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

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

Important Safety Information.................................................1
  Safety Decals ...................................................................6
Introduction ............................................................................11
  Models Covered ................................................................11
  Description of Unit ..........................................................11
  Intended Usage ................................................................11
  Document Family .............................................................11
  Using This Manual ..........................................................11
  Definitions ....................................................................11
  Owner Assistance ............................................................12
Preparation and Setup ...........................................................13
  Initial Setup ....................................................................13
  Post-Delivery/Seasonal Setup ..........................................13
  Pre-Planting Setup ..........................................................13
  Hitching Tractor to Drill ..................................................14
    Tractor Draw Bar Hook-Up ............................................15
    Hydraulic Hose Hookup ...............................................16
  Bleeding Hydraulic Systems ............................................18
    Bleeding Lifting Hydraulic System ..................................18
    Bleeding Folding Hydraulics ..........................................19
  Leveling Drill ..................................................................20
    Transport Wheel Adjustments for Leveling Drill ..........21
    Gauge Wheel Adjustments for Leveling Drill ..............22
  Box Alignment Adjustments ..........................................22
  Pull Bar Adjustments ......................................................22
  Drill Adjustments ...........................................................23
Operating Instructions ...........................................................24
  Pre-Start Checklist ..........................................................24
  General Notes for Field Operations ..............................25
  Folding the Drill .............................................................26
  Lifting the Drill ...............................................................27
  Unfolding the Drill ..........................................................28
  Transporting the Drill .......................................................29
  Parking ........................................................................30
  Marker Operations ..........................................................31
  Dual Marker Operations ..................................................31
  Acremeter ......................................................................31
  DataTrac Acremeter ........................................................33
  Long-Term Storage ........................................................34
Adjustments ............................................................................35
  Planting Depth Adjustments ..........................................36
    Press Wheel-Opener Linkage Depth Adjustment ..........36
    Disk Opener Spring Pressure Setting .........................36
  Marker Adjustments ........................................................37
    Folding Speed ............................................................37
    Transport Carrier ........................................................38
    Marker Chain .............................................................39
    Marker Disk Adjustment ..............................................39
    Disk Scraper Adjustments ..........................................40
    Seed-Lok® Seed Firmer Lock-Up ..................................40
Troubleshooting .....................................................................41
Maintenance and Lubrication ................................................43
  Maintenance ...................................................................43
  Seed Flap Replacement ..................................................44
  Marker Maintenance ......................................................45
  Lubrication and Scheduled Maintenance ......................46
Options ................................................................................48
Appendix A - Reference Information ....................................50
  Specifications and Capacities ........................................50
  Torque Values Chart ......................................................52
Appendix B - Assembly and Setup ........................................53
  Drill Assembly ..............................................................53
  Assembly Diagram ........................................................55
  Harness Installation (2SNG24 S/N 3509F+) (2SNG30 S/N 3974G+) ...56

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Printed in the United States of America
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.
Wear Protective Equipment

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

Avoid High Pressure Fluids

Escaping fluid under pressure can penetrate the skin, causing serious injury. This drill requires a Power-Beyond port, which is always under pressure when the tractor is running.
▲ Avoid the hazard by relieving pressure at other remotes, and shutting down tractor before connecting, disconnecting or inspecting hydraulic lines.
▲ Use a piece of paper or cardboard, NOT BODY PARTS, to check for suspected leaks.
▲ Wear protective gloves and safety glasses or goggles when working with hydraulic systems.
▲ If an accident occurs, seek immediate medical assistance from a physician familiar with this type of injury.

Use A Safety 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 specified anchor location. Allow only enough slack in chain for turns.
▲ Replace chain if any links or end fittings are broken, stretched or damaged.
▲ Do not use safety chain for towing.

Negative Tongue Weight

This drill can have positive and negative tongue weight, and it can change during planting. This poses a serious hazard during unhitching and it can work the hitch pin loose during transport. To avoid serious injury or death due to a rising hitch or road accident.
▲ Always use a leveling hitch pin.
▲ Always use the hitch provided.
▲ Always hitch before connecting hydraulics.
▲ Always lower the openers or fold the drill and install the jackstand before unhitching.
Keep Riders Off Machinery
Riders obstruct the operator’s view. Riders could be struck by foreign objects or thrown from the machine.

▲ Never allow children to operate equipment.
▲ Keep all bystanders away from machine during operation.

Use Safety 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.

Transport Machinery Safely
Maximum transport speed for implement is 20 mph (32 kph), 13 mph (22 kph) in turns. 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 drill in case of breakdown on the road.
▲ Keep clear of overhead power lines and other obstructions when transporting. Refer to transport dimensions under “Specifications and Capacities” on page 50.
▲ Do not fold or unfold the drill while the tractor is moving.
Handle Chemicals Properly
Agricultural chemicals can be dangerous. Improper use can seriously injure persons, animals, plants, soil and property.

▲ Do not use liquid treatments with drill.
▲ Read and follow chemical supplier instructions.
▲ Wear protective clothing.
▲ Handle all chemicals with care.
▲ Agricultural chemicals can be dangerous. Improper use can seriously injure persons, animals, plants, soil and property.
▲ Store or dispose of unused chemicals as specified by the chemical manufacturer.
▲ Dispose of empty chemical containers properly. By law rinsing of the used chemical container must be repeated three times. Puncture the container to prevent future use. An alternative is to jet-rinse or pressure rinse the container.
▲ Never wash out a hopper within 100 feet (30 m) of any freshwater source or in a car wash.

Shutdown and Storage
▲ Lower drill, put tractor in park, turn off engine, and remove the key.
▲ Secure drill using blocks and supports provided.
▲ Detach and store drill in an area where children normally do not play.

Tire Safety
Tire changing can be dangerous. Employ trained personnel using correct tools and equipment.

▲ When inflating tires, use a clip-on chuck and extension hose long enough for you to stand to one side—not in front of or over tire assembly. Use a safety cage if available.
▲ When removing and installing wheels, use wheel-handling equipment adequate for weight involved.
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 drill, 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 drill to cool completely.
▲ Disconnect battery ground cable (-) before servicing or adjusting electrical systems or before welding on drill.
▲ Inspect all parts. Make sure parts are in good condition and installed properly.
▲ Remove buildup of grease, oil or debris.
▲ Remove all tools and unused parts from drill before operation.

Safety At All Times

Thoroughly read and understand the instructions in this manual before operation. Read all instructions noted on the safety decals.
▲ Be familiar with all drill functions.
▲ Operate machinery from the driver’s seat only.
▲ Do not leave drill unattended with tractor engine running.
▲ Do not stand between the tractor and drill during hitching.
▲ Keep hands, feet and clothing away from power-driven parts.
▲ Wear snug-fitting clothing to avoid entanglement with moving parts.
▲ Watch out for wires, trees, etc., when folding and raising drill. Make sure all persons are clear of working area.
Safety 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
818-003C

On the right end of left-hand seed box (facing rear in transport);
1 total

Amber Reflectors
838-265C

On the outside face of the right and left walkboard, on the rear face at both ends of the right and left walkboard;
6 total
Red Reflectors  
(2SNG24 S/N 3508F-) (2SNG30 S/N 3973G-) 
838-266C

On the inside face of the seed hoppers (facing rear in transport);  
4 total

Red Reflectors  
(2SNG24 S/N 3509F+) (2SNG30 S/N 3974G+) 
838-266C

On the inside face of the walkboard on each seed box (facing rear in transport), on the rear face of frame;  
4 total

Daytime Reflectors  
(2SNG24 S/N 3508F-) (2SNG30 S/N 3973G-) 
838-267C

On the center inside face of right and left hopper section;  
2 total

Daytime Reflectors  
(2SNG24 S/N 3509F+) (2SNG30 S/N 3974G+) 
838-267C

On the inside face of the walkboard on each seed box (facing rear in transport), on the rear face of frame;  
4 total
Warning: Negative Tongue Weight Hazard
818-019C

**WARNING**
NEGATIVE TONGUE WEIGHT HAZARD
Negative tongue weight can cause an immediate elevation of tongue when unhitching implement.
To prevent serious injury or death:
- Always be certain implement is hitched securely to tractor drawbar before raising.
- Lower implement BEFORE unhitching.

On the lower left face of the parking stand; 1 total

---

Warning: Excessive Speed Hazard
818-188C

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

On top face of transport lock weldment on tongue; 1 total

---

Warning: Falling Hazard
838-102C

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

On left outside face of walkboard by ladder on left-hand seed box; 1 total
Caution: Tire Damage Hazard

818-020C

**CAUTION**

TIRE DAMAGE HAZARD

To Avoid Machine Damage:
- Do Not lower drill in folded position - tire damage may result.

On the lower left face of the parking stand:
1 total

---

Caution: Read Operator’s Manual

818-078C

**CAUTION**

- Read Operator’s Manual Before Operating Drill
- Operating Drill
  - Folding and Shielding Drill
- Check Eye Rinse Station and Eyewash drill
- Keep all safety shields and Devices in Place
- Keep Mouth and Clothing Away
- Keep Hands and Clothing Away
- Keep Machine and Operating
- Never Ride on Drill
- Before Transporting, Be Sure
  - Transport tools are in transport
- Drill is Tight in Tractor Before Folding, Unfolding or Tilting Drill Sled
- Always Lower or Properly Support Drill Sled Before Starting
- Exercising Hydraulic Slew Can Cause (Slew) Injury

On top face of tongue near hitch:
1 total

---

Caution: 44 PSI Tire Pressure

858-669C

**CAUTION**

To Avoid Injury or Machine Damage from Improper Tire Inflation or Torquing of Wheel Bolts:
- Maximum inflation pressure for tires is 44 psi.
- Torque wheel bolts to 85 lb-ft.

On rim of each gauge wheel:
2 total (single gauge wheels)
4 total (dual gauge wheels)
Caution: 64 PSI Tire Pressure
858-669C

* To avoid injury or machine damage from improper tire inflation or torqueing of wheel bolts:
  * Maximum inflation pressure for tires is 64 psi.
  * Torque wheel bolts to 85 lb-ft.

On rim of each transport wheel; 4 total

Notice: Lift Cylinder Operating Instructions
818-043C

* Lift cylinders operating instructions:
  * This machine is equipped with replaceable lower lift cylinders which may after a period of time get out of line or phase. An indication of this is when one section is running too low or too high because that lift cylinder is either overextended or overcontracted compared to the other lift cylinders. To rephase the cylinders, raise the implement completely up and hold the tractor hydraulic lever on for a few seconds giving the cylinders time to rephase. This should be done each time the machine is raised out of the ground. If necessary repeating the procedure several times after maxing up the implement. When cylinders contract about 1/2" with help to rephase a need inspection.

On top face of tongue near hitch; 1 total

Notice: General Instructions
858-679C

* Do not use petroleum based products on feeder cup or small grass cup components.

Front frame, both ends; 2 total
Great Plains welcomes you to its growing family of new product owners. The Two Section Folding Drills have 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

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2SNG24-2810</td>
<td>28-Row, 10 inch</td>
</tr>
<tr>
<td>2SNG24-3875</td>
<td>38-Row, 7.5 inch</td>
</tr>
<tr>
<td>2SNG30-3610</td>
<td>36-Row, 10 inch</td>
</tr>
<tr>
<td>2SNG30-4875</td>
<td>48-Row, 7.5 inch</td>
</tr>
</tbody>
</table>

Description of Unit

The 2SNG24 is a 24 foot pull-type seeding implement. The 2SNG30 is a 30 foot pull-type seeding implement. Both drills are designed for minimum till conditions. The opener disks clear away crop residue and open a seed trench. Seed tubes between the opener disks place seed in the trench, and press wheels firm soil over the seed. The press wheels also gauge opener depth.

Intended Usage

Use this drill to seed grasses or production-agriculture crops or to seed over existing grass stands. Do not modify the drill for use with attachments other than Great Plains options and accessories specified for use with the 2SNG24 and 2SNG30.

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.

**NOTE:**

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 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 outside end of the front upper tool bar.

Record your model and serial number here for quick reference:

Model Number: _________________________________
Serial Number: _______________________________

Your Great Plains dealer wants you to be satisfied with your new machine. If you do not understand any part of this manual or are not satisfied with the service received, please take the following actions.

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.

Further Assistance

Great Plains Manufacturing, Inc. wants 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 contact:

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

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

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

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

Initial Setup

See "Appendix B - Assembly and Setup" on page 53 for first-time/infrequent setup tasks.

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:

- Bleed hydraulic system (page 18).
- 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 grease fittings are in place and lubricated. See “Lubrication and Scheduled Maintenance” on page 46.
- 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 Inflation Chart” on page 52.
Hitching Tractor to Drill

Great Plains 2-Section Folding Drills are engineered to be used with tractors having a standard drawbar.

To operate your Great Plains Folding Drill in most field conditions, a tractor of 125 minimum horsepower for 24 foot drills and 150 minimum horsepower for 30 foot drills should be used.

⚠️ DANGER ⚠️

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

⚠️ WARNING ⚠️

Negative Tongue Weight Hazard:
This drill can have both positive and Negative Tongue Weight and it can change during planting. This poses a serious hazard during unhitching and it can work the hitch pin loose during transport. Never unhook from tractor with boxes unfolded and raised off the ground.
Tractor Draw Bar Hook-Up

Refer to Figure 3, Figure 4 and Figure 5

1. The hitch can be used as either a single strap, clevis, or combination hitch.

2. When using the combination hitch, remove lower strap when hooking up to a clevis-type tractor drawbar. Spacers between the drawbar and hitch may be added to eliminate some of the movement of the tongue caused from positive to negative tongue weight.

Two hitch sizes are available:

- the small hole hitch with or without the hammer strap (1 1/4 inch maximum pin diameter) and

- the large hole hitch without a hammer strap (up to 1 1/2 inch diameter pin). The small-hole hitch is sold as standard equipment.

The mounting holes in the hitch have been offset so the hitch can be turned over and bolted on in three different positions giving you six different hitch heights.

On the clevis-type hitch, always mount the thinner strap on the bottom.

**NOTE:**
Set hitch so tongue of drill is parallel to ground when drill is in planting position. Use tongue jack to level tongue, then find closest setting of hitch to match your tractor drawbar height.

3. Attach safety chain on tongue hitch to tractor and lock hook securely on chain. Adjust chain length to remove all slack except what is necessary to permit turning of the drill and tractor.

4. The tongue jack makes it possible to raise or lower the hitch for tractor unhooking and reconnecting. Always return jack to its horizontal position on top of the tongue at the pull bar slide stop.
Hydraulic Hose Hookup

**WARNING**

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

For ease of operation, your tractor should be equipped with six remote hydraulic outlets (three pairs). This will allow you to connect one pair to the drill lift circuit, one pair to your drill fold circuit and one pair remaining for connection of optional markers. If your tractor has only four remote outlets (two pairs) and a marker circuit is required, a marker sequences valve with double selector is available through your Great Plains Dealer.

**Refer to Figure 6**

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

**Color Coded Hose Handles**

<table>
<thead>
<tr>
<th>Color</th>
<th>Hydraulic Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue</td>
<td>Lift</td>
</tr>
<tr>
<td>Gray</td>
<td>Fold</td>
</tr>
<tr>
<td>Green</td>
<td>Marker (Optional)</td>
</tr>
</tbody>
</table>

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 feeds 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.
Older Style Hoses with Color Ties

Refer to Figure 7

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

<table>
<thead>
<tr>
<th>Color</th>
<th>Hydraulic Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue</td>
<td>Lift</td>
</tr>
<tr>
<td>White</td>
<td>Fold</td>
</tr>
<tr>
<td>Orange</td>
<td>Marker (Optional)</td>
</tr>
</tbody>
</table>

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

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.

Figure 7
Older Style Hoses w/Label
Bleeding Hydraulic Systems

WARNING

Negative Tongue Weight Hazard:
This drill has a Negative Tongue Weight when unfolded and raised. Be certain that the drill is hitched securely to your tractor draw bar and be certain the hitch safety chain is securely attached to the drill hitch and tractor before raising or unfolding the drill!

NOTICE

Equipment Damage Risk:
When using sealant on pipe threads the friction between the threads is reduced; therefore, be certain not to over tighten, causing damage to a valve, cylinder port or fitting.

NOTE:
The SAE O-ring and JIC 37° FLARE type hose connections do not require sealant for reconnecting. They do not require high torque for a good seal.

Bleeding Lifting Hydraulic System

This drill is equipped with rephasing type hydraulic lift cylinders that require a special procedure for bleeding air from the hydraulic system. If your dealer has not already prepared the cylinders for transport use, read the following information carefully. The rephasing cylinders will not function properly if this bleeding procedure is not followed. Do not crack hose fittings in order to bleed air from this system.

NOTE:
Check the hydraulic fluid level in the tractor reservoir and fill to the proper level before starting this procedure. If the bleeding is performed with a low reservoir supply, there is a chance of drawing air into the system. System capacity is approximately 3.3 gallons and requires one pair of remote outlets.

1. If required, raise your drill 1 inch in order to extend your lift cylinders a little. Loosen the jam nuts on top of the transport vertical tubes and screw the adjustment screw in until it bottoms. Lower the drill until the cylinders become loose.

2. Unpin the cylinders from the mainframe and turn the cylinders upside down to a position where the rod end is higher than the base end. Support the cylinders in a safe location. One transport tire may have to be removed in order to unpin the master cylinder.

3. Start the tractor and run the engine at idle. With the rod end of the cylinders higher than the base end, hydraulically extend the cylinders and hold the tractor control lever in position for sixty seconds after the cylinders have extended to their maximum stroke.

4. Hydraulically retract the cylinders, then repeat the extending procedure several more times until both cylinders are free of air and operate together.

5. Repin the cylinders to the main frame and axle with the rod end down. If air is tapped in either cylinder, the affected cylinder will have a spongy, erratic movement and the machine will not raise evenly. Refill the tractor hydraulic fluid reservoir to its proper level.

NOTE:
After drill is raised, a slight settling will occur due to the action of the rephasing cylinder.

NOTE:
In order to prevent trapped air pockets, the port on the rod end must be higher than any other port of the cylinder during the bleeding operation.

NOTE:
The folding and transport wing lift cylinders are not rephasing type cylinders and do not require this bleeding procedure.
Bleeding Folding Hydraulics

The following section describes a bleeding procedure that requires you to crack (loosen) a hydraulic fitting. Be aware that these lines may be under pressure even with the tractor shut off. Never allow anyone under the drill when fittings are opened. Escaping fluid may allow the drill to suddenly drop. Be aware of the following medical alert.

⚠️ **WARNING**

**High Pressure Fluid Hazard:**
Escaping fluid under pressure can have sufficient force to penetrate the skin. Check all hydraulic lines and hoses before applying pressure. Fluid escaping from a very small hole can be almost invisible. Use paper or cardboard, not body parts, to check for suspected leaks. If injured, seek medical assistance from a doctor familiar with this kind of injury.

The drill transport lift systems should be completely operational before attempting to work with the folding hydraulic circuit.

⚠️ **NOTE:**
The cylinders are double acting but are not the rephasing type.

1. The first step in charging the fold hydraulic circuit is to make sure the tractor hydraulic fluid reservoir is filled to the proper level. System capacity is approximately 2 gallons and requires one pair of remote outlets. If optional selector is used, rotate to the wing lift position.

2. With the drill fully raised and in the folded position, disconnect the rod end pin on each fold cylinder and block the cylinders in a location where they are free to extend and retract without contacting anything.

3. Cycle the fold cylinders in and out several times to work the air out of the system.

⚠️ **NOTE:**
If the wing fold cylinders do not operate properly, clean out the small hole in the elbow fitting on fold cylinders. These orifice are located in the cylinder elbow as circled in Figure 8.

4. Retract the hydraulic cylinder and repin the rod ends.

5. Recheck the tractor reservoir level and add clean fluid as necessary.

6. It is advisable to fold and unfold the drill several times. The majority of the air should now be expelled from this system. The remaining air will gradually be pushed to the tractor during day to day operations.

---

![Figure 8](image.png)

Wing Fold Hydraulics
Leveling Drill

This section describes procedures for leveling the drill on its initial setup. This should be a one-time adjustment and will not be needed during day-to-day operation.

If while using the drill, it appears to be lifting or planting unevenly, check the following before re-leveling the drill.

- First, make sure the tongue is running level to the ground while running in the field. Be sure to check this if the drill has been switched to a different tractor.
- Second, check the lift cylinders. Be sure they are properly bled, are operating correctly, and do not have internal oil leaks before using this section to re-level the drill.

The opener spring rods located along the back of the drill boxes are indicators of the level of the drill because they show the amount of down-pressure exerted on the disk openers and press wheels. A level drill will have equal opener down-pressure from end to end.

Check the spring rod cross bolts at the top of the spring rods to see that they are all extended about 2 inches above their spring rod castings. This is a general dimension and may vary with the spring down-pressure you require for different soil conditions and planting depths, see “Planting Depth Adjustments” on page 36.

If you require more downward float of your openers you may want to increase this dimension. Keep in mind when this dimension is increased your upward motion is decreased, limiting the vertical travel of the openers for running over rocks and other foreign objects.

**NOTICE**

*Opener Damage Risk:*

*If the vertical travel of the opener is decreased, considerable damage will occur to your openers.*

If all the spring rods along the drill extend the same distance above their castings, the drill is level and you should tighten down the threaded studs as described in “Transport Wheel Adjustments for Leveling Drill” on page 21. If the spring-rod extensions vary in length, the drill can be leveled with transport wheel and gauge wheel adjustments. These are described on page 21.

To summarize: After leveling your drill, it should have the same dimension from the ground to the box frame at both ends of each box. These adjustments may have to be fine tuned after observing the drill in the field in actual planting conditions.
Transport Wheel Adjustments for Leveling Drill

When leveling your drill, opener spring rods near the center of the drill that extend higher above their spring rod castings than desired can be adjusted by raising the transport frame. This is done by raising the drill with the hydraulic lift cylinders.

Spring rods near the center that do not extend high enough are adjusted by lowering the transport frame by retracting the cylinders.

Refer to Figure 11

Once the spring rods are at the desired setting, screw the threaded studs on top of the vertical tubes down as far as possible and secure them with the jam nuts (1). This adjustment will stop the lift cylinder travel at the same point each time the boxes are lowered for drilling and assures accurate seed depth control.

NOTE:
If it is noticed that one drill box spring rod extension is different from the other drill box at the center of your drill, this is a sign that your lift hydraulic master and slave cylinders are out of sequence with one another. In order to get them back in sequence, simply raise your drill all the way up and hold your tractor hydraulic control valve lever on for a few seconds. Lower your drill and both cylinders will be in sequence with one another and the two drill boxes should be at the same level again.
Gauge Wheel Adjustments for Leveling Drill

**Refer to Figure 12**

The openers near the outside of the drill are adjusted by raising or lowering the gauge wheels.

Raise the drill out of the ground and loosen the jam nut located near the bottom clevis of the gauge wheel turnbuckle. This turnbuckle is threaded to allow easy gauge wheel adjustment.

- Lengthening the turnbuckle the gauge wheel is lowered, causing less spring rod extension through the spring rod casting.
- Shortening the turnbuckle the gauge wheel is raised, causing less spring rod to protrude through the spring rod casting.

After adjusting, be sure the turnbuckle on both gauge wheel arms have the same pin center dimension.

Shortening the gauge wheel turnbuckle will level the ends of the drill with the center.

**Box Alignment Adjustments**

**Pull Bar Adjustments**

**Refer to Figure 13**

With the drill lowered to the ground and completely unfolded the tongue slide on the tongue should be back against the stop on the tongue. Adjust the pull bars length so drill boxes are in line with one another and parallel to the back edge of the main frame.
Drill Adjustments

*Refer to Figure 14*

Put the transport pins in storage position. Slowly lower the drill until it is on the ground and the main frame top slide cylinder is fully extended. Pull the drill forward a few feet to make sure that the transport and the gauge wheel tires have equally firm contact with the soil.

![Figure 14: Top Slide Cylinder](image)

*Refer to Figure 15*

Unfold the drill on a level seedbed typical to your soil conditions. At the top of both vertical tubes on the transport frame is a threaded stud and jam nut (1). Make sure both studs have approximately the same length of threads extending above the jam nut (approximately 3 inches for most planting conditions). Adjustments may be required.

![Figure 15: Threaded Stud](image)
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 product to the field.

- Carefully read “Important Safety Information” on page 1.
- Lubricate drill as indicated under “Lubrication and Scheduled Maintenance” on page 46.
- Check all tires for proper inflation. See “Tire Inflation Chart” on page 52.
- Check all bolts, pins, and fasteners. Torque as shown in “Torque Values Chart” on page 52.
- Check drill 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.

**WARNING**

**High Pressure Fluid Hazard:**
Relieve pressure and shut down tractor before connecting, disconnecting or checking 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.

---

**NOTICE**

LIFT CYLINDERS OPERATING INSTRUCTIONS

This machine is equipped with rephasing master slave lift cylinders which may after a period of time get out of time or phase. An indication of this is when one section is running too low or too high because its lift cylinder is either overextended or overcontracted compared to the other lift cylinders. To rephase the cylinders, raise the implement completely up and hold the tractor hydraulic lever on for a few seconds giving the cylinders time to rephase. This should be done each time the machine is raised out of the ground. Momentarily reversing the hydraulic lever immediately after rephasing to allow the cylinders to retract about 1/2” will help to maintain a level implement.
General Notes for Field Operations

Most of the procedures described in this section require the use of a tractor with hydraulic remotes. Before proceeding with the first time setup, or before making any adjustments mentioned in this section, make every effort to obtain and hitch a tractor to the drill.

24 foot drill: minimum of 125 horsepower
30 foot drill: minimum of 150 horsepower

**WARNING**

Negative Tongue Weight Hazard:
This drill can have both positive and Negative Tongue Weight and it can change during planting. This poses a serious hazard during unhitching and it can work the hitch pin loose during transport. Never unhook from tractor with boxes unfolded and raised off the ground.

Be certain that the drill tires have the proper inflation as listed in the “Tire Inflation Chart” on page 52.

Load seed box with seed. Use clean seed to get the best results. Always have the drill hitched securely to a tractor with safety chain connected. Lower the drill before loading.

This drill can be transported with a full box of grain. It is best not to do this unless necessary because the increased weight does increase the chances for problems on the road. Do not exceed 20 miles per hour.

Calibrate each seed box for a proper rate based on the seed that you are drilling. Calibration information is located on the inside of your box lid or in the seed rate book. Make sure the seed rate is adjusted the same across the entire drill.

If your drill comes equipped with an acremeter, it should be mounted on the left gauge wheel axle on the outboard side. It will accumulate the total acres drilled with the drill. In order to find out the acres covered, write down the beginning reading and subtract it from the ending reading for the total acres planted.

This drill is offered in different row spacings; therefore, some of the drill boxes do not have the same number of seed cups between each internal box divider. The section with the largest number of cups will tend to empty sooner.

Make sure that the seed-cup-door adjustment handles are set the same across the drill.

If you notice excessive cracking on large-grain seeds, adjust all seed cup door handles to a wider setting.

**NOTICE**

Machine Damage Risk:
Never back up with openers in the ground. If you do, check all openers to be sure none are clogged.

After lowering the drill into planting position, observe the drill from the side. Check to see that the tongue is level to the ground. If it is not, a hitch height adjustment is needed. See “Tractor Draw Bar Hook-Up” on page 15. It is especially important to check for this if the drill has been hitched to a different tractor.

This drill is not designed to be turned sharply in the field. Always lift the drill completely out of the ground when turning at ends of field rows and other short-radius turns. If the drill is not completely raised, the lift hydraulics will be out of sequence. Refer to “Bleeding Lifting Hydraulic System” on page 18.

**WARNING**

Crushing Hazard:
Never allow anyone to ride on the drill.

Maximum seeding speed will vary according to soil conditions.

You can adjust the tension on each disk spring. This is especially useful in applying more pressure in tractor tire tracks.

**NOTICE**

Equipment Damage Risk:
Do not lower drill while in folded position, certain equipment damage will occur.
Folding the Drill

**NOTICE**

*Equipment Damage Risk:*
Do not lower drill while in folded position, certain equipment damage will occur.

1. Folding is best achieved on level ground with the tractor transmission in neutral. Be aware of the clearance required to fold the drill.
2. Never allow anyone near the drill during folding operations.

Refer to Figure 16

3. When folding the drill, the drill transport stabilizer frame should line up with the nest on the front of the main frame.

Refer to Figure 17

4. If the stabilizers scrape the wing on the tongue, the boxes can be raised or lowered by adjusting the wing adjustment turnbuckle.

Refer to Figure 18

5. Apply hydraulic pressure to the raising and lowering system. Raising the drill may be required to free up the transport lock pins in the vertical tubes for removal. Place pins into transport position.
6. Fold boxes using hydraulic cylinders. Do this very slowly and carefully. Serious damage could occur if done fast and carelessly.
Refer to Figure 19

7. Place the pin in the pull-bar transport lock. This must always be used when transporting the drill in the folded position.

Lifting the Drill

The lift cylinders may after a period of time get out of time or phase. The effects of this can be seen when one side of the drill is running too low or too high because its lift cylinder is either overextended or not retracted compared to the other lift cylinders.

To rephase the cylinders, raise the drill completely up and hold the tractor hydraulic lever on for a few seconds to give the cylinders time to rephase. This should be done each time the drill is raised out of the ground. Momentarily reversing the hydraulic lever immediately after rephasing to allow the cylinders to retract about $\frac{1}{2}$ inch will help in maintaining a level drill.

**NOTE:**

Understand that having the cylinders become gradually out of time is different than having air trapped in the system from improper bleeding. Each condition is corrected differently.
Unfolding the Drill

**WARNING**

**Negative Tongue Weight Hazard:**
This drill has a negative tongue weight when unfolded and raised. Be certain that the drill is hitched securely to your tractor drawbar and be certain the hitch safety chain is securely attached to the drill hitch and tractor before raising or unfolding the drill!

1. Unfolding the drill is best achieved on level ground with the tractor transmission in neutral.
2. Be aware of the clearance requirements of the unfolding drill. Allow plenty of room to unfold and do not allow anyone in the area of the drill when unfolding.
3. Refer to Figure 20 and Figure 21.
4. Remove pin from pull-bar transport lock.
5. Slowly unfold the drill using the hydraulic cylinders. For the first time, watch to be sure the hydraulic hoses do not get pinched or kinked. Serious damage could occur if the drill is unfolded carelessly.
6. Apply hydraulic pressure to the raising and lowering system. Lowering the drill may be required to free up the transport lock pins in the vertical tubes for removal. Place pins into storage position.
Transporting the Drill

**DANGER**

*Loss of Control Hazard:*
Never tow an implement that weighs more than 150% of the tractor. Check your numbers. This drill is quite heavy for its size. Ensure that the towing vehicle is adequate for the task. Using an inadequate tow vehicle is extremely unsafe, and can result in loss of control, serious injury and death. The drill can weigh nearly 23000 pounds (10500 kg), depending on configuration and material load. The tractor MUST be rated for the load and must weigh at least 67% of the load. If the tractor is not rated for at least 23000 lbs, calculate or obtain a scale weight of the drill.

Do not tow if drill exceeds the load rating of the vehicle.

**CAUTION**

This drill should never be pulled faster than 20 miles per hour.

**Before transporting drill:**

1. Make sure that hitch is securely attached to the drawbar of the tractor and that the hitch safety chain has been securely attached.

2. To prevent possible damage in case of hydraulic failure during transport, Always insert transport lock pins when transporting (see Figure 22).

3. Check to be sure the pull-bar transport lock pin is in position (see Figure 23).

4. Check to see if you have the required air pressure in your transport tires for proper inflation see “Tire Inflation Chart” on page 52.

5. When in transport, use warning lights and safety hitch chain. Comply with all federal, state and local laws when traveling on public roads.

6. Be sure that the drill is properly folded. The drill boxes must be correctly supported in the folded position. “Folding the Drill” on page 26.

7. Reduce speed of the tractor when transporting over uneven or rough terrain. Avoid all chuck holes and washboard areas in roads.

8. Reduce speed of the tractor when transporting over hills or steep slopes. Never exceed 20 miles per hour.

9. Use slow moving vehicle emblem for warning vehicles approaching from the rear.

10. When transporting, remember the drill is wider than your tractor and extreme care must be taken to allow for safe clearance.

11. Extra care should be taken when transporting with seed in the box.
Parking

1. Choose a location with level firm ground. Do not unhitch on a steep slope.
2. Fold drill (page 26).
3. Set hydraulic circuits to neutral.
4. Disconnect hydraulic lines. Secure them so that they do not touch the ground.
5. Disconnect electrical cables, capping where necessary.
6. Move jack from storage position to side of tongue (see Figure 24).
   If the ground is soft, place a board or plate under the jack to widen the ground contact area.
7. Slightly raise tongue with jack until the weight of the tongue is on the jack and has been removed from the tractor drawbar.
8. Remove the hitch pin and safety chain from the tractor drawbar.
9. Restart tractor and pull away from drill.

The following steps should be done when preparing to hitch the drill to the tractor.

10. Raise or lower the drill tongue as needed and hitch the drill to the tractor drawbar. Always use a safety chain, see “Tractor Draw Bar Hook-Up” on page 15.
11. Plug the drill hydraulic lines into the tractor remotes.
12. Connect the electrical cables.
13. Retract the jack until the weight of the tongue and pin it on the storage post located on top of the main tongue (see Figure 25).

**NOTE:**
If the drill is being hitched up and operated for the first time, it is important to follow the safety, setup, adjustment, bleeding, and operating information.
Marker Operations

It is not possible to operate the markers other than during a field lift or field lower. If the Lift/Lower steps are followed, one marker alternately folds on one side at each lift, and the other unfolds at each lower.

Dual Marker Operations

It is possible to deploy markers on both sides. This might be needed for special field passes, but can also occur inadvertently if a lift/lower is interrupted.

Two Markers Out

1. Perform a normal field lower/marker deploy (previous topic).
2. When the lowering stops, with the marker fully unfolded, briefly reverse the lever to Extend (lift), then back to Retract (lower).
3. The marker on the opposing side deploys. Hold at Retract until the marker is fully unfolded.

Folding With Two Markers Out

With two markers out, the next lift operation folds only one of them (the second one deployed). To fold the other marker, use either of two techniques:

- Perform a second lower, then a lift, or
- At full fold of the first marker, perform a brief Extend, then a Retract, to fold the other marker (and continue frame lift).

Acremeter

Refer to Figure 26

The acremeter is factory installed. It is located on the left end of the left main drive shaft.

If the acremeter has been removed, screw the threaded end of the meter into the 1/2-20 tapped hole in the left end of center main drive shaft.

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

WARNING

Overhead, Crushing and Sharp Object Hazards:

Do not allow anyone to stand under, near or beyond the end of opener frame during marker operations. There is risk of serious injury or death for anyone under the frame or in the path of a marker. Marker arms are heavy, are under tremendous hydraulic power, and may move suddenly if the hydraulic system is damaged or needs bleeding. Marker discs may be sharp.
The acremeter counts shaft rotations whenever the shaft is rotating - this is with the drill lowered and in motion or during calibration crank operation. The meter is programmed to display rotations as acres or hectares, when using all rows, factory-specified tires and tire inflations.

Unusual conditions and/or non-standard row spacings can cause the acremeter tally to vary somewhat from actual acres planted.

**Normal Operating Sequence**

The acremeter counts rotations during drill calibration (and if so, can be useful for calibration, although the meter must be on, or moved to the shaft being cranked).

1. Record the acremeter reading at the start of planting (and after calibration). The large 12345.6 format display is the grand total area planted since meter installation. The smaller number in the lower left corner is the number of revolutions per acre for which the meter was factory-programmed. If the display is blank, see “**Dormant Display**” below.

2. Lower drill and plant. Acremeter counts shaft rotations, calculates acres or hectares, and adds to the running grand total.

   During planting (drill lowered and moving forward), the display blanks (goes dormant), but area tally continues.

   When raised for turns, obstructions and transport, the drill’s ground drive wheel, contact wheel or clutch disengages the drive shaft, and the meter counts no additional (non-planting) rotations.

   Whenever shaft rotation stops, the LCD display activates after 30 to 60 seconds, and remains visible for 30 to 45 minutes.

3. At the completion of planting, record the final reading of the grand total. If the display goes dormant before you can read it, see “**Dormant Display**”.

4. Subtract the reading at step 1 from the reading at step 3 for the total planted in the present session.

**Dormant Display**

To conserve power, the LCD display blanks itself most of the time. If you need to read the display after it has timed out and gone dormant:

- use the calibration crank to turn the jackshaft once, or
- gently tap or wave a magnet at either of the Great Plains logo spots on the lower region of the display. Be careful not to scratch the window.
DataTrac Acremeter

The DataTrac acrometer is factory installed on new units (effective July 1, 2013). The meter is supplied with a decal located on its side indicating the number of programmed wheel revolutions. The numbers automatically orient to read upright.

The acrometer always shows “REV” (1) on the face of the display. The meter is programmed to count acres if the drill is for domestic use and is programmed for hectares if the drill is for export use.

Normal Operating Sequence

To display the number of revolutions per acre or hectare programmed into the meter simply cover the round bump on the face of the unit (light sensor) (2) with the palm of your hand and leave it there for at least 1/2 second before removing it. A screen that shows “rEV ###” will be displayed. The ### is the number of revolutions that is programmed into the unit.

The acrometer may count rotations during drill calibration (and if so, can be useful for calibration).

1. Record the acrometer reading at the start of planting (and after calibration). The large format display is the grand total area planted since meter installation.

2. Lower drill and plant. The acrometer counts shaft rotations, calculates acres or hectares, and adds to the running grand total.

   When raised for turns, obstructions and transport, the drill’s ground drive wheel, contact wheel or clutch disengages the drive shaft, and the meter counts no additional (non-planting) rotations.

3. At the completion of planting, record the final reading of the grand total.

4. Subtract the reading at step 1 from the reading at step 3 for the total planted in the present session.

Dormant Display

If the display is totally blank and never displays anything, the battery may be dead. Expected life is 5 to 10 years. The battery is not user-replaceable.
Long-Term Storage

1. Clean the drill as necessary. Be sure that the seed boxes and all feed systems are completely cleaned out before storing.

2. Lube chain and adjust all roller chains.

3. Lubricate all fittings as indicated in “Maintenance and Lubrication” on page 43.

4. When storing in transport position, use all locking devices as described under “Transporting the Drill” on page 29 and “Operating Instructions” on page 24.

5. Apply a light coat of grease to all exposed hydraulic cylinder rods.

6. Seed cup drive sprocket hub should be oiled in its square bore. Squirt oil on to the square seed cup shaft and move seed cup adjustment lever back and forth in order to get the oil back into the square. This is most important before putting the drill in storage.

7. Always maintain proper pounds of air pressure in gauge wheel tires and in transport tires see “Tire Inflation Chart” on page 52.

8. Store the drill inside if possible. Inside storage will reduce maintenance and make for a longer drill life.
To get full performance from the drill, 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>Planting Depth Adjustment</td>
<td>36</td>
<td>Consistent seed firming and planting depth</td>
</tr>
<tr>
<td>Press Wheel-Opener Linkage Depth Adjustment</td>
<td>36</td>
<td>Correctly offset and visible pass marks</td>
</tr>
<tr>
<td>Marker Adjustments</td>
<td>37</td>
<td>Consistent seed placement and coverage</td>
</tr>
<tr>
<td>Disk Scraper Adjustments</td>
<td>40</td>
<td>Keep opener disks turning freely</td>
</tr>
<tr>
<td>Seed Firmer Adjustments</td>
<td>40</td>
<td>Consistent seed placement and coverage</td>
</tr>
<tr>
<td>Leveling</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Opener Spring Rods</td>
<td>20</td>
<td>Uniform down pressure on press wheels and openers</td>
</tr>
<tr>
<td>Transport Wheels</td>
<td>21</td>
<td>Controls lift cylinder travel for accurate seed depth</td>
</tr>
<tr>
<td>Gauge Wheels</td>
<td>22</td>
<td>Levels ends of drill with the center</td>
</tr>
<tr>
<td>Box Adjustments</td>
<td>22</td>
<td></td>
</tr>
<tr>
<td>Pull Bar</td>
<td>22</td>
<td>Ensure drill boxes are in line with one another and parallel to the main frame for uniform seeding</td>
</tr>
<tr>
<td>Top Slide</td>
<td>22</td>
<td>Helps to make adjustments to the pull bars</td>
</tr>
</tbody>
</table>
Planting Depth Adjustments

Press Wheel-Opener Linkage Depth Adjustment

Attached to the rear of each of these openers is one of several optional press wheels. The press wheel and its mechanism provide two important functions:

1. The press wheel closes the furrow and gently presses the soil over the seed.

To provide consistent seed firming, the press wheel is free to move downward from its normal operation position. This system maintains pressing action even if the opener body is lifted as a result of the opener disks encountering an obstruction or hard soil.

2. The press wheel rolls on the ground providing depth control to the opener and seed. To maintain a consistent planting depth, the relationship between the bottom of the opener disk-blades and the press wheel is upwardly fixed. The upward stop is independently adjustable on each opener. The position of the adjustable stop determines how deep the seed will be placed.

Refer to Figure 31

To change the height of the press wheel, which automatically changes the seeding depth of the opener, simply lift the “T” handle located on top of the opener at the rear and slide forward or rearward until the seeding depth is correct as shown in the inset in. A spring loaded pin holds the “T” handle at your setting to maintain the proper depth.

Disk Opener Spring Pressure Setting

Refer to Figure 32

Each opener spring can be adjusted for down pressure. This is useful when penetrating hard soil and for planting in tractor tire tracks. To adjust the pressure, remove the “W” clip at the bottom of the spring and place it in a higher hole in the spring rod for more pressure, and in a lower hole for less pressure.
Marker Adjustments

Folding Speed

Refer to Figure 33

Adjust folding speed for dual markers with hex adjustment screws on the sequence-valve body. There is one adjustment screw for raising (fold) speed (1) and one for lowering (extend) speed (2). You can identify adjustment screws by markings stamped in valve body.

Turn adjustment screws clockwise to decrease folding speed and counterclockwise to increase folding speed. With tractor idling at a normal operating speed, adjust marker folding to a safe speed. Excessive folding speed could damage markers and void the warranty.

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

Refer to Figure 34

The hydraulic system for a single marker has a needle valve to control folding speed. The needle valve is in the hydraulic hose at rod end of marker cylinder.

Turn adjustment knob clockwise to reduce folding speed or counterclockwise to increase folding speed. With tractor idling at a normal operating speed, adjust marker folding to a safe speed. Excessive folding speed could damage markers and void the warranty.
Transport Carrier

Refer to Figure 35

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

To adjust front-to-rear position of saddle, loosen 1/2 x 6 inch U-bolts (1) that fasten transport-carrier mount onto box frame. Slide transport-carrier assembly forward or back as needed.

To adjust height of saddle, loosen 1/2 x 2 inch U-bolts (2) that hold carrier tube to mounting bracket. Slide carrier tube up or down as needed.

Figure 35
Marker Transport Carrier Adjustment
Marker Chain

*Refer to Figure 36*

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

**Lifting Slack.** With marker unfolded, back full-threaded adjustment bolt (1) down until head extends as little as possible. Slowly fold marker while observing disk. If marker disk slides across ground more than a foot before chain and linkage lifts it up, the chain is too long.

Shorten chain one or two links by moving clevis (2). Check adjustment by repeating folding process.

If chain is too short when marker is unfolded, it will prevent end of marker from dropping into field depressions, causing skips in your marker line. Correct this condition by lengthening chain one or two links at clevis (2).

**Folding Slack.** Fold marker. Use full-threaded adjustment bolt (1) to take slack out of chain while marker is folded. Extend bolt until there is no chain slack. Lock bolt in this position by tightening nuts (3) on either side of upright channel (4).

---

**Marker Disk Adjustment**

*CAUTION*

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

*Refer to Figure 37*

There are two ways you can change the mark left by the marker disk.

**Disk Angle**

1. To change angle of cut, and the width of the mark, loosen $\frac{1}{2}$ inch bolts (2) holding the disk assembly.

   For a wider mark (W), increase the angle of the marker with respect to the tube (1). For a narrower mark (N), reduce the angle.

   **NOTE:**
   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).

**Direction of Cut**

To change direction of cut and throw dirt either in or out:

Reverse blade and depth band by remounting lug bolts on disk hub.
Disk Scraper Adjustments

**CAUTION**

*Sharp Object Hazard:*
Row unit disk blades may be sharp. Use caution when making adjustments in this area.

Refer to Figure 38

Disk scrapers are optional. To keep opener disks turning freely, dirt scrapers are mounted between disks to clean as disks rotate.

As field conditions vary, scrapers may need to be adjusted. In damp conditions, lower scrapers. If openers are not turning freely, raise scrapers. To adjust, loosen bolt and move scraper as needed.

Seed-Lok® Seed Firmer Lock-Up

Refer to Figure 39

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

To lock up Seed-Lok® wheels:

- Pull up on Seed-Lok® arm (1).
- Raise lever (2).
## Troubleshooting

<table>
<thead>
<tr>
<th>Problem</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Uneven Seed Spacing or Uneven Stand</strong></td>
<td>Check for plugging in seed cup.</td>
</tr>
<tr>
<td></td>
<td>Check to see if seed tubes are plugged.</td>
</tr>
<tr>
<td></td>
<td>Reduce ground speed.</td>
</tr>
<tr>
<td></td>
<td>Check opener disks to see they turn freely.</td>
</tr>
<tr>
<td></td>
<td>Use faster drive speed and close seed cup flutes to a more narrow position.</td>
</tr>
<tr>
<td></td>
<td>Spring pressure on openers could be improperly adjusted causing opener to not penetrate low spots.</td>
</tr>
<tr>
<td></td>
<td>Check for trash or mud build-up on Seed-Lok® wheel.</td>
</tr>
<tr>
<td><strong>Opener Disks Not Turning Freely</strong></td>
<td>Check for trash or mud build-up on disk scraper. Re-adjust scraper.</td>
</tr>
<tr>
<td></td>
<td>Check to see if scraper is adjusted too tightly and is restricting disk movement.</td>
</tr>
<tr>
<td></td>
<td>Check disk bearings.</td>
</tr>
<tr>
<td></td>
<td>Check opener frame for possible damage.</td>
</tr>
<tr>
<td></td>
<td>If opener disks turn freely by hand but not in field, reduce down pressure on disk opener.</td>
</tr>
<tr>
<td></td>
<td>Check press wheel adjustment for seeding depth.</td>
</tr>
<tr>
<td><strong>Actual Seeding Rate Is Different than Desired</strong></td>
<td>Check tire pressure. For proper inflation see “Tire Inflation Chart” on page 52.</td>
</tr>
<tr>
<td></td>
<td>Check gauge wheel size. Proper size is 9.5L x 15.</td>
</tr>
<tr>
<td></td>
<td>Seed treatment will affect seeding rate if the chemicals build up in seed cup. Unless cleaned regularly, this build up can cause breakage of the seed-cup shaft.</td>
</tr>
<tr>
<td></td>
<td>Check speed change box setting.</td>
</tr>
<tr>
<td></td>
<td>For instructions on calculating seed rate, see seeding adjustments in the seed rate book.</td>
</tr>
<tr>
<td><strong>Excessive Seed Cracking</strong></td>
<td>Use slower drive speed and open flutes in seed cup to a wider position.</td>
</tr>
<tr>
<td></td>
<td>Position seed-cup handles to a lower notch.</td>
</tr>
<tr>
<td><strong>Acremeter Does Not Measure Accurately</strong></td>
<td>Check tire pressure. For proper inflation see “Tire Inflation Chart” on page 52.</td>
</tr>
<tr>
<td></td>
<td>Check end gauge wheel tire size. proper size is 9.5L x 15.</td>
</tr>
<tr>
<td></td>
<td>Check planting operation for excessive overlap or gaps between passes.</td>
</tr>
<tr>
<td></td>
<td>Loose soil conditions and slippage will cause variations in acres registered.</td>
</tr>
<tr>
<td></td>
<td>To check accuracy of acremeter, see “Acremeter” on page 31.</td>
</tr>
<tr>
<td></td>
<td>Check to be sure your acremeter is for your width of drill.</td>
</tr>
<tr>
<td><strong>Uneven Seeding Depth</strong></td>
<td>See “Planting Depth Adjustments” on page 36.</td>
</tr>
<tr>
<td></td>
<td>See “Hitching Tractor to Drill” on page 14 and “Leveling Drill” on page 20.</td>
</tr>
<tr>
<td><strong>Press Wheels Not Compacting Soil As Desired</strong></td>
<td>Refer to “Planting Depth Adjustments” on page 36.</td>
</tr>
<tr>
<td></td>
<td>Re-adjust press wheel depth to match coulter depth.</td>
</tr>
<tr>
<td></td>
<td>Increase down pressure on disk openers.</td>
</tr>
<tr>
<td><strong>Grain Box Not Emptying Evenly</strong></td>
<td>Certain models do not have the same number of seed cups between each divider of bulkhead. The section with the larger number of cups will empty sooner.</td>
</tr>
<tr>
<td></td>
<td>Seed cups close to the ends of box tend to empty sooner due to amount of seed available.</td>
</tr>
<tr>
<td></td>
<td>Check adjustment levers on each box to see that they are set on the same indicator number.</td>
</tr>
<tr>
<td>Problem</td>
<td>Solution</td>
</tr>
<tr>
<td>--------------------------------------------------------------</td>
<td>----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td><strong>Press Wheel or Openers Plugging</strong></td>
<td>Drilling in damp or wet conditions may increase this problem. Openers may be moved from a staggered to an in-line position to reduce trash thrown from front openers into rear openers. Reduce down pressure on openers. Do not back up drill in the field, or stop and allow drill to roll backwards with openers in the ground. If using double &quot;V&quot; press wheels, adjust angle bar. Check Seed-Lok® wheel.</td>
</tr>
<tr>
<td><strong>Rubber Tire Depth Control Wheels Becoming Packed With Mud</strong></td>
<td>Install scrapers. Reduce spring tension on openers.</td>
</tr>
<tr>
<td><strong>Improper Folding of Drills</strong></td>
<td>Adjust post frame adjusting links. Check hydraulic system for air and oil leaks. Clean out small orifice fittings in wing cylinders. Make sure that the wing boxes unfold to a straight line. check to see that both pull bars are attached to the boxes at exactly the same distance inboard from the inboard edge of the drill box (90°) and both are exactly the same length.</td>
</tr>
<tr>
<td><strong>Hydraulic Adaptors Cracking</strong></td>
<td>JIC fittings do not require high torque. ALWAYS use liquid pipe sealant when adding or replacing pipe thread hydraulic fittings. Plastic sealant tape can crack fittings and plug hydraulic lines. JIC and O-ring fittings do not require sealant. O-ring fittings require a thin coat of oil. IMPORTANT: When using sealant on pipe threads, the friction between the threads is reduced, therefore, be certain not to overtighten causing damage to the cylinders, valves or fittings.</td>
</tr>
<tr>
<td><strong>Seed Cup Sprockets Locked up or Twisted Seed-Drive Shaft</strong></td>
<td>Check for foreign matter lodged in one or more seed cup sprockets. Liquid insecticide from seed has dried within the seed cup. Remove the build up by disassembling each seed cup and scrape the foreign substance from the turning surfaces. NOTE: Liquid inoculant should be applied with caution and care should be taken to clean the seeding system after drilling treated seeds.</td>
</tr>
<tr>
<td><strong>Raising and Lowering Drill is Rough and Uneven</strong></td>
<td>Lubricate lower rollers of vertical transport tubes located between the transport tires. Check hydraulic fittings for leaks. Rephasing cylinders not properly bled. See &quot;Hydraulic Hose Hookup&quot; on page 16. When raising drill at end of field, the lifting cylinders should be fully extended to ensure that they are always rephased. If machine is only raised enough to lift openers out of the ground, lift cylinders may eventually get out of sequence and cause uneven seeding depth.</td>
</tr>
<tr>
<td><strong>Hydraulic Marker Functioning Improperly</strong></td>
<td>Check all hose fittings and connections for air and oil leaks. The chain on the folding 3-section marker should be slack when the marker is both fully extended and fully raised. Check tractor hydraulic oil level. Check all bolts and fasteners. Double selector valve positioned for wing fold. Shift valve to marker sequence position. Open needle valve, cycle markers slowly and reset needle valve if plugged.</td>
</tr>
<tr>
<td><strong>Chain-Debris/Retainer Clip</strong></td>
<td>Be sure retainer clip open end is facing opposite way of chain travel.</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 when working on implement. You may be severely injured or killed by being crushed under a 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 drill 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 drill tires.
4. Check the hitch safety chain before the drill is transported and regularly during normal operation. Inspect the chain and hardware for wear and other damage. Replace immediately if needed.
5. Keep disk scrapers properly adjusted.
6. Clean drill on a regular basis. Regular and thorough cleaning will lengthen equipment life and reduce maintenance and repair.
7. Lubricate areas listed under “Lubrication and Scheduled Maintenance” on page 46.
8. Replace any worn, damaged, or illegible safety labels by obtaining new labels from your Great Plains dealer.
Seed Flap Replacement

Refer to Figure 40

To replace a seed flap (1), use a needle nose pliers or similar tool to grasp “T” top of flap. Pull upward to pull flap up out of metal bracket (2).

Push new seed flap (1) down through metal bracket (2) until flap snaps into place with “T” top resting on top of bracket.

Older Style Seed Flap

Refer to Figure 41

1. Remove one disk for easier seed flap replacement.
2. To replace, pull the seed flap (1) up out of metal bracket (2).
3. Push new seed flap (1) down through metal bracket until seed flap is in place.
Marker Maintenance

Marker Shear Bolt Replacement

Refer to Figure 42

If a marker gets caught or hits an obstruction, it is designed to fail a shear bolt (3) at the fold, pivot on a second bolt (not visible in Figure), and swing back.

The shear bolt is a hex head cap screw, (3) 5/16-18 x 1 1/2 inch Grade 5, Great Plains part number 802-012C, plus a (4) 5/16-18 lock nut, Great Plains part number 803-011C.

NOTE:
If an exact replacement is not immediately available, temporarily substitute an M8x1.25 Class 8.8 bolt and nut.

Install a replacement shear bolt on the vertical face 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.
Lubrication and Scheduled Maintenance

Drive Shaft Clutches

2 grease fittings each of 2 clutches; 4 total
Type of Lubrication: Grease
Quantity: Until grease emerges
Also smear grease on clutch engagement.

Marker Hinge Pivots

1 grease fitting at mount pivot,
1 grease fitting and 1st to 2nd section pivot,
1 grease fitting at 2nd section to arm pivot;
3 or 6 total
Type of Lubrication: Grease
Quantity: Until grease emerges at pivot ends
**Gauge Wheel Bearings**

Seasonal

2 races each of 4 wheels; 8 total
Type of Lubrication: Grease
Quantity: Repack

**Transport Wheel Bearings**

Seasonal

2 races each of 4 wheels; 8 total
Type of Lubrication: Grease
Quantity: Repack

**Seed Cup Drive Shaft Sprocket**

50

2 sliding sprockets; one each side
Type of Lubrication: Oil
Quantity: Coat thoroughly

Move the Seed Rate adjustment handle back and forth to get oil into the square bore. Perform this with seed box empty, or handle may be difficult to set to 100.

**Marker Disk Bearings**

Seasonal

2 races each marker; 2 or 4 total
Type of Lubrication: Grease
Quantity: Repack
Shaft Monitor

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

<table>
<thead>
<tr>
<th>Description</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-Channel Shaft Monitor</td>
<td>116-282A</td>
</tr>
</tbody>
</table>

Flat Folding Markers

Hydraulically operated markers provide precise pass-to-pass spacing by leaving a user-controlled visible score mark to one side.

The single marker is left-side mounted. Dual markers are operated through an automatic sequence valve. After each fold operation, the next unfold extends the other marker. Order one kit per drill.

<table>
<thead>
<tr>
<th>Description</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single Flat Fold Marker 24 foot</td>
<td>113-200A</td>
</tr>
<tr>
<td>Single Flat Fold Marker 30 foot</td>
<td>113-196A</td>
</tr>
<tr>
<td>Dual Flat Fold Marker 24 foot</td>
<td>113-201A</td>
</tr>
<tr>
<td>Dual Flat Fold Marker 30 foot</td>
<td>113-197A</td>
</tr>
</tbody>
</table>

Dual gauge wheels and markers not compatible on 2SNG24.

Seed Firmers

The base 2SNG24 and 2SNG30 product requires a choice of row unit bundles which include one of two firmers: seed flap 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>00 Series 5 inch Seed-Lok®</td>
<td>122-193K</td>
</tr>
<tr>
<td>00 Series 6 inch Seed-Lok®</td>
<td>122-266K</td>
</tr>
</tbody>
</table>
Acremeter

Should a mechanical acremeter fail, or an electronic acremeter’s battery life be exceeded, replace it with our current electronic meter.

<table>
<thead>
<tr>
<th>Description</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>24 foot Acremeter</td>
<td>891-107C</td>
</tr>
<tr>
<td>24 foot Hectare Meter</td>
<td>891-108C</td>
</tr>
<tr>
<td>30 foot Acremeter</td>
<td>891-041C</td>
</tr>
<tr>
<td>30 foot Hectare Meter</td>
<td>891-042C</td>
</tr>
</tbody>
</table>

Air Design Spring Loaded Scrapers

Optional disk scrapers help clear any soil and debris not removed by the standard disk spreaders at the seed tube. Scraper cannot be mounted if optional seed firmers are used. Scrapers are compatible with the standard seed flap.

<table>
<thead>
<tr>
<th>Description</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spring Scraper Assembly</td>
<td>121-781A</td>
</tr>
</tbody>
</table>

Feeder Cup Plugs

This plug stops seed flow from the main seed box above the meter. Order one per row to be set inactive.

<table>
<thead>
<tr>
<th>Description</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 1/4 Wide Feeder Cup Plug</td>
<td>817-200C</td>
</tr>
</tbody>
</table>
### Specifications and Capacities

<table>
<thead>
<tr>
<th></th>
<th>2SNG24-2810</th>
<th>2SNG24-3875</th>
<th>2SNG30-3610</th>
<th>2SNG30-4875</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Row Count</strong></td>
<td>28</td>
<td>38</td>
<td>36</td>
<td>48</td>
</tr>
<tr>
<td><strong>Row Spacing</strong></td>
<td>10 inches</td>
<td>7.5 inches</td>
<td>10 inches</td>
<td>7.5 inches</td>
</tr>
<tr>
<td></td>
<td>(25.4 cm)</td>
<td>(19 cm)</td>
<td>(25.4 cm)</td>
<td>(19 cm)</td>
</tr>
<tr>
<td><strong>Swath (Channel Width)</strong></td>
<td>280 inches</td>
<td>285 inches</td>
<td>360 inches</td>
<td>360 inches</td>
</tr>
<tr>
<td></td>
<td>(711.2 cm)</td>
<td>(723.9 cm)</td>
<td>(914.4 cm)</td>
<td>(914.4 cm)</td>
</tr>
<tr>
<td><strong>Seed Capacity</strong></td>
<td>48 bu (1690 liters)</td>
<td>60 bu (2110 liters)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Native Grass Seed Capacity</strong></td>
<td>24 bu (840 liters)</td>
<td>30 bu (1050 liters)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Small Seed Capacity</strong></td>
<td>6.8 bu (240 liters)</td>
<td>7.2 bu (250 liters)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Working Width</strong></td>
<td>24 feet 9 inches (7.54 m)</td>
<td>30 feet (9.14 m)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Transport Width</strong></td>
<td>14 feet (4.27 m)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Working Length</strong></td>
<td>23 feet 2 inches (7.06 m)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Transport Length</strong></td>
<td>19 feet 4 inches (5.89 m)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Working Height</strong></td>
<td>6 feet 4 inches (1.92 m)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Transport Height</strong></td>
<td>7 feet 7 inches (231 cm)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Transport Clearance</strong></td>
<td>19 inches (48 cm)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Minimum Tractor Requirement</strong></td>
<td>125 hp (93 kW)</td>
<td>140 hp (104 kW)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Hitch</strong></td>
<td>Pull Type, Large Diameter, Small Clevis, or Small Strap</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Hydraulic Circuits Required</strong></td>
<td>Closed or Open Center, 2 or 3 Remotes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Hydraulic Power Required</strong></td>
<td>2250 psi (155 bar) at 5 gallons/minute (19 liters/minute)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Weight, approx.</strong></td>
<td>7500 pounds (3400 kg)</td>
<td>8200 pounds (3700 kg)</td>
<td>8300 pounds (3800 kg)</td>
<td>8800 pounds (4000 kg)</td>
</tr>
<tr>
<td>(minimum, empty)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Weight, approx.</strong></td>
<td>15,100 pounds (6800 kg)</td>
<td>15,700 pounds (7100 kg)</td>
<td>17,700 pounds (8000 kg)</td>
<td>18,100 pounds (8200 kg)</td>
</tr>
<tr>
<td>(maximum, full)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Transport Tire Size</strong></td>
<td>9.5Lx15 12 Ply Tubeless</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Gauge Wheel Tire Size</strong></td>
<td>9.5L-15SL 8 Ply</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Opener Down Pressure</strong></td>
<td>90 to 180 pounds (40 to 80 kg)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Opener Depth Range</strong></td>
<td>4 inches (8.9 cm) in 1/4 inch (6.4 mm) increments</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Tire Inflation Chart

<table>
<thead>
<tr>
<th>Tire Size</th>
<th>Inflation</th>
</tr>
</thead>
<tbody>
<tr>
<td>9.5L x 15” 8 Ply Rib Implement</td>
<td>44 psi (303 kPa)</td>
</tr>
<tr>
<td>9.5L x 15” 12 Ply Rib Implement t</td>
<td>60 psi (414 kPa)</td>
</tr>
<tr>
<td>11L x 15” 12 Ply Rib Implement</td>
<td>52 psi (359 kPa)</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 Manual or online at the manufacturer’s web sites listed below. For assistance or information, contact your nearest Authorized Farm Tire Retailer.

----------------------|---------------------------|-----------------|---------------------|---------------|----------------------|----------------|-------------------|

Torque Values Chart

<table>
<thead>
<tr>
<th>Bolt Size</th>
<th>Bolt Head Identification</th>
<th>Bolt Head Identification</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Grade 2</td>
<td>Grade 5</td>
</tr>
<tr>
<td></td>
<td>N-m&lt;sup&gt;a&lt;/sup&gt; ft-lb&lt;sup&gt;d&lt;/sup&gt;</td>
<td>N-m&lt;sup&gt;a&lt;/sup&gt; ft-lb</td>
</tr>
<tr>
<td>3/8-20</td>
<td>7.4</td>
<td>5.6</td>
</tr>
<tr>
<td>3/8-28</td>
<td>8.5</td>
<td>6.6</td>
</tr>
<tr>
<td>5/16-18</td>
<td>15.1</td>
<td>11.1</td>
</tr>
<tr>
<td>5/16-24</td>
<td>17.1</td>
<td>13.1</td>
</tr>
<tr>
<td>3/8-16</td>
<td>27.0</td>
<td>20.0</td>
</tr>
<tr>
<td>5/16-24</td>
<td>31.0</td>
<td>22.0</td>
</tr>
<tr>
<td>7/16-14</td>
<td>43.0</td>
<td>32.0</td>
</tr>
<tr>
<td>7/16-20</td>
<td>49.0</td>
<td>36.0</td>
</tr>
<tr>
<td>1/2-13</td>
<td>66.0</td>
<td>49.0</td>
</tr>
<tr>
<td>9/16-20</td>
<td>75.0</td>
<td>55.0</td>
</tr>
<tr>
<td>5/16-18</td>
<td>95.0</td>
<td>70.0</td>
</tr>
<tr>
<td>5/16-20</td>
<td>105.0</td>
<td>79.0</td>
</tr>
<tr>
<td>9/16-18</td>
<td>130.0</td>
<td>97.0</td>
</tr>
<tr>
<td>5/16-18</td>
<td>150.0</td>
<td>110.0</td>
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<tr>
<td>3/8-10</td>
<td>235.0</td>
<td>170.0</td>
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<td>3/8-16</td>
<td>260.0</td>
<td>190.0</td>
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<td>7/16-9</td>
<td>225.0</td>
<td>165.0</td>
</tr>
<tr>
<td>7/16-14</td>
<td>250.0</td>
<td>185.0</td>
</tr>
<tr>
<td>1-8</td>
<td>340.0</td>
<td>250.0</td>
</tr>
<tr>
<td>1-12</td>
<td>370.0</td>
<td>275.0</td>
</tr>
<tr>
<td>9/16-7</td>
<td>480.0</td>
<td>355.0</td>
</tr>
<tr>
<td>9/16-12</td>
<td>540.0</td>
<td>395.0</td>
</tr>
<tr>
<td>1/2-7</td>
<td>680.0</td>
<td>500.0</td>
</tr>
<tr>
<td>1/2-12</td>
<td>750.0</td>
<td>555.0</td>
</tr>
<tr>
<td>13/16-6</td>
<td>890.0</td>
<td>655.0</td>
</tr>
<tr>
<td>13/16-12</td>
<td>1010.0</td>
<td>745.0</td>
</tr>
<tr>
<td>15/16-6</td>
<td>1180.0</td>
<td>870.0</td>
</tr>
<tr>
<td>15/16-12</td>
<td>1330.0</td>
<td>980.0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Bolt Size</th>
<th>Class 5.8</th>
<th>Class 8.8</th>
<th>Class 10.9</th>
</tr>
</thead>
<tbody>
<tr>
<td>mm x pitch&lt;sup&gt;c&lt;/sup&gt; ft-lb&lt;sup&gt;d&lt;/sup&gt;</td>
<td>N-m&lt;sup&gt;a&lt;/sup&gt; ft-lb</td>
<td>N-m&lt;sup&gt;a&lt;/sup&gt; ft-lb</td>
<td>N-m&lt;sup&gt;a&lt;/sup&gt; ft-lb</td>
</tr>
<tr>
<td>M 5 X 0.8</td>
<td>4</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>M 6 X 1</td>
<td>7</td>
<td>5</td>
<td>11</td>
</tr>
<tr>
<td>M 8 X 1.25</td>
<td>17</td>
<td>12</td>
<td>26</td>
</tr>
<tr>
<td>M 8 X 1</td>
<td>18</td>
<td>13</td>
<td>28</td>
</tr>
<tr>
<td>M 10 X 1.5</td>
<td>33</td>
<td>24</td>
<td>52</td>
</tr>
<tr>
<td>M 10 X 0.75</td>
<td>39</td>
<td>29</td>
<td>61</td>
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<tr>
<td>M 12 X 1.75</td>
<td>58</td>
<td>42</td>
<td>91</td>
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<tr>
<td>M 12 X 1.5</td>
<td>60</td>
<td>44</td>
<td>95</td>
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<tr>
<td>M 16 X 1.5</td>
<td>90</td>
<td>66</td>
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<tr>
<td>M 14 X 1.5</td>
<td>92</td>
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<td>M 16 X 2</td>
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<td>390</td>
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<tr>
<td>M 30 X 3.5</td>
<td>960</td>
<td>705</td>
<td>1510</td>
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<tr>
<td>M 30 X 2</td>
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<td>785</td>
<td>1680</td>
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<tr>
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<td>1730</td>
<td>1270</td>
<td>2650</td>
</tr>
<tr>
<td>M 36 X 2</td>
<td>1880</td>
<td>1380</td>
<td>2960</td>
</tr>
</tbody>
</table>

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

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

25199
Appendix B - Assembly and Setup

Before You Start

Read and understand the operator’s manual for your drill. A basic understanding of how the drill works will aid in the assembly and setup of your drill.

Before attempting to assemble the drill use the following as a check list. Having all the needed parts and equipment ready at hand will speed up your assembly task and will make the job as safe as possible.

- Check for all major frame components.
- Check for fasteners and pins that were shipped with the drill.

**NOTE:**
All hardware coming from the factory has been installed in the location where it will be used. If a part or fastener is temporarily removed for assembly reasons, remember where it goes. Keep the parts separated.

- If a pin, bolt or other part has been removed and you are unsure where it is used, use the parts manual to identify it. Be sure the part gets used in the correct location. By double checking while you assemble, you will lessen the chance of using a bolt incorrectly that may be needed later.
- Have a forklift or loader along with chains and safety stands that are sized for the job ready for the assembly task.
- Have a tractor with remote hydraulics ready to attach to the tongue. The tongue must be anchored to a large enough tractor to overcome the negative tongue weight that will be present when the boxes are attached to the frame. The hydraulics will aid in raising and lowering the drill to align pins and bolts during assembly.

**WARNING**

Negative Tongue Weight Hazard:
Be familiar with the term NEGATIVE TONGUE WEIGHT. Be aware of the special precautions you should take when working with an implement that can develop Negative Tongue Weight.

- Have a minimum of two people on hand while assembling the drill.

Drill Assembly

Refer to Figure 43 on page 55.

1. Read and understand the previous section “Before You Start”.
2. Read “Important Safety Information” on page 1, before assembling drill.
3. Set the tongue (1) approximately 21 inches off the ground in a horizontal position with stable blocking for support.
4. Raise the mainframe (2) up, keeping the side members horizontal. Position the mainframe over the tongue and lower into position.
5. Secure tongue to mainframe with six 1 x 2 1/2 inch long bolts (3), lock washers, and nuts.
6. Attach the tongue screw jack (4) in a vertical position and remove blocking so the unit is on the ground.
7. Remove the safety wires from each hydraulic cylinder rod clevis between the tires.
8. Slide the hydraulic hoses from the mainframe through the tongue and pull them out at the tractor end. Attach tractor male couplers to the hydraulic hoses.
9. Hook tractor up to the tongue and plug hydraulic connectors into the tractor.
   a. With tractor running at an idle speed charge the drill hydraulic system. Be sure tractor has plenty of hydraulic fluid. (This system requires approximately 3.3 gallons.)
   b. When the drill frame is raised for the first time, one lift cylinder will extend fully before the other one begins to move.
   c. Once the first cylinder is fully extended continue to hold the tractor valve in the same position for at least 60 seconds after the second lift cylinder has fully extended.
   d. Raise and lower the frame several times to be sure there is no binding or problems with your lift system. Refer to “Hitching Tractor to Drill” on page 14, for additional information.
10. Attach the gauge-wheel turnbuckle (5) to the gauge-wheel arm (6) on each drill and then mount the wheel (7) and tire.
11. Position the two drill boxes in line, end to end, with the end chain drive sprockets outboard and approximately 3 inches between the drill boxes. Drills on 8 inch row spacing and narrower will have 8 inch spacing at disks between boxes.

12. Using the tractor, back the drill main frame up to the center of the two drill boxes (8).
   a. When close, position the posts (9) on each side of the mainframe so the face of the post mounting angles are toward the drill frames.
   b. Attach the post (9) to the drill frames using eight 5/8 x 3 1/2 x 5 inch long U-bolts (10), lock washers (11), and nuts (12).
   c. With the U-bolts left loose, slide the drill frames inward so that the lugs (13) welded to the drill frames are up tight against the post angles.
   d. Tighten all the nuts on the U-bolts.

13. Attach frame adjustment link (14) from the drill frame to the pivot post using the clevis pin (15) with hairpin cotters.
   Pin to pin should be approximately 37 inches.

14. Locate drill transport stabilizer frame (16) 86 1/2 inches from the outside edge of each box frame.
   a. Using 5/8 inch U-bolts (17), lock washers (18), and nuts (19), mount stabilizer to box frame.
   b. Repeat for other side.

15. Adjust clevis end of pull bars (20) so that the distance from the center line to center line of pull bar pin holes is approximately 134 1/4 inches.

16. Mount pull bars to drill transport stabilizer frames (16) and tongue slide (21). With the tongue slide in the back position against its stop, adjust pull bar lengths so boxes are in line with one another and parallel to the back edge of the mainframe.

17. Extend the main lift cylinder (22) and place the transport lock pins (23) in the transport position through the holes in the mainframe axle side tube.

18. Fold the drill making sure that the tongue slide (21) moves smoothly up the tongue.
   a. When drill boxes are almost folding in, stop and adjust the post-frame adjustment links on each box so that the tang (24) on each drill transport stabilizer frame lines up with the nest (25) on the front of the main frame.
   b. Fold drill completely closed.

19. With tongue slide forward on the tongue and drill folded completely, position the pull bar lock pin (26) across the top of the tongue slide. Adjust the transport lock bolt (27) on top and front of tongue up against lock pin with 1/16 inch clearance and lock the jam nut. This pin prevents the drill from unfolding when in transport.

**NOTICE**

_Do not lower drill while in folded position, certain equipment damage will occur._

20. Check to see that all nuts are tightened. See “Torque Values Chart” on page 52, for torque specifications.
Assembly Diagram

Figure 43
Assembly Diagram
Harness Installation (2SNG24 S/N 3509F+) (2SNG30 S/N 3974G+)

The red and amber lights should already be installed on the machine. The enhanced module and machine wishbone harness will need to be installed to connect the lights.

**CAUTION**

Harness Damage Hazard:  
Make sure all wiring harnesses are secured to the machine to prevent damage to the harnesses which can result in injury to the operator or damage to the machine.

Refer to Figure 44 and Figure 45 on the next page.

The main wiring harness (1) with 7-pin plug (2) will already be installed inside the tongue.

1. Install the enhanced module (3) to the rear of the mainframe as shown. Secure with two 1/4-20 x 1 1/4 inch bolts (4) and flange nuts (5).

2. Plug in the main wiring harness coming from the rear of the tongue to the enhanced module.

3. Connect the wishbone harness (6) to the other end of the enhanced module. Make sure to position the wishbone harness so it can be routed as follows:
   - The wires with green tape will be routed to the right-hand side of the machine.
   - The wires with yellow tape will be routed to the left-hand side of the machine.

4. Route the wishbone harness to the red lights.

5. Plug in the three pin connectors (7) to the red lights.

6. Route the two pin wire lead (8) to the amber lights. Some wire ties, connecting the two and three pin wire leads, may need to be clipped off with side cutters to route the two pin wire leads.

7. Plug in the two pin connectors (9) to the amber lights.

8. Secure the wiring harness to the machine with adhesive backed cord clips (10) and wire ties (11).

**NOTICE**

Wire Damage Risk:  
Make sure all harnesses are secured to machine. To prevent damage to harnesses, do not stretch wires and do not let wires drag on the ground. Allow enough harness length for folding and unfolding machine, and watch for any pinch points.
Figure 45
Harness Routing Diagram
Warranty

Great Plains (a division of Great Plains Manufacturing, Inc.) warrants to the original purchaser that this Great Plains unit will be free from defects in material and workmanship for a period of one year from the first use date when used as intended and under normal service and conditions for personal use; ninety days for custom/commercial or rental use. This Warranty is limited to the replacement of any defective part by Great Plains and the installation by the dealer of any such replacement part. Great Plains reserves the right to inspect any equipment or part which are claimed to have been defective in material or workmanship.

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

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

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

This warranty is not valid unless the unit is registered with Great Plains within 10 days from the date of the original purchase.
Index

A
adjustments ......................................35
amber reflectors ................................6
B
blue, hose grip ....................................16
bolt, shear .........................................45
C
capacities .........................................50
cap, grease seal .................................45
CAUTION, defined .............................1
checklists
    pre-setup ......................................13
    pre-start ......................................24
chemicals .........................................4
children ...........................................3
color code, hose .................................16, 17
covered models ..................................11
customer service ................................12
cylinder symbols ................................16, 17
D
DANGER, defined ...............................1
daytime reflectors ...............................7
decal replacement ................................6
decals
cautions
    PP-HC-MF-24 & 30 ...........................9
tire damage hazard .........................9
notice
    lift cyl operating instructions ..........10
warning
    falling hazard ..............................8
    negative tongue weight ..................8
    speed ........................................8
decal, safety .....................................6
disposal, chemical ............................4
dual marker .....................................31
F
fire ...............................................1
folding ...........................................26
G
gauge wheel turnbuckle ......................22
grey, hose grip ................................16
grease seal cap ..................................45
H
height, hitch ....................................20, 21, 22, 23
height, tool bar ................................19, 21
high pressure fluids ..........................2
hitch height ....................................20, 22
hitching .........................................14
hydraulic safety ................................2
I
inflation .........................................52
intended usage ...................................11
L
left-hand, defined ............................11
leveling hitch pin ................................2
lights ..............................................3
M
maintenance .....................................43
    marker ........................................45
    maintenance safety .......................5
    marker operation ..........................31
    marker shear bolt .........................45
model number ..................................12
M8x1.25 Class 8.8 .............................45
N
Note, defined ..................................11
NOTICE, defined .............................11, 12
O
owner assistance ..............................12
P
parking ..........................................30
planting depth adjustments ...............36
protective equipment .......................2
R
red reflectors ...................................7
    reflectors
        amber ......................................6
        daytime ..................................7
        red .......................................7
SMV ..............................................6
reflectors, safety .............................6
repair parts ....................................12
riders ...........................................2, 3
right-hand, defined .........................11
S
safety chain ....................................2
safety decal ....................................6
safety information ............................1
safety symbol ...................................1
seed flap .........................................44
Seed-Lok® .......................................48
serial number ..................................12
setup .............................................13
    initial .......................................13
    pre-planting ..............................13
    seasonal .....................................13
shutdown .........................................4
specifications ..................................50
storage ..........................................4, 34
symbol, safety ..................................1
T
tables
    adjustments ..................................35
document family .............................11
hose color code ...............................16, 17
models covered ...............................11
torque values ..................................52
threaded stud ...................................21, 23
tire inflation ..................................52
tires ..............................................4
top slide cylinder ............................23
torque
    fastener .....................................52
towing vehicle capability .................29
transport ........................................29
transport speed ................................3
two markers out .............................31
U
URLs, tires ......................................52
W
WARNING, defined ...........................1
warranty .........................................52
welding .........................................5
wing fold hydraulics .......................19, 21
Numercs
113-196A, marker .........................48
113-197A, marker .........................48
113-200A, marker .........................48
113-201A, marker .........................48
802-012C, bolt ..............................45
803-011C, nut ...............................45