



# Installation Service and Parts Manual

---

## 4-Port Hose Reel

---

Manual Number 669225

---

**cascade<sup>®</sup>**

Cascade is a Registered Trademark of Cascade Corporation.

# CONTENTS

<b>INTRODUCTION</b> . . . . .	<b>i</b>
<b>INSTALLATION</b> . . . . .	<b>1</b>
<b>SERVICE</b>	
<b>SEAL and SPRING ASSEMBLY REPLACEMENT</b> . . . . .	<b>3</b>
<b>HOSE REPLACEMENT</b> . . . . .	<b>6</b>
<b>TROUBLESHOOTING GUIDE</b> . . . . .	<b>7</b>
<b>HOSE LENGTH</b> . . . . .	<b>7</b>
<b>PARTS LISTS</b> . . . . .	<b>8-10</b>

# INTRODUCTION

This booklet contains the complete PARTS, INSTALLATION, and SERVICE information for the 4-Port Hose Reel. The manual also includes a TROUBLESHOOTING GUIDE located on page 7. If you have additional questions, call the Cascade Service Department in Portland, Oregon Area Code (503) 666-1511.

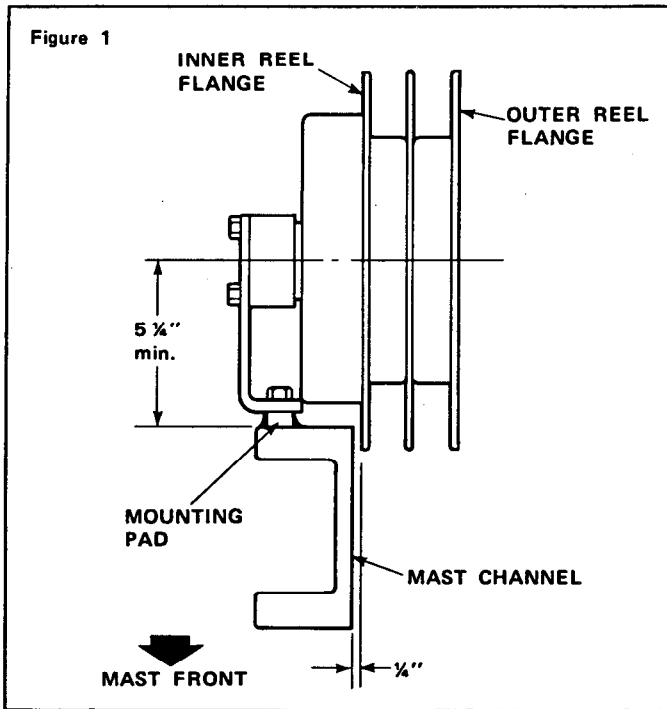
To order replacement parts contact the Cascade Central Parts Depot at:

Cascade Corporation  
P.O. Box 360  
Springfield, Ohio 45505  
(513) 322-1199

# INSTALLATION

**IMPORTANT:** Do not allow the reel to rotate on its shaft at this time. Doing so will prewind the spring. The reel must not be rotated until it is to be prewound and hoses connected to the junction block.

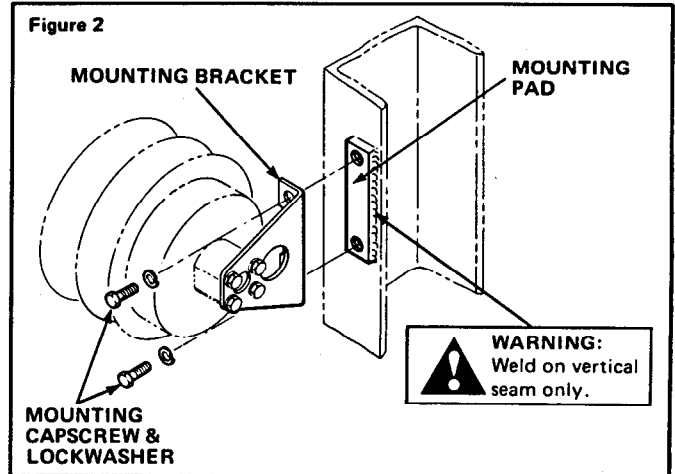
1. Determine a location for the mounting pad keeping in mind the following points:
  - a. **Locate the mounting pad** on the mast channel or truck cowlings so that the reel flanges will not interfere with:
    - the truck overhead guard when the mast is tilted all the way back (if the reel is mounted on the mast).
    - the truck carriage as it moves past the reel (if the reel is mounted on the mast).
    - the mast channel members when the mast is tilted all the way back (if the reel is mounted on the truck cowlings).
  - b. The inner reel flange should be no more than 1/4" from the side of the mast, and should be placed behind the mast channel rather than along side it. See Figure 1.
  - c. The reel should not extend beyond the widest part of the truck to prevent possible damage to the reel during truck operation.



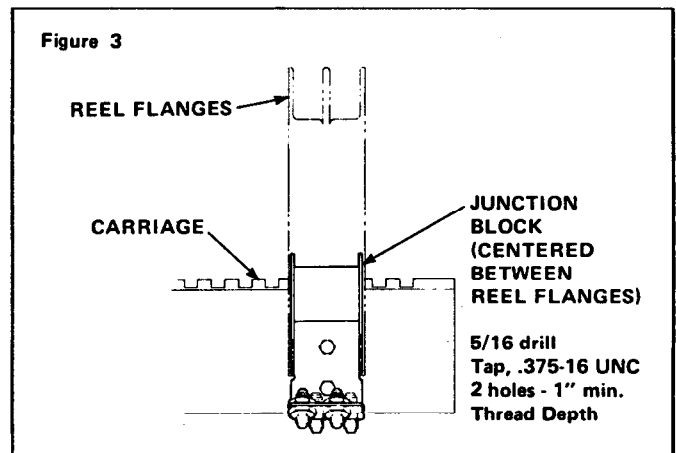
d. If you are not using the Cascade Mounting Pad make sure that your pad has a thickness of at least 5/8 inch.

2. Weld the mounting pad in place using a 3/16" fillet weld (use E60XX rod with no preheat or postheat) along the vertical sides of the mounting pad. See Figure 2. Cover the hoist chains to shield from weld splatter.

3. Attach the reel mounting bracket to the mounting pad using the mounting cap screws and lockwashers supplied with the reel. See Figure 2.

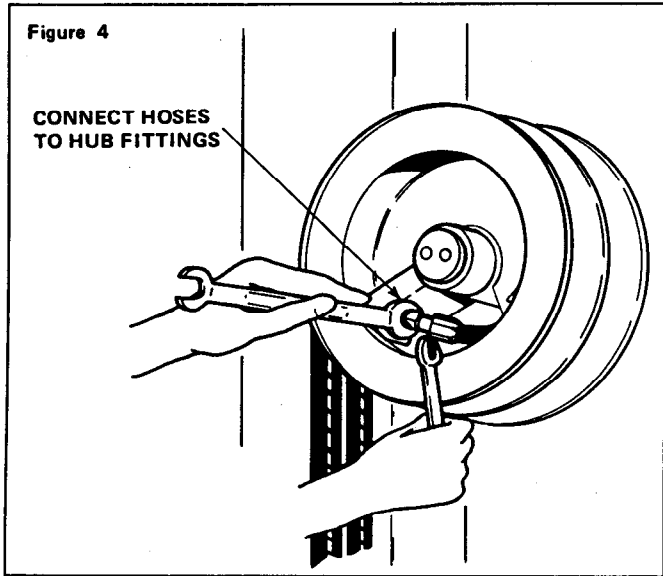


4. Connect the truck valve hoses to the reel shaft.
5. Raise the carriage to a position approximately even with the top of the reel to position the junction block. The junction block should be positioned so that it is centered between the reel flanges. See Figure 3. Using the junction block as a guide, mark the location of the junction block mounting holes on the back side of the carriage. Make sure the junction block is positioned vertically.
6. Lower the truck carriage to the floor.
7. Drill and tap the holes at the location marked on the carriage. Figure 3 shows the diameter and drilling information for the holes. The thread depth should be drilled a minimum of 1 inch.



8. Install the junction block on the carriage using the cap screws and lockwashers supplied with the junction block. Tighten the cap screws.

9. Determine the cable-hose length required as shown in the Hose Length Calculations, see page 7.  
 Recommended Twin Hose Assembly:  
 (No. 4 twin hose with No. 5 J.I.C. fittings) Ref. Eastman D-504 or Synflex 3700-04
10. Connect the hoses to the reel hub fittings. See Figure 4.



11. Wind the outer hoses completely onto the reel in the direction indicated (viewed from the flange side):  
**Right Hand Reel:** Wind hoses clockwise.  
**Left Hand Reel:** Wind hoses counterclockwise.
- A Right or Left hand reel is determined as viewed from the flange side of the reel. See Figure 5.

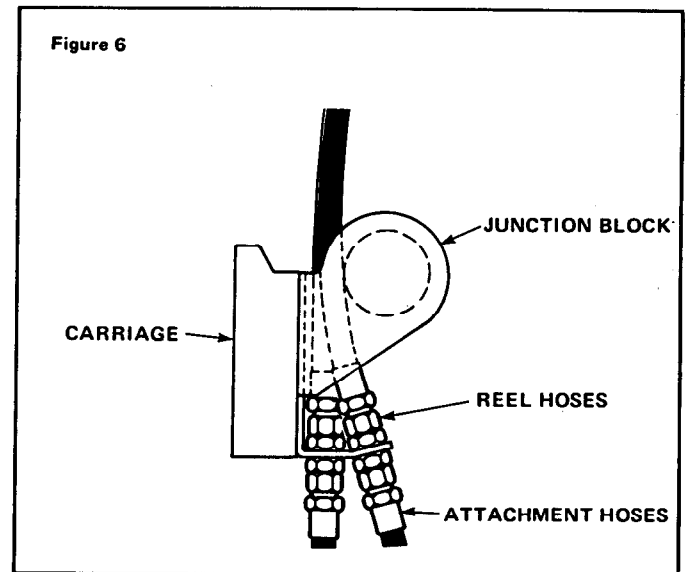
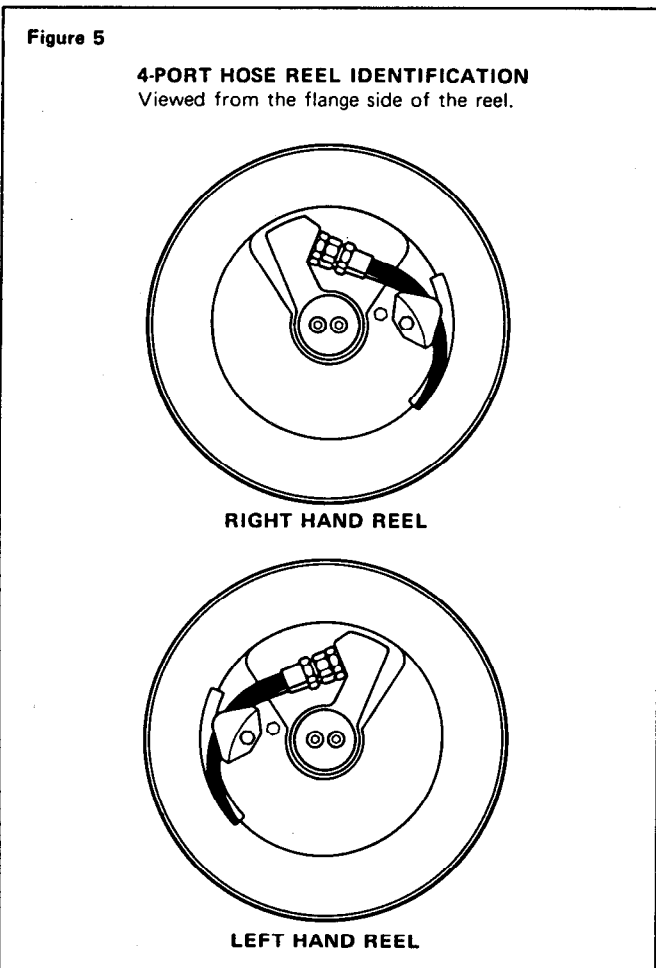
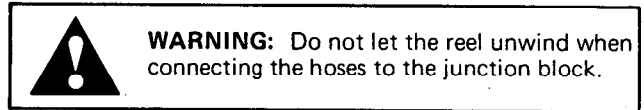
12. Prewind the reel spring by grasping the ends of the outer hoses and turning the reel a minimum of 3 turns in the direction indicated (viewed from the flange side):  
**Right Hand Reel:** Wind reel clockwise.  
**Left Hand Reel:** Wind reel counterclockwise.

If more tension is required the reel can be prewound additional turns. The maximum turn capacity is **16 total turns**.

**Total turns = Prewind turns + Working turns.**

**CAUTION:** Exceeding turn capacity of the reel will damage the reel spring.

13. With the reel prewound, pull the hose ends down to the junction block. Fasten the hoses to the fittings. See Figure 6.

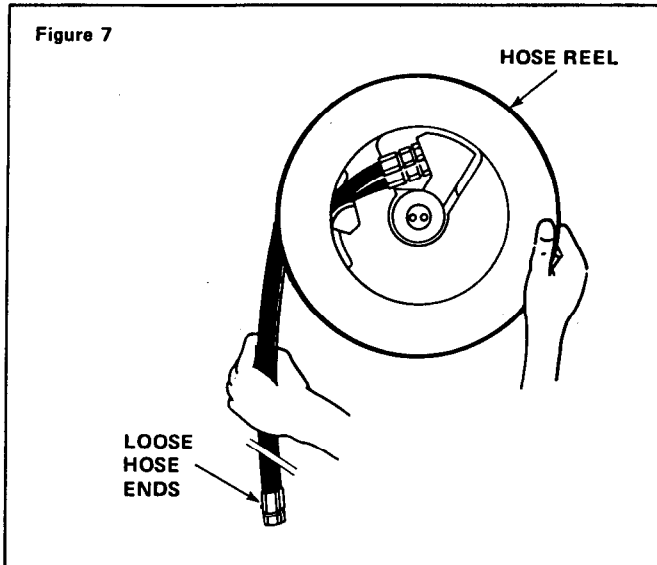
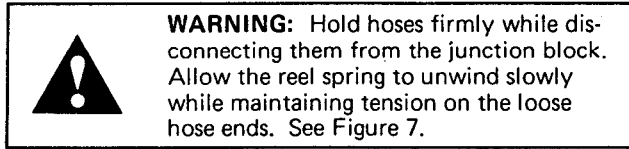


14. Connect the attachment hoses to the junction block. Be sure the hoses and their functions do not become interchanged.
15. Operate the carriage up and down a few times to make sure the hoses track smoothly and no interference exists.

# SEAL and SPRING ASSEMBLY REPLACEMENT

## DISCONNECTING THE REEL

1. Remove the reel hoses from the junction block.



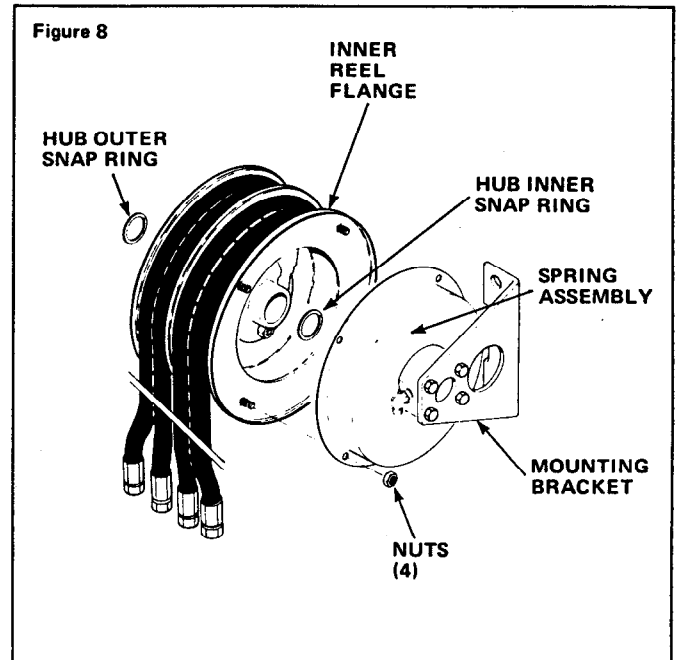
2. Disconnect the truck valve hoses from the shaft.
3. Remove the capscrews and lockwashers fastening the reel to the mounting pad. Remove the reel from the mast.
4. Determine whether the reel is a right or left hand model (viewed from the flange side of the reel). See Figure 5.

**This must be noted for future reference.**

## REEL DISASSEMBLY

1. Remove the four nuts attaching the spring assembly to the inner reel flange. See Figure 8.
2. Remove the hub outer snap ring. See Figure 8.
3. Pull the flanges (with hoses) and hub off the shaft as one unit.

**NOTE:** Since the O-rings on the shaft produce friction, it may be necessary to tap gently on the end of the shaft with a rubber mallet or hammer handle while pulling on the flanges.



4. Inspect the bore of the hub. The bore must be smooth. Rough areas cause premature wear. Use an emery cloth to remove any rough areas. If these areas cannot be removed with emery cloth then replace the hub.
5. Remove all rings from the shaft. Inspect the shaft grooves. They must be free of sharp nicks or projections to prevent cutting the O-rings and back-up rings during installation. Use an emery cloth to remove nicks. If these areas cannot be removed with emery cloth then replace the shaft.

## SPRING ASSEMBLY REPLACEMENT

**NOTE:** If the spring assembly does not require replacement, delete this step and proceed to Reel Reassembly.

1. Clamp the shaft in a vise as shown in Figure 9.
2. Remove the hub inner snap ring. See Figure 9.

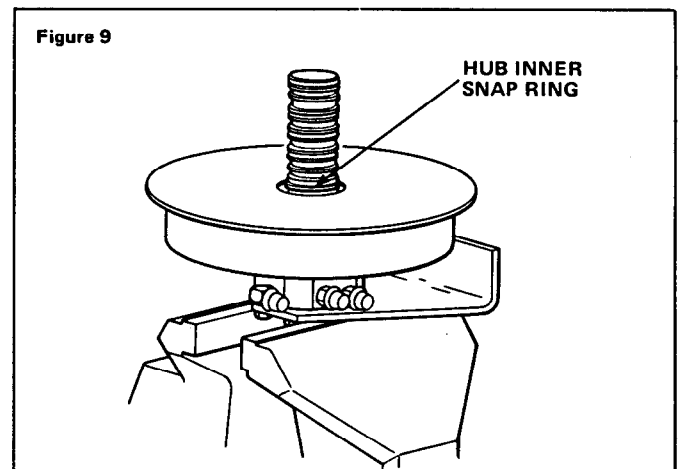
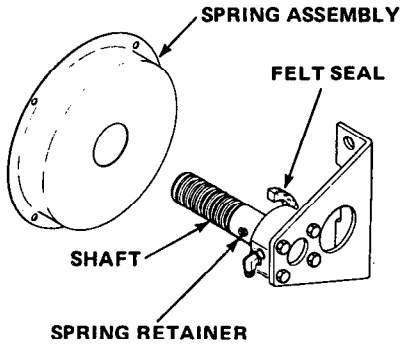


Figure 10

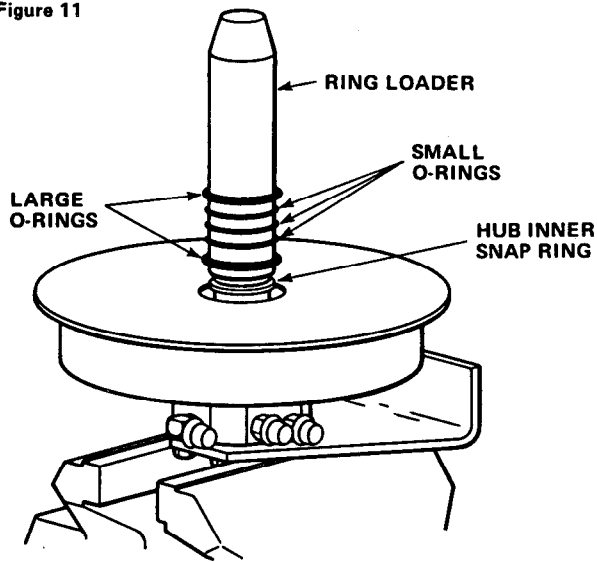


3. Use a screw driver to disengage the spring end from the retainer on the shaft. See Figure 10.
4. Slide the spring assembly off the shaft.
5. Remove the felt seal from the shaft. Install the new felt seal. See Figure 10.
6. Slide the new spring assembly onto the shaft. Fasten the spring end on the spring retainer.
7. Install the hub inner snap ring. See Figure 9.

## REEL REASSEMBLY

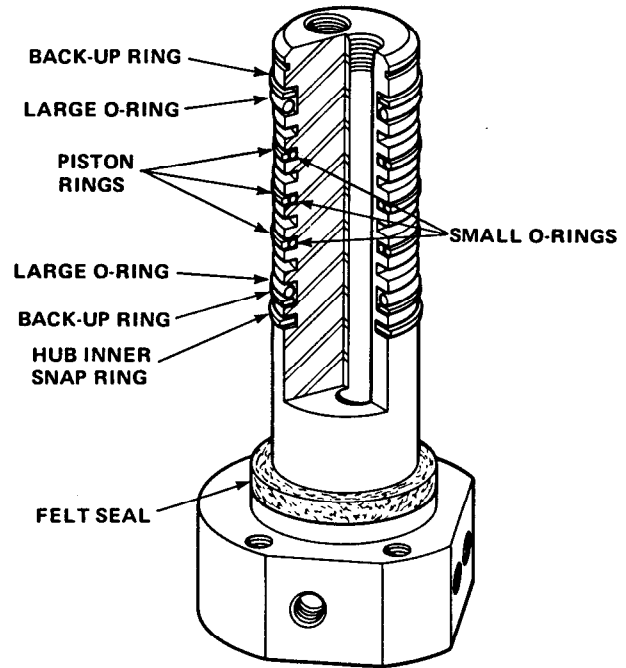
1. Clean the hub and shaft with a non-corrosive solvent.
2. Apply STP to the shaft, hub bore and all seal kit rings.
3. Slide one large O-ring, then three small O-rings, then the last large O-ring over the tapered end of the ring loader. Position the O-rings at the large end. See Figure 11.

Figure 11



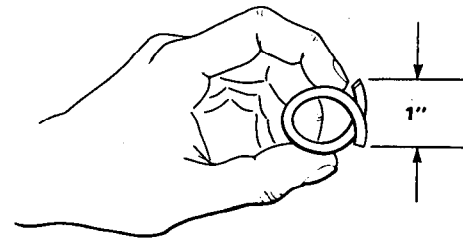
4. Place the ring loader over the shaft, exposing only one O-ring groove. See Figure 11. Slide the large O-ring off the ring loader into the groove. Repeat for the remaining O-rings in their respective grooves as shown in Figure 12.

Figure 12



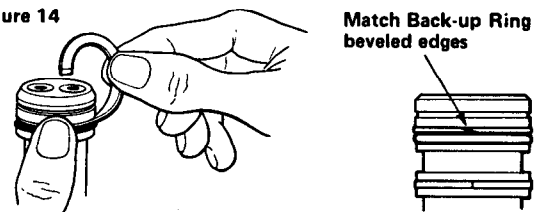
5. Preset the back-up rings for correct size by squeezing them until the ends overlap 1 inch. Hold there for 3 seconds. See Figure 13.

Figure 13



6. Install the back-up rings in the large O-ring grooves. See Figure 12. Place one end in the groove and wind onto the shaft as shown in Figure 14. Inspect the installed rings for matched beveled ends.

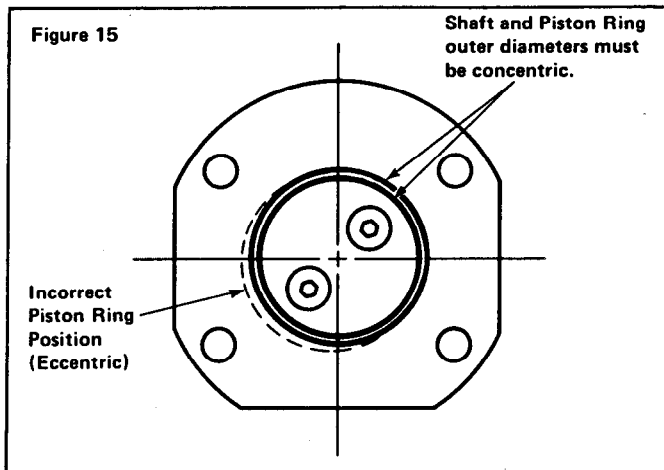
Figure 14



7. Slide the piston rings over the tapered end of the ring loader. Position the piston rings at the large end.

**CAUTION:** The piston rings must be installed in their shaft grooves **IMMEDIATELY** after being placed on the ring loader.

8. Place the ring loader over the shaft, exposing only one small O-ring groove. Slide a piston ring off the ring loader into the groove as shown in Figure 12. Repeat for the remaining piston rings in their respective grooves.
9. Apply STP to the shaft and installed rings.
10. Position the piston rings outer diameters concentric with the shaft O.D. See Figure 15.



11. Slide the ring compressor sleeve (tapered end first) onto the shaft, compressing the piston rings. Leave the ring compressor sleeve on the shaft 5–6 minutes.
12. Remove the ring compressor sleeve from the shaft. Immediately slide the hub and flanges over the shaft. Rotate the hub while installing to prevent ring damage.
13. Install the hub outer snap ring. See Figure 8.
14. Install the four capscrews and nuts to the inner flange and and spring assembly. See Figure 8.
15. Mount the reel to the truck.
16. Connect the truck valve hoses to the shaft.
17. Make sure the hoses are tightly wound on the reel in the direction indicated (viewed from the flange side):

**Right Hand Reel:** Hoses wound clockwise.  
**Left Hand Reel:** Hoses wound counterclockwise.

A Right or Left hand reel is determined as viewed from the flange side of the reel. See Figure 5.

18. Prewind the reel spring by grasping the end of the outer hoses and turning the reel a minimum of 3 turns in the direction indicated (viewed from the flange side):

**Right Hand Reel:** Wind reel clockwise.

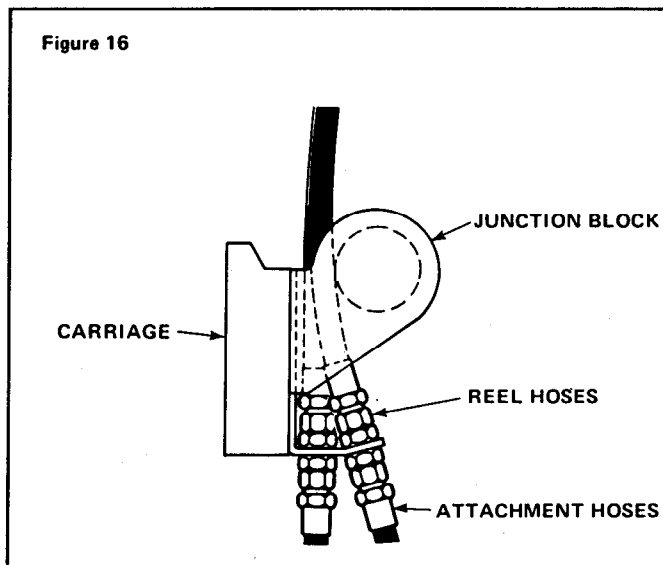
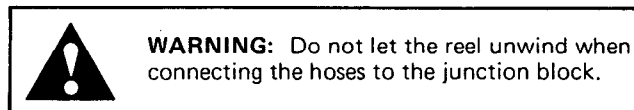
**Left Hand Reel:** Wind reel counterclockwise.

If more tension is required the reel can be prewound additional turns. The maximum turn capacity is **16 total turns**.

**Total turns = Prewind turns + Working turns.**

**CAUTION:** Exceeding turn capacity of the reel will damage the reel spring.

19. With the reel prewound, pull the hose ends down to the junction block. Fasten the hoses to the fittings. See Figure 16.



20. Operate the carriage up and down a few times to make sure the hoses track smoothly and no interference exists.

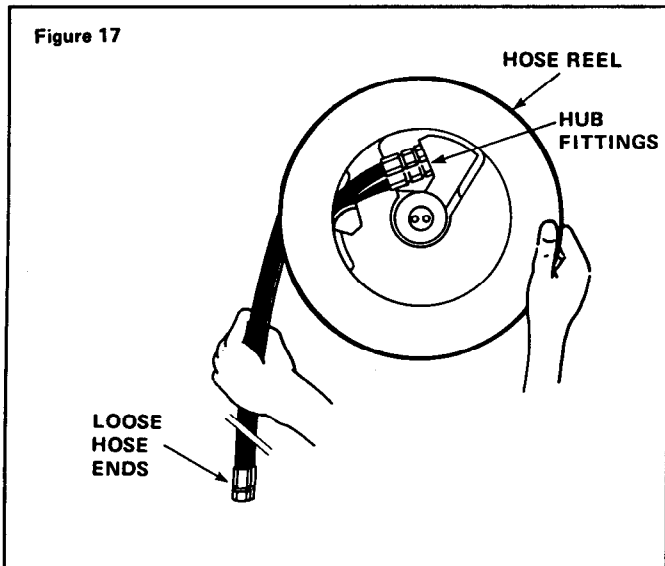
# HOSE REPLACEMENT

1. Disconnect the reel hoses from the junction block.



**WARNING:** Hold hoses firmly while disconnecting them from the junction block. Allow the reel spring to unwind slowly while maintaining tension on the loose hose ends. See Figure 17.

Figure 17



2. Disconnect the hoses from the reel hub fittings. See Figure 17.
3. Remove the hoses from the reel.
4. Connect the new hoses to the reel hub fittings. See Figure 17.
5. Wind the new hoses completely onto the reel in the direction indicated (viewed from the flange side):

**Right Hand Reel:** Wind hoses clockwise.

**Left Hand Reel:** Wind hoses counterclockwise.

A Right or Left hand reel is determined as viewed from the flange side of the reel. See Figure 5.

6. Prewind the reel spring by grasping the ends of the hoses and turning the reel a minimum of 3 turns in the direction indicated (viewed from the flange side):

**Right Hand Reel:** Wind reel clockwise.

**Left Hand Reel:** Wind reel counterclockwise.

If more tension is required the reel can be prewound additional turns. The maximum turn capacity is **16 total turns**.

**Total turns = Prewind turns + Working turns.**

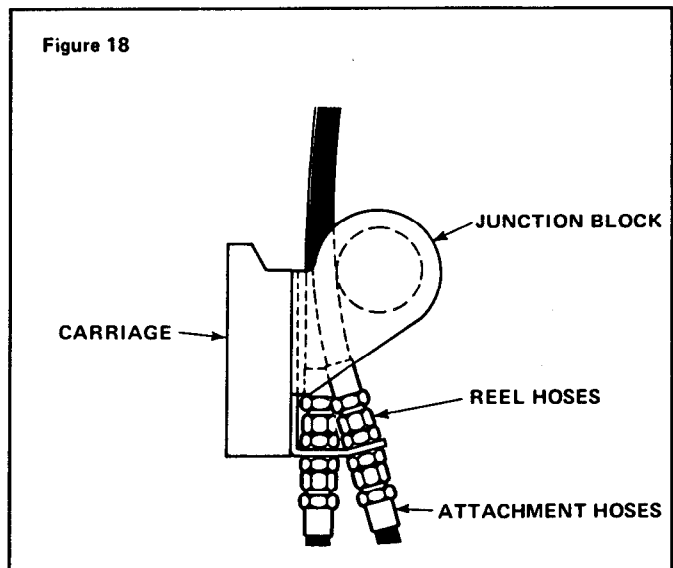
**CAUTION:** Exceeding turn capacity of the reel will damage the reel spring.

7. With the reel prewound, pull the hose ends down to the junction block. Fasten the hoses to the fittings. See Figure 18.



**WARNING:** Do not let the reel unwind when connecting the hoses to the junction block.

Figure 18



8. Operate the carriage up and down a few times to make sure the hoses track smoothly and no interference exists.

# TROUBLESHOOTING GUIDE

PROBLEM	PROBABLE CAUSE	CORRECTIVE ACTION
Excessive wear on hose.	Hose Reel and junction block are not in proper alignment.	Align the junction block and hose reel properly. They must be on the same center line and mounted squarely to each other. See Fig. 3.
	Hose reel flanges damaged.	Repair or replace damaged parts.
Hose jumps off reel during operation.	Hose reel not aligned with junction block.	Align junction block with hose reel. See Fig. 3.
	Incorrect prewind of spring.	Prewind spring, see page 2.
Hose binds during operation.	Hose reel spring is broken.	Replace the spring.
	Back-up ring on hub shaft working between shaft and hub.	Replace the back-up rings.
Hose Reel leaks at hub.	Worn or cut rings in the rotating hub.	Replace all rings. When a hose reel requires immediate replacement of any one of the O-rings, piston rings or back-up rings, it is important that all the rings be replaced. If all the rings are not replaced at the same time, the reel will only have to be disassembled again in a short period of time to replace the older rings. The seal kit offered by Cascade includes all of the piston rings, O-rings and back-up rings necessary to rebuild one hose reel. Order appropriate Seal Kit.
	Loose or damaged fittings.	Tighten or replace damaged fittings.
	Scored seal areas.	Replace the damaged hub or use an emery cloth to remove the nicks from the shaft or hub.

## HOSE LENGTH

### HOSE LENGTH CALCULATIONS

**H**=Total lift height  
**D**=Distance from centerline of reel to junction block (carriage fully lowered).

**Note:**

It is essential that 28 inches of hose be prewrapped on the reel at all times. This amount is included when using the following formula for calculating hose length.

- When **H** is equal to, or greater than  $2 \times D$  the correct hose length is:

$$H - D + 28 \text{ inches}$$

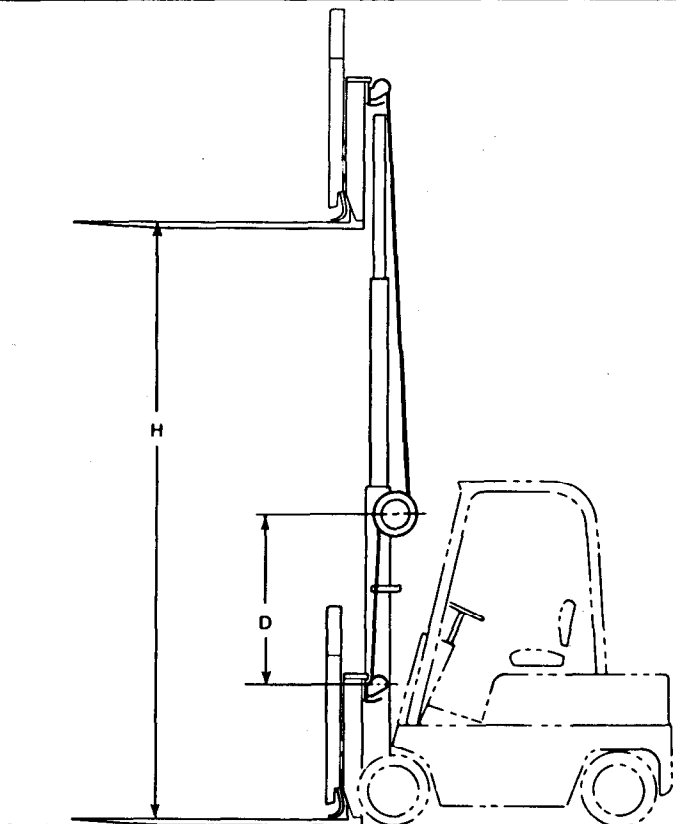
- When **H** is less than  $2 \times D$  the correct hose length is:

$$D + 28 \text{ inches}$$

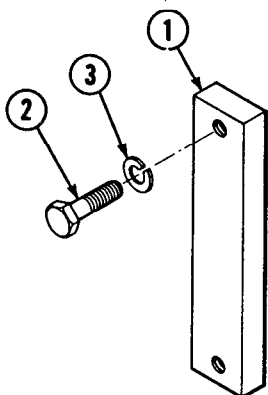
**Example**

**H** = 286"  
**D** = 96"

$286'' - 96'' = 190'' + 28'' = 218''$   
 correct hose length. In this case, use hose C-666251.



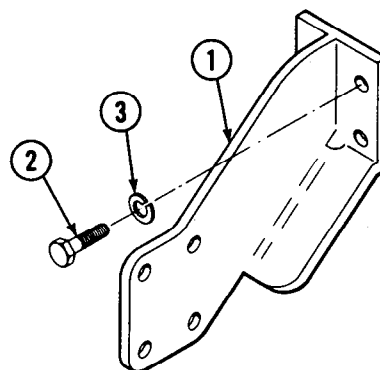
## Mounting Groups



REF. NO.	QTY.	PART NO.	DESCRIPTION
		C-666207	Mounting Group
1	1	C-661032	Mounting Block
2	2	C-3652	Capscrew
3	2	C-6261	Lockwasher

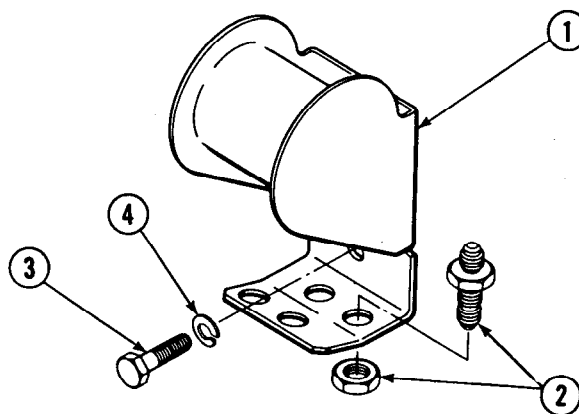
### For Cascade Masts

REF. NO.	QTY.	PART NO.	DESCRIPTION
		C-666205	Mounting Group, R.H.
		C-666206	Mounting Group, L.H.
1	1	C-666238	Mounting Bracket, R.H.
	1	C-666240	Mounting Bracket, L.H.
2	3	C-3603	Capscrew
3	3	C-6259	Lockwasher



## Junction Block Group

REF. NO.	QTY.	PART NO.	DESCRIPTION
		C-669695	Junction Block Group
1	1	C-669696	Junction Block
2	4	C-2374	Bulkhead Fitting
3	2	C-3601	Capscrew
4	2	C-6259	Lockwasher

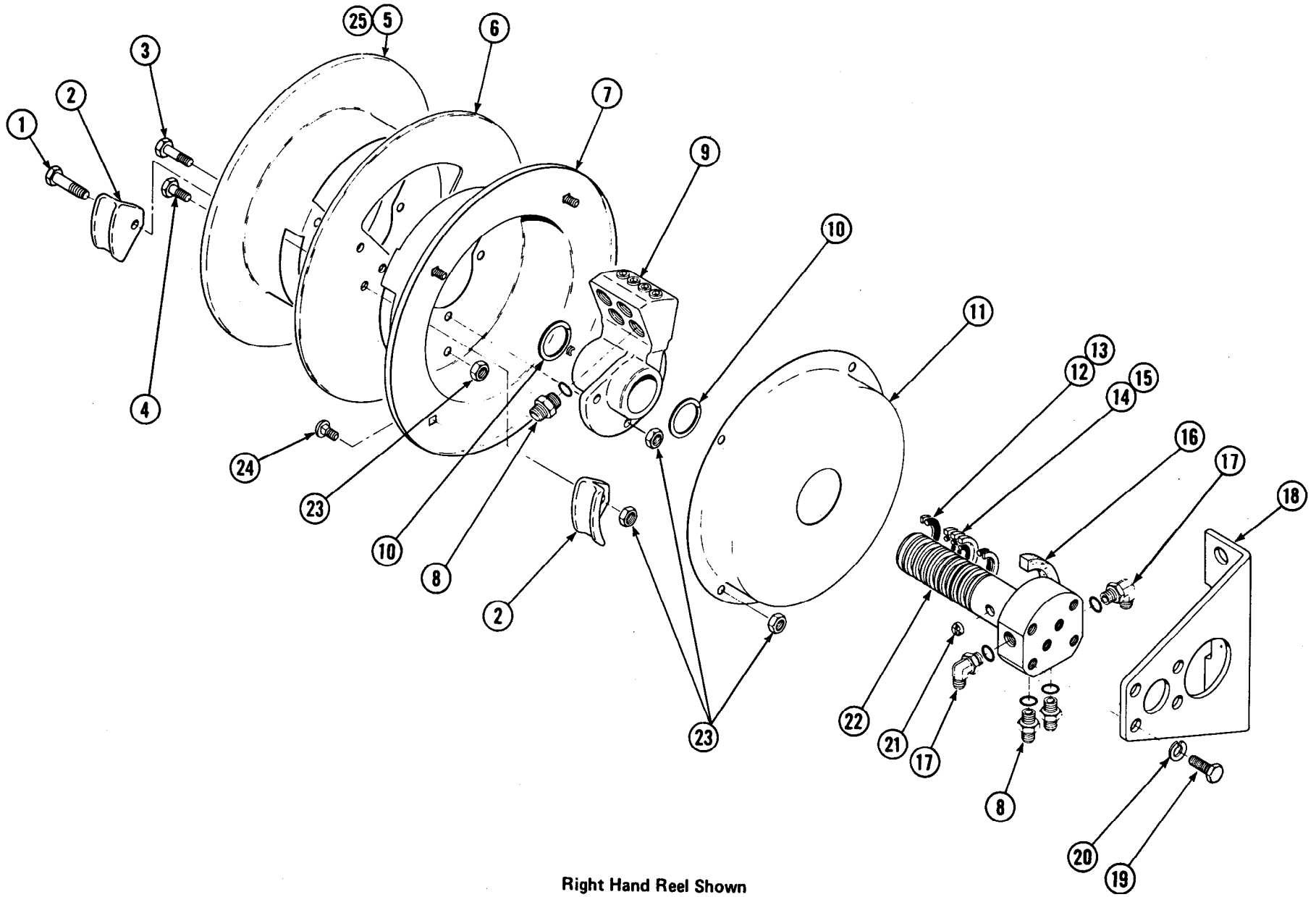


## Twin Hose Assemblies

CATALOG ORDER NO.	HOSE SIZE	LENGTH
C-666250	No. 4	139"
C-666251	No. 4	260"
C-666252	No. 4	354"

Note: All hoses include No.5 JIC female Swivel ends.  
Two hose assemblies required per reel.

# 4 Port Hose Reels



Right Hand Reel Shown

## 4 Port Hose Reels

Items that vary according to model

REF. NO.	QTY.	11.50" Diameter		14.50" Diameter		16.50" Diameter		DESCRIPTION
		H4 - 2R	H4 - 2L	H4 - 8R	H4 - 8L	H4 - 6R	H4 - 6L	
		C-666200	C-666201	C-665802	C-666162	C-666202	C-666203	4 Port Hose Reel Assy.
5	1	C-645979	C-645990	C-645988	C-646067	C-646070	C-646071	Flange - Outboard
6	1	C-645977	C-645977	C-646607	C-646607	C-646608	C-646608	Divider
7	1	C-645990	C-645979	C-646067	C-645988	C-646071	C-646070	Flange - Inboard
11	1	C-646250	C-646249	C-646250	C-646249	C-646250	C-646249	Spring Assy.
25	1	C-667383	C-667384	C-667388	C-667387	C-667385	C-667386	Nameplate Decal

Items common to all models

REF. NO.	QTY.	PART NO.	DESCRIPTION	REF. NO.	QTY.	PART NO.	DESCRIPTION
1	1	C-3557	Capscrew	●15	3	C-653886	O-Ring
2	2	C-665803	Hose Guide	●16	1	C-649055	Felt Seal
3	3	C-3555	Capscrew	17	2	C-611298	Elbow
4	2	C-3552	Capscrew	18	1	C-666152	Mounting Bracket
8	6	C-609252	Connector	19	4	C-643524	Capscrew
9	1	C-665804	Hub	20	4	C-6288	Lockwasher
●10	2	C-7194	Snap Ring	■21	1	C-666159	Spring Retainer
●12	2	C-648569	Back-Up Ring	22	1	C-666158	Shaft Assembly
●13	2	C-2715	O-Ring	23	11	C-645986	Nut
●14	3	C-653885	Piston Ring	24	4	C-649106	Special Capscrew
						C-653881	Shaft Service Kit

●Included in Shaft Service Kit C-653881

■Included in Shaft Assembly C-666158

**Do you have questions you need answered right now? Call your nearest Cascade Service Department.**

**Cascade Corporation**  
2201 N.E. 201st Ave.  
Troutdale, OR 97060-9718  
TEL: 503-669-6300  
800-227-2233 (Toll Free)  
Telex: 590480  
Cable: Cascade Ptl  
FAX: 503-669-6280

**Cascade (UK) Ltd.**  
15, Orgreave Crescent  
Dore House Industrial Estate  
Handsworth  
Sheffield S13 9NQ  
England  
Tel: 0742-697524/5/6/7  
Telex: 547254 cascsh g

**Cascade France S.A.R.L.**  
11, rue Jean Charcot  
Zone Industrielle Sud  
B.P. 22  
91421 Morangis Cedex  
France  
Tel: 1-69091139  
Telex: cascade 690016f

**Cascade N.V.  
Benelux Sales and Service**  
P.O. Box 170  
1110 AD Deimen  
Weesperstraat 110  
1112 AP Diemen  
The Netherlands  
Tel: 020-906411  
Telex: 14495 casc nl

**Cascade N.V.  
European Headquarters**  
P.O. Box 50086  
1305 AB Almere-Haven  
Achterwerf 240  
1357 CB Almere-Haven  
The Netherlands  
Tel: 03240-92911  
Telex: 40838 case nl  
FAX: 011-31-3240-92286

**Cascade Materials Handling  
(Aust.) Pty. Ltd.  
(Incorporated in N.S.W.)**  
121 Long Street  
Smithfield, N.S.W. 2164  
Australia  
Tel: 02-604-6222  
Te/Ac: 790-24302  
Cable: Cascaus  
FAX: 011-61-2-609-2742

**Cascade Hydraulics Ltd.**  
7615 Kimbel Street  
Mississauga, Ontario  
Cascade L5S-1A8  
Tel: 416-677-9695  
Direct Parts Line:  
416-677-9686  
416-677-9684  
Te/Ac: 06-968715

**Cascade Japan Ltd.**  
4-1,1-Chome,  
Shin Senri Higashimachi  
Toyonaka, Osaka 565  
Japan  
Tel: 06-835-2900  
Te/Ac: 781-5287115 Cascade J  
Cable: Cascadecfe, Osaka  
FAX: 011-816-835-2905

**Cascade Scandinavia  
Hydraulik A.B.**  
Muskotgatan 17-(E.8-9)  
252 55 Helsingborg  
Sweden  
Tel: 042-151135  
Telex: 72565 caschbg s

**Cascade Materials Handling  
(Aust.) Pty. Ltd.**  
44E Winton Road  
Clayton, Victoria 3168  
Australia  
Tel: 03-543-4344  
Cable: Casmel

**Cascade Hispania S.A.**  
Avenida De La Fabregada, 7  
Hospitalet De Llobregat  
Barcelona  
Spain  
Tel: 93-3355158  
Telex: 54018 casc e

**Cascade (Africa) Pty. Ltd.**  
P.O. Box 625  
15 Power Street  
Isando 1600  
South Africa  
Tel: 011-974-5611/2/3/4/5  
Telex: 4-29718 S.A.

**Cascade GmbH**  
Klosterhofweg 52  
4050 Monchengladbach 3  
B.R. Deutschland  
Tel: 02166-602091  
Telex: 852812 casc d