



# Installation Instructions

## Hose Installation Kits for Cascade Attachments

This manual provides installation instructions for Cascade attachment Hose Installation Kits. The kits provide hoses and fittings to connect the hydraulic system on a standard Cascade attachment to the hose terminals on the lift truck carriage.

A reusable fitting is provided on one end of each hose to allow cutting each hose to exact length. Mounting brackets are provided when required for specific applications.

The following pages show hose and fitting locations (driver's view) and part numbers for each kit. Control handle functions, bracket location and instructions for the reusable hose end are located at the back of the manual.

**NOTE:** Hydraulic supply kits are available to connect between the lift truck auxiliary control valve and the truck carriage. Contact Cascade Service for more information.

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**cascade**®  
corporation

Part No. 663590-R6

#### For Technical Support . . .

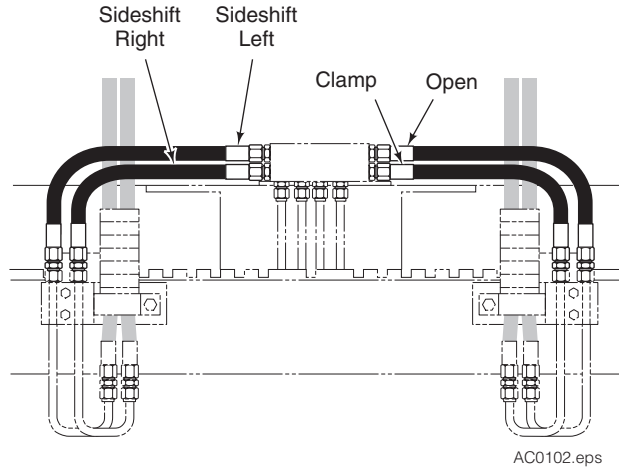
Call: 1-800-227-2233 Fax: 1-888-329-8207  
Internet: [www.cascorp.com](http://www.cascorp.com)  
Write: Cascade Corporation, PO Box 20187, Portland, OR 97294

#### To Order Parts . . .

Call: 1-888-227-2233 Fax: 1-888-329-0234  
Internet: [www.cascorp.com](http://www.cascorp.com)  
Write: Cascade Corporation, 2501 Sheridan Ave., Springfield, OH 45505

# Clamps

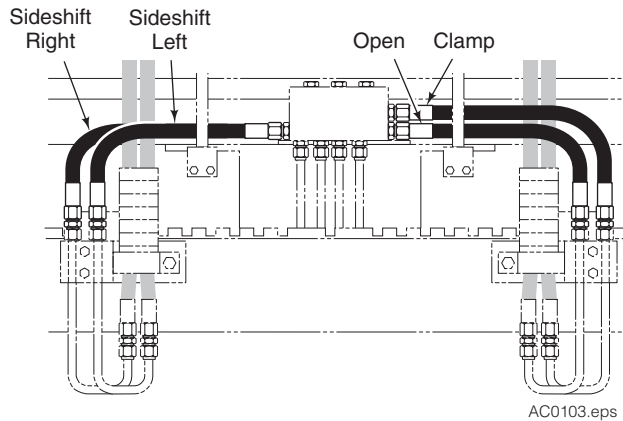
## 25D – 50D Sideshifting



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# Carton Clamps

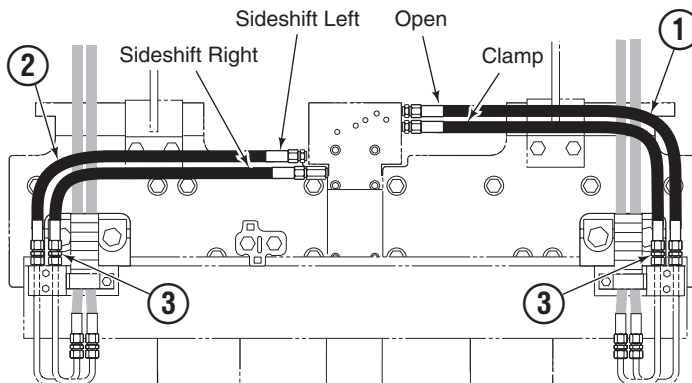
## D-Series



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# Carton Clamps

## E-Series



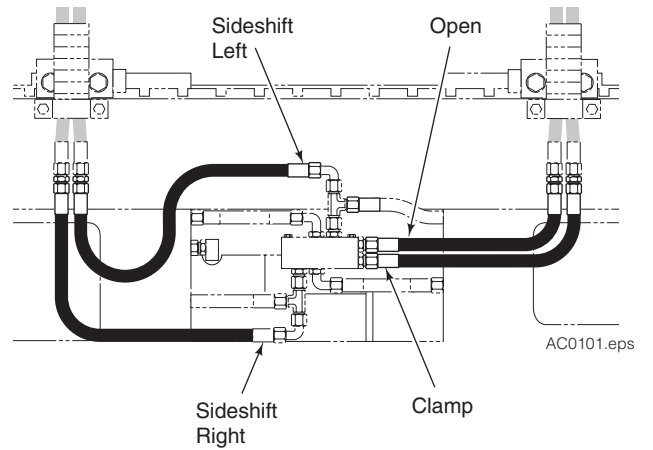
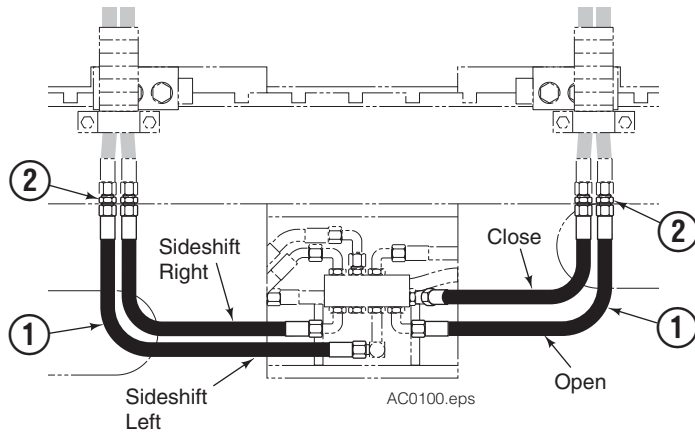
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**NOTE:** E-Series Clamps can be plumbed from either side of valve to match truck supply.

REF	QTY	PART NO.	DESCRIPTION
		659249	Hose Installation Kit
1	2	6030548	Hose, 8 (24.5 in.)
2	2	6030557	Hose, 6 (24.25 in.)
3	2	2347	Fitting, 6-6
	2	674294	Fitting, 6-8
	2	2348	Fitting, 8-8

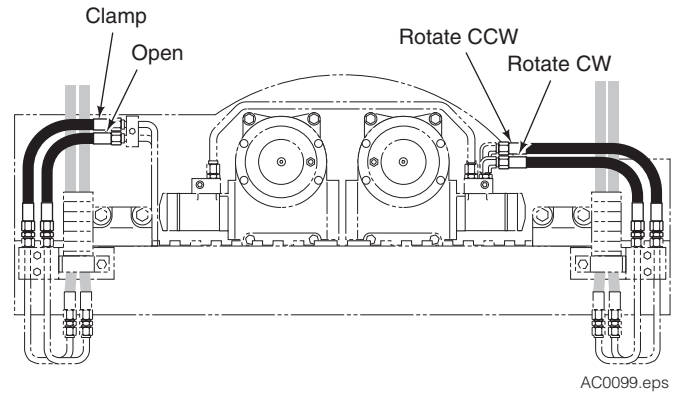
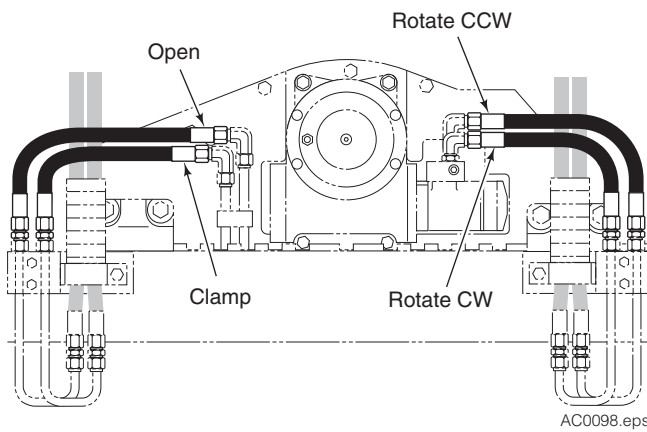
# Clamps

## 70D – 140D Sideshifting



# Revolving Clamps

## D-Series



REF	QTY	PART NO.	DESCRIPTION
		672442	Hose Installation Kit
1	4	6030547	Hose, 8 (24 in.)
2	4	674294	Fitting, 6-8
	4	2348	Fitting, 8-8

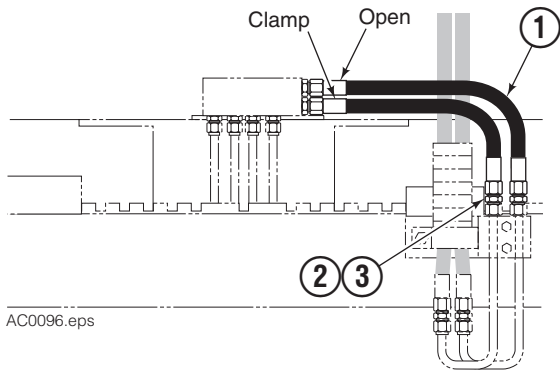
Reference: SK-4761.

REF	QTY	PART NO.	DESCRIPTION
		3016583	Hose Installation Kit-2600 psi
1	4	644537	Hose, 8 (24 in.)
2	4	674294	Fitting, 6-8
	4	2348	Fitting, 8-8

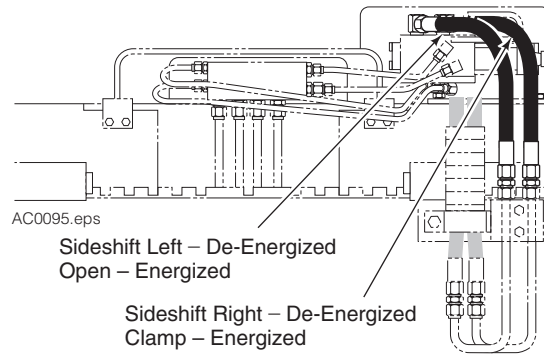
Reference: SK-4761.

# Clamps

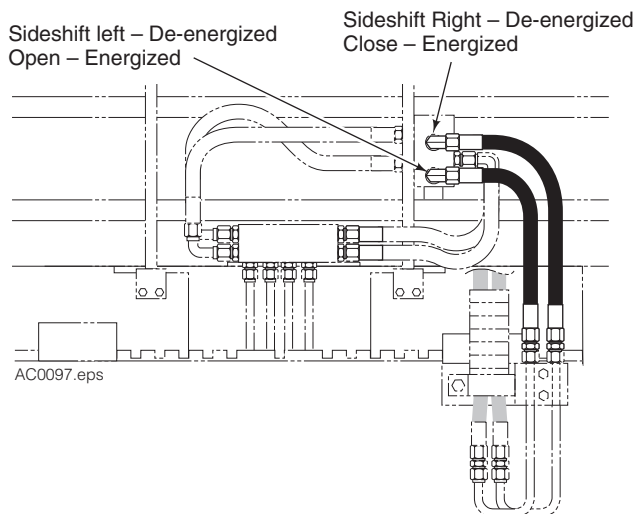
## D-Series Non-Sideshifting



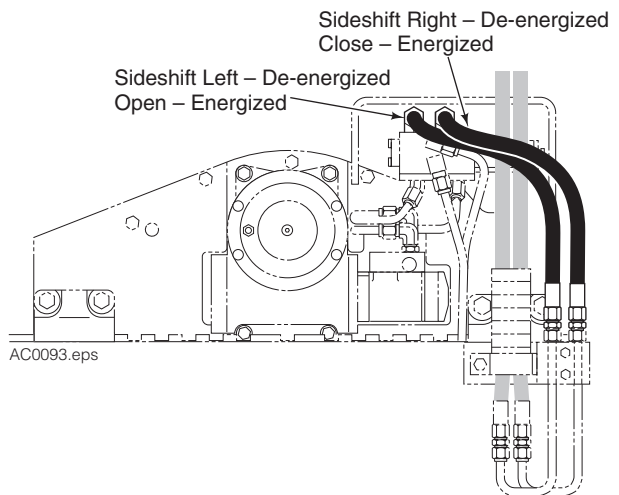
## D-Series Sideshifting with Solenoid Adaption



## D & E-Series Carton Clamps with Solenoid Adaption



## D-Series Revolving Clamps with Solenoid Adaption

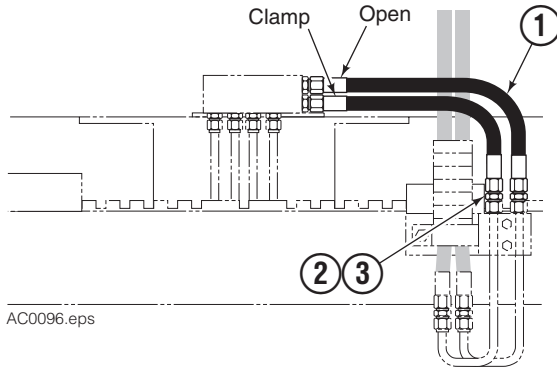


REF	QTY	PART NO.	DESCRIPTION
		659245	Hose Installation Kit
1	2	6030548	Hose, 8 (24.5 in.)
2	2	2348	Fitting, 8-8
3	2	674294	Fitting, 8-6

Reference: SK-4761, 4748.

# Fork Positioners

## C & D-Series Non-Sideshifting

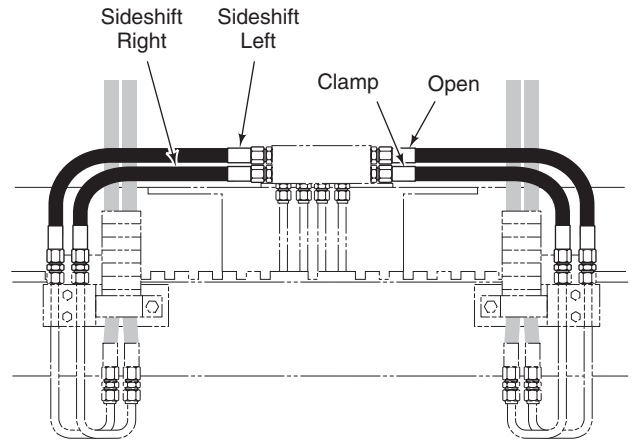


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REF	QTY	PART NO.	DESCRIPTION
		659245	Hose Installation Kit
1	2	6030548	Hose, 8 (24.5 in.)
2	2	674294	Fitting, 6-8
3	2	2348	Fitting, 8-8

Reference: SK-4761, 4748.

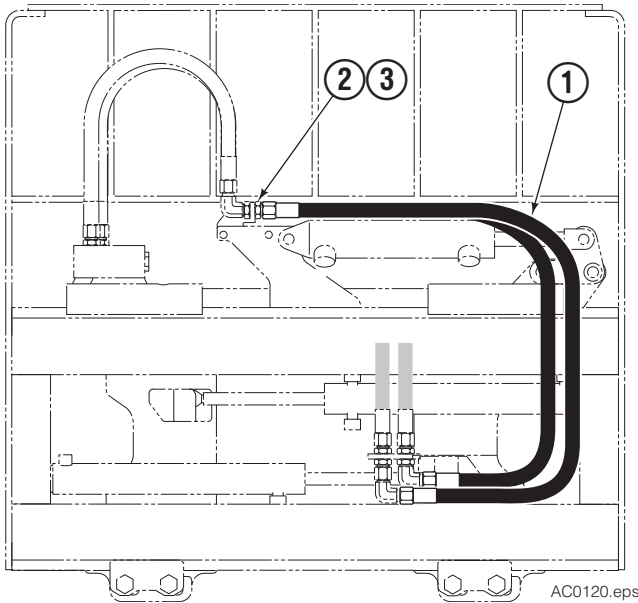
## D-Series Sideshifting



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REF	QTY	PART NO.	DESCRIPTION
		659249	Hose Installation Kit
1	2	6030548	Hose, 8 (24.5 in.)
2	2	6030557	Hose, 6 (24.25 in.)
3	2	2347	Fitting, 6-6
	2	674294	Fitting, 6-8
	2	2348	Fitting, 8-8

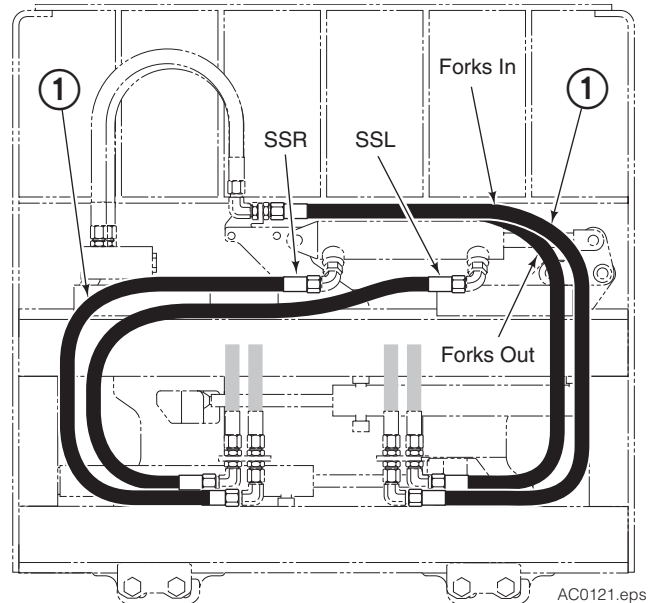
## F-Series Non-Sideshifting



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REF	QTY	PART NO.	DESCRIPTION
		224041	Hose Installation Kit
1	2	6030739	Hose, 4 (48 in.)
2	2	2347	Fitting, 6-6

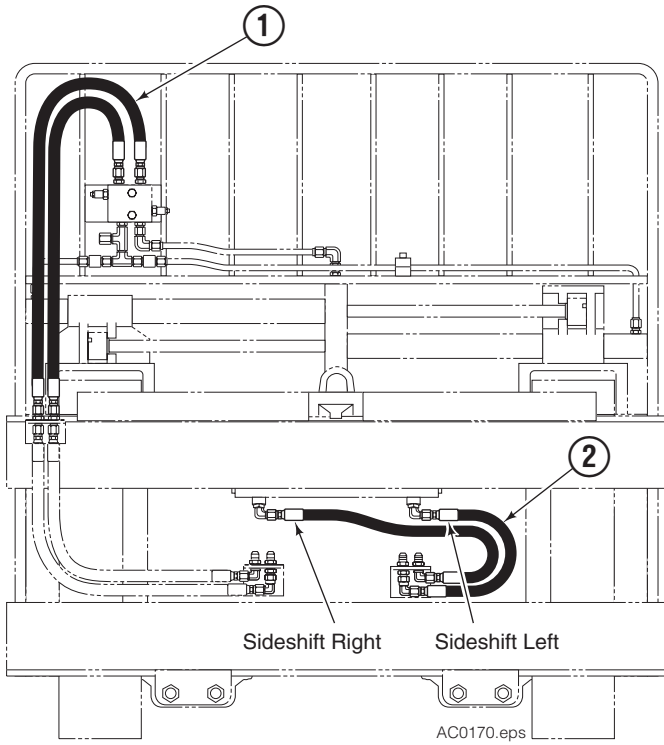
## F-Series Sideshifting



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REF	QTY	PART NO.	DESCRIPTION
		224042	Hose Installation Kit
1	4	6030739	Hose, 4 (48 in.)
2	4	2347	Fitting, 6-6

# Fork Positioners



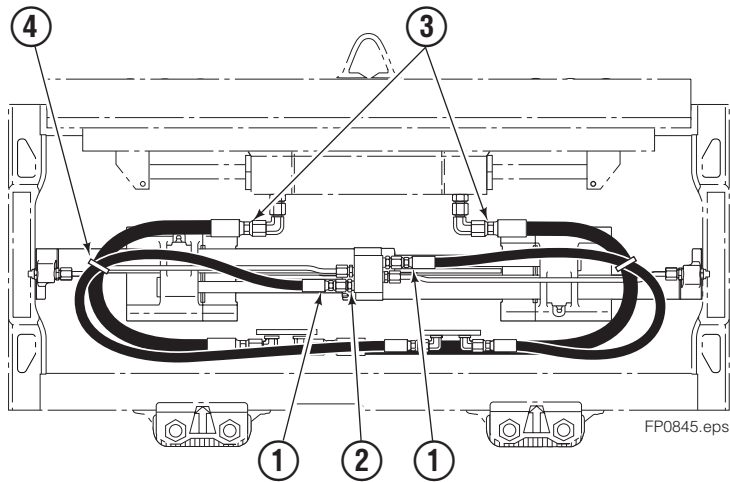
## 150H Non-Sideshifting

REF	QTY	PART NO.	DESCRIPTION
		218898	Hose Installation Kit
1	2	6030714	Hose, 6 (61 in.)

## 150H Sideshifting

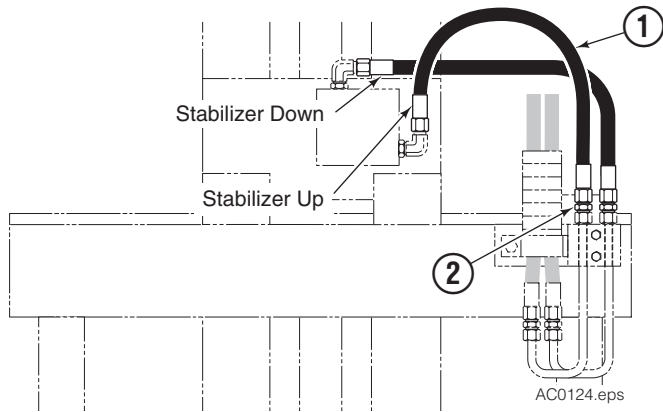
REF	QTY	PART NO.	DESCRIPTION
		218899	Hose Installation Kit
1	2	6030714	Hose, 6 (61 in.)
2	2	6030606	Hose, 6 (29 in.)

## 55K Sideshifting



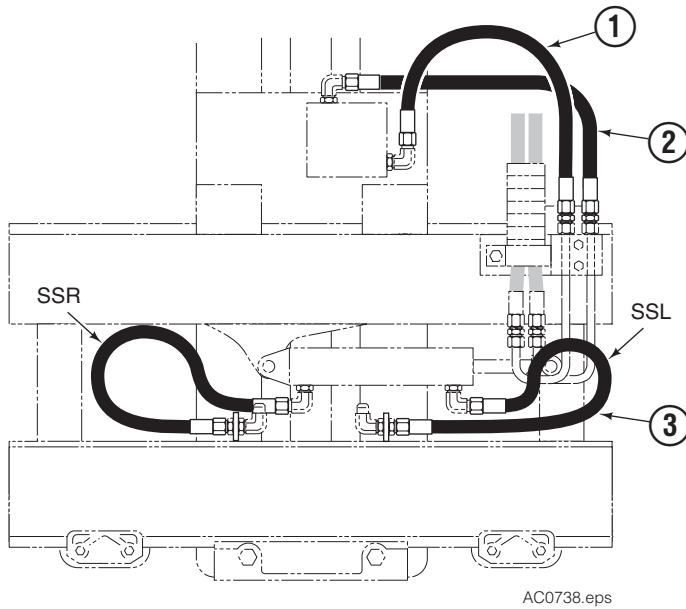
REF	QTY	PART NO.	DESCRIPTION
		6053309	Hose Installation Kit
1	2	6053325	Hose, No. 3 with 4 Fittings (28.3 in.)
2	2	2669	Fitting, 6-4
3	2	6053329	Hose, No. 4 with 6 Fitting (24.4 in.)
4	6	200343	Cable Tie

# Load Stabilizers 35E Non-Sideshifting



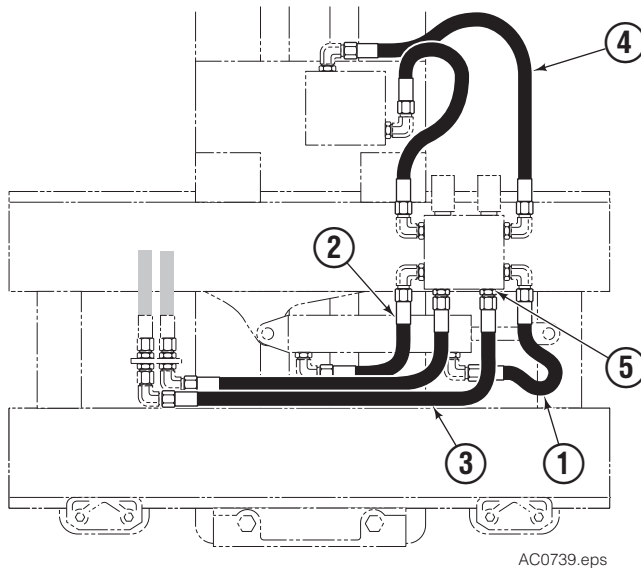
REF	QTY	PART NO.	DESCRIPTION
		202127	Hose Installation Kit
1	2	6030563	Hose, 6 (54 in.)
2	2	2347	Fitting, 6-6

# 35E Sideshifting



REF	QTY	PART NO.	DESCRIPTION
		202126	Hose Installation Kit
1	1	6030711	Hose, 6 (26 in.)
2	1	6030712	Hose, 6 (29 in.)
3	2	6030562	Hose, 6 (48 in.)

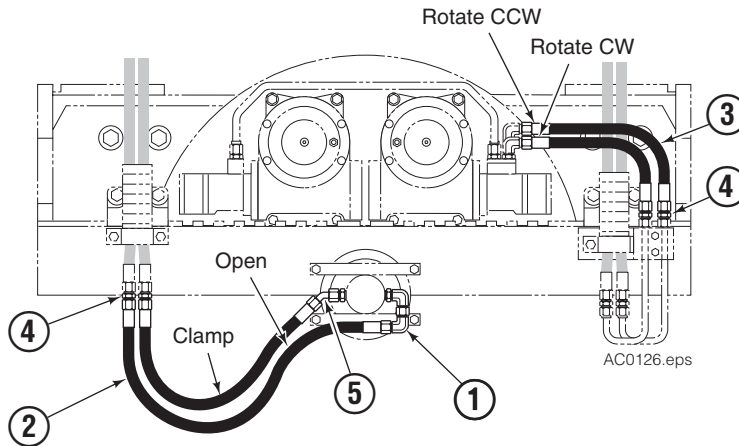
# 35E Sideshifting with Solenoid



REF	QTY	PART NO.	DESCRIPTION
		202126	Hose Installation Kit
1	1	6030711	Hose, 6 (26 in.)
2	1	6030712	Hose, 6 (29 in.)
3	2	6030562	Hose, 6 (48 in.)

REF	QTY	PART NO.	DESCRIPTION
		202127	Hose Installation Kit
4	2	6030563	Hose, 6 (54 in.)
5	2	2347	Fitting, 6-6

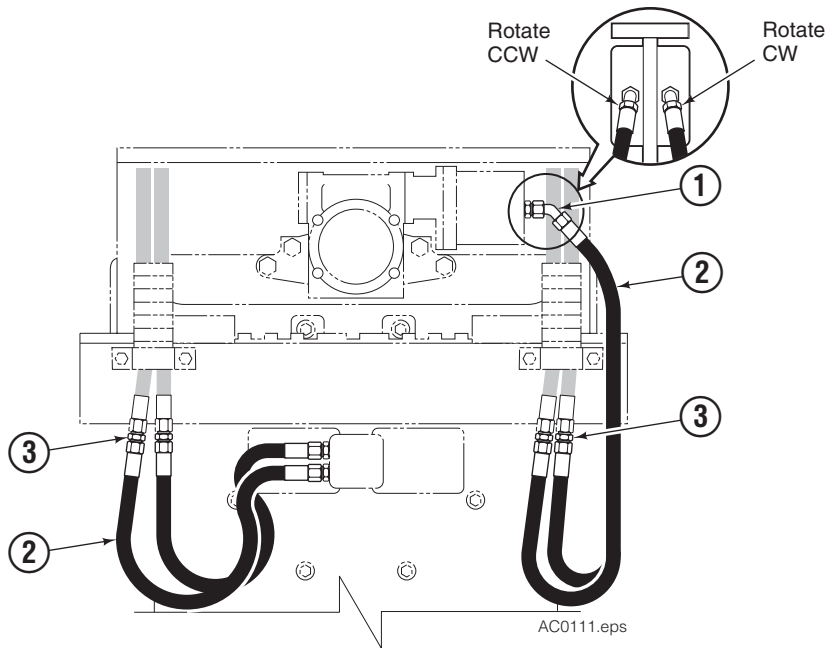
# 100D Paper Roll Clamp 140D, 200D Revolving Clamp



REF	QTY	PART NO.	DESCRIPTION
		663598	Hose Installation Kit
1	2	605761	Fitting, 8-8
2	2	6030552	Hose, 8 (102 in.)
3	2	6030551	Hose, 8 (44 in.)
4	4	2348	Fitting, 8-8
5	1	605948	Fitting, 8-8

Reference: SK-4195.

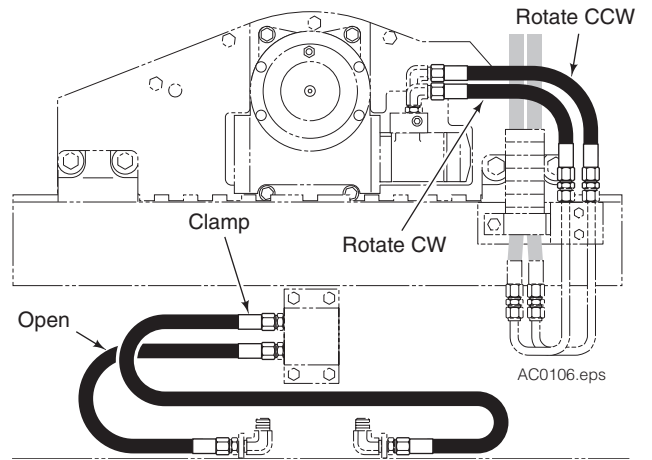
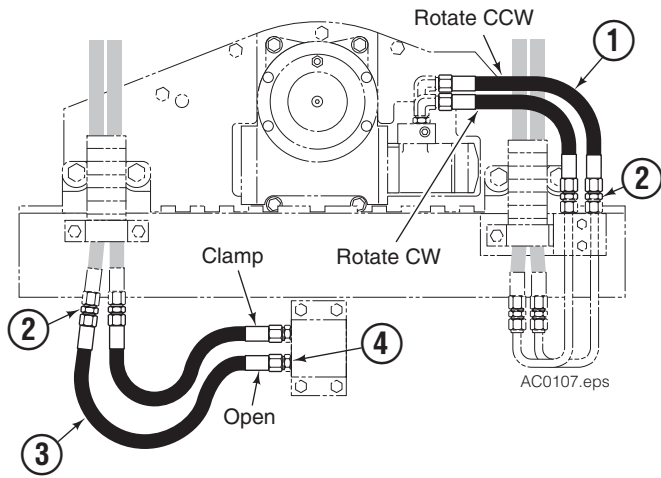
# 25F Paper Roll Clamp



REF	QTY	PART NO.	DESCRIPTION
		681061	Hose Installation Kit
1	2	605230	Fitting, 6-6
2	4	6030560	Hose, 6 (28.75 in.)
3	4	2347	Fitting, 6-6

Reference: SK-5289.

# Paper Roll Clamps F-Series Fixed-Frame



## Hose Reels

REF	QTY	PART NO.	DESCRIPTION
		685474	Hose Installation Kit
1	2	6030547	Hose, 8 (24 in.)
2	4	2348	Fitting, 8-8
3	2	6030549	Hose, 6 (26 in.)
4	2	662187	Fitting, 8-6

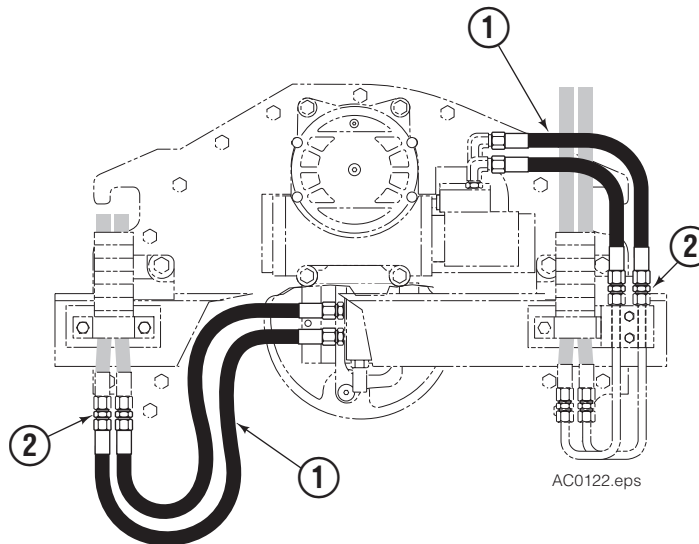
Reference: SK-5030.

## Hose Reel & Internal Reeving

REF	QTY	PART NO.	DESCRIPTION
		675158	Hose Installation Kit
1	2	6030547	Hose, 8 (24 in.)
2	2	2348	Fitting, 8-8
3	2	6030606	Hose, 6 (29 in.)
4	2	2347	Fitting, 6-6

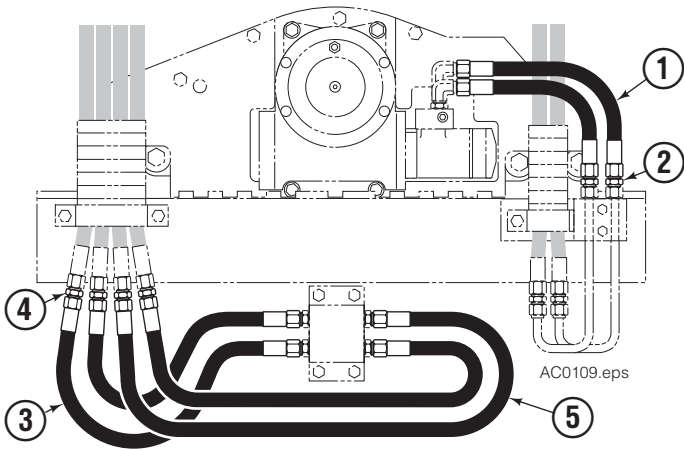
Reference: SK-5030.

# G-Series Fixed-Frame

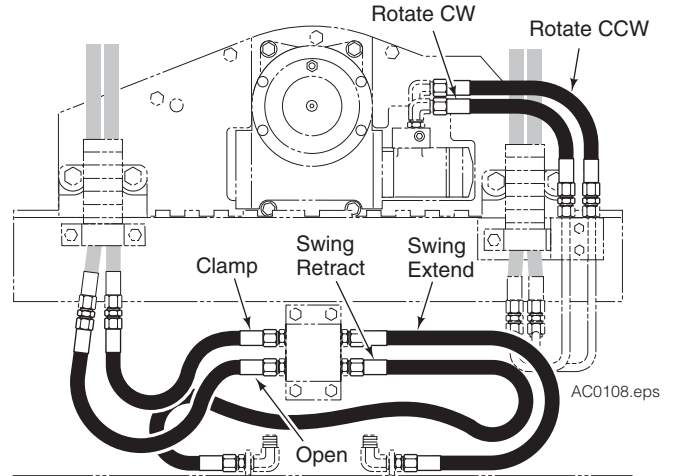


REF	QTY	PART NO.	DESCRIPTION
		212904	Hose Installation Kit
1	4	6030548	Hose, 8 (24.5 in.)
2	4	2348	Fitting, 8-8

# Paper Roll Clamps F & G-Series Swing-Frame



**Hose Reels**

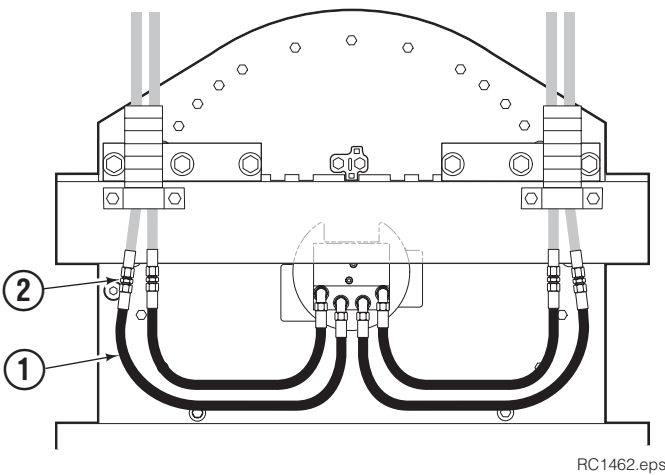


**Hose Reel & Internal Reeving**

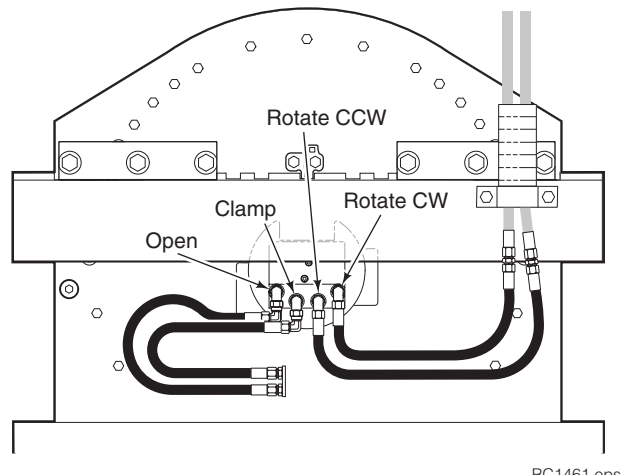
REF	QTY	PART NO.	DESCRIPTION
		675157	Hose Installation Kit
1	2	6030547	Hose, 8 (24 in.)
2	2	2348	Fitting, 8-8
3	2	6030606	Hose, 6 (29 in.)
4	4	2347	Fitting, 6-6
5	2	6030561	Hose, 6 (40 in.)

Reference: SK-5030.

## 90FX



**Hose Reels**

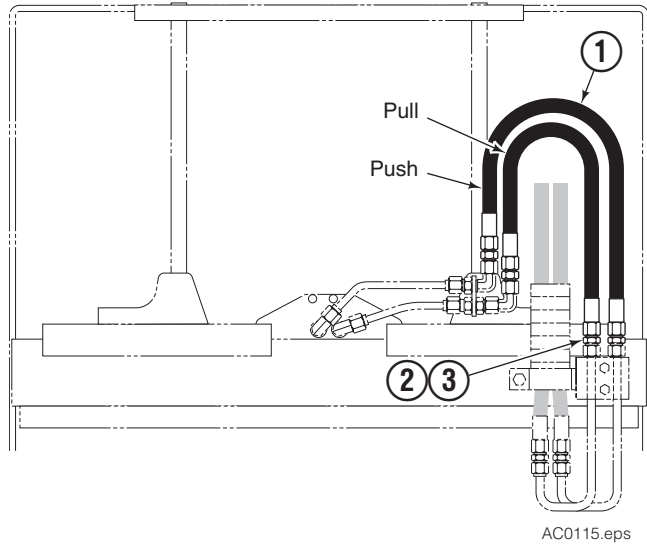


**Hose Reel & Internal Reeving**

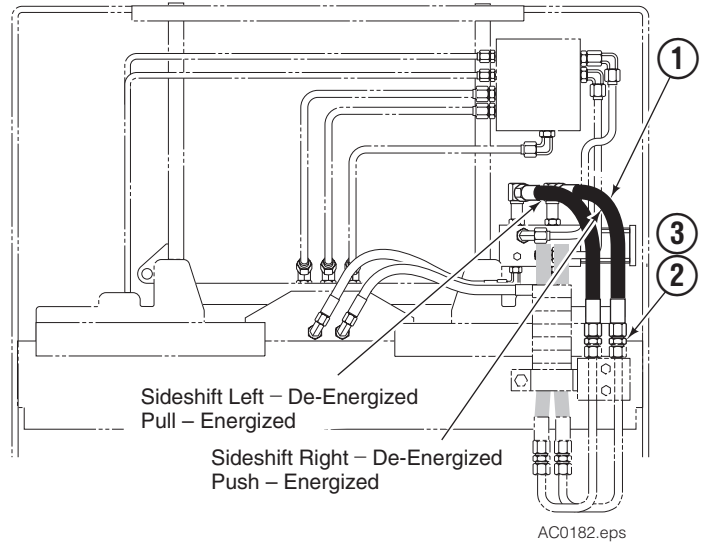
REF	QTY	PART NO.	DESCRIPTION
		6003896	Hose Installation Kit
1	2	6031372	Hose, 8 (28 in.)
2	2	2348	Fitting, 8-8

# Push/Pulls

## E-Series Non-Sideshifting



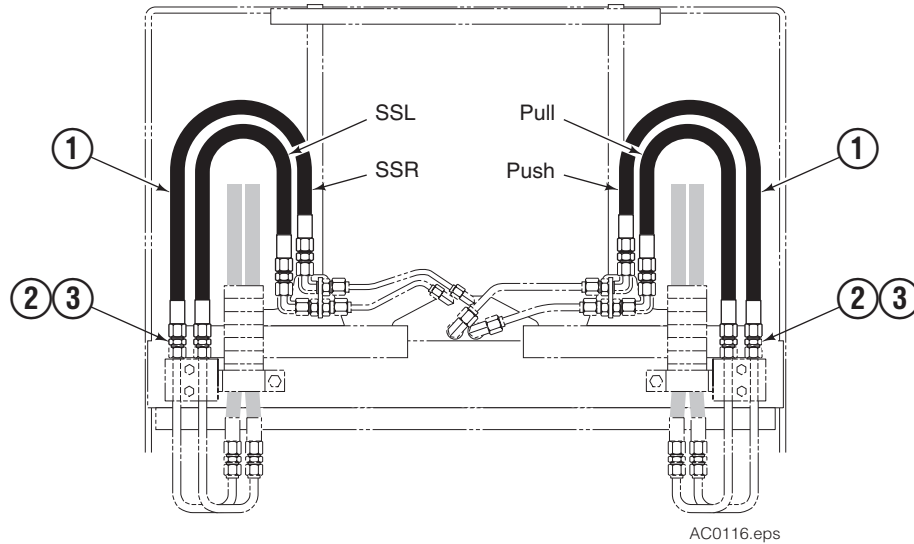
## E-Series Sideshifting with Solenoid Adaption



REF	QTY	PART NO.	DESCRIPTION
		685558	Hose Installation Kit
1	2	6030606	Hose, 6 (29 in.)
2	2	2347	Fitting, 6-6
3	2	611288	Fitting, 6-8

Reference: SK-5449.

## E-Series Sideshifting

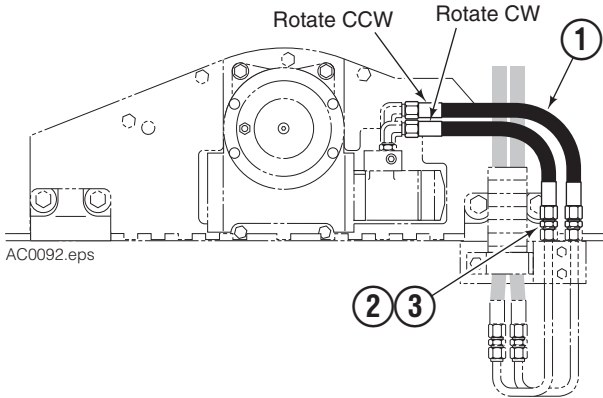


REF	QTY	PART NO.	DESCRIPTION
		685559	Hose Installation Kit
1	4	6030606	Hose, 6 (29 in.)
2	4	2347	Fitting, 6-6
3	4	611288	Fitting, 6-8

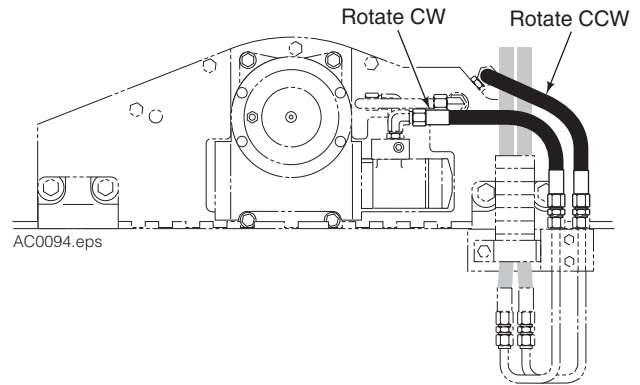
Reference: SK-5449.

# Rotators

## D-Series Rotators



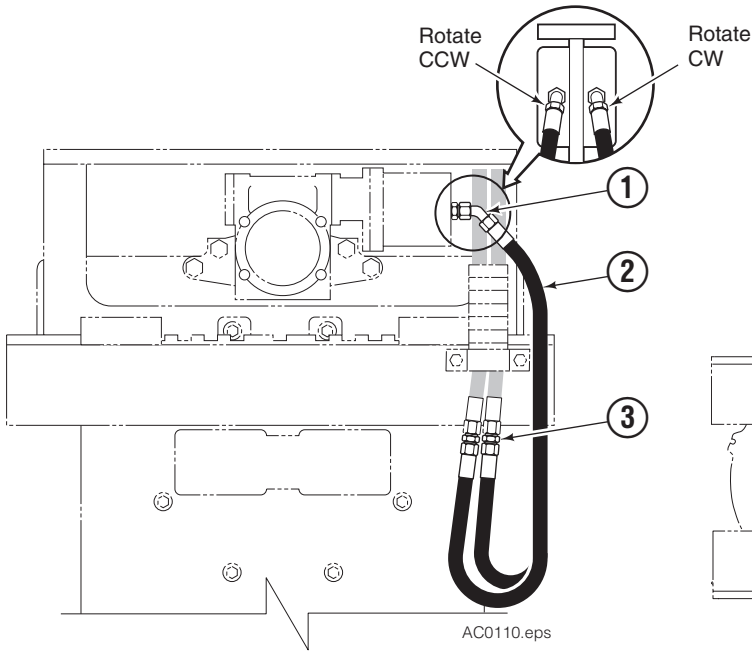
## D-Series with 180° Rotation Stop



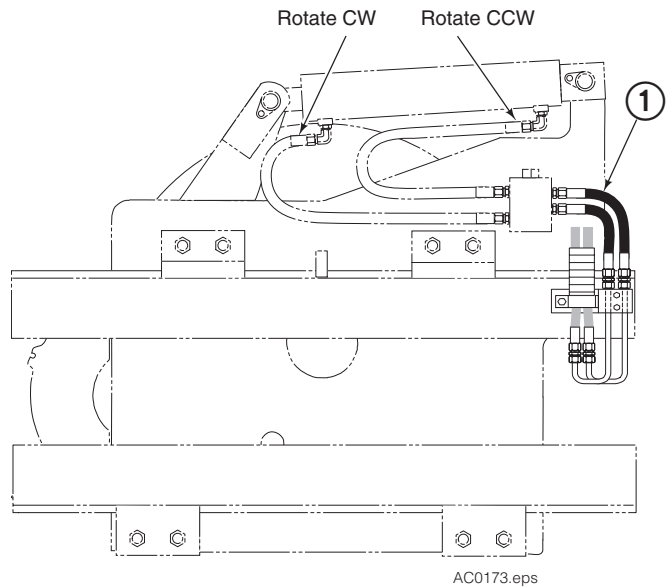
REF	QTY	PART NO.	DESCRIPTION
		659245	Hose Installation Kit
1	2	6030547	Hose, 8 (24.5 in.)
2	2	2348	Fitting, 8-8
3	2	674294	Fitting, 8-6

Reference: SK-4761, 4748.

## 30E Rotator



## 55F Rotator (180° Rotation)



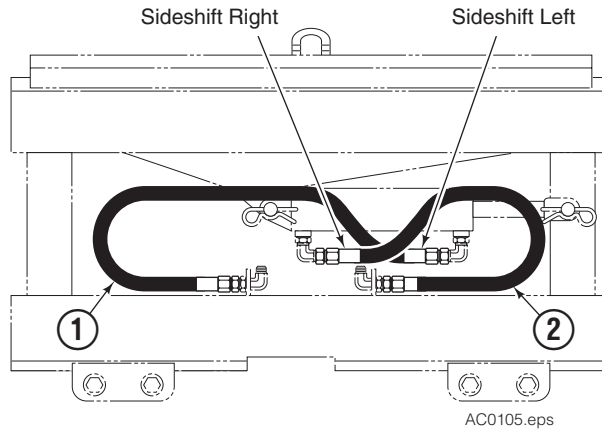
REF	QTY	PART NO.	DESCRIPTION
		681060	Hose Installation Kit
1	2	605230	Fitting, 6-6
2	2	6030560	Hose, 6 (28.75 in.)
3	2	2347	Fitting, 6-6

Reference: SK-5289.

REF	QTY	PART NO.	DESCRIPTION
		222902	Hose Installation Kit
1	2	6030554	Hose, 6 (18 in.)

# Sideshifters

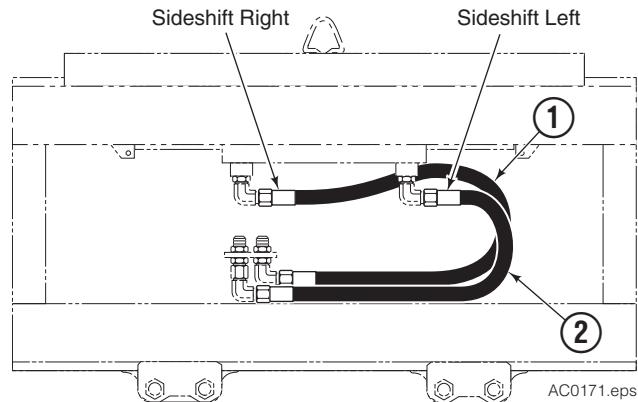
## 120D & 150D Sideshifters



REF	QTY	PART NO.	DESCRIPTION
		209555	Hose Installation Kit-3000 psi
1	1	6030608	Hose, 6 (28.25 in.)
2	1	6030609	Hose, 6 (18.25 in.)

REF	QTY	PART NO.	DESCRIPTION
		223987	Hose Installation Kit-4000 psi
1	1	6030559	Hose, 6 (28.25 in.)
2	1	6030555	Hose, 6 (18.25 in.)

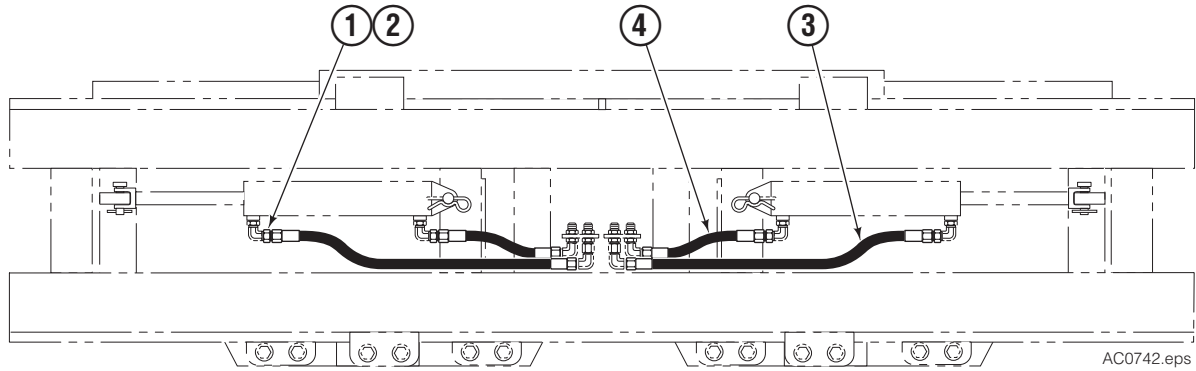
## E & F-Series Sideshifters



REF	QTY	PART NO.	DESCRIPTION
		205826	Hose Installation Kit
1	1	6030557	Hose, 6 (24.25 in.)
2	1	6030553	Hose, 6 (15.25 in.)

# Sideshifters

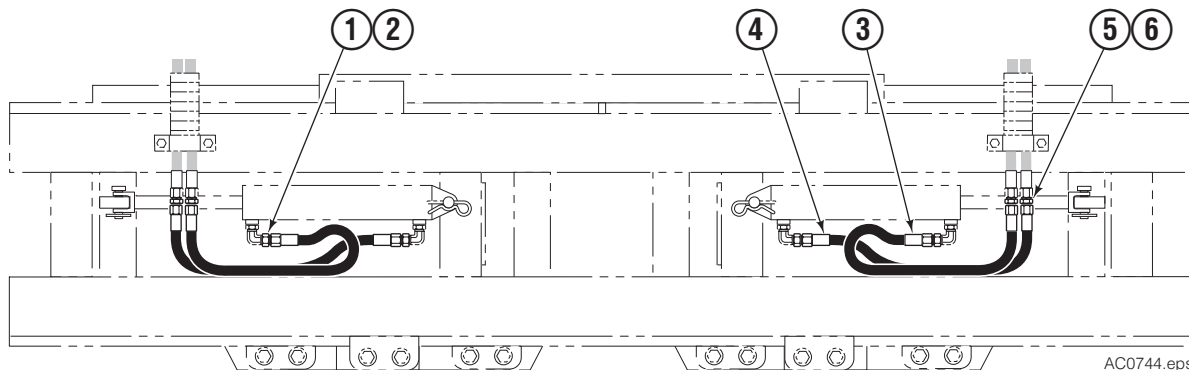
## 55D & 65D Double Wide Sideshifters



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### Internal Reeving

REF	QTY	PART NO.	DESCRIPTION
		229052	Hose Installation Kit
1	8	2617	Nut, 6
2	8	2669	Reducer, 6-4
3	2	6031594	Hose, 4 (30 in.)
4	2	6031592	Hose, 4 (18 in.)
5	4	2345	Fitting, 4-4
6	4	2347	Fitting, 6-6

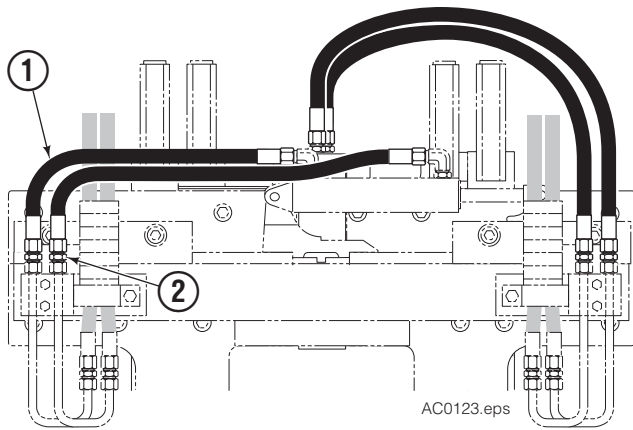


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### Hose Reels

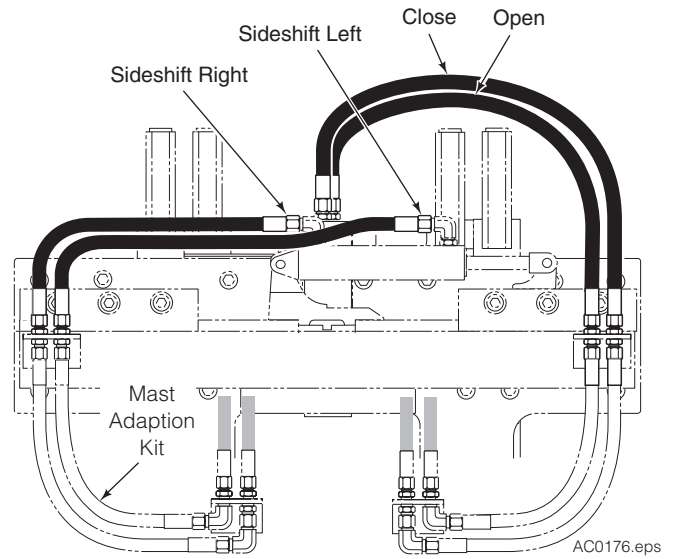
REF	QTY	PART NO.	DESCRIPTION
		229051	Hose Installation Kit
1	8	2617	Nut, 6
2	8	2669	Reducer, 6-4
3	2	6031593	Hose, 4 (24 in.)
4	2	6031591	Hose, 4 (15 in.)
5	4	2345	Fitting, 4-4
6	4	2347	Fitting, 6-6

# Single-Double Pallet Handlers



**Hose Reels**

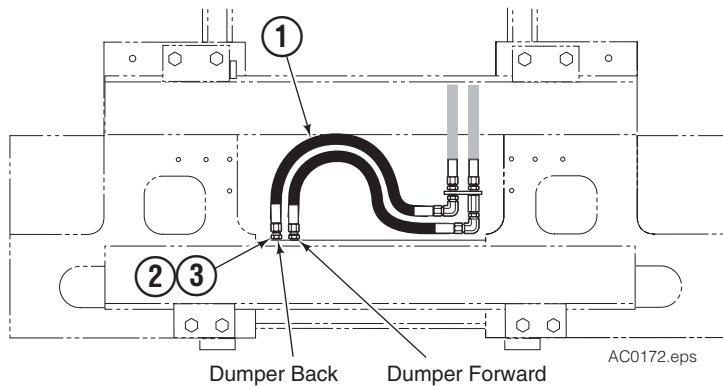
REF	QTY	PART NO.	DESCRIPTION
		213574	Hose Installation Kit-Class II
1	4	6030738	Hose, 6 (36 in.)
2	4	2347	Fitting, 6-6



**Internal Reeving**

REF	QTY	PART NO.	DESCRIPTION
		213575	Hose Installation Kit-Class III
1	4	6030557	Hose, 6 (24.25 in.)
2	4	2347	Fitting, 6-6

# Forward Bin Dumper



REF	QTY	PART NO.	DESCRIPTION
		659245	Hose Installation Kit
1	2	6030548	Hose, 8 (24.5 in.)
2	2	2348	Fitting, 8-8
3	2	674294	Fitting, 8-6

Reference: Sk-4761, 4748.

# Lift Truck Lever Controls

This Table lists the hydraulic control configuration for lift trucks as stated in the voluntary consensus standard ASME B56.1: *Safety Standards for Powered Industrial Low and High Lift Trucks*.

These standards are included in OSHA Regulations 1910.178 for the safe operation and maintenance of industrial trucks.

**IMPORTANT:** Hoses should always be hooked up to provide the following functions in the manner indicated:

Function in sequence of location from driver outward	Direction of load or equipment motion	Typical motion of driver's hand when actuating control handle while facing load ①
Hoist	Up	Rearward or Up
	Down	Forward or Down
Reach	Retract	Rearward ②
	Extend	Forward
Tilt	Rearward	Rearward or Up ②
	Forward	Forward or Down
Sideshift	Right	Rearward or Up
	Left	Forward or Down
Push-Pull	Rearward	Rearward ②
	Forward	Forward
Rotate Laterally	Clockwise	Rearward or Up
	Counterclockwise	Forward or Down
Rotate Longitudinally	Rearward	Rearward or Up
	Forward	Forward or Down
Load Stabilizer	Down	Rearward or Up
	Up	Forward or Down
Swing	Right	Rearward or Up
	Left	Forward or Down
Slope	Clockwise	Rearward or Up
	Counterclockwise	Forward or Down
Fork Position	Together	Rearward or Up
	Apart	Forward or Down
Clamp	Clamp	Rearward or Up
	Release	Forward or Down
<p>① Exception: For high lift order picker trucks and center control pallet trucks, predominant motion of operator's hand when activating the control handle when facing away from the load.</p> <p>② The sense of rotation of the control handle is intended to be in the same direction as the desired motion of the mast or load.</p>		

# Reusable Hose Fittings

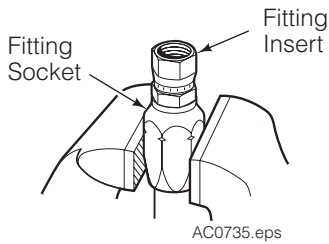
Kit hoses are equipped with reusable fittings to enable hoses to be modified to the exact length required for installation.

**IMPORTANT:** Do not shorten hoses to the point where they will be stretched or kinked when installed. When routing hoses, make sure they will not be pinched, rubbed, twisted, or otherwise damaged throughout their full range of movement. Use hose clamps to secure hoses if required.

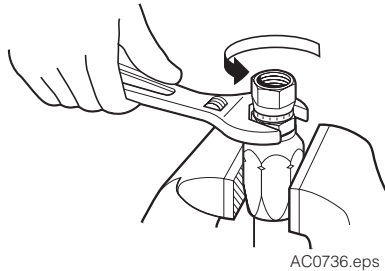
## Fitting Removal

To shorten a hose, remove the reusable end-fitting using the following procedures:

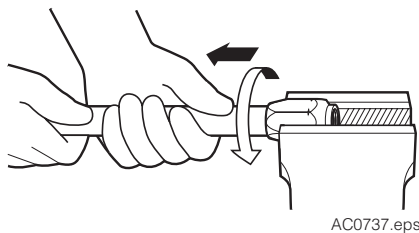
- 1 Clamp the fitting socket in a vise.



- 2 Unscrew the fitting insert from the fitting socket.



- 3 Unscrew the hose **clockwise** from the fitting socket.



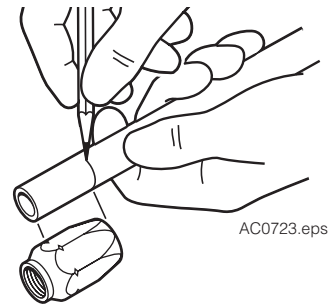
## Fitting Assembly

The hose inserts into the fitting socket to the depth shown below and as indicated by the marks on the fitting wrench flats. Make sure the hose is not cut too short for proper installation. Cut the hose to the desired length using a fine toothed hacksaw or hose cutoff machine.

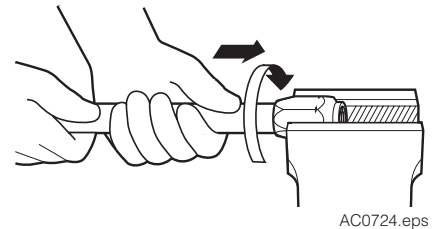
Hose Insertion Depth	
Hose Size	Screw Hose into Socket
No. 4	1.00 in. (25 mm)
No. 6	1.15 in. (29 mm)
No. 8	1.18 in. (30 mm)

- 1 Lubricate the fitting insert threads and hose ID.

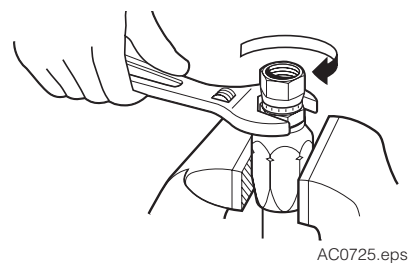
- 2 Measure from the end of the hose and mark the hose insertion depth using the marks on the wrench flats or the table above.



- 3 Screw the hose into the fitting socket **counterclockwise** (CCW) to the hose insertion depth mark.



- 4 Screw the fitting insert into the fitting socket until it touches the socket.



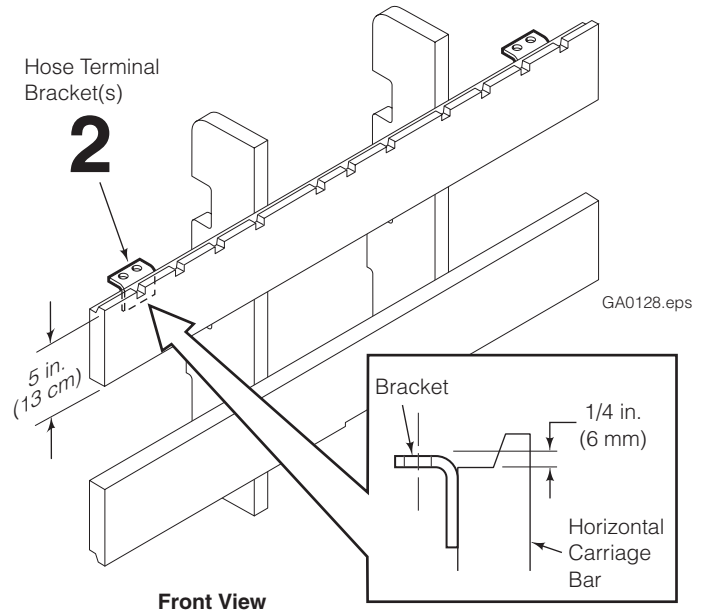
**IMPORTANT:** Inspect the hose for proper assembly. Look down the fitting ID checking for hose material that might prevent free flow. If the hose is damaged, remove the fitting and cut away the damaged hose. Reassemble the hose as in Steps 1 through 4. Use compressed air to clear the hose of debris.

# Bracket Welding Specifications

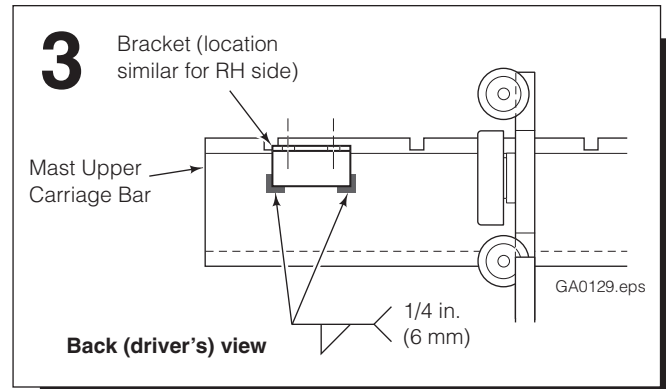
The illustrations on this page show where to weld hose terminal mounting brackets on the mast carriage bar.

- 1 Clean all surfaces to be welded. Remove any paint, oil, grease or other contaminants.
- 2 Position the bracket(s) on the back side (driver's view) of the mast upper carriage bar. Assure that the brackets do not extend beyond the end of the bar. Clamp in place.

**WARNING:** Cascade Corporation recommends that a qualified welder experienced in this type of work be used for best quality.



- 3 Weld the brackets to the mast carriage using the following weld procedures:
  - Protect hoses and adjacent areas from weld splatter.
  - Preheat weld areas to 70° F (21° C).
  - **WELD METHOD A – FCAW (Flux-Cored Arc Weld).** Attach ground wire to carriage. Weld using AWS E70T-1 1/16 in. (1.6 mm) or 5/64 in. (2 mm) diameter wire with 100% CO<sup>2</sup> shielding gas at 35–50 CFH. Set welding amps per manufacturer's recommendations. Apply weld holding a close arc. Do not oscillate or use a wash bead pattern. Let welds normal air-cool.
  - **WELD METHOD B – SMAW (Stick Welding).** Attach ground wire to carriage. Weld using E-7018 low hydrogen 1/8 in. (3.2 mm) or 5/32 in. (4 mm) diameter electrodes. Set welding amps per manufacturer's recommendations. **Do not use electrodes exposed to moisture without first re-drying them at 200° F (75° C) for 2 hours.** Apply weld holding a close arc. Do not oscillate or use a wash bead pattern. Let welds normal air-cool.
- 4 Remove all slag and weld splatter and inspect the welds.





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