Lift for raising/lowering.

WARNING
Crushing Hazard:
Tongue or product components may drop suddenly when circuit is floated. Before raising or lowering, set CFM Lift/Hitch switch to Hitch and set tractor circuit to Float. If tractor is not available, use bypass valve on hitch. Stand clear and open it slowly.
Folding the Planter

Fold the YP4025A-48TR20 product for moves between fields and over public roads, and for storage. The distance between the tractor and the seed structure increases by 12 feet (3.7 m) during folding. Planter, tractor, or both will move during this operation.

⚠️ WARNING ⚠️

**Pinch Point and Crushing Hazard:**
To prevent serious injury or death:

- Fold only on hard level ground. Allow ample room.
- If it is desired that the tractor not move during folding, make sure tractor is in Park and/or has parking brakes set, otherwise the telescoping movement of the product is likely to result in tractor movement.
- Do not allow anyone to be on or near the product during folding.
- Stay clear of the wing sweep arcs. The sweep arcs of the wings have numerous pinch and crush points in the mechanism. Coulters and row openers are sharp.
- Allow no one behind the product. The seed structure moves backward during folding.
- Do not fold with product lowered, or machine damage will result.
- Fold only with markers resting in transport cradles.

1. Move to level ground.

Refer to Figure 27

2. On the cab Clutch Folding Module (CFM), set the following switches to OFF (down): MASTER switch 1 in the CLUTCH cluster 2, and Fert.Pump 3.

3. Raise product mainframe (see “Raising/Lowering Planter” on page 27). Do not raise (hydraulic) hitch at this point.

4. Install lift cylinder locks (see “Lift Cylinder Lock-Up” on page 29).
Refer to Figure 28
If caster locks are engaged (handle ® in FIELD position), they must be released before folding.

**NOTICE**

**Machine Damage Risk:**
*Caster locks must be disengaged for transport.*

5. At each wing caster, move the lock control handle ® to the ROAD position.

6. If the indicator end of the lock ⑦ does not immediately snap up from FIELD to ROAD, some pivot tension is holding the pawl end of the lock ⑦ in the plate detent ⑧. Move the product forward or back a short distance until both locks unlock.

Refer to Figure 27
7. Set CFM Marker/Fold switch ④ to Fold. LED above switch blinks continuously.

8. Activate (normally Extend) tractor Marker/Fold hydraulic circuit to fold wings. Sequence begins with releasing of tongue latch (Refer to Figure 19 on page 26).

9. Raise product tongue ("Raising/Lowering Tongue" on page 20). This must be done before folding completes.

If tongue is not raised prior to folding complete, wing locks will be above transport hooks and unable to secure wings to tongue.

If this happens, partially unfold product, raise tongue, and refold.

Refer to Figure 28
10. When fully folded, lower tongue so that wing locks ⑤ engage transport hooks ⑧.

11. Set Marker/Fold circuit lever to Neutral.

12. 3-point: lower hitch completely
   Hydraulic tongue: Set hitch circuit to Float (not Neutral).

**CAUTION**

**Transport Hazard:**
*Wing locks must be engaged for safe transport, and product tongue must be lowered to keep wings locked.*

*Hydraulic tongue, if installed, must be in Float.*
Rephasing Fold System

In typical use during a single planting operation, it is normal for the fold cylinders to get slightly out of phase, resulting in uneven folding and unfolding of the YP4025A-48TR20.

Every few planting days, rephase the cylinders with this procedure:

1. Raise, unfold and fold the product completely, and hold the fold hydraulic lever or switch in Extend for several seconds after the product reaches full folding, or until all cylinders are fully extended.
2. When all cylinders are fully extended, reverse (Retract) the control to unfold and return to planting.
Transporting the Planter

**DANGER**

**Loss of Control Hazard (Weight):**
Do not tow if product exceeds the load rating of the vehicle. Ensure that the towing vehicle is adequate. An inadequate tow vehicle is extremely unsafe, and can result in loss of control, serious injury and death.

**Check Bridge Loads:** A loaded product, or a product with cart in tow, can exceed the load ratings of bridges you must cross. The product can weigh up to 45,000 pounds (20,400 kg), depending on configuration and seed load. A tank cart hitched to the product (“in train”) can add another 12,000 pounds (5400 kg) empty. The tractor unit MUST be rated for the load. If the tractor is not rated for at least 45,000 pounds, calculate or obtain a scale weight of the product and cart.

**Loss of Control Hazard (Tank Carts):**
A tank cart in train must be EMPTY. A full SML-735 cart weighs 12,000 pounds (5400 kg), and, when hitched to the product, represents an unsafe highway load regardless of towing vehicle. A loaded nurse cart must be transported separately.

**Loss of Control Hazard (Unfold):**
The CFM switch must be set to Hitch, and the hydraulic circuit must be in FLOAT during transport. Failure to do this may result in hydraulic system damage, transport hooks unlatching, a serious highway accident and major product/tractor damage.

**CAUTION**

**Braking and Loss of Control Hazard:**
Do not exceed 20 mph (32 km/h) when driving straight.

**CAUTION**

**Loss of Control Hazard:**
Do not exceed 13 mph (22 km/h) in turns. The implement name is extremely heavy, and can cause “over-steer” with most tractors. The leading gauge wheels, rear-most transport
wheels, and tank cart lead wheel fully caster, and provide no resistance to side sway by the implement name or cart.

**NOTICE**

*Reduction of Control Risk:*
Seed may be loaded prior to travel, but increases stopping distance, increases the need for caution in turns and braking, and increases tire wear.

**NOTICE**

Never exceed 3 mph (5 km/h) in reverse.

**NOTICE**

Never back up with the implement name lowered or with a pull-type fertilizer tank hitched to the implement name.

**NOTICE**

If towing other than with a suitable tractor, and the weight transfer option is present, install shipping links (page 160).

**Typical Planter Weights**

The figures in the table at right represent a limited number of configurations. The weight of your product can vary by thousands of pounds, even if it is the same base model, due to installed options and/or aftermarket equipment.

If your tractor weight or capability is near its limits, take your empty product to a scale and get a precise weight.

**Steering**

Never exceed 13 mph (22 km/h) in turns. The implement name is extremely heavy, and can cause "over-steer" with most tractors. The leading gauge wheels, rear-most transport wheels, and tank cart lead wheel fully caster, and provide no resistance to side sway by the product or cart.

<table>
<thead>
<tr>
<th>Configuration: Markers, Unit-Mounted Coulters and Hopper</th>
<th>YP4025A-48TR20 150bu Hopper</th>
</tr>
</thead>
<tbody>
<tr>
<td>Base Model, Empty</td>
<td>34,000 lbs 15 400 kg</td>
</tr>
<tr>
<td>Base Model + Material Load</td>
<td>43,000 lbs 19 500 kg</td>
</tr>
<tr>
<td>Add for SML-735, Empty</td>
<td>3000 lbs 1300 kg</td>
</tr>
<tr>
<td><strong>Planter with Cart</strong></td>
<td></td>
</tr>
<tr>
<td>Planter and Cart Empty</td>
<td>36,900 lbs 16 800 kg</td>
</tr>
<tr>
<td>Planter and Cart, Full*</td>
<td>54,800 lbs 24 800 kg</td>
</tr>
</tbody>
</table>

* Figures included only to emphasize the hazard.

Never tow a loaded tank cart hitched to a planter.
Transport Checklist

- Plan the route. If towing a cart hitched to the product, plan the route so that no reverse movements will be necessary. Avoid steep hills. Keep Clearances in mind. Folded, your implement name may be nearly 15 feet (4.6 m) wide and 13 feet (4 m) high.

- Hitch.
  Make both electrical and hydraulic connections. See “Hitching Tractor to Planter” on page 17.

- If markers are unfolded, fold them.
  See “Folding the Markers” on page 64.

- Raise product.
  See “Raising/Lowering Planter” on page 27

- Install lock-up channels on lift cylinders.
  See “Lift Cylinder Lock-Up” on page 29.

- Disengage caster locks. See page 31.

- Fold and latch lower ladder section. See page 35.

- If product wings are unfolded, fold them.
  See “Folding the Planter” on page 30. Make sure wing locks are engaged.

- 3-point hitch:
  Lower hitch fully to ensure wings remain locked.

  Hydraulic hitch:
  Confirm CFM set to Hitch and hitch circuit in Float.

- Always have lights on for highway operation.

- Comply with all federal, state and local safety laws when traveling on public roads.

- Travel with caution.

Loading Materials

Walkboard and Ladder

Walkboard pin and pivot operation is covered on page 40.

Refer to Figure 31

The bottom two steps 1 of the walkboard ladder are a swing-down section. To release this section, pull the spring-loaded pin 2 forward and pull the top of the free end of the ladder back.

To re-stow the steps, merely swing them up and forward. The spring-load pin automatically engages.

Figure 31
Walkboard Lower Ladder

Machine Damage Risk:
Ladder steps must be locked up before lowering product or machine damage will occur.
**Refer to Figure 31**

A tool ③ is pinned to the bottom of the walkboard. It is easier to remove and replace this tool with the product lowered.

The wrench end fits the nut weldment of the spring force cam (page 78).

![Figure 32: Walkboard Tool Location](image)

**Refer to Figure 33**

As necessary for auger clearance, open walkboard top railing. At each side, pull cross-pins ① out and make 1/4 turn. Release pin into shallow detents. Swing railing toward hopper.

![Figure 33: Walkboard Swing-Down Rail](image)
Auxiliary Hydraulics

Refer to Figure 34, Figure 35 and Figure 36 (Figure 34 also depicts an optional pintle hitch for a user-provisioned cart)

The YP4025A-48TR20 product includes, as standard equipment, an auxiliary hydraulic circuit, intended to power a seed auger for loading bulk hoppers.

The Aux quick-disconnect ports ① are on the frame. This circuit is shared with the markers (if installed).

If markers are not installed, the Aux/Marker circuit is always in Aux mode.

Operating Auxiliary Hydraulics

The product needs to be unfolded for convenient access to the manual hydraulic valve.

1. Fold any extended markers and set the tractor lever for the marker/aux circuit to Neutral.
2. If no markers were unfolded, set the Clutch Folding Module Marker/Fold switch ② to “Marker”.
3. If the machine has markers, at the left wing tool bar, move the lever on the manual valve ③ from Marker ⑤ (lever pointing forward) to Aux ③ (lever pointing back).
4. Connect the implement requiring hydraulic power.
5. Briefly Extend the tractor lever for the Marker circuit, engage local valve/switch on implement, and confirm proper implement operation (auger rotation in the correct direction).
6. Set tractor circuit lever to Extend, and operate implement with local controls.
7. When operation is complete, set tractor circuit to Float or Neutral.
8. Set wing valve ⑤ back to Marker ⑤.

**WARNING**

Unexpected Marker Movement:

Do not move Marker/Aux valve unless tractor circuit is in Float, Neutral, or shut down. If circuit is pressurized, markers begin moving immediately when valve is set to Marker.
82 bu. Hopper Operation

**CAUTION**

*Tipping Hazard:*
Load an 82 bu. hopper only when mounted on the cart. A full hopper can weigh over 5500 pounds (2500 kg), which is above the lifting and balance capability of most tractors and farm forklifts.

Fork lift height capability required is:
- Planter lowered: 4 feet 2 5/8 inches (129 cm)
- Planter raised: 6 feet 5 7/8 inches (198 cm)

The hopper includes a level sensor which is not factory-installed. If you desire to use the sensor, install it prior to first use of the hopper. See page 162.

**Adding Seed to 82 bu. Hopper**

1. When using new meters for the first time, or at the start of each season, measure out approximately 4 gallons (15 liters) of seed into a pail. Add 1/2 cup (120 ml) of lubricant to the pail. Mix and pour into air box before mounting the bulk box or hopper.
3. Turn off seed box fan.
4. If the 82 bu. hopper is not yet on the product, dismount any seed container present, and mount the empty 82 bu. hopper. See “Changing the Bulk Box or Hopper” on page 40.
5. Open slide gate at base of hopper. Open lid.
6. Measure the lubricant required, and if loading seed by bag, determine the amount of lubricant per bag.

    If loading with a hydraulic auger, see “Auxiliary Hydraulics” on page 37. Lower walkboard railing as necessary.

**NOTICE**

*Seed Lubricant Required:*
Seed lubricant is required for all seeds. Use only Ezee Glide Plus or Bayer Seed Fluency Agent, depending on local requirements. see “Seed Lubricants” on page 130 for crop-specific advice.

**CAUTION**

*Entanglement, Chemical and Falling Hazards:*
Observe all safety precautions for material handling and use of loading equipment (particularly augers).

Auger height capability required is:
- bulk box, product lowered: 8 feet 9 1/2 inches (2.68 m)
- bulk box, product raised: 11 feet 3 1/4 inches (3.37 m)
- 82 bu. hopper, product lowered: 9 feet 1 3/4 inches (2.75 m)
- 82 bu. hopper, product raised: 11 feet 3 1/2 inches (3.44 m)

7. Add seed, mixing in lubricant continuously or per bag.
150 bu. Hopper Operation

**CAUTION**

**Tipping Hazard:**
Load a 150 bu. hopper only when mounted on the cart. A full hopper can weigh over 10,000 pounds (4500 kg), which is above the lifting and balance capability of most tractors and farm forklifts.

- The 150 bu. hopper is incompatible with the optional cart-mounted liquid fertilizer system. The sides of the hopper extend into the space occupied by the tank system.

- Fork lift height capability required is:
  - Planter lowered: 4 feet 2 5/8 inches (129 cm)
  - Planter raised: 6 feet 5 7/8 inches (198 cm)

- The hopper includes a level sensor which is not factory-installed. If you desire to use the sensor, install it prior to first use of the hopper. See page 162.

**Adding Seed to 150 bu. Hopper**

1. When using new meters for the first time, or at the start of each season, measure out approximately 8 gallons (30 liters) of seed into a pail. Add 1 cup (240 ml) of lubricant to the pail. Mix and pour into air box before mounting hopper.


3. Turn off seed box fan.

4. If the 150 bu. hopper is not yet on the product, dismount any seed container present, and mount the empty 150 bu. hopper. See “Changing the Bulk Box or Hopper” on page 40.

5. Open slide gates at base of hoppers. Open lids.

6. Measure the lubricant required, and if loading seed by bag, determine the amount of lubricant per bag.

   If loading with a hydraulic auger, see “Auxiliary Hydraulics” on page 37. Lower walkboard railing as necessary.

- Auger height capability required is:
  - bulk box, product lowered:
    - 8 feet 9 1/2 inch (2.68 m)
  - bulk box, product raised:
    - 11 feet 3/4 inch (3.37 m)
  - 150 bu. hopper, product lowered:
    - 9 feet 6 1/4 inch (2.9 m)
  - 150 bu. hopper, product raised:
    - 11 feet 9 1/2 inch (3.59 m)

7. Add seed, mixing in lubricant continuously or per bag.

---

**Figure 38**
150 bu. Hopper Capacities (bu.)

**Approximate capacity of 150 bu. bulk seed hopper:**

- 0 bu.
- 7 bu.
- 10 bu.
- 22 bu.
- 32 bu.
- 45 bu.
- 59 bu.
- 94 bu.
- 132 bu.

---

Approximate capacity of 150 bu. bulk seed hopper, in bushels, at 10 inch increments.
Changing the Bulk Box or Hopper

The Product # product accepts the Great Plains 82 bu. hopper, 150 bu. \(^a\) hopper, or bulk seed boxes that meet the PROBOX\(^b\) specification.

**CAUTION**

**Tipping and Overload Hazard:**

Place or remove a hopper only when empty. A full hopper can weigh between 5000 and 10,000 lbs (2700 and 4500 kg), which is above the lifting and balance capability of most tractors and farm forklifts.

1. Move the product to an area of level ground and sufficient room to maneuver a tractor or fork-loader.
2. Unhitch tank cart if present.

**Refer to Figure 39**

3. Disconnect hopper level sensor (if installed).
4. Remove the pin 2 securing the left end of the walkboard to the ladder assembly.
5. Swing the walkboard open, and secure it at full open with the keeper 3.
6. Raise the product. This causes the rear transport wheels to move forward, providing closer access for the lifter.
7. Back up the product about three feet (1 m). This causes the rear transport wheels to caster forward, further reducing the reach required for lifting.
8. Turn off the seed box fan.
10. Close the slide gate at the base of the hopper or seed box.

**Refer to Figure 40**

11. Remove the two pins 1, at opposite corners, used to retain the seed box or hopper. Remove these pins even if no container is presently mounted.

**Refer to Figure 41 (depicting identical process on YP24)**

12. Align the lifting forks with the slots in the rear of the seed box or hopper. Slowly drive forward until the forks are completely under the container.
13. Slowly lift the seed container above the bracket, and back away from the product.
14. Lower the container to the ground for exchange with the next seed container.

---

\(^a\) The 150 bu. hopper is incompatible with on-board fertilizer tanks.

\(^b\) PROBOX\(^b\) is a registered trademark of Pioneer Hi-Bred International, Inc.
15. If mounting a seed container for the first time in a season, open the new seed container and measure out approximately 3 gallons (11 liters) of seed into a pail. Add $\frac{1}{3}$ cup (80 ml) of lubricant. Mix and pour into air box before mounting the container.

**NOTICE**

**Plugging and Inconsistent Population Risks:**
Ezee Glide Plus or Bayer Seed Fluency Agent is mandatory for all seed, especially treated or inoculated seed. Insufficient seed lubricant can cause system plugging, skips and doubles.

16. If mounting a seed box, add lubricant to the seed box at this time. It may be easier to add it while the box is still at ground level.

Refer to Figure 42

17. Approach the hopper or seed box from the back (the side with the slide gate).

**CAUTION**

**Tipping Hazard:**
Do not let anyone stand under or in front of the elevated seed box. Make sure your tractor or fork lift is rated for and configured to lift the weight. A full seed box can weight over 2500 pounds (1134 kg); a full 82 bu. hopper over 5000 pounds (2270 kg).

18. If mounting a seed hopper, confirm that the hopper is the correct version for that side. The left hopper has the lid hinge on the left. The right hopper has the lid hinge on the right.

19. Slowly lift the full seed box or empty hopper, and place it in the product air box frame.

20. Install the box retaining pins in frame corners.

21. If the hopper has a level sensor, connect that lead to the “HOPPER 2” lead of the product harness, located below the hydraulic drive in the center section.

22. Close and pin walkboard.

23. It may be necessary to make a one-time adjustment to the seal on the top of the air box, to obtain full contact between air box and seed box/hopper.

24. If installing an empty hopper for planting, load seed (and lubricant).

25. Open the slide gate.

**NOTICE**

**Inoperable Configuration Risk:**
It is possible to lift the hopper or seed box from any side, but it will only function properly if the seed gate is to the rear of the product.
Refuge Hopper Operation

The 10 bushel refuge hopper comes attached and ready to operate if purchased at the same time as implement name. If purchased separately see installation instructions in manual 403-287M.

Refer to Figure 43

1. Fill the refuge hopper with appropriate seed for seeding desired areas of the field.
2. Close the slide gate at the main hopper ①.
3. Open refuge hopper left and right slide gates ②.

One slide gate may be left closed if there is a preferred reason.
Air System Operation

Figure 44
Yield-Pro® Air System for Air-Pro® Seed Metering

<table>
<thead>
<tr>
<th>Meter Pressurization System Elements (→ shows air direction)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A01 Hydraulic Fan</td>
</tr>
<tr>
<td>A02 Split-Air Manifold</td>
</tr>
<tr>
<td>A03 Servo-Controlled Vane</td>
</tr>
<tr>
<td>A04 WSMT Servo Programming</td>
</tr>
<tr>
<td>A05 Priority Meter Pressurization Air</td>
</tr>
<tr>
<td>A06 Excess Air to Air Box</td>
</tr>
<tr>
<td>A07 Pressure Sensor Lines</td>
</tr>
<tr>
<td>A08 Pressure Sensor Chamber</td>
</tr>
<tr>
<td>A09 Feedback Signal Line</td>
</tr>
<tr>
<td>A10 Air Box &amp; Seed Manifold</td>
</tr>
<tr>
<td>A11 Seed Delivery Hose</td>
</tr>
<tr>
<td>A12 Air Release Screen</td>
</tr>
<tr>
<td>A13 Air-Pro® Seed Meter</td>
</tr>
<tr>
<td>A14 Row Pressurizing Tubes</td>
</tr>
<tr>
<td>A15 Row Unit Seed Tube</td>
</tr>
<tr>
<td>A16 IntelliAg® Console</td>
</tr>
</tbody>
</table>
Air System Overview

The hydraulic fan supplies air for both seed delivery and meter operation. Fan rpm is operator-adjusted (page 46) via the tractor’s hydraulic flow control, and reported by the seed monitor system. The rest of the system is fully automatic.

At the split air manifold, a rotary actuator operates a vane, under the control of software in the WSMT, which regulates the air diverted to the meter pressurization system.

Air not used for metering (typically just under half of it) flows to the air box for bulk seed delivery. Air pressure in the seed delivery system is not presently reported. The meter pressurization air has priority, and can take all the air.

Several rows have lines to sample metering air pressure, which is measured in a sensor chamber. The sensor reading is fed back to the WSMT for closed-loop pressure control. No operator adjustment is required for the metering air system.

At the air box, air is mixed with seed from the bulk hopper or ProBox, and flows out air box manifold ports into primary seed hoses to the rows. Y-tubes (not shown) may split primary hoses into secondary hoses to rows.

An air release screen above each Air-Pro® meter vents the delivery air. The vent has two functions:

1. It releases delivery air while retaining the delivered seeds.
2. It is a passive control gate for bulk seed delivery.

It takes about a minute to initially fill the meters.

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

A detector in each seed tube reports seed passage to the seed monitor system, which reports counts and rates on the console.

There are console menus for adjustment of metering air, and manual fall-back modes.

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

Meter Pressurization is displayed by a mechanical gauge, and by sensors connected to the seed monitor system. As these sensors measure pressure at similar locations, they generally agree.

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

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

Several rows have pressure sensor ports for the meter pressurization system. Use of the special blank disk is particularly important when one of these rows is shut off. Running a normal disk with no seed causes the air system to over-compensate.
Fan Circuit Operation
See also "Fan and Adjustment" on page 70.

Refer to Figure 45
Three hydraulic hoses serve the fan, and must be properly connected for the fan to operate in the correct direction at recommended speeds, and without damage. See "Hydraulic Hose Hookup" on page 17.

1. Always connect the case drain line first.

This line protects the outer shaft seal of the hydraulic motor. The case drain is a small line to the hitch, provisioned with a specialized low-seep flat-face case drain Quick Disconnect. Pressure spikes during motor operation, and pressure cycles due to temperature change are bled off by the case drain.

**NOTICE**

**Motor Seal Damage Hazard:**
Do not apply pressure to the case drain line. Do not change the special QD connector. A restricted or sealed case drain line will promptly result in motor seal damage.

2. Connect the motor return line second, to sump.

The product includes an 1\(\frac{1}{16}\) inch low back-pressure QD coupler set. Install the receptacle on a tractor sump port, and not at a normal remote return port. The unusual size aids in ensuring correct connection, so that the motor return line handles high volume at low back-pressure, ensuring full motor performance.

3. Connect the motor inlet line to a tractor remote capable of the flow rates shown at “Recommended Fan Speeds” on page 46.

4. The fan hydraulic circuit includes a check valve, which provides a relief path for oil at motor shutoff. If fan pressure and return hoses are reversed, the resulting low fan rpm provides strong indication of bypass flow through the check valve.

Correct fan direction is shown at 1. If reversed fan is suspected, observe it during shutoff, as the direction of motion is easier to see at lower rpms as it slows to a stop (initial startup is virtually instantaneous, making observation at start difficult).

Fan speed is controlled by the tractor circuit (and not the seed monitor). Fan rpm is reported by the seed monitor. You may 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.

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 incapable of providing sufficient air flow for planting.

---

a. Fan hose connections are made only if no PTO pump is installed. With PTO, the connections are made once when the kit is installed.
**Fan General Operating Information**

Use tractor remote hydraulic valve flow control to set fan speed. Always start the fan with a low flow setting.

Monitor fan rpm with the seed monitor.

Gradually bring fan up to the recommended initial rpm. The split-air servo vane engages only above 50 rpm. Do not run the fan over 3500 rpm or at speeds under 2000 rpm.

At excessive rpm, too much air flow can cause:

- seed to plug the air box
- seed suspension in a bulk seed box
- oil heating
- slow lift times

If the rpm is too low, the split-air system may divert nearly all the air to the meter pressurization, leaving none for seed transport (or just enough to plug low spots in seed hoses).

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

The Seed Rate manual provides initial values for meter pressurization. Normal readings are in the 0.8 inch to 4.0 inch water pressure range, and vary considerably with crop.

If at suggested fan rpm, desired pressure cannot be reached, chances are the fan is running backwards. If the rpm and meter pressurization readings are correct, but the meters are starved of seed, the fan may be running backwards and the meter pressurization system is taking all the air, leaving little or none for seed delivery. Reverse the inlet/return lines at the hitch.

If air system does not operate suitably with fan speeds between 2000 and 3800 rpm, see "Seed Delivery Troubleshooting" on page 99.

When starting empty you must blow seed out to the meters for two to four minutes to fill meters.

During "FILL METER", all air is routed to the air box, and none to the meter pressurization system.

The monitor has a level sensor below the hopper or seed box to warn when seed box is empty. There are three to four acres of seed in the system when the sensor first indicates box empty, depending on seeding rate.

### Recommended Fan Speeds

<table>
<thead>
<tr>
<th>YP4025A</th>
<th>Seed Hopper¹</th>
<th>Bulk Box</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Initial Fan Speed</strong></td>
<td>2700 rpm</td>
<td>2500 rpm</td>
</tr>
<tr>
<td>Fan Oil Consumption²</td>
<td>11.6 gpm</td>
<td>10.7 gpm</td>
</tr>
<tr>
<td></td>
<td>44 liters/min</td>
<td>40 liters/min</td>
</tr>
<tr>
<td>Hydraulic Drive Oil Consumption²</td>
<td>4.5 gpm</td>
<td>4.5 gpm</td>
</tr>
<tr>
<td></td>
<td>17 liters/min</td>
<td>17 liters/min</td>
</tr>
<tr>
<td>Hydraulic Pump Oil Consumption²</td>
<td>4.0 gpm</td>
<td>4.0 gpm</td>
</tr>
<tr>
<td></td>
<td>15 liters/min</td>
<td>15 liters/min</td>
</tr>
<tr>
<td>Total² Oil, Motors, Initial Speed</td>
<td>20.1 gpm</td>
<td>19.2 gpm</td>
</tr>
<tr>
<td></td>
<td>76 liters/min</td>
<td>72 liters/min</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Fan Speed Range</strong></th>
<th>2300 - 3500 rpm</th>
<th>2300 - 3200 rpm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fan Oil Consumption²</td>
<td>9.9 - 12.9 gpm</td>
<td>9.9 - 12.4 gpm</td>
</tr>
<tr>
<td></td>
<td>37 - 49 lpm</td>
<td>37 - 47 lpm</td>
</tr>
<tr>
<td>Hydraulic Drive Oil Consumption²</td>
<td>4.5 gpm</td>
<td>4.5 gpm</td>
</tr>
<tr>
<td></td>
<td>17 liters/min</td>
<td>17 liters/min</td>
</tr>
<tr>
<td>Hydraulic Pump Oil Consumption²</td>
<td>4.0 gpm</td>
<td>4.0 gpm</td>
</tr>
<tr>
<td></td>
<td>15 liters/min</td>
<td>15 liters/min</td>
</tr>
<tr>
<td>Total² Oil, Motors, Speed Range</td>
<td>20.1 - 19.2 gpm</td>
<td>18.4 - 20.9 gpm</td>
</tr>
<tr>
<td></td>
<td>76 - 72 lpm</td>
<td>69 - 79 lpm</td>
</tr>
</tbody>
</table>

¹ This assumes a 2007+ Great Plains hopper, or older hopper with the vent line update. For an older unvented hopper, use the rpms recommended for a bulk box.

² Does not include oil for lift/lower or markers.

Values are typical, and may be higher for high seeding or application rates.

**NOTICE**

**Low Population Risk at Turns:**

The figures above do not include oil for lift/lower or oil for marker operation. Aggressive lift/lower operations, and simultaneous lift/marker operations, can reduce fan rpm below that needed to pressurize meter disks. If seed falls out of pockets, low population bands will occur shortly after turns.

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

Before the first planting each season, or when using new meters or meter wheels for the first time, or at the start of each season, before filling with seed, add $\frac{1}{3}$ cup (80 ml) seed lubricant to bottom of airbox.
Steps for setting and adjusting the air system are found at “Fan and Adjustment” on page 70.

**Y-Tubes**

Refer to Figure 46

Y-tube gates can be shut off to feed only one row for single-row planting on a twin-row machine. In the photograph, the left meter tube is open and the right closed.

You can also shut off the Y-tube gates to clean out the air system and meters. See “Row Unit Shut-Off” on page 88.

**Airbox Operation**

Refer to Figure 47

The function of the airbox ① is to mix seed with turbulent air from the hydraulic fan, which then exits through a manifold (not shown) to the seed tubes which serve the row unit meters.

Before the first planting each season, or when using new meters or meter wheels for the first time, or at the start of each season, before filling with seed, add \(\frac{1}{3}\) cup (80 ml) seed lubricant to bottom of airbox.

When starting empty you must blow seed out to the meters for two to four minutes to fill meters.

The monitor has a level sensor below the hopper or seed box to warn when seed box is empty. There are three to four acres of seed in the system when the sensor first indicates box empty, depending on seeding rate.
Weight Transfer Operation (Option)

This option provides a control valve 1, plumbed into the hydraulic drive circuit, and a cylinder 2 for each wing. Up to 1000 pounds (450 kg) of mainframe weight may be transferred to each wing when oil is being supplied to the hydraulic drive circuit.

Once set, the circuit usually requires little adjustment in normal field operations. To set the circuit:

1. Unfold and lower the implement name in field conditions.
2. Supply oil to the hydraulic drive circuit (or operate the PTO at field rpm if using a PTO pump that supplies the hydraulic drive). The hydraulic drive motor itself does not need to be operated.
3. Loosen the lock disc 3 at the valve block. Adjust the knob 4 until the gauge 5 reads approximately 1000 psi. Tighten the lock disc.
4. Lower the implement name. Engage the hydraulic drive (with seeding disabled) Pull forward at normal field speed for a short distance. Stop.
5. Check that the wings are level.
   - If the wings ends are lower than the center, decrease the pressure at the valve 5.
   - If the wing ends are higher than the center, increase the pressure.

A relief valve in the valve block prevents any damage from over-pressure.

See page 17 and page 160 for important information about movements without a suitable tractor. See page 131 for ordering information.

Monitor Operation

Monitor operation is described in a separate manual supplied with your implement name.

Operations covered in that manual (and therefore not in this manual) include:

- hydraulic drive control
- seed rate calibration
- planting rate
- fertilizer rate
- setting rate limits and detecting out-of-limits
- GPS integration
- fan rpm
Electric Clutch Operation

The YP4025A-48TR20 product has three clutches in the seed meter drive system. A clutch enables or disables groups of row units. The information in the table below is normally preset at the factory for your product configuration.

The switches Left ② / Center ③ / Right ④ correspond to the left wing row units, center section row units and right wing row units respectively.

The Master ① switch controls all row units, regardless of drive type. For all switches, “OFF” (down) removes power from the clutch, disengaging that set of row units. When any switch (plus Master) is ON, the LED for that switch illuminates steadily.

Clutch Switch Coverage

<table>
<thead>
<tr>
<th>Clutch Switch Coverage (Rows)</th>
<th>Left ②</th>
<th>Center ③</th>
<th>Right ④</th>
</tr>
</thead>
<tbody>
<tr>
<td>48 row</td>
<td>01-14</td>
<td>15-34</td>
<td>35-48</td>
</tr>
</tbody>
</table>

Electric Clutch Lock-Up

In case of electric clutch failure, an electric clutch can be mechanically engaged.

Refer to Figure 51 and Figure 52

1. Remove the rubber plugs ① from the oil shield disc ② to allow access to the lock-up holes. Plugs simply push out away from the clutch side.
2. Align the cutouts ③ with the holes ④.
3. Insert the M8-1.25x14 mm long metric bolts ⑤.
   - If you observe half the hole obstructed by a metal disc ⑥, you are not at a cutout.
   - If the entire hole is obstructed by a metal disc ⑥, you are not at a cutout.
   - When at a cutout, the bolt will screw in with minimal resistance until the bolt head reaches the clutch face.
4. Reinstall the plugs so they are not lost.

Use only the provided 14 mm length bolts. Longer bolts will damage the clutch. Shorter bolts may not effect a lock-up.
Air-Pro® Meter Operation

Refer to Figure 53
The meter disk is driven, top forward, by a chain drive (not shown) always connected to the section drive shaft. At non-planting rows, use a blank disk (page 88).

Seed is air-delivered to the inlet above the air release screen 1. Seed customarily fills to the top of the screen, blocking further air flow from the seed delivery system, until the seed level falls below the screen.

Seed enters the meter at the seed inlet shutter 2 (if open), and forms a seed pool 3 at the base of the meter. Seed pool size is controlled by the shutter handle 4 setting (which is the only user adjustment at the meter). Initial shutter settings are given in the seed rate charts.

Meter pressurization air enters the meter at 5, and exits the meter primarily at the seed pockets in the seed disk. The pressure differential holds seed in the disk pockets 6 rising from the seed pool. Excess seed at a pocket is picked off by the tickler brushes 7.

The strip and drop brushes block meter pressurization air. Seeds passing the drop brush 8 are free to fall into the seed tube, and are detected by the seed sensor 9.

Meter Operation
1. Install disks for your crop/population range per the Seed Rate manual and the instructions beginning on page 86 of this manual.
2. Open the shutter at planting rows to the recommended initial setting (from the Seed Rate charts). At unused rows, close Y-tube leg (page 106), install a blank disk (page 88) and close shutter.
3. Set sprocket indexing if staggering a twin-row crop (see Seed Rate manual for details).
4. Operate the fan at normal field rpm (page 46).
5. On the seed monitor, perform a “FILL METER” operation.
6. With all rows primed, rotate meters one turn to fill pockets to edge of drop brush.

For hydraulic drive, engage all clutches, and use a “FILL DISK” seed monitor operation.

For ground drive, either disengage all clutches and rotate the section drive shafts (top forward) with a 7/8 inch (23 mm) wrench, or raise product, engage clutches and rotate ground drive tires (top forward).

7. Leave fan running (to keep seed in top pockets). Re-install rain covers. Commence planting. Meter operation is automatic from this point on.

For hydraulic drive products, an optional Remote Test Switch is available from DICKEY-john® which allows at-row control of meter rotation for meter fill and seed pool recovery operations.

See also:
“Seed Pool Troubleshooting” on page 94,
“Seed Pool Recovery” on page 95,
“Meter Clean-Out” on page 106, and
“Meter Brush Maintenance” on page 109.
Fertilizer Systems Overview

The YP4025A-48TR20 supports one or two optional fertilizer boom systems:

- one or two Type 2 single-section booms, typically used with on-board tanks, trailing SML tank cart, or a user-provisioned trailing cart, supplied by an optional product- or cart-mounted hydraulic pump system;
- a Type 3 three-section boom, typically used with a user-provisioned trailing cart, supplied by a pump and manifold on the cart.

Use only pre-mixed liquid fertilizer. Do not use dry fertilizer added to water in the tank.

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

If the fertilizer product is at any risk of precipitation, stratification or sedimentation, load it shortly before application. Although the on-board and SML tanks include bypass return ports, the flow through these lines is too low to act as agitation (and may even be shut off).

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

The next four pages cover plumbing diagrams and system component identification for the available on-board system and the available SML cart system. Operations are described on page 57.
Planter Tanks System Diagram

Figure 55
Hydraulic Pump Fertilizer System
Planter Tank Fertilizer System Elements

Liquid fertilizer system callouts are consistent across this entire manual. No single system includes all elements.

Tank Lid (not shown)
Tank lids are vented and may be kept tight. Some lids have a removable center section for easier hose fill.

Planter Tank
On-board tanks are 200 gallons (750 liters) each. A sight gauge at front shows current fill level against a scale.

Tank Discharge Shutoff Valve
These valves are normally left open, unless the material is different on each side.

Tank Clean-Out Plug
These plugs are only removed for unusual maintenance.

Quick-Fill Inlet and Plug
This 2 inch fitting secures either the plug or the fitting of an external hose using cam locks. Always close the valve before removing the plug.

Quick-Fill Shutoff Valve
This valve is opened for filling tanks from a pressurized supply source. It might also be opened for gravity off-load. It is closed during all other operations.

Pump
The centrifugal pump is powered by a hydraulic motor controlled by a proportional valve (not shown). The valve is controlled by the seed monitor.

Pump Outlet
The pump normally operates at a flow rate higher than required for the booms. The pump output is split into a boom flow, and a recirculation/bleed flow.

Air Bleed Line
This small line provides pump priming and recirculation of excess material afield.

Pump Drain Plug
Remove this plug to drain or flush the bleed line or pump.

Pump Recirculation Valve
This valve is normally open. It may be closed for reduced bypass at very high application rates.

Recirculation Lines to Tank(s)
These lines provide pump priming at startup, and recirculation of excess material afield.

Tank Recirculation Valve(s)
These valves are normally open. They might be closed for maintenance.

Pressure Relief Valve
This valve protects the system from damage in the event of overpressure due to blockage or valve misconfiguration. Above approximately 65 psi, excess material is returned to both the pump and the tanks.

Pressure Gauge
This gauge reports operating pressure to the boom, typically in the 15 to 45 psi range. Normally the gauge is only relied on for setting the relief valve.

Overpressure Dump Line
This line returns the majority of any overpressure excess material to the tanks.

Pump Outlet Selector Valve
This valve sets the boom flow side of the pump outlet to boom, off or off-load. A decal on the mount indicates handle positions.

Offload Quick-Coupler and Plug
This outlet is normally closed. A supply tank 2 inch hose may be connected for using the implement name pump to return material to an off-implement name tank.

Boom Supply Strainer
A filter element in the canister traps large particles that might clog boom orifice plates. See the Seed Rate manual for maintenance and alternate element screen sizes.

Flow Sensor
This fitting measures material flow to the boom. Readings from this sensor are used by the seed monitor to adjust the pump rate.

Boom Shutoff Valve
This valve is normally open. It might be closed for maintenance.

Passive Manifold
There are separate boom sections for the implement name center section and each wing.

Boom
There are separate boom sections for the implement name center section and each wing.

Boom Clamp
Boom taps are provided for at least the number of rows present.

Nozzle Body
The standard fitting on an active row is a nozzle body that accepts various size orifice plates.

Nozzle Gasket
The orifice plate sits inside this rubber seal.

Orifice Plate
These stainless steel plates have precisely sized center holes that provide flow resistance for optimum boom pressure. They do not regulate flow rate, but must be sized to the flow rate. Standard booms include sizes 24, 34 and 48.

VeriFlow Nozzle
These optional nozzles are an alternative to changing orifice plates. They are spring loaded to maintain a constant back-pressure over a wide range of rates.

Shutoff Cap
Any unused boom clamps are provisioned with caps instead of nozzles. Caps may also be used to shut off rows when changing row spacing.

---

a. Boom flow may instead be off-load flow for recovery of unused material. The recirculation circuit includes a Relief Valve which sends excess material back to the tanks in the event of blockage or valve misconfiguration.
End Cap
Each boom section has at least one end cap. These are removed for flushing booms, such as for winterizing.

Nozzle Drop Line
Each active nozzle is connected to the row applicator via tubing.

Row Applicator Tube
All standard 25 Series row units include an applicator tube which can deliver material in-furrow just ahead of the seed tube. Optional Keeton® seed firmers (not shown) have a delivery tube for applying material behind the seed tube.
SML Cart Pump System Diagram

Figure 56
Cart Pump Fertilizer System
SML Cart Tank Fertilizer System Elements

- Liquid fertilizer system callouts are consistent across this entire manual. No single system includes all elements.

- **Tank Lid**
  Tank lids are vented and may be kept tight. Lids have a removable center section for easier hose fill.

- **Cart Tank**
  Cart tanks is 500 or 735 gallons (1900 or 2800 liters) each. A sight gauge at one end shows current fill level against a scale.

- **Tank Discharge Shutoff Valve**
  This valve is normally left open.

- **Quick-Fill Inlet and Plug**
  This 2 inch fitting secures either the plug or the fitting of an external hose using cam locks. Always close the valve before removing the plug.

- **Quick-Fill Shutoff Valve**
  This valve is opened for filling tanks from a pressurized supply source.

- **Quick-Fill Inlet Strainer**
  This fitting contains an element to trap coarse debris in the material. Reverse flow through this strainer is not recommended.

- **Pump**
  The centrifugal pump is powered by a hydraulic motor controlled by a proportional valve (not shown). The valve is controlled by the seed monitor.

- **Pump Outlet**
  The pump normally operates at a flow rate higher than required for the booms. The pump output is split into a boom flow, and a recirculation/bleed flow.

- **Air Bleed Line**
  This small line provides pump priming and recirculation of excess material afield.

- **Pump Drain Plug**
  Remove this plug to drain or flush the bleed line or pump.

- **Pump Recirculation Valve**
  This valve is normally open. It may be closed for reduced bypass at very high application rates.

- **Recirculation Lines to Tank(s)**
  This line provides pump priming and recirculation of excess material afield.

- **Tank Recirculation Valve(s)**
  This valve is normally open. It might be closed for maintenance.

- **Pressure Relief Valve**
  This valve protects the system from damage in the event of overpressure due to blockage or valve misconfiguration. Above approximately 65 psi, excess material is returned to both the pump and the tank.

- **Overpressure Dump Line**
  This line returns the majority of any overpressure excess material to the tanks.

- **Pump Outlet Selector Valve**
  This valve sets the boom flow side of the pump outlet to boom, off or off-load. A decal on the mount indicates handle positions.

- **Boom Supply Strainer**
  A filter element in the canister traps large particles that might clog boom orifice plates. See the Seed Rate manual for maintenance and alternate element screen sizes.

- **Strainer Shut-Off Valve**
  Normally open, this valve isolates the boom side of the strainer for servicing.

- **Cart Outlet Valve**
  This valve is open for field application and normally closed at all other times.

- **Planter Inlet Valve**
  This valve is open for field application and normally closed at all other times.

- **Flow Sensor**
  This fitting measures material flow to the boom. Readings from this sensor are used by the seed monitor to adjust the pump rate.

- **Boom Shutoff Valve**
  This valve is normally open. It might be closed for maintenance.

- **Passive Manifold**
  There are separate boom sections for the implement name center section and each wing.

- **Boom**
  There are separate boom sections for the implement name center section and each wing.

- **Boom Clamp**
  Boom taps are provided for at least the number of rows present.

- **Nozzle Body**
  The standard fitting on an active row is a nozzle body that accepts various size orifice plates.

- **Nozzle Gasket**
  The orifice plate sits inside this rubber seal.

- **Orifice Plate**
  These stainless steel plates have precisely sized center holes that provide flow resistance for optimum boom pressure. They do not regulate flow rate, but must be sized to the flow rate. Standard booms include sizes 24, 34 and 48.

- **VeriFlow Nozzle**
  These optional nozzles are an alternative to changing orifice plates. They are spring loaded to maintain a constant back-pressure over a wide range of rates.

- **Shutoff Cap**
  Any unused boom clamps are provisioned with caps instead of nozzles. Caps may also be used to shut off rows when changing row spacing.

- **End Cap**
  Each boom section has at least one end cap. These are removed for flushing booms, such as for winterizing.

- **Nozzle Drop Line**
  Each active nozzle is connected to the row applicator via tubing.
**Row Applicator Tube**

All standard 25 Series row units include an applicator tube which can deliver material in-furrow just ahead of the seed tube. Optional Keeton® seed firmers (shown) have a delivery tube for applying material behind the seed tube.

**Fertilizer Systems Operation**

This information applies to implement names with Great Plains hydraulic fertilizer pumps. For systems using customer provisioned components (pump, tanks or controllers), consult the documentation for those components.

*Refer to Figure 55 on page 52*

Flow rate (pump rpm) is controlled by a proportional valve at the pump motor inlet, under the control of the IntelliAg® system.

*Refer to Figure 58*

The default rate is set on the seed monitor console (Material Setup menu). In this example, the material has been named “10-34-0”. See the Seed Rate Manual for details of system setup and configuration.

*Refer to Figure 58*

The field rate is displayed on the main Work Screen, and may be adjusted via the Inc/Dec softkeys, once they are configured. See the Seed Rate Manual for details.

The hydraulic fertilizer system may be enabled or disabled entirely using the Channel On/Off softkey, or by disabling the Channel in the main Channel Setup screen (not shown).
Planter Fertilizer Tanks (Option)

Filling Tanks
Refer to Figure 59, Figure 55 on page 52 and Figure 56 on page 55

1. Connect nurse-tank hose to quick-fill coupler at the rear tool bar. Lock hose in place with cam-lock levers.
2. Close valve (not shown) going to the in-line filter located just before the pump.
3. Open valves at each tank and at quick-fill coupler.
4. Fill tanks, then close valve at quick-fill coupler, and disconnect the nurse tank hose.

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

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

Planter Pump System Operation
Refer to Figure 55 on page 52
For normal field operations with fertilizer application, after loading fertilizer, set the system valves as follows:
1. rear quick-fill: closed
2. tank recirculation (2): open
3. pump main discharge selector: open to pump and boom
4. tank discharge (2): open
5. pump bypass/recirculation: open briefly to gravity-prime pump, then closed if desired for high rate application
6. boom shut-off (strainer isolation) valve: open

Cart Pump System Operation
Refer to Figure 56 on page 55
For normal field operations, when applying fertilizer, set the system valves as follows:
1. cart quick-fill: closed
2. tank recirculation: open
3. pump main discharge selector: open to pump and boom
4. cart hose valve: open
5. rear implement name inlet: open
6. tank discharge: open
7. pump bypass/recirculation: open briefly to gravity-prime pump, then closed if desired for high rate application

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

SML Cart Operations

A 510 or 735 gallon semi-mounted liquid fertilizer cart (SML-500 or SML-735) is available for the YP4025A-48TR20 as an accessory. The cart requires either the Great Plains hydraulic fertilizer pump option, or a user-provisioned pump. For the Great Plains system, see the system overview on page 55.

Checklists in this manual include steps for an SML configuration. Also consult the SML Operator manual (407-451M).

**WARNING**

Loss of Control and Braking Hazards:
Do not transport with more than 50 gallons in the tank. Cart wheels and trailing implement name wheels fully caster, providing no resistance to side sway in turns. Severe under-steer may result. A full SML-735 cart weighs over 12,000 pounds (5400 kg), and may cause the tractor’s braking capacity to be exceeded. An accident could result in serious injury or death, and certain major equipment damage.

Reverse operations may be performed with care with an SML cart hitched.

Other Cart Operations

The YP4025A-48TR20 product optionally includes a trailing pintle hitch, intended for use with user-provisioned fertilizer tank carts. Hitching/hook-up and operating instructions are found in the tank cart documentation.

**WARNING**

Uncontrollable Load Hazard:
DO NOT EVER transport a pintle-hitched nurse tank cart while hitched to the product (in train) over roads if there is any liquid in either tank. Tank(s) must be empty for transport, or the tank must be towed separately.

**CAUTION**

Machine Damage Hazard:
Do not attempt reverse operations with a pull-type trailer hitched to the product. Trailer direction is extremely difficult to control.
Field Set-Up Checklists

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

### Mechanical Checklist

<table>
<thead>
<tr>
<th>Item</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tongue height preset on 3-point</td>
<td>23</td>
</tr>
<tr>
<td>Planter unfolded</td>
<td>25</td>
</tr>
<tr>
<td>Tongue front latch hook engaged</td>
<td>26</td>
</tr>
<tr>
<td>Transport locks moved to storage</td>
<td>29</td>
</tr>
<tr>
<td>Caster locks set to FIELD (extreme hillsides only)</td>
<td>61</td>
</tr>
<tr>
<td>Side-to-side level at gauge wheels</td>
<td>113</td>
</tr>
<tr>
<td>Marker initial length set</td>
<td>161</td>
</tr>
<tr>
<td>Marker disk angle set</td>
<td>69</td>
</tr>
</tbody>
</table>

### Electrical Checklist

<table>
<thead>
<tr>
<th>Item</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Verify electrical hookups solid</td>
<td>19</td>
</tr>
<tr>
<td>Check seed monitor terminal and observe any diagnostic messages</td>
<td>See(^a)</td>
</tr>
<tr>
<td>With hydraulic circuits in Neutral, check switches and indicator lights on Clutch Folding Module switch panel. Confirm Master OFF.</td>
<td>-</td>
</tr>
<tr>
<td>Verify that, when product is lowered, radar speed sensor is pointed at ground, at an angle approximately 35(^\circ) below horizontal.</td>
<td>See(^b)</td>
</tr>
</tbody>
</table>

\(a\). Refer to monitor manual.

\(b\). Refer to sensor documentation.

### Air System Checklist

<table>
<thead>
<tr>
<th>Item</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manifold to seed box or hopper seal</td>
<td>-</td>
</tr>
<tr>
<td>Add 1 cup of seed lubricant to each air box, prior to first use, and prior to loading seed</td>
<td>130</td>
</tr>
<tr>
<td>Seed loaded</td>
<td>38</td>
</tr>
<tr>
<td>Tube gates turned on to correct rows</td>
<td>47</td>
</tr>
<tr>
<td>No air leaks (except from seed box)</td>
<td>-</td>
</tr>
<tr>
<td>Hose routings - no sags, no pinches (check wing-folded &amp; field positions)</td>
<td>-</td>
</tr>
<tr>
<td>Hoses fully connected to meters and locked</td>
<td>-</td>
</tr>
</tbody>
</table>

### Treatments (Options) Checklist

<table>
<thead>
<tr>
<th>Item</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Confirm Clutch Folding Module “Fert.Pump” switch OFF</td>
<td>59</td>
</tr>
<tr>
<td>Check tractor-mounted components</td>
<td>See(^a)</td>
</tr>
<tr>
<td>Ground drive wheel, chain</td>
<td></td>
</tr>
<tr>
<td>PFC2000 or PFC1600: Execute Tank Cart Checklist</td>
<td>See(^b)</td>
</tr>
<tr>
<td>Check for correct orifice plates</td>
<td>See(^c)</td>
</tr>
<tr>
<td>Fill system with 100 gallons of water, and check for leaks</td>
<td>-</td>
</tr>
<tr>
<td>Check all row unit lines connected, free of kinks, and discharge tube/nozzles clear</td>
<td>-</td>
</tr>
<tr>
<td>Inlet and hose valves open</td>
<td></td>
</tr>
</tbody>
</table>

### SmartBox system loaded, powered up

c. Check Seed Rate manual, and manual for fertilizer pump system.

### Row Units Checklist

<table>
<thead>
<tr>
<th>Item</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preset depth handles alike.</td>
<td>81</td>
</tr>
<tr>
<td>Preset down force springs alike, except in tracks.</td>
<td>77</td>
</tr>
<tr>
<td>Set all unit-mounted coulters to 1/4 inch shallower than opener blades.</td>
<td>79</td>
</tr>
<tr>
<td>Check coulter alignment to row</td>
<td>80</td>
</tr>
<tr>
<td>Check closing wheel alignment</td>
<td>91</td>
</tr>
<tr>
<td>Set press wheels alike.</td>
<td>91</td>
</tr>
<tr>
<td>Check action and contact of side depth wheels</td>
<td>82</td>
</tr>
<tr>
<td>Check wheel scraper gaps (if installed)</td>
<td>83</td>
</tr>
</tbody>
</table>
Caster Locks - Field Operations

For planting in conditions ranging from flat ground to moderate slopes, the caster locks may be left in the ROAD position, allowing the casters to pivot freely, and simplifying fold/unfold operations.

For planting across extreme hillsides, where side drift might occur, lock the casters after unfolding:

1. Move the lock handle 1 from ROAD to FIELD at each caster.

The lock arm 2 will automatically capture and hold the pivot plate detent 3 when the product next moves. See page 31 for unlocking steps.
Field Operation

Perform all steps in "Pre-Start Checklist" on page 24 and "Field Set-Up Checklists" on page 60.

<table>
<thead>
<tr>
<th>First Pass Operation Checklist</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Set tractor 3-point hitch to &quot;depth control&quot; operation (and not load control)</td>
<td>-</td>
</tr>
<tr>
<td>2. Unfold marker on next-row side.</td>
<td>63</td>
</tr>
<tr>
<td>3. Set fan hydraulic circuit to low flow, engage circuit. Gradually adjust fan hydraulic flow to obtain recommended initial fan rpm.</td>
<td>46</td>
</tr>
<tr>
<td>4. Prime meters with seed. Leave fan running.</td>
<td>50</td>
</tr>
<tr>
<td>5. Engage hydraulic seed drive via seed monitor. Refer to seed monitor manual.</td>
<td>-</td>
</tr>
<tr>
<td>6. If product has a fertilizer system integrated with the DICKEY-john seed monitor, set the &quot;Fert.Pump&quot; switch on the Clutch Folding Module to ON.</td>
<td>59</td>
</tr>
<tr>
<td>7. In the CLUTCH cluster of the Clutch Folding Module, set all switches, including Master, to ON.</td>
<td>49</td>
</tr>
</tbody>
</table>
| 9. Stop. Assess:  
  • planting depth  
  • seed spacing  
  • press wheel operation  
  • fertilizer application (if in use) | |
| 10. Make necessary adjustments | 67 |

<table>
<thead>
<tr>
<th>Sharp Field Turns Checklist</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Fold marker</td>
<td>64</td>
</tr>
<tr>
<td>2. Raise product</td>
<td>27</td>
</tr>
<tr>
<td>3. Make turn</td>
<td></td>
</tr>
<tr>
<td>4. Lower product</td>
<td>27</td>
</tr>
<tr>
<td>5. Unfold marker on next-row side.</td>
<td>63</td>
</tr>
<tr>
<td>6. Resume planting.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Suspending Planting Checklist</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Stop tractor</td>
<td></td>
</tr>
<tr>
<td>2. Fan hydraulic circuit to Float or Neutral</td>
<td>45</td>
</tr>
<tr>
<td>3. Fold Marker</td>
<td>64</td>
</tr>
<tr>
<td>4. Raise product</td>
<td>27</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Ending Planting Checklist</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. Install lift locks</td>
<td>29</td>
</tr>
<tr>
<td>3. Set caster locks to ROAD</td>
<td>31</td>
</tr>
<tr>
<td>4. Fold product</td>
<td>30</td>
</tr>
<tr>
<td>5. Lights ON</td>
<td>-</td>
</tr>
<tr>
<td>6. Transport</td>
<td>33</td>
</tr>
</tbody>
</table>
Marker Unfolding

**DANGER**

*Electrocution Hazard:*
Beware of overhead electrical lines. If the markers contact lines, the tractor, raised product and any cart can become “hot” with no indication. A person standing on the ground and touching equipment can complete the circuit. Serious injury or death is likely. At higher voltages electrocution can occur without direct contact.

If your YP4025A-48TR20 product has markers, unfolding of the markers is performed only after unfolding the wings.

The Marker/Aux valve on the left wing must be set to “Marker”. See “Auxiliary Hydraulics” on page 37.

This section presumes correct marker length for your pass spacing. If this has not been set, or needs to be

**Marker Unfold (one side)**

*Refer to Figure 62 and Figure 63*

1. If the Auxiliary Hydraulic circuit has been used recently, confirm that the manual Marker/Aux valve on the left wing is set to “Marker”.
2. On the DICKEY-john® Clutch Folding Module (CFM), set “Marker/Fold” switch 1 to Marker (up). The LED above the switch illuminates steadily for normal operation.
3. Move tractor hydraulic control (lever or switch) for the marker circuit to Extend. Hold until marker is completely unfolded. Do not leave tractor control in detent.
4. If the marker side operating is not the desired side, let it unfold part way, and move the tractor’s circuit control to “Retract”. When the marker is folded, move the circuit control to Extend to activate the other side.

On the CFM, leave the “Marker/Fold” switch in “Marker” during normal field operations.
Row Marker Operation
To alternate which side is marked:
1. Move the tractor’s circuit control to fold marker. Hold until marker is folded.
2. Reverse the tractor’s circuit control. Hold until the new side’s marker is fully unfolded.
3. Return tractor control to neutral.

Folding the Markers
If your product has markers, they must be folded and secured before folding the wings.
1. Move the tractor’s circuit control to Retract. Hold until marker is folded.
2. Set circuit control to neutral.

Unusual Marker Operations
Both Sides Unfolded
With both markers in their cradles:
1. Unfold either side. Move lever/switch to Retract momentarily, and return to Extend to deploy other side.

Monitor Operation
Monitor operation is described in a separate manual supplied with your implement name.
Operations covered in that manual (and therefore not in this manual) include:
- hydraulic drive control
- planting rate
- fertilizer rate
- ground speed
- setting rate limits and detecting out-of-limits
- GPS integration
- meter pressurization adjustment and fan rpm monitoring
- low hopper alarm

Planting
When all checklist items are complete, a planting pass normally consists of a few simple steps
1. Lower product mainframe
2. Extend a marker
3. Drive forward
5. Raise marker
6. Raise product mainframe
7. Turn
8. Extend marker as needed for next pass
9. Subsequent Passes resume at step 1.
When reloading seed and fertilizer, check consumption against anticipated use to that point.

Checking Planting Rate
Although your seed monitor will report useful full pass results, cautious practice includes manually checking the seed rate early in the first pass.
The Seed Rate Chart book for this product contains sampling instructions.
Short-Term Parking

1. Fold markers. See “Folding the Markers” on page 64.
2. Choose a location with level firm ground. Do not unhitch on a slope.
5. Block tires.
6. Re-install the parking stand (“Hitching Tractor to Planter” on page 17).

Refer to Figure 65 (shown without tractor for clarity)

7. For the standard 3-point hitch, deploy the two forward stands ⃣. Remove the inner pin ⃣, swing the stand ⃣ out, down and vertical around the bottom pin ⃣, and re-insert the pin at ⃣.

For hydraulic hitch products, adjust hitch cylinder to relieve weight from draw-bar.
8. Insert transport locks on all lift cylinders.
9. Disconnect hydraulic lines. Secure them so that they do not touch the ground.
10. Disconnect electrical cables, capping where provisioned.
Long-Term Storage

Complete Parking steps first.

1. Park the implement name indoors if possible, per the steps above. Great Plains recommends parking/storing in the raised configuration, folded, on the parking stands and with all lift cylinder locks installed.

2. If no hopper or seed box is mounted, cap air box.

3. If empty seed box or hopper is mounted, close the seed gates and the lids.

4. If partially-loaded seed box is mounted, close seed gate, and remove seed box. If partially loaded hopper is present, unload seed via clean-out doors on air box. Store product only without seed.

5. Open airbox clean-out door. Clean out residual seed.


7. Remove seed disks from meters (this is primarily to relieve pressure on brushes). Clean disks of residue build-up (see Caution at right). Use mild soap, non-abrasive scrubbers, and hot or warm water. If using sealed storage, dry disks prior to storage.

8. Close seed inlet shutters at meters (to prevent pest entry to seed hoses). Thoroughly clean seed and seed treatment residue from seed meters. See “Meter Clean-Out” on page 106, for more information.


10. Apply grease to exposed cylinder rods to prevent rust.

11. Flush fertilizer lines (if present). Flush system with RV anti-freeze if there is any chance of freezing prior to next implement use.

12. Empty and clean fertilizer strainers.

13. Lubricate all points listed in Maintenance to prevent rust.


15. Inspect YP4025A-48TR20 for worn or damaged parts. Make repairs and service during off season.

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

17. Cover YP4025A-48TR20 with a tarp if stored outside.

Storage: Fertilizer Option

The pump, strainer and manifold system require special attention prior to storage. See "Fertilizer System Maintenance” on page 119.
Adjustments

To get full performance from your implement name, you need an understanding of all component operations, and many provide adjustments for optimal field results. Some of these have been covered earlier in this manual. Even if your planting conditions rarely change, some of these items need periodic adjustment due to normal wear.

<table>
<thead>
<tr>
<th>Adjustment</th>
<th>Page</th>
<th>The Adjustment Affects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tongue Height</td>
<td>21</td>
<td>Correct draft load to tractor</td>
</tr>
<tr>
<td>Frame height</td>
<td>21</td>
<td>Planting depth consistency</td>
</tr>
<tr>
<td>Frame level</td>
<td>23</td>
<td>Planting consistency</td>
</tr>
<tr>
<td>Height Switch Adjustment</td>
<td>68</td>
<td>Correct off/on state of meter drive</td>
</tr>
<tr>
<td>Wing Leveling</td>
<td>114</td>
<td>Planting consistency</td>
</tr>
<tr>
<td>Weight Transfer Operation (Option)</td>
<td>48</td>
<td>Equal available down-force on center and wing rows.</td>
</tr>
<tr>
<td>Clutch Lock-Up</td>
<td>49</td>
<td>Temporary operation with a failed clutch</td>
</tr>
<tr>
<td>Air System</td>
<td>43</td>
<td></td>
</tr>
<tr>
<td>Fan Speed</td>
<td>46</td>
<td>Optimal seed distribution</td>
</tr>
<tr>
<td>(values from SRM(^a))</td>
<td>70</td>
<td>Consistent seed flow and disk singulation</td>
</tr>
<tr>
<td>Planting Rate</td>
<td>SRM(^a)</td>
<td>Refer to Seed Rate manual</td>
</tr>
</tbody>
</table>

Marker Adjustments

<table>
<thead>
<tr>
<th>Adjustment</th>
<th>Page</th>
<th>Description</th>
</tr>
</thead>
<tbody>
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Fertilizer Adjustments

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Monitor Adjustments

<table>
<thead>
<tr>
<th>Adjustment</th>
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<th>Description</th>
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<tr>
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</tr>
</tbody>
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\(\ ^{a}\) SRM: Seed Rate Manual (ManualB \#)
\(\ ^{b}\) PDC: DICKEY-john\(^*\) Planter/Drill Control manuals
Setting Material Rates

Planting Rate

Adjusting the planting rate requires the following:

1. Monitor configuration:
   - The seed monitor must be set up with the correct row count, row spacing and disk cell count. See the Seed Rate Manual (SRM) and the DICKEY-john® Planter/Drill Control (PDC).

2. Preparing rows:
   - Correct seed disk selection and Y-tube settings are required for correct rate. Meter shutter setting and meter pressurization adjustments assure the rate. See the SRM.

3. Ground speed calibration:
   - Seed monitor rate control and reporting is only as accurate as the speed reported by the radar. See the PDC manual.

4. Setting seed rate via seed monitor:
   - See the SRM and the PDC manuals.

5. Checking planting rate:
   - Although the seed monitor reports a computed population based on seeds sensed, only an actual furrow check provides certainty about the actual seeding rate. See the SRM.

Height Switch Adjustment

Refer to Figure 68

The implement name includes a sensing switch 1 that signals the seed monitor (and activates the optional hydraulic meter drive), when the product is lowered for planting. The switch is located at the rear cross tube on the implement name’s left side.

Although factory-preset for typical planting conditions, Great Plains recommends adjusting this switch for your exact field conditions and planting depth.

DANGER

Crushing Hazard:
Exercise extreme caution when adjusting the switch.

1. Lower the product to the height at which seed delivery is to begin.
2. Loosen bolt 2 holding switch bracket 3 to plate 4.
3. Move bracket forward or rearward so that switch toggle arm 5 makes contact with rear cross tube 6.
4. Tighten nuts.

Switch is in “Neutral” position when planting. Switch is “Activated” when raised.
Marker Adjustments

There are two adjustments and two maintenance items for markers:

- **Disk Angle (following)**
  Even if your row spacing rarely changes, you may need to adjust disk angle for soil conditions and planting speed.

- **Shear Bolt Replacement (Maintenance, page 113)**
  If a marker hangs up on an obstruction, a bolt at the fold is designed to fail.

- **Marker Extension (Initial Setup, page 161)**
  Once set for a specific row spacing, this only needs periodic checking to ensure the clamp is secure.

- **Marker Speed (Initial Setup, page 164)**
  Once initially set by your dealer, this rarely needs modification.

### Marker Disk Adjustment

---

**CAUTION**

**Sharp Object Hazard:**
Use caution when making adjustments in this area. Marker disks may be sharp.

**Refer to Figure 69**

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

   For a wider mark ③, increase the angle of the marker with respect to the tube ①. For a narrower mark ④, reduce the angle.

   Do not set a marker angle wider than need to make a useful mark. Excess angle increases wear on all marker components.

2. Tighten bolts ②.

   The direction of travel ① tends to drive the disk angle to Wide. If bolts are not tight enough, or loosen over time, the disk will slip into the Wide mark configuration.

---

**Overhead Sudden Marker Movement Hazard:**
You may be injured if hit by a folding or unfolding marker. Markers may fall quickly and unexpectedly if the hydraulics fail. Never allow anyone near the product when folding or unfolding the markers.
Fan and Adjustment

1. These steps presume that correct seed disks are installed (Seed Rate Charts), and the seed inlet shutters are set for the seed (page 84).

2. With fan off, check meter pressurization reported by seed monitor. Re-zero as needed (see Seed Monitor manual).

3. Determine recommended fan rpm based on your own notes in the Seed Rate Charts, or the table on page 46.

4. Determine the recommended meter pressurization based on your own notes or the published value in the Seed Rate Charts.

5. Start the fan. Gradually increase fan rpm using the tractor's hydraulic flow control for the circuit. Adjust to the developed or suggested value from step 3.

6. Check that at least a small amount of pressure is being sensed at the meters and meter pressurization is near suggested value.

7. Perform a “FILL METER” operation for at least one minute (see DICKEY-john® Planter/Drill Control user level 1 manual).

8. Check for meter fill: With fan running, put the tractor in Park and set the brakes. Walk behind the wings, remove several rain covers, and check for seed in meters by looking through the clear disks. Rows to check are those with longer hoses or sharper hose bends.

9. Fill the disk pockets with seed: Run a “FILL DISK” operation.

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


The meter pressurization system cannot reach full operating pressure when the hoses, meters and disks are completely empty. Low initial pressures are normal.

If a meter runs completely out of seed (“starved”), back-pressure to the air box manifold may prevent prompt refill. To fill a starved meter, close the seed inlet shutter for about 15 seconds, then restore it to the original setting.
12. During the first pass, take note of the average populations reported on the seed monitor.
   Typical Location: Item:
   Screen 1, first row above graphs Average Overall Population
   If the reported population varies from your intentions by a significant amount, it is imperative to perform a furrow check. For serious rate variances, for which the source of the problem and the solution are not quickly determined, see “Population Troubleshooting Charts” on page 96.

   If the population is only slightly low, the problem can be skips (periodic empty disk pockets). If slightly high, the problem can be doubles (period pockets with double seed). An adjustment to the meter pressurization may correct either condition (see step 14).

13. Resume planting. During the next pass, note the following two readouts on the seed monitor:
   Typical Location: Item:
   Screen 1, 2nd row above graphs Minimum Row Population
   Screen 1, 3rd row above graphs Maximum Row Population

14. Skips:
   If all else is correct, and the overall average population is running low (or there are gaps upon furrow check), the cause may be seeds falling out of disk pockets before delivery to the seed tube. Increase meter pressurization to correct this. You can adjust meter pressurization with the product in motion.

   Press the “SPLIT AIR +” softkey on the seed monitor console. Wait 5 to 10 seconds for the system to update, while you continue planting. Continue making small increase adjustments until the reported population levels out at the target value.

15. Doubles:
   If all else is correct, and the overall average population is running high (or there are double seeds upon furrow check), the cause may be two seeds in some disk pockets at delivery to the seed tube. Decrease meter pressurization to correct this. You can adjust meter pressurization with the product in motion.

   Press the “SPLIT AIR -” softkey on the seed monitor console. Wait 5 to 10 seconds for the system to update, while you continue planting. Continue making small decrease adjustments until the reported population levels out at the target value.

Small seeds, such as Milo, may be under-reported. Use the “Alternate Skip/Double Check” below to verify seed status at the disc pockets.

Furrow Check:
Expose several seeds in each of several rows, being careful not to disturb their relative positions. Measure and average the distance between seeds. Compare this to the predicted seed spacing for the population in the Seed Rate manual.

Any instances of no seed where expected may be a sign of “skips”. Finding two seeds at the same spot is clear indication of “doubles”

A small varying population deviation between rows is normal; however, if a row is consistently running lower or higher than the other rows, it could indicate a meter or seed sensor problem that needs attention. “Population Troubleshooting Charts” on page 96.

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

The suggested increment of change is two presses of the “SPLIT AIR” softkey, at the factory default value for change increments.

Excess meter pressurization can increase the incidence of doubles. Be sure to rule out other causes (such as incorrect meter disks) before adjusting meter pressurization to reduce doubles.
Fine-Tuning
After several passes, and you are comfortable with the product's operation, you can optimize meter pressurization. Use this method during longer passes, so there are fewer distractions (and see sidebar regarding Milo).

16. Observe the current overall average population reported by the monitor.
17. Adjust the meter pressurization down, in discrete steps, waiting 5 to 10 seconds between adjustments, until skips occur (actual population begins falling below target). Note the pressure at which skips begin.
18. Restore pressure to the initial value at step 16.
19. Adjust the meter pressurization up, by periodic small increments, until doubles occur (actual population begins rising above target). Note the pressure at which doubles begin.

If unable to adjust up to doubles (or skips happen instead), seed delivery is probably being starved of air. Increase fan rpm and repeat limit search.

20. Adjust meter pressurization to a value halfway between the limits established at step 17 and step 19. This is the ideal value for your crop, disk and population, providing equal margin against skips and doubles. Record this value for future use.

Seed Delivery Fan Adjustments
Refer to Figure 70
The primary control for seed delivery air is fan rpm. The servo vane (not shown), under the control of the split air system, takes whatever is needed to maintain meter pressurization (the bottom three manifold outlets (1)). Remaining air is sent to the top outlet for seed delivery.
Adjust the basic fan rate with the tractor hydraulic system and the fan rpm display of the seed monitor. Do not run at speeds over 4000 rpm or speeds under 2000 rpm.

Alternate Skip/Double Check
Small seeds, particularly Milo, are less reliably sensed as skips or doubles by the seed tube sensors, and watching monitor population is unlikely to locate the pressure limits. This test can also be quicker for all seeds.

A. After planting a few passes with initial settings, remove the rain covers from several rows (use rows with a variety of seed hose lengths and routes).
B. Make a meter pressurization adjustment. Resume planting for a pass or less.
C. Stop product motion but leave fan running.
D. Inspect the seed disks closely. Look for empty seed cells (skips) and cells with multiple seeds (doubles).
E. Repeat step B-step D until limits are established. Record limits. Re-install rain covers. Plant with median settings.
Liquid Fertilizer Adjustments

Liquid fertilizer distribution systems\(^{a}\) are optional on the implement name and are optimized for use with the optional on-board 2x200 gallon tanks and/or the Great Plains SML-500 or SML-735 tank carts.

If installed, there are several points of fertilizer setup and/or adjustment:

1. **Row orifice setup**
   Orifice plate sizes are chosen to assure consistent pressure at all nozzles. Refer to the Seed Rate manual.

2. **Relief valve setting**
   See “Fertilizer Relief Valve” on page 74.

3. **Inlets**
   Both Type 2 (1-section, single inlet) and Type 3 (3-section, 3-inlet) systems have quick-connect inlets and shutoff valves at the back of the product. See page 22 for hook-up details.

4. **Strainer setup**
   The optional ground drive pump includes a strainer. The mesh screen size must be compatible with the orifice plates in the distribution system. Refer to the Seed Rate manual.

5. **Seed monitor control channel adjustment.**
   Once the control channel is set up, rate adjustment, and channel enable/disable, are operations performed using the seed monitor screen. The Seed Rate manual for details.

Great Plains recommends checking with your local agronomist as soil conditions vary. Soil conditions in your area may need less or more fertilizer than represented in these charts. In furrow, do not exceed 12 gallons per acre in any case.

The liquid fertilizer system is designed to operate (ideally) between 15 and 40 psi, but in no case more than 65 psi. Several system elements affect system pressure, and need initial setup, periodic maintenance, and adjustment when changing fertilizer rates.

---

\(^{a}\) Type 2, Type 3, or both, with or without product-mounted ground drive pumps for Type 2. See page 22 for details.
Liquid Fertilizer Strainer

The optional Great Plains fertilizer pump systems include a strainer, which may be located on the implement name or on a fertilizer cart.

The strainer(s) are delivered with a mesh screen. You need to check that each screen is an appropriate size for the orifice plates you plan to use.

If changing screen sizes, keep in mind the following:

- Generally, select a mesh screen the same or slightly smaller than the orifice size.
- A substantially smaller mesh (e.g. 100) will reduce manifold orifice plates plugging so often, but the strainer screen will have to be cleaned more often.
- A much larger mesh (e.g. 50 or 30) will pass more material but should only be considered when using large manifold orifice plates.
- A plugged or partially plugged screen starves the pump and results in a reduced application rate. Monitor the pressure gauge for a reduction in pressure that indicates a plugged strainer screen.

Fertilizer Relief Valve

Refer to Figure 72

An optional fertilizer system may include a relief valve and pressure gauge. The relief valve protects the manifold, lines and fittings from excessive pressure. Any product that dumps over the relief valve will discharge from the dump line in relative safety.

To set relief valve:

1. Unlock plastic jam nut from relief valve knob.
2. Unscrew knob clockwise (looking down) until it loses contact with internal spring.
3. Screw knob counterclockwise two turns. Start at this setting.
4. Observe manifold gauge and watch for relief valve dump line discharge while operating in the field.
5. If valve is dumping product and gauge reads under 65 psi, stop tractor and turn knob clockwise 1/4 turn. Continue operating at normal field speed. Repeat this step as needed until no product is discharged from relief valve dump line.
6. If the pressure gauge reads above 65 psi, change to a larger orifice. Go to step 2 and repeat.
Fertilizer Nozzle Adjustments

Refer to Figure 73

In general, the orifice needs to be small enough to create at least 15 psi of pressure in the manifold but large enough to prevent the manifold pressure from exceeding 65 psi.

The minimum pressure is required to even out the flow of fertilizer between rows. To reduce orifice plugging and pump wear, use the largest orifice practical for your fertilizer application rate. Alternate orifice plates are listed in the Seed Rate manual.

The best pressure range to maintain is 20-40 psi to ensure optimum distribution while minimizing leakage. Built-in check valves at the row units prevent flow below 15 psi.

The Seed Rate Chart book for this product (manual part number ManualB #) contains a table of orifice sizes in gallons per acre.

⚠️ DANGER

Agricultural Chemical Hazard:
Wear protective gloves when changing orifice plates.

⚠️ NOTICE

System Damage/Uneven Application Risks:
Select orifice plates to balance flow. Sizes too small can result in system rupture. Sizes too large can result in unbalanced flow. Orifice plates do not set fertilizer rate. Rate is set at the pump. Plates only create back-pressure to balance flow.

If frequent plate changes are likely, consider replacing the standard nozzles with SprayTarget VeriFlow nozzles. The novel spring-loaded design provides consistent back-pressure over a wide range of rates and pressures. See page 136 for ordering information.
25 Series Row Unit Adjustments

Refer to Figure 74 (which depicts a row unit populated with most optional accessories supported for use with the Product)

From front to back, a Great Plains 25 Series row unit can include the following capabilities (some optional):

1. **Lock-Up Pin Storage Hole** (Hole Standard)
   - See “Row Unit Shut-Off” on page 88.

2. **Down-Pressure Cam** (Standard)
   - Row units are mounted on parallel arms. This parallel-action mounting allows the row-unit to move up and down while staying horizontal. Springs add an adjustable force, set by the cam, to the row weight. See “Row Unit Down Pressure” on page 77.

3. **Air Inlet** (Standard)
   - Pressure-regulated air enters the meter here and holds seed in the disk pockets. See “Fan and Adjustment” on page 70.

4. **Seed Delivery Hose Inlet** (Standard)
   - Air carrying the bulk seed is vented at the bottom of the air release cone. Gravity then carries the seed into the meter at the shutter. The hose is easily removed for inspection. There are no adjustments.

5. **Air-Pro® Seed Meter** (Standard, Choice of Disks)
   - See “Air-Pro® Meter Disk Installation” on page 86.

6. **Seed Inlet Shutter** (Standard)
   - This controls the level of bulk seed at the disk. There are four operating settings, plus fully open (clean-out) and fully closed (shut-off or storage). See “Seed Inlet Shutter Adjustment” on page 84.

7. **Side Gauge Wheel Depth** (Standard)
   - The T-handle sets planting depth by controlling the height of the side gauge wheels relative to the opener discs. See “Side Gauge Wheel Adjustment” on page 82.

8. **Press Wheel Force, Angle, Stagger** (Standard)
   - The press wheels close the furrow, gently pressing the soil over the seed to ensure good seed to soil contact for even emergence. See “Press Wheel Adjustment” on page 91.

9. **Row Unit Lock-Up Hole** (Hole Standard)
   - Pins are standard on some models. With the row unit raised above level, the lock-up pin is inserted here. See “Row Unit Shut-Off” on page 88.

10. **Unit-Mount Coulter** (Option)
    - Coulters cut remaining trash and begin opening the seed furrow. Working depth is set by row depth and a mounting hole selection. See “Unit-Mount Coulter Adjustments” on page 79.

**NOTICE**

*Do not back up with row units in the ground. To do so will cause severe damage and row unit plugging.*

11. **Opener Discs** (Standard)
    - Row-unit double disc openers create the seedbed furrow. They have adjustments for angle and spacing. See “Row-Unit Opener Disc Adjustments” on page 81.

12. **Seed Tube with Sensor** (Standard)
    - Requires no adjustment.

13. **Scrapers** (Optional, not shown)
    - Inside scrapers require no adjustment. For gauge wheel scrapers, see “Adjusting Gauge Wheel Scrapers” on page 83.

14. **Seed Firmers** (Seed Flap Standard, not shown)
    - An optional seed firmer (Keeton® shown) minimizes seed bounce and improves soil contact. It may also deliver fertilizer. See “Seed Firmer Adjustments” on page 90.

15. **Press Wheel Type** (Choice)
    - A variety of single and dual press wheel assemblies are available, some region-specific. Consult your Great Plains dealer.
Row Unit Down Pressure

Refer to Figure 75

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

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

At several row units, inspect the furrow created by the opener discs, but prior to furrow closing by the press wheels.

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

Refer to Figure 76

1. If the side gauge wheels are leaving no tracks, or light tracks, increase down-force.

2. If the wheels are compressing trash and loose soil, and leaving clear tracks right at the top of the subsoil, down-force is probably correct and needs no adjustment.

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

Adjusting Down-Force

The next two pages cover the standard mechanical down-force system. If the optional Row-Pro™ system is installed, down-force is set higher than required, and the Row-Pro™ system automatically lowers it so that each section runs at optimum down-force. Appendix R - Row-Pro™ on page 165 for Row-Pro™ setup details.

Refer to Figure 77

Row unit springs ① provide the primary down pressure necessary for row unit discs to open a seed trench. The weight of the row units themselves contributes about 130 pounds (59 kg) of the total force.

The springs allow the row units to float down into depressions and up over obstructions. Springs also provide down force on coulters when using optional row mounted coulters, and provide the primary down force on row cleaners (optional), seed firmers (optional) and press wheels.

With Frame-Mounted Coulters:

With frame-mounted coulters, the seed trench is primarily opened by the coulters. Row unit springs provide only additional assistance needed to make a furrow "V" shaped and ensure furrow closure by the press wheels.
An adjuster cam ① sets down pressure individually for each row unit. This is useful for penetrating hard soil and planting in tire tracks. For best results always adjust tractor tires so they are not ahead of 30 inch or 70 cm rows.

**Refer to Figure 79**

<table>
<thead>
<tr>
<th>Cam Notch</th>
<th>Pounds</th>
<th>Kilograms</th>
</tr>
</thead>
<tbody>
<tr>
<td>zero (out of notch)</td>
<td>Lock-Up &amp; Maintenance</td>
<td></td>
</tr>
<tr>
<td>one</td>
<td>235</td>
<td>105</td>
</tr>
<tr>
<td>two</td>
<td>260</td>
<td>120</td>
</tr>
<tr>
<td>three</td>
<td>295</td>
<td>135</td>
</tr>
<tr>
<td>four</td>
<td>355</td>
<td>160</td>
</tr>
<tr>
<td>five</td>
<td>415</td>
<td>190</td>
</tr>
<tr>
<td>six</td>
<td>475</td>
<td>215</td>
</tr>
<tr>
<td>tip</td>
<td>Do Not Use</td>
<td></td>
</tr>
</tbody>
</table>

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, uneven seed depth and gauge wheel slippage.

**Refer to Figure 78 (shown at cam setting 2), Figure 79 and Figure 80**

To adjust down pressure, use a 1 1/8 inch (29 mm) open end wrench or the tool ⑥ stored under the walkboard.

1. Raise the implement name. Although this adjustment can be made with the implement name lowered, the springs will be in tension, and will require more effort. The extra force required may also damage tools.
2. Install lift cylinder locks.
3. Put tractor in Park and shut it off.
4. Position wrench on the fixed nut ④ near or slightly forward of vertical.
5. Pull upper spring link ⑤ back.
6. Move the adjustment cam ② to the new setting on the spring adjust bar ⑦.

Do not set all rows higher than notch four. Using high settings across all rows causes uneven planting. Individual rows may be set higher if running in tire tracks.
Unit-Mount Coulter Adjustments

Coulters are not factory-installed. Check alignment and depth prior to first use.

Coulter Depth Adjustment

The ideal operating depth for coulters is $\frac{1}{4}$ inch (6 mm) above opener depth. Although they may have originally been set to this depth, coulter (and opener) blades wear with time, and may need adjusting.

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

Refer to Figure 81 and Figure 82

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

To adjust coulter depth:

1. Determine the present opener and coulter depths.
2. Note which bracket hole the coulter is presently using.
3. Determine which new hole will position the coulter closer to the $\frac{1}{4}$ inch-above depth. See the table below.
4. Remove the $\frac{5}{8}$-11 x 4 inch bolt, lock washer and nut (in Figure 81).
5. Move the blade to the new position. Insert the bolt, and tighten on the lock washer and nut.
6. Re-adjust row cleaners, if installed.

If a worn coulter cannot be adjusted to satisfactory operating depth, replace coulter.

<table>
<thead>
<tr>
<th>Hole Number</th>
<th>Depth of (new) coulter blade relative to (new) opener blades</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>1 inch (25 mm) above</td>
</tr>
<tr>
<td>3</td>
<td>$\frac{5}{8}$ inch (16 mm) above</td>
</tr>
<tr>
<td>5</td>
<td>$\frac{1}{4}$ inch (6 mm) above</td>
</tr>
<tr>
<td>6</td>
<td>0</td>
</tr>
<tr>
<td>4</td>
<td>$\frac{3}{8}$ inch (9.5 mm) below</td>
</tr>
<tr>
<td>6</td>
<td>$\frac{7}{4}$ inch (19 mm) below</td>
</tr>
</tbody>
</table>

Figure 81
25 Series Unit-Mounted Coulter

Figure 82
Coulter Blade Mounting Holes
Coulter Row Alignment

Refer to Figure 83

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

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

The exacting test of correct alignment is field results. Operate the implement name on some test ground (no seed required), and verify that the opener blades are in the groove opened by the coulter, and that the press wheels are centered over the furrow. See “Press Wheel Adjustment” on page 91 for press wheel alignment.

Refer to Figure 84

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

Keep the coulter blade vertical while adjusting.

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

25 Series openers have three adjustments:
1. planting/seed depth
2. opener disc to disc clearance
3. gauge wheel/opener disc clearance (page 82)

Setting Planting Depth

Refer to Figure 85

The “T” handle ① sets planting depth by limiting the how high the side depth gauge wheels ride relative to the opener discs. The position of the seed tube itself is fixed relative to the discs, and is not adjusted.

To adjust seed depth, pull the “T” handle ① up and back, move it forward or aft, and set it back in a different pair of holes in the scale.

• For shallower planting, move the “T” handle ① forward.
• For deeper planting, move the “T” handle ① back.

Opener Disc Contact Region

Refer to Figure 86

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

The ideal spacing causes the blades to be in contact for about one inch ④. If you insert two pieces of paper between the blades, they should slide to within zero (touching) to 1 1/2 inch (3.8 cm) of each other. If zero, the gap between the blades should not be significantly greater than the thickness of two sheets of paper.

If the contact region is significantly larger or there is a large gap, it needs to be adjusted by moving one or more spacer washers.

Adjusting Disc Contact

Refer to Figure 87

1. Raise the implement name and install lift cylinder locks.
2. Remove the side gauge wheels ⑤ on the row unit in need of adjustment.
3. Remove the bolt ⑥ retaining the opener disc ⑦ on one side. Carefully remove the disc. Do not lose the hub components and spacer washers ⑧, ⑨.
4. To reduce the spacing between the discs (the normal case), move one spacer washer from the inside ⑧ to the outside ⑨ of the disc.
5. Re-assemble and check disc contact.
Side Gauge Wheel Adjustment

Refer to Figure 88 and Figure 89

Disc-to-wheel angle and clearance ideally has the wheel just touching the disc when the wheel is raised to planting depth (is up against the stop set by the “T” handle. The goal is to have both disc and wheels turn freely, but keep soil and trash from getting between them.

These two adjustments interact with each other. Changing one requires at least checking the other.

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

Refer to Figure 89

For 2 inch (5.1 cm) planting depth, adjust side gauge wheel angle so wheels contact row unit discs at the bottom of wheel. Check with row units in soil so wheels are held up.

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

Wheel should be out far enough so discs and wheels turn freely.

Refer to Figure 91 on page 83

To adjust side gauge wheels:

1. Raise the implement name and install lift cylinder locks.
2. Loosen hex-head bolt ①. Move wheel and arm out on O-ring bushing.
3. Loosen pivot bolt ② Turn hex adjuster ② so indicator notch ③ is at 5 o’clock to 7 o’clock.
4. Move wheel arm in so side gauge wheel contacts row unit disc. Tighten hex-head bolt ① to clamp arm around bushing and shank.

Refer to Figure 90

5. Check wheel-to-disc contact at 2 inch (5.2 cm) planting depth. Lift wheel 2 inch, check contact and release. When let go, wheel should fall freely.

If wheel does not contact disc at bottom to area where blade leaves contact with soil, move hex adjuster until wheel is angled for proper contact with disc.
• *If wheel does not fall freely*, loosen hex-head bolt ① and slide wheel arm out just until wheel and arm move freely. Tighten hex-head bolt ① according to grade:
  1/2 inch Grade 5 bolt on 25 series,
  75 foot-pounds (102 N•m).
  1/2 inch Grade 8 bolt on 25 series,
  110 foot-pounds (149 N•m).

  Use “Torque Values Chart” on page 147 for reference.

6. Keep turning hex adjuster and moving wheel arm until the wheel is adjusted properly. When satisfied, tighten pivot bolt ② to 110 foot-pounds (149 N•m).

**Adjusting Gauge Wheel Scrapers**

*Refer to Figure 92 (bottom view)*

Scrapers are optional, and may be useful in moist or sticky soils that tend to accumulate on gauge wheels and reduce intended planting depth.

To adjust scrapers:

1. Loosen nut ③.
2. Slide scraper ② toward gauge wheel ③ until scraper touches tire.
3. Slide scraper ② away from wheel ③ leaving a 1/8 inch (3 mm) gap at ③.
4. Rotate scraper left and right around bolt, making sure it cannot touch tire if bumped in field. If it can touch tire, back scraper away from wheel until it cannot.
5. Center scraper on bolt ② until gap ④ is constant.
6. Tighten nut ③.
Seed Meter Setup and Adjustment

There are adjustments for seed inlet, and choice of disks. There are no other adjustments, in particular no brush adjustments, at the meter.

Meter Rain Cover

The rain cover keeps side winds from unseating seed in disk pockets. It also keeps precipitation, sunlight and field debris out of the meters.

Refer to Figure 93

To remove the rain cover, peel the flexible snap latches, at top ① and rear ②, away from the meter housing. Pivot the cover forward and down at tab ③ in slot.

When removing a cover, inspect it for damage and missing parts. If a cover does not have both latches, and an intact edge seal under the latches, the cover is apt to be lost during transport or field operations.

To replace a latch, temporarily remove the seal near the latch. Slide the replacement latch onto the cover lugs from the meter side, then snap the other end down over the lugs. Re-install the seal.

Seed Inlet Shutter Adjustment

Refer to Figure 94 (showing the shutter at setting 3)

The seed inlet shutter regulates the volume of bulk seed presented to the seed disk. The operating settings vary with crop, seed size and treatments. The shutter also has settings for row shut-off (completely closed), and clean-out (wide open).

The Seed Rate Charts include suggested initial shutter settings. Refine these settings based on experience, and on inspection of the slope of the seed pool at the bottom of the seed disk.

The shutter is operated by a handle. Lift the handle away from the meter plate. Move the handle to half a setting higher than the new setting, then back to the new setting, and lower the pawl into that slot.

The table at right is a general summary of shutter settings.

<table>
<thead>
<tr>
<th>Setting</th>
<th>Setting Typically Used For</th>
</tr>
</thead>
<tbody>
<tr>
<td>Top (0)</td>
<td>Closed: Row Shut-Off, Meter Re-Fill</td>
</tr>
<tr>
<td></td>
<td>(1) Small seeds, such as Milo, with little or no treatments</td>
</tr>
<tr>
<td></td>
<td>(2) Small treated seeds and edible beans (such as Soybeans)</td>
</tr>
<tr>
<td></td>
<td>(3) Corn, round popcorn</td>
</tr>
<tr>
<td></td>
<td>(4) Large corn, or heavily treated corn</td>
</tr>
<tr>
<td>Bottom (5)</td>
<td>Wide Open: Clean-Out</td>
</tr>
</tbody>
</table>
Optimal Seed Pool Slopes

The optimal seed slope is one that results in the most consistent seeding, with minimal skips and doubles. The column at right has photographs of pool slopes found to be optimal for representative seeds.

If the suggested initial shutter settings do not seem to be working for your seed, adjust the shutter to achieve specific reserve slope targets.

Refer to Figure 95

For medium size and smaller seeds that flow easily, the slope runs from just above the 8:00 (o’clock) position on the housing wall, forward and down to one or two seeds deep at the base of the rear strip brush ①.

Refer to Figure 96 and Figure 97

For medium size and larger, or heavily treated smaller seeds that flow less easily, the slope runs from at or slightly above the 8:30 (o’clock) position on the housing wall, forward and down to 3-6 seeds deep at the base of the rear strip brush ①.

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

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

Meter Re-Fill

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

An empty meter causes seed monitor “Row Failure” alarm, with a report of the row number. Row numbers are counted from the left wing (outside row is row 1).

Stop, and put the tractor in Park. Leave the fan running. Locate the failed row, remove the rain cover, and verify that the meter is empty. Note the shutter setting. Temporarily open the shutter one of two notches wider. If the problem was inlet bridging, seed should flow into the meter immediately.

If inlet bridging is not the problem, little or no seed flows into the meter with the shutter open wider. In this case, the problem is further upstream in the seed flow, and may be bridging at the air release screen at the top of the meter. Close the shutter completely for about 15 seconds. This prevents meter pressurization air from opposing seed delivery air. The delivery air pressure usually collapses the bridge. Re-open the shutter and see if seed now fills the meter.

If no obvious foreign object was the cause of the bridging, the shutter setting may have been too small for the seed. Verify that this and other operating rows were at the correct initial shutter setting. If so, re-set the shutters to the next higher opening.

NOTICE

Foreign Object Risk:

After clearing a bridge, or a delivery blockage upstream, check the seed pool at the meter for any debris that might have been the original cause. Remove such debris from the meter before planting. Don’t run the risk of an object lodging in a seed pocket and causing on-going skips.
Air-Pro® Meter Disk Installation
1. Cross-check Seed Rate Chart data against part number/description molded into disks to be used.

**NOTICE**

*Population Risk:*
*Use the same disk in all active rows.*

2. Inspect disks to be installed. Do not install damaged or excessively worn disks. Either can cause irregular seeding. Chips and cracks accelerate brush wear.

3. Remove meter rain cover (page 84).

*Refer to Figure 98 (depicting an empty meter)*

4. Inspect meter (see page 109 for details).

5. Make sure clamp ① is aligned with seat ②.

*Refer to Figure 99*

6. With the seed pocket side facing the meter housing, place the new seed disk on the disk seat.

7. Rotate disk clamp ① clockwise 45° to clamp disk. Clamp seats into detents ③ in disk hub.

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

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

**NOTICE**

*Brush Mis-Seating Risk:*

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

Brush seating may be accomplished with or without seed present, and may be combined with “FILL DISK”. An alternate method, which avoids running the tractor, monitor and fan, is to rotate the section’s meter drive shaft, top forward, with a 7/8 inch open-end wrench.

8. Reset seed inlet shutter ④ to setting recommended by Seed Rate Chart, or to your own developed value.

9. On the seed monitor console, select the new Material, seed disk Cell Count, and target population.

10. Re-install rain cover (page 84).
Removing a Seed Disk

Refer to Figure 101

1. Remove rain cover. If seed is present, close shutter ③ to prevent more seed from entering meter. Attach funnel (page 106).

2. Hold seed disk in meter. Rotate disk clamp ① counterclockwise 45° to release disk.

3. Tilting top of disk toward meter, slowly remove disk, allowing seed to collect in funnel. Open shutter to release remaining seed up to wing tube.

4. Clean seed from all brushes. Clean disk seat (② in Figure 98 page 86), so that new disks can seat fully. Inspect brushes for excess wear and damage. See "Meter Brush Maintenance" on page 109.

5. Inspect removed disks for excess wear and damage. Set aside any disks requiring replacement. Clean other removed disks and place in storage. See "Seed Disk Maintenance" on page 111.

6. Re-install the rain cover (page 84).

Sprocket Indexing (Stagger)

Indexed - deliberate pair spacing provides maximum plant separation

Non-Indexed - arbitrary pair spacing

If you are planting:
• twin-row crops,
• at seed interval spacings above 6½ inch (16.5 cm),
you can synchronize each pair of adjacent meters in a twin row so that you achieve the maximum seed-to-seed spacing between the units of the pair.

Refer to the Seed Rate manual for details.
Row Unit Shut-Off
Skip-row operations, such as planting from every other row when switching from 30 inch twin-row to 30 inch single-row, requires shutting down unused rows.

Shutting off seeding at a row involves 4 to 7 steps:
1. Identify the rows to shut off.
2. Fully close seed inlet shutter (always done).
3. Replace seed disk with blank disk (always done).
4. Close seed flow to row at Y-tube (if present).
5. Lock up row unit to reduce wear (optional).
6. Reset marker extension (if used, page 161).
7. Reset monitor active row pattern and row spacing to avoid nuisance alarms (always done).

* Meter drive is not disabled on 25AP row units during shut-off.

1. **Identify Rows to Shut Off**
   On twin-row products, openers are installed with short and long opener mounts. If locking up unused rows of a twin-row product, shut off the rear (long mount) rows.
   On single-row products with mid-length mounts, any rows may be locked up.

2. **Close Seed Shutter**
   *Refer to Figure 102 on page 88*
   Lift the handle away from the plate. Move it to the top position, and release the handle into the notch.
   Closing the shutter prevents meter pressurization air from leaking into the bulk seed air system, resulting in lower pressures in adjacent rows, with risk of skips.
   The shutter also stops seed flow from a row as soon as the meter is empty. Bulk seed flow to the row falls to nil as soon as the seed backs up to the air release vent at the top of the meter. If the row is served by a Y-tube, the Y-tube also needs to be shut off for the row (step 4).

3. **Install Blank Disk**
   *Refer to Figure 103*
   Clean out meter. See “Meter Clean-Out” on page 106. Remove seed disk and install blank disk. See “Air-Pro® Meter Disk Installation” on page 86.
   Blank disks (part number 817-841C) are essential in row shut-off, both to maintain consistent meter back-pressure to meter pressurization and to prevent wear on a seed disk.
   Blank disks are engineered to simulate a seed disk with seed in all pockets. Blanks are particularly important on the rows with sensor lines to the pressure chamber.

---

**NOTICE**

**Irregular Seeding Risk:**
Always use a blank disk in a shut-off row. Operating with no disk, or with a seed disk but no seed, destabilizes the regulated airflow, particularly at rows with pressure sensor lines.
4. Close Y-Tubes

Refer to Figure 104

If any shut-off rows are served by a Y-tube, close the gate for the branch to that row. Rotate the gate cap until the indicator/handle is perpendicular to the tubes.

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

5. Lock-Up Row

Alternate twin-row units (the rear units) can be pinned in the up position to accommodate single-row spacing.

Refer to Figure 105

The lock-up pins ① for each front row unit are located in a storage hole ② in the row unit mount. To lock up a unit, the unit must be raised, and the pin moved to the lock-up hole ⑤ in the row unit shank.

**WARNING**

**Crushing and Sharp Object Hazards:**

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

If you lose a pin, the replacement part number is 805-033C.

1. Raise the product. Although this adjustment can be made with the product lowered, the springs will be in tension, and will require more effort. The extra force may also damage tools.
2. Install lift assist cylinder locks. Lower parking stands.
3. Set the down pressure spring cam to zero, per the instructions on page 78.
4. Raise the row unit high enough that the hole for the pin is above the lower parallel arm. This can be done in several ways, including:
   a. use a hoist at the rear of the shank ④
   b. use a jack under the shank extension ⑤

**CAUTION**

**Crushing Hazard:**

Use a jack or hoist. Raising a row unit on a block by lowering the product is risky. The potential for hydraulic failure creates a safety hazard. Full lowering can damage components.

Refer to Figure 106

5. Remove the pin from the storage hole ② and insert and secure it in the lock-up hole ③.
6. Lower row unit until lock-up pin rests on lower parallel arm.

**NOTICE**

**Certain Machine Damage:**

Do not pin the row unit while it is in the lowered position. If the pin is inserted below the parallel arm, unit damage occurs as soon as planting begins.
Seed Firmer Adjustments

Series 25 row units include a standard seed flap, and accept one of two optional seed firmers (which may be included in your selected opener bundle).

**CAUTION**

*Sharp Object Hazard:*
Row unit disc blades may be sharp. Use caution when making adjustments in this area. To adjust the Keeton® Seed Firmer, lower the implement name until the discs of the row units are resting on the ground.

**Keeton® Seed Firmer Adjustment**

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

*Refer to Figure 107*

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

**Seed-Lok® Seed Firmer Lock-Up**

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

*Refer to Figure 108 (which depicts a row unit with discs, side depth wheels/arms and press wheels removed for illustrative purposes - removal is not necessary for lock/unlock)*

To lock up Seed-Lok® wheels:

1. Raise implement name. Insert lift assist cylinder locks.
2. Lift Seed-Lok® lock-up handle 1 until lever stop 2 is free to rotate.
4. Push up on Seed-Lok® wheel 4 until wheel arm latches up 5.

To release a locked-up Seed-Lok®:

1. Insert a 1/4 inch tool drive tip in the tool hole 6 of the handle 1. Alternatively, lift up on the wheel 3.
2. Rotate the handle clockwise (handle arm up) until the Seed-Lok® wheel releases at the latch point 5 and falls free.

Engage the lever stop under the handle 2 when Seed-Lok® is in use. If left disengaged 3, a furrow obstruction could cause unintended lock-up.
3. While holding the handle up, rotate the raised portion of the lever stop ② under both sides ② of the handle at the arm end. Remove the tool.

**Press Wheel Adjustment**

The press wheels close the furrow which gently presses the soil over the seed to ensure good seed-to-soil contact for even emergence.

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

There are three adjustments available on the press wheel assembly:

*Refer to Figure 109*

1. Down pressure (shown at maximum)
2. Wheel stagger (shown staggered)
3. Centering (see Figure 111 on page 92)

**Press Wheel Down Pressure**

The handle ① sets down pressure, which may need adjustment for different soil types and field conditions.

- Relax the handle forward (in the direction of travel) for decreased down pressure.
- Pull the handle ① back for increased down pressure.

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 force. See page 77.

**Press Wheel Stagger**

The factory stagger setting has been found optimal for residue flow. If your conditions appear to require even press wheels, you might try one row before re-configuring the entire implement name. To change the stagger:

*Refer to Figure 110*

1. Raise the implement name and install the lift assist cylinder locks. See “Lift Cylinder Lock-Up” on page 29.
2. Remove the bolt ④, nut ⑤ and lock-washer ⑥ for the left press wheel ⑦.
3. Move the spacer ⑧ and wheel ⑥ to the forward of the two mounting holes at ⑨.
4. Re-install the bolt, lock washer and nut. Tighten.
Press Wheel Centering

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

Refer to Figure 111

1. Determine how far, and in which direction, the press wheel assembly needs to move to center the wheels.
2. Raise implement name and install lift assist cylinder locks. See “Lift Cylinder Lock-Up” on page 29.
3. Loosen the 1/2 inch hex-head bolts 2 and 3.
   - Do not loosen the square-head bolts forward of the hex-head bolts.
4. Turn the hex head cam 4 under the forward hex head jam bolt 3, and move the required amount.
5. Tighten both hex head bolts 2 and 3.

If press wheel adjustments do not provide satisfactory furrow closing, your conditions may require alternate press wheels. A variety of wheel assemblies are available. Consult your Great Plains dealer.

Figure 111
Press Wheel Centering
(View from beneath opener)
Troubleshooting

Planting Rate Problems

When starting up with a new implement name, a new crop or a new population it is important to physically double check what the monitor is reporting in the cab by digging seeds. This is to verify that you are set up correctly to plant the desired population. Do not rely solely on the population reported by the DICKEY-john® monitor.

Also during start up it is common to encounter alarms and readouts on the DICKEY-john® console that don't seem to make sense. It is critical to troubleshoot these alarms not only to make sure the implement name drive is set properly to hit the target population, but also to fix incorrect entries in the DICKEY-john® monitor to eliminate nuisance alarms.

Before entering the troubleshooting charts to remedy a monitor or population problem, it is helpful to use the following flowchart to get a handle on what may be wrong. The basis for finding what is wrong comes from knowing exactly what the implement name is actually doing in the soil. Always dig or observe seed on the ground when checking populations.

1. Is the spacing on the ground correct?
   - No: Check the ground drive transmission and range sprocket selections, or the population settings on a hydraulic drive unit. See also “Population Too Low” or “Population Too High” in the troubleshooting charts.
   - Yes: Go to step 2.

2. Is the reported population 1/2 the actual or is the reported population too high by a factor of 2?
   - No: Go to step 3.
   - Yes: An incorrect row spacing value entered in the seed monitor can cause this. Example: 15 inches instead of 30 inches. Correct the row spacing error on the DICKEY-john® 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 implement name.

3. Is the population on the screen close to the target population?
   - No: Check seed rate charts against transmission sprockets selected. See “Population Too Low” or “Population Too High” in the troubleshooting charts.
   - Yes: If slightly under, see “Population Too Low” if slightly over, see “Population Too High”.

For seed monitor issues, see also the DICKEY-john® Planter/Drill Control User Manuals, “TROUBLESHOOTING & ALARMS” section.

Suggested Furrow Check:
Plant a short distance and dig seeds, or run with the closing wheels wired up to leave an open seed trench. Based on seeds found, determine an average distance between seeds. Compare the distance between seeds to the seed spacing listed in the charts for your population. This is listed as “inches per seed”.

Suggested Furrow Check:
Plant a short distance and dig seeds, or run with the closing wheels wired up to leave an open seed trench. Based on seeds found, determine an average distance between seeds. Compare the distance between seeds to the seed spacing listed in the charts for your population. This is listed as “inches per seed”.

For seed monitor issues, see also the DICKEY-john® Planter/Drill Control User Manuals, “TROUBLESHOOTING & ALARMS” section.

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For seed monitor issues, see also the DICKEY-john® Planter/Drill Control User Manuals, “TROUBLESHOOTING & ALARMS” section.
# Seed Pool Troubleshooting

![Diagram of Seed Pool Troubleshooting](image)

<table>
<thead>
<tr>
<th>Condition</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal: 2 Filling</td>
<td>No action required. Continue Planting.</td>
</tr>
<tr>
<td>Seed pool at shutter prevents backflow of meter pressurization air, allowing seed to flow from delivery system, filling inlet to top of air release screen.</td>
<td></td>
</tr>
<tr>
<td>Normal: Filled</td>
<td>No action required. Continue Planting.</td>
</tr>
<tr>
<td>Once inlet is filled to top of air release screen, air flow from the delivery system is blocked. No further seed arrives until planting reduces the backlog at the inlet.</td>
<td></td>
</tr>
<tr>
<td>No seed arriving from manifold. Air back-flow is occurring. Causes may include:  - low fan speed  - seed hose blockage  - no seed available  - Y-tube closed  - meter never primed</td>
<td></td>
</tr>
<tr>
<td>Oversize matter in seed has caused a bridge at the top of the inlet. Air back-flow is occurring. When the bridge is released, the seed pool will be insufficient to prevent back-flow.</td>
<td></td>
</tr>
<tr>
<td>Bridging: Shutter</td>
<td>1. If shutter was at suggested opening, increase one notch. 2. Check seed pool for foreign matter. 3. Resume planting.</td>
</tr>
<tr>
<td>A bridge at the shutter is blocking flow. Causes may include:  - oversize seed  - shutter setting too low  - oversize matter in seed</td>
<td></td>
</tr>
</tbody>
</table>

![Figure 112 rear cross-section of Air-Pro® meter in normal and row-failed conditions](image)
Seed Pool Recovery

When a meter has been starved of seed, back-flow of air through the open shutter 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.

Refer to Figure 113 (which depicts a recovery after an incidence of bridging at air release screen)

1. Close the shutter 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 ③ to fall into the inlet.
4. Wait for seed fall ④ to taper off and stop.
5. Open the shutter ⑤ to the operating setting.
6. Start or resume planting.

Figure 113
Seed Pool Recovery
Population Troubleshooting Charts

Population Too Low

<table>
<thead>
<tr>
<th>Problem</th>
<th>Cause</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Overall Low Population</strong></td>
<td>Incorrect seed rate</td>
<td>Check seed rate charts</td>
</tr>
<tr>
<td></td>
<td>Empty pockets on disk (skips) due to insufficient air pressure.</td>
<td>Methodically increase the controlled air to the meter. See “Fan and Adjustment” on page 70.</td>
</tr>
<tr>
<td></td>
<td>Empty pockets on disk (skips) due to sticky seed treatments not allowing seed to rapidly fill the pockets.</td>
<td>Increase seed lubricant.</td>
</tr>
<tr>
<td></td>
<td>Empty pockets on disk (skips) due to rough field conditions causing seeds to fall from the disks.</td>
<td>Decrease field speed or increase the air pressure in the meter.</td>
</tr>
<tr>
<td></td>
<td>Empty pockets on disk (skips) due to seed pool too low, and seeds are not filling every pocket on the disk.</td>
<td>Open shutter one notch.</td>
</tr>
<tr>
<td></td>
<td>Empty pockets on disk (skips) due to disk speed too high, and pockets are not filling.</td>
<td>Decrease field speed or change to a higher cell count disk.</td>
</tr>
<tr>
<td></td>
<td>Empty pockets on disk (skips) due to singulation (4 tufted) brush too aggressive.</td>
<td>Check for matted, stuck together fibers. Wash, scrape clean, or replace as needed.</td>
</tr>
<tr>
<td></td>
<td>Seeds are not falling from disk, and get carried past drop zone. Static electricity can cause small, lightweight seeds to cling to the pocket 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.</td>
</tr>
<tr>
<td></td>
<td>Air pressure too low, false information driving the DICKEY-john® software.</td>
<td>Compare the air pressure reported on the monitor console to the mechanical gage. If they do not match: • Inspect the 1/4 inch sample lines from the row units up to the sensor chamber for leaks. • Make sure all non-planting rows have blank disks. • Re-zero the air pressure with the fan off.</td>
</tr>
<tr>
<td></td>
<td>Low fan speed: meter starvation due to meter pressurization, leaving insufficient air for seed delivery</td>
<td>Increase fan speed.</td>
</tr>
<tr>
<td></td>
<td>Leaking meters in split row: meter starvation due to meter pressurization leaving insufficient air for seed delivery</td>
<td>Install blank disks and close shutters on unused rows.</td>
</tr>
<tr>
<td></td>
<td>Excess field speed</td>
<td>Plant within speed ranges recommended in seed rate charts.</td>
</tr>
<tr>
<td></td>
<td>Incorrect speed sensor constant.</td>
<td>Perform speed radar calibration per DICKEY-john® monitor manual. See page 162.</td>
</tr>
<tr>
<td></td>
<td>Speed sensor angle.</td>
<td>With implement name lowered, check radar speed sensor angle per DICKEY-john® recommendations.</td>
</tr>
<tr>
<td></td>
<td>Pass gaps too large</td>
<td>Check marker extension (page 161). For GPS, check implement name 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>Debris build-up in airbox.</td>
<td>Clean airbox. See “Air Box Residue Clean-Out” on page 108.</td>
</tr>
<tr>
<td><strong>Low Population, One Section</strong></td>
<td>Clutch slipping, due to contaminants in clutch, or wear</td>
<td>Lock-up clutch (page 49) until it can be overhauled or replaced</td>
</tr>
<tr>
<td></td>
<td>Skipping chain from drive to section</td>
<td>Check chain slack. Replace worn chain.</td>
</tr>
</tbody>
</table>
## 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>Shutter opening too wide - interfering with meter pressurization</td>
<td>Adjust shutter to lower setting.</td>
</tr>
<tr>
<td></td>
<td>Shutter opening too narrow - starving meter of seed (low seed pool)</td>
<td>Adjust shutter to higher setting.</td>
</tr>
<tr>
<td></td>
<td>Y-tube partially or completely closed, reducing bulk flow to meter or causing bridging</td>
<td>Open Y-tube for row</td>
</tr>
<tr>
<td></td>
<td>Meter starvation due to bridging at shutter</td>
<td>Re-adjust for shutter bridging (page 85). If seed is treated, increase seed lubricant.</td>
</tr>
<tr>
<td></td>
<td>Meter starvation due to bridging above inlet, caused by low seed delivery air flow</td>
<td>Clear bridge (page 85). Check that seed delivery system is getting sufficient fan air, and that there are no other obstructions upstream.</td>
</tr>
<tr>
<td></td>
<td>Meter starvation due to bridging above inlet, caused by high levels of seed treatment</td>
<td>Clear bridge (page 85). Increase seed lubricant.</td>
</tr>
<tr>
<td></td>
<td>Debris build-up in airbox.</td>
<td>Clean airbox. See &quot;Air Box Residue Clean-Out&quot; on page 108.</td>
</tr>
<tr>
<td></td>
<td>Skips due to low meter pressurization at one or several rows</td>
<td>Check shutter 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 skipping chain</td>
<td>Check for worn chain, worn idlers, and low chain slack (page 116).</td>
</tr>
<tr>
<td></td>
<td>Skips due to debris in disk pockets</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 (see page 107).</td>
</tr>
<tr>
<td></td>
<td>Seed tube plugged</td>
<td>Raise implement name, expose bottom of seed tube and clean out.</td>
</tr>
</tbody>
</table>

## Population Too High

<table>
<thead>
<tr>
<th>Problem</th>
<th>Cause</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall High Population</td>
<td>Incorrect seed rate</td>
<td>Check seed rate charts</td>
</tr>
<tr>
<td></td>
<td>Two seeds per pocket on the disk (doubles), due to excess meter pressurization</td>
<td>Methodically decrease the controlled air to the meter. See &quot;Fan and Adjustment&quot; on page 70.</td>
</tr>
<tr>
<td></td>
<td>Two seeds per pocket on the disk (doubles), due to pockets too large for the seed</td>
<td>Select a disk with smaller pockets.</td>
</tr>
<tr>
<td></td>
<td>Air meter pressure too high due to pressure sensor not zeroed properly.</td>
<td>Re-zero the air pressure with the fan off. Make sure the displayed pressure reads 0.00.</td>
</tr>
<tr>
<td></td>
<td>Air pressure too high, false information driving the Dickey-John® software.</td>
<td>Compare the air pressure reported on the monitor console to the mechanical gage. If they do not match: • Inspect the 1/4 inch sample lines from the row units up to the sensor chamber for leaks. • Make sure all non-planting rows have blank disks. • Re-zero the air pressure with the fan off.</td>
</tr>
<tr>
<td></td>
<td>False alarms or actual seed rate errors due to monitor setup with incorrect row count, spacing or active rows</td>
<td>When troubleshooting population issues, always first rule out seed monitor setup. Review product configuration and monitor setup.</td>
</tr>
<tr>
<td></td>
<td>Incorrect cell count</td>
<td>Replace seed disks with correct disks, or reset rate for current disks (if within range).</td>
</tr>
</tbody>
</table>
## Population Too High

<table>
<thead>
<tr>
<th>Problem</th>
<th>Cause</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall High Population (cont.)</td>
<td>Incorrect speed sensor constant</td>
<td>Perform speed calibration per DICKEY-john® monitor manual. See page 162.</td>
</tr>
<tr>
<td></td>
<td>Doubles due to incorrect disk for crop or seed size</td>
<td>Use recommended disk for crop and seed size.</td>
</tr>
<tr>
<td></td>
<td>Sticky seeds: excess seed treatment</td>
<td>Increase seed lubricant.</td>
</tr>
<tr>
<td></td>
<td>Speed sensor angle.</td>
<td>With implement name lowered, check radar speed sensor angle per DICKEY-john® recommendations.</td>
</tr>
<tr>
<td></td>
<td>Incorrect speed sensor constant</td>
<td>Perform speed calibration per DICKEY-john® monitor manual.</td>
</tr>
<tr>
<td></td>
<td>Overlapping passes</td>
<td>Check marker extension (page 161). For GPS, check implement name 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>High Population, Single Row</td>
<td>Excess meter pressurization causing doubles</td>
<td>Check shutter.</td>
</tr>
<tr>
<td></td>
<td>Worn seed-drop brush and/or strip brushes allowing excess seed to pass</td>
<td>Replace worn brushes.</td>
</tr>
<tr>
<td></td>
<td>Incorrect seed disk with higher cell count.</td>
<td>Install correct disk.</td>
</tr>
</tbody>
</table>

## Population Related

<table>
<thead>
<tr>
<th>Problem</th>
<th>Cause</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall Population Alarms</td>
<td>False alarms or actual rate errors due to monitor setup with incorrect [active] row count or spacing</td>
<td>When troubleshooting population issues, always first rule out seed monitor setup. Review product configuration and monitor setup.</td>
</tr>
<tr>
<td></td>
<td>Incorrect cell count</td>
<td>Replace seed disks with correct disks, or reset rate for current disks (if within range).</td>
</tr>
<tr>
<td></td>
<td>Improper gap on speed sensor.</td>
<td>Check speed sensor on product for $\frac{1}{16}$ inch to $\frac{1}{8}$ inch (1.6-3.2 mm) gap from wheel. Improper gap can cause erratic speed signal causing monitor to falsely report improper planting rate.</td>
</tr>
<tr>
<td></td>
<td>Incorrect speed sensor constant</td>
<td>Perform speed calibration per DICKEY-john® monitor manual.</td>
</tr>
<tr>
<td>Mismatch Between Reported and Furrow Population</td>
<td>Small seeds (example milo) are not reliably sensed in the seed tube</td>
<td>Run with rain covers in place to minimize ambient light intrusion. Use the population adjustment factor in the Dickey John monitor system to compensate for missed seeds. For example, change the DICKEY-john® Population Adjustment values from 100% to 130% or 140% as needed. 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 long narrow seed tube brush. Replace sensors that malfunction.</td>
</tr>
<tr>
<td></td>
<td>Seeds / revolution value in the DICKEY-john® setup does not match the disk cell count.</td>
<td>Correct the value in a setup screen or install the correct cell count disk.</td>
</tr>
<tr>
<td>Excessive Seed Cracking</td>
<td>Incorrect seed pocket size</td>
<td>Use correct disk for seed.</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>
</tbody>
</table>
### Population Related

<table>
<thead>
<tr>
<th>Problem</th>
<th>Cause</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<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 (page 146). If sufficient:  
  • Fold markers before engaging lift  
  • Use a less aggressive lift rate.  
  • Monitor fan rpm during end-of-pass operations. |
| Unable to adjust air pressure low enough. | Lower limit reached in DICKEY-john® software. | At User Level 2, reduce the controlled air lower limit in the software. |
|                                 | Fan speed too high, vane rotated to maximum.    | Reduce the fan speed.                                                    |
| Seed too shallow or scattered on ground from a single row | Bottom of seed tube damaged. | Replace seed tube. Avoid setting implement name straight down. Use forward motion when lowering. |
|                                 | Row not penetrating in tire tracks.             | Increase down force on parallel arm springs.                             |
|                                 | Opener depth too shallow.                       | Change side depth wheel setting.                                         |
| Twin Rows were timed but became out of time. | Timing will change when a population change has been made. | Re-time meters from the population based timing chart.                   |
|                                 | Chain has jumped.                               | Check sprockets and chain for excessive wear or rusty stuck links.      |
| System is unable to automatically control air meter pressure. | Signal from air pressure sensor lost. (failed sensor or wiring) | Air pressure may be controlled manually, consult DICKEY-john® Planter/Drill Control manual, User Level 2/3. |

### Seed Delivery Troubleshooting

<table>
<thead>
<tr>
<th>Problem</th>
<th>Cause</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single row doesn't fill or keep up with other rows.</td>
<td>Y tube is bent/angled off feed pipe.</td>
<td>Loosen pipe and spin so the bend is straight down and Y-tube is not pointing to front or rear of air pipe.</td>
</tr>
<tr>
<td></td>
<td>Drop tube to meter is too long, causing seed to pool and plug hose or Y-tube.</td>
<td>Shorten hose (with product raised, but row units lowered, to ensure hose is not too short).</td>
</tr>
<tr>
<td></td>
<td>Debris build-up in airbox.</td>
<td>Clean airbox. See &quot;Air Box Residue Clean-Out&quot; on page 108.</td>
</tr>
<tr>
<td>Both rows on one meter outlet low or not keeping up with other rows.</td>
<td>Blockage in air slot in top of airbox.</td>
<td>Clear by using a long skinny tool and taking hose off through hose outlet. It may be necessary to take top off airbox or use side access doors to clear junk from slot.</td>
</tr>
<tr>
<td></td>
<td>Bad hose routing between delivery hose and airbox on wing.</td>
<td>Correct hose routing.</td>
</tr>
<tr>
<td>Multiple rows fail for lack of seed.</td>
<td>Fan speed too high/too low.</td>
<td>Check/adjust fan speed.</td>
</tr>
<tr>
<td></td>
<td>Out of seed.</td>
<td>Add seed.</td>
</tr>
<tr>
<td></td>
<td>Debris build-up in airbox.</td>
<td>Clean airbox. See &quot;Air Box Residue Clean-Out&quot; on page 108.</td>
</tr>
</tbody>
</table>
## Seed Delivery Troubleshooting

<table>
<thead>
<tr>
<th>Problem</th>
<th>Cause</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single or multiple hoses plugging just ahead of airbox.</td>
<td>Fan speed too high/too low.</td>
<td>Check/adjust fan speed.</td>
</tr>
<tr>
<td></td>
<td>Possible air leak.</td>
<td>Check for air leak downstream between box and top of meter.</td>
</tr>
<tr>
<td>All rows fail.</td>
<td>Lack of seed.</td>
<td>Fan speed too high. Adjust fan speed.</td>
</tr>
<tr>
<td></td>
<td>Field speed too high</td>
<td>Extremely high populations may require slightly reduced field speed.</td>
</tr>
<tr>
<td>1, 2, 3, or more outlets fail.</td>
<td>Foreign matter in seed chamber in bottom of airbox.</td>
<td>Clean out seed chamber.</td>
</tr>
<tr>
<td>Outlets can be side-by-side or random. Plugging may also move from one outlet to another.</td>
<td>Seed treatment sticky.</td>
<td>Add Ezee Glide Plus to seed to dry out seed treatment.</td>
</tr>
<tr>
<td></td>
<td>Treatment mixed unevenly and plugging outlets.</td>
<td>Clean out seed. Re-mix.</td>
</tr>
<tr>
<td></td>
<td>Treatment build-up in airbox.</td>
<td>Clean airbox. See &quot;Air Box Residue Clean-Out&quot; on page 108.</td>
</tr>
</tbody>
</table>

## General Troubleshooting

<table>
<thead>
<tr>
<th>Problem</th>
<th>Cause</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population Alarms</td>
<td>See “Population Troubleshooting Charts” on page 96.</td>
<td></td>
</tr>
<tr>
<td>Excess Seed Remaining</td>
<td>See “Population Troubleshooting Charts” on page 96.</td>
<td></td>
</tr>
<tr>
<td>Field size different.</td>
<td>After ruling out population problems, re-check geography.</td>
<td></td>
</tr>
<tr>
<td>Excessive gaps between product passes.</td>
<td>Adjust marker, page 161.</td>
<td></td>
</tr>
<tr>
<td>Seed Consumption Too High</td>
<td>See “Population Troubleshooting Charts” on page 96.</td>
<td></td>
</tr>
<tr>
<td>Field size different.</td>
<td>After ruling out population problems, re-check geography.</td>
<td></td>
</tr>
<tr>
<td>Rows Not Planted</td>
<td>If not detected by seed monitor, check for plugged row-unit seed tube</td>
<td>Lift product, expose bottom of seed tube and clean out.</td>
</tr>
</tbody>
</table>
## General Troubleshooting

<table>
<thead>
<tr>
<th>Problem</th>
<th>Cause</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Uneven seed spacing</td>
<td>See “Population Troubleshooting Charts” on page 96.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Excessive field speed.</td>
<td>Reduce field speed.</td>
</tr>
<tr>
<td></td>
<td>Unclean seed.</td>
<td>Use clean seed.</td>
</tr>
<tr>
<td></td>
<td>Damaged seed tube.</td>
<td>Inspect; repair or replace.</td>
</tr>
<tr>
<td></td>
<td>Seed-Lok® plugging.</td>
<td>Lock up Seed-Lok®, page 90.</td>
</tr>
<tr>
<td></td>
<td>Row-unit discs not turning.</td>
<td>See “Row-unit discs not turning freely” in this Troubleshooting chart.</td>
</tr>
<tr>
<td></td>
<td>Worn/rusted sprockets and/or chain idler or bearings.</td>
<td>Check and replace any worn/rusted sprockets or chain idlers.</td>
</tr>
<tr>
<td></td>
<td>Partially plugged row-unit seed tube.</td>
<td>Lift up product, expose bottom of seed tube and clean out.</td>
</tr>
<tr>
<td></td>
<td>Lack of proper seed lubrication on seed.</td>
<td>See “Seed Lubricant” on page 138.</td>
</tr>
</tbody>
</table>
|                                        | Hydraulic meter drive rpm too low for reliable control by proportional valve. | 1. Increased field speed.  
2. Use a seed disk with a lower cell count.  
3. Install a low speed kit (page 132). |
| Planter does not fold or unfold fully  | Fold cylinders out of phase                    | Rephase cylinders, refer to 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.                         |
|                                        | Excessive or improper row unit down pressure spring setting. | See 25 series row-units, page 77.                                      |
|                                        | Damaged seed tubes.                            | Check seed tubes for damage.                                            |
|                                        | Seed-Lok® building up with dirt.               | Lock up Seed-Lok®, page 90.                                             |
|                                        | Row-unit not penetrating low spots.            | Adjust row-unit, see instructions beginning on page 77.                 |
|                                        | Rough planting conditions.                     | Rework the field.                                                       |
|                                        | Seed firmer not in place and set to correct tension. | See “Seed Firmer Adjustments” on page 90.                              |
| Press wheel or row-units plugging      | Planting conditions too wet.                   | Wait until drier weather.                                               |
|                                        | Too much pressure on row-units.               | Reduce down pressure on row-units.                                      |
|                                        | Coulters set too deep, bring up excess dirt and moisture. | Check coulter adjustment.                                               |
|                                        | Planter not set to run level from front to rear. | Check tongue height page 23                                             |
|                                        | Backed up with product in the ground.          | Clean out and check for damage.                                         |
|                                        | Failed disc bearings.                          | Replace disc bearings.                                                  |
|                                        | Disc blades worn.                              | Replace disc blades.                                                    |
|                                        | Scraper worn or damaged. Side depth wheels not set correctly. | Adjust side depth wheels page.                                         |
## General Troubleshooting

<table>
<thead>
<tr>
<th>Problem</th>
<th>Cause</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Row-unit discs not turning freely</strong></td>
<td>Row-unit plugged with dirt. Clean row-unit.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Planting conditions too wet. Wait until drier weather.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Incorrect side depth wheel adjustment See “Side Gauge Wheel Adjustment” on page 82.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Seed-Lok® is plugging row-unit. Lock up Seed-Lok®, page 90.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Failed disc bearings. Replace disc bearings.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Bent or twisted row-unit frame. Replace row-unit frame.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Partially plugged row-unit seed tube. Lift up product, expose bottom of seed tube and clean out.</td>
<td></td>
</tr>
<tr>
<td><strong>Press wheels not compacting the soil as desired.</strong></td>
<td>Incorrect spring handle setting See “Press Wheel Adjustment” on page 91.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Insufficient row unit down-force See “Row Unit Down Pressure” on page 77.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Use of incorrectly shaped tire for your conditions. 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>
<td></td>
</tr>
<tr>
<td></td>
<td>Not level front to rear. Check tongue height.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Wheel stagger needs adjustment for conditions See “Press Wheel Adjustment” on page 91.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Too wet or cloddy Wait until drier weather or rework ground.</td>
<td></td>
</tr>
<tr>
<td><strong>Seed blowing out of bulk box door area</strong></td>
<td>Fan too fast. Slow down fan.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Seal from airbox to hopper damaged or not adjusted. Inspect and adjust seal. Seal should be intact, and compress to about 1/2 inch (13 mm) under seed container.</td>
<td></td>
</tr>
<tr>
<td><strong>Air lines plugging between air box and Y splitters</strong></td>
<td>Fan too slow. Speed up fan.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Air leaks between air box manifold and splitters Check for leaks and correct as needed.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Improper hose routing, sags or kinks With product unfolded, hoses should for a gentle “S” shape through the holders, with no deep sags.</td>
<td></td>
</tr>
<tr>
<td><strong>Air lines plugging between Y-tube and meter</strong></td>
<td>Sag or kink in air hose. Check air tube placement in tube mount weldment. If correct, shorten any hose that has stretched due to age.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Meter is shut off but Y-tube is open. Shut off Y-tube.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Air tube assembly not positioned on correct tab. Move assembly to properly position Y-tubes over row meters.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sag in air hose due to incorrect frame height Raise or lower the tongue so center portion of frame is level with gauge wheel area.</td>
<td></td>
</tr>
<tr>
<td><strong>Hydraulic marker functioning improperly, or not at all</strong></td>
<td>Marker/Fold switch set to Fold. CFM Switch must be set to “Marker”. Set tractor remote circuit to Neutral or Float before operating switch.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Marker/Aux valve set to Aux On a product with optional Auxiliary Hydraulics, selector valve must be set to Marker for markers to function. Set tractor remote circuit to Neutral or Float before changing valve.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Air or oil leaks in hose fittings or connections. Check all hose fittings and connections for air or oil leaks.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Low tractor hydraulic oil level. Check tractor hydraulic oil level.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Loose or missing bolts or fasteners. Check all bolts and fasteners.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Needle valve(s) in sequence valve plugged. Open needle valves, cycle markers slowly and reset needle valves, refer to page 164.</td>
<td></td>
</tr>
<tr>
<td><strong>Marker disk does not mark</strong></td>
<td>Marker folding linkage does not have enough slack to allow marker disk to drop into field depressions. Maximum down float should be limited by the slot at the rod end of the marker cylinder, refer to page 161.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Reverse marker disk to pull or throw dirt.</td>
</tr>
</tbody>
</table>
## General Troubleshooting

<table>
<thead>
<tr>
<th>Problem</th>
<th>Cause</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Auxiliary Hydraulics Inoperative</strong></td>
<td>Marker/Fold switch set to Fold</td>
<td>CFM Switch must be set to “Marker” for Aux to function. Set tractor remote circuit to Neutral or Float before switching.</td>
</tr>
<tr>
<td></td>
<td>Marker/Aux valve set to Marker</td>
<td>Selector valve must be set to Aux. Set tractor remote circuit to Neutral or Float before changing valve.</td>
</tr>
<tr>
<td><strong>Hydraulic Hitch Won’t Stay Raised</strong></td>
<td>Bypass valve is open at hitch</td>
<td>Close valve.</td>
</tr>
<tr>
<td><strong>Speed Reading Doesn’t Match Tractor</strong></td>
<td>Monitor speed reading will only match tractor with implement name lowered</td>
<td>If speeds don’t agree during planting (with implement name lowered), re-calibrate radar speed sensor with implement name lowered. See page 162.</td>
</tr>
</tbody>
</table>
Maintenance and Lubrication

Maintenance

Proper servicing and maintenance is the key to long implement life. With careful and systematic inspection, you can avoid costly maintenance, downtime, and repair. Always turn off and remove the tractor key before making any adjustments or performing any maintenance.

**WARNING**

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

**WARNING**

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

1. After using your product for several hours, check all bolts to be sure they are tight.
2. Remove excess slack from chains. Clean and use chain lube on all roller chains as needed.
3. Maintain proper air pressure in product tires.
4. Keep disc scrapers properly adjusted.
5. Clean product on a regular basis. Regular and thorough cleaning will lengthen equipment life and reduce maintenance and repair.
6. Lubricate areas listed under “Lubrication” on page 120.
7. Replace any worn, damaged, or illegible safety labels by obtaining new labels from your Great Plains dealer.
Material Clean-Out

When planting is completed, it is commonly the case that some seed remains. There may be seed in the hopper or bulk box, seed in the airbox, a small amount of seed in the hose lines, and seed in the meters. Some meters may be filled up to the air release vent (which prevents additional seed from reaching that meter).

A complete system clean-out is a 3 step process.
A. Empty airbox (and hopper, if desired).
B. Blow residual seed to meters.
C. Clean out meters with fan running.

**WARNING**

Entrapment and Rapid Suffocation Hazard:
Never enter a hopper for any reason.
Keep strainer in place at all times.

▲ A hopper that is full or merely appears full can be an entrapment hazard. You can sink entirely into the grain, or into an oxygen-deficient void, and suffocate in a matter of seconds. Grain bridges and crusts are especially dangerous.

▲ When hazardous fumes are present, you can be quickly overcome even with the hopper lid open.

▲ Do not enter a hopper for material loading, material unloading, hopper cleaning or meter maintenance.

▲ Clean hopper by power washing from outside hopper top.

**CAUTION**

Possible Dust and Chemical Fume Hazard:
Wear a respirator, and any other protective equipment specified by the seed and/or seed treatment supplier. Expect dust and fumes during hopper clean-out.

Air Box Material Clean-Out

1. Place a tarp or large container under the air box clean-out doors.

Refer to Figure 114

2. Close the slide gates ① on the hopper or bulk box.

3. Open air box clean-out doors.

4. If hoppers are mounted, gradually open hopper slide gates. Leave bulk seed box gates closed, unless the boxes actually need to be emptied.

Use gates to regulate seed flow while recovering seed.

5. As flow subsides, rapidly open and close the slide gate to dislodge seed in the tracks. Tap on the sides of the hopper to dislodge residual seed.

Air System Clean-Out

Refer to Figure 115 (which also depicts the meter with the rain cover and disk removed - do not remove disk until step 5)

1. Close slide gates.
Close air box clean-out doors.

2. Set all seed inlet shutters to closed (handle ② fully raised to the position above setting “I”).

This step prevents meter pressurization air from leaking back against seed delivery air at meters that have low seed pools or are empty.
Refer to Figure 116

3. If the product has Y-tubes, shut off the gates at all of the Y-tubes.

4. Turn on the air fan and let it run. Use the “SPLIT AIR” softkey to reduce the regulated air pressure to a low value, 1 inch water pressure or less - this diverts most of the air to the bulk seed delivery system.

Reduce fan speed as necessary to obtain a low meter pressurization.

Clean out meters with fan running. Work from one side of the implement name to the other.

Meter Clean-Out

When planting is completed, it is commonly the case that some seed remains. There may be seed in the hoppers, hose lines, and meters.

Refer to Figure 117

The product includes an 817-811C container for meter clean-out, stored in a spring-loaded holder at the right rear of the air manifold. The container can hold all the seed in the meter and inlet (up to a closed slide gate).

The container can be converted into a true funnel for complete system clean-out.

The hoppers are connected to the rows with clamped hose, and are not intended to be routinely unlatched and tipped for clean-out.

Funnel Conversion

Materials and tools needed:

- 2 a length of 1 1/2 inch I.D. hose
- 3 a worm drive clamp with a working diameter of approximately 1 1/2 to 2 1/4 inch
- b a hacksaw with fine-toothed blade

Trim the sump from the funnel. Slide the hose fully onto the funnel tip. Secure with clamp (do not over-tighten clamp, the funnel wall be crushed).

The choice of complete system clean-out process depends on whether you are using the 817-811C as a container or funnel.

---

a. The “FILL METER” function can divert all the air to seed delivery, but only does so for a short period of time (~90 seconds).
b. The funnel wall is thin ABS. Scissor-type pipe-cutting tools may fracture it. Rotary-type pipe cutting tools may slip off.
Refer to Figure 118

The container/funnel may be attached to the housing of the seed meter, freeing your hands for other tasks during clean-out. Normal use of the funnel is:

1. Close the seed inlet shutter on the meter (page 84). This minimizes the seed volume at disk removal.
2. Remove the rain cover (page 84). The funnel cannot be snapped in place with the cover installed.
3. Align the left (rear) end of the funnel lip 3 with the top of the lower (rear) cover latch ear. Place the right (front) end of the funnel lip 4 between the meter housing and the seed tube.
4. Rotate the funnel forward until the slot at lip center engages a tab on the bottom center of the meter housing.
5. Remove the seed disk (page 87).
6. Slowly open the seed shutter (page 84) to empty the seed up to the Y-tube or wing tube.
7. If the air system is running (and Y-tube open), there may be more seed than the funnel can hold (as a container). Use the shutter to turn seed flow off, and empty funnel.

Refer to Figure 119

8. Clean seed from all brushes (shop vac recommended).
10. Rotate funnel clockwise, remove and empty.
11. For imminent operations:
    Install next seed wheel or blank disk (page 88) for operations. Set inlet shutter for next seed (page 84).
12. For storage:
    Close seed inlet shutter. Leave disk out.
    Close Y-tube (if any).
13. Re-install rain cover (page 84).

Seed Tube Clean-Out

The seed sensor in the seed tube can be obscured by build-up of dust, dirt and seed treatments. This can cause false low population alarms.

The implement name includes a seed tube brush (Great Plains part number 891-259C). If the seed meter is empty, remove the seed disk and insert the brush into the seed tube 5 from above. With the implement name raised, you can also insert the brush from below, whether the meter is empty or not.

Alternate Meter Clean-Out

To use a shop vacuum cleaner, with narrow hose nozzle, to clean out a meter:

- Close the seed shutter.
- Release the meter clamp, hold the disk against the meter.
- Tip the top of the disk away from the meter.
- Insert hose nozzle and remove seed.
- Open shutter to allow seeds in inlet and drop hose to flow to vac nozzle.
Air Box Residue Clean-Out

Planting in extremely dusty conditions, particularly dusty and humid conditions, or otherwise sticky soils, can lead to air residue build-up inside the airbox. This residue can cause seed delivery blockages.

Refer to Figure 120 and Figure 121 (Figure 120 depicts a partially and a completely plugged agitation port, and build-up in the RH plenum chamber)

Whenever opening the airbox clean-out door ①, inspect the agitation ports ②. If any are partially or completely blocked, follow the clean-out instructions on this page.

Seasonally, remove the inspection ports on each of the airbox, and inspect plenum chambers 1 (LH) and 16 (RH). If any build-up is observed, follow the more comprehensive inspection steps and clean-out instructions on this page.

1. Spot the implement name at a suitable location for clean-out and follow the parking instructions (page 65).
2. If seed is loaded, close the slide gate for the hopper or bulk seed box (page 105).
3. Set out a tarp for recovery of any expected seed still in the airbox. Open the airbox clean-out door ①.
4. Remove the inspection port covers from each end of the airbox (not shown in figures).
5. Use an indelible marker to identify the hoses on seed hose ports ① through 16. Disconnect the clamps and hoses.

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

6. Inspect the agitation ports ②. Break up any build-up. Use a hooked tool or wire to pull smaller fragments down through the ports. For larger fragments, reach in through the inspection ports or vacuum them out via those ports.
7. Inspect the entire plenum area ③ for build-up. Break up any deposits. Vacuum them out through the inspection ports.
8. From the seed hose ports ④, inspect the seed air ports ⑤. Break up any deposits. Vacuum out from clean-out door.
9. With all ports and doors still open, operate the implement name fan to blow up any remaining loose residues.
10. Reconnect the seed hoses. Reinstall the inspection port doors. Close the clean-out door.

Flushing the airbox with water is not recommended. If done, operate the fan for an extended period to completely remove any moisture prior to storage or field operations.
Meter Brush Maintenance

**CAUTION**

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

**Refer to Figure 122**

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

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

- If the tufted brushes (5) are worn/damaged, the seed “double” 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. Merely remove the seed.

- If the strip brushes (6) are worn/damaged, air pressure regulation may become unstable, or require increasing fan speed over time.

  If you find you need to exceed recommended fan rpm ranges, the regulated air system may be taking too much air due to meter leakage.

  In severe cases, seed may leak past the strip brushes, causing spikes in population. If you frequently observe seed in between the strip brushes, one or both may need replacement.

- If the seed drop brush (7) is worn/damaged, its anti-static effect may fade, which can result in “skips” due to smaller seeds failing to release, and lower populations.

  If an obvious groove is worn in the drop brush, replace it.
Meter Brush Replacement
Consult the Parts manual (ManualP #) for current replacement part numbers.

Refer to Figure 123
Tufted Brush Replacement
1. Remove and save both 10-24 hex head cap screws and Nylock nuts (not shown).
2. Remove the tufted brush assembly, and replace with new assembly.
3. Re-insert the 10-24 screws, and re-start the Nylock nuts. Carefully tighten each nut just until plate has no play under the screw heads.
4. Add a half turn to the nuts. Do not tighten fasteners to normal 10-24 torque, or the plate may fracture.

Strip Brush Replacement
Do not loosen or remove any of the three 5/16-18 cap screws retaining the brush holder.
1. Insert the flat blade of a large screwdriver into the slots of the brush holder snaps. Turn each snap clockwise to release brush holder.
2. Prepare to catch drop brush (which will fall lose). Slide brush holder left and up to free front edge from under washer. Remove brush holder.
3. Remove used strip brushes from the holder by sliding them downward out of the grooves.

Refer to Figure 124
4. Insert replacement strip brushes into grooves at holder bottom so that notched ends are at the bottom.

Refer to Figure 123
5. Check strip brush positioning with a trial re-insertion of the brush holder. The ends of the long brush must fit snugly into meter housing grooves at top and lower rear. The bottom end of the short brush must fit snugly in the lower front housing groove. If any significant force is require to re-seat the brush holder, a strip brush is likely too high or too low.
6. Relax the position of the brush holder, re-position the drop brush (see below), and re-seat the brush holder.
7. Starting with the bottom snap, swing snaps back into engagement.
Seed Disk Maintenance

Refer to Figure 125

When removing seed disks, inspect them for wear and damage. If there is any seed dust or treatment build-up in the cell pockets ①, or along the raised wiper ridges ②, clean the disks and re-inspect.

Replace disks for conditions including:

- Chips at circumference ③. These will leak air.
- Chips at edges or in sculpted surfaces of cell pockets ①. These can leak air and/or adversely affect singulation.
- Cracks over 2 inch (5 cm) long in the working face ④ of the disk, or any cracks in support webs or to an edge.
- Warping - if any part of the disk does not press firmly on the seed drop brushes (page 86) in operation, replace the disk.
- Wear - if a wiper ridge is worn away, replace the disk. If the seed pockets are worn through, or the air ports ⑤ have enlarged, replace the disk.

Cleaning and Storing Seed Disks

![Figure 125 Disk Seed Cells and Wiper](image)

**CAUTION**

Possible Chemical Hazard:

*Wear gloves when washing disks. Avoid spray. Do not wash disks where food is prepared, or where cookware or dinnerware is washed. Seed disks will have talc and graphite residue, and may have residues of hazardous seed treatments. Although the disks are dishwasher-safe, do not wash them in an appliance also used for food preparation or food serving items.*

*Use warm or hot water, mild soap, and a sponge or soft brush to remove build-up.*

*If disks are washed, allow them to dry completely prior to storage.*

*Retain original shipping cartons for disk storage. Otherwise, store them on edge (and 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.*
Hydraulic System

**WARNING**

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

*Only trained personnel should work on system hydraulics!*

**Hydraulic Drive Maintenance**

As with any hydraulic system, contamination is the most common cause of performance problems and pre-mature wear. *Make a special effort to properly clean quick couplers prior to attaching the hoses to tractor.*

Filter: All fluid is filtered through the high pressure filter (p/n 18574) and it provides protection to the hydraulic components of your drive if properly maintained. It is equipped with a pop-out indicator to alert that the replaceable element is clogged, and should be changed immediately if this situation occurs. Normal service life of the element will vary based on the precautions that you take to minimize contamination at the couplers and routine service of the tractor filtration.

**To change the element:**

*Refer to Figure 126*
1. Un-screw lower canister from filter, catching and disposing of used fluid.
2. Remove and discard element.
3. Install new element (p/n 19856)
4. Clean canister threads and lube O-ring with hydraulic fluid, then re-install.

*Refer to Figure 127*
5. Re-set pop-out indicator if necessary.

It is a good idea to keep a filter element on hand, and Great Plains recommends changing filters annually, if not more often.

*Between planting seasons, store cab console inside in a relatively stable and dry environment.*

*Avoid direct spray from high pressure washers on the motor encoder and the external controller box. These units are sealed from normal moisture, but high pressure could inject water into the housing.*

*Keep electrical connects free from dirt and grease. It’s a good idea to occasionally spray the terminals with contact cleaner to ensure proper connection.*
Marker Maintenance

Marker Shear Bolt Replacement

Refer to Figure 128

If a marker gets caught or hits an obstruction, it is designed to fail a shear bolt at the fold, pivot on a pin, and swing back.

The shear bolt is a hex head cap screw, $^{1/2}-13\times 2^{1/2}$ inch Grade 5, Great Plains part number 802-130C, plus a $^{1/2}-13$ lock nut, Great Plains part number 803-019C.

Install a replacement shear bolt on the vertical faces on the side opposite from the pivot bolt. Do not use a higher grade bolt, or marker hang-ups may result in machine damage. Do not use a lower grade bolt, or you may experience nuisance shears.

Marker Grease Seal Cap

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

Wing Leveling

Center Section Level Check

Vertical height and side-to-side level of the center section cannot be adjusted, but needs to be verified before checking/adjusting the wings. Soil accumulation on the wheels, for example, can cause the center section to tilt.

Refer to Figure 13 on page 113 (which depicts product on a paved surface - actual measurement must be with rows pulled forward in soil)

1. Measure the elevation of both left and right sides of the product center section, at the ends of the center section tool bar.

Wing Leveling

Wing leveling check/adjustment is required prior to first use of the YP4025A-48TR20 product, and periodically thereafter, for example, if soil conditions change dramatically.

Refer to Figure 129 (which depicts product on a paved surface - actual measurement must be with rows pulled forward in soil)

2. Measure the outside ends of each wing section. This should be the same as measured at step 1 above.

See page 113 for adjustments.
Wing Leveling, Inboard End

Wing leveling check/adjustment is required prior to first use of the implement name, and periodically thereafter, for example, if soil conditions change dramatically.

Before performing this operation:

- Lower unfolded product in soil. Pull forward until gauge and caster wheels are in normal planting position.
- Row unit coulter/planting depths, and row unit down-pressures must all be equal.
- Check center section height and level (page 23).

Refer to Figure 130

1. Measure the height of the inboard end of each wing, directly under the wing flex pivot.
2. Compare this height to that of the center section obtained at step 1 on page 113.
3. If the heights differ by more than 1 inch (2.5 cm), check them again after leveling the wing ends. If they still differ, the thrust washers in the wing pivots may be worn and in need of replacement.

Any unevenness in ground that tilts the wings or center section causes the inner wing ends to move up or down slightly with respect to the center frame.

Wing Leveling, Outboard End

Refer to Figure 129 on page 113 and Figure 131

1. Measure from the bottom of the wing tool bar to the ground at the outer end of each wing.
2. Compare to the measurement at the outer end of the center tool bar, at the wing pivot location. All measurements should be identical, and close to 26 inch (66 cm).
3. If measurements do not match, loosen upper gauge wheel jam nut ①, and adjust eyebolt link length with adjuster nut ②.
4. If adjustments are needed on either side, re-check the other side after each adjustment, and re-adjust it as needed.
5. Once level, tighten the lock nut ①.
Wing Alignment

To check and adjust wing alignment:


2. Set tongue height (page 23).
   Lower product. Pull forward.

Refer to Figure 132 and Figure 133

3. Select a common reference point that is easy to access at the wing-end and center section end row units, such as the back of the press wheel assembly 5. On a twin-row product, align using only the rear units.

4. Check for proper alignment by running a string line across back of product toward outer ends of wings. For proper alignment, outside ends of wings 6 should be 0-to-\(\frac{1}{4}\) inch (0-to-6 mm) ahead of inside ends of wings at center section 7.

5. To adjust wing alignment, shorten or lengthen eye bolts 8 to change the length of the wing pull bar. Adjust eye bolts in or out until dimension 6 is 0 to \(\frac{1}{4}\) inch (0-to-6.4 mm) greater than dimension 7.

6. Be sure both wings are adjusted equally or the product will tend to pull sideways behind the tractor. Measure length of both pull bars, pin to pin, and set the same.
Chain Maintenance

Inspect and lubricate chains regularly. The slack of new chains tends to increase during the first few hours of operation due to seating.

See also “Chain Routing” on page 154.

Chain Slack

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

Refer to Figure 134, which, for clarity, greatly exaggerates slack, and omits the idlers.

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:
   Long chains (over 36 inch/91 cm): 1/4 inch per foot
   Vertical short chains: 1/4 inch per foot (2.1 cm/m)
   Horizontal short chains: 1/2 inch per foot (4.2 cm/m).

3. Measure the current slack 2:
   Acting 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.

Chain Clips

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

Refer to Figure 135 (arrow shows chain direction)

Install clip with open end facing away from direction of chain travel (shown by gray or striped arrows in chain routing diagrams).

Meter Drive Chain

Refer to Figure 136 (which depicts product raised)

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

When performing seasonal checks, lower product to put chain at minimum idler spring tension.

Check that idler spring length 3, measured from outside of pin to outside of pin, is not shorter than:
   7.0 inch (17.8 cm)

Lift spring off idler assembly 4. Check that idler assembly pivots freely. Re-attach spring.

Check chain clip orientation. Check chain routing at shank idler(s) 5 (see page 156).
Spreaders and Scrapers

Applies to all row unit Series.

Refer to Figure 137

1. Remove side gauge wheels from arms to access row-unit discs and scrapers.
2. With the unit raised, check blade spreader for wear. Replace spreader if it is \(\frac{1}{2}\) inch (13 mm) wide or narrower. To replace, remove disc blades, drive out roll pins, and install new spreader.
3. When reinstalling disc blades, put two shims between bearing and shank on each blade. Tighten bolts.
4. Check amount of contact between blades, and adjust number of shims as needed. Store extra shims on outside of blade. See “Opener Disc Contact Region” on page 81.
5. Check that outside disc scrapers are formed to disc blades to help remove any mud. Bend/twist scrapers to fit blades as needed. Every 200 acres of operation, check outside scrapers for adjustment and wear. Replace outside scrapers as necessary.

Row-Unit Side Wheels

Refer to Figure 138

1. Lift opener side wheel off the ground. Move tire in and out to check for end play. Check for roughness in bearing by rotating wheel. If bearings are rough, inspect and replace if necessary.
2. Side wheels are preset at the factory. Due to normal wear it may become necessary to make adjustments so the wheel remains close to the disc. To prevent plugging, loosen clamp bolt and slide arm inward to take up gap between side wheel and disc blade. If more adjustment is needed, go to step 3.
3. Remove bolt and wheel. Remove shims from the inside of wheel and place them on the outside of wheel. Always place removed shims from the inside to the outside. When installed, wheel should turn freely and not hit the arm at the curve. Do not add any more shims than necessary.
4. Disassemble side gauge wheel arm from unit. Remove bushing from sleeve and check for wear. If necessary, replace bushing.
5. When reinstalling side gauge wheels, align tab on hex adjustment with notch in bushing. Replace bolt and tighten.
6. Adjust side gauge wheels. Refer to see “Side Gauge Wheel Adjustment” on page 82.

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

Sharp Object Hazard:
Be careful when working in this area. Disc edges are sharp.
Seed Flap Replacement

Refer to Figure 139

To replace an 816-302C seed flap use a needle nose pliers or similar tool to grasp “T” top of flap. Pull upward to pull flap up out of metal bracket.

Push new seed flap down through metal bracket until flap snaps into place with “T” top resting on top of bracket.

Hopper Strap Maintenance (Option)

This applies only to the 150 bushel hopper. The 82 bushel hopper and bulk seed boxes have no straps.

Refer to Figure 140

A new 150 bu. hopper requires periodic attention to the hopper strap, as the hopper initially seats, and thereafter due to continued hopper seating and strap stretching.

Check tension before and after filling the hopper, and periodically during the first season. Seasonally check tension and inspect the strap for wear and damage. Replace if frayed or torn.

To tension:
1. Choose one end of the strap to work with (both ends are adjustable).
2. Loosen the tensioning nut and back it off until flush with the top of the bolt threads.
3. Cinch the strap to remove all slack.
4. Fully tighten the tensioning nut.
Fertilizer System Maintenance

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

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

1. Flush entire system with clean water.
2. Remove end caps from booms and flush booms out with water. Drain and replace end caps.
3. Remove strainer and drain it out. Drain all lines and tanks completely to prevent freezing damage.
5. Wash all spilled fertilizer off the product.

Liquid Fertilizer Strainer

Refer to Figure 141

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

Disassemble and clean the strainer prior to storage to prevent caking.

In Season Filter Cleaning

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

End of Season Filter Cleaning

1. Load 10 to 15 gallons (40 to 60 liters) of clean water in each supply tank.
2. Pump most of it 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 valves open, remove the canister. Clean strainer and canister.
4. Drain tanks and lines. Remove boom end-caps to drain wings.
5. Re-install strainer and canister.
6. Add 2 pints (1 liter) of RV antifreeze to each tank. Pump until tank is just empty (which leaves some fluid in strainer).
7. Open supply line above pump inlet. Introduce RV antifreeze, and operate pump until pump is filled.

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

Equipment Damage Risk:
Do not leave fertilizer or fertilizer residue in pump. Do not allow air to enter pump. Even for short periods of storage, the entrance of air into the pump causes RAPID and SEVERE CORROSION.
### Lubrication

#### Wing Caster: Parallel Arms

<table>
<thead>
<tr>
<th>![lubrication_icon]</th>
<th>8</th>
</tr>
</thead>
</table>

One zerk each end of each arm, each wing; 8 total

Type of Lubrication: Grease

Quantity: Until Grease emerges

#### Wing Casters: Lift Cylinder Ends

<table>
<thead>
<tr>
<th>![lubrication_icon]</th>
<th>8</th>
</tr>
</thead>
</table>

One zerk at rod end of each cylinder, each wing; 2 total

Type of Lubrication: Grease

Quantity: Until Grease emerges

#### Wing Caster Wing Pivot

<table>
<thead>
<tr>
<th>![lubrication_icon]</th>
<th>8</th>
</tr>
</thead>
</table>

One zerk each of 2 casters; 2 total

Type of Lubrication: Grease

Quantity: Until grease emerges

- Zerk is located on the left side of the pivot tube on both wings. This is to the outside on the left (shown with caster assembly dismounted), and to the inside on the right.
Wing Frames

Two zerks; one each wing at wing-frame to tool bar joint
Type of Lubrication: Grease
Quantity: Until grease emerges

Rockshaft to Main Frame

One zerk each side; 2 total
Type of Lubrication: Grease
Quantity: Until grease emerges

Rockshaft to Axle Link Arm

Two zerks; pin outside end, each link
Type of Lubrication: Grease
Quantity: Until grease emerges
Lift Cylinders: Rod End

Two zerkos, one each inside end of pins, each side  
Type of Lubrication: Grease  
Quantity: Until grease emerges

Level Link, Front End

One zerk each link; 2 total  
Type of Lubrication: Grease  
Quantity: Until grease emerges

Mainframe to Rear Sub-Frame

One zerk each side; 2 total  
Type of Lubrication: Grease  
Quantity: Until grease emerges
Rear Sub-Frame to Rear Axle

One zerk each side; 2 total
Type of Lubrication: Grease
Quantity: Until grease emerges

Axle Link: Aft End

One zerk each link; 2 total
Type of Lubrication: Grease
Quantity: Until grease emerges

Level Link, Aft End

One zerk each link; 2 total
Type of Lubrication: Grease
Quantity: Until grease emerges
Rear Caster Wheel Pivot

| 8 |

One zerk each of 2 casters; 2 total
Type of Lubrication: Grease
Quantity: Until grease emerges

Opener Side Wheel Bushing

| 8 |

On both sides of each row-unit
Type of Lubrication: Grease
Quantity: Until grease emerges

Marker Joints

| 8 |

Four zerks each marker, each wing; 4 total
Type of Lubrication: Grease
Quantity: Until Grease emerges
150 Bu. Hopper Straps (Option)

| 0, 8, 50 |

One strap each hopper

See “Hopper Strap Maintenance (Option)” on page 118 for inspection intervals and adjustment.

Hydraulic Drive Chains

| As Required |

Four chains in mainframe center section

Type of Lubrication: Chain Lube

Quantity = Coat thoroughly

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

To avoid clutch slippage, prevent chain lube from getting on electric clutches.

Wing Drives

| As Required |

One chain each wing

Type of Lubrication: Chain Lube

Quantity = Coat thoroughly

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

To avoid clutch slippage, prevent chain lube from getting on electric clutches.
**Meter Drive Chains**

<table>
<thead>
<tr>
<th>As Required</th>
</tr>
</thead>
<tbody>
<tr>
<td>One chain each meter</td>
</tr>
<tr>
<td>Type of Lubrication: Chain Lube</td>
</tr>
<tr>
<td>Quantity = Coat thoroughly</td>
</tr>
</tbody>
</table>

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

**Hitch Parallel Arms**

<table>
<thead>
<tr>
<th>50</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Hydraulic Tongue only)</td>
</tr>
<tr>
<td>Four zerks; 1 each end of each arm</td>
</tr>
<tr>
<td>Type of Lubrication: Grease</td>
</tr>
<tr>
<td>Quantity: Until grease emerges</td>
</tr>
</tbody>
</table>

**Tongue Latch**

<table>
<thead>
<tr>
<th>50</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of Lubrication: Spray lube</td>
</tr>
<tr>
<td>Quantity: Coat working surfaces</td>
</tr>
</tbody>
</table>

**Tongue Slide Roller**

<table>
<thead>
<tr>
<th>50</th>
</tr>
</thead>
<tbody>
<tr>
<td>One zerk; roller end</td>
</tr>
<tr>
<td>Type of Lubrication: Grease</td>
</tr>
<tr>
<td>Quantity: Until grease emerges</td>
</tr>
</tbody>
</table>
Wing Caster Wheel Pivot

One zerk each of 2 casters; 2 total
Type of Lubrication: Grease
Quantity: Until grease emerges

It may be necessary to unfold the product, place the wing caster locks in FIELD configuration, and move the product a short distance to engage the lock, and move the indicator arm down enough to provide access to the zerk.

Wing Transfer Drive Shafts

Eight zerks, 4 each side; 2 two each outer shaft sleeve 2 one each of 2 universal joints
Type of lubrication: Grease
Quantity = Until grease emerges (joints)
Quantity = 6 pumps (shafts)

Airbox: Plenum and Ports

One clean-out door, 2 inspection ports, 16 hose ports
Type of Maintenance: Inspection
Action: Remove any debris build-up
See “Air Box Residue Clean-Out” on page 108.
Wing Casters: Wheel Hubs

<table>
<thead>
<tr>
<th>Seasonal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Four bearings; 2 each wing</td>
</tr>
<tr>
<td>Type of Lubrication: Grease</td>
</tr>
<tr>
<td>Quantity: Re-pack</td>
</tr>
</tbody>
</table>

Markers: Disk Hub

<table>
<thead>
<tr>
<th>Seasonal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Four bearings; 2 each marker</td>
</tr>
<tr>
<td>Type of Lubrication: Grease</td>
</tr>
<tr>
<td>Quantity: Re-pack</td>
</tr>
</tbody>
</table>

Transport Wheels: Wheel Hubs

<table>
<thead>
<tr>
<th>Seasonal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eight bearings; 2 each of 4 wheels</td>
</tr>
<tr>
<td>Type of Lubrication: Grease</td>
</tr>
<tr>
<td>Quantity: Re-pack</td>
</tr>
</tbody>
</table>
Gauge Wheel Bearings

Seasonal

Four bearings, 2 each side
Type of Lubrication: Grease
Quantity = Re-pack
Seed Lubricants
To maximize performance of Great Plains metering systems, it is imperative to use “Ezee Glide Plus” or Bayer Seed Fluency Agent.

Ezee Glide Plus Talc+Graphite Mix
821-069C bucket, 5 gallon (19 liter)

Ezee Glide Plus Lubricant
“Ezee Glide Plus” 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 of Ezee Glide Plus Talc per 4 bushels or units (170 ml per 100 liters) of seed.

For milo, cotton, and sunflowers double the application to one cup (or more) per 2 bushels or units (335 ml per 100 liters) of seed.

For canola or mustard, 1 cup (240 ml) per 30 pound (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 this rate 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.

CAUTION
Irritation and Chronic Exposure Hazard:
Wear gloves. DO NOT use hands or any part of your body to mix seed lubricant. Wear a respirator when transferring and mixing. Avoid breathing lubricant dust. Not an acute hazard. May cause mechanical eye or skin irritation in high concentrations. As with all mineral spills, minimize dusting during clean-up. Prolonged inhalation may cause lung injury. Product can become slippery when wet.

Bayer Seed Fluency Agent
821-074C Fluency Powder, case quantity
821-075C Fluency Powder, single 4.4 pound bucket

This agent is required by regulation for certain crops in certain regions (such as corn and soybean 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 affixed to the bucket for recommended usage. Do not exceed those recommendations, as excess amounts adversely affect accurate metering.

CAUTION
Dust and Explosion Hazard:
Avoid exposure to dust when mixing this powder into seed. Avoid creating dust in any confined space with ignition sources present, as specific concentrations can be explosive. Consult the instruction booklet and SDSa for further cautions.

a. SDS: Safety Data Sheet, formerly Material Safety Data Sheet (MSDS).
Options

Hydraulic Tongue

A 3-point hitch is standard on the YP4025A-48TR20, but a hydraulic tongue may be substituted.

<table>
<thead>
<tr>
<th>Option Packages</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Factory-Installed</td>
<td>401-482A</td>
</tr>
<tr>
<td>Field-Installed</td>
<td>401-483A</td>
</tr>
</tbody>
</table>

See page 20 for operation.

Weight Transfer System

This option provides two cylinders and a control valve that transfer up to 1000 pounds (450 kg) of mainframe weight to each wing.

<table>
<thead>
<tr>
<th>Option Package</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>YP40/44 WEIGHT TRANSFER</td>
<td>411-172A</td>
</tr>
</tbody>
</table>

This option is factory-installed if ordered with the implement name (feature code 70). See page 48 for operation.

PTO Pump Kits

For tractors lacking a sufficient number of remotes with adequate continuous oil flow capability, kits are available to operate the fan(s) optionally the hydraulic seed drive motor, via mechanical Power Take-Off (PTO).

A 1000 rpm PTO is required with either:

- 1 3/4 inch (44.5 mm) 20-spline shaft, or
- 1 5/8 inch (35 mm) 21-spline shaft

Order one kit and one coupler.

<table>
<thead>
<tr>
<th>Kits and Couplers</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>YP40 PTO KIT</td>
<td>401-946A</td>
</tr>
<tr>
<td>For model Product #</td>
<td></td>
</tr>
<tr>
<td>1 3/4-20 PTO COUPLER</td>
<td>826-777C</td>
</tr>
<tr>
<td>1 3/8-21 PTO COUPLER</td>
<td>826-778C</td>
</tr>
</tbody>
</table>

Operation and installation of the PTO kits is described in manual 411-015M, included with each kit.
Low Speed Kit

Combinations of narrow row spacings, high cell count or fingers per revolution, low populations and/or low field speed can result in the hydraulic seed meter motor operating at an rpm too low for consistent control by the proportional valve.

If the remedies in the Troubleshooting chart (page 93) are not available, order a low speed kit to replace the standard motor output sprocket with one having fewer teeth that increases motor speed by 160%.

<table>
<thead>
<tr>
<th>Description</th>
<th>Order Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>YP30,40,44,24 LOW SPEED DRIVE</td>
<td>402-520A</td>
</tr>
</tbody>
</table>

See “402-520A Low Speed Kit Installation” on page 164.

Markers

Markers are a standard factory-installed feature on the implement name, but may be optionally deleted (line item 401-569A), for example, if all planting is done via GPS navigation.

If any possible future planting (or re-sale considerations) might require markers, do not delete them from the initial implement name order.

Trailer Hitch Weldment

This accessory provides a 20 ton pintle hook intended for use with a customer-provisioned trailing nurse cart.

<table>
<thead>
<tr>
<th>Description</th>
<th>Order Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trailer Hitch Weldment</td>
<td>401-467A</td>
</tr>
</tbody>
</table>
Fertilizer Systems

The YP4025A-48TR20 supports several supply and distribution systems for fertilizer application of one or two materials:

- on-board 400 gallon tanks (2x200 gal./1500 liters total), relying on a product-mounted hydraulic-drive pump and Type 2 manifold,
- 500 or 735 gallon (1900 or 2800 liter) semi-mounted trailing cart with available hydraulic fertilizer pump, relying on a Type 2 product boom or;
- available pintle hitch for a customer-provisioned trailing nurse tank, using a Type 2 or Type 3 boom and product-mounted hydraulic-drive pump or customer-provisioned pump.

Liquid Fertilizer Systems

One available boom (manifold) system is factory-installed if ordered with the product. A second boom is dealer- or customer-installed. All booms have the same number of outlets. Unused outlets are capped on wider row spacings.

The Type 2 boom has a single inlet, and is optimized for use with a Great Plains hydraulic drive pump. The base Type 2 system is plumbed to the on-board tanks. The 407-243A kit extends it to the rear hitch, for use with the 400 gallon tank of the PFC2000.

The Type 3 boom is separately plumbed for each of the three product sections, and relies on an off-product pump and supply manifold (which would must be provided by the trailing nurse tank cart).

Both booms include a bypass return line, which is not used with the Great Plains hydraulic drive pump.

For operations, see the Seed Rate manual.

Liquid System Configurations

Order one each (except where noted) of the parts listed for your configuration.

<table>
<thead>
<tr>
<th>Example Great Plains Material Supply Systems</th>
</tr>
</thead>
<tbody>
<tr>
<td>Delivery Systems</td>
</tr>
<tr>
<td>Boom Two</td>
</tr>
</tbody>
</table>
Liquid Fertilizer Tanks

This option includes two 200 gallon (750 liter) tanks, plumbing subsystems, and requires a separate manifold and 417-482A pump.

<table>
<thead>
<tr>
<th>Description</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>YP4025A-48TR20 Tank Kit</td>
<td>407-244A</td>
</tr>
</tbody>
</table>

For operations, see: “Air System Operation” on page 43.

Fertilizer Carts

Semi Mounted Tank

The SML-735 and SML-500 carts are semi-mounted trailing tank carts compatible with the YP4025A. These carts are intended for pre-mixed liquid fertilizers.

<table>
<thead>
<tr>
<th>Description</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>735 gallon (2800 liters)</td>
<td>SML-735</td>
</tr>
<tr>
<td>510 gallon (1900 liters)</td>
<td>SML-500</td>
</tr>
</tbody>
</table>

Unless using a customer-provisioned pump, also order a 417-489A hydraulic pump.

For operator information see the Semi-Mounted Fertilizer Carts Operator manual 407-451M.

Hydraulic Drive Fertilizer Pump

One pump kit integrates with the Type 2 fertilizer manifold system. The pump mounts on the mainframe (for use with optional implement name tanks) or on an optional SML fertilizer cart.

<table>
<thead>
<tr>
<th>Option Packages</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>YP30/40/44 HYD FERT ASSEM</td>
<td>417-482A</td>
</tr>
<tr>
<td>SML FERT CART HYD DRV</td>
<td>417-489A</td>
</tr>
</tbody>
</table>

Pump kit 417-482A is factory-installed if ordered with the implement name. Pump kit 417-489A is factory-installed if ordered with the cart.
Type 2 Fertilizer Manifold

The Type 2 system includes all plumbing from the rows, to the product-mounted hydraulic drive pump, and to the on-board 2x200 gallon tanks.

The 407-243A kit extends the inlet to the available rear pintle hitch for use with a user-provisioned nurse tank cart. This kit is not required for on-board tanks or SML carts using the Great Plains hydraulic pump.

The wing boom systems are separate for each wing.

<table>
<thead>
<tr>
<th>Description</th>
<th>Initial Order</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type 2 Fertilizer Manifold Kit</td>
<td>407-239A</td>
</tr>
<tr>
<td>Type 2 Nurse Tank Hookup</td>
<td>407-243A</td>
</tr>
</tbody>
</table>

The system does not include, and requires:

- a pump (order 417-482A or 417-489A, page 134)
- a tank system, such as the 407-244A on-board 2x200 gallon tanks (page 134), or an SML-500 or SML-735 cart.

If a user provisioned trailing nurse tank cart and user-provisioned pump is used, also order:

- 407-243A nurse tank hookup kit (above)
- a trailer hitch weldment, 401-467A (page 132).

Type 3 Fertilizer Manifold

The Type 3 system includes all plumbing from the rows to the triple bulkhead at the hitch weldment. The boom system has separate connections and sections for each product section (left, center, right), and is compatible with point-row operation.

<table>
<thead>
<tr>
<th>Description</th>
<th>Initial Order</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type 3 Fertilizer Manifold Kit</td>
<td>407-240A</td>
</tr>
</tbody>
</table>

The system does not include, and requires:

- pump, usually provided by the tank cart
- 401-467A trailer hitch weldment (page 132)
- nurse tank cart
- 3-section manifold on the nurse tank cart
Fertilizer Orifice Plates

The manifold systems include size 28, 34 and 48 plates. To order alternate 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>28*</td>
<td>832-056C</td>
<td>0.028 in</td>
<td>0.40 mm²</td>
</tr>
<tr>
<td>34*</td>
<td>832-053C</td>
<td>0.034 in</td>
<td>0.59 mm²</td>
</tr>
<tr>
<td>48*</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>

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

VeriFlow Nozzles

To eliminate the need to change orifice plates, you can replace the standard Great Plains nozzles with SprayTarget VeriFlow nozzles. These contain a spring-loaded regulator that provides consistent back-pressure over a wide range of rates and pressures. Great Plains offers two models of VeriFlow nozzles:

<table>
<thead>
<tr>
<th>Description</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>NOZZLE HI-VERIFLOW1 (0.25 to 2.8 gpm at 15 to 60 psi)</td>
<td>829-143C</td>
</tr>
<tr>
<td>NOZZLE VERIFLOW1 (0.15 to 1.5 gpm at 15 to 60 psi)</td>
<td>829-144C</td>
</tr>
</tbody>
</table>

Order one nozzle per active boom clamp.

High-Rate Dribblers

For use only with 25 Series openers.

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

<table>
<thead>
<tr>
<th>Option Packages</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fertilizer Dribbler Assembly, RH</td>
<td>204-131A</td>
</tr>
<tr>
<td>Fertilizer Dribbler Assembly, LH</td>
<td>204-132A</td>
</tr>
</tbody>
</table>
82 or 150 bu. Seed Hopper

The 82 bu. (2890 liter) hopper may be purchased with the YP4025A-48TR20 or added later.

The 150 bu. (5286 liter) hopper is incompatible with the liquid fertilizer tank system, as it occupies the space used for the tanks.

<table>
<thead>
<tr>
<th>Option Packages</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>82 bu. (2890 l.) Bulk Hopper (shown)</td>
<td>403-143K</td>
</tr>
<tr>
<td>150 bu. (5286 l.) Bulk Hopper</td>
<td>403-174K</td>
</tr>
</tbody>
</table>

The hoppers have no prerequisites on the product, but you will need a means of top-loading seed when the hopper is mounted on the seed box, such as an auger connected to the standard auxiliary hydraulic ports. These hoppers are usually too heavy to be safely fork-lifted onto the product if already pre-loaded with seed.

For operations, see:
82 bu. Hopper Operation on page 38 and

Refuge Hopper

The 10 bu. (352 liter) refuge hopper may be purchased with the YP4025A-48TR20 or added later.

<table>
<thead>
<tr>
<th>Option Packages</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yield-Pro® Refuge Hopper Kit</td>
<td>403-287A</td>
</tr>
</tbody>
</table>

You will need a means of top-loading seed when the hopper is mounted on the seed box, such as an auger connected to the standard auxiliary hydraulic ports.

For operations, see:
Refuge Hopper Operation on page 42.

If added later see installation manual 403-287M included with kit order.
Seed Lubricant

<table>
<thead>
<tr>
<th>Description</th>
<th>Order Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ezee Glide Plus Talc + Graphite Mix (5 gallon / 18.9 liter container)</td>
<td>821-069C</td>
</tr>
<tr>
<td>Fluency Powder, case quantity</td>
<td>821-074C</td>
</tr>
<tr>
<td>Fluency Powder, single 4.4 pound bucket</td>
<td>821-075C</td>
</tr>
</tbody>
</table>

For use, see “Seed Lubricants” on page 130.

USB-CANbus Adapter

This kit allows a personal computer (computer not included) to perform a monitor system (WSMT) software update (DICKEY-john® update software is provided separately on CD).

Before ordering, see if your dealer already has one.

<table>
<thead>
<tr>
<th>Description</th>
<th>Order Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>DJ INTELLIAG USB REPROGRAM ASM</td>
<td>823-364C</td>
</tr>
</tbody>
</table>

Situations that call for this kit include:

- DICKEY-john® 10 inch monitor console not available
- Non-standard CANbus console in use

The kit includes a USB to CANbus adapter, adapter-to CANbus harness, and 32-bit Windows® drivers for the USB adapter.

ยอม The computer, typically a laptop, must be running Microsoft® Windows® XP (SP2) or Vista, and have a CD (DVD or BD) reader, and have an available USB port.

This kit is not required when the standard DICKEY-john® 10 inch monitor console, with its SD card slot, is available.
Frame-Mounted Row Options
SmartBox® Mounting Kit

These kits support the mounting of AMVAC SmartBox® containers and meters above row units. SmartBox® is a delivery system for low-rate pelletized seed/row treatments.

<table>
<thead>
<tr>
<th>Planter Model</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>YP4025A-48TR20</td>
<td>403-746A</td>
</tr>
</tbody>
</table>

Mounting kits include brackets only. SmartBoxes, with additional mounting hardware specific to the YP4025A-48TR20, must be ordered from AMVAC. SmartBoxes are field-installed.
Unit-Mounted Row Options

Swath Command

Swath Command™ replaces the electric 3-section clutches with electro-pneumatic clutches at each row (at each row pair for twin row and spacings under 20 in.). The basic Swath Command™ package includes all implement hardware, all implement electronics (except GPS), and cabling to integrate with monitor CAN bus.

The row clutches are intended for automatic operation by an optional or user-provisioned controller relying on an optional or user-provisioned DGPS® receiver. Great Plains offers two models of Trimble GPS receiver.

Presently, the implement hardware and harness components are only available factory installed (initial implement name order feature code 57), and are not field-installable. Swath controller, DGPS receiver, and interface cables (below) may be purchased at any time.

Swath Command™ Controller

This DICKEY-john® A5 console supplements the standard DICKEY-john® Intellia® console, as well as some models of customer-provisioned monitors. It accepts the GPS coordinate feed, performs field mapping/data logging functions, and provides 8 channels (typically 6 sections) of clutch control. Data import/export is via SD card or USB.

The console includes a mounting bracket, but does not include a cable harness. Order one of the following:

<table>
<thead>
<tr>
<th>Description</th>
<th>Part No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>DICKEY-john® console</td>
<td></td>
</tr>
<tr>
<td>A5 HARNESS INTELLIA® SYSTEMS</td>
<td>467980458</td>
</tr>
<tr>
<td>John Deere Greenstar™ 2 (order all)</td>
<td></td>
</tr>
<tr>
<td>DJ INTELLIA® GS2 ADAPTER</td>
<td>467980336</td>
</tr>
<tr>
<td>A5 HARNESS FOR NON INTELLIA®</td>
<td>467980337</td>
</tr>
<tr>
<td>John Deere Starfire GPS</td>
<td></td>
</tr>
<tr>
<td>DJ HARNS STARFIRE GPS INTERFAC</td>
<td>467980460</td>
</tr>
<tr>
<td>AGCO GTA Console II</td>
<td></td>
</tr>
<tr>
<td>A5 HARNESS FOR NON INTELLIA®</td>
<td>467980337</td>
</tr>
</tbody>
</table>

a. The GPS receiver must update at 5 Hz or faster. Augmented precision needs to be below one row space, and may need to be below 1 inch (2.5 cm) depending on requirements to precisely align passes for auto-steer, Swath Command™ or with other operations, such as treatments, irrigation and harvesting.

b. A customer-provisioned GPS receiver must provide an NMEA 0183 RS-232 connection, or an ISO 11783 (CAN bus) connection.
Row-Pro™
Row-Pro™ adds a pneumatic cylinder to each row unit, supplement the down-pressure springs. Under control of the DICKEY-john® IntelliAg® seed monitor, the included air system make real-time adjustments to row down force. This has several benefits:

- consistent down-force in varying field conditions;
- the ability to set force levels anywhere in the row's range (and not just at cam notch values); and,
- the ability to vary the force from the tractor cab (by about one cam notch: ±50 pounds, ±23 kg).

No need to stop and manually reset all 24 cams. Row-Pro™ is presently available only as a factory-installed option with the original product order.

### Lock-Up Pins
If rows are shut off, you can reduce unnecessary wear on the unused row units by locking them up. Order one per row unit locked-up.

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

See “Row Unit Shut-Off” on page 88.

### Unit-Mounted Disc Coulters
Optional unit-mount disc coulters are available with 15 inch (38.1 cm) fluted blades or 15 inch turbo blades. If you need complete coulters, with unit mount and blade, the selection includes:

<table>
<thead>
<tr>
<th>Description</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>15 inch Fluted Packages</td>
<td>YP4025A-4810</td>
</tr>
<tr>
<td></td>
<td>204-629A</td>
</tr>
<tr>
<td>15 inch Turbo Packages</td>
<td>YP4025A-4810</td>
</tr>
<tr>
<td></td>
<td>204-630A</td>
</tr>
</tbody>
</table>
Coulter Blades
Replacement and alternate coulter blades include (qty. 1 per row unit):

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

For operations, see: “Unit-Mount Coulter Adjustments” on page 79.

Gauge Wheel Scrapers
When planting in moist or sticky soils, these scrapers are useful in preventing build-up that might otherwise result in shallow planting.

Order one part per wheel (2 per opener).

<table>
<thead>
<tr>
<th>Wheel Scrapers</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 1/2 inch (6.4 cm) scraper</td>
<td>404-194D</td>
</tr>
<tr>
<td>3 inch (7.6 cm) scraper</td>
<td>404-195D</td>
</tr>
<tr>
<td>4 inch (10.2 cm) scraper</td>
<td>404-196D</td>
</tr>
</tbody>
</table>

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

For operations, see: “Adjusting Gauge Wheel Scrapers” on page 83.

Inside Disc Scrapers
When planting in moist or sticky soils, these scrapers are useful in preventing build-up that might otherwise impair opener disc performance.

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

This scraper cannot be used with Seed-Lok® seed firmers installed. It is compatible with seed flaps and optional Keeton® seed firmers.

See page 163 for scraper installation. The spring-loaded carbide scraper requires no adjustment.
Seed Meter Disks

Air-Pro® meters accept a variety of seed disks, each optimized for specific seeds, plus a special blank disk for row shut-off. Disks are simple to change. Choices include:

<table>
<thead>
<tr>
<th>Meter Disks</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blank, 0 Cell</td>
<td>817-841C</td>
</tr>
<tr>
<td>Canola, 150 Cell</td>
<td>837-148C</td>
</tr>
<tr>
<td>Canola, 250 Cell</td>
<td>817-9691C</td>
</tr>
<tr>
<td>Corn, 24 Cell (Large, Flat)</td>
<td>817-836C</td>
</tr>
<tr>
<td>Corn, 24 Cell (Large, Round)</td>
<td>817-794C</td>
</tr>
<tr>
<td>Corn, 24 Cell (Medium)</td>
<td>837-126C</td>
</tr>
<tr>
<td>Corn, 24 Cell (Small, Round or Flat)</td>
<td>817-795C</td>
</tr>
<tr>
<td>Corn, 40 Cell (Large, Flat)</td>
<td>817-838C</td>
</tr>
<tr>
<td>Corn, 40 Cell (Large, Round)</td>
<td>817-796C</td>
</tr>
<tr>
<td>Corn, 40 Cell (Medium)</td>
<td>837-127C</td>
</tr>
<tr>
<td>Corn, 40 Cell (Small, Round or Flat)</td>
<td>817-797C</td>
</tr>
<tr>
<td>Cotton, 60 Cell</td>
<td>817-857C</td>
</tr>
<tr>
<td>Cotton, Hill Drop, 12 Cell</td>
<td>837-186C</td>
</tr>
<tr>
<td>Edible Bean, Large 56 Cell</td>
<td>817-967C</td>
</tr>
<tr>
<td>Edible Bean, Medium 60 Cell</td>
<td>837-057C</td>
</tr>
<tr>
<td>Milo, Pelletized Sugar Beet 30 Cell</td>
<td>837-849C</td>
</tr>
<tr>
<td>Milo, 130 Cell</td>
<td>817-800C</td>
</tr>
<tr>
<td>Soybeans, 84 Cell</td>
<td>817-798C</td>
</tr>
<tr>
<td>Soybeans, 168 Cell</td>
<td>403-551D</td>
</tr>
<tr>
<td>Sunflower, 24 Cell</td>
<td>817-851C</td>
</tr>
<tr>
<td>Sunflower, 60 Cell (Small)</td>
<td>837-234C</td>
</tr>
<tr>
<td>Sunflower, 60 Cell (Medium)</td>
<td>837-235C</td>
</tr>
<tr>
<td>Volumetric No. 1, 84 Cell</td>
<td>817-867C</td>
</tr>
</tbody>
</table>

For rice use the Volumetric No.1, 84 Cell meter disk, see table at left.

**NOTICE**

Rice Requires a Special Hardened Meter:
Planter model Product #R-4810 is offered specifically for planting rice. In this implement name, the Air-Pro® meter housing has a special coating that resists wear from rice. Other implement name models must have their standard Air-Pro® meters replaced with rice Air-Pro® meters. Rice planting can wear out a standard Air-Pro® meter housing within one season; such excess meter wear is not covered by warranty. A rice meter, however, may be used with any crop.
Clean-Out Container

One container is provided with the product. Order the following part for additional or replacement containers.

<table>
<thead>
<tr>
<th>Description</th>
<th>Order Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>AIR METER CLEAN OUT FUNNEL</td>
<td>817-811C</td>
</tr>
</tbody>
</table>

See “Funnel Conversion” on page 106. See “Meter Clean-Out” on page 106.

Seed Tube Brush

One brush is provided with the product. Order the following part for additional or replacement brushes.

<table>
<thead>
<tr>
<th>Description</th>
<th>Order Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>SEED TUBE CLEANER BRUSH</td>
<td>891-259C</td>
</tr>
</tbody>
</table>

See “Seed Tube Clean-Out” on page 107.

Seed Firmers

The base implement name requires a choice of row unit bundles which include one of three firmers: seed flap, Keeton®, or Seed-Lok®. Only one type of seed firmer may be installed at the same time. Order one per row.

Seed-Lok® Seed Firmer

<table>
<thead>
<tr>
<th>Description</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>25 Series Seed-Lok® kit (per opener)</td>
<td>404-093K</td>
</tr>
</tbody>
</table>

For operations, see: “Seed Firmer Adjustments” on page 90.

Keeton® Seed Firmer

The Keeton® seed firmer supports low-rate fertilizer delivery. For this use, an optional liquid fertilizer system (page 133) must also be installed.

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

For operations, see: “Seed Firmer Adjustments” on page 90.
Row Unit Press Wheels
The base Yield Pro product includes a choice of press wheels. Additional wheels are available, and all may be field-installed.

This manual does not list kit part numbers as the available wheels are often region-specific. Consult your Great Plains dealer.

For operations, see: “Press Wheel Adjustment” on page 91.
Appendix A - Reference Information

Specifications and Capacities
YP4025A-48TR20

<table>
<thead>
<tr>
<th>Specifications</th>
<th>YP4025A-48TR20</th>
</tr>
</thead>
<tbody>
<tr>
<td>Row Count</td>
<td>48 (24 twin)</td>
</tr>
<tr>
<td>Row Spacing</td>
<td>20 in.</td>
</tr>
<tr>
<td>Working Width</td>
<td>39 ft. 7 in.</td>
</tr>
<tr>
<td>Swath (Channel Width)</td>
<td>480 in.</td>
</tr>
<tr>
<td>Seed Capacity</td>
<td>Optional 82 or 150 bu hopper or PROBOX® 50 unit bulk seed container</td>
</tr>
<tr>
<td>Transport Width</td>
<td>16 ft. 4 in.</td>
</tr>
<tr>
<td>Working Length</td>
<td>34 ft. 2 in.</td>
</tr>
<tr>
<td>Transport Length</td>
<td>42 ft. 0 in.</td>
</tr>
<tr>
<td>Working Height</td>
<td>10 ft. 3 in. with 150bu hopper, 9 ft. 8 in. with 82bu hopper</td>
</tr>
<tr>
<td>Transport Height</td>
<td>12 ft. 4 in. with 150bu hopper, 11 ft. 9 in. with 82bu hopper</td>
</tr>
<tr>
<td>Transport Clearance</td>
<td>22 in</td>
</tr>
<tr>
<td>Seed Box Heights</td>
<td>Min. forklift: 4ft 2 5/8in (129 cm) lowered, 6ft 5 7/8in (198 cm) raised</td>
</tr>
<tr>
<td></td>
<td>Bulk box refill: 8ft 9 1/2in (2.68m) lowered, 11ft 3/4in (3.37m) raised</td>
</tr>
<tr>
<td></td>
<td>82bu Hopper Fill: 9ft 1/4in (2.75m) lowered, 11ft 3 1/2in (3.44m) raised</td>
</tr>
<tr>
<td></td>
<td>150bu Hopper Fill: 9ft 6 1/4in (2.9m) lowered, 11ft 9 1/2in (3.59m) raised</td>
</tr>
<tr>
<td>Tractor HP Requirement</td>
<td>410 - 480 hp</td>
</tr>
<tr>
<td>Hitch</td>
<td>3-Point, Hydraulic Tongue Optional</td>
</tr>
<tr>
<td>Hydraulic Circuits Required</td>
<td>Closed-Center, 4 Remotes, 2250 psi, 23 gal/min</td>
</tr>
<tr>
<td>Weight* (empty, base)</td>
<td>34000 lbs</td>
</tr>
<tr>
<td>Weight* (full, max.)</td>
<td>43000 lbs</td>
</tr>
<tr>
<td>Transport Tire Size</td>
<td>15-19.5 12 Ply NHS Skid Steer</td>
</tr>
<tr>
<td>Opener Down Pressure</td>
<td>235 to 475 lbs</td>
</tr>
<tr>
<td>Opener Travel (Up - Down)</td>
<td>10 in.</td>
</tr>
<tr>
<td>Opener Depth Range</td>
<td>0 to 4 in.</td>
</tr>
</tbody>
</table>

* Weight can vary by thousands of pounds depending on options installed.
# Power requirements vary significantly with conditions and practices. Add 25hp (19kW) for SML-735 cart.
Torque Values Chart

<table>
<thead>
<tr>
<th>Bolt Size</th>
<th>Bolt Head Identification</th>
<th>Class 5.8</th>
<th>Class 8.8</th>
<th>Class 10.9</th>
</tr>
</thead>
<tbody>
<tr>
<td>in-tpia</td>
<td>N-m</td>
<td>N-m</td>
<td>N-m</td>
<td>N-m</td>
</tr>
<tr>
<td>ft-lb</td>
<td>ft-lb</td>
<td>ft-lb</td>
<td>ft-lb</td>
<td>ft-lb</td>
</tr>
<tr>
<td>1/4-20</td>
<td>7.4</td>
<td>5.6</td>
<td>11</td>
<td>8</td>
</tr>
<tr>
<td>1/4-28</td>
<td>8.5</td>
<td>6</td>
<td>13</td>
<td>10</td>
</tr>
<tr>
<td>5/16-18</td>
<td>15</td>
<td>11</td>
<td>24</td>
<td>17</td>
</tr>
<tr>
<td>5/16-24</td>
<td>17</td>
<td>13</td>
<td>26</td>
<td>19</td>
</tr>
<tr>
<td>5/16-16</td>
<td>27</td>
<td>20</td>
<td>42</td>
<td>31</td>
</tr>
<tr>
<td>3/8-24</td>
<td>31</td>
<td>22</td>
<td>47</td>
<td>35</td>
</tr>
<tr>
<td>3/8-14</td>
<td>43</td>
<td>32</td>
<td>67</td>
<td>49</td>
</tr>
<tr>
<td>3/8-20</td>
<td>49</td>
<td>36</td>
<td>75</td>
<td>55</td>
</tr>
<tr>
<td>3/8-13</td>
<td>66</td>
<td>49</td>
<td>105</td>
<td>76</td>
</tr>
<tr>
<td>5/16-20</td>
<td>75</td>
<td>55</td>
<td>115</td>
<td>85</td>
</tr>
<tr>
<td>9/16-12</td>
<td>95</td>
<td>70</td>
<td>150</td>
<td>110</td>
</tr>
<tr>
<td>9/16-18</td>
<td>105</td>
<td>79</td>
<td>165</td>
<td>120</td>
</tr>
<tr>
<td>5/8-11</td>
<td>130</td>
<td>97</td>
<td>205</td>
<td>150</td>
</tr>
<tr>
<td>5/8-18</td>
<td>150</td>
<td>110</td>
<td>230</td>
<td>170</td>
</tr>
<tr>
<td>3/4-10</td>
<td>235</td>
<td>170</td>
<td>360</td>
<td>265</td>
</tr>
<tr>
<td>7/8-16</td>
<td>260</td>
<td>190</td>
<td>405</td>
<td>295</td>
</tr>
<tr>
<td>7/8-9</td>
<td>225</td>
<td>165</td>
<td>585</td>
<td>430</td>
</tr>
<tr>
<td>7/8-14</td>
<td>250</td>
<td>185</td>
<td>640</td>
<td>475</td>
</tr>
<tr>
<td>1-8</td>
<td>340</td>
<td>250</td>
<td>875</td>
<td>645</td>
</tr>
<tr>
<td>1-12</td>
<td>370</td>
<td>275</td>
<td>955</td>
<td>705</td>
</tr>
<tr>
<td>1 1/4-7</td>
<td>480</td>
<td>355</td>
<td>1080</td>
<td>795</td>
</tr>
<tr>
<td>1 1/2-12</td>
<td>540</td>
<td>395</td>
<td>1210</td>
<td>890</td>
</tr>
<tr>
<td>1 1/4-7</td>
<td>680</td>
<td>500</td>
<td>1520</td>
<td>1120</td>
</tr>
<tr>
<td>1 1/4-12</td>
<td>750</td>
<td>555</td>
<td>1680</td>
<td>1240</td>
</tr>
<tr>
<td>1 1/4-6</td>
<td>890</td>
<td>655</td>
<td>1990</td>
<td>1470</td>
</tr>
<tr>
<td>1 1/2-12</td>
<td>1010</td>
<td>745</td>
<td>2270</td>
<td>1670</td>
</tr>
<tr>
<td>1 1/2-6</td>
<td>1180</td>
<td>870</td>
<td>2640</td>
<td>1950</td>
</tr>
<tr>
<td>1 1/2-12</td>
<td>1330</td>
<td>980</td>
<td>2970</td>
<td>2190</td>
</tr>
</tbody>
</table>

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

Tire Information

<table>
<thead>
<tr>
<th>Wheel</th>
<th>Tire Size</th>
<th>Inflation</th>
<th>Torque</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transport/Caster</td>
<td>15-19.5 NHS 12 Ply Skid Steer</td>
<td>60 psi (414 kPa)</td>
<td>170 ft lb (230 N·m)</td>
</tr>
<tr>
<td>Transport/Caster</td>
<td>15-19.5 NHS 12 Ply</td>
<td>60 psi (414 kPa)</td>
<td>170 ft lb (230 N·m)</td>
</tr>
</tbody>
</table>

Tire Warranty Information

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

Manufacturer/Website
- Firestone: www.firestoneag.com
- Goodyear: www.goodyearag.com
- Titan: www.titan-intl.com
- BKT: www.bkt-tire.com
- Gleason: www.gleasonwheel.com
Hydraulic Diagrams
Fold, Marker and Auxiliary Hydraulics (Standard)
Auxiliary Hydraulics (with Markers deleted)
Fan Hydraulics (S/N B1082H-)
Fan Hydraulics (S/N B1083H+)
Hydraulic Drive (Standard)
Hydraulic Tongue (Option)

Lift Hydraulics (Standard)
Chain Routing

Legend:

- **34T**: Sprocket or idler Tooth count
- **56P**: Chain Pitch count
- **Direction of chain in motion**

Hydraulic Drive Chain Routing
Wing Drive Chain Routing
**25AP Final Meter Drive**

Legend:
- **34T**: Sprocket or idler Tooth count
- **56P**: Chain Pitch count
- **1**: Direction of chain in motion

---

**25AP: Meter Drive (Front type)**
- ① No idlers on mount.
- ① top chain passes over single idler on shank
- ② be sure to reconnect idler spring

---

**25AP: Meter Drive (Mid type)**
- ① top chain passes between 2 idlers at mount
- ② be sure to reconnect idler spring

---

**25AP: Meter Drive (Rear type)**
- ① top chain passes between 2 idlers at mount
- ② top chain passes between 2 idlers at shank
Seed Hose Routing
Mechanical Routing, Left Side
Connections, 16-Port Air Box, Left
Facing forward/left, with product folded.

48-Row: YP4025A-48TR20

<table>
<thead>
<tr>
<th>Section</th>
<th>Left Center</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air Box</td>
<td>P01</td>
</tr>
<tr>
<td>Ctr Guide</td>
<td>C1</td>
</tr>
<tr>
<td>Wing Guide</td>
<td>W1</td>
</tr>
<tr>
<td>Rack Tube</td>
<td>T1</td>
</tr>
<tr>
<td>Splitter</td>
<td>-</td>
</tr>
<tr>
<td>Y-Tube</td>
<td>-</td>
</tr>
<tr>
<td>Row Unit</td>
<td>1</td>
</tr>
</tbody>
</table>

Connections, 16-Port Air Box, Right
Facing forward/right, with product folded.

48-Row: YP4025A-48TR20

<table>
<thead>
<tr>
<th>Section</th>
<th>Right Center</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air Box</td>
<td>P09</td>
</tr>
<tr>
<td>Ctr Guide</td>
<td>-</td>
</tr>
<tr>
<td>Wing Guide</td>
<td>-</td>
</tr>
<tr>
<td>Rack Tube</td>
<td>T6</td>
</tr>
<tr>
<td>Splitter</td>
<td>-</td>
</tr>
<tr>
<td>Y-Tube</td>
<td>-</td>
</tr>
<tr>
<td>Row Unit</td>
<td>25</td>
</tr>
</tbody>
</table>
Appendix B - Initial Setup

Pre-Delivery Items
These items are normally completed by the Great Plains dealer prior to releasing the implement to the customer.

Install Upper Marker Components
Marker disks and end tubes are removed for shipping.

Refer to Figure 142
The end tube ① may be inserted into the outer marker arm ② in any of four orientations. Great Plains recommends that the spindle adjustment allow the disk to pivot back, away from the direction of travel ①.

If the markers are extended for this work, also set the initial marker extension based on the row spacing.

Refer to Figure 143
1. At each marker, select one each:
   ① marker disk and tube assembly
   ② 806-110C U-BOLT 5/8-11 X 3 1/32 X 4 1/2
   and two sets:
   ③ 803-021C NUT HEX 5/8-11 PLT
   ④ 804-022C WASHER LOCK SPRING 5/8 PLT
2. Insert the end tube ① into the outer marker arm ②. Insert to initial marker extension value, or about halfway if extension is not known. Secure with U-bolt ⑤, lock washers ② and nuts ④.

Install Press Wheels
To meet highway clearance requirements, press wheel arms and wheels on wing rows are not factory-installed.

Refer to Figure 144
1. Remove and save the 1/2-13x1 inch hex head bolt and washer ② at the back of an incomplete row unit ③.

NOTICE
There are four bolts at this location. Remove only the hex head bolts. Do not loosen or remove the square head bolts forward.
2. Remove and save the 1/2-13x1 1/2 inch hex head bolt ④, washer, and eccentric adjuster nut.
3. Align the 1/2 inch holes in the press wheel assembly with the 1/2-13 tapped holes in the row unit, loosely assemble with the 1/2-13x1 inch hex head bolt and washer ②.
4. Loosely screw in the 1/2-13x1 1/2 inch hex head bolt ④, washer, and eccentric adjuster nut. Rotate the adjuster to visually align the press wheel assembly with the row unit, and tight the adjust and both bolts.
Initial Setup

These items may not be dealer-installed or dealer pre-set unless prior arrangements have been made.

Seed Monitor Console Installation

The product’s standard seed monitor system includes a virtual terminal and switch panel that must be mounted in the tractor cab. As supplied by DICKEY-john®, the kit includes a flat bracket for the modules, and a ball swivel for mounting the bracket in the tractor.

CAUTION

Transport and Field Safety Risk:
Mount the modules so that they are easy to monitor during planting, but do not interfere with safe operation of the tractor in the field or on public roads.

The ball swivel includes four 10-32 screws. You or your dealer must provide the mounting holes for the screws. Your dealer may have alternate suction cup or clamping brackets available if you prefer to avoid drilling holes.

Refer to the included DICKEY-john® manual for harness connections.

Weight Transfer Shipping Links

When a implement name is on customer premises, and further movements will only be done with a tractor or towing vehicle having hydraulic motor return and case drain remote ports, remove the weight transfer shipping links.

1. Use a hoist or a second worker to support the weight of the outboard end of a weight transfer cylinder 🔄.
2. Remove both cotter pins and clevis pins:
   🔄 805-058C PIN COTTER 3/16 X 2
   🔄 805-396C PIN CLVS 1.0X3.13 USBL
   from each end of a shipping link:
   🔄 411-175H WT SHIP LINK
   Remove the link.
3. Swing the cylinder down. Align the clevis with the wing lug 🔄. Secure with one of the clevis pins and cotters.
4. Store the other clevis pin and cotter in the clevis end of the link. Store the link for future use.
5. Repeat step 1 through step 4 for the other wing.

To install a link, complete step 4 through step 1 in reverse order.

See page 48 for initial weight transfer setup.
Marker Extension

Prior to first use, and if row spacing is changed (including locking up row units for single-row operation on a twin-capable product), set and check where the mark is made on each side relative to the outside row units (whether in use or not).

1. Move the product to a location where both markers may be safely unfolded. Unfold the product. Lower the product. Unfold one marker.

2. Find the suggested initial marker Extension in the tables.

Refer to Figure 147 and Figure 148

3. Measure out the Extension distance from the center-line of each outside end row unit. Do not measure to center of row pair.

4. Mark the ground at this point.

5. To adjust marker width, loosen nuts on U-bolts. Move marker disk tube in or out to get the proper adjustment. Tighten nuts.

6. Repeat step 3 through step 5 for the other side.

7. With the product still lowered, drive forward a few feet for each side.

8. Check mark locations. Adjust to obtain table value.

<table>
<thead>
<tr>
<th>YP4025A-48TR20</th>
<th>Spacing Used</th>
<th>Left Extension</th>
<th>Right Extension</th>
</tr>
</thead>
<tbody>
<tr>
<td>as -48TR20</td>
<td>20 inch TR (50.8 cm TR)</td>
<td>245.8 inch (624.4 cm)</td>
<td>245.8 inch (624.4 cm)</td>
</tr>
<tr>
<td>as -2420 (1st row #2)</td>
<td>20 inch (50.8 cm)</td>
<td>237.4 inch (603.1 cm)</td>
<td>254.2 inch (645.6 cm)</td>
</tr>
<tr>
<td>as -1630 (1st row #2)</td>
<td>30 inch (76.2 cm)</td>
<td>247.4 inch (628.5 cm)</td>
<td>247.4 inch (628.5 cm)</td>
</tr>
</tbody>
</table>
Hopper Level Sensor Installation

Regardless of hopper/seed box used, the YP4025A-48TR20 implement name includes a factory-installed seed level sensor in the airbox.

If a 403-143K 82bu or 403-174K 150 bu. hopper was ordered with the product, it includes an 833-235C hopper level sensor which is not factory-installed. This sensor can provide a second, earlier, low seed level alarm.

Use of this sensor is optional, and level placement is at your discretion. To install:

1. Perform the installation before first use of the hopper. The sensor body is mounted inside the hopper. It can be dangerous to enter a hopper if it contains any seed, or has ever been used with treated seed.
2. Refer to Figure 37 on page 38, or Figure 38 on page 39 for placement elevations based on remaining hopper capacity. Great Plains suggests mounting the sensor on the lower front wall of the hopper.
3. Follow the steps in DICKEY-john® instruction sheet 11001-1126 to install the sensor.
4. Use silicone to seal the cable at the grommet, and around the grommet, to prevent air leaks which can interfere with consistent seed delivery.

After the hopper is mounted on the product, the leads connect to the “HOPPER 2” harness lead located below the hydraulic drive in the product center section.

Radar Calibration

At the first opportunity to operate the product in the field (with or without planting), the radar component of the seed monitor needs to be calibrated. The seed monitor manual describes the procedure.

⚠️ The product must be in the lowered/field position for this calibration. The angle of the sensor changes when the product is raised, and readings during planting will be incorrect if calibrated in the raised configuration.

⚠️ Due to this angle change, seed monitor speed readings will not match tractor speedometer reading during transport.
Appendix C - Option Installation

122-278S Scraper Installation

Optional carbide disc scrapers are not factory installed. Start with row 1 (left-most row unit).

- If a Keeton® seed firmer is also installed, see the Parts Manual for assembly details.
- This scraper is not compatible with Seed-Lok®.

Refer to Figure 151 and Figure 152

1. Remove one or both opener disc blades to gain safe access to the mount 1. Note the position of bushings and spacers for correct re-assembly (page 81).

2. Select one each:
   - 802-024C HHCS 3/8-16X3 GR5
   - 129BXT824 BRACKET FOR 890-929C FIRMER
   - 122-177D 10HD25 INSIDE SCRAPER MNT TUBE

   Insert the bolt (7), from the rear, through the lowest hole of the bracket (6). Place the tube (5) over the bolt.

3. Select one scraper set:
   - 890-928C 25 SER AIR DESIGN IN SCRAPER

   Place the shoulder washer (2) on bolt (7) with the larger diameter to the rear (toward bolt head). Place the left scraper blade (3) on the washer, followed by the right scraper blade (4).

4. Select one each:
   - 804-011C WASHER FLAT 3/8 USS PLT
   - 804-013C WASHER LOCK SPRING 3/8 PLT
   - 803-014C NUT HEX 3/8-16 PLT

   Place the flat washer (11) on the bolt (7), followed by the lock washer (12) and nut (9). Tighten bolt and nut to 3/8-16GR5 torque spec. Make sure blades pivot freely.

5. Select the scraper spring (5). Connect the spring between the blades, using the small top holes.

6. Select two sets:
   - 802-172C HHCS 5/16-18X2 1/2 GR5
   - 803-043C NUT HEX WHIZ 5/16-18 PLT

   Insert the scraper assembly (8) between the middle four lower square holes (7) of the opener frame. Secure with bolts (8) and whiz nuts (10).

7. Re-mount the removed disc blade.
**402-520A Low Speed Kit Installation**

See “Low Speed Kit” on page 132 for the purpose of this kit.

1. Shut off any hydraulic source that powers the hydraulic seed meter drives (dedicated remotes or PTO).

**Refer to Figure 153**

2. At the hydraulic drive motor, loosen the idler nut ➊. Slide the idler out of engagement with the existing chain ➋. Remove and save the existing chain: ➌ 136-247D CHAIN RL #60 41 PITCHES

3. Loosen the set screws securing the existing 16T sprocket ➍. Remove and save the sprocket: ➎ 808-388C SPKT 60B16 X 1 BORE W/KWAY, SS Leave the woodruff key ❼ in place.

4. Select one new 10T sprocket: ➏ 808-479C SPKT 60B10 X 1 BORE W/KWAY 2SS Install it on the motor shaft Secure it with the woodruff key and two set screws provided.

5. Select one new:
   ⑦ 136-285D CHAIN RL #60 38 PITCHES
   Consult page 116 and the directional arrows shown on the page for proper chain clip orientation. Install the new chain on the new sprocket and existing driven sprocket.

   Engage the idler for ¼ inch (2.1 cm/m) slack. Secure the idler nut ➊.

---

**NOTICE**

**Field Results Risk:**

*Do not change the sprocket ratios in the DICKEY-john® IntelliAg® hydraulic drive setup.*

---

**Figure 153**

Low Speed Kit Sprocket

---

Field Results Risk:

*Do not change the sprocket ratios in the DICKEY-john® IntelliAg® hydraulic drive setup.*
Appendix R - Row-Pro™

Preparation and Setup

Row-Pro™ Setup (Option)

The factory default setting for down-force is likely to differ from that required by your next field conditions.

Before modifying the monitor setting for down-force, determine what actual down force is ideal for the initial use of the planter. One method of determining an initial setting involves operating in the field (without seeding).

1. Set planting depth at T-handles (page 81).
2. Review unit-mount coulter depth relative to opener disc. Adjust as needed (page 79).
3. Start with the row unit down pressure springs in the lowest, or second-lowest notch (page 78).

Adjustment to the spring pressure may need to be made if the depth is reset or the closing wheel down pressure is adjusted.

4. Operate in the field for a short distance.
5. Evaluate the seed trench (page 77).
6. Adjust the springs until depth and closure are ideal. If the ideal setting seems to be in between two notch values, use the higher setting. Rows in wheel tracks may be higher still.
7. Engage the Row-Pro™ system. Set the initial target weight at 80 pounds.
8. Operate in the field. Evaluate furrow and closing. Adjust Row-Pro™ force setting for optimal results.
9. When verifying the final setting, and when planting, watch for Unable to Control alarms, which may indicate that the cams are a notch or more too high or too low.

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

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

---

a. Optionally operate the Row-Pro™ system in Monitor Only mode, and note the forces reported.
Operating Instructions

Refer to Figure 154
Row-Pro™ is a factory installed option for implements with 25-series openers that are equipped with DICKEY-john® IntelliAg®. It helps the spring down force system to maintain a user-determined, ideal weight for the side depth gauge wheels. Once the springs are set, Row-Pro™ pneumatically increases/decreases pressure on the openers.

The row units are already getting their down pressure from the springs on the parallel arms. Row-Pro only acts to vary that pressure as needed to maintain consistency in different soil conditions.

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

Refer to Figure 155
There is one valve set per opener section, located in the center of the section. It allows each section to be controlled independently.

For twin row there are two valve sets 2 per section: one for the front openers and one for the rear openers.
Row-Pro™ Components

Refer to Figure 156 and Figure 157

The main systems of Row-Pro™ consist of:

1. **An air compressor system:** one 12VDC air compressor 11 with air tank 12, two extension cables 13, and one fuse assembly 14.

2. **A load sensing system:** DPLCM (Down Pressure Load Cell Module) 15 and the load cells 16.

3. **An adjusting system:** valves 17 and air cylinders 18.

Load Cell, DPLCM and Valves

The DPLCM 15 and valves 17 are mounted together on a plate and are connected to the DICKEY-john® Row-Pro™ wiring harness 19.

Two leads on the Row-Pro™ harness each connect to a load cell 18 which is located in the opener body (see fig.162). Four leads connect to the valve sets. There is one pair (one air intake, one exhaust) for each valve.

- For single row planters:
  - There is one load cell and one valve set per each opener section located at mid section.

- For twin row planters:
  - There are two load cells and two valve sets per each opener section located on the long and short center row unit of the section.

The Row-Pro™ harness connects to the implement name’s CANbus at connector ends 20.

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

The DPLCM uses the readings from the load cell to regulate the air valves in order to increase or decrease pressure in the air cylinders.
**Row-Pro™ Air Compressor System**

**Row-Pro™ Air Compressor**

**Refer to Figure 158**

The 12VDC compressor requires both an electrical connection and a mounting location. It should be mounted in a location on the tractor or planter where most convenient. Mount where cool clean air can get to it. The battery connection is equipped with one large 60 amp spade fuse (automotive type).

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

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

The air compressor pressurizes the air tank reservoir.

**Row-Pro™ Air Tank**

**Refer to Figure 159**

An air tank is provided and mounted on the wing. Open the air tank petcock once daily to drain water accumulation.

The air tank is used in conjunction with the air valves to maintain a set pressure value for the air cylinders.

Air valves are used to increase or decrease the amount of air provided to the air cylinders.

**Row-Pro™ Air Tank Lines**

**Refer to Figure 160**

The air tank has two lines. A 3/8 inch line attaches the compressor to the air tank. A 1/4 inch line splits at a T-junction and goes to the valves while the remaining end attaches to the compressor plate where it activates the pressure switches.

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

**Row-Pro™ Air Pressure Gauge**

Row-Pro™ is designed to run at 150 psi. When the psi drops to 135 the compressor engages and builds back up to 150 psi. Duty cycle varies based on air usage.

**Check for Air Leaks**

Before going to the field check for air leaks.

1. Turn the compressor on to pressure up the primary system until it automatically shuts off. If the system loses pressure, check for leaks.
2. Use the Leak Test mode to cycle through the sections and check for leaks.
Row-Pro™ Adjustments

Refer to Figure 162

Load Cell Reading

These readings are displayed and adjusted from the IntelliAg® seed monitor console.

**Control Mode:** Auto is the normal running mode. **Manual** is used to control the valves only when the operator touches the increase or decrease icon on the work screen.

**Monitor Only:** This screen disables control, but still reports sensor feedback. From there, press the Down Pressure Diagnostic key and then press the Float Mode ON button to release all of the air from the system. Next, press the Float Mode OFF button. Stay on the Diagnostic screen and make a planting pass. Note the pressure displayed on the Diagnostic screen and then evaluate the seed trench. If the seed trench results are acceptable, use the displayed pressure as your target rate.

**Front-Rear Linked:** “Enabled” links the front and rear row units so that the same amount of pressure increase/decrease set at the screen is applied to front/rear row units. When “Disabled” - front/rear row units are not linked. Two sets of buttons appear on the screen that allow for adjustments of front and rear rates independently.

**Target Rate:** This is the desired down pressure on the side depth wheels. The target rate to be entered is the set rate (pounds) of the down force to determine how much pressure is applied. The system monitors and adjusts pressure to meet the defined rate set at this screen.

Pressure displayed on screen and target pressure both refer to the amount of weight carried by the side depth gauge wheels, and not overall row unit down pressure.

Inc/Dec: Sets the amount that the Target Rate is changed with each key press during planting operations.
**Sensitivity Adjust:** Determines how responsive the Controller is to input from the DPLCM. The range is from -10 to +10. Zero (0) is the average setting. Going below 0 decreases the reaction time. Going above 0 increases the reaction time.

**Disable Down Pressure Modules:** Modules interfacing with feedback sensors can be independently disabled so that down pressure to rear and/or front row units are not monitored or controlled. Modules that have been disabled are ignored by the system and will not report down pressure data or react to soil conditions.

(The IntelliAg® screen shows both row modules enabled ☑️. An unchecked box indicates disabled.)

If a section fails, that individual section can be turned on and off to locate the problem.

---

Refer to Figure 165

**Reset Offset Value:** Resetting Offset Values clears previous down pressure readings and resets values to zero.

1. At Main WORK SCRN press NEXT PAGE button.
2. Press MODULE CFG button.
3. At Module Configuration screen, press DPRESS SET.
4. At the Down Pressure Setting screen press OK to clear values.

**IMPORTANT:** The implement must be lifted and the implement lift switch in the up state before the OK button appears and values can be cleared.

* Make sure side depth wheels are all in the lowered position so there is no tension on the load cell. Values other than OFF or 1-6 mV may indicate stuck side depth wheels. If the reading is 0 mV, there may be a problem with load cell grounding. See “Row-Pro™ Troubleshooting”, page 178.

* **Initial Setup:** Zero out the load cell reading.
### Row-Pro™ Troubleshooting

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

### Row-Pro™ Maintenance
Check the tractor cab air filter as per manufacturer recommendation.
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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