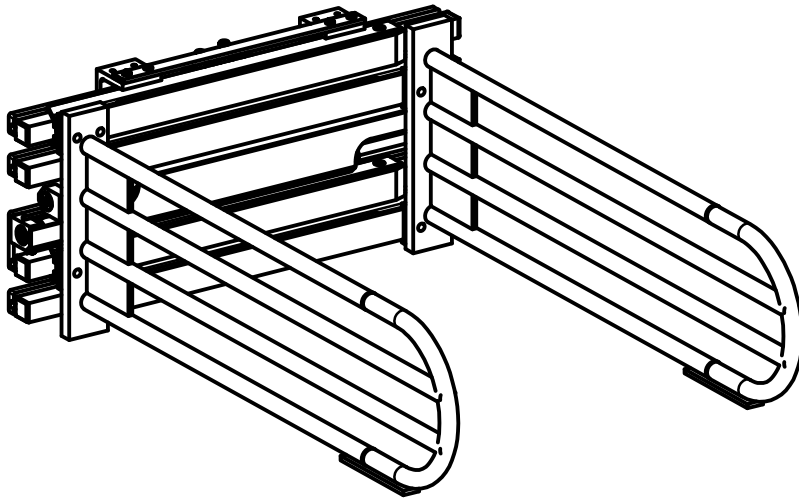




SERVICE MANUAL / PARTS LIST

FOAM CLAMP

MODEL #109531



CONTENT:

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1	Lift Truck Requirements General Installation Procedures General Inspection & Maintenance
2-4	Clamp Assembly
5	Hydraulic Assembly
6	Cylinder Assembly
7	Clamp Control Valve
8	Adjusting Relief Pressure
9	Arm and Shim Replacement
10	Trouble Shooting Guide

Specifications:

Mounting: ITA Class II
Capacity: 2500 lbs at 35"
Arm Size: 20" High x 70" Long
Range: 27" - 101"
Frame: 56" Wide

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

LIFT TRUCK REQUIREMENTS

CAPACITY

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

BALE CLAMP HYDRAULICS

Recommended Truck Pressure: 1700 PSI (142 to 170 bar)

Oil volume: 6-10 GPM (22.5 to 38 l/min)

Hydraulic fluid: petroleum based hydraulic fluid only

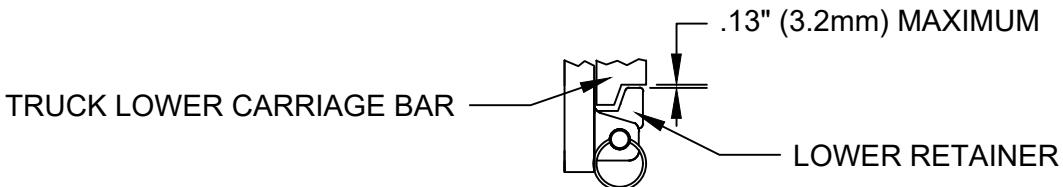
Hydraulic supply group: includes hoses and take-up - one set for each function

Auxiliary valve:

2 Function (Side Shift & Clamp)= a double auxiliary valve

GENERAL INSTALLATION PROCEDURES

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



3. Attach the truck's supply group (take-up) to hoses supplied on the attachment base.
4. Standing clear of the clamp attachment, cycle the attachment open and close several times to distribute the hydraulic oil. Use caution because partially filled hydraulic lines may cause erratic movement.

GENERAL INSPECTION AND MAINTENANCE

1. Check all hydraulic fittings, hoses, cylinders and valves for leakage. Repair or replace as required
2. Check hoses for pinch points and signs of wear. Replace worn hoses with LORON hose or Parker Parflex # 560 wire (reinforced hose only).
3. All bolts should be checked and tightened as required.
4. Check lower retainer clearance referenced to item 2 in General Installation Procedures above. A shim may be tack-welded to the bottom of the lower retainers to tighten the clearance if necessary.

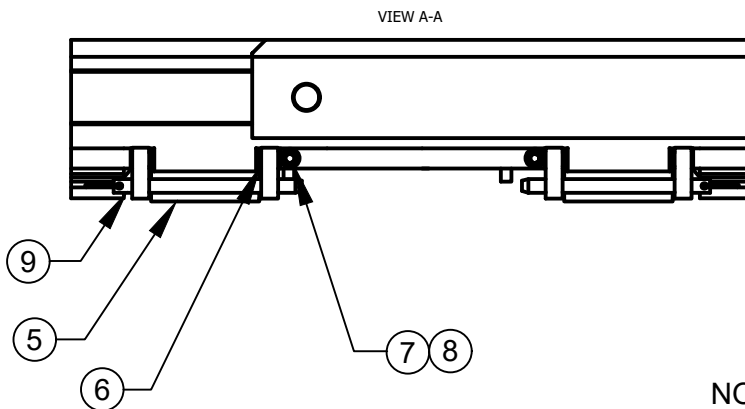
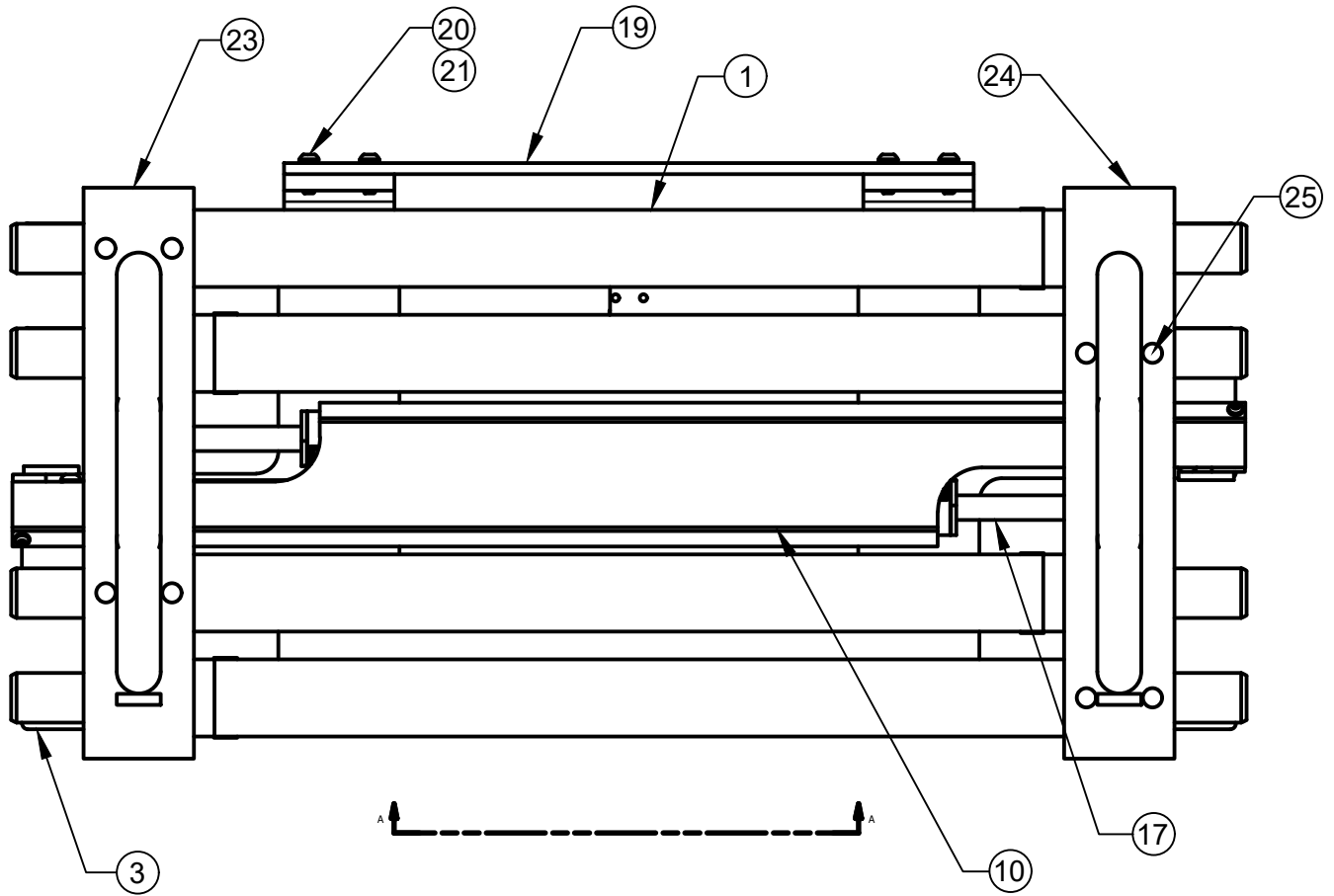
CLAMP ASSEMBLY-1

Drawing reference: 103683.22 & 109604.1

#	QTY	PART #	DESCRIPTION
1	4	101052.18	Arm Weldment
2	8	103660.22	Angle Slide
3	1	101043.12	Frame Weldment
4	12	107997	Slide Button
5	2	101098	Lower Hook
6	2	100077.3	Round Bar
7	2	11G.0612	Bolt
8	2	16E.06	Lock Washer
9	2	100572.060	Ball Lock Pin
10	1	101098.3	Cover
11	2	25G.0612	Bolt
12	2	4E.06	Lock Washer
13	4	101324	Spherical Bearing
14	4	101333	Slotted Nut
15	4	100574.83	Cotter Pin
16	4	100047	Cylinder Washer
17	2	101251.48	Cylinder Assembly
18	12	109653.2	Arm Slide Shim
19	1	101779	Guard
20	4	25G.0824	Bolt
21	4	4E.08	Lock Washer
22	4	103661.22	Flat Slide
23	1	109605	Right Hand Arm Weldment
24	1	109706	Left Hand Arm Weldment
25	8	102163.1	Bolt (Arm)

CLAMP ASSEMBLY-2

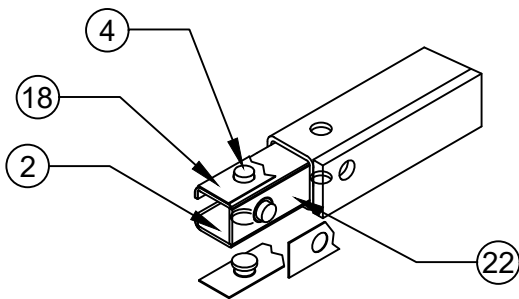
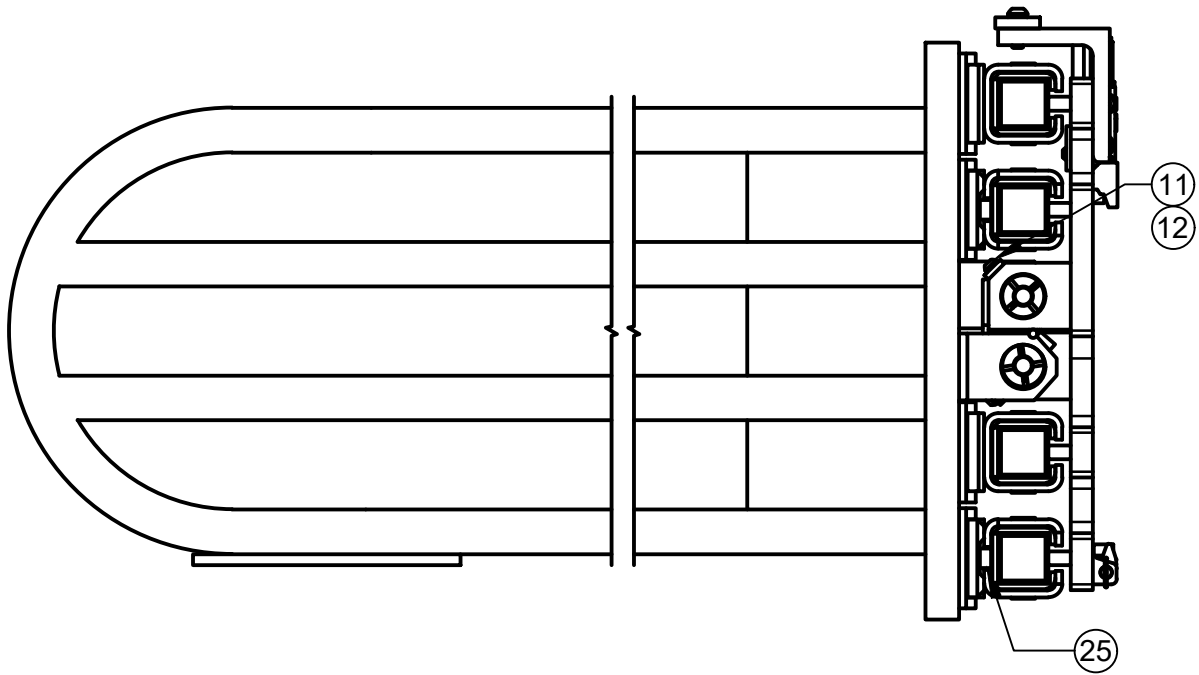
Drawing reference: 103683.22 & 109604.1



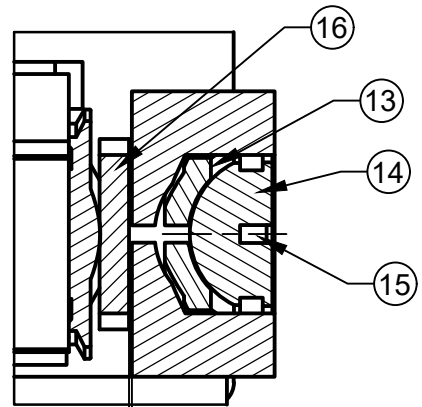
NOTE: Item 29
Torque Specs - Lubricated 675 ft-lbs
For bolt on arms

CLAMP ASSEMBLY - 3

Drawing reference: 103683.22 & 109604.1



NOTE: Item 29
Torque Specs - Lubricated 675 ft-lbs
For bolt on arms

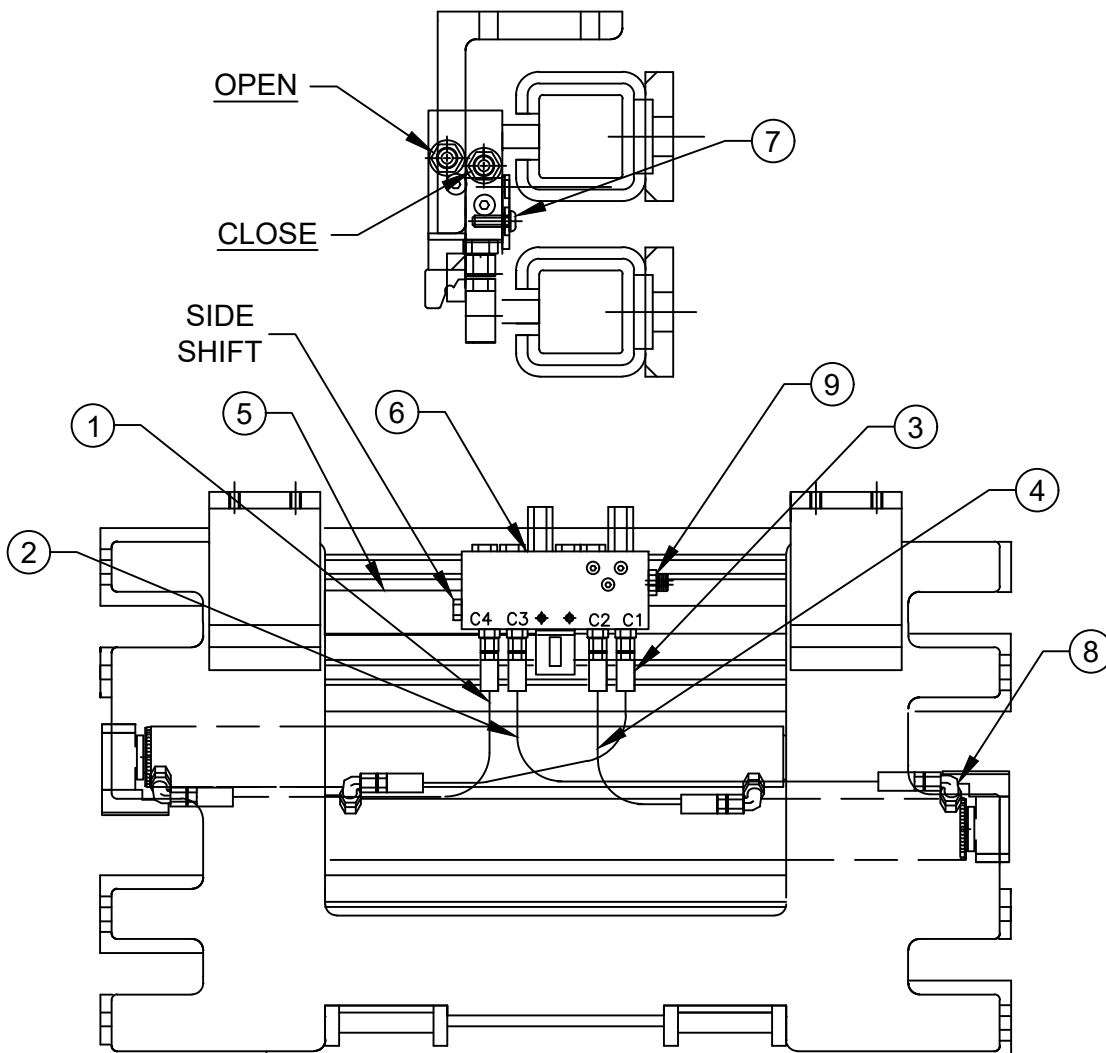


NOTE: 0.03/0.06 → →
Adjust slotted nut to allow
for clearance as shown

HYDRAULIC ASSEMBLY

Drawing reference: 101125.25

#	QTY	PART #	DESCRIPTION
1	1	100674.0280	Hose
2	1	100674.0330	Hose
3	1	100674.0235	Hose
4	1	100674.0175	Hose
5	1	101423	Valve Mounting Plate
6	1	100011	Main Clamp Valve
7	2	25GN.0516	Bolt
8	4	100095.05	90° O-Ring Fitting
9	8	100676.05	Straight O-Ring Fitting

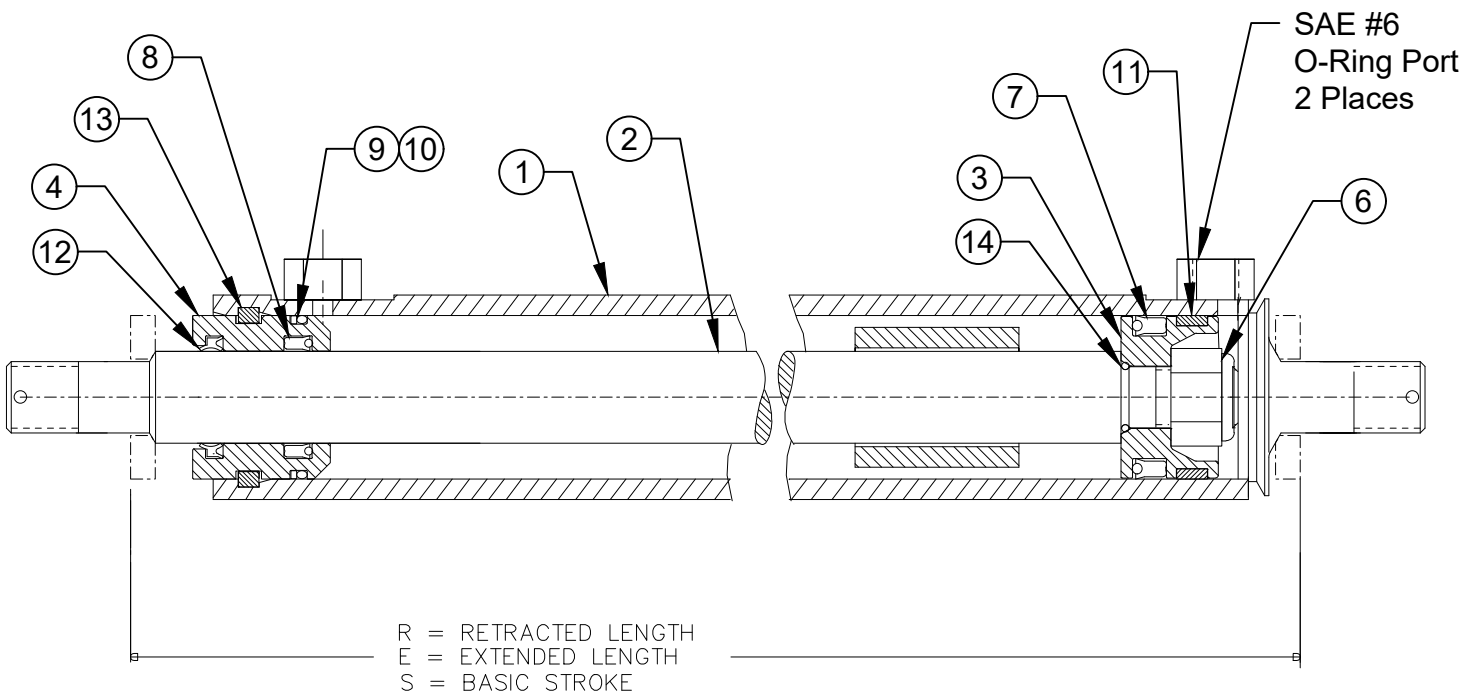


CYLINDER ASSEMBLY

Drawing reference 101251.48

Part #	R	E	S	NET STROKE
101251.48	41.94	79.19	37.25	37.25

#	QTY	PART #	DESCRIPTION	#	QTY	PART #	DESCRIPTION
1	1	101257.46	Tube Weldment	8	1	100031.059	Poly Pak
2	1	100965.52	Rod	9	1	100028.314	Back-Up Ring
3	1	101256	Piston	10	1	100029.314	O-Ring
4	1	101254	Gland	11	1	101260	Wear Ring
5	1	101261	Seal Kit (Items 6-14)	12	1	101034.6	Wiper
6	1	101035	ESNA Nut	13	1	100027.2	Lock Wire
7	1	100032.095	Poly Pak	14	1	100029.203	O-Ring

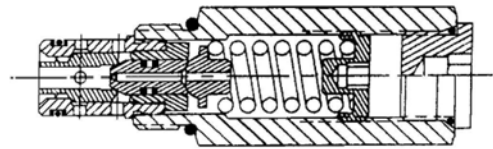
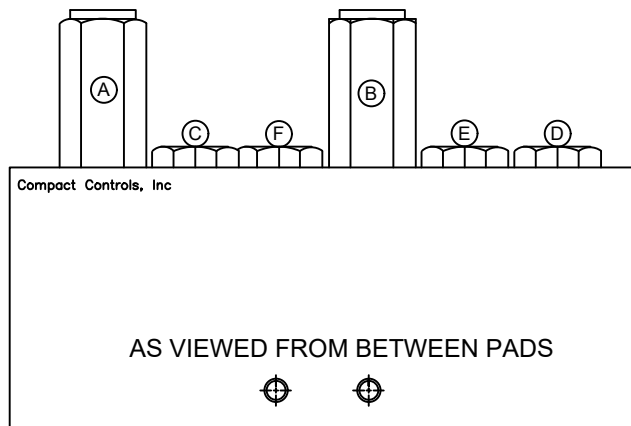
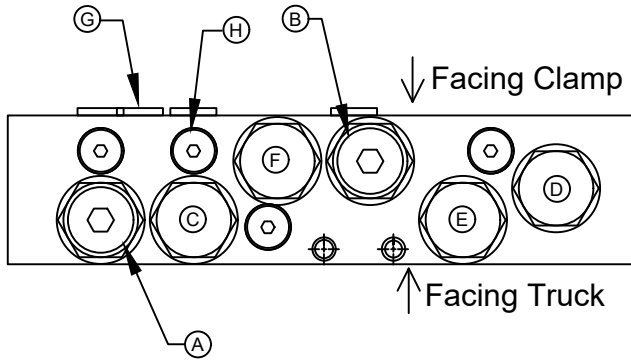


Cylinder Service

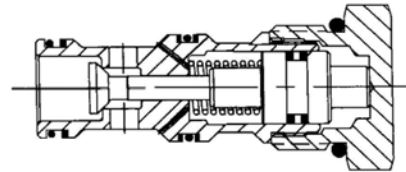
- Prior to assembly lubricate seals, cylinder bore and rod with STP.
- Inspect all parts for scratches, nicks and gouges - replace all damaged components.
- Inspect cylinder bore and rod for scoring - replaced if scored.
- Avoid damage to seal grooves - use a dull screwdriver for seal removal.
- Torque piston nut to 200 FT-LBS. (27.7kg-m).

CLAMP CONTROL VALVE

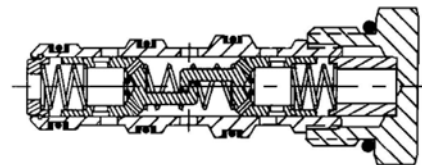
Drawing reference 100011



(B) 103815 BIDIRECTIONAL RELIEF
(A) 103815.1 BIDIRECTIONAL RELIEF
 TORQUE TO 35-40 FT/LBS
 104716 SEAL KIT



(D, E, F) 103814 P.O. CHECK VALVE
 TORQUE 35-40 FT/LBS
 104715 SEAL KIT



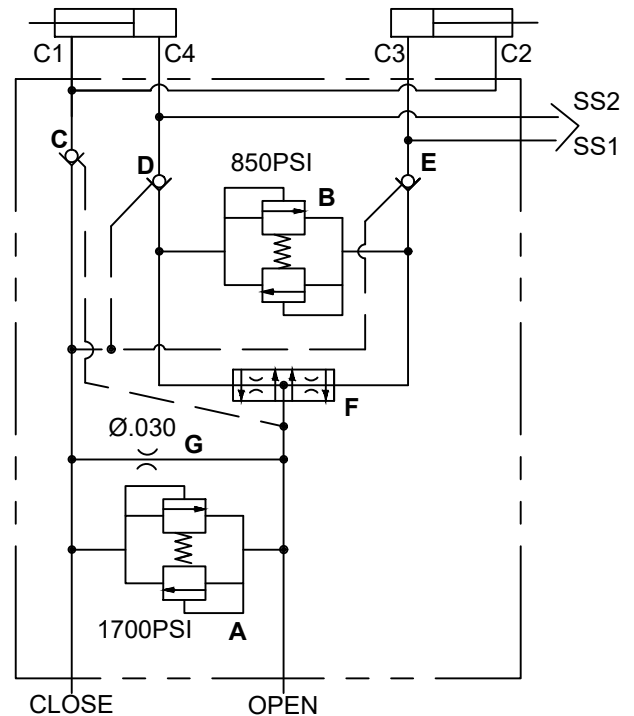
(C) 103813 FLOW DIVIDER
 TORQUE 10-12 FT/LBS
 104711 SEAL KIT

NOTE:

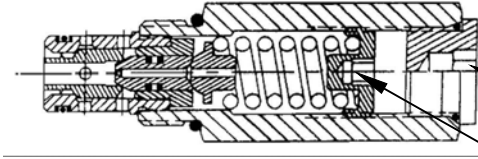
Lubricate threads & seals prior to assembly.
 Side Shifting Ports plugged for Non-Side Shift

ID	QTY	PART #	DESCRIPTION
A	1	103815.1	Bi-Directional Relief Cartridge
B	1	103815	Bi-Directional Relief Cartridge
C	1	103814	P.O. Check Valve Cartridge
D	1	103814	P.O. Check Valve Cartridge
E	1	103814	P.O. Check Valve Cartridge
F	1	103813	Flow Divider Cartridge
G	1	104721	Orifice
H	14	101419.03	SAE #4 O-Ring Plug

HYDRAULIC SCHEMATIC



ADJUSTING RELIEF PRESSURE



WARNING:

RELEASE TRUCK PRESSURE PRIOR TO SERVICING VALVE BY TURNING THE TRUCK OFF AND "WORKING" THE SIDE SHIFT AND CLAMP FUNCTION CONTROLS.

REMOVE CAP - REPLACE CAP PRIOR TO PRESSURIZING SYSTEM.

TURN ADJUSTMENT:
COUNTERCLOCKWISE TO DECREASE PRESSURE
CLOCKWISE TO INCREASE PRESSURE.

DO NOT EXCEED 2000 PSI (136 BAR)

ADJUSTING SYSTEM PRESSURE

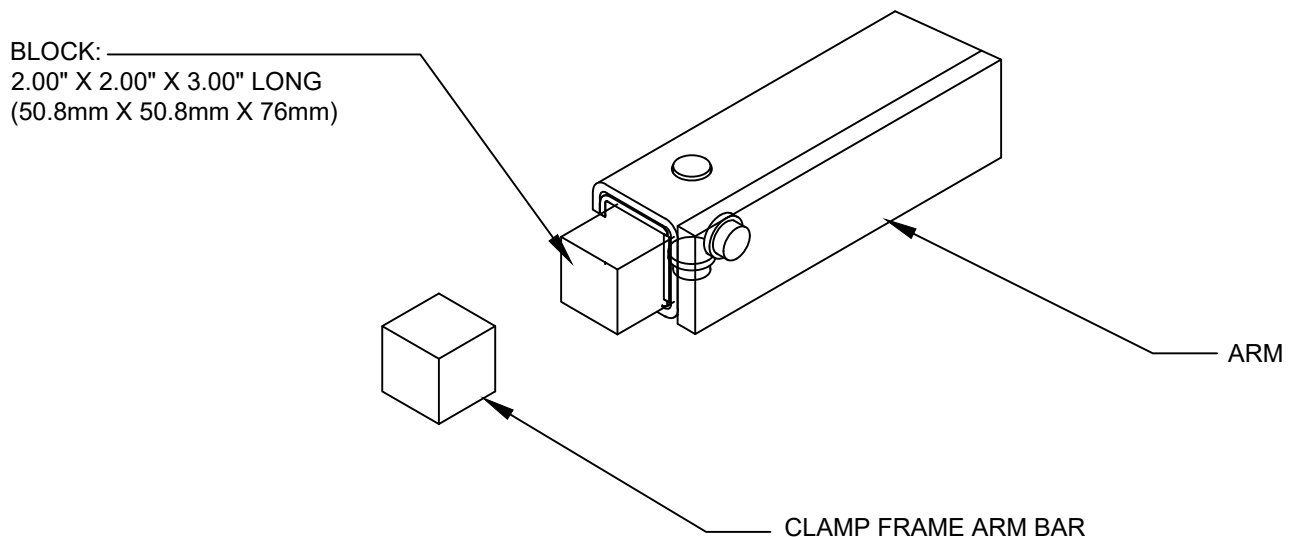
1. Release system pressure prior to servicing valve by turning the truck off and working the side shift and clamp function controls several times.
2. Prior to adjusting system pressure, disconnect the hoses from the clamp valve at the "open" and "close" ports. Install a separate in-line tee with a short hose and a pressure gauge that is calibrated to 5000 psi (340 bar) in each port (two required). Reconnect hoses.
3. Measure system pressure by securely clamping a load or close the clamp arms all the way and hold the control and hold the control lever in the closed (clamped) position. The actual clamping pressure is the difference between the pressure shown on the gauge in the "open" port subtracted from the pressure shown on the "close" port gauge.
4. Release system pressure (see step 1). Remove cap on bidirectional valve (refer to page 8) and adjust cartridge no more than one quarter turn. Replace cap prior to pressurizing system. Repeat until desired pressure setting is achieved. Do not exceed 2000 psi (136 bar) clamping pressure.

ADJUSTING BY-PASS PRESSURE

1. If one arm bottoms out and the other moves more than 3" (76mm) before opening fully, increase by-pass relief pressure. If one arm bottoms out and the other does not open fully, decrease by-pass pressure.
2. To adjust by-pass relief pressure, release system pressure prior to servicing valve by turning the truck off and working the side shift and clamp function control several times.
3. Remove cap on bidirectional valve (item #1 on side shifting valve) and adjust cartridge no more than one quarter turn. Replace cap prior to pressurizing system. Repeat until desired pressure setting is achieved. Do not exceed 2000 psi (136 bar).

ARM SLIDE & SHIM REPLACEMENT

1. To replace the slides, extend the arms to 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 frame.
3. Remove the cotter pin, slotted nut and spherical bearing from the end of the clamp cylinder rod. Keeping hands and feet clear, carefully slide the clamp arm off of the clamp frame.
4. Install the arm on the clamp frame ensuring that the arm moves freely without excessive binding. If the arm is too loose or too tight add or remove shims as required. Once the clearance is satisfactory insert the cylinder rod into the cylinder anchor on the arm. Install the spherical bearing, nut and cotter pin onto the cylinder rod end. Be sure to leave .03" - .06" (.7mm to 1.5mm) clearance to allow the cylinder to "float" on it's mountings (see page 7). Remove the cotter pin, slotted nut and spherical bearing from the end of the clamp cylinder rod. Keeping hands and feet clear, carefully slide the clamp arm off of the clamp frame.



5. Inspect slides and slide buttons for wear. Slides may be rotated end-for-end and re-used 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 .06" (1.5mm) thick or any slide that is deeply scored or broken.
6. 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 in 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.
7. 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.

TROUBLE SHOOTING GUIDE

LOADS SLIPPING OR DROPPING

POSSIBLE CAUSES

1. Valve cartridges are not sufficiently tight.
2. System relief pressure is set too low.
3. Internal leakage in cylinder.
4. Incorrect clamp pad size or load not fully engaged in clamp arms.
5. Pad camber is set incorrectly.
6. Load too heavy for clamp capacity.
7. Load may not be stacked correctly or may need to be unitized.
8. Bent arms or contact pads.

SOLUTIONS

1. Tighten all cartridges to torque values shown on page 8.
2. See Adjusting System Pressure on page 9.
3. Replace Cylinder seals. If tube, piston or rod is scored replace with new parts.
4. Be sure the clamp pads are correctly sized for the load and the load is positioned fully in the clamp arms.
5. Shim pads to change camber.
6. Consult factory.
7. Re-stack or unitize load (shrink wrap).
8. Consult factory.

CRUSHING LOADS

POSSIBLE CAUSES

1. System relief pressure is set too high.
2. Operator over-working (milking) control valve.
3. Bent arms or contact pads.
4. Pad camber is set incorrectly.
5. Variable loads that require different clamping pressures.

SOLUTIONS

1. See Adjusting System Pressure page 9.
2. Once the pad contacts the load, clamp the load in one even motion - do not over-work the valve.
3. Consult factory.
4. Shim pads to change the camber.
5. Install a 4-position pressure regulator on truck cowl - consult factory for part number and availability.