



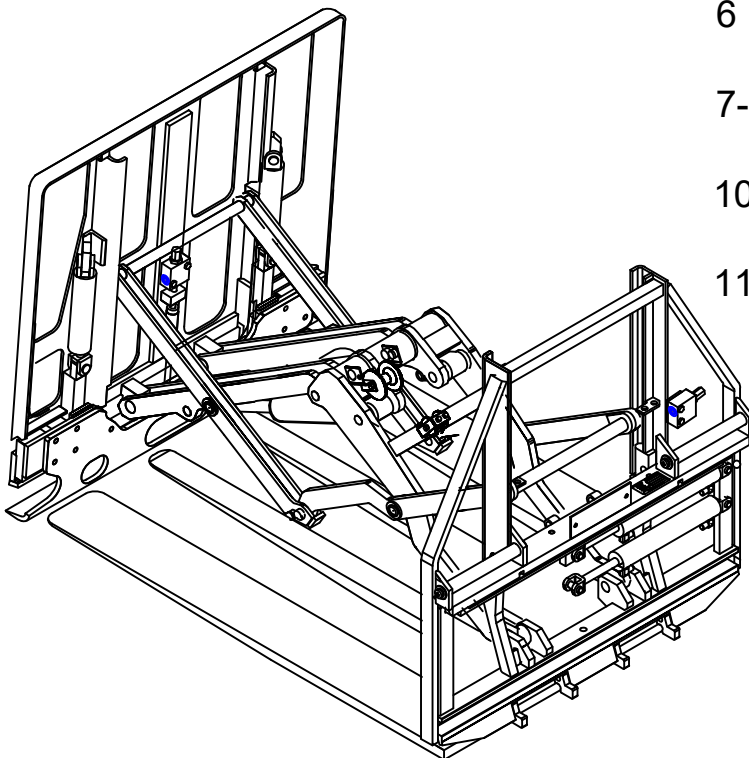
# SERVICE MANUAL / PARTS LIST

## MARK 55 PUSH PULL SEQUENCE VALVE

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# LIFT TRUCK REQUIREMENTS

## CAPACITY

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

## PUSH PULL HYDRAULICS

**Recommended Truck Pressure:** 2000 to 2500 PSI (135 to 170 bar)

**Oil volume:** 7-10 GPM (26.5 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:**

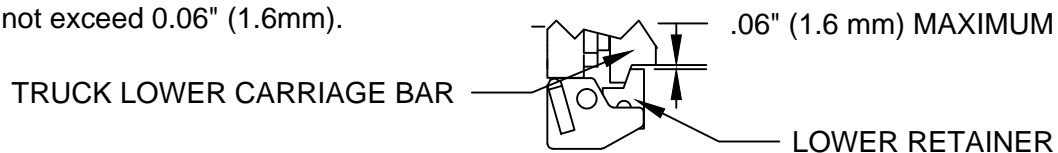
2 Function = a double auxiliary valve or single valve plus a single solenoid valve (solenoid voltage must match truck voltage) with

button and supply group

1 Function = a single auxiliary valve

# GENERAL INSTALLATION PROCEDURES

1. Prior to mounting the attachment make sure the lower UHMW slide is securely in it's channel (See Base Group Parts, item #4 ).
2. Make sure that attachment centering lug, located across cylinder anchor weldment (See Base Assembly item #3), is completely seated in the truck carriage's center notch.
3. The lower retainers that hold the attachment to the truck are self-adjusting, however, during initial installation the clearance between the lower retainer and the truck's lower carriage bar profile should not exceed 0.06" (1.6mm).



4. Attach the truck's supply group (take-up) to hoses supplied on the attachment base.
5. Standing clear of the Push Pull attachment, cycle the attachment in and out 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 hoses or Parker Tough Cover #471TC.
3. All bolts should be checked and tightened as required.
4. Check all weld joints for signs of cracking - paying close attention to the linkage group welds and all platen welds.

# BASE ASSEMBLY - 1

Drawing reference 110659

| #  | QTY | PART #    | DESCRIPTION                  |
|----|-----|-----------|------------------------------|
| 1  | 1   | 110660    | Frame Weldment               |
| 2  | 2   | 100052    | Upper Bronze                 |
| 3  | 1   | 100450    | Cyl. Anchor Weldment         |
| 4  | 1   | 100065.81 | Lower UHMW Slide             |
| 5  | 6   | 100574.83 | Cotter Pin LSP               |
| 6  | 2   | 100573.2  | Lower Retainer Pin           |
| 7  | 4   | 104002    | Socket Head Bolt             |
| 8  | 2   | 107343    | Lower Retainer               |
| 9  | 2   | 2F.10     | Plain Washer LSP             |
| 10 | 1   | 100106    | SS Cylinder Assm (Reference) |
| 11 | 2   | 100095.05 | 90° O-Ring Fitting LSP       |
| 12 | 2   | 100075.07 | Lube Fitting LSP             |
| 13 | 1   | 100072    | Name Tag                     |
| 14 | 4   | 100066    | Drive Screw                  |
| 15 | 2   | 100477    | Bent Bracket                 |
| 16 | 2   | 25G.0512  | Button Head Bolt LSP         |
| 17 | 2   | 4E.05     | Lockwasher LSP               |
| 18 | 4   | 108126    | Washer                       |
| 19 | 4   | 16E.08    | Lockwasher Hi-Collar LSP     |
| 20 | 4   | 25G.0816  | Button Head Bolt LSP         |
| 21 | 2   | 107337    | Round Bar                    |
| 22 | 1   | 103990    | Self Tapping Screw           |
| 23 | 1   | 104114    | Rubber Insert                |
| 24 | 2   | 107004    | Compression Spring           |
| 25 | 4   | 107003    | Retainer Pin                 |
| 26 | 2   | 108053    | Hose Clamp                   |
| 27 | 2   | 105671.1  | Aluminum Bronze Slide        |
| 28 | 4   | 11G.0824  | Socket Head Cap Screw LSP    |
| 29 | 1   | 107531    | Pin                          |
| 30 | 2   | 25G.0524  | Button Head Bolt LSP         |
| 31 | 1   | 17D.05    | Nut ESNA LSP                 |
| 32 | 1   | 110444    | Hose Clamp                   |
| 33 | 1   | 100998    | Hose Clamp (Side Shift)      |
| 34 | 1   | 109087    | Spacer                       |

WEEKLY SERVICE:

Check & tighten round bar mounting bolts (item #20).

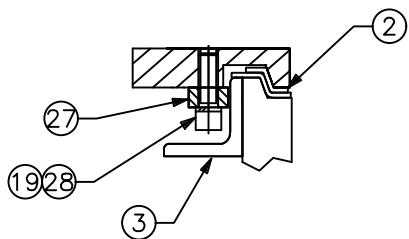
Check and tighten all bolts.

Grease upper bronze (item #2) weekly or as required.

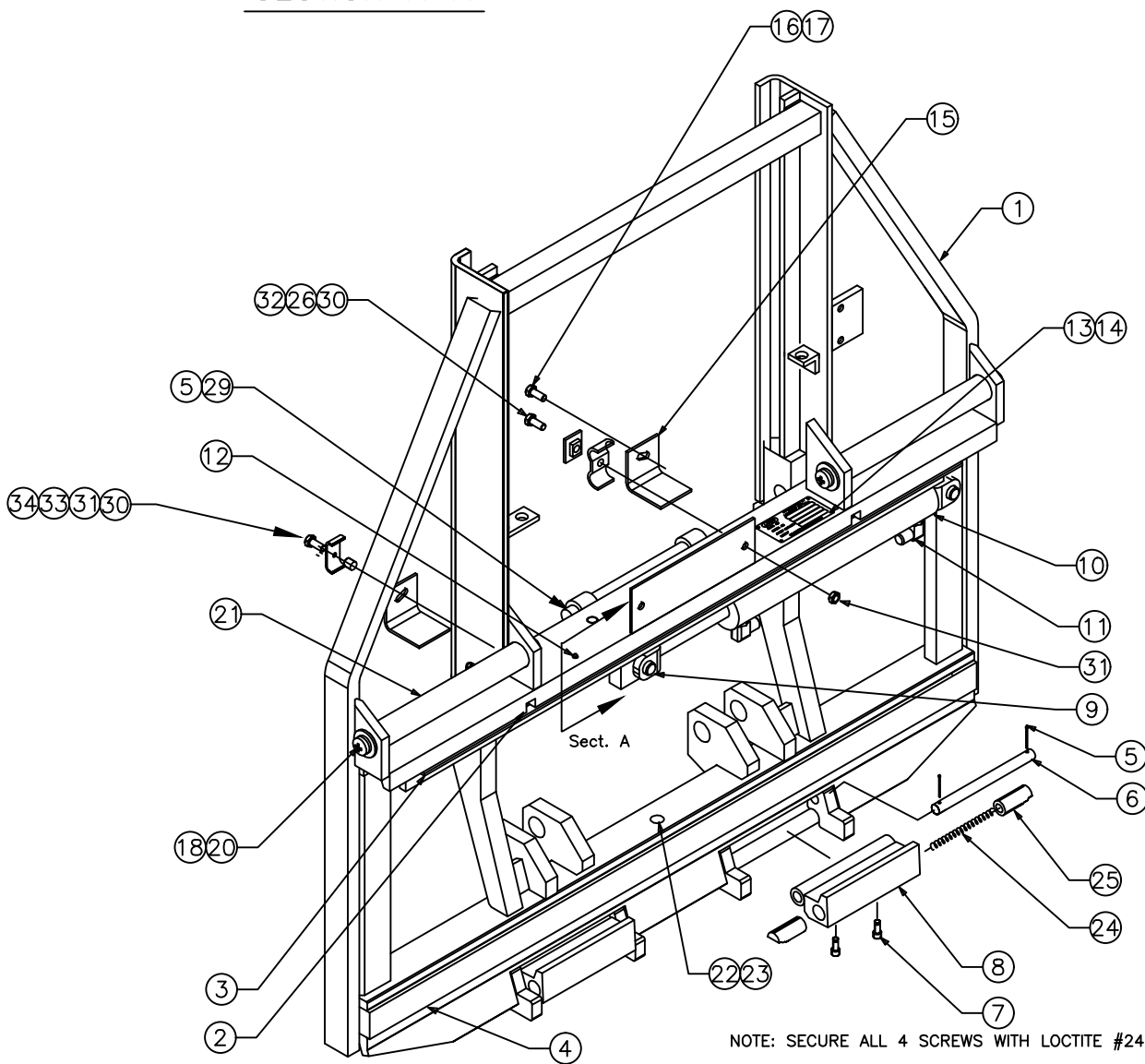
Lubricate platen mounting round bar (item #21) with light oil.

# BASE ASSEMBLY - 2

Drawing reference 110659



SECTION A-A



NOTE: SECURE ALL 4 SCREWS WITH LOCTITE #242 (BLUE)

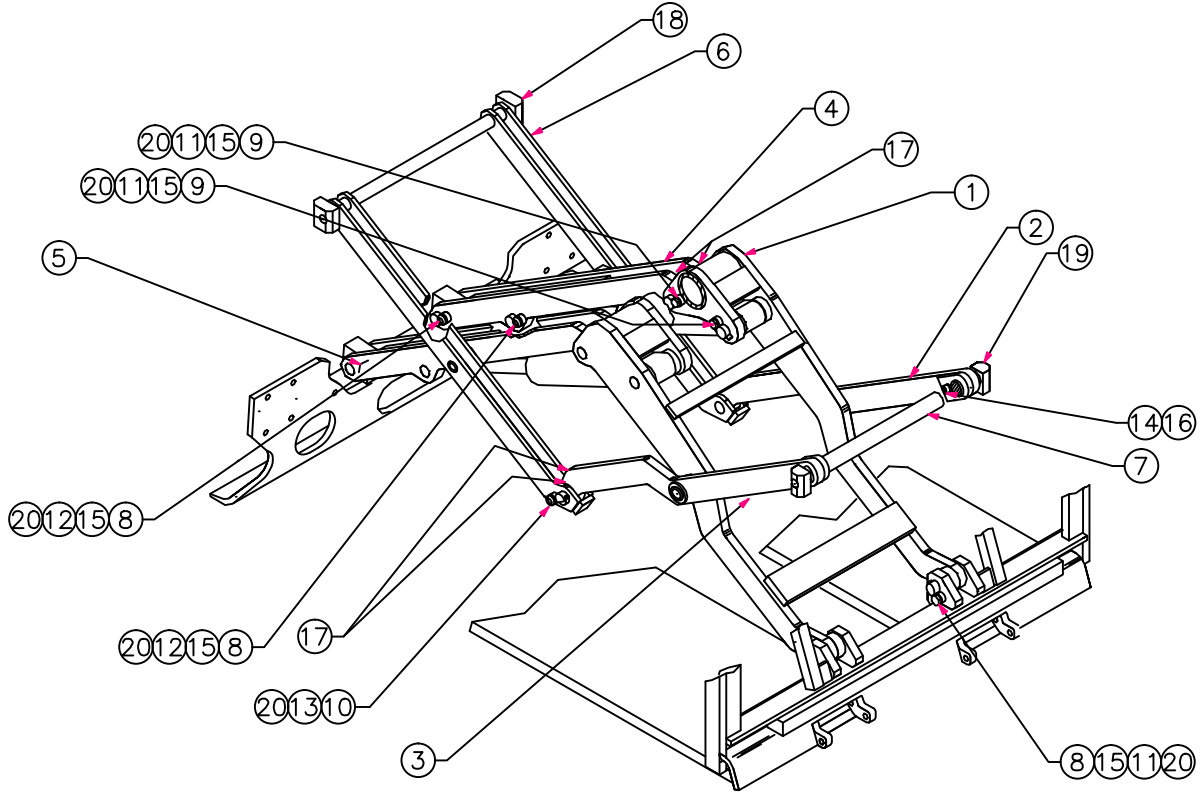
# LINKAGE ASSEMBLY

Drawing reference 100743

| #  | QTY | PART #   | DESCRIPTION       |
|----|-----|----------|-------------------|
| 1  | 1   | 100209   | Rear Push Arm     |
| 2  | 1   | 100637   | Rear Regulator RH |
| 3  | 1   | 100636   | Rear Regulator LH |
| 4  | 1   | 100208   | Front Push Arm RH |
| 5  | 1   | 100207   | Front Push Arm LH |
| 6  | 1   | 100662   | Front Regulator   |
| 7  | 1   | 100267   | Regulator Bracket |
| 8  | 6   | 100663.2 | Chrome Pin        |
| 9  | 4   | 100663.3 | Chrome Pin        |
| 10 | 2   | 100727   | Chrome Pin        |

|    |    |           |                          |
|----|----|-----------|--------------------------|
| 11 | 6  | 1C.0616   | Hex Head Bolt LSP        |
| 12 | 4  | 25G.0616  | Button Head Bolt LSP     |
| 13 | 2  | 25G.0612  | Button Head Bolt LSP     |
| 14 | 2  | 11G.0824  | Socket Head Bolt LSP     |
| 15 | 10 | 4E.06     | Lockwasher LSP           |
| 16 | 2  | 16E.08    | Hi-Collar Lockwasher LSP |
| 17 | 8  | 100665.38 | Thrust Washer/Shim       |
| 18 | 2  | 100465    | Slide Block (Push Rack)  |
| 19 | 2  | 100464    | Slide Block (Base)       |
| 20 | 12 | 101294.5  | Lock Pin LSP             |

**WEEKLY SERVICE:**  
Grease slide block channels  
(items 18 & 19) weekly or as  
required.



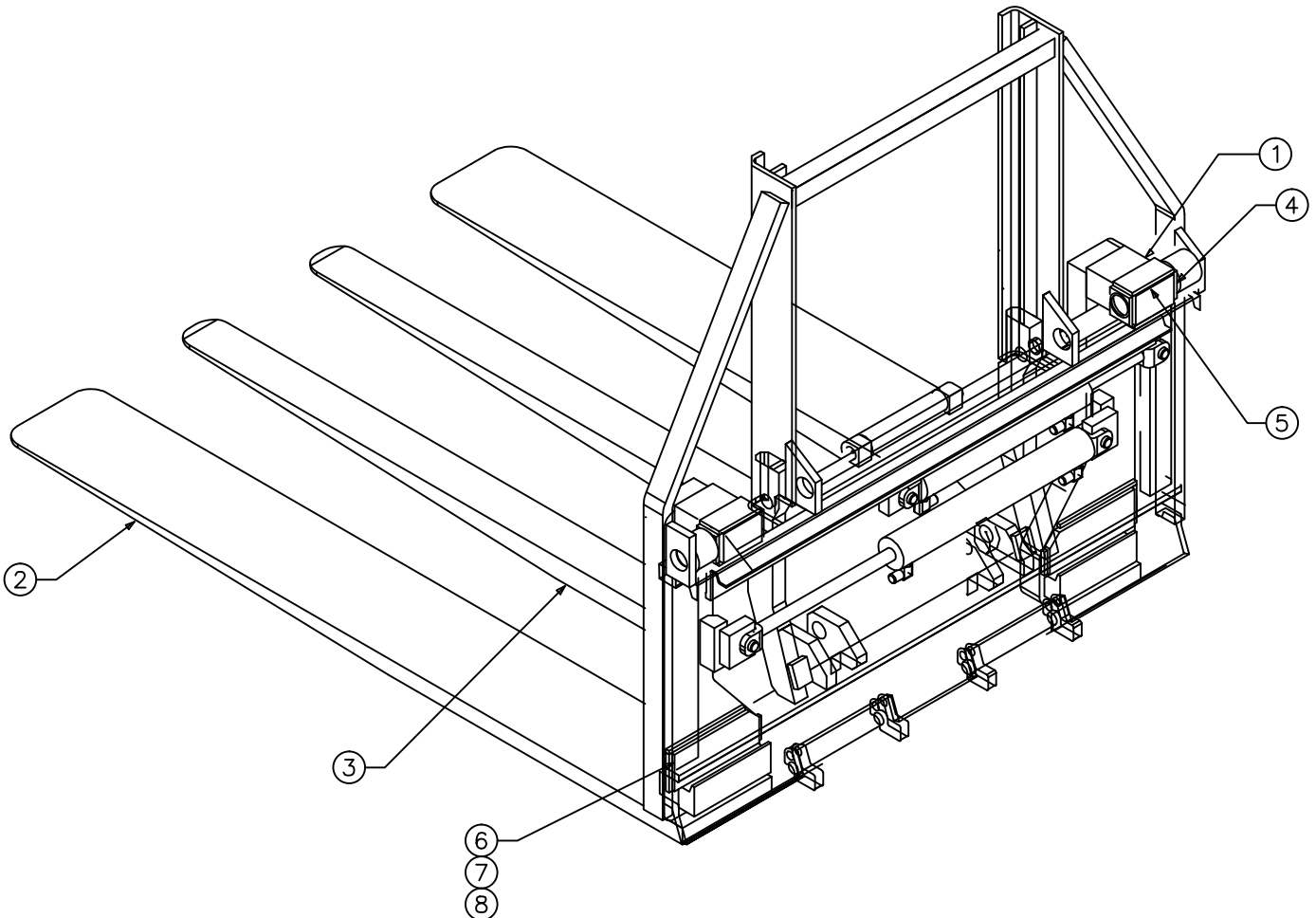
# PLATEN ASSEMBLY

Drawing reference 110875.1

| # | QTY | PART #    | DESCRIPTION            |
|---|-----|-----------|------------------------|
| 1 | 1   | **        | Platen Weldment RH     |
| 2 | 1   | **        | Platen Weldment LH     |
| 3 | 1   | **        | Center Platen Weldment |
| 4 | 4   | 100785.16 | Bushing (Reference)    |
| 5 | 2   | 110697    | Retainer Weldment      |
| 6 | 2   | 107530.1  | Lower Slide            |
| 7 | AR  | 110764.1  | Shim 16 GA             |
| 8 | AR  | 110764.2  | Shim 12 GA             |

NOTE:  
Platen useable length is measured from the face of the push rack to the tip of the platens with the push rack fully retracted.

\*\*See customer packet for part number



# JAW / PUSH RACK ASSEMBLY

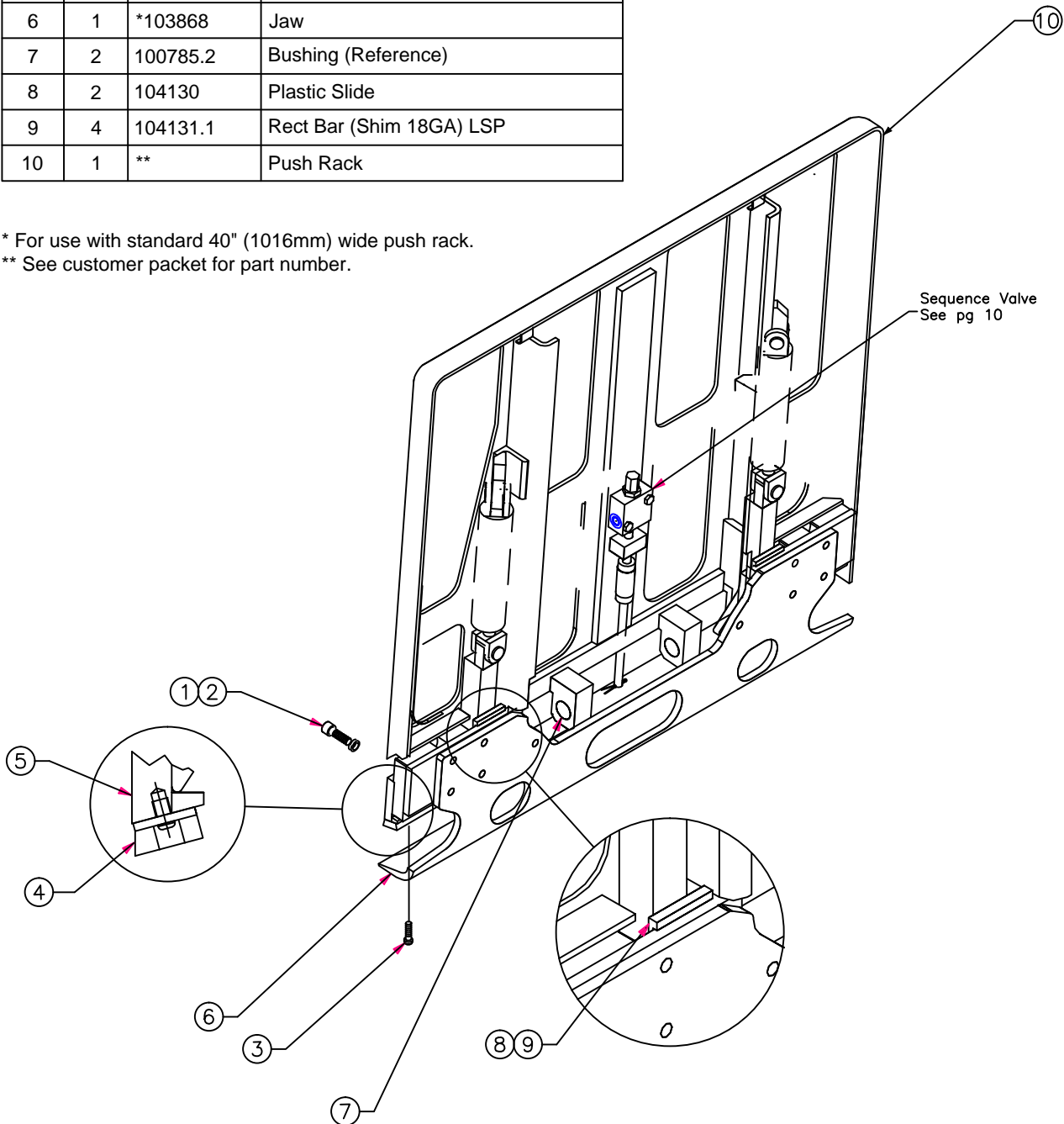
Drawing reference 110874, 108132

| #  | QTY | PART #    | DESCRIPTION                 |
|----|-----|-----------|-----------------------------|
| 1  | 10  | 11G.0820  | Socket Head Bolt LSP        |
| 2  | 10  | 16E.08    | Hi-Collar Lockwasher LSP    |
| 3  | 7   | 25GN.0508 | Button Head Nylock Bolt LSP |
| 4  | 1   | *103873   | Gripper Shoe                |
| 5  | 1   | *103530   | Gripper Bar                 |
| 6  | 1   | *103868   | Jaw                         |
| 7  | 2   | 100785.2  | Bushing (Reference)         |
| 8  | 2   | 104130    | Plastic Slide               |
| 9  | 4   | 104131.1  | Rect Bar (Shim 18GA) LSP    |
| 10 | 1   | **        | Push Rack                   |

**WEEKLY SERVICE:**  
Check and tighten jaw and gripper shoe mounting bolts (item #3).

Check gripper shoe (item #4) for wear and replace if badly worn.

\* For use with standard 40" (1016mm) wide push rack.  
\*\* See customer packet for part number.



# HYDRAULIC ASSEMBLY - 1

Drawing reference 110874

| #  | QTY | PART #      | DESCRIPTION              |
|----|-----|-------------|--------------------------|
| 1  | 1   | 100679      | Sequence Valve           |
| 2  | 1   | 100106.22   | Platen Cylinder Assm     |
| 3  | 1   | 100106      | SS Cylinder Assm         |
| 4  | 1   | 108192      | Gripper Cylinder Assm LH |
| 5  | 1   | 108191      | Gripper Cylinder Assm RH |
| 6  | 2   | **          | Cylinder Assm            |
| 7  | 1   | 103824.1    | Actuator Rod Assem       |
| 8  | 2   | 104550      | Clamp                    |
| 9  | 1   | 103788      | UHMW-PE Tape             |
| 10 | 1   | 101000      | Hose Roller              |
| 11 | 1   | 100999      | Roll Bracket             |
| 12 | 2   | 25G.0412    | Button Head Bolt LSP     |
| 13 | 4   | 17D.04      | ESNA Nut LSP             |
| 14 | 1   | 101130      | Valve                    |
| 15 | 2   | 1D.04       | Nut LSP                  |
| 16 | 2   | 1C.0432     | Hex Bolt LSP             |
| 17 | 4   | 17D.05      | ESNA Nut LSP             |
| 18 | 1   | 100986      | Bracket                  |
| 19 | 1   | 100987      | Bracket                  |
| 20 | 3   | 1C.0448     | Hex Bolt LSP             |
| 21 | 1   | 101001      | Hose Roller              |
| 22 | 1   | 101002      | Plastic Guide            |
| 23 | 1   | 1C.0440     | Hex Bolt LSP             |
| 24 | 2   | 4E.04       | Lockwasher LSP           |
| 25 | 1   | 109674.0190 | Hose Assm 6-6 LSP        |
| 26 | 1   | 102702.0485 | Hose Assm 6-4-4 LSP      |
| 27 | 14  | 100095.05   | 90° Elbow LSP            |
| 28 | 1   | 102702.0475 | Hose Assm 6-4-4 LSP      |
| 29 | 3   | 100678.05   | Branch Tee LSP           |
| 30 | 2   | 100676.05   | STR THD Adapter LSP      |
| 31 | 2   | 109674.0090 | Hose Assm 6-6 LSP        |

|    |   |             |                           |
|----|---|-------------|---------------------------|
| 32 | 1 | 100669      | Junction Block            |
| 33 | 1 | 109674.0480 | Hose Assm 6-6 LSP         |
| 34 | 1 | 109674.0740 | Hose Assm 6-6 LSP         |
| 35 | 2 | 100677.1    | Union Tee LSP             |
| 36 | 1 | 109674.0130 | Hose Assm 6-6 LSP         |
| 37 | 1 | 109674.0270 | Hose Assm 6-6 LSP         |
| 38 | 1 | 102702.0525 | Hose Assm 6-4-4 LSP       |
| 39 | 1 | 109674.0450 | Hose Assm 6-6 LSP         |
| 40 | 1 | 102702.0435 | Hose Assm 6-4-4 LSP       |
| 41 | 1 | 104662.0465 | Hose Assm 4-4-4 LSP       |
| 42 | 1 | 104662.0415 | Hose Assm 4-4-4 LSP       |
| 43 | 1 | 100676.032  | STR THD Adapter 6-4 LSP   |
| 44 | 4 | 100095.031  | 90° Elbow Adapter 6-4 LSP |
| 45 | 2 | 100744.05   | Bulkhead Union LSP        |
| 46 | 1 | 108058.0468 | Hose Assm 4-3-4 LSP       |
| 47 | 1 | 108058.0383 | Hose Assm 4-3-4 LSP       |
| 48 | 3 | 102937.05   | Reducer Fitting 6-4 LSP   |
| 49 | 1 | 103098.05   | Bulkhead Tee LSP          |
| 50 | 1 | 100440.05   | Swivel Elbow 90° 6-6 LSP  |
| 51 | 2 | 100238.03   | Swivel Elbow 45° 4-4 LSP  |

\*\* See customer packet for part number.

**WEEKLY SERVICE:**

Check hoses for fraying, cuts, bulges and badly worn areas.

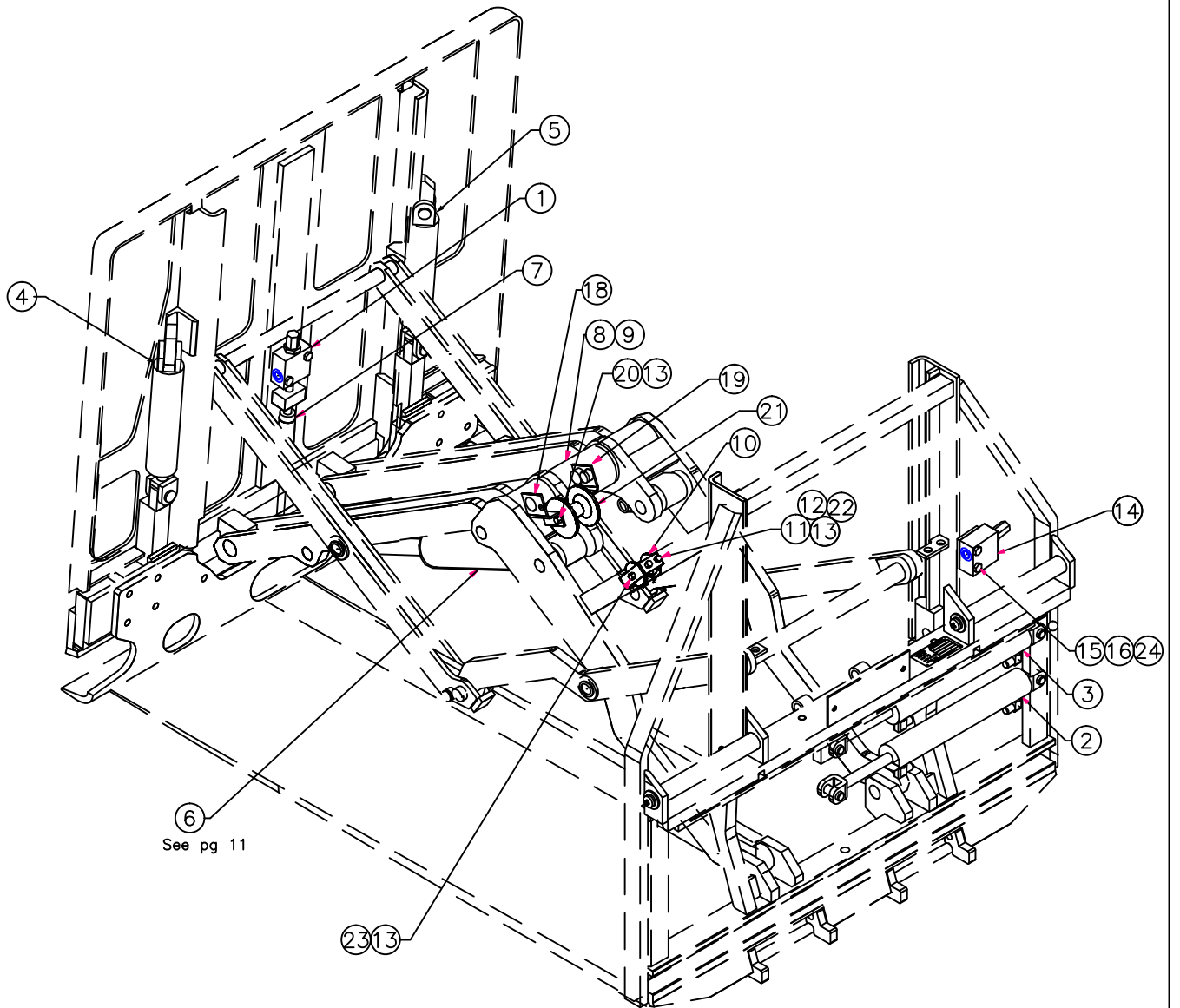
**WARNING:**

Use only LORON hoses or Parker Tough Cover #471TC wire reinforced hose for replacement hoses.



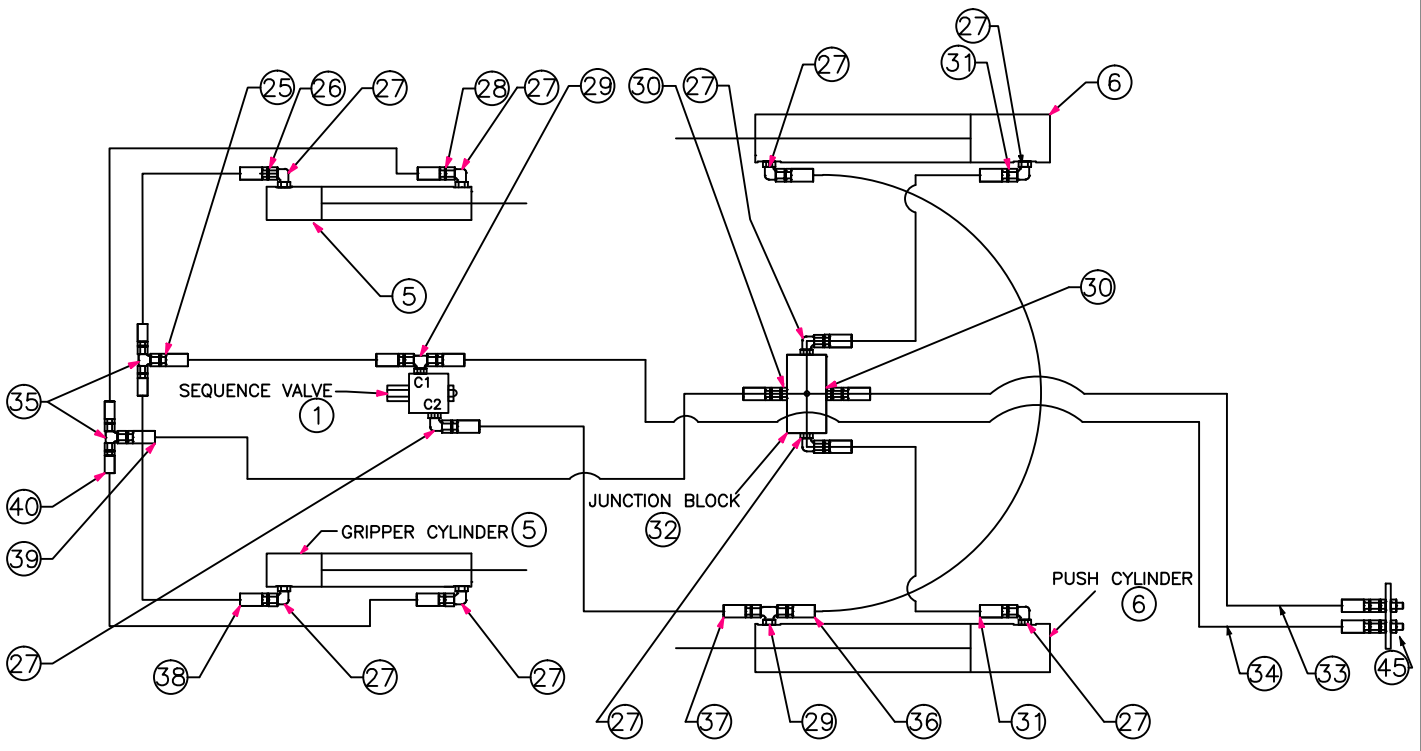
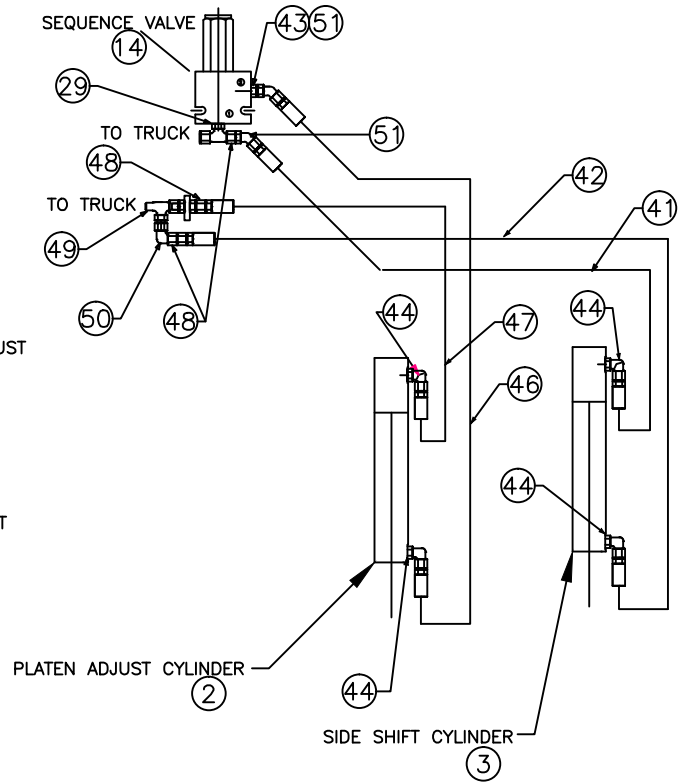
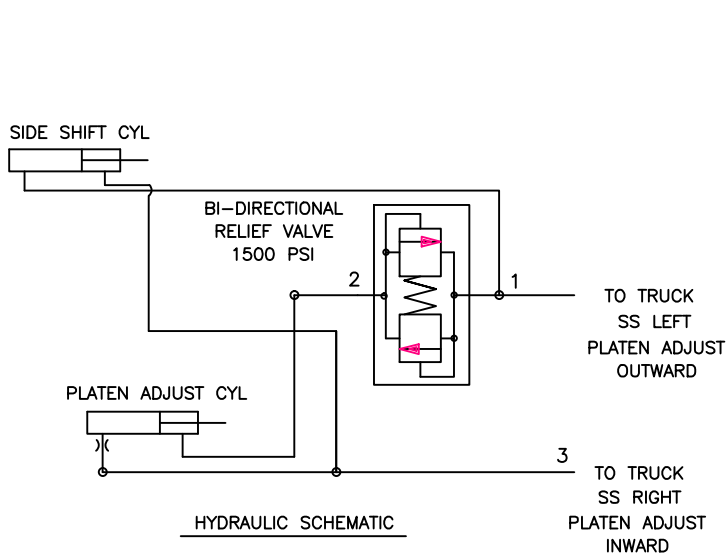
# HYDRAULIC ASSEMBLY - 2

Drawing reference 110874



# HYDRAULIC ASSEMBLY - 3

Drawing reference 110874



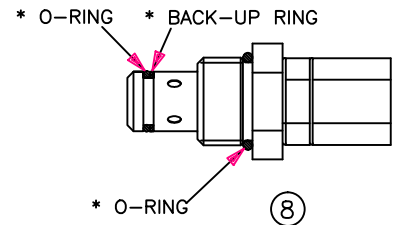
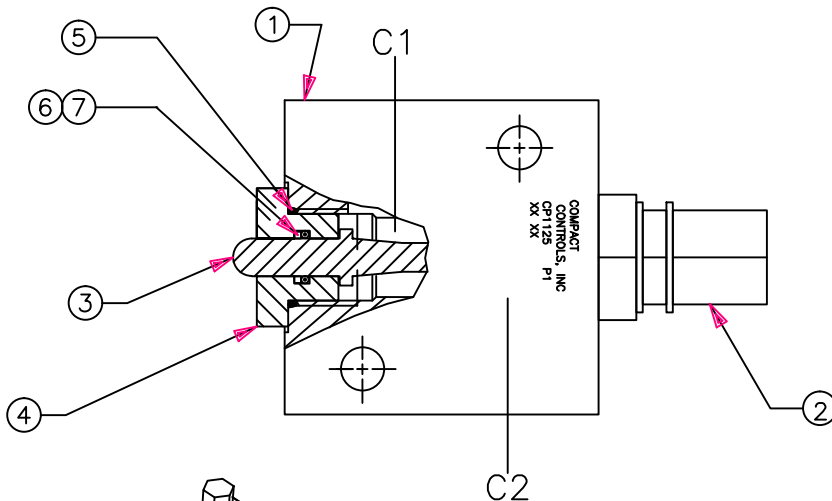
# SEQUENCE VALVE

Drawing reference 100679

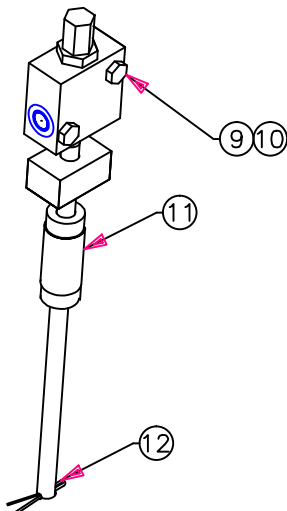
| #  | QTY | PART #      | DESCRIPTION          |
|----|-----|-------------|----------------------|
| 1  | 1   | 103220      | Valve Body           |
| 2  | 1   | 103219      | Relief Cartridge     |
| 3  | 1   | 103222      | Push Rod             |
| 4  | 1   | 103223      | Plug                 |
| 5  | 1   | *100030.4   | O-Ring               |
| 6  | 1   | *100029.107 | O-Ring               |
| 7  | 1   | *100028.107 | Back-up Ring         |
| 8  | 1   | *103221     | Cartridge Seal Kit   |
| 9  | 2   | 4E.05       | Lockwasher LSP       |
| 10 | 2   | 25G.0524    | Button Head Bolt LSP |
| 11 | 1   | 103824.1    | Actuator Rod         |
| 12 | 1   | 100574.82   | Cotter Pin LSP       |

**SERVICE NOTE:**  
Lubricate parts prior to assembly with STP

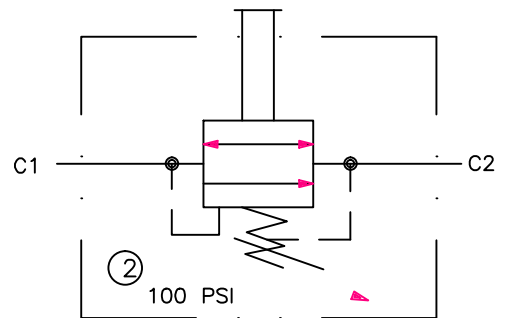
\* Sequence valve seal kit 103218



\* CARTRIDGE SEAL KIT=A103221



PUSH RACK SEQUENCE VALVE SCHEMATIC



# PUSH CYLINDER ASSEMBLY

Drawing reference 103922 (4500#) & 104042 (3500#)

| #  | QTY | 3500# Push Cyl<br>PART # | 4500# Push Cyl<br>PART # | DESCRIPTION      |
|----|-----|--------------------------|--------------------------|------------------|
| 1  | 1   | 102241                   | 102241                   | Rod Weldment     |
| 2  | 1   | 103201                   | 102242                   | Gland Nut        |
| 3  | 1   | 104043                   | 103994                   | Tube Weldment    |
| 4  | 1   | ***                      | ***                      | Piston           |
| 5  | 1   | *100031.5                | **100031.5               | Polypak BS LSP   |
| 6  | 1   | *101421.3                | **101421.4               | PSP Seal LSP     |
| 7  | 1   | *18D.12                  | **101035                 | Locknut Modified |
| 8  | 1   | *103208.4                | **103208.4               | Wiper Ring LSP   |
| 9  | 1   | *100029.12               | **100029.10              | O-Ring LSP       |
| 10 | 1   | 100785.3                 | 100785.3                 | Bushing          |
| 11 | 1   | 100785.2                 | 100785.2                 | Bushing          |

\* Seal Kit = 102182 (Items 5 thru 9)  
 \*\* Seal Kit = 102183 (Items 5 thru 9)  
 \*\*\* See customer packet for part number

### CYLINDER SERVICE

- Prior to assembly lubricate seals, cylinder bore, & rod with STP.
- Inspect all parts for scratches, nicks, and gouges - replace damaged components.
- Inspect cylinder bore & 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. (27.7 kg-m)
- Gland nut tightening procedure:  
 Turn gland nut until tight and then strike the end of the spanner wrench with a hammer to further tighten.

Using spanner wrench number:  
 103225.2 for 2.25" (57mm) bore cylinder  
 103225.1 for 2.50" (63.5mm) bore cylinder

