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PMPS-Series Pallet Handlers 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, use, and maintenance comply with laws, regulations, codes, and mandatory standards applied where the product is used.

Replacement Parts and Technical Support:

For answers to questions not addressed in these instructions and to order replacement parts, labels, and accessories, call our Technical Service and Parts Department at (260) 665-7586. The department can also be contacted online at http://www.vestilmfg.com/parts_info.htm.

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NOTE: Figures 3A - 8 are views of the modular power unit. These diagrams only apply to PMPS units manufactured before 12-01-2018. Units manufactured after 12-01-2018 receive a redesigned modular power unit (MPU GEN2). Diagrams and operating instructions for GEN2 power units are provided in separate MPU-AC/DC manuals.

Signal Words:

This manual classifies personal injury risks and situations that could lead to property damage with SIGNAL WORDS. A safety message appears with a signal word that describes an improper/dangerous use of the product. The signal word indicates the seriousness of the injury that could result from the described use.



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.

Hazards:

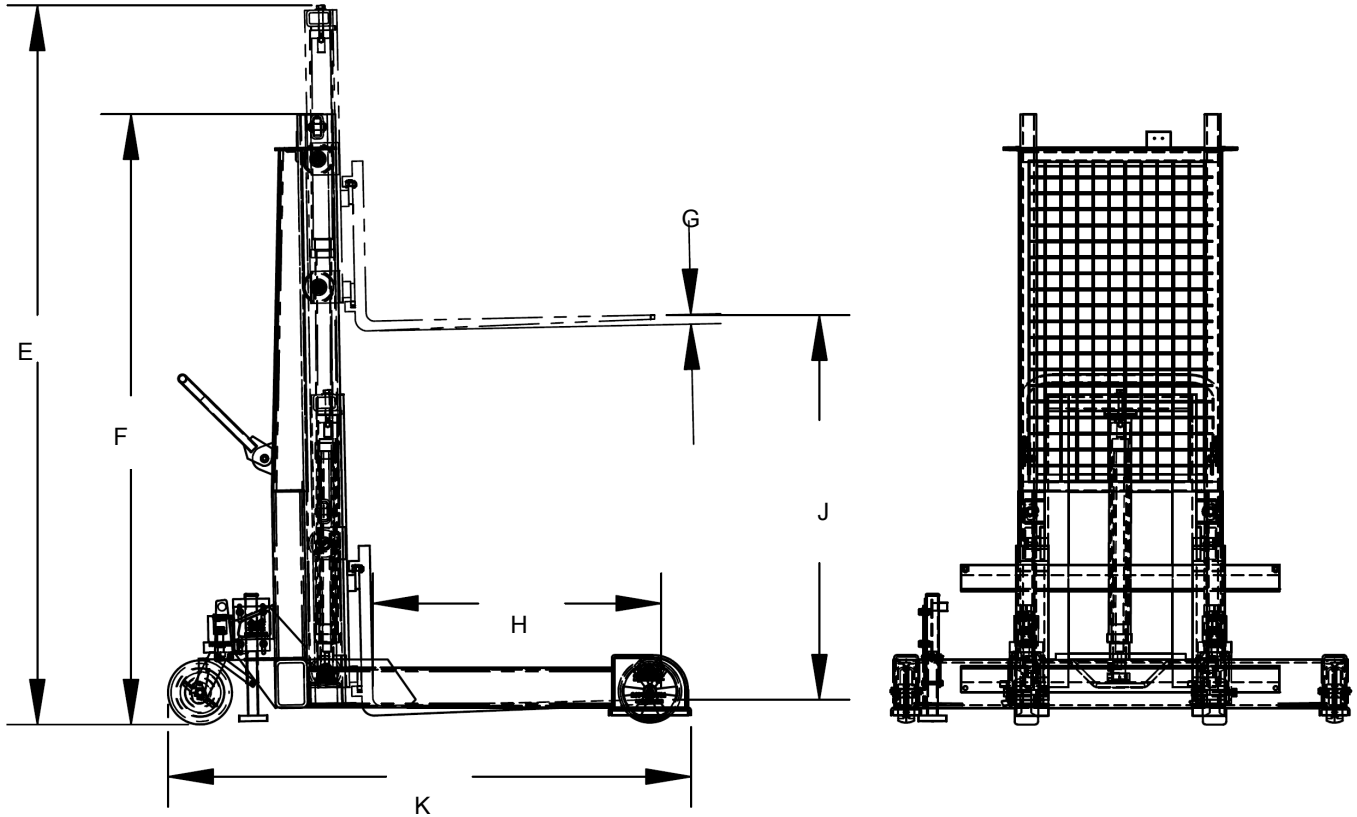
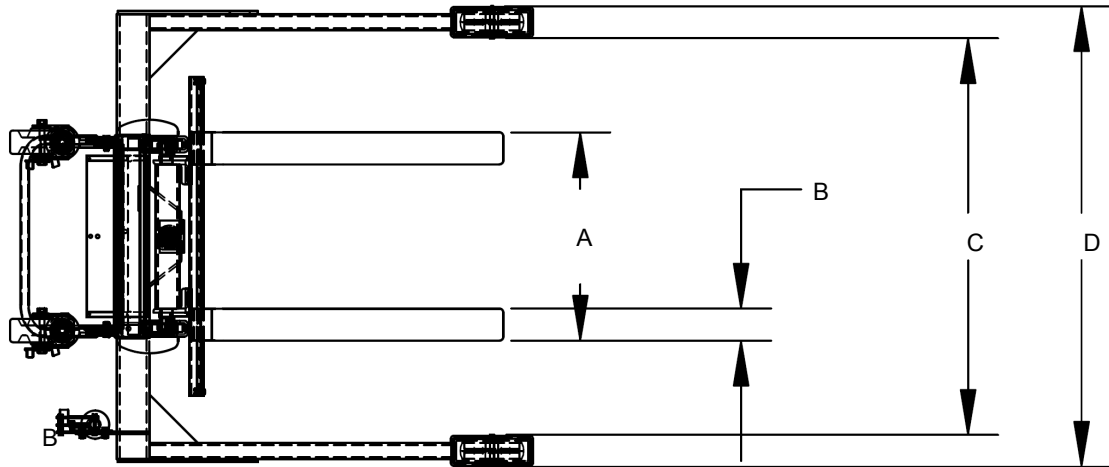
Vestil strives to identify all hazards associated with the use of its products. However, material handling is dangerous and no manual can address every risk. The most effective means for preventing accidents is for the end-user to exercise common sense and sound judgment whenever using this product.

WARNING If this product is used or maintained improperly serious personal injuries or death might result. ALWAYS use the product properly.

- **Read and understand the entire manual before assembling, using or servicing the product.**
- Read the manual to refresh your understanding of proper use and maintenance procedures.
- DO NOT attempt to resolve any issue with the product unless you are both authorized to do so and certain that it will be safe to use afterwards.
- DO NOT modify the product in any way. Unauthorized modifications might make the lifter unsafe to use and automatically void the [Limited Warranty](#) on p. 17.
- DO NOT exceed the (4,000 lb./1,818.2 kg) capacity, i.e. do not attempt to lift more than 4,000 lb.
- Inspect the product before each use. Check the lifter for damage, such as: 1) Cracked, broken or deformed load-bearing members (forks, fork carriage, mast, wheels, and frame); 2) cracked welds; 3) corrosion or severe wear; 4) damage to the hydraulic system including leaks in of any part of the cylinder, hoses, reservoir, etc.). Remove the product from service if damage is discovered. Replace each part that is not in normal condition. DO NOT use the product until it is fully restored to normal condition. ONLY use manufacturer-approved replacement parts.
- Cycle the forks all the way up and all the way down. While cycling the forks listen for unusual sounds. Watch the forks, carriage, cylinder, and carriage rollers for unusual movement. If you discover a malfunction, remove the unit from service. Notify your supervisor & maintenance personnel about the issue(s). In the event that part of the hydraulic system is damaged, AVOID contact with pressurized hydraulic oil (leaking from a ruptured hose, for instance). High pressure oil easily punctures skin and can cause gangrene.
- DO NOT use the lifter unless all machine guards (e.g. the expanded metal mast guard and formed wheel guards) are in place.
- This product is NOT a personnel lift. DO NOT use it to lift or transport people.
- DO NOT walk or stand beneath the forks at any time.
- DO NOT leave the pallet handler unattended while it is loaded. ALWAYS completely lower the forks until the load is entirely supported by the ground before leaving the lifter unattended.
- ONLY transport loads with the forks no higher than necessary to support the load and avoid obstacles.
- DO NOT continue to push the “UP” button on the hand control if the forks do not respond. Remove the unit from service and report the problem to maintenance personnel.
- Always lift pallets properly. Drive forward until the edge of a pallet contacts the heels of the forks.
- ONLY use this lifter on even, level ground.
- NEVER change the setting of the pressure relief valve.
- ALWAYS carefully watch the pallet handler and the load while lifting and transporting loads.
- DO NOT use this device UNLESS all labels are in place, readable, and undamaged. See [Labeling Diagram](#) on p. 16.

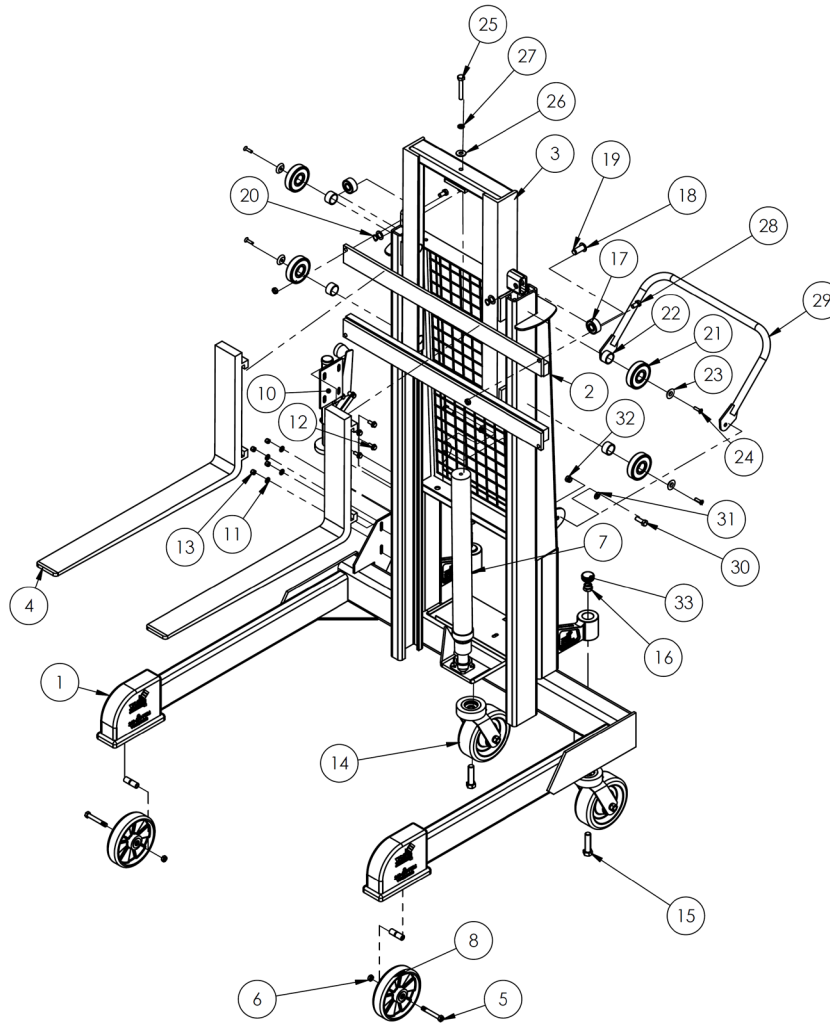
Specifications:

Dimensions, capacity, and net weight information appear in the following diagrams and table.



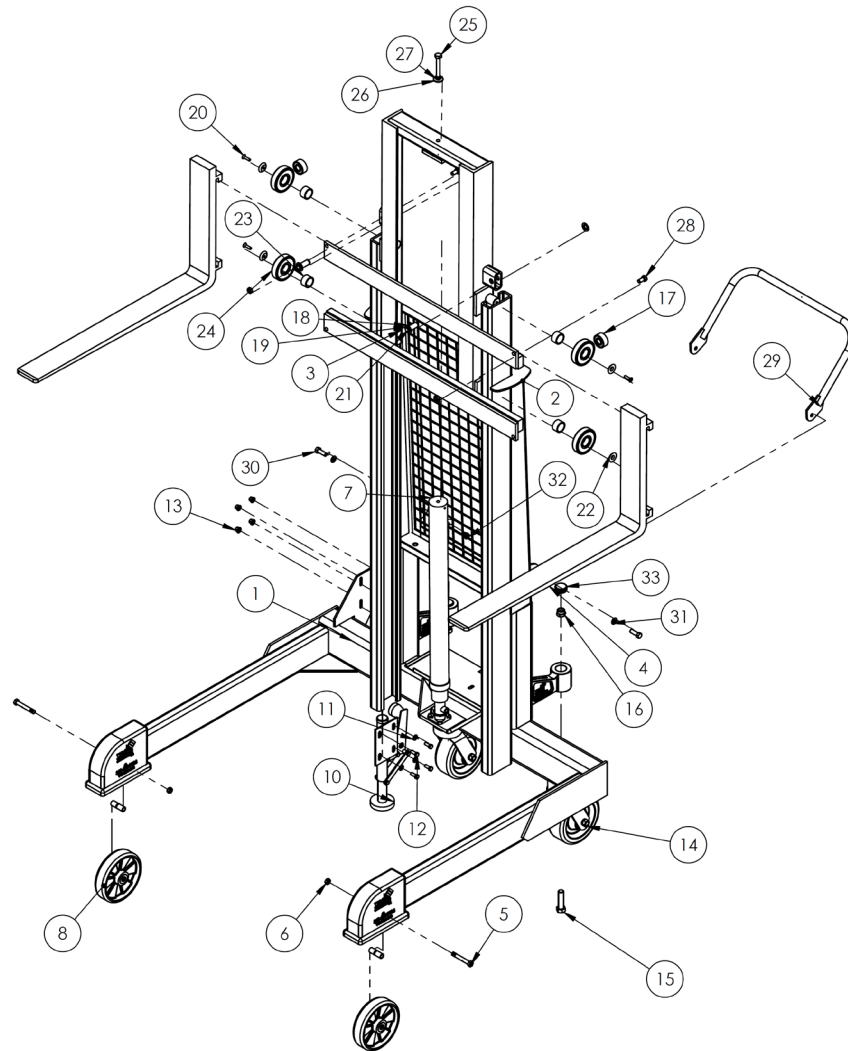
| Model | A | B | C | D | E | F | G | H | J | K | Net Weight | Capacity |
|---------|-----------|------|------------------------------------|-------|--------|-------|-----------------------------------|-------|-----------|-------|-----------------------|-------------------------|
| PMPS-50 | 8 - 37in. | 4in. | 49 ¹ / ₂ in. | 58in. | 91in. | 77in. | 1 ¹ / ₄ in. | 36in. | 3 - 50in. | 66in. | 825.0 lb. 375.0 kg | 4,000 lb. 1,818.2 kg |
| PMPS-60 | 8 - 37in. | 4in. | 49 ¹ / ₂ in. | 58in. | 101in. | 87in. | 1 ¹ / ₄ in. | 36in. | 3 - 60in. | 66in. | 853.4 lb. 387.9 kg | 4,000 lb. 1,818.2 kg |

FIG. 1: PMPS-50 exploded view and bill of materials



| Item | Part no. | Description | Qty. | Item | Part no. | Description | Qty. |
|------|----------------|---|------|------|------------|--|------|
| 1 | 15-514-087 | Weldment, frame | 1 | 17 | 20-110-009 | Bearing, ball | 2 |
| 2 | 15-514-024 | Weldment, frame, uprights | 1 | 18 | 33424 | Machine bushing, low carbon, plain finish, 3/4"-18ga. | 4 |
| 3 | 15-538-005 | Weldment, carriage | 1 | 19 | 38-112-019 | Pin, hinge pivot | 2 |
| 4 | 38-028-007 | 4" x 36" fork | 2 | 20 | 68015 | External retaining ring, phosphate, 3/4" | 4 |
| 5 | 16-145-031 | Bolt with grease zerk, 1/2"-13x3 1/2" | 2 | 21 | 38-027-001 | Carriage, bearing, roller | 4 |
| 6 | 37032 | 1/2" nylon insert jam nut | 4 | 22 | 38-113-005 | Spacer | 4 |
| 7 | 15-021-012 | Telescopic cylinder, PMPS-50 | 1 | 23 | 38-024-015 | Roller, end cap | 4 |
| 8 | 16-132-216 | Caster, wheel, GFN-8/2-W | 2 | 24 | 94257 | Bolt, hex head flat socket, FHSCS, 5/16"-18x1 1/4" | 4 |
| 9 | 16-111-003 | Sleeve bearing for 2" wheel | 2 | 25 | 12217 | Hex bolt, HHCS #5, 1/2"-13x3 1/2" | 1 |
| 10 | 16-132-081-001 | Floor lock assembly, right mount | 1 | 26 | 33012 | Flat washer, low carbon, zinc finish, 1/2" | 1 |
| 11 | 33008 | Flat washer, low carbon, USS, zinc-plated 3/8" | 8 | 27 | 33626 | Lock washer, zinc plated, 1/2" | 1 |
| 12 | 11105 | Hex bolt, grade A, zinc-plated, 3/8"-16x1" | 4 | 28 | 11205 | Hex bolt, grade A, zinc plated 1/2"-13x1" | 2 |
| 13 | 37024 | Nylon insert lock nut, grade 2, zinc-finish 3/8"-16 | 4 | 29 | 15-525-007 | Handle, weldment | 1 |
| 14 | 16-132-227 | Caster, 8/3-FWB-NTP | 2 | 30 | 11209 | Hex head bolt, HHCS, ASTM grade A, zinc plated, 1/2"-13x1 1/2" | 2 |
| 15 | 11365 | Hex bolt, HHCS #2, zinc-plated, 3/4"-10x 3" | 2 | 31 | 33354 | 1/2" inner diameter Belleville spring washer | 4 |
| 16 | 37039 | Nylock nut, zinc-plated, 3/4"-10 | 2 | 32 | 37030 | 1/2" - 13 Nylon insert lock nut | 2 |
| | | | | 33 | 99-024-003 | Guard/cover/endcap/plug | 2 |

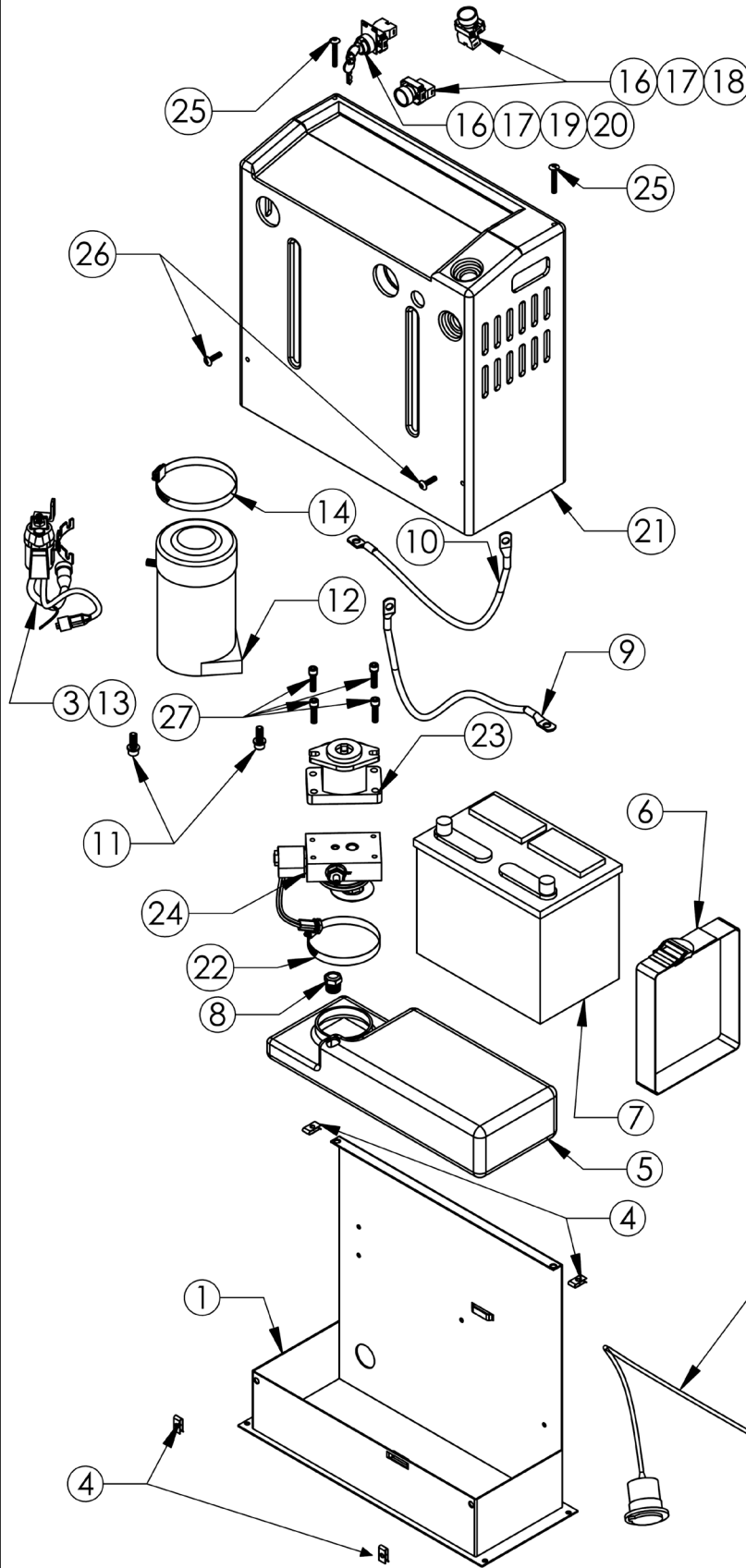
FIG. 2: PMPS-60 exploded view and bill of materials



| Item | Part no. | Description | Qty. | Item | Part no. | Description | Qty. |
|------|----------------|---|------|------|------------|--|------|
| 1 | 15-514-087 | Weldment, frame | 1 | 17 | 20-110-009 | Bearing, ball | 2 |
| 2 | 15-514-025 | Weldment, frame, uprights | 1 | 18 | 33424 | Machine bushing, low carbon, plain finish, 3/4"-18ga. | 4 |
| 3 | 15-538-006 | Weldment, carriage | 1 | 19 | 68015 | External retaining ring, phosphate, 3/4" | 4 |
| 4 | 38-028-007 | 4" x 36" fork | 2 | 20 | 94257 | Bolt, hex head flat socket, FHSCS, 5/16"-18x1 1/4" | 4 |
| 5 | 16-145-031 | Bolt with grease zerk, 1/2"-13x3 1/2" | 2 | 21 | 38-112-019 | Pin, hinge pivot | 2 |
| 6 | 37032 | 1/2" nylon insert jam nut | 4 | 22 | 38-024-015 | Roller, end cap | 4 |
| 7 | 15-021-012 | Telescopic cylinder, PMPS-50 | 1 | 23 | 38-113-005 | Spacer | 4 |
| 8 | 16-132-216 | Caster, wheel, GFN-8/2-W | 2 | 24 | 38-027-001 | Carriage, bearing, roller | 4 |
| 9 | 16-111-003 | Sleeve bearing for 2" wheel | 2 | 25 | 12217 | Hex bolt, HHCS #5, 1/2"-13x3 1/2" | 1 |
| 10 | 16-132-081-001 | Floor lock assembly, right mount | 1 | 26 | 33012 | Flat washer, low carbon, zinc finish, 1/2" | 1 |
| 11 | 33008 | Flat washer, low carbon, USS, zinc-plated 3/8" | 8 | 27 | 33626 | Lock washer, zinc plated, 1/2" | 1 |
| 12 | 11105 | Hex bolt, grade A, zinc-plated, 3/8"-16x1" | 4 | 28 | 11205 | Hex bolt, grade A, zinc plated 1/2"-13x1" | 2 |
| 13 | 37024 | Nylon insert lock nut, grade 2, zinc-finish 3/8"-16 | 4 | 29 | 15-525-007 | Handle, weldment | 1 |
| 14 | 16-132-227 | Caster, 8/3-FWB-NTP | 2 | 30 | 11209 | Hex head bolt, HHCS, ASTM grade A, zinc plated, 1/2"-13x1 1/2" | 2 |
| 15 | 11365 | Hex bolt, HHCS #2, zinc-plated, 3/4"-10x 3" | 2 | 31 | 33354 | 1/2" inner diameter Belleville spring washer | 4 |
| 16 | 37039 | Nylock nut, zinc-plated, 3/4"-10 | 2 | 32 | 37030 | 1/2" - 13 Nylon insert lock nut | 2 |
| | | | | 33 | 99-024-003 | Guard/cover/endcap/plug | 2 |

FIG. 3A: DC modular power unit exploded parts diagram and parts list

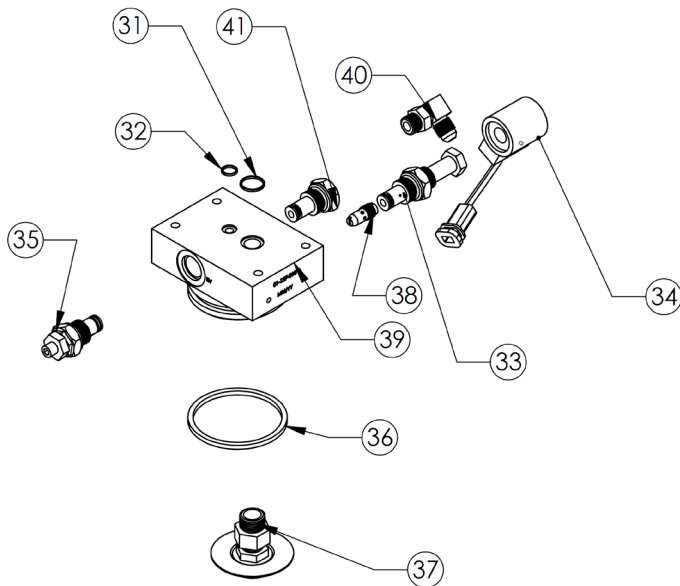
*See [note](#) in table of contents on cover page.



| Item | Part no. | Description | Quantity |
|------|-------------------------|--|-------------|
| 1 | 99-016-933 | Base bracket | 1 |
| 2 | 21-034-008 | Charger (Soniel) | 1 |
| 3 | 01-033-024 | 24", 18/3, 4-pin plug | 1 |
| 4 | 37927 | Tinnerman clip | 4 |
| 5 | 99-023-001 | Reservoir | 1 |
| 6 | 99-034-013 | Battery strap | 1 |
| 7 | 99-139-003 | Battery | 1 |
| 8 | 01-116-003 | Breather | 1 |
| 9 | 15-533-013 | Cable, battery, 23" black | 1 |
| 10 | 15-533-014 | Cable, battery, 23" red | 1 |
| 11 | 23305 33688 33008 | $\frac{3}{8}$ " - 16 x 1" utility grade bolt $\frac{3}{8}$ " high collar lock washer $\frac{3}{8}$ " flat washer | 2 2 2 |
| 12 | 99-135-011 | 4", 12VDC motor w/ tang dr. | 1 |
| 13 | 15-022-004 | 12V start solenoid relay | 1 |
| 14 | 99-145-164 | Worm gear hose clamp | 1 |
| 15 | 99-639-001 | Battery gauge | 1 |
| 16 | 99-034-054 | Base, contact block | 3 |
| 17 | 01-022-003 | Contact block N.O. | 3 |
| 18 | 99-034-055 | Operator, black, non-illuminated | 2 |
| 19 | 01-022-008 | Key switch, 2-position | 1 |
| 20 | 01-134-007 | Legend, ON - OFF | 1 |
| 21 | 99-024-029 | Fiberglass cover | 1 |
| 22 | 99-145-061 | Clamp, worm gear | 1 |
| 23 | 01-143-906 | Pump | 1 |
| 24 | 01-627-010 | Manifold assembly (exploded view on p. 12) | 1 |
| 25 | 29201 | $\frac{1}{4}$ in. - 20 x $\frac{1}{4}$ in. TPHMS zinc-plated | 2 |
| 26 | 29185 | $\frac{1}{4}$ in. - 20 x 1in. TPHMS zinc-plated | 2 |
| 27 | 23255 33687 | SHCS utility grade High collar lock washer | 4 4 |
| 28 | 99-033-024 | Molded cord | 1 |
| 29 | 21-034-008 | Connector, charge | 1 |
| 30 | 99-051-014 | 1in. hook and loop press | 10" |

FIG. 3B: Exploded view of DC manifold assembly (item no. 24 in FIG. 3A)

*See note in table of contents on cover page.



| Item | Part no. | Description | Quantity |
|------|------------|-----------------------------------|----------|
| 31 | 99-144-023 | O-ring | 1 |
| 32 | 99-144-022 | O-ring | 1 |
| 33 | 99-153-015 | Valve, cartridge, normally closed | 1 |
| 34 | 99-034-010 | Coil with weather-tite plug | 1 |
| 35 | 99-153-006 | Valve, pressure relief | 1 |
| 36 | 99-144-007 | O-ring | 1 |
| 37 | 99-531-005 | Filter | 1 |
| 38 | 99-153-038 | Flow control, 1.0GPM | 1 |
| 39 | 01-127-010 | Manifold | 1 |
| 40 | 99-116-033 | MJ-MAORB 90 degree | 1 |
| 41 | 99-153-011 | Valve, check | 1 |

FIG. 4: 12VDC modular power unit electrical circuit diagram

*See note in table of contents on cover page.

Overcurrent & short-circuit protection as well as system disconnect must be provided.

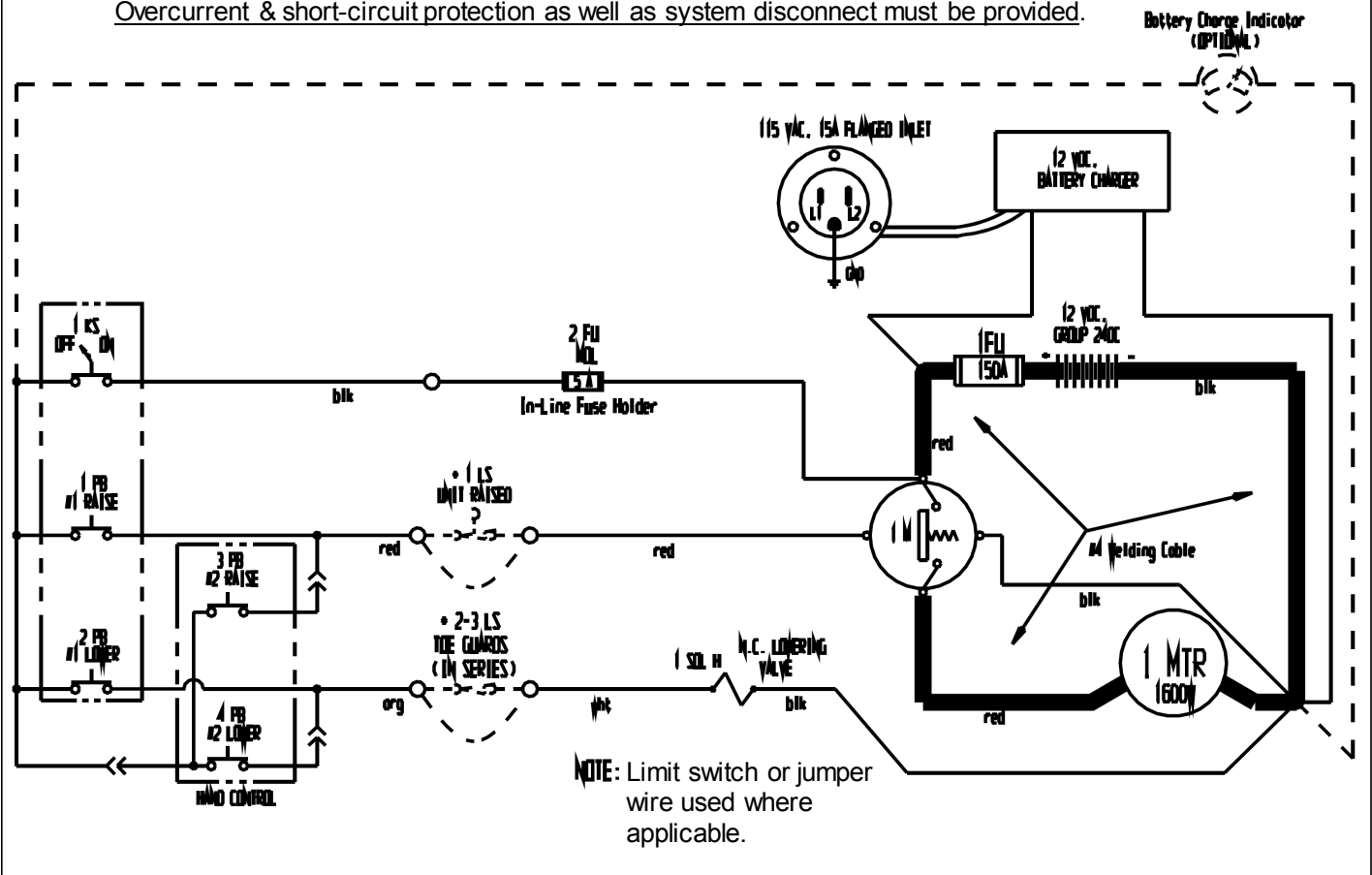


FIG. 5A: 12VDC modular power unit layout (part 1 of 2)

*See note in table of contents on cover page.

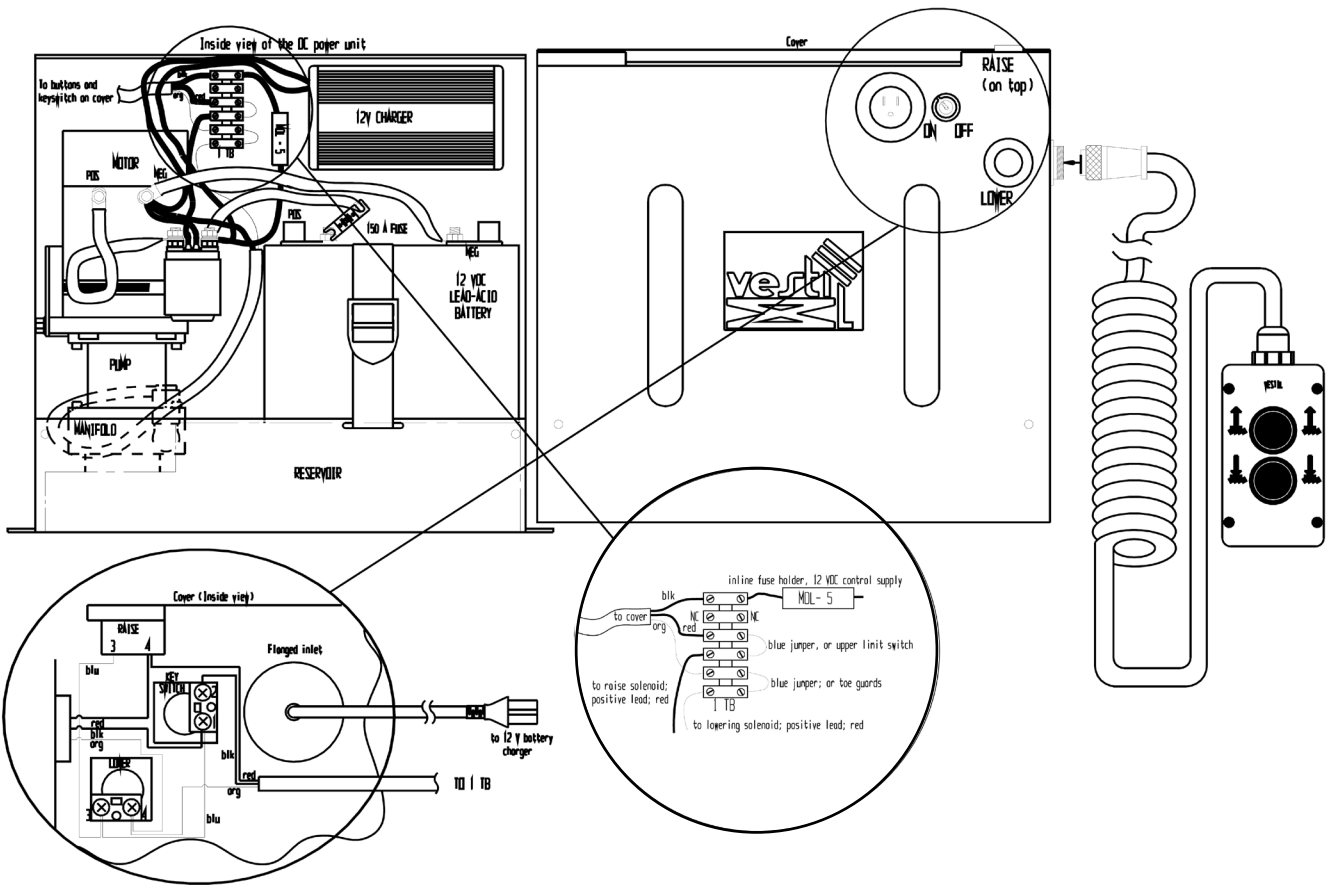


FIG. 5B: 12VDC modular power unit layout (part 2 of 2)

*See note in table of contents on cover page.

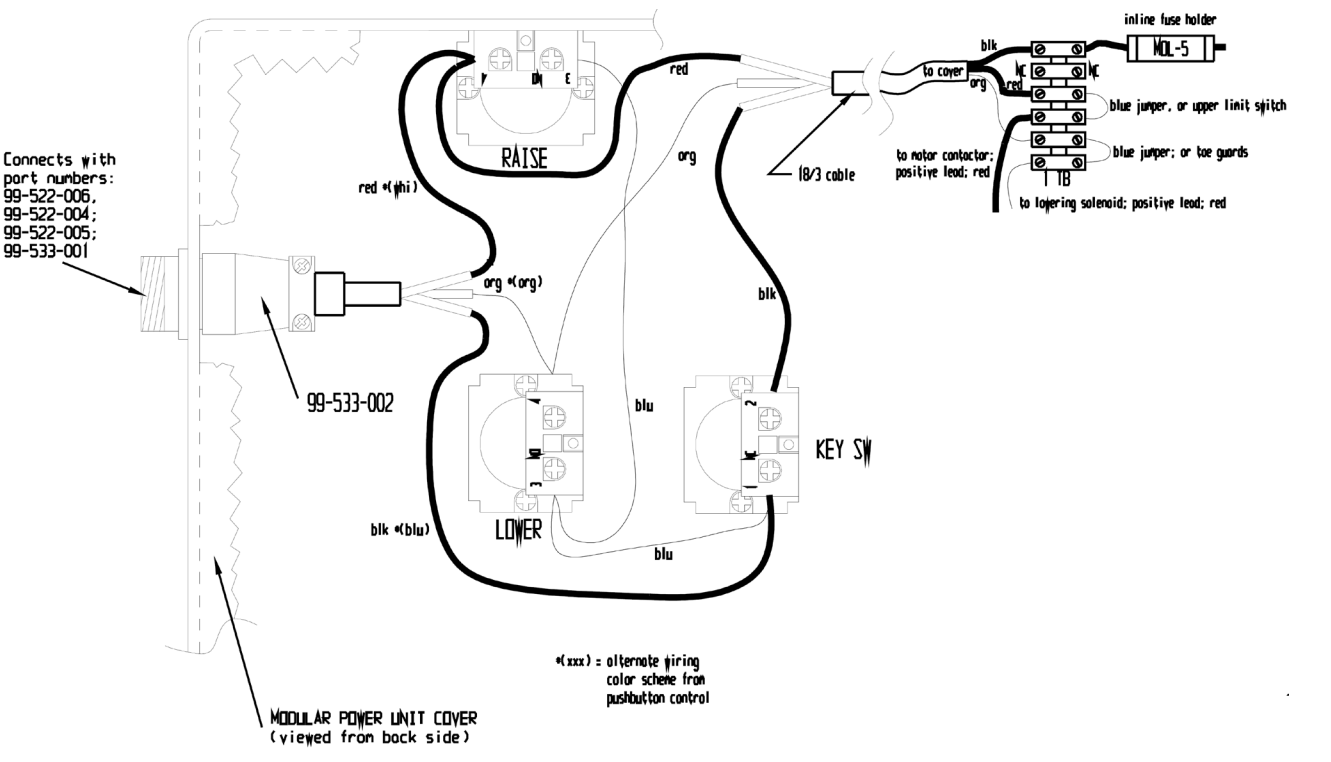
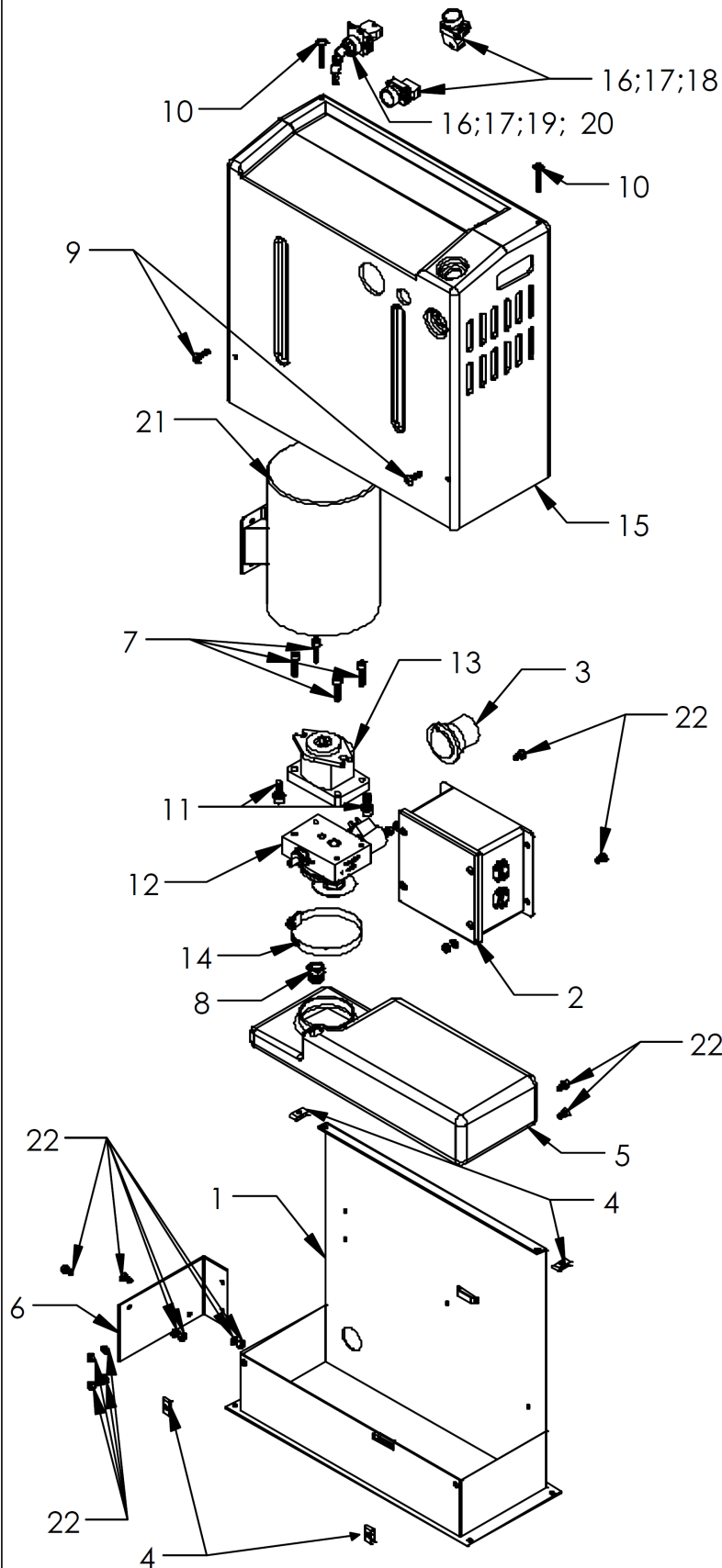


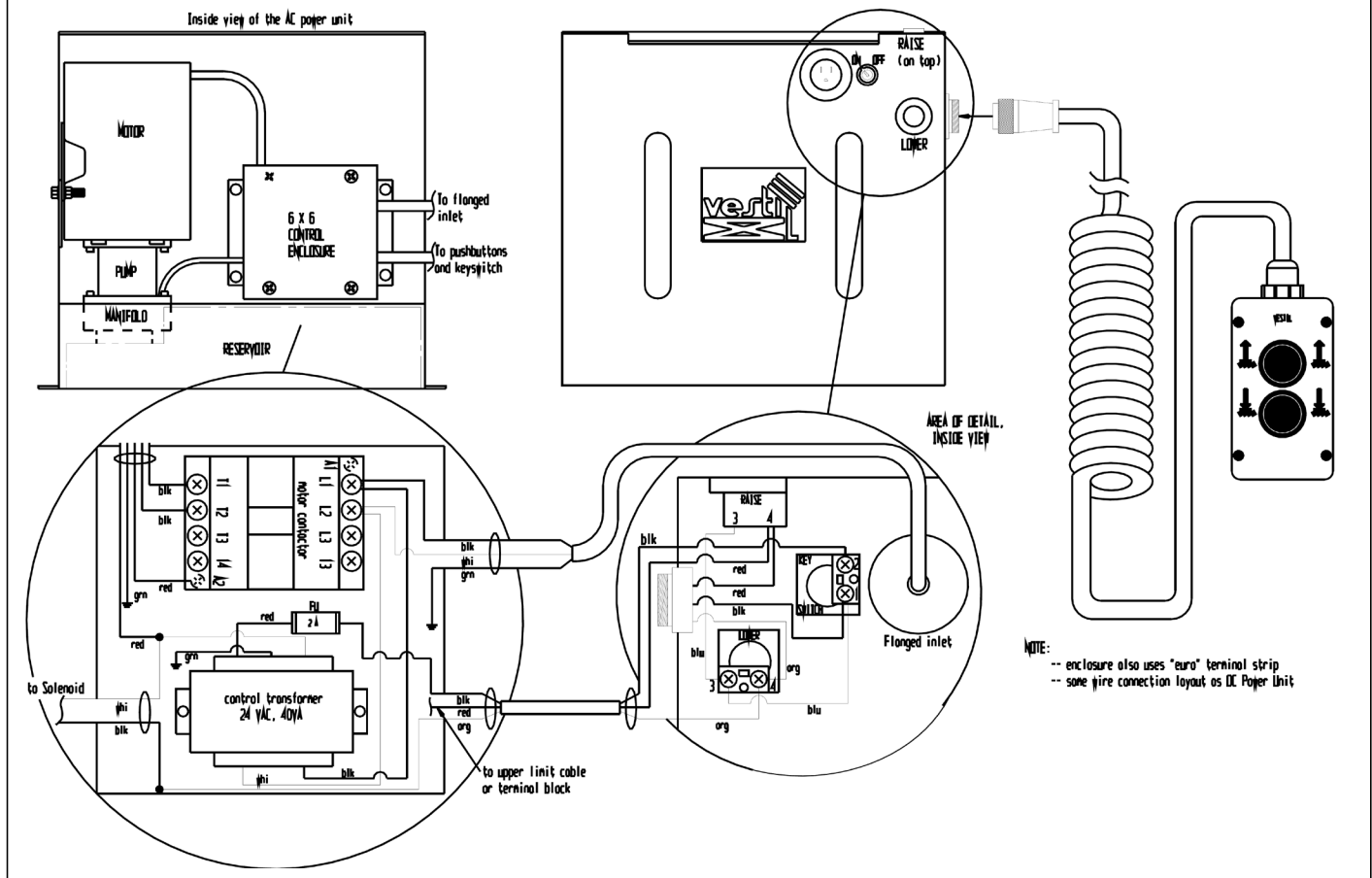
FIG. 6A: AC modular power unit exploded parts diagram and parts list

*See note in table of contents on cover page.



| Item | Part no. | Description | Qty. |
|------|-------------------------|--|-------------|
| 1 | 99-016-933 | Base bracket | 1 |
| 2 | 21-034-008 | Electrical box (see FIG. 6B) | 1 |
| 3 | 21-034-005 | AC adaptor plug | 1 |
| 4 | 37927 | Tinnerman clip | 4 |
| 5 | 99-023-001 | Reservoir | 1 |
| 6 | | Motor brace | 1 |
| 7 | 23255 33687 | $\frac{5}{16}$ " - 18 x 1" utility grade bolt $\frac{5}{16}$ " high collar lock washer | 4 4 |
| 8 | 01-116-003 | Breather | 1 |
| 9 | 29185 | $\frac{1}{4}$ " - 20 x 1" TPHMS z-plated screw | 1 |
| 10 | 29201 | $\frac{1}{4}$ " - 20 x $1\frac{3}{4}$ " TPHMS z-plated screw | 1 |
| 11 | 23305 33688 33008 | $\frac{3}{8}$ " - 16 x 1" utility grade bolt $\frac{3}{8}$ " high collar lock washer $\frac{3}{8}$ " flat washer | 2 2 2 |
| 12 | 01-627-010 | Manifold (see FIG. 6C) | 1 |
| 13 | 01-143-906 | Pump | 1 |
| 14 | 99-145-061 | Worm gear hose clamp | 1 |
| 15 | 99-024-029 | Fiberglass cover | 1 |
| 16 | 99-034-054 | Base, contact block | 3 |
| 17 | 01-022-003 | Contact block N.O. | 3 |
| 18 | 99-034-055 | Operator, black, non-illuminated | 2 |
| 19 | 01-022-008 | Key switch, 2-position | 1 |
| 20 | 01-134-007 | Legend, ON - OFF | 1 |
| 21 | 99-135-003 | Motor, electric, 1ph. | 1 |
| 22 | 99-145-061 | Clamp, worm gear, hose | 1 |
| 23 | 01-143-906 | Pump | 1 |
| 24 | 01-627-010 | Manifold assembly (exploded view on p. 12) | 1 |
| 25 | 29201 | $\frac{1}{4}$ in. - 20 x $1\frac{3}{4}$ in. TPHMS zinc-plated | 2 |
| 26 | 29185 | $\frac{1}{4}$ in. - 20 x 1in. TPHMS zinc-plated | 2 |
| 27 | 23255 33687 | SHCS utility grade High collar lock washer | 4 4 |
| 28 | 99-033-024 | Molded cord | 1 |
| 29 | 21-034-025 | Connector, charge | 1 |
| 30 | 99-051-014 | 1in. hook and loop press | 10" |

FIG. 8: 115VAC modular power unit layout
 *See note in table of contents on cover page.

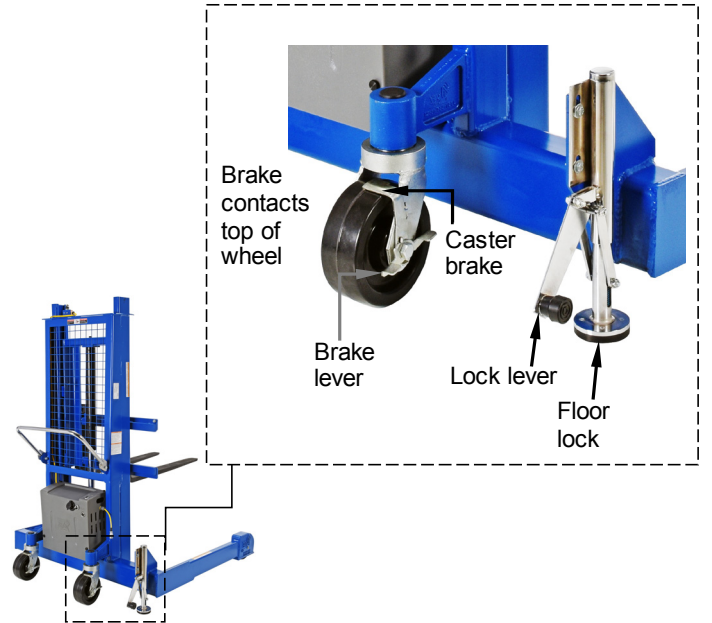


Loading instructions:

The capacity of this PMPS-series lifter is 4,000 lb. Every unit is labeled with this information. See label 287 in [Labeling Diagram](#) on p. 16. DO NOT attempt to lift loads that exceed the capacity! Personal injury or permanent damage to the lifter might occur.

When loading the PMPS, always follow these guidelines:

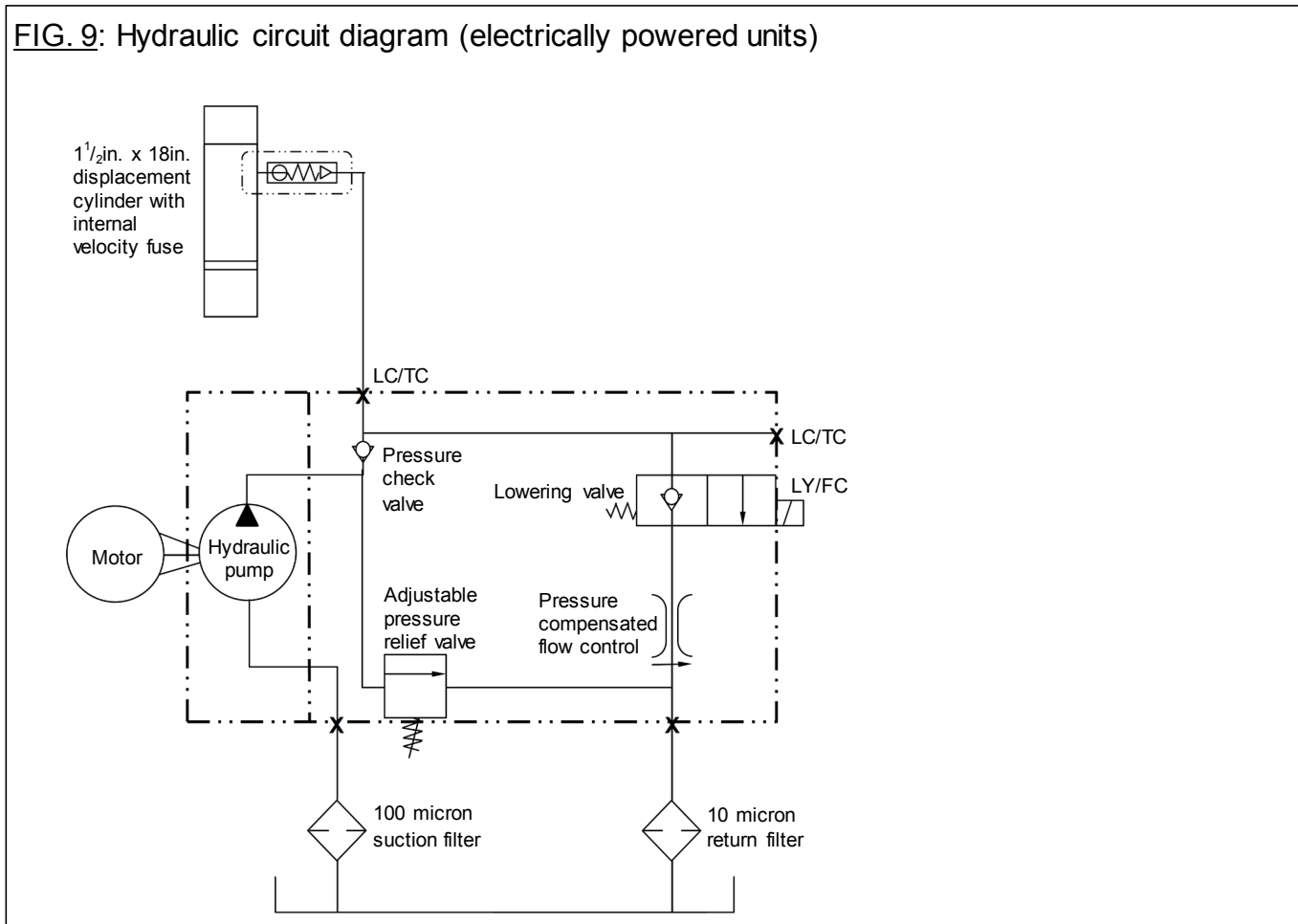
1. The load should firmly contact the heels of the forks
2. DO NOT apply a load to the tips of the forks
3. Center the load on the forks
4. Only transport loads in the lowered position
5. Apply the floor lock *and* both caster brakes (only one caster shown in diagram at right) whenever the lifter is not in use. They should also be applied anytime a load is being elevated. To apply the floor lock, press down on the lock lever. Apply the caster brakes by pressing down the brake lever until the brake firmly contacts the top of the wheel.



RESPONSIBILITIES OF OWNERS & USERS:

- 1.) Inspect and maintain this product in accordance with this manual. See [Inspections & Maintenance](#) on p. 14. ONLY use the pallet handler if it is in normal operating condition.
- 2.) ONLY use this device after you read and understand all operating procedures and safe use recommendations provided in this instruction manual.
- 3.) Never overload this lifter. The capacity of your unit is provided on label 287 (see [Labeling Diagram](#) on p. 16) and in the [table](#) on p. 3.

FIG. 9: Hydraulic circuit diagram (electrically powered units)



Using the Pallet Handler:

Pushbutton controls are standard equipment on PMPS series pallet handlers, i.e. a handheld controller as well as control buttons on the housing of the modular power unit. To raise or lower the fork carriage, press the appropriately marked button. When either button is released, the carriage will maintain position until the **UP** or **DOWN** button is pressed.

OPERATION:

To raise the forks, press the **UP** button on the pushbutton controller. This starts the electric motor which turns the hydraulic pump. Oil from the reservoir (inside the modular power unit) flows through the suction filter and into the pump. The pump delivers pressurized oil to the hydraulic cylinder through a check valve. The check valve allows oil to flow only in one direction, i.e. to the cylinders, and prevents oil from flowing back into the pump circuit when the pump stops. This traps oil in the cylinder, which allows the forks to maintain elevation after the control button is released.

If a load exceeds the capacity of the lifter, pressure will build up in the circuit between the pump and the cylinders when the **UP** button is pressed. This pressure forces the relief valve to unseat which in turn allows oil to circulate back to the reservoir instead of to the cylinder. This pressure relief mechanism prevents damage to the hydraulic system.

To lower the forks, press the **DOWN** button. This energizes the lowering solenoid valve coil, which unseats the poppet valve and allows oil to return to the reservoir from the cylinders through the pressure-compensated flow control valve. Releasing the **DOWN** button de-energizes the solenoid and closes the valve poppet. The poppet valve and check valve together prevent oil from returning to the reservoir and cause the cylinders to stop retracting. The forks remain elevated until the operator presses a button on the pushbutton controller again.

LOWERING SOLENOID VALVE:

The pallet handler is equipped with a cartridge lowering valve. If a malfunction occurs while lowering the fork carriage (item no. 3; p. 4 & 5), refer to the solutions presented in [Troubleshooting](#) on p. 15.

If a malfunction of this valve occurs, clean it by applying the following procedure:

1. Completely lower the forks.
2. Use a thin tool to press the poppet in from the bottom and open the valve.
3. Repeat several times while immersing the valve in kerosene or mineral spirits; then blow dry the cleaned valve.
4. Blow compressed air through the valve while holding it open as described in step 2.

5. Inspect the O-rings and the PTFE washer (polytetrafluoroethylene). If either component is damaged (for example, torn or cut) replace it.
6. Reinstall the valve. The valve should be tightened to approximately 20 ft.-lb. of torque.

VELOCITY FUSE:

There is a brass velocity fuse with a stainless steel spring in the base of each cylinder. If a fitting leaks or a hose is ruptured, the platform lowers more rapidly. If the rate of descent exceeds the preset speed, the Velocity Fuse will shut. As long as the fuse is shut oil cannot flow and the forks will remain stationary until pressure is reestablished. This safety feature reduces the possibility of personal injury or damage to the pallet handler (or load) that could result if the forks suddenly fall.

If air enters the hydraulic system, the velocity fuse might activate although no failure occurs. To reset the velocity fuse, activate the pump by jogging the **UP** button. Immediately after resetting the velocity fuse, lower the forks and remove the load. Then, cycle the carriage (raise the forks all the way to the top of the mast and back down) several times to purge air from the system.

AIR BLEEDING PROCEDURE:

If the forks descend very slowly or fail to lower at all, air probably is trapped in the hydraulic circuit and must be bled from the system. The PMPS has a "bleeder" screw at the top of the cylinder. To bleed air from the hydraulic circuit, follow these directions.

- 1.) Completely unload the forks.
- 2.) Loosen the bleeder screw at the top of the cylinder by giving it approximately $\frac{1}{4}$ to $\frac{1}{2}$ turn to allow trapped air to escape. Jog the motor to push air out of the system.
- 3.) When the cylinder is free of air, only clear hydraulic fluid will flow from the bleeder screw opening. When you observe only oil flowing from the bleeder, retighten the bleeder screw.

Battery Charger Operation (DC units only):



WARNING Working on lead-acid batteries is dangerous. Batteries contain sulfuric acid and produce explosive gases. A battery explosion could result in loss of eyesight or serious burns.

- DO NOT smoke near the battery or expose the battery to a spark or flame.
- ONLY charge batteries in dry, well-ventilated locations.
- DO NOT lay tools or metallic items on top of a battery. NEVER touch both terminals simultaneously! Remove personal items such as rings, bracelets, necklaces, and watches. A battery can produce enough voltage to weld jewelry to metal.
- Always have plenty of fresh water and soap nearby in case contact with battery acid occurs.
- Operating the battery with low voltage can cause premature motor contact failure.
- The charger has an external ground wire (small green wire). During installation the charger must be grounded to the equipment which it is connected to. Be sure this wire is always connected to the chassis, frame, or other metallic surface considered ground.
- Confirm that all battery connections are sound and clean. Remove all accumulated deposits on the terminals.
- Replace defective electrical cords and wires immediately.
- DO NOT use the charger if the flanged inlet is damaged.
- DO NOT connect the charger to a damaged extension cord.

Every DC powered PMPS is equipped with an onboard battery charger with a flanged electrical inlet. The charger is current limited and will not exceed its rated output even if loads are placed on the battery while it is charging. The charger fuse will blow if it is connected in reverse polarity.

To charge the battery:

- 1.) Plug the charger into an 115V, 60 Hz receptacle by connecting the flanged inlet on the charger to an extension cord. Plug the other end of the cord into a wall socket. Use a short, thick extension cord.
- 2.) When properly connected, the charge LED will indicate the status of charge current flowing to the battery.
 - If only the red LED is on, the charger is providing full output to the battery.
 - If both the red and green LED's are on, the charger is "topping off" the battery.
 - When only the green LED is on, the unit is providing a "float" (maintenance) charge.
 - DO NOT leave the charger on for long periods after the battery is fully charged.
- 3.) Unplug the charger before using the lifter. Failure to do so could cause damage to cords, receptacles, etc.

TROUBLESHOOTING--If the charger does not work:

- 1) Make sure all battery connections are sound.
- 2) Confirm that the AC power source (e.g. wall socket) is supplying power.
- 3) Examine the fuse. See Fig. 4 on p. 7. Replace only with a fuse having the same rating as the original fuse.
- 4) Determine battery condition. It may take some time before current begins to flow through a highly sulfated battery.

Record of Normal Condition:

Before using the lifter for the first time, create a written record of its appearance and functions. Include detailed descriptions about the frame, wheels & casters, forks & fork carriage, mast, cylinder, and chain drive. Use the unit to lift a load. Describe the motion of the fork carriage as it rises and lowers. Also describe how the unit sounds as the carriage cycles up-and-down. Thoroughly photograph the unit including all labels. Add the photographs to the record. This record establishes normal condition. When conducting inspections in the future, compare your observations to this record to determine if a component is in normal condition or requires repair or replacement.

Inspections & Maintenance:

- NOTICE** Regular maintenance is essential to keep this product in nominal condition. Before beginning maintenance, completely unload the forks and lower them. Always use this product in accordance with the instructions in this manual and consistently with any training relevant to machines, devices, etc. used in conjunction with this product.
- Relieve hydraulic pressure whenever the unit is not in use by fully lowering the forks and turning off system power.
 - Keep the product clean & dry. Lubricate moving parts at least once per month.
 - ONLY use manufacturer-approved replacement parts. Vestil is not responsible for issues or malfunctions that result from the use of unapproved replacement parts.
 - ONLY use ISO AW-32 hydraulic fluid or its equal in the hydraulic system. 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.
 - Contact the manufacturer for MSDS information.

Inspections: Refer to the appropriate *Exploded View* on p. 4 or 5.

(A) Before Each Use--Inspect the following:

1. Electrical system: inspect the power unit and electrical wiring for cuts or frays.
2. Casters: examine the casters and confirm normal operating condition.
3. Hydraulic hoses: check for pinches, punctures, and loose connections.
4. Structure: inspect the frame for deformations and cracked welds.
5. Forks, carriage and mast: cycle the forks up and down while listening and watching unusual noise, motion, or binding.
6. Pushbutton controller: inspect the controller and look for damage that exposes.

(B) Monthly Inspections--at least once per month check the following:

1. Oil level. Lower the forks completely and unload them. Oil should be 1" - 1¹/₂" below the top of the tank/reservoir. Add oil as necessary. Look for oil leaking from hoses, the cylinder, or the reservoir. See [Troubleshooting](#) on p. 15 and correct issues as instructed.
2. *[DC models only]* Battery: check the water level in the battery.
3. Clevis and pivot points: inspect for excessive wear.
4. Hydraulic system, wiring, and pushbutton control: Check for worn or damaged hydraulic hoses, electrical wires, and cords. Repair as necessary.
5. Carriage rollers: check rollers and retaining hardware for normal condition.
6. Forks, carriage and mast: cycle the forks up (to the top of the mast) and back down while listening and watching for unusual noise, motion, or binding.
7. Labels: confirm that all labels are in place and easily readable. See [Labeling diagram](#) on p. 16.
8. Surfaces: remove dirt and debris.

(C) Yearly Inspection

Hydraulic oil should be changed at least once a year or sooner if the oil darkens or becomes gritty. Flush the reservoir before refilling. Similarly, if the oil appears milky, water is present and the oil should be changed.

Maintenance:

Implement a maintenance program to ensure the proper function and safety of the device. ANSI/ITSDF standard B56.10 provides some recommended maintenance procedures. The following steps should be utilized in conjunction with those recommendations.

Step 1: Tag the unit, "Out of Service."

Step 2: Conduct a "Before each use". If deformity, corrosion, rusting, or excessive wear of structural members is present, DO NOT use the handler. Contact Vestil for instructions. If the carriage does not move smoothly or makes noise as it moves up or down the mast, apply a silicon wax or silicon spray to the inside of the mast frame.

Step 3: Remove any dirt or other matter from the forks and other surfaces.

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

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

Replacement Parts:

Our company carefully selects parts for our equipment. Be certain that only manufacturer approved replacement parts are used. To order parts for your equipment, contact [Technical Service](#). Contact information appears on the cover page of this manual. In any correspondence with the factory please include the Serial Number which is inscribed on the nameplate of the equipment. Use only the part numbers provided in this Owner's Manual. When ordering parts for AC power units, please be prepared with the motor phase and voltage of the equipment.

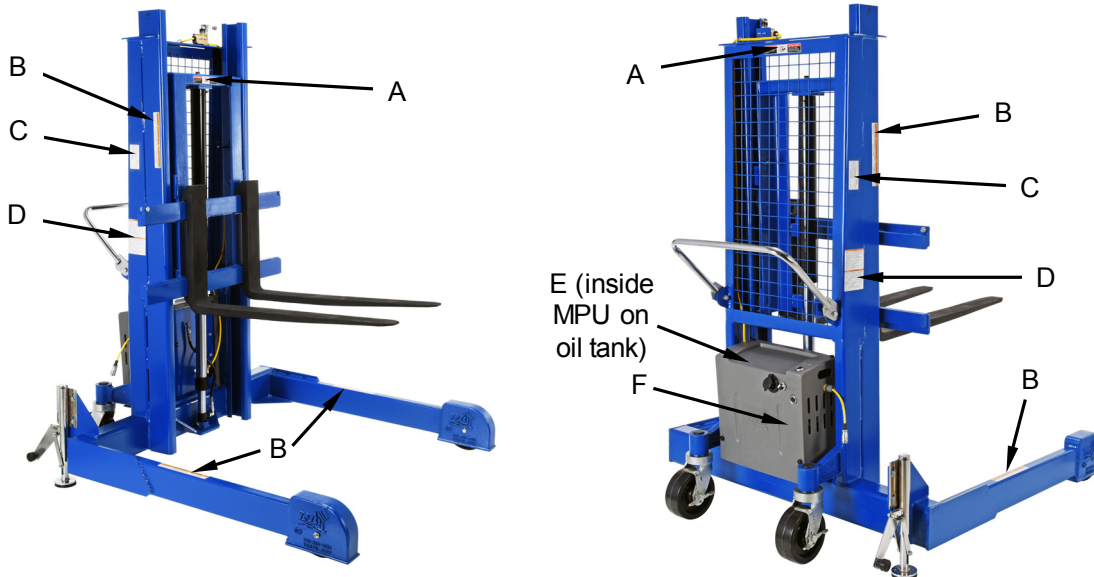
Troubleshooting:

Contact [technical support](#) for assistance resolving any issues not discussed in this section.


| Issue | Possible Cause | Remedy |
|--|--|--|
| 1. Forks do not raise and motor does not run | a. Low battery voltage. (Check light) b. All chassis connections to negative post of battery not made well. | a. Recharge battery b. Check and tighten or clean connections if necessary. |
| 2. Forks do not raise but motor is running or humming. | c. Voltage at motor terminals might be too low to run pump at existing load. d. Fluid level in reservoir is low. e. Load exceeds capacity requirements. Relief valve is allowing hydraulic fluid to flow back into the reservoir. f. Suction filter is clogged, starving pump. g. Suction line fittings are loose allowing air to enter. h. Filter/Breather cap on tank is clogged. i. Lowering solenoid valve might be energized by faulty wiring or might be stuck open. j. Hydraulic pump not operating. | c. Measure voltage at motor terminals (as near as possible) while pump runs under load. Check for loose wiring connections. d. Add fluid. See p. 14 for proper fluid level. e. DO NOT CHANGE RELIEF VALVE SETTING. Instead, reduce the load to rated capacity. f. Remove filter and clean. g. Inspect all fittings for proper tightness. h. Remove cap and clean. i. Remove lowering solenoid valve. Check and clean. Refer to Lowering Solenoid Valves on p. 12-13. j. Disconnect hydraulic line from power unit. Put pressure line in a large container and operate the pump. If no output, check the pump motor coupling and correct as appropriate. If pump is worn, contact factory for replacement parts. |
| 3. Unit rises too slowly. | k. Foreign material stuck in lowering solenoid valve causing fluid to flow back into the reservoir. l. Foreign material clogging suction filter or breather cap, or a hose is pinched. m. Low motor voltage. n. Unit overloaded. o. Inoperative pump. | k. Lower the forks. Remove the lowering solenoid valve and clean. See Lowering Solenoid Valves on p. 12-13. l. Correct as appropriate. See also, 2(f), (h) above. m. See 1 (b) n. See 2 (e) o. See 2 (j) |
| 4. Motor labors or is excessively hot. | p. Battery voltage too low. q. Oil starvation causing pump to bind & overheat. [NOTE: If this occurs, pump can be permanently damaged.] r. Binding cylinder. | p. See 1 (b) q. See 2 (d), (f), (g), (h), (j) r. Align cylinder correctly. |
| 5. Forks rise in jerks or are spongy when elevated. | s. Fluid starvation. t. Air in system. | s. See 2 (d), (f), (g), (j) t. See Air Bleeding Procedure p. 13. |
| 6. Unit lowers too slowly when loaded. | u. Lowering solenoid valve filter screen clogged. v. Pinched tube or hose. w. Foreign material in flow control valve. x. Binding cylinders. y. Foreign material in velocity fuse. | u. Remove lowering solenoid valve; clean filter screen. v. Correct as appropriate. w. Remove and clean flow control valve. Refer to Hydraulic Circuit Diagram on p. 12. x. Align cylinders correctly. y. Remove and clean velocity fuse. Hydraulic Circuit Diagram on p. 12. |
| 7. Forks lower too quickly. | z. Foreign material stuck in flow control valve. Carriage initially lowers at a normal rate but accelerates as the carriage descends. | z. Remove flow control valve from the valve block and clean. Refer to Hydraulic Circuit Diagram on p. 12. |
| 8. Forks rise then lower slowly on their own. | aa. Lowering solenoid valve may be incorrectly wired or is stuck open bb. Check valve stuck open. cc. Leaking hoses, fittings, pipes. dd. Cylinder packing is worn or damaged. | aa. See 3 (k). bb. Remove and clean check valve. See p.7 or 10 . cc. See 2 (c) above. dd. Replace packing (contact factory for replacement parts). |
| 9. Fork carriage elevates but does not lower. | ee. Incorrect lowering solenoid valve wiring. ff. Lowering solenoid valve is stuck. gg. Faulty lowering solenoid coil. hh. Binding cylinders. ii. Air present in the hydraulic system causing the velocity fuse to activate | ee. Correct per diagram. See p. 7 or 10 . ff. Lightly tap down the solenoid coil body to seat it properly. (DO NOT hit coil hard as it will permanently damage the internal system. DO NOT remove the solenoid valve from the block because the carriage will descend dangerously quickly.) gg. Remove and replace. DO NOT remove the lowering solenoid valve from the block because the forks will lower in an uncontrolled manner. hh. See 4 (r). ii. To unlock, pressurize the hydraulic system. |

Labeling diagram:

Each unit should be labeled as shown in the diagram. However, label content and location are subject to change without notice so your product might not be labeled exactly as shown. Compare the diagram below to your *Record of Normal Condition*. If there are any differences between actual labeling and this diagram, adapt the diagram to reflect actual labeling. Replace all labels that are damaged, missing, or not easily read (e.g. faded). To order replacement labels or to inquire whether your unit is properly labeled, contact the technical service and parts department online at http://www.vestilmfg.com/parts_info.htm or by calling (260) 665-7586 and asking for the Parts Department.



A: Label 824

| | | |
|--|---|--|
| ⚠ DANGER |  | ⚠ PELIGRO |
| To avoid bodily injury, stand clear while in motion. | | Para evitar daños, manténgase alejado cuando en movimiento |

B: Label 643

| | | |
|---------------------------|---------------------------------------|---|
| ⚠ WARNING | ⚠ ADVERTENCIA | ⚠ AVERTISSEMENT |
| KEEP CLEAR OF PINCH POINT | MANTÉNGASE ALEJADO DEL PUNTO DE CORTE | SE TENIR À DISTANCE DU POINT DE PINCEMENT |

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C: Label 287

| | |
|--|------|
| MODEL/MODÉLO/MODÈLE _____ | |
| STATIC CAPACITY (evenly distributed) _____ | lbs. |
| LA CAPACIDAD CONSTANTE (distribuida uniformemente) _____ | kgs. |
| CAPACITÉ STATIQUE (distribuée régulièrement) _____ | kgs. |
| SERIAL/SERIE/SÉRIE _____ | |

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D: 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: |
| <ul style="list-style-type: none"> • 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: <ul style="list-style-type: none"> 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 transeúntes. Los operarios deben observar y seguir las siguientes prácticas de seguridad: |
| <ul style="list-style-type: none"> • 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: <ul style="list-style-type: none"> 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. |

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E: Label 206 (inside MPU on oil tank)

| |
|--|
| ISO 32 / 150 SUS |
| HYDRAULIC OIL OR NON-SYNTHETIC TRANSMISSION FLUID ACEITE HIDRAULICO O LIQUIDOS DE TRANSMISION NO SINTETICOS |
| HUILE OU LIQUIDE HYDRAULIQUE NON-SYNTHÉTIQUE |

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F: Label 295 (on MPU cover)

| |
|--|
| ⚠ WARNING |
| Enclosed battery contains hazardous chemicals. DO NOT handle enclosed battery UNLESS wearing eye protection and other appropriate personal protective equipment. DO NOT directly contact skin with battery. DO NOT expose to sparks or extreme heat; battery contains explosive gases. |
| ⚠ ADVERTENCIA |
| La batería incluida continúe materiales peligrosos. NO use la batería incluida A NO SER que lleve protección de ojos y otros equipos de protección apropiados para el personal. NO tenga contacto directo en la piel con la batería. NO exponga a destellos o a calor excesivo, la batería contiene gases explosivos. |

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NOTE: Labels E and F apply to the modular power unit of PMPS units manufactured before 12-01-2018. Units manufactured after 12-01-2018 receive a redesigned modular power unit (MPU GEN2). Labeling diagrams for GEN2 power units are provided in separate MPU-AC/DC manuals.

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

| <u>US Mail</u> | <u>Fax</u> | <u>Email</u> |
|---|--|--|
| Vestil Manufacturing Corporation 2999 North Wayne Street, PO Box 507 Angola, IN 46703 | (260) 665-1339 <u>Phone</u> (260) 665-7586 | info@vestil.com Enter “Warranty service request” 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 1 year. For wearing parts, the warranty period is 90 days. 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) is 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;
- Unauthorized modifications: 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.

