INSTALLATION INSTRUCTIONS

and PERIODIC MAINTENANCE

J-Series

Carton Clamps, White Goods Clamps and Tipping Carton Clamps

Original Instructions

Number 6871082-R2 EN

CE

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This manual provides instructions for installing Cascade J-Series Carton Clamps.

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.

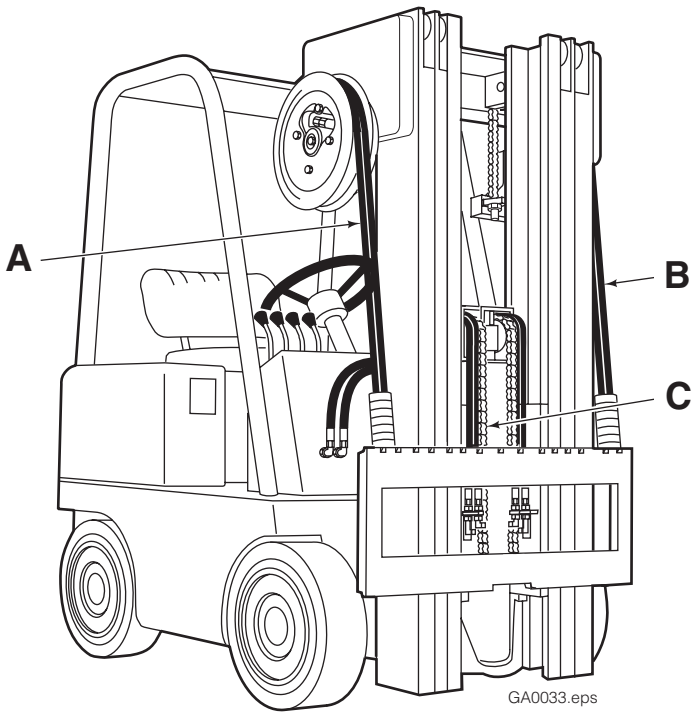
Read the **WARNING** Statements placed throughout this Manual to emphasize safety during attachment installation.

IMPORTANT: 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 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 M8 with a minimum internal diameter of 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.

Sideshifting with Solenoid

A 6-N-1 Cable/Hose Reel group.

OR

A and C
Cable Reel and single internal hose reeving group.

TRUCK REQUIREMENTS

STANDARD CARTON CLAMP & WHITE GOODS CLAMPS

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 (see attachment nameplate)

Low Pressure	High Pressure
155 bar	190 bar - **Recommended**
189 bar	250 bar - **Maximum**

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

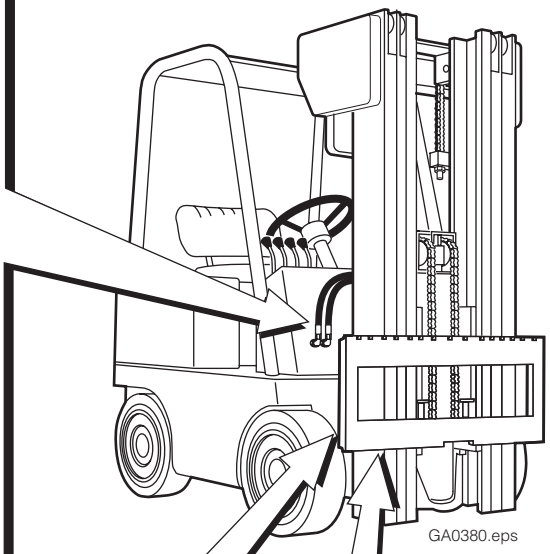
Truck Flow Volume ①

8J-26J	Min. ②	Recommended	Max. ③
SIDESHIFT	4 L/min.	19 L/min.	38 L/min.
CLAMP	19 L/min.	45 L/min.	61 L/min.

① Cascade J-Series Carton 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.



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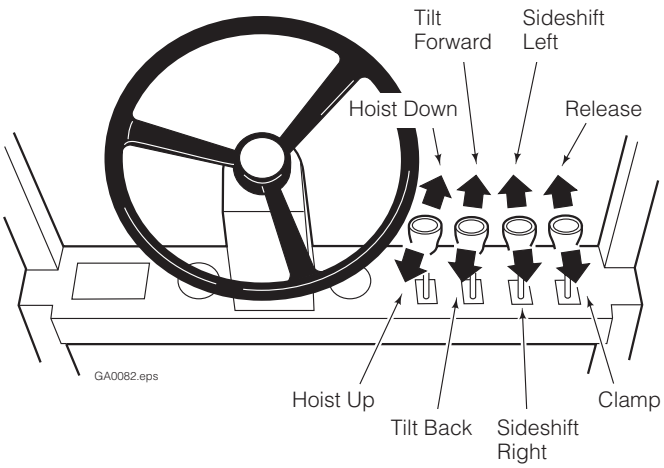
Carriage Mount Dimension (A) ITA (ISO)

	Minimum	Maximum
Class II	380.0 mm	381.0 mm
Class III	474.5 mm	476.0 mm

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

Auxiliary Valve Functions

Check for compliance with ANSI/ITSDF (ISO) standards:



TRUCK REQUIREMENTS

TIPPING CARTON CLAMPS

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 (see attachment nameplate)

Low Pressure	High Pressure
155 bar	190 bar - **Recommended**
189 bar	250 bar - **Maximum**

NOTE: The attachment valve has separate pressure relief control for Clamp and Sideshift functions, see Installation Step 11 for adjustment.

Truck Flow Volume ①

8J, 18J	Min. ②	Recommended	Max. ③
SIDESHIFT & TIPPING	4 L/min.	19 L/min.	38 L/min.
CLAMP	19 L/min.	45 L/min.	61 L/min.

① Cascade J-Series Tipping Carton 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.

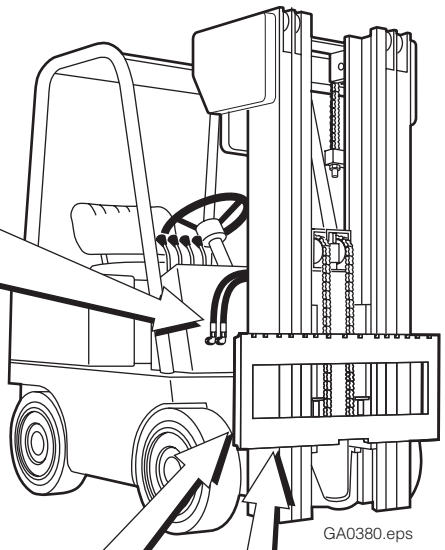
③ Flow greater than maximum can result in excessive heating, reduced system performance and short hydraulic system life.



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Carriage Mount Dimension (A) ITA (ISO)

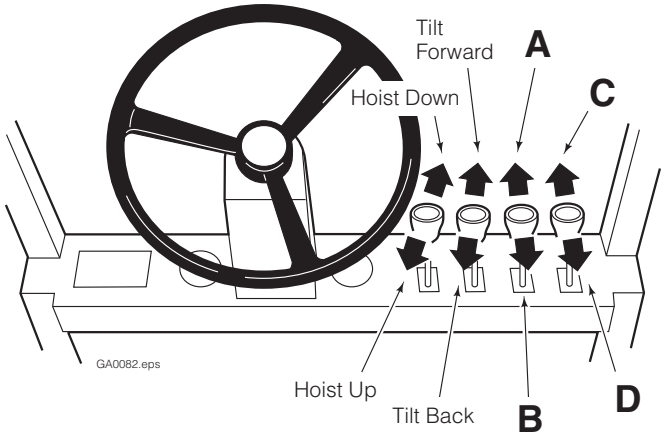
	Minimum	Maximum
Class II	380.0 mm	381.0 mm


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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.

Auxiliary Valve Functions

Check for compliance with ANSI/ITSDF (ISO) standards:



Non-Sideshifting Clamps

A Tip Forward
B Tip Backward
C Release
D Clamp

Sideshifting Clamps

A Sideshift Left
OR
Tip Forward (Push Button)
B Sideshift Right
OR
Tip Backward (Push Button)
C Release
D Clamp

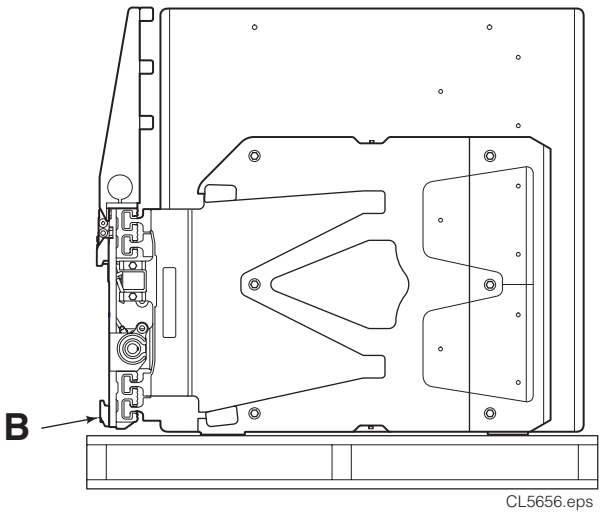
Follow the steps shown to install the attachment on the truck. Read and understand all **WARNING** and **CAUTION** statements. If a procedure is not understood, ask a supervisor or call the nearest Cascade Service Department for assistance.

1 Attach overhead hoist

A Remove banding. If required, set the attachment upright on pallet. Use chains or straps as necessary.

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

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

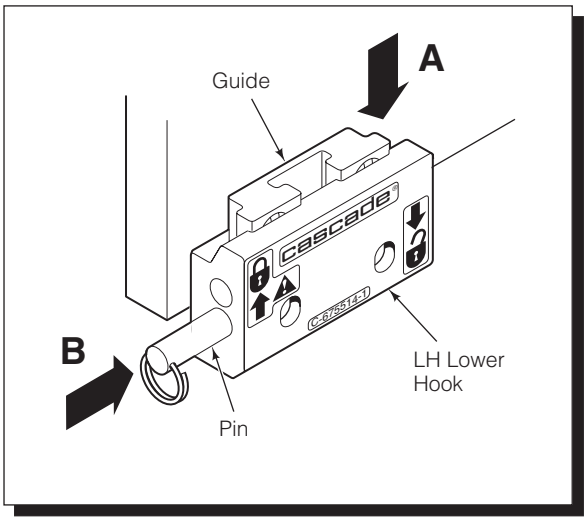


Side View
(Standard Attachment Shown)

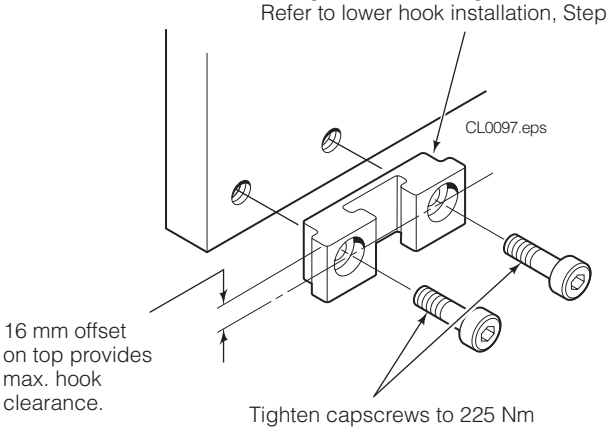
2 Unlock quick-change lower mounting hooks

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.



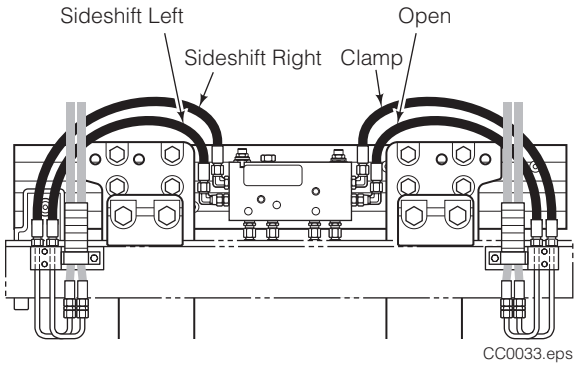
3 Prepare Hoses

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.

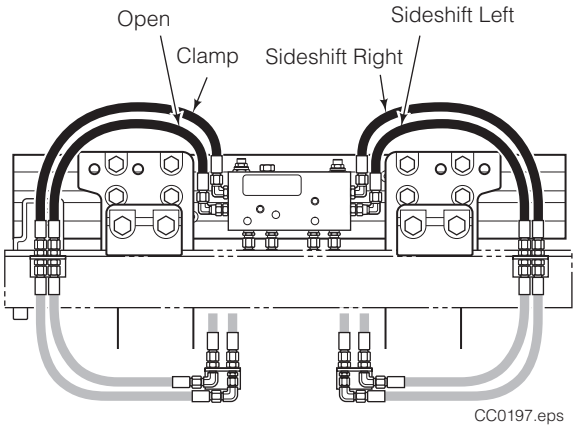
IMPORTANT: Valve options include LH or RH supply porting for Clamp/Open and Sideshift Left/Right. External sideshifter has top center location porting suitable for both LH or RH supply connections.

RH CLAMP, LH SIDESHIFT Ports



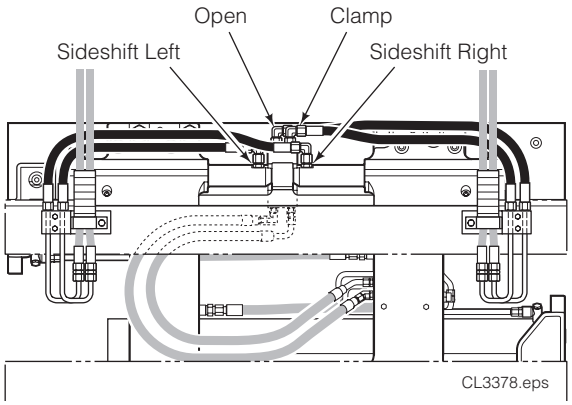
Non-Sideshifting – Single Hose Reels
Sideshifting Clamp – Double Hose Reels

LH CLAMP, RH SIDESHIFT Ports



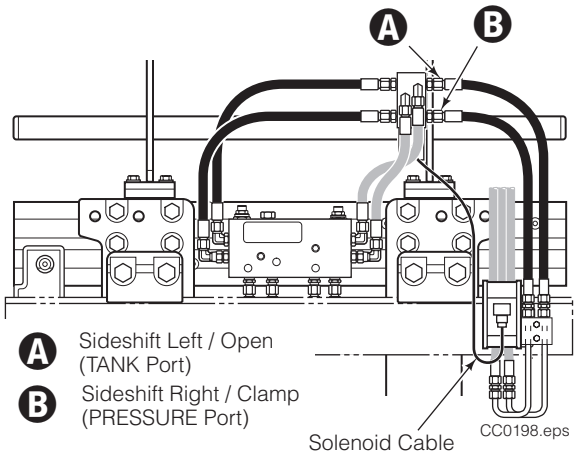
Non-Sideshifting – Single Internal Hose Reeving
Sideshifting Clamp – Double Internal Hose Reeving

EXTERNAL SIDESHIFTER-EQUIPPED



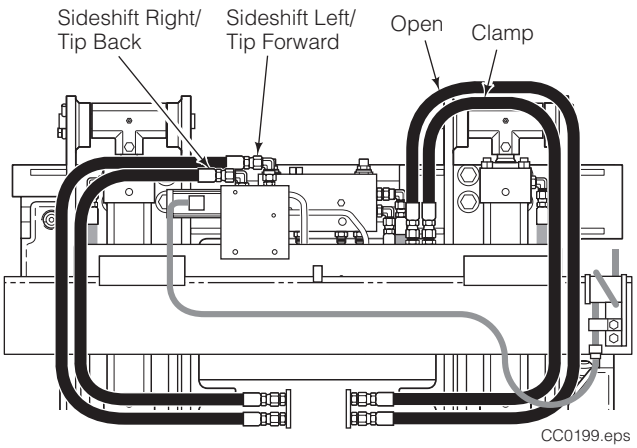
External Sideshifting Clamp – Double Hose Reels

SOLENOID-EQUIPPED RH or LH CLAMP Ports



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

TIPPING with SOLENOID-EQUIPPED



Sideshifting Clamp – Double Internal Hose Reeving

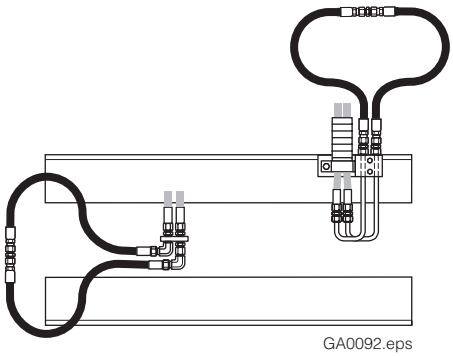
Back (Driver's) Views

4 Flush hydraulic supply hoses

A Install hoses using union fittings.

B Operate auxiliary valves for 30 seconds.

C Remove union fittings.



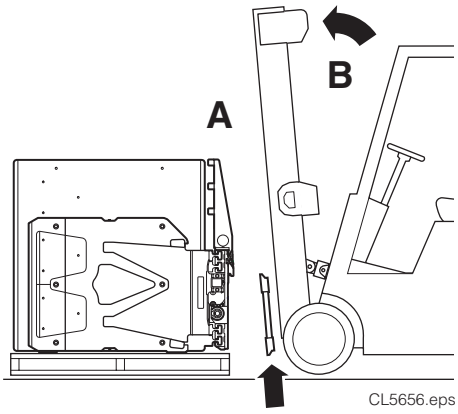
5 Mount attachment on truck carriage

A Center truck behind the attachment.

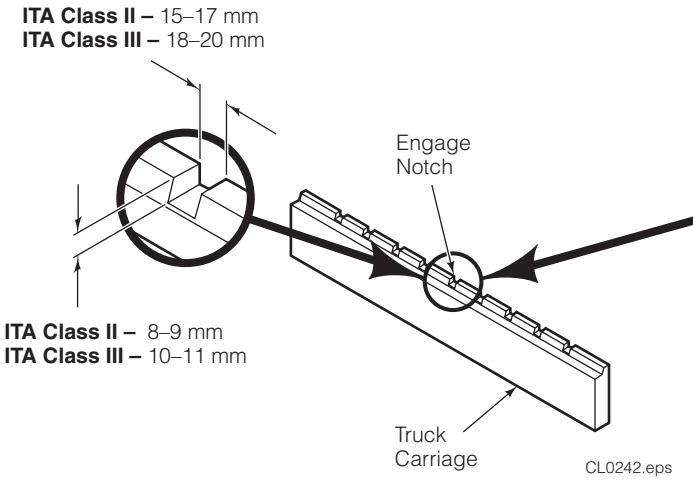
B Tilt forward and raise carriage into position.

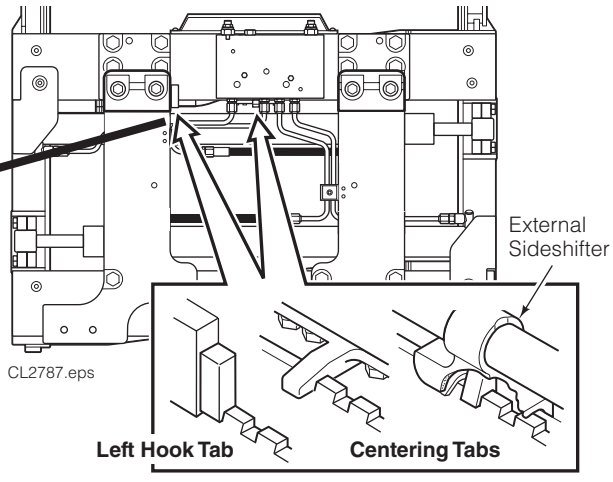
C Engage upper mounting hooks with upper carriage bar. Make sure a centering tab or hook tab engages a notch on the carriage bar. Refer to the illustration below.

D Lift the attachment 5 cm above pallet.



Side View
(Standard Carton Clamp Shown)

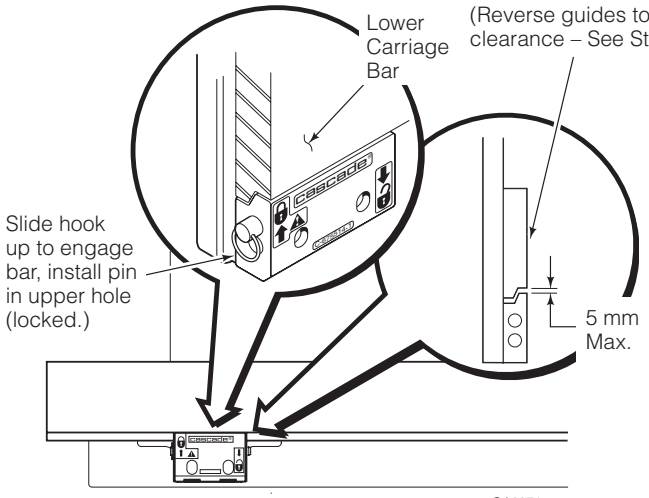




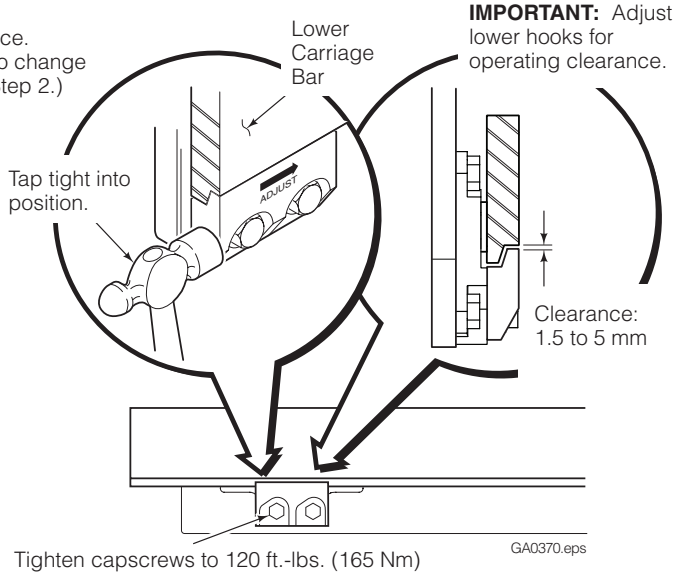
Back (Driver's) View
(Standard Carton Clamp Shown)

6 Install and engage lower hooks

QUICK-CHANGE TYPE

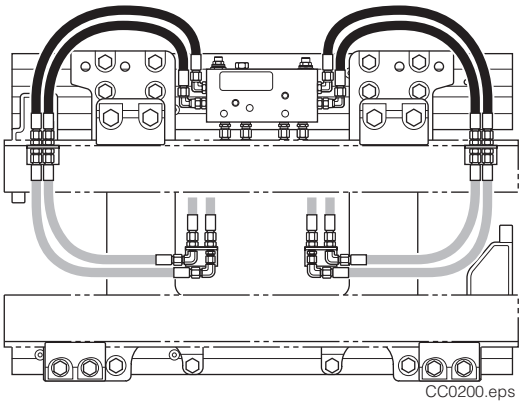


BOLT-ON TYPE w/ INTERNAL SIDESHIFTING

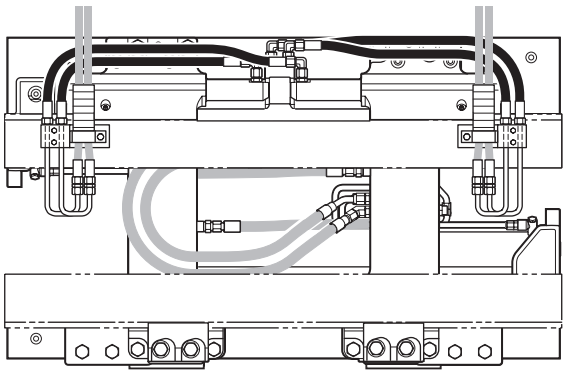


BOLT-ON TYPE w/ EXTERNAL SIDESHIFTING

7 Connect hoses prepared in Step 3 to attachment



Internal Hose Reeving Hydraulic Supply
(Standard Attachment Shown)

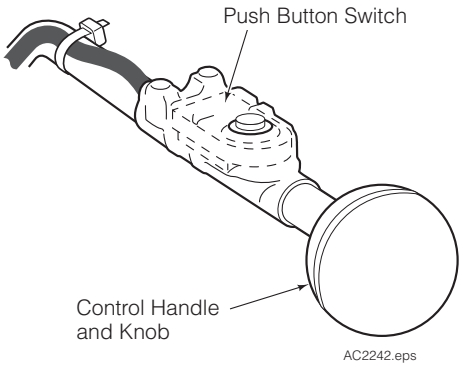


Hose Reels Hydraulic Supply (External Sideshifter)

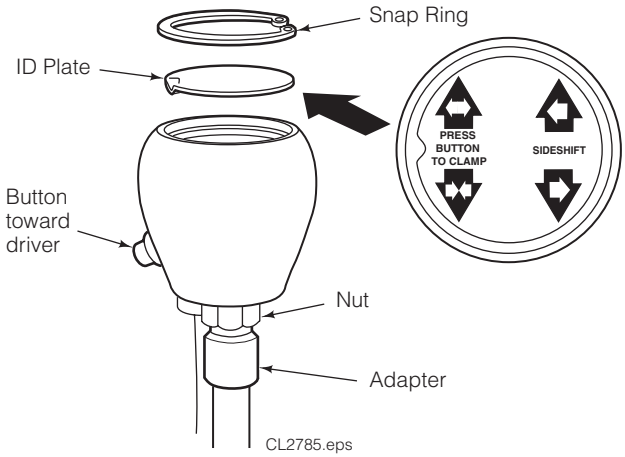
8 Install solenoid control knob or push button switch (solenoid-equipped)

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

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

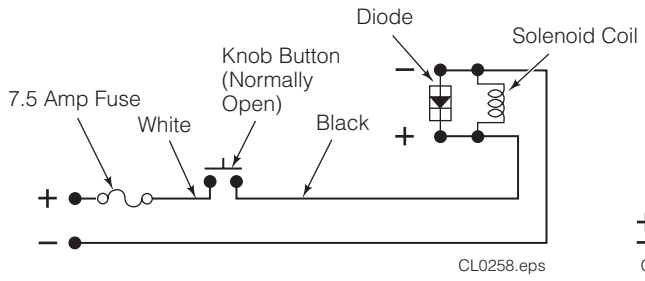


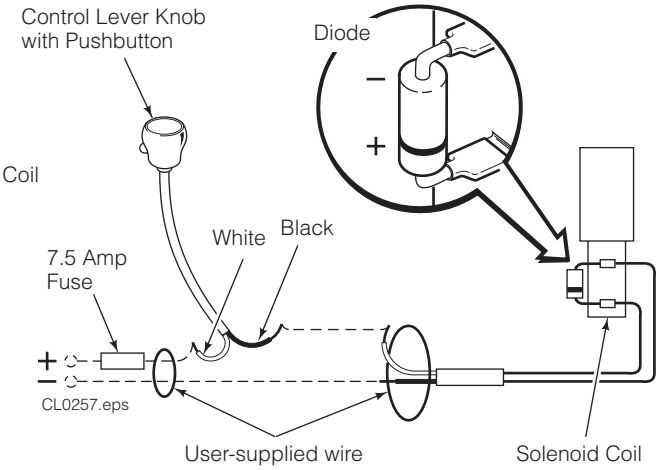
Install the push button switch to the control lever. Refer to Installation Instructions 6822725, included with switch, for complete installation procedure.



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

9 Install wiring – (solenoid-equipped units)





10 Cycle attachment functions

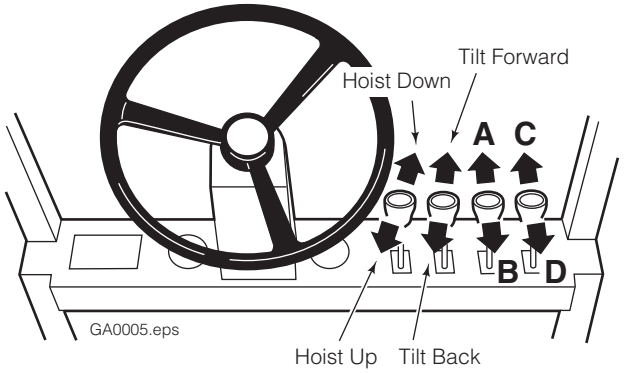
- With no load, cycle CLAMP function, SIDESHIFT function and TIPPING function several times. Check for equal arm movement and adequate arm speed.
- Clamp and lift a maximum load. Sideshift left and right. Tip forward and back.
- Check for operation in accordance with ANSI/ ITSDF (ISO) standards.

  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.

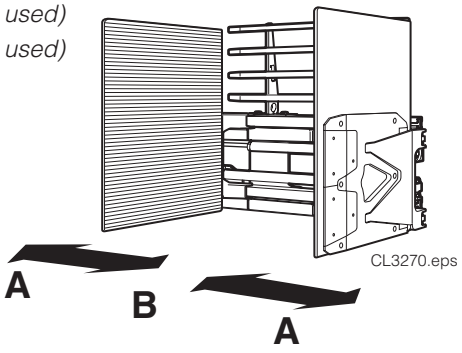
WARNING: Truck control handle and attachment function activation shown here conforms to ANSI/ITSDF B56.1 (ISO 3691) recommended practices. Failure to follow these practices may lead to serious bodily injury or property damage. End user, dealer and OEMs should review any deviation from the practices for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

AUXILIARY VALVE FUNCTIONS



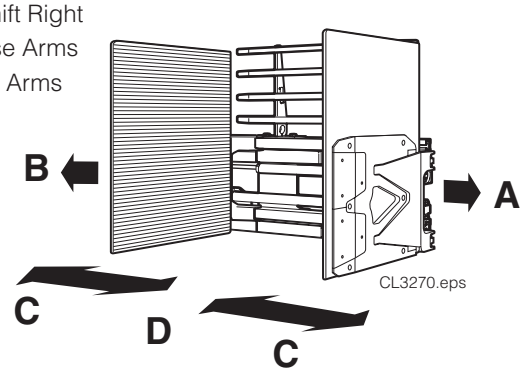
NON-SIDESHIFTING CLAMPS

A Release Arms
B Clamp Arms
C *(not used)*
D *(not used)*



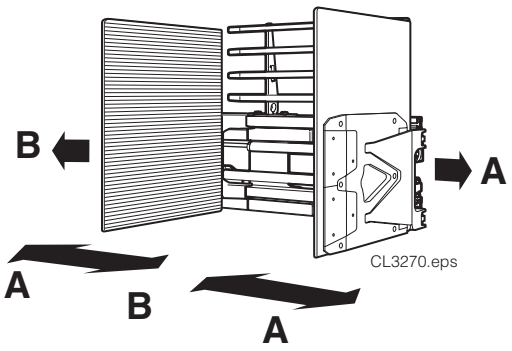
SIDESHIFTING CLAMPS

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



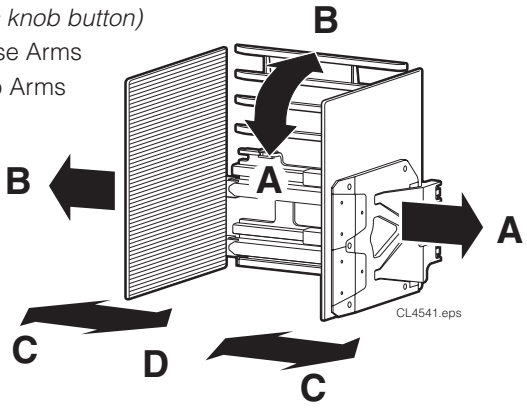
SIDESHIFTING CLAMPS WITH SOLENOID VALVE

A Sideshift Left
A Release Arms
(press knob button)
B Sideshift Right
B Clamp Arms
(press knob button)



SIDESHIFTING WITH TIPPING

A Sideshift Left
A Tip Forward
(press knob button)
B Sideshift Right
B Tip Back
(press knob button)
C Release Arms
D Clamp Arms



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: 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 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 345 bar pressure gauge (with a No. 4 O-ring fitting) to the valve gauge 'G' port.

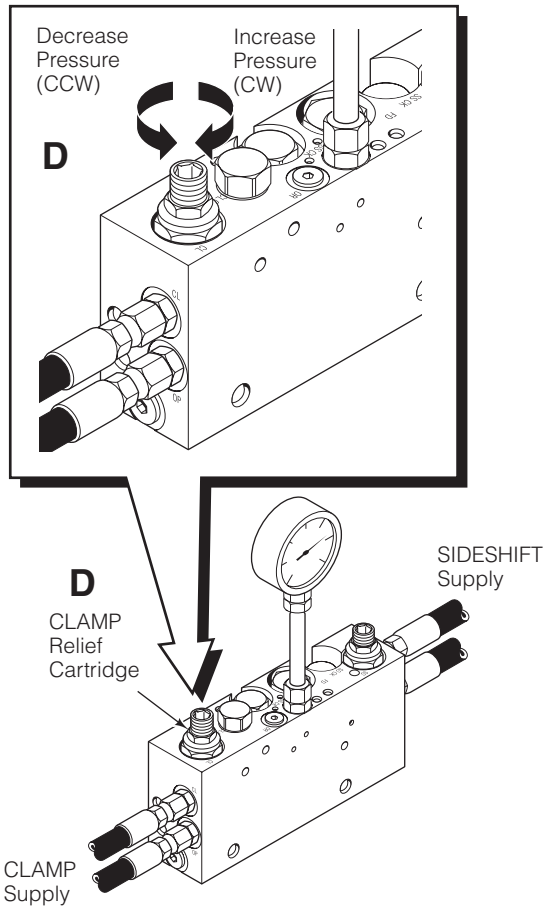
C From fully open, close the arms at normal speed to clamp a rigid load, clamp force indicator or fully bottom cylinders. Release truck handle and read pressure gauge. Compare gauge pressure with valve label pressure.

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.

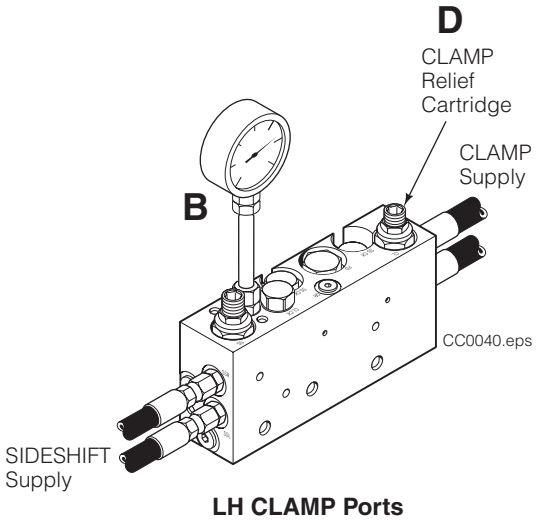
E Repeat steps **C** and **D** to confirm setting. Tighten jam nut.

NOTE: When adjusting a CLAMP 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.

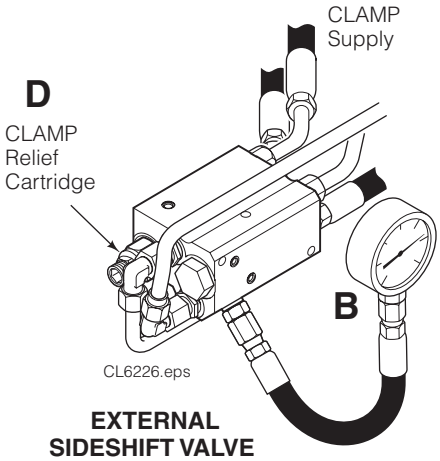
NOTE: Adjustment of CLAMP relief pressure according to load requirements for secure handling and damage reduction is recommended. Adjust the relief cartridge per step **A**–**E** to obtain a desired pressure setting. Pressure is not to exceed the maximum pressure setting on the attachment nameplate.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



RH CLAMP Ports



LH CLAMP Ports



EXTERNAL SIDESHIFT VALVE

Adjust Relief Cartridges (continued)

Clamp Relief Adjustment – Clamp Force Method
A Cascade 4-Point Force Distribution Tester is required for this procedure.

A Extend the arms to the most common load width. Lower the contact pads to just above the floor.

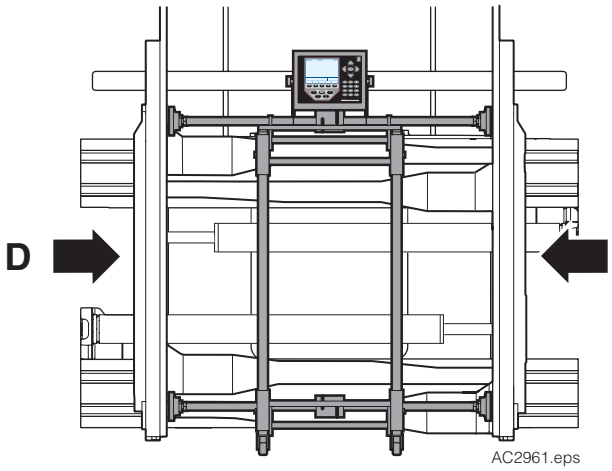
B Position the tester between the contact pads. Adjust the tester's spindle locations to be perpendicular to the contact pad surfaces and to the desired position based on the type of product being handled.

C Set the truck CLAMP circuit to the approximate pressure for the required clamp force on the load.

D Clamp on the tester and hold activated for 5 seconds.

E The tester will display **clamp force** and **percentage of clamp force** for each spindle location and **total clamp force** (sum of force of the four spindles).

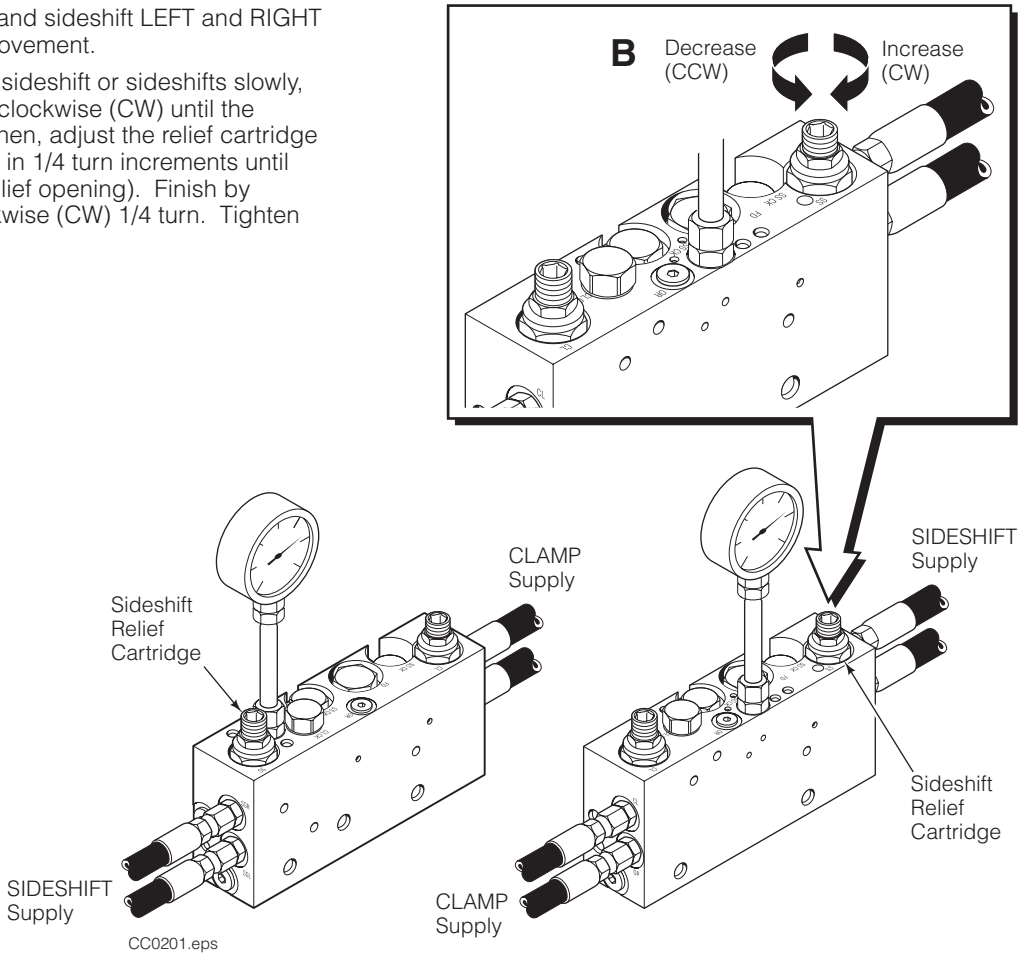
F Adjust the truck CLAMP circuit pressure to the required total clamp force for the load.



Sideshift Relief Adjustment (Internal SS only)

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) in 1/4 turn increments until sideshift speed slows (relief opening). Finish by adjusting cartridge clockwise (CW) 1/4 turn. Tighten jam nut.



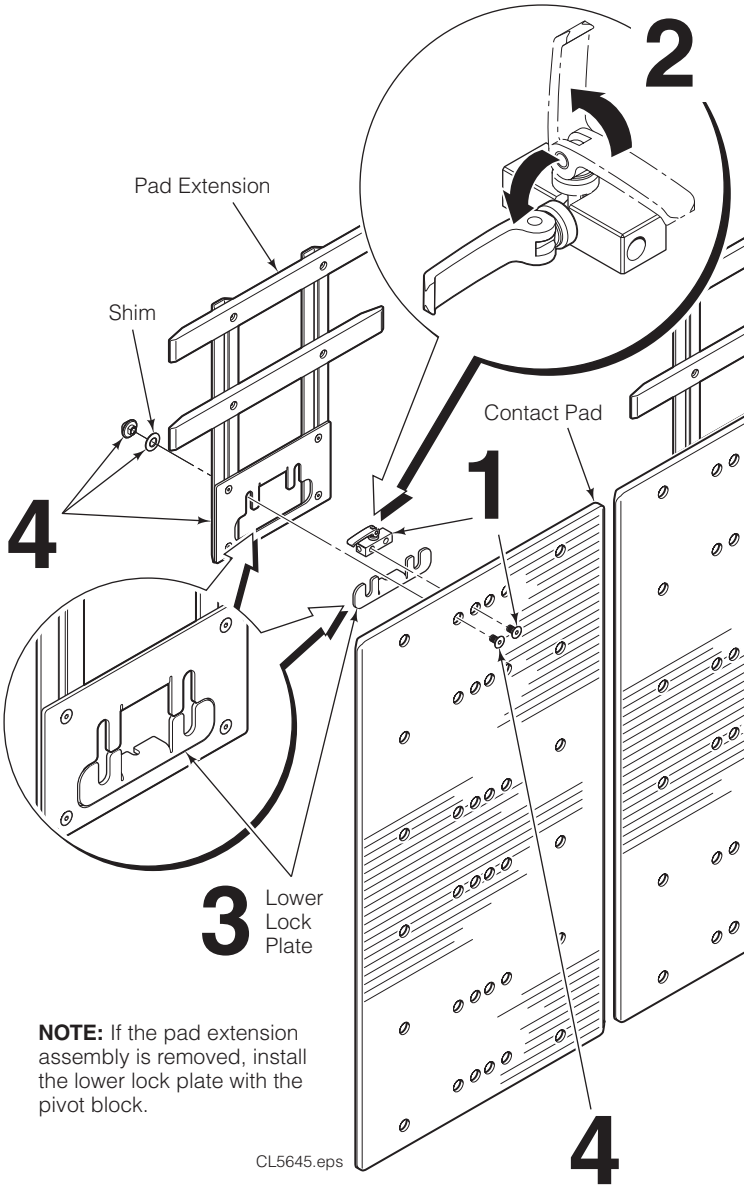
LH CLAMP Ports **RH CLAMP Ports**

CONTACT PAD EXTENSION

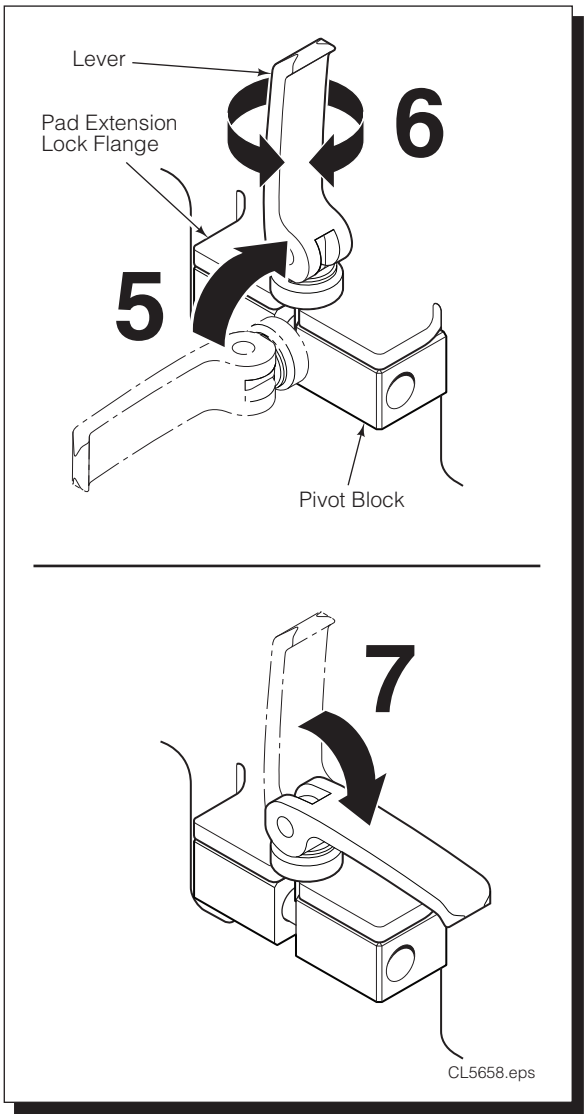
Attachments supplied with contact pad extensions are installed as follows:

1. Install pivot block to contact pad. Tighten capscrews to 90 Nm.
2. Release lever on pivot block. Position the lever to the front face of the pivot block.
3. Insert the lower lock plate into the pad extension.
4. Install pad extension to contact pad. Tighten capscrews to 90 Nm. The pad extension lock flange should be flush with the top of the pivot block.
5. Position the lever to the top face of the pad extension lock flange.
6. Adjust the lock lever to firmly clamp the lock flange to the pivot block when in the lock position.
7. Fully lock the lever by positioning the lever in the downward position.

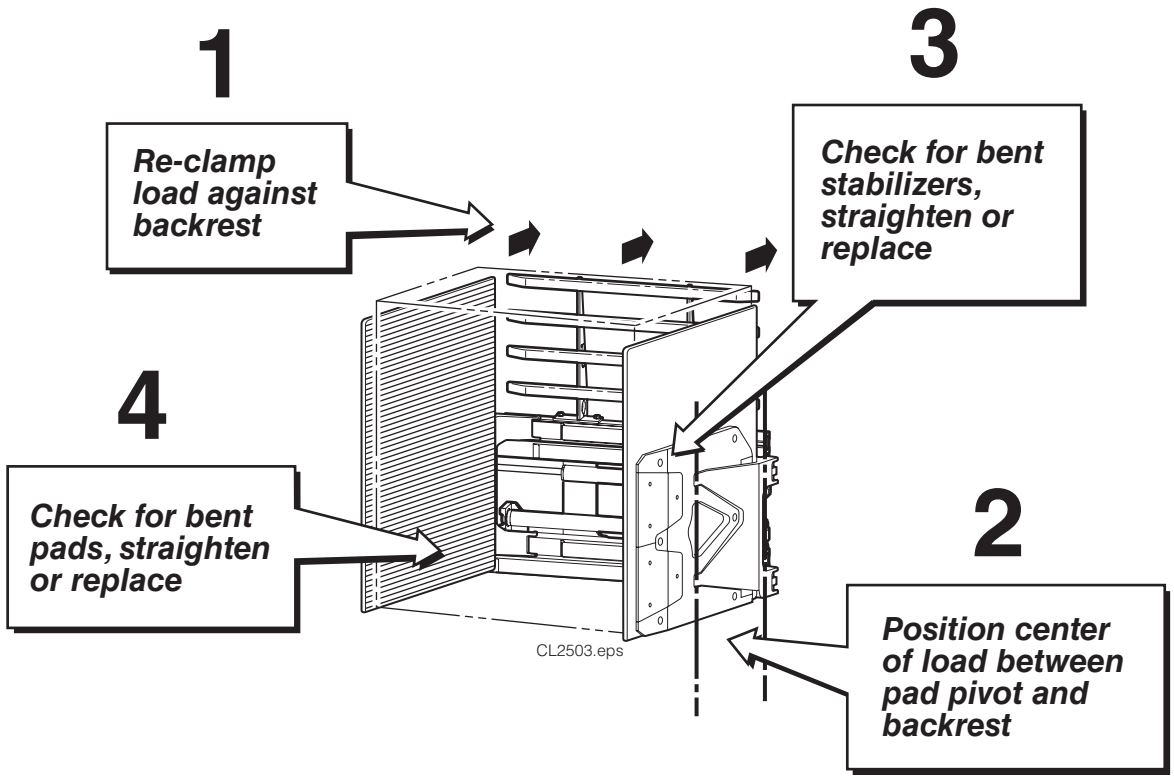
NOTE: The face of the pad extension should be flush with the contact pad surface. Shim as required.



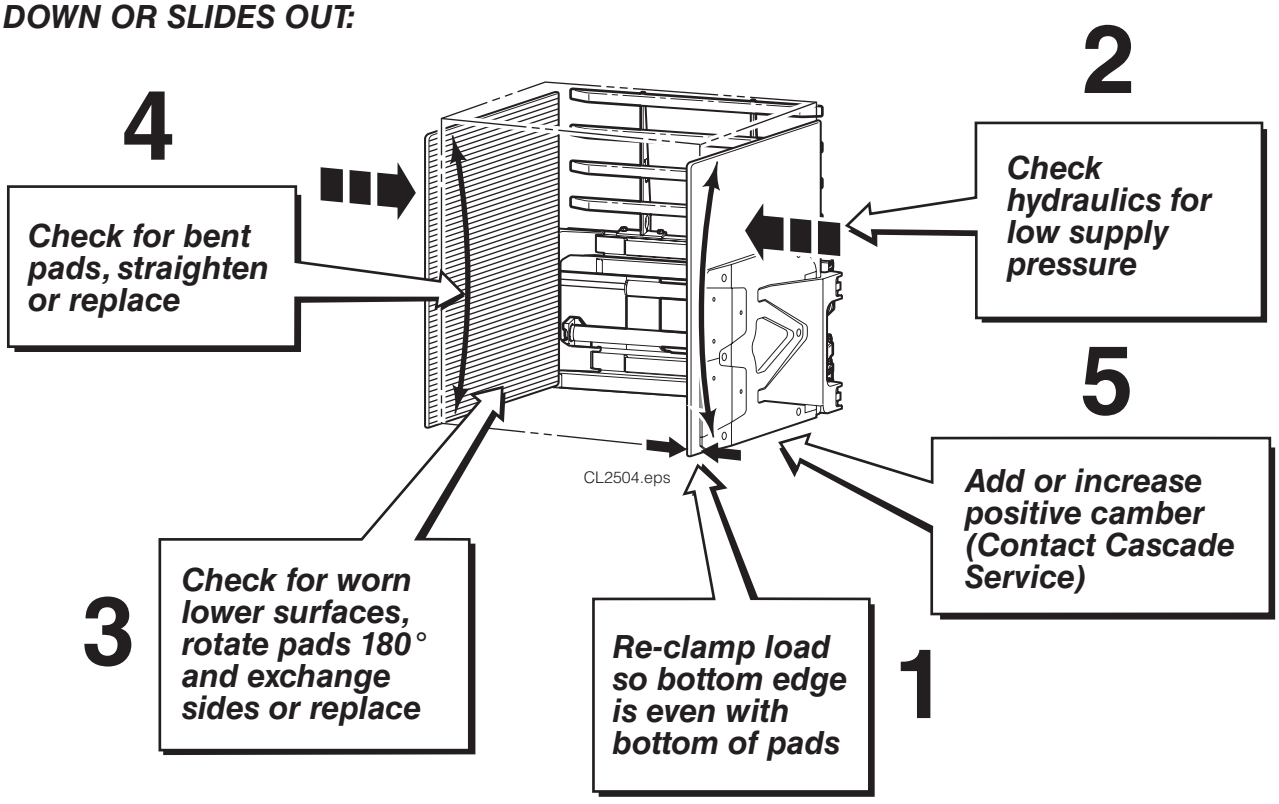
NOTE: If the pad extension assembly is removed, install the lower lock plate with the pivot block.



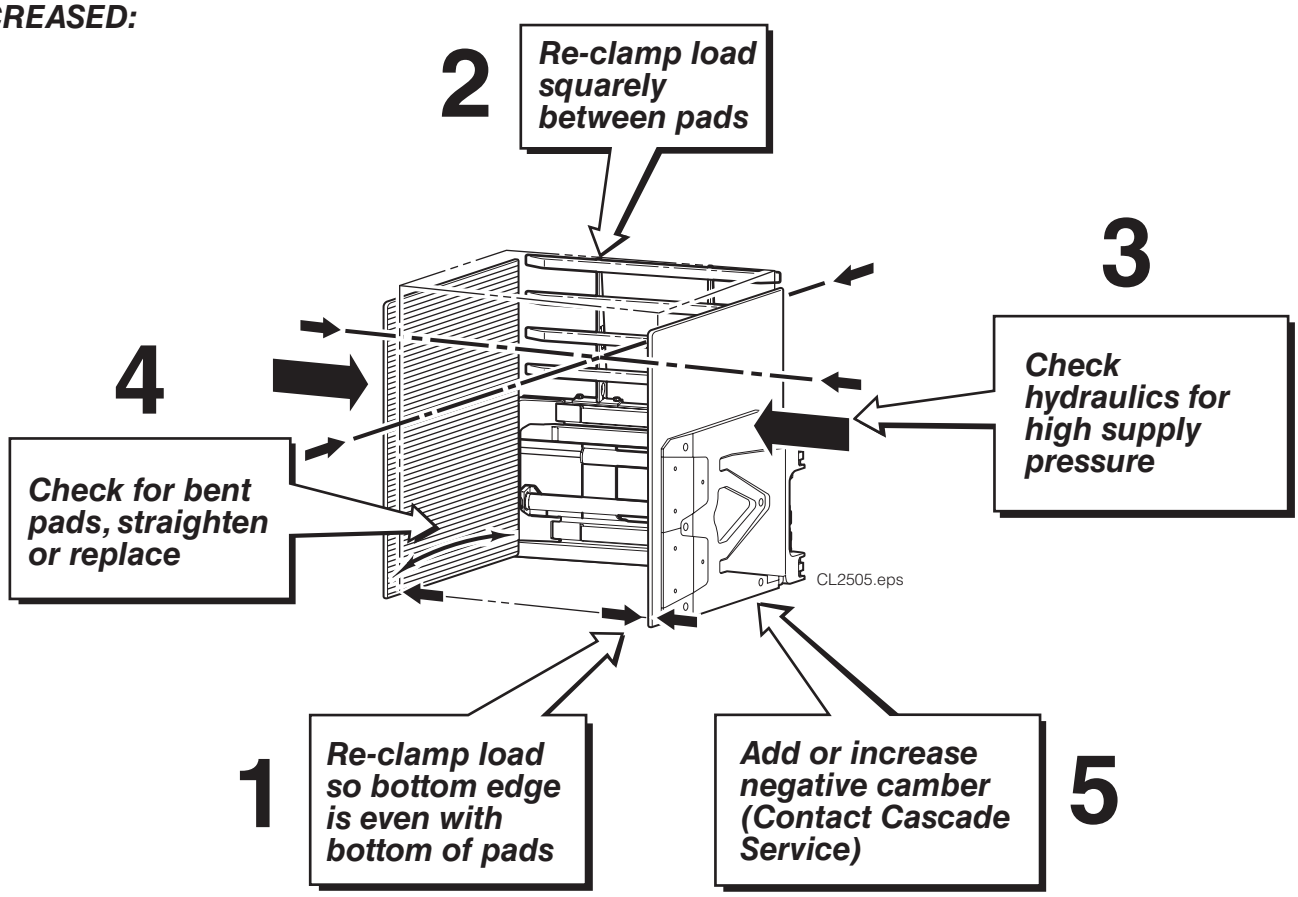
IF FRONT STACK OF LOAD TILTS OUT:



IF LOWER TIER OF LOAD BRIDGES DOWN OR SLIDES OUT:



IF LOWER TIER OF LOAD IS CREASED:



TYPICAL PAD CAMBER FOR HANDLING CARTON CASE LOADS

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

ADJUSTING PAD CAMBER

STANDARD (SHIMMED) DESIGN

The following procedure is performed on attachments with standard (shimmed) design for contact pad and stabilizer. This procedure can be performed with the attachment mounted on the truck. Contact pad camber can be determined using the measurement method or using the Cascade 4-Point Force Distribution Tester method.

1 Extend the arms to frame width. Lower the contact pads to just above the floor.

2 **Measurement Method –** Measure the distance between the pads in two places: at the bottom of the pad in-line with the pivot pins and 73 cm directly above, as shown. The difference between the two measurements is the pad camber.

4-Point Force Distribution Tester Method – Perform the following steps:

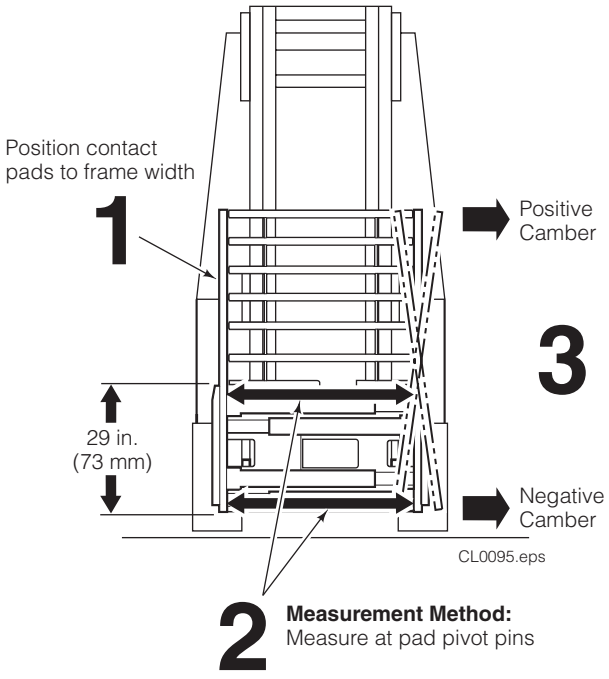
A Position the tester between the contact pads with the spindles perpendicular to the contact pad surfaces. Align the spindles with the contact pad capscrews at 100 mm above and below the stabilizer top and bottom edges, as shown.

B Clamp on the tester and hold activated for 5 seconds.

C Note the clamp force percentage of each spindle. Add the upper percentages together. Add the lower percentages together. The difference between the two percentages is the pad camber.

3 Determine the camber required for the product being handled. Refer to the Pad Camber Chart, below.

Procedure continued on the following page.



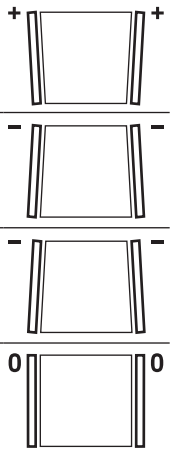
TYPICAL PAD CAMBER FOR HANDLING CARTON CASE LOADS

CANNED / BOTTLED / DENSE CASE GOODS
Typical Camber: Neutral-to-Positive

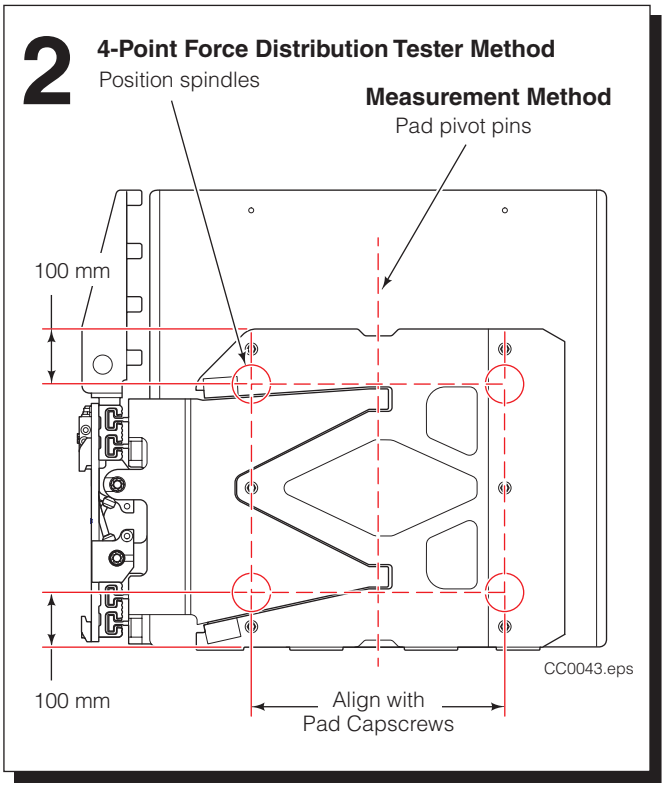
SOFT CASE GOODS
Typical Camber: Neutral-to-Negative

APPLIANCE / LARGE CASE GOODS
Typical Camber: Neutral-to-Negative

UNKNOWN LOADS
Start with neutral, look for creases and adjust camber as required



CL0093.eps



STANDARD (SHIMMED) DESIGN

4 Loosen the contact pad capscrews and nuts.

NOTE: It is not necessary to remove the capscrews and nuts to insert the shims.

5 Install shims as required.

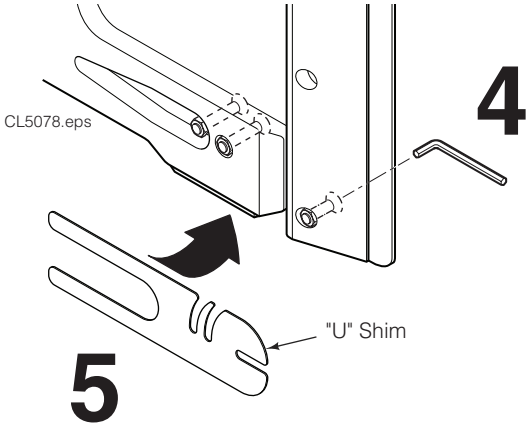
- **Positive Camber –** Install shims at the bottom and middle of the pad to increase clamp force at the bottom of the load.

  NOTE: This will increase the clamp force percentages on the lower spindles readout of the 4-Point Force Distribution Tester.

- **Negative Camber –** Install shims at the top and middle of the pad to decrease clamp force at the bottom of the load.

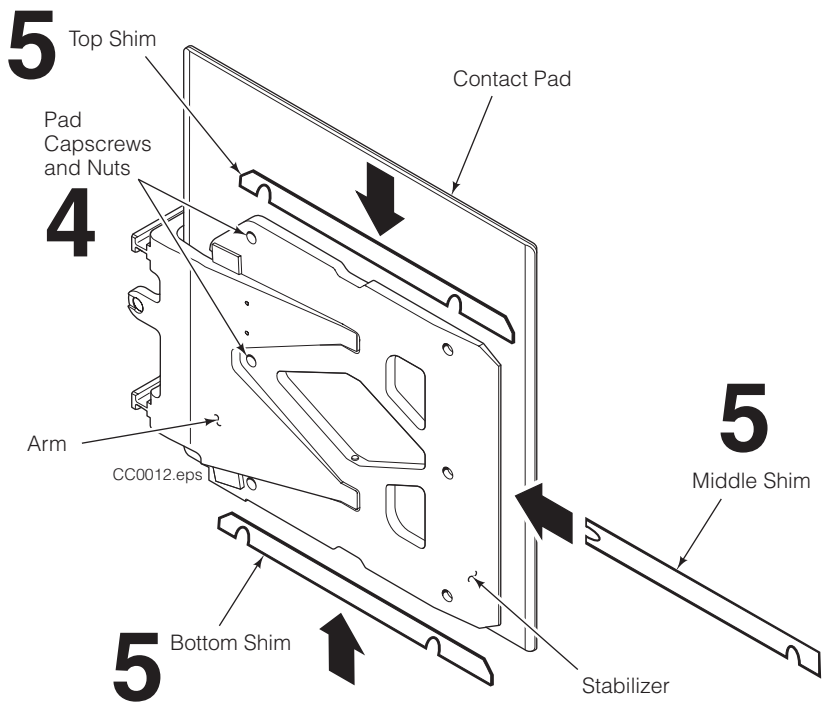
  NOTE: This will increase the clamp force percentages on the upper spindles readout of the 4-Point Force Distribution Tester.

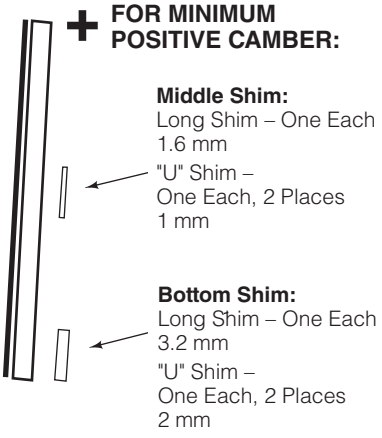
CAUTION: Use an equal number of shims on each contact pad. Pad camber must be the same on both sides of the attachment for proper load handling.

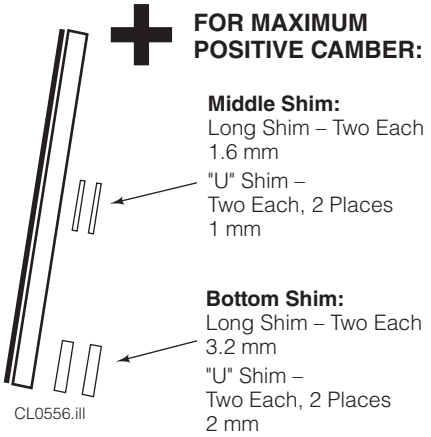


Contact Pad Camber	Clamp Force Change @ Maximum Shimming ◆		Clamp Force Distribution	
	Upper	Lower	Upper	Lower
Neutral ▲	—	—	35%	65%
Negative	+10%	–10%	45%	55%
Positive	–10%	+10%	25%	75%

▲ Shimmed equally in all locations.
◆ Camber based on 12 mm total shims negative or positive position.







ADJUSTING PAD CAMBER

FLEXIBLE (ADJUSTA-BLOCK) DESIGN

The following procedure is performed on attachments with flexible (ADJUSTA-BLOCK) design for contact pad and stabilizer. This procedure can be performed with the attachment mounted on the truck. A Cascade 4-Point Force Distribution Tester is required for this procedure.

IMPORTANT: Clamp circuit pressure should be adjusted, if required, prior to adjusting the pad camber. Refer to Installation Step 11 (page 7).

1 Extend the arms to the most common load width. Lower the contact pads to just above the floor.

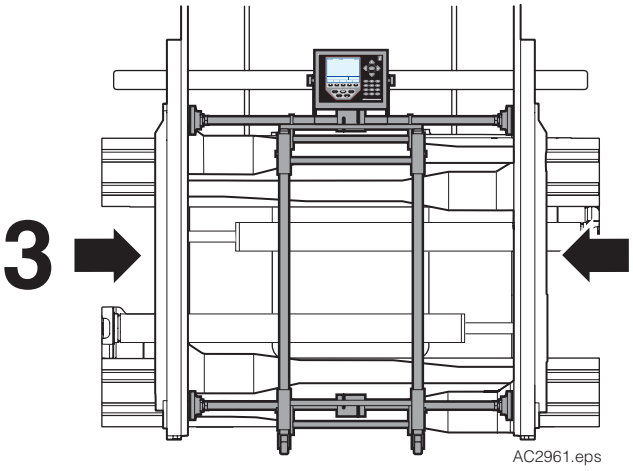
2 Position the tester between the contact pads. Adjust the tester spindle locations to be perpendicular to the contact pad surfaces and to the desired position based on the type of product being handled.

3 Clamp on the tester and hold activated for 5 seconds.

4 The tester will display **clamp force** and **percentage of clamp force** for each spindle location and **total clamp force** (sum of force of the four spindles).

5 Clamp force distribution should be within the desired percentages and tolerances.

If the tolerance difference is greater than allowable tolerance difference, the contact pads require pivot block adjustment. Continue to Step 6 for adjustment.



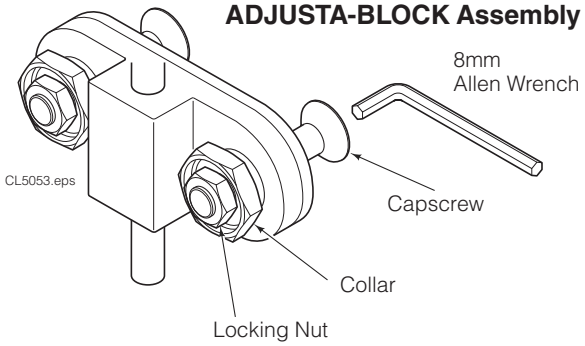
6 Clamp force distribution can be changed at the ADJUSTA-BLOCK locations on the right hand contact pad. Tune as follows:

- Loosen the locking nuts 3 turns. Use an 8 mm allen wrench to hold the capscrews.
- Adjust the collar using a 32 mm socket. Turn the collar **CW** to **increase** clamp force, **CCW** to **decrease** clamp force. One full turn of the collar is approximately 2 mm linear travel or 10% of force.

Follow adjustment sequence, Step 7.

Procedure continued on the following page.

ADJUSTA-BLOCK Assembly



FLEXIBLE (ADJUSTA-BLOCK) DESIGN

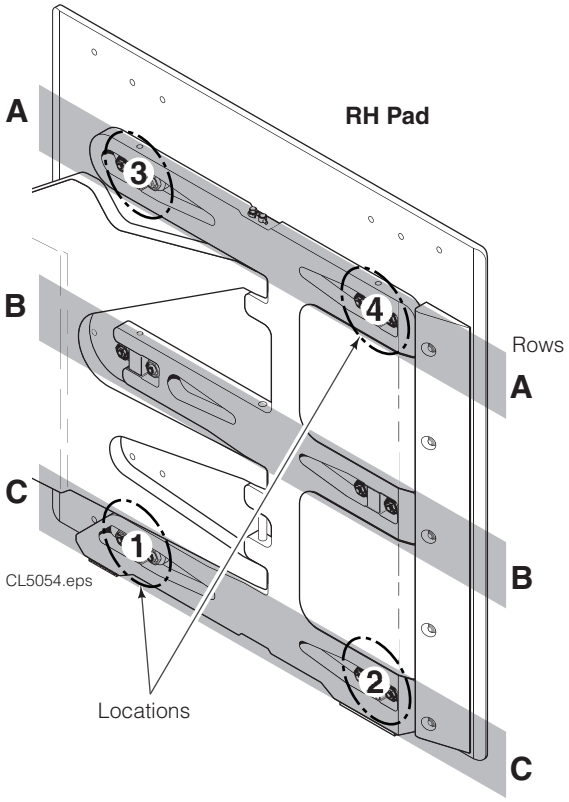
7 Adjustment Sequence –

- Adjust force at location **2** to the desired specification. Validate clamp force with tester and adjust as required.
- Adjust force at location **4** to the desired specification. Validate clamp force with tester and adjust as required.
- Adjust force at location **1** to the desired specification. Validate clamp force with tester and adjust as required.
- Adjust force at location **3** to the desired specification. Validate clamp force with tester and adjust as required.

IMPORTANT: When adjustments are made in Rows **A** or **C**, Row **B** must be adjusted by 1/2.

Example 1: If location **2** in row **C** is increased by 2 mm, the location above **2** in row **B** must be increased by 1 mm.

Example 2: If location **3** in row A is decreased by 0.08 in. (2 mm), the location below **3** in row **B** must be decreased by 1 mm.



GENERAL

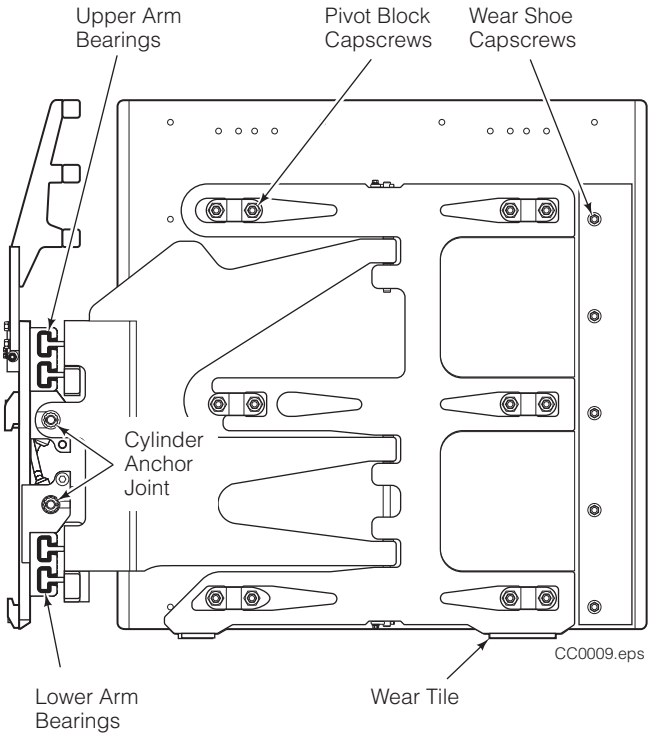
NOTE: Refer to the following pages for periodic maintenance specific to attachments with external sideshift (page 19) and tipping attachments (page 20).

> **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.

Daily Inspection

Prior to each shift of truck operation, complete the following procedures:

- Check for loose or missing bolts, worn or damaged supply hoses and hydraulic leaks.
- Inspect cylinder rod ends and anchor bars 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.



Flexible (ADJUSTA-BLOCK) Design
RH Side

1000-Hour Maintenance

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

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

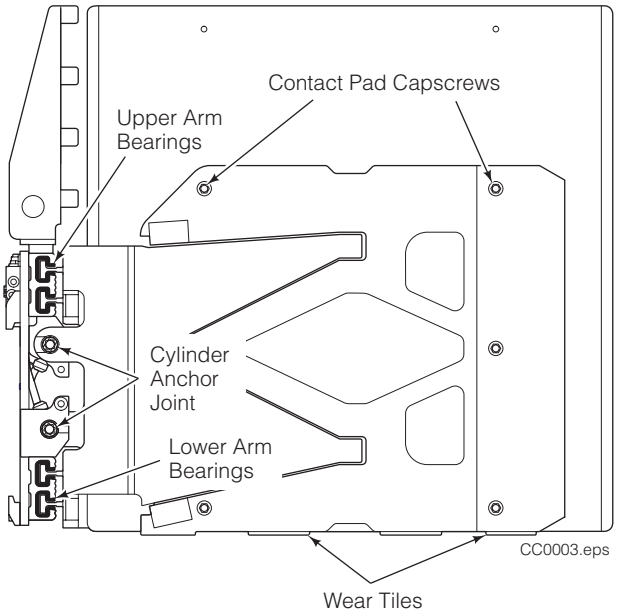
  Quick-Change Hooks – 5 mm Max.
  Bolt-on Hooks – Tight against lower carriage bar.

  If adjustment is necessary, refer to Installation Step 6.
- Inspect stabilizer wear tiles for wear and damage. Replace or repair, as needed.
- Tighten lower hook capscrews:

  Bolt-on Hooks, CL II/III – 165 Nm
  Quick-Change Hooks, CL II/III – 225 Nm
- Tighten accessible mounting plate capscrews. Double-torque capscrews by tightening to final torque value (shown below), loosen 1/2 turn, then retighten.

  8J-22J – 270 Nm
  26J – 520 Nm

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



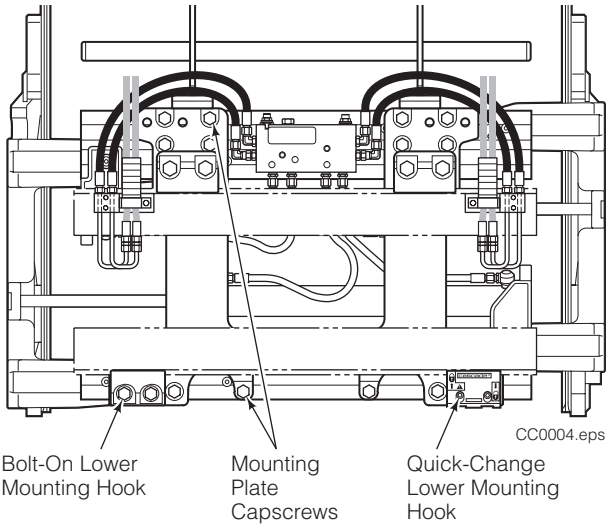
Standard (Shimmed) Design
RH Side

GENERAL

1000-Hour Maintenance (Continued)

- Tighten contact pad capscrews to:

  Standard (Shimmed) Design – 65 Nm
  Flexible (ADJUSTA-BLOCK) Design – 90 Nm



Standard Attachments Back (Driver's) View

4000-Hour Maintenance

After each 4000 hours of truck operation, in addition to the 1000-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.

ATTACHMENTS WITH EXTERNAL SIDESHIFT

In addition to (or in place of, where necessary) the schedule found in the General Periodic Maintenance section, perform the following for attachments with external sideshift:

1000-Hour Maintenance

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

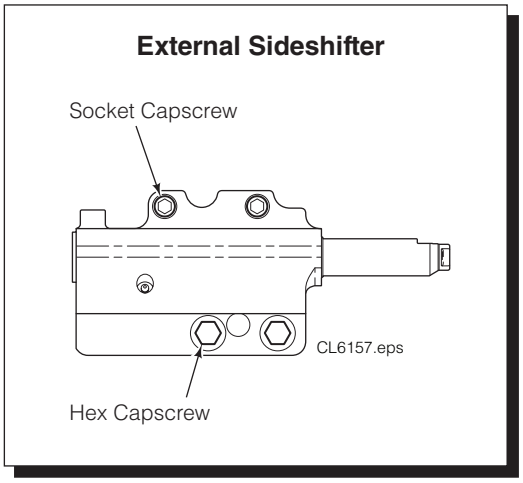
- Inspect external sideshifter bearings for wear or damage. If upper bearings are worn to less than 1.5 mm thickness, replace bearings. If lower bearings are worn to less than 1.5 mm exposed thickness, replace bearings.
- Apply general-purpose chassis grease to external sideshifter upper bearing grease fittings and lower bearing areas.
- Check lower mounting hooks for engagement clearance of 1.5 to 5 mm.

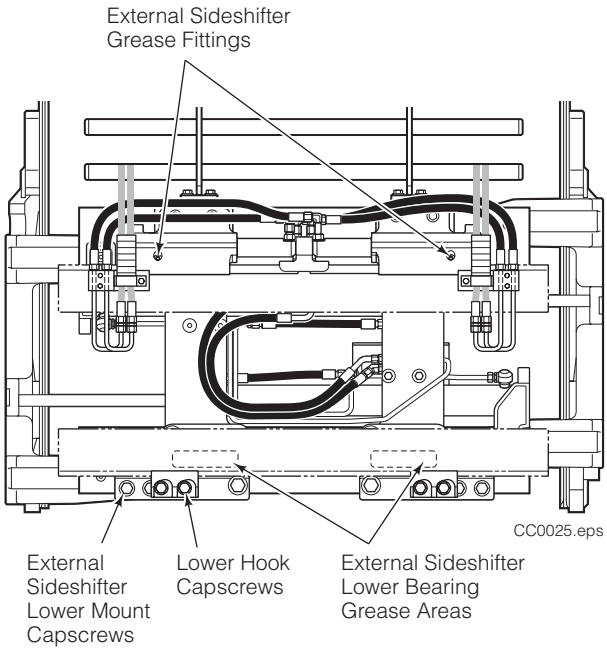
  If adjustment is necessary, refer to Installation Step 6.

- Tighten external sideshift cylinder mounting capscrews:

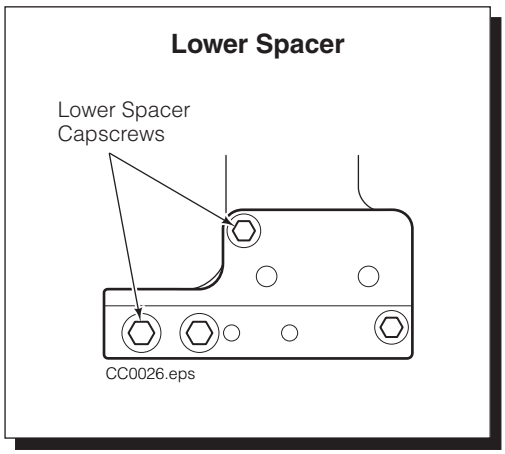
  Socket Capscrews (Upper) – 285 Nm
  Hex Capscrews (Lower) – 235 Nm

  IMPORTANT: If any capscrews are found loose, remove attachment from truck and check all sideshifter mount capscrews for proper torque values.
- Tighten lower spacer capscrews. Double-Torque capscrews by tightening to final torque of 270 Nm, loosen 1/2 turn, then retighten.





Attachments with External Sideshift
Back (Driver's) View



TIPPING ATTACHMENTS

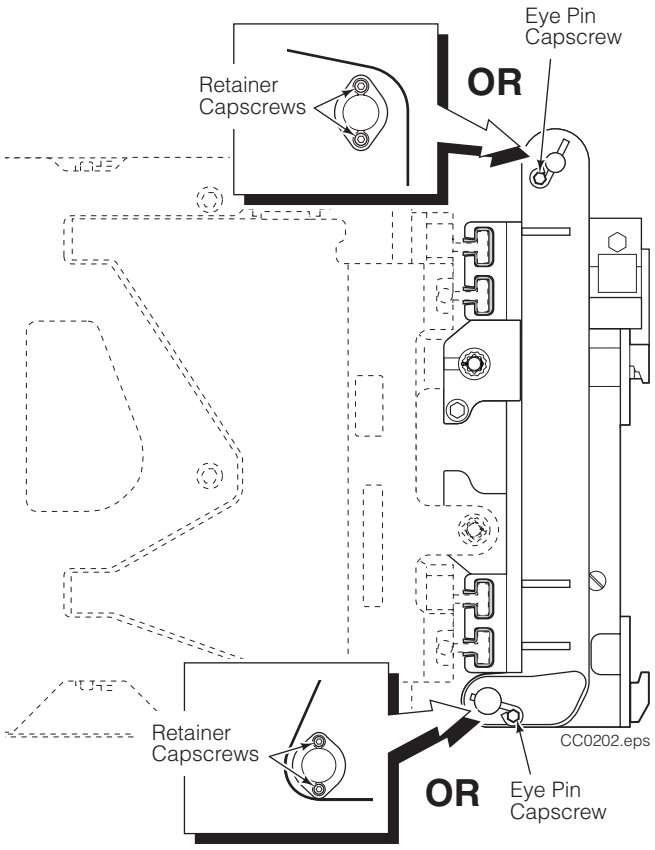
In addition to (or in place of, where necessary) the schedule found in the General Periodic Maintenance section, perform the following for attachments with tipping function:

1000-Hour Maintenance

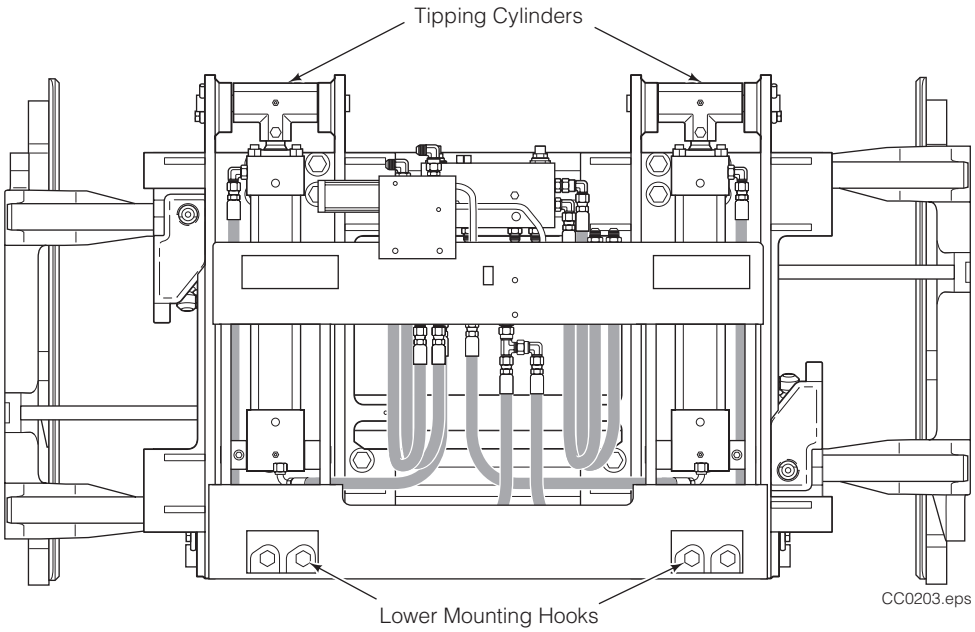
Every time the lift truck is serviced or every 1000 hours of truck operation, complete the following maintenance procedures:

- Check lower mounting hooks for engagement. Hooks should be tight against lower carriage. If adjustment is necessary, refer to Installation Step 6.
- Tighten lower hook capscrews to 165 Nm
- Inspect all tipping pivot bushings and pins for wear. Replace, as needed.
- Tighten tipping eye pin or retainer capscrews to:

  Retainer Capscrew – 19 Nm
  Eye Pin Capscrew – 38 Nm



Side View



Back (Driver's) View

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