TRUCK BODIES & EQUIPMENT INTERNATIONAL, Inc.

Website: www.TBEI.com
E-mail: sales@TBEI.com

CRYSTEEL'S ROLLERCOMBO HOIST

CRYSTEEL

THIS MANUAL MUST BE INCLUDED WITH THE VEHICLE AFTER COMPLETING THE INSTALLATION.

Web Site
www.crysteel.com

E-Mail
crysteel@tbei.com

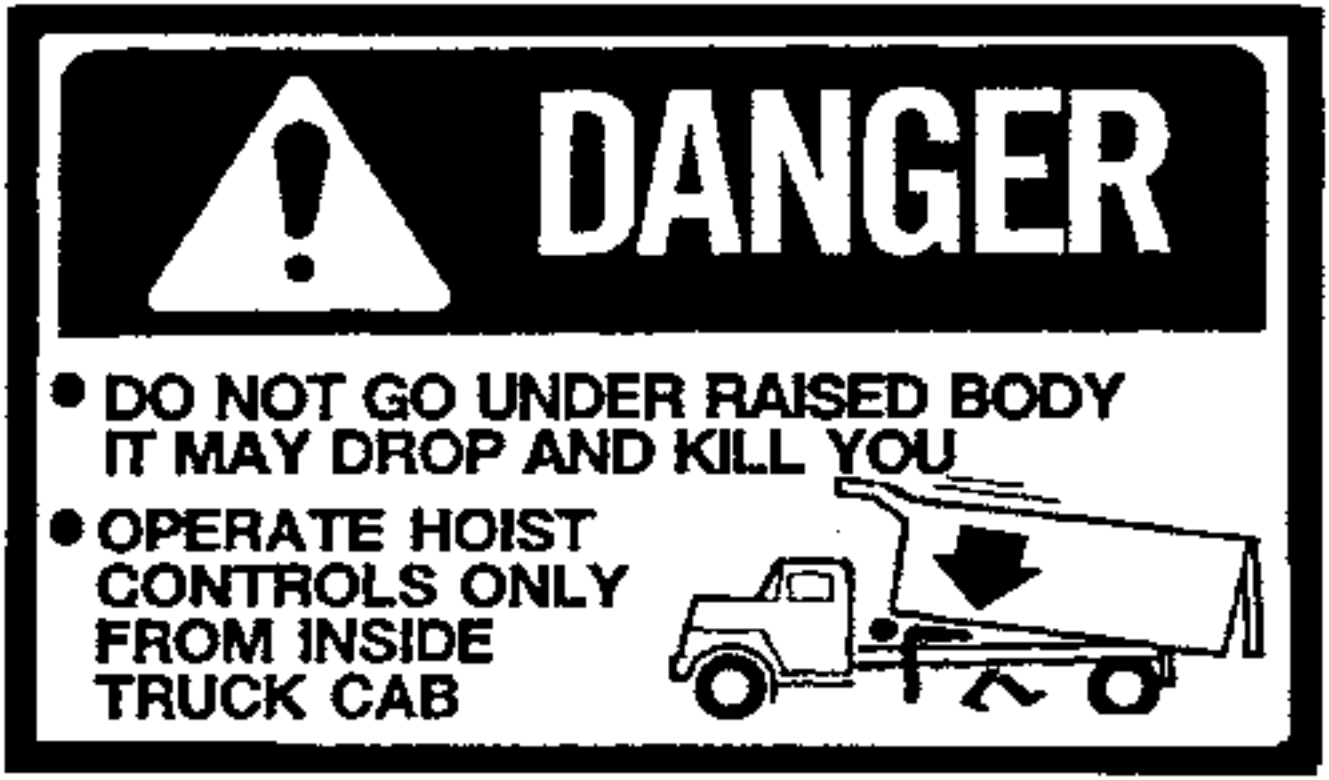
Phone (507) 726-2728
Toll Free (800) 533-0494

FOREWORD

Crysteel's Roller-Combo Hoist is a heavy duty underbody hoist designed and intended for use under dump bodies. The Roller-Combo Hoist line consists of seven sizes that fit single-, tandem-and triple-axle trucks. The Roller-Combo Hoist is a patented combination of two underbody hoist principles, the scissors and the double-arm hoist.

This manual contains the information needed for the proper installation and operation of Crysteel's Roller-Combo Hoist. With proper installation, use, and regular maintenance, this hoist will give many years of trouble free service.

When ordering parts, be sure to give serial number of hoist and cylinder. The serial number of the hoist is stamped into the hoist frame near the base end of the cylinder. 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.



DATE PURCHASED _____

HOIST SERIAL NUMBER _____

CYLINDER SERIAL NUMBER _____

DEALER _____

ADDRESS _____

PHONE _____

OPERATIONANDUSE

1. Engage PTO from cab and adjust engine speed to fast idle.
2. ALWAYS operate the hoist from inside the cab of the truck.
3. If the hydraulic hose connections are correct, the hoist should raise when the hoist control lever is pulled back, hold when the lever is in the center detent, and lower when the lever is pushed forward.
4. To raise the hoist, pull the control lever back. To hold the body in a raised position, place the control lever in its center detent position. To lower the hoist, push the control lever forward.
5. ALWAYS return the hoist control lever to its center detent position after each use.
6. When the hoist cylinder reaches the end of the stroke, oil will flow through the automatic bypass valve built into the piston inside the cylinder and return to the reservoir.
7. It is advisable to run the PTO to "power down" or lower the hoist because this will act as an hydraulic lock to hold the hoist in the lowered position. It is not necessary to do this, however, because the reservoir has sufficient capacity whether or not the hoist is powered down. You will benefit from the advantages of the double acting hoist only if you power down.
8. To make use of the hydraulic lock feature, place the hoist control lever in the center hold position after the hoist is powered down. This places the pressure on the valve, where it belongs, not on the pump.
9. DO NOT LEAVE THE PTO IN GEAR WHILE TRANSPORTING. THIS CAN CAUSE SEVERE DAMAGE TO THE PTO OR HYDRAULIC PUMP.
10. 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.
11. After adding or replacing the hydraulic fluid, cycle the hoist several times to remove air from the cylinders and hydraulic hoses.

SOMEDO'SANDDON'TSFORSAFEANDLONGSERVICE

1. Use the proper hydraulic fluid. KEEP IT CLEAN. Remember to change it regularly.
2. Lubricate all grease fittings every 100 cycles or every two months. Infrequent or insufficient lubrication will cause hoist failure and possibly injury or death.
3. ALWAYS carefully block up the body, using the body prop, before working under it.
4. Do not "race" the engine when unloading.
5. Do not load the hoist beyond its capacity.
6. DO NOT tamper with the hydraulic relief valve. This will void the warranty. It can cause severe damage to the hoist and cylinder.
7. Never leave the PTO in gear while transporting. It could ruin the hydraulic pump, the PTO or the transmission.
8. Check all bolts and fittings regularly. Keep them tight. See table on page 4 for torque values.
9. Always operate hoist on a firm and level surface.
10. Always make sure area around truck is clear and safe for hoist operation and dumping.
11. Bouncing or jerking of the hoist system is to be avoided as it may result in component failure, injury, or death.

TABLE OF CONTENTS

INSTALLATION INSTRUCTIONS

GENERAL INFORMATION

It is a good idea to look through these installation instructions before beginning to mount the hoist and hydraulic system.

When welding, protect the truck's electrical, air and brake systems by disconnecting, removing or covering. Tighten all nuts and bolts to a consistent level. Use the following table for torque values.

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

INSTALLATION INSTRUCTIONS

LOCATEHOIST/SUBFRAMEASSEMBLY-SINGLE-AXLETRUCKS

Place the hoist-subframe assembly on the truck frame so the back edge of the rear hinge is 2 inches or more behind the back side of the spring shackle, as shown in Fig. 1. This will place the rear hinge pivot 32 to 35 inches behind the center of the rear axle. Mark the rear of the truck frame, as shown in Fig. 4.

Crysteel recommends that the subframe crossmember under the back end of the hoist be supported if the unit is to be subjected to severe service. To do this a crossmember may be added to the truck frame. On the truck frame, mark the location of the flange of the hoist subframe crossmember, this will be the location of the added crossmember for supporting the subframe crossmember. Remove the hoist-subframe assembly from the truck and cut the truck frame as marked. At the location marked for the hoist subframe crossmember, install a crossmember (not supplied) in the truck frame.

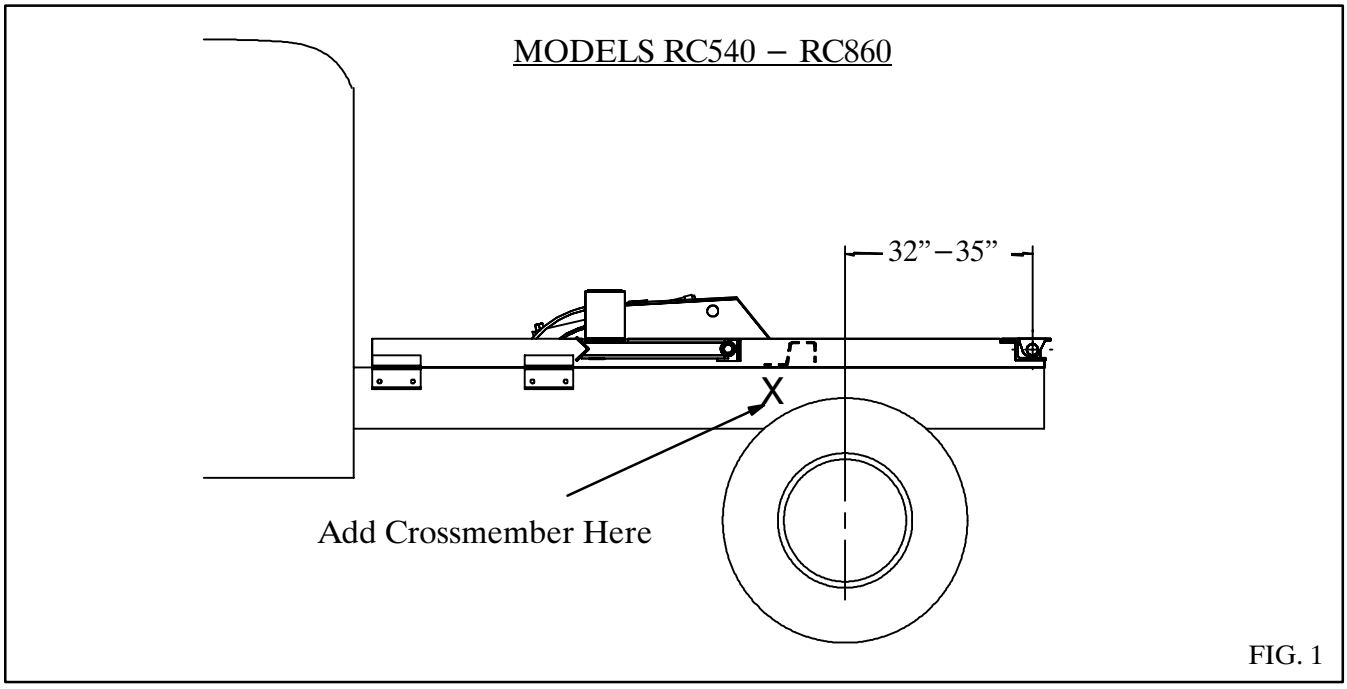


FIG. 1

NOTE: If the truck frame has rivets in the top flange, add spacers between the truck frame and subframe, or counter sink the rivet heads into the subframe by drilling holes in the subframe. Do not remove the rivet heads!

LOCATEHOIST/SUBFRAMEASSEMBLY-TANDEM-AXLETRUCKS

Place the hoist-subframe assembly on the truck frame, as shown in Fig. 2. The rear pivot should be located 42 to 45 inches behind the center of the tandem on tandem axle trucks - never more than 50 inches. Mark the rear of the truck frame as shown in Fig. 4.

Crysteel recommends that the subframe crossmember under the back end of the hoist be supported if the unit is to be subjected to severe service. To do this a crossmember may be added to the truck frame. On the truck frame, mark the location of the flange of the hoist subframe crossmember, this will be the location of the added crossmember for supporting the subframe crossmember. Remove the hoist-subframe assembly from the truck and cut the truck frame as marked. At the location marked for the hoist subframe crossmember, install a crossmember (not supplied) in the truck frame.

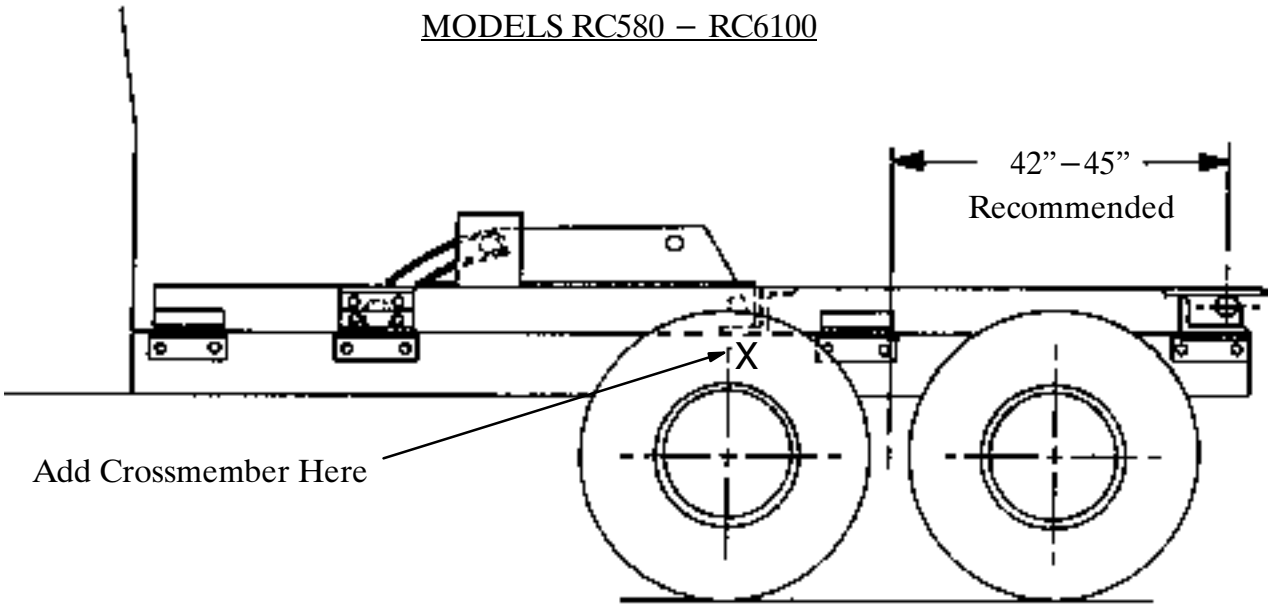


FIG. 2

NOTE: If the truck frame has rivets in the top flange, add spacers between the truck frame and subframe, or counter sink the rivet heads into the subframe by drilling holes in the subframe. Do not remove the rivet heads!

LOCATE BODY/HOIST ASSEMBLY ON TRUCK

Use the following installation procedures when the body and hoist have been assembled at the factory.

On single-axle trucks, place the body and hoist assembly on the truck frame so the back edge of the rear hinge is 2 inches or more behind the back side of the spring shackle. On tandem-axle trucks, place the body and hoist assembly so the rear pivot is 42”-45” behind the center of the tandem. This should give 3 to 5 inches of cab clearance. The truck frame will need to be cut off even with the back end of the subframe rails. Relocate the body and hoist, if necessary. The center of the rear hinge should never be more than 36 inches behind the center of the rear axle on single-axle trucks or 50 inches on tandem-axle trucks.

Crysteel recommends that the subframe crossmember under the back end of the hoist should be supported if the unit is to be subjected to severe service. To do this add a crossmember (not supplied) to the truck frame under the bottom flange of the subframe crossmember. On the truck frame, mark the location of the flange of the hoist subframe crossmember, this will be the location of the added crossmember for supporting the subframe crossmember. Mark the rear of the truck frame for shortening as shown in Fig. 4.

Block up the back end of the body/hoist assembly and cut the truck frame as marked. At the location marked for the hoist subframe crossmember, install a crossmember, (not supplied) in the truck frame.

NOTE: If the truck frame has rivets in the top flange, add spacers between the truck frame and subframe, or counter sink the rivet heads into the subframe by drilling holes in the subframe. Do not remove the rivet heads!

LOCATEMOUNTINGPLATES

There are six mounting plates, three for each side - one at the front of the subframe, one at the hoist mount and one between the hoist mount and the rear hinge. Clamp the mounting plates to the truck frame and to the subrame as shown in Fig. 3. If desired, locate the plates to use existing holes in the frame. Mark the mounting plates for drilling. Repeat this for the other side.

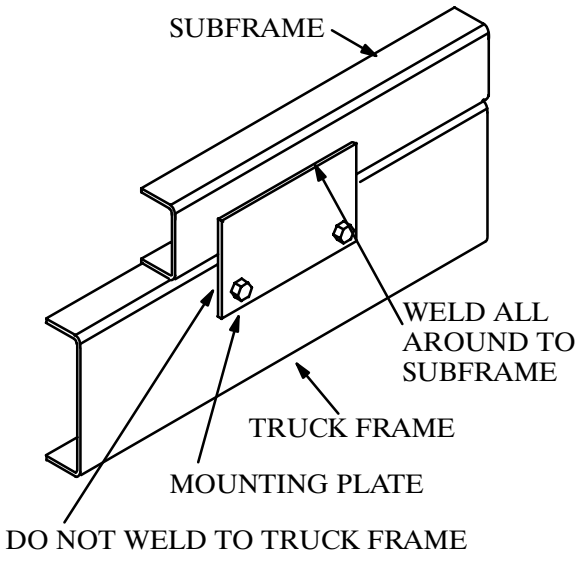


FIG. 3

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

DRILLTRUCKFRAME-ALLMODELS

Drill 21/32” holes in the mounting plates and the truck frame. Bolt the mounting plates in place using 5/8 x 2 cap screws (grade 8) and hex lock nuts, tightening to 180-190 lb-ft.

WELDREARHINGEANDSUBFRAME-ALLMODELS

Make sure the body/hoist assembly or hoist/subframe assembly is correctly located, centered on and square with the truck frame. Securely weld the mounting plates to the subframe. Add a plate to cap the end of the truck frame. (See Fig. 4.) Securely weld the back end of the truck frame rail to the back end of the subframe. Do this on both sides. If a crossmember was added to the truck frame to support the subframe crossmember, add spacers between it and the subframe crossmember and weld in place.

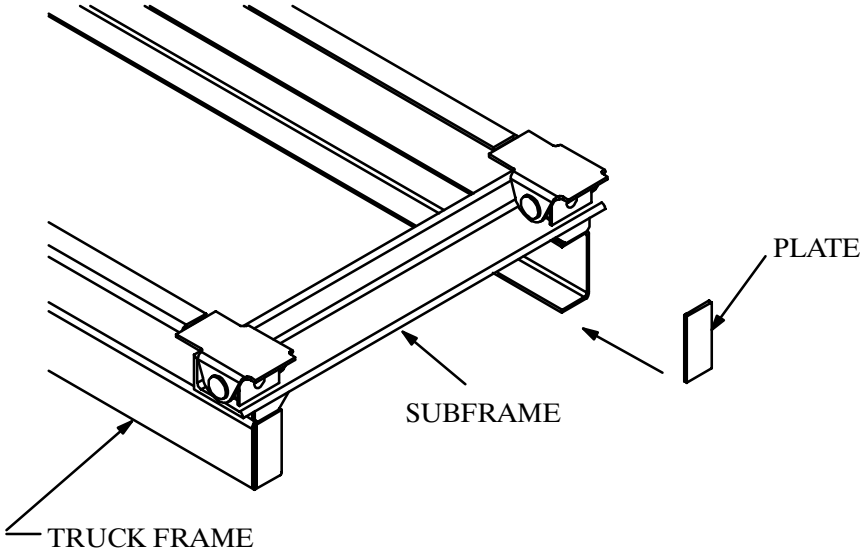


FIG. 4

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 x 1 1/4 cap screws and lock washers.

MOUNTRESERVOIR/VALVEASSEMBLY

The reservoir/valve assembly is intended to be mounted just behind the cab, between the longbeams of the body with the control valve to the left (drivers) side of the truck.

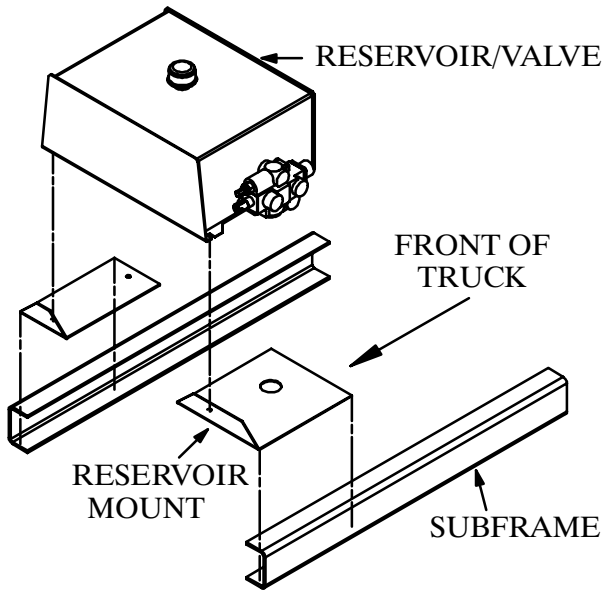


FIG. 5

Bolt the large mounting angle to the valve end of the reservoir/valve assembly and the small mounting angle to the other end using 3/8 x 1” cap screws, flat washers and hex lock nuts. Place this assembly between the subframe rails so the mounting angles are resting on the bottom flanges of the subframe rails and the front of the reservoir/valve assembly is 2” back from the front of the subframe. Securely weld the mounting angles to the subframe. (See Fig. 5.)

NOTE: If there is not enough room between the front of the body and the hoist, the reservoir/valve assembly will need to be mounted to the outside of the truck frame. Brackets will need to be made to do this.

INSTALLREMOTEVALVECONTROL

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, hex lock nuts. Insert the control cable through the hole in the floor and mount the pedestal to the floor using 5/16 x 1/2 machine screws and hex lock nuts. 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).

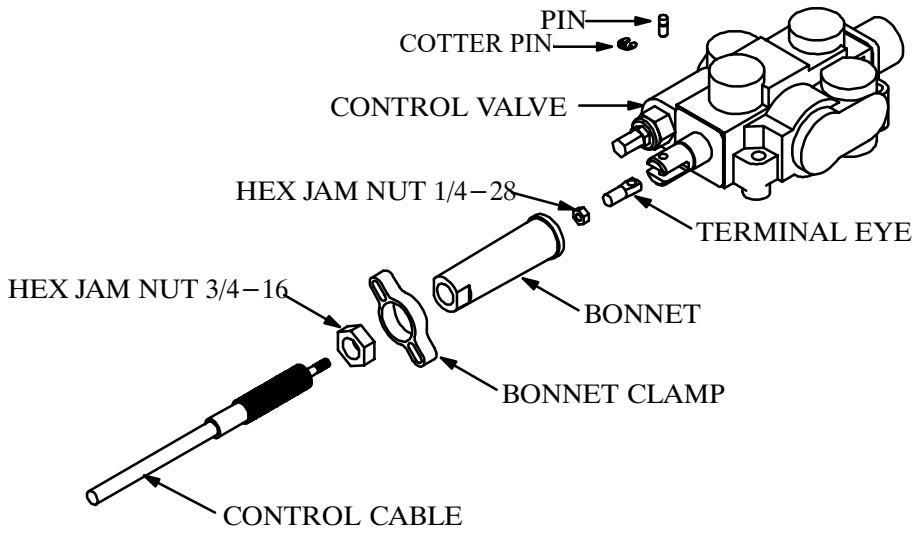


FIG. 6

Install the 3/4” hex jam nut onto the valve end of the control cable and turn it 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 of the cable 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 cotter pin. Thread the bonnet onto the end of the cable so it firmly touches the end of the 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 RC540 & RC650

Study Fig. 7 very carefully before connecting the hoses. Install an 1 1/4” x 3/4” hex bushing, a 3/4” 90° street elbow and a 3/4” hose barb in the suction port on the bottom of the reservoir. Install a 1 1/16 ORB x 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 1 1/16 ORB x 1/2” NPT adapter in the pressure port of the pump. Install a 72” long 1/2” hose from the pump to the valve.

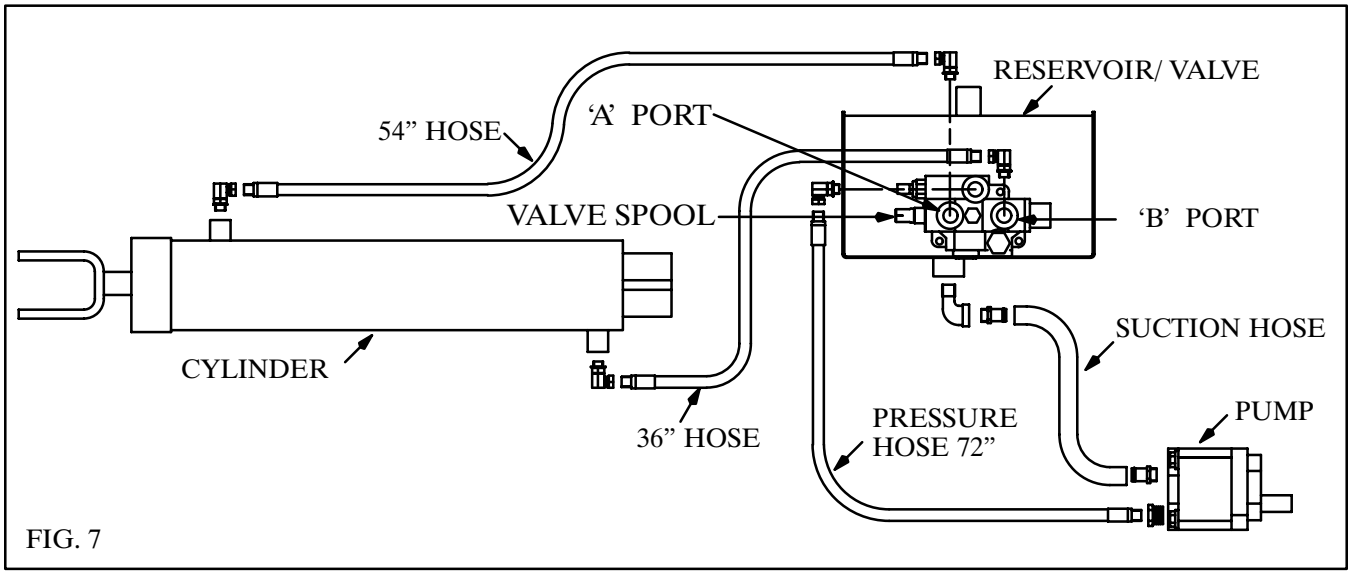


FIG. 7

Install 90° swivel adapters in the work ports of the control valve and in the ports on the cylinder. Connect the 36” long 1/2” hose from the `B’ port on the control valve to the base end port on the cylinder. Connect the 54” long 1/2” hose from the `A’ port on the control valve to the rod end port on the cylinder. 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 at engine idle; the `B’ port has full system pressure.

INSTALL HOSES - MODEL RC750

Study Fig. 7 very carefully before connecting the hoses. Install an 1 1/4” 90° street elbow and an 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 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 1 5/16 ORB x 1/2” NPT adapter in the pressure port of the pump. Connect 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 in the ports on the cylinder. Connect the 36” long 1/2” hose from the `B’ port on the control valve to the base end port on the cylinder. Connect the 54” long 1/2” hose from the `A’ port on the control valve to the rod end port of the cylinder. 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 at engine idle; the `B’ port has full system pressure.

INSTALLHOSES-MODELRC860

Study Fig. 8 very carefully before connecting the hoses. Install an 1 1/4” 90° street elbow and an 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 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 1 5/16 ORB x 3/4 NPT adapter in the pressure port of the pump. Connect a 72” long 3/4” hose from the pump to the valve.

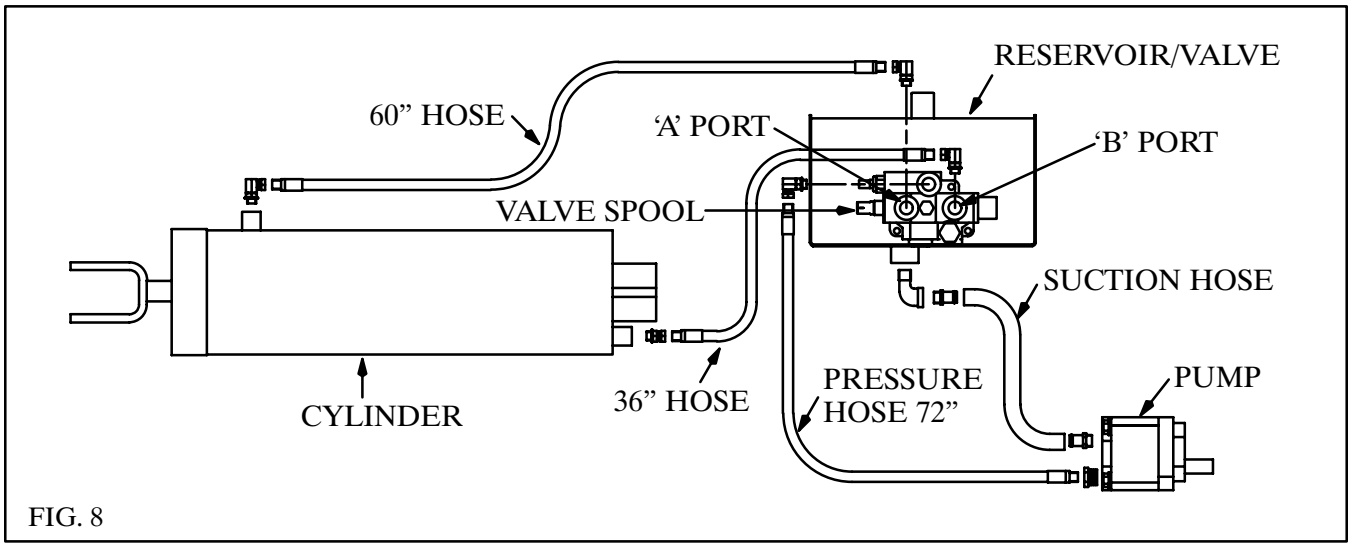


FIG. 8

Install 90° swivel adapters in the work ports of the control valve and in the rod end port of the cylinder and a straight swivel adapter in the base end port. Connect the 36” long 3/4” hose from the `B’ port on the control valve to the base end port on the cylinder. Connect the 60” long 3/4” hose from the `A’ port on the control valve to the rod end port of the cylinder. 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 at engine idle; the `B’ port has full system pressure.

INSTALLHOSES-MODELRC580

Study Fig. 9 very carefully before connecting the hoses. Install an 1 1/2” x 1 1/4” hex bushing, an 1 1/4” 90° street elbow and an 1 1/4” hose barb in the suction portion on the bottom of the reservoir. Install a 1 5/16 ORB x 1 1/4” 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 1 5/16 ORB x 1/2 NPT adapter in the pressure port of the pump. Connect 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 in the ports of the cylinder. Connect a 24” long 1/2 NPT-7/8 ORB hose from the base end port of the right cylinder to the middle port of the 7/8” ORB tee; connect an 18” long 1/2 NPT-7/8 ORB hose from the base end port of the left cylinder to the7/8 ORB tee and connect the 36” long 1/2 NPT-7/8 ORB hose from this tee to the `B’ port on the control valve.

Connect an 18” long 1/2 NPT-3/4 ORB hose from the rod end port of the right cylinder to the middle port of the 3/4 ORB tee; connect a 12” long 1/2 NPT-3/4 ORB hose from the rod end port of the left cylinder to

the 3/4” ORB tee. Connect the 72” long 1/2 NPT-3/4 ORB hose from this tee to the `A’ port on the control valve. 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 at engine idle; the `B’ port has full system pressure.

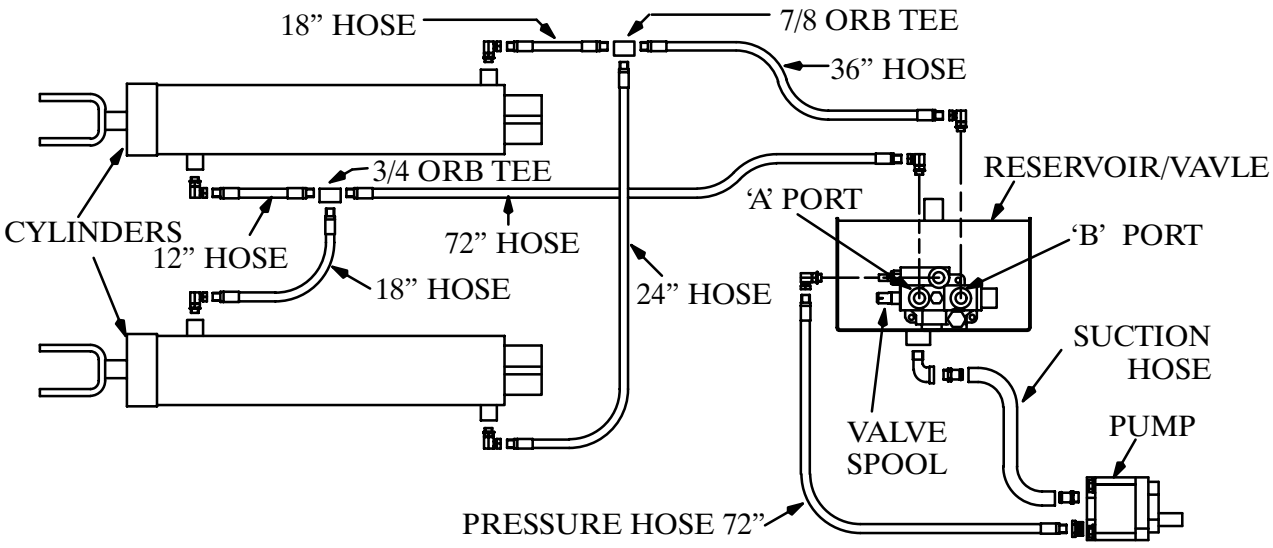


FIG. 9

INSTALL HOSES - MODELS RC690 & RC6100

Study Fig. 9 very carefully before connecting the hoses. Install an 1 1/2” 90° street elbow, an 1 1/2” x 1 1/4” hex bushing and an 1 1/4” 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 90° swivel adapter in the `IN’ port of the control valve and install a 1 5/16 ORB x 3/4 NPT adapter in the pressure port of the pump. Connect a 72” long 3/4” hose from the pump to the valve.

Install 90° swivel adapters in the work ports of the control valve and in the ports of the cylinder. Connect a 24” long 1/2 NPT-7/8 ORB hose from the base end port of the right cylinder to the middle port of the 7/8 ORB tee; connect an 18” long 1/2 NPT-7/8 ORB hose from the base end port of the left cylinder to the 7/8 ORB tee. Install a 7/8 ORB x 3/4 NPT swivel adapter in the third port of the 7/8 ORB tee and connect the 36” long 3/4” hose from this tee to the `B’ port on the control valve.

Connect an 18” long 1/2 NPT-3/4 ORB hose from the rod end port of the right cylinder to the middle port of the 3/4 ORB tee; connect a 12” long 1/2 NPT-3/4 ORB hose from the rod end port of the left cylinder to the 3/4 ORB tee. Install a 3/4 ORB x 3/4 NPT swivel adapter in the third port of the 3/4 ORB tee and connect the 72” long 3/4” hose from the 3/4 ORB tee to the `A’ port on the control valve. 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 at engine idle; the `B’ port has full system pressure.

ADD HYDRAULIC FLUID

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. Initially fill the reservoir with the quantities given below. DO NOT OVERFILL THE RESERVOIR!

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

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

HOIST MODEL	RESERVOIR SIZE	FLUID REQUIRED
RC540 RC650 RC750 RC860	10 GAL	7 GAL
RC580 RC690 RC6100	18 GAL	13 GAL

NOTE: If the pump does not pump oil, pressurize the reservoir and engage the pump with the engine at slow idle. Once the pump is working, release the pressure and install the breather cap.

POWER HOIST DOWN

Before mounting the body, the hoist must be completely closed to make certain the hoist gives full lift height and performance. NOTE: If the body and hoist have been assembled at the factory, this step is not necessary.

Push the upper cross channel all the way to the back of the roller tracks. Start the truck engine, engage the PTO and power down the hoist to “bottom out” the hydraulic cylinder and the hoist frame. Place the valve control in the center “hold” position and shut off the truck engine. The hoist is now fully closed.

It is VERY IMPORTANT that the Roller-Combo Hoist be installed with the upper cross channel pushed all the way to the back of the roller tracks. (See Fig. 10) This provides the extra leverage the hoist needs to start the load. If the hoist is not installed correctly, it will not have its full lift height and capacity. The results would be extreme over-loading of the hoist and the possibility of severe damage to the hoist and/or truck.

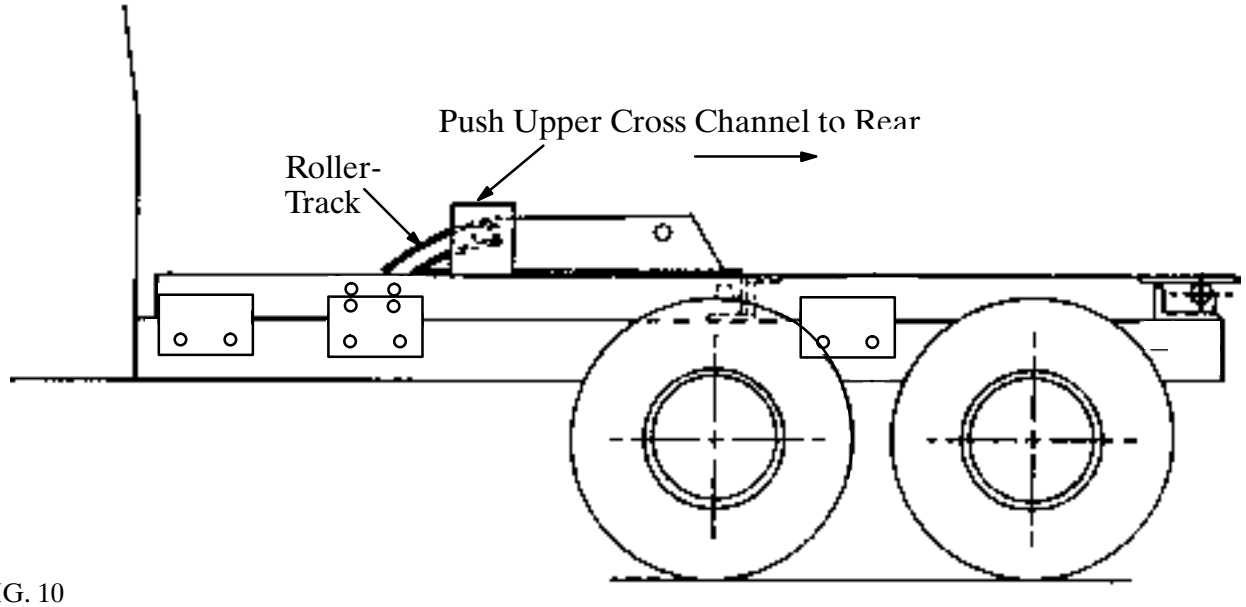


FIG. 10

ASSEMBLE BODY AND INSTALL ON TRUCK

Crysteel dump bodies are custom built to fit the Roller-Combo Hoist. The Roller Combo Hoist subframe is custom-made to match the dump body length. To check the amount of overhang, measure from the front of the subframe to the center line of the rear hinge and subtract that distance from the body length. That distance is the overhang.

NOTE: If a different overhang is desired, crossmembers may need to be notched for hoist clearance. Any notched crossmember must be reinforced to provide adequate floor support.

On other bodies, the inside of the longbeams must be boxed in to provide a flat surface for welding the hoist lift plates to the body. Some crossmembers may need to be notched to provide clearance for the hoist. Any notched crossmembers must be reinforced to provide adequate floor support. Box in the longbeams and notch the crossmembers where necessary after carefully measuring the hoist.

It is recommended that the body be painted before it is mounted on the truck. CAUTION! When mounting the body, be careful so the upper cross channel remains all the way back in the roller tracks and square with the hoist. (See Fig. 10) Place the body on the truck allowing 3 inches of clearance between the truck cab and the body. Securely weld the longbeams to the rear hinge plates. Securely weld the hoist lift brackets to the outside of the longbeams. (See Fig. 11.) Raise the body and securely block the body in the raised position. Securely weld the hoist lift brackets to the inside of the longbeams.

DO NOT WORK UNDER A RAISED BODY UNLESS THE BODY IS SECURELY BLOCKED OR PROPPED IN THE RAISED POSITION.

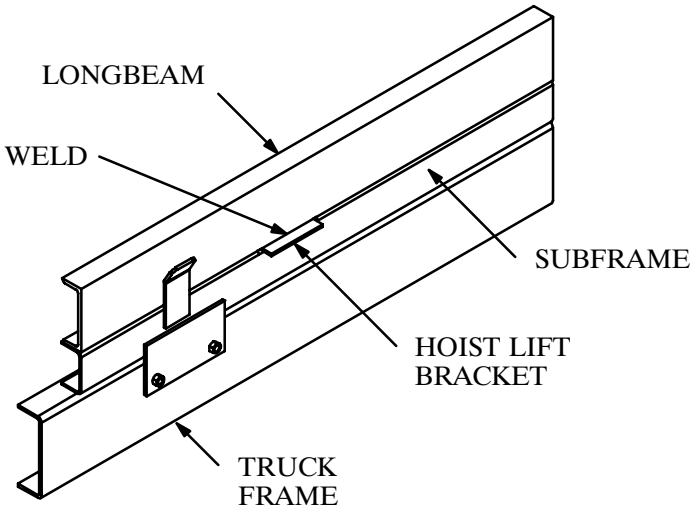


FIG. 11

DO NOT WORK UNDER A RAISED BODY UNLESS THE BODY IS SECURELY BLOCKED OR PROPPED IN THE RAISED POSITION.

INSTALL BODY GUIDES

Two body guides have been included and should be mounted near the front of the subframe. Clamp the body guides to the outside of the subframe as shown in Figs. 12 and 13. The body guide should be tight against the outside of the longbeams of the body. Securely weld the body guides to the subframe.

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

CHANNEL OR INTERLOCKING LONGBEAM

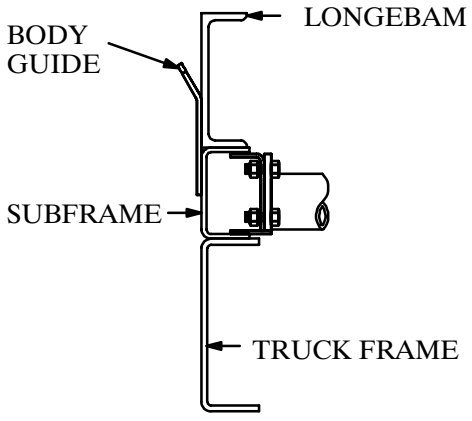


Fig. 12

TUBULAR , INTERLOCKING LONGBEAM

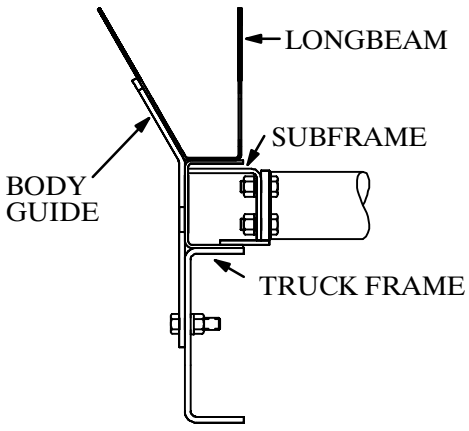


Fig. 13

INSTALL BODY PROP LONGBEAM BRACKET

The body prop is designed and intended to support an EMPTY truck body in the raised position. Using the body prop permits service work to be performed safely beneath a raised body. It is mounted on the outside of the subframe on the driver's side.

1. Raise the body more than half way up.

2. Raise the prop arm to a free standing position by allowing the prop arm to rest against the rear flange of the prop pivot. The top of the prop arm will swing in under the longbeam.

3. Slowly lower the body until the bottom of the longbeam rests on the body prop saddle.

4. Place the longbeam bracket against the outside of the longbeam so the legs straddle the prop arm saddle. Securely weld this bracket to the body. (See Fig. 14.)

5. Repeat step 4 on other side of truck for hoists with two body props (RC580, RC690 & RC6100)

6. 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 longbeam bracket contacts the prop arm saddle. DO NOT POWER HOIST DOWN!

7. 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.

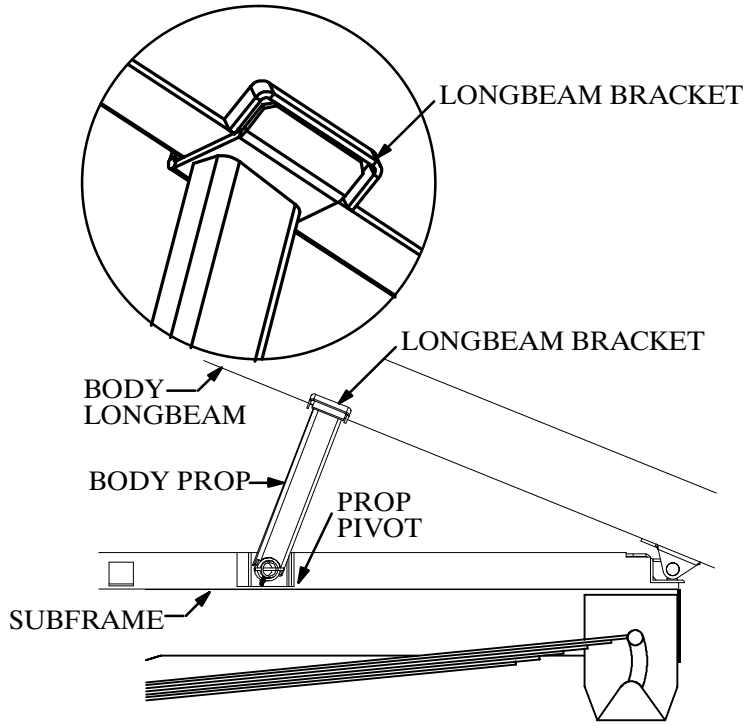


Fig. 14

INSTALL GREASE ZERKS AND LUBRICATE

Install grease zerks in the following locations. Lubricate all fittings at regular intervals, at least every 150 cycles or every two months. The grease fittings are located as follows:

A. Hoist Lower Crosstube .....2 fittings
B. Cylinder Base Pivot .....4 fittings
C. Body Prop .....1 fitting per prop
D. Rear Hinge.....2 fittings RC540-860;
4 fittings RC580-6100

Lubricate all fittings at regular intervals, at least every 100 cycles or every 2 months. There are extremely high forces on the bearing surfaces within the hoist frame. It pays to be generous in lubricating the hoist to insure proper operation and long life.

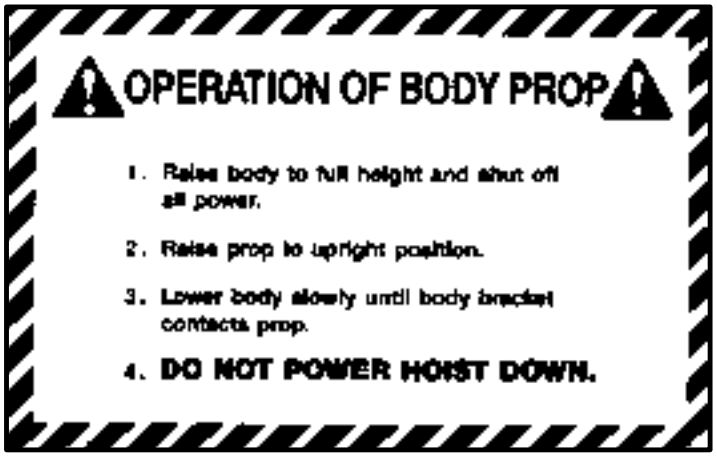
PROPER LUBRICATION IS EXTREMELY IMPORTANT!

The center hinge, the cylinder crosshead and the rollers on the Roller-Combo Hoists do not need to be greased. These pivot points are equipped with self lubricating composite bearings that do not need lubrication.

ONE OF THE MOST COMMON REASONS FOR HOIST PROBLEMS IS FAILURE BY THE OPERATOR TO LUBRICATE THE HOIST.

INSTALL LIGHTS, REFLECTORS AND DE-

Install the lights and wiring harness. Mount the amber reflectors near the front on the sides. Mount the red reflectors near the rear on the sides and on the tailgate near the sides. Slip the rubber hand grip over the end of the latch control lever. MOUNT DECALS IN THE PROPER PLACES. See Fig. 16 for decal identification and placement.



1642848 **Mount on the body longbeam near the body prop**

1643067 **Mount on the outside of the body longbeams near the front of the body (one on each side).**

1642844 **Mount on the longbeam on the drivers side.**

1643068 **Mount in the cab in a prominent location**

1642843 **Mount in the cab in a prominent location'**

1642846 **Mount on the body prop arm.**

Fig. 15

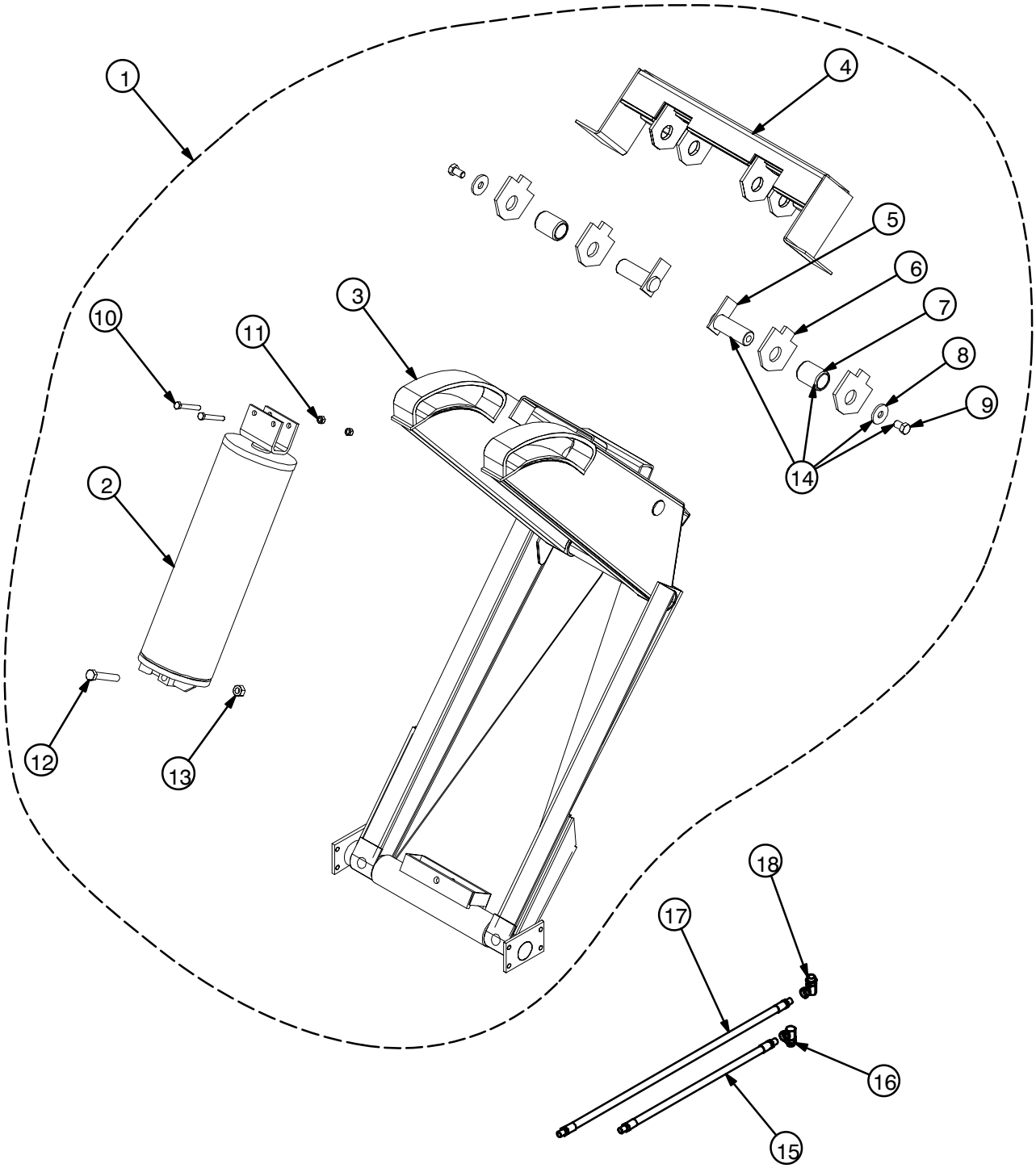


Fig. 16

ITEM	DESCRIPTION	RC540	RC650	RC750	RC860	QTY
1.	Frame & Cylinder Assy	1625657	1625658	1625659	1625660	1
2.	Cylinder Assy	1621532	1621533	1621635	1621903	1
3.	Hoist Frame Assy	1625661	1625661	1625661	1625661	1
4.	Cross Channel Assy	1625662	1625662	1625662	1625662	1
5.	Roller Pin Assy	1623618	1623618	1623618	1623618	2
6.	Wear Plate - RC540/RC860	1643217	1643217	1643217	1643217	4
7.	Roller - 2.375 Diameter	1630853	1630853	1630853	1630853	2
8.	Washer 13/16 ID x 2 3/8 OD	1643266	1643266	1643266	1643266	2
9.	Cap Screw 3/4-16 x 1 1/4 Gr 8	1643252	1643252	1643252	1643252	2
10.	Cap Screw 1/2-13 x 3 3/4 Gr 8	1642721	1642721	1642721	1642721	2
11.	Hex Lock Nut 1/2-13	1642984	1642984	1642984	1642984	2
12.	Cap Screw 3/4-10 x 4 1/2 Gr 8	1642956	1642956	1642956	1642956	1
13.	Hex Lock Nut 3/4-10	1642957	1642957	1642957	1642957	1
14.	Roller & Pin Kit (contains 2)	1622939	1622939	1622939	1622939	1
15.	Hose 1/2 NPT x 36” 3500 PSI	1642973	1642973	1642973		1
	Hose 3/4 NPT x 36” 2500 PSI				1643178	1
16.	Adapter 7/8 ORB x 1/2 NPT 90°	1642927	1642927	1642927		1
	Adapter 1 1/16 ORB x 3/4 NPT				1642994	1
17.	Hose 1/2 NPT x 54” 3500 PSI	1642974	1642974	1642974		1
	Hose 3/4 NPT x 60” 3500 PSI				1643062	1
18.	Adapter 3/4ORB x 1/2 NPT 90°	1642925	1642925	1642925		1
	Adapter 7/8 ORB x 3/4 NPT 90°				1643035	1

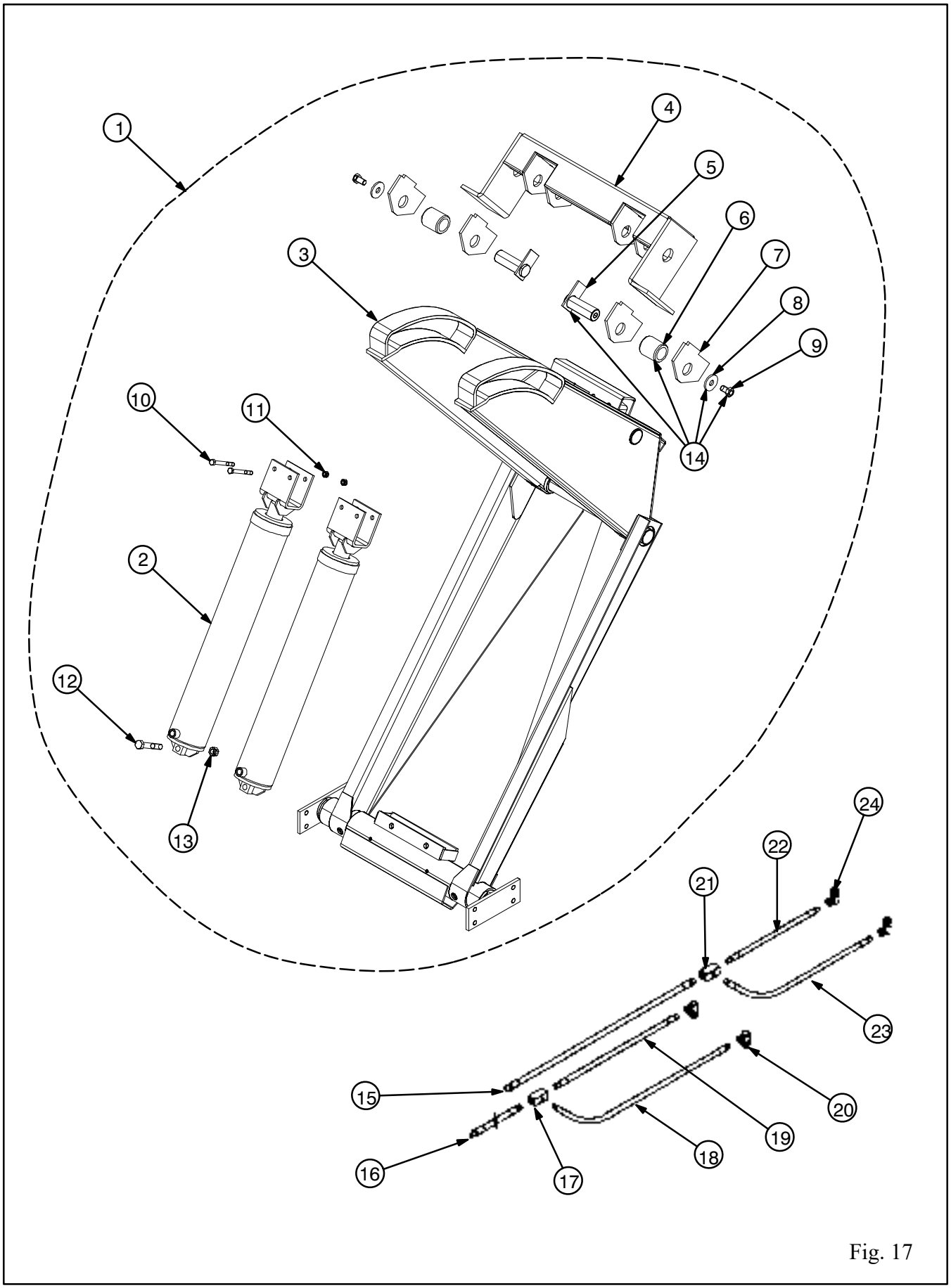


Fig. 17

ITEM	DESCRIPTION	RC580	RC690	RC6100	QTY
1.	Frame & Cylinder Assy	1621525	1621896	1621896	1
2.	Cylinder Assy	1621534	1621900	1621900	1
3.	Hoist Frame Assy	1621526	1621897	1621897	1
4.	Cross Channel Assy	141391	141392	141392	1
5.	Roller Pin Assy	1623618	1623618	1623618	2
6.	Wear Plate - RC540/RC860	1643253	1643253	1643253	4
7.	Roller - 2.750 Diameter	1630938	1630938	1630938	2
8.	Washer 13/16 ID x 2 3/8 OD	1643266	1643266	1643266	2
9.	Cap Screw 3/4-16 x 1 1/4 Gr 8	1643252	1643252	1643252	2
10.	Cap Screw 1/2-13 x 4 1/2 Gr 8	1642718	1642718	1642718	2
11.	Hex Lock Nut 1/2-13	1642984	1642984	1642984	2
12.	Cap Screw 3/4-10 x 4 1/2 Gr 8	1642956	1642956	1642956	1
13.	Hex Lock Nut 3/4-10	1642957	1642957	1642957	1
14.	Roller & Pin Kit (contains 2)	1623001	1623001	1623001	1
15.	Hose 1/2 NPT-3/4 ORB x 72” 2000 PSI	1643224			1
	Hose 3/4 NPT-7/8 ORB x 72” 2000 PSI		1643165	1643165	1
16.	Hose 1/2 NPT-7/8 ORB x 36” 3500 PSI	1642980			1
	Hose 3/4 NPT-7/8 ORB x 36” 2500 PSI		1643178		1
	Hose 3/4 NPT-7/8 ORB x 36” 3000 PSI			1643353	1
17.	Tee 7/8 ORB	1629343	1629343	1629343	1
	Swivel 7/8 ORB x 3/4 NPT		1643192	1643192	1
18.	Hose 1/2 NPT-7/8 ORB x 24” 3500 PSI	1642979	1642979	1642979	1
19.	Hose 1/2 NPT-7/8 ORB x 18” 3500 PSI	1642978	1642978	1642978	1
20.	Adapter 7/8 ORB x 1/2 NPT 90°	1642927	1642927	1642927	2
21.	Tee 3/4 ORB	1629342	1629342	1629342	1
	Swivel 3/4 ORB x 3/4 NPT		1643047	1643047	1
22.	Hose 1/2 NPT-3/4 ORB x 12” 3500 PSI	1642976	1642976	1642976	1
23.	Hose 1/2 NPT-3/4 ORB x 18” 3500 PSI	1642977	1642977	1642977	1
24.	Adapter 3/4ORB x 1/2 NPT 90°	1642925	1642925	1642925	2

SINGLE CYLINDER ROLLER-COMBO SUBFRAME PARTS

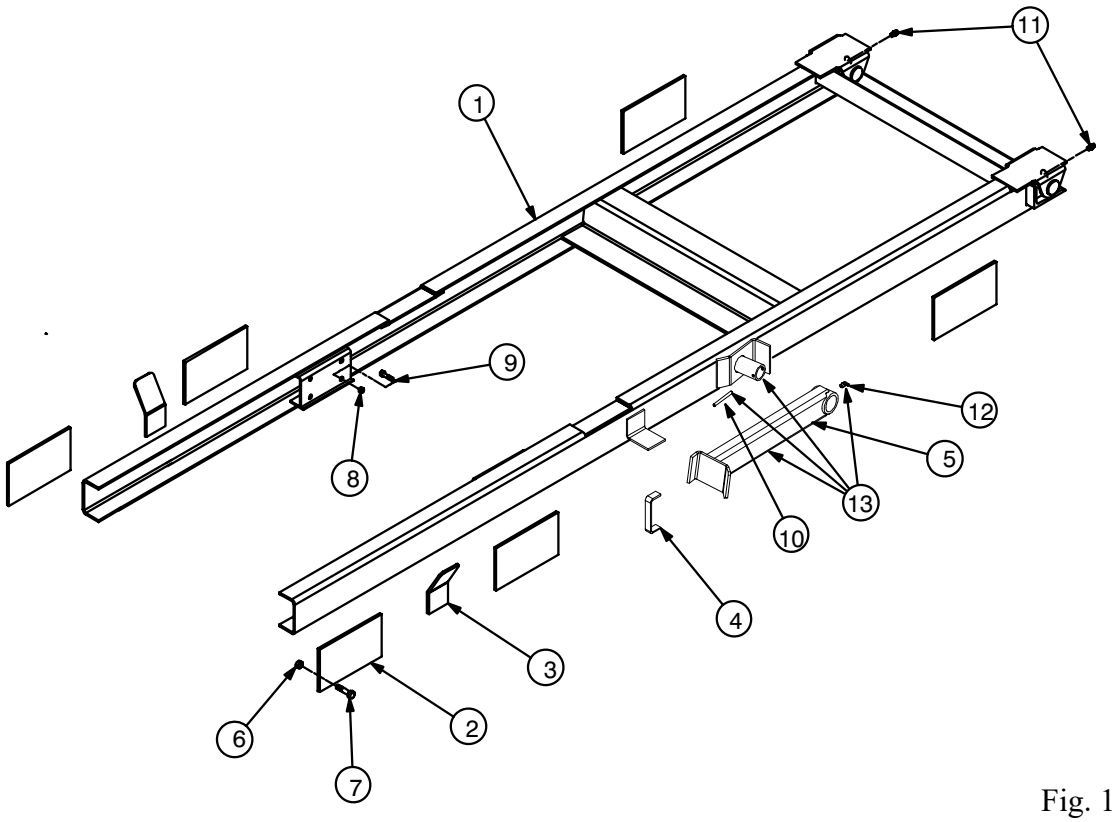


Fig. 18

ITEM	DESCRIPTION	RC540	RC650	RC750	RC860	QTY
1.	Subframe Assy - 8’	CALL	CALL	CALL	CALL	1
	Subframe Assy - 9’	CALL	CALL	CALL	CALL	1
	Subframe Assy - 10’	CALL	CALL	CALL	CALL	1
	Subframe Assy - 11’	CALL	CALL	CALL	CALL	1
	Subframe Assy - 12’	CALL	CALL	CALL	CALL	1
2.	Mounting Plate	1631206	1631206	1631206	1631206	6
3.	Body Guide	1630827	1630827	1630827	1630827	2
4.	Body Prop Longbeam Bracket	1634760	1634760	1634760	1634760	2
5.	Body Prop Arm Assy - Left	1624092	1624092	1624092	1624092	1
	Body Prop Arm Assy - Right (not shown)	1624093	1624093	1624093	1624093	1
6.	Hex Lock Nut 5/8-11	1643070	1643070	1643070	1643070	12
7.	Cap Screw 5/8-11 x 2 Gr 8	1643313	1643313	1643313	1643313	12
8.	Hex Lock Nut 1/2-13	1642984	1642984	1642984	1642984	8
9.	Cap Screw 1/2-13 x 1 1/4 Gr 8	1642726	1642726	1642726	1642726	8
10.	Roll Pin 1/4 x 3	1642757	1642757	1642757	1642757	1
11.	Grease Zerk 1/8 NPT	1642699	1642699	1642699	1642699	2
12.	Grease Zerk 1/8 NPT 90°	1642713	1642713	1642713	1642713	1
13.	Body Prop Kit - Left	1624090	1624090	1624090	1624090	1
14.	Body Prop Kit - Right (not shown)	1624091	1624091	1624091	1624091	1

TWIN CYLINDER ROLLER-COMBO SUBFRAME PARTS

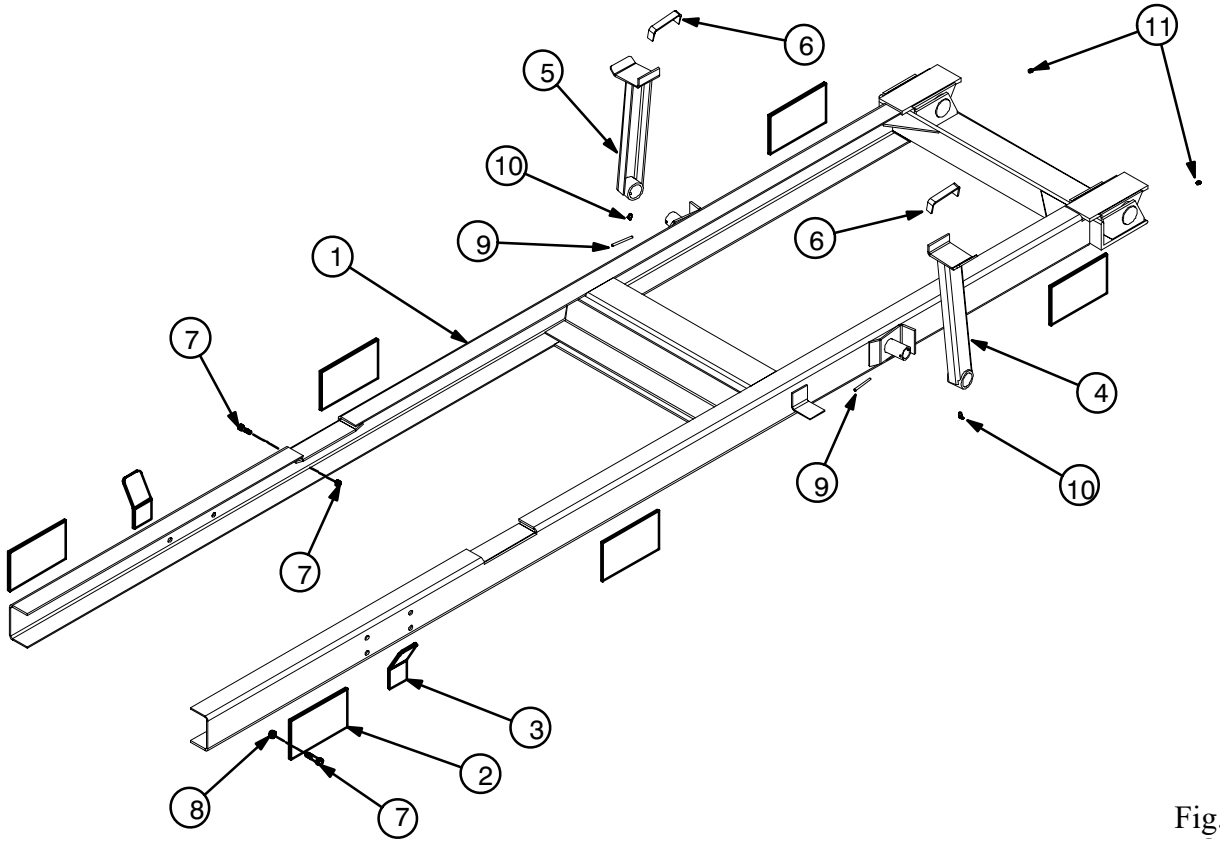


Fig. 19

ITEM	DESCRIPTION	RC580	RC690 | RC6100	QTY
1.	Subframe Assy - 12’	1624063	1625266	1
	Subframe Assy - 13’	1621577	1625265	1
	Subframe Assy - 14’	1624064	1625204	1
	Subframe Assy - 15’	1621568	1625267	1
	Subframe Assy - 16’	1624065	1625268	1
2.	Mounting Plate	1631206	1631206	6
3.	Body Guide	1630827	1630827	2
4.	Body Prop Arm Assy - Left	1624092	1624092	1
5.	Body Prop Arm Assy - Right	1624092	1624092	1
6.	Body Prop Longbeam Bracket	1634760	1634760	2
7.	Cap Screw 5/8-11 x 2 Gr 8	1643313	1643313	20
8.	Hex Lock Nut 5/8-11	1643070	1643070	20
9.	Roll Pin 1/4 x 3	1642757	1642757	2
10.	Grease Zerk 1/8 NPT 90°	1642713	1642713	2
11.	Grease Zerk 1/8 NPT	1642699	1642699	2
12.	Body Prop Kit - Left	1624090	1624090	1
13.	Body Prop Kit - Right	1624091	1624091	1

ROLLER-COMBOHYDRAULICPARTS

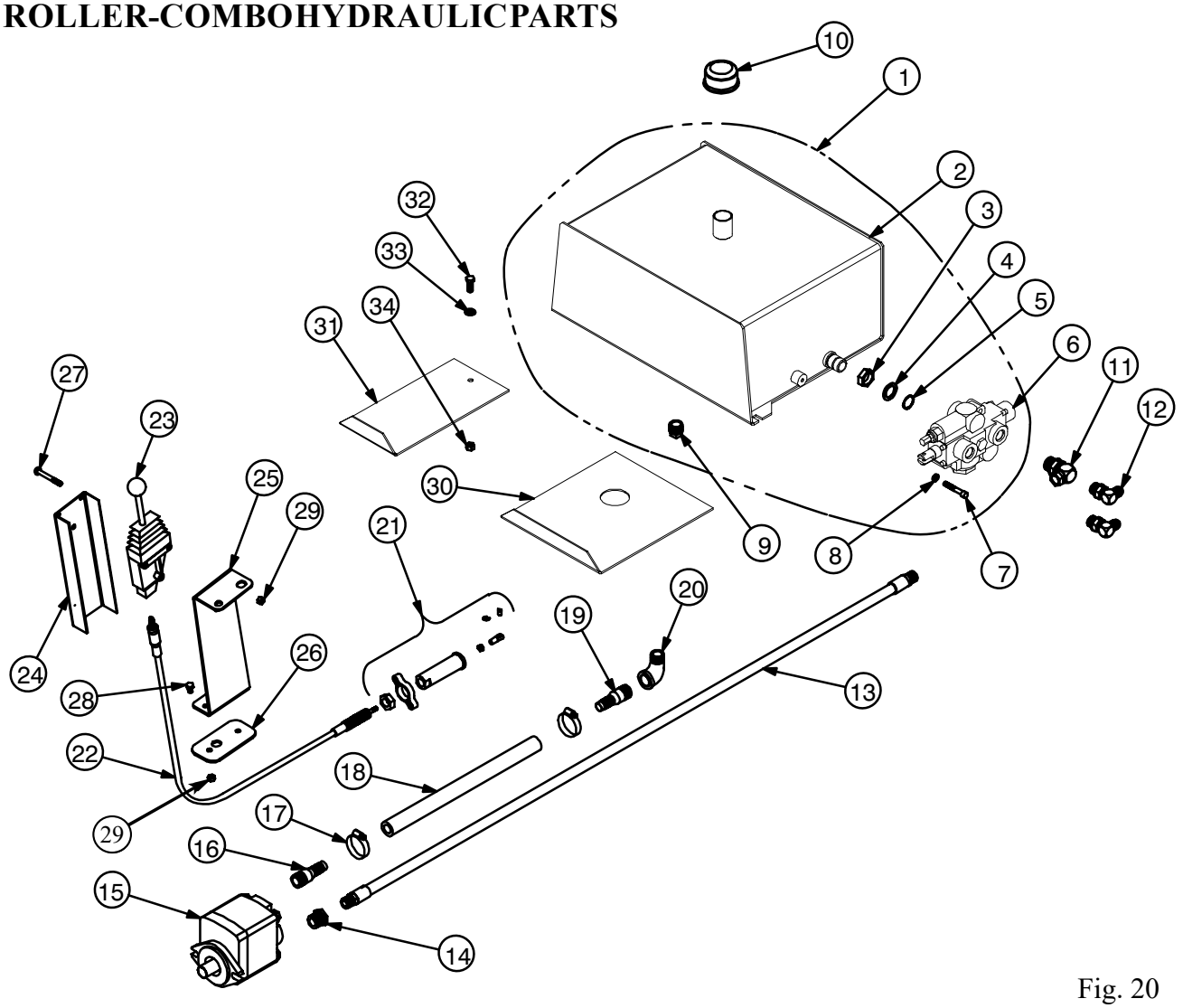


Fig. 20

ITEM	DESCRIPTION	HOIST MODEL	PART NO.	QTY.
1.	Reservoir/Valve Assy 10 Gal 3250 PSI	RC540-RC650	1621926	1
	Reservoir/Valve Assy 10 Gal 2000 PSI	RC750-RC860	1621936	1
	Reservoir/Valve Assy 18 Gal 3250 PSI	RC580	1621928	1
	Reservoir/Valve Assy 18 Gal 2000 PSI	RC690	1621937	1
	Reservoir/Valve Assy 18 Gal 2700 PSI	RC6100	1622027	1
2.	Reservoir Weldment 10 Gal	RC540-RC860	1621927	1
	Reservoir Weldment 18 Gal	RC580-RC6100	1621929	1
3.	Hex Jam Nut 1 1/16-12	ALL	1643194	1
4.	Cone Washer 1 1/16	ALL	1643195	1
5.	O-Ring .924 ID x .116 CS	ALL	1642922	1
6.	Control Valve 3250 PSI -10 Port	RC540, RC650, RC580	1643185	1
	Control Valve 2000 PSI -10 Port	RC750-RC860	1643186	1
	Control Valve 2000 PSI -12 Port	RC690	1643201	1
	Control Valve 2700 PSI -12 Port	RC6100	1643251	1

ITEM	DESCRIPTION	HOIST MODEL	PART NO.	QTY.
7.	Socket Cap Screw 5/16-18 x 2	ALL	1643205	1
8.	Lock Washer 5/16	ALL	1642733	1
9.	Magnetic Pipe Plug 3/4 NPT	ALL	1642794	1
10.	Breather Cap	ALL	1644723	1
11.	Adapter 1 1/16 ORB x 1/2 NPT 90°	RC540-RC750, RC580	1642969	1
	Adapter 1 1/16 ORB x 3/4 NPT 90°	RC860, RC690-RC6100	1642971	1
12.	Adapter 7/8 ORB x 1/2 NPT 90°	RC540-RC750, RC580	1642927	2
	Adapter 7/8 ORB x 3/4 NPT 90°	RC860	1643035	2
	Adapter 1 1/16 ORB x 3/4 NPT 90°	RC690-RC6100	1642971	2
13.	Hose 1/2 NPT x 72” 3500 PSI	RC540-RC750, RC580	1643017	1
	Hose 3/4 NPT x 72” 2500 PSI	RC860, RC690	1643165	1
	Hose 3/4 NPT x 72” 3000 PSI	RC6100	1643153	1
14.	Hex Bushing 3/4 npt x 1/2 NPT	RC540-RC650	1642921	1
	Adapter 1 5/16 ORB x 1/2 NPT	RC750, RC580	1630083	1
	Adapter 1 5/16 ORB x 3/4 NPT	RC860, RC690-RC6100	1630637	1
15.	Pump 6 GPM P20	RC540-RC650	1644773	1
	Pump 10 GPM P20	RC750-RC580	1644774	1
	Pump 15 GPM P20	RC690-RC6100	1644776	1
16.	Hose Barb 1 1/16 ORB x 3/4	RC540-RC650	1643228	1
	Hose Barb 1 5/16 ORB x 1 1/4	RC750-RC6100	1643018	1
17.	Hose Clamp #24 1 1/16-2	RC540-RC650	1643011	2
	Hose Clamp 1 3/4 T-Bolt	RC750-RC6100	1643241	2
18.	Suction Hose 3/4 ID x 72”	RC540-RC650	1643805	1
	Suction Hose 1 1/4 ID x 72”	RC750-RC6100	1643806	1
19.	Hose Barb 3/4 NPT x 3/4	RC540-RC650	1643017	1
	Hose Barb 1 1/4 NPT x 1 1/4	RC750-RC6100	1643018	1
20.	Street Elbow 3/4 90°	RC540-RC650	1643226	1
	Street Elbow 1 1/4 90°	RC750-RC6100	1642975	1
21.	Valve Connection Kit	ALL	1643215	1
22.	Control Cable - 84”	ALL	1643332	1
23.	Valve Control - RVC	ALL	1643208	1
24.	Channel, Tall Pedestal	ALL	1630873	1
25.	Pedestal, Tall	ALL	1630872	1
26.	Clamp, Pedestal	ALL	1631026	1
27.	Machine Screw 5/16-18 x 2 1/2	ALL	1643233	3
28.	Cap Screw 5/16-18 x 1/2 Hex Head	ALL	1643329	2
29.	Hex Lock Nut 5/16-18	ALL	1642962	5
30.	Reservoir Mount, Left (large)	ALL	1630898	1
31.	Reservoir Mount, Right (small)	ALL	1630899	1
32.	Cap Screw 3/8-16 x 1	ALL	1642714	3
33.	Flat Washer 3/8	ALL	1642732	3
34.	Hex Lock Nut 3/8-16	ALL	1643177	4

ROLLER-COMBOCYLINDERPARTS

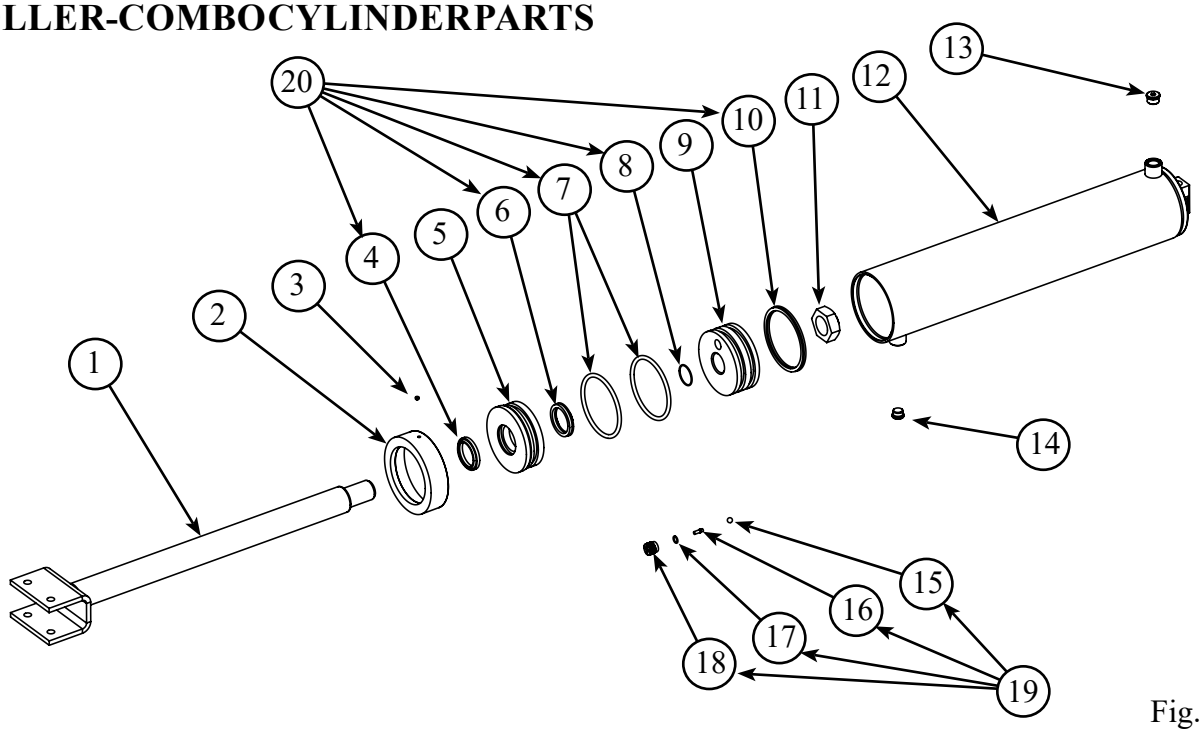


Fig. 21

ITEM	DESCRIPTION	RC540	RC650	RC580	QTY
1.	Cylinder Shaft Assy	1621556	1621558	1621561	1
2.	Cap Ring	1635171	1635173	1635171	1
3.	Set Screw 1/4 x 3/16	1642724	1642724	1642724	1
4.	Wiper	1642878	1642879	1642879	1
5.	Cylinder Head	1637938	1636110	1636109	1
6.	Shaft Seal	1642765	1642874	1642874	1
7.	O-Ring	1642766	1642770	1642766	2
8.	O-Ring	1642767	1642767	1642767	1
9.	Cylinder Piston	1629601	1629604	1629601	1
10.	Piston Seal	1642764	1642769	1642764	1
11.	Hex Jam Nut	1642995	1642995	1642995	1
12.	Cylinder Tube Assy	1621554	1621510	1621559	1
13.	Plug 7/8-14 ORB	1642807	1642807	1642807	1
14.	Plug 3/4-16 ORB	1642805	1642805	1642805	1
15.	Ball 3/8	1642679	1642679	1642679	1
16.	Bypass Valve Pin	1642894	1642894	1642894	1
17.	O-Ring	1642907	1642907	1642907	1
18.	Bypass Valve Body	1642893	1642893	1642893	1
19.	Bypass Valve Kit	1621569	1621569	1621569	1
20.	Cylinder Seal Kit	1621640	1621642	1621640	1
21.	Cylinder Assy	1621532	1621533	1621534	

ROLLER-COMBOCYLINDERPARTS

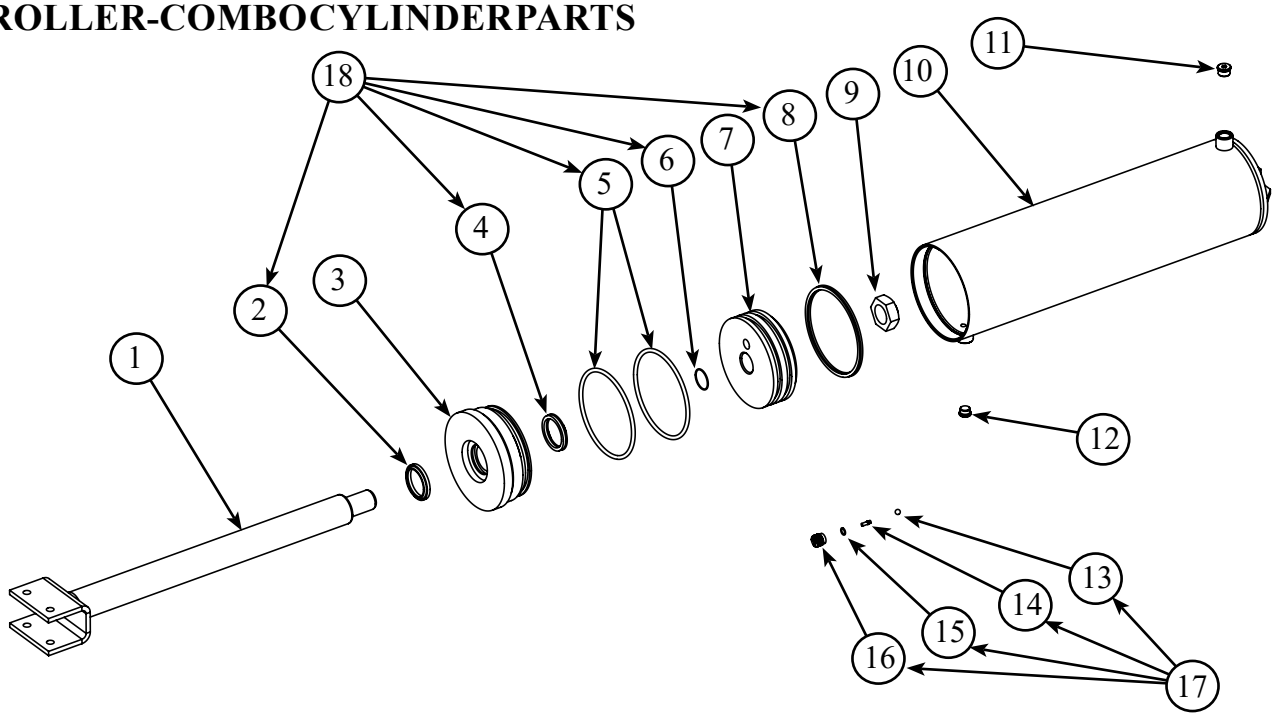


Fig. 22

ITEM	DESCRIPTION	RC750	RC860	RC690	RC6100	QTY
1.	Cylinder Shaft Assy	1621558	1621905	1621562	1621562	1
2.	Wiper	1642879	1642879	1642880	1642880	1
3.	Cylinder Head	1630870	1630714	1630748	1630748	1
4.	Shaft Seal	1642874	1642874	1642875	1642875	1
5.	O-Ring	1642967	1643168	1642770	1642770	2
6.	O-Ring	1642767	1643179	1642767	1642767	1
7.	Cylinder Piston	1630044	1630713	1629604	1629604	1
8.	Piston Seal	1642968	1643169	1642769	1642769	1
9.	Hex Jam Nut	1642995		1642995	1642995	1
10.	Cylinder Tube Assy	1621954	1621895	1621901	1621901	1
11.	Plug 7/8-14 ORB	1642807		1642807	1642807	1
	Plug 1 1/16-12 ORB		1642966			
12.	Plug 3/4-16 ORB	1642805		1642805	1642805	1
	Plug 7/8-14 ORB		1642807			
13.	Ball 3/8	1642679	1642679	1642679	1642679	1
14.	Bypass Valve Pin	1642894	1642894	1642894	1642894	1
15.	O-Ring	1642907	1642907	1642907	1642907	1
16.	Bypass Valve Body	1642893	1642893	1642893	1642893	1
17.	Bypass Valve Kit	1621569	1621569	1621569	1621569	1
18.	Cylinder Seal Kit	1621643	1623000	1621642	1621642	1
	Cylinder Assy	1621635	1621903	1621900	1621900	

NOTES

NOTES

CRYSTEEL MANUFACTURING'S 5 YEAR CUSTOMER SATISFACTION PLEDGE & WARRANTY

Crysteel offers the most comprehensive warranty in the truck equipment industry. Crysteel warrants each product against defects in material and workmanship for 60 months from the in-service date.

For the full Customer Satisfaction Pledge and Warranty information, please visit our website.

http://www.crysteel.com

CRYSTEEL MANUFACTURING, INC.