Operator Manual
5109, 5111, 5113 & 5115,
5313, 5315, 5317, 5319, 5321 & 5323
 Turbo-Chisel (S/N A1420X+)

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.

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Dealer Contact Information

Name: ________________________________
Street: ______________________________
City/State: __________________________
Telephone: __________________________
Email: ______________________________
Dealer’s Customer No.: ____________________

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

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

Be Aware of Signal Words
Signal words designate a degree or level of hazard seriousness.
DANGER indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury. This signal word is limited to the most extreme situations, typically for machine components that, for functional purposes, cannot be guarded.
WARNING indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury, and includes hazards that are exposed when guards are removed. It may also be used to alert against unsafe practices.
CAUTION indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices.

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

Be Familiar with Safety Decals
▲ Read and understand “Safety Decals” on page 5, thoroughly.
▲ Read all instructions noted on the decals.
▲ Keep decals clean. Replace damaged, faded and illegible decals.
Use Safety Chains

▲ Use safety chains to help control drawn machinery should it separate from tractor draw-bar or trailing nurse tank hitch.
▲ Use chain with a strength rating equal to or greater than the gross weight of towed machinery.
▲ Attach implement chain to tractor draw-bar support or specified anchor location. Allow only enough slack in chain for turns.
▲ Replace chain if any links or end fittings are broken, stretched or damaged.
▲ Do not use safety chain for towing.

Avoid High Pressure Fluids

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

Keep Riders Off Machinery

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

Use Safety Lights and Devices

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

Maximum transport speed for implement is 20 mph (32 kph), 13 mph (22 kph) in turns. Some rough terrains require a slower speed. Sudden braking can cause a towed load to swerve and upset.

- Do not tow an implement or nurse tank that weighs more than 1.5 times the weight of towing vehicle.
- Carry reflectors or flags to mark Turbo-Chisel in case of breakdown on the road.
- Keep clear of overhead power lines and other obstructions when transporting. Refer to transport dimensions under “TC Specifications and Capacities” on page 27.
- 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.
- Reduce speed on rough roads.
- Comply with national, regional and local laws.
- Do not fold or unfold the Turbo-Chisel while the tractor is moving.

Shutdown and Storage

- Lower Turbo-Chisel, put tractor in park, turn off engine, and remove the key.
- Secure Turbo-Chisel using parking jack provided.
- Detach and store Turbo-Chisel in an area where children normally do not play.

Tire Safety

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

- When inflating tires, use a clip-on chuck and extension hose long enough for you to stand to one side—not in front of or over tire assembly. Use a safety cage if available.
- When removing and installing wheels, use wheel-handling equipment adequate for weight involved.
Practice Safe Maintenance

▲ Understand procedure before doing work. Use proper tools and equipment. Refer to this manual for additional information.
▲ Work in a clean, dry area.
▲ Lower implement, put tractor in park, turn off engine, and remove key before performing maintenance.
▲ Make sure all moving parts have stopped and all system pressure is relieved.
▲ Disconnect battery ground cable (-) before servicing or adjusting electrical systems or before welding on Turbo-Chisel.
▲ 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 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.
▲ Be familiar with all Turbo-Chisel functions.
▲ Operate machinery from the driver’s seat only.
▲ Do not leave Turbo-Chisel unattended with tractor engine running.
▲ Do not stand between tractor and implement, or implement and nurse tank, 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 Turbo-Chisel. Make sure all persons are clear of working
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 smv post on wing stop; 1 total

838-615C
Amber Reflectors
Two on front of light brackets. Two on front, outside of trusses. Two on outside, rear of center frame. Two on rear of finishing attachment (not shown), visible from side while folded for transport; 8 total
838-614C
Red Reflectors
On rear of light brackets (top). On rear of reflector bracket (top), Models 5111, 5113, 5115 Only;
2 or 4 total

838-603C
Orange Reflectors
On rear of light brackets (bottom) On rear of reflector bracket (bottom), Models 5111, 5113, 5115 Only;
2 or 4 total

838-598C
Caution: Read Operator’s Manual
On front of left truss;
1 total
838-599C
Danger: Electrocution Hazard
Top side of gusset on rear of hitch (left side), Models 5313-5323; 1 total

838-600C
Danger: Crushing Hazard
Front of hitch; 1 total

838-602C
Warning: Overhead Wing Hazard
Outside, center of center frame and front, left of wing frames (both sides), Models 5313-5323; 4 total
838-094C
Warning: High Pressure Fluid
Front of hitch (middle);
1 total

838-611C
Warning: Hand Crushing
Front side of center frame (left & right side);
2 total

838-613C
Notice: Transport Lock
Outside of cylinder mount bar (both sides);
2 total
838-606C
Warning: Tongue Rising
Front of hitch (rear);
1 total

848-271C
Danger: Cutting Of Foot
Top side of gusset on rear of hitch (middle);
1 total
Introduction

Great Plains welcomes you to our growing family of new product owners. The TC5109-5323 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

TC5109  11-Foot  1-section
TC5111  14-Foot  1-section
TC5113  16-Foot  1-section
TC5115  19-Foot  1-section
TC5313  16-Foot  3-section
TC5315  19-Foot  3-section
TC5317  21-Foot  3-section
TC5319  24-Foot  3-section
TC5321  26-Foot  3-section
TC5323  29-Foot  3-section

Description of Unit

The TC5109-5323 is a one or three-section “vertical” tillage tool. Working width ranges from 11 to 29 feet. The implement is designed to cut, size and bury residue. It can work up to 11” deep, will dislodge rootballs and leave the field smooth enough for “one pass” finishing in Spring. For optimum leveling of your machine, it should be equipped with either a Chopper Reel or Buster Bar attachment.

Document Family

566-224Q-ENG Assembly Manual
566-224Q Pre-Delivery Manual
566-224M Operator Manual (this document)
566-224P 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 on the left end of the top front tool bar.

Record your Turbo-Chisel model and serial number here for quick reference:

Model Number: _______________________
Serial Number: _______________________

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

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

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

Further Assistance

Great Plains Manufacturing, Inc. wants you to be satisfied with your new Turbo Chisel. 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.
PO 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.
(800)255-9215
Preparation and Setup

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

Before using the Turbo-Chisel in the field, you must hitch it to a suitable tractor, inspect systems and level the Turbo-Chisel. Before using the Turbo-Chisel 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 and 14.
- If machine is folded, remove the transport pins from wing stops. (DO NOT remove pins if the wing is leaning against the pins or putting pressure on the pins. Use the hydraulics to pull the wings in completely before unpinning them.) Once the pins are removed, slowly untold the unit. Make sure no one is under the wings during the unfolding process.
- Check again for hydraulic leaks and watch that hoses do not get pinched in hinges, wing stops, etc.

- After the machine is completely unfolded, raise and lower the Turbo Chisel several times to purge air from the hydraulic system. Again check for hydraulic leaks and tighten or replace if necessary.
- Check safety chain hookup. Make sure all warning lights are hooked up and functioning correctly.
- Check that all grease fittings are in place and lubricated. See “Lubrication” on page 25. 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 29.
- Put transport locks in place and refold the machine slowly. Put wing stop pins in place. Always use the transport pins when moving from field to field. You are now ready to go to the field.
**Hitching Turbo-Chisel to Tractor**

Hitch to a tractor for highway transport or field operations. Hitch to a leading implement only for field operations. Do not transport behind another implement.

Before hitching, check the compatibility and capability of the towing tractor or implement:

The TC5109-5323 Turbo-Chisel is a pull-type implement equipped with a standard Category IV single tang hitch. It may be converted to a Category III or clevis hitch using supplied accessory parts.

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

1. Raise tractor three-point arms (if equipped) clear up to clear Turbo-Chisel.
2. For TWO-WHEEL DRIVE and MFWD tractors, pin drawbar in fixed center position for field and transport. For FOUR-WHEEL DRIVE and TRAC-DRIVE tractors, leave one hole clearance on each side of drawbar for field position, hitch damage may occur if pinned solid. Pin in center position for transport to maintain maximum steering control.

Refer to Figure 3

3. Use jack 1 to raise and lower turbo-chisel tongue.
4. Back tractor draw bar into alignment with hitch 2.
5. Secure with a locking hitch pin.

**CAUTION**

**Negative Tongue Weight Hazard:**
Make certain that turbo-chisel is securely hitched to the tractor or leading implement before unfolding. An unhitched turbo-chisel can tip over backwards during folding and unfolding if the tongue is not secured.

6. Secure safety chain to an anchor on the tractor.

Refer to Figure 4

7. Retract jack foot. Re-orient jack to storage position.
8. After hitching tractor to turbo-chisel, store jack on storage stob 3 on Turbo-Chisel tongue.

**Load Sway Hazard:**

9. Lock drawbar swing to center position to minimize any side-to-side sway to assure proper tracking in the field, and safe road travel. See "Transport" on page 19, for safe transporting.
Electrical Hookup  
*Refer to Figure 5*
Your Turbo-Chisel is equipped with either North American lights.
Plug the lighting connector into the tractor outlet.
Test the lights and signaling prior to highway movement.

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>
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<tbody>
<tr>
<td>Black</td>
<td>Lift (2 hoses)</td>
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<tr>
<td>Green</td>
<td>Fold (2 hoses)</td>
</tr>
<tr>
<td>Red</td>
<td>Gang (2 hoses)</td>
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</table>

**Hydraulic Hose Hookup**

⚠️ **WARNING**

*High Pressure Fluid Hazard:*
Shut down tractor before making hydraulic connections. Only trained personnel should work with system hydraulics.

Escaping fluid under pressure can have sufficient pressure to penetrate the skin causing serious injury. If an accident occurs, seek immediate medical assistance from a physician familiar with this type of injury.

Use paper or cardboard, NOT BODY PARTS, to check for leaks. Wear protective gloves and safety glasses or goggles when working with hydraulic systems.

*Refer to Figure 6*
To distinguish hoses on the same hydraulic circuit, refer to hose label.

- The hose with an extended-cylinder symbol feeds a cylinder base end.
- The hose with a retracted-cylinder symbol feeds a cylinder rod end.

Secure hoses and cables so that they have sufficient slack for hitch movements, but cannot get caught between moving parts of tractor, turbo-chisel or hitch. Failure to safely route and secure hoses and cables could result in damage requiring component repair/replacement, and lost field time.

To distinguish hoses on the same hydraulic circuit, refer to, “Hydraulic Hose Hookup” on page 14. Clean all hydraulic couplings and hook hoses to tractor.
Transport Locks

Refer to Figure 7

10. Once the cylinders are connected, raise the unit completely. If the transport locks 1 are in place, remove them at this time.

Refer to Figure 8

11. Store the transport locks 2 on the lift mechanism link as shown.
12. Once the locks are removed, unfold the wings (if folding unit).
   - Make sure no one is under the wings during the unfolding process. Watch for leaks and make sure hoses do not get pinched during the initial unfolding process.
13. Once the machine is unfolded, raise and lower the machine several times to purge air from the lift system. Again, watch for any leaks and tighten if necessary.
14. Check the tire pressure for proper inflation and check the tightness of lug bolts.

First Time Field Adjustments

Pre-Leveling of Machine

- Pre-leveling of machine should be done on a good level surface.

Front to Rear Leveling

Refer to Figure 9

15. Lower the machine until the front row of shanks are 1 to 2” above the surface. At this point, remove the snap wire pin 1 from the turnbuckle lock 2, swing lock off turnbuckle and adjust the hitch turnbuckle 3 to adjust the fore and aft. The front corner of the main frame should be 1/2 to 1” lower than the rear corner.
16. Now the turnbuckle lock 2 may be swung back onto hitch turnbuckle 3 and the snap wire pin 1 may be re-installed.
Wing Adjustment (5313-5315)

Refer to Figure 10

17. Once the machine is level fore to aft, the wings may be leveled (Models 5313-5315). Start by unfolding the wings to a rigid position.

18. Completely extend the wing fold cylinders and check the wings for levelness. If machine is not level, fold wings back up and install shims as needed to level.

Extra shims are stored in manual pak. The extra shims may be needed in the future if the hinge holes or bolts begin to wear. There are two different thickness of shims, you may use multiple shims to level wings.

19. Remove the two \( \frac{3}{8} \times 1 \frac{1}{2} \) bolts and either add more shims to raise wings or take shims out to lower wings.

20. Re-install bolts and tighten to specs, see “Torque Values Chart” on page 29.

Wing Adjustment (5317-5323)

Refer to Figure 11

21. The wings are to be leveled with the turnbuckle on the wing cylinder mount.

22. Loosen jam nut and either shorten turnbuckle to raise the wings or lengthen the turnbuckle to lower the wings.

23. Re-tighten the jam nut to specs, see “Torque Values Chart” on page 29.

Refer to Figure 12

24. Once machine is pre-leveled, raise and lower the gangs completely to cycle and purge air from these cylinders.
5317-5323 Hydraulic Down Pressure

Refer to Figure 13

This setup procedure is for tractors with closed-center or pressure compensated flow hydraulic systems. Open center hydraulics not supported. Adjust down pressure valve as shown on decal ③ (located on front right hand truss), Refer to Figure 14.

CAUTION

Never leave tractor valve centered when unfolded with machine in motion. Machine damage may occur when wings flex up or down.

CAUTION

This machine is designed for continuous hydraulic flow to the wing fold cylinders during field operations. It is for use on tractors having CLOSED CENTER hydraulics only. If your tractor has an OPEN CENTER hydraulics, please consult your dealer for operating instructions.

25. Adjust the bypass/pressure reducing valve by turning knob ① clockwise all the way in and then backing out 1 full turn.

26. On tractor, adjust flow-control valve to low side of flow rate.

The faster the flow of oil through the system the greater the potential for oil heating, premature wear or tractor damage.

27. Lock the fold hydraulic lever for continuous downward oil flow.

28. Adjust bypass/pressure reducing valve knob ② on implement so the pressure gauge ② reads 1200 psi. Never exceed 1400 psi.

29. While watching pressure gauge ③, slowly open knob ① until gauge reads 1100 psi. Pressure might rise and then fall off as knob is opened. If pressure exceeds 1400 psi during this step, the tractor flow is too high, reduce tractor flow. Lock valve knob ① at 1100 psi.

30. Finally adjust valve ② to the desired wing down pressure setting. Never exceed 900 psi.

31. In field operation, lock the fold hydraulic lever for continuous downward oil flow. If wings are running too high, increase pressure setting, knob ②, to level machine. If center is too high, decrease pressure setting with knob ② on valve.
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 Turbo-Chisel to the field.

- Carefully read “Important Safety Information” on page 1.
- Lubricate Turbo-Chisel as indicated under “Lubrication” on page 25.
- Check all tires for proper inflation, “Tire Inflation Chart” on page 28.
- Check all bolts, pins, and fasteners. Torque as shown in “Torque Values Chart” on page 29.
- Check Turbo-Chisel for worn or damaged parts. Repair or replace parts before going to the field.

Check hydraulic hoses, fittings, and cylinders for leaks. Repair or replace before going to the field.

WARNING

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

⚠️ DANGER

Loss of Control Hazard:
Do not tow the turbo-chisel behind another implement on public roads. Tow the turbo-chisel to the field with a separate vehicle. The leading implement may not provide sufficient lateral control of a trailing implement at highway speeds. The total weight of the train can also exceed the steering and/or braking capability of the tractor. The resulting accident could cause serious injury or death.

⚠️ DANGER

Loss of Control Hazard:
Use an adequate towing vehicle. Never tow an implement that weighs more than 150% of the towing vehicle (transport vehicle must weigh at least 67% of implement). Ensure that the towing vehicle is adequate for the task. Using an inadequate tow vehicle is extremely unsafe, and can result in loss of control, serious injury and death.

See tables below for harrow transport weights.

⚠️ DANGER

Braking and Loss of Control Hazard:
Do not exceed 20 mph (32 kph). Slow down on rough roads.

Transport Steps

Know your implement weight. If tractor capabilities are marginal, check actual weight of implement at a scale.

32. Check that implement is securely hitched to a sufficient tractor (page 13).

33. Always use a locking-style hitch pin sized to match holes in hitch and draw-bar, and rated for the load.

34. Attach safety chain to tractor with enough slack to permit turning (page 13).

35. Verify correct operation of lights.

36. Install transport locks (page 15).

37. Check that tires are properly inflated (page 28).

38. Plan the route. Avoid steep hills.

39. Always have lights on for highway operation.

40. Do not exceed 32 kph (20 mph). Comply with all national, regional and local laws when traveling on public roads.

41. Remember that the implement may be wider than the towing vehicle. Allow safe clearance.
Field Operation

This implement is designed to be pulled in the field with the machine engaged (including wide turns). Lifting for short distances to clear residue clogs is acceptable. Lifting for tight turns or reverse moves is required.

**NOTICE**

*Equipment Damage Risk:*
*Lift for tight turns and reverse moves. Tight turns can result in a section moving backward. Never back up with harrows on the ground. If the inside tire stops or rolls backward, the turn is tight and requires lift.*

Field Set-Up Checklists

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

### Mechanical Checklist (Tractor Hitching)

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</tr>
<tr>
<td>Safety chain secured to tractor or leading implement</td>
<td>13</td>
</tr>
<tr>
<td>Parking jack stowed</td>
<td>13</td>
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</tbody>
</table>

### Electrical Checklist

<table>
<thead>
<tr>
<th>Task</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Verify electrical hookups solid, or connector securely stowed if not using lights in field.</td>
<td>14</td>
</tr>
</tbody>
</table>

### Hydraulic System Checklist

<table>
<thead>
<tr>
<th>Task</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Check tractor hydraulic reservoir full</td>
<td>-</td>
</tr>
<tr>
<td>Make hydraulic connections</td>
<td>14</td>
</tr>
<tr>
<td>Inspect connections for leaks</td>
<td>-</td>
</tr>
<tr>
<td>Unfold Implement</td>
<td></td>
</tr>
</tbody>
</table>

### General Operation and In-Field Adjustments

1. Remove the transport pins, see “Transport Locks” on page 15 and unfold machine. Make sure the fold cylinders are fully extended to allow the wings to fully flex in the field.

2. If possible have someone observe the machine during first time operation for levelness, front to rear and wings to center frame.
Refer to Figure 15

3. If machine needs leveled from front to rear, remove the snap wire pin ① from the turnbuckle lock ②, swing lock off turnbuckle and adjust the hitch turnbuckle ③. When done adjusting, be sure and swing turnbuckle lock back down and secure with snap wire pin.

Refer to Figure 16

4. If machine is not level when fold cylinders are completely extended, fold wings back up and install shims as needed to level.

Extra shims ④ are stored in manual pak. The extra shims may be needed in the future if the hinge holes or bolts begin to wear. There are two different thickness of shims, you may use multiple shims to level wings.

5. Remove the two 3/8 x 1 1/4 bolts ⑤ and either add more shims ④ to raise wings or take shims out to lower wings.


7. For best results, if at all possible, run machine at a slight angle to the rows. This will improve trash flow and allow for better dislodging of rootballs and will help spread the residue more evenly across the field.

Refer to Figure 17

8. When you have machine level and set to the desired working depth, set the depth stop ⑥ on the depth stop tube ⑦. This is located at the front of the machine. This will maintain a constant depth each time after raising and lowering machine. One full turn of the handle ⑧ will change the depth approximately 1/4.”

If after setting the depth stop, the detent on the tractor kicks out before the stop contacts the button ⑨ on the depth stop, slow the hydraulic flow speed down. If this problem exists, contact the factory service representative for other possible adjustments. On tractors with a timed detent setting, set the detent so when you raise the machine, the pump will run for 1/2 to 1 full second after full raise. If it runs longer than this, damage to the seals of the lift cylinders may result.
Refer to Figure 18

9. Once the machine is set, running level both fore and aft, from side to side you are ready to run. The first part of the machine that makes contact with the soil is the turbo coulters. These can be adjusted hydraulically from the seat of the tractor. These coulters are designed to cut and size, they will also help with burying residue as the aggressive turbo blades will pick up and roll the soil.

These coulters should not be run at a depth deeper than 5”. Also, in very hard ground, be careful to try not to force the coulters too deep as it may try to raise the front of the machine out of the ground as this will affect the overall performance of the machine.

10. The machine can be equipped with several different shank options. It is important to understand these options and how they affect the soil. See a and b for description.

a. Toggle Trip Shanks with 7” winged point. These can run up to 11” deep and with winged points, they do an excellent job of fracturing the soil. These shanks run 2” deeper than the rear row of shanks.

b. Spring Reset Mounts can be equipped with several different shank and point configurations. The most popular is the Parabolic Shank with a 7” winged point. This point is similar to the ones on the toggle trip shank except It has a “fin” on it that helps minimize shank “blow out”. The combination of these shank assemblies and the Toggle Trip shanks provide the best combination for fracturing the ground completely while leaving the surface in a relatively “smooth” condition. By following the combination with a Chopper Reel or Buster Bar, one pass finishing in the Spring is attainable. Spring Reset Mounts can also be equipped with a Standard Chisel Shank which supports many point options. See chart below for a detailed analysis of the varying point options.

<table>
<thead>
<tr>
<th>Front Row</th>
<th>Rear Row</th>
<th>Fracture</th>
<th>Bury Residue</th>
<th>Smoothness</th>
<th>Trash Clearance</th>
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</thead>
<tbody>
<tr>
<td>Toggle Trip 7” Point</td>
<td>Auto Reset/ Parabolic w/ 7” Finned Point</td>
<td>Very Good</td>
<td>Good</td>
<td>Very Good</td>
<td>Very Good</td>
</tr>
<tr>
<td>Toggle Trip 7” Point</td>
<td>Auto Reset/ Chisel w/ 7” Winged Point</td>
<td>Very Good</td>
<td>Very Good</td>
<td>Good</td>
<td>Good</td>
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<tr>
<td>7” Point</td>
<td>Auto Reset/ Chisel w/ 2” Winged Point</td>
<td>Good</td>
<td>Very Good</td>
<td>Good</td>
<td>Good</td>
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<tr>
<td>Auto Reset/Chisel w/ 2” Straight Point</td>
<td>Auto Reset/ Chisel w/ 2” Straight Point</td>
<td>Average</td>
<td>Good</td>
<td>Poor</td>
<td>Good</td>
</tr>
<tr>
<td>Auto Reset/Chisel w/ 3” or 4” Twisted Point</td>
<td>Auto Reset/Chisel w/ 3” or 4” Twisted Point</td>
<td>Poor</td>
<td>Very Good</td>
<td>Very Poor</td>
<td>Average</td>
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</table>
Rear Attachment Settings

Rear Chopper Reel

11. The chopper reel attachment is designed to help size the soil and residue coming out of the back of the machine and level the soil surface. The reels should be run as far forward as possible without causing plugging of the reel assemblies or the machine. In wetter conditions, they may need to be moved back some to allow the soil to “settle” before coming in contact with the reels. Also in wet conditions, it is not advisable to apply down pressure on the reels as this will cause them to plug with mud.

Refer to Figure 19

12. In order to raise or lower the chopper reel assembly, adjust the eyebolt 1 by loosening the jam nuts 2. Extend eyebolt to lower the assembly, retract eyebolt to raise assembly.

13. Tighten jam nuts securely.

14. To adjust the chopper reels fore and aft, remove bolt 3 and slide tubes in or out. Adjustment is 3" for each hole. The bolt may need to move from the back hole to the front hole or vice versa, depending on the amount of adjustment needed. Because of weight concerns, the choppers should run as far forward as possible while still allowing soil and residue to flow freely from the rear shanks.

Refer to Figure 20

15. The down pressure can be adjusted two ways. For slight down pressure, loosen set screw 4 from collar 5 and slide collar up for more pressure. Tighten set screw to secure.

16. For added down pressure, tighten lock nut 6 on top of spring. This will compress the bottom of the spring, increasing down pressure. This will also raise the chopper reel so you will also need to re-adjust eyebolt at the bottom of the spring bolt accordingly.
Buster Bar

Refer to Figure 21

17. The buster bar attachment is designed to knock the tops of the ridges and to help fill the valleys behind the chisel shanks. The down pressure can be set by the \( \frac{1}{2}'' \) bolt under the arm. To adjust the pressure, loosen the jam nut on the back side and then adjust the \( \frac{1}{2}'' \) bolt. To increase down pressure, loosen the bolt. In some instances, especially when you are running the chisel very deep, the bolt head will not be in contact with the ball joint when the unit is out of the ground. Once the unit is lowered into the ground, the bolt head will come in contact with the ball joint and pressure will be applied. Once the proper tension is set, re-tighten the jam nut. There are no other adjustments to this attachment.

Figure 21
Buster Bar Settings
Maintenance and Lubrication

Maintenance

1. Always use the transport lock when working on or doing maintenance to the Turbo-Chisel. If folded, be sure your wing stop pins are in place. Read and understand all safety decals on your equipment.

2. During the first season of operation, and periodically after that, check your bolts for tightness. Check shank pivot bolts for tightness. Check shank pivot bolts on the spring-loaded shank, these must remain tight to prevent excessive wear on the shank assembly.

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

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

5. 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.

6. Check drag bolts for loosness or excessive wear. Replace broken or bent teeth. Your drag is an important part of the tillage operation.

7. 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.

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 listed below. For more information on operating, adjusting or maintaining your Great Plains Discovator, assistance is available. Contact:

Great Plains Service Department
1525 E. North St.
PO 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.

(800)255-9215

Lubrication

Wheel Bearing Hub

1 zerk on each hub;
4 total

Units made after 3/2014 will not have a grease zerk.

Type of Lubrication: Grease
Quantity: Sparingly, Do Not Over Grease, may cause damage to seal.

Repack wheel bearings annually or every 2500 acres.
Coulter Bearings

One on rear of each c-flex bearing.

Units made after 3/2014 will not have a grease zerk.

Type of Lubrication: Grease
Quantity: Grease every 50 hours, 2 to 3 pumps. In heavy conditions grease every 20 hours, 2 to 3 pumps.

Wing Hinge

One on each wing hinge (3-Section)

Type of Lubrication: Grease
Quantity: Sparingly or 2 pumps
### TC Specifications and Capacities

<table>
<thead>
<tr>
<th>Model No.</th>
<th>TC5109</th>
<th>TC5111</th>
<th>TC5113</th>
<th>TC5115</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tillage Width</td>
<td>11’ 3” (3.43 m)</td>
<td>13’ 9” (4.20 m)</td>
<td>16’ 3” (4.95 m)</td>
<td>18’ 9” (5.72 m)</td>
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<tr>
<td>Center Section</td>
<td>10’ (3.05 m)</td>
<td>10’ (3.05 m)</td>
<td>10’ (3.05 m)</td>
<td>10’ (3.05 m)</td>
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<tr>
<td>Wing</td>
<td>N/A</td>
<td>2’ 6” (0.76 m)</td>
<td>3’ 6” (1.07 m)</td>
<td>4’ 9” (1.45 m)</td>
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<tr>
<td>Number of Shanks</td>
<td>9</td>
<td>11</td>
<td>13</td>
<td>15</td>
</tr>
<tr>
<td>Shank Spacing</td>
<td>15” (.38 m)</td>
<td>15” (.38 m)</td>
<td>15” (.38 m)</td>
<td>15” (.38 m)</td>
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<tr>
<td>Number of Coulters</td>
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<td>23</td>
<td>27</td>
<td>31</td>
</tr>
<tr>
<td>Blade Spacing</td>
<td>7.5” (.19 m)</td>
<td>7.5” (.19 m)</td>
<td>7.5” (.19 m)</td>
<td>7.5” (.19 m)</td>
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<tr>
<td>Weight (base machine)</td>
<td>8,080 lbs. (3665 kg)</td>
<td>9,835 lbs. (4461 kg)</td>
<td>11,240 lbs. (5098 kg)</td>
<td>12,600 lbs. (5715 kg)</td>
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<td>Transport Width</td>
<td>11’ 6” (3.50 m)</td>
<td>14’ 3” (4.4 m)</td>
<td>16’ 6” (5 m)</td>
<td>19’ (5.80 m)</td>
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<td>Transport Height</td>
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<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
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<tr>
<td>Length (w/o attachment)</td>
<td>22’ 10” (6.95 m)</td>
<td>22’ 10” (6.95 m)</td>
<td>22’ 10” (6.95 m)</td>
<td>22’ 10” (6.95 m)</td>
</tr>
<tr>
<td>Tire Size Center</td>
<td>12.5L x 15” 12-ply</td>
<td>12.5L x 15” 12-ply</td>
<td>12.5L x 15” F-ply</td>
<td>12.5L x 15” F-ply</td>
</tr>
<tr>
<td>Tire Size Wing</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Kilowatt Chisel Shanks</td>
<td>150-185</td>
<td>170-210</td>
<td>200-245</td>
<td>235-290</td>
</tr>
<tr>
<td>Horsepower (PTO) Parabolic Shanks**</td>
<td>230-260</td>
<td>255-315</td>
<td>315-385</td>
<td>365-440</td>
</tr>
<tr>
<td>Kilowatt Parabolic Shanks</td>
<td>170-190</td>
<td>190-235</td>
<td>235-290</td>
<td>260-330</td>
</tr>
</tbody>
</table>

* Available with 2” straight or 3” twisted points on chisel shanks

** Equipped with 7” winged points on parabolic shanks

With a continued commitment to constantly improving our products, these specifications are subject to change without notice.
Tire Inflation Chart

<table>
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<tr>
<th>Wheel</th>
<th>Tire Size</th>
<th>Inflation</th>
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</thead>
<tbody>
<tr>
<td>Transport</td>
<td>12.5L x 15&quot; F-Ply</td>
<td>620 kPa 90 psi</td>
</tr>
<tr>
<td>Transport/</td>
<td>12.5L x 15&quot; 12-Ply</td>
<td>379 kPa 55 psi</td>
</tr>
<tr>
<td>Wings</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Hydraulic Connectors and Torque

Refer to Figure 22 (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.

Tire Warranty Information

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

Manufacturer/Website
- Firestone - www.firestoneag.com
- Gleason - www.gleasonwheel.com
- Titan - www.titan-intl.com
- Galaxy - www.atgtire.com
- BKT - www.bkt-tire.com

Transport 12.5L x 15" F-Ply
- 620 kPa
- 90 psi

Transport/Wings 12.5L x 15" 12-Ply
- 379 kPa
- 55 psi

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

<table>
<thead>
<tr>
<th>Bolt Size</th>
<th>Bolt Head Identification</th>
<th>Grade 2</th>
<th>Grade 5</th>
<th>Grade 8</th>
</tr>
</thead>
<tbody>
<tr>
<td>in-tpia</td>
<td>N-m^b ft-lb^d</td>
<td>N-m</td>
<td>N-m</td>
<td>N-m</td>
</tr>
<tr>
<td>1/4-20</td>
<td>7.4</td>
<td>5.6</td>
<td>11</td>
<td>8</td>
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<tr>
<td>1/4-28</td>
<td>8.5</td>
<td>6</td>
<td>13</td>
<td>10</td>
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<td>31</td>
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<td>31</td>
<td>22</td>
<td>47</td>
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<td>67</td>
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<td>1950</td>
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<td>1330</td>
<td>980</td>
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<table>
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<th>Class 8.8</th>
<th>Class 10.9</th>
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<td>mm x pitch</td>
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<td>ft-lb</td>
<td>N-m</td>
<td>ft-lb</td>
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<td>M 5 X 0.8</td>
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<td>3</td>
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<td>5</td>
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<td>M 6 X 1</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 + 6%, -15% of torquing values. Unless otherwise specified use torque values listed above.
Great Plains (a division of Great Plains Manufacturing, Inc.) warrants to the original purchaser that this Great Plains machine will be free from defects in material and workmanship for a period of one year (Parts & Labor) from the first use date when used as intended for personal use; ninety days for custom/commercial or rental use.

Second year limited warranty covers Parts ONLY (personal usage only, excluding labor and wear items). This warranty is limited to the replacement of any defective part by Great Plains. Great Plains reserves the right to inspect any equipment or part which are claimed to have been defective in material or workmanship.

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

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

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

This warranty is not valid unless registered by a certified Great Plains dealer.

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