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# **CRYSTEEL'S STINGRAY HOIST**

**MOUNTING AND OPERATING INSTRUCTIONS**



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Lake Crystal, MN 56055  
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**1902 Route 57 South  
Fulton, NY 13069  
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DATE PURCHASED \_\_\_\_\_  
 HOIST MODEL/ SERIAL NUMBER \_\_\_\_\_  
 CYLINDER SERIAL NUMBER \_\_\_\_\_  
 PUMP MODEL/SERIAL NUMBER \_\_\_\_\_  
 DEALER \_\_\_\_\_  
 ADDRESS \_\_\_\_\_  
 PHONE \_\_\_\_\_

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## FOREWORD

The Stingray twin cylinder underbody hoist is designed for use on single and tandem axle trucks with 12 to 28 foot bodies. The Stingray line provides hoists ranging from Model 1500 in NTEA class E/50 to the Model 7700 in NTEA class L/120.

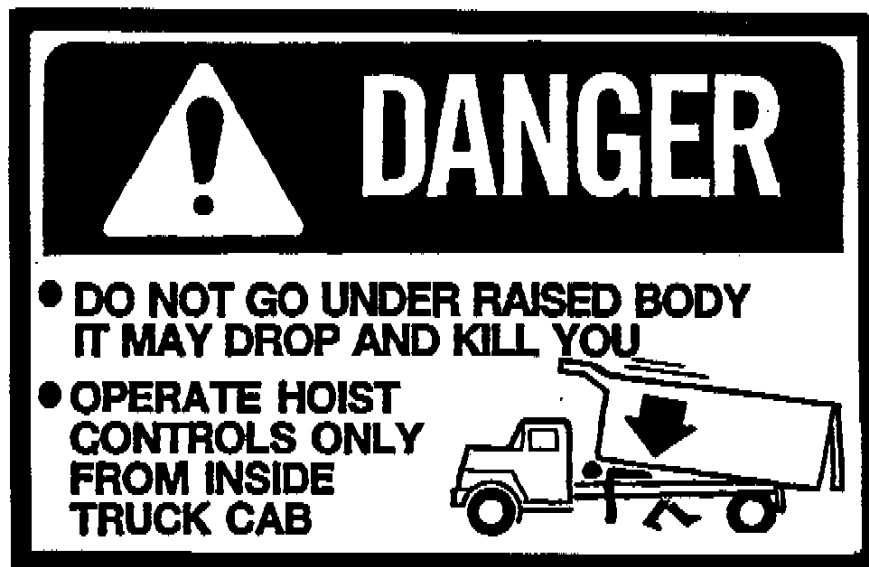
This manual contains the information needed for the proper installation and operation of these hoists.

These instructions are for standard installations using a self contained reservoir/valve unit. Study this manual carefully before attempting to install or operate this product. Other hydraulic packages will come with supplemental instruction sheets when needed. With the proper instal-

lation, use and regular maintenance, Crysteel's Stingray hoist will give many years of trouble free service.

When ordering parts, be sure to give the serial numbers of the hoist, pump, and cylinder. The serial number of the pump is found on the plate on the side of the pump. The serial number of the cylinder is stamped on the barrel of the cylinder near the base. The serial number of the hoist frame is found on top of the lower crosstubes under the model decal. For future reference, copy these numbers NOW in the space provided on page 1. Order parts by number and description as given in the parts listing in this manual.

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# OPERATION AND MAINTENANCE INFORMATION

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## OPERATION AND USE

1. Engage PTO from cab and adjust engine speed to fast idle.
2. To raise the hoist, pull the hoist control lever back. To hold the body in a raised position, return the hoist control lever to the center detent position.
3. To lower the hoist, push the hoist control lever forward. Always return the hoist control lever to the center detent position after the body is all the way down.
4. **DO NOT LEAVE THE PTO IN GEAR WHILE TRANSPORTING. THIS WILL CAUSE SEVERE DAMAGE TO THE HYDRAULIC PUMP.**
5. 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.

## SOME DO'S AND DON'T'S FOR SAFETY AND LONG SERVICE

1. **NEVER** operate the hoist control valve from outside the cab.
2. Use the proper hydraulic fluid. **KEEP IT CLEAN.** Remember to change it regularly.
3. Lubricate all grease fittings at regular intervals.
4. **ALWAYS** carefully block up the body, using the body prop, before working under it.
5. Do not "race" the engine when unloading.
6. Do not load the hoist beyond its capacity.
7. **DO NOT** tamper with the hydraulic relief valve. This will void the warranty. It can cause severe damage to the hoist and cylinder.
8. Never leave the PTO in gear while transporting. It will ruin the hydraulic pump.
9. Check all bolts and fittings regularly. Keep them tight.

**NEVER EXCEED THE G.V.W. (GROSS VEHICLE WEIGHT) RATING OR THE G.A.W.  
(GROSS AXLE WEIGHT) RATING SPECIFIED FOR YOUR TRUCK**

# INSTALLATION INSTRUCTIONS

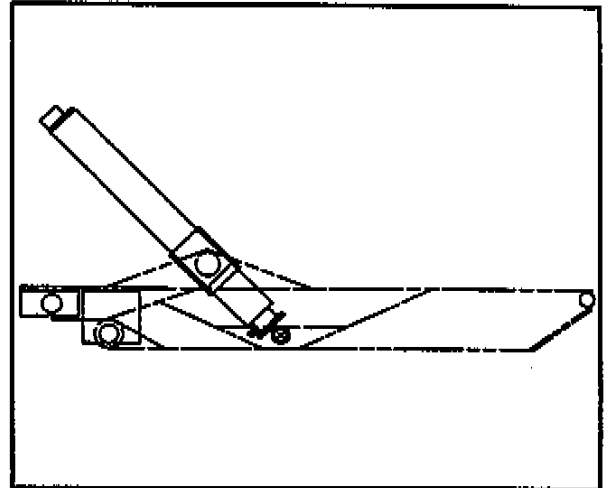
## COMPLETE CYLINDER INSTALLATION

Place the hoist upside down on the floor. The cylinders have been installed in the cylinder mounting sleeves. They need to be bolted to the crossheads.

On **DOUBLE-ACTING CYLINDERS** the head ports should be toward the center of the hoist for hoist models 3300 through 7700. Lift the base end of the cylinders to align the cylinders with the crossheads. (The hoist may need to be opened slightly to do this.) Bolt the cylinders to the crossheads using  $3/8 \times 1\ 1/2$  cap screws, lock washers and hex nuts. Check the cylinder mounting screws; they should be tight.

On **SINGLE-ACTING CYLINDERS** bolt the cylinders to the crosshead using  $3/8 \times 1\ 1/2$  capscrews, and hex locknuts. (The hoist may

need to be opened slightly to do this.) Check the cylinder mounting screws, they should be tight.



## MOUNT THE REAR HINGE

The rear hinge must be located as close as possible behind the rear spring hanger. This will be 32 to 36 inches behind the center of the rear axle on single axle trucks and 42 to 50 inches behind the center of the tandem on tandem axle trucks. Mark the rear of the truck frame for notching as shown, leaving enough of the bottom flange of the truck frame to be bent up later to box in the truck frame. Notch the truck frame as marked. Make sure the rear hinge is square with the truck frame and at the correct height. The top surface of the rear hinge bracket should be flush with the top of the angle mounting brackets of the hoist frame. Securely weld the rear hinge to the truck frame. Bend the bottom flange of the truck frame up and weld all around to box in the truck frame.

operation. Securely weld the gussets to the rear hinge, the truck frame rail and the top flange of the truck frame rail.

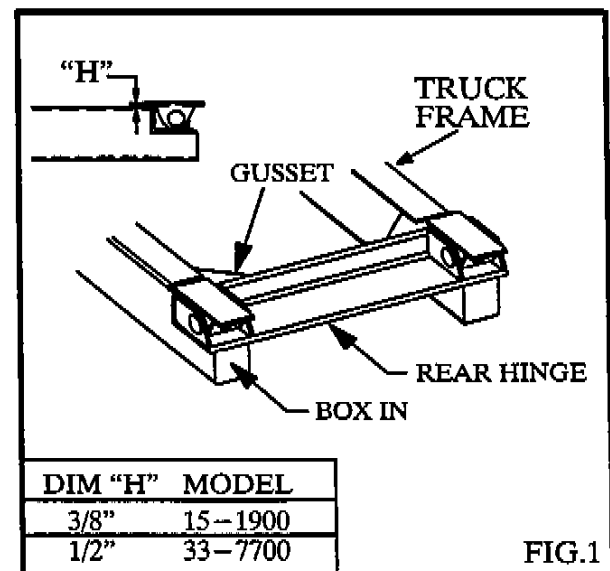


FIG.1

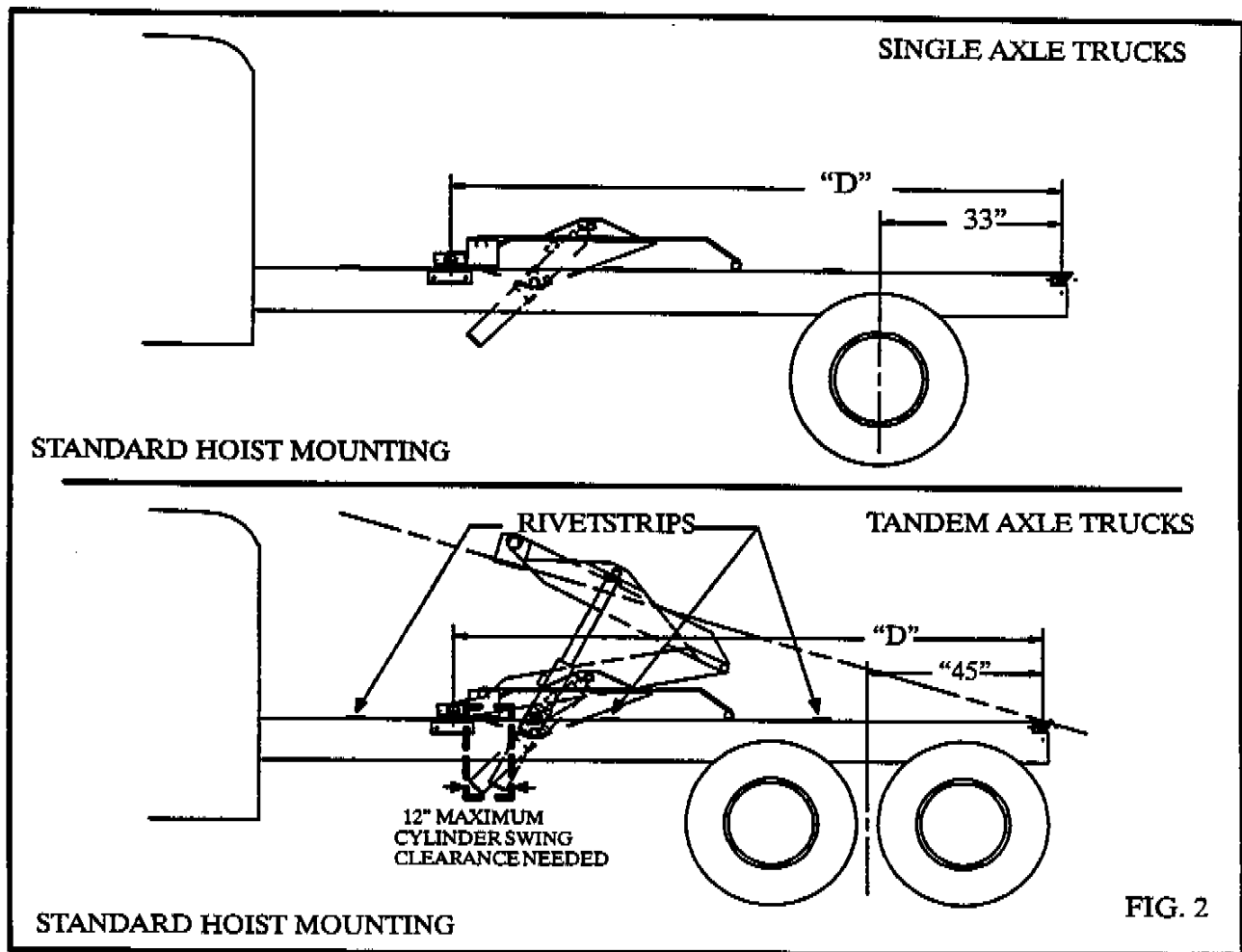
Place the gussets in the corners formed by the truck frame rail and the rear hinge frame angle. Raise the front end of the gusset so it touches the top flange of the truck frame rail. Be sure that the gusset does not interfere with the rear hinge

### LOCATE HOIST ON TRUCK FRAME

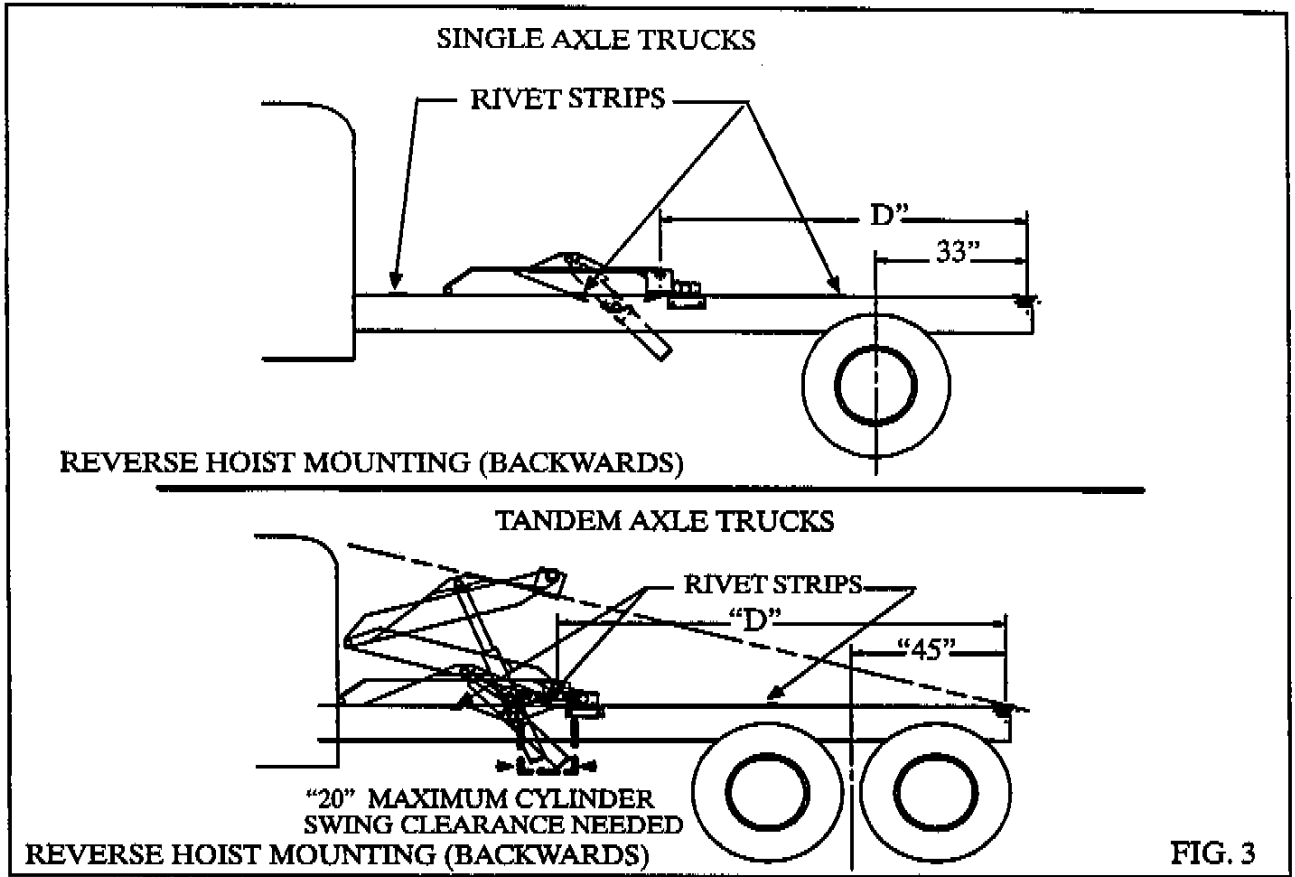
Find the "D" dimension in TABLE 1, on page 6, for the hoist model and desired dump angle. Using this dimension, measure forward from the center of the rear hinge and mark the truck frame. Place the hoist on the truck frame. (See Fig. 2) Center the front cross tube of the hoist over the mark on the truck frame. Be sure to allow enough room for the cylinders to swing as the body is raised. Make sure the hoist is centered on and square with the truck frame. The angle mounting brackets must rest flat on the truck frame. If rivets are encountered in the truck frame, and the hoist cannot be moved to

clear them, countersink the rivet heads into the brackets. The rear end of the main hoist frame is designed to rest on a crossmember in the truck frame. If no crossmember exists to support the hoist frame, add one.

Note: In some cases the hoist may fit the truck frame better if it is mounted reversed or "backwards" as shown in Figure 3. When mounting the hoist "backwards" be sure to measure to the front crosstube of the hoist as shown in Figure 3 and to allow enough room for the cylinders to swing as the body is raised.



**NOTE: NO CROSSBRACING** allowed within cylinder swing clearance area. Crossbracing will lead to interference with the working operation of the hoist. ( Fig. 2 and 3 on the Tandem Axle Trucks.)



**TABLE 1**

MODEL	DUMP ANGLE			
	40°	45°	50°	55°
1500	113"	97"	88"	81"
1900	113"	97"	88"	81"
3300	136"	123"	111"	102"
4400	136"	123"	111"	102"
5500	171"	153"	140"	128"
6600	191"	171"	156"	143"
7700	208"	186"	169"	155"

## MOUNT HOIST TO TRUCK FRAME

Center the mounting angles under the angle mounting brackets on the hoist. Clamp them in place and mark the truck frame for drilling, using the mounting angles as guides. (See Fig. 4)

**CAUTION: WHEN DRILLING THE TRUCK FRAME BE CAREFUL OF BRAKELINES, WIRING, ETC, INSIDE THE TRUCK FRAME.**

Drill  $21/32$  inch holes in the truck frame and bolt the mounting angles in place using  $5/8 \times 1 3/4$  cap screws, lock washers and hex nuts. Securely weld the angle mounting brackets to the mounting angles.

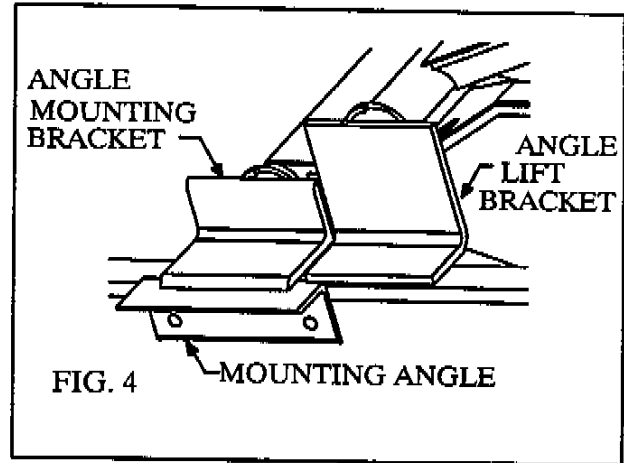


FIG. 4

## MOUNT GEAR PUMP

The gear pump has an SAE 'B' mounting configuration, a 13-tooth splined shaft and a four-bolt mounting flange, and is assembled for rotation in either direction. **NOTE:** This pump will mount directly to Chelsea's output type 'XK' or Muncie's output type 'D'. Crysteel

Manufacturing recommends a PTO ratio of 100-120%. This assures a minimum pump operating speed of 600 RPM. Bolt the gear pump to the PTO output flange using  $1/2 \times 1 1/4$ " cap screws and lock washers.

## MOUNT RESERVOIR/VALVE ASSEMBLY

The reservoir/valve assembly should be mounted on the same side of the truck as the pump with the exposed end of the valve spool toward the front. Bolt the mounting angles to the reservoir/valve assembly using  $3/8 \times 1$  cap screws, flat washers, lock washers and hex nuts. Place the valve/reservoir assembly inside the truck frame and raise it as high as possible. See Fig. 5. (There is no drive line to align and the reservoir should be higher than the pump for

reliable performance.) Make sure there is enough clearance for the truck drive line and hot exhaust pipes. **THE ENGINE EXHAUST MUST NEVER BLOW DIRECTLY ONTO THE RESERVOIR/VALVE ASSEMBLY.** Clamp the mounting angles to the truck frame and mark the truck frame for drilling using the pump mounting angles as guides.

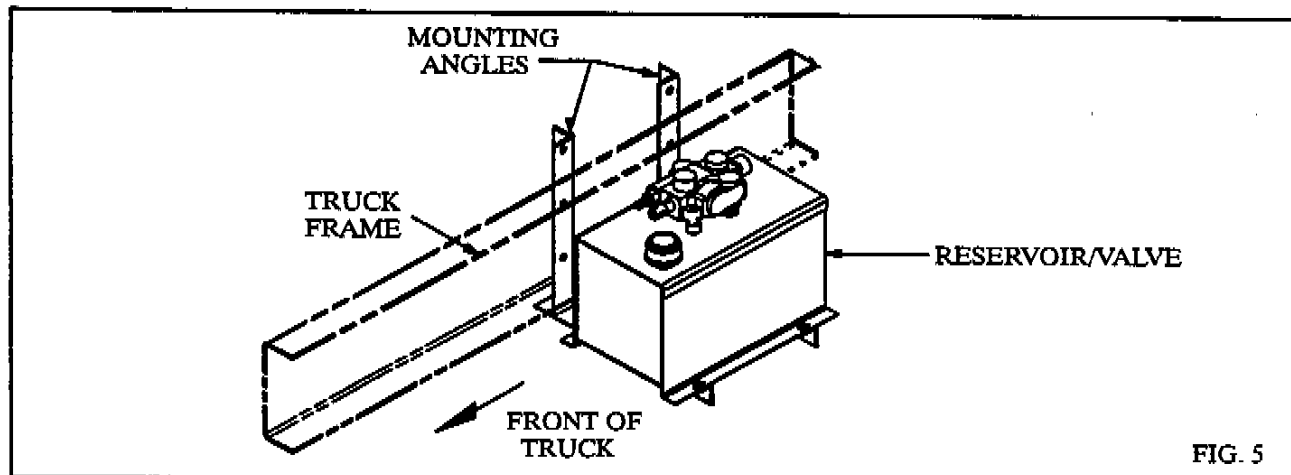


FIG. 5



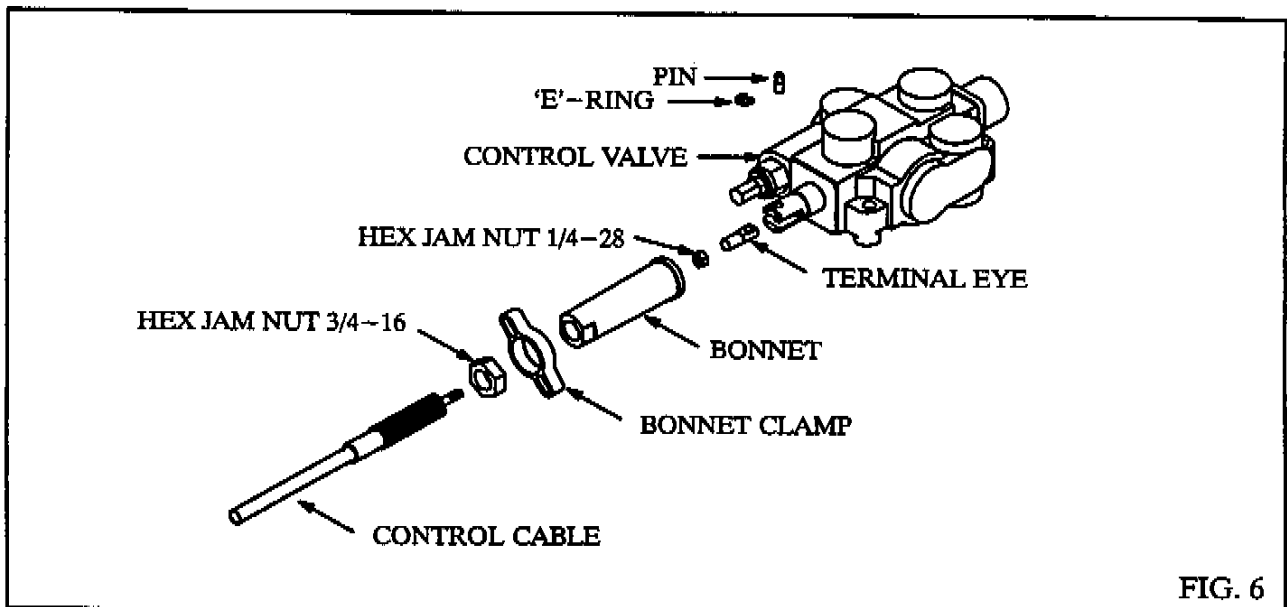
**CAUTION: WHEN DRILLING THE TRUCK FRAME BE CAREFUL OF BRAKELINES, WIRING, ETC. INSIDE THE TRUCK FRAME.**

Drill 17/32" holes in the truck frame and bolt the reservoir/valve assembly in place using 1/2 x 1 3/4" cap screws, lock washers and hex nuts.

## INSTALL REMOTE VALVE CONTROL

Temporarily assemble the valve control head to the pedestal using 5/16 x 2 1/4" machine screws and hex nuts. Place this assembly on the floor of the cab. Make sure there is enough room to operate the valve control and the gear shift lever and to adjust the seat. Check below the floor for obstructions and cable routing. Relocate the valve control if necessary. Mark the floor using the pedestal as a template and drill 1/4" holes for the mounting screws and a 3/4" hole for the control cable. Assemble the control cable to the valve control head and assemble the valve

control head and cover to the pedestal using 5/16 x 2 1/4" machine screws, lock washers and hex nuts. Insert the control cable through the hole in the floor and mount the pedestal to the floor using 5/16 x 3/4" self-tapping screws. Make sure the valve control lever is in its center detent position. Keep the control cable away from hot exhaust pipes and rotating drive shafts. The control cable should not have any sharp bends or kinks in it (these will make the control harder to operate).



Install the 3/4" hex jam nut onto the valve end of the control cable and turn past the threads. Insert the end of the cable through the bonnet clamp. Install the bonnet onto the control cable and turn it past the threads also. Install the 1/4" hex jam nut and terminal eye on the core rod of the cable. Lock the terminal eye to the core rod using the hex jam nut. Place the terminal eye in the slot of the valve spool; insert the short pin through the valve spool and terminal eye and secure it in place with the 'E' ring.

Thread the bonnet onto the end of the cable so it firmly touches the end valve. (Do not over or under tighten the bonnet as either would move the valve spool out of its neutral position.) Remove two cap screws from opposite corners of the seal retainer plate. Slide the bonnet clamp onto the bonnet and secure it to the valve using the 1/4 x 1 1/4" cap screws, lock washers and flat washers. Lock the bonnet to the cable using the 3/4" hex jam nut. See Fig. 6.

## INSTALL HOSES – MODELS 1500 AND 1900

Study Fig. 7 very carefully before connecting the hoses. Install a 3/4" 90° street elbow and a 3/4" hose barb in the suction port on the bottom of the reservoir. Install a 3/4" hose barb in the suction port of the pump and install the suction hose. Secure the suction hose in place using hose clamps. Install a 90° swivel adapter in the 'IN' port of the control valve and install a 3/4 x 1/2 hex reducer in the pressure port on the pump. Install a 72" long 1/2" hose from the pump to the valve.

Install 90° swivel adapters in the work ports of the control valve and the base end ports of the cylinders. Install straight swivel adapters in the rod end ports of the cylinder. Connect a 60" long 3/8" hose from the 'B' port on the control valve

to a swivel nut tee; connect the 18" long 3/8" hoses from the tee to the ports on the base end of the cylinders. Connect a 60" long 3/8" hose from the 'A' port to a second swivel nut tee; connect the 18" long 3/8" hoses from the second tee to the ports on the rod end of the cylinders. This will raise the hoist when the control lever is pulled back and lower it when pushed forward. Secure the 18" long hoses to the cylinder mount using the tie straps provided.

**NOTE:** The 'A' port is the 'power-down' port and has a pressure of only 500–1000 PSI; the 'B' port has full system pressure.

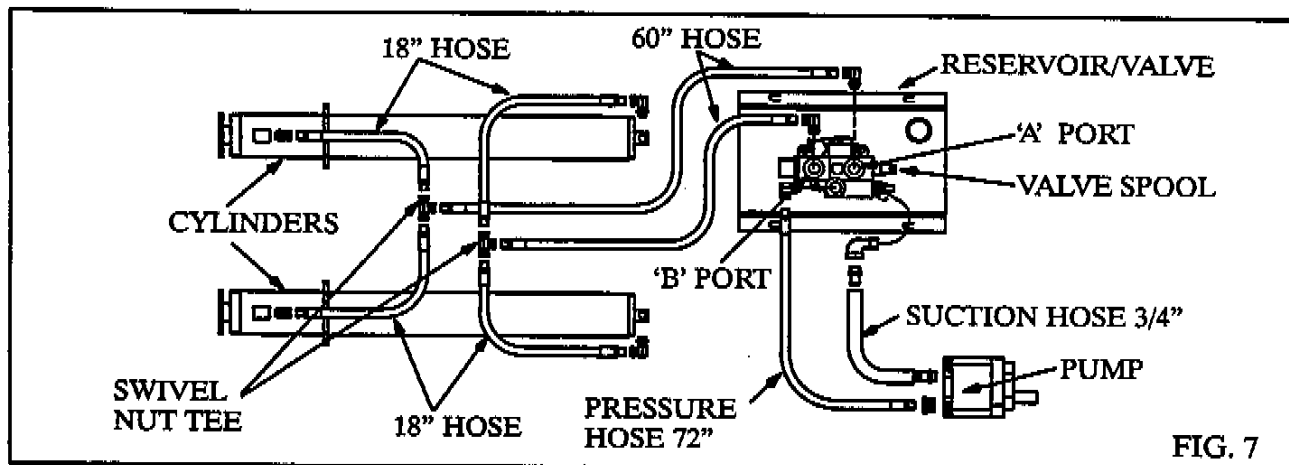
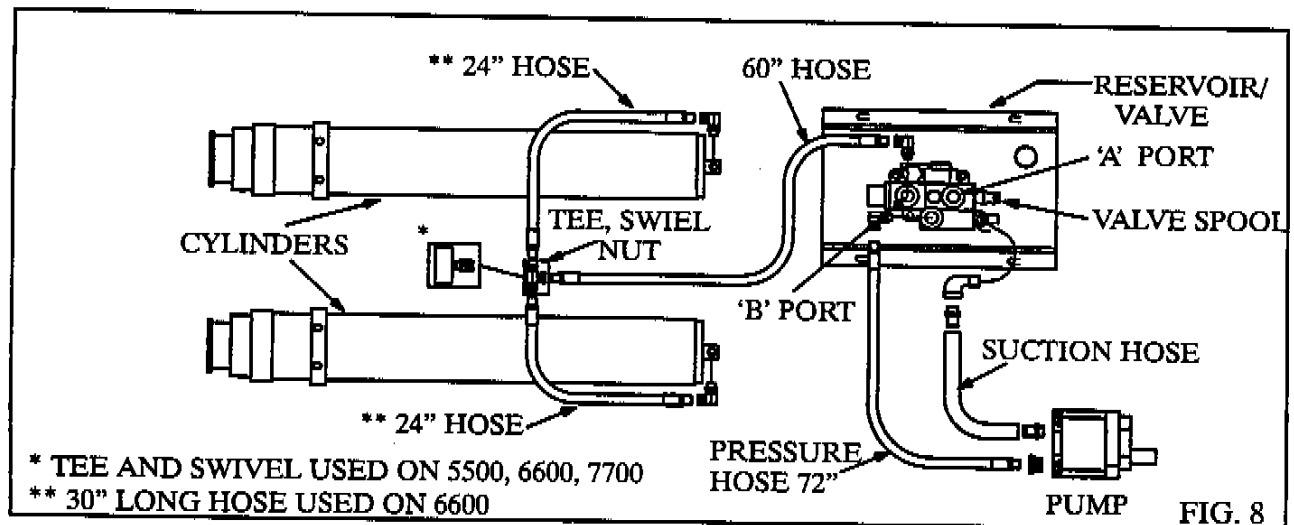


FIG. 7

## INSTALL HOSES – MODEL 3300 AND 4400 SINGLE ACTING

Study Fig. 8 very carefully before connecting the hoses. Install a 1 1/4" 90° street elbow and a 1 1/4" hose barb in the suction port on the bottom of the reservoir. Install a 1 5/16 ORB x 1 1/4" hose barb in the suction port on the pump and install the suction hose. Secure the suction hose in place using hose clamps. Install a 1 5/16 ORB x 1/2 NPT adapter in the pressure port of the pump and install a 90° swivel adapter in the 'IN' port on the control valve. Install the 72" long 1/2" hose from the pump to the valve.

Install 90° swivel adapters in the work port of the control valve and the ports on the base end of the cylinders. Connect a 60" long 1/2" hose from the control valve to the swivel nut tee; connect a 24" long 1/2" hose from the tee to the ports on the base end of the cylinder. This will raise the hoist when the control lever is pulled back and lower it when pushed forward. Secure the 24" long hoses to the cylinder mount using the tie straps provided.



### INSTALL HOSES – MODEL 5500, 6600, 7700 SINGLE–ACTING

Study Fig. 8 very carefully before connecting the hoses. Install a 1 1/2" 90° street elbow and an 1 1/2" hose barb in the suction port on the bottom of the reservoir. Install a 1 5/16 ORB x 1 1/2" hose barb in the suction port of the pump and install the suction hose. Secure the suction hose in place using hose clamps. Install a 1 5/16 ORB x 3/4" NPT adapter in the pressure port of the pump and install a 90° swivel adapter in the "IN" port of the control valve. Install the 72" long 3/4" hose from the pump to the valve. Install 90° swivel adapters in the work port of the control valve and the ports on the base end

of the cylinders. Install a 7/8 ORB x 3/4" NPT swivel in the middle port of the 7/8 ORB tee.

Connect a 60" long 3/4" hose from the control valve to the middle port of the tee; connect 24" long 1/2 NPT–7/8 ORB hoses (30" long hoses for the 6600) from the tee to the ports on the base end of the cylinders. This will raise the hoist when the control lever is pulled back and lower it when pushed forward. Secure the 24" (30") long hoses to the cylinder mount using the tie straps provided.

### INSTALL HOSES – MODEL 3300 AND 4400 DOUBLE–ACTING

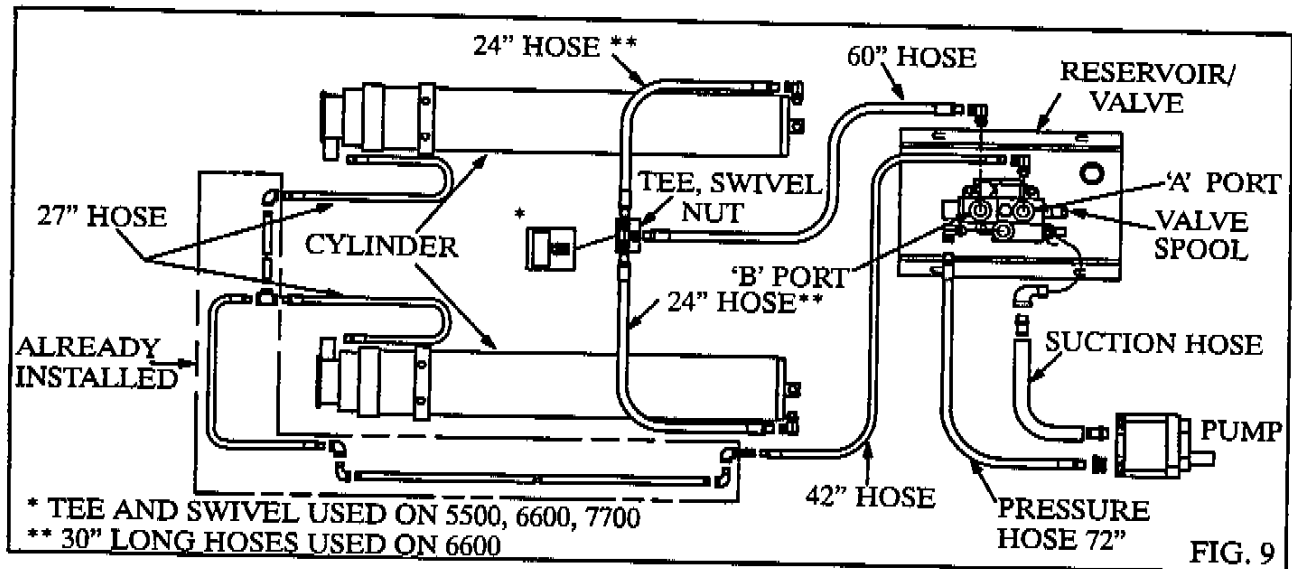
Study Fig. 9 very carefully before connecting the hoses. Install a 1 1/4" 90° street elbow and a 1 1/4" hose barb in the suction port on the bottom of the reservoir. Install a 1 5/16 ORB x 1 1/4" hose barb in the suction port on the pump and install the suction hose. Install a 1 5/16 ORB x 1/2 NPT adapter in the pressure port of the pump and install a 90° swivel adapter in the "IN" port of the control valve. Install the 72" long 1/2" hose from the pump to the valve. Secure the suction hose in place using hose clamps.

Install 90° swivel adapters in the work ports of the control valve and the ports on the base end of the cylinders. Connect a 60" long 1/2" hose from the control valve to the swivel nut tee; connect 24" long 1/2" hose from the tee to the ports on the base end of the cylinder. Secure the

24" long hoses to the cylinder mount using the tie straps provided.

There is plumbing inside the hoist frame for the power down function of the hoist. Install a 3/8 NPT x 1/2 NPT swivel adapter in the pipe elbow near the front of the hoist frame. Connect a 42" long 1/2" hose from the 'A' port on the control valve to the swivel adapter. Connect 27" long 1/4" hoses from the pipe fittings on the upper frame to the ports on the rod end of the cylinders. This will raise the hoist when the control lever is pulled back and lower it when pushed forward.

**NOTE:** The 'A' port is the 'power–down' port and has a pressure of only 500–1000 PSI; the 'B' port has full system pressure.



### INSTALL HOSES -- MODEL 5500, 6600, 7700 DOUBLE-ACTING

Study Fig. 9 very carefully before connecting the hoses. Install a 1 1/2" 90° street elbow and an 1 1/2" hose barb in the suction port on the bottom of the reservoir. Install a 1 5/16 ORB x 1 1/2" hose barb in the suction port of the pump and install the suction hose. Secure the suction hose in place using hose clamps. Install a 1 5/16 ORB x 3/4 NPT adapter in the pressure port of the pump and install a 90° swivel adapter in the 'IN' port of the control valve. Install the 72" long 3/4" hose from the pump to the valve.

Install 90° swivel adapters in the work ports of the control valve and the ports on the base end of the cylinders. Install a 7/8 ORB x 3/4 NPT swivel in the middle port of the 7/8 ORB tee. Connect a 60" long 3/4" hose from the control valve to the middle port of the tee; connect 24" long 1/2" hoses (30" long hoses for the 6600)

from the tee to the ports on the base end of the cylinders. Secure the 24" (30") long hoses to the cylinder mount using the tie straps provided.

There is plumbing inside the hoist frame for the power down function of the hoist. Install a 3/8 NPT x 1/2 NPT swivel adapter in the pipe elbow near the front of the hoist frame. Connect a 42" long 1/2" hose from the 'A' port on the control valve to the swivel adapter. Connect 27" long 1/4" hoses from the pipe fittings on the upper frame to the ports on the rod end of the cylinders. This will raise the hoist when the control lever is pulled back and lower it when pushed forward.

**NOTE:** The 'A' port is the 'power-down' port and has a pressure of only 500–1000 PSI; the 'B' port has full system pressure.

### ADD HYDRAULIC OIL

Refer to TABLE 2 below for the amount of hydraulic oil required to operate the hoist. Use a quality hydraulic fluid of 150 SSU @ 100°F. which contains corrosion and oxidation inhibitors and a foam depressant. This is

approximately the equivalent of SAE 10W or lighter weight oil, or use Type A automatic transmission fluid for improved performance in cold weather.

TABLE 2

HOIST MODEL	RESERVOIR SIZE	OIL REQUIRED	HOIST MODEL	RESERVOIR SIZE	OIL REQUIRED
1500	6 GAL.	13QTS	5500	14 GAL.	34QTS
1900	6 GAL.	15QTS	6600	14 GAL.	39QTS
3300	8 GAL.	20QTS	7700	14 GAL.	42QTS
4400	8 GAL.	27QTS			

### GREASE HOIST

Install grease zerks and lubricate in the following locations:

- A. Upper Crosstube . . . . . 2 fittings
- B. Lower Crosstube . . . . . 2 fittings
- C. Body Props . . . . . 2 fittings
- D. Rear Hinge . . . 2 fittings (Installed)

Lubricate all fittings at regular intervals, at least

every 200 cycles or 2 months. There are very high forces on the bearing surfaces within the hoist frame. It pays to be generous in lubricating the hoist to ensure proper operation and long life.

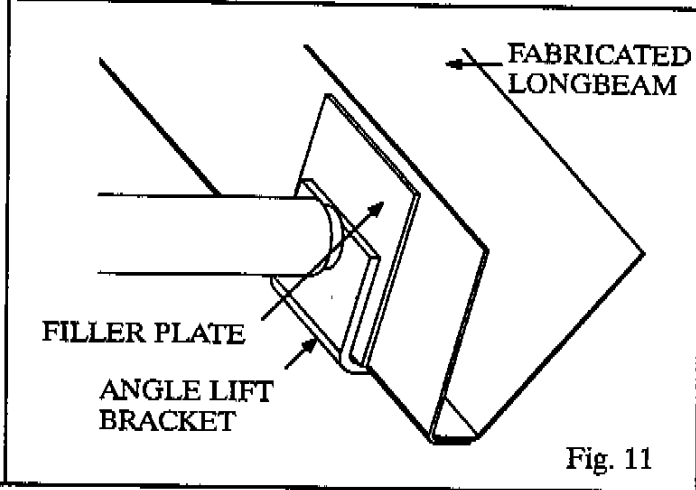
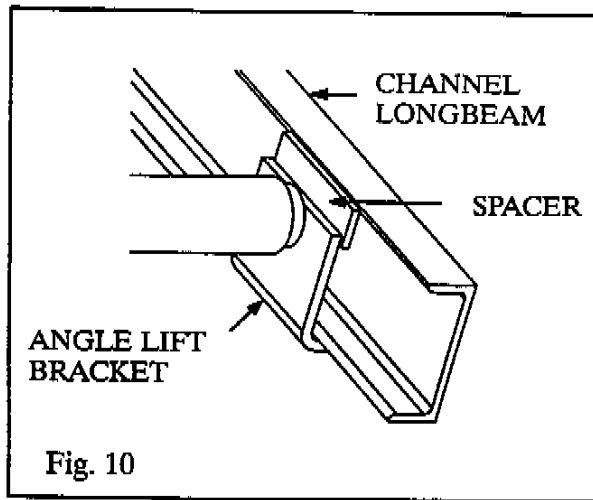
NOTE: The crossheads, the lower cylinder mount pivots and the center hinge of the hoist are equipped with SELF LUBRICATING COMPOSITE BEARINGS. These points do not need to be greased.

### MOUNT BODY

It is recommended that the body be painted before it is mounted on the truck. Place the body in position on the truck with three inches of clearance behind the cab. Use the rivet strip mounting pads between the longbeams and the truck frame. Use three on each side, spaced as seen on Fig. 2 on page 5 or Fig. 3 on page 6. Weld them to the longbeams. Align body longbeams carefully with the truck frame. Securely weld the longbeams to the rear hinge brackets.

the hoist. On the inside of the longbeams, insert the filler plate between the lift bracket and the longbeam. Securely weld the filler plate to the angle lift brackets and to both flanges of the longbeam channels as shown in Fig. 10. For Crysteel's new grain body, place the filler plate between the angle lift bracket and the inside of the longbeam as shown in Fig. 11. Securely weld this plate to the longbeam and to the lift bracket. Be sure to do this on both sides.

Weld the longbeams to the angle lift brackets of



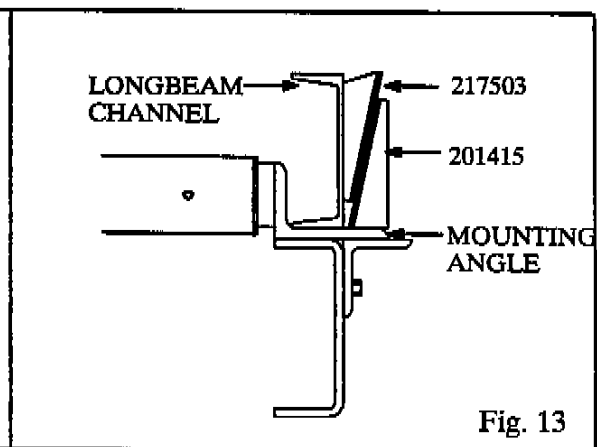
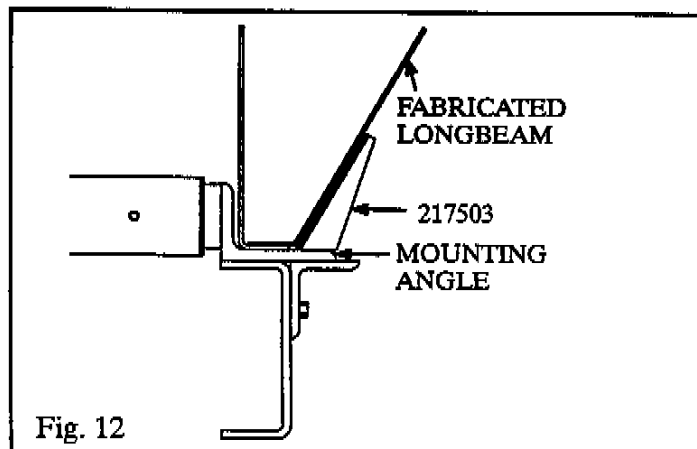
**INSTALL BODY GUIDES**

The four body guides supplied with your hoist are of two types. Part number 217503 has an obtuse angle that allows it to match the angle of fabricated longbeams. Position this type as shown in Fig. 12 with wide end down, pushed against the longbeam, and centered over the hoist lower mounting angle. Weld securely to the mounting angles. **DO NOT** use the other body guides with fabricated longbeams.

channel type longbeams and has a right angle that allows it to be positioned as shown in Fig. 13. Position this guide 1/4" away from the longbeam, centered over the lower mounting angle. Place the 217503 body guide inside of it as shown so that the flat sides of the guides fit together. Weld number 201415 to the lower mounting angle and 217503 to the longbeam.

Part number 201415 body guide is used with

There should be **NO SIDEPLAY** when the truck body is in the lowered position.

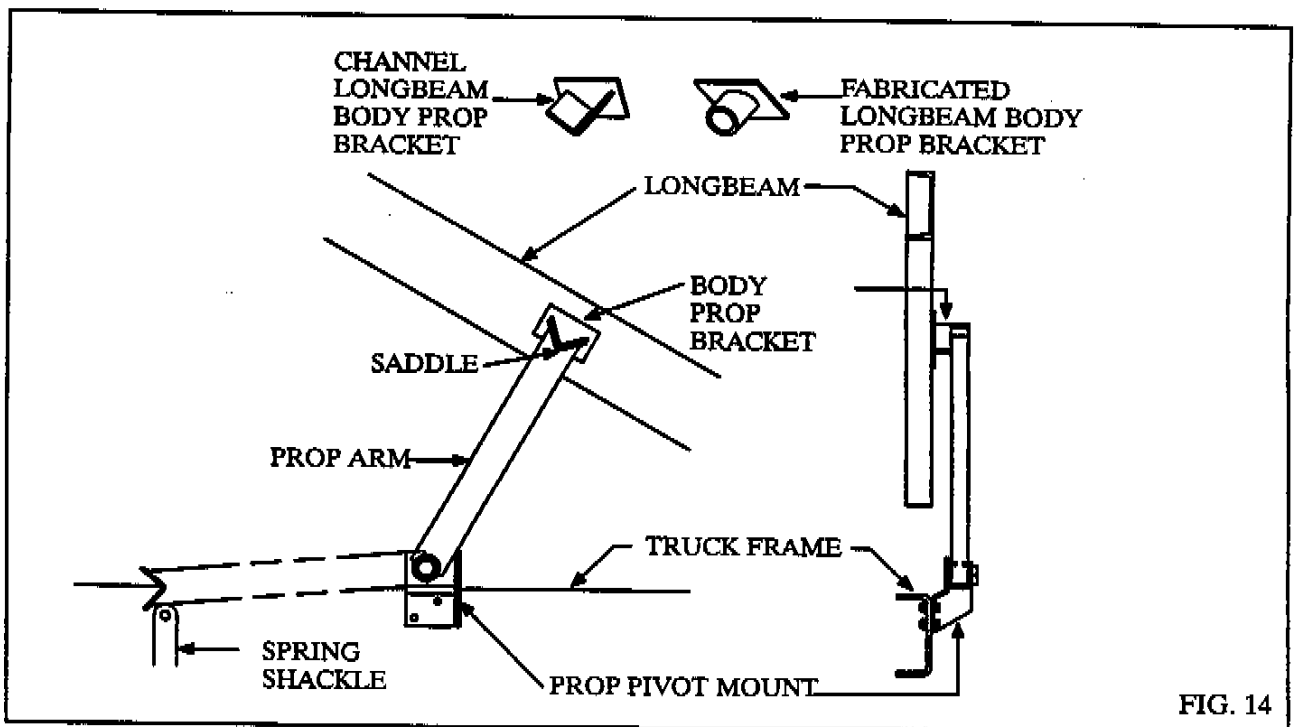


**INSTALL BODY PROP**

The body prop is designed and intended to support an **EMPTY** truck body in the raised position. Use of the body prop permits service to be performed safely beneath a raised body. One body prop is included with Stingray Hoist

models 1500 and 1900; two body props (one pair) are included with models 3300 through 7700. Be sure to install each prop on the correct side of the truck as explained below. (See Fig. 14)

1. Raise the body to a 30° to 35° angle and brace it securely before beginning installation.
2. Assemble the prop arm to the prop pivot mount with a 1/4 x 3 roll pin. Clamp the prop pivot mount against the outside of the truck frame just behind the rear axle. Raise the body prop arm to a free standing position. Place the body prop bracket in the prop arm saddle. Reposition if needed to locate the prop bracket on the longbeam. It may be necessary to raise or lower the body to get the best location for the prop pivot mount. Using the prop pivot mount as a guide, mark the location of holes on the truck frame and drill 17/32 inch holes. Assemble the prop pivot mount to the frame using 1/2 x 1 3/4 cap screws, lock washers and hex nuts. Raise the prop arm to a free standing position, place the body prop bracket in the saddle and securely weld the bracket to the longbeam.
3. When mounting two body props, repeat steps 1 and 2 for the other side. Use the body prop already mounted to assure that both body props hold the body at the same height. The left and right body props should pivot toward the front of the truck in the storage position.
4. To operate the body prop, raise the body to the desired height, shut off all power, raise the prop arm to a free standing position. Lower the body slowly until the body prop bracket contacts the prop arm saddle. **DO NOT POWER HOIST DOWN.**
5. To place the body prop in the storage position, raise the body to clear the body prop saddle, lower the body prop to the storage position and lower the body.



## **BLEED CYLINDERS – SINGLE ACTING**

The StingRay single-acting cylinders are equipped with a self-bleeding feature. When first installed, raise the body to full height and lower completely two or three times. Air is removed from the cylinder every time the hoist is cycled. No further bleeding is required.

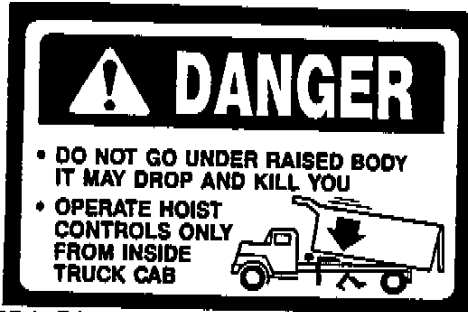
**NOTE:** Double-acting cylinders do not have bleed valves because they bleed themselves in use. Cycle the hoist several times to remove any air from the cylinders

## **INSTALL DECALS**

There should be a total of 8 decals supplied in the manual packet. Be sure that you have all of them as shown on the following page. If you do not, notify Crysteel and we will gladly supply those missing. Be careful that the decals are

placed in the proper places and are applied to a clean, dry surface. Locations are described on the next page. Installation is not considered complete without all decals in place.





401576—Place on longbeams near front of body. One on each side. (2)



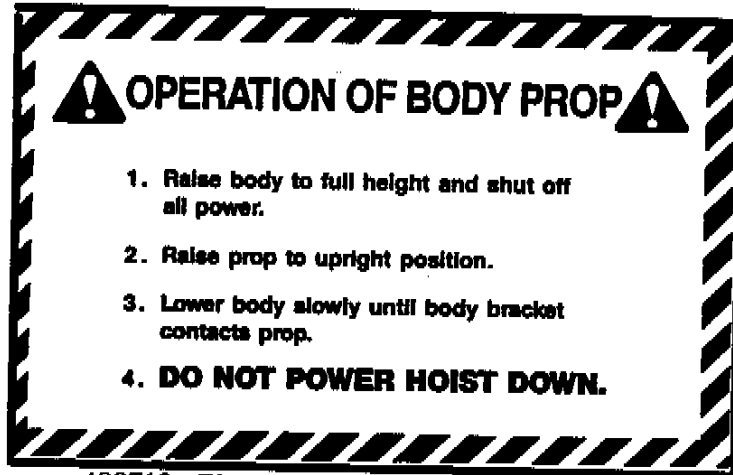
400642—Place in cab of truck where easily seen.



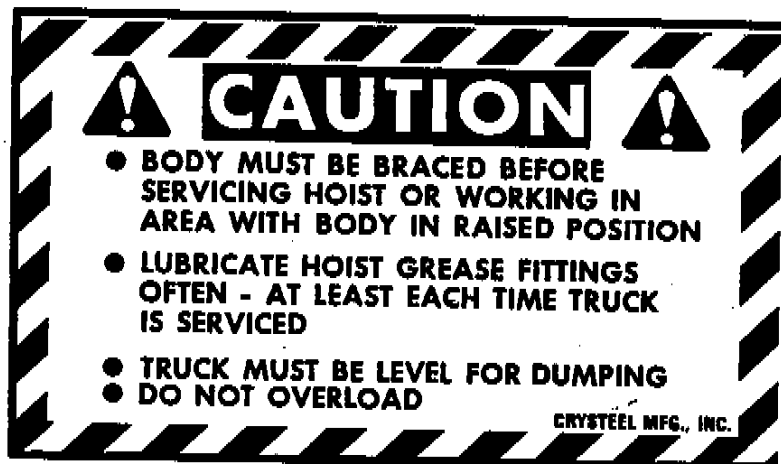
401577—Place in cab of truck where easily seen.



400661—Place one on each body prop arm.



400719—Place on longbeam near body prop. on drivers side.



400643—Place on longbeam near body prop, on drivers side.

FIG. 15

# ROUTINE MAINTENANCE

## LUBRICATE REGULARLY

Install grease zerks and lubricate the Stingray Hoist in the following locations:

- A. Body Prop ..... 2 fittings
- B. Upper Crosstube ..... 2 fittings
- C. Lower Crosstube ..... 2 Fittings
- D. Rear Hinge ..... 2 Fittings

Lubricate all fittings at regular intervals, at least every 200 cycles or 2 months. There are very high

forces on the bearing surfaces within the hoist frame. It pays to be generous in lubricating the hoist to ensure proper operation and long life.

NOTE: The crossheads, the lower cylinder mount pivots and the center hinge of the hoist are equipped with SELF LUBRICATING COMPOSITE BEARINGS. These points do not need to be greased.

## CHANGE HYDRAULIC OIL

With normal use and working conditions the hydraulic oil should be changed annually. The breather cap should be cleaned regularly. With heavy use or very dusty working conditions the hydraulic oil should be changed more often.

**KEEP THE OIL CLEAN! USE CLEAN CONTAINERS, FUNNELS AND OTHER EQUIPMENT!**

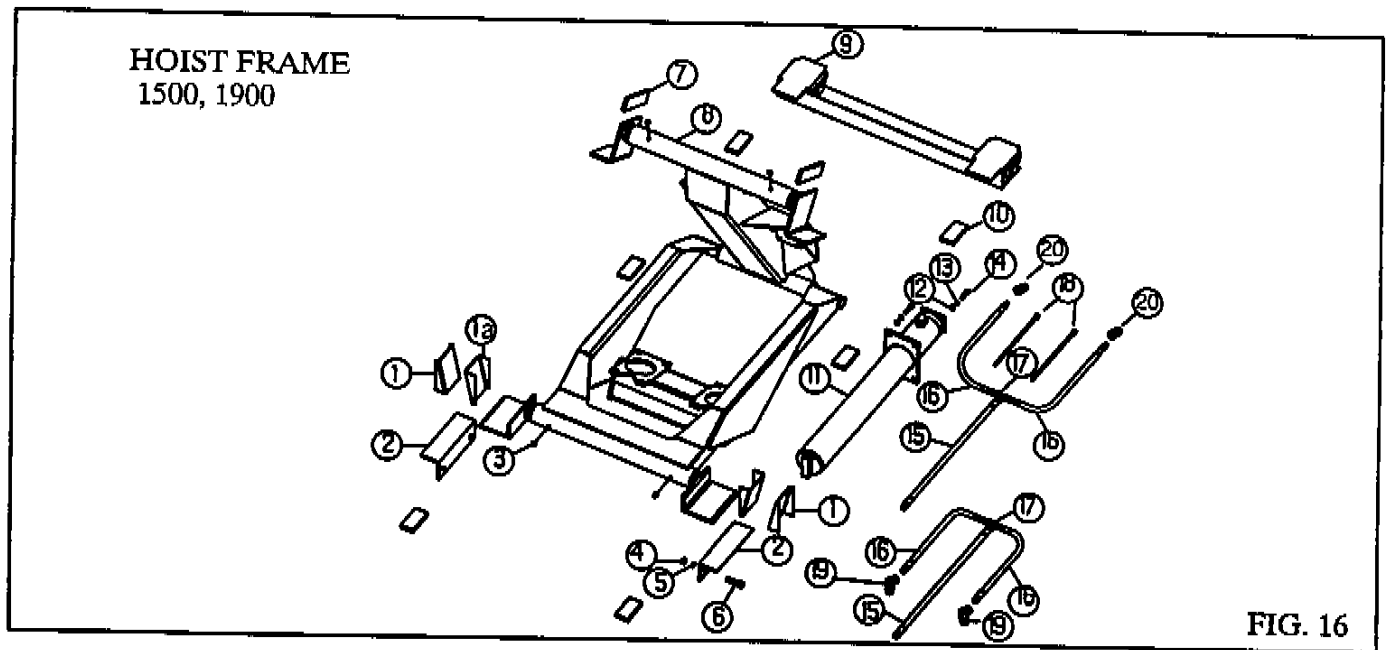
Use a quality hydraulic fluid of 150 SSU @ 100° F. which contains corrosion and oxidation inhibitors and a foam depressant. This is approximately the equivalent of SAE 10W or lighter weight oil, or use Type A automatic

transmission oil for improved performance in cold weather. Refer to chart on page 10 for the amount of oil needed.

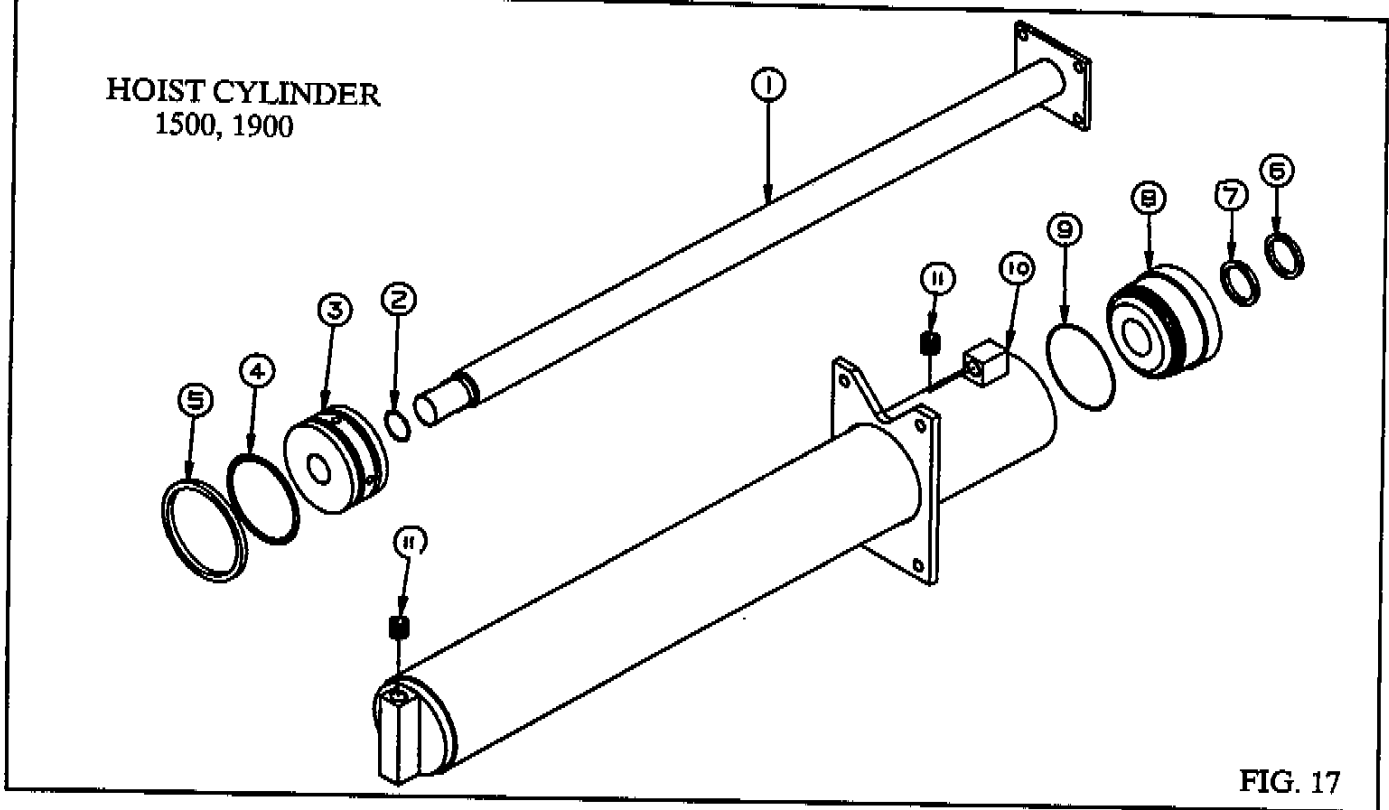
NOTE: It is extremely important that the valve connection kit remain in place. It should be removed ONLY for adjustment of the lever or cable, then secured immediately. It protects the lever and cable from the weather and corrosion. It also prevents operation of the valve from outside the cab. NEVER, under any circumstances, try to operate the valve manually from outside the cab.

## NOTES

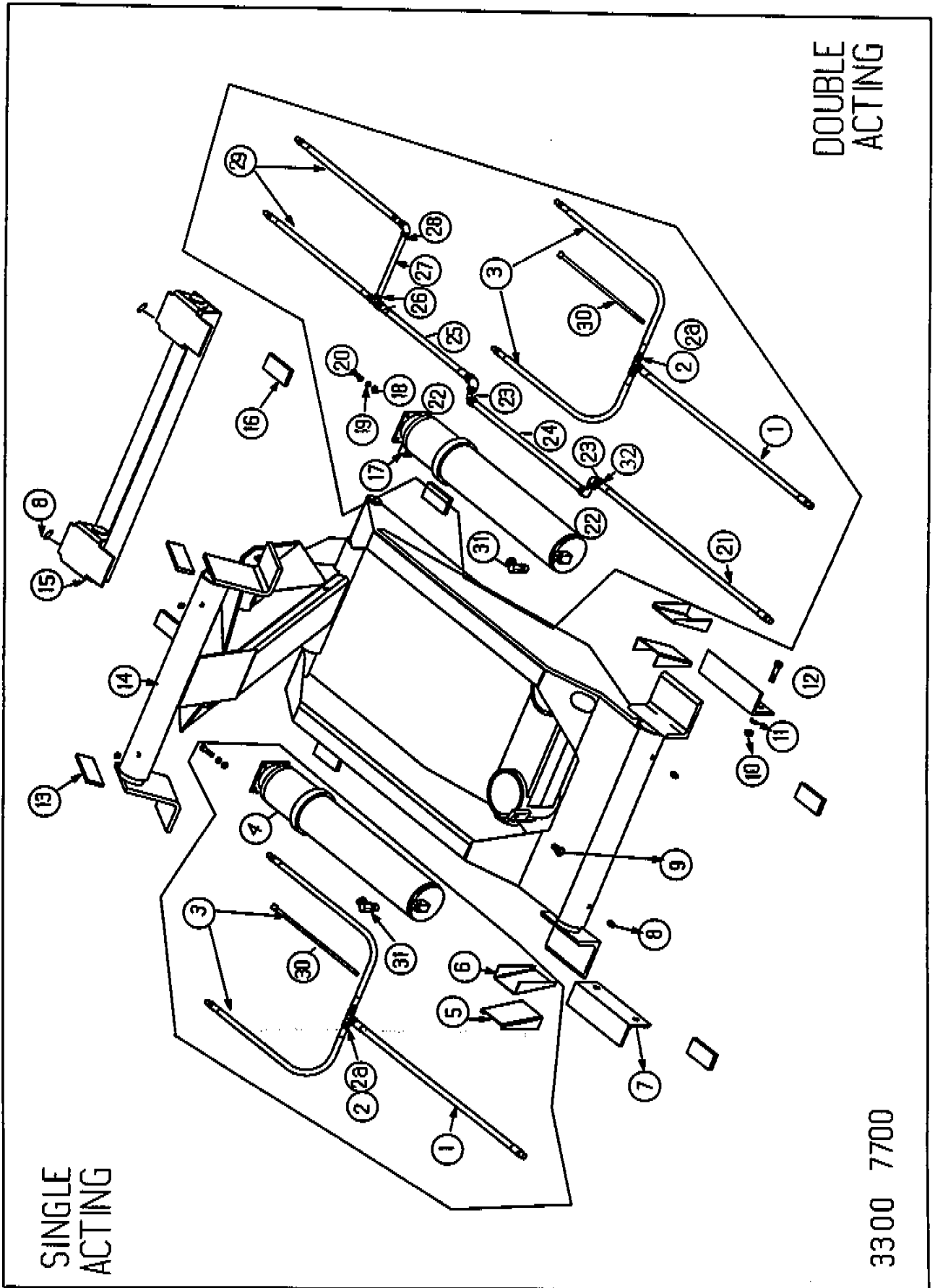
## STINGRAY PARTS LIST



FRAME PARTS LIST 1500 - 1900			
ITEM	PART NO.	DESCRIPTION	QTY.
1.	201415	Body Guide	2
1a.	217503	Body Guide	2
2.	201422	Mounting Angle	2
3.	400103	Grease Zerk	4
4.	400181	Hex Nut 5/8 NC	4
5.	400160	Lock Washer 5/8	4
6.	400100	Hex Cap Screw 5/8 NC X 1 3/4	4
7.	200900	Longbeam Filler	2
8.	111716	Hoist Frame - 1500	1
	112972	Hoist Frame - 1900	1
9.	106060	Rear Hinge	1
10.	200892	Longbeam Spacer	6
11.	112138	Cylinder - 1500	2
	111717	Cylinder - 1900	2
12.	400183	Hex Nut 3/8 NC	16
13.	400162	Lock Washer 3/8	16
14.	400114	Hex Cap Screw 3/8 NC x 1 1/2	16
15.	400515	Hose 3/8 NPT x 60	2
16.	400509	Hose 3/8 NPT x 18	4
17.	402156	Swivel Tee 3/8 NPSM	2
18.	401542	Tie Strap	2
19.	402162	Swivel 9/16 ORBM x 3/8 NPSM 90	2
20.	402161	Swivel 9/16 ORBM x 3/8 NPSM	2



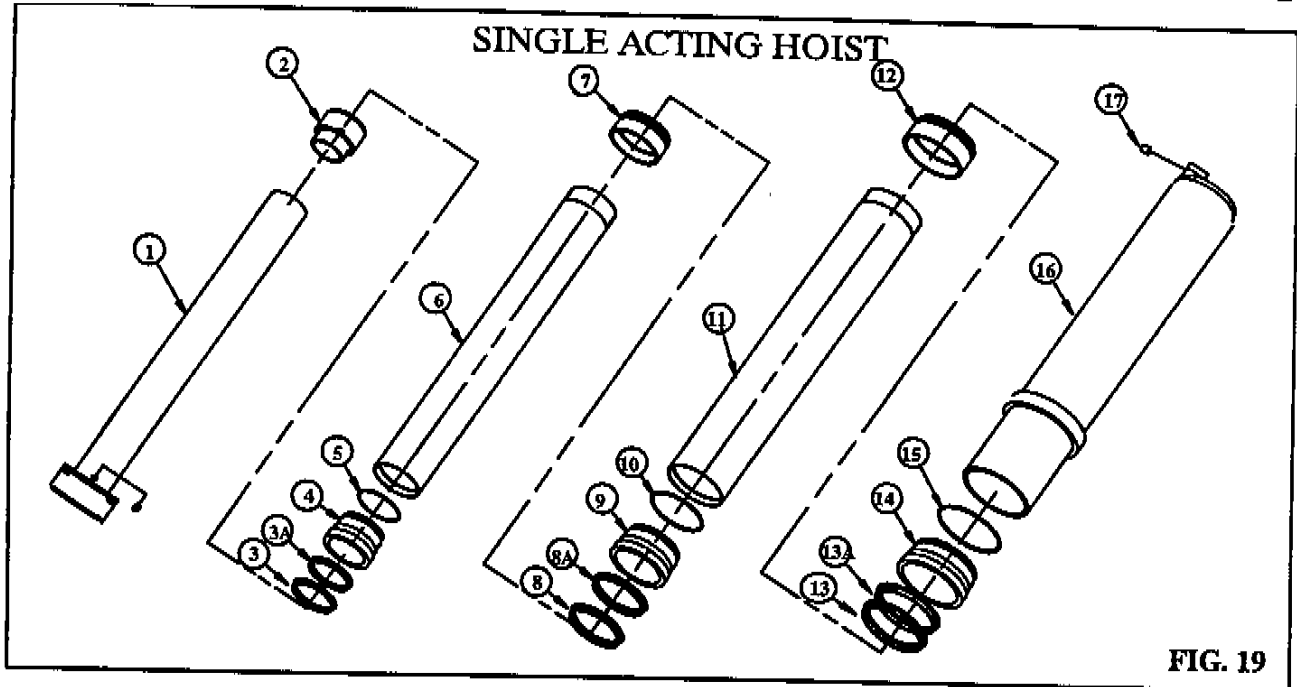
CYLINDER PARTS	1500	1900
1. Shaft Assy	112141	112141
2. O-Ring*	401131	401131
3. Piston	215364	214838
4. O-Ring*	401633	401616
5. Polyseal*	401645	401646
6. Wiper Seal *	401617	401617
7. Polyseal*	401132	401132
8. Head	215363	214837
9. O-Ring*	401634	400957
10. Outer Tube Assy	112140	111721
11. Pipe Plug 3/8"	403395	403395
12. Seal Kit (includes items with *)	113478	113479



STINGRAY FRAME PARTS LIST			
ITEM	PART NO.	DESCRIPTION	QTY
1.	401502	Hose 1/2NPT x 60" 3300	1
	402143	Hose 1/2 NPT x 60" 4400	1
	401938	Hose 3/4 NPT x 60" 5500, 6600, 7700	1
2.	402165	Tee 1/2 NPTM Swivel 3300, 4400	1
	200033	Tee 7/8-14 ORB 5500, 6600, 7700	1
2a.	402079	Swivel 7/8 ORBM x 3/4 NPTF 5500, 6600, 7700	1
3.	402166	Hose 1/2 NPT x 24" 3300	2
	401755	Hose 1/2 NPT x 24" 4400	2
	401303	Hose 1/2-7/8 x 24 RM/RM 5500, 7700	2
	402159	Hose 1/2-7/8 x 30" RM/RM 6600	2
4.	128453	Cylinder, SA 3300	2
	128454	4400	2
	128455	5500	2
	128456	6600	2
	128457	7700	2
5.	201415	Body Guide	2
6.	217503	Body Guide	2
7.	201422	Mounting Angle, Truck Frame	2
8.	400103	Grease Zerk, 1/8 NPT	6
9.	401612	Retaining Screw	2
10.	400181	Hex Nut 5/8-11	4
11.	400160	Lock Washer 5/8	6
12.	400100	Hex Cap Screw 5/8-11 x 1 3/4	4
13.	200896	Longbeam Filler	2
14.	110021	Hoist Frame 3300SA	1
	111348	3300DA	1
	110026	4400SA	1
	111349	4400DA	1
	109655	5500SA	1
	111350	5500DA	1
	110293	6600SA	1
	111352	6600DA	1
	110373	7700SA	1
	111354	7700DA	1
15.	107037	Rear Hinge	1
16.	200890	Longbeam Spacer	6
17.	111072	Cylinder DA 3300	2
	111073	4400	2
	111074	5500	2
	111075	6600	2
	111078	7700	2

STINGRAY FRAME PARTS CONTINUED			
ITEM	PART NO.	DESCRIPTION	QTY.
18.	400183	Hex Nut 3/8-16	8
19.	400162	Lock Washer 3/8	8
20.	400114	Hex Cap Screw 3/8-16 x 1 1/2	8
21.	402141	Hose 1/2 NPT x 42" 33-7700 DA	1
22.	400412	Street Elbow 3/8	2
23.	400413	Elbow 3/8	2
24.	401521	Pipe 3/8 x 34" 3300DA, 4400DA	1
	401597	Pipe 3/8 x 46" 5500DA,	1
	401598	Pipe 3/8 x 55" 6600DA,	1
	401599	Pipe 3/8 x 62" 7700DA	1
25.	400510	Hose 3/8NPT x 24" 3300DA, 4400SA	1
	400512	Hose 3/8 x 36" 5500DA,	1
	400513	Hose 3/8 x 42" 6600DA,	1
	400514	Hose 3/8 x 48" 7700DA	1
26.	401519	Tee, Reducing 3/8 x 1/4 x 1/4	1
27.	401520	Pipe 1/4 x 9"	1
28.	400417	Elbow 1/4	1
29.	402301	Hose 1/4 NPT x 27" ALL DA	2
30.	401542	Tie Strap	3
31.	401107	Adapter 7/8 ORBM x 1/2 NPTF 90 ALL	2
32.	402152	Swivel 3/8 NPTM x 1/2 NPTF 33-7700DA	1

## NOTES



**FIG. 19**

<b>SINGLE ACTING HOIST 3300-7700</b>					
	3300	4400	5500	6600	7770
1. INNER TUBE ASSY	135257	133942	135258	135259	135260
2. INNER PISTON	213683	213684	213683	213683	213683
3. WIPER 2 3/4 ID	401690	---	401690	401690	401690
3A. POLYSEAL 2 3/4 ID X 1/4*	401695	---	401695	401695	401695
4. HEAD 2 3/4 ID	253750	---	253750	253750	253750
5. O-RING 2 7/8 ID X .070*	400956	---	400956	400956	400956
6. TUBE 3 1/2 OD	251561	---	251562	251563	251564
7. PISTON 3 3/4 OD	208360	---	208360	208360	208360
8. WIPER 3 1/2 ID	401691	401691	401691	401691	401691
8A. POLYSEAL 3 1/2 ID X 1/4*	401696	401696	401696	401696	401696
9. HEAD 3 1/2 ID	251597	251597	251597	251597	251597
10. O-RING 4 1/4 ID*	400957	400957	400957	400957	400957
11. TUBE 4 1/4 OD	---	217521	217522	217523	217524
12. PISTON 4 1/4 OD	---	208361	208361	208361	208361
13. WIPER 4 1/4 ID	---	401692	401692	401692	401692
13A. POLYSEAL 4 1/4 ID X 1/4*	---	401697	401697	401697	401697
14. HEAD 4 1/4 ID	---	208343	208343	208343	208343
15. O-RING 4 1/4 OD X .070*	---	400958	400958	400958	400958
16. OUTER TUBE ASSY	138014	138015	133935	138016	138017
17. PIPE PLUG 7/8-14 ORB	401390	401390	401390	401390	401390
HEX BUSHING 1/2NPTX3/8NPT	400440	400440	---	---	---
18. SEAL KIT ( includes * )	114346	114347	114348	114348	114348



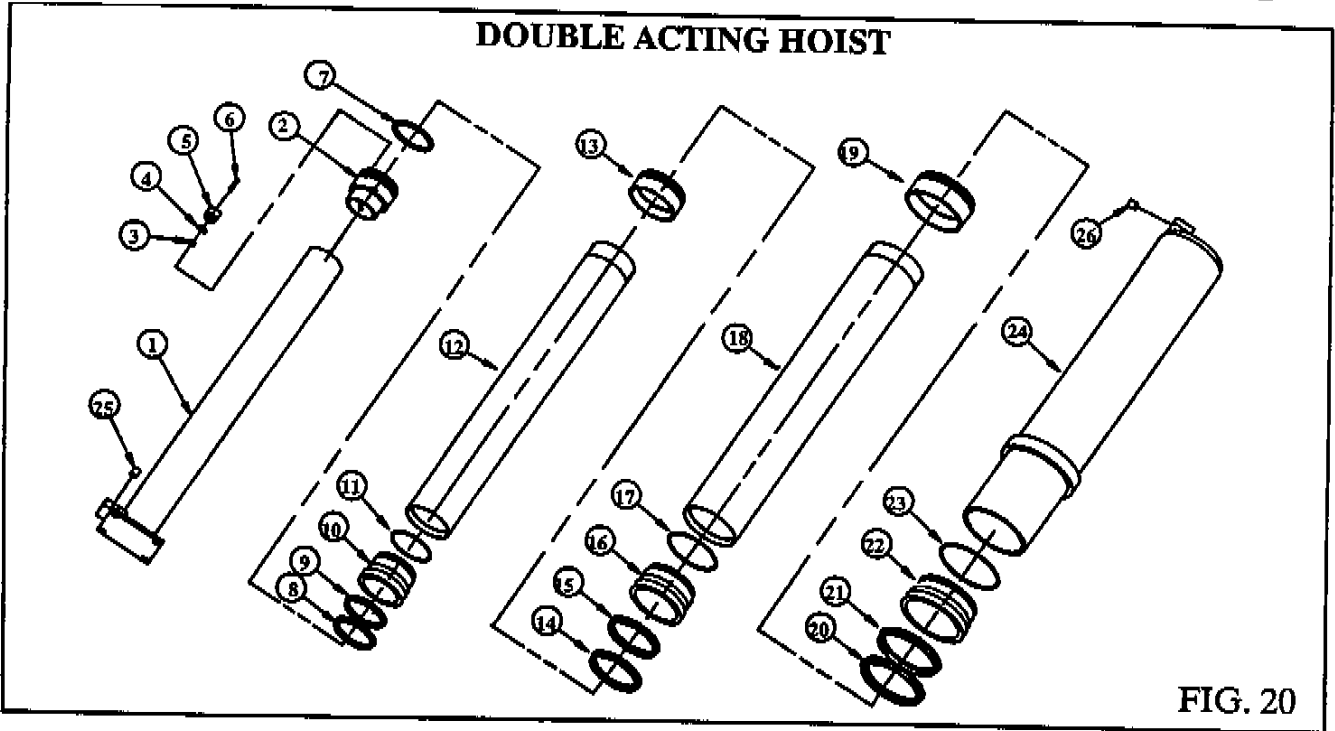


FIG. 20

DOUBLE ACTING HOIST 3300-7700					
	3300	4400	5500	6600	7700
1. INNER TUBE ASSY	135253	133941	135254	135255	135256
2. PISTON INNER	218237	218238	218237	218237	218237
3. BALL 3/8 DIA.	400013	400013	400013	400013	400013
4. O-RING 7/16 I.D. X .070	401017	401017	401017	401017	401017
5. BY PASS PLUG	400978	400978	400978	400978	400978
6. BY PASS SHAFT	401338	401338	401338	401338	401338
7. SEAL, PIP 3" O.D. *	401777	---	401777	401777	401777
SEAL, PIP 3 3/4 O.D. *	---	401778	---	---	---
8. WIPER 2 3/4 I.D.	401690	---	401690	401690	401690
9. SEAL, BS 2 3/4 I.D. X 1/4" *	401695	---	401695	401695	401695
10. HEAD 2 3/4" I.D.	253750	---	253750	253750	253750
11. O-RING 2 7/8 I.D. X .070 *	400956	---	400956	400956	400956
12. TUBE 3 1/2 O.D.	218231	---	218232	218233	218234
13. PISTON 3 1/2"	208360	---	208360	208360	208360
14. WIPER 3 1/2" I.D.	401691	401691	401691	401691	401691
15. SEAL, BS 3 1/2 I.D. X 1/4" *	401696	401696	401696	401696	401696
16. HEAD 3 1/2 I.D.	251597	251597	251597	251597	251597
17. O-RING 3 1/2 I.D. X .070 *	400957	400957	400957	400957	400957
18. TUBE 4 1/2" O.D.	---	218235	217522	217523	217524
19. PISTON 4 1/4"	---	208361	208361	208361	208361
20. WIPER 4 1/4 I.D.	---	401692	401692	401692	401692

DOUBLE ACTING PARTS LIST CONTINUED					
	3300	4400	5500	6600	7700
21. SEAL, BS 4 1/4 I.D. X 1/4 *	---	401697	401697	401697	401697
22. HEAD 4 1/4 I.D.	---	208343	208343	208343	208343
23. O-RING 4 1/4 I.D. X .070 *	---	400958	400958	400958	400958
24. OUTER TUBE ASSY	113797	113798	113799	113800	113801
25. PIPE PLUG 1/8 NPT	400428	400428	400428	400428	400428
26. PIPE PLUG 1/2 NPT	401753	401753	401753	401753	401753
27. SEAL KIT ( includes * )	114350	114351	114352	114352	114352

**STINGRAY HYDRAULICS**

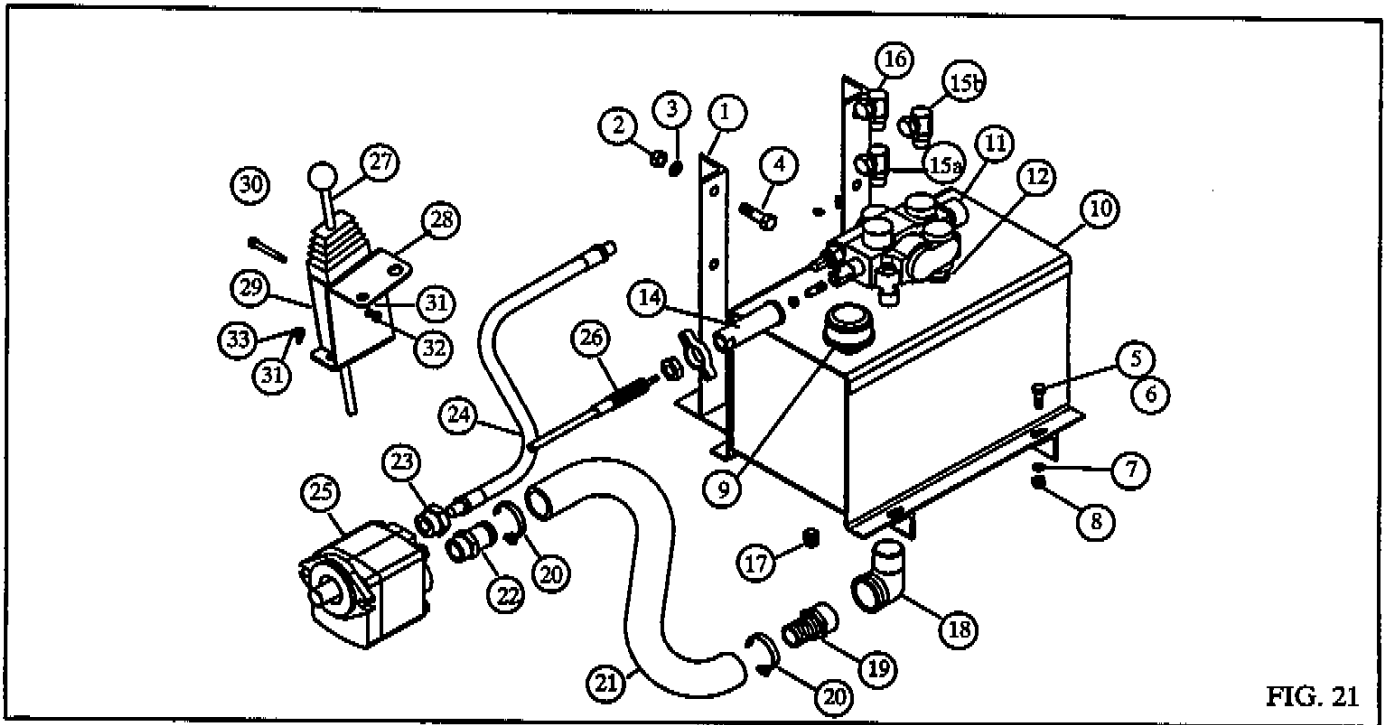


FIG. 21

**STINGRAY HYDRAULIC PARTS LIST**

ITEM	PART NO.	DESCRIPTION	QTY.
1.	100511	Pump Angle	2
2.	400182	Hex Nut 1/2-13	4
3.	400161	Lock Washer 1/2	4
4.	400104	Cap Screw 1/2 x 1 3/4	4
5.	400121	Cap Screw 3/8 x 1	4
6.	400164	Flat Washer 3/8	4
7.	400162	Lock Washer 3/8	4
8.	400183	Hex Nut 3/8-16	4
9.	400764	Breather Cap	1

ITEM	PART NO.	DESCRIPTION		QTY
10.	116361	6 Gallon Reservoir	1500, 1900	1
	116350	8 Gallon Reservoir	3300, 4400	1
	116352	14 Gallon Reservoir	5500, 6600, 7700	1
11.	402068	Valve 4-Way 4000 PSI 7/8 Ports	1500, 1900, 3300DA	1
	402070	Valve 3-Way 4000 PSI 7/8 Ports	3300SA	1
	402065	Valve 4-way 3250 PSI 7/8 Ports	4400DA	1
	402069	Valve 3-way 3250 PSI 1 1/16 Ports	4400SA - 7700SA	1
	402104	Valve 4-way 3250 PSI 1 1/16 Ports	5500DA - 7700DA	1
12.	401094	0-Ring .924ID X .116CS		1
13.	402115	Cap Screw 5/16-18 X 2" NF Socket		1
14.	402127	Kit, Remote Valve Control	ALL	1
15a.	401200	Adapter 7/8 ORBM X 3/8 NPTF 90	1500, 1900	1
	401107	Adapter 7/8 ORBM X 1/2 NPTF 90	3300DA	1
	401285	Adapter 1 1/16 ORBM x 1/2 NPTF 90	4400-7700 DA	1
15b.	401200	Adapter 7/8 ORBM x 3/8 NPTF 90	1500, 1900	1
	401107	Adapter 7/8 ORBM X 1/2 NPTF 90	3300	1
	401285	Adapter 1 1/16 ORBM x 1/2 NPTF 90	4400	1
	401291	Adapter 1 1/16 ORBM x 3/4 NPTF 90	5500, 6600, 7700	1
16.	401285	Adapter 1 1/16 ORBM x 1/2 NPTF 90	15-1900, 33-4400	1
	401291	Adapter 1 1/16 ORBM x 3/4 NPTF 90	5500, 6600, 7700	1
17.	400405	Pipe Plug 3/4" Magnetic	All	1
18.	402144	Pipe Elbow 3/4" Street 90	1500, 1900	1
	401296	Pipe Elbow 1 1/14" Street 90	3300, 4400	1
	402145	Pipe Elbow 1 1/2" Street 90	5500, 6600, 7700	1
19.	401447	Hose Barb 3/4 NPT x 3/4	1500, 1900	2
	401449	Hose Barb 1 1/14 NPT x 1 1/4	3300, 4400	1
	402148	Hose Barb 1 1/2 NPT x 1 1/2	5500, 6600, 7700	1
20.	401441	Hose Clamp #24	1500, 1900	2
	402164	Hose Clamp 1 3/4" T-Bolt	3300, 4400	2
	401163	Hose Clamp 2" T-Bolt	5500, 6600, 7700	2
21.	210604	Suction Hose 3/4 ID x 6'	1500, 1900	1
	210606	Suction Hose 1 1/4 ID x 6'	3300, 4400	1
	401727	Suction Hose 1 1/2 ID x 6'	5500, 6600, 7700	1
22.	401450	Hose Barb 1 5/16 ORB x 1 1/4	3300, 4400	1
	402147	Hose Barb 1 5/16 ORB x 1 1/2	5500, 6600, 7700	1
23.	401091	Bushing Pipe Hex 3/4 M x 1/2 F	1500, 1900	1
	210608	Adapter 1 5/16-12M x 1/2 NPTF	3300, 4400	1
	219825	Adapter 1 5/16-12M x 3/4 NPTF	5500, 6600, 7700	1
24.	401446	Hose 1/2 NPT x 72 RM/RM 4400	1500, 1900, 3300	1
	401445	Hose 1/2 NPT x 72 RM/RM 3500	4400	1
	401937	Hose 3/4 NPT x 72 RM/RM 3000	5500, 6600, 7700	1

ITEM	PART NO.	DESCRIPTION	QTY.
25.	400394	Pump 6 GPM DM 1500, 1900	1
	402114	Pump 10 GPM DM 3300, 4400	1
	402113	Pump 15 GPM DM 5500, 6600, 7700	1
26.	402122	Cable - RVC 96" ALL	1
27.	402120	Wescon Control ALL	1
28.	223396	Pedestal Wescon Control ALL	1
29.	223397	Channel Control Cover ALL	1
30.	402154	Machine Screw 5/16-18 x 2 1/2 ALL	3
31.	401733	Lock Washer 5/16 Ext. Tooth ALL	5
32.	400194	Hex Nut 5/16-18 ALL	3
33.	400112	Self Tapping 5/16 x 3/4 ALL	2

STANDARD VALVE TANK ASSEMBLY NUMBERS				
HOIST MODEL	ASSY #	TANK SIZE	VALVE PRESSURE	WORKING PORT SIZE
1500 DA	116638	6 GAL.	4000 PSI	7/8" ORB
1900 DA	116638	6 GAL.	4000 PSI	7/8" ORB
3300 DA	116639	8 GAL.	4000 PSI	7/8" ORB
3300 SA	116640	8 GAL.	4000 PSI	7/8" ORB
4400 DA	116349	8 GAL.	3250 PSI	7/8" ORB
4400 SA	116641	8 GAL.	3250 PSI	1 1/16" ORB
5500 DA	116351	14 GAL.	3250 PSI	1 1/16" ORB
5500 SA	116642	14 GAL.	3250 PSI	1 1/16" ORB
6600 DA	116351	14 GAL.	3250 PSI	1 1/16" ORB
6600 SA	116642	14 GAL.	3250 PSI	1 1/16" ORB
7700 DA	116351	14 GAL.	3250 PSI	1 1/16" ORB
7700 SA	116642	14 GAL.	3250 PSI	1 1/16" ORB

## *SPECIALLY DESIGNED – WITH QUALITY IN MIND*

### 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, travel, loss of use or downtime 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.

### **! 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.

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