

I **INSTALLATION INSTRUCTIONS** *and PERIODIC MAINTENANCE*

Carton Clamps with Folding Forks

Manual Number 6810419

**cascade[®]
corporation**

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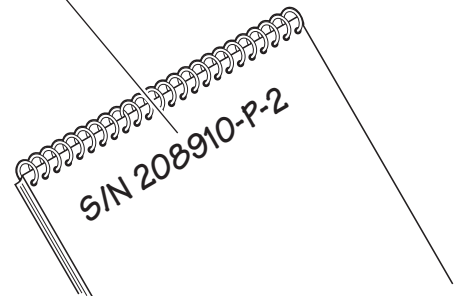
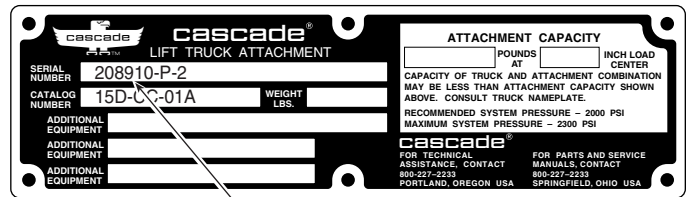
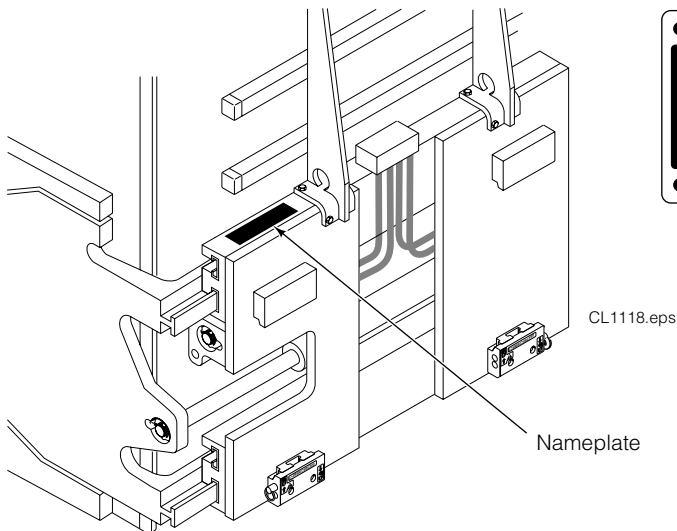
I NTRODUCTION

This manual provides the Installation, Periodic Maintenance and Troubleshooting for Cascade Carton Clamps with Folding Forks.

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 back of the baseplate.

IMPORTANT: All hoses, tubes and fittings on the attachment are SAE O-Ring.

NOTE: Specifications are shown in both US 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

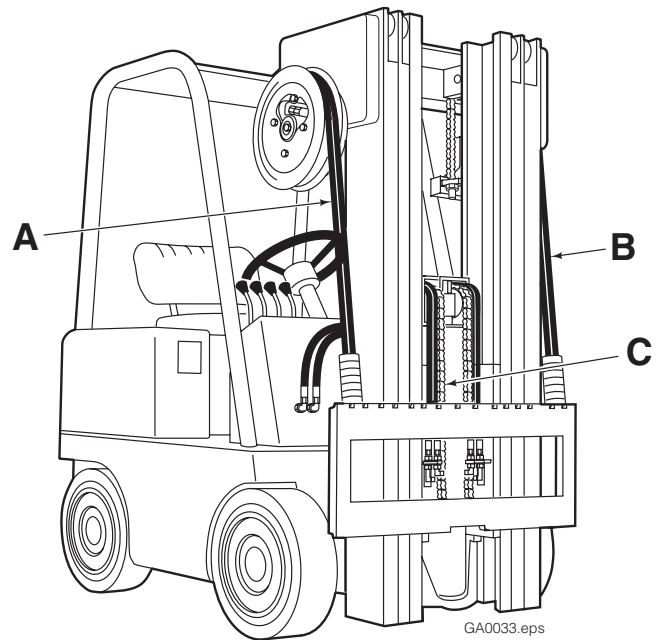
Carton Clamps with Fold-Up Forks provide the best performance with one of the hydraulic supply arrangements shown below. Refer to Cascade Hose and Cable Reel Selection Guide, Part No. 212119, to select the correct hose reel for the mast and truck. The hose and fitting requirements are:

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

A and B RH and LH Hose reel groups

OR

C Double internal hose reeving group



T RUCK REQUIREMENTS

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

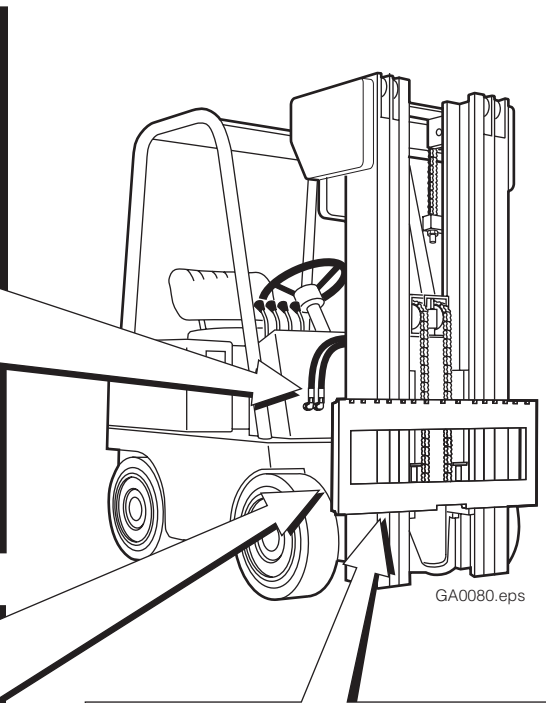
Truck Flow Volume ^①

	Min. ^②	Recommended	Max. ^③
D-Series	5 GPM 19 L/min.	7 GPM 26 L/min.	8 GPM 30 L/min.

① Cascade Carton Clamps with Fold-up Forks 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.

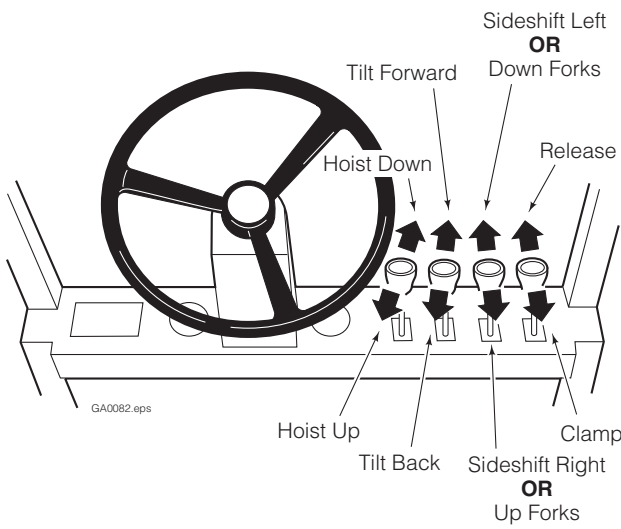


Carriage Mount Dimension (A) ITA (ISO)

	Minimum	Maximum
Class II	14.94 in. (380.0 mm)	15.00 in. (381.0 mm)
Class III	18.68 in. (474.5 mm)	18.74 in. (476.0 mm)

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

Auxiliary Valve Functions
 Check for compliance with ANSI (ISO) standards:



INSTALLATION

Truck Preparation

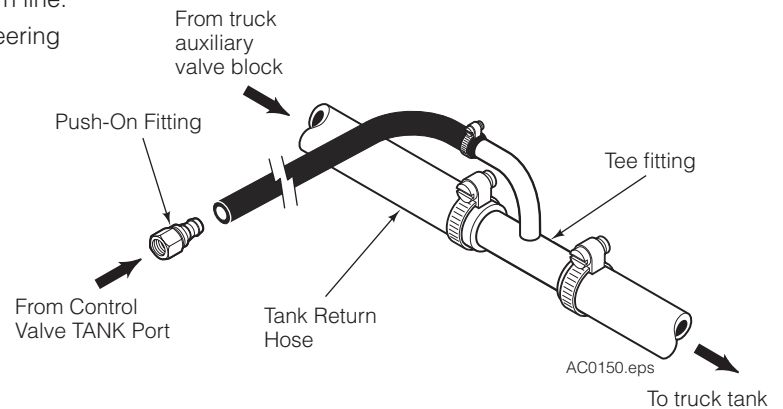
Prior to installing the attachment, the following components on must be installed on the truck:

- Solenoid-operated 3N2 control valve in the CLAMP and SIDESHIFT/FOLD FORKS supply lines to the attachment.
- Tee adapter in the truck tank main return line for return-to-tank from the 3N2 Control Valve.

1 Install Tee adaptor

A Determine a suitable location and install the tee adapter in the truck tank main return line.

CAUTION: Do not install into power steering or other tank return lines.

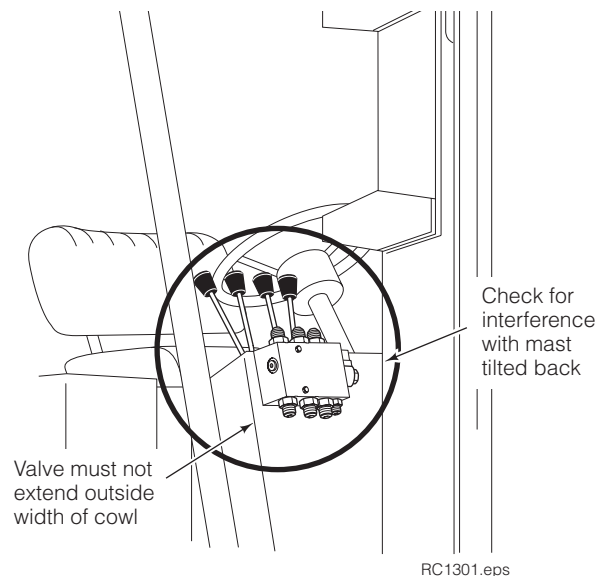


2 Mount 3N2 Control Valve

Determine a suitable mounting location for the solenoid-operated control valve. If mounted on the truck cowl as shown, the valve must not extend outside the width of the cowl or interfere with the truck mast when tilted back.

If the valve is mounted in the engine compartment, make sure it is securely mounted. Use hose clamps or cable ties as necessary.

NOTE: Control valve ports are drilled straight through allowing tee connections when opposite ports are capped. Straight-through connections are preferred to reduce entrapped air and enable use of straight fittings.



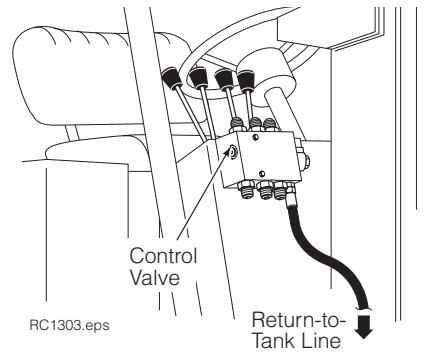
INSTALLATION

Truck Preparation

3

Install tank return hose

Install a hose from the 3N2 control valve TANK port to the 'tee' adapter installed in Step 1.

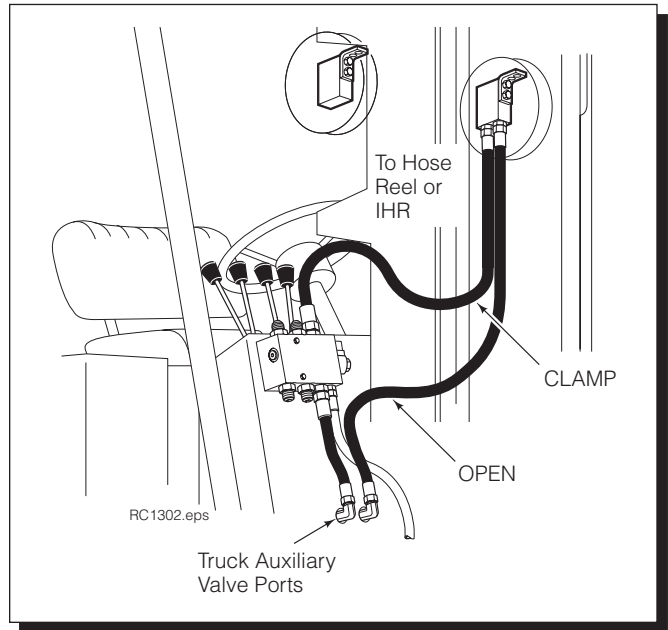


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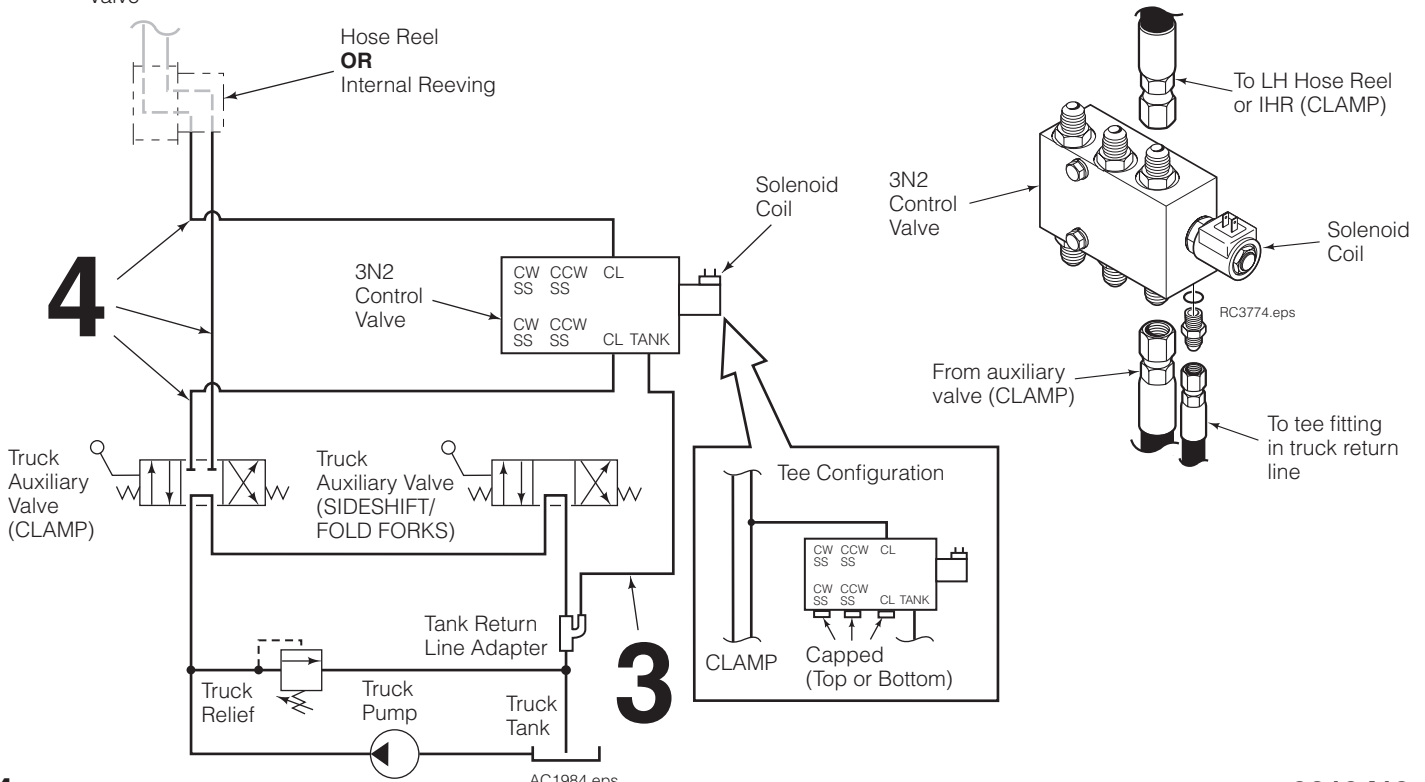
Install clamp circuit hoses

Measure and assemble hoses (user-supplied) for the clamp circuit. Install hoses using straight fittings where possible. Use hose clamps as necessary to secure hoses and prevent chafing.

- A** Install a hose from the truck auxiliary valve port to the control valve CLAMP IN port.
- B** Install a second hose from the CLAMP OUT port to a LH or RH 2-Port hose reel or internal reeving.
- C** Install a third hose from truck auxiliary valve port to the LH 2-Port hose reel or internal reeving.



To Attachment Valve



INSTALLATION

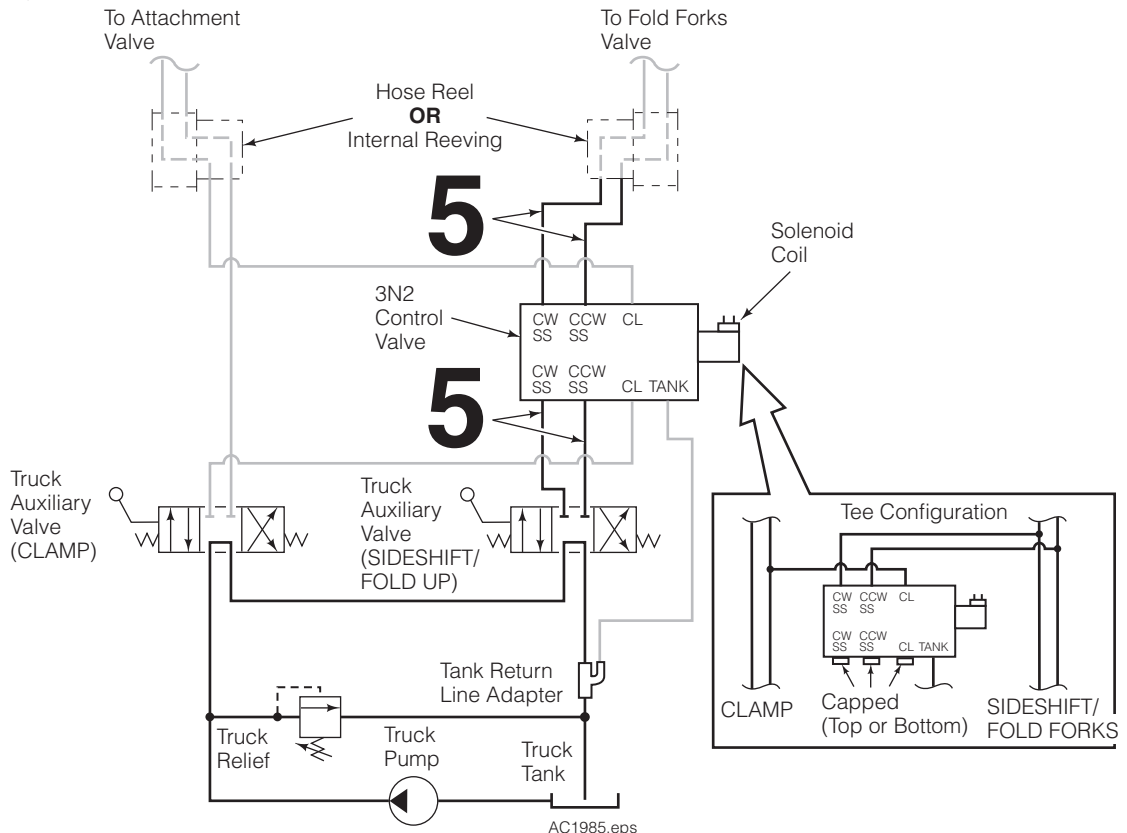
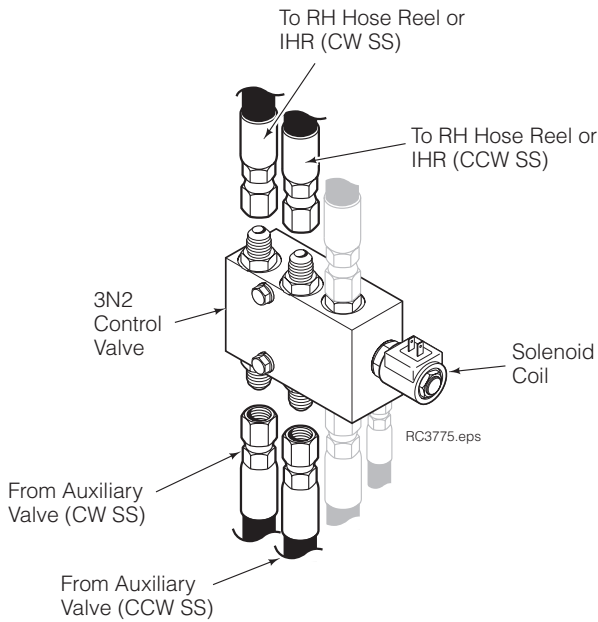
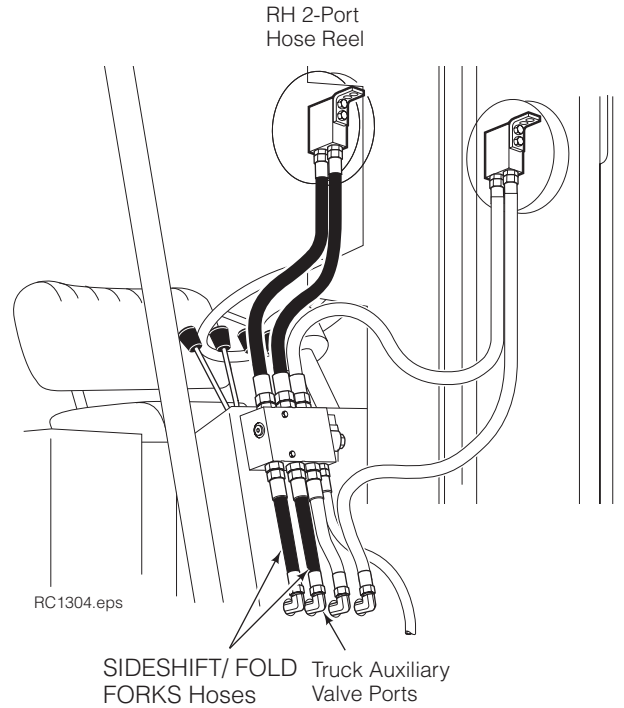
Truck Preparation

5 Sideshift/Fold Forks (SS/FF) Circuit Hoses

Measure and assemble hoses (user-supplied) for the SS/FF. Install hoses using straight fittings wherever possible. Use hose clamps as necessary to secure hoses and prevent chafing.

A The first set of SS/FF function hoses run from truck auxiliary valve ports to the control valve SS IN ports.

B The second set of rotate function hoses run from control valve SS OUT ports to a LH or RH 2-Port hose reel or internal reeving.



INSTALLATION

Truck Preparation

6 Install pushbutton switch for Folding Forks

A Mount the pushbutton switch for the SIDESHIFT function control lever using double-sided foam tape. Apply heat-shrink tubing over control lever and switch. Use cable ties as necessary to secure wiring.

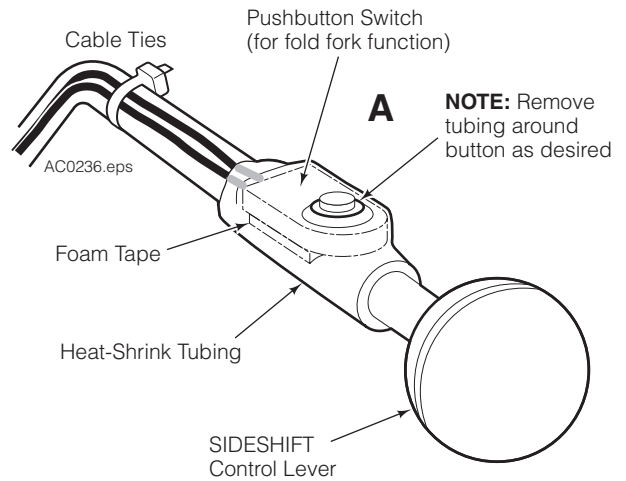
B With Power Relay – Connect the wiring harness and cables as shown in **B** below.

C Direct Connection – Connect the wiring harness and cables as shown in **C** below.

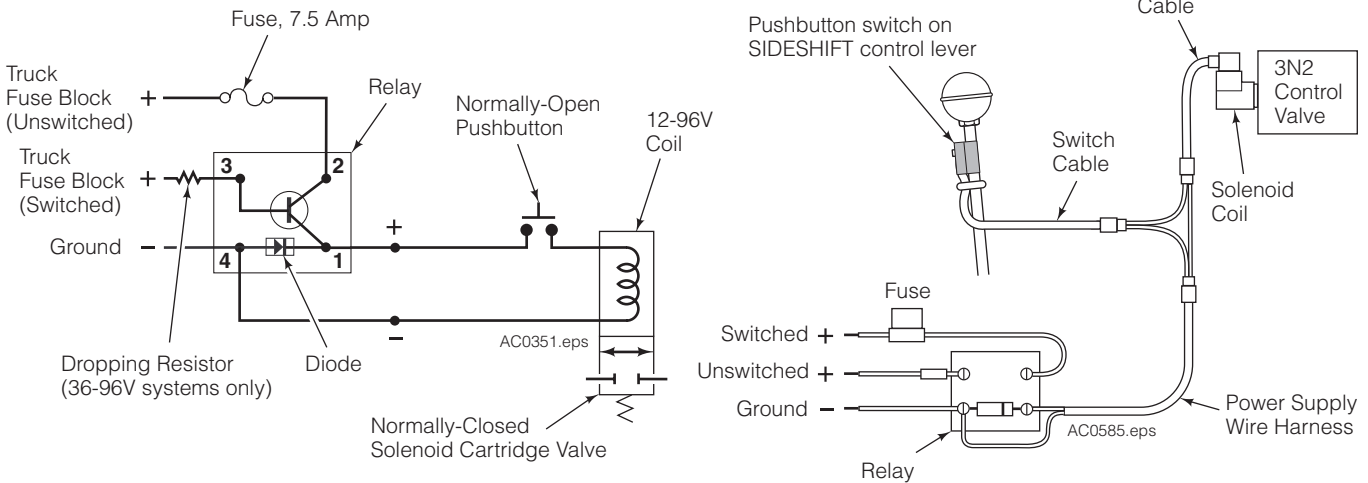
IMPORTANT: Pushbutton should be installed on CLAMP function lever (ANSI standards). When pushbutton is depressed, control lever should activate FOLD UP FORK function.

CAUTION: Consult OEM for proper positive (+) power source connection.

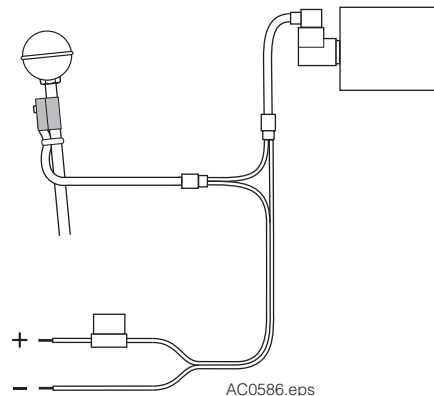
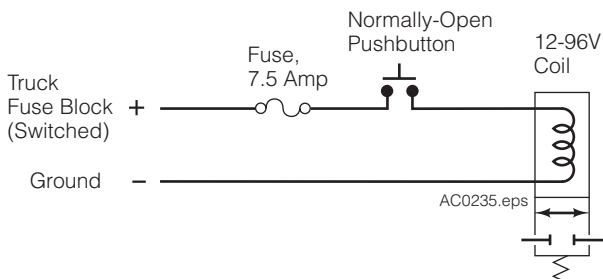
CONTROL LEVER WITH PUSHBUTTON SWITCH



B ELECTRICAL HOOKUP WITH RELAY (recommended)



C DIRECT CONNECTION



INSTALLATION

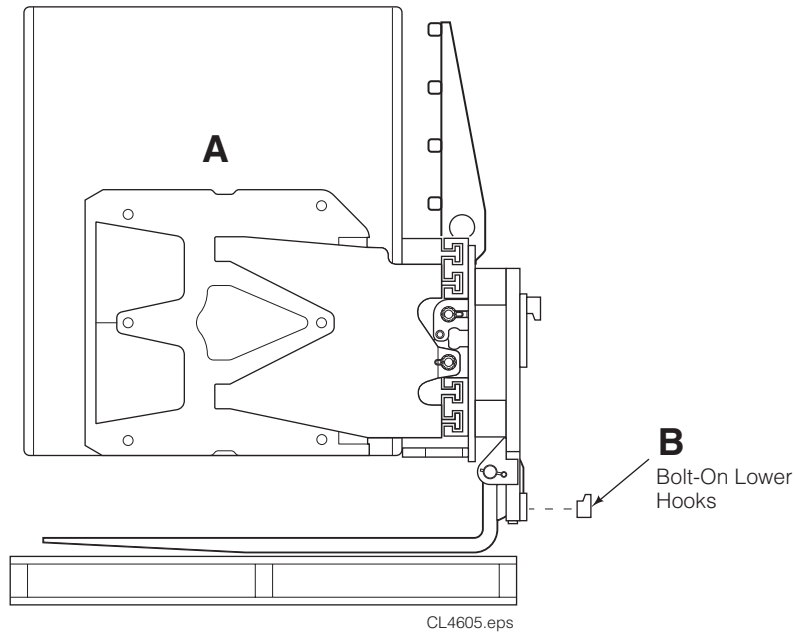
Attachment Installation

1 Attach overhead hoist

- A** Remove banding, set attachment upright on pallet.
- B** Remove bolt-on lower mounting hooks.

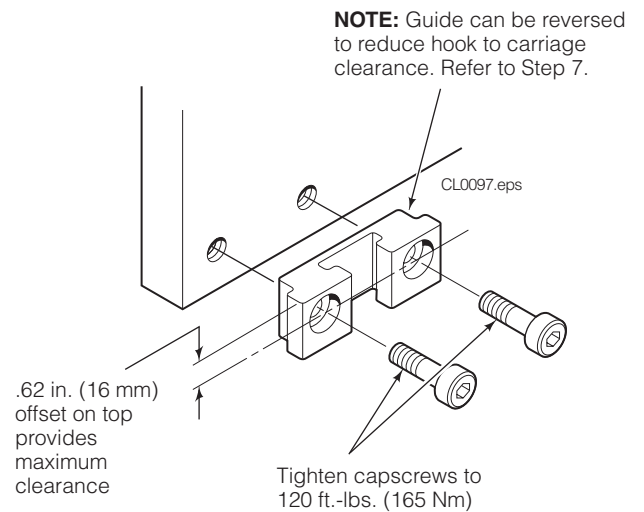
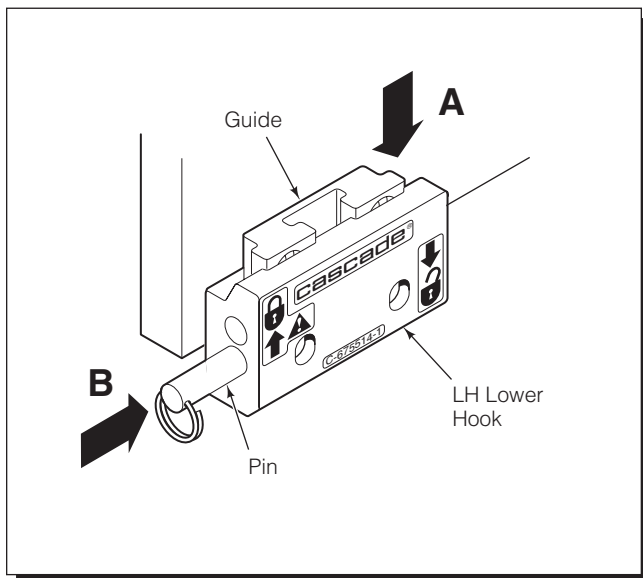


WARNING: Check the attachment weight (located on the nameplate) to make sure the overhead hoist and chains or straps are at least the rated capacity of the attachment.



2 Disconnect quick-change lower mounting hooks

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

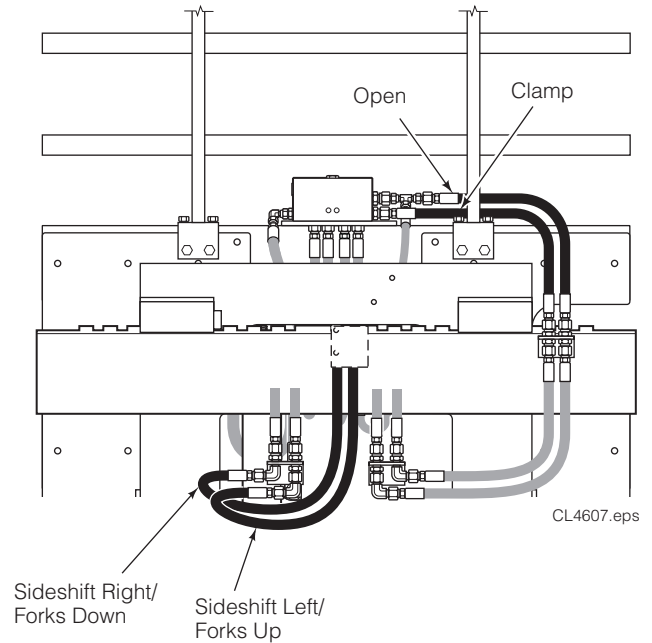
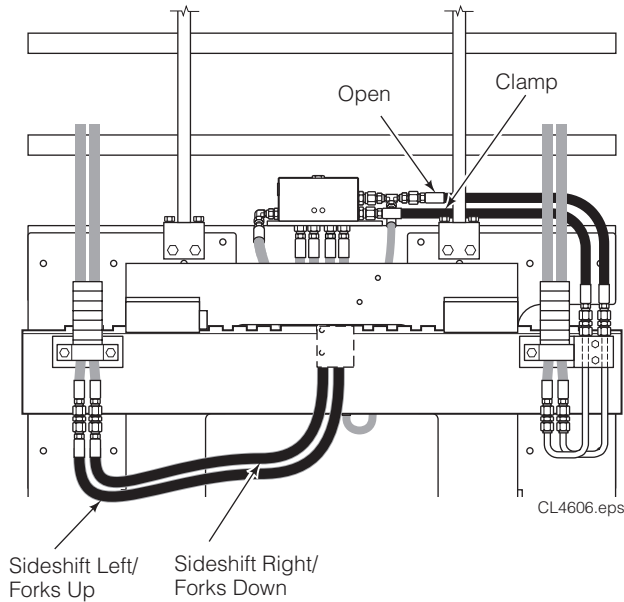


INSTALLATION

Attachment Installation

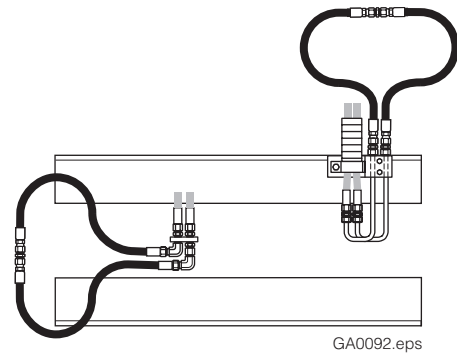
3 Prepare Hoses

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



4 Flush hydraulic supply hoses

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

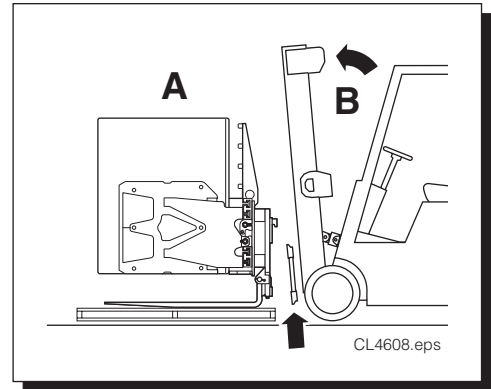


INSTALLATION

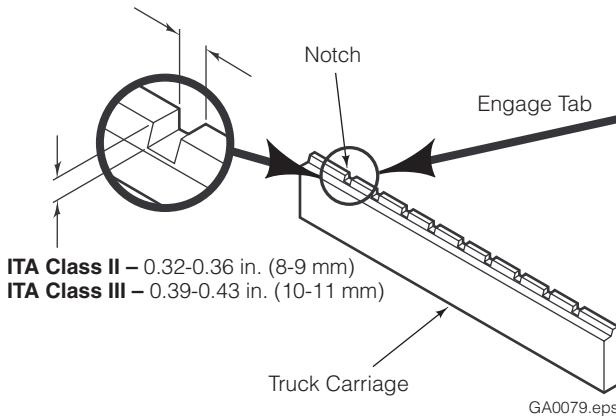
Attachment Installation

5 Mount attachment on truck carriage

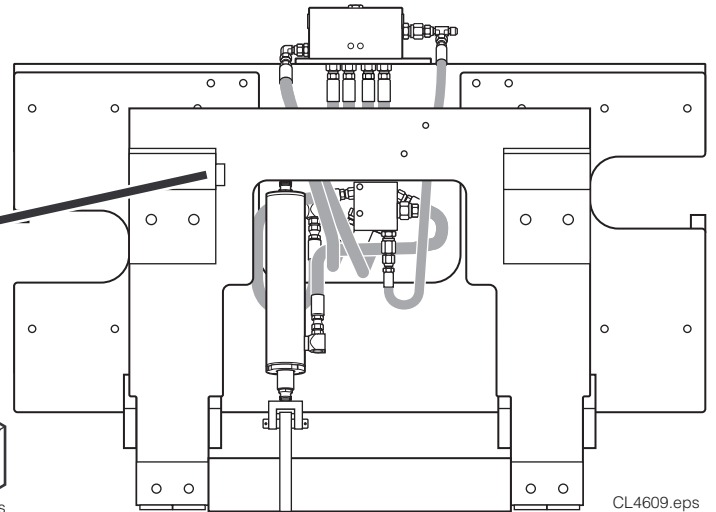
- A** Center truck behind the attachment.
- B** Tilt forward and raise carriage into position.
- C** Engage upper mounting hooks with carriage. Make sure the locator tab on the left upper hook engages the closest notch on the top carriage bar.
- D** Lift attachment 2 in. (5 cm) off pallet.



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

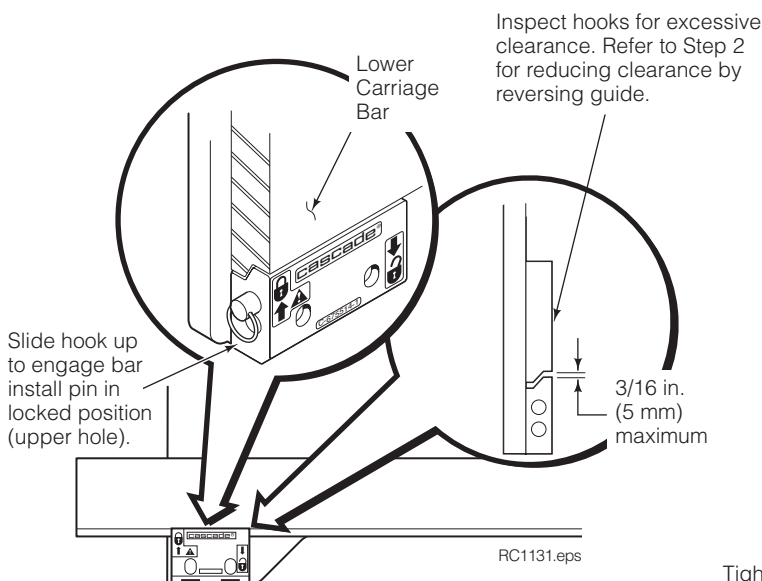


ITA Class II – 0.32-0.36 in. (8-9 mm)
ITA Class III – 0.39-0.43 in. (10-11 mm)

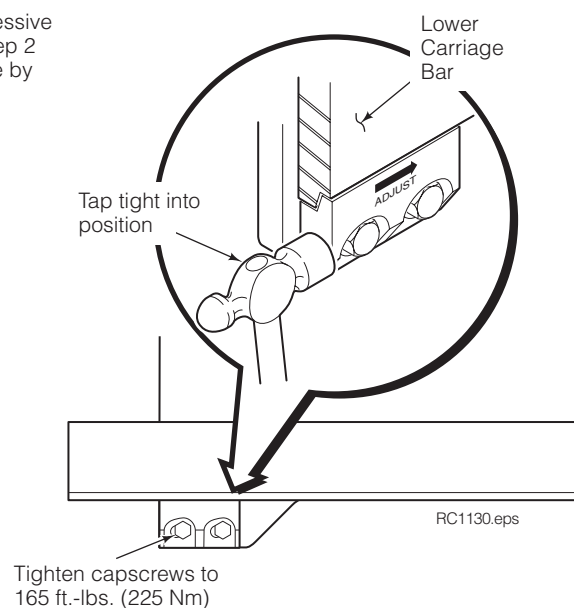


6 Install and engage lower hooks

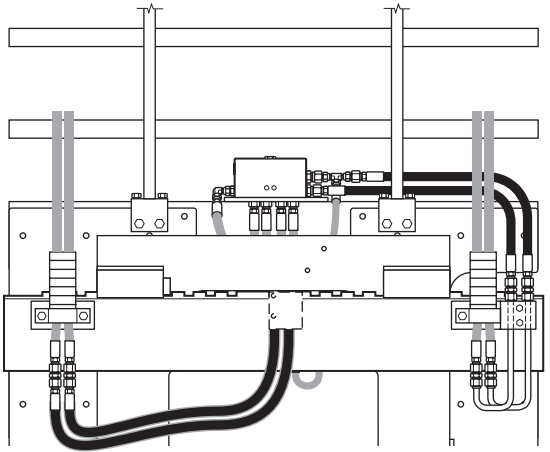
QUICK-DISCONNECT TYPE



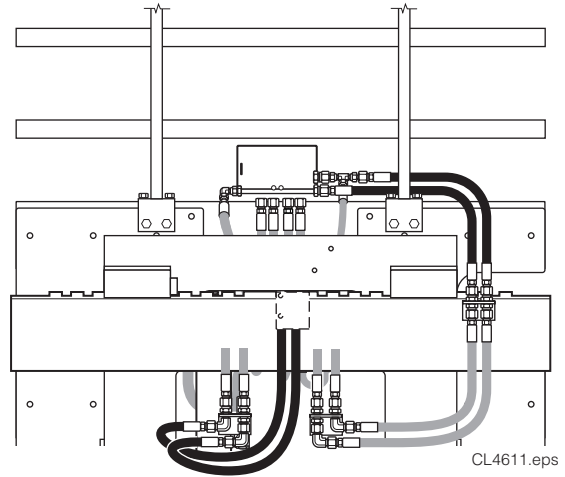
BOLT-ON TYPE



7 Connect hoses prepared in Step 3 to attachment



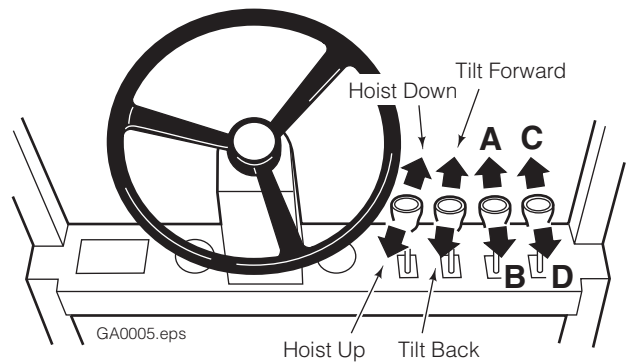
Double Hose Reels Hydraulic Supply



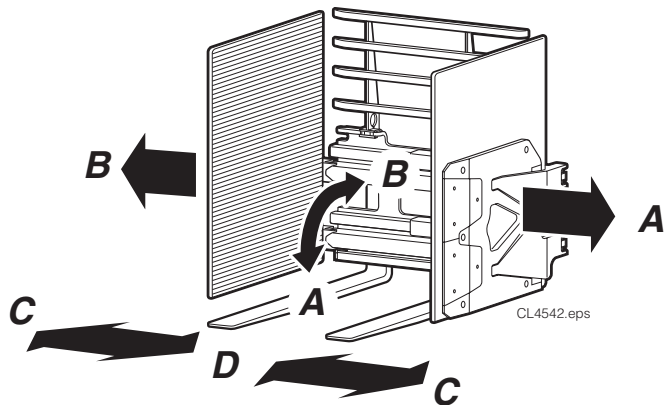
Internal Hose Reaving Hydraulic Supply

10 Cycle attachment functions

- With no load, cycle each attachment function several times.
- Check for operation in accordance with ANSI (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.



- A** Sideshift Left
- A** Forks Down (Press Button)
- B** Sideshift Right
- B** Forks Up (Press Button)
- C** Open Arms
- D** Clamp Arms



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 attachment:

- 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.
- Check decals and nameplate for legibility.



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 in to the job.

500-Hour Maintenance

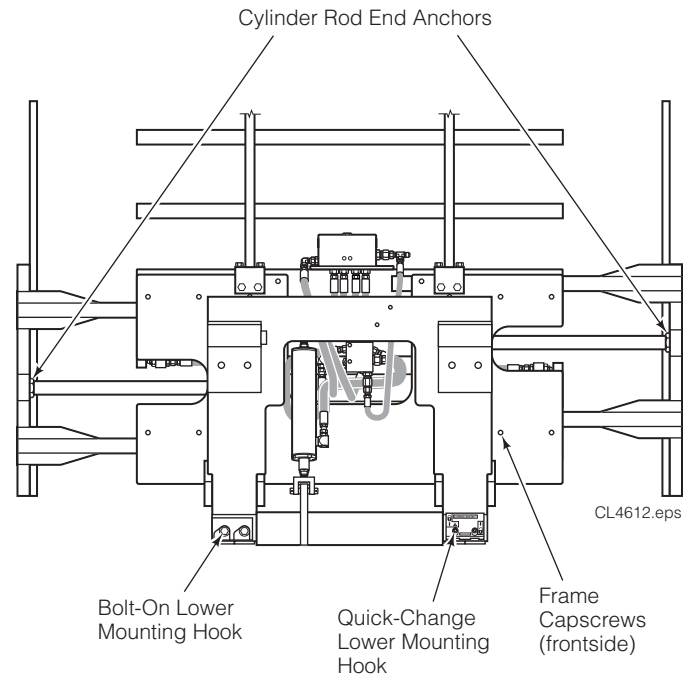
After each 500 hours of truck operation, in addition to the 100-hour maintenance, perform the following procedures:

- Check for lower mounting hook engagement clearance with the truck carriage bar:
 - Quick-Change Hooks – 3/32 in. (2.5 mm) minimum
3/16 in. (5 mm) maximum
 - Bolt-On Hooks – Tight against lower carriage bar.
 If adjustment is necessary, refer to installation step 6. Tighten lower hook capscrews to 165 ft.-lbs. (225 Nm).
- Check attachment clamp force. Cascade Clamp Force Indicators 680072, 6003391, 831887 are available for testing clamp force.
- Perform Clamp Circuit Pressure Test. Refer to Service Manual 670487.

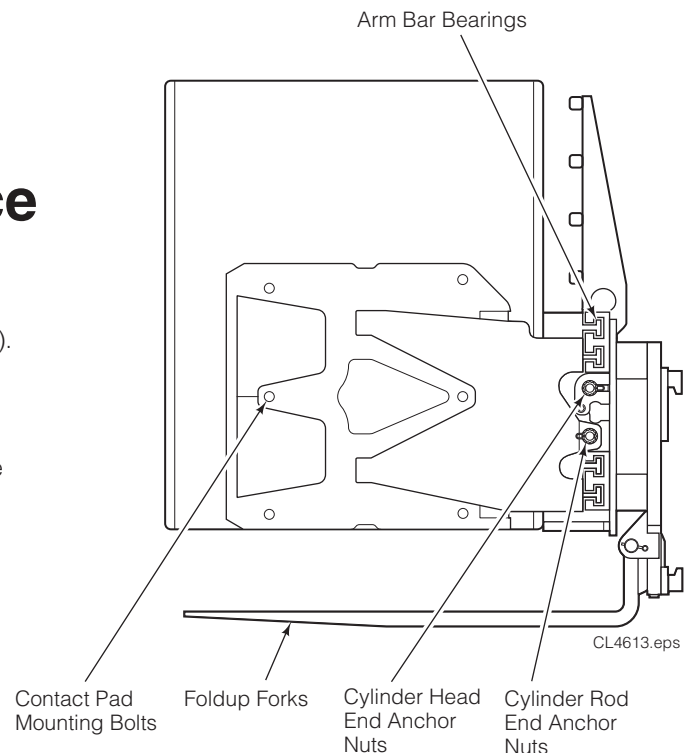
1000-Hour Maintenance

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 0.40 in. (1 mm) thickness, replace all bearings. Refer to Service Manual 670487.
- Inspect and replace wear tiles if worn. Refer to Service Manual 670487.
- Inspect pad pivot pins and bushing, replace if worn. Refer to Service Manual 670487.



Back (Driver's View)



2000-Hour Maintenance

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

- Tighten frame capscrews to 75 ft.-lbs. (100 Nm).
- Replace all arm bar bearings. Refer to Service Manual 670487.
- **Fork Inspection** – After 2000 hours of truck operation, forks in use shall be inspected at intervals of not more than 12 months (for single shift operations) or whenever any defect or permanent deformation is detected. Severe applications will require more frequent inspection.

Fork inspection shall be carried out by trained personnel to detect any damage that might impair safe use. Any fork that is defective shall be removed from service. Reference ANSI B56.1-2005.

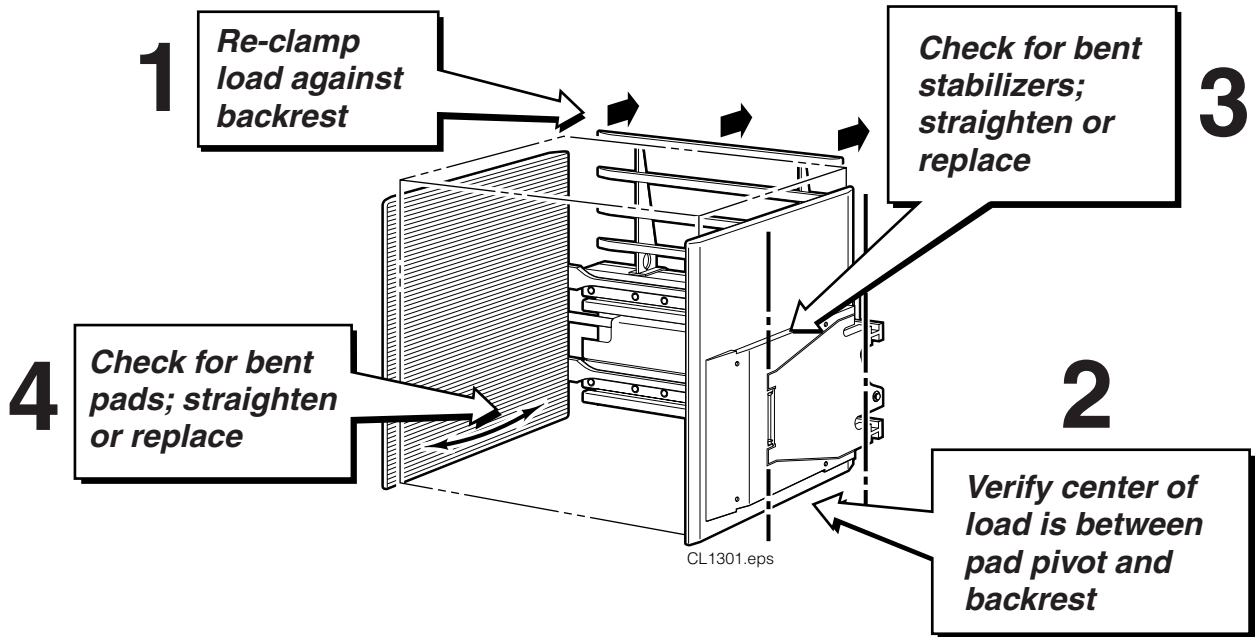
Inspect for the following defects:

- Surface cracks
- Straightness of blade and shank
- Fork angle
- Difference in height of fork tips
- Wear on fork blade and shank
- Legibility of marking

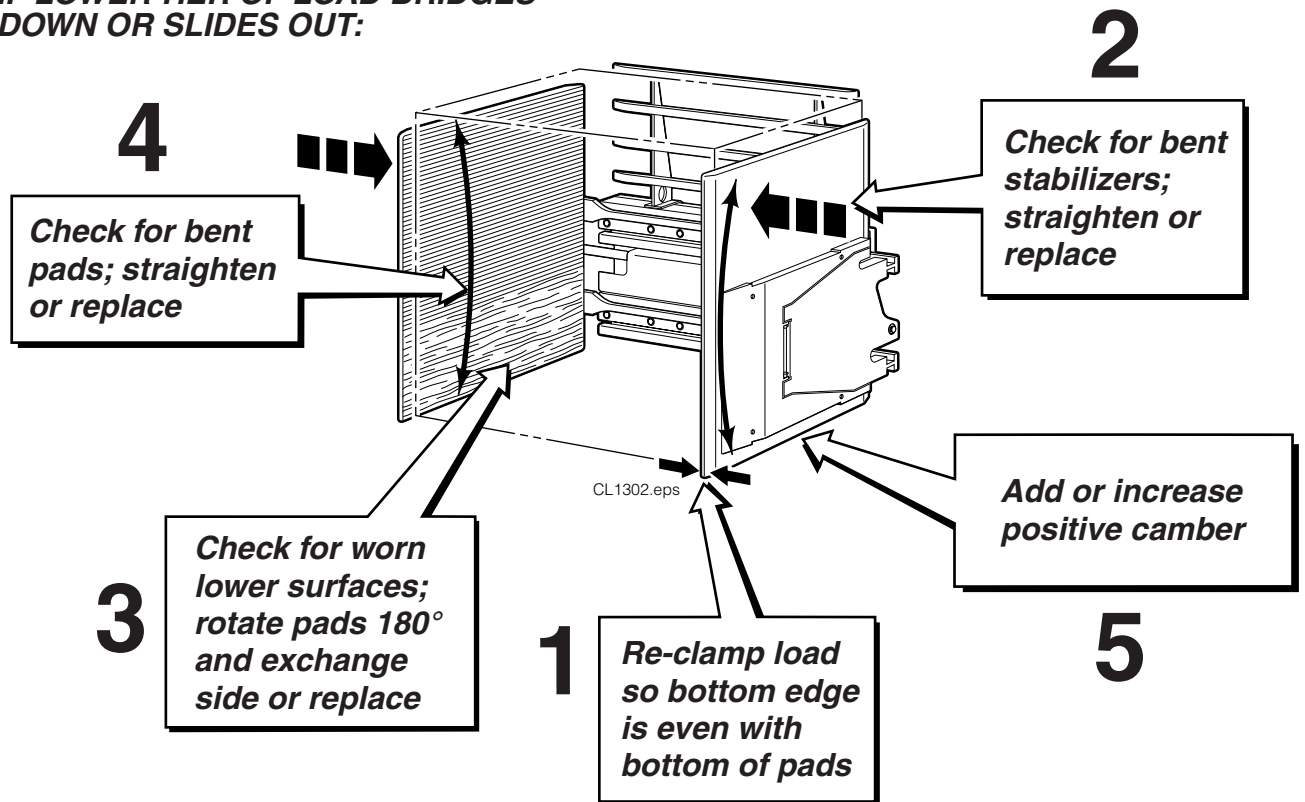
Carton Clamp Loads

IMPORTANT: Before adjusting contact pad camber to solve handling problems, make sure the attachment 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.

IN FRONT STACK OF LOAD TILTS OUT:

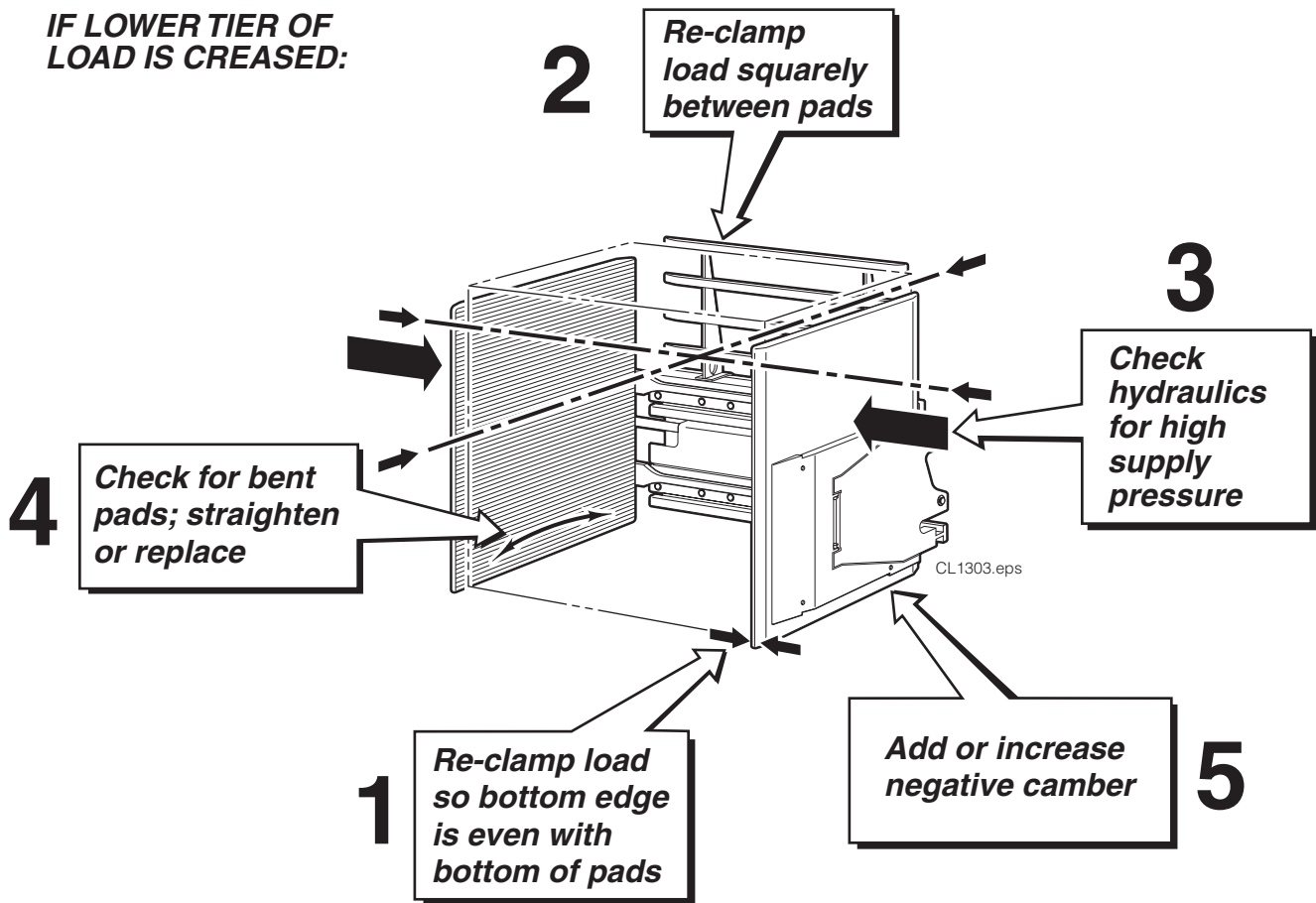


IF LOWER TIER OF LOAD BRIDGES DOWN OR SLIDES OUT:

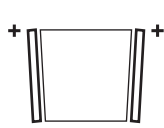
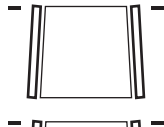
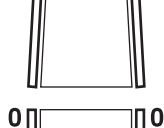



Carton Clamp Loads (Continued)

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

CL0093.eps

BLANK

Do you have questions you need answered right now?

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AMERICAS

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