



VESTIL MANUFACTURING CORP.
 2999 North Wayne Street, P.O. Box 507, Angola, IN 46703
 Telephone: (260) 665-7586 -or- Toll Free (800) 348-0868
 Fax: (260) 665-1339
 www.vestilmfg.com e-mail: sales@vestil.com

HYDRA SERIES MANUAL HYDRAULIC LIFT TRUCKS ASSEMBLY, USE, AND MAINTENANCE MANUAL



RECEIVING INSTRUCTIONS:

After delivery, IMMEDIATELY remove the packaging from the product in a manner that preserves the packaging and maintains the orientation of the product in the packaging; then inspect the product closely to determine whether it sustained damage during transport. If damage is discovered during the inspection, immediately record a complete description of the damage on the bill of lading. If the product is undamaged, discard the packaging.

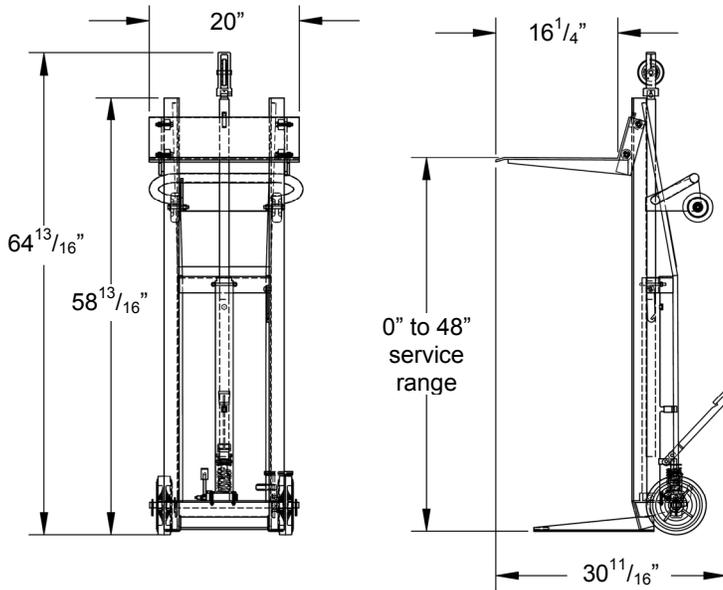
NOTES:

- 1) Compliance with laws, regulations, codes, and non-voluntary standards enforced in the location where the product is used is exclusively the responsibility of the owner/end-user
- 2) VESTIL is not liable for any injury or property damage that occurs as a consequence of failing to apply either:
 - a) Instructions in this manual; or b) information provided on labels affixed to the product. Neither is Vestil responsible for any consequential damages sustained as a result of failing to exercise sound judgment while assembling, installing, using or maintaining this product.

<u>Table of Contents</u>	
Product Specifications.....	2
Signal Words.....	3
Safety Recommendations.....	3
FIG. 1: HYDRA-2 exploded parts diagram & bill of materials.....	4
FIG. 2: HYDRA-4 exploded parts diagram & bill of materials.....	5
FIG. 3: HYDRA-HD exploded parts diagram & bill of materials.....	6
Function tests before use.....	7
Operation instructions.....	7 - 8
Inspections & Maintenance.....	9
Troubleshooting Guide.....	10
Detailed Troubleshooting—Foot Pump.....	11-15
FIG. 4: Hydraulic System Diagram.....	15
Detailed explanation of Hydraulic System Operation.....	16
Label Placement Diagram.....	17
Limited Warranty.....	18

Product specifications:

Dimensions and other product specifications appear in the following table based on the following diagrams.

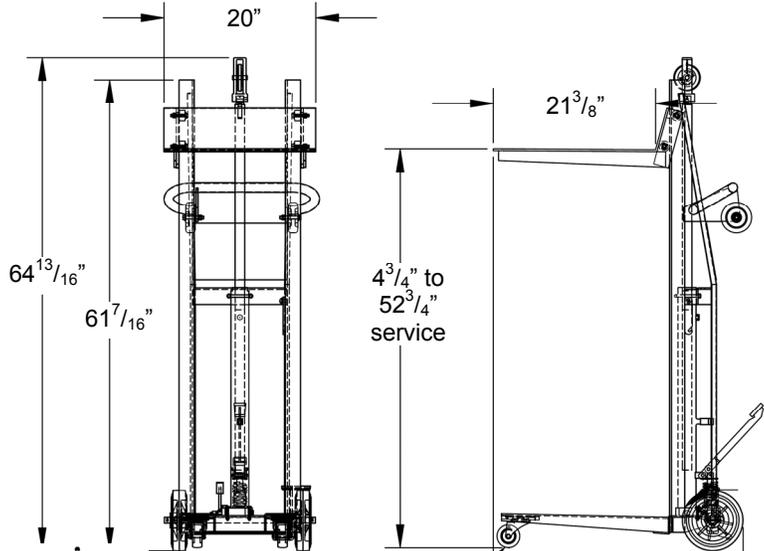


HYDRA-2
Deck operated by foot pump

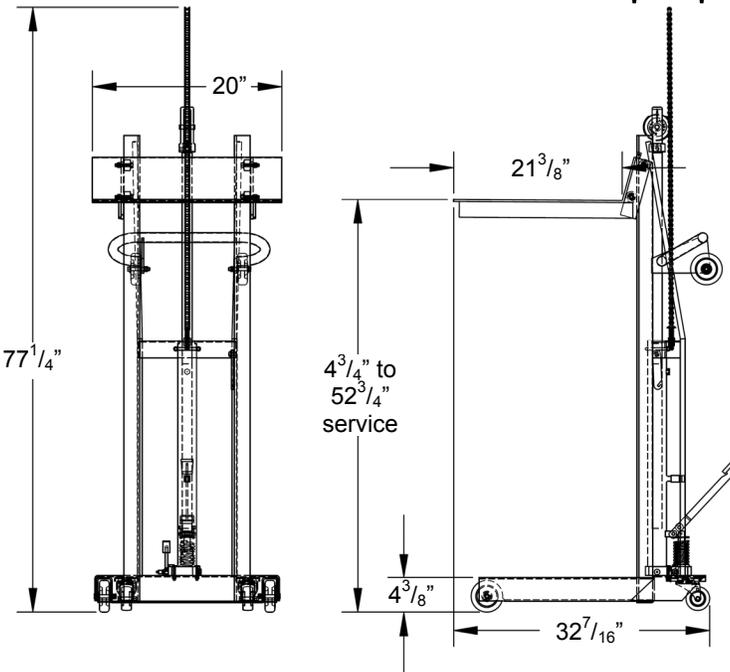
Capacity:	750 lb.
Overall width:	20 inches
Overall length:	30 ^{11/16} inches
Overall height:	64 ^{13/16} inches
Deck dimensions:	20 inches x 16 ^{1/4} inches
Service range:	0 inches to 48 inches

HYDRA-4
Deck operated by foot pump

Capacity:	750 lb.
Overall width:	20 inches
Overall length:	32 ^{15/16} inches
Overall height:	64 ^{13/16} inches
Deck dimensions:	20 inches x 21 ^{3/8} inches
Service range:	4 inches to 52 ^{3/4} inches



3" x 1 1/4" hard rubber swivel caster



HYDRA-HD
Deck operated by foot pump

Capacity:	1,000 lb.
Overall width:	24 inches
Overall length:	32 ^{7/16} inches
Overall height:	77 ^{1/4} inches
Deck dimensions:	24 inches x 21 ^{3/8} inches
Service range:	4 ^{3/4} inches to 52 ^{3/4} inches

Signal Words:

This manual uses SIGNAL WORDS to indicate the likelihood of personal injuries, as well as the probable seriousness of those injuries, if the product is misused in the ways described. Other signal words call attention to uses of the product likely cause property damage. The signal words used appear below along with the meaning of each word:



Identifies a hazardous situation which, if not avoided, WILL result in DEATH or SERIOUS INJURY. Use of this signal word is limited to the most extreme situations.



Identifies a hazardous situation which, if not avoided, COULD result in DEATH or SERIOUS INJURY.



Indicates a hazardous situation which, if not avoided, COULD result in MINOR or MODERATE injury.



Identifies practices likely to result in product/property damage, such as operation that might damage the product.

Each person who assembles, installs, uses, or maintains this product should read the entire manual in advance and fully understand the directions. If after reading the manual you do not understand an instruction, ask your supervisor or employer for clarification, because failure to adhere to the directions in this manual might result in serious personal injury.

Safety Recommendations:

We strive to identify foreseeable hazards associated with the use of our products. However, material handling is dangerous and no manual can address every risk. The end-user ultimately is responsible for exercising sound judgment at all times.



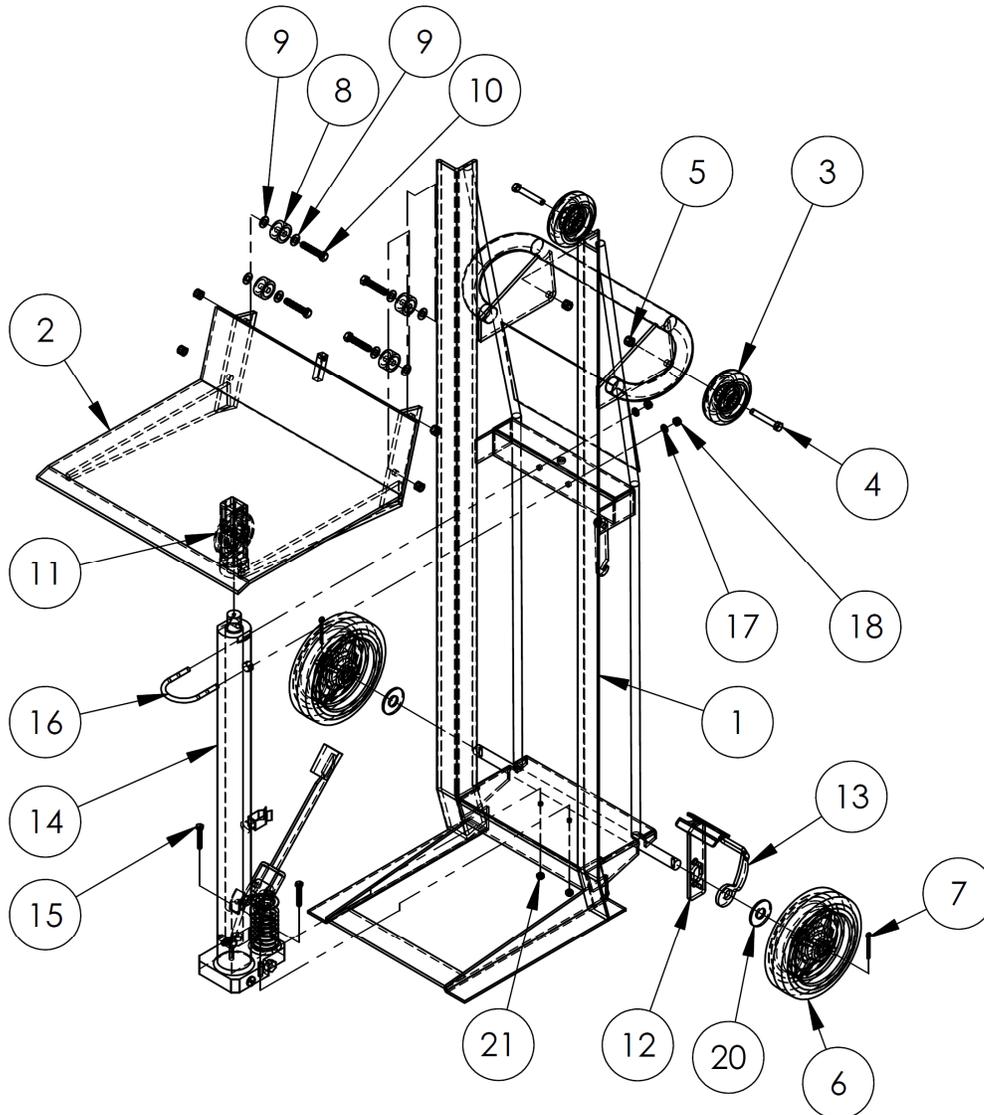
Improper or careless operation might result in serious personal injuries sustained by the operator and bystanders. Always apply material handling techniques learned during training and use the product properly.

- *Failure to read and understand the entire manual before assembling, using or servicing the product constitutes misuse.* Read the manual to refresh your understanding of proper use and maintenance procedures as necessary.
- Prior to each use, ALWAYS inspect the area where you intend to use the lifter. Inspect the area for unusual conditions that might require special precautions. See “Warning” messages on p. 7.
- DO NOT use a malfunctioning lifter; always perform the “Functions Checks/Tests” described on p. 7 before each use.
- Regardless of whether the lifter is loaded or unloaded, DO NOT stand or travel under the deck and DO NOT allow any other person to stand or travel under the deck.
- Inform all persons in the area that you are going to use the lifter. Instruct them to stay clear of the device and the supported load during operation.
- ALWAYS make sure that your clothing and body do not contact the moving parts during operation. In particular, avoid contact with the chain assembly (Item #21, Fig. 1; Item #22, Fig. 2; and Item #17, Fig. 3) and with the roller bearings. ONLY control the lifter from the “Operator Position,” shown in the figures that appear on p. 8. DO NOT move the lifter or raise or lower the forks unless you are in the operator position.
- DO NOT allow people to ride on the lifter.
- ALWAYS load the HYDRA-Lift according to the list of 5 recommendations that appears below. Failure to properly position a load on the deck might cause the lifter to tip over and you could be injured as a consequence.
 1. DO NOT exceed the maximum rated load (capacity). The rated load of your lifter is posted on a label (see Fig. 5 on p. 18).
 2. ONLY move loads using the deck platform or the optional forks.
 3. ALWAYS properly center the load. DO NOT handle off-center loads or loads that cannot be centered.
 4. Start and stop gradually to avoid upsetting the load on the deck.
 5. NEVER tilt the lifter while carrying a load. All four castors must maintain contact with the ground when a load is on the deck (or forks).

NOTE: The HYDRA-2 model has only 2 wheels and thus operates like a dolly: it must be tilted towards the operator in order to drive it from one location to another. After loading the deck of a Hydra-2, verify that you will be able to control the loaded lifter, by tilting it into the drivable position. If the weight is too much for you to safely control, DO NOT use the Hydra-2 to transport the load.

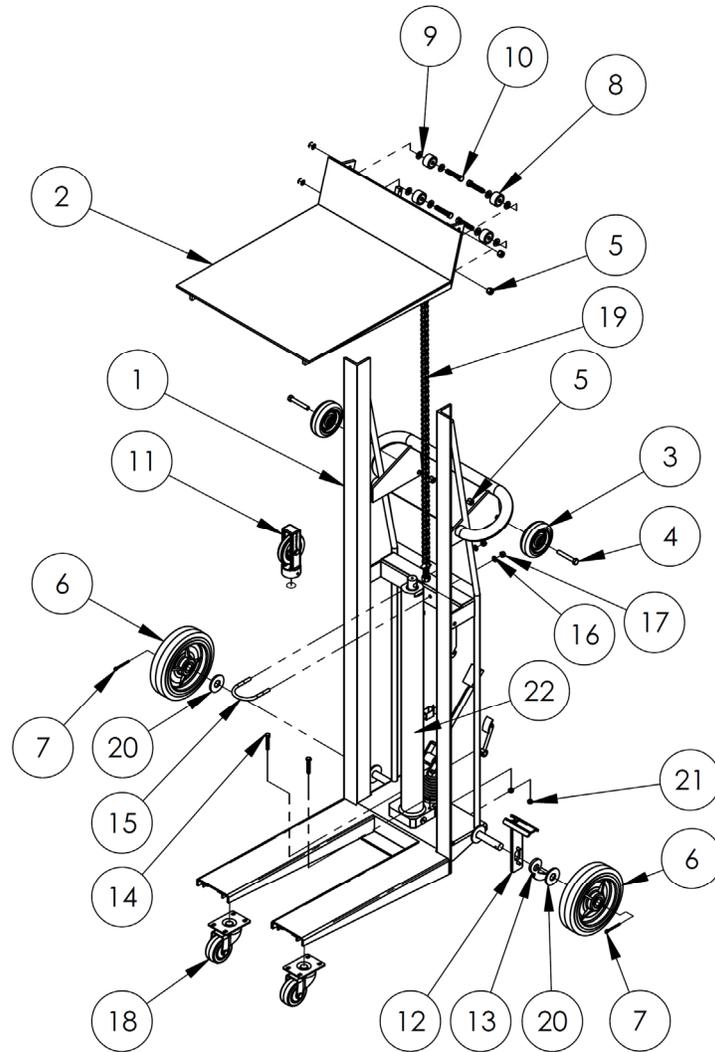
- DO NOT transport loads up or down stairs.

Fig. 1: HYDRA-2 exploded parts diagram & bill of materials



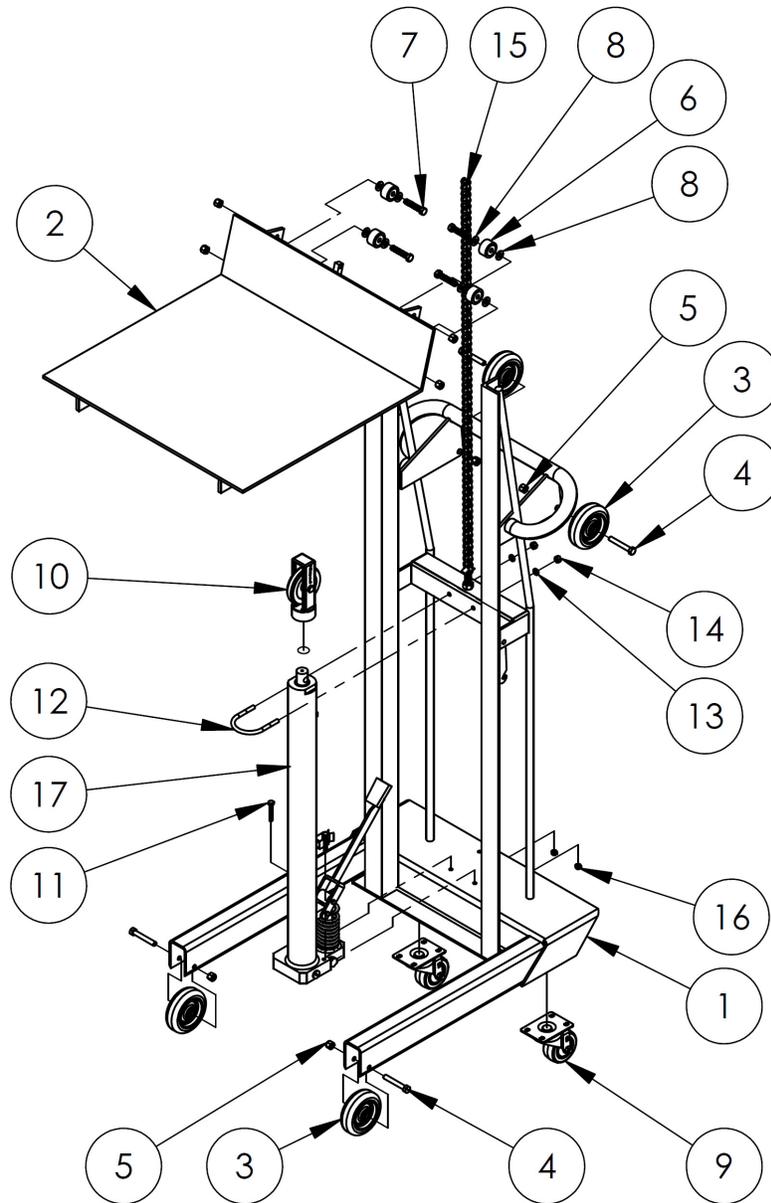
Item No.	Part No.	Description	Quantity
1	33-514-092	Frame Weldment	1
2	33-513-044	Deck Plate Weldment	1
3	16-132-009	HR-4/1.25-SLB-S	2
4	11113	$\frac{3}{8}$ "-16 x 2 $\frac{1}{2}$ " Zinc-plated HHCS Bolt	2
5	37024	$\frac{3}{8}$ "-16 nylock nut	6
6	16-132-200	8" x 2" red hard rubber wheel (red)	2
7	65107	$\frac{5}{32}$ " x 2" zinc-plated cotter pin	2
8	33-027-003	Cam roller, bearing, deck	4
9	33008	$\frac{3}{8}$ " USS Zinc-Plated Flat Washer	8
10	11111	$\frac{3}{8}$ " - 16 x 2" Zinc-Plated Bolt HHCS	4
11	33-542-001	Assembly, pulley	1
12	21-537-002	Weldment, wheel brake assembly	1
13	21-037-015	Brake lever, formed	1
14	01-640-031	Pump, manual, 24in. stroke	1
15	11010	$\frac{1}{4}$ " - 20 x 1 $\frac{3}{4}$ " HHCS zinc-plated #2 bolt	2
16	42034	$\frac{5}{16}$ " - 18UNC x 2 $\frac{1}{2}$ " U-bolt	1
17	33620	$\frac{5}{16}$ " zinc-plated lock washer	2
18	36104	$\frac{5}{16}$ " - 18 zinc-plated hex nut	2
19	33-542-002	Chain assembly (#50), hydrapulley	1
20	33018	$\frac{3}{4}$ " USS zinc-plated flat washer	2
21	36102	$\frac{1}{4}$ " - 20 zinc-plated hex nut	2

Fig. 2: HYDRA-4 exploded parts diagram & bill of materials



Item No.	Part No.	Description	Quantity
1	33-514-093	Frame Weldment	1
2	33-513-043	Deck Plate Weldment	1
3	16-132-009	HR-4/1.25-SLB-S	2
4	11113	$\frac{3}{8}$ "-16 x 2 $\frac{1}{2}$ " Zinc-plated HHCS Bolt	2
5	37024	$\frac{3}{8}$ "-16 nylock nut	6
6	16-132-200	8" x 2" red hard rubber wheel (red)	2
7	65107	$\frac{5}{32}$ " x 2" zinc-plated cotter pin	2
8	33-027-003	Cam roller, bearing, deck	4
9	33008	$\frac{3}{8}$ " USS Zinc-Plated Flat Washer	8
10	11111	$\frac{3}{8}$ " - 16 x 2" Zinc-Plated Bolt HHCS	4
11	33-542-001	Assembly, pulley	1
12	21-537-002	Weldment, wheel brake assembly	1
13	21-037-015	Brake lever, formed	1
14	11010	$\frac{1}{4}$ " - 20 x 1 $\frac{3}{4}$ " HHCS zinc-plated #2 bolt	2
15	42034	$\frac{5}{16}$ " - 18UNC x 2 $\frac{1}{2}$ " U-bolt	1
16	33620	$\frac{5}{16}$ " zinc-plated lock washer	2
17	36104	$\frac{5}{16}$ " - 18 zinc-plated hex nut	2
18	16-132-201	Caster, PP-3/1.25 swivel (red)	2
19	33-542-003	Chain assembly (#50), hydrapulley	1
20	33018	$\frac{3}{4}$ " USS zinc-plated flat washer	4
21	36102	$\frac{1}{4}$ " - 20 zinc-plated hex nut	2
22	01-640-031	Pump, manual, 24in. stroke	1

Fig. 3: HYDRA-HD exploded parts diagram & bill of materials



Item No.	Part No.	Description	Quantity
1	33-514-094	Frame Weldment	1
2	33-513-045	Deck Plate Weldment	1
3	16-132-009	HR-4/1.25-SLB-S	4
4	11113	$\frac{3}{8}$ "-16 x 2 $\frac{1}{2}$ " Zinc-plated HHCS Bolt	4
5	37024	$\frac{3}{8}$ "-16 nylock nut	8
6	33-027-003	Cam roller, bearing, deck	4
7	11111	$\frac{3}{8}$ " - 16 x 2" Zinc-Plated Bolt HHCS	4
8	33008	$\frac{3}{8}$ " USS Zinc-Plated Flat Washer	8
9	16-132-327	Caster, PU-3/1.5-S swivel (red)	2
10	33-542-001	Assembly, pulley	1
11	11010	$\frac{1}{4}$ " - 20 x 1 $\frac{3}{4}$ " HHCS zinc-plated #2 bolt	2
12	42034	$\frac{5}{16}$ " - 18UNC x 2 $\frac{1}{2}$ " U-bolt	1
13	33620	$\frac{5}{16}$ " zinc-plated lock washer	2
14	36104	$\frac{5}{16}$ " - 18 zinc-plated hex nut	2
15	33-542-003	Chain assembly (#50)	1
16	36102	$\frac{1}{4}$ " - 20 zinc-plated hex nut	2
17	01-640-043	Pump, manual, 24in. stroke	1

Functions Checks/Tests:

Before operating the HYDRA lift, verify that each of the following systems function normally:

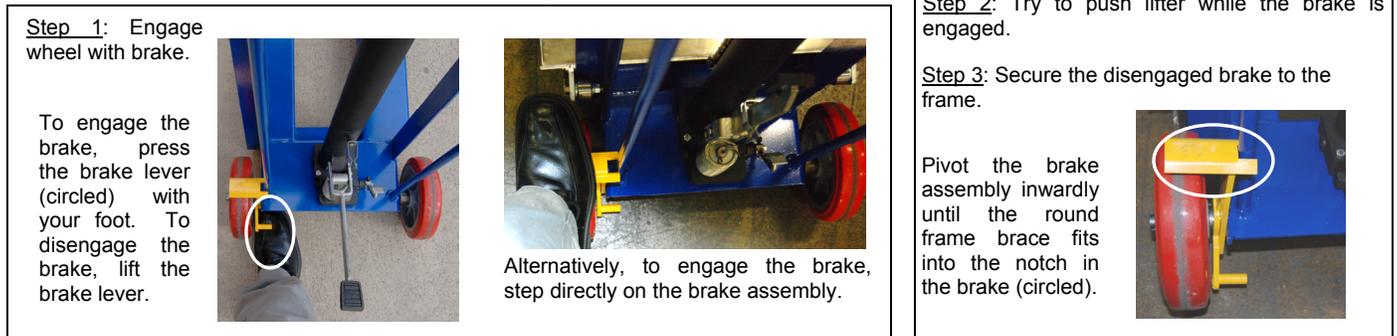
I. Hydraulic system: raise and lower the deck to verify normal operation.

Normal Function — Pump the hydraulic pedal several times with your foot. Press down on the pedal; when the pedal reaches the bottom of its stroke, release it to allow the pedal to return to the neutral position. With each stroke, the deck should rise by a noticeable increment, and should maintain its position after the pedal is released.



II. Wheels/Rollers: to verify that the wheels turn smoothly and are undamaged, push the lifter far enough to allow the rear wheels to complete a few full revolutions. If the lifter wobbles as you push it, check the surface of each wheel for embedded debris. Remove all debris; then repeat the process to determine whether the vibration problem has been resolved. If the problem persists, notify maintenance personnel.

III. Brakes [HYDRA-2 and -4 models]: engage the brakes; then try to roll the lifter. The HYDRA should not be able to roll (forward or reverse) more than an insignificant amount.



Operation:

Safe operation is the operator's responsibility [ANSI/ITSDF B56.10]. The operating instructions in this manual supplement the rules applied at your workplace.

⚠️ WARNING DO NOT operate the HYDRA lift until you read AND understand every instruction. If you do not understand an instruction, contact Vestil for clarification. To reduce the possibility of sustaining or causing serious personal injuries, always:

- Review the safety guidelines on p. 3 before each use;
- Apply proper loading techniques (p. 8);
- Ask a coworker to help you load and unload the lifter.

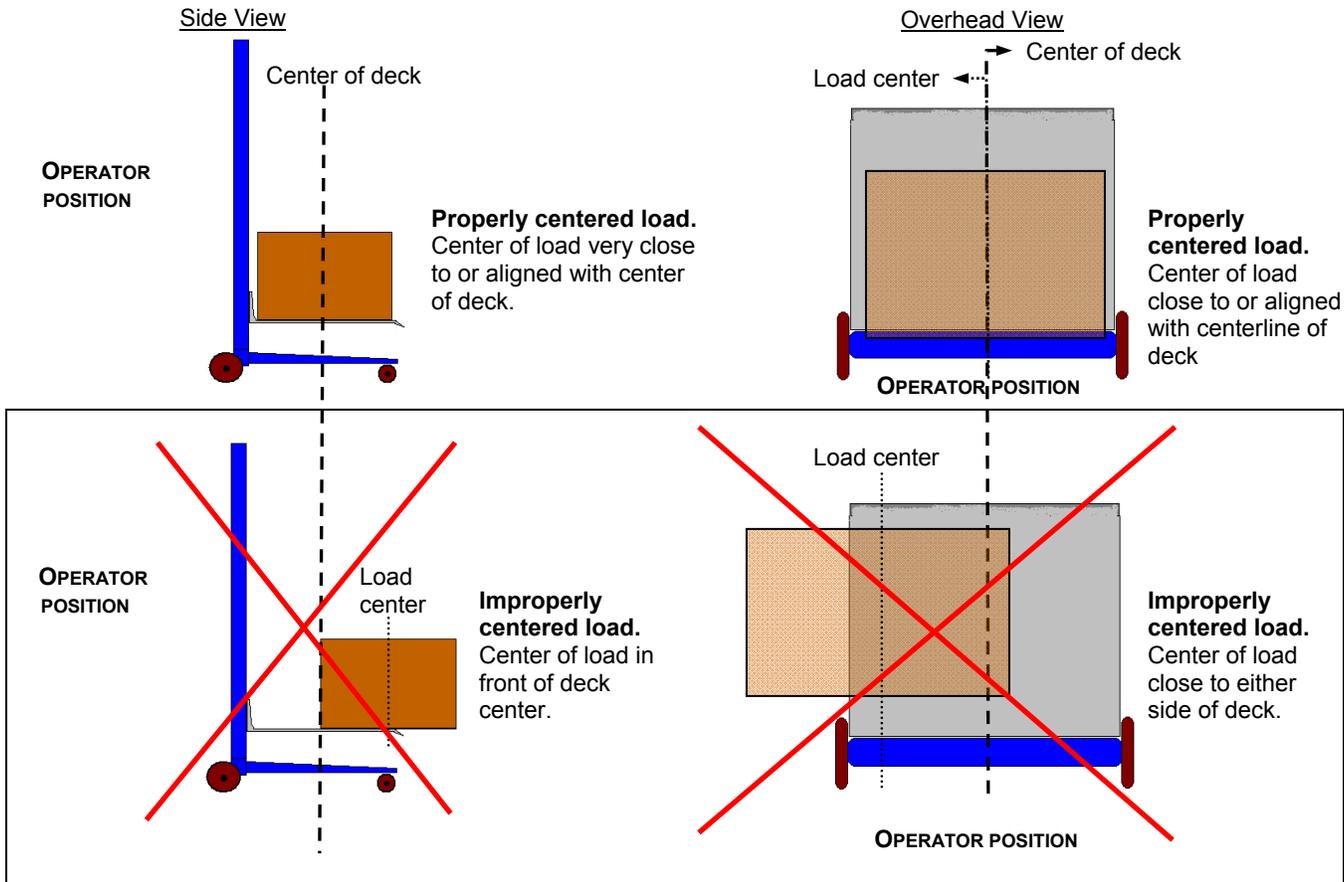
“Operator” means a person, who is trained and authorized to use a manually propelled high lift device. ONLY persons who have successfully completed a training program, like the courses outlined on p. 4-5 of B56.10-2006, should operate the HYDRA-Lift. Safe operation requires operators to:

- Develop safe working habits and a process for identifying hazards that exist or might be encountered during operation;
- Conduct thorough inspections of the usage area to identify unusual/hazardous conditions. Walk the path you will use to transport loads with the lifter beforehand. Do not use the HYDRA lift if the floor (or other supporting surface) is uneven or damaged or cannot support the combined weight of the operator, the lifter and the load.
- Make sure that the lifter has been inspected as recommended in the “Inspections & Maintenance” section of this manual (p. 9). Use the lifter ONLY IF it is deemed safe to use by designated inspection personnel.

Step 1: Always maneuver the HYDRA-lift from the "Operator Position" (shown below). Maneuver the lifter to a position near the load and then apply the brake.

NOTE: Although Hydra-4 and -HD models have 4 wheels/casters, and therefore can be pushed, Hydra-2's only have 2 wheels. Consequently, a Hydra-2 functions like a dolly. To drive a Hydra-2, pivot the dolly towards yourself, i.e. towards the operator, and push the dolly to the desired location.

Step 2: Place the load on the deck. Always center the load and secure it to the deck if the material is likely to slide.



Step 3: Slowly lower the deck by pressing the release pedal (identified with an arrow in the photograph). Allow the deck to descend until it is fully lowered. Disengage the brake, and push the lifter to the desired location. If obstacles in the travel path require you to raise the deck to avoid contact between the load and those obstacles, raise the deck to an appropriate elevation, pass over the obstacle, and then return the deck to the lowered position.

Step 4: Unload the lifter; then return the HYDRA to its storage location. Engage the brake and secure the hydraulic pedal in the stored position (circled).



NOTICE A proper storage location is one where the unused lifter will not:

1. Interfere with or obstruct traffic or other operations;
2. Be exposed to corrosive chemicals or water, either as a consequence of weather or of worksite conditions.

Inspections & Maintenance:

The end-user is responsible for ensuring that the lifter is properly inspected and maintained. Only trained, authorized persons should be allowed to perform inspections of and maintenance on the lifter.

Inspections:

⚠️WARNING Inspection and maintenance personnel should engage the brake and immobilize the deck before conducting inspections or performing maintenance on the HYDRA-Lift.

- DO NOT use the lifter if structural damage exists. Structural damage includes, but is not limited to, cracked welds, warping or other deformation of the frame, deck, chain or hydraulic cylinder.
- Restore the lifter to normal operating condition BEFORE using it again.

Before each use: The person(s) authorized by the end-user (your employer, for instance) to inspect the lifter must do so before it is used for the first time and before each use thereafter. If the lifter is infrequently used, inspect the unit at least once every 2 weeks. Inspect the HYDRA-lift for:

1. Warping or other damage of the lift chain;
2. Noisy or abnormal movement of the deck when either the hydraulic pedal or the release pedal is pressed;
3. Frame damage or deformation;
4. Excessive wear of any load-bearing part(s);
5. Noisy or rough operation of the castors/wheels;
6. Dirt or other matter on the surface of the lifter.

Maintenance: the end-user, i.e. you and/or your employer, must implement a maintenance program to ensure the proper function and safe condition of the lifter. Page 9 of ANSI/ITSDF standard B56.10-2006 describes some recommended maintenance procedures, and the following steps should be utilized in conjunction with those recommendations.

⚠️WARNING The end-user is responsible for selecting and training employees to work on the lifter. “Work on” refers to operating, loading, cleaning, servicing, maintaining, or repairing the product. ONLY trained, authorized maintenance personnel or contractors should perform inspection, maintenance, or repair work.

Step 1: Tag the lifter, “Out of Service.”

Step 2: Conduct a “Before each use” inspection. If deformity, corrosion, rusting, or excessive wear of structural members is found, DO NOT use the lifter. If the deck does not move smoothly or makes noise as it moves up or down, apply a silicon wax or silicon spray to the mast frame (part of the frame that the roller bearings contact). Oil the chain if it squeaks or articulates roughly.

Step 3: Remove any dirt or other matter from the chain, deck and other lifter surfaces.

Step 4: Perform all other necessary adjustments and/or repairs, but DO NOT modify the lifter.

⚠️WARNING The reader should understand the important difference between necessary adjustments and repairs, and modifications.

An “adjustment” is a simple correction that restores the lifter to normal operating condition, such as tightening loose fasteners, or removing dirt or other debris from the surface. “Repair” refers to removing worn parts and installing replacement parts.

➤ DO NOT use the HYDRA-lift if adjustments and/or repairs are incomplete! Return it to service ONLY after finishing all necessary repairs and adjustments.

A “modification” is a change that alters the lifter from normal operating condition, like bending the structural members or removing a part or several parts. **NEVER** modify the unit without the express, written approval of Vestil. Modifications may render the lifter unsafe to use.

Step 5: Make a dated record of any repairs, adjustments and/or replacements.

Troubleshooting Guide

Fully lower the deck before beginning maintenance work on the lifter. If the issue/problem with your HYDRA lift is not addressed in the table below, contact Vestil for answers.

Issue / Problem	Possible Causes	Suggested Corrective Action
1. I pump the pedal, but the deck does not rise; -OR- I can move the pedal with very little force.	A. Oil not getting through the pump because i) too little oil in reservoir or ii) pump is air-locked. B. Relief valve is opening. C. Foreign material holding inlet check valve open. D. Foreign matter in release valve.	A. i) Check oil level in reservoir. ii) Bleed air from hydraulics (see "Remove air from hydraulic system," p. 11). B. Verify that load does not exceed lifter's maximum rated load (see "Product Introduction" on p.2) C. Remove material from inlet check valve assembly (see "Inlet Check Valve Assembly Cleaning," p. 11; photograph on p. 14). D. Disassemble release valve and clean the components. (See photograph of release valve assembly on p. 13).
2. Deck rises during pedal down stroke, but lowers during pedal upstroke.	A. Foreign material preventing outlet-check from closing.	A. Clean outlet check assembly
3. Deck rises but does not maintain raised position (slowly returns to lowered position over time).	A. Foreign material holding outlet-check open B. Foreign material holding relief-valve open C. Foreign material holding release-valve open	A. Disassemble and clean the outlet check valve components. B. Disassemble and clean the relief-valve components. C. Disassemble and clean the release-valve components.
4. Deck rises when pedal pumped, but in smaller increments than normal.	A. Foreign matter holding open relief valve. B. Foreign matter holding inlet check valve open. C: Foreign matter holding outlet check open.	A. Disassemble and clean the relief valve components. B. Disassemble and clean inlet check valve parts. (p. 11 and 13). C. Clean outlet check assembly.
5. Great effort required to operate foot pump.	A. Operating pressure exceeds the pump's force capability.	A. Reduce load weight.
6. Deck will not lower.	A. Release pedal screw out of adjustment. B. Pedal not properly positioned on release cam. C. Pedal lock-screw not tight. D. Release cam broken. E. Debris obstructing flow control. F. Internal components missing. G. Something preventing deck cam roller bearing(s) from rolling (see Fig. 2 item #9; Fig. 3 item #9; Fig. 4 item #6).	A. See "pedal adjustment" on page 11. B. Pedal lock screw must be seated into the mating detent on the release-cam. C. The screw must be snug against the release cam to prevent it from rotating relative to the cam during use. D. Replace broken components. E. Flush the jack assembly and add fresh hydraulic fluid. F. Study break-down (p. 12-15); replace and install components as shown. G. Inspect frame for obstructions interfering with roller bearing movement; remove obstruction(s).
7. Deck lowers maddeningly slowly when release pedal pressed.	A. Release pedal screw improperly adjusted. B. Pedal not properly positioned on release cam. C. Pedal lock screw not tight. D. Release cam broken. E. Debris obstructing flow control.	A. See "pedal adjustment" on page 11. B. Pedal lock screw must be seated in the mating detent on the release-cam. C. The screw must be snug against the release cam to prevent it from rotating relative to the cam during use. D. Replace broken components. E. Flush jack assembly and install new fluid.
8. Deck lowers too quickly.	A. Release pedal screw out of adjustment. B. Pedal lock-screw not properly positioned on release cam.	A. See "pedal adjustment" procedure on page 11. B. Pedal lock screw must be seated into the mating detent on the release-cam.
9. Deck lowers in jerks.	A. Air trapped in hydraulic system.	A. Bleed air from system (see "Remove air from hydraulic system," p. 11). B. Add oil to hydraulic reservoir.

Detailed Troubleshooting — Hydraulic Foot Pump

The following tools are required to resolve the issues listed above:

- 5mm hex key wrench
- Standard (flat head) screwdriver
- Adjustable crescent wrench

Hydraulic Fluid Level Adjustment

1. Remove the fill/breather plug.
2. Hydraulic fluid level should be 2 - 2.5 inches below the bottom of the fill hole when the cylinder rod is fully lowered. Do not overfill the reservoir; if overfilled, oil may leak or seep around the fill plug.

NOTICE ONLY use ISO AW-32 anti-wear hydraulic pump oil. The oil must be clean; strain the oil, if necessary, before adding it to the reservoir.

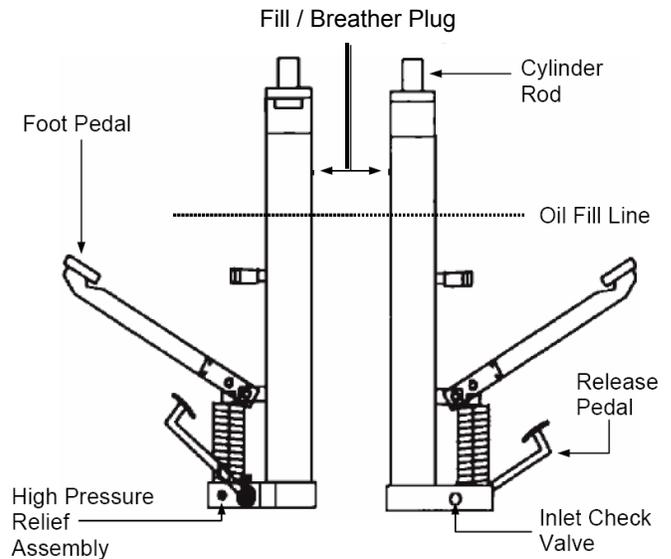
Remove Air Trapped Inside Hydraulic System

1. Pump the foot pedal until the cylinder rod is fully extended. The small hole near the base of the rod will pass by the high pressure seal and air will automatically vent into the reservoir tube.

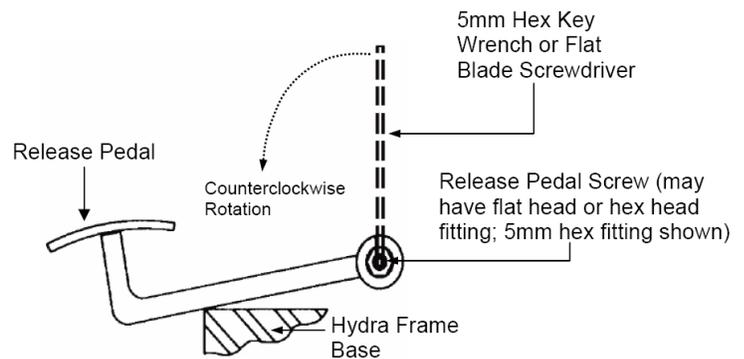
Release Pedal Adjustment

1. Loosen the release pedal screw retaining nut (p. 13).
2. Loosen the release pedal screw: $\frac{1}{2}$ to a full counterclockwise turn using either a 5mm hex key wrench (Allen wrench) or flat blade screwdriver.
3. Apply a test weight to the deck; pump the foot pedal until the deck rises ~2ft; then press the release pedal down. [If the deck lowers, turn the release pedal screw by another $\frac{1}{2}$ turn, and repeat step 3. The deck should not lower when you press the release pedal.]
4. Turn release pedal screw *clockwise* $\frac{1}{8}$ to $\frac{1}{4}$ turn; repeat step 3. The deck now *should* lower; if it does not, turn the screw clockwise by another $\frac{1}{8}$ turn. Repeat this step until the desired deck-lowering rate is achieved.
5. Tighten the retaining nut. To prevent the screw from rotating while tightening the nut, either hold the screw with your fingers or insert the 5mm hex key wrench (or flat blade screwdriver) into the fitting.

Proper Hydraulic Fluid Level



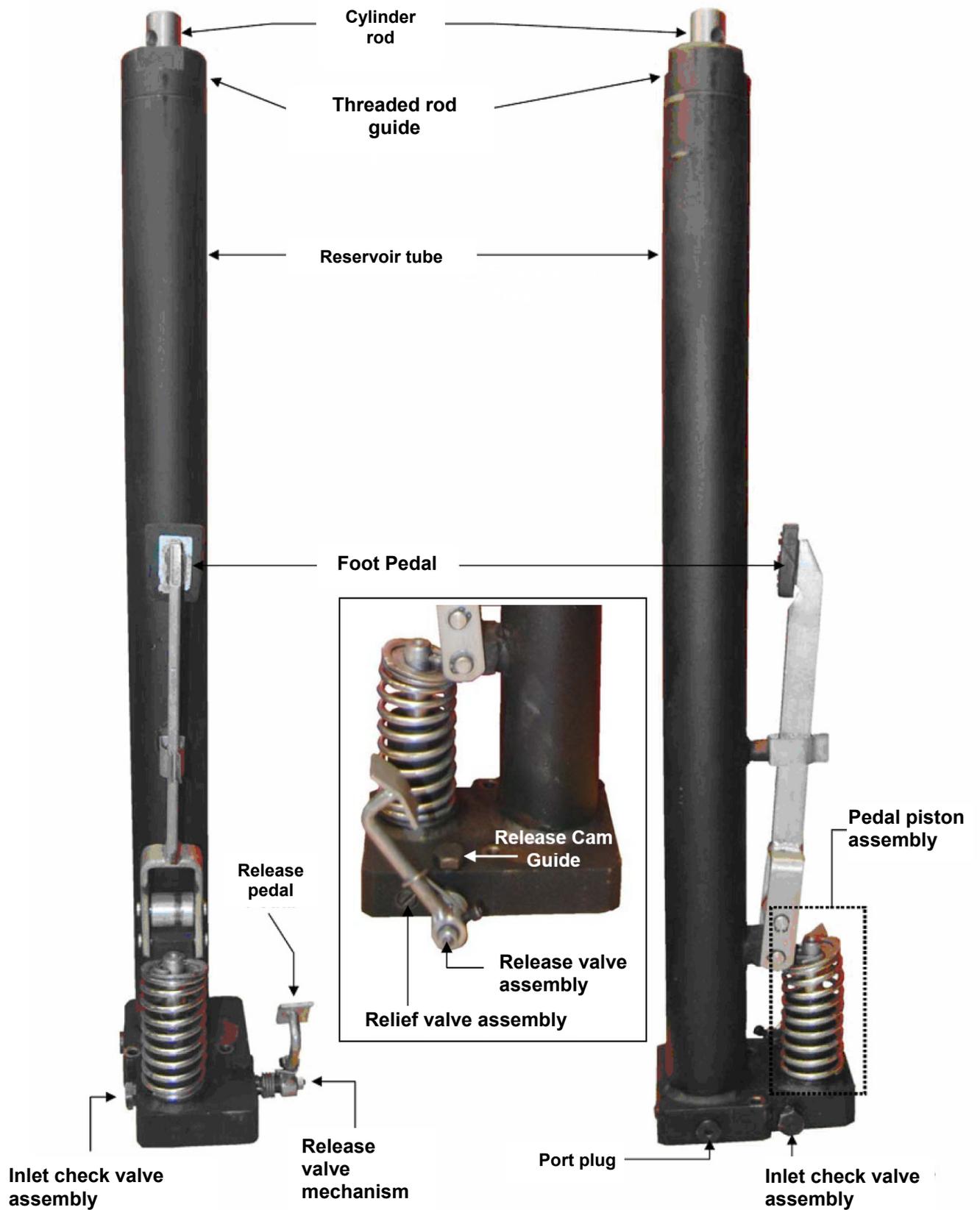
Release Pedal Adjustment



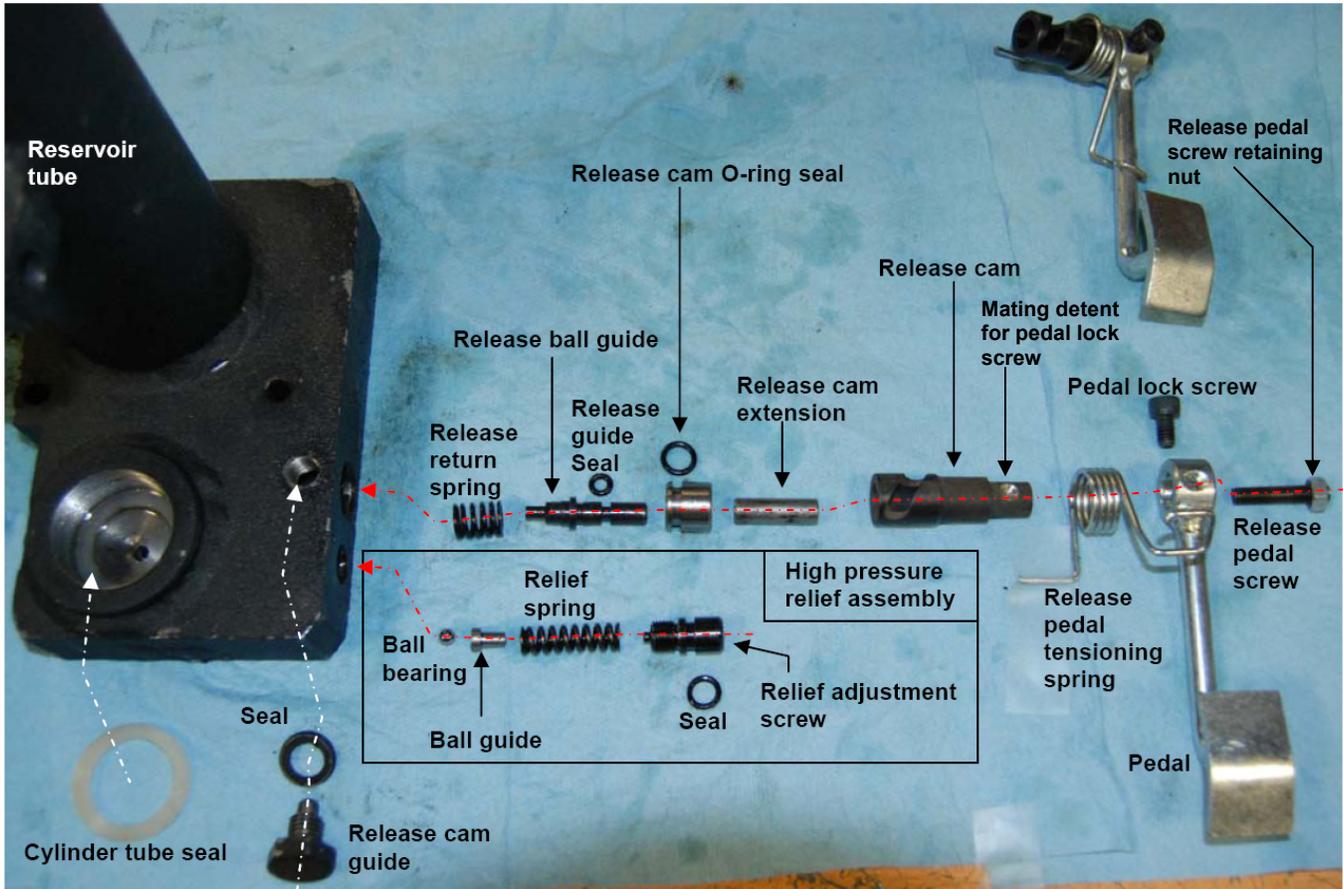
Inlet Check Valve Assembly Cleaning

1. Remove inlet check port plug with a crescent wrench (see p. 14).
2. Clean the valve components.
3. While the valve is disassembled, pump the foot pedal at least 5 times. Fluid will discharge from the inlet check valve opening, which should dislodge debris clogging the valve.
4. Reassemble the valve & reconnect the port plug.
5. Add hydraulic fluid as necessary according to the "Hydraulic Fluid Level Adjustment" instructions above.

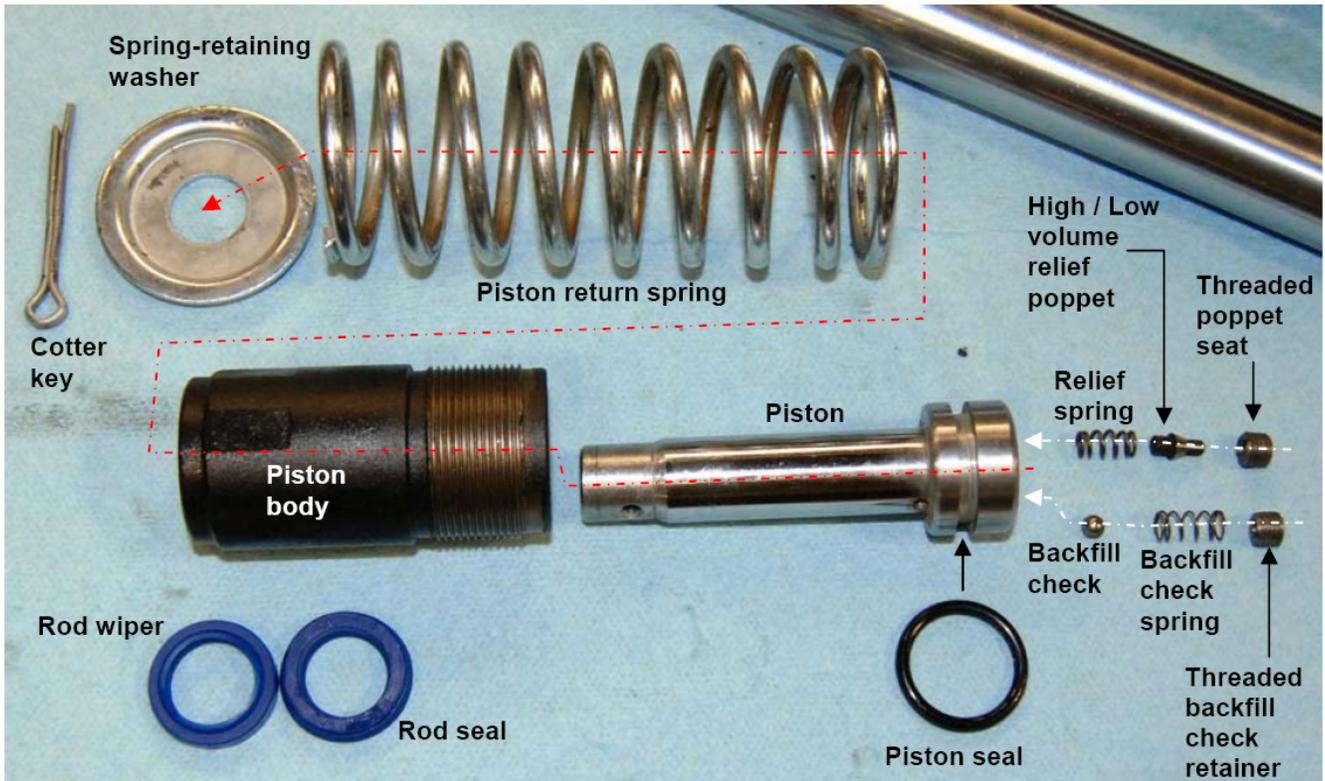
Hydraulic foot pump



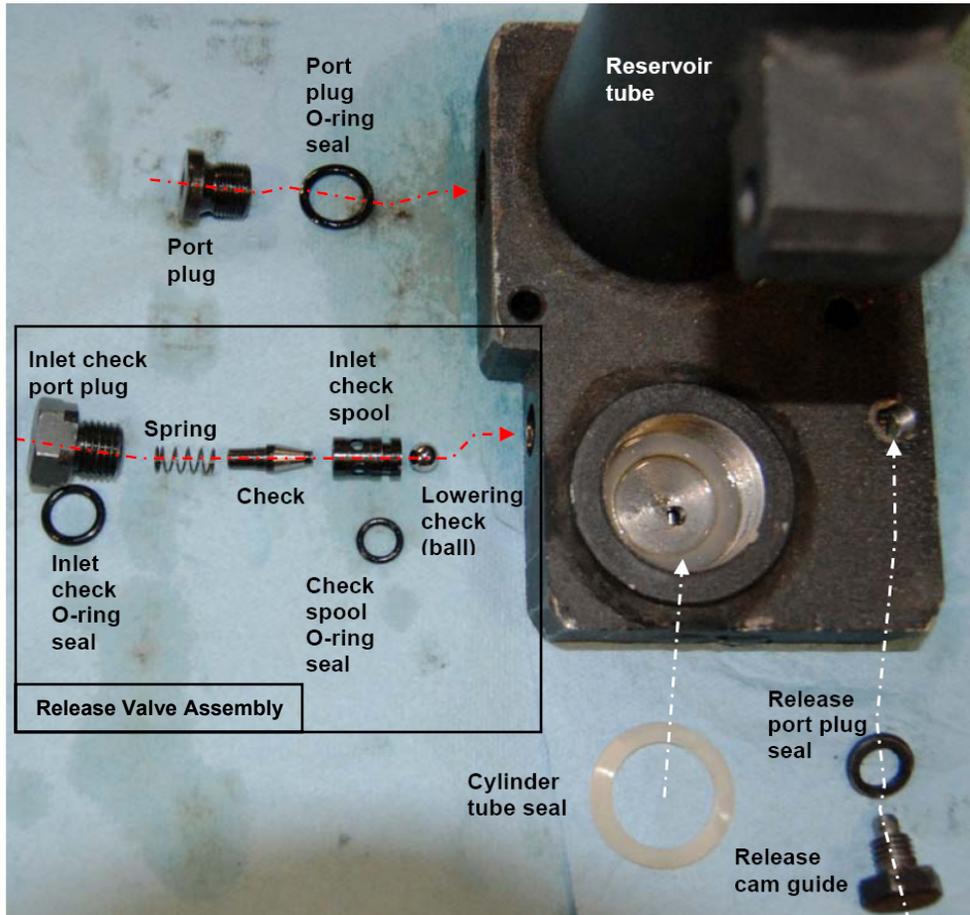
Release Valve and High Pressure Relief Valve Assemblies



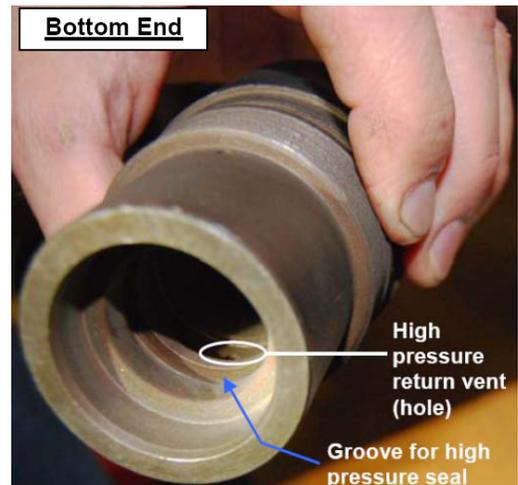
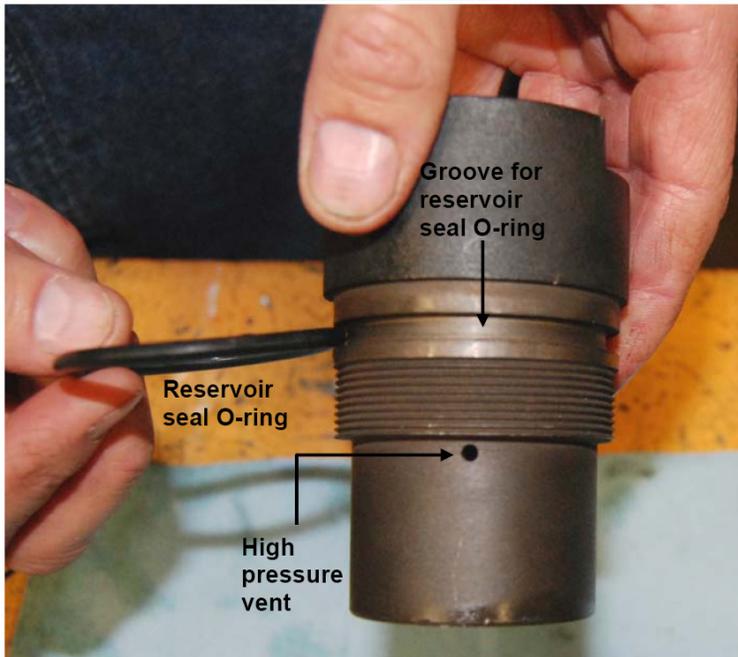
Pedal Piston Assembly



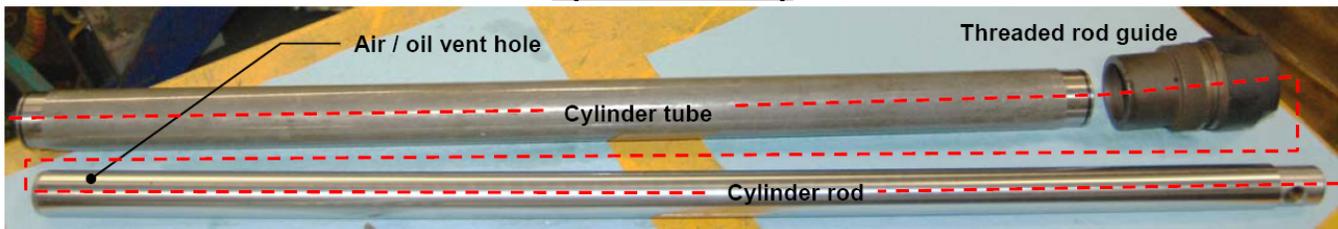
Inlet Check Valve Assembly



Threaded Rod Guide



Cylinder Assembly



Close-up View of Cylinder Assembly

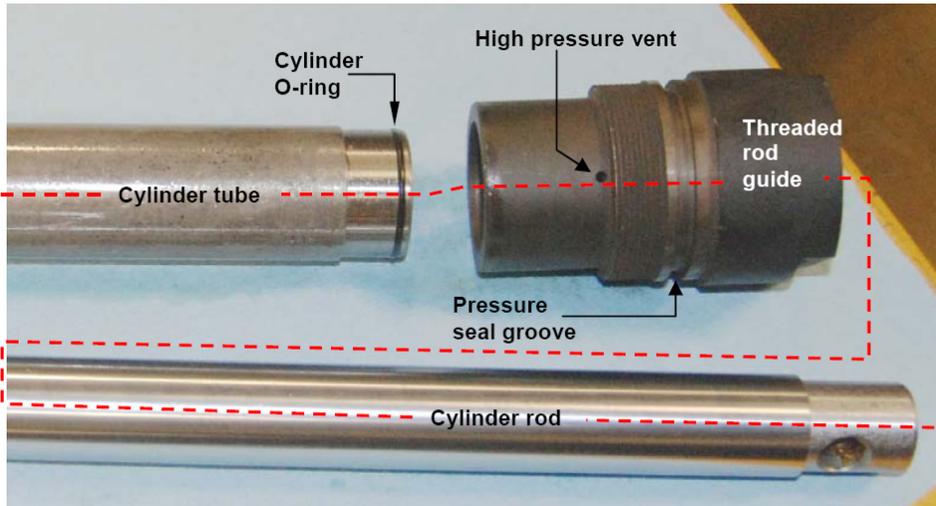
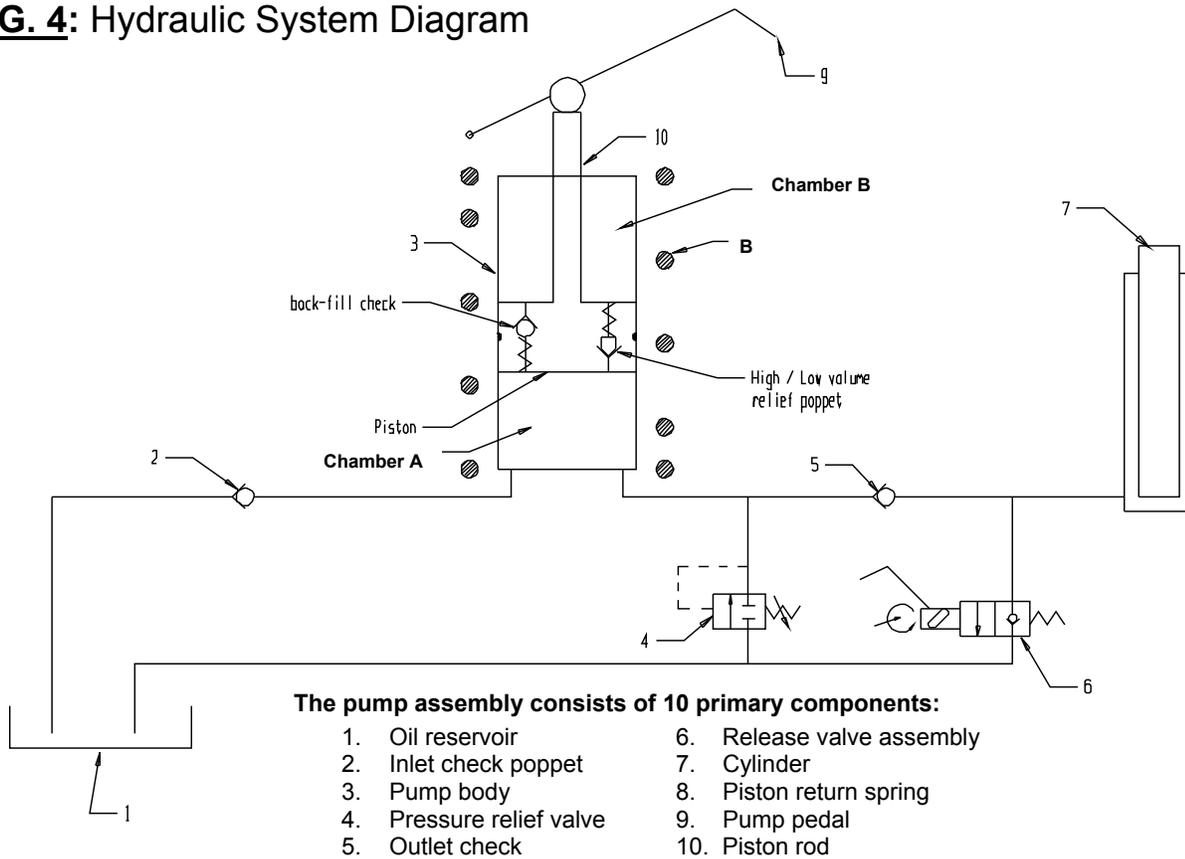


FIG. 4: Hydraulic System Diagram



The piston assembly incorporates a two-speed mechanism comprised of five main components:

- | | |
|----------------------------------|---|
| 1. Piston blind-side – Chamber A | 4. High-volume / low-volume relief poppet |
| 2. Rod-side – Chamber B | 5. Piston rod |
| 3. Back-fill check | |

Detailed Explanation of Hydraulic System Operation:

Raising the deck:

The sequence of events begins with the foot pedal in the neutral, or “home”, position. The operator first activates the hydraulic system by pressing the foot pedal down. This is referred to as the “power-stroke”. Next, after releasing the foot pedal, the piston return spring (B) exerts an upward force on the piston. Consequently, oil flows from the reservoir, through the inlet check valve, and into chamber A. At the same time, oil trapped in chamber B (from a prior cycle) flows across the back-fill check into chamber A. When another power stroke occurs, the inlet check valve closes, which prevents oil from flowing back into the reservoir; simultaneously, the outlet check valve opens and oil flows into the cylinder. In preparation for the next stroke, the piston return spring forces the piston and the foot pedal back to the home position. Chamber A again fills with oil as the piston rises.

The pump piston has two modes of operation: 1) Low-pressure, high-volume; and 2) High-pressure, low-volume.

1. Low-pressure, High-volume.

When raising an unloaded or lightly loaded platform, the piston will function in low-pressure mode. As the operator presses the foot pedal (power stroke):

- a. Back-fill check remains closed;
- b. High / low volume relief poppet remains closed; and
- c. All oil in chamber A flows into the cylinder.

2. High-pressure, low-volume

When raising a partly loaded or heavily loaded platform, the piston will function in high-pressure mode. As the operator executes a power stroke:

- a. Back-check remains closed;
- b. High / low volume relief poppet opens;
- c. A volume of oil equal to the annulus (piston diameter minus the rod diameter) flows from A to B;
- d. Oil equal to the cross-sectional area of the rod flows to the cylinder; and
- e. The opening force of the high / low volume relief poppet adds to the cylinder load resistance.

Pressure relief system

If a load that exceeds the maximum rated load is placed on the deck, or a mechanical malfunction interferes with the movement of the deck, the pressure relief valve will open during a power-stroke. The pressure relief valve reduces the likelihood that excessive loads will damage the lifter frame or the hydraulic system. The pressure relief valve shunts oil directly from chamber A to the reservoir.

Release valve assembly

The foot-actuated release valve assembly is the mechanism that allows the deck to lower. When the release pedal is pressed down, the release valve opens, and oil flows from the cylinder to the reservoir. The lowering rate is adjustable; instructions appear under “Release pedal adjustment” on p. 11. Lowering rate is also variable: the farther down the release pedal is pressed, the more rapidly the deck descends. The weight of a load on the deck affects the flow rate, and therefore, a heavier load will lower more rapidly than a lighter load, regardless of the lowering rate selected. When the operator lets the pedal loose, the release pedal tensioning spring returns the release pedal to the home position, which automatically closes the valve.

Label placement diagram:

Only use the HYDRA-Lift if ALL labels are readable and undamaged. Contact Vestil to order replacement labels.

Labels 527 & 287 affixed to operator side of display panel

Label 287: Model & serial number

MODEL/MODÉLO/MODÈLE _____

STATIC CAPACITY (evenly distributed) _____ lbs.

LA CAPACIDAD CONSTANTE (distribuida uniformemente) _____ kgs.

CAPACITÉ STATIQUE (distribuée régulièrement) _____ kgs.

SERIAL/SERIE/SÉRIE _____

287 REV 0812



Label display panel

Label 527: Hazards of improper use

⚠ **WARNING**

Only trained, authorized persons should operate this device. Improper operation might result in serious personal injuries sustained by the truck operator and/or bystanders. Operators must observe the following safety-enhancing practices:

- **BEFORE** operating, inspect mast, carriage, forks/deck, cable/chain, wheels, and brakes for damage. **DO NOT** use if damaged.
- **ALWAYS** walk travel path before using truck to identify hazards:
 - 3 **DO NOT** contact electrical lines or overhead objects with device or load;
 - 3 **DO NOT** travel up/down inclines if an alternate route is available;
 - 3 **DO NOT** travel over debris.
- **ONLY** travel with forks/deck in lowest position appropriate for conditions.
- **ALWAYS** center and evenly distribute loads on forks/deck.
- **ALWAYS** secure load to forks/deck.
- **ONLY** drive or operate truck functions from operator position.
- **DO NOT** exceed maximum rated load (capacity).
- **DO NOT** allow people to ride on device.
- **DO NOT** lift loads over people; **DO NOT** permit people to walk beneath the forks/deck when raised (loaded or unloaded).
- **DO NOT** leave unattended UNTIL fully lowered AND unloaded.
- **DO NOT** modify device in any way.

⚠ **ADVERTENCIA**

Solo personas entrenadas y autorizadas deben operar este equipo. La operación inadecuada podría resultar en daños serios al operario del camión y/o a los transeuntes. Los operarios deben observar y seguir las siguientes prácticas de seguridad:

- **ANTES** de usar, inspeccione el mástil, el equipo, las horquillas/plataforma, cable/cadena, ruedas y frenos por daños. **NO** use si se observan daños.
- **SIEMPRE** camine el trayecto de viaje antes de usar el camión para identificar riesgos:
 - 3 **NO** toque las líneas eléctricas u objetos altos con el dispositivo o la carga;
 - 3 **NO** viaje en inclinaciones de subida y bajada si hay otra ruta alternativa;
 - 3 **NO** viaje sobre desechos.
- **SOLO** viaje con las horquillas/plataforma en la posición de descenso más apropiada para las condiciones.
- **SIEMPRE** centre y distribuya las cargas uniformemente en las horquillas/plataforma
- **SIEMPRE** asegure la carga a las horquillas/plataforma.
- **SOLO** conduzca u opere las funciones del camión desde la posición del operario.
- **NO** exceda la capacidad máxima tasada de carga.
- **NO** permita que la gente viaje en el equipo.
- **NO** eleve las cargas sobre la gente; **NO** permita que la gente camine debajo de las horquillas/plataforma cuando este elevada (con carga o sin carga).
- **NO** deje el equipo desatendido **HASTA** que este completamente cargado Y descargado.
- **NO** modifique el equipo de ninguna manera.

527 • Rev 1109

Label 208: Pinch point (apply to outside of both forks)

⚠ WARNING	⚠ ADVERTENCIA	⚠ AVERTISSEMENT
KEEP CLEAR OF PINCH POINT	MANTENGASE ALEJADO DEL PUNTO DE CORTE	SE TENIR À DISTANCE DU POINT DE PINCEMENT
VESTIL MANUFACTURING CORPORATION • Phone (260) 665-7586 • Fax (260) 665-1339 • sales@vestil.com • www.vestil.com		

LIMITED WARRANTY

Vestil Manufacturing Corporation ("Vestil") warrants this product to be free of defects in material and workmanship during the warranty period. Our warranty obligation is to provide a replacement for a defective original part if the part is covered by the warranty, after we receive a proper request from the warrantee (you) for warranty service.

Who may request service?

Only a warrantee may request service. *You are a warrantee if you purchased the product from Vestil or from an authorized distributor AND Vestil has been fully paid.*

What is an "original part"?

An original part is a part used to make the product as shipped to the warrantee.

What is a "proper request"?

A request for warranty service is proper if Vestil receives: 1) a photocopy of the Customer Invoice that displays the shipping date; AND 2) a written request for warranty service including your name and phone number. Send requests by any of the following methods:

Mail
Vestil Manufacturing Corporation
2999 North Wayne Street, PO Box 507
Angola, IN 46703

Fax
(260) 665-1339
Phone
(260) 665-7586

Email
sales@vestil.com

In the written request, list the parts believed to be defective and include the address where replacements should be delivered.

What is covered under the warranty?

After Vestil receives your request for warranty service, an authorized representative will contact you to determine whether your claim is covered by the warranty. Before providing warranty service, Vestil may require you to send the entire product, or just the defective part or parts, to its facility in Angola, IN. The warranty covers defects in the following original dynamic components: motors, hydraulic pumps, electronic controllers, switches and cylinders. It also covers defects in original parts that wear under normal usage conditions ("wearing parts"), such as bearings, hoses, wheels, seals, brushes, and batteries.

How long is the warranty period?

The warranty period for original dynamic components is 90 days. For wearing parts, the warranty period is 90 days. The warranty periods begin on the date when Vestil ships the product to the warrantee. If the product was purchased from an authorized distributor, the periods begin when the distributor ships the product. Vestil may, at its sole discretion, extend the warranty periods for products shipped from authorized distributors by up to 30 days to account for shipping time.

If a defective part is covered by the warranty, what will Vestil do to correct the problem?

Vestil will provide an appropriate replacement for any covered part. An authorized representative of Vestil will contact you to discuss your claim.

What is not covered by the warranty?

1. Labor;
2. Freight;
3. Occurrence of any of the following, which automatically voids the warranty:
 - Product misuse;
 - Negligent operation or repair;
 - Corrosion or use in corrosive conditions;
 - Inadequate or improper maintenance;
 - Damage sustained during shipping;
 - Accidents involving the product;
 - Unauthorized modifications: DO NOT modify the product IN ANY WAY without first receiving written authorization from Vestil. Modification(s) might make the product unsafe to use or might cause excessive and/or abnormal wear.

Do any other warranties apply to the product?

Vestil Manufacturing Corp. makes no other express warranties. All implied warranties are disclaimed to the extent allowed by law. Any implied warranty not disclaimed is limited in scope to the terms of this Limited Warranty.

