



P E R K I N S
MANUFACTURING COMPANY

CREATORS OF THE
TUCKAWAY™ LIFTER

Instruction Manual



Check out our website!
WWW.PERKINSMFG.COM

Updated; May 31, 2011

Model D6405-27k
Patented 6,921,239 & 6,988,864
7,273,340 & 7,128,515
An ISO 9001:2000 Company

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Hardware Glossary

(HYDRAULICS SOLD SEPARATELY)



**FLOW DIVERTER
VALVE**
PART # D63237S



**P.O. CHECK
VALVE**
PART # D63580



**DUAL FLOW
DIVERTER VALVE**
PART # D63411S



**ADJUSTABLE
FLOW CONTROL**
PART # D63575



**4-WAY
DIRECTIONAL
HAND CONTROL**
PART # D63228



**AEROQUIP
HYDRAULIC
HOSES**



**FLOW DIVERTER
WITH PRESSURE
RELIEF VALVE**
PART # D63471



**HOSE
CLAMP**
PART # D63014



**SEQUENCE
VALVE**
PART # D63612



**ASSORTED
FITTINGS**



Cart Glossary



**US CART
ANSI TYPE "B"**



**EUROPEAN CART
ANSI TYPE "C"**



**DIAMOND CART
ANSI TYPE "D"**



**AUTOMATED CART
ANSI TYPE "G"**



Truck Component Glossary



- A ORIGINAL SILL / MOUNTING HEIGHT
- B SILL EXTENSION / BUMPER
- C ELEPHANT EAR
- D CONTAINER LOCKS
- E PACKER BLADE
- F KICK BAR / TIPPER BAR
- G LIGHT PANEL



INSTALLERS NOTE: IF YOUR TRUCK HAS A KICK BAR / TIPPER BAR, MAKE SURE YOUR LIFTER IS COMPATIBLE. THE LIFTER SHOULD NOT MAKE CONTACT WITH THE BAR. IT MAY BE NECESSARY TO MODIFY OR LOWER THE BAR TO CLEAR THE LIFTER. SEE INSTRUCTIONS.



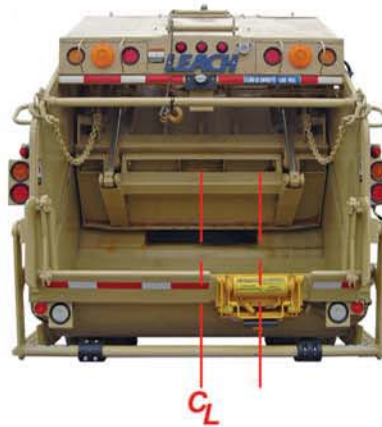


Rearload Configurations

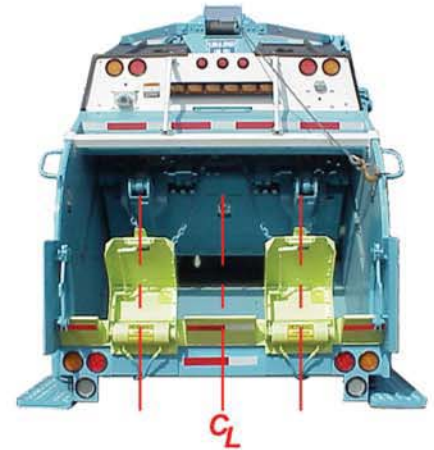
CENTER MOUNT



OFFSET MOUNT



DOUBLE MOUNT

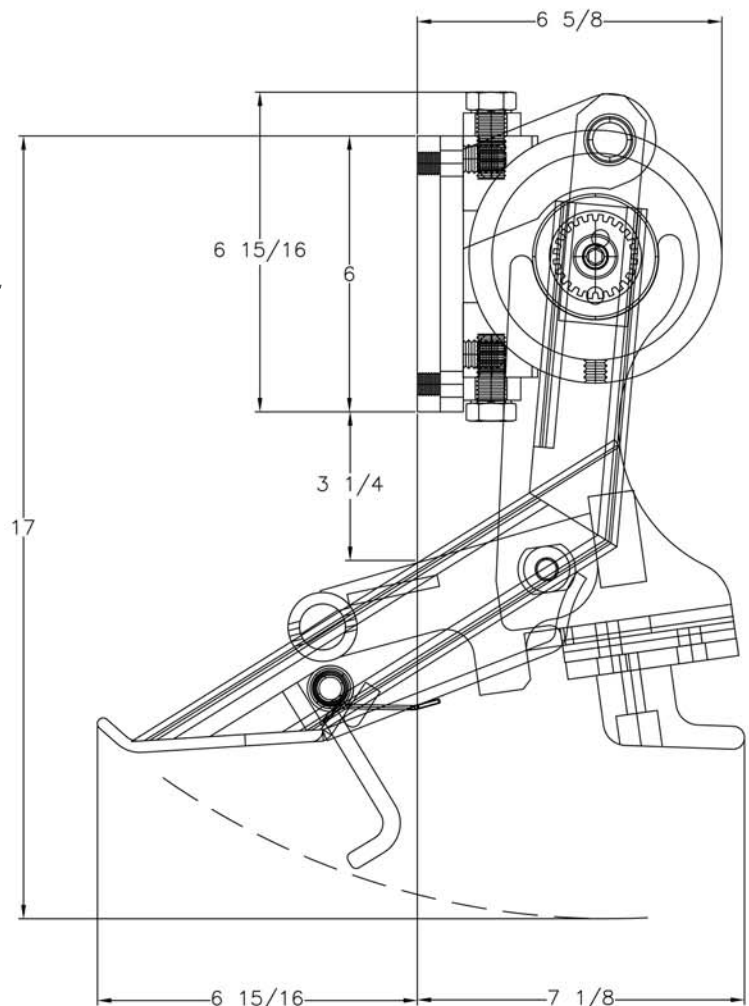


LIFTERS ARE SPACED 17 1/2" OFF CENTERLINE OF TRUCK



**TO ENSURE THAT THE
D6400 CAN FIT TO YOUR
TRUCK SILL, PLEASE
CHECK THE DIMENSIONS
AT RIGHT.**

**IT IS COMMON PRACTICE ON SOME
VEHICLES TO RELOCATE, CUT,
OR MODIFY THE LIGHT BAR AS
NEEDED TO ENSURE THE LIFTER
CAN TUCK UNDER THE HOPPER
FULLY AND NOT STRIKE ANY
COMPONENT WHICH MAY BE
SIMILARLY LOCATED.**





Installation Preparation & Safety

- 1) PLEASE READ THIS MANUAL COMPLETELY AND FAMILIARIZE YOURSELF WITH ALL THE NECESSARY PROCEDURES. CONTACT PERKINS MANUFACTURING IF AT ANY TIME THERE IS A QUESTION.**
- 2) CORRECT INSTALLATION DIMENSIONS DEPEND ON AN EMPTY TRUCK, PARKED ON A SMOOTH AND LEVEL SURFACE.**
- 3) REMOVE ANY FLAMMABLE MATERIALS FROM THE WORK AREA AND HOPPER.**
- 4) DO NOT WELD ON THE TRUCK UNLESS THE GROUND IS IN PLACE AND THE BATTERY IS DISCONNECTED.**
- 5) LIFTERS AVERAGE ABOUT 200 LBS. ALWAYS USE A HOIST TO LIFT AND SECURE THE LIFTERS INTO PLACE.**
- 6) DURING INSTALLATION, SECURE THE LIFTER WITH A CHAIN TO PREVENT ACCIDENTS.**
- 7) TURN THE TRUCK OFF AND DEPRESSURIZE THE HYDRAULIC LINES BEFORE LOOSENING ANY FITTINGS OR HOSES.**
- 8) ALWAYS USE APPROPRIATE PERSONAL SAFETY GEAR.**



INSTALLERS NOTE: IT IS NOT RECOMMENDED TO INSTALL A LIFTER ONTO A TAILGATE THAT IS NOT ALREADY MOUNTED TO A CHASSIS. THIS CAN LEAD TO LIFTERS MOUNTED TOO LOW OR TOO HIGH, DUE TO CHASSIS HEIGHT VARIATIONS.



INSTALLERS NOTE: THE REAR MOUNTING PLATE IS INCLUDED WITH EVERY LIFTER AND IS ATTACHED TO THE LIFTER FOR SHIPPING PURPOSES. REMOVE THE REAR PLATE TO INSTALL IT TO THE TRUCK.



INSTALLERS NOTE: YOUR LIFTER WILL COME WITH AN ADJUSTABLE FLOW CONTROL VALVE ATTACHED UNDER THE LEFTHAND SIDE OF THE ACTUATOR. ALL OTHER HYDRAULICS ARE SOLD SEPARATELY.

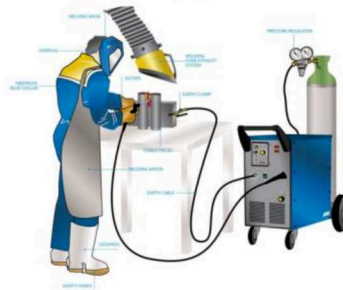
Please be aware of the risks of working with welding equipment and consumables. Always use safety protection equipment. The sparks may ignite fire, always clean the area from flammable material or flammable chemicals, do not weld close to gas lines or on top of electrical cords or installations. Disconnect 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.



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

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Installation

NOTE: THE LIFTER PICTURED MAY BE DIFFERENT THAN YOUR MODEL.



**TYPICAL RESIDENTIAL-ONLY
INSTALLATION**



**EXTENDED SILL AND CONTAINER
LOCKS ALLOWS BOTH RESIDENTIAL
AND COMMERCIAL PICKUP**

STEP 1

**CHOOSE YOUR LIFTER CONFIGURATION (CENTER MOUNT, OFFSET, OR DOUBLE)
& CHOOSE WHETHER THIS TRUCK WILL BE USED FOR COMMERCIAL CANS.**



INSTALLERS NOTE: DUE TO THE VARIETY OF TRUCK TYPES AND CUSTOM FABRICATION REQUIRED, MOST INSTALLATIONS REQUIRE SUPPORT PIECES NOT INCLUDED. BUMPER EXTENSION KITS ARE AVAILABLE AND ARE SOLD SEPARATELY.



INSTALLERS NOTE: TRUCK MANUFACTURERS START WITH AN ORIGINAL STRUCTURAL MEMBER ACROSS THE SILL OF THE TAILGATE. WHEN THEY ADD CONTAINER LOCKS, THEY ADD A SILL EXTENSION. WHEN RECESSING A LIFTER INTO THE SILL, IT IS OKAY TO CUT INTO THE EXTENSION, BUT NEVER CUT THE ORIGINAL STRUCTURAL MEMBER OR THE TAILGATE WILL LOSE SIGNIFICANT STRENGTH AND COULD EVEN BOW.



Residential-Only Installation

TYPICAL RESIDENTIAL-ONLY CONFIGURATION

- A REAR MOUNTING
PLATE**
- B ADD-ON STRUCTURAL
TUBE TO RAISE SILL**
- C MOUNTING HEIGHT:
FROM TOP OF PLATE
TO GROUND, AS
FOLLOWS:**

38" FOR D6240X

40" FOR D6098

**38 1/2"-41" FOR MODELS
D6080, D6080C, D6220,
D6226, D6245/50,
D6400/05 & D6300**



STEP 2

**CENTER AND LEVEL THE REAR MOUNTING PLATE AND TACK WELD IN PLACE
AT THE SUGGESTED MOUNTING HEIGHT FOR YOUR LIFTER.**

STEP 3

**IN SOME CASES, THE REQUIRED HEIGHT WILL BE HIGHER THAN THE EXISTING
SILL. SIMPLY ADD A STRUTURAL TUBE ACROSS THE SILL TO RAISE THE SILL
HIEGHT TO MEET WITH THE TOP OF THE MOUNTING PLATE.**

STEP 4 (DOUBLE INSTALLS ONLY)

**LOCATE THE MOUNTING PLATES
17 1/2" OFF THE CENTER OF
HOPPER. RELOCATE ANY TAIL-
LIGHTS THAT ARE OBSCURED BY
THE LIFTER LOCATION.**





Commercial Installation

TYPICAL FINISHED COMMERCIAL / RESIDENTIAL INSTALLATION

STEP 1

LOCATE YOUR MOUNTING PLATE(S) AND MARK A CUT-OUT LINE 4" WIDER THAN THE WIDTH OF YOUR MOUNTING PLATE. THIS SHOULD ALLOW FOR A 2" GAP ON EACH OF THE LIFTER. CUT INTO THE OEM SILL EXTENSION, BEING CAREFUL TO NOT CUT THE STRUTURAL SILL UNDERNEATH.



STEP 2

USE PAGE 7 TO DETERMINE YOUR MOUNTING PLATE HEIGHT REQUIREMENTS, LEVEL THE PLATE AND TACK IN PLACE INSIDE THE CUT-OUT. TEMPORARILY MOUNT THE LIFTER TO THE PLATE. IF THE MOUNTING PLATE IS HIGHER THAN YOUR SILL, BUILD THE SILL UP WITH A PIECE OF STRUCTURAL TUBE TO MATCH UP TO THE LIFTER.



STEP 3

POSITION THE BUMPER KIT (SOLD SEPARATELY) SO THAT IT PROTECTS THE LEADING EDGES OF THE LIFTER BY AT LEAST AN 1". THE LIFTER SHOULD NOT MAKE CONTACT WITH THE COMMERCIAL CONTAINER.

STEP 4

TRIM THE BUMPER KIT TO FIT AND TACK WELD IN PLACE. ADD BUMPER END-CAPS TO SEAL OFF ENDS. ADD REINFORCING SUPPORT PIECES AS NEEDED TO PREVENT FLEXING AND PROPERLY SUPPORT THE LIFTER'S MOUNTING PLATE.





Commercial Installation

STEP 5

MEASURE THE DISTANCE YOUR NEW BUMPER EXTENDS PAST THE ORIGINAL. TORCH OFF THE CONTAINER LOCKS AND EXTEND THEM THE SAME DISTANCE.

NOTE: NOTICE HOW IN THE FINISHED PICTURE THE LOCK HAS BEEN EXTENDED ABOUT 3" FOR THIS INSTALLATION.

STEP 6

PRIOR TO WELDING FULLY, TAKE A COMMERCIAL CAN AND MAKE SURE IT CAN STILL LOCK INTO THE CONTAINER LOCKS AFTER THE MODIFICATIONS.

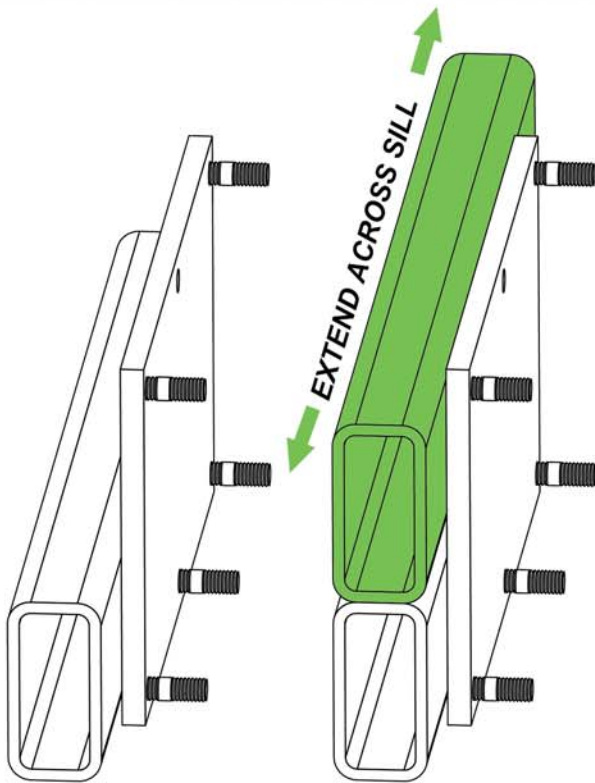


STEP 7

IF YOUR TRUCK COMES EQUIPPED WITH A KICK BAR / TIPPER BAR IT MAY BE NECESSARY TO LOWER THE BAR. MEASURE THE DISTANCE YOU WILL NEED TO CLEAR THE BAR BY AT LEAST 1/2" WHEN THE LIFTER IS ALL THE WAY DOWN. TORCH OFF THE KICK BAR AND EXTEND IT THE AMOUNT REQUIRED, ADDING REINFORCEMENTS AS NEEDED.



Welding the Rear Mounting Plate



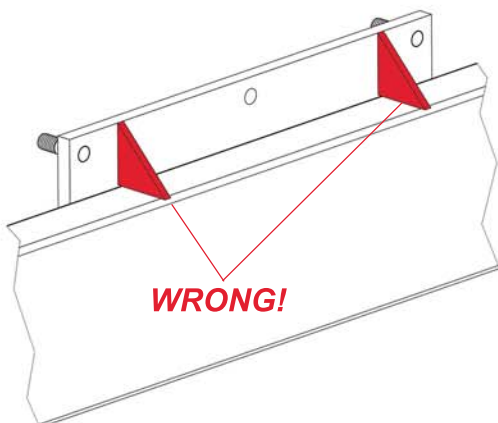
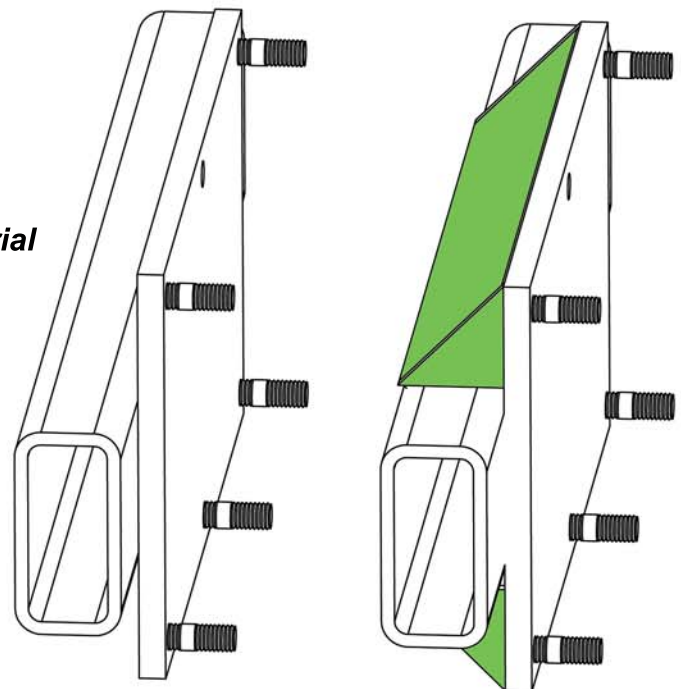
The Rear Mounting Plate of all lifters must be completely supported around all edges of the plate.

Unsupported plates will lead to premature lifter failure.

In the example at left, the mounting plate is well above the original height of the sill. A steel tube of appropriate size is cut and placed on top of the sill, extending it up and meeting with the top edge of the mounting plate. This additional piece would extend across the entire length of the hopper sill. Weld fully, leaving no portion of the mounting plate hanging above or below the original sill without support

In the example at right, the mounting plate is shown to be slightly above (or slightly below) the sill edge. In this case, add a strip of material and endcaps to the exposed mounting plate rear and weld fully.

Installations will vary from truck to truck. Custom cut pieces will likely be required to properly support the mounting plate.



The drawing at left is an example of inadequate support. The gussets will not help add rigidity to the mounting plate and the mounting plate will deform over time, leading to premature lifter failure. Never leave any portion of the mounting plate hanging without proper backing material.



Hydraulic Installation

STEP 1

FIND A SUITABLE LOCATION FOR THE HAND VALVE BRACKET. THE VALVE SHOULD BE LOCATED TO PREVENT ACCIDENTAL ACTIVATION, WITHIN ARMS REACH OF THE LIFTER AND AT A COMFORTABLE HEIGHT. MAKE SURE THAT IF YOU ARE USING THE HOSES PROVIDED IN THE TAP-IN KIT THAT THEY WILL REACH BOTH LIFTER AND DIVERTER VALVE FROM THIS LOCATION. TACK WELD HAND VALVE BRACKET IN PLACE.



HAND VALVE CONTROL



STEP 2

RUN THE HYDRAULIC HOSES ALONG THE TAILGATE AND HOPPER UNDERBELLY, MARK SUITABLE LOCATIONS FOR THE HOSE CLAMPS. TACK WELD THESE IN PLACE.



INSTALLER'S NOTE: RUN THE HOSES SO THEY CAN BE PROTECTED AS MUCH AS POSSIBLE FROM CASUAL ABRASION. HOSES SHOULD HAVE MINIMAL MOVEMENT AND NOT REST ON ANY SHARP EDGES.

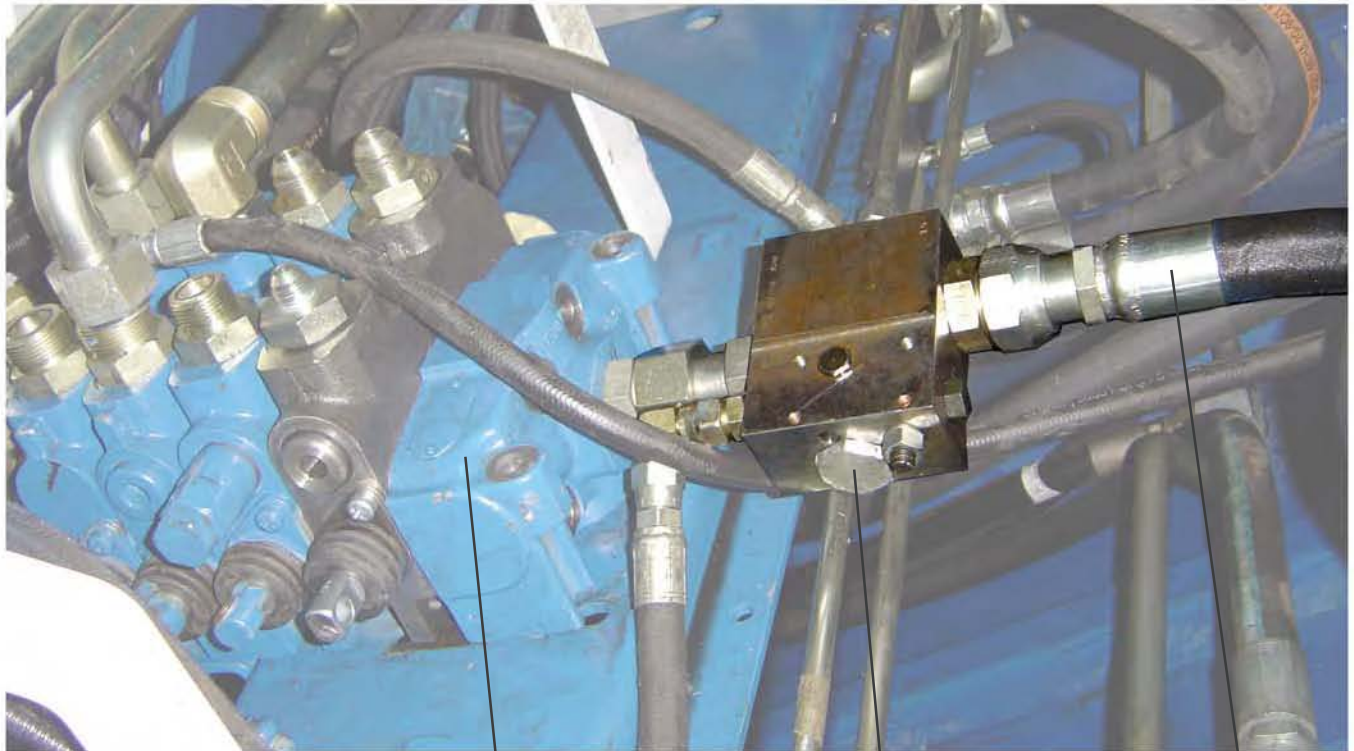
STEP 3

ATTACH TWO HOSES FROM BOTTOM OF LIFTER TO HAND VALVE. PORT "A" OF HAND VALVE GOES TO LEFT-HAND ACTUATOR PORT. PORT "B" GOES TO RIGHT-HAND ACTUATOR PORT.





Hydraulic Installation



**PACKER BLADE
CONTROL VALVE**

DIVERTER VALVE

PRESSURE LINE

STEP 4

LOCATE THE PACKER CONTROL VALVE ON THE TOP OF THE TAILGATE. (SEE PICTURE) DISCONNECT THE PRESSURE LINE THAT FEEDS THE PACKER VALVE AND ATTACH IT TO THE PERKINS DIVERTER VALVE'S "IN" PORT. ATTACH THE "OUT" PORT BACK TO THE PACKER BLADE CONTROL VALVE.

STEP 5

ATTACH THE PRESSURE LINE (S) THAT WILL FEED THE LIFTER. IF YOU ARE INSTALLING TWO LIFTERS, THE DIVERTER VALVE WILL HAVE A 50/50 SPLITTER MOUNTED ON TOP OF IT. FOR ONE LIFTER, USE PORT "P" OF DIVERTER VALVE TO HAND VALVE "IN" PORT. FOR TWO LIFTERS, PORT "P" IS PLUGGED. INSTEAD USE PORTS "1" & "2" ON THE ATTACHED 50/50 SPLITTER.

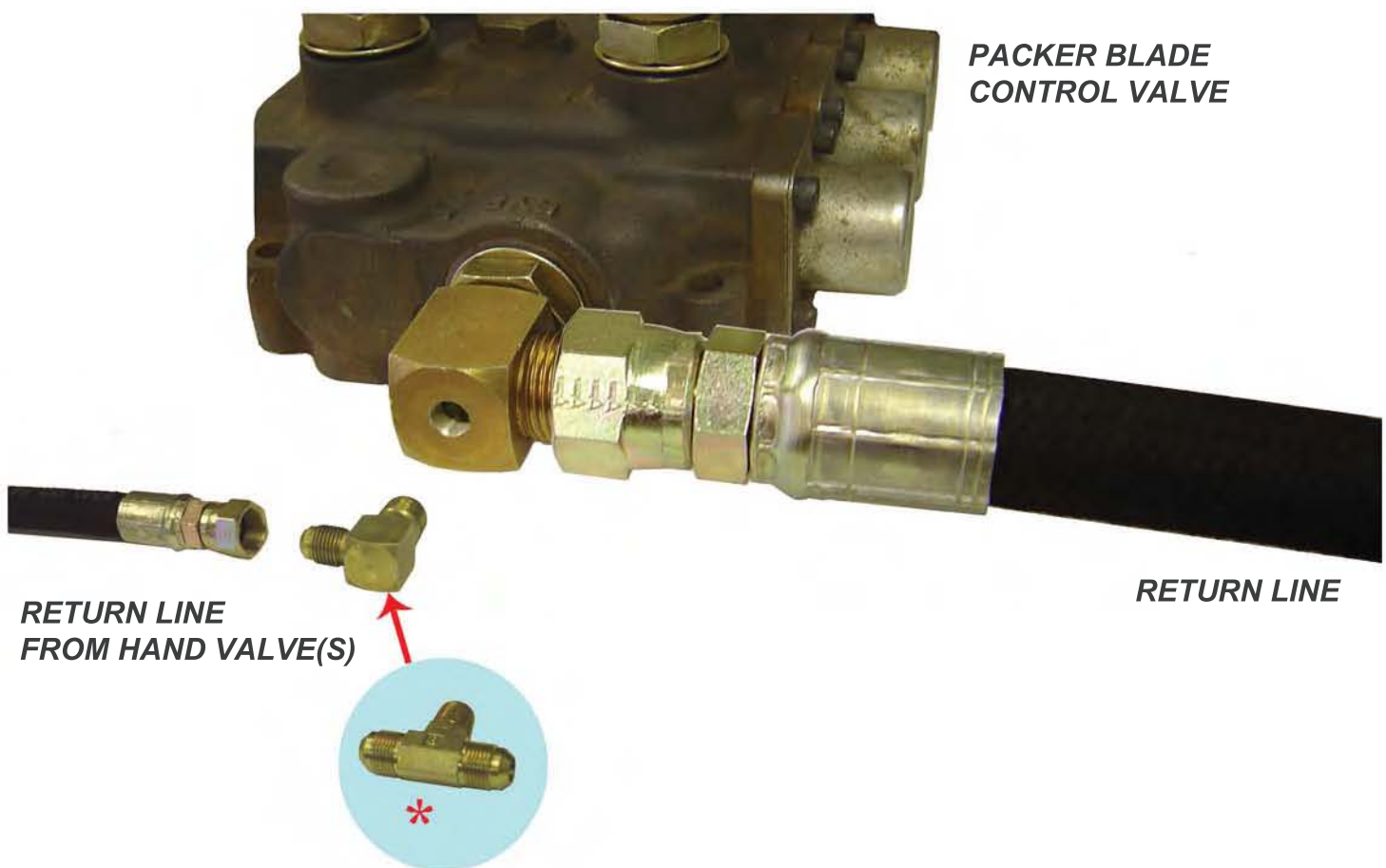




Hydraulic Installation

STEP 6 (OPTION A) ** PREFERRED METHOD OF OIL RETURN **

RUN THE RETURN LINE FROM THE HAND VALVE (S) (OUT" PORT (S) UP TO THE PACKER BLADE CONTROL VALVE. LOCATE THE PACKER BLADE CONTROL VALVE'S RETURN TO TANK LINE. SELECT A LARGE FITTING ON THE RETURN LINE AND DRILL AND TAP INTO IT'S BODY FOR 3/8 NPT INSTALL A ELBOW OR TEE TO ATTACH THE RETURN LINES.

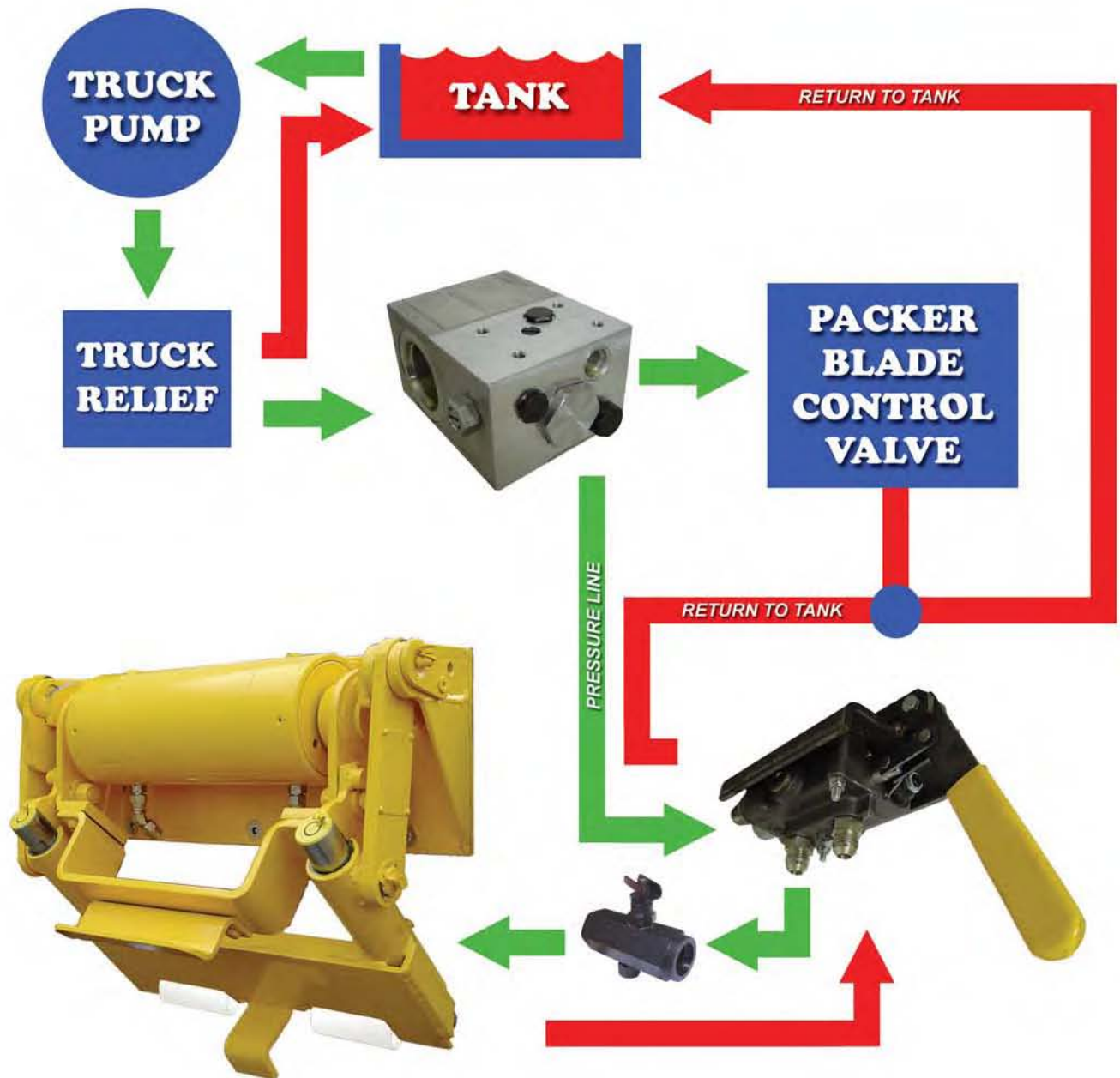


STEP 6 (OPTION B) **ALTERNATE METHOD **

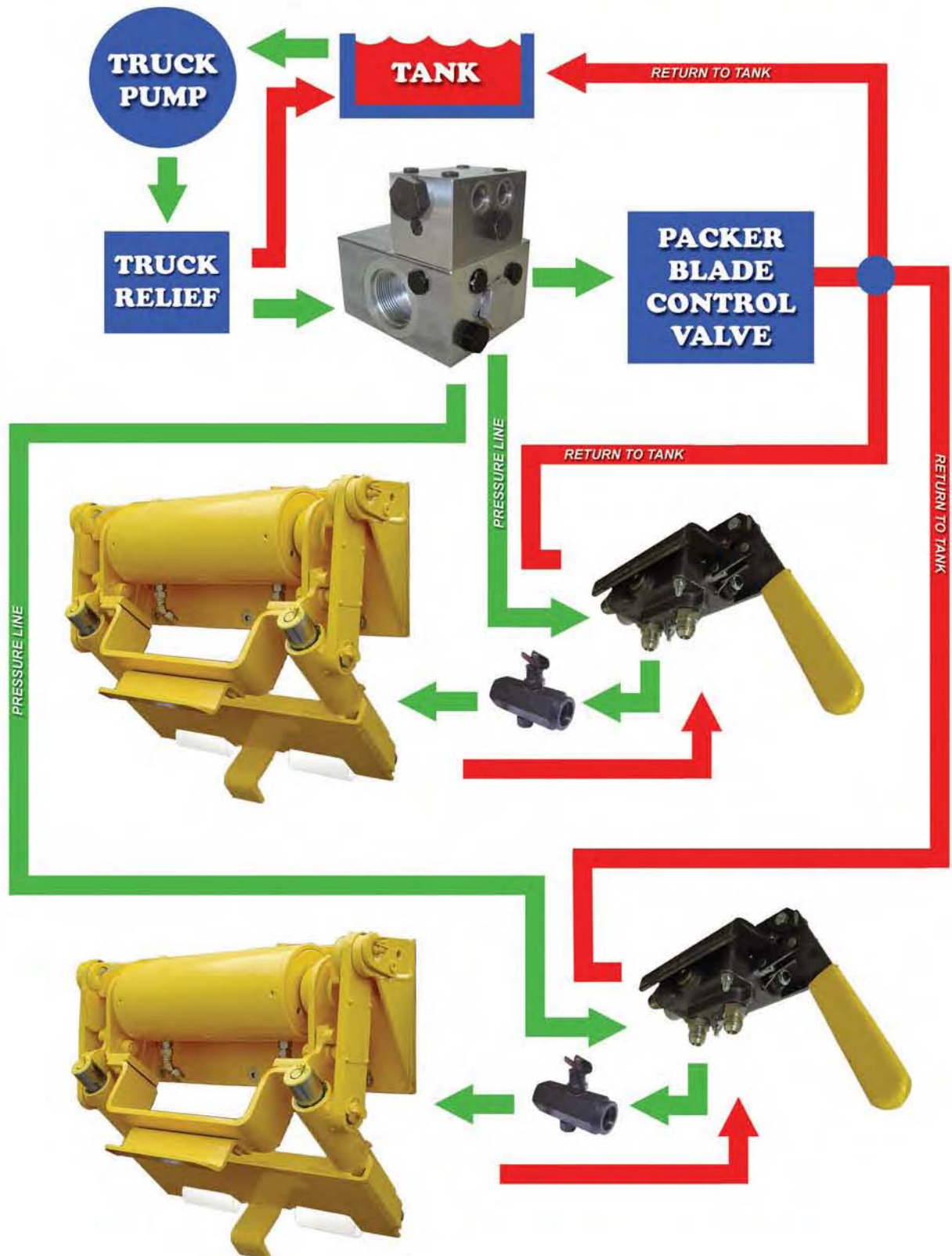
RUN THE RETURN LINE FROM THE HAND VALVE (S) (OUT" PORTS UP TO THE DIVERTER VALVE AND CONNECT TO THE "R" RETURN PORT. THIS OPTION ALLOWS THE OIL TO BE RETURNED TO THE PACKER BLADE, KEEPING THE BLADE SPEED THE SAME AS IT WOULD BE WITHOUT THE DIVERTER VALVE, BUT AT THE EXPENSE OF A SLIGHT INCREASE IN OPERATING TEMPERATURE/BACK PRESSURE.



Hydraulic Schematic - Single



Hydraulic Schematic - Double





Hydraulic Parts Kit (Sold Separate)



- 1 D63236
- 2 D63237S
- 3 D63606
- 3a D63292
- 4 D63044
- 4a D63291
- 5 D63429
- 6 D63591
- 7 D63580
- 8 D63639
- 9 D63430
- 10 D63490
- 11 D63051
- 12 D63489
- 13 D63550
- 14 D63416
- 15 D63635
- 16 D63074
- 17 D63431
- 18 D63014
- 19 D63535
- 20 D63760
- 21 D63534
- 22 D62460
- 23 D62063

	LEACH			HEIL/NUWAY			LOADMASTER EZ-PACK DEMPSTER PAK-MOR MCNEILUS		
	SINGLE - OFFSET KIT # D60311 / (-2R3)	DOUBLE INSTALL KIT # D60321 / (-2R3)	SINGLE - CENTER KIT # D60393 / (-2R3)	SINGLE - OFFSET KIT # D60312	DOUBLE INSTALL KIT # D60322	SINGLE - CENTER KIT # D60394	SINGLE - OFFSET KIT # D60313	DOUBLE INSTALL KIT # D60323	SINGLE - CENTER KIT # D60395
1		1			1			1	
2	1	1	1	1	1	1	1	1	1
3	1	1	1						
3a	1	1	1				1	1	1
4	1	1	1				1	1	1
4a	1	1	1						
5				2	2	2			
6	1	2	1	1	2	1	1	2	1
7	1	2	1	1	2	1	1	2	1
8	2	4	2	2	4	2	2	4	2
9	2	4	2	2	4	2	2	4	2
10				1	1	1			
11							1	1	1
12				1	1	1			
13	1		1	1		1	1		1
14		1			1			1	
15	1	1	1	1	1	1	1	1	1
16		1			1			1	
17		1			1			1	
18	5	10	5	5	10	5	5	10	5
19	2	4	2	2	4	2	2	4	2
20			2			2			2
21	2	4		2	4		2	4	
22	1	2	1	1	2	1	1	2	1
23	5	10	5	5	10	5	5	10	5



Final Installation

TEST THE LIFTER WITH THE FULL VARIETY OF CARTS YOU EXPECT TO USE WITH THIS TRUCK. MAKE SURE THEY ALL WORK AS INTENDED.

TEST THE ABILITY TO LOCK-UP A COMMERCIAL CONTAINER.

WHEN SATISFIED, WELD FULLY ALL NECESSARY LOCATIONS AROUND CONTAINER LOCKS, BUMPER EXTENSIONS, LIFTER MOUNTING PLATE, HOSE CLAMPS, BRACKETS AND SUPPORT PIECES.

WHEN PAINTING, MASK CAUTION LABELS SO THEY WILL BE VISIBLE AFTERWARDS. ADDITIONAL CAUTION LABELS ARE AVAILABLE BY CALLING CUSTOMER SERVICE.

REINSTALL BATTERY TERMINAL CONNECTION AFTER ALL NECESSARY WELDING IS COMPLETE.

TIGHTEN ALL HYDRAULICS AND CHECK FOR LEAKS.



INSTALLER'S NOTE: NEVER CHECK FOR HYDRAULIC LEAKS WITH YOUR BARE HANDS. A PIN-HOLE LEAK CAN BE PRESSURIZED ENOUGH TO PIERCE THE SKIN AND CAUSE INFECTION / INJURY.

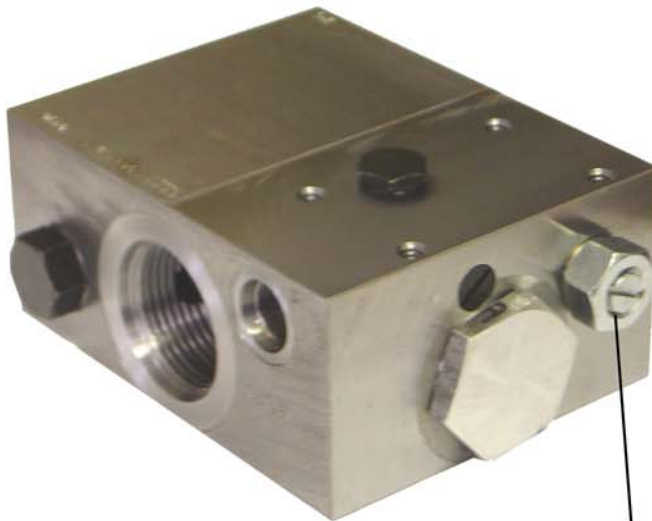
OPERATE THE LIFTER. IT'S MOVEMENT WILL BE ERATIC THE FIRST FEW CYCLES BECAUSE OF AIR IN THE SYSTEM. CONTINUOUS BACK AND FORTH CYCLING SHOULD CLEAR THE LAST OF THE BUBBLES AFTER A DOZEN CYCLES.

AFTER THE AIR IS PURGED, IT IS TIME TO ADJUST THE HYDRAULIC VALVES.



Adjusting the Hydraulics

*** CAUTION * ADJUST THIS VALVE WITH THE HYDRAULIC PUMP OFF OR VALVE DAMAGE COULD OCCUR**



ADJUSTMENT SCREW

DIVERTER VALVE - FLOW CONTROL #D63237S

OPEN THE ADJUSTABLE FLOW CONTROL, COMPLETELY. LOSEN THE LOCKING NUT ON THE DIVERTER. USING A SCREWDRIVER, TURN THE ADJUSTMENT SCREW CLOCKWISE UNTIL FLOW TO THE LIFTER STOPS. THEN SLOWLY TURN COUNTER-CLOCKWISE 1/2 TURN AT A TIME UNTIL FLOW IS APPROX. 3 GPM PER LIFTER, OR THE LIFTERS HAVE A COMPLETE CYCLE TIME OF 6-10 SECONDS. RE-TIGHTEN THE LOCKING NUT.

SEAL KIT #D63477
ADJUSTABLE SCREW #D63565

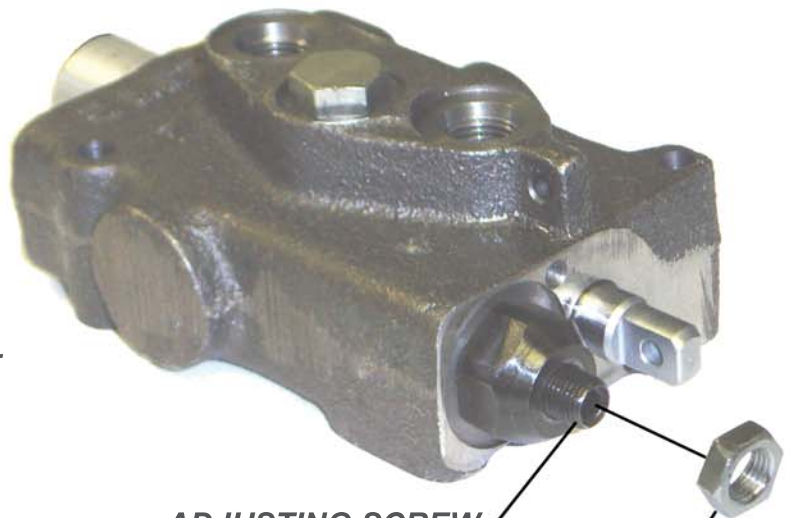


**FLOW=LIFTER SPEED. ADJUST WITH DIVERTER VALVE
PRESSURE = LIFTING POWER. ADJUST WITH HAND VALVE**

HAND VALVE'S BUILT-IN RELIEF #D63228

LOOSEN THE LOCKING NUT. TURN THE ADJUSTING SCREW CLOCKWISE TO INCREASE THE PRESSURE, LIMITED BY THE TRUCK'S MAIN RELIEF SETTING. THE RELIEF SHOULD BE SET TO ALLOW THE LIFTER TO DUMP A 350LB LOAD. THE ACTUAL PSI REQUIRED WILL VARY FROM MODEL TO MODEL. THE HAND VALVE'S RELIEF MUST BE SET AT LEAST 100 PSI LESS THAN THE TRUCK'S MAIN RELIEF OR THEY MAY "CHATTER". RE-TIGHTEN THE LOCKING NUT.

SEAL KIT #D63127
SPRING KIT #D63192
CARTRIDGE KIT#D63672



ADJUSTING SCREW

LOCKING NUT



Operating Instructions

START THE ENGINE AND ACTIVATE THE PUMP.

ROLL A CART TO THE LIFTER, PLACING IT SO THE UPPER HOOK WILL GRASP THE TOP BAR / POCKET OF THE CART.

PULL HANDLE OF HAND VALVE TO RAISE AND DUMP CART.

ONCE WASTE IS DUMPED, REVERSE THE HANDLE TO RETURN THE CART TO THE GROUND.

REPLACE THE EMPTY CART WITH A LOADED CART AND REPEAT.



OPERATOR'S NOTE: GIVING THE CART A SHAKE BACK AND FORTH IS A COMMON WAY TO HELP GET ALL THE GARBAGE OUT. IT IS ALSO A COMMON WAY TO CAUSE DAMAGE TO THE CART IF DONE EXCESSIVELY. SHAKING A DAMAGED CART CAN CAUSE IT TO FALL OR BE THROWN. USE CAUTION AND COMMON SENSE.



OPERATOR'S NOTE: THE MOST COMMON WAY TO DAMAGE YOUR CART INVESTMENT IS TO RUN THE LIFTERS TO FAST. MAINTAIN THE LIFTER CYCLE OF 6-10 SECONDS. USE LOCK-OUT PROCEDURES TO PREVENT IN-FIELD ADJUSTMENTS.



OPERATOR'S NOTE: OVER-LOADED CARTS, BROKEN CARTS, CARTS NOT WITHIN ANSI STANDARD, AND BULK ITEMS SHOULD NOT BE LIFTED WITH THE CART LIFTER.



Safety Procedures



ALWAYS KEEP YOUR HANDS AND BODY AWAY FROM THE LIFTER WHILE IT IS IN OPERATION.



NEVER REACH INTO THE HOPPER WHILE LIFTER IS IN OPERATION.



MAKE SURE ALL PERSONS ARE CLEAR OF LIFTER BEFORE AND DURING OPERATION.



DO NOT LIFT BROKEN CARTS OR BULK ITEMS WITH THE LIFTER.



DO NOT OPERATE THE LIFTER FASTER THAN 6 SECONDS PER CYCLE.



DO NOT LIFT OVER-LOADED CARTS. THEY CAN BREAK AND FALL OR BE THROWN/DROPPED AFTER BREAKING.



DO NOT LIFT CARTS THAT ARE NOT MEANT FOR THIS LIFTER.



DO NOT PERFORM MAINTANANCE ON THE LIFTER UNLESS IT IS PROPERLY SECURED WITH A CHAIN



INSPECT THE LIFTER DAILY BEFORE USE, FOR ANYTHING OBVIOUSLY IN NEED OF REPAIR OR UNSAFE.



Maintenance

WASHING

A SIMPLE AND QUICK POWER-WASH WILL REMOVE FLTH & GRIME FROM THE LIFTER'S CRITICAL COMPONENTS, MAKING THEM LAST LONGER AND MAKING INSPECTION FOR DAMAGES EASIER.

LUBRICATION

PROPER GREASING OF THE LIFTER IS IMPORTANT. CHECK THE LIFTERS WEEKLY AND GREASE AS NECESSARY ANY PIVOT OR SLIDE POINTS THAT DO NOT MOVE SMOOTHLY. SOME NEWER MACHINES HAVE FIBERGLIDE BEARINGS THAT DO NOT REQUIRE GREASE. YOUR LOCAL WEATHER CONDITIONS WILL VARY THE FREQUENCY OF YOUR NECESSARY GREASING.

BEARINGS

THE LIFTER SHOULD MOVE FREELY, BUT SNUGLY. ANY PLAY OR LOOSENESS INDICATES BEARING WEAR. BEARINGS THAT ARE WORN OR SCARRED SHOULD BE REPLACED IMMEDIATELY.

BREAKAWAY FEATURE

IF YOU LIFTER HAS A BREAKAWAY FEATURE, THERE MAY BE A SHEAR BOLT ON THE DRIVER ARM. MAKE SURE THE BOLT IS IN PLACE BEFORE USE DAILY.

LIFTER COMPONENTS

USE THE WEEKLY GREASING AS A TIME TO PERFORM A SPOT CHECK OF THE PARTS ON THE LIFTER, ENSURING NOTHING IS BENT OR SHOWING FATIGUE. A DAMAGED LIFTER MAY STILL DUMP CARTS, BUT IT MAY DAMAGE THEM TOO. PROTECT YOUR CARTS BY KEEPING YOUR LIFTERS IN GOOD CONDITION.

HYDRAULIC COMPONENTS

INSPECT ALL HOSES AND REPLACE ANY THAT ARE WORN OR FRAYED. LOOK FOR SIGNS OF LEAKS AND TIGHTEN THE APPROPRIATE FITTINGS. LIFTERS THAT DRIFT WHEN NOT IN USE MAY NEED A NEW SEAL KIT FOR THE ACTUATOR, OR HAND VALVE. DON'T FORGET TO BLEED THE AIR AFTER ANY HYDRAULIC WORK.

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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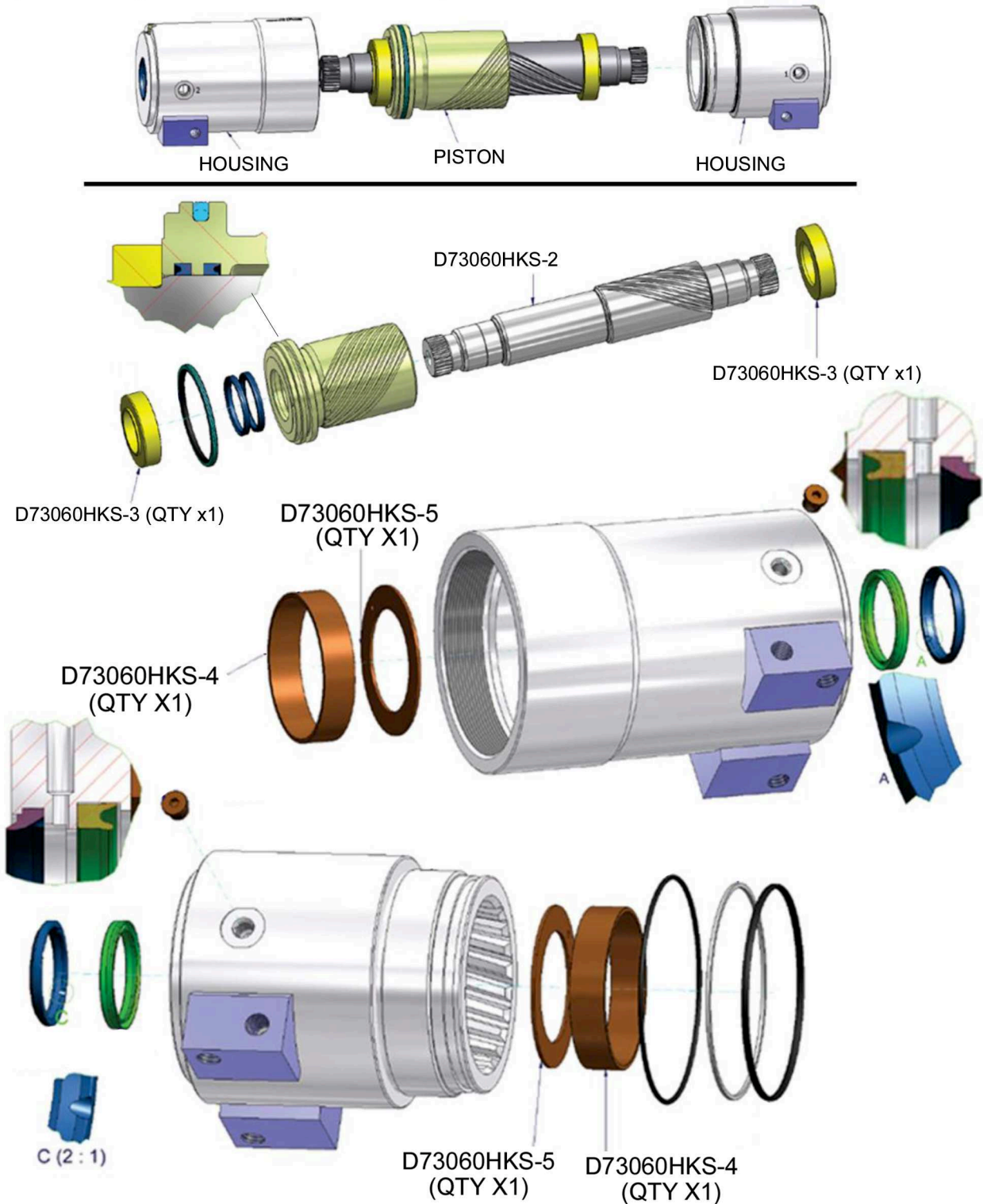
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27k HKS (Current) Actuator Parts Guide

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.



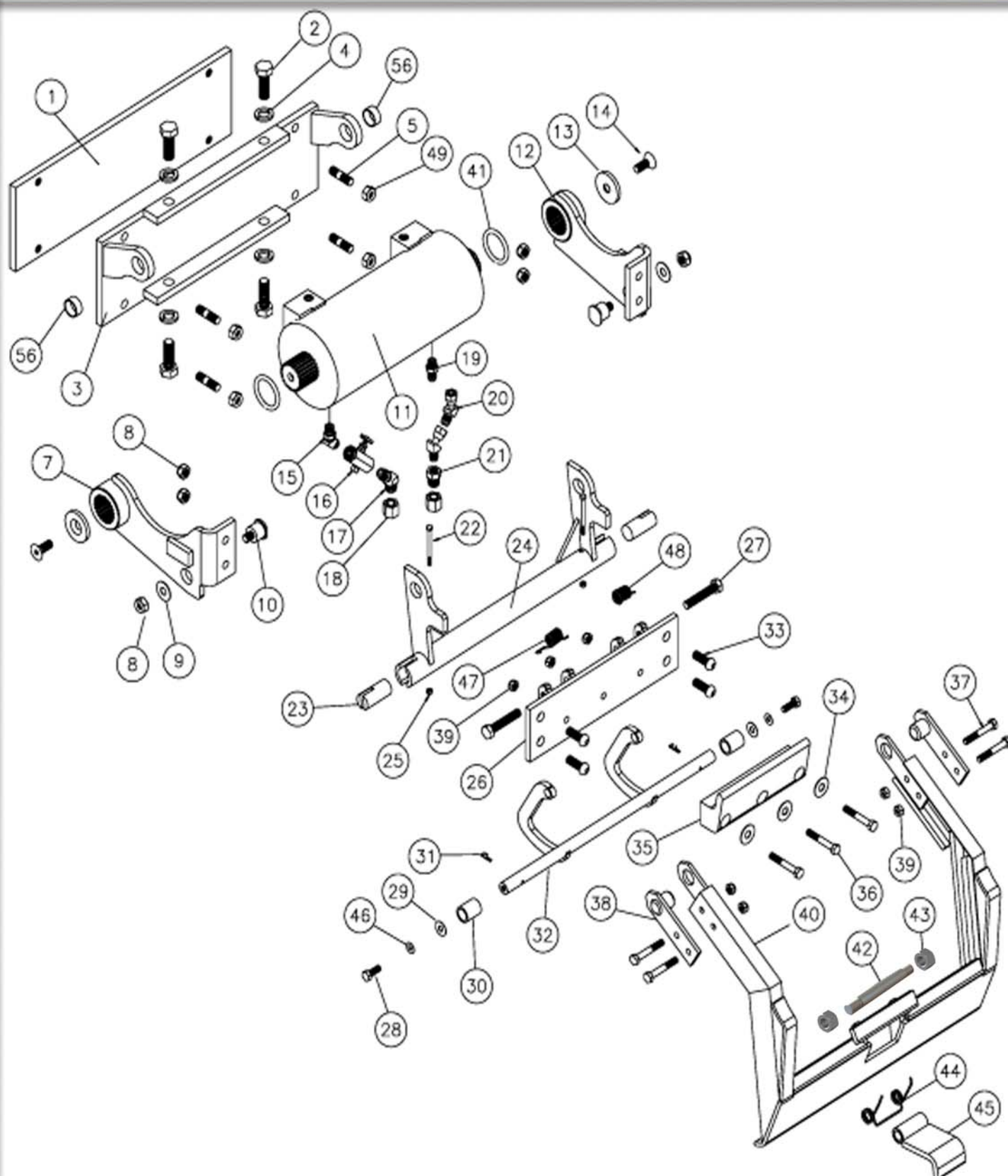
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D6405 Exploded View





Spare Parts Key

PARTS FOR D6405-27k

Updated: May 31, 2011

#	PART #	DESCRIPTION	QTY
1	D78333	MOUNTING PLATE REAR	1
2	D62410	BOLT HHCS 5/8-11 X 1 ½" W/SHOULDER	4
3	D78336	MOUNTING PLATE WELDMENT	1
4	D62458	5/8" LOCKWASHER	4
5	D72001	STUD ½-13 X 1 3/4	4
6	D77159	BOLT HHCS ½-13 X 1	4
7	D78314	DRIVER ARM WELD –LH	1
8	D72030	NYLOCK LOCKNUT ½-13 - THIN	2
9	D62484	1/8" THICK FLATWASHER X ½" DIA	2
10	D78828	THREADED PIN – BREAKAWAY	2
11	D73060	27K ACTUATOR	1
12	D78313	DRIVER ARM WELD - RH	1
13	D73008	HUB RETAINING DISC	2
14	D62006	BOLT FHCS ½-13 X 1 ¼	2
15	D63569	ELBOW 45 DEG #6SAE-#6SAE	1
16	D63575	ADJ. FLOW CONTROL VALVE	1
17	D63663	ELBOW 45 DEG #6SAE - #8JIC	1
18	D63562	#8 HYDRAULIC CAP	2
19	D63074	STR. FITTING #6SAE-#6JIC	1
20	D63581	ELBOW 45 DEG #6FT-#6MT	2
21	D63431	REDUCER #6FT-#8MT	1
22	D62066	BOLT HHCS ¼-20 X 2 ¼	2
23	D78332	PLASTIC INSERT	2
24	D78328	SLIDE BRACKET WELDMENT	1
25	D62457	NYLOCK LOCKNUT ¼-20	2
26	D78309	LOCKING LATCH BRACKET	1
27	D72042	BOLT HHCS ½-13 X 2 ½	2
28	D62079	BOLT HHCS 3/8-16 X 1	2
29	D62004	3/8" FLATWASHER	2
30	D78364	2" DIA UHMW ROLLER	2
31	D63204	COTTER PIN 3/32 X 1	2
32	D78301	LOCKING LATCH WELDMENT	1
33	D72021	BOLT BHCS ½-13 X 1 1/4	4
34	D62060	WASHER 3/8" ID X 7/8" OD	3



Spare Parts Key

PARTS FOR D6405-27k

Updated: May 31, 2011

#	PART #	DESCRIPTION	QTY
35	D65255P	PLASTIC UPPER HOOK	1
36	D62085	BOLT HHCS 3/8-16 X 1 3/4	3
37	D62038	BOLT HHCS 3/8-16 X 1 1/2	4
38	D78326	PIN LOCK WELDMENT	2
39	D62080	NYLOCK LOCKNUT 3/8-16	7
40	D78340	FACEPLATE WELDMENT	1
41	D63238-9	EXTERNAL HUB SEAL	2
42	D79344	THREADED ROD	1
43	D62001	5/8" LOCKNUT	2
44	D72109	SPRING – LOWER LATCH	1
45	D78305	LATCH WELDMENT	1
46	D62106	3/8" SPLIT LOCKWASHER	2
47	D72065L	LH BREAKAWAY SPRING	1
48	D72065R	RH BREAKAWAY SPRING	1
49	D62081	1/2-13 LOCKNUT	8
50	D63491	S/N PLATE	1
51	D72009	DRIVE SCREW	4
52	D62474	LARGE CAUTION LABEL	1
53	D72113	PERKINS LABEL	1
54	D72114	CAUTION LABEL	1
55	D72115	CAUTION LABEL	1
56	D72108	Self-Lub Bearing 1" ID x 1/2"	2



Troubleshooting

	SYMPTOM	POSSIBLE CAUSES	SOLUTION
A	LIFTER OPERATION IS VERY ERRATIC	AIR COULD BE TRAPPED IN SYSTEM. FLOW IS TOO LOW ADJUSTABLE FLOW VALVE IS NOT WORKING PROPERLY	BLEED ALL AIR OUT INCREASE FLOW FROM DIVERTER VALVE ADJUST, CLEAN OR REPLACE THE FLOW DIVERTER VALVE.
B	CART LIFTER WILL NOT PICK UP THE WEIGHT	CART IS OVERWEIGHT HAND VALVE PRESSURE SET TO LOW TRUCK PRESSURE SET TOO LOW FAULTY HAND VALVE ACTUATOR/CYLINDER HAS INTERNAL LEAKAGE	REDUCE WEIGHT OF CART CHECK AND ADJUST PRESSURE RELIEF ON HAND VALVE ADJUST TRUCK'S MAIN RELIEF (SEE MANUFACTURER'S INSTRUCTIONS) REPLACE HAND VALVE REBUILD ACTUATOR OR RETURN TO PERKINS FOR SERVICE
C	LIFTER OPERATES SLOWLY	FLOW ADJUSTMENT SCREW ON DIVERTER IN TO MUCH ENGINE IDLE IS TOO LOW FAULTY HAND VALVE FAULTY TRUCK PUMP DEBRIS CLOGGING DIVERTER VALVE	ADJUST SCREW OUT TO INCREASE FLOW ADJUST ENGINE IDLE REPLACE HAND VALVE CHECK TRUCK MANUFACTURER'S INSTRUCTIONS DISASSEMBLE AND CLEAN DIVERTER



Troubleshooting

	SYMPTOM	POSSIBLE CAUSES	SOLUTION
D	LIFTER OPERATES TOO FAST	ADJUSTMENT SCREW IS OPEN TOO MUCH ENGINE IDLE TOO HIGH	ADJUST DIVERTER FLOW DOWN ADJUST ENGINE IDLE DOWN
E	DIVERTER VALVE IS LEAKING OIL	WORN OR DAMAGED SEALS	REPLACE SEAL KIT, PART #D63477
F	HAND VALVE LEVER STICKS IN THE UP OR DOWN POSITION	WORN OR BROKEN SPRING CENTER DEVICE DEBRIS OR RUST AROUND SPOOL PRESSURE "IN" & "OUT" HOSES REVERSED	INSTALL NEW SPRING PART #D63192 DISASSEMBLE AND CLEAN SPOOL & HOUSING REVERSE HOSES TO CORRECT ORDER
G	HAND VALVE IS LEAKING OIL AROUND SPOOL	WORN OR DAMAGED SEALS WORN SPOOL	INSTALL NEW SEALS PART # D63217 REPLACE HAND VALVE
H	UNABLE TO ACHIEVE 1950 PSI	TRUCK PRESSURE TOO LOW	ADJUST PRESSURE RELIEF OF TRUCK HIGHER IF IT IS ALREADY AS HIGH AS POSSIBLE, INSTALL A PRESSURE SPEED UP SWITCH
I	UNABLE TO ACHIEVE OVER 1400 PSI	TRUCK PRESSURE TOO LOW	CALL YOUR TRUCK MANUFACTURER



Troubleshooting

	SYMPTOM	POSSIBLE CAUSES	SOLUTION
J	LIFTER BREAKS BOTTOM BAR OF CARTS	CHECK FOR DAMAGED LIFTER FACEPLATE CHECK ADJUSTMENT OF LATCH RELEASE ROD/PLUNGER CHECK PLUNGER SPRINGS AND MOVES FREELY CHECK MOUNTING HEIGHT OF LIFTER	REPLACE DAMAGED PARTS ADJUST SO LATCH RELEASES PRIOR TO CART RETURNING TO THE GROUND GREASE PLUNGER OR REPLACE AS NEEDED BRAND-NEW LIFTERS THAT BREAK LOWER BARS ARE USUALLY MOUNTED TO LOW. CHECK THE HEIGHT AND REMOUNT ACCORDINGLY
K	LIFTER BREAKS BOTTOM AND/OR TOP BAR OF CART	WARPED FACEPLATE IS STRETCHING THE HOOK SPACING WARPED LOWER LATCH LIFTER MAY REQUIRE GREASING/LATCH CONTROL JAMMED	REPLACE DAMAGED PARTS, ENSURING THE HOOK TO HOOK DIMENSION IS 14 3/4 - 15" REPLACE LATCH GREASE MOVING LATCH PARTS
L	LIFTER DROPS CARTS	CART COULD HAVE DIMENSIONS INCOMPATIBLE WITH LIFTER LOWER LATCH FAILS TO LOCK ON LOWER BAR	CHECK THAT THE CART MEETS ANSI SPECIFICATIONS ADJUST LATCH MAKING SURE IT MOVES FREELY, REPLACE DAMAGED PARTS AND GREASE



Troubleshooting

	SYMPTOM	POSSIBLE CAUSES	SOLUTION
M	LIFTER RETURNS TO GROUND TOO FAST	IN-LINE ADJUSTABLE FLOW CONTROL NOT ADJUSTED IN-LINE ADJUSTABLE FLOW CONTROL NOT POSITIONED CORRECTLY	ADJUST VALVE IN UNTIL LIFTER'S DOWNWARD MOTION IS DESIRABLE CHECK THAT IN-LINE ADJUSTABLE FLOW CONTROL IS UNDER LEFTHAND ACTUATOR PORT, SMALL ARROW POINTS AWAY FROM ACTUATOR
N	LIFTER DRIFTS OUT OF POSITON WHEN NOT IN USE	P.O. CHECK VALVE NOT PRESENT P.O. CHECK VALVE NOT WORKING INTERNAL LEAKAGE IN HAND VALVE. INTERNAL LEAKAGE IN ACTUATOR	INSTALL A P.O. CHECK VALVE CLEAN VALVE CARTRIDGE, RETEST AND REPLACE IF NECESSARY CLEAN SPOOL AND REPLACE SEAL KIT AS NECESSARY REBUILD ACTUATOR WITH NEW SEAL KIT
O	THERE IS NO LIFTER DAMAGE AND LATCH ADJUSTMENTS ARE CORRECT, BUT LIFTER STILL BREAKS LOWER BARS OF CARTS.	LIFTER OPERATING FASTER THAN 6 SECONDS OPERATOR SHAKING CART BACK AND FORTH EXCESSIVELY OVERLOADED CART	SLOW THE LIFTER BY ADJUSTING THE FLOW DOWN TRAIN USERS TO LIMIT CART SHAKING TO A MINIMUM REDUCE CART WEIGHT

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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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 Two-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 **two (2) years** 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.