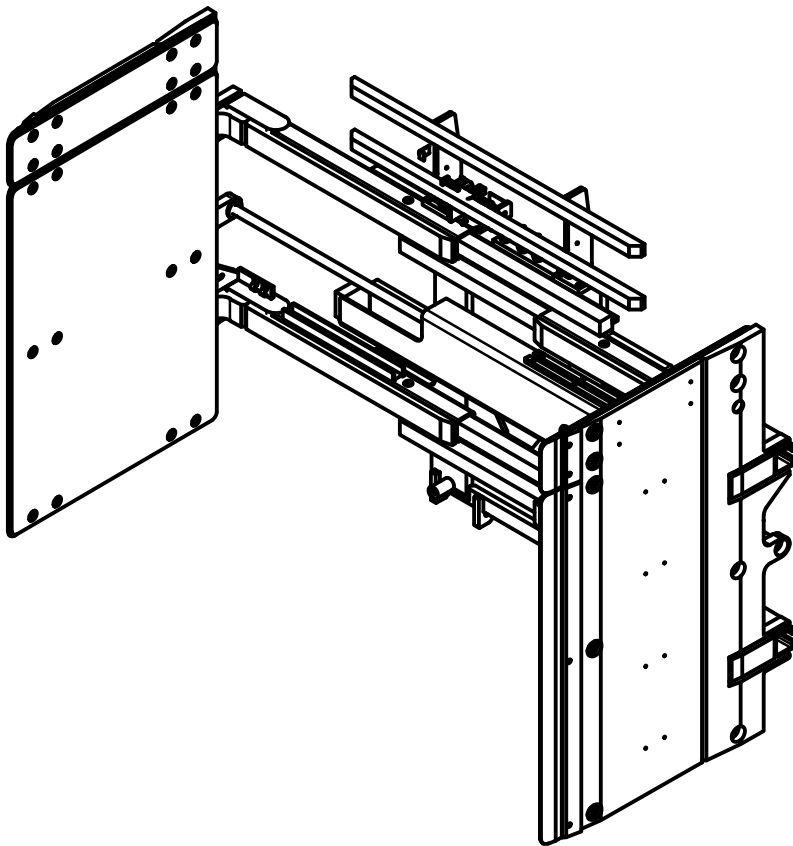




# SERVICE MANUAL / PARTS LIST

## APPLIANCE CLAMP SOFT TOUCH

MODEL #113321  
PATENT NO. 9,630,821  
PATENT NO. 10,597,272



## CONTENT:

### PAGE

1	Lift Truck Requirements General Installation Procedures General Inspection & Maintenance
2-4	Clamp Assembly
5	Arm Group Assembly
6-9	Floating Pad Assembly
10-12	Hydraulic Assembly
13	Cylinder Assembly
14	Clamp Adjustments
15	Control Valve
16	Clamp Force Control Valve
17	Arm Slide & Shim Replacement
18	Trouble Shooting Guide

### Specifications:

Mounting: Class II  
Side Shifting: External Side Shifting  
Capacity: 1800 lbs at 24"  
Pad Size: 60" High x 42" Long  
Range: 22.0" - 69.7"  
Frame: 38" Wide

R0 - 07/2017

425 Hazel St.  
Kelso WA 98626  
(800) 248-6079  
Fax (360) 578-9934

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# LIFT TRUCK REQUIREMENTS

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Capacity shown on the clamp's name plate is for the clamp only. The combined truck and clamp capacity is provided by the lift truck manufacturer.

**Recommended Truck Pressure:** 2300 to 2400 PSI (159 to 165 bar).

**Hydraulic fluid:** petroleum based hydraulic fluid only.

**Hydraulic supply group:** includes hoses and take-up - one for each function.

**Auxiliary valves:** 2 function (Side Shift & Clamp) = double auxiliary valve.

**Oil Volume Settings:**

Side Shift = 3 GPM

Clamp Open/Close = 7 GPM

**NOTE:** Three Position Force Selector must be disabled.

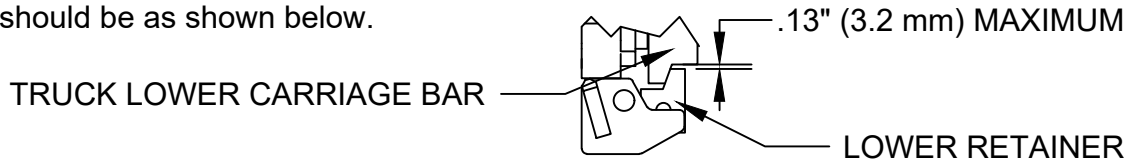
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## GENERAL INSTALLATION PROCEDURES

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1. Make sure that the attachment centering lug is correctly seated in truck carriage center notch.
2. Clearance between the lower retainers that hold the attachment to the truck lower carriage bar should be as shown below.



3. Connect hydraulic jumper hoses from the truck's supply group to the attachment's main manifold.
4. Standing clear of the clamp attachment, cycle the attachment in and out several times. Partially filled hydraulic lines may cause erratic movement.

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## GENERAL INSPECTION AND MAINTENANCE

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1. Check all hydraulic fittings, hoses, cylinders and valves for leakages - repair or replace as required.
2. Check bladder system pressure. If out of operating range adjust as required using the LORON hand pump (PN: 112909) and pure propylene glycol antifreeze mixed 1:1 with water. Check clamp force and adjust.  
Time Schedule: Check bladder pressure every day and clamp forces every 3 weeks  
Bladder System Pressure: 4 - 6 PSI
3. All bolts should be checked and tightened as required.
4. Check lower retainer clearance - see item 2 in the General Installation Procedures above.

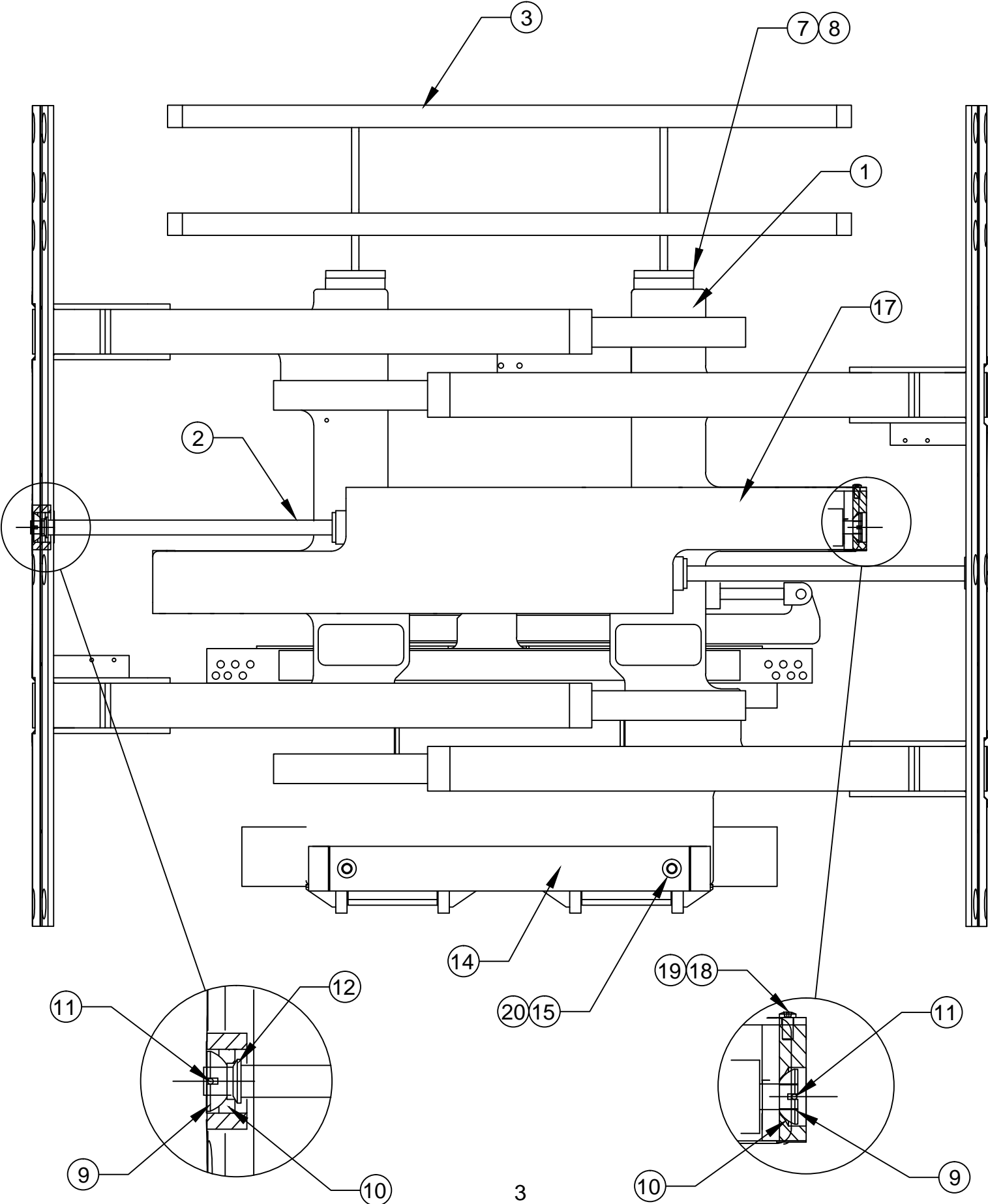
# CLAMP ASSEMBLY-1

Drawing reference 113261

#	QTY	PART #	DESCRIPTION	20	2	4E.10	Lock Washer
1	1	113505	Frame Weldment	21	2	11G.08136	Bolt
2	2	111714.5	Cylinder Assembly	22	2	17D.08	Nut
3	1	111439.6	Load Backrest	23	1	100106	Cylinder Assembly
4	4	111622.2	Flat Slide	24	1	113028	Hook Weldment
5	8	111621.2	Angle Slide	25	6	11G.1040	Bolt
6	12	109212.5	Shim	26	6	16E.10	Lock Washer
7	8	1C.0820	Bolt	27	2	108421	Slide II
8	8	4E.08	Lock Washer	28	1	113029	Cylinder Anchor Weldment
9	4	111631	Spherical Bearing	29	1	113262	Lower Slide
10	4	100029.301	Rod Centering Seal	30	1	113150.1	Shim
11	4	100574.86	Cotter Pin	31	2	25GN.0612	Bolt
12	2	111380	Cylinder Rod Washer	32	1	100095.05	Fitting
13	2	107870.1	Lower Retainer	33	1	100222.1	Restrictor Fitting
14	1	111423	Lower Load Backrest	34	2	100075.14	Grease Fittings
15	2	11G.1028	Bolt	35	1	108272	Brass Set Screw
16	12	111619	Slide Button	36	1	7D.06	Jam Nut
17	1	113507	Cylinder Guard	37	2	11G.0808	Bolt
18	4	25GN.0612	Bolt	38	2	16E.08	Lock Washer
19	4	109528	Nord-Lock Washer				

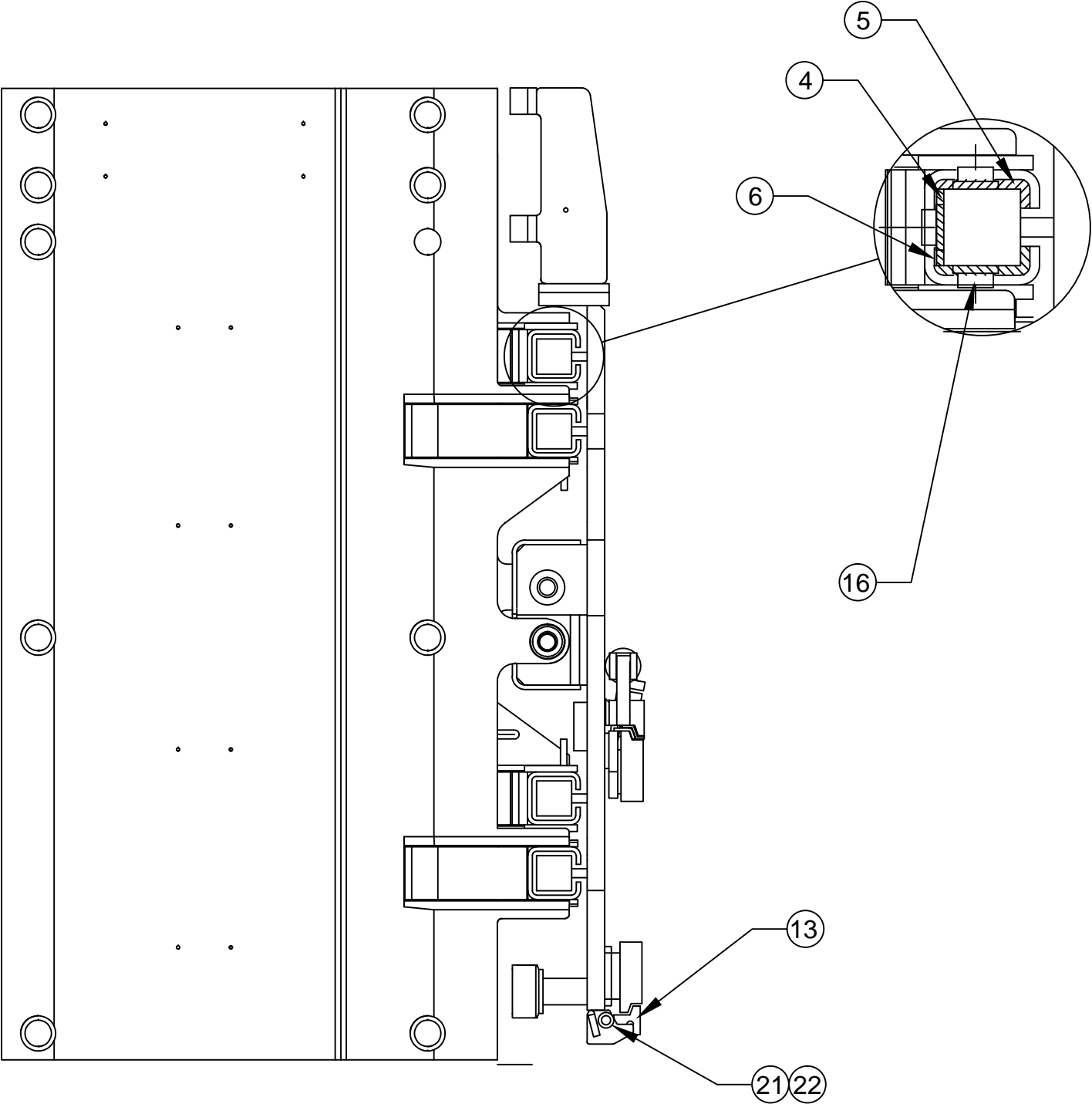
# CLAMP ASSEMBLY-2

Drawing reference 113261



# CLAMP ASSEMBLY-3

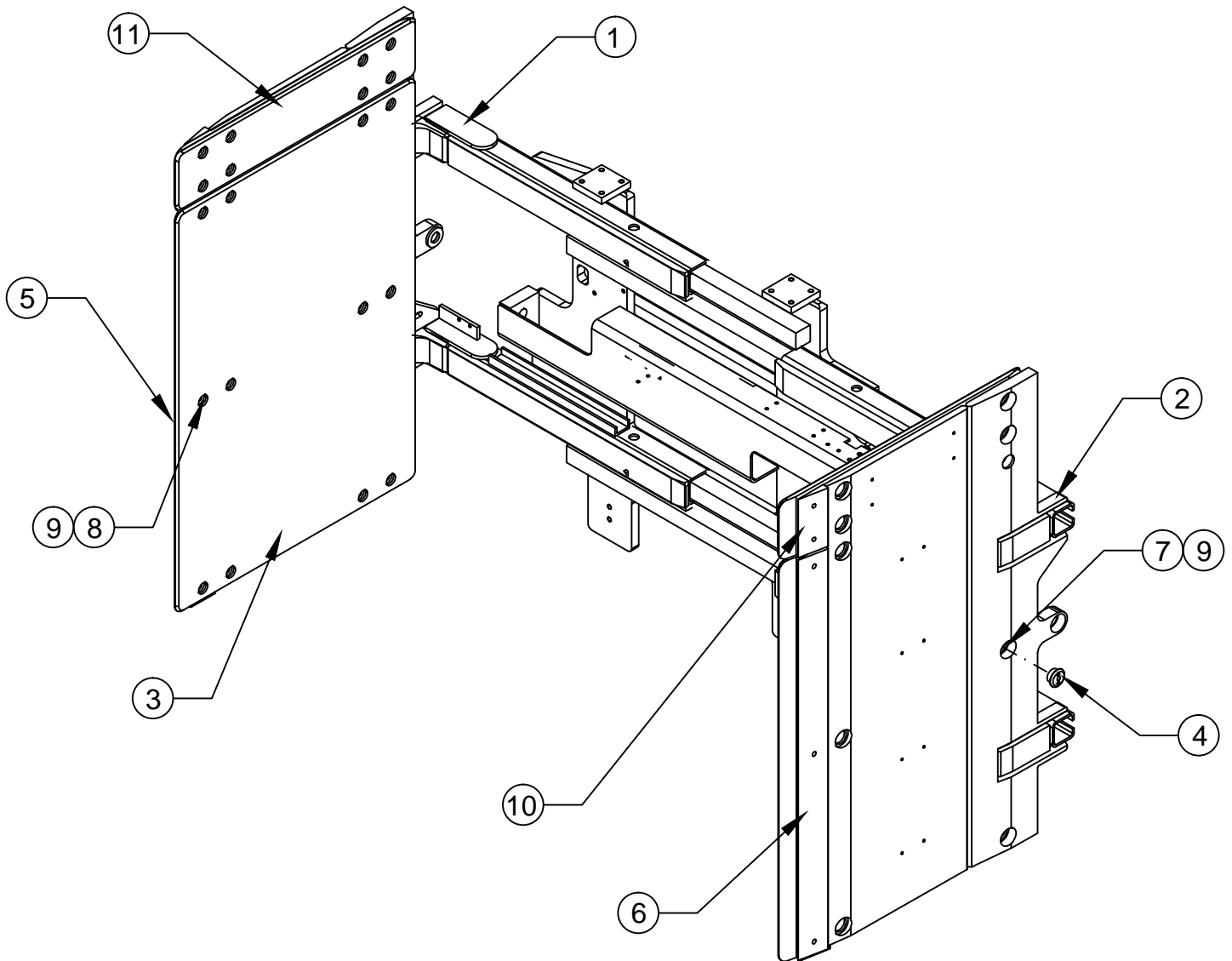
Drawing reference 113261



# ARM GROUP ASSEMBLY

Drawing reference 111164.5

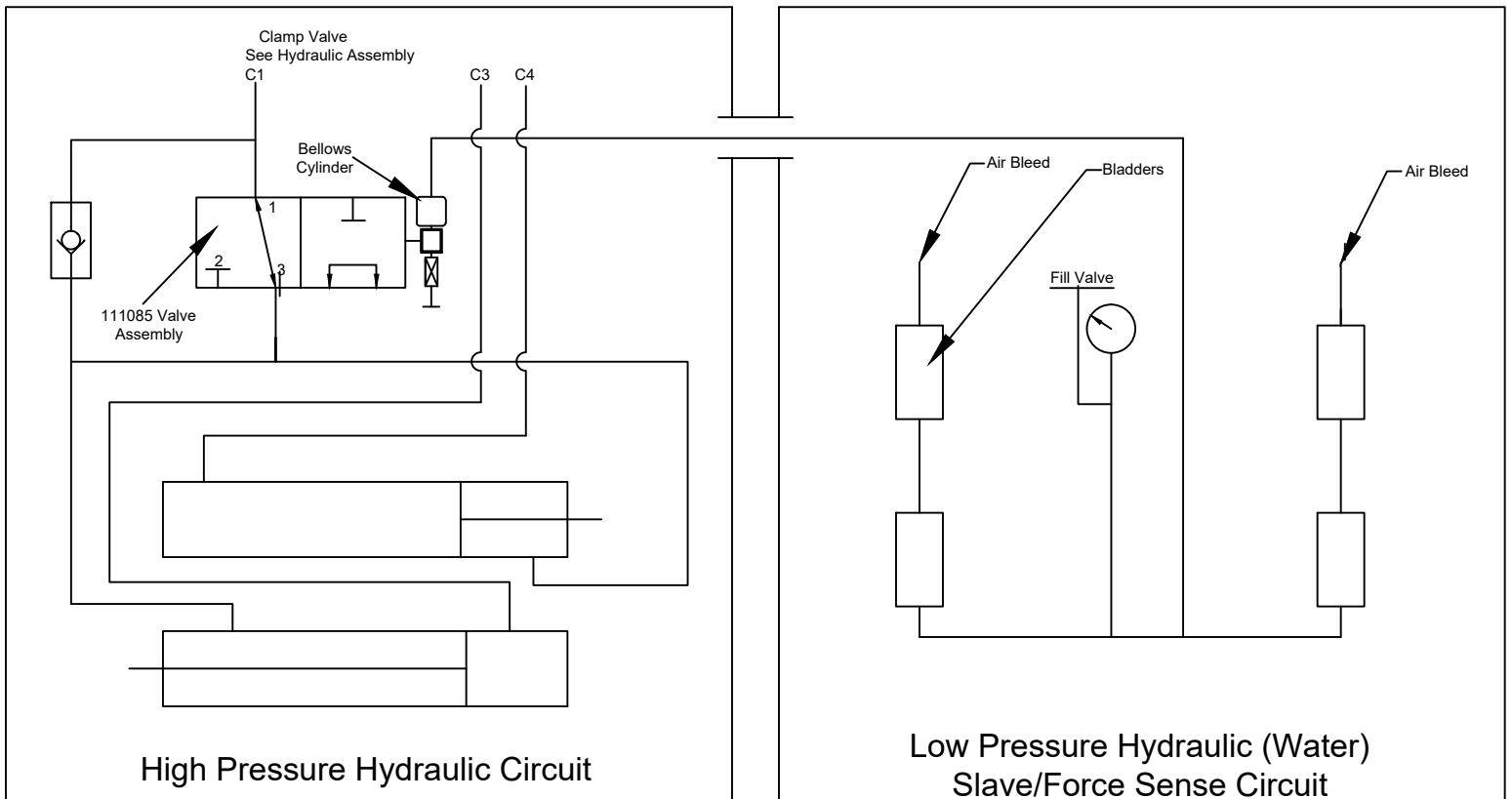
#	QTY	PART #	DESCRIPTION
1	1	113511	Right Hand Arm Weldment
2	1	113512	Left Hand Arm Weldment
3	2	113509	Contact Pad (Lower)
4	20	111031	Retaining Nut
5	1	112871	Right Hand Tip Plate
6	1	112871	Left Hand Tip Plate
7	20	1C.0820	Bolt
8	10	1C.0812	Bolt
9	30	108088	Spring Washer
10	2	113522	Tip Plate Upper
11	2	113510	Contact Pad (Upper)



# FLOATING PAD ASSEMBLY-1

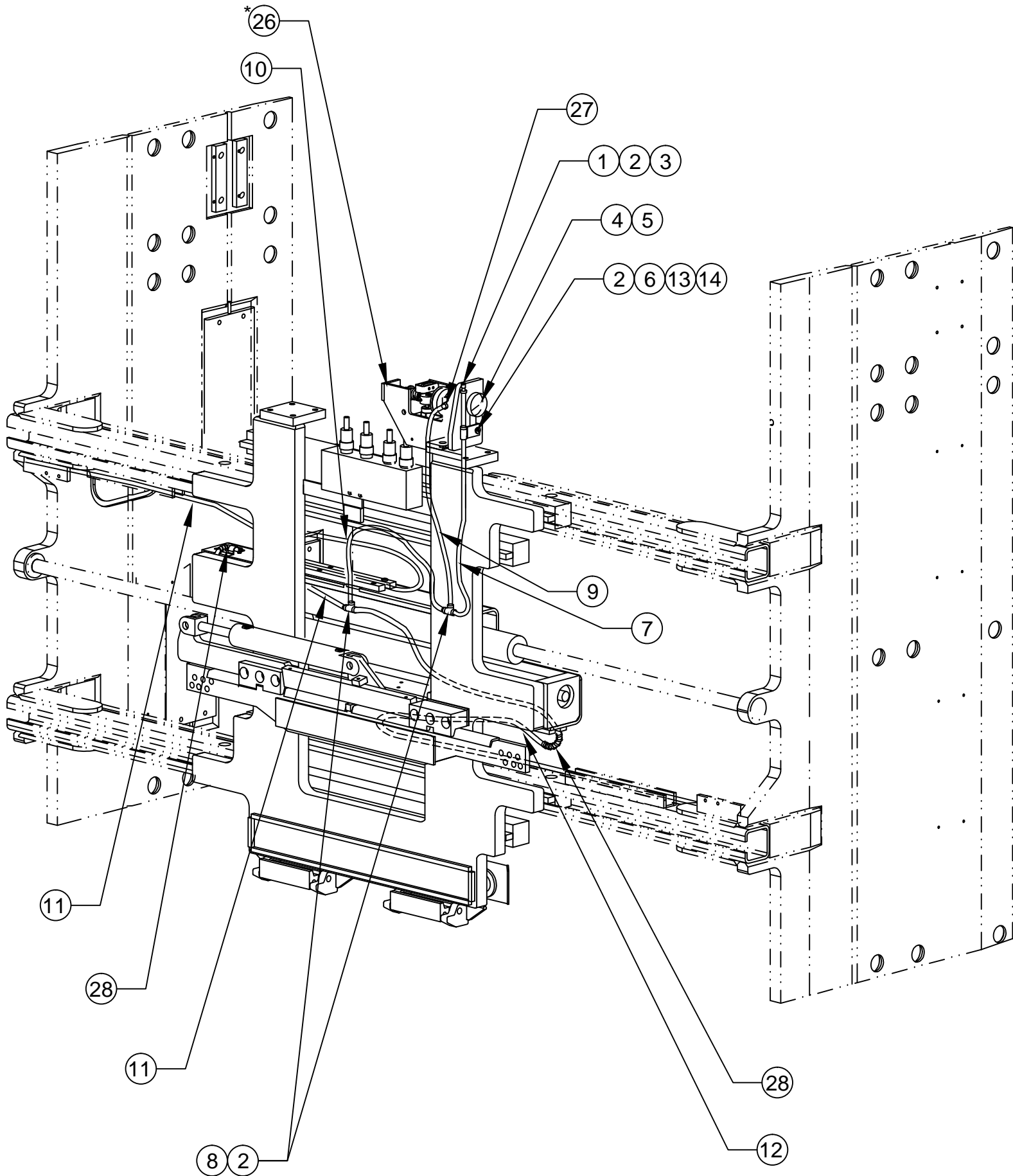
Drawing reference 113523.1

#	QTY	PART #	DESCRIPTION	17	4	113524	Rubber Spring
1	3	111350	Air Tank Valve	18	2	111290.0104	Hose
2	9	111295	Hose Clamp	19	24	9G.0412	Bolt
3	1	111290.0025	Hose	20	8	111471	Clamp Bar
4	1	111296	Pressure Gauge	21	8	109256	Hose Clamp
5	1	111543.01	90° Elbow Fitting	22	8	25GN.0508	Bolt
6	1	111292	Branch Tee	23	2	113026.0320	Cover Hose
7	1	111290.0220	Hose	24	4	111128	Hose Guide
8	2	111293	Run Tee	25	12	1C.0512	Bolt
9	1	111290.0180	Hose	26	1	111085	Direction Valve Assembly -Ref-
10	1	111290.0082	Hose	27	1	111289	Pipe Elbow
11	1	111290.1090	Hose	28	2	111510	Spring
12	1	111290.0960	Hose	29	16	111878	19 Gauge Stainless Wire Tie
13	1	111299	Hose Clip	30	8	100879	Fender Washer
14	1	25G.0520	Bolt	31	2	113416	Hose Extrusion w/Holes
15	4	111030	Bladder	32	8	3G.0808	Bolt
16	2	111290.0165	Hose				



# FLOATING PAD ASSEMBLY-2

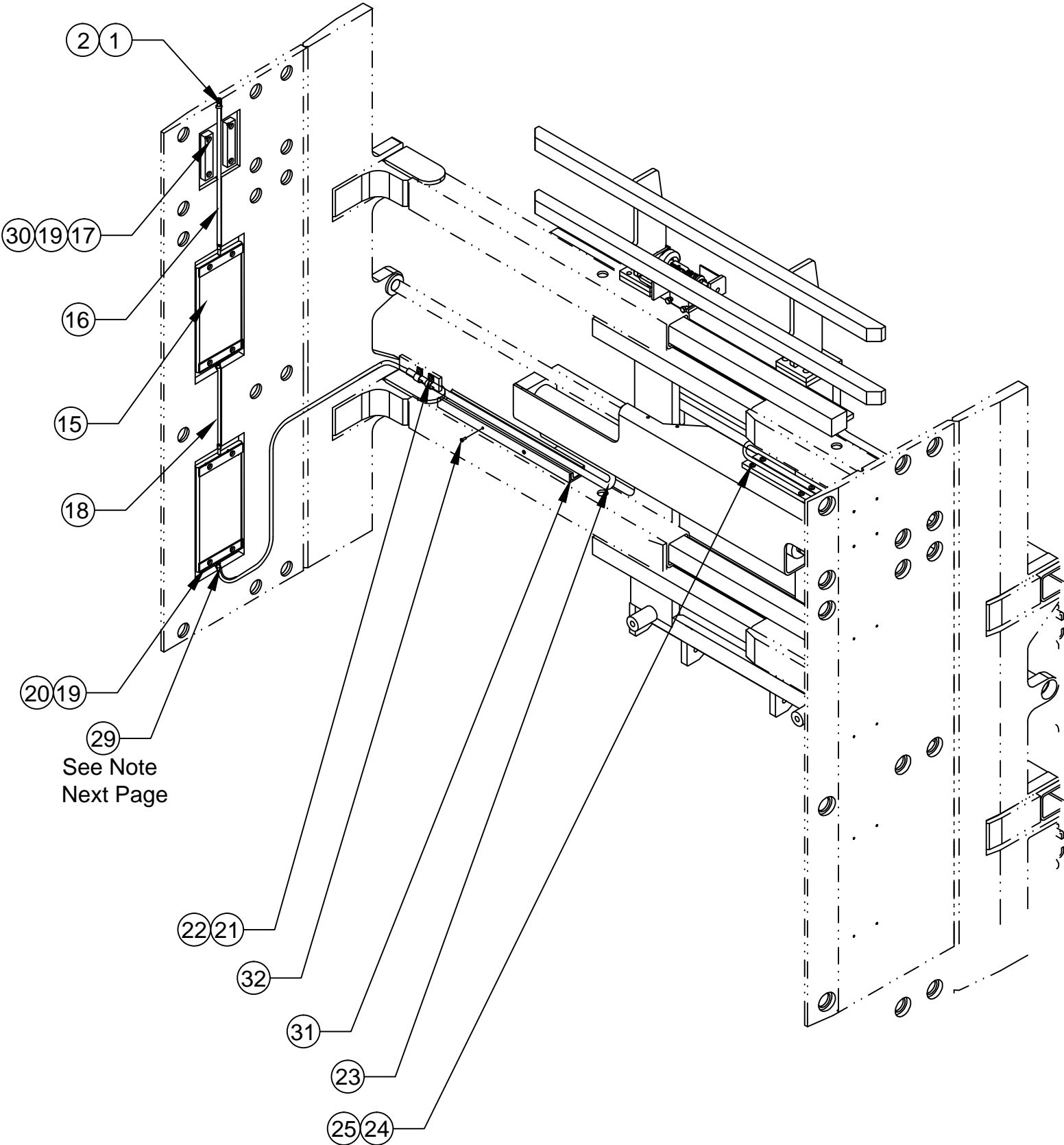
Drawing reference 113523.1





# FLOATING PAD ASSEMBLY-3

Drawing reference 113523.1

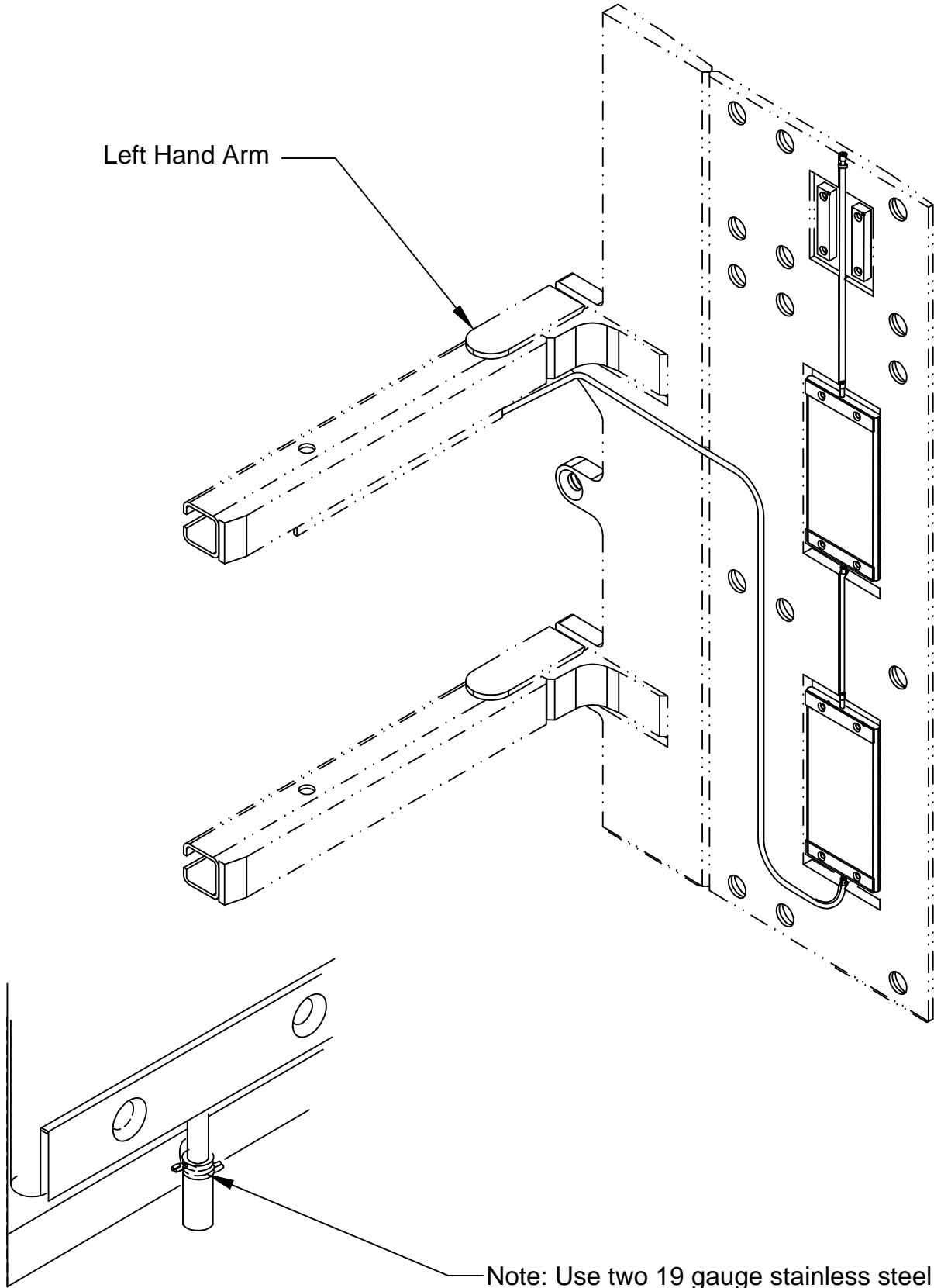


See Note  
Next Page

# FLOATING PAD ASSEMBLY-4

Drawing reference 113523.1

Left Hand Arm

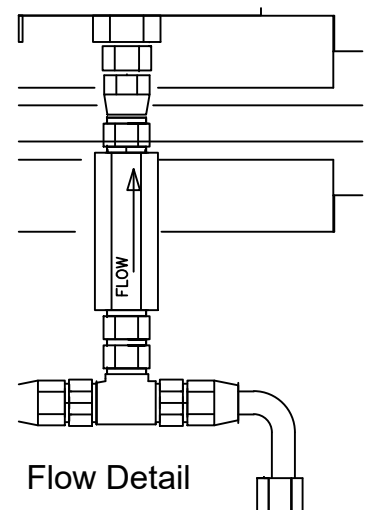
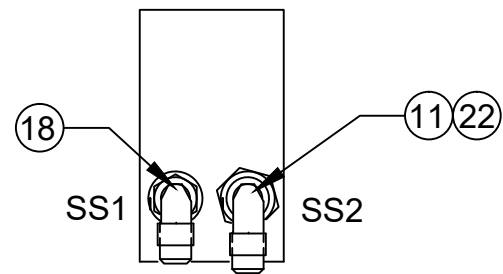
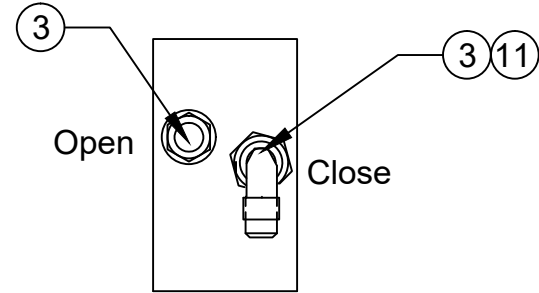


Note: Use two 19 gauge stainless steel wire ties (111878) at each bladder connection. Twist to tighten and clip to reduce ends.

# HYDRAULIC ASSEMBLY-1

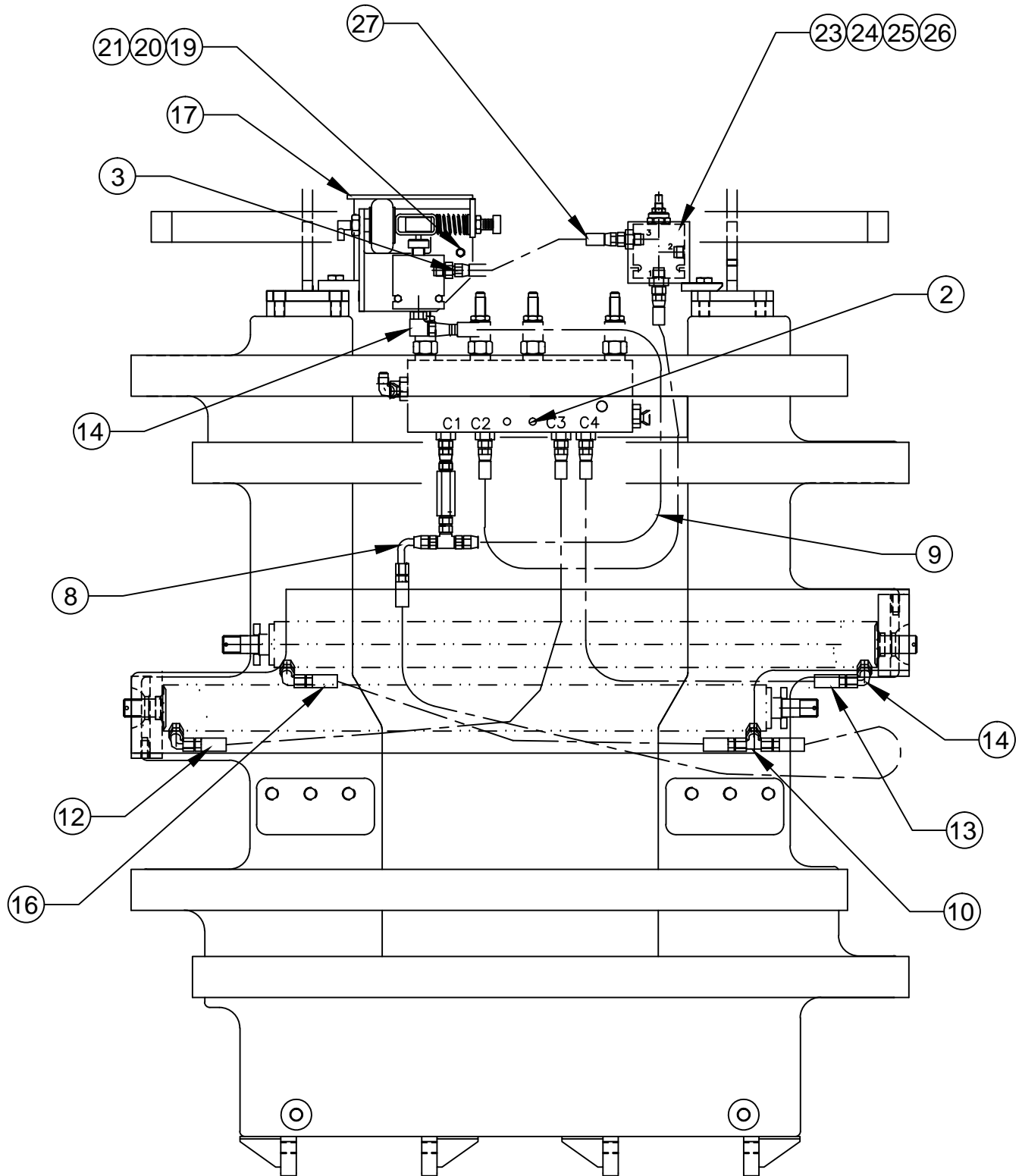
Drawing reference 113528

#	QTY	PART #	DESCRIPTION
1	1	111193	Clamp Valve
2	2	25G.0524	Bolt
3	8	100676.05	Straight Thread Adapter
4	2	111518.06	Fitting Adapter
5	1	111085	Directional Valve Assembly
6	1	100227.05	Fitting Union Tee
7	1	111123	In-Line Check Valve
8	1	103411.0350	Hose Assembly
9	1	100674.0290	Hose Assembly
10	1	100678.05	O-Ring Tee Branch Fitting
11	2	100440.05	90° Swivel Fitting
12	1	100674.0290	Hose Assembly
13	1	100674.0225	Hose Assembly
14	4	100095.05	90° O-Ring Elbow Fitting
15	1	100674.0270	Hose Assembly
16	1	100674.0195	Hose Assembly
17	1	111514	Valve Guard
18	1	100222	90° O-Ring Restrictor Fitting
19	1	25G.0616	Bolt
20	1	4F.05	Flat Washer
21	1	17D.06	Nylock Nut
22	1	109626.1	Straight O-Ring Restrictor Fitting
23	1	113395	Valve Mounting Weldment
24	1	113403	Flow Regulator Assembly
25	2	1C.0424	Bolt
26	2	4E.04	Lock Washer
27	1	100233.0090	Hose Assembly



# HYDRAULIC ASSEMBLY-2

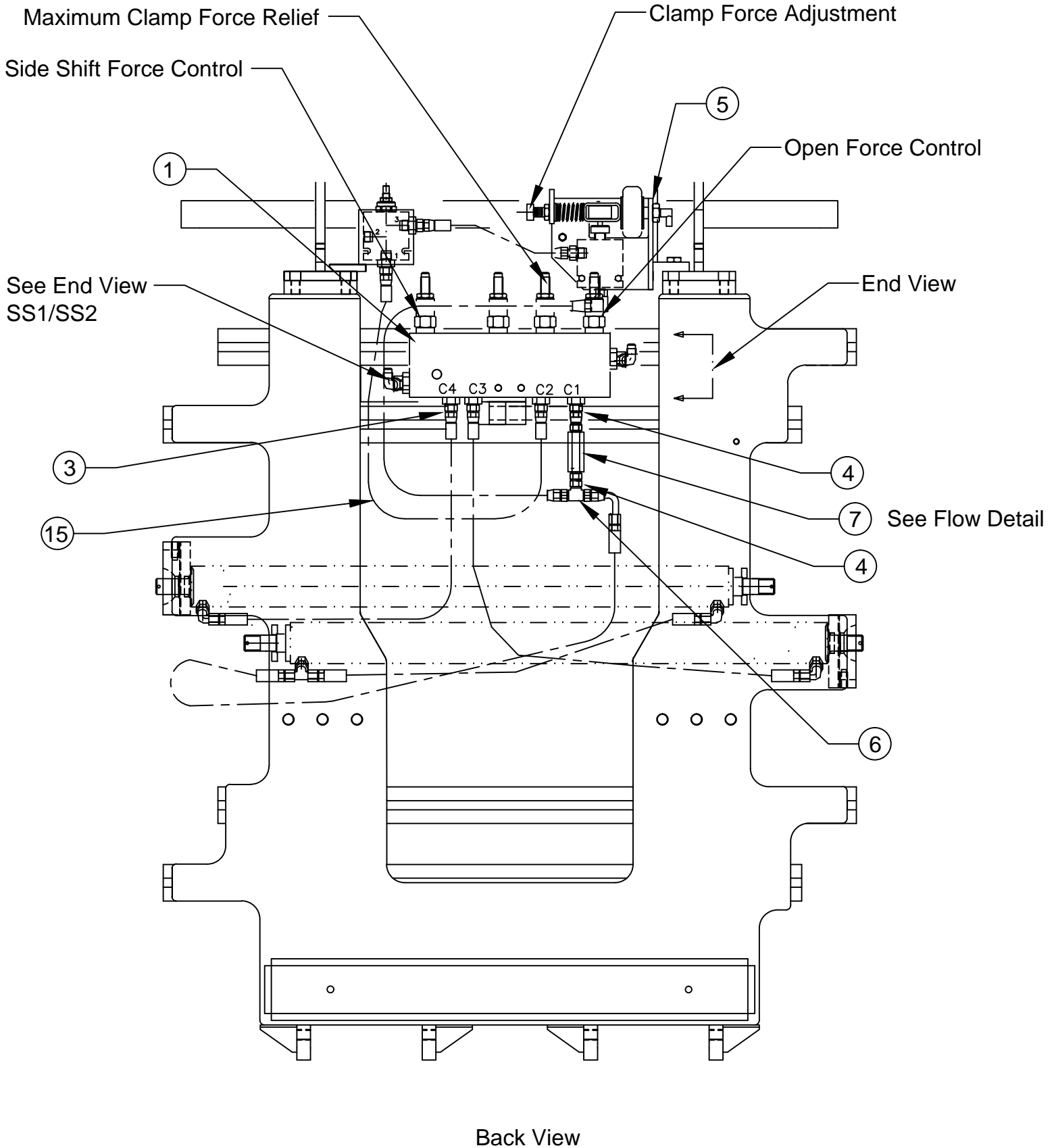
Drawing reference 113528



Front View

# HYDRAULIC ASSEMBLY-3

Drawing reference 113528

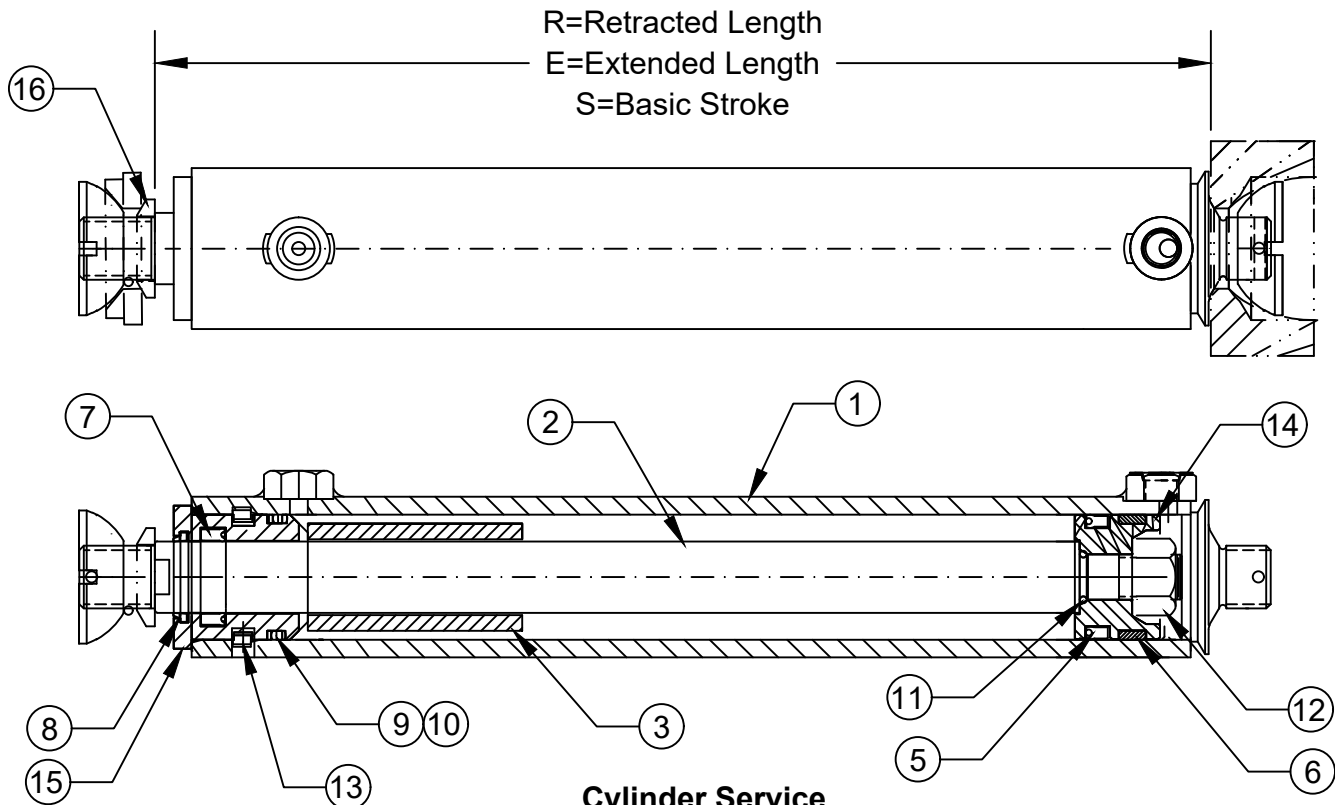


# CYLINDER ASSEMBLY

Drawing reference 111714.5

Part #	R	E	S	NET STROKE
111714.5	30.08	54.66	26.08	24.58

#	QTY	PART #	DESCRIPTION	9	1	100029.2	O-Ring
1	1	111715.5	Tube Weldment	10	1	100028.2	Back-Up Ring
2	1	111717.5	Rod	11	1	100029.201	O-Ring
3	1	104379.4	Spacer	12	1	27D.10	Nut Self Locking
4	1	111482	Seal Kit (Items 4-13)	13	1	100027.7	Lock Wire
5	1	100032.6	Poly-Pak "B"	14	1	111374	Piston
6	1	102099.1	Wear Ring	15	1	111373	Gland
7	1	112905	Rod Seal	16	1	111380	REF Washer Cylinder
8	1	102098.5	Rod Wiper				



## Cylinder Service

- Prior to assembly lubricate seals, cylinder bore and rod with STP.
- Inspect all parts for scratches, nicks and gouges - replace all damaged components.
- Inspect cylinder bore and rod for scoring - replaced if scored.
- Avoid damage to seal grooves - use a dull screwdriver for seal removal.
- Torque piston nut to 110 FT/LBS. (15.3kg-m).

# CLAMP ADJUSTMENTS

## CLAMP FORCE CHECK/ADJUSTMENT

1. Check water pressure. If out of operating range fill with LORON hand pump # 112909. NOTE: Use pure Propylene Glycol Antifreeze mixed 1 to 1 with water.
2. Check the clamp force.

## CLAMP CONTROL VALVE ADJUSTMENT

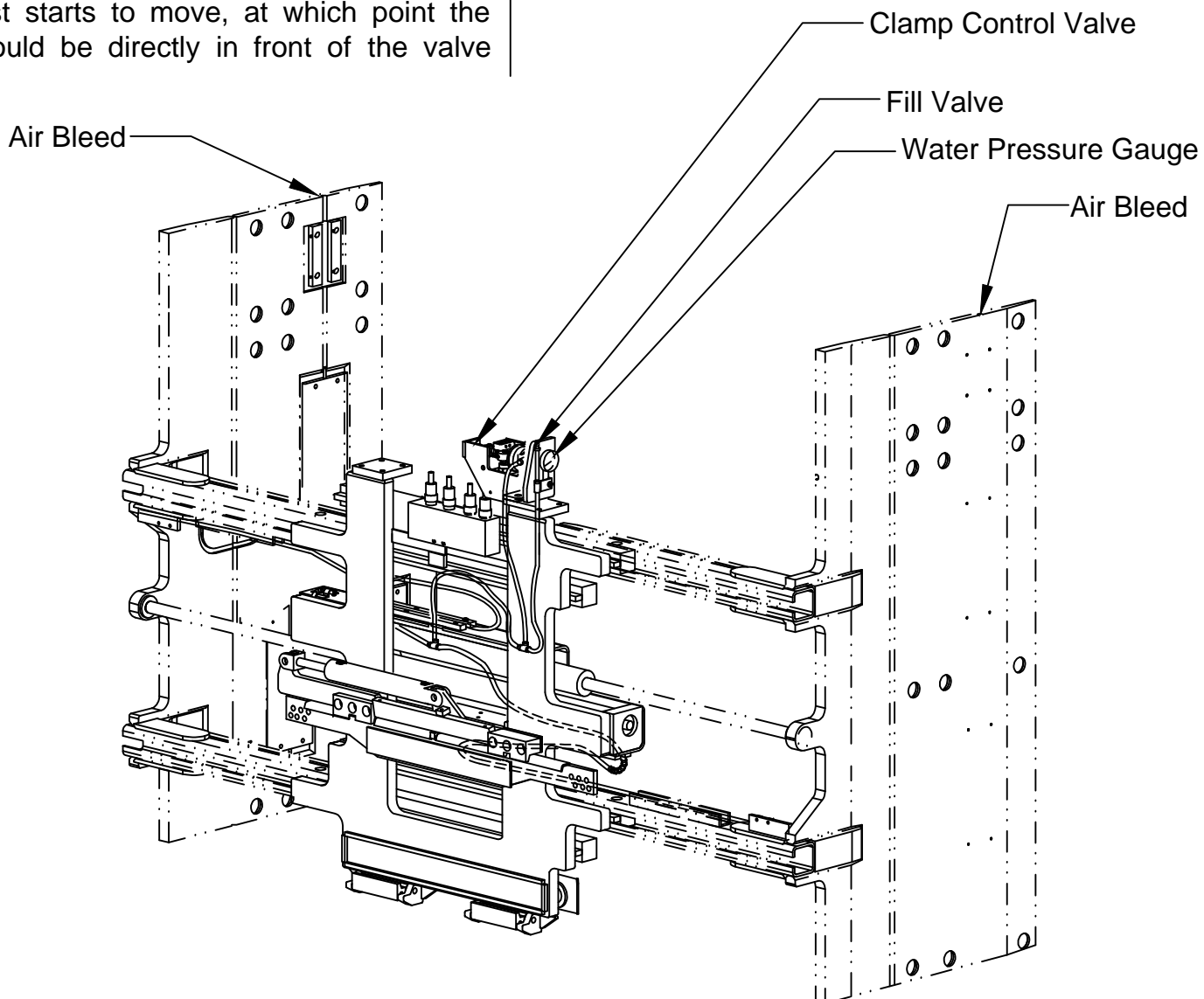
NOTE: When looking at the clamp control valve from the front of the clamp, the clevis pin should be directly in front of the shut off valve stem, or slightly to the left, when the clamp will not close. To check the pin position, turn the force control screw in until the clamp just starts to move, at which point the clevis pin should be directly in front of the valve stem.

## OPEN FORCE CHECK/ADJUSTMENT

Open the arms against a force fixture and adjust for desired maximum force.

## SIDE SHIFT FORCE ADJUSTMENT

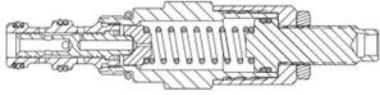
1. Clamp on the heaviest load that will be handled.
2. Adjust the side shift force down until the arms stop.
3. Turn the adjusting screw one turn in.



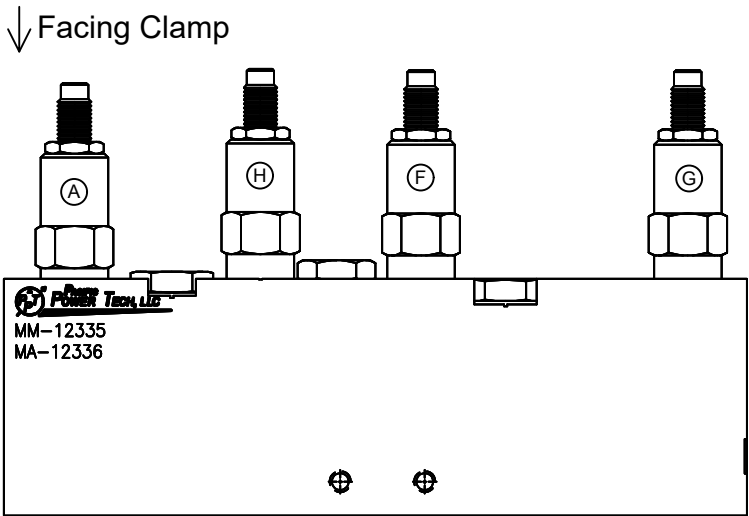
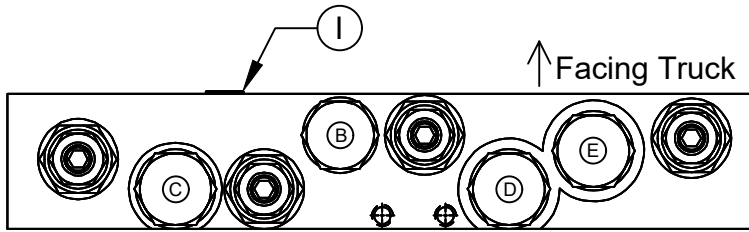
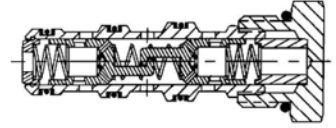
# CONTROL VALVE

Drawing reference 111193

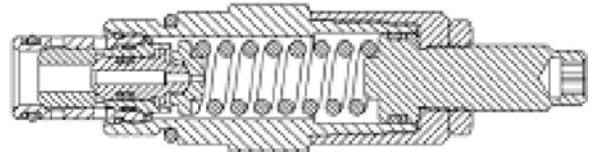
(A) **111627** Pressure Reduce/Relief Valve  
Torque 15-20 FT/LBS  
Seal Kit 112065



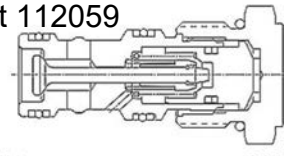
(B) **112887** Flow Divider  
Torque 10-12 FT/LBS  
Seal Kit 104711



(H)(G) **112406.1** & (F) **112406.2** Relief Valve  
Torque 20-25 FT/LBS  
Seal Kit 112064

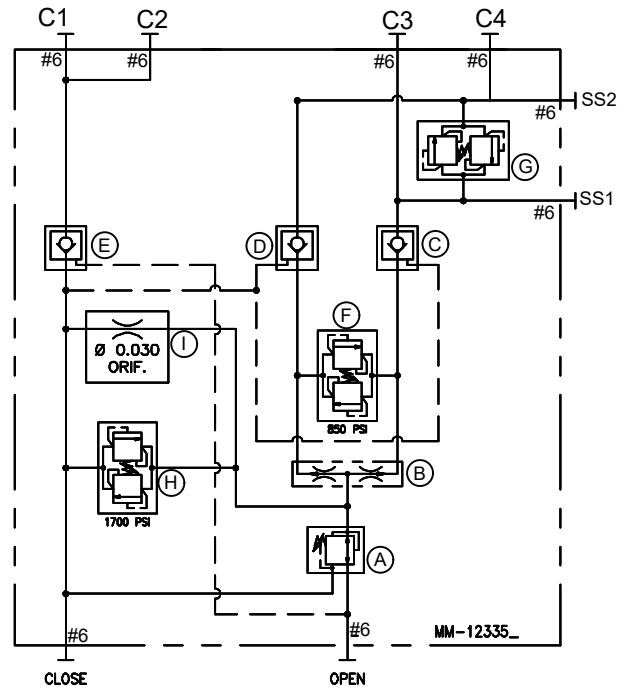


(C)(D)(E) **111244** Check Valve  
Torque 30-35 FT/LBS  
Seal Kit 112059



**NOTE:** Lubricate threads & seals prior to assembly.

## HYDRAULIC SCHEMATIC



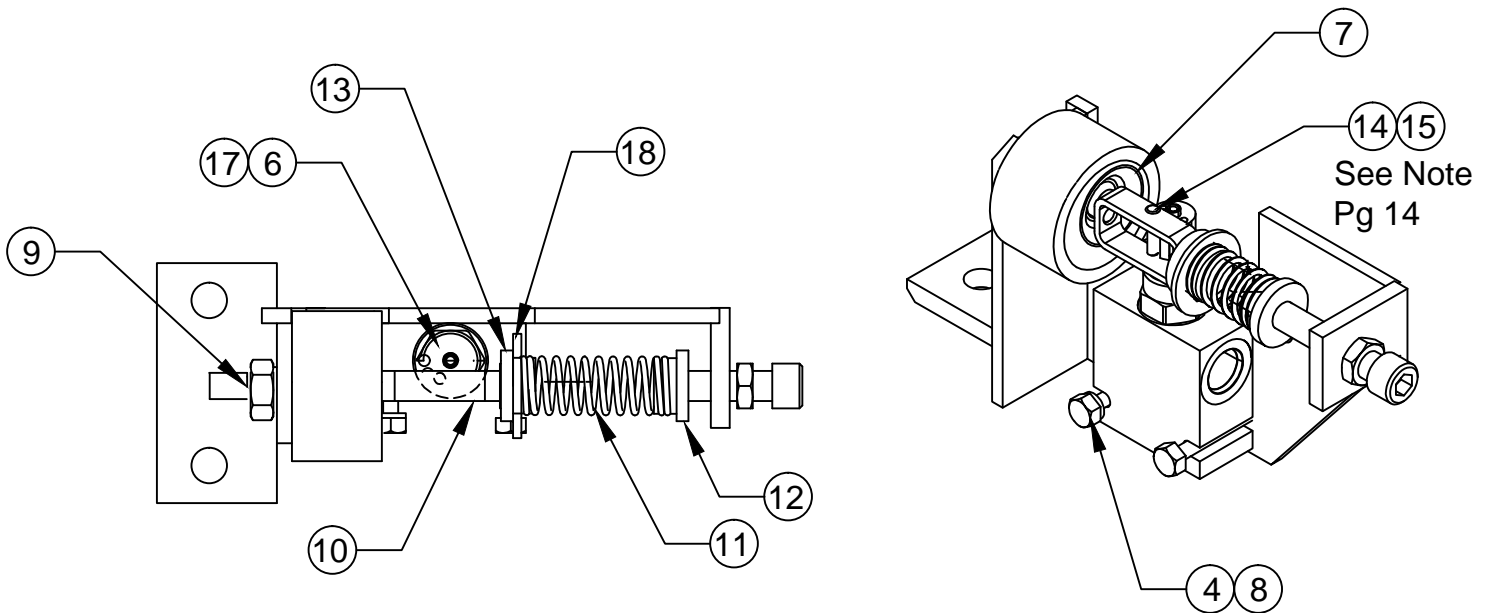
QTY	PART #	DESCRIPTION
1	111627	Pressure Reducer Valve
1	103813	Flow Divider
2	112406.1	Relief Cartridge
1	112406.2	Relief Cartridge
1	00.030 ORIFICE	1/16" NPT Orifice Plug
3	111244	Check Valve



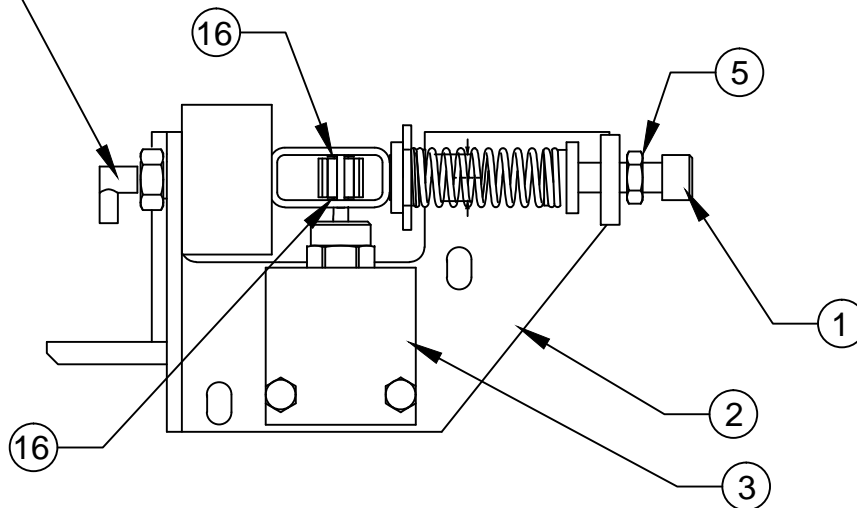
# CLAMP FORCE CONTROL VALVE

Drawing reference 111085

#	QTY	PART #	DESCRIPTION
1	1	11G.0844	Bolt
2	1	111573	Mounting Plate Weldment
3	1	111094	Directional Valve
4	2	4E.04	Lock Washer
5	1	7D.08	Jam Nut
6	1	110906	Wheel
7	1	111091	Air Spring
8	2	1C.0424	Bolt
9	1	7D.10	Hex Nut
10	1	111328	Wheel Housing
11	1	111097	Spring
12	1	111098	Spring Tension Cap
13	1	111572	Spring Cap
14	1	111655	Clevis Pin
15	1	100574.28	Cotter Pin
16	1	113234	Nylon Washer
17	1	15G.0408	Set Screw
18	1	113233	Washer
19	1	113235	Nylon Washer



Reference 111289 see floating pads assembly



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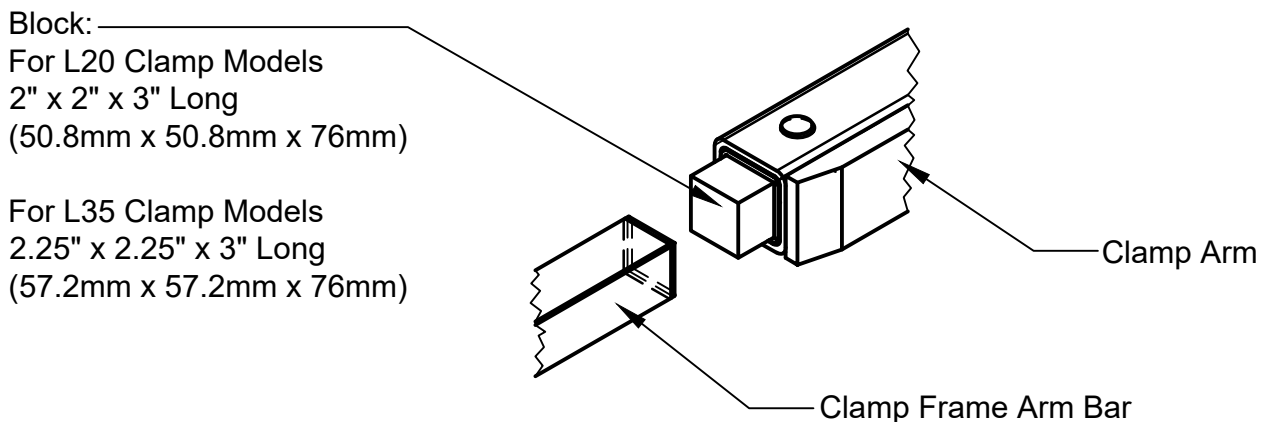
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# ARM SLIDE & SHIM REPLACEMENT

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1. To replace the slides, the arms need to be in the fully open position. Release system pressure prior to removing the arms by turning the truck off and working the side shift and clamp function controls several times.
2. Support the arm with an overhead crane or lift truck. Be sure to secure the chain or sling in a manner that prevents the arm from falling out of the chain or sling when hanging free of the clamp.
3. Remove the cotter pin, slotted nut and spherical bearing from the end of the clamp cylinder rod. Keeping hands and feet clear, and carefully slide the clamp arm off of the clamp frame.
4. Inspect slides and slide buttons for wear. Slides may be rotated end-to-end and reused if excessively worn on the outer end only. Extra shims may be used to tighten operating clearance on slightly worn slides. Replace any slides worn to less than 0.15" (3.8mm) thick or any slide that is deeply scored or broken.



5. To aid in replacing the slides a block may be fashioned of wood or another convenient material to the dimensions shown above. The block is inserted to the end of the arm to hold the slides, shims, and buttons in position while the arm is inserted over the arm bars on the clamp frame. The block is expelled out the opposite end of the arm as the arm is pushed onto the frame. Prior to installing the arm the block may be used to determine the number of shims to place under the slides. Adjust the clearance between the slides and the block to provide approximately .06" (1.5mm) running clearance between the slides and arm when installed.
6. Keeping hands and feet clear, carefully slide the clamp arm onto the clamp frame. Be sure the arm moves freely without excessive binding. If the arm is too loose or too tight add or remove shims as required.
7. Install the spherical bearing, slotted nut and cotter pin onto the end of the clamp cylinder rod. Be sure to leave .03"-.06" (.7mm to 1.5mm) clearance to allow the cylinder to "float" on its mountings.

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# TROUBLE SHOOTING GUIDE

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## LOADS SLIPPING OR DROPPING

### POSSIBLE CAUSES

1. Clamp force set too low.
2. Internal leakage in cylinder.
3. Load too heavy for the clamp capacity.
4. Load may not be stacked correctly or may need to be unitized.
5. Bent arms or contact pads.
6. Damaged / leaking hydraulic hose

### SOLUTION

1. Adjust clamp force.
2. Replace cylinder seals. If tube, pistons or rod is scored replace with new parts.
3. Consult factory.
4. Restack or unitize load (shrink wrap).
5. Consult factory.
6. Replace damaged hose.

## CRUSHING LOADS

### POSSIBLE CAUSES

1. Clamp force set too high.
2. Bent arms or contact pads.
3. Leak in the bladder system.

### SOLUTION

1. Adjust clamp force.
2. Consult factory.
3. Check for leaks and repair.

## ARM CHATTERING OR ERRATIC MOVEMENT

### POSSIBLE CAUSES

1. Bent clamp arms.
2. Nylon slides sticking.  
Note: Sticking slides can cause inconsistent force measurements.
3. Nylon slides worn, broken or missing.

### SOLUTION

1. Consult factory.
2. Clean slides if necessary, the slides are self lubricating.
3. Replace damaged slides, shims, and retaining buttons.