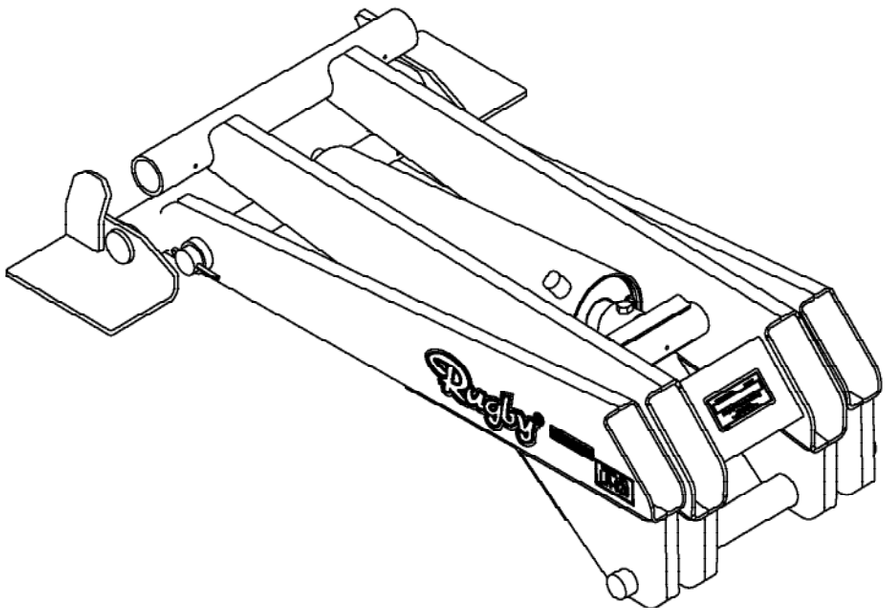
INSTALLATION AND OPERATION MANUAL
LR–SERIES HOIST
2432272B



Serial Number: _____

In–Service Date: _____

Read this manual thoroughly prior to installation and operation. This manual out–lines the installation and operation of an LR Series Hoist manufactured by Rugby Manufacturing Co. This manual should be kept readily accessible for any potential operator at all times. Contact your dealer or a Rugby Manufacturing customer service representative at 800–869–9162 or www.rugbymfg.com with any ques–tions or concerns.

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Section 1: Safety

This manual provides guidelines and instructions for correctly operating and maintaining your Rugby Manufacturing Co. product. Any and all people that own and operate a Rugby Manufacturing dump trailer are recommended to read and fully understand each section in this manual.

Throughout this manual, the three following types of labels will be used: Danger, Warning, and Caution. For the safety of the operator, it is imperative that all labels are obeyed.

⚠ DANGER

Indicates imminent danger. Failure to follow this instruction will result in death or serious injury.

⚠ WARNING

Indicates a possibly impending danger. Failure to follow this instruction can result in death or serious injury.

⚠ CAUTION

Indicates a hazardous situation or unsafe practice which, if not avoided, could result in injury or component damage.

In all cases, Rugby products are sold with the understanding that the purchaser agrees to thoroughly train all operating and maintenance personnel in the correct and safe installation and operation of hoist equipment and to provide adequate supervision of personnel at all times.

Read the following in its entirety before connecting, operating or repairing equipment. Purchasers and operators also should be familiar with the current version of any applicable OSHA regulations, standards and guidelines.

Should any questions arise concerning safe and proper procedures, contact Rugby Manufacturing Co. to the installation or use at (800) 869–9162 or (701) 776–5722.

The hydraulic system supplied with an LR–Series hoist manufactured by Rugby Manufacturing Co. is made up of components (pump, valves, res–ervoir, hoses, cylinder, etc.) designed to be compatible with each other. Several different types of pump and hydraulic components are available to power the LR–Series hoists. Refer to the pump and hydraulic compo–nent Installation and Operation Manual for more information.

⚠ DANGER

If the hydraulic system used to power the hoist was supplied by TBEI, an operation manual will be included with the hydraulic components. This manual MUST BE available for reference by the operator when needed.

If the hydraulic system used to power the hoist was supplied by a company other than TBEI, an operation manual will be included with the hydraulic components. This manual MUST BE available for reference by the operator when needed.

⚠ DANGER

It is the installer's responsibility to ensure any substitut-ed components are compatible with Rugby Manufactur-ing Co. components. Incompatible hydraulic components may cause failure of the hoist, which in turn, could damage the vehicle, damage other property, and cause death or injury.

If hydraulic components are substituted, it is the installer's responsibility to be sure they are compatible with the components supplied by Rugby Manufacturing Co. Incompatible hydraulic components may cause failure of the hoist which in turn could damage the truck, damage other prop–erty, and cause human injury or death. Rugby Manufacturing Company's liability and warranty for a given hoist will be voided if it is determined by Rugby Manufacturing Co. that substituted hydraulic components were used that were incompatible with those supplied by Rugby Manufacturing Co.

⚠ DANGER

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 tanks during equipment installation.

⚠ DANGER

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.

⚠ DANGER

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.

⚠ DANGER

Malfunctioning equipment can cause property damage, injury or death. ALWAYS have faulty equipment repaired before continuing its use. If required, consult the manufacturer.

⚠ CAUTION

To prevent damage to the truck's electrical system, disconnect the positive battery cable and alternator when arc welding on the truck.

⚠ DANGER

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.

⚠ DANGER

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.

⚠ DANGER

NEVER exceed the gross vehicle weight (GVW) or gross axle weight (GAW) rating of your vehicle. This may result in component damage, injury or death.

⚠ DANGER

Avoid bouncing or jerking of the hoist. This may result in component failure, injury or death.

⚠ DANGER

NEVER raise or drive a raised body against another object. This may result in property damage, injury or death.

⚠ DANGER

NEVER connect the hoist to a hydraulic system with more pressure (psi) or flow (gpm) than is recommended. This may result in component failure, injury or death.

⚠ CAUTION

Unlatch tailgate prior to elevating a loaded dump body as excessive forces on the rear of the dump body may result in component failure.

⚠ DANGER

NEVER operate the hoist until bystanders are free & clear of the hoist and body. This may result in injury or death.

⚠ DANGER

NEVER position yourself or allow others under a raised body as this can result in serious injury or death should the body inadvertently descend. ALWAYS prop up the **unloaded** body using the body props.

⚠ DANGER

Place a complete hoist operation manual in the glove box of the truck that will pull the trailer OR in a place on the trailer that is sheltered from the weather and other elements. This manual MUST BE available for reference by the operator when needed.

Section 2: Introduction

This manual covers the installation of the LR–series hoist.

The following manuals cover other components:

- 1656575 – Body Prop Manual
- 1903326 – Split “M” (Direct Mount Pump with Remote 9–Quart Reservoir) & Tower Control / Electric Operated Solenoid Valve
- 1657447 – Electric Single– and Double–Acting Pump

Ensure the correct manuals are present when working on equipment. For help locating the correct manuals contact Rugby Manufacturing Co. at (800) 869–9162 or (701) 776–5722.

Serial Number

This information is required for any warranty or service inquiries, and should be recorded on the front cover of this manual for easy reference. The serial number is located on the hoist serial number plate. Figure 1.

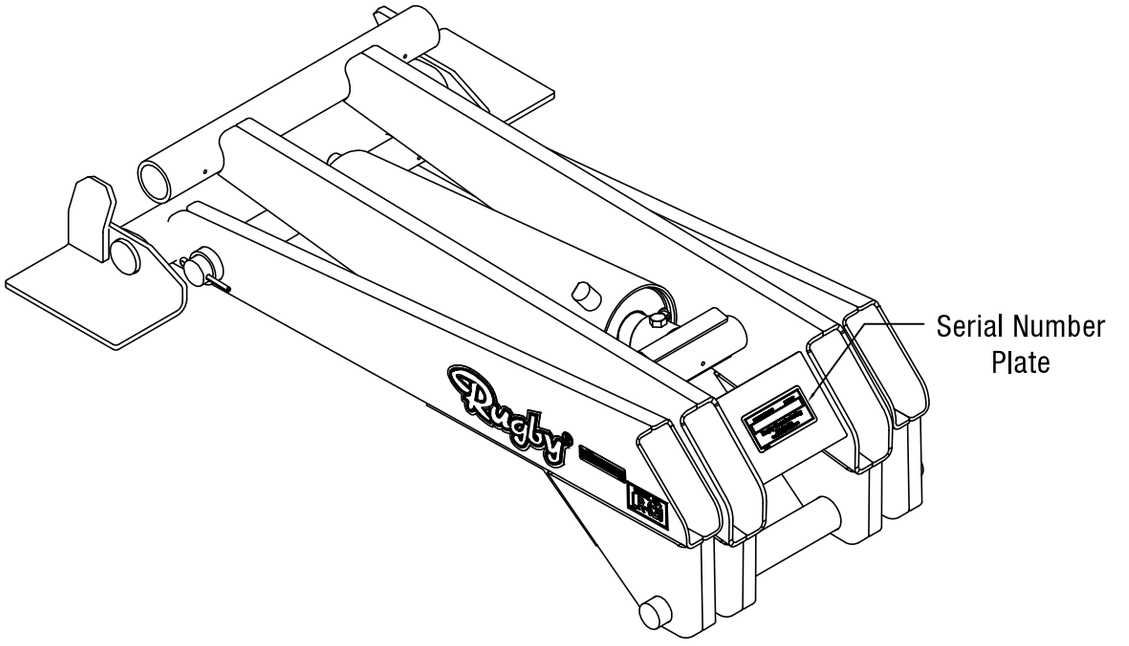


Figure 1: Serial Number Location

Specifications

Model	Previous Model Name	Maximum Hydraulic Flow Rate (gpm)	Maximum Up Pressure (PSI)	Maximum Down Pressure (PSI)
LR–410	LR–3510	4	3200	1000
LR–416	LR–416	4	3200	1000
LR–516	LR–165	6	3200	1000
LR–520	LR–25	6	3200	1000
LR–620	LR–26	9	3200	1000
LR–623	LR–623	9	3200	1000
LR–628	LR–28	9	3200	1000
LR–5520	LR–2355	18	3200	1000
LR–6620	LR–2066	18	3200	1000
LR–6628	LR–2866	18	3200	1000

⚠ DANGER

NEVER adjust the hydraulic pressure to more than the recommended setting. This may cause the hoist to fail during the dumping of a load and result in property damage, injury or death. NEVER adjust the pressure on your own. ALWAYS consult the manufacturer if the hydraulic pressure is in question to talk with a qualified mechanic.

Capacity Charts

The following charts are to be used as a reference when determining capacity based on overhang. The capacity and dump angle will vary de–pending on where the hoist is mounted in relation to the rear hinge. The following tables list dump angles and corresponding capacities for differ–ent mounting distances (M) (refer to Figure 2). REMEMBER, all capacities listed below are based on water level, non–diminishing loads and the hydraulic relief pressure set at the maximum of 3200 PSI.

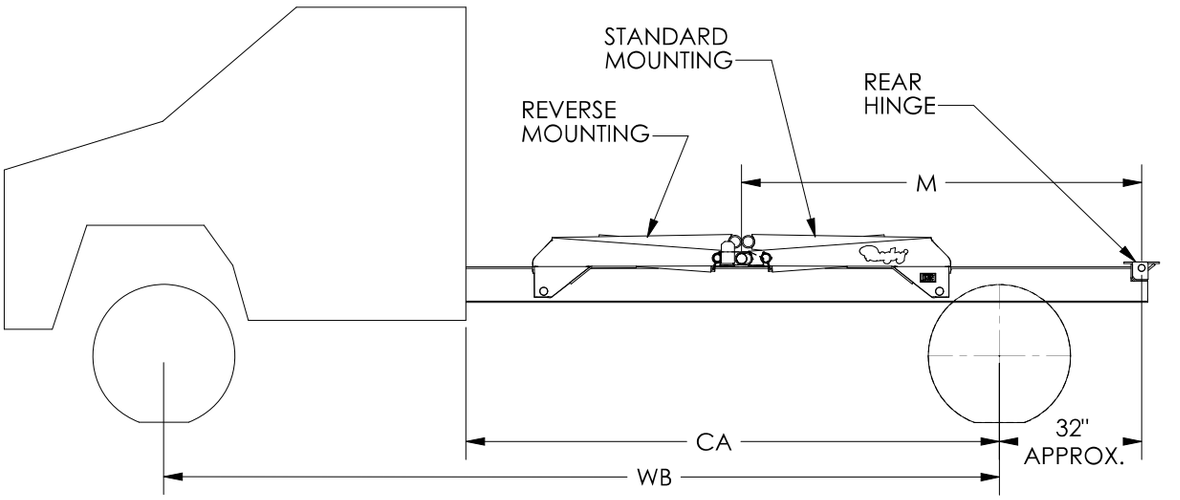
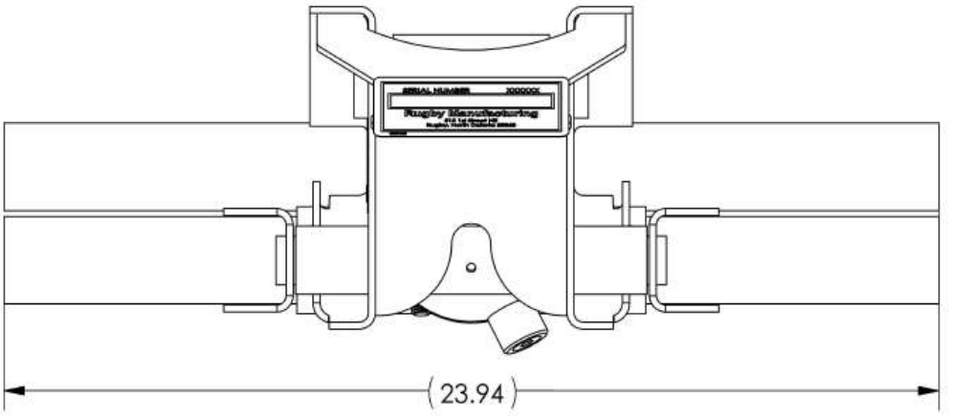


Figure 2: Mounting Distances

LR–410 Forward Mounting Conversion Class: A					
Body Length (feet)	**CA (inches)**	**Rear Overhang (inches)**	**Capacity 40º Dump (tons)**	**Capacity 45º Dump (tons)**	**Capacity 50º Dump (tons)**
7	42	3	5.1	4.6	4.2
8	56	0	4.2	3.7	3.4
8’6”	56	6	4.5	4.0	3.6
9	56	6	4.2	3.7	3.4
9	60	3	3.9	3.5	3.2
10	56	18	4.8	4.3	3.9
10	60	15	4.5	4.0	3.6
Mounting Height			5.00”		
Minimum Longsill Height			5.00”		
Mounting Distance			55.50”	49.75”	45.10”

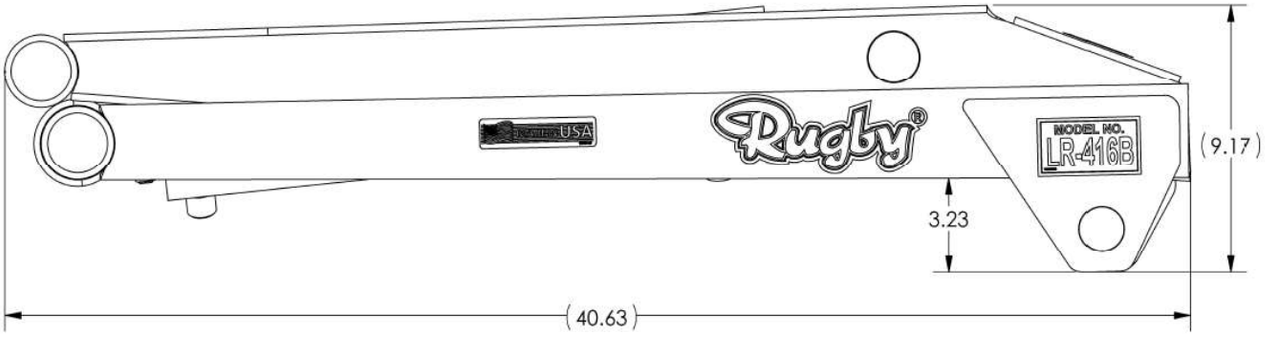
*Reverse Mounting:
40° = 57”
45° = 51.25”
50° = 46.6”

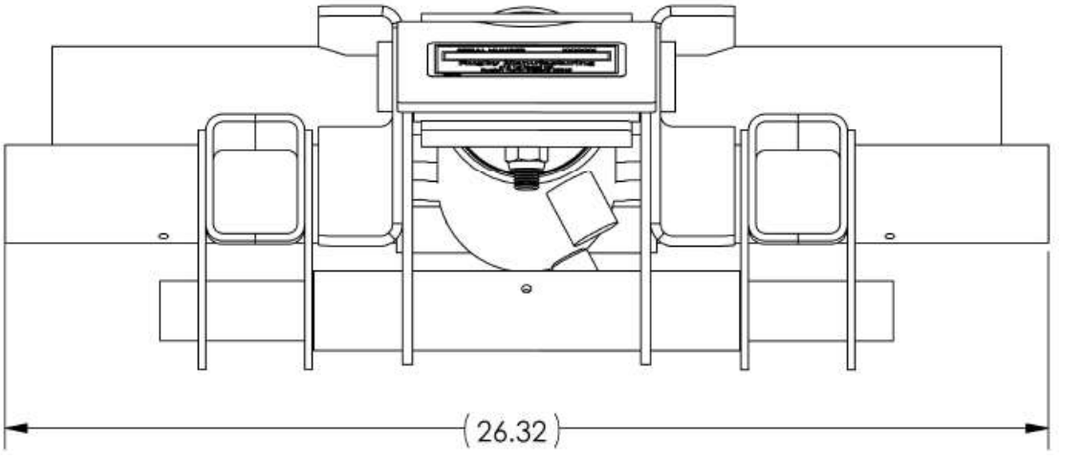




LR–416 Forward Mounting Dump Class: 10 Conversion Class: B					
Body Length (feet)	**CA (inches)**	**Rear Overhang (inches)**	**Capacity 40º Dump (tons)**	**Capacity 45º Dump (tons)**	**Capacity 50º Dump (tons)**
8	56	0	6.6	5.9	5.4
9	56	12	7.6	6.8	6.1
9	60	3	6.3	5.6	5.0
10	56	24	8.9	7.9	7.2
10	60	15	7.1	6.3	5.7
12	84	15	5.6	5.0	4.5
Mounting Height			5.75”		
Minimum Longsill Height			6.00”		
Mounting Distance			89.75”	80.25”	72.75”

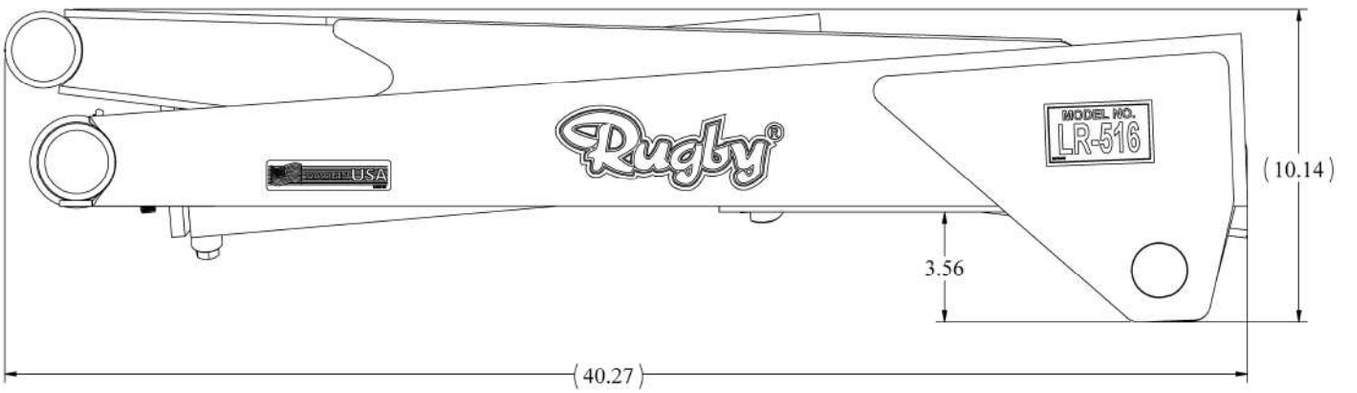
*Reverse Mounting:
40º = 90.75”
45º = 81.25”
50º = 73.75”

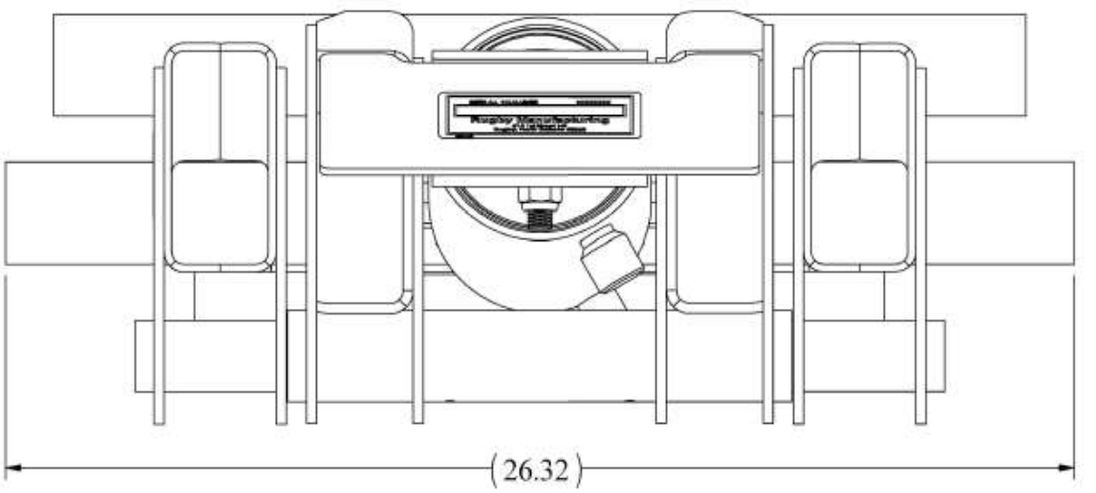




LR–516 Forward Mounting Dump Class: 20 Conversion Class: C					
Body Length (feet)	**CA (inches)**	**Rear Overhang (inches)**	**Capacity 40º Dump (tons)**	**Capacity 45º Dump (tons)**	**Capacity 50º Dump (tons)**
9	60	3	9.4	8.3	7.6
10	60	15	10.6	9.5	8.6
11	84	3	7.6	6.7	6.1
12	84	15	8.4	7.5	6.8
Mounting Height			5.75”		
Minimum Longsill Height			6.00”		
Mounting Distance			90.5”	80.75”	73.25”

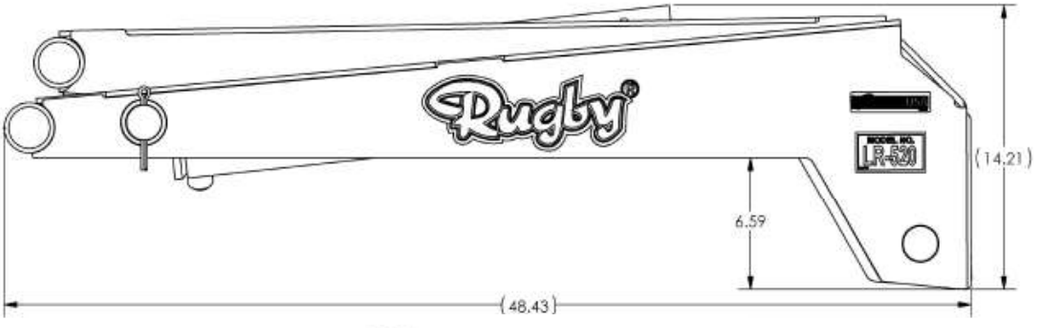
*Reverse Mounting:
40º = 91”
45º = 81.75”
50º = 74.25”

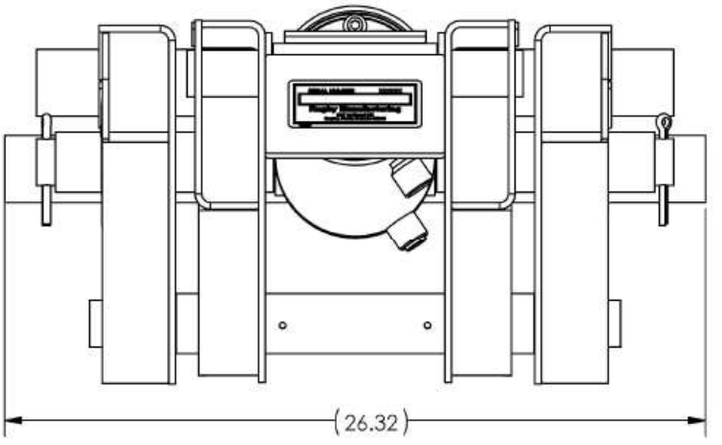




LR–520 Forward Mounting Dump Class: 40 Conversion Class: D					
Body Length (feet)	**CA (inches)**	**Rear Overhang (inches)**	**Capacity 40º Dump (tons)**	**Capacity 45º Dump (tons)**	**Capacity 50º Dump (tons)**
12	84	18	14.8	13.2	12.0
13	84	30	16.6	14.9	13.5
13	102	12	12.1	10.8	9.8
13	108	6	11.1	9.9	9.0
14	102	24	13.3	11.9	10.8
14	108	18	12.1	10.8	9.8
14	120	6	10.2	9.1	8.3
15	102	36	14.8	13.2	12.0
15	108	30	13.3	11.9	10.8
15	120	18	11.1	9.9	9.0
Mounting Height			7.50”		
Minimum Longsill Height			6.00”		
Mounting Distance			108.75”	97.25”	88.25”

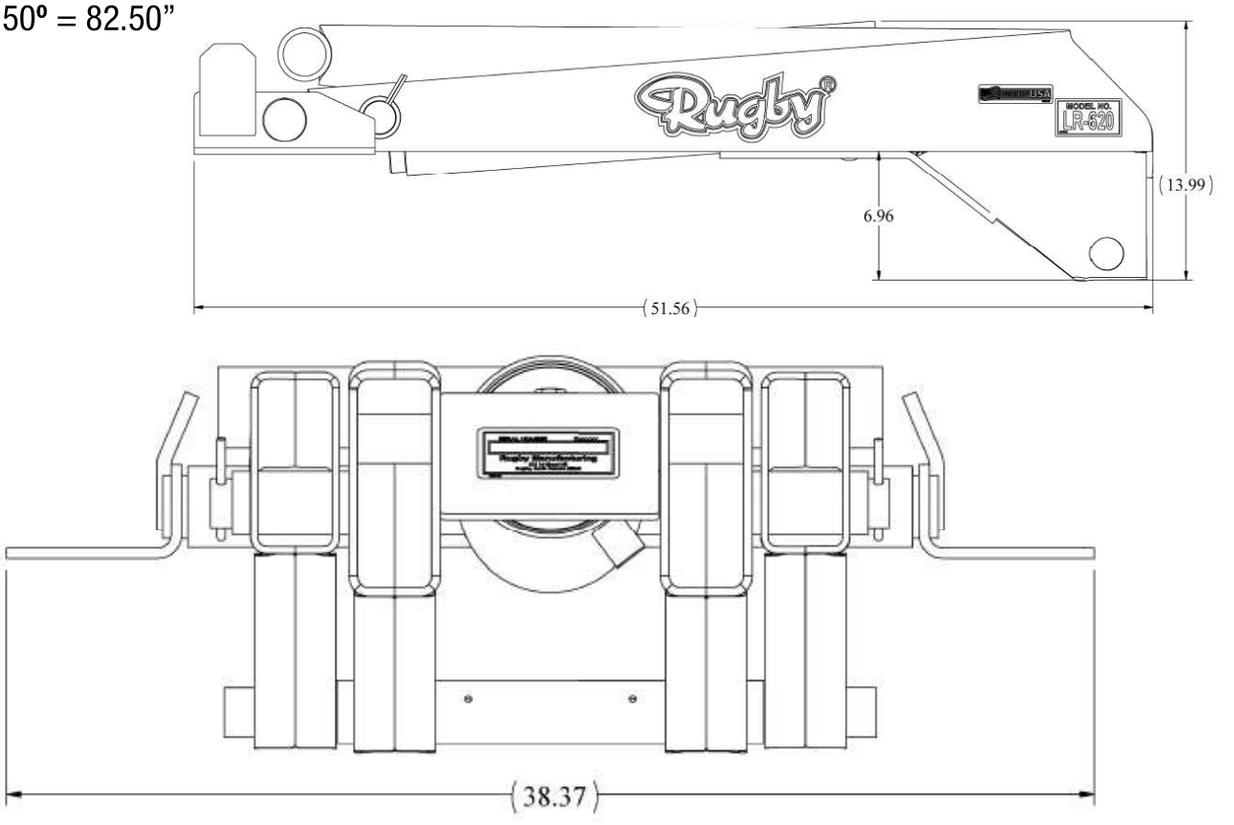
*Reverse Mounting:
40º = 107”
45º = 96”
50º = 87”





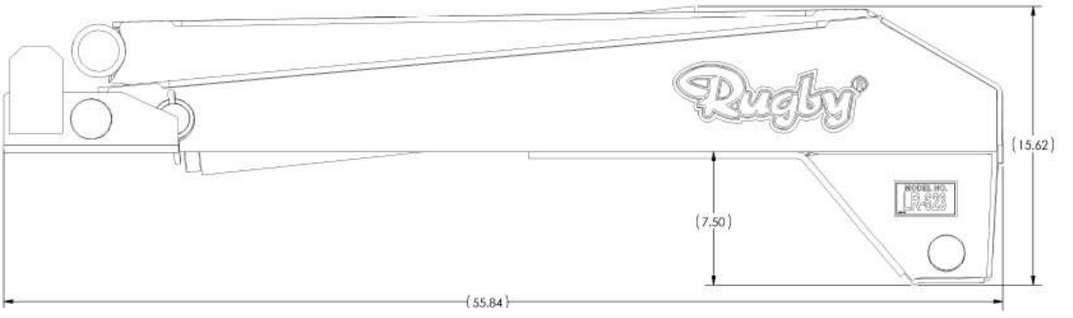
LR–620 Forward Mounting Dump Class: 50 Conversion Class: E					
Body Length (feet)	**CA (inches)**	**Rear Overhang (inches)**	**Capacity 40º Dump (tons)**	**Capacity 45º Dump (tons)**	**Capacity 50º Dump (tons)**
10	84	6	16.5	14.9	13.6
12	84	30	21.0	19.0	17.3
12	108	6	13.6	12.3	11.2
13	108	18	14.9	13.4	12.2
14	108	30	16.5	14.9	13.6
14	120	18	13.6	12.3	11.2
15	120	30	14.9	13.4	12.2
16	120	42	16.5	14.9	13.6
16	138	24	12.5	11.3	10.2
Mounting Height			7.13”		
Minimum Longsill Height			6.00”		
Mounting Distance			104.25”	93.25”	84.50”

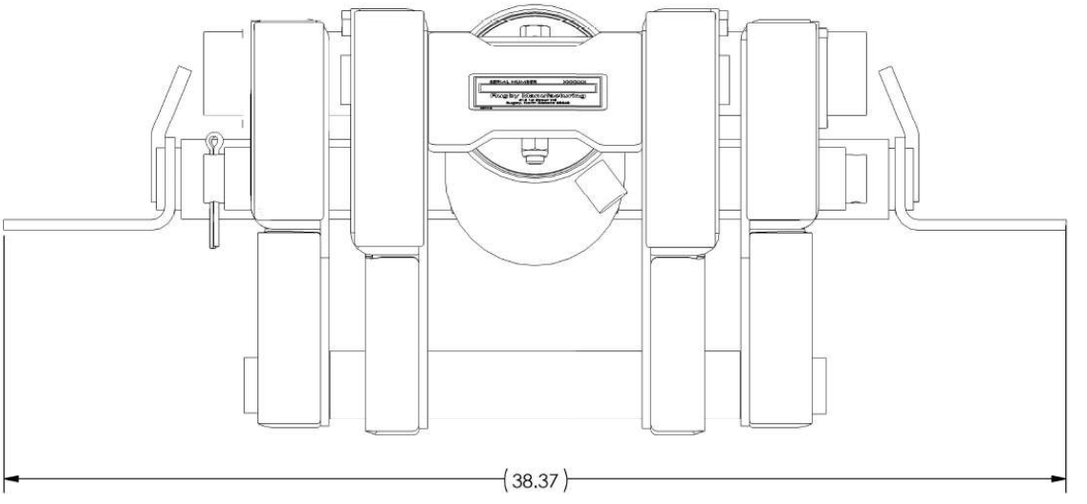
*Reverse Mounting:
40º = 102.25”
45º = 91.25”
50º = 82.50”



LR–623 Forward Mounting Dump Class: 50 Conversion Class: F					
Body Length (feet)	**CA (inches)**	**Rear Overhang (inches)**	**Capacity 40º Dump (tons)**	**Capacity 45º Dump (tons)**	**Capacity 50º Dump (tons)**
10	84	6	21.7	19.4	17.4
12	84	30	27.7	24.8	22.2
14	108	30	21.7	19.4	17.4
14	120	18	17.9	16.0	14.3
16	120	42	21.7	19.4	17.4
16	138	24	16.4	14.7	13.1
18	144	42	17.9	16.0	14.3
18	156	30	15.2	13.5	12.1
Mounting Height			8.00”		
Minimum Longsill Height			7.00”		
Mounting Distance			119.0”	106.5”	96.5”

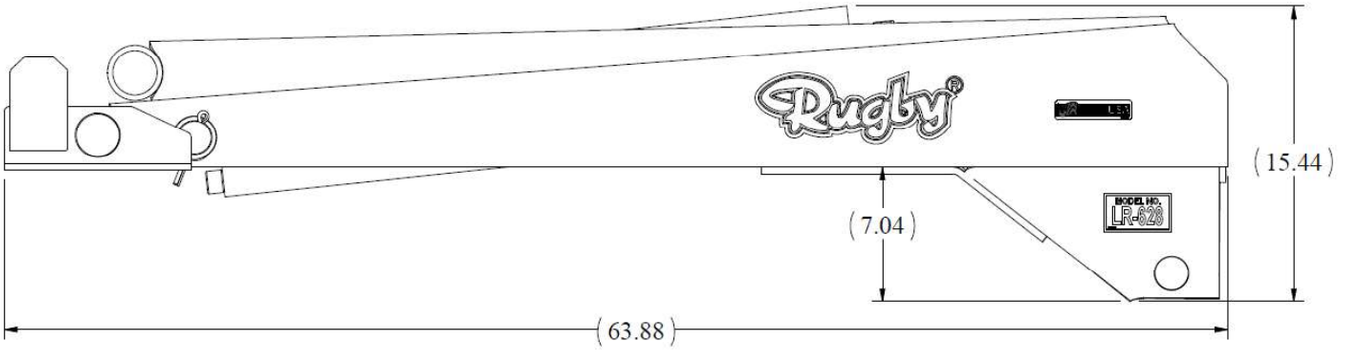
*Reverse Mounting:
40º = 117.75”
45º = 105.25”
50º = 95.25”

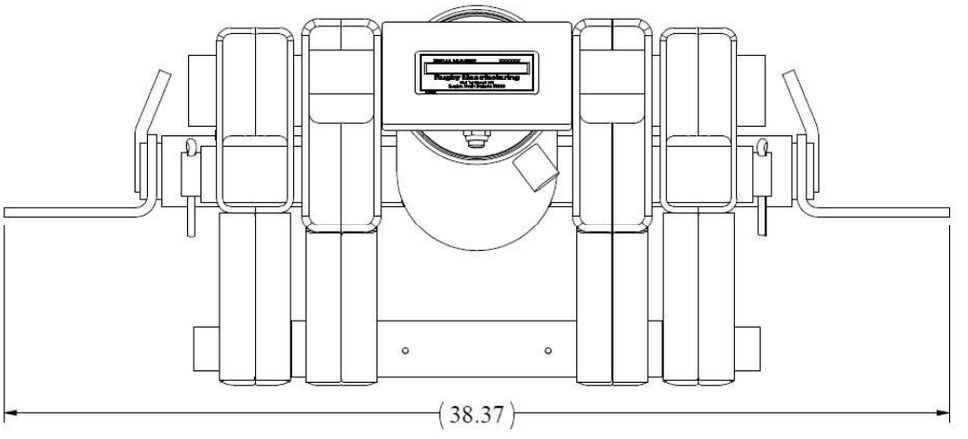




LR–628 Forward Mounting Dump Class: 60 Conversion Class: F					
Body Length (feet)	**CA (inches)**	**Rear Overhang (inches)**	**Capacity 40º Dump (tons)**	**Capacity 45º Dump (tons)**	**Capacity 50º Dump (tons)**
12	108	6	17.9	16.4	14.8
14	108	30	21.8	19.5	17.7
14	120	0	17.9	16.1	14.5
16	120	42	21.8	19.5	17.7
16	144	18	15.2	13.6	12.3
18	156	30	15.2	13.6	12.3
18	168	18	13.2	11.8	10.7
Mounting Height			8.50”		
Minimum Longsill Height			7.00”		
Mounting Distance			146”	131”	120”

*Reverse Mounting:
40º = 144”
45º = 129”
50º = 118”

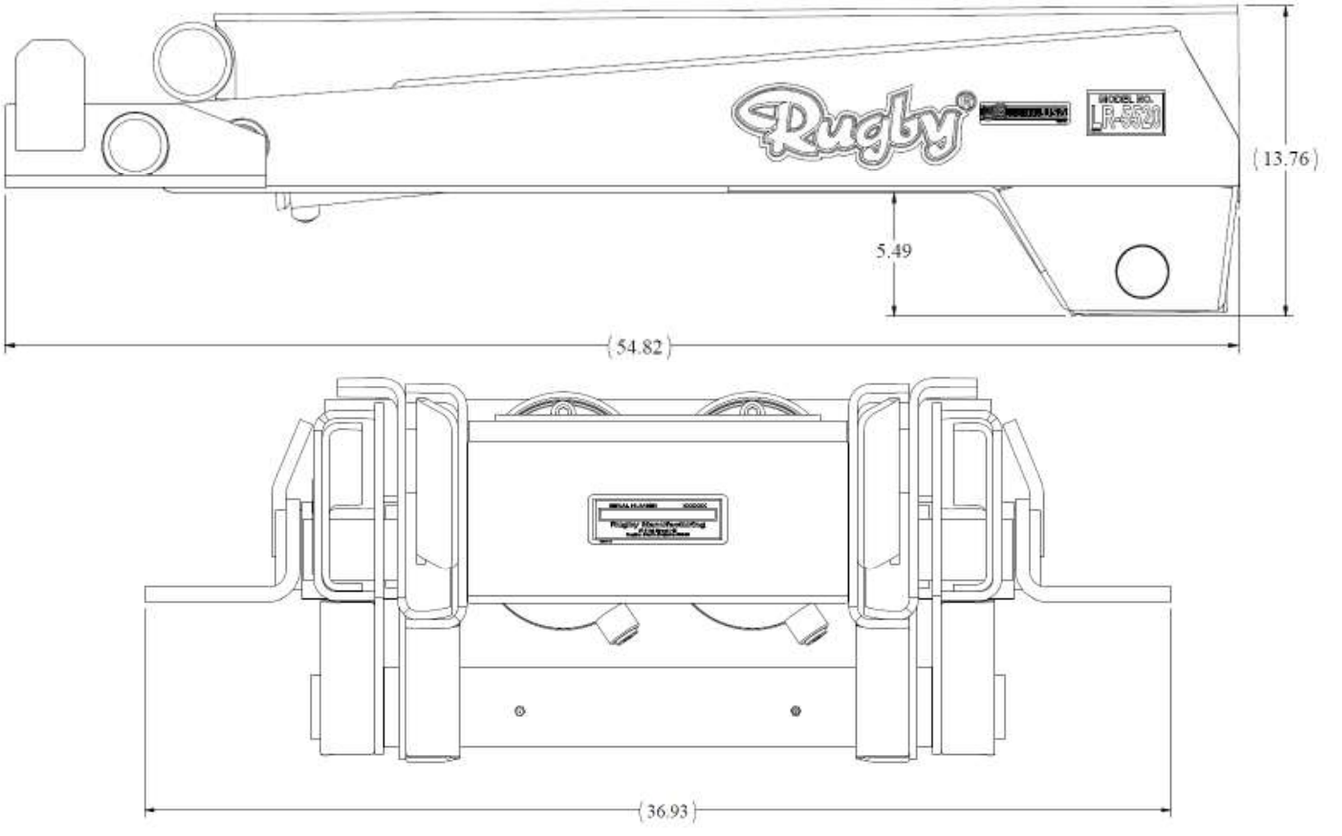




LR–5520 Forward Mounting Dump Class: 60 Conversion Class: G 2 Cylinders,5.5” Piston, 20” Stroke					
Body Length (feet)	**CA (inches)**	**Rear Overhang (inches)**	**Capacity 40º Dump (tons)**	**Capacity 45º Dump (tons)**	**Capacity 50º Dump (tons)**
12	108	6	NR	20.5	18.6
14	108	30	28.1	25.4	23.1
14	120	18	23.0	20.8	18.9
16	132	30	23.0	20.8	18.9
16	144	18	19.5	17.6	16.0
16	138	24	21.1	19.1	17.3
18	144	42	23.0	20.8	18.9
Mounting Height			8.13”		
Minimum Longsill Height			7.00”		
Mounting Distance			108”	97.50”	88.50”

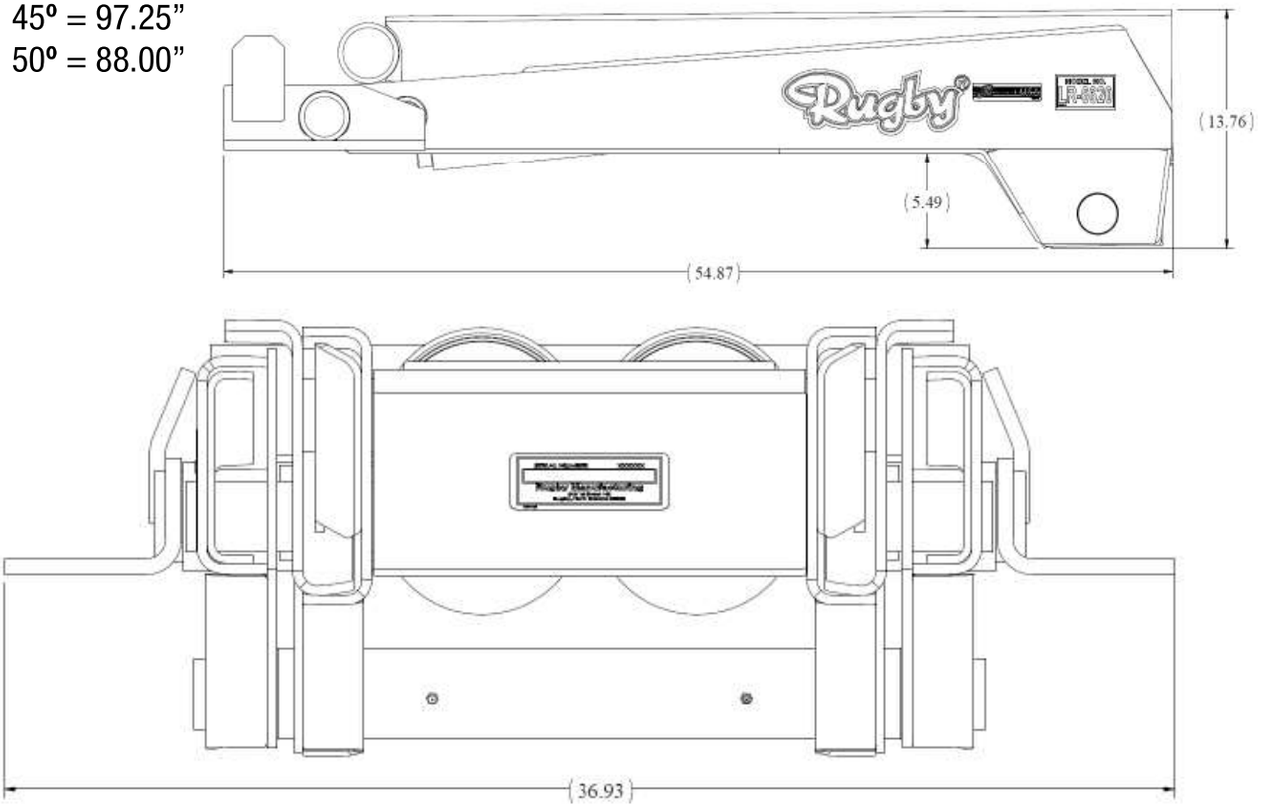
*Reverse Mounting:
40º = 112”
45º = 100”
50º = 90.75”

NR = Not Recommended



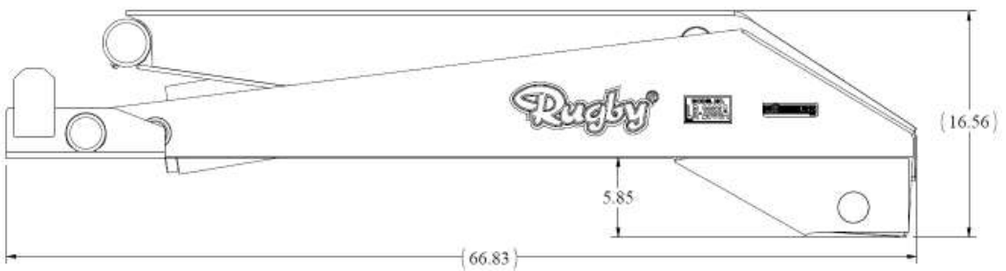
LR–6620 Forward Mounting Dump Class: 70 Conversion Class: G 2 Cylinders, 6” Piston, 20” Stroke					
Body Length (feet)	**CA (inches)**	**Rear Overhang (inches)**	**Capacity 40º Dump (tons)**	**Capacity 45º Dump (tons)**	**Capacity 50º Dump (tons)**
14	120	18	26.9	24.1	21.9
14	132	6	22.7	20.4	18.5
14	138	0	21.1	18.9	17.2
15	132	18	24.6	22.1	20.0
15	138	12	22.7	20.4	18.5
16	120	18	22.7	20.4	18.5
16	138	0	18.5	16.6	15.0
18	156	6	17.4	15.6	14.1
19	156	18	18.5	16.6	15.0
Mounting Height			8.38”		
Minimum Longsill Height			7.00”		
Mounting Distance			106”	95”	86”

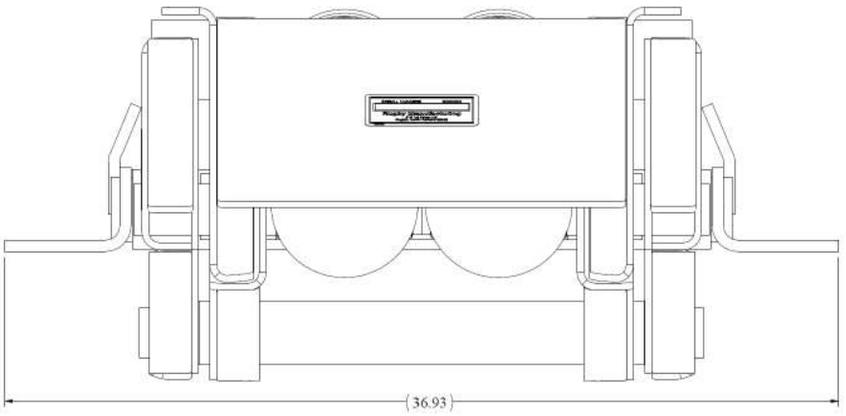
*Reverse Mounting:
40º = 108.75”
45º = 97.25”
50º = 88.00”



LR–6628 Forward Mounting* Dump Class: 90 Conversion Class: J 2 Cylinders, 6” Piston, 28” Stroke					
Body Length (feet)	**CA (inches)**	**Rear Overhang (inches)**	**Capacity 40º Dump (tons)**	**Capacity 45º Dump (tons)**	**Capacity 50º Dump (tons)**
18	156	6	24.8	22.4	20.4
18	138	24	30.0	27.2	24.7
19	156	18	26.3	23.8	21.6
19	138	36	33.2	29.2	26.5
20	156	42	33.2	29.8	27.0
20	168	30	28.5	25.8	23.4
20	174	24	26.7	24.2	22.0
20	186	12	23.7	21.5	19.5
22	174	48	30.6	27.6	25.0
22	180	42	28.5	25.8	23.4
Mounting Height			10.38”		
Minimum Longsill Height			9.00”		
Mounting Distance			142.00”	127.50”	115.25”

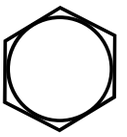
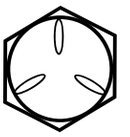
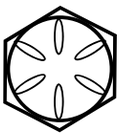
*Reverse Mounting:
40º = 139.75”
45º = 124.75”
50º = 113.00”





Torque Chart

The following chart is to be used as a guide during installation.

Size	Grade 2 (lb–ft)	Grade 5 (lb–ft)	Grade 8 (lb–ft)
			
1/4–20	3–4	6–7	10–11
1/4–28	4–5	8–9	11–12
5/16–18	8–9	14–15	21–22
5/16–24	9–10	15–16	21–22
3/8–16	17–18	24–26	37–40
3/8–24	19–20	28–30	40–43
1/2–13	38–42	60–65	90–100
1/2–20	43–47	70–75	95–105
5/8–11	75–80	122–130	180–190
5/8–18	85–90	145–150	200–210
3/4–10	132–140	220–230	315–330
3/4–16	152–160	250–260	355–370

Section 3: Installation

⚠ DANGER

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 tanks during equipment installation.

⚠ DANGER

Exhaust system heat 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 components.

Rear Hinge Installation

1. Determine the location of the rear hinge. This location should be immediately behind the rear wheel leaf spring shackle.
   NOTE: If a distance of 38” is exceeded between the rear hinge and the center of the rear axle, additional reinforcement of the truck frame is required.
2. Refer to Figure 3 below and cut a notch as shown.

MODEL	X	Y
LR-410	3.53	2.00
LR-416	3.53	3.75 minus D
LR-516	3.53	3.75 minus D
LR-520	3.53	3.75 minus D
LR-620	3.75	4.3125 minus D
LR-623	3.75	4.3125 minus D
LR-628	3.75	4.3125 minus D
LR-5520	3.75	4.3125 minus D
LR-6620	4.375	4.625 minus D
LR-6628	4.375	4.625 minus D

D = The distance from the bottom of the long sill to the top of the chassis

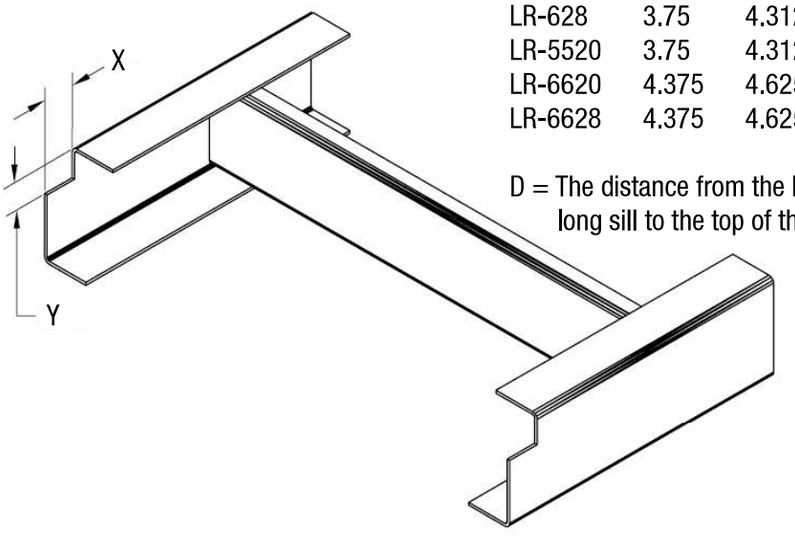


Figure 3: Notch Location

3. Position the rear hinge angle into the notch cut in Step 2 as shown in Figure 4. Center it side–to–side in the notch as illustrated and weld the rear hinge angle to each of the truck chassis frame rails.

NOTES:

- This hinge assembly is designed for a truck longsill spacing of 34” (37.5” for LR–410 model) and is not recommended for any other width.
- The distance between the rear hinge shaft center and the saddle center is referred to as the “M” dimension. See the “Capacity Charts” on page 10 to see the various dump angles.

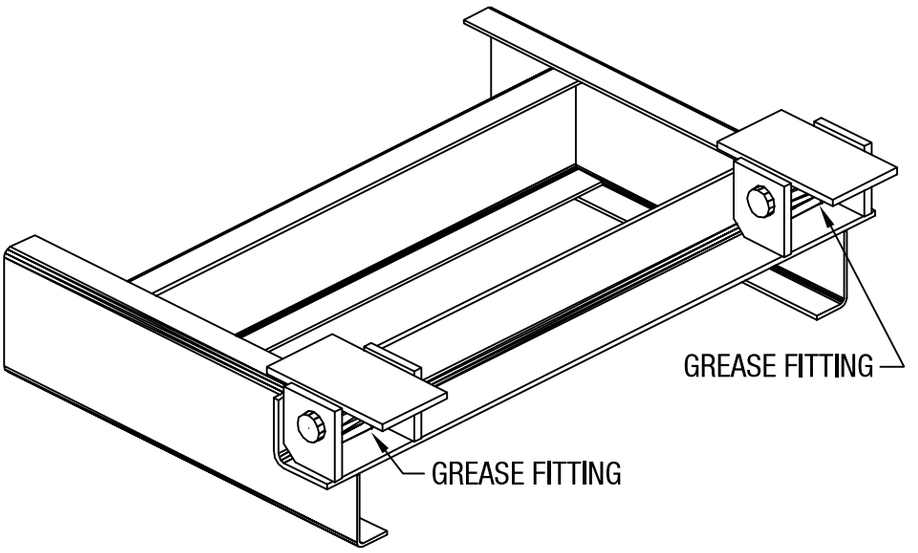
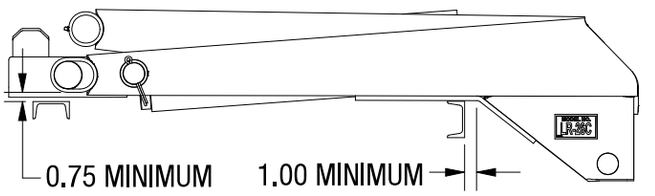


Figure 4: Rear Hinge Location

⚠ CAUTION

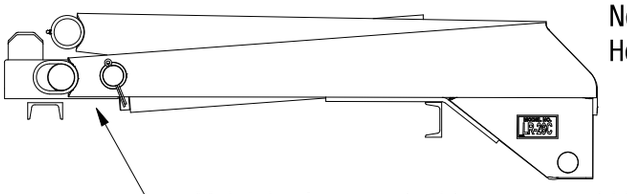
During the first degrees of the dump cycle, the hoist lower link will move forward if in the standard mounting configuration or rearward if in the reverse mounting configuration. It is important to keep these areas open to allow the hoist to move and operate as intended. Blocking these areas may damage the hoist and other truck components.



Maintain shown dimensions to allow room for the hoist to rotate freely during the lift cycle.

Notice how the hoist must be installed so the oval saddle tube is slid as far rearward as possible when the hoist is down.

Figure 5: Hoist Position Before Beginning the Lift Cycle

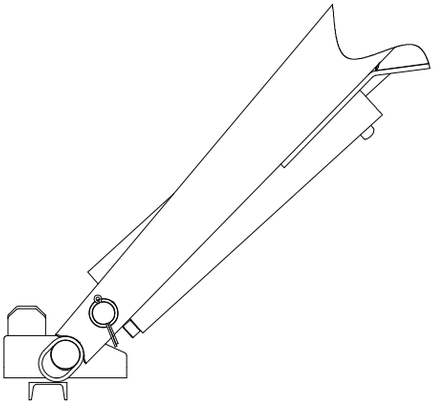


Notice how the oval saddle tube has slid forward. Hoist will slide ahead about 1 inch.

← FORWARD MOVEMENT

Maintain clearance in this area to avoid interference between the hoist and the cross member.

Figure 6: Hoist Position in the First Few Degrees of the Lift Cycle



The size and shape of the cross members shown are for illustration purposes only.
Saddle brackets have been removed in the figures for illustration purposes.

Figure 7: Hoist Position in the Middle of the Lift Cycle

Hoist Frame Installation

1. Slide a lock collar onto each saddle shaft. Slide each saddle shaft into the lower tube as shown in Figure 8.

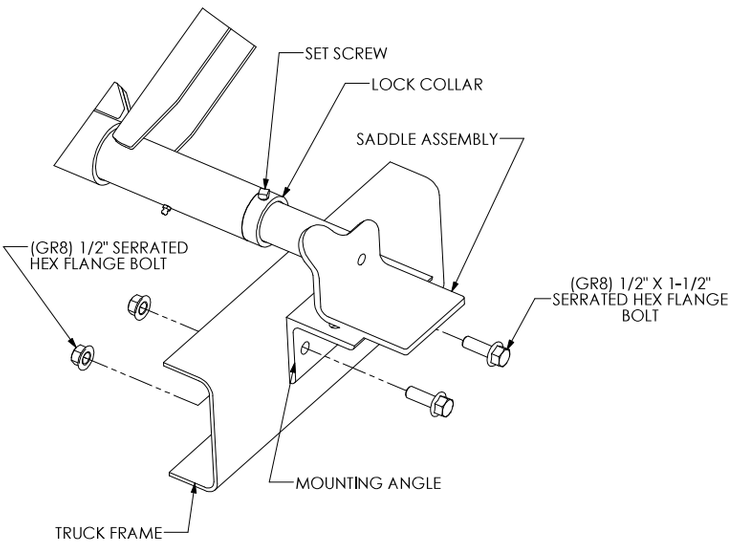


Figure 8: Saddle Assembly

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 hoist is designed to rest on the truck frame as shown in Figure 2. A small portion of the hoist extends below the truck frame, allowing the hoist to be moved forward or rearward to avoid truck cross members.
   NOTES:
   - If an obstruction can not be cleared by moving the hoist forward or rearward, the hoist may be reverse mounted as shown in Figure 2, 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.
   - The distance between the rear hinge shaft center and the saddle center is referred to as the “M” dimension. In Figure 2, the “M” dimension for several dump angles are tabulated.
   - 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.

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 17/32” holes and installing GR8 1/2” x 1–1/2” serrated hex flange bolts, and GR8 1/2” serrated hex flange nuts in each mounting bracket hole (see Figure 8). Tighten all 1/2” fasteners to 90 lbs–ft.

4. Weld each end of the hoist saddle bracket to the corresponding mounting angle (see Figure 8).

   NOTES:
   - Do not weld the hoist or mounting angle to the truck frame.
   - The hoist saddle must set directly on the truck frame. If rivet interference is encountered, counter sink the rivet head into the hoist saddle.

Pump Bracket Installation

1. Position and clamp the pump bracket to the chassis frame in a con–venient location. Ensure the location of the pump is close enough to allow the hose to connect the pump to the hoist cylinder.

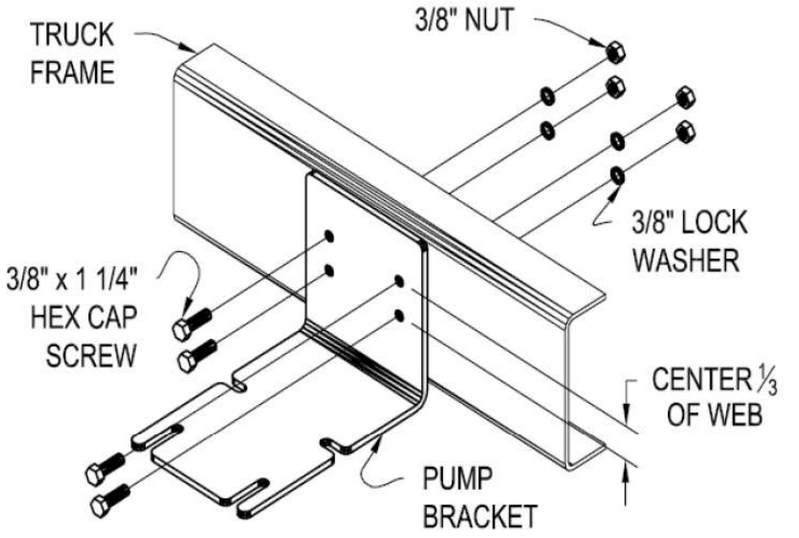


Figure 9: Pump Bracket Assembly

2. Drill four 13/32” 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 (see Figure 9).
   NOTES:
   - To maintain chassis frame strength, keep all four 13/32” diameter holes within the middle third of the frame web (see Figure 9).
   - To install the pump, refer to the pump installation manual included with the pump package.
3. Install the hydraulic system using the applicable Pump Installation & Operation Manual listed on page 8.

Body Installation

1. Slide a lock collar onto each lifting shaft. Slide a lifting shaft with col–lar into each end of the hoist lifting tube (Figure 10).

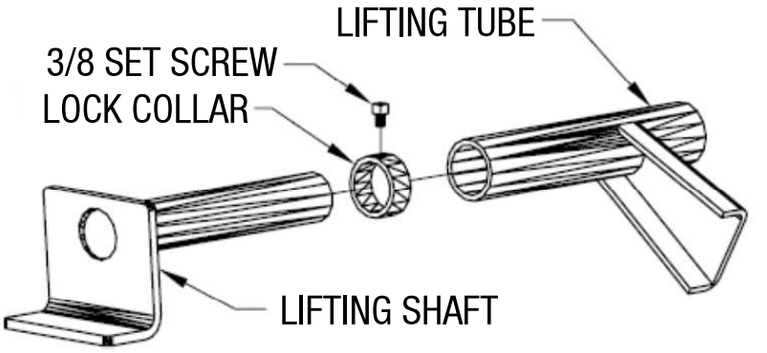


Figure 10: Lift Shaft Assembly

2. Position the body with the long beams (just long beams if they are separate from the body) onto the truck frame.
   NOTES:
   - A clearance of at least 2” is required between the truck cab and the closest point on the truck body.
     The LR–410, LR–416, & LR–516 require 5–3/4” clearance above the truck frame.
     The LR–520 and LR–620 requires 7–1/2” clearance above the truck frame.
     The LR–623, LR–628, and LR–5520 requires 8–1/8” clearance above the truck frame.
     The LR–6620 requires 8–3/8” clearance above the truck frame.
     The LR–6628 requires 10–3/8” clearance above the truck frame.

   - On some truck models, 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 (Figure 11).

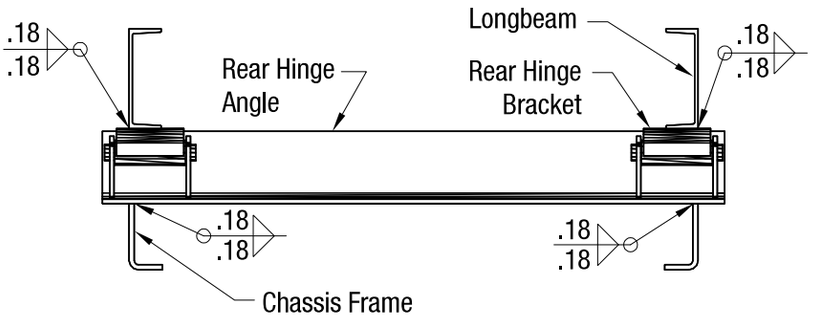


Figure 11: Rear Hinge Location on Long Beam

> **⚠ CAUTION**
>
> The saddle tube is oblong to allow the hoist to slide front to back as part of the anti-kickup design. Before performing the next step, the saddle tube must be slid as far rearward as possible as shown in Figure 6. Failure to do this will cause the anti-kickup to function improperly and cause damage to the hoist, truck body, and other truck components.

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 to 24 lbs–ft (see Figure 10).

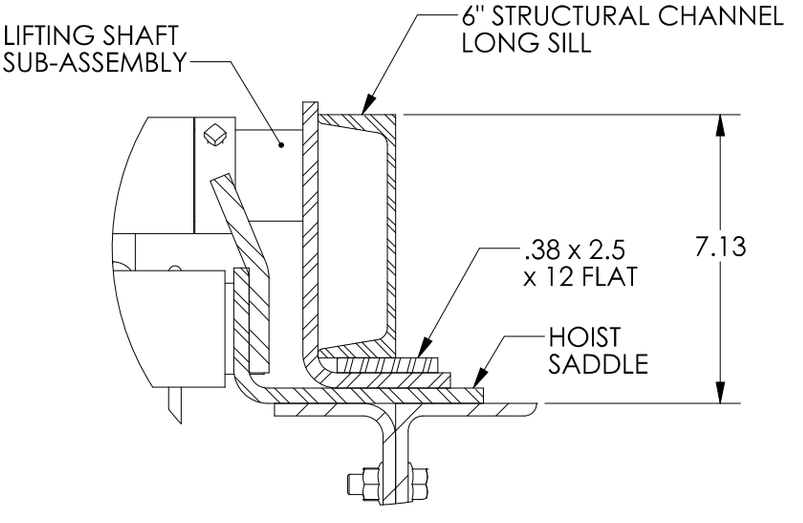
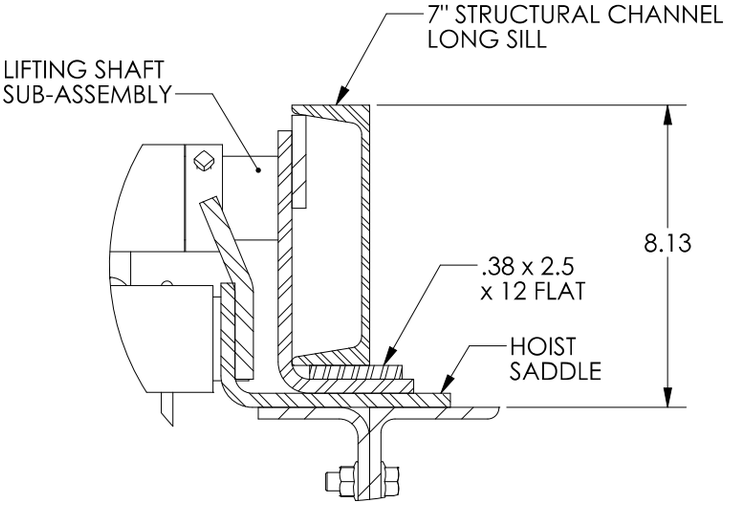
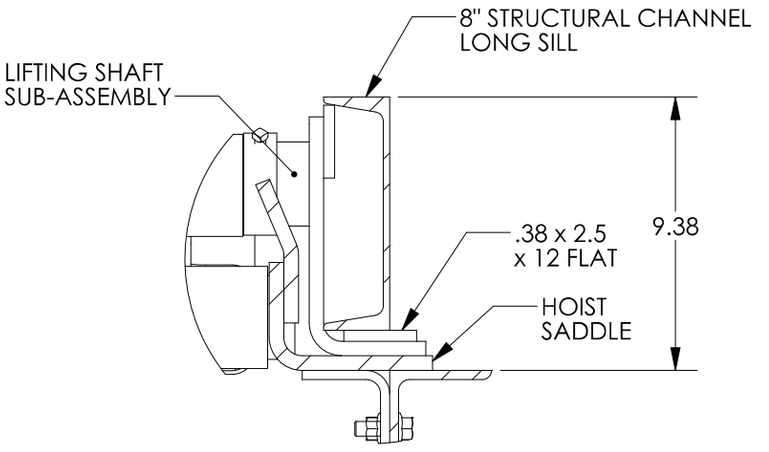


Figure 12: Hoist to Body Detail for 6” Structural Channel



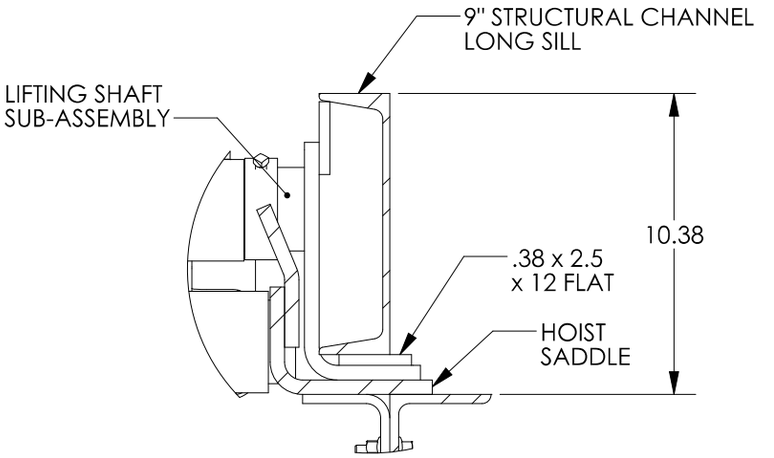
HOIST TO BODY ATTACHMENT DETAIL FOR 7" STRUCTURAL CHANNEL LONG SILL AND 8.13" MOUNTING HEIGHT.

Figure 13: Hoist to Body Detail for 7” Structural Channel



HOIST TO BODY ATTACHMENT DETAIL FOR 8" STRUCTURAL CHANNEL LONG SILL AND 9.38" MOUNTING HEIGHT.

Figure 14: Hoist to Body Detail for 8” Structural Channel



HOIST TO BODY ATTACHMENT DETAIL FOR 9" STRUCTURAL CHANNEL LONG SILL AND 10.38" MOUNTING HEIGHT.

Figure 15: Hoist to Body Detail for 9” Structural Channel

5. Install and lubricate all grease fittings and tighten to 70 lbs–in. See Figure 4 and Section 6: Maintenance for grease fitting locations.

6. With the hoist and body completely installed, cycle the hoist several times to rid the hydraulic circuit of air.

⚠ DANGER

NEVER operate the hoist until bystanders are free & clear of the hoist and body. This may result in injury or death.

⚠ DANGER

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.

7. Raise the hoist and body. Position the body prop and prop base as shown in Body Prop Installation Manual. Weld the prop base to the body long beam.

   NOTE: Before using the hoist, read the Operation section on page 38.

8. Place all Installation & Operation Manuals in the vehicle glove box to ensure they are always available for the operator.

⚠ DANGER

Place a complete hoist operation manual in the glove box of the truck that will pull the trailer OR in a place on the trailer that is sheltered from the weather and other elements. This manual MUST BE available for reference by the operator when needed.

Body Prop Calculation

A body prop and the required hardware is supplied with every LR–series hoist package. It is the responsibility of the installer to determine wheth–er one body prop is sufficient. The following information will help make that determination.

⚠ DANGER

NEVER position yourself or allow others under a raised body as this can result in serious injury or death should the body inadvertently descend. ALWAYS prop up the **unloaded** body using the body props.

The body prop is designed for use only when the body is empty. The purpose of the body prop is to hold an empty body in the raised position when performing maintenance or inspection on the hoist, body, or any component that requires working under an **empty** body.

⚠ DANGER

NEVER operate the hoist until bystanders are free & clear of the hoist and body. This may result in injury or death.

⚠ DANGER

NEVER perform maintenance under a raised body without first blocking the empty body up with body prop(s).

⚠ DANGER

NEVER use a body prop that is bent or damaged.
A damaged body prop has reduced holding capacity and may break during use. This may result in injury or death.
Replace all damaged parts before using equipment.

For instructions on how to raise and lower the body prop, refer to the Operation section of this manual on page 38.

1. Referring to Figure 16, determine the horizontal distance between the rear hinge and the prop when the body is empty and in the upward position, known as value “P”.

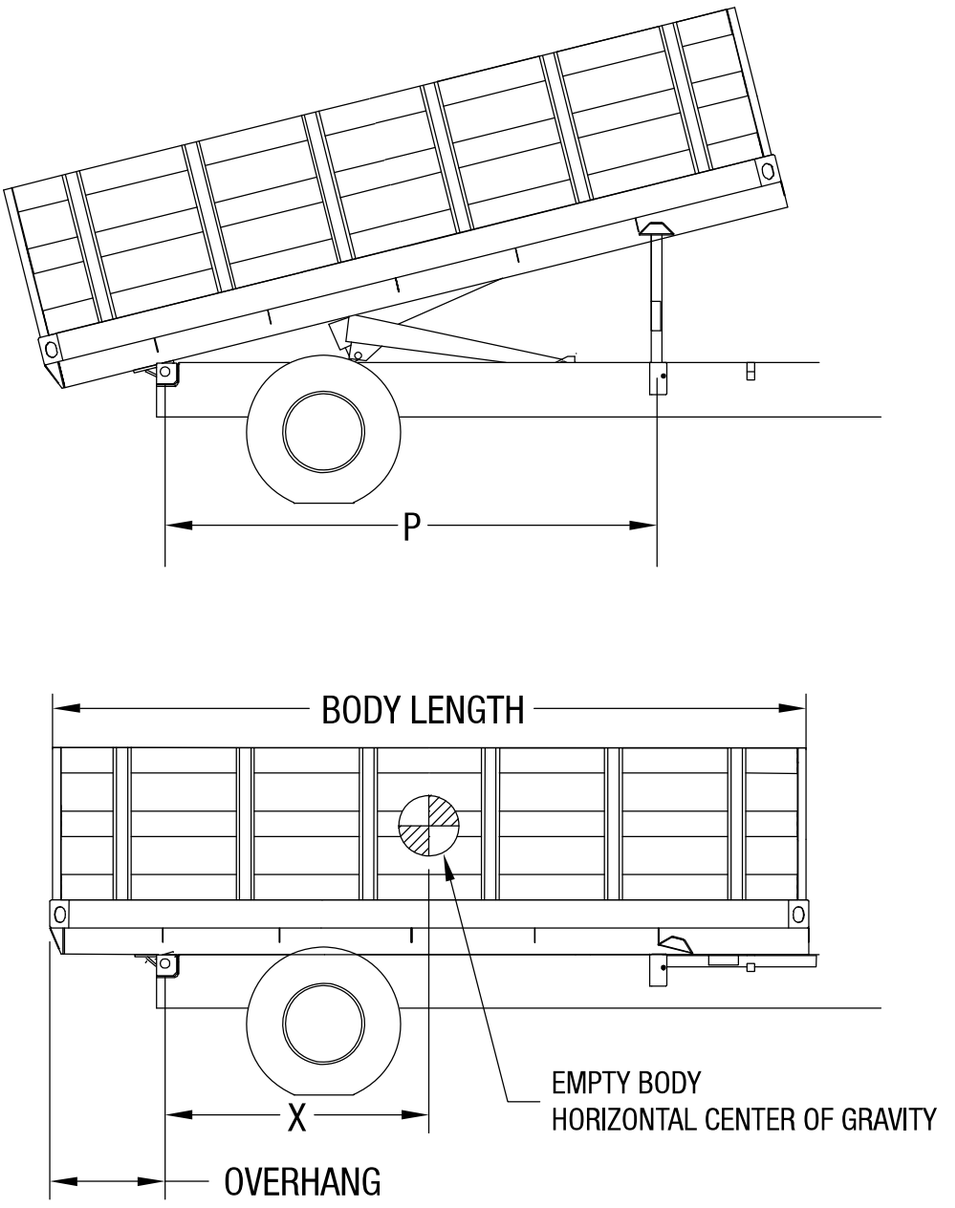


Figure 16: Body Prop Measurements

2. Referring to Figure 16, determine the horizontal distance between the body center of gravity and the rear hinge when the body is empty and in the lowered position, known as value “X”. Be sure to include any items attached to the body such as tool boxes or other structures when determining the center of gravity.

3. Use the following chart to locate the cell where the determined “P” and “X” values intersect. This represents the maximum weight that can be supported with only one body prop. **If the body weighs more than the amount listed, two body props will be required.** Contact Rugby Manufacturing Co. to order Body Prop part number 03–0703.

   NOTE: If the body weighs more than two times the amount listed in the chart, another body prop with more weight capacity will be required.

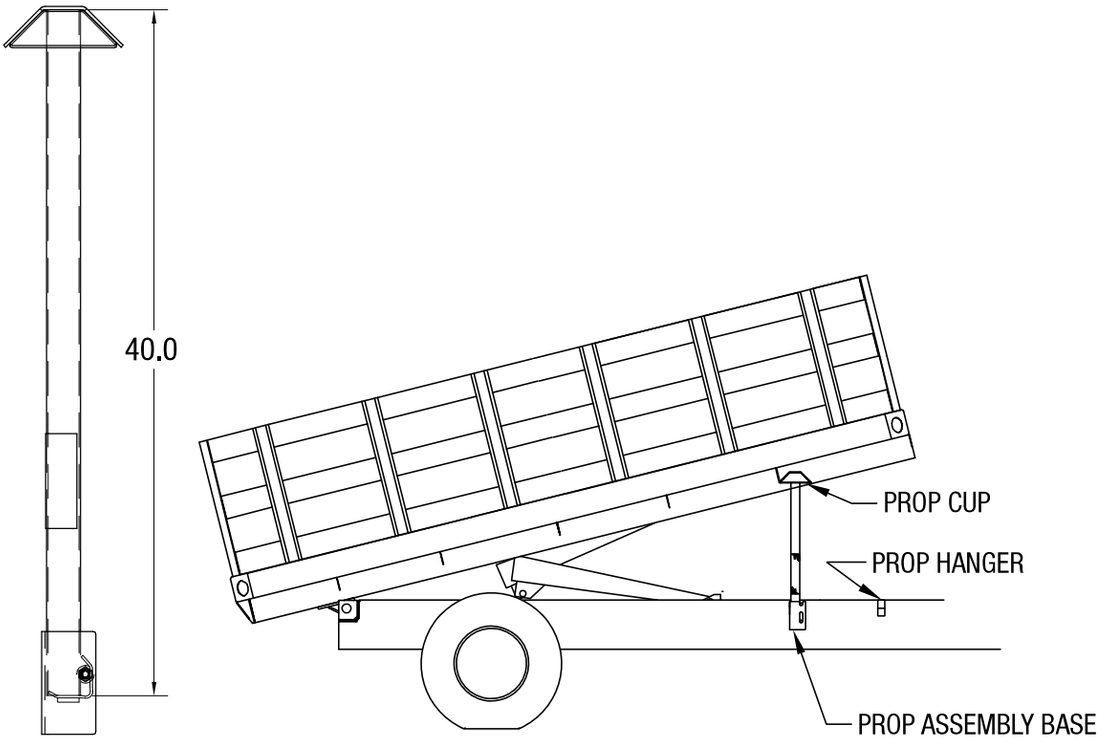
Maximum Body Weight Per Body Prop (PN 03–0703)										
Distance Rear Hinge to Body Prop (P)	Distance Rear Hinge to Center of Gravity (X)									
	0–36	37–48	49–60	61–72	73–84	85–96	97–108	109–120	121–132	133–144
42–47	6100	4500	3500	2800	2300	2000	1700	1500	1300	1100
48–53	6600	4800	3800	3000	2500	2100	1800	1600	1400	1200
54–59	7200	5200	4100	3300	2800	2300	2000	1800	1600	1400
60–65	7700	5700	4400	3600	3000	2600	2200	1900	1700	1500
66–71	8300	6100	4800	3900	3300	2800	2400	2100	1900	1700
72–77	8900	6600	5100	4200	3500	3000	2600	2300	2000	1800
78–83	9500	7000	5500	4500	3800	3200	2800	2500	2200	2000
84–89	10200	7500	5900	4800	4000	3500	3000	2700	2400	2100
90–95	10800	7900	6200	5100	4300	3700	3200	2800	2500	2300
96–101	11400	8400	6600	5400	4600	3900	3400	3000	2700	2400
102–107	12100	8900	7000	5800	4900	4200	3700	3200	2900	2600
108–114	12700	9400	7400	6100	5100	4400	3900	3400	3100	2800
115–119	13400	9900	7800	6400	5400	4700	4100	3600	3200	2900
120–125	14000	10400	8200	6700	5700	4900	4300	3800	3400	3100
126–131	14700	10900	8600	7100	6000	5200	4500	4000	3600	3300
132–137	15300	11400	9000	7400	6300	5400	4700	4200	3800	3400
138–143	16000	11800	9400	7700	6500	5600	5000	4400	4000	3600
144+	16600	12300	9800	8000	6800	5900	5200	4600	4100	3700

Example: A 12’ body with an empty weight of 6,000 lbs. The body is installed with an 18” overhang. The prop is located 84” forward of the rear hinge. Assume the center of gravity is 72” from the rear of the body. Subtract the overhang to get X = 54”. Using P = 84–89, X = 49–60, the maximum body weight is 5,900 lbs. This application needs 2 body props. Remember, this is an example only, and in no way means that this hoist is or is not acceptable to use in this application.

Body Prop Installation

The following steps are a guideline for installing the body prop. Since trucks vary according to their design, it is not possible to be specific about every aspect of the body prop installation.

1. Once the hoist has been installed, raise the hoist up and temporar–ily block the body up. Position the prop assembly against the truck frame as illustrated in Figure 17.



Body Prop 40” Tube Mounting of Body Prop (For reference purposes only)

Figure 17: Body Prop Installation Location

2. Fasten the body prop assembly base to the truck frame.
3. Position and fasten the prop hanger to the truck frame. The hanger must be installed so that when the body is down, the body prop leg will not bounce out of the hanger.
4. Position and weld the prop cup on the body as illustrated in Figure 17.

Section 4: Decal Locations

⚠ DANGER

Missing or damaged decals can lead to accidents which may cause serious injury or death. Replace any missing or damaged decals immediately by contacting a Rugby dealer or Rugby Manufacturing Co..

Two Hoist Danger decals are supplied with each LR–series hoist. These decals must be positioned as shown in Figure 19 on both the left– and right–hand sides of the truck. The chosen decal location should be free of any viewing obstructions.

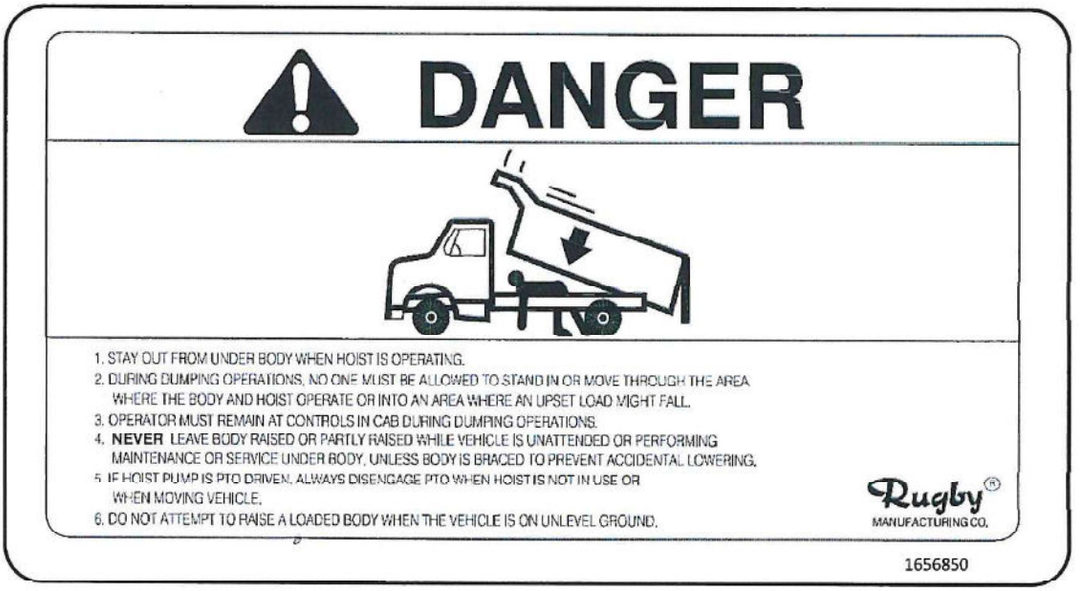


Figure 18: Hoist Danger Decal

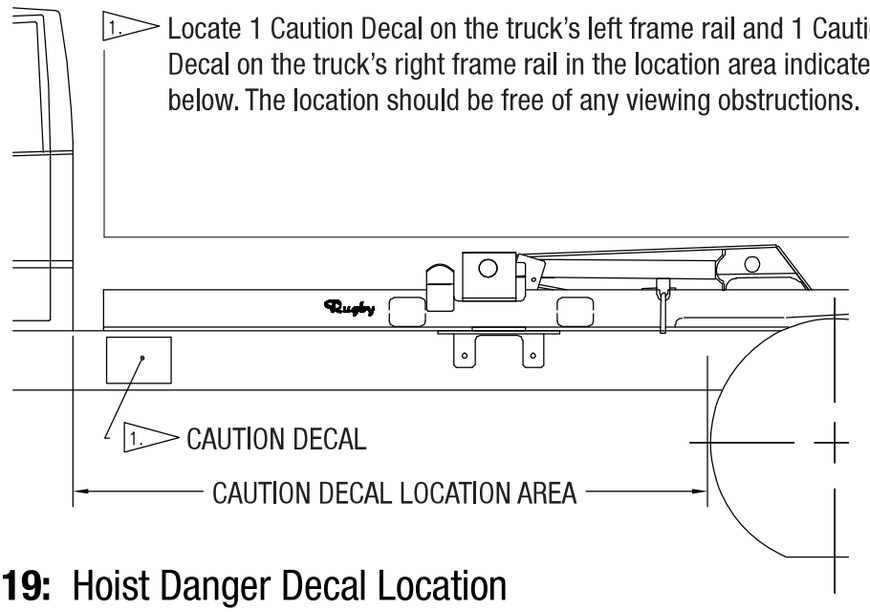


Figure 19: Hoist Danger Decal Location

Section 5: Operation

Body Prop Operation

⚠ DANGER

NEVER operate the hoist until bystanders are free & clear of the hoist and body. This may result in injury or death.

⚠ DANGER

NEVER position yourself or allow others under a raised body as this can result in serious injury or death should the body inadvertently descend. ALWAYS prop up the **unloaded** body using the body props.

1. Raise the body to the sufficient height and shut off all power.
2. Grasp the body prop handle at arms length and rotate the prop up–wards.
3. Swing the body prop up to the vertical position and push downward until the prop locks in–line with the support bracket on the body.
4. Using the in–cab controls, lower the body slowly until the prop con–tacts the prop cup.

⚠ CAUTION

NEVER power the hoist downward when body prop(s) are being used. Damage to the hoist, truck body, and other truck components may occur.

5. To lower the body prop for normal operation, perform Steps 1–4 above in reverse order.

Hoist and Pump Operation

⚠ DANGER

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.

⚠ DANGER

NEVER operate the hoist until bystanders are free & clear of the hoist and body. This may result in injury or death.

⚠ DANGER

Avoid bouncing or jerking of the hoist. This may result in component failure, injury or death.

⚠ DANGER

- NEVER allow bystanders to stand in or move through the work area or surroundings where the load may fall.
- NEVER leave a body raised or partially raised while the truck is unattended.
- The operator must ALWAYS remain at the controls during a dumping operation. All controls must be permanently located in the truck cab or a location where it is not possible to be under the body during a dumping operation.
- NEVER raise a loaded body when the vehicle is on uneven ground to prevent the vehicle from over turning.
- ALWAYS disengage the drive when the hoist is not in use or when moving a load on units that the pump is direct driven by the truck.

Raising the Hoist

1. Push in the “UP” button on the control station to 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, as this will put stress on the whole hydraulic and electrical system.
3. To stop the pump from bypassing, release the “UP” button on the control station.

Lowering the Hoist

1. Push the “DOWN” button in on the control station to start the pump and lower the box.
2. To stop the hoist from lowering, release the “DOWN” button on the control station. The hoist will stop lowering and hold its position.

Section 6: Maintenance

Every 100 cycles or every two months, whichever comes first:

Lubricate Grease Fittings

1. Install and grease the all grease fittings in the hoist frame itself. Refer to Figure 20 for grease fitting locations.
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.

Check and Change Pump Reservoir

1. Check the pump reservoir oil level every time the oil is changed in the truck engine.
2. Keep the oil clean. An annual oil change can prevent contaminants from ruining the pump and hoist cylinder.

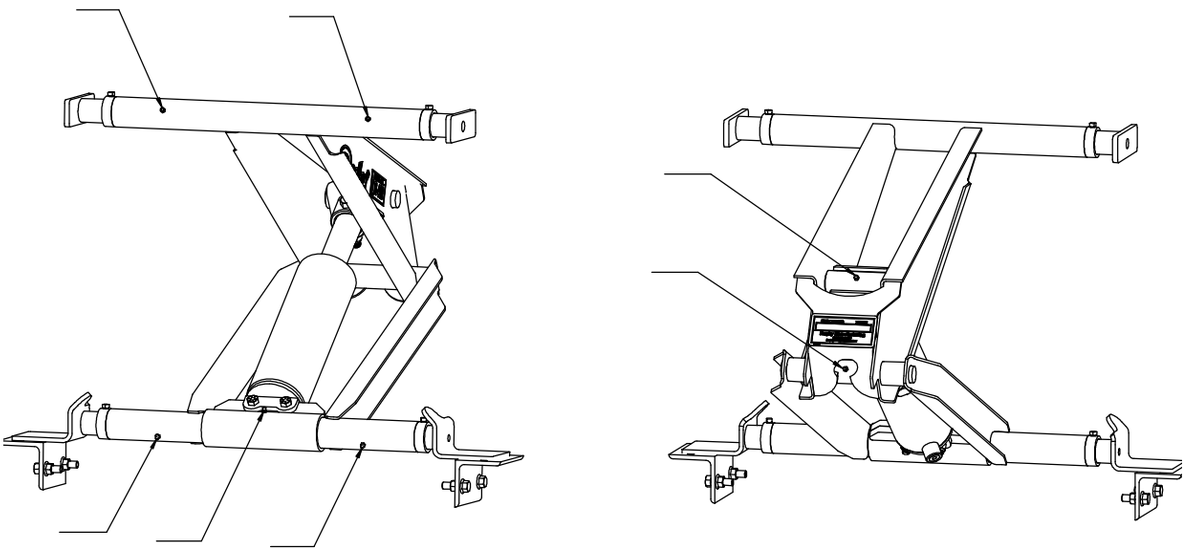


Figure 20: Grease Fitting Locations (LR–410)

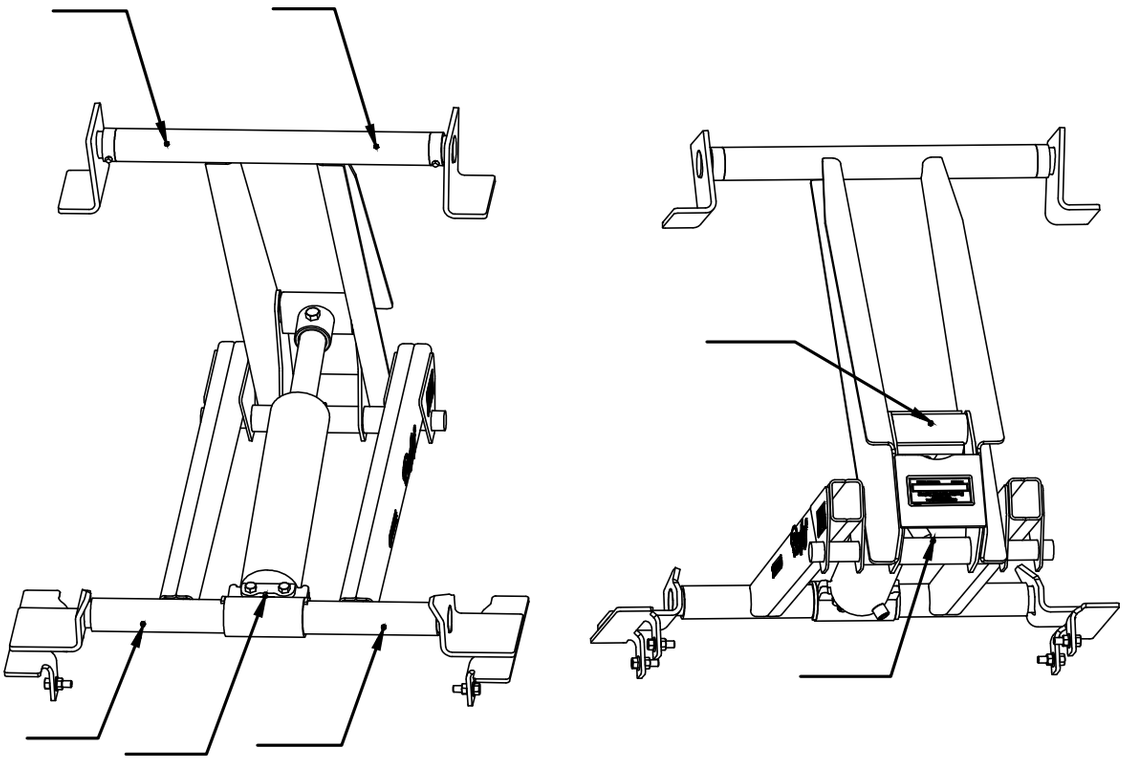


Figure 21: Grease Fitting Locations (LR–416)

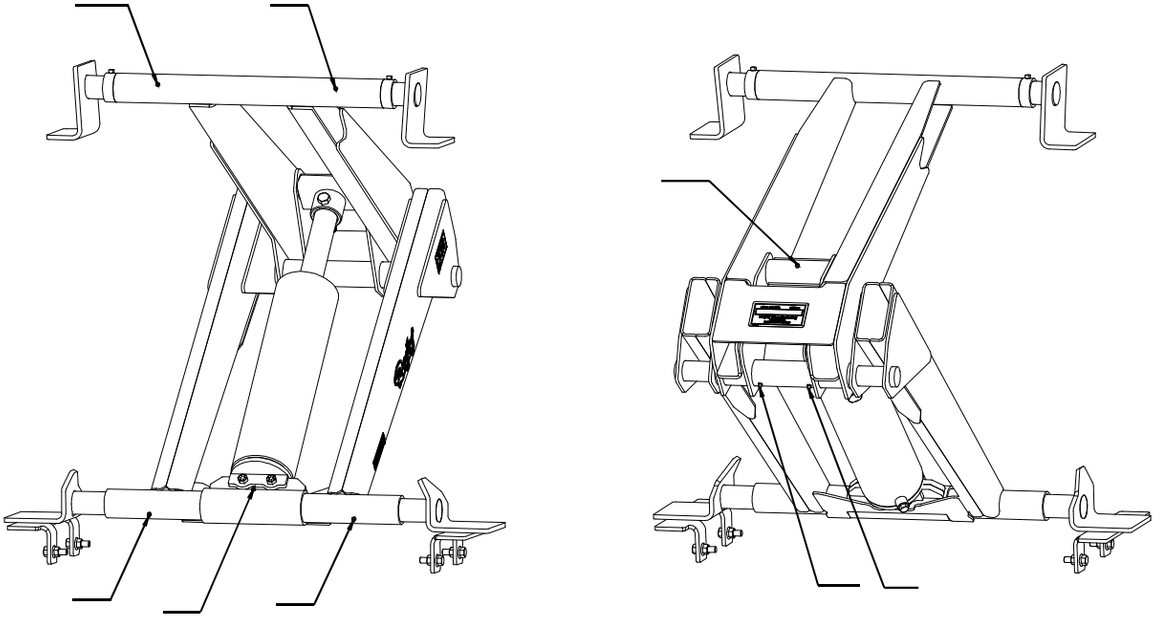


Figure 22: Grease Fitting Locations (LR–516)

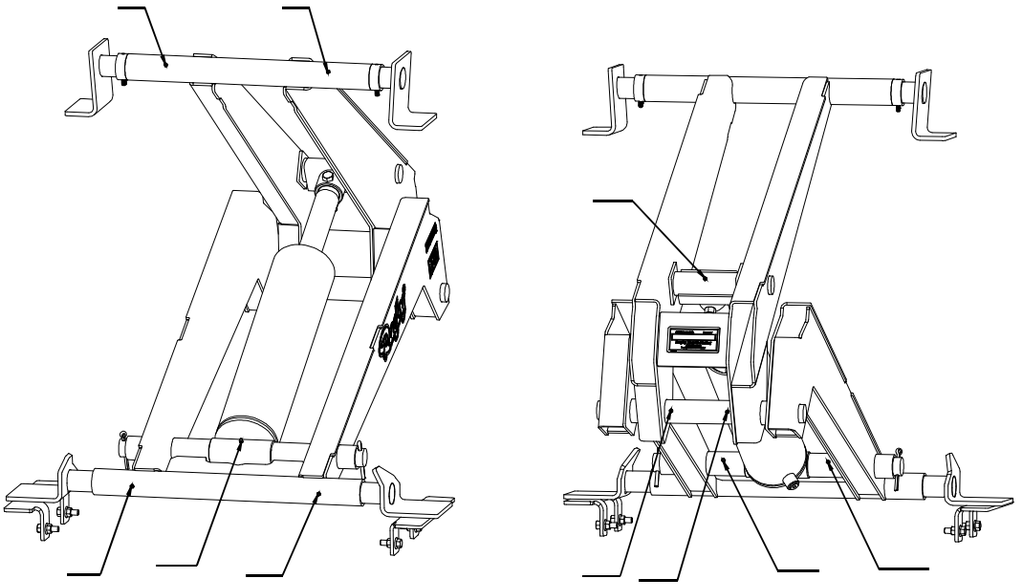


Figure 23: Grease Fitting Locations (LR–520)

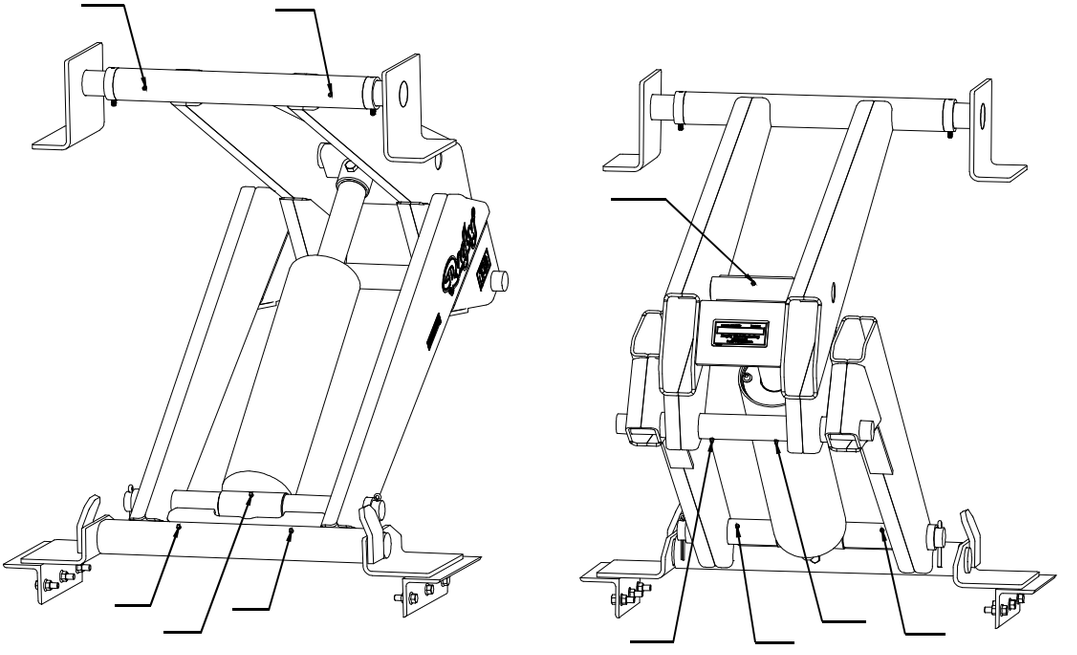


Figure 24: Grease Fitting Locations (LR–620)

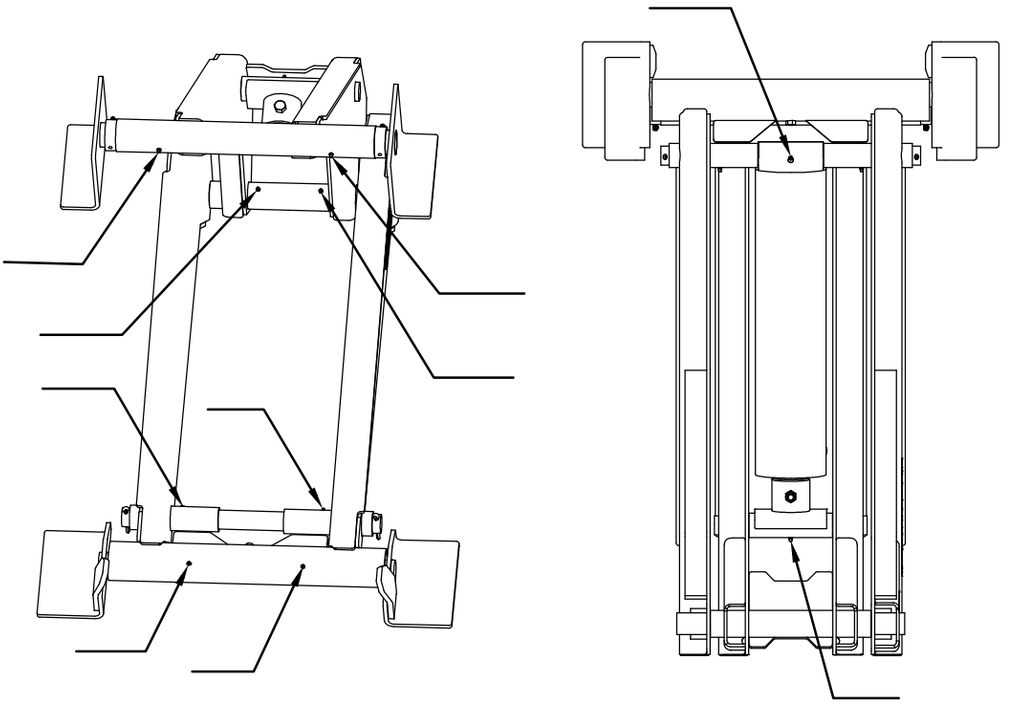


Figure 25: Grease Fitting Locations (LR–623)

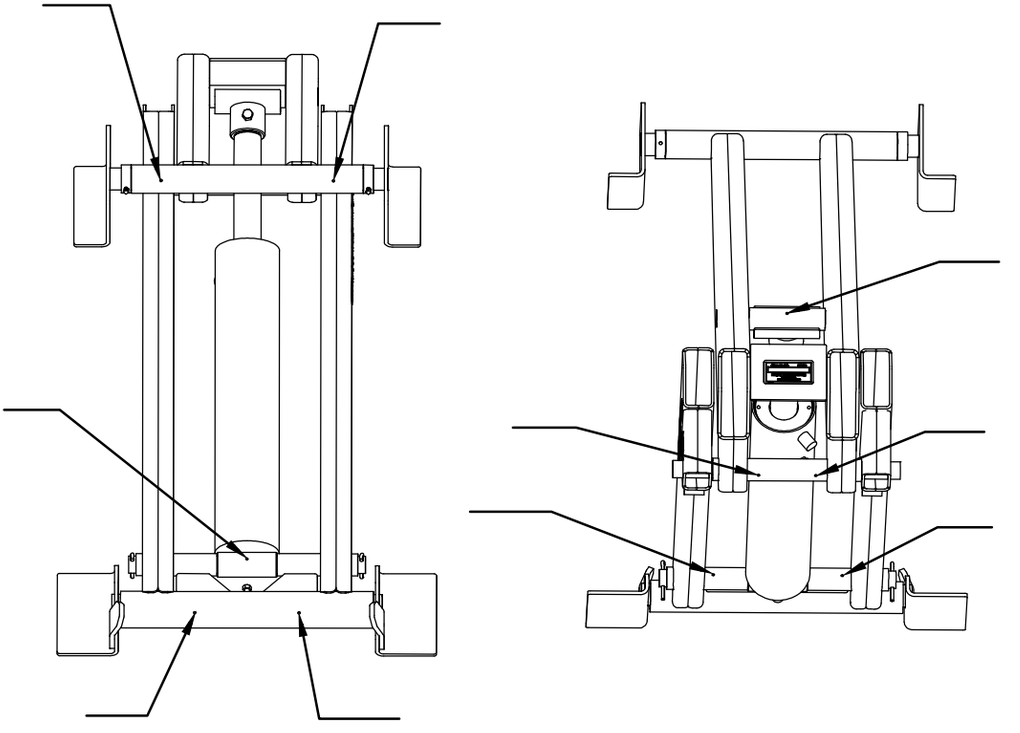


Figure 26: Grease Fitting Locations (LR–628)

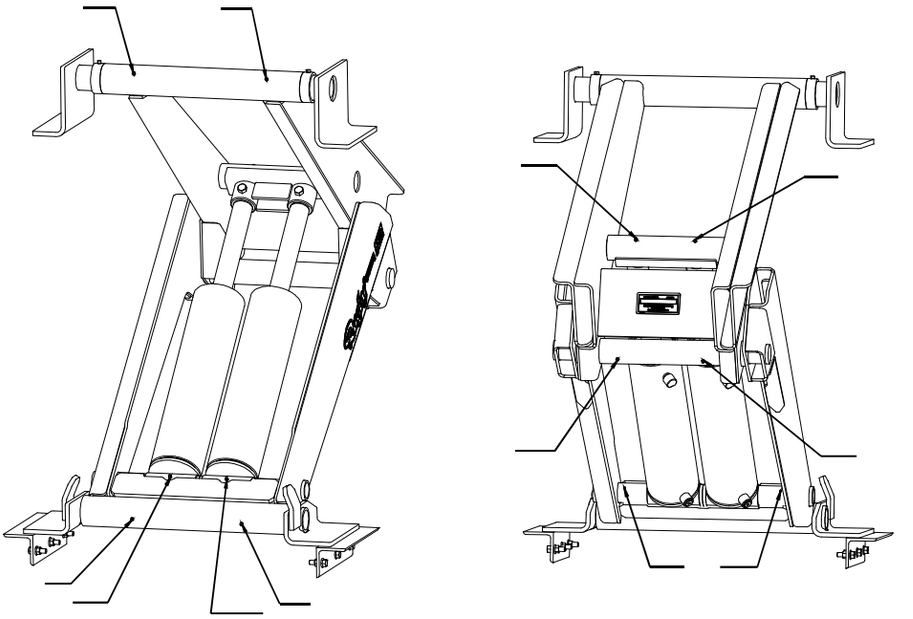


Figure 27: Grease Fitting Locations (LR–5520)

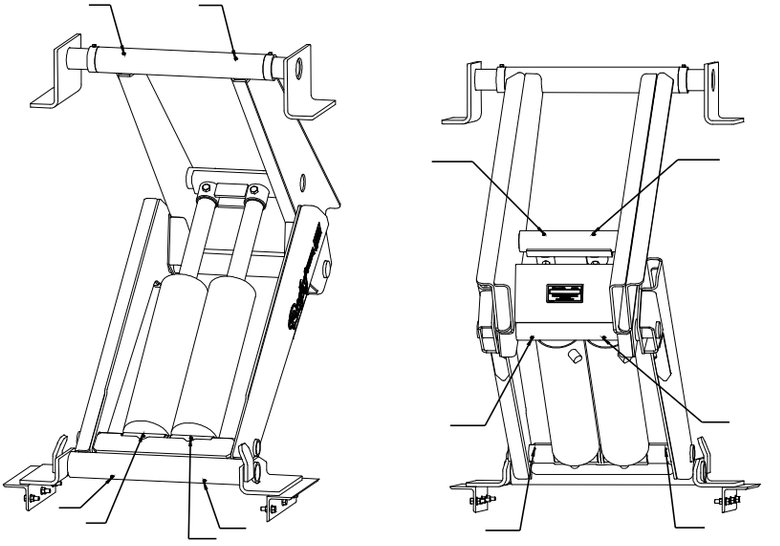


Figure 28: Grease Fitting Locations (LR–6620)

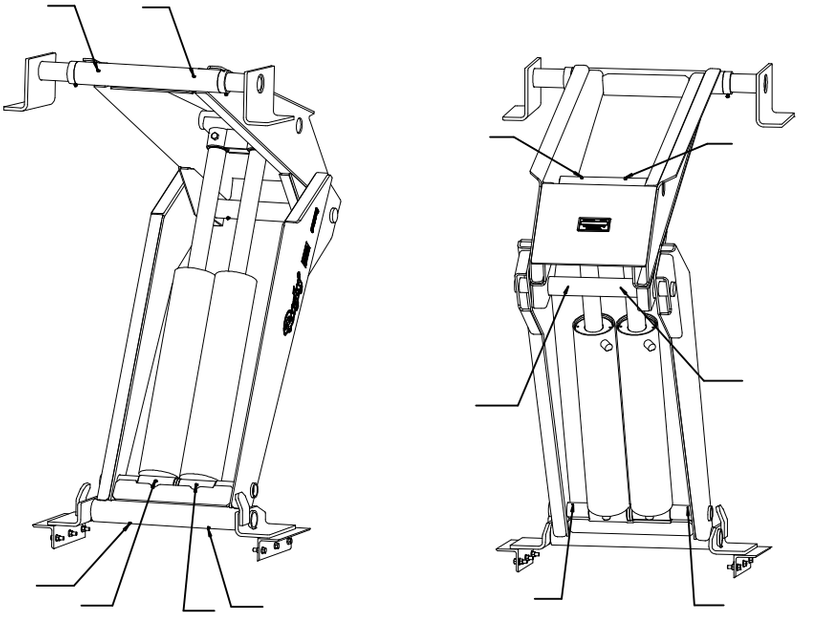
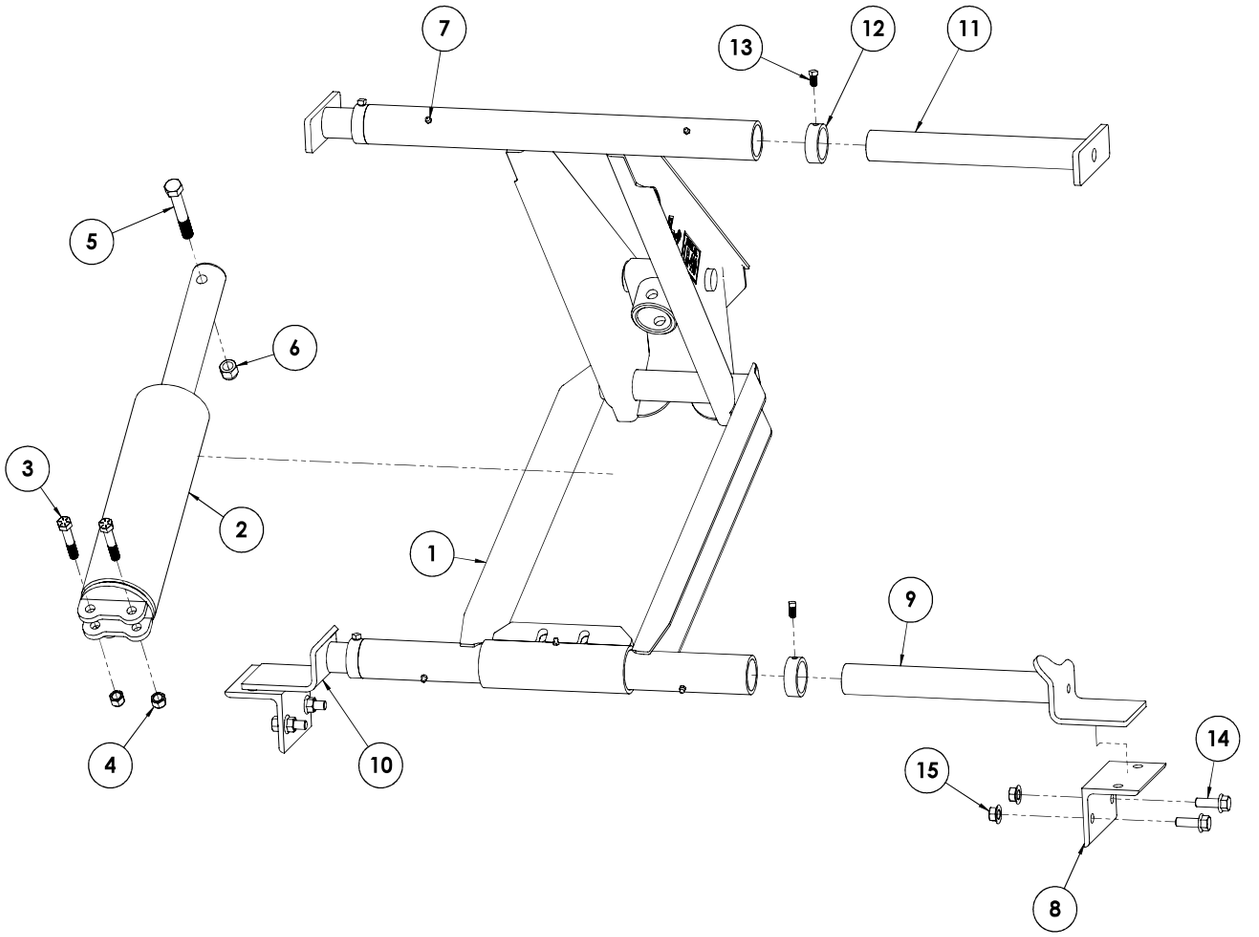


Figure 29: Grease Fitting Locations (LR–6628)

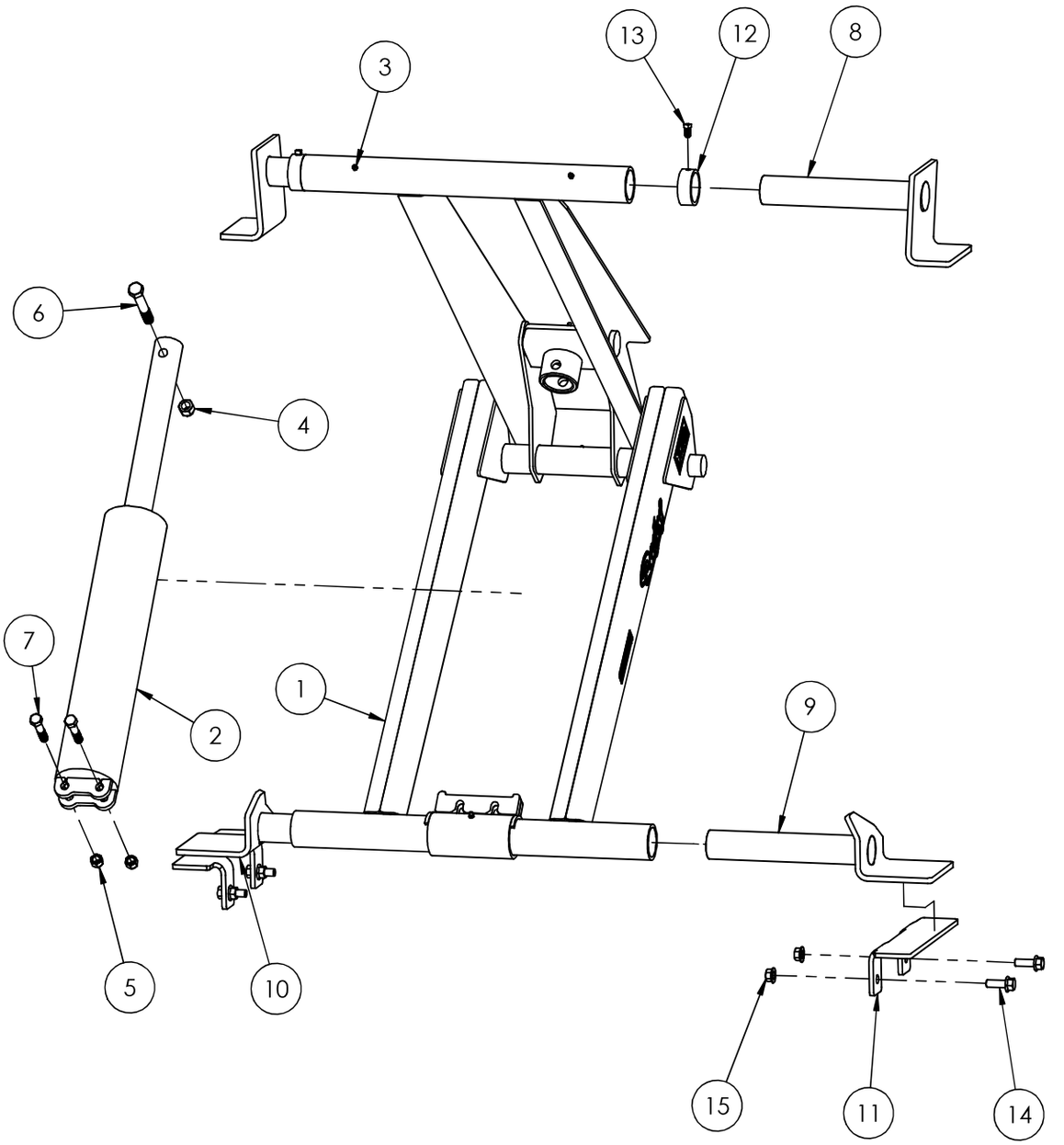
Section 7: Exploded Views

LR–410 Model



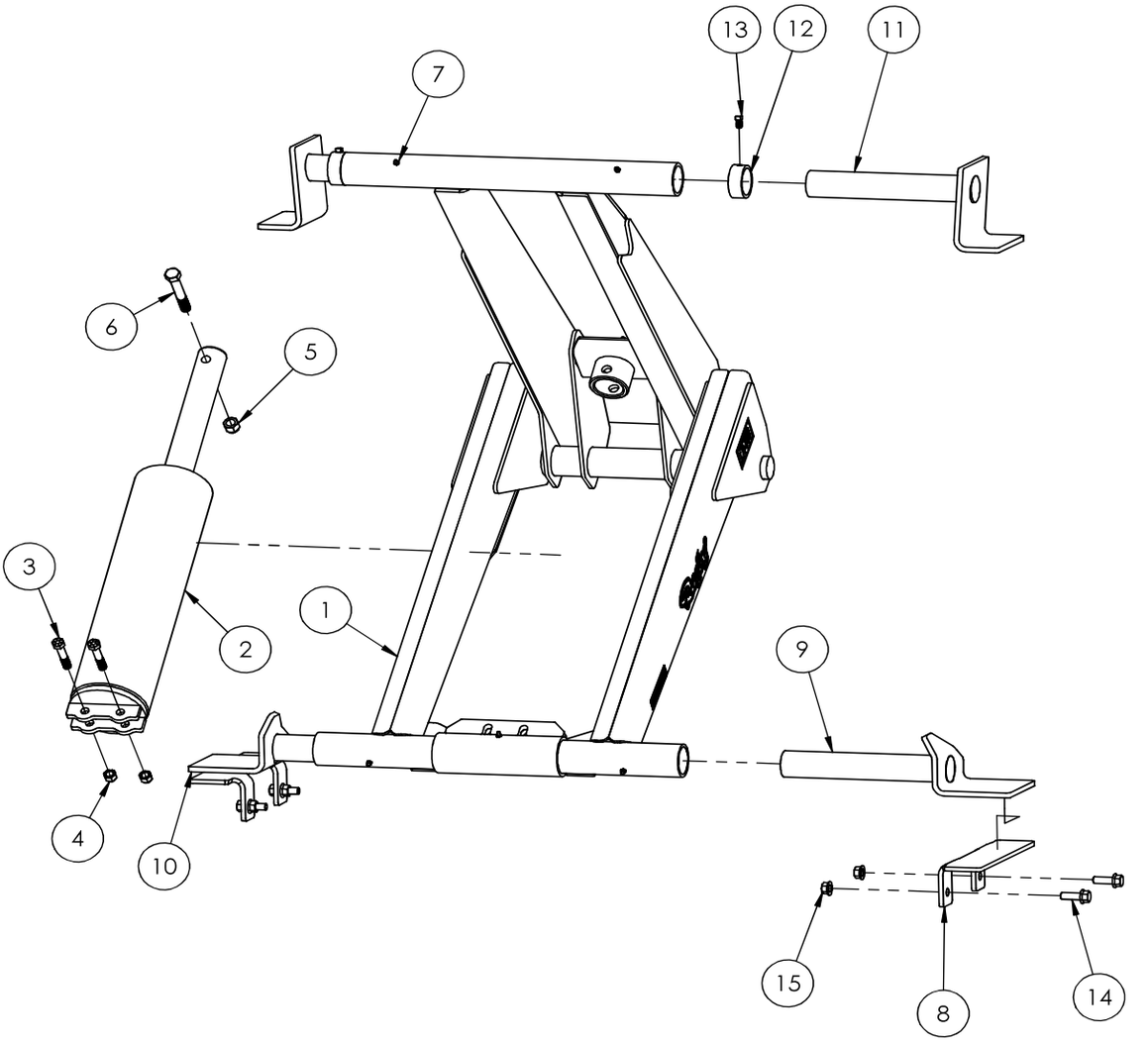
LR–410 Parts List			
Item	Part #	Description	Qty
1	2482573	FRAME, LR–410 HOIST PCBLK	1
2	2496446	ASSY CYLINDER 4 x 10 PNT	1
3	1643730	SCREW, 1/2–13 X 2–3/4 HHC GR8 PLT	2
4	1642984	NUT, 1/2–13 NYLOCK – NE GR8 STL	2
5	1653838	SCREW, 5/8–11 X 4 HHC GR8 PLT	1
6	1643070	NUT, 5/8–11 NYLOCK – NE, GR. 5 STL	1
7	1520370	FITTING, 1/4–28 THREAD FORMING GREASE	7
8	1655043	ANGLE, MOUNTING	2
9	1655200	BRACKET, LR–3510 L SADDLE	1
10	1655201	BRACKET, LR–3510 R SADDLE	1
11	1655198	LIFTING SHAFT SA	2
12	1655176	LOCK RING	4
13	1653845	SET SCREW, 3/8–16 X 5/8 SQR HD, BLK	4
14	2722650	BOLT, 1/2–13 X 1–1/2 FLG GR8 STL YZ SRTD	4
15	2722645	NUT, 1/2–13 FLG GR8 STL YZ SRTD	4

LR–416 Model



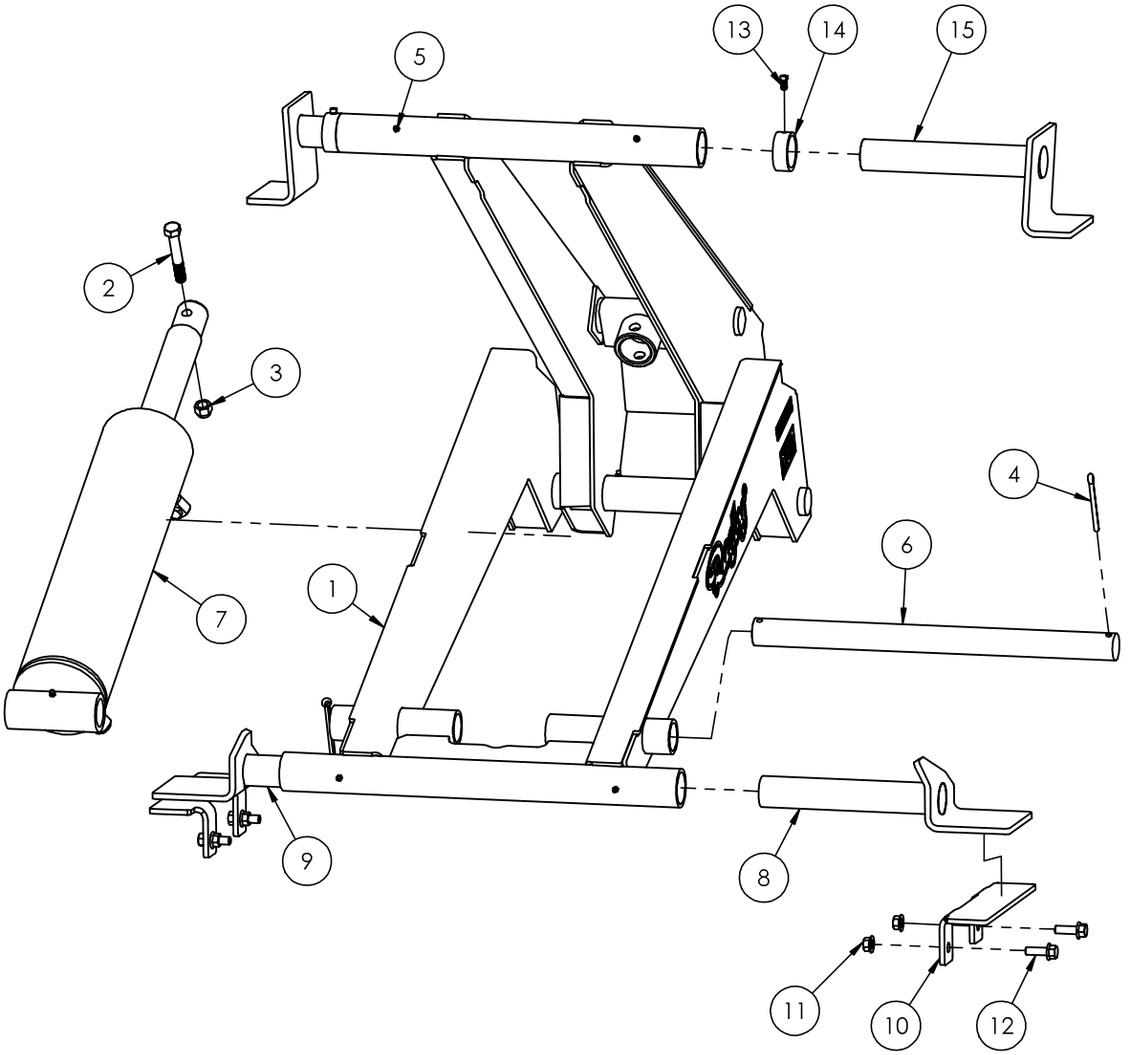
LR–416 Parts List			
Item	Part #	Description	Qty
1	1657122	FRAME, LR–416B PCBLK HOIST	1
2	1621265	CYLINDER, 4X16, TH–410	1
3	1520370	FITTING, 1/4–28 THREAD FORMING GREASE	7
4	1643070	NUT, 5/8–11 NYLOCK – NE, GR. 5 STL	1
5	1642984	NUT, 1/2–13 NYLOCK – NE GR8 STL	2
6	1653838	SCREW, 5/8–11 X 4 HHC GR8 PLT	1
7	1620051	SCREW, 1/2–13 X 2–1/2 HHC GR8 PLT	2
8	1655695	BRACKET, LR–416/165/25 LIFT	2
9	1655677	BRACKET, LR416/165/25 LEFT SADDLE	1
10	1655678	BRACKET, LR416/165/25 RIGHT SADDLE	1
11	1655917	BRACKET, MOUNTING ANGLE	2
12	1654905	COLLAR, 2.00 LOCK	2
13	1653845	SET SCREW, 3/8–16 X 5/8 SQR HD, BLK	2
14	2722650	BOLT, 1/2–13 X 1–1/2 FLG GR8 STL YZ SRTD	4
15	2722645	NUT, 1/2–13 FLG GR8 STL YZ SRTD	4

LR–516 Model



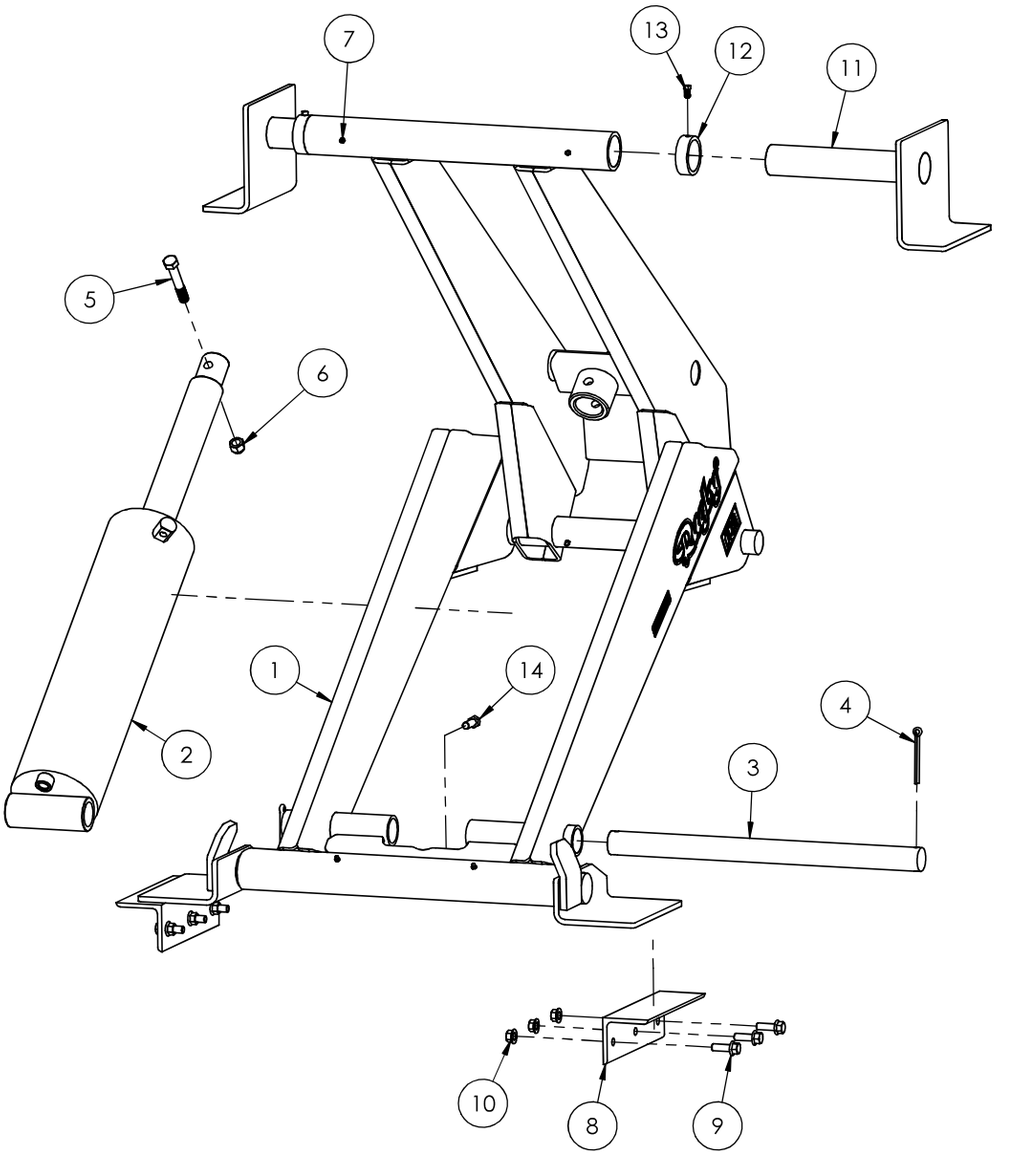
LR–516 Parts List			
Item	Part #	Description	Qty
1	1657156	FRAME, LR–516 PCBLK HOIST	1
2	1621474	CYLINDER, 5 X 16 HR–520	1
3	1620051	SCREW, 1/2–13 X 2–1/2 HHC GR8 PLT	2
4	1642984	NUT, 1/2–13 NYLOCK – NE GR8 STL	2
5	1643070	NUT, 5/8–11 NYLOCK – NE, GR. 5 STL	1
6	1653838	SCREW, 5/8–11 X 4 HHC GR8 PLT	1
7	1520370	FITTING, 1/4–28 THREAD FORMING GREASE	8
8	1655917	BRACKET, MOUNTING ANGLE	2
9	1655677	BRACKET, LR416/165/25 LEFT SADDLE	1
10	1655678	BRACKET, LR416/165/25 RIGHT SADDLE	1
11	1655695	BRACKET, LR–416/165/25 LIFT	2
12	1654905	COLLAR, 2.00 LOCK	2
13	1653845	SET SCREW, 3/8–16 X 5/8 SQR HD, BLK	2
14	2722650	BOLT, 1/2–13 X 1–1/2 FLG GR8 STL YZ SRTD	4
15	2722645	NUT, 1/2–13 FLG GR8 STL YZ SRTD	4

LR–520 Model



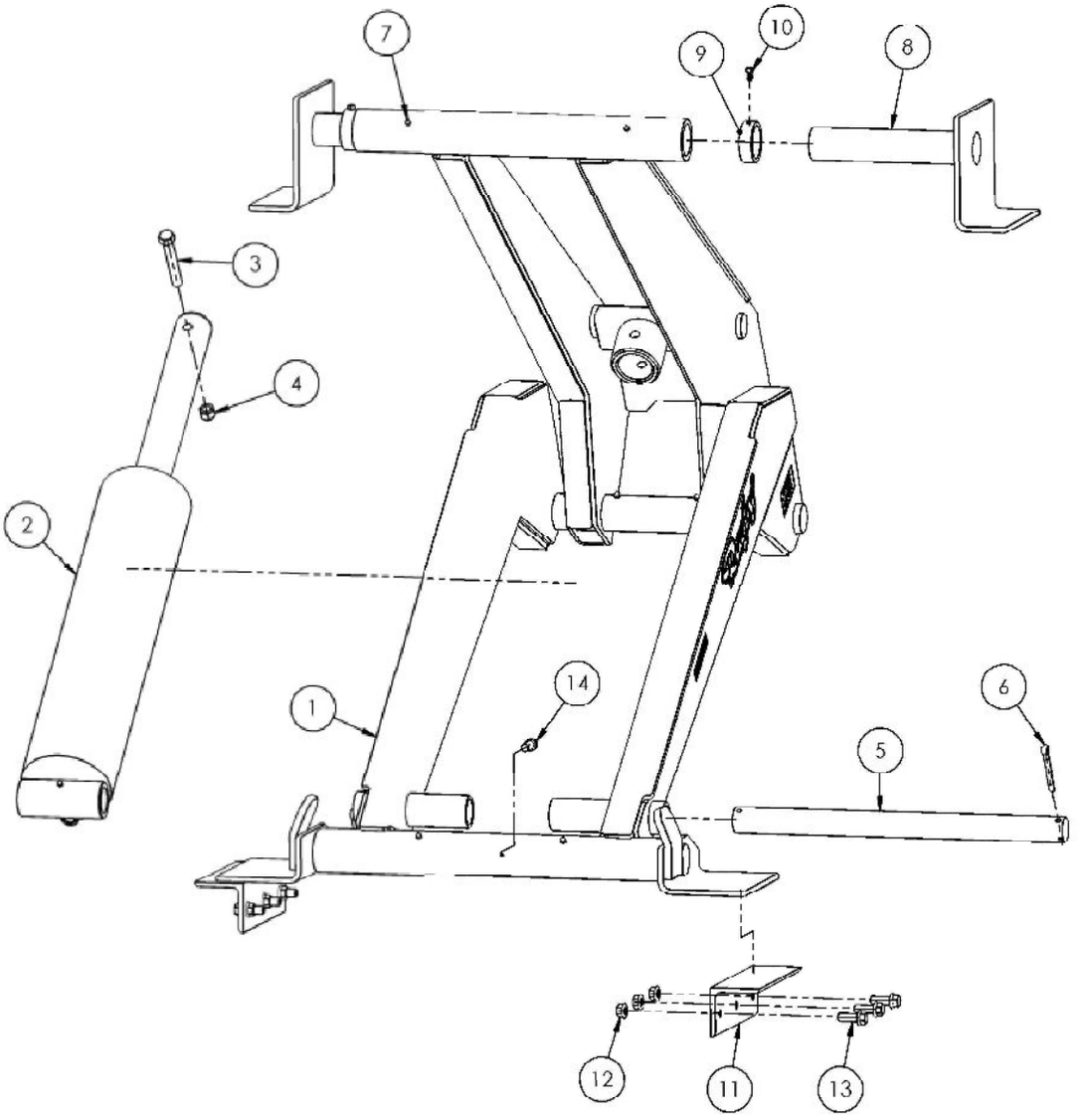
LR–520 Parts List			
Item	Part #	Description	Qty
1	2482581	FRAME, LR–520 HOIST PCBLK	1
2	1653838	SCREW, 5/8–11 X 4 HHC GR8 PLT	1
3	1643070	NUT, 5/8–11 NYLOCK – NE, GR. 5 STL	1
4	1653921	PIN, 5/16” X 3–1/2” ZP COTTER	2
5	1520370	FITTING, 1/4–28 THREAD FORMING GREASE	10
6	1654950	SHAFT, LR–628/620/623/TR–18/20 CYL. PIN	1
7	2414369	CYLINDER, 5.5 X 20, 2.25 SHAFT PNT	1
8	1655677	BRACKET, LR416/165/25 LEFT SADDLE	1
9	1655678	BRACKET, LR416/165/25 RIGHT SADDLE	1
10	1655917	BRACKET, MOUNTING ANGLE	2
11	2722645	NUT, 1/2–13 FLG GR8 STL YZ SRTD	4
12	2722650	BOLT, 1/2–13 X 1–1/2 FLG GR8 STL YZ SRTD	4
13	1653845	SET SCREW, 3/8–16 X 5/8 SQR HD, BLK	2
14	1654905	COLLAR, 2.00 LOCK	2
15	1655695	BRACKET, LR–416/165/25 LIFT	2

LR–620 Model



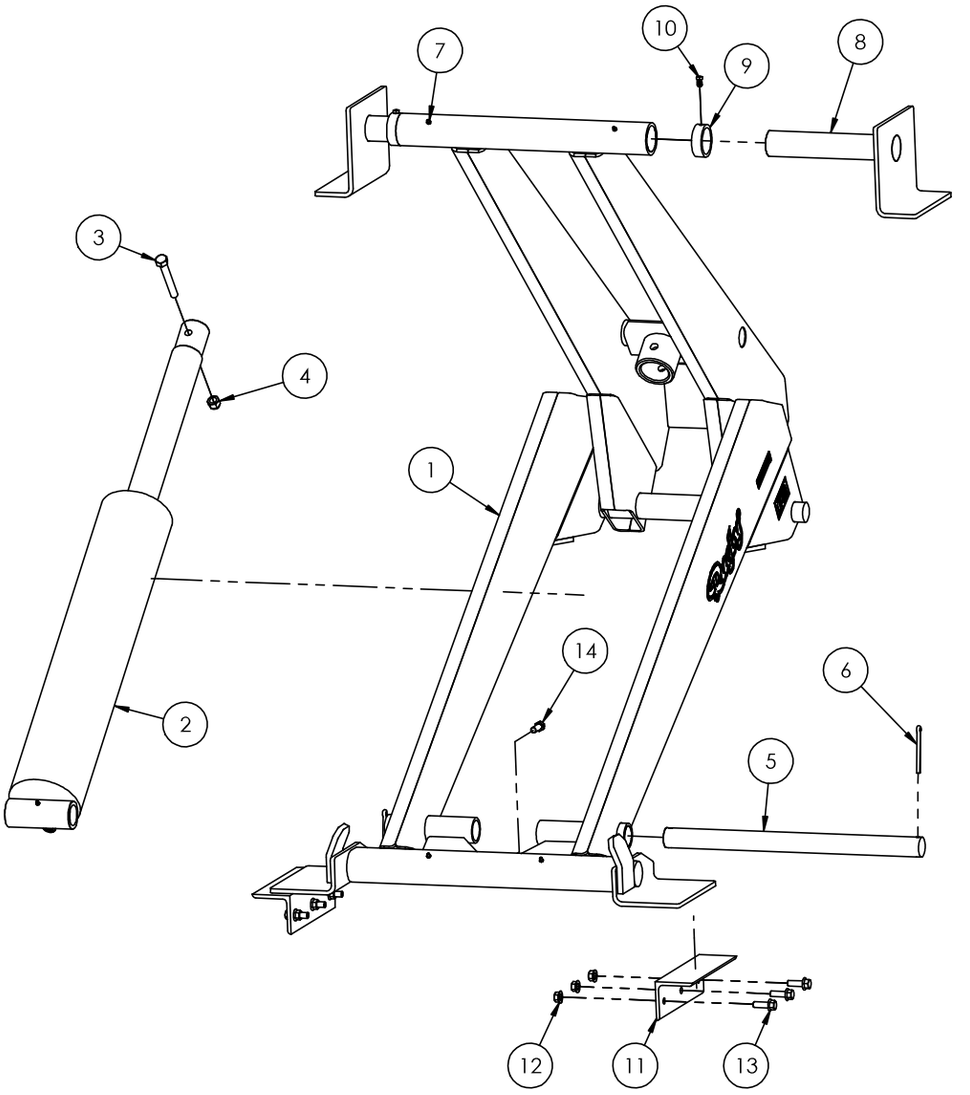
LR–620 Parts List			
Item	**Part #**	**Description**	**Qty**
1	1657062	FRAME, LR–620 PCBLK HOIST	1
2	1621268	FITTING, 1/4–28 THREAD FORMING GREASE	1
3	1654950	SHAFT, LR–28/26 CYLINDER PIN	1
4	1653921	PIN, 5/16” X 3–1/2” ZP COTTER	2
5	1653838	SCREW, 5/8–11 X 4 HHC GR8 PLT	1
6	1643070	NUT, 5/8–11 NYLOCK – NE, GR. 5 STL	1
7	1520370	FITTING, 1/4–28 THREAD FORMING GREASE	10
8	1654936	ANGLE, 11.5 MOUNTING	2
9	2722650	BOLT, 1/2–13 X 1–1/2 FLG GR8 STL YZ SRTD	6
10	2722645	NUT, 1/2–13 FLG GR8 STL YZ SRTD	6
11	1655330	WELDMENT, 2.25DIA LIFTING	2
12	1656191	COLLAR, 2.25 LOCK	2
13	1653845	SET SCREW, 3/8–16 X 5/8 SQR HD, BLK	2
14	1653827	SCREW, 1/2–13 X 1–1/2 HHC GR5 PLT	1

LR–623 Model



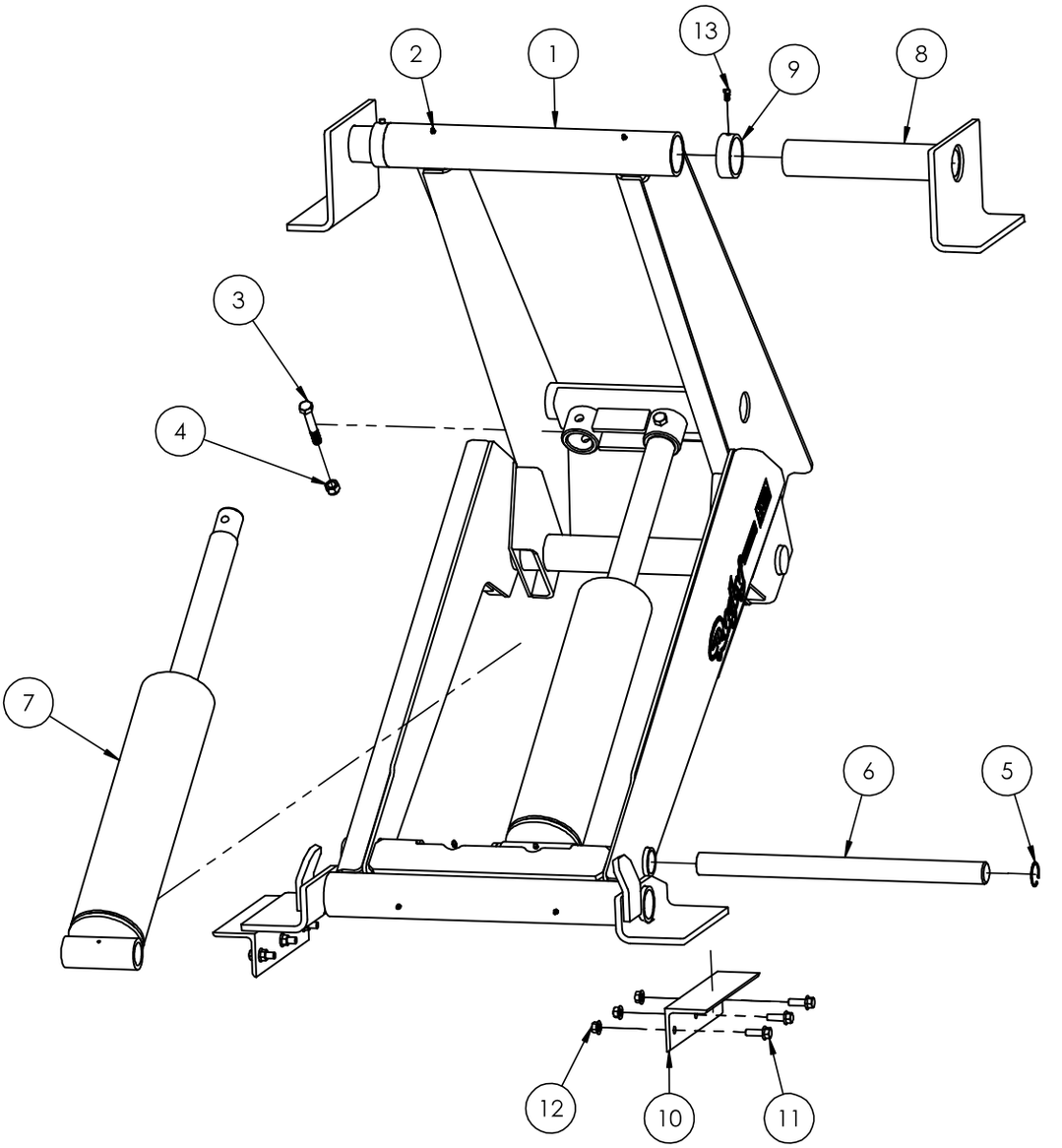
LR–623 Parts List			
Item	Part #	Description	Qty
1	1655951	FRAME, LR–623 PCBLK HOIST	1
2	1621264	CYLINDER, 6 X 23	1
3	1653840	SCREW, 5/8–11 X 4–1/2 HHC GR8 PLT	1
4	1643070	NUT, 5/8–11 NYLOCK – NE, GR. 5 STL	1
5	1654950	SHAFT, LR–28/26 CYLINDER PIN	1
6	1653921	PIN, 5/16" X 3–1/2" ZP COTTER	2
7	1520370	FITTING, 1/4–28 THREAD FORMING GREASE	10
8	1655330	WELDMENT, 2.25DIA LIFTING	2
9	1656191	COLLAR, 2.25 LOCK	2
10	1653845	SET SCREW, 3/8–16 X 5/8 SQR HD, BLK	2
11	1654936	ANGLE, 11.5 MOUNTING	10
12	2722645	NUT, 1/2–13 FLG GR8 STL YZ SRTD	6
13	2722650	BOLT, 1/2–13 X 1–1/2 FLG GR8 STL YZ SRTD	6
14	1653827	SCREW, 1/2–13 X 1–1/2 HHC GR5 PLT	1

LR–628 Model



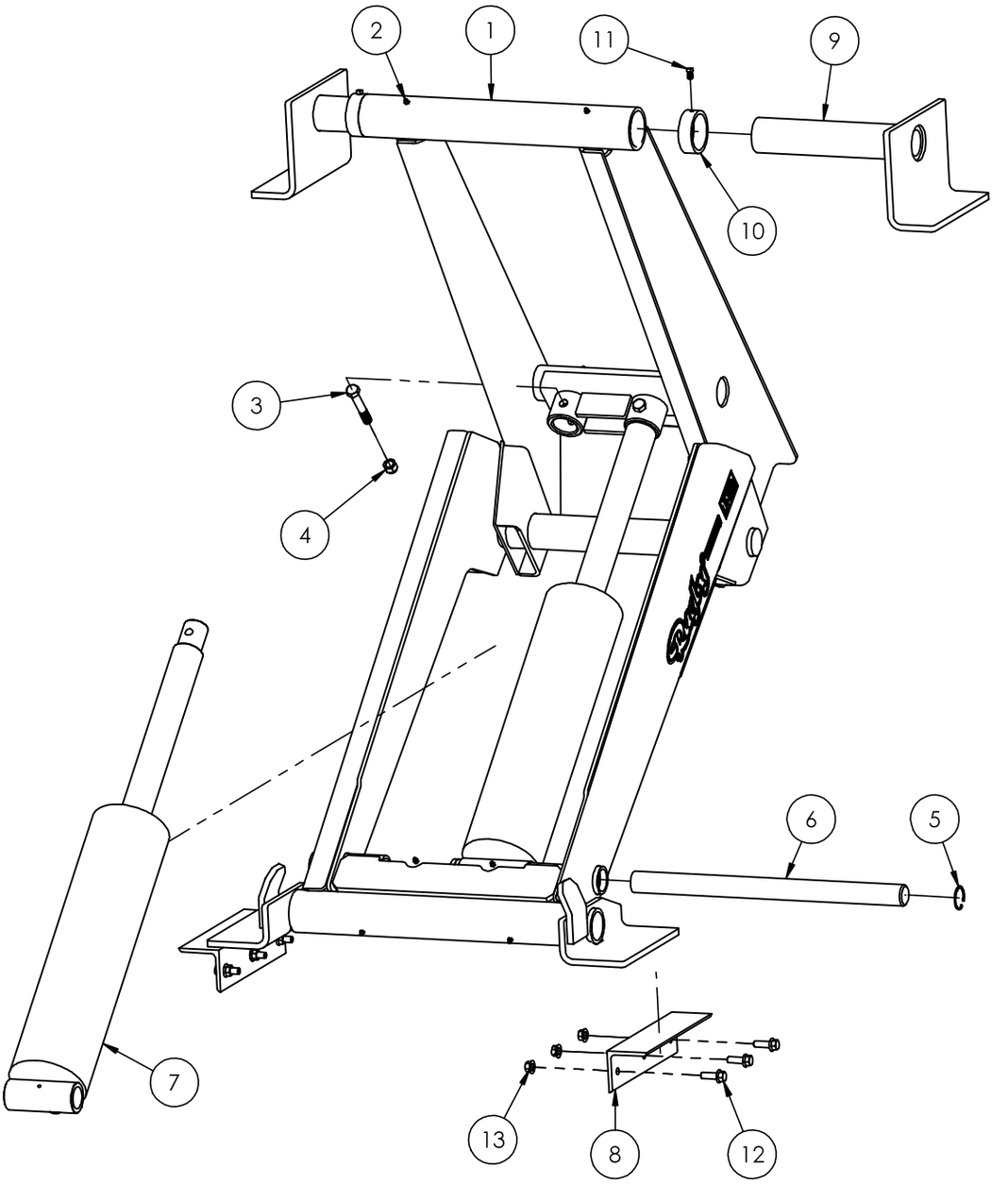
LR–628 Parts List			
Item	Part #	Description	Qty
1	1655288	FRAME, LR–28A PCBLK HOIST	1
2	1621270	CYLINDER, 6X28, 2.75 ROD, 2.5 NECK	1
3	1653840	SCREW, 5/8–11 X 4–1/2 HHC GR8 PLT	1
4	1643070	NUT, 5/8–11 NYLOCK – NE, GR. 5 STL	1
5	1654950	SHAFT, LR–28/26 CYLINDER PIN	1
6	1653921	PIN, 5/16” X 3–1/2” ZP COTTER	2
7	1520370	FITTING, 1/4–28 THREAD FORMING GREASE	8
8	1655330	WELDMENT, 2.25DIA LIFTING	2
9	1656191	FITTING, 1/4–28 THREAD FORMING GREASE	2
10	1653845	SET SCREW, 3/8–16 X 5/8 SQR HD, BLK	2
11	1654936	ANGLE, 11.5 MOUNTING	2
12	2722645	NUT, 1/2–13 FLG GR8 STL YZ SRTD	6
13	2722650	BOLT, 1/2–13 X 1–1/2 FLG GR8 STL YZ SRTD	6
14	1653827	SCREW, 1/2–13 X 1–1/2 HHC GR5 PLT	1

LR–5520 Model



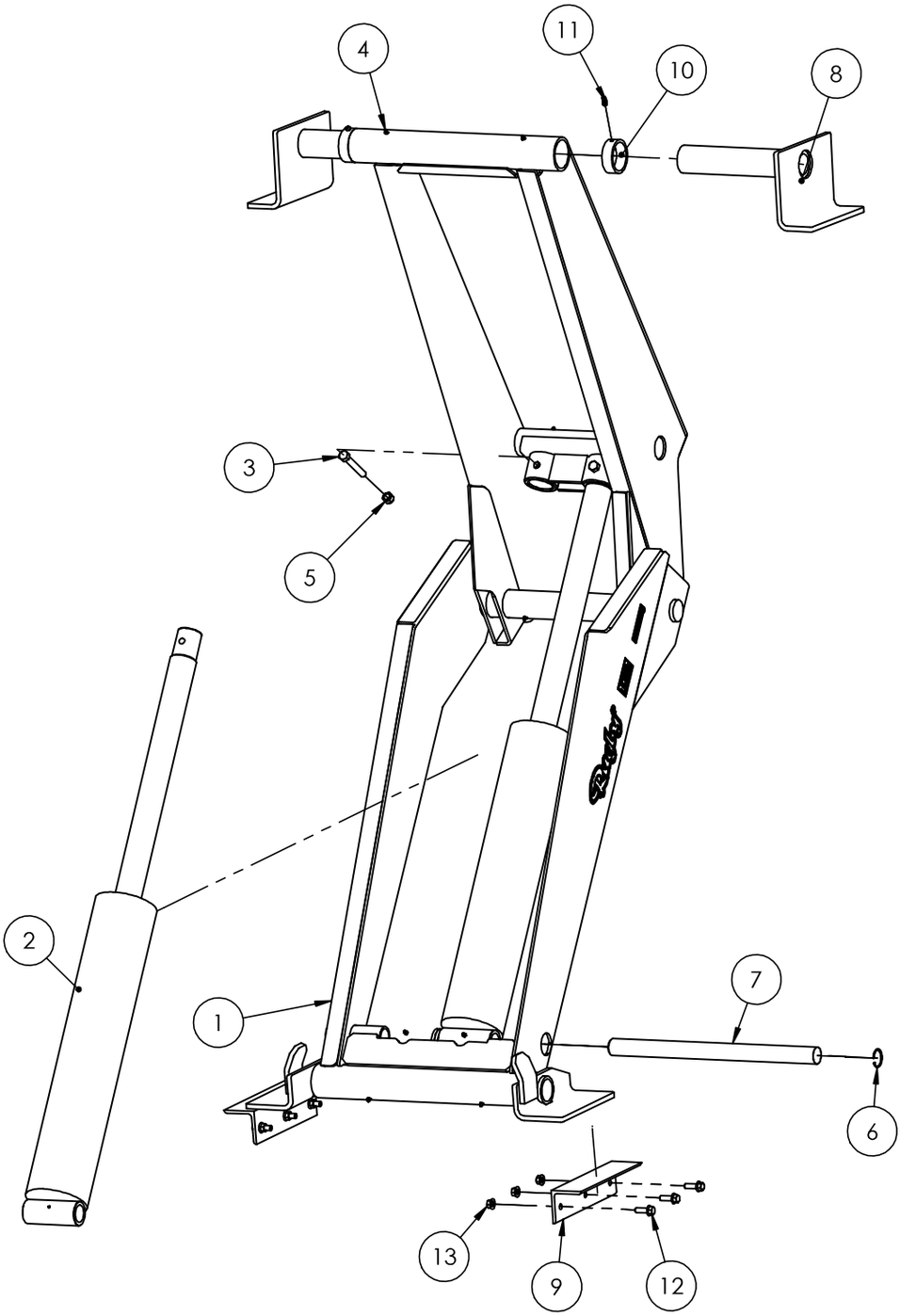
LR–5520 Parts List			
Item	Part #	Description	Qty
1	2482711	FRAME, LR–5520/LR–6620 HOIST PCBLK	1
2	1520370	FITTING, 1/4–28 THREAD FORMING GREASE	10
3	1653838	SCREW, 5/8–11 X 4 HHC GR8 PLT	2
4	1643070	NUT, 5/8–11 NYLOCK – NE, GR. 5 STL	2
5	1653939	RING, INTERNAL –181 SNAP	2
6	1657281	SHAFT, LR–2066 CYL PIN	1
7	2414369	CYLINDER, 5.5 X 20, 2.25 SHAFT PNT	2
8	1655707	LIFTING SHAFT ASSY, 2.88 DIA	2
9	1654973	LOCK COLLAR, 2.88 SHAFT	2
10	1654979	ANGLE, 13.5 MOUNTING	2
11	2722650	BOLT, 1/2–13 X 1–1/2 FLG GR8 STL YZ SRTD	6
12	2722645	NUT, 1/2–13 FLG GR8 STL YZ SRTD	6
13	1653845	NUSET SCREW, 3/8–16 X 5/8 SQR HD, BLK	2

LR–6620 Model



LR–6620 Parts List			
Item	Part #	Description	Qty
1	2482711	FRAME, LR–5520/LR–6620 HOIST PCBLK	1
2	1520370	FITTING, 1/4–28 THREAD FORMING GREASE	10
3	1653838	SCREW, 5/8–11 X 4 HHC GR8 PLT	2
4	1643070	NUT, 5/8–11 NYLOCK – NE, GR. 5 STL	2
5	1653939	RING, INTERNAL –181 SNAP	2
6	1657281	SHAFT, LR–2066 CYL PIN	1
7	1621268	CYLINDER, 6 X 20, 2.5 ROD, 2.0 NECK	2
8	1654979	ANGLE, 13.5 MOUNTING	2
9	1655707	LIFTING SHAFT ASSY, 2.88 DIA	2
10	1654973	LOCK COLLAR, 2.88 SHAFT	2
11	1653845	SET SCREW, 3/8–16 X 5/8 SQR HD, BLK	2
12	2722650	BOLT, 1/2–13 X 1–1/2 FLG GR8 STL YZ SRTD	6
13	2722645	NUT, 1/2–13 FLG GR8 STL YZ SRTD	6

LR–6628 Model



LR–6628 Parts List			
Item	**Part #**	**Description**	**Qty**
1	2420786	FRAME, LR–2866 PCBLK HOIST	1
2	1621270	CYLINDER, 6X28, 2.75 ROD, 2.5 NECK	2
3	1653840	SCREW, 5/8–11 X 4–1/2 HHC GR8 PLT	2
4	1520370	FITTING, 1/4–28 THREAD FORMING GREASE	10
5	1643070	NUT, 5/8–11 NYLOCK – NE, GR. 5 STL	2
6	1653939	RING, INTERNAL –181 SNAP	2
7	1657281	SHAFT, LR–2066 CYL PIN	1
8	1655707	LIFTING SHAFT ASSY, 2.88 DIA	2
9	1654979	ANGLE, 13.5 MOUNTING	2
10	1654973	LOCK COLLAR, 2.88 SHAFT	2
11	1653845	SET SCREW, 3/8–16 X 5/8 SQR HD, BLK	6
12	2722650	BOLT, 1/2–13 X 1–1/2 FLG GR8 STL YZ SRTD	6
13	2722645	NUT, 1/2–13 FLG GR8 STL YZ SRTD	6





If questions exist, call your Rugby representative at 1-800-869-9162 for further information.

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