Read the operator’s 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>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Serial Number</td>
<td></td>
</tr>
<tr>
<td>Machine Height</td>
<td></td>
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<tr>
<td>Machine Length</td>
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<tr>
<td>Machine Width</td>
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<td>Machine Weight</td>
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<td>Year of Construction</td>
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<td>Delivery Date</td>
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<td>First Operation</td>
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<td>Accessories</td>
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<tr>
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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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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 5, 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.

Handle Chemicals Properly

Agricultural chemicals can be dangerous. Improper use
can seriously injure persons, animals, plants, soil and
property.
▲ Read and follow chemical manufacturer’s instructions.
▲ Wear protective clothing.
▲ Handle all chemicals with care.
▲ Avoid inhaling smoke from any type of chemical fire.
▲ Store or dispose of unused chemicals as specified by
   chemical manufacturer.

Avoid High Pressure Fluids

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

Use Safety Lights and Devices

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

Use lights and devices provided with implement

Keep Riders Off Machinery

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

Maximum transport speed for implement is 20 mph (32 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 Sub-Soiler in case of breakdown on the road.

▲ Keep clear of overhead power lines and other obstructions when transporting. Refer to transport dimensions under “SS1800-SS2000 Specifications and Capacities” on page 24.

▲ Do not fold or unfold the Sub-Soiler while the tractor is moving.

Shutdown and Storage

▲ Lower Sub-Soiler, put tractor in park, turn off engine, and remove the key.

▲ Secure Sub-Soiler using blocks and supports provided.

▲ Detach and store machine in an area where children normally do not play.

Tire Safety

Tire changing can be dangerous and should be performed by trained personnel using correct tools and equipment.

▲ When inflating tires, use a clip-on chuck and extension hose long enough for you to stand to one side—not in front of or over tire assembly. Use a safety cage if available.

▲ When removing and installing wheels, use wheel-handling equipment adequate for weight involved.
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 machine, put tractor in park, turn off engine, and remove key before performing maintenance.
▲ Disconnect battery ground cable (-) before servicing or adjusting electrical systems or before welding on machine.
▲ 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 machine 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 machine functions.
▲ Operate machinery from the driver’s seat only.
▲ Do not leave Sub-Soiler unattended with tractor engine running.
▲ Do not stand between the tractor and machine 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 machine. 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.

818-055C
Slow Moving Vehicle Reflector
On the back of the center SMV post; 1 total

838-615C
Amber Reflectors
Two on front of light bracket and two on center frame. Two on outside of wing frame (not shown). 6 total
838-614C
Red Reflectors
On rear of light brackets (top);
2 total

838-603C
Orange Reflectors
On rear of light brackets (bottom);
2 total

818-719C
Caution: General Instructions
On front of hitch;
1 total

CAUTION
To prevent injury or death:
- Read and understand Operator’s Manual before using.
- Lower implement, stop tractor engine, set park brake and remove ignition key before servicing, adjusting, repacking or unplugging.
- Do not allow riders.
- Keep others away during operation.
- Safely support and secure implement before repairs are made.

WARNING: Cancer and Reproductive Harm - www.P65Warnings.ca.gov
**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 damage can result.

**818-337C**

**Warning: Excessive Speed Hazard**

On front of center frame; 1 total

---

**DANGER**

**CRUSHING HAZARD**

To prevent serious injury or death:
- Do not stand between implement and working tractor.
- Keep others away.

**818-590C**

**Danger: Crushing Hazard**

On front of center frame; 1 total

---

**WARNING**

**OVERHEAD WING HAZARD**

To prevent serious injury or death:
- Stay away from wings when they are raised or are being lowered.
- Keep others away.
- Lock in up position before transport or service.

**838-602C**

**Warning: Overhead Wing Hazard**

On outside center of center and wing frames (both sides); 4 total
**838-094C**
**Warning: High Pressure Fluid**
Front side of center frame; 1 total

---

**818-398C**
**Caution: Tires Not A Step**
Front side of gauge wheel jacks; 2 total

---

**838-595C**
**Caution: Tire 90 PSI**
On outside of gauge wheel arms; 2 total
Great Plains welcomes you to our growing family of new product owners. The Sub-Soiler Inline Ripper SS1800 & SS2000, 6-12 shank, 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**

- SS1800 30"-centers, 7 shank, 3-section
- SS1800 36"-centers, 6 shank, 3-section
- SS1800 38"-centers, 6 shank, 3-section
- SS1800 40"-centers, 6 shank, 3-section
- SS2000 24"-centers, 8 shank, 3-section
- SS2000 24"-centers, 10 shank, 3-section
- SS2000 24"-centers, 12 shank, 3-section
- SS2000 30"-centers, 8 shank, 3-section
- SS2000 30"-centers, 9 shank, 3-section
- SS2000 30"-centers, 10 shank, 3-section
- SS2000 36"-centers, 7 shank, 3-section
- SS2000 36"-centers, 8 shank, 3-section
- SS2000 38"-centers, 7 shank, 3-section
- SS2000 38"-centers, 8 shank, 3-section
- SS2000 40"-centers, 7 shank, 3-section


**Description of Unit**

The Sub-Soiler Inline Ripper SS1800 & SS2000 is a three-section machine. It is designed to break up soil crust on hard dried fields while eliminating compaction layers. An optional berm conditioner may be added to the rear of each shank.

**Document Family**

- 596-222M  Operator Manual (this document)
- 596-222P  Parts Manual

**Using This Manual**

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

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

**Definitions**

The following terms are used throughout this manual.

**NOTICE**

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

Useful information related to the preceding topic.

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

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

Refer to Figure 2

Your machine’s parts were specially designed and should only be replaced with Great Plains parts. Always use the serial and model number when ordering parts from your Great Plains dealer. The serial-number plate is located in front of manual pack holder.

Record your SS1800-SS2000 Sub-Soiler model and serial number on back page of the cover for quick reference.

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 Sub Soiler. If for any reason you do not understand any part of this manual or are otherwise dissatisfied with the product 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 SS1800 & SS2000 Sub-Soiler for use, and covers tasks that need to be done seasonally, or when the tractor/Sub-Soiler configuration changes.

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

Prior to Going to the Field Checklist

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.
- Make sure your tractor horsepower matches the implement you are pulling. This is important so the implement can do the best possible job.
- Clean all hydraulic couplings and connect to tractor as shown on page 13.
- Check again for hydraulic leaks and watch that hoses do not get pinched in hinges, wing stops, etc.
- Check that all grease fittings are in place and lubricated. See “Lubrication” on page 23. The hubs will come pre-greased and will not need greased at this time.
- Check that all safety decals and reflectors are correctly located and legible. Replace if damaged. See “Safety Decals” on page 5.
- Inflate tires to pressure recommended and tighten wheel bolts as specified. See “Torque Values Chart” on page 26.
Hitching Tractor to Sub-Soiler

**DANGER**

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

**WARNING**

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

**Hitching with 3-Point**

Refer to Figure 3

1. The sub-soiler is designed to use either Category III or IV tractors.
2. See drawing for correct pins and hole positions for Category III and IV.
3. Connect your tractor 3-point to the sub-soiler 3-point hitch. If using quick hitch be sure sub-soiler locks into hitch securely.
4. Raise tractor 3-point just enough to relieve pressure from parking stands.
5. Swing up and pin up 3-point stands. See "Wing Locks" on page 13.

**NOTICE**

**Load Sway Risk:**
Adjust 3-point hitch arms and sway blocks to minimize any side-to-side sway to assure proper tracking in the field and safe road travel.

7. Connect light electrical cable to tractor.
Hydraulic Hose Hookup

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.

<table>
<thead>
<tr>
<th>Color</th>
<th>Hydraulic Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Green</td>
<td>Fold (2 hoses)</td>
</tr>
</tbody>
</table>

**Refer to Figure 4**

**Hose Handles**

To distinguish hoses on the same hydraulic circuit, refer to, "Hydraulic Hose Hookup" on page 13. The hose under an extended symbol feeds a cylinder base end. The hose under a retracted-cylinder symbol feeds a cylinder rod end.

Clean all hydraulic couplings and hook hoses to tractor.

**Refer to Figure 5**

**SS2000 Wing Locks**

1. On Model SS2000 when the wing locks ① are installed run hydraulics in neutral to reduce the strain on the lock and wing stop block.
Refer to Figure 6

Storing Parking Stands
1. While holding the parking stand ①, remove the snap lock pin ②.
2. Slide the stand out the bottom of the holder ③ and position stand across frame as shown.
3. Install snap lock pin through aligned holes to secure.

Machine Adjustments

Pre-Leveling of Machine

Front to Rear Leveling
1. Pre-leveling of machine may be done on a level floor. Lower the machine down until the shank tips are just above the floor.
2. Adjust the 3 point top link until the front and rear points are level.

Side to Side Leveling

Refer to Figure 7
3. Set the wings to match the depth of the center. This is done by removing the bolts ① on each wing. Add or remove shims ②, until the wings are level with the center.
4. Re-install the bolts. Torque as shown in “Torque Values Chart” on page 26.
Auto Reset Shank Adjustment

Refer to Figure 8

1. The dual spring package should be preloaded so both top and bottom springs are loaded evenly and measure 23.8" from end of coil to end of coil.

⚠️ DANGER ⚠️

Spring pack is pre-loaded at factory and should not be disassembled in the field. You could be severely injured or killed by instant release of stored energy.
Gauge Wheel Adjustment  
*Refer to Figure 9*

1. The jacks should only be used to help raise and lower the gauge wheels. The cross pin still needs to be used in order to avoid overloading the jack.
2. Adjust the gauge wheel as shown on the decal on the front of the frame.

Coulter Adjustment  
*Refer to Figure 10*

Coulter Height

1. Determine the desired depth of the shank and set the gauge wheel in the appropriate hole.
2. Subtract 8" from the shank depth. Take this distance and measure from the top of the frame to the top of the coulter shank. This will allow the coulter to run approximately hub deep. If trying to deep rip less than 8", position the top of the coulter shank flush with the top of the tube.

Coulter Alignment  
*Refer to Figure 11*

1. Loosen the bottom set screw (1), jam nut (2) and swivel limiter set screw (3). Lower the ripper in the ground and drive forward a few feet.
2. Leave the ripper in the ground and tighten the bottom set screw (1) and jam nut (2). Position the swivel limiter in the center of the slot and tighten the set screw (3).
3. Check alignment of the coulter and shank. Move either the coulter or shank so the shank is in the center of the groove made by the coulter.

Note: If you want the coulter to swivel, loosen the bottom set screw (1) and jam nut (2). Re-tighten jam nut to prevent from loosing set screw.
Coulter Spring

Refer to Figure 11

1. The coulter springs are preset at the factory to between 9 7/8” to 10”. This is measured from the inside surface of the coulter spring washer to the inside surface of the coulter bushing.

Note: Adjusting the spring below 9 7/8” could cause premature part failure and void the warranty.

Berm Conditioner

Refer to Figure 12

1. The berm conditioner may be adjusted pulling up on handle sliding to a different notch.

2. For the deepest setting, move handle clear forward. For shallower, move handle towards rear.
SS2000 Rigid Wing Locks

Refer to Figure 13

Rigid wing locks may be used on SS2000 to keep the wings level with the center frame.

1. Unfold wings completely.
2. Install the wing locks in the fold bracket on the wing, secure with clevis pin and machine washer.
3. Repeat for the other wing.
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 SS1800-SS2000 Sub-Soiler to the field.

- Carefully read “Important Safety Information” on page 1.
- Lubricate Sub-Soiler as indicated under “Lubrication” on page 23.
- Check all tires for proper inflation. “Tire Inflation Chart” on page 25.
- Check all bolts, pins, and fasteners. Torque as shown in “Torque Values Chart” on page 26.
- Check Sub-Soiler for worn or damaged parts. Repair or replace parts before going to the field.
- Check hydraulic hoses, fittings, and cylinders for leaks. Repair or replace before going to the field.

Field Operation

DANGER

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

1. Hitch implement to a suitable tractor.

2. Check to be sure machine is running level from front to rear when running machine at depth desired. See “Front to Rear Leveling” on page 14

3. Be sure wings are running same depth as center section. See “Side to Side Leveling” on page 14

4. Adjust gauge wheels to desired tillage depth. See “Gauge Wheel Adjustment” on page 16.

5. Adjust and align coulters to desired tillage depth. “Coulter Alignment” on page 16

6. Always lift implement out of the ground when turning at field ends and for other short-radius turns.

7. Both the Auto reset and Rigid shank mounts are protected by shear bolts for extreme overloads. If the shank bolt shears replace the lower bolt with the correct shear bolt, use GP part number 802-060C. (HHCS 5/8-11 x 4 Gr5).

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.

WARNING
Transporting
See “Hitching Tractor to Sub-Soiler” on page 12 before transporting the Sub-Soiler.

Check Tractor Capacity and Configuration
- Consult your tractor manual for 3-point limitations.
- Add weights to tractor as required.

When determining the weight of your Sub-Soiler, be sure to include the weight of any options.

Transport Checklist
- Plan the route. Avoid steep hills. Keep Clearances in mind.
- Make all electrical and hydraulic connections. See “Hitching Tractor to Sub-Soiler” on page 12.
- Raise Sub-Soiler.
- Always have lights on for highway operation.
- Comply with all federal, state and local safety laws when traveling on public roads.
- Travel with caution. Allow safe clearance.
  Remember that the Sub-Soiler is wider than the tractor.

Parking
Perform the following steps when parking the implement. Refer to “Storage”, page 22, to prepare for long-term storage.
1. Park implement on a level, solid area.
2. Lower implement until shanks are resting on the ground.

Refer to Figure 14
1. Lower and pin parking stands.
2. Unhook hydraulic hoses from tractor.
3. Unplug light harness lead from tractor receptacle. Do not allow lead to rest on the ground.
4. Unhitch from the tractor 3-point.

Loss of Control Hazard:
Use a tractor rated for the load. Add tractor ballast as needed. Do not exceed 20 mph. Towing the Sub-Soiler with a vehicle that is not adequate, or at high speeds, could lead to loss of vehicle control. Loss of vehicle can result in a serious road accident, severe injury or death. Check that your tractor has enough to handle the weight of the Sub-Soiler. Refer to your tractor’s operator manual for capacities and ballast requirements.
## Troubleshooting

<table>
<thead>
<tr>
<th>Problem</th>
<th>Cause</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Excessive blowout</td>
<td>Going too fast.</td>
<td>Slow down.</td>
</tr>
<tr>
<td></td>
<td>Ripping too shallow.</td>
<td>Raise gauge wheel.</td>
</tr>
<tr>
<td></td>
<td>Coulter not deep enough.</td>
<td>Lower coulter, see “Coulter Height”, page 16.</td>
</tr>
<tr>
<td></td>
<td>Shank not aligned with coulter.</td>
<td>Align shank with trench made by coulter, see “Coulter Alignment”, page 17.</td>
</tr>
</tbody>
</table>
Maintenance and Lubrication

Maintenance

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

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

Refer to Figure 15

3. After using the implement for several hours, check all bolts to be sure they are tight.

4. After one hour and again after five hours re-torque the grade 8 bolts (1) to 400 FT LBS. Re-torque periodically.

5. Lubricate areas listed under “Lubrication”, page 23.


7. Replace or rotate worn parts as needed -- hinge bolts, clevis pins, bearings, etc.

8. Check and tighten or replace any hydraulic leaks. Check hoses for any leaks. It is important that there are no leaks on the equipment.

9. Grease wheel bearings and walking beams sparingly. Over greasing may cause damage to seals and reduce the life of the bearing. Grease hinge points periodically.

10. If machine is stored outdoors over the winter months, it is a good idea to fold the machine then set it down on the ground so all the cylinders are retracted to protect the cylinder rods. This will extend the life of the cylinder seals and reduce internal and external leaks.

Storage

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

12. Remove any dirt and debris that can hold moisture and cause corrosion.

13. Lubricate areas noted under “Lubrication”, page 23.

14. Inspect implement for worn or damaged parts. Make repairs and service during the off season.

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

By following and maintaining a routine service and lubrication program, your tillage equipment will give you many years of service.

For the most current manual information, visit Great Plains website www.greatplainsag.com. For more information on operating, adjusting or maintaining your Great Plains Sub-Soiler Inline Ripper, assistance is available at:

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.
Lubrication

<table>
<thead>
<tr>
<th>Multipurpose spray lube</th>
<th>Seasonally</th>
<th>Intervals (service hours) at which lubrication is required</th>
</tr>
</thead>
<tbody>
<tr>
<td>Multipurpose grease lube</td>
<td>8</td>
<td>50</td>
</tr>
<tr>
<td>Multipurpose oil lube</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Wheel Bearings

One on each gauge wheel.
Type of Lubrication: Grease
Quantity: Pump grease into bearings until resistance is felt, being careful not to pressurize seal or blow out cap.

Coulter Swing Arms

1 zerk on each hub;
Type of Lubrication: Grease
Quantity: Until grease emerges.

Coulter Hubs

1 zerk on each hub;
Type of Lubrication: Grease
Quantity: Pump grease until resistance is felt, being careful not pressurize seal or blow out cap.
### SS1800-SS2000 Specifications and Capacities

#### Model SS1800

<table>
<thead>
<tr>
<th>Shank Spacing</th>
<th>91cm (36&quot;)</th>
<th>97cm (38&quot;)</th>
<th>102cm (40&quot;)</th>
<th>76cm (30&quot;)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Shanks</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>Weight</td>
<td>2200kg (4850lbs)</td>
<td>2234kg (4925lbs)</td>
<td>2234kg (4925lbs)</td>
<td>2325kg (5125lbs)</td>
</tr>
<tr>
<td>Working Width</td>
<td>549cm (18' 0&quot;)</td>
<td>579cm (19' 0&quot;)</td>
<td>610cm (20' 0&quot;)</td>
<td>533cm (17' 6&quot;)</td>
</tr>
<tr>
<td>Wing</td>
<td>86cm (34&quot;)</td>
<td>107cm (42&quot;)</td>
<td>107cm (42&quot;)</td>
<td>86cm (34&quot;)</td>
</tr>
<tr>
<td>Transport Width</td>
<td>399cm (13' 1&quot;)</td>
<td>389cm (12' 9&quot;)</td>
<td>389cm (12' 9&quot;)</td>
<td>399cm (13' 1&quot;)</td>
</tr>
<tr>
<td>Gauge Wheel Tire Size</td>
<td>20.5X8 10 PLY</td>
<td>20.5X8 10 PLY</td>
<td>20.5X8 10 PLY</td>
<td>20.5X8 10 PLY</td>
</tr>
<tr>
<td>Kilowatt</td>
<td>224-358</td>
<td>224-358</td>
<td>224-358</td>
<td>261+</td>
</tr>
<tr>
<td>Horsepower (PTO)</td>
<td>300-480</td>
<td>300-480</td>
<td>300-480</td>
<td>350+</td>
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#### Model SS2000

<table>
<thead>
<tr>
<th>Shank Spacing</th>
<th>91cm (36&quot;)</th>
<th>97cm (38&quot;)</th>
<th>102cm (40&quot;)</th>
<th>76cm (30&quot;)</th>
<th>91cm (36&quot;)</th>
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</thead>
<tbody>
<tr>
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<td>7</td>
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<td>8</td>
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<tr>
<td>Weight</td>
<td>2649kg (5840lbs)</td>
<td>2688kg (5925lbs)</td>
<td>2722kg (6000lbs)</td>
<td>2778kg (6125lbs)</td>
<td>2846kg (6275lbs)</td>
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<tr>
<td>Working Width</td>
<td>640cm (21' 0&quot;)</td>
<td>675cm (22' 2&quot;)</td>
<td>713cm (23' 4&quot;)</td>
<td>610cm (20' 0&quot;)</td>
<td>732cm (24' 0&quot;)</td>
</tr>
<tr>
<td>Wing</td>
<td>122cm (48&quot;)</td>
<td>142cm (56&quot;)</td>
<td>168cm (66&quot;)</td>
<td>122cm (48&quot;)</td>
<td>168cm (66&quot;)</td>
</tr>
<tr>
<td>Transport Width</td>
<td>469cm (15' 5&quot;)</td>
<td>456cm (14' 11&quot;)</td>
<td>468cm (14' 4&quot;)</td>
<td>457cm (15' 0&quot;)</td>
<td>399cm (13' 1&quot;)</td>
</tr>
<tr>
<td>Gauge Wheel Tire Size</td>
<td>20.5X8 10 PLY</td>
<td>20.5X8 10 PLY</td>
<td>20.5X8 10 PLY</td>
<td>20.5X8 10 PLY</td>
<td>20.5X8 10 PLY</td>
</tr>
<tr>
<td>Kilowatt</td>
<td>261+</td>
<td>261+</td>
<td>261+</td>
<td>298+</td>
<td>298+</td>
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<tr>
<td>Horsepower (PTO)</td>
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#### Model SS2000

<table>
<thead>
<tr>
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<th>76cm (30&quot;)</th>
<th>61cm (24&quot;)</th>
<th>76cm (30&quot;)</th>
<th>61cm (24&quot;)</th>
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<tbody>
<tr>
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<td>9</td>
<td>10</td>
<td>10</td>
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<tr>
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<td>2948kg (6500lbs)</td>
<td>3016kg (6650lbs)</td>
<td>3118kg (6875lbs)</td>
<td>3357kg (7400lbs)</td>
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<tr>
<td>Working Width</td>
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<td>683cm (22' 5&quot;)</td>
<td>610cm (20' 0&quot;)</td>
<td>762cm (25' 0&quot;)</td>
<td>732cm (24' 0&quot;)</td>
</tr>
<tr>
<td>Wing</td>
<td>193cm (76&quot;)</td>
<td>168cm (66&quot;)</td>
<td>122cm (48&quot;)</td>
<td>193cm (76&quot;)</td>
<td>193cm (76&quot;)</td>
</tr>
<tr>
<td>Transport Width</td>
<td>389cm (12' 9&quot;)</td>
<td>399cm (13' 1&quot;)</td>
<td>421cm (13' 10&quot;)</td>
<td>457cm (15' 0&quot;)</td>
<td>421cm (13' 10&quot;)</td>
</tr>
<tr>
<td>Gauge Wheel Tire Size</td>
<td>20.5X8 10 PLY</td>
<td>20.5X8 10 PLY</td>
<td>20.5X8 10 PLY</td>
<td>20.5X8 10 PLY</td>
<td>20.5X8 10 PLY</td>
</tr>
<tr>
<td>Kilowatt</td>
<td>298+</td>
<td>336+</td>
<td>373+</td>
<td>373+</td>
<td>373+</td>
</tr>
<tr>
<td>Horsepower (PTO)</td>
<td>400+</td>
<td>450+</td>
<td>500+</td>
<td>500+</td>
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Tire Inflation Chart

<table>
<thead>
<tr>
<th>Wheel</th>
<th>Tire Size</th>
<th>Inflation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gauge Wheel</td>
<td>20.5x8.0 10-ply LRE</td>
<td>90 psi 621 kPa</td>
</tr>
</tbody>
</table>

Hydraulic Connectors and Torque

*Refer to Figure 16 (a hypothetical fitting)*

Leave any protective caps in place until immediately prior to making a connection.

- **NPT** - National Pipe Thread
  - Note tapered threads, no cone/flare, and no O-ring.
  - Apply liquid pipe sealant for hydraulic applications.
  - Do not use tape sealant, which can clog a filter and/or plug an orifice.

- **JIC** - Joint Industry Conference (SAE J514)
  - Note straight threads and the 37° cone on “M” fittings (or 37° flare on “F” fittings).
  - Use no sealants (tape or liquid) on JIC fittings.

- **ORB** - O-Ring Boss (SAE J514)
  - Note straight threads and elastomer O-Ring.
  - Prior to installation, to prevent abrasion during tightening, lubricate O-Ring with clean hydraulic fluid.
  - Use no sealants (tape or liquid) on ORB fittings.

- ORB fittings that need orientation, such as the ell depicted, also have a washer and jam nut ("adjustable thread port stud"). Back jam nut away from washer. Thread fitting into receptacle until O-Ring contacts seat. Unscrew fitting to desired orientation. Tighten jam nut to torque specification.

---

<table>
<thead>
<tr>
<th>Dash Size</th>
<th>Fitting</th>
<th>N-m</th>
<th>Ft-Lbs</th>
</tr>
</thead>
<tbody>
<tr>
<td>-4</td>
<td>1/4 -18 NPT</td>
<td>1.5-3.0 turns past finger tight</td>
<td></td>
</tr>
<tr>
<td>-5</td>
<td>1/2 -20 JIC</td>
<td>19-20</td>
<td>14-15</td>
</tr>
<tr>
<td>-5</td>
<td>1/2 -20 ORB w/jam nut</td>
<td>12-16</td>
<td>9-12</td>
</tr>
<tr>
<td>-5</td>
<td>1/2 -20 ORB straight</td>
<td>19-26</td>
<td>14-19</td>
</tr>
<tr>
<td>-6</td>
<td>5/16 -18 JIC</td>
<td>24-27</td>
<td>18-20</td>
</tr>
<tr>
<td>-6</td>
<td>5/16 -18 ORB w/jam nut</td>
<td>16-22</td>
<td>12-16</td>
</tr>
<tr>
<td>-6</td>
<td>5/16 -18 ORB straight</td>
<td>24-33</td>
<td>18-24</td>
</tr>
<tr>
<td>-8</td>
<td>3/4 -16 JIC</td>
<td>37-53</td>
<td>27-39</td>
</tr>
<tr>
<td>-8</td>
<td>3/4 -16 ORB w/jam nut</td>
<td>27-41</td>
<td>20-30</td>
</tr>
<tr>
<td>-8</td>
<td>3/4 -16 ORB straight</td>
<td>37-58</td>
<td>27-43</td>
</tr>
</tbody>
</table>

---

Tire Inflation Chart

<table>
<thead>
<tr>
<th>Tire</th>
<th>Inflation</th>
</tr>
</thead>
<tbody>
<tr>
<td>20.5x8.0 10-ply LRE</td>
<td>90 psi 621 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 Manuals or online at the manufacturer’s web sites listed below. For assistance or information, contact your nearest Authorized Farm Tire Retailer.

Manufacturer Web site

<table>
<thead>
<tr>
<th>Manufacturer</th>
<th>Web site</th>
</tr>
</thead>
<tbody>
<tr>
<td>Firestone</td>
<td><a href="http://www.firestoneag.com">www.firestoneag.com</a></td>
</tr>
<tr>
<td>Gleason</td>
<td><a href="http://www.gleasonwheel.com">www.gleasonwheel.com</a></td>
</tr>
<tr>
<td>Titan</td>
<td><a href="http://www.titan-intl.com">www.titan-intl.com</a></td>
</tr>
<tr>
<td>Galaxy</td>
<td><a href="http://www.atgtire.com">www.atgtire.com</a></td>
</tr>
<tr>
<td>BKT</td>
<td><a href="http://www.bkt-tire.com">www.bkt-tire.com</a></td>
</tr>
</tbody>
</table>
## Torque Values Chart

<table>
<thead>
<tr>
<th>Bolt Size</th>
<th>Bolt Head Identification</th>
<th>Bolt Size</th>
<th>Bolt Head Identification</th>
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<tbody>
<tr>
<td></td>
<td>Grade 2</td>
<td>Grade 5</td>
<td>Grade 8</td>
</tr>
<tr>
<td>in-tpi(^a)</td>
<td>N-m(^b) ft-lb(^d)</td>
<td>N-m</td>
<td>ft-lb</td>
</tr>
<tr>
<td>1/4&quot;-20</td>
<td>7.4 5.6</td>
<td>11 8</td>
<td>16 12</td>
</tr>
<tr>
<td>1/4&quot;-28</td>
<td>8.5 6</td>
<td>13 10</td>
<td>18 14</td>
</tr>
<tr>
<td>5/16&quot;-18</td>
<td>15 11</td>
<td>24 17</td>
<td>33 25</td>
</tr>
<tr>
<td>5/16&quot;-24</td>
<td>17 13</td>
<td>26 19</td>
<td>37 27</td>
</tr>
<tr>
<td>3/8&quot;-16</td>
<td>27 20</td>
<td>42 31</td>
<td>59 44</td>
</tr>
<tr>
<td>3/8&quot;-24</td>
<td>31 22</td>
<td>47 35</td>
<td>67 49</td>
</tr>
<tr>
<td>7/16&quot;-14</td>
<td>43 32</td>
<td>67 49</td>
<td>95 70</td>
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<tr>
<td>7/16&quot;-20</td>
<td>49 36</td>
<td>75 55</td>
<td>105 78</td>
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<tr>
<td>1/2&quot;-13</td>
<td>66 49</td>
<td>105 76</td>
<td>145 105</td>
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<td>1/2&quot;-20</td>
<td>75 55</td>
<td>115 85</td>
<td>165 120</td>
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<td>9/16&quot;-12</td>
<td>95 70</td>
<td>150 110</td>
<td>210 155</td>
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<td>9/16&quot;-18</td>
<td>105 79</td>
<td>165 120</td>
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<td>5/8&quot;-11</td>
<td>130 97</td>
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<td>150 110</td>
<td>230 170</td>
<td>325 240</td>
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<td>235 170</td>
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<td>640 475</td>
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<td>340 250</td>
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<td>370 275</td>
<td>955 705</td>
<td>1350 995</td>
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<td>1 1/8&quot;-7</td>
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<td>1680 1240</td>
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<td>2270 1670</td>
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<td>2640 1950</td>
<td>4290 3160</td>
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<table>
<thead>
<tr>
<th>Bolt Size</th>
<th>N-m (^c) ft-lb (^d)</th>
<th>N-m</th>
<th>ft-lb</th>
<th>N-m</th>
<th>ft-lb</th>
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<td>M 6 X 1</td>
<td>7 5</td>
<td>11</td>
<td>8</td>
<td>15</td>
<td>11</td>
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<td>M 8 X 1.25</td>
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<td>26</td>
<td>19</td>
<td>36</td>
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<tr>
<td>M 8 X 1</td>
<td>18 13</td>
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<td>21</td>
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<td>200</td>
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<td>115</td>
<td>215</td>
<td>160</td>
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<td>165</td>
<td>315</td>
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<td>335</td>
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<tr>
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<td>310</td>
<td>230</td>
<td>405</td>
<td>300</td>
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</tr>
<tr>
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<td>260</td>
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<td>355</td>
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<td>440</td>
<td>325</td>
<td>610</td>
<td>450</td>
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<td></td>
</tr>
<tr>
<td>M 20 X 1.5</td>
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<td>650</td>
<td>480</td>
<td>900</td>
<td>665</td>
<td></td>
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</tr>
<tr>
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<td>480 355</td>
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<td>560</td>
<td>1050</td>
<td>780</td>
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</tr>
<tr>
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<td>830</td>
<td>610</td>
<td>1150</td>
<td>845</td>
<td></td>
<td></td>
</tr>
<tr>
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<td>1510</td>
<td>1120</td>
<td>2100</td>
<td>1550</td>
<td></td>
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<tr>
<td>M 30 X 2</td>
<td>1060 785</td>
<td>1680</td>
<td>1240</td>
<td>2320</td>
<td>1710</td>
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<tr>
<td>M 36 X 3.5</td>
<td>1730 1270</td>
<td>2650</td>
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<td>3660</td>
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<td></td>
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<tr>
<td>M 36 X 2</td>
<td>1880 1380</td>
<td>2960</td>
<td>2190</td>
<td>4100</td>
<td>3220</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

- **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

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**Wheel Bolt Torque Values**

- 1/2"-20 (75-85ft-lbs)
- 5/16"-18 (80-90ft-lbs)
- 5/8"-18 (85-95ft-lbs)
SS2000 (S/N 1741YY-) Hydraulic Layout

Hose Wrap

Green Retract to Tee Block, Bottom Hole

Green Extend to Tee Block, Top Hole

Bottom Holes Tee Block to Base End Cylinders

Top Holes Tee Block to Rod End Cylinders
SS1800-30” 7-Shank Machine Layout

Diagram showing the layout of the machine with dimensions and labels for various parts.
SS1800-36” 6-Shank Machine Layout
SS1800-SS1800 30”hank Machine Layout
SS1800-40” 6 Shank Machine Layout
SS2000-24” 8-Shank Machine Layout

43158
SS2000-24” 10 Shank Machine Layout
SS2000-24” 12 Shank Machine Layout
SS2000-30” 8 Shank Machine Layout
SS2000-30” 9 Shank Machine Layout
SS2000-30” 10 Shank Machine Layout
SS2000-36” 7 Shank Machine Layout
SS2000-36” 8 Shank Machine Layout
SS2000-38” 7 Shank Machine Layout
SS2000-38” 8 Shank Machine Layout
SS2000-40” 7 Shank Machine Layout
Warranty

Great Plains Manufacturing, Incorporated warrants to the original purchaser that this tillage equipment will be free from defects in material and workmanship for a period of one year from the date of original purchase when used as intended and under normal service and conditions for personal use; 90 days for commercial or rental purposes. This Warranty is limited to the replacement of any defective part by Great Plains Manufacturing, Incorporated 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.

This Warranty does not apply to any part or product which in Great Plains’ judgement shall have been misused or damaged by accident or lack of normal maintenance or care, or which has been repaired or altered in a way which adversely affects its performance or reliability, or which has been used for a purpose for which the product is not designed. This Warranty shall not apply if the product is towed at a speed in excess of 20 miles per hour.

Claims under this Warranty must be made to the dealer which originally sold the product and all warranty adjustments must be made through such dealer. Great Plains reserves the right to make changes in materials or design of the product at any time without notice.

This Warranty shall not be interpreted to render Great Plains liable for damages of any kind, direct, consequential, or contingent, to property. Furthermore, Great Plains shall not be liable for damages resulting from any cause beyond its reasonable control. This Warranty does not extend to loss of crops, losses caused by harvest delays or any expense or loss for 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 registered with Great Plains Manufacturing, Incorporated within 10 days from the date of original purchase.
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