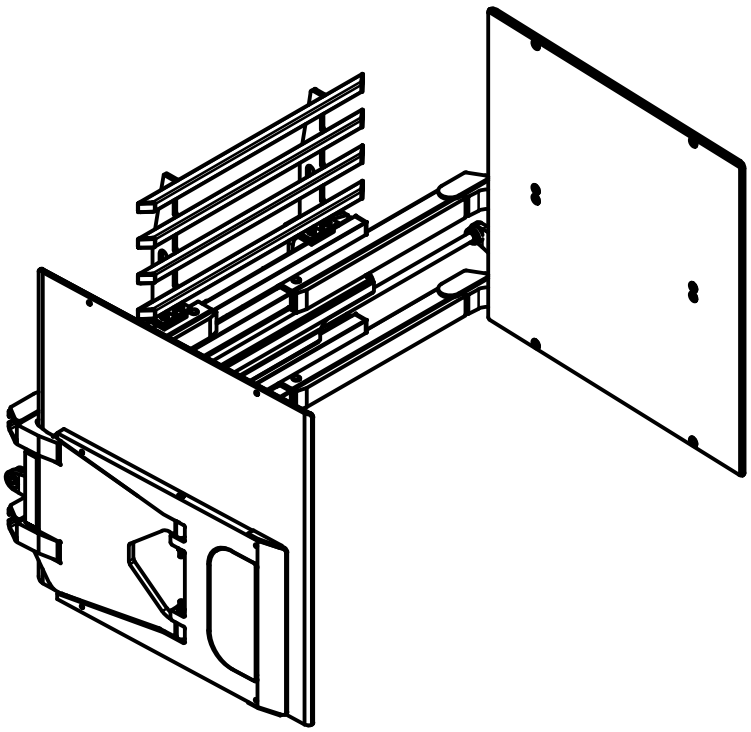
SERVICE MANUAL / PARTS LIST

CARTON CLAMP
(L35A & L20A)



CONTENT:

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

R0 - 04/2023

LIFT TRUCK REQUIREMENTS

CAPACITY

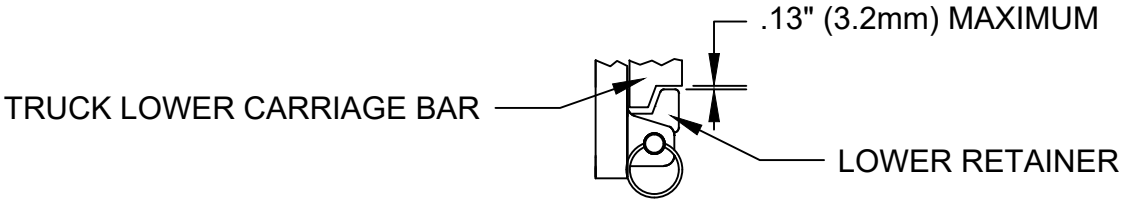
Capacity shown on the clamps's name plate is for the clamp only. The combined truck and clamp capacity is provided by the lift truck manufacturer.

CLAMP HYDRAULICS

Recommended Truck Pressure: 1700 PSI - 2500 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 seated 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

L20A CLAMPS

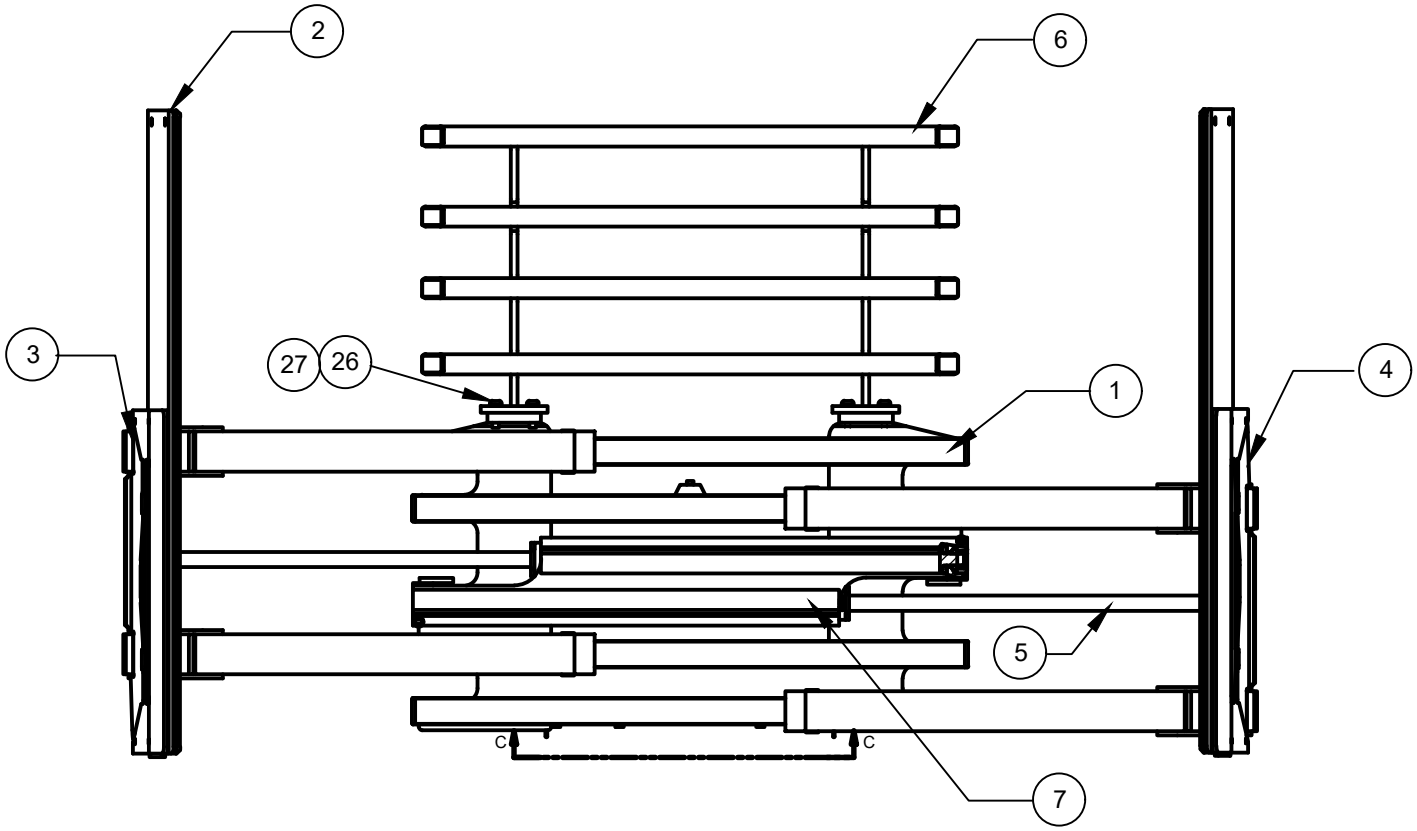
#	QTY	PART #	DESCRIPTION
1	CONSULT FACTORY		FRAME
2	CONSULT FACTORY		PAD
3	CONSULT FACTORY		RIGHT HAND ARM
4	CONSULT FACTORY		LEFT HAND ARM
5	CONSULT FACTORY		CYLINDER ASSEMBLY
6	CONSULT FACTORY		LOAD BACKREST
7	CONSULT FACTORY		FRONT COVER
8	CONSULT FACTORY		PLASTIC SLIDE
9	CONSULT FACTORY		FLAT SIDE
10	4	110730	SPHERICAL SEAT
11	4	110731	SPHERICAL BEARING
12	4	100574.86	COTTER PIN
13	4	11G.08136	SOCKET HEAD BOLT
14	4	17D.08	ESNA NUT
15	CONSULT FACTORY		PAD SUPPORT
16	CONSULT FACTORY		HEX HEAD BOLT
17	8	108088	SPRING WASHER
18	2	101098	HOOK-LOWER
19	2	100077.3	BAR .50 DIA X 5.3 C1018
20	2	100572.060	BALL LOCK PIN
21	2	11G.0612	SOCKET HEAD BOLT
22	2	16E.06	HI COLLAR LOCK WASHER
23	12	111619	SLIDE BUTTON
24	2	25G.0612	BUTTON HEAD BOLT
25	2	4E.06	LOCK WASHER
26	CONSULT FACTORY		BUTTON HEAD BOLT
27	8	4E.08	LOCK WASHER
28	4	100047	CYLINDER WASHER
29	CONSULT FACTORY		SHIM
30	4	100029.314	O RING
31	1	112444	MOUNTING LUG
32	2	11G.0820	SOCKET HEAD BOLT
33	2	16E.08	LOCK WASHER
34	CONSULT FACTORY		PLATE ASSEMBLY KIT *NOT SHOWN*

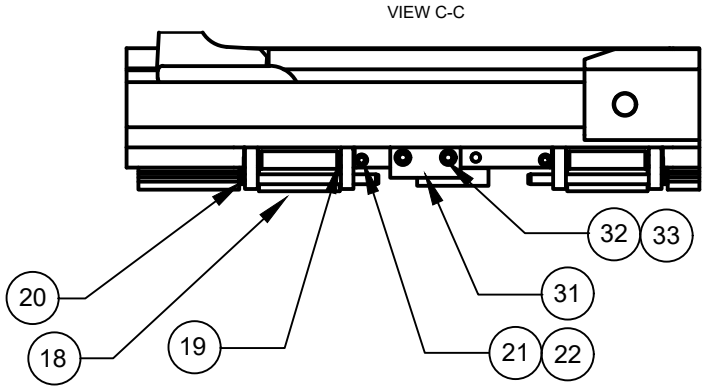
L35A CLAMPS

#	QTY	PART #	DESCRIPTION
1	CONSULT FACTORY		FRAME
2	CONSULT FACTORY		PAD
3	CONSULT FACTORY		RIGHT HAND ARM
4	CONSULT FACTORY		LEFT HAND ARM
5	CONSULT FACTORY		CYLINDER ASSEMBLY
6	CONSULT FACTORY		LOAD BACKREST
7	CONSULT FACTORY		FRONT COVER
8	CONSULT FACTORY		PLASTIC SLIDE
9	CONSULT FACTORY		FLAT SIDE
10	4	110730	SPHERICAL SEAT
11	4	110731	SPHERICAL BEARING
12	4	100574.86	COTTER PIN
13	4	11G.08136	SOCKET HEAD BOLT
14	4	17D.08	ESNA NUT
15	CONSULT FACTORY		PAD SUPPORT
16	8	1C.0820	HEX HEAD BOLT
17	8	108088	SPRING WASHER
18	2	101098	HOOK-LOWER
19	2	100077.3	BAR .50 DIA X 5.3 C1018
20	2	100572.060	BALL LOCK PIN
21	2	11G.0612	SOCKET HEAD BOLT
22	2	16E.06	HI COLLAR LOCK WASHER
23	8	106041	SLIDE BUTTON
24	2	25G.0612	BUTTON HEAD BOLT
25	2	4E.06	LOCK WASHER
26	8	25G.0524	BUTTON HEAD BOLT
27	8	4E.08	LOCK WASHER
28	4	100047	CYLINDER WASHER
29	CONSULT FACTORY		SHIM
30	4	100029.314	O RING
31	1	111959	MOUNTING LUG
32	2	11G.0820	SOCKET HEAD BOLT
33	2	16E.08	LOCK WASHER
34	4	111867	SLIDE BUTTON

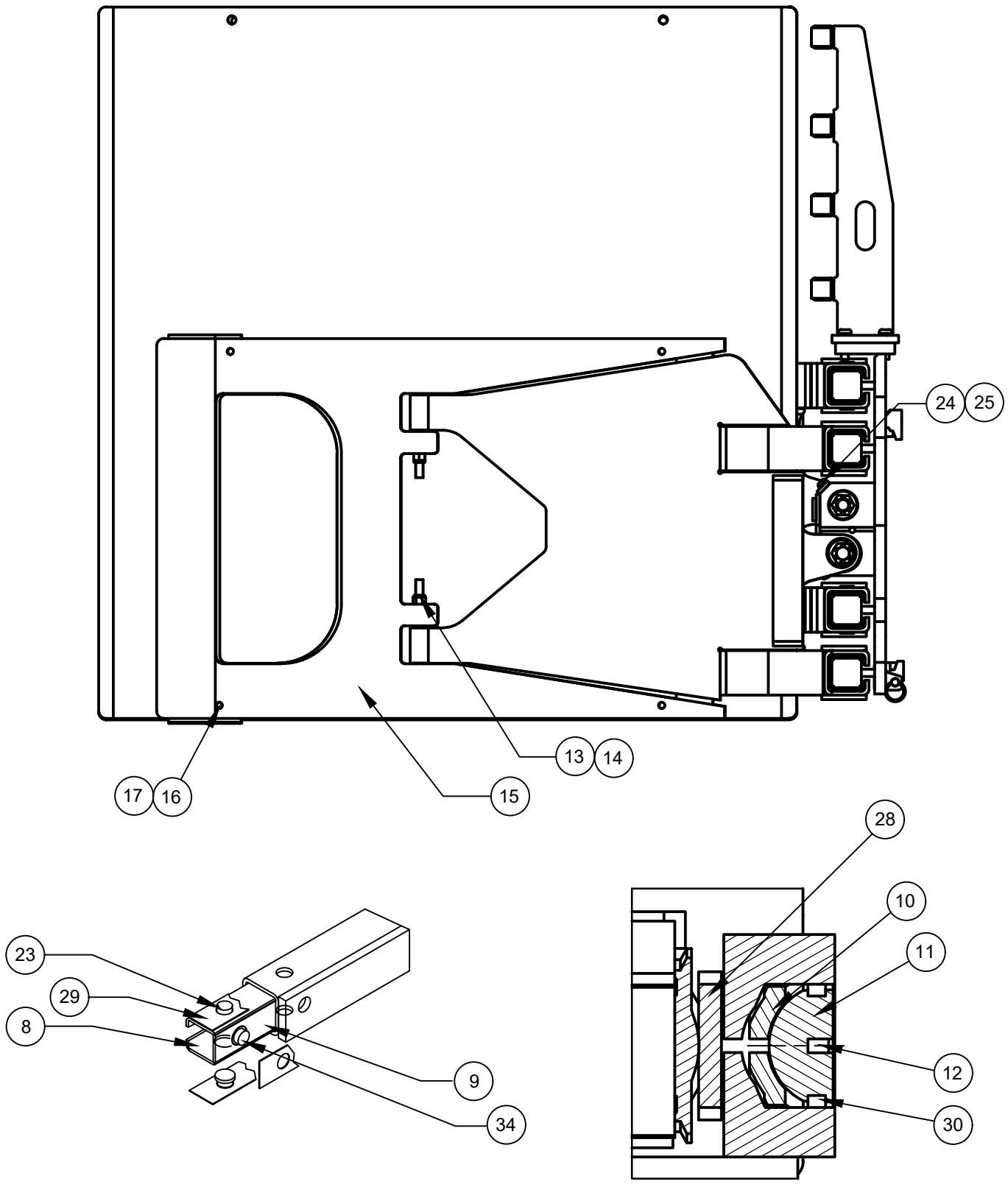
Note: Older Attachments may require different parts then shown consult with factory for Attachments 2009 or older.

CLAMP ASSEMBLY - 2



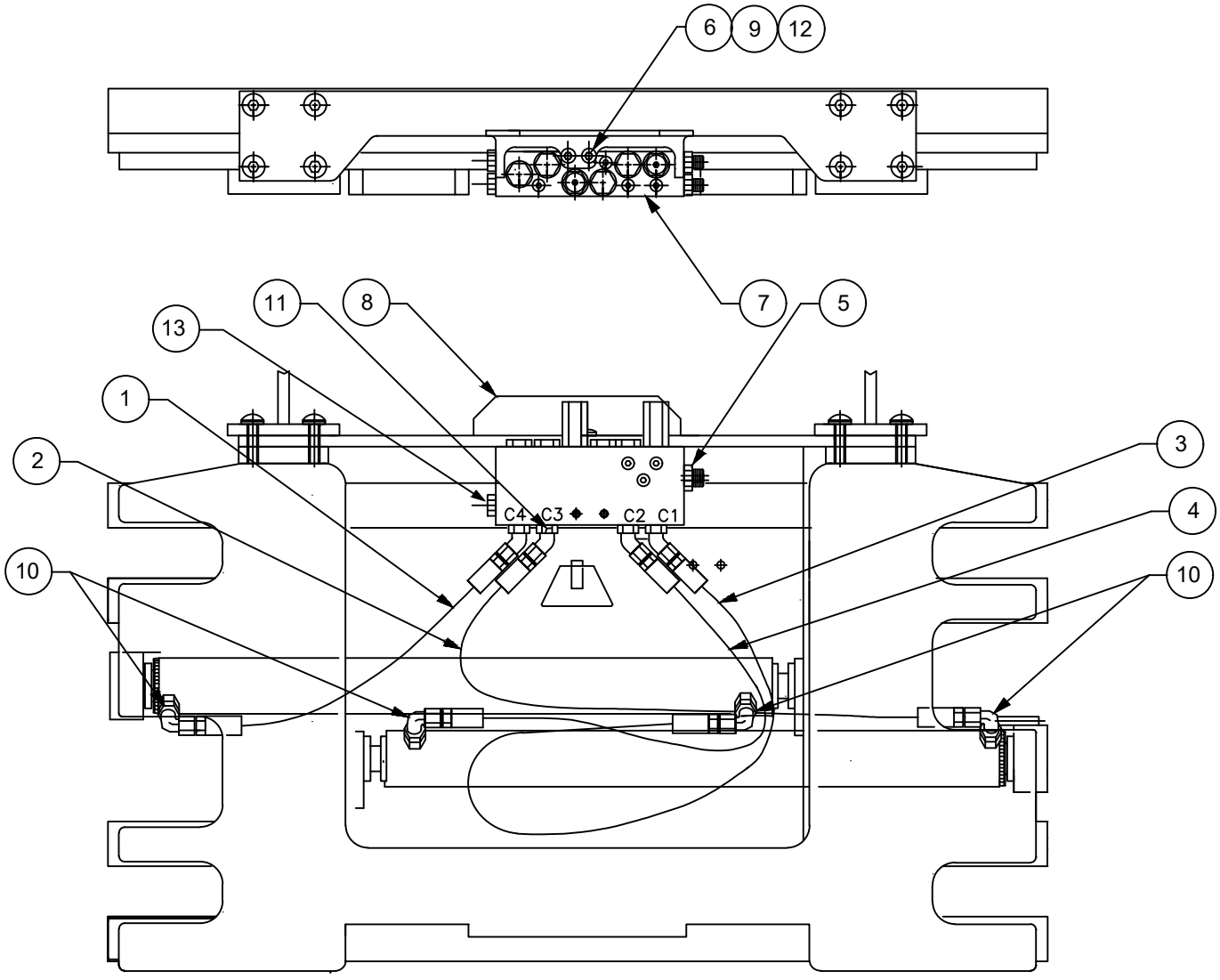


CLAMP ASSEMBLY - 3



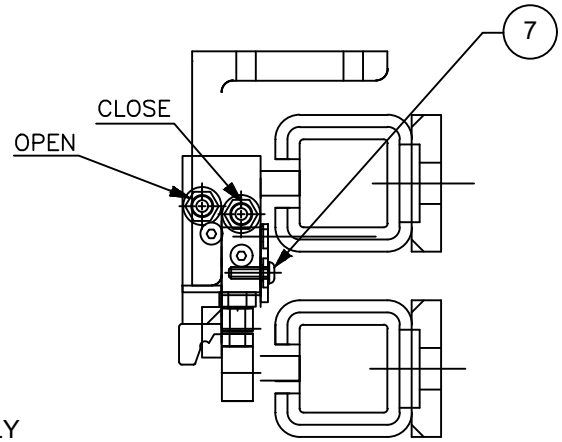
HYDRAULIC ASSEMBLY - L20A CLAMPS

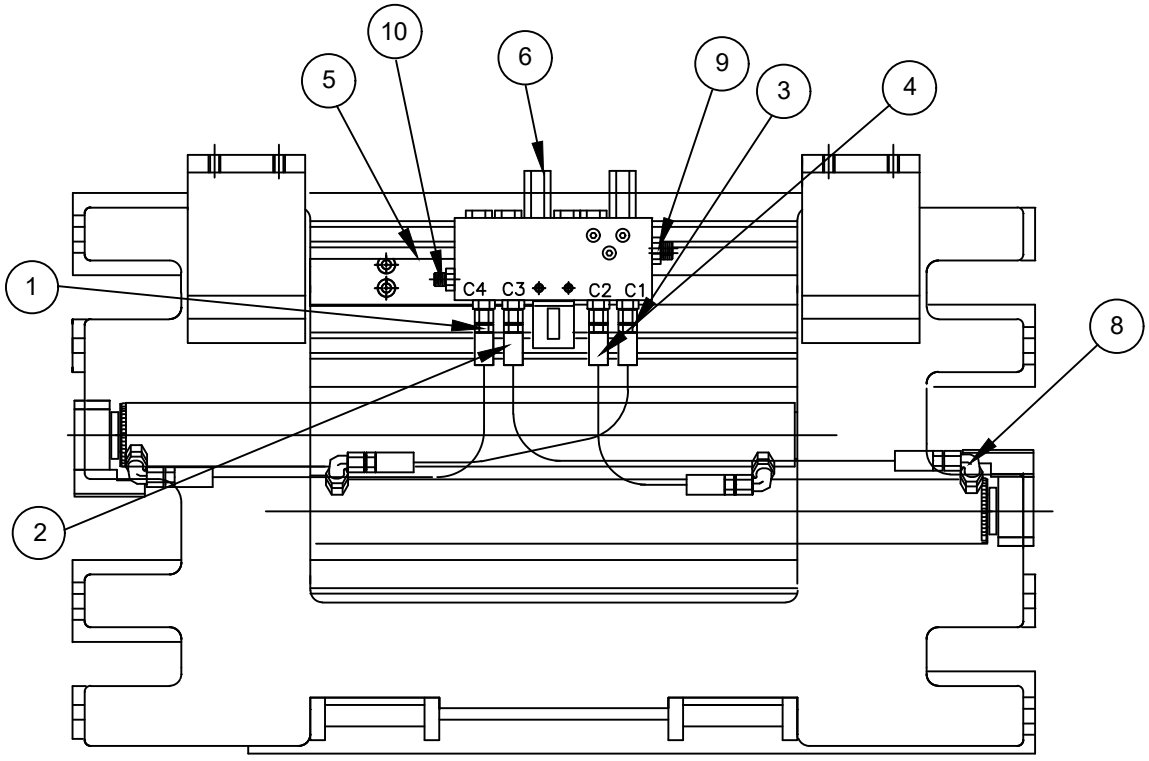
#	QTY	PART #	DESCRIPTION
1	1	CONSULT FACTORY	HOSE ASSEMBLY
2	1	CONSULT FACTORY	HOSE ASSEMBLY
3	1	CONSULT FACTORY	HOSE ASSEMBLY
4	1	CONSULT FACTORY	HOSE ASSEMBLY
5	2	100676.05	STRIAGHT THREAD ADAPTER FITTING
6	2	25G.0516	BUTTON HEAD BOLT
7	1	100011	CLAMP VALVE W/ FLOW DIVIDER
8	1	103084	VALVE MOUNTING BAR WELDMENT
9	2	4E.05	LOCK WASHER
10	4	100095.05	90° O-RING
11	4	100254.05	45° O-RING ELBOW
12	2	2F.05	PLAIN WASHER
13	2	101419.05	HOLLOW HEX PLUG NOTE: USED ON NON-SIDE SHIFT ONLY



HYDRAULIC ASSEMBLY - L35A CLAMPS

#	QTY	PART #	DESCRIPTION
1	1	CONSULT FACTORY	HOSE ASSEMBLY
2	1	CONSULT FACTORY	HOSE ASSEMBLY
3	1	CONSULT FACTORY	HOSE ASSEMBLY
4	1	CONSULT FACTORY	HOSE ASSEMBLY
5	1	101423	MOUNTING PLATE
6	1	100011	VALVE-SIDE SHIFTING
7	2	25GN.0516	NYLOCK BUTTON HEAD BOLT
8	4	100095.05	90° O-RING FITTING
9	8	100676.05	STRIAGHT THREAD O-RING ADAPTER
10	2	101419.05	HOLLOW HEX PLUG NOTE: USED ON NON-SIDE SHIFT ONLY





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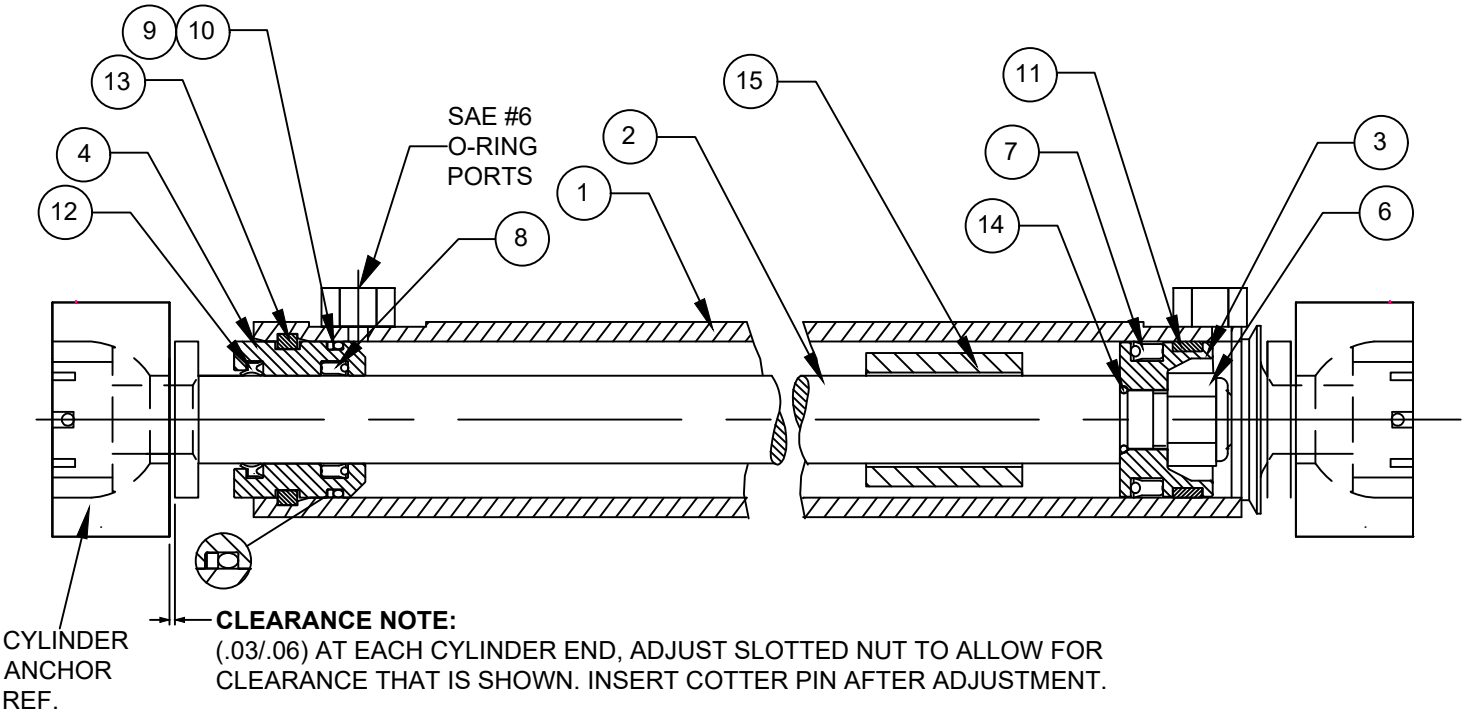
CYLINDER ASSEMBLY



L35A CLAMPS

#	QTY	PART #	DESCRIPTION
	1	CONSULT FACTORY	CYLINDER ASSEMBLY
1	1	CONSULT FACTORY	TUBE
2	1	CONSULT FACTORY	ROD
3	1	100021	PISTON
4	1	100020	GLAND
5	1	101036	SEAL KIT (NOT SHOWN)
6	1	101035	MODIFIED ESNA NUT
7	1	100032.107	POLY PAK LSP
8	1	100031.059	POLY PAK LSP
9	1	100028.316	BACK-UP O-RING
10	1	100029.316	O-RING LSP
11	1	100033	WEAR RING LSP
12	1	101034.6	WIPER LSP
13	1	100027.1	LOCKWIRE
14	1	100029.203	O-RING LSP
15	1	CONSULT FACTORY	SPACER

L20A CLAMPS

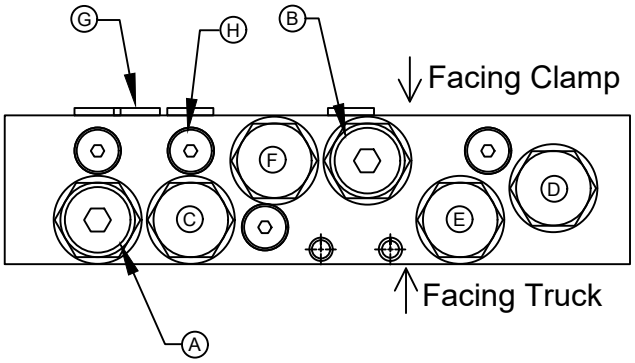
#	QTY	PART #	DESCRIPTION
	1	CONSULT FACTORY	CYLINDER ASSEMBLY
1	1	CONSULT FACTORY	TUBE
2	1	CONSULT FACTORY	ROD
3	1	101256	PISTON
4	1	101254	GLAND
5	1	101261	SEAL KIT (NOT SHOWN)
6	1	101035	MODIFIED ESNA NUT
7	1	100032.095	POLY PAK LSP
8	1	100031.059	POLY PAK LSP
9	1	100028.314	BACK-UP O-RING
10	1	100029.314	O-RING LSP
11	1	101260	WEAR RING LSP
12	1	101034.6	WIPER LSP
13	1	100027.2	LOCKWIRE
14	1	100029.203	O-RING LSP
15	1	CONSULT FACTORY	SPACER

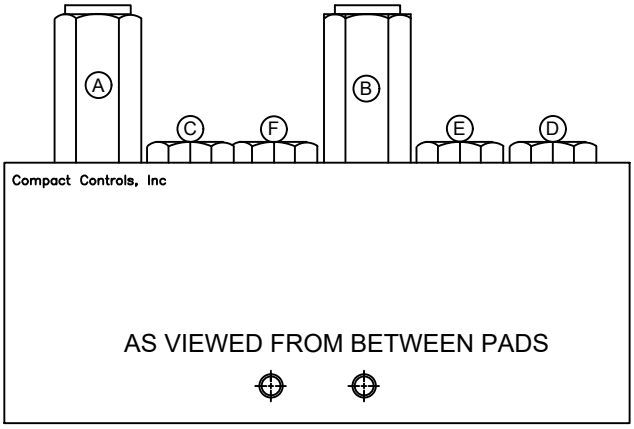
CYLINDER SERVICE

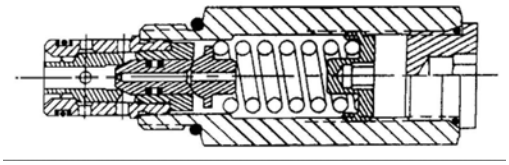
- Prior to assembly lubricate seals, cylinder bore and rod with STP.
- Inspect all parts for scratches, nicks and gouges. Replace all damaged components.
- Inspect cylinder bore and rod for scoring. Replace if scored.
- Avoid damage to seal grooves. Use a dull screwdriver for seal removal.
- Torque piston nut to 200 FT/LBS.

CLAMP CONTROL VALVE

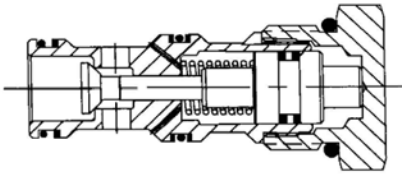
Drawing Reference: 100011



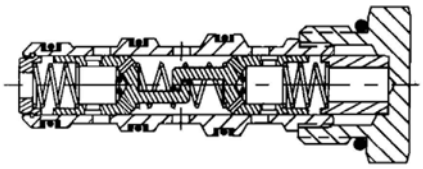




(B) 103815 BIDIRECTIONAL RELIEF
(A) 103815.1 BIDIRECTIONAL RELIEF
TORQUE TO 35-40 FT/LBS
104716 SEAL KIT



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

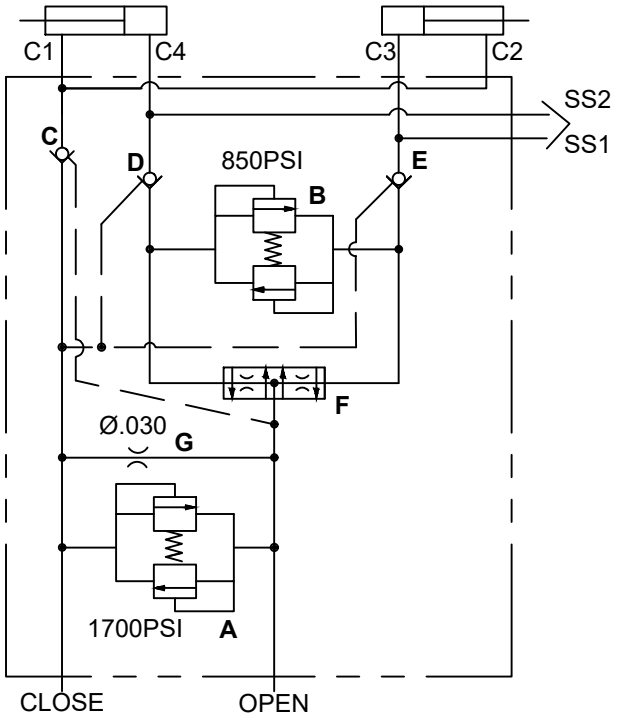


(F) 103813 FLOW DIVIDER
TORQUE 10-12 FT/LBS
104711 SEAL KIT

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

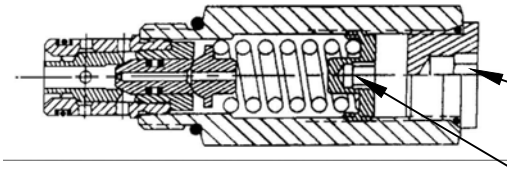
ID	QTY	PART #	DESCRIPTION
A	1	103815.1	Bi-Directional Relief Cartridge
B	1	103815	Bi-Directional Relief Cartridge
C	1	103814	P.O. Check Valve Cartridge
D	1	103814	P.O. Check Valve Cartridge
E	1	103814	P.O. Check Valve Cartridge
F	1	103813	Flow Divider Cartridge
G	1	103926.1	Orifice
H	14	101419.03	SAE #4 O-Ring Plug

HYDRAULIC SCHEMATIC



ADJUSTING RELIEF VALVE

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



REMOVE CAP - ADJUST INTERNAL BOLT
REPLACE CAP - PRIOR TO PRESSURIZING SYSTEM.

DO NOT EXCEED 2000 PSI (136 BAR)

TURN ADJUSTMENT:
OUT TO DECREASE PRESSURE
IN TO INCREASE PRESSURE.

ADJUSTING SYSTEM PRESSURE

1. Release system pressure prior to servicing valve (See WARNING above).

2. Install a hydraulic pressure gauge (2 required) that is calibrated to 5000 psi (340 bar) using a short hose and tee to be in line with both the "open" and "close" ports of the main clamp valve.

3. Measure system pressure by deadheading the clamp in the closed position. System pressure is the difference between the pressure gauge reading of the "open" port subtracted from the pressure gauge reading of the "close" port.

4. Repeat step one if adjusting system pressure. Remove cap of the bi-directional relief valve (refer to item A 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) in the system pressure.

ADJUSTING BY-PASS PRESSURE

1. If one arm bottoms out before the other with more then 2" (51mm) difference adjustment is needed. Increase relief pressure (See above) if arms are moving independent of each other. If the lagging arm is moving slowly after first arm bottoms out, decrease relief pressure (See above).

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 bi-directional valve (item B page 8) and adjust cartridge no more than one quarter turn in needed direction. Replace cap prior to pressurizing system. Repeat adjustments until arms are in sync or within 2" (51mm) difference.

4. If assistance is needed in adjustments contact Loron Inc. engineering.

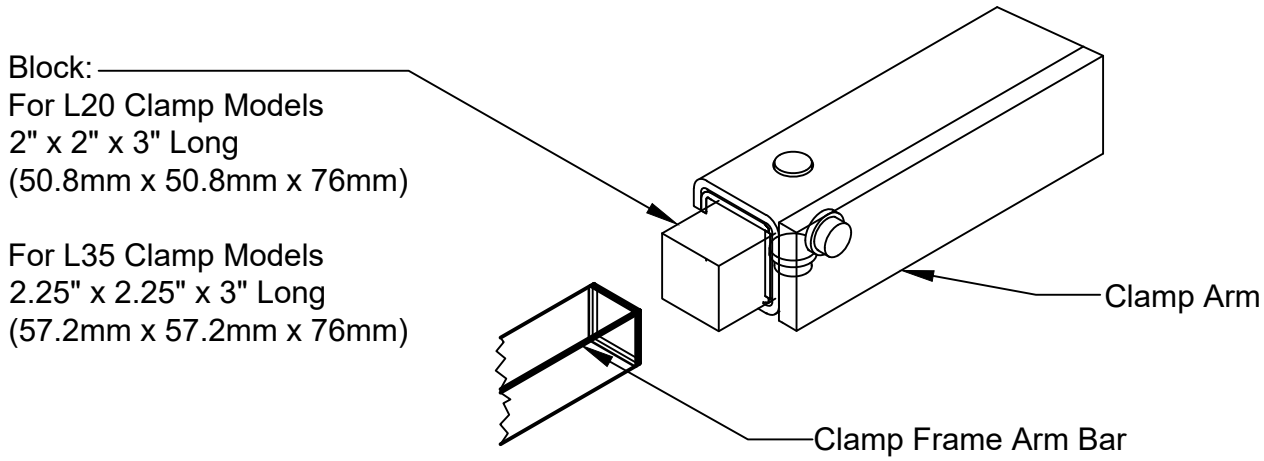
ARM SLIDE & SHIM REPLACEMENT

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 to 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	SOLUTIONS
1. Valve cartridges are not sufficiently tight.	1. Tighten all cartridges to torque values shown on page 8.
2. System relief pressure is set too low.	2. See Adjusting System Pressure on page 9.
3. Internal leakage in cylinder.	3. Replace Cylinder seals. If tube, piston or rod is scored replace with new parts.
4. Incorrect clamp pad size or load not fully engaged in clamp arms.	4. Be sure the clamp pads are correctly sized for the load and the load is positioned fully in the clamp arms.
5. Pad camber is set incorrectly.	5. Shim pads to change camber.
6. Load too heavy for clamp capacity.	6. Consult factory.
7. Load may not by stacked correctly or may need to be unitized.	7. Re-stack or unitize load (shrink wrap).
8. Bent arms or contact pads.	8. Consult factory.

CRUSHING LOADS

POSSIBLE CAUSES	SOLUTIONS
1. System relief pressure is set too high.	1. See Adjusting System Pressure page 9.
2. Operator over-working (milking) control valve.	2. Once the pad contacts the load, clamp the load in one even motion - do not over-work the valve.
3. Bent arms or contact pads.	3. Consult factory.
4. Pad camber is set incorrectly.	4. Shim pads to change the camber.
5. Variable loads that require different clamping pressures.	5. Install a 4-position pressure regulator on truck cowl - consult factory for part number and availability.