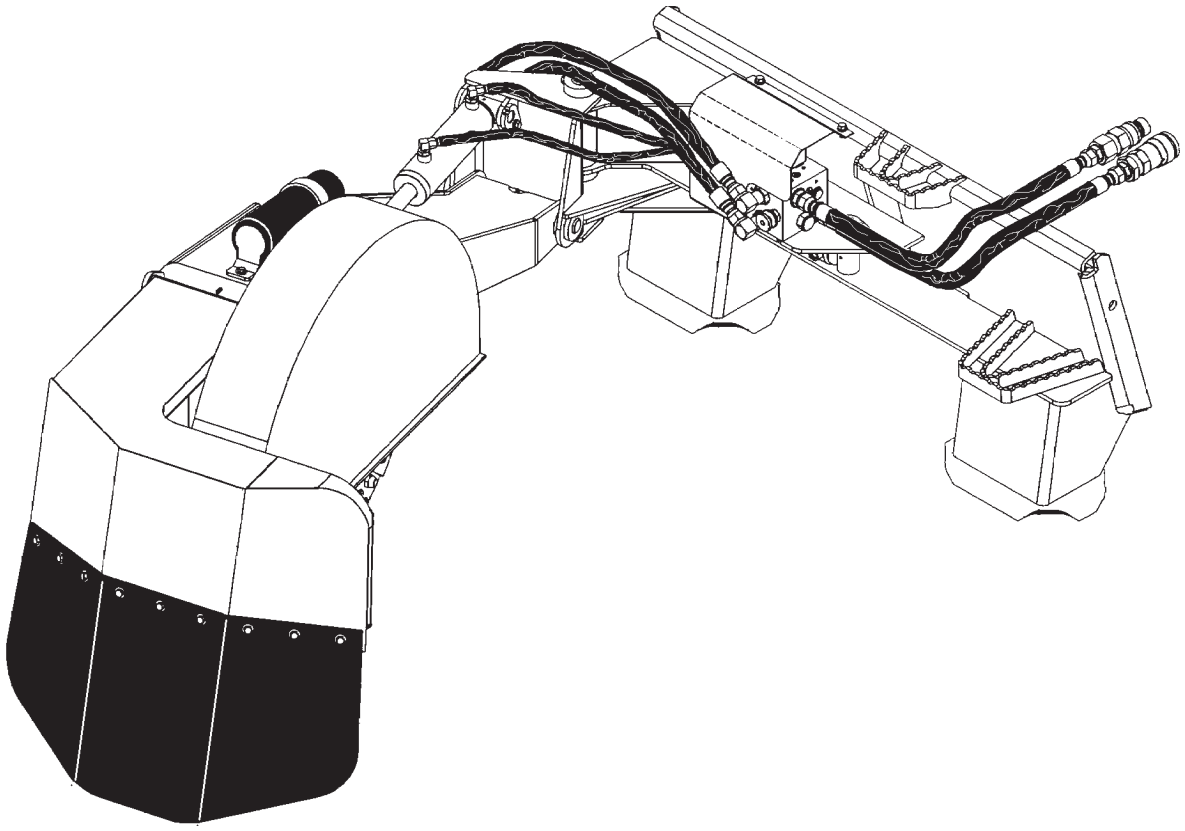
PALADIN™
POWERFUL ATTACHMENT TOOLS

OPERATOR'S HANDBOOK

STUMP GRINDERS / FRONT DISCHARGE
UNIVERSAL SKID STEER APPLICATIONS



SERIAL NUMBER: _____

MODEL NUMBER: _____

Original
Part Number: 75666-X
Rev. 3

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PREFACE

GENERAL INFORMATION

This product was carefully designed and manufactured to give you many years of dependable service. Only minor maintenance (such as cleaning and lubricating) is required to keep it in top working condition. Be sure to observe all maintenance procedures and safety precautions in this manual and on any safety decals located on the product and on any equipment on which the attachment is mounted.

WARNING!  **Never let anyone operate this unit without reading the "Safety Precautions" and "Operating Instructions" sections of this manual.**
Always choose hard, level ground to park the vehicle on and set the brake so the unit cannot roll.

Unless noted otherwise, right and left sides are determined from the operator's control position when facing the attachment.

NOTE: The illustrations and data used in this manual were current (according to the information available to us) at the time of printing, however, we reserve the right to redesign and change the attachment as may be necessary without notification.

BEFORE OPERATION

The primary responsibility for safety with this equipment falls to the operator. Make sure the equipment is operated only by trained individuals that have read and understand this manual. If there is any portion of this manual or function you do not understand, contact your local authorized dealer or the manufacturer to obtain further assistance. Keep this manual available for reference. Provide the manual to any new owners and/or operator's

SAFETY ALERT SYMBOL

This is the "Safety Alert Symbol" used by this industry. This symbol is used to warn of possible injury. Be sure to read all warnings carefully. They are included for your safety and for the safety of others working with you.

SERVICE

Use only manufacturer replacement parts. Substitute parts may not meet the required standards.

Record the model and serial number of your unit on the cover of this manual. The parts department needs this information to insure that you receive the correct parts.

SOUND AND VIBRATION

Sound pressure levels and vibration data for this attachment are influenced by many different parameters: some items are listed below (not inclusive):

- prime mover type, age, condition, with or without cab enclosure and configuration
- operator training, behavior, stress level
- job site organization, working material condition, environment

Based on the uncertainty of the prime move, operator, and job site, it is not possible to get precise machine and operator sound pressure levels or vibration levels for this attachment.

NOTE: A list of all Paladin Patents can be found at http://www.paladinattachments.com/patents.asp.

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SAFETY STATEMENTS

THIS SYMBOL BY ITSELF OR WITH A WARNING WORD THROUGHOUT THIS MANUAL IS USED TO CALL YOUR ATTENTION TO INSTRUCTIONS INVOLVING YOUR PERSONAL SAFETY OR THE SAFETY OF OTHERS. FAILURE TO FOLLOW THESE INSTRUCTIONS CAN RESULT IN INJURY OR DEATH.

DANGER — **THIS SIGNAL WORD IS USED WHERE SERIOUS INJURY OR DEATH WILL RESULT IF THE INSTRUCTIONS ARE NOT FOLLOWED PROPERLY.**

WARNING — **THIS SIGNAL WORD IS USED WHERE SERIOUS INJURY OR DEATH COULD RESULT IF THE INSTRUCTIONS ARE NOT FOLLOWED PROPERLY.**

CAUTION — **THIS SIGNAL WORD IS USED WHERE MINOR INJURY COULD RESULT IF THE INSTRUCTIONS ARE NOT FOLLOWED PROPERLY.**

NOTICE — **NOTICE INDICATES A PROPERTY DAMAGE MESSAGE.**

GENERAL SAFETY PRECAUTIONS

WARNING!

READ MANUAL PRIOR TO INSTALLATION

Improper installation, operation, or maintenance of this equipment could result in serious injury or death. Operators and maintenance personnel should read this manual, as well as all manuals related to this equipment and the prime mover thoroughly before beginning installation, operation, or maintenance. **FOLLOW ALL SAFETY INSTRUCTIONS IN THIS MANUAL AND THE PRIME MOVER'S MANUAL(S).**

READ AND UNDERSTAND ALL SAFETY STATEMENTS

Read all safety decals and safety statements in all manuals prior to operating or working on this equipment. Know and obey all OSHA regulations, local laws, and other professional guidelines for your operation. Know and follow good work practices when assembling, maintaining, repairing, mounting, removing, or operating this equipment.

KNOW YOUR EQUIPMENT

Know your equipment's capabilities, dimensions, and operations before operating. Visually inspect your equipment before you start, and never operate equipment that is not in proper working order with all safety devices intact. Check all hardware to ensure it is tight. Make certain that all locking pins, latches, and connection devices are properly installed and secured. Remove and replace any damaged, fatigued, or excessively worn parts. Make certain all safety decals are in place and are legible. Keep decals clean, and replace them if they become worn or hard to read.

H003 3-10-08

GENERAL SAFETY PRECAUTIONS

WARNING! PROTECT AGAINST FLYING DEBRIS

Always wear proper safety glasses, goggles, or a face shield when driving pins in or out, or when any operation causes dust, flying debris, or any other hazardous material.

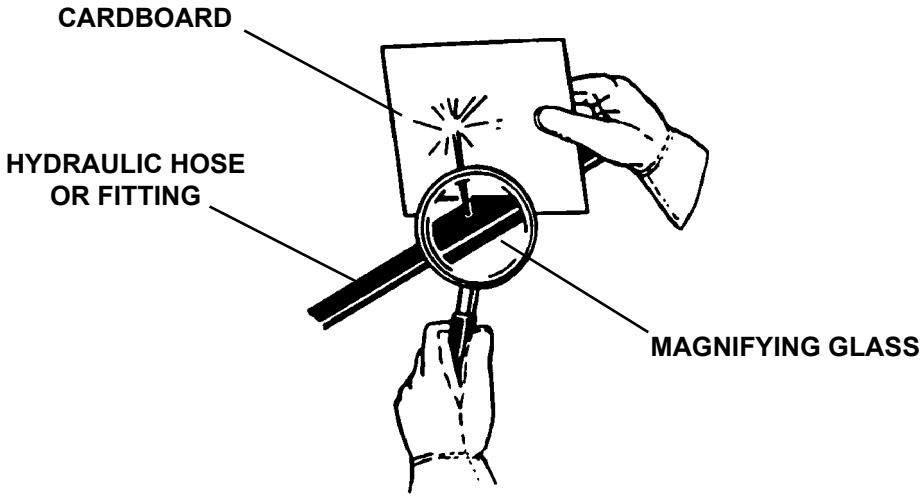
WARNING! LOWER OR SUPPORT RAISED EQUIPMENT

Do not work under raised booms without supporting them. Do not use support material made of concrete blocks, logs, buckets, barrels, or any other material that could suddenly collapse or shift positions. Make sure support material is solid, not decayed, warped, twisted, or tapered. Lower booms to ground level or on blocks. Lower booms and attachments to the ground before leaving the cab or operator's station.

WARNING! USE CARE WITH HYDRAULIC FLUID PRESSURE

Hydraulic fluid under pressure can penetrate the skin and cause serious injury or death. Hydraulic leaks under pressure may not be visible. Before connecting or disconnecting hydraulic hoses, read your prime mover's operator's manual for detailed instructions on connecting and disconnecting hydraulic hoses or fittings.

- Keep unprotected body parts, such as face, eyes, and arms as far away as possible from a suspected leak. Flesh injected with hydraulic fluid may develop gangrene or other permanent disabilities.
- If injured by injected fluid, see a doctor at once. If your doctor is not familiar with this type of injury, ask him to research it immediately to determine proper treatment.
- Wear safety glasses, protective clothing, and use a piece of cardboard or wood when searching for hydraulic leaks. **DO NOT USE YOUR HANDS! SEE ILLUSTRATION.**



H004 3-10-08

GENERAL SAFETY PRECAUTIONS

WARNING!

DO NOT MODIFY MACHINE OR ATTACHMENTS

Modifications may weaken the integrity of the attachment and may impair the function, safety, life, and performance of the attachment. When making repairs, use only the manufacturer's genuine parts, following authorized instructions. Other parts may be substandard in fit and quality. Never modify any ROPS (Roll Over Protection Structure) or FOPS (Falling Object Protective Structure) equipment or device. Any modifications must be authorized in writing by the manufacturer.

WARNING!

SAFELY MAINTAIN AND REPAIR EQUIPMENT

- Do not wear loose clothing or any accessories that can catch in moving parts. If you have long hair, cover or secure it so that it does not become entangled in the equipment.
- Work on a level surface in a well-lit area.
- Use properly grounded electrical outlets and tools.
- Use the correct tools for the job at hand. Make sure they are in good condition for the task required.
- Wear the protective equipment specified by the tool manufacturer.

SAFELY OPERATE EQUIPMENT

Do not operate equipment until you are completely trained by a qualified operator in how to use the controls, know its capabilities, dimensions, and all safety requirements. See your machine's manual for these instructions.

- Keep all step plates, grab bars, pedals, and controls free of dirt, grease, debris, and oil.
- Never allow anyone to be around the equipment when it is operating.
- Do not allow riders on the attachment or the prime mover.
- Do not operate the equipment from anywhere other than the correct operator's position.
- Never leave equipment unattended with the engine running, or with this attachment in a raised position.
- Do not alter or remove any safety feature from the prime mover or this attachment.
- Know your work site safety rules as well as traffic rules and flow. When in doubt on any safety issue, contact your supervisor or safety coordinator for an explanation.

EQUIPMENT SAFETY PRECAUTIONS

WARNING!

KNOW WHERE UTILITIES ARE

Observe overhead electrical and other utility lines. Be sure equipment will clear them. When digging, call your local utilities for location of buried utility lines, gas, water, and sewer, as well as any other hazard you may encounter.

WARNING!

EXPOSURE TO RESPIRABLE CRYSTALLINE SILICA DUST ALONG WITH OTHER HAZARDOUS DUSTS MAY CAUSE SERIOUS OR FATAL RESPIRATORY DISEASE.

It is recommended to use dust suppression, dust collection and if necessary personal protective equipment during the operation of any attachment that may cause high levels of dust.

WARNING!

REMOVE PAINT BEFORE WELDING OR HEATING

Hazardous fumes/dust can be generated when paint is heated by welding, soldering or using a torch. Do all work outside or in a well ventilated area and dispose of paint and solvent properly. Remove paint before welding or heating.

When sanding or grinding paint, avoid breathing the dust. Wear an approved respirator. If you use solvent or paint stripper, remove stripper with soap and water before welding. Remove solvent or paint stripper containers and other flammable material from area. Allow fumes to disperse at least 15 minutes before welding or heating.

WARNING!

END OF LIFE DISPOSAL

At the completion of the useful life of the unit, drain all fluids and dismantle by separating the different materials (rubber, steel, plastic, etc.). Follow all federal, state and local regulations for recycling and disposal of the fliud and components.

OPERATING THE STUMP GRINDER

- Do not operate a standard flow stump grinder on high flow hydraulic systems. Severe injury could occur due to increased RPM.
- Do not exceed the lifting capacity of your prime mover.
- Operate only from the operator's station.
- Never operate near bystanders, traffic, pets, livestock or buildings. Be sure others know when and where you will be working. Never direct discharge towards people, animals or property. Never allow anyone to approach this attachment when in operation.
- Do not raise the attachment when the grinding wheel is rotating.
- Keep hands, feet, hair and clothing away from equipment with engine running. Stay clear of all moving parts.
- Do not operate without covers or rubber guards installed.
- Always carry attachment as close to the ground as possible.
- Make sure grinding wheel is completely stopped and engine shut off before making any adjustments on the attachment.
- Before exiting the prime mover, lower the attachment to the ground, turn off the prime mover's engine, remove the key and apply the brakes.

H064 11-10-10-2

EQUIPMENT SAFETY PRECAUTIONS

OPERATING THE STUMP GRINDER (continued)

- When operating on slopes, drive up and down, not across. Avoid steep hillside operation, which could cause the prime mover to overturn.
- Reduce speed when driving over rough terrain, on a slope, or turning, to avoid overturning the vehicle.
- An operator must not use drugs or alcohol, which can change his or her alertness or coordination. An operator taking prescription or over-the-counter drugs should seek medical advice on whether or not he or she can safely operate equipment.

TRANSPORTING THE STUMP GRINDER

- Travel only with the attachment in a safe transport position to prevent uncontrolled movement. Drive slowly over rough ground and on slopes.
- When driving on public roads use safety lights, reflectors, Slow Moving Vehicle signs etc., to prevent accidents. Check local government regulations that may affect you.
- Do not drive close to ditches, excavations, etc., cave in could result.
- Do not smoke when refueling the prime mover. Allow room in the fuel tank for expansion. Wipe up any spilled fuel. Secure cap tightly when done.
- Use extra care when loading or unloading the machine onto a truck or trailer. Disconnect hydraulic couplers during transportation.

MAINTAINING THE STUMP GRINDER

- Before performing maintenance, lower the attachment to the ground, turn off the engine, remove the key and apply the brakes.
- Never perform any work on the attachment unless you are authorized and qualified to do so. Always read the operator service manuals before any repair is made. After completing maintenance or repair, check for correct functioning of the attachment. If not functioning properly, always tag “DO NOT OPERATE” until all problems are corrected.
- Worn, damaged, or illegible safety decals must be replaced. New safety decals can be ordered from Paladin.
- Never make hydraulic repairs while the system is under pressure. Serious personal injury or death could result.
- Never work under a raised attachment.

H065 4-1-08

PREOPERATION

GENERAL INFORMATION

The stump grinders are operated by the skid steer's auxiliary hydraulics and mount to the toolbar/quick attach mechanism for easy operator hook-up.

Your skid steer must be equipped with auxiliary hydraulics and an electric control kit or LH multi-function handle kit.

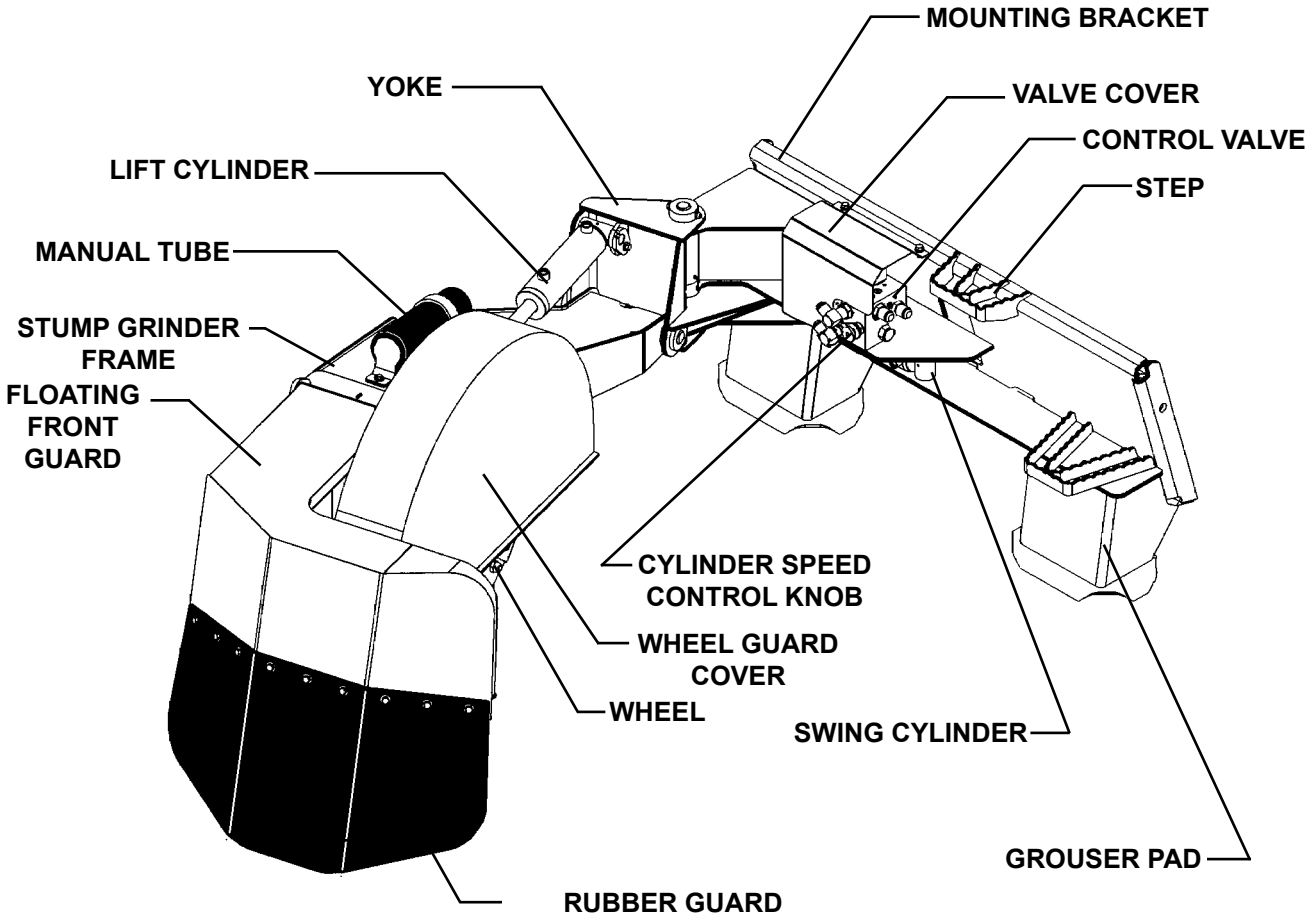
There are two models of stump grinders available, standard flow and high flow. Be sure the stump grinder that you have purchased, matches the hydraulic flow of your skid steer.

The standard flow unit requires 15-22 gpm (56.8-83.3 lpm) and the high flow units require 25-42 gpm (94.6-159 lpm). Operating the high flow stump grinder on a standard flow skid steer will result in poor performance.

WARNING! OPERATING THE STANDARD FLOW STUMP GRINDER ON A HIGH FLOW HYDRAULIC SYSTEM MAY CAUSE SEVERE INJURY OR DEATH TO THE OPERATOR OR BYSTANDERS DUE TO THE INCREASED RPM.

NOMENCLATURE

The purpose of this diagram is to acquaint you with the various names of the stump grinder components. This knowledge will be helpful when reading through this manual or when ordering service parts.



H246 12-9-08

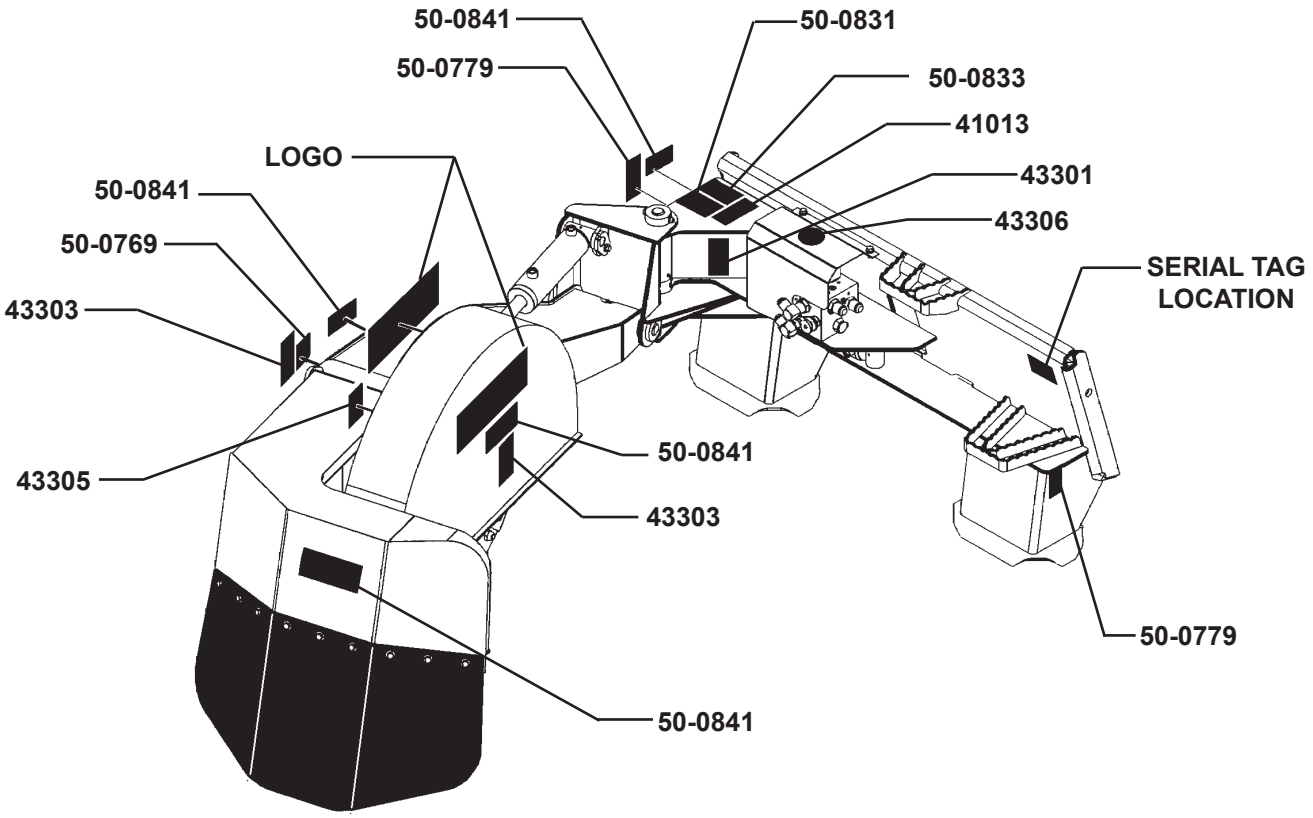
SAFETY DECAL PLACEMENT

GENERAL INFORMATION

The following diagrams show the location of all the decals used on your attachment. The decals are identified by their part numbers, with the reductions of the actual decals shown on the following pages. Use this information to order replacements for lost or damaged decals. Be sure you understand all decals before operating the attachment. They contain information you need to know for attachment safety. (See decal explanations on the following pages.)

IMPORTANT: Keep all safety decals clean and legible. Replace all missing, or damaged safety decals. When replacing parts with safety decals attached, the safety decals must also be replaced.

REPLACING SAFETY DECALS: Clean the area of application with a nonflammable solvent, then wash the same area with soap and water. Allow the surface to dry. Remove the backing from the safety decal, exposing the adhesive surface. Apply the safety decal to the position shown in the diagram, and smooth out any bubbles.



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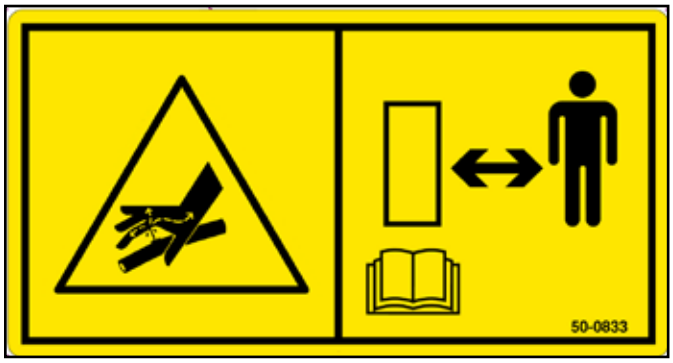
DECALS

⚠ WARNING

PINCH POINT HAZARD: (43301)
Stay back a safe distance from hazard when any portion of this machine is in motion. Failure to heed this warning could result in serious injury or death.



⚠ WARNING

HIGH PRESSURE FLUID HAZARD: (50-0833)
Escaping fluid under pressure can have sufficient force to penetrate skin causing serious personal injury. Fluid escaping from a very small hole can be almost invisible. Use a piece of cardboard or wood, rather than hands to search for suspected leaks.
Keep unprotected body parts, such as face, eyes, and arms as far away as possible from a suspected leak.
Flesh injected with hydraulic fluid may develop gangrene or other permanent disabilities.
If injured by injected fluid, see a doctor at once. If your doctor is not familiar with this type of injury, ask him to research it immediately to determine proper treatment.

⚠ WARNING

READ MANUALS: (50-0831)
Do NOT operate or service unless you have read and understand the instruction and safety information in the operator's handbook and all prime mover manuals.

T**O AVOID EQUIPMENT DAMAGE AND/OR PERSONAL INJURY:** Do not operate the standard flow stump grinder on hi-flow hydraulic system. Maximum 25 GPM on standard flow units. (26" Diameter Wheel)

⚠ WARNING

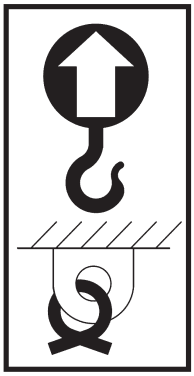
REMOVE KEY: (41013)
Lower attachment to the ground, set the parking brake, shut off the engine and remove the key before performing maintenance or leaving the operator's station.

H155 8-26-08

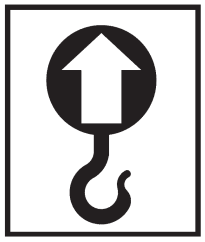
DECALS

WARNING

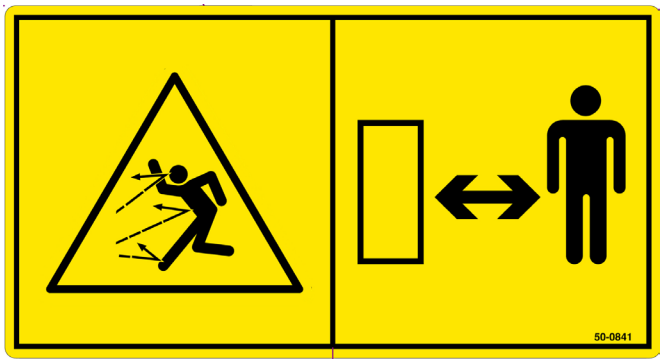
ENTANGLEMENT HAZARD: (43305)
This guard covers moving parts underneath. Remove guard for service only. See manual for service information. Do not operate attachment with guard removed. Serious personal injury or death could occur.



LIFT & TIE DOWN POINT: (50-0779)
Identifies recommended lift point and tie down locations. Lifting unit or securing to trailer at other points is unsafe and can damage attachment.



LIFT POINT: (50-0769)
Identifies recommended lift point locations. Lifting unit at other points is unsafe and can damage attachment.



WARNING

FLYING DEBRIS HAZARD: (50-0841)
Flying debris hazard: Stay back a safe distance from this attachment when it is in operation. Failure to comply could result in serious personal injury or death.

WARNING

ROTATING BLADE HAZARD: (43303)
Rotating Cutting Wheel: To prevent serious injury or death, keep a safe distance away from moving parts.

NO STEP: (43306)
Do not use valve cover as a step when entering or exiting the prime mover.

H253 10-3-12-3

INSTALLATION

GENERAL INFORMATION

The following instructions will help you mount your stump grinder onto your skid steer loader. The stump grinder uses the quick-attach system for ease of installation.

Remember to read all safety warning, decals and operations instructions before operating the attachment. If there is any portion of this manual that you do not understand, contact your dealer.

WARNING! OPERATING THE STANDARD FLOW STUMP GRINDER ON A HIGH FLOW HYDRAULIC SYSTEM MAY CAUSE SEVERE INJURY OR DEATH TO THE OPERATOR OR BYSTANDERS DUE TO THE INCREASED RPM.

INSTALLATION INSTRUCTIONS

1. Remove shipping banding.

2. Remove any existing attachment from the loader.

3. Following all standard safety practices and the instructions for installing an attachment in your skid steer operator's manual, install the stump grinder onto your skid steer.

NOTE: IT IS IMPORTANT TO MAKE SURE THE LOCKING MECHANISM ON YOUR QUICK ATTACH IS ENGAGED, THEREFORE LOCKING THE ATTACHMENT ONTO THE SKID STEER

4. Lower the unit to the ground and remove the key.

5. If the guard assembly was not installed at the factory, install it now using the hardware provided. (See Operator’s and Parts Manual for hardware locations.)

6. If installing the high flow stump grinder, connect the case drain coupler to the case drain on your skid steer loader.

7. Relieve pressure from the auxiliary hydraulic system. Connect couplers to the auxiliary hydraulic system of your skid steer loader. Route the hoses in such a fashion as to avoid pinching or chafing.

CAUTION! BE SURE CASE DRAIN COUPLER IS COMPLETELY ENGAGED. IMMEDIATE HYDRAULIC MOTOR SEAL FAILURE WILL OCCUR IF CASE DRAIN IS NOT SUCCESSFULLY CONNECTED.

8. Route the electrical control handle to the operator's station. Take care to avoid pinching of the electrical wire harness.

NOTICE: Keep all electrical cables away from prime mover exhaust system.

NOTE: If your skid steer is equipped with a multi-function control handle, connect the electrical wire harness from the stump grinder to the auxiliary electrical connector on the front of the skid steer.

9. Following all standard safety practices, start the skid steer and run all cylinders through their full cycle to purge any air from the system. Check that all controls function according to the operating control decal.

   Your stump grinder is now installed and ready for operation.

DISCONNECT INSTRUCTIONS

1. With the stump grinder extended halfway out, lower the unit onto the grouser pads on the mounting bracket and the brace stand. NOTE: Extending the unit will help prevent it from tipping forward when disconnected.

2. Following Safety Shut Down Procedures; stop the engine and set the parking brake, relieve any pressure in the hydraulic lines.

3. Disconnect the power and return hoses from the auxiliary hydraulics. (Disconnect case drain coupler from the case drain if using the high flow stump grinder.)

4. Disconnect the electrical wire harness from the auxiliary electrical connector (if so equipped).

5. Following all standard safety practices and the instructions for disconnecting an attachment in your skid steer operator's manual, disconnect the stump grinder from your skid steer.

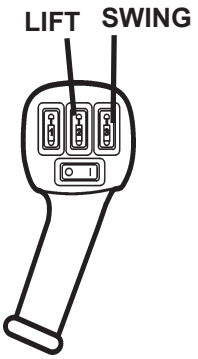
6. Connect the hydraulic couplers on the attachment together to prevent contaminants from entering the hydraulic system and secure all hoses and electrical cables off the ground to help prevent damage.

OPERATION

The stump grinder is controlled from inside the skid steer, using the electric control handle for your specific skid steer and an electric valve assembly. These instruction will cover the New Holland Multi-Function control handle, Case control handle and the optional Paladin control handle.

WARNING! DO NOT OPERATE THE STUMP GRINDER FROM OUTSIDE OF THE SKID STEER OPERATOR'S STATION. SERIOUS INJURY OR DEATH COULD OCCUR.

NEW HOLLAND CONTROL HANDLE



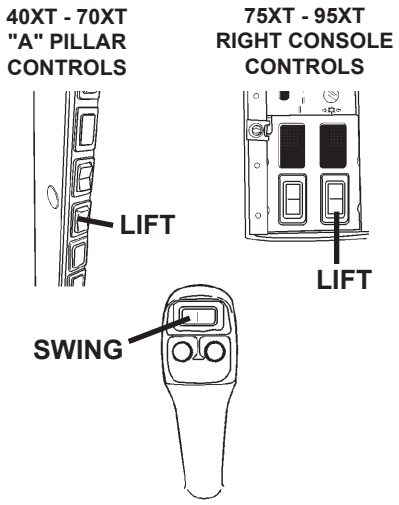
LIFT CONTROL

Raising and lowering the stump grinder frame is achieved by activating the middle rocker switch on the left multi-function control handle.

SWING CONTROL

Swinging the stump grinder frame to the left and right across the stump is achieved by activating the right rocker switch on the left multi-function control handle.

CASE CONTROL HANDLE



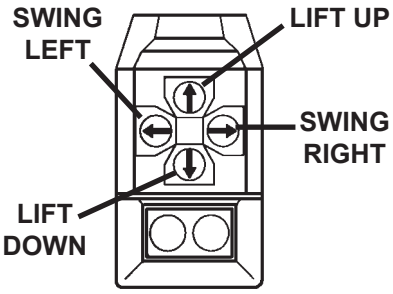
LIFT CONTROL

Raising and lowering the stump grinder frame varies according to the Case operating skid steer. On 40XT - 70XT loaders with pillar controls the lower rocker switch activates the lift control. On 75XT - 95XT loaders with right console controls the right lower rocker switch activates the lift controls

SWING CONTROL

Swinging the stump grinder frame to the left and right across the stump is achieved by activating the rocker switch on the Case control handle.

PALADIN CONTROL HANDLE



LIFT CONTROL

Raising and lowering the stump grinder frame is achieved by activating the top and bottom switches on the control handle.

SWING CONTROL

Swinging the stump grinder frame to the left and right across the stump is achieved by activating the left and right switches on the control handle.

SWING SPEED CONTROL

A swing speed control knob is located on the front side of the hydraulic valve. Turning the knob to the right will decrease the swing speed and turning the knob to the left will increase the swing speed.

H247 10-4-12-3

OPERATION

INTENDED USE: This unit is designed for grinding stumps up to 12” (305 mm) high. Use in any other way is considered contrary to the intended use.

STUMP GRINDING OPERATION

WARNING! CHECK THE WORK AREA AND KNOW WHERE ALL UTILITY LINES ARE BEFORE OPERATING THE STUMP GRINDER.

OPERATE THE STUMP GRINDER FROM INSIDE THE OPERATOR'S STATION OF YOUR SKID STEER LOADER ONLY.

IMPORTANT: Adjust swing speed as necessary. There are several factors that may warrant adjustment of the swing speed such as, hydraulic flow, hardness of the stump and operator comfort to mention a few. The swing speed is adjusted by turning the knob on the front of the control valve, left will increase swing speed and right will decrease swing speed.

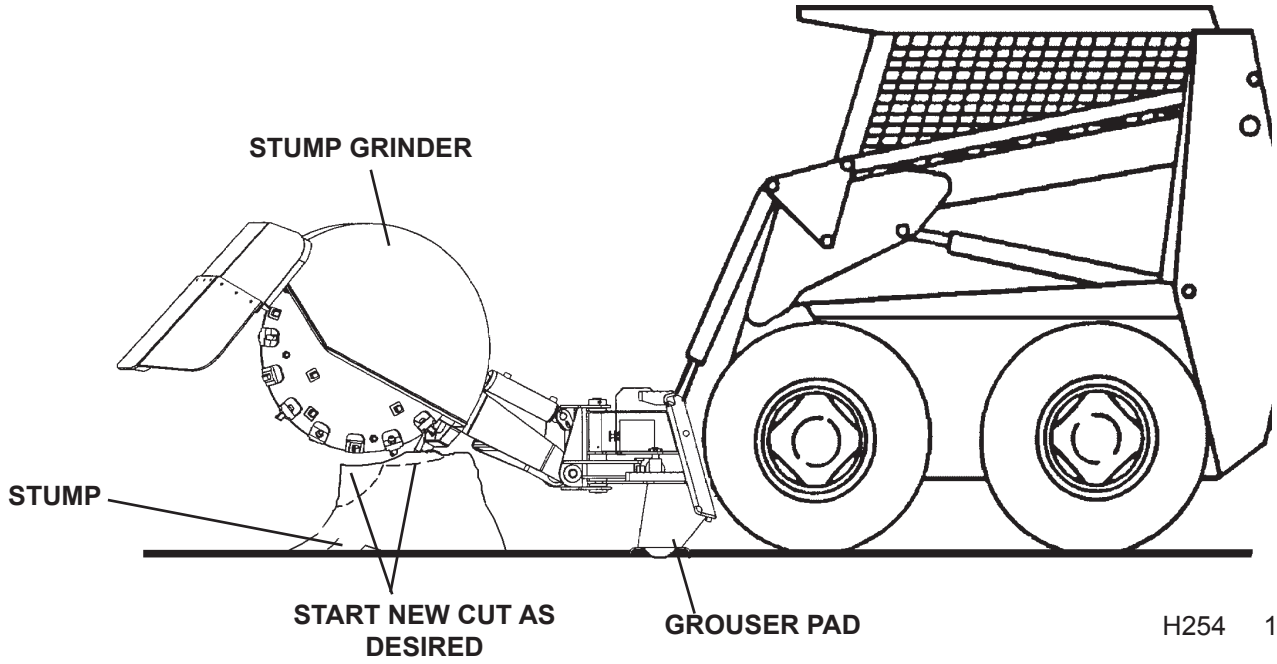
1. Swing the stump grinder all the way to the right, align with the stump in such a fashion that the skid steer is as level as possible from left to right.

2. Position the cutting wheel to the right of the stump. Lower the frame so the grouser pads are resting on the ground. This will assist in stabilizing the unit for even cutting and reduce inadvertent movement of the skid steer.

NOTE: It is recommended that the pivot pin, attaching the mounting bracket to the yoke, be perpendicular to the ground for the best performance of the unit.

NOTE: Be sure the cutting wheel is not contacting the ground.

3. Activate the auxiliary hydraulics to the stump grinder and increase engine to full RPM.



H254 10-4-12-3

4. Adjust the cutting wheel to cut approximately 1 to 1-1/2" (2.5-3.8 cm) of stump.

NOTE: The cutting depth of each pass will be determined by the type of tree. Certain varieties of trees will allow for a deeper cut than trees containing a lot of sap.

5. Swing the cutting wheel to the left across the top of the stump on the edge away from the skid steer. Lower the grinder another 1 to 1-1/2" (2.5-3.8 cm) and swing the cutting wheel back across the stump to the right.

6. Continue cutting in this manner. If the wheel stalls, reduce the depth of the cut. Move the skid steer as required to allow cutting a new area.

NOTE: Do not move into the stump while making a cross sweep. Machine and/or tooth damage could result from motor overload.

NOTE: Make shallow cuts when cutting surface roots. Large chips can be broken off and thrown if the cut is too deep.

NOTE: Larger stumps may require that you begin grinding the edge of the stump closest to the skid steer first.

OPERATION

STUMP GRINDER STORAGE

1. Clean the unit thoroughly, removing all mud, dirt, grease and wood chips.
2. Replace any worn or chipped teeth. Replace any teeth that are missing the carbide tip.
3. Inspect the unit for visible signs of wear, breakage or damage. Order any parts required and make the necessary repairs to avoid delays when starting next season.

NOTE: Purchase only approved parts from your authorized dealer.

4. Tighten all loose nuts, capscrews and hydraulic connections.
5. Check the gearbox for proper lubrication level.
6. Connect the hydraulic couplers together to protect the system from contaminates.
7. Seal hydraulic system from contaminants and secure all hydraulic hoses off the ground to help prevent damage.
8. Replace decals that are damaged or in unreadable condition.
9. Coat exposed portion of the cylinder rods with grease.
10. Grease all grease fittings.
11. Store the unit in a dry and protected place. Leaving the unit outside will materially shorten its life.

Additional Precautions for Long Term Storage:

1. Touch up all unpainted and exposed areas with paint to prevent rust.

REMOVING FROM STORAGE

1. Remove all protective coverings.
2. Check hydraulic hoses for deterioration and replace if necessary.
3. Check all nuts and bolts for tightness, especially those securing the motor, gearbox and teeth.

TRANSPORTING

1. Follow all federal, state and local regulations when transporting on public roads.
2. Use extra care when loading or unloading onto a trailer or truck. Disconnect hydraulic couplers during transporting

CAUTION: Be sure to install a SMV (Slow Moving Vehicle) sign on loader before transporting.

When transporting on a road or highway at night or during the day, use accessory lights and devices for adequate warning to the operators of other vehicles. In this regard, check local and government regulations.

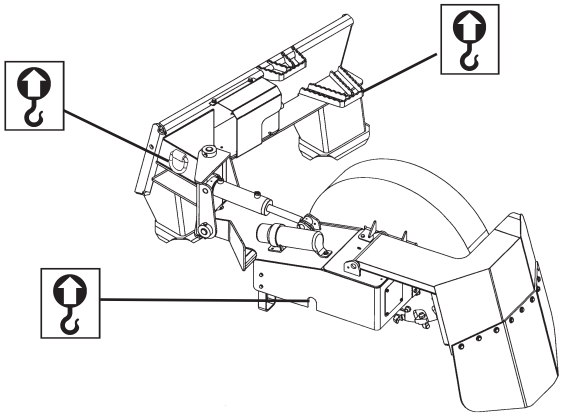
Always drive slowly over uneven terrain to avoid tipping the unit.

H083 10-5-12-2

OPERATION

LIFT POINTS

Lifting points are identified by a lifting decals where required. Lifting at other points is unsafe and can damage attachment. Do not attach lifting accessories around cylinders or in any way that may damage hoses or hydraulic components. See Diagram

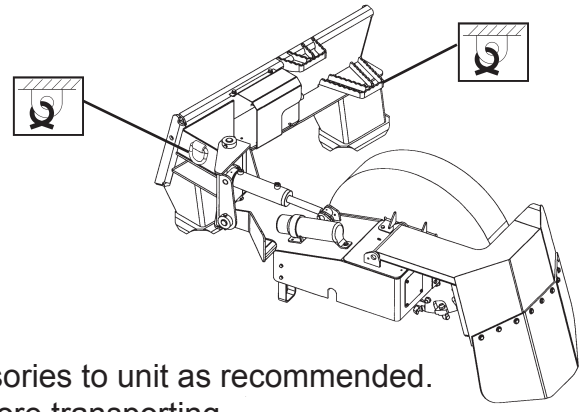


- Attach lifting accessories to unit at recommended lifting points.
- Bring lifting accessories together to a central lifting point.
- Lift gradually, maintaining the equilibrium of the unit.

WARNING! Use lifting accessories (chains, slings, ropes, shackles and etc.) that are capable of supporting the size and weight of your attachment. Secure all lifting accessories in such a way to prevent unintended disengagement. Failure to do so could result in the attachment falling and causing serious personal injury or death.

TIE DOWN POINTS

Tie down points are identified by tie down decals where required. Securing to trailer at other points is unsafe and can damage attachment. Do not attach tie down accessories around cylinders or in any way that may damage hoses or hydraulic components. See Diagram



- Attach tie down accessories to unit as recommended.
- Check unit stability before transporting.

WARNING! Verify that all tie down accessories (chains, slings, ropes, shackles and etc.) are capable of maintaining attachment stability during transporting and are attached in such a way to prevent unintended disengagement or shifting of the unit. Failure to do so could result in serious personal injury or death.

H439 11-12-10

LUBRICATION

GENERAL INFORMATION

All parts provided with grease fittings should be lubricated as indicated. If any grease fittings are missing, replace them immediately. Clean all fittings thoroughly before using grease gun.

IMPORTANT: Avoid excessive greasing. Dirt collects on exposed grease and greatly increases wear. After greasing, wipe off excessive grease from fittings.

LUBRICATION SYMBOLS

The following symbol is used on the lubrication diagram printed on the following page. It is reproduced here with its meaning for your convenience.

Lubricate daily or every 8 hours of operation, whichever comes first, with SAE Multi-Purpose Lubricant or an equivalent SAE Multi Purpose type grease.

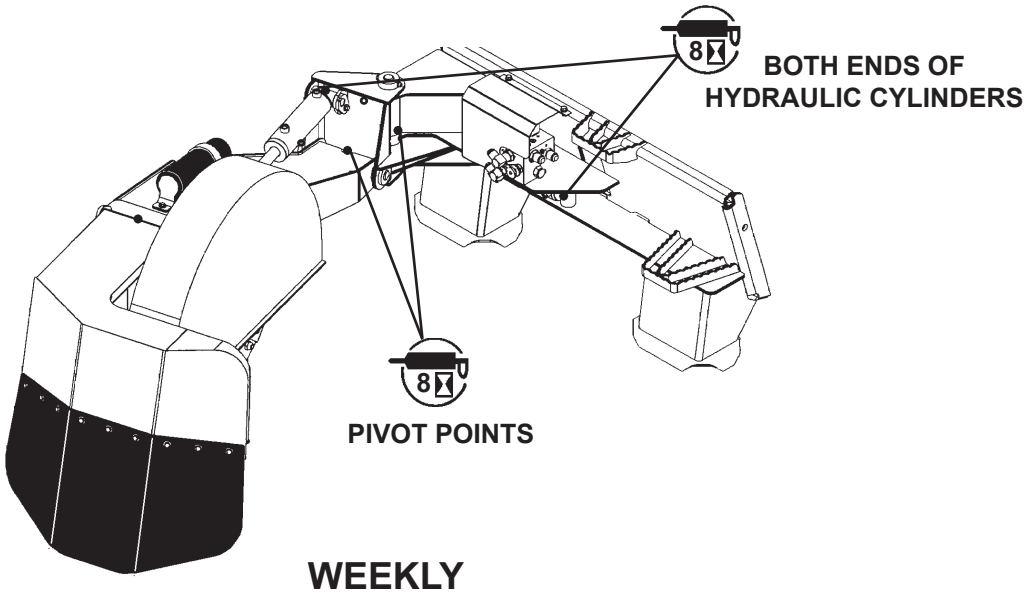
CAUTION! Shut off vehicle engine before lubricating equipment.

LUBRICATION

DAILY

- Lubricate all grease fittings.

The following diagram is provided to help you locate all the points on your attachment that needs lubricating. Be sure to follow the lubrication intervals as noted by the lubrication symbols on this page.



WEEKLY

The oil level in the gearbox should be checked once a week. Fill as necessary with 80-90 weight gear lubricant.

TO CHECK:

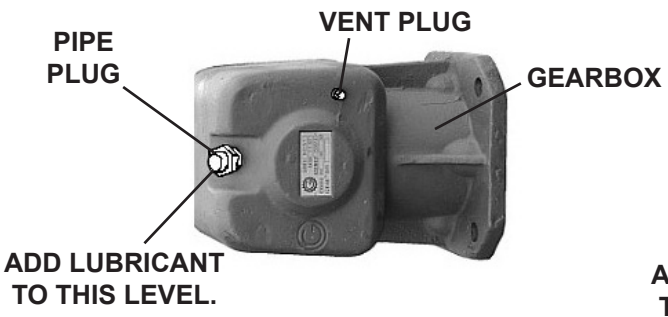
Open access cover on top of frame. Remove pipe plug from gearbox. Lubricant should be at the same level as the plug.

TO ADD:

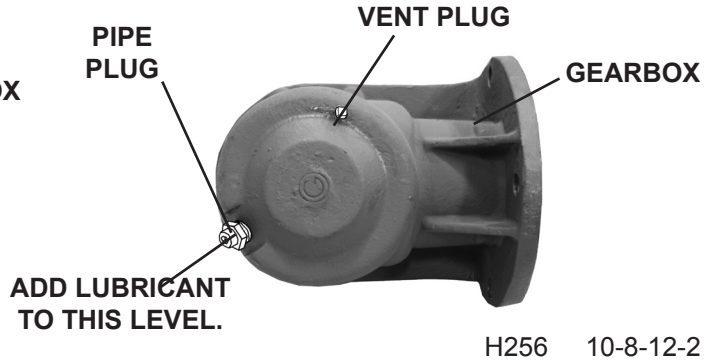
Remove pipe plug from the gearbox and add 80-90 weight gear lubricant until level with plug. Replace pipe plug. **NOTE: Removing vent plug when filling will speed up the filling process.**

IMPORTANT: DO NOT OVERFILL, AS TOO MUCH LUBRICANT MAY RUPTURE THE GEAR BOX SEALS.

STANDARD FLOW



HIGH FLOW



H256 10-8-12-2

MAINTENANCE AND SERVICE

GENERAL INFORMATION

Regular maintenance is the key to long equipment life and safe operation. Maintenance requirements have been reduced to an absolute minimum. However, it is very important that these maintenance functions be performed as described below.

WARNING! Avoid serious injury. Lower the stump grinder to the ground, set the parking brake, stop the skid-steer engine and remove the key before leaving the operator's seat. If unit must be left raised for maintenance block the unit securely to prevent accidental release of the lifting mechanism. Disconnect the hydraulic couplers.

Procedure	Daily	Every 40 Hours
Check skid steer loader hydraulic system to ensure an adequate level of hydraulic oil.	✔	
Check Gearbox castle nut and torque to 250-350 ft. lbs (339-475 N·m).	✔	
Check mounting hardware on teeth and torque to 150- 180 ft. lbs (203-244 N·m).	✔	
Check all other hardware and tighten if necessary. (See Bolt Torque Specifications)	✔	
Check hydraulic system for hydraulic oil leaks.	✔	
Check Gearbox power shaft for foreign material wrapped around the shaft and remove if necessary.	✔	
Check teeth for damage and replace as needed.	✔	
Check all Safety Guards and Devices are installed correctly.	✔	
Check for missing or illegible Safety / Warning Decals.	✔	
Check oil level in gearbox and add if necessary. (See Lubrication Section)		✔

WARNING! Escaping fluid under pressure can have sufficient force to penetrate the skin causing serious personal injury. Fluid escaping from a very small hole can be almost invisible. Use a piece of cardboard or wood, rather that hands to search for suspected leaks.

Keep unprotected body parts, such as face, eyes, and arms as far away as possible from a suspected leak. Flesh injected with hydraulic fluid may develop gangrene or other permanent disabilities.

If injured by injected fluid, see a doctor at once. If your doctor is not familiar with this type of injury, ask him to research it immediately to determine proper treatment.

H079 11-9-10-2

MAINTENANCE

REPLACING TEETH

Securely block the unit off the ground to allow the wheel to rotate.

The teeth should be inspected daily for tightness and to ensure they are not worn or that the carbide tip is not missing or chipped. Tighten and replace as necessary.

Replacing Square Teeth:

1. With unit securely blocked off the ground and hydraulic couplers disconnected, remove lock nuts on teeth being replaced.
2. Position new teeth and replace existing lock nut with new one provided.
3. Torque to specification.

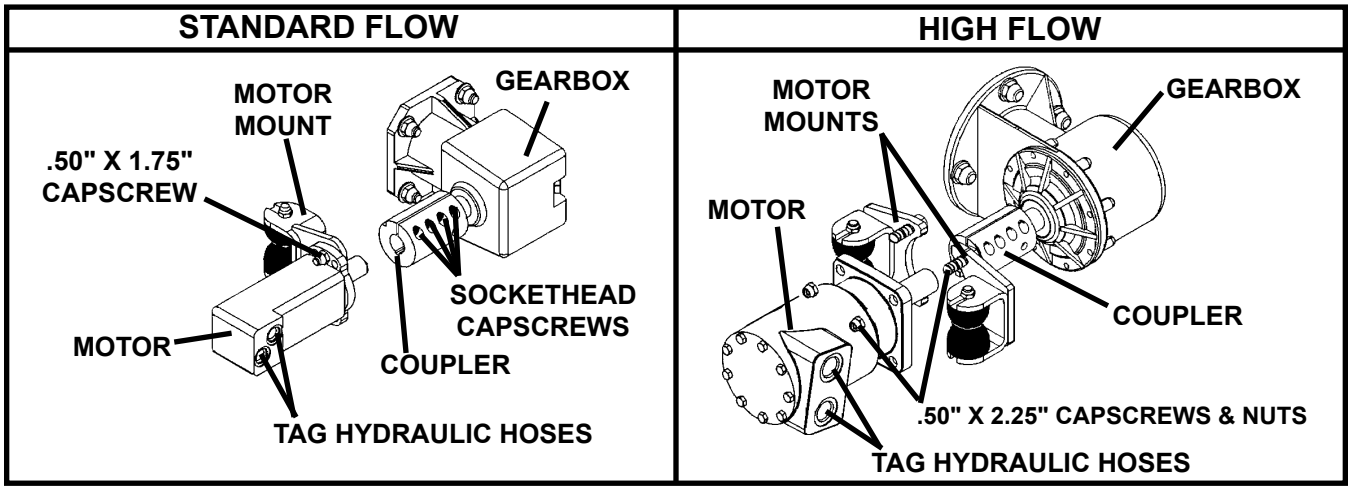
REPLACING HYDRAULIC MOTOR

When replacing the hydraulic motor the hydraulic couplers should be disconnected and the unit should be either securely blocked up off the ground or attached to a hoist.

NOTE: Field replacement of the internal motor seals voids warranty.

1. Tag and disconnect the hydraulic hoses from the hydraulic motor. Note the hose routing for re-installation.
2. Loosen the four sockethead capscrews on the coupler. See Figure #1

FIGURE #1



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3. **Standard Flow:** Slide the motor out of the coupler and remove the two .50" capscrews holding the motor to the motor mount and remove the motor. See Figure #1
   High Flow: Remove the four .50" capscrews holding the motor to the motor mounts and then slide the motor out of the coupler. See Figure #1
4. **Standard Flow:** Install the new motor onto the motor mount using existing hardware. Slide the motor with the mounting plate into the coupler while positioning the rubber bumpers and retighten the sockethead capscrews.
   High Flow: Slide the motor into the coupler while maintaining the positioning of the motor mounting plates. Reinstall the motor onto the motor mountings using existing hardware and retighten the sockethead capscrews.
5. Torque all hardware to specification.
6. Re-connect the hydraulic hoses and fittings to the new motor.
7. Check for leaks and tighten as required.

REPLACING GEARBOX/MOTOR COUPLER

When replacing the coupler the hydraulic couplers should be disconnected and the unit should be either securely blocked up off the ground or attached to a hoist.

1. Loosen the four sockethead capscrews on the coupler.
2. **Standard Flow:** Slide the motor out of the coupler. See Figure #1
   High Flow: Remove the four .50" capscrews holding the motor to the motor mounts and slide the motor out of the coupler. See Figure #1
3. Remove the roll pin holding the coupler to the gearbox.
4. Place the new coupler on the gearbox shaft and reinstall roll pin.
5. Reinstall motor into the coupler (install the four .50" capscrews on high flow units) and retighten the sockethead capscrews. Torque to specification.

REPLACING GEARBOX

When replacing the gearbox the hydraulic couplers should be disconnected and the unit should be either securely blocked up off the ground or attached to a hoist.

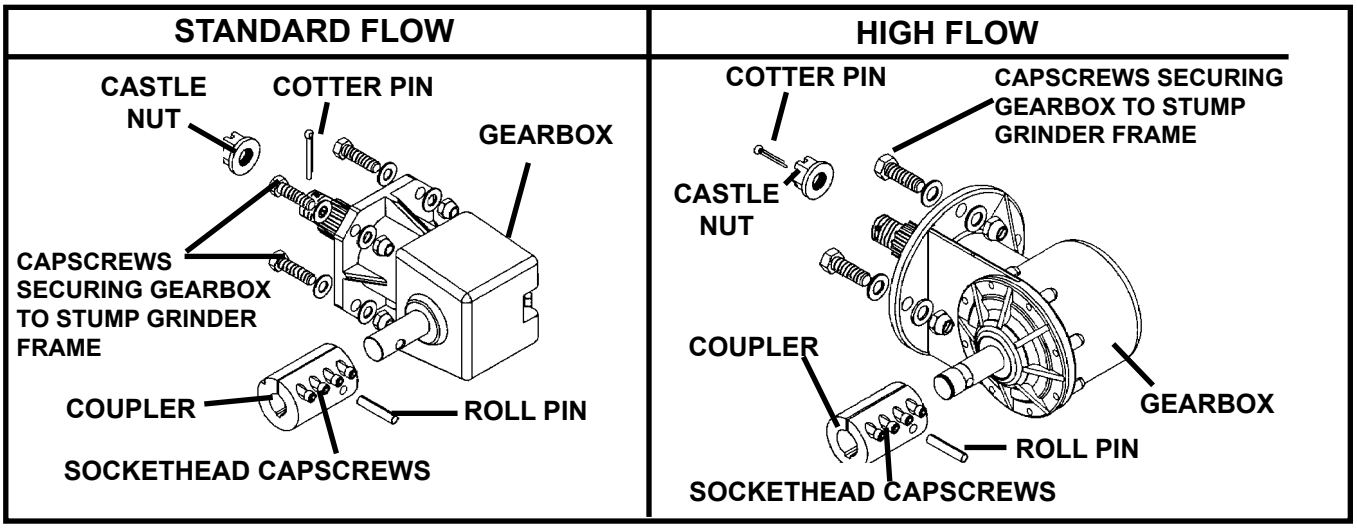
NOTE: A new cotter pin should be installed whenever the wheel is removed.

1. Remove the wheel guard cover. Remove the castle nut and cotter pin securing the wheel to the gearbox.
2. Loosen the four sockethead capscrews on the coupler. See Figure #1
3. **Standard Flow:** Slide the motor out of the coupler. See Figure #1
   High Flow: Remove the four .50" capscrews holding the motor to the motor mounts and slide the motor out of the coupler. See Figure #1

3. Remove the roll pin holding the coupler to the gearbox and remove the coupler. See Figure #2
4. Remove the four capscrews securing the gearbox to the stump grinder frame and remove the gearbox. See Figure #2

NOTE: Be prepared for the gearbox to drop when the capscrews are removed.

FIGURE #2



5. Check lubrication level in the gearbox and add as needed. (See Lubrication Section) Install into the stump grinder frame using existing hardware.
6. Place the new coupler on the gearbox shaft and reinstall the roll pin.
7. Reinstall the motor into the coupler (install the four .50" capscrews on high flow units) and retighten the sockethead capscrews.
8. Re-install the wheel using the new castle nut and cotter pin.
9. Re-install the wheel guard cover using the existing hardware.
10. Torque all capscrews to specification.

MAINTENANCE AND SERVICE

CYLINDER SEAL REPLACEMENT

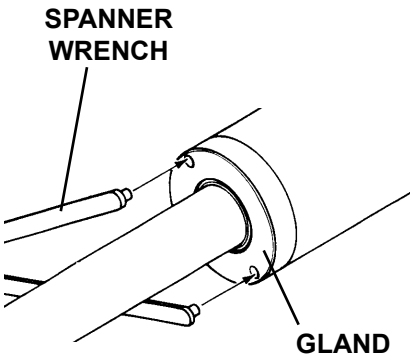
The following information is provided to assist you in the event you should need to repair or rebuild a hydraulic cylinder. When working on hydraulic cylinders, make sure that the work area and tools are clean and free of dirt to prevent contamination of the hydraulic system and damage to the hydraulic cylinders. Always protect the active part of the cylinder rod (the chrome section). Nicks or scratches on the surface of the rod could result in cylinder failure. Clean all parts thoroughly with a cleaning solvent before reassembly.

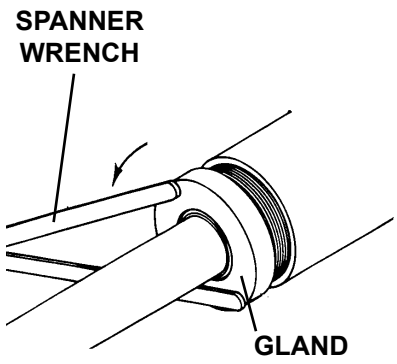
DISASSEMBLY PROCEDURE

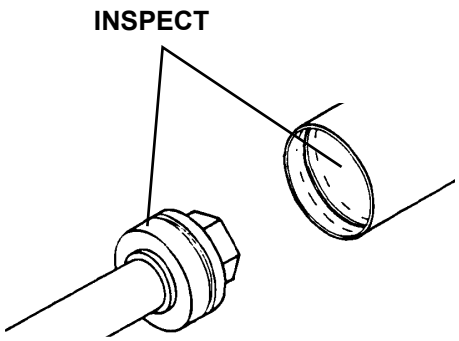
IMPORTANT: Do not contact the active surface of the cylinder rod with the vise. Damage to the rod could result.

THREADED TYPE GLAND

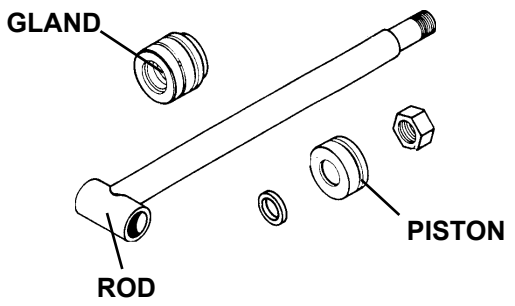
1. Rotate the gland with a spanner wrench counterclockwise until the gland is free of the cylinder tube.
2. Pull the cylinder rod from the cylinder tube and inspect the piston and the bore of the cylinder tube for deep scratches or galling. If damaged, the piston AND the cylinder tube must be replaced.

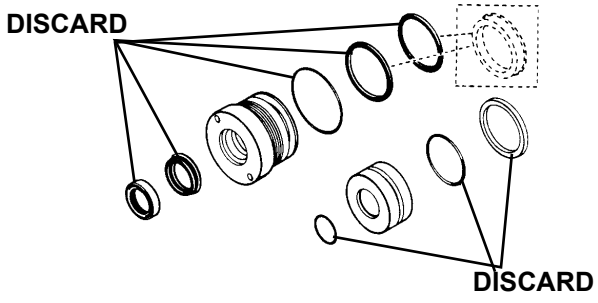






3. Remove the hex nut, piston, flat washer or spacer tube (if so equipped), and gland from the cylinder rod. If the cylinder rod is rusty, scratched, or bent, it must be replaced.
4. Remove and discard all the old seals.





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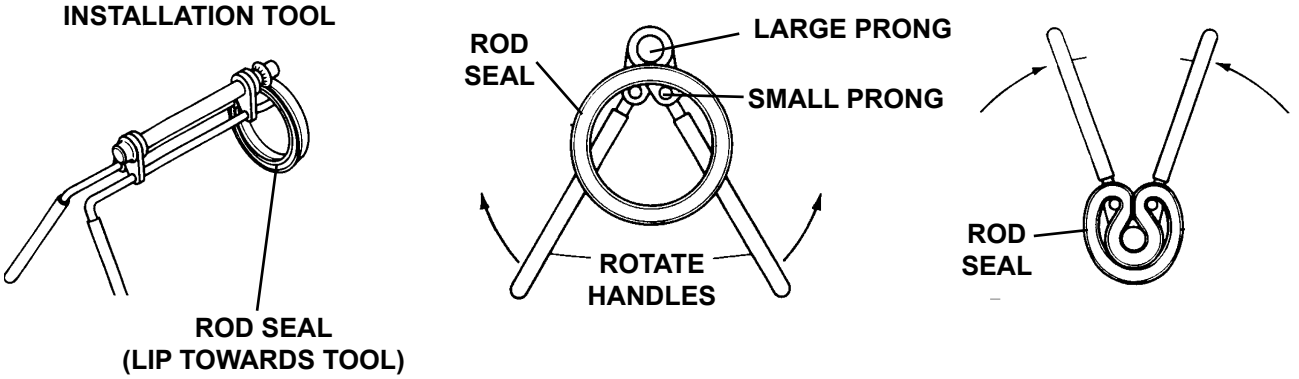
MAINTENANCE AND SERVICE

ASSEMBLY PROCEDURE

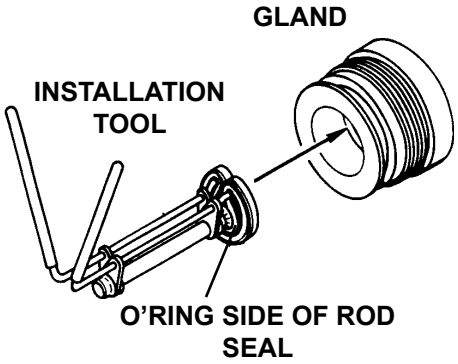
IMPORTANT: Replace all seals even if they do not appear to be damaged. Failure to replace all seals may result in premature cylinder failure. NOTE: Seal kits will service most cylinders of similar bore size and rod diameter.

1. Install the cylinder rod seal in the gland first. Be careful not to damage the seal in the process, as it is somewhat difficult to install.

NOTE: A special installation tool (Part #65349) is available to help with installing the seal. Simply fit the end of the tool over the seal so that the large prong of the tool is on the outside of the seal, and the two smaller prongs on the inside. The lip of the seal should be facing towards the tool. Rotate the handles on the tool around to wrap the seal around the end of the tool.

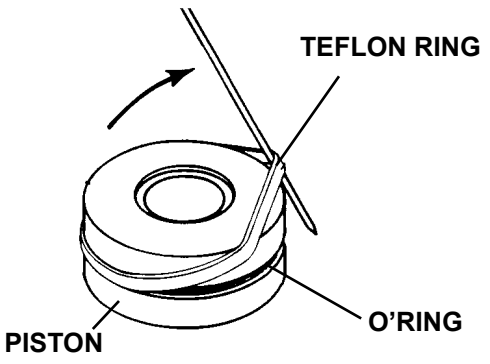


Now insert the seal into the gland from the inner end. Position the seal in its groove, and release and remove the tool. Press the seal into its seat the rest of the way by hand.



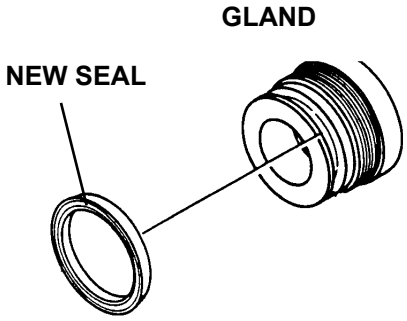
2. Install the new piston ring, rod wiper, O-rings and backup washers, if applicable, on the piston.

Be careful not to damage the seals. Caution must be used when installing the piston ring. The ring must be stretched carefully over the piston with a smooth, round, pointed tool.



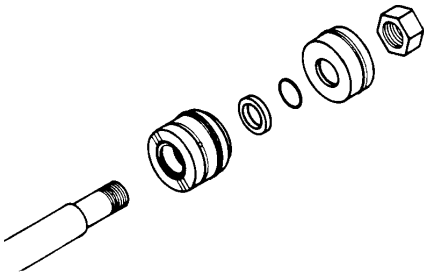
H034 3-12-08

MAINTENANCE AND SERVICE



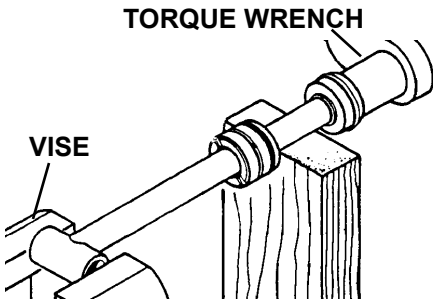
3. After installing the rod seal inside the gland, as shown in step #1, install the external seal.

NOTE: Threaded glands may have been equipped with a separate O-ring and backup washer system or a polypak (all in one) type seal. Current seal kits contain a polypak (all in one) type seal to replace the discarded seal types on ALL THREADED GLANDS.



4. Slide the gland onto the cylinder rod, being careful not to damage the rod wiper. Then install the spacer, or flat washer (if so equipped), small o-ring, piston, and hex nut onto the end of the cylinder rod.

5. Secure the cylinder rod (mounting end) in a vise with a support at its center. Torque the nut to the amount shown for the thread diameter of the cylinder rod (see chart).



Thread Diameter	POUNDS - FEET	NEWTON-METERS
7/8"	150-200	203.4-271.2
*1"	230-325	311.8-440.6
1-1/8"	350-480	474.5-650.8
1-1/4"	490-670	664.4-908.4
1-3/8"	670-900	908.4-1 220.2

*** 1" Thread Diameter WITH 1-1/4" Rod Diameter**
Min. 230 ft. lbs. (311.8 N·m) Max. 250 ft. lbs. (339.0 N·m)

IMPORTANT: Do not contact the active surface of the cylinder rod with the vise. Damage to the rod could result.

6. Apply a lubricant (such as Lubriplate #105) to the piston and teflon ring. Insert the cylinder rod assembly into the cylinder tube.

IMPORTANT: Ensure that the piston ring fits squarely into the cylinder tube and piston groove, otherwise the ring may be damaged and a leak will occur.

7. Use a spanner wrench to rotate the gland clockwise into the cylinder. Continue to rotate the gland with the spanner wrench until it is tight.

WARNING! Cylinders serviced in the field are to be tested for leakage prior to the attachment being placed in work. Failure to test rebuilt cylinders could result in damage to the cylinder and/or the attachment, cause severe personal injury or even death.

H035 3-12-05

TROUBLESHOOTING

PROBLEM	POSSIBLE CAUSE	POSSIBLE SOLUTION
Motor will not operate.	Auxiliary hoses not hooked up to the skid steer.	Engage Couplers
	Obstruction in hydraulic lines.	Remove obstruction and replace if necessary.
	Skid steer auxiliary valve not engaged.	Engage auxiliary valve.
Wheel rotates sluggishly.	Insufficient hydraulic flow from the skid steer.	Refer to your skid steer's owners manual.
	Damaged quick coupler.	Replace coupler.
	Oil filter on skid-steer is dirty.	Refer to your skid steer's owners manual.
	Internal motor leakage.	Call Paladin Service Department.
	Gearbox Failure.	Call Paladin Service Department.
Leaking Oil.	Loose or damaged hydraulic line.	Tighten or replace.
	O-Rings on fittings damaged.	Replace.
	Fittings loose or damaged.	Tighten or replace.
	Cylinder seals damaged.	Replace cylinder seals.
	Motor seals damaged.	Call Paladin Service Department.
Insufficient power.	Insufficient hydraulic flow from the skid steer.	Refer to your skid steer's owners manual.
	Relief valve setting adjusted too low.	Refer to your skid steer's owners manual.
	Oil filter on skid steer is dirty.	Refer to your skid steer's owners manual.

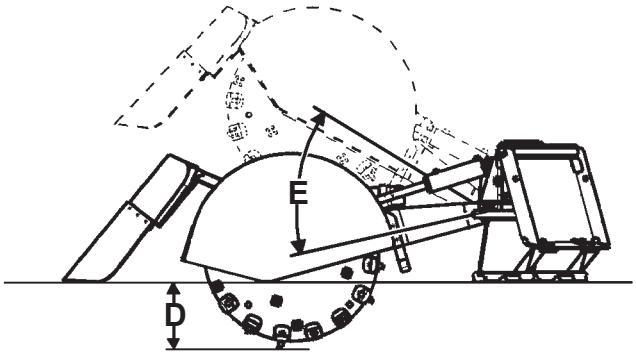
H084 4-3-08

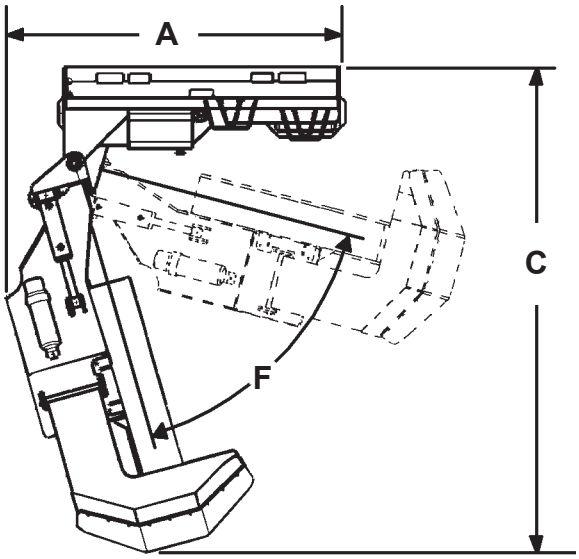
TROUBLESHOOTING

PROBLEM	POSSIBLE CAUSE	POSSIBLE SOLUTION
Cylinders operate in the wrong direction.	Hoses to skid steer incorrectly connected.	Switch couplers at the skid steer end.
	Incorrect wiring from the joy-stick control.	Check wiring diagram and correct.
Cylinders speed is either too fast or too slow.	Cylinder speed adjusted in-correctly.	Adjust the cylinder speed knob on the control valve.
Excessive oil temperature.	Hydraulic oil level too low.	Refer to your skid steer's owners manual
	Excessive stalling of cutting wheel.	Decrease cutting depth and swing speed.
	Obstruction in hydraulic lines.	Remove obstruction and re-place if necessary.
	Hydraulic oil or oil filter in skid steer is dirty.	Refer to your skid steer's owners manual.
	Relief valve setting adjusted too low.	Refer to your skid steer's owners manual.
	Couplers not engaged.	Engage couplers.
Wheel rotates in the wrong direction.	Hoses are switched at the motor.	Switch motor hoses.
Excessive Vibration	Broken, damaged or missing teeth.	Replace as necessary.
	Bent gearbox shaft.	Call Paladin Service Depart-ment.
Cylinders will not function.	Faulty switch or electrical connection.	Repair or replace as neces-sary.
	Faulty control valve coil.	Replace coil.
	Damaged spool in control valve.	Replace spool.

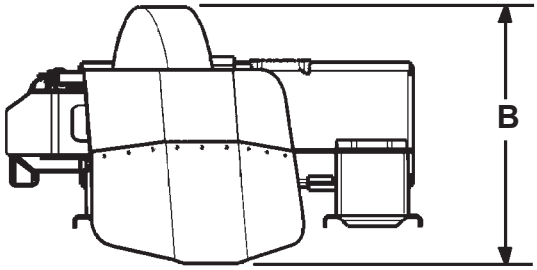
H085 4-3-08

SPECIFICATIONS





SPECIFICATION AND DESIGN ARE SUBJECT TO CHANGE WITHOUT NOTICE AND WITHOUT LIABILITY THEREFORE.



DESCRIPTION	SPECIFICATION
A. Overall Width	58" (1,473 mm)
B. Overall Height	37" (940 mm)
C. Overall Length	84" (2,134 mm)
D. Below Ground Depth	12" (305 mm)
E. Swing Arc	60°
F. Maximum Lift	43°
Number of Cutting Teeth	28

	STANDARD FLOW	HIGH FLOW
Wheel Diameter	26" (660 mm)	30" (762 mm)
Hydraulic Flow Requirement	16-22 gpm (61-83 lpm)	25-40 gpm (95-151 lpm)
Weight	720 lbs (327 kg)	795 lbs (361 kg)
Stump Height (with gouser pads on the ground and measuring to centerline of cutting wheel)	30" (762 mm)	30" (762 mm)

H440 11-12-10

BOLT TORQUE SPECIFICATIONS

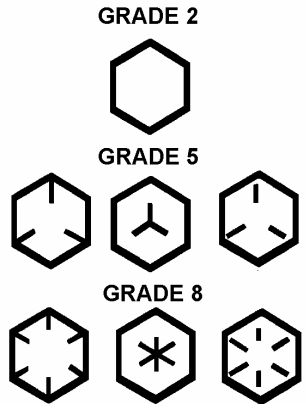
GENERAL TORQUE SPECIFICATION TABLES

Use the following charts when determining bolt torque specifications when special torques are not given. Always use grade 5 or better when replacing bolts.

SAE BOLT TORQUE SPECIFICATIONS

NOTE: The following torque values are for use with extreme pressure lubricants, plating or hard washer applications Increase torque 15% when using hardware that is unplated and either dry or lubricated with engine oil.

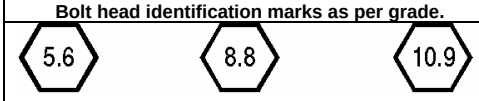
Bolt Size		SAE GRADE 5 TORQUE Pounds Feet		SAE GRADE 5 TORQUE Newton-Meters		SAE GRADE 8 TORQUE Pounds Feet		SAE GRADE 8 TORQUE Newton-Meters		Bolt head identification marks as per grade. NOTE: Manufacturing Marks Will Vary
Inches	Millimeters	UNC	UNF	UNC	UNF	UNC	UNF	UNC	UNF	
1/4	6.35	8	9	11	12	10	13	14	18	
5/16	7.94	14	17	19	23	20	25	27	34	
3/8	9.53	30	36	41	49	38	46	52	62	
7/16	11.11	46	54	62	73	60	71	81	96	
1/2	12.70	68	82	92	111	94	112	127	152	
9/16	14.29	94	112	127	152	136	163	184	221	
5/8	15.88	128	153	174	207	187	224	254	304	
3/4	19.05	230	275	312	373	323	395	438	536	
7/8	22.23	340	408	461	553	510	612	691	830	
1	25.40	493	592	668	803	765	918	1037	1245	
1-1/8	25.58	680	748	922	1014	1088	1224	1475	1660	
1-1/4	31.75	952	1054	1291	1429	1547	1700	2097	2305	
1-3/8	34.93	1241	1428	1683	1936	2023	2312	2743	3135	
1-1/2	38.10	1649	1870	2236	2535	2686	3026	3642	4103	



METRIC BOLT TORQUE SPECIFICATIONS

NOTE: The following torque values are for use with metric hardware that is unplated and either dry or lubricated with engine oil. Reduce torque 15% when using hardware that has extreme pressure lubricants, plating or hard washer applications.

Bolt head identification marks as per grade.



Size of Bolt	Grade No.	Pitch (mm)	Pounds Feet	Newton-Meters	Pitch (mm)	Pounds Feet	Newton-Meters
M6	5.6	1.0	3.6-5.8	4.9-7.9	-	-	-
	8.8		5.8-.4	7.9-12.7		-	-
	10.9		7.2-10	9.8-13.6		-	-
M8	5.6	1.25	7.2-14	9.8-19	1.0	12-17	16.3-23
	8.8		17-22	23-29.8		19-27	25.7-36.6
	10.9		20-26	27.1-35.2		22-31	29.8-42
M10	5.6	1.5	20-25	27.1-33.9	1.25	20-29	27.1-39.3
	8.8		34-40	46.1-54.2		35-47	47.4-63.7
	10.9		38-46	51.5-62.3		40-52	54.2-70.5
M12	5.6	1.75	28-34	37.9-46.1	1.25	31-41	42-55.6
	8.8		51-59	69.1-79.9		56-68	75.9-92.1
	10.9		57-66	77.2-89.4		62-75	84-101.6
M14	5.6	2.0	49-56	66.4-75.9	1.5	52-64	70.5-86.7
	8.8		81-93	109.8-126		90-106	122-143.6
	10.9		96-109	130.1-147.7		107-124	145-168
M16	5.6	2.0	67-77	90.8-104.3	1.5	69-83	93.5-112.5
	8.8		116-130	157.2-176.2		120-138	162.6-187
	10.9		129-145	174.8-196.5		140-158	189.7-214.1
M18	5.6	2.0	88-100	119.2-136	1.5	100-117	136-158.5
	8.8		150-168	203.3-227.6		177-199	239.8-269.6
	10.9		175-194	237.1-262.9		202-231	273.7-313
M20	5.6	2.5	108-130	146.3-176.2	1.5	132-150	178.9-203.3
	8.8		186-205	252-277.8		206-242	279.1-327.9
	10.9		213-249	288.6-337.4		246-289	333.3-391.6

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PALADIN™
CONSTRUCTION GROUP

CE

EU DECLARATION OF CONFORMITY

I, the undersigned, on behalf of:

Manufacturer/Technical Document Holder

Paladin Construction Group
2800 N. Zeeb Road
Dexter, MI 48130 USA
Phone: 734-996-9116
Fax: 734-996-9014

hereby declare that the following product:

Description of Equipment: Hydraulically driven Stump Grinder with 26" or 30" cutting wheel and forward discharge for skid steer loader applications. Used for grinding down tree stumps.

Attachment Model: **SG26 AND SG30**

Serial Number:

Conforms to: **2006/42/EC Machinery Directive; EN ISO4254-1:2008; EN ISO14121-1:2007; EN ISO12100-1:2009; EN ISO12100-2:2003; EN ISO2867:2006; EN ISO982:2008**

Certification method: **Self-certified, per Annex V of the Directive**

Name and address of the person in the Community authorized to compile the technical construction file:

GENESIS GmbH
Alpenstrasse 71
Memmingen, GERMANY D – 87700

At Delhi, Signature, Title, Date

Signature: _____

Title: _____

Date: _____