



MANUAL HYDRAULIC LIFT TRUCKS INSTRUCTION MANUAL



HYDRA-2



HYDRA-4



HYDRA-HD

MODEL NO. _____
SERIAL NO. _____

VESTIL MANUFACTURING CORP.

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NOTE: The end-user is responsible for verifying that the lifter complies with all regulations, codes, and standards that apply in the location where it is used.

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PRODUCT INTRODUCTION



Thank you for purchasing a Manual Hydraulic Lifter (“hydraulic lifter,” “HYDRA,” or simply “lifter”) made by Vestil Manufacturing Corporation (“Vestil”). Our lifters are durable, high-quality products that combine safety features and rigorous engineering. Although operation is relatively intuitive, all personnel must familiarize themselves with the instructions provided in this manual.

The lifter design includes a manual hydraulic lift system actuated by means of a foot-actuated pedal. Use your HYDRA lifter to transport and lift materials like boxes and office equipment. Additional product specifications appear in the following table:

Model	Platform Dimensions (W x L) in Inches	Vertical Range in Inches	Net Weight in Pounds	Maximum Rated Load in Pounds
HYDRA-2	20 x 16 (51cm x 41cm)	0 to 52 (0m to 1.32m)	240 (~109kg)	750 (~341kg)
HYDRA-4	20 x 22 (51cm x 56cm)	5.5 to 52 (0.14m to 1.32m)	260 (~118kg)	750 (~341kg)
HYDRA-HD	24 x 22 (61cm x 56cm)	5.5 to 55 (0.14m to 1.40m)	299 (~136kg)	1,000 (~455kg)

Vestil Manufacturing Corp. created this manual to acquaint owners and users of our manual hydraulic lifters with safe operation and maintenance procedures. Employers are responsible for instructing employees to properly use the product. Employees and any other persons, who might foreseeably use, repair, or perform maintenance on the lifter, must read and understand every instruction BEFORE using the device. Operators should have access to the manual at all times and should review the directions before each use. Contact Vestil for answers to any questions that remain unanswered after reading the entire manual.

Although Vestil diligently strives to identify foreseeable, hazardous situations, this manual cannot possibly catalog and address every conceivable danger. Of course, the end-user is ultimately responsible for exercising sound judgment and common sense at all times.


SAFETY PRINCIPLES

We offer three models of manual hydraulic lift truck: two 750 pound (~340kg) capacity models and a heavy-duty 1,000 pound (~455kg) capacity model. Each unit conforms to the generalized specifications disclosed in this manual and fulfills our demanding standards for quality, safety and durability.

Vestil Manufacturing Corp. recognizes the critical importance of workplace safety. Each person who might participate in operation or maintenance of this product must read the manual. Read the entire manual and fully understand the directions BEFORE using the lifter or performing maintenance on it. If you do not understand an instruction, contact Vestil for clarification. Failure to adhere to the directions in this manual might result in serious personal injury or even death.


Vestil is not liable for any injury or property damage that occurs as a consequence of failing to apply the safe maintenance and operation methods that appear either in this manual or on labels affixed to the product. Furthermore, failure to exercise good judgment and common sense may result in property damage, serious personal injury or death, and also are not the responsibility of Vestil.

This manual classifies personal injury risks and situations that could lead to property damage with SIGNAL WORDS. These signal words announce an associated safety message. The reader must understand that the signal word chosen indicates the seriousness of the hazard identified according to the following convention:

 DANGER 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.

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

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

 NOTICE Identifies practices not related to personal injury, such as operation that could damage the lifter. No safety alert symbol (equilateral triangle enclosing an exclamation point) accompanies this signal word.

SAFETY GUIDELINES

Failure to read and understand the instructions included in this manual before using or servicing the HYDRA lift constitutes misuse of the product. Study the entire manual before you use the lifter for the first time, before each subsequent use, and to periodically refresh your understanding of safe use and recommended maintenance procedures. If questions remain after you finish reading the manual, contact Vestil for answers. DO NOT attempt to resolve any problems with the lifter unless you are certain that it will be safe to use afterwards.

⚠ DANGER

To avoid the risk of electrocution:

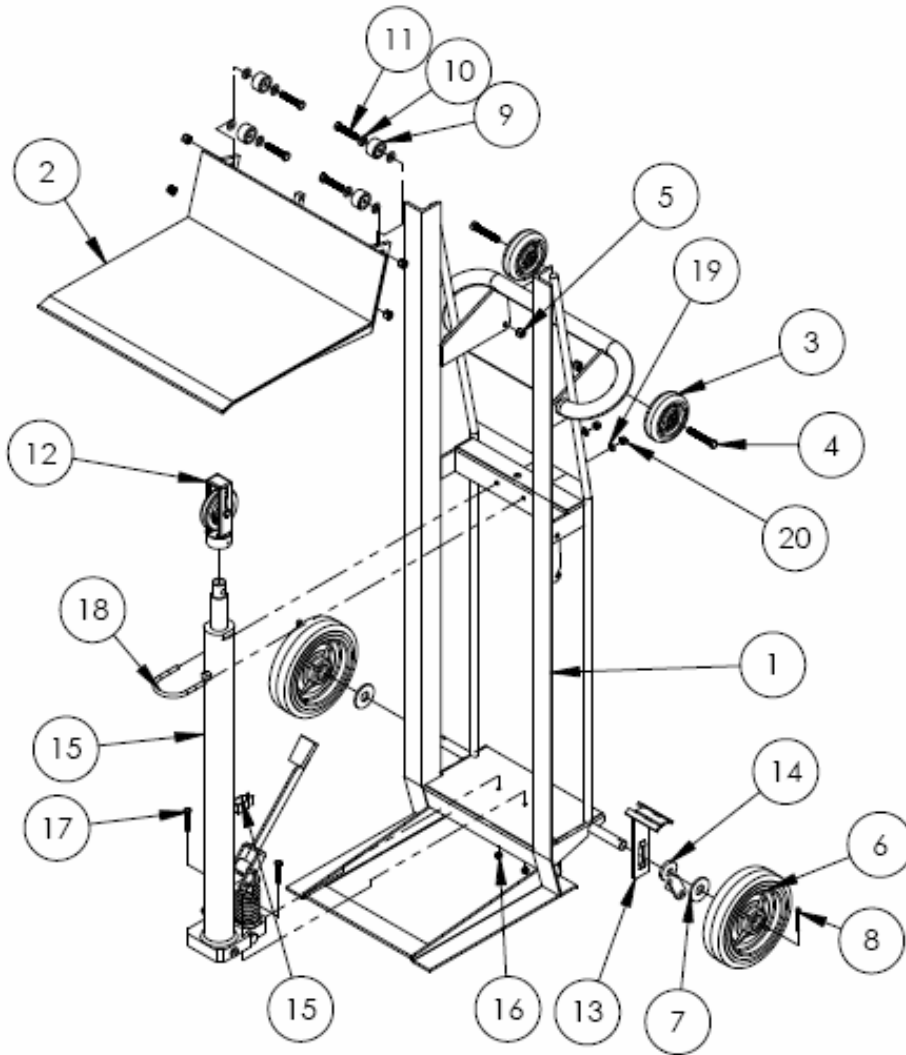
- DO NOT *contact* electrified wires with the lifter or the load.
- DO NOT *operate* the HYDRA lift *close to* electrified wires or other sources of electricity;

⚠ WARNING

Using the lifter improperly might result in serious personal injuries or even death. To limit the obvious risks associated with using this type of device:

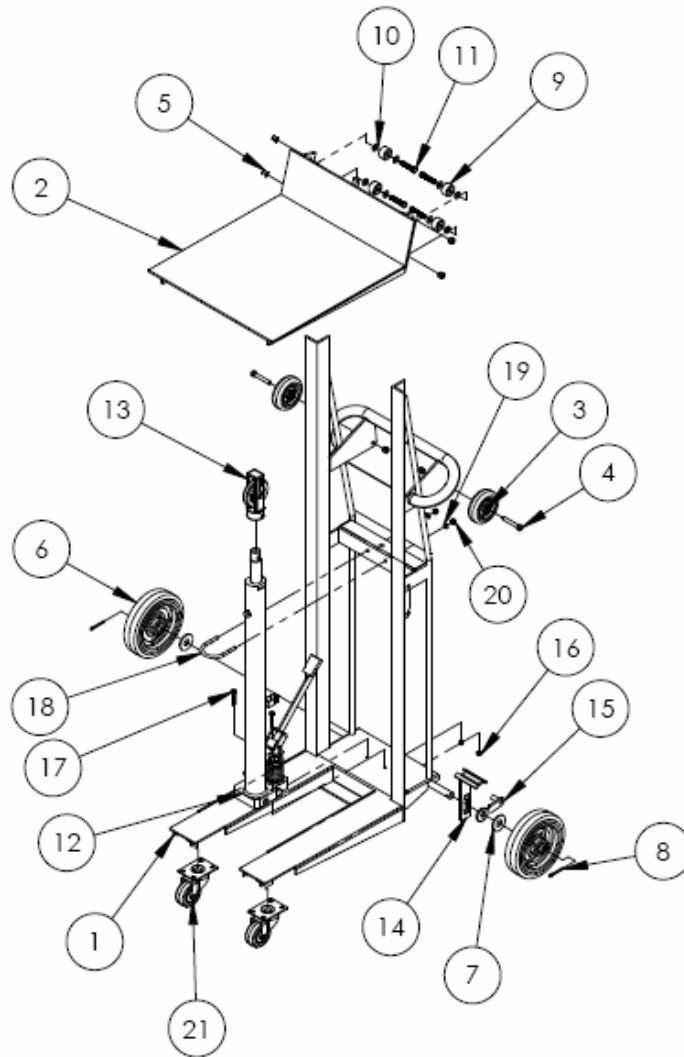
- Inspect the lifter before each use according to the instructions that appear on p. 9. DO NOT use the lifter unless it passes the inspection.
 - Prior to each use, ALWAYS inspect the area where you intend to use the lifter. Inspect the area for unusual conditions that might require special precautions. 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 & PARTS LIST



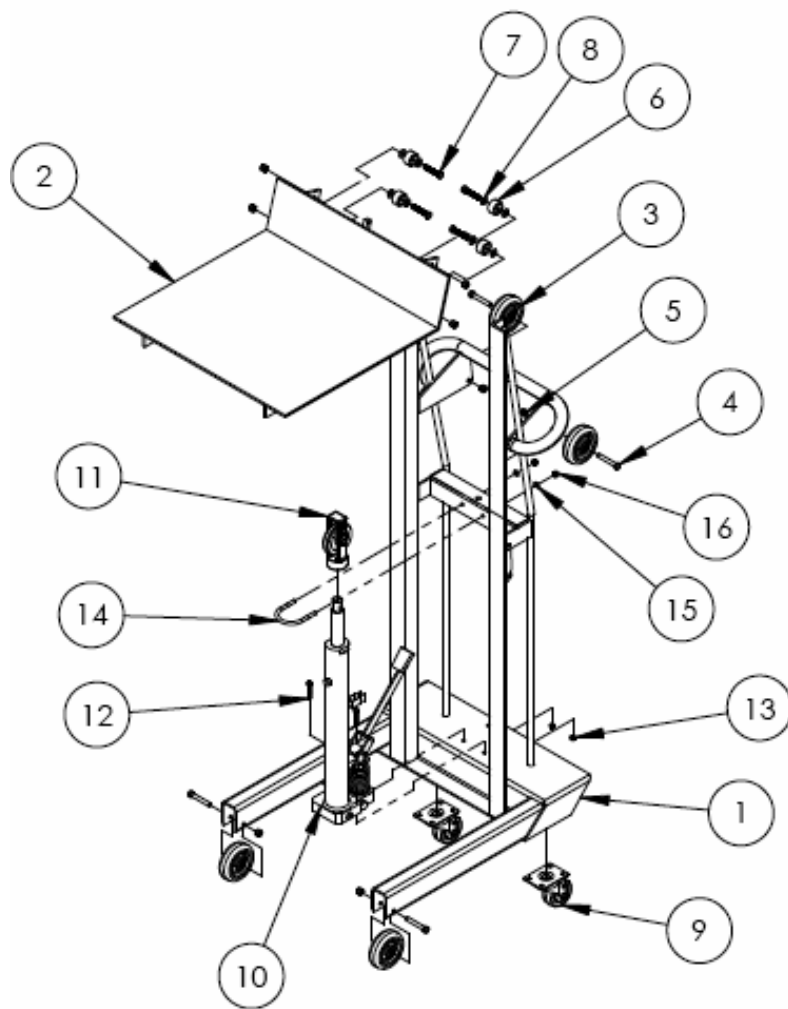
Item No.	Part No.	Description	Quantity
1	33-514-092	Frame Weldment	1
2	33-513-044	Deck Plate Weldment	1
3	16-132-009	HR-4/1.25-SLB-S	2
4	11113	3/8"-16 x 2-1/2" Zinc-plated HHCS Bolt	2
5	37024	3/8" Nylock Nut	6
6	16-132-200	8x2 Red Hard Rubber Wheel	2
7	33018	3/4" Zinc-plated USS Flat Washer	2
8	65107	5/32" x 2" Zinc-Plated Cotter Pin	2
9	33-027-003	Deck Cam Roller Bearing	4
10	33008	3/8" USS Zinc-Plated Flat Washer	8
11	11111	3/8"-16 x 2 Zinc-Plated Bolt HHCS	4
12	33-542-001	Pulley Assembly	1
13	21-537-002	Wheel Brake Weldment Assembly	1
14	21-537-001	Wheel Brake Foot Lever Lock Assembly	1
15	01-640-043	24 inch Foot Hydraulic Jack	1
16	36102	1/4"-20 Zinc-Plated Hex Nut	2
17	11010	1/4"-20 x 1-3/4" HHCS Zinc-Plated Bolt	2
18	42034	5/16"-18 x 2-1/2" UNC Bolt	1
19	33620	5/16" Zinc-Plated Lock Washer	2
20	36104	5/16"-18 Zinc-Plated Hex Nut	2
21	33-542-002	Chain Assembly (#50)	1
Not Shown			

Fig. 2: HYDRA-4 EXPLODED PARTS DIAGRAM & PARTS LIST



Item No.	Part No.	Description	Quantity
1	33-514-093	Hydra-4 Frame Weldment	1
2	33-514-043	Hydra-4 Deck Plate Weldment	1
3	16-132-009	HR – 4/1.25 SLB-S	2
4	11113	3/8"-16 x 2-1/2" HHCS Zinc-Plated bolt	2
5	37024	3/8" Nylock Nut	6
6	16-132-200	8"x2" Red Hard Rubber Wheel	2
7	33018	3/4" USS Zinc-Plated Flat Washer	2
8	65107	5/32"x2" Zinc-Plated Cotter Pin	2
9	33-027-003	Deck Bearing Cam Roller	4
10	33008	3/8" USS Zinc-Plated Flat Washer	8
11	11111	3/8"-16 x 2" HHCS Zinc-Plated Bolt	4
12	01-640-043	24" Foot Hydraulic Jack	1
13	33-542-001	Pulley Assembly	1
14	21-537-002	Wheel Brake Weldment Assembly	1
15	21-537-001	Wheel Brake Foot Lever Lock Assembly	1
16	36102	1/4"-20 Zinc-Plated Hex Nut	2
17	11010	1/4"-20 X 1-3/4" HHCS Zinc-plated Bolt	2
18	42034	5/16"-18 x 2-1/2" U-Bolt	1
19	33620	5/16" Zinc-Plated Lock Washer	2
20	36104	5/16"-18 Zinc-Plated Hex Nut	2
21	16-132-201	3/1.25-S Red Caster	2
22	33-542-003	Chain Assembly	1
Not Shown			

FIG. 3: HYDRA-HD EXPLODED PARTS DIAGRAM & PARTS LIST



Item No.	Part No.	Description	Quantity
1	33-514-094	Hydra-HD Frame Weldment	1
2	33-513-045	Hydra-HS Deck Plate Weldment	1
3	16-132-009	HR-4/1.25-SLB-S	4
4	11113	3/8"-16 x 2-1/2" HHCS Zinc-plated Bolt	4
5	97024	3/8" Nylock Nut	8
6	33-027-003	Deck Bearing Cam Roller	4
7	11111	3/8"-16 x 2" HHCS Zinc-plated Bolt	4
8	33008	3/8" USS Zinc-plated Flat Washer	8
9	16-132-201	3/1.25 Red Caster	2
10	01-640-032	15" Stroke Foot Hydraulic Jack	1
11	33-542-001	Pulley Assembly	1
12	11010	1/4"-20 x 1-3/4" HHCS Zinc-plated Bolt	2
13	36102	1/4"-20 Zinc-plated Hex Nut	2
14	42034	5/16-18 x 2-1/2" U-Bolt	1
15	33620	5/16" Zinc-Plated Lock Washer	2
16	36104	5/16"-18 Zinc-Plated Hex Nut	2
17	33-542-003	Chain Assembly	1
Not Shown			

Operation Instructions:

Safe operation is the operator's responsibility [ANSI/ITSDF B56.10-2006]. 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.

Functions Checks/Tests:

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

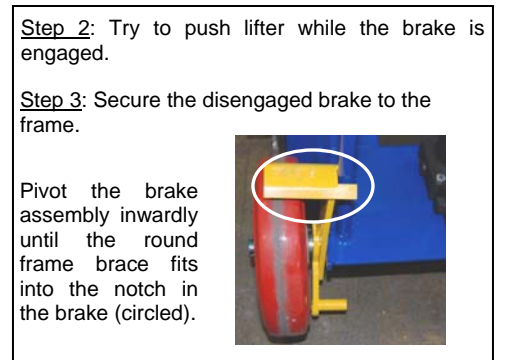
- I. Hydraulic system: raise and lower the deck to verify normal operation.

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.

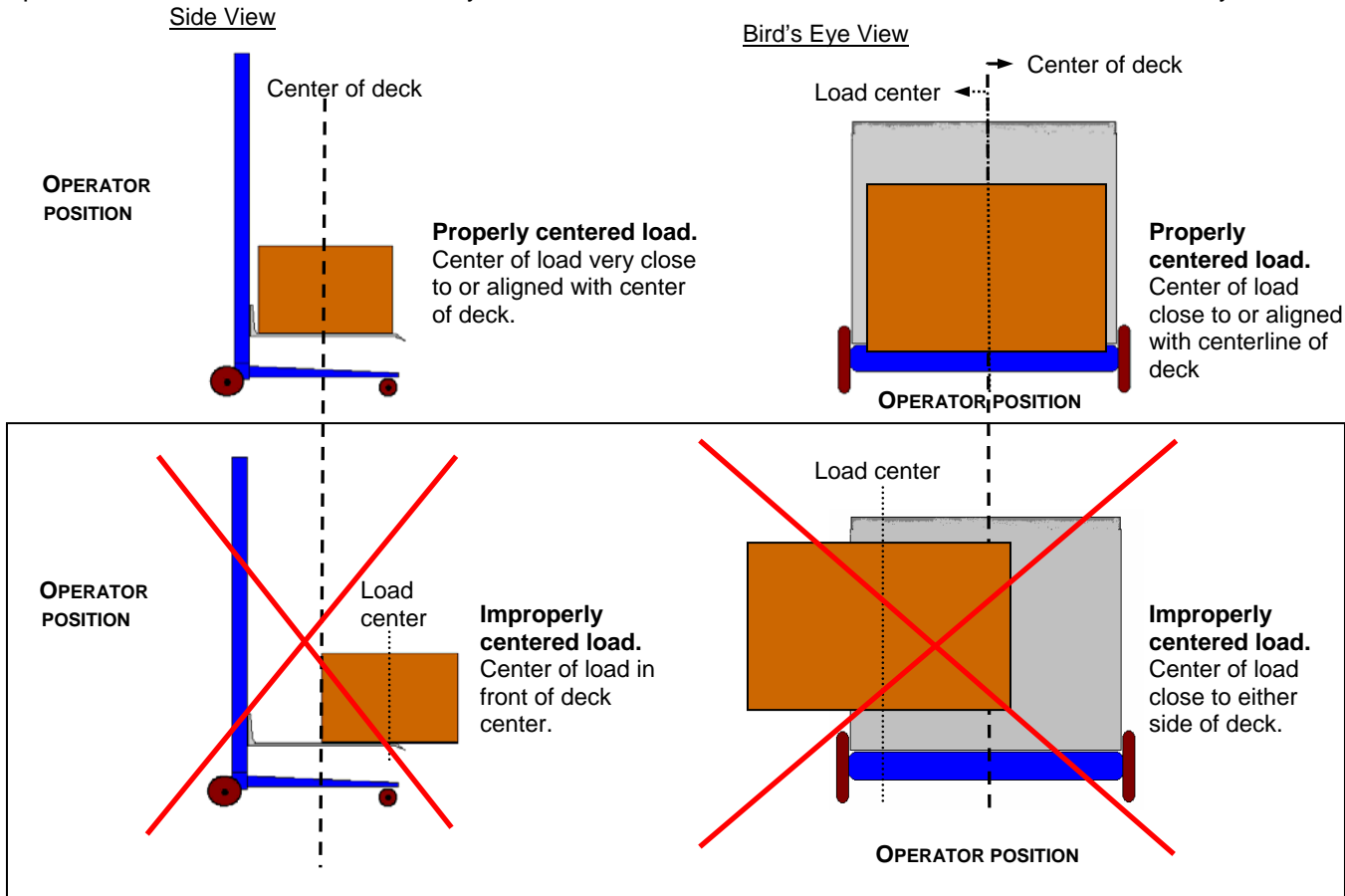


Operation:

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.

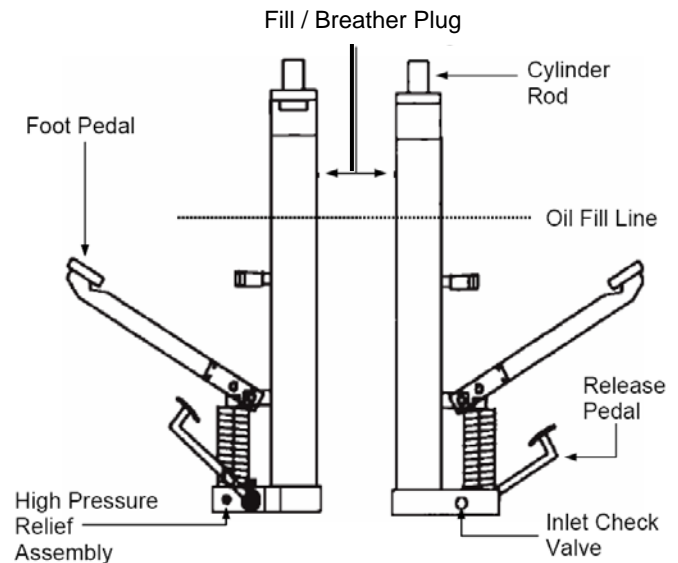
Remove Air Trapped Inside Hydraulic System

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.

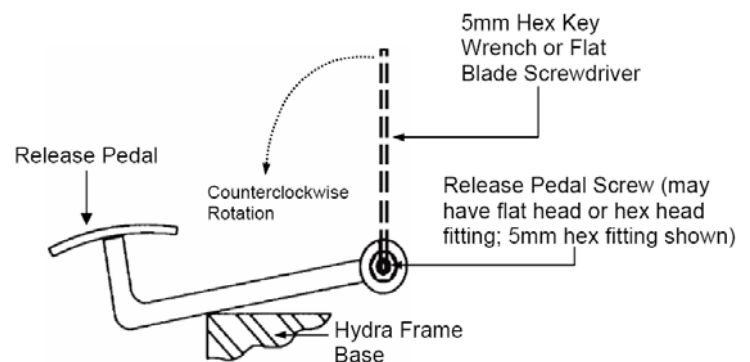
Release Pedal Adjustment

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



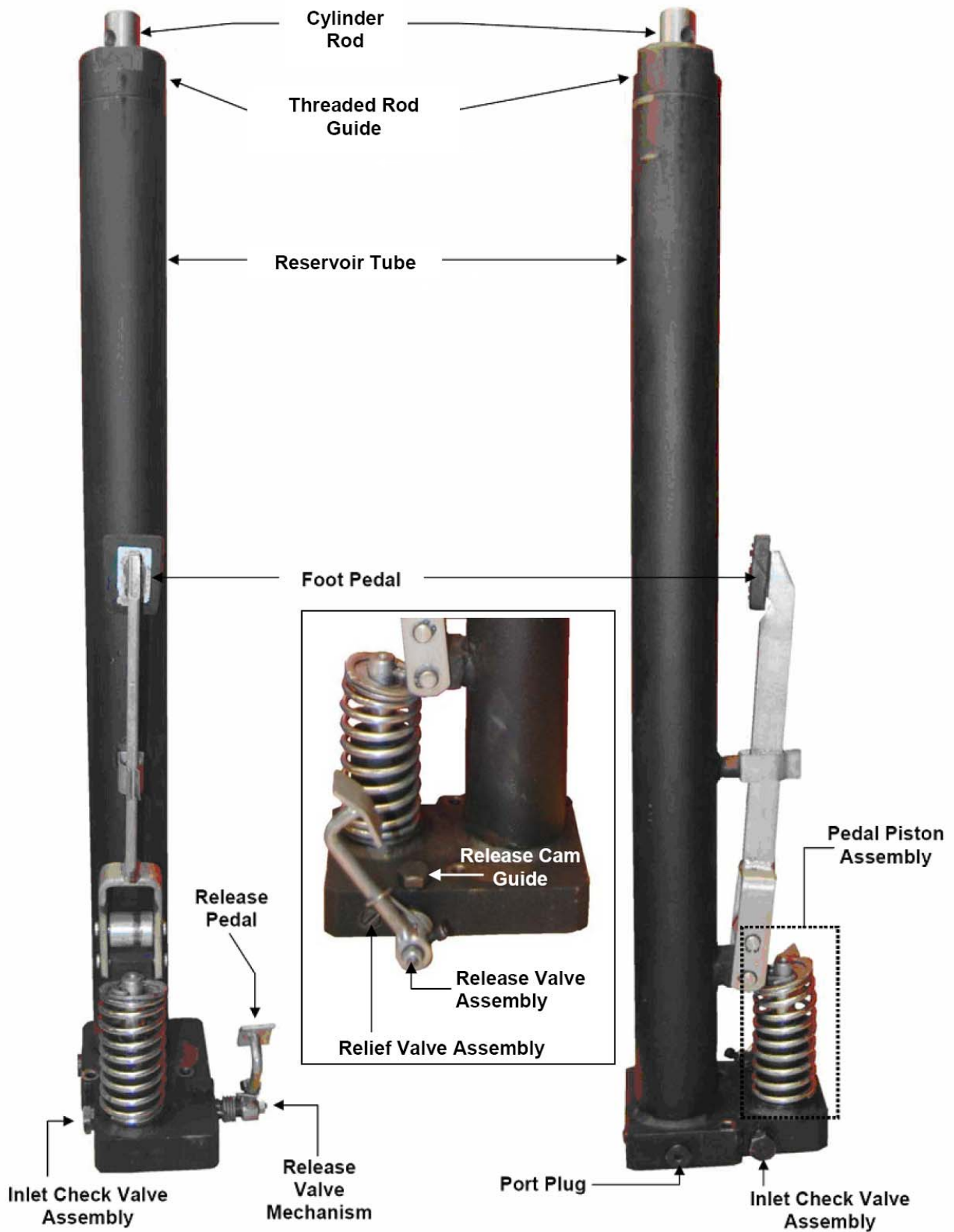
Inlet Check Valve Assembly Cleaning

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.

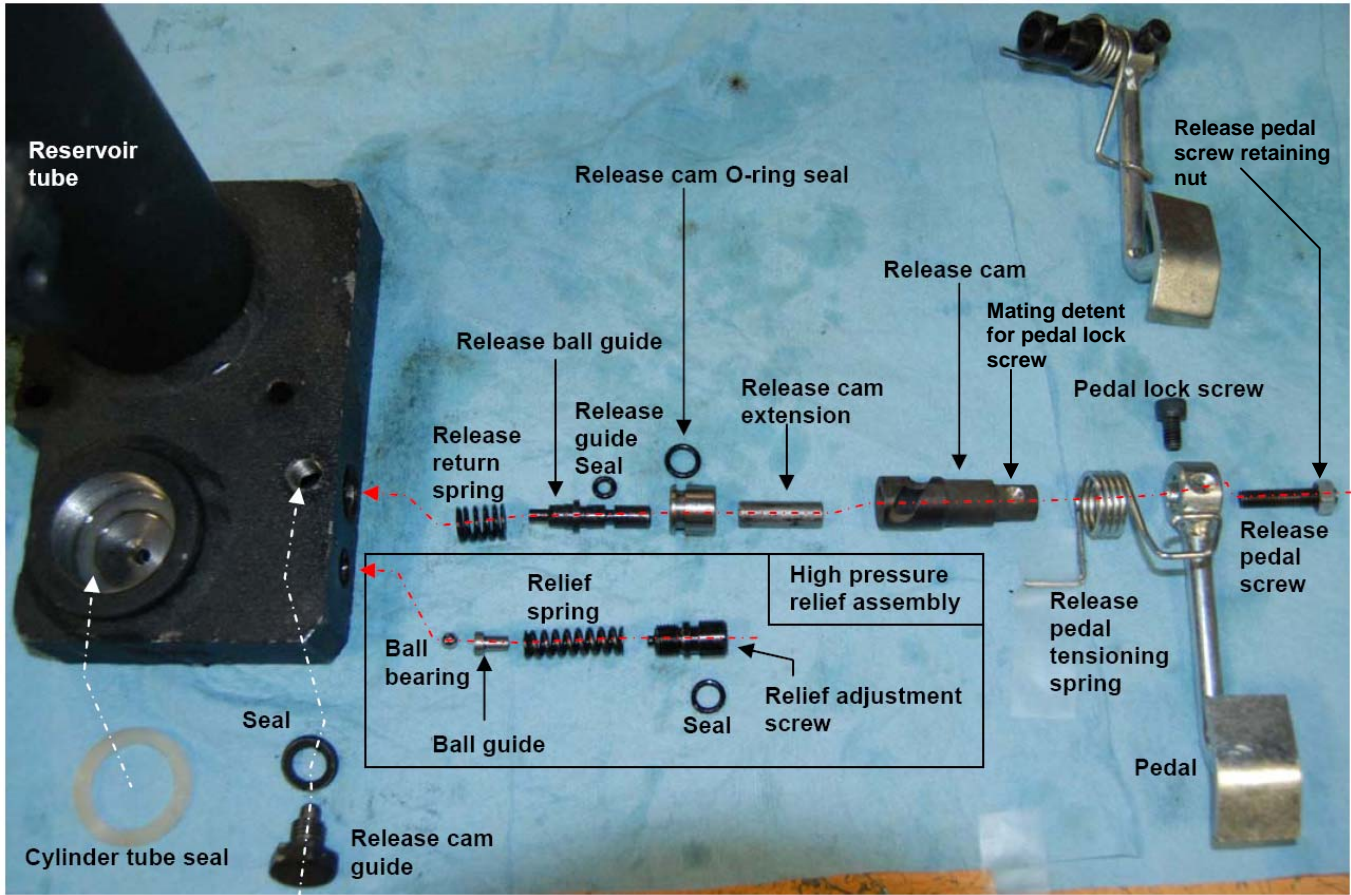
Foot Hydraulic Jack

Hydra-2 & 4 part number 01-640-043

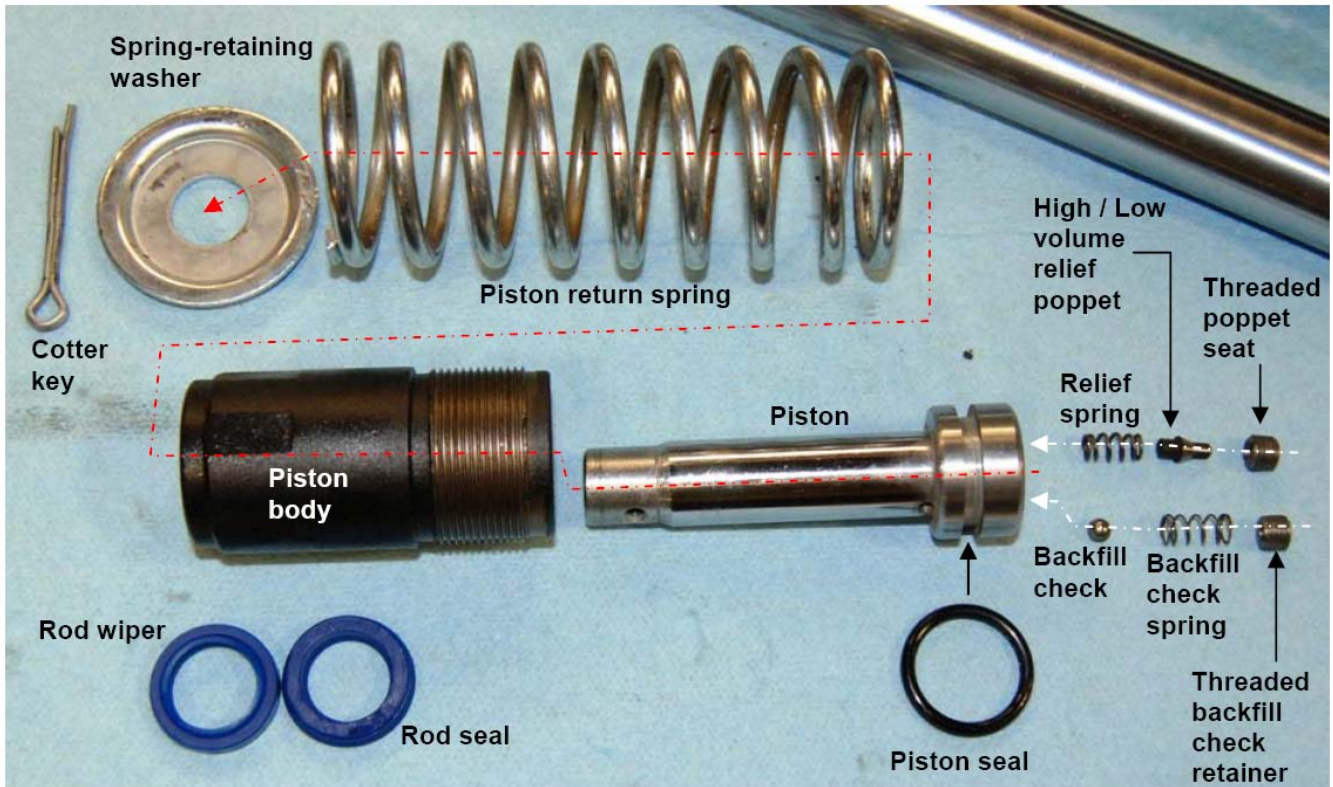
Hydra-HD part number 01-640-032



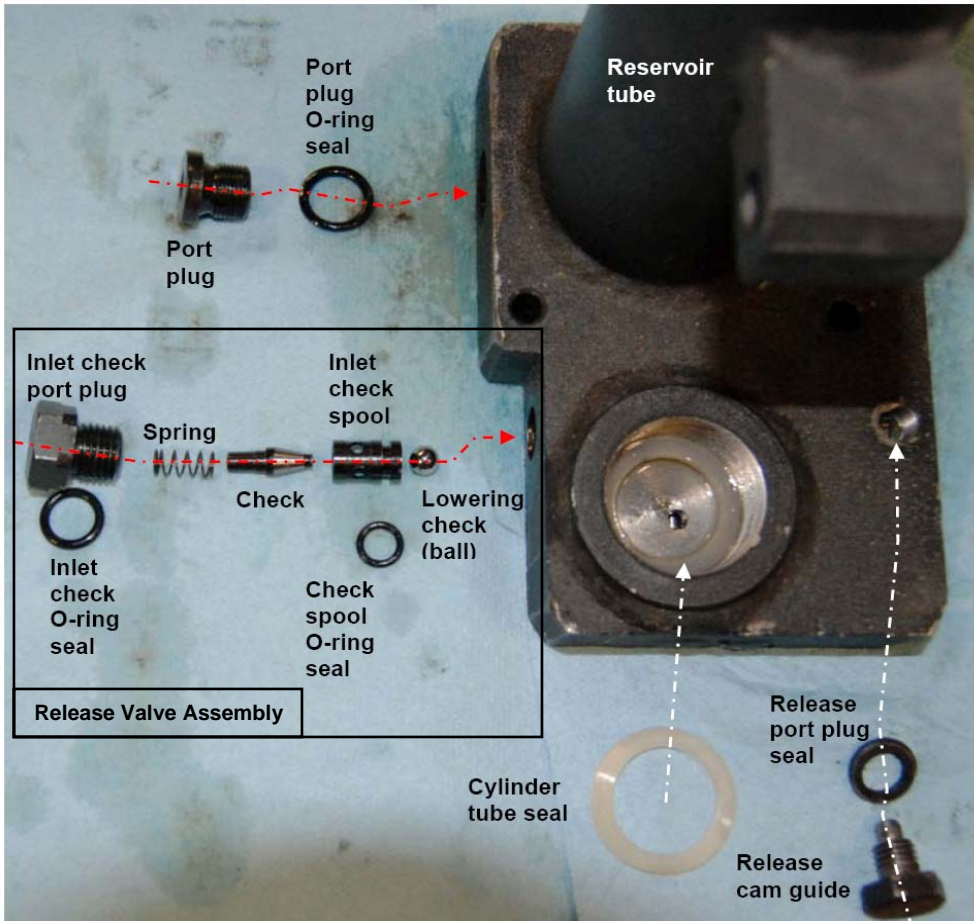
Release Valve and High Pressure Relief Valve Assemblies



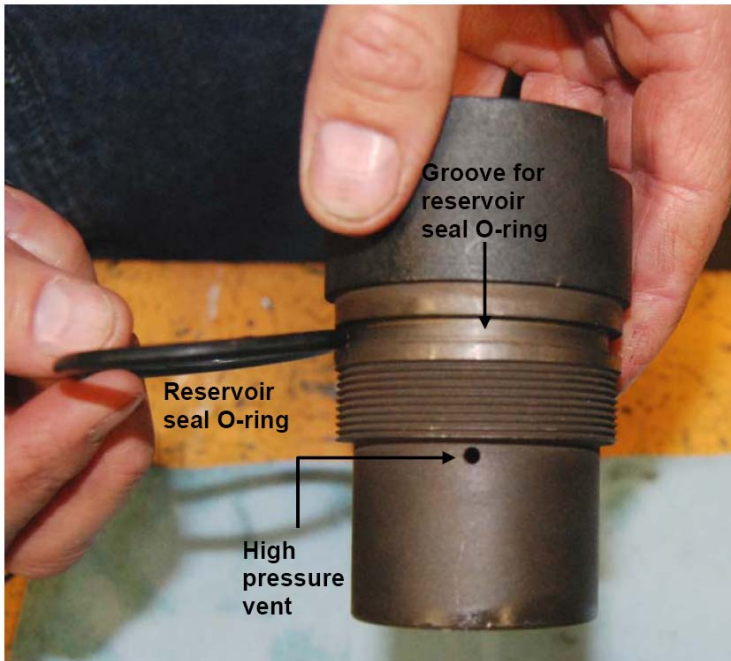
Pedal Piston Assembly



Inlet Check Valve Assembly



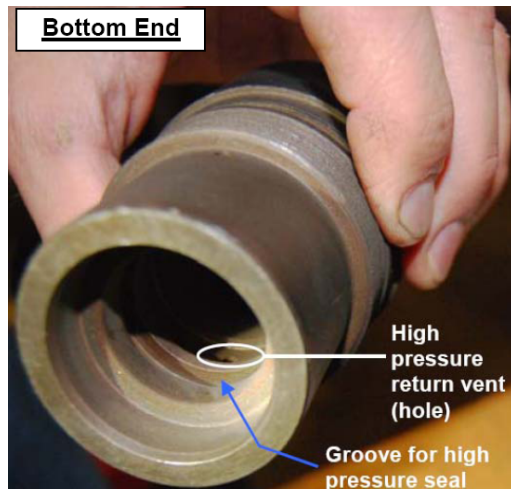
Threaded Rod Guide



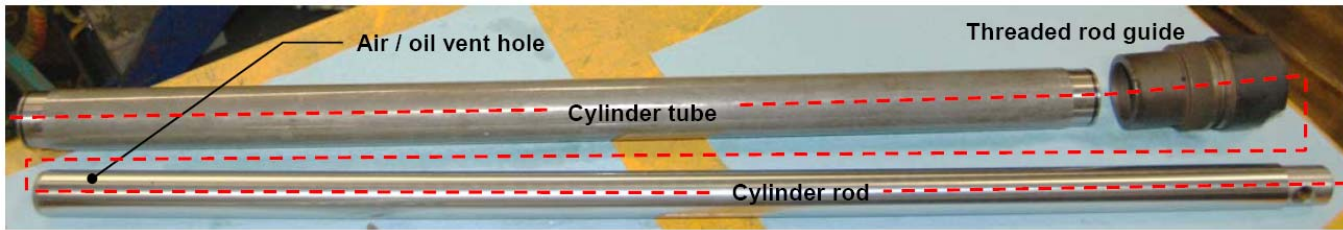
Top End



Bottom End



Cylinder Assembly



Close-up View of Cylinder Assembly

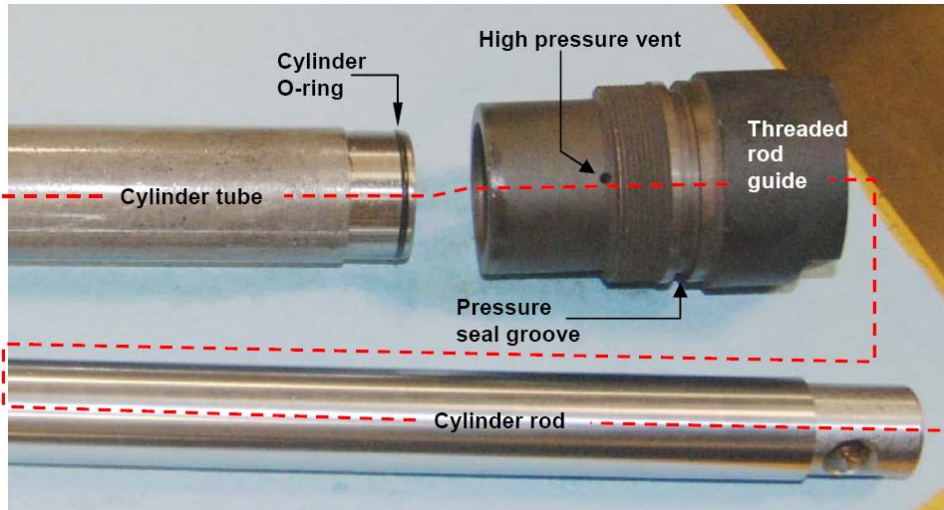
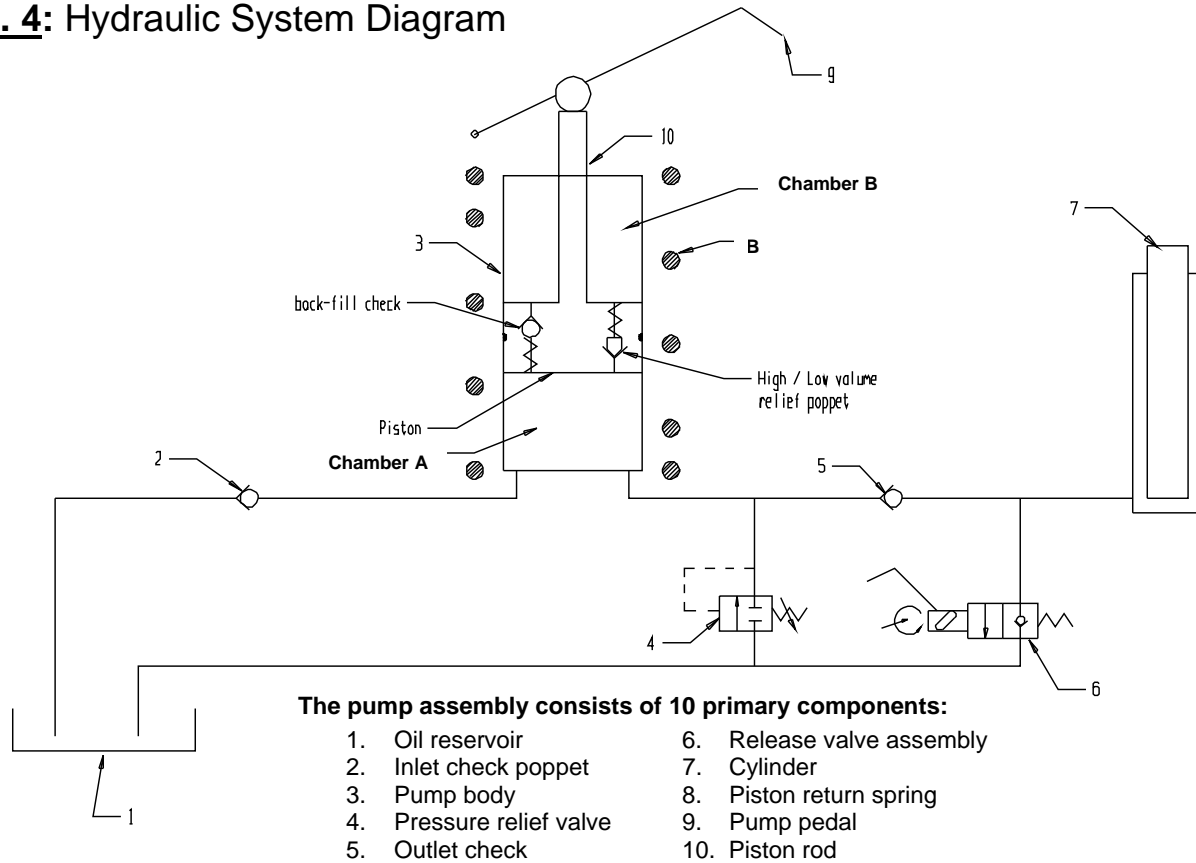


FIG. 4: Hydraulic System Diagram



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.

FIG. 5: Label placement

Only use the HYDRA-Lift if ALL labels are readable and undamaged. If needed, contact Vestil for replacement labels.

“Vestil” logo and labels #527 & #287 affixed to operator side of panel



Label #287

MODEL/MODELO/MODELE _____

CAPACITY _____ lbs.

CAPACIDAD/CAPACITÉ _____ kgs.

SERIAL/SERIE/SÉRIE _____

VESTIL MANUFACTURING CORPORATION 287

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Label #208

Label #527

⚠ 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:
 - ✓ **DO NOT** contact electrical lines or overhead objects with device or load;
 - ✓ **DO NOT** travel up/down inclines if an alternate route is available;
 - ✓ **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:
 - ✓ **NO** toque las líneas eléctricas u objetos altos con el dispositivo o la carga;
 - ✓ **NO** viaje en inclinaciones de subida y bajada si hay otra ruta alternativa;
 - ✓ **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.

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⚠ WARNING	⚠ ADVERTENCIA	⚠ AVERTISSEMENT
KEEP CLEAR OF PINCH POINT	MANTENGASE ALEJADO DEL PUNTO DE CORTE	SE TENIR À DISTANCE DU POINT DE PINCEMENT
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		208 Revision 06-03