



## OPERATOR'S MANUAL

### SKID HOE Fixed and Swing

**FOR  
SKID STEER LOADERS**



SERIAL NUMBER: \_\_\_\_\_

MODEL NUMBER: \_\_\_\_\_

Manual Number: OM731  
Part Number: 75631  
Rev. 6



# TABLE OF CONTENTS

<b>PREFACE</b>	3
<b>SAFETY PRECAUTIONS</b>	
SAFETY STATEMENTS	5
GENERAL SAFETY PRECAUTIONS	5-7
EQUIPMENT SAFETY PRECAUTIONS	8-9
<b>DECALS</b>	
DECAL PLACEMENT	10-11
DECALS	12
<b>PREOPERATION</b>	
GENERAL INFORMATION	13
PREPARING THE SKID STEER LOADER	13-14
SECONDARY RELIEF VALVE INSTALLATION	14-15
NOMENCLATURE	15
<b>INSTALLATION</b>	
ATTACHING	16
SKID HOE HYDRAULICS	16
DETACHING	16
SUPPLEMENTAL - RELIEF VALVE INSTALLATIONS	16-17
<b>OPERATING INSTRUCTIONS</b>	
GENERAL INFORMATION	18
BASIC DIGGING TECHNIQUE	18-19
BACKFILLING	19
STORAGE	20
LIFT POINTS	20
TIE DOWN POINTS	21
TRANSPORTING	21
<b>MAINTENANCE AND SERVICE</b>	
GENERAL INFORMATION	22
BEFORE EACH USE OR AFTER EVERY 8 HOURS OF OPERATION	22
LUBRICATION	23
REPLACING BUCKET TEETH	23
CHANGING BUCKETS	23
CYLINDER SEAL REPLACEMENT	24-25
<b>TROUBLESHOOTING</b>	26-27
<b>SPECIFICATIONS</b>	
BOLT TORQUE SPECIFICATIONS	28
SKID HOE SPECIFICATIONS	29
<b>PARTS / WARRANTY</b>	31

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# PREFACE

## GENERAL COMMENTS

Congratulations on the purchase of your new product! 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.

This manual has been designed to help you do a better, safer job. Read this manual carefully and become familiar with its contents.

**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 forward.

**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 operators.

## 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 mover, 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 INDICATES A HAZARDOUS SITUATION WHICH, IF NOT AVOIDED, WILL RESULT IN DEATH OR SERIOUS INJURY.



### **WARNING**

THIS SIGNAL WORD INDICATES A HAZARDOUS SITUATION WHICH, IF NOT AVOIDED, COULD RESULT IN DEATH OR SERIOUS INJURY.



### **CAUTION**

THIS SIGNAL WORD INDICATES A HAZARDOUS SITUATION WHICH, IF NOT AVOIDED, COULD RESULT IN MINOR OR MODERATE INJURY.

### **NOTICE**

NOTICE IS USED TO ADDRESS PRACTICES NOT RELATED TO PHYSICAL INJURY.

## 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.

## 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.

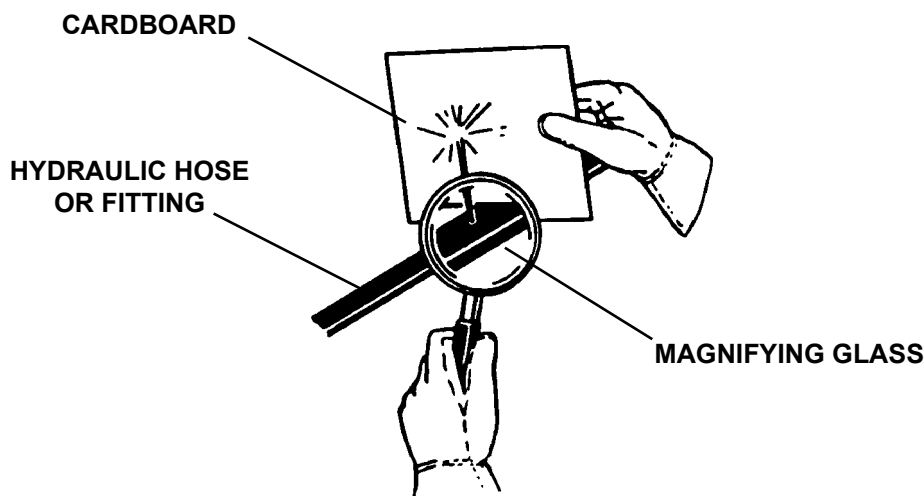
### WARNING!



#### 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.**





## 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 Protective 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.

### WARNING!



#### CALIFORNIA PROPOSITION 65 WARNING

This product may contain a chemical known to the state of California to cause cancer, or birth defects or other reproductive harm. [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov)

## 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 fluid and components.



#### OPERATING THE ATTACHMENT

- Block off work area from bystanders, livestock, etc. Allow plenty of room for skid hoe swing.
- Operate only from the operator's station.
- Use the skid hoe only for digging. Do not use the skid hoe to pull things, as a battering ram, or attach ropes, chains etc., to the unit.
- Do not lift loads in excess of the capacity of the skid hoe or prime mover.
- When operating on slopes, dig with the skid hoe uphill, and avoid swinging the skid hoe to the downhill side. 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 prime mover.
- 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.
- Before exiting the prime mover, lower the skid hoe to the ground, turn off the prime mover's engine, remove the key and apply the brakes.

# EQUIPMENT SAFETY PRECAUTIONS



## TRANSPORTING THE ATTACHMENT

- 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.



## MAINTAINING THE ATTACHMENT

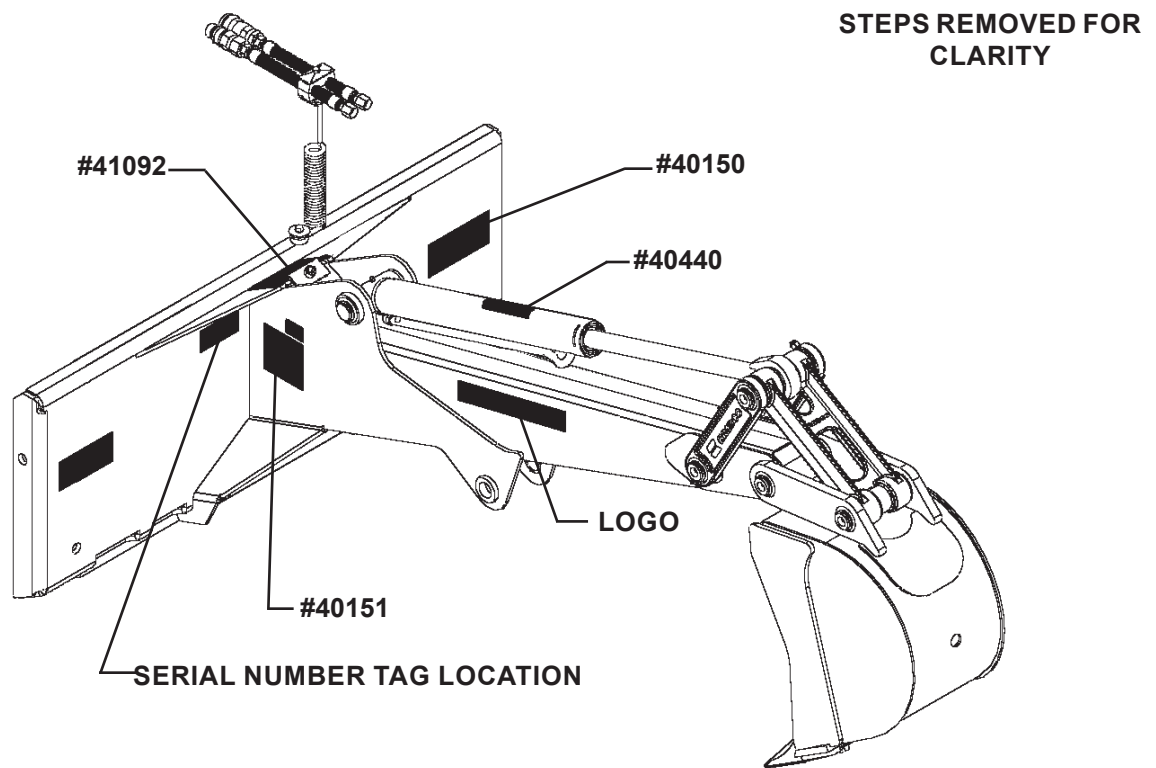
- Before performing maintenance, lower the attachment to the ground, turn off the engine, remove the key and apply the brakes.
- Never perform any work on the attachment unless you are authorized and qualified to do so. Always read the operator service manuals before any repair is made. After completing maintenance or repair, check for correct functioning of the skid hoe. 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 BRADCO.
- Never make hydraulic repairs while the system is under pressure, or cylinders under load. Serious personal injury or death could result.
- Never work under a raised attachment.

## DECALS

### DECAL PLACEMENT - FIXED SKID HOE

#### GENERAL INFORMATION

The diagram on this page shows the location of the decals used on the Fixed Skid Hoe. The decals are identified by their part numbers, with reductions of the actual decals shown. Use this information to order replacements for lost or damaged decals. Be sure to read all decals before operating the attachment. They contain information you need to know for both safety and longevity.



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

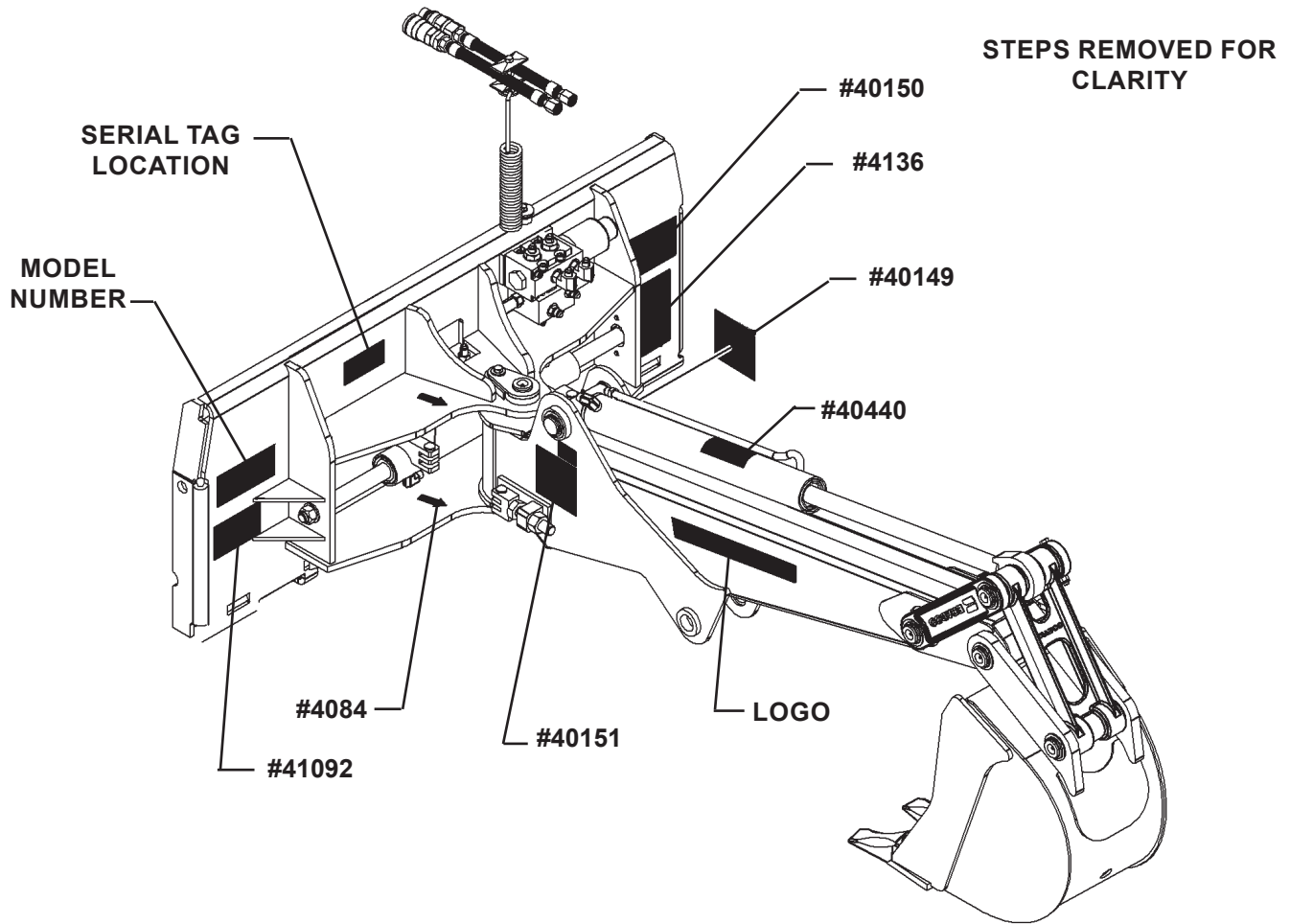
**REPLACING SAFETY DECALS:** Clean the area of application with nonflammable solvent, then wash the same area with soap and water. Allow the surface to fully dry. Remove the backing from the safety decal, exposing the adhesive surface. Apply the safety decal to the position shown in the diagram above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

# DECALS

## DECAL PLACEMENT - SWING SKID HOE

### GENERAL INFORMATION

The following diagrams show the location of the decals used on the Swing Skid Hoe. The decals are identified by their part numbers, with reductions of the actual decals shown on the following page. Use this information to order replacements for lost or damaged decals. Be sure to read all decals before operating the attachment. They contain information you need to know for both safety and longevity.



**IMPORTANT:** Keep all safety decals clean and legible. Replace all missing, illegible, 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 nonflammable solvent, then wash the same area with soap and water. Allow the surface to fully dry. Remove the backing from the safety decal, exposing the adhesive surface. Apply the safety decal to the position shown in the diagram above and smooth out any bubbles.

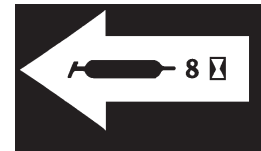
## DECALS



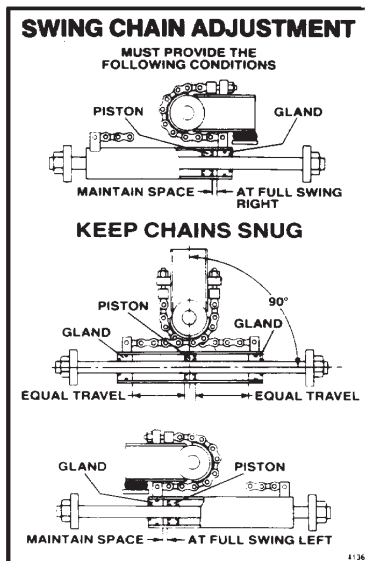
**PART #40149**  
**DANGER! PINCH POINT**



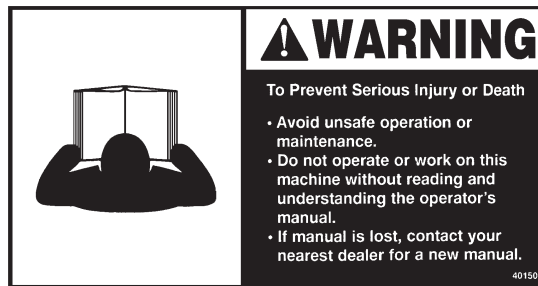
**PART #40151**  
**WARNING! HIGH PRESSURE FLUID**



**PART #4084**  
**GREASE 8 HOURS**



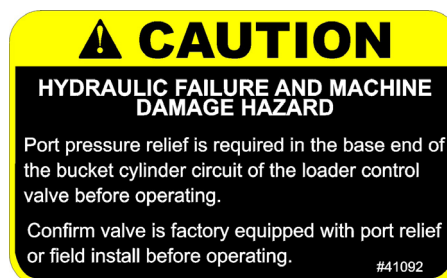
**PART #4136**  
**SWING CHAIN ADJUSTMENT**



**PART #40150**  
**WARNING! READ MANUAL**



**PART #40440**  
**CALL BEFORE YOU DIG**




**PART #41092**  
**CAUTION DECAL**

**NOTE: CONTACT YOUR LOCAL DEALER TO PURCHASE LOGO AND MODEL NUMBER DECALS.**

# PREOPERATION

## GENERAL INFORMATION

The BRADCO Skid Hoe was designed to be easy to use and maintain.

**WARNING!**  Never let anyone operate this equipment without first reading this manual, as well as all manuals related to this equipment and the prime mover. Follow all safety and operating instructions.

Operate the skid hoe only when properly seated in the skid steer's operating station. Any other method could result in serious personal injury or death.

Check the prospective digging area for hidden utility lines before operating the skid hoe. If in doubt of their location, contact the local utility companies. When operating the unit in an area where utility lines are expected to be present, proceed with caution. If the bucket makes contact with anything out of the ordinary, stop digging at once, and have the obstruction checked by hand. If a utility line has been damaged, contact the affected utility company immediately.

## PREPARING THE SKID STEER LOADER

**CAUTION!**  THIS ATTACHMENT REQUIRES BASE-END BUCKET CIRCUIT PORT RELIEF VALVE TO BE INSTALLED IN THE LOADER CONTROL VALVE. CONFIRM PORT RELIEF VALVE INSTALLATION BEFORE OPERATING THIS ATTACHMENT.

If your unit does not have a factory installed relief in the base end of the loader control valve bucket cylinder circuit, contact your local dealer and have one installed before installing and operating the skid hoe. This cartridge is in addition to any existing rod-end relief cartridge and protects the skid steer from hydraulic failure and/or loader bucket cylinder damage.

**Bobcat:** Units with BICS (Bobcat Interlock Control System) do not require additional relief. Units without BICS but with a plug and relief on the tilt spool require Bobcat part #6599161 cartridge to replace the plug.

**Case:** Order Case #87445935 on all early production manual-control units. Later production manual-control machines have port relief valve included. All pilot-controlled units, track models and all 450 models have factory installed port relief valve since first production. Confirm port relief valve installation before operating this attachment. (See Installation Instructions)

**Gehl:** Models 7600, 7800 and 7810E install Gehl #138703 cartridge. Install into main control valve opposite the existing cartridge on the bucket circuit spool.

**John Deere:** Models 4475, 5575, 6675, 7775 and 8875 require John Deere #MG86529091. The following models require Bradco #LAF4495: Model 240 (up to SN#440000), 250 (up to SN#450000), 260 (up to SN#460000) and 270 (up to SN#470000). All others along with Model 280 (SN#480001 and up) require no additional relief.

11088 9-1-09-2



## PREOPERATION

**Mustang:** Models 2095 and 2105 install Gehl #138703 cartridge. Install into main control valve opposite the existing cartridge on the bucket circuit spool.

**New Holland:** Order NH #86529091 for all Eaton valve equipped units (LX models and LS140, LS150, LS160, LS170, LS180, LS190, L140 and L150 along with manual-control L160, L170 and L175.) Order NH #87445939 for Husco valve equipped units (LS180.B, LS185.B, LS190.B and early production manual-control L180, L185 and L190.) Later production L180, L185, L190 manual-control machines have port relief valves included. All pilot-controlled L160 and larger and track models LT and C have had factory installed port relief valves since first production. Confirm port relief valve installation before operating. (See Installation Instructions)

**Others:** There is a secondary relief valve #LAF4264 available from your Bradco dealer for all units that do not have a base-end port relief available. (See the following installation instructions for installing this valve onto your skid steer loader.)

### SECONDARY RELIEF VALVE INSTALLATION (PART #LAF4264)

The purpose of this valve is to relieve high pressure in the loaders bucket cylinder circuit when the loader control valve does not have a port relief for this circuit. Read these instructions and your loader manual before attempting installation.

1. Clean the prime mover before working on the hydraulic system.
2. Remove any attachments from the skids steer loader and park on a level surface.
3. Shut off the engine, set the parking brake and relieve any hydraulic pressure in the system before connecting or disconnecting hydraulic lines.
4. Locate a convenient place to “tee” into the loader’s bucket circuit lines after they have passed through any self-leveling devices or any other devices which may be present on these lines. Refer to your loader’s service manual.
5. Locate a convenient area to “tee” into a return-to-tank line.
6. Once these areas have been located, find an area in close proximity for mounting the relief valve. Although the valve can be mounted in any position, every effort should be made to ensure accessibility to the valve, its cartridges, fittings and any lines that will be added. Careful consideration should also be made as to the type and size of the fittings and hoses that will be required before dismantling any hydraulic circuitry. Keep any added fittings, hoses, and the valve a safe distance from all moving parts of the machine. Any .38” SAE o’ring fittings, JIC fittings and .38” hydraulic hoses are all adequate for the amount of flow required. The valve’s ports accept #6 (.38”) SAE o’rings.
7. Install the line from the base-end of the loader’s bucket cylinders into port “B” on the valve. Install the line from the rod-end of the cylinder into port “R” on the valve and the return to the tank line into port “T”. Make sure all fittings and hoses are tightened securely and no hoses are stretched, bent, or kinked before mounting the valve.
8. Using the valve as a template, mark and drill two .25” holes.

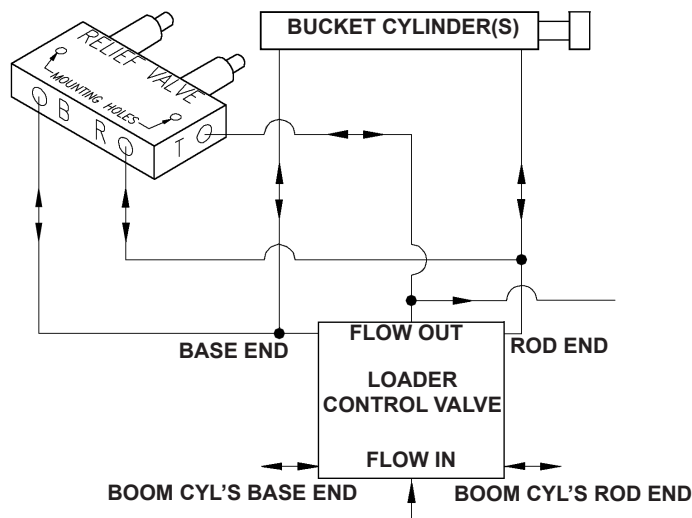
11089 9-1-09-2



## PREOPERATION

**IMPORTANT:** When drilling holes, be sure that you are not drilling into a reservoir or any other sealed compartment. Also be careful not to damage any hydraulic lines, fittings or components.

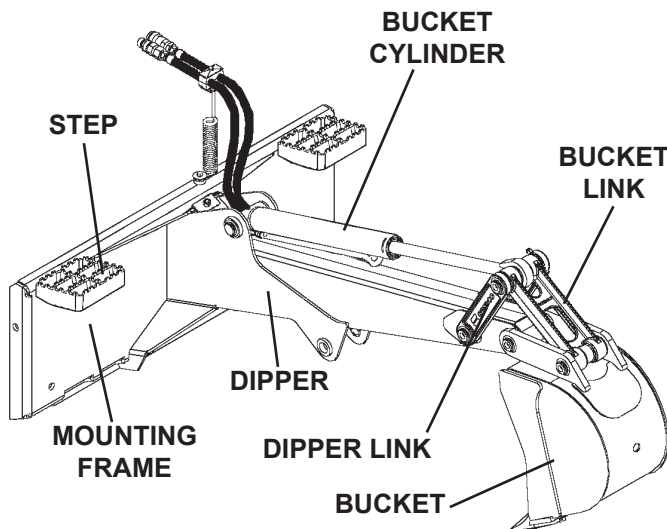
9. Secure the valve to the loader using .25" hardware. Check all connections for proper fit and tightness.
10. Replace any guards, shields or covers that were removed.
11. Replace any hydraulic fluid that may have been lost. See your loader's manual for specifications. (Start loader, reposition the loader arms and bucket cylinders according to the loader manufacturer's recommendations for checking fluid levels. Add fluid as needed.)



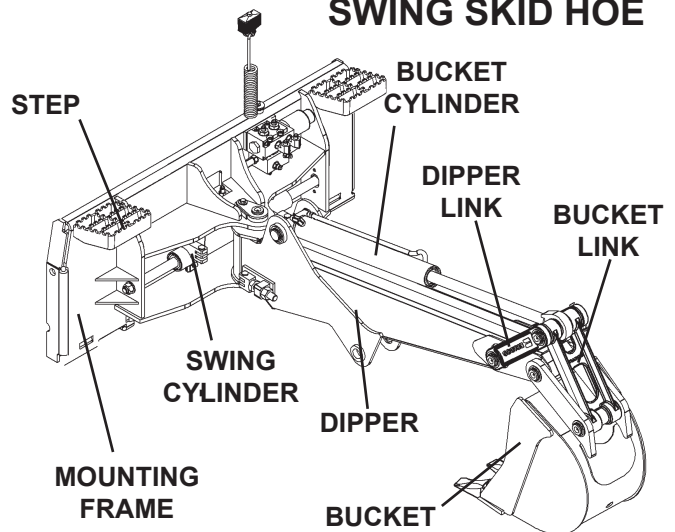
## NOMENCLATURE

Throughout this manual, reference is made to various skid hoe components. Study the following diagrams to acquaint yourself with the various names of these components. This knowledge will be helpful when reading through this manual or when ordering service parts. There is a complete parts breakdown for the skid hoes at the back of this manual.

### FIXED SKID HOE



### SWING SKID HOE



11090 5-22-14-3

# INSTALLATION

## ATTACHING

Install the skid hoe by following your prime mover's operator's manual for installing an attachment.

**WARNING!** To avoid serious personal injury, make sure the skid hoe is securely latched to the attachment mechanism of your unit. Failure to do so could result in separation of the attachment from the unit.



## SKID HOE HYDRAULICS

When installing a skid hoe onto your unit, finish the installation by connecting the couplers on the skid hoe to the auxiliary hydraulic couplers on your prime mover. If installing a swing hoe, also connect the wire assembly from the hydro-electric valve on the swing hoe to the optional control box or to the skid steer's auxiliary electrical outlet (if so equipped). Start the engine and slowly cycle the cylinder(s) several times to purge system of air and check for proper hydraulic connection, hose routing and hose length. Check for any hydraulic leaks and correct if necessary.

## DETACHING

On firm level ground, lower the skid hoe to the ground. Turn off the engine.

Move the control levers back and forth to relieve pressure in the line. Disconnect couplers. (If detaching a swing hoe, also disconnect the wire assembly going to either the electrical control box or the auxiliary electrical outlet on your prime mover.)

**NOTE: Connect couplers together or install dust caps to prevent contaminants from entering the hydraulic system.**

Follow your prime mover's operator's manual for detaching (removing) an attachment.

**NOTE: Frequent lubrication of grease fittings at the end of the cylinders and/or pivot points with a multi-purpose grease will greatly increase the life of the product.**

## SUPPLEMENTAL

**CAUTION!** THIS ATTACHMENT REQUIRES BASE-END BUCKET CIRCUIT PORT RELIEF VALVE TO BE INSTALLED IN THE LOADER CONTROL VALVE. CONFIRM PORT RELIEF VALVE INSTALLATION BEFORE OPERATING THIS ATTACHMENT.

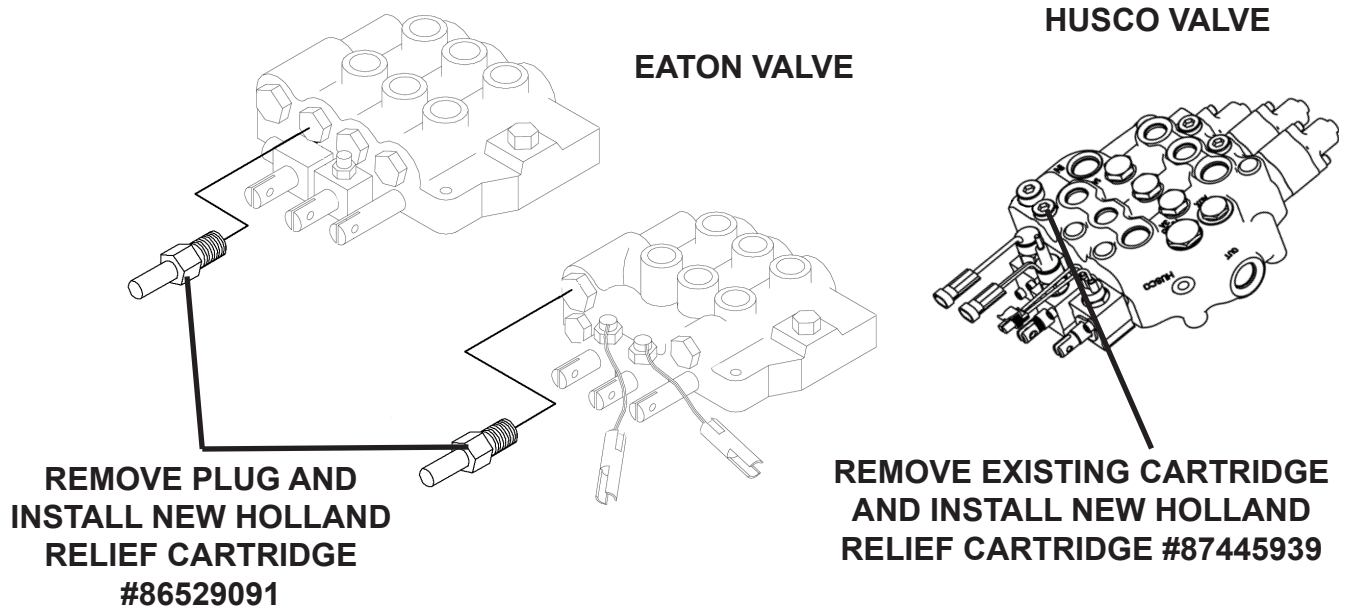


If your unit does not have a factory installed relief in the base-end of the loader control valve bucket cylinder circuit, contact your local dealer and have one installed before installing and operating the skid hoe. This cartridge is in addition to any existing rod-end relief cartridge and protects the skid steer from hydraulic failure and/or loader bucket cylinder damage.

# INSTALLATION

## NEW HOLLAND LOADERS:

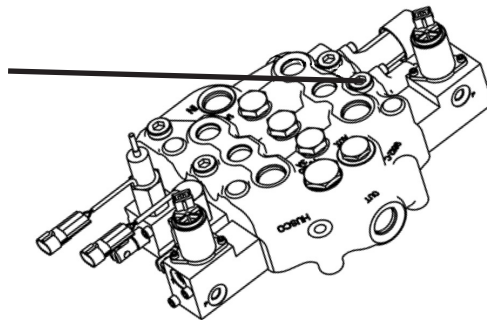
Order NH #86529091 for all Eaton valve equipped units (LX models and LS140, LS150, LS160, LS170, LS180, LS190, L140 and L150 and manual-control L160, L170 and L175). Order NH #87445939 for Husco valve equipped units (LS180.B, LS185.B, LS190.B and early production manual-control L180, L185 and L190). Later production L180, L185, L190 manual-control machines have port relief valves included. All pilot-controlled L160 and larger plus track models LT and C have had factory installed port relief valves since first production. Confirm port relief valve installation before operating.



## CASE:

Order Case #87445935 on all early production manual-control units. Later production manual-control machines have port relief valves included. All pilot-controlled units, track models and all 450 models have factory installed port relief valves since first production. Confirm port relief valve installation before operating this attachment. (See Installation Instructions)

**FOR CASE 400 SERIES MODELS  
REMOVE EXISTING CARTRIDGE  
AND INSTALL RELIEF CARTRIDGE  
#87445935**



See "PREPARING THE SKID STEER LOADER" in the Preoperation section of this manual for additional loader information.

# OPERATING INSTRUCTIONS

## GENERAL INFORMATION

When operating the skid hoe, smoothness of technique should be strived for at all times. Smoothness will come with experience and practice at feathering the controls. Establish a flowing digging cycle to increase operator efficiency and save unnecessary wear on the machine.

Observe the following instructions to obtain the best results and to fully utilize the digging force of the skid hoe.

**WARNING!** Read and understand the Safety Precautions section of this manual before beginning any skid hoe operation.



Operate the attachment only from the operator's station. Any other method could result in serious personal injury or death.

Check the prospective digging area for hidden utility lines before operating the skid hoe. If in doubt of their location, contact the local utility companies. When operating the unit in an area where utilities are expected to be present, throttle the skid hoe down and proceed with caution. If you feel the bucket make contact with anything out of the ordinary, stop digging at once and have the obstruction checked by hand. If a utility line has been damaged, contact the affected utility company immediately.

## BEFORE YOU START DIGGING

Before any excavating is started, it is always a good idea to plan the job first. Various things need to be considered and taken into account prior to the actual digging. The operator should inspect the job site and take notice of any potential hazards in the area. He/she should have a complete understanding of the tasks he/she is expected to perform. Figure out what will be done with the spoil (excavated soil), Will it be used to backfill? What are the soil conditions? Will you have to work around others? Etc.

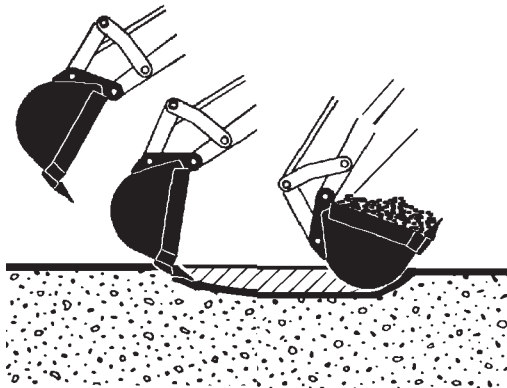
## BASIC DIGGING TECHNIQUE

When starting an excavation, make the first cut of each section shallow, being careful to follow the exact layout of the excavation. The reason for the shallow cut is to minimize damage to the sod and to facilitate replacement. These first cuts are also important because they will act as guides for the remaining cuts. Thus getting the first few cuts as accurate as possible will help in keeping all future cuts accurate.

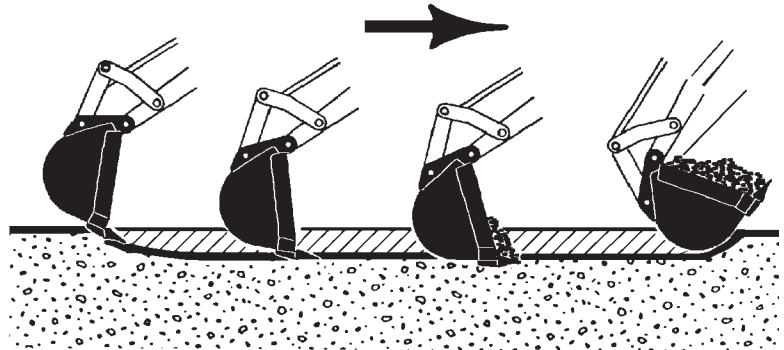
When digging with the skid hoe, the loader arms should be partially raised with the bucket out, away from the operator. Lower the dipper and start the digging process. The bucket teeth should be at a 30° to 45° entry angle. With the bucket on the ground, simultaneously curl the dipper toward the loader (using the loader arms) and roll the bucket until the bucket is full. (If the bucket stalls (wheels slide) raise the loader arms slightly and continue to dig until the bucket is full.) With the bucket full, raise the bucket out of the trench, and either rotate the skid steer and dump the spoil in the desired location or if using a swing hoe, swing the bucket to the side and dump the spoil in the desired location.

# OPERATING INSTRUCTIONS


To dig a shallow trench, reach the desired depth by following the basic digging techniques and then slowly back up the loader, keeping the bucket height constant.



**BASIC DIGGING**



**DIGGING A SHALLOW TRENCH**

**WARNING!** To prevent serious personal injury or death from cave-in or prime mover overturn;  
 Always back away from trenches before turning.  
Do not dig close to the loader wheels or under the loader.

The depth of the hole or trench will be controlled by dipper extension and loader arm height.

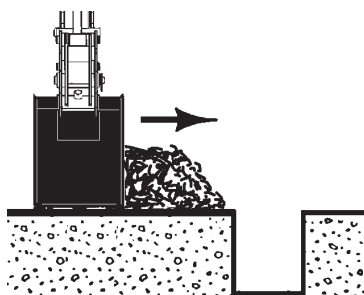
Use caution when working close to fences, ditches or on uneven ground and slopes. Always dump a loaded bucket on the uphill side of the hoe to minimize the possibility of turnover.

Use the flat sides of the bucket to scrape off any high spots on the sides of the excavation.

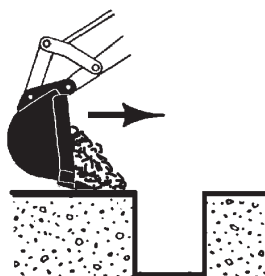
## BACKFILLING

There are several options available for backfilling a hole or trench. The spoil location and job will determine which procedure is best for your application.

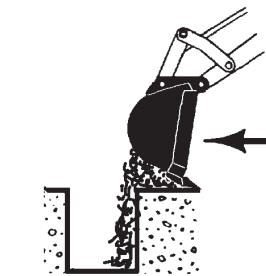
- Use the side of the bucket and pivot the loader toward the trench or hole or use the skid hoe swing (if equipped) to PUSH the spoil into the trench or hole.
- Use the bucket to reach beyond the trench and travel in reverse to PULL the spoil into the trench or hole.
- Use the back of the bucket and travel forward to PUSH the spoil into the trench or hole.



**USE SIDE OF BUCKET TO  
PUSH SPOIL INTO TRENCH**



**USE BUCKET TO PULL  
SPOIL INTO TRENCH**



**USE BUCKET TO PUSH  
SPOIL INTO TRENCH**

# OPERATING INSTRUCTIONS

**WARNING!** MAKE SURE THE TRENCH OR HOLE IS FULL BEFORE TRAVELING OVER IT WITH THE LOADER AND SKID HOE. MOVING OVER AN UNSTABLE SURFACE CAN RESULT IN TIPOVER.



Always lower the bucket to the ground, set the parking brake, stop engine and remove the key before leaving the operator's station.

## STORAGE

- Clean the unit thoroughly, removing all mud, dirt, and grease.
- Inspect for visible signs of wear, breakage, or damage. Order any parts required and make the necessary repairs to avoid delays upon removal from storage.
- Tighten loose nuts, capscrews and hydraulic connections.
- Coat exposed portions of the cylinder rods with grease.
- Lubricate grease fittings.
- Lubricate swing chain on Swing Hoe Only.
- Seal hydraulic system from contaminants and secure all hydraulic hoses off the ground to help prevent damage.
- Replace decals that are damaged or in unreadable condition.
- Store unit in a dry and protected place. Leaving the unit outside will materially shorten its life.

### Additional Precautions for Long Term Storage:

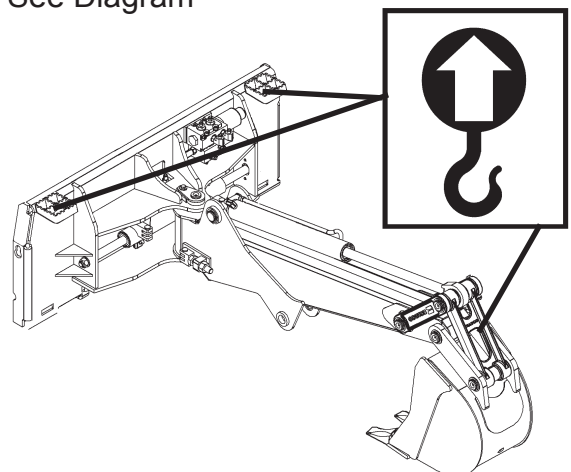
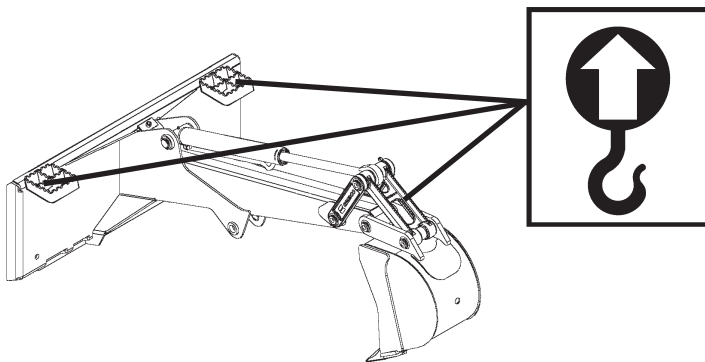
- Touch up all unpainted surfaces with paint to prevent rust.

## REMOVAL FROM STORAGE

- Remove cover.
- Wash unit and replace any damaged and/or missing parts.
- Lubricate grease fittings.
- Lubricate swing chain on Swing Hoe Only.
- Check hydraulic hoses for damage and replace as necessary.
- Inspect bucket teeth and replace if necessary.

## LIFT POINTS

Lifting points are identified by 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



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# OPERATING INSTRUCTIONS

- 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.

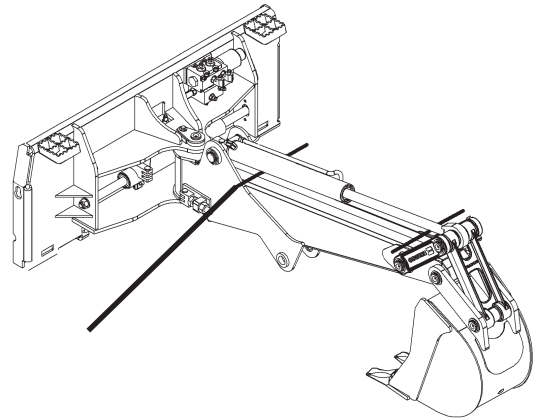
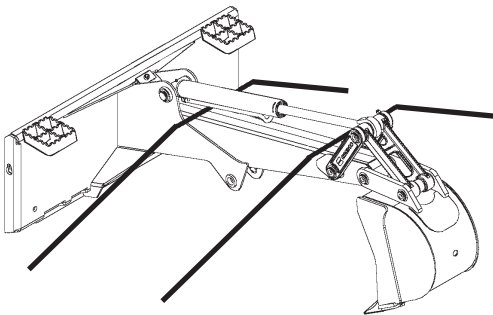
**WARNING!** Use lifting accessories (chains, slings, ropes, shackles and etc.) that are capable of supporting the size and weight of your attachment. Secure all lifting accessories in such a way to prevent unintended disengagement. Failure to do so could result in the attachment falling and causing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

**DO NOT ATTACH TIE DOWN ACCESSORIES  
OVER CYLINDERS, HOSES OR VALVE**



- 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.



## TRANSPORTING

Follow all local government regulations that may apply along with recommended tie down points and any equipment safety precautions at the front of this handbook when transporting your attachment.

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# 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 procedures be performed as described in this section.

**WARNING!** Read the Safety Precautions section of this manual before performing any maintenance procedure.



Follow all mandatory safety shutdown procedures outlined in the prime mover operator's manual before adjusting, cleaning, lubricating or servicing this attachment.

Procedure	Daily
Hardware - Check for tightness (see Bolt Torque Specifications).	✓
Check teeth for damage and replace as needed.	✓
Hydraulic System - Check for leaks and tighten as necessary. Check for damage and replace as needed.	✓
Decals - Check for missing or damaged safety decals and replace as necessary.	✓
Inspect attachment for any worn parts or cracked welds. Repair as required.	✓
Lubricate all grease fittings.	✓
Lubricate swing chain with spray lubricant. (Swing Hoe Only)	✓

**WARNING!** Escaping hydraulic 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 than your 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/her to research it immediately to determine proper treatment.



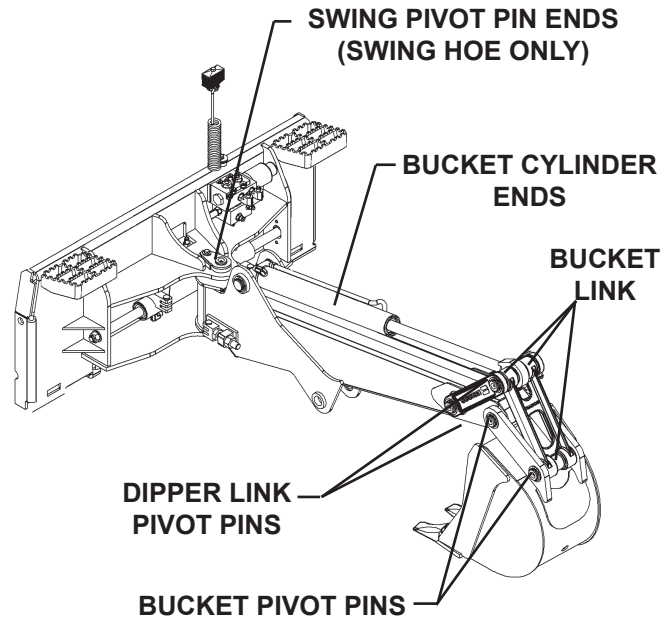
# MAINTENANCE AND SERVICE

## LUBRICATION

Economical and efficient operation of any machine is dependent upon regular and proper lubrication of all moving parts with a quality lubricant. Neglect leads to reduced efficiency, heavy draft, wear, breakdown and needless replacement of parts. All parts provided with grease fittings should be lubricated every 8 hours. 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 the wear. After greasing, wipe off excessive grease from fittings.**

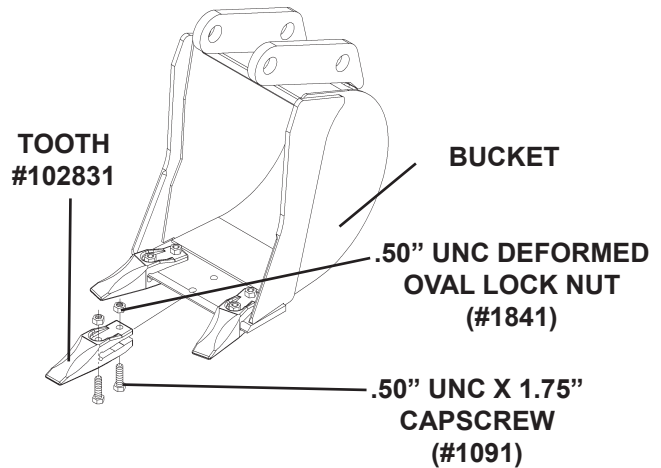
## (SWING SKID HOE SHOWN)



## REPLACING BUCKET TEETH

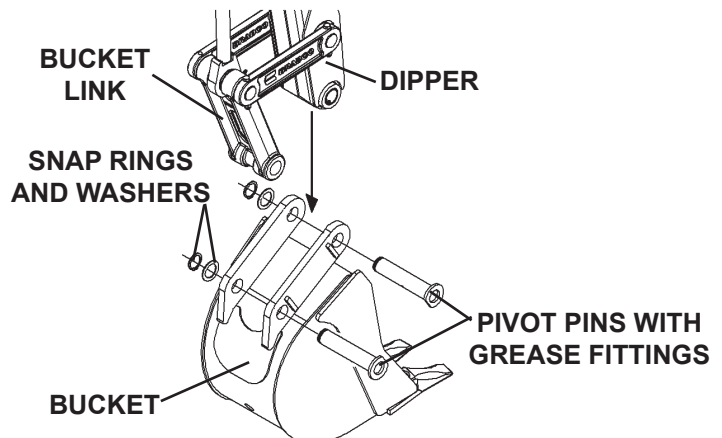
The bucket teeth are self-sharpening and require little attention, however, they can be replaced when they become worn or broken.

Remove the two capscrews and lock nuts securing the tooth to the bucket and replace with new bucket teeth and hardware.



## CHANGING BUCKETS

The bucket is connected to the dipper and bucket link with snap ring style pins. To change buckets, remove the snap rings and washers from one side of the pivot pins, slide the pins out and then remove the old bucket. Position the new bucket in its place. Install the pivot pins and secure with snap rings and thrust washers. Lubricate both pivot pin grease fittings before operating.



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# MAINTENANCE AND SERVICE

## CYLINDER SEAL REPLACEMENT

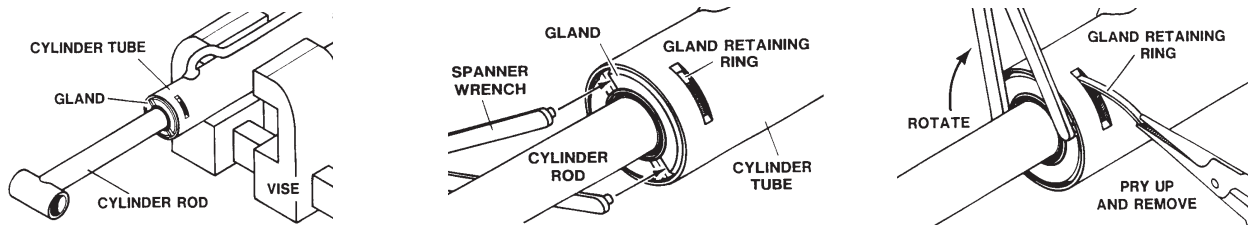
The following information is provided to assist you in the event you should need to repair or rebuild a hydraulic cylinder. When working on hydraulic cylinders, make sure that the work area and tools are clean and free of dirt to prevent contamination of the hydraulic system and damage to the hydraulic 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.

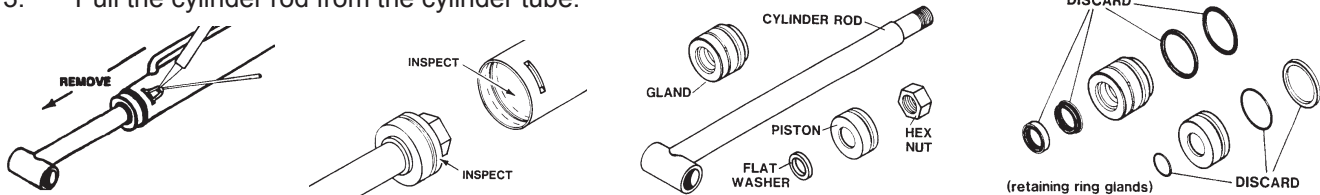
#### RETAINING RING TYPE GLAND

1. Mount the cylinder tube securely in a vise. **NOTICE:** Do not clamp too tight and distort the tube.
2. Rotate the gland with a spanner wrench (available from your dealer), until the gland retaining ring appears in the milled slot.



Pry up the end of the gland retaining ring with a pointed tool. Rotate the gland with a spanner wrench while removing the retaining ring. **NOTE:** The gland and piston seal(s) can be pulled out and cut as they appear in the milled slot during disassembly. After cutting, pull them on out through the milled slot.

3. Pull the cylinder rod from the cylinder tube.

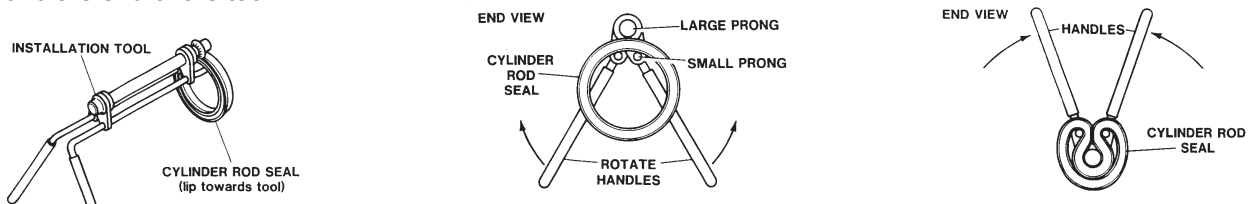


4. Inspect the piston and the bore of the cylinder tube for deep scratches or galling. If damaged, the piston and cylinder tube must be replaced.
5. Remove the hex nut, piston, flat washer or spacer tube (if so equipped), and gland from the cylinder rod. If the cylinder rod is rusty, scratched, or bent, it must be replaced.
6. Remove and discard all old seals.

### 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.

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. A special installation tool 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.



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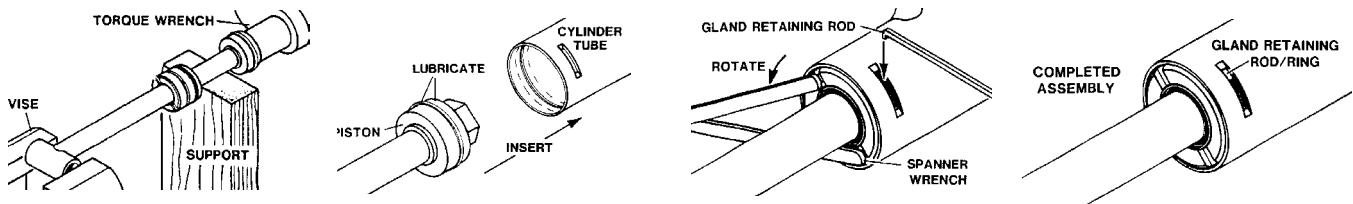
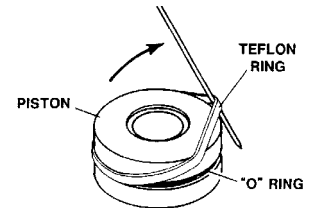
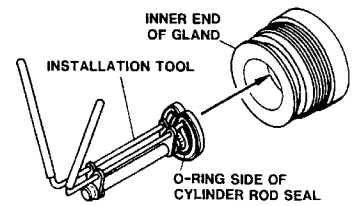
# MAINTENANCE AND SERVICE

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.

NOTE: Threaded gland is shown in diagram for reference only.

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.
3. 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.
4. Secure the cylinder rod (mounting end) in a vise, with a support at its center. Torque the nut to the value shown on the chart for the thread diameter of the cylinder rod.

Thread Diameter	POUNDS - FEET
7/8"	150-200
*1"	230-325
1-1/8"	350-480
1-1/4"	490-670
1-3/8"	670-900
* 1" Thread Diameter WITH 1.25" Rod Diameter	
Min. 230 ft. lbs. Max. 250 ft. lbs.	



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

**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.

5. Apply a lubricant (such as Lubriplate #105) to the piston and teflon ring. Insert the cylinder rod assembly into the cylinder tube.
6. Rotate the gland with a spanner wrench until the hole (drilled into the retaining slot of the gland) appears in the milled slot of the cylinder tube. Insert the hooked end of the gland retaining rod into the hole.

Rotate the gland until the gland retaining rod forms a ring between the gland and the cylinder tube. When complete, the bent end of the gland retainer ring should be hidden (not turned so it is exposed in the slot) to prevent it from popping out.

## 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, causing severe personal injury or even death.

# TROUBLESHOOTING

PROBLEM	POSSIBLE CAUSE	POSSIBLE SOLUTION
Bucket fails to curl or swing hoe fails to swing	Low oil supply	Add oil
	Obstruction in hydraulic line	Remove obstruction or replace
	Bent cylinder rod	Replace
	Damaged hydraulic cylinder	Replace
	Hydraulic couplers malfunctioning or non-compatible.	Replace
	Hydraulic couplers not completely engaged	Check and tighten couplers
Bucket fails to maintain curl	Oil leaking past cylinder seals	Replace cylinder seals
	Broken or leaking hydraulic lines	Replace and check for leaks
	Malfunctioning valve	Replace
Bucket or swing operating too slowly	Malfunctioning valve	Replace
	Oil leaking past cylinder seals	Replace cylinder seals
	Hydraulic couplers not completely engaged	Check and tighten couplers
	Obstruction in hydraulic line	Remove obstruction or replace
External leaking	Cylinder seals damaged	Replace and repair
	Broken or loose hydraulic lines or fittings	Check for leaks and repair or replace
	O'Rings damaged between the valves (swing hoe only)	Replace O'rings.

## TROUBLESHOOTING

PROBLEM	POSSIBLE CAUSE	POSSIBLE SOLUTION
Swing hoe functions in one circuit only	No electrical power to solenoid valve	Check for proper connection in control box and power from loader
Swing hoe functions in one circuit only WITH power to the valve	Valve malfunctioning	Replace valve
Skid hoe not functioning according to operation decal	Incorrect hose routing	Switch power and return hoses at valve

# 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				SAE GRADE 8 TORQUE				Bolt head identification marks as per grade. NOTE: Manufacturing Marks Will Vary
		Pounds Feet		Newton-Meters		Pounds Feet		Newton-Meters		
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	




GRADE 2



GRADE 5






GRADE 8



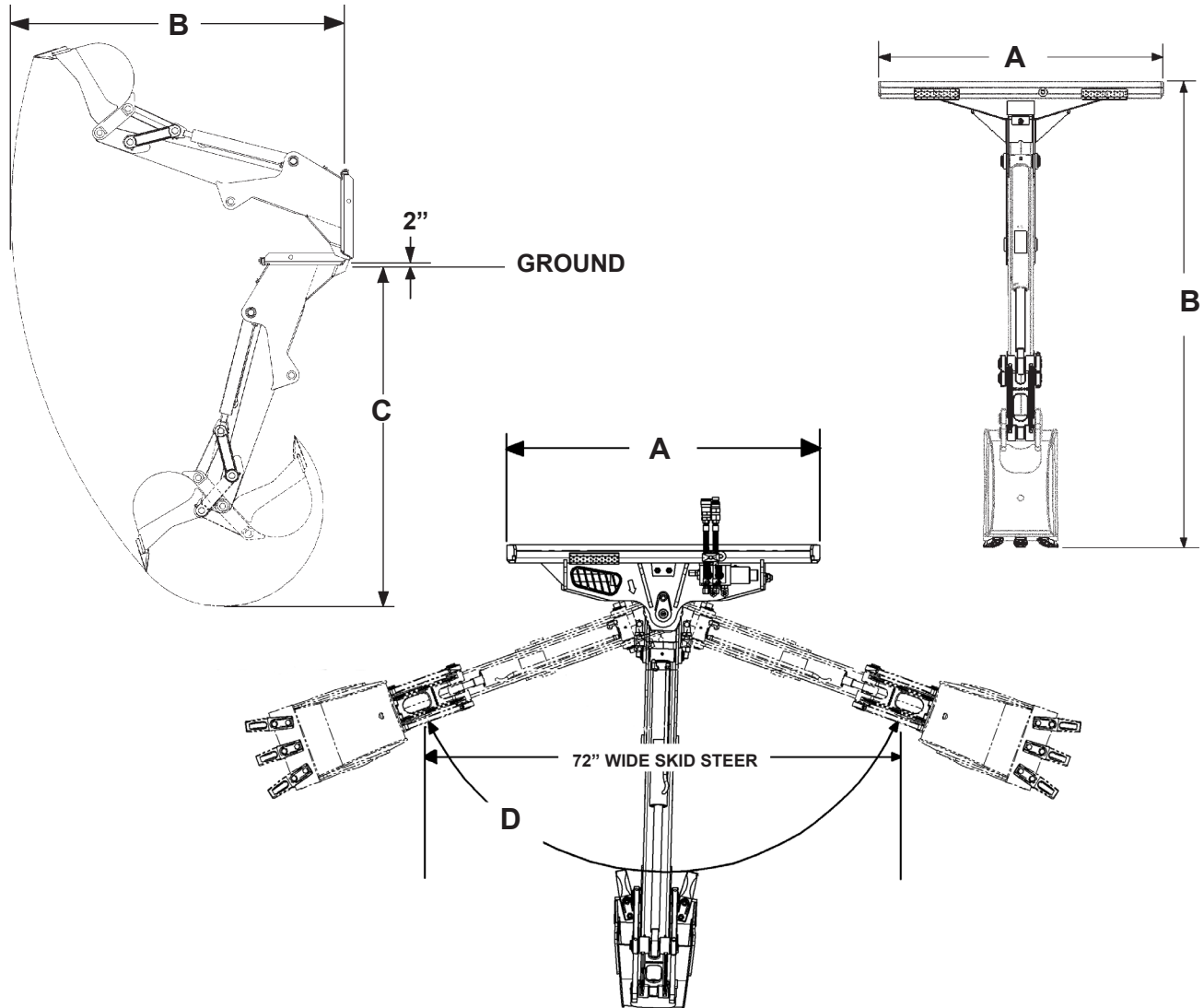
## METRIC BOLT TORQUE SPECIFICATIONS

**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

## SPECIFICATIONS



DESCRIPTION		FIXED HOE	SWING HOE
A.	OVERALL WIDTH	47.50"	47.50"
B.	OVERALL REACH (From Mounting Plate)	75.00"	78.00"
C.	DIGGING DEPTH (With Mounting Plate 2" Above Ground.)	73.00"	76.00"
D,	SWING ANGLE	NA	140°
	DIGGING FORCE (Bucket Cylinder)	3895#	3800#
	WEIGHT (Approx. with 12" bucket)	395#	535#
<b>Cylinder Specifications</b>		<b>105306</b>	<b>112126</b>
	Bore .....	2.25"	2.00"
	Stroke .....	18.23"	7.73"
	Rod Diameter.....	1.25"	1.12"

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## PARTS

In order to provide you with the most UP-TO-DATE part information, all parts for this attachment have been moved to our website at [www.paladinattachments.com/Manuals](http://www.paladinattachments.com/Manuals). Please use these diagrams and parts lists to locate replacement parts.

When servicing your attachment, remember to use only original manufacturer replacement parts. Substitute parts may not meet the standards required for safe, dependable operation.

To facilitate parts ordering when contacting the factory, please have the product control number (PCN or C/N) or model and serial number of your product ready to ensure that you receive the correct parts for your specific attachment.

The product control number, model and serial number for your attachment should be recorded in the space provided on the cover of this manual. This information may be obtained from the serial number identification plate located on your attachment.

**NOTE: Most daily and emergency parts orders (in stock) received by 10:30 A.M. (Eastern Standard Time) will be shipped UPS Ground the same day received. UPS Next Day orders must be received by 1:30 PM (Eastern Standard Time.)**

### SERVICE DEPARTMENT

(734) 996-9116

(800) 456-7100

### For Fax and E-mail Orders

PLC\_Sales@paladinattachments.com

(734) 996-9014

## WARRANTY

In order to provide you with the most UP-TO-DATE Warranty information, Paladin Warranty Statement and Warranty Procedures along with Warranty Registration and Claim Forms have been moved to our website at [www.paladinattachments.com](http://www.paladinattachments.com).

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