

# ***SERVICE MANUAL SUPPLEMENT***

## ***H-Series***

### ***Swing Frame Paper Roll Clamps***

**NOTE:** This manual covers swing components only. Refer to H-Series Fixed Frame Pivot Arm Paper Roll Clamp Service Manual, part number 6078255, for servicing arms, drive group, clamp cylinders, base unit and 180° hydraulic stop group.

***Manual Number 6844788***

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corporation**

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## 1.1 Introduction

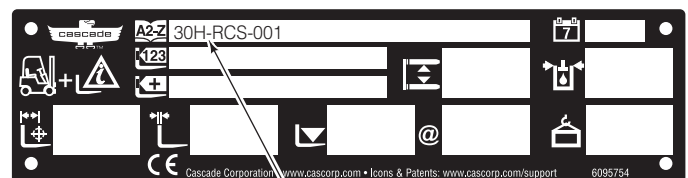
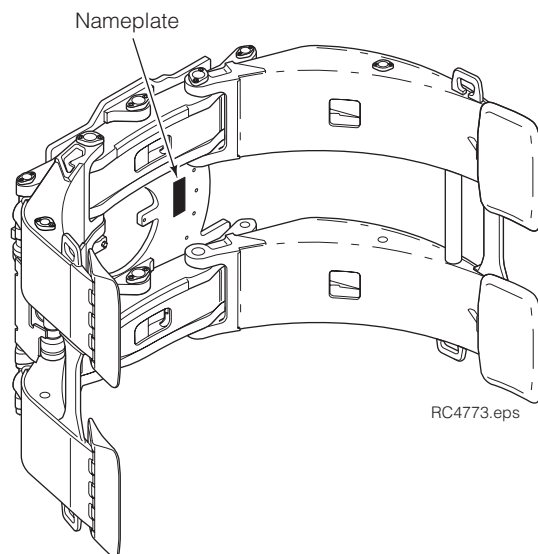
This supplement service manual provides the Periodic Maintenance, Troubleshooting, Service and Specifications for swing components and related components for Cascade H-Series Swing Frame Paper Roll Clamps. **NOTE:** Service all other attachment components as described in the H-Series Fixed Frame Pivot Arm Paper Roll Clamp Service Manual 6078255.

In any communication about the attachment, refer to the product catalog and serial numbers stamped on the nameplate, as shown. If the nameplate is missing, the numbers can be found stamped on the front of the faceplate top or side.

**IMPORTANT:** Supply input fittings are JIC.

**NOTE:** Specifications are shown in both US and (Metric) units. All fasteners have a torque value range of  $\pm 10\%$  of stated value.

**NOTE:** Manuals are available at [www.cascorp.com](http://www.cascorp.com) under the support tab, "Technical Support Manuals" link.



## 1.2 Special Definitions

The statements shown appear throughout this Manual where special emphasis is required. Read all **WARNINGS** and **CAUTIONS** before proceeding with any work. Statements labeled **IMPORTANT** and **NOTE** are provided as additional information of special significance or to make your job easier.



**WARNING** - A statement preceded by **WARNING** is information that should be acted upon to prevent **bodily injury**. A **WARNING** is always inside a ruled box.

**CAUTION** - A statement preceded by **CAUTION** is information that should be acted upon to prevent machine damage.

**IMPORTANT** - A statement preceded by **IMPORTANT** is information that possesses special significance.

**NOTE** - A statement preceded by **NOTE** is information that is handy to know and may make your job easier.

## 2.1 100-Hour Maintenance

Every time the lift truck is serviced or every 100 hours of truck operation, whichever comes first, complete the following maintenance procedures:

- Check for loose or missing bolts, worn or damaged hoses and hydraulic leaks.
- Check edges of contact pads for wear or sharp nicks that could damage or tear paper rolls. Grind edges smooth.
- Check the torque on the 180° stop block capscrews and tighten to 80 ft.-lbs. (110 Nm) as necessary.
- Check contact pad pivot joints for wear. Repair or replace as necessary.
- Check that load-holding hydraulic system is functioning properly. Cascade Clamp Force Indicators 830141 and 832442 are available for this test.
- Check decals and nameplate for legibility.

## 2.2 500-Hour Maintenance

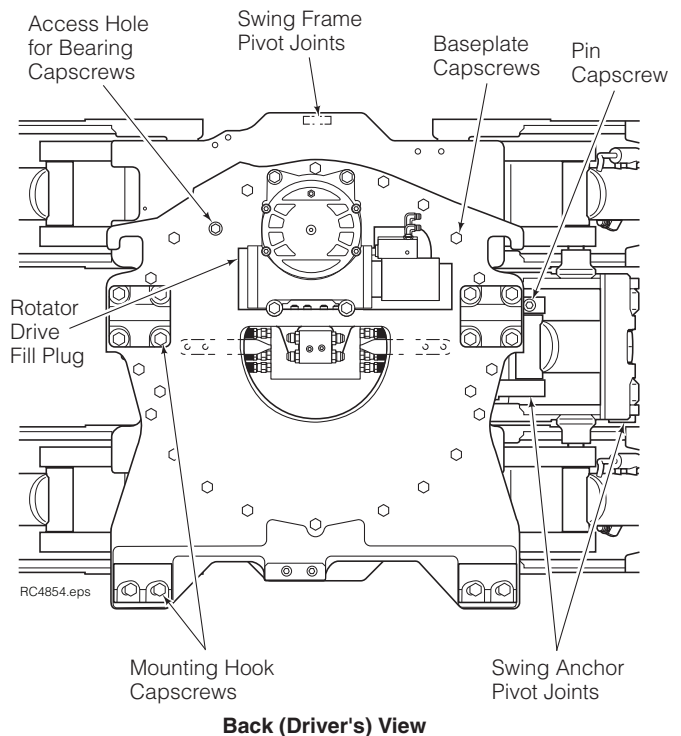
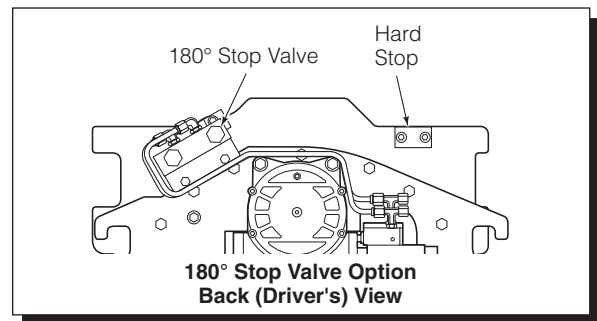
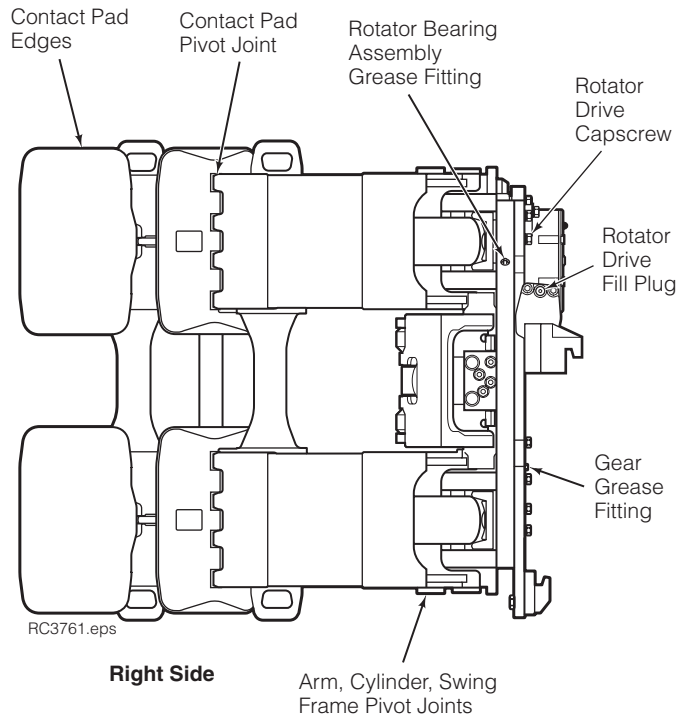
After each 500 hours of truck operation, in addition to the 100-hour maintenance, perform the following procedures:

- Check sample of baseplate capscrews for proper torque value. See Technical Bulletin TB183 or H-Series Fixed Frame Pivot Arm Paper Roll Clamp Service Manual 6078255 for checking and replacement procedures.
- Check sample of bearing capscrews for proper torque value. See Technical Bulletin TB183 or H-Series Fixed Frame Pivot Arm Paper Roll Clamp Service Manual 6078255 for checking and replacement procedures.



**WARNING:** A sampling of baseplate and bearing capscrews must be checked for proper torque at 500 hours (see TB183). A complete inspection is required every 2000 hours. Failure to keep the capscrews tightened can result in attachment damage and serious injury.

- Tighten lower mounting hook capscrews:  
**Class II/III – 122 ft.-lbs. (165 Nm)**  
**Class IV – 195 ft.-lbs. (265 Nm)**
- Tighten rotator drive capscrews to 65 ft.-lbs. (88 Nm).
- Lubricate rotator bearing assembly with EP-2 grease. (Whitmore 'OmniTask' or equivalent). Rotate attachment in 90 degree increments and grease in each position.
- Check rotator drive gearcase lubricant level. Lubricant should be up to bottom of fill plug hole. If necessary, fill with Cascade Rotator Drive Lubricant, Part No. 656300 or SAE 90 wt. gear lube (AGMA 'mild' 6 EP Gear Oil). Replace the plug.
- Inspect all arm, frame and cylinder pivot bushings for wear. Replace as necessary.
- Inspect all load-bearing structural welds on arms, arm pivots and cylinder pivot areas for visual cracks. Replace components as required.
- Inspect arm tips, wear tiles and contact pads for wear. Repair or replace as needed. Refer to H-Series Fixed Frame Pivot Arm Paper Roll Clamp Service Manual 6078255, Section 4.2.



## 2.3 2000-Hour Maintenance

After each 2000 hours of truck operation, in addition to the 100 and 500-hour maintenance, perform the following procedures:

- Check **all** rotation bearing capscrews for proper torque value. See Technical Bulletin TB183 or H-Series Fixed Frame Pivot Arm Paper Roll Clamp Service Manual 6078255 for checking and replacement procedures.
- Inspect all arm and cylinder pivot pins for wear and replace, if necessary.

## 2.4 4000-Hour Maintenance

After each 4000 hours of truck operation, in addition to the 100, 500 and 2000-hour maintenance, perform the following procedures:

- Due to normal mechanical wear and component service life, cylinder seals should be replaced to maintain performance and safe operation. Refer to H-Series Fixed Frame Pivot Arm Paper Roll Clamp Service Manual 6078255, Section 4.4, for cylinder service.



**WARNING:** After completing any service procedure, always test the attachment through five complete cycles. First test the attachment empty, then test with a load to make sure the attachment operates correctly before returning it to the job.

## 3.1 General Procedures

### 3.1-1 Truck System Requirements

- Truck hydraulic pressure should be within the range shown in Specifications, Section 5.1. **Pressure to the attachment must not exceed 2300 psi (160 bar).**
- Hydraulic flow should be within the volume range as shown in Specifications, Section 5.1.
- Hydraulic fluid supplied to the attachment must meet the requirements as shown in Specifications, Section 5.1.



**WARNING:** Before servicing any hydraulic component, relieve pressure in the system. Turn the truck off and move the truck auxiliary control valves several times in both directions.

After completing any service procedure, test the attachment through several cycles. First test the attachment empty to bleed any air trapped in the system to the truck tank. Then test the attachment with a load to be sure it operates correctly before returning to the job.

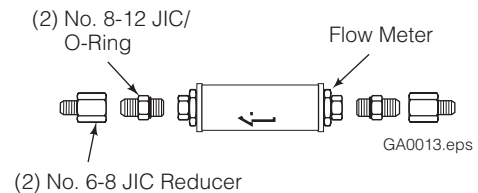
Stay clear of the load while testing. Do not raise the load more than 4 in. (10 cm) off the floor while testing.

### 3.1-2 Tools Required

In addition to a normal selection of hand tools, the following will be required:

- Inline Flow Meter Kit:  
20 GPM (75 L/min.) - Cascade Part No. 671477.
- Assorted fittings and hoses to adapt the gauges and flowmeter to the components being tested.

#### Flow Meter Kit 671477



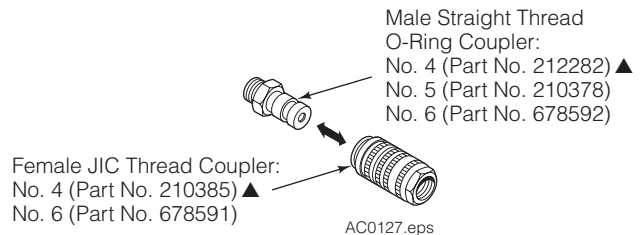
### 3.1-3 Troubleshooting Chart

**Determine All The Facts** – It is important that all the facts regarding the problem are gathered before beginning service procedures. The first step is to talk to the equipment operator. Ask for a complete description of the malfunction. The following guidelines can then be used as a starting point to begin troubleshooting procedures:

#### Swing Circuit

- Clamp swings slowly or not at all.
- To correct this problem, refer to Section 3.3.

#### Diagnostic Quick-Disconnects



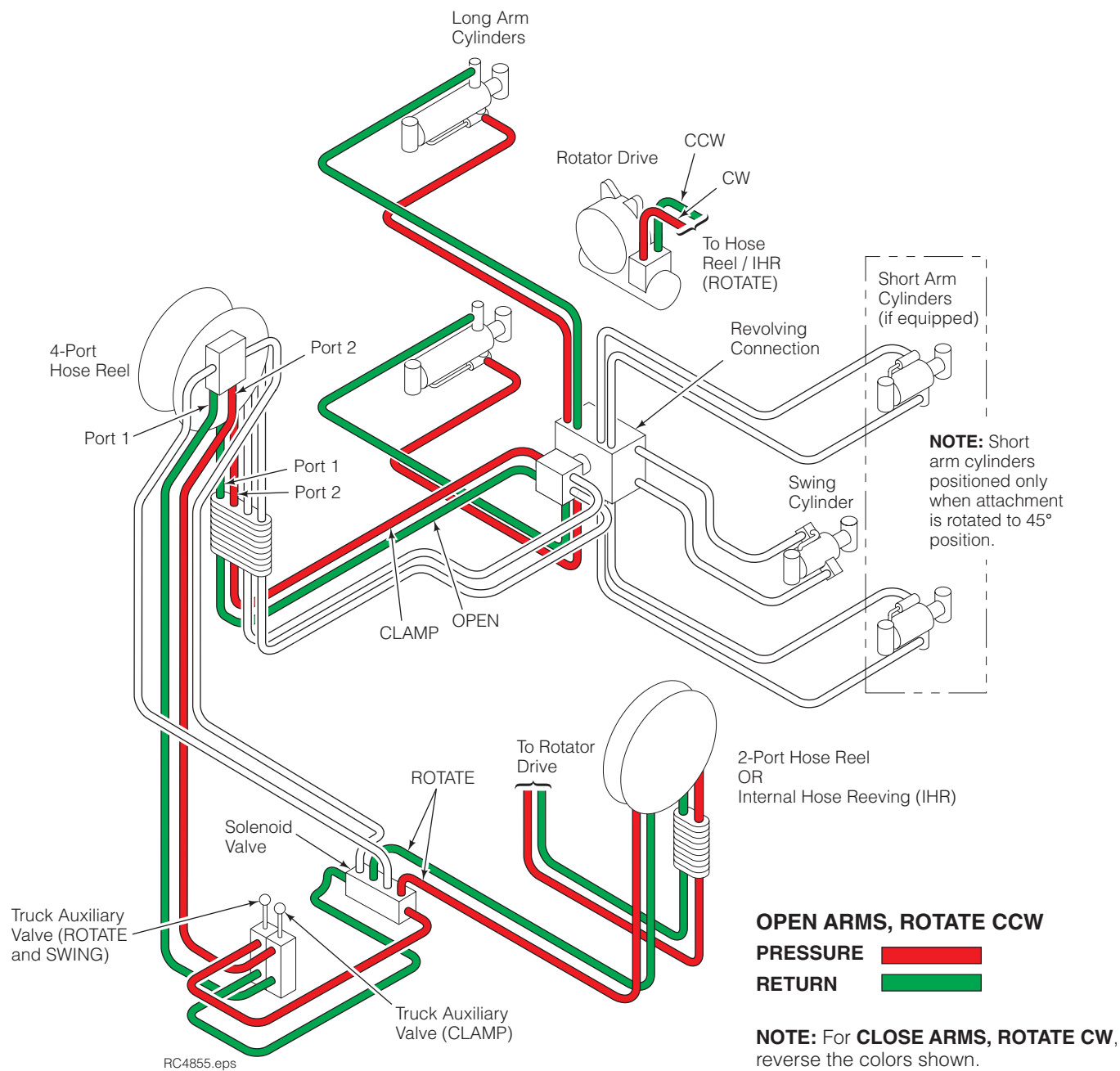
▲ Included in Diagnostics Kit 394382.

**IMPORTANT:** Troubleshooting to the CLAMP or ROTATE circuit can be found in the H-Series Fixed Frame Pivot Arm Paper Roll Clamp Service Manual 6078255.

## 3.2 Plumbing

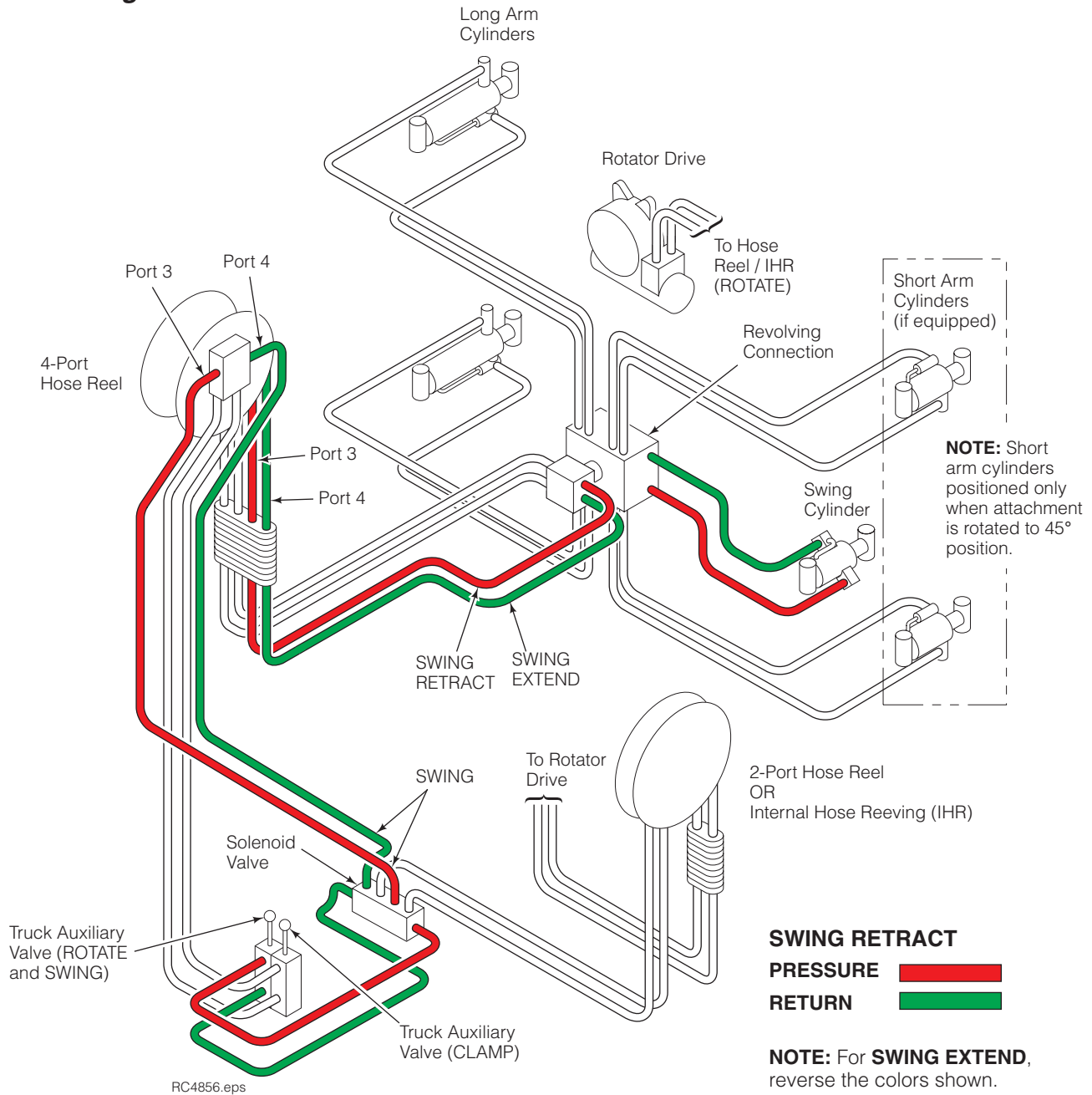
### 3.2-1 Hosing Diagram - 22H, 24H

#### Clamp and Rotate Circuit



## 3.2-1 Hosing Diagram - 22H, 24H (continued)

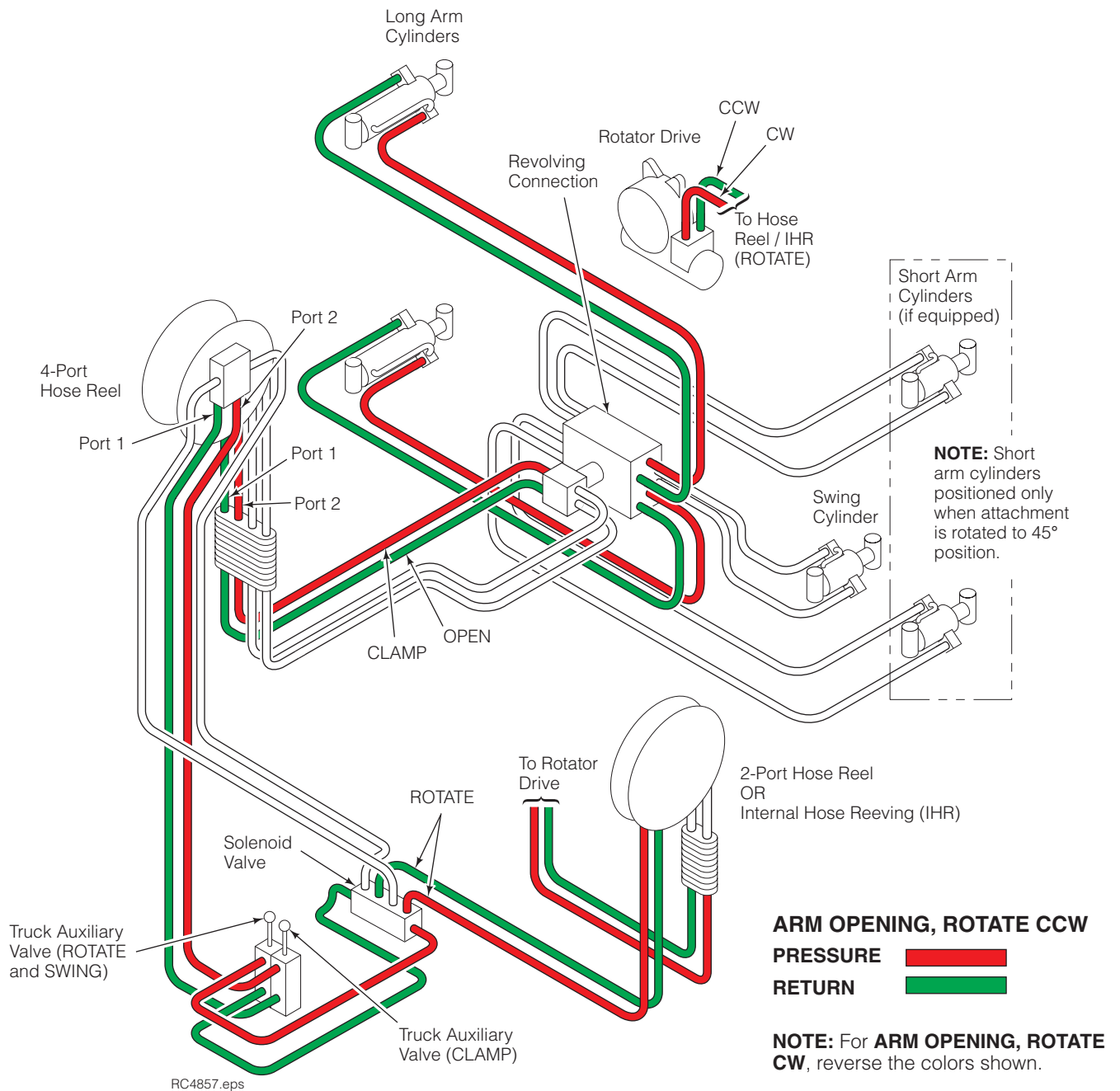
### Swing Circuit





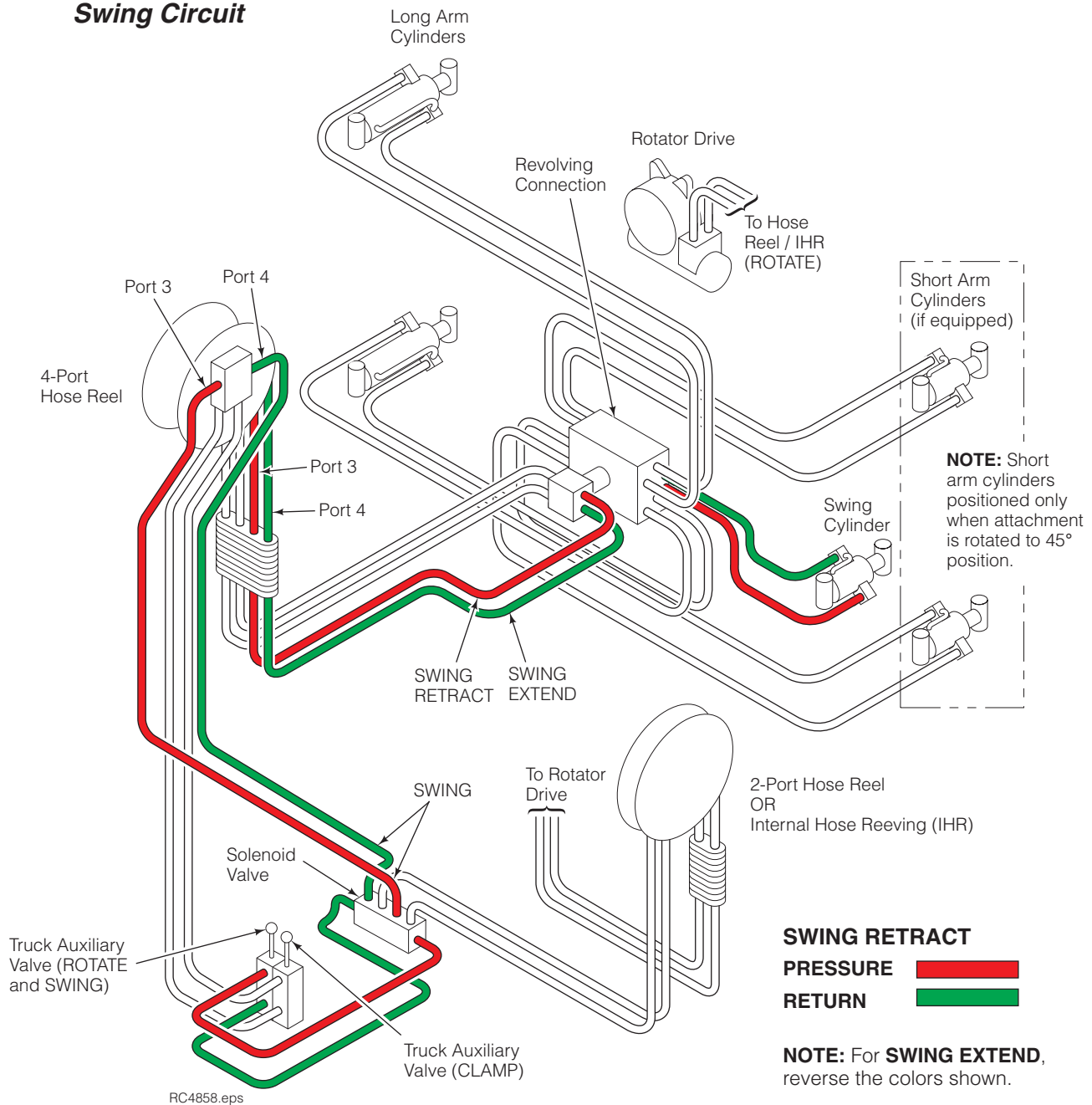
## 3.2-2 Hosing Diagram - 25H, 30H, 33H

### Clamp and Rotate Circuit

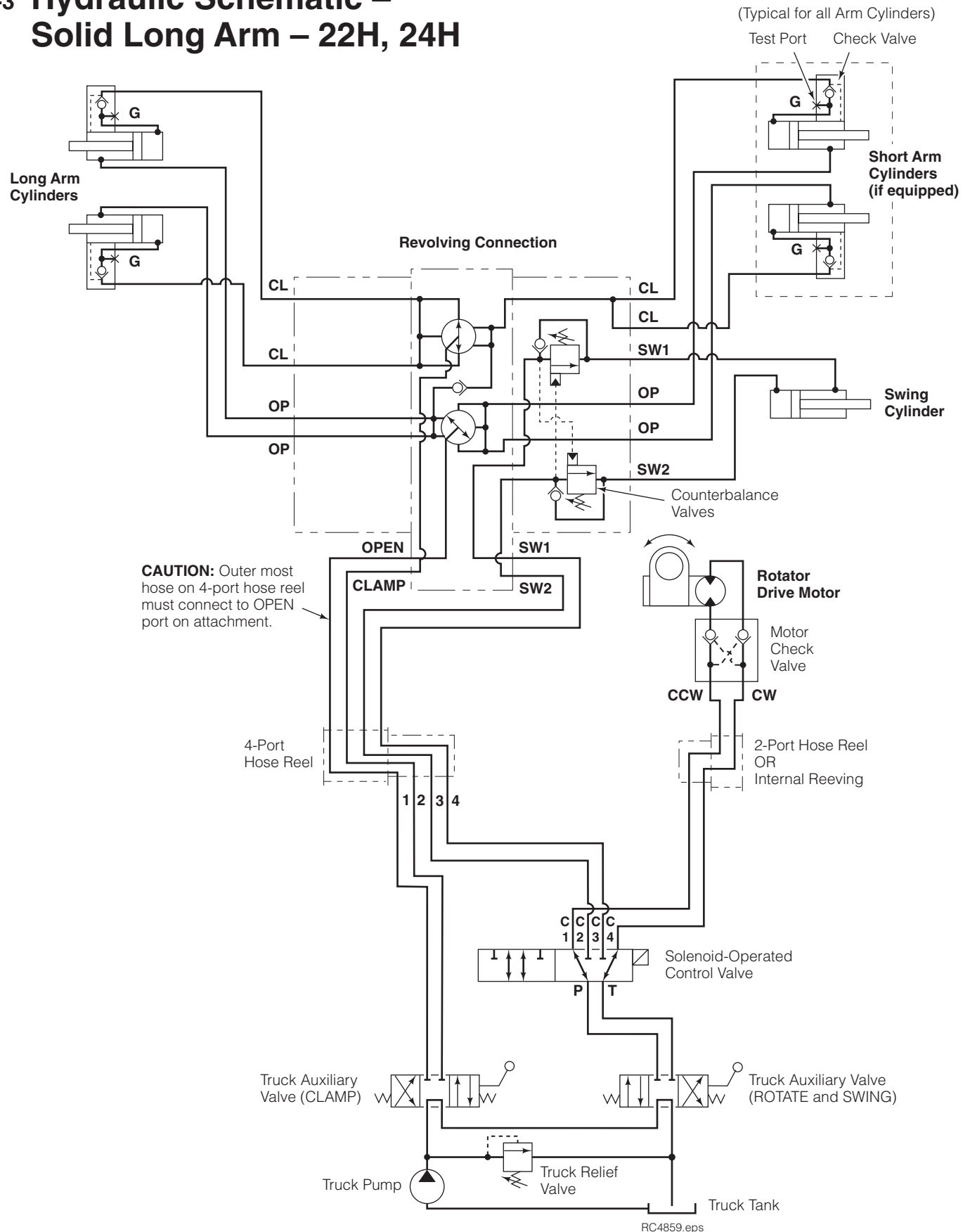


## 3.2-2 Hosing Diagram - 25H, 30H, 33H (continued)

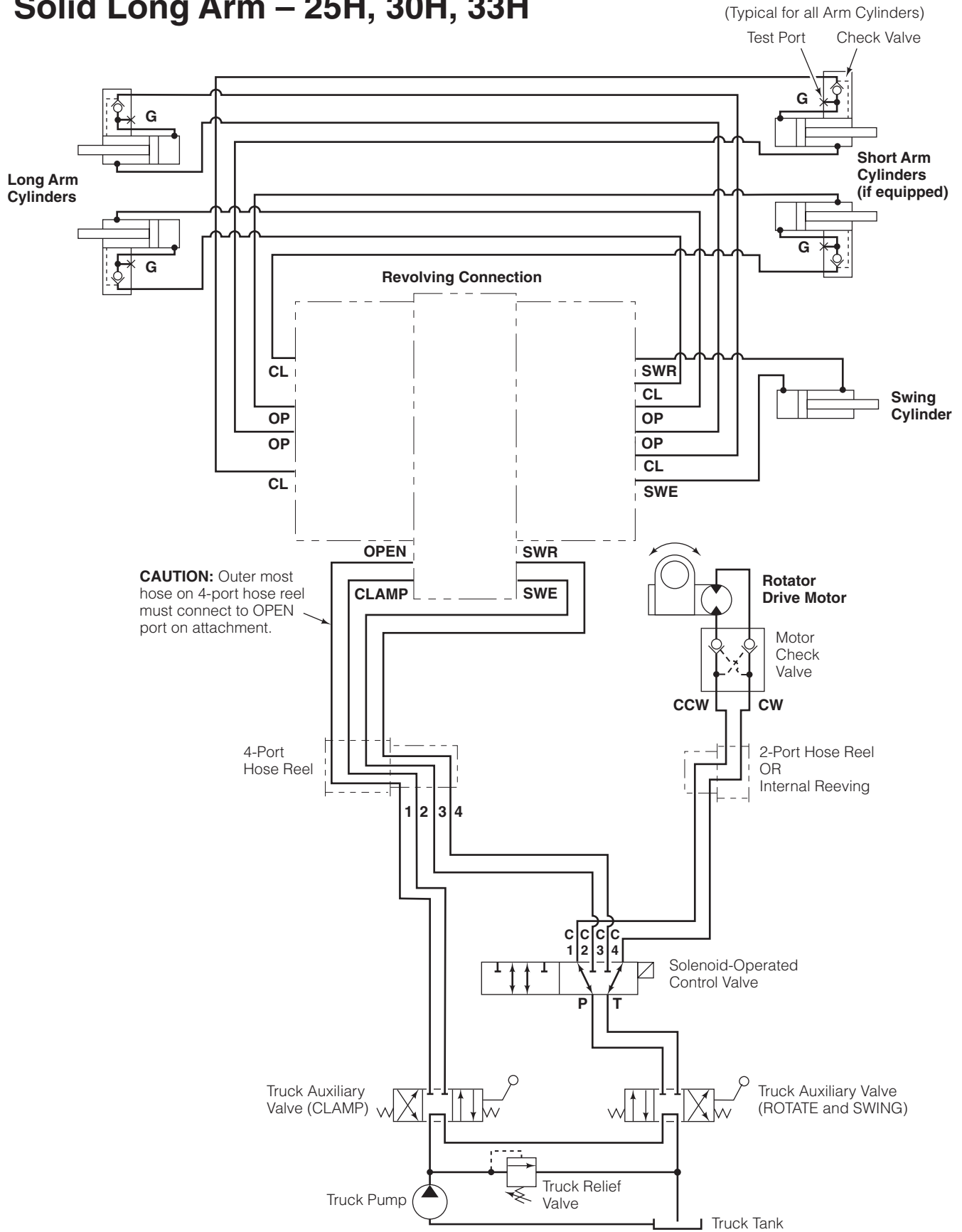
### Swing Circuit



## 3.2-3 Hydraulic Schematic – Solid Long Arm – 22H, 24H



## 3.2-4 Hydraulic Schematic – Solid Long Arm – 25H, 30H, 33H



## 3.3 Swing Function

There are five potential problem areas that can affect the clamp function:

- Operator may be handling roll incorrectly. Loads may be too heavy, exceeding capacity of attachment. Refer to Operator's Guide (Cascade part no. 210135) for suggested procedures.
- Low hydraulic pressure or flow from lift truck.
- External leaks.
- Defective solenoid coil or valve.
- Worn/defective revolving connection shaft seals, cartridge valves, cylinder seals or check valves.



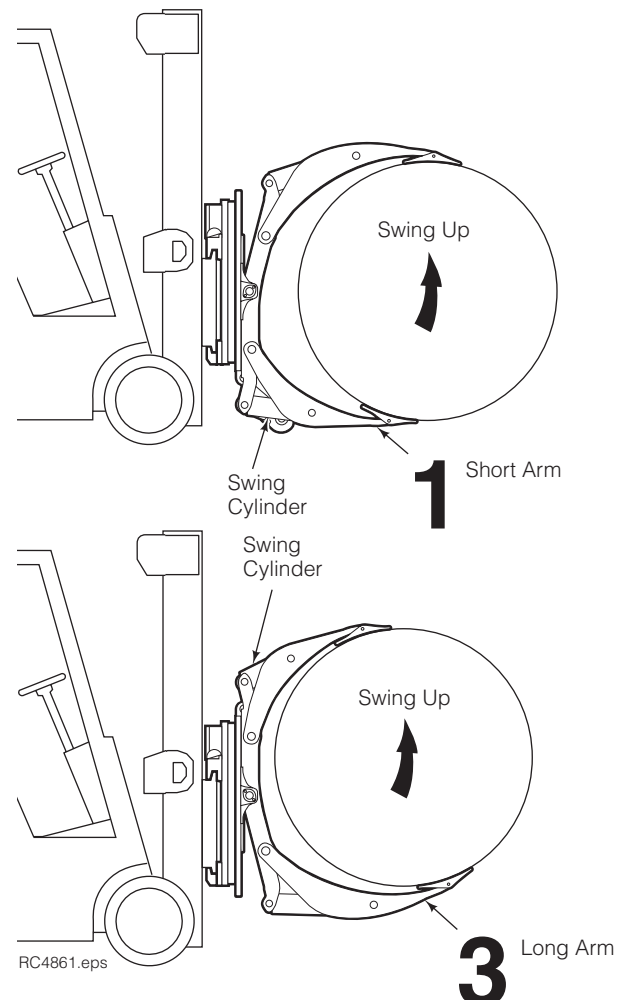
**WARNING:** Before removing hydraulic lines, relieve pressure in the hydraulic system. Turn the truck off and open the truck auxiliary control valves several times in both directions.

### 3.3-1 Supply Circuit Test

- 1 Check the pressure delivered by the truck. Refer to the truck Service Manual. The pressure must be within 100 psi (7 bar) of specified truck pressure. **Pressure to the attachment must not exceed 2300 psi (160 bar),** measured at the carriage hose terminal.
- 2 Check the flow volume at the carriage hose terminal. See Section 5.1-1 for recommended flow volumes. If the truck pressure and flow are correct, proceed with the swing circuit pressure test.

### 3.3-2 Swing Circuit Test

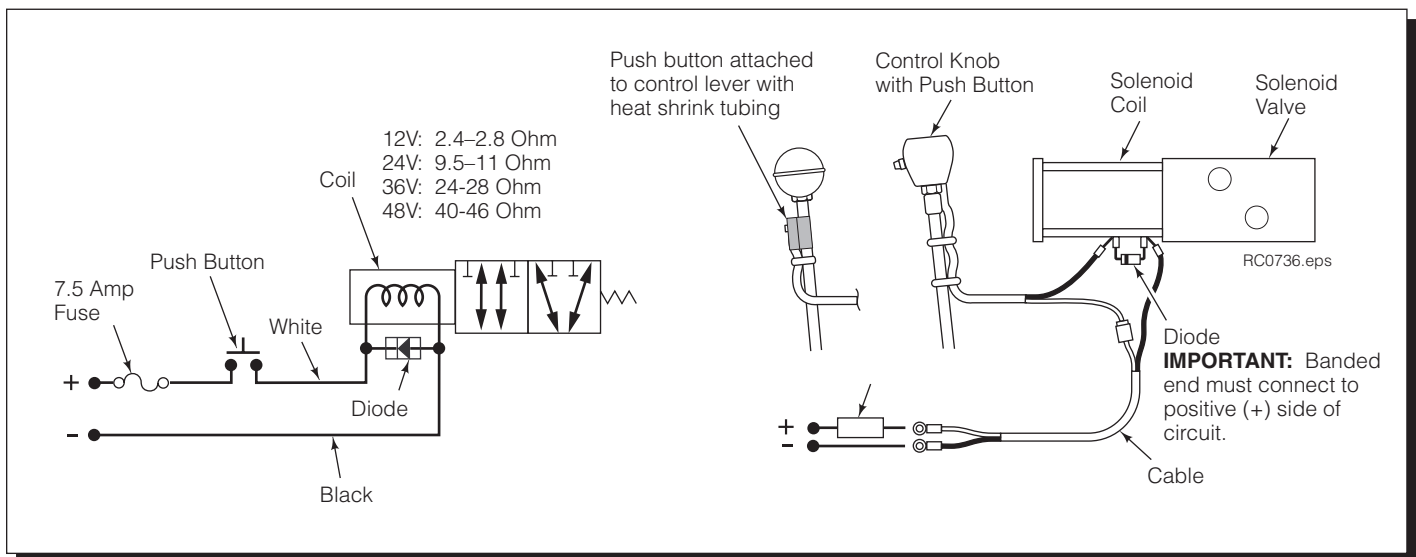
- 1 If equipped, press the solenoid button. Listen for a 'click' at the solenoid valve. If no sound is heard, first check the fuse, wiring and coil. Make sure that the valve is not jammed. Refer to Section 4.12.  
**IMPORTANT:** Solenoid-operated valves must be plumbed so that the solenoid is **energized** during the SWING EXTEND/RETRACT function.
- 2 Clamp a vertical roll of the approximate weight capacity of the attachment. Rotate 90° to position the short arm down. Extend the swing cylinder fully to swing the frame upward.
  - If the roll drifts downward, the revolving connection counterbalance valve may require service. Refer to Section 4.9-2.
  - If the roll does not drift down, continue troubleshooting.
- 3 Retract the swing cylinder to lower the roll:
  - If the roll drops suddenly, the counterbalance valve requires adjustment. Refer to Section 4.9-3.
- 4 Raise the roll and rotate 180° to position the long arm down. Retract the swing cylinder fully to swing the frame upward.
  - If the roll drifts downward, the revolving connection counterbalance valve may require service. Refer to Section 4.9-2.
  - If the roll does not drift down, continue troubleshooting.
- 5 Extend the swing cylinder to lower the roll:
  - If the roll drops suddenly, the counterbalance valve requires adjustment. Refer to Section 4.9-3.



## 3.4 Electrical Circuit (Solenoid-equipped attachments)

Use the schematic shown and follow the steps below.

- 1 Check the control knob circuit fuse. Replace as necessary.
- 2 Check for loose electrical connections at the truck ignition switch, control knob button, solenoid coil terminals and diode.
- 3 Remove the diode from the solenoid coil terminal. Test with an ohmmeter for high resistance in one direction and no resistance in the other direction. If there is no resistance in both directions, replace the diode.  
**NOTE:** When replacing the diode, the banded end must be connected to the coil and wiring as shown.
- 4 Use a voltmeter to determine if correct voltage is present at the electrical leads when the button is pressed.
  - If there is no voltage at the solenoid, troubleshoot the electrical circuit for shorts or open circuits.
  - If there is insufficient voltage to the solenoid, check the circuit for excessive voltage drop.
  - If there is sufficient voltage to the solenoid, test for coil continuity. Continue to step 5.
- 5 Test for coil continuity by placing an ohmmeter test lead on each solenoid coil terminal (ohmmeter on Rx1 scale).
  - If there is an ohmmeter reading, and the coil matches the values below for the truck voltage, the coil is good.
  - If the coil is good, but the solenoid does not 'click' when the control knob button is depressed, the solenoid cartridge may be jammed. Refer to Section 4.5.
  - If there is no ohmmeter reading, the coil is defective and should be replaced. Refer to Section 4.12.



**NOTE:** Manuals are available at [www.cascorp.com](http://www.cascorp.com) under the support tab, "Technical Support Manuals" link.

## **4.1 Arms**

To remove and service arms, contact pads and arm tips, refer to H-Series Fixed Frame Pivot Arm Paper Roll Clamp Service Manual 6078255.

## **4.2 Drive Group**

To service the drive group, refer to H-Series Fixed Frame Pivot Arm Paper Roll Clamp Service Manual 6078255.

## **4.3 Drive Motor**

To service the drive motor, refer to H-Series Fixed Frame Pivot Arm Paper Roll Clamp Service Manual 6078255.

## **4.4 Rotator Drive Check Valve**

To service the rotator drive check valve, refer to H-Series Fixed Frame Pivot Arm Paper Roll Clamp Service Manual 6078255.

## **4.5 Clamp Cylinders**

To remove and service the clamp cylinders, refer to H-Series Fixed Frame Pivot Arm Paper Roll Clamp Service Manual 6078255.

## **4.6 Base Unit**

For torque inspection and service the base unit, refer to H-Series Fixed Frame Pivot Arm Paper Roll Clamp Service Manual 6078255.

## **4.7 180° Hydraulic Stop Group**

To service and adjust the stop valve, refer to H-Series Fixed Frame Pivot Arm Paper Roll Clamp Service Manual 6078255.

## 4.8 Swing Components

### 4.8-1 Swing Frame Service

- 1 Rotate the attachment to the vertical roll handling position.
- 2 Remove the arms and clamp cylinders from the attachment as described in H-Series Fixed Frame Pivot Arm Paper Roll Clamp Service Manual 6078255. Note the location and quantity of shims between the arm and swing anchor.

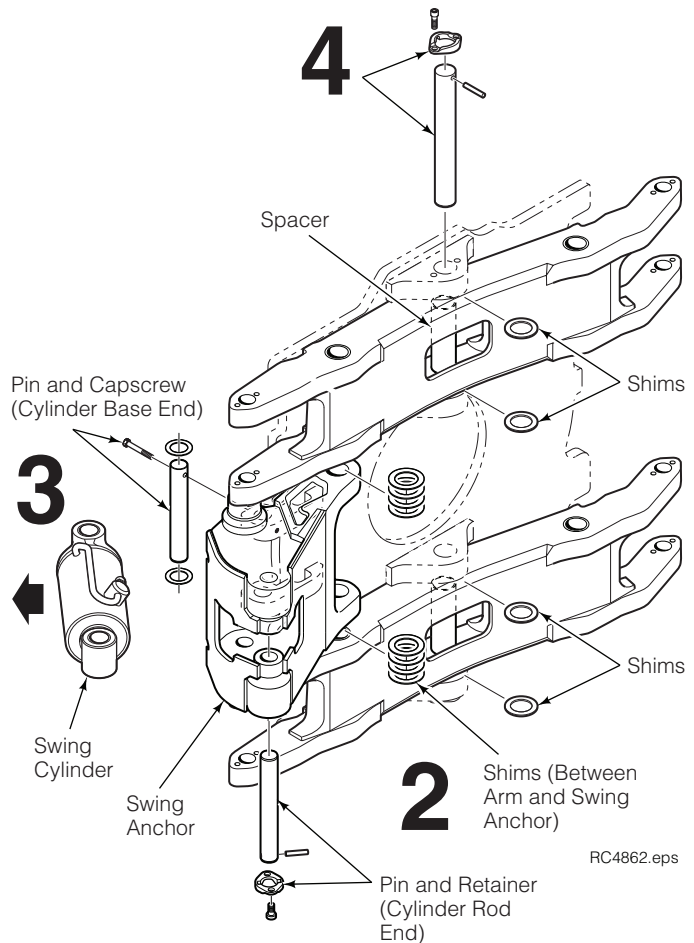
- 3 Remove the swing cylinder and swing anchor. Remove the anchor pin retainer and anchor pin from both ends of the cylinder. Note the location of the shims. For reassembly, tighten the anchor capscrews to:

**Retainer Capscrews** – 28 ft.-lbs. (38 Nm)

**Pin Capscrew** – 15 ft.-lbs. (20 Nm)

- 4 Remove the swing frame pivot pins and spacers. Note the location and quantity of shims removed. For reassembly, tighten the retainer capscrews to 28 ft.-lbs. (38 Nm).

- 5 For reassembly, reverse the above procedures.



### 4.8-2 Frame Bushing Service

**NOTE:** Bushings require replacement if bushing-to-pin clearance exceeds 1/16 in. (1.6 mm).

- 1 Remove the swing frames from the faceplate as described in Section 4.8-1.
- 2 Remove the bushings from the frames using a bushing driver.

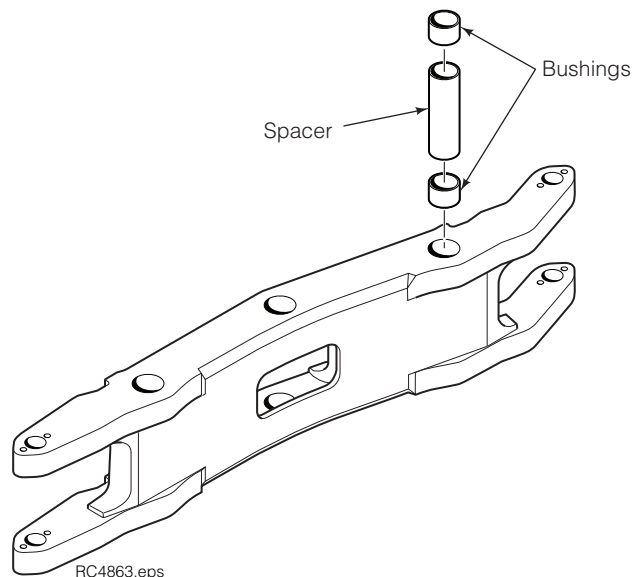
**NOTE:** Bushing drivers can be machined using the dimensions shown in the chart below.

- 3 Install new bushings in the frames. See chart below.
- CAUTION:** Bushings may be damaged if installed without a proper bushing driver.

Bushing Driver Dimensions		
	A Bearing ID	B Driver OD
22H, 24H	1.38 in. (35.0 mm)	1.57 in. (40.0 mm)
25H, 30H, 33H	1.57 in. (40.0 mm)	1.77 in. (45.0 mm)

This diagram shows the dimensions for the bushing driver. The total length is 9.64 in. (245 mm). The bearing ID (A) is 1.38 in. (35.0 mm) for 22H, 24H and 1.57 in. (40.0 mm) for 25H, 30H, 33H. The driver OD (B) is 1.57 in. (40.0 mm) for 22H, 24H and 1.77 in. (45.0 mm) for 25H, 30H, 33H. The file name RC0362.eps is noted at the bottom right.





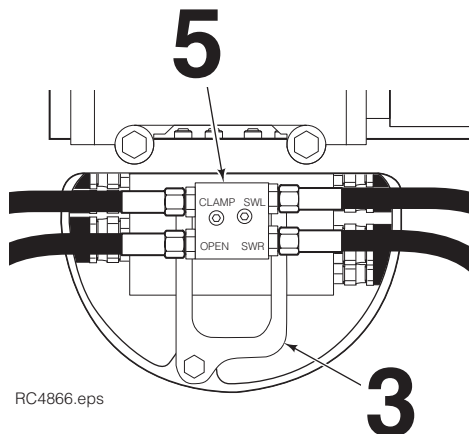
## 4.9 Revolving Connection

### 4.9-1 Revolving Connection Removal and Installation

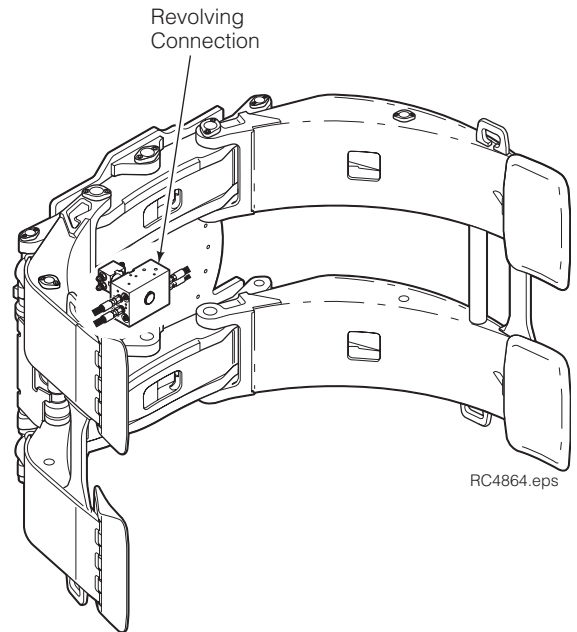


**WARNING:** Before removing any hydraulic lines, relieve pressure in the hydraulic system. Turn the truck off and open the truck auxiliary control valves several times in both directions.

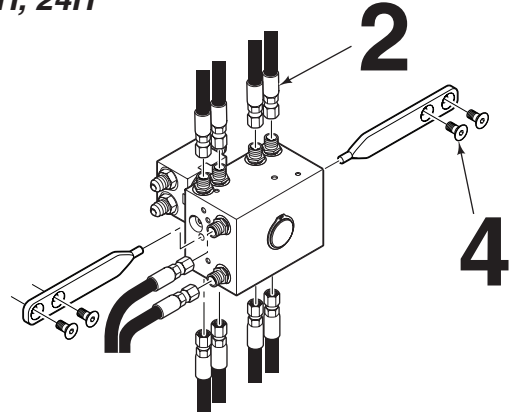
- 1 Remove the attachment from the lift truck as described in H-Series Fixed Frame Pivot Arm Paper Roll Clamp Service Manual 6078255, Section 4.1.
- 2 Disconnect the hoses and tubes (if equipped) from the front and rear of the revolving connection. Tag for reassembly.
- 3 If equipped, remove the yoke supporting the end block on the rear of the revolving connection. For reassembly, tighten the capscrews to 30 ft.-lbs. (40 Nm).
- 4 Remove the four capscrews and support brackets from the revolving connection. For reassembly, tighten the capscrews to 30 ft.-lbs. (40 Nm).
- 5 For reassembly, reverse the above procedures except as follows:
  - **22H, 24H** – Position the revolving connection on the faceplate where the stamps 'SHORT ARM' and 'LONG ARM' are facing the appropriate arms.
  - **22H, 24H** – Position the end block/shaft assembly so that the stamping 'CLAMP' and 'SWL' are on top.
  - **25H, 30H, 33H** – Position the revolving connection on the faceplate with the counterbalance valve side facing the short arm side.
  - **25H, 30H, 33H** – Position the end block/shaft assembly so that the stamping 'OPEN' and 'SWR' are on top.
  - Service revolving connection in a clean work area.



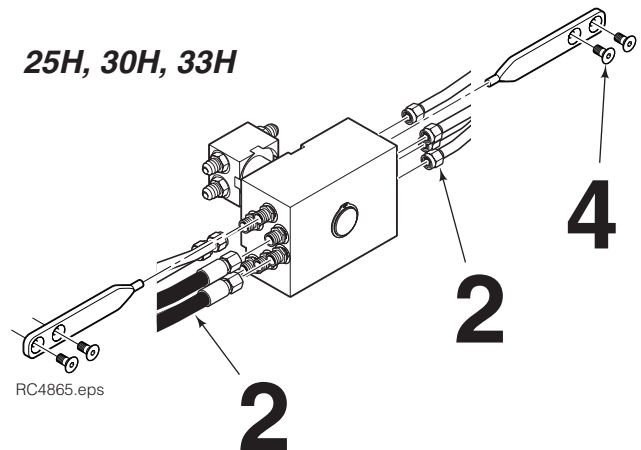
**End Block Yoke Support**  
(if equipped)



**22H, 24H**



**25H, 30H, 33H**

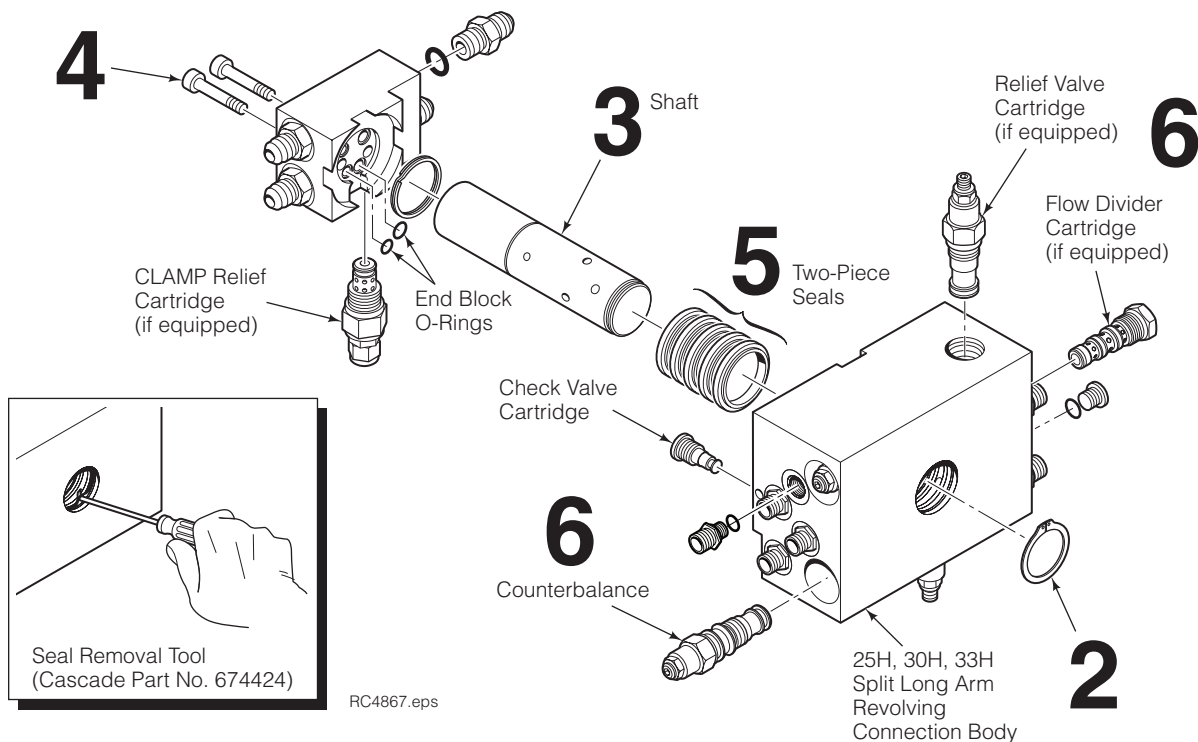


## 4.9-2 Revolving Connection Service

- 1 Remove the revolving connection from the attachment as described in Section 4.9-1.
- 2 Remove the spiral snap ring from the front of the shaft.  
**CAUTION:** Remove all burrs and paint from the exposed shaft surface prior to removal from the body. Burrs or paint chips pulled through the bore may permanently damage the valve body.
- 3 Remove the shaft from the body.
- 4 Remove the end block from the shaft and remove the relief cartridge (if equipped). For reassembly, use O-ring lube or petroleum jelly to hold the O-rings in place between the shaft and end block. Apply Loctite 242 (blue) to the capscrews and tighten to 15 ft.-lbs. (20 Nm).
- 5 Remove the two-piece seals from the revolving connection body using brass hook-type tools (Cascade Part No. 674424).  
**NOTE:** Do not scratch or damage the grooved surfaces.
- 6 Remove the cartridges from the revolving connection body.
- 7 Remove the cartridge O-rings and back-up rings.

- 8 Clean all parts with clean solvent and inspect the following areas:

- Check the sealing surface of the shaft for minor surface imperfections. Remove with 320-grit emery paper. Sand the shaft radially (around), not along the length. Break the edges on the outer end of the shaft and the snap ring grooves with 320-grit emery paper. If severely worn, replace the shaft.
- Check the seal grooves in the body for sharp nicks or projections. Remove minor imperfections with 320-grit emery paper. If severely worn, replace the body.

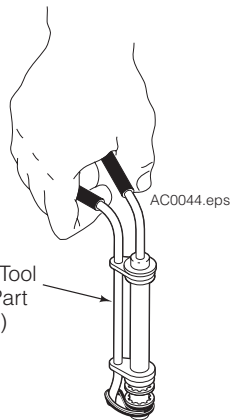


## 4.9-2 Revolving Connection Service (Continued)

9 For reassembly, reverse the previous procedures with the following exceptions:

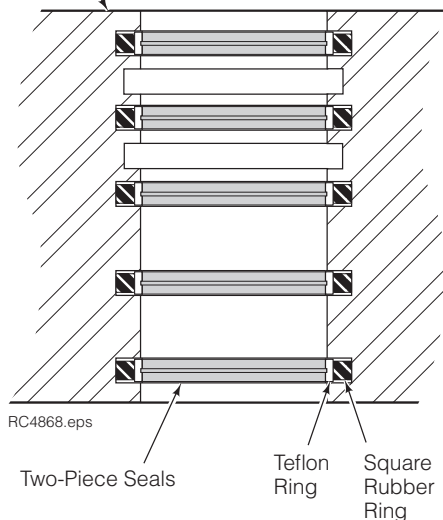
- Clean all traces of oil and moisture from the 2-piece seal grooves inside the revolving connection body using a non-petroleum based cleaner. (Example: electronic contact cleaner)
- Clean hands thoroughly to remove all traces of oil and moisture prior to 2-piece seal installation.
- A) Install the square rubber rings into the revolving connection body grooves.  
B) Install the Teflon rings on top of the rubber rings.
- IMPORTANT:** Form the seals into a 'kidney' shape as shown to install. Avoid sharp bends. Press the seals into the grooves using finger pressure.
- Lubricate the shaft and body with hydraulic fluid prior to reassembly.
- Rotate the body and apply gentle pressure when installing the shaft to prevent damage to the seals.
- Install new O-rings and back-up rings on the cartridges (if equipped) as shown.

Form Teflon ring into 'kidney' shape to install

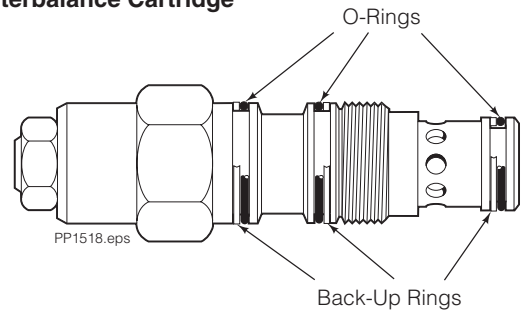


Seal Install Tool  
(Cascade Part  
No. 599514)

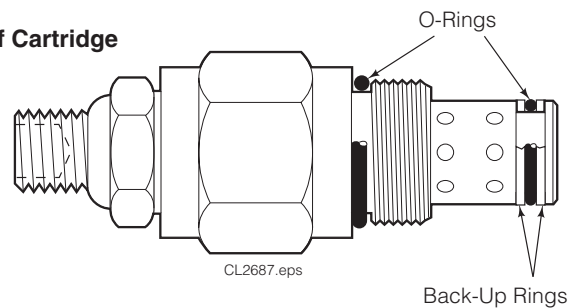
Revolving Connection Body



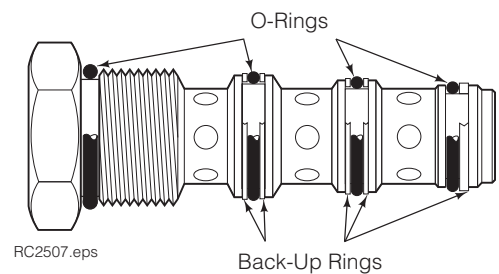
### Counterbalance Cartridge



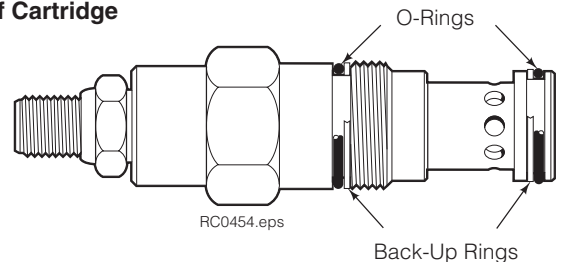
### Relief Cartridge



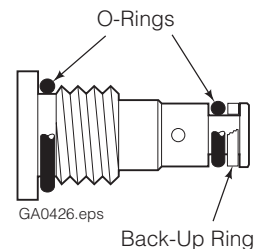
### Flow Divider Cartridge



### Relief Cartridge

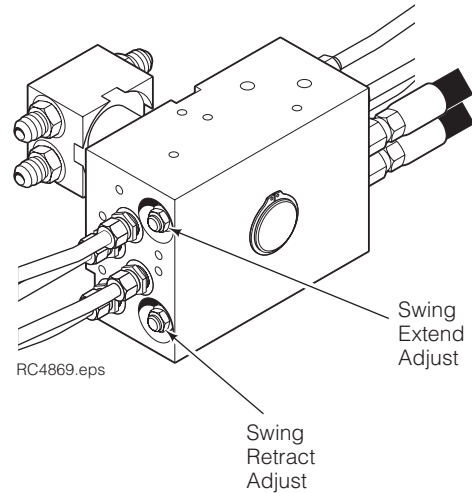


### Shuttle Check Cartridge



## 4.9-3 Swing Frame Counterbalance Valve Adjustment

- 1 Rotate the attachment to the bilge (horizontal) position with the short arm down.
- 2 Activate the SWING function and check for smooth extend and retract at equal, moderate speeds.
  - If attachment moves **upward** suddenly when SWING EXTEND function is activated, adjust cartridge labeled 'Swing Extend Adjust' (see illustration). Loosen nut and turn adjustment screw counterclockwise (CCW) to reduce swing speed or clockwise (CW) to increase swing speed.
  - If attachment moves **downward** suddenly when SWING RETRACT function is activated, adjust cartridge labeled 'Swing Retract Adjust' (see illustration). Loosen nut and turn adjustment screw counterclockwise (CCW) to reduce swing speed **or** clockwise (CW) to increase swing speed.



25H-33H Revolving Connection shown

## 4.10 Swing Cylinder

### 4.10-1 Swing Cylinder Removal

- 1 Position the swing cylinder rod to midstroke. Rotate the attachment to the vertical roll handling position.



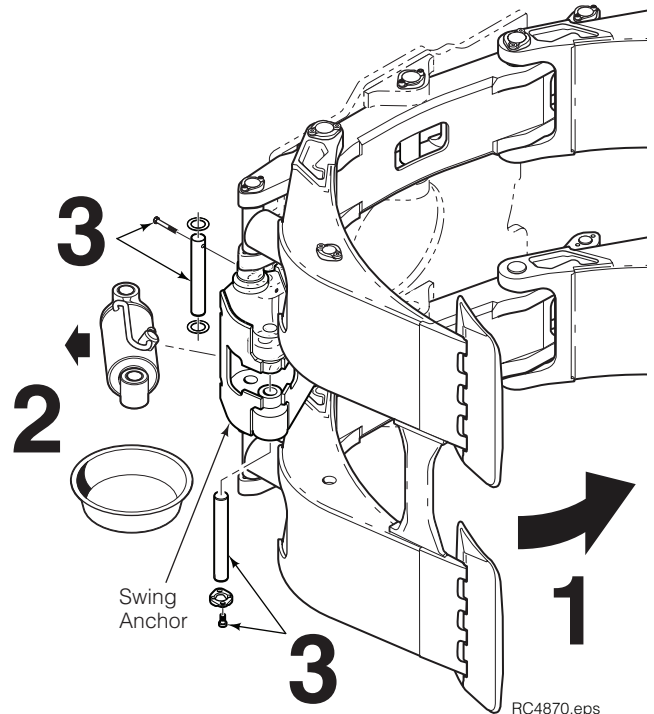
**WARNING:** Before removing hydraulic hoses, relieve pressure in the hydraulic system. Turn the truck off and open the truck auxiliary control valves several times in both directions.

- 2 Place a drip pan under the cylinder. Disconnect the hoses from the cylinder ports. Plug the hose ends and tag for reassembly.
- 3 Remove the swing anchor pin retainer and anchor pin from both ends of the cylinder. Remove the cylinder and note the location of the shims. For reassembly, tighten the anchor capscrews to:

**Retainer Capscrews** – 28 ft.-lbs. (38 Nm)

**Pin Capscrew** – 15 ft.-lbs. (20 Nm)

- 4 Service the cylinder as described in Section 4.11.



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### 4.10-2 Swing Cylinder Bushing Service

**NOTE:** Bushings require replacement if the clearance between the bushing and pin exceeds 1/16 in. (1.6 mm)

- 1 Remove the cylinder from the attachment as described in Section 4.10-1.
- 2 Remove the bushings from the cylinder using a bushing driver.

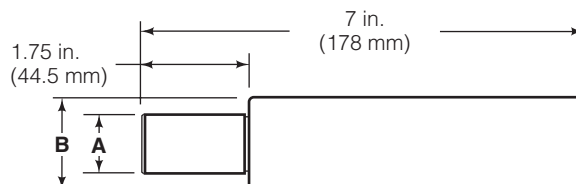
**NOTE:** Bushing drivers can be machined using the dimensions shown below.

- 3 Install new bushings in the cylinder. Replace with the same number of bushings removed.

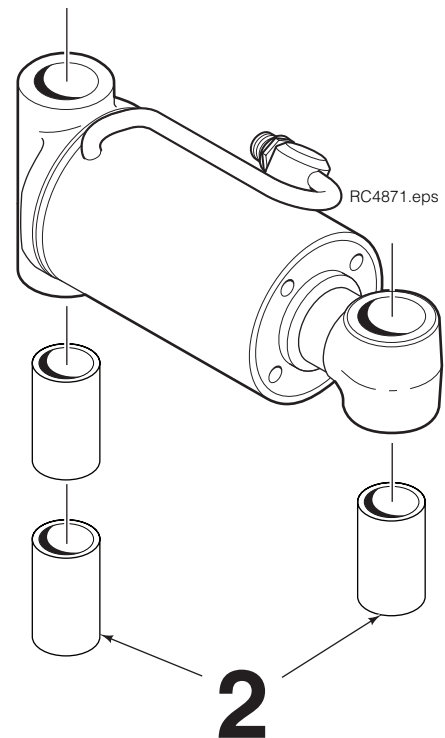
**CAUTION:** Bushings may be damaged if installed without a proper bushing driver.

**Bushing Driver Dimensions**

	A Bearing ID	B Driver OD
20H-33H	1.18 in. (30.0 mm)	1.38 in. (35.0 mm)



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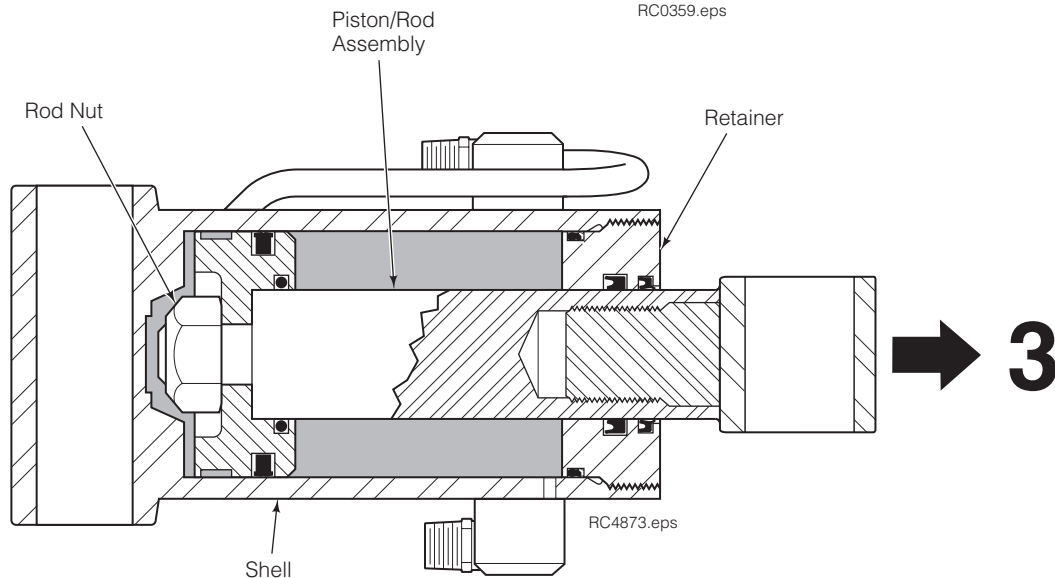
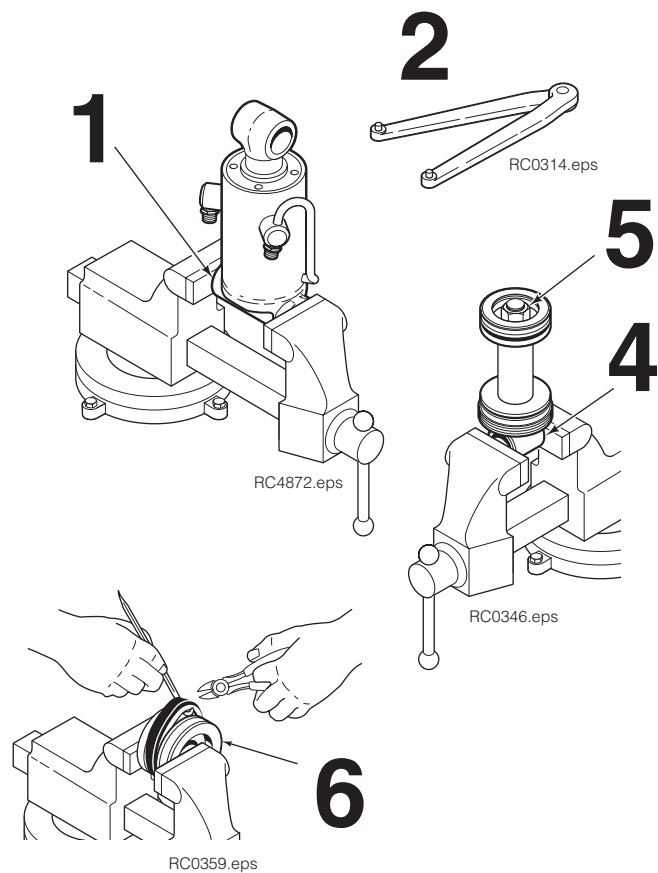
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## 4.11 Cylinder Service

### 4.11-1 Cylinder Disassembly

- 1 Clamp the cylinder in a soft-jawed vise at the extreme base end. Do not clamp on the shell.
- 2 Unscrew and remove the retainer using a pin-type spanner wrench (Part No. 679917), as shown.
- 3 Remove the rod assembly from the cylinder.
- 4 Clamp the rod assembly across the rod end.  
**CAUTION:** Do not clamp on the cylinder rod sealing surface.
- 5 Remove the piston nut. Remove the piston from the cylinder rod.
- 6 Place the piston or retainer in a soft-jawed vise to remove the seals. Pry the seals or O-rings up with a brass seal removal tool (Part No. 674424) and cut the seals to remove them.

**CAUTION:** Do not scratch seal grooves.

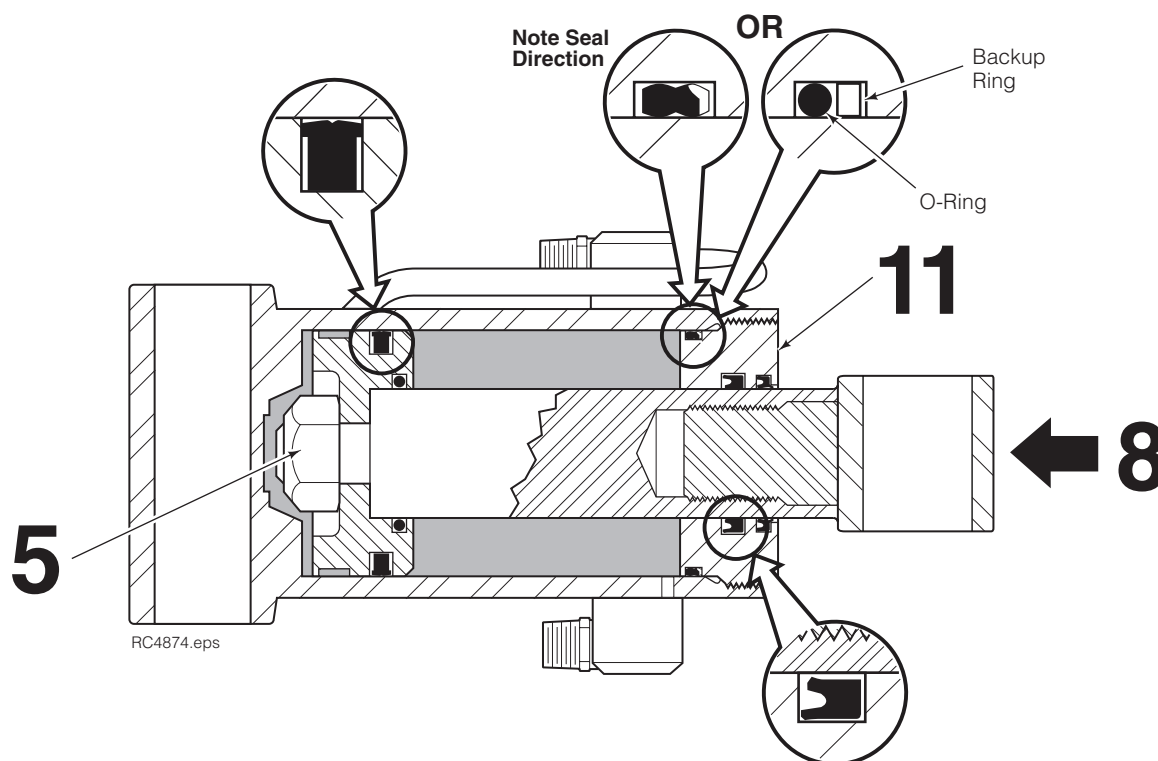
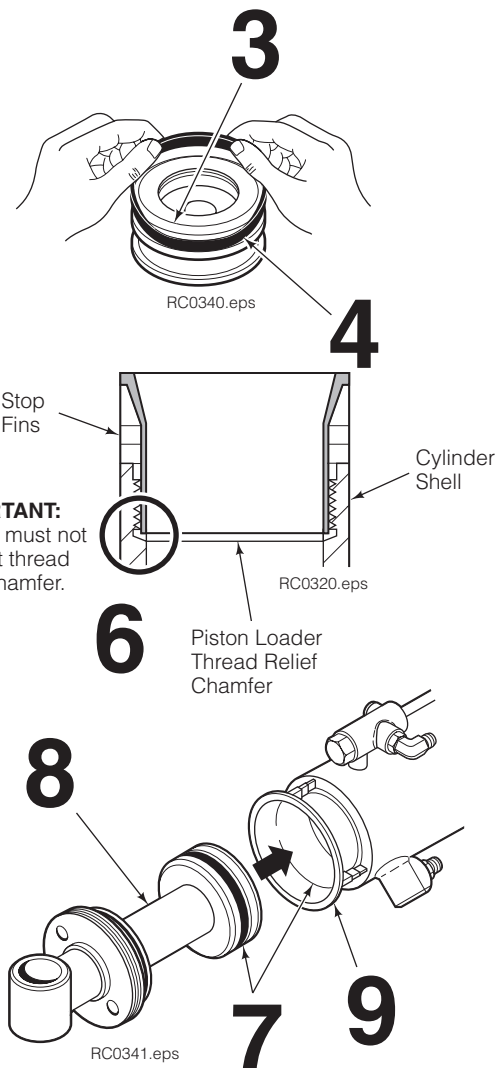


### 4.11-2 Cylinder Inspection

- Inspect the rod, piston and retainer for nicks or burrs. Minor nicks or burrs may be removed with emery cloth. If they cannot be removed, replace the part.
- Inspect the cylinder shell bore and remove any minor nicks or burrs with a butterfly. If the nicks or burrs cannot be removed, replaced the part.
- Inspect the outside of the shell for any deformities or cuts that could impair performance or cause leaks under pressure. If necessary, replace the part.

## 4.11-3 Cylinder Reassembly

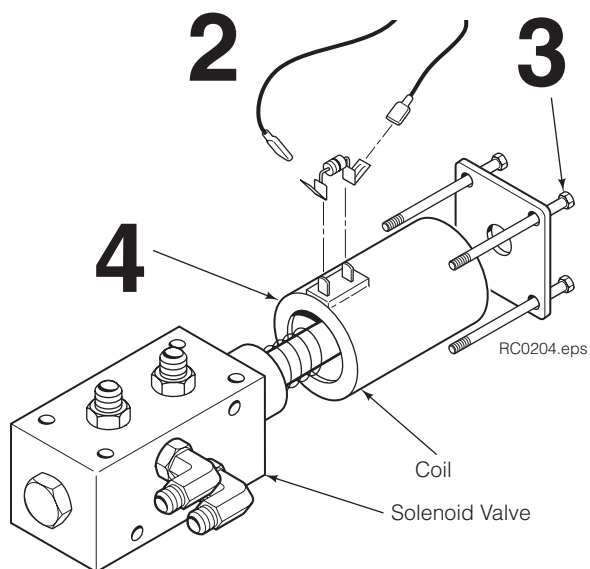
- 1 Lubricate all new seals and O-rings with petroleum jelly.
- 2 Note the direction of the U-cup seals. Pressure seals must always be installed with the lip toward the high pressure side of the cylinder.
- 3 Polish the piston and retainer chamfer angle with emery cloth to facilitate seal installation.
- 4 Install new seals on the piston and retainer. Hook one side of the seal in the groove and carefully work it over the piston or retainer as shown.
- 5 Install the retainer and then the piston on the cylinder rod. Tighten the piston retaining nut to a torque of 400 ft.-lbs. (540 Nm).
- 6 Place the piston loader furnished with the seal kit into the cylinder shell. Make sure that the loader covers all the cylinder shell threads but does not contact the thread relief chamfer. Trim the loader stop fins if more engagement is needed.  
**CAUTION:** The piston will not enter the cylinder shell properly if the loader contacts the thread relief chamfer.
- 7 Apply a thick film of petroleum jelly to the inside of the cylinder shell, piston loader and piston seals.
- 8 Using a rubber mallet, tap the piston/rod assembly through the loader into the cylinder shell.
- 9 Remove the loader by cutting down one side and pulling it out of the cylinder bore.
- 10 Apply a thick film of petroleum jelly to the inside of the cylinder shell, and to the retainer and seal.
- 11 Screw the retainer into the cylinder shell. Tighten the retainer to a torque of 400 ft.-lbs. (540 Nm).



## 4.12 Solenoid Valve

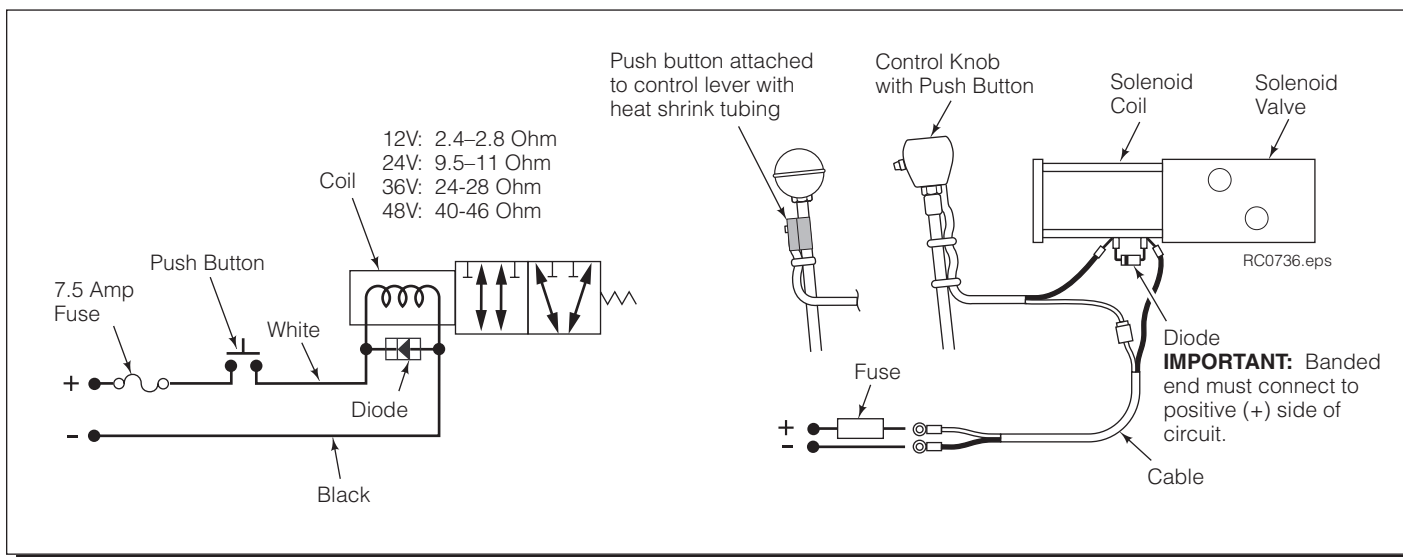
### 4.12-1 Coil Service

- 1 Disconnect the wires and diode from the coil terminals.
- 2 Remove the end cover capscrews and remove the end cover and coil. Note the position of the coil terminals.
- 3 Install the new coil and end cover. Verify that the terminals are positioned correctly.
- 4 For reassembly, reverse the above procedures except as follows:
  - Refer to electrical schematic below for correct wire and diode installation.



### 4.12-2 Valve Service

- Check the plunger within the valve body for freedom of movement. Press end button on coil to assure that valve is not jammed or damaged. If problems are found, replace solenoid valve as a complete assembly.





## 5.1 Specifications

### 5.1-1 Hydraulics

#### Truck Relief Setting

2300 psi (160 bar) Maximum

#### Truck Flow Volume <sup>①</sup>

H-Series	Min. <sup>②</sup>	Recommended	Max. <sup>③</sup>
<b>Clamp &amp; Rotate</b>	5 GPM (18 L/min.)	10 GPM (37 L/min.)	15 GPM (56 L/min.)
<b>Swing</b>	1 GPM (4 L/min.)	2 GPM (8 L/min.)	3 GPM (12 L/min.)

① Cascade Roll Clamps are compatible with SAE 10W petroleum base hydraulic fluid meeting Mil. Spec. MIL-0-5606 or MIL-0-2104B. Use of synthetic or aqueous base hydraulic fluid is not recommended. If fire resistant hydraulic fluid is required, special seals must be used. Contact Cascade.

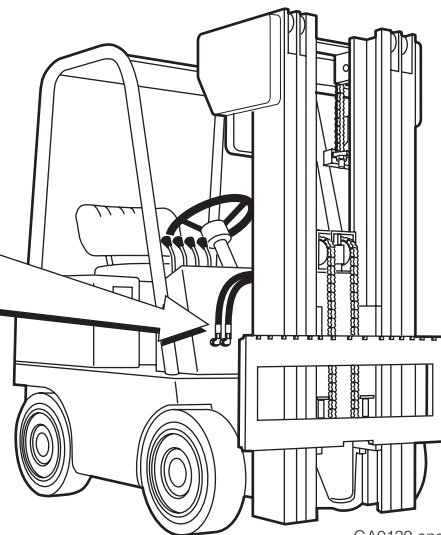
② Flow less than recommended will result in a rotate speed less than 2 RPM.

③ Flow greater than maximum can result in excessive heating, reduced system performance and short hydraulic system life.

#### Hoses and Fittings

**ROTATE Function** – No. 8 with 13/32 in. (10 mm) minimum ID.

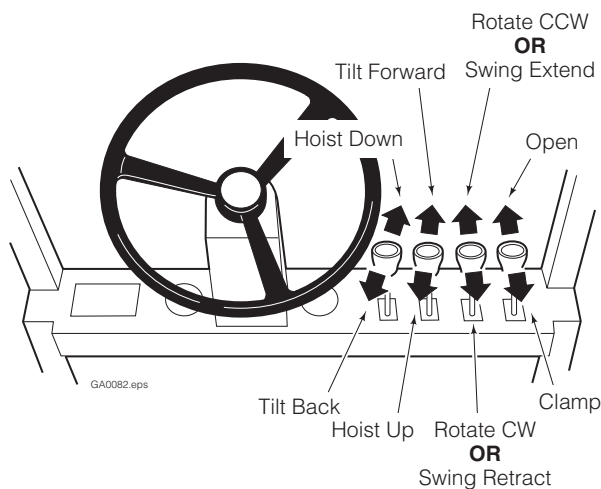
**CLAMP & SWING Function** – No. 8 with 13/32 in. (10 mm) minimum ID.



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### 5.1-2 Auxiliary Valve Functions

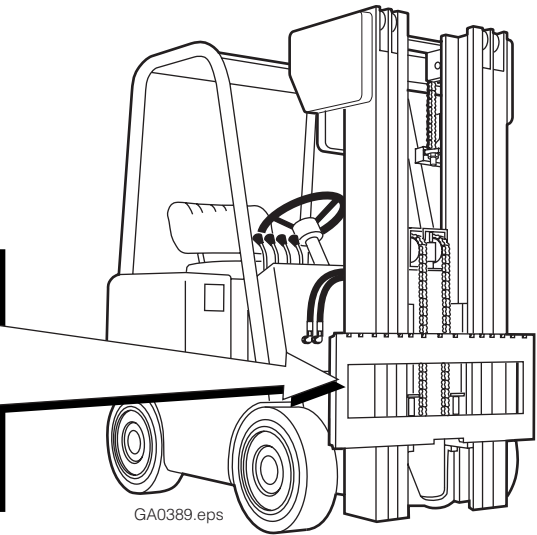
Check for compliance with ANSI (ISO) standards:



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5.1-3 Truck Carriage

	Carriage Mount Dimension (A) ITA (ISO)		
		Minimum	Maximum
	<b>Class III</b> <b>Class IV</b>	18.68 in. (474.5 mm) 23.44 in. (595.5 mm)	18.74 in. (476.0 mm) 23.50 in. (597.0 mm)



## 5.1-4 Torque Values

Fastener torque values for the H-Series Swing Frame Roll Clamps are shown in the table below in both US and Metric units. All torque values are also called out in each specific service procedure throughout this manual

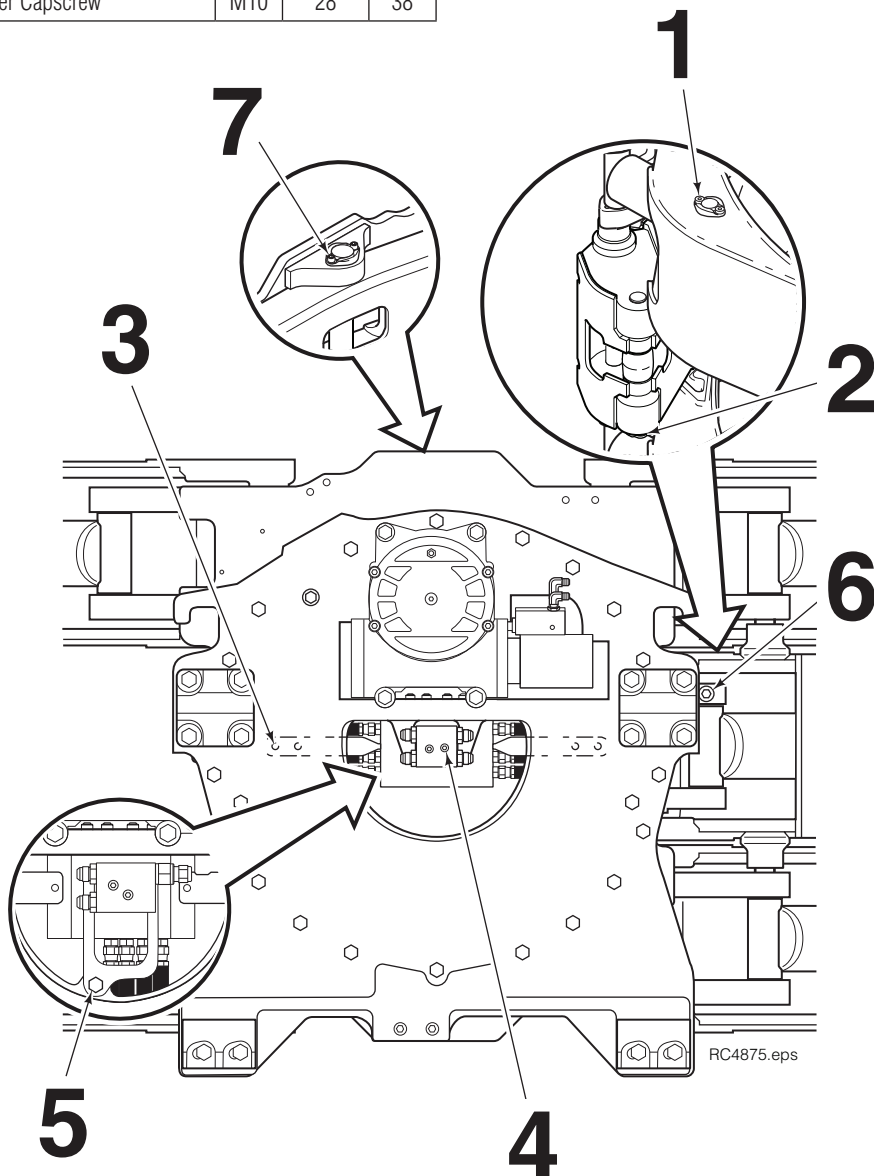
**NOTE:** Refer to H-Series Fixed Frame Pivot Arm Paper Roll Clamp Service Manual 6078255 for non-swing related torque values.

**NOTE:** All fasteners have a torque value range of  $\pm 10\%$  of stated value.

**NOTE:** Manuals are available at [www.cascorp.com](http://www.cascorp.com) under the support tab, "Technical Support Manuals" link.

Ref.	Fastener Location	Size	Ft.-lbs.	Nm
<b>1</b>	Arm Retainer Capscrew	M10	28	38
<b>2</b>	Swing Anchor Retainer Capscrew	M10	28	38
<b>3</b>	Support Capscrew	M10	30	40
<b>4</b>	End Block Capscrew ■	M8	15	20
<b>5</b>	Yoke Retainer Capscrew	M10	30	40
<b>6</b>	Anchor Pin Capscrew	M8	15	20
<b>7</b>	Swing Frame Retainer Capscrew	M10	28	38

■ Use Loctite 242 (Blue)



**Do you have questions you need**

**answered right now?** Call your nearest Cascade Service Department.

Visit us online at [www.cascorp.com](http://www.cascorp.com)

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