



Installation & Operational Manual

Model CWL7000-60

Cart Washing Lifter



Perkins Manufacturing Company
Creators of the TuckAway® Cart Lifter
www.perkinsmfg.com

800-882-5292

Revised:4/30/21
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CWL7000-60 Lifter Specifications

Cart Compatibility	ANSI Type G up to 96 gal (Empty) Front End Load Containers 2 – 8 Yards (Empty)
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	4 gpm (Residential Lifter) 8 gpm (Fork Lifter)
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)	Designed for 40" trailer or truck bed height
Approximate Unit Weight (not counting packaging)	2500 lbs
Hydraulic Package	None Provided, Sold Separately
Bearings	Ball Joint Swivel Bearing
Finish	Powder-Coated
Warranty	1 Year***

Perkins regularly makes product improvements. Specifications are subject to change without notice.

* 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.

*** See Warranty page for full details of coverage

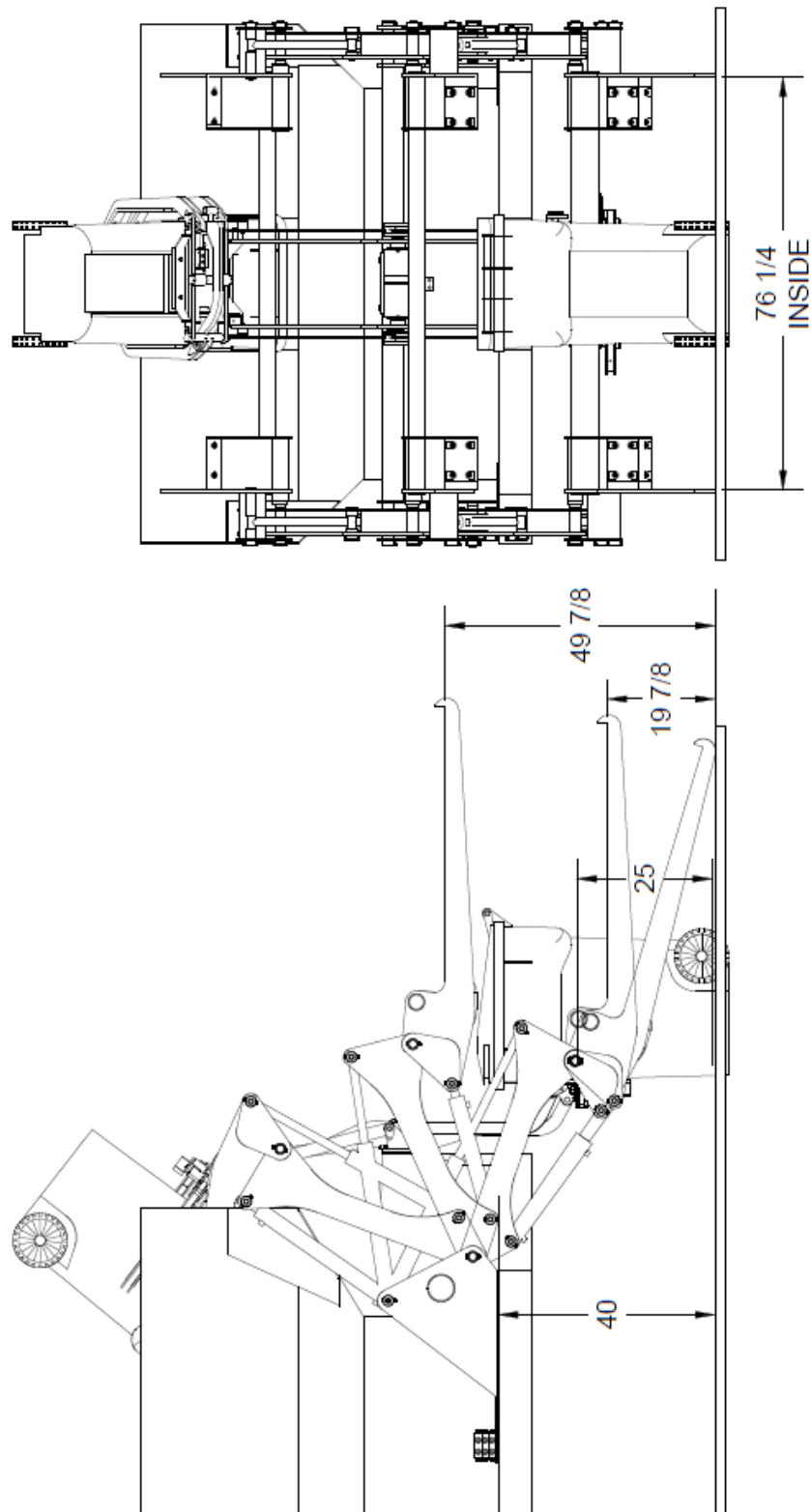


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Overall Dimensions



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Glossary of Terms

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.



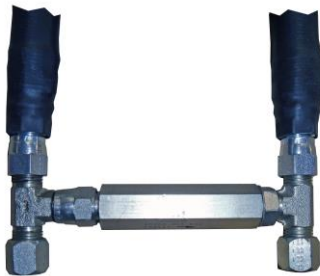
ANSI Type D Carts (Diamond-Type)



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 Pressure Relief



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.



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Installation Safety

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.
- ✧ If there are any questions about the proper installation or use of the cart lifter not covered in the manual, it is recommended to call Perkins at 800-882-5292.



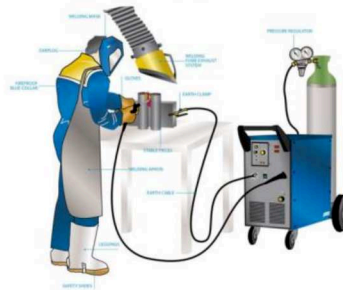
Please be aware of the risks of working with welding equipment and consumables. Always use safety protection equipment. The sparks may ignite fire, always clean the area from flammable material or flammable chemicals, do not weld close to gas lines or on top of electrical cords or installations. Disconnect battery cables from the battery and make sure the vehicle is perfectly grounded prior to attempt to do any weld. Always weld in a ventilated area.



WHEN WELDING, WEAR APPROPRIATE EYE AND SKIN PROTECTION. WELDING LIGHT CAN BLIND. WELDING LIGHT CAN SUNBURN THE SKIN. LONG TERM EXPOSURE TO WELDING LIGHT CAN CAUSE CANCERS. ALWAYS WEAR PPE WHEN WELDING. PROPER PPE SHOULD ALSO BE WORN BY ANYONE IN THE THE WORK ZONE WHO MIGHT ALSO BE EXPOSED.



Correct and safe electric welding station



HYDRAULIC SYSTEMS CAN LEAK OUT HIGH PRESSURE WHICH CAN CAUSE SERIOUS INJURY, GANGRENE OR DEATH. DO NOT CHECK FOR LEAKS WITH YOUR BARE HANDS AND AVOID CONTACT WITH LEAKING OIL STREAMS.

HYDRAULIC OIL CAN ENTER THE BLOODSTREAM. SEEK MEDICAL ATTENTION IMMEDIATELY IF YOUR SKIN IS PUNCTURED BY HYDRAULIC OIL.

HYDRAULIC SYSTEMS CAN BECOME HOT (GENERALLY UP TO 170-180 DEG. F.) TO AVOID BURNS, DO NOT TOUCH VALVES, ACTUATORS, CYLINDERS, AND OTHER HOT COMPONENTS, EVEN AFTER THE SYSTEM IS SHUT OFF IT WILL REMAIN HOT AND TAKE TIME TO COOL DOWN.

ALWAYS TURN OFF A SYSTEM BEFORE SERVICING IT. DEPRESSURIZE THE CIRCUIT BY ACTIVATING THE CONTROLS WITH THE SYSTEM OFF TO RELIEVE ANY BUILT UP PRESSURE.

NEVER WORK UNDER A RAISED LOAD. RAISED EQUIPMENT CAN SUDDENLY FALL WHEN A VALVE OR LINE IS OPENED (LIKE A MOUSETRAP). IF THE EQUIPMENT MUST BE SERVICED IN THE RAISED POSITION, SECURE THE EQUIPMENT WITH CHAIN OR STRAP TO HOLD IT UP SAFETY.



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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.

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. If 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, if 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 4 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 stopwatch 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. 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 $\frac{1}{4}$ turn at a time until the down direction is smooth and under control.



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

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

Adj. High-Flow Control Valve: D63575P

Its purpose is to restrict oil coming out of the cylinders when the commercial 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.

If the forks rotate down too quickly, try turning this valve in clockwise $\frac{1}{4}$ turn at a time until the down direction is smooth and under control.



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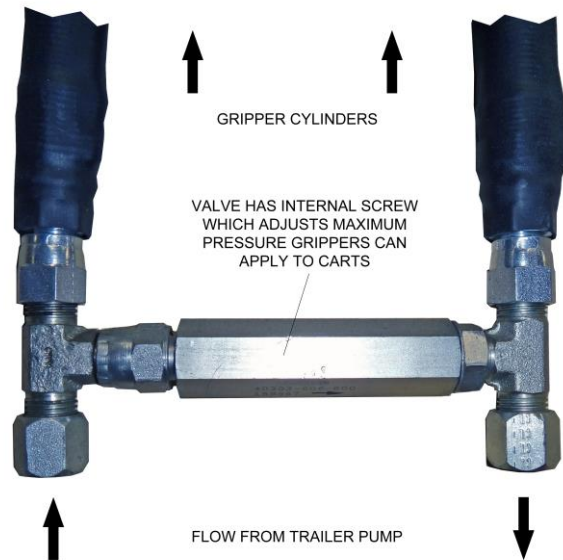
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Adjusting the Maximum Gripper Pressure

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. The standard preset is 900 psi of pressure.

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.



15 gpm Splitter Combiner, D63595-15

Non-Adjustable.

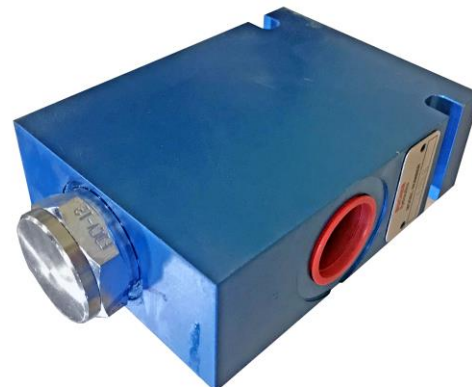
With system off and depressurized, you can remove the cartridge safely. Clean it to remove any build-up and inspect it for wear or damage. Re-insert and try the system again, or replace cartridge if damage is evident.



15 gpm Splitter Combiner, D63595-24

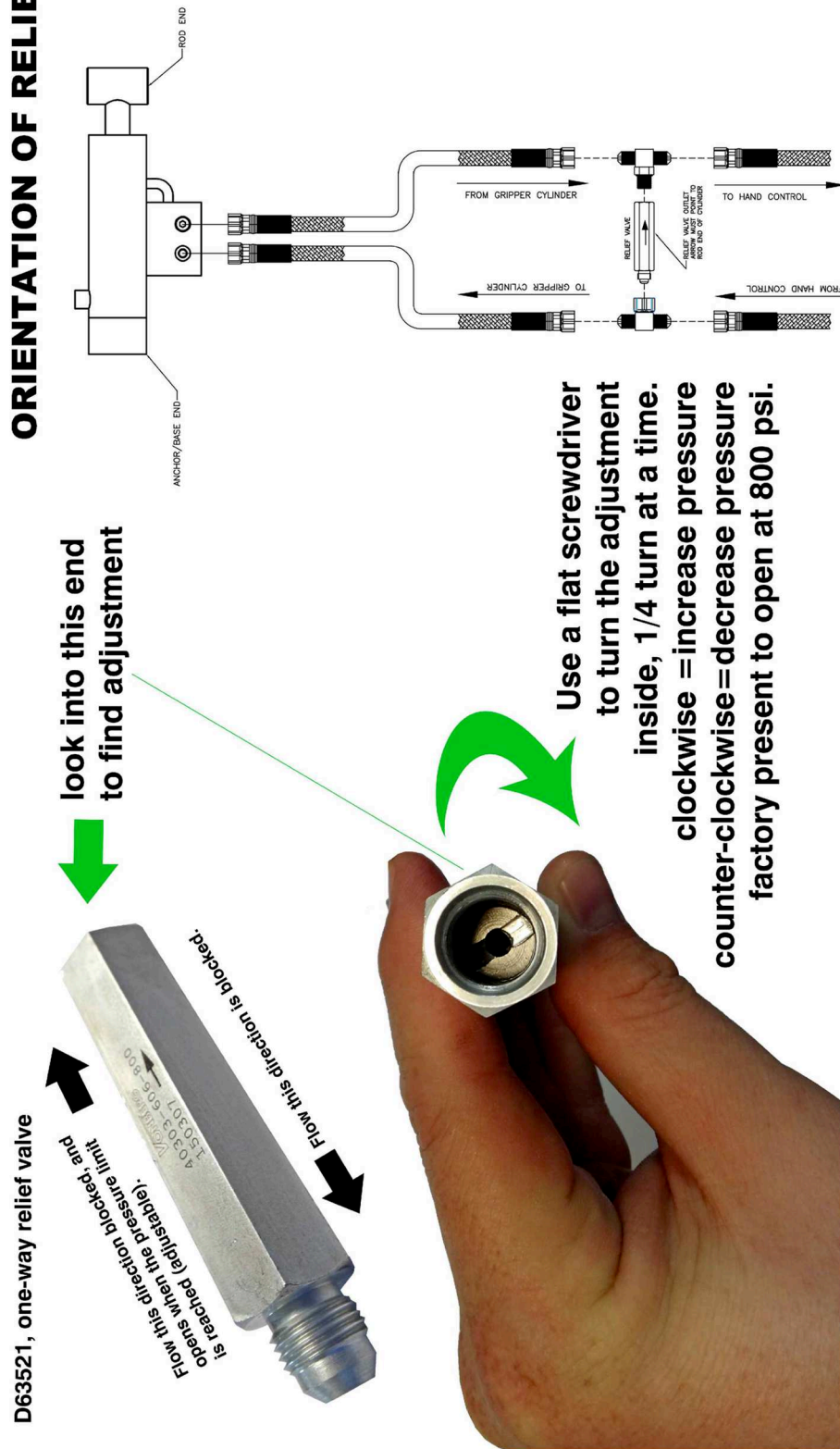
Non-Adjustable.

With system off and depressurized, you can remove the cartridge safely. Clean it to remove any build-up and inspect it for wear or damage. Re-insert and try the system again, or replace cartridge if damage is evident.





ORIENTATION OF RELIEF



Servicing the PerkinsHKS Rotary Actuator

PerkinsHKS27k Actuator: D73060HKS

Common Parts: Seal Kit: D73060HKS-1 Bearing Ring (x1) #D73060hks-3

DO NOT ORDER SPARE PARTS FOR ANY ACTUATOR WITHOUT CALLING PERKINS WITH A POSITIVE ID VIA SERIAL #, LCOATED ON THE ACTUATOR BODY.

Actuator Shaft : D73060hks-2

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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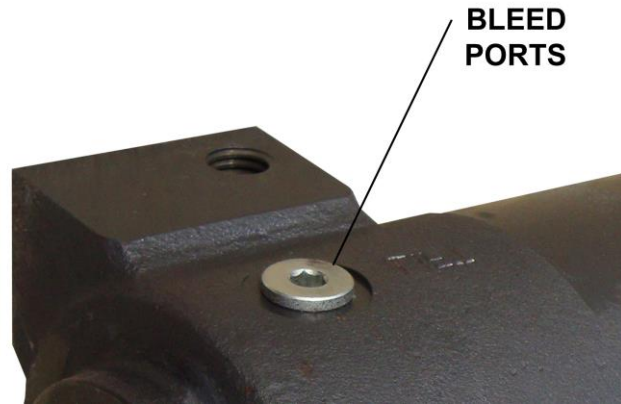
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Bleeding air from the Actuator

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.

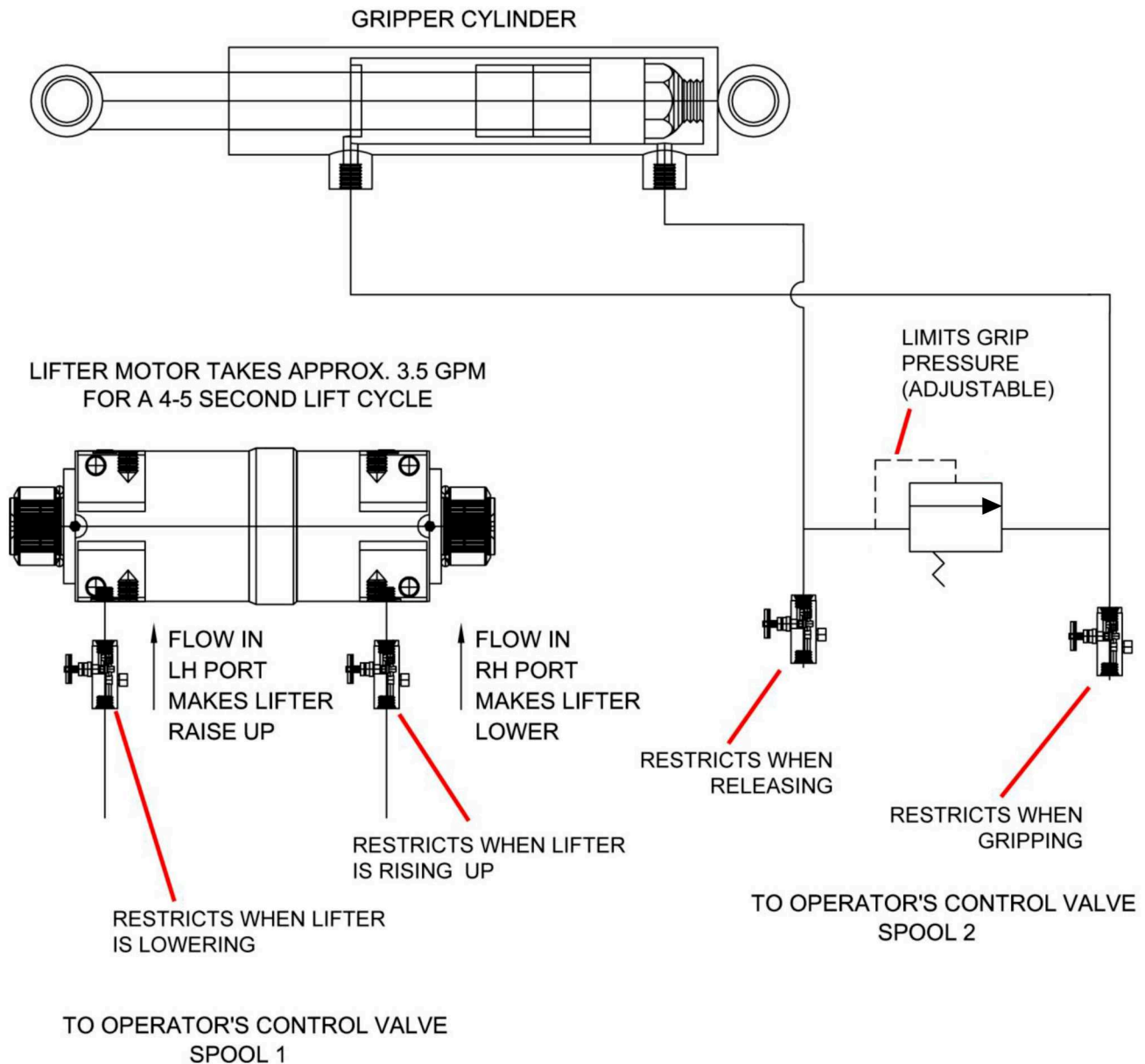


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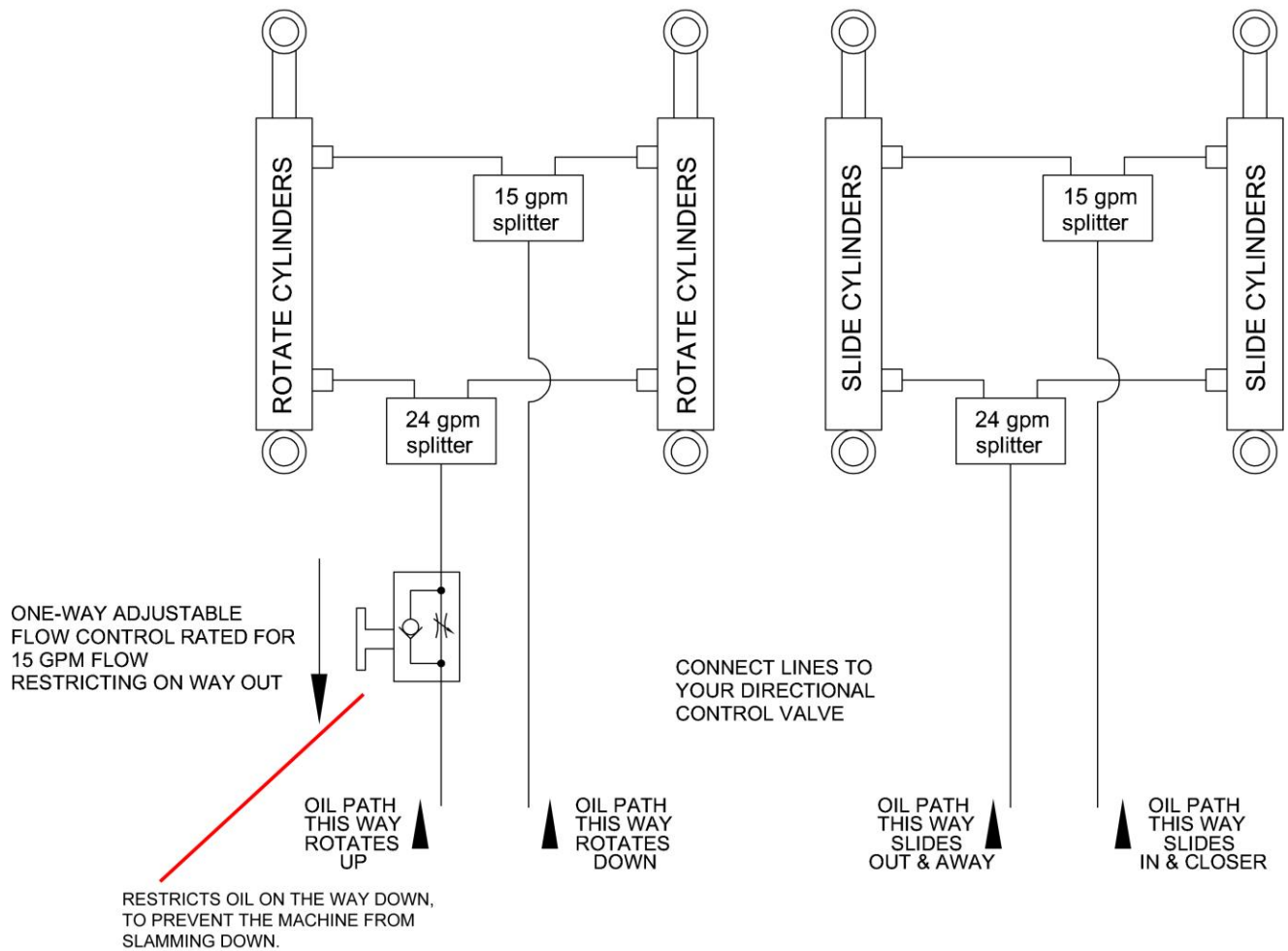
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Perkins Single Lifter Hydraulics Schematic (Residential)



Perkins Single Lifter Hydraulics Schematic (Commercial)

FOR 13GPM FLOW (1350 RPM)



Operating the Lifter

Operating Instructions (Residential Grabber Lifter)

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.

Operating Instructions (Commercial Fork Lifter)

The recommended cycle is 7-10 seconds to travel up and 7-10 seconds to travel down. This cycle time is based on the safe and smooth movement without risking 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: Slide the forks up or down to match the pockets of the FL container.

Step 2: Slide the forks into the pockets all the way until the container is up against the lifter bumpers.

Step 3: Stop and look to make sure no one is in the area, operate the valve controlling the slide. Slide the container all the way up.



Step 4: Use the other lever to rotate the bin to the wash position. Begin wash cycle.

Step 5: When wash is complete, check to make sure the area is clear before lowering the lifter down by rotation.

Step 6: When rotated down fully, slide the lifter back down until the container rests on the ground.

Step 7: Remove the container and repeat the process 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, both pedestrians and other vehicles. Always be aware of your surroundings and watch for hazards. Avoid use of headphones that may prevent the hearing of oncoming vehicles. Be mindful of overhead obstructions including power lines or trees.

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. Do not ride on the product. Doing so can cause serious damage or injury and will void the warranty.

Speeding up the lifter beyond the recommended cycle time 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. Keep your hands on the controls and step back while the machine is operation. Always keep your eyes focused on the lifter while you are using it, and stop motion immediately if a person or vehicle enters the working area, or if the lifter malfunctions. Be prepared to stop the machine or turn off the truck in the event of an emergency.

If a hydraulic leak develops, turn off the system immediately. Pressurized oil leaks can pierce the skin and cause infection or death. Do not check for leaks with your bare hands. If you see a leak stop the machine. If a fitting is loose, tighten it and see if you can return to work. If not, seek qualified assistance in repairing the leak.

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!

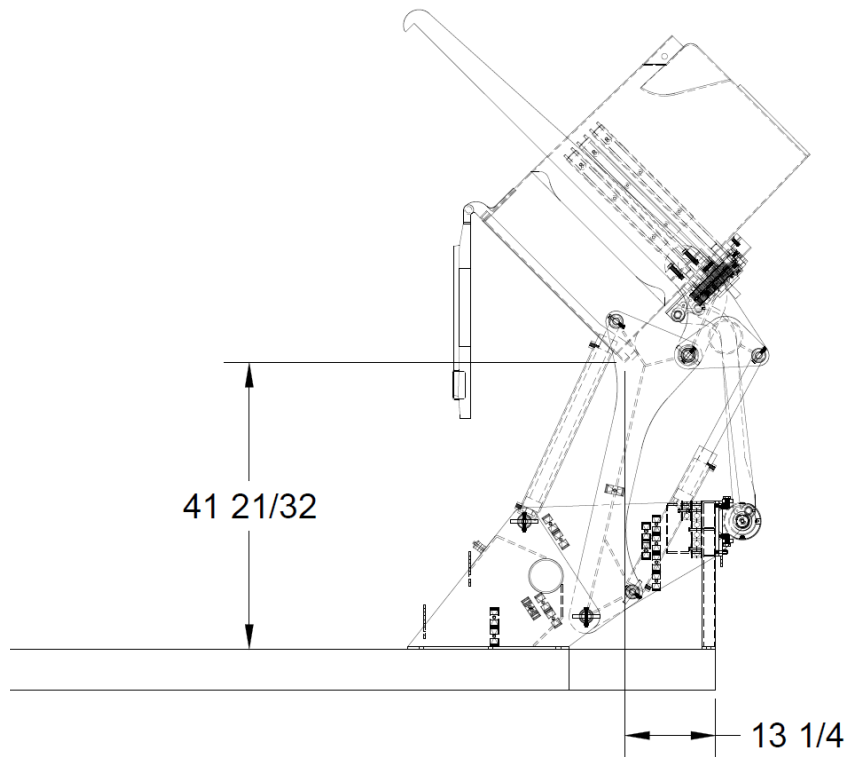
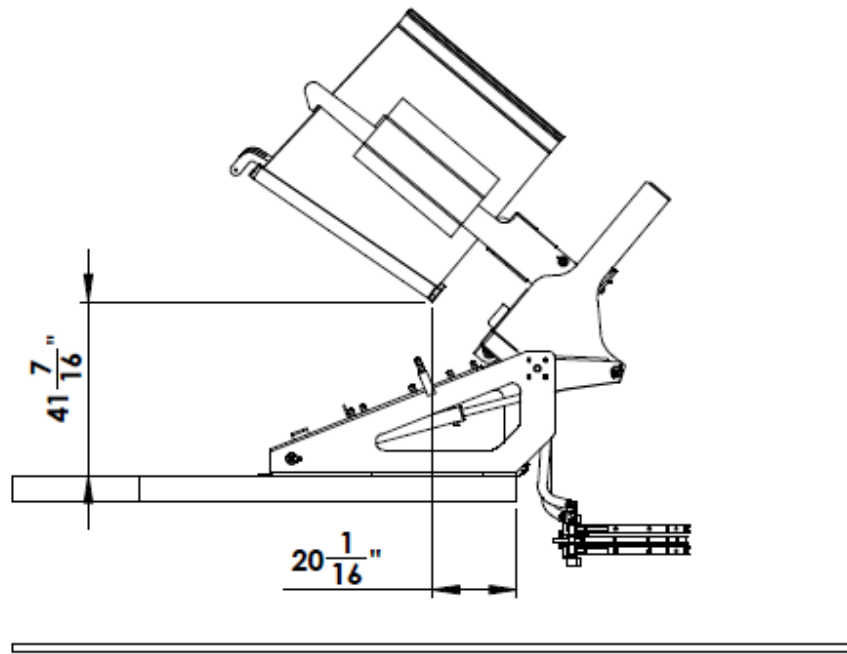
Make sure all hardware is firmly tightened.

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.

There is a wide variety of carts, some of which do not meet ANSI standards. Customers may experience engagement issues with some particular brands of carts and in circumstances like these please call Perkins at 800-882-5292 to discuss the problem and Perkins will advise the best solution to meet your needs.





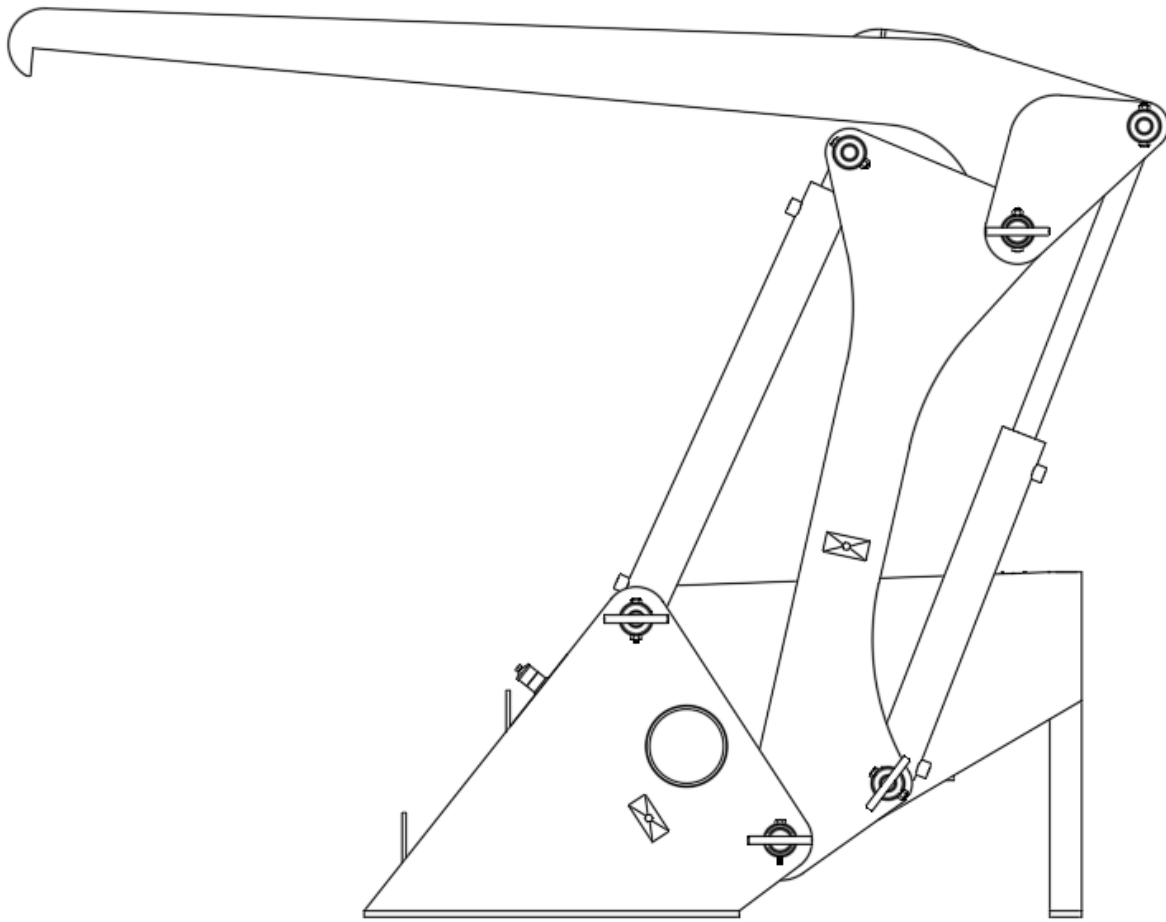
Dimensions as shown are for reference only. Actual dimensions can vary depending on the size and type of bin/cart that is used.



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Position shown is new feature in Perkins CWL7000. Arms can be positioned parallel to truck to avoid any obstructions that may occur when driving with other cart washers.



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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 running the lifter up and down several times. Excess air will work itself out in most cases after a few cycles.

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, try 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 output of the pump (and rpm of the engine). Use a flow meter to make sure the residential lifter receives approximately 4 gpm and the commercial lifter 8 gpm. Adjust flow as needed following instructions in the manual that came with your PTO/control valve.

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 if using a DC electric system, 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.

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 ¼ turn adjustments until the lifter returns to ground level smoothly.

Forks slam down too quickly

Check that the adjustable flow control is installed and facing the correct way. It should be restricting oil that exits the base end of the rotation cylinders. This prevents free-fall, allowing the down motion to be controlled and smooth. Turn the adj. flow control in to slow the motion. If the up direction gets slow instead of the down motion, then the valve is facing the wrong way and needs to be flipped.



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.

Once you have the number, please call Perkins Manufacturing at 800-882-5292 for additional instructions.



Write your serial # below:

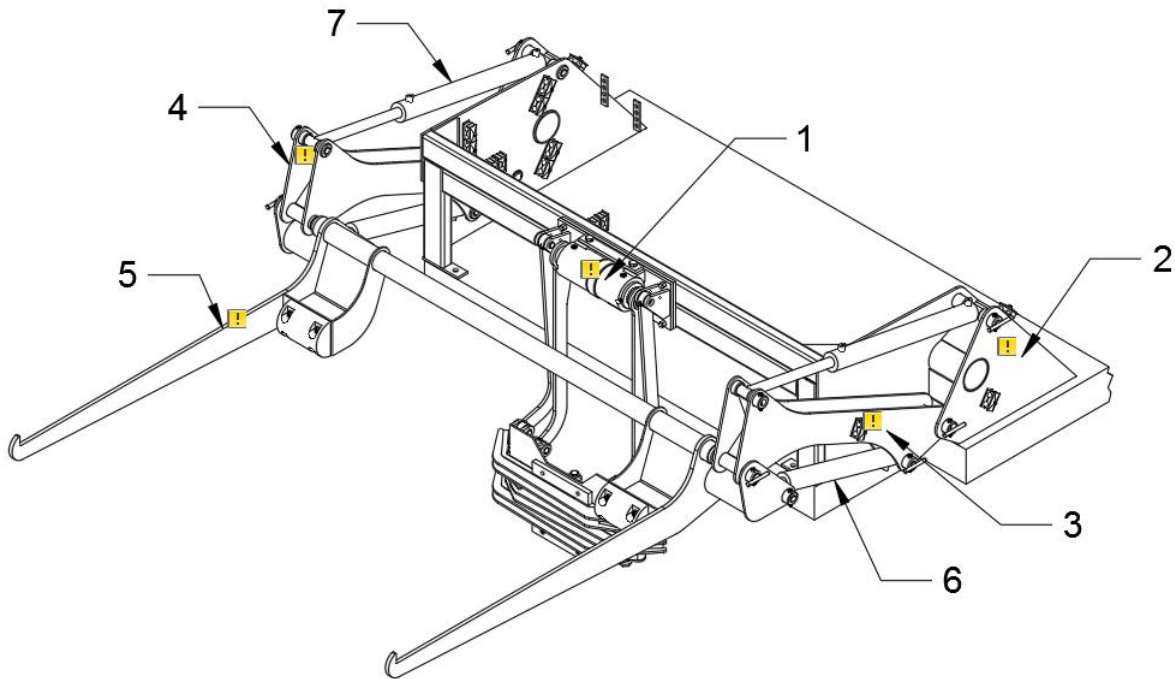


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Exploded Parts View – OVERALL ASSEMBLY



1	D6098B-60-27K	SPECIAL FOLDING ARM AUTO-LIFTER	1
2	KB1930	CART WASHER FRAME WELDMENT	1
3	KB1951	RIGHT MASTER ARM WELDMENT	1
4	KB1962	LEFT MASTER ARM WELDMENT	1
5	KB1963	FORK ARM WELDMENT	1
6	KB1981	CYLINDER 2.5 X 18	2
*	KB1982	CYLINDER 2.5 X 24	2

*NOT SHOWN

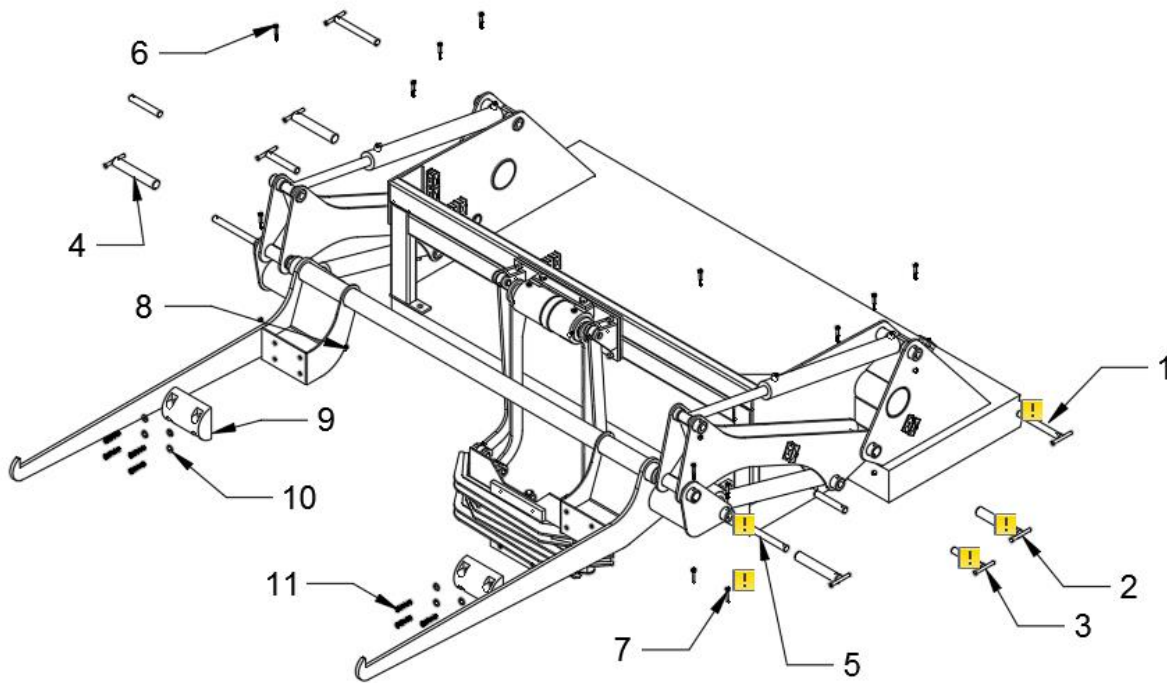


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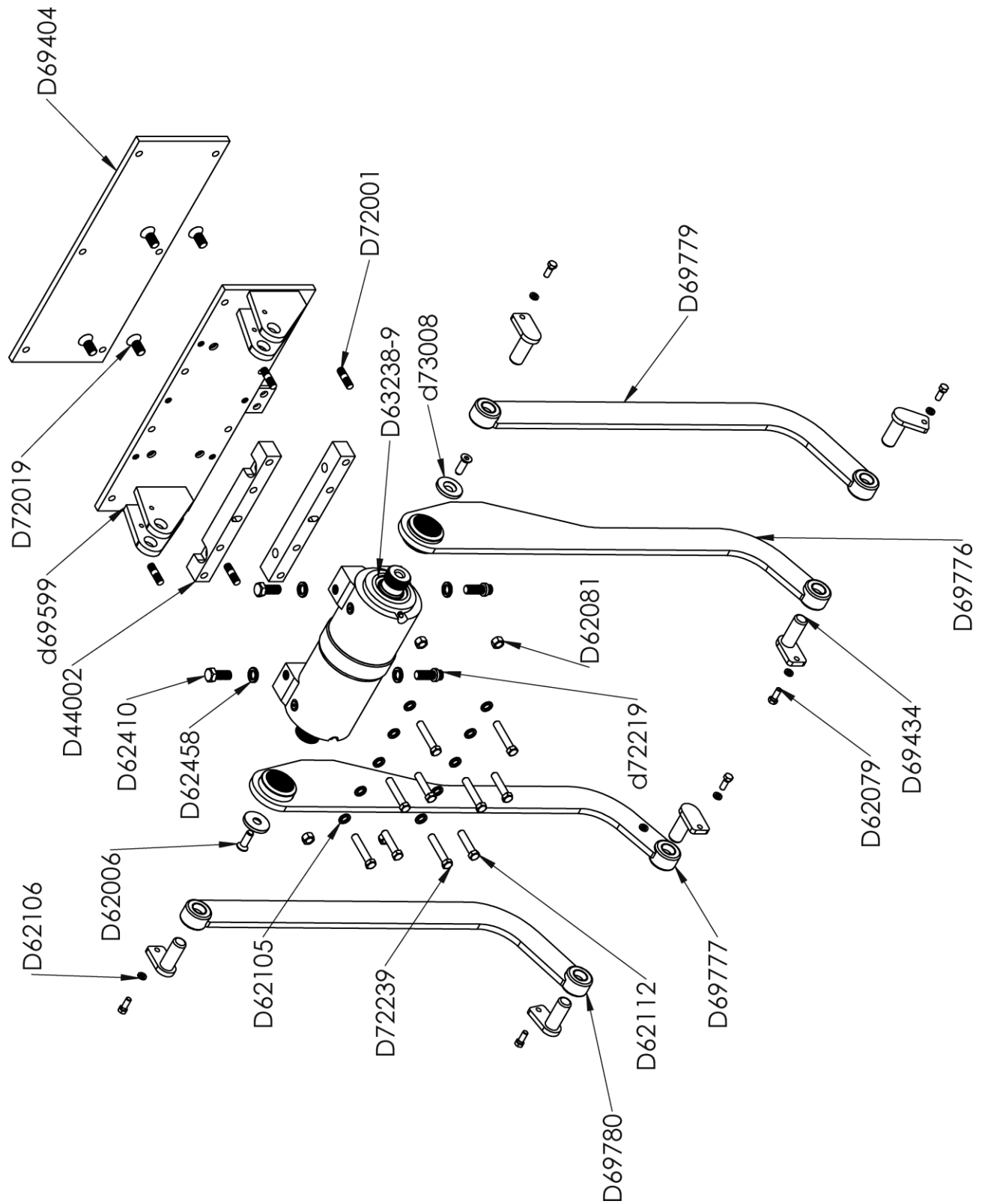
Exploded Parts View – HARDWARE



1	KB1989	TOP T-PIN WELDMENT	2
2	KB1990	BOTTOM T-PIN WELDMENT	2
3	KB1991	KICK BAR T-PIN WELDMENT	4
4	KB1992	FORK ARM T-PIN WELDMENT	2
5	KB1970	FORK ARM PIVOT ROD	2
6	D62075	BOLT HHCS 3/8-16 X 2 ½ GR8	12
7	D62080	LOCKNUT 3/8-16 GR8	12
8	D62081	LOCKNUT ½-13 GR8	8
9	D67576	RUBBER TRUCK BUMPER	2
10	D62008	SAE FLAT WASHER ½ X 1.06 OD	16
11	D72042	BOLT HHCS ½-13 X 2 ½ GR8	8



Exploded View – D6098b-60-SB-27k



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Parts List – D6098b-60-SB-27k

Item	Description	Qty
D44020	RETENSION DISC	2
D62006	BOLT FHCS 1/2-13 X 1 1/4 GR8; Zinc Plated	2
D62053	SPLIT LOCKWASHER 5/16" ZINC PLATED	2
D62079	BOLT HHCS 3/8-16 X 1 GR8 ZINC PLATED	4
D62081	LOCKNUT 1/2-13 GRADE 8 ZINC PLATED	5
D62105	SPLIT LOCKWASHER 1/2" ZINC PLATED	10
D62106	SPLIT LOCKWASHER 3/8" ZINC PLATED	2
D62112	BOLT HHCS 1/2-13 x 2 1/4 Gr8, Zinc Plated	4
D62113	BOLT HHCS 5/16-18 X 3/4 GR8, Zinc Plated	2
D62410	BOLT HHCS 5/8-11 X 1 1/2 Gr 8, ZINC PLATED	2
D62420	BOLT FHCS 3/8-16 X 1 1/2 GR8, Zinc Plated	2
D62458	SPLIT LOCKWASHER 5/8" ZINC PLATED	4
D62474	LABEL-CAUTION (ENG/SPAN)	1
D63029	PLASTIC GREASE ZERK CAP	11
D63031	TEE 6MT 6MO 6MT	1
D63074	ADAPTER #6MT - #6MO	3
D63124	BULKHEAD 90 DEG ELBOW 6MT-6MT	2
D63238-9	EXTERNAL HUB SEAL O-RING	2
D63419	TEE #6MT-#6FT-#6MT	1
D63430	ADAPTER #8MT - #6MO	1
D63431	REDUCER #6FT-#8MT	1
D63521	VALVE RELIEF AUTO ARM	1
D63562	CAP #8 JIC	2
D63569	ELBOW 45 #6MO-#6MO	1
D63575	VALVE FLOW CONTROL ADJUSTABLE - 6 GPM MAX. #6 SAE PORTS *FREE FLOW ONE DIRECTION / ADJUSTABLE RESTRICTION IN OTHER DIRECTION.* RESTRICTS IN DIRECTION OF ARROW.	1
D63581	ELBOW SW 45 #6MT-#6FT	1
D63584	CAP #6 Female JIC	2
D63663	ELBOW 45 #6MO - #8MT	1
D69404	REAR MTG PLATE-D6098 REV A	1
D69434	SHORT PINLOCK WELD (REV G)	6

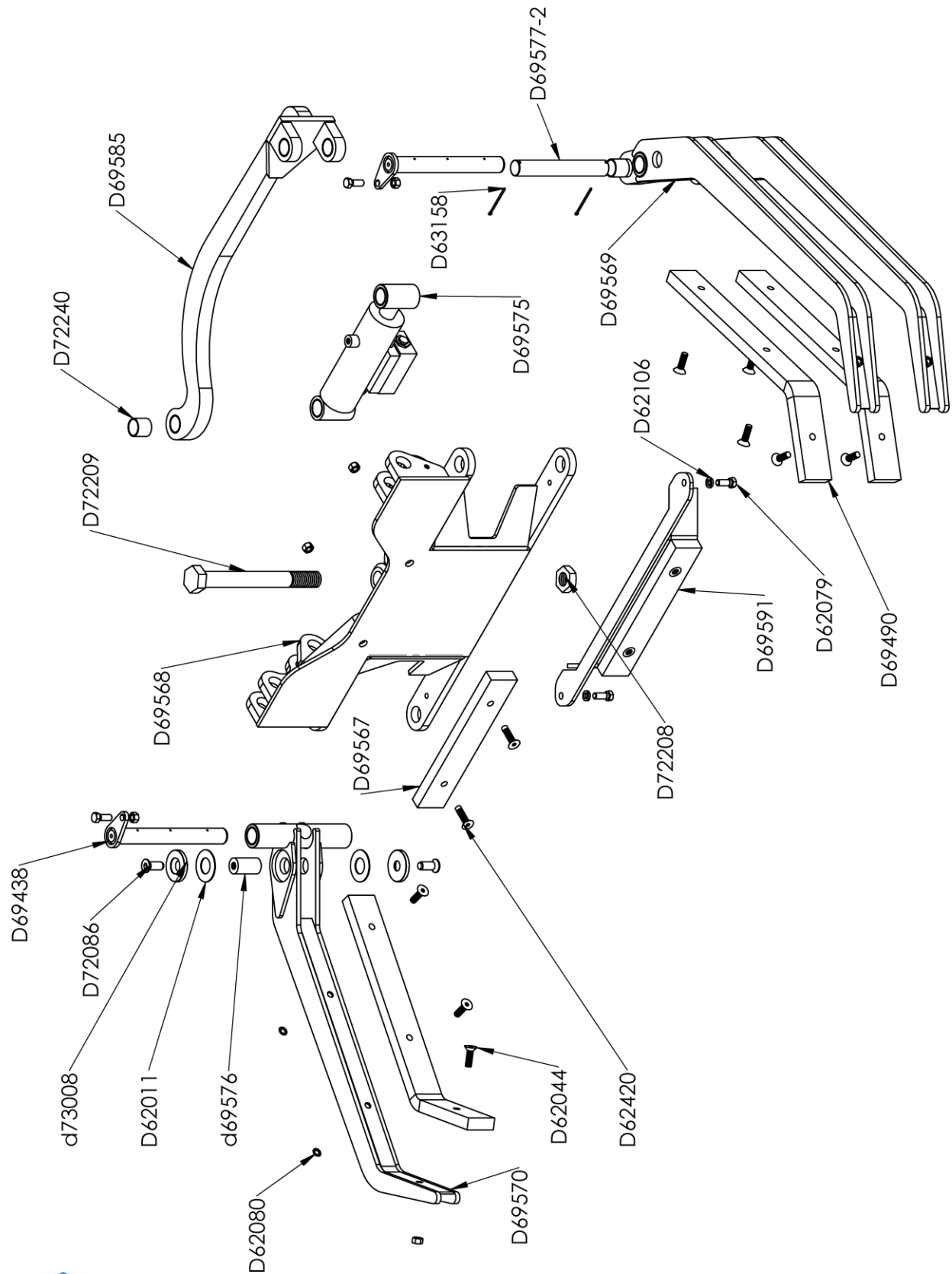


Parts List – D6098b-60-SB-27k

Item	Description	Qty
D69599	MTG PLATE WELDMENT	1
D72001	STUD 1/2-13 X 1 3/4, ZINC PLATED (R	4
D72019	BOLT FHCS 5/8-11 X 1 1/4 LG, ZINC PLATED	4
D72028	90 DEG GREASE ZERK 1/4-28	2
D72113	LABEL - PERKINS LOGO, diamond cut, 4" long x 2 1/2" high, solid color (not a gradient)	1
D72589	LABEL - "CAUTION" FOR D6220-TYPE MODELS	1
D72590	LABEL - "CAUTION" FOR D6220-TYPE MODELS - SPANISH	1
D72219	12pt Flange Bolt 5/8-11 x 1 1/2 LG, ZINC PLATED	2
D72239	BOLT HHCS 1/2-13 X 2 3/4 GR8 (zinc plate)	6
D73060SJH	27K Helical Rotary Actuator - SJH, REV A	1
Z102	Grease Zerk Str 1/4-28 515550	7
D44002	ACTUATOR BAR REV D	2
A90877-35	HOSE ASSY #6 x 35" LONG REV A W/#6 HOSE FEMALE JIC ENDS, BOTH ENDS AEROQUIP/EATON # GH681-6	2
D63004	#6 Hydraulic Hose Assy x 48" long MATCHMATE GLOBAL/EATON/AEROEQUIP #GH681-6 Standard #6 Female Swivel JIC straight ends	2
D6098-G	FOLDING ARM AUTO-LIFTER - GRIPPER ARM ASSEMBLY ONLY	1
D72631	Label - "Made in the USA"	1
D72163	LABEL - GREASE POINT, REV B	1
D69776	RH DRIVER ARM WELD. - 60	1
D69777	LH DRIVER ARM WELD. -60	1
D69779	RH IDLER ARM WELD. -60	1
D69780	LH IDLER ARM WELD. -60	1
D72498	LABEL - WARNING HYDRAULICS rev A	1



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Item	Description	Qty
D69568	NEW FACEPLATE WELDMENT REV B	1
D69569	DOUBLE RH GRIP ARM WELD	1
D69585	LINKAGE ARM WELDMENT rev D	1
D69575	HYDRAULIC CYLINDER ASSEMBLY WITH MANIFOLD & x2 PO Check CARTRIDGES REF: CC520992B 2" BORE X 3" STROKE REV C	1
D72209	BOLT HHCS 1-8 X 9, GR 8, ZINC PLATED	1
D69576	SHORT PIN	1
D62044	BOLT FHCS 3/8-16 X 1 1/4 GR8, ZINC PLATED	9
D72086	BOLT FHCS 1/2-13 X 1, GR8, ZINC PLATED	2
D73008	Actuator Flange 515583 rev E	2
D69490	Rubber Pad Rev b	3
D69570	SINGLE LH GRIP ARM WELD REV A	1
D69577-2	LONG PIN W/HOLES	1
D63158	Cotter Pin 7/64" x 2"	2
D62011	SPACER 1" ID X 2" OD 18GA, ZINC PLATED	2
D69438	Arm Pin Weld 515587 REV E	2
D72208	LOCKNUT 1-8-THIN 1/2" high, ZINC PLATED	1
D62079	BOLT HHCS 3/8-16 X 1 GR8 ZINC PLATED	4
D63201	ADAPTER #4MO-#6MT W/.063 ORIFICE	2
D69591	LOWER BUMPER ADD ON KIT	1
D69567	CENTER RUBBER STRIP	1
D62420	BOLT FHCS 3/8-16 X 1 1/2 GR8, Zinc Plated	4
D62080	LOCKNUT 3/8-16 GR 8 ZINC PLATED	11
D62106	SPLIT LOCKWASHER 3/8" ZINC PLATED	4

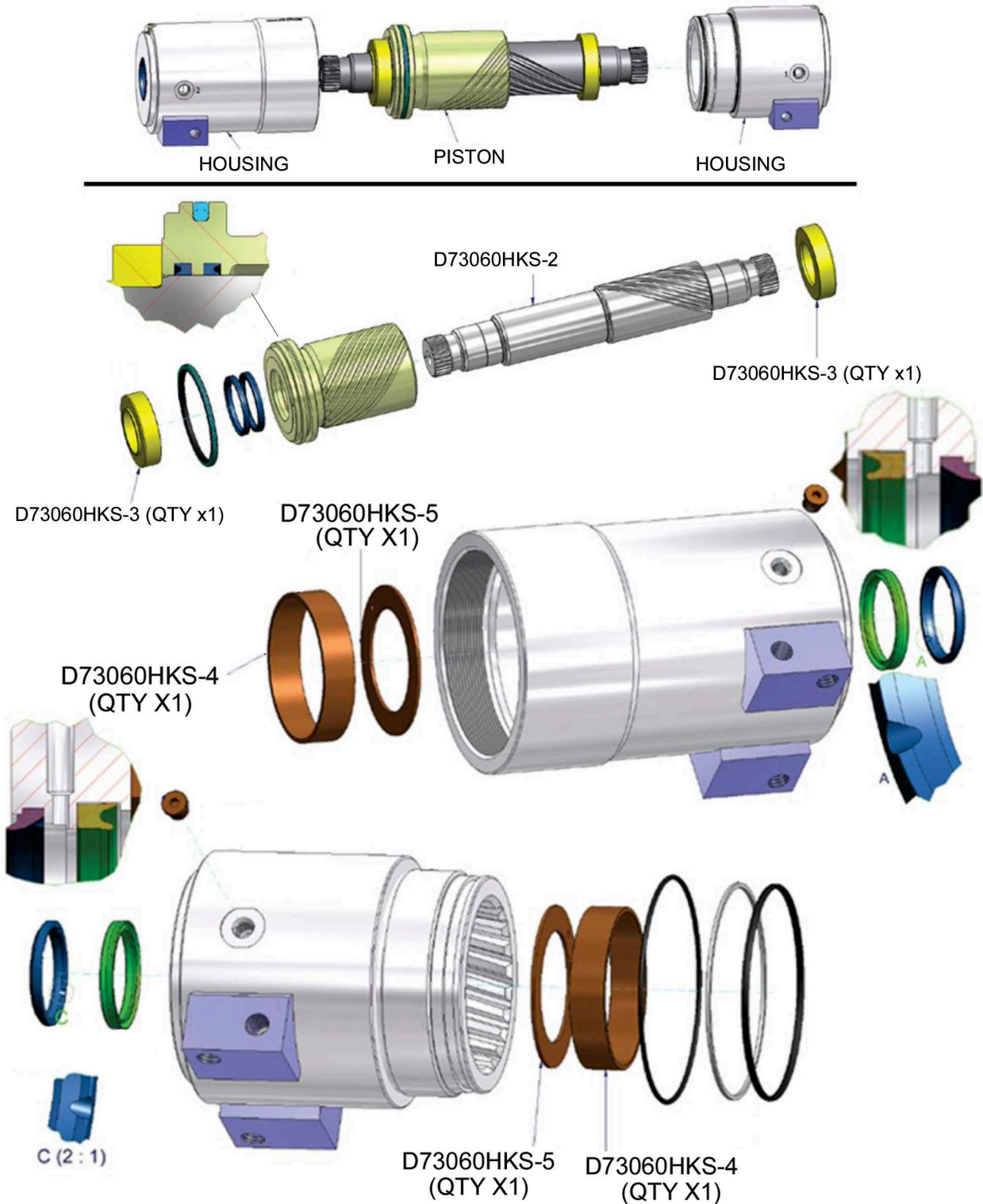


27k HKS (Current) Actuator Parts Guide

The housing and piston pieces are not replaceable due to the need to mate them at the factory.

Seals are only sold in kit form. One kit contains all the seals for one actuator.

Bearings and Bushings and Washers are sold individually.



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Protective Safety Labeling

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.







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 	⚠ CAUTION
	<p>Pinch point hazard. Keep hands clear. Worker can be injured by moving parts.</p> <p>Skin injection hazard. Protect your hands & 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. Faster operation can cause damage and injury.</p>	
<p>Perkins Manufacturing, Company 708 482 9500 Label # D72589</p>	

 	⚠ ATENCIÓN
	<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. Una operación más rápida puede causar daños y lesiones.</p>	
<p>Perkins Manufacturing, Company 708 482 9500 Label # D72590</p>	

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.

Visit www.perkinsmfg.com for important updates.

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

Perkins Manufacturing. Company 708 482 9500

Label # D72163

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 greased. 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. If any issues occur, please contact service immediately.



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⚠ CAUTION

**Pinch point
hazard.
Keep hands clear.**



⚠ ATENCIÓN

**Punta Peligrosa.
Mantenga las
manos alejadas.**

Label # CA1078

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Safety Labeling and Training Requirements

Perkins provides safety labeling on all outgoing product per ANSI regulations, seen below.

19-01 Warning, Label and Safety Instructions.

Include standard safety instructions as one of the first items in a manual. This helps emphasize safe use of the product and can help the user understand the hazards, the consequences of the hazards and how to avoid the hazards. Priority placement also increases the likelihood that the information will be read. Any symbols or pictograms physically on the product should be included in the appropriate section of the manual to reinforce the association between the nature and severity of the hazard and the correct behavior.

The American National Standards Institute (ANSI) standard Z535.6, *Product Safety Information in Product Manuals, Instructions, and Other Collateral Materials*, should also be applied.

To help ensure the product user sees and understands warnings and safety instructions, you should make them conspicuous. It is critical that you make proper use of the signal words "*danger*", "*warning*", "*caution*" and "*notice*" and their corresponding signal colors *red*, *orange*, *yellow*, and *blue*.

Choosing the appropriate signal words and colors are based on an estimate of the likelihood of exposure to the hazardous situation and what could happen as a result of exposure to the hazard. The American National Standards Institute (ANSI) standard Z535.4, *Product Safety Signs and Labels*, defines the hazard signal words as follows:

DANGER: Indicates an imminently hazardous situation which, if not avoided, "will" result in death or serious injury. This signal word is to be limited to the most extreme situations.

WARNING: Indicates a potentially hazardous situation which, if not avoided, "could" result in death or serious injury.

CAUTION: Indicates a potentially hazardous situation, which, if not avoided, "may" result in minor or moderate injury. It may also be used to alert against unsafe practices.

NOTICE: Indicates information considered important, but not hazard related (e.g., messages relating to property damage).

It is the responsibility of owner of this product to maintain the safety labels, keep them clear & visible to all users, and replace the safety labels when they become worn or missing.

All users must read and understand this manual and the safety precautions before using this product.



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Addendum

Manufacturing Company

Perkins Warranty Procedure

This procedure for claiming warranty must be followed or warranty will not be approved, credit will not be issued, and replacement parts will not be shipped. This document is not a replacement for the warranty policy. Please refer to the last page of your manual, which describes the warranty policy in detail.

If you believe your Perkins lifter has suffered from a failure that could be covered by warranty, immediately lock out any equipment that has failed per OSHA guidelines.

Take photographs of the lifter, including overall views of the unit and some close-ups, as necessary to properly record the failure in a way our engineering staff can examine. While taking photos of the lifter, record the serial number of the lifter.

Call Perkins at (800) 882-5292 and ask to speak to the service department. Requests for warranty can also be emailed to svaldez@perkinsmfg.com. Attach any photos to the email, as necessary. The service department will use the photos to determine if the return of parts for inspection is necessary or not. If the return of parts is required, the service department will issue you an RGA number.

Your replacement parts will be shipped at the time of your warranty request, but they will require a purchase order number/payment in order to ship. (Credit will be issued later, after warranty status is determined.) Your replacement parts will feature RGA numbers on the documentation referencing your warranty request. Replacements are sent UPS ground. For faster shipping, the customer will be charged.

Clearly mark the box of any returns with the provided RGA number in a prominent place. This helps our shippers identify your items. When your returned parts arrive, our service and engineering teams will inspect your shipment and determine if the failure is a defect covered by the warranty or not. If the item(s) are covered by warranty, credit will be issued. If the item(s) were not covered by warranty, a report will be generated that fully describes the reasoning behind the decision.

Common Warranty Mistakes:

Please do not ship lifters/parts to Perkins without first obtaining an RGA number. Parts received without prior authorization or without RGA markings will be discarded and credit will not be issued.

Orders that are placed without discussing warranty status will be treated as a typical order and will be billed accordingly. Credit will not be issued for warranty requests after the order is placed.

No warranty is allowed on lifters/parts not having a serial number.



Manufacturing Company

Perkins Return Policy:

If, within 30 days of receipt of the item(s), a customer would like to return an unused item(s), the customer may contact Perkins for a return authorization (RGA#). The item must be shipped within 2 weeks of the return authorization. The customer will pay the return freight and a 15% restocking fee on the return(s). The item must be in new / unused condition, and any damage or clean up required to restore the product to resalable condition will be charged to the customer.

Packages received without an RGA# on the packaging identifying who the product is from may be discarded or refused and credit may not be issued. Always make sure the RGA# is displayed on the box and on any included paperwork.

If Perkins shipped the wrong item(s), the incorrect item(s) may be returned within 30 days of receipt of the item by contacting Perkins for a return authorization (RGA#). The item(s) must be shipped within 2 weeks of the return authorization. Perkins will pay the return freight and waive the restocking fee.

If the return results in a net debit, the customer will be invoiced. If the return results in a net credit, the credit can be used against the replacement item(s) or a future purchase.

Special Notes:

Perkins does offer customized solutions and due to the customization of these items, Perkins cannot accept returns or refunds on anything custom ordered. This includes industrial units, cane lifters, and other items which have been specially fabricated to the customer's specifications. Unfortunately returns on these products cannot be accepted.

Perkins Manufacturing One-Year Limited Warranty

PERKINS MANUFACTURING COMPANY warrants its products to be free from defects in material and workmanship under normal use for a period of **one (1) year** from the date of delivery to the first purchaser.

Any claim under this warranty must be handled in accordance with PERKINS' warranty procedure.

This warranty is expressly limited to the repair or replacement in PERKINS' discretion of any component or part of any PERKINS product unit manufactured by PERKINS which is brought to PERKINS attention promptly after discovery and is proven to PERKINS' satisfaction to have been defective in material or workmanship.

This warranty shall not obligate PERKINS to bear the cost of labor or transportation charges in connection with the repair or replacement of defective parts, and it shall not apply to a product upon which repairs, or alterations have been made unless authorized in writing by PERKINS.

Any damage, wear & tear or improper use, substitution of parts not approved by PERKINS, modifications other than those done by PERKINS or as authorized in writing by PERKINS, or any alteration or repair by others in such a manner which, in PERKINS' judgment, materially and adversely affects the product shall void this warranty. Operation at an actuator cycle time of less than six seconds shall void this warranty. Wear items used for anti-friction purposes are not covered by this warranty.

Periodic maintenance is required in order to maintain warranty but is not covered by warranty. Please refer to the maintenance section of the service manual for instructions.

PERKINS makes no warranty of products manufactured by others and supplied by PERKINS, the same being subject to warranties, if any, of their respective manufacturers.

PERKINS shall not assume any liability for any incidental, consequential, direct, or indirect damage, loss or delay of any kind, including, but not limited to, the loss of profits, product or downtime.

PERKINS warrants any service parts it may sell for a period of ninety (90) day from the date of delivery for replacement only. The item being replaced must be returned to PERKINS for evaluation upon its request. The cost of labor to replace such part shall be the responsibility of the owner. PERKINS does not warrant any used parts.

PERKINS, whose policy is one of continuous improvement, reserves the right to improve its products through changes in design or materials as it may deem desirable without obligation to incorporate such changes in products of prior manufacture.

THE ABOVE WARRANTY SUPERCEDES AND IS IN LIEU OF ALL OTHER EXPRESS OR IMPLIED WARRANTIES INCLUDING, WITHOUT LIMITING, ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. NO EMPLOYEE OR ANY OTHER REPRESENTATIVE OF PERKINS IS AUTHORIZED TO CHANGE THIS WARRANTY IN ANY WAY OR TO GRANT ANY OTHER WARRANTY. THESE TERMS WILL BE CONSTRUED ACCORDING TO THE LAWS OF THE STATE OF ILLINOIS WITHOUT REGARD TO ITS CONFLICTS OF LAWS PROVISIONS. ALL ACTIONS OR PROCEEDINGS IN ANY WAY, MANNER OR RESPECT ARISING OUT OF OR RELATED TO THE GOODS WILL BE LITIGATED ONLY IN STATE OR FEDERAL COURTS, AS APPROPRIATE, LOCATED IN WILL COUNTY, ILLINOIS. BUYER CONSENTS AND SUBMITS TO JURISDICTION IN THE STATE OF ILLINOIS AND WAIVES ANY RIGHT TO TRANSFER THE VENUE OF ANY SUCH ACTION OR PROCEEDING.