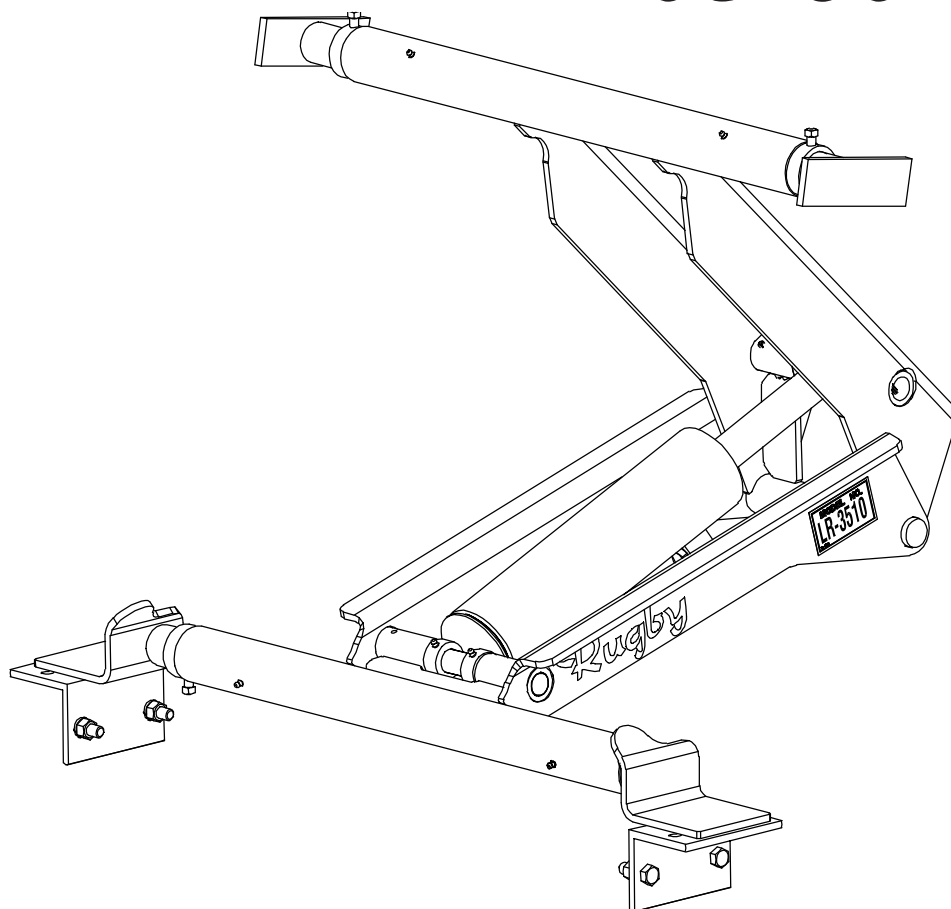


**Rugby**<sup>®</sup>

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**03 6048**



***LR-3510***  
***Install and Operation***  
***Manual***

***LATEST EDITION:***     ***1st (January 4, 2001)***

***FIRST EDITION:***     ***January 4, 2001***

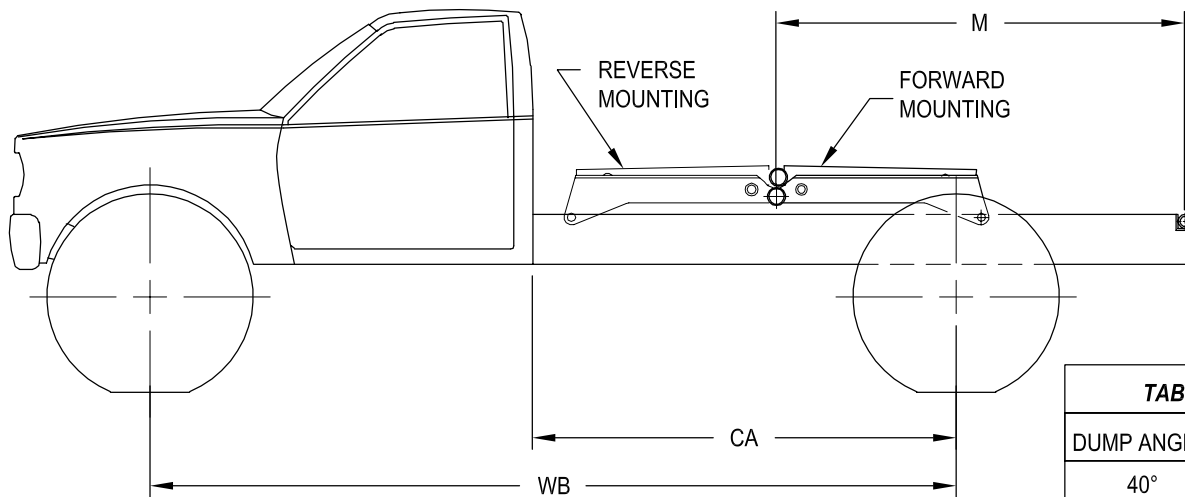
## **WARNINGS:**

- Warning:** Not installing or operating equipment correctly can cause component damage or an accident which may cause injury or death. "**Always**" install and operate equipment in accordance with manufacturer's instructions. Read and understand this manual fully before proceeding.
- Warning:** Welding, oxy-fuel cutting, or grinding sparks can cause fuel to ignite which in turn can lead to injury or death. "**Always**" take adequate steps to avoid ignition of fuel from fuel tanks when welding, grinding, or oxy-fuel cutting during equipment installation.
- Warning:** Heat from the truck's exhaust system can cause hydraulic component failure and may lead to a fire which could cause injury or death. "**Always**" install equipment in locations where heat from the exhaust system will not damage any hydraulic component.
- Warning:** Being under a raised body can result in serious injury or death should the body inadvertently descend. "**Never**" position yourself or allow others to position themselves under a "**loaded**" body. "**Always**" prop the "**unloaded**" body up using the body prop or body props supplied. "**Remember**" body props are to be used only on an "**unloaded**" body.
- Warning:** Malfunctioning equipment can cause property damage, injury or death. "**Always**" have faulty equipment repaired before continuing its use. If required, consult the manufacturer.
- Warning:** Overloading of a truck can cause truck component damage or an accident which may cause injury or death. "**Never**" exceed the gross vehicle weight (GVW) or the gross axle weight (GAW) rating of your vehicle.
- Warning:** The inadvertent shorting of the truck's electrical supply can cause a fire or equipment damage that could lead to injury or death. "**Always**" disconnect the vehicle battery prior to installing, servicing or repairing the pump.
- Warning:** Never install a cable on a truck while the body is raised without first blocking, bracing, or propping the body up to prevent the body from inadvertently falling when the control valve lever is moved. A falling body will result in serious injury or death if the control valve lever is moved while someone is under the non-supported body.
- Warning:** Damage to brake lines during equipment installation, or installing bolts or equipment in such a way that the line will rub and become damaged can lead to brake failure which can cause an accident and can lead to severe injury or death. "**Always**" take adequate steps to prevent brake line damage during installation and isolate brake lines from installed equipment.
- Warning:** To prevent damage to the truck's electrical system, disconnect the positive battery cable and alternator when arc welding on the truck.

**SECTION A - APPLICATION**

The capacity and dump angle obtained with the LR-3510 will vary depending on where the hoist is mounted in relation to the rear hinge, see Table A. Below is a list of dump angles and corresponding capacities for different mounting distances (M), (Refer to Fig. #1). **REMEMBER**, all capacities listed below are based on water level, non-diminishing loads.

Body Length	Rear Overhang	M=58" Capacity @ 40°	M=52" Capacity @ 45°	M=47" Capacity @ 50°
7 ft.	0"	3.7 Ton	3.3 Ton	3.0 Ton
8 ft.	0"	3.2 Ton	2.9 Ton	2.6 Ton
8 ft.	6"	3.7 Ton	3.3 Ton	3.0 Ton
8 ft.	12"	4.3 Ton	3.8 Ton	3.5 Ton
9 ft.	6"	3.2 Ton	2.9 Ton	2.6 Ton
9 ft.	12"	3.7 Ton	3.3 Ton	3.0 Ton
9 ft.	18"	4.3 Ton	3.8 Ton	3.5 Ton
10 ft.	12"	3.2 Ton	2.9 Ton	2.6 Ton
10 ft.	18"	3.7 Ton	3.3 Ton	3.0 Ton
10 ft.	24"	4.3 Ton	3.8 Ton	3.5 Ton

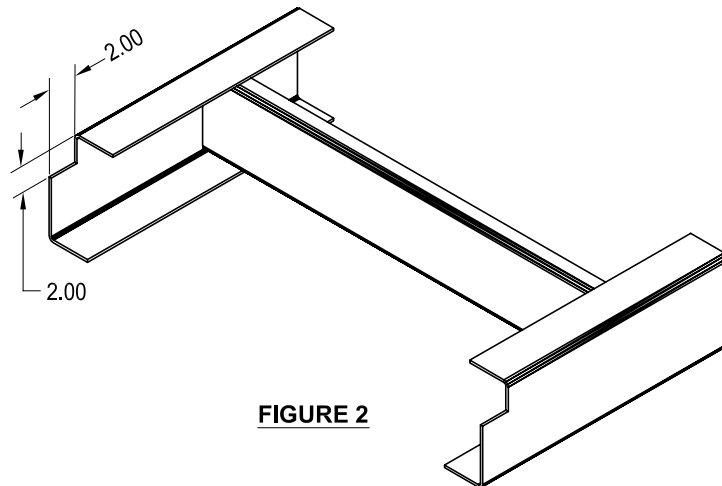


**LR-3510  
TABLE A  
FIGURE 1**

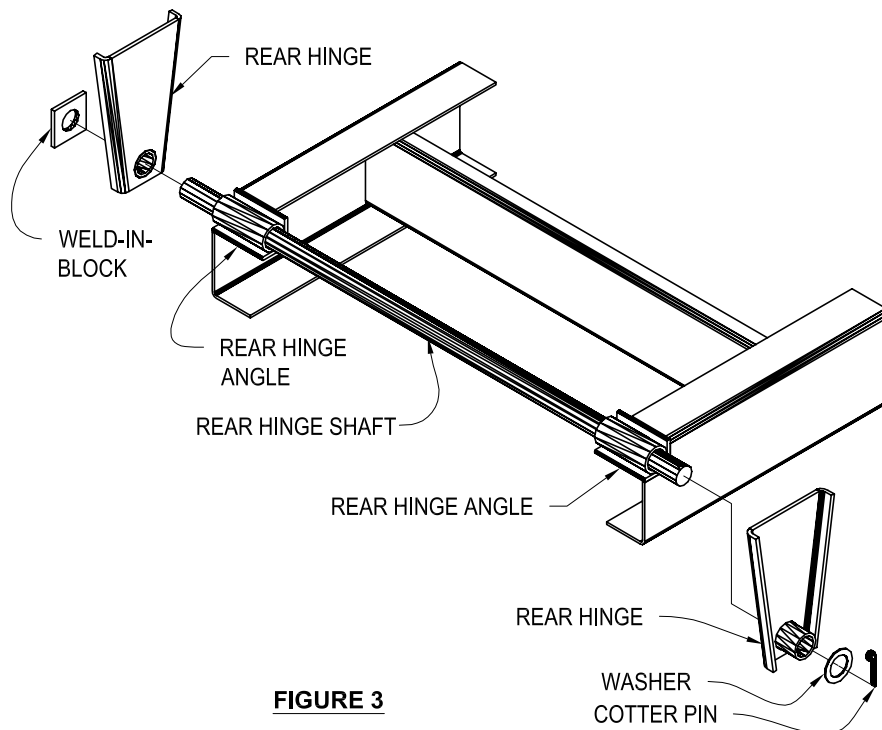
DUMP ANGLE	M
40°	58"
45°	52"
50°	47"

**SECTION B - INSTALLATION OF REAR HINGE:**

1. Determine the location of the rear hinge. This location should be immediately behind the rear wheel leaf spring shackle.
2. Referring to Fig. #2, cut a notch as shown.
3. Position two rear hinge angles on the rear hinge shaft. Place this assembly into the notch, cut in Step #2 as shown in Fig. #3. Weld into place.



**FIGURE 2**



**FIGURE 3**

4. Place a rear hinge on each end of the rear hinge shaft installed in Step #3. Secure one end with a 2 1/8" O.D. x 1 3/8" I.D. washer and a 1/4" x 2" cotter pin. On the opposite end of the shaft, slide the weld-in-block supplied against the rear hinge. Weld the block in place. Cut off the excess rear hinge shaft.

**NOTE:** If an obstruction can not be cleared by moving the hoist forward or rearward, the hoist may be reverse mounted as shown in Fig. #1, or the portion of the hoist that extends below the frame may be lifted to the frame level without affecting the capacity or performance of the hoist. Be aware that lifting this portion of the hoist will raise the hoist mounting height.

**NOTE:** The distance between the rear hinge shaft center and the saddle center is referred to as the "M" dimension. In Fig. #1, the "M" dimension for several dump angles are tabulated.

**NOTE:** Moving the hoist rearward or forward along the truck frame will affect the hoist's performance. A forward movement will reduce the dump angle and will increase capacity while a rearward movement will increase the dump angle and reduce capacity.

### **SECTION C -- INSTALLATION OF HOIST FRAME:**

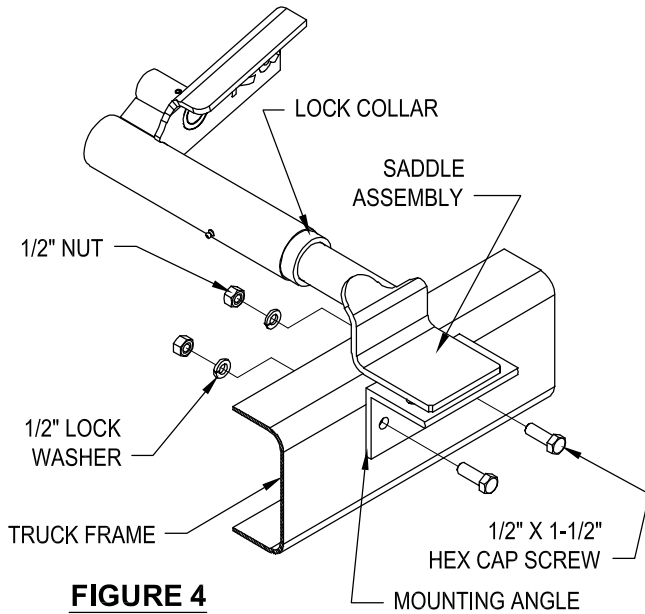
1. Slide a lock collar onto each saddle shaft. Slide each saddle shaft into the lower tube as shown in Fig. #4.
2. Locate the hoist on the truck frame, making sure to center the hoist right and left, and to square the hoist with the truck frame. The LR-3510 is designed to rest on the truck frame as shown in Fig. #1. A small portion of the hoist extends below the truck frame level. The hoist therefore, may have to be moved forward or rearward to avoid obstructions below the frame level.
3. When the hoist is positioned, place a mounting angle under each side of the hoist saddle. Secure each mounting angle to the truck frame by drilling two 17/32" dia. holes and installing two 1/2" x 1 1/2" hex cap screws, two 1/2" lock washers and two 1/2" hex nuts (Fig. #4).
4. Weld each end of the hoist saddle bracket to the corresponding mounting angle (Fig. #4).

**NOTE:** **Do not** weld the hoist or mounting angle to the truck frame.

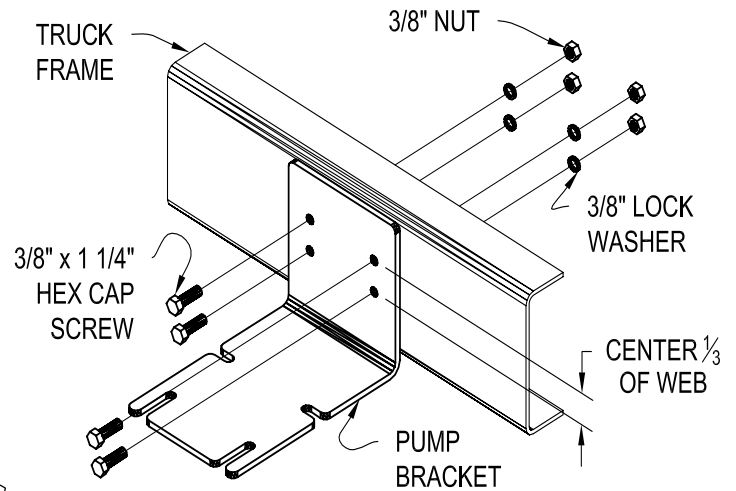
**NOTE:** The hoist saddle must set directly on the truck frame. If rivet interference is encountered, counter sink the rivet head into the hoist saddle.

### **SECTION D -- INSTALLATION OF PUMP BRACKET:**

1. Position and clamp the pump bracket to the chassis frame in a convenient location. Make sure the location of the pump is close enough to allow the hose to connect the pump to the hoist cylinder.



**FIGURE 4**



**FIGURE 5**

2. Drill four 13/32" dia. holes through the chassis frame and the pump bracket. Fasten with four 3/8" x 1 1/4" hex cap screws, four 3/8" lock washers and four 3/8" hex nuts. (Fig. #5).

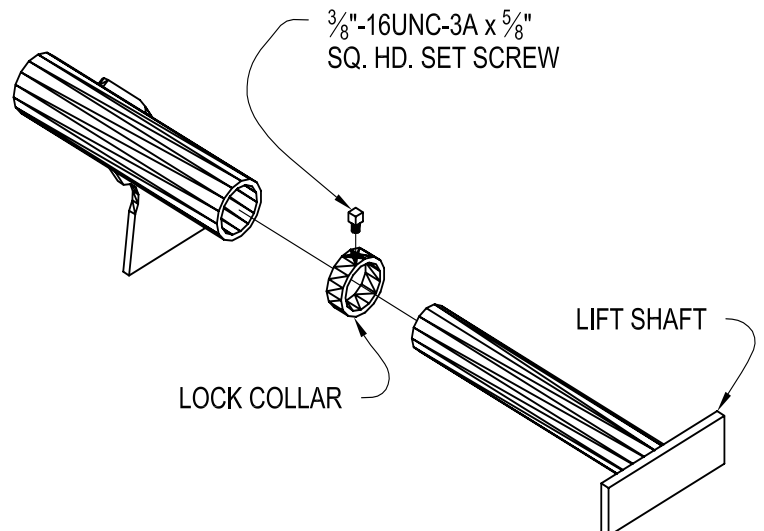
**IMPORTANT:** To maintain chassis frame strength, keep all four 13/32" dia. holes within the middle third of the frame web (Fig. #5).

**IMPORTANT:** To install the pump, refer to the pump installation manual included with the pump package.

**SECTION E - BODY INSTALLATION:**

1. Slide a lock collar onto each lifting shaft. Slide a lifting shaft with collar into each end of the hoist lifting tube (Fig. #6).
2. Position the body with the long beams (just long beams if they are separate from the body) onto the truck frame.

**NOTE:** A clearance of at least 2" is required between the truck cab and the closest point on the truck body. The LR-3510 has a mounting height of 5".



**FIGURE 6**

**NOTE:** On some models of trucks, the frame is not flat from front to rear. On these models, provisions must be made to level the frame before installing the body.

3. Position the rear hinge brackets against the long beams. Once in position, weld the rear hinge brackets to the body long beams.
4. Slide each of the lifting shafts all the way against the inside of the long beam. Weld all around the lifting shaft plate to secure the shaft to the long beam. With the shaft secured, slide the lock collars against the hoist lifting tube and lock them there by tightening the set screw (refer to Fig. #6).
5. With the hoist and body completely installed, cycle the hoist several times to rid the hydraulic circuit of air.
6. Raise the hoist and body. Position body prop and prop base as shown in Body Prop Installation Manual. Weld prop base to body long beam.

**NOTE:** Before operating the hoist, read the operation section of this manual (SECTION G).

**WARNING:** If it is necessary to work on the hoist or body while in the raised position, **ALWAYS** block the unloaded body up securely with the body prop or body props.

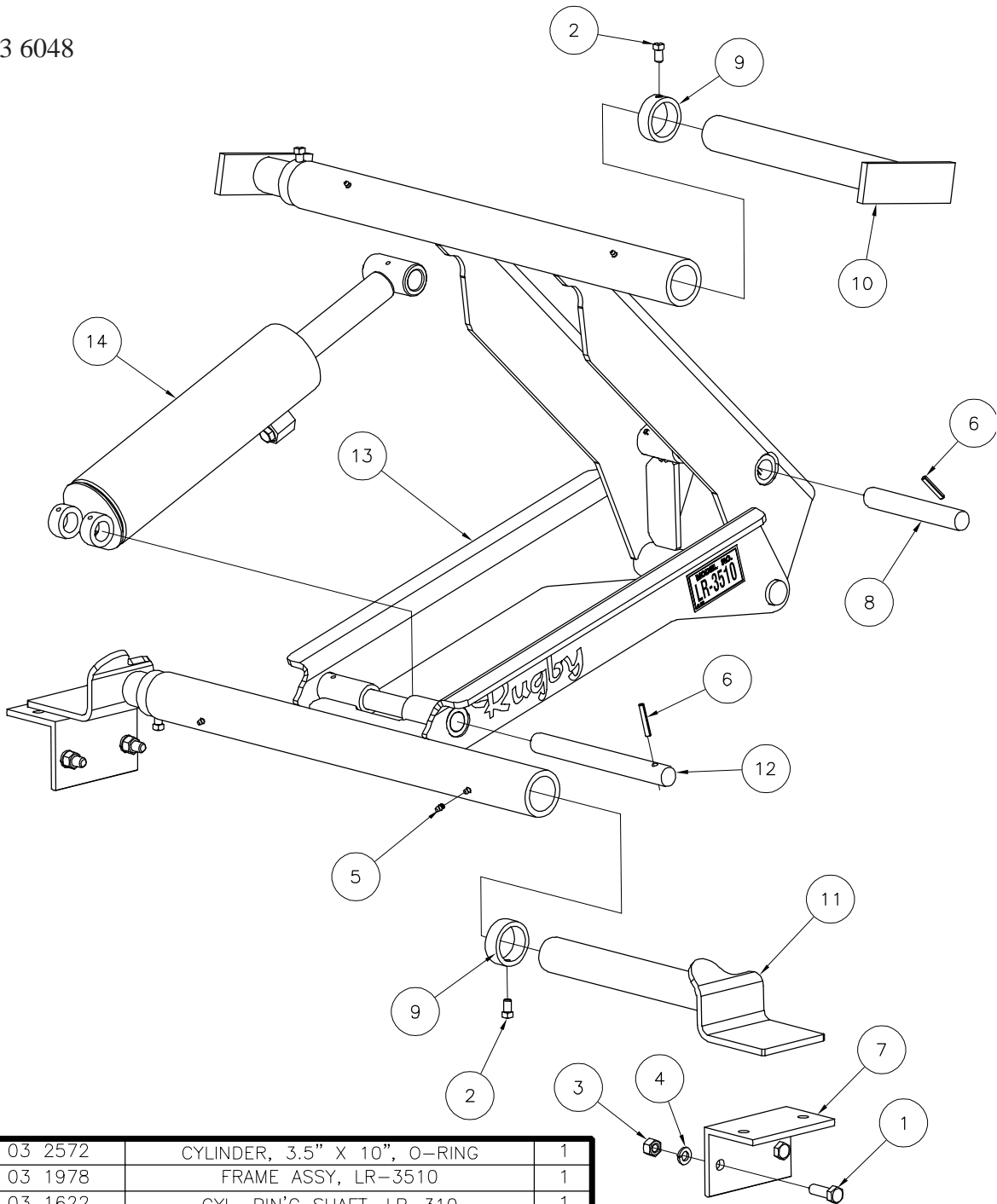
#### **SECTION F -- LUBRICATION:**

1. Install and grease the eight grease fittings in the hoist frame itself. Refer to Fig. #7 for grease fitting location.
2. Install and grease the two grease fittings in the truck rear hinge.
3. All grease fittings should be greased periodically or at least every time the truck itself is greased.
4. Check oil level in the pump reservoir every time the oil is changed in the truck engine. **REMEMBER** keep the oil clean. An annual oil change can prevent contaminants from ruining your pump and hoist cylinder.

LR-3510

Stock No. 03 6048

Page 8 of 9



14	03 2572	CYLINDER, 3.5" X 10", O-RING	1
13	03 1978	FRAME ASSY, LR-3510	1
12	03 1622	CYL. PIN'G SHAFT, LR-310	1
11	03 1138	SADDLE BRACKET SA, SET, LR-310	1
10	03 1137	LIFTING SHAFT SA, LR-310	2
9	03 1100	LOCK RING	4
8	03 0975	SHAFT, CYLINDER ROD END	1
7	03 0883	MOUNTING ANGLE	2
6	00 8256	PIN, ROLL, 1/4" X 1-3/4", NOT PLATED	3
5	00 8215	FITTING, GREASE, THREAD FORMING	8
4	00 7744	WASHER, LOCK, PLATED, 1/2"	4
3	00 7662	NUT, HEX, 1/2"	4
2	00 7452	SCREW, SET, 3/8"	4
1	00 7347	SCREW, HEX CAP, 1/2x1-1/2, GR.5, PLT	4
ITEM	PART NUMBER	DESCRIPTION	REQ'D
Parts List			

**FIGURE 7**



## **SECTION G-- OPERATION:**

### **Single Acting Hoist Operation:**

To insure long service and safety from your hoist, it is important that the following procedures be followed every time the hoist is operated.

1. To raise the hoist, push in the "**up**" button on the control station. This will start the pump and raise the box.
2. When the hoist reaches full extension, the pump will bypass. Care should be taken not to let the pump bypass for long periods of time, for this will put stress on the whole hydraulic and electrical system. To stop the pump from bypassing release the "**up**" button on the control station.
3. To lower the hoist, simply push the "**down**" button in on the control station. This will activate the pump and start the hoist down. To stop the hoist from lowering, simply release the "**down**" button. The hoist will stop lowering and hold its position.

### **Double Acting Hoist Operation:**

**CAUTION:** To insure long service and safety from your hoist, it is important that the following procedure be followed every time the hoist is operated.

1. To raise the hoist, push in the control station button marked "**up**". This will activate the pump.
2. When the hoist has reached its full extension, the pump will bypass. Care should be taken not to allow the pump to bypass for long periods of time for this will put stress on the entire hydraulic system. To stop the pump from bypassing, release the "**up**" button on the control station.
3. To lower the hoist, push the control station button marked "**down**". This will activate the pump and start the hoist down. Hold the button down until the pump bypasses and then release this button. This will lock the truck body against the truck frame.

**WARNING:** Anytime the hoist or truck body is worked on with the truck body in a raised position, be sure the unloaded body is properly blocked with the body prop or body props.