PALADIN

OPERATOR'S MANUAL

DURALATCH™ HYDRAULIC COUPLER

for Excavators

SERIAL NUMBER: _____

MODEL NUMBER: _____

Manual Number: OM93C-DLT
Date: April 2024

Table of Contents

THIS PAGE
IS INTENTIONALLY
BLANK

Preface

General Comments

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

This manual has been designed to help you do a better, safer job. Read this manual carefully and become familiar with its contents.

⚠ WARNING!

Never let anyone operate this unit without reading the "Safety Precautions" and "Operating Instructions" sections of this manual.

Always choose hard, level ground to park the vehicle on and set the brake so the unit cannot roll.

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

IMPORTANT

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

Before Operation

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

Safety Alert Symbol

This is the "Safety Alert Symbol" used by this industry. This symbol is used to warn of possible injury. Be sure to read all warnings carefully. They are included for your safety and for the safety of others working with you.

Service

Use only manufacturer replacement parts. Substitute parts may not meet the required standards.

Record the model and serial number of your unit on the cover of this manual. The parts department needs this information to insure that you receive the correct parts.

Sound And Vibration

Sound pressure levels and vibration data for this attachment are influenced by many different parameters: some items are listed below (not inclusive):

- prime mover type, age, condition, with or without cab enclosure and configuration
- operator training, behavior, stress level
- job site organization, working material condition, environment

Based on the uncertainty of the prime mover, operator, and job site, it is not possible to get precise machine and operator sound pressure levels or vibration levels for this attachment.

NOTE

A list of all Paladin Patents can be found at http://www.paladinattachments.com/patents.asp.

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! INDICATES A HAZARDOUS SITUATION WHICH, IF NOT AVOIDED, WILL RESULT IN DEATH OR SERIOUS INJURY

WARNING! INDICATES A HAZARDOUS SITUATION WHICH, IF NOT AVOIDED, COULD RESULT IN DEATH OR SERIOUS INJURY

CAUTION! 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 AND UNDERSTAND MANUAL

- Read and understand this manual and other safety information provided with this equipment and base machine (prime mover) and be sure all controls and instructions are understood before attempting to install, operate or maintain this equipment.
- Read and follow all safety warnings and instructions.
- Do not discard safety instructions. Give to the operator.
- Improper installation, operation or maintenance of this equipment could result in serious injury, death or property damage.

READ AND UNDERSTAND ALL SAFETY STATEMENTS

- Read all safety statements in this manual and on your equipment safety decals.
- Keep safety decals in good condition. Replace missing or damaged safety decals.
- Because the manufacturer cannot foresee all hazardous circumstances, the precautions listed in this manual and on the equipment are not all-inclusive. If a procedure, method, tool or part is not specifically recommended by the manufacturer, determine whether it is safe for you and others, and that the equipment will not be damaged or made unsafe as a result of your decision to implement it.

PERSONAL PROTECTIVE EQUIPMENT (PPE)

- **Always wear personal protective equipment (PPE) appropriate for the job, such as eye protection, ear protection, gloves, head protection, breathing protection and safety shoes. PPE should be worn at all times when operating, maintaining or observing the tool.**
- **Use PPE that conforms to standards ANSI Z87.1 (Eye and Face Protection), ANSI Z89.1 (Head Protection), ANSI Z41.1 (Foot Protection) and ANSI S12.6 (S3.19) (Hearing Protection).**


M003
Wear Ear Protection


M004
Wear Eye Protection


M016
Wear a Mask

- **Do not wear loose fitting clothing, jewelry, long hair or gloves with cut or frayed fingers. These items can become entangled in the equipment causing hazards such as choking, scalping, lacerations, severed or broken appendages.**

KNOW YOUR EQUIPMENT

- **Know your equipment's capabilities, dimensions, and controls before operating.**
- **Do not operate a damaged, improperly adjusted, modified or incompletely assembled tool.**
- **Make sure all safety guards and devices are installed.**
- **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.**
- **Inspect the tool before each use and ensure all safety decals are in place and legible. Contact manufacturer if replacement decals are needed.**
- **Know and follow good work practices when assembling, maintaining, repairing, mounting, removing or operating this equipment.**

SAFELY OPERATE EQUIPMENT

- **Establish a training program for all operators to ensure safe operation.**
- **Do not operate the tool unless thoroughly trained or under the supervision of a qualified operator or instructor.**
- **Know and obey all OSHA regulations, local laws, and other professional guidelines for your operation.**
- **Know your work site safety rules. When in doubt on any safety issue, contact your supervisor or safety coordinator.**
- **Assess hazards to yourself and others around you before operating the tool. Start in a work area without bystanders. A hazard to bystanders can include, but is not limited to, the risk of serious injury or death caused by the tool or accessories being dropped from an elevated height. Keep children out of the work area.**
- **Do not operate the equipment from anywhere other than the correct operator's position.**
- **Do not alter or remove any safety feature from the prime mover or tool.**
- **Stay alert, watch what you are doing and use common sense when operating the tool. Do not operate the tool if you are tired or under the influence of drugs, alcohol or medication. A moment of inattention while operating the tool may result in serious**

General Safety Precautions

injury.

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

DUST AND FUMES

- WARNING: Dust created by power sanding, sawing, grinding, drilling, and other job site activities may contain chemicals known to cause cancer, birth defects or other reproductive harm. Some examples of these chemicals are:
  - Lead from lead-based paints
  - Crystalline silica from quartz, bricks, cement and other masonry products
  - Arsenic and chromium from chemically-treated lumber

- To reduce your exposure to these chemicals: work in a well ventilated area and work with approved safety equipment, such as dust masks that are specially designed to filter out microscopic particles. Protect yourself and those around you.
- Research and understand materials you are working with.
- Follow correct safety procedures and comply with all applicable national, state or provisional health and safety regulations relating to them, including, if appropriate, arranging for the safe disposal of the materials by a qualified person.
- Use dust suppression or dust collection methods when using a tool that may cause high levels of dust.
  - Control dust or fumes at the point of emission.
  - Direct tool exhaust to minimize disturbance of dust.
  - Operate and maintain the tool as recommended in this manual to minimize dust.
  - Use respiratory protection in accordance with employers instruction or as required by occupational health and safety regulations.
  - Avoid prolonged contact with dust. Allowing dust to get into your mouth, eyes or on the skin may promote absorption of harmful chemicals.

SAFELY MAINTAIN AND REPAIR EQUIPMENT

- Work in a clean and dry area.
- Keep the work area well lit.
- Work on a level surface.
- Use properly grounded electrical outlets and tools.
- Use the correct tools for the job at hand.
- Ensure tools are working properly and safely by performing preventative maintenance procedures.
- Wear protective equipment specified by the tool manufacturer.
- Do not perform any work on the tool 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, remove all maintenance tools and unused parts from equipment.**
- **Check for correct operation of the tool. If not operating properly, shut down the prime mover, follow proper Lock-Out / Tag-Out procedures and tag "DO NOT OPERATE" until all problems are corrected.**

USE CARE WITH HYDRAULIC FLUID PRESSURE

- **DO NOT attempt to make repairs to hydraulic lines or components while the system is pressurized. Hydraulic fluid under pressure can penetrate the skin and cause serious injury or death. Follow proper procedures for relieving pressure from hydraulic system before connecting of disconnecting hydraulic lines or components.**

- **Wear personal protective equipment (PPE) such as safety glasses, gloves and protective clothing at all times.**
- **Hydraulic leaks under pressure may not be easily visible. Keep hands and other body parts away from a suspected leak. Flesh injected with hydraulic fluid may develop gangrene or other permanent disabilities. Use a piece of cardboard or wood when searching for hydraulic leaks.**
- **If injured by injected fluid, seek immediate medical attention.**
- **Hydraulic fluid can become hot during operation. DO NOT come in contact with hot hydraulic fluid as it could cause severe burns.**
- **If exposed to hydraulic fluid, wash hands immediately.**
- **Inspect and clean couplers before use. Replace damaged couplers immediately.**
- **Ensure the couplers are properly connected and are tight.**
- **Do not smoke while working on the hydraulic system.**

DO NOT MISUSE OR MODIFY EQUIPMENT

- **Use and maintain the tool as stated in this manual. Misuse of the tool can cause serious injury.**
- **Do not modify the tool in any way. Modifications may weaken its integrity and may impair its function, safety, life and performance. When making repairs use only factory recommended replacement parts, following authorized instructions. Use of parts that are not factory approved may be substandard in fit and quality and may cause damage and void the warranty.**
- **Do not modify any ROPS (Roll Over Protective Structure) or FOPS (Falling Object Protective Structure) equipment or device. Any modifications must be authorized in writing by the manufacturer.**

END OF LIFE DISPOSAL

- **At the completion of the useful life of the unit, drain all fluids and dismantle by separating the different materials (rubber, steel, plastic, etc.). Follow all federal, state and local regulations for recycling and disposal of the fluid and components.**

Equipment Safety Precautions

⚠ WARNING!

ONLY USE PALADIN PROVIDED HYDRAULIC KIT TO OPERATE THE COUPLER

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

The coupler has not been studied or tested using any other hydraulic system. Since hydraulic systems vary in many aspects, Paladin 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, Paladin takes no responsibility for the safety of a coupler if it is operated with a hydraulic system other than the one provided by Paladin.

LIFT EYE USAGE

The 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 prime mover. 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.

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.

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.

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.

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.

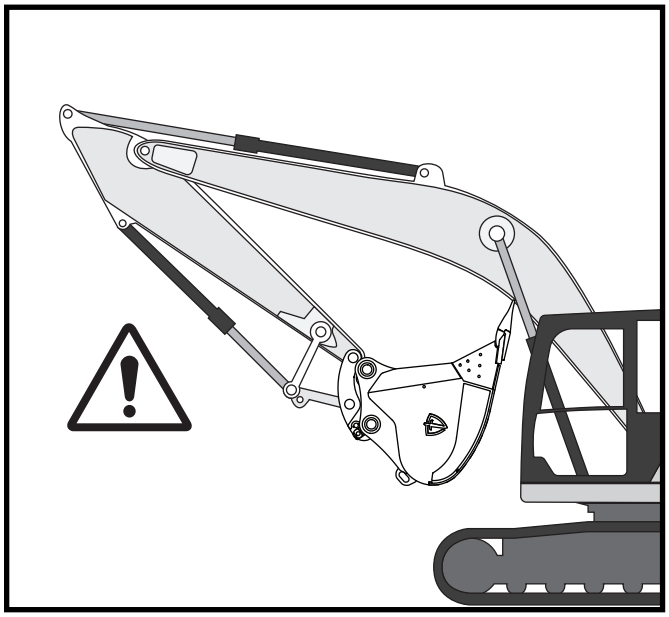
LOWER OR SUPPORT RAISED EQUIPMENT

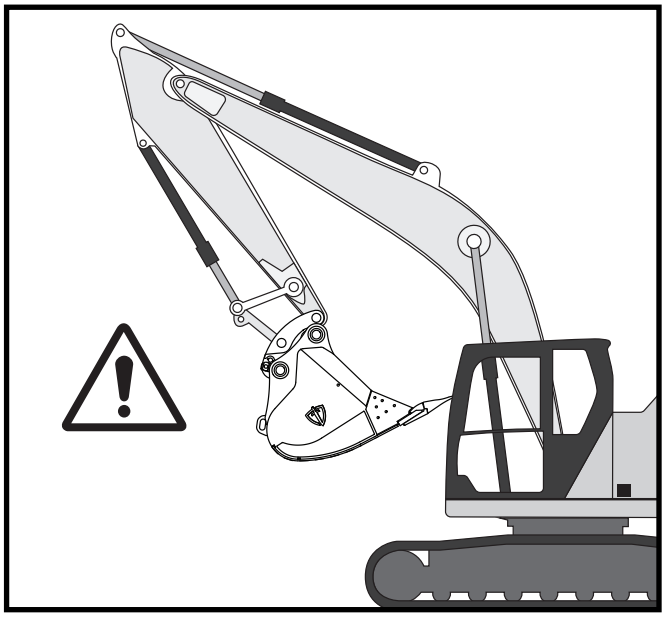
Do not work under raised booms without supporting them. Do not use support material made of concrete blocks, logs, buckets, barrels, or any other material that could suddenly collapse or shift positions. Make sure support material is solid, not decayed, warped, twisted, or tapered. Lower booms to ground level or on blocks. Lower booms and attachments to the ground before leaving the cab or operator's station.

NOTICE!

The coupler increases the distance between the dipper arm 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 be familiar with any potential interference locations prior to use.





Equipment Safety Precautions

OPERATING THE ATTACHMENT

- Never use your attachment for a work platform or personnel carrier
- Do not exceed the lifting capacity of your prime mover.
- Operate only from the operator's station.
- Never leave the attachment unattended when in the raised position.
- 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

TRANSPORTING THE ATTACHMENT

- Travel only with the attachment in a safe transport position to prevent uncontrolled movement. Drive slowly over rough ground and on slopes.
- 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., 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.
- 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, lower the attachment to the ground, apply the brakes, turn off the prime mover's engine and remove the key.
- Worn, damaged, or illegible safety decals must be replaced. New safety decals can be ordered from Paladin.
- Never work under a raised attachment.
- Take care when manually handling coupler and components, bucket and installation pins. Use a correctly rated lifting device if needed.

NOTICE!

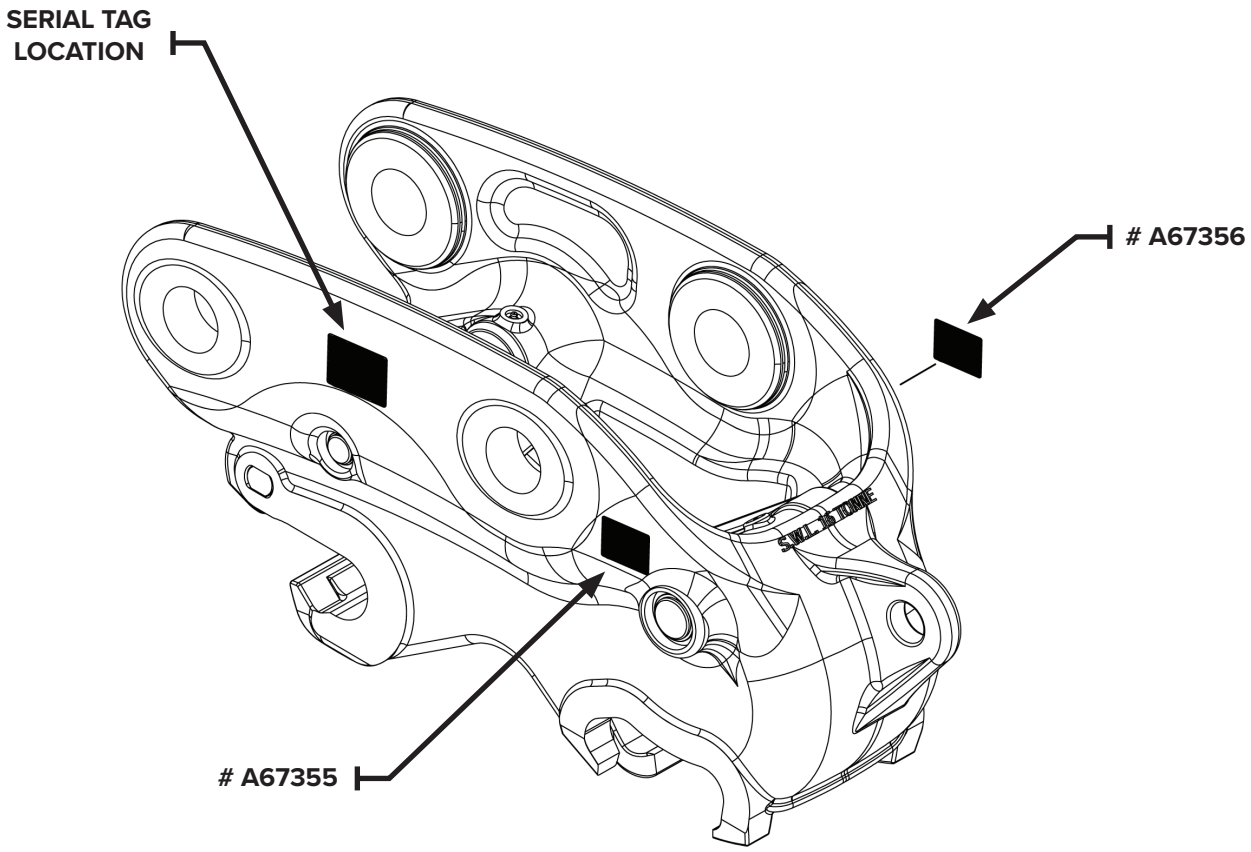
Remove the attachment from the coupler at the end of each shift. Failure to do so could cause increasing tightness of the locking mechanism, causing it to be come difficult to uncouple.

Decals

Decal Placement

GENERAL INFORMATION

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



IMPORTANT

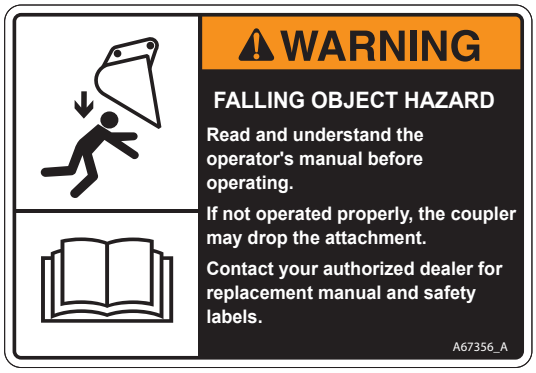
Keep all safety decals clean and legible. Replace all missing, illegible, or damaged safety decals. When replacing parts with safety decals attached, the safety decals must also be replaced. Safety decals are available, free of charge, from your local dealer or Paladin.

REPLACING SAFETY DECALS: Clean the area of application with nonflammable solvent, then wash the same area with soap and water. Allow the 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!

 # A67355 - HIGH PRESSURE FLUID HAZARD

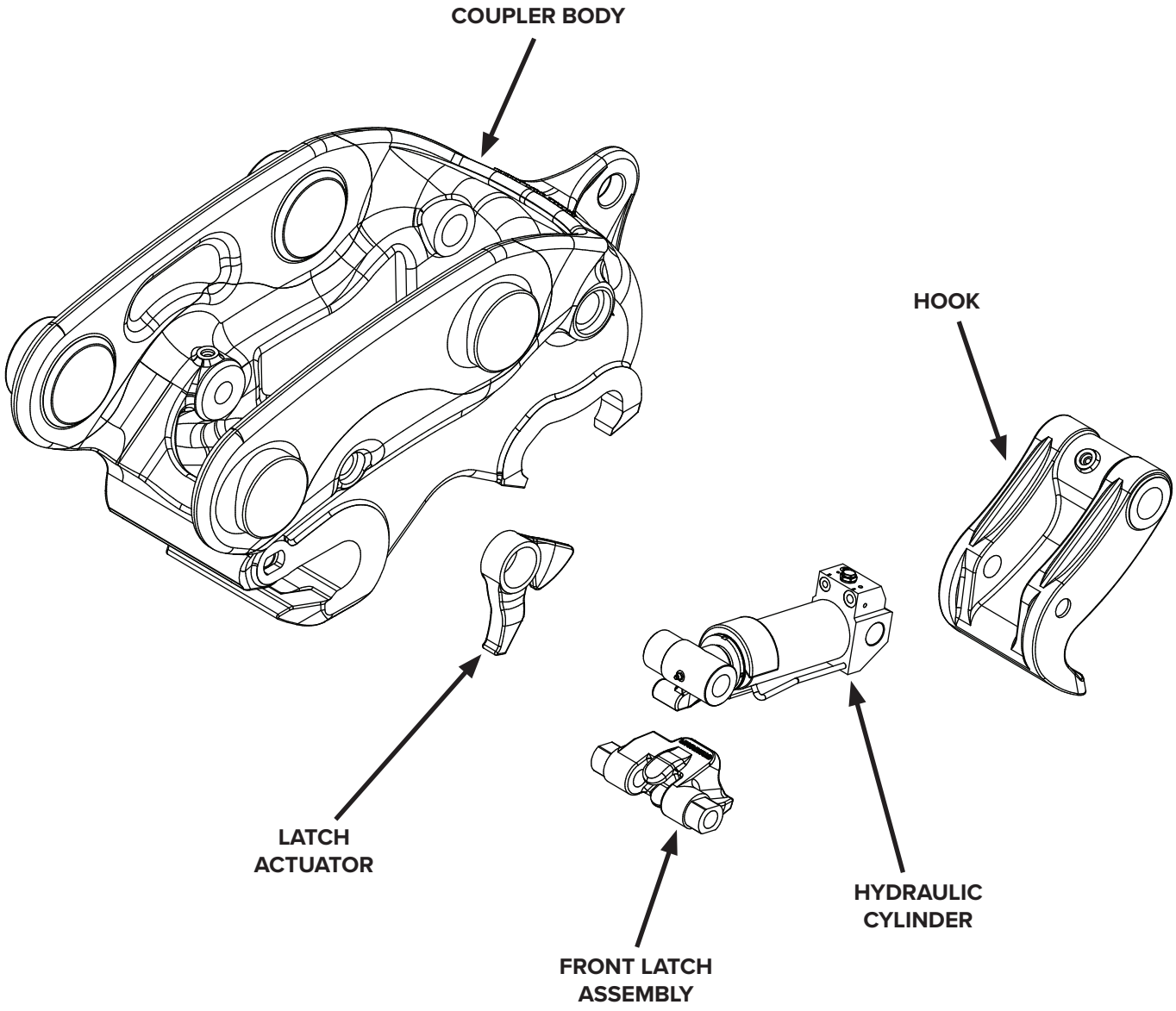


WARNING!

 # A67356 - FALLING OBJECT HAZARD

Nomenclature

Throughout this manual, reference is made to various coupler components. Study the following diagram to acquaint yourself with the various names of these components. This knowledge will be helpful when reading through this manual or when ordering service parts.



Installation

GENERAL INFORMATION

The following instructions will help you set up and install the coupler onto your prime mover. Read all safety warnings, decals and operating instructions before operating the coupler. If there is any portion of this manual that you do not understand, contact your dealer.

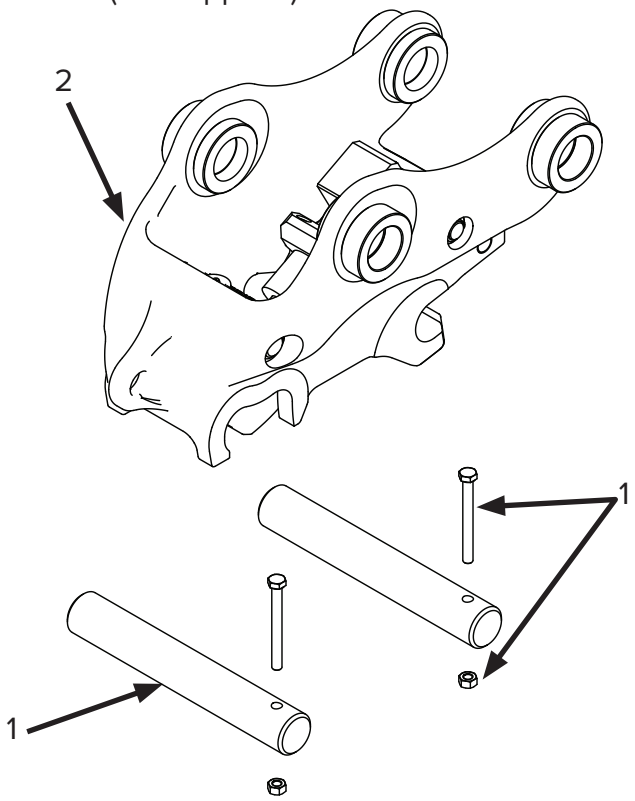
⚠ WARNING!

DO NOT USE SUPPLIED PINS TO INSTALL COUPLER TO PRIME MOVER. The dummy pins are non-hardened and only intended to be used in the attachment. Use the original OEM specification hardened pins to install the coupler to the prime mover. Failure to comply could cause equipment damage or failure.

The following items are required to install the coupler:

Item	Req'd	Description
1	1	Attachment Pin Kit (Includes 2 pins, bolts & nuts)
2	1	Hydraulic Coupler
3	1	Hydraulic Kit

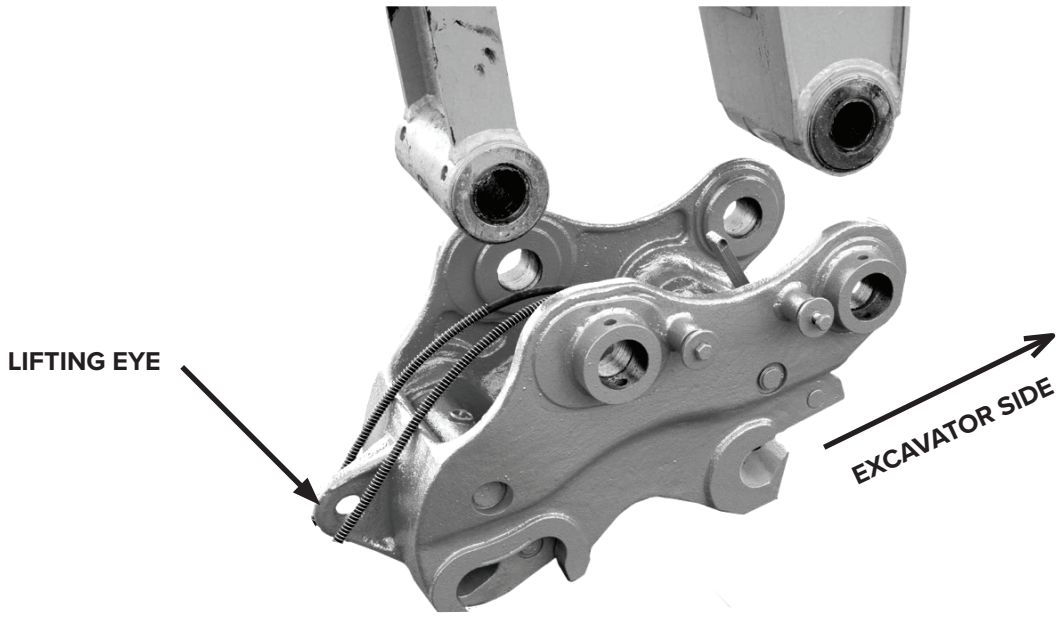
- Installation Instructions (this manual)
- All required paperwork, certificates & decals
- Grease gun (not supplied)
- Wrench (not supplied)



ATTACHING COUPLER TO PRIME MOVER

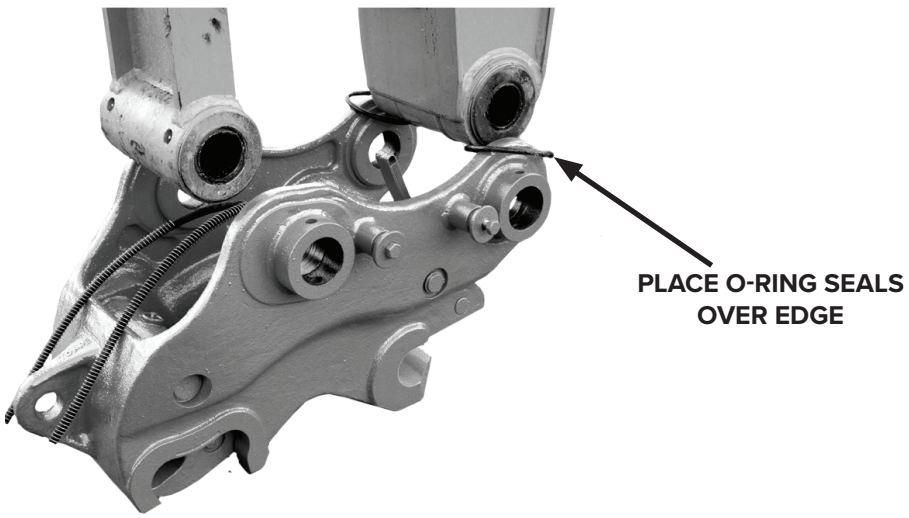
1. Position coupler on the ground with lifting eye pointing away from excavator. See Figure #1

FIGURE #1



2. Align the coupler with the end of the dipper arm and install seals and shims where required. Lightly grease the O-ring seals and place over the edge of the coupler as shown. See Figure #2

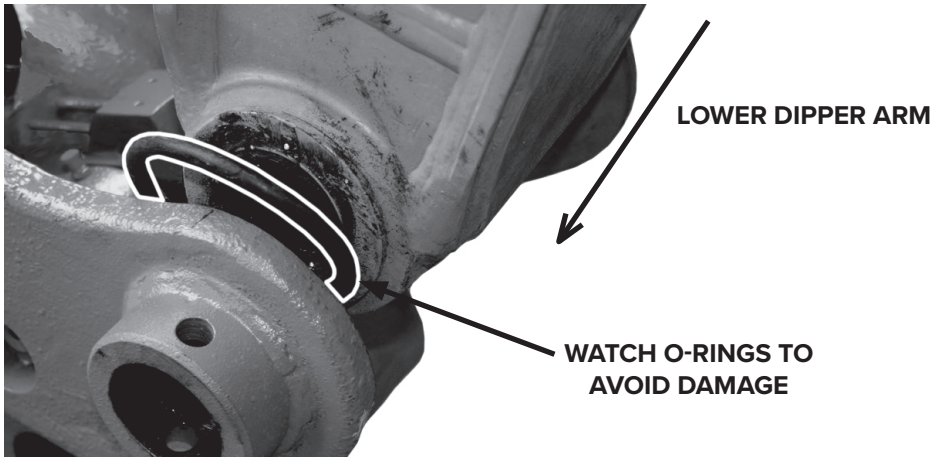
FIGURE #2



Installation

3. Slowly lower the dipper arm into place while making sure the O-ring seals do not enter the pin hole or get damaged. Align the holes in the coupler with the holes in the dipper arm. See Figure #3

FIGURE #3



4. Install the original OEM bucket pin through the coupler and dipper arm holes and install the locking bolt and nut.
5. Slowly lower the link arm into place while making sure the O-ring seals do not enter the pin hole or get damaged. Align the holes in the coupler with the holes in the link arm.
6. Install the original OEM bucket pin through the coupler and link arm holes and install the locking bolt and nut.

⚠ WARNING!

Use original OEM spec hardened pins to connect coupler to dipper/link. Use the supplied attachment pins for the bucket or attachment only. Do not use attachment pins to install the coupler to the prime mover.

7. Refer to the installation instructions provided with the hydraulic kit for your specific prime mover for detailed installation procedure for the hydraulic/electrical components needed to operate the coupler.

NOTICE!

Do not connect a 12V solenoid to a 24V supply, or a 24V solenoid to a 12V supply as damage to the solenoid will result.

IMPORTANT

The coupler is designed to be locked when there is no electrical power. In other words, the coupler is locked by default. Electrical power is required to unlock the coupler.

POST INSTALLATION TESTING

Test the pressure of the prime mover before it enters into the coupler system. Each OEM has a predetermined operating pressure that Paladin has used to make the coupler function. If the prime mover pressure is not within the range given by the OEM then the coupler could potentially not work or malfunction. Always run the prime mover at the OEM suggested pressure.

Test the pressure in the extend (supply) line of the lock cylinder, with switch in lock position and the bucket cylinder fully extended to over-relief condition. The operating pressure of the coupler circuit should match full operating pressure of the prime mover.

NOTICE!

DO NOT use low/servo pressure. The coupler needs full working pressure for satisfactory operation.

COUPLER & HYDRAULIC SYSTEM TESTING

Power up prime mover engine to approximately quarter throttle and rotate the coupler to full curl position and hold over relief to put hydraulics under pressure. Operate the coupler switch to ensure the coupler cylinder is working correctly. The hook should extend when the switch is in the lock position and retract when the switch is in the unlock position. This will give pressurized flow to the coupler cylinder and help in bleeding air from the system. Repeat this procedure several times.

After testing, check for any leaks and fix if necessary. If the system is free from leaks, the coupler should now be ready to use.

COUPLER REMOVAL

1. Position coupler on the ground.
2. Turn off the prime mover and work controls to vent residual pressure in the hydraulic system.
3. Disconnect cylinder hoses from manifold block on the dipper arm. Plug hoses to keep contaminents out.
4. Remove the coupler from the prime mover by following the installation procedure in reverse starting with step 6.

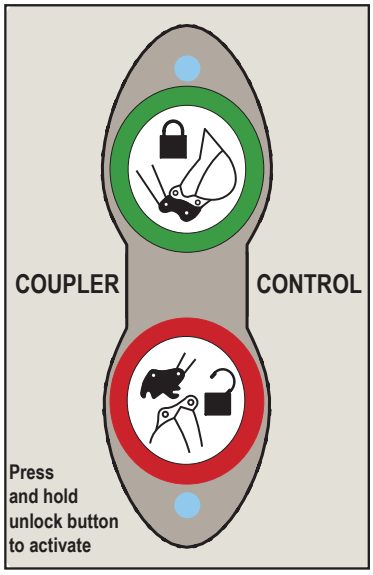
Operation

CONTROLS

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

With prime mover stick at approximately 90° to the ground, rotate coupler to full curl position and hold 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 the 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 to be 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 to be 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:

5. Turn the prime mover ignition to OFF.
6. Make sure control box is completely powered down (no buzzer and no lights).
7. While pressing both the LOCK and UNLOCK buttons, turn the prime mover 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 coupler is designed as a tool to provide a safe and 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.

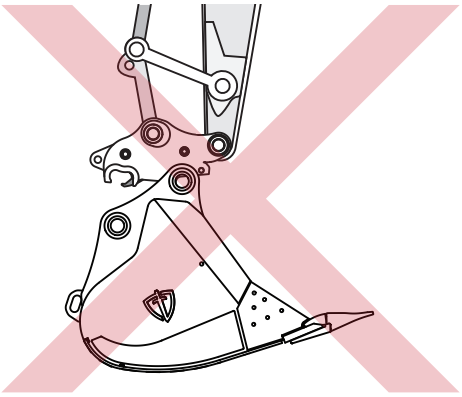
The coupler must ONLY be used in accordance with the instructions in this manual. Paladin will not be liable for any accidents or damage which result from bad working practices.

Some examples of misuse include, but are not limited to, the following:

AVOID Incorrect use of coupler to pick up and move attachments, for example:

- Moving attachments by front pin only. See Figure #1
- Using hook only to lift attachments.
- Picking up items before the hook is retracted.
- Jamming the rear pin with the hook.

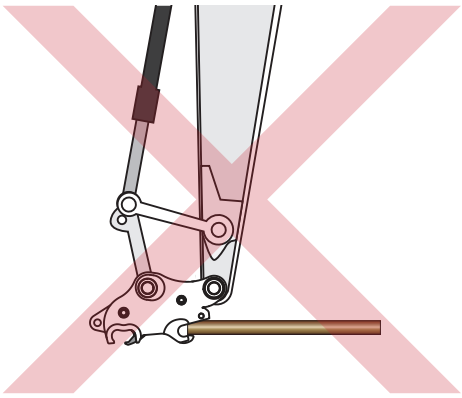
FIGURE #1



AVOID using the jaw as a lifting tool or hammer, for example:

- Moving items held in the jaw. See Figure #2
- Using jaw or hook to hammer products into the ground.

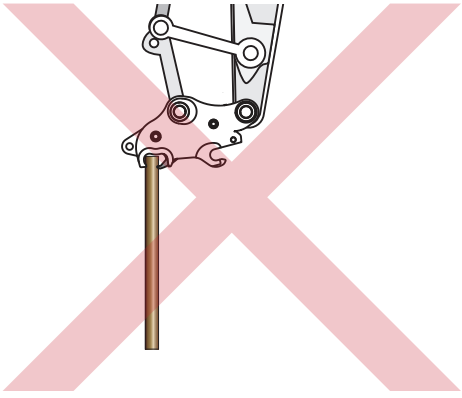
FIGURE #2



AVOID using the hook to lift and move items, for example:

- Moving items using the hook.
- Positioning items gripped with hook.See Figure #3

FIGURE #3



AVOID incorrect use of coupler to pick up items using chains or slings, for example:

- Using the jaw to pick up items with chains.
- Using the corner of the jaw to pick up items with chains.
- Using the hook to pick up items with chains. See Figure #4
- Using the coupler body to pick up items with chains. See Figure #5
- Using the prime mover dipper arm to pick up items with chains.
- Using the cylinder to pick up items with chains.

FIGURE #4

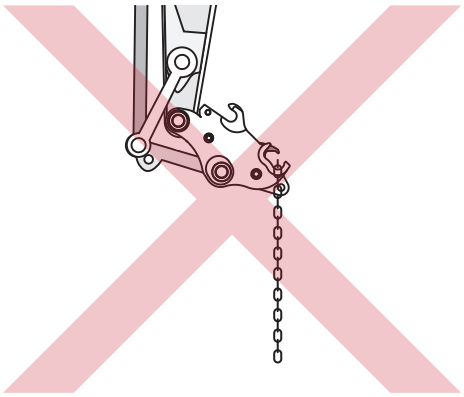
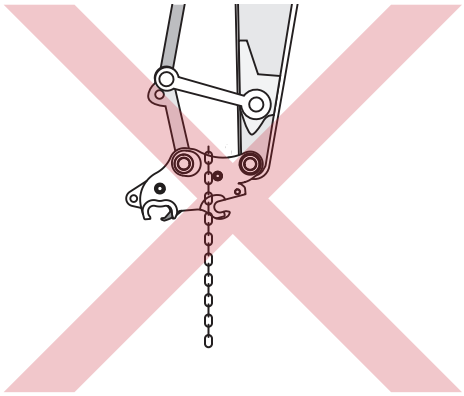


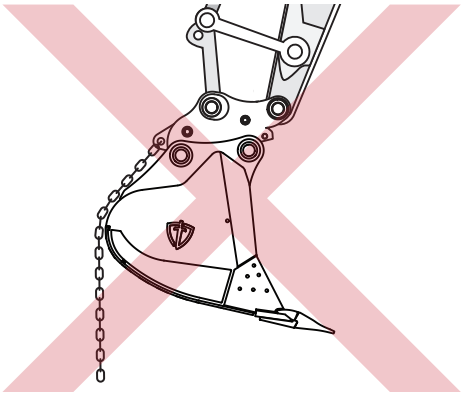
FIGURE #5



AVOID incorrect use of the lift eye, for example:

- When the bucket is attached, the shackle and chain are not visible. See Figure #6

FIGURE #6



Operation

⚠ 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. Read all safety precautions before operating equipment.

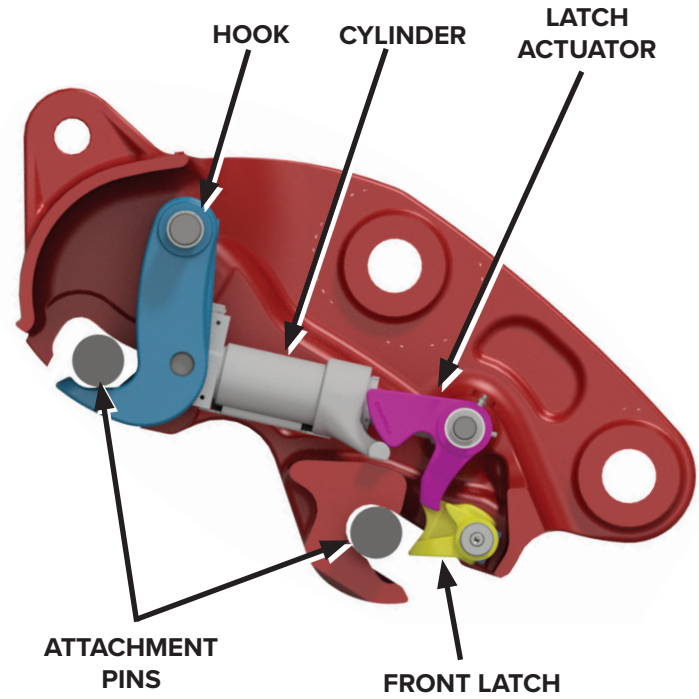
COUPLER LOCKING SYSTEM

The coupler has a locking system which allows the coupler to be operated solely from the prime mover's cab. Independent locks on the front and rear attachment pins allow the attachment to remain securely attached to the coupler in the event of hydraulic failure. See Figure #1.

If hydraulic pressure is lost during operation and the cylinder check valve fails the attachment may move forward in the coupler pushing the pins against the hook and front latch. The front attachment pin will pull the front latch down, locking the pin in place and preventing the coupler from releasing the attachment. The cylinder is also charged with nitrogen gas. The gas pressure in the cylinder keeps the hook fully engaged with the rear attachment pin during operation. See Figure #2.

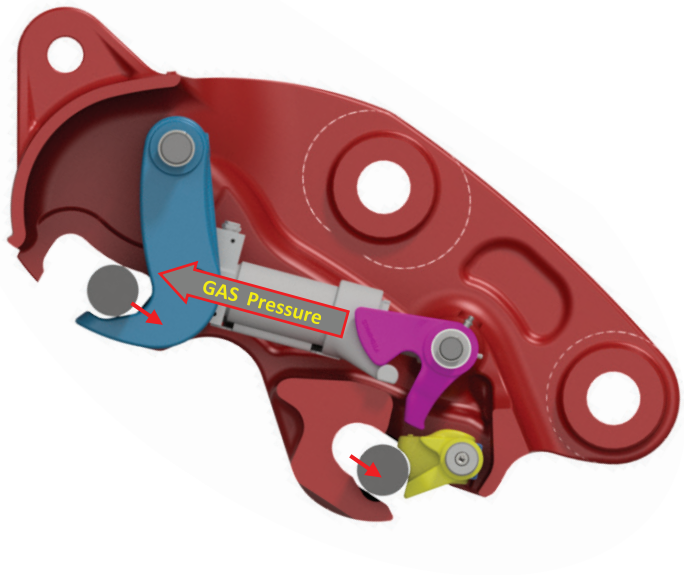
If the coupler is in an incorrect locked position like that shown in Figure #2, the front latch must be reset before continuing to operate the coupler. See "Resetting Front Latch" section of this manual for instruction on setting the front latch back into proper position.

FIGURE #1



CORRECT LOCKED POSITION

FIGURE #2

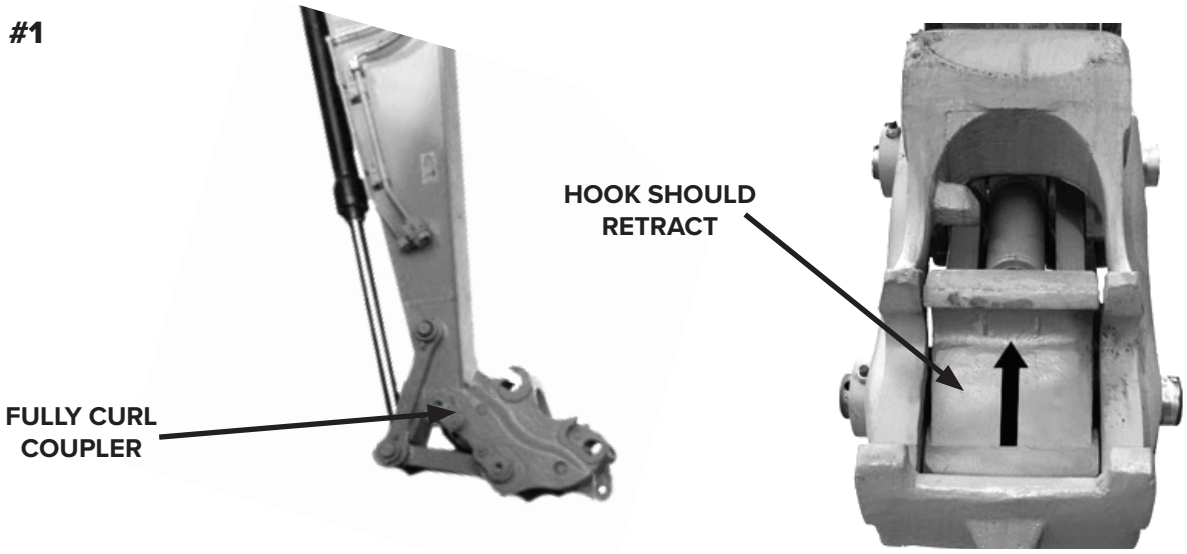


INCORRECT LOCKED POSITION
(ATTACHMENT PINS MOVED FORWARD)

LOCKING ATTACHMENT

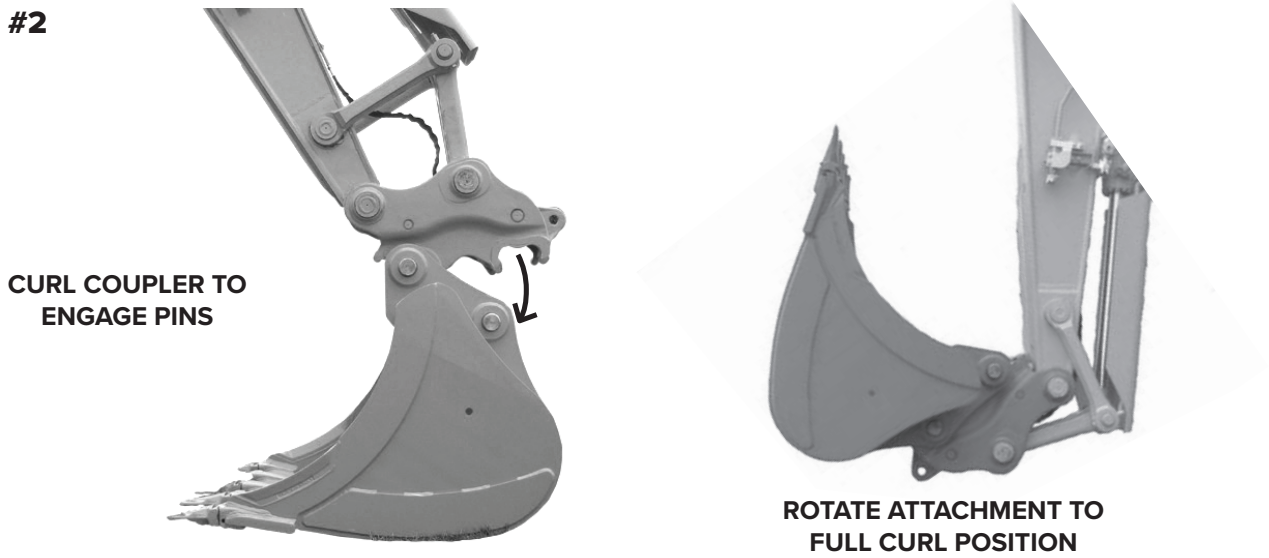
1. With prime mover dipper arm at approximately 90° to the ground, rotate coupler to full curl position and hold over relief. See Figure #1. Press and hold UNLOCK button of control box (the buzzer will sound) and hold the bucket curl lever for approx. 5-10 seconds to allow the hook to fully retract. Visually verify the hook is fully retracted.

FIGURE #1



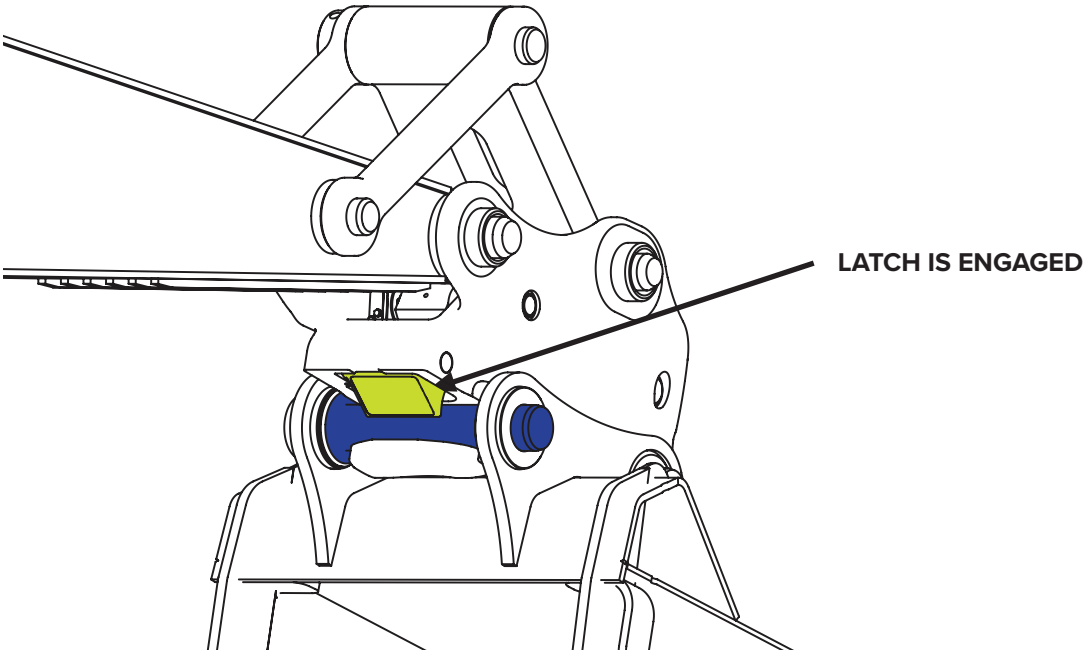
2. Ensure the hook and front latch are fully retracted before attempting to engage the attachment. Place the coupler above the attachment.
3. Curl the coupler to engage the attachment pins.
4. Position the dipper arm so the attachment will not contact the boom or cab when rotated to the full curl position. While keeping the dipper arm as close to 90° is preferred, some attachments may require the dipper arm to be positioned farther out to avoid any possible interference.
5. Slowly rotate attachment to the full curl position and hold over relief. See Figure #2. Press LOCK button (the buzzer will stop). Hold the bucket curl lever for approx. 5-10 seconds to allow the hook to fully engage and clamp the attachment pin.

FIGURE #2



6. Slowly uncurl attachment and check the latch is visible. See Figure #3

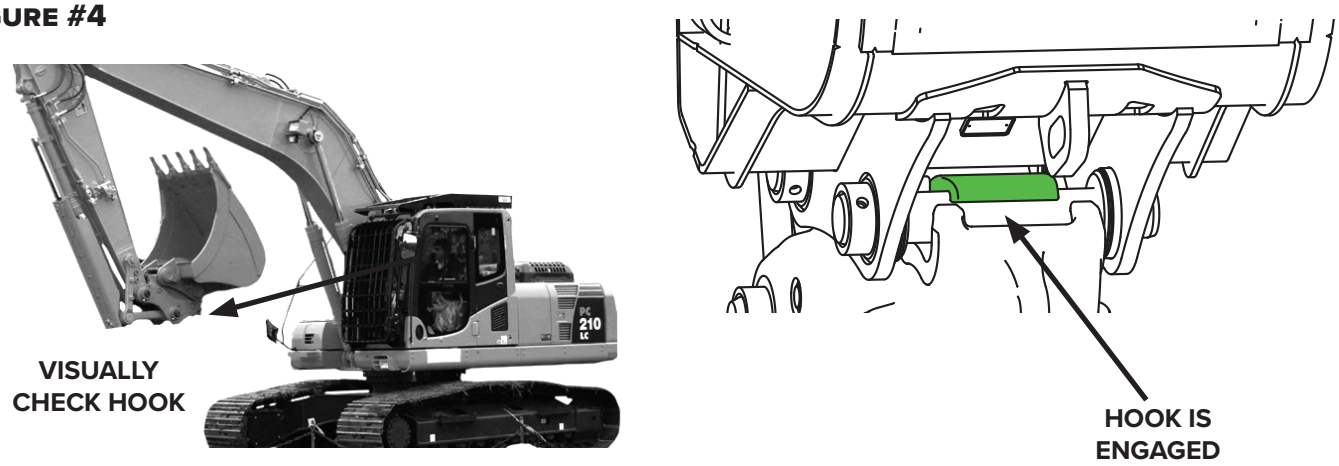
FIGURE #3



7. To ensure attachment pins are securely held by coupler, apply pressure to the attachment by rotating it against the ground and away from the prime mover before operating. This is referred to as a “Ground Test”.

8. Visually inspect and check that the hook is engaged. See Figure #4

FIGURE #4



⚠ WARNING!

If attachment pin has not been correctly engaged, the hook MUST NOT be retracted. This could cause the unintended release of the attachment and could cause damage to the prime mover or personal injury. If the hook is not correctly engaged, place the attachment on the ground and release the attachment. Repeat steps 1-7.

9. If the hook is correctly engaged, then the coupler is ready for operation

UNLOCKING ATTACHMENT

1. Position the dipper arm so the attachment will not contact the boom or cab when rotated to the full curl position. While keeping the dipper arm as close to 90° is preferred, some attachments may require the dipper arm to be positioned farther out to avoid any possible interference.
2. Rotate the attachment to the full curl position and hold over relief. Press UNLOCK (release) button (the buzzer will sound) and hold the bucket curl lever for approx. 5-10 seconds to allow the hook to fully retract.
3. Visually verify the hook is fully retracted. The latch should also be retracted and the attachment can now be released. See Figures #1 & #2

FIGURE #1

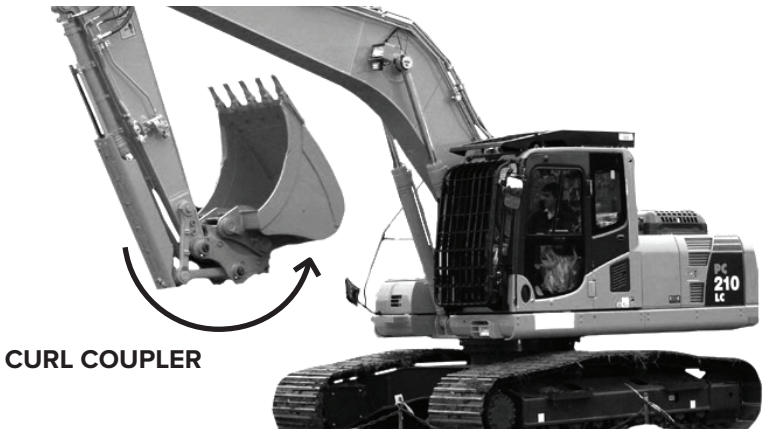
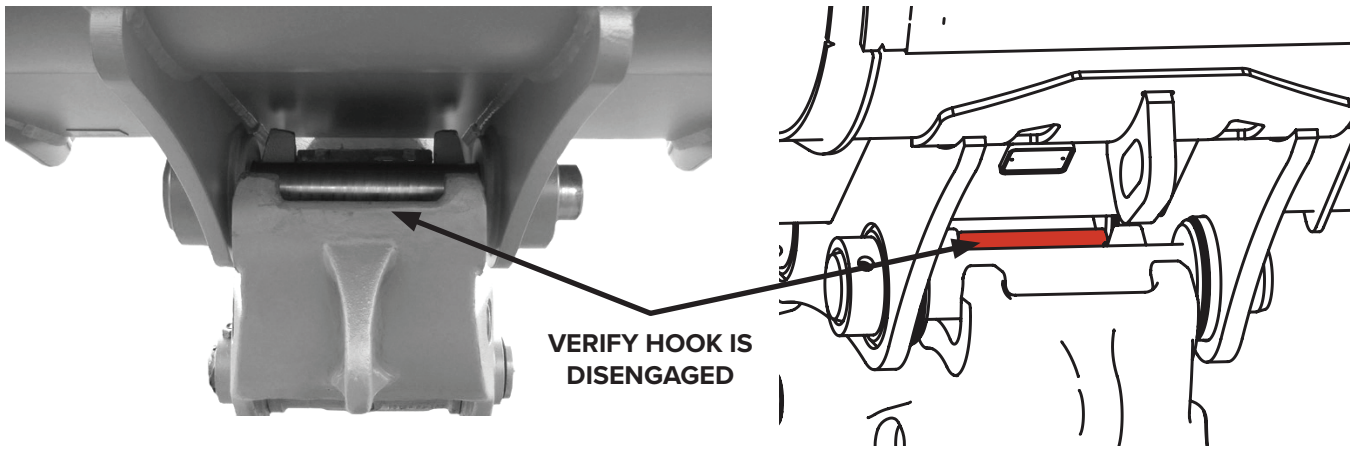


FIGURE #2

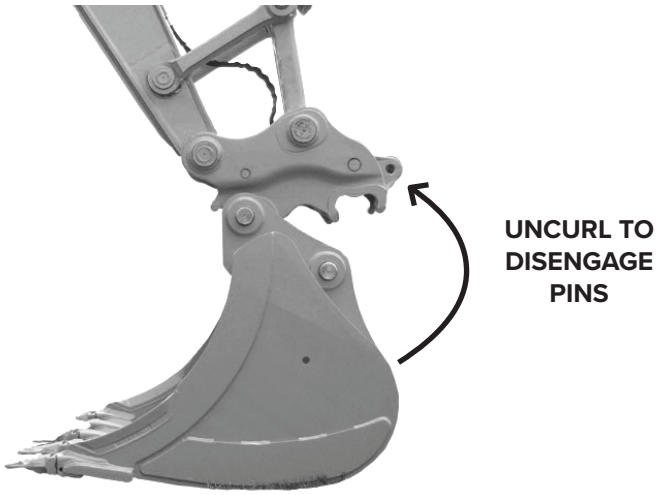


⚠ WARNING!

Do not try to release or change attachment near any persons or in any areas that may result in an accident or injury occurring. The switch should be in the LOCK position at all times, except while changing attachments.

4. Slowly roll out attachment until attachment base is horizontal. Lower the boom until the attachment is on the ground.
5. Once attachment is on the ground, continue to uncurl the coupler. See Figure #3
6. Lift the coupler clear of the attachment. The coupler is now safely disengaged.

FIGURE #3



RESETTING FRONT LATCH

If the coupler will not release the attachment, the front latch may not be in the correct position or jammed which may prevent the hook from retracting. This could happen because the attachment was not fully curled as described in the unlock procedure.

To reset the front latch into the correct position, press the LOCK button. Hold the bucket curl lever for approx. 5-10 seconds to allow the hook to engage. Ensure the front latch is free from debris or any other obstruction that may cause it to jam then repeat steps of the unlock procedure, ensuring the prime mover dipper arm is pulled in close to the prime mover and the attachment fully curled.

NOTICE!

DO NOT try to force attachment from the coupler if the front latch will not release. Doing so may cause damage to the coupler and/or attachment.

LIFTING WITH COUPLER

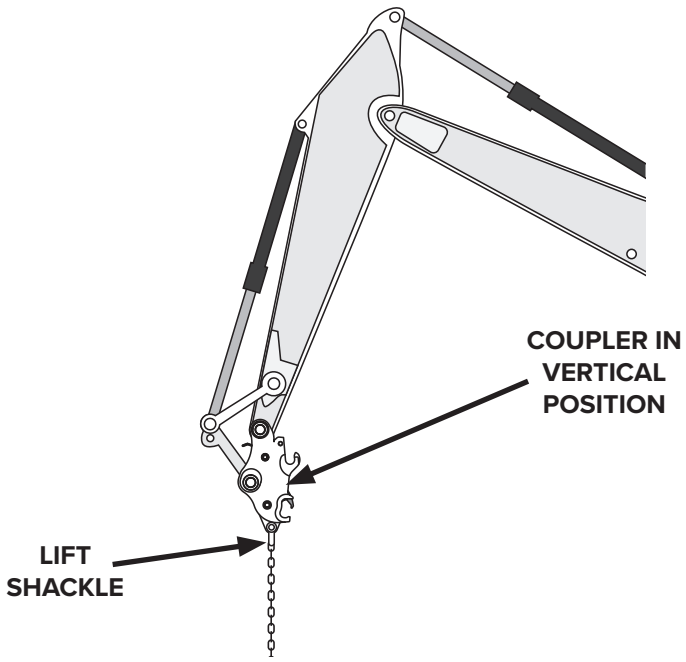
⚠ WARNING!

Always use correctly rated shackle and lifting devices. Refer to Specifications section of this manual for product weight table. Never use worn, damaged or undersized lifting equipment.

This coupler is designed with a certified Lift Eye for lifting and placing material. Consult your prime mover specifications for lifting procedures and capabilities. In order to use the lift eye, correctly and safely, the attachment must be removed. With an attachment installed the chain, cable or other lifting device can contact the attachment and cause interference, damage or unexpected release.

- Any lifting device must be removed when changing attachments.
- The Safe Working Load (SWL) can be found stamped into the coupler frame (near the lifting eye). Check the lifting capacity of the coupler and the prime mover before lifting and do not exceed. Lift with the coupler in a vertical position. See Figure #1.

FIGURE #1



Operation

WORK TOOLS

The coupler is designed to allow the easy changeover of standard buckets and work tools. The coupler can work with a range of buckets from a variety of prime mover manufacturers within the same size range.

No modifications are required to the buckets or the prime mover. The coupler can use buckets in the shovel mode position, operate hydraulic breakers and be used as a lifting tool.

The coupler can also work in a range of applications and with a wide variety of work tools.

⚠ CAUTION!

Do not use any tool that is not in the correct weight class specified by the prime mover manufacturer.

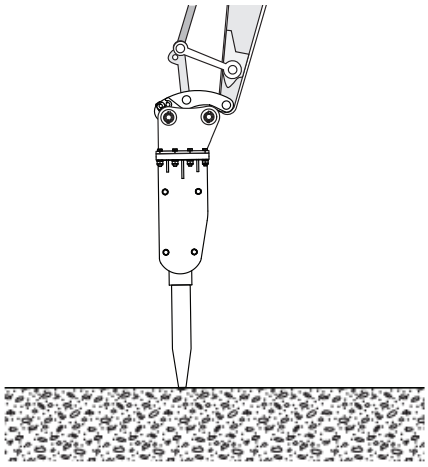
DEMOLITION TOOLS

The coupler can be used with hydraulic breakers and work tools of appropriate pin spread and weight. DO NOT use a tool which is beyond the tonnage class specified.

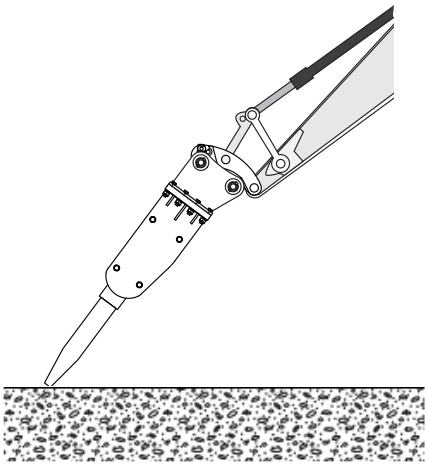
Always use breakers in the vertical position whenever possible. NEVER use the breaker as a lever. When used with a breaker the coupler should be inspected frequently.

⚠ WARNING!

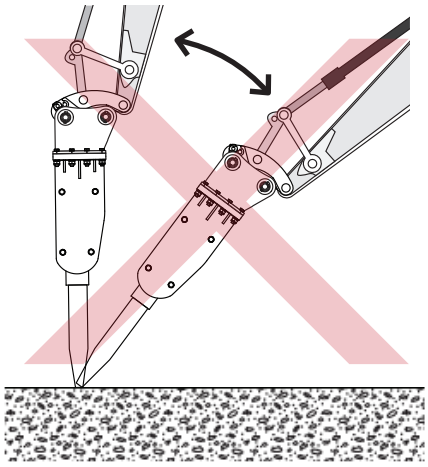
Do not use the coupler with a hydraulic breaker for long periods without a periodic inspection of all working parts. If the breaker needs to be used continuously for a long period, it is recommended that it be mounted directly to the prime mover. The coupler has not been designed to work with prolonged excessive vibration.



OPERATE BREAKER IN THE VERTICAL POSITION.



USE CAUTION WHEN OPERATING A BREAKER NOT IN THE VERTICAL POSITION.



NEVER USE THE BREAKER AS A LEVER.

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.

STORAGE

The following storage procedure will help you to keep your product in top condition. It will also help you get off to a good start the next time your attachment is needed. We therefore strongly recommend that you take the extra time to follow these procedures whenever your unit will not be used for an extended period of time.

- Clean the unit thoroughly, removing all mud, dirt, and grease.
- Inspect for visible signs of wear, breakage, or damage. Order any parts required and make the necessary repairs to avoid delays upon removal from storage.
- Tighten loose nuts, capscrews and hydraulic connections.
- Coat exposed portions of the cylinder rods with grease.
- Lubricate grease fittings.
- Seal hydraulic system from contaminants and secure all hydraulic hoses off the ground to help prevent damage.
- Replace decals that are damaged or in unreadable condition.
- Store unit in a dry and protected place. Leaving the unit outside will materially shorten its life.

Additional Precautions for Long Term Storage:

- Touch up all unpainted surfaces with paint to prevent rust.

REMOVAL FROM STORAGE

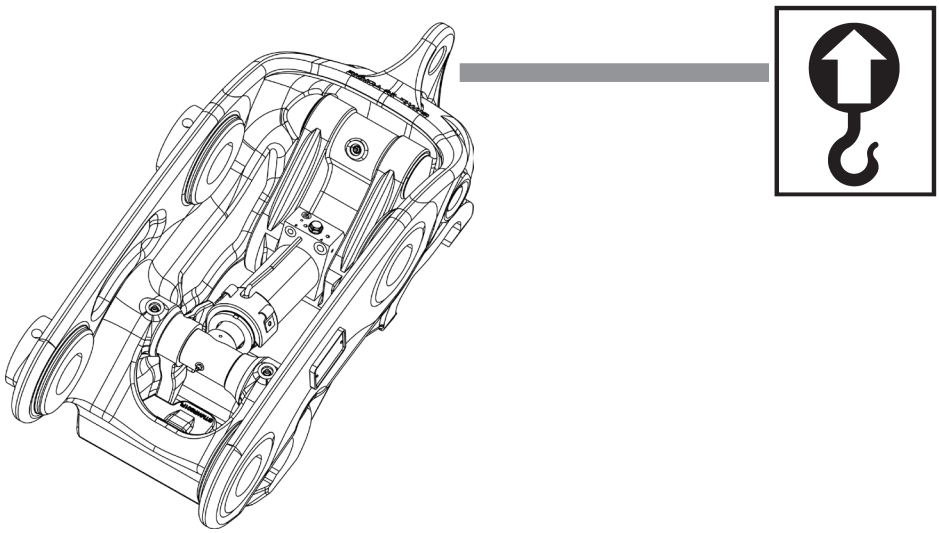
- Wash unit and replace any damaged and/or missing parts.
- Lubricate grease fittings.
- Check hydraulic hoses for damage and replace as necessary.

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 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

Tie down points are identified by tie down 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 as recommended.
- Check unit stability before transporting.

⚠ WARNING!

Verify that all tie down 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 tie down points and any equipment safety precautions at the front of this handbook when transporting your attachment.

⚠ WARNING!

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.

Lubrication

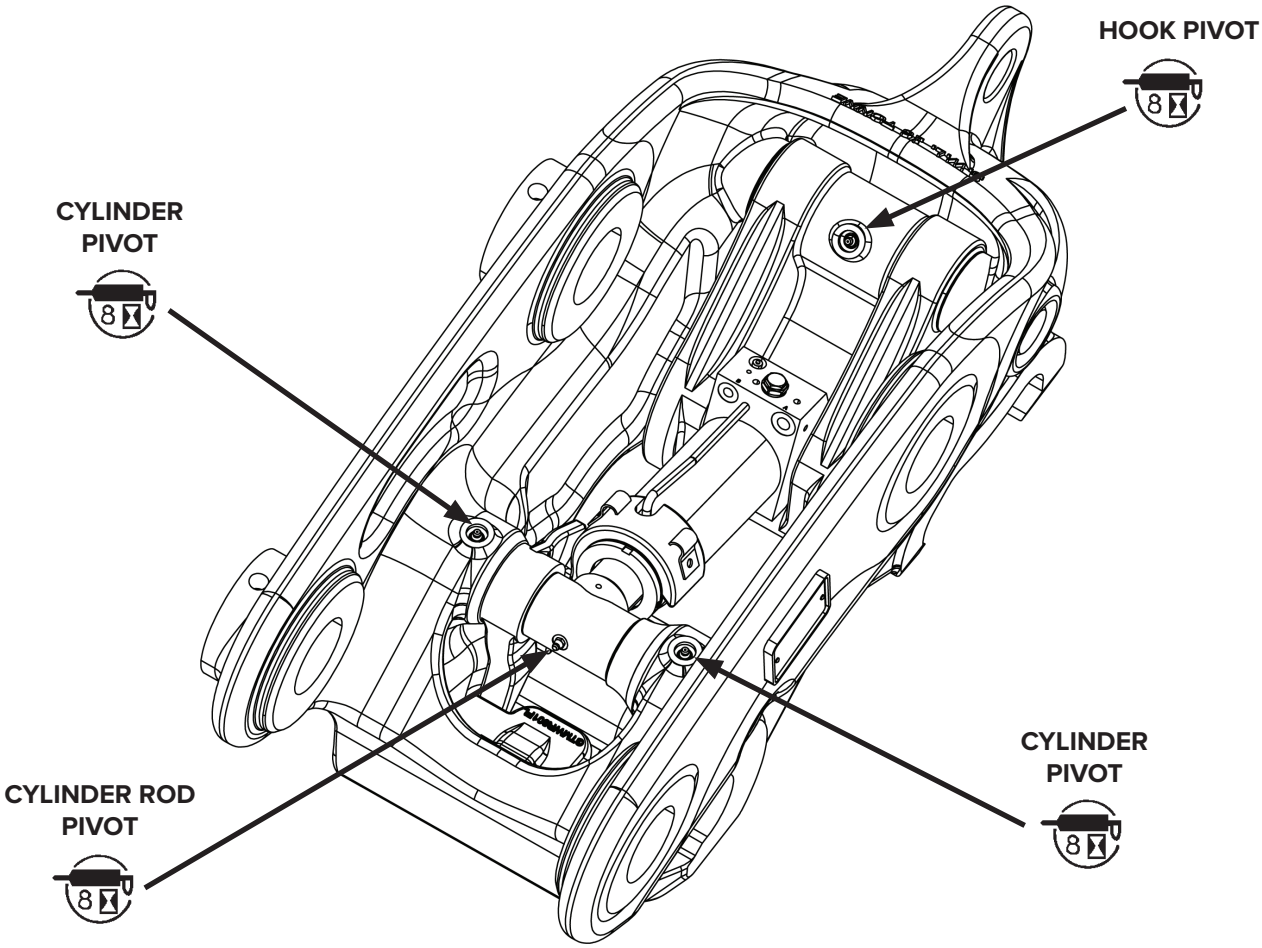
LUBRICATION

All parts provided with grease fittings should be lubricated as indicated. If any grease fittings are missing, replace them immediately. Clean all fittings thoroughly before using grease gun.

NOTICE!

Cylinders and pin kits that are supplied without grease zerks DO NOT need to be greased.

Lubricate daily or every 8 hours of operation, whichever comes first, with SAE Multi-Purpose Lubricant or an equivalent SAE Multi-Purpose type grease.



IMPORTANT

Avoid excessive greasing. Dirt collects on exposed grease and greatly increases wear. After greasing, wipe off excessive grease from fittings.

Maintenance

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.

Procedure	Every 8 Hours (Daily)	Every 40 Hours (Weekly)
Check prime mover hydraulic system to ensure an adequate level and cleanliness of hydraulic oil.	✔	
Check for missing or loose hardware. Replace or tighten as necessary. See Bolt Torque Specifications	✔	
Check hydraulic system for leaks and tighten as necessary. Check for damage and replace as needed.	✔	
Check for missing or damaged safety decals and replace as necessary.	✔	
Check coupler for worn parts or cracks. (If cracks exist in coupler frame or welds, remove coupler from prime mover and contact Paladin Customer Service.)	✔	
Lubricate grease fittings.	✔	
Lubricate & retract cylinder rod.	✔	
Check that the front latch swings freely and that area around locking mechanism is free from dirt or debris.	✔	
Cycle the cylinder to check that it is working correctly.	✔	
Check that the switch/buzzer are working.	✔	
Check that mounting pins and pin locking hardware are secure.	✔	
Check coupler frame for signs of wear. See "Inspecting the Coupler Frame" in the Maintenance Section.		✔
Check nitrogen gas charge in cylinder. See "Checking Cylinder Gas Pressure" in Maintenance Section.	✔	

⚠ WARNING!

Hydraulic fluid under pressure can penetrate the skin causing serious injury. Hydraulic leaks under pressure may not be visible. Use a piece of cardboard or wood, rather than hands to search for suspected leaks.

Keep unprotected body parts, such as face, eyes, and arms as far away as possible from a suspected leak. Flesh injected with hydraulic fluid may develop gangrene or other permanent disabilities. If injured by injected fluid, see a doctor at once.

Stop the engine and relieve pressure before connecting or disconnecting hydraulic lines. Tighten all connections before starting engine or pressurizing lines.

Maintenance

⚠ WARNING!

Take care when handling coupler & components, attachment and installation pins. Refer to Specifications section for product weight table.

HYDRAULIC CHECK

⚠ WARNING!

Remove the ignition key and disconnect battery before performing maintenance on the hydraulic system.

The most common cause of coupler failure is contaminates in the hydraulic system. If this occurs, the coupler may work slowly or improperly. In this situation, perform the following checks.

1. Check the solenoid valve block assembly for contamination as follows:
   - ▶ Switch off the prime mover and operate controls to vent residual pressure in the hydraulic system.
   - ▶ Vent pressure from the hydraulic tank by releasing the tank filler cap.
   - ▶ Remove solenoid valve and dismantle. Inspect for blockages or damaged seals.
   - ▶ Clean and replace all seals if necessary.
   - ▶ Clean or change filter fittings.
   - ▶ Re-assemble solenoid unit and install to prime mover. If in doubt, replace solenoid valve.
2. Re-connect all hydraulic hoses to correct ports as detailed in the installation instructions provided with your coupler hydraulic kit.
3. Check that the coupler cylinder has not become locked due to contamination as follows:
   - ▶ Switch the coupler to the unlock position and disengage the prime mover hydraulics.
   - ▶ When the cylinder is fully retracted, switch off the prime mover and operate the controls to vent residual pressure in the hydraulic system.

⚠ WARNING!

There may be some residual pressure in the hydraulic cylinder. Unscrew the check valve slowly to allow any trapped pressure to escape.

- ▶ Slowly unscrew the check valve in the hydraulic cylinder.
- ▶ Inspect the check valve and clean or replace the O-ring seals.
- ▶ Clean all cavities including the cylinder.
- ▶ Re-assemble the check valve into the cylinder.
- ▶ If there is any damage to the cylinder, replace the entire cylinder.

OPERATION CHECK

If the coupler is locked on the attachment but the attachment can still be released from the coupler, the cylinder or the cylinder check valve is losing hydraulic pressure and may need to be re-sealed or replaced. To check for loss of pressure, place the attachment on the ground and attempt to move the coupler on the attachment. If the coupler does not hold firmly, the coupler is losing hydraulic pressure.

⚠ WARNING!

Do not operate coupler in this condition. Have coupler repaired immediately.

HYDRAULIC CYLINDER AND HOOK REMOVAL

NOTICE!

Do not contaminate any hydraulic components during the replacement procedure.

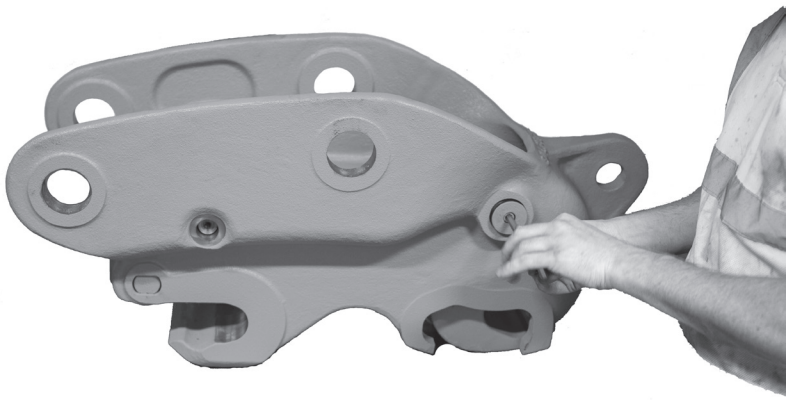
⚠ WARNING!

Hydraulic fluid under pressure can penetrate the skin and cause serious injury or death. Before connecting or disconnecting hydraulic hoses, read your prime movers operator's manual for detailed instructions on connecting and disconnecting hydraulic hoses or fittings.

Removal

1. Uncouple attachment/work tool from the coupler (Refer to Operation Section of this manual).
2. Lock the hook by moving the coupler switch to the LOCK position.
3. Remove the coupler from the prime mover.
4. Remove the retaining caps and bolts from two cylinder pins. See Figure #1

FIGURE #1



Maintenance

5. Remove the cylinder pin. See Figure #2
6. Remove the cylinder hook pin. See Figure #3

FIGURE #2

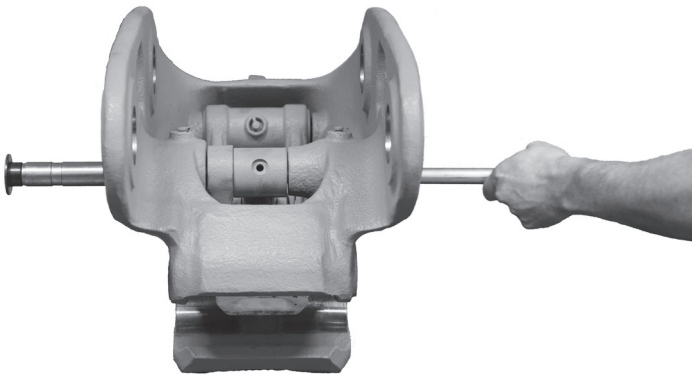
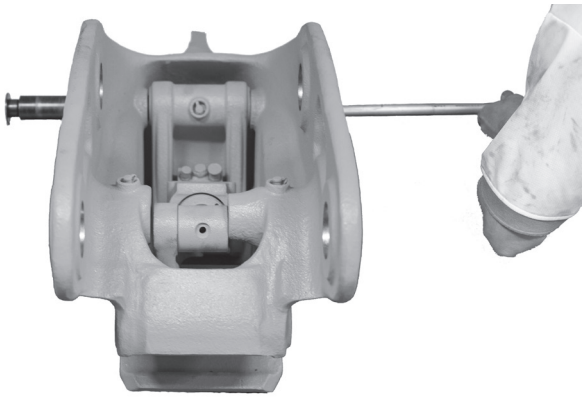
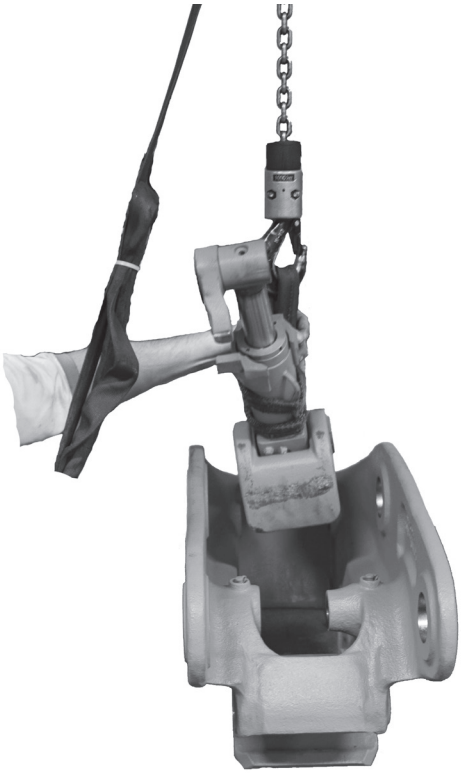


FIGURE #3



7. Remove the cylinder and hook assembly. Use lifting device if needed. See Figure #4

FIGURE #4



8. Remove latch actuator from cylinder. See Figure #5
9. Remove hook pin. See Figure #6
10. Remove hook from cylinder.

FIGURE #5

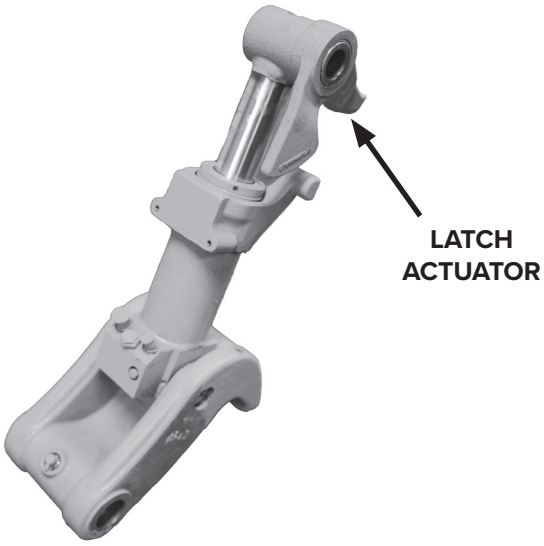
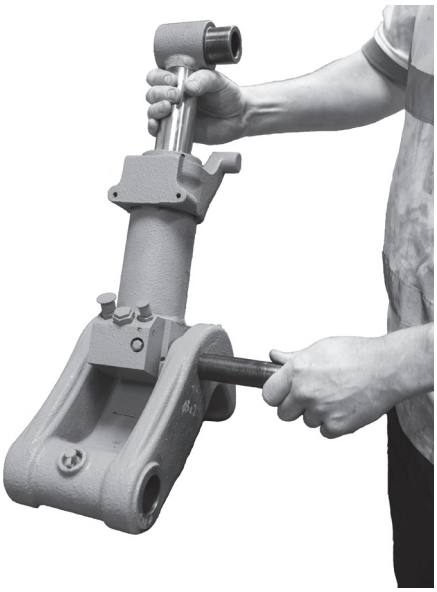


FIGURE #6



Replacement

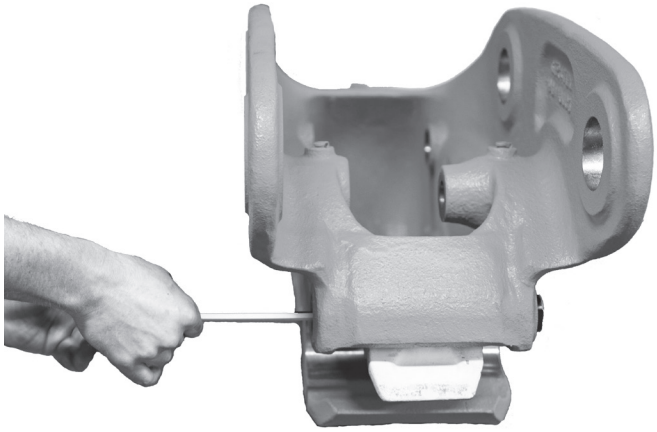
Replacement is the reverse of the removal procedure.

COUPLER LATCH ASSEMBLY REMOVAL

Removal

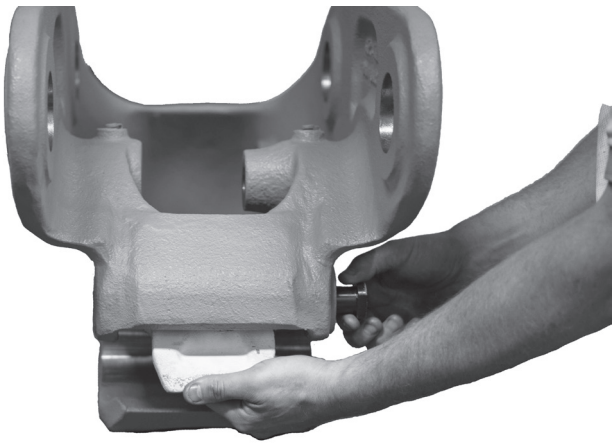
1. Uncouple attachment/work tool from the coupler (Refer to Operation Section of this manual).
2. Retract the hook by moving coupler switch to the UNLOCK position.
3. Remove the coupler from the prime mover.
4. Remove the retaining boss cap and bolt. See Figure #1

FIGURE #1



5. Remove the pivot pin. See Figure #2
6. Remove the latch assembly.

FIGURE #2



Replacement

Replacement is the reverse of the removal procedure.

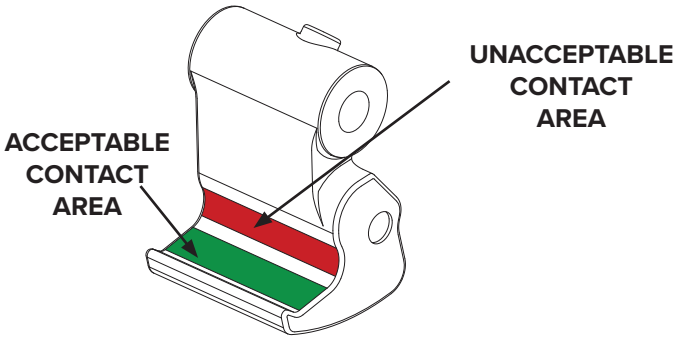
INSPECTING THE COUPLER FRAME

It is possible that over time the coupler could become worn or damaged in the horseshoe area of the frame. To determine if the horseshoe area of the coupler is worn to an unacceptable level, it is recommended that you check the contact area on the coupler hook.

Inspect coupler hook to see where the bucket pin is coming into contact with the hook. Use Figure #1 to establish if the contact point on your hook is in the acceptable area. If the bucket pin comes into contact with the protruding wear indicators, this is unacceptable contact.

If bucket pin is secured by the hook in the unacceptable contact area, this is an indication that the horseshoe area of the coupler frame is worn and will need repairing.

FIGURE #1



REPAIRING THE COUPLER FRAME

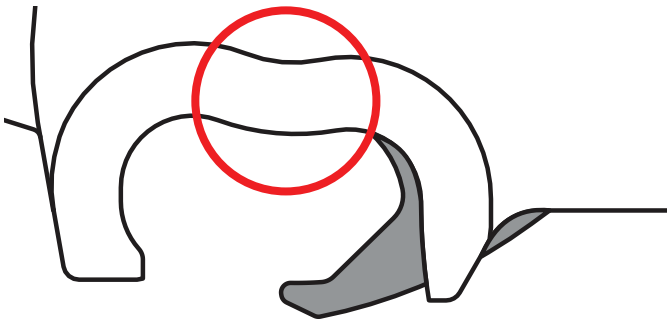
If the coupler frame becomes worn or damaged in area shown in Figure #1, then the following procedure must be performed for repair.

The maximum wear allowed around this area is 5mm (0.19 inches) If the wear is more than this the area will need to be repaired.

1. Contact manufacturer for a template for the coupler using serial number and coupler type.
2. The worn area should be prepared with use of a grinder before being built up with weld to match the appropriate shape. Mig welding is recommended for these repairs. Alternatively, welding with low hydrogen electrodes (E7018 or equivalent) can be used. All welds should be blended in and smooth to avoid stress areas.
3. Once fully welded, the repaired area must be allowed to cool slowly in controlled conditions.
4. Fully dress the welded areas by grinding and check that there is no interference with the movement of the hook or other parts of the coupler. Check that the dressed areas match the template provided.
5. Remove all sharp edges and repaint area. Perform a maintenance check before re-installing the coupler to the prime mover.

Contact manufacturer for more detailed information about the above process.

FIGURE #1



CHECKING CYLINDER GAS PRESSURE

Do the following to check that the cylinder is retaining full nitrogen gas charge.

1. Uncouple attachment/work tool from the coupler (Refer to Operation Section of this manual).
2. Curl coupler and retract hook by moving coupler switch to the UNLOCK position. See Figure #1.
3. Turn off prime mover ignition.
4. Visually check that the coupler hook closes under gas pressure in the cylinder. See Figure #2.

FIGURE #1

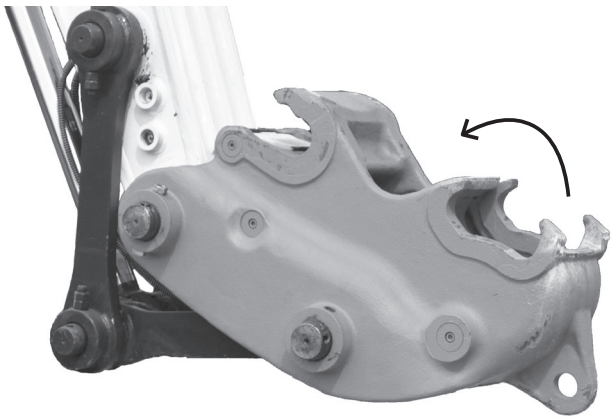
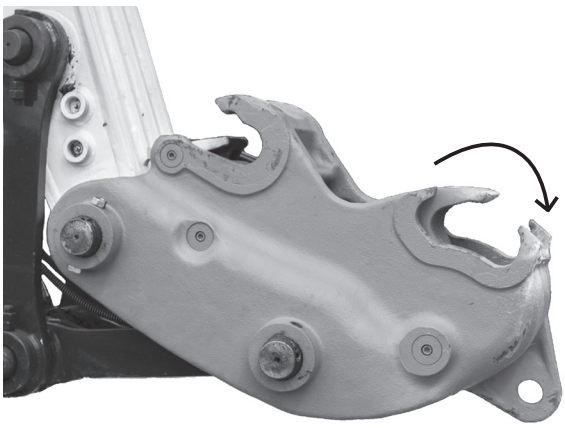


FIGURE #2



NOTICE!

Do not try to recharge the cylinder with nitrogen gas. If the cylinder is not operating properly, it should be replaced with a new cylinder subassembly.

Tool Disposal

Hydraulic Oil
Hydraulic oil can contaminate the air, ground and water if not properly recycled. Recycle hydraulic oil in accordance with all State, Federal and local laws, at your local oil recycling facility.

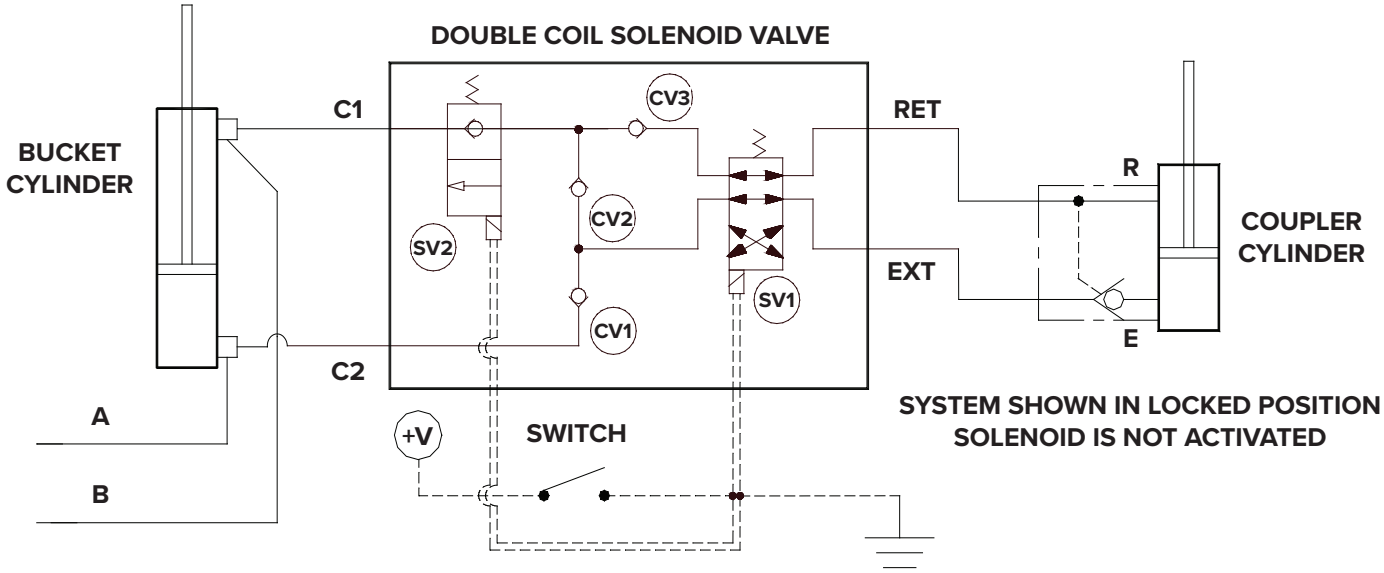
Hydraulic Hoses
Hang hydraulic hoses to drain. Collect the oil for recycling. Contact your local municipal recycling authorities for an approved hydraulic hose recycling site.

Tool Body
Disassemble the tool and dispose of all non-metal parts. Recycle the metal components. Contact your local municipal recycling authorities for recycling instructions.

Troubleshooting

Problem	Possible Cause	Possible Solution
COUPLER FAILS TO LOCK/ UNLOCK	Snapped, bent or lost pins.	Replace if necessary.
	Damaged cylinder.	Replace if necessary.
	Loose or damaged hardware.	Tighten or replace.
	Solenoid valve coil is loose or burnt out.	Tighten or replace.
	Worn, damaged, insufficient or inadequate hydraulic pump.	Refer to prime mover's owners manual.
	Hydraulic oil level too low	Refer to prime mover's owners manual.
	Air in hydraulic lines.	Cycle hydraulic flow to coupler several times to remove air from lines.
	Obstruction in hydraulic lines.	Remove obstruction and replace if necessary.
	Front latch jammed	See Resetting Front Latch
LEAKING OIL	Worn or damaged seal.	Replace if necessary.
	Loose or damaged hoses.	Tighten or replace.
	Loose or damaged connections.	Tighten or replace.
ELECTRICAL FAILURE	Damaged electrical wiring	Repair or replace if necessary.
	In-line fuse to control switch has blown.	Replace if necessary.
	Controls and/or buzzer is broken.	Repair or replace if necessary.
	Incorrect voltage to magnetic coil.	Ensure solenoid is getting correct voltage.
	Prime mover electrical failure.	Refer to prime mover's owners manual.

Hydraulic / Electrical Diagram



IMPORTANT

The coupler is designed to be locked when there is no electrical power. In other words, the coupler is locked by default. Electrical power is required to unlock the coupler.

The schematic above is in the LOCKED position (no electrical power to solenoid). System pressure applied to bucket cylinder line “A” or “B” is transferred through valve port C2 or C1 respectively. Pressure is then sent through CV1 or SV2/CV2, through solenoid valve SV1 and charges the head end of coupler cylinder. The system maintains a positive force on the locking plate at all times while the bucket cylinder is pressurized.

With switch in the UNLOCK position (electrical power applied to both solenoids SV1 and SV2) and line A pressurized; pressure is transferred through CV1 and SV1 and energizes the rod-end of the coupler cylinder to retract the coupler locking plate. Hydraulic fluid from the head end of the coupler cylinder moves through the “EXT” port back through SV1, CV3, and SV2 and drains into line B. When line B is energized, the locking plate can not be retracted.

NOTICE!

Do not connect a 12V solenoid to a 24V supply, or a 24V solenoid to a 12V supply as damage to the solenoid will result.

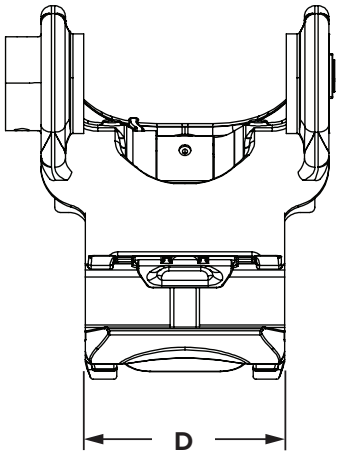
Specifications

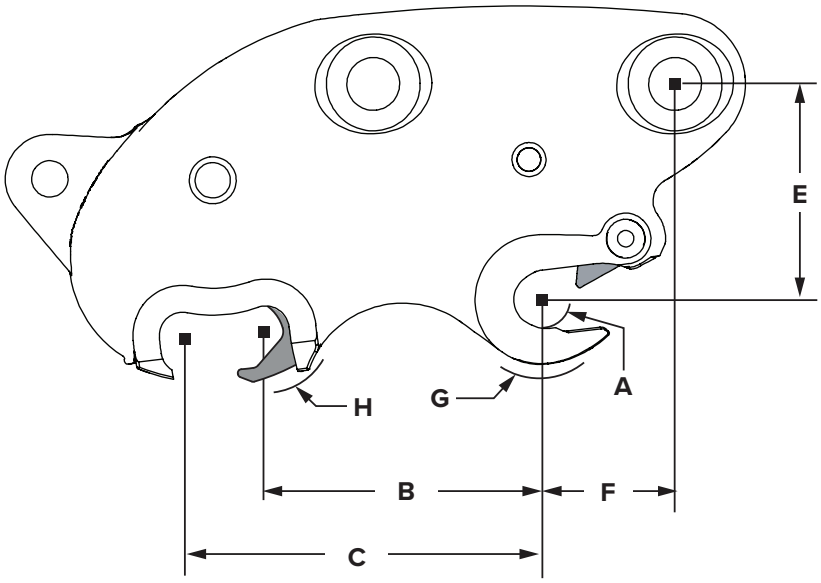
BUCKET PIN KIT AND HYDRAULIC CYLINDER WEIGHT CHART

Prime Mover Tonnage	Coupler Range	Bucket Pin Kit Weight KG. (LBS)	Cylinder weight KG. (LBS)
6 - 9T	3	8.5 (19)	7 (16)
10 - 15T	4	20 (44)	12 (26)
16 - 19T	5	30 (66)	17 (38)
20 - 25T	6	44 (97)	18 (40)
26 - 32T	7	52 (115)	31 (68)
33 - 41T	8	68 (150)	36 (80)
42 - 52T	9	87 (192)	48 (106)

All weights are approximate.

Specifications





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

DURALATCH COUPLER - RANGE 3 & 4				
DESCRIPTION	**RANGE 3**		**RANGE 4**	
A. Pin Diameter	50mm	60mm	60mm	65mm
B. Minimum Pin Spread - in.(mm)	11.03 (280)	11.42 (290)	13.59 (345)	13.98 (355)
C. Maximum Pin Spread - in.(mm)	12.48 (317)	12.59 (320)	16.33 (415)	16.53 (420)
D. Attachment Pick Up Width - in.(mm)	6.66 (169)		8.70 (221)	
E. Vertical Offset - in.(mm)	7.48 (190)		8.82 (224)	
F. Horizontal Offset - in.(mm)	5.47 (139)		8.82 (224)	
G. Hook (Shell) Clearance - in.(mm)[1]	3.13 (79.5)		3.80 (96.5)	
H. Box Section Clearance - in.(mm)[1]	3.51 (89)		3.59 (91)	
Weight -lb.(kg)	211 (96)		407 (185)	
Lift Eye Rating -lb.(kg)	11,023 (5)		28,660 (13)	

[1] Measurement is radius from pin center.

DURALATCH COUPLER - RANGE 5 & 6			
DESCRIPTION	**RANGE 5**		**RANGE 6**
A. Pin Diameter	70mm	80mm	80mm
B. Minimum Pin Spread - in.(mm)	14.81 (376)	15.40 (391)	16.93 (430)
C. Maximum Pin Spread - in.(mm)	18.58 (472)	18.77 (477)	20.47 (520)
D. Attachment Pick Up Width - in.(mm)	10.91 (277)		12.08 (307)
E. Vertical Offset - in.(mm)	10.51 (267)		10.71 (272)
F. Horizontal Offset - in.(mm)	7.48 (190)		8.54 (217)
G. Hook (Shell) Clearance - in.(mm)[1]	3.90 (99)		4.19 (106.5)
H. Box Section Clearance - in.(mm)[1]	3.62 (92)		4.27 (108.5)
Weight - lb.(kg)	590 (268)		724 (329)
Lift Eye Rating - lb.(kg)	28,660 (13)		35,273 (16)

DURALATCH COUPLER - RANGE 7 & 8				
DESCRIPTION	**RANGE 7**		**RANGE 8**	
A. Pin Diameter	80mm	90mm	90mm	100mm
B. Minimum Pin Spread - in.(mm)	17.44 (443)	18.04 (458)	18.58 (472)	19.69 (500)
C. Maximum Pin Spread - in.(mm)	20.47 (520)	20.66 (525)	23.70 (602)	23.90 (607)
D. Attachment Pick Up Width - in.(mm)	12.84 (326)		13.59 (345)	
E. Vertical Offset - in.(mm)	12.40 (315)		13.31 (338)	
F. Horizontal Offset - in.(mm)	9.76 (248)		10.35 (263)	
G. Hook (Shell) Clearance - in.(mm)[1]	4.51 (114.5)		4.69 (119)	
H. Box Section Clearance - in.(mm)[1]	4.55 (115.5)		4.61 (117)	
Weight - lb.(kg)	964 (438)		1,285 (584)	
Lift Eye Rating - lb.(kg)	44,092 (20)		55,115 (25)	

DURALATCH COUPLER - RANGE 9		
DESCRIPTION	**RANGE 9**	
A. Pin Diameter	100mm	110mm
B. Minimum Pin Spread - in.(mm)	21.10 (536)	21.33 (542)
C. Maximum Pin Spread - in.(mm)	24.80 (630)	25.00 (635)
D. Attachment Pick Up Width - in.(mm)	14.45 (372)	
E. Vertical Offset - in.(mm)	13.19 (353)	
F. Horizontal Offset - in.(mm)	13.66 (347)	
G. Hook (Shell) Clearance - in.(mm)[1]	5.43 (138)	
H. Box Section Clearance - in.(mm)[1]	4.94 (125.5)	
Weight - lb.(kg)	1624 (738)	
Lift Eye Rating - lb.(kg)	66,138 (30)	

Bolt Torque Specifications

GENERAL TORQUE SPECIFICATION TABLES

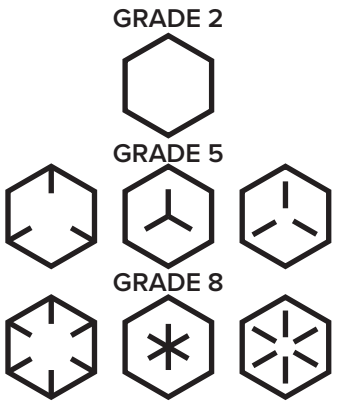
Use the following charts when determining bolt torque specifications when special torques are not given. Always use grade 5 or better when replacing bolts.

SAE BOLT TORQUE SPECIFICATIONS

IMPORTANT

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

IMPORTANT

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
	5.6		3.6-5.8	4.9-7.9		-	-
M6	8.8	1.0	5.8-.4	7.9-12.7	-	-	-
	10.9		7.2-10	9.8-13.6		-	-
	5.6		7.2-14	9.8-19		12-17	16.3-23
M8	8.8	1.25	17-22	23-29.8	1.0	19-27	25.7-36.6
	10.9		20-26	27.1-35.2		22-31	29.8-42
	5.6		20-25	27.1-33.9		20-29	27.1-39.3
M10	8.8	1.5	34-40	46.1-54.2	1.25	35-47	47.4-63.7
	10.9		38-46	51.5-62.3		40-52	54.2-70.5
	5.6		28-34	37.9-46.1		31-41	42-55.6
M12	8.8	1.75	51-59	69.1-79.9	1.25	56-68	75.9-92.1
	10.9		57-66	77.2-89.4		62-75	84-101.6
	5.6		49-56	66.4-75.9		52-64	70.5-86.7
M14	8.8	2.0	81-93	109.8-126	1.5	90-106	122-143.6
	10.9		96-109	130.1-147.7		107-124	145-168
	5.6		67-77	90.8-104.3		69-83	93.5-112.5
M16	8.8	2.0	116-130	157.2-176.2	1.5	120-138	162.6-187
	10.9		129-145	174.8-196.5		140-158	189.7-214.1
	5.6		88-100	119.2-136		100-117	136-158.5
M18	8.8	2.0	150-168	203.3-227.6	1.5	177-199	239.8-269.6
	10.9		175-194	237.1-262.9		202-231	273.7-313
	5.6		108-130	146.3-176.2		132-150	178.9-203.3
M20	8.8	2.5	186-205	252-277.8	1.5	206-242	279.1-327.9
	10.9		213-249	288.6-337.4		246-289	333.3-391.6

PALADIN®

Parts

In order to provide you with the most UP-TO-DATE part information, all parts for this attachment have been moved to our website at www.paladinattachments.com. 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.

IMPORTANT

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.

Dexter, MI 48130 USA