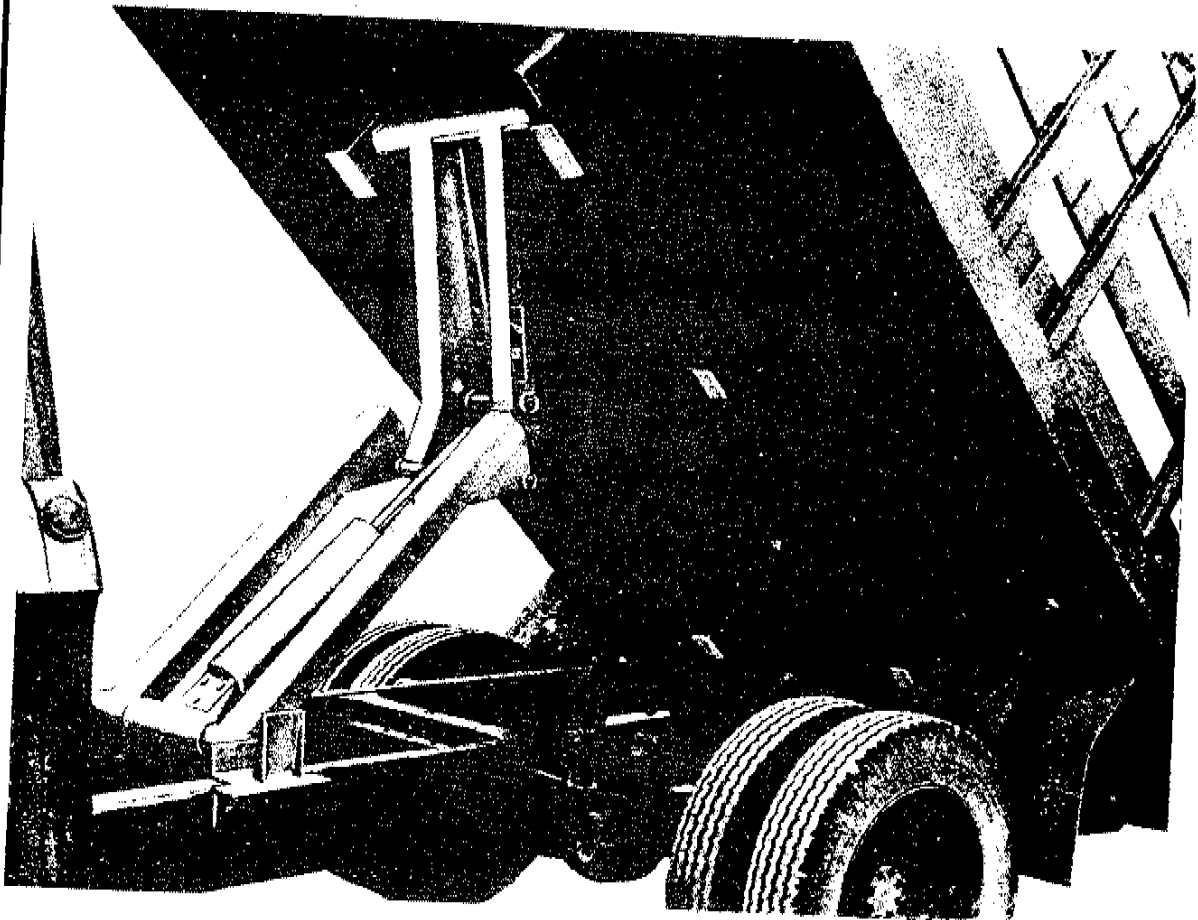


# OPERATOR'S MANUAL

## INSTRUCTIONS and REPAIR PARTS LIST

**FOR ASSEMBLING AND OPERATING  
THE LO-BOY MODEL 445 TRUCK HOIST**



Read these instructions

Save them for reference

**Crysteel Manufacturing, Inc.**

Telephone: (507) - 726-2728

Highway 60 East  
LAKE CRYSTAL, MINNESOTA 56055

## LO-BOY 445 TRUCK HOIST

DATE PURCHASED \_\_\_\_\_  
SERIAL NUMBER ON HOIST \_\_\_\_\_  
SERIAL NUMBER ON CYLINDER \_\_\_\_\_  
SERIAL NUMBER ON PUMP \_\_\_\_\_

## FOREWARD

This manual contains information necessary for the proper installation and operation of this truck hoist. Study it carefully before attempting to mount the hoist. With proper installation and maintenance the Lo-Boy Model 445 truck hoist will give many years of trouble free service.

When ordering parts, be sure to give serial number of hoist, pump, and cylinder. The serial number of the pump is found on the plate on the front of the pump. The serial number of the cylinder is stamped on the barrel of the cylinder near the base. For future reference, copy these numbers NOW in the space provided above. Order parts by number and description as given in the parts listing in this manual.

If you prefer, parts for the pump may be ordered directly from the manufacturer of the pump as per the information supplied with the pump, which can be considered to be part of this manual. If you do this, specify that the built-in relief valve be set to operate at 3500 P.S.I. and that your pump is part of the Lo-Boy 445 truck hoist.

THE LO-BOY MODEL 445 TRUCK HOIST IS DESIGNED AND INTENDED FOR USE ON SINGLE AXLE TRUCKS WITH CAB-TO-AXLE DIMENSIONS OF 60 INCHES THROUGH 84 INCHES AND BODY LENGTHS OF 9 FEET THROUGH 13½ FEET.

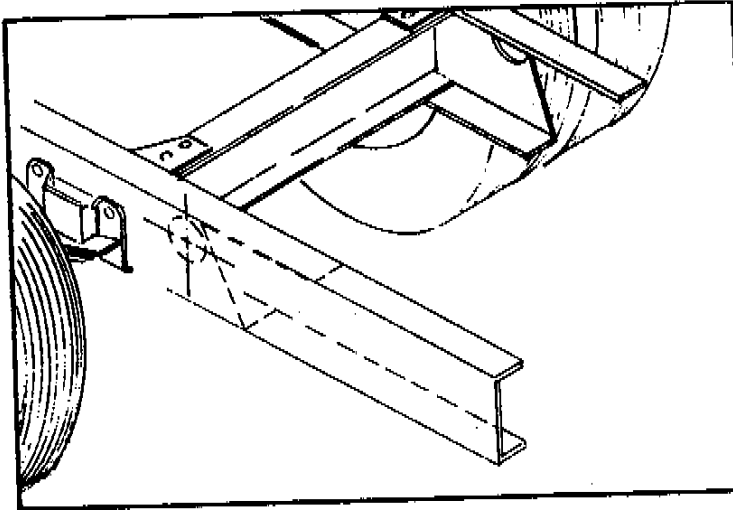
KEEP THIS MANUAL IN A SAFE PLACE FOR FUTURE REFERENCE

# SAFETY FIRST

NEVER EXCEED THE G.V.W. (GROSS VEHICLE WEIGHT) RATING, NOR THE G.A.W. (GROSS AXLE WEIGHT) RATING SPECIFIED FOR YOUR TRUCK.

## LO-BOY 445 TRUCK HOIST

## MOUNTING INSTRUCTIONS

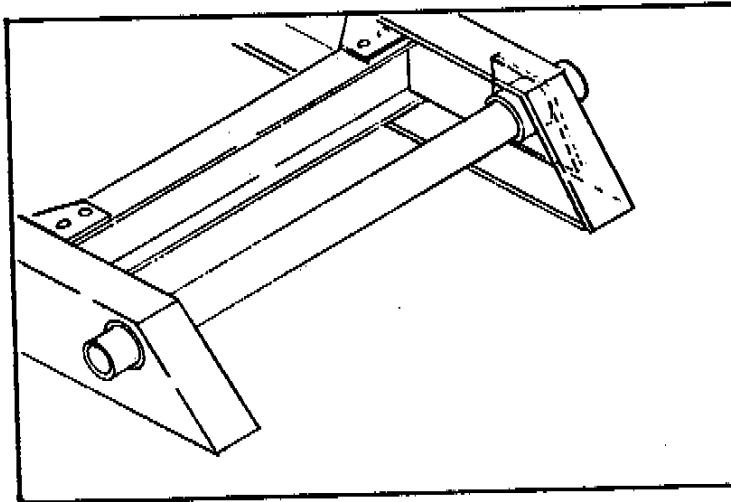


## LOCATE REAR HINGE

Use the rear hinge truck frame Brackets No. 4 and 6 as a guide to mark the location of the rear hinge. Mark the hole just below the top flange of the truck frame. The bracket has the correct slant on it for the angle of truck frame cut-off. The center of the rear hinge pin should be from 32 inches to 36 inches behind the center of the rear axle. If rear hinge is located more than 38 inches behind the rear axle, the truck frame must be strengthened.

## TORCH-CUT HOLE AND TRUCK FRAME

Cut the frame as marked, leaving the top flange intact. It is to be bent down and welded later.



## WELD BRACKETS TO TRUCK FRAME

Install the truck frame brackets No. 4 and 6 on the rear hinge pin No. 5 for alignment. Weld them to truck frame at all contact points. Bend the top flange of the truck frame down and weld in place. Be sure to weld the top flange of the truck frame to the bracket tube.

## LO-BOY 445 TRUCK HOIST

## LOCATE HOIST ON TRUCK FRAME

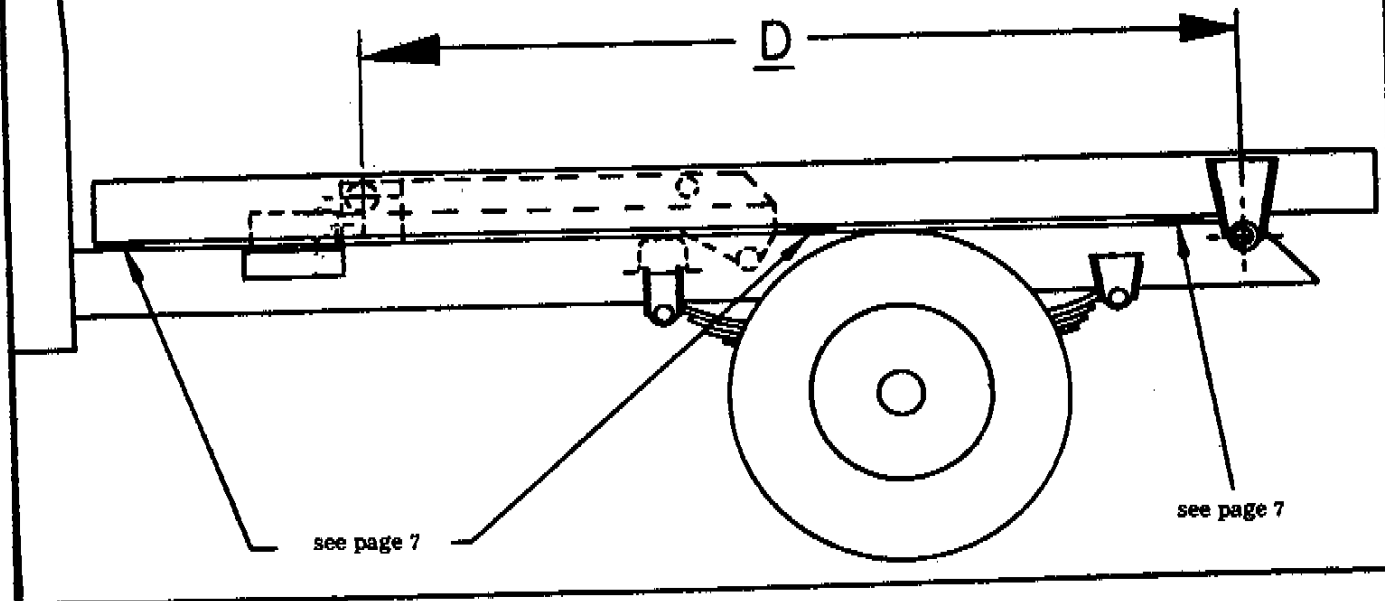
The rear end of the main hoist frame No. 9 is designed to rest on the truck frame crossmember that supports the forward spring shackle. The off-set pivot of the hoist frame fits down into the truck frame behind the crossmember as shown.

Measure forward from the center of the rear hinge pin to the center of the front crosstube of the hoist. The following dimension "D" from the rear hinge to the crosstube will provide the corresponding dump angle:

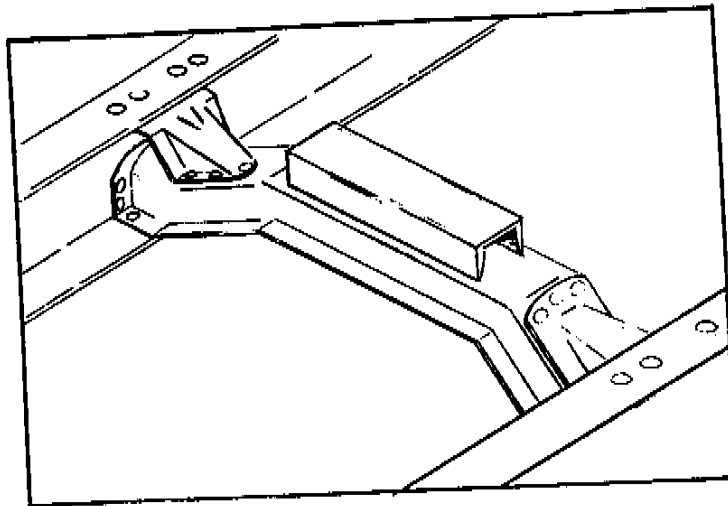
82 inches	-	50 degrees
85 inches	-	48 degrees
90 inches	-	45 degrees
96 inches	-	42 degrees
100 inches	-	40 degrees

Center the hoist in the truck frame and make certain it is square with the truck frame.

**IMPORTANT:** The hoist is designed to fit trucks with straight frames. For trucks with drop-frame design, frame fillers must be installed first to level up the truck frame. These should be of formed steel equal in strength to the truck frame.



## LO-BOY 445 TRUCK HOIST

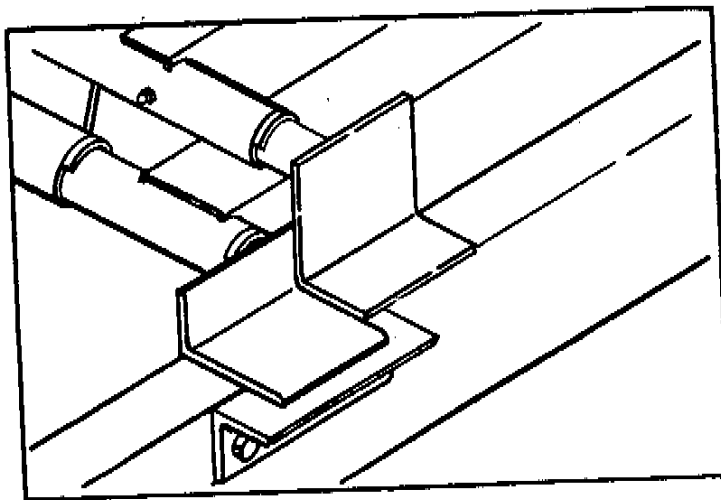


## SPECIAL INSTRUCTIONS FOR SOME INSTALLATIONS

1. On certain models of Chevrolet and GMC trucks, the truck frame crossmember at the forward spring shackle is lower than the frame. In this case weld a short length of three inch channel iron on top of this crossmember as shown, to support the hoist.
2. On some trucks it will be necessary to reshape the vacuum lines to the two speed axle, to clear the hoist.

## MOUNT HOIST TO TRUCK FRAME

The angle mounting brackets must rest flat on truck frame. If rivets are encountered in truck frame, and hoist cannot be moved to clear them, counter-sink the rivet heads into the brackets. Center the mounting angles No. 12 under the brackets, clamp them in place and drill  $21/32$  holes in truck frame. Bolt mounting angles to truck frame with  $5/8$  by  $1-3/4$  machine bolts and lockwashers. CAUTION: When drilling in truck frame be careful of brakelines, wiring, etc. inside the truck frame.



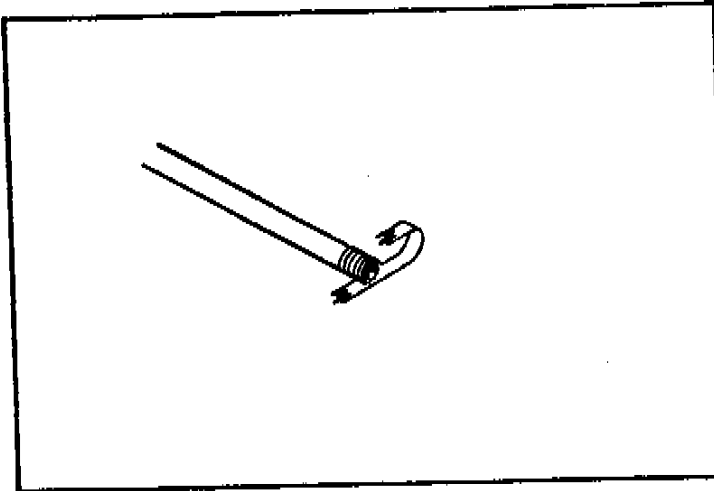
## WELD BRACKETS TO MOUNTING ANGLES

Recheck to make sure hoist is square with truck frame. Weld brackets very securely to mounting angles.

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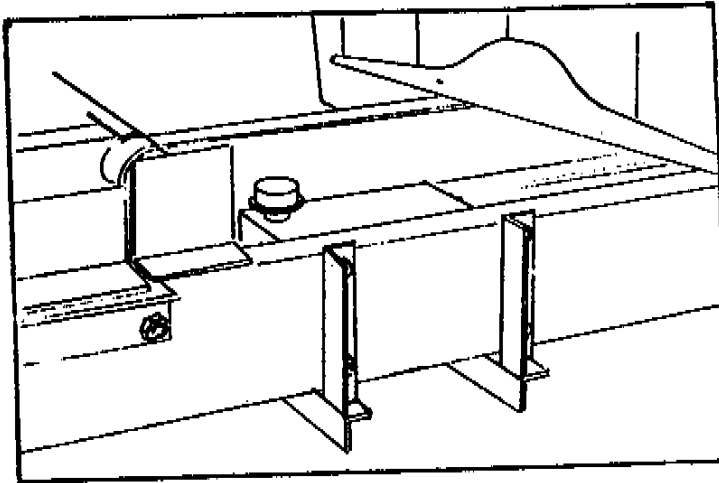
CRYSTEEL MANUFACTURING, INC.

## LO-BOY 445 TRUCK HOIST



## PLUMBING AND USE OF TEFLON TAPE

Use teflon tape on all hydraulic connections. Properly done, this will assure absolutely leakproof connections. All connections are pipe thread. One wrap of teflon tape is enough -- use it sparingly. Rather than cutting, break off about 2 inches of teflon tape. This will provide a feathered edge, for easier assembly. Stretch it tight so that it sinks deeply into the threads. Be sure to wrap the tape in the same direction the fitting screws on so it will stay in place as the fitting is threaded on. It is not necessary to tighten the connections excessively.



## ATTACH MOUNTING ANGLES TO PUMP

Determine on which side of the truck frame to mount the pump. (Same side as the PTO). Bolt the pump mounting angles No. 18 to the pump No. 15, using 3/8 by 1 machine bolts, flat washers and lock washers.

## MOUNT HYDRAULIC PUMP

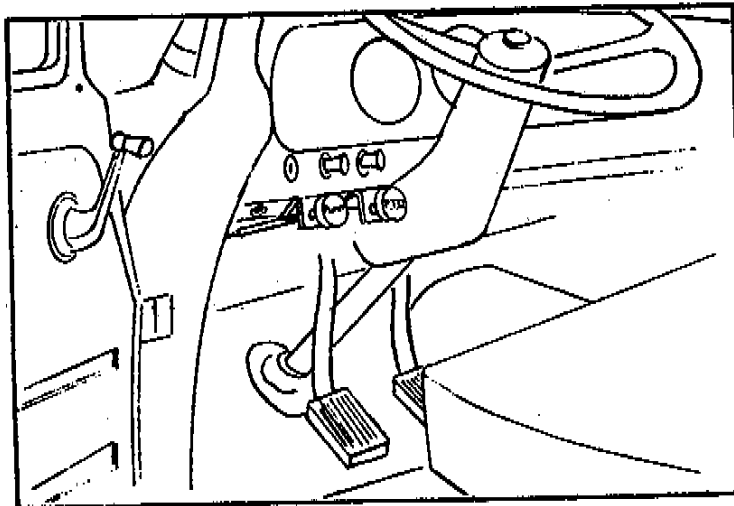
Temporarily clamp the pump mounting angles to the truck frame, with the pump inside the truck frame a few inches behind the cab. Check to be sure of sufficient clearance and that PTO drive-shaft is long enough. In some cases it may be necessary to re-work the exhaust system for clearance. UNDER NO CIRCUMSTANCES SHOULD THE ENGINE EXHAUST BE PERMITTED TO BLOW DIRECTLY ONTO THE PUMP. The PTO drive line must never exceed 15 degrees angularity. After locating the pump, drill 17/32 diameter holes in the truck frame and bolt tight, using 1/2 by 1-3/4 inch machine bolts and lock washers.

### ADD HYDRAULIC FLUID - 5 U.S. QUARTS

The capacity of the pump reservoir is 7 U.S. quarts. Five quarts of hydraulic fluid are required for operation. **KEEP IT CLEAN!! USE CLEAN CONTAINERS, FUNNELS AND OTHER EQUIPMENT.** Use a high quality hydraulic fluid of 150 SSU @ 100 degrees F. which contains corrosion and oxidation inhibitor and a foam depressant. For general use, a high quality SAE 10W non-detergent motor oil with the proper additives, or type A automatic transmission fluid can be used.

### COMPLETE HYDRAULIC PLUMBING

Install a 90 degree street elbow No. 29 to each valve port. Connect the 36 inch hose No. 13 to the valve port nearest the rear, and to the cylinder port at the base of the cylinder. Connect the 48 inch hose No. 14 to the front valve port and to the head end cylinder port.



### INSTALL CABLE CONTROL NO. 37

Remove control wire from cable housing and oil inside of cable housing before installing. Attach control mounting angle No. 35 at a convenient location under the dash, by drilling and bolting with 1/4 by 3/4 machine bolts and lock washers. Install cable through firewall and connect to valve control lever. Check and adjust for proper operation. Be sure there are no sharp bends in cable.

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 LO-BOY MODEL 445 HOIST
 

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## 12 VOLT ELECTRIC HYDRAULIC POWER UNIT

Special Instructions to Install Monarch Electric pumps with Model 445, 545, 645, 655, and ST-560 Lo-Boy hoists.

1. Mount pump unit just ahead of hoist between frame rails of truck or trailer.
2. Mount control cable under the dash or in a convenient place in the cab. For trailers, mount control cable to a suitable bracket near front of trailer. Connect cable to pump valve control with small parts supplied.
3. Mount push-button switch just above control cable so one hand can operate both cable and push button.
4. The solenoid on the MONARCH pump will energize the pump motor when the small terminal on the solenoid is grounded. Connect one terminal of the push-button switch to ground, and the other terminal to the solenoid. Connect battery cable to the heavy terminal on the solenoid. For trailers, use a heavy duty coupler of the type used for welding cable extensions to disconnect the battery cable at the trailer hitch.
5. For trailers, install a separate heavy duty ground cable that can be disconnected at the trailer hitch. DO NOT depend on the hitch to carry the ground connection.
6. IMPORTANT - On all electric installations, install a heavy duty ground cable from the truck battery direct to the truck frame. The light cable normally used from the engine to the frame is not heavy enough. Recommended battery cable size is No. 0. Never, under any circumstance, use cable lighter than No. 1.

Monarch Model 310 - Double acting ( 2 types)  
 12" reservoir (445), 3 gal. approx., 3600 P.S.I.  
 22" reservoir (545 through ST-560), 6 gal. approx.,  
 3250 P.S.I.

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 INSTALL PTO DRIVELINE

Install the long U-slip joint No. 27 on the pump driveshaft, and the short U-joint No. 25 on the PTO driveshaft so that the inner edge of the hub of each is flush with the end of the shaft. DO NOT TIGHTEN SETSCREWS. Measure the exact length of the square driveshaft No. 26 needed between the two joints so that the shaft will be flush with inner edge of both hubs. Cut the square driveshaft to proper length with a hacksaw and grind off any burr. Insert shaft into the slip joint hub. Slide both joints farther onto the shafts, and insert the square driveshaft into the short U-joint hub. Re-locate the joints in their proper position. Tighten the setscrews very tight and secure with a safety wire.

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 INSTALL TRUCK BODY

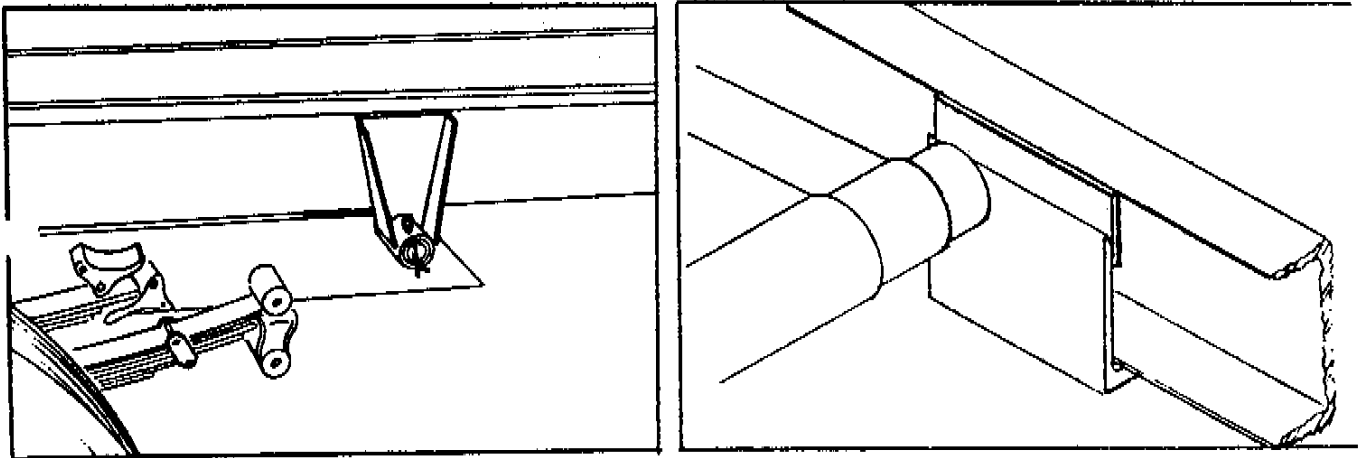
Assuming that six inch longbeams are attached to the body, place the body in position on the truck WITH AT LEAST TWO INCHES OF CLEARANCE BEHIND THE CAB. Use the rivet strip mounting pads No. 7 between longbeams and truck frame. Use three on each side, spaced as seen on Page 3. Weld them to the longbeams. Align body longbeams carefully with the truck frame.



## LO-BOY 445 TRUCK HOIST

## ATTACH REAR HINGE LONGBEAM BRACKETS

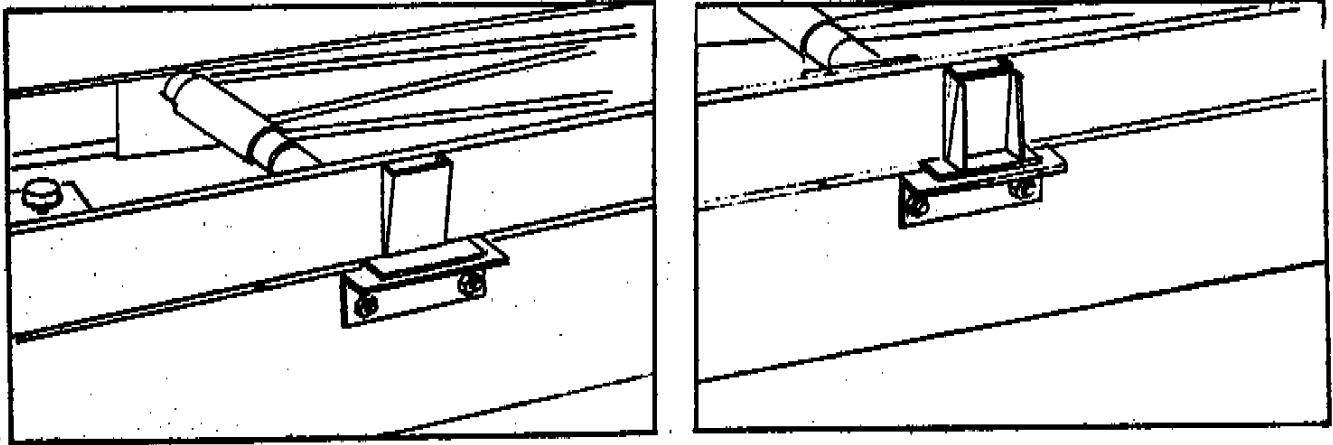
Install the rear hinge pin No. 5 in place and clamp the rear hinge longbeam brackets No. 2 to the longbeams. Align them carefully and weld them very securely to the longbeams as shown. Normally, the brackets will lay flat on the longbeams, but if the truck frame has been reinforced and is over width, it will be necessary to shim between the brackets and the longbeams with a flat plate of proper thickness. Install the 3/8 by 3 inch cotter pin No. 3 through the hinge pin. Since this is usually quite a permanent installation, it is advisable to also weld the hinge pin to both longbeam brackets with small welds that can be broken loose if need be in the future.



## ATTACH LONGBEAMS TO HOIST LIFT BRACKETS

Weld the longbeams securely to the angle lift brackets of the hoist. On the inside of the longbeams, use the flat spacer No. 1 to connect the upper flange of the longbeam channel to the lift bracket as shown. Weld the flat spacer securely to both the bracket and the flange of the longbeam. **THIS IS IMPORTANT!** The spacer can be used with either six inch or seven inch channel longbeams.

## LO-BOY 445 TRUCK HOIST



## INSTALL BODY GUIDES

The four body guides No. 38 are all identical. Weld one to each longbeam as shown, with the wide end of the body guide at the top and centered over the truck mounting brackets. Now weld the other pair of body guides to the truck mounting brackets, and tight against the first body guides as shown. There should be NO side-play between body guides when the truck body is in the lowered position.

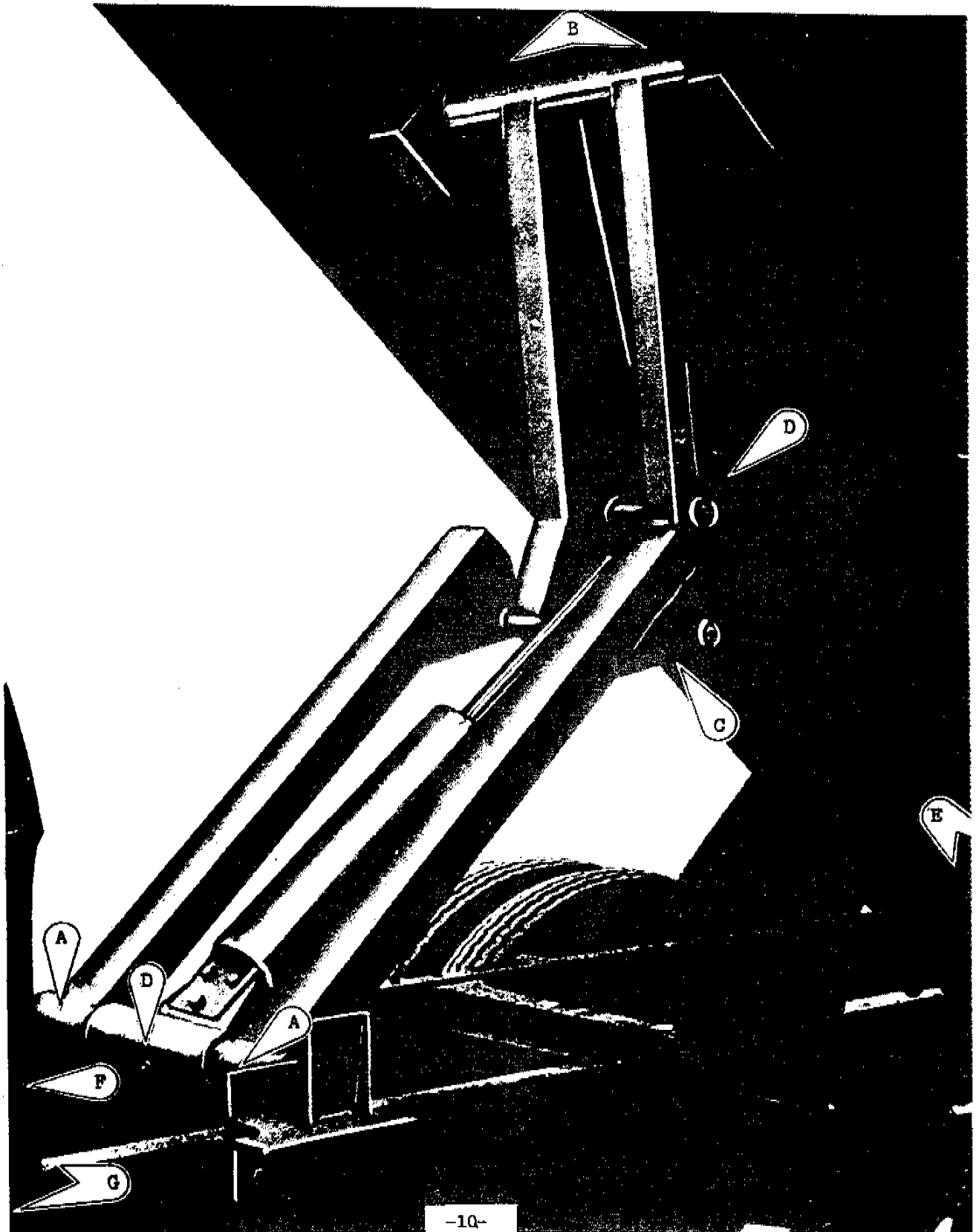
## LUBRICATION INSTRUCTIONS

Install and lubricate grease zerks in the following locations:

- A - Truck mount pivot pin - - 2 fittings
- B - Longbeam pivot pin - - - 2 fittings
- C - Main center hinge - - - - 1 fitting
- D - Cylinder pivots - - - - - 2 fittings
- E - Rear hinge - - - - - - 2 fittings
- F - U-slip joint - - - - - - 1 fitting
- G - Each U-joint - - 2 fittings (These are already installed)

Lubricate all fittings at regular intervals, at least each time the truck chassis is lubricated. There are tremendous forces of the bearing surfaces within the hoist frame, especially the main center hinge and cylinder crosshead. It pays to be generous with the grease gun, to insure proper operation and long life.

LO-BOY 445 TRUCK HOIST



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Crysteel Manufacturing, Inc.

## LO-BOY 445 TRUCK HOIST

## OPERATION AND USE

1. Engage PTO from cab and adjust engine speed to fast idle.
2. If hydraulic plumbing is correct, hoist should raise when pump knob is out, hold when knob is centered, and lower with knob in.
3. Cycle the hoist several times to remove air from the cylinder and hydraulic lines.
4. When hoist cylinder reaches the end of it's stroke, oil will by-pass through the relief valve. Do not permit this for any length of time as it places unnecessary strain on the hydraulic system. Put pump knob in hold position or disengage the PTO.
5. It is advisable to run the PTO to lower the hoist because this will act as a hydraulic lock to hold the hoist closed. It is not necessary to do this, however, because the reservoir has sufficient capacity whether you pump the oil back into the cylinder or not, but you will not benefit from the advantages of double action.
6. To make use of the hydraulic lock feature, place knob in center hold position after hoist is pumped all the way down. This places the pressure on the valve where it belongs, not on the pump.
7. DO NOT LEAVE THE PTO IN GEAR WHILE TRANSPORTING. THIS WILL CAUSE SEVERE DAMAGE TO THE HYDRAULIC PUMP AND/OR DRIVE LINE.
8. The hydraulic system should be drained, flushed, and refilled with proper hydraulic fluid at regular intervals.

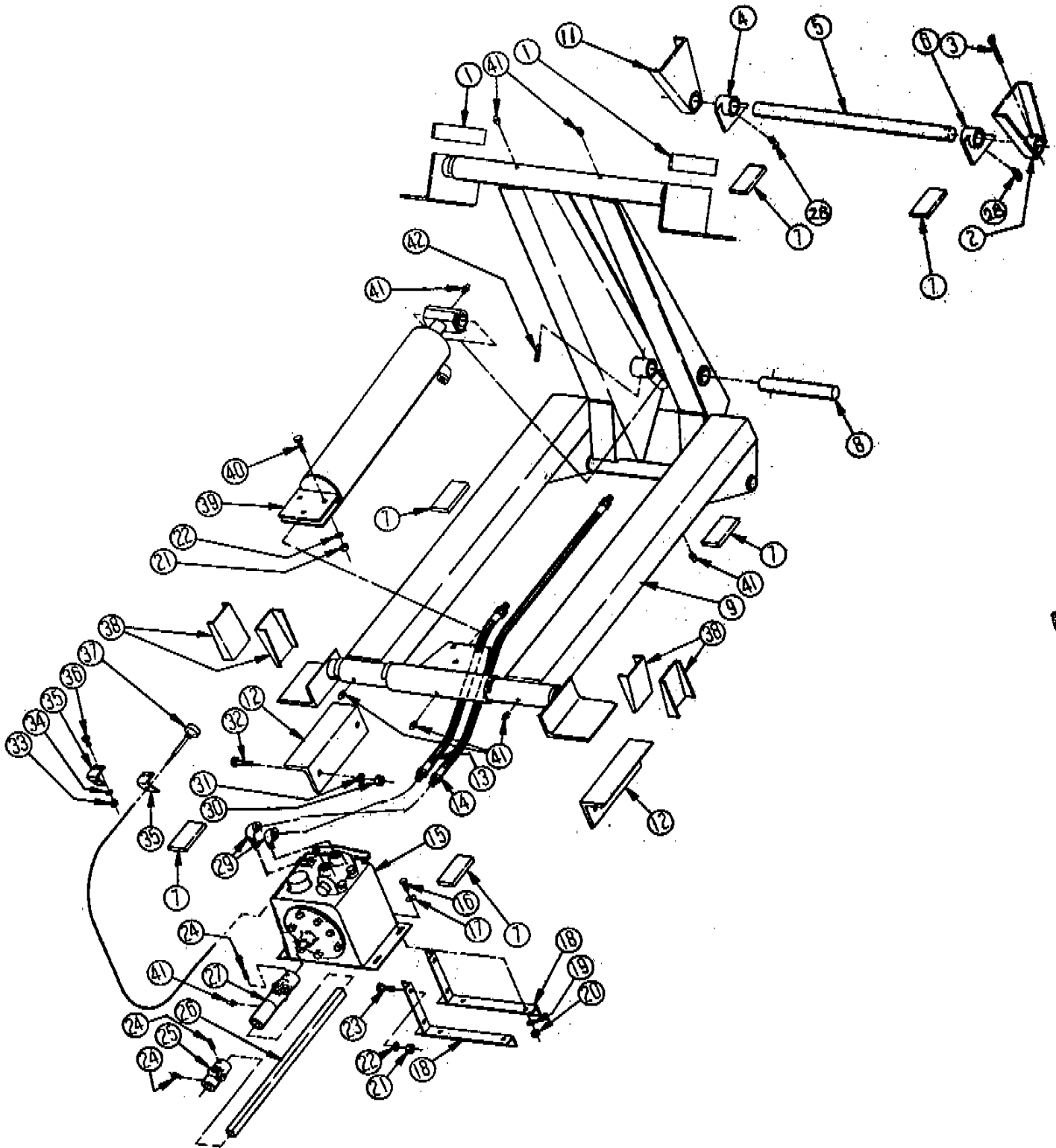
CAUTION: NEVER USE HYDRAULIC BRAKE FLUID IN THE HYDRAULIC SYSTEM.

## CAPACITY CHART FOR LO-BOY MODEL 445 HOIST

The capacity of any hoist will vary according to the C.A. dimension of the truck, body length, rear overhang, and dump angle.

C.A. length	Body length	Dump angle	Capacity (level load)
60"	9'	45 degrees	10 tons
60"	9'6"	45	11
60"	10'	45	12
72"	9'6"	45	8
72"	10'	45	9
72"	11'	45	10
72"	12'	45	12
84"	12'	45	8
84"	12'6"	45	9
84"	13'	45	10
84"	13'6"	45	11

### LO-BOY 445 TRUCK HOIST



LO-BOY 445 TRUCK HOISTPARTS LIST

<u>KEY NO.</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QUANTITY</u>
1	200900	Flat Spacer 3/8 x 2 x 6	2
2	100172	Rear hinge longbeam bracket	1
3	400210	3/8 x 3 cotter pin	1
4	100167	Rear hinge truck bracket, right	1
5	202218	Rear hinge pin	1
6	100165	Rear hinge truck bracket, left	1
7	200892	Rivet strip, 3/8 x 2 x 4	6
8	201153	Cylinder cross head shaft	1
9	100146	Main hoist frame	1
11	100176	Rear hinge longbeam bracket	1
12	201422	Mounting angle	2
13	400512	3/8 hydraulic hose, 36 inch, SAE 100R2	1
14	400514	3/8 hydraulic hose, 48 inch, SAE 100R2	1
15	400332	Hyd. pump & reservoir,	1
16	400121	3/8 x 1 N.C. cap screw	4
17	400164	3/8 flat wrought washer	4
18	100174	Pump mounting angle	2
19	400162	3/8 lock washer	4
20	400183	3/8 N.C. hex nut	4
21	400182	1/2 N.C. hex nut	7
22	400161	1/2 lock washer	7
23	400104	1/2 x 1-3/4 N.C. cap screw	4
24	400102	3/8 x 1/2 setscrew, drilled hd.	3
25	400578	Standard short U-joint	1
26	200885	PTO driveshaft, 7/8 sq. x 4 ft.	1
27	400583	Long U-slip joint	1
28	400117	1/8-27 90° grease fitting	2
29	400412	3/8 pipe 90° street elbow	2
30	400181	5/8 N.C. hex nut	4
31	400160	5/8 lock washer	4
32	400100	5/8 x 1-3/4 N.C. cap screw	4
33	400184	1/4 N.C. hex nut	4
34	400163	1/4 lock washer	4
35	201391	Dash control mounting angle	2
36	400101	1/4 x 3/4 N.C. cap screw	4
37	400025	Pump control cable, 12 foot	1
38	201415	Body guide	4
39	100257	Cylinder assembly	1
40	400104	1/2 x 1-3/4 N.C. cap screw	3
41	400103	1/8-27 straight grease fitting	8
42	400208	7/16 x 2-1/2 double roll pin	1

LO-BOY 445 TRUCK HOISTOPTIONAL PARTS LIST

<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>REPLACES KEY NO.</u>	<u>QUANTITY</u>
200895	Spacer		2
400330	Hyd. pump & res. 4 GPM 1 valve	15	1
400326	Electric pump unit	15	1
100014	Electric pump kit		1
400517	Hyd. hose extension 12 inch long		2
400518	Hyd. hose extension 24 inch long		2
400519	Hyd. hose extension 42 inch long		2
400359	Hyd. pump & res. T series	15	1

SOME DO'S AND DON'TS FOR SAFETY AND LONG SERVICE LIFE

1. Use the proper hydraulic fluid. KEEP IT CLEAN. Remember to change it regularly. See page 6.
2. Lubricate all grease fittings at regular intervals. See page 10.
3. ALWAYS BLOCK UP THE HOIST BEFORE WORKING UNDER IT.
4. Do not race the engine when unloading.
5. Do not overload the hoist beyond it's capacity.
6. DO NOT TAMPER WITH THE HYDRAULIC RELIEF VALVE. This will void the warranty. It can cause severe damage to hoist and cylinder.
7. NEVER LEAVE THE PTO IN GEAR WHILE TRANSPORTING. IT WILL RUIN THE HYDRAULIC PUMP.
8. Check all bolts and setscrews regularly. Keep them tight.

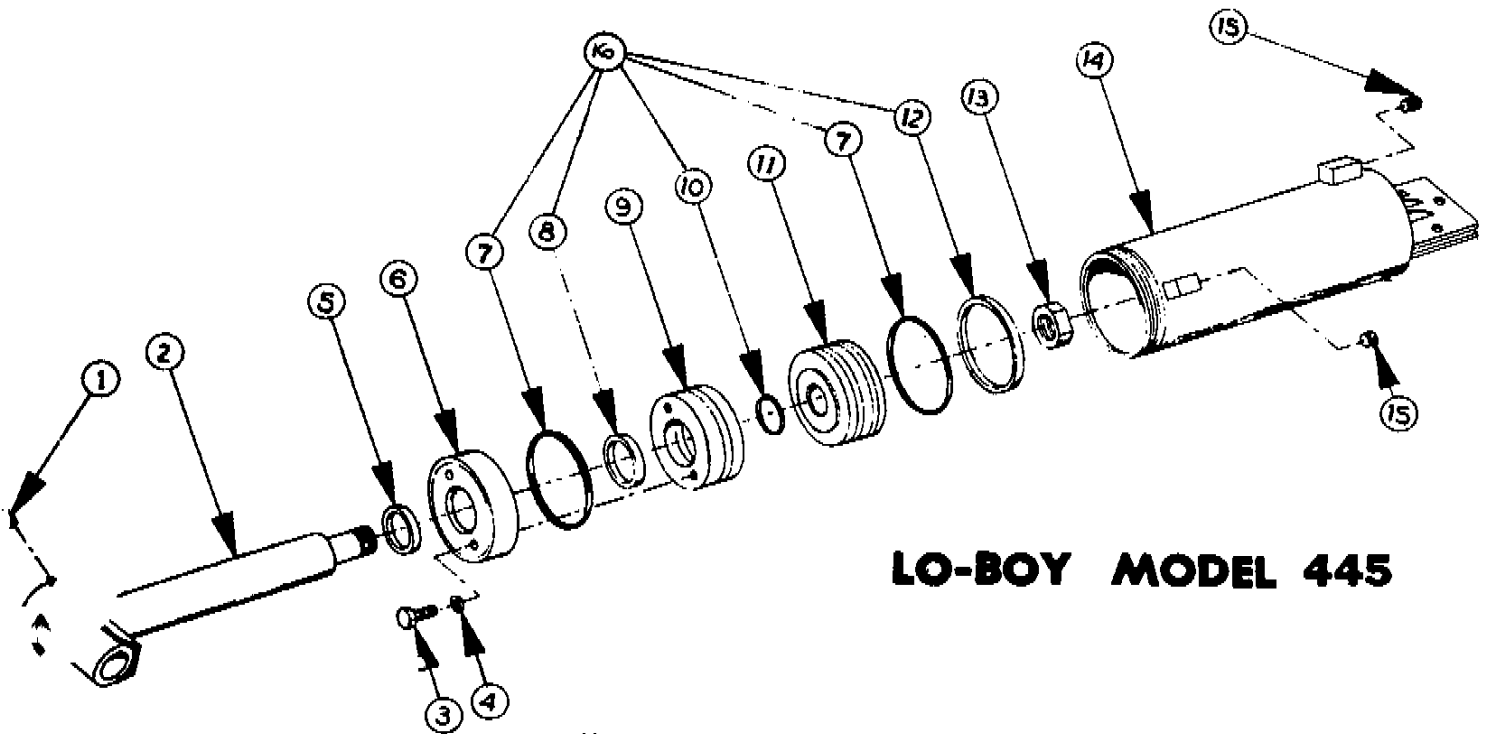
CAPACITY FORMULA FOR LO-BOY MODEL 445 HOIST

To determine the capacity of the Lo-Boy Model 445 Hoist for applications other than those shown on the capacity chart, use the following formula:

- (1) Measure the distance in inches from center of the rear hinge pin to the center of the body. Call this dimension "A"
- (2) Measure the distance in inches as shown on page 3, from the center of the rear hinge pin to the center of lift point. This is dimension "D".
- (3) Multiply dimension "D" by 8.5.
- (4) Divide this total by dimension "A". Result will be the level load capacity of the hoist in thousands of pounds, including body weight.

# CRYSTEEL MANUFACTURING, INC.

Highway 60 East  
LAKE CRYSTAL, MINNESOTA 56055



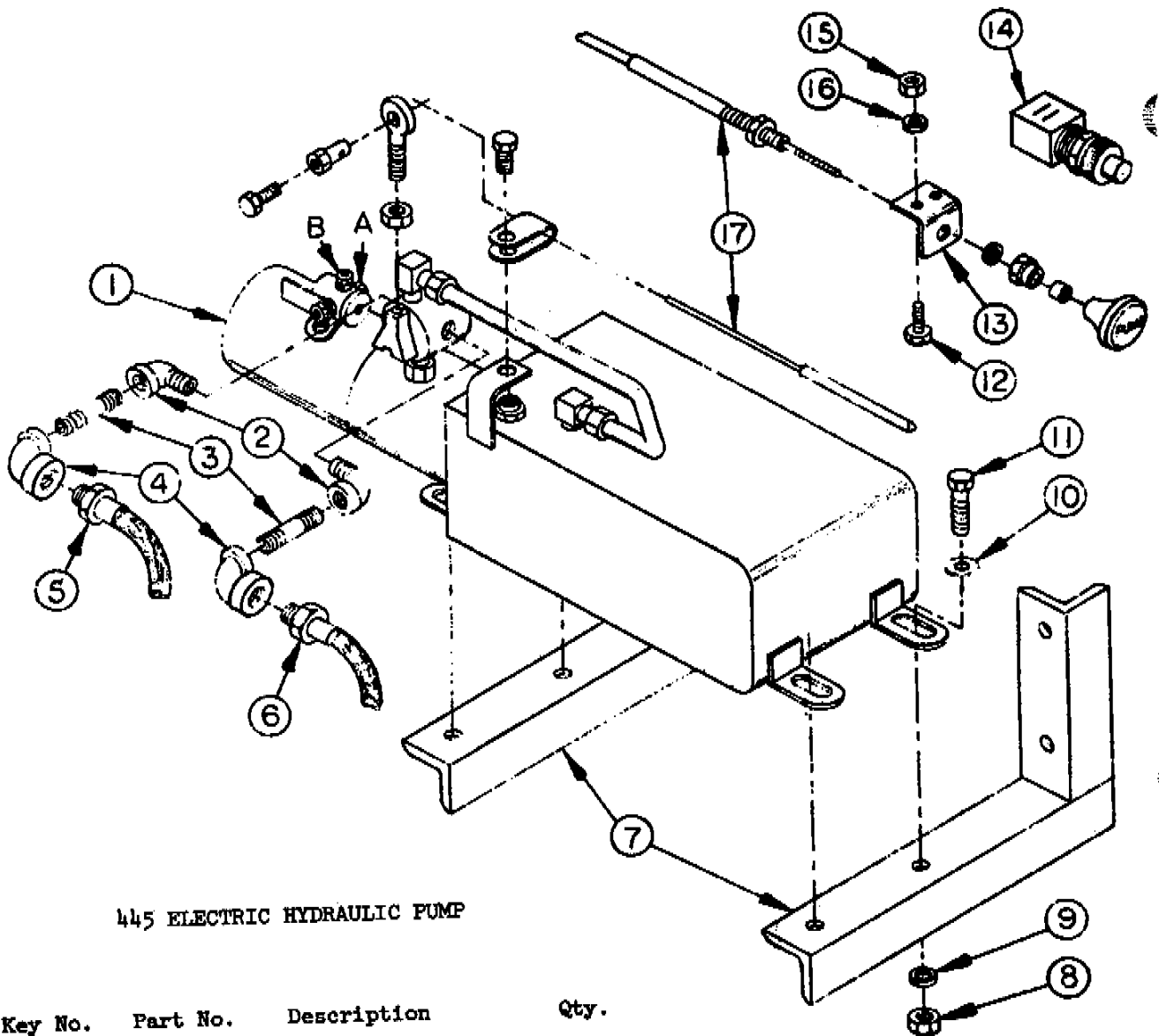
## LO-BOY MODEL 445

### CYLINDER PARTS LIST

MODEL 445 (SERIAL NUMBER 2-445-001 AND UP)

KEY NO.	PART NO.	DESCRIPTION	QUANTITY
1	400103	Grease zerk, 1/8-27 NPT	1
2	100266	Cylinder shaft assembly	1
3	400121	3/8 x 1 cap screw	2
4	400162	3/8 Lock washer	2
5	400265	Wiper seal, 1-3/4	1
6	100264	Cylinder cap assembly	1
7	400263	O-ring, 3-5/8 x 4 piston & head	2
8	400266	Moly seal, 1-3/4 x 2-1/8	1
9	202453	Head	1
10	400264	O-ring, 1-1/4 x 1-3/8	1
11	202451	Piston	1
12	400262	Moly seal, 3-5/8 x 4	1
13	400192	1-1/4 - 12 NF Lock nut	1
14	100262	Cylinder tube assembly	1
15	400422	3/8 Steel pipe plug	2
16	100069	Seal Kit	



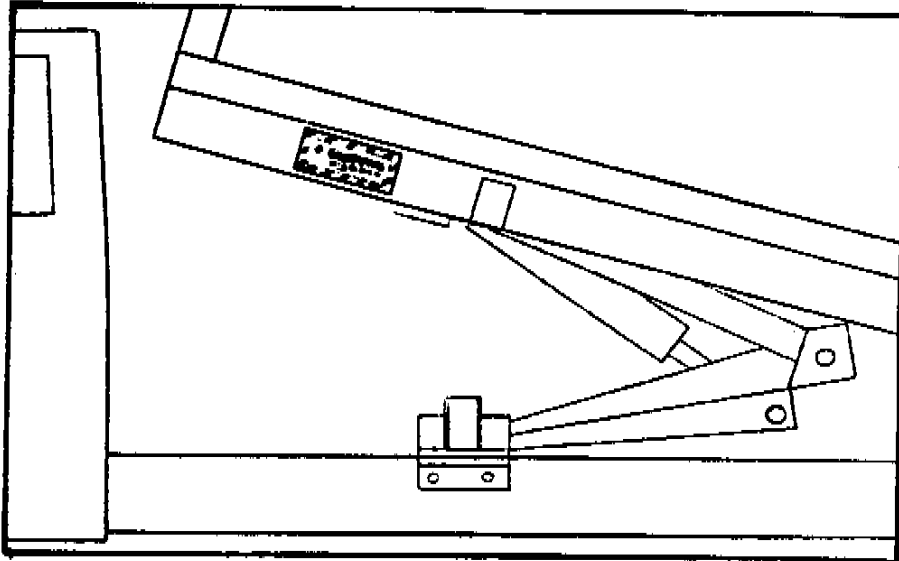


445 ELECTRIC HYDRAULIC PUMP

Key No.	Part No.	Description	Qty.
1	400326	Electric Pump	1
2	400423	1/4 90° Street Elbow	2
3	400420	1/4 x 1 1/2 Pipe Nipple	2
4	400421	1/4 x 3/8 Pipe Elbow	2
5	400514	3/8 Hyd. Hose, 48 Inch	1
6	400512	3/8 Hyd. Hose, 36 Inch	1
7	100174	Pump Mounting Bracket	2
8	400183	3/8-16 Plain Hex Nut	4
9	400162	3/8 Lockwasher	4
10	400164	3/8 Flat Washer	4
11	400121	3/8-16 x 1 Cap Screw	4
12	400101	1/4-20 x 3/4 Cap Screw	2
13	201391	Control Cable Bracket	1
14	400051	Push Button Switch	1
15	400184	1/4-20 Plain Hex Nut	2
16	400163	1/4 Lockwasher	2
17	400025	12' Control Cable	1

# SAFETY DECALS

SAFETY DECALS ARE SUPPLIED IN TWO SIZES,  
ONE OF EACH WITH EACH HOIST



(1) Attach the large safety decal to the body longbeam on the left side (driver's side) just ahead of the hoist installation.

(2) Attach the small safety decal to the dashboard in a prominent place near the hoist controls.

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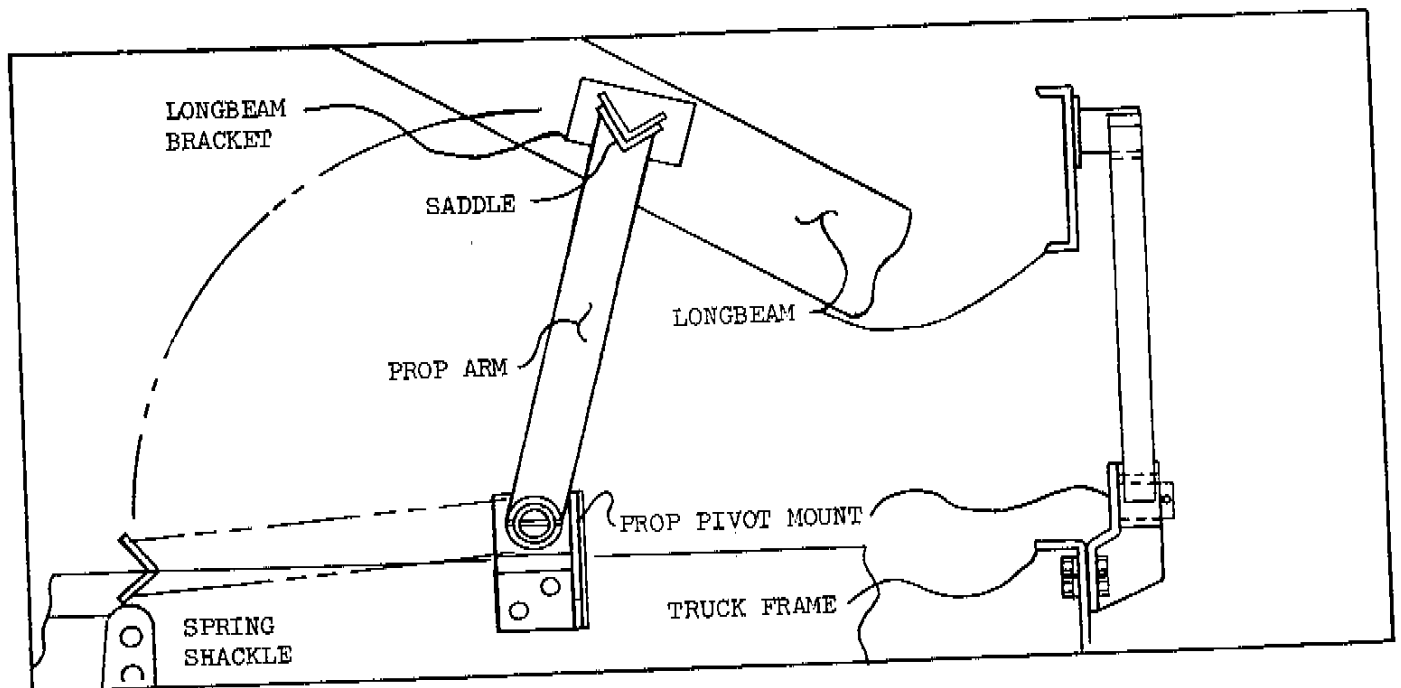
### CRYSTEEL TRUCK BODY PROP

Crysteel's Body Prop is designed and intended for use to support an empty truck body in the raised position to permit service work to be performed safely beneath a raised body. As a general rule, one prop will support a farm type body of 16 feet or less. With longer bodies, two props should be used, one on each side. Crysteel's Body Props come in pairs, driver's side and curb side. Single cylinder hoists come with the prop for the driver's side; twin cylinder hoists come with both props.

### INSTALLATION OF TRUCK BODY PROP

Refer to drawings as shown below:

1. Raise body to desired height and brace it securely before beginning installation.
2. Assemble prop arm to prop pivot mount with 1/4 x 3 roll pin. Position prop pivot mount against outside of truck frame just behind rear axle, allowing saddle end of prop arm to rest a top front rear spring shackle as shown. Using prop pivot mount as a guide, mark location of holes on truck frame and drill. Fasten prop pivot mount to truck frame with 1/2 x 1 3/4 bolts, lockwashers and nuts.
3. Raise prop arm to free standing position by allowing prop arm to rest against rear flange of prop pivot mount. Place longbeam bracket in prop arm saddle. Position longbeam bracket against the upper outside of body longbeam in order to allow room for clearance when body is in the lowered position. Weld longbeam bracket securely in place.
4. To operate Truck Body Prop raise body to desired height, shut off all power, raise prop arm to free standing position. Lower body slowly until longbeam bracket contacts prop arm saddle. DO NOT POWER HOIST DOWN!!!!!!
5. To place Truck Body Prop in storage position simply reverse the above procedure.



CRYSTEEL MANUFACTURING, INC.

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LO-BOY 445 TRUCK HOIST

WARRANTY

**WARRANTY**

Crysteel Manufacturing, Inc., warrants its products for a period of one year from date of purchase.

The warranty provides that our products must perform satisfactorily or we will repair, replace, or refund the purchase price at the option of the purchaser. Hydraulic pumps, valves, hoses, and other purchased parts are covered by the warranties of their respective manufacturers.

Any parts returned to Crysteel Manufacturing, Inc. shall be shipped prepaid, and will be returned F.O.B. Lake Crystal, Minnesota.

We will not assume responsibility for shipping, labor, or travel expenses.

The warranty is void if the product has been obviously abused, or subjected to other than normal usage.

We reserve the right to make improvements without notice or obligation regarding models previously sold.

**SPECIALLY DESIGNED —  
WITH QUALITY IN MIND**

**CAUTION**

- BODY MUST BE BRACED BEFORE SERVICING HOIST OR WORKING IN AREA WITH BODY IN RAISED POSITION
- LUBRICATE HOIST GREASE FITTINGS OFTEN - AT LEAST EACH TIME TRUCK IS SERVICED
- TRUCK MUST BE LEVEL FOR DUMPING
- DO NOT OVERLOAD

CRYSTEEL MFG. INC.



HIGHWAY 60 EAST • LAKE CRYSTAL, MINNESOTA 56055 • TELEPHONE 507-726-2728

FORM 400003 11/89

CRYSTEEL MANUFACTURING, INC.