



An EFCO Company

# SWAPLOADER<sup>®</sup>

*"Hooked on Quality"*

U.S.A. LTD.

# MODEL SL-412

PARTS AND OPERATION MANUAL



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HOIST SERIAL NUMBER



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**TO THE CUSTOMER:**

Your new SwapLoader Hoist was carefully designed and manufactured to give years of dependable service. To keep it operating efficiently, read the instructions in this manual thoroughly. It contains detailed descriptions and instructions for the efficient operation and maintenance of your SwapLoader. Each section is clearly identified so you can easily find the information that you need. Read the Table of Contents to learn where each section is located. All instructions are recommended procedures only.



Throughout this manual you will come across "**Dangers,**" "**Warnings,**" or "**Cautions**" which will be carried out in bold type and preceded by the symbol as indicated to the left. Be certain to carefully read the message that follows to avoid the possibility of personal injury or machine damage.

Record your SwapLoader Hoist serial number in the appropriate space provided on the title page. Your SwapLoader dealer needs this information to give prompt, efficient service when ordering parts. It pays to rely on an authorized SwapLoader Distributor for your service needs. For the location of the Distributor nearest you, contact SwapLoader.

**NOTE:** It is SwapLoader's policy to constantly strive to improve SwapLoader products. The information, specifications, and illustrations in this publication are based on the information in effect at the time of approval for printing and publishing. SwapLoader therefore reserves the right to make changes in design and improvements whenever it is believed the efficiency of the unit will be improved without incurring any obligations to incorporate such improvements in any unit which has been shipped or is in service. It is recommended that users contact an authorized SwapLoader Distributor for the latest revisions.

# LIMITED WARRANTY STATEMENT

**Effective August 1, 2023**

SwapLoader U.S.A., Ltd., (SwapLoader), warrants to the original purchaser of any new SwapLoader product sold by an authorized SwapLoader distributor or service center, that such products are free of defects in material and workmanship. All SwapLoader products with an original factory in-service date of August 1, 2023, or later qualify for warranty as defined in this Limited Warranty Statement.

|       |  | 1 YEAR   | 4 YEAR   | 5 YEAR   |
|-------|--|--|--|--|
|       |  | Not to extend beyond 24 months from the original factory ship date | Not to extend beyond 60 months from the original factory ship date | Not to extend beyond 72 months from the original factory ship date |
| HOIST | <b>Manufactured Components</b>   |  |  |  |
|       | SwapLoader Manufactured Parts (excludes replacement or service parts) includes but not limited to:               |  |  |  |
|       | <ul style="list-style-type: none"> <li>Weldments</li> <li>Pins</li> <li>Hardware</li> <li>Piece Parts</li> </ul> |  |  |  |
|       | Repair Labor   | ✓  |  |  |
|       | <b>Vendor Supplied Components</b>  |  |  |  |
|       | Cylinders  |  | ✓  |  |
|       | Hoses  |  | ✓  |  |
|       | Fittings   |  | ✓  |  |
|       | Jib Lockout Valve  |  | ✓  |  |
|       | Hydraulic Body Lock Cylinder   |  | ✓  |  |
|       | Repair Labor   | ✓  |  |  |

|                       |  | 1 YEAR   | 4 YEAR   | 5 YEAR   |
|-----------------------|--|--|--|--|
|                       |  | Not to extend beyond 24 months from the original factory ship date | Not to extend beyond 60 months from the original factory ship date | Not to extend beyond 72 months from the original factory ship date |
| OPTIONS & ACCESSORIES | <b>Manufactured Components</b>   |  |  |  |
|                       | SwapLoader Manufactured Parts (excludes replacement or service parts) includes but not limited to:   |  |  |  |
|                       | <ul style="list-style-type: none"> <li>Bumpers</li> <li>Sub-Frames</li> <li>Stabilizers (structural)</li> <li>Dual Rollers</li> </ul>  |  |  |  |
|                       | Repair Labor   | ✓  |  |  |
|                       | <b>Vendor Supplied Components</b>  |  |  |  |
|                       | Includes but not limited to:   |  |  |  |
|                       | <ul style="list-style-type: none"> <li>Pumps</li> <li>EHVs</li> <li>Valves</li> <li>Controls</li> <li>Sensors</li> <li>Tanks</li> <li>Toolboxes</li> <li>Tarps</li> <li>Lights</li> <li>Fenders</li> <li>PTOs</li> <li>All vendor replacement parts</li> </ul> |  |  |  |
|                       | Repair Labor   |  |  |  |

Reverts to Vendor Warranty

**Coverage Start Date:**

- Derived from the completed warranty registration at [www.swaploader.com/warranty-registration/](http://www.swaploader.com/warranty-registration/). In the event warranty registration is not completed, the factory ship date will be used.
- Items under “hoists” or “manufactured components” on page 1 are allowed a 12-month period between factory shipment and in service date to account for distributor stock.

**Warranty Process:**

- Unless otherwise stated the following warranty process must be followed for repairs and/or replacement parts to be covered:
  - Prior to any parts orders or repair work, contact SwapLoader at 888-767-8000 or [warranty@swaploader.net](mailto:warranty@swaploader.net) to initiate a claim and pre-authorize repairs.
  - Distributor will then order replacement parts and SwapLoader will invoice the distributor for the replacement parts and freight.
  - After authorized repair is completed the distributor must submit a fully completed warranty claim form.
  - If required by SwapLoader, defective parts will be assigned an RGA (return goods authorization) number, and those parts must be returned freight prepaid with a copy of the RGA form within 30 days of repair or credit consideration will not be given.
  - Upon evaluation of the returned parts if warranty is approved credit will be issued to the appropriate distributor account for the approved warranty costs which may include parts, labor, and/or freight.
  - SwapLoader will, at its discretion, adjust labor credit to pre-authorized or known repair times for covered repairs or service.

**Warranty Limitations & Responsibilities:**

- Warranty service must be performed by a distributor or service center authorized by SwapLoader to sell and/or service SwapLoader products. Distributors or service centers will use only new or remanufactured parts or components furnished by SwapLoader U.S.A. LTD.
- Defects in material and workmanship must be reported to SwapLoader immediately at time of discovery, subsequent damage caused by delay of defect reporting and repair will not be covered under warranty.
- Defects observed inside of the active warranty period and reported outside of the active warranty period will not be covered.
- Warranty service, repairs or returns must be pre-authorized by SwapLoader to be considered for credit.
- SwapLoader will, at its discretion, either repair defective parts or replace them with equivalent parts.
- SwapLoader will ship any replacement parts by the most economical, yet expedient means possible. Expedited freight delivery will be at the expense of the owner.
- Labor rates and credits are determined by the SwapLoader Distributor agreement.
- This warranty covers only defective material and workmanship. It does not cover depreciation or damage caused by normal wear and tear, accident, mishap, untrained operators, or improper or unintended use. The owner has the obligation of performing routine care and maintenance duties as stated in SwapLoader's written instructions, recommendations, and specifications. Any damage resulting from owner/operator failure to perform such duties shall void the coverage of this warranty. The cost of labor and supplies associated with routine maintenance will be paid by the owner.
- Warranty Registration must be submitted within 15 days of Retail Sale of SwapLoader hoist to [www.swaploader.com](http://www.swaploader.com). If unit has not been registered, then the warranty start date will revert to the original factory ship date. Warranty Registration is the ultimate responsibility of the owner. If the owner is unsure product registration has been completed, contact SwapLoader at 888-767-8000 or send email [sales@swaploader.net](mailto:sales@swaploader.net) to confirm.
- In no event will SwapLoader, the SwapLoader distributor or any company affiliated with SwapLoader be liable for business interruptions, costs of delay, or for any special, indirect, incidental, or consequential costs or damages. Such costs may include, but are not limited to:
 

|                   |                   |                              |
|-------------------|-------------------|------------------------------|
| • loss of time    | • commissions     | • travel                     |
| • loss of revenue | • lodging         | • mileage                    |
| • loss of use     | • meals           | • any other incidental costs |
| • wages           | • towing          |                              |
| • salaries        | • hydraulic fluid |                              |
- Warranty shall not apply if the equipment is operated in abnormal conditions or operated at capacities more than factory ratings.
- Warranty is expressly void if the seal on the main relief control valve has been tampered with or broken.
- Warranty is expressly void if serial number plate or stamping is tampered with.
- Paint, plating, and coatings are not covered under this warranty policy.
- All products purchased by SwapLoader from outside vendors shall be covered by the warranty offered by that respective manufacturer unless defined otherwise on page 1.

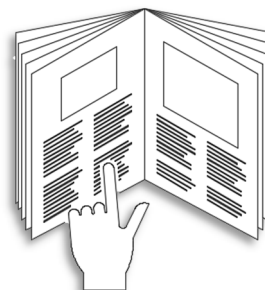
**IT IS EXPRESSLY UNDERSTOOD AND AGREED THAT THERE ARE NO WARRANTIES MADE BY THE MANUFACTURER OR ITS AGENTS, REPRESENTATIVES OR DISTRIBUTORS, EITHER EXPRESSED, IMPLIED, OR IMPLIED BY LAW, EXCEPT THOSE EXPRESSLY STATED ABOVE IN THIS STANDARD LIMITED WARRANTY AGAINST DEFECTS IN MATERIAL AND WORKMANSHIP. THE MANUFACTURER AND ITS AGENTS, REPRESENTATIVES AND DISTRIBUTORS SPECIFICALLY DISCLAIM ANY IMPLIED WARRANTY OR MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE.**



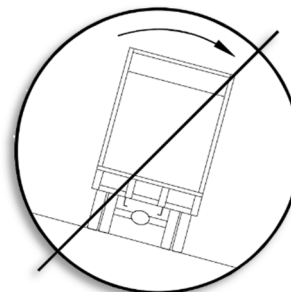
## **SAFETY SUGGESTIONS**



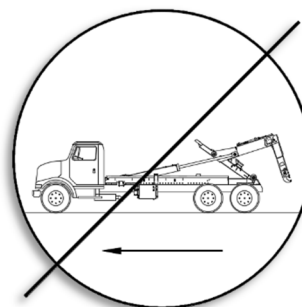
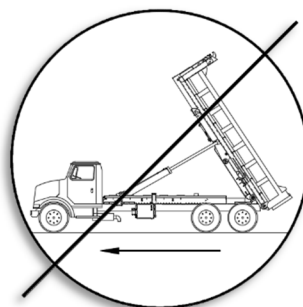
1. Do not operate or service this equipment until you have been properly trained and instructed in its use and have read the operation and service manual.



2. Do not operate this equipment on uneven ground.

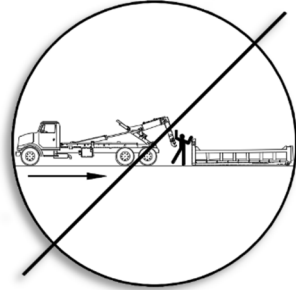


3. Do not drive with the hoist in the dump position or with the hook to the rear.

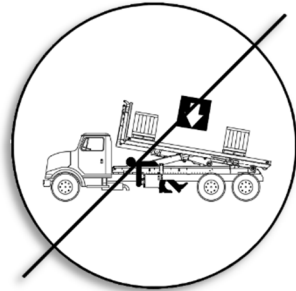


4. Do not exceed 1,500 Engine RPM when operating the Power Take Off (P.T.O.). Never leave the P.T.O. in gear while transporting.
5. The hoist must be used with containers that properly fit the hook and rear hold-downs. The container specifications must match the hoist specifications.
6. Keep the containers and hoist in good working order. **DO NOT** use if repairs are needed. Perform periodic inspections and maintenance as required by the maintenance section of the operator's manual.

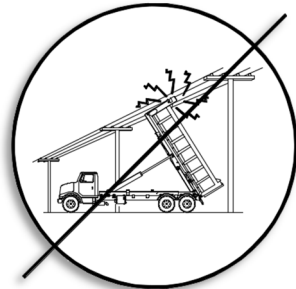
7. Make sure work area is clear of people and obstacles prior to dumping or unloading containers. SwapLoader strongly recommends that a backup alarm be installed on the truck chassis. The operation of the hook hoist is that the truck is backed up to the body to pick it up and so there is a potential pinch point between the body and the hook.



8. Any container, which is on the hoist, **MUST** be unloaded prior to performing any repairs or maintenance to the hoist. Also, **DO NOT** allow any person to work on or be under the hoist in a raised position without first installing adequate safety blocks to eliminate all possibility of the hoist accidentally lowering. SwapLoader strongly recommends that, if possible, the container should be dismounted from the hoist prior to performing any maintenance to the hoist.



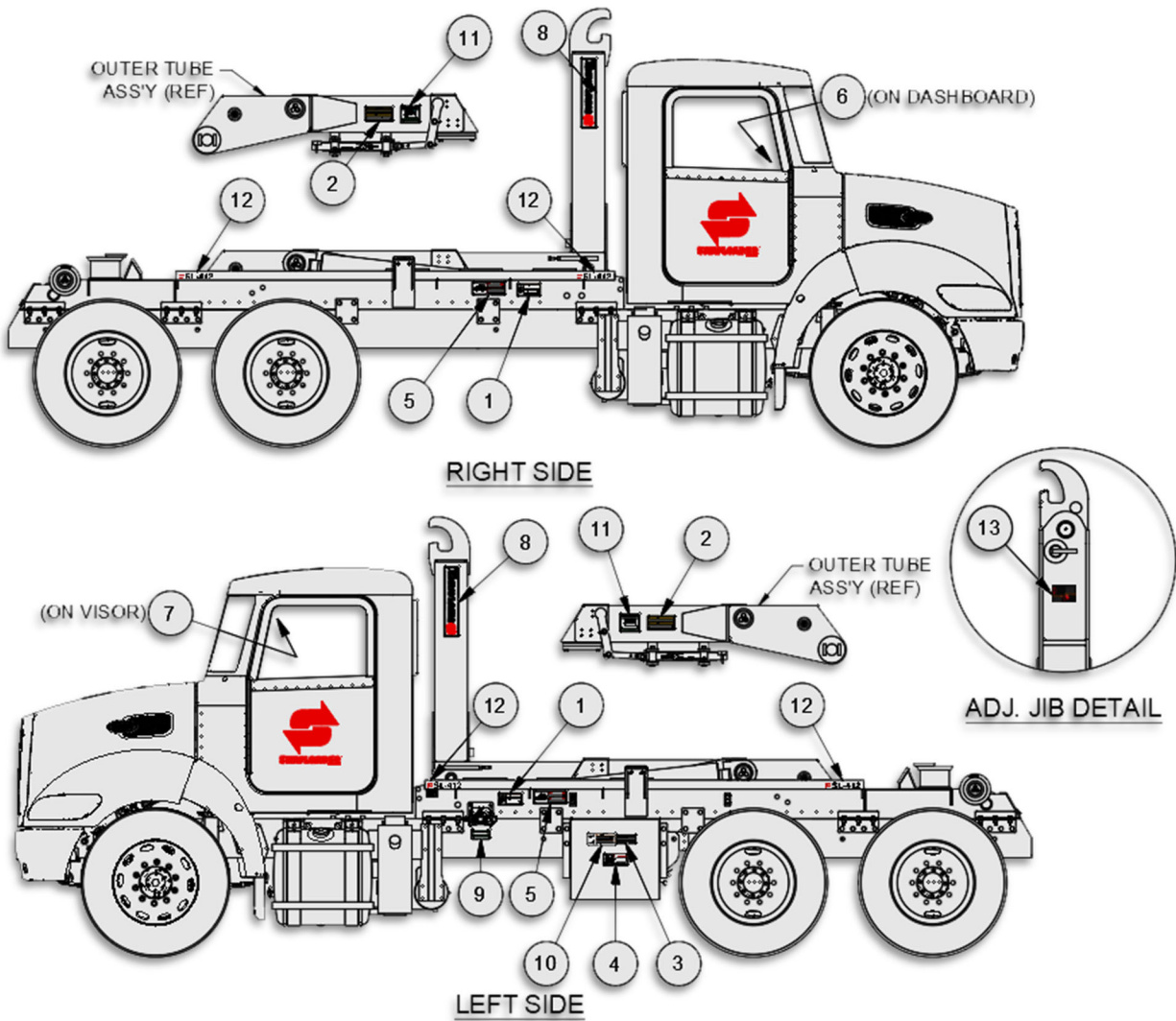
9. It is the responsibility of the owner and/or installer to ensure that any additional safety devices required by state or local codes are installed on the SwapLoader Hoist and/or Truck Chassis.
10. Keep away from overhead power lines. Serious injury or death can result from contact with electrical lines. Use care when operating hoist near electrical lines to avoid contact.



11. Avoid contact with high-pressure fluids. Escaping fluid under pressure can penetrate the skin causing serious injury. Avoid hazardous conditions by relieving pressure before disconnecting hydraulic or other lines. Tighten all connections before applying pressure. Search for leaks with a piece of cardboard, while protecting hands and body from the high-pressure fluids.



12. It is the responsibility of the owner to provide proper maintenance of the Safety Decals. Regular inspection and replacing of Safety Decals that have any fading or damage which would impair their function should be done (See the illustration on the following page for location of Safety Decals).



| ITEM | QTY | P/N   | DESCRIPTION                  |
|------|-----|-------|------------------------------|
| 1    | 2   | 90P07 | OPERATION & SERVICE MANUAL   |
| 2    | 2   | 90P08 | HOIST-BODY SPECIFICATIONS    |
| 3    | ONE | 90P09 | HYDRAULIC OIL SPECIFICATIONS |
| 4    | ONE | 90P10 | HYDRAULIC OIL FLAMMABLE      |
| 5    | 2   | 90P11 | HOIST FALLING                |
| 6    | ONE | 90P12 | LEVER CONTROL                |
| 7    | ONE | 90P13 | SAFETY INSTRUCTIONS          |
| 8    | 2   | 90P14 | SWAPLOADER - JIB             |
| 9    | ONE | 90P18 | RELIEF VALVE                 |
| 10   | ONE | 90P78 | HIGH PRESSURE FLUID          |
| 11   | 2   | 91P06 | LUBRICATION POINTS           |
| 12   | 4   | 91P10 | SL-412                       |
| * 13 | 2   | 90P94 | ADJ. JIB OPERATION           |

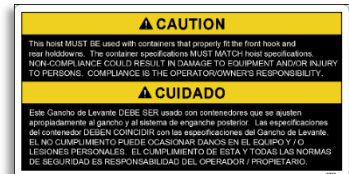
\* Included with the Adjustable Jib option

The following is a list of all the SwapLoader Safety Decals, and their part numbers. Please use when reordering replacement decals.

## 90P07 – OPERATIONS & SERVICE MANUAL



## 90P08 – HOIST-BODY SPECIFICATIONS



## 90P09 – HYDRAULIC OIL SPECIFICATIONS



## 90P10 – HYDRAULIC OIL FLAMMABLE



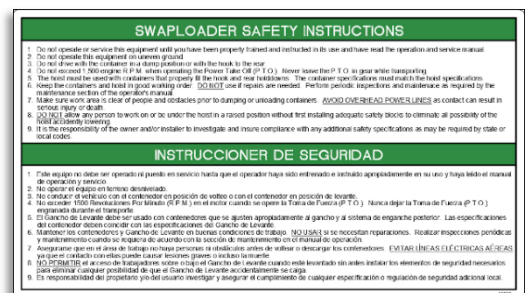
## 90P11 – HOIST FALLING



## 90P12 – LEVER CONTROL



## 90P13 – SWAPLOADER SAFETY INSTRUCTIONS

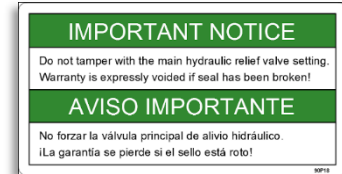




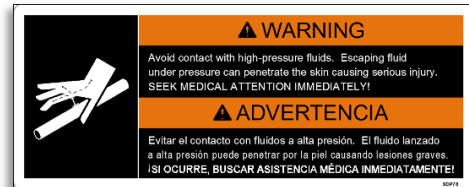
90P14 – SWAPLOADER - JIB



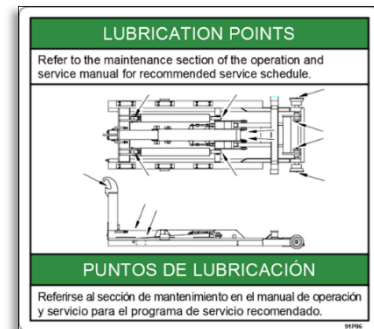
90P18 – RELIEF VALVE



90P78 – HIGH-PRESSURE FLUID



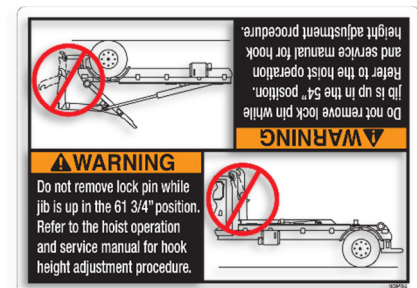
91P06 – LUBRICATION POINTS



91P10 – SL-412



90P94 – ADJUSTABLE JIB OPERATION



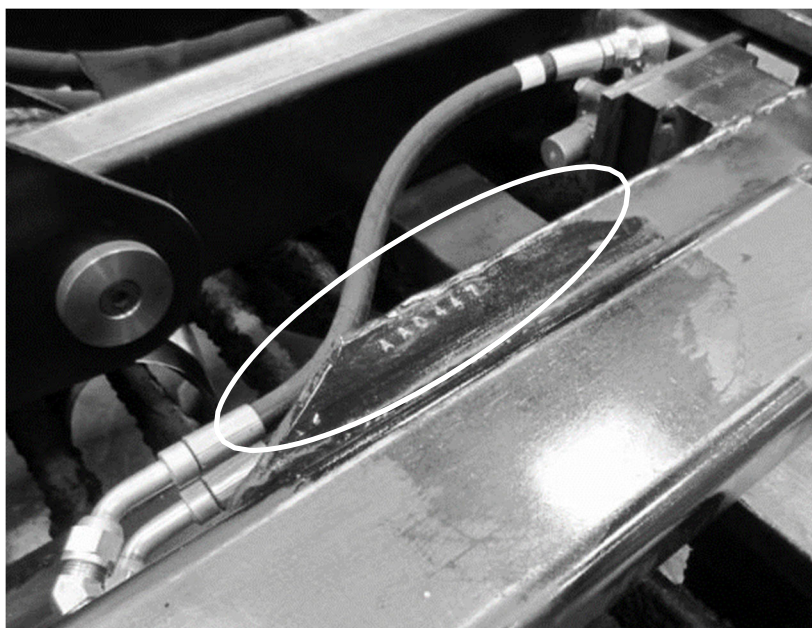


## Serial Number Locations on a SwapLoader Hoist



Serial Number Tag is located at the front driver side of the hoist (gray arrow on first picture).

The Serial Number is also stamped into the frame of the hoist on the top of the "inner rail" shown at the rear of the hoist (red arrow on first picture). An example of a 6-character serial number is shown in the second picture.



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## **INITIAL INSPECTION**



When the hoist is installed and ready for delivery, it is your responsibility to fill out and submit the Product Registration Form. Visit

<https://www.swaploader.com/warranty-registration/> to complete this form.

When the SwapLoader hoist is received from the factory, you should inspect the hoist for damage, which may have occurred in shipment. If damage has occurred, you should contact the shipper immediately. Be sure to note any damage or missing items on bill of Lading.

When you receive your SwapLoader hoist, it is your responsibility to make sure you have received all the parts and pieces that were ordered, within 30 days of the invoice date of the hoist. Lay out all the options, loose parts and accessories on a table and compare the items received vs the Packing List and the Loose Parts Box List(s) shipped with the hoist order.

If you have any problems, shortages, or questions, please contact SwapLoader U.S.A., Ltd. immediately.

## **GENERAL INSTALLATION PROCEDURE**

The installation of the SwapLoader on a truck chassis will generally follow these steps:

1. Install hoist assembly onto truck chassis.
2. Mount the hydraulic control valve to the hoist and install the hydraulic plumbing from the control valve to the hydraulic cylinders. Then install the control levers in the cab and route the control cables to the hydraulic control valve assembly.
3. Install the hydraulic tank, hydraulic filter, and hydraulic plumbing between the hydraulic tank and the control valve assembly.
4. Select and install the P.T.O. on the truck transmission. (Note: This can be done prior to hoist installation on the truck chassis.)
5. Install the hydraulic pump and the plumbing from the pump to the hydraulic tank and control valve assembly.
6. Fill the hydraulic tank with oil, bleed the air from the pump suction line, and start up the unit.

Although SwapLoader attempts to include the mounts and attaching fasteners with each hoist unit, your installation may require some additional mounts or modifications. If you have problems with your installation, please contact SwapLoader at 1-888-767-8000, as we may be aware of another customer who has installed a SwapLoader on a similar truck chassis.

## HOIST INSTALLATION TO TRUCK CHASSIS

1. Place the SL-412 hoist assembly on the truck chassis. The truck chassis mounting surface should be flat without any steps or protrusions. If necessary, shim bars need to be added to ensure a flat surface on which to support hoist. It is advised to clamp the main frame of the hoist to the truck chassis prior to install of the mount brackets.

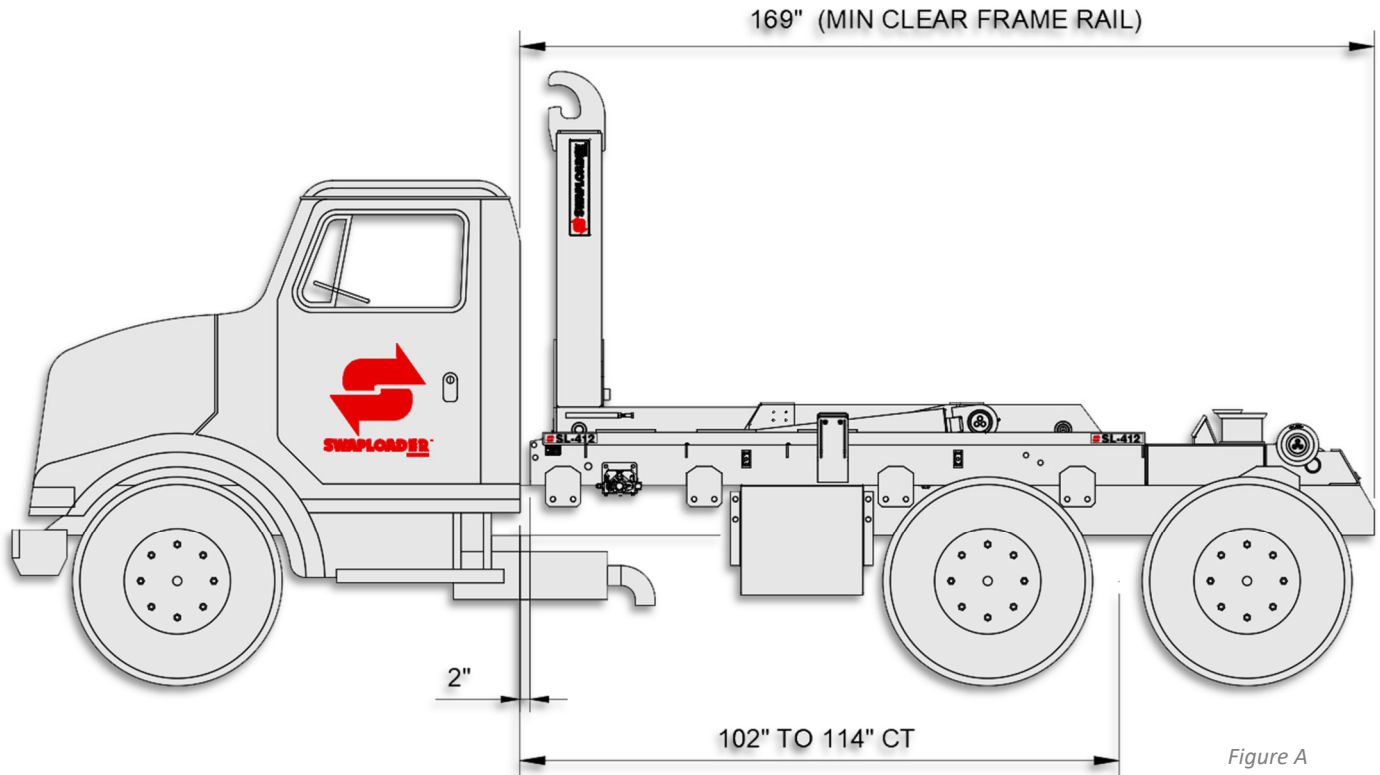


Figure A

The clear frame dimension indicated in *Fig. A* allows for the overall length of the hoist plus 5 inches for cab clearance and rear light bar mounting. Extra frame length may be needed to allow for mounting additional accessories (e.g., Cab Guard, Tarper, Light Kit, Stabilizer, etc.). For example, when mounting a light kit on a truck with a long CA, check that the hoist and the light kit are positioned far enough back to eliminate any interference between the fender and the light kit. You should also consider the final weight distribution regarding the bridge code when positioning the hoist.

### NOTE:

THE ABOVE SPECIFICATIONS ARE A MINIMUM REQUIREMENT. IT IS THE RESPONSIBILITY OF THE OWNER/ OPERATOR TO ENSURE THE COMPLETED CHASSIS MEETS OR EXCEEDS ALL FEDERAL, STATE, AND LOCAL REGULATIONS. ALSO, THE HOIST SHOULD NOT BE USED TO LIFT AND HAUL ANY LOAD THAT EXCEEDS THE LOAD RATING OF ANY OF THE INDIVIDUAL COMPONENTS OF THE COMPLETED CHASSIS (TIRES, AXLES, SUSPENSION, ETC.)

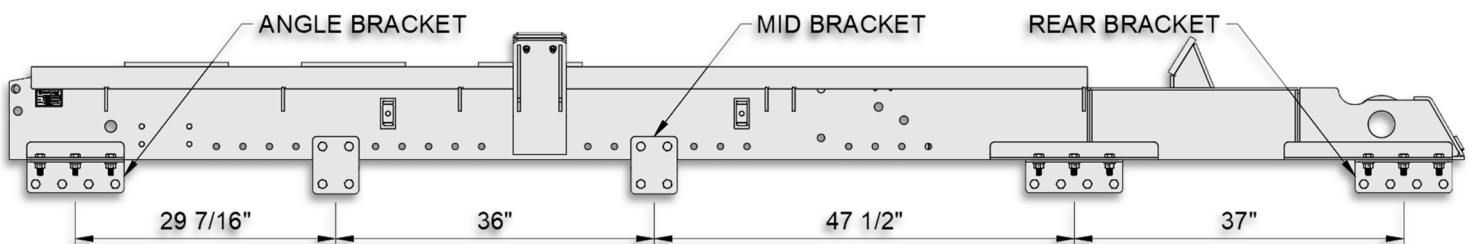


Figure B

2. There are two types of mount brackets used on the Model SL-412 hoist as indicated in *Fig. B* and *Pg. 5-7*. They are the angle brackets (*Pt. No. 89H51*) and the mid brackets (*Pt. No. 89H46*). Locate the mount brackets on the side of the hoist as indicated in *Fig. B*. These dimensions are flexible because of possible interference with chassis components. Also allow for mounting the control valve assembly and the hydraulic tank. You should consult the truck chassis supplier for any limitations regarding drilling mount holes in the truck chassis frame rails. Typically, the holes must be at least  $2\frac{3}{4}$ " from the top of the truck chassis rails (reference *Fig. C, D & E*). Once the locations of the mount brackets have been determined, use the mount brackets as a template for marking the mounting holes in the truck chassis frame rails. Drill the  $\frac{21}{32}$ " diameter holes required and attach the brackets to the truck chassis with the  $\frac{5}{8}$ " diameter bolts, washers, and locking hex nuts provided. Torque to 110 ft.lb.
3. Bolt the mount brackets to the hoist main frame as indicated on *Fig. C, D and E*. You may need to modify the mount brackets or add shim plates to allow for variances in the width of the truck chassis as well as to allow for top rivets, stepped channels, etc.

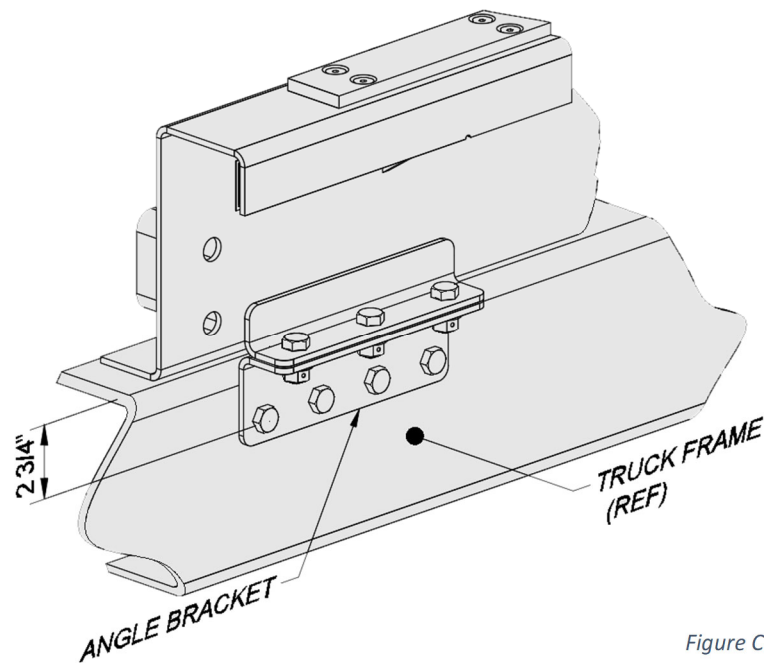


Figure C

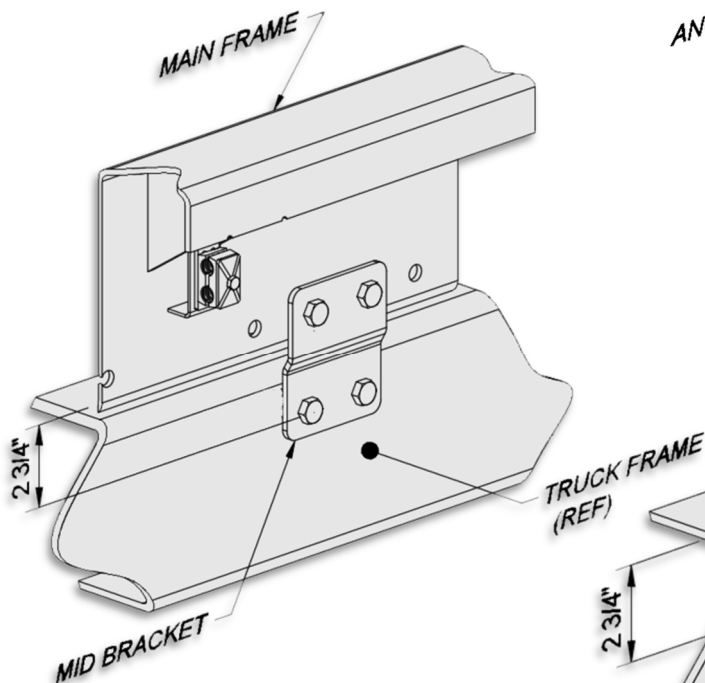


Figure D

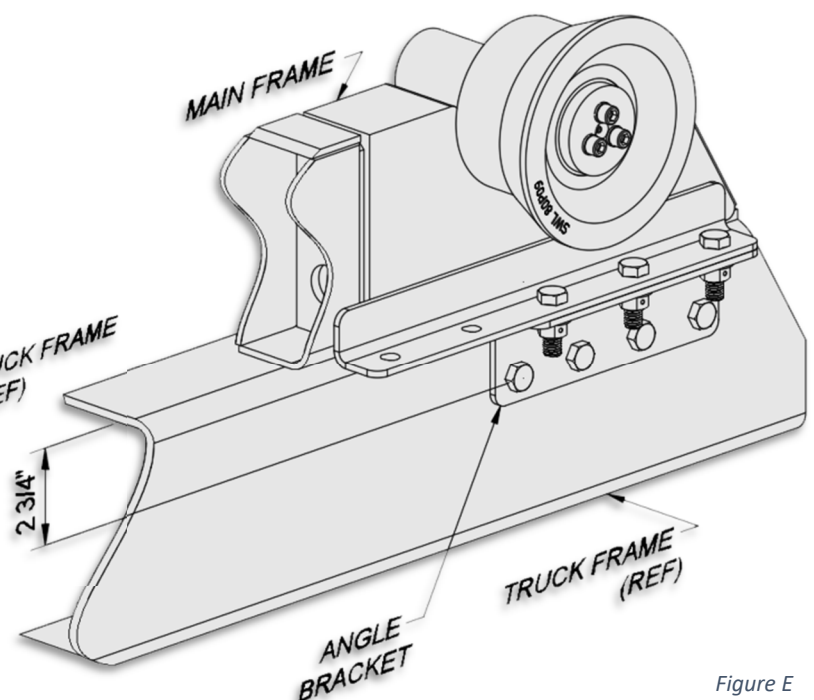


Figure E



## **CONTROLS INSTALLATION – MANUAL**

1. Attach the valve mount bracket (*Pt. No. 41H01*) to the main frame as indicated on *Pg. 5-11* with the fasteners provided (see *Pg. 5-7*).
2. Mount the hydraulic control valve assembly (*Pt. No. 20P88*) to the valve mount bracket as shown on *Pg. 5-11* with the fasteners provided.
3. Install the hydraulic adapters, connect the hydraulic tubing & hoses (*Pt. Nos. 13P11, 11P98 & 11P99*) to the control valve assembly as indicated on *Pg. 5-9*. The tubing should be supported by the clamp assemblies that are provided in the Loose Parts Box (see *Pg. 5-7*).
4. Determine the best location in the cab for the control levers (*Pt. No. 20P08*). The location should be such that the controls can be easily reached while operating the truck. A control lever console (*Pt. No. 20P09*) is provided to facilitate the mounting of the control levers (see *Pg. 5-11*).
5. Assemble and install the control lever console (see *Fig. F*). Typically, the console is fastened to the floor of the cab and the control cables are routed through additional holes drilled in the floor. Your installation may require that additional brackets be fabricated, or other modifications made.
6. Attach the control cables to the control levers and route the cable through the holes in the cab. Install the control levers in the console. Levers should be installed such that when the levers are pushed forward the control cable is extended. See *Pg. 5-11* (Manual Control Assembly) for control lever orientation.
7. Route the cables to the control valve location and attach them to the control valve with the bonnet connection kits provided (*Pt. No. 20P10*). See the following instruction sheet for installation procedures. The control cables supplied are 96 inches long. Your mounting may require different length control cables, which can be purchased locally or through SwapLoader. Take proper care when routing the control cables, as a good cable path is essential for a proper operating system. Keep bends in the cable path to a minimum and be as generous as possible. Under no circumstances should any bend be tighter than an 8" radius. Protect the cable from heat above 225 degrees F. and avoid hot areas such as exhaust pipes, etc. Protect the cable from physical damages such as pinching or crushing,

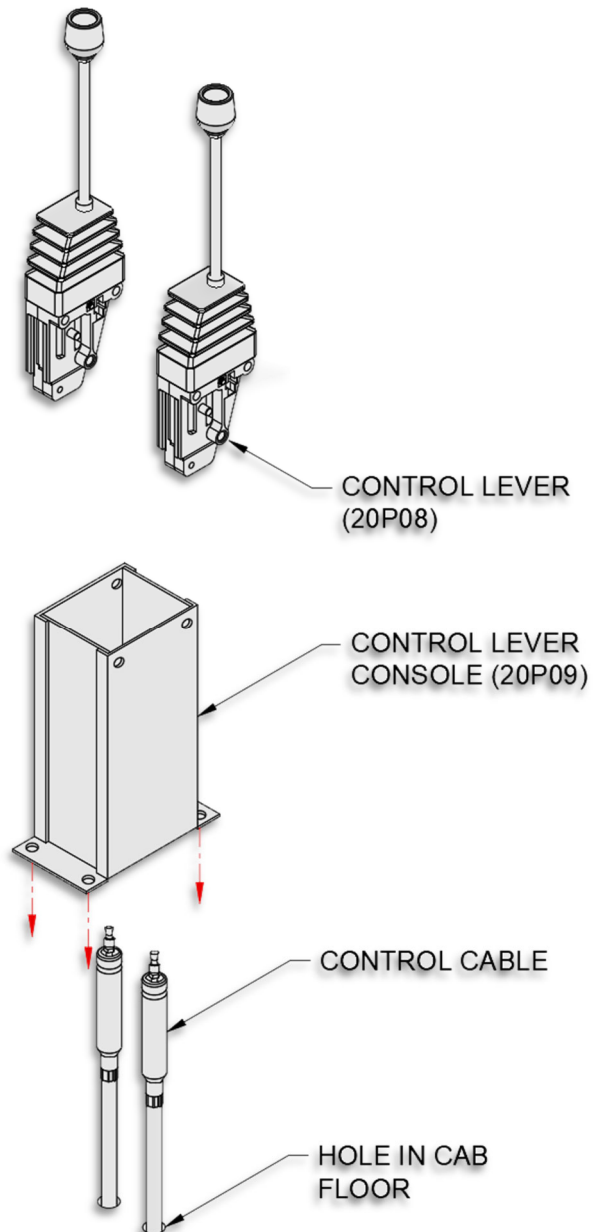
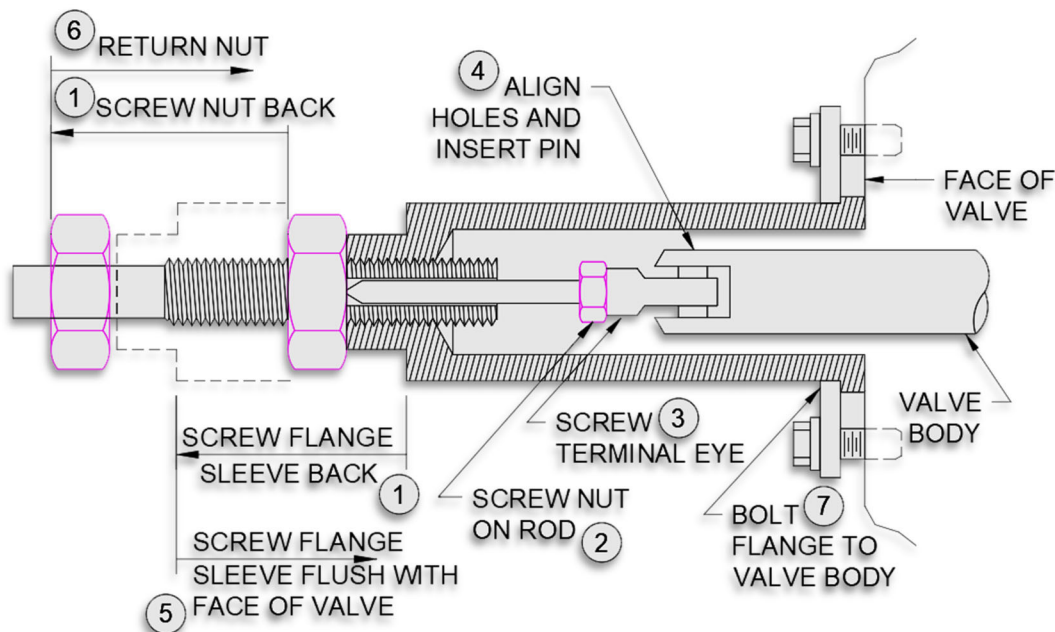


Figure F

and do not use cable supports, which may crush or deform the cable. Allow room for flexing where the cable is attached to moving parts of the equipment, so that the cable is neither kinked nor stretched.

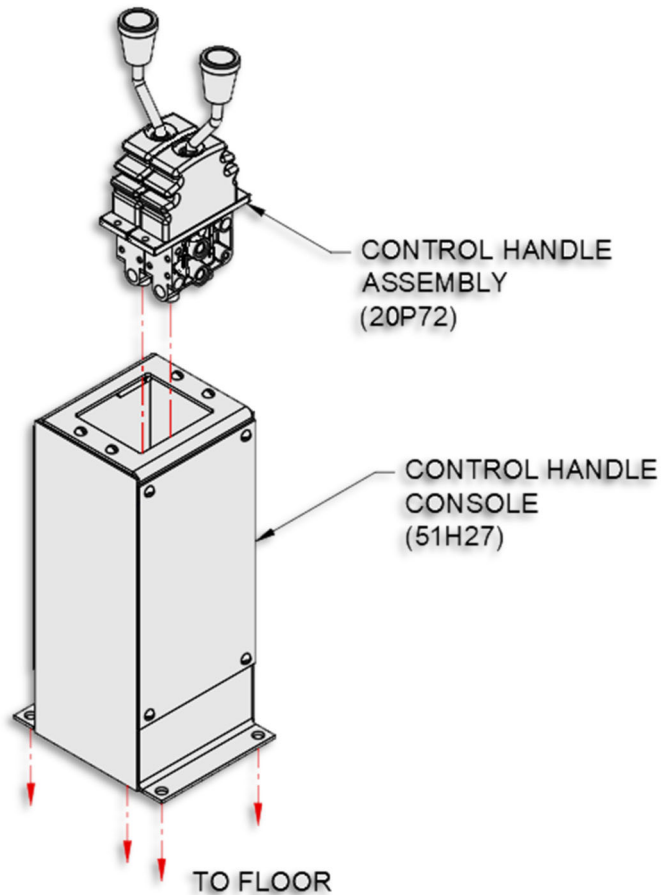
### **INSTALLATION PROCEDURE FOR A HYDRAULIC CONTROL CABLE TO HYDRAULIC VALVE WITH BONNET CONNECTION KIT**

1. Turn .750-16 UNF jam nut entire length of threaded hub back over the cable. Place Flange onto Sleeve (large end first) and flange onto sleeve and turn flange adaptor / flange / sleeve assembly entire length of threaded hub back over the cable.
2. Turn .250-28 UNF jam nut onto cable threaded rod until it bottoms.
3. Place clevis of threaded rod and bottom against jam nut. Turn other .250-28 UNF jam nut onto threaded rod until it bottoms against clevis. Align clevis so it will mate with spool terminal eye and secure jam nut against clevis.
4. Slide the clevis onto terminal eye on spool and align the holes. Insert clevis pin through yoke and terminal eye holes and secure clevis pin with retaining ring.
5. Now, with the cable attached to the valve and control head, turn the flange adaptor / flange / sleeve assembly back onto the threaded hub until it is flush with the valve face. When turning on the flange adaptor / flange / sleeve assembly, make sure that the control head remains in the neutral position.
6. Tighten the .750-16 UNF jam nut against the sleeve and lock in position.
7. Bring flange into position on bolt assembly to valve housing.



**CONTROLS INSTALLATION - AIR SHIFT (OPTION)**

1. Attach the valve mount bracket (*Pt. No. 41H01*) to the main frame as indicated on *Pg. 6-4* with the fasteners provided.
2. Mount the hydraulic control valve assembly (*Pt. No. 20P88*) to the valve mount bracket as shown on *Pg. 6-4* with the fasteners provided. Attach air shift kits (*Pt. No. 20P95*) to the hydraulic control valve. Reference installation instructions included with the air shift kits.
3. Install the hydraulic adapters and connect the hydraulic hoses and tubing (*Pt. Nos. 11P98, 11P99 & 13P11*) to the control valve assembly as indicated on *Pg. 5-9*. The tubing should be supported by the clamp assemblies that are provided in the Loose Parts Box (See *Pg. 5-7*).
4. Determine the best location in the cab for the control handle assembly (*Pt. No. 20P72*). The location should be such that the controls can be easily reached while operating the truck. A control handle console (*Pt. No. 51H27*) is provided to facilitate the mounting of the control handles (see illustration on the right).
5. Install the air fittings and hose as shown on *Pg. 6-5* (Air Circuit Plumbing Diagram). An air pressure protection valve (*Pt. No. 20P74*) is provided so you can tap into the truck's air supply without jeopardizing the integrity of the air system. The air hose is provided in a bulk length, which you can cut to length as required for running the air lines. Take care in routing the air lines and avoid hot areas such as exhaust pipes, etc.

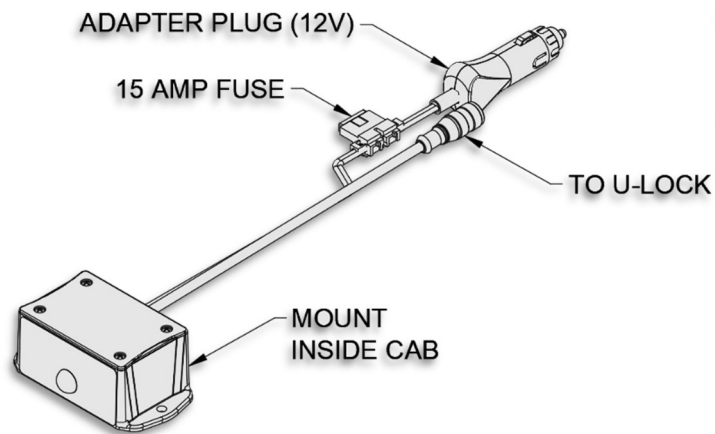
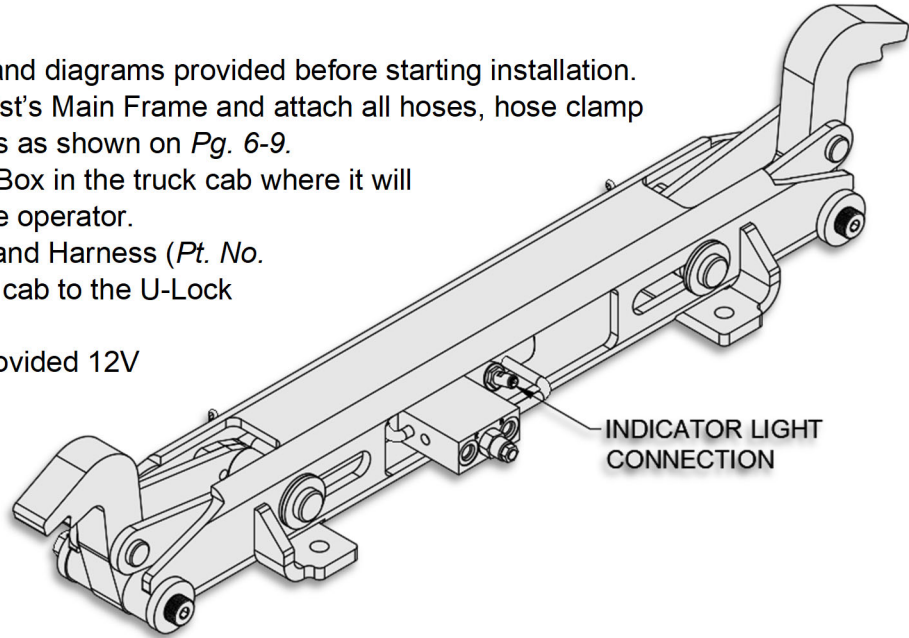




## **AIR OR CABLE CONTROL INSTALLATION w/ U-LOCK (OPTION)**

The Universal Body Lock (U-Lock) can be installed with a standard 3-section valve and operated from the cab (see *Pg. 6-6* for routing). A separate indicator light and harness will be provided to be installed in the truck cab. This will notify the operator when the U-Lock has been engaged or disengaged.

1. Review all directions and diagrams provided before starting installation.
2. Mount valve to the hoist's Main Frame and attach all hoses, hose clamp assemblies and fittings as shown on *Pg. 6-9*.
3. Mount Indicator Light Box in the truck cab where it will be clearly visible to the operator.
4. Route Indicator Light and Harness (*Pt. No. 40P60*) from the truck cab to the U-Lock cylinder.
5. Hardwire or plug in provided 12V adapter for indicator light.



### **NOTE:**

AS A SAFETY MEASURE, THE JIB CYLINDER IS DISENGAGED WHENEVER THE U-LOCK IS ENGAGED.

## P.T.O. SELECTION

The next step is to select and install a direct drive type P.T.O. to the transmission. Please contact your local truck equipment representative for the correct unit sized on the following criteria which is based on the SwapLoader provided pump:

|  |   |
|--|---|
| <b>P.T.O. Torque Rating:</b>                       | 200 ft.-lbs. (See Note 1)   |
| <b>Power at 1500 RPM:</b>                          | 57 H.P. (See Note 1)  |
| <b>Mount Flange (Direct Mount):</b>                | SAE B 4 Bolt  |
| <b>Hydraulic Pump Spline Shaft Specifications:</b> | 7/8-13T 16/32 D.P.  |
| <b>Hydraulic Pump Rotation:</b>                    | L.H. As provided (see Note 2). The hydraulic pump rotation can be reversed to R.H. by a qualified hydraulic technician or it can be sourced through SwapLoader. |

### NOTE 1:

P.T.O. TORQUE AND POWER REQUIREMENTS ARE BASED ON THE UNIT OPERATING AT MAIN RELIEF PRESSURE. NORMAL OPERATING PRESSURE WILL BE LESS.

### NOTE 2:

P.T.O. OUTPUT ROTATION WILL NEED TO BE R.H. (CLOCKWISE) AS VIEWED LOOKING AT OUTPUT FLANGE OF P.T.O. FOR A L.H. PUMP.

### NOTE 3:

DO NOT OPERATE PUMP AT SPEEDS OVER 1500 R.P.M.

### NOTE 4:

ALWAYS DISENGAGE THE P.T.O. AFTER EACH OPERATING CYCLE.

## HOW TO IDENTIFY WHAT PUMP IS NEEDED

The SwapLoader factory supplied pump is a bushing style gear pump, because of the pressure requirements of the SwapLoader hooklift hoist. By design the bushing style pumps are single rotation (rotation specific).

All SwapLoader hooklift hoists come standard with a CCW (left-hand rotation pump), which will work for most manual transmission applications. For most automatic transmission applications, a CW (right-hand rotation pump) is needed; call SwapLoader for price and availability.

### NOTE:

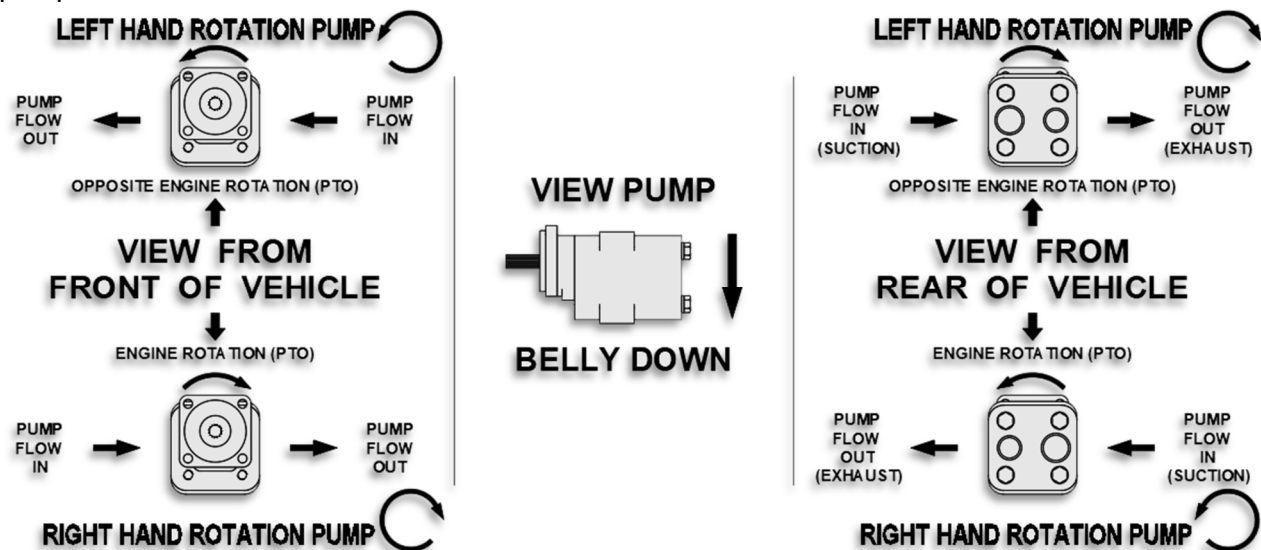
CONSULT THE PTO SUPPLIER WHENEVER UNCERTAIN ABOUT THE CORRECT PUMP ROTATION FOR A PARTICULAR APPLICATION.

The table lists the SwapLoader part number for both left- and right-hand rotation pumps for the SL-412 hoist model:

| MODEL  | Bi-Rotational Pump | L.H. Rotation Pump | R.H. Rotation Pump |
|--------|--------------------|--------------------|--------------------|
| SL-412 | 23P47              | 20P87              | 21P03              |

## HOW TO IDENTIFY PUMP ROTATION

To better understand the effects of pump rotation we must consider the path that oil takes through the pump. Oil enters the pump through the inlet (suction) port, travels around the outside of the gears, and is forced out through the outlet (exhaust) port. Oil enters and exits the pump in the direction of its rotation.



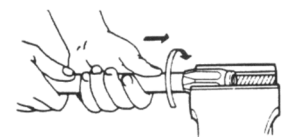
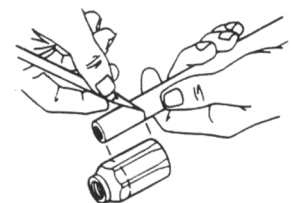
Determine pump rotation by positioning the pump belly side down (see illustration above). Looking at the rear of the pump if the suction (largest) port is to the left side, then the pump is a CCW or left-hand rotation. If the suction (largest) port is on the right side, then the pump is CW or right-hand rotation.

## PUMP INSTALLATION

1. Install the hydraulic pump to the P.T.O. (Bolts are not provided).
2. Install the hydraulic fittings into ports on the hydraulic pump as shown on *Pg. 5-10*.
3. Connect the suction hose assembly to the hydraulic tank (1-1/2" I.D. hose) and route to the hydraulic pump in as short and straight line as possible. Be sure to route the hose clear of exhaust components and of the drive shaft. Extra hose is provided so the hose can be shortened to an appropriate length. Install the hose on the hose barb fittings at the tank and at the pump and secure with the hose clamps provided.

**NOTE: Prior to startup, this hose must be filled with oil.**

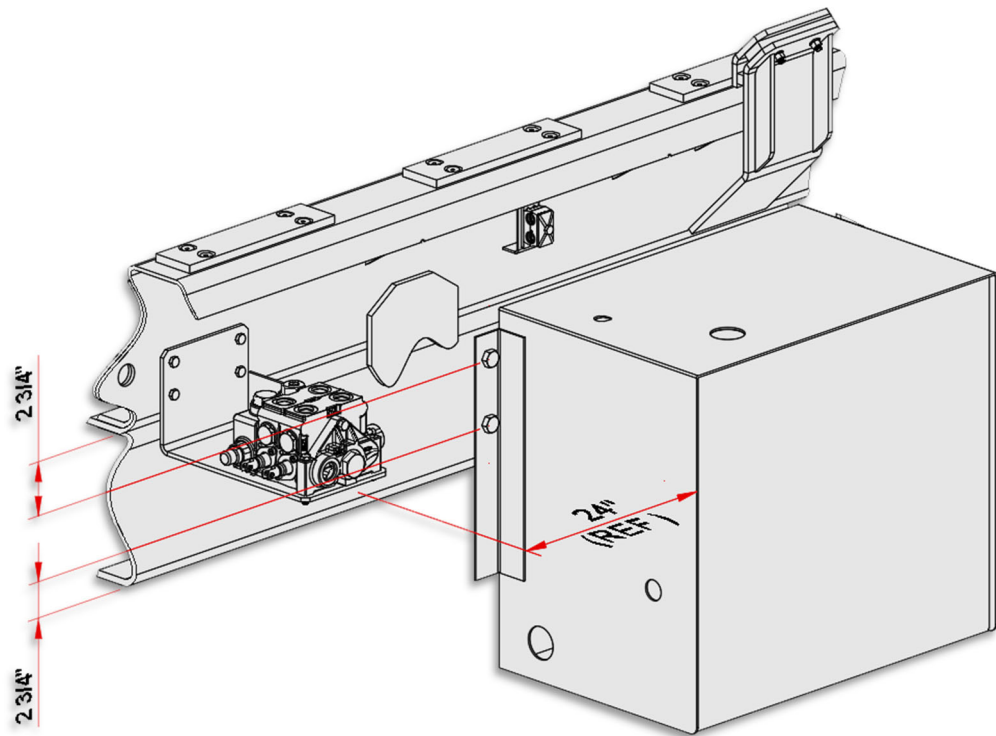
4. The pressure hose from the hydraulic pump to the control valve assembly is not supplied with the hoist as it must be made to the proper length. This hose must be purchased from a local hydraulic hose assembly supplier per the following specification:
  - a. Hose ID: 3/4 inch
  - b. Working Pressure: 3500 PSI
  - c. Hose Fitting Threads: SAE 37° (JIC) 1 1/16-12



5. Install the pressure hose as indicated. Tie up the pressure and suction hoses as necessary. Again, be sure the hoses are routed to avoid exhaust components and to stay clear of the drive shaft.

### **HYDRAULIC TANK INSTALLATION**

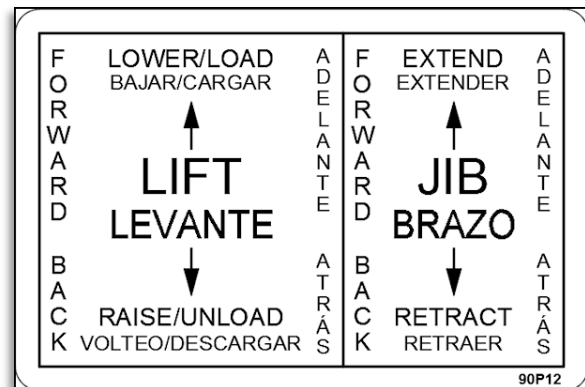
1. Select a location to mount the hydraulic tank. Reference *Fig. G* or *Pg. 5-11* for the suggested location of the hydraulic tank to the rear of the control valve assembly on the left-hand side of the truck. The hydraulic hoses have been sized for the tank to be mounted in this general area. The tank can be located on the right-hand side or behind the cab, if necessary, which means longer hoses may be required.
2. Drill four (4) holes for 5/8" diameter bolts (provided) in the mount angle of the hydraulic tank (two per angle) and the frame rails of the truck chassis. Mount the hydraulic tank and install the hydraulic filter. Install the hydraulic return hose and the hose barb fitting between the filter and the control valve assembly as shown on *Pg. 5-9*. The hose length can be shortened if necessary. Secure the hose to the barb fittings with the hose clamps provided.



*Figure G*

## START UP PROCEDURE

1. Fill the hydraulic tank with hydraulic oil (see oil specification in Section IV: Maintenance.)
2. Prime the pump by loosening the clamp on the suction hose at the pump. Pull the hose back off the fitting till the air is bled from the line. Push the hose back on the fitting and retighten the clamp.
3. Engage the P.T.O. and run the engine at idle (700 to 900 RPM). Operate the cylinders at full stroke five to ten times to bleed the air from the lines and cylinders. The cylinders were filled with oil during testing at the factory, but some seepage may have occurred during shipping and installation. Refill the hydraulic tank, if needed, during this sequence and do not let the pump run without oil.
4. Check for leaks and tighten fittings as necessary.
5. Verify the movement of the control levers corresponds to the movement of the cylinders per the figure below.
6. Install all safety decals and product decals as shown on *Pg. 1-5* after final installation and painting have been completed.
7. Fill out the Product Registration form online at <https://www.swaploader.com/warranty-registration/>.



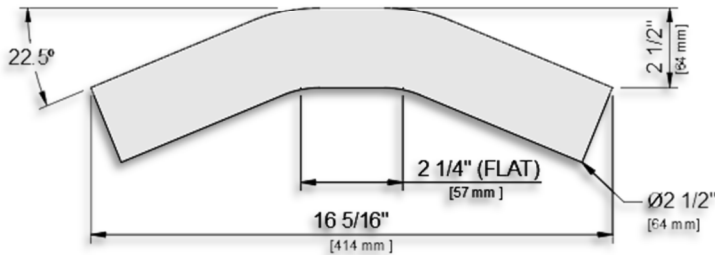
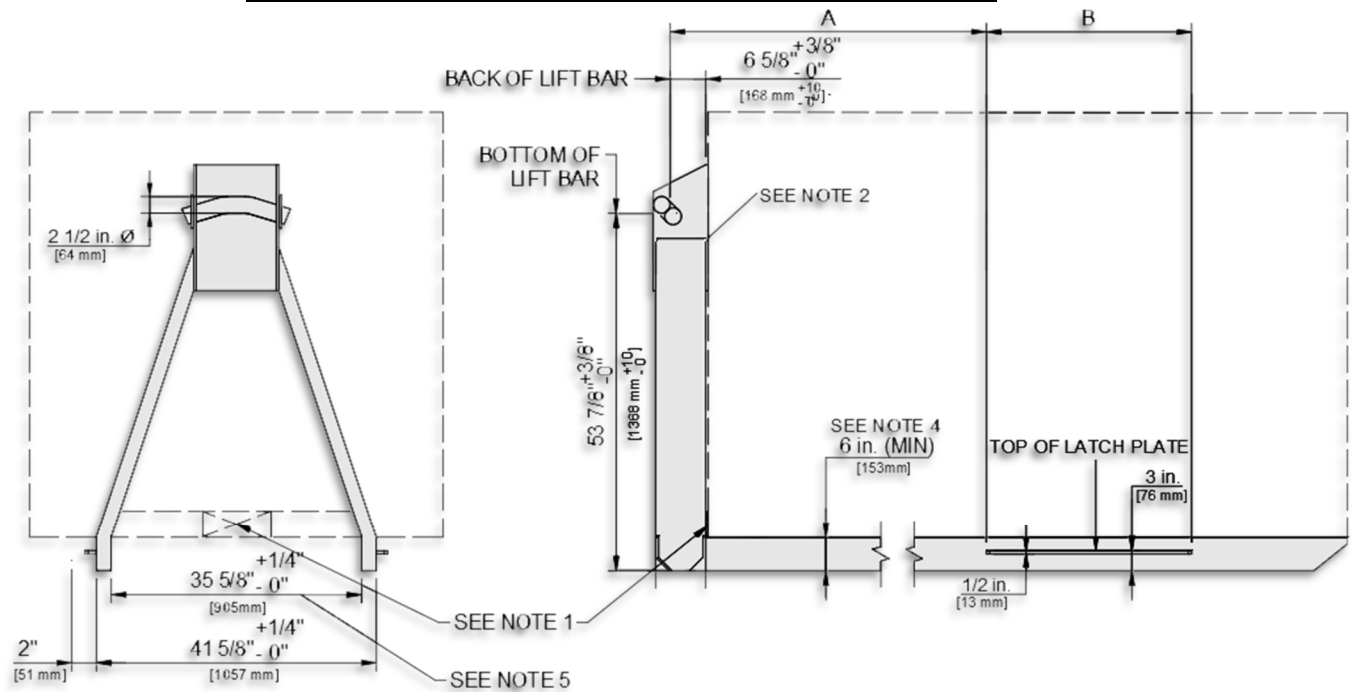
### NOTE:

FAILURE TO FILL OUT AND SUBMIT PRODUCT REGISTRATION WITHIN 15 DAYS OF INSTALLATION MAY POSSIBLY VOID THE WARRANTY.



**CAUTION** The SwapLoader hoist must be used with bodies or containers that properly fit the front hook and the rear hold-downs (see Subframe Critical Dimensions on Pgs. 2-12 & 2-13). If possible, pick up one of the containers that will be used with the SwapLoader hoist and verify the following:

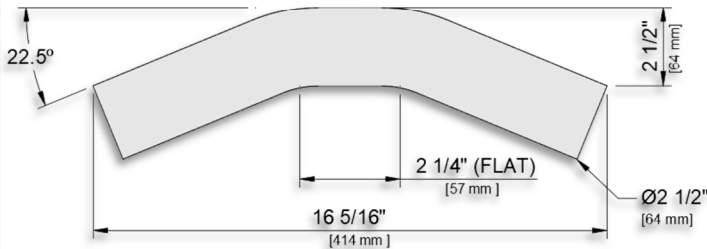
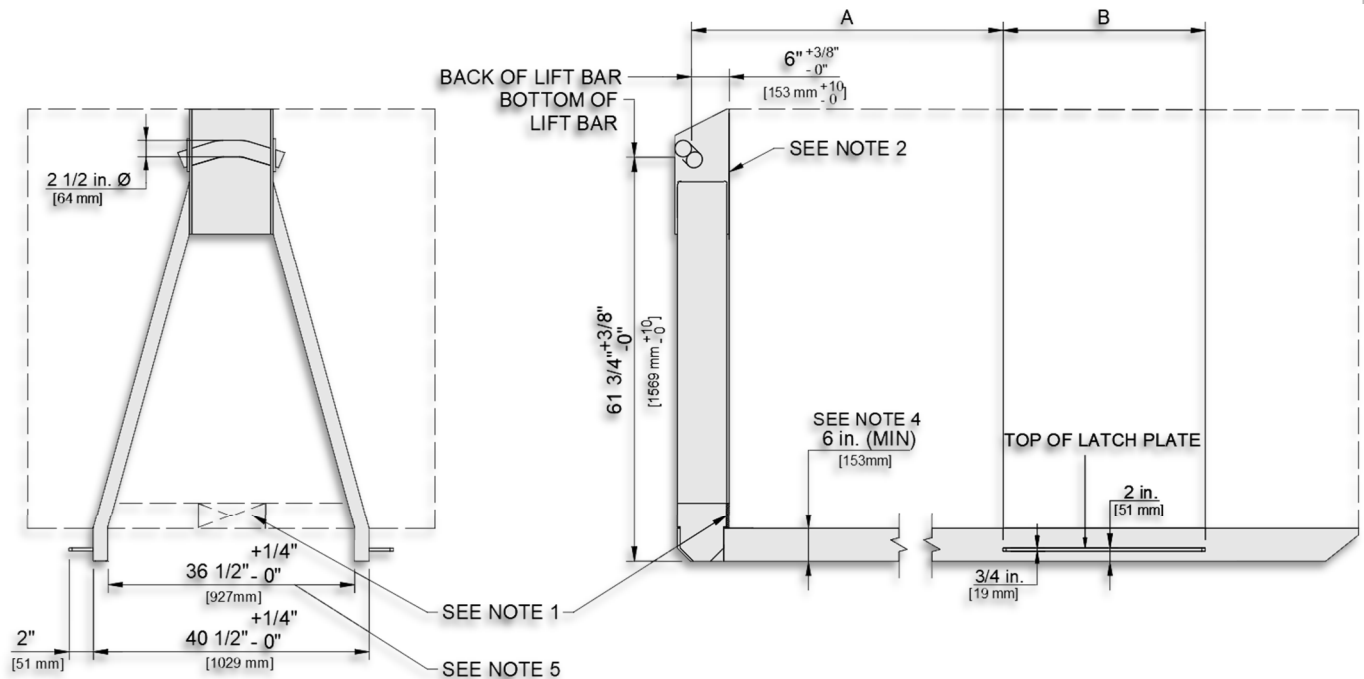
- Outside dimensions of the long sills match the guiding rollers on the hoist.
- The front hook dimensions are correct for the hoist.
- The rear hold-downs of the container latch into the hold-downs on the hoist.
- Check for any interference between the container and any part of the hoist (i.e.: Hydraulic tank, hydraulic tubing or hose, hydraulic valve, etc.)

**300 SERIES SUB-FRAME CRITICAL DIMENSIONS****LIFT BAR DETAIL****300 SERIES SUB-FRAME DIMENSIONS**

| HOIST COMPATABILITY           | A                  | B             |
|-------------------------------|--------------------|---------------|
| SL-180/212/214/24/330/400/412 | 111 3/4" [2839 mm] | 36" [915 mm]  |
| SL-220/222/406/518            | 123 3/4" [3143 mm] | 48" [1220 mm] |
| SL-520                        | 154 1/2" [3925 mm] | 48" [1220 mm] |

**NOTE:**

1. A STRUCTURAL JIB CONTACT POINT LOCATED AS LOW AS ALLOWABLE ON THE CONTAINER FRONT IS REQUIRED.
2. WELD HOOK GUARD TO BODY OR ADD STRUCTURAL SUPPORT AS NEEDED FOR THE APPLICATION.
3. THIS DRAWING PROVIDES THE CRITICAL SUB-FRAME DIMENSIONS FOR COMPATABILITY WITH THE SWAPLOADER HOOK LIFT HOIST. IT IS THE SUB-FRAME SUPPLIER'S RESPONSIBILITY TO PROVIDE A SUB-FRAME OF SUFFICIENT CAPACITY WHICH PROPERLY SUPPORTS THE BODY/CONTAINER WHEN USED WITH THE HOOK LIFT HOIST.
4. SWAPLOADER MANUFACTURED 300 SERIES A-FRAMES REQUIRE A 6 INCH LONGSILL HEIGHT.

**400 SERIES SUB-FRAME CRITICAL DIMENSIONS****LIFT BAR DETAIL****400 SERIES SUB-FRAME DIMENSIONS**

| HOIST COMPATABILITY | A                  | B             |
|---------------------|--------------------|---------------|
| SL-412              | 111 3/4" [2839 mm] | 36" [915 mm]  |
| SL-240/330/400      | 123 3/4" [3143 mm] | 36" [1220 mm] |
| SL-220/222/406/518  | 132 1/8" [3356 mm] | 48" [1220 mm] |
| SL-520/650          | 154 1/2" [3925 mm] | 48" [1220 mm] |

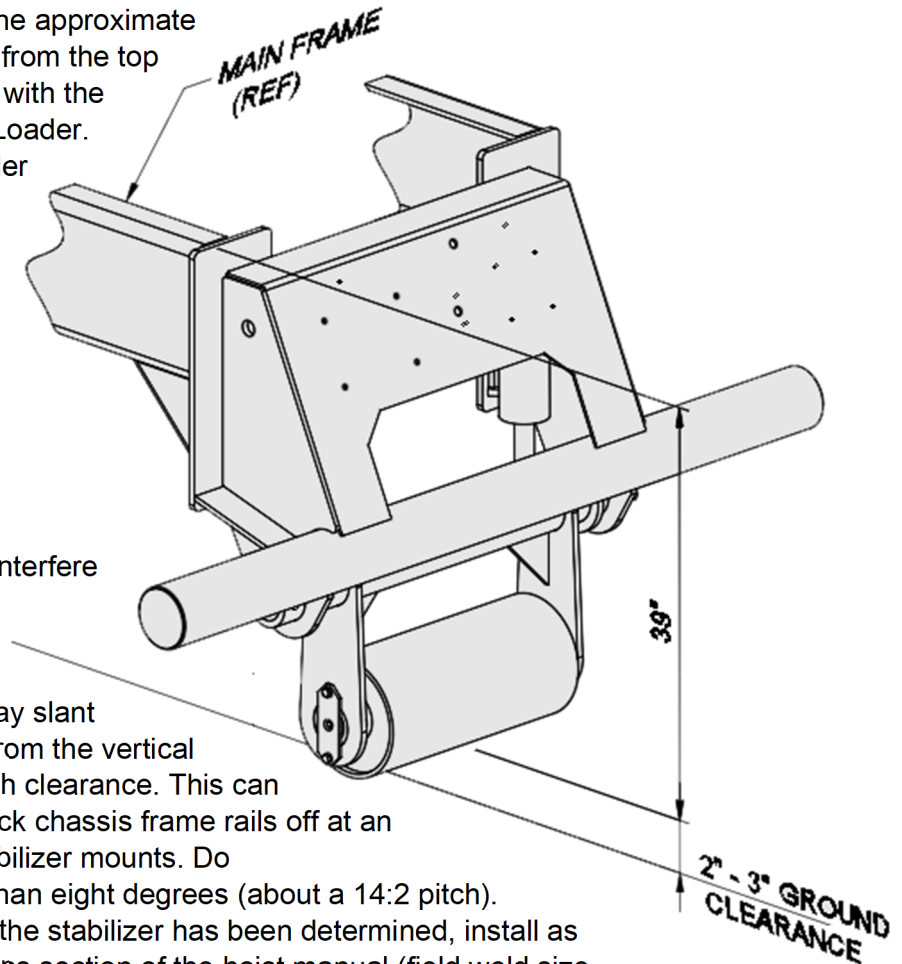
**NOTE:**

1. A STRUCTURAL JIB CONTACT POINT LOCATED AS LOW AS ALLOWABLE ON THE CONTAINER FRONT IS REQUIRED.
2. WELD HOOK GUARD TO BODY OR ADD STRUCTURAL SUPPORT AS NEEDED FOR THE APPLICATION.
3. THIS DRAWING PROVIDES THE CRITICAL SUB-FRAME DIMENSIONS FOR COMPATABILITY WITH THE SWAPLOADER HOOK LIFT HOIST. IT IS THE SUB-FRAME SUPPLIER'S RESPONSIBILITY TO PROVIDE A SUB-FRAME OF SUFFICIENT CAPACITY WHICH PROPERLY SUPPORTS THE BODY/CONTAINER WHEN USED WITH THE HOOK LIFT HOIST.
4. SWAPLOADER MANUFACTURED 400 SERIES A-FRAMES REQUIRE A 6 INCH LONGSILL HEIGHT.



## **STABILIZER INSTALLATION (OPTION)**

1. The hoist installation for a unit with the stabilizer option is much the same as that for the standard unit except that a three-section hydraulic control valve is used (see *Pg. 6-9 to 6-10* for the correct installation and plumbing diagrams for a hoist with three control circuits in the Option section of the manual).
2. The following diagram gives the approximate position of the stabilizer roller from the top of the truck chassis frame rail with the mounts as provided by SwapLoader. When extended down, the roller should touch the ground only when the vehicle is loading a heavy container. Therefore, with the truck empty, leave 2 to 3 inches of clearance between the ground and the roller. Also, you will need to check that when the roller is up in the transport position it does not interfere with any part of the rear axle, rear suspension, or brake components. If some interference will occur, you may slant the stabilizer mounting back from the vertical position until you leave enough clearance. This can be achieved by cutting the truck chassis frame rails off at an angle before installing the stabilizer mounts. Do not slant the mounting more than eight degrees (about a 14:2 pitch).
3. Once the required position of the stabilizer has been determined, install as shown on *Pg. 6-9* in the Options section of the hoist manual (field weld size requirements are also indicated on this page).



### **NOTE:**

PRIOR TO ANY WELDING, CONSULT THE TRUCK MANUFACTURER FOR ANY SPECIAL PRECAUTIONS THAT MAY NEED TO BE TAKEN. TYPICALLY, THE BATTERIES MUST BE DISCONNECTED AND THE GROUND LEAD FROM THE WELDER SHOULD BE CONNECTED AS CLOSE AS POSSIBLE TO THE PART BEING WELDED TO AVOID THE POSSIBILITY OF ARCHING ACROSS BEARINGS, GEARS, ETC.

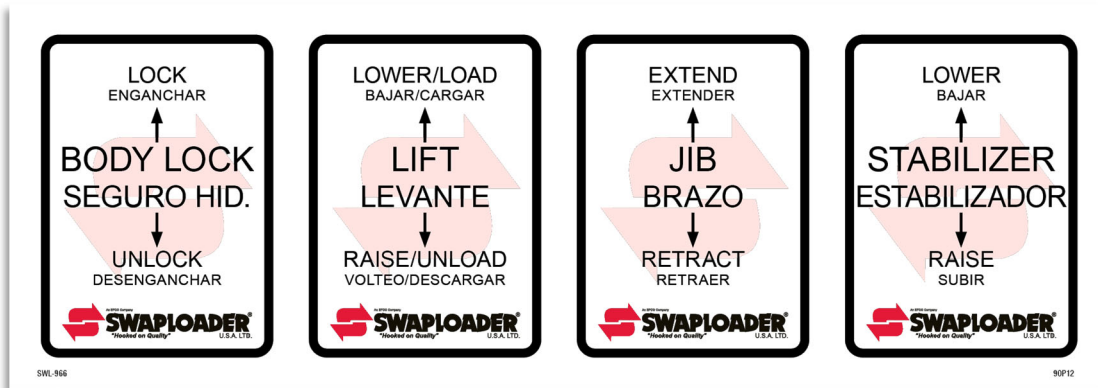
### **NOTE:**

THE HOIST MAINFRAME IS MADE FROM HIGH STRENGTH LOW ALLOY STEEL. USE AN APPROPRIATE WELDING PROCESS.

4. Install the hydraulic adapters and hoses from the three-section hydraulic control valve to the hydraulic cylinder (*Pt. No. 21P84*) shown on drawings *Pgs. 6-12 & 6-13* of the manual. Tie up all loose hoses as required. Be sure the hoses are routed to avoid exhaust components and all moving components of the rear axles.



5. After the start procedure has been completed on the hoist, verify that the movement of each control lever corresponds to the movement of the cylinders per the figure below. Operate the stabilizer through 5 to 8 cycles to remove the air from the hydraulic cylinders and lines.



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## INSTALLATION INSTRUCTIONS – REAR BUMPER ASSEMBLY

1. Review all directions and diagrams provided before starting bumper installation.
2. Trim truck frame to indicated dimensions (see Fig. A). These dimensions will facilitate the mounting of the rear light assembly if it is also being mounted.
3. Measure the distance from the top of the truck frame to the ground (**NOTE: This should be performed on a level surface**). Based on this measurement and the dimensions in Figure 1, the vertical channel (Pt. No. 63H94) may need to be modified in length to meet the Office of Motor Carrier Safety (OMCS) regulations. Regulation 393.86 requires that no bumper be located more than 30" off the ground when the truck is empty, and the end of the bumper should not be located more than 24" from the extreme rear of the vehicle, including truck bodies (see Fig. B). Once the length has been determined for the vertical channels, weld them to the bottom of the truck frame (see additional notes on next page).
4. Center the bumper weldment (Pt. No. 52H12) on the vertical channels (Pt. No. 63H94). Position rear of bumper from rear of the hoist as indicated by the bumper location chart. This is crucial in order to ensure that the container longsills do not contact the bumper during the dump cycle (see Fig. A & B).
5. Weld the bumper weldment to the vertical channels (see Fig. A & C).

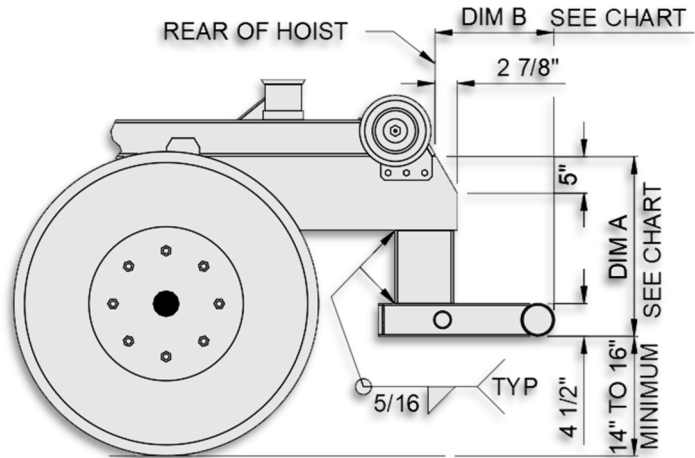


Figure A

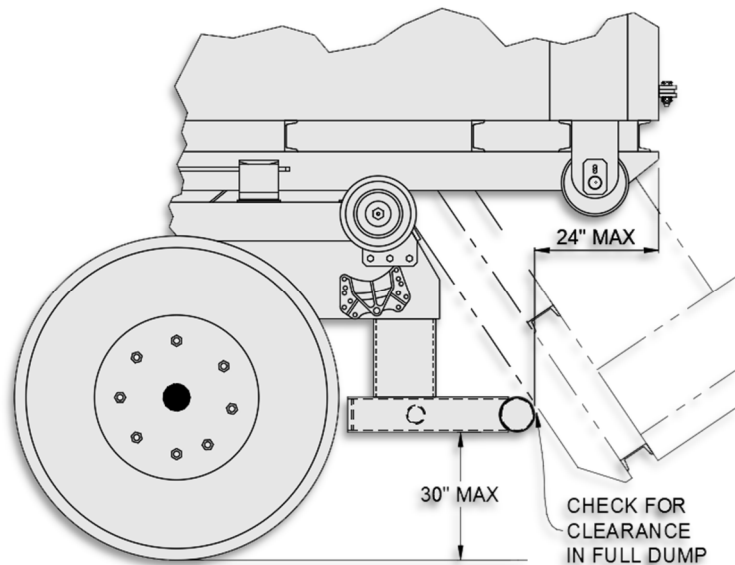


Figure B

| BUMPER LOCATION CHART |                   |                  |                  |                            |         |                  |         |  |        |
|-----------------------|-------------------|------------------|------------------|----------------------------|---------|------------------|---------|--|--------|
| DIM. A                | DIMENSION B (MAX) |                  |                  |                            |         |                  |         |  |        |
|                       | SL-105            | SL-145<br>SL-160 | SL-212<br>SL-214 | SL-220<br>SL-222<br>SL-240 | SL-2418 | SL-330<br>SL-400 | SL-412  | SL-406<br>SL-518X<br>SL-520<br>SL-520X | SL-650 |
| 24 5/8"               | 13 1/2"           | 15 3/4"          | 15 1/4"          | 17"                        | 14 1/4" | 14"              | 13 1/2" | 16 1/2"                                | 18"    |
| 22 5/8"               | 12 1/4"           | 14 1/2"          | 14"              | 15 3/4"                    | 13"     | 12 3/4"          | 12"     | 15"                                    |        |
| 20 5/8"               | 11"               | 13"              | 12 3/4"          | 14 1/4"                    | 11 3/4" |                  |         |  |        |
| 18 5/8"               | 9 3/4"            | 11 3/4"          | 11 1/2"          |                            |         |                  |         |  |        |

| MATERIAL LIST FOR 52H11 |        |     |                      |           |
|-------------------------|--------|-----|----------------------|-----------|
| ITEM                    | PART # | QTY | DESCRIPTION          | WT-lb/ea. |
| 1                       | 52H12  | 1   | Rear Bumper Weldment | 95.66     |
| 2                       | 63H94  | 2   | Vertical Channel     | 9.58      |

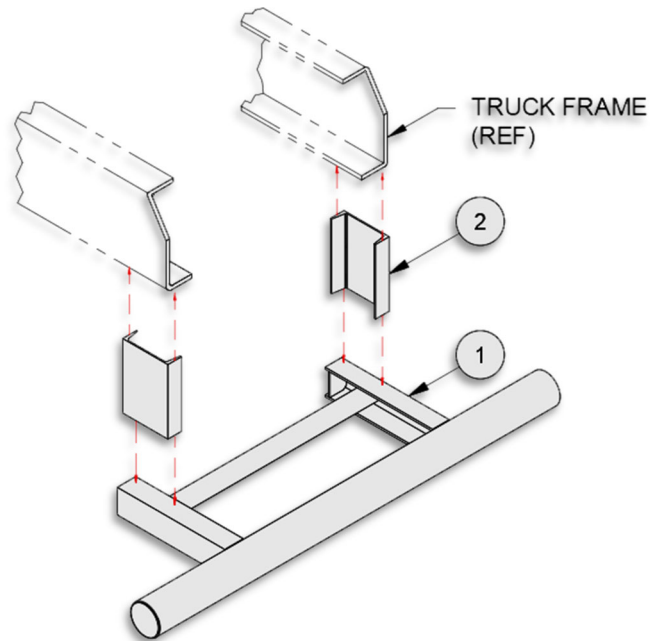


Figure C

**NOTE:**

1. PRIOR TO ANY WELDING, CONSULT THE TRUCK MANUFACTURE FOR ANY SPECIAL PRECAUTIONS THAT MAY NEED TO BE TAKEN. TYPICALLY THE BATTERIES MUST BE DISCONNECTED AND THE GROUND LEAD FROM THE WELDER SHOULD BE AS CLOSE TO THE PART BEING WELDED TO AVOID THE POSSIBILITY OF ARCING ACROSS BEARINGS, GEARS, ETC.
2. ALL WELDS SHOULD BE DONE UTILIZING A LOW HYDROGEN WELDING PROCESS.

## INSTALLATION INSTRUCTIONS – REAR BUMPER ASSEMBLY w/ EXTENSIONS

1. Review all directions and diagrams provided before starting bumper installation.
2. Trim truck frame to indicated dimensions (see *Fig. A*). These dimensions will facilitate the mounting of the rear light assembly if it is also being mounted.
3. Measure the distance from the bottom of the truck frame to the ground (**NOTE: This should be performed on a level surface**). Based on this measurement and the dimensions in *Fig. A*, the vertical channel [Pt. No. 63H94] may need to be modified in length to meet the Office of Motor Carrier Safety (OMCS) regulations. Regulation 393.86 requires that no bumper be located more than 30" off the ground when the truck is empty, and the end of the bumper should not be located more than 24" from the extreme rear of the vehicle, including truck bodies (see *Fig. B*). Once the length has been determined for the vertical channels, weld them to the truck frame (see *additional notes on the next page*).

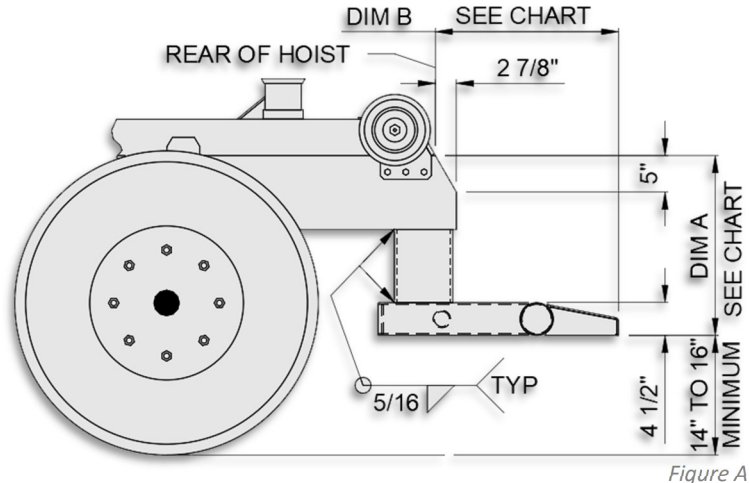


Figure A

4. Center the bumper weldment [Pt. No. 52H12] with factory installed extensions [Pt. No. 52H13] on the vertical channels [Pt. No. 63H94]. Position rear of bumper from rear of the hoist as indicated by the bumper location chart. This is crucial in order to ensure that the container longsills do not contact the bumper during the dump cycle (see *Fig. A & B*).
5. Weld the bumper weldment to the vertical channels (see *Fig. A & C*).

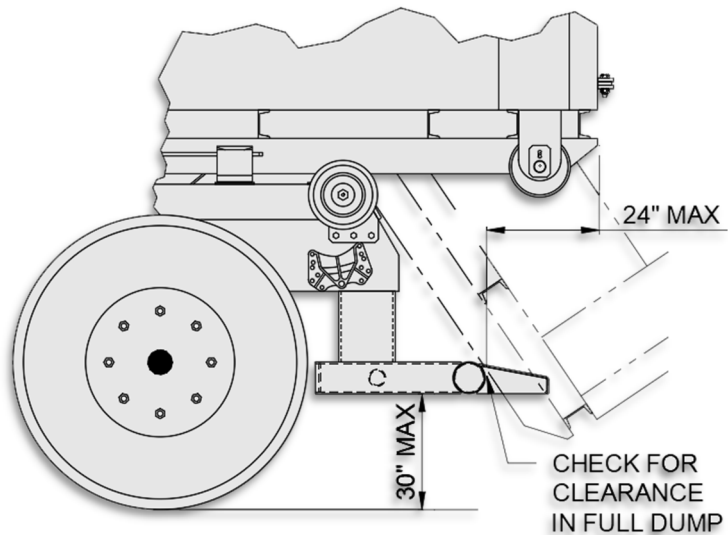


Figure B

| BUMPER LOCATION CHART |                   |                  |                  |                            |         |                  |           |  |        |
|-----------------------|-------------------|------------------|------------------|----------------------------|---------|------------------|-----------|--|--------|
| DIM. A                | DIMENSION B (MAX) |                  |                  |                            |         |                  |           |  |        |
|                       | SL-105            | SL-145<br>SL-160 | SL-212<br>SL-214 | SL-220<br>SL-222<br>SL-240 | SL-2418 | SL-330<br>SL-400 | SL-412    | SL-406<br>SL-518<br>SL-518X<br>SL-520<br>SL-520X | SL-650 |
| 24 5/8"               | 1 3/4"            | 22 1/2"          | 21 3/4"          | 25 1/4"                    | 21 3/4" | * 21 1/2"        | * 21      | * 24 1/4"  | 27"    |
| 22 5/8"               | 18 1/2"           | 21"              | 20 1/2"          | 23 3/4"                    | 20 1/2" | * 20"            | * 19 3/4" | * 22 3/4"  |        |
| 20 5/8"               | 17 1/4"           | 19 1/2"          | 1 1/4"           | 22 1/4"                    | 19 1/4" |                  |           |  |        |
| 18 5/8"               | 16"               | 18 1/4"          | 18"              |                            |         |                  |           |  |        |

\* \*Dimensions assume 6" tall longsills. For 8" tall longsills add 2 1/4" to the dimension shown

| MATERIAL LIST FOR 52H13 |        |     |                        |           |
|-------------------------|--------|-----|------------------------|-----------|
| ITEM                    | PART # | QTY | DESCRIPTION            | WT-lb/ea. |
| 1                       | 52H12  | 1   | Rear Bumper Weldment   | 95.66     |
| 2                       | 52H13  | 1   | Rear Bumper Extensions | 58.42     |
| 3                       | 63H94  | 2   | Vertical Channel       | 9.58      |

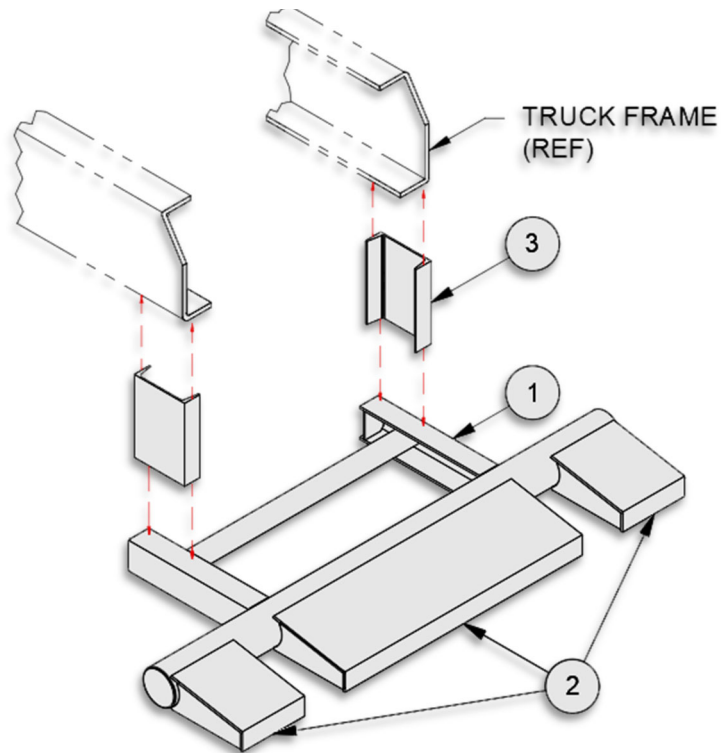


Figure C

#### NOTE:

1. PRIOR TO ANY WELDING, CONSULT THE TRUCK MANUFACTURE FOR ANY SPECIAL PRECAUTIONS THAT MAY NEED TO BE TAKEN. TYPICALLY THE BATTERIES MUST BE DISCONNECTED AND THE GROUND LEAD FROM THE WELDER SHOULD BE AS CLOSE TO THE PART BEING WELDED TO AVOID THE POSSIBILITY OF ARCING ACROSS BEARINGS, GEARS, ETC.
2. ALL WELDS SHOULD BE DONE UTILIZING A LOW HYDROGEN WELDING PROCESS.

## **INSTALLATION INSTRUCTIONS – FOLDING BUMPER ASSEMBLY**

1. Review all directions and diagrams provided before starting bumper installation. Typically, a folding bumper is needed when the rear of the container extends beyond the back of the truck such that the distance between the truck bumper and container rear exceeds 24" (see *Fig. A*). Office of Motor Carrier Safety (OMCS) Regulation 393.86 requires that no bumper be located more than 30" off the ground when the truck is empty, and the end of the bumper should not be located more than 24" from the extreme rear of the vehicle, including truck bodies (see *Fig. A*). The folding bumper will need to be used in conjunction with the Roller Assembly (*Pt. No. 10H90*) and Roller Mount Brackets Assembly (*Pt. No. 10H91*) for the container to function properly.

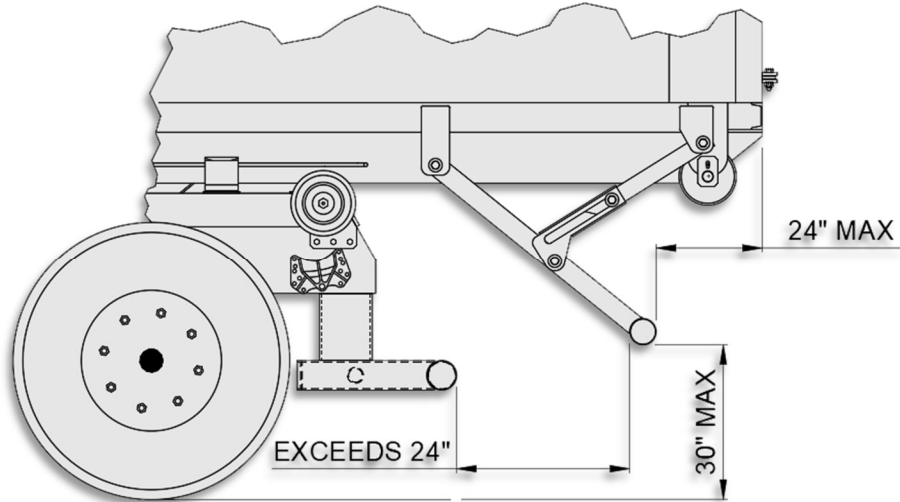


Figure A

2. Locate the best position for the support bars between the cross members. Fabricate four support bars out of 4" x 1" bar cut to the length needed to fit between the cross members (see *Fig. C*). *Fig. C* shows a width dimension of 56 1/2". This width can be adjusted if interference occurs with other items on the container, but cannot exceed the width of the bumper tube. Weld the four bars between the cross members.

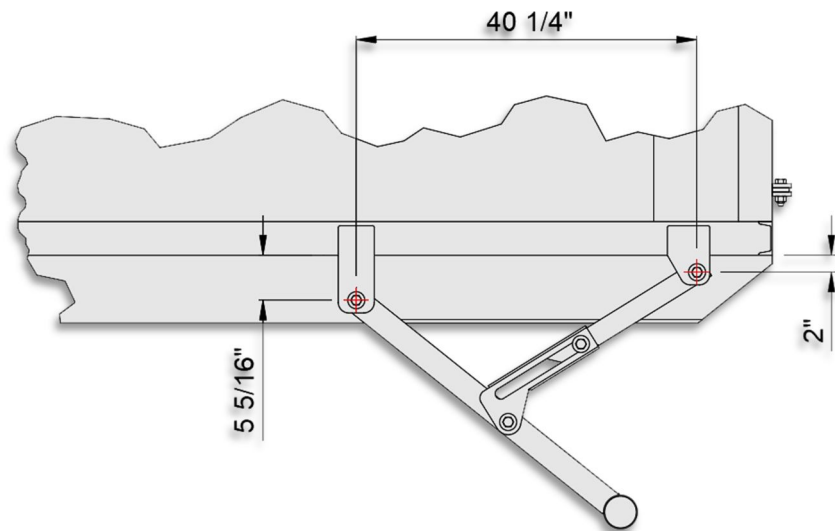


Figure B

3. Weld the front (*Pt. No. 62H87*) and rear (*Pt. No. 62H88*) brackets to the support bars. Be sure to maintain the dimensions as indicated so that the bumper folds properly (see *Fig. B & C*).
4. Weld the Pivot Arms (*Pt. No. 62H84*) to the Bumper Tube Weldment (*Pt. No. 51H46*). Be sure to maintain the width dimension that was used to locate the support bars in Step 2.

5. Assemble the Bumper Assembly to the Front and Rear Brackets (see Fig. C). Refer to the Typical Bolted Connection (see Fig. C) for all connections.
6. Raise the bumper into the folded position several times to ensure the mechanism works smoothly and freely.

| MATERIAL LIST FOR 51H44 |        |     |                        |           |
|-------------------------|--------|-----|------------------------|-----------|
| ITEM                    | PART # | QTY | DESCRIPTION            | WT-lb/ea. |
| 1                       | 51H45  | 2   | Slip Bracket Wdmt      | 9.71      |
| 2                       | 51H46  | 1   | Bumper Tube Wdmt       | 47.83     |
| 3                       | 62H84  | 2   | Pivot Arm              | 24.79     |
| 4                       | 62H85  | 2   | Slide Arm              | 10.67     |
| 5                       | 62H86  | 8   | Bushing                | 0.39      |
| 6                       | 62H87  | 4   | Front Bracket          | 4.45      |
| 7                       | 62H88  | 4   | Rear Bracket           | 3.16      |
| 8                       | 01P15  | 8   | 3/4-10 x 3 HHCS        | 0.56      |
| 9                       | 00P72  | 8   | 3/4-10 Locking Hex Nut | 0.20      |
| 10                      | 00774  | 16  | Ø3/4 Flat Washer       | 0.05      |

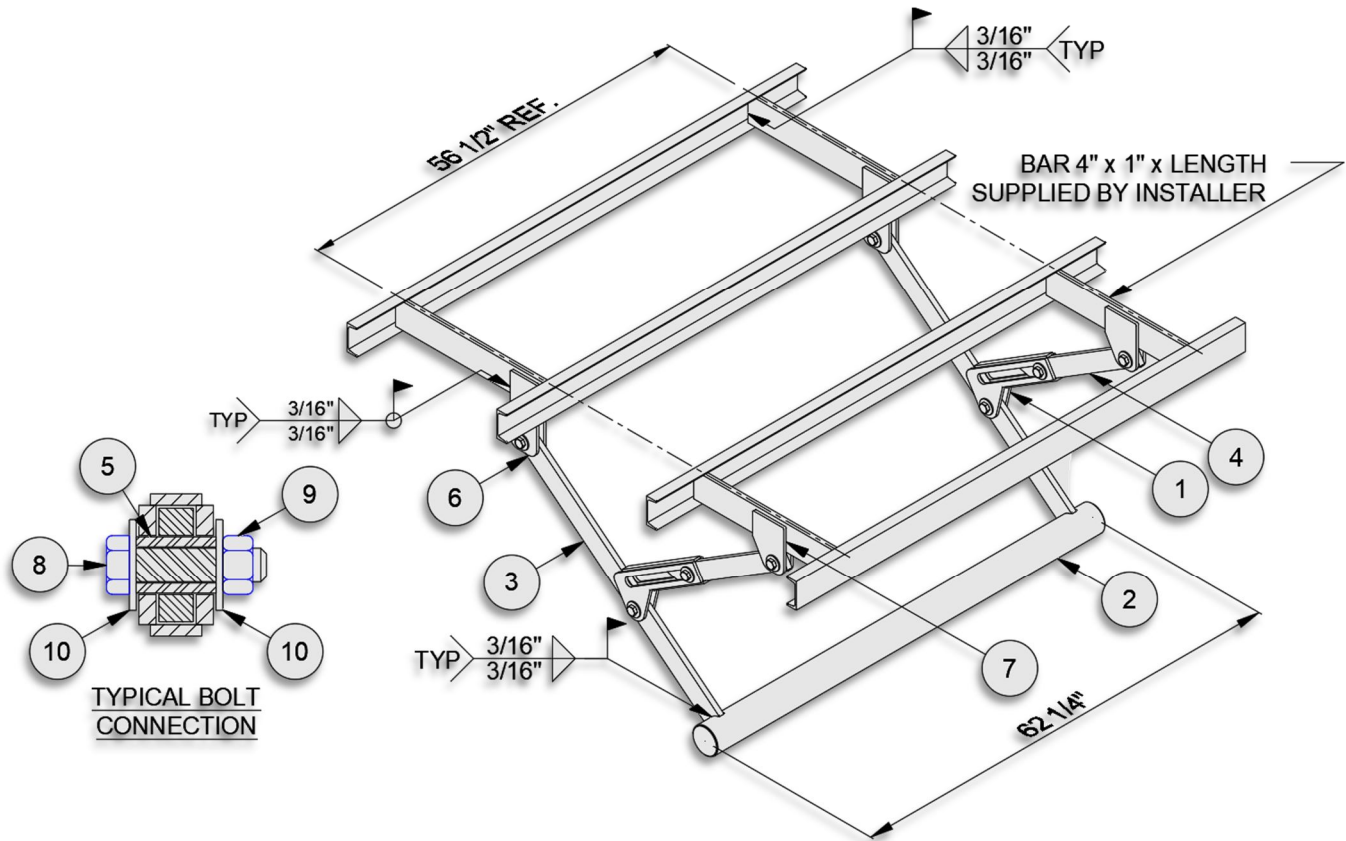


Figure C

**NOTE:**

1. PRIOR TO ANY WELDING, CONSULT THE TRUCK MANUFACTURE FOR ANY SPECIAL PRECAUTIONS THAT MAY NEED TO BE TAKEN. TYPICALLY, THE BATTERIES MUST BE DISCONNECTED AND THE GROUND LEAD FROM THE WELDER SHOULD BE AS CLOSE TO THE PART BEING WELDED TO AVOID THE POSSIBILITY OF ARCING ACROSS BEARINGS, GEARS, ETC.
2. DURING INSTALLATION OF THE BUMPER, CHECK TO MAKE SURE THAT THE POSITION OF THE BUMPER DOES NOT INTERFERE WITH THE LOADING AND UNLOADING OF TRUCK BODIES.



## INSTALLATION INSTRUCTIONS – DROP DOWN BUMPER ASSEMBLY

1. Review all directions and diagrams provided before starting bumper installation. Typically, a drop down bumper is needed when the rear of the container extends beyond the back of the truck such that the distance between the truck bumper and container rear exceeds 24" (see *Fig. A*). Office of Motor Carrier Safety (OMCS) Regulation 393.86 requires that no bumper be located more than 30" off the ground when the truck is empty, and the end of the bumper should not be located more than 24" from the extreme rear of the vehicle, including truck bodies (see *Fig. A*).

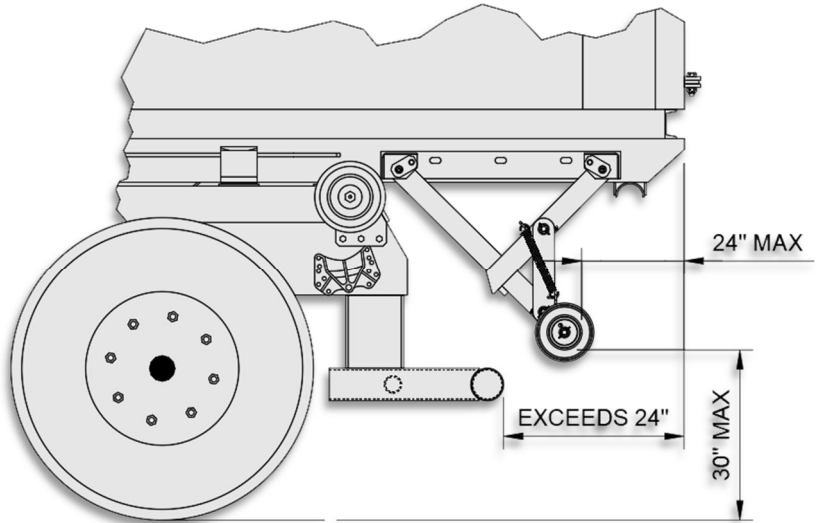


Figure A

2. Position drop down bumper on the longsills of the sub-frame (see *Fig. B & C*). The mount brackets (*Pt. No. 51H17*) need to be positioned correctly to allow for sufficient room for bumper cradles (*Pt. No. 51H19*) (see *Fig. B*). Weld mount brackets onto the longsills of the sub-frame.
3. Position bumper cradles (*Pt. No. 51H19*) on the longsills of the sub-frame. Check bumper cradles for squareness with respect to each other. The bumper tube (*Pt. No. 51H16*) should come to rest within the bumper cradles when the container rests on the ground (see *Fig. B & C*). Weld bumper cradles into place on longsills.

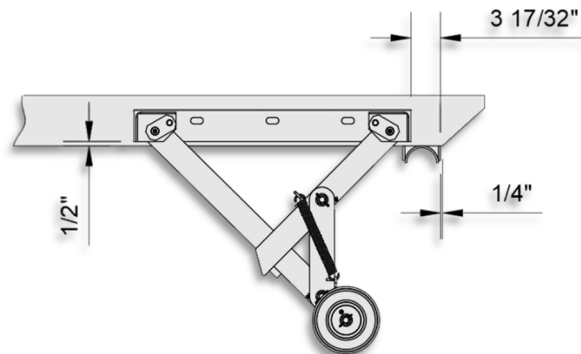
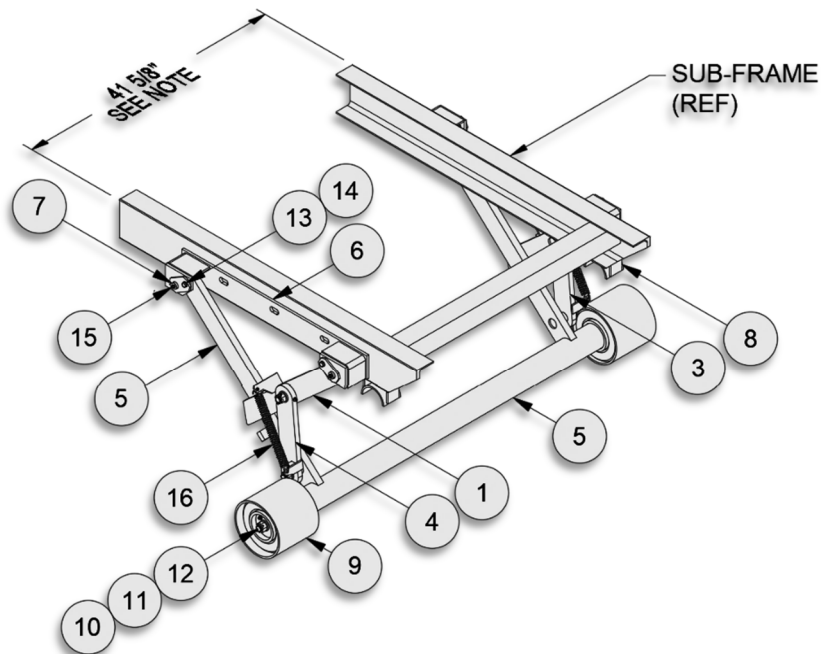


Figure B

**MATERIAL LIST FOR 51H11**

| ITEM | PART # | QTY | DESCRIPTION              | WT-lb/ea. |
|------|--------|-----|--------------------------|-----------|
| 1    | 51H12  | 1   | Long Pivot Arm R.H.      | 16.08     |
| 2    | 51H13  | 1   | Long Pivot Arm L.H.      | 16.08     |
| 3    | 51H14  | 1   | Short Pivot Arm R.H.     | 8.89      |
| 4    | 51H15  | 1   | Short Pivot Arm L.H.     | 8.89      |
| 5    | 51H16  | 1   | Bumper Tube              | 113.05    |
| 6    | 51H17  | 2   | Mount Bracket            | 19.94     |
| 7    | 51H18  | 4   | Bumper Pin               | 1.12      |
| 8    | 51H19  | 2   | Bumper Cradle            | 1.64      |
| 9    | 51H20  | 2   | Bumper Roller            | 27.07     |
| 10   | 01P06  | 6   | 3/4-10 Slotted Hex Nut   | .22       |
| 11   | 00786  | 6   | Ø3/4 Flat Washer HT      | .10       |
| 12   | 00P98  | 6   | Ø5/32 x 1 1/2 Cotter Pin | .01       |
| 13   | 00P03  | 4   | 3/8-16 x 3/4 HHCS        | .11       |
| 14   | 00755  | 4   | Ø3/8 Lock Washer         | .05       |
| 15   | 90P20  | 10  | 1/4-8 Grease Zerk        | .01       |
| 16   | 90P33  | 2   | 1-1/8 O.D. x 10 Spring   | .60       |



NOTE: IF WIDTH OF THE LONGSILLS IS UNDER 41 5/8", ADD SHIMS UNDER THE 51H17 BRACKETS TO GET THE DIMENSION.

Figure C

**NOTE:**

1. PRIOR TO ANY WELDING, CONSULT THE TRUCK MANUFACTURE FOR ANY SPECIAL PRECAUTIONS THAT MAY NEED TO BE TAKEN. TYPICALLY THE BATTERIES MUST BE DISCONNECTED AND THE GROUND LEAD FROM THE WELDER SHOULD BE AS CLOSE TO THE PART BEING WELDED TO AVOID THE POSSIBILITY OF ARCING ACROSS BEARINGS, GEARS, ETC.
2. DURING INSTALLATION OF THE BUMPER, CHECK TO MAKE SURE THAT THE POSITION OF THE BUMPER DOES NOT INTERFERE WITH THE LOADING AND UNLOADING OF TRUCK BODIES.

## **INSTALLATION INSTRUCTIONS – FENDER ASSEMBLY, TANDEM AXLE**

1. Review all directions and diagrams provided before starting fender installation.
2. Center fender above tire using block to maintain the proper height. Fender should be approximately 6" above tire to allow for suspension movement (see Fig. A). A maximum width of 48" from center of the truck to the outside edge of the fender should be maintained (see Fig. A).

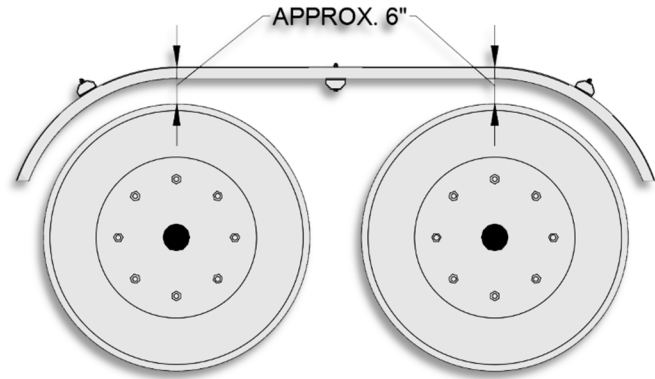


Figure A

3. Place fender bracket weldments (Pt. No. 10H74) on fender. Position the brackets to avoid any mounting obstacles on hoist and/or truck chassis.
4. Mark mounting holes through the fender bracket weldment onto the fender. Remove the bracket and drill  $\varnothing 7/16$ " holes in fender (see Fig. C).
5. Attach fender bracket weldments to fender using fasteners provided.
6. Weld mounting plates (Pt. No. 21H37) to fender tubes (Pt. No. 21H61).
7. Position fender tubes with mount plates on hoist main frame; align with fender bracket weldments. (**NOTE: Fender tube length may need to be modified to fit specific application.**)
8. Weld fender tubes to hoist main frame. If attaching the fender tubes to the truck chassis, an additional mount plate may need to be fabricated so the assembly can be bolted to the truck chassis.
9. Attach fender bracket weldment (Pt. No. 10H74) to mounting plate (Pt. No. 21H37) using fasteners provided (see Fig. C).

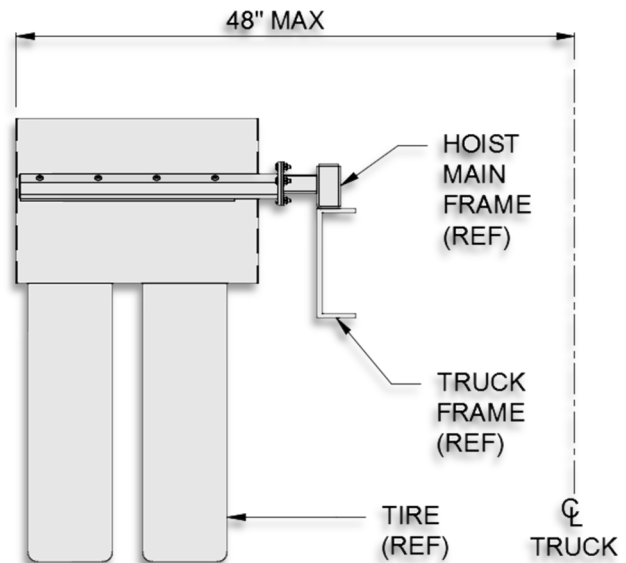


Figure B

| MATERIAL LIST FOR 11H14 |        |     |                         |           |
|-------------------------|--------|-----|-------------------------|-----------|
| ITEM                    | PART # | QTY | DESCRIPTION             | WT-lb/ea. |
| 1                       | 10H74  | 6   | Fender Bracket Wdmt     | 8.05      |
| 2                       | 21H37  | 6   | Mounting Plate          | 1.09      |
| 3                       | 21H42  | 6   | Rubber Spacer           | 0.85      |
| 4                       | 21H61  | 6   | Fender Tube             | 1.26      |
| 5                       | 00P34  | 48  | 3/8-16 UNC Locking Nut  | 0.02      |
| 6                       | 00P44  | 24  | 3/8-16 UNC x 1 1/2 HHCS | 0.07      |
| 7                       | 00P78  | 24  | Ø3/8" Nylon Washer      | 0.01      |
| 8                       | 00P99  | 8   | 3/8-16 UNC x 4 HHCS     | 0.11      |
| 9                       | 01P21  | 16  | 3/8-16 UNC x 2 1/2 HHCS | 0.09      |
| 10                      | 90P36  | 2   | Fender, Steel Tandem    | 77.00     |
| 11                      | 00771  | 72  | Ø3/8" Flat Washer       | 0.05      |

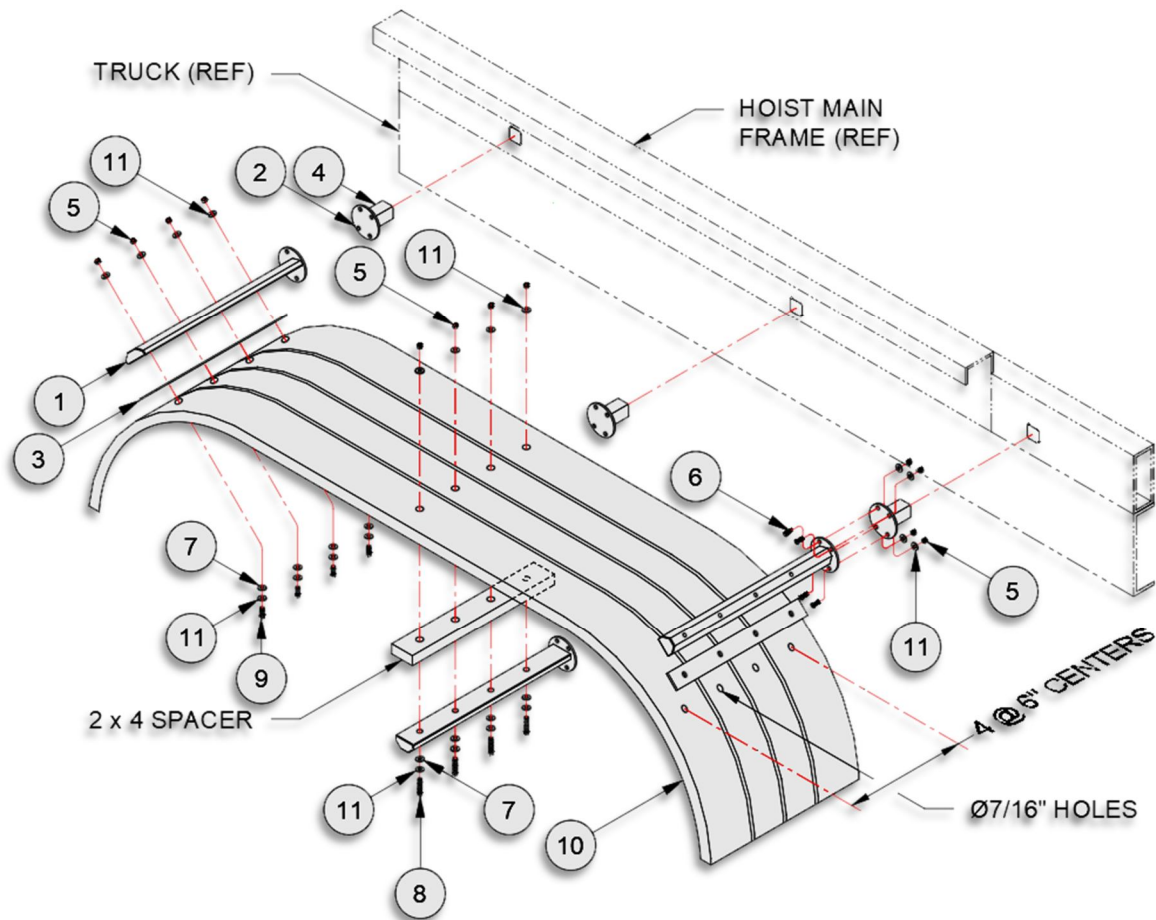


Figure C

**NOTE:**

1. PRIOR TO ANY WELDING, CONSULT THE TRUCK MANUFACTURE FOR ANY SPECIAL PRECAUTIONS THAT MAY NEED TO BE TAKEN. TYPICALLY THE BATTERIES MUST BE DISCONNECTED AND THE GROUND LEAD FROM THE WELDER SHOULD BE AS CLOSE TO THE PART BEING WELDED TO AVOID THE POSSIBILITY OF ARCING ACROSS BEARINGS, GEARS, ETC.

## INSTALLATION INSTRUCTIONS – LIGHT BAR ASSEMBLY

1. Review all directions and diagrams provided before starting rear light bar installation.
2. Trim truck frame to indicated dimensions (see Fig. A). This step may have already been performed if a bumper was previously installed.

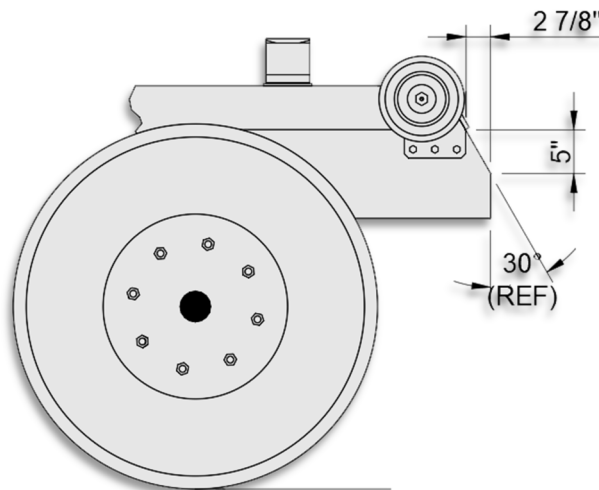


Figure A

3. Position center plate (Pt. No. 63H08) on the rear of the main frame. Weld center plate to truck frame (see Fig B & Note).
4. Position stub light bar weldment (Pt. No. 51H69) on truck frame. Stub light bar weldment should be as high and as far back as possible on the truck frame to avoid interference with the bumper and fenders. It may be necessary to modify the stub light bar weldment to avoid interference. Drill mounting holes as required and mount using fasteners provided (See Fig. C).
5. Attach the taillight module to the stub light bar weldments with the fasteners provided (see Fig. C).

6. Mount the identification light bar at top center of the center plate (Pt. No. 63H08) using the fasteners provided (see Fig. C).

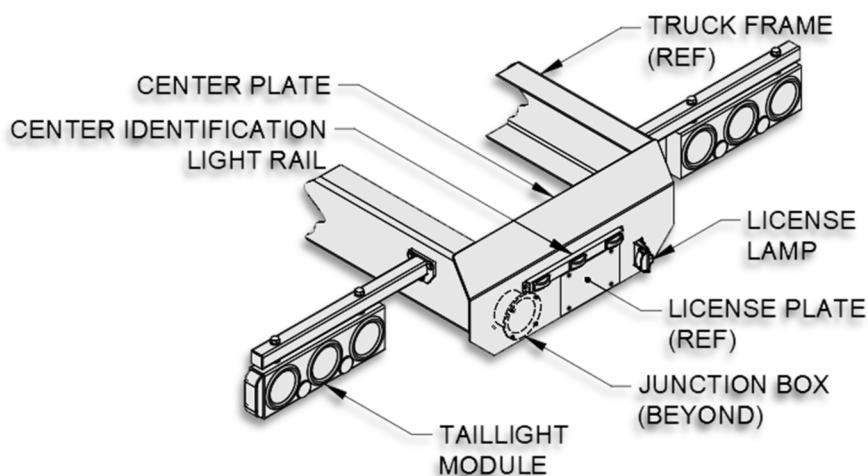


Figure B

7. Mount license lamp right of the license plate (See Fig. B) using the fasteners provided (see Fig. C).
8. Mount junction box on the back left side of center plate (see Fig. B), using the fasteners provided (see Fig. C).
9. Mount all wire harnesses into the junction box. Wire harnesses must enter the junction box through a compression fitting (based on the size of the wire harness, choose a compression fitting with an appropriately sized grommet). Make wiring connections in junction box with wire harness from truck cab as indicated on wiring diagram (see schematic drawing on Pg. 2-29).

| MATERIAL LIST FOR 51H68 |        |     |                                    |           |
|-------------------------|--------|-----|------------------------------------|-----------|
| ITEM                    | PART # | QTY | DESCRIPTION                        | WT-lb/ea. |
| 1                       | 51H69  | 2   | Stub Light Bar Weldment            | 8.54      |
| 2                       | 63H08  | 1   | Center Plate                       | 27.33     |
| 3                       | 00P44  | 6   | 3/8-16 x 1 1/2 HHCS                | 0.07      |
| 4                       | 00P34  | 6   | 3/8-16 Locking Hex Nut             | 0.02      |
| 5                       | 00771  | 6   | Ø3/8 Flat Washer                   | 0.01      |
| 6                       | 01P18  | 4   | 5/8-11 x 3 HHCS                    | 0.35      |
| 7                       | 00P81  | 8   | #8-32 x 1 RHMS                     | -         |
| 8                       | 00P82  | 8   | #8-32 Hex Nut                      | -         |
| 9                       | 00P83  | 8   | #8 Lock Washer                     | -         |
| 10                      | 40P32  | 1   | Lic. Light Assy (w/o Harness)      | -         |
| 11                      | 40P34  | REF | License Lamp Harness               | -         |
| 12                      | 40P35  | REF | Id Light Bar Rail                  | -         |
| 13                      | 40P37  | REF | Id Light Bar Harness               | -         |
| 14                      | 40P38  | REF | Junction Box Assembly              | -         |
| 15                      | 40P39  | REF | Light Kit Assembly                 | 23.00     |
| 16                      | 40P40  | REF | Right Tail Light Module w/ Harness | -         |
| 17                      | 40P41  | REF | Left Tail Light Module w/ Harness  | -         |
| 18                      | 40P42  | REF | Side Marker Lamp                   | -         |
| 19                      | 40P43  | REF | Stop, Turn, & Tail Lamp            | -         |
| 20                      | 40P44  | REF | License Lamp                       | -         |
| 21                      | 40P45  | REF | Back-Up Lamp                       | -         |
| 22                      | 40P46  | REF | ID Light Bar Lamp                  | -         |

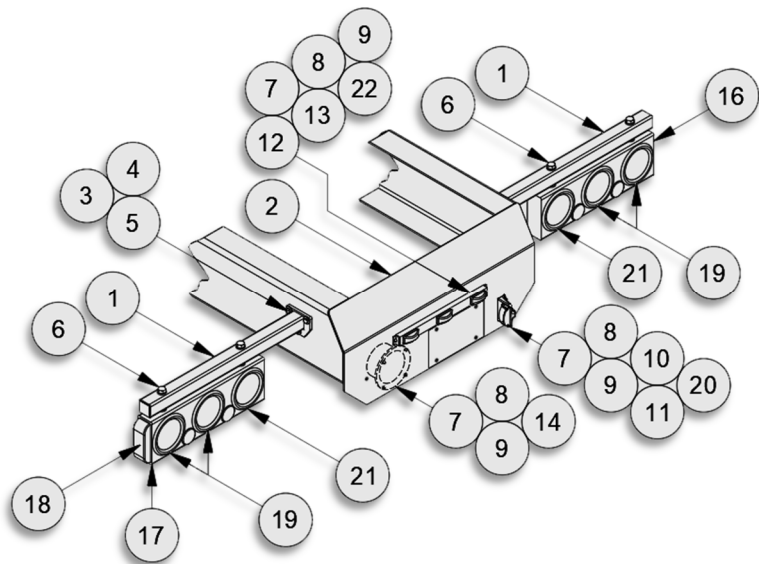
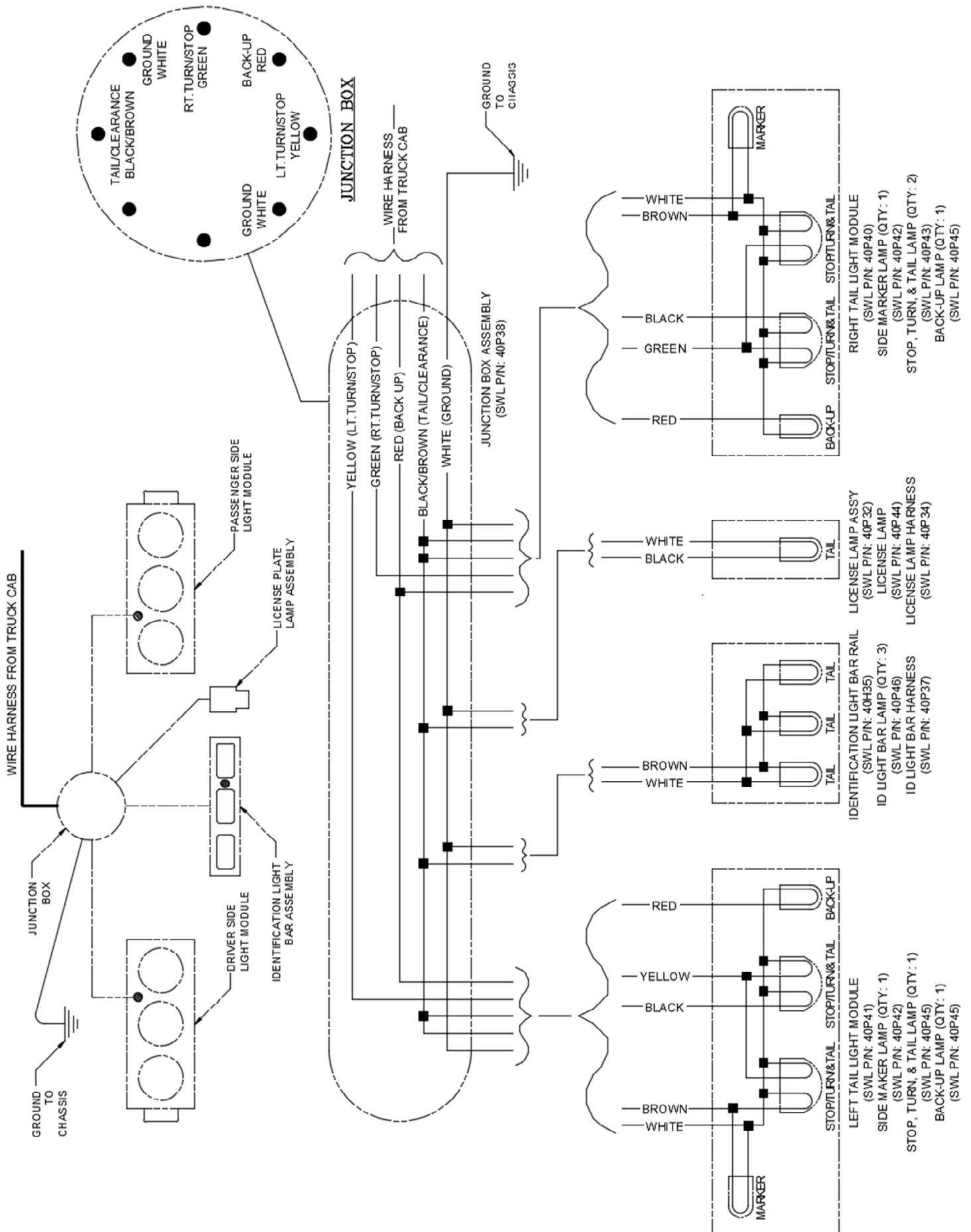


Figure C

**NOTE:**

1. PRIOR TO ANY WELDING, CONSULT THE TRUCK MANUFACTURE FOR ANY SPECIAL PRECAUTIONS THAT MAY NEED TO BE TAKEN. TYPICALLY THE BATTERIES MUST BE DISCONNECTED AND THE GROUND LEAD FROM THE WELDER SHOULD BE AS CLOSE TO THE PART BEING WELDED TO AVOID THE POSSIBILITY OF ARCING ACROSS BEARINGS, GEARS, ETC.







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## INSTALLATION INSTRUCTIONS – ROLLER & ROLLER MOUNT ASSEMBLY

1. Review all directions and diagrams provided before starting roller and roller mount installation.
2. Locate position for roller mount brackets (*Pt. No. 32H03*) between cross sills of the container. Rollers should be positioned as far back and as wide as possible for stability. For hoist and folding bumper clearance, do not place brackets any closer than 11" to the subframe longsill (see *Fig. A*). Also, the roller axle center line should be approximately 1-11/16" below the bottom of the subframe longsill for roller clearance (see *Fig. A*).

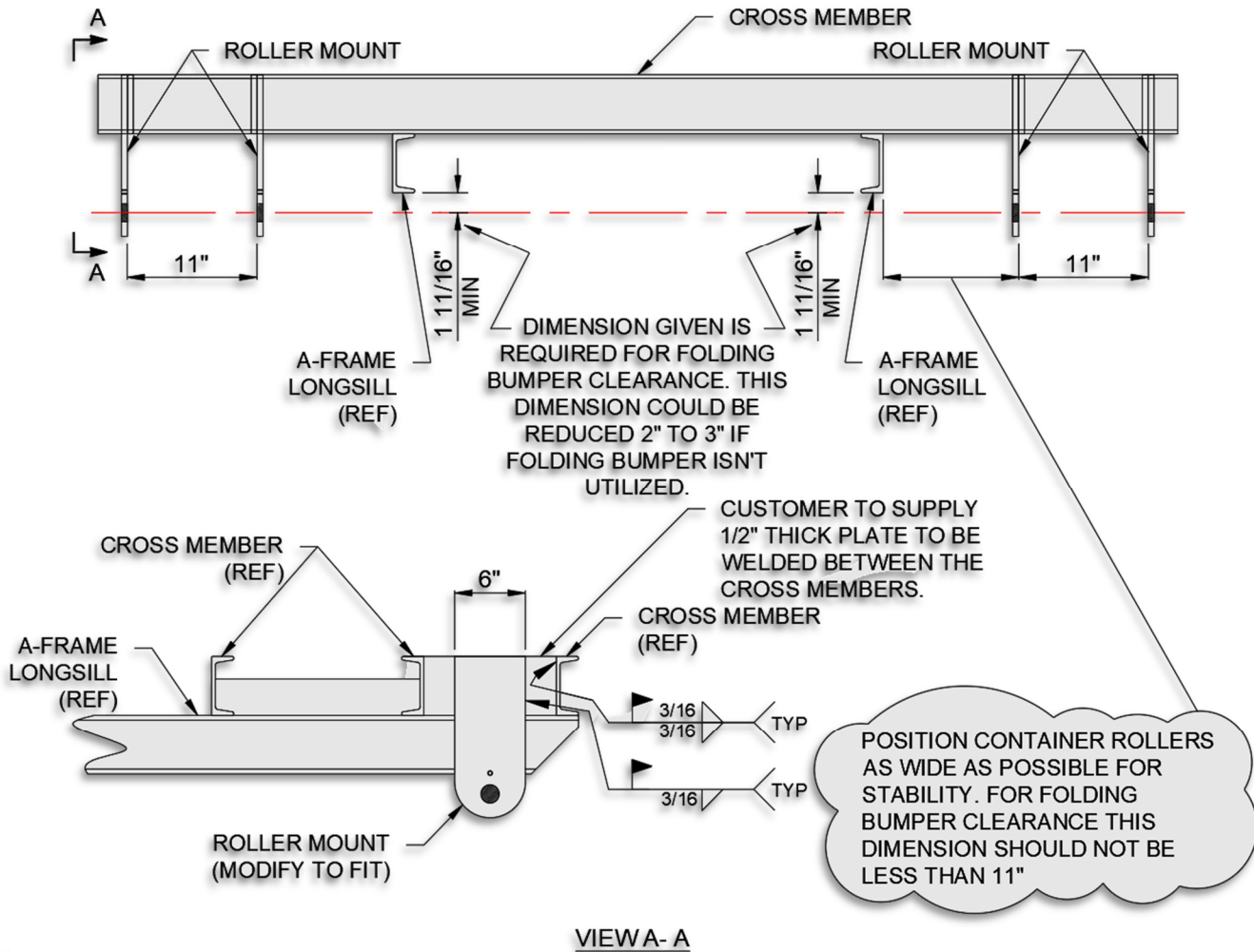


Figure A

3. Some modification to the roller mount bracket may be required for the roller mount to fit properly. If the existing container cross members are wider than 6", a fabricated support member of 1/2" plate or thicker will need to be added (see *Fig. B*).

4. Once the mount brackets are located on the container, weld the roller mount brackets in place (see Fig. A).
5. Install the roller (Pt. No. 10H12) between the brackets with the roller axle (Pt. No. 10H31) and the fasteners provided (see Fig. C). Grease the rollers before use.

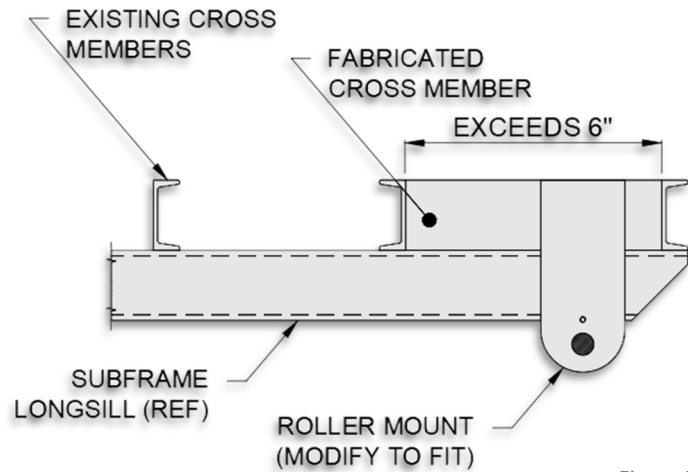


Figure B

| MATERIAL LIST FOR 10H90 AND 10H91 |      |        |     |                      |           |
|-----------------------------------|------|--------|-----|----------------------|-----------|
|                                   | ITEM | PART # | QTY | DESCRIPTION          | WT-lb/ea. |
| 10H91 →                           | 1    | 32H03  | 4   | Roller Ear           | 11.95     |
|                                   | 2    | 10H12  | 2   | Roller Wdmt.         | 39.76     |
|                                   | 3    | 10H31  | 2   | Roller Axle Wdmt.    | 7.28      |
| 10H90 {                           | 4    | 00P62  | 2   | 3/8-16 UNC x 1 Bolt  | .05       |
|                                   | 5    | 90P03  | 2   | 1/8 NPT Grease Zerk  | .01       |
|                                   | 6    | 00755  | 2   | 3/8 Dia. Lock Washer | .01       |
|                                   | 7    | 00P36  | 2   | 3/8 Dia. Washer H.T. | .10       |

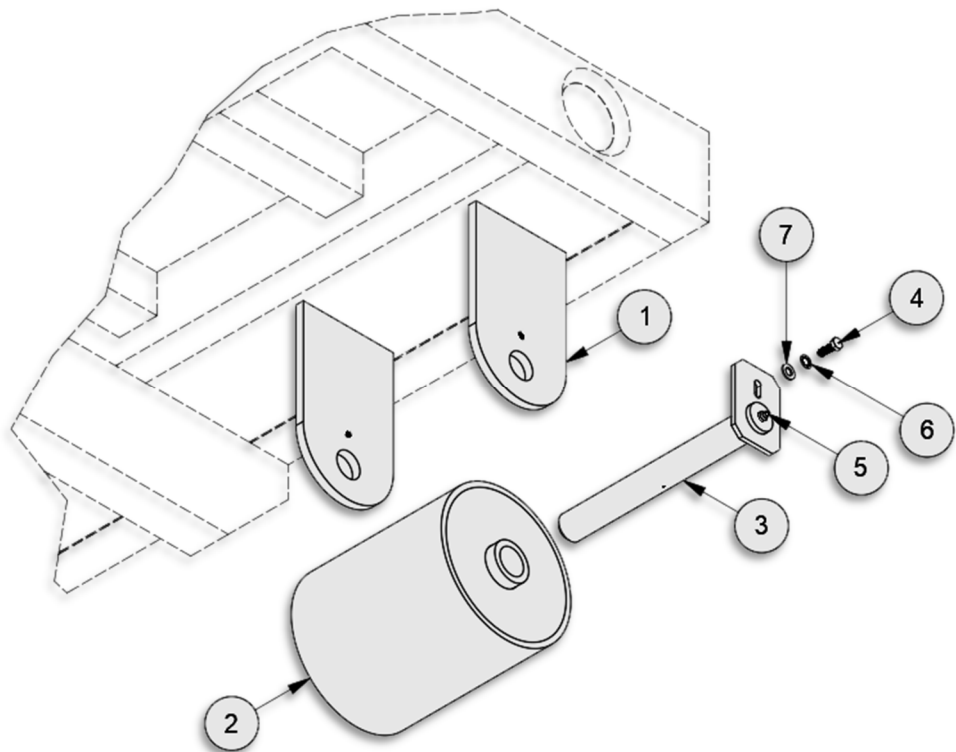


Figure C

# **INSTALLATION INSTRUCTIONS – TOOLBOX**

1. Review all directions and diagrams provided before starting toolbox installation.
2. Position toolbox brackets (Pt. No. 10H88) on truck chassis (NOTE: toolbox has an envelope of 18"x18"x36". see Fig. A for hole dimensions).
3. Mark position of mounting holes through brackets onto truck chassis. Remove brackets and drill 9/16" dia. holes.
4. Mount toolbox brackets using fasteners provided (see Fig. A).

| MATERIAL LIST FOR 10H92 OR 11H12 |        |     |                            |           |
|----------------------------------|--------|-----|----------------------------|-----------|
| ITEM                             | PART # | QTY | DESCRIPTION                | WT-lb/ea. |
| 1                                | 10H88  | 1   | Toolbox Bkt, 18 In. Pair   | 28.00     |
| 2                                | 22H71  | 2   | Toolbox Rubber Spacer      | .27       |
| 3                                | 90P27  | 1   | Aluminum Toolbox           | 50.00     |
| 3                                | 90P37  | 1   | Steel Toolbox              | 72.00     |
| 4                                | 00784  | 8   | 1/2 Dia. Flat Head Washer  | .07       |
| 5                                | 00P15  | 4   | 1/2- 13 UNC x 1-3/4        | .23       |
| 6                                | 00P35  | 8   | 1/2- 13 UNC Lock Nut       | .15       |
| 7                                | 00P75  | 4   | 1/2- 13 UNC x 1-1/2        | .12       |
| 8                                | 00P76  | 2   | 1/2 Dia. Nylon Flat Washer | -         |

Note:

- Will include either (1) 90P27 aluminum toolbox or (1) 90P37 steel toolbox depending on order.
- Installation is the same for both aluminum and steel toolbox.
- Toolbox dimensions are 18" x 18" x 36".

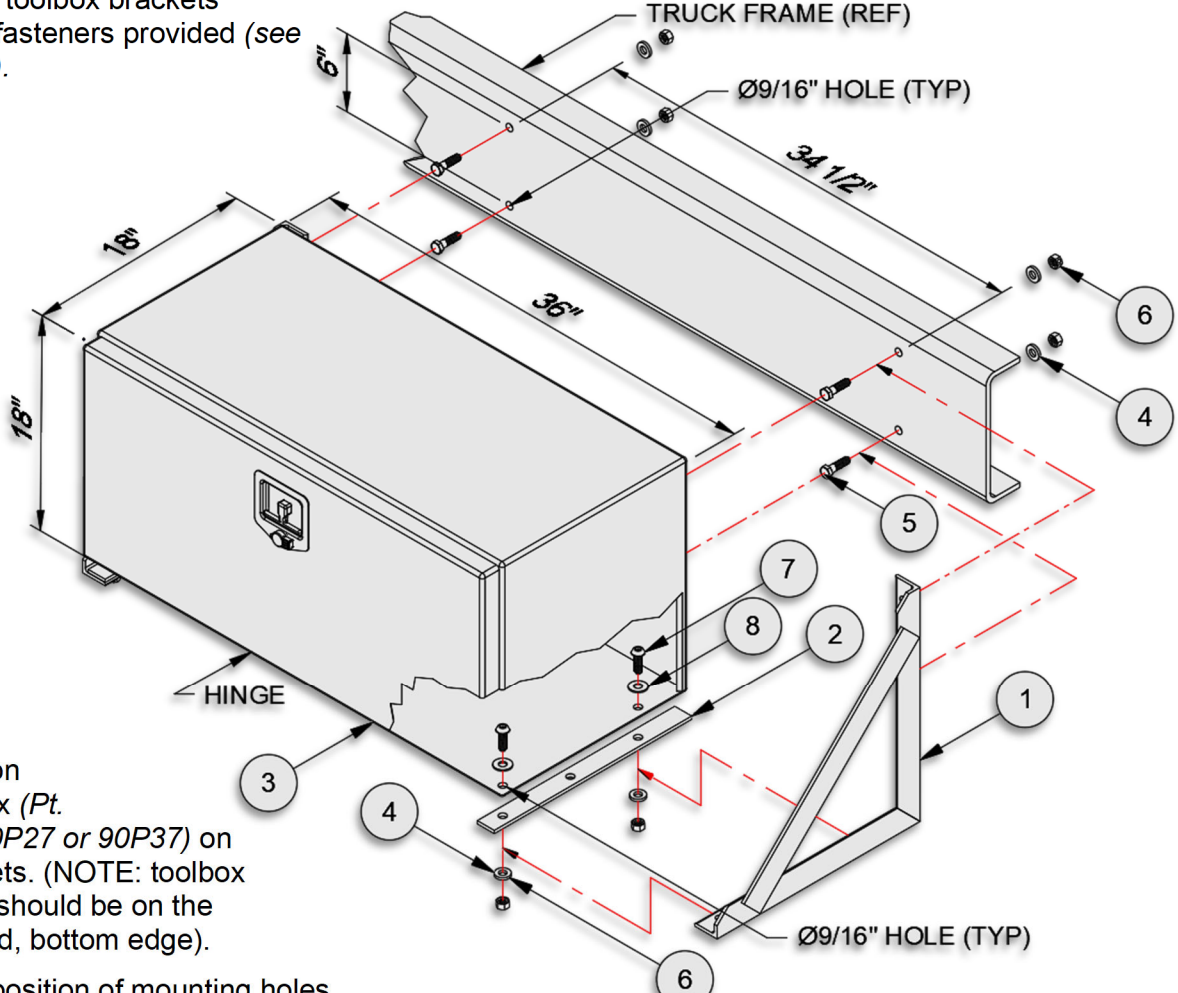
- 
5. Position toolbox (Pt. No. 90P27 or 90P37) on brackets. (NOTE: toolbox hinge should be on the forward, bottom edge).
  6. Mark position of mounting holes through brackets onto toolbox. Remove toolbox and drill 9/16" dia. holes.
  7. Mount toolbox to brackets using fasteners provided (see Fig. A).

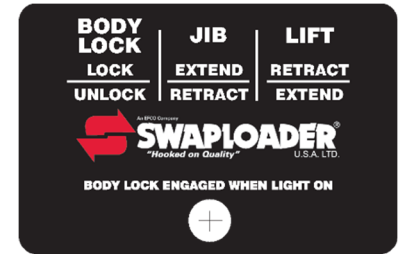
Figure A

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## OPERATING INSTRUCTIONS

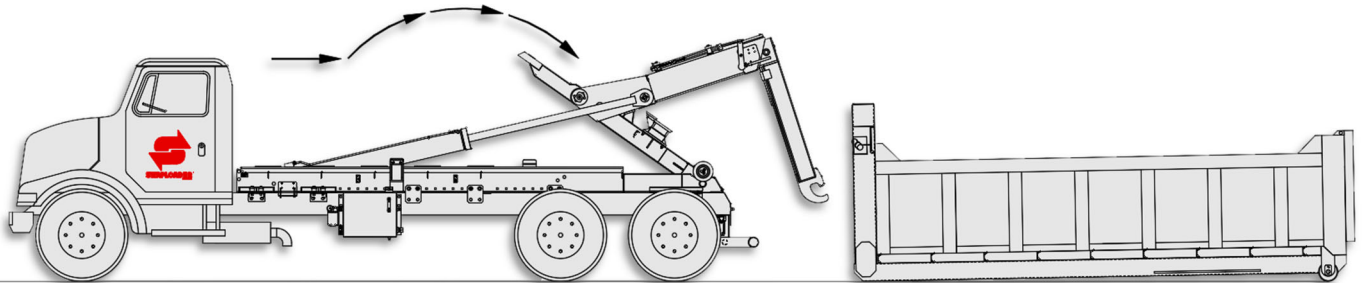


**CAUTION:**  
IF YOUR HOIST IS EQUIPPED WITH THE U-LOCK BODY LOCK SYSTEM, ENSURE IT IS UNLOCKED PRIOR TO EXTENDING OR RETRACTING THE JIB CYLINDER. WHEN LOADING OR UNLOADING A BODY, ENSURE THE U-LOCK IS UNLOCKED AT ALL TIMES. WHEN TRANSPORTING OR DUMPING, THE U-LOCK MUST BE LOCKED.

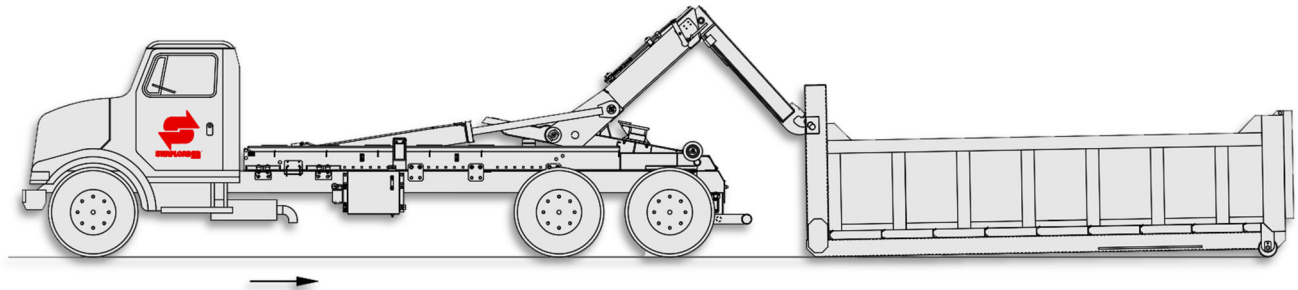


### LOADING A CONTAINER

**STEP 1.** ENGAGE THE P.T.O. (REFER TO P.T.O. MANUAL FOR OPERATION).



**STEP 2.** UNLOCK U-LOCK (IF INSTALLED ON HOIST). RETRACT THE JIB (RIGHT CONTROL LEVER BACKWARD). THEN, TILT THE ARM BACKWARD (LEFT CONTROL LEVER BACKWARD).

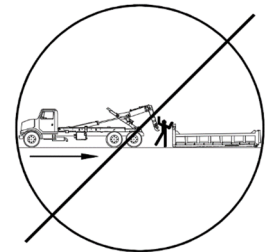


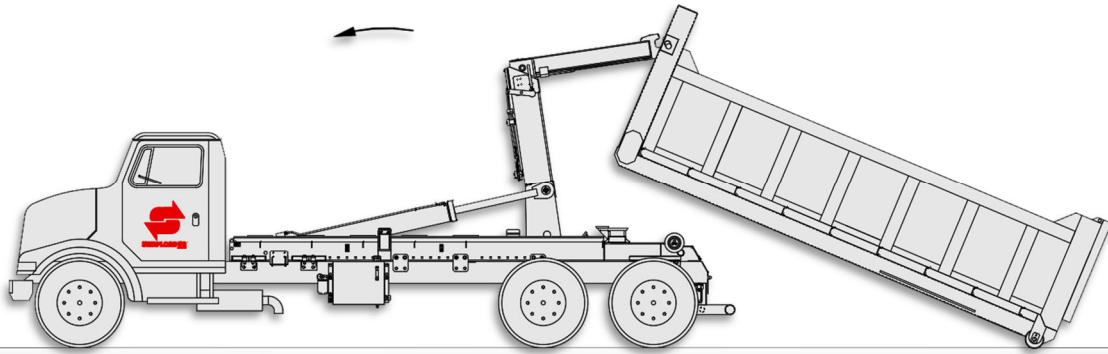
**STEP 3.** MAKE SURE THE WORK AREA IN FRONT OF THE CONTAINER IS CLEAR OF PEOPLE AND OBSTACLES. MOVE THE TRUCK BACKWARDS UNTIL THE HOOK ENGAGES THE CURVED LIFTING BAR OF THE CONTAINER. **NEVER EXTEND THE JIB** TO REACH THE PROPER CATCHING HEIGHT, RATHER TILT THE ARM.



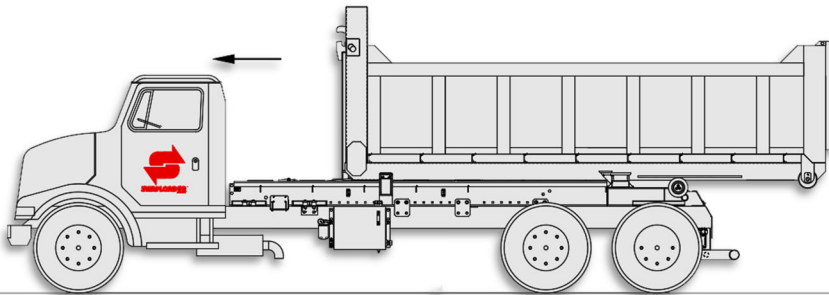
**WARNING:**

MAKE SURE WORK AREA IS CLEAR OF PEOPLE AND OBSTACLES PRIOR TO DUMPING OR UNLOADING CONTAINERS. SWAPLOADER STRONGLY RECOMMENDS THAT A BACKUP ALARM BE INSTALLED ON THE TRUCK CHASSIS. THE OPERATION OF THE HOOK HOIST IS THAT THE TRUCK IS BACKED UP TO THE BODY TO PICK IT UP AND SO THERE IS A POTENTIAL PINCH POINT BETWEEN THE BODY AND THE HOOK.



**LOADING A CONTAINER (cont'd)**

**STEP 4.** CYCLE THE ARM FORWARD (LEFT CONTROL LEVER FORWARD), MAKING SURE THE CURVED LIFTING BAR IS SECURELY ATTACHED TO THE HOOK. RELEASE THE BRAKES OF THE TRUCK AND STEER TO CORRECTLY ALIGN THE TRUCK WITH THE CONTAINER. WATCH THE CONTAINER RAILS TO SEE THAT THEY COME TO REST CENTERED ON THE REAR ROLLERS. DO NOT EXTEND THE JIB DURING LIFTING.



**STEP 5.** WHEN THE CONTAINER IS RESTING ON THE FRAME, MOVE THE JIB FORWARD ALL THE WAY TO ENSURE THE CONTAINER IS HELD IN THE BODY LOCKS (RIGHT CONTROL LEVER FORWARD). DISENGAGE THE P.T.O. LOCK U-LOCK (IF INSTALLED ON HOIST).

**DUMPING:**

**STEP 1.** MOVE THE JIB FORWARD (RIGHT CONTROL FORWARD) TO ENSURE THAT THE CONTAINER IS LOCKED.

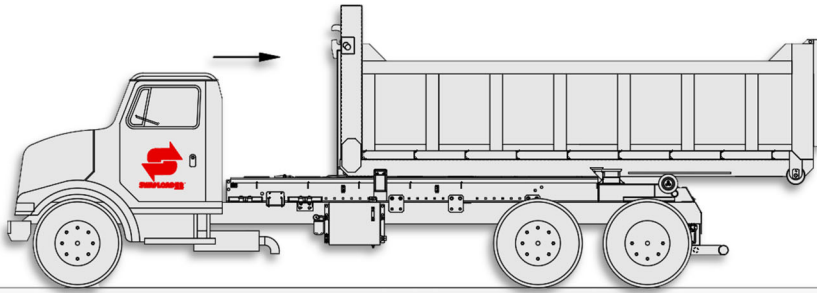
**STEP 2.** EXTEND THE MAIN LIFT CYLINDERS (LEFT CONTROL BACKWARD).

**CAUTION:**

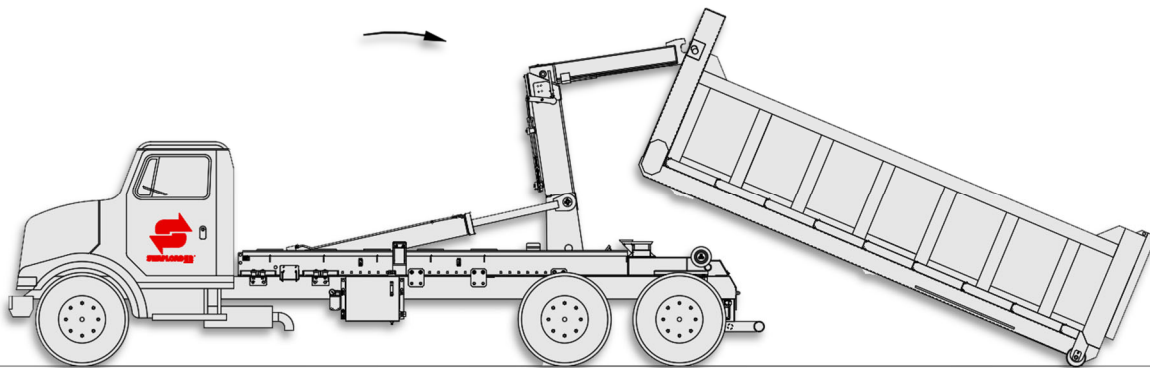
**DO NOT RETRACT THE JIB WHILE DUMPING.** RETRACTING THE JIB DURING DUMPING MAY UNLOCK THE MECHANICAL JIB LATCHES WHICH COULD ALLOW THE CONTAINER TO CRASH DOWN ONTO THE HOIST AND/OR ABRUPTLY UNLOAD.



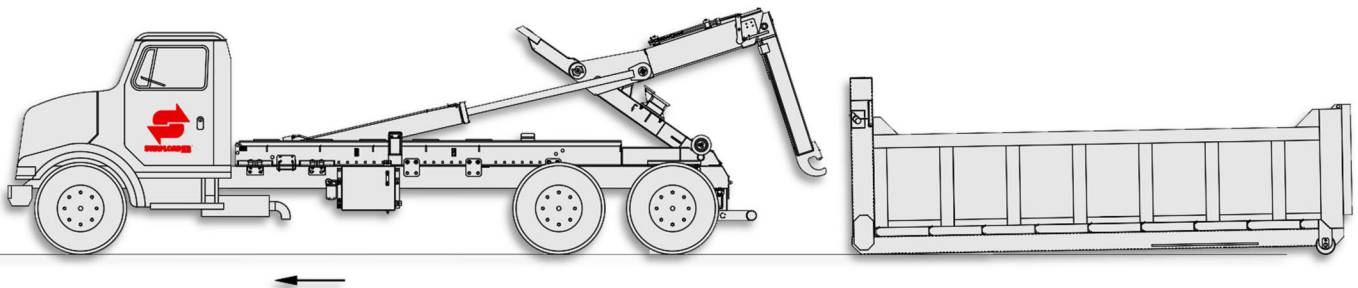
# PLACING A CONTAINER ON THE GROUND:



**STEP 1.** MOVE THE SLIDING JIB ALL THE WAY BACK (RIGHT CONTROL BACKWARD) UNTIL MECHANICAL JIB LATCHES UNLOCK.



**STEP 2.** TILT THE ARM BACKWARDS (LEFT CONTROL BACKWARD). WHEN THE CONTAINER TOUCHES THE GROUND, RELEASE THE BRAKES TO FREE THE TRUCK FOR FORWARD MOVEMENT CAUSED BY THE CONTAINER.



**STEP 3.** ROTATE JIB ALL THE WAY BACK UNTIL THE CONTAINER TOUCHES THE GROUND. PULL AWAY FROM CONTAINER AND ROTATE JIB BACK INTO THE TRANSPORT POSITION.



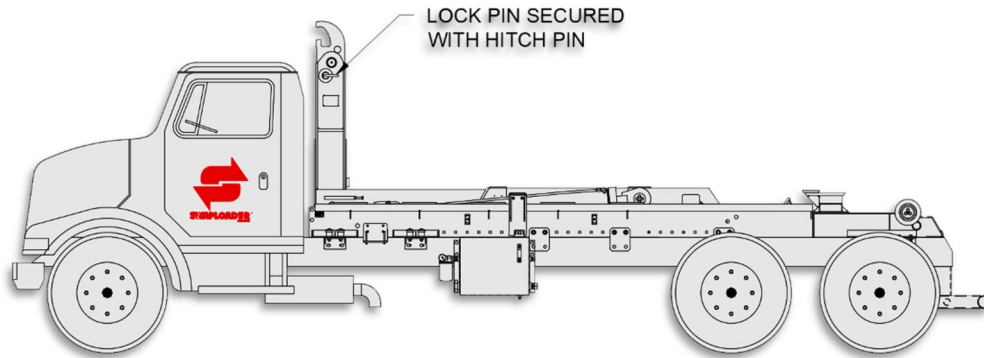
## WARNING:

1. **DON'T OVER SPEED THE PUMP 1,500 RPM MAXIMUM.**
2. **DON'T DUMP, MOUNT OR DISMOUNT BODIES ON UNEVEN GROUND.**
3. **DON'T DRIVE WITH THE HOIST IN THE DUMP POSITION OR WITH THE HOOK TILTED BACK.**

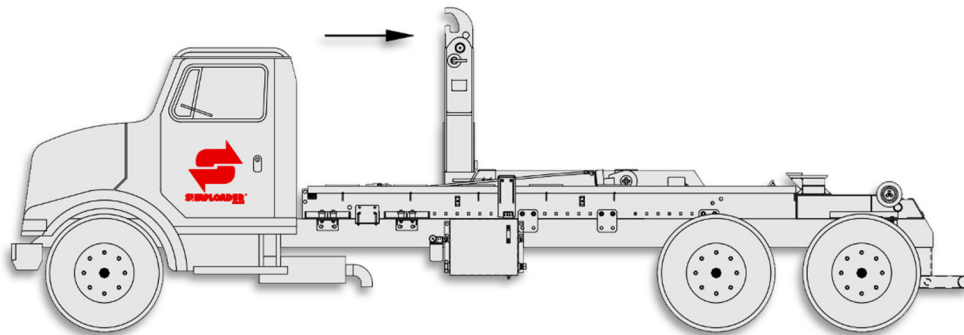


**CHANGING HOOK HEIGHT: 54" TO 62" JIB HEIGHT ADJUSTMENT PROCEDURE****CAUTION:**

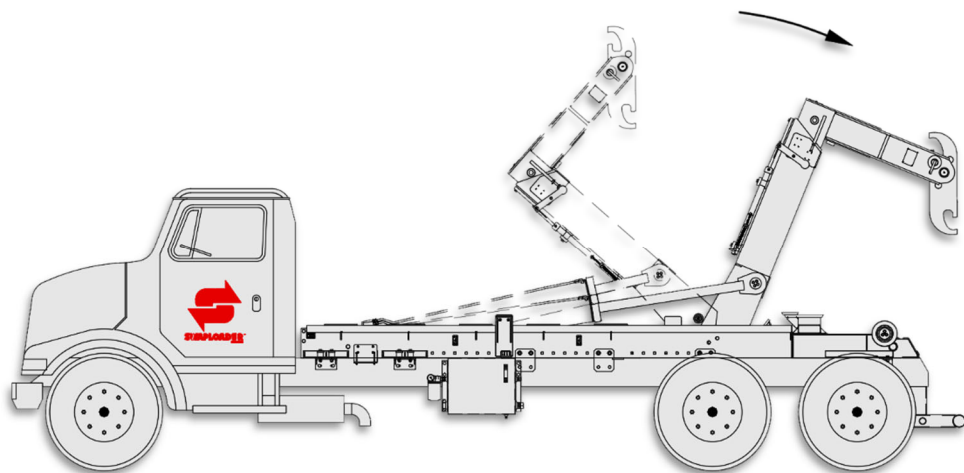
THE FOLLOWING IS THE RECOMMENDED PROCEDURE FOR CHANGING HOOK HEIGHTS ON THE ADJUSTABLE JIB FROM 54" TO 62" HEIGHTS. FAILURE TO FOLLOW AND ADHERE TO THIS PROCEDURE MAY RESULT IN POSSIBLE PROPERTY DAMAGE AND/OR PERSONAL INJURY. MAKE SURE WORK AREA IS CLEAR OF PEOPLE AND OBSTACLES PRIOR TO CHANGING THE HOOK HEIGHT ON THE ADJUSTABLE JIB.



**STEP 1.** WITH THE TELESCOPIC ARM IN THE TRANSPORT POSITION (AS SHOWN); REMOVE THE HITCH PIN FROM THE LOCK PIN. THEN PULL THE LOCK PIN LOOSE FROM THE JIB ARM.

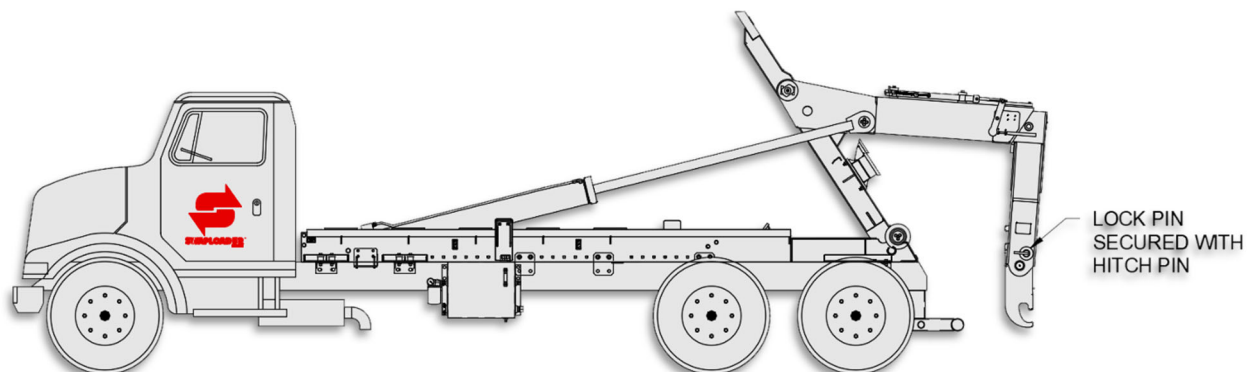


**STEP 2.** RETRACT THE JIB (RIGHT CONTROL LEVER BACKWARD).



**STEP 3.** TILT THE TELESCOPIC ARM REARWARD (LEFT CONTROL LEVER BACKWARD).

**CHANGING HOOK HEIGHT: 54" TO 62" JIB HEIGHT ADJUSTMENT PROCEDURE (cont'd)**

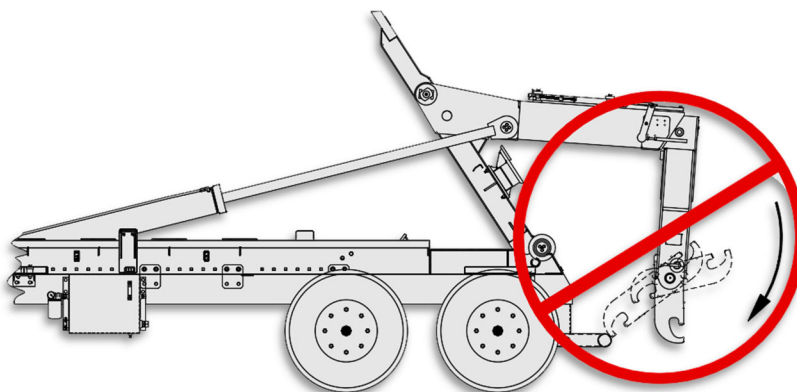


**STEP 4.** CONTINUE TO TILT TELESCOPIC ARM REARWARD UNTIL THE DUMP CYLINDERS ARE FULLY EXTENDED. REPLACE LOCK PIN AND SECURE WITH HITCH PIN.



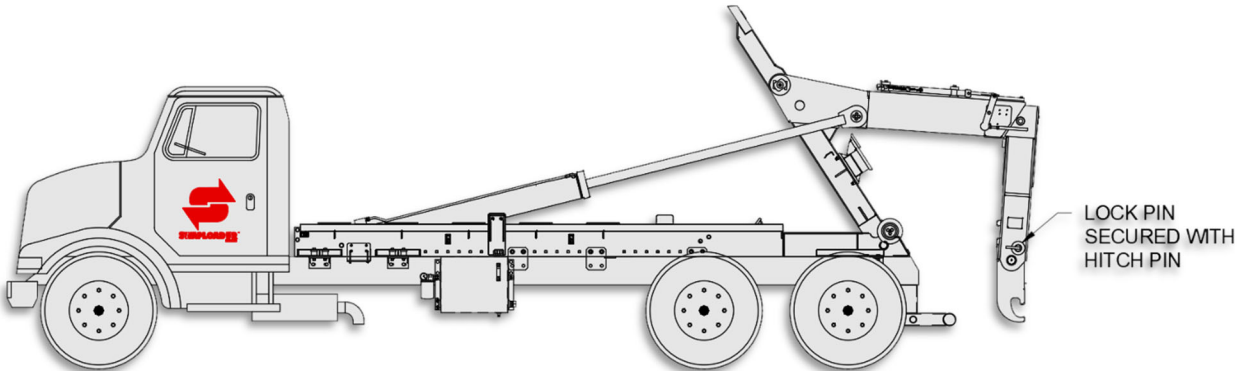
**WARNING:**

**DO NOT REMOVE LOCK PIN ON THE ADJUSTABLE JIB WHILE JIB IS IN THE 54" HOOK POSITION AND THE TELESCOPIC ARM IS TILTED REARWARD (AS SHOWN). POSSIBLE PROPERTY DAMAGE AND/OR PERSONAL INJURY MAY RESULT.**

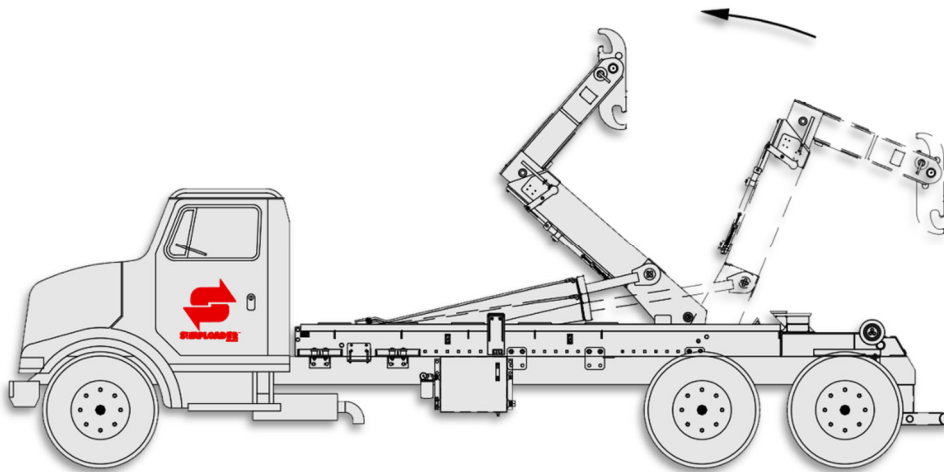


**CHANGING HOOK HEIGHT: 62" TO 54" JIB HEIGHT ADJUSTMENT PROCEDURE****CAUTION:**

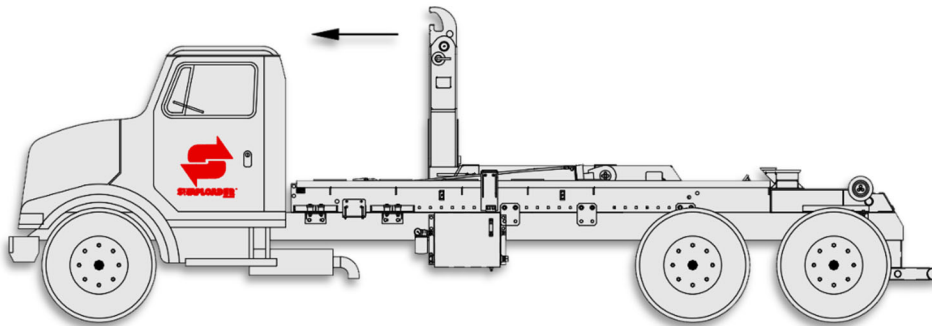
THE FOLLOWING IS THE RECOMMENDED PROCEDURE FOR CHANGING HOOK HEIGHTS ON THE ADJUSTABLE JIB FROM 62" TO 54" HEIGHTS. FAILURE TO FOLLOW AND ADHERE TO THIS PROCEDURE MAY RESULT IN POSSIBLE PROPERTY DAMAGE AND/OR PERSONAL INJURY. MAKE SURE WORK AREA IS CLEAR OF PEOPLE AND OBSTACLES PRIOR TO CHANGING THE HOOK HEIGHT ON THE ADJUSTABLE JIB.



**STEP 1.** WITH THE TELESCOPIC ARM IN FULL LOAD/UNLOAD POSITION (AS SHOWN); REMOVE THE HITCH PIN FROM THE LOCK PIN. THEN PULL THE LOCK PIN LOOSE FROM THE JIB ARM.

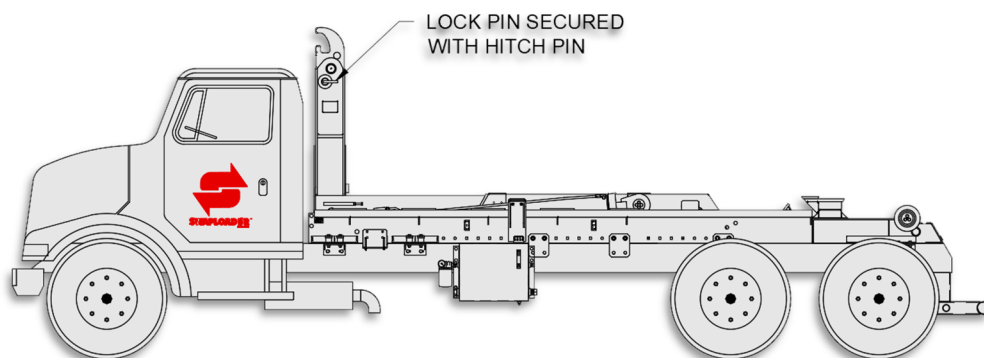


**STEP 2.** TILT THE TELESCOPIC ARM TOWARD THE CAB (LEFT CONTROL LEVER FORWARD).



**STEP 3.** EXTEND THE JIB TOWARD THE CAB (RIGHT CONTROL LEVER FORWARD).

**CHANGING HOOK HEIGHT: 62" TO 54" JIB HEIGHT ADJUSTMENT PROCEDURE (cont'd)**

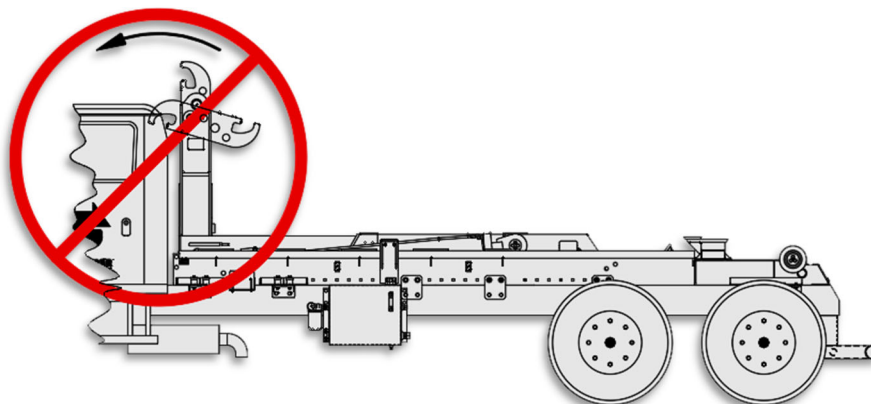


**STEP 4.** WITH THE TELESCOPIC JIB FULLY EXTENDED IN THE TRANSPORT POSITION (AS SHOWN); REPLACE THE LOCK PIN AND SECURE WITH HITCH PIN.



**WARNING:**

**DO NOT REMOVE LOCK PIN ON THE ADJUSTABLE JIB WHILE JIB IS IN THE 62" HOOK POSITION AND THE TELESCOPIC ARM IN TRANSPORT POSITION (AS SHOWN). POSSIBLE PROPERTY DAMAGE AND/OR PERSONAL INJURY MAY RESULT.**

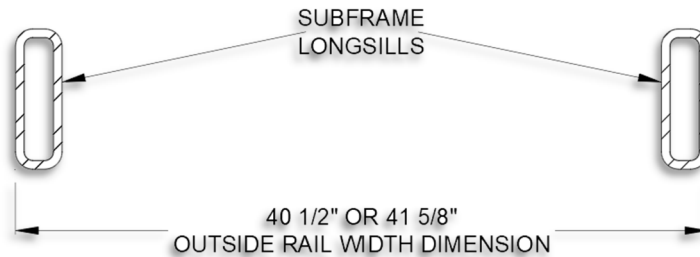


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## **REAR ROLLER SPACING ADJUSTMENT INSTRUCTIONS**

Industry standard for the outside rail width dimension on subframe longsills is either 40 1/2" or 41-5/8" (see illustration below). For most 35 5/8" hook height (100 series) and 53 7/8" hook height (200/300 series) subframes the outside width dimension of the longsill rails is 41 5/8". For most 61 3/4" hook height (400 series) subframes the outside width dimension of the longsill rails is 40 1/2".

*From this point forward we will refer to the rear rollers setup for 40 1/2" outside width as 'narrow spacing' and rear rollers setup for 41 5/8" outside width as 'wide spacing'.*



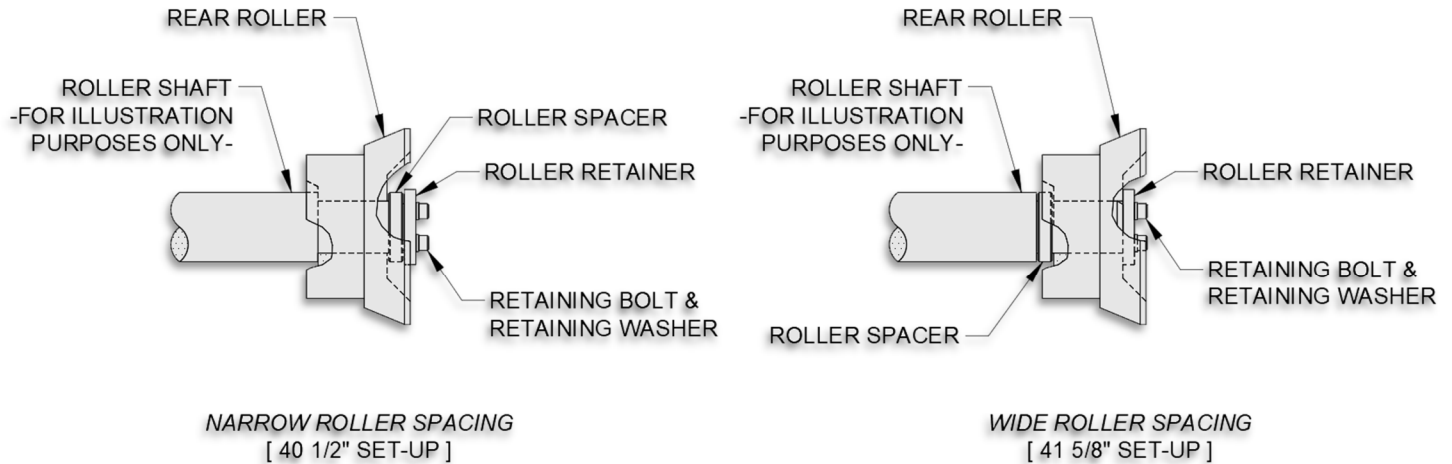
## **SUBFRAME STANDARD WIDTHS**

### **HOIST STANDARD:**

All SwapLoader hooklift hoists are made so that the rear rollers can be spaced at either the wide spacing or narrow spacing depending on the subframe design (the only exception is the SL-105 which can only accommodate a 'wide spacing' or 41 5/8" outside width). Unless instructed otherwise SwapLoader will ship hoists with the rear rollers setup per the previously discussed industry standard for a given hook height of subframe, or as detailed in the chart below.

| <b>SUBFRAME HOOK HEIGHT (SERIES)</b> | <b>HOIST MODELS</b>   | <b>STANDARD ROLLER SPACING</b> |
|--------------------------------------|---|--------------------------------|
| 35 5/8"<br>(100 SERIES)              | SL-105, SL-145, SL-160, SL-180, SL-185, SL-212, SL-214          | 41 5/8"<br>(WIDE WIDTH)        |
| 53 7/8"<br>(200 & 300 SERIES)        | SL-220, SL-222, SL-240, SL-2418                                 | 41 5/8"<br>(WIDE WIDTH)        |
| 61 3/4"<br>(400 SERIES)              | SL-330, SL-400, SL-406, SL-412, SL-518, SL-520, SL-520X, SL-650 | 40 1/2"<br>(NARROW WIDTH)      |



**REAR ROLLER SPACING ADJUSTMENT INSTRUCTIONS (cont'd)****REAR ROLLER NARROW & WIDE SPACING ILLUSTRATION****NARROW TO WIDE ROLLER SPACING ADJUSTMENT:**

To change a hoist from the narrow roller spacing to a wide roller spacing follow these instructions:

1. Loosen and remove the retaining bolts, washers and roller retainer.
2. Remove the roller spacer and rear roller from the hoist roller shaft.
3. Place the roller spacer on first; then place the rear roller back on the roller shaft.
4. Replace and tighten the retaining bolts, retaining washer and roller retainer.

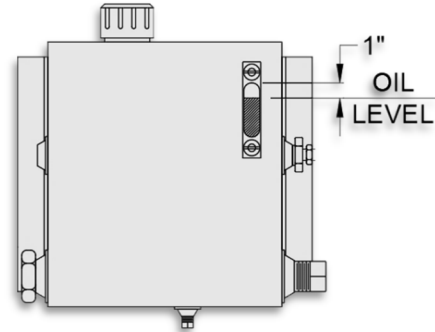
**WIDE TO NARROW ROLLER SPACING ADJUSTMENT:**

To change a hoist from the wide roller spacing to a narrow roller spacing follow these instructions:

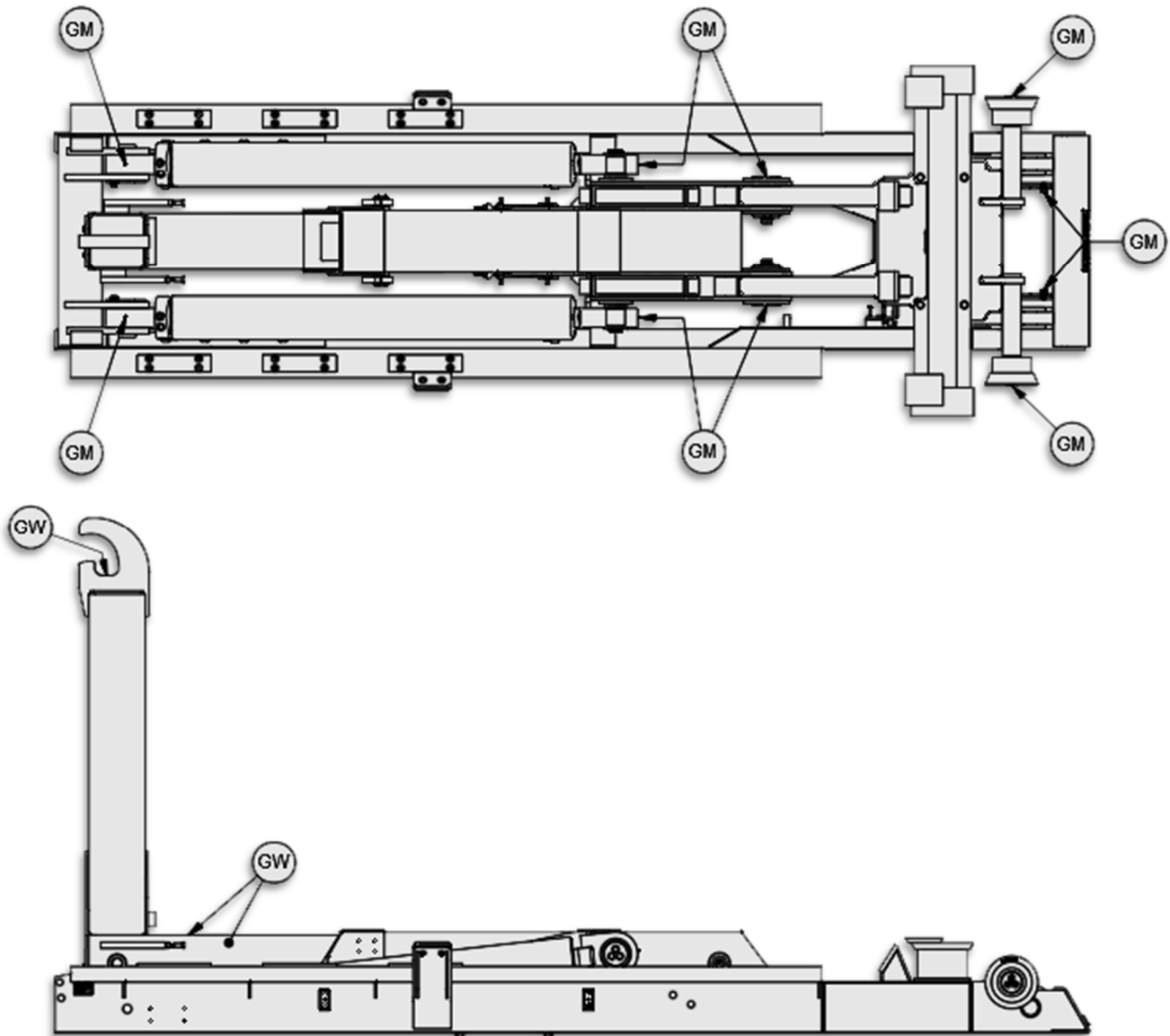
1. Loosen and remove the retaining bolts, washers and roller retainer.
2. Remove the rear roller and roller spacer from the hoist roller shaft.
3. Place the rear roller on first; then place the roller spacer back on the roller shaft.
4. Replace and tighten the retaining bolts, washers and roller retainer.

## MAINTENANCE INSTRUCTIONS

|   |  |
|---|--|
| <p style="text-align: center;"><b>WEEKLY SERVICE</b><br/><b>(50 OPERATIONS)</b></p>   | <ol style="list-style-type: none"> <li>Lubricate with grease (refer to lubrication diagram). <ul style="list-style-type: none"> <li>Lifting hook on jib (if operating the adjustable jib be sure to rotate and grease hook).</li> <li>Jib slide - top, bottom, and side guides.</li> </ul> </li> <li>Check hydraulic oil level. with the hoist in the transport position (lift cylinders retracted and jib cylinder extended – see diagram on front cover) the oil level in the tank should read approximately one inch below the top of the glass sight on the temperature/sight gauge (see diagram →).</li> <li>Check hydraulic hose and fittings for leaks. Also check hydraulic hose for wear. Repair and/or retighten as necessary.</li> </ol>          |
| <p style="text-align: center;"><b>MONTHLY SERVICE</b><br/><b>(200 OPERATIONS)</b></p> | <ol style="list-style-type: none"> <li>Lubricate with grease (refer to lubrication diagram) <ul style="list-style-type: none"> <li>Fittings on lift cylinders (quantity: 4).</li> <li>Front pins on rear pivot joint weldment (quantity: 2).</li> <li>Fittings on rear pivot pins and rollers (quantity: 4).</li> </ul> </li> <li>Check all bolts and retighten as required.</li> <li>Check adjustments on mast lock (safety latch) mechanism. Refer to the <u>Mast Lock Inspection &amp; Adjustment Instructions</u> on Pg. 4-4 of the Maintenance section.</li> <li>Check adjustments on the jib lockout valve. Refer to the <u>Jib Lockout Valve Inspection &amp; Adjustment Instructions</u> on Pg. 4-5 &amp; 4-6 of the Maintenance section.</li> </ol> |
| <p style="text-align: center;"><b>YEARLY SERVICE</b></p>                              | <ol style="list-style-type: none"> <li>Check for proper gapping on outer tube clamp assembly. Refer to the <u>Outer Tube Clamp Assembly Inspection Instructions</u> on Pg. 4-10 of the Maintenance section.</li> <li>Change hydraulic oil, replace hydraulic filter element, and wash out suction strainer.</li> <li>Check main relief valve setting. Refer to the pressure check instructions on Pg. 4-7 to 4-9 of the Maintenance section (pressure should be 3,500 psi minimum).</li> </ol>   |



# LUBRICATION DIAGRAM



| LEGEND |                  |
|--------|------------------|
| GW     | = Grease Weekly  |
| GM     | = Grease Monthly |

## **HYDRAULIC OIL SPECIFICATION & INTERCHANGE CHART**

Select an ISO grade of Premium Anti-Wear Hydraulic Oil that is optimum for your location.

| <b>HYDRAULIC OIL SELECTION CHART</b> |                                  |           |                     |
|--------------------------------------|----------------------------------|-----------|---------------------|
| <b>ISO Grade</b>                     | <b>Ambient Temperature Range</b> |           | <b>Viscosity</b>    |
|                                      | <b>F°</b>                        | <b>C°</b> | <b>SUS @ 100 °F</b> |
| 32                                   | -10 to 85                        | -23 to 29 | 150-170             |
| 46                                   | 10 to 110                        | -12 to 43 | 195-240             |

### **NOTE:**

1. ALWAYS CONSULT YOUR LOCAL HYDRAULIC OIL SUPPLIER FOR MORE INFORMATION.
2. USE CAUTION WHEN OPERATING AT OR BEYOND THE RECOMMENDED TEMPERATURE EXTREMES.
3. DO NOT OPERATE THE HOOKLIFT HOIST WHEN HYDRAULIC OIL TEMPERATURE ON TANK GAUGE EXCEEDS 160 °F (71 °C) AS DAMAGE TO HYDRAULIC COMPONENTS CAN OCCUR.

| <b>ISO Grade 32</b> |                               |
|---------------------|-------------------------------|
| <b>Company Name</b> | <b>Brand Name &amp; Grade</b> |
| Castrol (BP)        | Paradene 32AW                 |
| CITGO               | A/W 32                        |
| Exxon               | Nuto H 32                     |
| Mobil               | DTE 24 (DTE 13)               |
| Shell               | Tellus 32                     |
| SUNOCO              | Sun Vis 706 (816 WR)          |

| <b>ISO Grade 46</b> |                               |
|---------------------|-------------------------------|
| <b>Company Name</b> | <b>Brand Name &amp; Grade</b> |
| Castrol (BP)        | Paradene 46AW                 |
| CITGO               | A/W 46                        |
| Exxon               | Nuto H 46                     |
| Mobil               | DTE 25 (DTE 15)               |
| Shell               | Tellus 36                     |
| SUNOCO              | Sun Vis 747 (821 WR)          |

## **HYDRAULIC FILTER ELEMENT SPECIFICATION**

Element Size: Ø5.10x 10.9"  
 Mounting Thread: 1 1/2-16 UN-2B  
 Filtration Rating: 10 micron (Nominal)  
 Flow Rating: 60 GPM

| <b>Company Name</b> | <b>Filter Part Number</b> |
|---------------------|---------------------------|
| Baldwin             | BT-388-10                 |
| Can Flo             | RSE60-10N                 |
| Case                | D-130046                  |
| Donaldson           | HSM6047                   |
| Fleetguard          | R750-H-0825A              |
| FPC                 | HF6711                    |

| <b>Company Name</b> | <b>Filter Part Number</b> |
|---------------------|---------------------------|
| Hydac               | 0180MA010P                |
| LHA                 | SPE60-10                  |
| Norman              | 610                       |
| Parker              | 927736                    |
| Wix                 | 51860                     |
| Zinga*              | LE-10                     |

\* Brand of Element supplied from factory on hoist

## **MAST LOCK INSPECTION & ADJUSTMENT INSTRUCTIONS**

All SwapLoader hook-lift hoists come with a mast lock (safety latch) assembly that is located on the bottom side of the outer tube. When the jib is extended the mast lock then engages the latch bars (forks) on the pivot joint, making the jib, outer tube, and pivot joint into a continuous member for raising the container or body up into a dump mode.

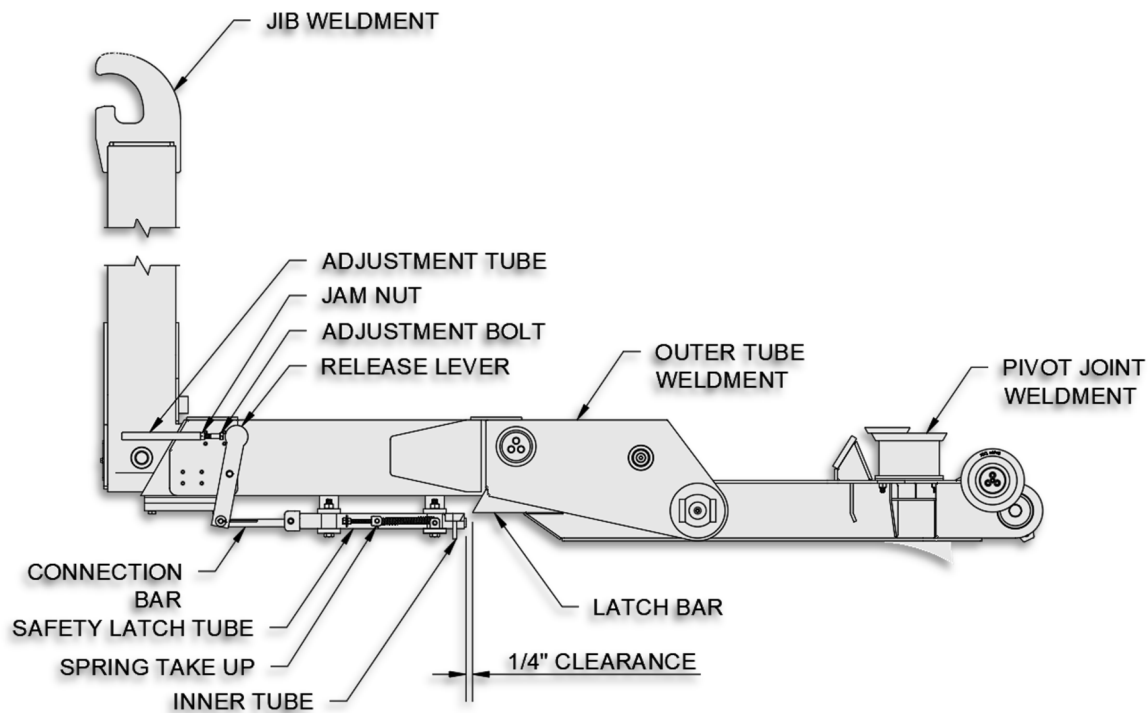
With the jib fully retracted the mast lock then disengages the latch bars on the pivot joint allowing the hook-lift to enter the mount-dismount cycle by pivoting around the front pins of the pivot joint. A properly adjusted mast lock will function smoothly and clear the latch bars on the pivot joint approximately a  $\frac{1}{4}$ " (see illustrations below).

### **INSPECTION**

The mast lock assembly comes adjusted from the factory and should provide years of trouble-free operation, however there may come a time when an adjustment may be required. Prior to making any adjustments, SwapLoader recommends that you begin with inspecting all mast lock components for damage or wear (see illustration below).

Inspect the adjustment tube and bolt on the jib; make sure nothing is missing or bent. Inspect the release lever and connection bar on; look for any missing or bent components such as ears or pins. Inspect the safety latch; again, make sure there are no missing or bent components. Repair or replace any missing or bent components prior to making any adjustment to the mast lock assembly; refer to the mast lock (safety latch) assembly drawing for proper part numbers and identification of the components (see Pg. 5-5 in the *Parts Section* of the manual).

### **400 SERIES HOISTS**



### **MAST LOCK LOCATION AND ADJUSTMENT ILLUSTRATION**

(shown with the jib retracted)

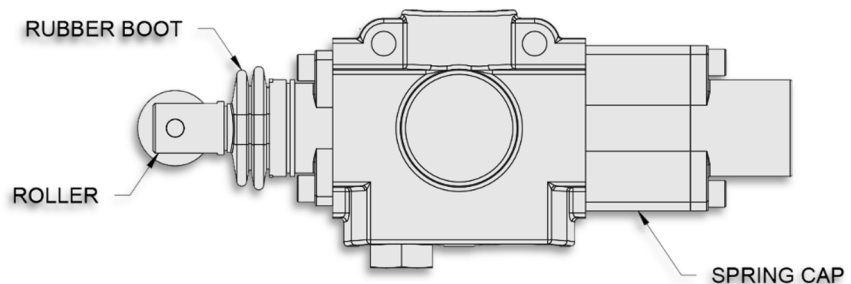
## ADJUSTMENT

If after inspecting all mast lock components and making any necessary repairs the gap between the mast lock and latch bars on the pivot joint is still incorrect, then an adjustment will need to be made. Please complete the following steps:

1. Retract the jib until the cylinder completely bottoms out (fully retracted).
2. Inspect gap between mast lock latch and the latch bar on the pivot joint. Look for a clearance of approximately 1/4" (if not proceed to steps 3-5).
3. Loosen jam nut on the adjustment bolt.
4. Turn adjustment bolt; counterclockwise to increase gap or clockwise to decrease the gap.
5. Once the 1/4" clearance is achieved, tighten the jam nut. Make sure to hold the adjustment bolt from turning when tightening the jam nut.

## JIB LOCKOUT VALVE INSPECTION & ADJUSTMENT INSTRUCTIONS

All SwapLoader hook-lift hoists have a jib lockout valve to prevent accidental operation of the telescopic jib, while the hoist is up in a dump mode. Because the jib lockout valve can block the flow of hydraulic oil to the jib cylinder, should the valve come out of adjustment the telescopic jib may experience a reduction in extension or retraction speed to the point of stalling out.



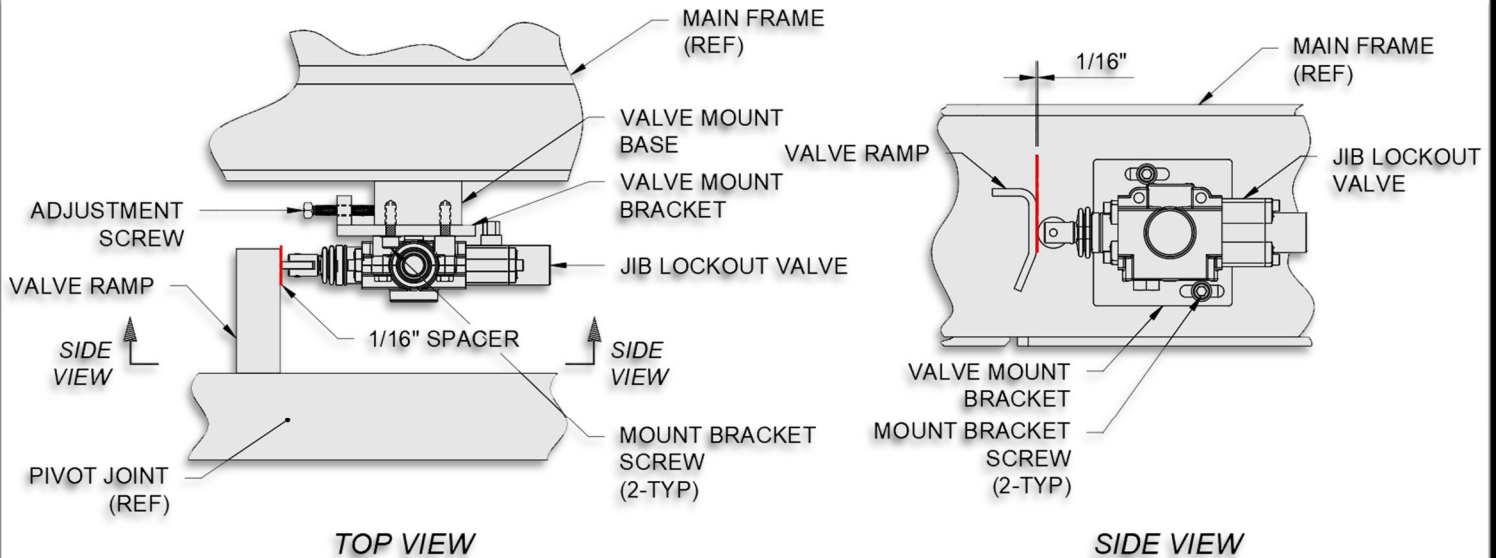
**JIB LOCKOUT VALVE ILLUSTRATION**

## INSPECTION

When a noticeable loss in extension or retraction speed of the telescopic jib is experienced, the first step should be to inspect the jib lockout valve and valve mount ramp to ensure that they are adjusted properly and in good working order. The jib lockout valve is located on the inside rail of the hoist mainframe approximately two-thirds of the way back on the driver side of the hoist (see *Jib Lockout Valve Mount Detail on Pg. 5-2* of the Parts Section of the manual). Visually inspect the jib lockout valve roller and the condition of the valve ramp on the hoist pivot joint without a container on the hoist (see illustration on the next page); this is most easily performed with the hoist back in a dismount mode. If either part shows signs of wear or damage, then replace or repair as needed.

With the jib lockout valve roller and valve ramp in good condition the next step is to check that the valve is positioned correctly with respect to the valve ramp. While looking at the roller end of the jib lockout valve, notice that the roller moves in and out of an end cap. With the hoist pivot joint in the down position, or horizontal to the hoist mainframe, the valve ramp should be in

contact with the jib lockout valve roller. The roller should be depressed by the valve ramp so that 1/8" to 3/16" of the roller is exposed from the end cap (see illustration below).



### JIB LOCKOUT VALVE ADJUSTMENT ILLUSTRATION

#### ADJUSTMENT

Should the jib lockout valve need adjustment follow the steps below (refer to the illustration on the previous page).

1. Loosen the mount bracket screws enough that the mount bracket can slide.
2. Place a 1/16" spacer between the roller and the ramp.
3. Tighten the adjustment bolt until the roller is completely or near completely compressed.
4. Tighten the mount bracket screws.
5. Remove the spacer.
6. Test function.

#### PART NUMBER & SPECIFICATION

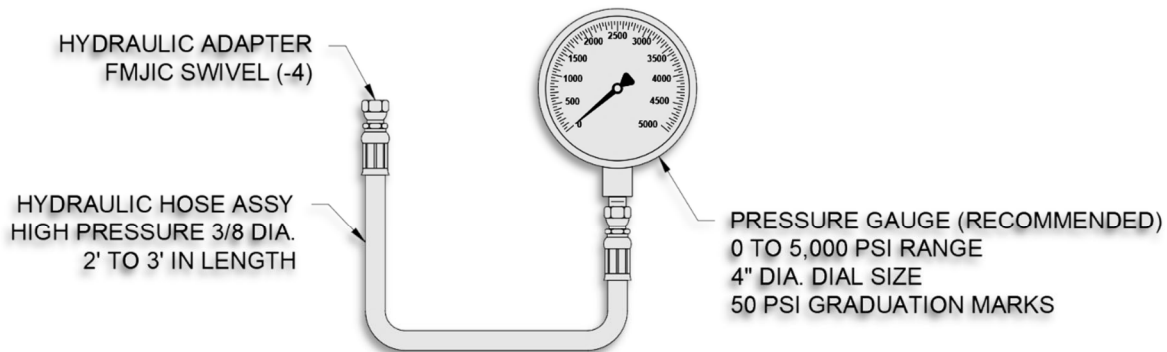
| SwapLoader<br>Pt. No. | Work Port Size     | Spool Type             |
|-----------------------|--------------------|------------------------|
| 23P04                 | 7/8-14 ORB (SAE 8) | 2-Way, 2-Position N.C. |

Please contact your SwapLoader Distributor or SwapLoader USA should you have any questions regarding this procedure.



## **PRESSURE CHECK INSTRUCTIONS**

When performing a pressure check on a SwapLoader hook-lift hoist, we recommend that you use a calibrated pressure gauge that reads pressures up to 3,500 PSI (a 0 to 5,000 PSI range gauge is recommended). As a minimum, the gauge should have 100 PSI graduation marks (50 PSI is preferred), and a 3-inch diameter dial size (4-inch dial is preferred). The pressure gauge should be outfitted with a female JIC #4 hydraulic adapter; preferably located at the end of a 3/8-inch diameter high pressure hydraulic hose that is 2 to 3 foot in length (see illustration



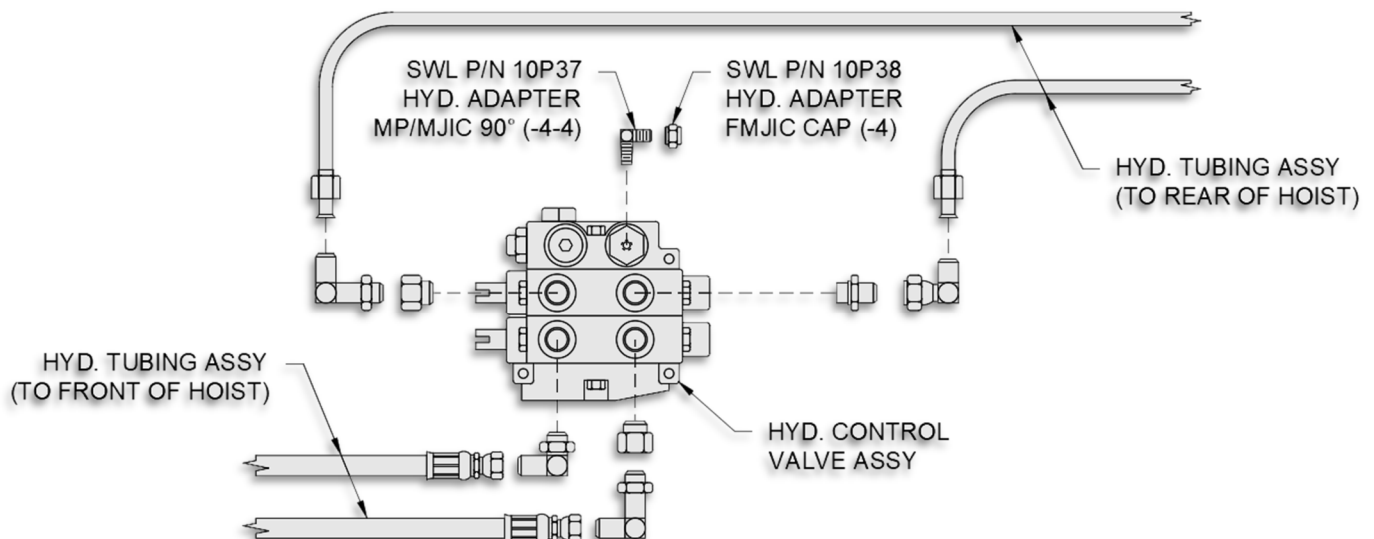
### **RECOMMENDED PRESSURE GAUGE ILLUSTRATION**

below).

Should you not be able to source a hydraulic gauge locally, SwapLoader can provide one at a reasonable cost (Hyd. Pressure Gauge & Hose Assembly – Pt. No. 22P10).

### **PRESSURE CHECK STEPS**

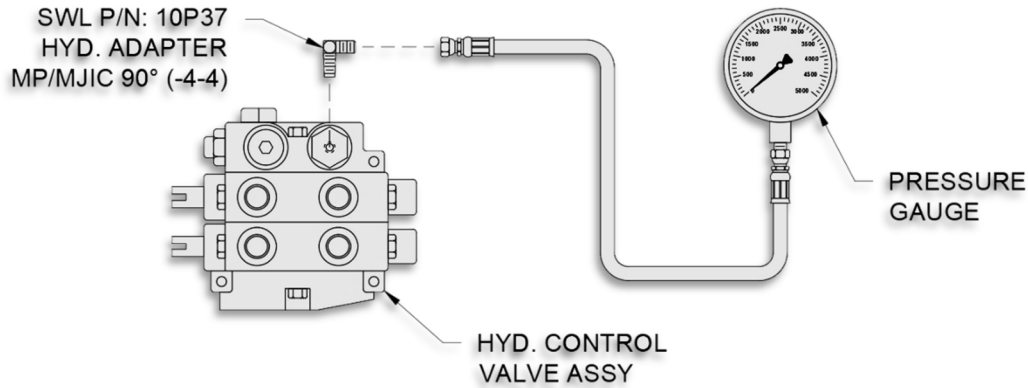
1. Locate the 90° male JIC #4 hydraulic adapter (SWL #10P37) found on the top of the hoist hydraulic control valve (see illustration below).



### **PRESSURE CHECK HYDRAULIC ADAPTER LOCATION ILLUSTRATION**

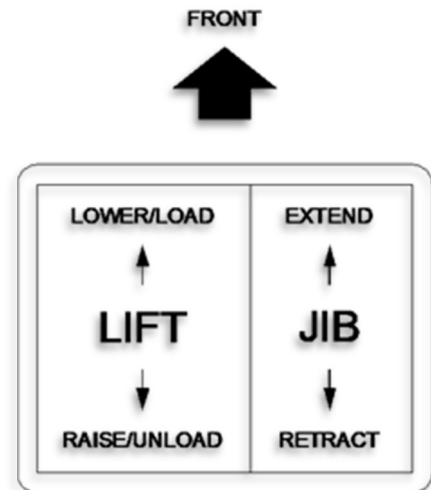
This 90° male #4 JIC hydraulic adapter is supplied by SwapLoader and should be installed in the hydraulic control valve at the time of the hoist installation (see the hoist parts & operations manual).

2. Remove the female JIC #4 cap from the male JIC #4 adapter and attach the pressure gauge to the hydraulic control valve (see illustration below).



### PRESSURE GAUGE TO HYDRAULIC ADAPTER ILLUSTRATION

3. Start the truck and engage the P.T.O.
4. Push the lift (dump) circuit lever forward until the lift (dump) cylinders bottom out (see illustration below). Continue to push the lever forward until steps 5-6 are complete.
5. Check the gauge for the maximum developed system pressure. The SL-412 should have a reading of 3,500 PSI.
6. With the pressure check complete; release all functions and disengage the P.T.O.

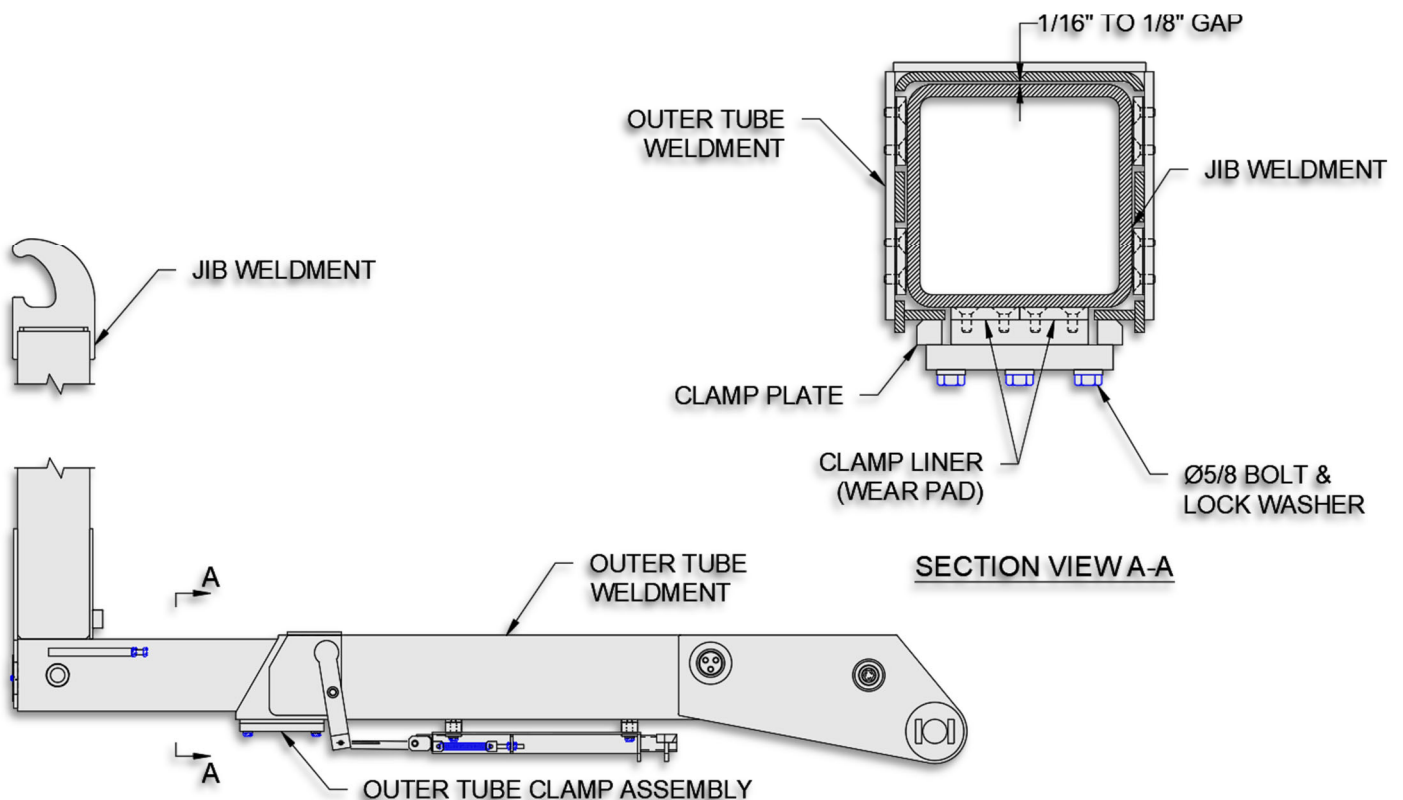


## **OUTER TUBE CLAMP ASSEMBLY INSPECTION INSTRUCTIONS**

All SwapLoader hooklift hoists come equipped with an outer tube clamp assembly located on the bottom of the outer tube at the opening where the jib telescopes in and out (see illustration below). On SwapLoader 400 Series hoist models the outer clamp assembly is fixed in height.

### **INSPECTION**

The illustration below is a typical hoist clamp assembly for the SwapLoader 400 Series hoist models. For optimum performance out of your SwapLoader SL-412 hooklift the gap between the top of the jib horizontal tube and the top inside surface of the outer tube should be kept between 1/16" to 1/8" (see Section View A-A below). When a gap greater than 1/8" exists, since the clamp assembly has a fixed elevation, inspect the clamp liner, clamp plate, and fasteners for excessive wear or damage (see Section View A-A below). Replace parts as needed to bring the outer tube clamp assembly back to recommended specifications (see *Pg. 5-4* in the *Parts Section* of the manual).



### **400 SERIES HOIST CLAMP ASSEMBLY ILLUSTRATION**

(shown with the jib retracted)

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### HEX HEAD CAP SCREW TORQUE SPECS

| BOLT<br>SIZE | SAE GR 8<br>W/ LOCK WASHER<br>(FT-LBS) |
|--------------|--|
| 3/8          | 53                                     |
| 7/16         | 85                                     |
| 1/2          | 130                                    |
| 5/8          | 258                                    |
| 3/4          | 459                                    |
| 7/8          | 739                                    |
| 1            | 1108                                   |

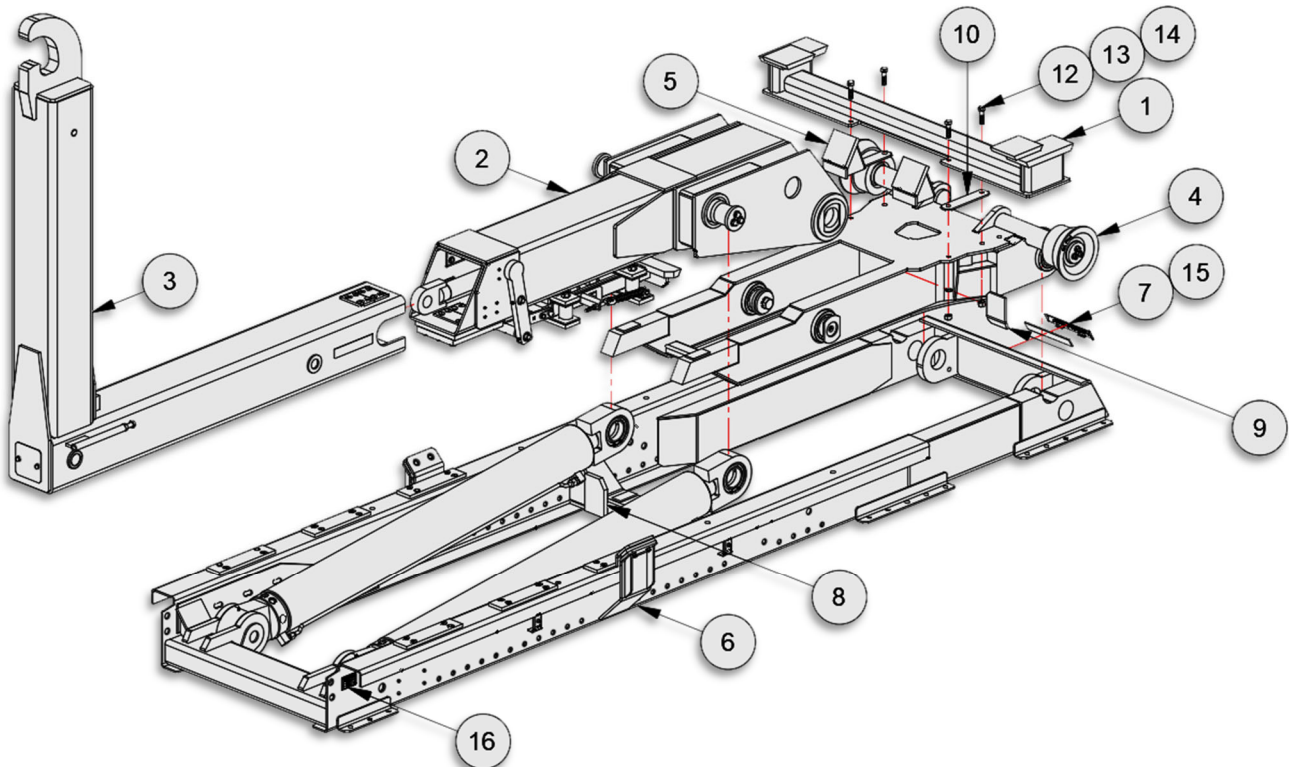
Note: Apply Loctite 243 (Blue) to all bolts.

### 43H59 - BASE HOIST ASSEMBLY

**SL-412**

| ITEM | PART # | QTY | DESCRIPTION                 | WT-lb/ea. | WT-lb/all |
|------|--------|-----|-----------------------------|-----------|-----------|
| 1    | 42H17  | 1   | Body Lock Wdmt, Dual 412    | 138.04    | 138.04    |
| 2    | 43H60  | 1   | Outer Tube Sub-Assy, SL-412 | 1033.76   | 1033.76   |
| 3    | 43H66  | 1   | Fixed Jib Sub-Assy, SL-412  | 760.23    | 760.23    |
| 4    | 43H69  | 1   | Pivot Joint Sub-Assy, 412   | 675.91    | 675.91    |
| 5    | 43H71  | 2   | Tube Stop Sub-Wdmt, 32 Deg  | 9.87      | 19.74     |
| 6    | 43H72  | 1   | Main Frame Sub-Assy, SL-412 | 1516.56   | 1516.56   |
| 7    | 62H99  | 1   | Logo Plate                  | 0.30      | 0.30      |
| 8    | 84H85  | 2   | Pivot Guide, MF 400S        | 4.95      | 9.90      |
| 9    | 87H57  | 1   | Lockout Ramp, 5-1/8 x 3-3/4 | 2.02      | 2.02      |
| 10   | 88H03  | 2   | Spacer, BL                  | 1.20      | 2.40      |
| 11   | 91H17  | 1   | Base Cyl Circuit, 412       | 25.27     | 25.27     |
| 12   | 00767  | 4   | Washer, Lock 5/8            | 0.04      | 0.16      |
| 13   | 00P24  | 4   | Nut, Hex 5/8-11 UNC Gr8     | 0.09      | 0.36      |
| 14   | 01P17  | 4   | HHCS 5/8-11 UNC x 2-1/4 Gr8 | 0.30      | 1.20      |
| 15   | 90P90  | 1   | Name Plate Insert           | 0.10      | 0.10      |
| 16   | 91P09  | 1   | Serial Tag, SL-412          | 0.02      | 0.02      |

\* Item not shown.



**SL-412 BASE HOIST w/ FIXED JIB**

**HEX HEAD CAP SCREW  
TORQUE SPECS**

| BOLT<br>SIZE | SAE GR 8<br>W/ LOCK WASHER<br>(FT-LBS) |
|--------------|--|
| 3/8          | 53                                     |
| 7/16         | 85                                     |
| 1/2          | 130                                    |
| 5/8          | 258                                    |
| 3/4          | 459                                    |
| 7/8          | 739                                    |
| 1            | 1108                                   |

Note: Apply Loctite 243 (Blue) to all bolts.

**SOCKET HEAD CAP  
SCREW TORQUE SPECS**

| BOLT<br>SIZE | SAE GR 8<br>W/ LOCK WASHER<br>(FT-LBS) |
|--------------|--|
| 3/8          | 62                                     |
| 7/16         | 103                                    |
| 1/2          | 151                                    |
| 5/8          | 291                                    |
| 3/4          | 516                                    |
| 7/8          | 831                                    |
| 1            | 1246                                   |

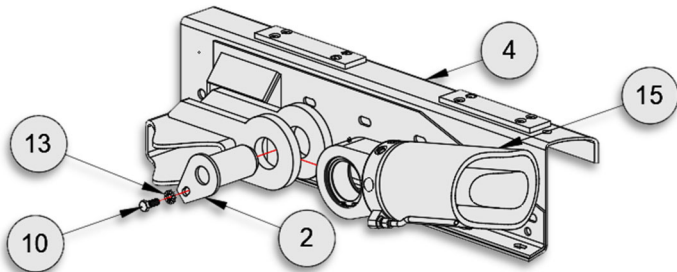
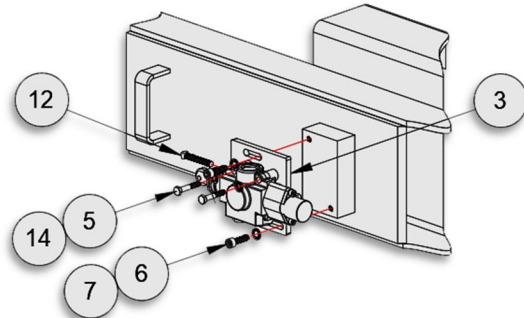
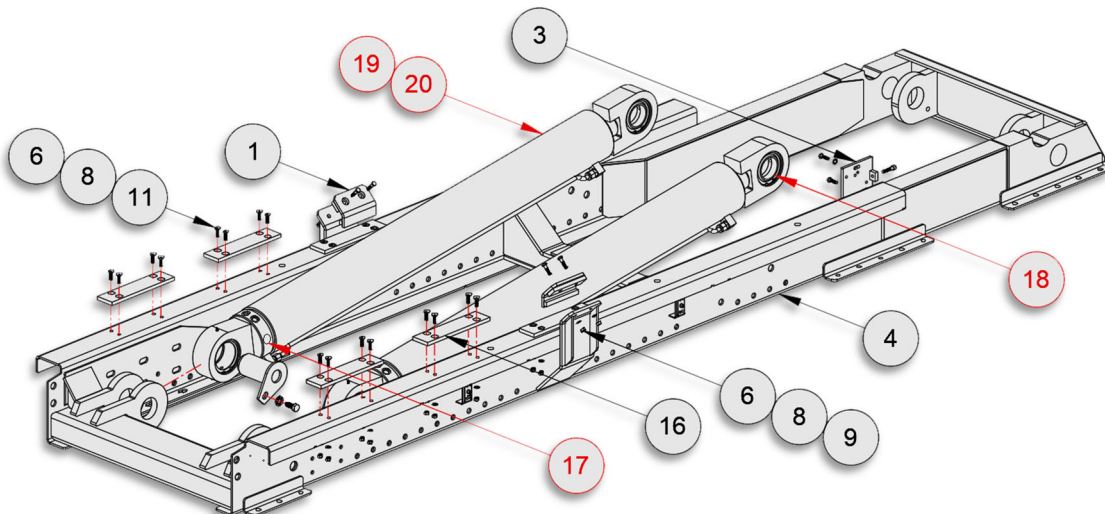
Note: Apply Loctite 243 (Blue) to all bolts.

**43H72 – MAIN FRAME SUB-ASSEMBLY****SL-412**

| ITEM | PART<br># | QTY | DESCRIPTION                 | WT-<br>lb/ea. | WT-lb/all |
|------|-----------|-----|-----------------------------|---------------|-----------|
| 1    | 41H81     | 2   | Front Guide Shim Wdmt, 400S | 4.38          | 8.76      |
| 2    | 42H01     | 2   | Pin, MF/Cyl 3 x 5-3/4       | 12.93         | 25.86     |
| 3    | 42H11     | 1   | Jib Lockout Mnt, 5 x 5      | 2.41          | 2.41      |
| 4    | 43H73     | 1   | Main Frame Wdmt, SL-412     | 1098.44       | 1098.44   |
| 5    | 00752     | 2   | Washer, Lock 5/16           | 0.03          | 0.06      |
| 6    | 00755     | 30  | Washer, Lock 3/8            | 0.03          | 0.90      |
| 7    | 00P13     | 2   | HHCS 3/8-16 UNC x 1-1/4 Gr8 | 0.10          | 0.20      |
| 8    | 00P14     | 28  | Nut, Hex 3/8-16 UNC Gr8     | 0.02          | 0.56      |
| 9    | 00P44     | 4   | HHCS 3/8-16 UNC x 1-1/2 Gr8 | 0.07          | 0.28      |
| 10   | 00P56     | 2   | HHCS 5/8-11 UNC x 1-1/2 Gr8 | 0.18          | 0.36      |
| 11   | 00P68     | 24  | FHSS 3/8-16 UNC X 1-1/4 SS  | 0.11          | 2.64      |
| 12   | 01P20     | 1   | SHCS 3/8-16 UNC x 1-3/4 Gr8 | 0.07          | 0.07      |
| 13   | 01P31     | 2   | Washer, Disc Lock 5/8 Pr    | 0.03          | 0.06      |
| 14   | 10P63     | 2   | HHCS 5/16-18 UNC x 1-3/4 ZP | 0.03          | 0.06      |
| 15   | 22P24     | 2   | Hyd Cyl 6x3x56              | 449.80        | 899.60    |
| 16   | 90P71     | 6   | Wear Pad, 2-3/4x1/2x11-3/4  | 0.70          | 4.20      |

**LIFT CYLINDER SERVICE PARTS**

|    |       |                               |      |  |
|----|-------|-------------------------------|------|--|
| 17 | 21P11 | C'Bal Cart, 3700 PSI CBCA-LHN | 0.35 |  |
| 18 | 22P15 | Hyd Cyl Brg, Sph 3.00ID       | 0.90 |  |
| 19 | 22P41 | Seal Kit, Cyl                 | 0.20 |  |
| 20 | 22P43 | Return Line, Cyl 412          | 2.00 |  |

**LIFT CYLINDER PIN DETAIL****JIB LOCKOUT VALVE MOUNT DETAIL****MAIN FRAME SUB-ASSEMBLY**



**HEX HEAD CAP SCREW  
TORQUE SPECS**

| BOLT<br>SIZE | SAE GR 8<br>W/ LOCK WASHER<br>(FT-LBS) |
|--------------|--|
| 3/8          | 53                                     |
| 7/16         | 85                                     |
| 1/2          | 130                                    |
| 5/8          | 258                                    |
| 3/4          | 459                                    |
| 7/8          | 739                                    |
| 1            | 1108                                   |

Note: Apply Loctite 243 (Blue) to all bolts.

**SOCKET HEAD CAP  
SCREW TORQUE SPECS**

| BOLT<br>SIZE | SAE GR 8<br>W/ LOCK WASHER<br>(FT-LBS) |
|--------------|--|
| 3/8          | 62                                     |
| 7/16         | 103                                    |
| 1/2          | 151                                    |
| 5/8          | 291                                    |
| 3/4          | 516                                    |
| 7/8          | 831                                    |
| 1            | 1246                                   |

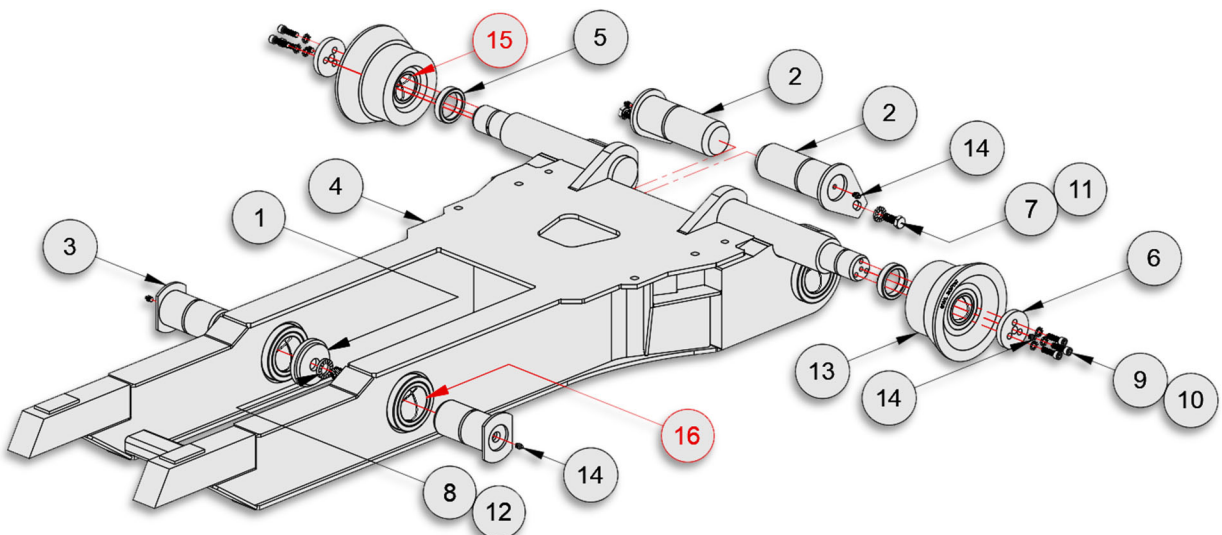
Note: Apply Loctite 243 (Blue) to all bolts.

**43H69 – PIVOT JOINT SUB-ASSEMBLY****SL-412**

| ITEM | PART<br># | QTY | DESCRIPTION                  | WT-<br>lb/ea. | WT-lb/all |
|------|-----------|-----|------------------------------|---------------|-----------|
| 1    | 40H71     | 2   | Pin Cap, 13/16 x 4-3/4       | 1.46          | 2.92      |
| 2    | 40H84     | 2   | Pin, PJ/MF 3 x 8             | 17.60         | 35.20     |
| 3    | 41H99     | 2   | Pin, PJ/OT 3 x 5-7/8         | 12.37         | 24.74     |
| 4    | 43H70     | 1   | Pivot Joint Wdmt, SL-412     | 541.16        | 541.16    |
| 5    | 61H94     | 2   | Spacer, Roller 11/16x2-9/32  | 0.60          | 1.20      |
| 6    | 85H21     | 2   | Roller Retainer, 1/2 x 3-1/4 | 1.05          | 2.10      |
| 7    | 00P56     | 2   | HHCS 5/8-11 UNC x 1-1/2 Gr8  | 0.18          | 0.36      |
| 8    | 00P87     | 2   | HHCS 1-8 UNC x 2 Gr8         | 0.70          | 1.40      |
| 9    | 01P25     | 6   | SHCS 7/16-14 UNC x 1-1/2 Gr8 | 0.05          | 0.30      |
| 10   | 01P29     | 6   | Washer, Disc Lock 7/16 Pr    | 0.02          | 0.12      |
| 11   | 01P31     | 2   | Washer, Disc Lock 5/8 Pr     | 0.03          | 0.06      |
| 12   | 01P34     | 2   | Washer, Disc Lock 1 Pr       | 0.08          | 0.16      |
| 13   | 80P09     | 2   | Roller Assy, 6-1/4x2-1/4ID   | 37.03         | 74.06     |
| 14   | 90P03     | 6   | Grease Zerk, 1/8-27 NPT Str  | 0.01          | 0.06      |

**BUSHINGS**

|    |       |   |                             |      |  |
|----|-------|---|-----------------------------|------|--|
| 15 | 23H07 | 2 | Brz Brg, 2.25IDx3.00x2.75OD | 1.71 |  |
| 16 | 50P20 | 4 | Brz Brg, 3.00IDx3.44x3.75OD | 4.00 |  |

**PIVOT JOINT SUB-ASSEMBLY**



### HEX HEAD CAP SCREW TORQUE SPECS

| BOLT<br>SIZE | SAE GR 8<br>W/ LOCK WASHER<br>(FT-LBS) |
|--------------|--|
| 3/8          | 53                                     |
| 7/16         | 85                                     |
| 1/2          | 130                                    |
| 5/8          | 258                                    |
| 3/4          | 459                                    |
| 7/8          | 739                                    |
| 1            | 1108                                   |

Note: Apply Loctite 243 (Blue) to all bolts.

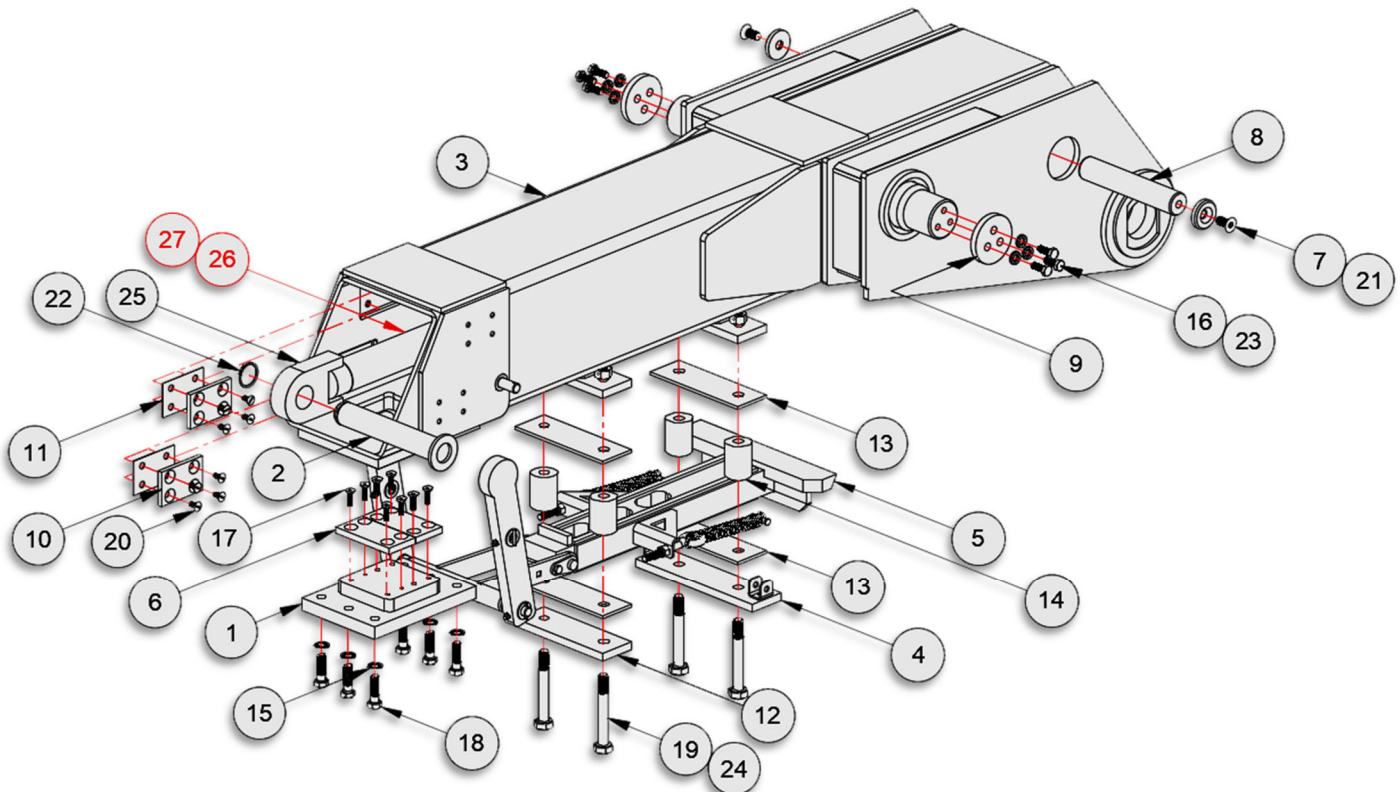
### 43H60 – OUTER TUBE SUB-ASSEMBLY

SL-412

| ITEM | PART # | QTY | DESCRIPTION                 | WT-lb/ea. | WT-lb/all |
|------|--------|-----|-----------------------------|-----------|-----------|
| 1    | 40H44  | 1   | Clamp Plate, OT 400/HD      | 30.05     | 30.05     |
| 2    | 41H98  | 1   | Pin, Jib/Cyl 1-3/4 x 9-7/8  | 7.33      | 7.33      |
| 3    | 43H61  | 1   | Outer Tube Wdmt, SL-412     | 669.80    | 669.80    |
| 4    | 43H75  | 1   | PL Connector Wdmt, 412      | 6.47      | 6.47      |
| 5    | 44H60  | 1   | Pivot Lock Sub-Assy, 412    | 109.67    | 109.67    |
| 6    | 80H35  | 2   | Wear Pad, 2-3/4x1/2x5-1/2   | 0.30      | 0.60      |
| 7    | 81H20  | 2   | Pin Cap, 7/16 x 2-1/4       | 0.40      | 0.80      |
| 8    | 82H50  | 1   | Pin, OT/Cyl 1-3/4 x 9-15/32 | 6.24      | 6.24      |
| 9    | 85H14  | 2   | Pin Cap, 1/2 x 3-3/4        | 1.46      | 2.92      |
| 10   | 87H44  | 4   | Wear Pad, 2-3/4x3/8x4-1/4   | 0.20      | 0.80      |
| 11   | 87H45  | 4   | Shim 2-3/4 x 16GA x 4-1/4   | 0.20      | 0.80      |
| 12   | 87H84  | 1   | Connection Bar, 412         | 4.61      | 4.61      |
| 13   | 89H15  | 4   | Shim, SS 3 x 1/4 x 9        | 1.74      | 6.96      |
| 14   | 89H16  | 4   | Spacer 2-21/32 x 2OD        | 1.93      | 7.72      |
| 15   | 00767  | 6   | Washer, Lock 5/8            | 0.04      | 0.24      |
| 16   | 00P31  | 6   | HHCS 1/2-13 UNC x 1-1/4     | 0.14      | 0.84      |
| 17   | 00P68  | 8   | FHSS 3/8-16 UNC X 1-1/4 SS  | 0.11      | 0.88      |
| 18   | 00P69  | 6   | HHCS 5/8-11 UNC x 2 Gr8     | 0.33      | 1.98      |
| 19   | 00P72  | 4   | Nut, Lock 3/4-10 UNC Gr8    | 0.22      | 0.88      |
| 20   | 00P79  | 16  | FHCS 3/8-16 UNC x 3/4 Br    | 0.09      | 1.44      |
| 21   | 00P95  | 2   | FHCS 5/8-11 x 1-1/4 Gr8     | 0.23      | 0.46      |
| 22   | 00P97  | 1   | Snap Ring, Ext 1.75         | 0.01      | 0.01      |
| 23   | 01P30  | 6   | Washer, Disc Lock 1/2 Pr    | 0.02      | 0.12      |
| 24   | 01P84  | 4   | HHCS 3/4-10 UNC x 5-1/2 Gr8 | 0.85      | 3.40      |
| 25   | 22P25  | 1   | Hyd Cyl 4x2.5x30            | 191.40    | 191.40    |

### JIB CYLINDER SERVICE PARTS

|    |       |   |                               |      |  |
|----|-------|---|-------------------------------|------|--|
| 26 | 21P17 | 1 | C'Bal Cart, 3700 PSI CBEA-LHN | 0.50 |  |
| 27 | 22P42 | 1 | Seal Kit, Cyl                 | 0.20 |  |



**OUTER TUBE SUB-ASSEMBLY**

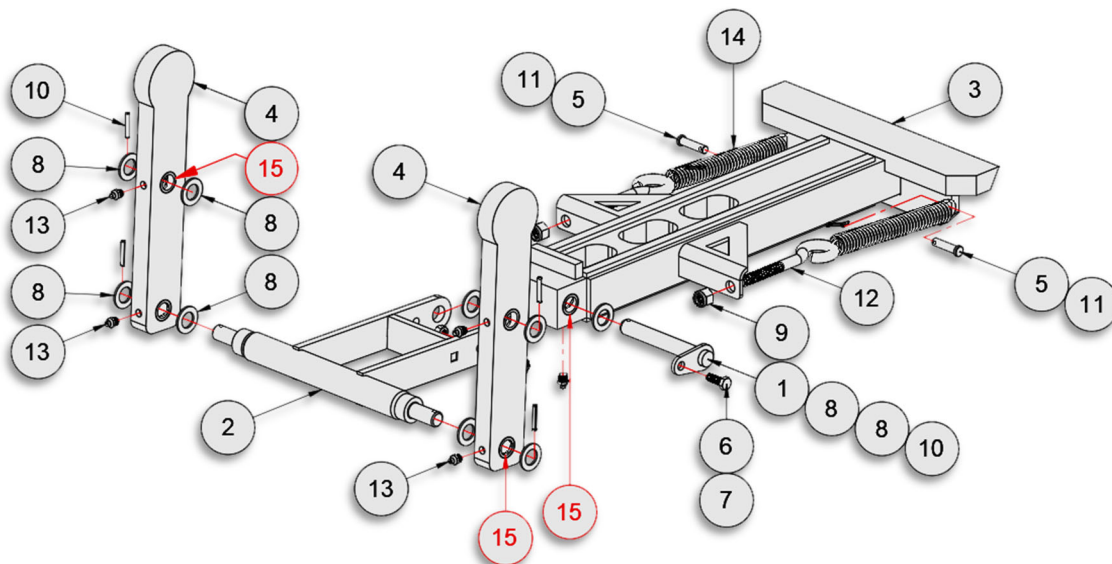
**HEX HEAD CAP SCREW  
TORQUE SPECS**

| BOLT<br>SIZE | SAE GR 8<br>W/ LOCK WASHER<br>(FT-LBS) |
|--------------|--|
| 3/8          | 53                                     |
| 7/16         | 85                                     |
| 1/2          | 130                                    |
| 5/8          | 258                                    |
| 3/4          | 459                                    |
| 7/8          | 739                                    |
| 1            | 1108                                   |

Note: Apply Loctite 243 (Blue) to all bolts.

**44H60 – PIVOT LOCK SUB-ASSEMBLY**
**SL-412**

| ITEM            | PART # | QTY | DESCRIPTION                 | WT-lb/ea. | WT-lb/all |
|-----------------|--------|-----|-----------------------------|-----------|-----------|
| 1               | 44H62  | 1   | Pin, Safety L 3/4 x 4-3/4   | 0.80      | 0.80      |
| 2               | 44H63  | 1   | Connection Bar Wdmt 9-1/4   | 6.73      | 6.73      |
| 3               | 44H64  | 1   | Latch Plate Wdmt, PL 412    | 51.90     | 51.90     |
| 4               | 44H65  | 2   | Release Lever, 13-7/8       | 8.69      | 17.38     |
| 5               | 00P26  | 2   | Pin, Cotter 1/8 x 1         | 0.01      | 0.02      |
| 6               | 00P34  | 1   | Nut, Lock 3/8-16 UNC GrC    | 0.02      | 0.02      |
| 7               | 00P62  | 1   | HHCS 3/8-16 UNC x 1 Gr8     | 0.05      | 0.05      |
| 8               | 01P77  | 10  | Washer, Flat 3/4 SS         | 0.02      | 0.20      |
| 9               | 01P78  | 2   | Nut, Nylock 1/2-13 UNC SS   | 0.05      | 0.10      |
| 10              | 01P80  | 5   | Pin, Slotted Spg 1-1/4 SS   | 0.01      | 0.05      |
| 11              | 01P81  | 2   | Pin, Clevis 3/8 x 1-1/4 SS  | 0.05      | 0.10      |
| 12              | 02P14  | 2   | Eyebolt 1/2-13 UNC x 4      | 0.34      | 0.68      |
| 13              | 90P03  | 6   | Grease Zerk, 1/8-27 NPT Str | 0.01      | 0.06      |
| 14              | 91P29  | 2   | Spring, SS 7/8 x 6          | 0.38      | 0.76      |
| <b>BUSHINGS</b> |        |     |                             |           |           |
| 15              | 50P30  | 6   | Brz Brg, 0.75IDx1.00x1.00OD | 0.10      |           |


**PIVOT LOCK SUB-ASSEMBLY**

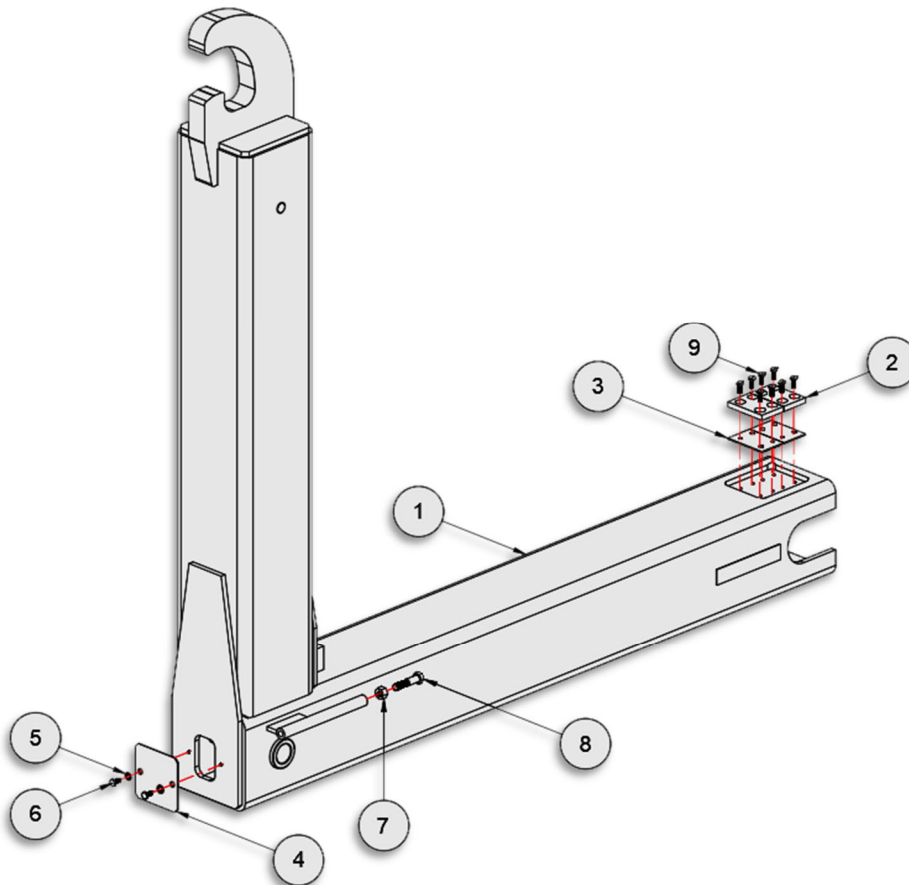
**HEX HEAD CAP SCREW  
TORQUE SPECS**

| BOLT<br>SIZE | SAE GR 8<br>W/ LOCK WASHER<br>(FT-LBS) |
|--------------|--|
| 3/8          | 53                                     |
| 7/16         | 85                                     |
| 1/2          | 130                                    |
| 5/8          | 258                                    |
| 3/4          | 459                                    |
| 7/8          | 739                                    |
| 1            | 1108                                   |

Note: Apply Loctite 243 (Blue) to all bolts.

**43H66 – FIXED JIB SUB-ASSEMBLY**
**SL-412**

| ITEM | PART # | QTY | DESCRIPTION                  | WT-lb/ea. | WT-lb/all |
|------|--------|-----|------------------------------|-----------|-----------|
| 1    | 43H67  | 1   | Fixed Jib Wdmt 62, 412       | 756.90    | 756.90    |
| 2    | 60H11  | 2   | Wear Pad, 2-3/4x1/2x4-1/4    | 0.21      | 0.42      |
| 3    | 61H90  | 2   | Shim, WP 2-3/4 x 1/8 x 4-1/4 | 0.40      | 0.80      |
| 4    | 62H11  | 1   | Cover, Jib 5-1/4x11GAx5-1/4  | 0.90      | 0.90      |
| 5    | 00755  | 2   | Washer, Lock 3/8             | 0.03      | 0.06      |
| 6    | 00P03  | 2   | HHCS 3/8-16 UNC x 3/4 Gr8    | 0.04      | 0.08      |
| 7    | 00P24  | 2   | Nut, Hex 5/8-11 UNC Gr8      | 0.09      | 0.18      |
| 8    | 01P49  | 2   | HHCS 5/8-11 UNC x 2-3/4 Gr8  | 0.27      | 0.54      |
| 9    | 01P51  | 8   | FHCS 3/8-16 UNC x 1 Br       | 0.03      | 0.25      |


**FIXED JIB SUB-ASSEMBLY**

### HEX HEAD CAP SCREW TORQUE SPECS

| BOLT<br>SIZE | SAE GR 8<br>W/ LOCK WASHER<br>(FT-LBS) |
|--------------|--|
| 3/8          | 53                                     |
| 7/16         | 85                                     |
| 1/2          | 130                                    |
| 5/8          | 258                                    |
| 3/4          | 459                                    |
| 7/8          | 739                                    |
| 1            | 1108                                   |

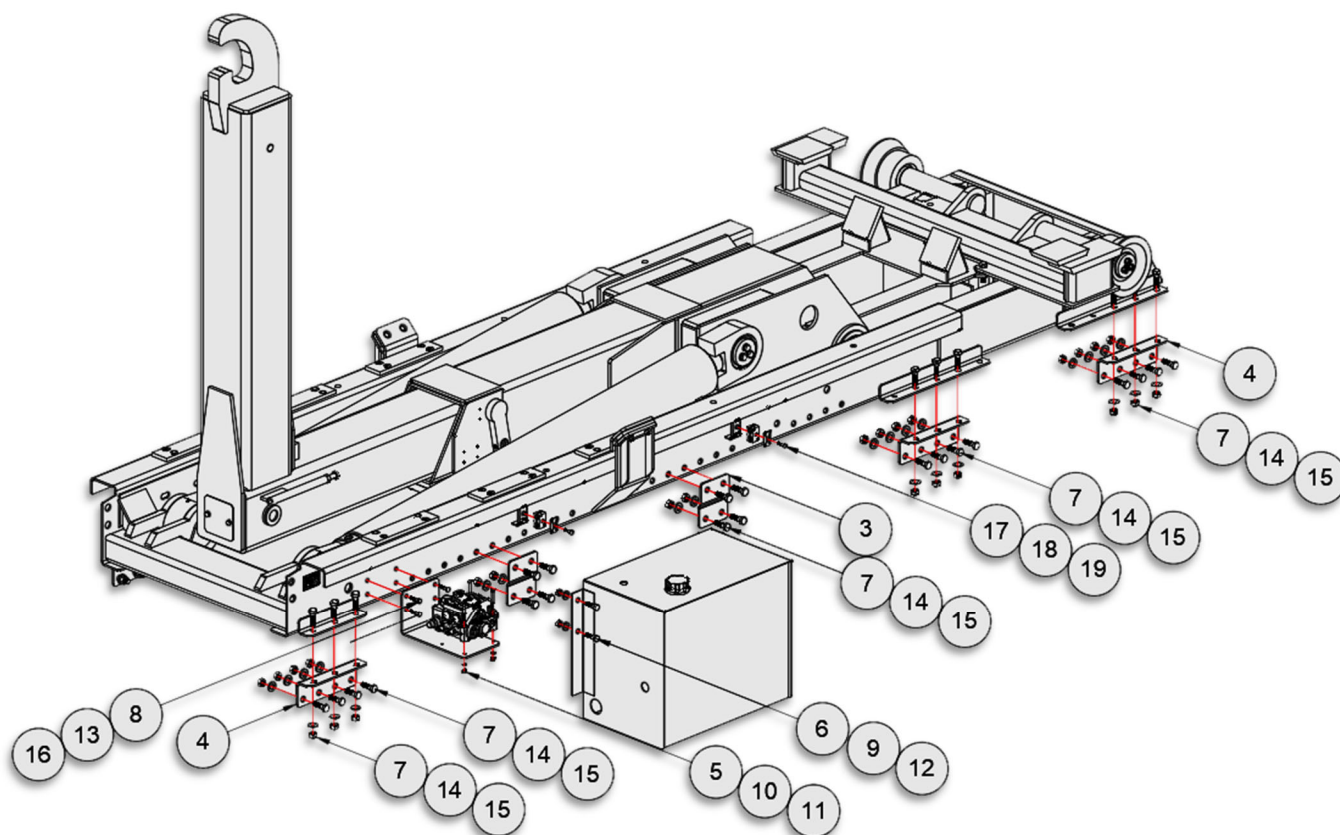
Note: Apply Loctite 243 (Blue) to all bolts.

### 44H88 – HOIST INSTALLATION KIT

SL-412

| ITEM | PART # | QTY | DESCRIPTION                  | WT-lb/ea. | WT-lb/all |
|------|--------|-----|------------------------------|-----------|-----------|
| 1    | 43H98  | 1   | Decal Assembly, SL-412       | 0.38      | 0.38      |
| 2    | 43H99  | 1   | Parts & Op, SL-412           | 1.00      | 1.00      |
| 3    | 89H46  | 4   | Mnt Bkt, 5-1/4X1/4x6-1/2     | 2.33      | 9.32      |
| 4    | 89H51  | 6   | Mnt Bkt, 2-7/16x3-3/4x11     | 4.14      | 24.84     |
| 5    | 00752  | 3   | Washer, Lock 5/16            | 0.03      | 0.09      |
| 6    | 00784  | 4   | Washer, Flat 7/8 HT          | 0.01      | 0.04      |
| 7    | 00785  | 58  | Washer, Flat 5/8 HT          | 0.07      | 4.06      |
| 8    | 00P14  | 4   | Nut, Hex 3/8-16 UNC Gr8      | 0.02      | 0.08      |
| 9    | 00P15  | 4   | HHCS 1/2-13 UNC x 1-3/4 Gr8  | 0.20      | 0.80      |
| 10   | 00P19  | 3   | HHCS 5/16-18 UNC x 2-3/4 Gr8 | 0.02      | 0.06      |
| 11   | 00P20  | 3   | Nut, Hex 5/16-18 UNC Gr8     | 0.01      | 0.03      |
| 12   | 00P35  | 4   | Nut, Lock 1/2-13 UNC GrC     | 0.05      | 0.20      |
| 13   | 00P44  | 4   | HHCS 3/8-16 UNC x 1-1/2 Gr8  | 0.07      | 0.28      |
| 14   | 00P55  | 58  | Nut, Lock 5/8-11 UNC Gr8     | 0.13      | 7.54      |
| 15   | 00P69  | 58  | HHCS 5/8-11 UNC x 2 Gr8      | 0.33      | 19.14     |
| 16   | 01P28  | 4   | Washer, Disc Lock 3/8 Pr     | 0.01      | 0.04      |
| 17   | 10P28  | 2   | HHCS 5-16-18 UNC x 1-1/4 ZP  | 0.03      | 0.06      |
| 18   | 10P29  | 2   | Cover Plate, Clamp 7/8       | 0.10      | 0.20      |
| 19   | 10P66  | 2   | Clamp Assy, Twin 5/8         | 0.04      | 0.08      |

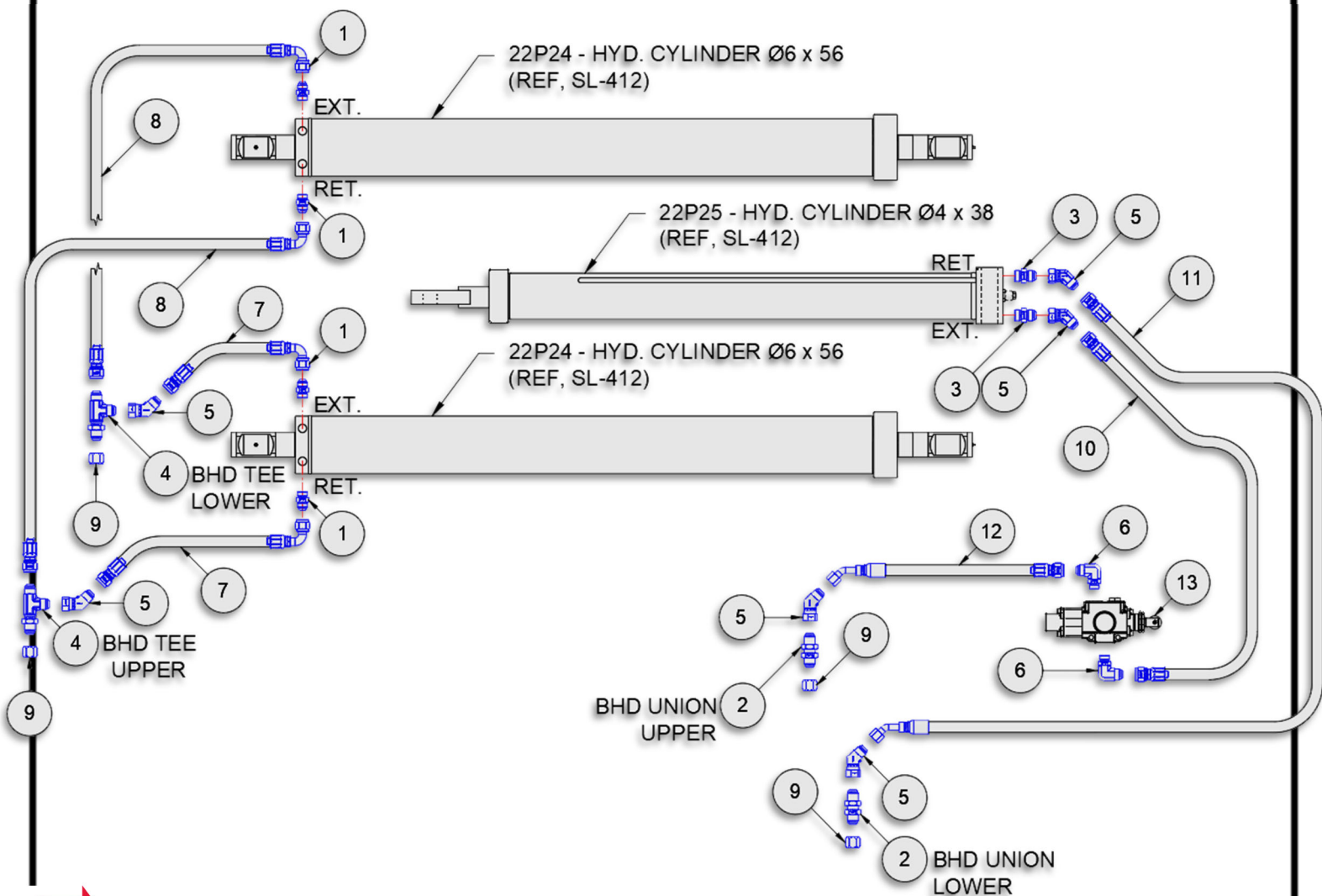
\* Item not shown.



**HOIST INSTALLATION KIT**

**91H17 – BASE CYLINDER CIRCUIT****SL-412**

| ITEM | PART # | QTY | DESCRIPTION                  | WT-lb/ea. | WT-lb/all |
|------|--------|-----|------------------------------|-----------|-----------|
| 1    | 10P39  | 4   | Adp Hyd 08MJ/08MB            | 0.10      | 0.40      |
| 2    | 11P02  | 2   | Adp Hyd 10MJ/10MJ BHD        | 0.40      | 0.80      |
| 3    | 11P06  | 2   | Adp Hyd 10MJ/10MB            | 0.40      | 0.80      |
| 4    | 11P27  | 2   | Adp Hyd 10MJ/10MJ/10MJ BHD   | 0.40      | 0.80      |
| 5    | 12P09  | 6   | Adp Hyd 10MJ/10FJ 45         | 0.30      | 1.80      |
| 6    | 12P69  | 2   | Adp Hyd 10MJ/08MB 90         | 0.30      | 0.60      |
| 7    | 12P86  | 2   | Hose Assy 20 08-10FJ/08FJ90  | 1.23      | 2.46      |
| 8    | 12P88  | 2   | Hose Assy 47 08-10FJ/08FJ90  | 2.24      | 4.48      |
| 9    | 13P15  | 4   | Adp Hyd 10FJ Cap             | 0.32      | 1.28      |
| 10   | 13P18  | 1   | Hose Assy 79 08-10FJ/10FJ    | 1.59      | 1.59      |
| 11   | 13P19  | 1   | Hose Assy 113 08-10FJ/10FJ45 | 2.22      | 2.22      |
| 12   | 13P21  | 1   | Hose Assy 32 08-10FJ/10FJ45  | 1.05      | 1.05      |
| 13   | 23P04  | 1   | Hyd Valve, 2-Way 08FB        | 5.20      | 5.20      |

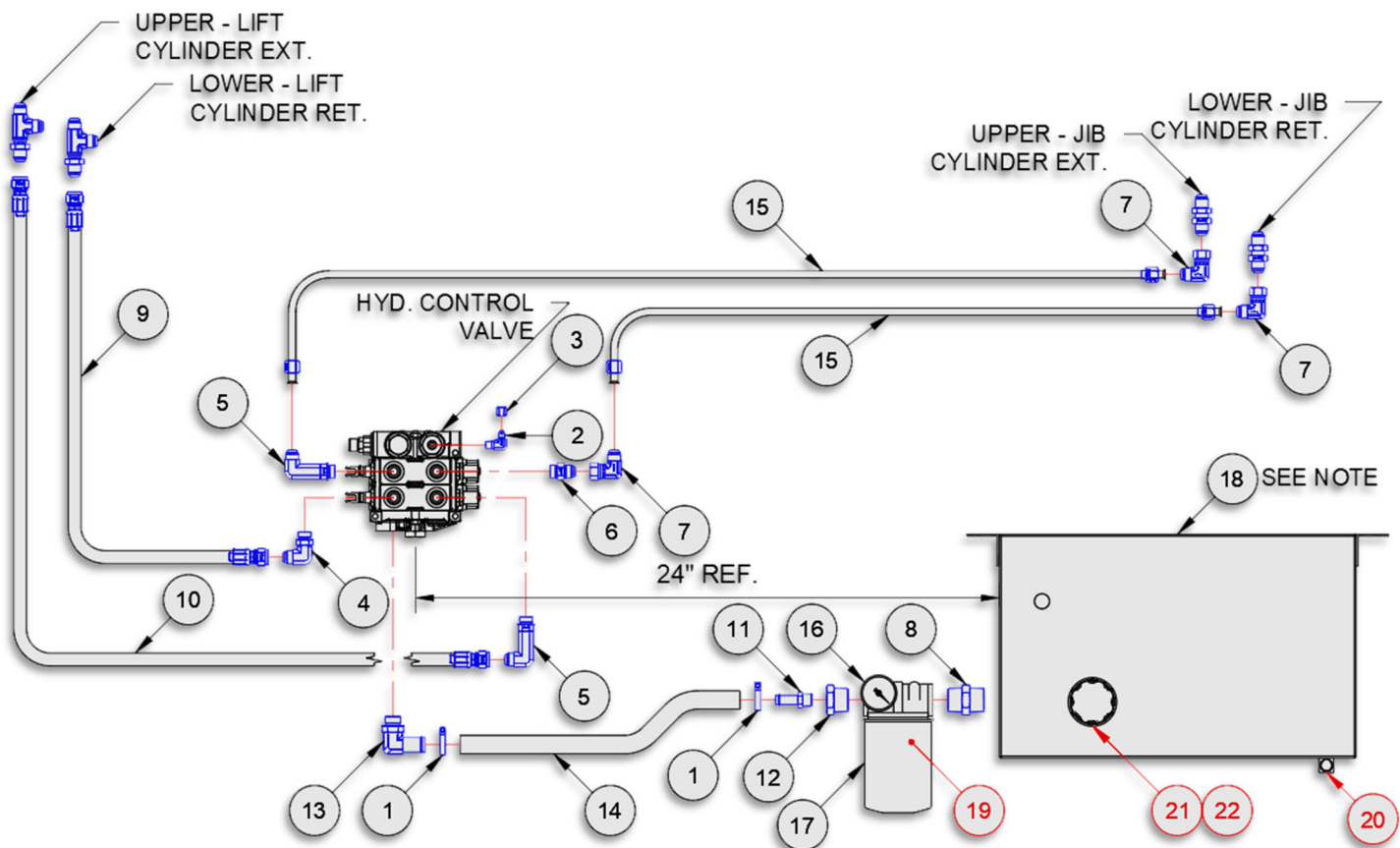
**BASE CYLINDER CIRCUIT**



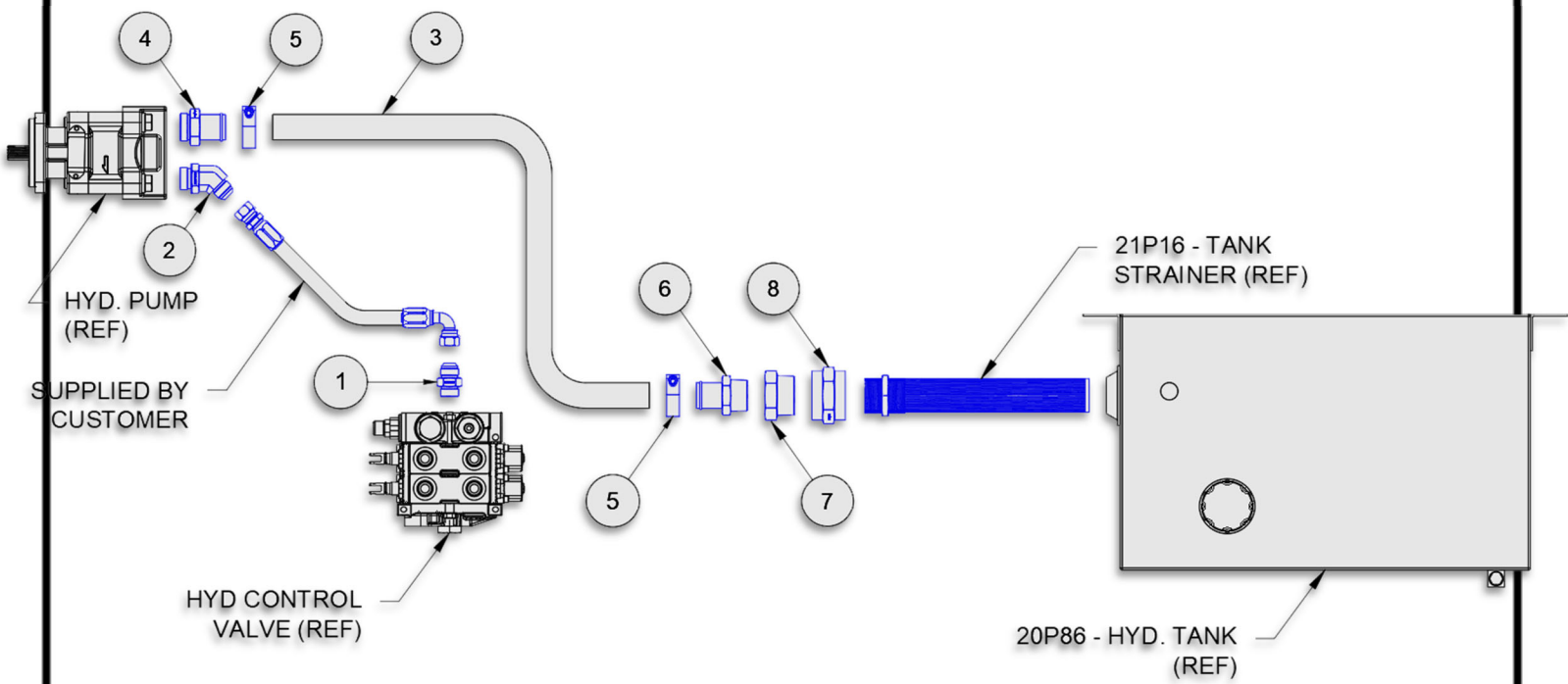
**91H18 – TANK CIRCUIT****SL-412**

| ITEM                      | PART # | QTY | DESCRIPTION                 | WT-lb/ea. | WT-lb/all |
|---------------------------|--------|-----|-----------------------------|-----------|-----------|
| 1                         | 10P21  | 2   | Clamp, T-Bolt Ø1-1/2        | 0.10      | 0.20      |
| 2                         | 10P37  | 1   | Adp Hyd 04MJ/04MP 90        | 0.30      | 0.30      |
| 3                         | 10P38  | 1   | Adp Hyd 04FJ Cap            | 0.10      | 0.10      |
| 4                         | 11P04  | 1   | Adp Hyd 10MJ/10MB 90        | 0.40      | 0.40      |
| 5                         | 11P05  | 2   | Adp Hyd 10MJ/10MB 90 LL     | 0.40      | 0.80      |
| 6                         | 11P06  | 1   | Adp Hyd 10MJ/10MB           | 0.40      | 0.40      |
| 7                         | 11P07  | 3   | Adp Hyd 10MJ/10FJ 90        | 0.40      | 1.20      |
| 8                         | 11P78  | 1   | Adp Hyd 20MP/20MP           | 0.70      | 0.70      |
| 9                         | 11P98  | 1   | Hose Assy 28 08-10FJ/10FJ   | 1.40      | 1.40      |
| 10                        | 12P19  | 1   | Adp Hyd 10HB/10MP           | 0.30      | 0.30      |
| 11                        | 12P20  | 1   | Adp Hyd 20MP/16FP           | 0.30      | 0.30      |
| 12                        | 12P26  | 1   | Adp Hyd 16HB/12MB 90        | 0.60      | 0.60      |
| 13                        | 12P31  | 1   | Hose 1 x 30 LP              | 1.65      | 1.65 </td |
| 14                        | 13P08  | 1   | Hose Assy 23 08-10FJ/10FJ   | 1.40      | 1.40      |
| 15                        | 13P20  | 2   | Hyd Tube, Rear 5/8 x 80-7/8 | 3.74      | 7.48      |
| 16                        | 20P61  | 1   | Hyd Filter Assy, 70 GPM     | 4.50      | 4.50      |
| 17                        | 20P64  | 1   | Hyd Filter Indicator Gauge  | 0.01      | 0.01      |
| 18                        | 20P86  | 1   | Hyd Tank, 30 Gallon LS      | 73.00     | 73.00     |
| <b>TANK SERVICE PARTS</b> |        |     |                             |           |           |
| 19                        | 20P66  | 1   | Hyd Filter Element (20P61)  | 2.00      |           |
| 20                        | 20P96  | 1   | Sight Gauge, Hyd Tank       | 0.70      |           |
| 21                        | 20P97  | 1   | Breather Cap Assy, Hyd Tank | 0.60      |           |
| 22                        | 21P16  | 1   | Hyd Strainer, 50 GPM        | 2.50      |           |

Note: Tank consists of tank weldment, tank mounted strainer, sight gauge, filler/breather cap, magnetic drain plug and port plugs.

**TANK CIRCUIT**

| 91H04 – PUMP CIRCUIT |        |     |                      |           | SL-412    |
|----------------------|--------|-----|----------------------|-----------|-----------|
| ITEM                 | PART # | QTY | DESCRIPTION          | WT-lb/ea. | WT-lb/all |
| 1                    | 10P90  | 1   | Adp Hyd 12MJ/12MB    | 0.40      | 0.40      |
| 2                    | 10P91  | 1   | Adp Hyd 12MJ/16MB 45 | 0.50      | 0.50      |
| 3                    | 11P71  | 1   | Hose 1-1/2 x 120 LP  | 9.60      | 9.60      |
| 4                    | 11P72  | 1   | Adp Hyd 24HB/20MB    | 0.40      | 0.40      |
| 5                    | 11P77  | 2   | Clamp, T-Bolt Ø2     | 0.20      | 0.40      |
| 6                    | 11P95  | 1   | Adp Hyd 24HB/24MP    | 0.40      | 0.40      |
| 7                    | 12P48  | 1   | Adp Hyd 32MP/24FP    | 0.60      | 0.60      |
| 8                    | 14P36  | 1   | Adp Hyd 32FP/32FP    | 1.51      | 1.51      |

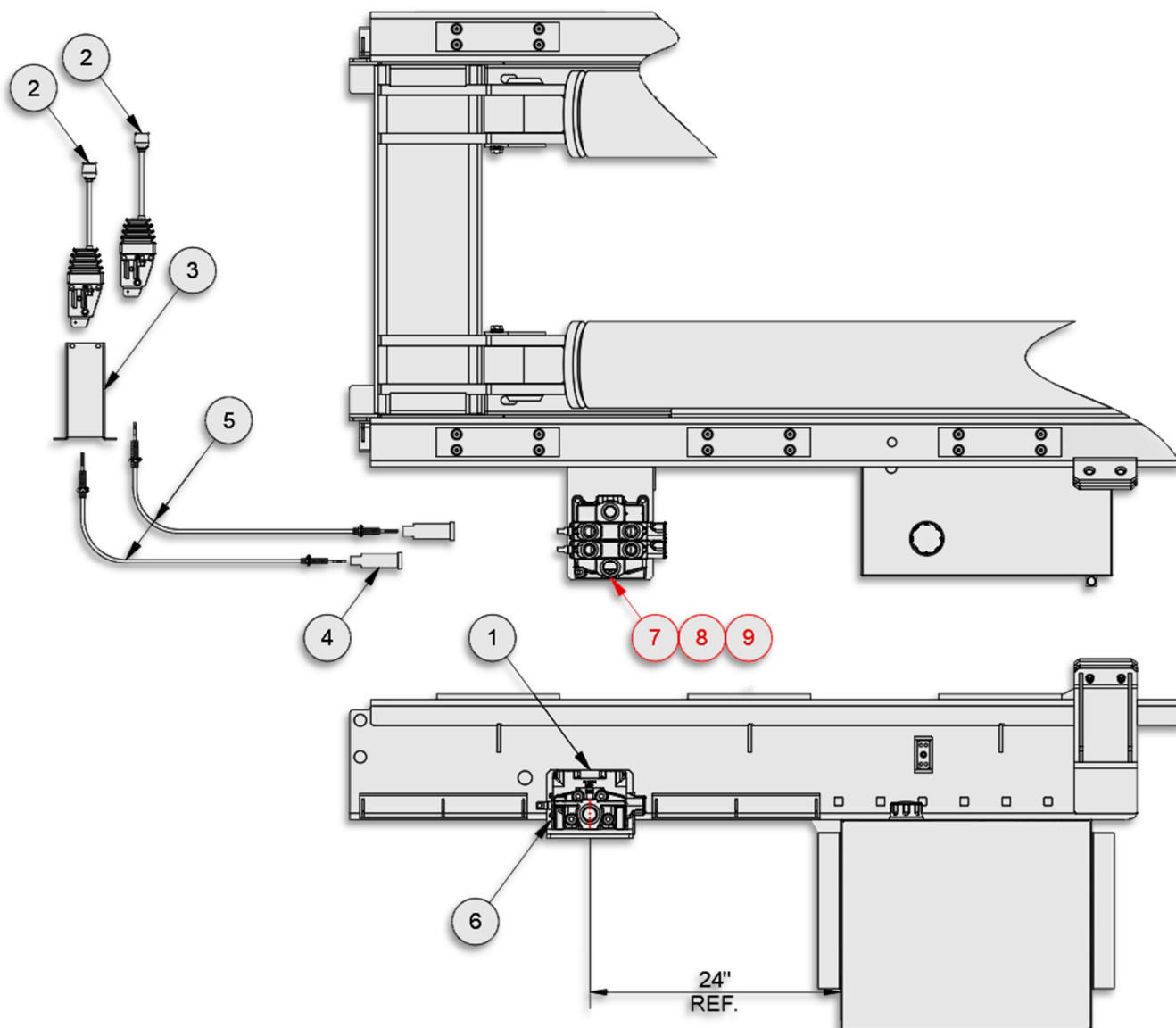


**PUMP CIRCUIT**



**90H57 – MANUAL CONTROLS, 2-SECTION****SL-412**

| ITEM                       | PART # | QTY | DESCRIPTION                | WT-lb/ea. | WT-lb/all |
|----------------------------|--------|-----|----------------------------|-----------|-----------|
| 1                          | 41H01  | 1   | Valve Mnt Bkt, 2-Sect V20  | 9.24      | 9.24      |
| 2                          | 20P08  | 2   | Control Handle, Cable      | 2.80      | 5.60      |
| 3                          | 20P09  | 1   | Control Console, 2-Sect    | 4.25      | 4.25      |
| 4                          | 20P10  | 2   | Bonnet Kit, V20            | 0.50      | 1.00      |
| 5                          | 20P40  | 2   | Control Cable Assy, 96 STD | 1.98      | 3.96      |
| 6                          | 20P88  | 1   | Hyd Valve, 2-Sect 3500 V20 | 27.00     | 27.00     |
| <b>VALVE SERVICE PARTS</b> |        |     |                            |           |           |
| 7                          | 21P04  | 1   | Relief Cartridge, V20 3500 | 0.50      |           |
| 8                          | 22P20  | 2   | Seal Kit, Sect V20         | 0.10      |           |
| 9                          | 22P21  | 2   | Seal Kit, Sect & Spool V20 | 0.20      |           |

**MANUAL CONTROLS**

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### HEX HEAD CAP SCREW TORQUE SPECS

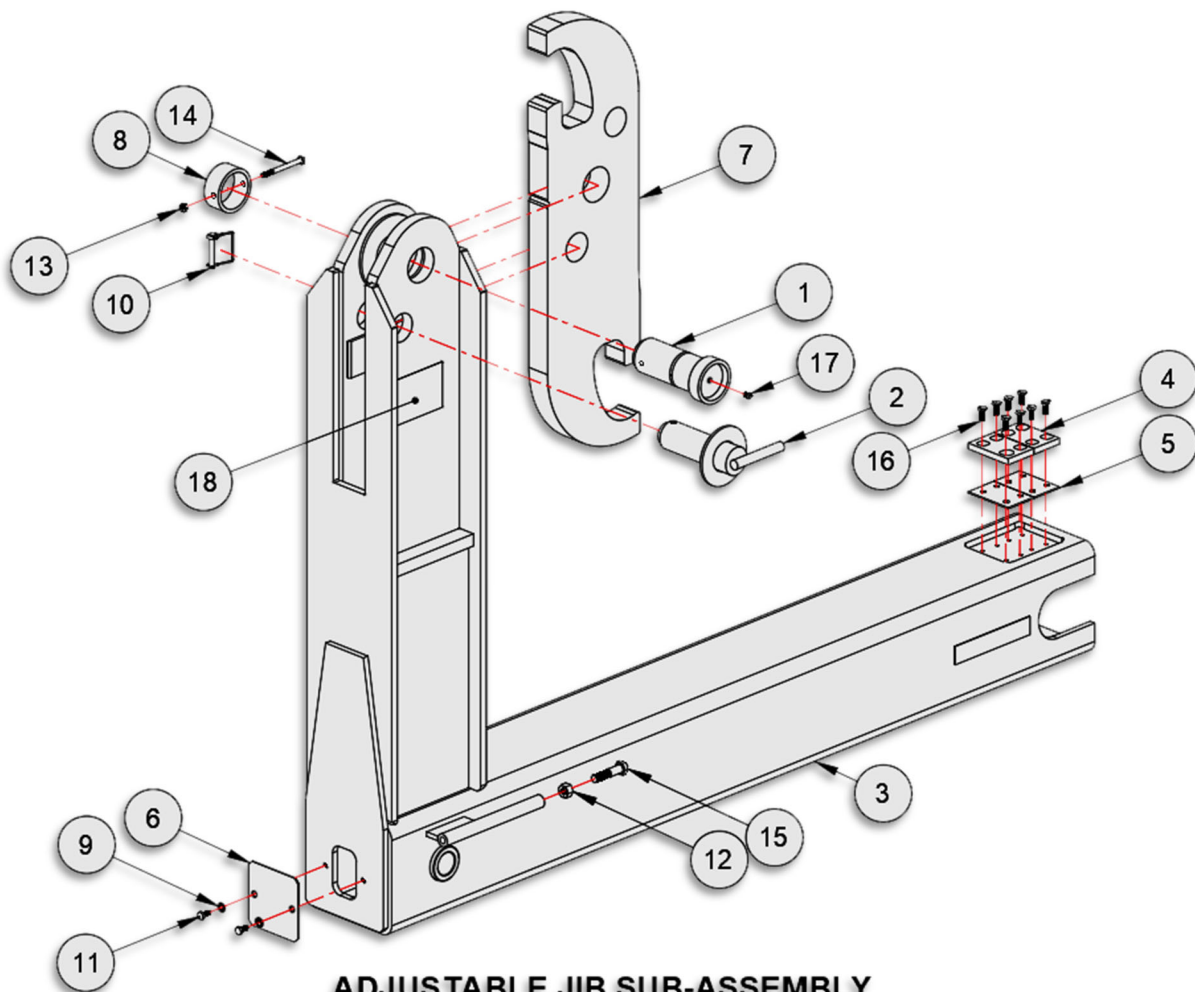
| BOLT<br>SIZE | SAE GR 8<br>W/ LOCK WASHER<br>(FT-LBS) |
|--------------|--|
| 3/8          | 53                                     |
| 7/16         | 85                                     |
| 1/2          | 130                                    |
| 5/8          | 258                                    |
| 3/4          | 459                                    |
| 7/8          | 739                                    |
| 1            | 1108                                   |

Note: Apply Loctite 243 (Blue) to all bolts.

### 43H64 – ADJUSTABLE JIB SUB-ASSEMBLY

**SL-412**

| ITEM | PART # | QTY | DESCRIPTION                  | WT-lb/ea. | WT-lb/all |
|------|--------|-----|------------------------------|-----------|-----------|
| 1    | 43H10  | 1   | Pin, Hook Pvt 2-3/4 x 5-3/8  | 12.38     | 12.38     |
| 2    | 43H11  | 1   | Pin, Hook Lock 2-1/4 x 5-1/8 | 9.68      | 9.68      |
| 3    | 43H65  | 1   | Adj Jib Wdmt 54/62, 412      | 741.07    | 741.07    |
| 4    | 60H11  | 2   | Wear Pad, 2-3/4x1/2x4-1/4    | 0.21      | 0.42      |
| 5    | 61H90  | 2   | Shim, WP 2-3/4 x 1/8 x 4-1/4 | 0.40      | 0.80      |
| 6    | 62H11  | 1   | Cover, Jib 5-1/4x11GAx5-1/4  | 0.90      | 0.90      |
| 7    | 86H95  | 1   | Hook, Adj Jib 54/62          | 146.50    | 146.50    |
| 8    | 86H98  | 1   | Lock Tube, Jib 3-1/2ODx1-1/2 | 1.20      | 1.20      |
| 9    | 00755  | 2   | Washer, Lock 3/8             | 0.03      | 0.06      |
| 10   | 53586  | 1   | Safety Snap Pin, 3/8 x 2-1/2 | 0.14      | 0.14      |
| 11   | 00P03  | 2   | HHCS 3/8-16 UNC x 3/4 Gr8    | 0.04      | 0.08      |
| 12   | 00P24  | 2   | Nut, Hex 5/8-11 UNC Gr8      | 0.09      | 0.18      |
| 13   | 00P34  | 1   | Nut, Lock 3/8-16 UNC GrC     | 0.02      | 0.02      |
| 14   | 00P99  | 1   | HHCS 3/8-16 UNC x 4 Gr8      | 0.22      | 0.22      |
| 15   | 01P49  | 2   | HHCS 5/8-11 UNC x 2-3/4 Gr8  | 0.27      | 0.54      |
| 16   | 01P51  | 8   | FHCS 3/8-16 UNC x 1 Br       | 0.03      | 0.25      |
| 17   | 90P03  | 1   | Grease Zerk, 1/8-27 NPT Str  | 0.01      | 0.01      |
| 18   | 90P94  | 2   | Decal, Adj Jib Op 54/62      | 0.01      | 0.02      |

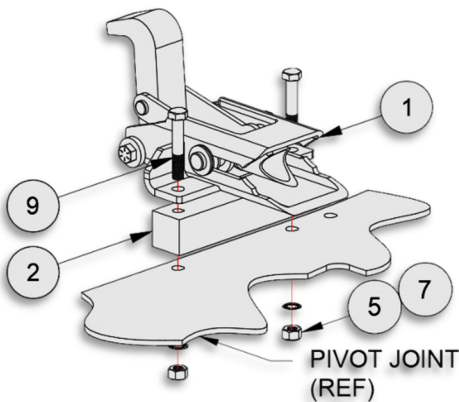
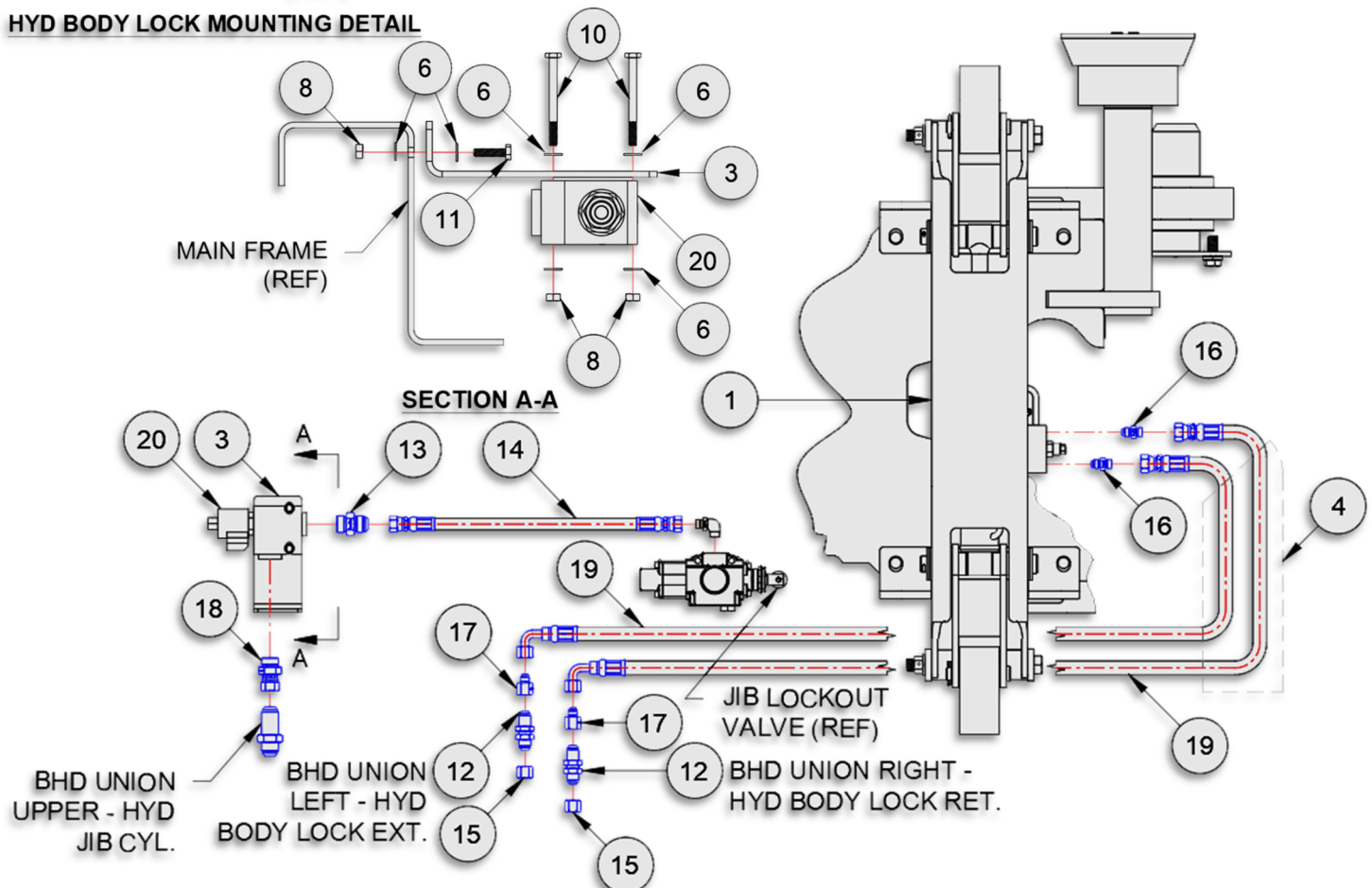


**ADJUSTABLE JIB SUB-ASSEMBLY**

**HEX HEAD CAP SCREW  
TORQUE SPECS**

| BOLT<br>SIZE | SAE GR 8<br>W/ LOCK WASHER<br>(FT-LBS) |
|--------------|--|
| 3/8          | 53                                     |
| 7/16         | 85                                     |
| 1/2          | 130                                    |
| 5/8          | 258                                    |
| 3/4          | 459                                    |
| 7/8          | 739                                    |
| 1            | 1108                                   |

Note: Apply Loctite 243 (Blue) to all bolts.

**HYD BODY LOCK MOUNTING DETAIL****CYL CIRCUIT, BL 412 STD****91H58 – CYLINDER CIRCUIT, BL 412 STD****SL-412**

| ITEM | PART # | QTY | DESCRIPTION                  | WT-lb/ea. | WT-lb/all |
|------|--------|-----|------------------------------|-----------|-----------|
| 1    | 44H79  | 1   | U-Lock Assy, HD              | 116.96    | 116.96    |
| 2    | 89H41  | 2   | Shim, BL Mnt 1-1/2           | 13.15     | 26.30     |
| 3    | 89H45  | 1   | Valve Mnt Bkt, Solenoid HD   | 1.13      | 1.13      |
| 4    | 90H74  | 1   | Nylon Hose Sleeve x 60"      | 0.25      | 0.25      |
| 5    | 00767  | 4   | Washer, Lock 5/8             | 0.04      | 0.16      |
| 6    | 00770  | 8   | Washer, Flat 1/4             | 0.01      | 0.08      |
| 7    | 00P24  | 4   | Nut, Hex 5/8-11 UNC Gr8      | 0.09      | 0.36      |
| 8    | 00P51  | 4   | Nut, Lock 1/4-20 UNC Gr8     | 0.01      | 0.04      |
| 9    | 00P85  | 4   | HHCS 5/8-11 UNC x 3-1/2 Gr8  | 0.37      | 1.48      |
| 10   | 01P41  | 2   | HHCS 1/4-20 UNC x 2-3/4 Gr8  | 0.04      | 0.08      |
| 11   | 01P56  | 2   | HHCS 1/4-20 UNC x 1 Gr8      | 0.02      | 0.04      |
| 12   | 10P43  | 2   | Adp Hyd 08MJ/08MJ BHD        | 0.30      | 0.60      |
| 13   | 10P90  | 1   | Adp Hyd 12MJ/12MB            | 0.40      | 0.40      |
| 14   | 11P25  | 1   | Hose Assy 30 08-10FJ/10FJ    | 1.50      | 1.50      |
| 15   | 13P14  | 2   | Adp Hyd 08FJ Cap             | 0.32      | 0.64      |
| 16   | 13P77  | 2   | Adp Hyd 06MJ/06MP .062 Rstr. | 0.30      | 0.60      |
| 17   | 13P87  | 2   | Adp Hyd 08FJ/06MJ            | 0.30      | 0.60      |
| 18   | 14P01  | 1   | Adp Hyd 12MB/10FJ            | 0.34      | 0.34      |
| 19   | 14P16  | 2   | Hose Assy 85 06-06FJ/06FJ90  | 5.08      | 10.16     |
| 20   | 23P02  | 1   | Solenoid Valve, U-Lock       | 2.85      | 2.85      |

### HEX HEAD CAP SCREW TORQUE SPECS

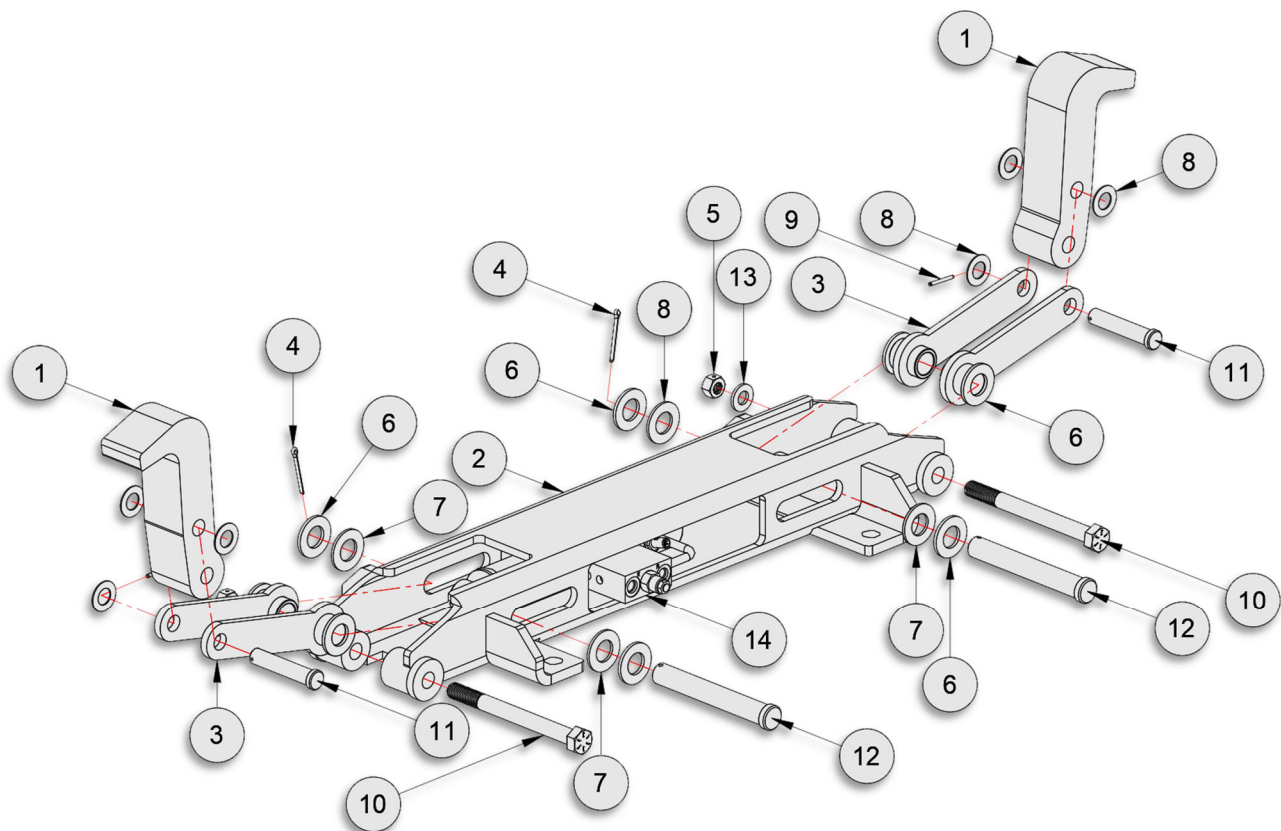
| BOLT<br>SIZE | SAE GR 8<br>W/ LOCK WASHER<br>(FT-LBS) |
|--------------|--|
| 3/8          | 53                                     |
| 7/16         | 85                                     |
| 1/2          | 130                                    |
| 5/8          | 258                                    |
| 3/4          | 459                                    |
| 7/8          | 739                                    |
| 1            | 1108                                   |

Note: Apply Loctite 243 (Blue) to  
all bolts.

### 44H79 – U-LOCK ASSEMBLY

SL-412

| ITEM | PART<br># | QTY | DESCRIPTION                   | WT-<br>lb/ea. | WT-lb/all |
|------|-----------|-----|-------------------------------|---------------|-----------|
| 1    | 26H98     | 2   | Prong, U-Lock HD              | 14.20         | 28.4      |
| 2    | 44H80     | 1   | U-Lock Wdmt, HD               | 48.62         | 48.62     |
| 3    | 44H81     | 4   | Linkage Wdmt, U-Lock HD       | 1.89          | 7.56      |
| 4    | 00837     | 2   | Pin, Cotter 3/16 Dia x 2      | 0.02          | 0.04      |
| 5    | 00P72     | 2   | Nut, Lock 3/4-10 UNC Gr8      | 0.13          | 0.26      |
| 6    | 01P87     | 8   | Washer, ZP 1 Dia              | 0.10          | 0.8       |
| 7    | 01P89     | 4   | Washer, Nylon 1 Dia           | 0.01          | 0.04      |
| 8    | 01P91     | 6   | Washer, SS 3/4 Dia            | 0.02          | 0.12      |
| 9    | 01P92     | 2   | Pin, Sltd Spring 5/32x1-1/2ZP | 0.01          | 0.02      |
| 10   | 01P94     | 2   | HHCS 3/4-10 UNC x 8 Gr8       | 1.12          | 2.24      |
| 11   | 01P95     | 2   | Pin, Clevis 3/4 x 3-1/2       | 0.52          | 1.04      |
| 12   | 01P96     | 2   | Pin, Clevis 1 x 6-11/16       | 1.65          | 3.3       |
| 13   | 02P04     | 2   | Washer, Flat – 3/4 Dia DS Gr8 | 0.04          | 0.08      |
| 14   | 22P93     | 1   | Hdy Cyl 2x1x6, HD             | 14.14         | 14.14     |



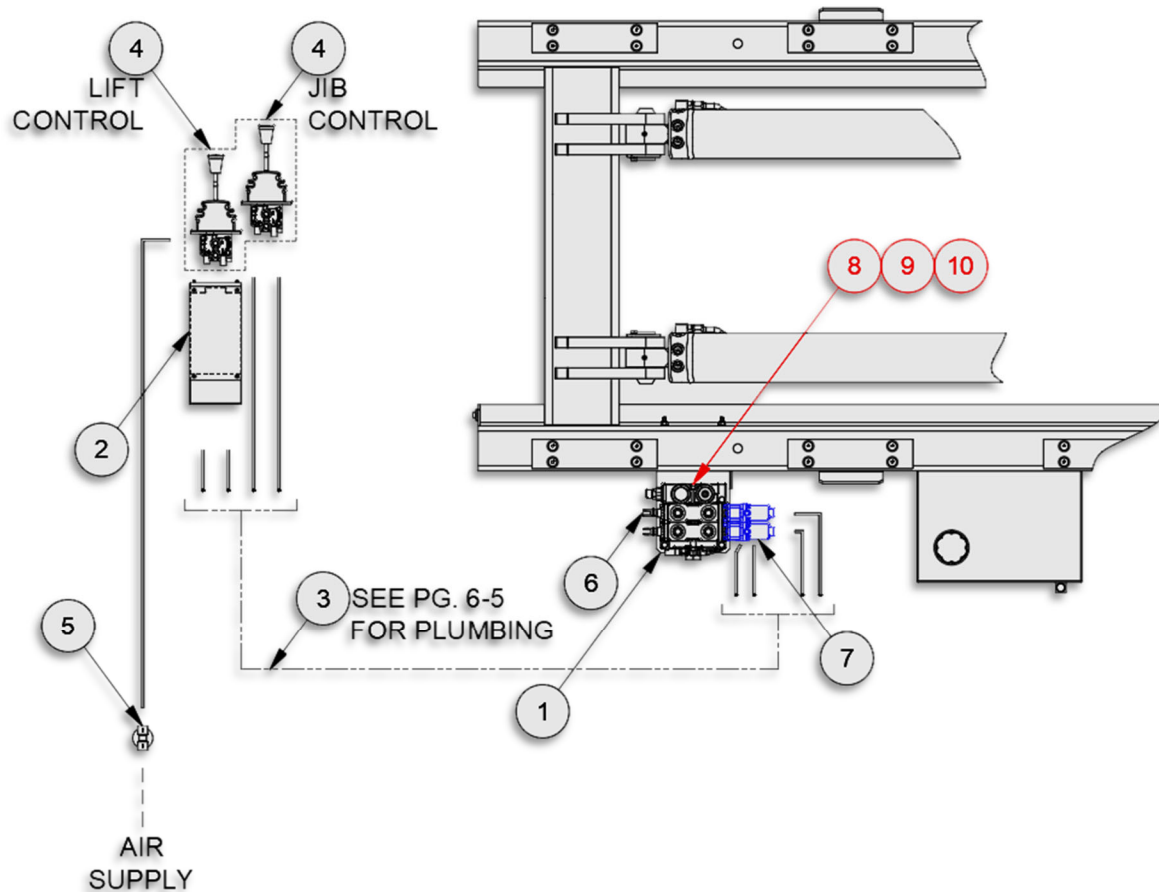
### U-LOCK ASSEMBLY

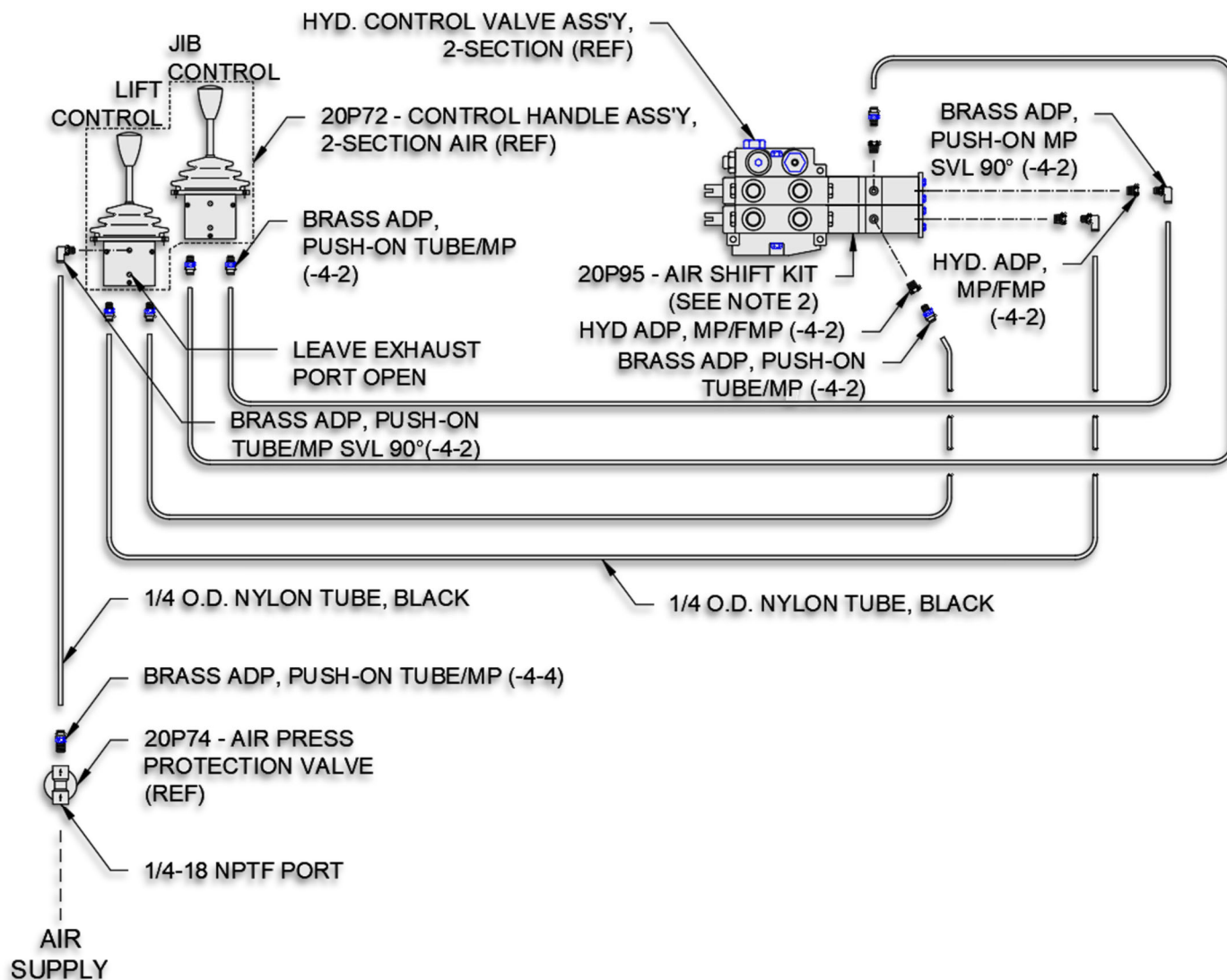
**90H58 – AIR CONTROLS, 2-SECTION****SL-412**

| ITEM | PART # | QTY | DESCRIPTION                        | WT-lb/ea. | WT-lb/all |
|------|--------|-----|------------------------------------|-----------|-----------|
| 1    | 10H51  | 1   | Valve Mount Bracket                | 8.20      | 8.20      |
| 2    | 51H27  | 1   | Air Cntrl Handle Console, -Section | 4.20      | 4.20      |
| 3    | 12P94  | 1   | Air Line Kit                       | 1.40      | 1.40      |
| 4    | 20P39  | 1   | Hyd Valve, 2 Sect 2800 V20         | 27.00     | 27.00     |
| 5    | 20P72  | 1   | Control Handle, 2 Sect Air         | 1.60      | 1.60      |
| 6    | 20P74  | 1   | Air Pressure Protection Valve      | 0.60      | 0.60      |
| 7    | 20P95  | 2   | Air Shift Kit, V20                 | 1.40      | 2.80      |

**VALVE SERVICE PARTS**

|    |       |   |                            |      |  |
|----|-------|---|----------------------------|------|--|
| 8  | 21P04 | 1 | Relief Cartridge, V20 3500 | 0.50 |  |
| 9  | 22P20 | 2 | Seal Kit, Sect V20         | 0.10 |  |
| 10 | 22P21 | 2 | Seal Kit, Sect & Spool V20 | 0.20 |  |

**AIR CONTROLS, 2-SECTION**



**AIR CIRCUIT PLUMBING DIAGRAM, 2-SECTION**

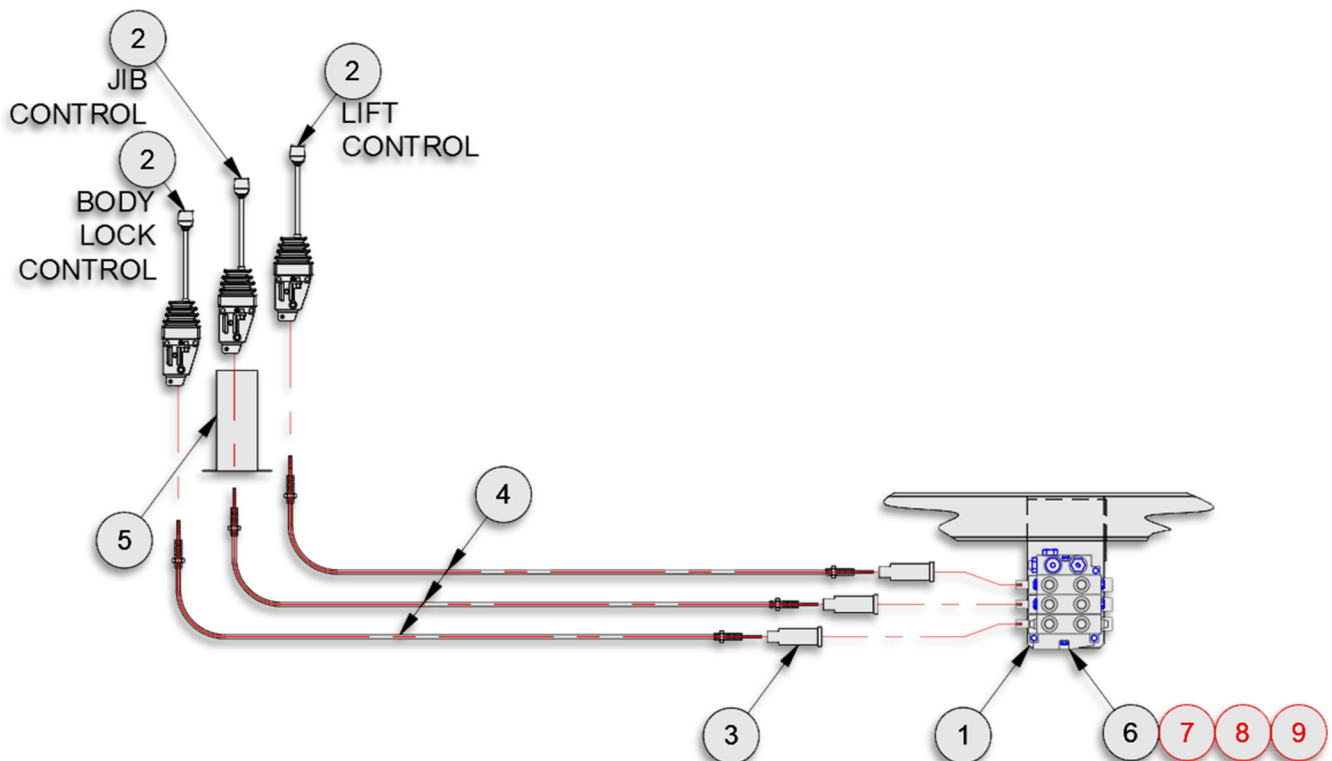
**NOTE:**

1. FITTING AND TUBING SHOWN ARE PART OF THE 12P94 AIR LINE KIT WHICH CONTAINS FITTINGS FOR MULTIPLE HOIST/PLUMBING CONFIGURATIONS. NOT ALL FITTINGS MAY BE UTILIZED.
2. THE 20P95 AIR SHIFT KITS ARE TO BE INSTALLED ON THE HYD. CONTROL VALVE BY THE HOIST INSTALLER. PREFERENCE INSTALLTION INSTRUCTIONS INCLUDED WITH THE AIR SHIFT KIT.



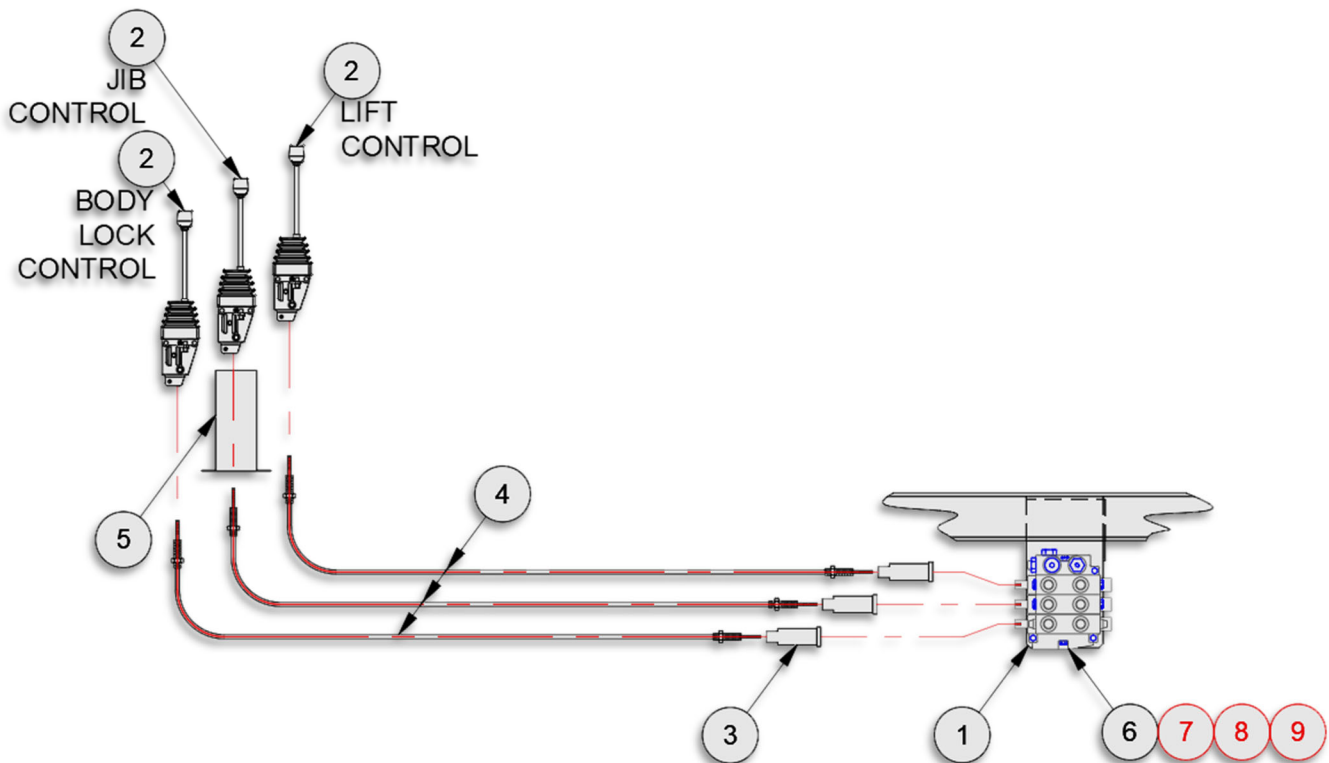
**90H68 – MANUAL CONTROLS, 3-SECTION****SL-412**

| ITEM                       | PART # | QTY | DESCRIPTION                | WT-lb/ea. | WT-lb/all |
|----------------------------|--------|-----|----------------------------|-----------|-----------|
| 1                          | 41H83  | 1   | Valve Mnt Bkt, 3-Sect V20  | 7.80      | 7.80      |
| 2                          | 20P08  | 3   | Control Handle, Cable      | 2.80      | 8.40      |
| 3                          | 20P10  | 3   | Bonnet Kit, V20            | 0.50      | 1.50      |
| 4                          | 20P40  | 3   | Control Cable Assy, 96 STD | 1.98      | 5.94      |
| 5                          | 20P78  | 1   | Control Console, 3-Sect    | 4.80      | 4.80      |
| 6                          | 21P89  | 1   | Hyd Valve, 3-Sect 3500 V20 | 35.50     | 35.50     |
| <b>VALVE SERVICE PARTS</b> |        |     |                            |           |           |
| 7                          | 21P04  | 1   | Relief Cartridge, V20 3500 | 0.50      |           |
| 8                          | 22P20  | 3   | Seal Kit, Sect V20         | 0.10      |           |
| 9                          | 22P21  | 3   | Seal Kit, Sect & Spool V20 | 0.20      |           |

**MANUAL CONTROLS, 3-SECTION**

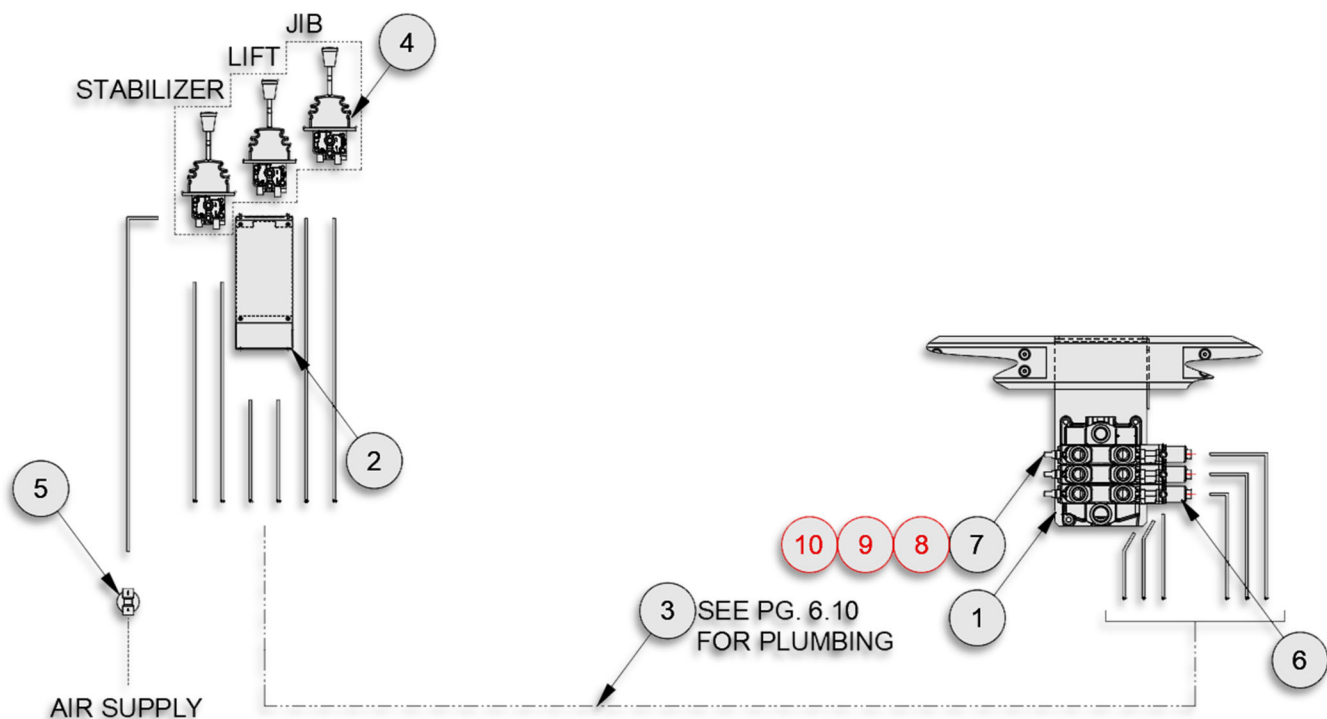
**91H64 – MANUAL CONTROLS, BL 3-SECTION****SL-412**

| ITEM                       | PART # | QTY | DESCRIPTION                   | WT-lb/ea. | WT-lb/all |
|----------------------------|--------|-----|-------------------------------|-----------|-----------|
| 1                          | 41H83  | 1   | Valve Mnt Bkt, 3-Sect V20     | 7.80      | 7.80      |
| 2                          | 20P08  | 3   | Control Handle, Cable         | 2.80      | 8.40      |
| 3                          | 20P10  | 3   | Bonnet Kit, V20               | 0.50      | 1.50      |
| 4                          | 20P40  | 3   | Control Cable Assy, 96 STD    | 1.98      | 5.94      |
| 5                          | 20P78  | 1   | Control Console, 3-Sect       | 4.80      | 4.80      |
| 6                          | 23P06  | 1   | Hyd Valve, 3-Sect 3500 V20 WR | 45.00     | 45.00     |
| <b>VALVE SERVICE PARTS</b> |        |     |                               |           |           |
| 7                          | 21P04  | 1   | Relief Cartridge, V20 3500    | 0.50      |           |
| 8                          | 22P20  | 3   | Seal Kit, Sect V20            | 0.10      |           |
| 9                          | 22P21  | 3   | Seal Kit, Sect & Spool V20    | 0.20      |           |

**MANUAL CONTROLS, BL 3-SECTION**

**90H68 – AIR CONTROLS, 3-SECTION****SL-412**

| ITEM                       | PART # | QTY | DESCRIPTION                   | WT-lb/ea. | WT-lb/all |
|----------------------------|--------|-----|-------------------------------|-----------|-----------|
| 1                          | 41H83  | 1   | Valve Mnt Bkt, 3-Sect V20     | 7.80      | 7.80      |
| 2                          | 51H37  | 1   | Air Ctrl Console, 3-Sect      | 4.90      | 4.90      |
| 3                          | 12P94  | 1   | Air Line Kit                  | 1.40      | 1.40      |
| 4                          | 20P73  | 1   | Control Handle, 3-Sect Air    | 2.40      | 2.40      |
| 5                          | 20P74  | 1   | Air Pressure Protection Valve | 0.60      | 0.60      |
| 6                          | 20P95  | 3   | Air Shift Kit, V20            | 1.40      | 4.20      |
| 7                          | 21P89  | 1   | Hyd Valve, 3-Sect 3500 V20    | 35.50     | 35.50     |
| <b>VALVE SERVICE PARTS</b> |        |     |                               |           |           |
| 8                          | 21P04  | 1   | Relief Cartridge, V20 3500    | 0.50      |           |
| 9                          | 22P20  | 3   | Seal Kit, Sect V20            | 0.10      |           |
| 10                         | 22P21  | 3   | Seal Kit, Sect & Spool V20    | 0.20      |           |

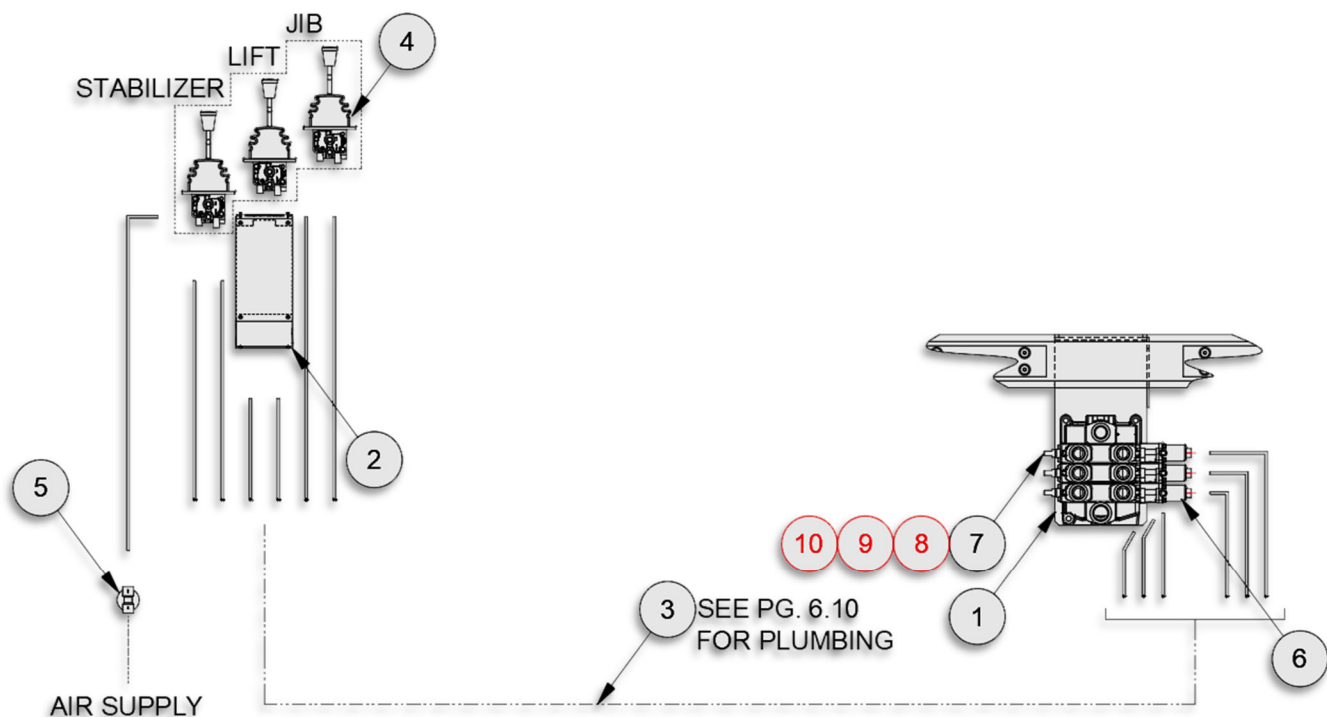
**AIR CONTROLS, 3-SECTION**

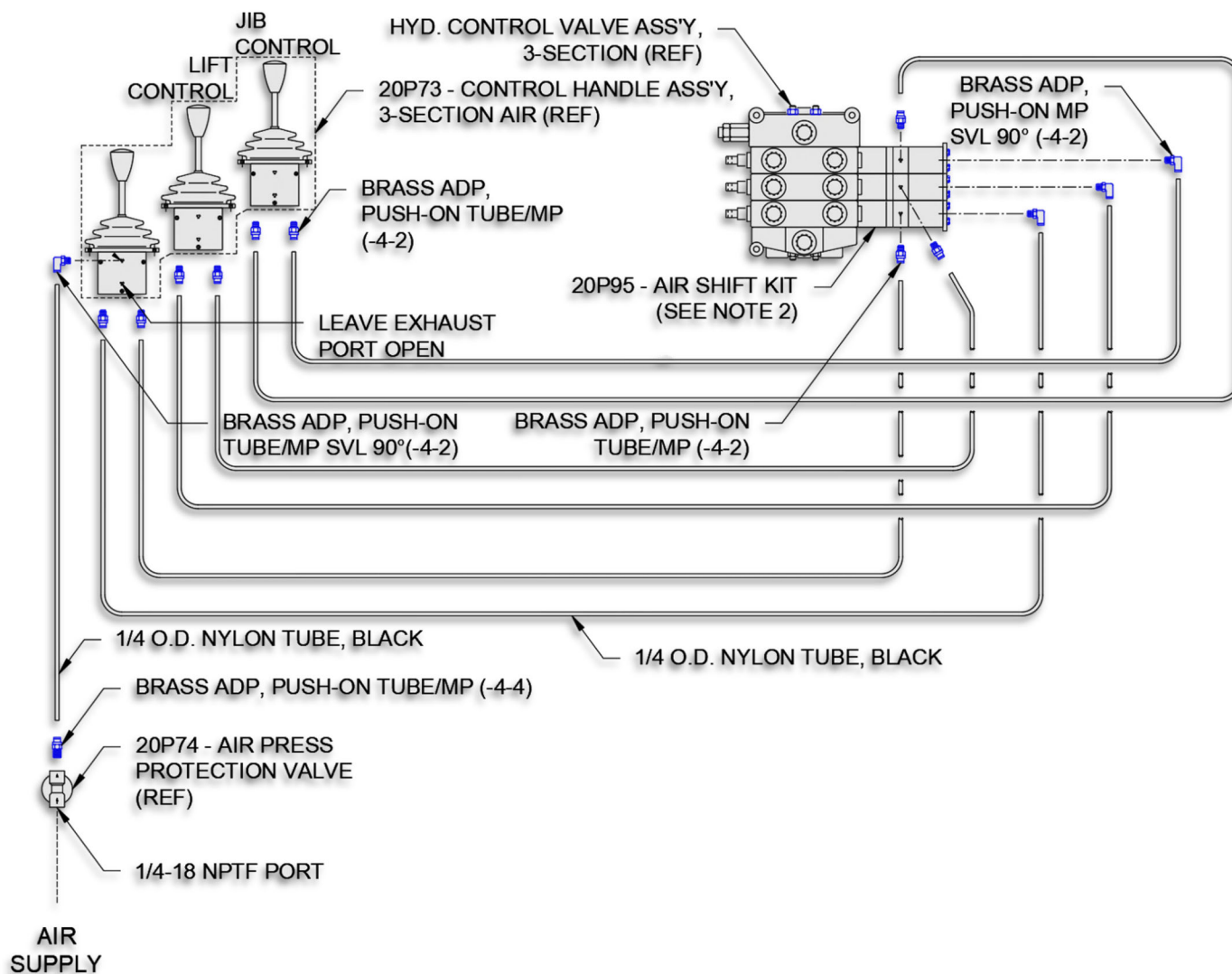
**91H65 – AIR CONTROLS, BL 3-SECTION****SL-412**

| ITEM | PART # | QTY | DESCRIPTION                   | WT-lb/ea. | WT-lb/all |
|------|--------|-----|-------------------------------|-----------|-----------|
| 1    | 41H83  | 1   | Valve Mnt Bkt, 3-Sect V20     | 7.80      | 7.80      |
| 2    | 51H37  | 1   | Air Ctrl Console, 3-Sect      | 4.90      | 4.90      |
| 3    | 12P94  | 1   | Air Line Kit                  | 1.40      | 1.40      |
| 4    | 20P73  | 1   | Control Handle, 3-Sect Air    | 2.40      | 2.40      |
| 5    | 20P74  | 1   | Air Pressure Protection Valve | 0.60      | 0.60      |
| 6    | 20P95  | 3   | Air Shift Kit, V20            | 1.40      | 4.20      |
| 7    | 23P06  | 1   | Hyd Valve, 3-Sect 3500 V20 WR | 45.00     | 45.00     |

**VALVE SERVICE PARTS**

|    |       |   |                            |      |  |
|----|-------|---|----------------------------|------|--|
| 8  | 21P04 | 1 | Relief Cartridge, V20 3500 | 0.50 |  |
| 9  | 22P20 | 3 | Seal Kit, Sect V20         | 0.10 |  |
| 10 | 22P21 | 3 | Seal Kit, Sect & Spool V20 | 0.20 |  |

**AIR CONTROLS, BL 3-SECTION**



**AIR CIRCUIT PLUMBING DIAGRAM, 3-SECTION**

**NOTE:**

1. FITTING AND TUBING SHOWN ARE PART OF THE 12P94 AIR LINE KIT WHICH CONTAINS FITTINGS FOR MULTIPLE HOIST/PLUMBING CONFIGURATIONS. NOT ALL FITTINGS MAY BE UTILIZED.
2. THE 20P95 AIR SHIFT KITS ARE TO BE INSTALLED ON THE HYD. CONTROL VALVE BY THE HOIST INSTALLER. PREFERENCE INSTALLATION INSTRUCTIONS INCLUDED WITH THE AIR SHIFT KIT.

**TANK SERVICE PARTS**

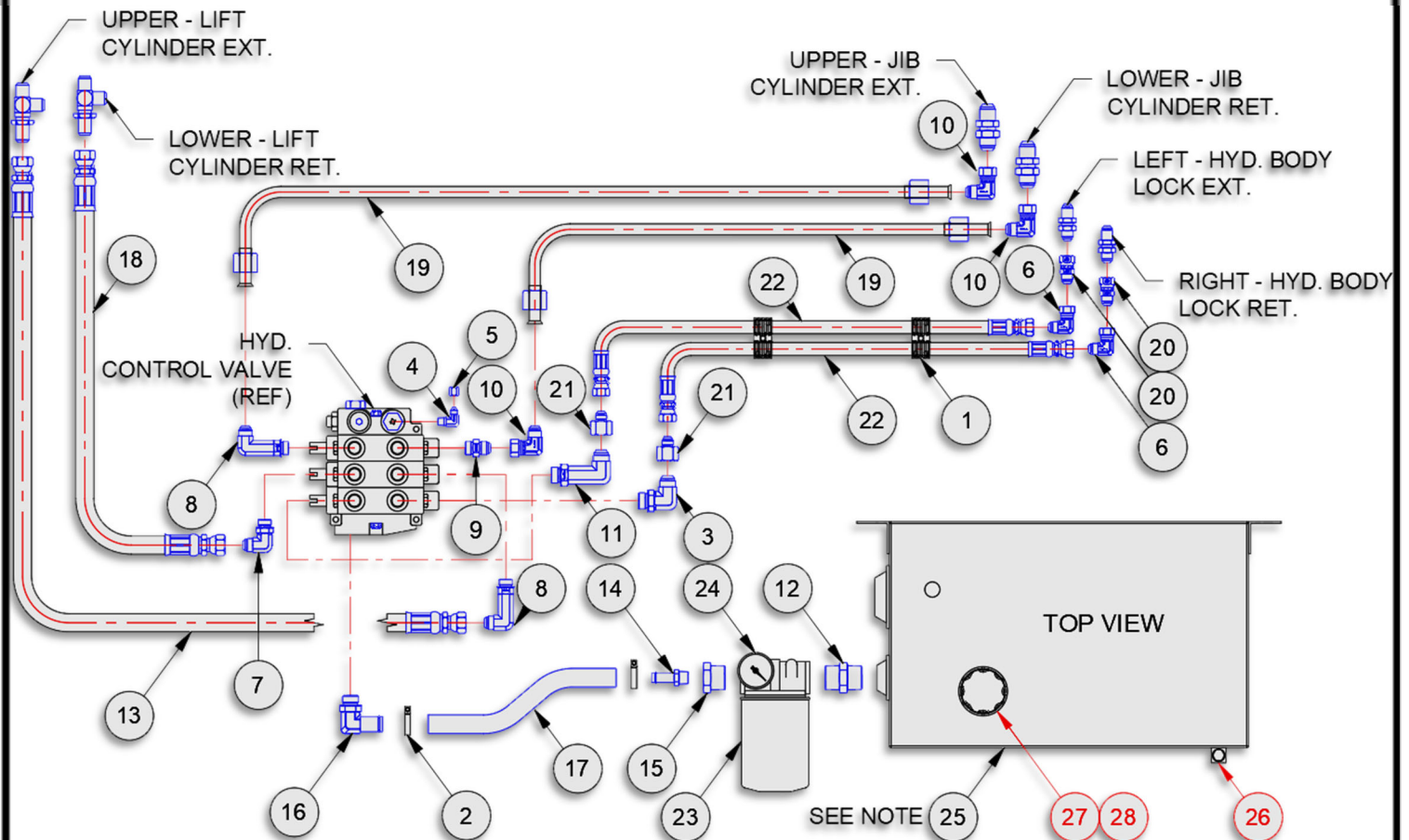
| ITEM | PART # | QTY | DESC.                       |
|------|--------|-----|-----------------------------|
| 26   | 20P96  | 1   | Sight Gauge, Hyd Tank       |
| 27   | 20P97  | 1   | Breather Cap Assy, Hyd Tank |
| 28   | 21P16  | 1   | Hyd Strainer, 50 GPM        |

**NOTE:**

TANK CONSISTS OF TANK WELDMENT, TANK MOUNTED STRAINER, SIGHT GAUGE, FILLER/BREATHING CAP, MAGNETIC DRAIN PLUG AND PORT PLUGS.

**91H68 – TANK CIRCUIT, 3-SECTION****SL-412**

| ITEM | PART # | QTY | DESCRIPTION                 | WT-lb/ea. | WT-lb/all |
|------|--------|-----|-----------------------------|-----------|-----------|
| 1    | 91H74  | 2   | Twin Clamp Assy, 5/8-7/8    | 0.29      | 0.58      |
| 2    | 10P21  | 2   | Clamp, T-Bolt Ø1-1/2        | 0.10      | 0.20      |
| 3    | 10P36  | 1   | Adp Hyd 12MJ/12MB 90        | 0.30      | 0.30      |
| 4    | 10P37  | 1   | Adp Hyd 04MJ/04MP 90        | 0.30      | 0.30      |
| 5    | 10P38  | 1   | Adp Hyd 04FJ Cap            | 0.10      | 0.10      |
| 6    | 10P44  | 2   | Adp Hyd 08MJ/08FJ 90        | 0.30      | 0.60      |
| 7    | 11P04  | 1   | Adp Hyd 10MJ/10MB 90        | 0.40      | 0.40      |
| 8    | 11P05  | 2   | Adp Hyd 10MJ/10MB 90 LL     | 0.40      | 0.80      |
| 9    | 11P06  | 1   | Adp Hyd 10MJ/10MB           | 0.40      | 0.40      |
| 10   | 11P07  | 3   | Adp Hyd 10MJ/10FJ 90        | 0.40      | 1.20      |
| 11   | 11P62  | 1   | Adp Hyd 12MJ/12MB 90 LL     | 0.40      | 0.40      |
| 12   | 11P78  | 1   | Adp Hyd 20MP/20MP           | 0.70      | 0.70      |
| 13   | 11P98  | 1   | Hose Assy 28 08-10FJ/10FJ   | 1.40      | 1.40      |
| 14   | 12P19  | 1   | Adp Hyd 10HB/10MP           | 0.30      | 0.30      |
| 15   | 12P20  | 1   | Adp Hyd 20MP/16FP           | 0.30      | 0.30      |
| 16   | 12P26  | 1   | Adp Hyd 16HB/12MB 90        | 0.60      | 0.60      |
| 17   | 12P31  | 1   | Hose 1 x 30 LP              | 1.65      | 1.65      |
| 18   | 13P08  | 1   | Hose Assy 23 08-10FJ/10FJ   | 1.40      | 1.40      |
| 19   | 13P20  | 2   | Hyd Tube, Rear 5/8 x 80-7/8 | 3.74      | 7.48      |
| 20   | 13P80  | 2   | Adp Hyd 08MJ/08FJ           | 0.30      | 0.60      |
| 21   | 13P82  | 2   | Adp Hyd 12FJ/08MJ           | 0.30      | 0.60      |
| 22   | 14P15  | 2   | Hose Assy 76 08-08FJ/08FJ   | 4.60      | 9.20      |
| 23   | 20P61  | 1   | Hyd Filter Assy, 70 GPM     | 4.50      | 4.50      |
| 24   | 20P64  | 1   | Hyd Filter Indicator Gauge  | 0.01      | 0.01      |
| 25   | 20P86  | 1   | Hyd Tank, 30 Gallon LS      | 73.00     | 73.00     |

**TANK CIRCUIT, 3-SECTION 412**

# **DISC-LOCK WASHER TORQUE SPECS**

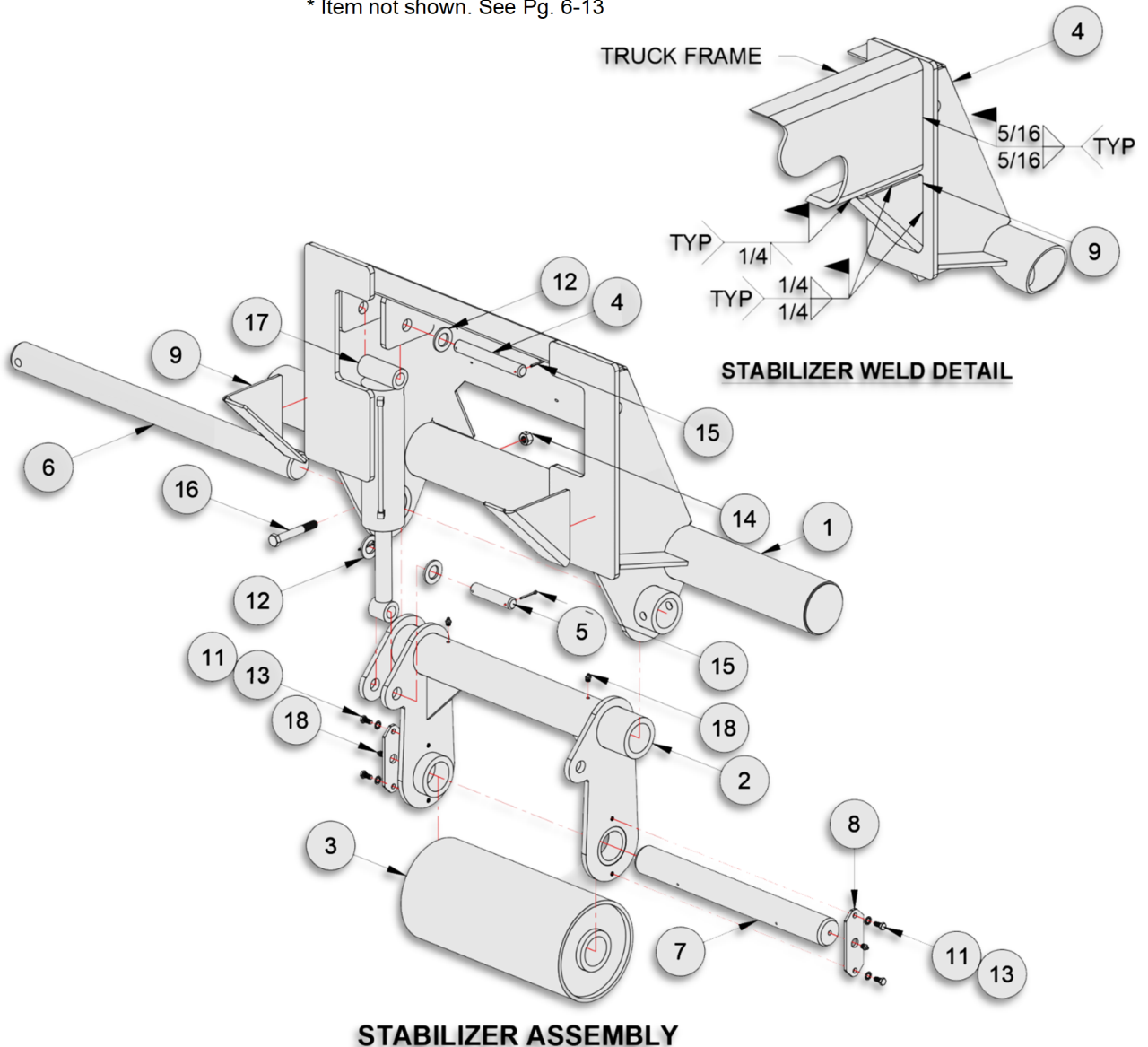
| BOLT<br>SIZE | SAE GR 8<br>ASS'Y TORQUE<br>(FT-LBS) |
|--------------|--------------------------------------|
| 3/8          | 53                                   |
| 7/16         | 85                                   |
| 1/2          | 130                                  |
| 5/8          | 258                                  |
| 3/4          | 459                                  |
| 7/8          | 739                                  |
| 1            | 1108                                 |

## **42H62 – STABILIZER ASSEMBLY**

**SL-412**

| ITEM | PART<br># | QTY | DESCRIPTION                  | WT-<br>lb/ea. | WT-lb/all |
|------|-----------|-----|------------------------------|---------------|-----------|
| 1    | 42H63     | 1   | Stabilizer Mnt Wdmt          | 229.01        | 229.01    |
| 2    | 42H64     | 1   | Stabilizer Arm               | 64.70         | 64.70     |
| 3    | 42H65     | 1   | Stabilizer Roller Wdmt       | 78.10         | 78.10     |
| 4    | 86H65     | 1   | Pin, Stabilizer 1 x 6-3/4    | 1.60          | 1.60      |
| 5    | 86H66     | 1   | Pin, Stabilizer 1 x 3-3/4    | 0.90          | 0.90      |
| 6    | 86H67     | 1   | Pin, Stabilizer 1 x 32       | 39.40         | 39.40     |
| 7    | 86H68     | 1   | Pin, Stabilizer 2-3/8x21-1/4 | 26.20         | 26.20     |
| 8    | 86H69     | 2   | End Plate, Stabilizer        | 0.70          | 1.40      |
| 9    | 86H70     | 2   | Gusset, Stabilizer           | 5.45          | 10.90     |
| 10   | 90H83     | 1   | Stabilizer Circuit           | 21.20         | 21.20     |
| 11   | 00755     | 4   | Washer, Lock - 3/8 Dia       | 0.03          | 0.12      |
| 12   | 00787     | 4   | Washer, Flat - 1 Dia HT      | 0.19          | 0.76      |
| 13   | 00P03     | 4   | HHCS 3/8-16 UNC x 3/4 Gr8    | 0.04          | 0.16      |
| 14   | 00P55     | 1   | Nut, Lock 5/8-11 UNC Gr8     | 0.13          | 0.13      |
| 15   | 00P98     | 4   | Pin, Cotter 5/32 x 1-1/2     | 0.01          | 0.04      |
| 16   | 01P39     | 1   | HHCS 5/8-11 UNC x 4-1/2 Gr8  | 0.49          | 0.49      |
| 17   | 21P84     | 1   | Hyd Cyl 3x1.375x6            | 35.00         | 35.00     |
| 18   | 90P03     | 4   | Zerk, Grease - 1/8 NPT       | 0.01          | 0.04      |

\* Item not shown. See Pg. 6-13

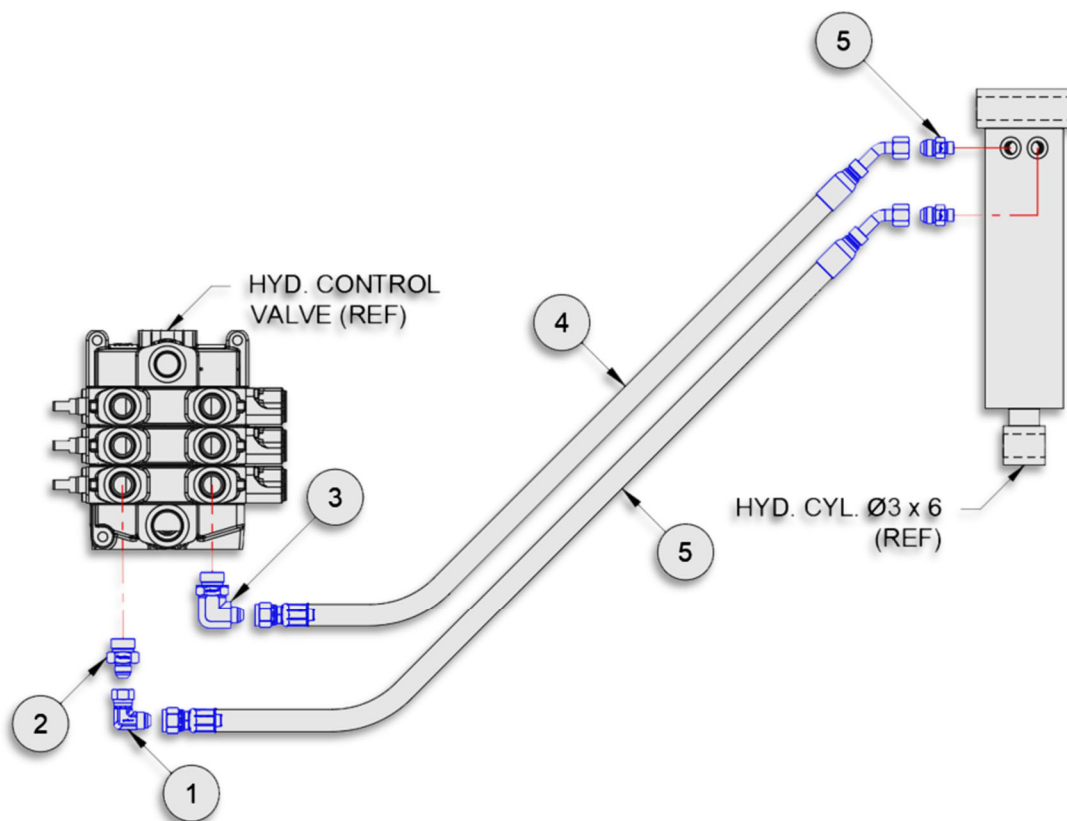


**STABILIZER ASSEMBLY**



**90H83 – STABILIZER CIRCUIT****SL-412**

| ITEM | PART # | QTY | DESCRIPTION                 | WT-lb/ea. | WT-lb/all |
|------|--------|-----|-----------------------------|-----------|-----------|
| 1    | 10P44  | 1   | Adp Hyd 08MJ/08FJ 90        | 0.30      | 0.30      |
| 2    | 11P83  | 1   | Adp Hyd 08MJ/12MB           | 0.40      | 0.40      |
| 3    | 11P84  | 1   | Adp Hyd 08MJ/12MB 90        | 0.40      | 0.40      |
| 4    | 11P87  | 2   | Hose Assy 243.5 08FJ/08FJ45 | 8.00      | 16.00     |
| 5    | 11P89  | 2   | Adp Hyd 08MJ/06MP           | 0.40      | 0.80      |

**STABILIZER CIRCUIT**

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