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

Illustrations may show optional equipment not supplied with standard unit.
### Machine Identification

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

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

<table>
<thead>
<tr>
<th>Model Number</th>
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</thead>
<tbody>
<tr>
<td>Serial Number</td>
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<tr>
<td>Machine Height</td>
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<td>Accessories</td>
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</tr>
</tbody>
</table>

### Dealer Contact Information

Name: ____________________________
Street: ____________________________
City/State: ____________________________
Telephone: ____________________________
Email: ____________________________
Dealer’s Customer No.: ____________________________

⚠️ **WARNING:** Cancer and Reproductive Harm - www.P65Warnings.ca.gov
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Singulator Plus, Short Disk, Swath Command, Terra-Tine, Ultra-Chisel, and X-Press. 
Registered Trademarks of Great Plains Manufacturing, Inc. include: Air-Pro, Clear-Shot, Discovator, Great Plains, Land Pride, MeterCone, 
Brand and Product Names that appear and are owned by others are trademarks of their respective owners.
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. The signal words are:

DANGER Indicates an imminent hazard 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 potential hazard 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 potential hazard which, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices.

Prepare for Emergencies

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

Wear Protective Equipment

1. Wear protective clothing and equipment appropriate for the job, such as safety shoes, safety glasses, hard hat, and ear plugs.
2. Clothing must fit snug without fringes and pull strings to avoid entanglement with moving parts.
3. Prolonged exposure to loud noise can cause hearing impairment or hearing loss. Wear suitable hearing protection such as earmuffs or earplugs.
4. Operating equipment safely requires your full attention. Avoid wearing entertainment headphones while operating machinery.

Use A Safety Chain

1. A safety chain will help control drawn machinery if the machinery separates from tractor drawbar.
2. Use a chain with a strength rating equal to or greater than the gross weight of towed machinery.
3. Attach chain to tractor drawbar support or other specified anchor location. Allow only enough slack in chain to permit turning.
4. Replace chain if any links or end fittings are broken, stretched or damaged.
5. Do not use safety chain for towing.

1. Symbols and color of decals are based on ANSI standard Z535.
Avoid High Pressure Fluids

Escaping fluid under pressure can penetrate the skin, causing serious injury.
1. Make sure all hydraulic fluid connections are tight and all hydraulic hoses and lines are in good condition before applying pressure to the system.
2. Avoid the hazard by relieving pressure before disconnecting hydraulic lines or performing any work on the system.
3. Wear protective gloves and safety glasses or goggles when working with hydraulic systems.
4. Use a piece of paper or cardboard, NOT BODY PARTS, to check for suspected leaks.
5. DO NOT DELAY. If an accident occurs, seek immediate medical assistance from a physician familiar with this type of injury. Any fluid injected into the skin or eyes must be treated within a few hours or gangrene can result.

Tire Safety

Tire changing can be dangerous and must be performed by trained personnel using correct tools and equipment.
1. 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.
2. When removing and installing wheels, use wheel-handling equipment adequate for weight involved.

Use Safety Lights and Devices

Slow-moving tractors and towed machinery can create a hazard when driven on public roads. They are difficult to see, especially at night.
1. Use flashing warning lights and turn signals whenever driving on public roads.
2. Use lights and devices provided with implement.

Keep Riders Off Machinery

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

Transport Machinery Safely

Maximum Transport speed for implement is 30 kph (20 mph). Some rough terrains require a slower speed. Sudden braking can cause a towed load to swerve and upset.
1. Comply with state and local laws.
2. Carry reflectors or flags to mark machinery in case of breakdown on the road.
4. Do not tow an implement that, when fully loaded, weighs more than 1.5 times the weight of towing vehicle.
5. Turning tractor too tight can cause implement to tip over.
6. When towing on a trailer, secure implement with tie downs and chains.
7. When towing on a trailer, sudden braking can cause a trailer to swerve and upset. Reduce speed if trailer is not equipped with brakes.

**Shutdown and Storage**

1. Park the tractor and implement on a solid, level surface where children normally do not play.
2. Put tractor in park or set park brake. Turn off engine and remove switch key to prevent unauthorized starting.
3. Wait for all components to come to a complete stop before leaving the operator’s seat.
4. Detach the tractor. Secure the implement using blocks and supports.

**Practice Safe Maintenance**

1. Understand procedure before doing work. Use proper tools and equipment. Refer to this manual.
2. Work in a clean, dry area.
3. Lower the implement. Put tractor in Park, turn off engine. To prevent unauthorized starting, remove key before performing maintenance or service work.
4. Make sure all moving parts have stopped and all system pressure is relieved.
5. Disconnect lighting harness from the tractor before servicing or adjusting electrical systems.
6. Allow machine to cool completely.
7. Welding: Disconnect lighting harness from the tractor. Protect hydraulic lines. Avoid fumes from heated paint.
8. Inspect all parts. Make sure parts are in good condition and installed properly.
9. Do not alter this machine in a way which will adversely affect its performance.
10. Remove buildup of grease, oil or debris.
11. Remove all tools and unused parts from implement 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.

Do not allow anyone to operate this equipment who has not fully read and comprehended this manual and who has not been properly trained in the safe operation of the equipment.

1. The operator must not use drugs or alcohol as they can change the alertness or coordination of that person while operating equipment. If over-the-counter drugs are used, seek medical advice on whether you can safely operate equipment.
2. Operator must be familiar with all functions of the tractor and attachments, and be able to handle emergencies quickly.
3. Make sure all guards and shields are in place and secured before operating the implement.
4. Keep all bystanders away from equipment and work area.
5. Operator must start tractor and operate controls from the driver’s seat only, never from the ground.
6. Dismounting from a moving tractor can cause serious injury or death.
7. Be familiar with all functions of the implement.
8. Do not leave implement unattended with tractor engine running.
9. Do not stand between the tractor and the implement during hitching.
10. Watch out for wires, trees, etc., when folding and raising the implement.
11. Turning tractor too tight can cause hitched implement to ride up on wheels. This can result in injury or equipment damage.
Safety Decals

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

▲ Read and follow decal directions.
▲ 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
(S/N 11957Z+)
818-055C

At rear center of main frame; 1 total

Red Reflector (S/N 11957Z+)
838-266C

One on rear face of each weight bracket; 2 total

Red Reflector (CPH-12/CPH-15
S/N 11957Z+)
838-266C

One on rear face at end of each light bracket; 2 total
Red Reflector (CPH-20 S/N 11957Z+)
838-266C
One on rear face at end of each light bracket; 4 total

Amber Reflector (S/N 11957Z+)
838-265C
One on front face at ends of outside light brackets, One on each side of tongue; 4 total

Daytime Reflector (S/N 11957Z+)
838-267C
One on rear face of each weight bracket; 2 total

Daytime Reflector (CPH-12/CPH-15 S/N 11957Z+)
838-267C
One on rear face of each light bracket; 2 total
Daytime Reflector (CPH-20 S/N 11957Z+)
838-267C

One on rear face of each light bracket; 4 total

Warning: Negative Tongue Weight Hazard
818-019C

One on top of tongue; 1 total

Warning: Excessive Speed Hazard
818-188C

One on front face of main frame; 1 total

Caution: General Safety Rules
818-587C

One on top of tongue; 1 total
Caution: Tire Not a Step  
818-398C

Above tires on outside face of main frame; 2 total

Caution: Tire Inflation Hazard (CPH-20)  
818-752C

One on each wheel; 4 total

Caution: Tire Inflation Hazard (CPH-12/CPH-15)  
838-092C

One on each wheel; 4 total
Introduction

Great Plains welcomes you to its growing family of new product owners. This implement has been designed with care and built by skilled workers using quality materials. Proper setup, maintenance and safe operating practices will help you get years of satisfactory use from the machine.

Description of Unit

The center pivot hitch is a pull-type tillage implement designed to tow a Great Plains three-point drill. No-till coulters are mounted on the hitch. Each coulter is aligned with a drill opener. The coulters till strips for the drill openers. The hitch has two hydraulic circuits: one for raising and lowering the coulters and one for raising and lowering the drill.

Intended Usage

Use the center pivot hitch in no-till field conditions. Use the hitch only with a Great Plains three-point drill. Do not modify the hitch for use with drills or attachments other than those specified by Great Plains.

Covered Models

- CPH-12: Center Pivot Hitch 12 ft
- CPH-12F: Center Pivot Hitch 12 ft Fertilizer
- CPH-15: Center Pivot Hitch 15 ft
- CPH-15F: Center Pivot Hitch 15 ft Fertilizer
- CPH-20: Center Pivot Hitch 20 ft
- CPH-20F: Center Pivot Hitch 20 ft Fertilizer

Document Family

- 148-152M: Operators Manual CPH
- 148-152P: Parts Manual CPH
- 148-152Q: Pre-Delivery Instructions CPH

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.

Right-hand and left-hand as used in this manual are determined by facing the direction the machine will travel while in use unless otherwise stated.

**NOTICE**

Economic and/or Liability Risks:
A crucial point of information related to the current topic. Read and follow the directions to remain safe, avoid serious damage to the equipment and to ensure desired field results.

**NOTE:**
Useful information related to the current 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.
**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.

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 as shown below.

![Serial Number Plate](image)

Record your model and serial number here for quick reference:

Model Number: ________________________________

Serial Number: ________________________________

**Further Assistance**

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

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

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

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

**Great Plains Service Department**

1525 E. North St.
P.O. Box 5060
Salina, KS 67402-5060

Or go to [www.greatplainsag.com](http://www.greatplainsag.com) and follow the contact information at the bottom of your screen for our service department.
Preparation and Setup

This section will help you prepare your tractor and drill for use. You must hitch the tractor to the hitch, connect the hydraulics to your tractor, hitch the drill to your hitch, and bleed the hydraulic systems.

Prestart Checklist

1. Read and understand “Safety Information” on page 1.
2. Check that all working parts are moving freely, bolts are tight, and cotter pins are spread.
3. Check that all grease fittings are in place and lubricated. Refer to “Lubrication” on page 23.
4. Check that all safety decals and reflectors are correctly located and legible. Replace decals if damaged. See “Safety Decals” on page 4.
5. Inflate tires to pressure recommended and tighten wheel bolts as specified. See “Specifications and Capacities” on page 26.

Hitching Tractor to Hitch

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

Refer to Figure 2

6. Place hitch weldment (1) over ball swivel (2) on hitch tongue. Hold hitch weldment in place by inserting spacer tube (3) through hitch clevis and ball swivel.
7. Back tractor up to hitch and bolt hitch weldment to tractor drawbar using 1-by-10-inch bolt (4), large flat washer (5), lock washer (6), and nut (7).
8. Use 3/4-by-9-inch bolt (8) to bolt hitch weldment through its slotted hole and onto secondary hole of tractor drawbar. Install a 3/4-inch flat washer (9) next to top slotted hole and fasten with a lock washer (10) and nut (11). Tighten both bolts.
10. Remove jack from stob on side of hitch tongue and place in transport position on frame brace.
Hitching Drill to Hitch

**DANGER**

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

1. Place hitch extension (1) between top hitch plates on drill. Bolt hitch extension in place as shown in Figure 4 using two 1-by-5 1/2-inch bolts (2), lock washers (3) and hex nuts (4).

2. With center-pivot hitch hitched to tractor drawbar, remove transport lock pins from vertical tubes above tires. Place transport lock pins in storage hole next to stabilizer cylinder.

3. Position center pivot hitch in front of drill so quick-hitch links on hitch are in line with lower hitch pins on drill. Hydraulically retract transport-lift cylinders to position quick-hitch links slightly lower than drill hitch pins.

4. Position quick-hitch handles to locking position as shown in Figure 6. This will allow drill hitch pins to snap into quick-hitch links and secure drill to hitch.

5. Back center pivot hitch up to drill until hitch pins contact quick hitch. Hydraulically raise hitch just until drill hitch pins are secure inside quick-hitch links. Do not raise drill any higher than necessary.

6. Attach slotted level-link bar (1) to top hitch extension on drill. Use 1-by-3 3/4-inch pin (2) and bushing (3) to pin level-link bar to drill. Secure pin with clip provided (4).
Hydraulic Hose Hookup

**WARNING**

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

Connect hydraulic hoses from tongue cylinder to one set of tractor outlets. Connect hoses from transport-lift cylinders to another set of tractor outlets.

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

<table>
<thead>
<tr>
<th>Color</th>
<th>Hydraulic Function</th>
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</thead>
<tbody>
<tr>
<td>Red</td>
<td>Field Lift Cylinders</td>
</tr>
<tr>
<td>Blue</td>
<td>Transport Lift Cylinders</td>
</tr>
<tr>
<td>Orange</td>
<td>Marker Cylinders</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 feed cylinder rod ends.

For Older Models

To distinguish hoses on the same hydraulic circuit, refer to plastic hose holder. Hose under extend-cylinder symbol feeds cylinder base ends. Hose under retracted-cylinder symbol feeds cylinder rod ends.

---

Figure 8
Color Coded Hose Grips

Figure 9
Hydraulic Hose Color Ties
**Bleeding the Hydraulics**

**WARNING**

*High Pressure Fluid Hazard:*

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

Hydraulics must be bled of air before hitch operation. If the hydraulics are not bled, the cylinders will move with jerky, uneven motions. The hydraulics should be bled during initial hitch setup. If the hydraulics have not be bled, or if you replace a hydraulic component during the life of the drill, follow these procedures.

**Bleeding Tongue Cylinder**

1. Check hydraulic fluid in tractor reservoir and fill to proper level. Add fluid to system as needed. Tongue cylinder capacity is one-half gallon (1.89 liters).
2. Raise and safely support hitch, transport frame and front tongue.
3. Unpin rod end of tongue cylinder. Block, wire or otherwise safely support cylinder so when rod end is fully extended it does not contact anything.
4. Cycle cylinder completely in and out at least three times to purge air from cylinder and hoses.
5. Fully extend cylinder and repin rod end.
6. Recheck tractor reservoir and fill to proper level.

**Bleeding Transport Lift Cylinders**

The transport-lift cylinders are rephasing cylinders and require a special procedure for bleeding air from the circuit. Read and follow procedure carefully. Cylinders will not function properly with air in the hydraulic circuit.

1. Check hydraulic fluid in tractor reservoir and fill to proper level. Add fluid to system as needed. Transport-lift-cylinder capacity is about 2 gallons (7.57 liters).
2. Jack up and support hitch frame.
3. Remove 1/2-inch nylock nuts on spring side of cylinder-support brace. Unpin cylinders. Do not alter position of jam nuts on center of support-brace bolts.
4. Turn cylinders to a position where rod ends are higher than base ends. Support cylinders in a safe location.
5. Start tractor and run engine at idle speed. With rod ends higher than base ends, hydraulically extend cylinders. After cylinder rods are fully extended, continue to hold control lever for one minute before hydraulically retracting cylinders.
Operating Instructions

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

Prestart Checklist

2. Lubricate implement as indicated under "Lubrication" on page 23.
3. Check all tires for proper inflation as indicated in "Specifications and Capacities" on page 26.
4. Check all bolts, pins and fasteners. Torque as specified on "Torque Values Chart" on page 27.
5. Check implement for worn or damaged parts. Repair or replace before going to the field.
6. Check hydraulic hoses, fittings and cylinders for leaks. Repair or replace before going to the field.

Field Operation

2. Unlock pivot-lock tubes. Refer to Pivot Lock Tubes, this page.
3. Hydraulically adjust coulters to desired depth. Note reference measurement on tongue-cylinder gauge to help you achieve the same coulter depth with each field pass. Refer to Coulter Depth, "Adjustments," page 17, for further adjustment instructions.
4. Set drill seeding rate. Refer to drill operator’s manual.
5. Load drill box with clean seed.
6. Pull forward, lower coulters and drill and begin seeding.
7. Always lift coulters and drill out of ground when turning at row ends and for other short turns. Seeding will stop automatically as drill is raised.

Pivot Lock Tubes

The pivot-lock tubes are located behind the stabilizer cylinders on each side of hitch.

During normal field operation, operate hitch with pivot-lock tubes unlocked so hitch can pivot and drill openers can properly track coulters.
When drilling on steep slopes or transporting, lock pivot-lock tubes. To lock tubes, turn so tubes are horizontal with hitch frame.

You can adjust spring tension on pivot-lock tubes. Refer to “Pivot Lock Tube Adjustment” on page 19.

Transport Lift Cylinders

The transport-lift cylinders are rephasing hydraulic cylinders. After a period of normal use, the cylinders may get out of sequence. If this happens, the hitch will lift unevenly or one set of tires will not retract from the soil.

To rephase cylinders, raise drill completely and hold hydraulic lever on for a few seconds to allow cylinders time to rephase.

Transporting

**WARNING**

*Loss of Control Hazard:*

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

1. Check that implement is securely hitched to a sufficient tractor. Refer to “Hitching Tractor to Hitch” on page 10. Make sure safety chain is secured to tractor.

2. Unload drill seed box before transporting if at all possible. The implement can be transported with a full box of grain, but added weight will increase stopping distance and decrease maneuverability.

3. Check that tires are properly inflated. Refer to “Specifications and Capacities” on page 26.

4. Know implement dimensions in transport position. Choose a route that provides adequate clearance from all obstructions. Refer to “Specifications and Capacities” on page 26, for dimensions.

5. Hydraulically lift drill with transport-lift cylinders.

6. Install transport lock pins in vertical axle tubes.

7. Lock pivot-lock tubes for transport. Position tubes so they are horizontal against hitch frame. See Figure 12.

8. Remove lock channel from storage. Install lock channel over extended tongue-cylinder rod.

9. Comply with all laws when traveling on public roads.
Parking
Perform the following steps when parking implement. Refer to “Storage” on page 22, for information on long-term storage preparation.

1. Park implement on a firm, level area. Lower coulters and drill to ground.
2. Block tires securely to prevent rolling.
3. Release pressure on hydraulic system, then disconnect hydraulic lines. Check that hose ends do not rest on ground.
4. Move jack from transport position and place it on stob on side of hitch tongue.

Figure 15
Jack Extended

5. Extend jack until all weight is off tractor drawbar. Remove 1-by-10-inch bolt, washer and nut.
**Adjustments**

**Coulter Down Pressure**

The amount of coulter down force needed to cut a soil groove varies with soil conditions. Adding weight or shortening the coulter spring increases coulter down pressure and cutting force.

**Added Weight**

In hard soil conditions where coulter penetration is limited, you can add suitcase weights to brackets on hitch the frame. Adding weight on the hitch frame provides the best weight distribution for no-till drilling. You can add up to 100 lbs (45 kg) of additional weight per foot of hitch width (1200, 1500 or 2000 pounds maximum). Place an equal amount of weight on each weight bracket.

**Coulter Springs**

Coulter-spring length is preset at the factory to 10 inches, giving coulters an initial operating force of 400 lbs (181 kg). This setting is adequate for many difficult no-till conditions. For lighter no-till conditions where rocks or other obstructions are a problem, you can reduce coulter down pressure to give coulters better impact protection. Refer to the following chart for adjusting coulter down pressure.

<table>
<thead>
<tr>
<th>Spring Length</th>
<th>Coulter Down Pressure</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 1/2 in (26.67 cm)</td>
<td>175 lbs (79 kg)</td>
</tr>
<tr>
<td>10 1/4 in (26.03 cm)</td>
<td>300 lbs (136 kg)</td>
</tr>
<tr>
<td>10 in (25.40 cm)</td>
<td>400 lbs (181 kg)</td>
</tr>
<tr>
<td>9 3/4 in (24.77 cm)</td>
<td>525 lbs (238 kg)</td>
</tr>
</tbody>
</table>

**NOTICE**

*Equipment Damage Risk:*
Resetting coulter-spring length shorter than 9 3/4 in (24.77 cm) may contribute to premature failure of parts and warranty will be voided.

**Seeding Depth**

For accurate seeding-depth adjustments, you must adjust your hitch and drill to match your soil conditions.

To adjust seeding depth:
1. Adjust coulters to desired depth.
2. Adjust length of gauge-wheel turnbuckles on drill for proper frame height. Refer to leveling information in the drill operator’s manual.
3. Set lock plate on hitch level link to position that best matches your field conditions. Refer to “Lock Plate” on page 18.

**Coulter Depth**

A no-till coulter is mounted on the hitch directly ahead of each opener on the drill. The coulters cut through heavy trash and make a groove in the soil for the openers. The center-pivot hitch is designed to allow coulters to penetrate approximately 2 in (5 cm) into soil when the tongue is level. However, hard soil or heavy crop residue may cause shallow penetration. If coulter penetration is different than desired, depth can be adjusted hydraulically for all coulters or manually for individual coulters.

**Hydraulic Control**

Make the following adjustment when drilling in level ground with the seed box half full.

1. Retract tongue cylinder to transfer weight to coulter toolbar.
2. Set tongue cylinder so that coulters are at desired depth. Note setting on cylinder gauge so that you can return to the same depth.

**NOTE:**

Use cylinder gauge only as a reference. Gauge does not measure actual coulter depth.
Coulter Mounting Height
You can change the depth of individual coulters by adjusting coulter-mounting height. If you adjust coulter height, be sure to rebolt coulters vertically straight and correctly spaced. To raise or lower individual coulters:

1. Loosen mounting clamps and adjust coulter to desired height. Do not lower coulter spring bar below top u-bolts on coulter clamp.
2. To retighten clamps, refer to Figure 18. Snug hex-head clamp bolts (1) just until U-bolts are tight on each side of spring bar.
3. Tighten nuts (2) on U-bolts.
4. Finish tightening hex-head clamp bolts.

**NOTE:**
Even when coulter is held securely, there may be a gap between clamp halves.

Lock Plate
Set lock plate to match your field conditions. Lock plate is located at rear of level link.

No-Till, Hard and Dry Soil
For maximum opener penetration, operate drill and hitch in rigid position. The rigid position is the most common position for no-till seeding and is effective for a wide range of field conditions. Lock plate down over top link pin.

Minimum Till, Average Soil with Hills and Terraces
For softer soils that have been tilled lightly and for drilling over hills, contours, ditches or terraces, operate drill in limited-float position. Leave lock plate unlocked and adjust level link so top link pin is at back of slot. (Refer to "Level Link Adjustment" on page 19.) The limited-float position allows hitch and drill to flex when traveling over contours but transfers enough weight to drill for opener penetration in softer soils.
Conventional Tillage, Very Soft Soils
For maximum flotation over hills and contours in soft soils, operate drill and hitch in maximum-float position. Leave lock plate unlocked and adjust level link so top link pin is in center of slot. (Refer to "Level Link Adjustment" on page 19.) In maximum-float position, drill tips forward and back independent of hitch.

Leaf Spring Adjustment
A leaf spring is located just ahead of the vertical pivot. The spring is designed to provide just enough force to keep the hitch square and stable for turning at field ends and to add stability for drilling in rough field conditions. Proper leaf-spring adjustment is important for smooth implement operation.

To adjust properly, refer to Figure 23. Square tongue with transport frame and adjust 3/8-inch u-bolts (1) on each side until leaf-spring rollers (2) just make contact with roller pads (3) on transport frame. Make sure both right and left sides are adjusted properly.

Level Link Adjustment
After setting lock plate to position that matches your field conditions, adjust level link to level drill.

1. With drill box half-full of seed, lower drill and coulters into field position in the field.
2. Observe drill and hitch from the side. The top of drill box (1) should be parallel with the ground.
3. If necessary, adjust level link. Refer to Figure 22. Raise drill and hitch, unlock lock plate and unpin level link (2) from hitch. Loosen jam nut (3) and turn eye bolt to shorten or lengthen link as necessary.
4. Repin link, lower drill and coulters and recheck top of drill box. When drill box is parallel with ground, tighten jam nuts.

Pivot Lock Tube Adjustment
To adjust tension on pivot-lock tubes, loosen jam nut and screw bolt in or out to desired setting and retightening jam nut. When pivot frame is 90 degrees to tongue, bolt head should be about 1/16 inch (0.16 centimeter) away from pivot frame.

Transport Cylinder Support Brace
The transport-lift cylinders are equipped with cylinder support braces to prevent cylinder buckling during transport. These support braces must be properly assembled to support transport-lift cylinders without binding or placing undo side loads on cylinders.

If cylinders are removed or inner-axle-slide blocks become worn, assemble or adjust support braces as follows.Use this procedure for both support bolts on the transport-lift cylinders. See Figure 24.

1. Assemble 1/2-by-5 1/2-inch, full-thread bolt (1) to cylinder support brace (2), bolted to rod end cylinder casting.
2. Screw on three 1/2-inch jam nuts (3) and one 1/2-inch washer (4) as shown. Tighten first jam nut against cylinder support (2) and run other two jam nuts on nearly all the way.
3. Install cylinder with support bolts (1) extending through bracket (5) on outer slide tube and pin both base end and rod end.

4. Screw outer 1/2-inch jam nut out until 1/2-inch washer (4) just touches bracket on outer slide tube. Do not put pressure on the cylinder by tightening the 1/2-inch jam nut. Once washer touches bracket, lock outer 1/2-inch jam nut in place with center 1/2-inch jam nut.

5. Install spring (6) and 1/2-inch nylock nut (7). Tighten nut to compress spring to a 1 1/4 inches (3.18 centimeters).

Figure 24
Transport Brace Assembly
## Troubleshooting

<table>
<thead>
<tr>
<th>Problem</th>
<th>Solution</th>
</tr>
</thead>
</table>
| Drill raising and lowering rough and uneven | - Check for too little play in slide-block area. Refer to “Maintenance” on page 22.  
- Check for air trapped in hydraulic lines or cylinders. Bleed hydraulics if necessary. Refer to “Bleeding the Hydraulics” on page 13. |
| Coulters not going deep enough               | - Retract tongue cylinder.  
- Add weight to hitch frame. Refer to “Coulter Down Pressure” on page 17.  
- Too much weight is being used by openers; set drill openers to lightest spring setting. Refer to drill operator’s manual.  
- Shorten coulter springs to increase down pressure. Refer to “Coulter Down Pressure” on page 17. |
| Drill not tracking behind coulters           | - Check if coulters are aligned with openers.  
- Check that pivot-lock tubes are in drilling position. Refer to “Pivot Lock Tubes” on page 14.  
- Check if leaf spring is out of alignment. Refer to “Leaf Spring Adjustment” on page 19. |
| Openers plugging in no-till conditions       | Drill across standing residue.                                                                                                                                                                    |
| Drill planting too deep                      | - Link is letting drill tip back too much. Refer to “Hitching Drill to Hitch” on page 11.  
- Change the press-wheel setting. Refer to drill operator’s manual.  
- Remove weight from hitch.                                                                                                                                 |
| Uneven seed spacing or uneven stand          | - Check for plugging in drill seed cups.  
- Check if drill seed tubes are plugged.  
- Reduce ground speed.  
- Check that drill opener disks turn freely.  
- Use a faster drive type and a lower seed-rate-handle setting. Refer to drill operator’s manual.  
- Increase opener down pressure so opener disks penetrate. Refer to drill operator’s manual.  
- Check for trash or mud build-up on optional Seed-Lok® wheels. |


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

**WARNING**

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

1. After using implement for several hours, check all bolts to be sure they are tight.
3. Replace any worn, damaged or illegible safety decals. Obtain new decals from your Great Plains dealer. Refer to “Safety Decals” on page 4 for decal placement.
4. Check hitch safety chain. Make sure chain is properly attached to both hitch. Inspect chain for wear or other damage. Replace immediately if needed.

**Slide Block**

Keep front slide blocks on telescoping transport axles adjusted to 0.015 to 0.025 in (0.0381 to 0.0635 cm) clearance with inner-axle tubes.

![Slide Block Adjustment](image)

**Storage**

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

1. Clean hitch as necessary.
2. Lubricate all fittings as indicated under “Lubrication” on page 23.
3. Apply a light coat of oil to exposed cylinder rods.
Lubrication

Front Tongue to Main Frame Pivot

<table>
<thead>
<tr>
<th>Multi-purpose spray lubricant</th>
<th>Multi-purpose grease lubricant</th>
<th>Multi-purpose oil lubricant</th>
<th>Inspection</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>50</td>
</tr>
<tr>
<td></td>
<td>Intervals (operating hours)</td>
<td>at which service is</td>
<td>34008</td>
</tr>
<tr>
<td></td>
<td>at which service is required</td>
<td>required</td>
<td></td>
</tr>
</tbody>
</table>

One grease fitting at rear of tongue
Type of Lubrication: Grease
Quantity = Until grease emerges

Top and Bottom Vertical Pivot Bushings

Located on back side of vertical pivot tube on transport frame; two grease fittings total
Type of Lubrication: Grease
Quantity = Until grease emerges

Level Link Pivot Tube

One grease fitting on top of mainframe under level link
Type of Lubrication: Grease
Quantity = Until grease emerges
Coulter Swing Arm Pivot

- Grease fitting on each coulter
- Type of Lubrication: Grease
- Quantity = Until grease emerges

Coulter Hub Bearings

- Grease fitting on each coulter hub
- Type of Lubrication: Grease
- Quantity = Force grease into tapered roller bearings; do not pressurize cavity enough to blow out seal or hub cap

Transport Hub Wheel Bearings

- Type of Lubrication: Grease
- Quantity = Repack bearings
Options

Coulter Toolbar Weight Brackets
Weight brackets for the coulter toolbar are available for improved coulter penetration in very hard soils.
To order the brackets, contact your Great Plains dealer.

<table>
<thead>
<tr>
<th>Weight Bracket Package</th>
<th>Part</th>
</tr>
</thead>
<tbody>
<tr>
<td>J.D. WT BRKT W/HARDWARE</td>
<td>149-032A</td>
</tr>
<tr>
<td>I.H. CASE WT BRKT W/HARDWARE</td>
<td>149-034A</td>
</tr>
<tr>
<td>94 CPH TOOL BAR WEIGHT BKT AS</td>
<td>149-168A</td>
</tr>
</tbody>
</table>

Coulter Toolbar Brace
The coulter toolbar brace is available for 20-foot coulters bars to prevent toolbar flexing in extremely dry or hard ground.
To order the brace, contact your Great Plains dealer.

<table>
<thead>
<tr>
<th>Toolbar Brace Package</th>
<th>Part</th>
</tr>
</thead>
<tbody>
<tr>
<td>94 20'CPH TOOL BAR BRACE ASSY</td>
<td>149-169A</td>
</tr>
</tbody>
</table>

Depth Channels and Cylinder Stops
In soft soils, the gauge-wheel tires on the drill may sink. Depth channels and cylinder stops are available to hold the center-pivot hitch tires down to help carry some weight. The channels pin over the extend transport-cylinder rods. The cylinder stops come in a set of five and are various widths.
To order the brackets or stops, contact your Great Plains dealer.

<table>
<thead>
<tr>
<th>Depth Channel Kits</th>
<th>Part</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 3/4-Inch Depth Channel</td>
<td>148-134A</td>
</tr>
<tr>
<td>6-Inch Depth Channel</td>
<td>148-181A</td>
</tr>
<tr>
<td>Set of Five Cylinder Stops</td>
<td>810-120C</td>
</tr>
</tbody>
</table>

Clevis-Style Drawbar Adapter
The adapter allows you to hitch the center-pivot hitch to a clevis-style tractor drawbar.
To order the adapter, contact your Great Plains dealer.

<table>
<thead>
<tr>
<th>Package</th>
<th>Part</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clevis-Style Drawbar Adapter</td>
<td>148-109H</td>
</tr>
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</table>
## Appendix - Reference Information

### Specifications and Capacities

#### CPH-12

<table>
<thead>
<tr>
<th>Coulter Spacing</th>
<th>Weight</th>
<th>Hitch Height</th>
<th>Hitch Length</th>
<th>Transport Width</th>
</tr>
</thead>
<tbody>
<tr>
<td>7 in</td>
<td>4260 lb (1936 kg)</td>
<td>8 ft 10 3/4 in (2.71 m)</td>
<td>17 ft 8 in (5.39 m)</td>
<td>12 ft 2 in (3.71 m)</td>
</tr>
<tr>
<td>7.5 in</td>
<td>4190 lb (1905 kg)</td>
<td>8 ft 10 3/4 in (2.71 m)</td>
<td>17 ft 8 in (5.39 m)</td>
<td></td>
</tr>
<tr>
<td>8 in</td>
<td>4130 lb (1877 kg)</td>
<td>8 ft 10 3/4 in (2.71 m)</td>
<td>17 ft 8 in (5.39 m)</td>
<td></td>
</tr>
<tr>
<td>10 in</td>
<td>3870 lb (1759 kg)</td>
<td>8 ft 10 3/4 in (2.71 m)</td>
<td>17 ft 8 in (5.39 m)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Coulters per Hitch</th>
<th>Weight</th>
<th>Hitch Height</th>
<th>Hitch Length</th>
<th>Transport Width</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td>4260 lb (1936 kg)</td>
<td>8 ft 10 3/4 in (2.71 m)</td>
<td>17 ft 8 in (5.39 m)</td>
<td>12 ft 2 in (3.71 m)</td>
</tr>
<tr>
<td>19</td>
<td>4190 lb (1905 kg)</td>
<td>8 ft 10 3/4 in (2.71 m)</td>
<td>17 ft 8 in (5.39 m)</td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>4130 lb (1877 kg)</td>
<td>8 ft 10 3/4 in (2.71 m)</td>
<td>17 ft 8 in (5.39 m)</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>3870 lb (1759 kg)</td>
<td>8 ft 10 3/4 in (2.71 m)</td>
<td>17 ft 8 in (5.39 m)</td>
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</table>

#### CPH-15

<table>
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<th>Coulter Spacing</th>
<th>Weight</th>
<th>Hitch Height</th>
<th>Hitch Length</th>
<th>Transport Width</th>
</tr>
</thead>
<tbody>
<tr>
<td>7 in</td>
<td>4800 lb (2182 kg)</td>
<td>8 ft 10 3/4 in (2.71 m)</td>
<td>17 ft 8 in (5.39 m)</td>
<td>15 ft 4 in (4.67 m)</td>
</tr>
<tr>
<td>7.5 in</td>
<td>4670 lb (2123 kg)</td>
<td>8 ft 10 3/4 in (2.71 m)</td>
<td>17 ft 8 in (5.39 m)</td>
<td></td>
</tr>
<tr>
<td>8 in</td>
<td>4540 lb (2064 kg)</td>
<td>8 ft 10 3/4 in (2.71 m)</td>
<td>17 ft 8 in (5.39 m)</td>
<td></td>
</tr>
<tr>
<td>10 in</td>
<td>4280 lb (1945 kg)</td>
<td>8 ft 10 3/4 in (2.71 m)</td>
<td>17 ft 8 in (5.39 m)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Coulters per Hitch</th>
<th>Weight</th>
<th>Hitch Height</th>
<th>Hitch Length</th>
<th>Transport Width</th>
</tr>
</thead>
<tbody>
<tr>
<td>26</td>
<td>4800 lb (2182 kg)</td>
<td>8 ft 10 3/4 in (2.71 m)</td>
<td>17 ft 8 in (5.39 m)</td>
<td>15 ft 4 in (4.67 m)</td>
</tr>
<tr>
<td>24</td>
<td>4670 lb (2123 kg)</td>
<td>8 ft 10 3/4 in (2.71 m)</td>
<td>17 ft 8 in (5.39 m)</td>
<td></td>
</tr>
<tr>
<td>22</td>
<td>4540 lb (2064 kg)</td>
<td>8 ft 10 3/4 in (2.71 m)</td>
<td>17 ft 8 in (5.39 m)</td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>4280 lb (1945 kg)</td>
<td>8 ft 10 3/4 in (2.71 m)</td>
<td>17 ft 8 in (5.39 m)</td>
<td></td>
</tr>
</tbody>
</table>

#### CPH-20

<table>
<thead>
<tr>
<th>Coulter Spacing</th>
<th>Weight</th>
<th>Hitch Height</th>
<th>Hitch Length</th>
<th>Transport Width</th>
</tr>
</thead>
<tbody>
<tr>
<td>7 in</td>
<td>5550 lb (2523 kg)</td>
<td>8 ft 10 3/4 in (2.71 m)</td>
<td>17 ft 8 in (5.39 m)</td>
<td>20 ft (6.10 m)</td>
</tr>
<tr>
<td>7.5 in</td>
<td>5420 lb (2464 kg)</td>
<td>8 ft 10 3/4 in (2.71 m)</td>
<td>17 ft 8 in (5.39 m)</td>
<td></td>
</tr>
<tr>
<td>8 in</td>
<td>5290 lb (2405 kg)</td>
<td>8 ft 10 3/4 in (2.71 m)</td>
<td>17 ft 8 in (5.39 m)</td>
<td></td>
</tr>
<tr>
<td>10 in</td>
<td>4900 lb (2227 kg)</td>
<td>8 ft 10 3/4 in (2.71 m)</td>
<td>17 ft 8 in (5.39 m)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Coulters per Hitch</th>
<th>Weight</th>
<th>Hitch Height</th>
<th>Hitch Length</th>
<th>Transport Width</th>
</tr>
</thead>
<tbody>
<tr>
<td>34</td>
<td>5550 lb (2523 kg)</td>
<td>8 ft 10 3/4 in (2.71 m)</td>
<td>17 ft 8 in (5.39 m)</td>
<td>20 ft (6.10 m)</td>
</tr>
<tr>
<td>32</td>
<td>5420 lb (2464 kg)</td>
<td>8 ft 10 3/4 in (2.71 m)</td>
<td>17 ft 8 in (5.39 m)</td>
<td></td>
</tr>
<tr>
<td>30</td>
<td>5290 lb (2405 kg)</td>
<td>8 ft 10 3/4 in (2.71 m)</td>
<td>17 ft 8 in (5.39 m)</td>
<td></td>
</tr>
<tr>
<td>24</td>
<td>4900 lb (2227 kg)</td>
<td>8 ft 10 3/4 in (2.71 m)</td>
<td>17 ft 8 in (5.39 m)</td>
<td></td>
</tr>
</tbody>
</table>

### Tire Inflation Chart

<table>
<thead>
<tr>
<th>Tire Size</th>
<th>Inflation</th>
</tr>
</thead>
<tbody>
<tr>
<td>7.50 x 20” 4-Ply Drill Rib</td>
<td>28 psi</td>
</tr>
<tr>
<td>9.0 x 22.5 10-Ply Highway Service 70</td>
<td>70 psi</td>
</tr>
<tr>
<td>9.0 x 24” 8-Ply Rib Implement</td>
<td>40 psi</td>
</tr>
<tr>
<td>9.5L x 15” 6-Ply Rib Implement</td>
<td>32 psi</td>
</tr>
<tr>
<td>9.5L x 15” 8-Ply Rib Implement</td>
<td>44 psi</td>
</tr>
<tr>
<td>9.5L x 15” 12-Ply Rib Implement</td>
<td>60 psi</td>
</tr>
<tr>
<td>11L x 15” 6-Ply Rib Implement</td>
<td>28 psi</td>
</tr>
<tr>
<td>11L x 15” 12-Ply Rib Implement</td>
<td>52 psi</td>
</tr>
<tr>
<td>12.5L x 15” 8-Ply Rib Implement</td>
<td>36 psi</td>
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<tr>
<td>12.5L x 15” 10-Ply Rib Implement</td>
<td>44 psi</td>
</tr>
<tr>
<td>16.5L x 16.1” 10-Ply Rib Implement</td>
<td>36 psi</td>
</tr>
<tr>
<td>41 x 15” x 18 - 22-Ply Rib Implement</td>
<td>44 psi</td>
</tr>
</tbody>
</table>

### Tire Warranty Information

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

<table>
<thead>
<tr>
<th>Manufacturer</th>
<th>Web site</th>
</tr>
</thead>
<tbody>
<tr>
<td>Titan</td>
<td><a href="http://www.titan-intl.com">www.titan-intl.com</a></td>
</tr>
<tr>
<td>Goodyear</td>
<td><a href="http://www.goodyearag.com">www.goodyearag.com</a></td>
</tr>
<tr>
<td>Firestone</td>
<td><a href="http://www.firestoneag.com">www.firestoneag.com</a></td>
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</table>
## Torque Values Chart

<table>
<thead>
<tr>
<th>Bolt Size</th>
<th>Bolt Head Identification</th>
<th>Bolt Head Identification</th>
</tr>
</thead>
<tbody>
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<td></td>
<td>Grade 2</td>
<td>Grade 5</td>
</tr>
<tr>
<td>in-tpia (a)</td>
<td>N-m (b) ft-lb (d)</td>
<td>N-m ft-lb</td>
</tr>
<tr>
<td>(\frac{1}{4})-20</td>
<td>7.4</td>
<td>5.6</td>
</tr>
<tr>
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<td>8.5</td>
<td>6</td>
</tr>
<tr>
<td>(\frac{5}{16})-18</td>
<td>15</td>
<td>11</td>
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<td>(\frac{5}{16})-24</td>
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<td>(\frac{3}{8})-16</td>
<td>27</td>
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* a. in-tpi = nominal thread diameter in inches-threads per inch
* b. N·m = newton-meters
* c. mm x pitch = nominal thread diameter in mm x thread pitch
* d. ft-lb = foot pounds

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