

# ***INSTALLATION INSTRUCTIONS***

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***and PERIODIC MAINTENANCE***

## ***40J-87J***

***Non-Revolving Clamps***

***Includes:***

***Non-Sideshifting Clamps,  
Sideshifting Clamps and  
Fork Positioning Clamps***

***Manual Number 6985759***

**cascade<sup>®</sup>  
corporation**

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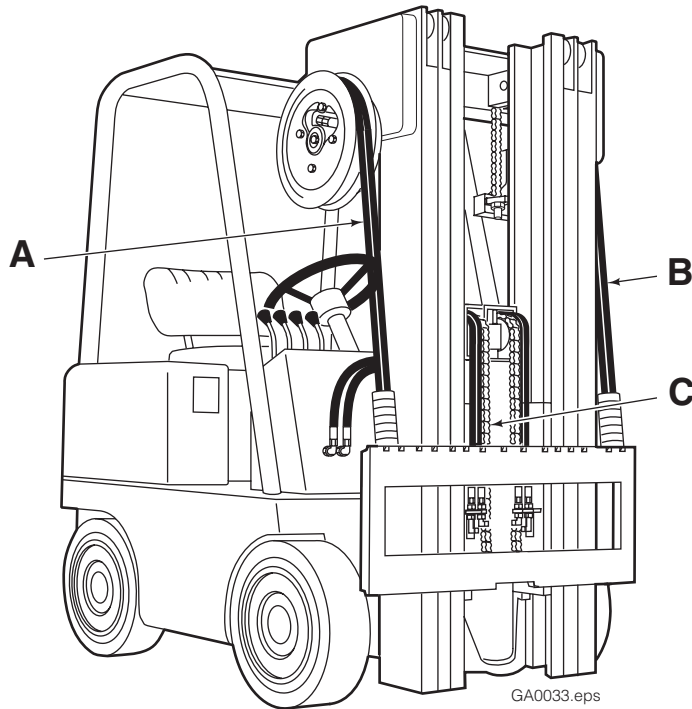
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<u>Recommended Hydraulic Supply</u>	<u>1</u>	This manual provides instructions for installing Cascade 40J-87J Non-Revolving Clamps.
<u>Truck Requirements</u>	<u>2</u>	Follow the suggested installation procedures for best results. If you have any questions or need more information, contact your nearest Cascade Service Department for assistance. Refer to back cover.
<u>Installation</u>	<u>3</u>	Read the <b>WARNING</b> Statements placed throughout this Manual to emphasize safety during attachment installation.
<u>Periodic Maintenance</u>	<u>10</u>	<b>IMPORTANT:</b> Field alterations may impair performance or capability and could result in loss of warranty. Consult Cascade for any required modifications.

# RECOMMENDED HYDRAULIC SUPPLY

J-Series Non-Revolving Clamps provide the best performance with one of the hydraulic supply arrangements shown below. Refer to *Cascade Hose & Cable Reel Selection Guide*, Part No. 212199, to select the correct hose reel for the mast and truck. The hose and fitting requirements are:

- All hoses and fittings for CLAMP and SIDESHIFT functions should be at least No. 6 (M8) with a minimum internal diameter of 0.28 in. (7 mm).



## Non-Sideshifting

### A or B

RH or LH THINLINE™ 2-port Hose Reel Group.

### OR

C Mast single internal hose reeving group.

## Sideshifting

### A and B

RH and LH THINLINE™ 2-port Hose Reel Groups.

### OR

C Mast double internal hose reeving group.

# TRUCK REQUIREMENTS

## Truck Relief Setting (see attachment nameplate)

### Low Pressure

2250 psi (155 bar, 15.5 MPa) **Recommended**  
 2740 psi (189 bar, 18.9 MPa) **Maximum**

### High Pressure

2760 psi (190 bar, 19.0 MPa) **Recommended**  
 3625 psi (250 bar, 25.0 MPa) **Maximum**

**NOTE:** The attachment valve has separate pressure relief control for CLAMP and SIDESHIFT functions, refer to Installation Step 11 for adjustment.

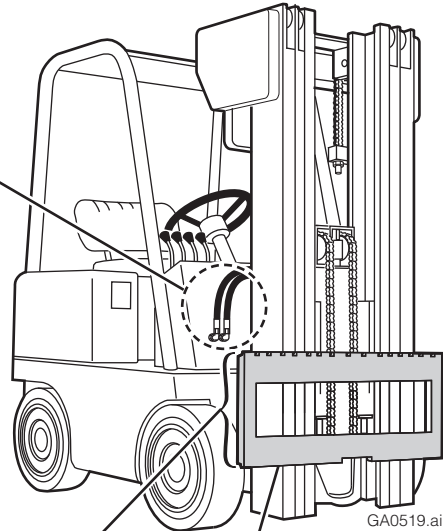
## Truck Flow Volume <sup>①</sup>

	Min. <sup>②</sup>	Recommended	Max. <sup>③</sup>
<b>CLAMP</b>	10 GPM (38 L/min.)	15 GPM (57 L/min.)	35 GPM (133 L/min.)
<b>SIDESHIFT</b>	5 GPM (19 L/min.)	10 GPM (38 L/min.)	15 GPM (57 L/min.)

- ① Cascade J-Series Non-Revolving 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 reduced system performance.
- ③ Flow greater than maximum can result in excessive heating, reduced system performance and short hydraulic system life.



**WARNING:** Rated capacity of the truck/attachment combination is a responsibility of the original truck manufacturer and may be less than that shown on the attachment nameplate. Consult the truck nameplate.



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## Carriage

Clean carriage bars and inspect carriage bars. Make sure the bars are parallel and that ends are flush. Repair any damaged notches.

## Carriage Mount Dimension (A) ITA (ISO)

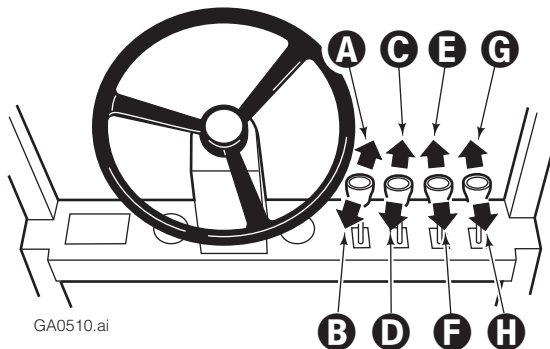


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	Minimum	Maximum
<b>Class III</b>	18.68 in. (474.5 mm)	18.74 in. (476.0 mm)
<b>Class IV</b>	23.44 in. (595.5 mm)	23.50 in. (597.0 mm)

## Auxiliary Valve Functions

Check for compliance with ANSI (ISO) standards:



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### Main Functions

<b>A</b> Hoist Down	<b>C</b> Tilt Forward
<b>B</b> Hoist Up	<b>D</b> Tilt Back

### Auxiliary Functions

<b>E</b> Sideshift Left	<b>G</b> Release <b>or</b> Open/Spread Forks
<b>F</b> Sideshift Right	<b>H</b> Clamp <b>or</b> Close Forks



**WARNING:** Truck control handle and attachment function activation shown here conforms to ANSI B56.1 (ISO 3691) recommended practices. Failure to follow these practices may lead to serious bodily injury or property damage. End user, dealer and OEMs should review any deviation from the practices for safe operation.

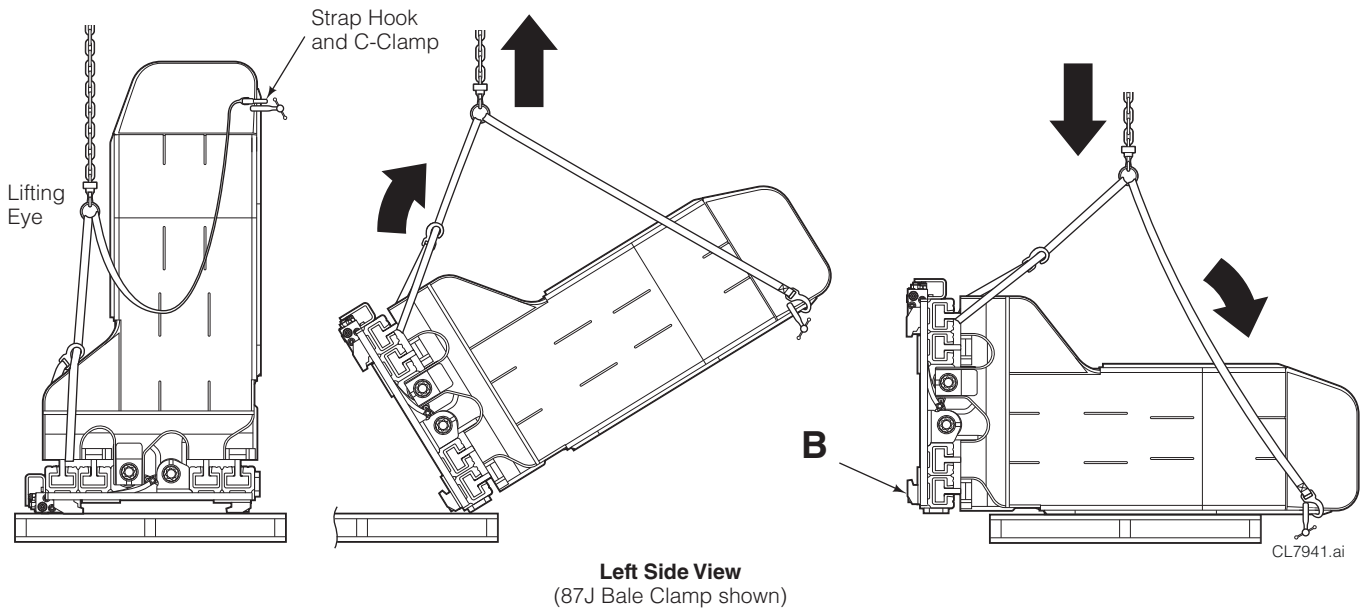
# INSTALLATION

Follow the steps shown to install the attachment on the truck.  
 Read and understand all **WARNING** and **CAUTION** statements.  
 If a procedure is not understood, ask a supervisor, or call the  
 nearest Cascade Service Department for assistance.

## 1 Prepare Attachment

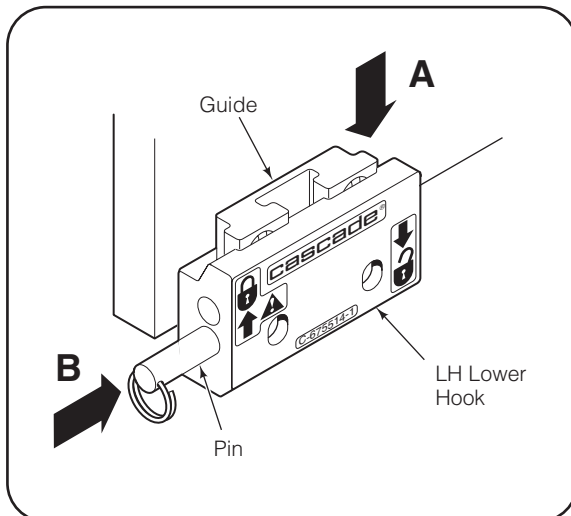
- A** Remove banding. If required, set the attachment upright on pallet. Use multiple straps (or chains) as necessary.
- B** If equipped, remove bolt-on lower mounting hooks.

**WARNING:** Verify that the overhead hoist and chains or straps are rated for the weight of the attachment. Refer to nameplate for attachment weight.

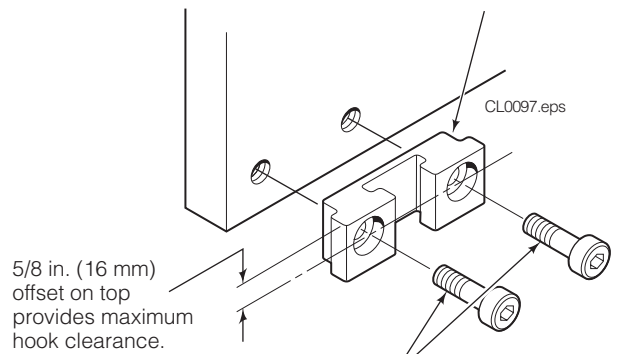


## 2 Unlock quick-change lower mounting hooks, if equipped

- A** Remove pin and drop hooks into unlocked position.
- B** Reinstall pin in lower hole.



**NOTE:** Guides can be reversed to change hook-to-carriage clearance. Refer to lower hook installation, Step 6.



Tighten capscrews to:  
**Class III** – 202 ft.-lbs. (274 Nm)  
**Class IV** – 395 ft.-lbs. (535 Nm)

# INSTALLATION

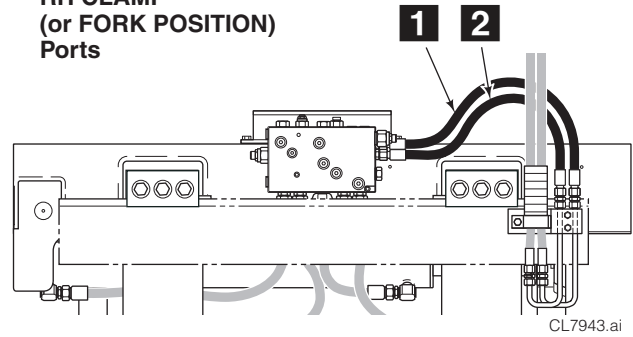
## 3 Prepare Hoses

- A** Determine hose lengths required for hydraulic supply configuration of truck.
- B** Cut hoses to length and install end fittings, or use hose kits supplied.

**IMPORTANT:** Valve options include LH or RH supply porting for Clamp/Open and Sideshift Left/Right.

### Non-Sideshifting

**RH CLAMP  
(or FORK POSITION)  
Ports**

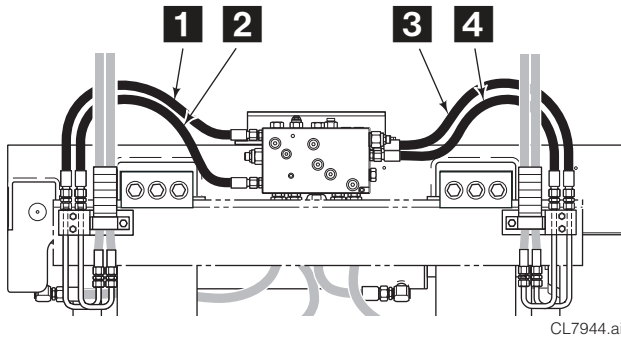


- 1** Clamp (or Close)
- 2** Release (or Open)

**RH 2-PORT THINLINE™ HOSE REEL**

### Sideshifting

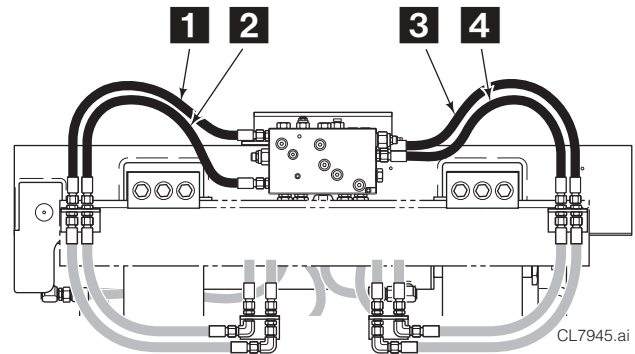
**RH CLAMP (or FORK POSITION), LH SIDESHIFT Ports**



- 1** Sideshift Right
- 2** Sideshift Left
- 3** Clamp (or Close)
- 4** Release (or Open)

**LH & RH 2-PORT THINLINE™ HOSE REEL**

**LH CLAMP (or FORK POSITION), RH SIDESHIFT Ports**



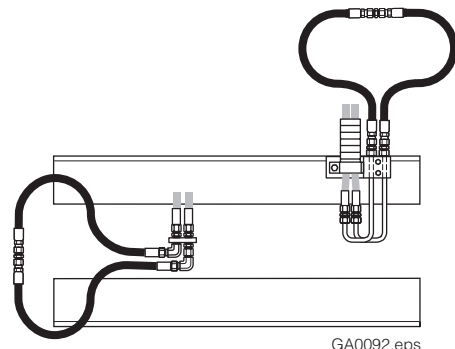
- 1** Sideshift Right
- 2** Sideshift Left
- 3** Clamp (or Close)
- 4** Release (or Open)

**DOUBLE INTERNAL HOSE REEVING**

**Back (Driver's) Views**

## 4 Flush hydraulic supply hoses

- A** Install hoses using union fittings.
- B** Operate auxiliary valves for 30 seconds.
- C** Remove union fittings.

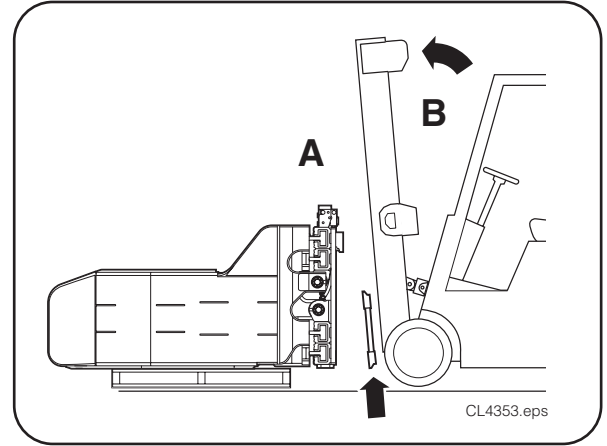


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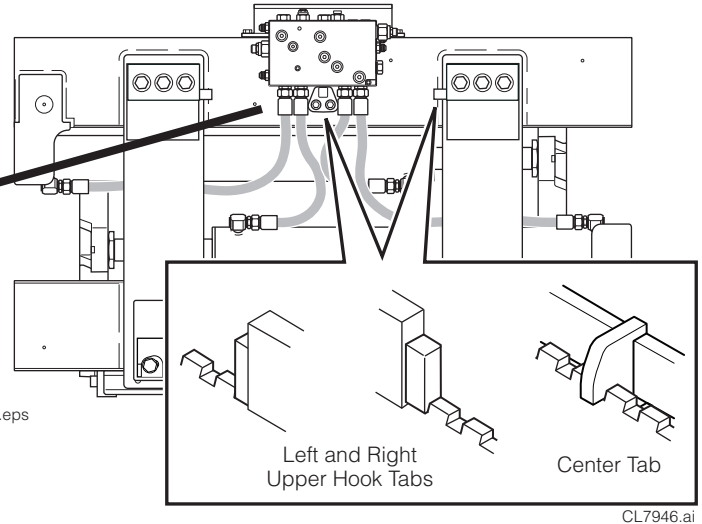
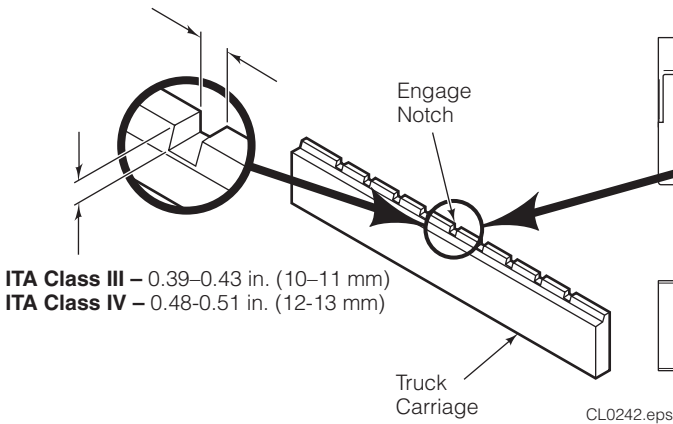
# INSTALLATION

## 5 Mount attachment on truck carriage

- A** Center truck behind the attachment.
- B** Tilt forward and raise carriage into position.
- C** Engage upper mounting hooks with upper carriage bar. Make sure a centering tab or hook tab engages a notch on the carriage bar. Refer to the illustration below.
- D** Lift the attachment 2 in. (5 cm) above pallet.

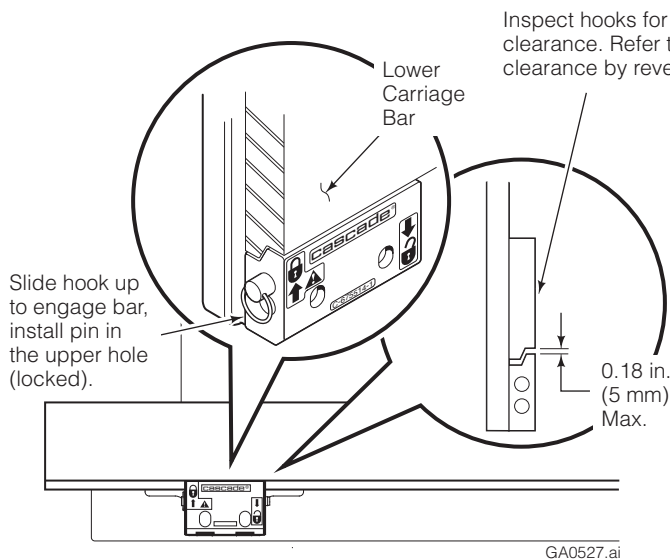


ITA Class III – 0.72–0.78 in. (18–20 mm)  
 ITA Class IV – 0.72–0.78 in. (18–20 mm)

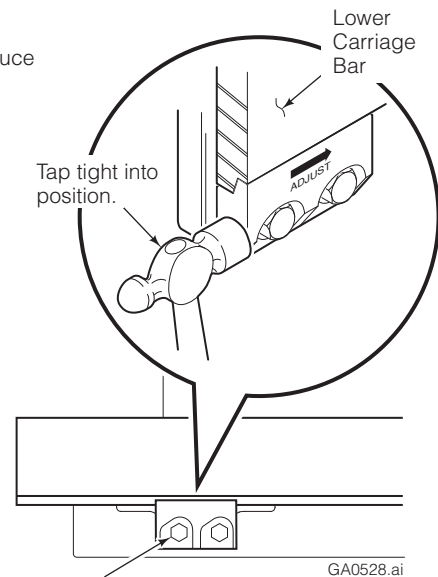


## 6 Install and engage lower hooks

### QUICK-CHANGE TYPE

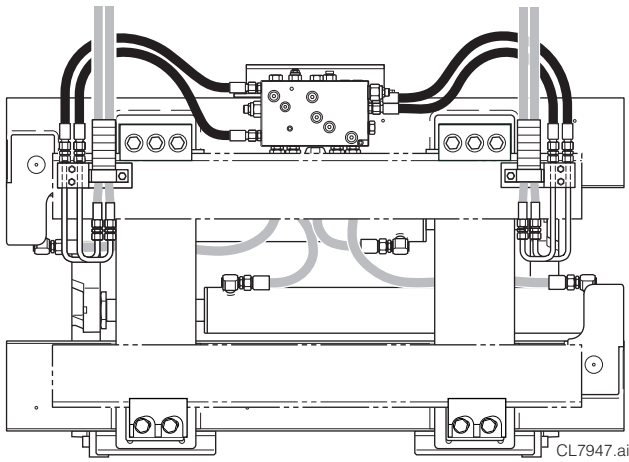


### BOLT-ON TYPE

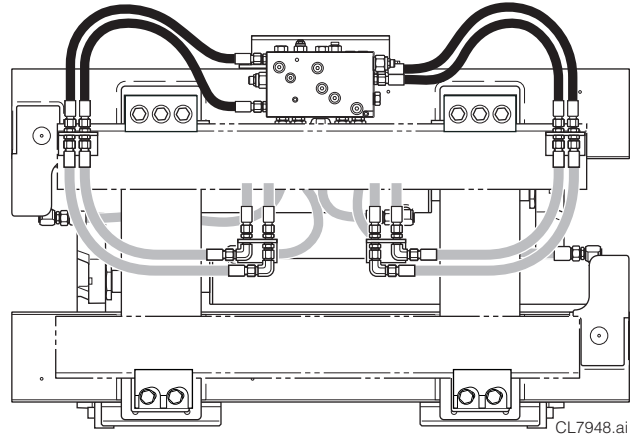


Tighten capscrews to:  
**Class III** – 165 ft.-lbs. (225 Nm)  
**Class IV** – 320 ft.-lbs. (435 Nm).

## 7 Connect hoses prepared in Step 3 to attachment



**LH & RH 2-PORT THINLINE™ HOSE REEL**  
(External Sideshifter shown)

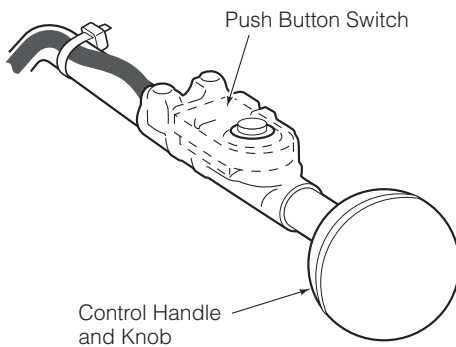


**DOUBLE INTERNAL HOSE REEVING**

## 8 Install solenoid control knob or push button switch (solenoid-equipped)

**IMPORTANT:** Avoid interference with other control levers and control surfaces.

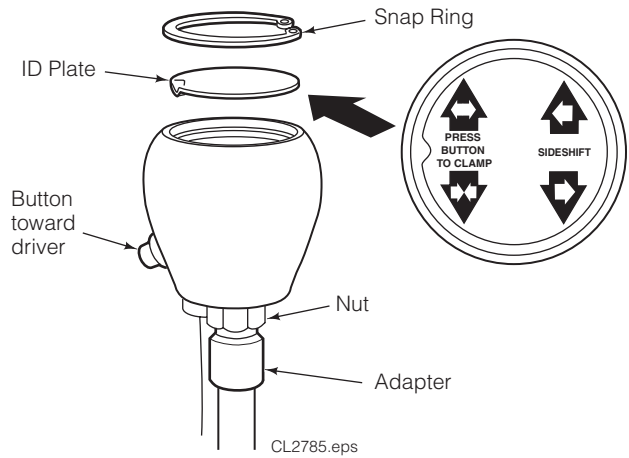
### PUSH BUTTON SWITCH



Install the push button switch to the control lever. Refer to Installation Instructions 6822725, included with switch, for complete installation procedure.

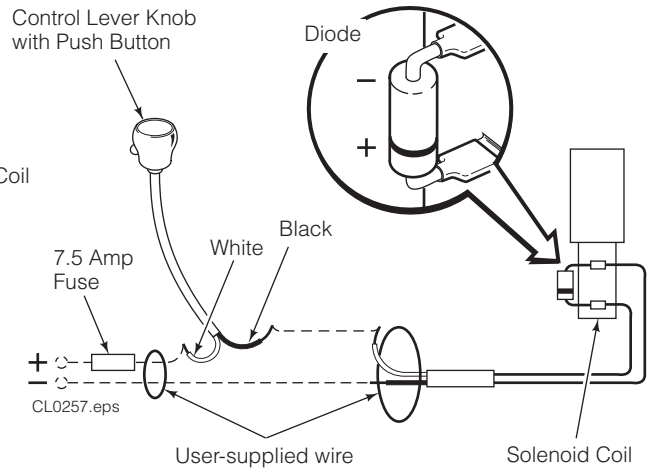
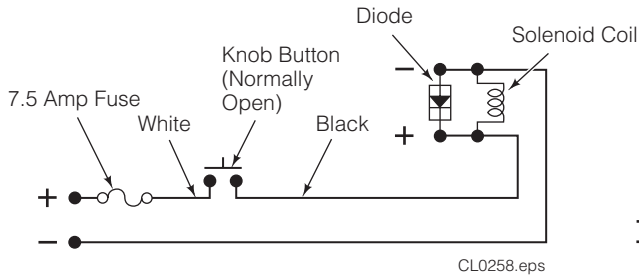
**NOTE:** Secure the cable so it will not be pinched when the handle is actuated.

### CONTROL KNOB



Remove existing knob from auxiliary valve handle. Install the new knob using the adapter provided.

## 9 Install wiring (solenoid-equipped)

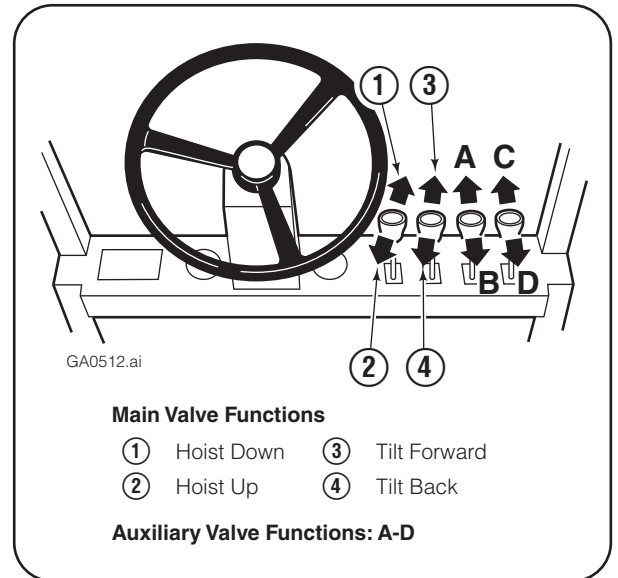


## 10 Cycle attachment functions

- With no load, cycle CLAMP function and SIDESHIFT function several times. Check for equal arm movement and adequate arm speed.
- Clamp and lift a maximum load. Sideshift left and right.
- Check for operation in accordance with ANSI (ISO) standards.
- **IMPORTANT:** If necessary, adjust relief valve cartridges. Refer to Installation Step 11.
- Check for leaks at fittings, valve, manifold and cylinders.

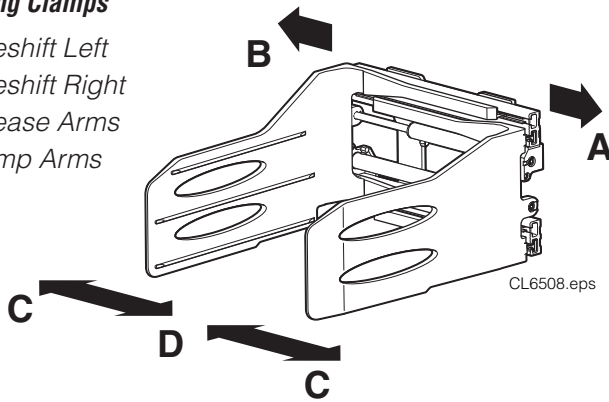


**WARNING:** Make sure all personnel are clear of the attachment during testing.



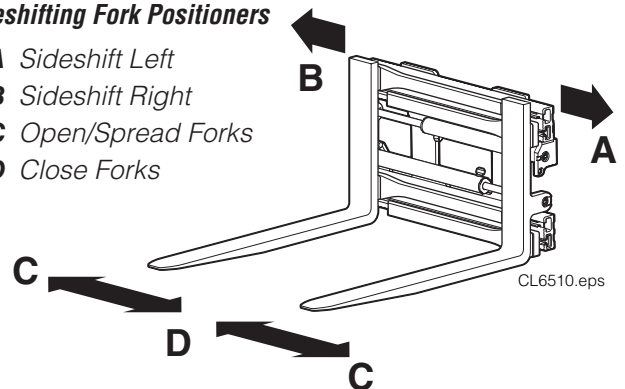
### Sideshifting Clamps

- A Sideshift Left
- B Sideshift Right
- C Release Arms
- D Clamp Arms



### Sideshifting Fork Positioners

- A Sideshift Left
- B Sideshift Right
- C Open/Spread Forks
- D Close Forks



**WARNING:** Truck control handle and attachment function activation shown here conforms to ANSI B56.1 (ISO 3691) recommended practices. Failure to follow these practices may lead to serious bodily injury or property damage. End user, dealer and OEMs should review any deviation from the practices for safe operation.

## 11

### Adjust Relief Cartridges

The valve is equipped with relief valve cartridges in both the sideshift and clamp circuits. Adjustment of these reliefs is recommended to optimize clamp performance.

**NOTE:** Attachments used for fork positioning do not require CLAMP relief adjustment. Contact Cascade before making any adjustments.

**NOTE:** External Sideshift function has no relief adjustment.



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

#### Clamp Relief Adjustment – Pressure Gauge Method

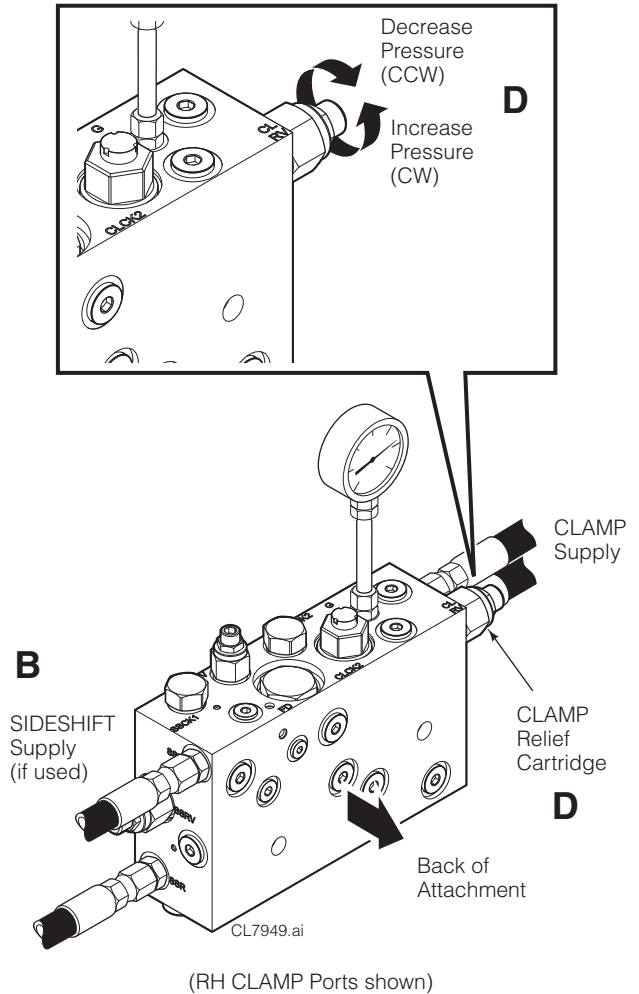
The clamp relief cartridge is set at the factory per the pressure specified on the label on the back of the valve.

The **CLAMP** relief cartridge is set at the factory with a system back pressure of 350 psi (24 bar). Actual back pressure with the attachment connected to the truck will vary. It is recommended to verify the CLAMP pressure as an initial starting point.

- A** Confirm that **TRUCK** pressure delivered to the attachment valve is within the range shown on the attachment nameplate.
- B** Install a 5000 psi (345 bar) pressure gauge (with a No. 4 O-ring fitting) to the valve gauge 'G' port.
- C** From fully open, close the arms at normal speed to clamp a rigid load, clamp force indicator or fully bottom cylinders. Release truck handle and read pressure gauge. Compare gauge pressure with valve label pressure.
- D** Adjust the **CLAMP** relief cartridge to correct pressure. Open arms to release clamp pressure. Turn clockwise (CW) to increase pressure, counterclockwise (CCW) to decrease pressure.
- E** Repeat steps **C** and **D** to confirm setting. Tighten jam nut.

**NOTE:** When adjusting an attachment equipped with a three position regulator valve, Volumetric Force Control (VFC) or Hydraulic Force Control (HFC), the **CLAMP** relief must be adjusted to maximum pressure. Refer to step **D** to increase pressure. Adjust the cartridge to the maximum position.

**NOTE:** Adjustment of **CLAMP** relief pressure according to load requirements for secure handling and damage reduction is recommended. Adjust the relief cartridge per step **A–E** to obtain a desired pressure setting. Pressure is not to exceed the maximum pressure setting on the clamp nameplate. If multiple pressure settings are desired, contact Cascade for options.



# INSTALLATION

## Adjust Relief Cartridges (continued)

### Sideshift Relief Adjustment

**A** Clamp a maximum load and sideshift LEFT and RIGHT observing sideshifting movement.

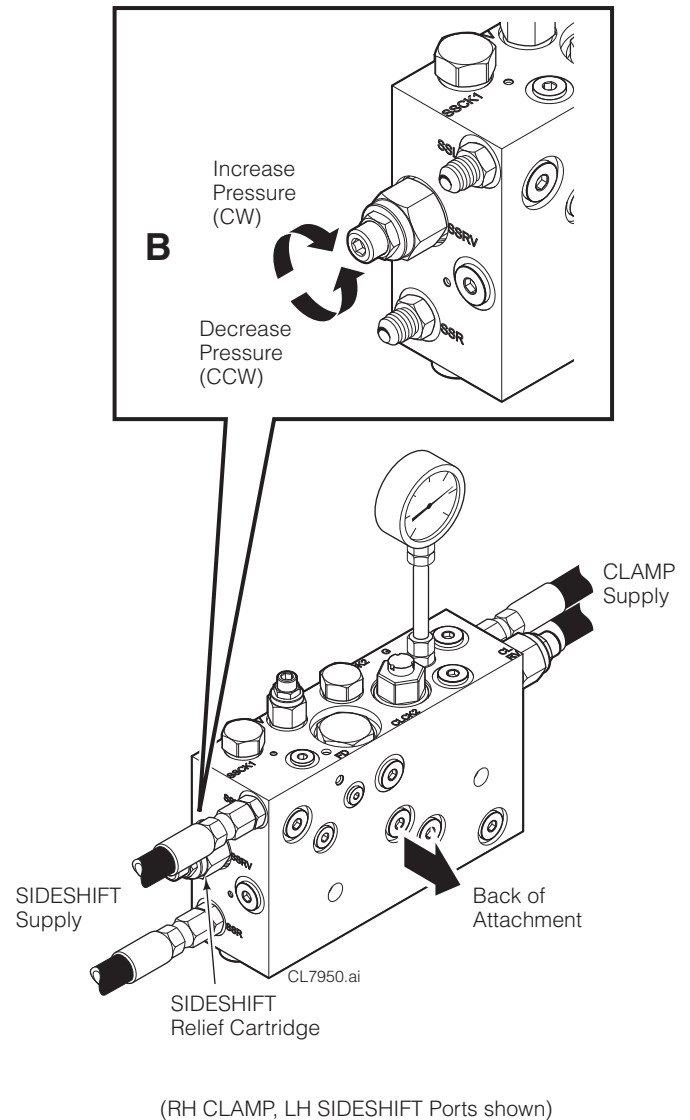
**B** If the attachment will not sideshift or sideshifts slowly, adjust **SIDESHIFT** relief clockwise (CW) until the attachment sideshifts. Then adjust the relief cartridge counterclockwise (CCW) 1/4 turn increments until sideshift speed slows (relief opening). Finish by adjusting cartridge clockwise (CW) 1/4 turn. Tighten jam nut.

**IMPORTANT:** Clamp force may decrease during the sideshift operation and when maximum sideshift has been reached. Always verify that the load remains secure during complete sideshift operation.

Corrective adjustments include:

- Increase clamp force by increasing **CLAMP** relief pressure
- Reduce sideshift force by reducing **SIDESHIFT** relief pressure

Consult Cascade for assistance and options.



(RH CLAMP, LH SIDESHIFT Ports shown)

# PERIODIC MAINTENANCE

## Daily

Check items shown each day. Report problems to a supervisor. Refer to service manual for troubleshooting, maintenance and repair procedures.

- Check for the following:
  - Loose or missing hardware,
  - Worn or damaged hoses,
  - Hydraulic leaks
- Inspect cylinder rod ends and anchor nuts for damage. The rod end anchors operate with a loose clearance and require no lubrication.
- Check for equal movement of arms.
- Check decals and nameplate for legibility.



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

## 1000-Hour Maintenance

Every time the lift truck is serviced or every 1000 hours of truck operation, whichever comes first, complete the following maintenance procedures:

- Inspect arm bearings for wear or damage. If bearings are worn in any area to less than 0.06 in. (1.5 mm) thickness, replace bearings.
- Check lower mounting hooks for engagement clearance:

**Quick-Change Hooks** – 0.18 in. (5 mm) Max.

**Bolt-on Hooks** – Tight against lower carriage bar.

If adjustment is necessary, refer to Installation Step 6.

- Tighten lower hook capscrews:

**Bolt-on Hooks:**

**Class III** – 165 ft.-lbs. (225 Nm)

**Class IV** – 320 ft.-lbs. (435 Nm)

**Quick-Change Hooks:**

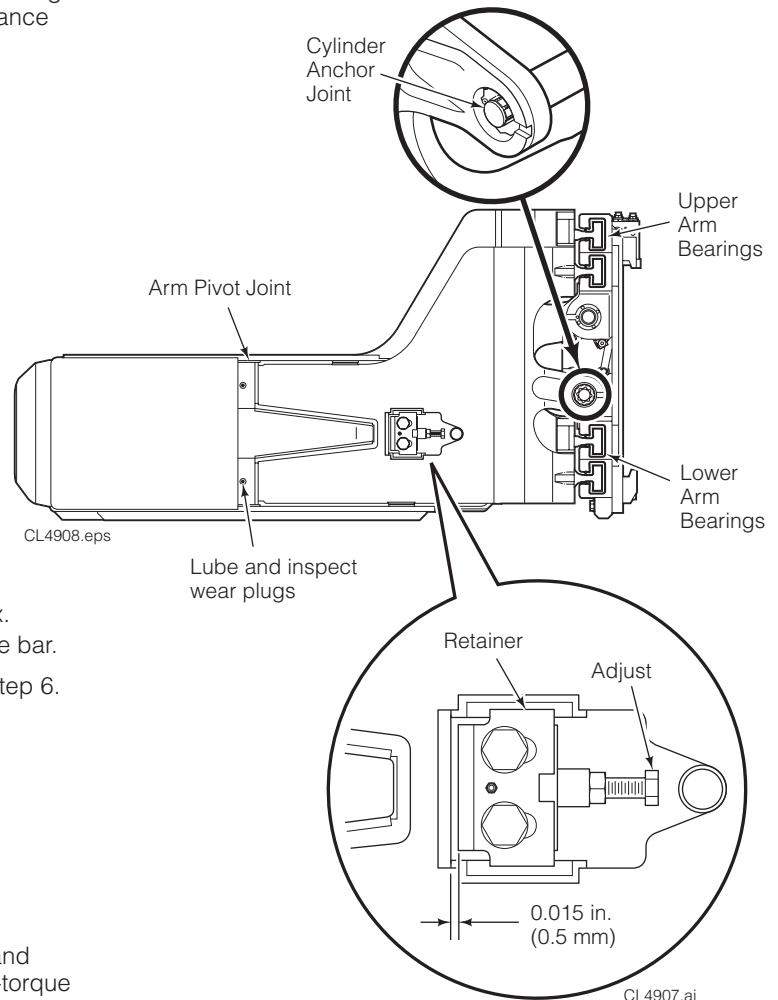
**Class III** – 202 ft.-lbs. (274 Nm)

**Class IV** – 395 ft.-lbs. (535 Nm)

- Tighten accessible mounting plate capscrews and lower spacer capscrews (if equipped). Double-torque capscrews by tightening to final torque value of 200 ft.-lbs. (270 Nm), loosen 1/2 turn, then retighten.

**IMPORTANT:** If any mounting plate capscrews are found loose, remove attachment from truck and check all mounting capscrews and lower spacer capscrews for proper torque values.

- Tighten spherical nut to a torque of 310 ft.-lbs. (420 Nm)
- **Articulating Arms** – Lubricate arm pivot joint grease fittings with chassis grease.
- **Articulating Arms** – Inspect the arm pivot wear plugs. If either plug is worn to less than 0.13 in. (3.0 mm), replace both wear plugs.
- **Articulating Arms** – Loosen retainer capscrews, adjust retainer to wear pad clearance to 0.5 mm. Tighten retainer capscrews to 320 ft.-lbs. (435 Nm).



## 4000-Hour Maintenance

After each 4000 hours of truck operation, in addition to the 1000-hour maintenance, perform the following procedure:

- Due to normal mechanical wear and component service life, cylinder seals should be replaced to maintain performance and safe operation.

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**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)

**AMERICAS**

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