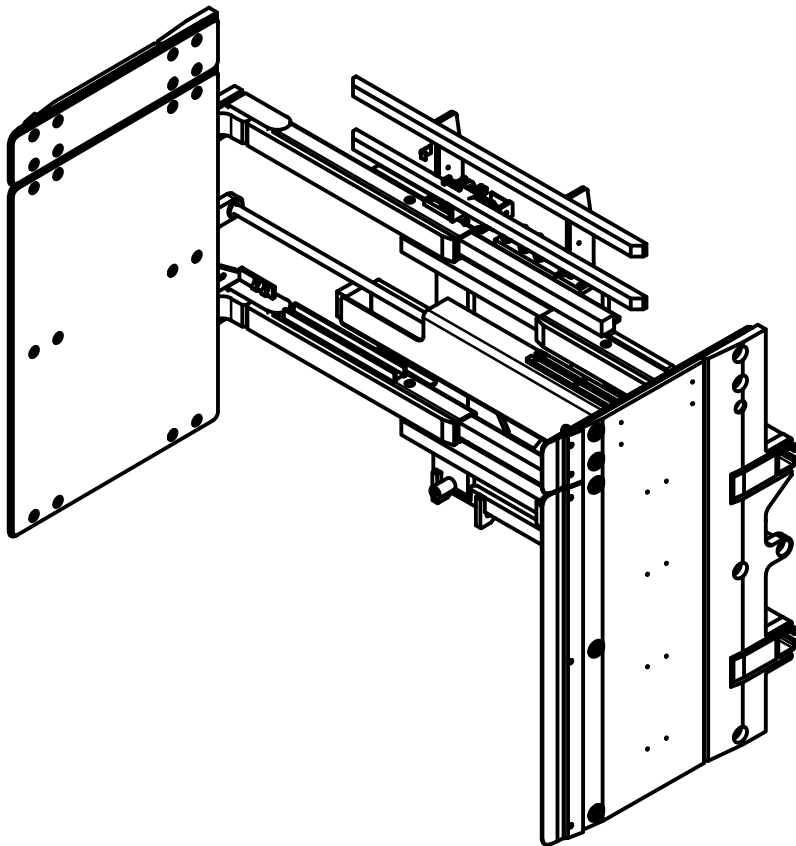




SERVICE MANUAL / PARTS LIST

APPLIANCE CLAMP SOFT TOUCH

MODEL #112051
PATENT NO. 9,630,821
PATENT NO. 10,597,272



Specifications:

Mounting: Class II
Side Shifting: Internal Side Shifting
Capacity: 2000 lbs at 18"
Pad Size: 55" High x 34" Long
Range: 21.5" - 83.3"
Frame: 48" Wide

CONTENT:

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1	Lift Truck Requirements General Installation Procedures General Inspection & Maintenance
2-3	Clamp Assembly
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8-9	Hydraulic Assembly
10	Cylinder Assembly
11	Clamp Adjustments
12	Control Valve
13	Clamp Force Control Valve
14-15	Narrow Range Control Valve
16	Arm Slide & Shim Replacement
17	Trouble Shooting Guide

LIFT TRUCK REQUIREMENTS

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:

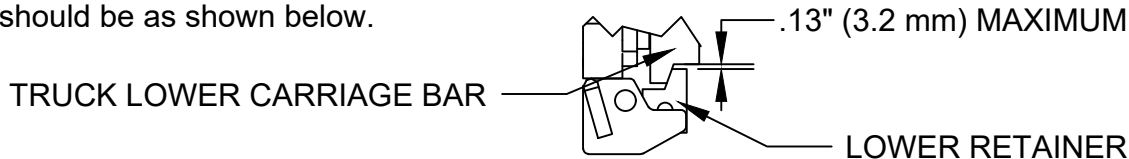
Side Shift = 3 GPM

Clamp Open/Close = 7 GPM

NOTE: Three Position Force Selector must be disabled.

GENERAL INSTALLATION PROCEDURES

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.

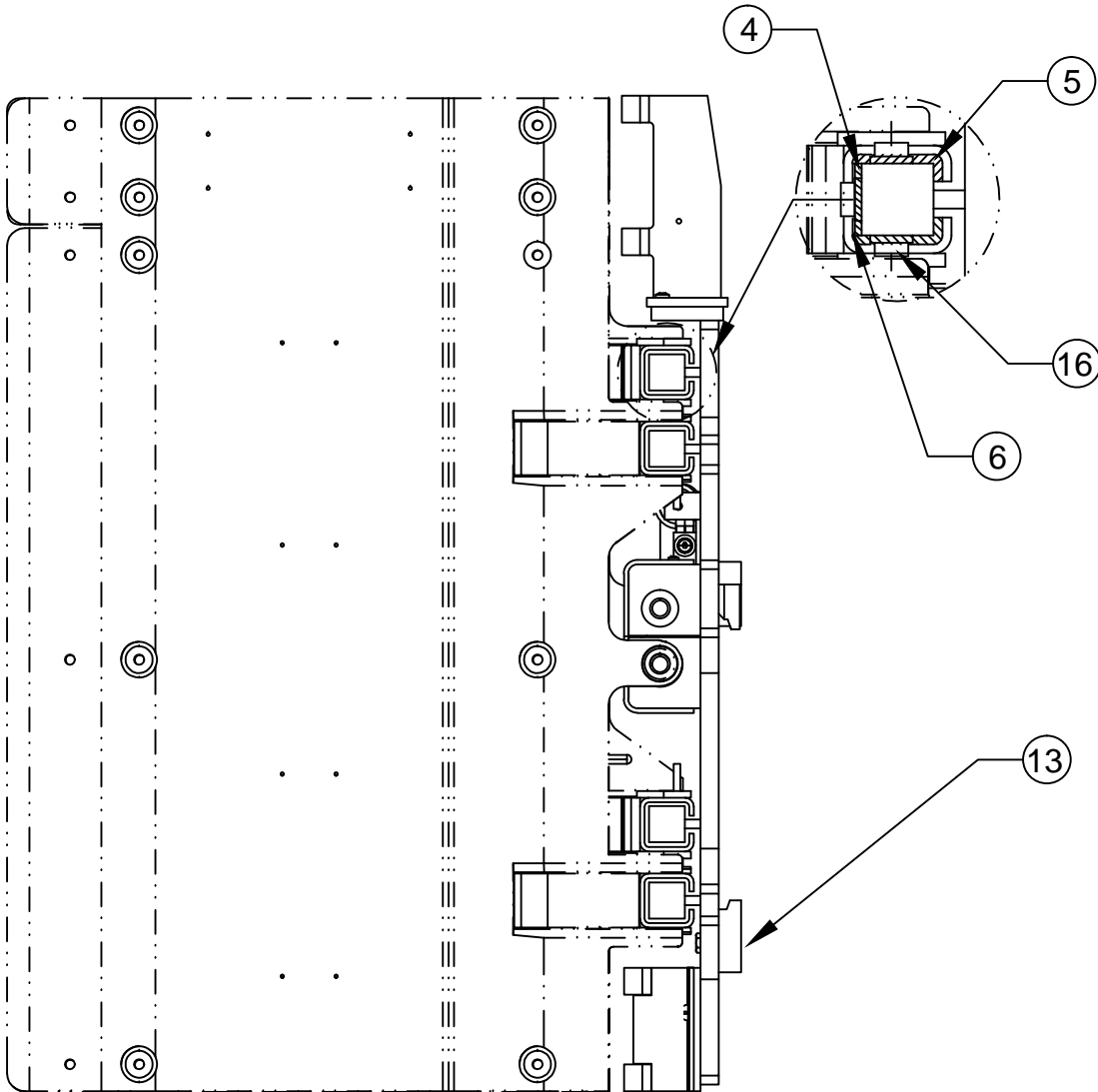
GENERAL INSPECTION AND MAINTENANCE

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

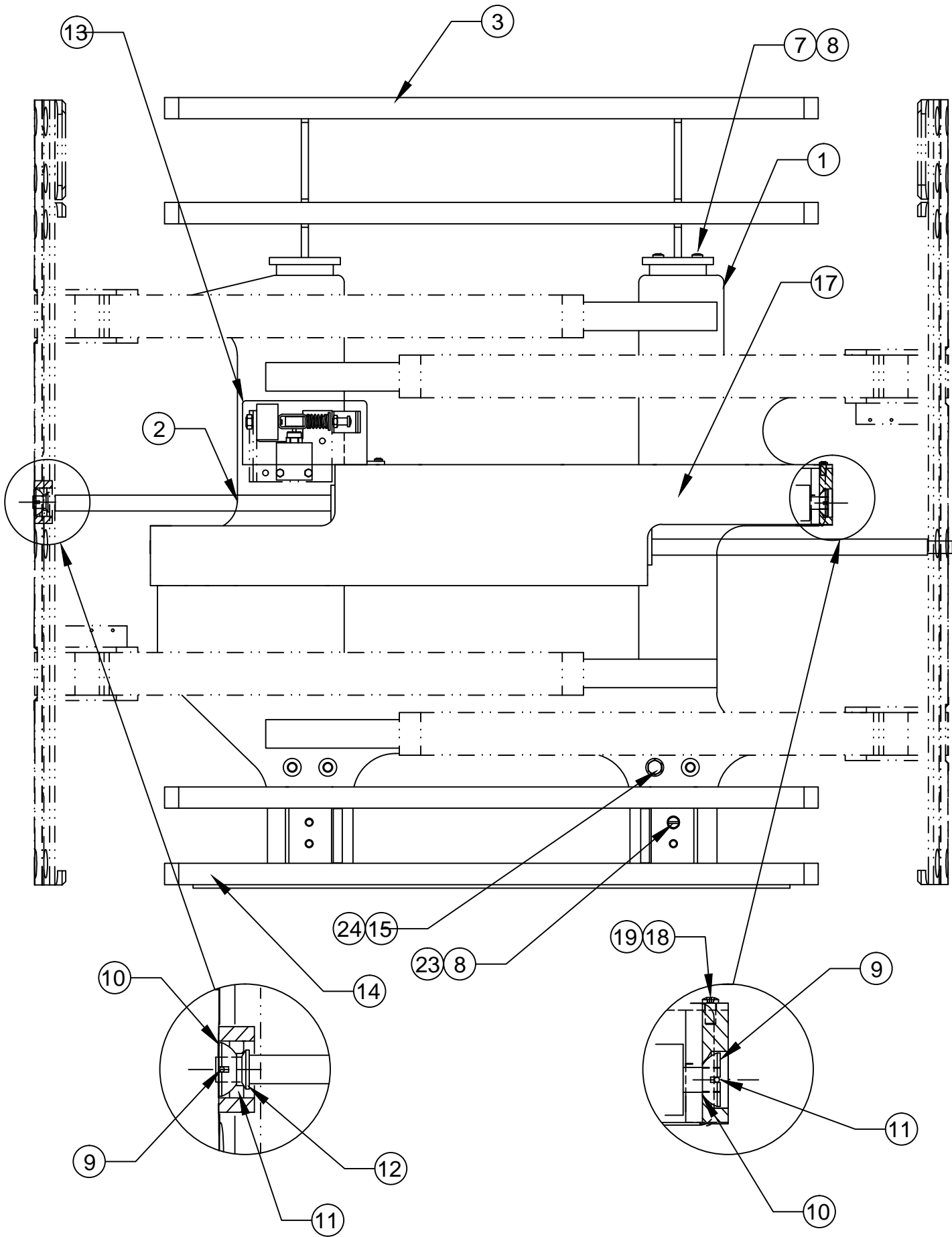
Drawing reference 111998.1

#	QTY	PART #	DESCRIPTION	13	2	111060	Lower Retainer
1	1	111999	Frame	14	1	111068	Lower Load Backrest
2	2	111714.1	Cylinder Assembly	15	4	1C.1028	Bolt
3	1	111652.3	Load Backrest	16	12	111619	Slide Button
4	4	111622.1	Flat Slide	17	1	111861	Cylinder Guard
5	8	111621.1	Angle Slide	18	4	25GN.0608	Bolt
6	12	109212.4	Shim	19	4	2F.06	Washer
7	8	1C.0820	Bolt	20	1	111367	Cover Weldment
8	12	4E.08	Lock Washer	21	2	25G.0512	Bolt
9	4	111631	Spherical Bearing	22	2	4E.05	Lock Washer
10	4	100029.301	Rod Centering Seal	23	4	1C.0828	Bolt
11	4	100574.86	Cotter Pin	24	4	4E.10	Lock Washer
12	2	111380	Cylinder Rod Washer				



CLAMP ASSEMBLY-2

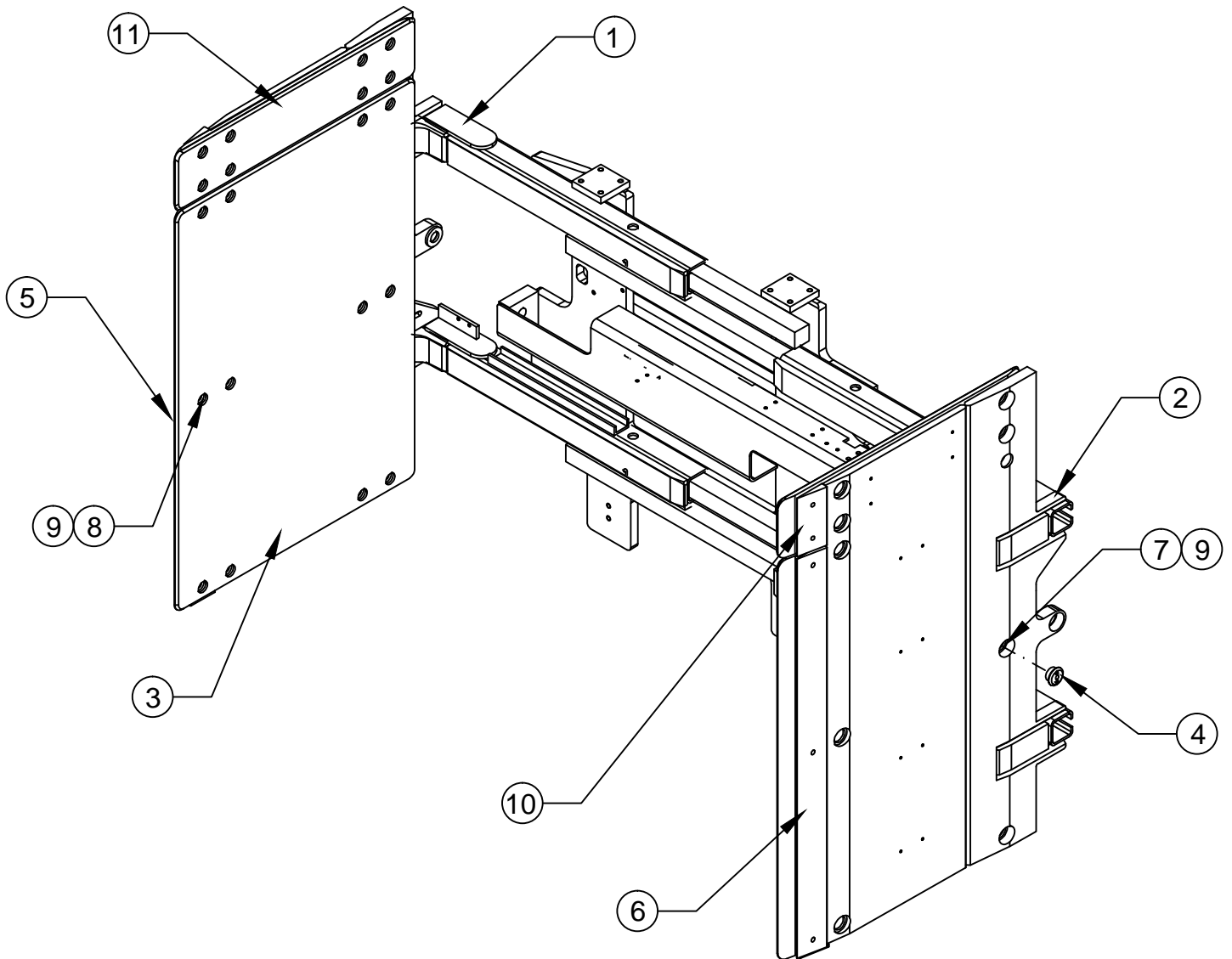
Drawing reference 111998.1



ARM GROUP ASSEMBLY

Drawing reference 111164.3

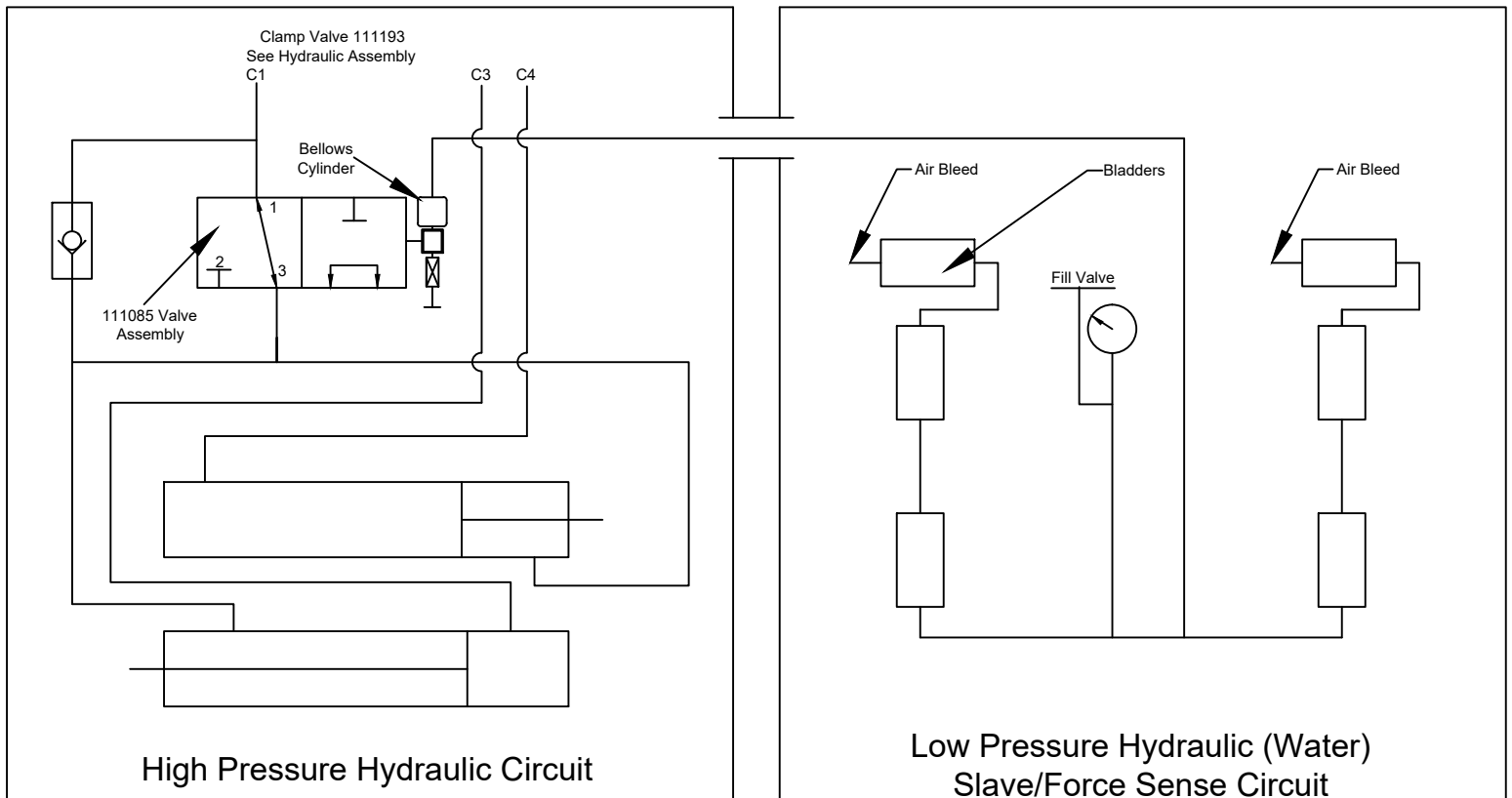
#	QTY	PART #	DESCRIPTION
1	1	111722	Right Hand Arm Weldment
2	1	111724	Left Hand Arm Weldment
3	2	111209	Contact Pad (Lower)
4	20	111031	Retaining Nut
5	1	111216	Right Hand Tip Plate
6	1	111218	Left Hand Tip Plate
7	20	1C.0820	Bolt
8	10	1C.0812	Bolt
9	30	108088	Spring Washer
10	2	112057	Tip Plate Upper
11	2	111210	Contact Pad (Upper)



FLOATING PAD ASSEMBLY-1

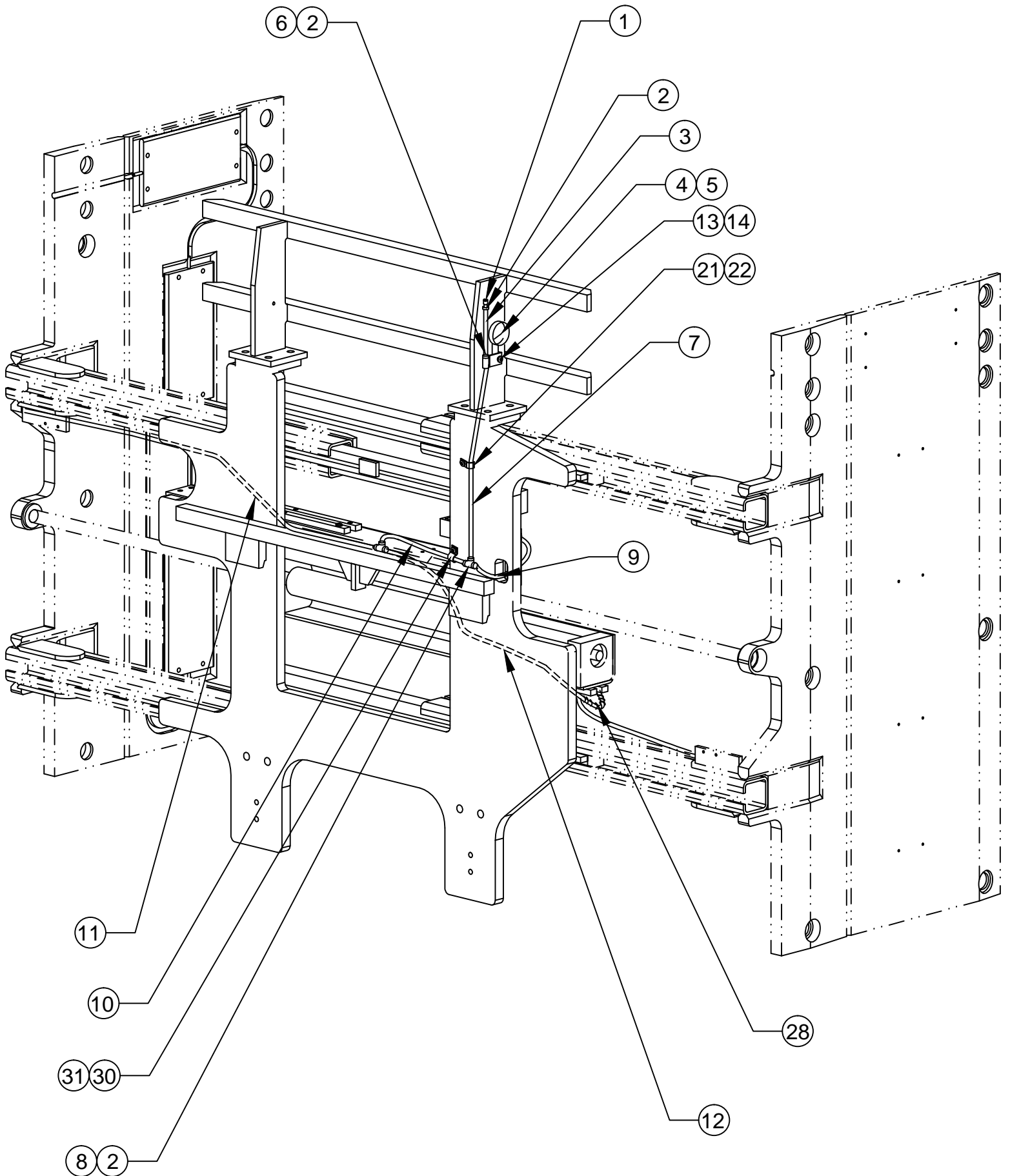
Drawing reference 111228.1

#	QTY	PART #	DESCRIPTION	16	2	111290.0094	Hose
1	3	111350	Air Tank Valve	17	2	111290.0166	Hose
2	9	111295	Hose Clamp	18	2	111290.0114	Hose
3	1	111290.0025	Hose	19	24	9G.0412	Bolt
4	1	111296	Pressure Gauge	20	12	111471	Clamp Bar
5	1	111543.01	90° Elbow Fitting	21	8	109256	Hose Clamp
6	1	111292	Branch Tee	22	8	25GN.0508	Bolt
7	1	111290.0175	Hose	23	2	113026.0360	Cover Hose
8	1	111293	Run Tee	24	4	111128	Hose Guide
9	1	111290.0060	Hose	25	12	25G.0512	Bolt
10	1	111290.0155	Hose	26	1	111085	Direction Valve Assembly -Ref-
11	1	111290.1210	Hose	27	1	111289	Pipe Elbow
12	1	111290.1185	Hose	28	2	111510	Spring
13	1	111299	Hose Clip	29	24	111878	19 Gauge Stainless Wire Tie
14	1	25G.0516	Bolt	30	1	112123	Hose Clamp
15	6	111030	Bladder	31	1	25G.0608	Bolt



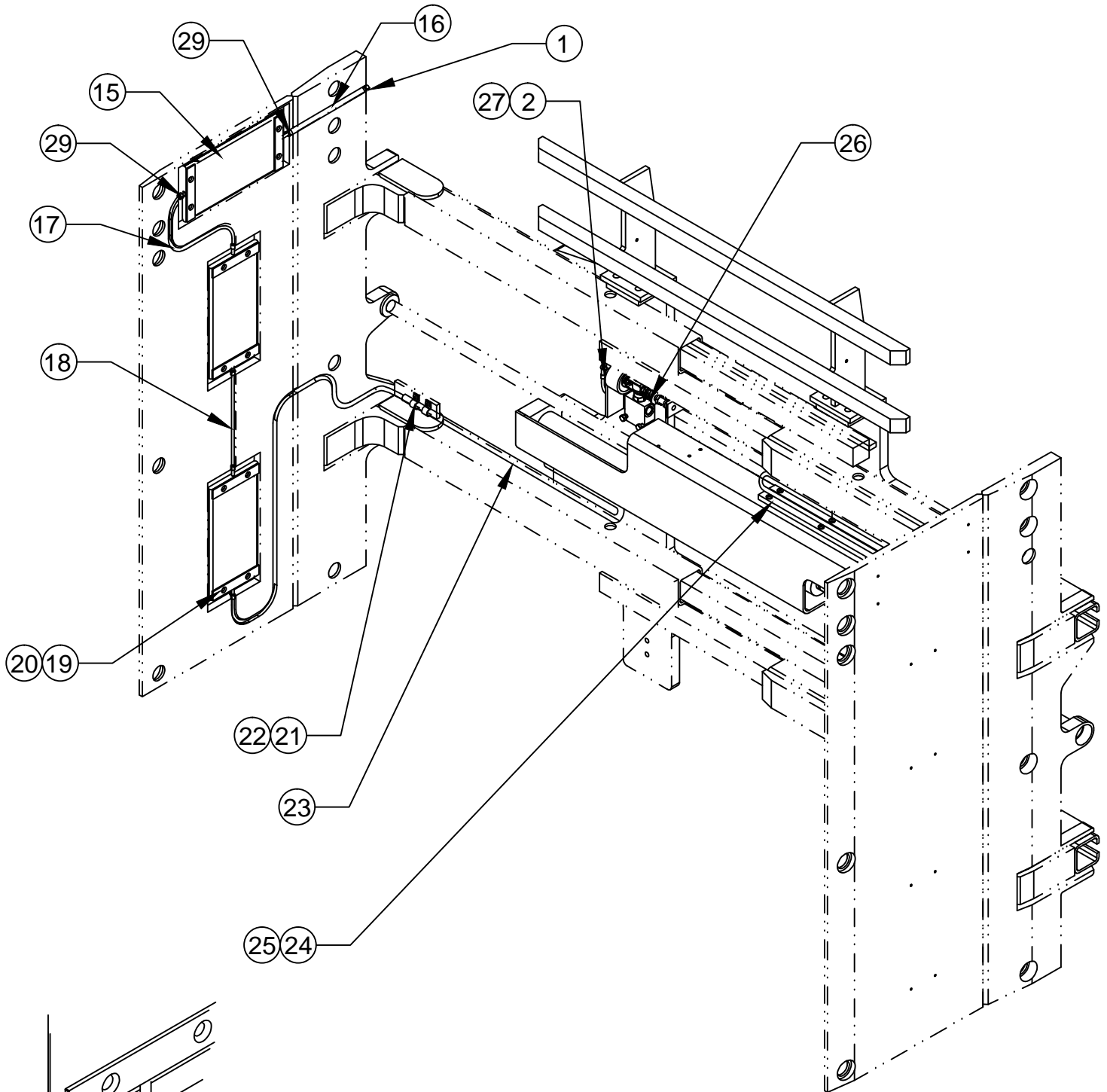
FLOATING PAD ASSEMBLY-2

Drawing reference 111228.1



FLOATING PAD ASSEMBLY-3

Drawing reference 111228.1

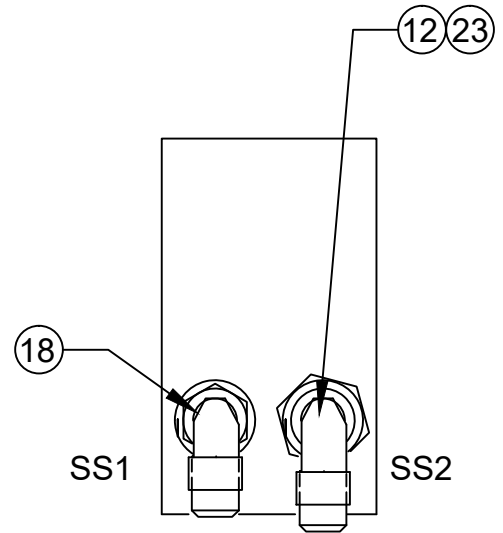


Note: Use two 19 gauge stainless steel wire ties (111878) at each bladder connection. Twist to tighten and clip to reduce ends.

HYDRAULIC ASSEMBLY-1

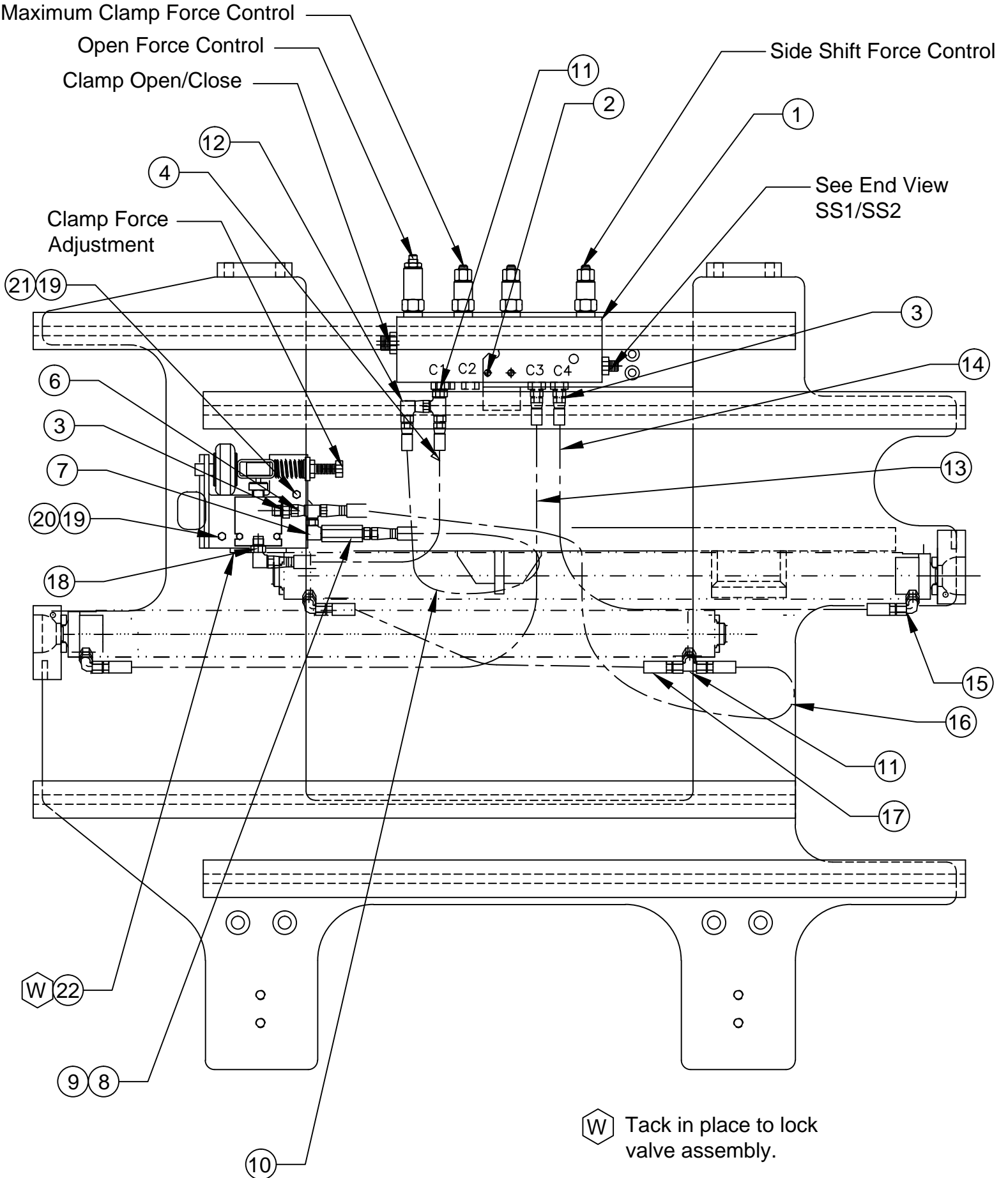
Drawing reference 112119

#	QTY	PART #	DESCRIPTION
1	1	111193	Clamp Valve
2	2	25G.0524	Bolt
3	5	100676.05	Straight Thread Adapter
4	1	100674.0155	Hose
5	1	111085.1	Directional Valve Assembly
6	1	100232.05	Swivel Union Tee Fitting
7	1	111073.05	Adapter Fitting Pipe to Swivel
8	1	111123	In-Line Check Valve
9	1	100432.05	Adapter Fitting JIC to Pipe
10	1	100674.0255	Hose
11	1	100678.05	O-Ring Tee Branch Fitting
12	2	100440.05	90° Swivel Fitting
13	1	100674.0340	Hose
14	1	100674.0275	Hose
15	3	100095.05	90° O-Ring Elbow Fitting
16	1	100674.0370	Hose
17	1	100674.0190	Hose
18	2	100222	90° Restrictor Fitting
19	2	109528	Lock Washer
20	1	25G.0612	Bolt
21	1	25G.0608	Bolt
22	1	MCD 0190-3.00	Bar Flat
23	1	109626.1	O-Ring Straight Restrictor Fitting



HYDRAULIC ASSEMBLY-2

Drawing reference 112119



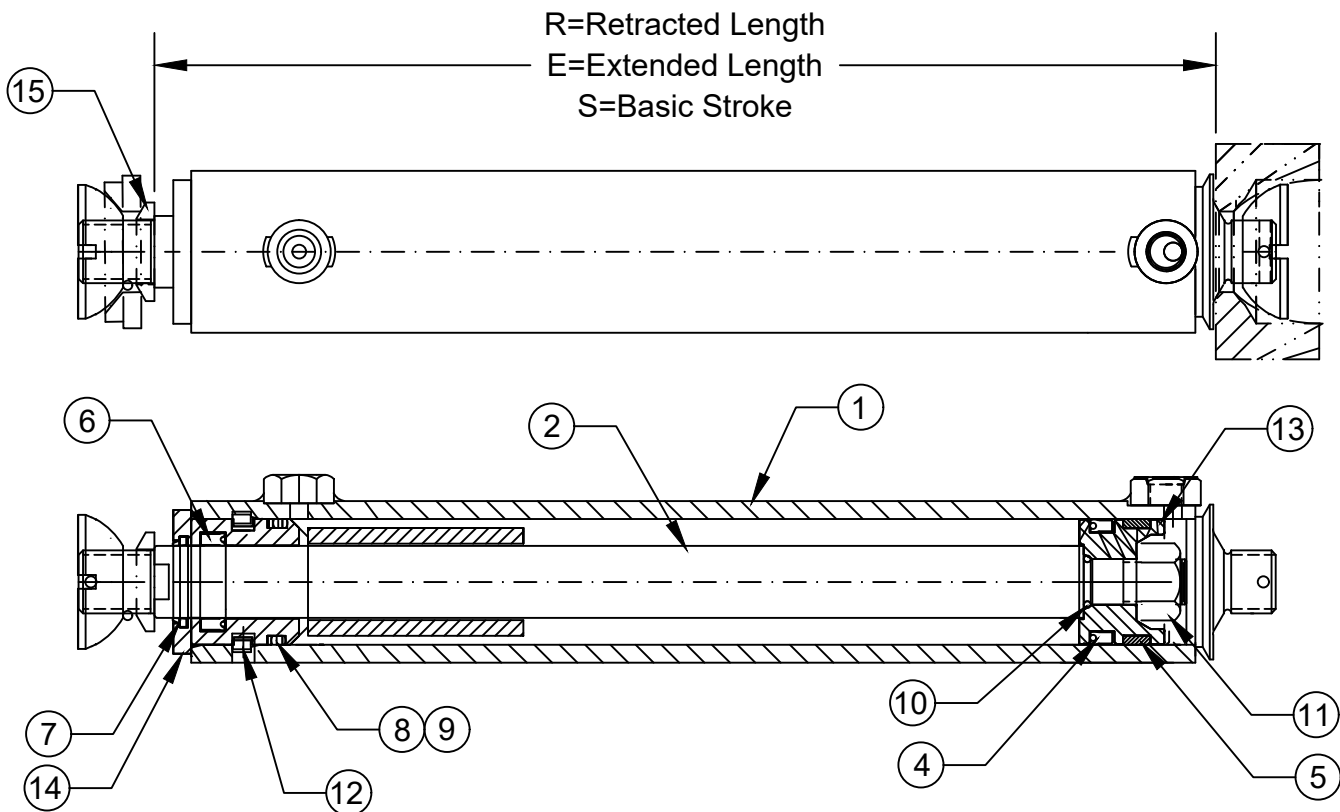
W Tack in place to lock valve assembly.

CYLINDER ASSEMBLY

Drawing reference 111714.1

Part #	R	E	S	NET STROKE
111714.1	35.08	66.16	31.08	31.08

#	QTY	PART #	DESCRIPTION	8	1	100029.2	O-Ring
1	1	111715.1	Tube Weldment	9	1	100028.2	Back-Up Ring
2	1	111717.1	Rod	10	1	100029.201	O-Ring
3	1	111482	Seal Kit (Items 4-10)	11	1	27D.10	Nut Self Locking
4	1	100032.6	Poly-Pak "B"	12	1	100027.7	Lock Wire
5	1	102099.1	Wear Ring	13	1	111374	Piston
6	1	112905	Rod Seal	14	1	111373	Gland
7	1	102098.5	Rod Wiper	15	1	111380	Washer Cylinder



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

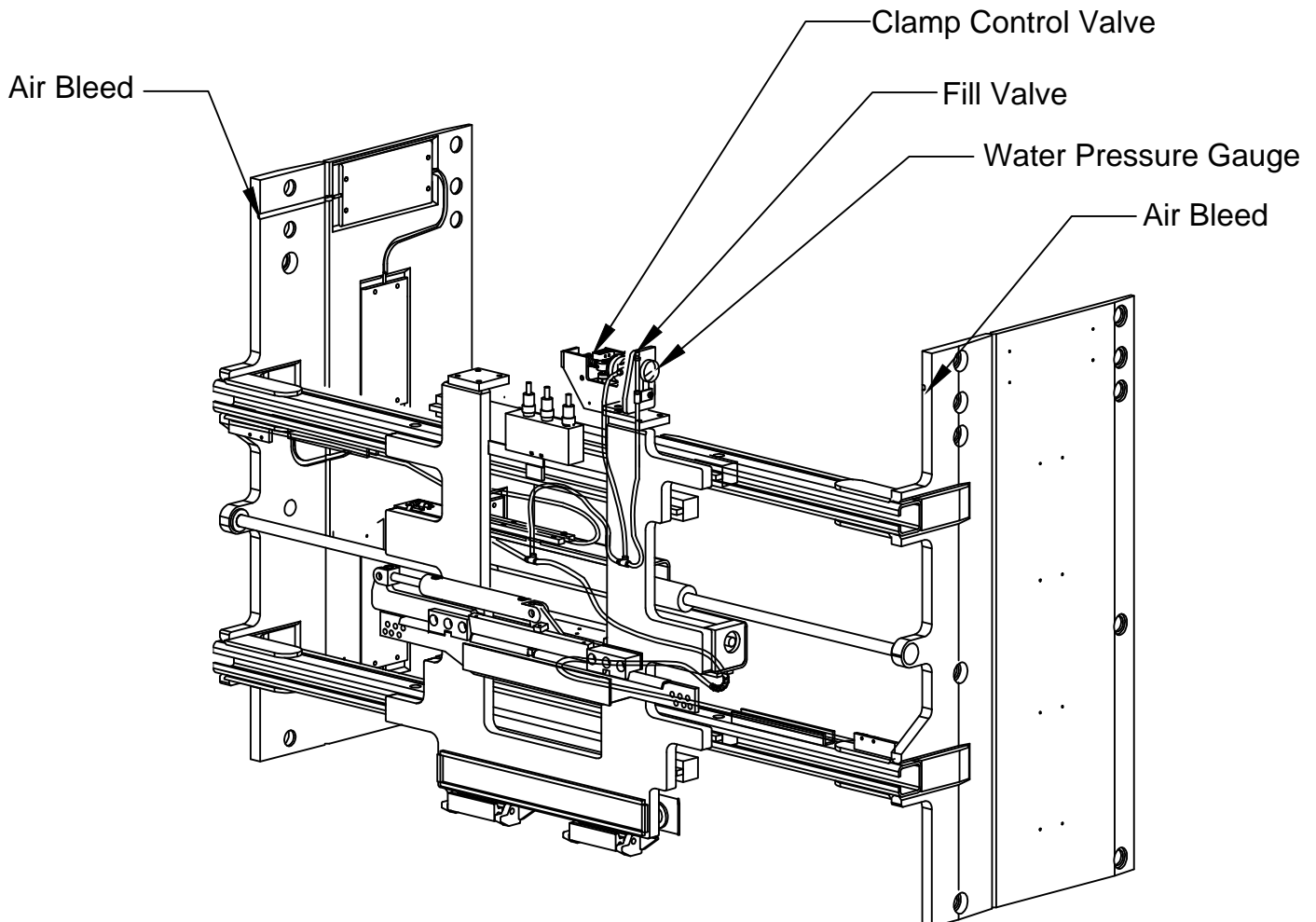
NOTE: When looking at the clamp control valve from the front of the clamp, the clevis pin should be directly in front of the shut off valve stem, or slightly to the left, when the clamp will not close. To check the pin position, turn the force control screw in until the clamp just starts to move, at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

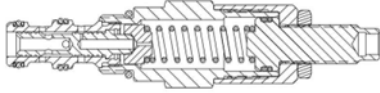
1. Clamp on the heaviest load that will be handled.
2. Adjust the side shift force down until the arms stop.
3. Turn the adjusting screw one turn in.



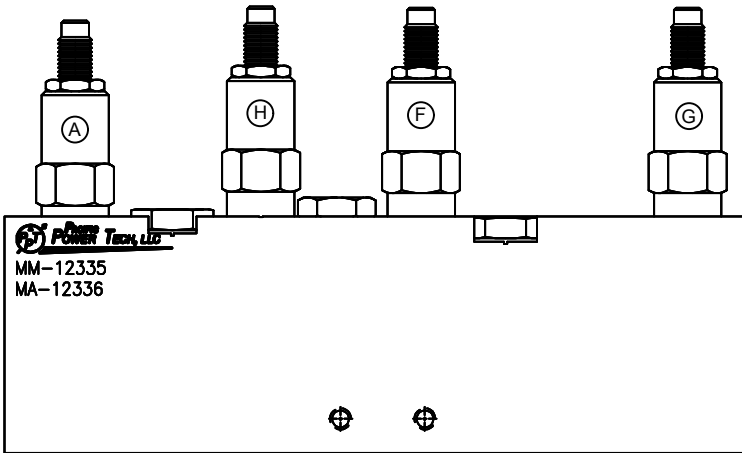
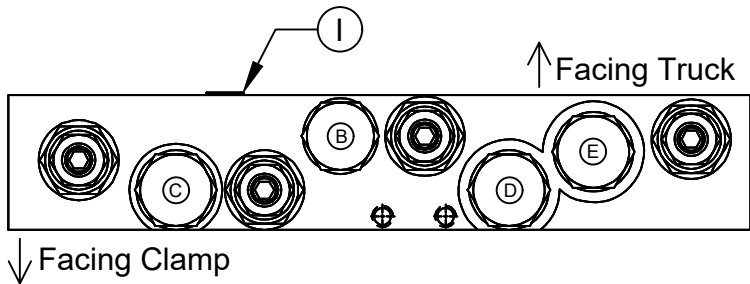
CONTROL VALVE

Drawing reference 111193

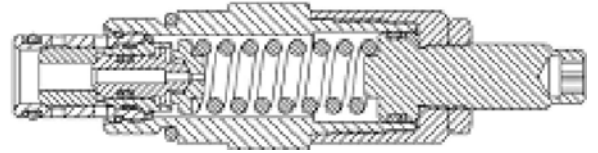
(A) **111627** Pressure Reduce/Relief Valve
Torque 15-20 FT/LBS
Seal Kit 112065



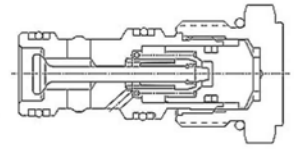
(B) **112887** Flow Divider
Torque 10-12 FT/LBS
Seal Kit 104711



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



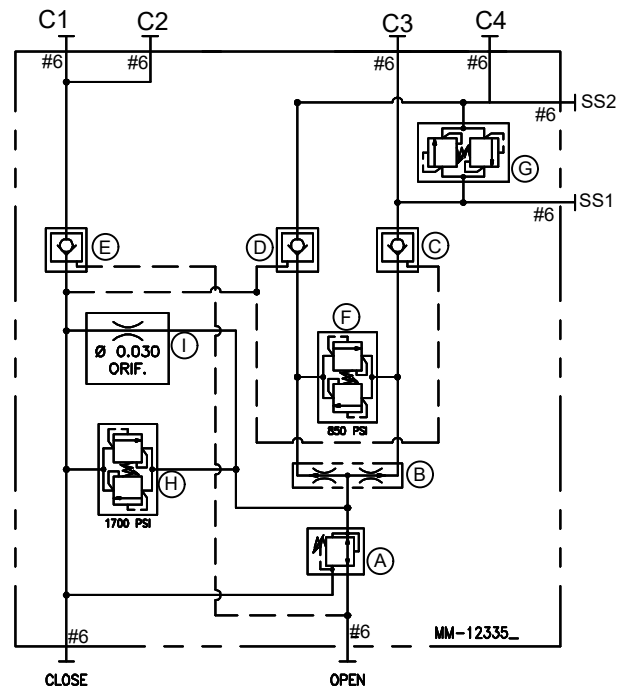
(C)(D)(E) **111244** Check Valve
Torque 30-35 FT/LBS
Seal Kit 112059



NOTE: Lubricate threads & seals prior to assembly.

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

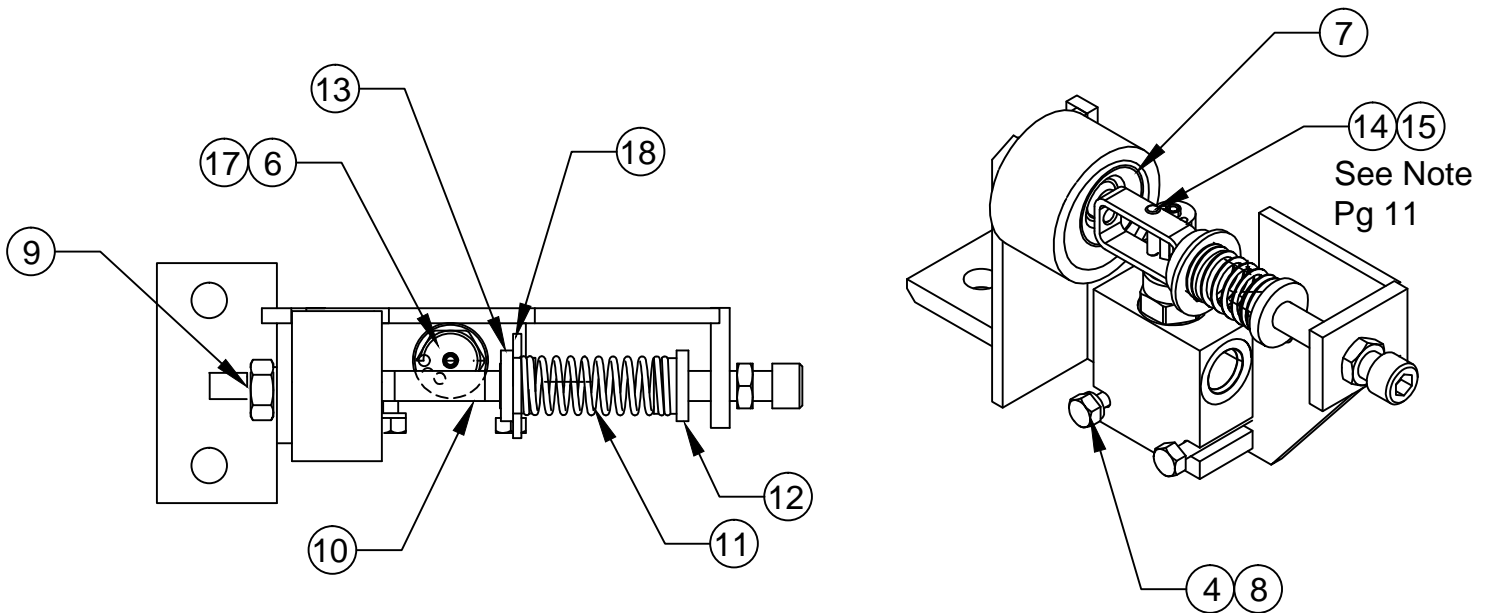
HYDRAULIC SCHEMATIC



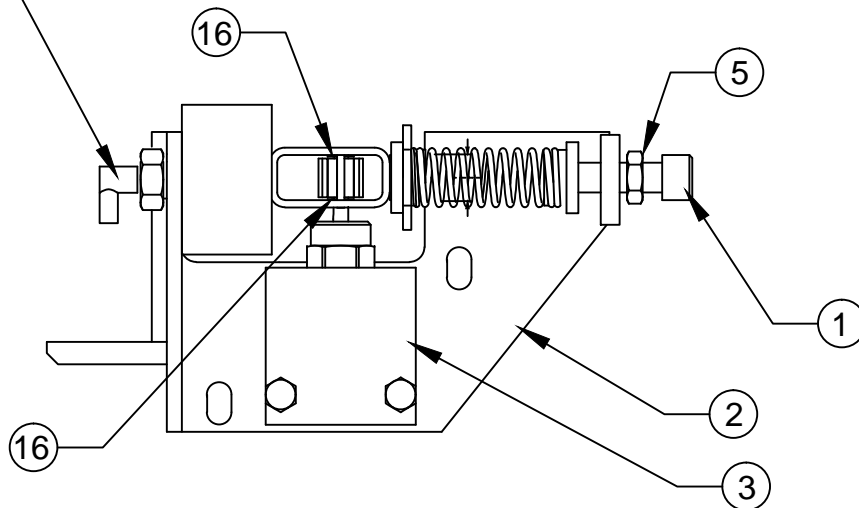
CLAMP FORCE CONTROL VALVE

Drawing reference 111085.1

#	QTY	PART #	DESCRIPTION
1	1	11G.0844	Bolt
2	1	111092	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



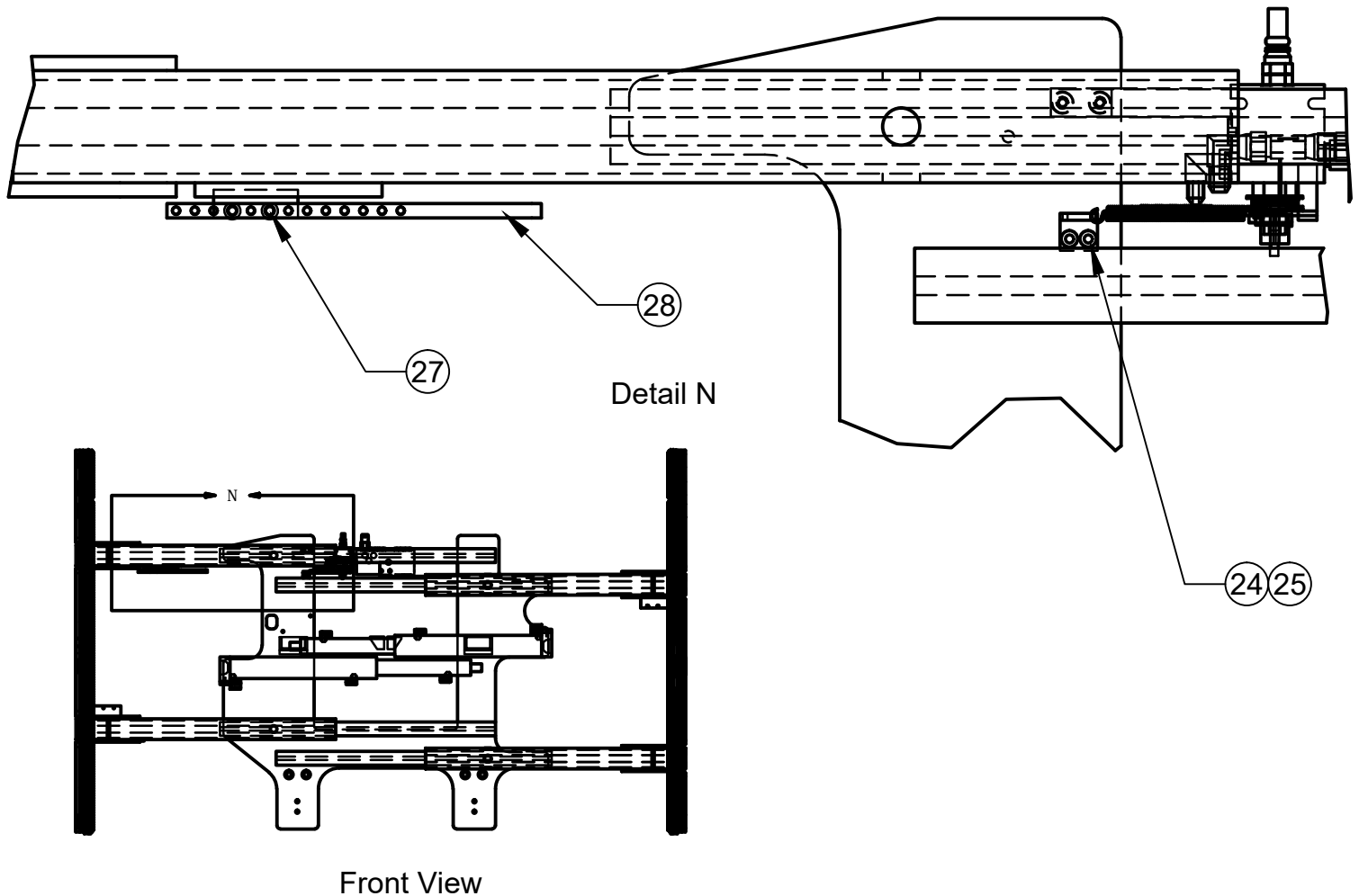
Reference 111289 see floating pads assembly



NARROW RANGE CONTROL VALVE

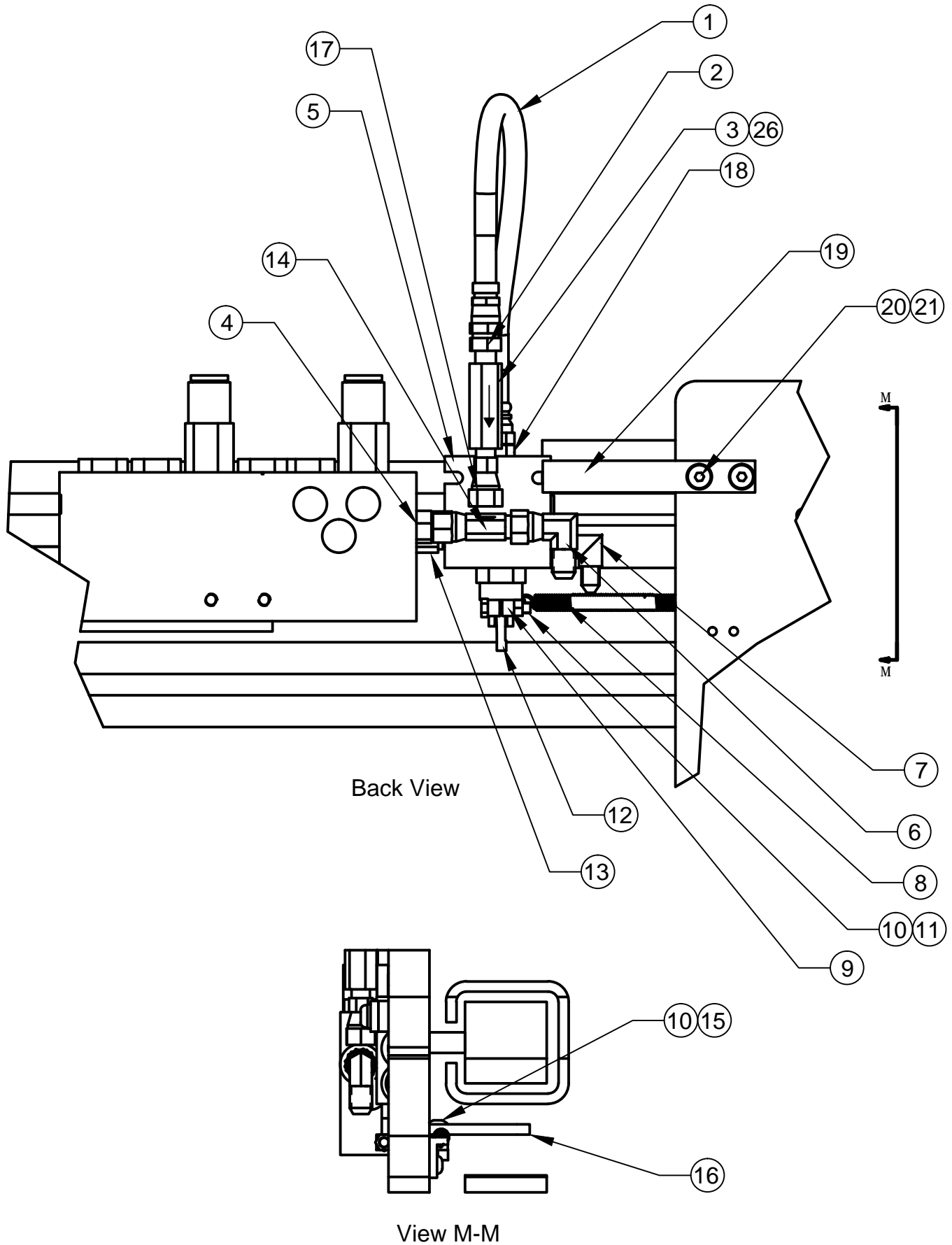
Drawing reference 111761

#	QTY	PART #	DESCRIPTION				
				14	1	100232.05	Swivel Nut Tee Fitting
1	1	100233.0145	Hose	15	1	25G.0412	Bolt
2	1	100432.05	Adapter Fitting	16	1	111636	Actuator Arm
3	1	112049	Relief Valve	17	1	111518.06	Straight Thread Adapter
4	1	100676.05	O-Ring Adapter Fitting	18	1	109626.2	Straight Thread Adapter
5	1	111755	Modified Valve Body	21	1	112124	Stop Bar
6	1	100440.05	Swivel Nut Elbow	22	2	4E.05	Lock Washer
7	1	100095.05	90° O-Ring Elbow Fitting	23	2	25G.0508	Bolt
8	1	113056	Spring	24	1	112744	Angle
9	1	112745	Collar	25	2	25G.0408	Bolt
10	2	17D.04	Nylock Nut	26	1	100251.03	Hex Plug Fitting
11	1	1C.0416	Bolt	27	1	113094	Cam Bar
12	1	111760	Direction Valve Cartridge	28	2	25G.0412	Bolt
13	1	105633	Connector Fitting				



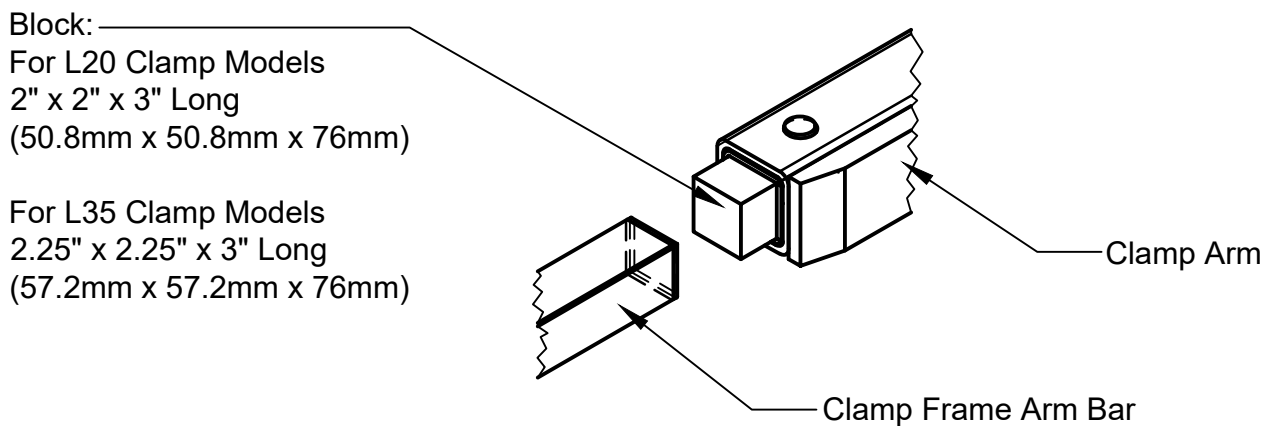
NARROW RANGE CONTROL VALVE

Drawing reference 111761



ARM SLIDE & SHIM REPLACEMENT

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.

TROUBLE SHOOTING GUIDE

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.