



Parts Manual and Installation Instructions

**THINLINE™ 2 and 4 Port Hose Reel
Hydraulic Supply Groups**

Manual Number 673990-R3

cascade®

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THINLINE™

Hydraulic Supply Groups

Kit Number	Maximum Mast Down Height (in.) ♣	Attachment Functions	Hose Size*	Hose Reel Diameter (in.)●	Parts List Shown On Page
For Dual Lift (Two-Stage) Masts					
673592	120	Single	No. 4	11	1
◆ 673593	120	Double	No. 4	11	3
673594	120	Single	No. 6	13	1
674516	120	Single, L.H.	No. 6	13	2
673595	120	Double	No. 6	13	3
673598	120	Single	No. 8	16	1
673599	120	Double	No. 8	16	3
■ 675298	120	Double, R.H.	No. 6	13	4
◆■ 675299	120	Double, L.H.	No. 6	13	5
For Triple Lift (Three-Stage) Masts					
◆ 673592	83	Single	No. 4	11	1
◆ 673593	83	Double	No. 4	11	3
673594	95	Single	No. 6	13	1
674516	95	Single, L.H.	No. 6	13	2
673595	95	Double	No. 6	13	3
673596	152	Single	No. 6	16	1
673597	152	Double	No. 6	16	3
673598	127	Single	No. 8	16	1
673599	127	Double	No. 8	16	3
■ 675298	95	Double, R.H.	No. 6	13	4
◆■ 675299	95	Double, L.H.	No. 6	13	5
■ 675300	152	Double, R.H.	No. 6	16	4
◆■ 675301	152	Double, L.H.	No. 6	16	5
For Quad Lift (Four-Stage) Masts					
673594	71	Single	No. 6	13	1
674516	71	Single, L.H.	No. 6	13	2
673595	71	Double	No. 6	13	3
673596	107	Single	No. 6	16	1
673597	107	Double	No. 6	16	3
673598	83	Single	No. 8	16	1
685263	83	Single L.H.	No. 8	16	2
673599	83	Double	No. 8	16	3
■ 675300	107	Double, R.H.	No. 8	16	4
◆■ 675301	107	Double, L.H.	No. 8	16	5

♣ For down heights greater than shown, contact Cascade.

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* No. 8 hose is recommended on all rotating attachments.

● Make sure the hydraulic supply group you select contains a hose reel that provides sufficient clearance for your truck overhead guard.

■ 4-Port Hose Reel.

◆ Does not include hose terminal up connection.

General Description

Cascade hydraulic supply groups provide the necessary hydraulic components to plumb your truck/mast combination for attachment installation. Each kit contains the hose reels, fittings, hose terminals, hoses, and mounting hardware required for specific truck/mast/attachment combinations. The hose reels are Cascade THINLINE™ models to provide the narrowest possible mounting configuration. All reel hoses are twinline thermoplastic type (100-R7 SAE) with standard 37° JIC permanent type fittings. Header hoses are SAE 100-R5 type rubber covered, with standard 37° JIC reusable fittings.

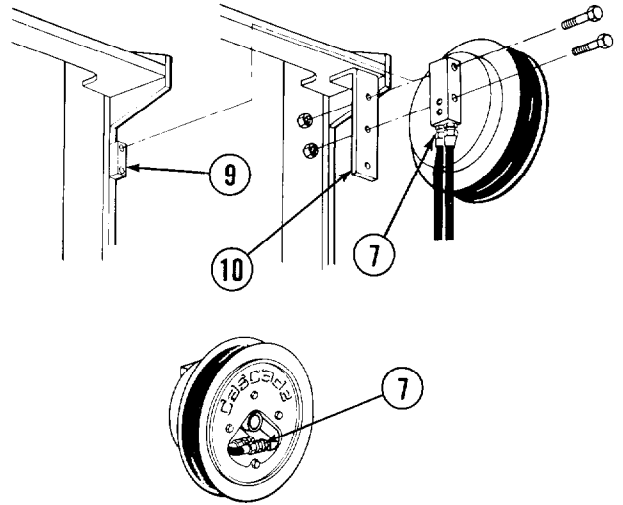
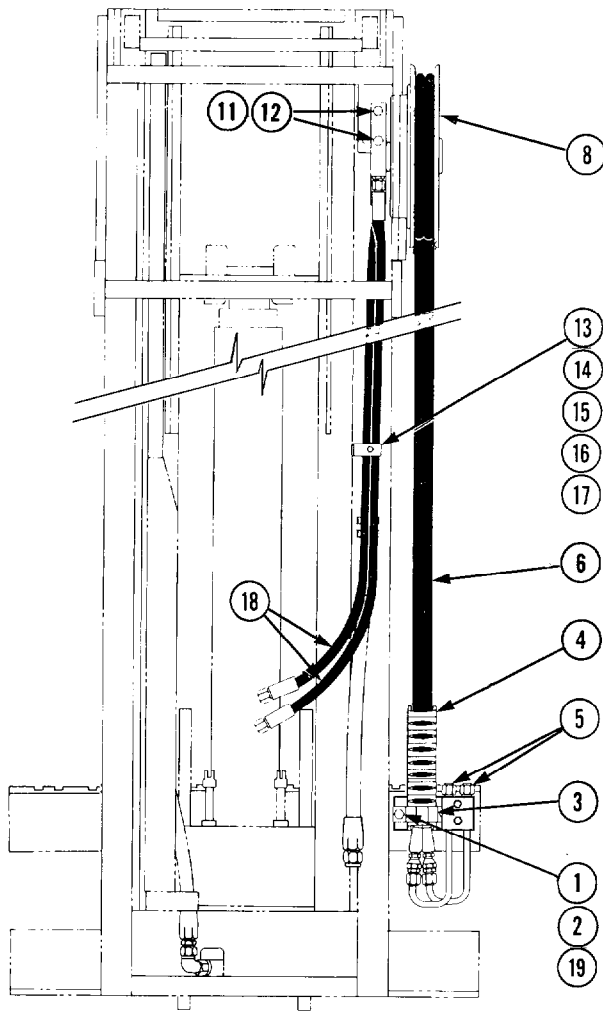
Cascade general purpose attachment installation kits are also

available. See General Purpose Attachment Installation Kits, manual part no. 663590-R2. These kits provide the necessary hoses and fittings to connect between the hose end on a lift truck mast carriage and a Cascade attachment. Contact your nearest Cascade Customer Service department, listed on the back cover, for more information about attachment installation kits.

The diagrams on the following pages illustrate the correct location of hydraulic supply group components. Locate the diagram that illustrates your group. Installation instructions are on pages 6 and 7. The kits contain hose reel brackets that must be welded to the mast channel or crossmember.

Right Hand Dual, Triple, and Quad Lift Masts

Single Function Kits:
673592, 673594
673596, 673598



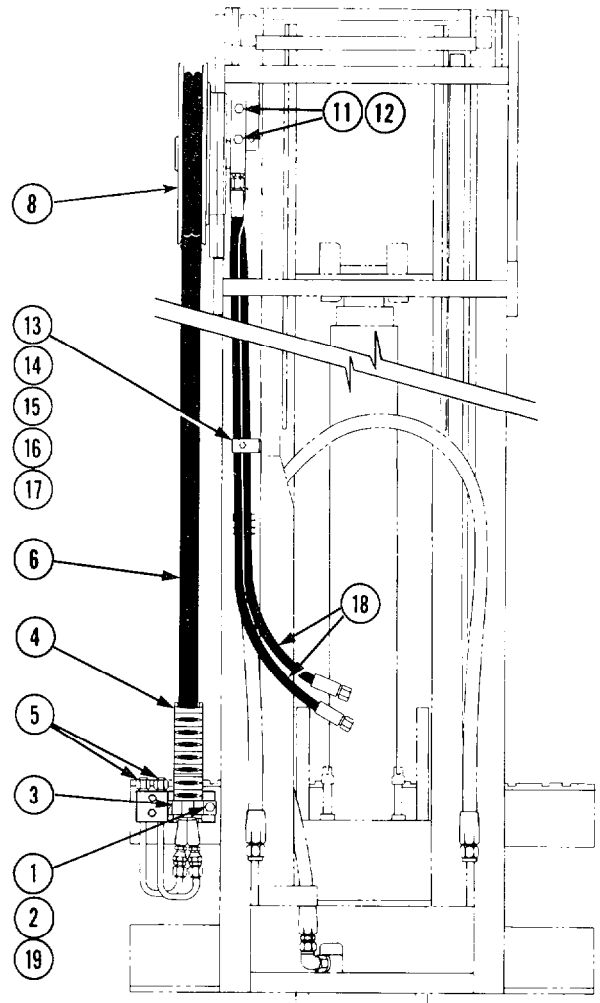
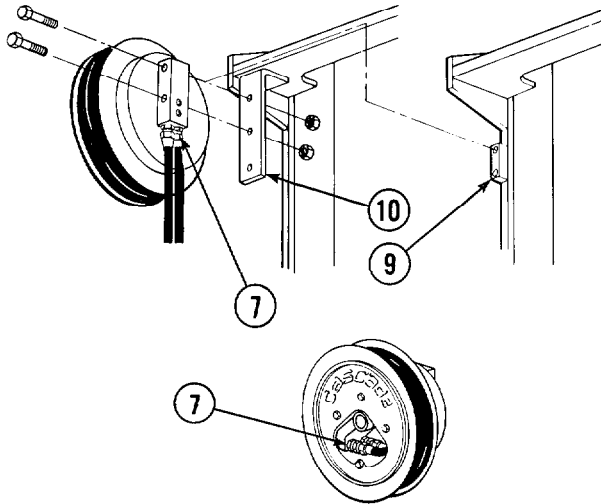
REF	QTY	KIT 673592 PART NO.	KIT 673594 PART NO.	KIT 673596 PART NO.	KIT 673598 PART NO.	DESCRIPTION
1	2	3599	3599	3599	3599	Capscrew, 3/8 NC x 1/2
2	1	673606	673520	673520	673520	Carriage Block
3	1	673419	673428	673428	673429	Clamp
4	1	673509	673510	673510	673511	Hose Restraint Assembly
5	1	-	674288	674288	674289	Hose Up Connection Assembly
* 6	1	673393	673394	673395	673396	Twinline Hose Assembly
7	2	617915	-	-	-	Fittings, 4-4
	2	604511	-	-	-	Fittings, 6-6
	4	-	604511	604511	-	Fittings, 6-6
	4	-	-	-	601377	Fittings, 8-8
• 8	1	672570	672572	672574	672576	R.H. THINLINE™ Hose Reel
9	1	673526	673526	673526	673526	Mounting Block
10	1	685487	685487	685487	685487	Mounting Bracket
11	2	3661	3661	3661	-	Capscrew, 1/2 NC x 2-3/4
	2	-	-	-	3663	Capscrew, 1/2 NC x 3-1/4
12	2	6290	6290	6290	6290	Lockwasher, 1/2
13	1	3578	3578	3578	3578	Capscrew, 5/16 NC x 1-1/4
14	1	6287	6287	6287	6287	Lockwasher, 5/16
15	1	744535	744535	744535	744535	Clamp
16	1	744536	744536	744536	744536	Spacer
17	1	744662	744662	744662	744662	Bar
18	2	2178	2178	2178	2221	Header Hose
19	2	674376	674376	674376	674376	Washer

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- See manual number 673838 for replacement parts breakdown.
- * Twinline Hose Length: 673393-154 in. No. 4 673395-300 in. No. 6
673394-180 in. No. 6 673396-228 in. No. 8

Left Hand Dual, Triple, and Quad Lift Masts

Single Function Kits:
674516, 685263



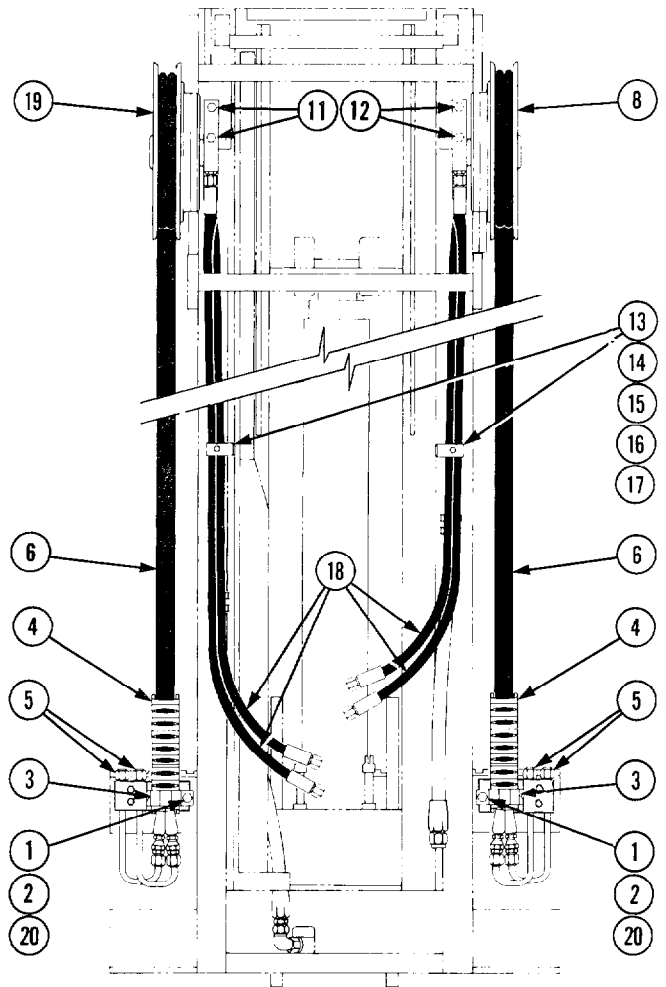
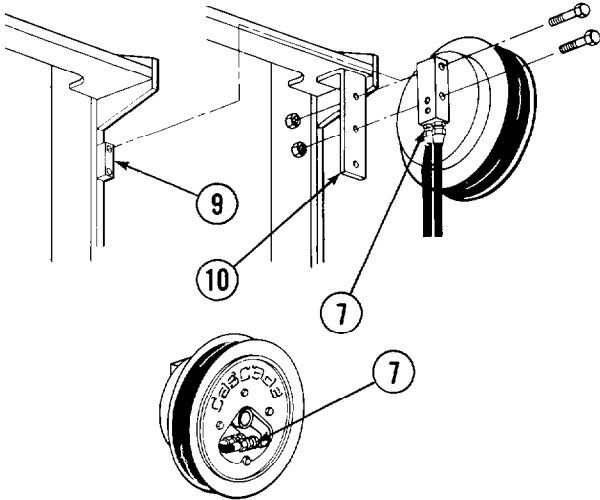
REF	QTY	KIT 674516 PART NO.	KIT 685263 PART NO.	DESCRIPTION
1	2	3599	3599	Capscrew, 3/8 NC x 1/2
2	1	673520	-	Carriage Block
3	1	673428	673429	Clamp
4	1	673510	673511	Hose Restraint Assembly
5	1	674288	674289	Hose Up Connection Assembly
* 6	1	673394	673396	Twinline Hose Assembly
7	4	604511	601377	Fittings, 6-6
● 8	1	672573	672577	L.H. THINLINE™ Hose Reel
9	1	673526	673526	Mounting Block
10	1	685487	685487	Mounting Bracket
11	2	3661	3663	Capscrew, 1/2 NC x 2-3/4
12	2	6290	6290	Lockwasher, 1/2
13	1	3578	3578	Capscrew, 5/16 NC x 1-1/4
14	1	6287	6287	Lockwasher, 5/16
15	1	744535	744535	Clamp
16	1	744536	744536	Spacer
17	1	744662	744662	Bar
18	2	2178	2221	Header Hose
19	2	674376	674376	Washer

- See manual number 675514 for replacement parts breakdown.
- * Twinline Hose Length: 673394-180 in. No. 6

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Dual, Triple, and Quad Lift Masts

Double Function Kits:
673593, 673595
673597, 673599



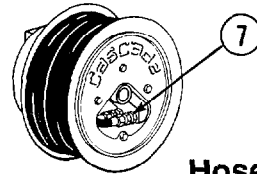
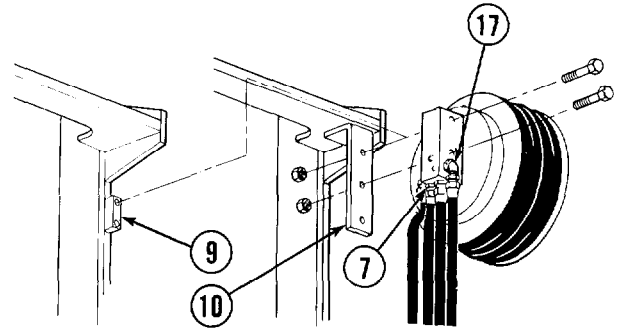
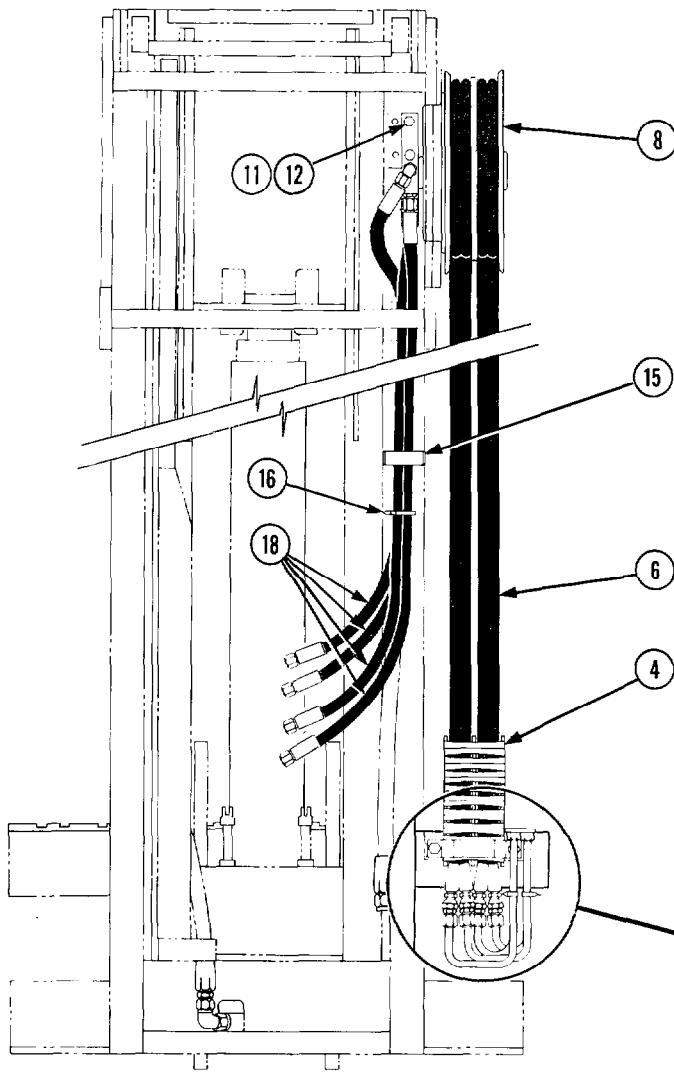
REF	QTY	KIT 673593 PART NO.	KIT 673595 PART NO.	KIT 673597 PART NO.	KIT 673599 PART NO.	DESCRIPTION
1	4	3599	3599	3599	3599	Capscrew, 3/8 NC x 1/2
2	2	673606	673520	673520	673520	Carriage Block
3	2	673419	673428	673428	673429	Clamp
4	2	673509	673510	673510	673511	Hose Restraint Assembly
5	2	-	674288	674288	674289	Hose Up Connection Assembly
★ 6	2	673393	673394	673395	673396	Twinline Hose Assembly
7	4	617915	-	-	-	Fittings, 4-4
	4	604511	-	-	-	Fittings, 6-6
	8	-	604511	604511	-	Fittings, 6-6
	8	-	-	-	601377	Fittings, 8-8
● 8	1	672570	672572	672574	672576	R.H. THINLINE™ Hose Reel
9	2	673526	673526	673526	673526	Mounting Block
10	2	685487	685487	685487	685487	Mounting Bracket
11	4	3661	3661	3661	-	Capscrew, 1/2 NC x 2-3/4
	4	-	-	-	3663	Capscrew, 1/2 NC x 3-1/4
12	4	6290	6290	6290	6290	Lockwasher, 1/2
13	2	3578	3578	3578	3578	Capscrew, 5/16 NC x 1-1/4
14	2	6287	6287	6287	6287	Lockwasher, 5/16
15	2	744535	744535	744535	744535	Clamp
16	2	744536	744536	744536	744536	Spacer
17	2	744662	744662	744662	744662	Bar
18	4	2178	2178	2178	2221	Header Hose
● 19	1	672571	672573	672575	672577	L.H. THINLINE™ Hose Reel
20	4	674376	674376	674376	674376	Washer

- See manual number 673838 for replacement parts breakdown.
- ★ Twinline Hose Length: 673393-154 in. No. 4 673395-300 in. No. 6
673394-180 in. No. 6 673396-228 in. No. 8

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Right Hand Dual, Triple, and Quad Lift Masts

Double Function Kits:
675298, 675300



Hose Up Connection

REF	QTY	KIT 675298 PART NO.	KIT 675300 PART NO.	DESCRIPTION
1	2	3599	3599	Capscrew, 3/8 NC x 1/2
2	1	674539	674539	Carriage Block
3	1	674428	674428	Clamp
4	1	674447	674447	Hose Restraint Assembly
5	2	675287	675287	Hose Up Connection
★ 6	2	675285	675286	Twinline Hose Assembly
7	6	604511	604511	Fittings, 6-6
● 8	1	674410	674412	R.H. 4-Port THINLINE™ Hose Reel
9	1	673526	673526	Mounting Block
10	1	685487	685487	Mounting Bracket
11	2	3661	3661	Capscrew, 1/2 NC x 3-1/2
12	2	6290	6290	Lockwasher, 1/2
13	1	3601	3601	Capscrew, 3/8 NC x 3/4
14	2	6259	6259	Lockwasher, 3/8
15	1	666885	666885	Clamp
16	3	649085	649085	Nylon Tie
17	2	601676	601676	Fitting, 6-6
18	4	2178	2178	Header Hose

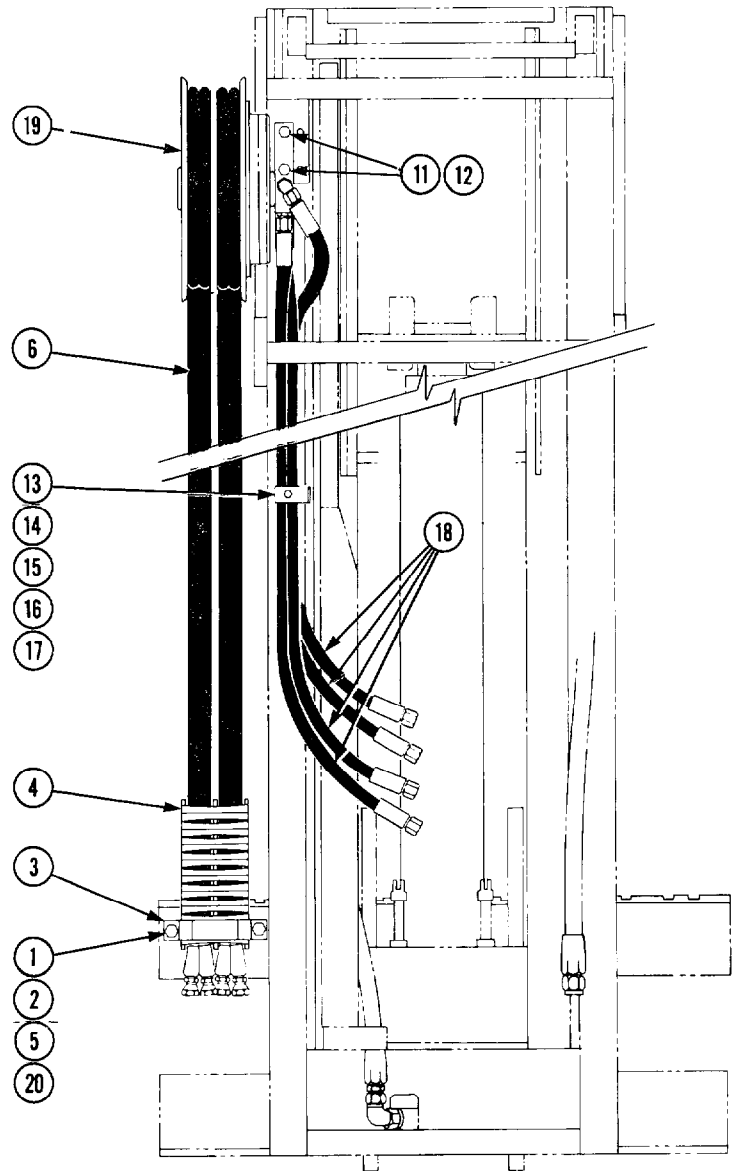
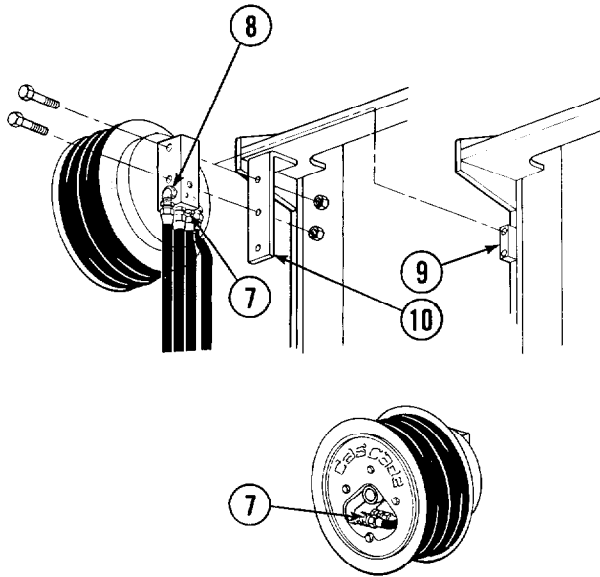
● See manual number 675514 for replacement parts breakdown.

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★ Twinline Hose Length: 675285-172 in. No. 6
675286-280 in. No. 6

Left Hand Dual, Triple, and Quad Lift Masts

Double Function Kits:
675299, 675301



REF	QTY	KIT 675299 PART NO.	KIT 675301 PART NO.	DESCRIPTION
1	2	3599	3599	Capscrew, 3/8 NC x 1/2
2	1	674540	674540	Carriage Block
3	1	674428	674428	Clamp
4	1	674447	674447	Hose Restraint Assembly
5	2	6259	6259	Lockwasher, 3/8
★ 6	2	675285	675286	Twinline Hose Assembly
7	6	604511	604511	Fitting, 6-6
8	2	601676	601676	Fitting, 6-6
9	1	673526	673526	Mounting Block
10	1	685487	685487	Mounting Bracket
11	2	3661	3661	Capscrew, 1/2 NC x 2-3/4
12	2	6290	6290	Lockwasher, 1/2
13	2	2578	2578	Capscrew, 5/16 NC x 1-1/4
14	2	6287	6287	Lockwasher, 5/16
15	2	744535	744535	Clamp
16	2	744536	744536	Spacer
17	2	744662	744662	Bar
18	4	2178	2178	Header Hose
● 19	1	674411	674413	L.H. 4-Port THINLINE™ Hose Reel
20	1	3601	3601	Capscrew, 3/8 NC x 3/4

● See manual number 675514 for replacement parts breakdown.

★ Twinline Hose Length: 675285-172 in. No. 6 675286-280 in. No. 6

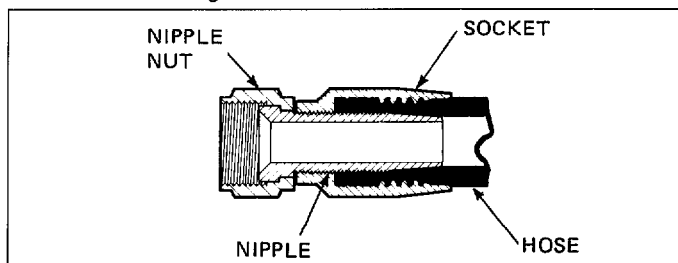
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Installation

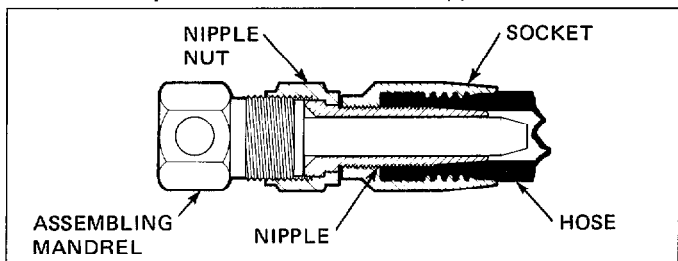
For 2-Port THINLINE™ installation instructions see manual part number 673835. For 4-Port THINLINE™ installation instructions see manual part number 675395. Both are included with hose reels.

The header hoses, as supplied, may be too long and interfere with the operation of the truck mast. The hoses are equipped with reusable fittings so the hose lengths can be modified to the exact length required for installation. **To shorten** a hose, remove one of the hose end fittings according to the following procedures.

1. Secure the fitting socket in a vise.

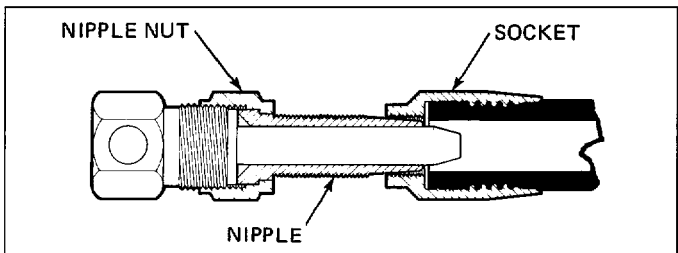


2. Lubricate an assembling mandrel* with hydraulic oil. Slide the mandrel into the nipple and thread it to the nipple nut. Using two wrenches, jam the mandrel onto the nipple nut.

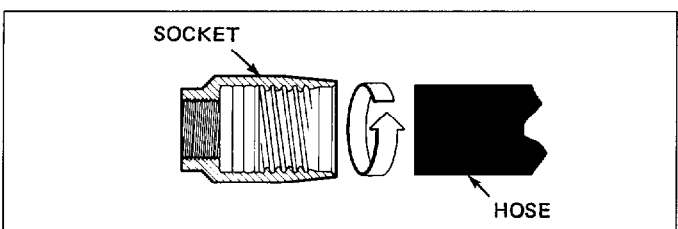


IMPORTANT: Do not shorten the hoses so much that they kink when they are installed. When installing the hoses, do not pinch, twist, or otherwise damage them. Make sure hoses are routed so moving objects do not rub or damage them.

3. With a wrench on the nipple nut, unthread the nipple from the socket.

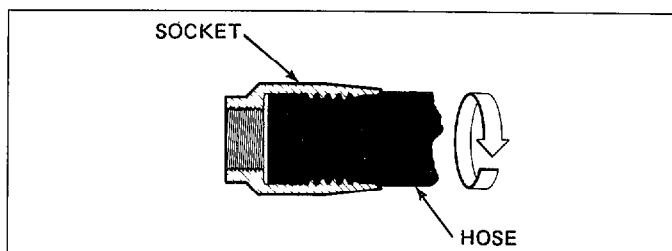


4. Manually turn the hose **clockwise** as you remove it from the socket. Cut the hose to the desired length with a fine tooth hacksaw or cutoff machine.

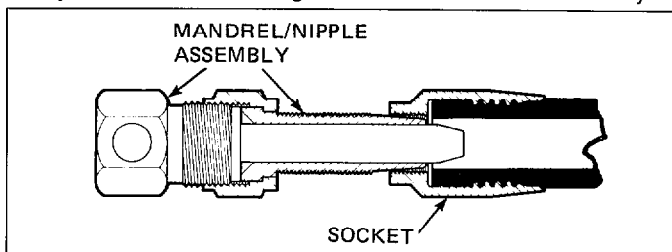


Reassemble the reusable fittings according to the following procedures. **All parts must be clean.**

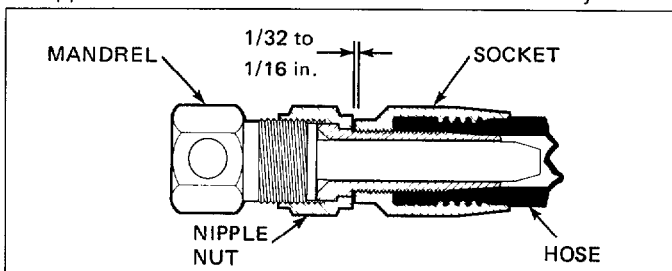
1. Secure the hose in a vise and manually screw on the socket **counter-clockwise** until it bottoms. Then back the hose out 1/4 turn.



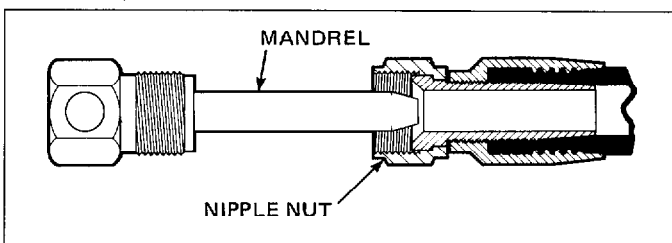
2. Liberally lubricate the mandrel/nipple assembly and the inside of the hose with hydraulic oil. Insert the mandrel/nipple assembly into the hose, moving it in and out until it moves freely.



3. Thread the nipple into the fitting socket with your wrench on the mandrel. Leave a 1/32 to 1/16 inch clearance between the nipple nut and the socket so the nut will swivel freely.

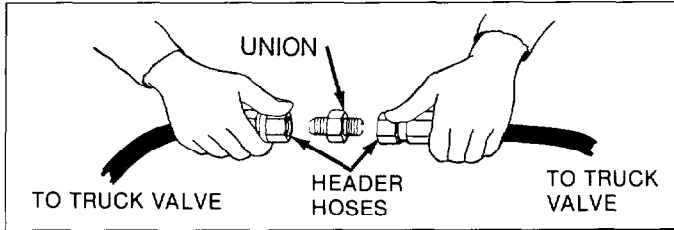


4. Loosen the mandrel from the nipple nut and remove the mandrel. To make sure that the nipple did not damage the inside of the hose during assembly, sight down through the hose. Blow through each end of the hose to make sure the nipple did not scarf a piece of hose material that might prevent free oil flow during operation. If you find internal hose damage, you might have to remove the fitting and cut away the damaged material, then reassemble as above.



*Stratoflex Part Nos.: for No. 6 hose-2701-9-18S; for No. 8 hose-2701-12-16S

- Using the chart below, connect the header hoses to the truck control valve. Connect each pair together using a union as shown. Actuate the truck control valve in each direction to flush any dirt or contamination from the hoses. Remove the union.



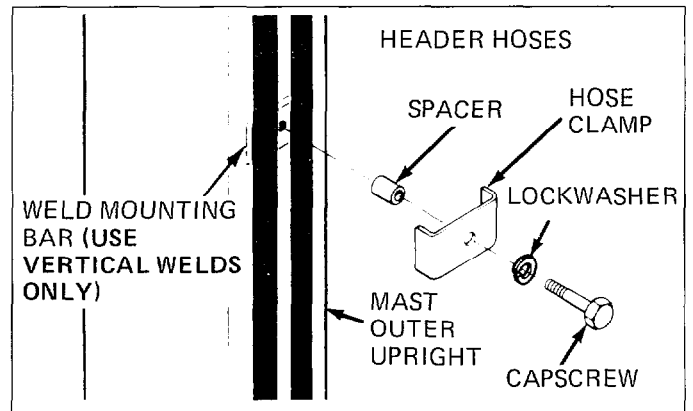
- Route the header hoses up the back of the mast to the hose mounting block. Connect the hoses to the mounting block fittings. See chart below.

IMPORTANT

In order to conform to industry standard practice, hoses should be connected between the truck auxiliary valve(s) and the hose reel shaft(s) as indicated by the following chart.

Attachment Function, in sequence of location.	Attachment Movement	Motion of the operator's hand when actuating the truck auxiliary valve control handle while facing the load.
Sideshift	Right Left	Rearward or Up Forward or Down
Push/Pull	Rearward (pull) Forward (push)	Rearward or Up Forward or Down
Rotate	Clockwise Counterclockwise	Rearward or Up Forward or Down
Swing	Right Left	Rearward or Up Forward or Down
Fork Position	Together Apart	Rearward or Up Forward or Down
Clamp	Clamp Release	Rearward or Up Forward or Down

- Fasten each pair of header hoses to the mast. Position mounting bar(s) (744662) in a reasonable location along the back side of the mast outer upright. See the figure below. Preheat to 100°F. Weld bracket(s) to the mast with 1/4" fillets using E-60XX welding rod. Use vertical welds only.



- Connect the hose reel hoses to the hose terminal as described in the installation instruction supplied with the hose reel.
- Operate the mast up and down, forward and back through its full travel and check for any movement restrictions. Make sure the hoses don't bind and that the hose reel(s) is free to rotate.

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

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