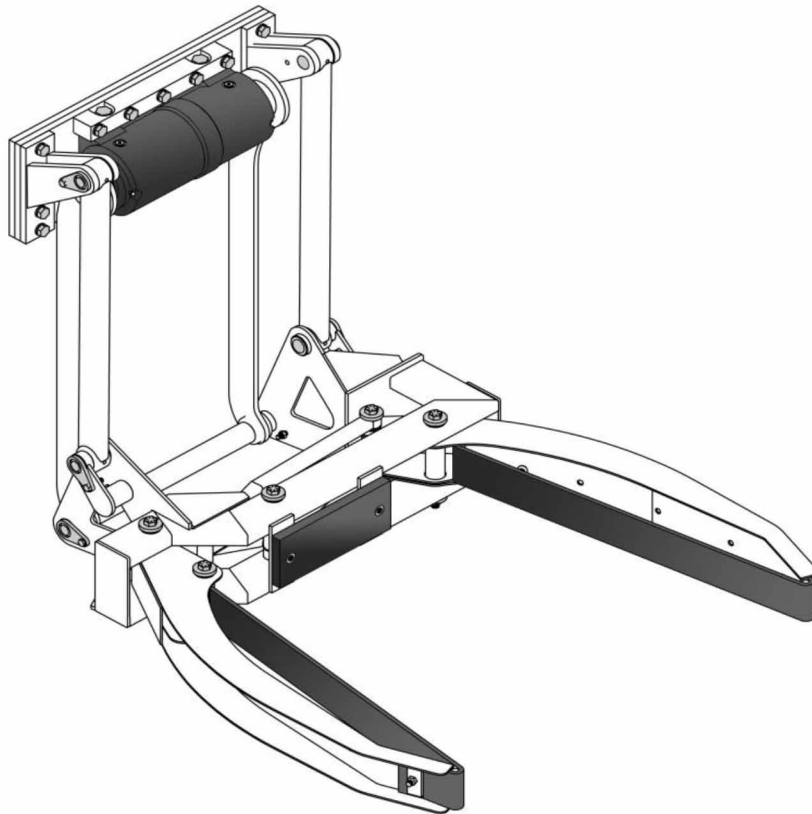




# Installation & Operational Manual

## Model CWL6120-52-UL-S

### Single Hydraulic Cart Washing Lifter



# CWL6120-52-UL-S Lifter Specifications

Cart Compatibility	ANSI Type G, AUTOMATED OR AUTOMATED COMPATIBLE. (Some carts are BOTH ANSI B & G)
Typical Mounting Application	Rear of Specialty Washing Trailer
Exclusive Split-Body Helical Rotary Actuator	27,000 inch lbs of torque @ 3,000 psi
Flow Rate Requirement	3.5 gpm
Cycle Time	6-8 seconds (up and down) *Time is determined by flow provided*
Recommended Pressure Setting*	1,550 psi at the pressure relief valve
Weight Capacity**	EMPTY CARTS ONLY WITH MINIMAL WATER INSIDE!
Dump Angle	45 degrees from the horizon
Mounting Height (ground level to top of gripper arms)	Approximately 24-26".
Approximate Unit Weight (not counting packaging)	250 lbs
Hydraulic Package	None Provided, Sold Separately
Bearings	Composite Self-Lubricated
Finish	Powder-Coated
Warranty	1-year ***

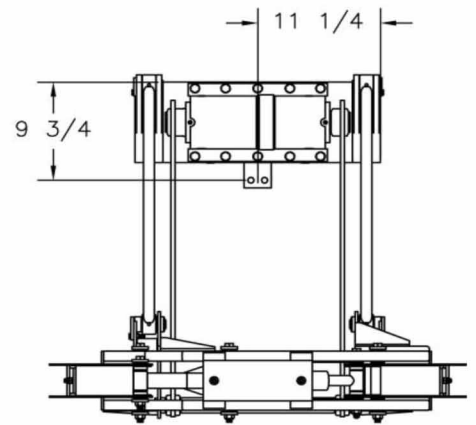
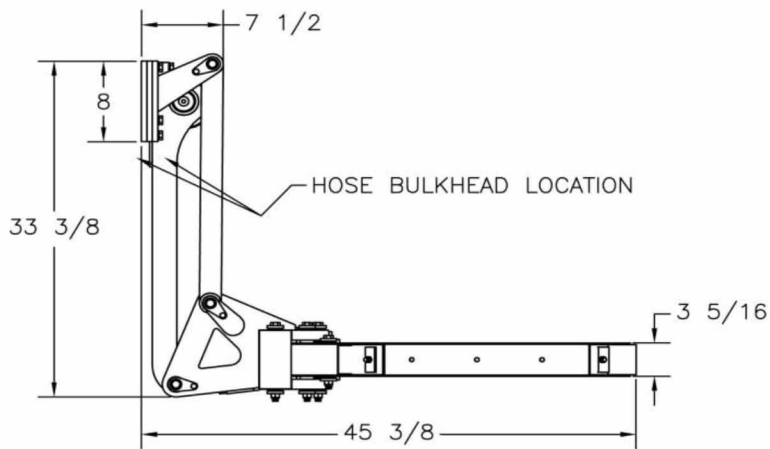
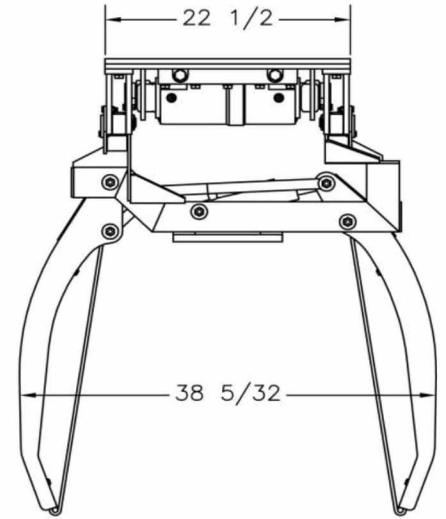
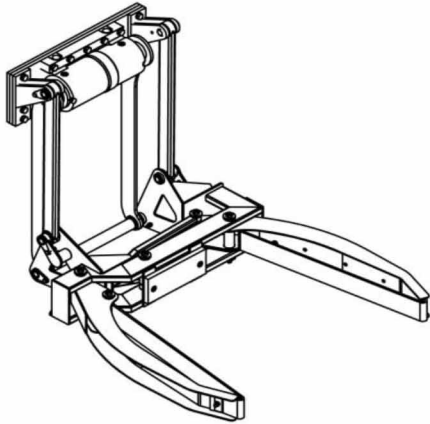
\* Actual pressure required to lift a load can vary.

\*\* Do not lift more than the recommended amount printed on the cart by the cart manufacturer or damage or injury may result.



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# Overall Dimensions



## Cart Types



ANSI Type B carts (US-Style two-bar carts) with a dimension of 14  $\frac{3}{4}$  - 15  $\frac{1}{4}$ " bar to bar spacing.



ANSI Type C Carts (European-type) Using an upper lip for lifting. Height to ground varies with size of cart.



ANSI Type D Carts (Diamond-Type)



ANSI Type G Carts (Automated Collection) Having a rounded body ideal for gripper arms to clasp around.

*Note: Some ANSI Type B carts are also Type G compatible, but some carts, particularly older designs, are not. This affects gripper-arm type of lifters that rely on grasping the cart around it's body. If using a gripper arm type of lifter, check your carts and see if they have rounded corners (look for approximately 6" radius). If so, they are likely ANSI Type G compatible.*

## Key Hydraulic Components



In-Line Relief Valve



Adjustable Flow Control



Helical Rotary Actuator (CUT-AWAY VIEW)

*Valves are sold separately or as part of a tap-in kit. The valves are shown for reference / identification purposes only. Your specific installation may require other equipment not shown.*





Please read this manual prior to installing, repairing or using this cart lifter.

- ✪ Installation of this equipment requires welding, painting, grinding, torching and working with high- pressure hydraulic systems. The appropriate safety equipment should be used at all times.
- ✪ Always follow OSHA specified lock-out procedures while working with a truck.
- ✪ Cart lifters weigh, on average, approximately 330 lbs. Do not lift the lifter onto the mounting plate by hand. Always use proper lifting equipment.
- ✪ Always use a chain or strap to secure the lifter in the upright position during the installation process. Unsecured lifters may fall suddenly causing injury.
- ✪ The equipment to which the lifter is to be installed should be free of combustibles. Torching and welding can ignite the surrounding materials and cause a fire.
- ✪ Do not weld on the truck unless a ground is in place and the battery is disconnected.
- ✪ Do not open/loosen any hydraulic lines unless the system is off and depressurized.
- ✪ Always double-check hydraulic fittings and hoses for tightness prior to reactivating the pump.
- ✪ Always relocate lights that need to be moved due to the position of the cart lifter to a clear and unobstructed area clearly visible to drivers.
- ✪ All painting of the truck/lifter after installation is complete should be done with proper ventilation and per local regulations. Do not paint over caution and warning labels.

## Installation Tips

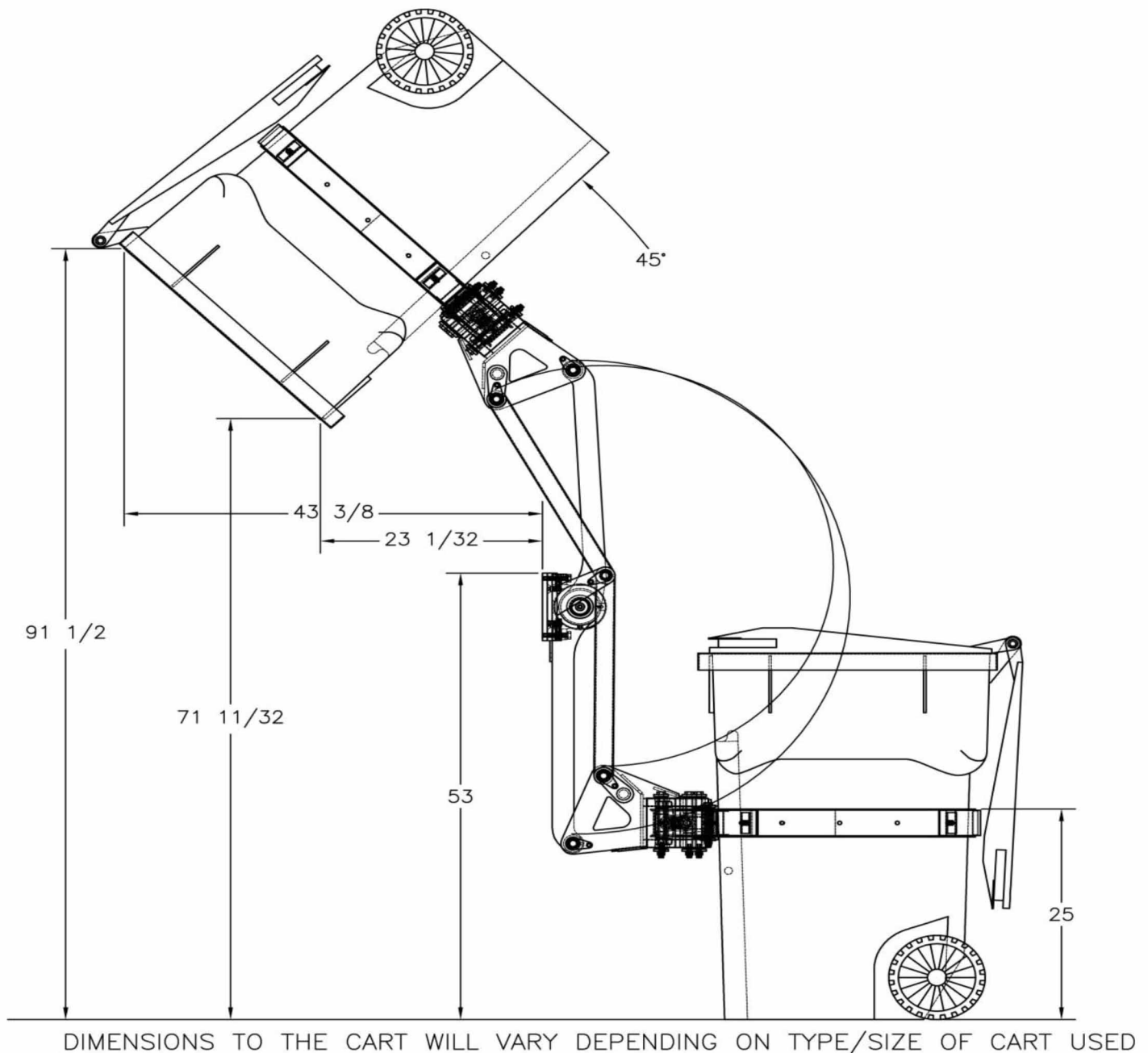
Do not mount the lifter to equipment which is not already mounted to a chassis. Chassis heights can vary and this will affect the final installed height of the cart lifter.

Tack weld only until all positions and clearances are verified to work well for your application.

Always work on a smooth level surface.



## Determine the Mounting Height



The mounting height is critical to the proper function of any cart lifter. The ideal location for the top of the gripper arms to be 24-26" off the ground. See above figure.

A cart lifter which is mounted too high will make it difficult for the gripper arms to grip the cart around the rounded portion of the cart. On most carts, the transition between rounded body and square top is approximately 26" off the ground. The grippers should always grab the cart by the rounded portion.



## Mounting Method

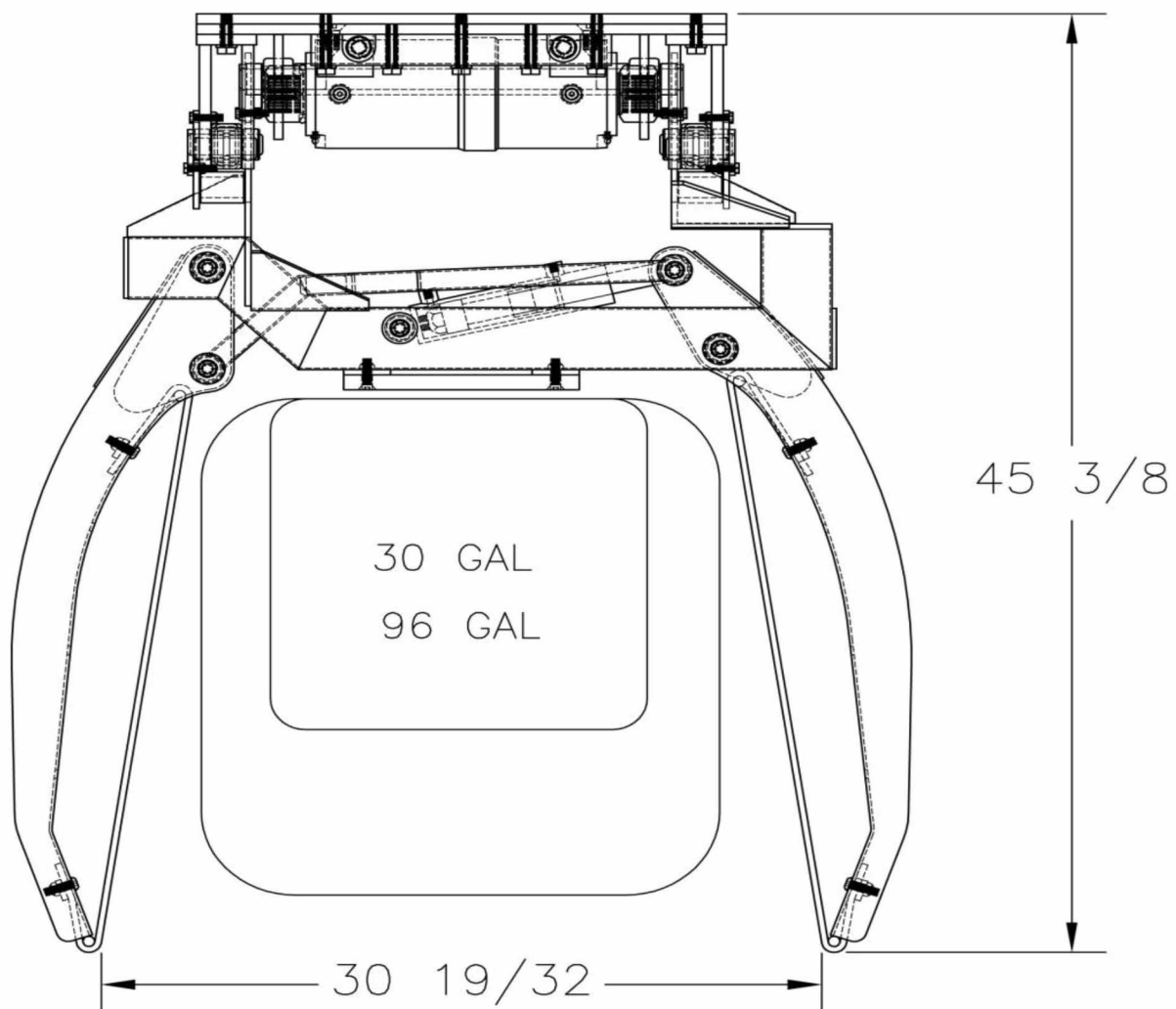
The lifter's mounting plate should be securely fastened to the mounting surface with adequate structure. Leaving the mounting plate hanging unsupported, above or below the mounting structure may lead to premature lifter failure. Add materials to the structure to ensure the mounting plate is fully supported all around.

The mounting plate should be level, and vertical.

Access clearance of at least 2" should be given around the sides of the lifter, to allow for getting tools in and out while installing and servicing.

The rear mounting plate welds to the equipment, while the front mounting plate acts to keep the lifter whole. This allows the lifter to be quickly and easily swapped for another one.

Make sure to check both up and down positions, and the position the cart will be in, before welding the lifter fully to the equipment. Perkins is not responsible for issues that result in poorly chosen lifter location, inadequate structure, or interferences with foreign objects.



## Hydraulic Oil

The most important component of any hydraulic system is the oil. Perkins cart lifters use standard seal materials and should therefore be compatible to most grades of hydraulic oils, operating in typical weather conditions for most of North America. However, the condition of the oil is an important consideration that should not be overlooked.

Hydraulic oil may be dirty, contaminated, lost its viscosity, burned up, or have too high a concentration of absorbed water and/or air. While these things are unlikely to cause an immediate performance issue with your cart lifter, these issues can lead to premature wear and tear in the longer term.

Perkins would like to take this opportunity to remind you to check the quality of your hydraulic oil periodically and make sure it meets your standards. Oil that is maintained in good condition will help your equipment last longer.

## Non-Perkins Controls

Some customers with new trucks may choose to use hydraulic controls provided by the OEM. As long as the GPM and pressure settings used match the specifications required, then the lifter should operate fine. Perkins cart lifters do not require special Perkins valves to operate.

In other cases, a Perkins cart lifter may be replacing a competitive lifter for which controls are already installed. Again, Perkins cart lifters should work just fine with competitive equipment, as long as the GPM and pressure settings are adjusted within the specified ranges.

## Lifter Speed

The cycle time of the lifter is very important for safe operation. Perkins suggests a complete cycle time of 6-8 seconds (3-4 seconds up and 3-4 seconds down). Faster cycle times may be dangerous. Running a lifter too fast can damage the cart, or make a cart break loose off the lifter and fall, resulting in damage and/or injury.

The speed of the cart lifter is determined by the rate of oil (gpm) going to the unit. Typical lifters with a 27k actuator will require approximately 3.5 gpm in order to meet this speed. A gauge is recommended but not needed to determine proper lifter speed. Counting the cycle time using a stop watch is adequate to determine proper flow rate. Running a lifter too fast will void the warranty.

## Weight Capacity

The maximum amount of weight that can be lifted is limited by the pressure relief valve (not included). The settings must be determined with a pressure gauge. The CWL6120-52-UL requires 1550 psi to lift a 150 lb load. Place a pressure gauge after the hand valve and run the actuator until it stops, continue activating the handle and note the pressure on the gauge. Adjust the relief valve according to the manufacturer's instructions.





# Adjusting the Perkins Hydraulics

## Adjusting the Speed

Adjustable Flow Control Valve: D63575

**LEFTHAND:** Its purpose is to restrict oil coming out of the actuator when the lifter is moving back down. By restricting the oil, the lifter is prevented from “getting ahead” of the oil and slamming into the ground.

This valve only works in one direction, so adjusting it does not affect the speed of the upwards direction.

The valve has a small arrow stamped into its body. The arrow should point away from the actuator.

If the lifter comes down too quickly, try turning this valve in clockwise ¼ turn at a time until the down direction is smooth and under control.



(2) INCLUDED, located under each side of the rotary actuator.

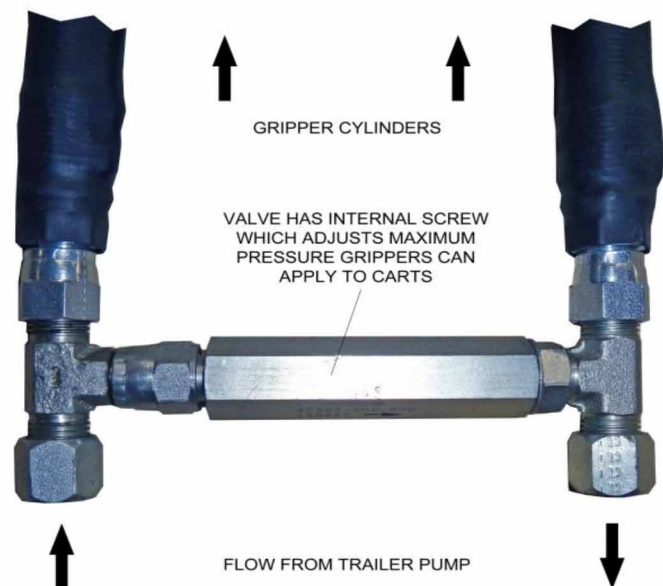
Right hand valve will restrict flow of the lifter as it goes up.

## Adjusting the Maximum Gripper Pressure

In-Line Pressure Relief Valve D63521

The valve stays closed, allowing the gripper cylinders to build pressure. When the pressure is reached, the valve opens, preventing over-squeezing of the carts.

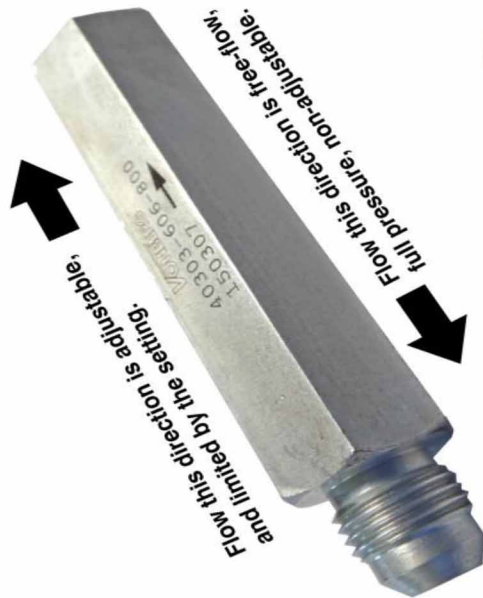
This valve is adjusted with an internal screw. To adjust, the pump must be off and the line broken. A flat-head screwdriver can turn the screw inside clockwise for more pressure, or counter-clockwise for less.



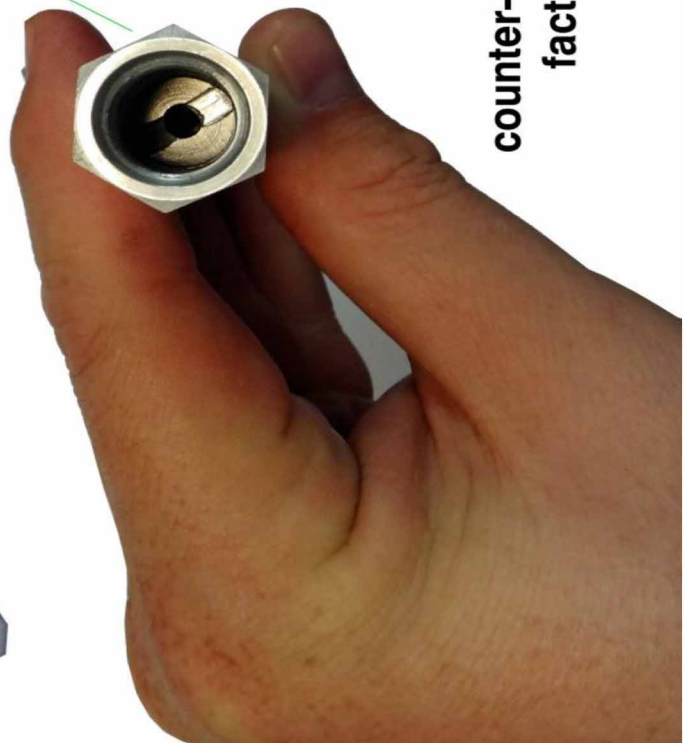




D63521, one-way relief valve

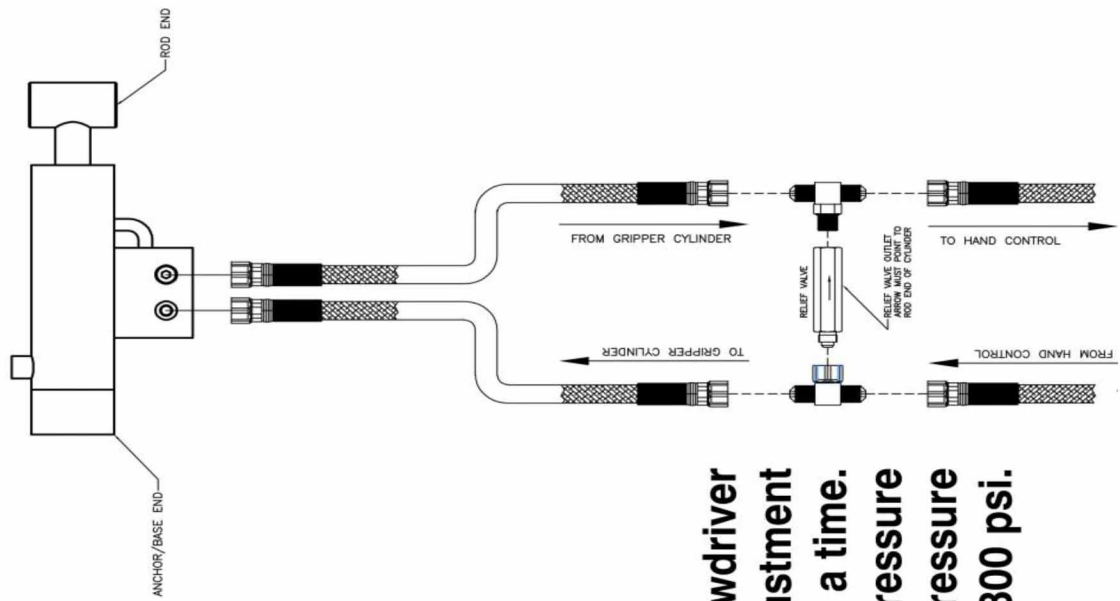


look into this end  
to find adjustment



Use a flat screwdriver  
to turn the adjustment  
inside, 1/4 turn at a time.  
clockwise = increase pressure  
counter-clockwise = decrease pressure  
factory present to open at 800 psi.

## ORIENTATION OF RELIEF



## Servicing the Perkins SJH Rotary Actuator

Perkins SJH 27k Actuator: D73060SJH

Common Parts: Seal Kit: D73060SJH-1 Bearing Kit: D73060SJH-2 EndCap D73060SJH-3

Actuator Shaft : D73060SJH-4

The manual for the actuator is provided separately and free of charge. It contains detailed instructions for rebuilding, based on a complete tear-down. Also, within the manual is a complete parts listing. To receive a copy of the actuator manual, simply call Perkins at 800-882-5292.

### Flushing the Actuator

Because the oil displacement of the actuator is nearly equal to the displacement of the hoses, the oil inside the actuator does not fully displace to the system and get filtered with each use. Only a percentage of the oil displaces. Because of this, it is possible to have build-up of particles over time which can lead to premature wear, especially in dirty oil conditions. Perkins recommends flushing the oil in the actuator to the system to allow for complete filtration once every 6 months. This will help ensure the actuator has a very long lifespan.

To flush the oil, turn off / depressurize the system and connect a hose from one bleed port to the other. Tighten the fittings, restart the pump. Run the hand valve back and forth several times, holding the handle down for about a minute each time. This ensures any particles have completely exited the actuator.

**BYPASS HOSE  
USING THE #4  
BLEED PORTS**



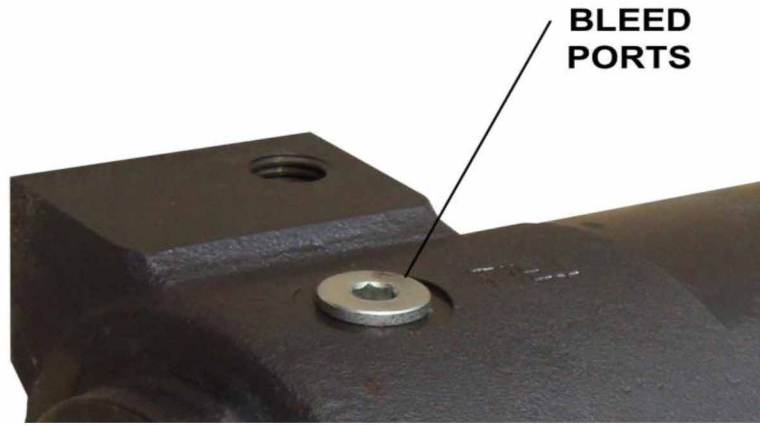
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## Bleeding air from the Actuator

Air does not usually get trapped inside the actuator, but it does happen on occasion, particularly with initial installations. For this reason, the actuator has #4 bleed ports located atop it. Cracking the plug loose slightly will allow trapped air to escape.

Perkins recommends this be performed only as necessary. Lifter motion that is very erratic is usually a sign of trapped air. The lifter should be run several times up and down first, as this usually clears any trapped air without having to use the bleed ports.

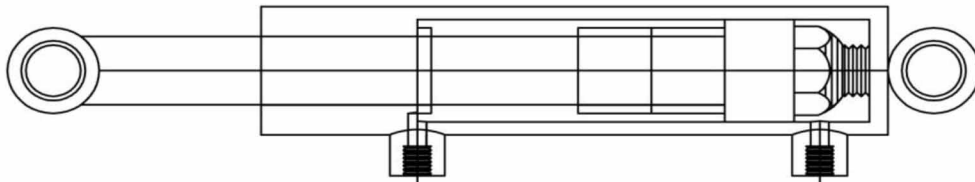
Make sure the bleed ports are fully tightened when complete.



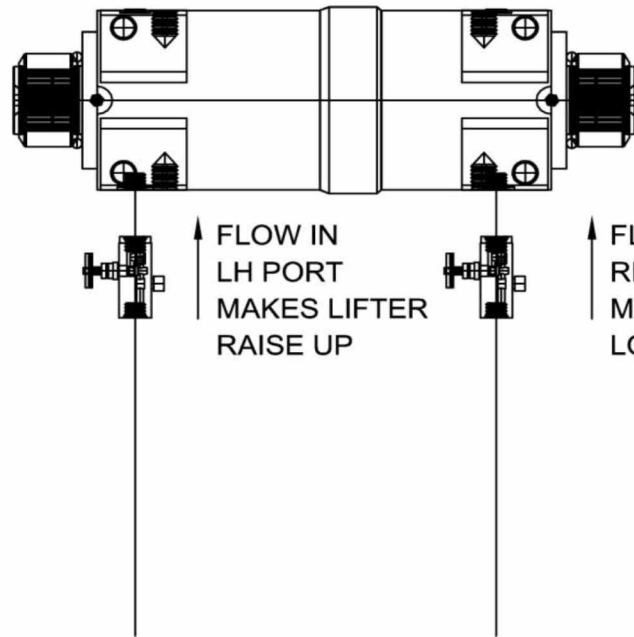
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# Perkins Single Lifter Hydraulics Schematic

## GRIPPER CYLINDERS



LIFTER MOTOR TAKES APPROX. 3.5 GPM  
FOR A 4-5 SECOND LIFT CYCLE



↑ FLOW IN  
LH PORT  
MAKES LIFTER  
RAISE UP

↑ FLOW IN  
RH PORT  
MAKES LIFTER  
LOWER

TO OPERATOR'S CONTROL VALVE  
SPOOL 1

TO OPERATOR'S CONTROL VALVE  
SPOOL 2



## Operating Instructions

The recommended cycle is 3-4 seconds to travel up and 3-4 seconds to travel down. This cycle time is based on the safe and smooth movement that the plastic cart can be swung about at without risking damage to the cart or injury to the operator. Therefore, operating the lifter faster than this time will void the warranty.

**It is recommended that the lifter be visually inspected on a daily basis to ensure that there is nothing obviously in need of repair. Broken or missing parts/hardware should be attended to immediately to avoid risk of further damage to the lifter, damage to the cart, or injury to the operator. Operating a cart lifter that is not properly maintained is hazardous.**

Step 1: Roll an EMPTY cart to the lifter and position the cart within the gripper arms.

Step 2: Look and make sure no one is in the area of the lifter or cart, then operate the hand valve by pulling on the handle controlling the gripper arms. The arms will grasp the cart (s).

Step 3: Look again, and making sure no one is in the area, operate the valve controlling the actuator. The lifter will rotate up. Begin wash cycle when ready.

Step 4: Being sure the area is clear, reverse the same handle to lower the cart(s) when the wash cycle is completed.

Step 5: Operate the handle for the gripper arms to open the arms.

Step 6: Roll away the cart and repeat as necessary.





## Safe Operating Tips

Always follow your company's safety policy during the use of this lifter, including use of proper clothing/ personal protective gear, reflective clothing, etc. Remember, you are operating the lifter on a public road/alley among moving traffic. Always be aware of your surroundings and watch for cars and pedestrians. Avoid use of headphones that may prevent the hearing of oncoming vehicles.

Do not lift anything with the lifter other than ANSI approved carts which are in good condition. Non-approved carts may not lock properly, causing them to fall from the lifter, which can cause damage or injury and will void the warranty.

Do not use the lifter for any purpose other than lifting a cart. Lifters are not meant as steps, they are not to be used to help lift a commercial container, or used to crush/breakdown an item. Doing so can cause serious damage or injury and will void the warranty.

Speeding up the lifter beyond the recommended cycle time of 6-8 seconds and/or adjusting the relief valve to pick up loaded carts can lead to damage or injury and will void the warranty.

Do not operate the lifter unless the area around it is clear of personnel. This means do not touch the lifter while it is in operation and do not stand or sit under/near the lifter while it is moving. Lifters have pinch points which can cause serious injury. Stay clear at all times.

Lifters of all kinds can be struck by utility poles, walls, other vehicles, backed into earthen hills, etc. It is the operator's responsibility to position the cart lifter in a safe position prior to coming close to any other foreign object. If the lifter is damaged by collision, the damage will not be covered by warranty.

If the lifter is installed in such a way that the lifter or cart can make contact with other equipment on the vehicle, it is your responsibility to monitor the position of both devices and avoid one contacting the other. Operator negligence is not covered by warranty.



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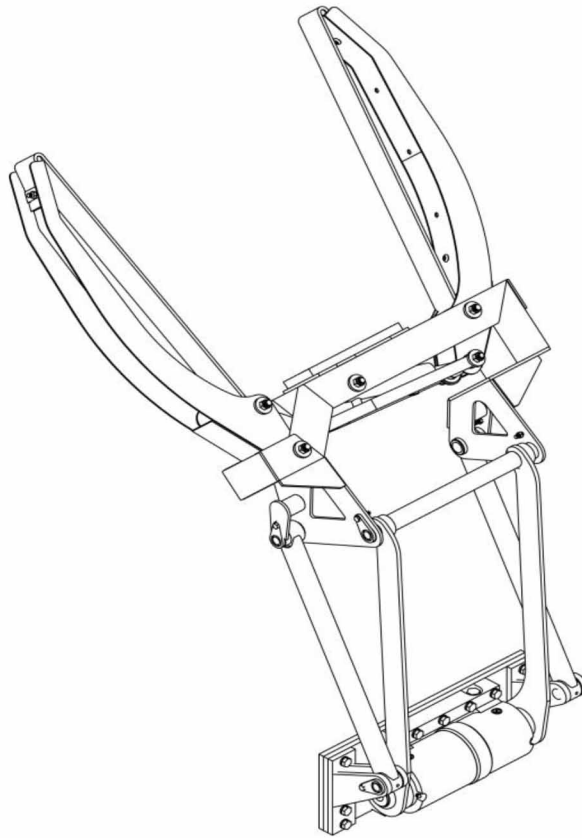
## Other Adjustments

**There are no primary mechanical adjustments on this lifter!**

Make sure all hardware is firmly tightened.

Inspect the lifter daily before leaving your facility and repair or replace any component that is missing, damaged or loose. Do NOT operate the lifter if it is in need of repair. This will likely lead to injury or additional damage.

Perkins uses anti-sieze lubrication on the shafts of the actuator when applying the driver bearing hubs. This typically does not wash away and helps in reducing corrosion. This makes removing the driver bearing hubs off the splines easier in the future. When rebuilding a lifter, reapply a fresh coating of anti-sieze on the splines.



## **Lifter operation is erratic, lifter does not move smoothly**

When the lifter does not move smoothly, there is typically air in the system. This is usually an issue after the initial installation or a recent repair where the hydraulic lines may have been opened. Bleed air out of the system by loosening a fitting very slightly and running the hand valve to create flow. Excess air should bleed out of the opening in the fitting. Retighten when complete done.

Another possibility is the adjustable flow control, D63575 not functioning properly. Check the arrow printed on the valve body. The valve should be installed so the arrow points away from the actuator. Adjust, clean, or replace the adjustable flow control valve as needed.

## **Cart lifter will not pick up the weight**

The cart may be overweight. This lifter is designed for empty carts only with a minimal amount of water in the bottom. If the lifter cannot lift the load, trying dumping out some of the water.

The hand valve relief pressure setting may be set too low. Check and adjust the pressure using a pressure gage. Note the pressure being delivered and adjust accordingly.

In cases of older equipment, the hand valve may be in need of replacement or repair.

If all pressures are set properly and the hand valve works, then the actuator may have internal leakage. Test for internal leakage by running the lifter all the way up and dead-head the lifter up. Note the pressure gage and see that the pressure stays constant as the hand valve is held depressed. If the pressure falls, you may have internal leakage and the actuator should be repaired/rebuilt with new seals.

## **Lifter operates slowly**

Check the flow adjustment on the diverter valve. Use a flow meter to make sure each lifter receives approximately 3.5 gpm. Adjust diverter as needed following instructions in the manual.

The hand valve may be faulty. Check, clean and/or replace as needed.

The truck's pump may be faulty, unable to deliver the desired flow. Contact your truck manufacturer. Remember DC pumps require high AMPS, and the truck will need to be running to deliver those AMPS necessary for the pump to function at full speed.

In rare instances, debris within the oil may be clogging the diverter valve. Check and clean the valve as needed.



## Lifter drops carts

Check the pressure in the gripper cylinder line with a pressure gauge. The pressure should build and hold to about 900 psi to grip an empty cart. If this is not the number you have, try adjusting the in-line pressure relief.

Carts which are damaged should be repaired or replaced. Lifting cracked/damaged carts can be dangerous.

## Lifter slams down to the ground or comes down too quickly

On the way down, the lifter can get ahead of the oil and free fall. Check that the adjustable flow control is mounted to the left side of the actuator, with the arrow pointed away from the actuator, and that the valve is adjusted properly. Try  $\frac{1}{4}$  turn adjustments until the lifter returns to ground level smoothly.

## Making a Warranty Claim

For complete warranty coverage details, please see the warranty page at the end of this manual.

If you suspect that failure of the lifter to operate is due to a defect, please take a moment to locate the serial number of your lifter.

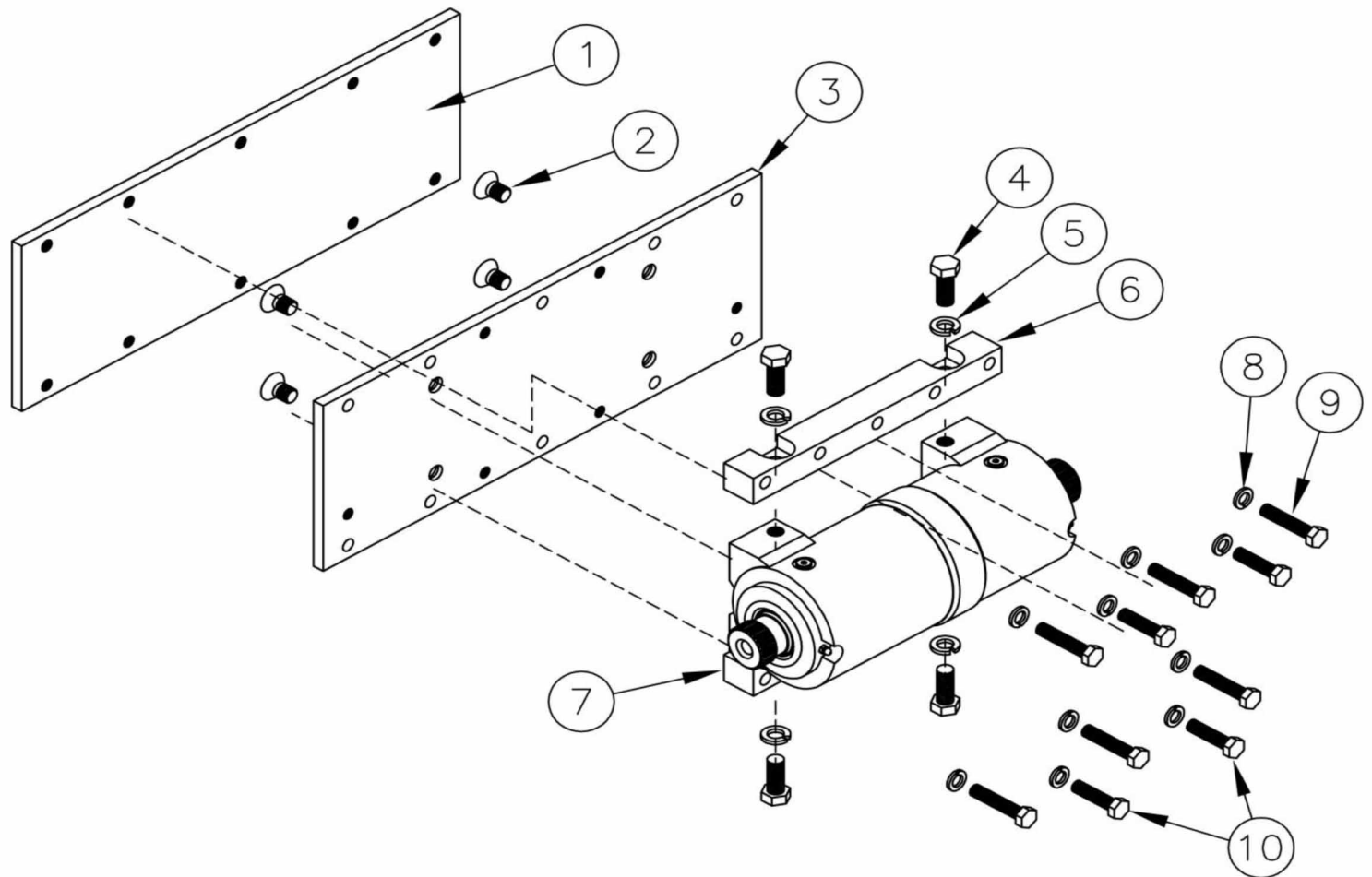
Warranty cannot be honored on lifters or individual pieces unless a serial number is provided. Since the tag is frequently lost, damaged, or painted over, it is a good idea to note the serial number in this manual at the time of installation.

At right is an example of the serial number plate. It will be stamped with a model number and serial number.





## Exploded Parts View – Mounting Portion

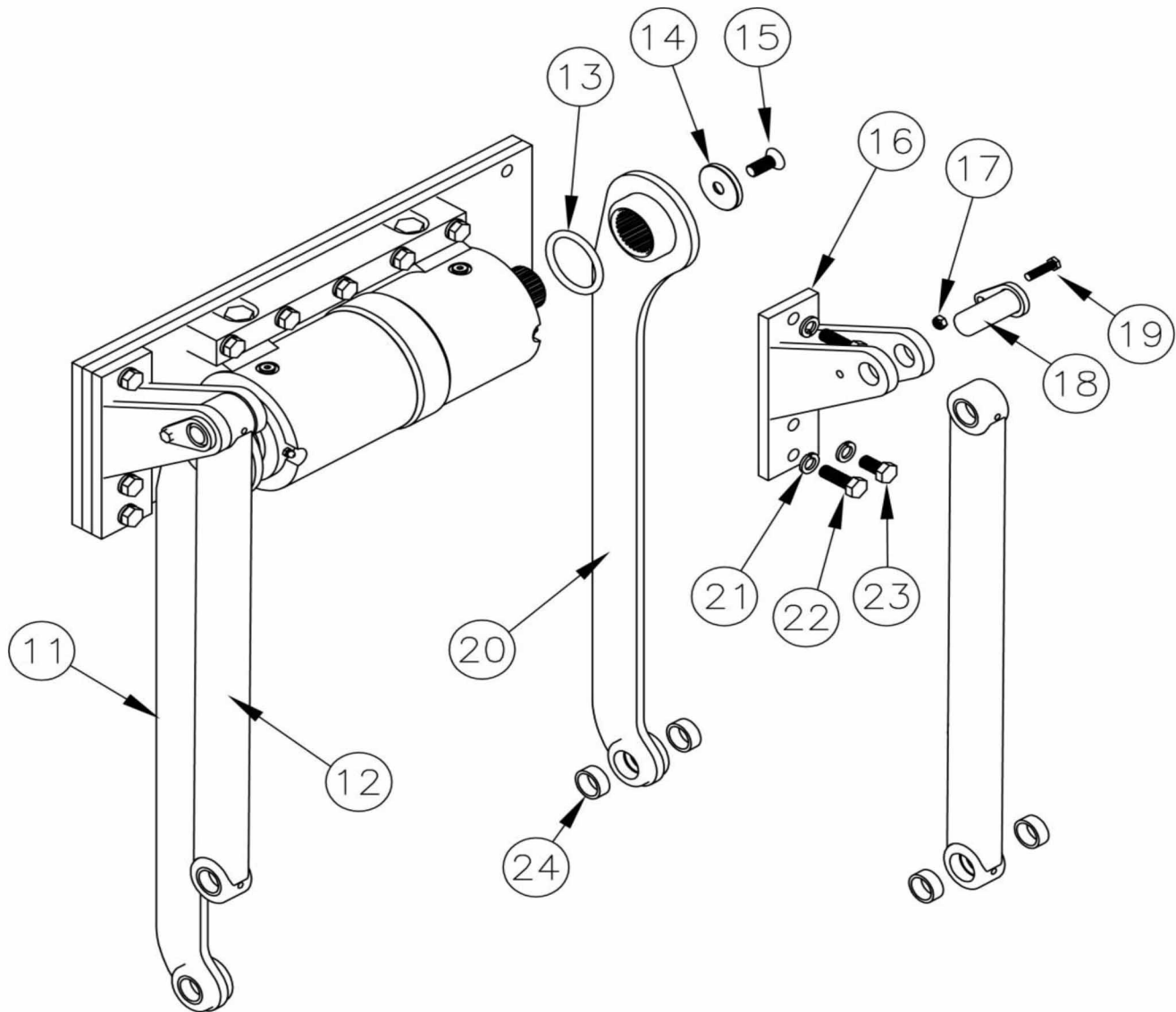


1	D69404	Rear Mounting Plate (Welds to vehicle)	1
2	D72019	Bolt FHCS 5/8-11 X 1 ¼	4
3	D69660	Front Mounting Plate	1
4	D62410	Bolt HHCS 5/8-11 x 1 1/2	4
5	D62458	Lockwasher 5/8	4
6	D44002	Actuator Mounting Bar	2
7	D73060SJH	27k Helical Rotary Actuator	1
8	D62105	Lockwasher ½	10
9	D72239	Bolt HHCS ½-13 x 2 ¾	6
10	D62405	Bolt HHCS ½-13 x 2	4





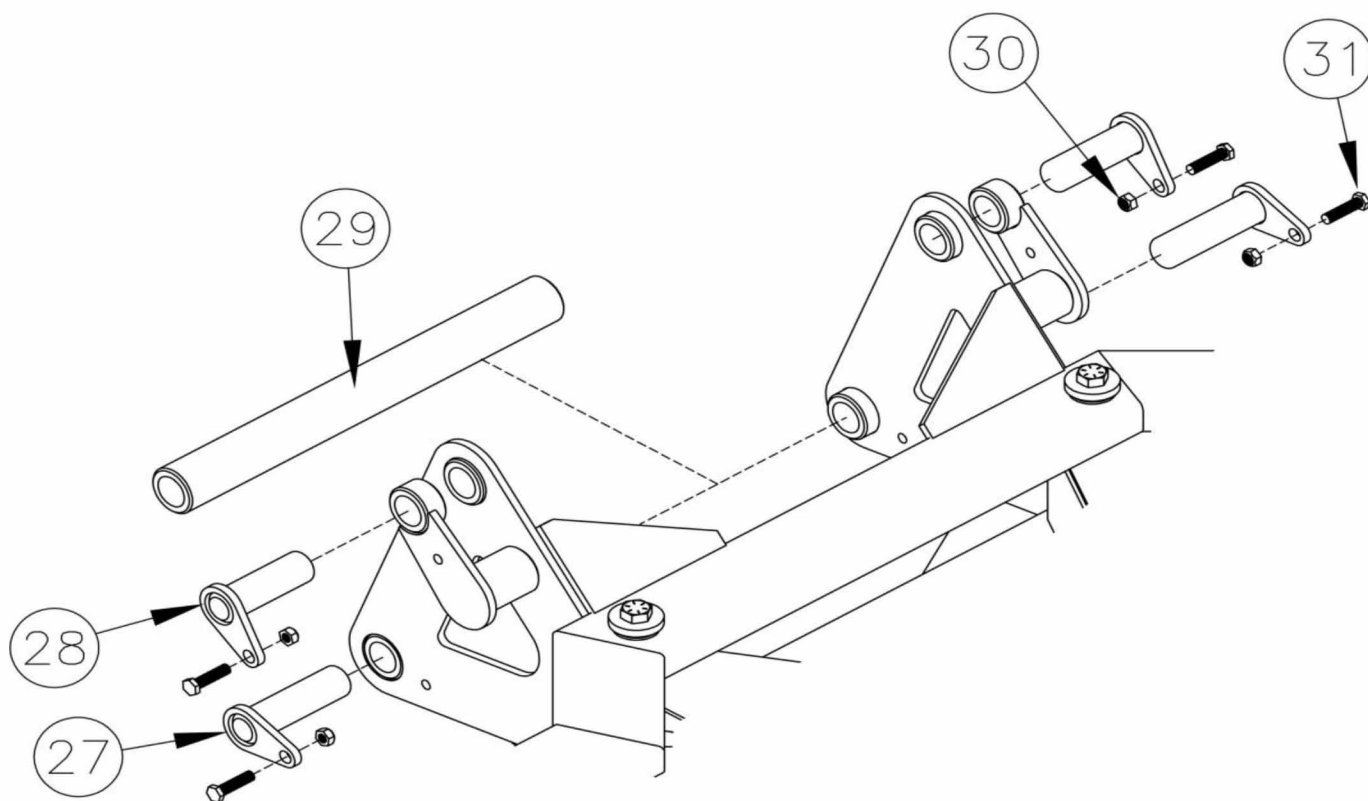
# Exploded Parts View – Driver & Idler Arm Portion



11	D55002	LH Driver Arm Weldment	1
12	D55004	Idler Arm Weldment	2
13	D63238-9	External O-ring	2
14	D73008	Retaining Disc	2
15	D62006	FHCS ½-13 x 1 ¼	2
16	D55001	Idler Arm Lug Bracket Weldment	2
17	D62030	Locknut 5/16-18	2
18	D69434	Pin Weldment x 2 7/16	2
19	D62028	Bolt HHCS 5/16-18 x 1 ¼	2
20	D55003	RH Driver Arm Weldment	1
21	D62105	Lockwasher ½	6
22	CC3300	Bolt HHCS ½-13 x 1 ½	4
23	D77159	Bolt HHCS ½-13 x 1	2
24	D72108	Bushing – Steel, 1" ID x 1/2	12



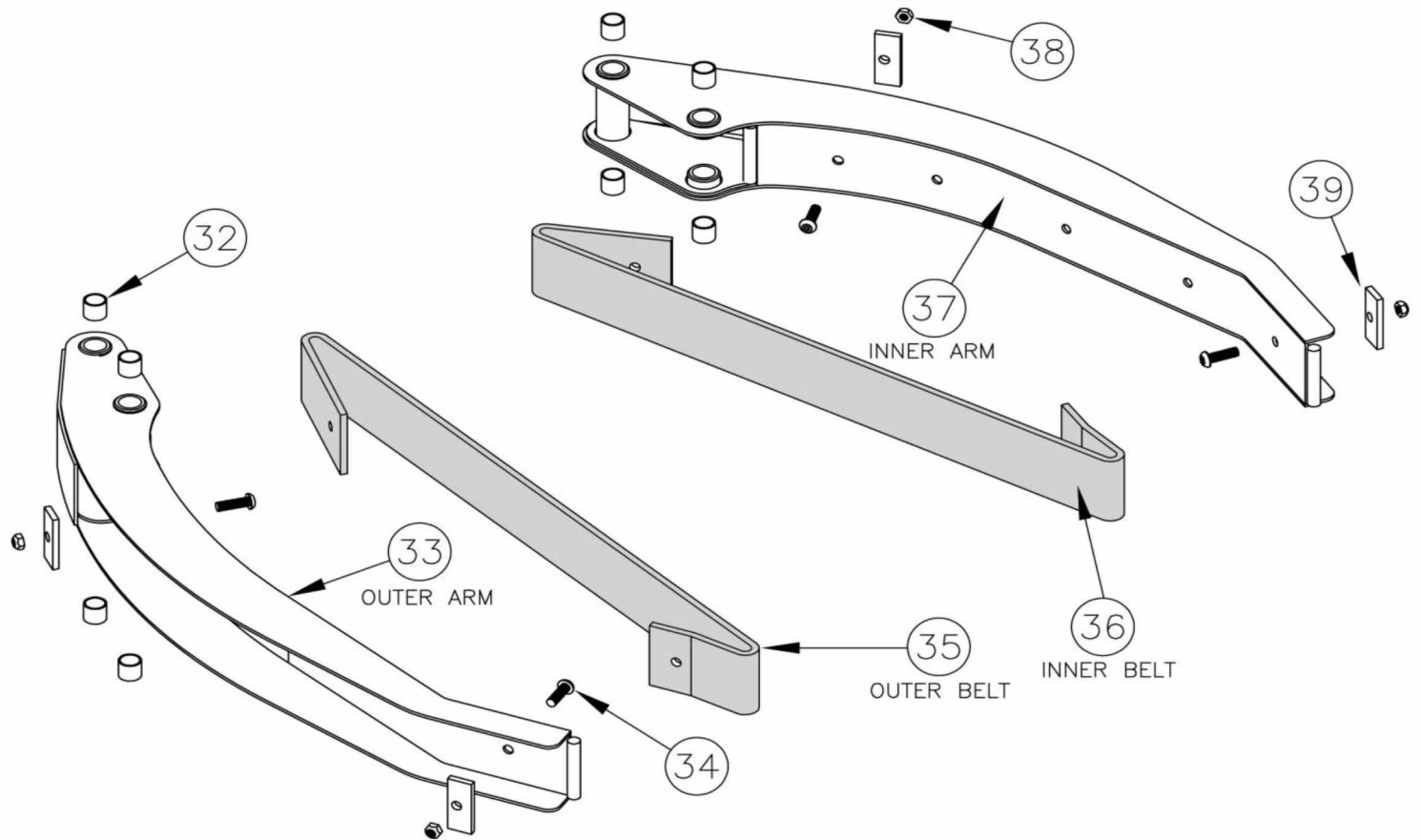
## Exploded Parts View – Latch Portion



27	D55013	Pin Weldment x 3.68	2
28	D55014	Pin Weldment x 2.93	2
29	D55010	Spacer Tube	1
30	D62030	Locknut 5/16-18	4
31	D62028	Bolt 5/16-18 x 1 1/4	4



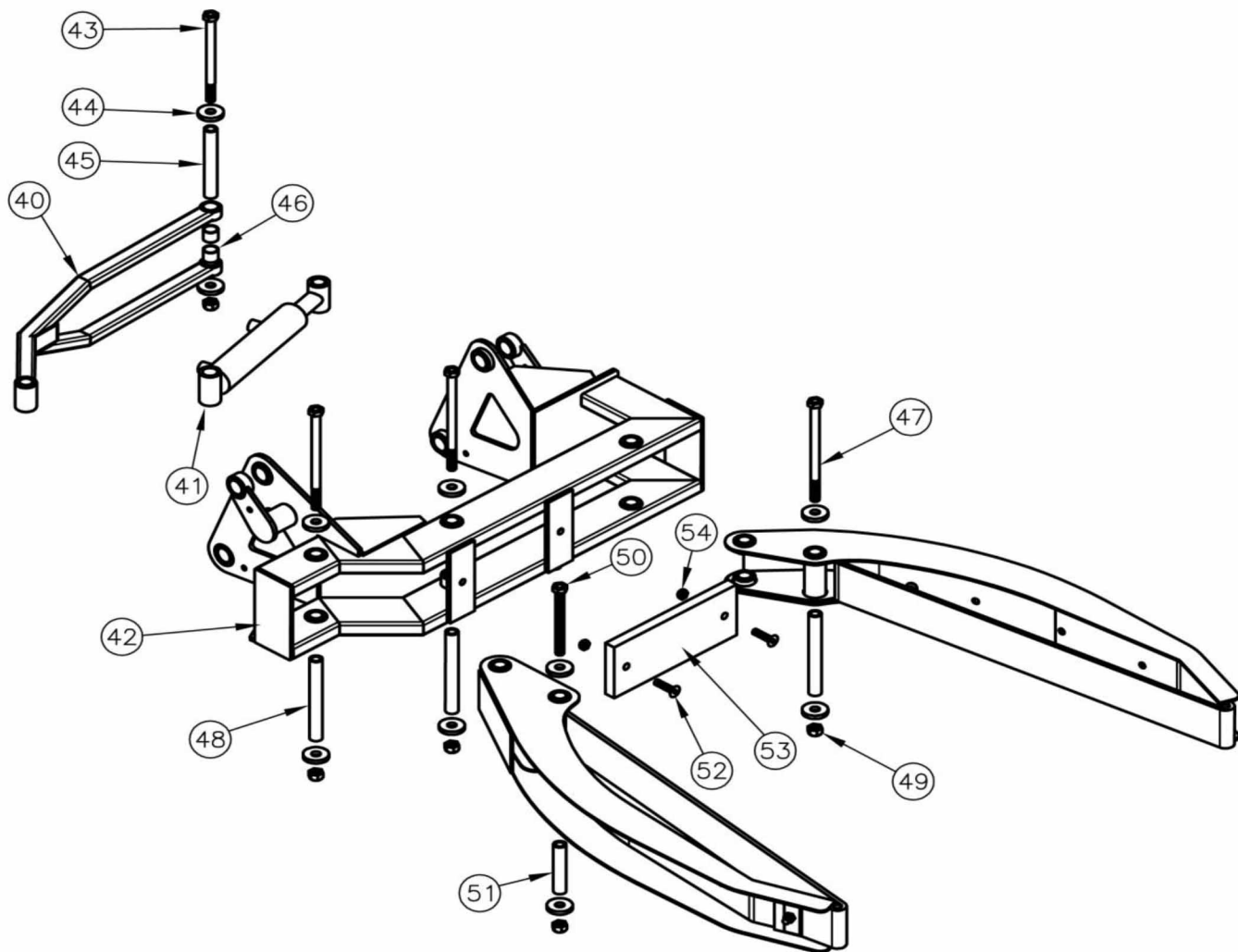
## Exploded Parts View – Gripper Arm Portion



32	D72244	Bushing – Self Lubricated 3/4 x 3/4	16
33	D55007	Outer Gripper Arm Weldment	2
34	D72033	Bolt BHCS 3/8-16 x 1 1/4	8
35	D55050	Outer Belt	2
36	D55048	Inner Belt	2
37	D55008	Inner Gripper Arm Weldment	2
38	D62080	Locknut 3/8-16	8
39	DC4285	Belt Lockdown Plate	8



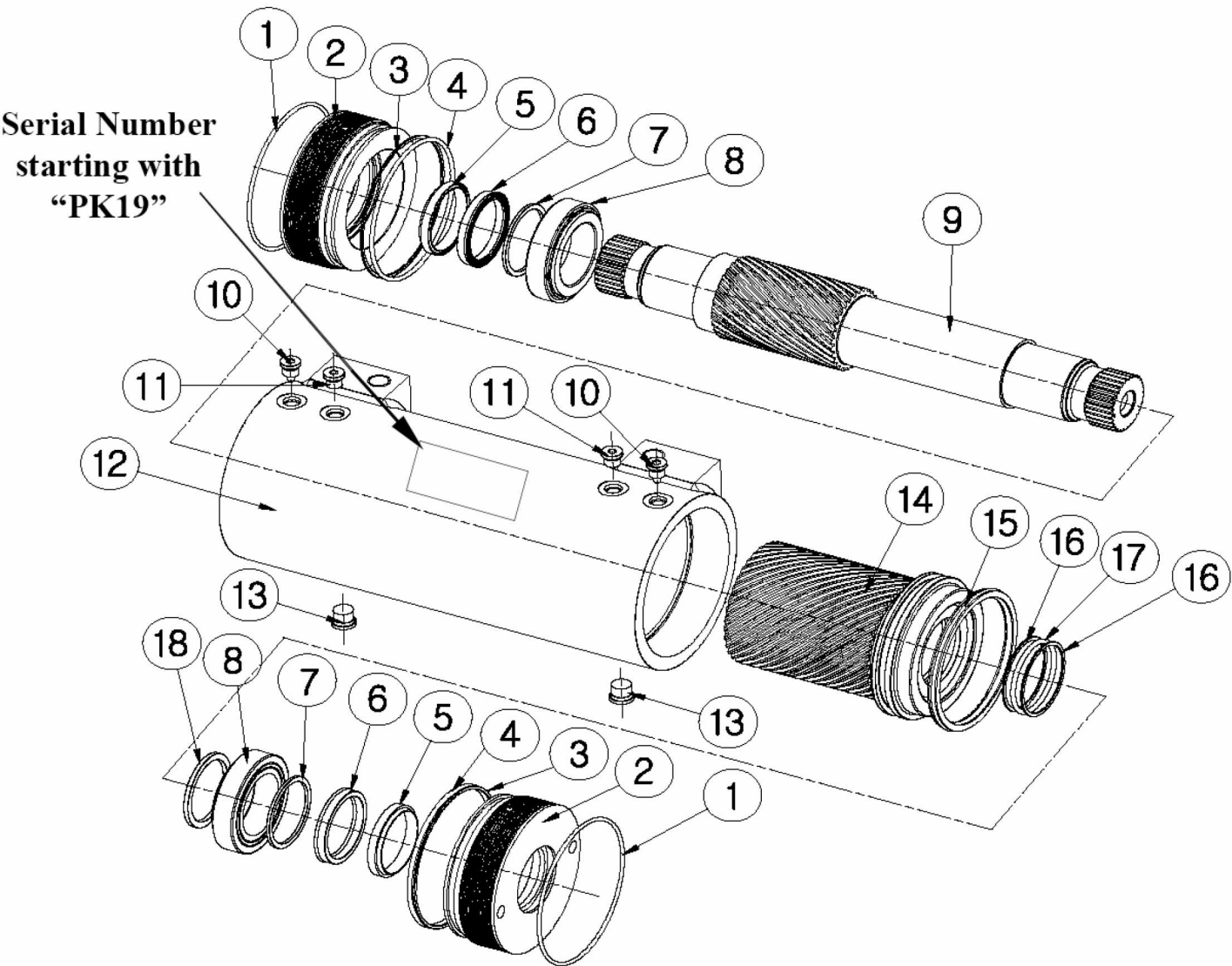
# Exploded Parts View – Hydraulic Fittings



40	D55006	Crosslink Weldment	2
41	D55009	Cylinder	2
42	D55055	Faceplate Weldment-single	1
43	D72276	Bolt HHCS ½-13 x 6 ½	2
44	D44020	Retaining Disc	20
45	D55012	Hollow Pin x 5 ¼	2
46	D72244	Bushing – Self Lubricated 3/4 x 3/4	8
47	D62487	Bolt HHCS ½-13 x 7 ½	6
48	D55011	Hollow Pin x 6 ¼	6
49	D62081	Locknut ½-13	10
50	D62421	Bolt HHCS ½-13 x 5	2
51	D55047	Hollow Pin x 3.68	2
52	D62420	Bolt FHCS 3/8-16 x 1 1/2	4
53	D55051	Rubber Face Pad	2
54	D62080	Locknut 3/8-16	4







Seal Kit: D73060SJH-1 includes 13 internal seals, item numbers 1, 3, 4, 5, 6, 15, 16.

Bearing Kit: D73060SJH-2 includes 2(two) bearings item number 8, 2(two) stoppers item number 7 and 1(one) spacer item number 18.

D73060SJH-3: includes 1(one) Endcap item number 2.

D73060SJH-4: includes 1(one) Actuator shaft item number 9.

The housing piece, item number 12, and the piston, item number 14 are not replaceable due to the need to mate the parts at the factory for the correct fit.





Perkins provides each finished cart lifter with ANSI-specified caution labels. They are clearly placed directly on the machine for easy viewing by the operators.

Should the cart lifter ever be re-painted, or if the labels are damaged beyond recognition, it is advised to replace the labels immediately to help keep your crew safe.



OHSA always requires these labels to be in clear sight on the machine.

Responsibility to maintain proper caution and warning labels is the responsibility of the end-user.





You should make sure that all pressure is bled/released from the hydraulic or pneumatic system; for some systems it may be possible to work on a part of the system by using line-breaking or blanking procedures. Never loosen or tighten a hydraulic connection when the system is under pressure. The connection could fail catastrophically and cause an injection injury and/or damage to property. Inspect hoses regularly for wear then replace hoses before leaks can develop. Hydraulics systems should look clean and dry. You can typically see leaks where the machine is collecting dirt and debris that is sticking to the oil. Look for wet-looking areas that are collecting dirt. Check for abraded/scuffed hoses, loose or damaged fittings, or worn out seals, or other physical damage that may have led to creating the leak.



 	<p><b>⚠ CAUTION</b></p> <p>Pinch point hazard. Keep hands clear. Worker can be injured by moving parts.</p> <p>Skin injection hazard. Protect your hands &amp; body from high pressure fluids. Relieve pressure before servicing. Do not check for leaks with your bare hands.</p>
<p>Compatible with ANSI Z245.60 type containers only.</p> <p>Cycle time must be 3-4 seconds up / 3-4 seconds down.</p> <p>Faster operation can cause damage and injury.</p>	

Label # D72589

 	<p><b>⚠ ATENCIÓN</b></p> <p>Punta Peligrosa. Mantenga las manos alejadas. El trabajador puede lesionarse moviendo partes.</p> <p>Riesgo de inyección cutánea. Proteja las manos y el cuerpo de líquidos en alta presión. Purgue la presión antes de realizar cualquier servicio. No busque fugas usando sus manos.</p>
<p>Compatible con ANSI Z245.60 solo contenedores de tipo.</p> <p>El tiempo del ciclo debe ser 3-4 segundos arriba / 3-4 segundos abajo.</p> <p>Una operación más rápida puede causar daños y lesiones.</p>	

Label # D72590

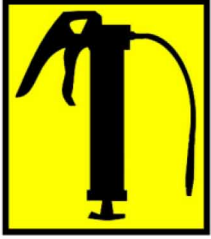
Dress appropriately for work with pants and sleeves that are not too long or too loose. Shirts should be fitted or tucked in. Avoid wearing loose and dangling jewelry. Tie back long hair and tuck braids and ponytails behind you or into your clothing. Wear the appropriate, well-fitting gloves for your job.

Look for possible pinch points before you start a task. Take the time to plan out your actions and decide on the necessary steps to work safely. Read and follow warning signs posted on equipment.

Machinery can pose a hazard with moving parts, conveyors, rollers, and rotating shafts. NEVER reach into a moving machine. Turn equipment off and use lockout/tagout procedures before adjusting, clearing a jam, repairing, or servicing a machine.



## NOTICE



**Grease all zerks on a weekly basis to maintain warranty.**

**Re-grease after power washing.**

**Please read the manual prior to operating or adjusting this machine for important information.**

Maintaining the lifter is vital to ensure proper operation of the equipment and for warranty to be valid. Inspection of the lifter is also important to make sure there are no loose parts and that the lifter is properly grease. Not inspecting or maintaining the machine regularly can pose a hazard of parts coming loose, parts not moving properly or wear items to become too worn to not move properly.



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