



# Parts Manual

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Model 30B Layer Picker

Serial Number SELP-41903

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**cascade**®  
**corporation**

**For Technical Assistance call:** 800-227-2233, Fax: 888-329-8207

**To Order Parts call:** 888-227-2233, Fax: 888-329-0234

**OR**

**Write:** Cascade Corporation, P.O. Box 20187, Portland, OR 97220

**Internet:** [www.cascorp.com](http://www.cascorp.com)



# Safety Decals

On Front Side of Inner Upright

On Front Side

On Front Side

WARNING

LP0064.ill

REF	QTY	PART NO.	DESCRIPTION
1	5	665595	No Hand Hold
2	2	679150	No Step
3	1	684166	WARNING
4	1	200798	WARNING-Trapped Air

# Publications

**cascade**  
Service Literature Index and Order Form

Ordering Information: This Service and Operator Guide Manual is sold through the Cascade Parts Dept. All shipments with an open order; please indicate quantity desired and purchase order number. All other orders require a check payable to Cascade Corporation.

Fax: 513-325-9270      Mail: Cascade Corporation, P.O. Box 280, Springfield, Ohio 45501      Phone: 513-325-1199

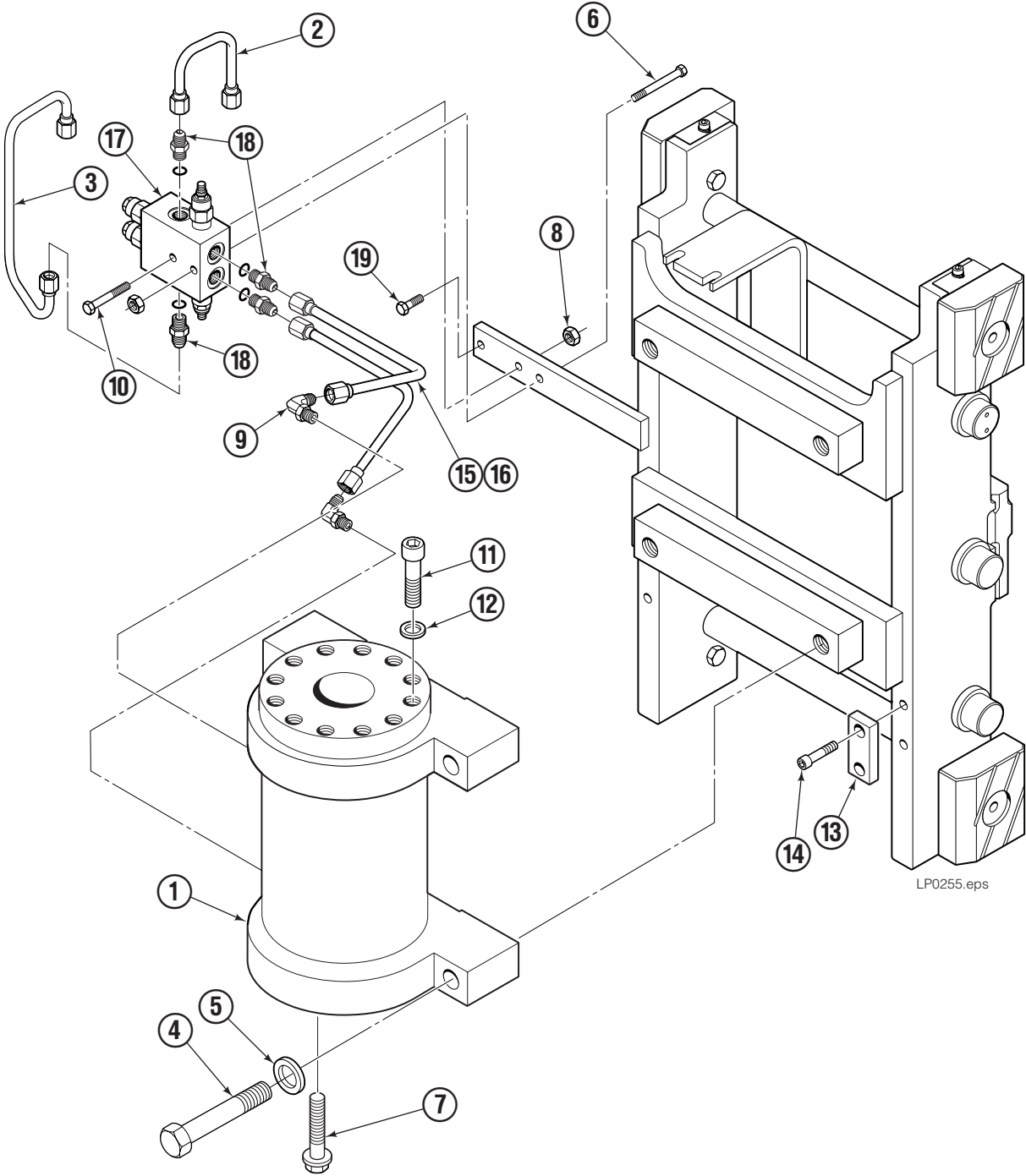
Master Service Manual - Part No. 672929  
Includes 21 Service Manuals listed in a 2-1/2" binder for \$140.00

**OPERATOR'S GUIDE**

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PART NO.	DESCRIPTION
-	Parts Manual
-	Service Manual
222964	Installation Instructions
222225	Operators Guide
679929	Tool Catalog
673964	Literature Index Order Form

# Hydraulic Group



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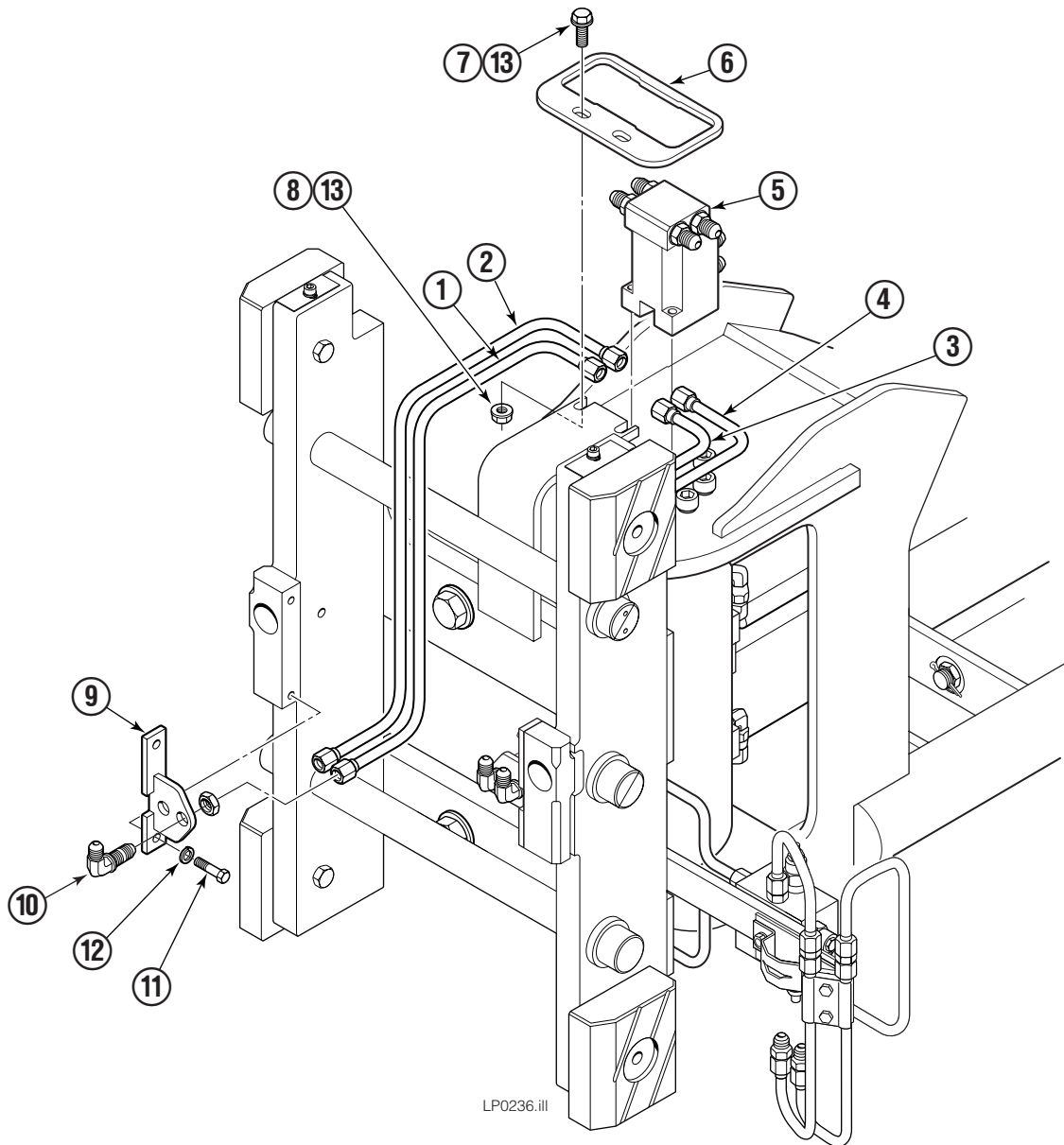
# Hydraulic Group

30A			
REF	QTY	PART NO.	DESCRIPTION
		6127207	Hydraulic Group
1	1	6125968	Actuator
2	1	223019	Tube
3	1	223020	Tube
4	4	6126374	Capscrew, 7/8 x 5.00
5	4	221204	Washer
6	1	3611	Capscrew, 3/8 x 3.00
7	7	607085	Capscrew, .625 x 1.50
8	2	6099	Nut
9	2	601676	Fitting, 6-6
10	1	674910	Capscrew
11	12	607105	Capscrew, 3/4 x 2.00
12	12	670692	Washer
13	2	6127201	Bumper
14	4	753159	Capscrew, M6 x 10
15	1	6126392	Tube
16	1	6126392	Tube
17	1	221642	Valve ●
18	4	604511	Fitting, 6-6
19	1	629516	Capscrew, 3/8 x 1.00

● See Valve page for parts breakdown.

Reference: SK-12167.

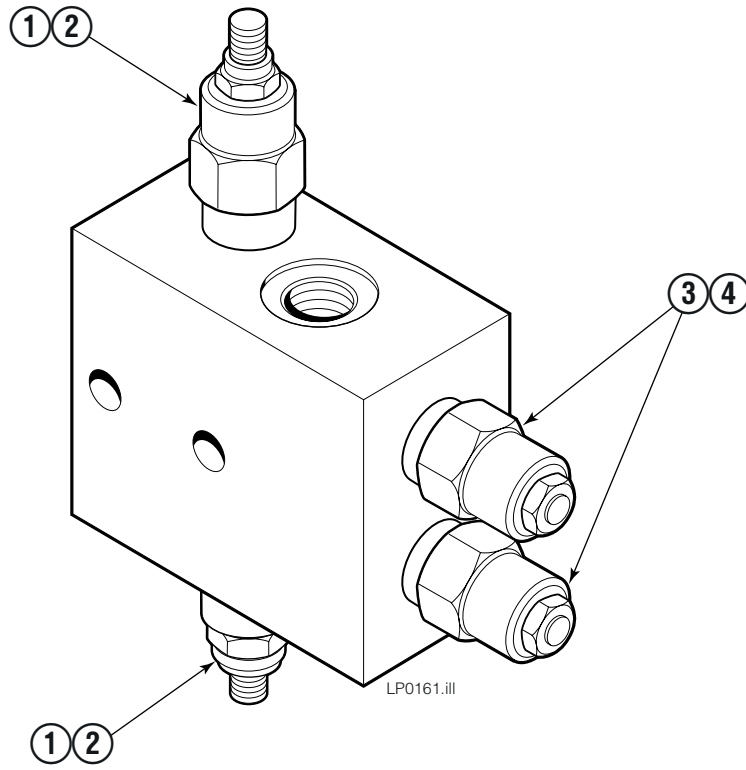
# Hydraulic Group



REF	QTY	PART NO.	DESCRIPTION	REF	QTY	PART NO.	DESCRIPTION
		6127207	Hydraulic Group (cont)	7	2	768538	Capscrew, M10 x 30
1	1	6126385	Tube	8	2	786882	Nut, M10
2	1	6126386	Tube	9	2	206898	Bracket
3	1	6126387	Tube	10	4	2453	Fitting, 6-6
4	1	6126388	Tube	11	4	787372	Capscrew, M8 x 20
5	1	220780	Revolving Connection ♦	12	4	206315	Lockwasher, M8
6	1	221649	Bracket	13	2	201570	Washer, M10

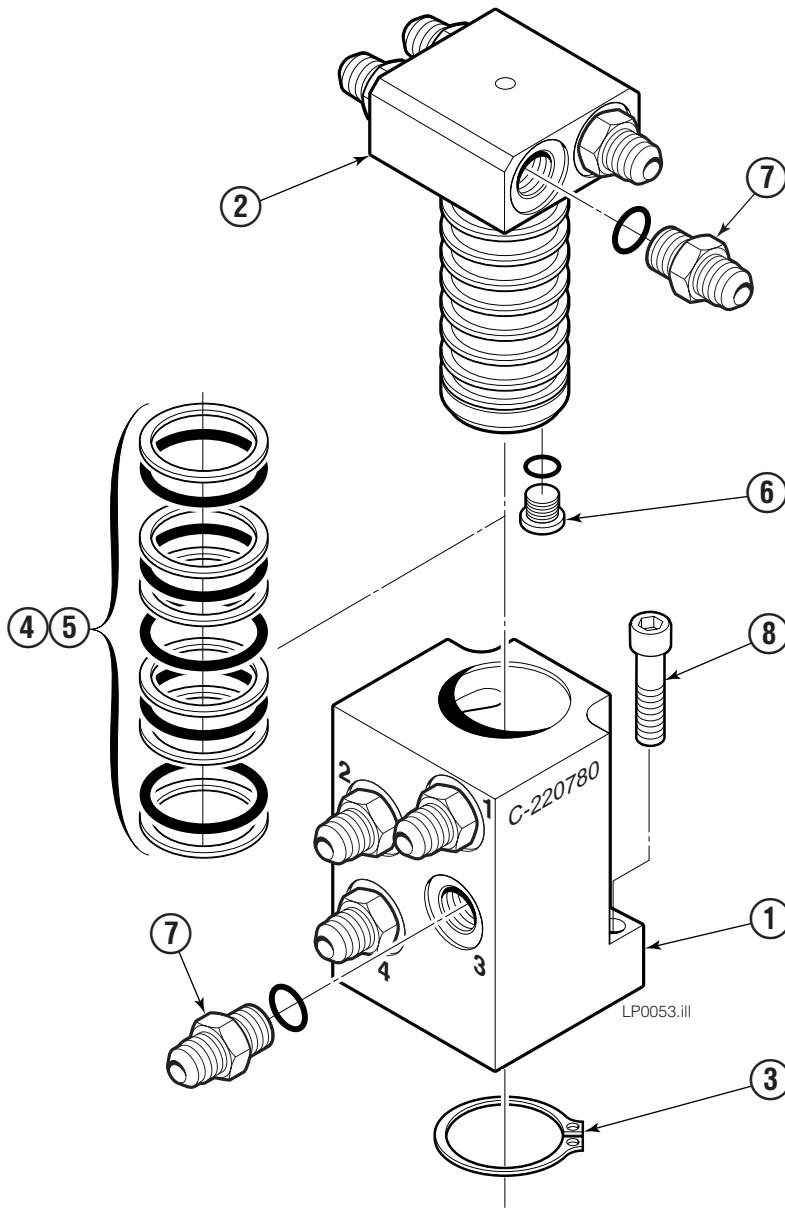
♦ See Revolving Connection page for parts breakdown.  
Reference: SK-12167.

# Valve



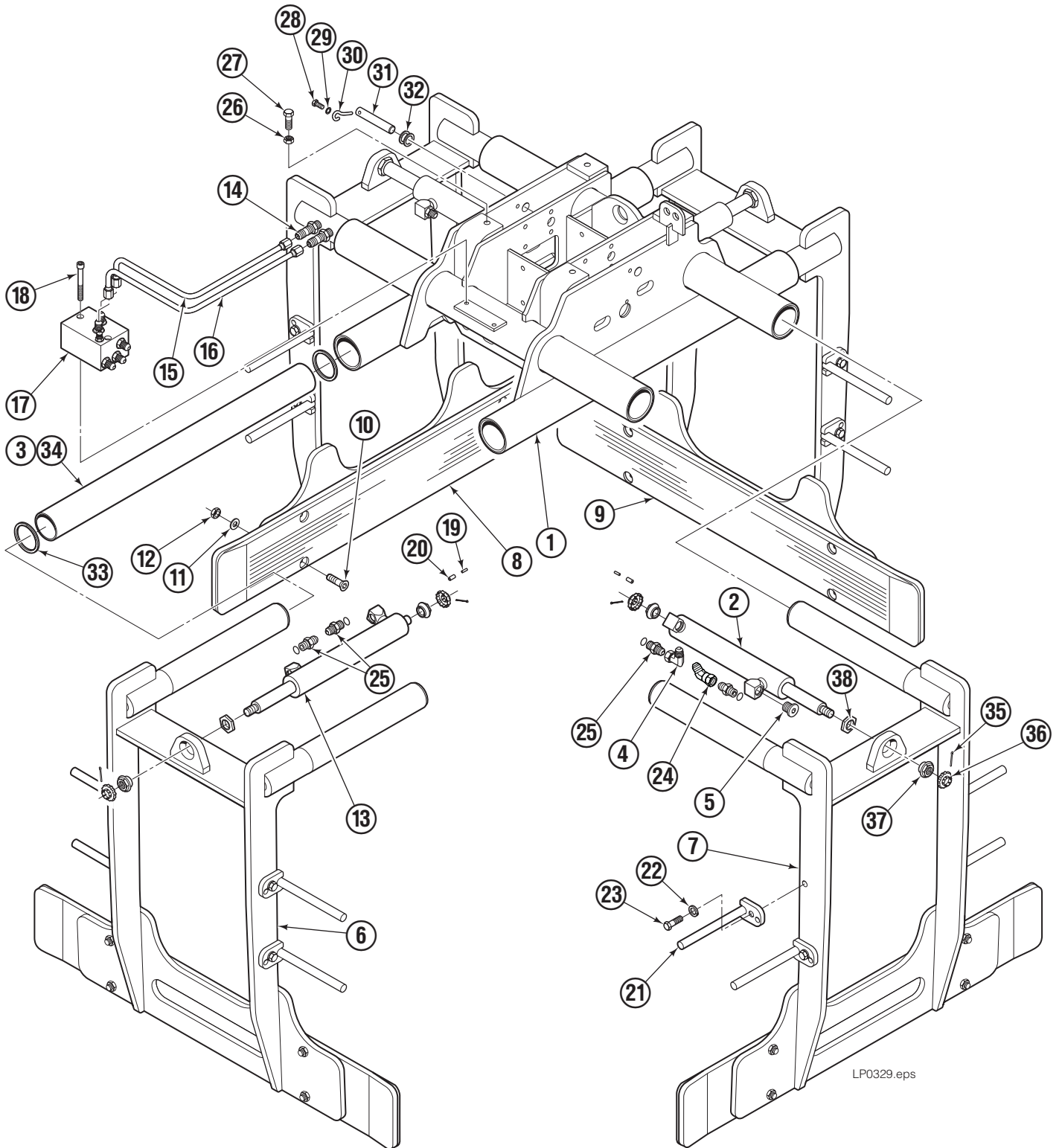
REF	QTY	PART NO.	DESCRIPTION
		221642	Valve Group
1	2	211762	Relief Cartridge
2	2	661312	Service Kit
3	2	674732	Counter Balance Valve
4	2	667516	Service Kit

# Revolving Connection



REF	QTY	PART NO.	DESCRIPTION
		220780	Revolving Connection
1	1	220781	Body
2	1	322714	Shaft
3	1	3139	Retaining Ring
4	8	615122	Back-Up Ring
5	5	655949	O-Ring
6	4	663694	Fitting, 3
7	8	604511	Fitting, 8-8
8	2	768796	Capscrew, M8x35

# Clamp Assembly



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# Clamp Assembly

30B			
REF	QTY	PART NO.	DESCRIPTION
		6143437	Clamp Assembly
1	1	6143428	Frame (28752)
2	2	6127322	Cylinder – LA ♦
3	2	21066-0816	Bushing – LA
4	6	2680	Fitting, 6-6
5	8	602580	Plug
6	2	6143430	Arm – Short (21071)
7	2	6143429	Arm – Long (21071)
8	2	6106451	Contact Pad – LA, 42 x 9 in. (21031)
9	2	6115404	Contact Pad – SA, 36 x 9 in. (21031)
10	16	755028	Capscrew, M12 x 50
11	16	200456	Washer, M12
12	16	205979	Nut, M12
13	2	6143427	Cylinder – SA ♦
14	2	2375	Fitting, 6-6
15	1	6143163	Tube
16	1	6143162	Tube
17	1	219694	Valve ●
18	2	768802	Capscrew, M8 x 70
19	4	7861	Roll Pin – Inner
20	4	7962	Roll Pin – Outer
21	16	221199	Bracket
22	16	683822	Lockwasher, M12
23	16	763021	Capscrew, M12 x 30
24	2	605230	Fitting, 6-6
25	8	611288	Fitting, 6-6
26	4	688387	Jam Nut, M12
27	4	768555	Capscrew, M12 x 40
28	2	787372	Capscrew, M8 x 20
29	2	787398	Washer, M8
30	2	689954	Eye Pin
31	2	218169	Pin
32	4	399469	Shim
33	8	222901	Retaining Ring
34	2	21066-0971	Bushing – SA
35	8	6510	Cotter Pin
36	8	667624	Retainer
37	8	667625	Nut
38	8	667626	Washer
	1	6143432	Hose Group ■

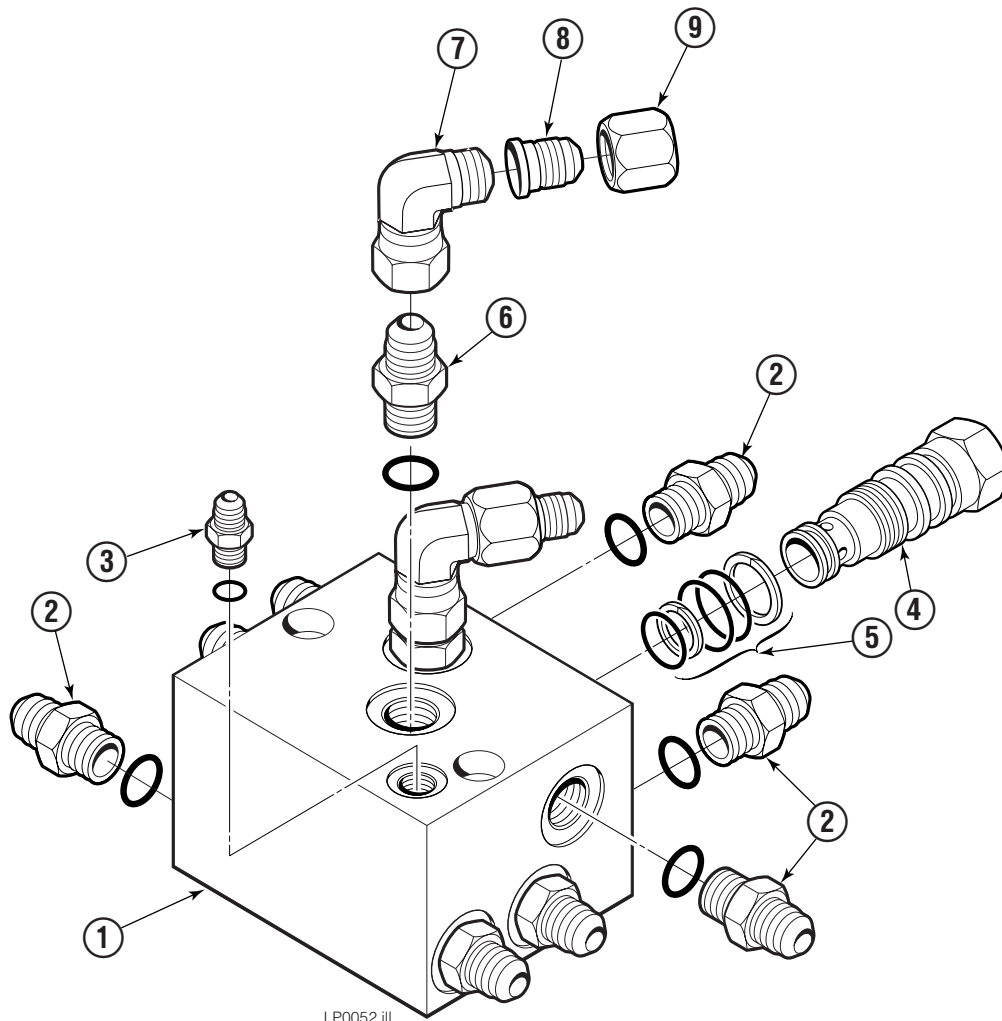
♦ See Cylinder page(s) for parts breakdown.

● See Valve page for parts breakdown.

■ See Hose Group page for parts breakdown.

Reference: Common Parts Group 6143338, S-28746.

# Clamp Valve



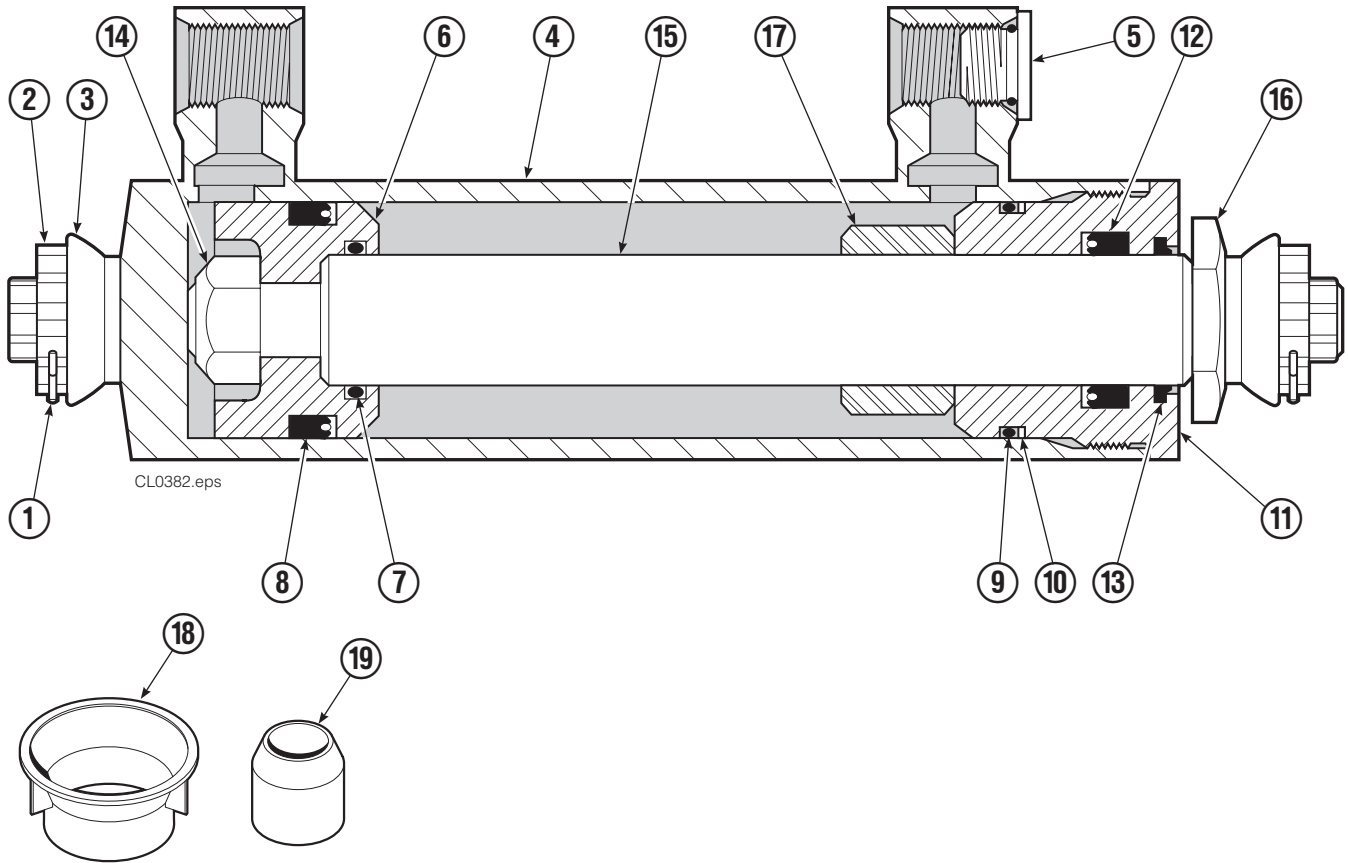
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REF	QTY	PART NO.	DESCRIPTION
		219694	Valve Assembly
1	1	219693	Body
2	8	611288	Fitting, 6-8
3	1	617915	Fitting, 4-4
4	1	659058	Check Valve - PO
5	1	667516	Service Kit
6	2	601377	Fitting, 8-8
7	2	605761	Fitting, 8-8 ▲
8	2	2671	Fitting, 8 ▲
9	2	2618	Nut, 8 ▲

▲ Not included in Valve Assembly.

Reference: Hydraulic Group 222080.

# Cylinder Assembly



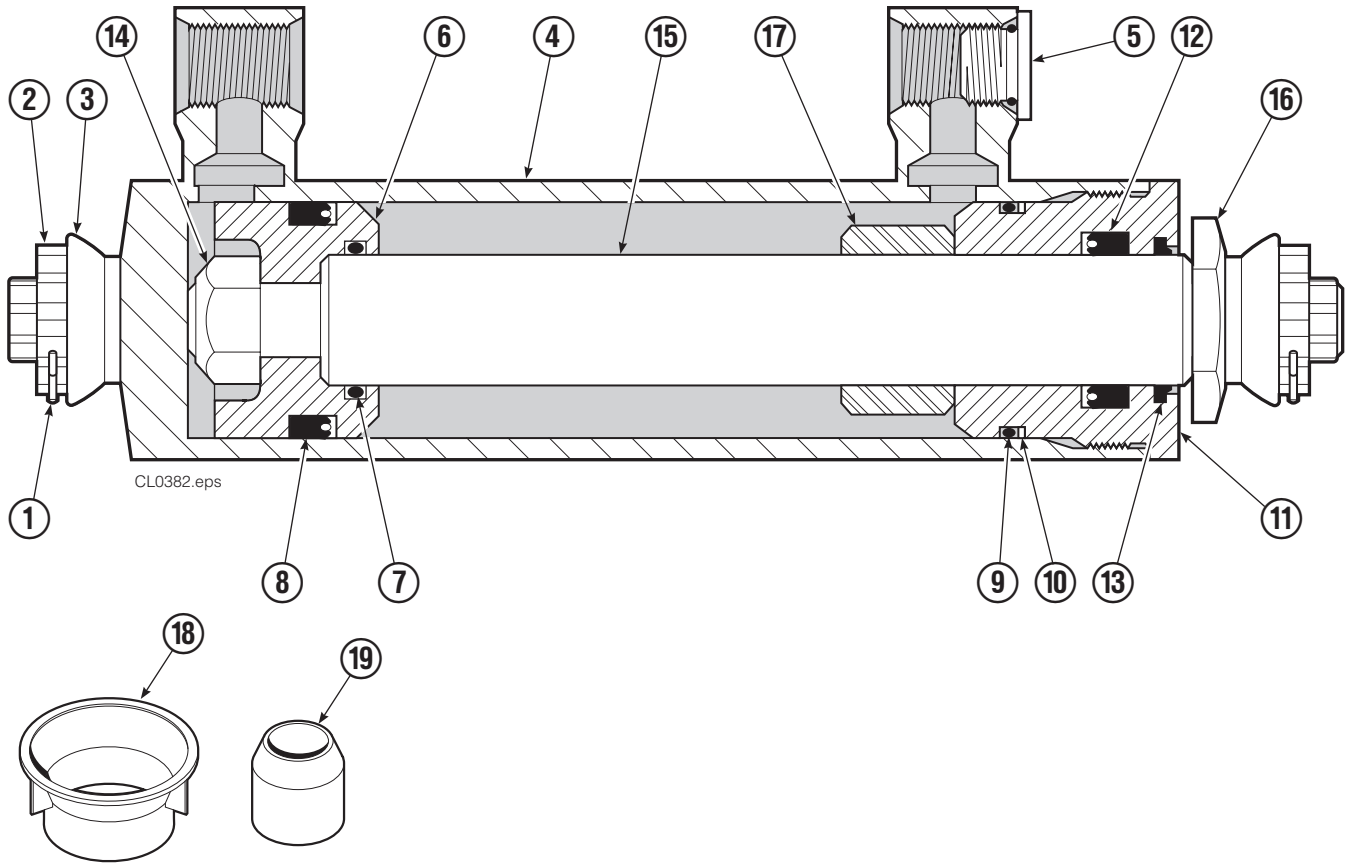
REF	QTY	PART NO.	DESCRIPTION
		6143427	Cylinder Assembly
1	2	6510	■ Cotter Pin
2	2	667624	■ Nut Retainer
3	2	667625	■ Nut
4	1	6127332	Shell
5	1	602580	Fitting
6	1	559702	Piston
7	1	2716	◆ O-Ring
8	1	662450	◆ Seal
9	1	2722	◆ O-Ring
10	1	615126	◆ Back-Up Ring
11	1	413799	Retainer
12	1	662448	◆ Seal
13	1	636853	◆ Wiper
14	1	667623	Nut
15	1	6127333	Rod
16	1	—	Washer
17	1	6003533	Spacer
18	1	671047	◆ Seal Loader - Piston
19	1	671051	◆ Seal Loader - Retainer
		560729	Service Kit

■ Included in Nut Service Kit 668926.

◆ Included in Service Kit 560729.

Reference: ST-0283, ST-0284.

# Cylinder Assembly



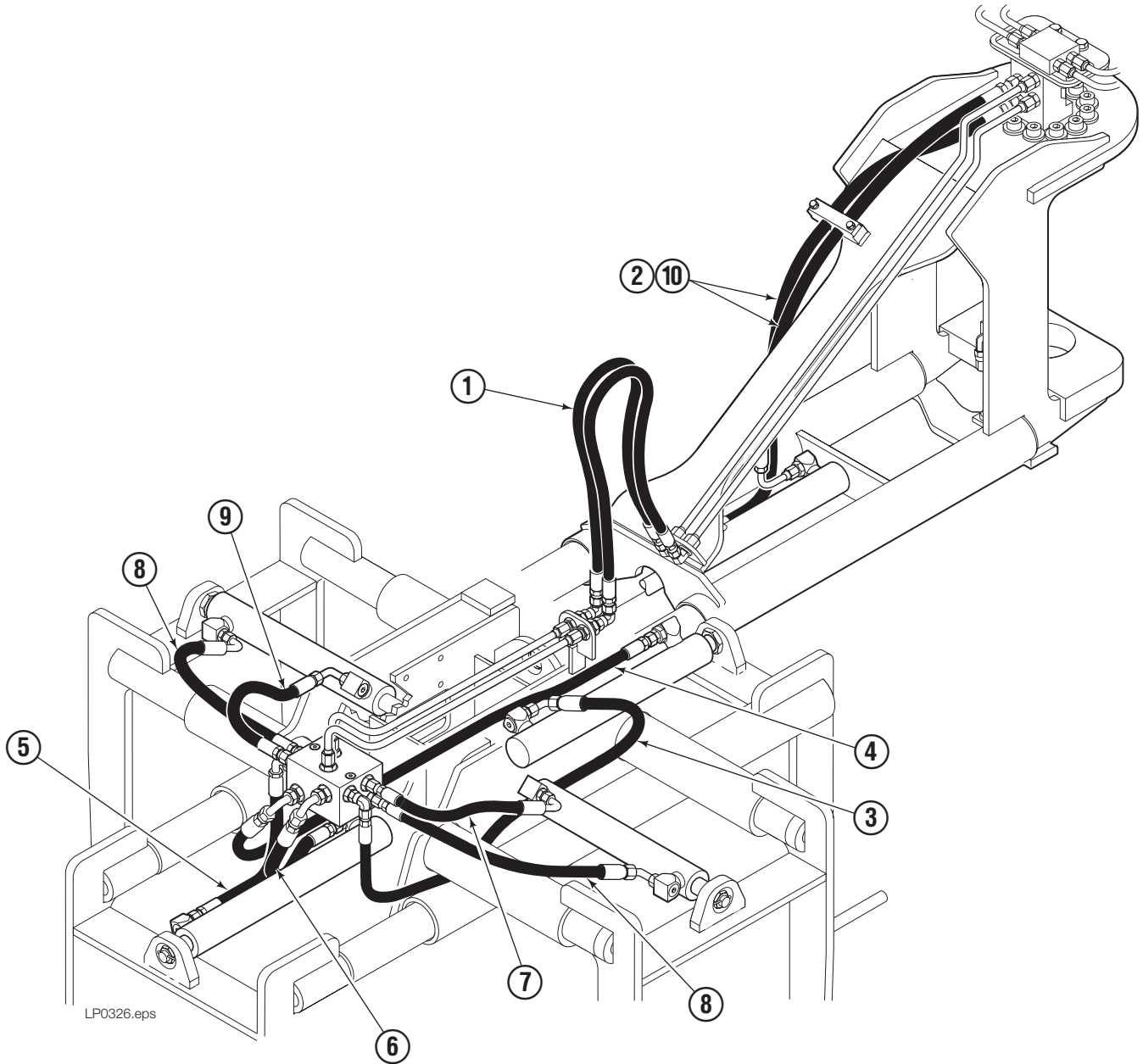
REF	QTY	PART NO.	DESCRIPTION
		6127322	Cylinder Assembly
1	2	6510	■ Cotter Pin
2	2	667624	■ Nut Retainer
3	2	667625	■ Nut
4	1	6120556	Shell
5	1	602580	Fitting
6	1	559702	Piston
7	1	2716	▲ O-Ring
8	1	662450	▲ Seal
9	1	2722	▲ O-Ring
10	1	615126	▲ Back-Up Ring
11	1	413799	Retainer
12	1	662448	▲ Seal
13	1	636853	▲ Wiper
14	1	667623	Nut
15	1	6127323	Rod
16	1	—	Washer
17	1	6123882	Spacer
18	1	671047	▲ Seal Loader - Piston
19	1	671051	▲ Seal Loader - Retainer
		560729	Service Kit

■ Included in Nut Service Kit 668926.

▲ Included in Service Kit 560729.

Reference: ST-0283, ST-0284.

# Hose Group

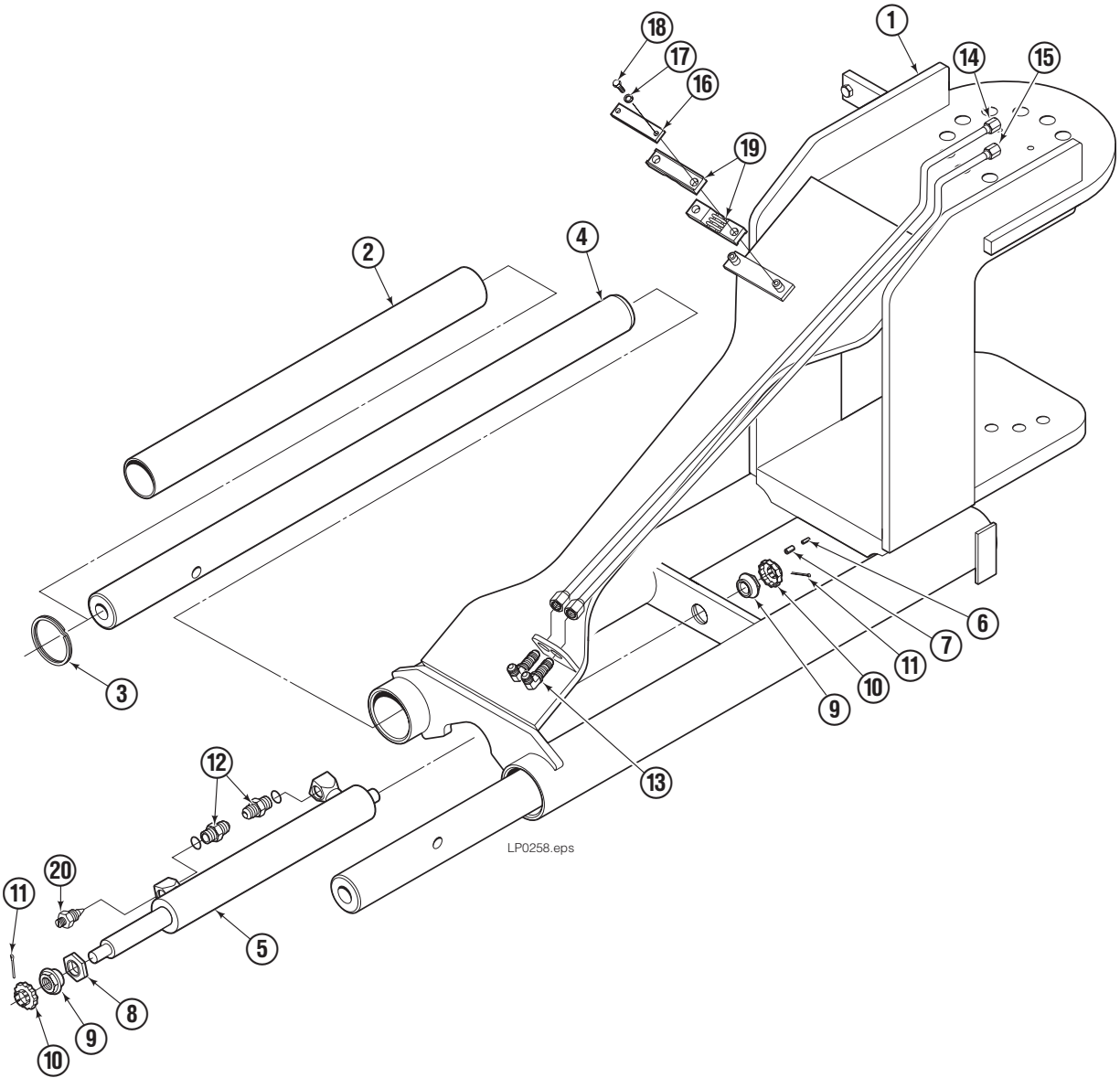


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30B			
REF	QTY	PART NO.	DESCRIPTION
		6143432	Hose Group
1	1	6011624	Hose, Twinline, 32.00 in.
2	1	385000	Hose, 41.00 in.
3	1	6125917	Hose, 35.00 in.
4	1	6126406	Hose, 41.00 in.
5	1	6132887	Hose, 15.00 in.
6	1	6100716	Hose, 12.00 in.
7	1	383026	Hose, 14.50 in.
8	2	383022	Hose, 19.00 in.
9	1	6132885	Hose, 16.00 in.
10	1	205226	Hose, 34.25 in.

Reference: SK-12510.

# Boom Arm Assembly



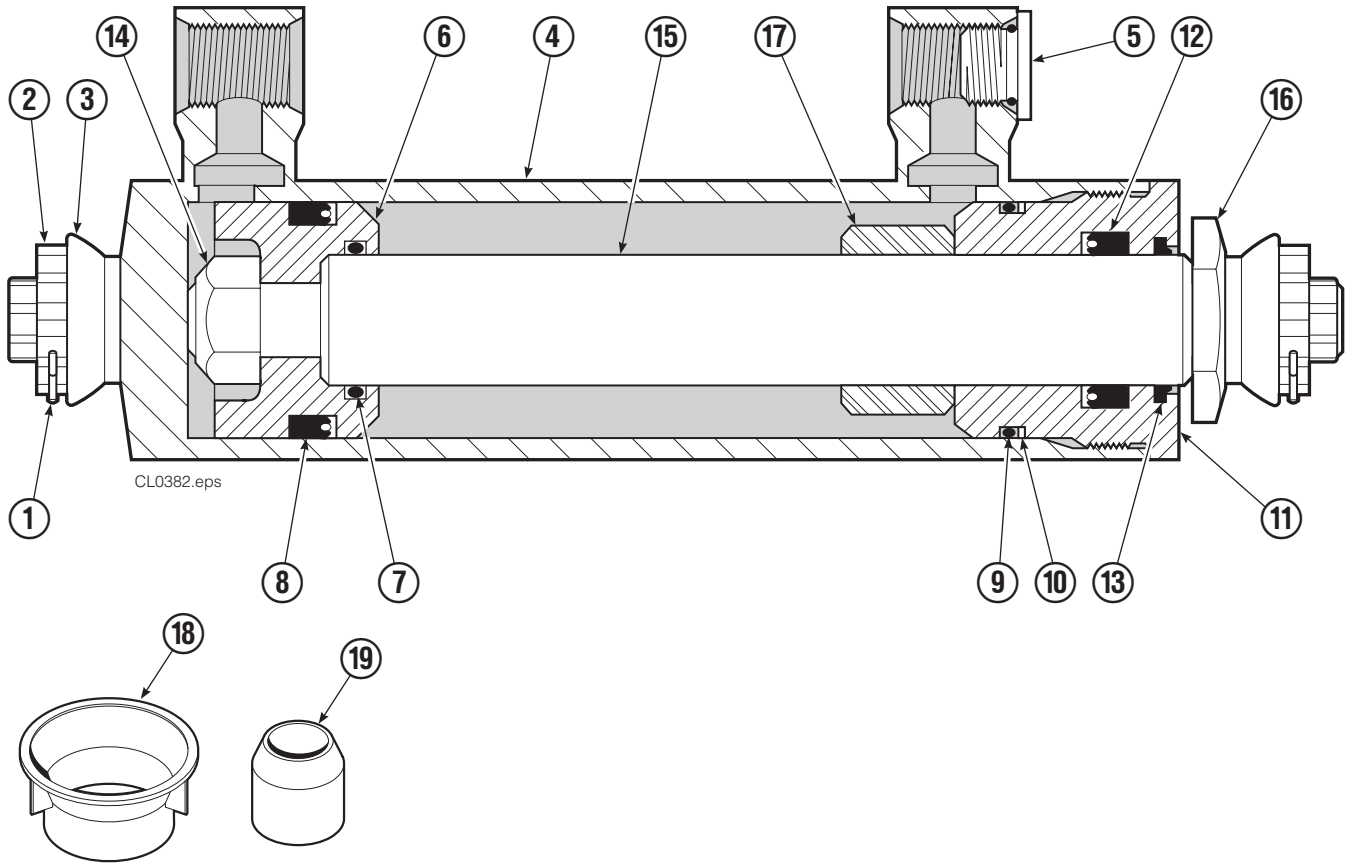
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30A							
REF	QTY	PART NO.	DESCRIPTION	REF	QTY	PART NO.	DESCRIPTION
		6142670	Boom Arm Assembly	11	2	6510	Cotter Pin
1	1	6134360	Frame	12	2	611288	Fitting, 6-6
2	2	21066-0780	Bushing	13	2	2453	Fitting, 6-6
3	2	222901	Retaining Ring	14	1	6134365	Tube
4	2	6128322	Arm Bar	15	1	6134364	Tube
5	1	6142672	Cylinder ◆	16	1	203407	Bar
6	1	—	Roll Pin – Inner	17	2	206323	Lockwasher, M6
7	1	—	Roll Pin – Outer	18	2	763169	Capscrew, M6 x 20
8	1	667626	Washer	19	2	208731	Molded Insert
9	2	667625	Nut	20	1	667609	Restrictor Fitting ●
10	2	667624	Retainer				

◆ See Cylinder page for parts breakdown.

● See Restrictor Fitting page for parts breakdown.

# Cylinder Assembly



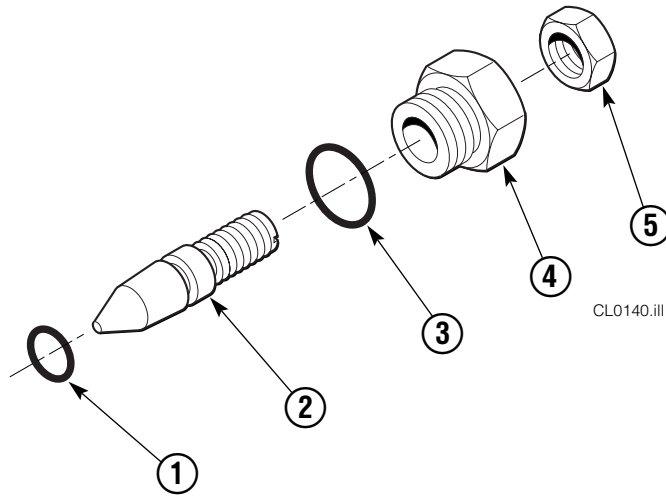
REF	QTY	PART NO.	DESCRIPTION
		6142672	Cylinder Assembly
1	2	6510	■ Cotter Pin
2	2	667624	■ Nut Retainer
3	2	667625	■ Nut
4	1	3006096	Shell
5	1	602580	Fitting
6	1	559702	Piston
7	1	2716	◆ O-Ring
8	1	662450	◆ Seal
9	1	2722	◆ O-Ring
10	1	615126	◆ Back-Up Ring
11	1	413799	Retainer
12	1	662448	◆ Seal
13	1	636853	◆ Wiper
14	1	667623	Nut
15	1	6110147	Rod
16	1	667626	Washer
17	1	—	Spacer
18	1	671047	◆ Seal Loader - Piston
19	1	671051	◆ Seal Loader - Retainer
		560729	Service Kit

■ Included in Nut Service Kit 668926.

◆ Included in Service Kit 560729.

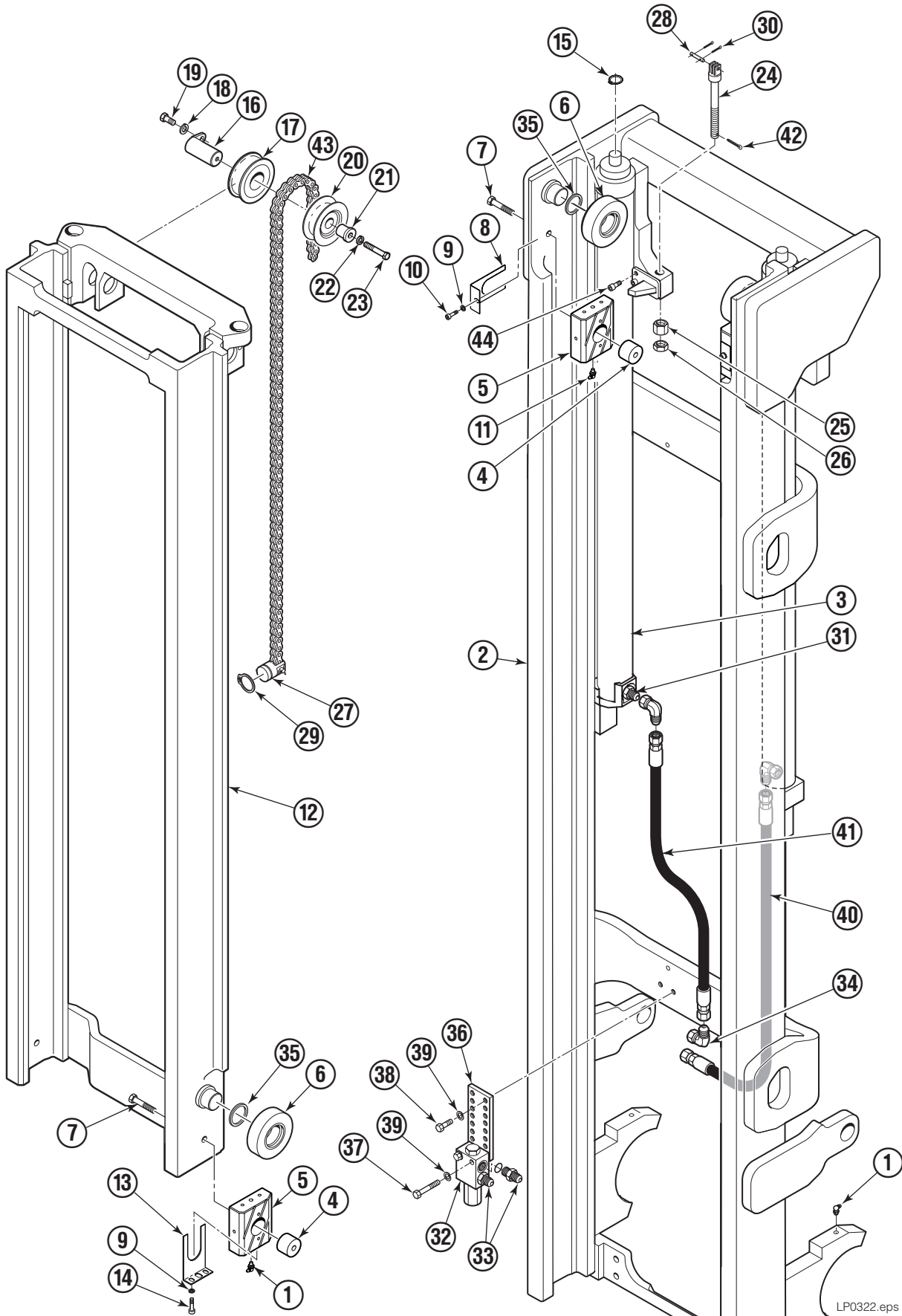
Reference: ST-0283, ST-0284.

# Restrictor Cartridge



REF	QTY	PART NO.	DESCRIPTION
		667609	Restrictor Cartridge
1	1	2701	O-Ring
2	1	667611	Plunger
3	1	2841	O-Ring
4	1	667610	Plug - Special
5	1	5716	Jam Nut

# Mast Assembly



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# Mast Assembly

30A							
REF	QTY	PART NO.	DESCRIPTION	REF	QTY	PART NO.	DESCRIPTION
		6143455	Mast Assembly	23	2	768557	Capscrew, M12 x 50
	1	6143082	Basic Mast Assembly ▼	24	2	201435	Chain Anchor
1	6	7418	Grease Fitting	25	2	200006	Nut, 5/8
2	1	6143083	Mast Weldment	26	2	200007	Jam Nut, 5/8
3	2	580705	Cylinder ◆	27	2	680243	Chain Anchor
4	4	6113008	Stub Shaft	28	4	684305	Pin
5	4	6142048	Thrust Bearing	29	2	3135	Snap Ring
6	4	662145	Roller	30	8	6508	Cotter Pin
7	4	768555	Capscrew, M12 x 40	31	2	611289	Fitting, 8-10
8	2	6142108	Shim	32	1	684810	Lowering Control Valve ●
9	6	206315	Lockwasher, M8	33	2	601377	Fitting, 8-8
10	2	787375	Capscrew, M8 x 20	34	3	605761	Fitting, 8-8
11	2	201541	Grease Fitting	35	■	631881	Shim (.030)
12	1	6143085	Inner Rail Weldment	36	1	683831	Bar
13	2	6142091	Shim	37	2	683823	Capscrew, M10 x 50
14	4	768796	Capscrew, M8 x 35	38	2	684649	Capscrew, M10 x 25
15	2	688935	Snap Ring	39	4	681238	Lockwasher, M10
16	2	683802	Pin	40	1	6055128	Hose, 41.00 in.
17	2	660051	Sheave	41	1	212651	Hose, 30.00 in.
18	2	787383	Washer, M10	42	2	6518	Cotter Pin
19	2	683820	Capscrew, M10 x 16	43	2	678770	Chain
20	2	209623	Sheave	44	4	219596	Capscrew, M8 x 16
21	2	684657	Shaft		2	688623	Internal Hose Reeving Group ▲
22	2	683822	Lockwasher, M12		1	6116740	Upper Carriage Assembly □

▼ Includes items 1 – 41.

◆ See Cylinder page for parts breakdown.

● See Valve page for parts breakdown.

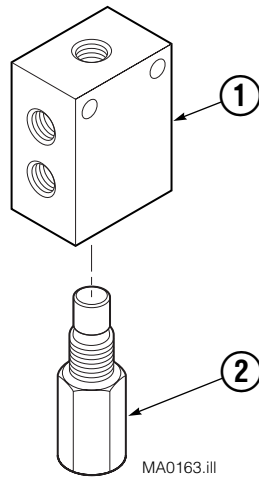
■ Quantity as required.

▲ See Internal Hose Reeving page for parts breakdown.

□ See Upper Carriage Assembly page for parts breakdown.

# Lowering Control Valve

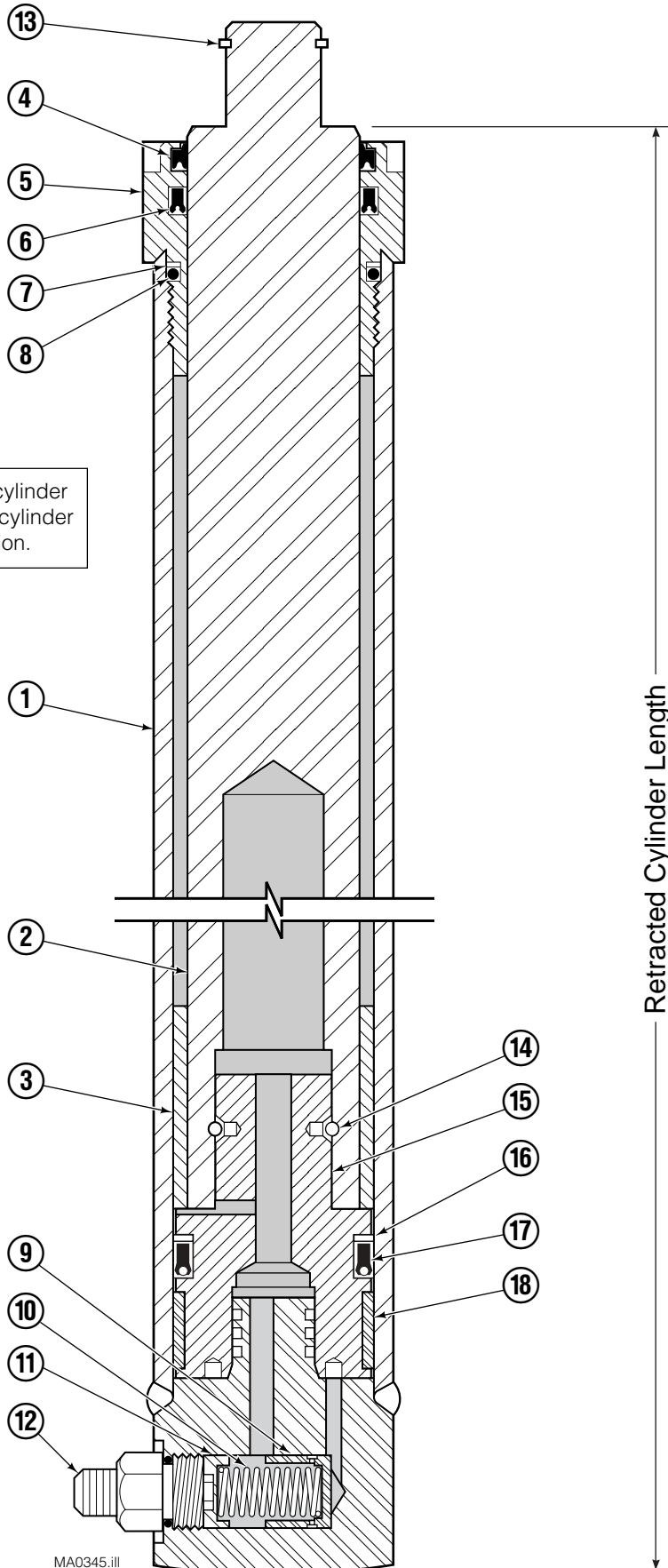
## 2600 PSI System Pressure




REF	QTY	PART NO.	DESCRIPTION
		684810	Lowering Control Valve
1	1	684152	Valve Body
2	1	684210	Valve Cartridge ▲

▲ This part must not be substituted. Check part number on side of cartridge when replacing.

# Main Lift Cylinder-2600 PSI



 **WARNING:** Replacing the cylinder with a different part number cylinder may cause mast to malfunction.

MA0345.iii

# Main Lift Cylinder-2600 PSI

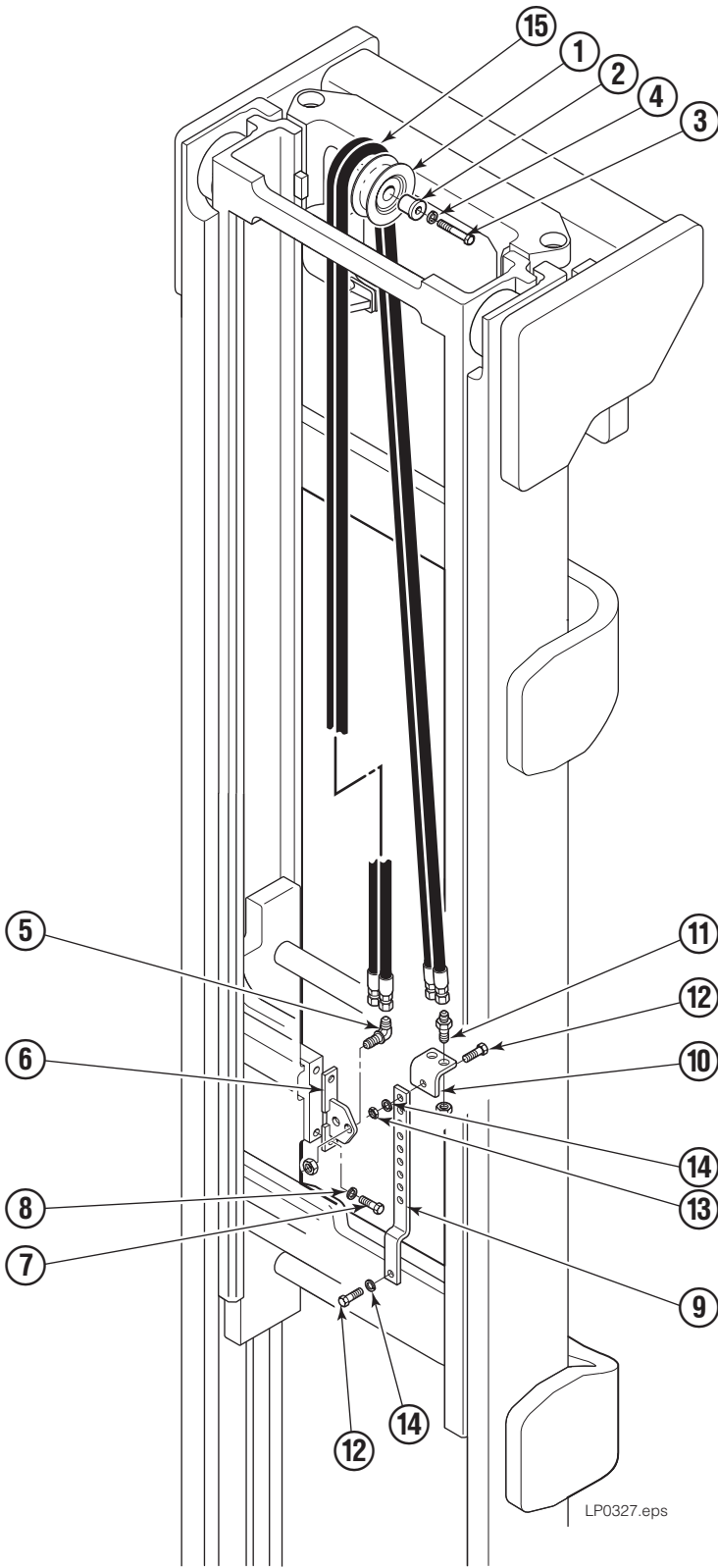
REF	QTY	PART NO.	DESCRIPTION
	1	580705	Cylinder Assembly
1	1	5432-1237	Shell
2	1	5444-1205	Plunger
3	—	—	Spacer
4	1	562663	▲ Plunger Wiper
5	1	562630	Retainer
6	1	562569	▲ Plunger Seal
7	1	559859	▲ Back-Up Ring
8	1	559858	▲ O-Ring
9	1	563782	Piston-Lowering Fuse
10	1	562847	Spring
11	1	562848	Spring Guide
12	1	611289	Fitting, 8-10 ■
13	1	3129	▲ Snap Ring
14	1	559906	▲ Pull-In Wire
15	1	560462	Piston
16	1	560066	▲ Back-Up Ring
17	1	563631	▲ Piston Seal
18	1	559864	▲ Wear Ring

▲ Included in Service Kit 562591.

■ Not included in Cylinder Assembly.

Reference: S-6079, S-6080.

# Internal Hose Reeving

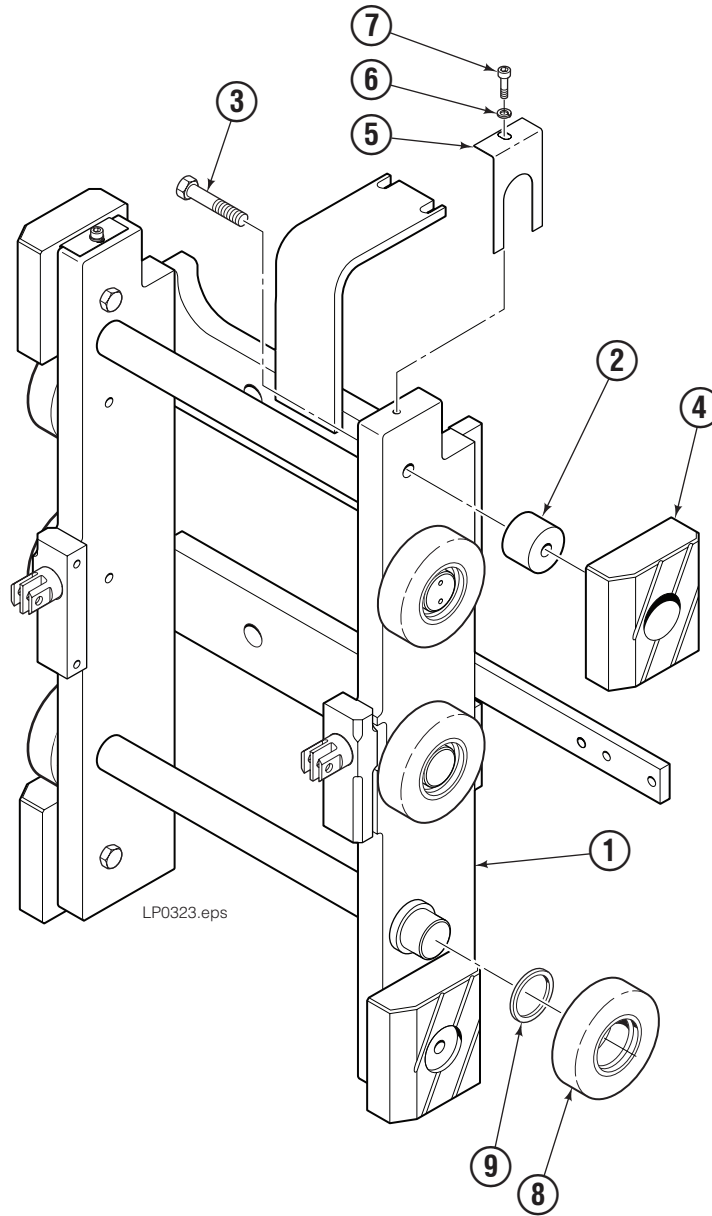


# Internal Hose Reeving

<b>30B</b>			
<b>REF</b>	<b>QTY</b>	<b>PART NO.</b>	<b>DESCRIPTION</b>
		688623	Internal Hose Reeving
1	1	209623	Sheave
2	1	684657	Shaft
3	1	684650	Capscrew, M12 x 55
4	1	683822	Lockwasher, M12
5	2	2453	Fitting, 8-8
6	1	206898	Bracket
7	2	787372	Capscrew, M8 x 20
8	2	206315	Lockwasher, M8
9	1	684658	Bracket
10	1	683919	Bracket
11	2	2375	Fitting, 8-8
12	2	684649	Capscrew, M10 x 25
13	1	763023	Nut, M10
14	2	683826	Lockwasher, M10
15	2	3550-3005	Hose

Reference: Common Parts Group 684819, S-3548.

# Upper Carriage Assembly



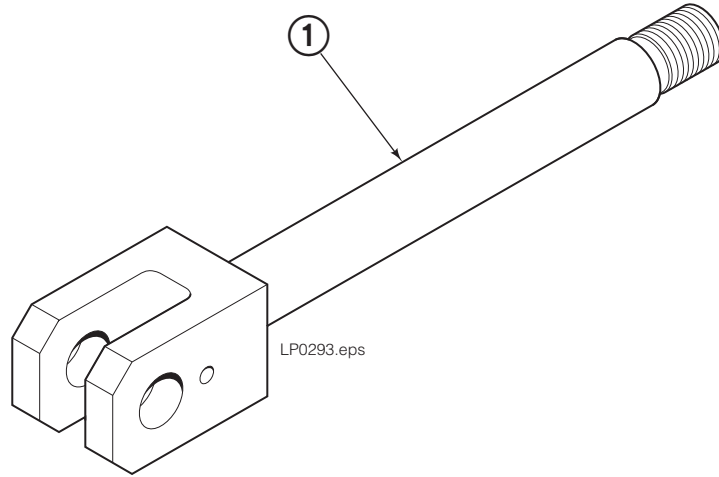
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REF	QTY	PART NO.	DESCRIPTION
		6116740	Carriage Assembly ♦
1	1	6116741	Carriage
2	4	6113008	Stub Shaft
3	4	202407	Capscrew, M12 x 60
4	4	6113010	Bearing
5	■	6113016	Shim
6	4	206315	Lockwasher, M8
7	4	768795	Capscrew, M8 x 30
8	6	662145	Roller Assembly
9	18	631881	Shim, Roller

♦ Includes items 1 – 7 only.

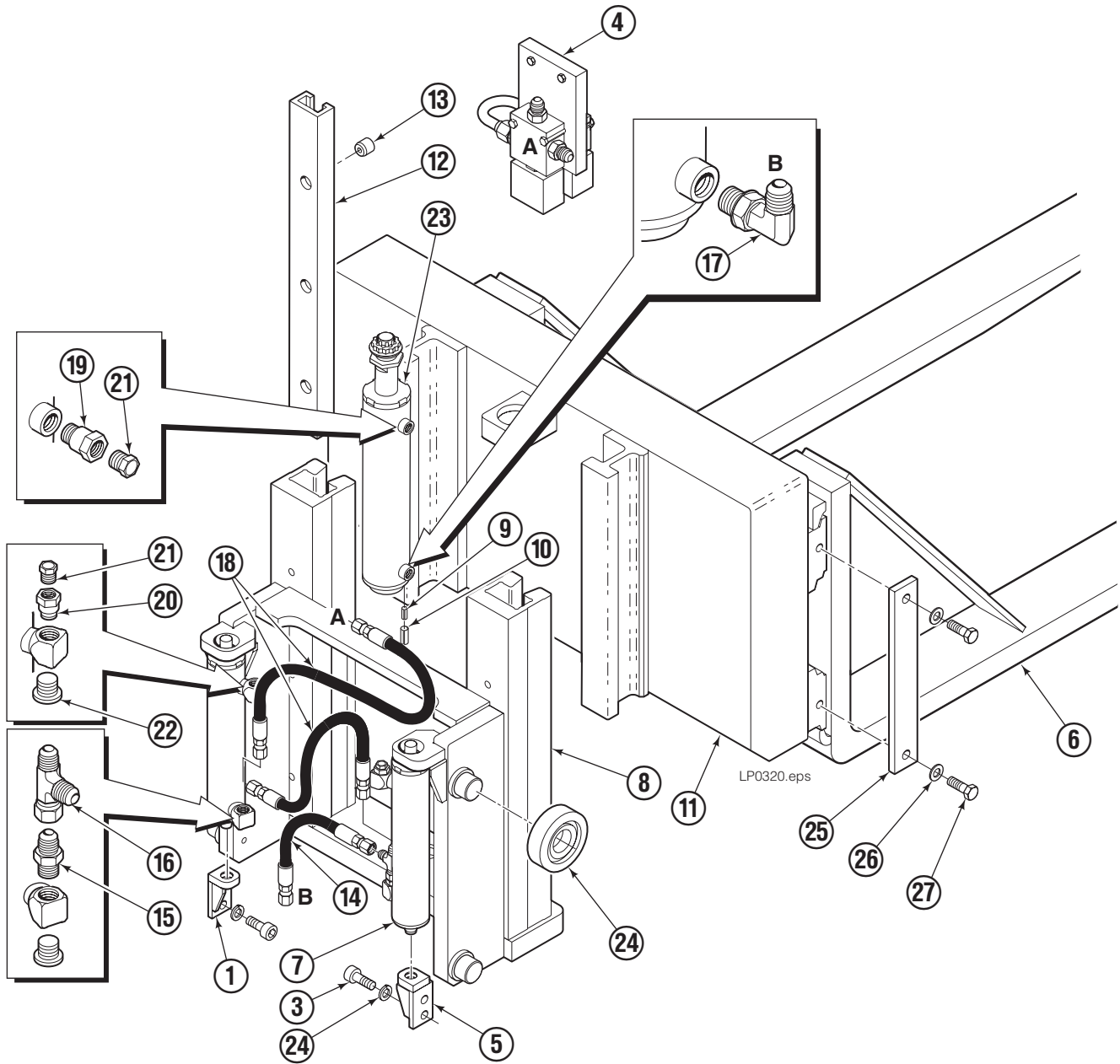
■ Quantity as required.

# Tilt Lock Weldment



REF	QTY	PART NO.	DESCRIPTION
1	2	6136189	Tilt Lock Weldment

# Fork Carriage Group



# Fork Carriage Group

30B			
REF	QTY	PART NO.	DESCRIPTION
		6143452	Fork Carriage Group
	1	6142741	Fork Carriage Assembly ▲
1	1	6126146	Anchor Weldment – LH
2	1	6126148	Anchor Weldment – RH
3	4	768850	Capscrew, M20 x 40
4	1	6143453	Solenoid Adapter Assembly ●
5	4	681346	Lockwasher, M20
6	2	6138340	Fork Weldment
7	2	395364	Cylinder ◆
8	1	6110858	Carriage Weldment
9	1	7961	Roll Pin
10	1	7882	Roll Pin
11	1	6110866	Carriage Weldment
12	2	21136-626	Slide Bearing
13	6	6011889	Retainer
14	1	631448	Hose, 23 in.
15	2	601377	Fitting, 6-6
16	2	611330	Fitting, 6-6
17	1	651303	Fitting, 6-6
18	2	644538	Hose, 17 in.
19	1	6111481	Adaptor
20	2	6111478	Adaptor
21	3	6106046	Breather Vent
22	4	602580	Plug
23	1	6110873	Cylinder ◆
24	4	662145	Roller Assembly
25	2	6142651	Fork Stop
26	4	684586	Washer, M16
27	4	766154	Capscrew, M16 x 40
	1	6014882	Control Switch Kit ■

▲ Includes items 6 – 27.

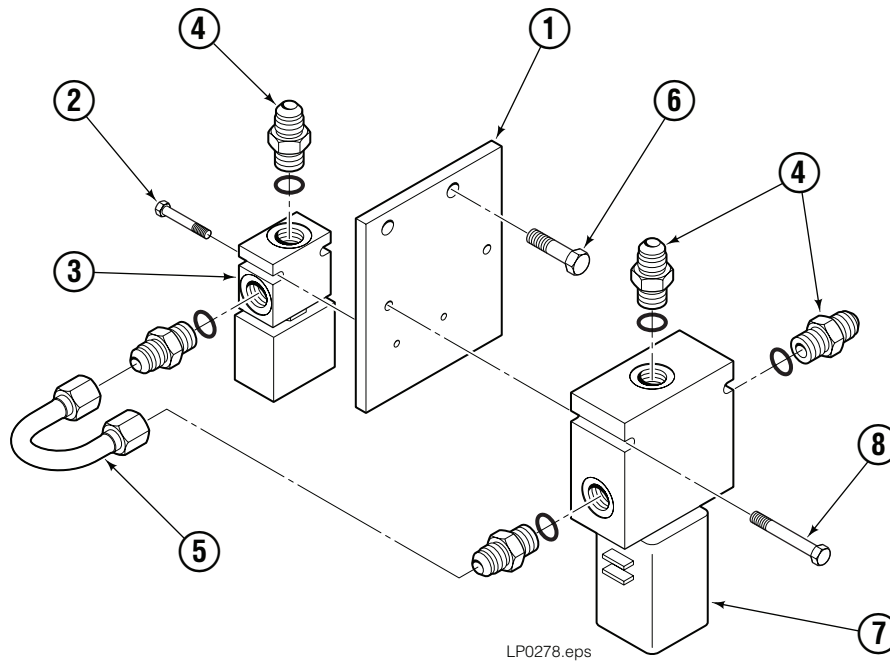
● See Solenoid Adapter Assembly page for parts breakdown.

◆ See Cylinder page(s) for parts breakdown.

■ See Control Switch Kit page for parts breakdown.

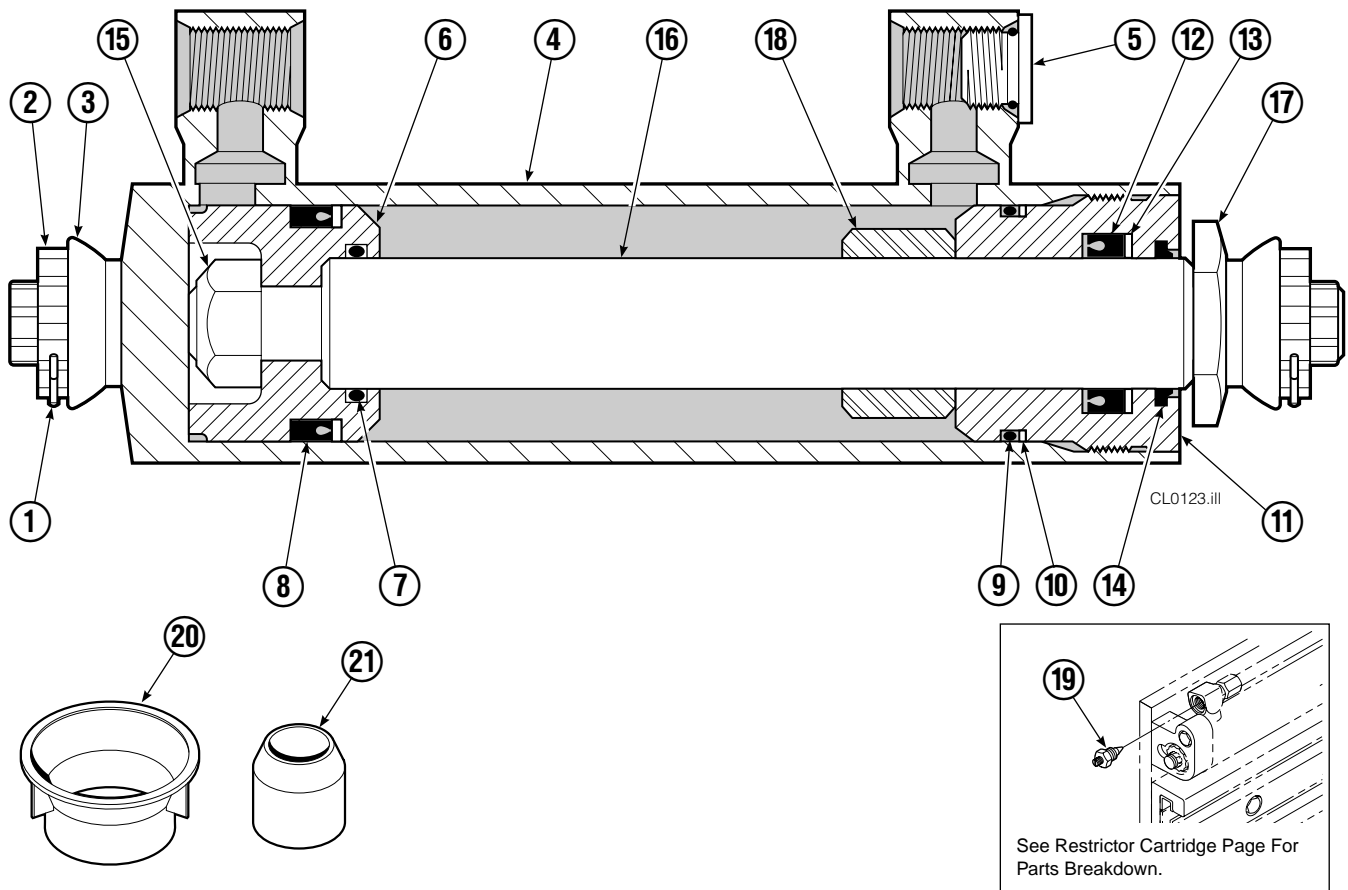
Reference: SK-12493.

# Solenoid Adapter Assembly



REF	QTY	PART NO.	DESCRIPTION
		6143453	Solenoid Adapter Assembly
1	1	6137567	Valve Adapter Plate
2	2	795396	Capscrew, M6 x 40
3	1	6109966	Solenoid Valve
4	5	601377	Fitting, 8-8
5	1	6104465	Tube
6	2	787374	Capscrew, M10 X 40
7	1	6143454	Solenoid Valve
8	2	768529	Capscrew, M8 x 60

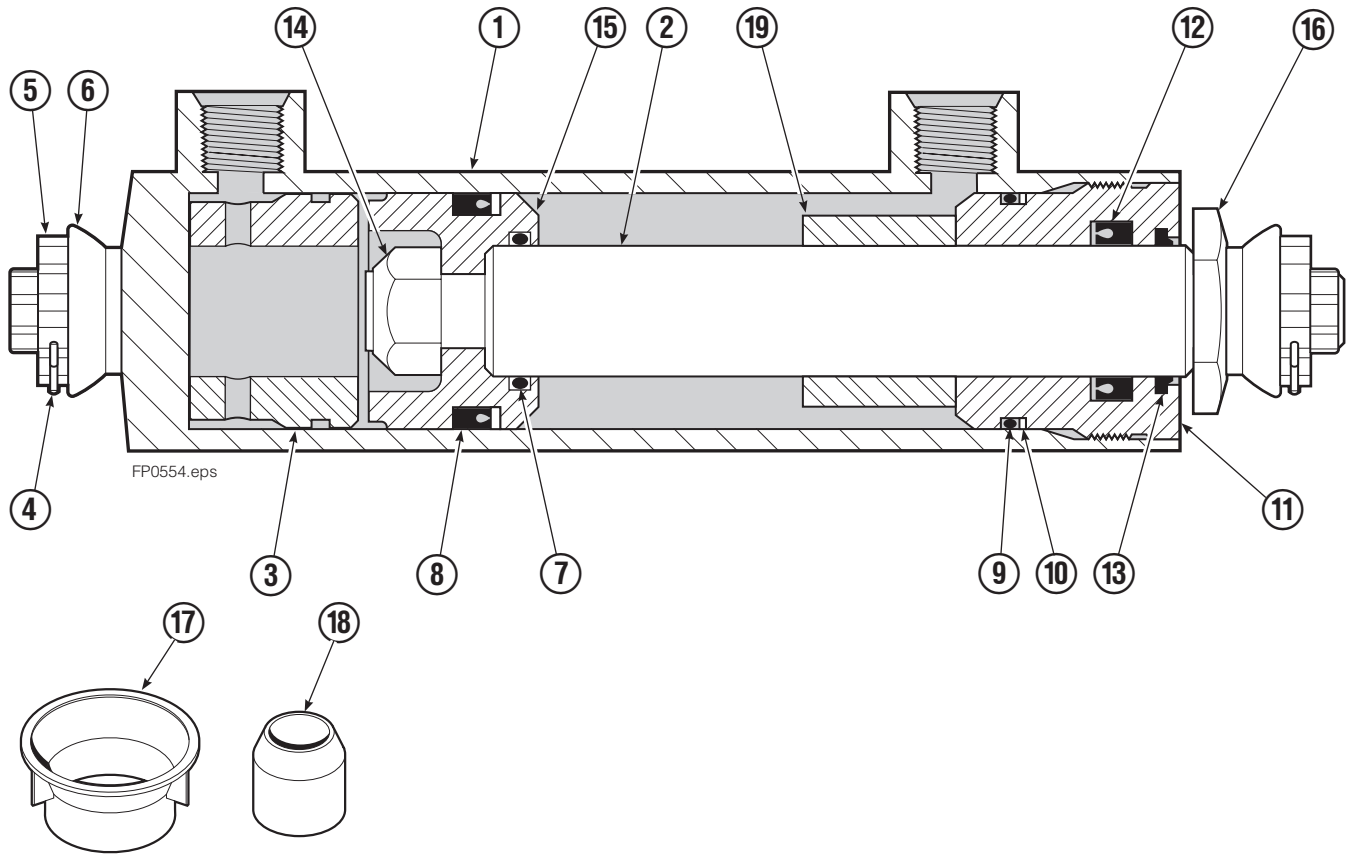
# Cylinder



35D			
REF	QTY	PART NO.	DESCRIPTION
		395364	Cylinder Assembly
1	2	6510	■ Cotter Pin
2	2	667624	■ Nut Retainer
3	2	667625	■ Nut
4	1	395365	Shell
5	1	602580	Fitting
6	1	558200	Piston
7	1	2716	▲ O-Ring
8	1	662452	▲ Seal
9	1	2785	▲ O-Ring
10	1	615128	▲ Back-Up Ring
11	1	563906	Retainer
12	1	662448	▲ Seal
13	1	638243	▲ Nylon Ring
14	1	636853	▲ Wiper
15	1	667623	Nut
16	1	395366	Rod
17	1	667626	Washer
18	1	—	Spacer
19	1	667609	Restrictor Cartridge ●
20	1	671047	▲ Seal Loader, Piston
21	1	671051	▲ Seal Loader, Retainer
		668021	Service Kit

- ▲ Included in Service Kit 668021.
  - Included in Nut Service Kit 668926.
  - Not included in Cylinder Assembly.
- Reference: S-7605, S-7658.

# Cylinder Assembly



REF	QTY	PART NO.	DESCRIPTION
		6110873	Cylinder Assembly
1	1	6110876	Shell
2	1	6110879	Rod
3	1	—	Spacer
4	2	6511	■ Cotter Pin
5	2	667667	■ Nut Retainer
6	2	667668	■ Nut
7	1	2722	▲ O-Ring
8	1	662457	▲ Seal
9	1	2791	▲ O-Ring
10	1	615134	▲ Back-Up Ring
11	1	667675	Retainer
12	1	662451	▲ Seal
13	1	564930	▲ Wiper
14	1	561012	Nut
15	1	558402	Piston
16	1	667676	Washer
17	1	671049	▲ Seal Loader, Piston
18	1	671052	▲ Seal Loader, Retainer
19	1	—	Spacer
		667723	Service Kit

■ Included in Nut Service Kit 668925.

▲ Included in Service Kit 667723.

Reference: S-5564, S-5565.



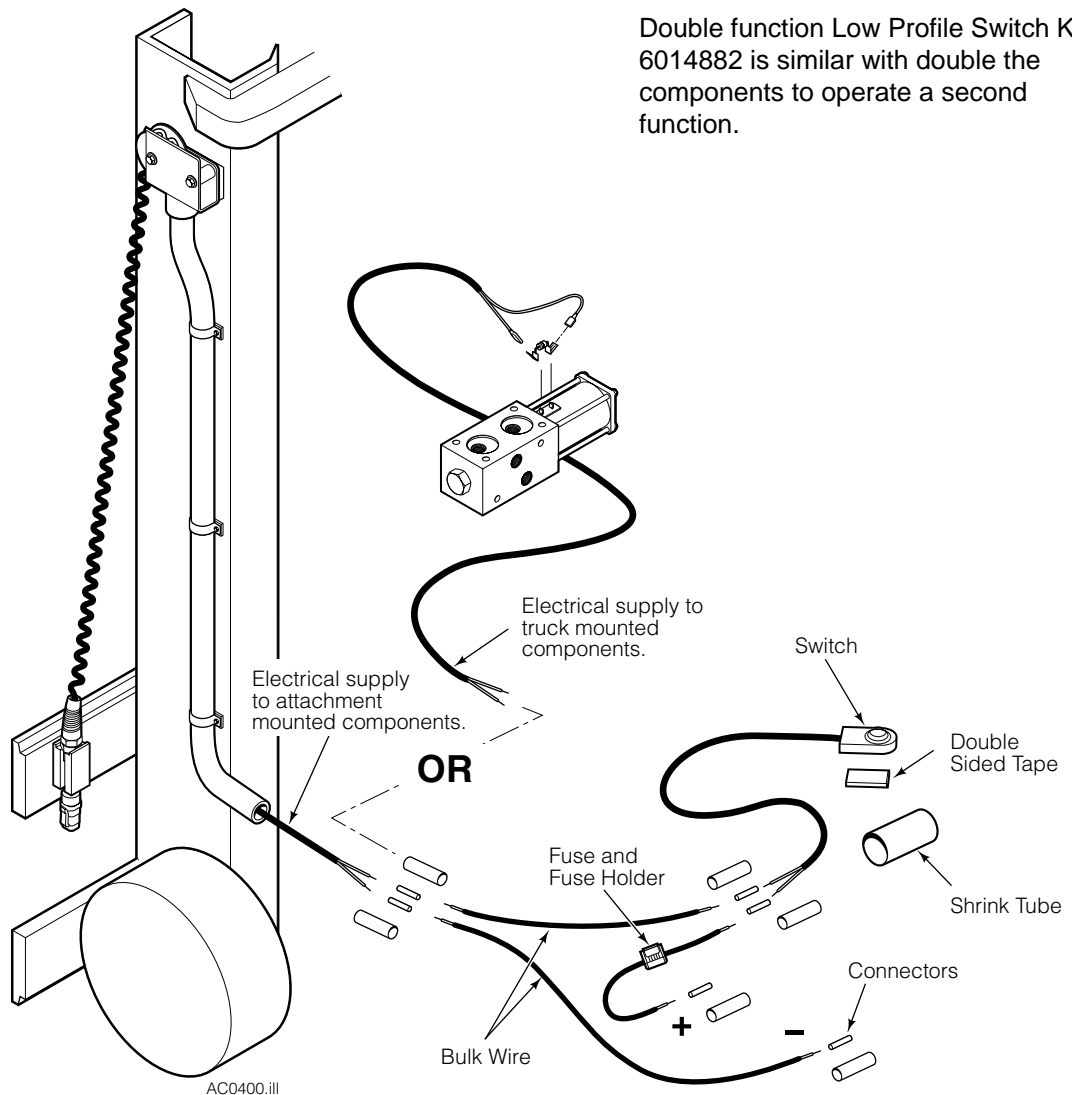
# Installation Instructions

## Low Profile Switch Kits 6014880 – Single Function 6014882 – Double Function

This manual provides installation instructions for Cascade Low Profile Switch Kits. The kits allow operator control of an attachment electrical function with an easy to install switch for the truck control handle and a fuse. The kit integrates easily with a Power Supply Kit to get electricity over the mast to an attachment or to a truck mounted component.

Single function Low Profile Switch Kit 6014880 shown below.

Double function Low Profile Switch Kit 6014882 is similar with double the components to operate a second function.



Part No. 6014984

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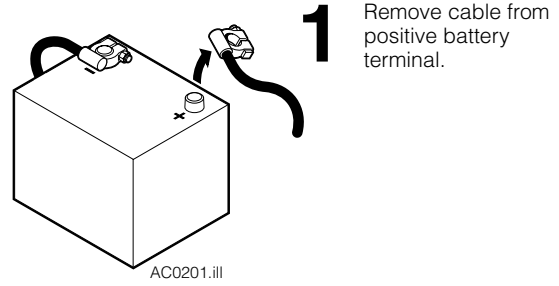
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**OR**

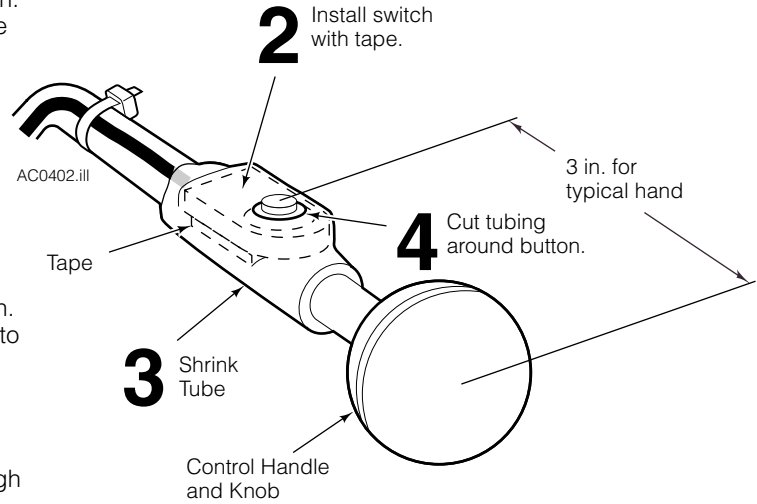
Write: Cascade Corporation, 2501 Sheridan Ave., Springfield, OH 45505

# Kit Installation

- 1 Disconnect the cable from the positive battery terminal.



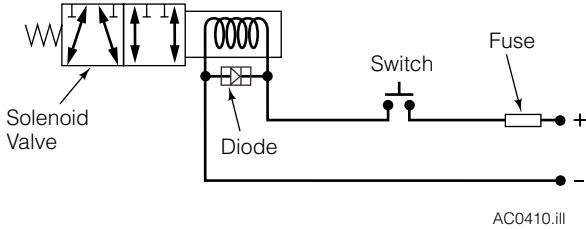
- 2 Install the switch to the control handle. Remove the control knob. Position the switch on the handle in a location for comfortable thumb or index finger operation. Place the double sided tape under the switch to secure the switch in place.



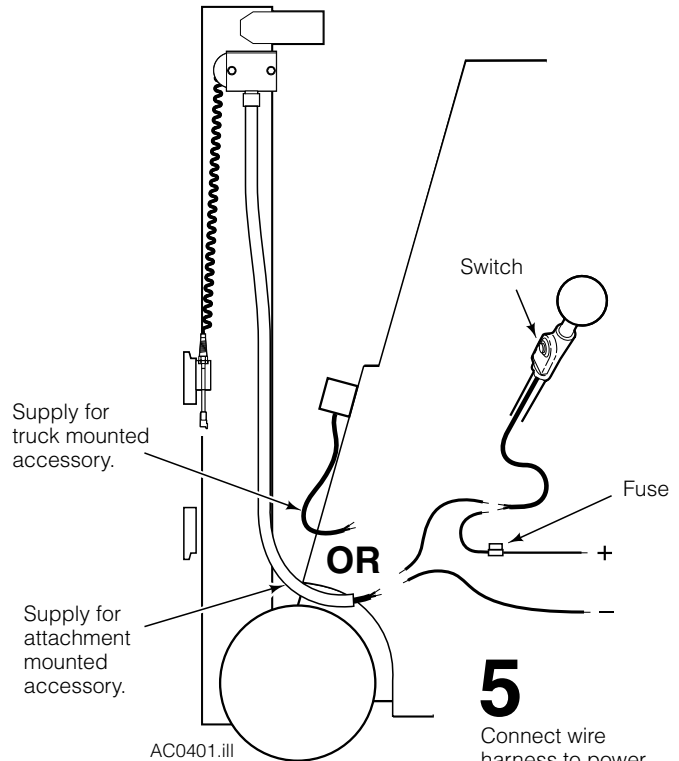
- 3 Place the heat shrink tubing over the handle and switch. Using a heat gun, heat the tubing to secure the switch to the handle. Reinstall the knob. Install cable ties as needed for the wire.

- 4 If it is difficult to feel or operate the switch button through the heat shrink tube, carefully cut a circle out of the tubing around the button.

- 5 Connect the switch wires to the truck or attachment wires and truck power as marked. Crimp the connectors and cover with the heat shrink tube. Watch for pinch and wear points. Install cable ties as needed.



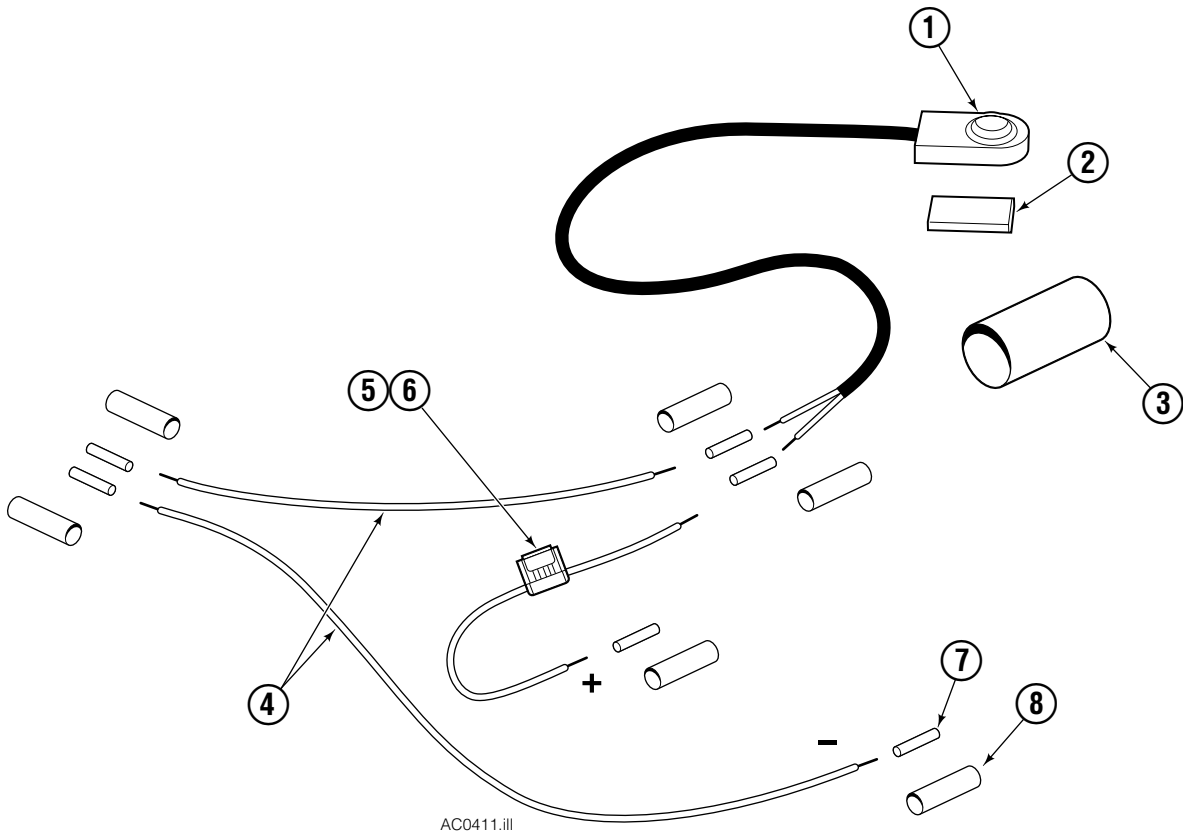
Wire connections to a solenoid valve shown.



- 6 Connect the battery cable to the positive battery terminal.

- 7 Test the electrical functions for proper operation. Raise and lower the mast to check the power supply coil cable for proper alignment, extension and retraction.

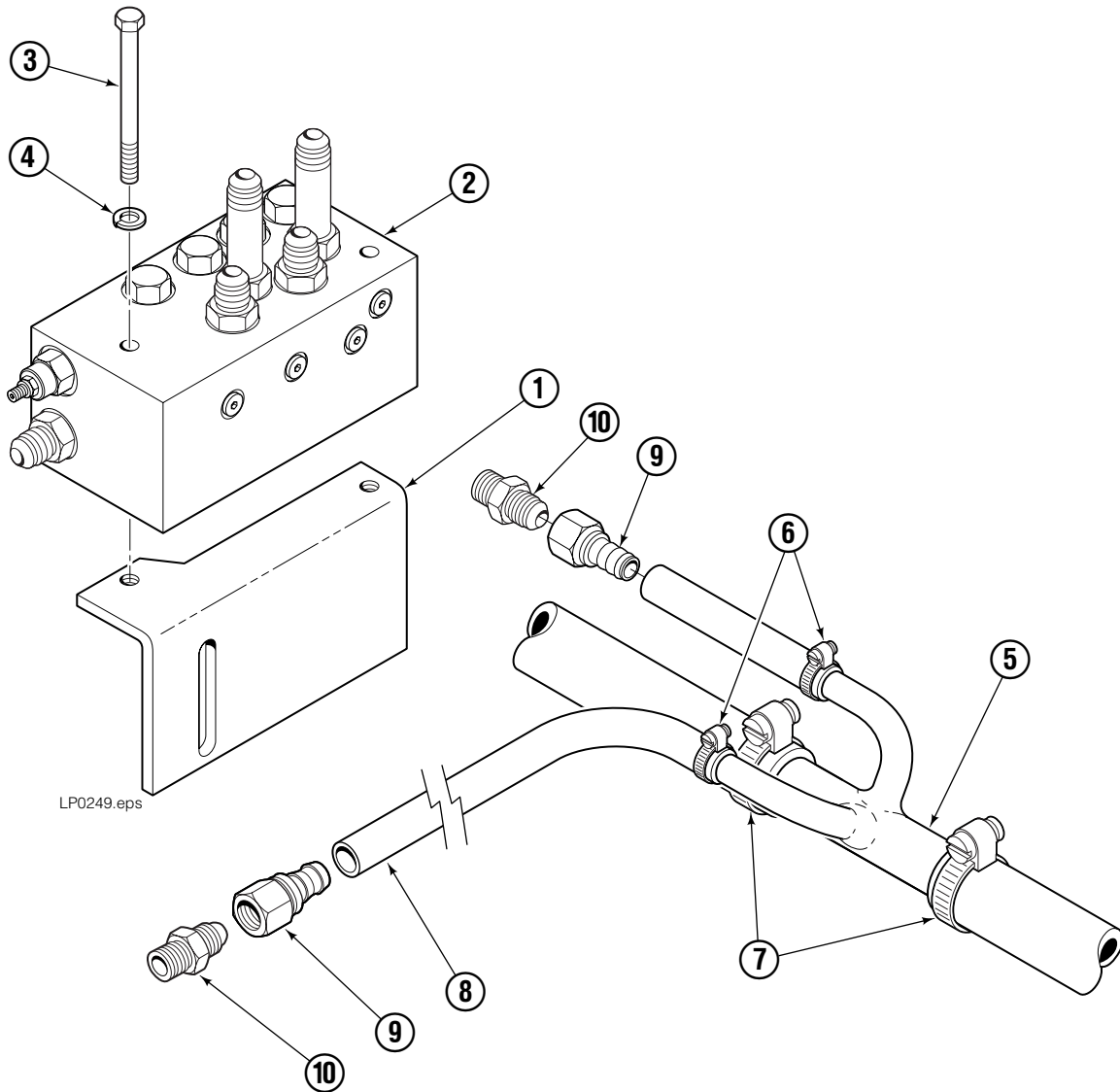
# Low Profile Switch Kits



Single Function			
REF	QTY	PART NO.	DESCRIPTION
		6014880	Operator Control Switch Kit
1	1	6009928	Switch
2	1	6014987	Double Sided Tape
3	1	6001641	Shrink Tube
4	1	6014990	Wire-18 AWG
5	1	219414	Fuse-7.5 Amp
6	1	219402	Fuse Holder
7	6	6014986	Connector
8	6	222014	Shrink Tube

Double Function			
REF	QTY	PART NO.	DESCRIPTION
		6014882	Operator Control Switch Kit
1	2	6009928	Switch
2	2	6014987	Double Sided Tape
3	2	6001641	Shrink Tube
4	2	6014990	Wire-18 AWG
5	2	219414	Fuse-7.5 Amp
6	2	219402	Fuse Holder
7	12	6014986	Connector
8	12	222014	Shrink Tube

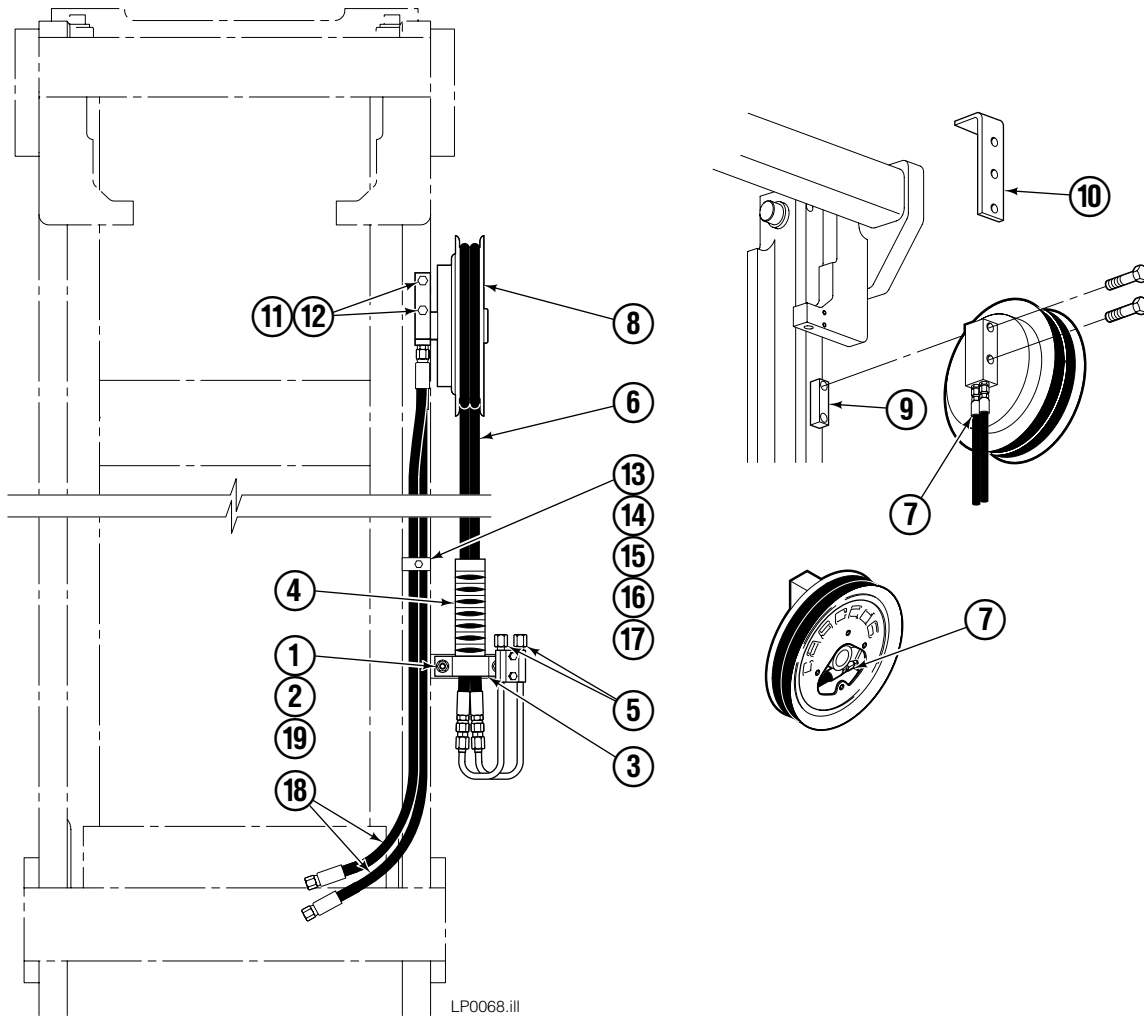
# Flow Control Valve Group



REF	QTY	PART NO.	DESCRIPTION
		6113151	Flow Control Valve Group
1	1	233036	Mounting Plate
2	1	6036088	Flow Control Valve
3	2	768535	Capscrew, M8 x 90
4	2	787398	Washer, M8
5	1	6049384	◆ Adapter Tee - 1.00 in.
6	2	211742	◆ Hose Clamp
7	2	211743	◆ Hose Clamp - 1.00 in.
8	1	211740	◆ Hose, 72.00 in.
9	2	211741	◆ Fitting, 8
10	2	601377	◆ Fltting, 8-8

◆ Included in Connector Kit 6049381.

# Hydraulic Supply Group



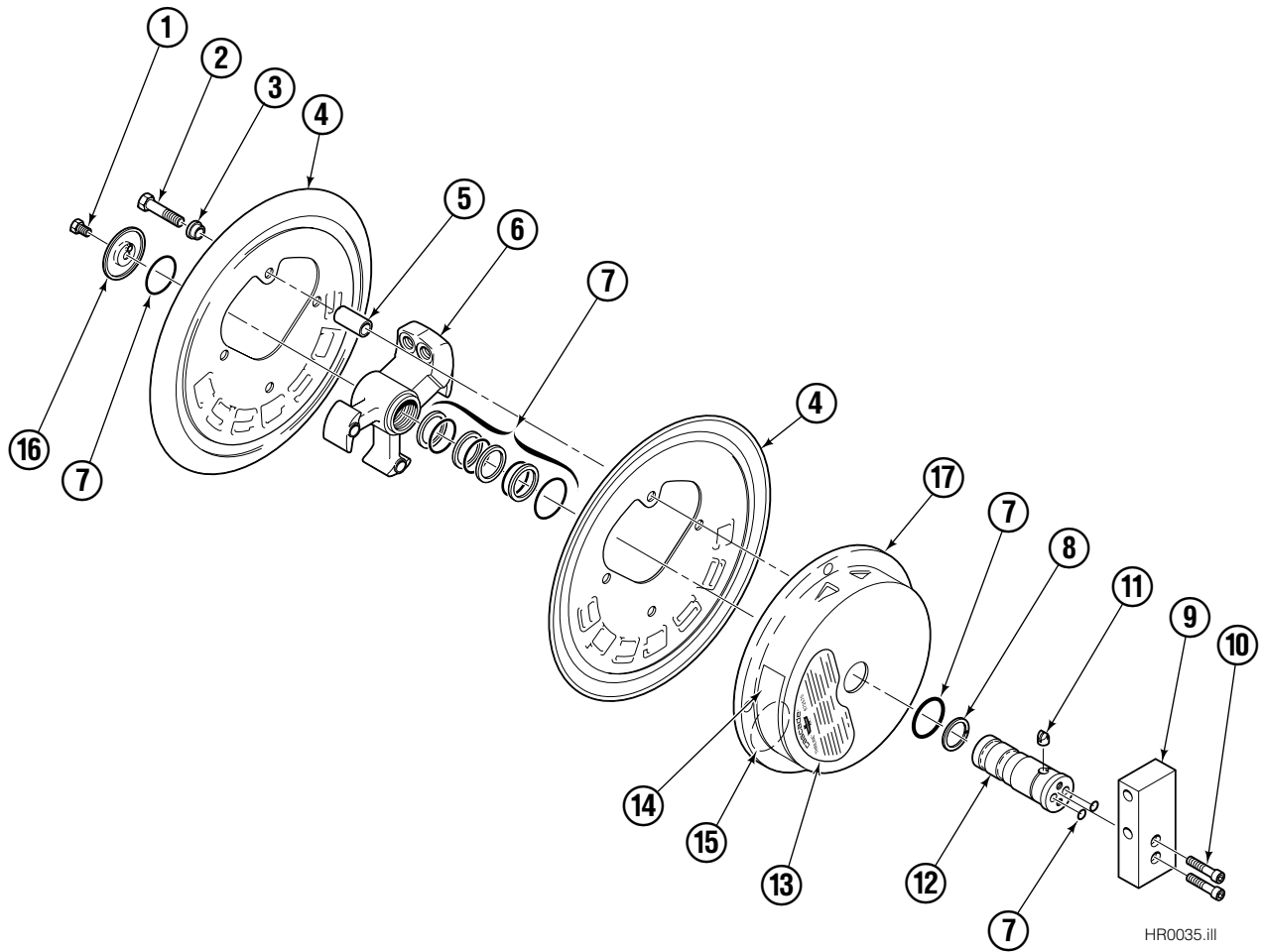
REF	QTY	PART NO.	DESCRIPTION
		673594	Hydraulic Supply Group
1	2	3599	Capscrew, 3/8 NC x .50 in.
2	1	673520	Carriage Block
3	1	673428	Clamp
4	1	673510	Hose Restraint Assembly
5	1	674288	Hose Up Connection Assembly ▲
6	1	673394	Twinline Hose Assembly
7	4	604511	Fitting, 6-6
8	1	672572	THINLINE Hose Reel, RH ●
9	1	673526	Mounting Block
10	1	685487	Mounting Bracket
11	2	622337	Capscrew, 1/2 NC x 3.00 in. GR5
12	2	6290	Lockwasher, 1/2
13	1	631162	Capscrew, 5/16 NC x 1.25 in. GR5
14	1	6287	Lockwasher, 5/16
15	1	744535	Clamp
16	1	744536	Spacer
17	1	744662	Bar
18	2	2178	Header Hose
19	2	674376	Washer

▲ See Hose Up Connection Assembly page for parts breakdown.

● See Hose Reel page for parts breakdown.

Reference: 673562 Hose Reel Group, 673590 Mounting,  
673496 Hose Terminal, 696567 Hose Reel Kit.

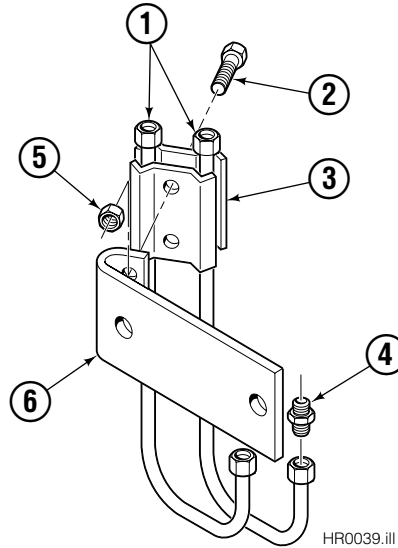
# Hose Reel Assembly



REF	QTY	PART NO.	DESCRIPTION
		672572	Hose Reel, No. 6-13, RH
1	1	672542	Capscrew, M8x10
2	4	768525	Capscrew, M8x40
3	4	672540	Sleeve
4	2	672567	Flange, 13 in. (330mm) dia.
5	1	672552	Hose Guide
6	1	672547	Hub
7	1	672563	Seal Service Kit
8	1	675610	Snap Ring
9	1	672551	Mounting Block
10	2	672550	Capscrew, M10
11	1	645982	Spring Retainer
12	1	672543	Shaft
13	1	673423	Nameplate, RH
14	1	655271	Patent Plate
15	1	673392	Warning Decal
16	1	672544	Cap
17	1	672578	Spring Assembly, RH

# Hydraulic Accessories

## Hose Terminal Up



REF	QTY	PART NO.	DESCRIPTION
		674288	Up Connection Kit
1	2	674371	Tube
2	2	3555	Capscrew, 1/4NCx1.00
3	2	674374	Clamp
4	2	2347	Fitting, 4-4
5	2	645986	Nut, 1/4
6	1	674373	Bracket

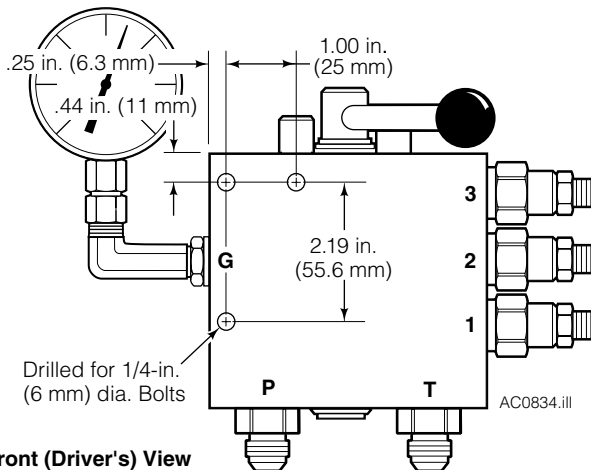


# Installation Instructions

## Four-Position Pressure Relief Valve 660412

This sheet provides installation instructions for the Four-Position Pressure Relief Valve 660412. The valve enables up to four (4) pressure selections, allowing the clamping force to be varied from load to load. Three pressure relief cartridges can be adjusted to relieve pressure between 100 and 3000 psi, a fourth position blocks flow to all relief cartridges enabling straight-through truck relief pressure. Maximum flow rate through the valve is 20 GPM.

- 1 Determine a convenient location on the truck cowl or safety cage upright, within safe reach and view of the driver (see illustration opposite). Use the mounting hole dimensions shown to mount the valve securely.



Front (Driver's) View

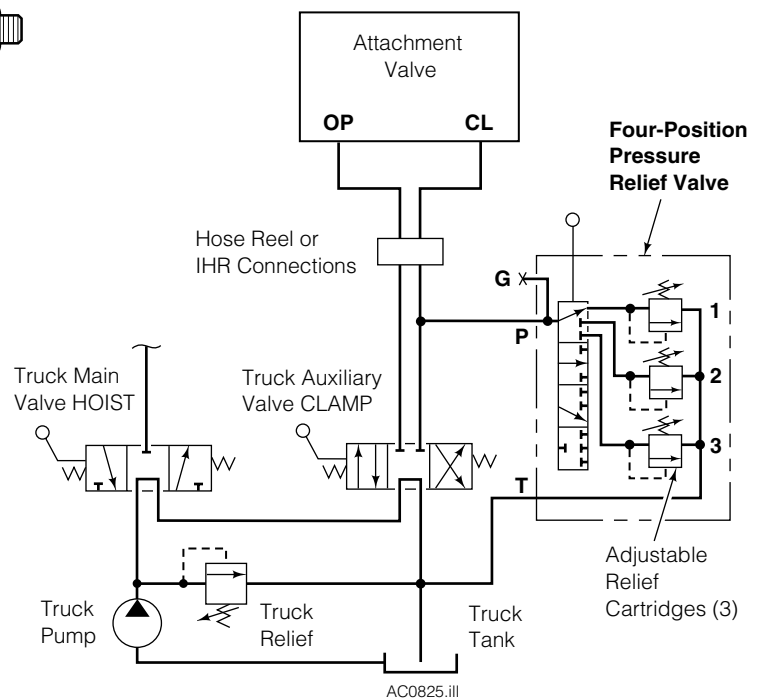
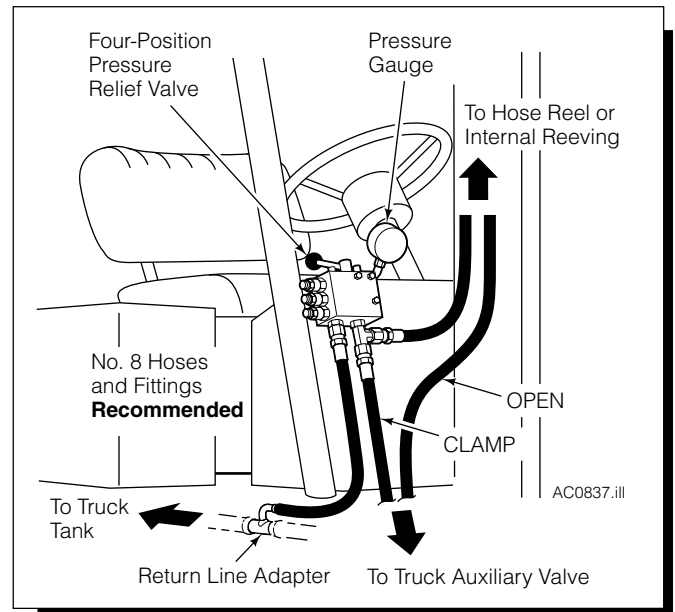


**WARNING:** Before removing hydraulic hoses, relieve pressure in the Attachment hydraulic system. Turn the truck off and move the auxiliary control lever several times in both directions.

- 2 Attach hoses and fittings between the Pressure Relief Valve, truck auxiliary valve, truck tank, and attachment valve using the diagram and hydraulic schematic. **No. 8 hoses and fittings with 13/32 in. (10 mm) minimum ID. recommended.**

**CAUTION:** A dedicated return-to-tank line is required from the relief valve 'TANK' port to the truck tank. Return Line Adapter Kits available:

**Part No. 214062** (.75 in. dia. line)  
**Part No. 211745** (1.0 in. dia. line)  
**Part No. 214066** (1.25 in. dia. line)



Part No. 664827-R4

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- 3** Four basic stop configurations are shown in the illustration opposite (relief valve mounted as shown in this sheet). Many different configurations are possible by rearranging the stops, or by sliding the lever within the valve spool. Position the stops for desired movement of the lever depending on your specific requirements.

**IMPORTANT:** Numbers stamped around base of lever correspond to relief valve cartridge selected. Positions 1 and 2 are duplicated and can be selected 180 degrees opposite from each other. Position 'X' blocks the flow to all relief valve cartridges so the valve has no effect. Truck relief pressure is then delivered to the attachment.

- 4** To preset the Valve relief cartridges, install a 5000 psi (345 bar) pressure gauge (Cascade Part No. 664158) in the Valve gauge port.

### Sample Settings\*

3-Position	4-Position
Pos. X – Not Available	Pos. X – 2300 (Truck Pressure)
Pos. 1 – 1400 psi	Pos. 1 – 1800 psi
Pos. 2 – 1600 psi	Pos. 2 – 1600 psi
Pos. 3 – 1800 psi	Pos. 3 – 1400 psi

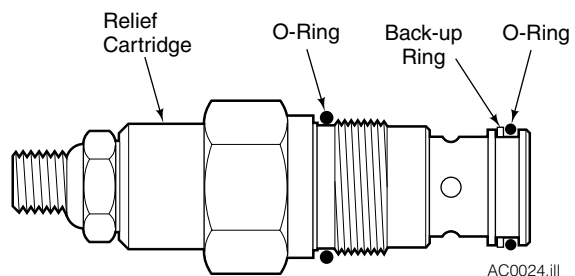
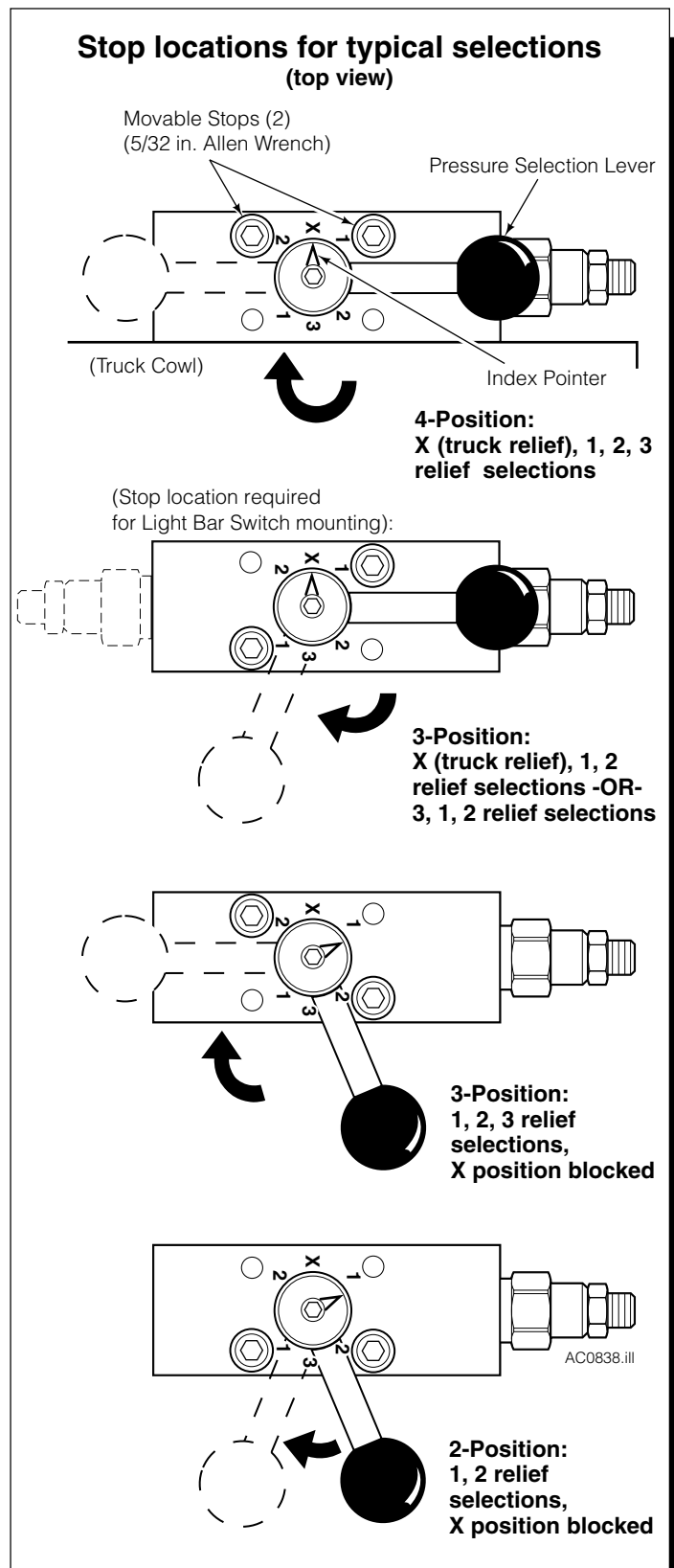
\* **IMPORTANT: Cartridges are not factory pre-set.** Pressures must be adjusted for your application. Four (4) positions not available when Light Bar Switch is mounted on valve.

- 5** Shift the valve lever index pointer to position '1' stamped on the valve body.
- 6** Loosen the jam nut on the No. 1 relief cartridge. Adjust the relief cartridge (3/16-in. Allen hex wrench) inward (CW) to raise pressure or outward (CCW) to lower the pressure.
- 7** Clamp up on the load and check the pressure. Readjust as required. Tighten the jam nut.
- 8** Shift the valve lever pointer to position '2' stamped on the valve body. Repeat step 6 and 7 for No. 2 relief cartridge.
- 9** Shift the valve lever pointer to position '3' stamped on the valve body. Repeat step 6 and 7 for No. 3 relief cartridge.
- 10** With the valve lever pointer at position 'X', all ports to the relief valve cartridges are blocked, and the valve has no effect. Pressure to the attachment is determined by truck system relief pressure. The 'X' position selection may be blocked by positioning the stops as shown.

**CAUTION:** Do not remove the rotating spool from the valve body. Permanent damage will occur due to the spring-loaded detents and will void the warranty. Replace valve as a complete assembly.

### Replacement Parts

Qty	Description	Part No.
3	Relief Cartridge with Seals	661676
3	Seal Service Kit	669597





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