



## OPERATOR'S MANUAL

# MULTI-PURPOSE GRAPPLE QUIK PIK™



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

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

Manual Number: OM856  
Part Number: 75756  
Rev. 4



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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.

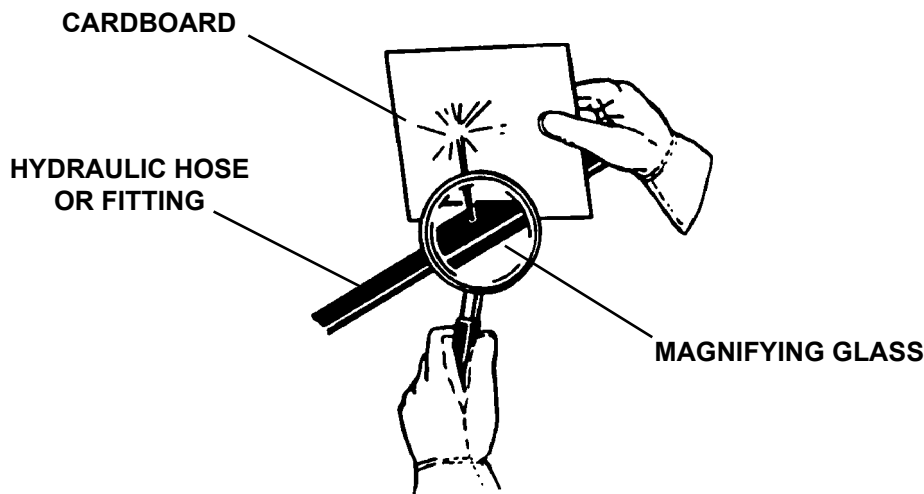
### WARNING!



#### 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.

### WARNING!



**CRUSHING HAZARD:** This attachment was designed to exert strong squeezing force. Closing the steel fingers on a body part will cause serious injury or death. Becoming entangled in the fingers or any other part of this attachment can lead to serious injury or death. Keep bystanders a safe distance away from the attachment and from any object in the attachments grasp.



#### OPERATING THE ATTACHMENT

- Operate only from the operator's station.
- The amount of pressure that can be applied by the steel fingers during clamping operation could result in flying objects. Keep all bystanders away from work area.
- Do not lift loads in excess of the capacity of the prime mover. Lifting capacity decreases as the loader is moved further away from the unit.
- 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.
- 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.

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# 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.
- Disconnect hydraulic couplers during transportation when installed on a prime mover.
- When transporting on a trailer: Secure attachment using tie down accessories that are capable of maintaining attachment stability.
- Use extra care to maintain attachment stability when loading or unloading the attachment onto a truck or trailer.
- 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

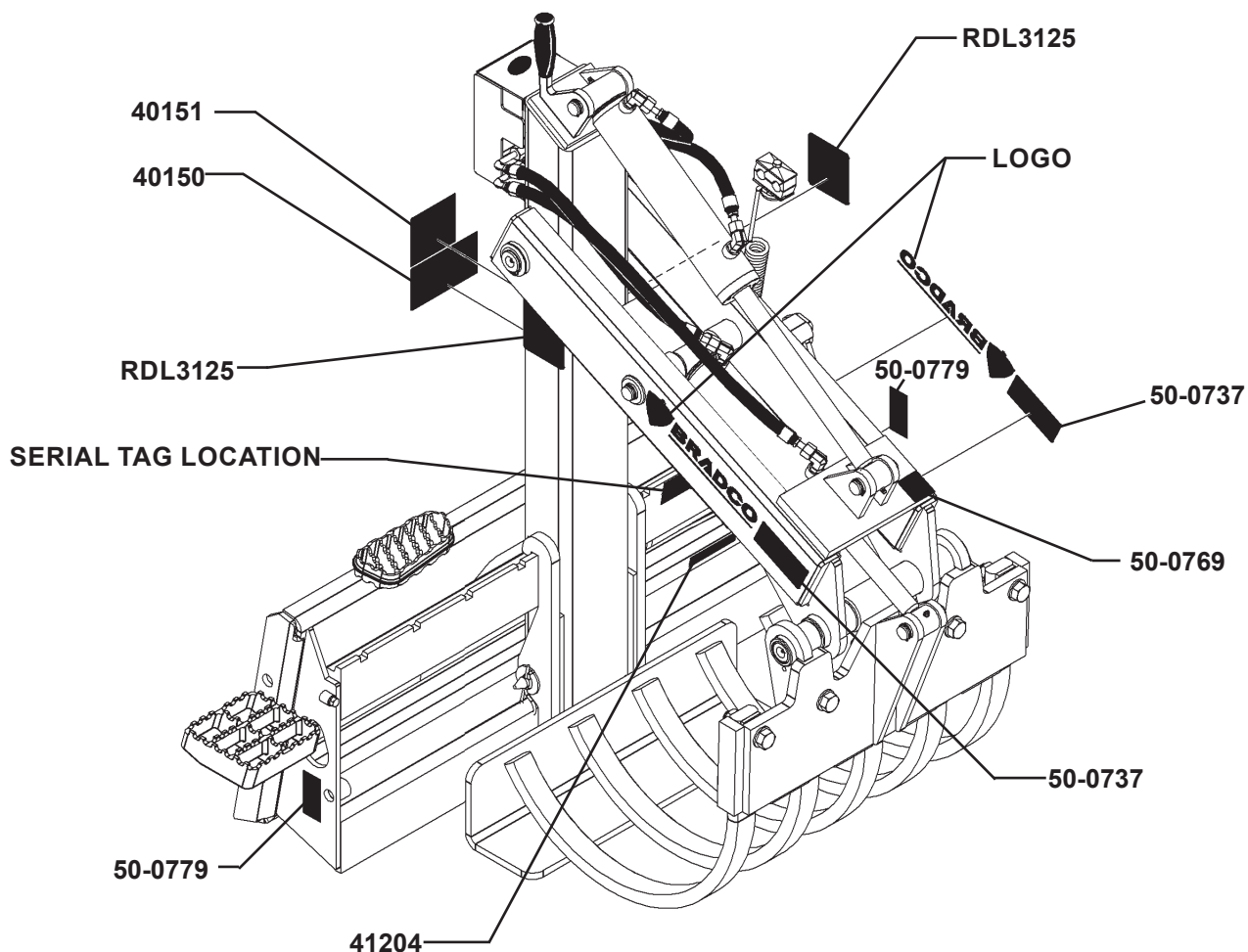
- Before performing maintenance, lower the attachment to the ground, turn off the engine, remove the key and apply the brakes.
- Never perform any work on the attachment unless you are authorized and qualified to do so. Always read the operator service manuals before any repair is made. After completing maintenance or repair, check for correct functioning of the backhoe. If not functioning properly, always tag “DO NOT OPERATE” until all problems are corrected.
- If attachment must be left raised for maintenance or any other reason, block the unit securely to prevent accidental release of the lifting mechanism. Serious damage or personal injury could result.
- 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, or cylinders under load. Serious personal injury or death could result.
- Never work under a raised attachment.

# DECALS

## DECAL PLACEMENT

### GENERAL INFORMATION

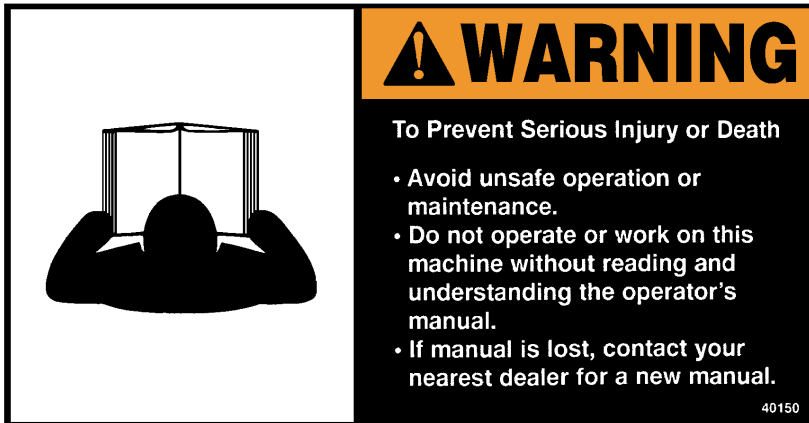
The diagrams on this page shows the location of all the decals used on the attachment. The decals are identified by their part numbers, with reductions of the actual decals located on the following pages. Use this information to order replacements for lost or damaged decals. Be sure to read all decals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

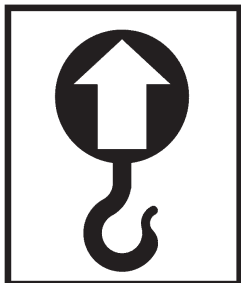
## DECALS



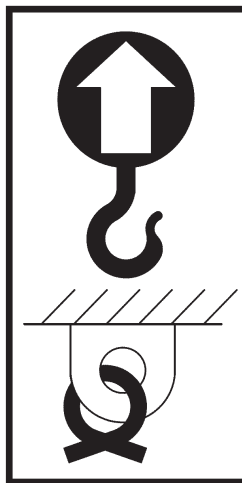
PART #40150  
WARNING: READ MANUAL DECAL



PART #40151  
WARNING: HIGH PRESSURE FLUID



PART #50-0769  
LIFT POINT



PART #50-0779  
LIFT & TIE DOWN POINT



PART #50-0737  
WARNING: PINCH POINT DECAL



PART #RDL3125  
WARNING: CRUSH HAZARD

**NOTE: CONTACT PALADIN OR YOUR LOCAL DEALER FOR MODEL NUMBER AND LOGO DECALS.**

# INSTALLATION

**WARNING!**  The prime mover must be equipped with an operator enclosure that will provide a safe operating environment whenever working with material or objects that may intrude into the operator's station.

**HOSE KIT INSTALLATION:** A hose kit with hydraulic hoses and couplers must be ordered separately to complete the hydraulic installation onto your prime mover. This kit should have been installed onto your unit at the factory. If it was not, install the 90° end of the hydraulic hoses to the two straight fittings towards the back of the solenoid valve on your unit. Install the adapter fittings (if required) followed by the quick couplers.

## INSTALLATION

1. Remove any attachment from the front of the loader.
2. Following all standard safety practices and the instructions for installing an attachment in your prime mover operator's manual, install the attachment onto your loader.

**WARNING!**  To Avoid Serious Personal Injury, make sure the **QUIK PIK Multi-Purpose Grapple** is securely latched to the attachment mechanism of your unit. Failure to do so could result in separation of the attachment from the unit.

3. Lower the unit to the ground and relieve pressure to the auxiliary hydraulic lines.
4. Following the safety shut down procedure for your prime mover, shut down and exit the prime mover.
5. After making sure that the hydraulic couplers are free from any foreign material or contaminants, connect the couplers to the auxiliary hydraulic system of your prime mover.
6. Connect the wire assembly from the solenoid valve on the QUIK PIK to the optional Bradco control box or to the prime mover's auxiliary electrical outlet. (An optional electrical assembly is required to go from the wire harness on the solenoid valve to your prime mover's auxiliary electrical connector.)
7. Following the standard start up procedure for your prime mover, start the loader and run all cylinders on the attachment to purge any air from the system. (Switch between the lift and grapple cylinders using the optional control box or your skid steers electrical circuit.) Check for proper hydraulic connection, hose routing and hose length by:
  - a. raising and lowering the loader arms and the QUIK PIK boom
  - b. tilt the QUIK PIK Multi-Purpose Grapple away from the prime mover
  - c. open and close the QUIK PIK fingers
8. Attachment installation is complete.

## DETACHING

1. Before exiting the prime mover, close the grapple and lower the boom arms completely down on the frame until the QUIK PIK Multi-Purpose Grapple is level and approximately 2" off the ground, apply the brakes, turn off the prime mover's engine and remove the key.
2. Follow prime mover operator's manuals to relieve pressure in the hydraulic lines.
3. Disconnect couplers and connect them together or install dust caps and plugs to prevent contaminants from entering the hydraulic system. Store hoses on attachment, off the ground. Disconnect the wire assembly going to either the electrical control box or the auxiliary electrical outlet on your prime mover.
4. Follow your prime mover operator's manual for detaching (removing) an attachment.

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



# OPERATION


**INTENDED USE:** The QUIK PIK Multi-Purpose Grapple is designed for securely picking up, transporting and setting a variety of objects and material within the lifting capacity of your prime mover. The QUIK PIK Multi-Purpose Grapple is also designed to rake the ground, clean ditches and culverts and pull out noxious plants. Use in any other way is considered contrary to the intended use.

## GENERAL INFORMATION


The BRADCO QUIK PIK Multi-Purpose Grapple, with its patented dual hydraulic functionality, offers the broadest range of uses of any grapple. Thorough knowledge of your prime mover is necessary for machine operation. Read and understand your prime mover's operator's manual before attempting to use the QUIK PIK Multi-Purpose Grapple.

**NOTE: Switching between the two cylinders is accomplished by the toggle switch on the electrical control box or by the auxiliary electrical function on your prime mover. Contact Factory for the electrical wire harness that connects to your prime mover auxiliary electrical outlet.**

The power that opens and closes the QUIK PIK Multi-Purpose Grapple is supplied by the hydraulic pressure of the prime mover to which the equipment is attached. The speed and force with which the grapple opens and closes is partially determined by your prime mover's engine speed. (The opening and closing speed and force is increased when operating the unit at a higher PSI and at a higher RPM.)

**WARNING!**  The QUIK PIK Multi-Purpose Grapple is designed to exert great squeezing force. Closing the grapple on a body part will cause serious injury or death. Keep bystanders a safe distance away from the QUIK PIK Multi-Purpose Grapple and from any object in the it's grasp.

**IMPORTANT:** Closing the QUIK PIK Multi-Purpose Grapple on a soft object can damage or destroy the object. Do not use to grasp an object that you do not want marred from contact with the steel fingers.

**WARNING!**  Do not grasp and lift any object that the combined weight of the object and the attachment exceeds the rated lift capacity of the prime mover to which the unit is attached.

## OPERATION

The landscape shoe is designed to provide a second contact point for securely supporting objects.

1. Position the curved fingers around or against the object and using the closing power of the fingers, lower the boom while drawing the object towards the frame.

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## OPERATION


2. Once the object is against the back of frame and supported by the landscape shoe, continue to close the fingers tightly around or against the object.

**WARNING!**  The amount of pressure that can be applied by the steel fingers of the QUICK PIK Multi-Purpose Grapple during clamping operation could result in flying objects. Keep all bystanders away from the work area.

3. Lift the object slowly making sure the load is stable. If load appears unstable, lower and reposition the fingers to achieve full stability.

**IMPORTANT:** When handling pipe, culverts logs or any other long object, make sure to securely grasp the object at the center point so that it is balanced properly. If the object is tilting left or right, set the object down and reposition.

4. Raise the load to the MINIMUM height required for the terrain.
5. During transporting, keep the attachment level to the ground or tilted slightly forward. Accelerate and brake gradually, slow down before turning and avoid any obstacles, bumps or holes. Check load frequently to ensure stability.

**CAUTION!**  Travel with the attachment and object as close to the ground as possible. The risk of prime mover turnover increases as you increase the height of the loader arms, the weight of the object, and/or the slope of the ground.

6. If placing the load off the ground (such as quarried stone for a retaining wall), be sure to lift slowly and smoothly while making sure load appears stable. Lower the load gently until the weight of the load is securely resting on the landing point before opening the fingers. Slowly back away from the load while tilting forward slightly to remove the landscape shoe from under the object.

### NOTES:

- Handling large cylindrical objects such as culverts, pipe, tanks and logs is accomplished securely with the curved fingers closed tightly around the center of the object allowing for secure and safe handling.
- Picking up, transporting, and setting in place large quarried stone blocks used in retaining walls requires that the leading edge of the landscape shoe is inserted underneath the block.
- Debris removal and handling stumps, trees and branches along just about any awkward objects you can think to pick up and move.
- Square or round bales can be moved if they are within the lifting capacity of your prime mover.

**WARNING!**  The QUICK PIK Multi-Purpose Grapple lifting limits are determined by the rated lift capacity of the prime mover. Do not exceed the lifting capacity of your prime mover.



## OPERATION

### OPTIONAL PALLET FORK TINES

The optional pallet fork tines can be mounted onto the QUIK PIK Multi-Purpose Grapple in wide or narrow configurations. The landscape shoe does not need to be removed when using the pallet forks.

**NOTE:** Fork tine capacities are pounds per pair at a 24" load center. (The center of gravity of the allowable loads must be applied within the first 24" of the fork tines when measured from the front face of the vertical section of the fork tine out towards the tip of the horizontal section of the fork tine.)

#### Moving Pallets:

1. Adjust the spacing of the forks so they engage the pallet or load at its maximum width.
2. Raise the QUIK PIK Multi-Purpose Grapple's boom as high as possible and then open the fingers as far outward as possible.
3. Approach the load in such a fashion that the weight will be centered between the fork tines. The heaviest side should be closest to the frame.
4. Slowly insert the forks until the pallet comes within a few inches of the frame or comes into contact with the landscape shoe.
5. Lower the boom and slowly close the fingers so that they are in contact with the load.

#### Moving Large Objects:

1. Approach the load (i.e. logs, pipes, culverts) in such a fashion that the weight will be evenly balanced.
2. Secure in place using the QUIK PIK Multi-Purpose Grapple's fingers.

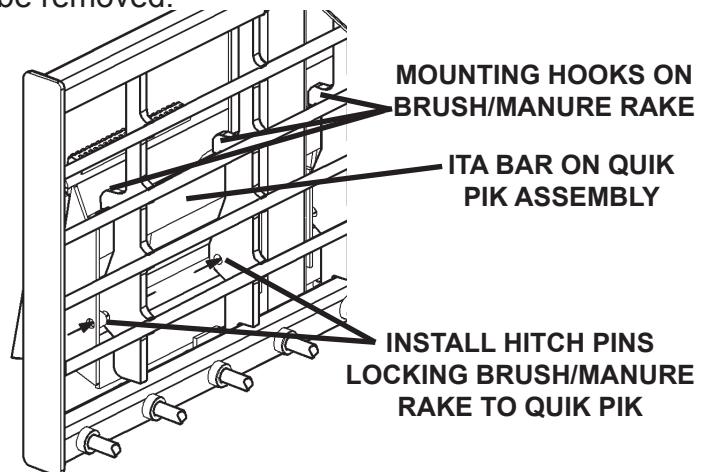
**WARNING!** Completely engage load before lifting. Fork length should be at least two-thirds of load length. It is recommended to keep lifting surface of the forks level at all times. When tilt is required to stabilize the load use extreme caution.



### OPTIONAL BRUSH/MANURE RAKE

**OPTIONAL BRUSH/MANURE RAKE INSTALLATION:** During installation and operation of the optional brush rake the landscape shoe must be removed.

1. Raise the QUIK PIK Multi-Purpose Grapple's boom and open the fingers. Tilt the QUIK PIK assembly forward.
2. Approach the Brush/Manure Rake slowly aligning the mounting hooks on the back of the rake assembly with the ITA bar on the QUIK PIK assembly. Slowly lift and roll back the QUIK PIK as the hooks on the rake come into contact with the ITA Bar.



## OPERATION

3. Continue to roll back the Brush/Manure Rake assembly until it is seated against the back of the QUIK PIK frame, lower the loader arms while maintaining contact with the frame.
4. Following standard safety shut down procedures, shut down and exit the prime mover.
5. Install the hitch pins into the back of the Brush/Manure Rake assembly locking it onto the QUIK PIK frame. Secure in place using the washers and hair pins supplied.

### **OPTIONAL BRUSH/MANURE RAKE OPERATION:**

1. Approach brush, branches or debris with the brush rake slightly tilted up. Avoid penetration of the ground by the pointed tips on the brush rake which may impact the integrity of the pins that hold the brush rake to the frame.
2. Slowly close the fingers to secure the load and travel with the attachment as close to the ground as possible.

### **OPERATIONAL TIPS**

- When curling the fingers around a cylindrical object, make sure that they are wrapped, as much as possible, underneath the object to be moved.
- Whenever possible, make sure the landscape shoe is underneath the object to be grasped. Especially cut stone, rocks or any object where a secondary point of support is desired.
- It is possible to close the fingers against the outer edge of the object (as opposed to underneath) and secure it against the frame and on top of the landscape shoe.
- If pulling logs from a pile, use the fingers to go behind and under the log. Either the landscape shoe or pallet fork tines can be used in this operation.
- When extended reach is required, raise the boom, extend the fingers and tilt the loader arms to the ground. This works if you are cleaning a ditch, pulling objects from a debris pile or for raking the ground and removing lightweight plants such as poison ivy, blackberries and etc.
- If using as a forklift, be sure the loader arms are slightly tilted up before moving. Slowly close the fingers against the load to secure prior to transport. Do not over close the fingers causing the pallet load to shift.

**IMPORTANT: Before moving the prime mover (with the exception of moving pallets) make sure the boom is lowered and the fingers tightly closed against the secured object.**

### **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.
- 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.

# OPERATION

## REMOVAL FROM STORAGE:

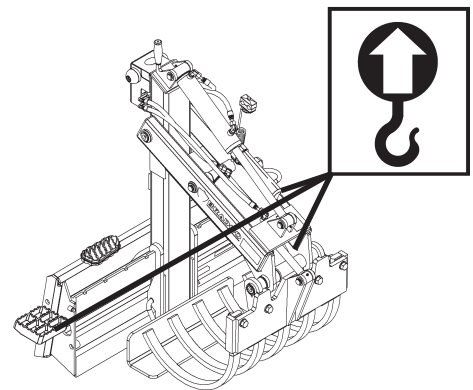
- Remove cover.
- Wash unit and replace any damaged and/or missing parts.
- Lubricate grease fittings.
- Check hydraulic hoses for damage and replace as necessary.

## 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.

- 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.

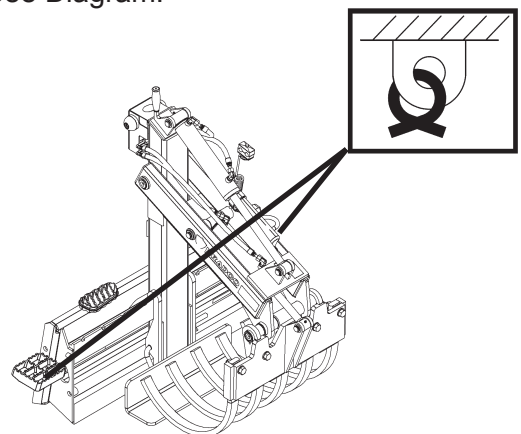


## TIE DOWN POINTS

Tiedown points are identified by tiedown 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 tiedown 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 tiedown points and any equipment safety precautions at the front of this manual when transporting your attachment.

# MAINTENANCE AND SERVICE

## GENERAL INFORMATION


Your attachment was designed to be virtually maintenance free. Very little effort is needed to keep it in top condition. It is, however, important to follow these procedures to get full performance and longevity out of the equipment.

**IMPORTANT:** When replacing parts, use only factory approved replacement parts. Manufacturer will not claim responsibility for use of unapproved parts or accessories and/or other damages as a result of their use.

**WARNING!**  **DO NOT MODIFY ATTACHMENT:** Modifications may weaken the integrity of attachment and may impair the function, safety, life and performance of the attachment.

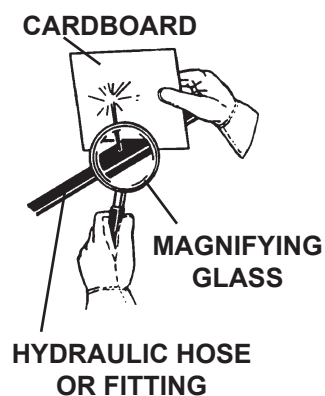
Procedure	Daily
Hardware - Check for tightness (see Bolt Torque Specifications)	✓
Replace any missing bolts or nuts with approved replacement parts.	✓
Decals - Check for missing or damaged safety decals and replace as necessary.	✓
Inspect attachment for any worn parts or cracked welds. Repair as required.	✓
Hydraulic System - Check for leaks and tighten or replace as necessary. See procedure below.	✓
Lubricate all grease fittings. (No. 2 general-purpose lithium base or molybdenum base grease.	✓

**CAUTION!**  Attach a hoist to the grapple arm when removing the cylinders for service. This will prevent any inadvertant dropping of the arm which could result in personal injury.

**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 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.



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# MAINTENANCE AND SERVICE

## CYLINDER SEAL REPLACEMENT

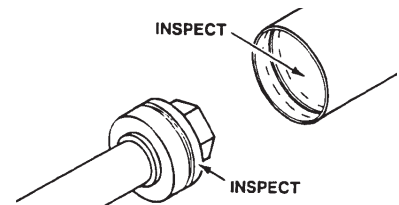
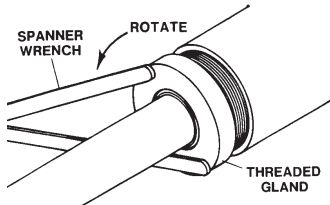
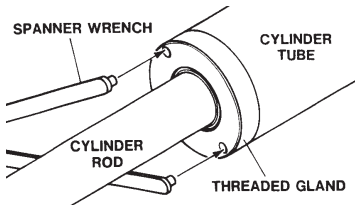
The following information is provided to assist you in the event you should need to repair or rebuild a hydraulic cylinder. When working on hydraulic cylinders, make sure that the work area and tools are clean and free of dirt to prevent contamination of the hydraulic system and damage to the hydraulic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

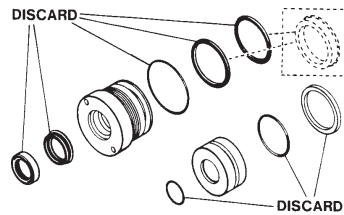
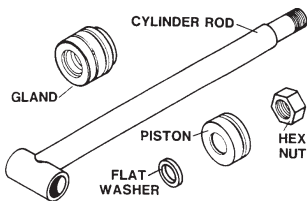
**IMPORTANT:** Do not contact the active surface of the cylinder rod with the vise. Damage to the rod could result.

#### 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.

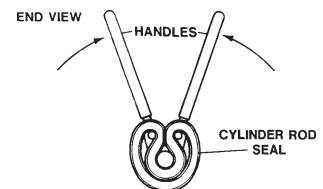
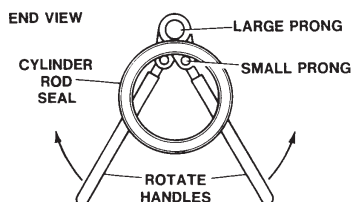
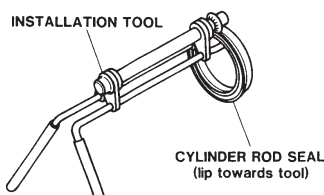


### ASSEMBLY PROCEDURE

**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.



Rotate the handles on the tool around to wrap the seal around the end of the tool.

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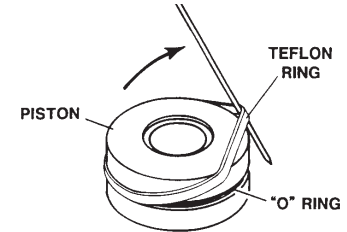
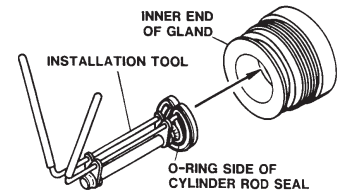
# MAINTENANCE AND SERVICE

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.

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

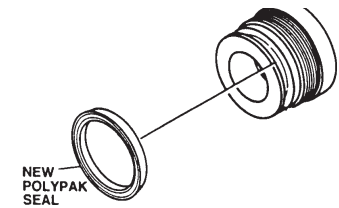
Be careful not to damage the seals. Caution must be used when installing the piston ring. The ring must be stretched carefully over the piston with a smooth, round, pointed tool.

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



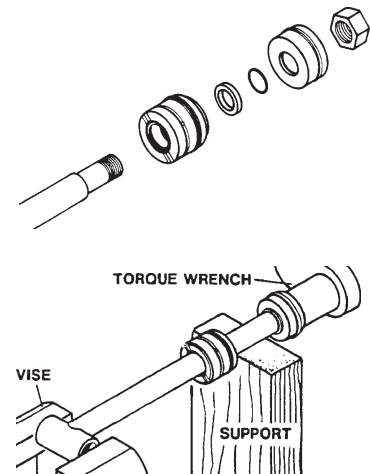
**NOTE:** Threaded glands may have been equipped with a separate O-ring and backup washer system or a polypak (all in one) type seal. Current seal kits contain a polypak (all in one) type seal to replace the discarded seal types on ALL THREADED GLANDS.

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
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.



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.

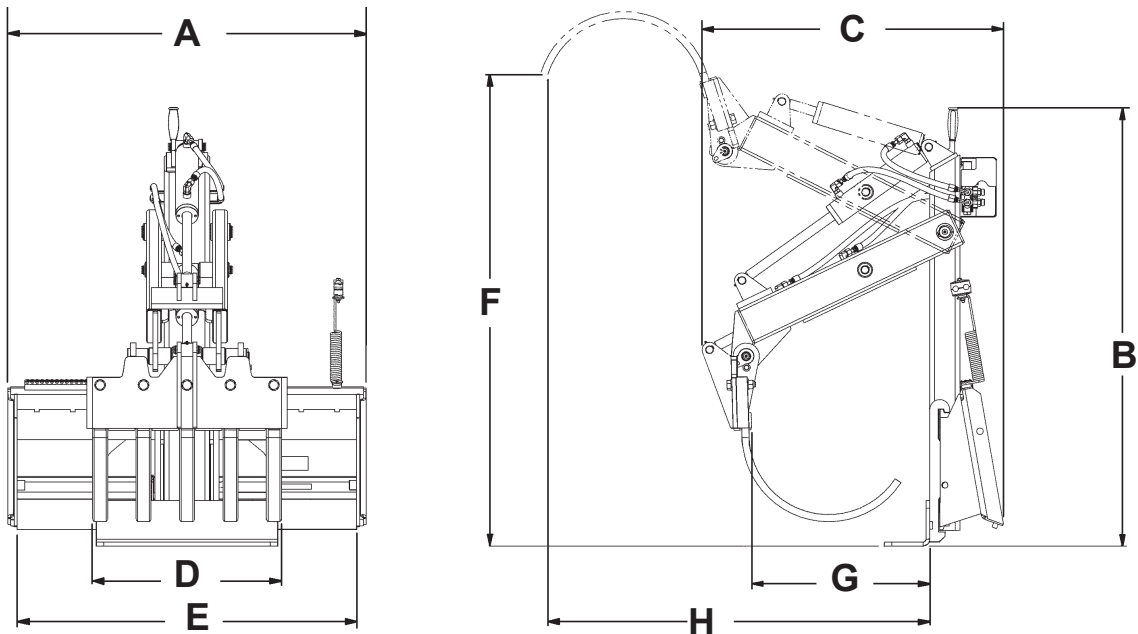
## WARNING!



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.



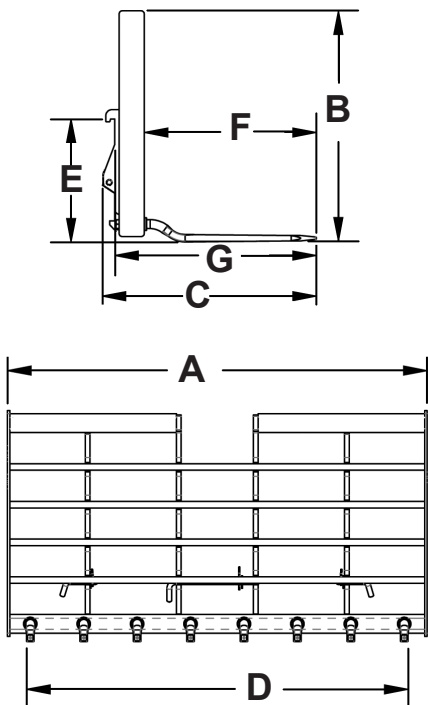
SPECIFICATIONS



SPECIFICATION

A.	Overall Width.....	47.46"
B.	Overall Height .....	58.00"
C.	Overall Length.....	39.90"
D.	Tine Width .....	25.00"
E.	ITA Bar Width (Optional Pallet Fork Tines).....	44.94"
F.	Grapple Open.....	62.38"
G.	Grapple Closed .....	23.57"
H.	Grapple Reach .....	50.55"

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



OPTIONAL BRUSH/MANURE RAKE

SPECIFICATION

A.	Overall Width.....	66.75"
B.	Overall Height .....	36.69"
C.	Overall Length.....	32.80"
D.	Tine Width .....	60.69"
E.	Top of ITA Bar Height .....	19.59"
F.	Tine Operating Length .....	27.37"
G.	Length from ITA Bar .....	32.06"

# 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



## 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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