

# **U**SER MANUAL

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## ***C-Series***

### ***Integral Sideshifter***

Manual Number 6014809 R-1

**cascade**<sup>®</sup>

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# INTRODUCTION

This User Manual is for Cascade Integral Sideshifters. It contains an Operation Guide, Installation Instructions, and Parts Manual. All specifications are shown in U.S. and (Metric) units where applicable.

**IMPORTANT:** Cylinder ports are #6 SAE O-Ring (.5625 in. dia., 18UNF-2B)

## 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.



**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.

**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.

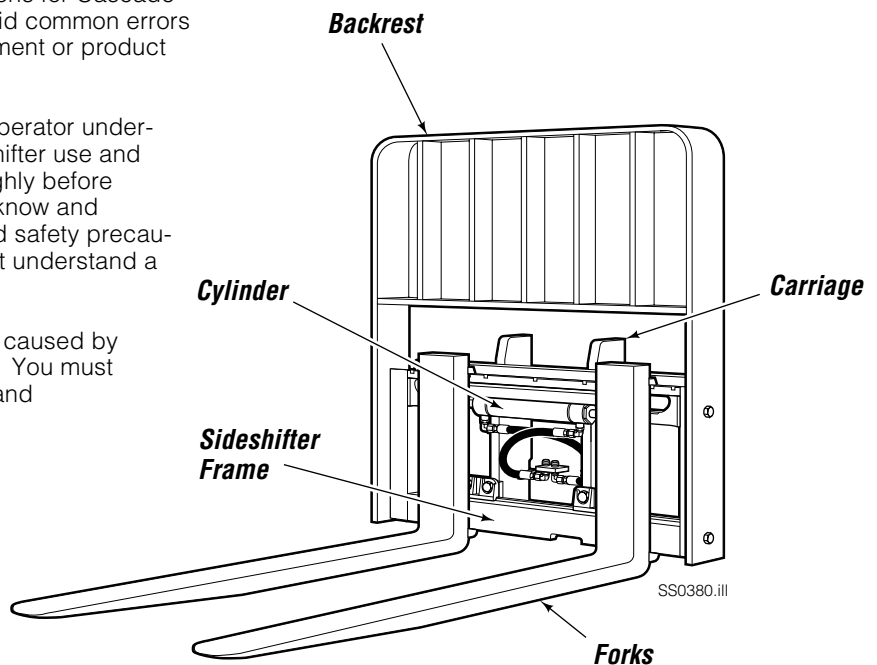
**NOTE** – A statement preceded by NOTE is information that is handy to know and may make the job easier.

# OPERATION

This Section contains operating instructions for Cascade Integral Sideshifters. 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 Sideshifter use and operation. Read this information thoroughly before operating the Attachment. Be 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 misjudgement. You must watch for poorly maintained equipment and hazardous situations and correct them.



# OPERATION

## Safety Rules – Industrial Lift Trucks

No riders



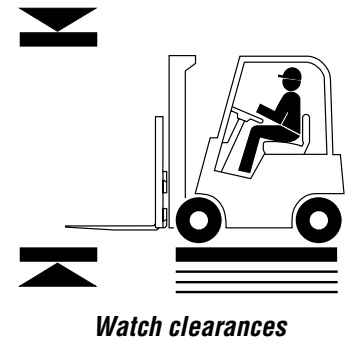
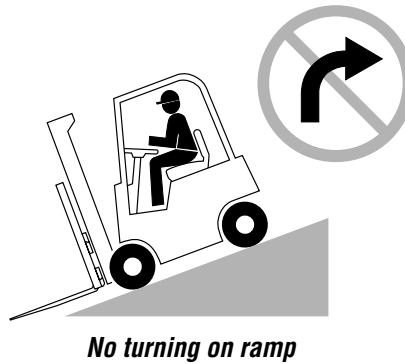
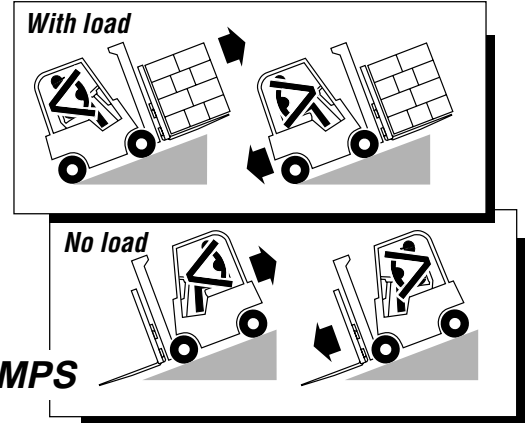
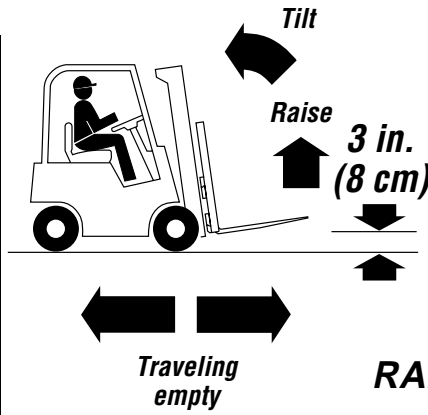
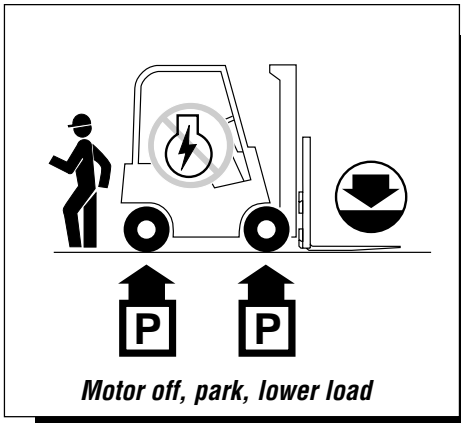
No reaching through mast



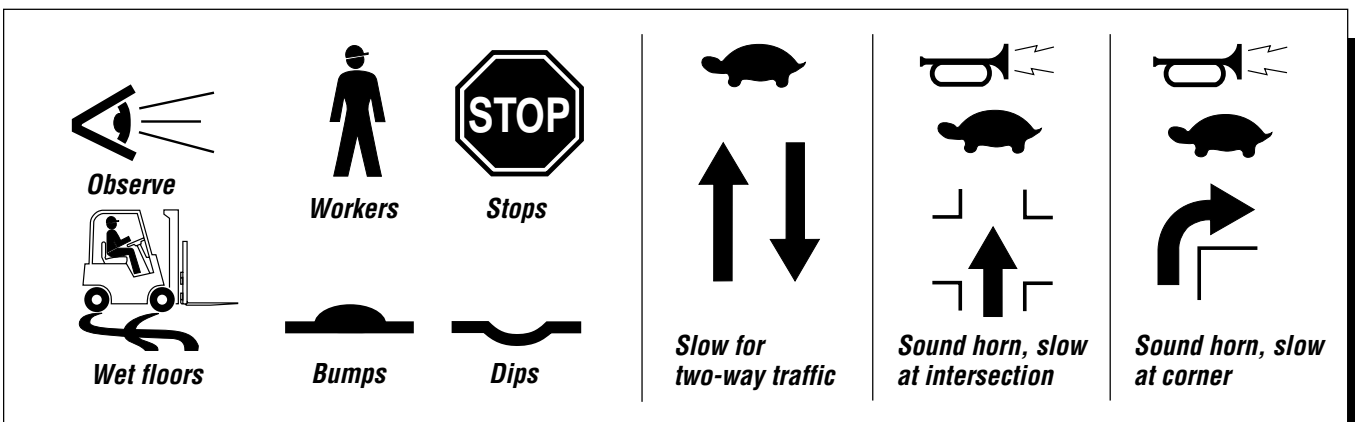
No standing under load



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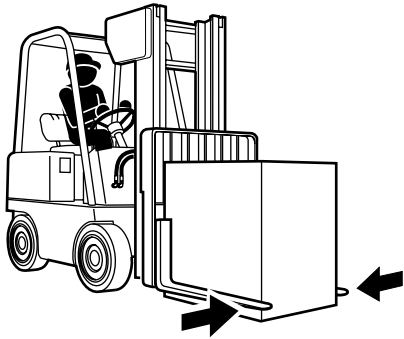
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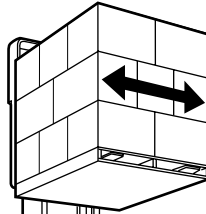
## OPERATION

### Safety Rules – Handling Loads

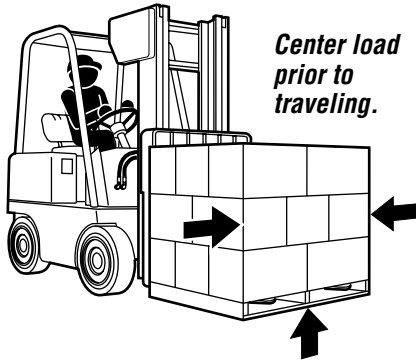
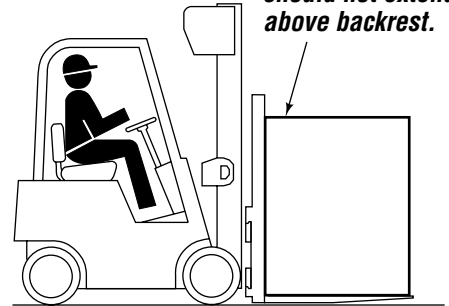


**CAUTION:** Do not put side loads on forks.

Limit sideshifting with raised load.



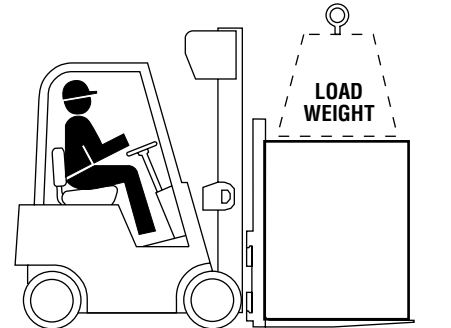
Top of load should not extend above backrest.



Center load prior to traveling.



Limit truck movement with raised load.



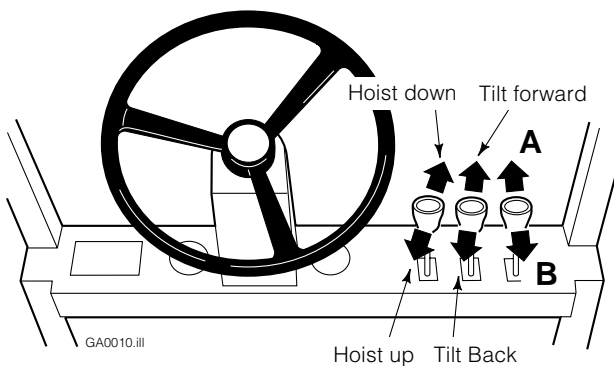
FP0017.iii

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.

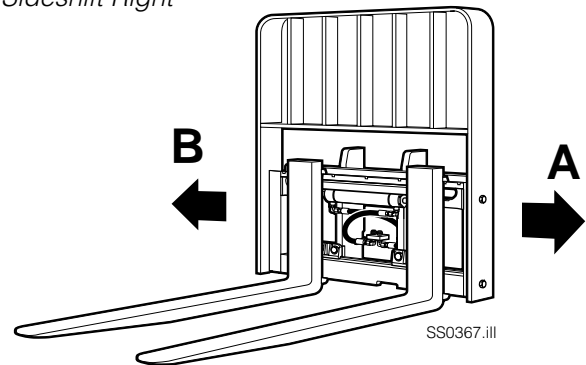
### Sideshifter Operation

#### AUXILIARY VALVE FUNCTIONS



#### SIDESHIFTING

- A Sideshift Left
- B Sideshift Right





# 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.**

### (a) General Requirement

- (4) 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.
- (5) 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.
- (6) The user shall see that all nameplates and markings are in place and maintained in a legible condition.

### (e) Safety Guards

- (2) If the type of load presents a hazard, the user shall equip fork trucks with a vertical load backrest extension in accordance with (a)(2) following.
  - (a)(2) 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.

### (l) 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.

### (m) Truck Operations

- (1) Trucks shall not be driven up to anyone standing in front of a bench or other fixed object.
- (2) No person shall be allowed to stand or pass under the elevated portion of any truck, whether loaded or empty.
- (3) 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.
- (4) The employer shall prohibit arms or legs from being placed between the uprights of the mast or outside the running lines of the truck.
- (5i) 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.
- (5ii) A powered industrial truck is unattended when the operator is 25 feet 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.
- (5iii) When the operator of an industrial truck is dismounted and within 25 feet of the truck still in his view, the load engaging means shall be fully lowered, controls neutralized and the brakes set to prevent movement.

- (6) 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.
- (10) A load backrest extension shall be used whenever necessary to minimize the possibility of the load or part of it from falling rearward.

### (n) Traveling

- (4) 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.
- (7i) When ascending or descending grades in excess of 10 percent, loaded trucks shall be driven with the load upgrade.
- (7iii) 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.

### (o) Loading

- (1) Only stable or safely arranged loads shall be handled. Caution shall be exercised when handling off-center loads which cannot be centered.
- (2) Only loads within the rated capacity of the truck shall be handled.
- (3) The long or high (including multiple-tiered) loads which may affect capacity shall be adjusted.
- (4) Trucks equipped with attachments shall be operated as partially loaded trucks when not handling a load.
- (5) 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.
- (6) 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.

### (p) Operation of the Truck

- (1) 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.

### (q) Maintenance of Industrial Trucks

- (1) Any power-operated industrial truck not in safe operating condition shall be removed from service. All repairs shall be made by authorized personnel.
- (5) 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.
- (6) 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.
- (7) 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

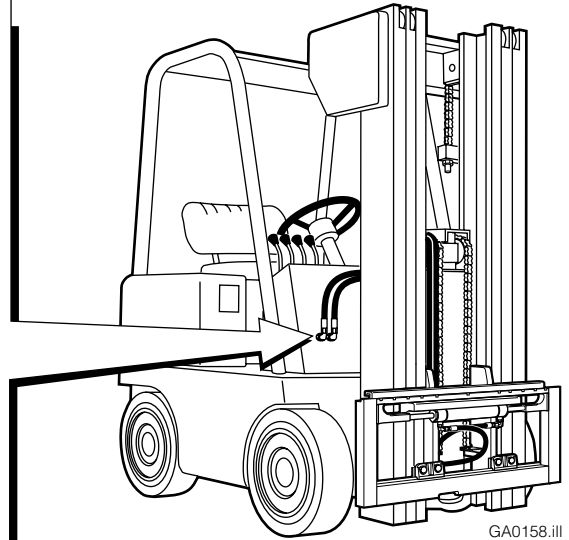
### Truck Relief Setting

2000 psi (140 bar) Recommended  
 3500 psi (240 bar) Maximum

### Truck Flow Volume <sup>①</sup>

	Min. <sup>②</sup>	Recommended	Max. <sup>③</sup>
<b>55C</b>	1 GPM (4 L/min.)	2 GPM (7.5 L/min.)	3 GPM (12 L/min.)

- ① Cascade Integral Sideshifters 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 may be required. Contact Cascade.**
- ② Flow less than recommended will result in slow sideshift speed.
- ③ Flow greater than maximum can result in excessive heating, reduced system performance and reduced hydraulic system life.

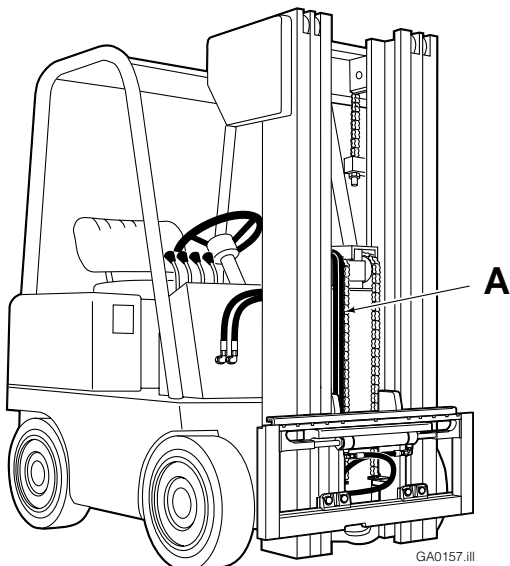
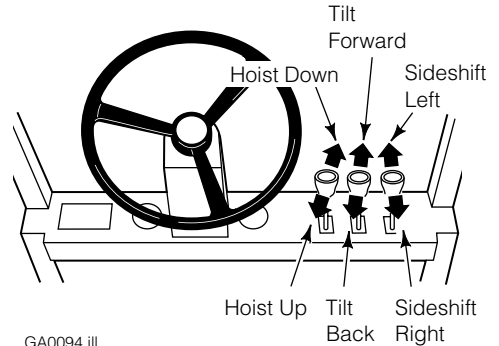


## Recommended Hydraulic Supply

The Integral Sideshifter requires the hydraulic supply arrangement shown below. All hoses and fittings should be at least No. 6 with 9/32 in. (7 mm) minimum I.D.

### Auxiliary Valve Functions

Check for compliance with ITA (ISO) standards:

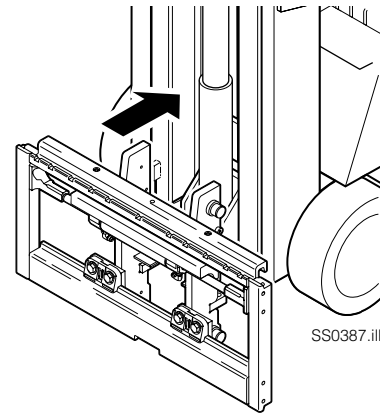


**A** Mast Single Internal Hose Reeving

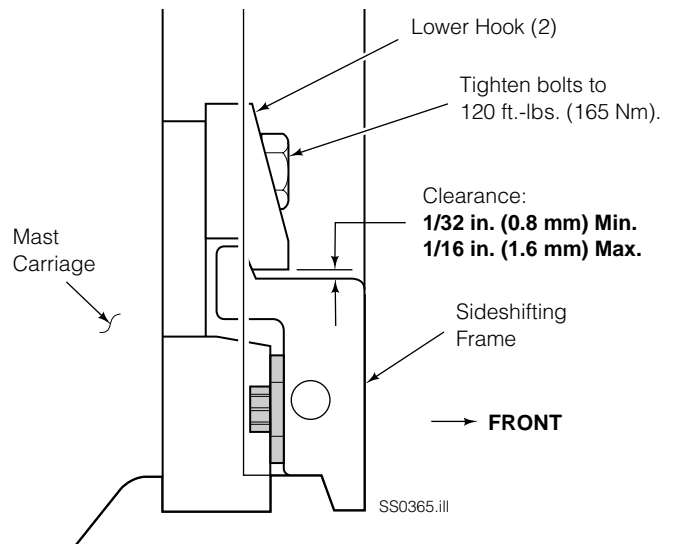
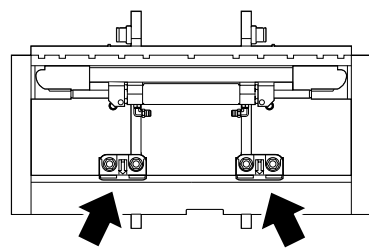
## Installation Procedure

**IMPORTANT:** Integral Attachment installation is an OEM or dealer responsibility. Some of the following Steps may or may not be required, but are shown for reference. Refer to the appropriate Service Manual for service and repair procedures.

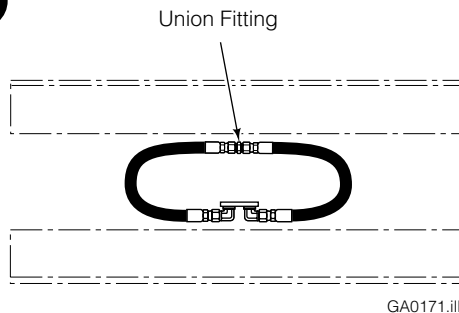
- 1** Integral Sideshifter carriage should be installed in mast per OEM specifications and procedures.



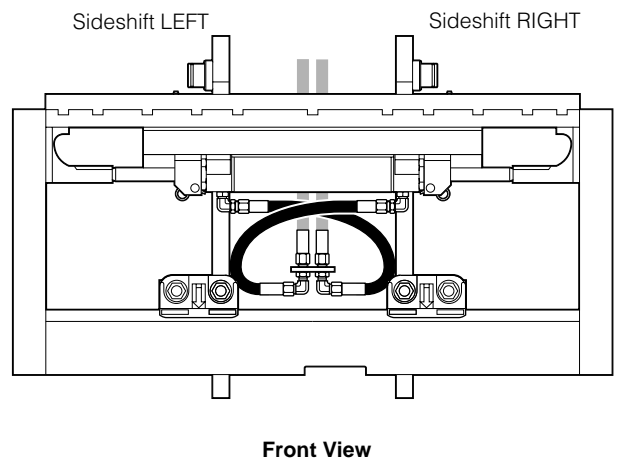
- 2** Check lower hook clearance



- 3** Flush supply hoses

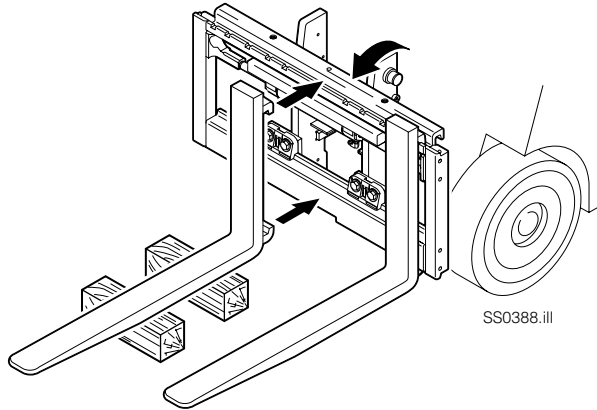


- 4** Connect hoses

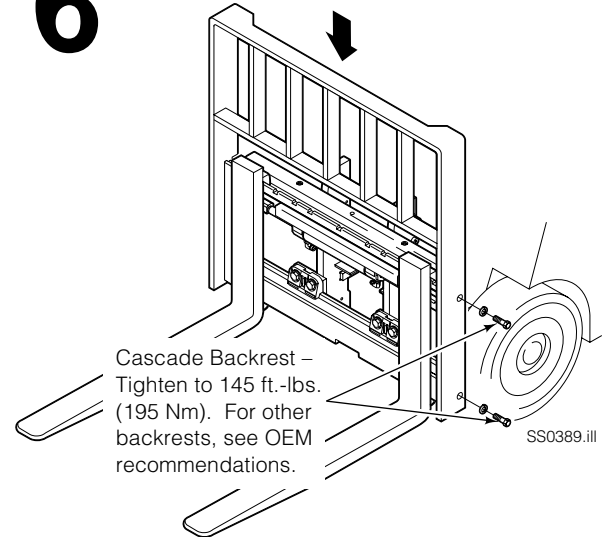


## 5 Install forks

Use blocks as necessary to raise forks to installation height. Keep feet clear of forks when installing.



## 6 Install backrest

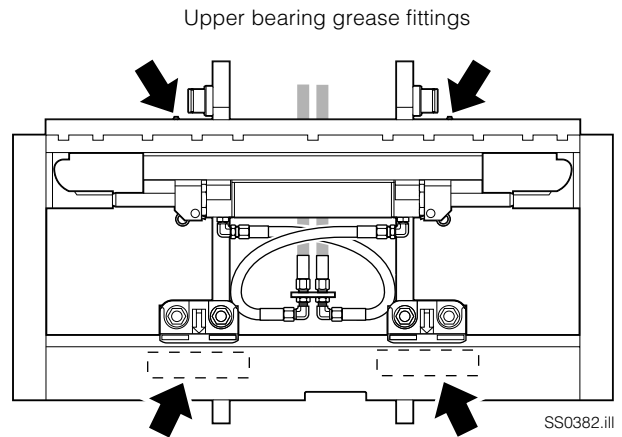


Cascade Backrest –  
Tighten to 145 ft.-lbs.  
(195 Nm). For other  
backrests, see OEM  
recommendations.

## 7 Check Sideshifter bearing lubrication

Bearings are prelubed at the Factory with break-in grease. **No additional lubrication is required during installation.**

**NOTE:** After 300 hours of operation, sideshifter bearings should be lubricated with general-purpose lithium-based chassis grease.



Upper bearing grease fittings

Lower bearing grease areas

Front View



# INSPECTION & MAINTENANCE



**WARNING:** After completing any service procedure, always test the Integral Sideshifter through five complete cycles. First test with no load, then test with a load to make sure the Sideshifter operates correctly before returning it to the job.

## Daily

Check items shown each day. Report problems to your supervisor. See Service Manual for troubleshooting, maintenance and repair procedures. **NOTE:** Carriage should be maintained per OEM service specifications.

## 100-Hour

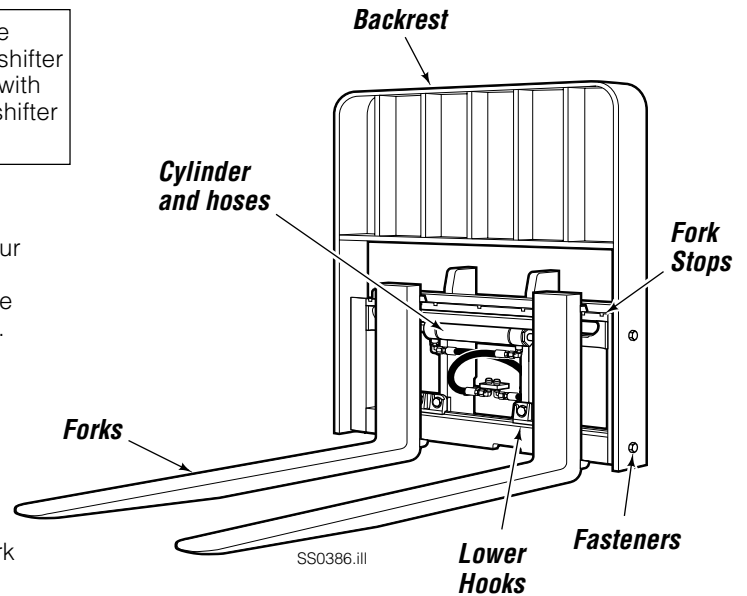
Every time the lift truck is serviced or every 100 hours of truck operation, whichever comes first, complete the following maintenance procedures:

- Check for loose or missing bolts, worn or damaged hoses, hydraulic leaks, and damaged or missing fork stops.
- Inspect lower hooks for wear and proper clearance. Adjust if necessary (see Step 2, Installation). Tighten lower hook capscrews to 120 ft.-lbs (165 Nm).

## 300-Hour

After each 300 hours of truck operation, in addition to the 100-hour maintenance, perform the following procedures:

- Tighten Cascade backrest capscrews to 145 ft.-lbs. (195 Nm).
- Lubricate Sideshifter upper and lower bearings with general-purpose lithium-based chassis grease.



## 1000-Hour

After each 1000 hours of truck operation, in addition to the 100 and 300-hour maintenance, perform the following procedures:

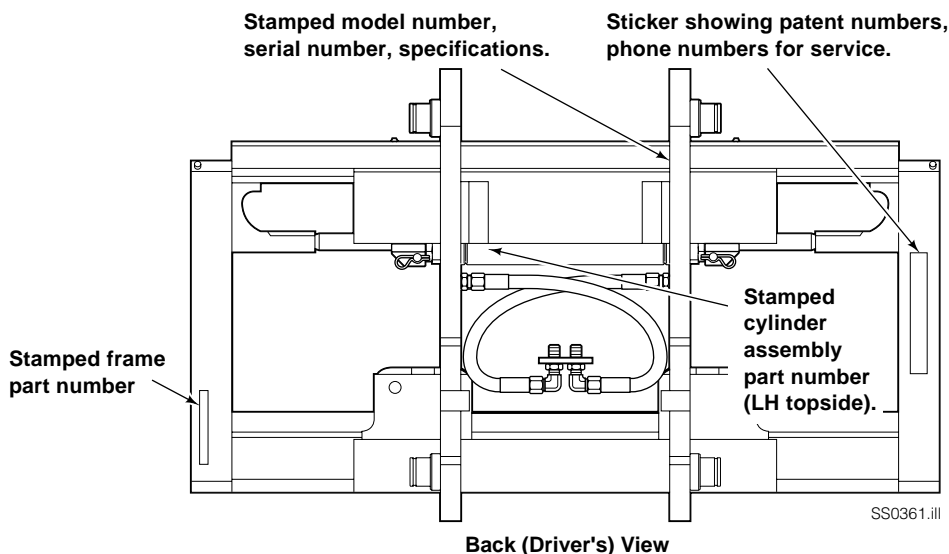
- Inspect upper and lower bearings for wear. If any bearing is worn to less than 3/32 in. (2.5 mm) thickness, replace the entire bearing set (see Service Manual).
- Inspect forks (if equipped) for wear. **NOTE:** Fork Safety Kit 3014162 is available containing wear calipers, inspection sheets and safety poster. Also available are fork hook & carriage wear gauges 209560 (CL II), and 209561 (CL III).

# PARTS

**Product Identification** – This Section shows replacement parts for Integral Sideshifters. The product model number and serial number are stamped on the inside surface of the RH vertical sideplate (driver's view), and must be provided when ordering replacement parts. The cylinder assembly part number is stamped on the LH topside (driver's view).

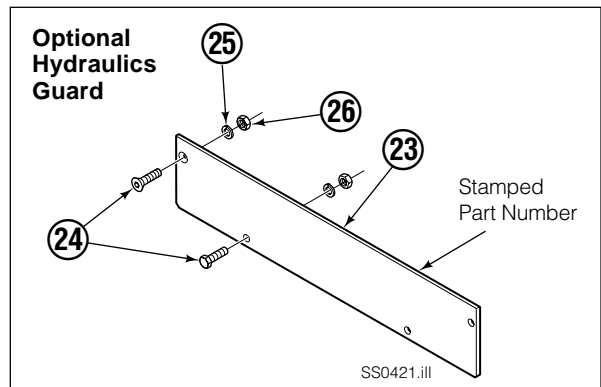
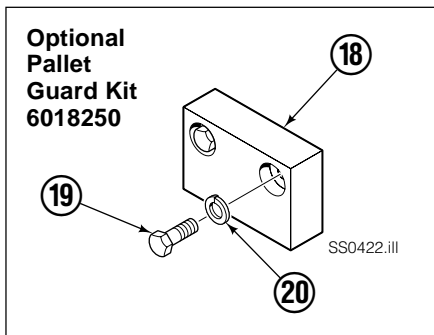
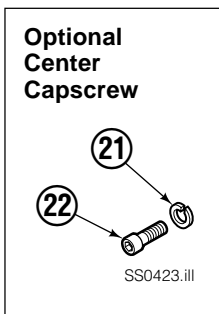
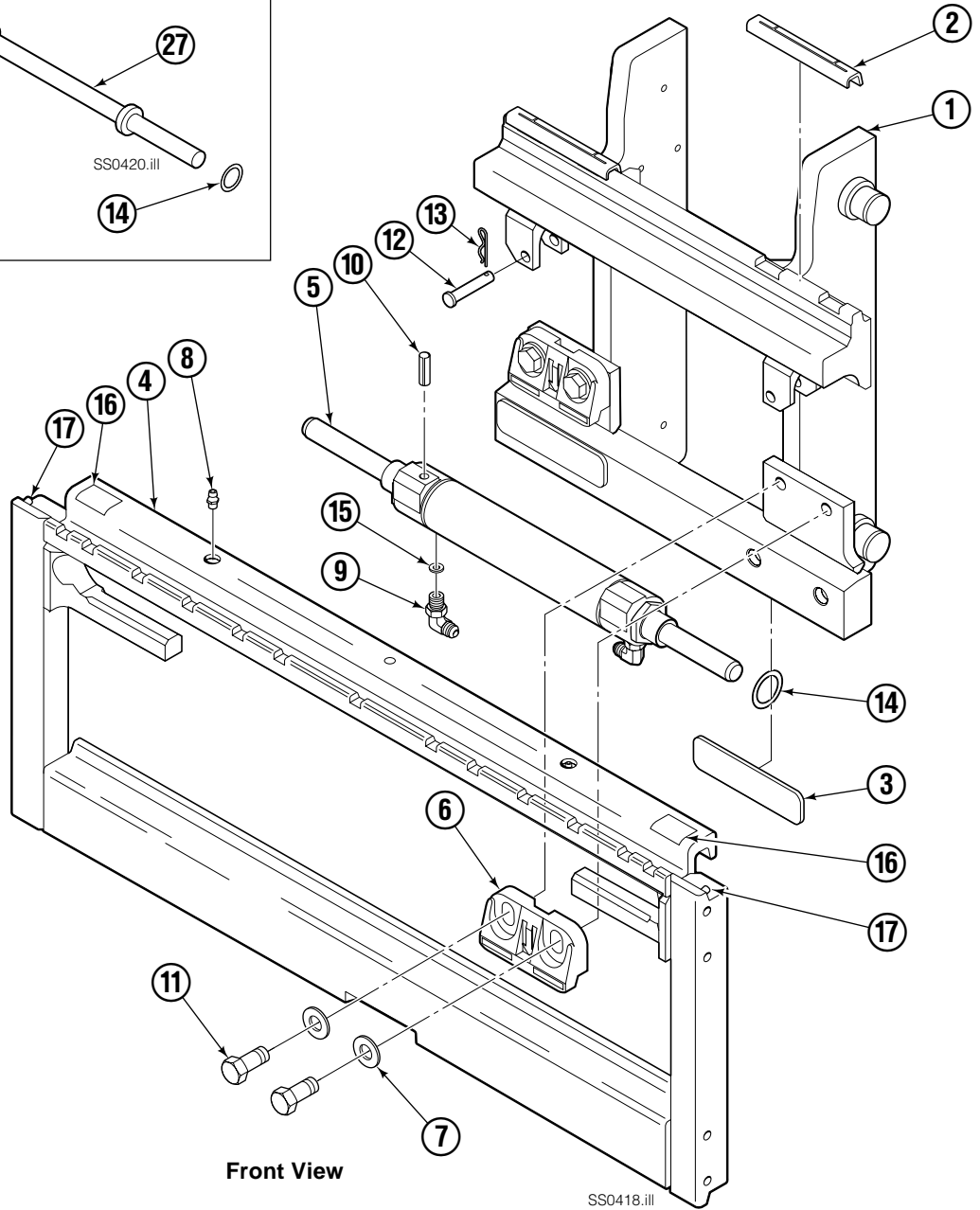
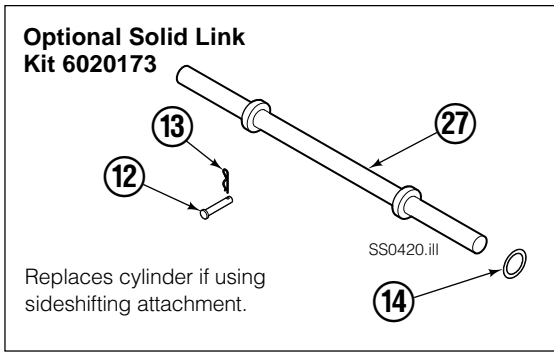


**WARNING:** For the safety of yourself and others, DO NOT install the parts shown in this Manual unless you have thoroughly reviewed the appropriate Service Manual.



# PARTS

## Base Unit



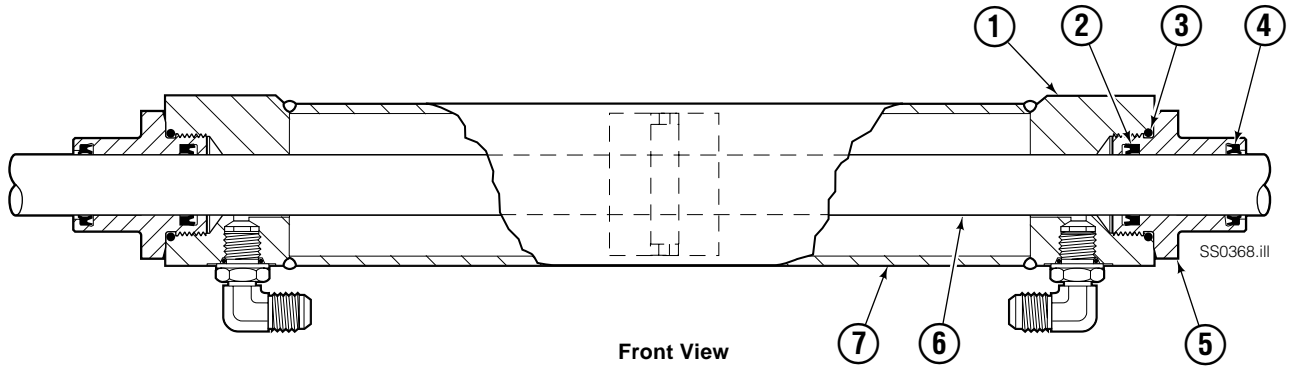
55C			
REF	QTY	PART NO.	DESCRIPTION
1	1	●	Inner Carriage Weldment
2	2	8508374	Upper Bearing, Composite
	2	8509289	Upper Bearing, Bronze (optional)
3	2	8508376	Lower Bearing, Composite
	2	8509290	Lower Bearing, Bronze (optional)
4	1	✕	Frame Weldment
5	1	■	Cylinder Assembly
★6	2	8508373	Lower Hook
★7	4	667225	Washer-HD, M16
8	2	7403	Grease Fitting
9	2	601676	Fitting-90, 6-6
	2	207304	Fitting-90, Long, 6-6
	2	667222	Fitting-90, 5-6
	2	666984	Fitting-90, 4-6
	2	604511	Fitting-STR, 6-6
	2	211807	Fitting-90, Face Seal, 4-6
	2	220832	Fitting-STR, Face Seal, 4-6
10	1	769050	Roll Pin
★11	4	684295	Capscrew, M16 x 2
◆12	2	6016592	Clevis Pin
◆13	2	6016912	Hairpin Cotter
◆14	▼	6016591	Shim, Cylinder
15	2	221733	Flow Restrictor, 1.5 mm
	2	206488	Flow Restrictor, 1.32 mm
	2	209648	Flow Restrictor, 1.27 mm
16	2	221906	Safety Decal
17	1	219400	Fork Stop Kit (includes 2 stops)
▲18	1	6018251	Pallet Guard
▲19	2	768557	Capscrew, M12 x 1.75
▲20	2	683822	Lockwasher, M12
21	1	768825	Center Capscrew, M12 x 1.75
22	1	678991	Lockwasher, High Collar, M12
23	1	▮	Hydraulic Guard, Solid (optional)
	1	▮	Hydraulic Guard, Mesh (optional)
24	4	4057	Capscrew, FH, (Solid Guard)
	4	643511	Capscrew, Hex (Mesh Guard)
25	4	6229	Washer
26	4	228818	Jam Nut
◆27	1	6020156	Solid Link (optional)

- If Carriage needs replacing, order complete Sideshifter Assembly.
- ✕ Order part number stamped on frame.
- See Cylinder page for parts breakdown.
- ★ Included in Lower Hook Service Kit 6018267.
- ◆ Included in Solid Link Kit 6020173.
- ▼ Quantity as required.
- ▲ Included in Pallet Guard Kit 6018250.
- ▮ Order part number stamped on Hydraulic Guard.

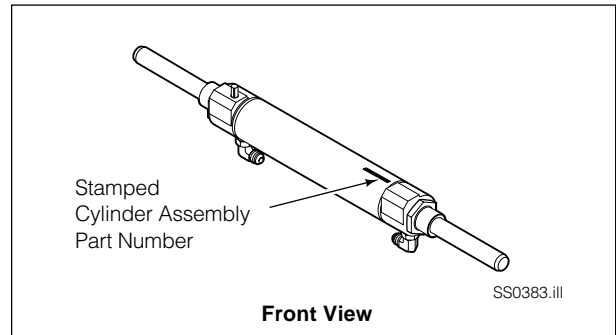
Reference: SK-7069

# PARTS

## Cylinder Assembly, Backrest

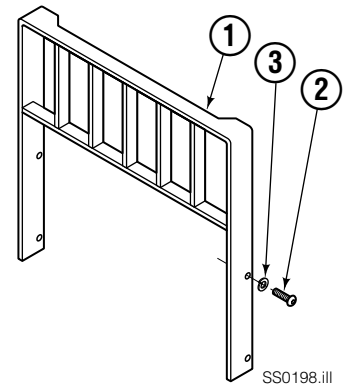


55C			
REF	QTY	PART NO.	DESCRIPTION
1	1	◆	Cylinder Assembly
●2	2	562132	Rod Seal ✕
●3	2	415866	O-Ring, 70 Duro ✕
●4	2	562131	Rod Wiper Seal ✕
●5	2	6017490	Retainer/Seal Carrier Assembly
6	—	■	Rod/Piston Assembly
7	—	■	Cylinder Shell
	2	6016592	Clevis Pin ★
●	2	6016912	Hairpin Cotter ★
	▼	6016591	Shim, Cylinder ★



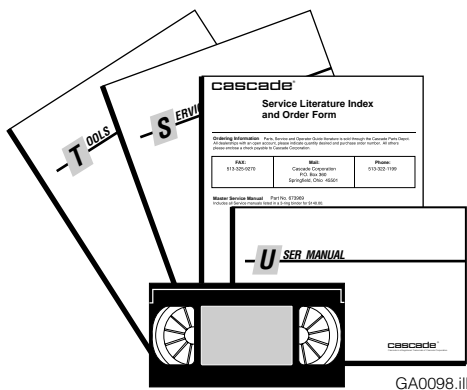
- ◆ Refer to part number stamped on cylinder top.
- Included in Rod Seal Service Kit 6019928.
- ✕ Preloaded in Retainer/Seal Carrier Assembly 6017490.
- Not serviceable, order new Cylinder Assembly.
- ★ Not shown, see Base Unit page for illustration.
- ▼ Quantity as required.

55C					
		Backrest Height			DESCRIPTION
		36 in. (91.5 cm)	48 in. (122 cm)	60 in. (152.5 cm)	
REF	QTY	PART NO.	PART NO.	PART NO.	
1	1	684769	684770	684771	Backrest – 31 in. (78.7 cm) Width
1	1	684772	684773	684774	Backrest – 37 in. (94 cm) Width
1	1	684775	684776	684777	Backrest – 41 in. (104 cm) Width
1	1	684778	684779	684780	Backrest – 49 in. (124.5 cm) Width
1	1	684781	684782	684783	Backrest – 61 in. (155 cm) Width
2	4		200173		Capscrew, M16x2 x 35
3	4		684586		Lockwasher, M16



Reference: S-3370

55C		UNITS SERVICED		
PART NUMBER	DESCRIPTION	1-5	6-19	20-50
<b>BASE UNIT AND MOUNTING</b>				
8508374	Upper Bearing, Composite	8	16	32
8508376	Lower Bearing, Composite	6	12	24
8508373	Lower Hook	0	2	4
684295	Capscrew, M16 x 2	0	4	8
667225	Washer, HD, M16	0	4	8
<b>CYLINDER</b>				
6020048	Cylinder Assembly	0	0	1
6019928	Rod Seal Service Kit	1	2	4



GA0098.iii

Integral Sideshifter	
PART NO.	DESCRIPTION
6014809	User Manual (Operation, Installation, Parts)
6020275	Service Manual
679929	Tool Catalog
673964	Literature Index Order Form

# Contacting Cascade

**Users** – Cascade product literature, service literature, parts and videos are available through authorized lift truck dealers. To find the dealer nearest you, contact:

## **North America/South America**

**Cascade Corporation  
U.S. Headquarters**  
2201 NE 201st  
Fairview, OR 97024-9718  
Tel: 800-CASCADE (227-2233)  
503-669-6300  
Fax: 888-329-8207

## **Europe**

**Cascade N.V.  
European Headquarters**  
P.O. Box 3009  
1300 El Almere  
Damsluisweg 56  
1332 ED Almere  
The Netherlands  
Tel: 31-36-5492911  
Fax: 31-36-5492964

**Lift Truck Dealers** – To order parts, service literature or videos:

## **North America/South America**

**Cascade Parts Sales**  
2501 Sheridan Ave.  
Springfield, OH 45505  
Tel: 888-CASCADE (227-2233)  
Fax: 888-329-0234

