OPERATOR'S HANDBOOK

PIPE FORKS

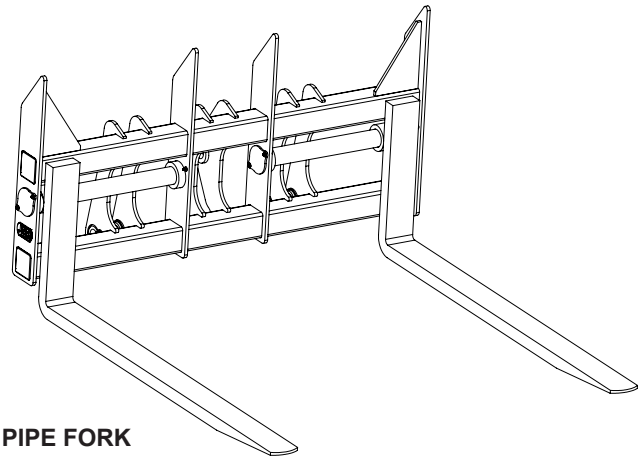
PALADIN HEAVY CONSTRUCTION

JRB

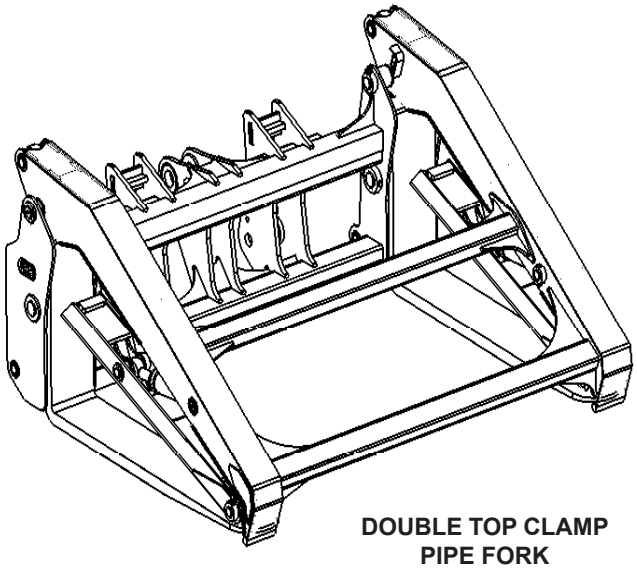
CP

CUSTOMWORKS

The Power of Combined Excellence



PIPE FORK



DOUBLE TOP CLAMP PIPE FORK

SERIAL NO.: _____

MODEL NO.: _____

Original
Manual No.: 90RHB01
Release Date: 5/26/2011
Rev. 1

800-428-2538 I www.paladinbrands.com JRB: 820 Glaser Parkway, Akron, OH 44306, United States of America

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PREFACE

GENERAL COMMENTS

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

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

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

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

BEFORE OPERATION

The primary responsibility for safety with this equipment falls to the operator. Make sure the equipment is operated only by trained individuals that have read and understand this manual. If there is any portion of this manual or function you do not understand, contact your local authorized dealer or the manufacturer. 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.

SAFETY STATEMENTS

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

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

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

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

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

GENERAL SAFETY PRECAUTIONS

WARNING!

READ MANUAL PRIOR TO INSTALLATION

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

READ AND UNDERSTAND ALL SAFETY STATEMENTS

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

KNOW YOUR EQUIPMENT

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

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

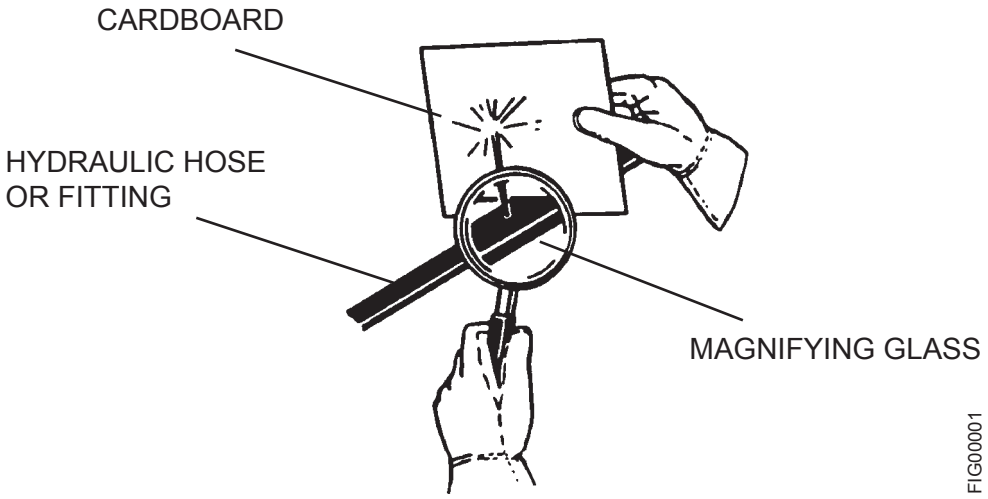
Do not work under raised booms without supporting them. Do not use support material made of concrete blocks, logs, buckets, barrels, or any other material that could suddenly collapse or shift positions. Make sure support material is solid, not decayed, warped, twisted, or tapered. Lower booms to ground 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.**



GENERAL SAFETY PRECAUTIONS

WARNING! DO NOT MODIFY MACHINE OR ATTACHMENTS

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

WARNING! SAFELY MAINTAIN AND REPAIR EQUIPMENT

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

SAFELY OPERATE EQUIPMENT

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

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

EQUIPMENT SAFETY PRECAUTIONS

WARNING! KNOW WHERE UTILITIES ARE

Observe overhead electrical and other utility lines. Be sure equipment will clear them. When digging, call your local utilities for locqtion 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.

OPERATING THE FORK

- Never use your attachment for a work platform or personnel carrier.
- Do not exceed the lifting capacity of any approved fork tines or prime mover.
- Operate only from the operator's station.
- Do not use the fork tines for prying or any other purpose other than lifting.
- 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.
- Never lift, move, or swing a load or attachment over anyone.
- Always space forks correctly for the load. Loads can fall off incorrectly spaced forks. Make sure the forks are completely under the load before lifting.
- Never stack loads on uneven ground. Loads stacked on uneven ground can topple.
- Never lift a load with one fork. A load lifted with one fork can slip off and cause injury.
- When using the clamp, lift the load slightly and make sure the load is secure. If the load appears to be unstable, lower the load, open the clamp and reposition the load to attain full stability.
- Don't obstruct you vision when traveling or working. Carry the forks 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.

EQUIPMENT SAFETY PRECAUTIONS

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 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.
- 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 (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.

INSTALLATION
COUPLER APPLICATIONS

HOSE REQUIREMENTS (Hydraulic Attachments Only)

JRB hydraulic attachments operate using the third function (auxiliary) hydraulic circuit of the prime mover. Hoses and fittings are required to connect to the prime mover third function lines. These hoses must be long enough to accomodate for complete roll out of the attachment and be rated for the maximum hydraulic pressure of the prime mover's hydraulic system.

Third function hose kits are available from JRB for your specific prime mover. These kits can be purchased through your local dealer and contain all parts necessary to install from the prime mover to the coupler.

The hoses and quick connect fittings supplied with the attachment will connect to the quick connect fittings on the 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.

WARNING!

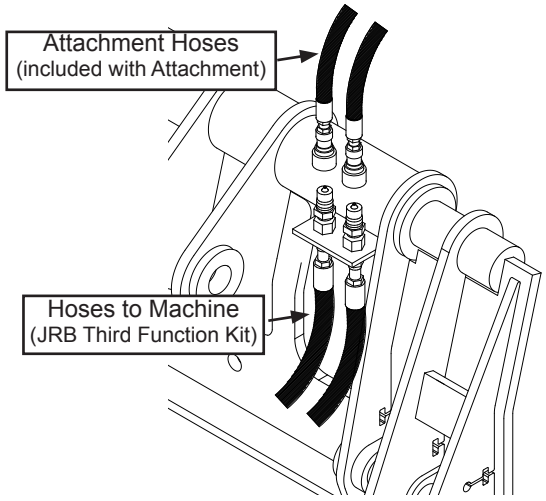
To Avoid Serious Injury, make sure the attachment is securely attached to the coupler or prime mover. Failure to do so could result in separation of the bucket from the coupler or prime mover. Always keep attachment as close to the ground as possible during installation.

COUPLING TO THE ATTACHMENT

- Reference the operator's manual for your coupler and/or prime mover for instruction on coupling attachment.

If installing a hydraulic attachment:

- Lower the attachment to the ground and turn off engine of the prime mover.
- Connect hoses from the attachment to the quick connect fittings on the coupler.
- Start engine and 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.



Typical arrangement shown. Actual coupler bulkhead arrangement will vary.

UNCOUPLING THE ATTACHMENT

- Reference the operator's manual for your coupler and/or prime mover for instruction on uncoupling the attachment.

If uncoupling a hydraulic attachment:

- Close the attachment and lower it to level ground.
- Turn off engine of the prime mover. Work controls to relieve pressure in the hydraulic lines. Disconnect attachment hoses from coupler.

NOTE: Connect attachment hoses to quick connect fittings welded to the frame of the attachment to prevent contaminants from entering the hydraulic system.

INSTALLATION
DIRECT PIN-ON APPLICATIONS

HOSE REQUIREMENTS (Hydraulic Attachments Only)

JRB hydraulic attachments operate using the third function (auxiliary) hydraulic circuit of the prime mover. For direct pin-on applications, hoses are supplied with the attachment for installation to the third function hydraulic lines of the prime mover. These hoses must be long enough to accomodate for complete roll out of the attachment and must be rated for the maximum hydraulic pressure of the prime mover's hydraulic system.

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.

WARNING!

To Avoid Serious Injury, make sure the attachment is securely attached to the coupler or prime mover. Failure to do so could result in separation of the bucket from the coupler or prime mover. Always keep attachment as close to the ground as possible during installation.

ATTACHING TO THE PRIME MOVER

- Reference the operator's manual for the prime mover for instructions on Installing the attachment.

If installing a hydraulic attachment:

- Lower attachment to the ground and turn off engine of the prime mover.
- Connect hoses from attachment to the third function hydraulic lines of the prime mover.
- Start engine and 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.

DETACHING FROM THE PRIME MOVER

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

If detaching a hydraulic attachment:

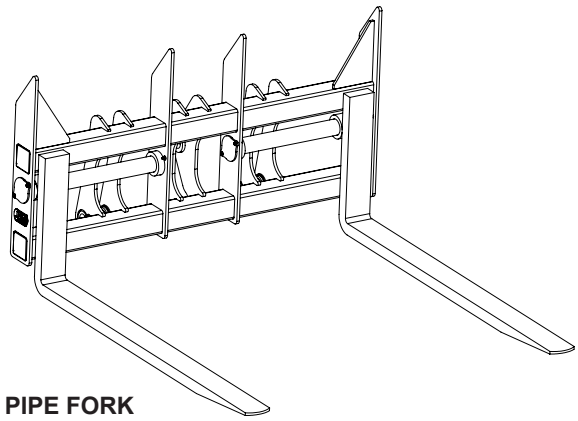
- Close the attachment and lower it to level ground.
- Turn off engine of the prime mover. Work controls to relieve pressure in the hydraulic lines. Disconnect attachment hoses from the third function hydraulic lines of the prime mover.

NOTE: Install caps or plugs into hoses to prevent contaminants from entering the hydraulic system.

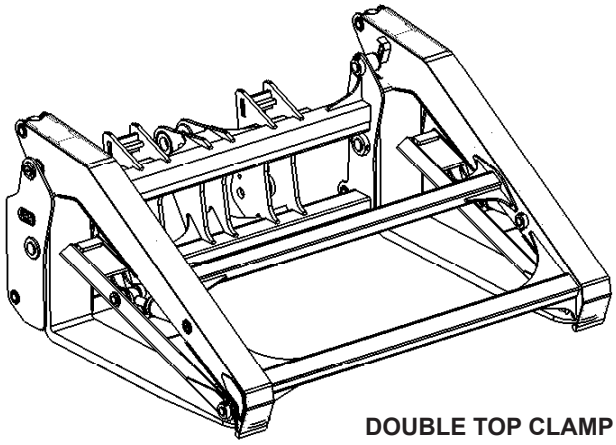
OPERATION

INTENDED USE

JRB Pipe Forks are designed specifically for the purpose of loading, unloading and transporting pipe. An optional hydraulic clamp is available for maximum load control when handling bulky or long materials. Use in any other way is considered contrary to the intended use.



PIPE FORK



DOUBLE TOP CLAMP
PIPE FORK

WARNING! **DO NOT OPERATE FORK IF TINES ARE CRACKED**
Replace cracked tines immediately. DO NOT attempt to repair tines by welding. Welding will weaken the strength of the tines, causing potential component failure.

OPERATING THE ATTACHMENT

Read all Safety Precautions before operating the attachment. Refer to the prime mover's operator's manual for attachment operation.

- 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 fork frame and not near the tips of the fork tines.
- Before lifting, make certain the fork tines are completely under the load and level.
- 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.
- Check load frequently to ensure stability.
- If using hydraulic clamp, close the clamp to its fullest extent possible and lift the load slightly to be certain the load is secure. **NOTE: If the load appears to be unstable, lower the attachment to the ground, open the clamp and reposition the load to attain full stability. Repeat until full stability is achieved.**

OPERATION

ADJUSTING THE FORK TINES

The tines on non-hydraulic pipe forks can be adjusted as needed to fit the load. With the loader arms lowered, shut down the prime mover, set the brake and remove the key. **NOTE: If the tines are in contact with the ground, the loader arms may need raised just enough to eliminate contact.** To adjust tines, loosen bolts in tine eyes. Slide tines along bar into desired position and tighten bolts.

NOTE: The tines on clamping pipe forks are fixed and can not be adjusted.

WARNING!

Never exceed the recommended lifting capacity of any approved fork tines or the loader.

NOTE: Fork tines 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 toward the tip of the horizontal section of the fork tine.

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:

- Remove cover
- Wash unit and replace any damage and/or missing parts
- Lubricate grease fittings
- 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.

MAINTENANCE

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.

PROCEDURE	INTERVAL	NOTES
Lubricate grease fittings	Daily	Refer to diagram below
Check for cracks	Daily	Primarily around attachment mounting bosses and tines
Check bolt tightness	Daily	Refere to torque table
Check stops for excessive wear	Weekly	

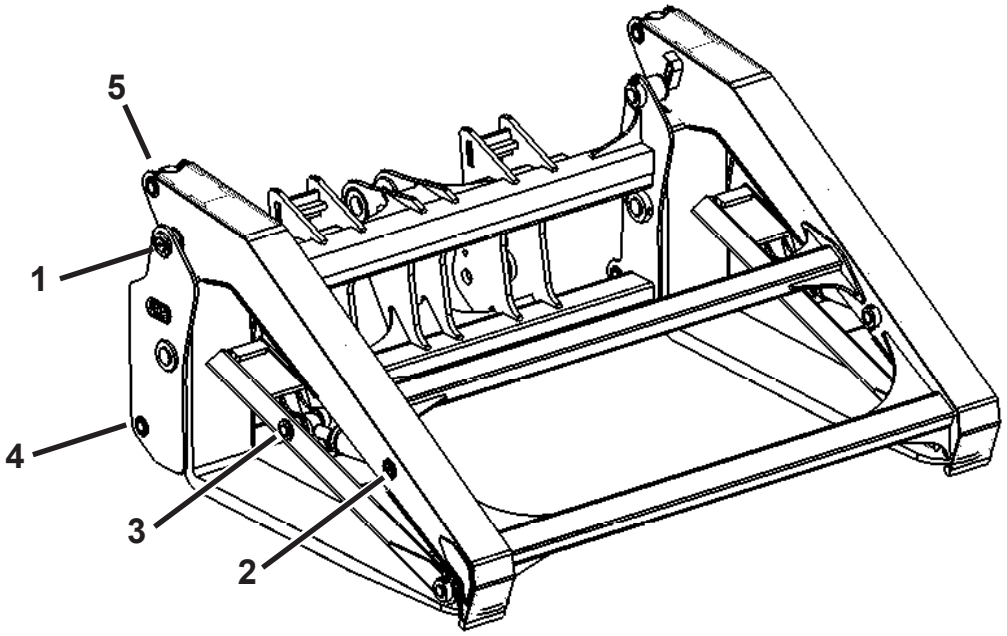
Keep area between cylinders and attachment frame free of dirt and debris. Build up of dirt and debris will restrict movement of the cylinders which may cause component failure.

GREASING THE ATTACHMENT

To keep the attachment in proper working condition, it must be greased on a daily basis. Grease points on the attachment are as shown. Grease points are located on both sides of the attachment. If any grease zerks are missing or damaged, replace and grease.

NOTE: Cylinders and pins that are supplied without grease zerks DO NOT need to be greased.

1 - Pivot Pin
2 - Clamp Cylinder Base Pin
3 - Clamp Cylinder Rod Pin
4 - Arm Cylinder Base Pin
5 - Arm Cylinder Rod Pin



MAINTENANCE

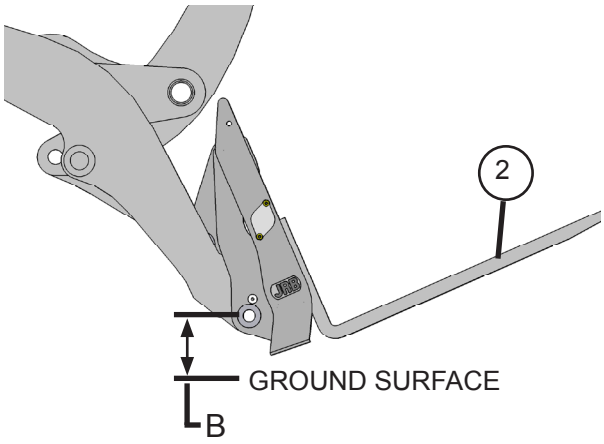
CHECKING ROLLBACK STOPS
(FOR BOTH STANDARD AND ADJUSTABLE STOPS)

NOTE: Verify tires are inflated to the correct pressure prior to performing this procedure.

Park the machine on a firm level surface.

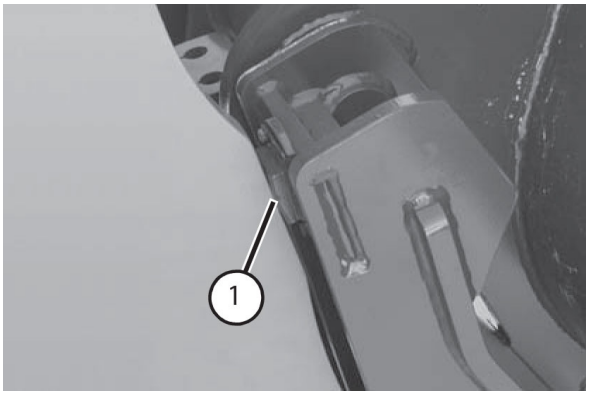
Set attachment in the carry position.

Check the vertical measurement from the ground to the center of the boom attaching pins (dimension B). Refer to OEM specifications for correct dimension.



Roll the coupler/attachment back until the stops (1) contact both arms evenly.

Place a magnetic protractor on the attachment's bottom leading edge (2) and read the protractor to determine the angle. Refer to OEM specifications for correct angle.



SETTING STANDARD STOPS

If rollback angle is not correct, perform one of the following:

To add stop material - Use a low hydrogen 7018 rod to build up the stop surface of the machine and grind smooth. More than one adjustment may be needed to obtain the OEM specified degree of rollback.

NOTE: Reference the machine's Operation and Maintenance Manual for correct procedure before welding on the machine.

To remove stop material - Grind the stop surface of the machine until the OEM specified degree of rollback is obtained.

SETTING ADJUSTABLE STOPS

If rollback stops fail to contact loader arms, measure the gap between the stop and the loader arm.

Use shims, provided with the attachment, as needed to close the gap. When set properly, the bucket cylinder rod should not travel more than 1/8" (3.175mm) after the attachment stops contact the loader arms.

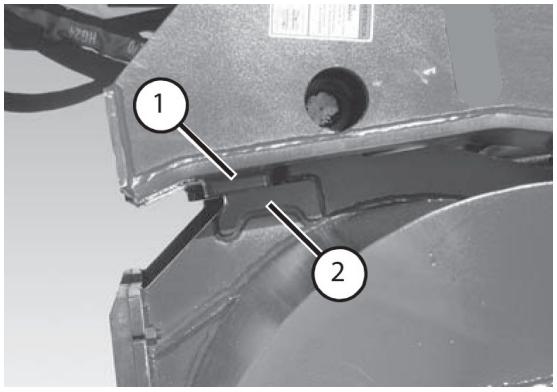
COUPLER TO ATTACHMENT FIT

The fit between the coupler and the attachment is very important and should be checked regularly.

To check the fit:

With the coupler locked to the attachment, roll the attachment forward and measure the gap between the stop block (1) and the rib stop surface (2).

The maximum allowable gap is 0.080” (2.032mm). In theory, the gap can be between .010” - .080” (0.254mm - 2.032mm). A very tight fit may not allow free movement of the plungers. Provide enough clearance to allow the plungers to move freely. The gap can be tightened by weld build up of the rib stop surface. **DO NOT** modify the coupler stop surface.



MAINTENANCE

WELDING GUIDELINES FOR TINE EYES AND KEEPERS

WARNING!

These instructions are for replacing tine eyes and keepers ONLY! DO NOT attempt to repair cracked or broken tines by welding. Welding will weaken the strength of the tines, causing potential component failure. REPLACE CRACKED TINES IMMEDIATELY.

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:

- Preheat surface to 600º to 625º degrees F before welding.
- Maintain the preheating temperature during the welding process.
- If wire weld cannot be used, the use of the electrode AWS-E7018, diameter of 5/32” is recommended.
- Field work in the open on cold days without wind protection is not recommended.
- Weld at least 6” from heel. Horizontal welds in this area are to be avoided.

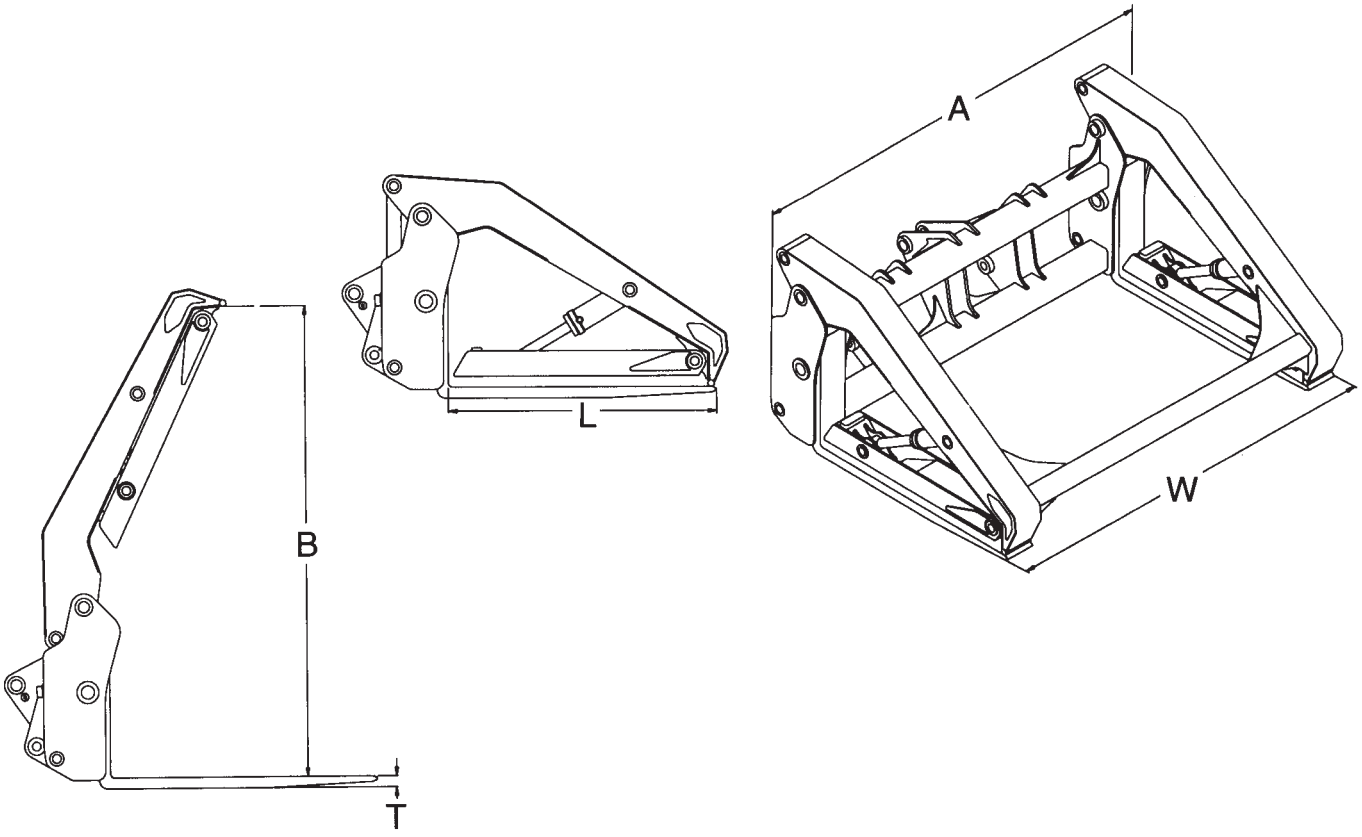
Welding characteristics:

Wire = 0.047
Wire Type = ER70-S6
Voltage = 29V - 30V
Wire Speed - 440” to 460” per minute
Polarity = +
Gas = C25 _ (25% of C0” + 75% of argon)
Flow - 0.42 to 0.53 cu ft/min

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

SPECIFICATIONS

PIPE FORK / DOUBLE TOP CLAMP PIPE FORK



CLASS	"A" FRAME WIDTH	"B" MAX. OPENING	"W" WIDTH OVER TINES	"L" TINE LENGTH	"T" TINE SIZE	CAPACITY @ 24" LOAD CENTER
200	96"	89-31/50"	92-19/50"	60"	2" x 6"	12600 lbs.
300	106"	106-14/25"	103-22/25"	60"	3" x 6"	19700 lbs.
500	106"	112"	103-22/25"	66"	3" x 8"	26390 lbs.
600	110"	118-1/4"	107-19/50"	66"	3" x 8"	38000 lbs.
700	120"	137-1/2"	117"	72"	3" x 8"	38000 lbs.

SPECIFICATIONS

TINE CAPACITIES CHART

CAPACITIES SHOWN ARE PER PAIR OF TINES @ 24” LOAD CENTERS

WIDTH/ THICKNESS (INCHES)	BLADE LENGTH (MIN.)	BLADE LENGTH (MAX.)	TAPER	ESTIMATED SAFE LOAD PER PAIR @ 3 TO 1 SAFETY FACTOR
4 x 1.25	30.00"	48.00"	18.00"	3,300#
4 x 1.50	30.00"	60.00"	22.00"	4,750#
4 x 1.75	30.00"	60.00"	26.00"	6,400#
4 x 2.00	30.00"	60.00"	28.00"	8,400#
5 x 1.50	36.00"	60.00"	22.00"	5,900#
5 x 1.75	30.00"	60.00"	26.00"	8,000#
5 x 2.00	36.00"	60.00"	30.00"	10,500#
6 x 2.00	36.00"	96.00"	30.00"	12,600#
6 x 2.25	36.00"	60.00"	30.00"	16,000#
6 x 2.50	36.00"	60.00"	30.00"	19,700#
6 x 2.75	36.00"	60.00"	30.00"	23,900#
6 x 3.00	36.00"	60.00"	30.00"	28,500#
7 x 1.50	36.00"	72.00"	22.00"	8,300#
7 x 1.75	36.00"	72.00"	26.00"	11,300#
7 x 2.00	36.00"	72.00"	30.00"	14,700#
7 x 2.25	36.00"	72.00"	30.00"	18,700#
7 x 2.50	36.00"	72.00"	30.00"	23,000#
7 x 3.00	36.00"	72.00"	30.00"	33,250#
8 x 1.50	36.00"	72.00"	22.00"	9,500#
8 x 1.75	36.00"	72.00"	26.00"	12,900#
8 x 2.00	36.00"	72.00"	30.00"	16,800#
8 x 3.00	36.00"	72.00"	30.00"	38,000#
8 x 3.50	36.00"	72.00"	30.00"	51,700#
8 x 4.00	36.00"	72.00"	30.00"	67,500#

BOLT TORQUE SPECIFICATIONS

GENERAL TORQUE SPECIFICATION TABLES

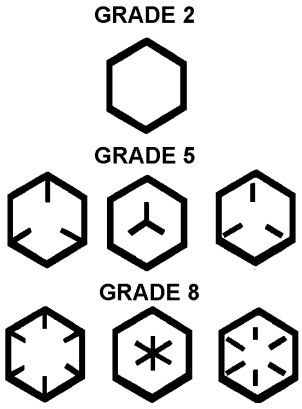
Use the following charts when determining bolt torque specifications when special torques are not given. Always use grade 5 or better when replacing bolts.

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			
		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

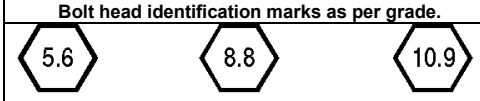
Bolt head identification marks as per grade.
NOTE: Manufacturing Marks Will Vary



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

WARRANTY POLICY

LIMITED WARRANTY POLICY

(page 1 of 2)

Paladin Heavy Construction ("Paladin") warrants its products against faulty design, material, and workmanship for a period of one (1) year from date of delivery or 2,000 hours, whichever comes first. Standard Series Loader Couplers are warranted for three (3) years or 3,000 hours, whichever comes first. Special Interchange Loader Couplers and Excavator Couplers are warranted for a period of one (1) year from date of delivery or 1,000 hours, whichever comes first. Refer to the Product Manual for proper maintenance procedures.

Hydraulic kits and components are warranted for one (1) year from factory delivery date. Cylinders must be returned in their entirety and not have been disassembled to be considered for warranty. After Warranty and Purchased Parts include cylinders, hydraulic valves, seal kits, electrical components and wear parts are warranted for 90 days. Disassembly, modification or welding of cylinders without Paladin's written authorization voids the warranty on the cylinder and the seals. All valves must be packaged and sealed to prevent contaminates from entering the valve during shipment. Valves improperly packaged will not be considered for warranty. Hydraulic hoses are warranted against failure due to workmanship. Improper installation, ripping or cutting due to unauthorized modifications of Paladin Heavy Construction installation procedures is not warranted. A qualified Paladin dealer or Paladin representative must install hydraulic kits and components for failures to be given warranty consideration.

Paladin will repair or replace, at its sole option, any equipment proven to Paladin's satisfaction to be of faulty design, material or workmanship. Warranty replacement parts will be shipped second day air. This warranty does not include or cover purchased subassemblies including, but not limited to, teeth, tines (forks), cylinders, blades, etc. Such purchase subassemblies are covered only by the OEM's warranty, if any, of their respective manufacturers, and not by Paladin.

Dealer labor rate charges on approved warranty repairs shall not exceed 70% of dealer regular hourly rate. Overtime charges need prior written approval. Claims received 30 days past the repair date will not be considered for warranty coverage and shall be null and void.

LIMITED WARRANTY POLICY

Continued (page 2 of 2)

LIMITATIONS:

This LIMITED WARRANTY does not cover product, which in the opinion of Paladin, is damaged due to abuse, misuse, misapplication, prohibited operation, improper maintenance, alteration, unauthorized service, contamination by the base machine, or normal wear and tear. This LIMITED WARRANTY is void if the product is modified in any way without the written consent or instruction of Paladin. This LIMITED WARRANTY is null and void if the product is used in a prohibited operation, or unauthorized adjustment/assembly/disassembly has occurred. This LIMITED WARRANTY is the exclusive warranty and is given in lieu of any and all other warranties, whether expressed or implied, arising in any fashion including but not limited to the course of dealing and course of performance, and including but not limited to warranty of merchantability or warranty of fitness for a particular purpose. Dealers or Agents of Paladin have no authority to make any type of representation or warranties on behalf of Paladin beyond those expressly set forth in this document.

Paladin Heavy Construction couplers are manufactured with a patented design to interface with Paladin attachments, OEM attachments and Paladin female adapters (ribs). The use of attachments other than Paladin attachments, OEM attachments and Paladin female adapters (ribs) will void all warranty on the Paladin Heavy Construction coupler. The use of Paladin Heavy Construction adapters on unapproved attachments is not sanctioned. A "home made" or nonstandard attachment outside the specifications for the machine will void the warranty on the Paladin Heavy Construction coupler.

In no event shall Paladin be liable to any party, including but not limited to buyer, for any direct, incidental, consequential, punitive, or special damages, including but not limited to loss of profits, loss of productivity, in any way related to or arising, directly or indirectly, from the product. The liability of Paladin for any and all losses and damages to buyer, its successors and assigns, resulting from any cause whatsoever, including the negligence of Paladin, irrespective of whether such defects are discoverable or latent, shall in no event exceed the purchase price of the product with respect to which such losses or damages are claimed.

[1]*Attachment Technologies Inc., a subsidiary of Paladin Brands Holding, Inc. (PBHI) is referred to herein as Paladin Heavy Construction.*

RETURNED GOODS POLICY

RETURNED GOODS POLICY - PARTS/SALES

Items shipped in error

JRB., will accept returned items, with prior approval of JRB. (see RGA Paragraph below), within thirty (30) days after shipment without a restocking charge, freight collect.

Items ordered in error

When current parts are incorrectly ordered and returned to JRB., the **Customer is responsible for freight costs and a 15% restock fee.**

When current parts are purchased without a serial number and returned, the **Customer is responsible for freight costs and a 15% restock fee.**

When current parts with a 90 day + shelf life are purchased and returned, the **Customer is responsible for freight costs and a 25% restock fee.**

Non-current and Special Parts items

JRB. will **not** accept returned items, which are special order or used on non-current machines.

Service Parts

JRB. will accept returned service parts items, which were ordered in error, with prior approval of JRB. (see RGA), within thirty (30) days after shipment with a **25% restocking charge, freight prepaid.**

RGA - Returned Goods Authorization

All return items must have the prior approval of JRB. and be assigned an RGA (Return Goods Authorization) number by either the JRB Sales or Parts Department and must be returned within (30) days of request.