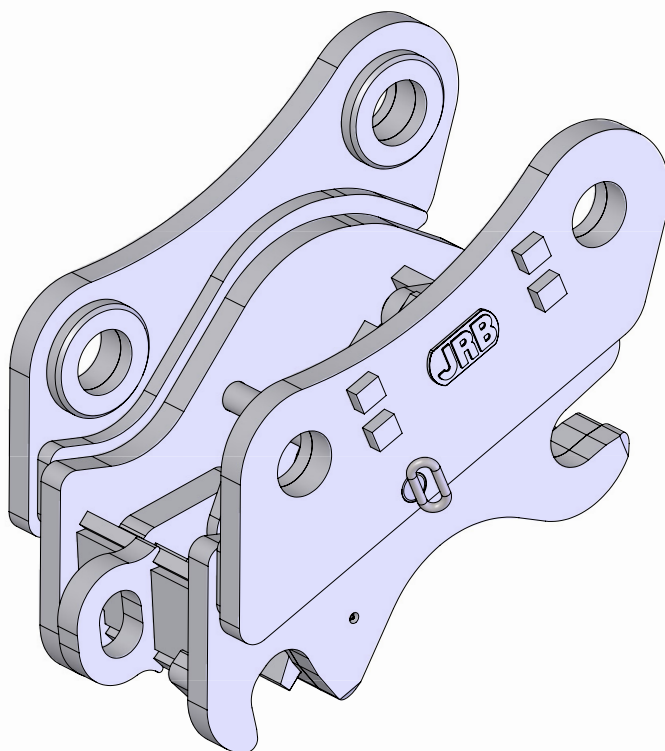




OPERATOR'S MANUAL

PINLOC COUPLER

**FOR
EXCAVATORS**



SERIAL NUMBER: _____

MODEL NUMBER: _____

Manual Number: OM90A-PL
Date: March 2021
Rev. 4

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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>.

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.**

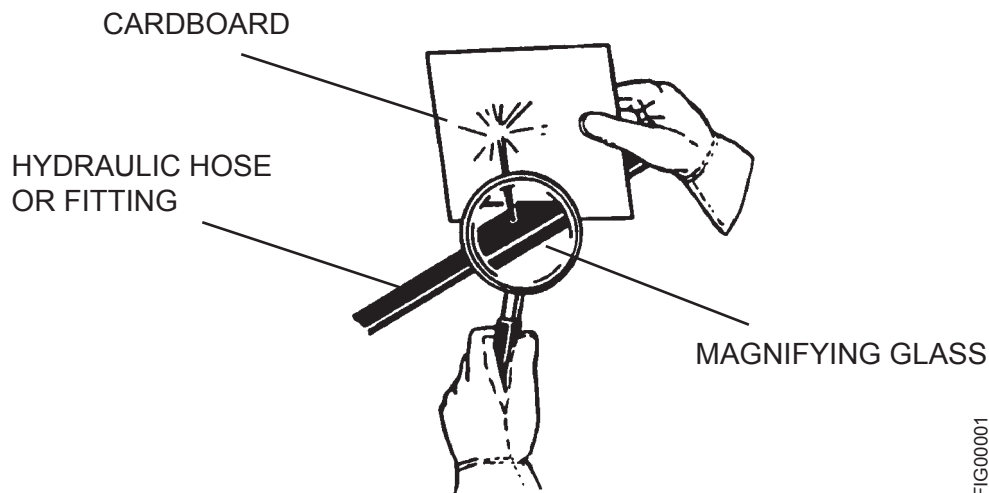


FIG00001

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.



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.
- 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.
- 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.

WARNING!



KEEP ATTACHMENT CLOSE TO THE GROUND DURING ALL LOCK AND UNLOCK OPERATIONS.

Attachment can drop without warning if not properly secured. Visually check the coupler is securely locked on attachment. Follow procedures described in this manual for checking fit between coupler and attachment. Failure to do so could result in serious injury or death.

EQUIPMENT SAFETY PRECAUTIONS

WARNING!



CLEAR COUPLER OF DEBRIS BEFORE OPERATING

Make sure coupler is free of debris prior to operation. Debris can interfere with the locking mechanism not allowing it to function properly.



UNDERSTAND GEOMETRY OF PRIME MOVER

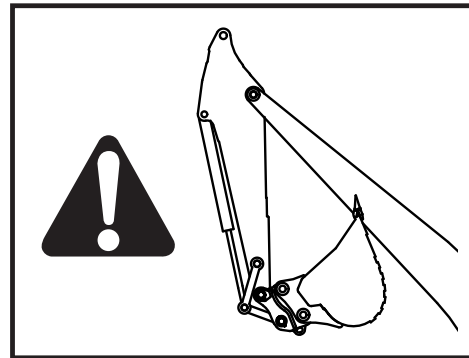
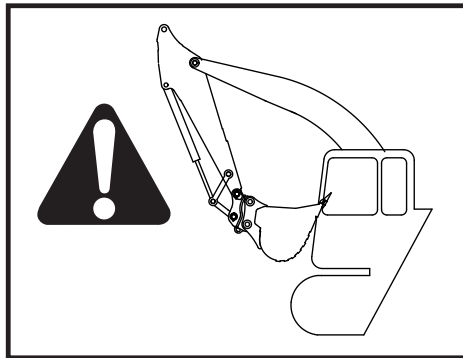
The addition of the coupler will change the geometry of the prime mover. This change should be taken into consideration during operation and travel.



UNDERSTAND EFFECTIVE REACH OF ATTACHMENTS

The coupler increases the distance between the stick and the attachment. The effective “reach” of the attachment will be increased.

Depending on the specific coupler and attachment combination, it may be possible for the attachment to come in contact with the upper structure of the excavator (cab, boom, cylinders, etc.). The operator should familiarize themselves with any potential interference locations prior to use.



WARNING!



LIFT EYE USAGE

The JRB coupler is designed with a lift eye for lifting and placing material. It is designed for the convenience of the operator. Consult your prime mover manufacturers specifications for lifting procedures and capacities. Incorrect applications and uses and failure to follow these instructions may result in severe injury or death.

In order to use the lift eye correctly and safely the attachment must first be removed from the coupler. Not only is this the safe method, it also increases the lifting capacity of the machine. When an attachment is in use with the coupler, the chain, cable or other lifting device can contact it and may cause interference, damage or potential for unexpected release.

The lifting device must always be removed when changing attachments. If the device is in the area of the coupler or attachment during coupling, it may cause an incomplete locking of the coupler to the attachment or damage to the coupler and/or the attachment.

EQUIPMENT SAFETY PRECAUTIONS

WARNING!



ONLY USE JRB PROVIDED HYDRAULIC KIT TO OPERATE THE COUPLER

The JRB Coupler has been extensively studied and tested, for both efficiency and safety, using the JRB hydraulic kit.

The JRB Coupler has not been studied or tested using any other hydraulic system. Since hydraulic systems vary in many aspects, JRB cannot know whether the coupler may be operated safely with a hydraulic system that is not its own. Because of the unknown characteristics of any other hydraulic system, JRB takes no responsibility for the safety of a JRB coupler if it is operated with a hydraulic system other than the one provided by JRB.

WARNING!



Attachments operated with the JRB coupler are required to use standard OEM pin sizes and pin spacings. Attachments with longer pin centers or smaller pin sizes will result in excessive coupler wear and will void the coupler warranty.



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.



MEASURE TRAVEL HEIGHT AND LENGTH PRIOR TO TRANSPORTING

The overall travel height and/or length of the prime mover will be increased if the coupler and attachment are installed. Do not rely on original prime mover specifications to determine overall dimensions. Actual dimensions will be affected by specific coupler and attachment combination.

EQUIPMENT SAFETY PRECAUTIONS



MAINTAINING THE ATTACHMENT

- Before performing maintenance (unless otherwise specified), lower the attachment to the ground, apply the brakes, turn off the engine and remove the 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.



REMOVE THE ATTACHMENT FROM THE COUPLER AT THE END OF EACH SHIFT.

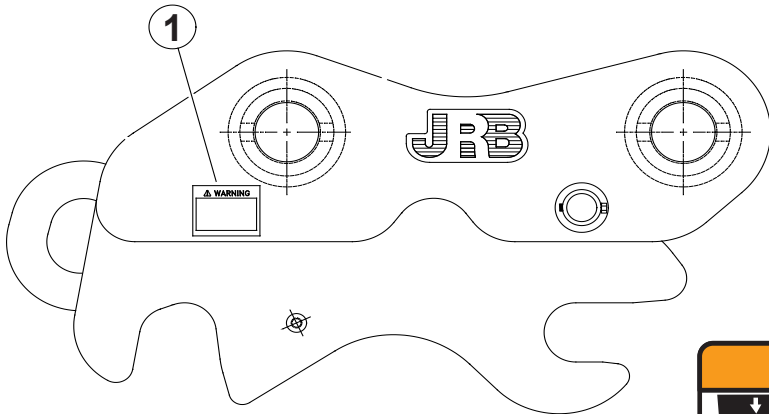
Failure to do so could cause increasing tightness of the locking mechanism, causing it to become difficult to uncouple.

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 below. 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.



Note: Locate Item 1 on both sides of coupler.



PART NO.	DESCRIPTION
91V0901	Decal Kit, Excavator Coupler (includes qty. 2 of decal A54403)

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.

OPERATION

NOTE: Some prime movers will require a different style control switch for operating the coupler. Refer to the instructions included with your hydraulic kit for details.

COUPLER CONTROL BOX

UNLOCKING PROCEDURE:

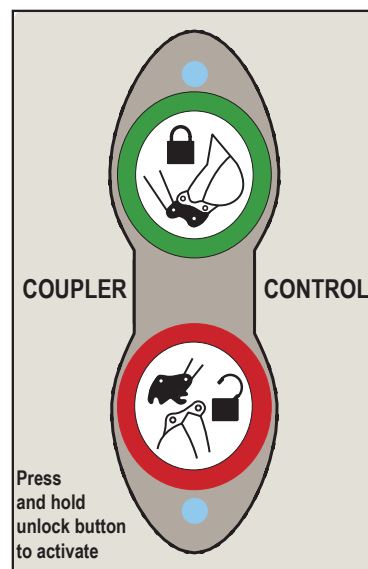
Rotate machine stick in toward machine cab. With coupler in full curl position and held over relief, activate the unlock sequence by pressing and holding the UNLOCK button on the control box (approx. two to three seconds). This is to prevent accidental unlocking of the coupler if the switch is inadvertently hit.

The UNLOCK button will light up and stay on. An internal buzzer will sound and remain on as long as the control box is in UNLOCK mode.

LOCKING PROCEDURE:

To activate the lock sequence, press the LOCK button. The LOCK button will light up and blink for five seconds followed by an audible beep. The green LED will then remain on.

NOTE: The LOCK button can be pressed at any time to trigger the lock sequence.



TROUBLESHOOTING CONTROL BOX

If an error occurs in the control box circuit, a continuous audible alarm will sound and signal lights will either flash or remain on. To determine the cause of the error, perform the following steps

1. Check the control box for damage. If any part of the control box is cracked or broken, it will need replaced.
2. Check wire harness for damage. Damage to the wire harness may cause a shorted or open circuit. Repair or replace if necessary.
3. If the problem was able to be repaired, the box will need reset to remove the error condition.
4. If the alarm continues after resetting the control box, call Paladin Customer Service.

RESETTING CONTROL BOX

To reset the control box do the following:

1. Turn the machine ignition to OFF.
2. Make sure control box is completely powered down (no buzzer and no lights).
3. While pressing both the LOCK and UNLOCK buttons, turn the machine ignition ON.

NOTICE! DO NOT try to override the control box and connect the valve coils directly to voltage. Doing so may cause damage to the control box.


OPERATION

INTENDED USE

The PinLoc coupler is designed as a tool to provide an efficient way for the operator to attach, detach and interchange between different attachments with ease. It can accommodate a variety of attachments, including demolition attachments, rippers and hammers. Use in any other way is considered contrary to the intended use.

NOTICE: Do not use coupler with a mechanical style pulverizer. Damage to the coupler may result which will void warranty. Mount pulverizer directly to the prime mover.

Install coupler to stick using original equipment attachment pins. The pins which come with the coupler must be used in the attachment.

WARNING!  **Keep attachment close to the ground during all lock and unlock operations. Coupler lock cylinder must be unlocked while connecting to an attachment. Clear debris from locking area of coupler prior to engaging attachment. Attachment may drop without warning if not properly secured. Failure to do so could result in serious injury or death.**

Connect coupler cylinder hoses as shown in instructions provided with coupler install kit. The cylinder in the coupler is powered by hydraulic oil from the bucket cylinder on the excavator. Oil is diverted to lock and unlock the coupler by an electric solenoid valve. It is important to understand that the solenoid coils are **energized** only during the **UNLOCK** sequence.

TO LOCK THE COUPLER TO THE ATTACHMENT:

Exit cab and remove the manual lock pin.

Curl coupler under to full extension of bucket cylinder. Move toggle switch to **UNLOCK** position.

Note: A safety light and buzzer will turn on warning the operator anytime the switch is in the UNLOCK position.

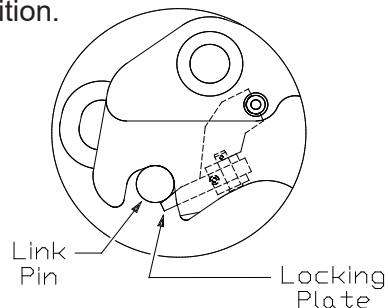
Move joystick to curl coupler, and hold over relief. You will see the cylinder and slide retract.

Retract bucket cylinder and position coupler to pick up an attachment. Engage pin closest to cab with hook on coupler.

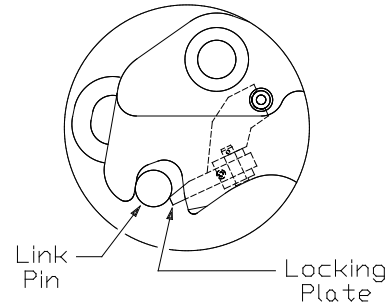
With hook on pin, again curl coupler and attachment to full extension of bucket cylinder.

Move toggle switch to lock position (light and buzzer will turn off, indicating switch position) and move joystick to take over relief. Taking the machine over relief, diverts the oil to the lock cylinder providing full extension of coupler lock cylinder. **Visually check coupler to verify it is securely attached.** Locking plate should contact pin as shown.

Shut off the machine. Exit cab and insert the manual lock pin into the PinLoc frame. Make sure that the lock pin is all the way through the coupler frame. Install linch pin into the manual locking pin and rotate the ring to the lock position.



CORRECT
LOCK POSITION



INCORRECT
LOCK POSITION

WARNING!



Make sure coupler is secured correctly to attachment. The supplemental lock can be engaged with the attachment in an incorrect lock position. A visual check is required each time the lock operation is performed. Failure to do so could result in serious injury or death.

OPERATION

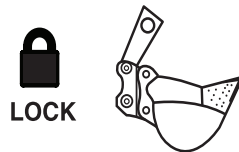
Note: Incorrect lock position could be caused by attachment pin centers outside of coupler design. Do not operate attachment when supplemental lock is used as the primary locking device. Doing so could result in coupler failure. Retract bucket cylinder slowly and watch for movement of attachment out of coupler. With the coupler properly locked to the attachment, the attachment will not move while retracting the bucket cylinder.

TO LOCK COUPLER

1. Engage front hook on pin



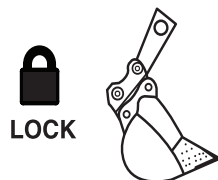
2. Rotate to full-curl position. Push LOCK button. Hold in full-curl position for 5 seconds.



3. Shut off machine. Exit cab and insert pin. Make sure the linch pin is installed and secured. Visually verify that lock plate is locked under the attachment pin.



4. Slowly uncurl coupler. Verify the attachment is properly locked.

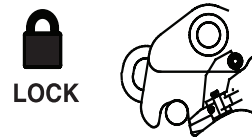


TO UNLOCK COUPLER

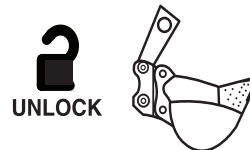
1. Rotate to full-curl position.



2. Keep attachment close to ground. Power down machine, exit cab and remove Supplemental Lock Pin.



3. Push UNLOCK button and hold for two seconds.



4. Slowly uncurl coupler. Attachment will release from hooks.



A60065EN

TO UNLOCK ATTACHMENT FROM COUPLER:

Curl coupler and attachment to full extension of bucket cylinder. Keeping attachment close to ground, shut off the machine, exit the cab and remove the supplemental lock pin. Turn on the machine. Move toggle switch to unlock position. The warning light and buzzer will turn on indicating the switch is in the unlock position. Move joystick to take over relief. This will divert oil from the bucket cylinder to unlock coupler. Slowly retract bucket cylinder keeping attachment close to the ground. With the attachment flat on the ground, uncurl coupler from the attachment.

OPERATION

SUPPLEMENTAL LOCK

JRB has added, as a design improvement, a supplemental locking device to all couplers, which must be manually engaged. This supplemental lock is to be used in conjunction with the main locking system - either hydraulic or mechanical.

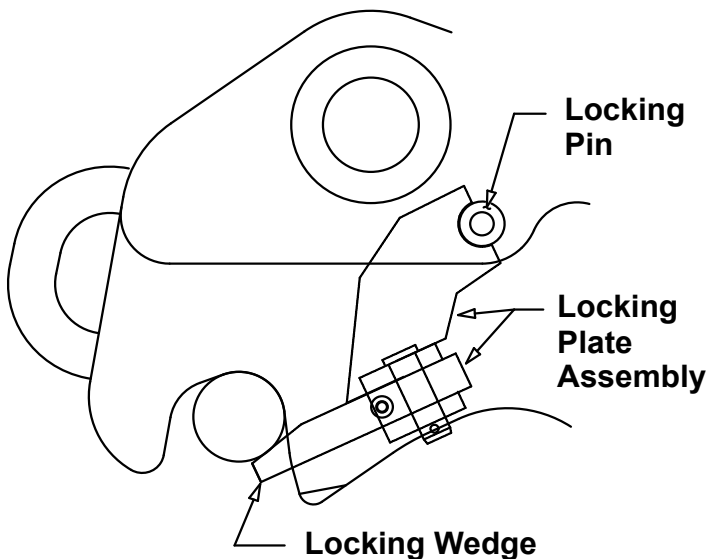
This lock is not intended to be used as the primary locking system for the coupler.

The supplemental lock consists of:

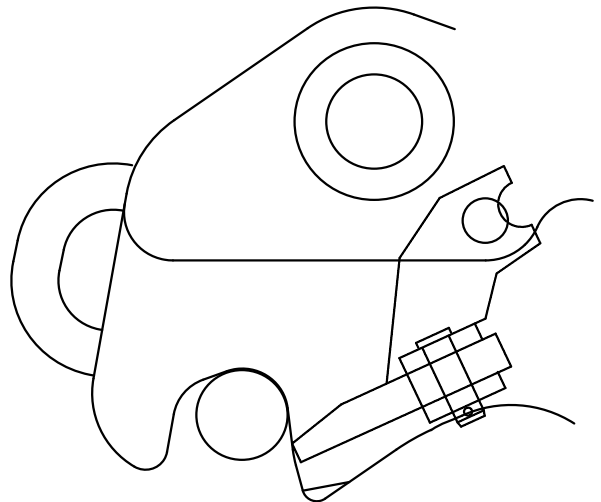
- A locking pin that is inserted into the PinLoc frame by hand after an attachment is locked onto the coupler with the primary locking system
- A linch pin that secures the locking pin in place
- Two plates welded to the top of the locking wedge.

When the locking wedge is extended under the attachment pin, and the locking pin is inserted, the wedge will not retract far enough to permit an attachment to become disengaged from the coupler.

ENGAGED



RETRACTED



OPERATION

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

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

The following maintenance procedure should be performed in order to maintain proper operation of the coupler.

PROCEDURE	INTERVAL	NOTES
Inspect locking	daily	Both primary and supplemental
Inspect hoses for leaks	daily	
Grease zerk fittings	daily	
Unlock coupler mechanism	daily	To prevent binding of slide
Check cylinder bolt torque Size of bolt varies depending on size of coupler Torque is in ft. lbs.	500 hours	<div style="display: flex; justify-content: space-between;"> <div>Dry Torque</div> <div>Wet Torque (cleaned and never sieze)</div> </div> <div style="display: flex; justify-content: space-between; margin-top: 10px;"> <div>7/8" dia. = 600</div> <div>306</div> </div> <div style="display: flex; justify-content: space-between; margin-top: 5px;"> <div>1-1/4" dia. = 1975</div> <div>1007</div> </div> <div style="display: flex; justify-content: space-between; margin-top: 5px;"> <div>1-1/2" dia. = 3200</div> <div>1632</div> </div>
Remove debris from coupler	at each interchange	Especially in lock area prior to engaging attachment
Replace seals in valve	1500 hours	

TROUBLESHOOTING

PROBLEM	POSSIBLE CAUSE	POSSIBLE SOLUTION
Coupler cylinder does not extend or retract properly	Hoses or valve plugged with dirt or debris	Remove hoses and valve. Clean hoses and valve spool. Blow air through valve to check operation
	Supplemental lock is engaged	Disengage supplemental lock
Coupler cylinder will not retract	No hydraulic pressure is directed to cylinder	The bucket cylinder is not being taken over relief
	Loss of electrical current to solenoid	Check electrical connections. Check ground wire at solenoid
	Supplemental lock is engaged	Disengage supplemental lock
Coupler cylinder will not retract with hydraulic system working properly	Locking plate is wedged on pin; cylinder cannot overcome binding force to retract	Position coupler to access locking plate. Carefully unscrew cylinder check valve enough to allow fluid to seep and relieve pressure. Tap on locking plate with sledge hammer to free it from pin.
	Supplemental lock is engaged	Disengage supplemental lock

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.