



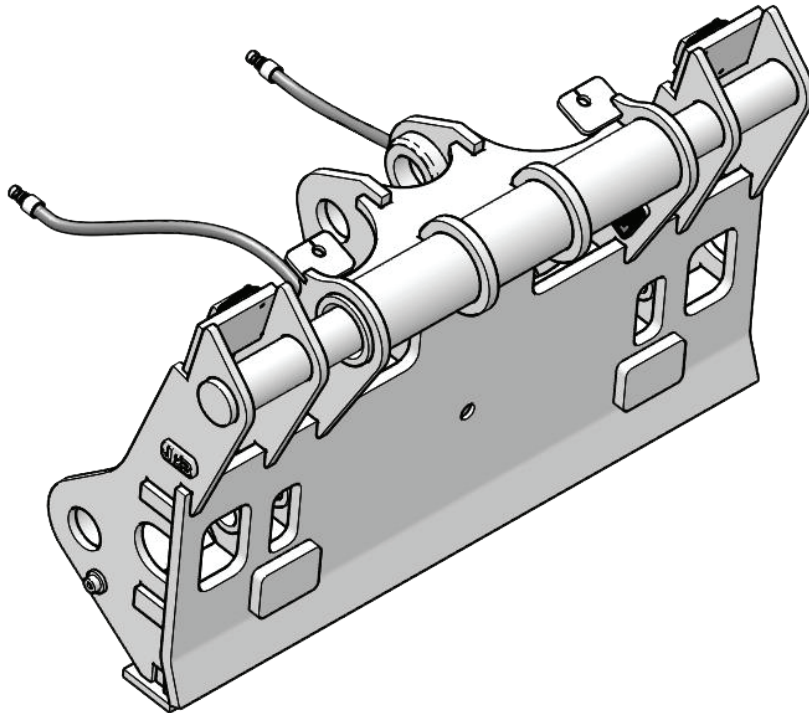
PALADIN®

JRB

OPERATOR'S MANUAL

HYDRAULIC COUPLER

**FOR
HITACHI COUPLER READY LOADERS**



SERIAL NUMBER: _____

MODEL NUMBER: _____

Manual Number: OM92F-HT-7
Date: December 2023
Rev.

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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 prime mover 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.**

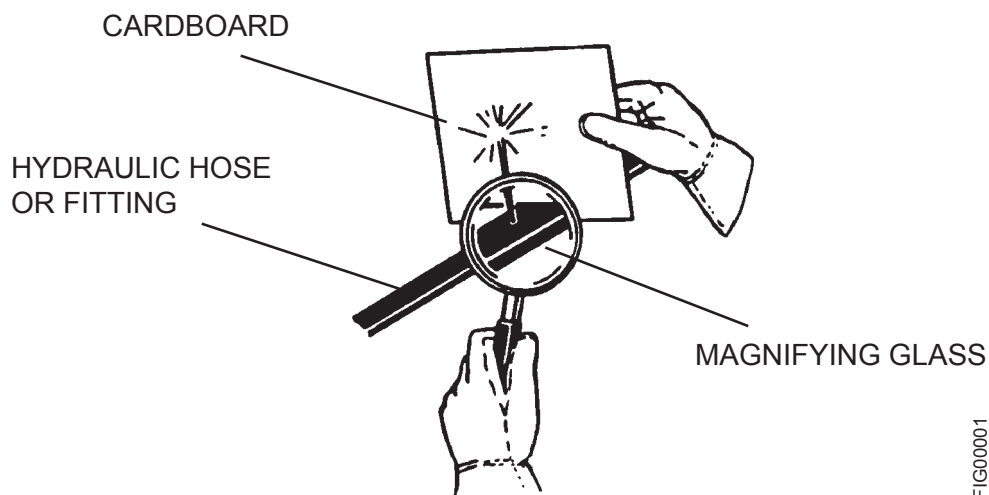


FIG00001

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.

EQUIPMENT SAFETY PRECAUTIONS

WARNING!



KEEP ATTACHMENT CLOSE TO THE GROUND DURING 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.

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 EFFECTIVE REACH OF ATTACHMENTS

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



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.

EQUIPMENT SAFETY PRECAUTIONS



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.



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.

WARNING!



KEEP HANDS AWAY FROM PLUNGER AREA WHEN PRIME MOVER IS ON

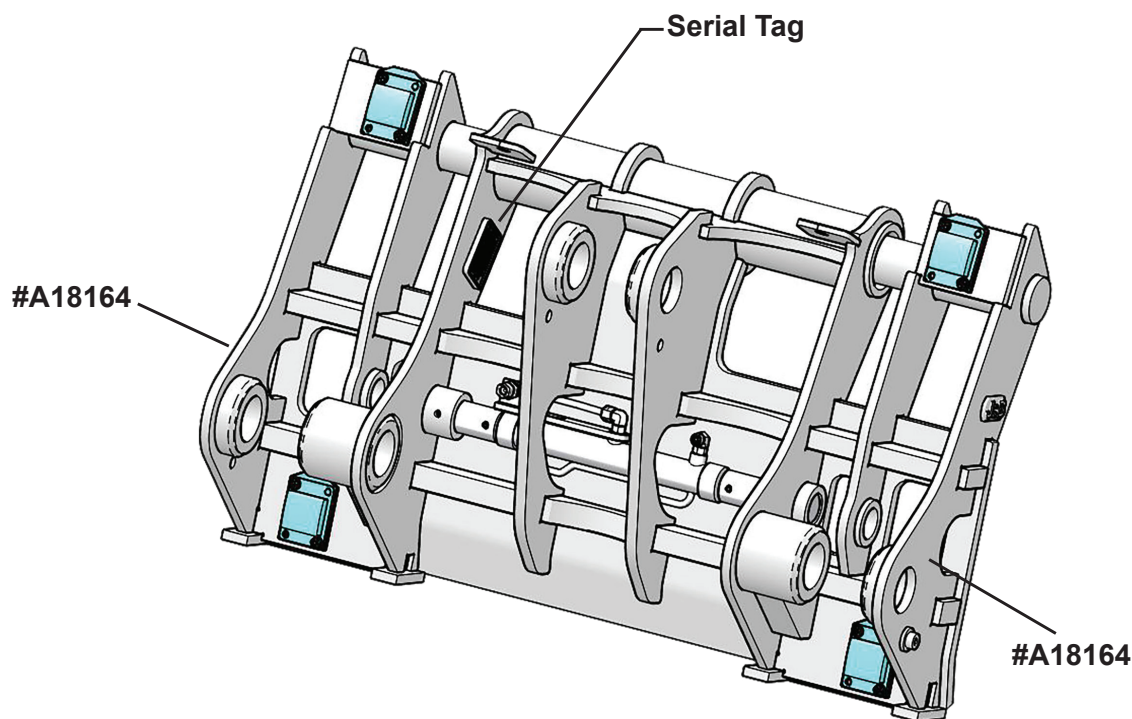
The coupler locking plungers will automatically extend if prime mover power is turned off. Always turn prime mover off **prior** to performing any maintenance in the cylinder or plunger area. Failure to do so could result in serious injury.

DECALS

DECAL PLACEMENT

GENERAL INFORMATION

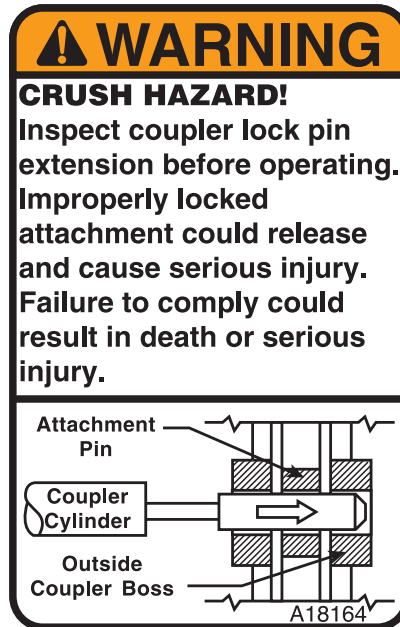
The following diagram(s) show the location of the decals used on your attachment. The decals are identified by their part numbers, with reductions of the actual decals shown on the following pages. Use this information to order replacements for lost or damaged decals. Be sure to read all the decals before 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



WARNING! INSPECT LOCK PINS
KIT # 91V0755EN
INCLUDES QTY. 2 OF DECAL A18164

NOTE: DECALS ONLY AVAILABLE IN KIT FORM.

INSTALLATION

WARNING!



KEEP ALL UNNECESSARY PERSONNEL AWAY FROM PRIME MOVER DURING INSTALLATION

Never leave equipment unattended with the engine running or with attachment in a raised position.

- Read all safety precautions before installing the coupler.
- Remove attachment (bucket, fork, ect.) from the prime mover. See the prime mover's Operation and Maintenance Manual for detailed instruction on removing the attachment.
- Remove coupler from shipping container or pallet. Reference lifting guidelines detailed in the Operation Section of this manual.

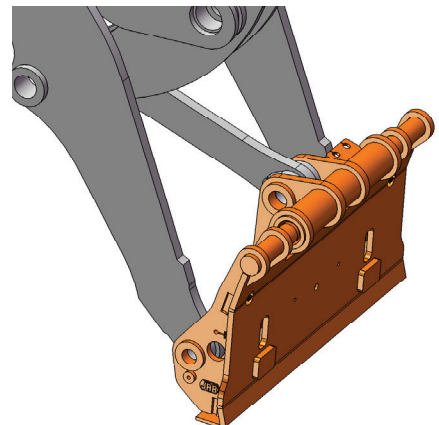
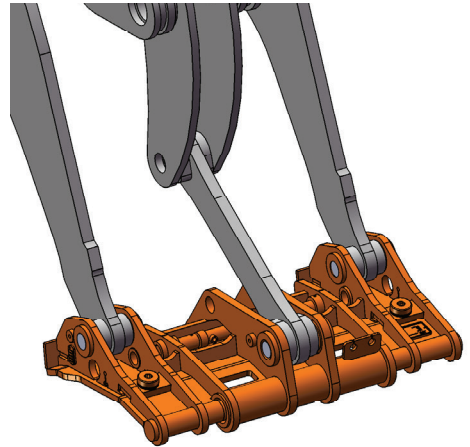
INSTALLING THE COUPLER

NOTE: Some cast style couplers will be provided with pins and pin retaining hardware for attaching the coupler to the prime mover. See parts information to verify all necessary parts are included before installation.

- Place coupler flat on level ground. Lower loader arms to the ground and turn off engine of the prime mover

NOTE: The use of a hoist or similar device may be needed to help support the coupler during installation. See page 22 for further lift point guidelines.

- Make sure pin bores are free from burrs and test fit pins. Remove pins and apply anti-sieze to pins and pin bores.
- Pin coupler to the prime mover, using pins and pin retaining hardware. Use OEM shims as needed to center coupler on loader arms and tilt link.
- See the prime mover's Operation and Maintenance Manual for further instruction on attaching the coupler.
- Reposition coupler on the ground. Work controls to relieve pressure from the hydraulic system. Make sure the loader arms and coupler are in an unpressurized rest position.



WARNING!

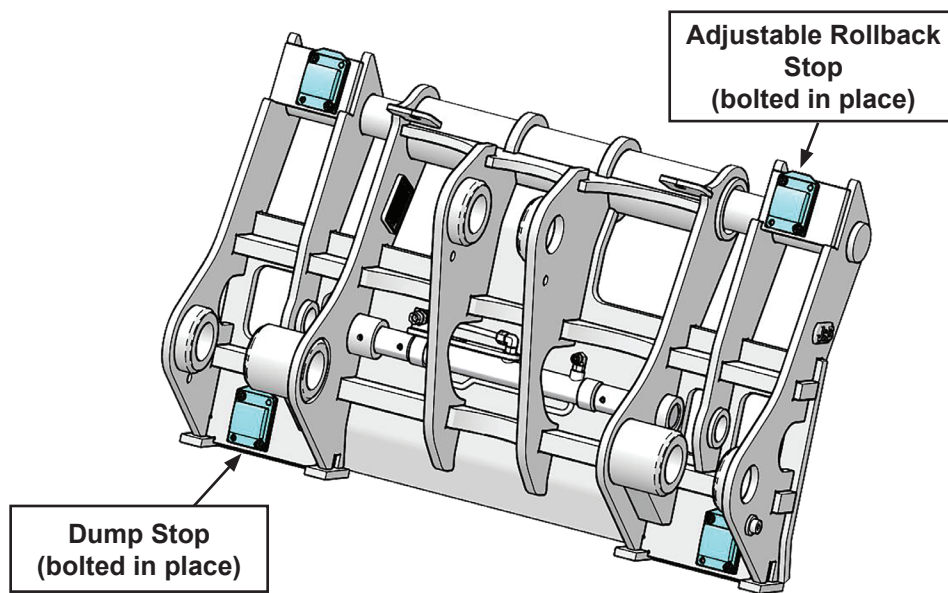


Failure to position coupler frame on the ground may allow movement of the bucket cylinder during installation which could cause dangerous spray and loss of hydraulic fluid.

INSTALLATION

- Exit the prime mover, making sure to apply the brakes, turn off the engine and remove the key.
- Connect hoses from the coupler cylinder to the prime mover.
- Start engine and slowly cycle coupler cylinder(s) several times to purge any air from the system. Check for proper hydraulic connection, hose routing and hose length. Check for proper assembly, installation and hydraulic leaks.
- Check and adjust rollback/dump stops as needed before using coupler. See following pages for instructions on checking and setting stops.

IMPORTANT: Ensure stop blocks are installed and set properly before use. See following pages for stop installation instructions.



REMOVING THE COUPLER

- Lower coupler to ground. Remove attachment from coupler. See the Operation Section of this manual for detailed instruction on detaching the coupler from the attachment.
- Turn prime mover ignition to ON position (engine not running). Cycle coupler between lock and unlock several times to relieve pressure in the coupler cylinder hydraulic lines.
- Shut down prime mover. Apply the brakes, turn off engine and remove the key.
- Disconnect coupler cylinder jump hoses from the coupler cylinder.

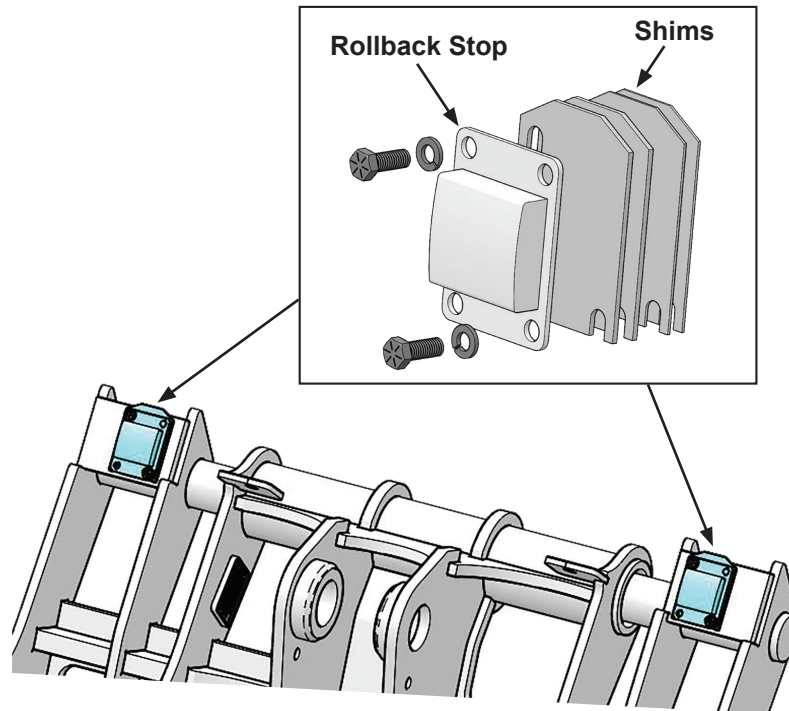
NOTE: Cap or plug hoses to prevent contaminants from entering the hydraulic system.

- With coupler flat on the ground, unpin from the prime mover. See the prime mover's operation and maintenance manual for further instruction on removing the coupler.

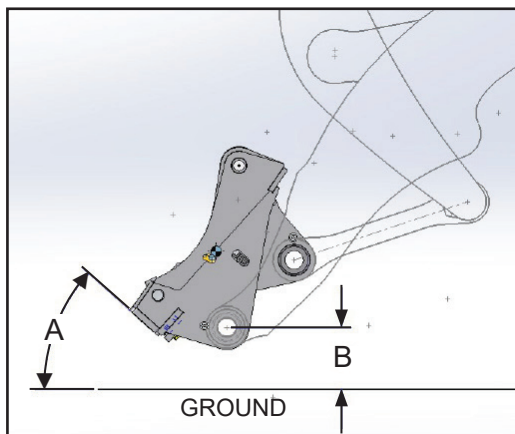
INSTALLATION

SETTING ROLLBACK STOPS

NOTE: Verify tires are inflated to the correct pressure prior to checking or installing stops.



- With prime mover on a level surface, place coupler 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 coupler back until bottom of coupler is at the angle specified (A).
- If 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.

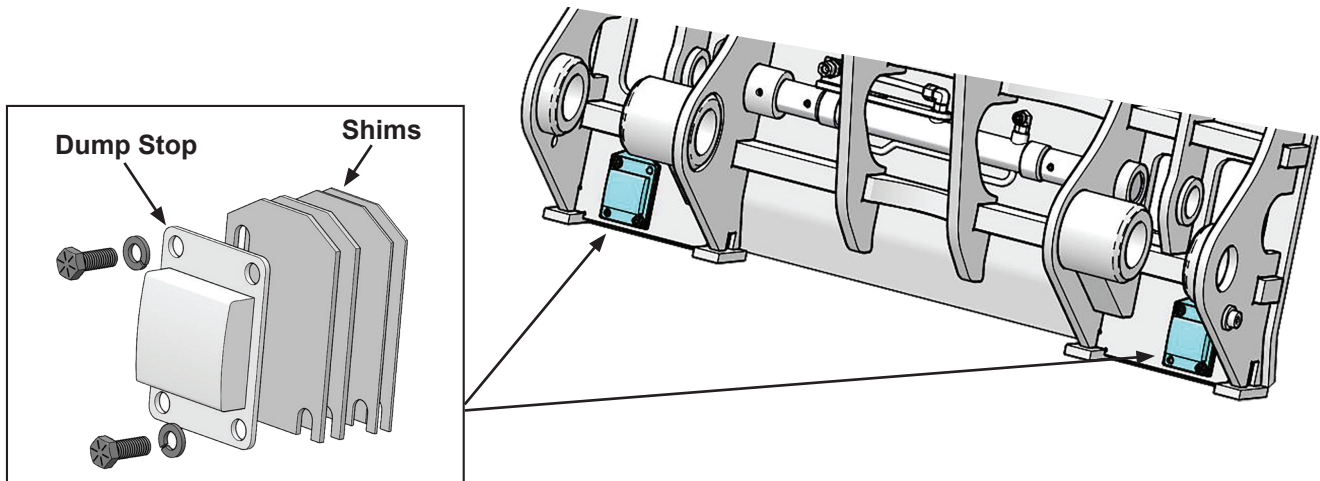


PRIME MOVER	"A" DEGREES	"B" INCHES (MM)
ZW100-7	50	18.11 (460)
60Z7 / ZW120-7	50	17.91 (455)
62Z7 / ZW140-7	50	18.30 (465)
67Z7 / ZW150-7	50	20.87 (530)
70Z7 / ZW180-7	42	9.84 (250)
80Z7 / ZW220-7	41	11.00 (280)
85Z7 / ZW250-7	43	11.42 (290)

INSTALLATION

SETTING DUMP STOPS

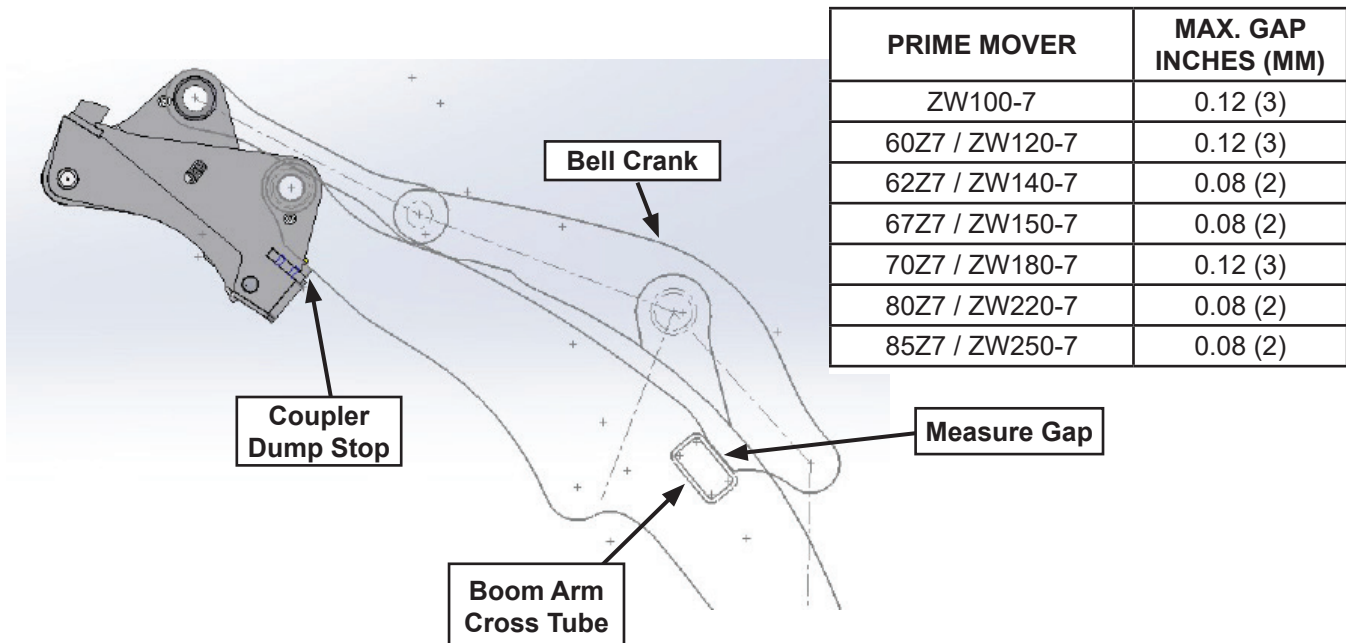
NOTE: Verify tires are inflated to the correct pressure prior to checking or installing stops.



- Park prime mover on a firm, level surface and apply parking brake.
- Raise boom arms to full dump height and shut off engine.
- With engine off, slowly roll coupler forward until the dump stops contact the boom arms.
- Measure the gap between the boom arm cross tube and the bell crank stop.

NOTE: The gap should be **NO GREATER** than that shown in the table below. If the width of the gap is greater than that shown, premature failure of the coupler is possible.

- 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.



OPERATION

INTENDED USE

Wheel Loader Couplers are designed to provide an efficient way for the operator to attach, detach and interchange between different attachments with ease. Use in any other way is considered contrary to the intended use.



ONLY USE APPROVED ATTACHMENTS WITH THE COUPLER.

Using an unapproved attachment with the coupler may cause a serious malfunction and will void the warranty on the coupler.

DO NOT use the coupler with the following types of attachments:

- Unapproved attachments specifically designed for continuous back dragging applications.
- Back dragging attachments that extend 7 feet (2.13 meters) or further from the loader.
- Attachments with a primary function that exerts a continuous back dragging force, such as silage rakes and silage defacers.

The coupler can be used while back dragging with buckets or snow pushers, except if the attachment meets any of the above provisions.

If you are uncertain about an attachment being appropriate for coupler use, please contact the manufacturer for authorization and approval.

Read all safety precautions before operating the coupler. Refer to the prime mover's Operation and Maintenance Manual to correctly operate the prime mover.

WARNING!

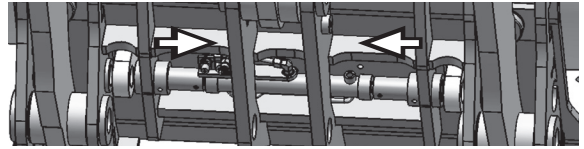


To Avoid Serious Injury, make sure the attachment is securely attached to the coupler. Failure to do so could result in separation of the attachment from the coupler. Always keep attachment as close to the ground as possible during installation.

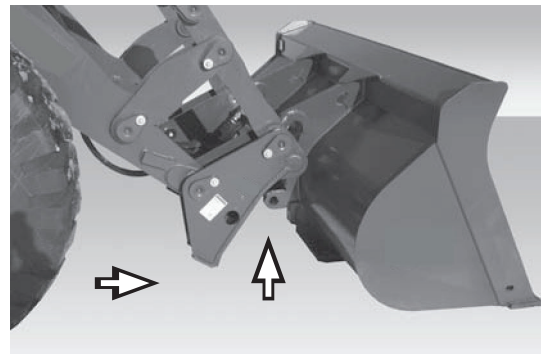
OPERATION

INSTALLING ATTACHMENT

Place coupler control switch in UNLOCK position until the coupler locking plungers have FULLY RETRACTED.

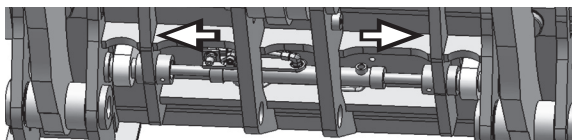
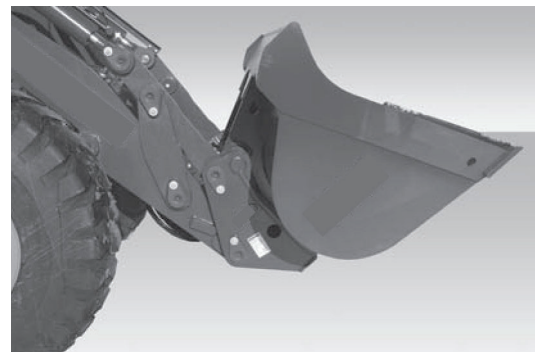


Roll coupler forward and align with attachment hooks.
Raise coupler into the top hooks of the attachment while slowly driving forward.

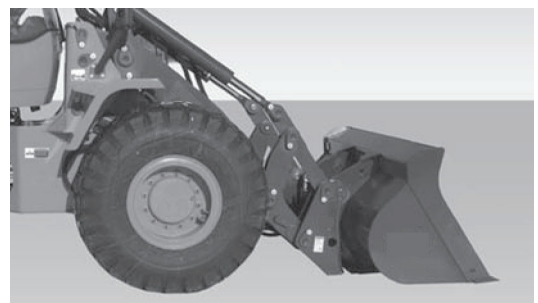


Rollback coupler and attachment against stops to align attachment pin holes with coupler plungers.

Place coupler switch in the LOCK position until coupler plungers have FULLY EXTENDED. Visually verify the plungers have fully engaged the attachment.



Lower the attachment to the ground.



OPERATION

USING COUPLER WITH HYDRAULIC ATTACHMENTS

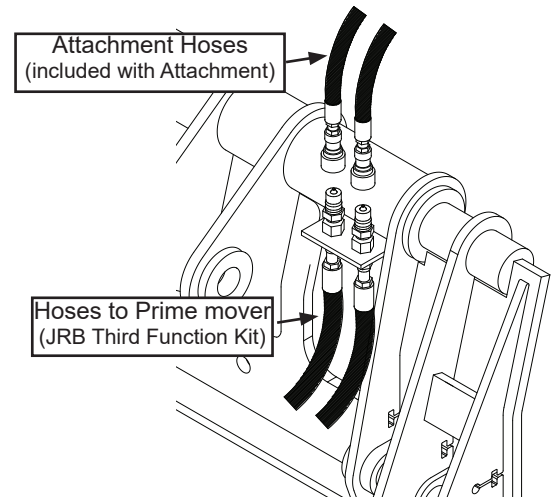
JRB hydraulic attachments operate using the third function (auxiliary) hydraulic circuit of the prime mover. Hoses and fittings are supplied, with most attachments, to connect to the bulkhead connection on your coupler.

To complete the installation, an additional third function hose kit is required to connect from your coupler to the third function lines of the prime mover. These kits can be purchased through your local dealer, for your specific prime mover, and contain 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.

If using a hydraulic attachment:

- Follow procedure for installing the attachment on the previous page.
- 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.



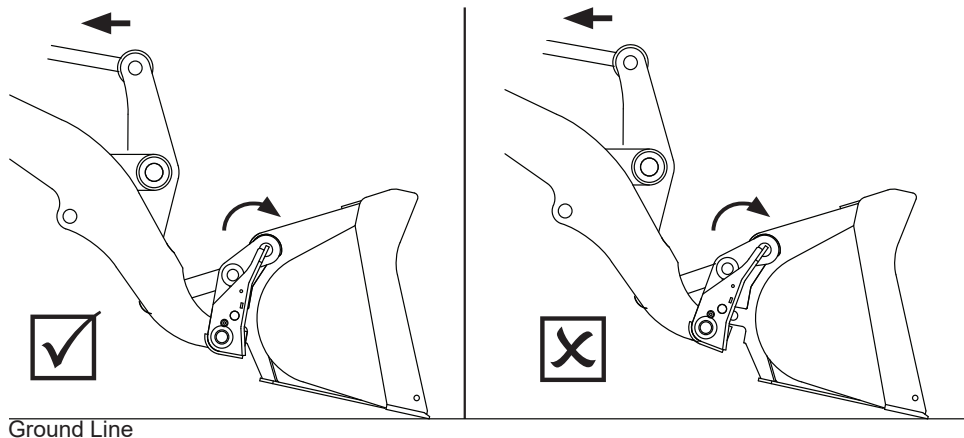
Typical arrangement shown. Actual coupler bulkhead arrangement will vary.

GROUND TESTING

In addition to visual checks, a ground test should be performed to verify that the coupler is properly locked to the attachment.

To perform a ground test, perform the following steps:

- Position attachment flat on the ground.
- Carefully retract the bucket cylinder of the prime mover, keeping the front edge of the attachment against the ground. The coupler should remain in tight contact with the attachment. If the coupler separates from the attachment, it is not properly locked.
- If the coupler is not properly locked, carefully reposition the attachment flat on the ground and repeat steps on previous page.



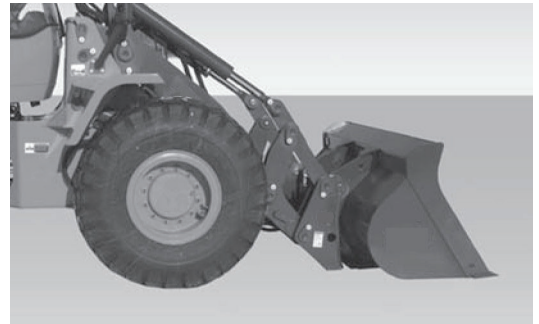
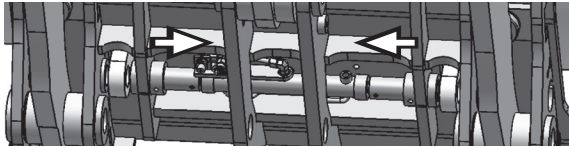
OPERATION

REMOVING THE ATTACHMENT

NOTE: If using a hydraulic attachment, lower attachment to the ground, turn off engine of the prime mover, work controls to relieve pressure in the hydraulic lines and disconnect attachment hoses from coupler prior to performing following steps.

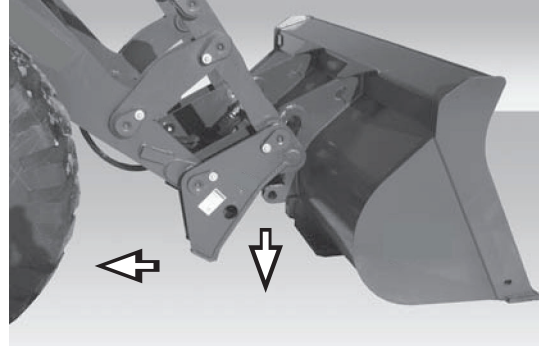
Position attachment on level ground.

Place coupler switch in the UNLOCK position until the coupler locking plungers have FULLY RETRACTED.



Rotate coupler forward and down while slowly backing away from the attachment.

NOTE: When uncoupling from the attachment, do not rotate the coupler too far forward. Doing so could cause contact and binding between attachment hooks and coupler frame causing potential damage to both.



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 & 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!



KEEP HANDS AWAY FROM PLUNGER AREA WHEN PRIME MOVER IS ON

The coupler locking plungers will automatically extend if prime mover power is turned off. Always turn prime mover off **prior** to performing any maintenance in the cylinder or plunger area. Failure to do so could result in serious injury.



Keep area around cylinder(s) free of dirt and debris. Build up of dirt and debris will restrict movement of the cylinder(s) which may cause component failure.

MAINTENANCE SCHEDULE

PROCEDURE	DAILY	WEEKLY	EVERY 1,000 HOURS	NOTES
Remove debris from coupler	✓			Primarily in lock area prior to engaging attachment
Inspect locking mechanism	✓			
Check for cracked, bent or broken components, distressed welds, missing parts and oil leaks	✓			Coupler should be cleaned thoroughly before inspection. If a crack is found in either the steel structure or welds, the coupler must be removed from the prime mover and JRB contacted immediately. Replace broken or missing parts if required.
Lubricate coupler grease points	✓			
Check that mounting pins and pin locking hardware are secure	✓			If bolt is out, the pin can slide out of one side of the coupler and cause the pin-on rib to break.
Check condition of hydraulic hoses, fittings and hydraulic system in general. Replace any damaged parts.	✓			
Check that the switch is working	✓			
Ensure daily checks are carried out		✓		
Inspect rollback and dump stops			✓	see Installation Section of this manual

MAINTENANCE & SERVICE

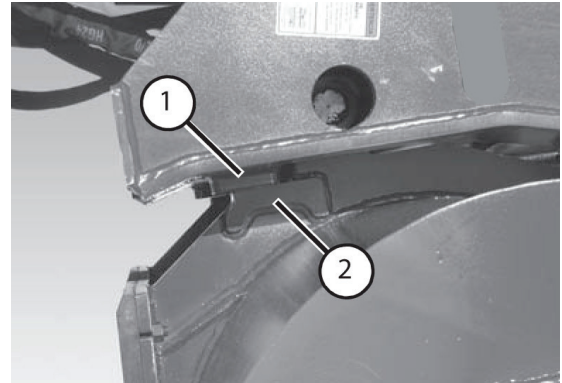
COUPLER TO ATTACHMENT FIT

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.



TROUBLESHOOTING

PROBLEM	POSSIBLE CAUSES	POSSIBLE SOLUTION
Coupler cylinder does not extend	Faulty solenoid valve or incorrect wiring.	Check for proper wiring of valve.
	Hoses are not connected to correct ports.	Inspect connections in relation to schematic.
Plungers extend but do not retract.	Jump hoses connected to wrong port at lock cylinder.	Switch hoses at cylinder.
	Check valves are dirty.	Clean check valves.
	Faulty solenoid valve or incorrect wiring.	Check wiring, replace valve if necessary.
Plunger on one side not retracting fully.	Internal lock set screw on cylinder piston backing out.	Remove cylinder and disassemble. Lock-tite set screw and reinstall. Reassemble cylinder with new seal kit.
	Internal cylinder damage.	Remove cylinder and disassemble. Replace if damaged.

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.

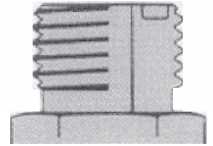
Bolt head identification marks as per grade.		
		

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

HYDRAULIC TORQUE SPECIFICATIONS

Face Seal: Assembly, Tube to Fitting

NOTICE - Face seal fittings have the most reliable sealing method and therefore, should be used whenever possible.



Installation

1. Make sure threads and sealing surfaces are free of burrs, nicks, scratches, or foreign materials.
2. Install proper SAE O-ring to end of fitting if not already installed. Ensure O-ring is fully seated and retained properly.
3. Lubricate O-ring with a light coating of clean hydraulic oil.
4. Position tube and nut squarely on face seal of fitting and tighten nut finger tight.
5. Using appropriate torquing device, tighten to given torque rating from the table below.

Torque Values

SAE Dash Size	Tube Side Thread Size	in.-lb.	ft.-lb.
-4	9/16 - 18	220	18
-6	11/16 - 16	360	30
-8	13/16 - 16	480	40
-10	1 - 14	---	60
-12	1 3/16 - 12	---	85
-16	1 7/16 - 12	---	110
-20	1 11/16 - 12	---	150
-24	2 - 12	---	230

NOTE - torque value tolerance is +10% -0%.

ft-lb may be converted to Newton Meters by multiplying by 1.35582.

in-lbs may be converted to Newton Meters by multiplying by 0.11298.

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.