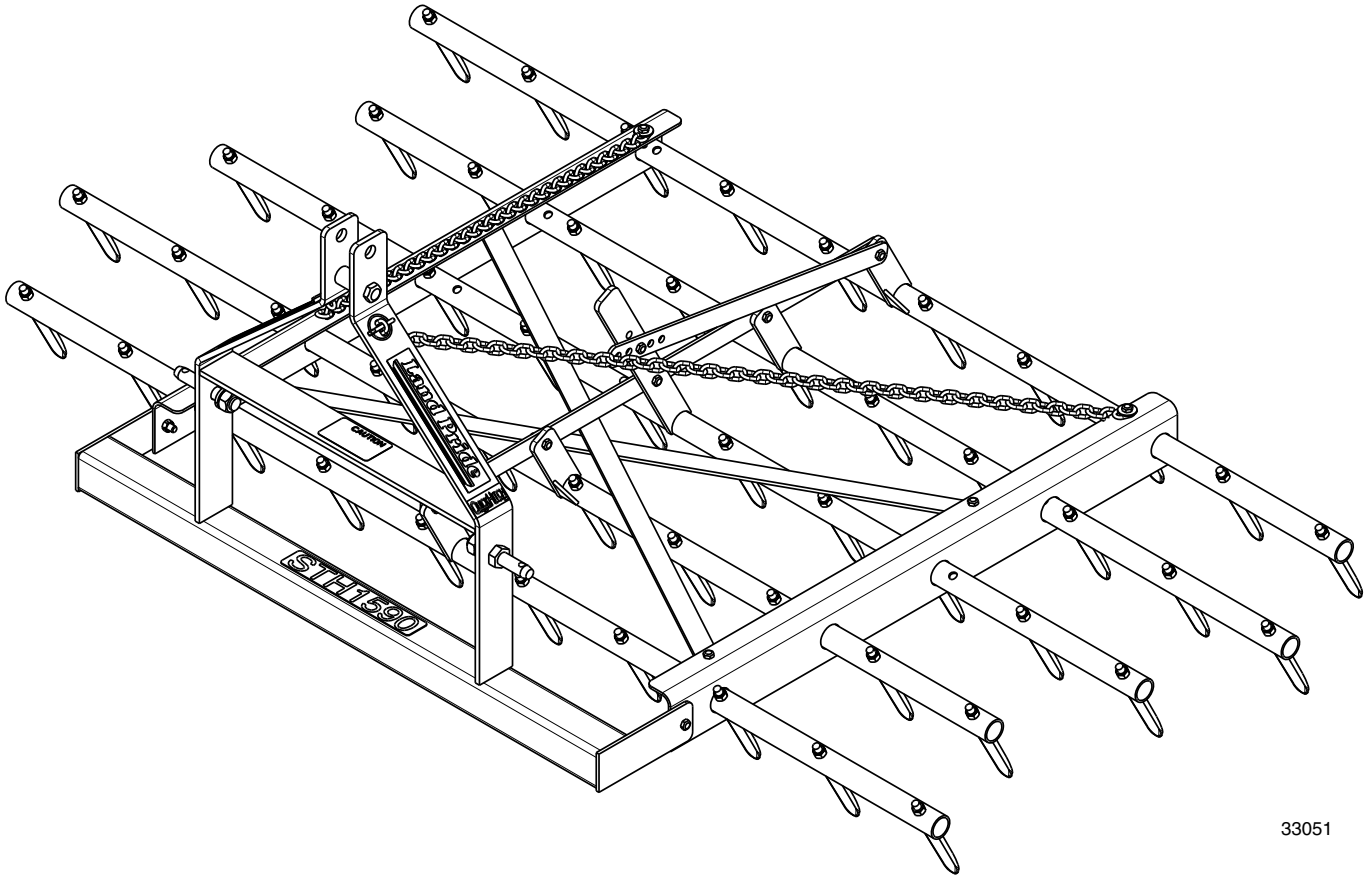
Table of Contents

Spike Tooth Harrow

STH1590



33051

322-314M
Operator's Manual

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!

Cover photo may show optional equipment not supplied with standard unit.

For an Operator's Manual and Decal Kit in French Language, please see your Land Pride dealer.

Printed 5/9/19

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 provided in the Specifications & Capacities Section of this manual with the Option(s) weight and measurements.

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

Dealer Contact Information

Name: _____

Street: _____

City/State: _____

Telephone: _____

Email: _____

California Proposition 65

WARNING: Cancer and reproductive harm - www.P65Warnings.ca.gov

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Printed in the United States of America.

See previous page for Table of Contents.

Parts Manual QR Locator

The QR (Quick Reference) code on the cover and to the left will take you to the Parts Manual for this equipment. Download the appropriate App on your smart phone, open the App, point your phone on the QR code and take a picture.

Dealer QR Locator

The QR code on the left will link you to available dealers for Land Pride products. Refer to Parts Manual QR Locator on this page for detailed instructions.

These are common practices that may or may not be applicable to the products described in this manual.

Safety at All Times

Careful operation is you best insurance against an accident.

All operators, no matter how much experience they may have, should carefully read this manual and other related manuals before operating the power machine and this implement.

It is the owner's obligation to instruct all operators in safe operation.

- ▲ Thoroughly read and understand the "Safety Label" section, read all instructions noted on them.
- ▲ Do not operate the equipment while under the influence of drugs or alcohol as they impair the ability to safely and properly operate the equipment.
- ▲ The operator should be familiar with all functions of the tractor and attached implement, and be able to handle emergencies quickly.
- ▲ Make sure all guards and shields are in place and secured before operating implement.
- ▲ Keep all bystanders away from equipment and work area.
- ▲ Start tractor from the driver's seat with hydraulic controls in neutral.
- ▲ Operate tractor and controls from the driver's seat only.
- ▲ Never dismount from a moving tractor or leave tractor unattended with engine running.
- ▲ Do not allow anyone to stand between tractor and implement while backing up to implement.
- ▲ Keep hands, feet, and clothing away from power-driven parts.
- ▲ While transporting and operating equipment, watch out for objects overhead and along side such as fences, trees, buildings, wires, etc.
- ▲ Do not turn tractor so tight as to cause hitched implement to ride up on the tractor's rear wheel.
- ▲ Store implement in an area where children normally do not play.





Look For The Safety Alert 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

A signal word designates a degree or level of hazard seriousness. The signal words are:

DANGER

Indicates a hazardous situation that, if not avoided, will result in death or serious injury.

WARNING

Indicates a hazardous situation that, if not avoided, could result in death or serious injury.

CAUTION

Indicates a hazardous situation that, if not avoided, may result in minor or moderate injury.

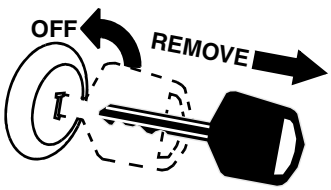
Safety Precautions for Children

Tragedy can occur if the operator is not alert to the presence of children, Children generally are attracted to implements and their work.

- ▲ Never assume children will remain where you last saw them.
- ▲ Keep children out of the work area and under the watchful eye of a responsible adult.
- ▲ Be alert and shut the implement and tractor down if children enter the work area.
- ▲ Never carry children on the tractor or implement. There is not a safe place for them to ride. They may fall off and be run over or interfere with the control of the power machine.
- ▲ Never allow children to operate the power machine, even under adult supervision.
- ▲ Never allow children to play on the power machine or implement.
- ▲ Use extra caution when backing up. Before the tractor starts to move, look down and behind to make sure the area is clear.

Tractor Shutdown & Storage

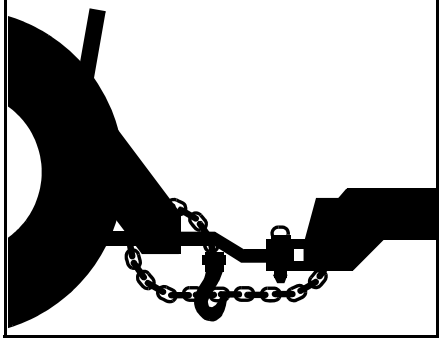
- ▲ If engaged, disengage power take-off.
- ▲ Park on solid, level ground and lower implement to ground or onto support blocks.
- ▲ Put tractor in park or set park brake, turn off engine, and remove switch key to prevent unauthorized starting.
- ▲ Relieve all hydraulic pressure to auxiliary hydraulic lines.
- ▲ Wait for all components to stop before leaving operator's seat.
- ▲ Use steps, grab-handles and skid-resistant surfaces when getting on and off the tractor.
- ▲ Detach and store implement in an area where children normally do not play. Secure implement using blocks and supports.



These are common practices that may or may not be applicable to the products described in this manual.

Use A Safety Chain

- ▲ A safety chain will help control drawn machinery should it separate from the tractor drawbar.
- ▲ Use a chain with the strength rating equal to or greater than the gross weight of the towed implement.
- ▲ Attach the chain to the tractor drawbar support or other specified anchor location. Allow only enough slack in the chain to permit turning.
- ▲ Always hitch the implement to the machine towing it. Do not use the safety chain tow the implement.

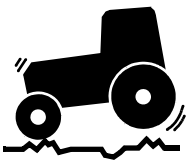


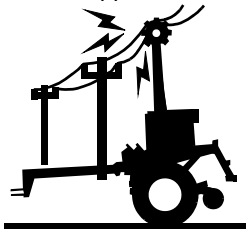
Transport Safely

- ▲ Comply with state and local laws.
- ▲ Use towing vehicle and trailer of adequate size and capacity. Secure equipment towed on a trailer with tie downs and chains.
- ▲ Sudden braking can cause a towed trailer to swerve and upset. Reduce speed if towed trailer is not equipped with brakes.
- ▲ Avoid contact with any over head utility lines or electrically charged conductors.
- ▲ Always drive with load on end of loader arms low to the ground.
- ▲ Always drive straight up and down steep inclines with heavy end of a tractor with loader attachment on the "uphill" side.
- ▲ Engage park brake when stopped on an incline.
- ▲ Maximum transport speed for an attached equipment is 20 mph. DO NOT EXCEED. Never travel at a speed which does not allow adequate control of steering and stopping. Some rough terrains require a slower speed.
- ▲ As a guideline, use the following maximum speed weight ratios for attached equipment:

  20 mph when weight of attached equipment is less than or equal to the weight of machine towing the equipment.

  10 mph when weight of attached equipment exceeds weight of machine towing equipment but not more than double the weight.
- ▲ **IMPORTANT:** Do not tow a load that is more than double the weight of the vehicle towing the load.









Tire Safety

- ▲ Tire changing can be dangerous and must be performed by trained personnel using the correct tools and equipment.
- ▲ Always maintain correct tire pressure. Do not inflate tires above recommended pressures shown in the Operator's Manual.
- ▲ When inflating tires, use a clip-on chuck and extension hose long enough to allow you to stand to one side and NOT in front of or over the tire assembly. Use a safety cage if available.
- ▲ Securely support the implement when changing a wheel.
- ▲ When removing and installing wheels, use wheel handling equipment adequate for the weight involved.
- ▲ Make sure wheel bolts have been tightened to the specified torque.



Practice Safe Maintenance

- ▲ Understand procedure before doing work. Refer to the Operator's Manual for additional information.
- ▲ Work on a level surface in a clean dry area that is well-lit.
- ▲ Use properly grounded electrical outlets and tools.
- ▲ Use correct tools and equipment for the job that are in good condition.
- ▲ Lower implement to the ground and follow all shutdown procedures before leaving the operator's seat to perform maintenance.
- ▲ Allow equipment to cool before working on it.
- ▲ Disconnect battery ground cable (-) before servicing or adjusting electrical systems or before welding on implement.
- ▲ Do not grease or oil implement while it is in operation.
- ▲ Inspect all parts. Make certain parts are in good condition & installed properly.
- ▲ Replace parts on this implement with genuine Land Pride parts only. Do not alter this implement in a way which will adversely affect its performance.
- ▲ Remove buildup of grease, oil, or debris.
- ▲ Remove all tools and unused parts from equipment before operation.





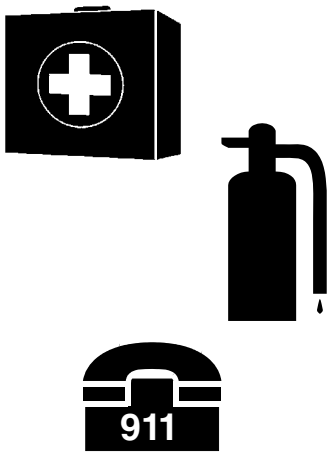




These are common practices that may or may not be applicable to the products described in this manual.

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.



Wear Protective Equipment

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



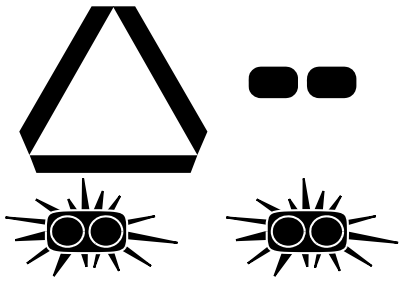
Avoid High Pressure Fluids Hazard

- ▲ Escaping fluid under pressure can penetrate the skin causing serious injury.
- ▲ Before disconnecting hydraulic lines or performing work on the hydraulic system, be sure to release all residual pressure.
- ▲ Make sure all hydraulic fluid connections are tight and all hydraulic hoses and lines are in good condition before applying pressure to the system.
- ▲ 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.
- ▲ **DO NOT DELAY.** If an accident occurs, see a doctor familiar with this type of injury immediately. Any fluid injected into the skin or eyes must be treated within a few hours or gangrene may result.



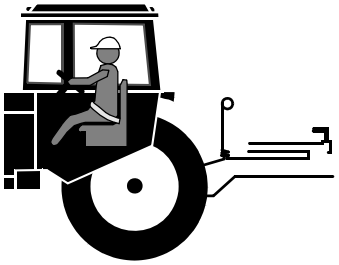
Use Safety Lights and Devices

- ▲ Slow moving tractors, and self-propelled equipment can create a hazard when driven on public roads. They are difficult to see, especially at night. Use the Slow Moving Vehicle (SMV) sign when on public roads.
- ▲ Flashing warning lights and turn signals are recommended whenever driving on public roads.



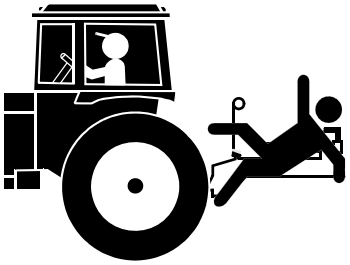
Use Seat Belt and ROPS

- ▲ Land Pride recommends the use of a CAB or roll-over-protective-structures (ROPS) and seat belt in almost all power machines. Combination of a CAB or ROPS and seat belt will reduce the risk of serious injury or death if the power machine should be upset.
- ▲ If ROPS is in the locked-up position, fasten seat belt snugly and securely to help protect against serious injury or death from falling and machine overturn.



Keep Riders Off Machinery

- ▲ Never carry riders or use tractor to lift or transport individuals.
- ▲ There is not a safe place for a person to ride.
- ▲ Riders obstruct operator's view and interfere with the control of the power machine.
- ▲ Riders can be struck by objects or thrown from the equipment.

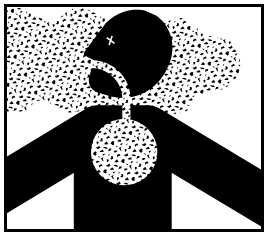


These are common practices that may or may not be applicable to the products described in this manual.

Avoid crystalline Silica (quartz) Dust

Because crystalline silica is a basic component of sand and granite, many activities at construction sites produce dust containing crystalline silica. Trenching, sawing, and boring of material containing crystalline silica can produce dust containing crystalline silica particles. This dust can cause serious injury to the lungs (silicosis).

There are guidelines which should be followed if crystalline silica (quartz) is present in the dust.



- ▲ Be aware of and follow OSHA (or other local, State, or Federal) guidelines for exposure to airborne crystalline silica.
- ▲ Know the work operations where exposure to crystalline silica may occur.
- ▲ Participate in air monitoring or training programs offered by the employer.
- ▲ Be aware of and use optional equipment controls such as water sprays, local exhaust ventilation, and enclosed cabs with positive pressure air conditioning if the machine has such equipment. Otherwise respirators shall be worn.
- ▲ Where respirators are required, wear a respirator approved for protection against crystalline silica containing dust. Do not alter respirator in any way. Workers who use tight-fitting respirators can not have beards/ mustaches which interfere with the respirator seal to the face.
- ▲ If possible, change into disposable or washable work clothes at the work site; shower and change into clean clothing before leaving the work site.
- ▲ Do not eat, drink, use tobacco products, or apply cosmetics in areas where there is dust containing crystalline silica.
- ▲ Store food, drink, and personal belongings away from the work area.
- ▲ Wash hands and face before eating, drinking, smoking, or applying cosmetics after leaving the exposure area.

Handle Chemicals Properly

- ▲ Protective clothing should be worn.
- ▲ Handle all chemicals with care.
- ▲ Follow instructions on container label.
- ▲ Agricultural chemicals can be dangerous. Improper use can seriously injure persons, animals, plants, soil, and property.
- ▲ Inhaling smoke from any type of chemical fire is a serious health hazard.
- ▲ Store or dispose of unused chemicals as specified by the chemical manufacturer.



Dig Safe - Avoid Underground Utilities

- ▲ **USA: Call 811**
  CAN: digsafecanada.ca
  Always contact your local utility companies (electrical, telephone, gas, water, sewer, and others) before digging so that they may mark the location of any underground services in the area.
- ▲ Be sure to ask how close you can work to the marks they positioned.

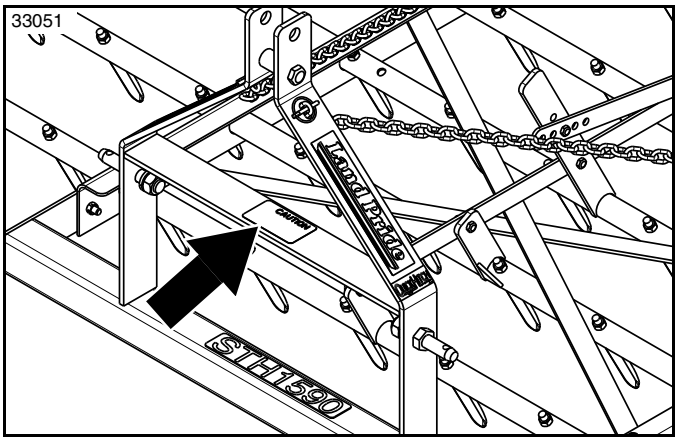


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Safety Labels

Your Spike Tooth Harrow comes equipped with all safety labels in place. They were designed to help you safely operate your implement. Read and follow their directions.

1. *Keep all safety labels clean and legible.*
2. *Refer to this section for proper label placement. Replace all damaged or missing labels. Order new labels from your nearest Land Pride dealer. To find your nearest dealer, visit our dealer locator at www.landpride.com.*
3. *Some new equipment installed during repair requires safety labels to be affixed to the replaced component as specified by Land Pride. When ordering new components make sure the correct safety labels are included in the request.*
4. *Refer to this section for proper label placement.*
   To install new labels:
   a. *Clean surface area where label is to be placed.*
   b. *Spray soapy water onto the cleaned area.*
   c. *Peel backing from label and press label firmly onto the surface.*
   d. *Squeeze out air bubbles with edge of a credit card or with a similar type of straight edge.*





818-719C

Caution: Prevent Injury

Land Pride welcomes you to the growing family of new product owners. This Spike Tooth Harrow has been designed with care and built by skilled workers using quality materials. Proper assembly, maintenance, and safe operating practices will help you get years of satisfactory use from this harrow

Application

The STH1590 Spike Tooth Harrow is built and designed by Land Pride for cutting through clods, manure, and grasses to break up material into finer pieces so that it can be spread evenly across the ground. The harrow does and excellent job of smoothing garden plots, fields, arenas, and landscaping areas. It loosens crusted soil, aerates legume crops such as alfalfa and uncovers overwintering insects. The harrow can be used to spread manure, grass clippings, leaf litter, previous crop stubble, and gravel driveways; and can incorporate into the soil fertilizers, herbicides, granular products, broadcast seed, and overseeding. It also helps to remove gopher mounds, ant hills, ridges lift by tillage implements, sticks, and small limbs from grassy areas.

Its 90" working width and Category I, 3-Point hitch makes it compatible with tractors rated 20 hp minimum and is Quick Hitch adaptable. The tooth can be adjusted to 10 different angles ranging from almost flat for providing the best flow-through of residue to straight up & down for the most aggressive position used to fluff up the soil.

See **"Field Uses"** on page 13, **"Specifications & Capacities"** on page 17 and **"Features & Benefits"** on page 18 for additional information.

Using This Manual

- This Operator's Manual is designed to help familiarize the operator with safety, assembly, operation, adjustments, troubleshooting, and maintenance. Read this manual and follow the recommendations to help ensure safe and efficient operation.
- The information contained within this manual was current at the time of printing. Some parts may change slightly to assure you of the best performance.
- To order a new Operator's or Parts Manual, contact your authorized dealer. Manuals can also be downloaded, free-of-charge, from our website at www.landpride.com

Terminology:

"Right" or "Left" as used in this manual is determined by facing the direction the machine will operate while in use unless otherwise stated.

Definitions:

IMPORTANT: A special point of information related to the following topic. Land Pride's intention is this information must be read & noted before continuing.

NOTE: A special point of information that the operator should be aware of before continuing.

Owner Assistance

The dealer should complete the Online Warranty Registration at the time of purchase. This information is necessary to provide you with quality customer service.

The parts on your Spike Tooth Harrow have been specially designed by Land Pride and should only be replaced with genuine Land Pride parts. Contact a Land Pride dealer if customer service or repair parts are required. Your Land Pride dealer has trained personnel, repair parts, and equipment needed to service the implement.

Serial Number

For quick reference and prompt service, record model and serial number on the inside cover page and again on the warranty page. Always provide model number and serial number when ordering parts and in all correspondences with your Land Pride dealer. For location of your serial number plate, see Figure 1.

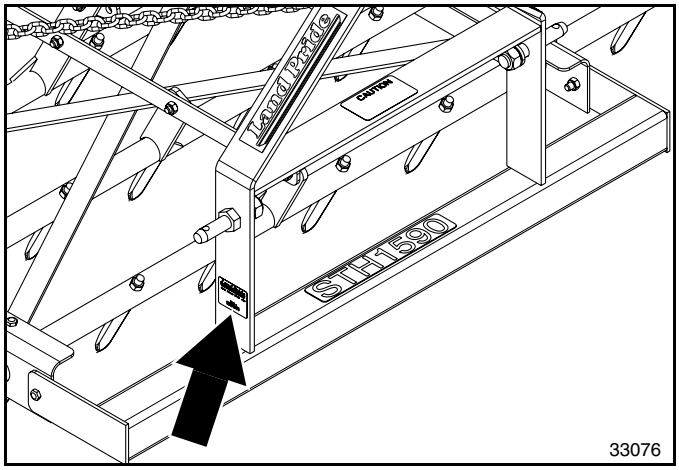


Figure 1

Further Assistance

Your dealer wants you to be satisfied with your new Spike Tooth Harrow. If for any reason you do not understand any part of this manual or are not satisfied with the service received, the following actions are suggested:

1. Discuss any problems you have with your implement with your dealership service personnel so they can address the problem.
2. If you are still not satisfied, seek out the owner or general manager of the dealership, explain the problem, and request assistance.
3. For further assistance write to:

Land Pride Service Department
1525 East North Street
P.O. Box 5060
Salina, Ks. 67402-5060

E-mail address
lpservicedept@landpride.com

Tractor Requirements

Tractor horsepower and hitch category should be within the range noted below. Tractors outside the horsepower range must not be used.

Tractor Horsepower Rating . . . . . 20 hp minimum
3-Point Hitch Category . . . . . Cat. I

WARNING

To avoid serious injury or death:

Lightweight tractors with rear attached implements may need weights added to the front to maintain steering control. Consult your tractor Operator's Manual to determine proper weight requirements and maximum weight limitations.

Torque Requirements

Refer to **"Torque Values Chart"** on page 20 to determine correct torque values for common bolts.

Dealer Set-up

Refer to Figure 1-1:

The STH1590 is shipped fully assembled with the hitch frame pivoted down onto the harrow frame, bolt (#1), and locknut (#2) stored in back hole "A" of adjustment bar (#4) and the spike teeth are folded completely up. Leave hitch and spike teeth in the folded up position except when hitched to a tractor.

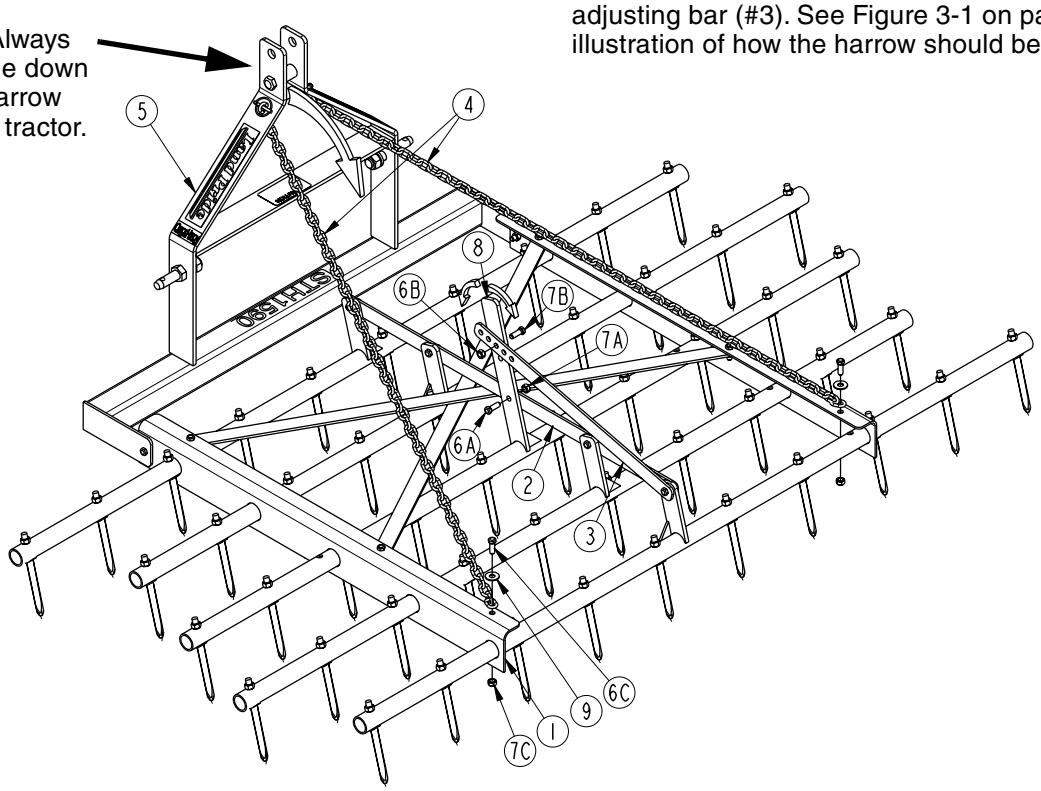
WARNING

To avoid serious injury or death:

- *Wear a pair of gloves when adjusting angle of the spike teeth to help protect hands from bruises and pinch points.*
- *The hitch can fall backwards unexpectedly when it is not hooked to a tractor. Always store harrow with hitch pivoted down onto the harrow frame when not hooked to a tractor.*
- *The spike teeth should be supported off the ground before adjusting angle of spike teeth. Harrow may rotate suddenly while removing bolt to change tooth angle creating a pinch point hazard and/or falling hazard. Pulling on the angle adjustment lever with teeth resting on the ground can strain a person's back and/or body extremities.*

1. If necessary, readjust lever arm (#8) to protect hitch frame (#5) from being scratched as it is rotated up. Unwrap support chains (#4) from hitch frame (#5) and carefully rotate hitch up to the position shown.
2. Loosen locknut (#7A) until bolt (#6A) pivots in hole of gang bar (#2).
3. Remove bolt (#6B) from lever arm (#8) and reinsert through center hole in adjustment bar (#3) and top hole in lever arm (#8). Secure with locknut (#7B) and tighten to the correct torque.
4. Attach end of support chains (#4) to right-hand and left-hand side rails (#1) with 7/16"-14 x 1 1/4" GR5 cap screws (#6C), flat washers (#9), and hex locknuts (#7C). Tighten nuts to the correct torque.
5. For safety, lay hitch frame down until resting on adjusting bar (#3). See Figure 3-1 on page 14 for illustration of how the harrow should be stored.

IMPORTANT: Always pivot hitch frame down when storing harrow unhitched from tractor.



33158

Set-up For Storage
Figure 1-1

Tractor Hook-Up

DANGER

To avoid serious injury or death:

A crushing hazard exists while hooking-up and unhooking implement. Keep people and animals away while backing-up to implement or pulling away from implement. Do not operate hydraulic controls while a person or animal is directly behind the power machine or near the implement.

NOTE: Land Pride's Cat. II Quick Hitch can be attached to the tractor to provide quick and easy 3-point hook-up and detachment. See your nearest Land Pride dealer to purchase a Quick-Hitch.

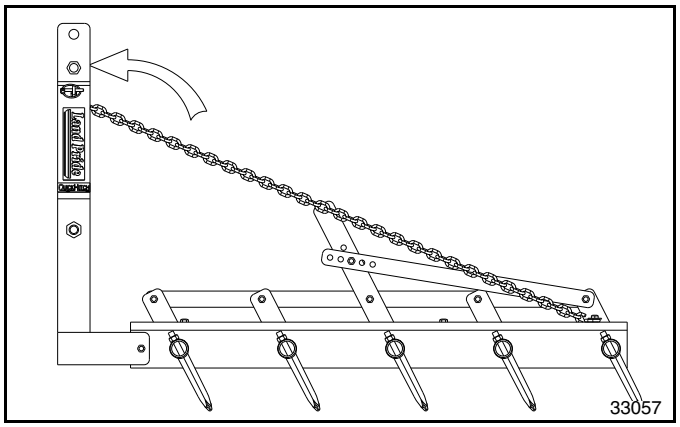
A 3-Point Category I hitch is required. The lower 3-Point arms of the 3-Point hitch must be stabilized to prevent side-to-side movement. Most tractors have sway blocks or adjustable chains for this purpose.

Refer to Figure 1-2:

1. Rotate hitch frame up to vertical position.

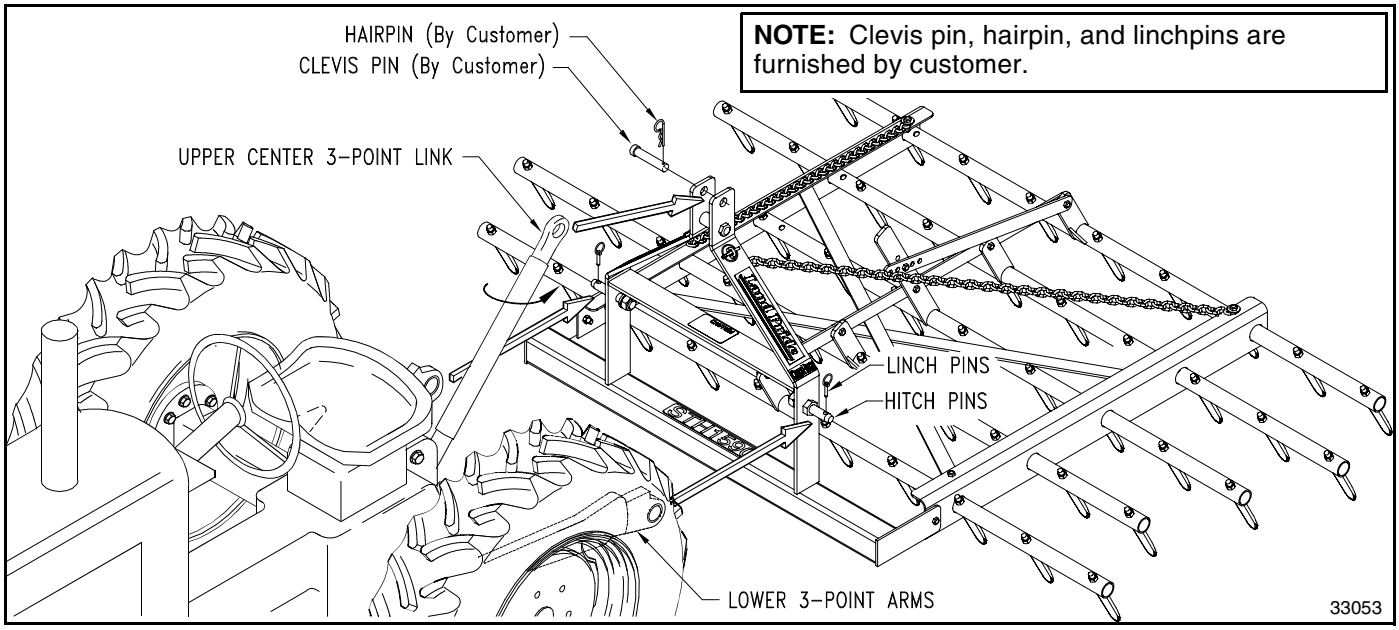
Refer to Figure 1-3:

2. Slowly back tractor up to the harrow while using the 3-Point hydraulic control lever to align lower 3-Point arm holes with hitch pins.
3. Engage tractor park brake, shut tractor engine off, and remove key before dismounting from tractor.
4. Attach lower arms to hitch pins and secure with linchpins.
5. Connect top center 3-Point link to upper center hitch point with clevis pin. Secure clevis pin with hairpin cotter. (Clevis pin and hairpin are furnished by customer.)



Rotate Hitch Frame up
Figure 1-2

6. Return to tractor and slowly raise harrow until off the ground several inches.
7. Set 3-Point lift arms for lateral float.
8. See Lower 3-Point Arm Leveling on page 10 for instructions on how to level the hitch frame from left to right.
9. See Center 3-Point Link Leveling on page 10 for instructions on leveling hitch frame front to back.
10. Make certain support chains are properly attached to the main frame.
11. Return to the tractor and slowly raise and lower harrow to ensure drawbar, tires, and other equipment on the tractor do not make contact with harrow. Move drawbar forward or remove it if it interferes.



Tractor Hook-Up
Figure 1-3

Lower 3-Point Arm Leveling

Refer to Figure 2-1:

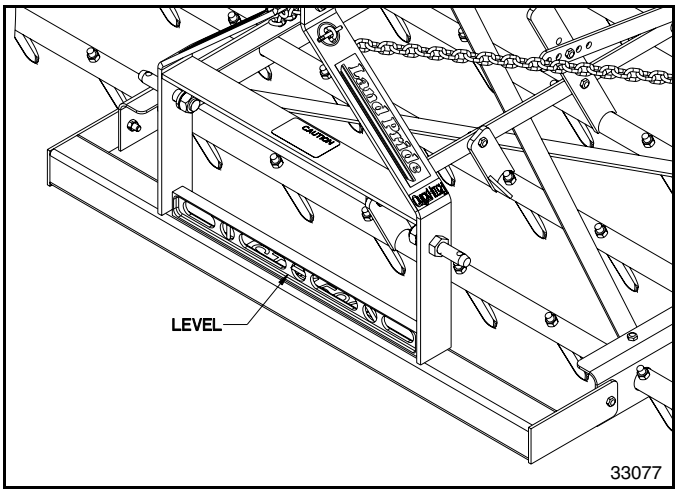
1. Locate tractor with Spike Tooth Harrow on a flat, level surface.
2. Use tractor's hydraulic 3-Point control lever to lower harrow until spike teeth are off the ground 2 to 3 inches.

WARNING

To avoid serious injury or death:

Always follow "Tractor Shutdown Procedure" provided in this manual before dismounting the tractor.

3. Place a level on the harrow hitch as shown. Manually adjust one or both lower 3-Point lift arms until hitch frame is level from left to right. On some tractors, only one arm can be adjusted vertically.
4. Continue with "Center 3-Point Link Leveling" on right side of this page.

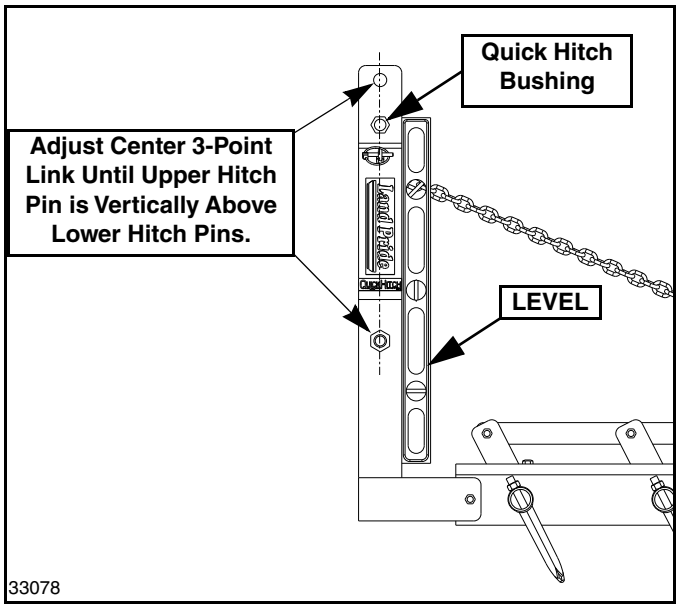


Deck Leveling
Figure 2-1

Center 3-Point Link Leveling

Refer to Figure 2-2:

NOTE: The bushing in the center of the hitch is used when attaching the harrow with a Quick Hitch.



Center 3-Point Link Adjustment
Figure 2-2

1. Lower harrow until teeth are resting on the ground.
2. Adjust length of center 3-Point link until upper center hitch pin is vertically above lower 3-Point hitch pins. This arrangement allows for optimum ground contour following performance. A level placed against the vertical edge of the hitch can be used to verify this adjustment.
3. Lock center 3-Point link in this position.

Hitch Height & Chain Adjustment

Refer to Figure 2-3:

> **IMPORTANT:** The harrow bars (#1) and the hitch pivot point (#2) should all be equal distance from the ground as the harrow is pulled forward by the tractor. It is subject to uneven tooth wear if one end is lower than the other.

1. Using tractor's 3-Point hydraulic control lever, raise, or lower 3-Point lift arms until harrow bars (#1)and hitch pivot point (#2) are all an equal distance off the ground from front to back when traveling forward.
2. Set tractor's 3-Point hydraulic control lever stop at this height.

> **NOTE:** Lift chains (#4) should sag to allow the harrow to follow the contour of the ground when going over raises such as terraces, but not so slack that the back teeth will not raise soon after the front is lifted off the ground.

1. Remove linchpins (#3).
2. Shorten or lengthen lift chains (#4) by dropping and equal amount of links on both chains and inserting the end link not dropped into slots (#5).
3. Replace linchpins (#3). make sure they are secured to the chain link.

Spike Tooth Angle Adjustment

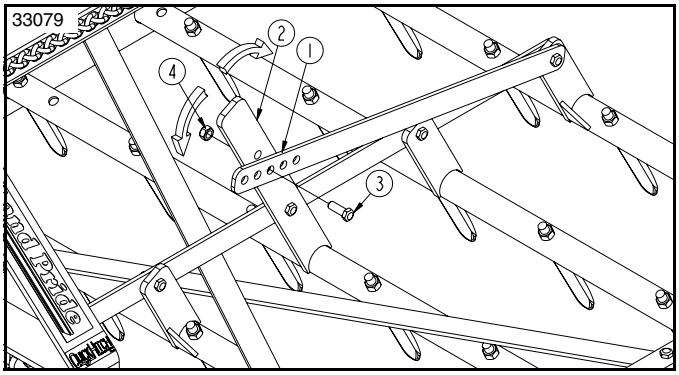
⚠ WARNING

To avoid serious injury or death:

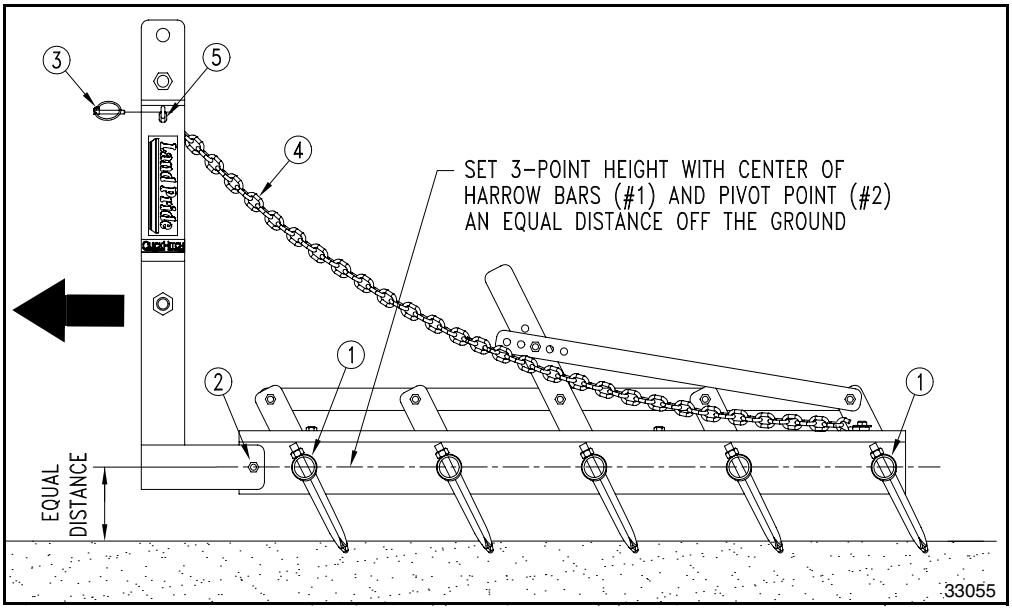
- *Wear a pair of gloves when adjusting angle of the spike teeth to help protect hands from bruises and pinch points.*
- *The spike teeth should be supported off the ground before adjusting angle of spike teeth. Harrow may rotate suddenly while removing bolt to change tooth angle creating a pinch point hazard and/or falling hazard. Pulling on the angle adjustment lever with teeth resting on the ground can strain a person's back and/or body extremities.*

Refer to Figure 2-4:

1. Raise harrow up until spike teeth are off the ground.
2. Place supports tall enough to support the teeth off the ground under the support harrow frame and then lower harrow onto the supports.
3. Place gear selector in park, shut tractor engine off, set park brake, and remove switch key.
4. Remove locknut (#4) and bolt (#3).
5. Move adjustment lever (#2) forward or backward to the preferred spike tooth angle.
6. Align hole in adjustment bar (#1) with hole in adjustment lever (#2) and secure with bolt (#3) and locknut (#4). Tighten locknut to the correct torque.



Spike Tooth Angle Adjustment
Figure 2-4



3-Point Height & Chain Adjustment
Figure 2-3

Operating Checklist

Hazard control and accident prevention are dependent upon the awareness, concern, prudence and proper training involved in the operation, transport, storage, and maintenance of the Spike Tooth Harrow. Therefore, it is absolutely essential that no one operates the unit unless they are age 16 or older and have read, fully understood, and are totally familiar with the Operator's Manual. Make sure the operator has paid particular attention to:

- **Important Safety Information**, page 1
- **Section 1: Assembly & Set-up,** page 8
- **Section 2: Adjustments**, page 10
- **Section 3: Operating Instructions**, page 12
- **Section 4: Maintenance**, page 15

Safety Information

WARNING

To avoid serious injury or death:

- *Allow only persons to operate this implement who have fully read and comprehended this manual, who have been properly trained in the safe operation of this implement, and who are age 16 or older. Serious injury or death can result from the inability to read, understand, and follow instructions provided in this manual.*
- *Always follow "Tractor Shutdown Procedure" provided in this manual before dismounting the tractor.*
- *Never carry riders on the implement or tractor. Riders can obstruct the operator's view, interfere with control of the equipment, be pinched by moving components, become entangled in rotating components, be struck by objects, be thrown or fall from the equipment, etc.*
- *Do not operate and/or travel across inclines where tractor and/or implement can roll over. Consult your tractor's manual for acceptable inclines the tractor is capable of traveling across.*
- *Do not allow children to play on or around stored equipment. Children and/or stored equipment can fall causing serious injury or death.*
- *Walk carefully around the harrow to prevent falling onto the unit. Always store harrow with spike teeth pointing down.*
- *Beware of pinching fingers when changing the angle of the spike teeth.*
- *Clear area to be worked of debris and other unforeseen removable objects. Mark any potential hazards that cannot be removed such as tree stumps, post, rocks, holes, drop-offs, etc. with a visible flag.*
- *Do not use implement to lift objects; to pull objects such as fence posts, stumps, etc; or to push objects. The unit is not designed or guarded for these uses.*
- *Do not use implement to tow other equipment unless it is designed with a tow hitch. Doing so can result in loss of control and damage the equipment.*
- *Do not use implement as a man lift or work platform. It is not properly designed or guarded for this use.*
- *Perform scheduled maintenance. Check for loose hardware, missing parts, broken parts, structural cracks, and excessive wear. Make repairs before putting implement back into service.*
- *Avoid exposure to dust containing crystalline silica particles. This dust can cause serious injury to the lungs (silicosis). Because crystalline silica is a basic component of sand and granite, many activities at construction sites produce dust containing crystalline silica. Trenching, sawing, and boring of material containing crystalline silica can produce dust containing crystalline silica.*

IMPORTANT: Do not add weights to the harrow. Adding weights will cause high tooth wear and/or bend harrow frame and bars.

IMPORTANT: Always raise harrow off the ground before backing up. Backing up with spike teeth in the ground can damage the harrow and tractor.

Tractor Shutdown Procedure

The following are basic tractor shutdown procedures. Follow these procedures and any additional shutdown procedures provided in your tractor Operator's Manual before leaving the operator's seat.

1. Reduce engine speed and disengage power take-off if engaged.
2. Park tractor and implement on level, solid ground.
3. Lower implement to ground or onto non-concrete support blocks.
4. Put tractor in park or set park brake, turn off engine, and remove switch key to prevent unauthorized starting.
5. Relieve all hydraulic pressure to auxiliary hydraulic lines.
6. Wait for all components to come to a complete stop before leaving the operator's seat.
7. Use steps, grab-handles and anti-slip surfaces when stepping on and off the tractor.

Transporting

WARNING

To avoid serious injury or death:

When traveling on public roadways, travel in such a way that faster moving vehicles may pass safely. Use accessory lights, clean reflectors, and a slow moving vehicle sign that is visible from the back to warn operators in other vehicles of your presence. Always comply with all federal, state, and local laws.

1. Reduce tractor ground speed when turning and leave enough clearance so harrow does not contact obstacles such as buildings, trees, or fences.

2. Limit transport speed to 20 mph. Transport only with a tractor of sufficient size and horsepower.
3. When traveling on roadways, transport in such a way that faster moving vehicles may pass you safely.
4. Shift tractor to a lower gear when traveling over rough or hilly terrain.

Out-of-Field Inspection

Make the following inspections with harrow attached to a tractor:

1. Inspect tractor safety equipment to make sure it is in good working condition.
2. Inspect harrow for loose bolts and nuts. Tighten all loose bolts and nuts as indicated in the **"Torque Values Chart"** on page 20.
3. Carefully raise and lower implement to ensure drawbar, tires, and other equipment on the tractor do not contact harrow frame.
4. Check for and remove foreign objects wrapped around the spike teeth and frame. Block harrow up before removing objects.
5. Check for missing, bent, broken, and worn spike teeth. Replace spike teeth as required. Refer to "Spike Tooth Replacement" on page 15.
6. Verify harrow is level from left to right and front to back. See "Lower 3-Point Arm Leveling" and "Center 3-Point Link Leveling" on page 10.

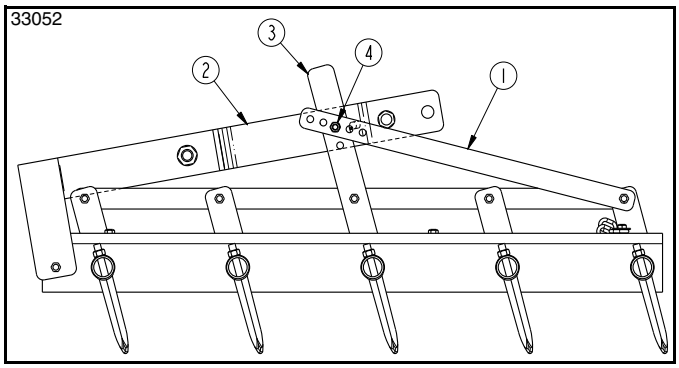
In-Field Inspection

Do not harrow in wet conditions. Wet material will build up causing the harrow to not be as effective.

1. Thoroughly inspect area to be harrowed for ditches, drop-offs, stumps, post, rocks, and other unforeseen objects that the harrow or tractor can snag on or hit. Mark all potential hazards before working the area.
2. Verify harrow is set at the correct working height. See "Hitch Height & Chain Adjustment" on page 11.
3. After the first 50 feet, stop and check to see that the harrow is adjusted properly.
4. Periodically turn tractor off, remove switch key, and check for foreign objects wrapped around the spike teeth and frame. Block harrow up before removing objects.
5. Frequently inspect the Spike Tooth Harrow for loose bolts and nuts. Tighten all loose hardware as indicated in the **"Torque Values Chart"** on page 20.

Field Uses

- **Firming Seedbeds**
  Most seedbeds are too loose and fluffy, Research shows that by firming the seedbed, planting depth can be better controlled resulting in huge increases (up to 54%) in germination rates. A firm seedbed also gives better seed/soil contact for proper germination.
- **Leveling Soil**
  Eliminates troublesome ridges left by some tillage tools and helps provide consistent planting depth across the width of the drill, seeder, or planter.
- **Spreads Residue**
  This harrow handles large amounts of residue while spreading it to manageable levels to allow tillage and planting tools to do their job without the plugging associated with heavy residue. It is a must-have tool for processing no-till residue.
- **Breaking-up Residue**
  This harrow pulled 7 to 10 MPH on a hot, dry day will shatter residue, turning it into mulch.
- **Conserving Moisture**
  Harrowing behind a primary tillage tool helps seal the open soil and lowers the evaporation rate of moisture in the freshly broken soil. Also, harrowing soil that has crusted, breaks the capillary action that releases moisture out of the soil.
- **Controls Sprouting of Volunteer and Cheat**
  Dry years delay sprouting of volunteer. By stirring the soil with the harrow, the dormant seed contacts the moist soil and sprouts prior to planting season. This allows time to control the volunteer and cheat before planting a new crop.
- **Incorporates herbicides**
  Preplant herbicides can be incorporated as deeply or shallow as desired.
- **Covers Broadcast Seed**
  Wheat pasture and cover crops can be planted inexpensively by spreading the seed with a fertilizer spreader and covering it with the harrow.
- **Decreases Chemical Usage**
  Harrowing pulls out small weeds and volunteer, uncovers overwinter insects to expose them to the elements for fewer insects problems and firms the soil to speed germination of weed and volunteer seed so they can be destroyed prior to planting.
- **Good for Alfalfa Fields**
  Makes a perfect alfalfa seedbed. Use on existing alfalfa fields before spring to level the ground, control gopher mounds and to pull out small weeds. It also aerates the soil for root/oxygen exchange, breaks up, and spreads clumps of old residue.
- **Good for Grasslands**
  Grooms grass plants, knocks down gopher mounds and pulls out small weeds.



Storage Position
Figure 3-1

Unhook Spike Tooth Harrow

WARNING

To avoid serious injury or death:

The hitch can fall backwards unexpectedly when it is not hooked to a tractor. Always store harrow with hitch pivoted down onto the harrow frame when not hooked to a tractor.

Un-hook Spike Tooth Harrow from the tractor as follows:

1. Park on a level solid surface.
2. Lower harrow to just off the ground or onto blocks that support the harrow spike teeth above ground.
3. Engage tractor park brake, shut tractor engine off and remove key before dismounting from tractor.

Refer to Figure 3-1:

4. Fold spike teeth to the angle shown with bolt (#4) in the center hole of adjustment bar (#1) and top hole in lever arm (#3).
5. Un-hook 3-Point hitch (#2) from tractor. Reinstall hitch pins, linchpins, and hair pin cotters in harrow hitch frame.
6. Lay hitch frame (#2) down onto adjustment bar (#1).
7. See "Long-Term Storage" information on page 16 if harrow is being stored for a long time.

General Operating Instructions

It is important that you familiarize yourself with the Operator's Manual, properly attached the harrow to your tractor, made leveling adjustments, spike tooth angle adjustments, pre-field inspections and field inspections before using your Land Pride Spike Tooth Harrow.

Make sure before starting the tractor that it is out of gear, the park brake is engaged, and the harrow is resting on the ground. Start tractor and set engine throttle speed at a low idle. Raise harrow with the tractor's rear hydraulic lift control lever to transport position making sure that the tractor does not contact the harrow. Lower the harrow to the ground and position the 3-Point adjustable stop on the hydraulic lift lever so that the harrow can be consistently returned to the same 3-Point hitch height for field work.

You should now be ready to transport to your harrowing site at a safe ground speed. On roadways transport in such a manner that faster moving vehicles can easily see you and pass you safely. Reduce your speed when traveling over rough and hilly terrain. Avoid quick or sharp steering corrections. Take extra care to ensure that the harrow doesn't come in contact with obstacles such as trees, buildings, or fences. Use accessory lights and appropriate reflective devices to provide adequate warning to pedestrians and other vehicle operators when traveling on public roads and in the dark of night. Comply with all local, state, and federal laws.

It is important to inspect the area where you will be harrowing and clear it of safety hazards and foreign objects before harrowing the site. Never assume the area is clear. Harrow only in areas you are familiar with and are free of debris and unseen objects. In the event you do strike an object, stop the harrow and tractor immediately to inspect and make necessary repairs before resuming operation. It really pays to inspect a new area and to develop a safe plan before harrowing.

Now that you're prepared and well briefed you may begin harrowing. You will need to maintain 7 to 10 MPH ground speed to shatter residue. Make a tractor gear and range selection that will enable you to maintain these speed combinations.

Avoid crossing the face of steep slopes and sharp drops. Cross diagonally through dips to prevent hanging up the tractor and harrow. Slow down in turns and make wide turns when possible. Three-point hitch should be lifted into transport position to make tight turns and to turn around in the field. Try increasing or decreasing ground speed to determine the effect on quality of work. Remember to look back often.

With a little practice you will be pleased with what you and your Land Pride Spike Tooth Harrow can do. Whether you are done harrowing, need to take a break, or just need to make a few adjustments to the harrow, remember to reduce tractor's engine rpm, stop on level ground, set tractor park brake, turn off the engine, and remove the key before dismounting from the tractor.

Maintenance

Proper servicing and adjustments are key to the long life of any implement. With careful inspection and routine maintenance, you can avoid costly downtime and repair.

Check all bolts and pins after using the unit for several hours and on a regular basis thereafter to ensure they are tight and secured.

Replace worn, damaged, or illegible safety labels by obtaining new labels from your Land Pride dealer.

DANGER

To avoid serious injury or death:

Always secure equipment with solid, non-concrete supports before working under it. Never go under equipment supported by concrete blocks or hydraulics. Concrete can break, hydraulic lines can burst, and/or hydraulic controls can be actuated even when power to hydraulics is off.

WARNING

To avoid serious injury or death:

- *Allow only persons to perform maintenance on this implement who have been properly trained in its safe operation.*
- *Perform scheduled maintenance. Check for loose hardware, missing parts, broken parts, structural cracks, and excessive wear. Make repairs before putting implement back into service.*
- *For safety reasons, each maintenance operation must be performed with harrow lowered completely to the ground or safely supported on blocks with tractor park brakes engaged, engine shut off and ignition key removed.*
- *Do not alter implement or replace parts on the implement with other brands. Other brands may not fit properly or meet OEM (Original Equipment Manufacturer) specifications. They can weaken the integrity and impair the safety, function, performance, and life of the implement. Replace parts only with genuine OEM parts.*

Spike Tooth Replacement

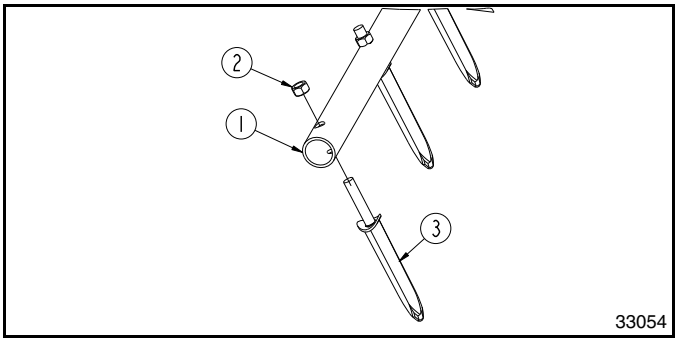
Refer to Figure 4-1:

NOTE: Always replace spike teeth and locknuts at the same time to ensure that the locknuts will not come loose and allow the spike teeth to fall off.

Always inspect spike teeth before each use. Make certain they are properly installed and are in good working condition. Replace any tooth that is lost, worn excessively, or broken.

Replace spike teeth as follows:

1. Place tractor gear selector in park and set brakes, shut engine off and remove ignition key.
2. Secure harrow in the up position with solid supports before servicing underside of harrow.
3. Remove 1/2"-13 locknut (#2) and spike tooth (#3) from harrow bar (#1).
4. Insert new spike tooth (#3) in harrow bar (#1) and secure with 1/2"-13 new locknut (#2). Tighten locknut to the correct torque.



Spike Tooth replacement
Figure 4-1

Long-Term Storage

When you are ready to park or store your harrow, it is best to park it on a dry hard packed gravel or concrete surface where it remains visible and grass and weeds cannot grow up through it. A harrow setting in deep grass and weeds can be hard to locate and hazardous to vehicles, livestock and people not seeing the harrow covered in vegetation.

Clean, inspect, service, and make necessary repairs to the implement when storing it for long periods and at the end of the season. This will help to ensure the unit is ready for field use the next time you hook-up to it.

DANGER

To avoid serious injury or death:

Always secure harrow in the up position with solid supports before servicing underside of harrow. Never work under equipment supported by hydraulics. Hydraulics can drop equipment if controls are activated or if hydraulic lines burst. Either situation can drop the harrow instantly even when power to hydraulics is shut off.

CAUTION

To avoid minor or moderate injury:

The hitch when not hooked to a tractor can fall backwards unexpectedly causing bodily injury. Always store harrow with hitch pivoted down onto the harrow frame when not in use.

1. Clean off any dirt and grease that may have accumulated on the harrow and moving parts. Scrape off compacted dirt and then wash surface thoroughly with a garden hose.
2. Check teeth and locknuts to make sure they are not missing, broken, or excessively worn. Replace harrow teeth as needed. See “Spike Tooth Replacement” on page 15.
3. Inspect for loose, damaged, or worn parts and adjust or replace as needed.
4. Repaint parts where paint is worn or scratched to prevent rust. Ask your dealer for Land Pride aerosol touch-up paint. Paint is also available in touch-up bottles with brush, quarts, and gallon sizes by adding TU, QT, or GL to the end of the aerosol part number.

Land Pride Touch-up Paint

Part No.	Part Description
821-011C	PAINT LP BEIGE SPRAY CAN
821-066C	PAINT ORANGE SPRAY CAN
821-070C	PAINT GP GLOSS BLACK SPRAY CAN

5. Replace all damaged or missing decals.
6. A coating of oil may also be applied to the teeth to minimize oxidation.
7. Store harrow on a level surface in a clean, dry place. Inside storage will reduce maintenance and make for a longer harrow life.
8. Follow all unhooking instructions on page 14 when disconnecting tractor from harrow.

Ordering Replacement Parts

Land Pride offers equipment in factory standard Beige with black highlights. This implement is also available in Orange.

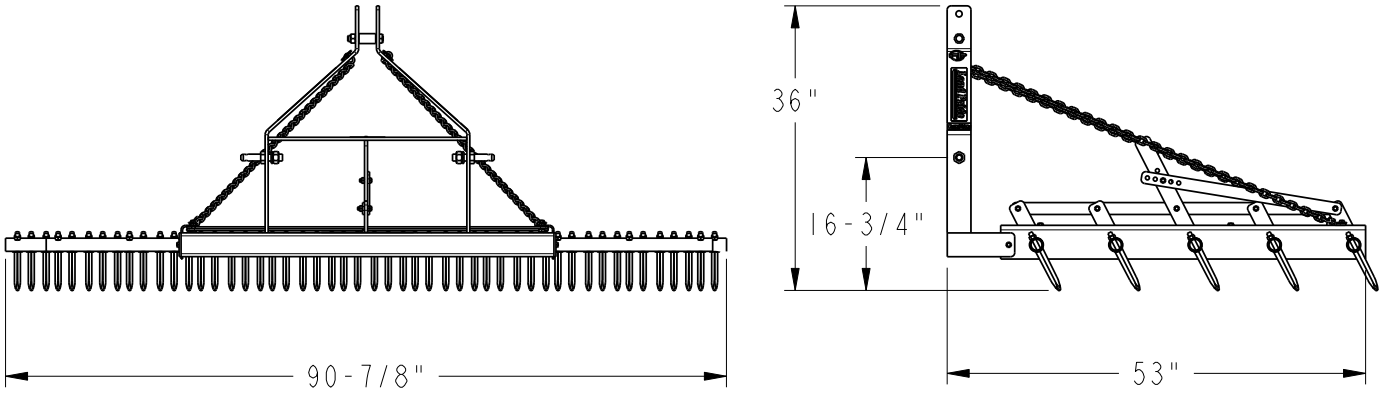
When ordering an optional color, the suffix number corresponding to the color must be added at the end of the part number. Parts ordered without the suffix number will be supplied in factory standard colors.

82 . . . . . Orange **85. . . . . Black**

For example, if you are ordering a replacement part with part number 555-555C and the existing part is orange, then add the suffix 82 to the end of the number to make the part number read 555-555C82.

STH1590 Model

Specifications & Capacities	
Recommended Tractor Power Take-Off Horsepower	20 hp minimum
Machine Weight	224 lbs.
Hitch	Category I, Quick Hitch adaptable
Working Width	88 5/8"
Overall Width	90 7/8"
Overall Length	53"
Overall Height	35 3/4"
Rear Frame Suspension	Chain suspension
Size of Adjustment Bars	1 11/16" OD x 84" long
Number of Adjustment Bars	5
Number of Teeth	50 (10 per adjustment bar)
Number of Teeth on Ground	7 Teeth per/ft.
Tooth Angles	10 Different adjustments for angle.
Construction of Spike Teeth	Diamond shaped tooth x 8 1/2" long. Tip is forge hardened
Ground Contact of Spike Teeth	Every 1 3/4"



33081

STH1590 Model

Features	Benefits
Chain suspension at the rear	Permits harrow to follow the terrain for even tooth penetration.
Heavy constructed tooth bars	Designed to handled the job.
10 Adjustable tooth angles	Has a wide range of teeth angles available from the least aggressive tooth angle for giving the best flow-through of residue to the most aggressive angle for fluffing-up the ground such as an arena floor and 8 position in between to best fit the job at hand.
A Tooth on the ground every 1 3/4"	Provides maximum conditioning of the soil, breaking, and spreading of manure and residue, and for even leveling and firming of the soil.
Diamond shaped teeth	Helps to break-up material into finer pieces for a more even spreading of material across the ground. Great for seed bed preparation, preparing arena floors, and breaking up clumps of manure blocking sunlight and spreading it over the ground to act as a fertilizer.
Narrow tooth point	Cuts through grasses instead of pulling out desirable grasses and plants.
Forged hardened tooth tips	Forged hardened tooth tips extends the life of the teeth.
Softer metal at threaded end of teeth	Helps resist breakage when striking rocks or other obstacles. Threaded end allows the tooth to be removed for repair or replacement.

STH1590 Troubleshooting Chart

Problem	Cause	Solution
Bent or Broken teeth	Hitting solid objects	Avoid hitting solid objects
Bent tooth bar	Added weights to the harrow	Remove weights.
	Hitting solid objects with harrow in the ground.	Inspect field and mark areas of trouble such as stumps, broken fence post, and outcropping of rocks.
	Hitting solid objects with harrow raised.	Stay away from buildings, fences, trees banks and other solid objects when traveling straight and turning corners.
Excessive tooth wear	Added weights to the harrow	Remove added weights.
	Loose teeth	Tighten teeth to the tooth bar.
	Sandy soil	Teeth are hardened for maximum wear. Sand is very abrasive and teeth may need replaced more frequently.
Harrow does not penetrate the ground	Grass, wire, and trash have accumulated under the harrow.	Remove grass, wire, and trash from under the harrow.
	Teeth not set at the correct angle	Adjust angle of teeth to be more upright.
	Ground is too hard	Break ground with a field tool.
Loose teeth	Locknuts have worked loose	Retighten locknuts to the correct torque. Replace locknuts that won't stay tight.
Material accumulates in front of harrow	3-Point hydraulic control stop not set correctly	Readjust 3-Point hydraulic control stop. See "Hitch Height & Chain Adjustment" on page 11.
Rear teeth do not follow ground contour	Rear chains are too short	Reattach rear chains to the hitch with more chain links between hitch and harrow frame.
Rear teeth do not raise very far off the ground when lifting harrow up	Rear chains are too long	Reattach rear chains to the hitch with fewer chain links between hitch and harrow frame.
Spike Tooth mounting holes are wallowing out.	Teeth are loose	Check for loose nuts frequently, Tighten loose nuts to the correct torque.

Torque Values Chart for Common Bolt Sizes

Bolt Size (inches)	Bolt Head Identification Grade 2		Grade 5		Grade 8	
in-tpi [1]	N · m [2]	ft-lb [3]	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 (Metric)	Bolt Head Identification 5.8 Class 5.8		8.8 Class 8.8		10.9 Class 10.9	
mm x pitch [4]	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

[1] in-tpi = nominal thread diameter in inches-threads per inch

[2] N· m = newton-meters

[3] ft-lb= foot pounds

[4] mm x pitch = nominal thread diameter in millimeters x thread pitch

Torque tolerance + 0%, -15% of torque values. Unless otherwise specified use torque values listed above.
All locknuts or lubricated fasteners: Use 75% of torque value. (i.e. 1/2"-13 GR5 = 76 ft-lb; 75% of 76 or .75 x 76 = 57 ft-lb)

Warranty

Land Pride warrants to the original purchaser that this Land Pride product will be free from defects in material and workmanship beginning on the date of purchase by the end user according to the following schedule when used as intended and under normal service and conditions for personal use.

Overall Unit: One year Parts and Labor

Spike Teeth: Considered wear items

This Warranty is limited to the repair or replacement of any defective part by Land Pride and the installation by the dealer of any such replacement part, and does not cover common wear items. Land Pride reserves the right to inspect any equipment or parts which are claimed to have been defective in material or workmanship.

This Warranty does not apply to any part or product which in Land Pride's judgment shall have been misused or damaged by accident or lack of normal maintenance or care, or which has been repaired or altered in a way which adversely affects its performance or reliability, or which has been used for a purpose for which the product is not designed. Misuse also specifically includes failure to properly maintain oil levels, grease points, and driveline shafts.

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

This Warranty shall not be interpreted to render Land Pride liable for damages of any kind, direct, consequential, or contingent to property. Furthermore, Land Pride shall not be liable for damages resulting from any cause beyond its reasonable control. This Warranty does not extend to loss of crops, any expense or loss for labor, supplies, rental machinery or for any other reason.

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

This Warranty is not valid unless registered with Land Pride within 30 days from the date of original purchase.

IMPORTANT: The Online Warranty Registration should be completed by the dealer at the time of purchase. This information is necessary to provide you with quality customer service.

Model Number _____ **Serial Number** _____



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