



INSTALLATION MANUAL

70F Clamps

Manual Number 229602

cascade™

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1.1 Introduction

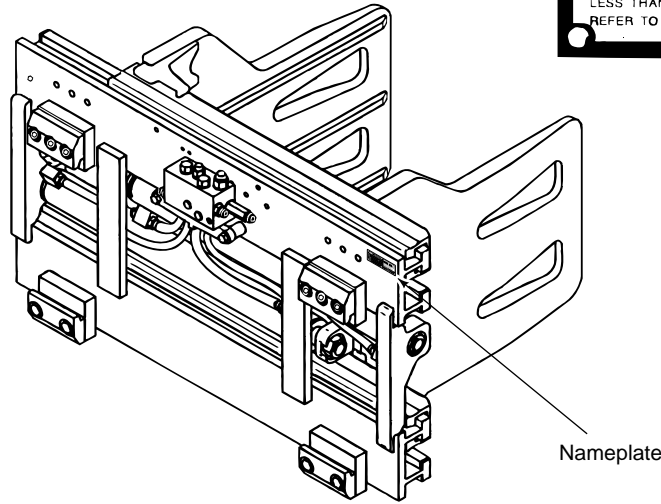
This Manual provides the Installation, Periodic Maintenance, Troubleshooting, Service and Specifications for Cascade 70F Clamps.


70F Clamps are designed for three-shift-a-day continuous-duty operations with minimal maintenance. They offer exceptional visibility for the lift truck driver and provide optimized clamp force and load handling.

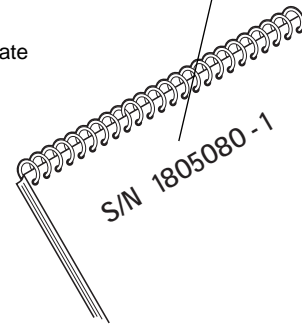
In any communication about the Clamp, refer to the product I.D. number stamped on the nameplate as shown. If the nameplate is missing, the numbers can be found stamped on the back of the baseplate.

IMPORTANT: All hoses, tubes and fittings on 70F Clamps are JIC.

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




 CASCADE MATERIALS HANDLING PTY. LTD. A.C.N. 000 998 710 37 COLBERT ROAD CAMPBELLFIELD VIC 3061 PHONE: (03) 9357 0899 FACSIMILE: (03) 9357 0166		MODEL NO.	
		PART NO.	
	DATE	SERIAL NO.	1805080 - 1
	MASS	HOR. C OF G	
	kg	mm	
	ET	VERT. C OF G	
	mm	mm	
CAPACITY OF LIFT TRUCK AND AT ATTACHMENT COMBINATION MAY BE LESS THAN ATTACHMENT CAPACITY. REFER TO TRUCK CAPACITY PLATE.		CAPACITY AT LOAD CENTRE	
	kg	mm	



1.2 Special Definitions

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

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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.

2.1 Truck System 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.

70F Clamps will provide maximum operating capability when the following requirements are met.

Truck Relief Setting

2300 psi (160 bar) Recommended
2600 psi (180 bar) Maximum

Truck Flow Volume^①

	Min. ^②	Recommended	Max. ^③
70F	7.8 GPM (19 L/min.)	14 GPM (28 L/min.)	17 GPM (38 L/min.)

Cascade 70F 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.

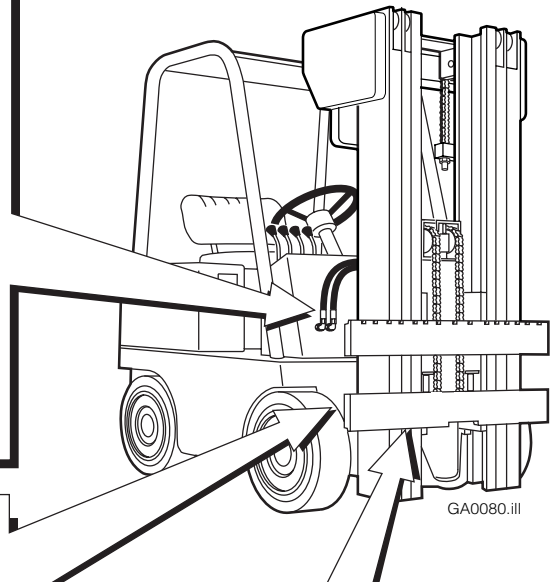
Flow less than recommended will result in reduced system performance.

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 III	18.68 in. (474.5 mm)	18.74 in. (476.0 mm)
Class IV	23.44 in. (595.5 mm)	23.50 in. (597.0 mm)

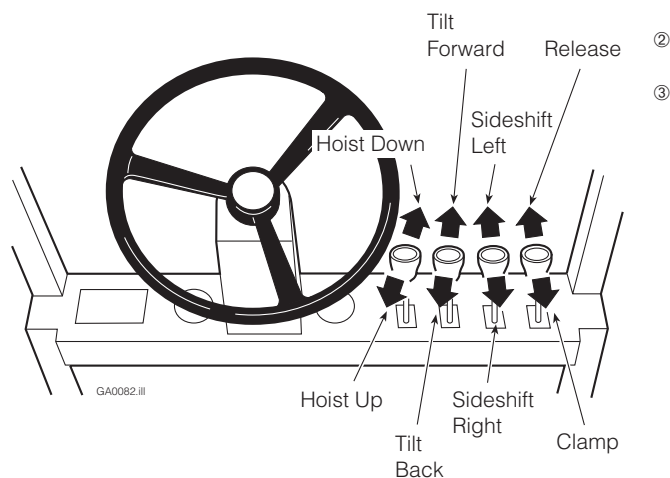


Carriage

Clean carriage bars and inspect for damaged notches

Auxiliary Valve Functions

Check for compliance with ANSI standards:

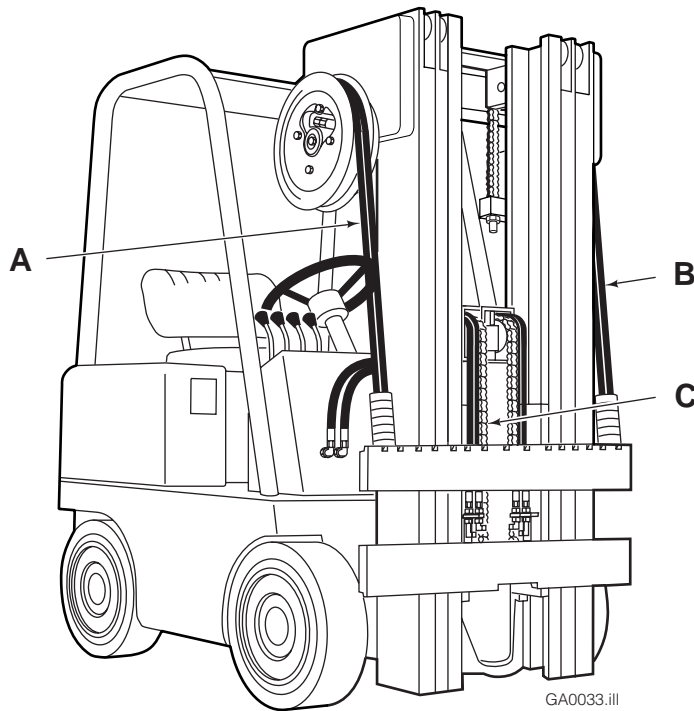


2.2

Recommended Hydraulic Supply Options

70F 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:

- All hoses for **clamp** functions should be at least No. 8 hose with 13/32 in. (10 mm) minimum I.D.
- All hoses for **sideshift** functions should be at least No. 8 hose with 13/32 in. (7 mm) minimum I.D.
- All **fittings** should have a minimum internal diameter of 13/32 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

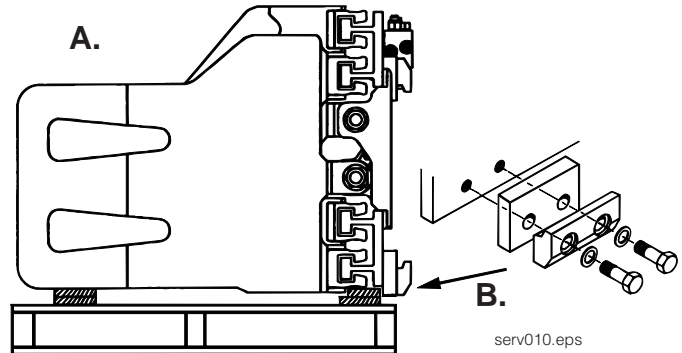
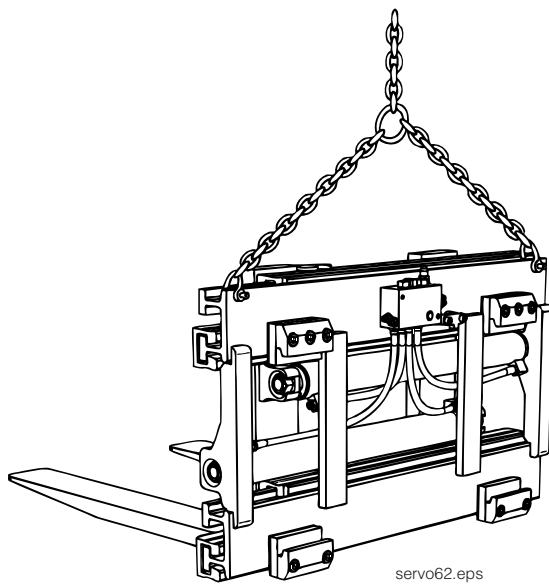
C Mast double internal hose reeving group.

2.2-1 Installation Procedure

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

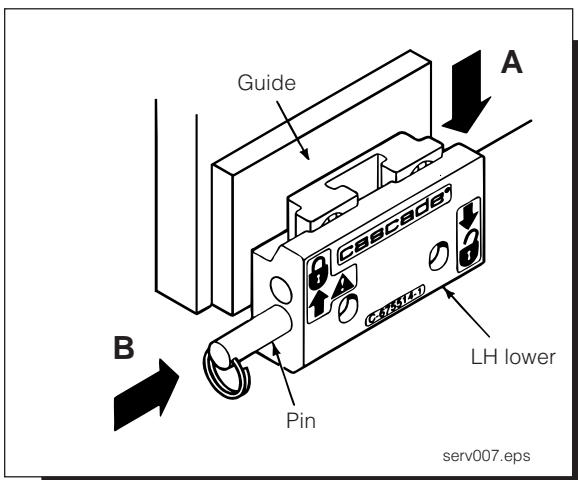
- A** Remove banding.
- B** Remove bolt-on lower mounting hooks (if equipped).



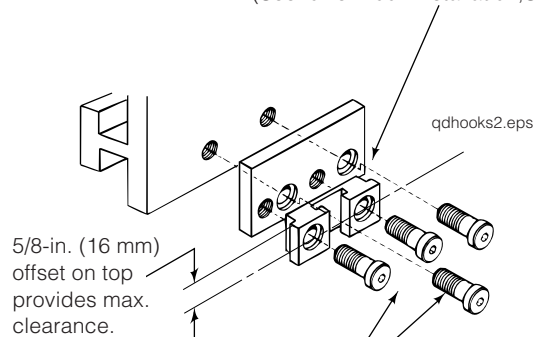
Install two 1/2" (12 mm) 'D' shackles into the holes provided at the ends of the frame and a suitable overhead chain hoist to the frame. Set the clamp vertical.

2 Unlock Quick-Change lower mounting hooks

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



NOTE: Guides can be reversed to reduce hook-to-carriage clearance (See lower hook installation, Step 6.)

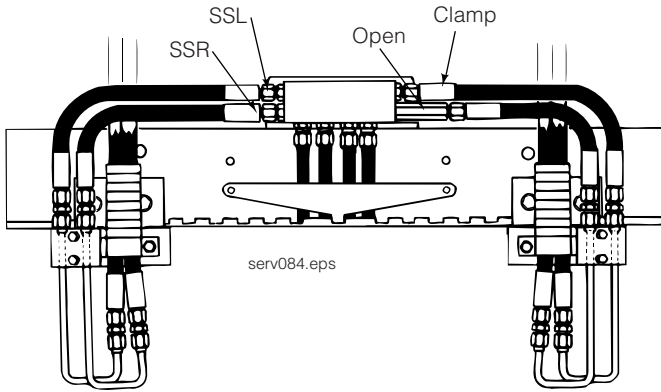


Tighten Capscrews:
Class II / III Mounting – 165 ft.-lbs. (225 Nm)

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3 Prepare hoses

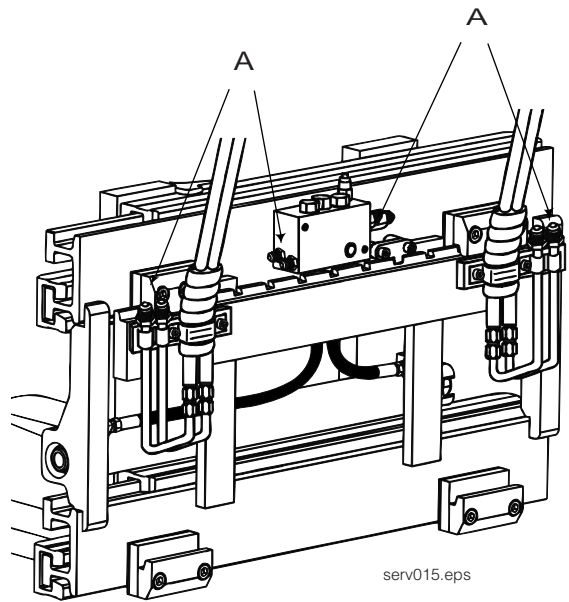
- A** Determine hose lengths required for hydraulic supply configuration of truck.
- B** Cut hoses to length, install end fittings or quick-disconnect kits.



Sideshifting – Double Hose Reels

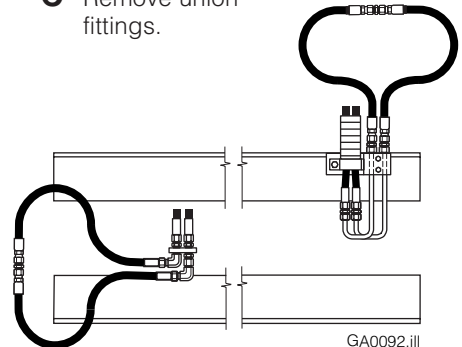


WARNING: Do not remove the fitting from the valve clamp (CL) port. For No. 6 hose connection, use a 6-8 reducer.



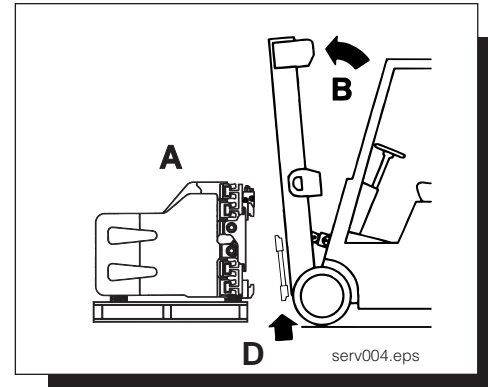
4 Flush hydraulic supply hoses

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



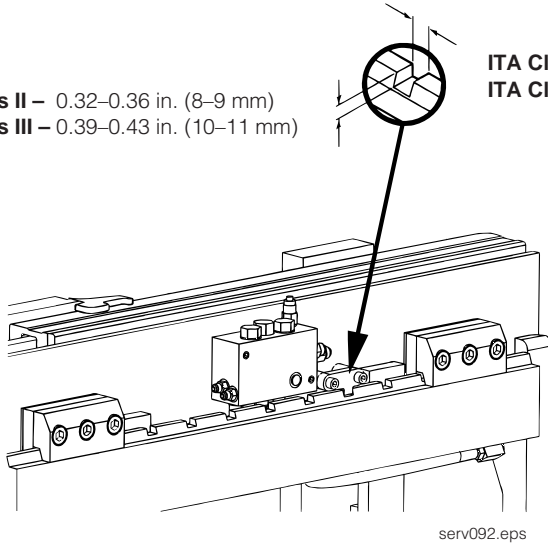
5 Mount Clamp on truck carriage

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



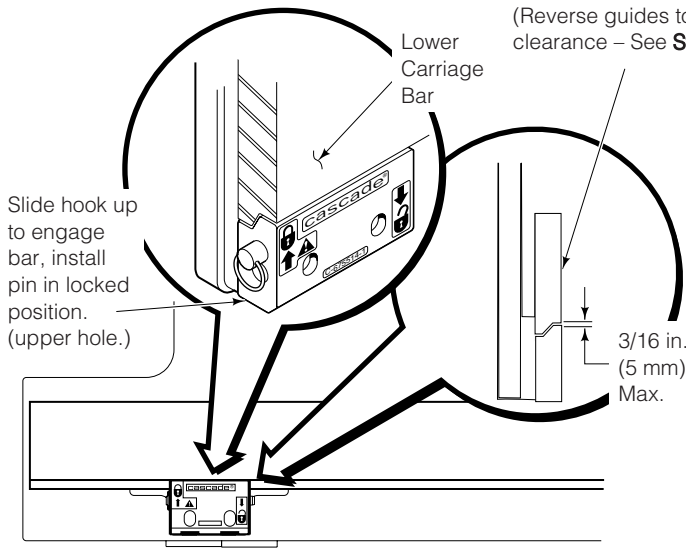
ITA Class II – 0.32–0.36 in. (8–9 mm)
 ITA Class III – 0.39–0.43 in. (10–11 mm)

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



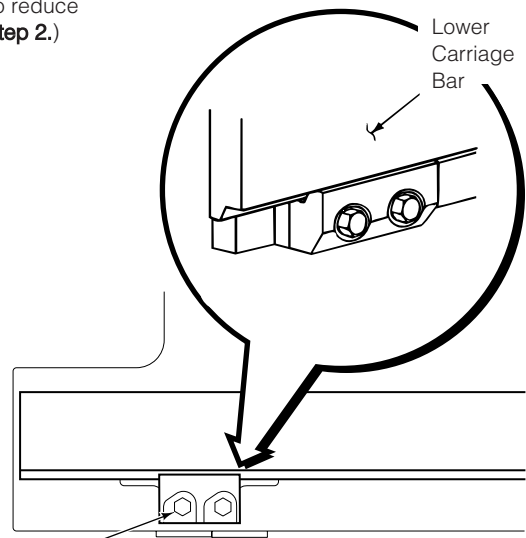
6 Install and engage lower hooks

QUICK-CHANGE TYPE



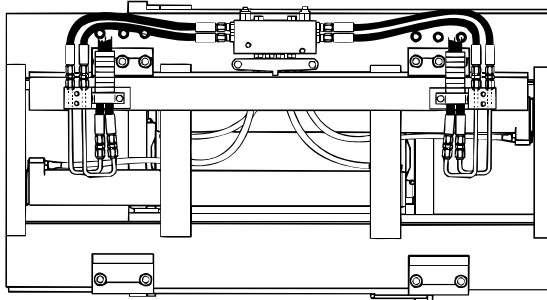
Inspect hooks for excessive clearance. (Reverse guides to reduce clearance – See **Step 2.**)

BOLT-ON TYPE

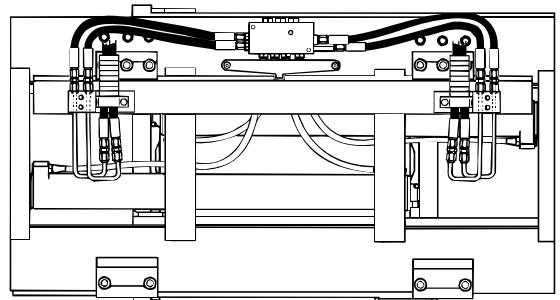


Tighten Capscrews:
Class II / III Mounting – 165 ft.-lbs. (225 Nm)

7 Connect hoses as shown in Step 3

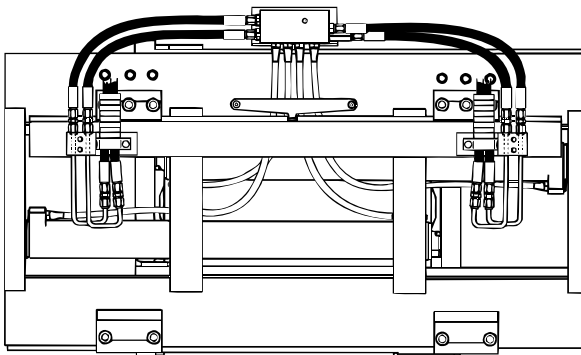


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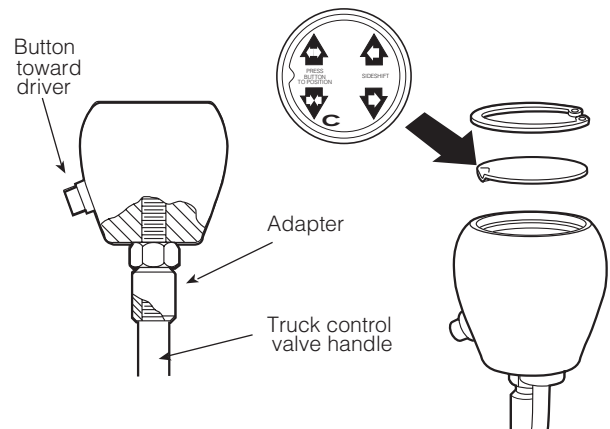
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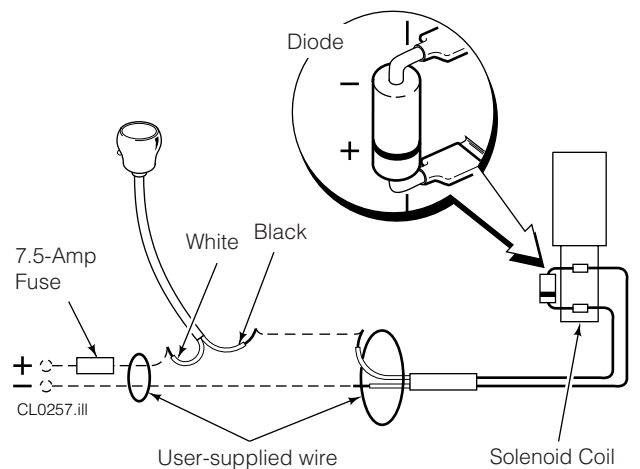
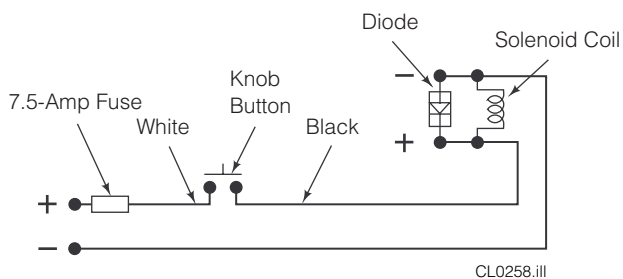


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8 Install solenoid control knob – (Solenoid equipped units)

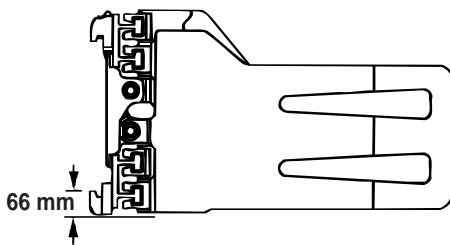
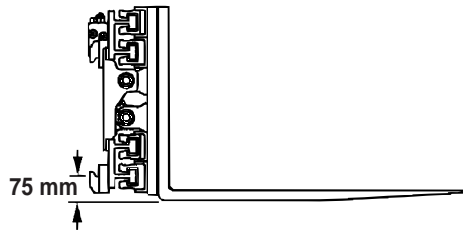


9 Install wiring – (Solenoid equipped units)

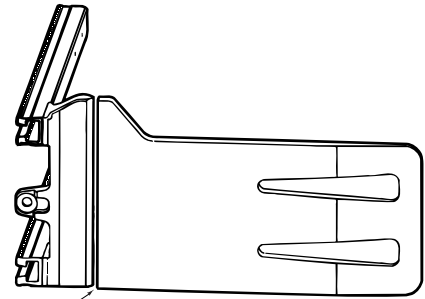


10 Weld Procedures

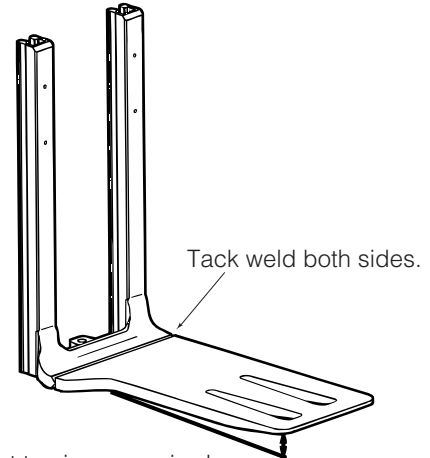
- A** Position arms or forks to be welded onto bases noting under clearance of arm as shown in the diagram.
- B** Tack weld the items into position - check all dimensions again.
- C** Weld up item in accordance with Cascade weld procedures.



⚠ WARNING: Remove arms from clamp frame and remove bearings before commencing welding or pre heat operation. Use a certified welder and proper welding procedures when welding arms to the arm bases.



Check under clearance with diagram.



Set toe in as required.

Contact Cascade Engineering Department for further technical assistance.

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11 Material Information For Arm Bases.

The arm base material is AISI C 1020 with the following specifications:
 Tensile Strength - 61,000 PSI min. (420 mPa)
 Yield Strength - 43,000 PSI min. (300 mPa)
 Carbon Content - 23% max.

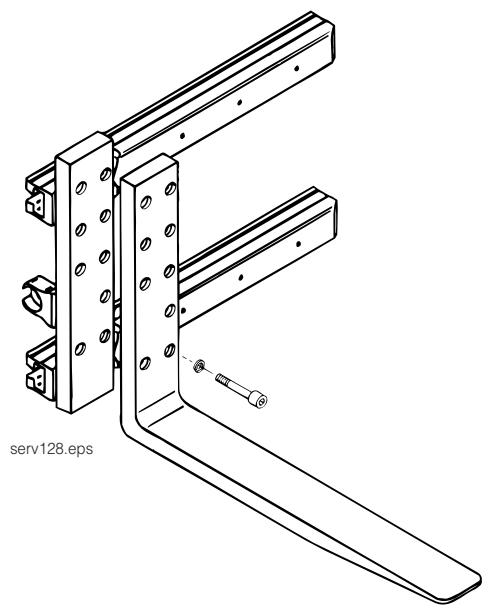
The casting base material is the following specifications.
 ASTM A 148 Gr.105-85: Tensile Strength - 105,000 PSI min. (740 N/mm -Sq)
 Yield Point - 85,000 PSI min. (600 N/mm - Sq).
 Elongation -17%
 Reduction in Area -35%.
 Hardness - BHN 217-255

12 For Bolt on Arms or Forks

Fasten the arms or forks to the arm bases. Tighten the cap screws to the torque valves as indicated in the chart. A torque multiplier must be used to achieve uniform tension on all the bolts.

NOTE: The surface flatness of the arms to be fitted must remain within .010 in. (.25mm) in bolt up area.

Model	Torque Values For Arm Capscrews
70F	680-720 ft- lbs (922- 976 Nm)



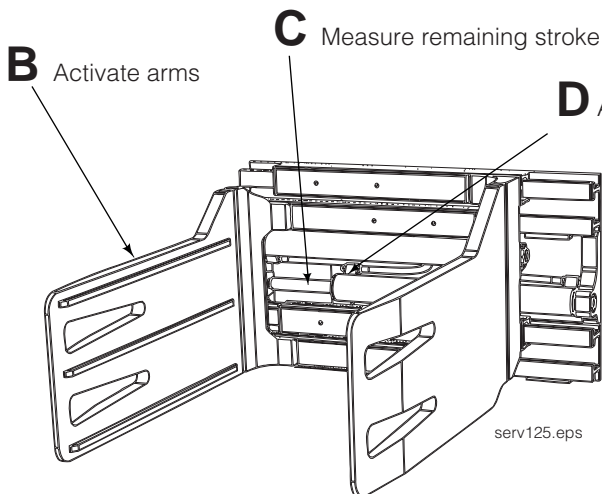
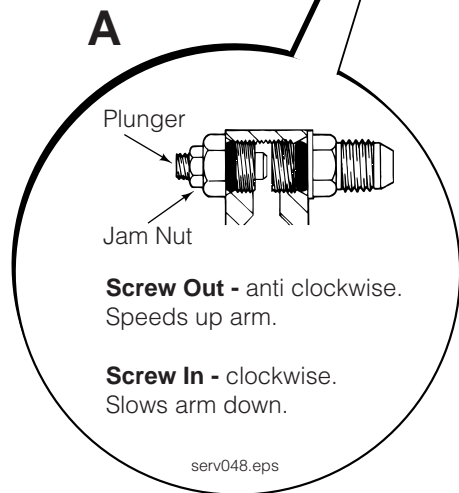
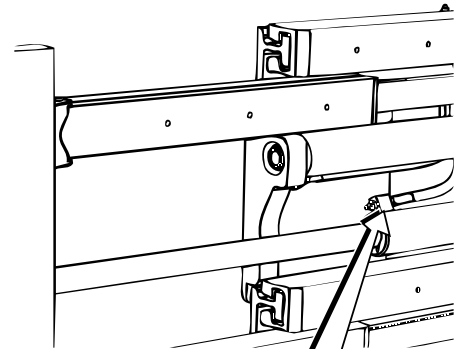
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13 Adjusting Arm speed

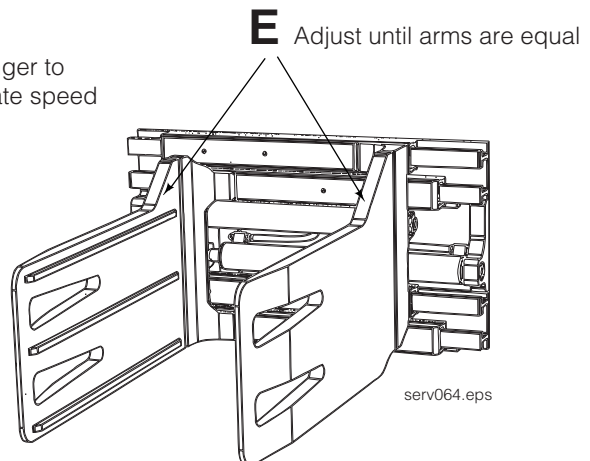
NOTE: All 70F Clamps utilize a regenerative hydraulic circuit in the arm opening mode. The arms will open at a faster speed than when closing. This is a normal clamp function. If required the regenerative function can be eliminated. Refer to 'Remove Regeneration' in the Service Section 5.3

Check for equal arm travel. If the travel is unequal, the restrictor cartridges can be adjusted as follows:

- A** Loosen the jam nuts on the restrictor cartridges. Screw in the plungers until they bottom out. Then screw out each plunger three full turns.
- B** Activate the arms to the fully open position.
- C** Activate the arms to close until one arm bottoms out. Measure the amount of stroke remaining in the opposite arm.
- D** If the unequal closing movement exceeds 50 mm (2 in.), screw the plunger in 1/2 turn on the cylinder that bottomed first.
- E** Repeat steps (b) through (d) until unequal closing movement is less than 2 in.



D Adjust plunger to regulate speed



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14 Cycle Clamp functions

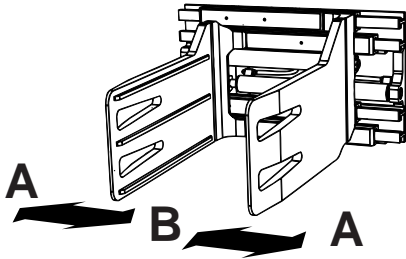
- With no load, cycle each Clamp function several times.
- Check for operation in accordance with ITA (ISO) standards.
- Lift a maximum load, check for smooth arm movement.
- Check for leaks at fittings, valve, manifold and cylinders.



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

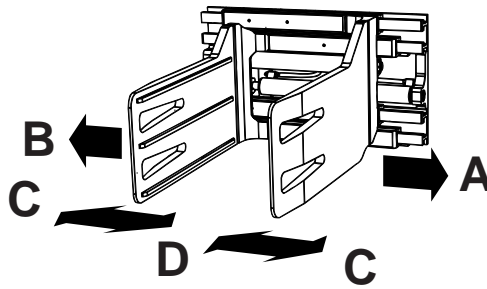
NON-SIDESHIFTING CLAMPS

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



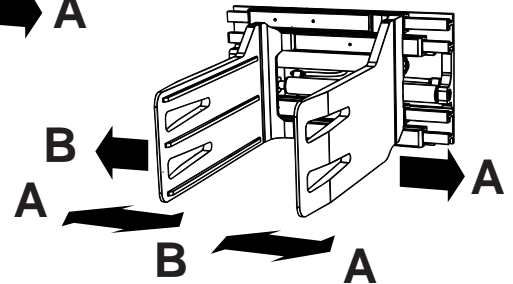
SIDESHIFTING CLAMPS

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

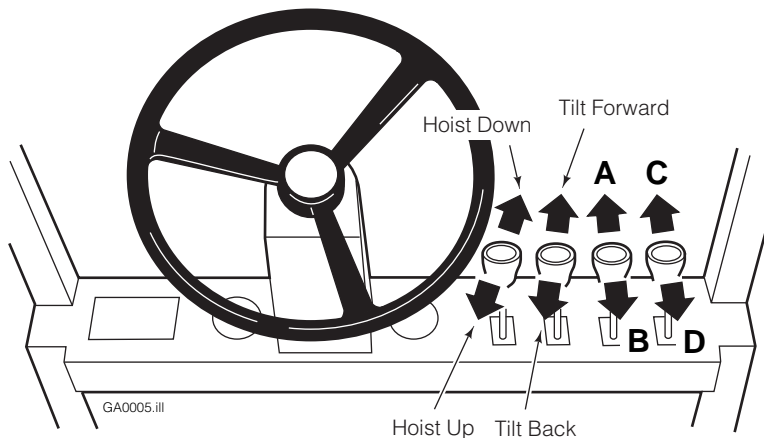


SIDESHIFTING CLAMPS WITH SOLENOID VALVE

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



Auxiliary Valve Functions



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3.1

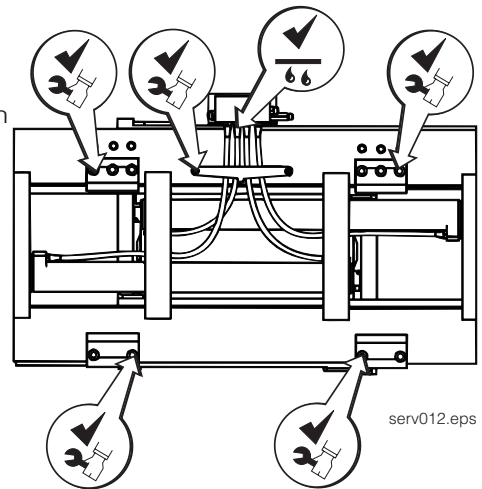
100-Hour Maintenance

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

- Inspect the cylinder anchor nuts for correct hold.
- Apply wheel bearing grease to the spherical portion of the cylinder anchor nuts.
- Arm bearing life can be extended with periodic inspection.
- Inspect 'T' section for any damage or sharp edges caused through impacting or foreign matter caught in the 'C' sections.
- Check for worn, damaged or leaking hoses.
- Check arm speed and uniform arm travel - clamps fitted with regenerative valves should operate to the following speeds if clamp is plumbed as per the chart in section 2.2. OPEN. 5 seconds. CLOSED. 6-7 seconds. NOTE: these values may vary depending on frame width of clamp.



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.



3.2

500-Hour Maintenance

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

- Tighten the top and lower hook capscrews. Use the torque specifications shown in Section 4.1.
- Check for wear and tear to bolt on or weld on accessories (ie) bale arm, forks - repair or replace as required
- Replace all arm bearings.
- Tighten the frame/mounting plate capscrews. Use the torque specification shown in Section 4.1.

3.3

1000-Hour Maintenance

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

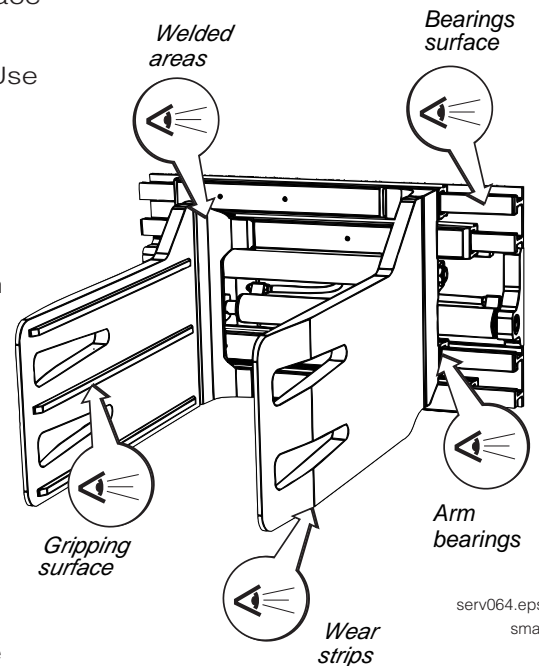
- Inspect the arm bearings. If the bearings are worn in any area to a thickness less than .040 in. (1 mm), they must be replaced.

3.4

2000-Hour Maintenance

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

- Replace all arm bearings.
- Tighten the frame/mounting plate capscrews. Use the torque specification shown in Section 4.1.

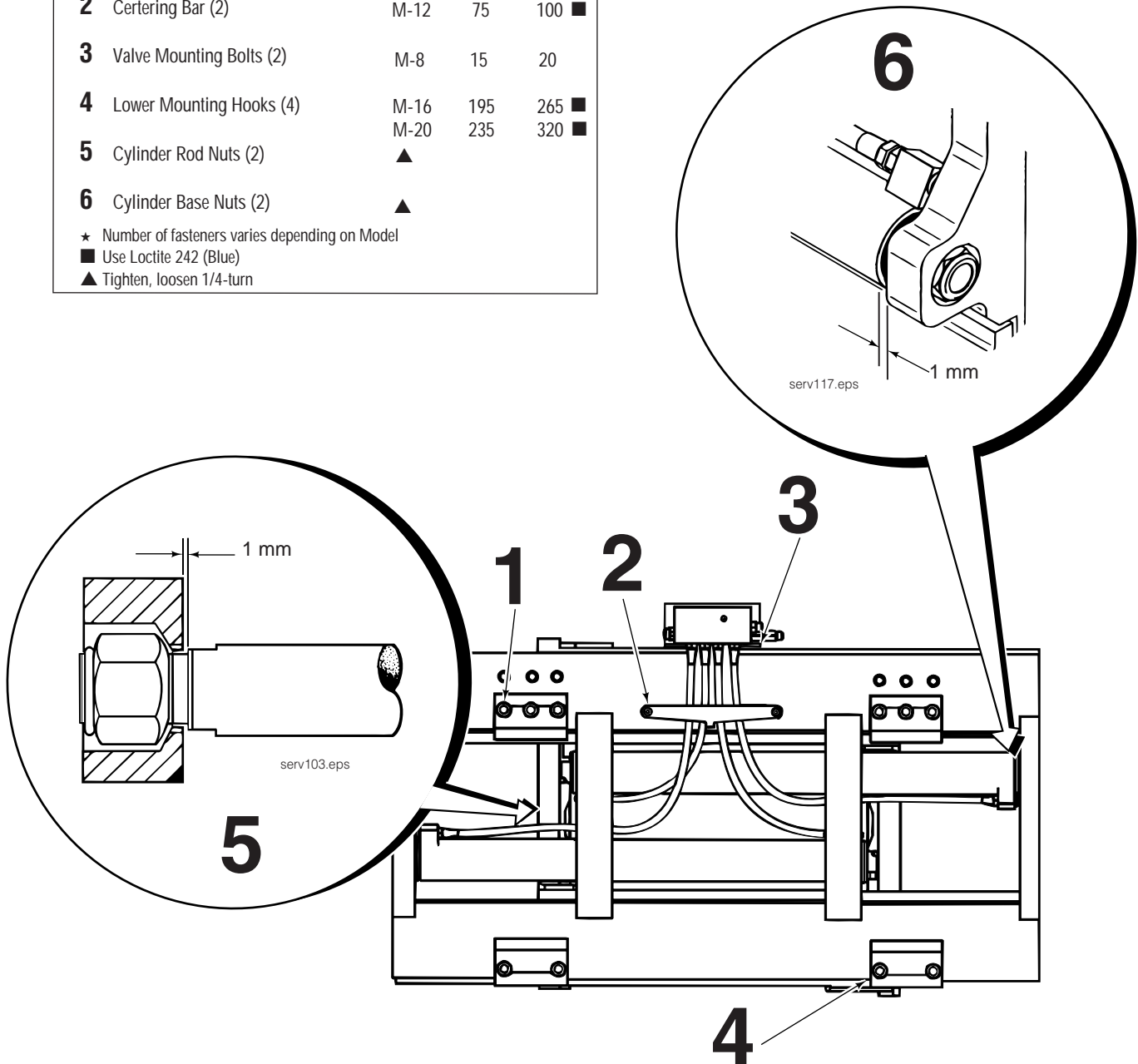


4.1 Torque Values

Fastener torque values for the 70F Clamps are shown in the table below in both U.S. and Metric units. All torque values are also called out in each specific service procedure section throughout the Manual.

Ref.	Fastener	Size	Ft.-lbs.	Nm
1	Top mounting Hook (6)	M-16	242	330 ■
		M-20	477	650 ■
2	Centering Bar (2)	M-12	75	100 ■
3	Valve Mounting Bolts (2)	M-8	15	20
4	Lower Mounting Hooks (4)	M-16	195	265 ■
		M-20	235	320 ■
5	Cylinder Rod Nuts (2)	▲		
6	Cylinder Base Nuts (2)	▲		

★ Number of fasteners varies depending on Model
 ■ Use Loctite 242 (Blue)
 ▲ Tighten, loosen 1/4-turn



Do you have questions you need answered right now?

Call your nearest Cascade Service Department.

Visit us online at www.cascorp.com

AMERICAS

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