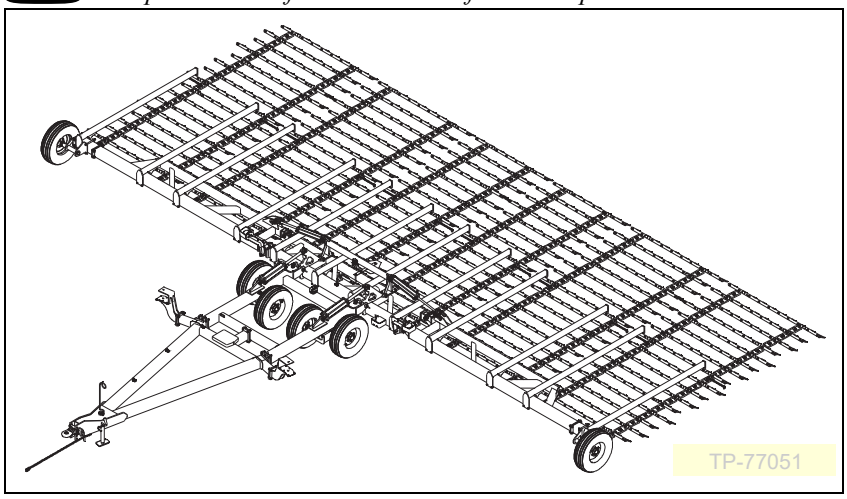
Operator Manual

CT8300 Flex Harrow

CT8300-18 - CT8300-60

Great Plains Manufacturing, Inc.
www.greatplainsmfg.com

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, or may show wider or narrower models where the topic function is identical.

ORIGINAL INSTRUCTIONS

EN

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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.

Model Number	
Serial Number	
Machine Height	
Machine Length	
Machine Width	
Machine Weight	
Year of Construction	
Delivery Date	
First Operation	
Accessories	

Dealer Contact Information

Name: _____

Street: _____

City/State: _____

Telephone: _____

Email: _____

Dealer's Customer No.: _____

Table of Contents

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.

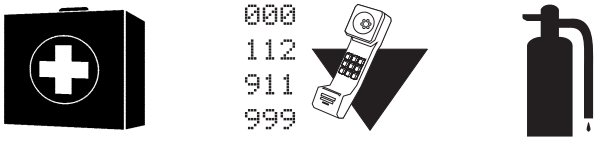
DANGER indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury. This signal word is limited to the most extreme situations, typically for machine components that, for functional purposes, cannot be guarded.

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.

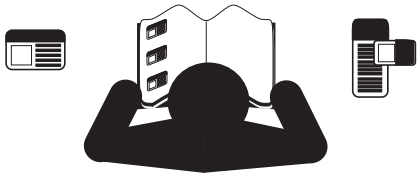
Prepare for Emergencies

- *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. Know the reporting requirement for spills or releases of the chemicals you are using. Have contact numbers available.*

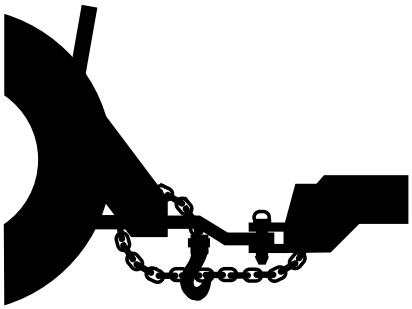


Be Familiar with Safety Decals

- *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.*



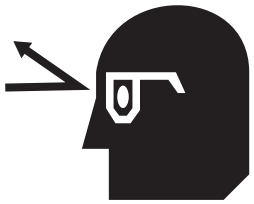
Use Safety Chains



- *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 flex harrow requires a Power-Beyond port, which is always under pressure when the tractor is running.



- *Avoid the hazard by relieving pressure at other remotes, and shutting down tractor before connecting, disconnecting or inspecting hydraulic lines.*
- *Use a piece of paper or cardboard, NOT BODY PARTS, to check for suspected leaks.*
- *Wear protective gloves and safety glasses or goggles when working with hydraulic systems.*
- *If an accident occurs, seek immediate medical assistance from a physician familiar with this type of injury.*

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

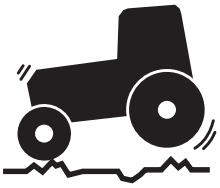
Slow-moving tractors and towed implements can create a hazard when driven on public roads. They are difficult to see, especially at night.

- *Use flashing warning lights and turn signals whenever driving on public roads.*
- *Use lights and devices provided with implement.*

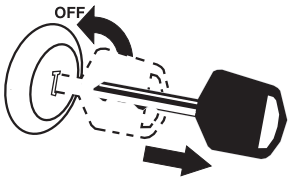
Transport Machinery Safely

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 flex harrow in case of breakdown on the road.*
- *Keep clear of overhead power lines and other obstructions when transporting. Refer to transport dimensions under "**Specifications and Capacities**" on page 31.*
- *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 flex harrow while the tractor is moving.*



Shutdown and Storage



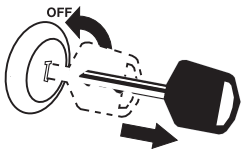
- *Lower flex harrow, put tractor in park, turn off engine, and remove the key.*
- *Secure flex harrow using parking jack provided.*
- *Detach and store flex harrow in an area where children normally do not play.*

Tire Safety

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

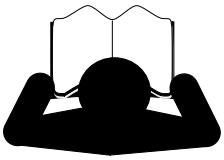
- *When inflating tires, use a clip-on chuck and extension hose long enough for you to stand to one side–not in front of or over tire assembly. Use a safety cage if available.*
- *When removing and installing wheels, use wheel-handling equipment adequate for weight involved.*

Practice Safe Maintenance



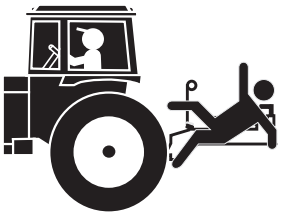
- *Understand procedure before doing work. Use proper tools and equipment. Refer to this manual for additional information.*
- *Work in a clean, dry area.*
- *Lower implement, put tractor in park, turn off engine, and remove key before performing maintenance.*
- *Make sure all moving parts have stopped and all system pressure is relieved.*
- *Disconnect battery ground cable (-) before servicing or adjusting electrical systems or before welding on flex harrow.*
- *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 flex harrow functions.*
- *Operate machinery from the driver's seat only.*
- *Do not leave flex harrow 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 flex harrow. 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.*

818-055C
Slow Moving Vehicle Reflector

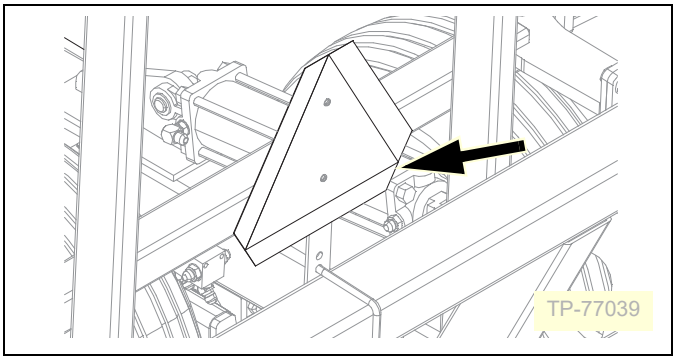
On cross-bars at center;
1 total

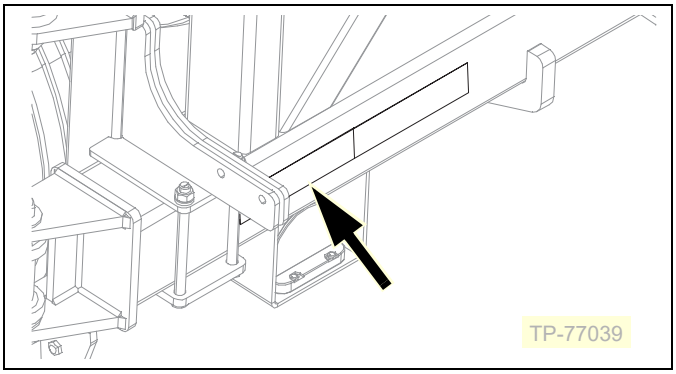
838-614C
Red Reflectors

On rear of center frame, above red tail lights (both sides);
2 total

To install new decals:

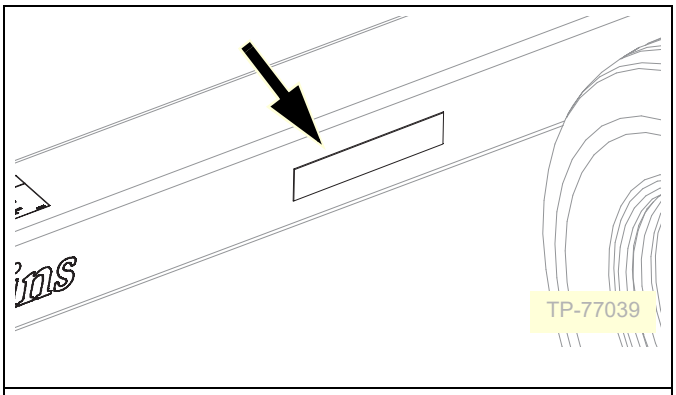
1. Clean the area on which the decal is to be placed.
2. Peel backing from decal. Press firmly on surface, being careful not to cause air bubbles under decal.

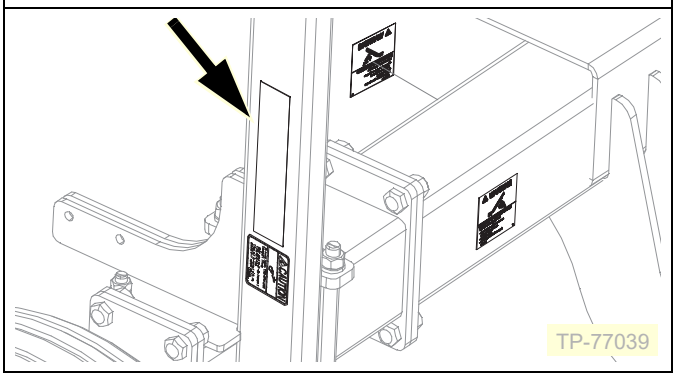




838-615C
Amber Reflectors

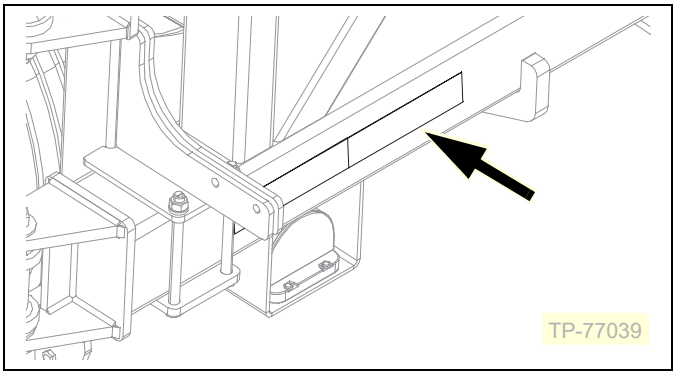
On outside face of wing end arm mounts, and on outside of tongue, front, angle tube (both sides);
4 total - CT8300-18 - 27
6 total - CT8300-30 - 45
8 total - CT8300-48 - 60

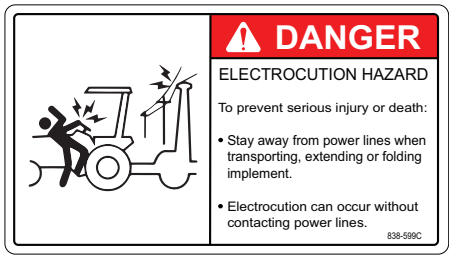




838-603C
Daytime (Orange) Reflectors

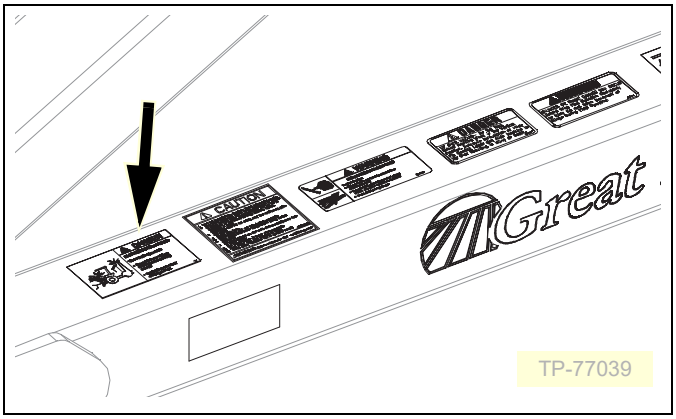
On rear of center wing (bottom) when folded up (both sides);
2 total

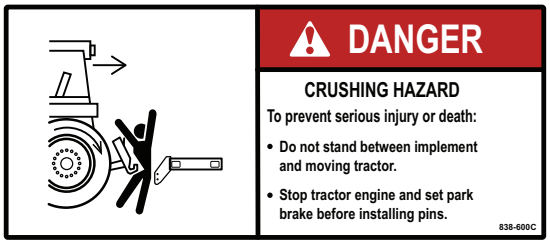




838-599C
Danger: Electrocution

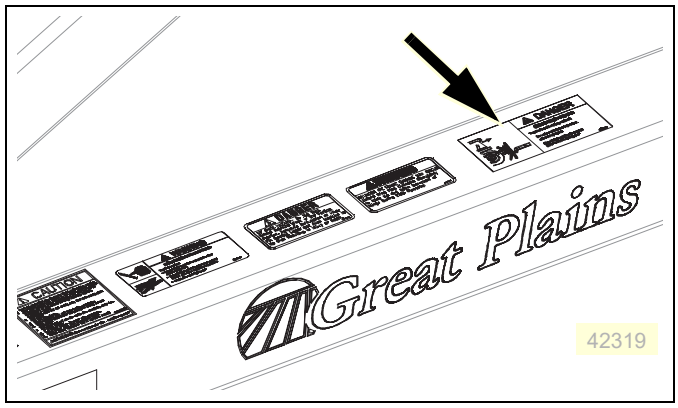
On top face of tongue;
1 total

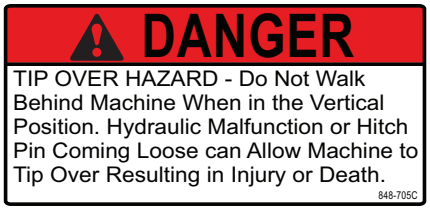




838-600C
Danger: Hitch Crush

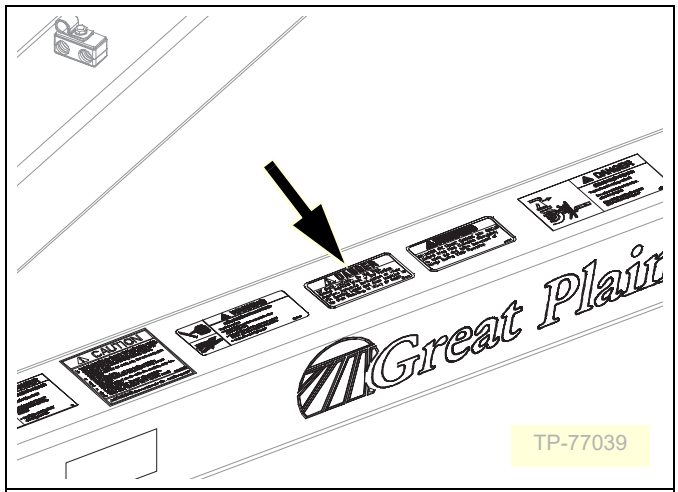
On top face of tongue near hitch;
1 total

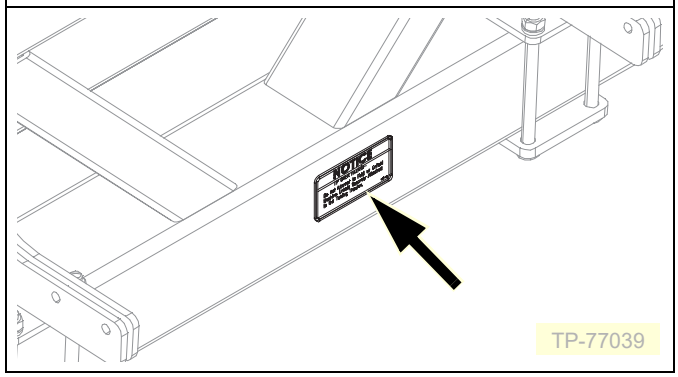




848-705C
Danger: Tip Over Hazard

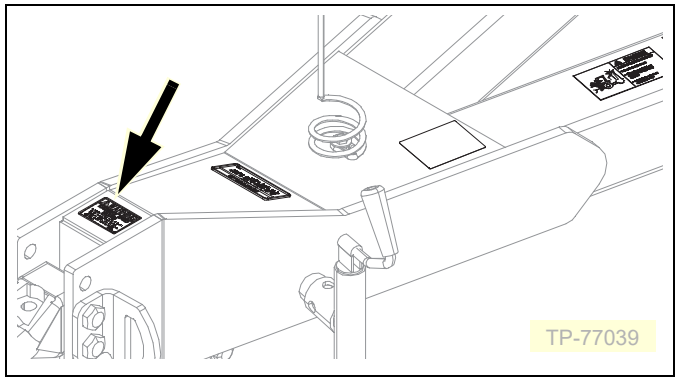
On outside of wing end arm mount (both sides), on top face of tongue front, and rear of machine bottom wing frame tube (folded);
3 total





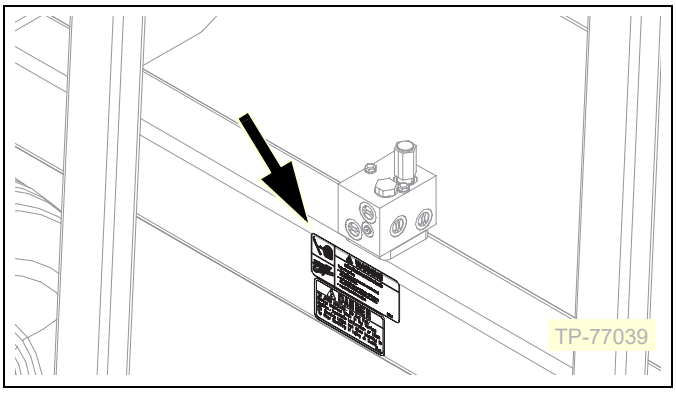
818-337C
Warning: Speed

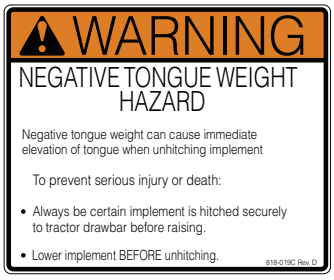
On top face of tongue near hitch;
1 total



838-094C
Warning: High Pressure Fluid Hazard

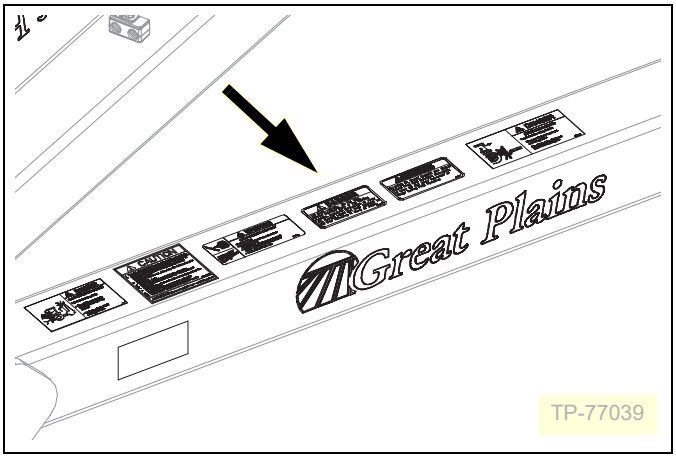
One on top face of tongue with other safety decals, one below hydraulic valve;
2 total





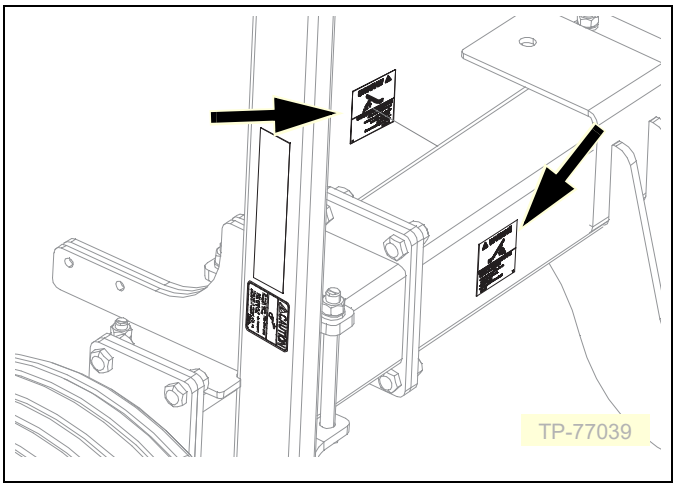
818-019C
Warning: Negative Tongue Weight

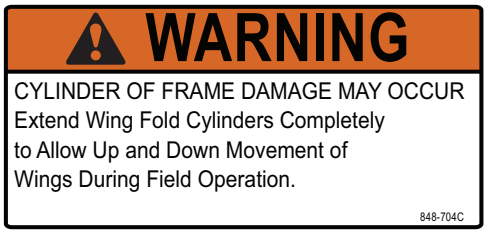
On tounge frame section;
1 total



838-602C
Warning: Overhead Wing

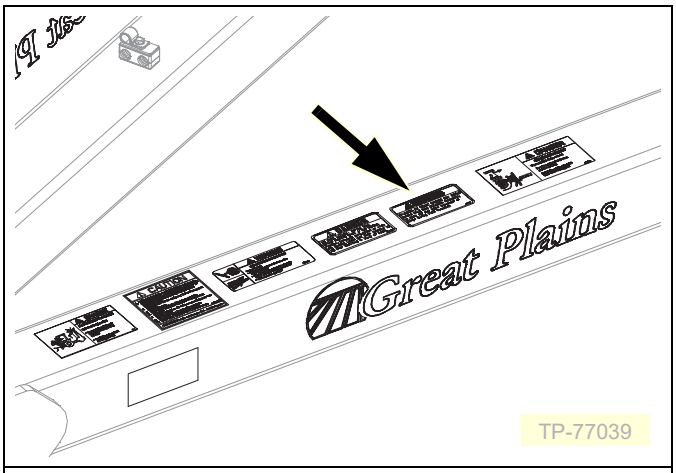
On front (when unfolded) face of wing frame near wing wheel (top and bottom of tube) (both sides);
4 total





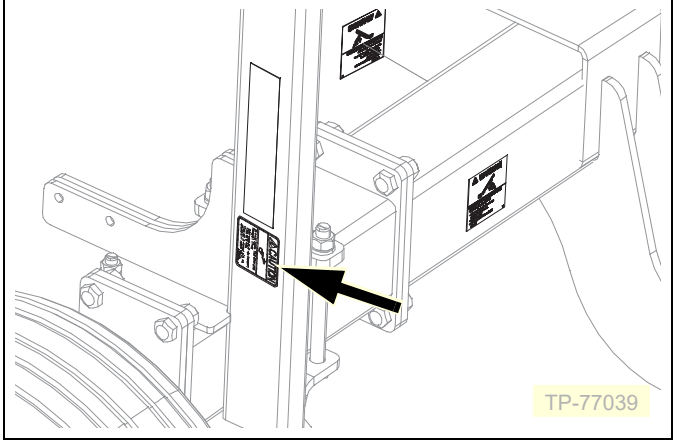
848-704C
Warning: Cylinder or Frame Damage

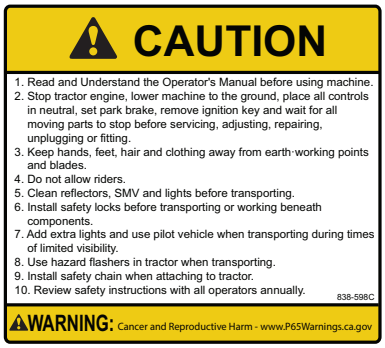
On front section of hitch frame;
4 total



818-398C
Caution: Tires Not a Step

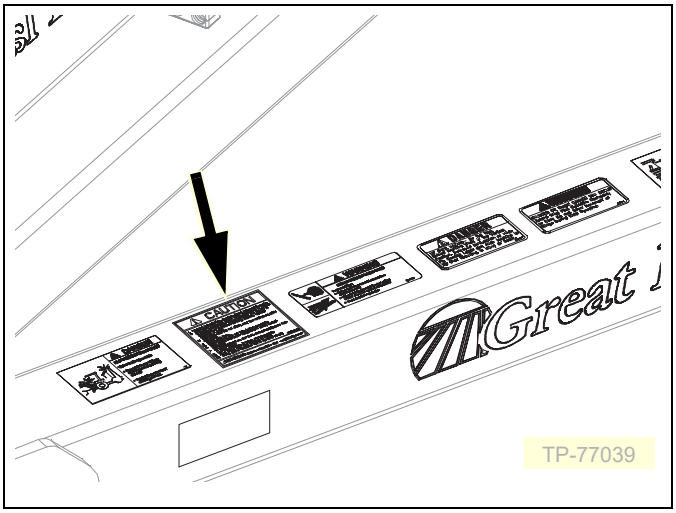
On outside face of wing end arm mount (both sides);
2 total

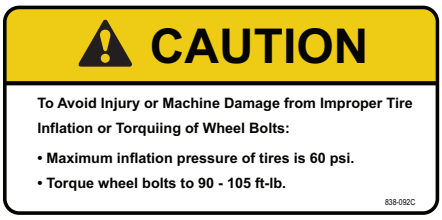




838-598C
Caution: Read Operator's Manual

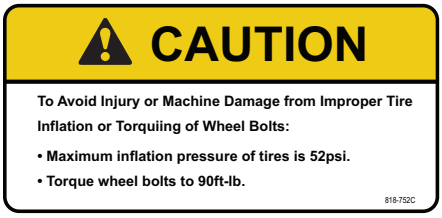
On top face of tongue in front of manual pak (rear);
1 total





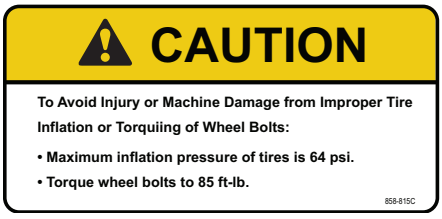
838-092C
Caution: Tire Torque/ PSI

Center fame near tires (each side);
Wing frame near Gauge Wheels (each side);
Models-CT8300-33, 36, 39, & 42
4 total



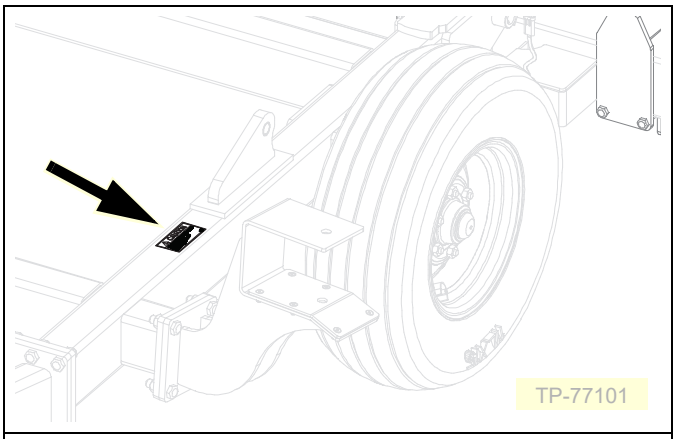
818-752C
Caution: Tire Torque/ PSI

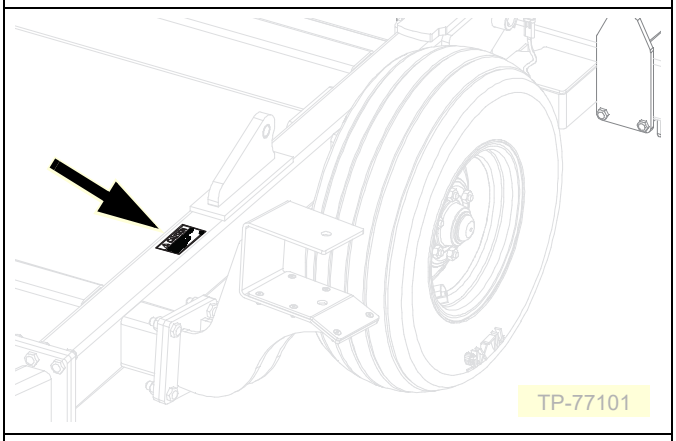
Center Frame near tires (each side);
Wing Frame near Gauge Wheels (each Side;
Models CT8300-18-30 & CT8300-45-60
4 total

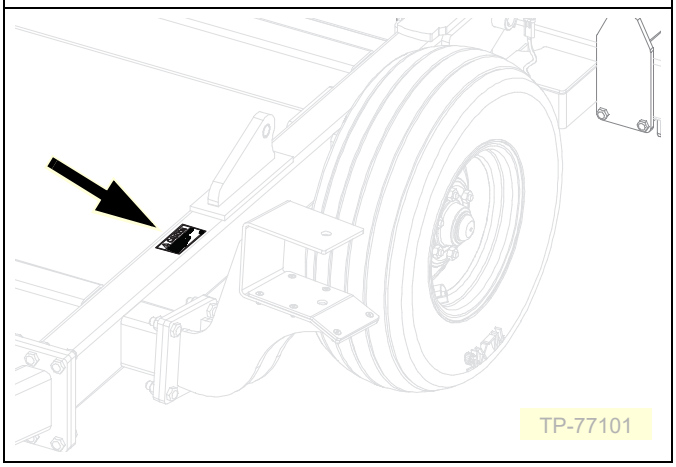


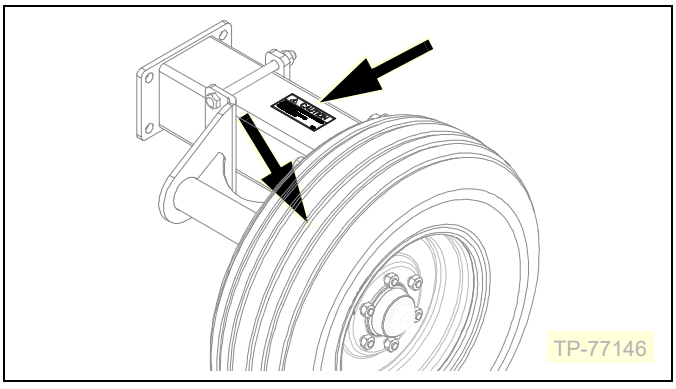
858-815C
Caution: Tire Torque/ PSI

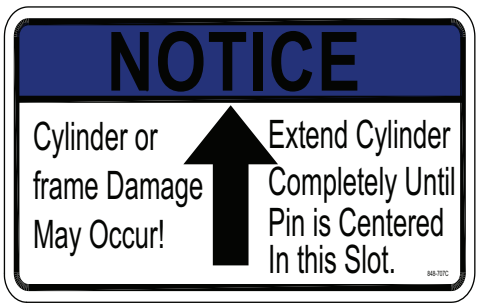
Tire Option on models 45-60
Center Frame near tires (each side);
Wing Frame near Gauge Wheels (each Side;
Models CT8300-45-60
4 total





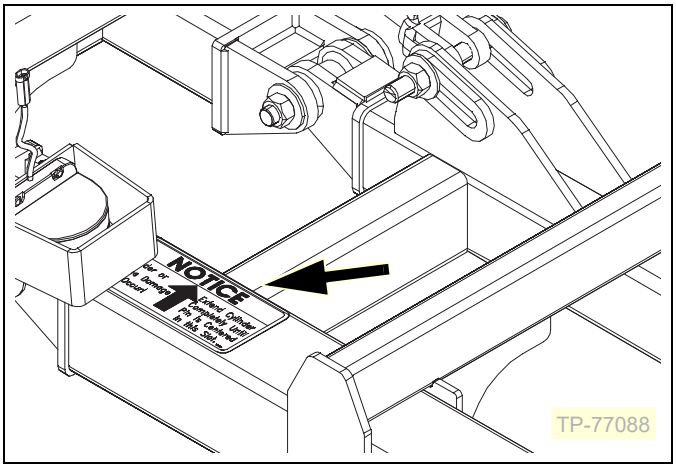






844-478C
Notice: Cylinder or Frame Damage

On top face of Wing Frame near hinge (both sides); 2 total

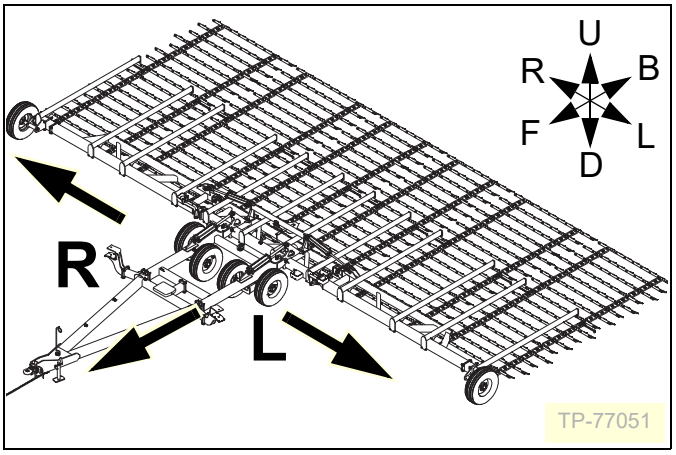


Introduction

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

Description of Unit

The CT8300 Flex Harrow is a heavy-duty flexible-link spike harrow. It is a pull-type implement intended for towing directly behind a tractor, or behind another implement. The outer sections fold up and forward for transport, See "**Specifications and Capacities**" on page 31 for transport width.



Models Covered

CT8300-18	8 & 16-Bar, 18-Foot, Heavy-Duty
CT8300-21	8 & 16-Bar, 21-Foot, Heavy-Duty
CT8300-24	8 & 16-Bar, 24-Foot, Heavy-Duty
CT8300-27	8 & 16-Bar, 27-Foot, Heavy-Duty
CT8300-30	8 & 16-Bar, 30-Foot, Heavy-Duty
CT8300-33	8 & 16-Bar, 33-Foot, Heavy-Duty
CT8300-36	8 & 16-Bar, 36-Foot, Heavy-Duty
CT8300-39	8 & 16-Bar, 39-Foot, Heavy-Duty
CT8300-42	8 & 16-Bar, 42-Foot, Heavy-Duty
CT8300-45	8 & 16-Bar, 45-Foot, Heavy-Duty
CT8300-48	8 & 16-Bar, 48-Foot, Heavy-Duty
CT8300-51	8 & 16-Bar, 51-Foot, Heavy-Duty
CT8300-54	8 & 16-Bar, 54-Foot, Heavy-Duty
CT8300-57	8 & 16-Bar, 57-Foot, Heavy-Duty
CT8300-60	8 & 16-Bar, 60-Foot, Heavy-Duty

Intended Usage

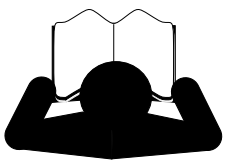
Use the Flex Harrow to level soil, firm seedbeds, break up and spread residue. Do not modify Great Plains-provisioned components, or install user-provisioned components, except as authorized or recommended by Great Plains.

Document Family

564-278M	Operator Manual (this document)
564-278P	Parts Manual
564-278Q	Pre-Delivery Manual
564-278Q-ENG	Assembly 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

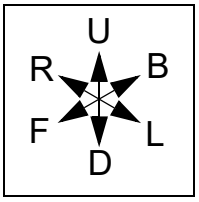
The following terms are used throughout this manual.

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.



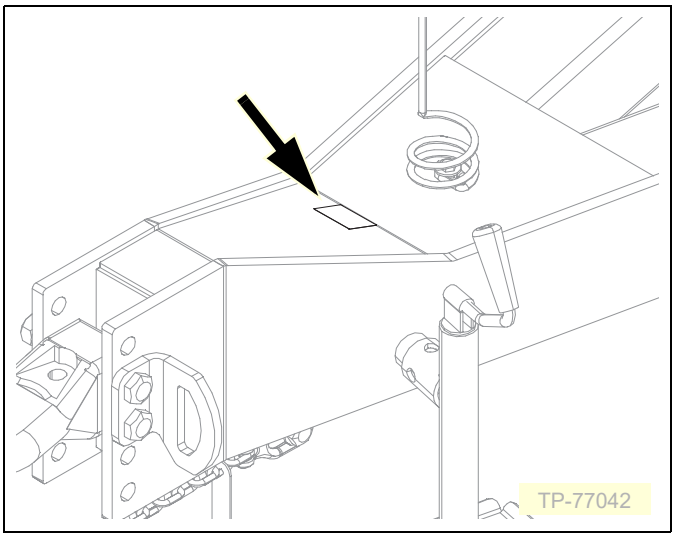
"(Option)" refers to components not part of the standard product, and not "optional" steps.

Owners Assistance

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

Your machine's parts were specially designed and should only be replaced with Great Plains parts. Always use the serial and model number with ordering parts from your Great Plains dealer. The serial-number plate is located on the front of the hitch as shown

Record your Flex Harrow model and serial number on the back side of the cover page of this manual for quick reference.



Further Assistance

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

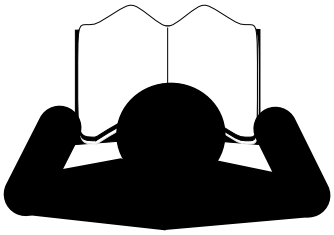
1. Discuss the matter with your dealership service manager. Make sure they are aware of any problems so they can assist you.
2. If you are still unsatisfied, seek out the owner or general manager of the dealership.

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

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

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

Preparation and Setup



This section helps you prepare your tractor and CT8300 Flex Harrow Flex Harrow for use, and covers tasks that need to be done seasonally, or when the tractor/flex harrow configuration changes.

Before using the harrow in the field, you must hitch it to a suitable tractor or leading implement, inspect systems and unfold the harrow. Before using the flex harrow for the first time, and periodically thereafter, certain adjustments may be required.

Initial Setup

See "**Appendix B - Initial Setup**" on page 34 for first-time/infrequent setup tasks, including:

- Hitch Configuration (page 34).
- Tooth Angle (page 36).
- Row Harrow Curtains (page 38).

Post-Delivery/Seasonal Setup

On initial delivery, and seasonally, check and as necessary, complete these items before continuing to the routine setup items:

- Bleed hydraulic system (page 30).
- De-grease exposed cylinder rods if so protected at last storage.

Pre-Application Setup

Complete this checklist before routine setup:

- ❑ Read and understand "**Important Safety Information**" on page 1.
- ❑ Check that all working parts are moving freely, bolts are tight, and cotter pins are spread.
- ❑ Check that all grease fittings are in place and lubricated. See "**Lubrication and Scheduled Maintenance**" on page 27.
- ❑ 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 "**Tire Inflation & Warranty**" on page 32.

Hitching Harrow 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 flex harrow 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 (see "**Hitch Configuration**" on page 34).
- Tongue weight varies from 500 pounds to 3200 pounds, depending on harrow model. See "**Specifications and Capacities**", pages 31.
- Recommended tractor horsepower is 3 hp per foot of implement width (50 to 180 hp, depending on harrow model). This is in addition to the power required for any leading implement.
- A leading implement must pass through one hydraulic circuit.

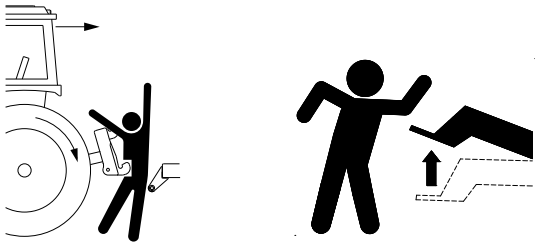
1. Use jack to raise and lower harrow tongue (1).
2. Back tractor draw bar into alignment with hitch.
3. Secure with a locking hitch pin (2).

📖 Location of clevis can be adjusted to fit your tractor.

⚠ CAUTION

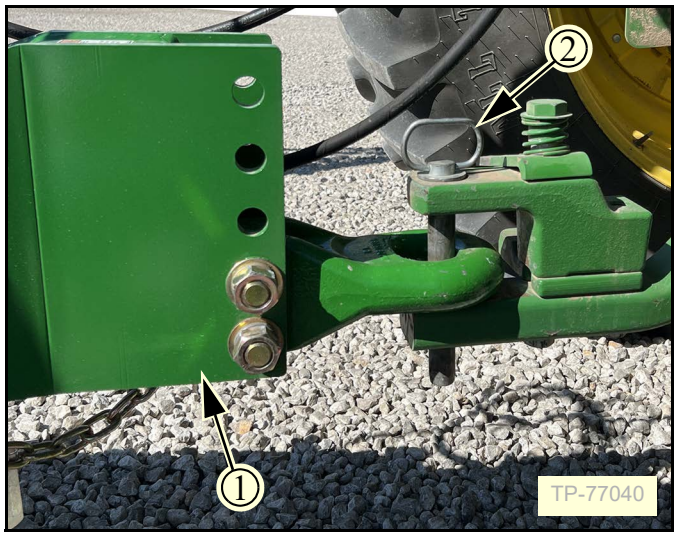
Negative Tongue Weight Hazard:
Make certain that harrow is securely hitched to the tractor or leading implement before unfolding. An unhitched harrow can tip over backwards during folding and unfolding if the tongue is not secured.

4. Secure safety chain to an anchor on the tractor.
5. Retract jack foot. Re-orient jack to storage position.
6. After hitching tractor to harrow, store jack on storage stub on flex harrow tongue.



⚠ DANGER

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

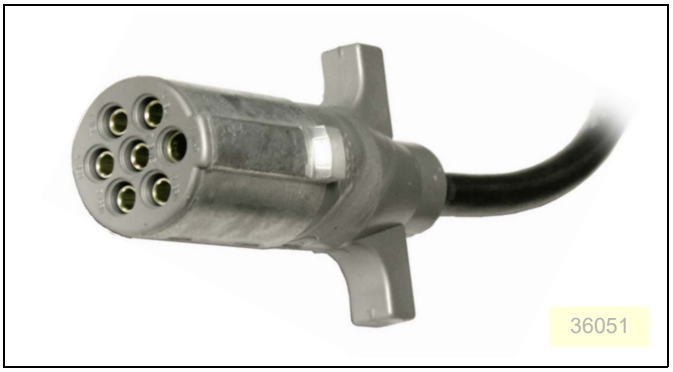


Electrical Hookup

Your flex harrow is equipped with lights.

Plug the lighting connector into the tractor outlet.

Test the lights and signaling prior to highway movement.



Hydraulic Hose Hookup

WARNING

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

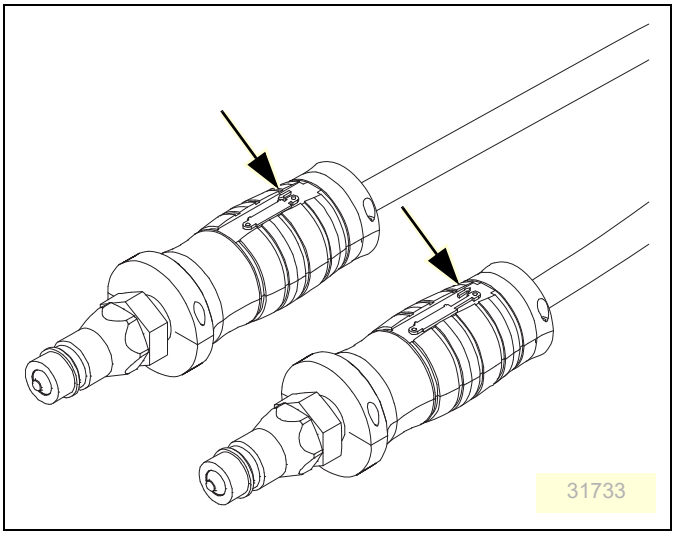
Escaping fluid under pressure can have sufficient pressure to penetrate the skin causing serious injury. If an accident occurs, seek immediate medical assistance from a physician familiar with this type of injury.

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

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, harrow or hitch. Failure to safely route and secure hoses and cables could result in damage requiring component repair/replacement, and lost field time.



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 flex harrow to the field.

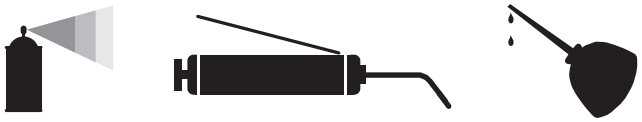
This checklist presumes that the nurse tank is not yet connected.

- ❑ Carefully read "**Important Safety Information**" on page 1.
- ❑ Lubricate flex harrow as indicated under "**Lubrication and Scheduled Maintenance**" on page 27.
- ❑ Check all tires for proper inflation. See "**Tire Inflation & Warranty**" on page 32.
- ❑ Check all bolts, pins, and fasteners. Torque as shown in "**Torque Values Chart**" on page 33.
- ❑ Check flex harrow for worn or damaged parts. Repair or replace parts 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.



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

The Flex Harrow has a single hydraulic circuit that combines the lateral (wing) and vertical (harrow) unfolding operations. During unfold, the wings first fully unfold, and then the harrows lower to the ground.

1. Position the hitched and folded harrow on the field to be worked, or on suitable other ground. Unfolding brings the tines into ground contact, and some forward movement is required to lay the sections flat.
2. Double-check that the harrow is securely hitched to the tractor or leading implement.
3. Remove the wing lock pin (1) on both wings.
4. Start the tractor. Set the brakes. Operate the engine at low rpms.
5. Slowly extend the fold circuit. Wings unfold (swing out). Do not move the tractor until the wings are fully unfolded.
6. As wings reach fully unfolded, release the brakes.

⚠ CAUTION

Negative Tongue Weight Hazard:
Allow no one near or especially behind the unfolding implement. During unfold the tongue weight shifts from positive to temporarily negative. If the hitch fails or there is a hydraulic failure, the harrow can tip over backwards or the harrows can fall suddenly. Anyone under them could be seriously injured or killed.

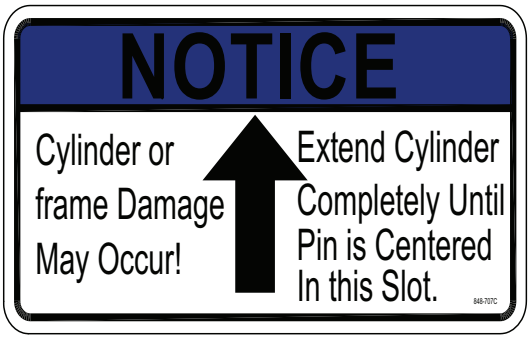
7. As sections begin to fold down, pull forward.
8. When the sections are on the ground, continue to extend the fold circuit until the cylinders are fully extended.

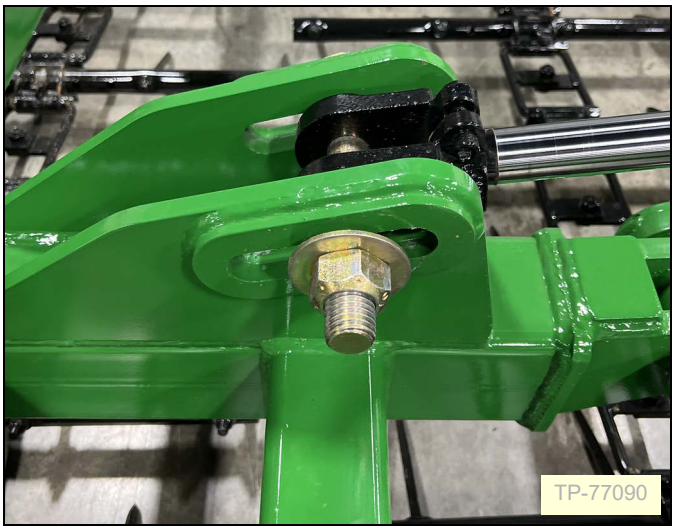
9. When the cylinders are at full extension on level ground, the clevis pin is approximately in the center of the slot. This allows for up and down travel over unleveled ground.

NOTICE

Equipment Damage Risk:
Fully extend the cylinders. If they are at less than full extension, the cylinders or frame could be damaged.

The implement is now ready for field operations (page 22).





Fold

DANGER

Negative Tongue Weight Hazard:
Allow no one near or especially behind the folding implement. During fold the tongue weight shifts from positive to temporarily negative. If the hitch fails or there is a hydraulic failure, the harrow can tip over backwards or the harrows can fall suddenly. Anyone under them could be seriously injured or killed.

1. With tractor engine at low rpms, slowly retract the fold circuit.

NOTICE

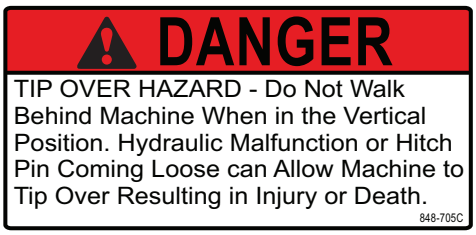
Equipment Damage Risk:
Do not move the harrow until folding is complete. Movement when partially folded can damage wings or center frame.

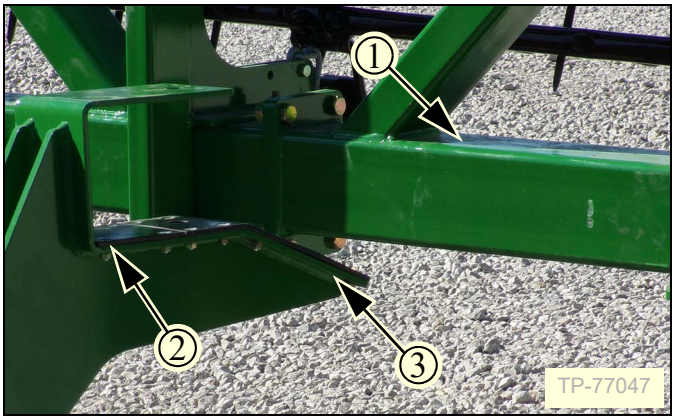
2. As the wings begin to fold up, check that the row curtains are not tangled together, and that they are hanging freely from the frame arms.

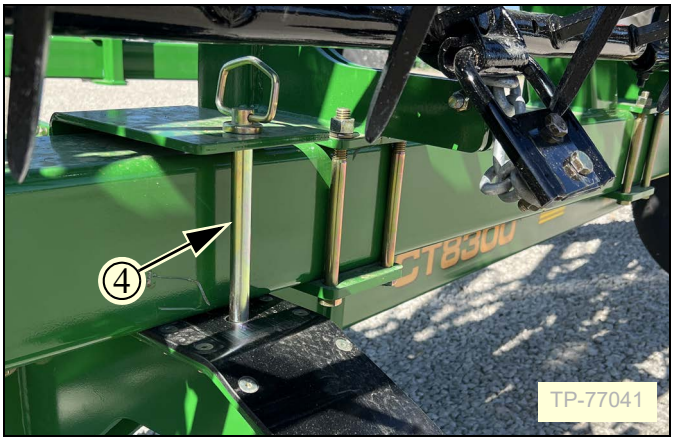
NOTICE

Equipment Damage Risk:
Stop the fold if the wing frame arms are not level with the center frame. The wings will not seat correctly for transport. Be sure to install the wing pins before transporting or damage will occur.

3. Continue retracting cylinders until wings (1) are fully seated in the wing rests (2).
4. The wing frames should contact the bottom ledge (3) of the wing rest on the bottom $^{1}/_{3}$ of the ramp.
5. The wing will then be able to slide into the wing rest.
6. Install the wing pins (4).
7. Harrow is now ready for transport (page 21), parking (page 23) or storage (page 23).







Transport

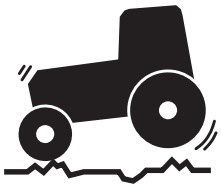
DANGER

Loss of Control Hazard:
Do not tow the harrow behind another implement on public roads. Tow the harrow 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.

Harrow Transport Weights

CT8300 Specifications and Capacities					
	CT8300-18	CT8300-21	CT8300-24	CT8300-27	CT8300-30
Weight Range (approx.)	5,810lbs (2,635kg)	6,160lbs (2,794kg)	6,510lbs (2,953kg)	6,860lbs (3,112kg)	7,210lbs (3,270kg)
	CT8300-33	CT8300-36	CT8300-39	CT8300-42	CT8300-45
Weight Range (approx.)	7,660lbs (3,475kg)	8,060lbs (3,656kg)	8,460lbs (3,837kg)	8,860lbs (4,019kg)	9,565lbs (4,339kg)
	CT8300-48	CT8300-51	CT8300-54	CT8300-57	CT8300-60
Weight Range (approx.)	10,015lbs (4,543kg)	10,465lbs (4,747kg)	10,915lbs (4,950kg)	11,360lbs (5,153kg)	11,815lbs (5,359kg)

Transport Steps

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

1. Check that implement is securely hitched to a sufficient tractor (page 15).
2. Always use a locking-style hitch pin sized to match holes in hitch and draw-bar, and rated for the load.
3. Attach safety chain to tractor with enough slack to permit turning (page 15).
4. Verify correct operation of lights.
5. Fold flex harrow (page 20).
6. Check that tires are properly inflated (page 32).
7. Plan the route. Avoid steep hills.
8. Always have lights on for highway operation.
9. Do not exceed 32 kph (20 mph). Comply with all national, regional and local laws when traveling on public roads.
10. Remember that the implement may be wider than the towing vehicle. Allow safe clearance.
11. Transport slowly over uneven or rough terrain.

Field Operation

This implement is designed to be pulled in the field with the harrows on the ground at all times (including turns). Pulling for extended distances with sections lifted, or routine lifting for turns, is not recommended. Lifting for short distances to clear residue clogs is acceptable. Lifting for tight turns or reverse moves is required.

NOTICE

Equipment Damage Risk:
Do not pull for extended distances when partially raised. Do not routinely raise for turns. Such practices cause premature wear of cylinders, pins and frame components. Such wear is not covered by the warranty.

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/flex harrow configuration. Additional or fewer steps may be necessary depending on tractor features, flex harrow options and planting accessories.

Mechanical Checklist (Tractor Hitching)	Page
☐ Flex Harrow hitched	15
☐ Hitch pin locked	
☐ Safety chain secured to tractor or leading implement	15
☐ Parking jack stowed	15

Electrical Checklist	Page
☐ Verify electrical hookups solid, or connector securely stowed if not using lights in field.	16

Hydraulic System Checklist	Page
☐ Check tractor hydraulic reservoir full	-
☐ Make hydraulic connections	16
☐ Inspect connections for leaks	-
☐ Unfold Implement	21

Short-Term Parking

1. Choose an implement parking location with level firm ground. Do not unhitch on a steep slope.
2. Fold harrow (page 21).
3. Install wing pins in the wing cradle (page 20)
4. Install jack stand on tongue (page 15).
5. Use parking jack to neutralize tongue weight at tractor hitch.
6. Set hydraulic circuits to neutral.
7. Disconnect hydraulic lines. Secure them so that they do not touch the ground.
8. Disconnect lighting connector, capping where provisioned.
9. Disconnect safety chain.
10. Unhitch. Restart tractor and pull away from flex harrow.

Long-Term Storage

1. Clean flex harrow of mud, dirt, excess oil and grease.
2. Lubricate all points listed in Maintenance.
3. Apply grease to exposed cylinder rods to prevent rust.
4. Inspect flex harrow for worn or damaged parts. Make repairs and service during off season.
5. Use spray paint to cover scratches, chips, and worn areas on the flex harrow to protect the metal.
6. Park implement per “**Short-Term Parking**” above.

Adjustments

To get full performance from your CT8300 Flex Harrow flex harrow, you need an understanding of all component operations. There are adjustments for optimal folding and field results.

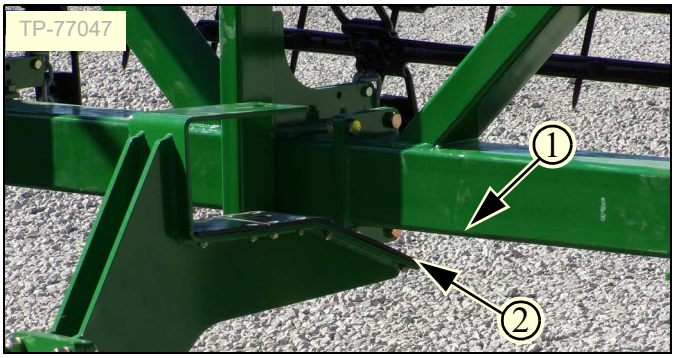
Adjustment	Page	The Adjustment Affects
Hitch Configuration	34	Compatibility with tractor or leading implement
Tooth Angle	36	Aggressive tine setting for unusual conditions
Wing Fold Height Adjustment		

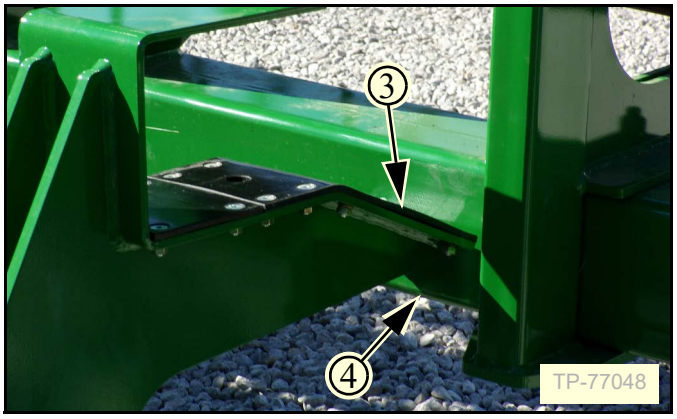
Wing Fold Height Adjustment

🕮 If wings are not level with the center frame the wings may not slide easily onto the wing rest during fold. You can raise or lower the wing height by adjusting the wing stop bolt.

In normal operation (top photo), the wing frame (1) engages at about the bottom $\frac{1}{3}$ of the way up the ramp (2) of the wing support cross-member.

If the wing cradle (3) touches the frame (4) (bottom photo) in the middle of the frame tube you need to adjust the wing bolts.



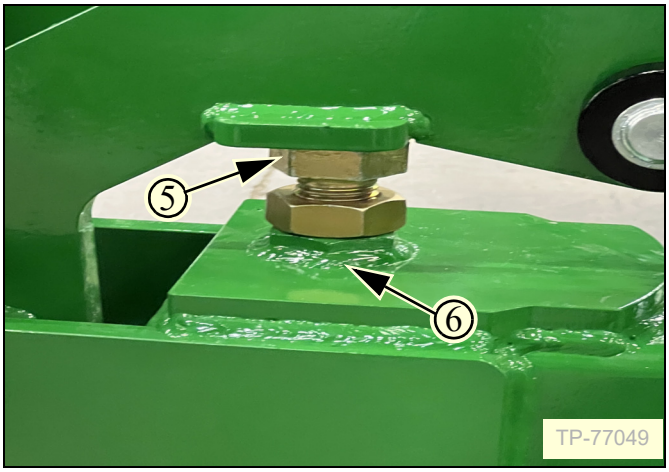


Wing Fold Height

Wing height is adjusted by a stop bolt (5) at each wing pivot lug.

Adjust the fold height by rotating the stop bolt head (5) (one for each wing). If the wings need to come down adjust the bolt in, if they need to move up adjust the bolt out.

Tighten the jam nut (6) against the plate nut when you have the wings adjusted correctly.



Troubleshooting

General Implement Troubleshooting

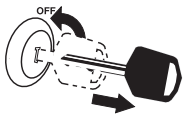
Problem	Cause	Solution
Trailing Chains Lifting Bars on Uneven Ground	Cylinders not fully extended	Extend cylinders
Harrow Sections Hopping	Tooth angle too aggressive for speed	Slow down or use 38· tooth angle. See "**Tooth Angle**" on page 36.
Wings Hang up in Fold	Fold height needs adjustment	See "**Wing Fold Height Adjustment**" on page 24.
Sections Gapping Inside Wings or Center	Chain broken or missing between trailing bars of section	Replace chain, and as needed, harrow teeth that secure chain.

Maintenance and Lubrication

Maintenance

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

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

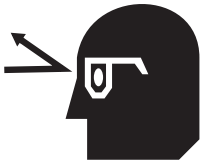


WARNING

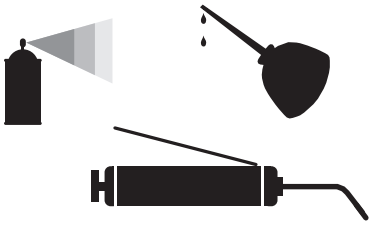
Crushing Hazard:
Always fully unfold or use stands when working on implement. You may be severely injured or killed by being crushed under a falling implement.

WARNING

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



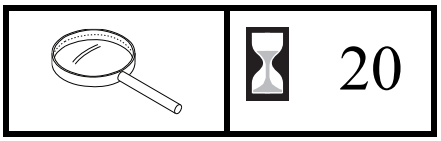
1. After using your flex harrow for several hours, check all bolts to be sure they are tight.
2. Maintain proper air pressure in tires.
3. Clean flex harrow on a regular basis. Regular and thorough cleaning will lengthen equipment life and reduce maintenance and repair.
4. Lubricate areas listed under "**Lubrication and Scheduled Maintenance**" on page 27.
5. Replace any worn, damaged, or illegible safety labels by obtaining new labels from your Great Plains dealer.
6. Check and tighten or replace any hydraulic leaks. Check hoses for any leaks. It is important that there are no leaks on the equipment.
7. Check drag bolts for loosness or excessive wear. Your drag is an important part of the tillage operation.
8. If your 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 cylinder 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.



Lubrication and Scheduled Maintenance

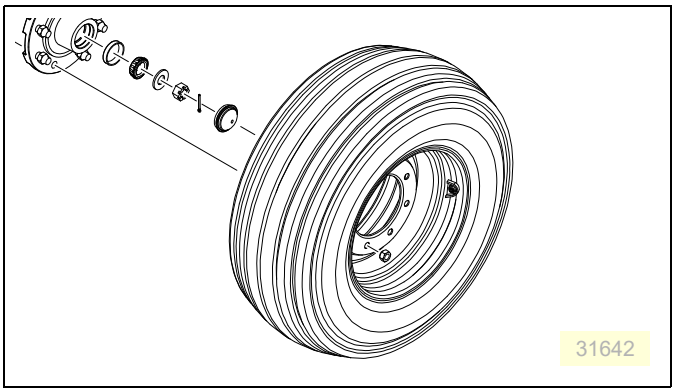
Multipurpose spray lube | Multipurpose grease lube | Multipurpose oil lube | Inspection required | 50 Intervals (service hours) at which lubrication is required

Tire Pressures

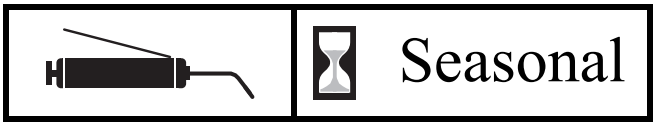


See page 32 for tire pressures.

Check tire pressures more frequently on a new implement, and with new tires. Check tire pressures before making any level adjustments, and whenever there are application problems.

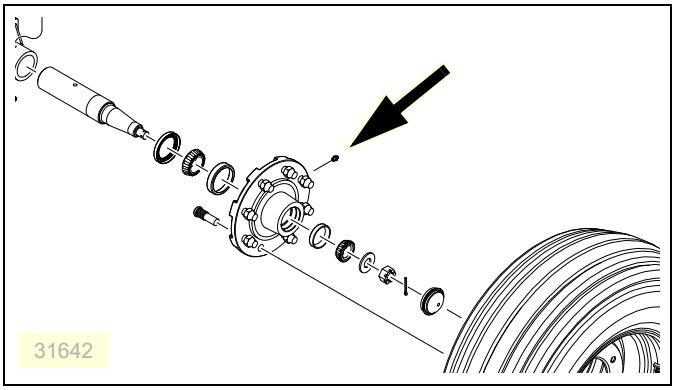


Wheel Hubs, Transport

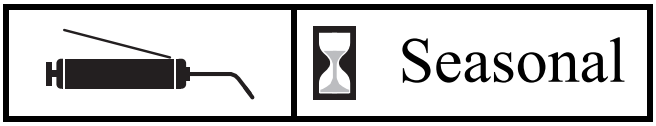


(pull-type implements only)
1 zerk each hub,
4 hubs per implement;
4 zerks total

Type of Lubrication: Grease
Quantity: Until resistance is felt

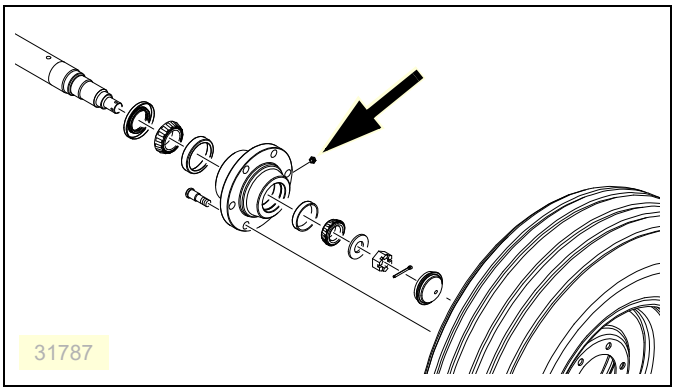


Wheel Hubs, Wing



(pull-type implements only)
1 zerk each hub,
4 hubs per implement;
4 zerks total

9. Type of Lubrication: Grease
   Quantity: Until resistance is felt

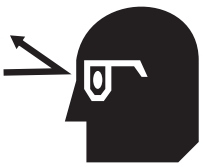


Hydraulic Maintenance

As with any hydraulic system, contamination is the most common cause of performance problems and pre-mature wear. *Make a special effort to properly clean quick couplers prior to attaching the hoses to tractor, and never let them fall to the ground.*

WARNING

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



Bleed only at JIC and NPT fittings.
Never try to bleed a QD (Quick Disconnect) fitting.
Avoid bleeding at ORB fittings. The O-ring is likely to be torn if any pressure remains in the circuit.

CAUTION

Crushing Hazard:
When reconnecting fittings at fold cylinder ports, verify that a 0.063in ($^{1}/_{16}$in, 1.6mm) orifice plate (Great Plains part number 196-430D) is installed at each port. A missing plate could result in a dangerously fast unfold, which might result in equipment damage, injury or death.

NOTICE

System Contamination Risk:
Always use liquid pipe sealant when adding or replacing NPT (National Pipe Thread, tapered thread) pipe-thread fittings. To avoid cracking hydraulic fittings from over tightening, and to keep tape fragments from clogging filters, do not use plastic sealant tape.

NOTICE

Over-Torque and Leak Risks:
JIC (Joint Industry Conference 37· Flare) fittings do not require high torque. Excess torque causes leaks. JIC and ORB (O-Ring Boss) fittings do not require sealant.

JIC Torque Chart

Size	Foot-Pounds	N-m
$^{7}/_{16}$-20	11-12	15-16
$^{1}/_{2}$-20	15-16	20-22
$^{9}/_{16}$-18	18-20	24-28
$^{3}/_{4}$-16	38-42	52-58
$^{7}/_{8}$-14	57-62	77-85
$^{11}/_{16}$-12	79-87	108-119

Hydraulic Connectors and Torque

Refer to Figure 1 (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.
(1) 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)
(2) Note straight threads (4) and the 37· cone (5) 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 (5) and elastomer O-Ring (7).
Prior to installation, to prevent abrasion during tightening, lubricate O-Ring with clean hydraulic fluid.
(3) Use no sealants (tape or liquid) on ORB fittings.
ORB fittings that need orientation, such as the ell depicted, also have a washer (8) and jam nut (9) (“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.

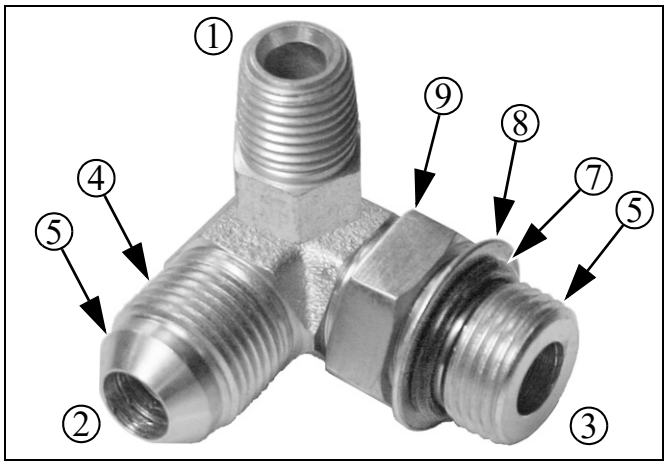


Figure 1 31282
Hydraulic Connector ID

Null4:

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

Bleeding Hydraulics

Normally the hydraulics are bled during final pre-delivery, and bleeding should not be required prior to first use. Bleeding may be required after hydraulic maintenance, or if the hydraulic system is in an uncertain state.

1. Hitch the harrow to a tractor.
2. If the harrow is folded, verify that the wing pins are installed (page 20).
3. Connect the hydraulics to a hydraulic source, such as a tractor remote.
4. Set the source circuit to Float to relieve any pressure in the lines.
5. Disconnect both base and rod ends of all fold cylinders.
6. Support the cylinders with ports facing up, and with cylinders oriented so that rods cannot strike implement parts when at full extension.
7. Orient cylinders with base ends higher than rod ends. Set circuit to Neutral.

One cylinder at a time:

8. Crack (slightly loosen) a JIC connection at a cylinder base end.
9. Extend the circuit slowly until fluid appears at the fitting.
10. Set the circuit to Neutral. Tighten the fitting.
11. Repeat step 8 through step 10 for the remaining cylinders.
12. Retract the cylinders. Set circuit to Neutral.
13. Orient cylinders with rod ends higher than base ends.

One cylinder at a time:

14. Crack (slightly loosen) a JIC connection at a cylinder rod end.
15. Extend the circuit slowly until fluid appears at the fitting.
16. Set the circuit to Neutral. Tighten the fitting.
17. Repeat step 14 through step 16 for the remaining cylinders.
18. Set circuit to Float.
19. Re-pin base and rod ends of cylinders to center section and wing lugs.
20. Test fold function carefully (page 20).

CAUTION

Negative Tongue Weight Hazard:
Make certain that harrow is securely hitched to a tractor before unfolding. An unhitched harrow can tip over backwards during folding and unfolding if the tongue is not secured.

WARNING

Crushing and Equipment Damage Hazards:
Bleed after servicing cylinders or their hoses. Air in the system makes it hazardous to fold the implement. If it is necessary to service hydraulics while folded, the first unfold is especially dangerous. Wing motion can be uneven or jerky in fold. Unfolding wings could fall suddenly. Anyone nearby could be seriously injured or killed. Equipment damage is likely.

WARNING

High Pressure Fluid Hazard:
Wear safety goggles and gloves. The bleed procedure requires partially opening pressurized hydraulic lines. Escaping fluid under pressure can penetrate the skin, causing serious injury. If an accident occurs, seek immediate medical assistance from a physician familiar with this type of injury.

Appendix A - Reference Information

Specifications and Capacities

CT8300 Specifications and Capacities					
	CT8300-18	CT8300-21	CT8300-24	CT8300-27	CT8300-30
Tires	11Lx15 12-ply - 2				
Weight Range (approx.)	5,810lbs (2,635kg)	6,160lbs (2,794kg)	6,510lbs (2,953kg)	6,860lbs (3,112kg)	7,210lbs (3,270kg)
Tractor Power Required	50+	60+	70+	80+	90+
Tillage Width	18ft (5.5m)	21ft (6.4m)	24ft (7.3m)	27ft (8.3m)	30ft (9.2m)
Transport Width	9ft 10in (3m)				
Transport Height (Folded)	11ft 4in (3.5m)	11ft 6in (3.5m)	11ft 8in (3.6m)	11ft 9in (3.6m)	11ft 9in (3.6m)
Center Section (Width)	9ft (2.74m)				
Wing Section (Width)	4ft 6in (1.4m)	6ft (1.8m)	7ft 6in (2.3m)	9ft (2.7m)	10ft 6in (3.2m)
Folding Sections	2	2	2	2	2
Harrow Section	4	4	4	6	6

	CT8300-33	CT8300-36	CT8300-39	CT8300-42	CT8300-45
Tires	95Lx15 12-ply - 4			11Lx15 12-ply - 2	
Weight Range	7,660lbs (3,475kg)	8,060lbs (3,656kg)	8,460lbs (3,837kg)	8,860lbs (4,019kg)	9,565lbs (4,339kg)
Tractor Power Required	100+	110+	120+	125+	135+
Tillage Width	33ft (10m)	36ft (10.9m)	39ft (11.9m)	42ft (12.8m)	45ft (13.7m)
Transport Width	9ft 10in (3m)	13ft 2in (3.7m)			
Transport Height (Folded)	11ft 8in (3.6m)	11ft 10in (3.6m)	12ft (3.7m)	12ft (3.7m)	11ft 9in (3.6m)
Center Section (Width)	12ft (3.7m)				
Wing Section (Width)	10ft 6in (3.2m)	12ft (3.7m)	13ft 6in (4.1m)	15ft (4.6m)	16ft 6in (5.0m)
Folding Sections	2	2	2	2	2
Harrow Section	6	6	6	6	8

	CT8300-48	CT8300-51	CT8300-54	CT8300-57	CT8300-60
Tires	11Lx15 12-ply - 2				
Weight Range	10,015lbs (4,543kg)	10,465lbs (4,747kg)	10,915lbs (4,950kg)	11,360lbs (5,153kg)	11,815lbs (5,359kg)
Tractor Power Required	145+	155+	165+	175+	180+
Tillage Width	48ft (14.6m)	51ft (15.5m)	54ft (16.5m)	57ft (17.4m)	60ft (18.3m)
Transport Width	13ft 2in (3.7m)			16ft 2in (4.9m)	
Transport Height (Folded)	11ft 10in (3.6m)	11ft 10in (3.6m)	12ft (3.7m)	12ft (3.7m)	12ft (3.7m)
Center Section (Width)	12ft (3.7m)			15ft (4.6m)	
Wing Section (Width)	18ft (5.5m)	19ft 6in (5.9m)	21ft (6.4m)	21ft (6.4m)	22ft 6in (6.9m)
Folding Sections	2	2	2	2	2
Harrow Section	8	8	8	8	8

Tire Inflation & Warranty

Tire Inflation Chart

Wheel	Tire Size	Inflation
Transport	11Lx15 SL 12-Ply	52 psi (360 kPa)
Transport	9.5L x 15 12-Ply	60psi (413kPa)
Transport (optional)	280/70 R15	64psi (441kPa)
Wing	11Lx15 SL 12-Ply	52 psi (360 kPa)
Wing	9.5L x 15 12-Ply	60psi (413kPa)

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.

ManufacturerWeb site
Firestone www.firestoneag.com
Gleason www.gleasonwheel.com
Titan www.titan-intl.com
Galaxy www.atgtire.com
BKT www.bkt-tire.com

Torque Values Chart

Bolt Size	Bolt Head Identification					
	Grade 2		Grade 5		Grade 8	
in-tpi[a]	N-m[b]	ft-lb[d]	N-m	ft-lb	N-m	ft-lb
1/4-20	7.4	5.6	11	8	16	12
1/4-28	8.5	6	13	10	18	14
5/16-18	15	11	24	17	33	25
5/16-24	17	13	26	19	37	27
3/8-16	27	20	42	31	59	44
3/8-24	31	22	47	35	67	49
7/16-14	43	32	67	49	95	70
7/16-20	49	36	75	55	105	78
1/2-13	66	49	105	76	145	105
1/2-20	75	55	115	85	165	120
9/16-12	95	70	150	110	210	155
9/16-18	105	79	165	120	235	170
5/8-11	130	97	205	150	285	210
5/8-18	150	110	230	170	325	240
3/4-10	235	170	360	265	510	375
3/4-16	260	190	405	295	570	420
7/8-9	225	165	585	430	820	605
7/8-14	250	185	640	475	905	670
1-8	340	250	875	645	1230	910
1-12	370	275	955	705	1350	995
1 1/8-7	480	355	1080	795	1750	1290
1 1/8-12	540	395	1210	890	1960	1440
1 1/4-7	680	500	1520	1120	2460	1820
1 1/4-12	750	555	1680	1240	2730	2010
1 3/8-6	890	655	1990	1470	3230	2380
1 3/8-12	1010	745	2270	1670	3680	2710
1 1/2-6	1180	870	2640	1950	4290	3160
1 1/2-12	1330	980	2970	2190	4820	3560

Bolt Size	Bolt Head Identification					
	5.8 Class 5.8		8.8 Class 8.8		10.9 Class 10.9	
mm x pitch[c]	N-m	ft-lb	N-m	ft-lb	N-m	ft-lb
M 5 X 0.8	4	3	6	5	9	7
M 6 X 1	7	5	11	8	15	11
M 8 X 1.25	17	12	26	19	36	27
M 8 X 1	18	13	28	21	39	29
M10 X 1.5	33	24	52	39	72	53
M10 X 0.75	39	29	61	45	85	62
M12 X 1.75	58	42	91	67	125	93
M12 X 1.5	60	44	95	70	130	97
M12 X 1	90	66	105	77	145	105
M14 X 2	92	68	145	105	200	150
M14 X 1.5	99	73	155	115	215	160
M16 X 2	145	105	225	165	315	230
M16 X 1.5	155	115	240	180	335	245
M18 X 2.5	195	145	310	230	405	300
M18 X 1.5	220	165	350	260	485	355
M20 X 2.5	280	205	440	325	610	450
M20 X 1.5	310	230	650	480	900	665
M24 X 3	480	355	760	560	1050	780
M24 X 2	525	390	830	610	1150	845
M30 X 3.5	960	705	1510	1120	2100	1550
M30 X 2	1060	785	1680	1240	2320	1710
M36 X 3.5	1730	1270	2650	1950	3660	2700
M36 X 2	1880	1380	2960	2190	4100	3220

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

Torque tolerance + 0%, -15% of torquingvalues. Unless otherwise specified use torquevalues listed above. 25199

Torque Values Chart	
Wheel Bolt Torque Values	1/2"-20 85ft-lbs (115nm)
	9/16"-18 120ft-lbs (162nm)
	5/8"-18 170ft-lbs (230nm)
	3/4"-16 295lbs (400nm)

Appendix B - Initial Setup

This Appendix covers setup tasks performed only once, or at infrequent intervals. Routine setup tasks are covered in "**Preparation and Setup**" on page 14. Perform Appendix B tasks first. Some of these items may already have been done by your Great Plains dealer:

a. Configure hitch (below and page 34)

b. Configure tine angle (page 36).

Post-Delivery Checklist

1. Read and understand "**Important Safety Information**" on page 1.
2. Check that all working parts are moving freely, bolts are tight, and cotter pins are spread.
3. Check that all grease fittings are in place and lubricated. See "**Lubrication and Scheduled Maintenance**" on page 27.
4. Check that all safety decals and reflectors are correctly located and legible. Replace if damaged. See "**Safety Decals**" on page 5.
5. Inflate tires to pressure recommended and tighten wheel bolts as specified. See "**Tire Inflation & Warranty**" on page 32.

Hitch Configuration

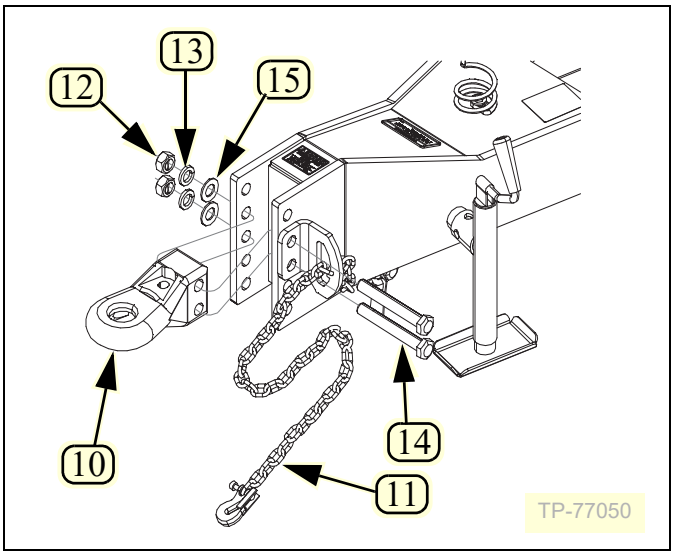
The standard CT8300 Flex Harrow hitch (10) is a Category IV single tang. The CT8300 Flex Harrow includes components for converting the hitch to clevis or to Category III.

Great Plains recommends operating with the tongue level with the ground. Machine operation is relatively unaffected by hitch height, but the hitch must be matched to the tractor or towing implement.

Each hitch configuration (CateSee "**Lubrication and Scheduled Maintenance**" on page 27gory IV, Category III and clevis) requires a specific orientation of the base hitch.

Hitch Height or Hitch Inversion

1. Remove and save two sets of:
   (12) 803-031C NUT HEX 1-8 PLT
   (13) 804-027C WASHER LOCK SPRING 1 PLT
   (14) 842-203C HHCS 1-8X7 1/2 GR8 SPTHD PL
   (15) 804-029C WASHER FLAT 1 SAE
   and one each:
   (10) 891-189C HITCH BASE - CAT IV
   (11) 556-236D SAFETY CHAIN SUPPORT
2. Orient the hitch (10) as required for the hitch type (upright, recessed notch down for Category IV), and position it at the height desired.
3. Re-secure the chain support (11) and hitch with both bolts (14). Use both bolts. Secure through 2 holes in chain support, 4 holes in tongue lugs and 2 holes in hitch casting (10).



WARNING

Hitch Failure Risk:

Verify that there are TWO grade 8 bolts (45) through:
TWO holes in chain support (11),
FOUR holes in tongue lugs, and
TWO holes in hitch casting (10).

If any of these components is secured by only a single bolt, machine damage is likely. The hitch could fail entirely, causing a highway accident resulting in serious injury or death.

Clevis Hitch

The base hitch must be upright (with the recessed notch on the bottom) for this configuration. This places the tongue weight on the base hitch, and not the clevis.

1. Select one each:
   (17) 890-798C HITCH CLEVIS
   (18) 802-487C HHCS 3/4-10X6 GR8
   (16) 803-367C NUT HEX TOP LOCK 3/4-10 PLT
2. With the square-shouldered end of the clevis (17) up, fully seat the clevis in the upright base hitch (19). Insert the Grade 8 bolt (18) from below. Secure with lock nut (16).

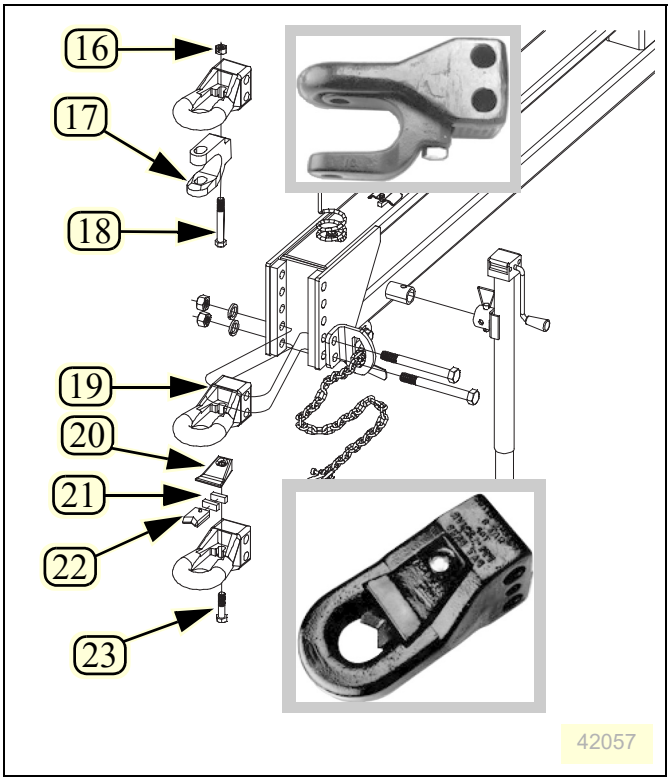
⚠ CAUTION

Hitch Failure Hazard:
Install the hitch base and assemble the clevis parts as shown. Incorrect installation or assembly may result in failure of the clevis bolt, leading to hitch failure. This could result in a serious highway accident or severe machine damage.

Category III Hitch

The base hitch must be inverted (with the recessed notch on the top) for this configuration. Set the V-block (22) to allow some vertical articulation of the draw bar pin. Always use at least one cushion (21).

1. Select one each:
   (20) PPI-302V TOP PLATE - CAT 3
   (22) PPI-203VR V-BLOCK
   (23) 802-383C HHCS 3/4-10X3 GR5
   and two:
   (21) PPI-205H CUSHION
2. Set the cushions inside the hitch recess (21), just forward of the vertical bolt hole. Position the V-block (22) forward of the cushions and check the size of the resulting pinning hole. Remove a cushion if needed.
3. Add the top plate (20). Secure from below with Grade 5 bolt (23).

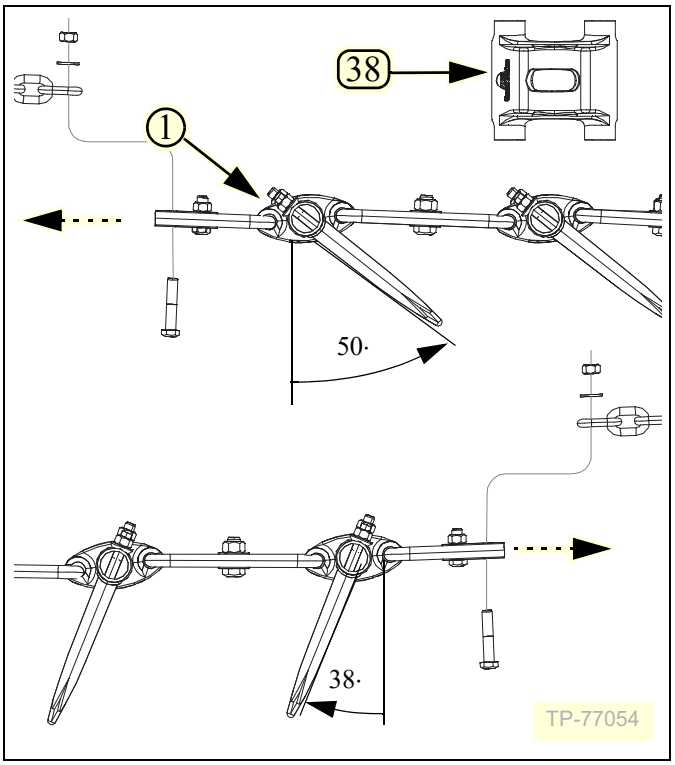


Tooth Angle

📖 Tine tooth angle is set by the spike tube pivot casting (38). Great Plains logo will be factory installed towards the front of the machine. For a more aggressive tooth angle you will unhook the harrows from the frame, reposition your tractor to the opposite end of the harrows and reattach the harrows to the frame.

The tine teeth are factory-set with the sharp break side (1) toward the direction of motion (◄- - - -). This pulls the teeth at 50· off vertical. This angle is suitable for most conditions, has no speed restrictions, usually creates a more optimal seedbed, and provides easier residue flow.

For a more aggressive tine angle of 38· off vertical, reverse all harrow sections at their chain connection to the arms.



NOTICE

Excess Wear / Irregular Results Risks:
Do not exceed 4½ mph (7.2 kph) with tines at 38·.
Machine loads are much higher.
Tine sections may also hop on the ground.

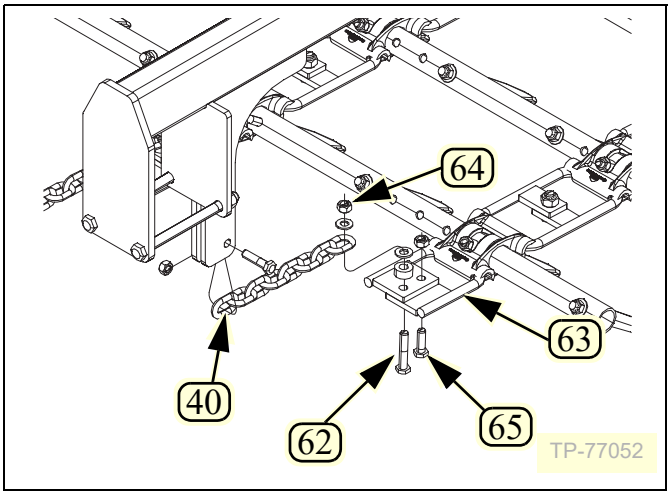
To change tine angle:

Spot Implement

1. With the harrow directly hitched to a tractor (not to another implement), fully unfold the implement in field conditions. Allow enough room for the tractor to approach either end of the harrow sections. Pull forward to lay the sections flat on the ground.

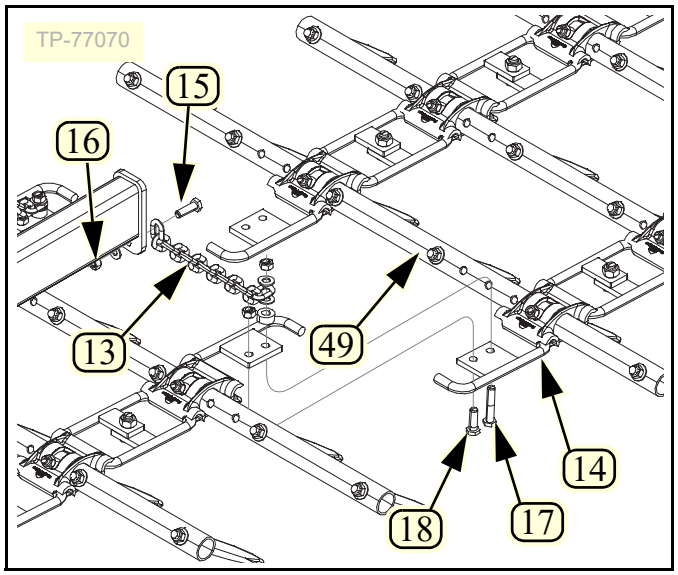
Disconnecting Leading Chains

2. Disconnect the trailing end of the leading chains (40) from the harrow sections: keep the fastening hardware ½ x2½ bolt (62) and the ½ lock nut (64), spacer and flat washer.
3. Remove both sides of the front pull link (63). Remove both bolts from pull link, ½ x 2½ (62) and ½ x 1½ (65) Reinstall this pull link on the rear of the drag harrow. Do not install front ½ x 2½ bolt until you have repositioned the tractor and are ready to reattach to the drag arms.



Disconnecting Trailing Chains

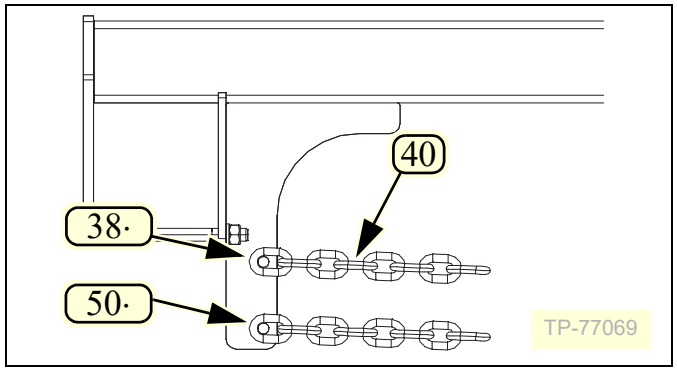
4. Remove fasteners from drag arm ends of trailing chains (13):
5. When all harrow sections are disconnected, reposition the implement (without harrows) at the other end of the harrows.
6. Secure free ends of chains (13) to arm with ½ x 1½ bolt (15), lock washers and nuts (16). Tighten nuts only to Grade 2 torque specification.



Reconnect Leading Chains

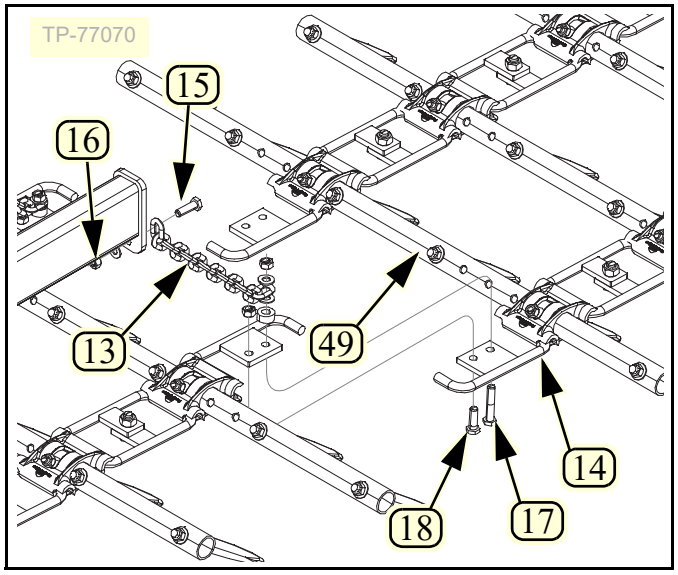
7. Re-attach the chains at the other frame hole.
   Use the upper hole for the 38· tooth angle.
   Use the lower hole for the [standard] 50· tooth angle.
8. Reinstall ½ x2½ bolt and the ½ lock nut, spacer and flat washer.

   Tighten nuts only until bolt does not rotate freely.
9. Reattach leading chain to pull link using the ½ x2½ bolt (62) that was removed from before repositioning the tractor.

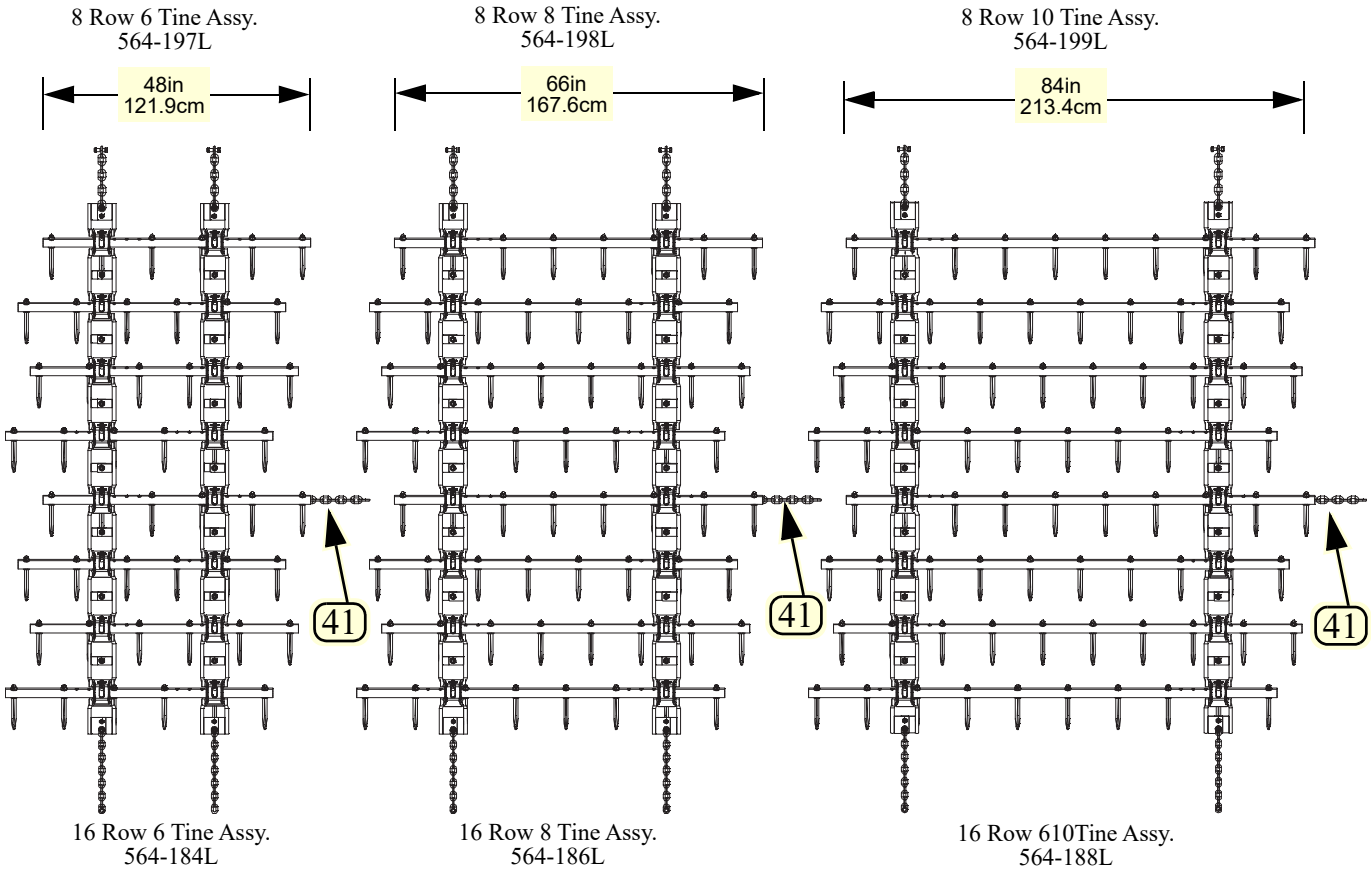


Reconnect Trailing Chains

10. Reattach the trailing chain to the drag arm using the same hardware that was removed when you unhooked the chain.
11. Be sure that the chain has been rotated to face the now front of the drag harrow frames.



Harrow Drag Identification



Harrow Drag Layouts

General Drag Installation Guidelines

- Separate the drags if stacked on pallets. If possible, set them down with the front fold (chain end) on top.
- Install drags for the standard 40· tooth angle unless the customer has otherwise arranged.
- Install drags from implement center outward, to minimize working near installed teeth.
- On implements with more than four drag sections, left and right wing drags may be of different widths. Larger widths are toward the inside, smaller to outside.
- Connect leading chains first, then fold the arms down for connecting trailing chains.
- Connect/move linking chains last.
- Connect the linking chains on each section, these will only be installed on sections with multiple drag sections.
- There are no connecting links from the wings to the center sections.

Great Plains
"Harvest Starts Here."

WARRANTY

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 customer location, overtime premium, or unit hauling expenses. The warranty may be voided if the unit is towed at speeds in excess of 20 miles per hour (32 kilometers per hour), or failures occurring from soils with rocks, stumps, or other obstructions.

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

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

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

Effective July 15, 2020

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Numerics

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