



# ***INSTALLATION INSTRUCTIONS***

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***and PERIODIC MAINTENANCE***

## ***D-Series*** ***Carton Clamps***

***Manual Number 670488-R5***

**cascade<sup>®</sup>**  
**corporation**

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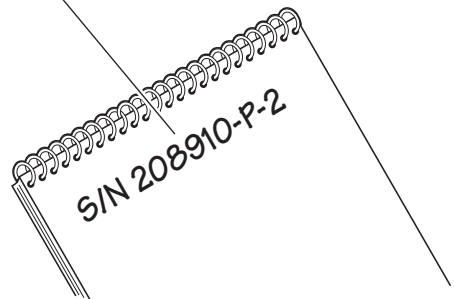
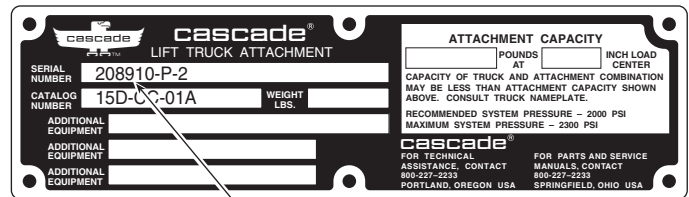
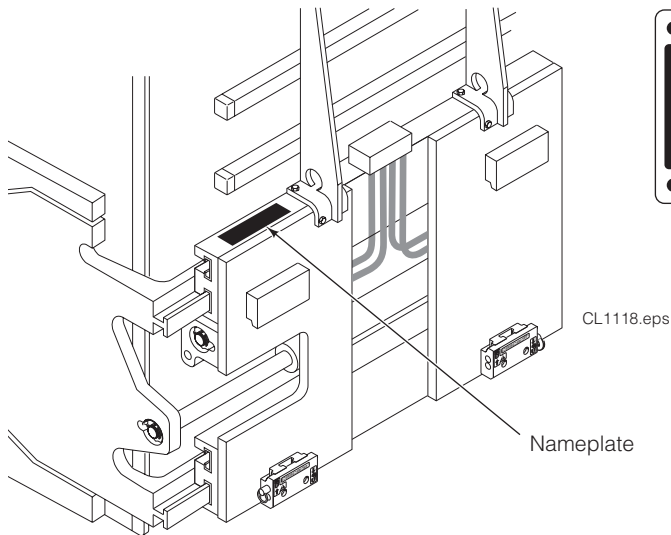
## I NTRODUCTION

This Manual provides the Installation, Periodic Maintenance and Troubleshooting for Cascade D-Series Carton Clamps.

In any communication about the Carton Clamp, refer to the product I.D. number stamped on the nameplate as shown. If the nameplate is missing, the numbers can be found stamped on the back of the baseplate.

**IMPORTANT:** All hoses, tubes and fittings on D-Series Clamps are JIC.

**NOTE:** Specifications are shown in both U.S. and (Metric) units.



# 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 the 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 the job easier.

# RECOMMENDED HYDRAULIC SUPPLY

D-Series Clamps provide the best performance with one of the hydraulic supply arrangements shown below. Refer to Cascade Hose and Cable Reel Selection Guide, Part No. 212119, to select the correct hose reel for the mast and truck. The hose and fitting requirements are:

- **CLAMP Function** - No. 8 with a minimum internal diameter of 13/32 in. (10 mm).
- **SIDESHIFT Function** - No. 6 with a minimum internal diameter of 9/32 in. (7 mm).

## Non-Sideshifting

**A** Hose reel group.

**OR**

**C** Single internal hose reeving group.

## Sideshifting

**A and B** RH and LH Hose reel groups.

**OR**

**C** Double internal hose reeving group.

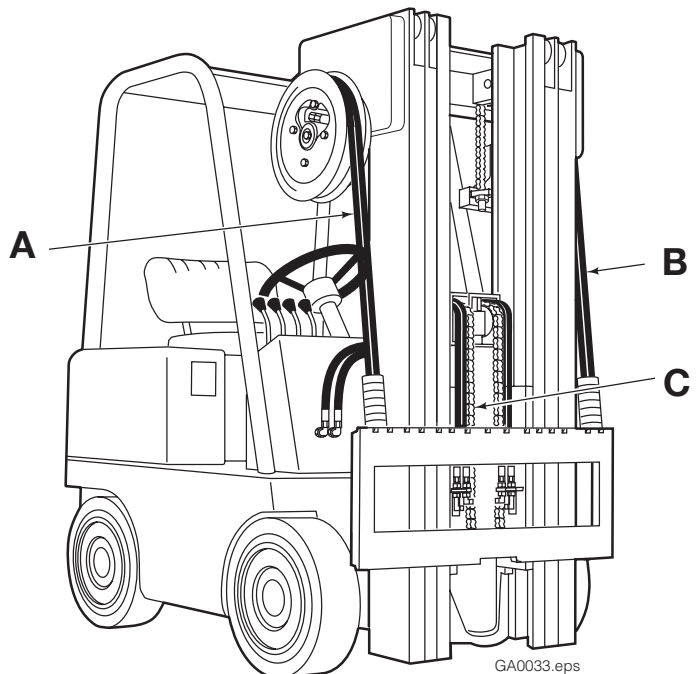
## Sideshifting with Solenoid

**A** 6-N-1 Cable/Hose reel group.

**OR**

**A and C**

Cable Reel and Single internal hose reeving group.



# T RUCK REQUIREMENTS

D-Series Clamps will provide maximum operating capability when the following requirements are met.



**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.

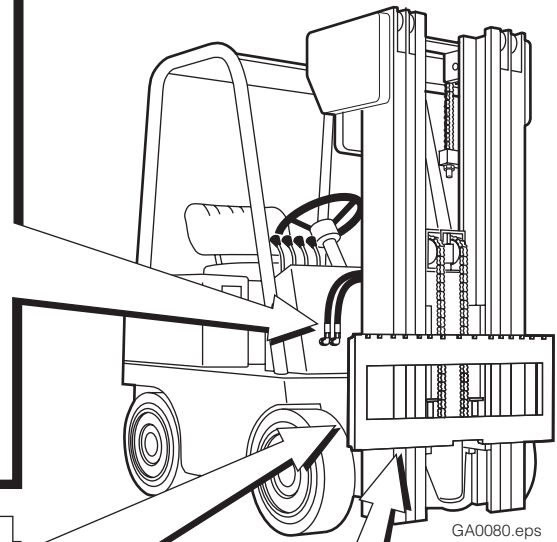
## Truck Relief Setting

2000 psi (140 bar) Recommended  
2300 psi (160 bar) Maximum

## Truck Flow Volume <sup>①</sup>

	Min. <sup>②</sup>	Recommended	Max. <sup>③</sup>
<b>15D, 25D, 35D, 50D</b>	5 GPM (19 L/min.)	7 GPM (26 L/min.)	8 GPM (30 L/min.)

- ① Cascade D-Series Clamps are compatible with SAE 10W petroleum base hydraulic fluid meeting Mil. Spec. MIL-O-5606 or MIL-O-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 reduced hydraulic system life.



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

	Minimum	Maximum
<b>Class II</b>	14.96 in. (380.0 mm)	15.00 in. (381.0 mm)
<b>Class III</b>	18.68 in. (474.5 mm)	18.74 in. (476.0 mm)

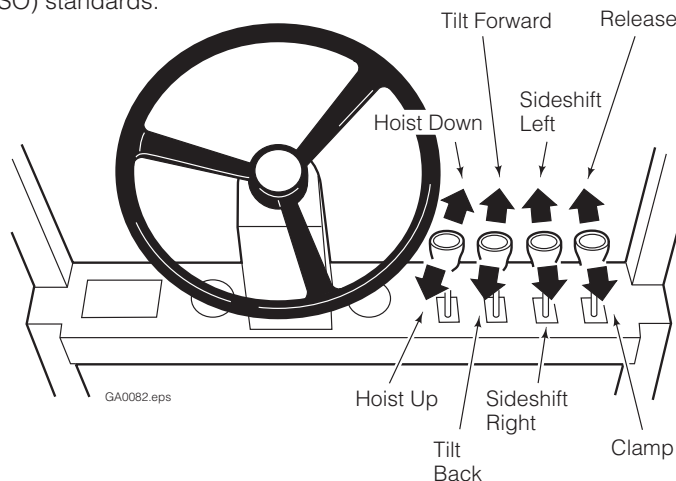
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## Carriage

Clean and inspect carriage bars for damage and smoothness. Repair any protruding welds or damaged notches.

## Auxiliary Valve Functions

Check for compliance with ITA (ISO) standards:



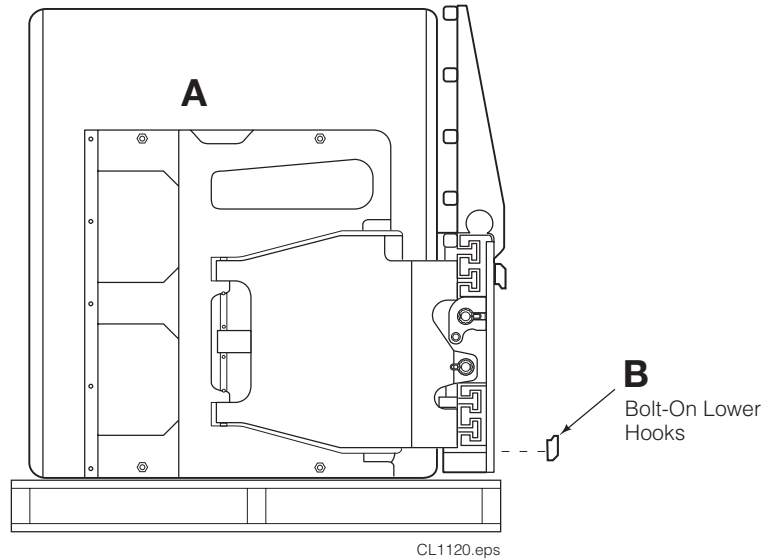
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# INSTALLATION

Follow the steps shown to install the Clamp on the truck.  
Read and understand all **WARNING** and **CAUTION** statements. If you don't understand a procedure, ask your supervisor, or call the nearest Cascade Service Department for assistance.

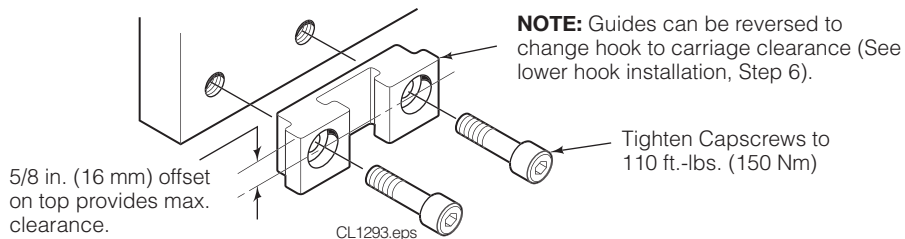
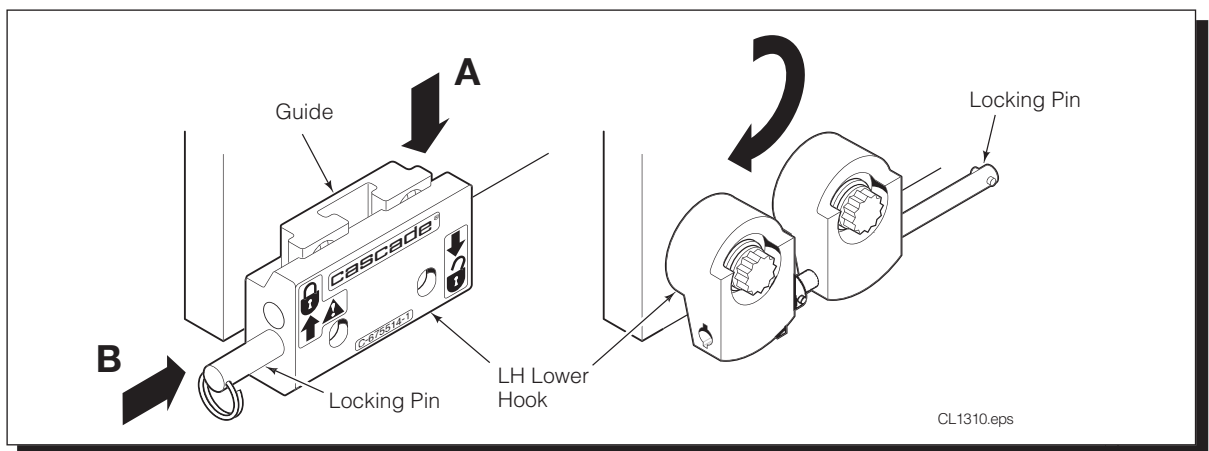
## 1 Prepare Attachment

- A** Remove banding.
- B** Remove bolt-on lower mounting hooks (if equipped).



## 2 Unlock Quick-Change lower mounting hooks

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

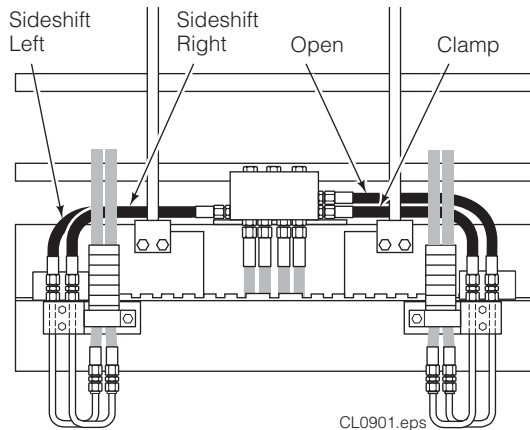


## 3 Prepare Hoses

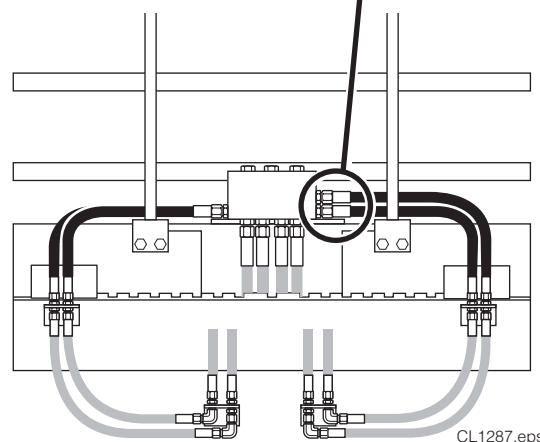
- A** Determine hose lengths required for hydraulic supply configuration of truck.
- B** Cut hoses to length, install end fittings or Quick-Disconnect coupling kits.



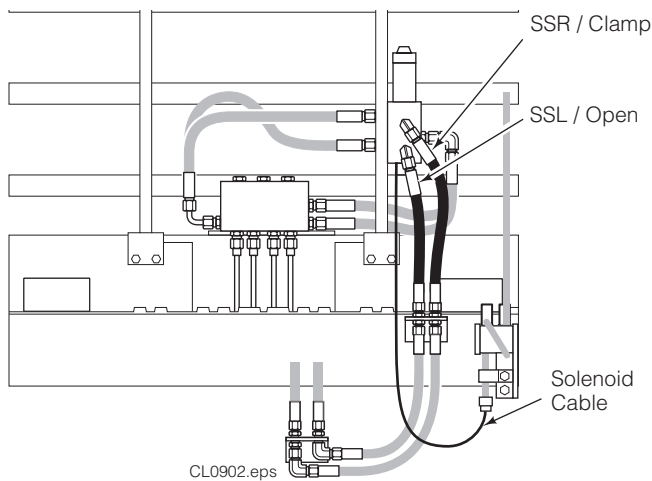
**WARNING:** Do not remove the special fitting from the valve CLAMP (CL) port. Use a 6-8 reducer for No. 6 hose connection.



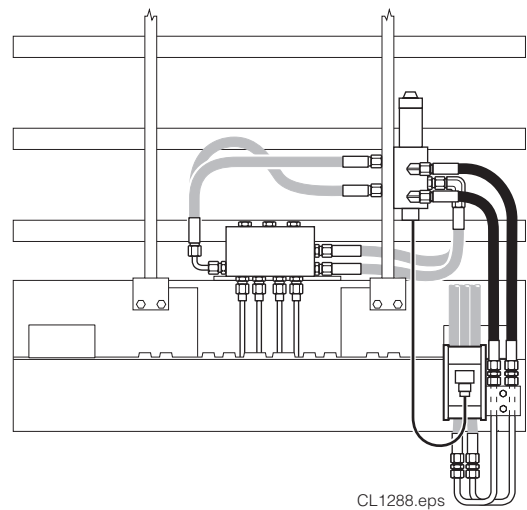
Sideshifting – Double Hose Reels



Sideshifting – Double Internal Hose Reaving



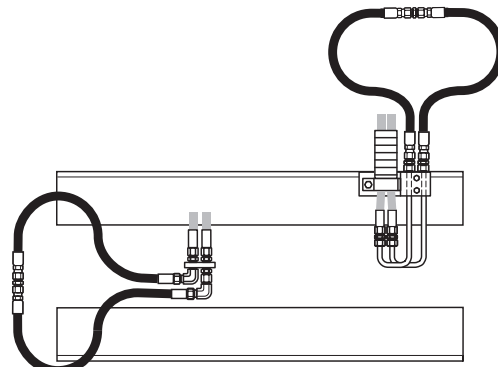
Sideshifting with Solenoid – IHR and Cable Reel



Sideshifting with Solenoid – 6-N-1 Cable/Hose Reel

## 4 Flush hydraulic supply hoses

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

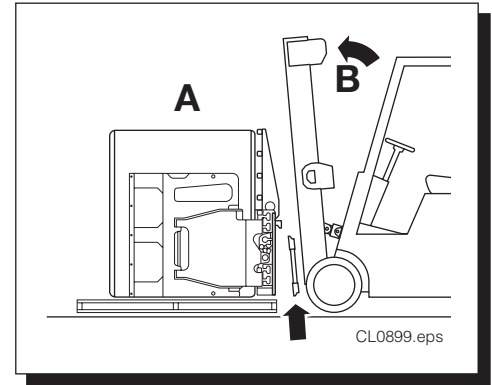


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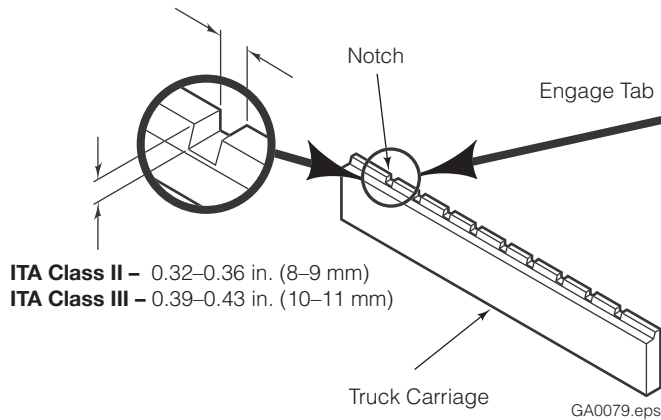
# INSTALLATION

## 5 Mount Clamp on truck carriage

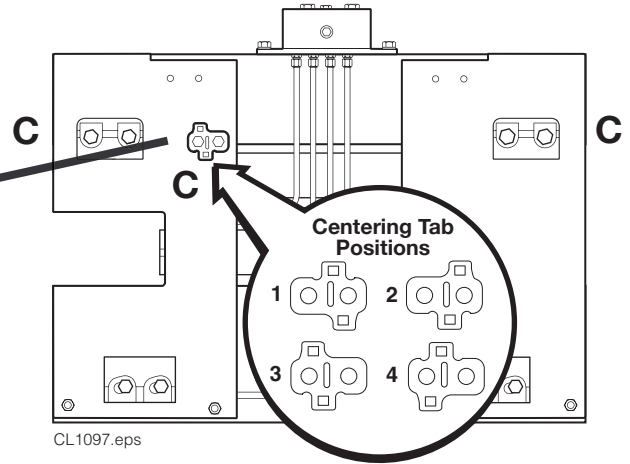
- A** Center truck behind Carton Clamp.
- B** Tilt forward and raise carriage into position.
- C** Engage upper mounting hooks with carriage. Make sure centering tab engages a notch on the top carriage bar. **NOTE:** Centering tab can be oriented in 4 different positions to center the Clamp (see illustration).
- D** Lift Clamp 2 in. (5 cm) off pallet.



ITA Class II – 0.60–0.66 in. (15–17 mm)  
 ITA Class III – 0.72–0.78 in. (18–20 mm)

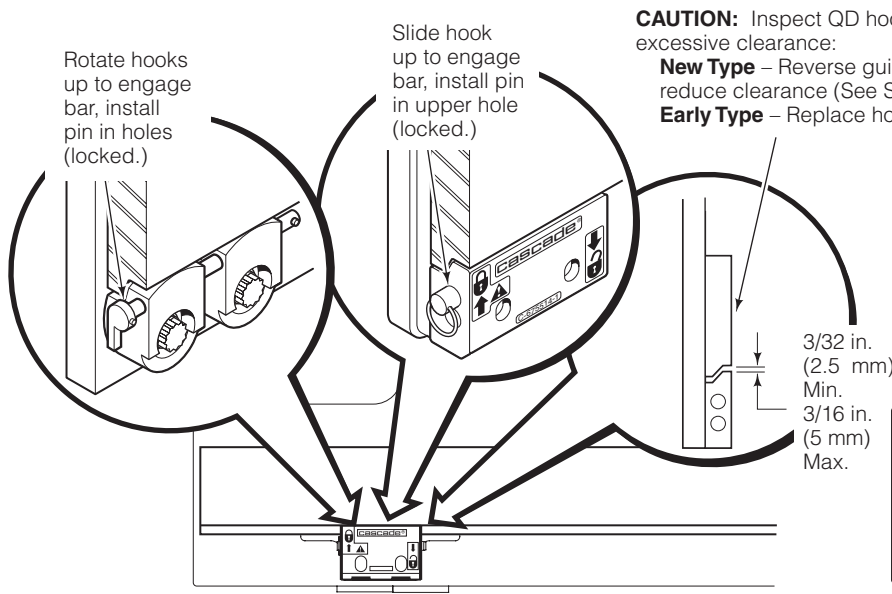


ITA Class II – 0.32–0.36 in. (8–9 mm)  
 ITA Class III – 0.39–0.43 in. (10–11 mm)

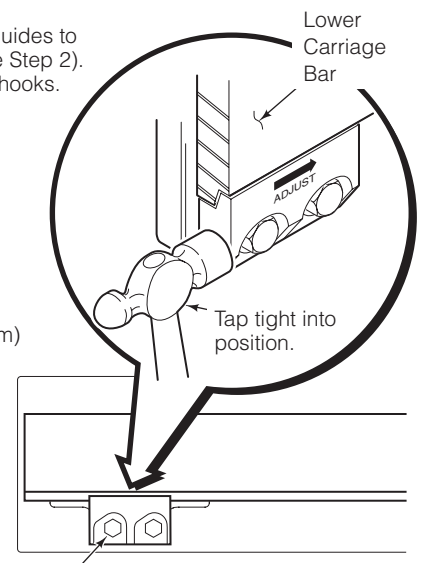


## 6 Install and engage lower hooks

### QUICK-DISCONNECT TYPE

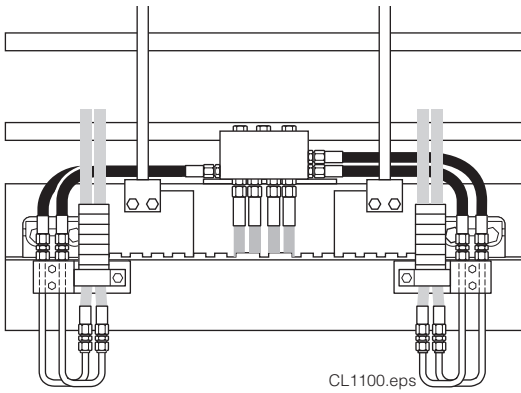


### BOLT-ON TYPE

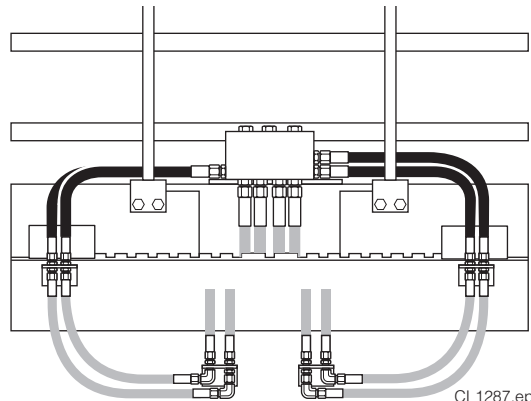


Tighten Capscrews: 110 ft.-lbs. (150 Nm)

## 7 Connect hoses prepared in Step 3 to Attachment

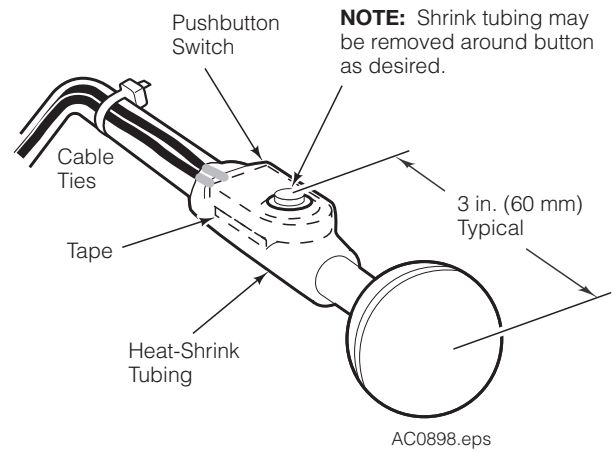
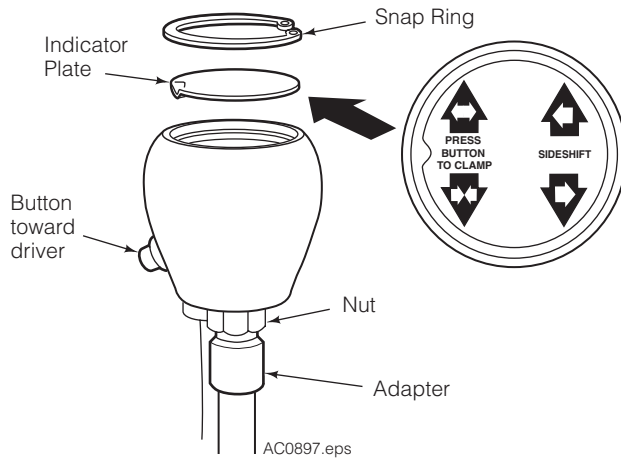


Double Hose Reels Hydraulic Supply

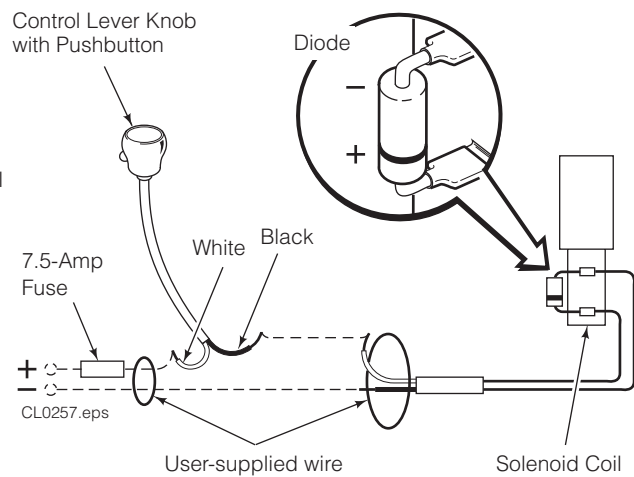
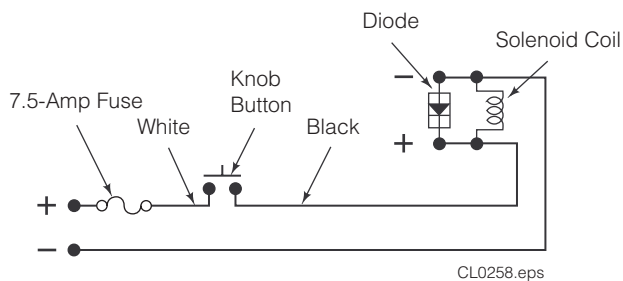


Internal Hose Reeving Hydraulic Supply

## 8 Install solenoid control knob or pushbutton switch – (Solenoid-equipped units)



## 9 Install wiring – (Solenoid-equipped units)






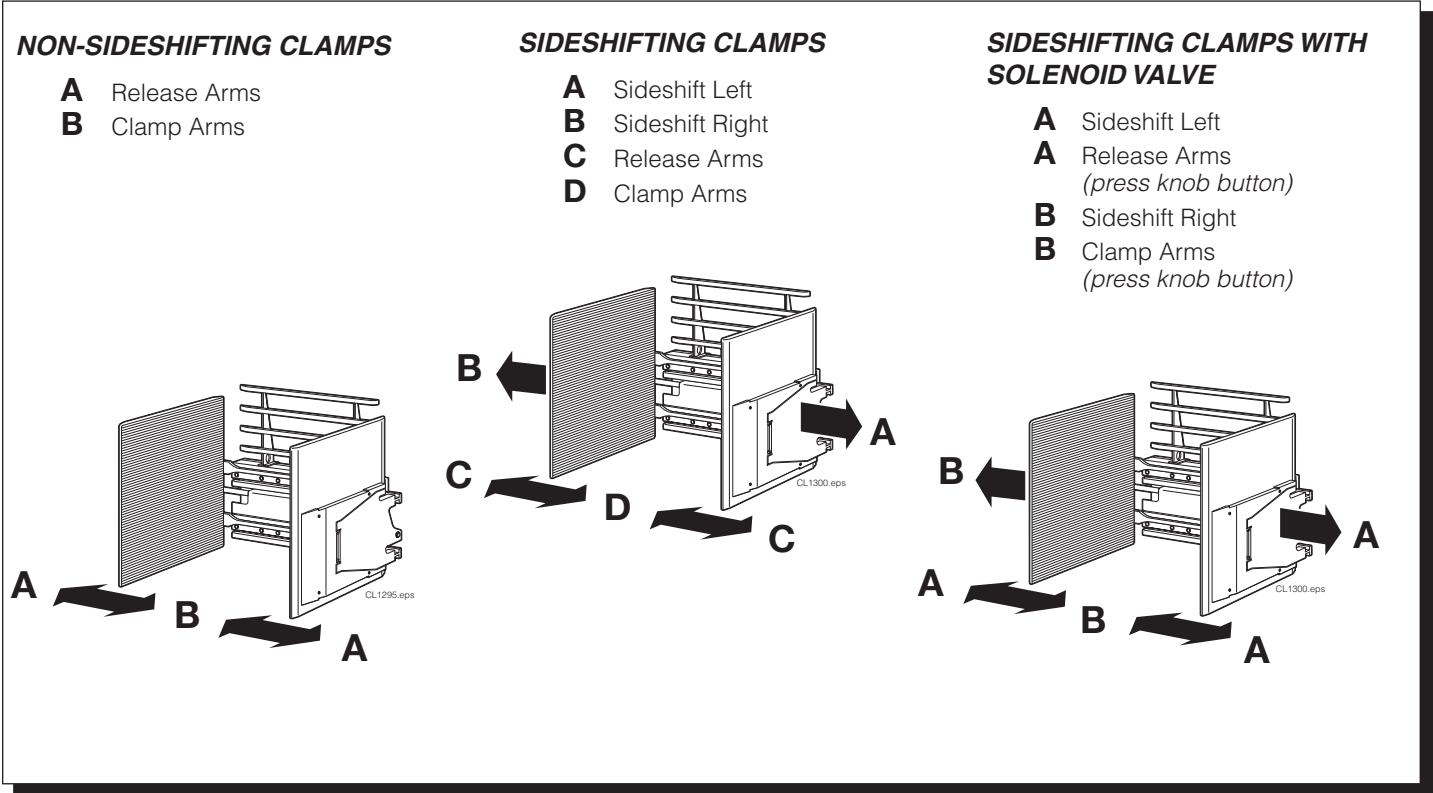
# I INSTALLATION

## 10 Cycle Clamp functions

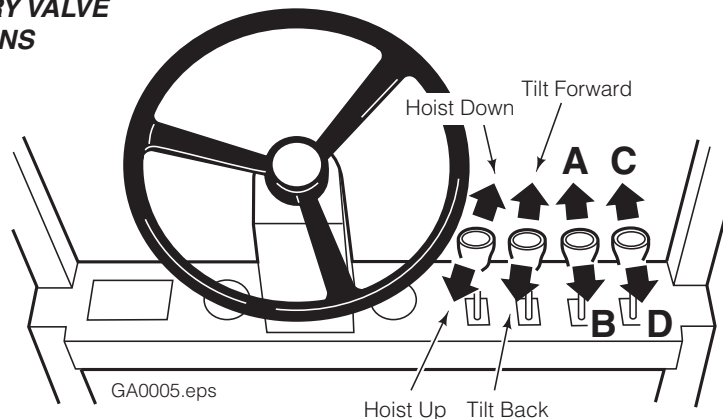
- With no load, cycle each Carton Clamp function several times.
- Check for operation in accordance with ITA (ISO) standards.
- Clamp and lift a maximum load. Sideshift left and right. Check for proper clamp force, equal arm movement and adequate speed.
- Check for leaks at fittings, valve, and cylinders.



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



### AUXILIARY VALVE FUNCTIONS



## 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 on the Clamp:

- Check for loose or missing bolts, worn or damaged supply hoses and hydraulic leaks.
- Inspect the cylinder anchor nuts for proper connection and tightness. Lubricate with chassis grease.
- Lubricate the four arm bars (see Table).
- Check contact pads for wear, nicks, distortion.
- Check decals and nameplate for legibility.

## 500-Hour Maintenance

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

- Check the lower mounting hook engagement clearance with the truck carriage bar:

**Quick-Change Hooks** – 3/32 in. (2.5 mm) min.  
3/16 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 to 110 ft.-lbs. (150 Nm).

- Check Clamp force (Cascade Clamp Force Indicators 680072, 6003391, 831887 are available for this test).
- Perform Clamp Circuit Pressure Test (see Service Manual 670487).

## 1000-Hour Maintenance

After each 1000 hours of truck operation, in addition to the 100 and 500-hour maintenance, perform the following procedures:

- Tighten contact pad mounting bolts to 50 ft.-lbs. (65 Nm).
- Inspect arm bearings for wear. If any bearing is worn to less than .040 in. (1 mm) thickness, replace all bearings (see Service Manual 670487).
- Inspect and replace wear tiles if worn (see Service Manual 670487).
- Inspect pad pivot pins and bushings and replace if worn (see Service Manual 670487).

## 2000-Hour Maintenance

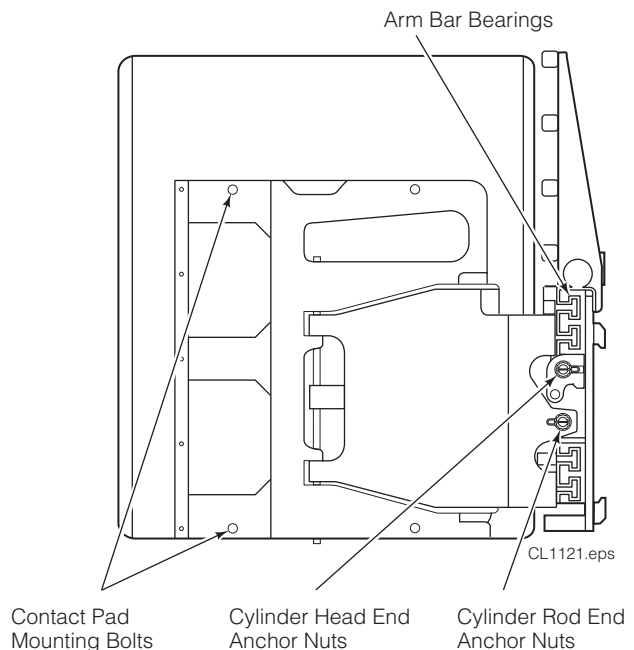
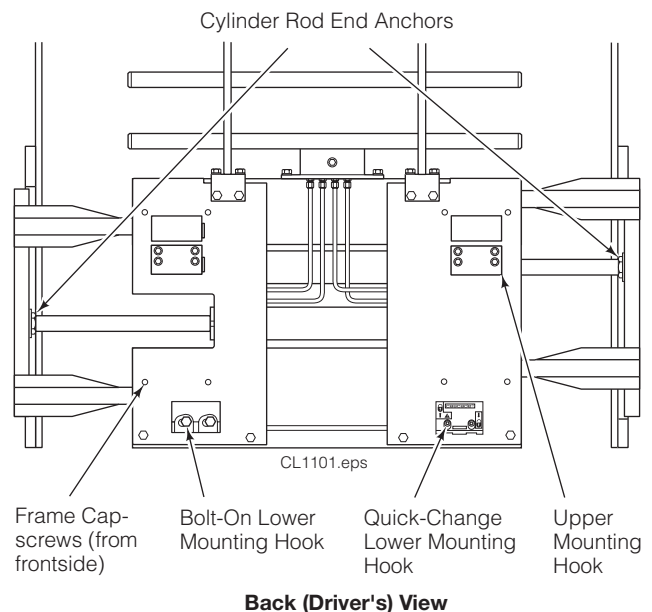
After each 2000 hours of truck operation, in addition to the 100, 500 and 1000-hour maintenance, perform the following:

- Tighten frame capscrews to 75 ft.-lbs. (100 Nm).
- Replace all arm bar bearings (see Service Manual 670487).



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

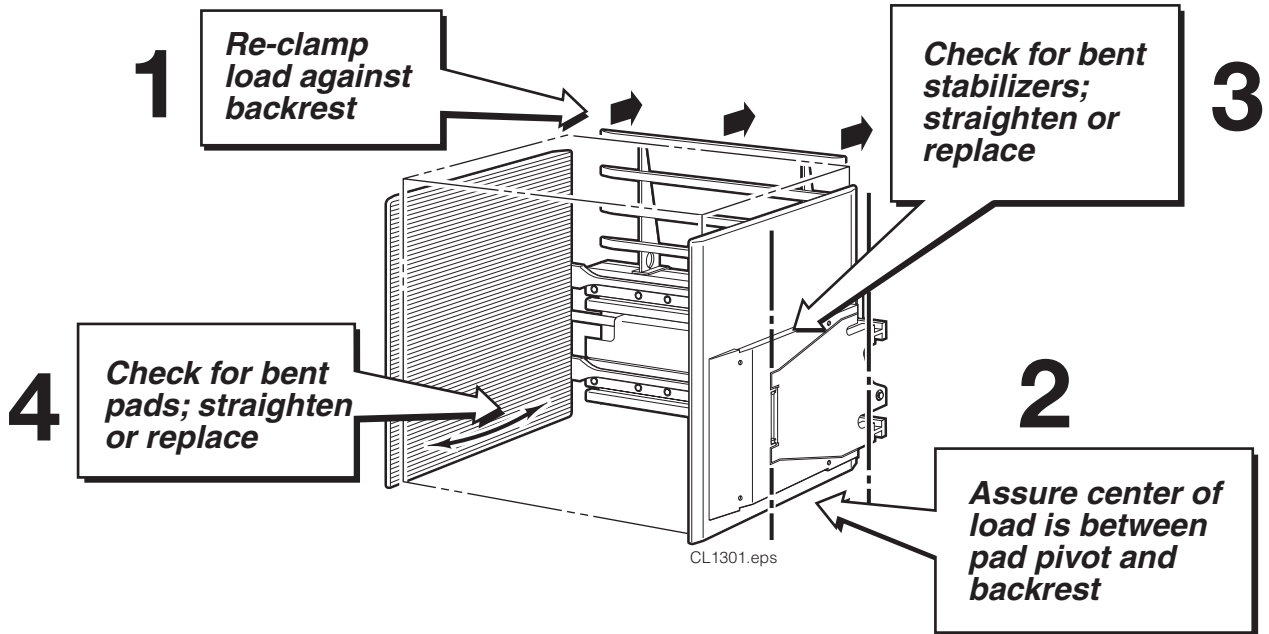
Application	Lubrication
General Products	Chassis Grease w/Moly
Food Industry	Chassis Grease (DuBois FGG-2)
Dry Lube Conditions	Slip Plate No. 3 (Superior Graphite)



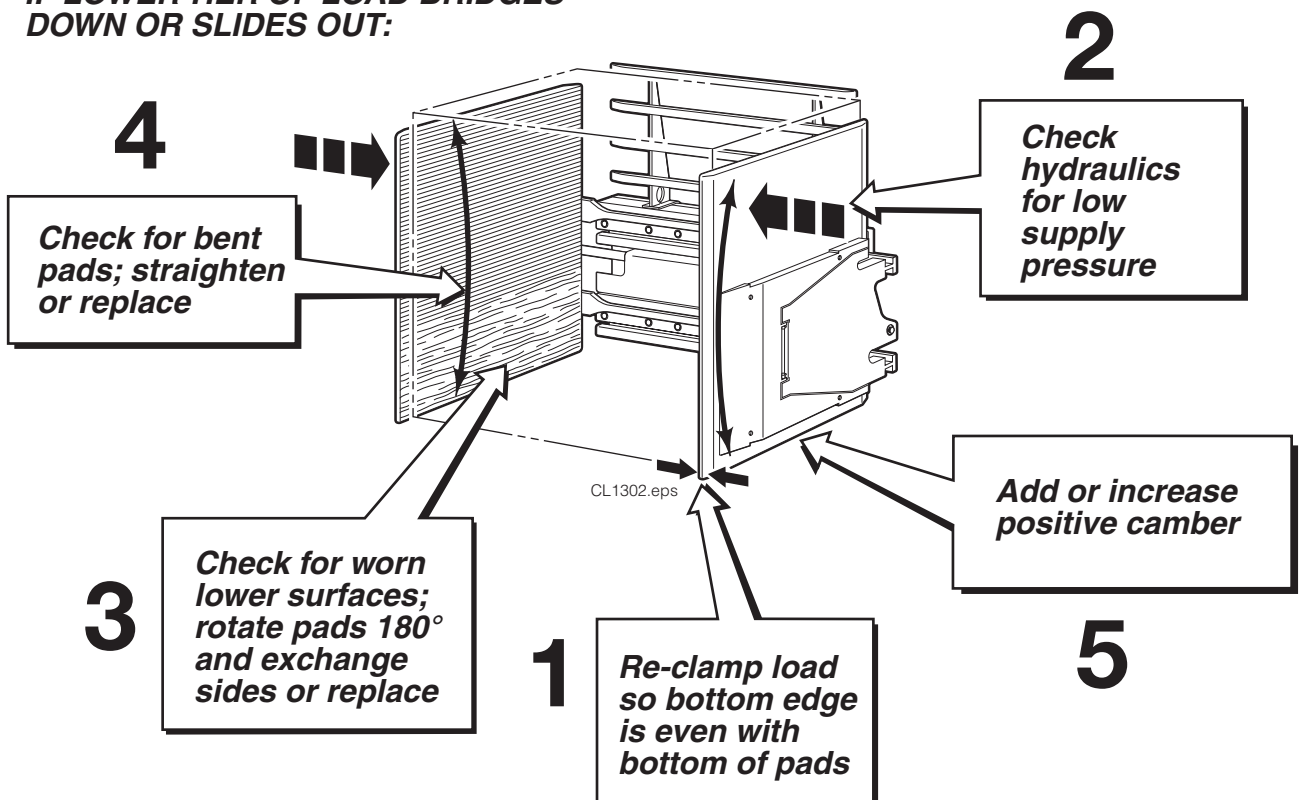
## Carton Clamp Loads

**IMPORTANT:** Before adjusting contact pad camber to solve handling problems, make sure the Clamp is being used correctly and is not damaged. Use the Troubleshooting procedure shown and, if necessary, adjust the contact pad camber using a Cascade Shim Service Kit.

**IF FRONT STACK OF LOAD TILTS OUT:**

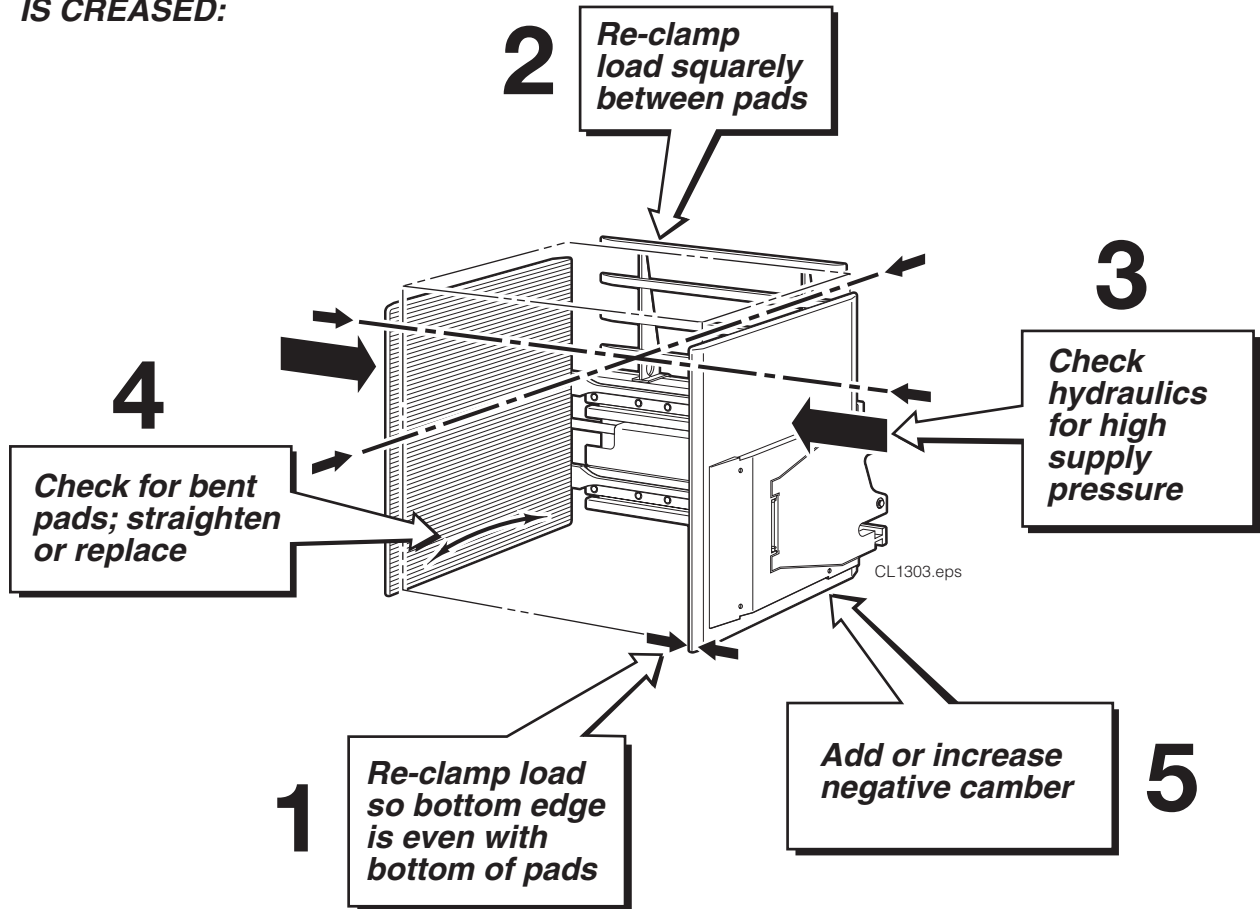


**IF LOWER TIER OF LOAD BRIDGES DOWN OR SLIDES OUT:**



## Carton Clamp Loads (Continued)

**IF LOWER TIER OF LOAD IS CREASED:**



### TYPICAL PAD CAMBER FOR HANDLING CASE LOADS

LOAD	CAMBER	Pads-Front View
CANNED / BOTTLED / DENSE CASE GOODS	Neutral-to-Positive	+  +
SOFT CASE GOODS	Neutral-to-Negative	-  -
APPLIANCE & LARGE CASE GOODS	Neutral-to-Negative	-  -
UNKNOWN LOADS	Start with neutral, look for creases and adjust camber as required.	0  0

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**Do you have questions you need answered right now?**

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

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