



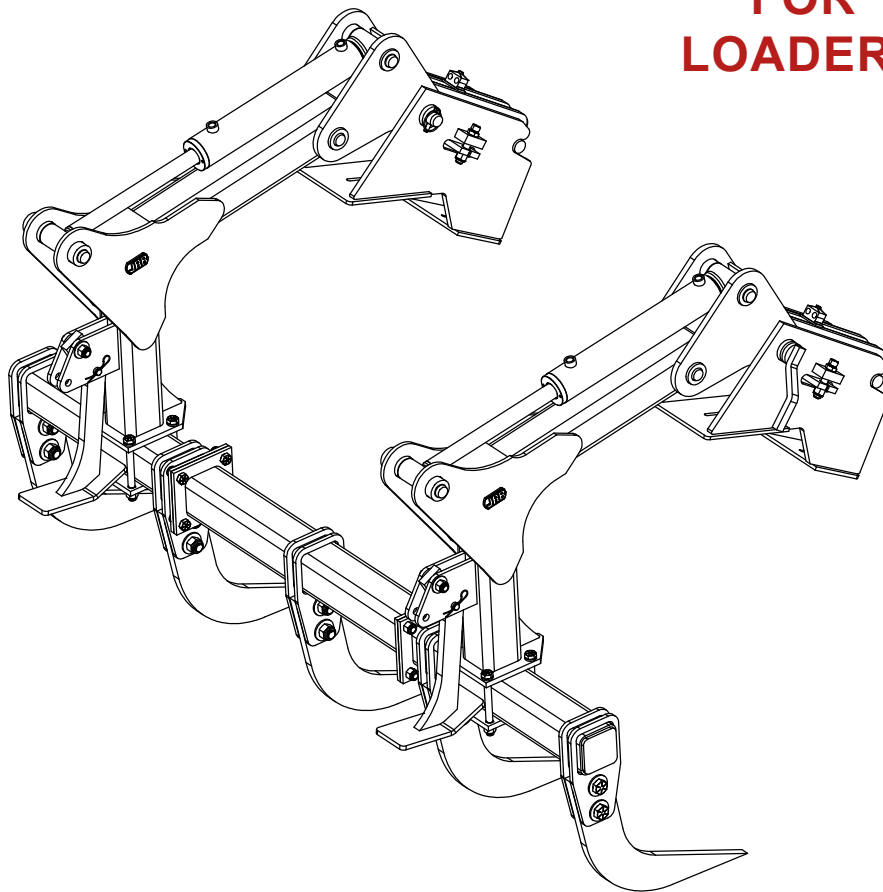
PALADIN®

JRB

OPERATOR'S MANUAL

VERSIGRAB™ ADD-ON GRAPPLE

**FOR
LOADERS**



SERIAL NUMBER: _____

MODEL NUMBER: _____

Manual Number: OM94F
Date: August 2018
Rev. 1

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PREFACE

GENERAL COMMENTS

Congratulations on the purchase of your new JRB 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 the attachment.

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

BEFORE OPERATION

The primary responsibility for safety with this equipment falls to the operator. Make sure the equipment is operated only by trained individuals that have read and understand this manual. If there is any portion of this manual or function you do not understand, contact your local authorized dealer or the manufacturer. Keep this manual available for reference. Provide this 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 and stress level
- job site organization, working material condition and 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 or her 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.**

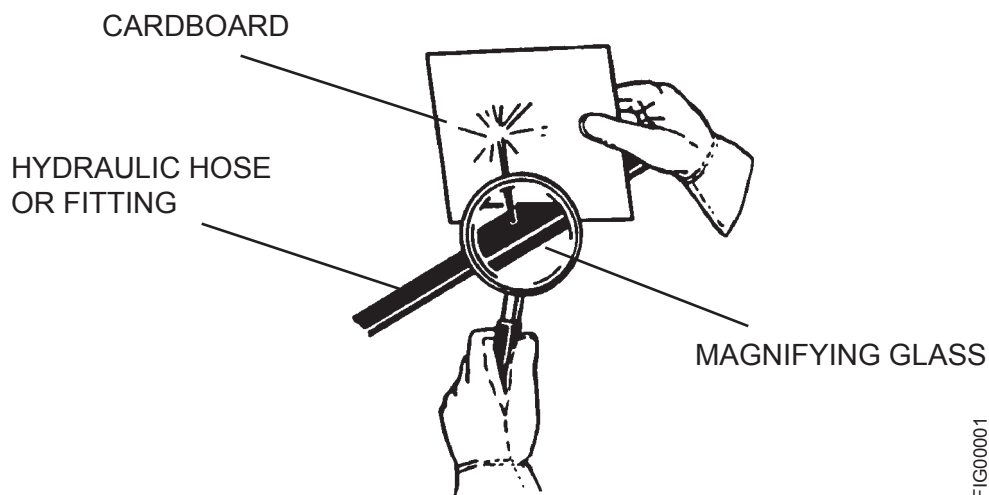


FIG00001

GENERAL SAFETY PRECAUTIONS

WARNING!



DO NOT MODIFY MACHINE OR ATTACHMENTS

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

WARNING!



SAFELY MAINTAIN AND REPAIR EQUIPMENT

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



SAFELY OPERATE EQUIPMENT

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

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

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

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.

EQUIPMENT SAFETY PRECAUTIONS



OPERATING THE ATTACHMENT

- Never use your attachment for a work platform or personnel carrier.
- Do not exceed the lifting capacity of your prime mover.
- Operate only from the operator's station.
- 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.
- Never lift, move, or swing an attachment over anyone.
- Always check locking pins before operating any attachment.
- Never undercut a high bank. When working at the base of a bank, overhang or stockpile, avoid dangers such as rock or earth slides, overhanging trees or a cave-in by proper job operation.
- When using the grapple, lift the load slightly and make sure the load is secure. If the load appears to be unstable, lower the load, open the grapple and reposition the load to attain full stability.
- Be careful when handling loose objects. Lifting too high or rolling the attachment too far back could result in these objects sliding backward down the arms onto the operator compartment.
- Don't obstruct your vision when traveling or working. Carry the attachment low for maximum stability and visibility.
- Before exiting the prime mover, lower the attachment to the ground, apply the brakes, turn off the prime mover's engine and remove the key.



TRANSPORTING THE ATTACHMENT

- Travel only with the attachment in a safe transport position to prevent uncontrolled movement. Drive slowly over rough terrain and slopes.
- When transporting on a trailer secure attachment at any recommended tie down locations using tie down accessories that are capable of maintaining attachment stability.
- 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., as a cave-in could result.



MAINTAINING THE ATTACHMENT

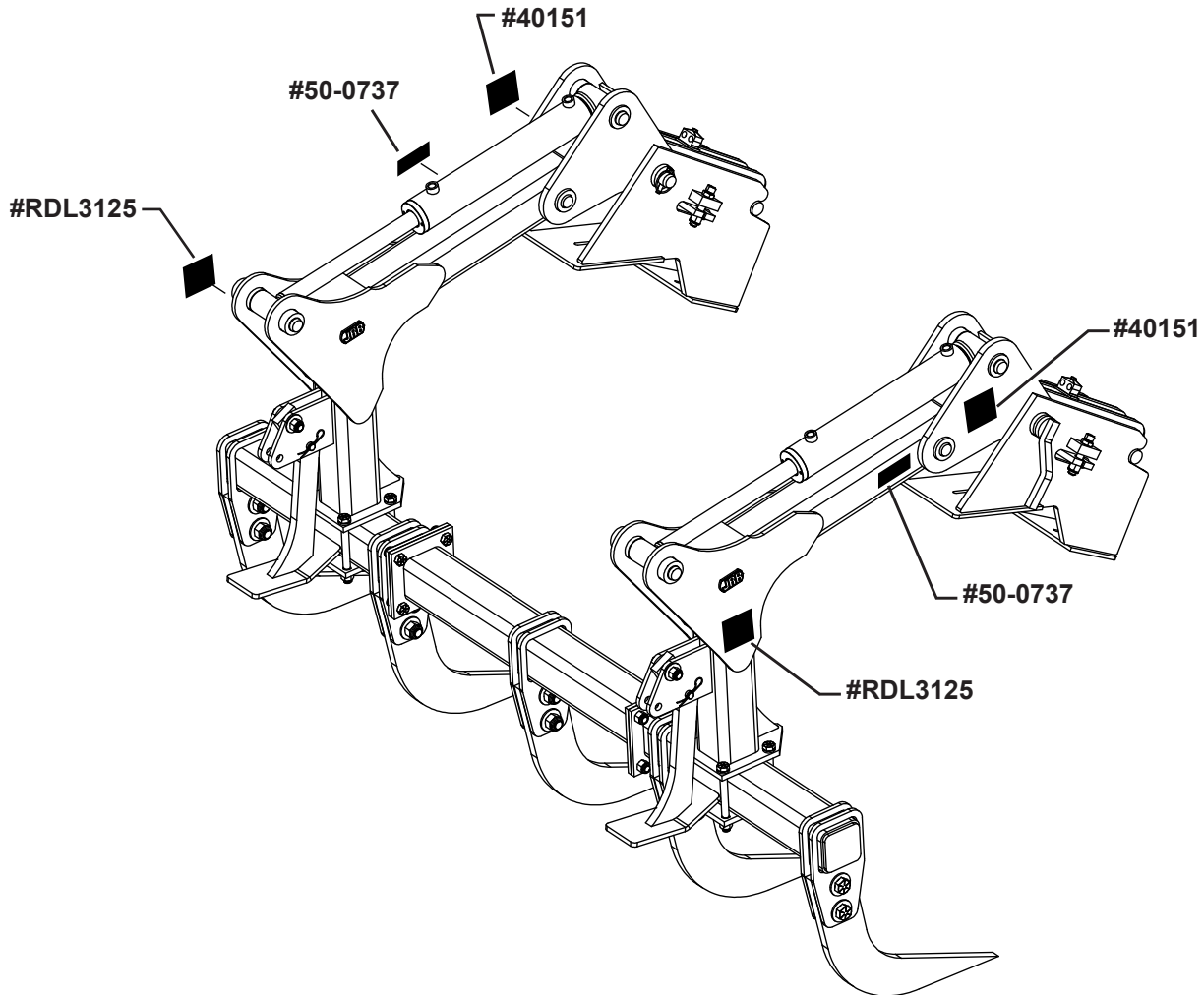
- Before performing maintenance (unless otherwise specified), lower the attachment to the ground, apply the brakes, turn off the engine and remove key.
- Never perform any work on the attachment unless you are authorized and qualified to do so. Always read the operator service manuals before any repair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

DECALS

DECAL PLACEMENT

GENERAL INFORMATION

The following diagram(s) show the location of the decals used on your attachment. The decals are identified by their part numbers, with reductions of the actual decals shown on the following pages. Use this information to order replacements for lost or damaged decals. Be sure to read all the decals before operating coupler. They contain information you need to know for both safety and product 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 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 #40151
WARNING! HIGH PRESSURE FLUID



PART #50-0737
WARNING! PINCH POINT



PART #RDL3125
WARNING! CRUSH HAZARD

NOTE: Decals available individually or
as kit 91V1413

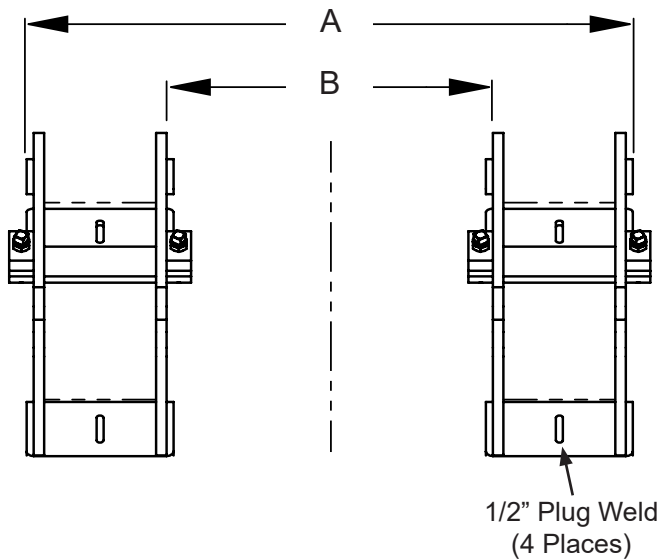
INSTALLATION

BUCKET MOUNT ASSEMBLIES

The bucket mount assemblies contain parts needed to use your bucket with the grapple. Install these assemblies on your bucket using the dimensional spacing and welding guidelines below.

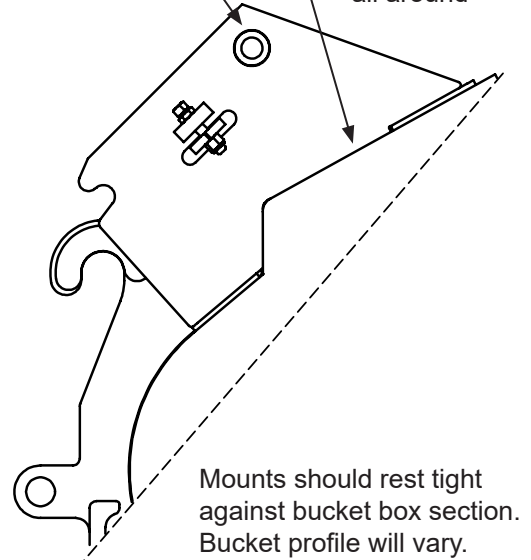
NOTE: Always use a hoist or similar device to lift items that weigh more than 50 lbs.

BUCKET SERIES	A	B
JRB	74.50"	54.50"
ISO	82.50"	62.50"



Align pin holes of left and right mounts using 1.50" round bar or tube

Weld to bucket using 3/8" fillet all around



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.

WELDING GUIDELINES

- Remove bucket from prime mover before doing any welding.
- Remove paint a minimum of 4" (100 mm) from area to be affected by heating.
- Connect welder ground clamp close to each weld area so electrical current does not pass through.
- Remove or protect all parts that can be damaged by heat or weld spatter.
- Make sure area to weld is clean and free of debris.
- Weld using ASW-E-7018 or ASW-E-7016 low hydrogen rod, (SMAW process).
- Allow to cool slowly at room temperature. **DO NOT place in a cold area to cool!**
- Repaint welded areas.

(FOR ADDITIONAL ASSISTANCE REFER TO **ANSI/AWS D14.3-94**)

INSTALLATION

CONNECTING GRAPPLE TO BUCKET

STEP 1: Position bucket and grapple on firm, level ground. Rotate bucket so bottom is almost vertical.

Carefully approach the grapple and hook the mount assembly, of the bucket, to the rear hook pins of the grapple.

STEP 2: Rotate the bucket back until grapple is slightly off the ground and the weight of the grapple is supported by the rear hook pins.

WARNING! Always stand to the side of the attachment when installing the grapple lock pins. **DO NOT** stand in front of grapple. Failure to do so could result in serious injury or death.



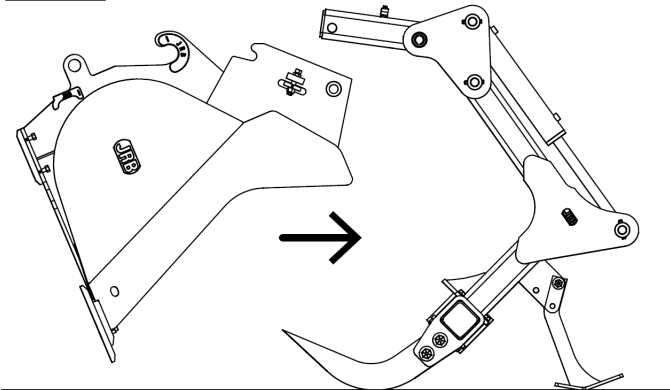
STEP 3: Insert the two lock pins to secure the grapple to the bucket.

NOTE: If the pins are difficult to install, the support plates may need adjusted. See page 17 for instructions on adjusting the support plates.

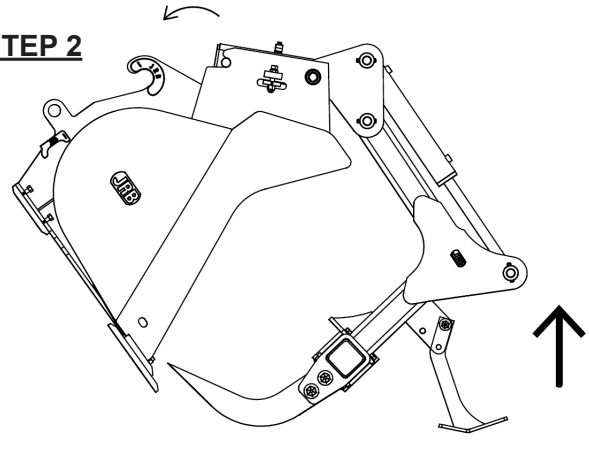
STEP 4: Connect grapple power and return hoses to the auxiliary lines of the prime mover. Move kick-stands to the up or storage position.

Slowly cycle attachment cylinders several times to purge any air from the system. Check for proper hydraulic connection, hose routing and hose length. Check the attachment for proper assembly, installation and hydraulic leaks.

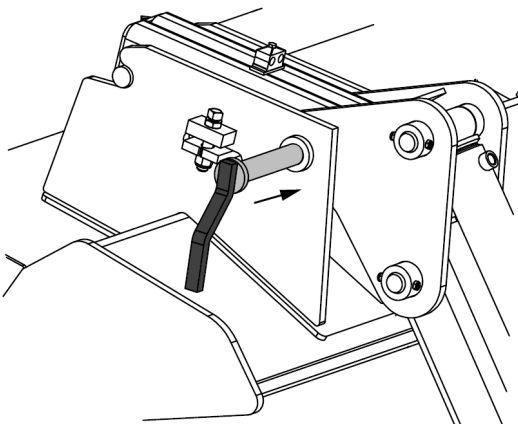
STEP 1



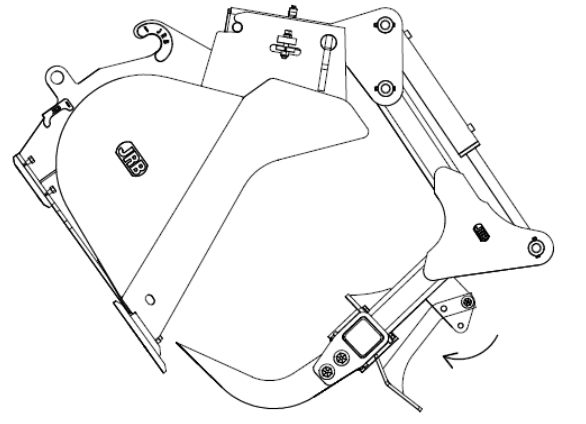
STEP 2



STEP 3



STEP 4



INSTALLATION

REMOVING GRAPPLE FROM BUCKET

STEP 1: Position bucket and grapple over firm, level ground and move kickstands to the down or park position. Keep bucket and grapple as close to the ground as possible.

Rotate bucket forward so that lock pin is lower than rear hook pin, allowing the hook pin to support the weight of the grapple.

WARNING! Always stand to the side of the attachment when removing the grapple lock pins. **DO NOT** stand in front of grapple. Failure to do so could result in serious injury or death.



STEP 2: Remove the lock pins that secure the grapple to the mount assembly on the bucket.

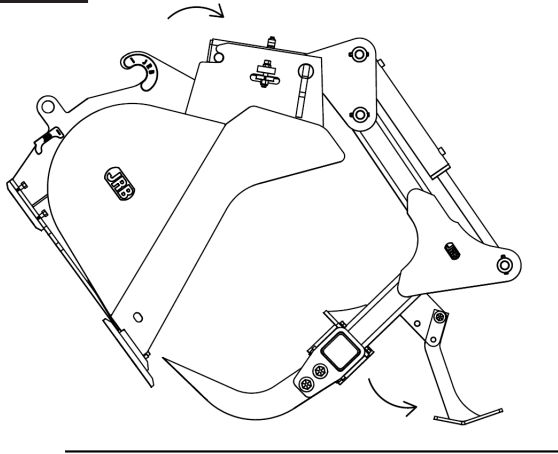
NOTE: If the pins are difficult to remove, the support plates may need adjusted. See next page for instructions on adjusting the support plates.

STEP 3: Disconnect grapple power and return hoses from auxiliary lines of prime mover. Always disconnect hoses before backing bucket away from grapple. Cap or plug hoses to prevent contaminants from entering the hydraulic system.

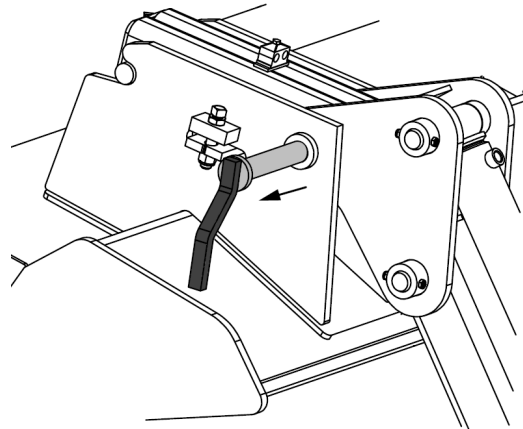
Carefully lower bucket and grapple completely to the ground so kickstands and outer curve of grapple tines make contact at the same time.

STEP 4: Rotate the bucket to release the mount assembly from the rear hook pins of the grapple and carefully back away.

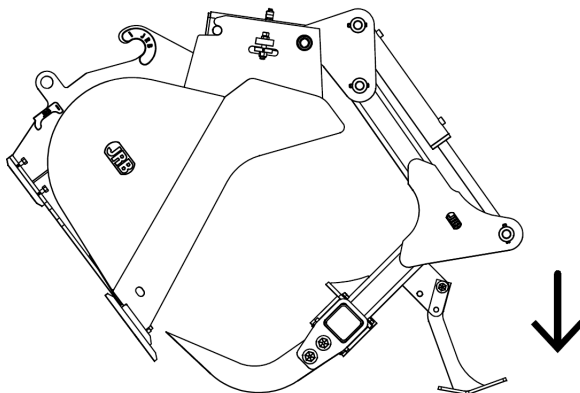
STEP 1



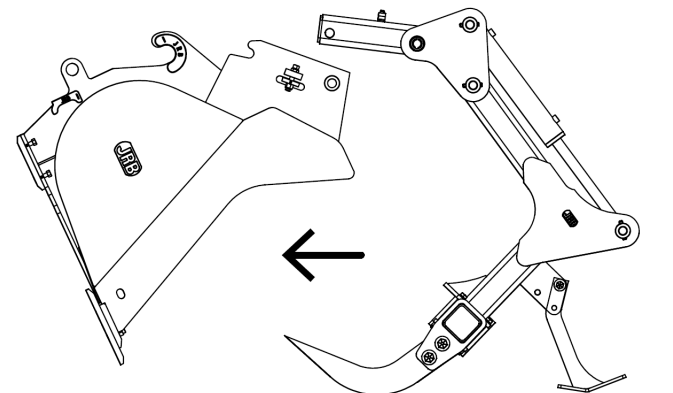
STEP 2



STEP 3



STEP 4



INSTALLATION

ADJUSTING GRAPPLE SUPPORT PLATES

The grapple lock pins should be easy to install or remove by hand. If it is difficult to either install or remove the pins, the grapple support plates may need adjusted either up or down to better align the lock pin holes of the grapple with the corresponding holes in the bucket mount assembly.

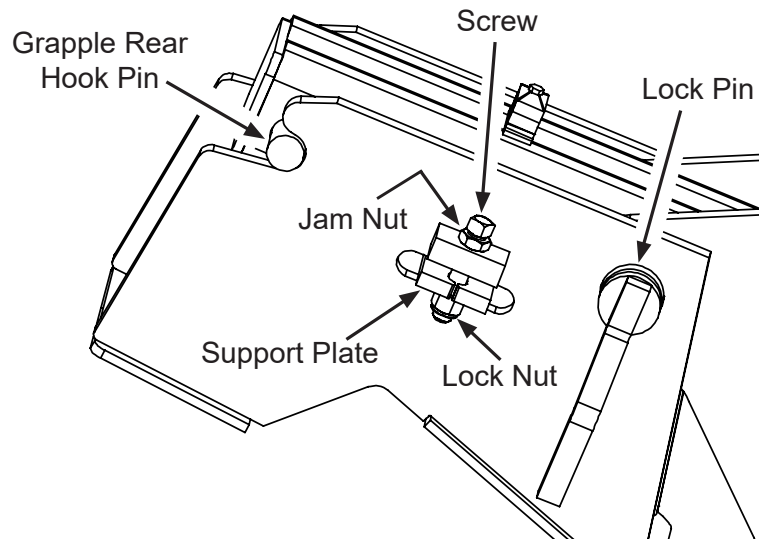
NOTE: For best results, adjust the support plates when the bucket and grapple are positioned so the weight of the grapple is supported by the rear hook pins.

To Adjust Support Plate:

Loosen the lower lock nut.

While keeping the screw from turning, rotate the top jam nut clockwise to raise the support plate and counter-clockwise to lower it.

Adjust the support plate as needed, making sure it makes even contact with the grapple, and re-tighten both nuts.



PRE-OPERATION

WARNING!



Make sure bystanders are a safe distance from equipment during installation and operation. Never leave equipment unattended with engine running or with attachment in a raised position.

WARNING!



To Avoid Serious Injury, make sure the attachment is securely attached to the bucket. Failure to do so could result in unintended release of the attachment.

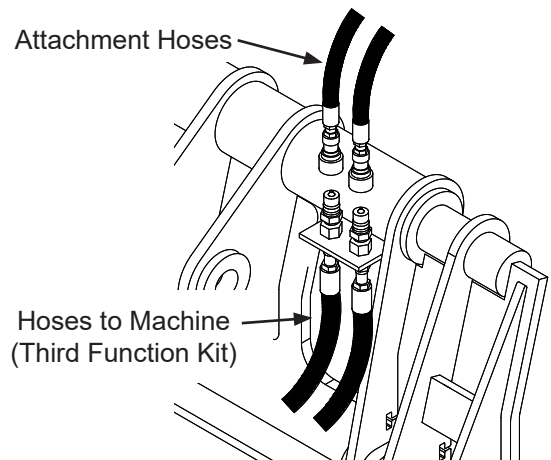
HOSE REQUIREMENTS

JRB hydraulic attachments operate using the third function (auxiliary) hydraulic circuit of the prime mover. Power and return hoses are required for installation to your prime mover. These hoses are supplied with most attachments.

When using an attachment with a JRB quick coupler, an additional third function hose kit is required in order to use the attachment. This kit can be purchased for your specific prime mover through your local dealer. The kit contains all parts necessary to connect from the prime mover third function lines to your coupler.

NOTE: The installation of an attachment which uses the prime mover's third function circuit to operate may lower the level of hydraulic fluid.

Check the hydraulic fluid level of the prime mover after installing the attachment.



Typical arrangement shown. Actual coupler bulkhead arrangement will vary.



A maximum operating pressure of 3,750 PSI is recommended for the attachment. Operating at a higher pressure may cause damage to the attachment and void all warranties.

OPERATION

INTENDED USE

The VersiGrab™ Grapple is designed as a material handling tool for loading, unloading and transporting materials such as silage, trees, brush, bales or any other material that fits within the bucket. Use in any other way is considered contrary to the intended use.

OPERATING THE ATTACHMENT

Read all safety precautions before operating the attachment. See the prime mover's operator's manual for additional instruction on attachment operation.

- Never heap load heavy material where the combined weight of the attachment and the load could exceed the rated capacity of the prime mover.
- Raise the attachment to the MINIMUM height required for the terrain.
- During material handling: stop and start the prime mover gradually, slow down before turning and avoid obstacles, bumps or holes.
- Close the clamps to their fullest extent possible and lift the attachment slightly to be certain the load is secure. **NOTE: If the load appears to be unstable, lower the attachment to the ground, open the clamps and reposition the load to attain full stability. Repeat until full stability is achieved.**
- Check load frequently to ensure stability.

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.
- Seal hydraulic system from contaminants and secure all hydraulic hoses off the ground to help prevent damage
- 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:

- Wash unit and replace any damage and/or missing parts
- Check hydraulic hoses for damage and replace as necessary

OPERATION

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 any 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.

- Attach tie down accessories to unit at any recommended tie down points.
- 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 handbook when transporting your attachment.

OPERATION TROUBLESHOOTING

ATTACHMENTS WITH HYDRAULICS

<u>PROBLEM</u>	<u>POSSIBLE CAUSE</u>	<u>POSSIBLE SOLUTION</u>
Excessive oil temperature	1. Hydraulic oil level too low	Refer to your vehicle operator's manual
	2. Obstruction in hydraulic lines	Remove obstruction and replace, if necessary
	3. Couplers not engaged correctly	Engage couplers
	4. Hydraulic system overloaded, and system relief open	Reduce load
A hydraulic cylinder not operating	1. Insufficient hydraulic flow from the prime mover	Refer to your vehicle operator's manual
	2. Cylinder rod bent	Visually inspect the cylinder for damage
	3. Cylinder seals damaged	Replace cylinder seals
	4. Obstruction in hydraulic lines	Remove obstruction and replace, if necessary

MAINTENANCE AND SERVICE

GENERAL INFORMATION

Regular maintenance is the key to long equipment life and safe operation. Maintenance requirements have been reduced to an absolute minimum. However it is very important that these maintenance functions be performed as described below. Read and follow all safety precautions before performing any maintenance or troubleshooting on this equipment.

WARNING!



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.

NOTE: Always use a hoist or similar device to lift items that weigh more than 50 lbs.

LUBRICATION

Greaseless bushings are used in the grapple cylinders and main pivot points so lubrication is not required. Do not lubricate the pins with grease of any kind. Wiper seals are installed in each end of the bushing housings to keep out debris. If a cylinder or pivot pin is removed, do not perform any grinding or welding around the bushing housings that may create harmful debris. Always make sure the pin is clean and dry before reinstalling. Replace any damaged wiper seals.

MAINTENANCE SCHEDULE

PROCEDURE	DAILY	WEEKLY	NOTES
Remove debris from attachment	✓		Primarily around cylinders and pivot areas. Build up of dirt and debris will restrict movement of the cylinders which may cause component failure.
Check for cracked, bent or broken components, distressed welds, missing parts and oil leaks	✓		Attachment should be cleaned thoroughly before inspection. If a crack is found in either the steel structure or welds, the attachment must be removed from the machine and JRB contacted immediately. Replace broken or missing parts if required.
Check that pins and pin locking hardware are secure	✓		Refer to torque table included in this manual
Check condition of hydraulic hoses, fittings and hydraulic system in general. Replace any damaged parts.	✓		
Ensure daily checks are carried out		✓	

MAINTENANCE AND SERVICE

CYLINDER SEAL REPLACEMENT

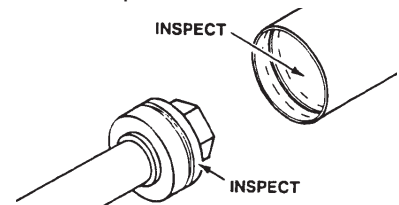
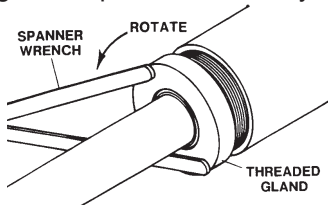
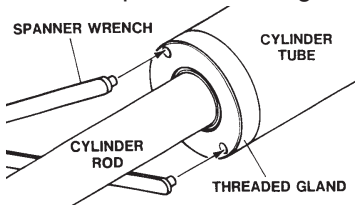
The following information is provided to assist you in the event you should need to repair or rebuild a hydraulic cylinder. When working on hydraulic cylinders, make sure that the work area and tools are clean and free of dirt to prevent contamination of the hydraulic system and damage to the hydraulic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

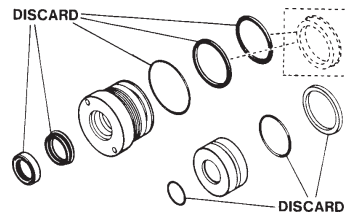
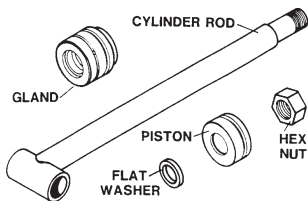
IMPORTANT: Do not contact the active surface of the cylinder rod with the vise. Damage to the rod could result.

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.

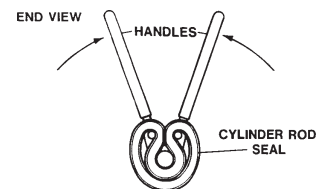
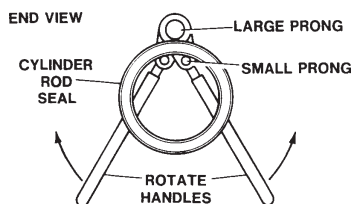
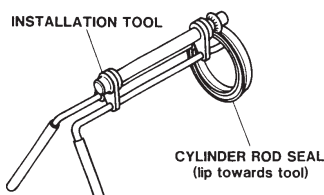


ASSEMBLY PROCEDURE

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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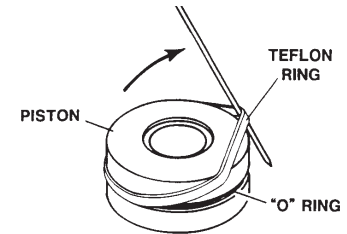
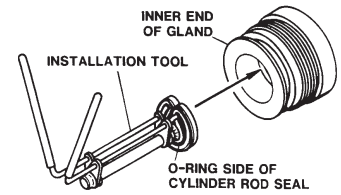
MAINTENANCE AND SERVICE

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.

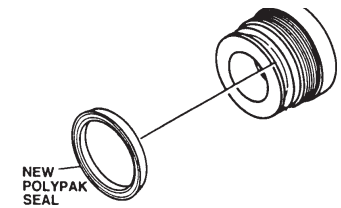
Be careful not to damage the seals. Caution must be used when installing the piston ring. The ring must be stretched carefully over the piston with a smooth, round, pointed tool.

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



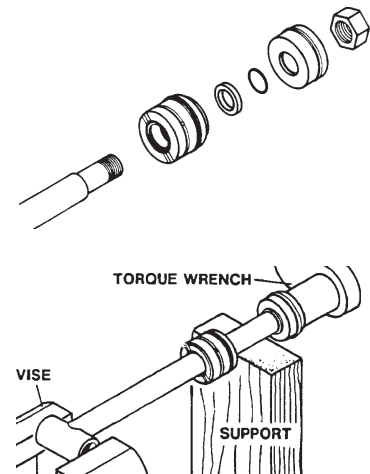
NOTE: Threaded glands may have been equipped with a separate O-ring and backup washer system or a polypak (all in one) type seal. Current seal kits contain a polypak (all in one) type seal to replace the discarded seal types on ALL THREADED GLANDS.

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!

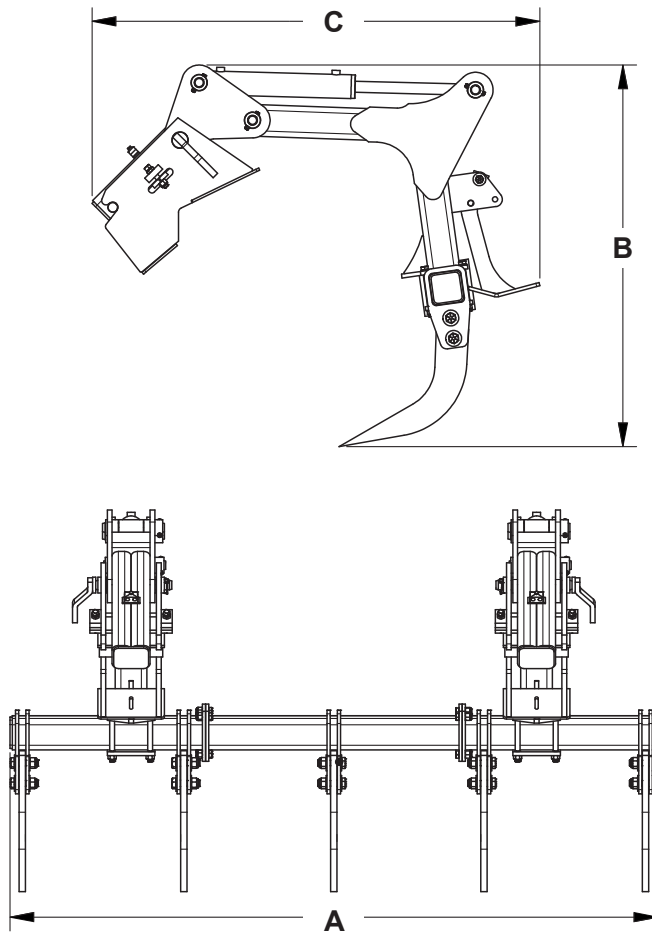


Cylinders serviced in the field are to be tested for leakage prior to the attachment being placed in work. Failure to test rebuilt cylinders could result in damage to the cylinder and/or the attachment, cause severe personal injury or even death.

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SPECIFICATIONS

VERSIGRAB™ GRAPPLE



DESCRIPTION	85"
A. Overall Width	85.25"
B. Overall Height	53.00"
C. Overall Length	70.67"
Grapple Opening (Ground to Grapple Tine Tip)	80.75"
Weight of Grapple and Mount Kit (approx.)	1500 lbs
DESCRIPTION	102"
A. Overall Width	102.25"
B. Overall Height	60.23"
C. Overall Length	70.67"
Grapple Opening (Ground to Grapple Tine Tip)	86.00"
Weight of Grapple and Mount Kit (approx.)	1800 lbs
Operating Pressure (PSI)	3,750
Clamping Force at Tips of Grapple Tines (3,750 PSI)	10,300 lbs
Cylinder Specifications	
Bore	3.00"
Stroke	16.88"
Rod Diameter	1.75"
SPECIFICATIONS AND DESIGN ARE SUBJECT TO CHANGE WITHOUT NOTICE AND WITHOUT LIABILITY THEREFOR.	

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, parts for this attachment are being moved to our website at 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 12:00 P.M. (Eastern Standard Time) will be shipped the same day.

SERVICE DEPARTMENT

(330) 734-3000

(800) 428-2538

For Fax and E-mail Orders

PHASales@paladinattachments.com

(330) 734-3018

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.