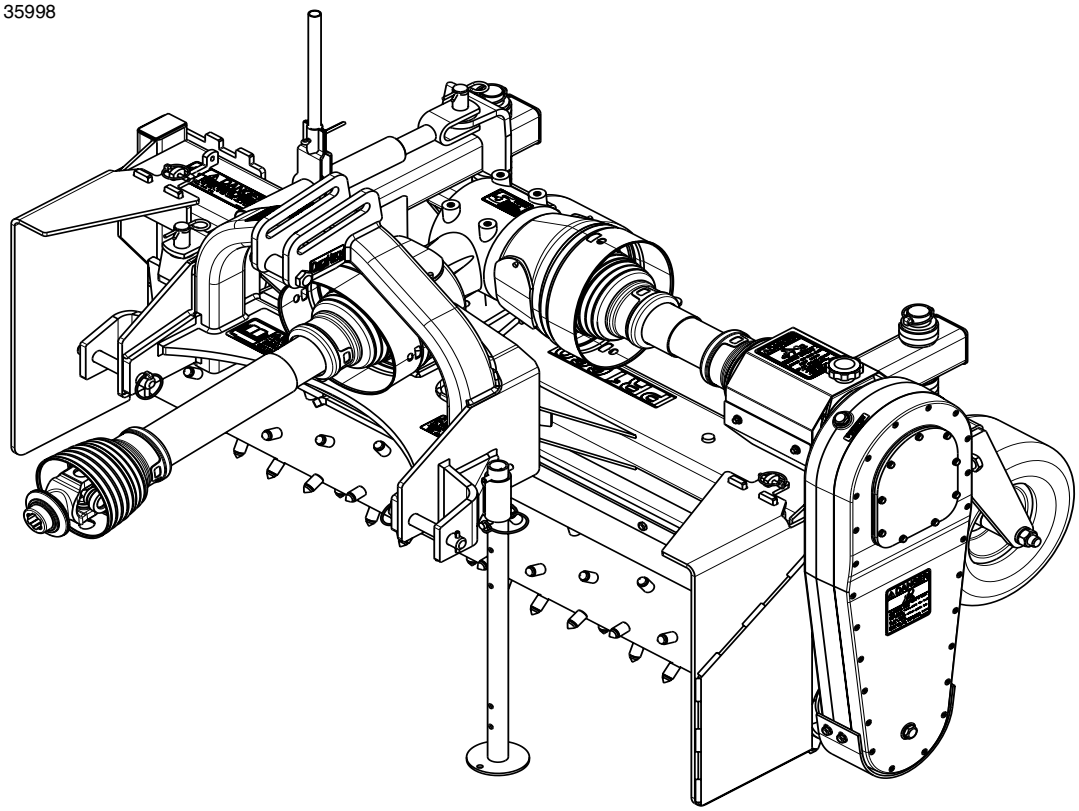
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Powered Rakes

PR1660, PR1672 & PR1690

35998



314-216M
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 9/7/22

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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Please take our Customer Satisfaction SURVEY at landpride.com

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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 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.

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

Safety at All Times

Careful operation is your best assurance against an accident.

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

- ▲ 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 appropriate for the operation are in place and secured before operating the 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 the implement and tractor while backing up to the 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 a safe and secure area where children normally do not play. When needed, secure implement against falling with support blocks.



Look for the Safety Alert Symbol

The SAFETY ALERT SYMBOL indicates there is a potential hazard to personal safety and extra precaution must be taken. When you see this symbol, be alert and carefully read the message that follows it. 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. They 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.

Be Aware of Special Notices

Special notices are intended to point out important and helpful information that should be followed. They are usually placed inside a box. They are:

IMPORTANT: Indicates that equipment or property damage could result if instructions are not followed.

NOTE: Indicates supplementary explanations that will be helpful when using the equipment.

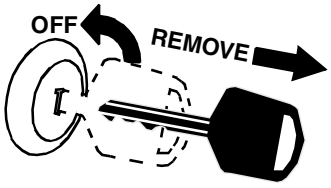
Safety Precautions for Children

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

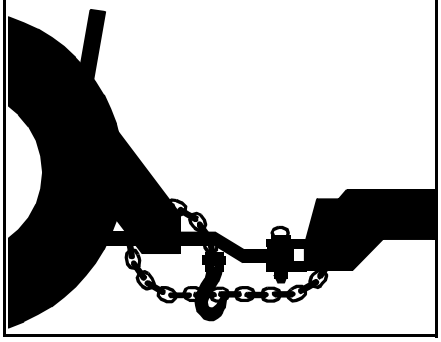
- ▲ If engaged, disengage power take-off.
- ▲ Park on solid, level ground and lower implement to ground or onto support blocks.
- ▲ Put tractor in park or set park brake.
- ▲ Turn off engine and remove ignition key to prevent unauthorized starting.
- ▲ Relieve all hydraulic pressure to auxiliary hydraulic lines.
- ▲ Wait for all components to stop before leaving operator’s seat.
- ▲ Use steps, grab-handles and anti-slip surfaces when stepping on and off the tractor.



Listed below 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 to tow the implement.

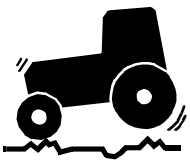


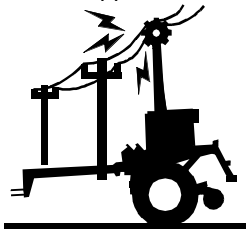
Transport Safely

- ▲ Comply with federal, 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 unexpectedly. Reduce speed if towed trailer is not equipped with brakes.
- ▲ Avoid contact with any overhead 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 skid steer on the “uphill” side.
- ▲ Engage park brake when stopped on an incline.
- ▲ Maximum transport speed for an attached equipment is 20 mph (32 km/h). 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 (32 km/h) when weight of attached equipment is less than or equal to the weight of machine towing the equipment.

  10 mph (16 km/h) 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 properly match the wheel size to the properly sized tire.
- ▲ 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.
- ▲ Lower implement to the ground and follow all shutdown procedures before leaving the operator’s seat to perform maintenance.
- ▲ Do not work under any hydraulically supported equipment. It can settle, suddenly leak down, or be lowered accidentally. If it is necessary to work under the equipment, securely support it with stands or suitable blocking beforehand.
- ▲ Use properly grounded electrical outlets and tools.
- ▲ Use correct tools and equipment for the job that are in good condition.
- ▲ Allow equipment to cool before working on it.
- ▲ Disconnect battery ground cable (-) before servicing or adjusting electrical systems or before welding on implement.
- ▲ 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.
- ▲ Do not grease or oil implement while it is in operation.
- ▲ Remove buildup of grease, oil, or debris.
- ▲ Always make sure any material and waste products from the repair and maintenance of the implement are properly collected and disposed.
- ▲ Remove all tools and unused parts from equipment before operation.
- ▲ Do not weld or torch on galvanized metal as it will release toxic fumes.





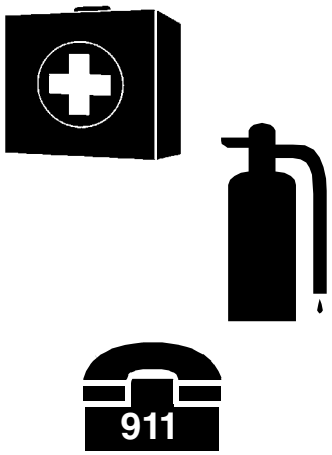




Listed below are common practices that may or may not be applicable to the products described in this manual.

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 the phone.



Wear Personal Protective Equipment (PPE)

- ▲ Wear protective clothing and equipment appropriate for the job such as safety shoes, safety, glasses, hard hat, dust mask, 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 a machine safely requires the operator's full attention. Avoid wearing headphones while operating equipment.



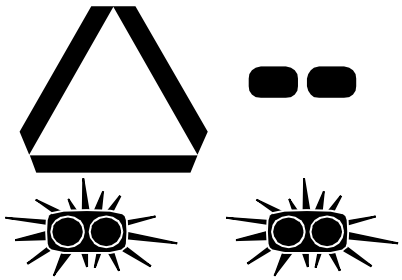
Avoid High Pressure Fluids



- ▲ Escaping fluid under pressure will penetrate the skin or eyes causing serious injury.
- ▲ Relieve all residual pressure before disconnecting hydraulic lines or performing work on the hydraulic system.
- ▲ Make sure all hydraulic fluid connections are properly tightened/torqued 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, seek immediate emergency medical care or gangrene may result.

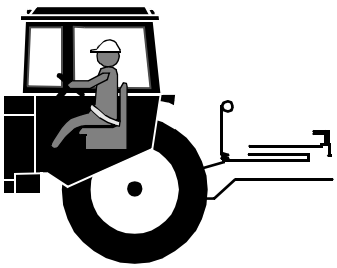
Use Safety Lights and Devices

- ▲ A Slow moving power machine 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.



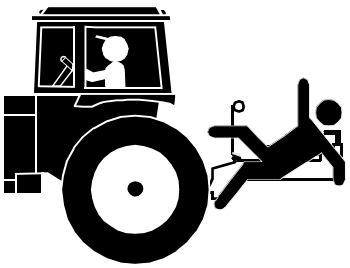
Use Seat Belt and ROPS

- ▲ 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 on the tractor or implement.
- ▲ 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.
- ▲ Never use the tractor or implement to lift or transport riders.

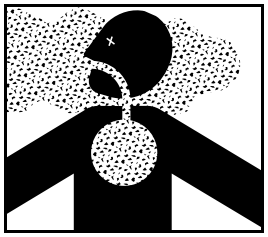


Listed below are common practices that may or may not be applicable to the products described in this manual.

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 can be 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.

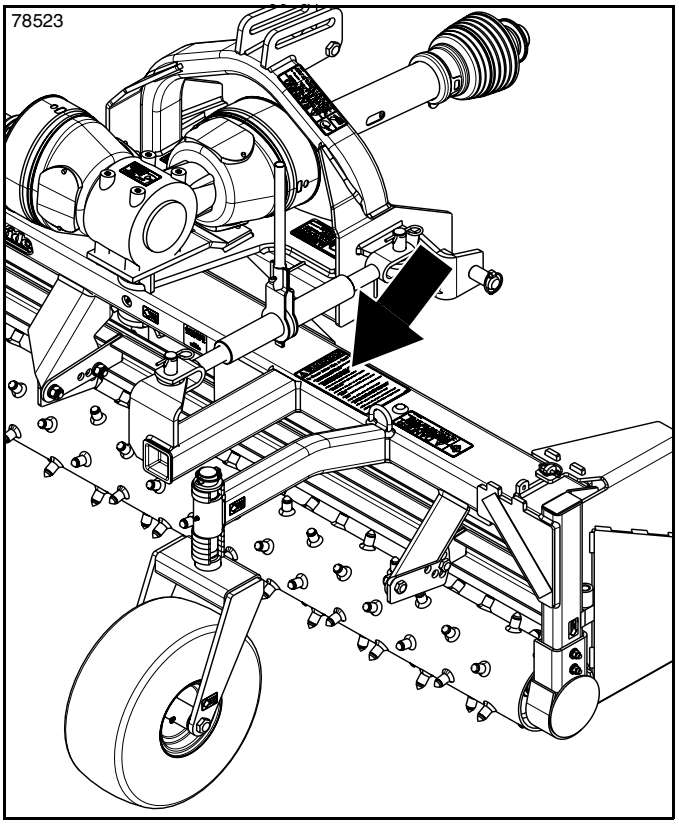


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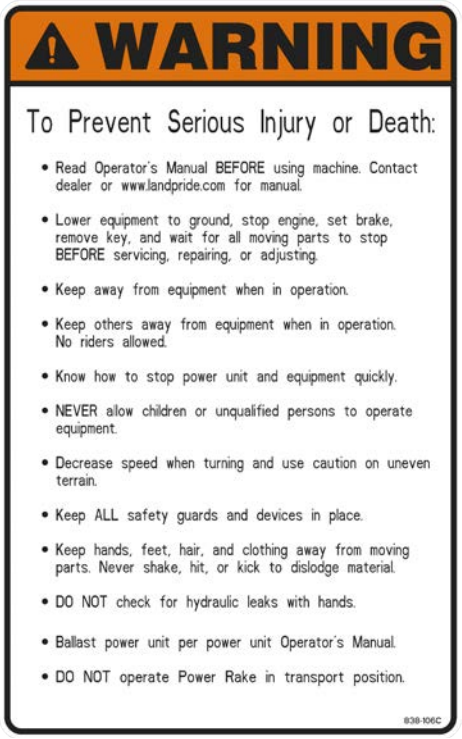
Safety Labels

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

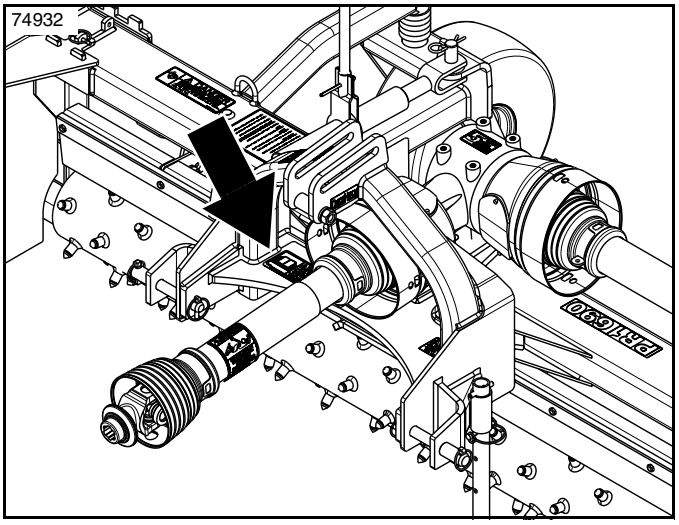
1. *Keep all safety labels clean and legible.*
2. *Refer to this section for proper label placement. Replace all damaged or missing labels. Order new labels from your nearest Land Pride dealer. To find your nearest dealer, visit our dealer locator at www.landpride.com.*
3. *Some new equipment installed 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.*



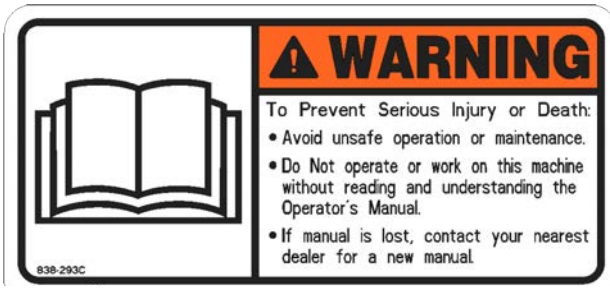
70585



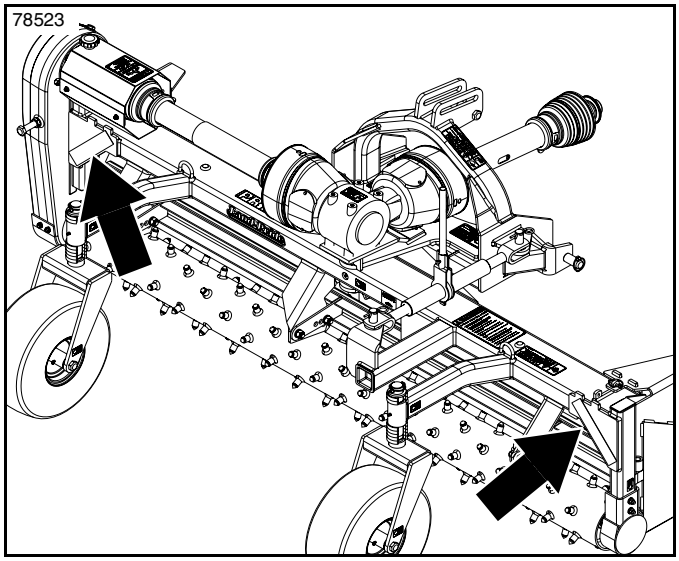
838-106C
Warning: Read Operator's Manual - General Safety
1 Place



70243

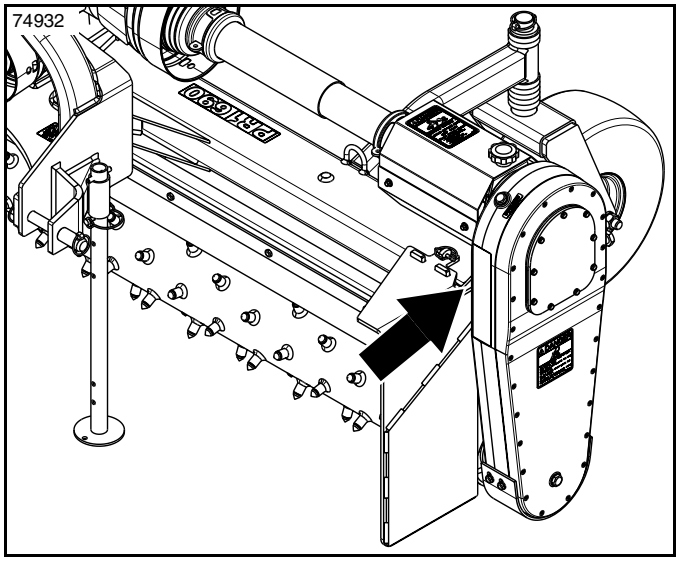


838-293C
Warning: Read Operator's Manual
1 Place





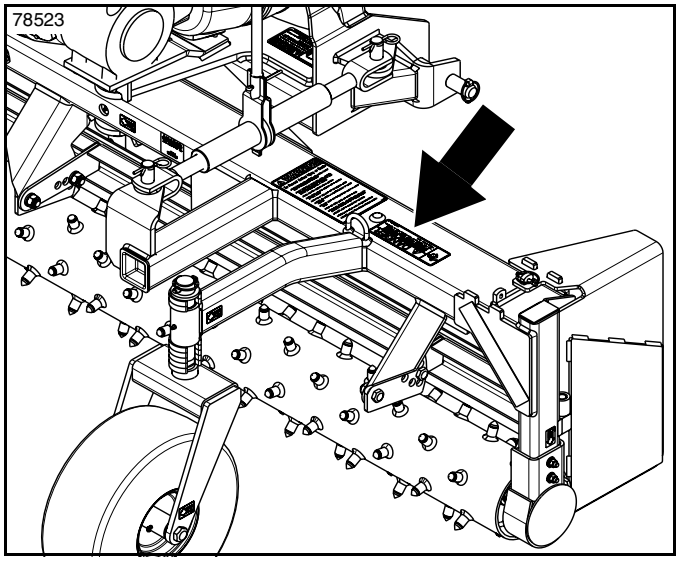
838-614C
Red Reflector: 2" x 9"
2 Places:





73138

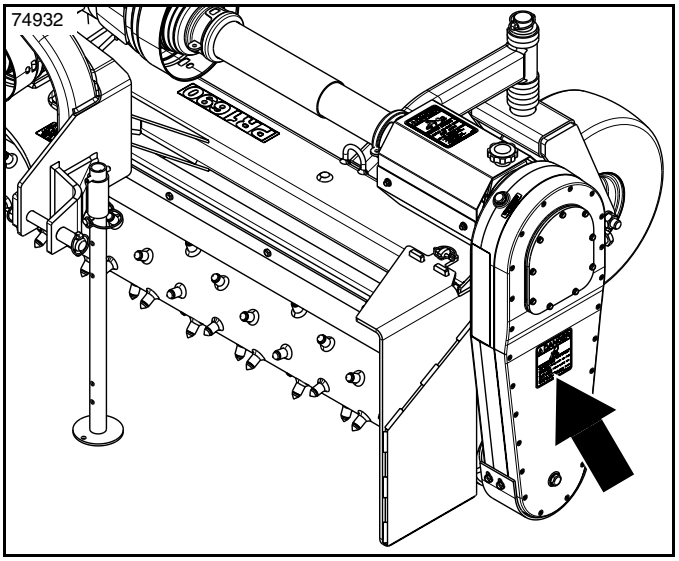
838-615C
Amber Reflector: 2" x 9"
1 Place: On PR1690 only





70977

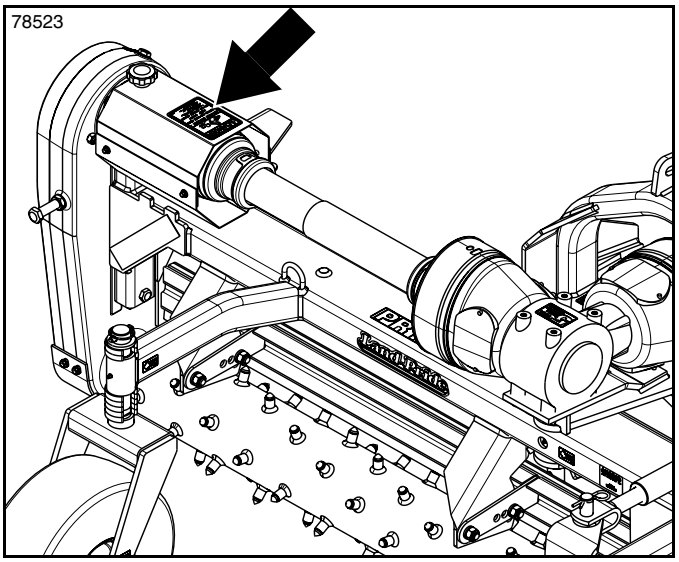
818-254C
Danger: Entanglement Hazard
1 Place



70576



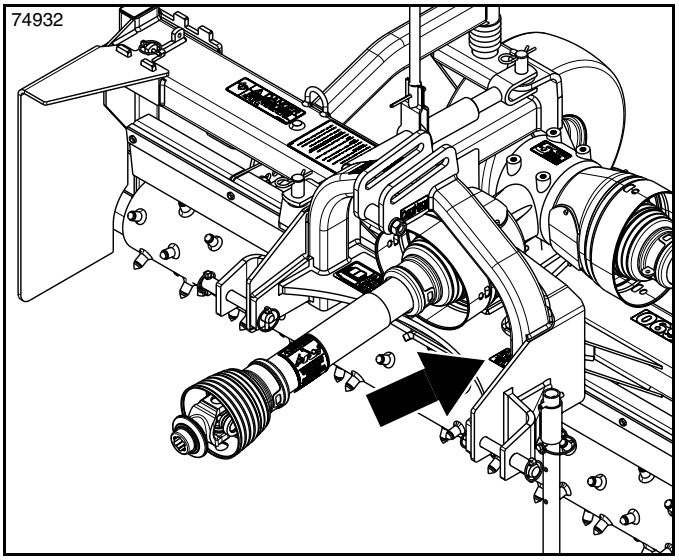
838-111C
Danger: Keep Away - Moving Parts Hazard
1 Place



70375



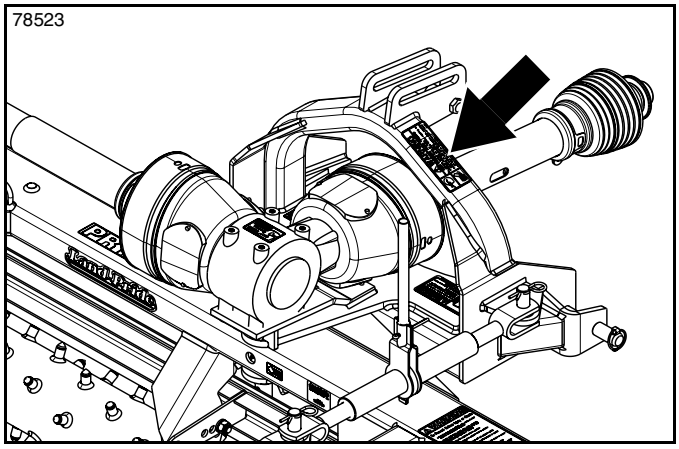
818-552C
Danger: Rotating Driveline - Keep Away
1 Place



70382



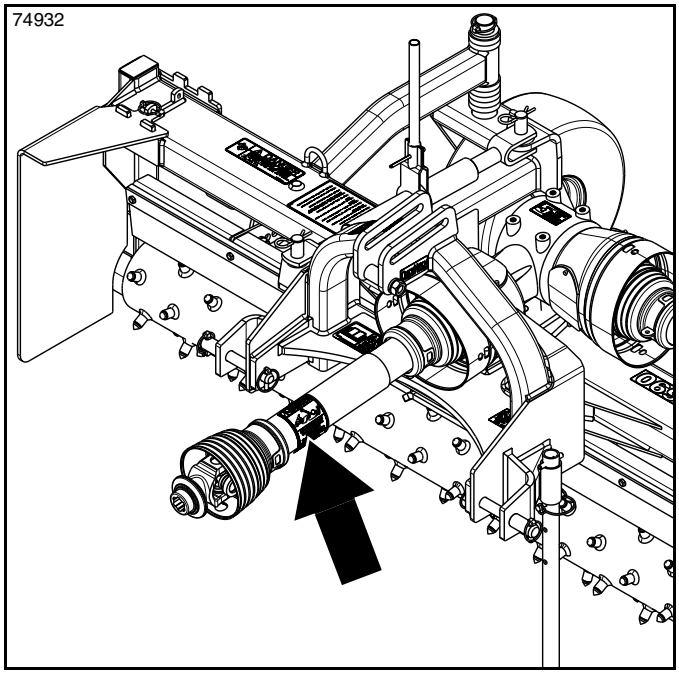
818-130C
Warning:
Operate only with 540 rpm Power Take-off Speed
1 Place



70245



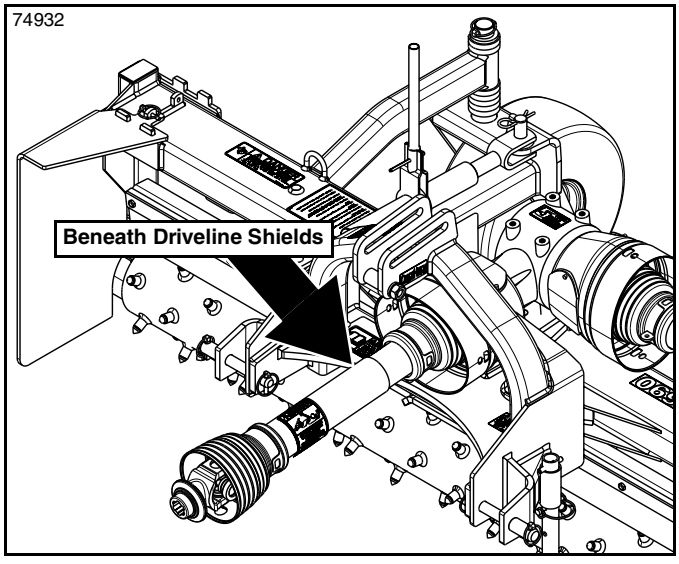
838-094C
Warning: High Pressure Fluid Hazard
1 Place



70375



818-552C
Danger: Rotating Driveline - Keep Away
1 Place: On the driveline outer shield



70374



818-540C
Danger: Guard Missing Hazard - DO NOT Operate
1Place: On the driveline outer profile (Beneath driveline outer shield)

Land Pride welcomes you to the growing family of new product owners. This Powered Rake 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 implement.

Application

The PR16 Series Powered Rakes are designed and built by Land Pride to be multi-functional seedbed and soil surface preparation tools for landscapers and turf care professionals. They are capable of grading, leveling, shaping, cultivating, renovating, and pulverizing various types of soil surfaces. They also are capable of raking and windrowing soil, rocks, and construction site debris.

The 60"and 72" (1.52 m and 1.53 m) working widths are compatible with 25-60 horsepower (18.6-44.7 kW), Cat. I, and 540 rpm power take-off tractors while the 90" (2.29 m) working width is compatible with 540 rpm power take-off Cat. I and II tractors 35-75 horsepower (26.1-55.6 kW). This means that Land Pride customers can choose models for either smaller “space restricted” landscaping and turf renovation jobs or all out “wide-area” renovation.

See **“Specifications & Capacities”** on page 31 and **“Features & Benefits”** on page 32 for additional information and performance enhancing options.

Using This Manual

- This Operator’s Manual is designed to help 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 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 the direction the operator faces while sitting in the operator’s seat looking forward unless otherwise stated.

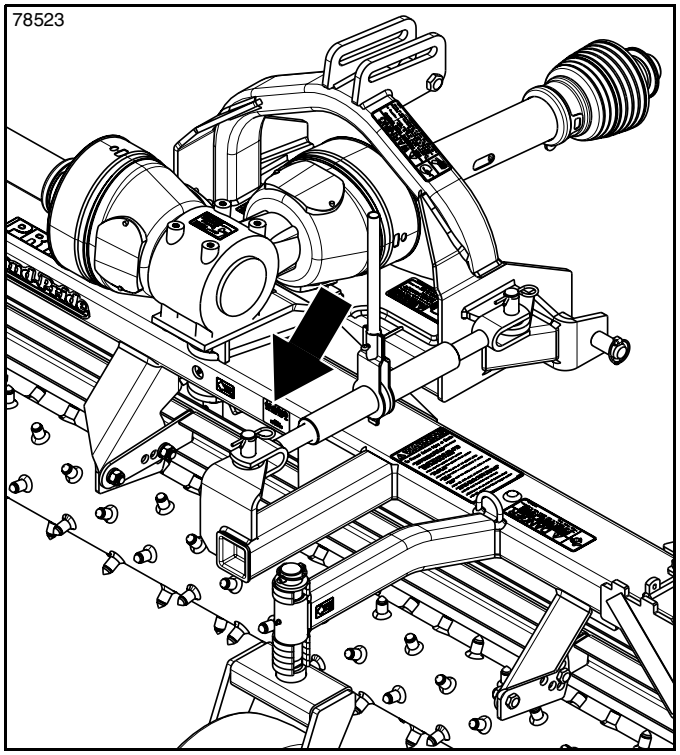
Owner Assistance

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 Powered Rake 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.



Serial Number Plate Location
Figure 1

Further Assistance

Your dealer wants you to be satisfied with your new Powered Rake. 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 question/problem, and request assistance.
3. For further assistance write to:

Land Pride
Service Department
P.O. Box 5060
Salina, KS 67402-5060

E-mail address
lpservicedept@landpride.com

Tractor Requirements

Tractor horsepower and weight must be capable of controlling the Powered Rake under all operating conditions. Tractors outside the horsepower range must not be used.

NOTE: Front tractor weights and/or ballast to tires may be required to offset weight of unit. Consult your tractor manual for details to install ballast weights.

- Models PR1660 & PR1672

  Horsepower . . . . . 25-60 hp (18.6-44.7 kW)
  Hitch Type 3-Point
  Hitch Category . . . . . Cat. I
  Power Take-Off Speed . . . . . 540 rpm
  Hydraulic (Optional) . . . . . .One Duplex Outlet

- Model PR1690

  Horsepower . . . . . 35-75 hp (26.1-55.6 kW)
  Hitch Type 3-Point
  Hitch Category . . . . . Cat. I or II
  Power Take-Off Speed . . . . . 540 rpm
  Hydraulic (Optional) . . . . . .One Duplex Outlet

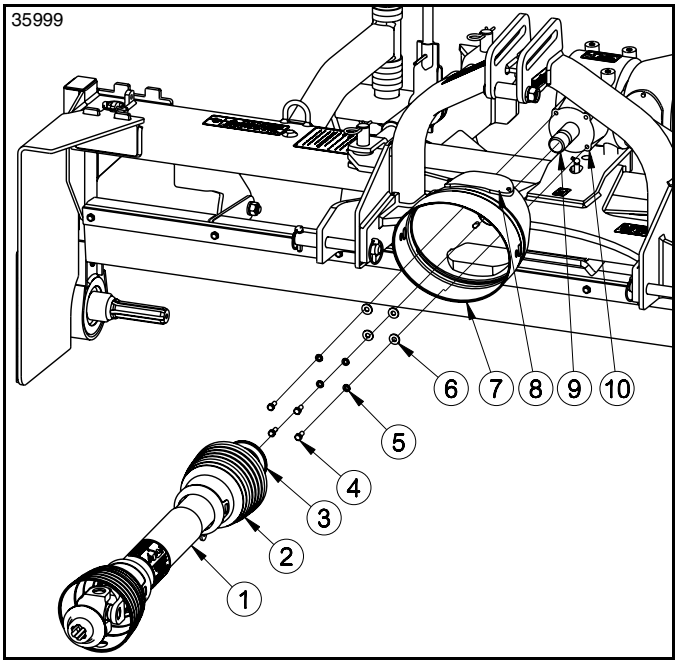
Hydraulic Option

The Powered Rake may be purchased with either a ratchet jack or a hydraulic cylinder for angling. A duplex outlet is required for the hydraulic option to operate the double acting cylinder.

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 weight requirements and maximum limitations.



Driveline Installation
(Roller not shown for clarity)
Figure 1-1

Cone Shield Assembly

Refer to Figure 1-1:

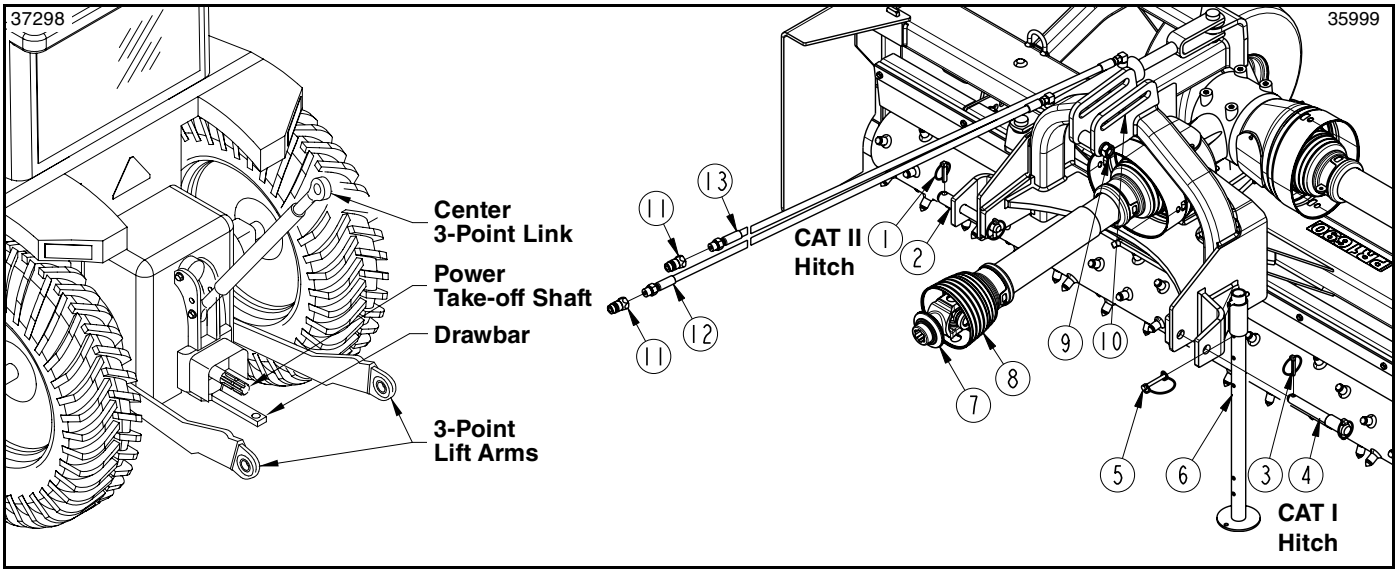
1. Rotate cone shield (#10) until access doors (#8) are on the top and bottom of the cone as shown.
2. Attach cone shield (#7) to gearbox (#10) with M8 x 1.25 x 16 GR 8.8 bolts (#4), lock washers (#5), and flat washers (#6).
3. Tighten bolts (#4) to the correct torque.

Driveline Installation

Refer to Figure 1-1:

IMPORTANT: The driveline must be lubricated before putting it into service. Refer to **"Lubrication Points"** on page 28.

1. Remove shield access doors (#8).
2. To ease driveline removal, apply a liberal amount of all purpose grease to gearbox shaft (#9) before attaching the driveline.
3. Pull back on driveline pull collar (#3) and push the yoke end with the long cone shield (#2) onto gearbox input shaft (#9). Release pull collar and continue to push the driveline yoke forward until the pull collar pops out and locks in place.
4. Driveline (#3) should now be moved back and forth to ensure the yoke is secured to the power rake. Reattach the yoke if it is loose.
5. Replace shield access door (#8).



3-Point Connection With Optional Hydraulic Angle Cylinder
Figure 1-2

Tractor 3-Point Connection

Refer to Figure 1-2:

DANGER

To avoid serious injury or death:

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

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 weight requirements and maximum limitations.

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

The lower 3-point arms must be stabilized to prevent side-to-side movement. Most tractors have sway blocks or adjustable chains for this purpose.

PR1660 & PR1672 Powered Rakes fit a Cat. I 3-point hitch and PR1690 Powered Rakes fit Cat. I & Cat. II 3-point hitches.

- A **Cat. I** tractor has a 7/8" dia. hole in the lower hitch links and a 3/4" dia. hole in the top center link.
- A **Cat. II** tractor has a 1 1/8" dia. hole in the lower hitch links and a 1" dia hole in the top center link.

Category I Lower Hitch Connection

Refer to Figure 1-2:

1. Remove inside linchpins (#3) and hitch pins (#4) from lower clevis lugs.
2. Slowly back tractor up to the Powered Rake while using the 3-point lift lever to position lower lift arms between the clevis lugs and to align hitch holes in lower arms with clevis lug holes.
3. Without changing 3-point lift height, shut tractor down according to **"Tractor Shutdown Procedure"** on page 17.
4. Attach lower arms to the clevises with hitch pins (#4) and secure with inside linchpins (#3). Rotate linchpin snap rings down to keep them from falling out.
5. Continue with **"Center Link Connection"** on page 13

Category II Lower Hitch Connection

Refer to Figure 1-2:

1. Remove outside linchpins (#1) from hitch pins (#2). **Do not remove hitch pins from lower clevis lugs.**
2. Slowly back tractor up to Powered Rake while using the 3-point hydraulic control lever to position lower lift arms outside of hitch pins (#2) and to align hitch holes in lower arms with hitch pins (#2).
3. Without changing 3-point lift height, shut tractor down according to **"Tractor Shutdown Procedure"** on page 17.
4. Attach lower lift arms to hitch pins (#2) and secure with outside linchpins (#1). Rotate linchpin snap rings down to keep them from falling out.
5. Continue with **"Center Link Connection"** on page 13.

Center Link Connection

Refer to Figure 1-2 on page 12:

NOTE: Customer to supply center 3-point hitch pin and hitch pin keeper.

Using the customer's supplied hitch pin and keeper, connect the center 3-point link to the rake as noted below.

- If working hard soil, remove hardware (#9) and attach center 3-point link to the removed hardware mounting holes. The hardware will need to be reinstall when using a Quick Hitch.
- If working soft soil, attach the center link to floating slots (#10).

Driveline Connection

Refer to Figure 1-2 on page 12:

DANGER

To avoid serious injury or death:

- *Tractor power take-off shaft shield, driveline shields, and gearbox shaft shields must be installed and in good working condition to avoid driveline entanglement and projectiles flying off of the driveline.*
- *Do not engage power take-off while connecting or disconnecting the driveline, or while someone is standing near the driveline. A person's body and/or clothing can become entangled in the driveline.*
- *Do not use a power take-off adapter. The adapter will increase strain on the tractor's power take-off shaft causing possible damage to shaft and driveline. It will also defeat the purpose of the tractor's power take-off shield.*
- *Make certain driveline yokes are securely fastened at each end. A loose yoke can work free allowing the driveline to rotate uncontrollably.*

WARNING

To avoid serious injury or death:

- *Always follow "Tractor Shutdown Procedure" provided in this manual before dismounting the tractor.*
- *Check driveline when lowering implement to make sure it does not interfere with the tractor drawbar at maximum depth. If needed, shut tractor off and move or remove drawbar to prevent driveline damage.*

IMPORTANT: An additional driveline may be required if implement is attached to more than one tractor or if a Quick Hitch is used.

IMPORTANT: Drivelines with friction clutches must go through a "run-in" prior to initial use and after long periods of inactivity. For detailed instructions, see **"Slip Clutch Maintenance"** on page 23.

IMPORTANT: Check driveline minimum collapsible length before completing **"Driveline Connection"**. Structural damage to the tractor and implement can occur if this check is not made. Refer to **"Check Driveline Collapsible Length"** on page 14.

1. If driveline collapsible length has not been checked, go to **"Check Driveline Collapsible Length"** on page 14. Otherwise, continue with step 2 below.
2. If tractor drawbar interferes with the driveline, disconnect driveline and move drawbar forward, to the side, or remove.
3. Collapse driveline (#8) by pushing tractor end of driveline toward the implement's gearbox.
4. Pull back on driveline pull collar (#7) and push yoke onto the tractor power take-off shaft. Release pull collar and continue to push driveline yoke forward until pull collar pops out and locks in place.
5. Pull on driveline yokes at the tractor and implement end to make sure they are secured to the tractor power take-off shaft and implement's gearbox shaft.

Optional Hydraulic Hose Connection

Refer to Figure 1-2 on page 12:

1. Attach quick release couplers (#11) to hydraulic hoses (#12 & #13) until tight. (Quick release couplers are furnished by customer.)
2. Attach quick release couplers to the tractor duplex outlet.

Park Jack storage

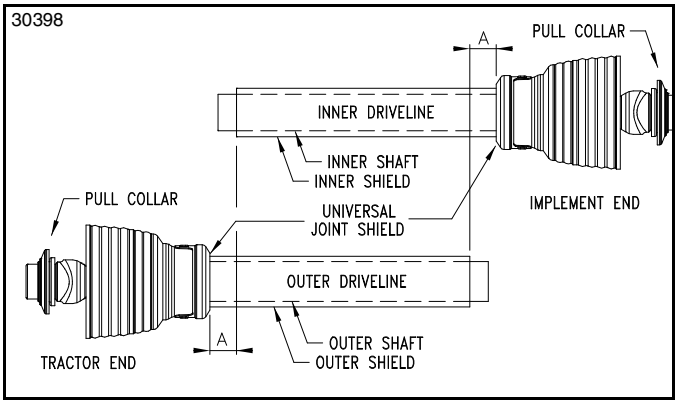
Refer to Figure 1-2 on page 12:

1. Return to the tractor and slowly operate 3-point lift lever to raise the powered rake until the parking stand (#6) is slightly off the ground.
2. Without changing 3-point lift height, shut tractor down according to **"Tractor Shutdown Procedure"** on page 17.
3. Remove wire retaining pin (#5) and raise parking stand (#6) fully up.
4. Reinsert wire retaining pin (#5) above parking stand support tube to secure stand in the up position.
5. Hook wire retainer over end of pin to secure pin.

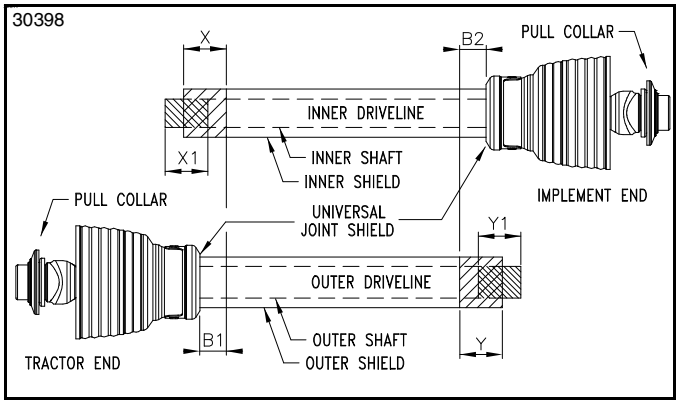
Level Rake From Side to Side

Refer to Figure 1-2 on page 12:

1. Manually adjust one of the lower 3-point lift arms up or down to level the Powered Rake from side to side. Refer to the tractor's manual for detailed instructions on how to adjust the lower lift arms up and down.
2. Leveling the rake from front to back will be completed later. For detailed instructions, refer to **"Level Rake From Front to Back"** on page 19.
3. Continue with **"Check Driveline Interference"** on page 15.



Check Driveline Minimum Length
Figure 1-3



Driveline Shortening
Figure 1-4

Check Driveline Collapsible Length

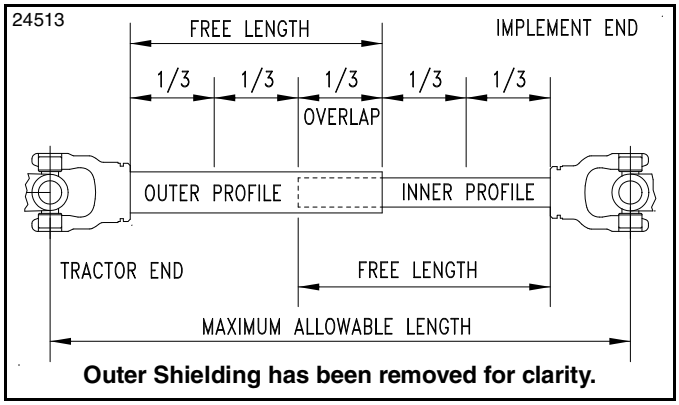
Refer to Figure 1-3:

> **IMPORTANT:** A driveline that is too long can bottom out causing structural damage to the tractor and implement. Always check driveline minimum length during initial setup, when connecting to a different tractor, and when alternating between using a quick hitch and a standard 3-point hitch. More than one driveline may be required to fit all applications.
>
> **IMPORTANT:** The power take-off shaft and gearbox input shaft must be aligned and level with each other when checking driveline minimum length. A driveline that is too long can damage tractor and implement.

1. With driveline attached only to the 3-point implement, remove outer driveline (tractor end) from inner driveline to separate the two profiles.
2. Park tractor and implement on a level surface.
3. Raise implement until gearbox input shaft is level with tractor power take-off shaft. Securely block implement at this height to keep unit from lowering.
4. Shut tractor down without removing support blocks. See **"Tractor Shutdown Procedure"** on page 17.
5. Attach outer driveline to the tractor's power take-off shaft. Refer to steps 2-5 under **"Driveline Connection"** on page 13.
6. Hold inner and outer drivelines parallel to each other. If dimension "A" is greater than or equal to 1" (2.5 cm), then skip to **"Driveline Maximum Extended Length"** on page 15. Otherwise continue with step 7.

Refer to Figure 1-4:

7. If dimension "A" was less than 1" (2.5 cm), shorten driveline as follows:
   a. Measure 1" (2.5 cm) (**"B1"** dimension) back from outer driveline shield and make a mark at this location on the inner driveline shield.
   b. Measure 1" (2.5 cm) (**"B2"** dimension) back from the inner driveline shield and make a mark at this location on the outer driveline shield.
8. Remove outer driveline from the tractor power take-off shaft and inner driveline from the implement's gearbox shaft.
9. Cut off non-yoke end of inner driveline as follows:
   a. Measure from end of inner shield to scribed mark (**"X"** dimension) and record.
   b. Cut off inner shield at the mark. Cut same amount off the inner shaft (**"X1"** dimension).
10. Cut off non-yoke end of outer driveline as follows:
    a. Measure from end of outer shield to scribed mark (**"Y"** dimension) and record.
    b. Cut off outer shield at the mark. Cut same amount off the outer shaft (**"Y1"** dimension).
11. Remove all burrs and cuttings.
12. Continue with **"Check Driveline Maximum Length"** on page 15.



Driveline Maximum Extended Length
Figure 1-5

Check Driveline Maximum Length

Refer to Figure 1-5:

The driveline maximum allowable length must, when fully extended, have a minimum overlap of profile tubes by not less than 1/2 the free length with both inner and outer profile tubes being of equal length.

1. Apply multi-purpose grease to the inside of the outer shaft and reassemble the driveline.
2. Assemble the two driveline profiles together with just 1/2 overlapping of the profile tubes as shown. Once assembled, measure and record maximum allowable length here. _____
3. Reattach driveline to the tractor power take-off shaft and gearbox input shaft. Refer to **"Driveline Installation"** on page 11 and **"Driveline Connection"** on page 13.
4. Continue with **"Optional Hydraulic Hose Connection"** on page 13.

Check Driveline Interference

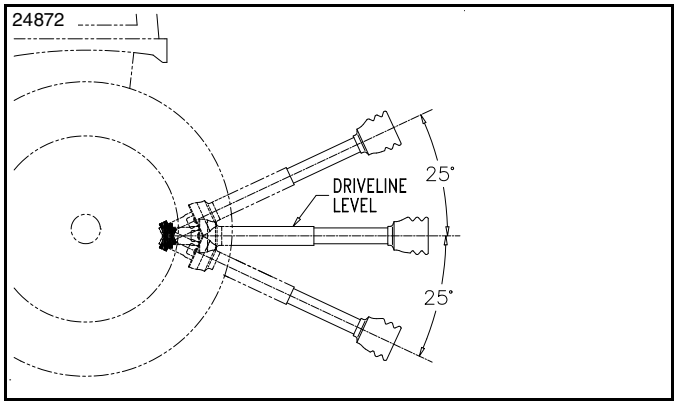
Refer to Figure 1-6:

WARNING

To avoid serious injury or death:

A rotating driveline must not exceed an angle of 25 degrees up or down, and never engage a driveline while at an angle exceeding 25 degrees up or down. The driveline can break and send flying projectiles.

1. Start tractor and raise implement slightly off the support blocks used to **"Check Driveline Collapsible Length"**. Drive forward until the implement is clear of the support blocks.



Maximum Allowable Driveline Movement
Figure 1-6

2. Slowly and carefully lower and raise the implement to ensure drawbar, tires, and other equipment on the tractor do not contact the implement's frame. If there is an interference:
   a. Back implement over the support blocks and lower it onto the blocks.
   b. Shut tractor down before dismounting. Refer to **"Tractor Shutdown Procedure"** on page 17
   c. Move or remove drawbar if it interferes with the implement and make any other necessary corrections.
   d. Repeat steps 1-2 to verify the implement does not interfere with the tractor.
3. Start tractor, raise implement fully up. Back implement over the support blocks. Do not lower implement onto the support blocks.
4. Without changing the 3-point lift height, shut tractor down using **"Tractor Shutdown Procedure"**.
5. Check to make sure driveline does not exceed any of the limits listed below:
   - Driveline does not exceed maximum length recorded in step 2 under **"Check Driveline Maximum Length"** on this page.
   - Driveline angle does not exceed 25° above horizontal.
6. If driveline exceeds maximum allowable length or 25 degrees up:
   a. Adjust 3-point lift height limiter to a height that will keep the driveline within the recommended limits.
   b. If the 3-point left lever does not have a lift height limiter, make a mark with tape or other means to indicate maximum lift height.
7. Start tractor, raise implement slightly, and drive forward enough to clear the support blocks.
8. Lower implement to the ground and shut tractor down using Tractor Shutdown Procedure on page 17.

Operating Checklist

Hazard control and accident prevention are dependent upon awareness, concern, prudence, and proper training involved in the operation, transport, maintenance, and storage of the Powered Rake. Therefore, it is absolutely essential that no one operates the Powered Rake without first having read, fully understood, and become 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 11
- **Section 2: Operating**, page 16
- **Section 3: Adjustments**, page 19
- **Section 4: Maintenance & Lubrication**, page 23

The following inspection should be performed before operating your Powered Rake.

Operating Checklist

✔	Check	Page
	Read and follow all safety information and alerts. Refer to "Important Safety Information".	1
	Make sure all guards and shields are in place and in good condition. Refer to "Important Safety Information".	1
	Read and follow all preparation, connect, and disconnect instructions. Refer to "Section 1: Assembly & Set-Up".	12
	Read and follow all operating procedures. Refer to "Section 2: Operating".	16
	Read and follow all maintenance instructions. Refer to "Section 4: Maintenance & Lubrication".	23
	Check initially and periodically for proper chain tension. Refer to "Drive Chain Adjustment".	22
	Grease driveline shaft and other grease fittings. Refer to "Lubrication Points".	28
	Check oil level in chaincase. Make certain oil plugs are properly replaced. Refer to "Lubrication Points".	29
	Check oil level in gearbox. Make certain oil plug has been properly replaced. Refer to "Lubrication Points".	29
	Check initially and periodically for loose bolts and pins. Refer to "Torque Values Chart".	34
	Check air pressure in gauge wheel tires. Refer to "Tire Inflation Chart".	34

Safety Information

DANGER

To avoid serious injury or death:

- *Do not operate hydraulic 3-point lift controls while someone is directly behind tractor or near the implement.*
- *All guards and shields must be installed and in good working condition while operating the implement.*
- *Do not engage power take-off while connecting or disconnecting the driveline, or while someone is standing near the driveline. A person's body and/or clothing can become entangled in the driveline.*
- *Do not allow anyone near the tractor or implement while they are operating. Stop operation if bystanders are too close. They can be hit by flying projectiles, become entangled in the equipment, or ran over.*
- *Do not use a power take-off adapter. The adapter will increase strain on the tractor's power take-off shaft causing possible damage to shaft and driveline. It will also defeat the purpose of the tractor's power take-off shield.*

WARNING

To avoid serious injury or death:

- *Always follow "Tractor Shutdown Procedure" provided in this manual before dismounting the tractor.*
- *Do not use implement as a man lift, work platform or as a wagon to carry objects. It is not properly designed or guarded for this use.*
- *Never carry riders on the implement or tractor. Riders can obstruct the operator's view, interfere with controls, be pinched by moving components, become entangled in rotating components, struck by objects, thrown about, fall off and be run over, etc.*
- *Buildup of debris around moving components and gearboxes is a fire hazard. Keep rotating parts and gearboxes free from debris.*
- *Improper oil level can cause bearing failure and be a fire hazard. Maintain proper gearbox oil level.*
- *Do not operate a broken or bent driveline. Such a driveline will break apart while rotating at high speeds. Always remove the implement from use until the damaged driveline can be repaired or replaced.*
- *Some tractors are equipped with two power take-off speeds. Be certain your tractor's power take-off shaft is set-up to operate at 540 rpm. Do not exceed 540 rpm power take-off speed. Excessive speed can damage drive/driven components and increase the risk of a thrown object hazard.*
- *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.*

Tractor and Power Rake Inspection

Make the following inspections after attaching the Powered Rake to the tractor. Make certain power take-off is disengaged and completely stopped before continuing.

1. Inspect tractor safety equipment to make sure it is in good working condition.
2. Carefully raise and lower implement with the Powered Rake set at the maximum 15 degree angle to ensure that the drawbar, tires, and other equipment on the tractor do not contact the frame or driveline.
3. Check all hoses and wires to be sure that they will not contact driveline. Check power take-off guards to make certain they are in good condition and in place.
4. Inspect hydraulic hoses for wear, damage, and hydraulic leaks. See **"Avoid High Pressure Fluids Hazard"** on page 3. Replace damaged and worn hoses with genuine Land Pride parts.
5. Set tractor throttle to idle or slightly above idle and slowly engage the power take-off. Once the Powered Rake is running smoothly, increase tractor power take-off speed to the rated power take-off speed. Stop power take-off rotation immediately if vibration occurs. Wait for the power take-off to come to a complete stop and then dismount from the tractor to check for probable causes.

Transporting

⚠ WARNING

To avoid serious injury or death:

When traveling on roadways, travel in such a way that other vehicles may pass you safely. Always use LED 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.

IMPORTANT: ALWAYS disengage power take-off before raising the Powered Rake to transport position.

1. Be sure that the driveline does not contact tractor or Powered Rake when raising the Powered Rake to the transport position.
2. Be sure to reduce tractor ground speed when turning; and to leave enough clearance between the Powered Rake and other obstacles such as buildings, trees, or fences to prevent damage from contacting them.
3. Select a safe ground speed when transporting from one area to another. 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.

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 ignition 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.

General Operating Instructions

First, completely familiarize yourself with the Operator's Manual. Then complete the Operator's checklist, properly attach the Powered Rake to your tractor, make initial depth, level, and roller angle adjustments. After completing the above, you will need to choose a work site, perform operational safety checks, and make final adjustments before using your Land Pride Powered Rake.

IMPORTANT: Shut off all power, disengage power take-off, set park brake, and remove ignition key any time the Powered Rake is not operating properly or needs adjustment.

It's now time for a running operational safety check. Make certain that the tractor's park brake is engaged, power take-off is disengaged, and the Powered Rake is resting on the ground. Start the tractor and back off engine rpm to approximately one-quarter throttle. Using the rear draft link hydraulic control, lift the Powered Rake about half way off the ground and then engage the rear power take-off. If everything is running smoothly, increase throttle speed until you have reached full operating speed. Never engage the tractor power take-off at full engine rpm., damage to the driveline and/or Powered Rake could occur.

To make final adjustments, choose a work site that is dry and allows you to make at least a 50 ft. straight run. Raise Powered Rake half way off the ground, disengage tractor power take-off, release the park brake, and travel to your starting point. Travel speed should be between 3 and 5 mph.

Once at the site, idle the tractor engine, engage the power take-off, and then increase engine speed until the tractor is at full 540 rpm operating speed. Begin traveling forward while gently lowering the running Powered Rake to the ground. Make slight changes to the tractor's ground speed as you travel forward to determine the desired ground finish. Generally, a slower speed results in a finer finish, while a higher speed results in a coarser finish. Excessive ground speed may result in dirt or material passing over the top of the material control deflector or too much material being windrowed off to the side. Powered Rakes do not perform well in wet sticky soil. Avoid making sharp turns or backing-up when in contact with the ground.

Normal operating rake angle is 15 degrees left or right. However, you may want to make subtle hydraulic adjustments to the roller angle to determine varying effect on the surface finish.

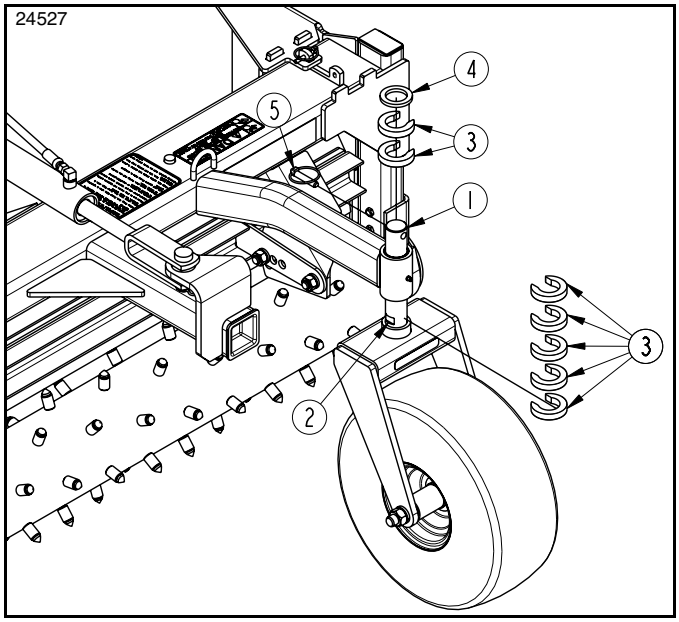
You can also vary the effect on the surface finish by setting the material control deflector height above the roller. The material control deflector sifts out clods, rocks, and other debris as the soil passes over the top of the roller. Adjusting the blade down decreases the gap between the deflector and roller and will sift out more objects for a finer soil finish. Adjusting the blade up allows more clods, rocks, and debris to pass over the roller and produces a coarser soil finish.

Set working depth and level the rake at the caster gauge wheels and not with the tractor. Normally a one-inch cultivation depth is considered ideal for a surface finish. Make adjustments to the working depth if too many rocks or excessive debris pass under the roller by changing the C-spacers on the gauge wheel spindles. Increase working depth by moving the spacers from below the support arms to above the support arms. Decrease working depth by moving the spacers from above the gauge wheel support arms to below the support arms.

The Powered Rake should also be set to operate level. It has a tendency to go in deeper on the driveline side (left side) because that is the heavy side of the rake. Compensate for this by changing the C-spacers on the right gauge wheel so that it is set approximately 1" (2.5 cm) deeper than the left gauge wheel.

After you have traveled 50 feet (15.24 m), properly shut down the tractor and Powered Rake to inspect the finish and determine what, if any, additional adjustments need to be made. Check for any foreign objects wrapped around the roller or lodged between moving parts.

Remember that the right finish is achieved through a combination of proper soil moisture conditions, operating depth, ground speed, material control deflector opening and roller angle. Your Powered Raking capabilities will improve rapidly with experience.



Depth Adjustment
Figure 3-1

Gauge Wheel Depth Adjustment

Refer to Figure 3-1:

Caster type gauge wheels control roller height during field operation. Moving gauge wheels up or down to set working depth. Do not use tractor to control roller height.

If the tractor's center 3-point link is connected to the float position, level the rake from front to back after adjusting the gauge wheels. Otherwise, adjust the gauge wheels before leveling the rake from front to back. Refer to **"Level Rake From Front to Back"** on this page.

NOTE: The gauge wheel on the chaincase side should be down approximately 1 inch more than the non-drive side to compensate for extra weight.

1. Remove linchpin (#5) and washer (#4).
2. Rotate open end of lower spacers (#3) to align with notch (#2).

   To Increase Working Depth

   Pull desired number of lower spacers (#3) from below the support arm and add to gauge wheel spindle (#1) above the support arm.

   To Decrease Working Depth

   Pull desired number of upper spacers (#3) from above support arm and add to notch (#2) below support arm.
3. Replace washer (#4) and linchpins (#5).
4. Repeat above steps 1-3 for the other side.
5. Continue with **"Level Rake From Front to Back"** on this page.

Level Rake From Front to Back

1. Make sure the rake is leveled from side to side before leveling the rake from front to back. Refer to **"Level Rake From Side to Side"** on page 13.
2. Know the type of connection used to connect the center 3-point link to the rake. For a detailed explanation of the connection types, refer to **"Center Link Connection"** on page 13. Follow the leveling instructions below that matches your center 3-point link connection type.

Center Link Connected to the fixed Hoes

When the center link is connected to the fixed holes on the rake, it is important that the rake be leveled from front to back before adjusting the gauge wheels up or down.

1. Using tractor control lever, raise the rake 2" to 3" (5-8 cm) above the ground.
2. Without changing 3-point lift height, shut tractor down according to **"Tractor Shutdown Procedure"** on page 17.
3. Lengthen or shorten center link to level the rake from front to back.
4. Continue with **"Gauge Wheel Depth Adjustment"** above.

Center Link Connected to the Floating Slots

When the center link is connected to the floating slots on the rake, it is important to adjust the gauge wheels up or down before leveling the rake from front to back.

1. First, adjust gauge wheels to the preferred working depth. See **"Gauge Wheel Depth Adjustment"** on this page for detailed instructions.
2. Using tractor 3-point lift lever, raise or lower the 3-point lift arms to level rake from front to back with rake operating in the field at the preferred working depth.
3. Set 3-point lift lever stop at this position.
4. Without raising the rake, shut tractor down according to **"Tractor Shutdown Procedure"** on page 17.
5. Adjust length of center 3-point link until the hitch pin is centered in the floating hitch slots.

Rake Angle

Refer to Figure 3-2:

The roller frame can be angled a maximum of 15 degrees in either direction for windrowing material to one side. Angling is accomplished with either a hydraulic cylinder (shown) or with a ratchet jack (not shown).

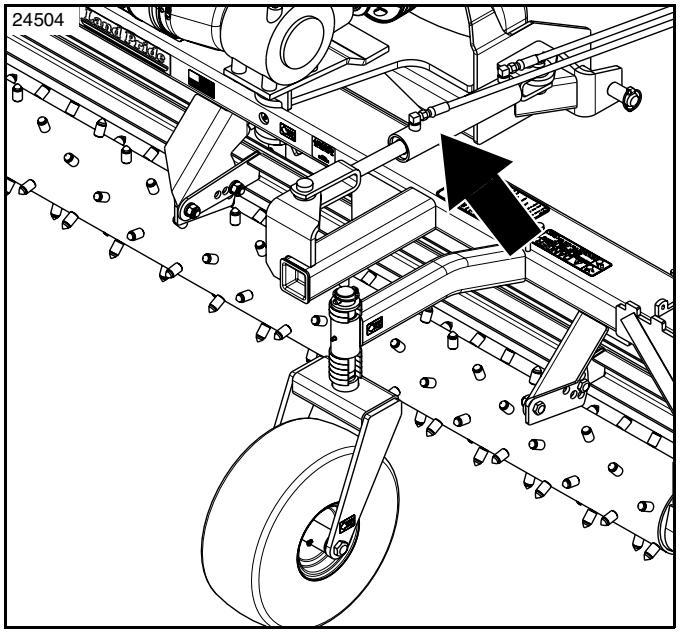
Adjust rake angle with ratchet jack by setting the ratchet mechanism on the jack and then pumping the jack handle.

DANGER

To avoid serious injury or death:

Do not operate hydraulic 3-point lift controls while someone is directly behind tractor or near the implement.

Adjust rake angle with the hydraulic cylinder by operating the control lever at the tractor. The hydraulic cylinder option is very useful when changing rake angle often. You may order a hydraulic cylinder from your nearest Land Pride dealer or visit our dealer locator at landpride.com.



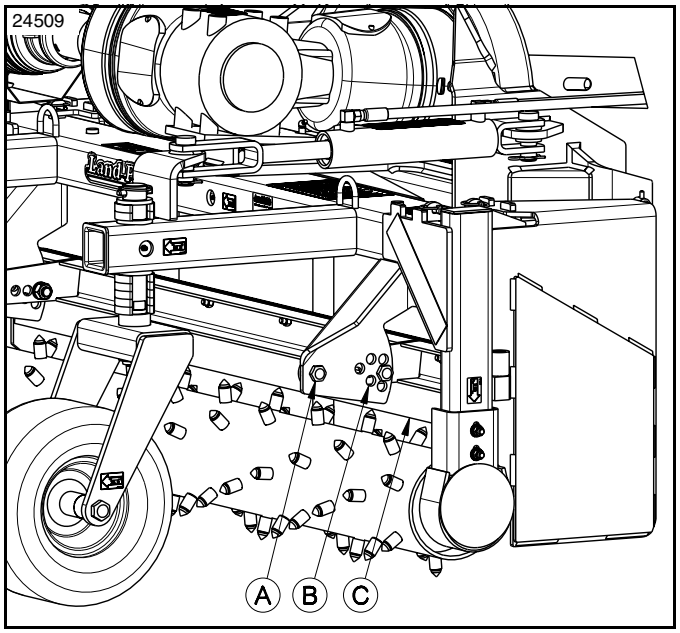
Rake Angle
Figure 3-2

Material Control Deflector

Refer to Figure 3-3:

A material control deflector mounted above the rake roller controls both size and shape of material being raked by adjusting the height of the deflector above the roller. The highest position or widest gap allows most dirt and rock to pass over the roller and lowering the deflector height or narrowing the gap produces a finer raking job.

Reposition the height of the material control deflector (C) by loosening at both ends bolts (A) and repositioning bolts (B) to a different deflector height location.



Material Control Deflector Adjustment
Figure 3-3

End Plate Positioning

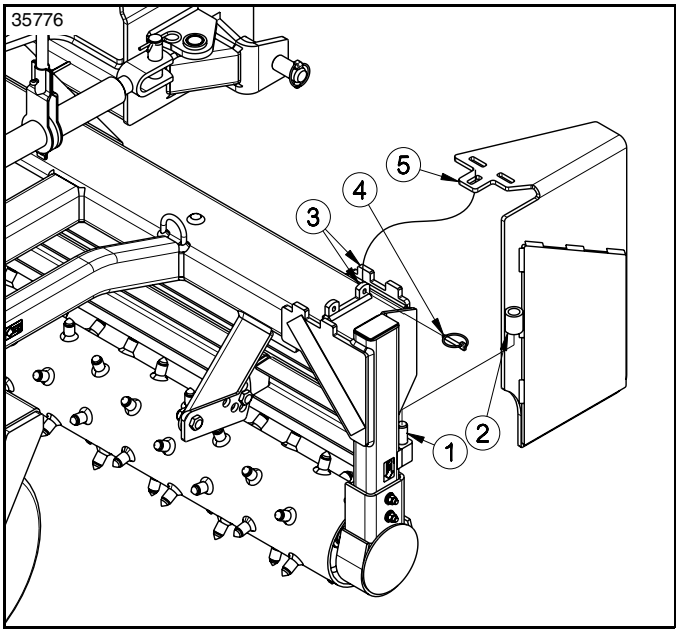
Side plates are utilized to gather and keep rocks and debris in front of the roller for the purpose of distributing material over low areas.

Working Position

Refer to Figure 3-4:

The side plates are attached on the front side to mounting tabs and pins for gathering and distributing material while traveling forward.

1. Remove linchpin (#4) and install right-hand side plate (#5) over front mounting tabs (#3) and side plate guide (#2) over front mounting pin (#1).
2. Secure side plate (#5) with linchpin (#4).
3. Repeat steps 1-2 for left-hand side plate.

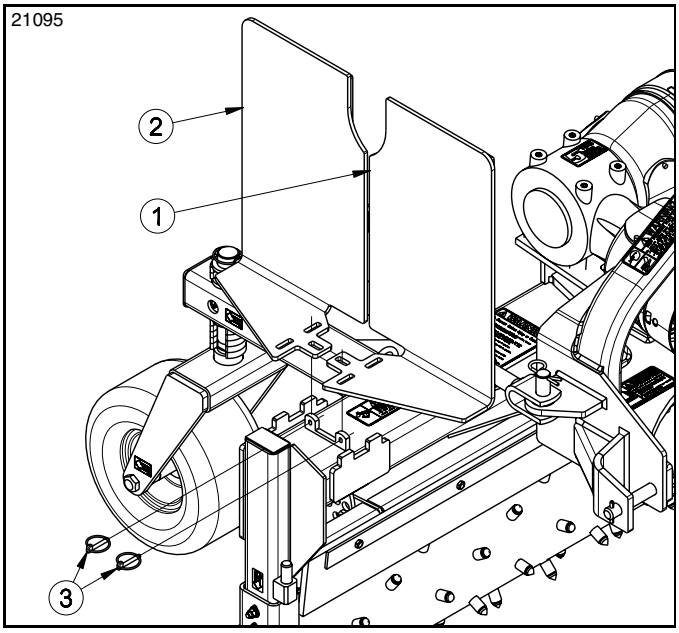


Side Plates (Shown in stored position)
Figure 3-4

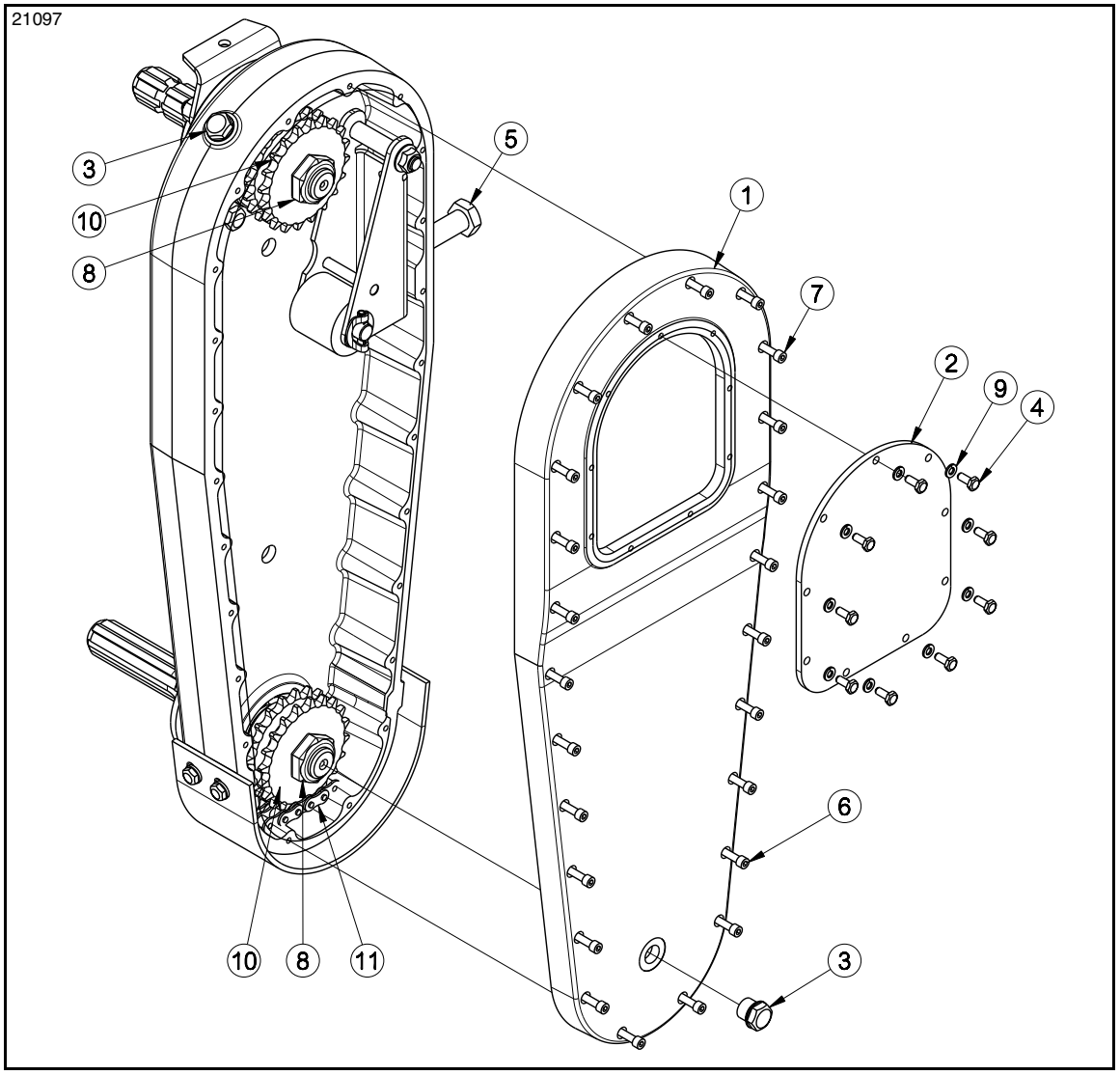
Storage Position

Refer to Figure 3-5:

Side plates (#1) & (#2) are utilized to collect rocks and debris in front of the roller for the purpose of distributing material over low areas. They can be removed and stored on the right-hand side of the rake by removing linchpins (#3) containing the plates and reposition the plates upside down on the top side at the right end of the rake as shown below. Secure side plates by reinserting the linchpins (#3).



Side Plates (Shown in stored position)
Figure 3-5



Drive Chain Adjustment
Figure 3-6

Drive Chain Adjustment

Refer to Figure 3-6:

⚠ WARNING

To avoid serious injury or death:

Before any lubrication or maintenance is performed, lower implement to ground, shut engine off, and remove ignition key. Do not attempt to lubricate or perform maintenance with implement or power machine running.

1. Check chain tension by removing 1/4" x 5/8" hex bolts (#4), lock washers (#9), and access cover (#2) from the chaincase.
2. Inspect chain for tightness and excess wear. Replace worn out chains. See **"Sprocket and Chain Replacement"** on page 26.
3. Tension a loose chain by turning the take-up bolt (#5) clockwise. Don't over tension. See note below.

NOTE: Do not over tension roller chain. Roller chain should be tightened with a slight amount of slack. A chain tensioned too tight will increase sprocket and chain wear.

4. Turn tension roller several turns and observe the chain to make sure everything is working properly.
5. Apply 1/8" (3 mm) bead of Land Pride No. 821-049C sealant on the surface of cover (#1) in the location where access cover (#2) contacts cover (#1). Reinstall access cover (#2) and secure with lock washers (#9) and 1/4"-20 x 5/8" GR5 hex bolts (#4). Torque hex bolts to correct torque.

Maintenance

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

After using your Powered Rake for several hours, check all bolts to be sure they are tight. Replace any worn, damaged, or illegible safety labels by obtaining new labels from your Land Pride dealer.

DANGER

To avoid serious injury or death:

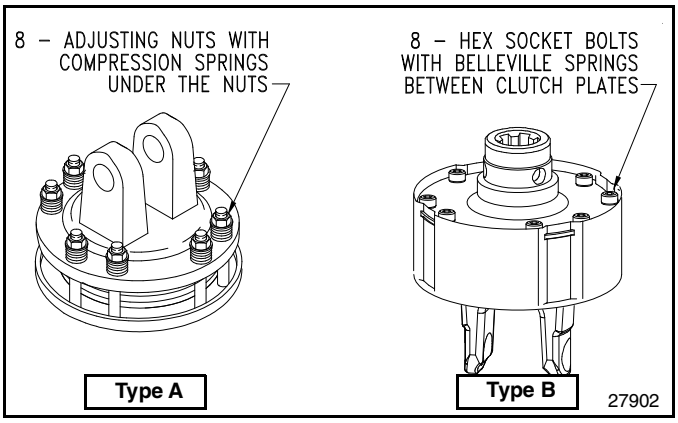
Always secure equipment with solid, non-concrete supports before working under it. Never go under equipment supported by concrete blocks or hydraulics. Concrete can break, hydraulic lines can burst, and/or hydraulic controls can be actuated even when power to hydraulics is off.

WARNING

To avoid serious injury or death:

- *Make sure controls are all in neutral position or park before starting the power machine.*
- *Perform scheduled maintenance. Check for loose hardware, missing parts, broken parts, structural cracks, and excessive wear. Make repairs before putting the implement back into service.*
- *Always shut tractor down using "Tractor Shutdown Procedure" provided in this manual before servicing, adjusting, cleaning, or maintaining this implement.*
- *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.*
- *Buildup of debris around moving components and gearboxes is a fire hazard. Keep rotating parts and gearboxes free from debris.*
- *Improper oil level can cause bearing failure and be a fire hazard. Maintain proper gearbox oil level.*

IMPORTANT: If chaincase and/or sprocket shafts are disassembled, it may be necessary to shim between the chaincase and frame tube during reassembly to properly realign the sprocket shafts. Shim Pack **314-254A** may be purchased from your nearest Land Pride dealer for this purpose.



Slip Clutch with Hex Socket Bolts
Figure 4-1

Slip Clutch Maintenance

Refer to Figure 4-1:

CAUTION

To avoid minor or moderate injury:

Slip clutches that have been in use or have been slipped for only two or three seconds during run-in may be too hot to touch. Allow a hot clutch to cool before working on it.

The Powered Rake drive components are protected from shock loads by a friction slip clutch. The clutch must be capable of slippage during operation to protect the gearbox, driveline, and other drivetrain parts. Friction clutches should be "run-in" prior to initial operation and after long periods of inactivity to remove any oxidation that may have accumulated on the friction surfaces. Repeat "run-in" instructions at the beginning of each season and when moisture and/or condensation seizes the inner friction plates.

The Powered Rake will have one of two slip clutches. Refer to Figure 4-1 to determine which slip clutch your Powered Rake has (Type A or B). Follow run-in and assembly instructions for your particular slip clutch.

Type A Slip Clutch

Follow clutch run-in and assembly instructions below if your clutch is the Type A shown in Figure 4-2.

Clutch Run-In

Refer to Figure 4-2:

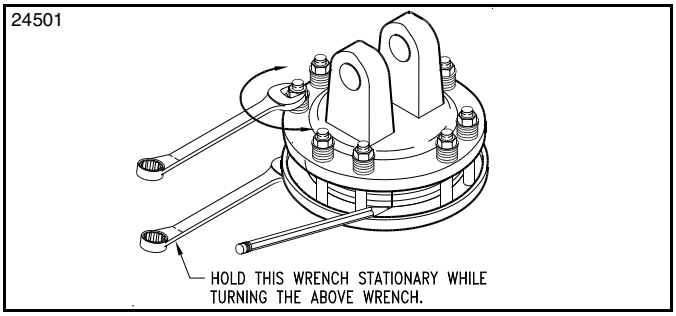
1. Make sure the area is clear of all bystanders and implement is safe to operate.
2. Start tractor and engage power take-off drive for 2-3 seconds to permit slippage of the clutch surfaces. Disengage power take-off, then re-engage a second time for 2-3 seconds. Disengage power take-off, shut off tractor, and remove key. Wait for all components to stop before dismounting from tractor.
3. Inspect clutch and ensure that the scribed markings made on the clutch plates have all changed position. Slippage has not occurred if any two marks on the friction disk and plate are still aligned. A clutch that has not slipped must be disassembled to separate the friction disk plates. See Clutch Disassembly, Inspection & Assembly on page 24.
4. Allow clutch to cool to ambient temperature and tighten each of the 8 spring retainer nuts on the clutch housing exactly 2 revolutions to restore clutch to original setting pressure.
5. Clutch is now ready for use.
6. Check clutch during the first hour of operation and periodically each week. An additional set of scribe marks can be added to check for slippage. See Figure 4-4 on page 24 to adjust spring length.

Clutch Disassembly, Inspection & Assembly

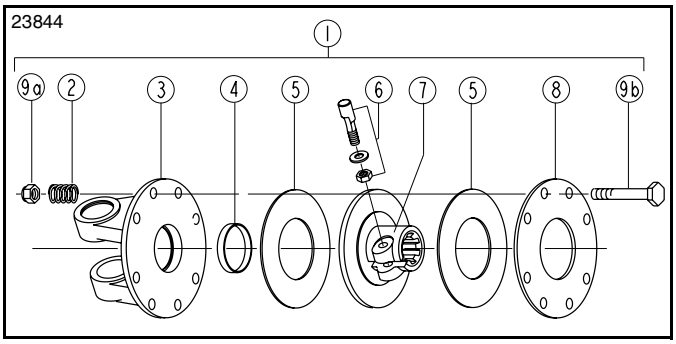
Refer to Figure 4-3:

If clutch run-in indicated that one or more of the friction disks did not slip, then the clutch must be disassembled to separate parts.

1. Allow clutch to cool to ambient temperature before disassembling it.
2. Remove spring retainer nuts (#9a), springs (#2), and bolts (#9b) from the assembly.
3. Each friction disk (#5) must then be separated from the metal surface adjacent to it.
4. Inspect all parts for excessive wear and condition. Clean all parts that do not require replacement.
   - The original disk thickness is 1/8" (3 mm) and should be replaced if it falls below 3/32" (2.4 mm).
5. If the clutch has slipped to the point of “smoking”, the friction disks may be damaged and should be replaced. Heat build-up may also affect the yoke joints. Reassemble each friction disk (#5) next to the metal plate it was separated from.
6. Make certain bushing #4 is positioned as shown. Install bolts (#9b) through the side plates and intermediate plates as shown.
7. Place springs (#2) over the bolts (#9b) and secure with nuts (#9a).



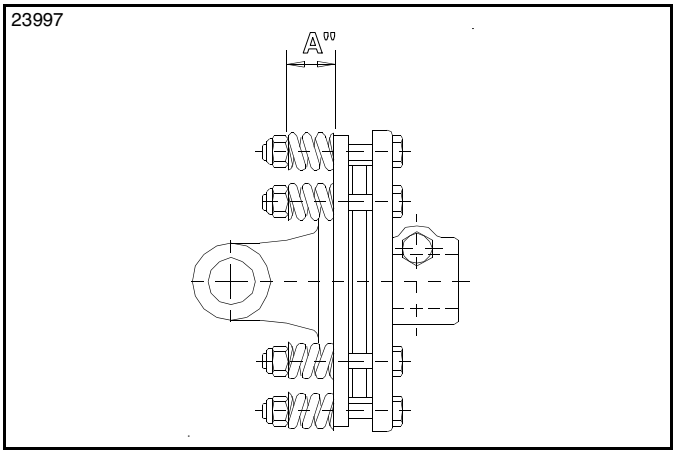
Type A Slip Clutch Run-In
Figure 4-2



Type A Slip Clutch Assembly
Figure 4-3

Refer to Figure 4-4:

8. Progressively tighten each spring retainer bolt until correct compressed spring length “A” is reached.
   - A = 1.26" (32 mm)



Type A Slip Clutch Adjustment
Figure 4-4

Type B Slip Clutch

Follow clutch run-in and assembly instructions below if your clutch is the Type B shown in Figure 4-1 on page 23.

Clutch Run-In

Refer to Figure 4-5:

1. Loosen counterclockwise all 8 hex socket bolts (#1) uniformly 6 full turns.
2. Cycle clutch on and off 5 or 6 times (15 seconds on and 15 seconds off) with the engine operating at half throttle.
3. Tighten clockwise all 8 hex socket bolts (#1) fully back. Clutch is ready for use.

Clutch Disassembly, Inspection & Assembly

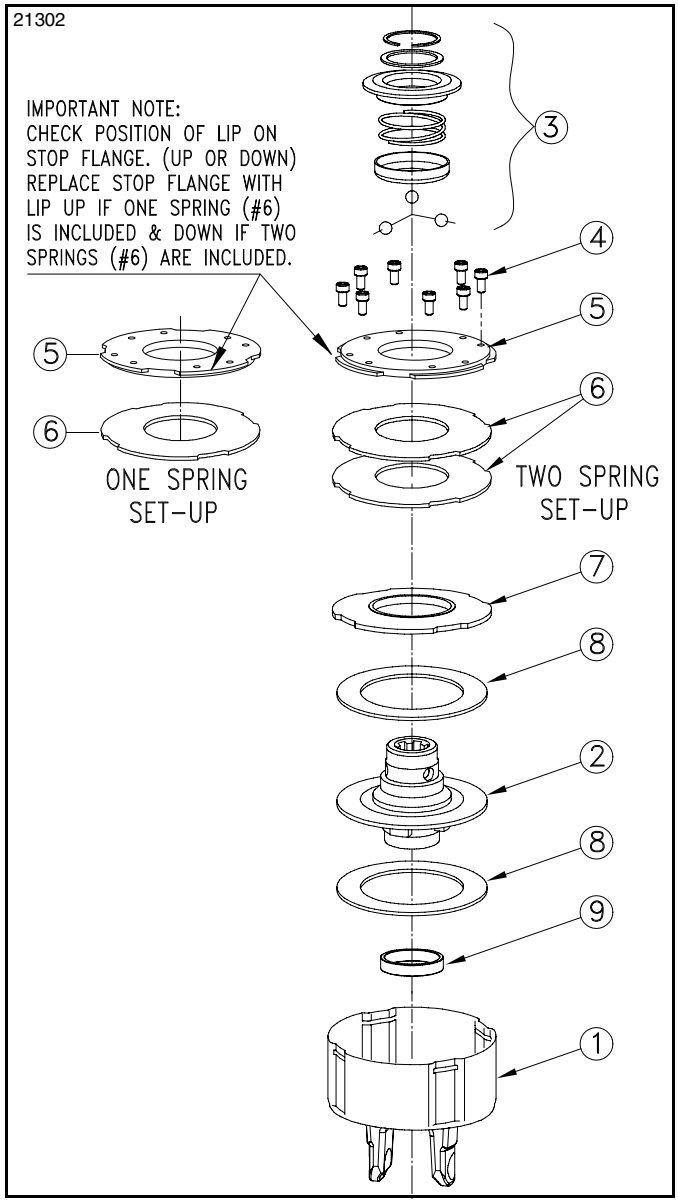
Refer to Figure 4-5:

If clutch run-in indicated that one or more of the friction disks did not slip, then the clutch must be disassembled into separate parts.

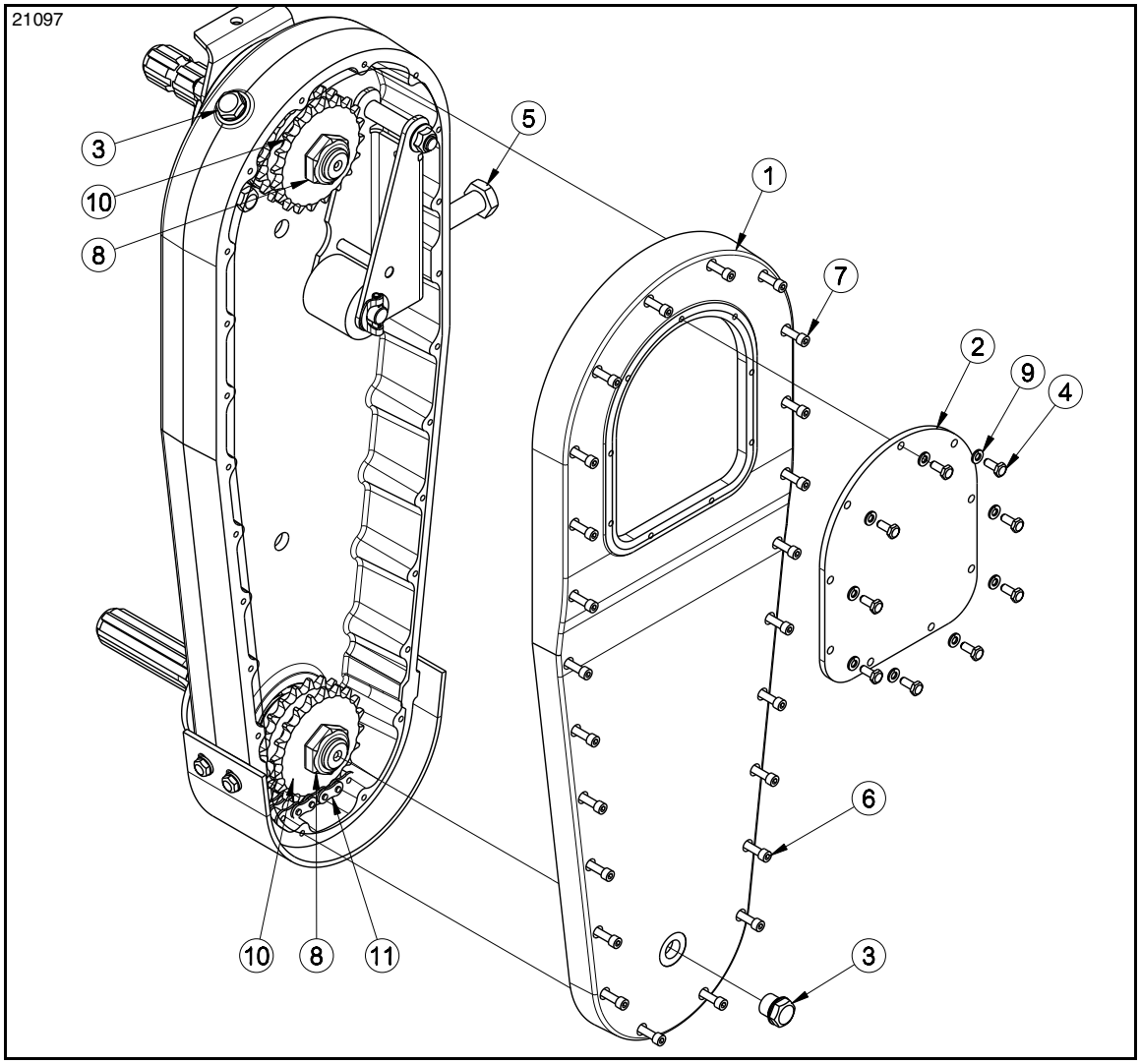
1. Allow clutch to cool to ambient temperature before disassembling it.
2. Rotate the 8 hex head socket bolts (#4) all the way out to free stop flange (#5).
3. Rotate stop flange (#5) and remove from housing (#1)
4. Remove the following inner components:
   a. Spring kit (#6)
   b. Pressure flange (#7)
   c. 1st Friction disk (#8)
   d. Hub with flange and pull collar (#2 & #3)
   e. 2nd Friction disk (#8)
   f. Bearing (#9)

IMPORTANT: Check position of lip on stop flange. (UP or DOWN). Replace stop flange with lip UP if one spring (#6) is included and DOWN if two springs (#6) are included.

5. Inspect all components and replace to their original position. Make certain stop flange (#5) is replaced with its flanges in its original position. See important note in Figure 4-5.
6. Fully tighten all 8 hex socket bolts (#4).



Type B Slip Clutch Assembly
Figure 4-5



Drive Chain Adjustment
Figure 4-6

Drive Chain Maintenance

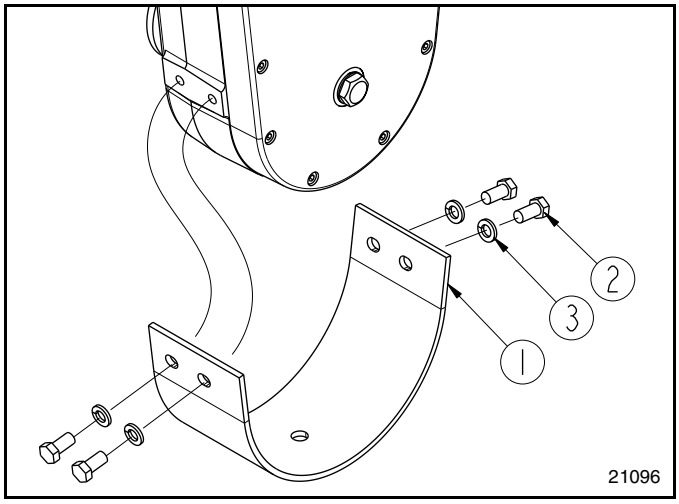
The operator should check chain tightness after initial run in and periodically thereafter to make sure that the drive chain is tensioned correctly. If adjustment is needed refer to **"Drive Chain Adjustment"** on page 22.

Sprocket and Chain Replacement

Refer to Figure 4-6:

NOTE: Oil in chaincase! Be prepared to capture oil when taking off the main cover plate (#1).

1. Remove 1/4" x 1 1/4" and 1/4" x 1 1/2" hex socket cap screws (#6 & #7).
2. Remove main cover plate (#1).
3. Loosen chain tension by turning chain tension take-up bolt (#5) counterclockwise.
4. Remove nuts (#8) retaining sprockets (#10).
5. Remove sprockets (#10) and chain (#11).
6. Install new chain and sprockets.
7. Install sprocket retaining nuts (#8). Torque tight.
8. Tension idler roller by tightening take-up bolt (#5). See **"Drive Chain Adjustment"** on page 22 for detailed chain take-up instructions.
9. Turn tension roller several turns and observe roller chain to make sure everything is working properly.
10. Apply 1/8" bead of Land Pride No. 821-049C sealant on the chaincase edge where cover plate (#1) contacts the chaincase. Reinstall cover plate with 1/4" -20 x 1 1/4" GR2 and 1/4" -20 x 1 1/2" GR2 hex socket cap screws (#6 & #7). Tighten cap screws to the correct torque.
11. See **"Chaincase Lubricant"** on page 29 for recommended lubrication. Remove top and bottom plugs (#3). Fill chaincase with recommended lubrication. Refer to **"Chaincase Lubricant"** on page 29.
12. Reinstall and tighten top and bottom plugs (#3).



Skid Shoe Replacement
Figure 4-7

Chaincase Skid Shoe Replacement

Refer to Figure 4-7:

1. Replace chaincase skid shoe (#1) by removing four 3/8" x 3/4" hex head bolts (#2) and lock washers (#3).
2. Replace worn skid shoe with new shoe.
3. Secure skid shoe (#1) with 3/8" lock washers (#3) and four 3/8" x 3/4" hex head bolts (#2). Torque hex bolts to correct torque.

Long-Term Storage

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 ensure the unit is ready for field use the next time you connect to it.

1. Clean off any dirt and grease that may have accumulated on the rake and moving parts. Scrape off compacted dirt from the roller and then wash surface thoroughly with a garden hose.
2. Check roller studs for wear and replace if necessary.
3. Inspect the Powered Rake for parts out of adjustment, loose, damaged, or worn.
   - Make required adjustments.
   - Tighten all loose hardware.
   - Replace damaged and worn parts 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. Lubricate as noted in **"Lubrication Points"** starting on page 28.
7. Apply a light coat of oil or grease may be applied to the roller and to any exposed hydraulic cylinder rods to minimize oxidation.
8. Drain gearbox and chaincase oil. Drain oil in gearbox by removing bottom drain plug. Drain oil in chaincase by removing large cover (#1) Figure 3-6 on page 22. Be sure to refill gearbox and chaincase at this time. See **"Chaincase Lubricant"** and **"Gearbox Lubricant"** on page 29.
9. Store Powered Rake on a level surface in a clean, dry place. Inside storage will reduce maintenance and make for a longer rake life.

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.

Lubrication Points

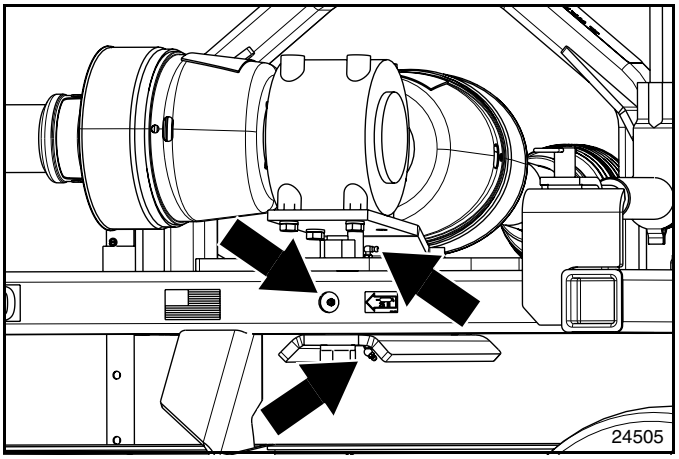
Lubrication Legend

Multi-purpose spray lube

Multi-purpose grease lube

Multi-purpose oil lube

50 Hrs — Intervals in hours at which lubrication is required



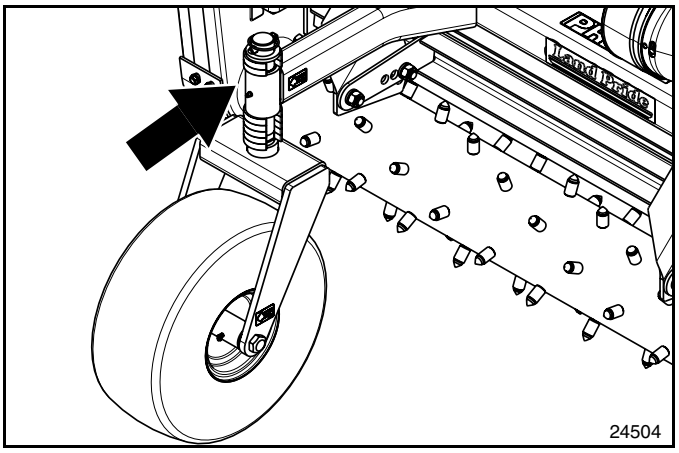
25 Hours

Pivot

Grease pivot point every 25 hours
Three grease zerks

Type of Lubrication: Multi-Purpose Grease

Quantity: Add grease until grease begin to emerge from either top or bottom bushings



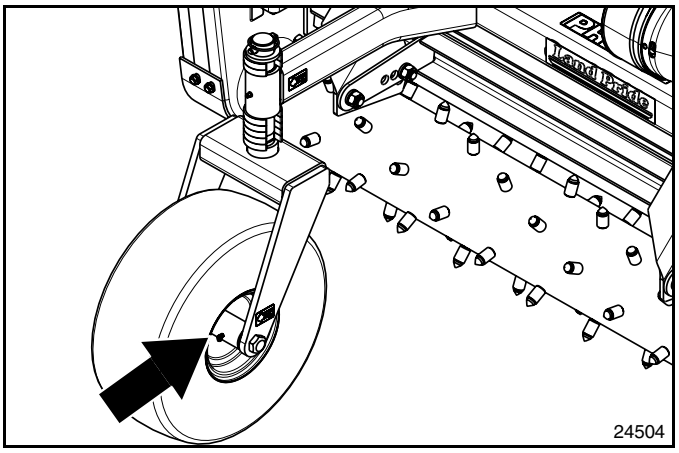
25 Hours

Gauge Wheel Spindle

Grease gauge wheel spindle every 25 hours
One grease zerk for each gauge wheel

Type of Lubrication: Multi-Purpose Grease

Quantity: Add grease until grease begin to emerge from either top or bottom bushings.



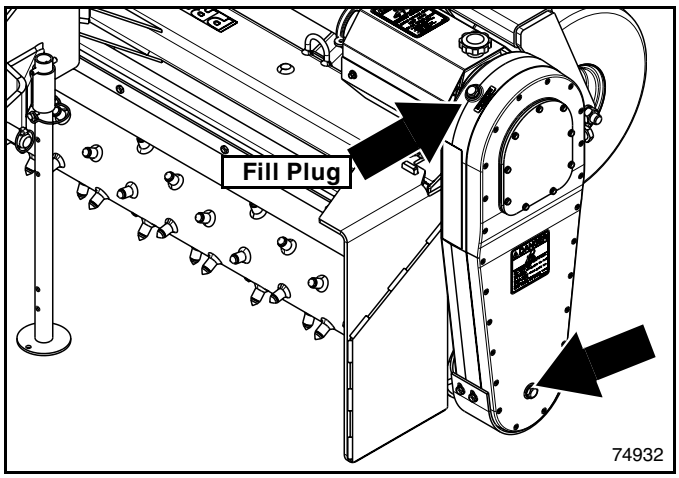
25 Hours

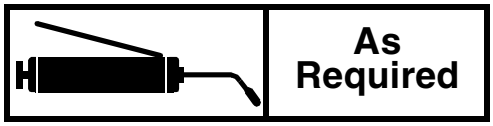
Gauge Wheel Axle

Grease gauge wheel axle every 25 hours
One grease zerk for each gauge wheel

Type of Lubrication: Multi-Purpose Grease

Quantity: Add grease until grease begins to emerge from either side of the axle hub.



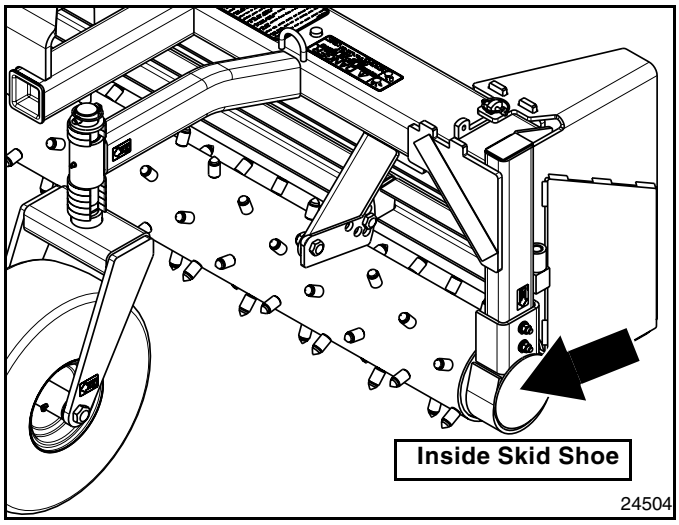


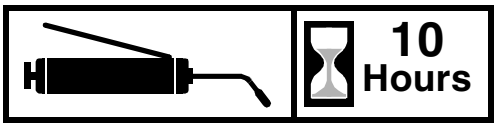
Chaincase Lubricant

IMPORTANT: Check lubricant level in the chaincase after the machine has run long enough to heat the lubricant to a fluid state. Level the machine and remove lower level plug. Heated lubricant should reach the bottom of the plug hole. If needed, add recommended lubricant through the level hole or fill hole. Tighten all removed plugs when done.

Type of Lubrication:
Shell Gadus S2 V220 00 flowable grease
14 oz (0,41 L) Cartridge, LP Part No. 821-086C

Quantity when empty: 40 oz (1,18 L)
Quantity when low: Flowable grease should reach bottom of level plug hole when in the liquid state.



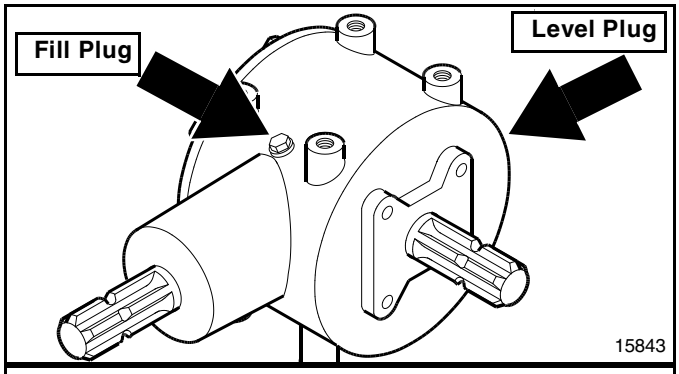


Non-Drive Bearing

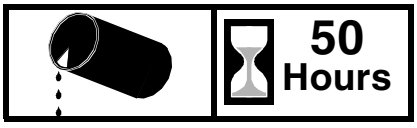
Grease gauge non-drive bearing every 10 hours
One grease zerk inside skid shoe

Type of Lubrication: Multi-Purpose Grease (Remove Skid Shoe to grease)

Quantity: Add grease until grease begins to emerge from either side of the axle.



NOTE: Use a suction or siphon pump to drain gearbox of oil when there is not an oil drain plug.

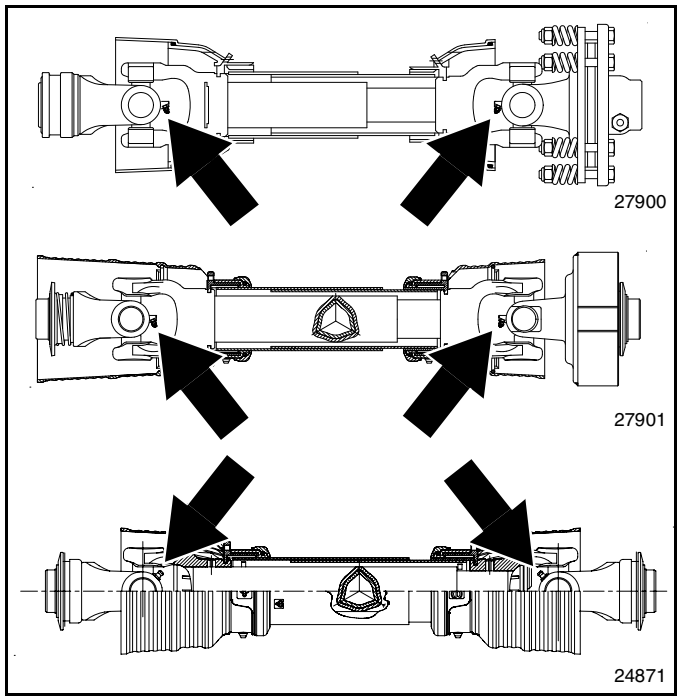


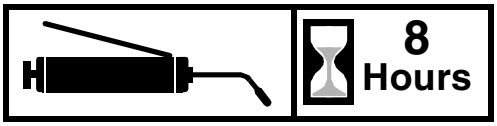
Gearbox Lubricant

Check Gearbox oil level every 50 hours

Type of Lubrication: 2.38 pints of SAE 90W gear lube

Quantity: With gearbox level check oil in box by removing plug from backside. If oil level is low remove top plug and fill with lube until fluid flows from back port. Do not overfill.

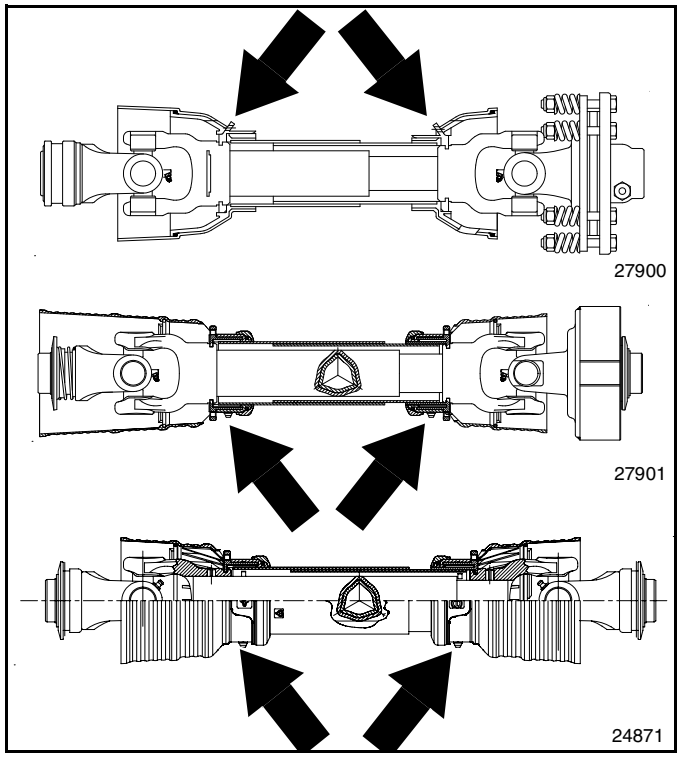


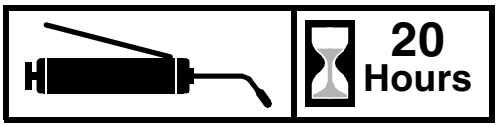


Driveline U-Joints

Grease pivot point every 8 hours
Two grease zerks

Type of Lubrication: Multi-Purpose Grease
Quantity: 6 pumps

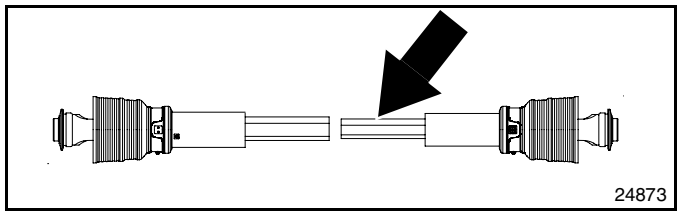


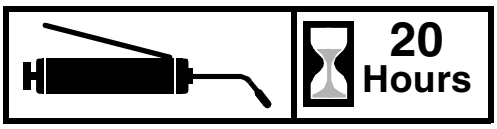


Driveline Inner Tube Bearings

Grease inner tube bearings every 20 hours
Two grease zerks

Type of Lubrication: Multi-Purpose Grease
Quantity: As required





Driveline Profiles

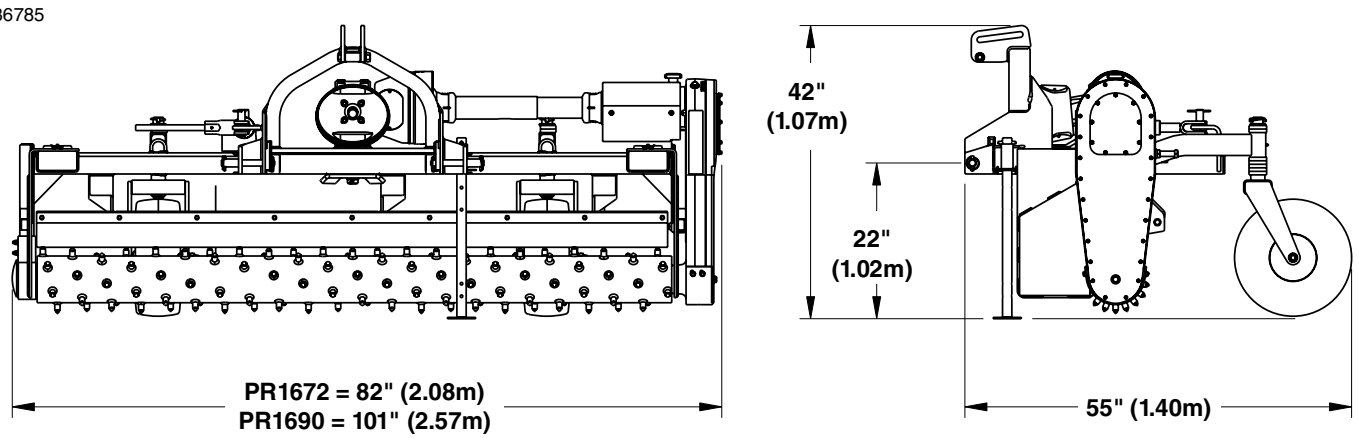
Grease all driveline profiles every 20 hours

Type of Lubrication: Multi-Purpose Grease
Quantity: As required

PR16 Series Powered Rake

Specifications & Capacities				
Model Nos.		**PR1660**	**PR1672**	**PR1690**
Tractor horsepower range	hp (kW)	25-60 (18.6-44.7)	25-60 (18.6-44.7)	35-75 (26.1-55.9)
Non-angled working width	inch (m)	60 (1.52)	72 (1.83)	90 (2.29)
Weight	lbs (kg)	980 (444.5)	1000 (453.6)	1150 (521.6)
Hitch		Cat. I		Cat. I and II
Quick hitch		Fits Land Pride QH15 Cat. I Quick Hitch		
Gearbox		540 rpm, Ball Bearings, Cast Iron Housing, Drain Plug		
Gearbox oil capacity and lubrication type	pints (L)	SAE 90 Weight Gear Lube - 1 1/2 (.71) empty (Add gear lube until it escapes from lower plug hole.)		
Primary driveline		Cat. 3 Heavy-Duty		
Secondary driveline		Cat. 3 with Slip-Clutch		
Material control deflector	inch (mm)	1/2" X 5" (13 x 127) Urethane		
Spiked roller	inch (mm)	9 3/8 (238) Dia. with 3/4 (19) x 1 1/2 (38) Carbide Tipped Studs		
Roller end bearings		Ball Bearing		
Drive chain		#50 Double Roller Chain		
Angle adjustment		15 degrees left or right - Hydraulic or manual		
Angle cylinder		2" x 8"		
Side plates		Standard, Removable with Storage Rack		
Gauge wheels / Depth control		13" x 6.5"	16.5" x 6.5"	16.5" x 6.5"
		Air Tires with Sealant and 3/4" Roller Bearings and Spacer Height Adjustment		
Skid shoes		Replaceable		
Chaincase Lubrication type **Lubrication capacity**	oz (L)	Shell Gadus S2 V2200 00 flowable grease or equivalent 40 oz (1.18L)		

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PR16 Series (3-Point)

Features	Benefits
Working widths	60", 72" & 90" (1.52m, 1.83m & 2.29m)
Tractor Horsepower Range	PR1660 = 25 - 60 horsepower (18.6 - 44.7 kW) PR1672 = 25 - 60 horsepower (18.6 - 44.7 kW) PR1690 = 35 - 75 horsepower (26.1 - 55.9 kW)
Cat. 3 drivelines with slip-clutch on second driveline	Slip-clutch offers protection to the gearbox and entire power train when a tough obstruction is encountered with the roller.
6" x 3" x 1/4" Tube Frames (152mm x 76mm x 6mm)	Superior in strength.
3/4" x 1 1/2" (19mm x 38mm) Carbide Tipped Studs	Carbide tipped studs are very tough, used in the mining industry, this offers a long life to the studs. Studs can be replaced one at a time.
15 Degrees left or right angling	By angling either direction, the user has many options on what direction to work his area.
Gauge wheels with sealant	Easy to adjust vertically to set working depth. Has tall and wide tires that keep turning in fluffy soil. Sealant helps seal against punctures.
Side plates with storage	Side plates can be used to hold dirt to aid in filling low spots. Easily store the side plates on the Powered Rake so that they are always with the rake when needed.
Material control deflector	Material control deflector is used to determine what size of material to let pass through the roller and what size to move out.
#50 Double continuous roller chain	Double roller chain can take the fluctuation loads from the roller due to varying ground conditions.
Cast Iron chain guard housing	Strong enough to protect chain in harsh conditions.
Drive chain enclosed in oil bath with drain plug	Oil keeps the chain and sprockets lubricated to keep abrasion to a minimum. Easy to maintain and change oil level.
Replaceable skid shoes	Skid shoes protect larger and vital parts of the unit. As they wear due to soil contact, they can easily be replaced.
5 Year gearbox warranty	Shows our confidence in the gearbox integrity.
Quick Hitch	Can be used with Land Pride QH15 Cat. I Quick Hitch. (May need extra driveline.)

Troubleshooting Chart

Problem	Solution
Machine makes intermittent clicking noise	Check for damaged gear and replace if necessary.
	Check for worn drive chain and replace if necessary.
Roller will not turn	Obstruction between roller and material control deflector.
	Chain is off.
	Burnt or mis-adjusted slip-clutch on driveline shaft.
	Broken drive spindle.
Operating depth insufficient	Raise gauge wheels.
	Increase tractor rpm.
	Clean roller.
Roller gouging on the end	The gauge wheel on chaincase side should be approximately 1" lower than the non-drive side gauge wheel for consistent leveling.
	Set gauge wheel depth.
	Correct air pressure in gauge wheels.
	Level 3-point arms on tractor.
Too much dirt going into the windrow or dirt going over the top of the material control deflector	Reduce ground speed.
	Raise material control deflector.
	Lower gauge wheels.
Too many rocks passing between material control deflector and the roller	Lower material control deflector.
Roller balling up with soil	Wait until soil dries.
Powered Rake bumping on ground	Clean roller.
	Increase roller speed if roller is turning slow. Decrease roller speed if roller is turning fast.

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	l215	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 torquing 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)

Tire Inflation Chart

Tire Size	Inflation PSI
16.5 x 6.5 2- Ply	45

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 and Driveline: One year Parts and Labor

Primary Driveline: One year Parts and Labor.
Slip-clutch Friction plates are considered wear items.

Gearbox: 5 years Parts and Labor

Roller: Considered a wear item

Hydraulic Cylinder: 1 year parts and labor.
Hoses and seals are 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 such as blades, belts, tines, etc. 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. Registration is done by your dealer.

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** _____



Corporate Office: P.O. Box 5060
Salina, Kansas 67402-5060 USA
www.landpride.com