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Trailer Lock System: TL-200-HP-F and TL-200-HP-F-S Instruction Manual



Receiving instructions:

After delivery, remove the packaging from the product. Inspect the product closely to determine whether it sustained damage during transport. If damage is discovered, record a complete description of it on the bill of lading. If the product is undamaged, discard the packaging.

NOTE:

The end-user is solely responsible for confirming that product design, installation, use, and maintenance comply with laws, regulations, codes, and mandatory standards applied where the product is used.

Replacement Parts and Technical Service:

To order replacement parts, labels, and accessories, contact the technical service and parts department online at http://www.vestilmfg.com/parts info.htm. Alternatively, you may request replacement parts and/or service by calling (260) 665-7586 and asking for the Parts Department.

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Signal Words

This manual uses SIGNAL WORDS to direct the reader's attention to statements about uses of the product that could result in personal injury or property damage. Each signal word connotes a specific hazard level. The following are definitions of signal words that might appear in this manual.

▲ DANGER

Identifies a hazardous situation which, if not avoided, <u>WILL</u> 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.

ACAUTION

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.

Hazards of Improper Use:

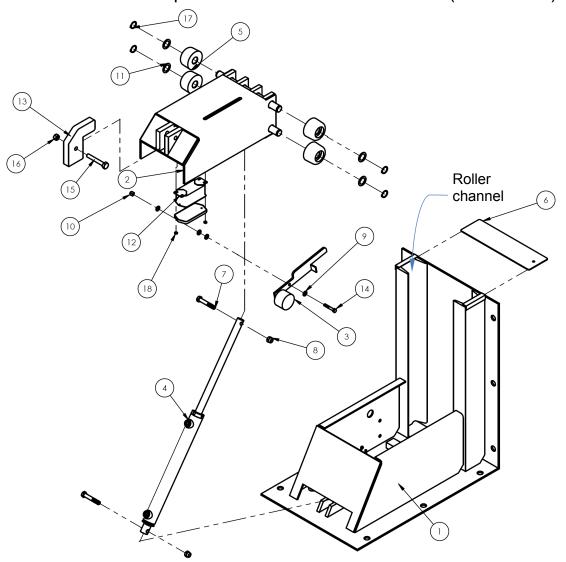
AWARNING Improper or careless use might result in serious personal injury.

- Read and understand the entire manual before assembling, installing, using or servicing this product.
- DO NOT attempt to resolve problems with the product unless you are both authorized to do so and <u>certain</u> that it will be safe to use afterwards.
- Anchor the trailer lock assembly to an intact, concrete surface with $^{3}/_{4}$ " anchor bolts of appropriate length (selected by your building engineer; recommend at least $4^{1}/_{2}$ ").
- DO NOT modify the product in any way without first obtaining written approval from Vestil. Unapproved modifications automatically void the *Limited Warranty* (p. 11) and might make the product unsafe to use.
- Replace burned out light bulbs immediately. The traffic light and/or control enclosure cannot provide accurate signals unless both bulbs are operable.
- Even when a truck/trailer is engaged by the lock, wheel chocks must be used and properly applied.
- Inspect the product as recommended in the *Inspections and Maintenance* section on p. 9. Do not use the product unless it is in normal condition.
- NEVER get between the dock and a truck/trailer backing up to the dock.
- DO NOT work on the system while a truck/trailer is locked. Only work on the system when it is not in use.
- DO NOT use this device as a trailer jack or trailer stabilizing jack. If jacks are required, apply as many jacks as necessary and place them in appropriate locations. If the trailer lock interferes with a jack(s), then the trailer should be parked at another loading dock where it can be properly stabilized.
- DO NOT use the trailer lock system UNLESS all labels and signs are present, easily readable (not significantly faded for example), and undamaged. See *Labeling Diagram* on p. 10.

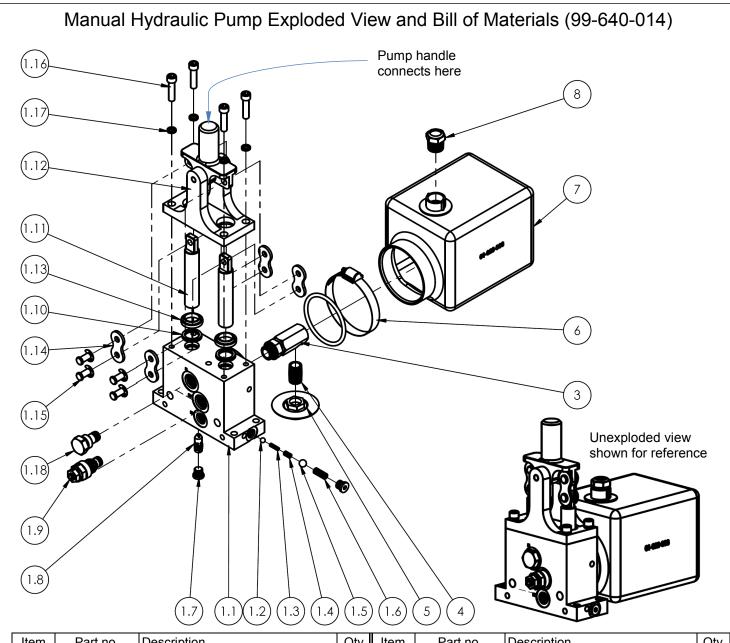
NOTICE Proper maintenance is essential for this product to remain in normal, working condition.

- o Periodically lubricate pivot points and moving parts.
- o Do not use brake fluid or jack oils in the hydraulic system. If oil is needed, use an anti-wear hydraulic oil with a viscosity grade of 150 SUS at 100°F, (ISO 32 cSt @ 40°C), or Dexron transmission fluid.

Trailer Lock Mechanism Exploded View and Bill of Materials (17-006-009)



Item	Part no.	Description	Qty.	Item	Part no.	Description	Qty.
1	17-514-019	Weldment, frame	1	10	70861	Nylock nut, S/S, ⁵ / ₁₆ " – 18	1
2	17-514-018	Weldment, trolley	1	11	33444	Machine bushing, 1"x18ga.	4
3	17-514-015	Weldment, frame, safety stop	1	12	99-029-011	Control box	1
4	99-021-953	Cylinder, hydraulic, 1 ¹ / ₂ " x 14" piston style	1	13	17-037-001	Tip, lock	1
5	99-027-009	Roller, mast	4	14	70061	Bolt, HHCS/SS, ⁵ / ₁₆ " – 18 x 1 ³ / ₄ "	1
6	17-014-047	Frame, guard, shroud	1	15	12217	Bolt, HHCS, #5, ¹ / ₂ " – 13 x 3 ¹ / ₂ "	1
7	70215	Bolt, HHCS, S/S, 1/2" – 13 x 3"	2	16	36310	Hex nut, gr. 5, z-plated, ¹ / ₂ " – 13 UNC	1
8	37030	Lock nut, ¹ / ₂ " – 13	2	17	20-117-003	External retaining ring, 1" diameter shaft	4
9	71015	Flat washer, SS, small OD, ⁵ / ₁₆ " 18-8	4	18	36030	Hex nut, 10-32	2

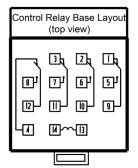


Item	Part no.	Description	Qty	Item	Part no.	Description	Qty
1	99-140-006	Hydraulic pump assembly, final		1.13	99-144-003	Wiper, solid profile, piston	
1.1	99-039-005	Pump, manual, hand		1.14	99-042-001	Chain, side plate, #80	
1.2	99-110-007	Bearing, ball, ¹ / ₄ "		1.15	11484-01103	Pin, SS, grooved clevis w/ snap ring	
1.3	99-146-004	Spring, compression, inlet check		1.16	93257	Bolt, SHCS, ⁵ / ₁₆ "-18 x 1 ¹ / ₄ "	
1.4	99-146-006	Spring, compression, retainer		1.17	0129169	Lock washer, hi collar, z-plated	
1.5	99-110-006	Bearing, ball, ³ / ₈ "		1.18	99-153-086	Cavity plug, VC08-2	
1.6	99-146-005	Spring, compression, outlet check		2	99-144-007	O-Ring, manifold, 3" O.D.	
1.7	99-116-005	Morb hollow hex plug, SAE 4		3	99-116-001	Suction fitting, mini manifold	
1.8	99-153-038	Flow control, pressure compensated, 1.0 gal.		4	99-031-033	Close pipe nipple	
1.9	99-153-006	Valve, pressure relief, 210 bar		5	99-031-018	Accessories, hydraulic, screen	
1.10	99-144-015	Seal, U-cup		6	99-145-061	Clamp, worm gear hose, 2 ¹³ / ₁₆ "-3 ³ / ₄ "	
1.11	99-041-004	Plunger/piston, pump		7	01-023-008	Reservoir, oil	
1.12	99-640-008	Subassembly, pump, rocker		8	01-116-003	Breather, ¹ / ₂ " NPT	

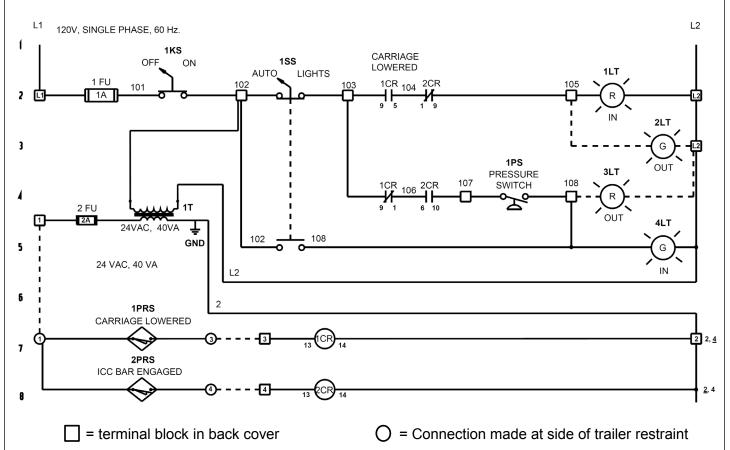
Electrical Circuit Diagram (17-124-015 Rev. B)

NOTES:

- 1. Overcurrent and short circuit protection as well as disconnect must be provided by the end user in accordance with NFPA 70 (National electrical Code) and local codes.
- 2. Turn off all power before performing service work on this equipment.
- 3. This diagram shows components in their resting positions, i.e. trailer lock completely lowered and all electrical power removed.



----- = wire and/or components supplied by end-user 1LT & 2LT = 60W (maximum) incandescent lamps 3LT & 4LT = 1.2W pilot lights



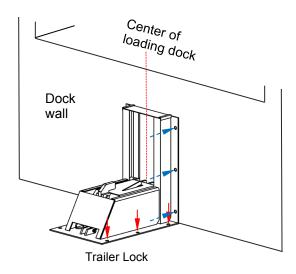
INSTALLATION

Components of this trailer lock system include: A) a lock assembly; B) a (manual-hydraulic) power unit assembly; C) a control enclosure with pilot lights; D) an outdoor traffic light assembly; E) Signage. Some components must be The following instructions describe how to install each component.

A. Trailer Lock Assembly

NOTE: Proper installation requires that the dock approach be concrete at least 4 inches thick. Concrete should have a strength rating of at least 4,000psi.

Move the lock assembly into position in front of the chosen loading dock. The center of the assembly should align with the center of the dock. If the dock is equipped with standard 4"-5" bumpers, then the back of the lock assembly should contact the dock wall. If bumpers are thicker than 5", the back of the lock assembly should be (bumper thickness in inches – 5) inches in front of the dock wall. I will also be necessary to move the assembly away from the dock wall if the grade of the approach to the dock is 5% or greater.



Anchor the lock assembly to the ground with six (6) $^3/_4$ " concrete anchor bolts that are at least $4^1/_2$ " long (solid/red arrows in diagram). Consult your building engineer of architect to determine if longer bolts are necessary. Anchor the back of the lock to the dock wall with 6 more $^3/_4$ " anchor bolts (dashed/blue arrows in diagram).

B. Manual Hydraulic Power Unit (Hand Pump, Hydraulic Fluid Reservoir, Accumulator, et al.)
Attach the power unit to a wall inside the building close to the dock (adjacent to the door where the lock assembly is installed). Use fasteners appropriate for the wall material and weight of the power unit. The flange of the power unit mounting plate includes 1/2" holes for mounting hardware. Mount the power unit to the wall with 3/8" hardware that is appropriate for the selected mounting location.

C. Control Enclosure (for Lights)

Attach the control enclosure to the inside wall of the dock to the left of the dock door (from the perspective of a person inside the building facing the dock door). The bottom of the control enclosure should be $48^{\circ} \pm 6^{\circ}$ above the floor.

D. Outdoor Traffic Light Assembly

The TL-200-HP-F kit includes an aluminum traffic light. Bulbs are <u>not</u> included. The end-user must provide two (2) 120V, 60W bulbs.

Model TL-200-HP-F-S kits include a polypropylene (plastic) traffic light. Bulbs <u>are</u> included.

The traffic lights must be visible to truck drivers as they back trailers up to the loading dock. Therefore, the traffic lights should be mounted just to the right side of the dock door from the perspective of a person outside the building looking at the door. The top of the traffic light assembly should be ~ 96 ° above the dock approach.

*Traffic Light Assembly

*Control Enclosure

*Component appearance might differ slightly from items shown in photograph.

E. Signage

Four signs are included with the trailer lock.

- 1. CAUTION: ENTER ON GREEN LIGHT ONLY
 - a. Install this sign a few inches above the control enclosure on the inside wall of the dock. It should be easily visible to all persons inside the building near the dock.
- 2. (Backwards) CAUTION: DEPART ON GREEN LIGHT ONLY
 - a. Install this sign on the outside wall of the dock a few inches below the traffic light. The sign, as well as signs 3 & 4 (below), must be easily visible to truck drivers as trailers are backed to the dock.
- 3. CAUTION: DEPART ON GREEN LIGHT ONLY
 - a. Install this sign a few inches below sign #2 (backwards lettering).
- 4. CHOCK YOUR WHEELS
 - a. Install this sign a few inches below sign #3.

ELECTRICAL CONNECTIONS

Examine the electrical circuit diagram on page 5. Use the diagram to make the necessary control and power connections between:

- 1. Lock assembly and Power Unit;
- 2. Traffic Light and Control Enclosure;
- 3. Power Unit and Control Enclosure.

TESTING THE SYSTEM

After completing the installation, test the system to confirm that all components operate properly. Locate the (manual) hydraulic pump on the power unit. Find the direction control lever. There are UP and DOWN labels applied to the power unit mounting plate next to the lever. The lever rotates 90° to select between UP and DOWN. Moving the pump handle back-and-forth raises the trailer lock when the lever points in the UP direction. Switching the lever setting to DOWN and moving the pump handle lowers/releases the lock.

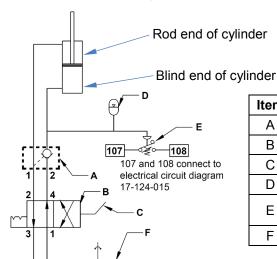
To test the system, cycle the trolley all the way up and all the way down several times. Refer to the directions in "Operating the Lock" to confirm normal operation.

OPERATING THE LOCK

NOTE: Be certain that the lock is in home position (completely lowered) whenever it is not in use! The lock assembly and/or trailer might be damaged if the trailer backs against the raised trolley.

- 1. Back a trailer against the dock bumpers. Now the trailer is in position for the ICC bar to be engaged by the trailer lock.
- 2. To raise the lock:
 - a. Put the direction control lever (on the hydraulic power unit) lever in UP position.
 - b. Grasp the handle of the hydraulic pump. Move the handle back-and-forth until the trolley is fully raised.
 - c. The traffic light signal (on the outer wall of the dock) will change from green to red. The red signal indicates to the truck driver that the lock is in place.
 - d. On the control enclosure (on the inside wall of the dock), the red light will turn off and the green light will turn on. The green light indicates to personnel at the loading dock that the trailer is locked.
- 3. To lower the dock:
 - a. Put the direction control lever in the DOWN position.
 - b. Move the handle back-and-forth until the lock is fully lowered.
 - c. The traffic light signal should change from red to green. The green signal indicates to the truck driver that it is ok to depart.
 - d. The green light on the control enclosure will turn off and the red light will turn on. The red light indicates that the dock is vacant.

Hydraulic Circuit Diagram and Bill of Materials



Item	Part no. Description		Qty.
Α	99-627-030	Pilot operated check valve	1
В	99-653-007	4-way, 2-position valve	1
С	5342030	2-position detent operator handle	1
D	17-031-002	Accumulator, 21in.3, SAE 8 port	1
Е	99-022-005	Pressure switch, NO/NC, adjustable over 250-2000psi	1
F	99-640-014	Hand pump, ¹ / ₄ gal. reservoir	1

Hydraulic fluid: the system uses HO150 hydraulic fluid. Any antiwear hydraulic fluid of viscosity grade 150 SUS at 100°F is acceptable. Examples of conforming hydraulic fluid include AW32 and non-synthetic transmission fluid.

HYDRAULIC SYSTEM SEQUENCE OF OPERATION

This trailer lock system uses a manually driven pump to circulate hydraulic fluid to a cylinder. Cylinder extension applies the lock, and cylinder retraction disengages the lock. The system is double-acting, meaning that the cylinder only extends and retracts when the pump is active. When the pump is inactive, the cylinder does not move which allows the lock to maintain position.

Noteworthy components of the hydraulic system include the following. Letters and numbers in parentheses () correspond to features shown in the hydraulic circuit diagram.

- A. Hand Pump: moving the handle back-and-forth pressurizes the hydraulic fluid and causes it to flow in the selected direction.
- B. 4-way, 2-Position Direction Selector Valve: controls the direction of fluid flow. When the lever is in the UP position, a path is open for fluid to flow to the blind end of the cylinder. This causes the cylinder to extend which raises the trailer lock. When the lever is in the DOWN position, a path to the rod end of the cylinder is open. Pumping the handle causes fluid pressure on the rod end to increase. Increased pressure opens the pilot-operated check valve which allows fluid to return to the reservoir.
- C. Pilot-Operated Check Valve: prevents hydraulic fluid from returning to the reservoir from the blind end of the cylinder unless the direction control valve is in DOWN position. Putting the valve in DOWN position and using the hand pump causes pressure to build on the rod end of the cylinder. Pressure opens the check valve and allows fluid to return to the reservoir.
- D. Fluid accumulator: this device provides shock absorption for the hydraulic system. It allows the lock to move slightly as shocks are applied to the truck or trailer. Shocks occur during loading and unloading operations as personnel and equipment move in and out of the trailer.
- E. Pressure switches: 107 and 108 react to increased pressure on the blind end of the cylinder to provide signals to the control enclosure. In response to the signals, specific lights on the enclosure and the traffic light are turned off or on. For instance, with the selector valve in the UP position, as the user moves the pump handle the lock raises. Once the lock contacts the trailer/truck, pumping the handle causes pressure on the blind end of the cylinder to increase. When a threshold pressure is reach, the pressure switches react. In response, the traffic signal turns from green to red. At the same time, the red light on the control enclosure turns off and the green light turns on.
- F. Cylinder: a double-acting cylinder is used to elevate and lower the trailer lock. When the cylinder extends, the lock elevates. Cylinder retraction lowers the lock.

RECORD OF NORMAL CONDITION

[NOTE: Refer to the exploded views on pages 3 & 4.]

Before putting the trailer lock system into regular service, make a detailed record of its appearance and operation. Cycle the trolley up and down. Describe the motion of the trolley, lock tip, and rollers. Describe sounds heard as the trolley moves. Also include a description of the cylinder as it extends and retracts. The cylinder should extend and retract smoothly (without binding/jerking). Indicate how much force is required to work the hand pump in each direction. Also describe how the traffic light and lights on the control enclosure react as the trolley cycles up and down. Take photographs of the lock assembly, control enclosure, the power unit, and all signs. Take photographs of all labels applied to the lock assembly, control enclosure, and power unit. Compare label numbers and locations to the *Labeling Diagram* on p. 10. Add the photographs to the record. This record establishes **normal condition**. During future inspections, compare observations to this record to determine if a component is in normal condition.

INSPECTIONS & MAINTENANCE

Do not use the trailer lock unless all parts, including signs, are in normal condition. Purely cosmetic changes, like damaged paint/powder coat, do not constitute changes from normal condition. However, touchup paint should be applied to all areas where the paint/powder coat has been damaged as soon as damage occurs. Contact *Technical Service* (contact information appears on the cover page) if you have questions that are not addressed in these instructions.

Before inspecting or servicing the trailer lock, make sure that the trolley is in the home position (completely lowered) and that it is de-energized, i.e. disconnected from electrical power.

- (A) At least weekly, inspect the following items:
 - 1.) Hydraulic system Check the hoses, fittings, pump, cylinder, and accumulator for
 - a. Oil leaks.
 - b. Pinches, cuts, and kinks.
 - c. Unusual noise or binding as the trolley elevates or descends.
 - 2.) <u>Lock assembly</u> Examine each item for damage, deformation, and corrosion. In particular, make sure that the trolley rolls up and down the roller channels smoothly.
 - 3.) <u>Cylinder</u> Raise and lower the trolley. Listen for unusual noise; watch the cylinder to confirm that it does not bind but extends and retracts smoothly.
 - 4.) <u>Light bulbs</u> Replace burned out light bulbs. The traffic light fixture will accept up to 60W incandescent lamps. The control enclosure uses 1.2W pilot lights.
- (B) Inspect the following at least once per month:
 - 1.) Oil level Oil should be within 1-1¹/₂"in. of the top of the reservoir with the trolley fully lowered. Add oil if necessary. See "Yearly inspection" (part (C) below) for hydraulic fluid specifications.
 - 2.) Hoses and fittings Examine for cuts, kinks, and other damage. Confirm that the ends of the hose are firmly connected to the pump and the cylinder.
 - 3.) Hardware check the integrity of all nuts, bolts, and pins. Replace any item that is damaged. In particular, check the anchor bolts and other fasteners used to anchor the lock assembly to the ground and the dock wall. It should not wobble. Concrete around each bolt should be intact. Tighten bolts/fasteners, repair concrete, or reposition the lock assembly if the mounting location is damaged and cannot solidly hold the lock in place. Also check fasteners used to mount the control enclosure and power unit to the inside dock wall. Make sure both components are solidly attached to the wall.
 - 4.) Lock assembly listen for unusual noises and watch for abnormal movement while elevating and lowering the trolley. Remove rust with steel wool, clean the area, and apply touchup paint.
 - 5.) Labels check all information/safety labels. The crane should be labeled at all times as shown in the *Labeling Diagram* on p. 10. Replace any label this is missing, damaged, or not easily readable, e.g. faded.

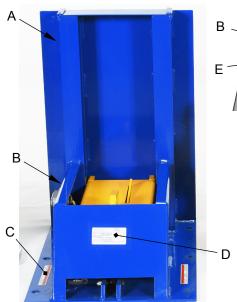
(C) Yearly inspection:

In addition to the inspections described above in parts A and B, check the hydraulic fluid at least once per year. Change the oil if it darkens, becomes gritty, or turns a milky color (indicating the presence of water). Replace the hydraulic fluid with anti-wear hydraulic oil of viscosity grade 150 SUS at 100°F, (ISO 32 at 40°C), for example, AW 32 or HO 150 hydraulic oil, or a non-synthetic

transmission fluid. You may use a synthetic transmission fluid if you flush the system with the synthetic fluid before filling the reservoir.

LABELING DIAGRAM

The unit should be labeled as shown in the diagram. However, label content and location are subject to change so your product might not be labeled exactly as shown. Replace all labels that are damaged, missing, or not easily readable (e.g. faded). To order replacement labels, contact *Technical Service and Parts Department* online at http://www.vestilmfg.com/parts info.htm. Alternatively, you may request replacement parts and/or service by calling (260) 665-7586 and asking the operator to connect you to the Parts Department.





A: Label 824 (on side of roller channel)



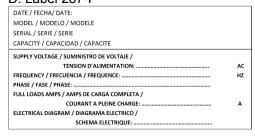
B: Label 221

▲ DANGER	ELECTRICAL SHOCK 221Rev 01111 Shut power off and consult owners manual before working on this equipment.
▲ PELIGRO	El GOLPE ELECTRICO Corte la corriente consulte el manual de propietario antes de trabajar en este equipo.
▲ DANGER	CHOC ELECTRIQUE Couper le courant et consulter le manuel d'utilisation avant de travailler sur cet équipement

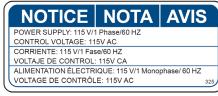
C: Label 204 (both sides of mounting plate)

▲WARNING	A ADVERTENCIA	A AVERTISSEMENT
SECURE FRAME	ASEGURE EL	FIXER SOLIDEMENT
TO FLOOR	BASTIDOR AL PISO	LE CADRE AU PLANCHER

D: Label 287-P



E: Label 325



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 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.

Definition of "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 <u>Customer Invoice</u> that displays the shipping date; AND 2) a <u>written request</u> for warranty service including your name and phone number. Send requests by one of the following methods:

US MailFaxEmailVestil Manufacturing Corporation(260) 665-1339info@vestil.com

2999 North Wayne Street, PO Box 507 Phone Enter "Warranty service request"

Angola, IN 46703 (260) 665-7586 in subject field.

In the written request, list the parts believed to be defective and include the address where replacements should be delivered. 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 will require you to send the entire product, or just the defective part (or parts), to its facility in Angola, IN.

What is covered under the warranty?

The warranty covers defects in the following original, dynamic parts: motors, hydraulic pumps, motor controllers, 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 <u>1 year</u>. For wearing parts, the warranty period is <u>90 days</u>. Both warranty periods begin on the date 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 a warranty period 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?

The Warrantee (you) are responsible for paying labor costs and freight costs to return the product to Vestil for warranty service.

Events that automatically void this Limited Warranty.

- Misuse:
- Negligent assembly, installation, operation or repair;
- Installation/use in corrosive environments;
- Inadequate or improper maintenance;
- Damage sustained during shipping;
- Collisions or other accidents that damage the product;
- <u>Unauthorized modifications</u>: Do not modify the product IN ANY WAY without first receiving written authorization from Vestil.

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. Vestil makes no warranty or representation that this product complies with any state or local design, performance, or safety code or standard. Noncompliance with any such code or standard is not a defect in material or workmanship.

