

USER MANUAL

K-Series

Sideshifting Fork Positioner with Carriers

Manual Number 6955238

**cascade[®]
corporation**

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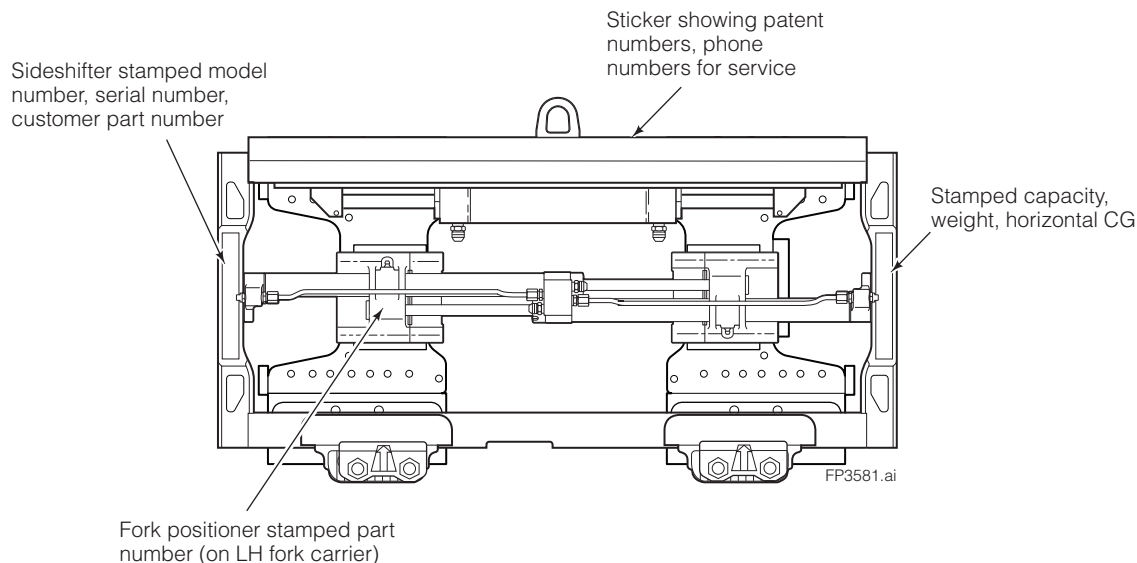
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INTRODUCTION

This user manual is for the Cascade K-Series Sideshifting Fork Positioner with Carriers. Contents include an Operator Guide, Installation Instructions, Periodic Maintenance and Parts Manual.

NOTE: All specifications are shown in US and (Metric) units where applicable. All fasteners have a torque value range of $\pm 10\%$ of stated value.

IMPORTANT: This attachment is metric. Supply fittings adapted as required for application.



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.



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

WARNING: Do not operate this attachment unless you are a trained and authorized lift truck driver.

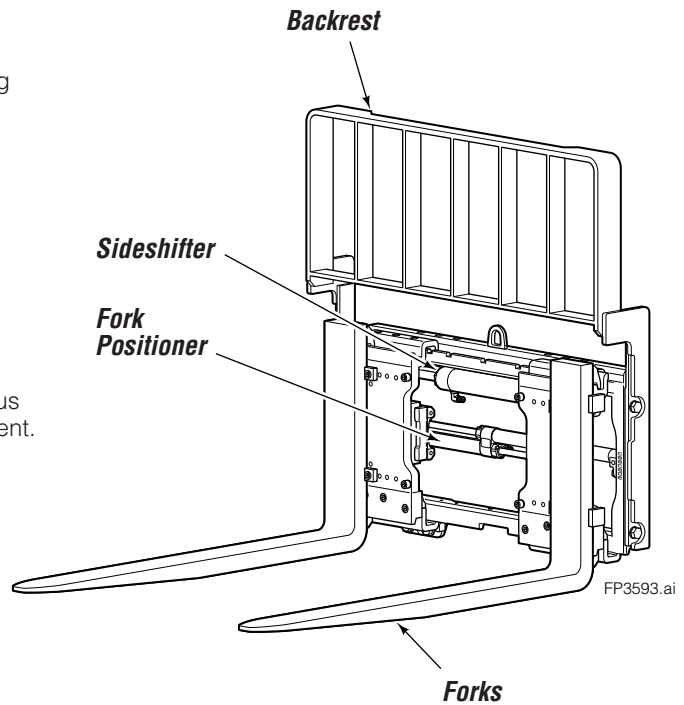
WARNING: For forks longer than 96 in. (2438 mm) or load centers exceeding 30 in. (760 mm), consult Cascade.

OPERATION

This Section contains operating instructions for the Cascade K-Series Sideshifting Fork Positioner with Carriers. It will help you avoid common errors which often cause damage to the equipment or product being handled.

This information is intended to simplify operator understanding about effective and safe attachment use and operation. Read this information thoroughly before operating the attachment. Make sure you know and understand all operating procedures and safety precautions. If you have any questions, or don't understand a procedure, ask your supervisor.

Emphasize Safety! Most accidents are caused by operator carelessness or misjudgment. Avoid hazardous situations and watch out for poorly maintained equipment.



OPERATION

Safety Rules – Industrial Lift Trucks

No riders



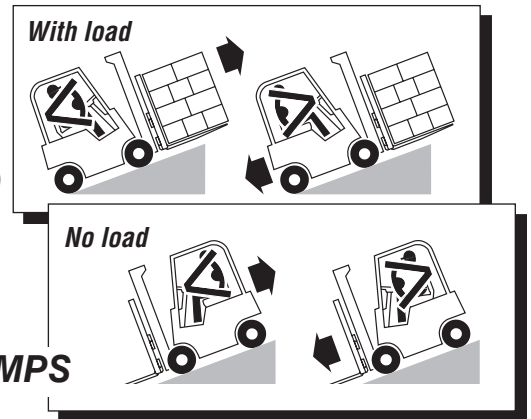
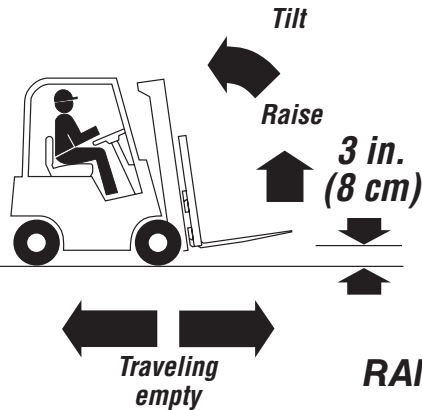
No reaching through mast



No standing under load

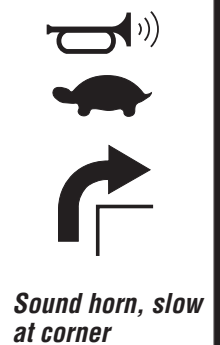
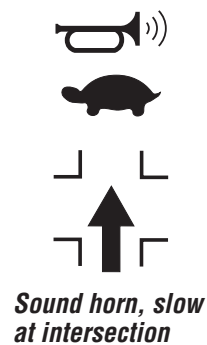
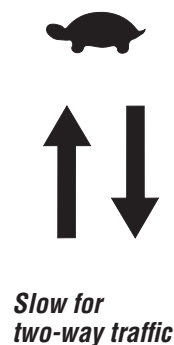


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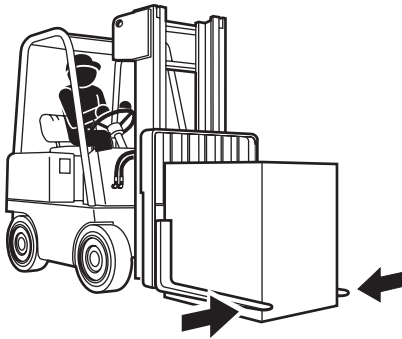
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TRAFFIC

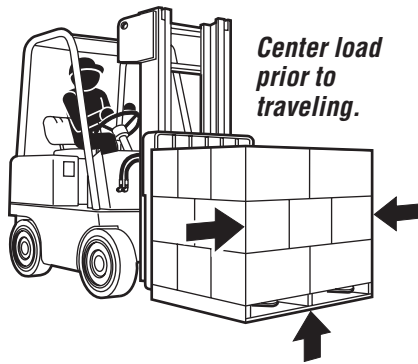


OPERATION

Safety Rules – Handling Loads



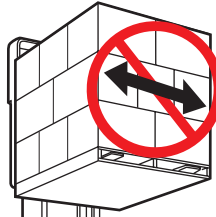
CAUTION: Do not put side loads on forks.



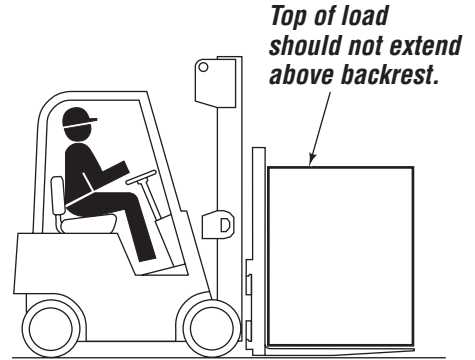
Center load prior to traveling.

Raise load prior to sideshifting.

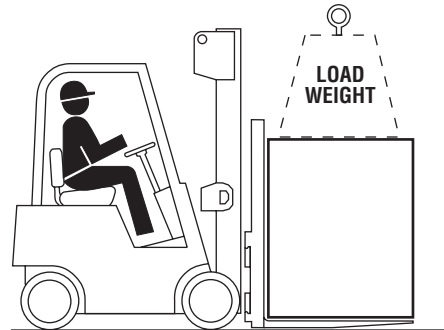
Limit sideshifting with raised load.



Limit truck movement with raised load.



Top of load should not extend above backrest.



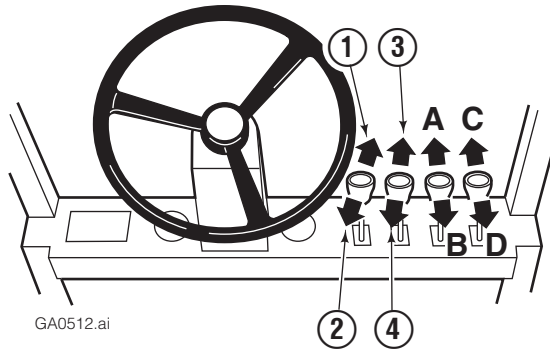
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Load weight must not exceed combined truck/attachment capacity (see truck nameplate).

Total fork capacity (LH + RH fork) must be greater than load weight. Check capacity stamp on forks.

OPERATION

Attachment Operation



Main Valve Functions

- ① Hoist Down ③ Tilt Forward
- ② Hoist Up ④ Tilt Back

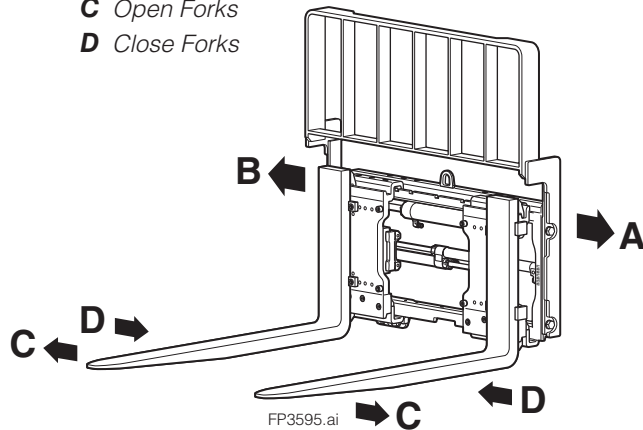
Auxiliary Valve Functions: A-D



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.

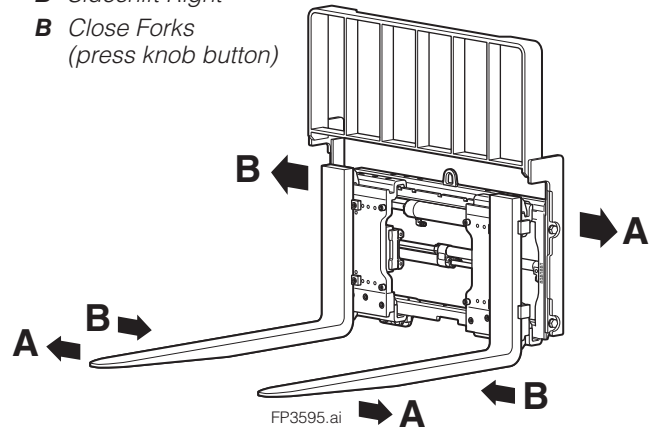
SIDESHIFTING / FORK POSITIONING

- A** Sideshift Left
- B** Sideshift Right
- C** Open Forks
- D** Close Forks



SIDESHIFTING / FORK POSITIONING WITH SOLENOID VALVE

- A** Sideshift Left
- A** Open Forks (press knob button)
- B** Sideshift Right
- B** Close Forks (press knob button)



SAFE OPERATION AND MAINTENANCE

OSHA Regulations – Industrial Trucks and Attachments (Specific Regulations from OSHA 1910.178)



WARNING: The safe operation and maintenance of industrial trucks is regulated by Occupational Safety and Health (OSHA) regulations 1910.178 and American National Standards Institute (ANSI) Safety Standard for Powered Industrial Trucks, ANSI B56.1. When operating and maintaining industrial trucks equipped with attachments you should pay particular attention to the following sections of these regulations. You should be familiar with **all** sections of these regulations. **Ask your employer for the complete regulations.**

General Requirement

Modifications and additions which affect capacity and safe operation shall not be performed by the customer or user without manufacturers prior written approval. Capacity, operation and maintenance instruction plates, tags or decals shall be changed accordingly.

If the truck is equipped with front-end attachments other than factory installed attachments, the user shall request that the truck be marked to identify the attachments and show the appropriate weight of the truck and attachment combination at maximum elevation with load laterally centered.

The user shall see that all nameplates and markings are in place and maintained in a legible condition.

Safety Guards

If the type of load presents a hazard, the user shall equip fork trucks with a vertical load backrest extension in accordance with the following.

All new powered industrial trucks acquired and used by an employer after February 15, 1972 shall meet the design and construction requirements for powered industrial trucks established in the "American National Standard for Powered Industrial Trucks, Part II, ANSI B56.1", except for vehicles intended primarily for earth moving or over-the-road hauling.

Operator Training

Only trained and authorized operators shall be permitted to operate a powered industrial truck. Methods shall be devised to train operators in the safe operation of powered industrial trucks.

Truck Operations

Trucks shall not be driven up to anyone standing in front of a bench or other fixed object.

No person shall be allowed to stand or pass under the elevated portion of any truck, whether loaded or empty.

Unauthorized personnel shall not be permitted to ride on powered industrial trucks. A safe place to ride shall be provided where riding of trucks is authorized.

The employer shall prohibit arms or legs from being placed between the uprights of the mast or outside the running lines of the truck.

When a powered industrial truck is left unattended, load engaging means shall be fully lowered, controls shall be neutralized, power shall be shut off and brakes set. Wheels shall be blocked if the truck is parked on an incline.

A powered industrial truck is unattended when the operator is 7 meter or more away from the vehicle which remains in his view, or whenever the operator leaves the vehicle and it is not in his view.

When the operator of an industrial truck is dismounted and within 7 meter of the truck still in his view, the load engaging means shall be fully lowered, controls neutralized and the brakes set to prevent movement.

A safe distance shall be maintained from the edge of ramps or platforms while on any elevated dock or platform or freight car. Trucks shall not be used for opening or closing freight doors.

A load backrest extension shall be used whenever necessary to minimize the possibility of the load or part of it from falling rearward.

Traveling

The driver shall be required to slow down and sound the horn at cross isles and other locations where vision is obstructed. If the load being carried obstructs forward view, the driver shall be required to travel with the load trailing.

When ascending or descending grades in excess of 10 percent, loaded trucks shall be driven with the load upgrade.

On all grades the load and load engaging means shall be tilted back if applicable, and raised only as far as necessary to clear the road surface.

Loading

Only stable or safely arranged loads shall be handled. Caution shall be exercised when handling off-center loads which cannot be centered.

Only loads within the rated capacity of the truck shall be handled.

The long or high (including multiple-tiered) loads which may affect capacity shall be adjusted.

Trucks equipped with attachments shall be operated as partially loaded trucks when not handling a load.

A load engaging means shall be placed under the load as far as possible; the mast shall be carefully tilted backward to stabilize the load.

Extreme care shall be used when tilting the load forward or backward, particularly when high tiering. Tilting forward with load engaging means elevated shall be prohibited except to pick up a load. An elevated load shall not be tilted forward except when the load is in a deposit position over a rack or stack. When stacking or tiering, only enough backward tilt to stabilize the load shall be used.

Operation of the Truck

If at any time a powered industrial truck is found to be in need of repair, defective, or in any way unsafe, the truck shall be taken out of service until it has been restored to safe operating condition.

Maintenance of Industrial Trucks

Any power-operated industrial truck not in safe operating condition shall be removed from service. All repairs shall be made by authorized personnel.

All parts of any such industrial truck requiring replacement shall be replaced only by parts equivalent as to safety with those used in the original design.

Industrial trucks shall not be altered so that the relative positions of the various parts are different from what they were when originally received from the manufacturer, nor shall they be altered either by the addition of extra parts not provided by the manufacturer or by the elimination of any parts. Additional counter-weighting of fork trucks shall not be done unless approved by the truck manufacturer.

Industrial trucks shall be examined before being placed in service and shall not be placed in service if the examination shows any condition adversely affecting the safety of the vehicle. Such examinations shall be made at least daily. When industrial trucks are used on a round-the-clock basis, they shall be examined after each shift. Defects when found shall be immediately reported and corrected.

TRUCK REQUIREMENTS

Truck Relief Setting

2250 psi (155 bar) Recommended
3500 psi (240 bar) Maximum

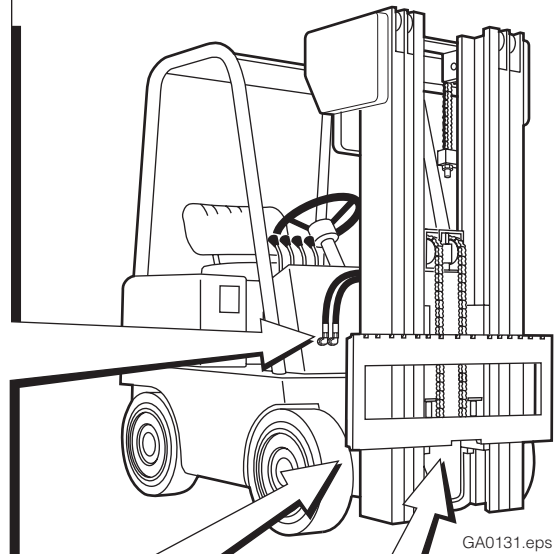
Truck Flow Volume ^①

| | Min. ^② | Recommended | Max. ^③ |
|----------------------------|---------------------|-----------------------|----------------------|
| 55K, 65K | 1 GPM (4 L/min.) | 2 GPM (7.5 L/min.) | 3 GPM (12 L/min.) |
| 100K, 120K 150K | 1 GPM (4 L/min.) | 4 GPM (16 L/min.) | 5 GPM (20 L/min.) |

① Cascade K-Series Fork Positioner/Sideshifters 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 slow fork positioning speed.

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



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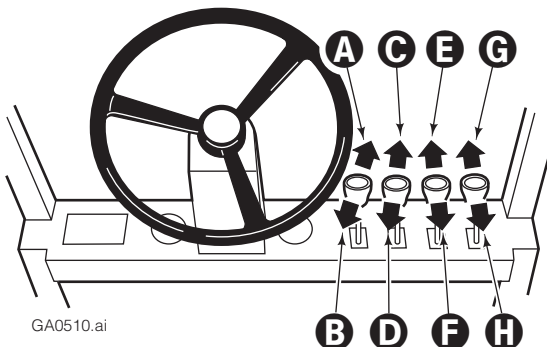
Carriage Mount Dimension (A) ITA (ISO)

| | Minimum | Maximum |
|------------------|----------------------|----------------------|
| Class II | 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) |
| Class IV | 23.44 in. (595.5 mm) | 23.50 in. (597.0 mm) |

Carriage – Clean and inspect carriage bars. Make sure that bars are parallel and that ends are flush. Grind smooth any protruding welds that may affect Sideshifter lower bearings. Repair any damaged notches.

Auxiliary Valve Functions

Check for compliance with ANSI (ISO) standards:



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Main Functions

- A** Hoist Down
- B** Hoist Up

- C** Tilt Forward
- D** Tilt Back

Auxiliary Functions

- E** Sideshift Left
- F** Sideshift Right

- G** Open forks
- H** Close forks

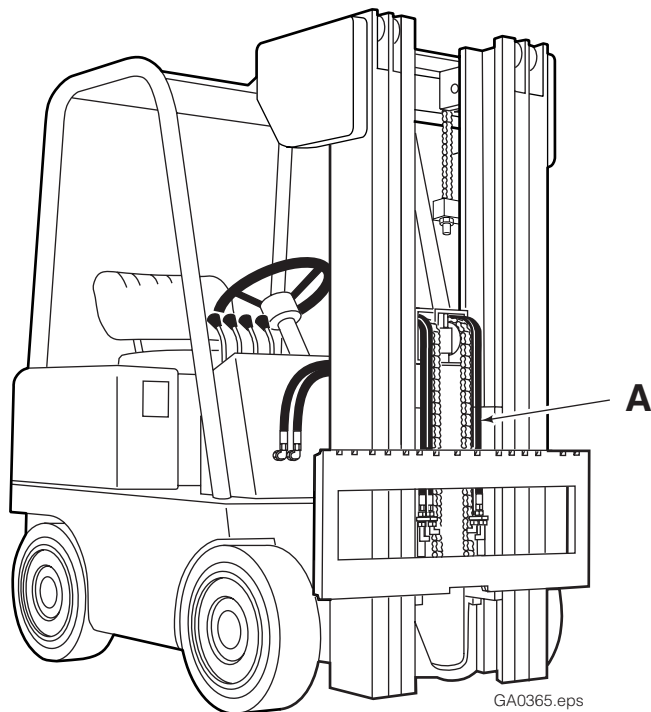


WARNING: Truck control handle and attachment function activation shown here conforms to ANSI/ITSDF B56.1 (ISO 3691) recommended practices. Failure to follow these practices may lead to serious bodily injury or property damage. End user, dealer and OEMs should review any deviation from the practices for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

Fork Positioning function: No. 3 hose/No. 4 fittings with .15 in. (4 mm) minimum I.D.

Sideshifting function: No. 4 hose/No. 6 fittings with .18 in. (5 mm) minimum I.D.

Refer to *Cascade Hose & Cable Reel Selection Guide*, Part No. 212199 to select the correct hose reel for the mast and truck.



Fork Positioning / Sideshifting

A Mast Double Internal Reeving

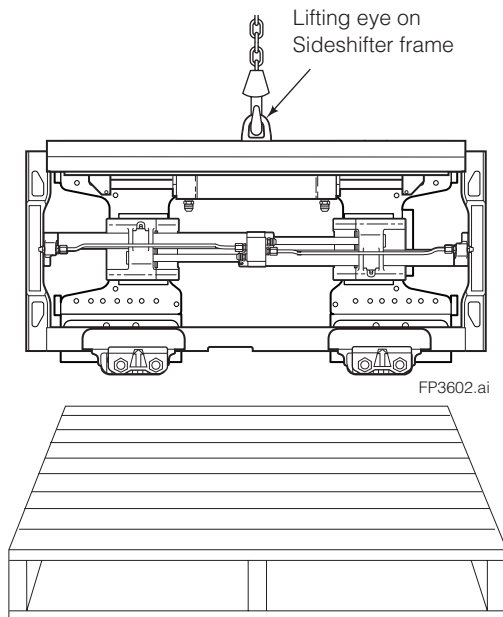
Solenoid Adaption

A Mast Single Internal Reeving
with RF Hydraulic Control

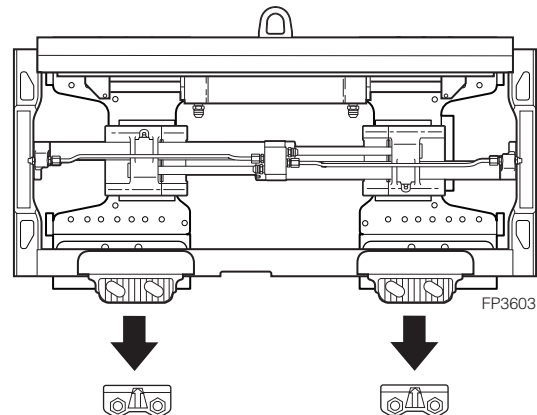
1 Attach overhead hoist



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.

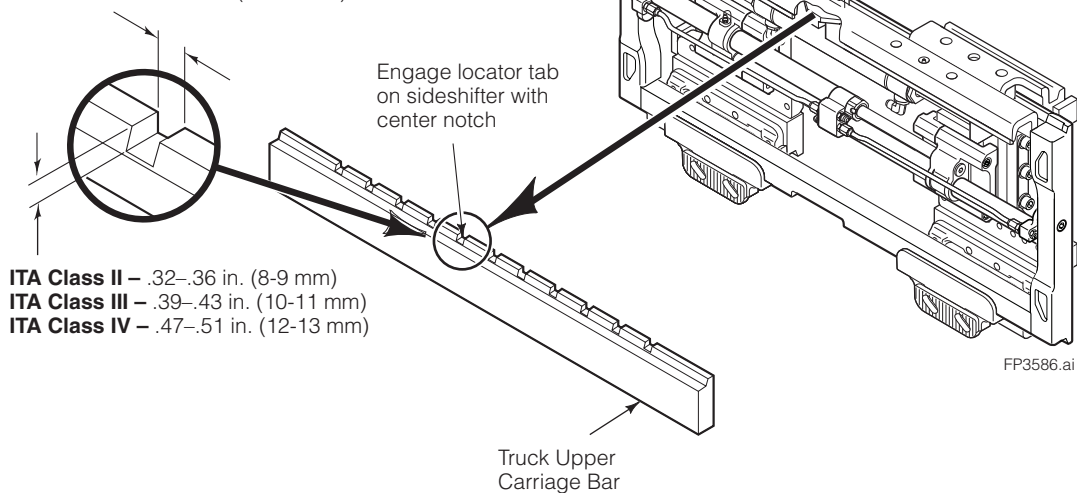


2 Remove bolt-on lower hooks



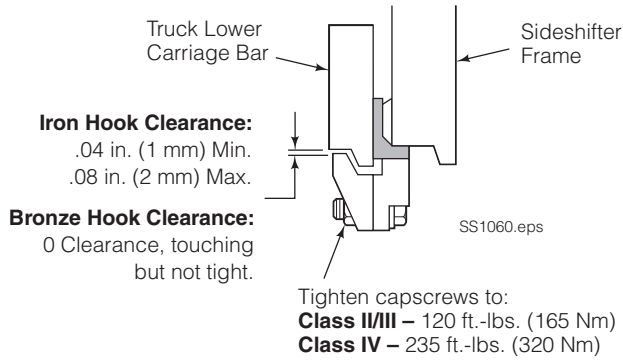
3 Mount unit on truck carriage

ITA Class II – .60-.66 in. (15-17 mm)
 ITA Class III – .72-.78 in. (18-20 mm)
 ITA Class IV – .72-.78 in. (18-20 mm)

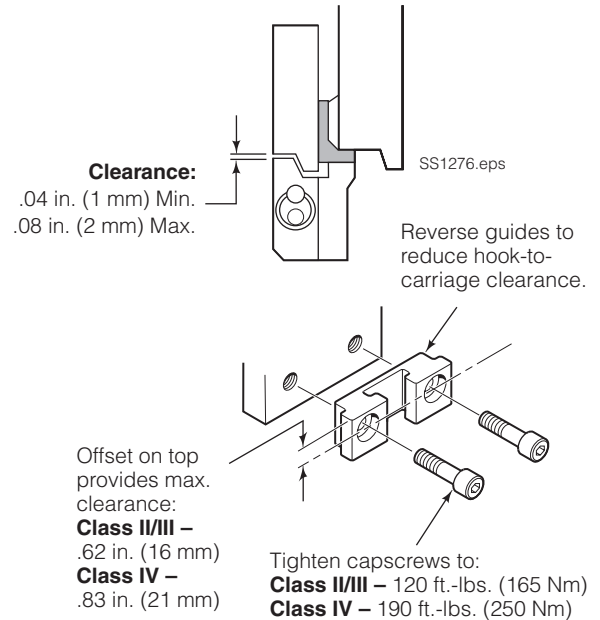


4 Install lower hooks

BOLT-ON HOOKS

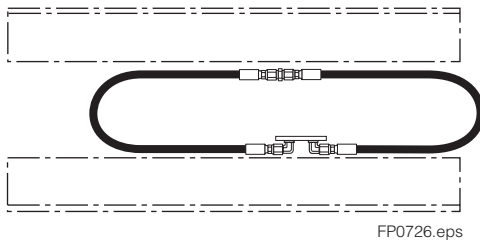


QUICK-DISCONNECT HOOKS



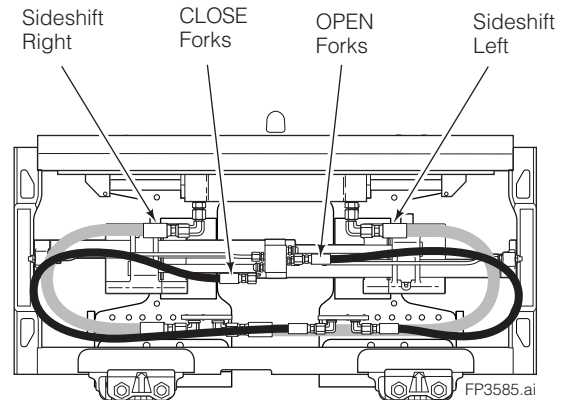
5 Flush supply hoses

- A** Connect supply hoses to supply terminals and connect together using a union fitting as shown.
- B** Operate auxiliary valve for 30 seconds.
- C** Remove union fitting.



6 Install hoses

CAUTION: Allow for 4 in. (100 mm) movement in each direction for sidsifting ('rolling' hose arrangement recommended).

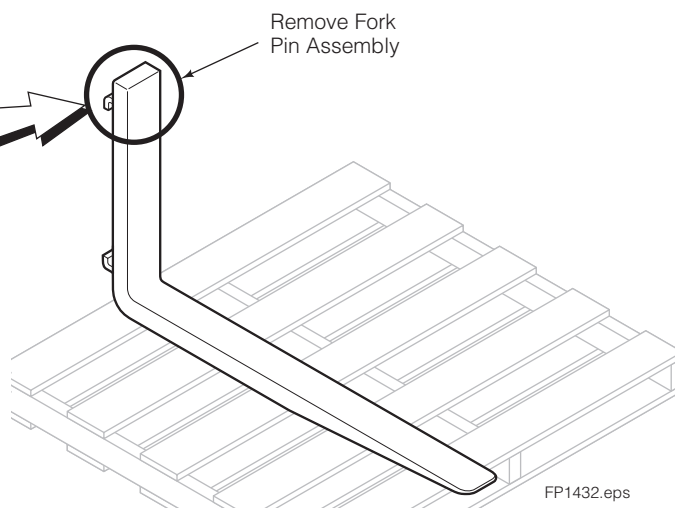
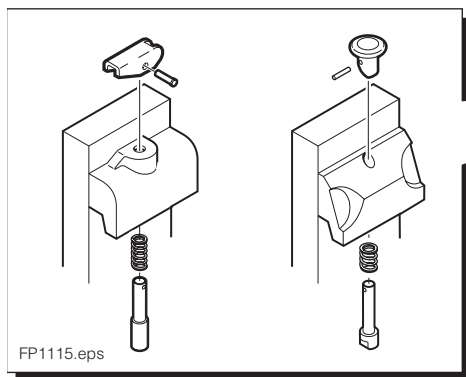


Back (Driver's) View

7 Remove fork locking pins



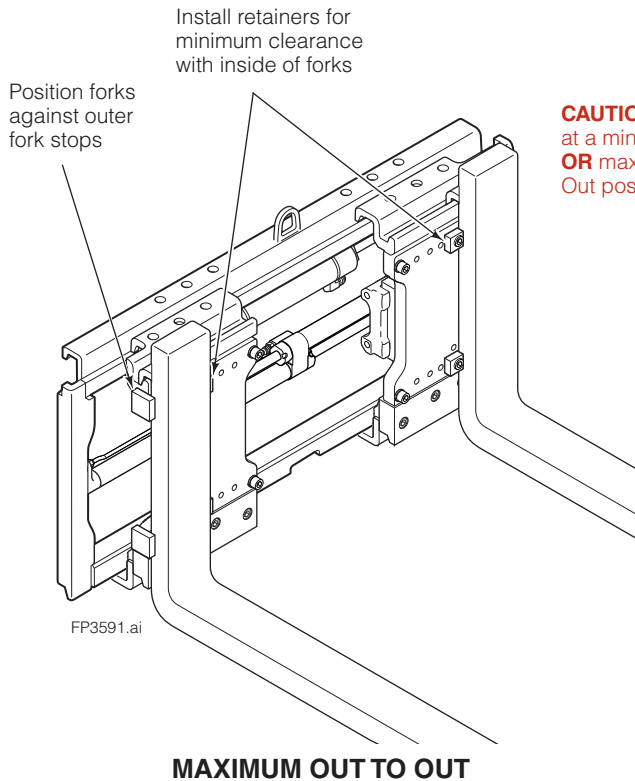
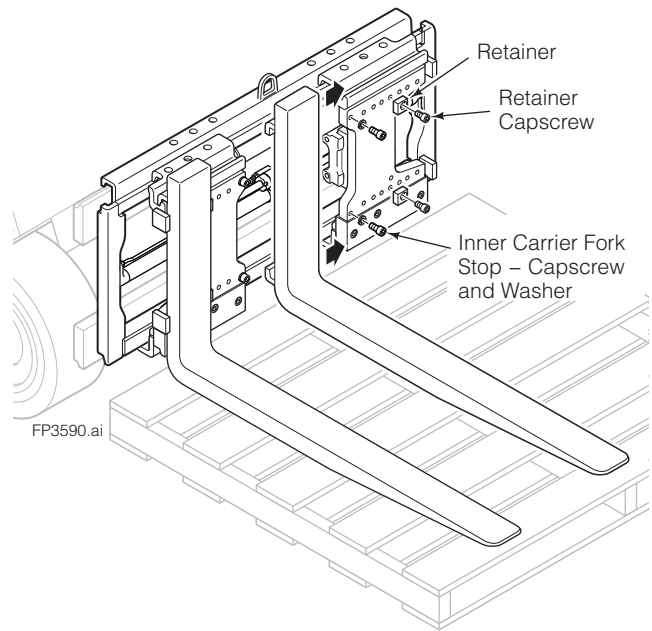
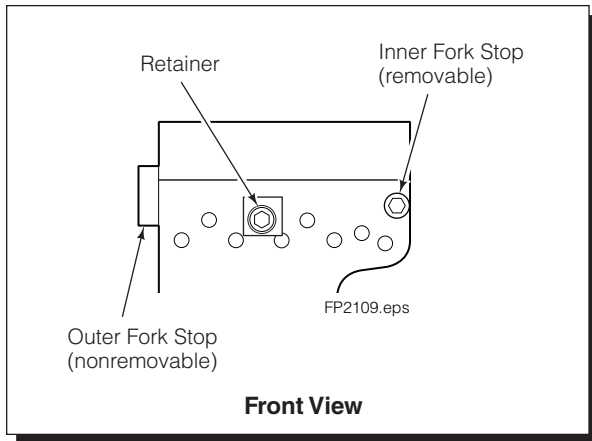
WARNING: Remove locking pins from forks. Make sure that forks slide freely on carriage bars.



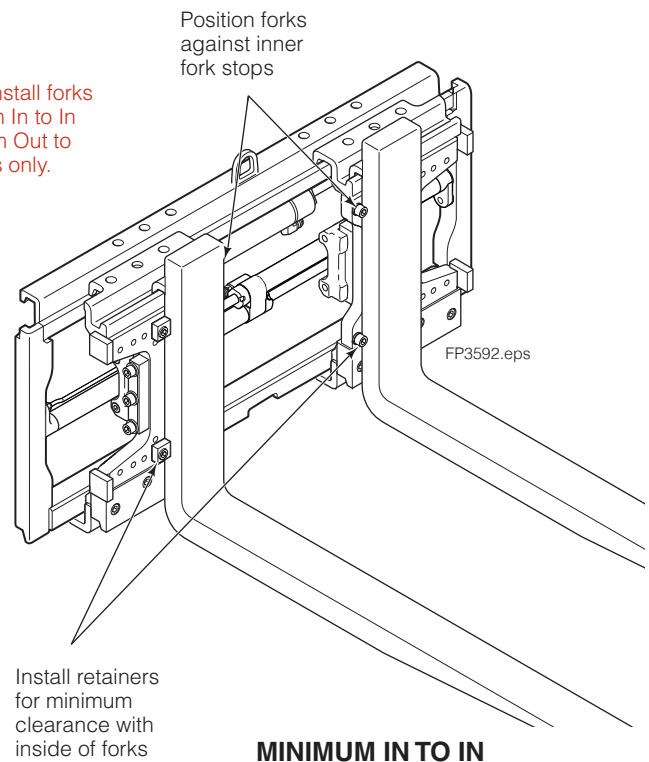
8 Install forks

- A** Remove inner carrier fork stops, retainers and their hardware.
- B** Install forks using a pallet or blocks. Keep feet clear of forks.
- C** Reinstall retainer, its hardware and inner carrier fork stop capscrews with washers. Tighten capscrews to 75 ft.-lbs. (100 Nm).

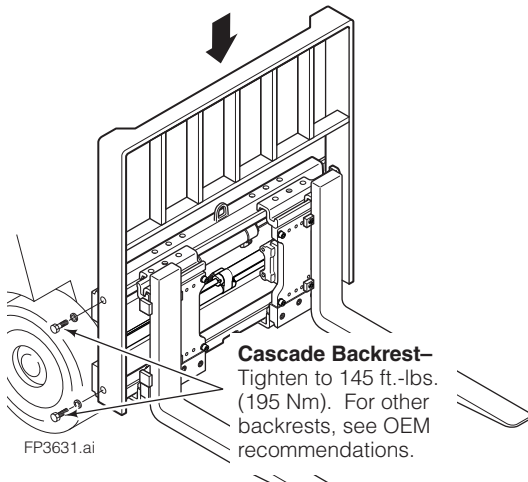
NOTE: To position retainers for various widths, refer to the illustration below.



CAUTION: Install forks at a minimum In to In **OR** maximum Out to Out positions only.



9 Install backrest



10 Lubrication

The attachment is prelubed at the factory and requires no lubrication for installation. Use graphite dry lube for fork bars as required ('Slip Plate Aerosol', 'GraphoKote' or equivalent).

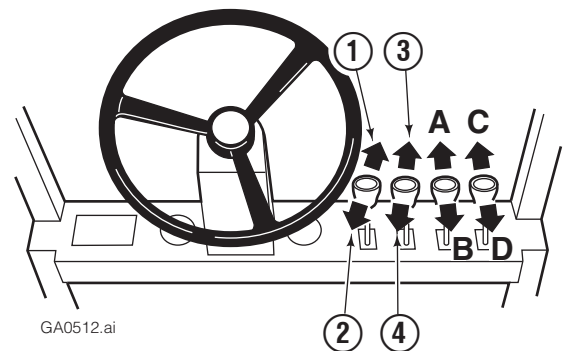
After use, lubricate fork positioner and sideshifter as described in Periodic Maintenance Section in this manual.

11 Cycle attachment functions

- Open and close forks several times. Sideshift (if equipped) left and right. Check for smoothness and equal movement.
- Check for operation in accordance with ANSI (ISO) standards.
- Check for leaks at fittings, valve, cylinders.
- Check that rolling hoses supplying fork position are not pinched.



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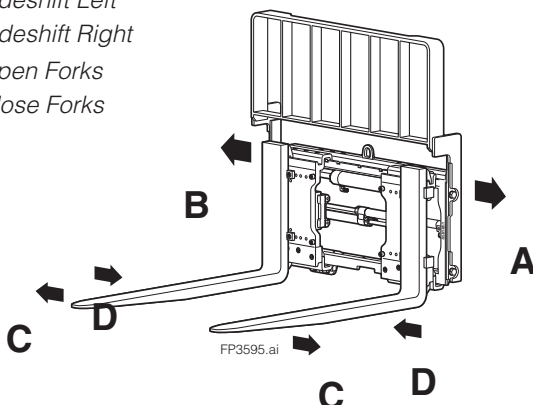
Main Valve Functions

- | | |
|--------------|----------------|
| ① Hoist Down | ③ Tilt Forward |
| ② Hoist Up | ④ Tilt Back |

Auxiliary Valve Functions: A-D

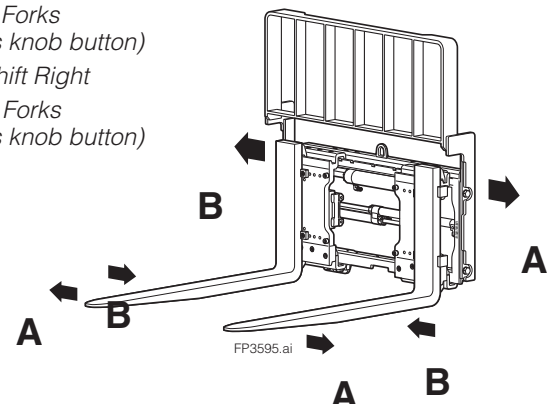
SIDESHIFTING / FORK POSITIONING

- A** Sideshift Left
- B** Sideshift Right
- C** Open Forks
- D** Close Forks



SIDESHIFTING / FORK POSITIONING WITH SOLENOID VALVE

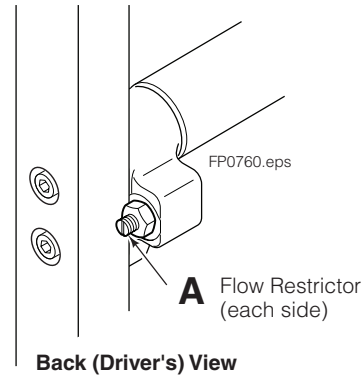
- A** Sideshift Left
- A** Open Forks
(press knob button)
- B** Sideshift Right
- B** Close Forks
(press knob button)



12 Adjust forks for equal movement (if required)

NOTE: Attachment is Factory-adjusted for equal fork movement when operated at recommended pressure and flow rate.

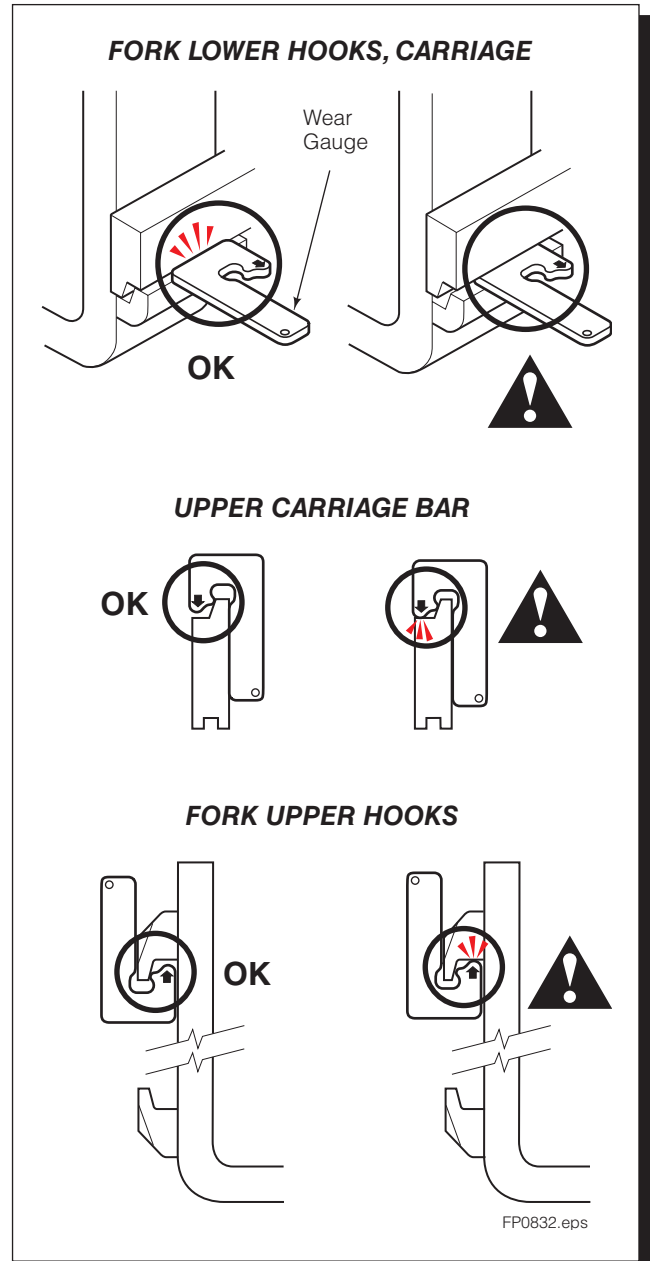
- A** Locate flow restrictors at each end. Loosen jam nuts and screw both flow restrictors in until they bottom. Screw each restrictor out (CCW) three (3) turns.
- B** Open forks fully, then close. Look for unequal fork movement.
- C** On faster fork (one that bottoms first), screw flow restrictor in (CW) 1/2 turn.
- D** Repeat Steps B and C until fork movement is equal. Tighten jam nuts.



13 Inspect fork hooks, carriage bar clearance

NOTE: Use go/no-go Wear Gauge Part No. 209560 (Class II), 209561 (Class III) or 6104118 (Class IV).

- A** Inspect the fork lower hooks and carriage bar. If the gauge fits between the carriage bar and lower hook, repair or replacement is needed.
- B** Inspect the upper carriage bar. If the gauge arrow touches the carriage bar, repair or replacement is needed.
- C** Inspect the fork upper hooks. If the gauge arrow touches the hook, repair or replacement is needed.



Daily

Check items shown each day. Report problems to your supervisor. See Service Manual for troubleshooting, maintenance and repair procedures.

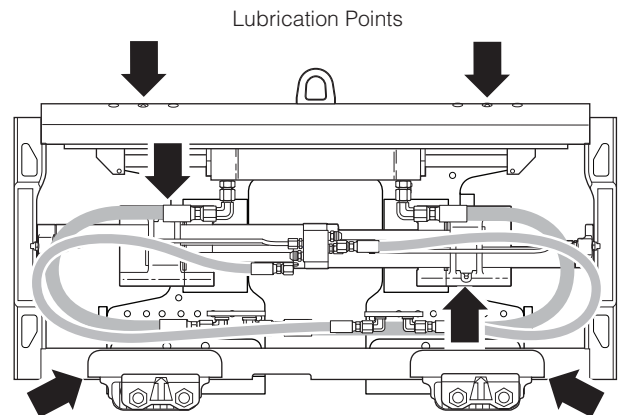
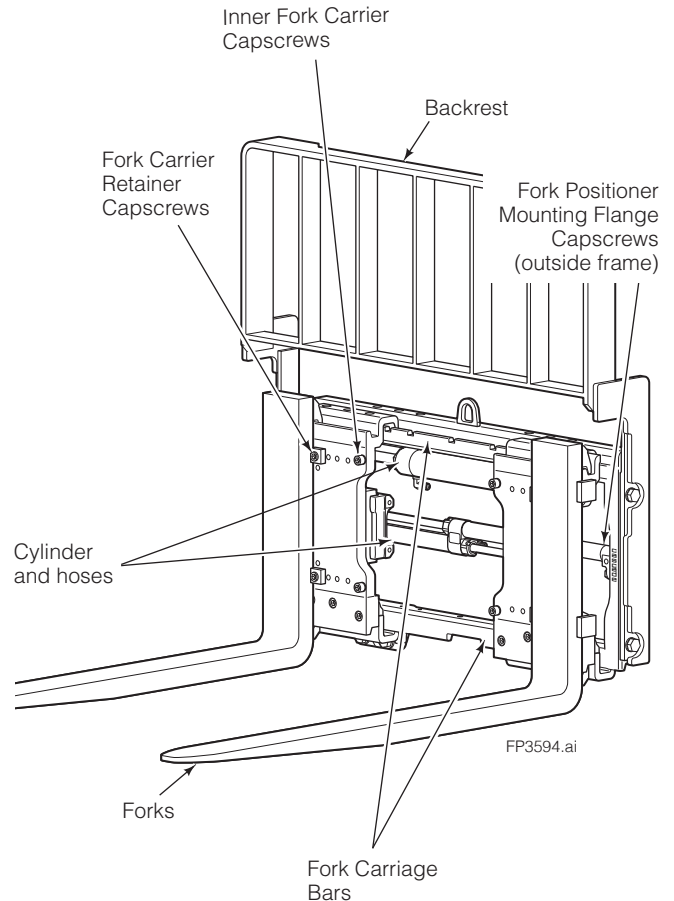
1000-Hour Maintenance

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

- Check for loose or missing capscrews, worn or damaged hoses, and hydraulic leaks.
 - Inspect sideshifter lower hooks for wear and proper clearance. Adjust if necessary, refer to Installation, Step 4. Tighten lower hook capscrews to:
Class II/III – 120 ft.-lbs. (165 Nm)
Class IV – 235 ft.-lbs. (320 Nm)
 - Tighten fork positioner mounting flange capscrews:
55K, 65K – 50 ft.-lbs. (65 Nm)
100K, 120K, 150K – 120 ft.-lbs. (165 Nm)
 - Tighten fork carrier capscrews:
55K, 65K – 25 ft.-lbs. (35 Nm)
100K, 120K, 150K – 50 ft.-lbs. (65 Nm)
 - Tighten fork positioner cylinder rod anchor plugs:
55K, 65K – 50 ft.-lbs. (65 Nm)
100K, 120K, 150K – 100 ft.-lbs. (135 Nm)
 - Tighten carrier backrest capscrews (Cascade) to 145 ft.-lbs. (195 Nm).
 - Tighten carrier retainer capscrews and inner carrier fork stops to 75 ft.-lbs (100 Nm).
 - Apply general purpose lithium-based chassis grease to the sideshifter upper bearing grease fittings and sideshifter lower bearings. Apply a single pump of grease for the fork carrier grease fittings.
 - Inspect fork carriers for looseness on bearing tubes, and cylinder rod anchors for excessive end play (see Service Manual for repair procedures).
- NOTE:** Cylinder rod anchors operate with a loose clearance.
- Inspect Sideshifter upper and lower bearings for wear. If any bearing is worn to less than .09 in. (2.5 mm) thickness replace the entire bearing set (see Service Manual for repair procedures).



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



Back (Driver's) View

2000-Hour Maintenance

After 2000 hours of truck operation, in addition to the Daily and 1000-Hour Maintenance, 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 (ISO 5057).

Inspect for the following defects:

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

NOTE: Fork Safety Kit 3014162 contains wear calipers, inspection sheets and safety poster. Also available is fork hook & carriage wear gauge 209560 (Class II), 209561 (Class III) and 6104118 (Class IV).

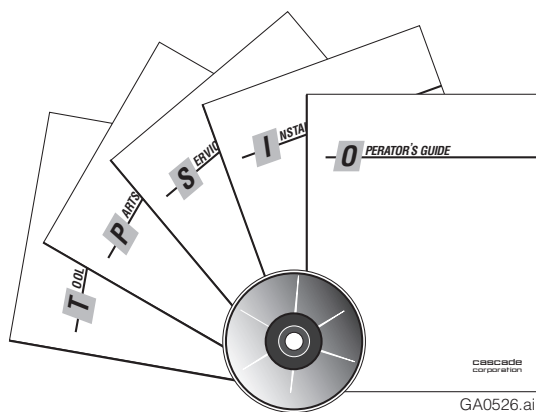
PARTS

Recommended Spare Parts

| 55K PART NO. | 65K PART NO. | 100K PART NO. | 120K,150K PART NO. | DESCRIPTION | UNITS SERVICED | | |
|-----------------|-----------------|------------------|-----------------------|-------------------------------|----------------|------|-------|
| | | | | | 1-5 | 6-19 | 20-50 |
| | | | | | QTY. | QTY. | QTY. |
| FORK POSITIONER | | | | | | | |
| 6055389 | 6055389 | 6081752 | 6081752 | Cylinder Internal Service Kit | 0 | 4 | 8 |
| 6055390 | 6055390 | 6081751 | 6081751 | Bearing Service Kit–Composite | 1 | 2 | 4 |
| 6055391 | 6055391 | 6081749 | 6081749 | Bearing Service Kit–Bronze | 1 | 2 | 4 |
| 6039245 | 6039245 | 6059383 | 6059383 | Mounting Shims | 4 | 6 | 8 |
| CARRIER GROUP | | | | | | | |
| 6827696 | 6878699 | 6878699 | 6898535 | Bearing | 4 | 8 | 8 |
| 207552 | 209306 | 209306 | 209306 | Block | 2 | 4 | 4 |
| SIDESHIFTER | | | | | | | |
| 228782 | 6051249 | 6051249 | 6079936 | Upper Bearing | 8 | 16 | 32 |
| 6000719 | 6057162 | 6057162 | 6057162 | Lower Bearing | 6 | 12 | 24 |
| 228166 | 228166 | 228166 | 6801474 | Lower Hook | 0 | 2 | 4 |
| 752903 | 752903 | 752903 | 768580 | Capscrew | 0 | 4 | 8 |
| 678990 | 678990 | 678990 | 783800 | Nut | 0 | 4 | 8 |
| 667225 | 667225 | 667225 | 215419 | Washer | 0 | 4 | 8 |
| ■ | ■ | ■ | ■ | Cylinder Assembly | 0 | 0 | 1 |
| 219868 | 219868 | 219868 | 219868 | Cylinder Rod Service Kit | 1 | 2 | 4 |

- Refer to part number stamped on part or supply serial number stamped on sideshifter frame when purchasing parts.

Publications



| PART NO. | DESCRIPTION |
|----------|----------------|
| 6955238 | User Manual |
| 6053927 | Service Manual |
| 679929 | Tool Catalog |

Do you have questions you need answered right now?

Call your nearest Cascade Service Department.

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