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PM/PS-Series Pallet Handlers Instruction Manual



Receiving instructions:

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

Notes:

- 1) Compliance with laws, regulations, codes, and non-voluntary standards enforced in the location where the product is used is exclusively the responsibility of the owner/end-user.
- 2) VESTIL is **not liable** for any injury or property damage that occurs as a consequence of failing to apply either:
 - a) Instructions in this manual; or b) information provided on product labels.

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Signal Words:

This manual uses SIGNAL WORDS to indicate the likelihood of personal injuries, as well as the probable seriousness of those injuries, if the product is misused in the ways described. Other signal words call attention to uses of the product likely cause property damage.

The signal words used appear below along with the meaning of each word:



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



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



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



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

Safe Use Recommendations:

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

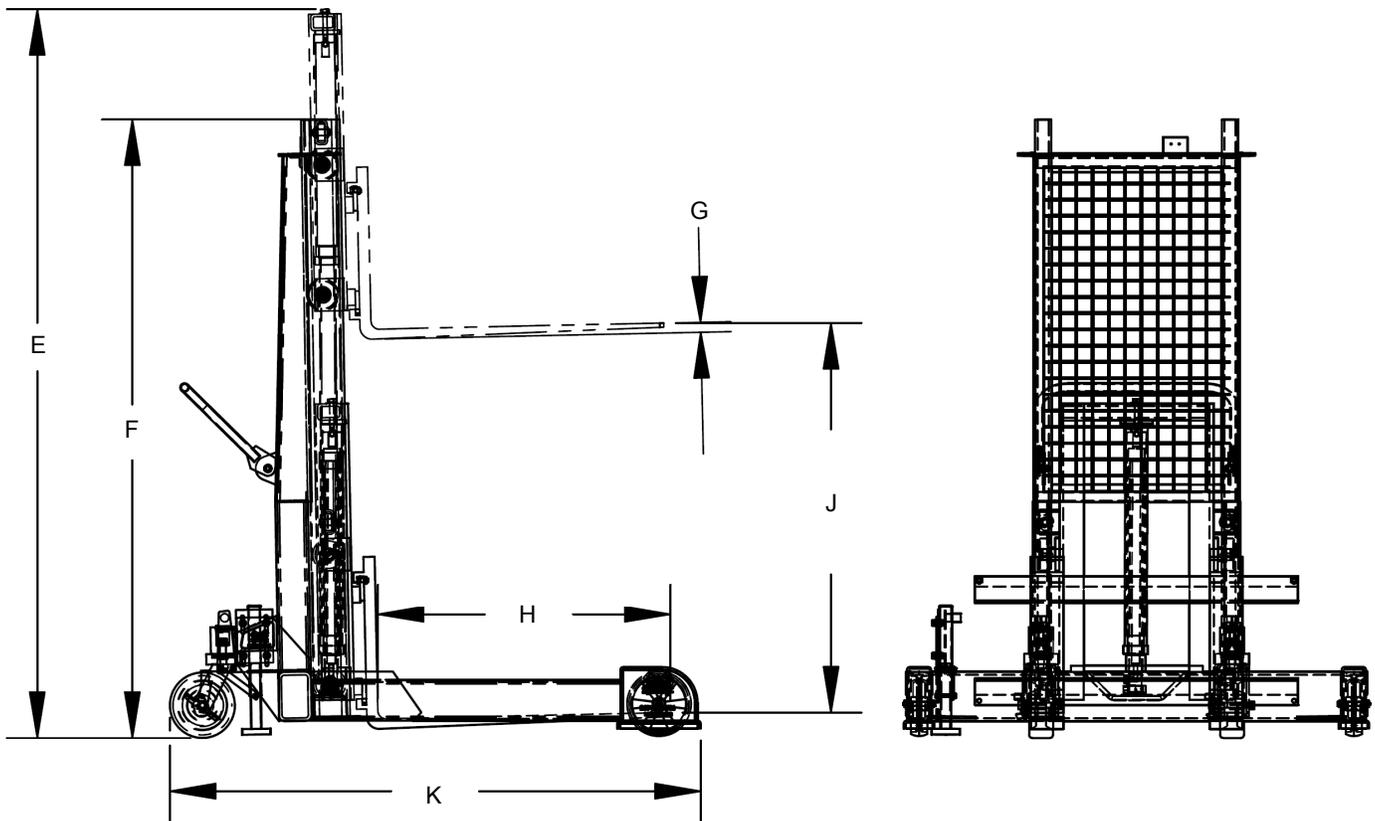
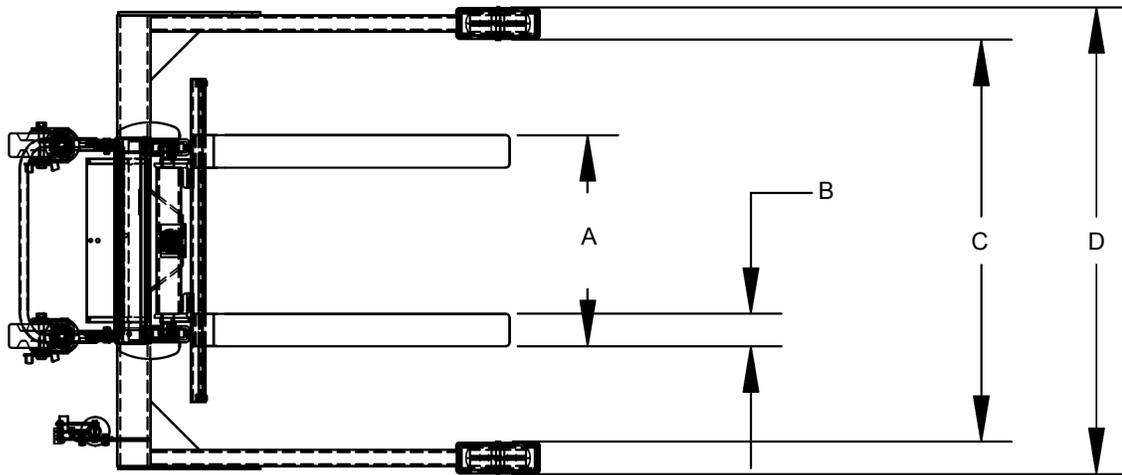


If this product is used or maintained improperly serious personal injuries or death might result. ALWAYS use the product properly.

- **Failure to read and understand the entire manual before assembling, using or servicing the product constitutes misuse.**
- Read the manual to refresh your understanding of proper use and maintenance procedures.
- 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 (see p. 21).
- DO NOT exceed the 4,000 lb. 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 and watch the forks, carriage, cylinder, and carriage rollers for unusual movement. If you discover a malfunction, remove the unit from service and notify your supervisor & maintenance personnel about the issue. 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 which can cause injury like 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 (see "Labeling Diagram" on p. 20) are in place, readable, and undamaged.

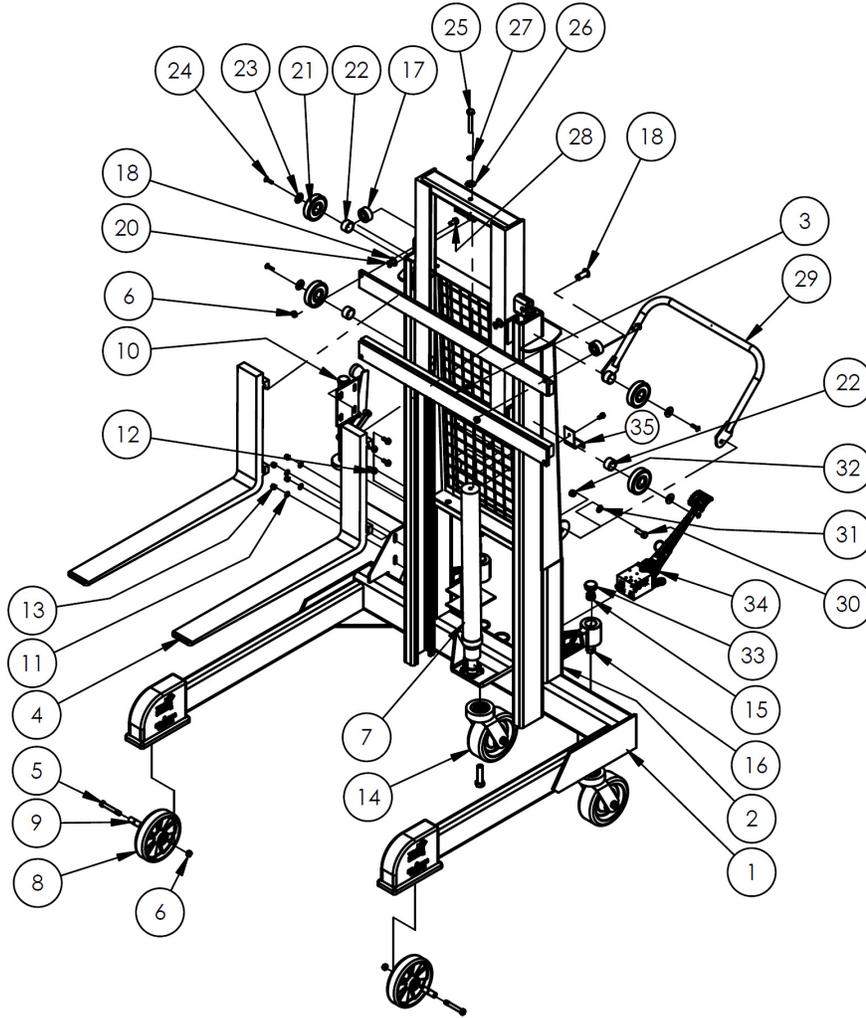
Product Specifications:

Dimensions and other PMPS specifications appear in the diagrams and table below.



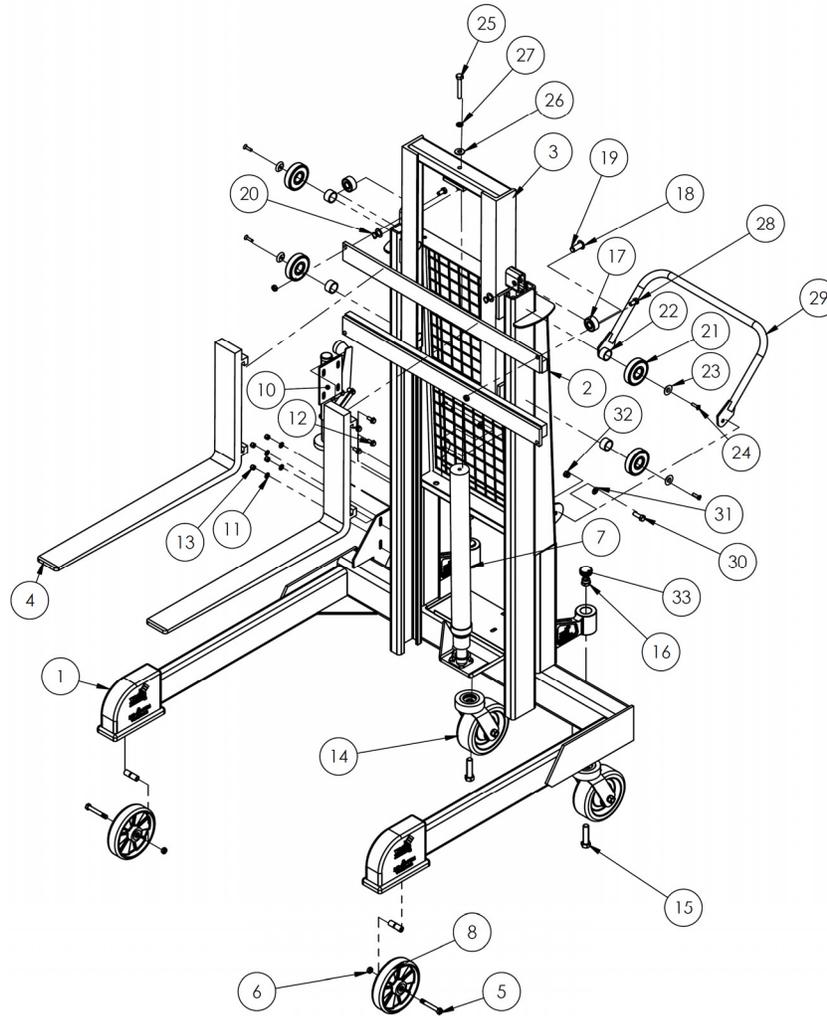
Model	A	B	C	D	E	F	G	H	J	K	Net Weight	Capacity
PMPS-50	8 - 37in.	4in.	49 ¹ / ₂ in.	58in.	91in.	77in.	1 ¹ / ₄ in.	36in.	3 - 50in.	66in.	825.0 lb. 375.0 kg	4,000 lb. 1,818.2 kg
PMPS-50M	8 - 37in.	4in.	49 ¹ / ₂ in.	58in.	91in.	77in.	1 ¹ / ₄ in.	36in.	3 - 50in.	66in.	944.2 lb. 429.2 kg	2,500 lb. 1,136.4 kg
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. 1A: PMPS-50M exploded parts diagram and bill of materials



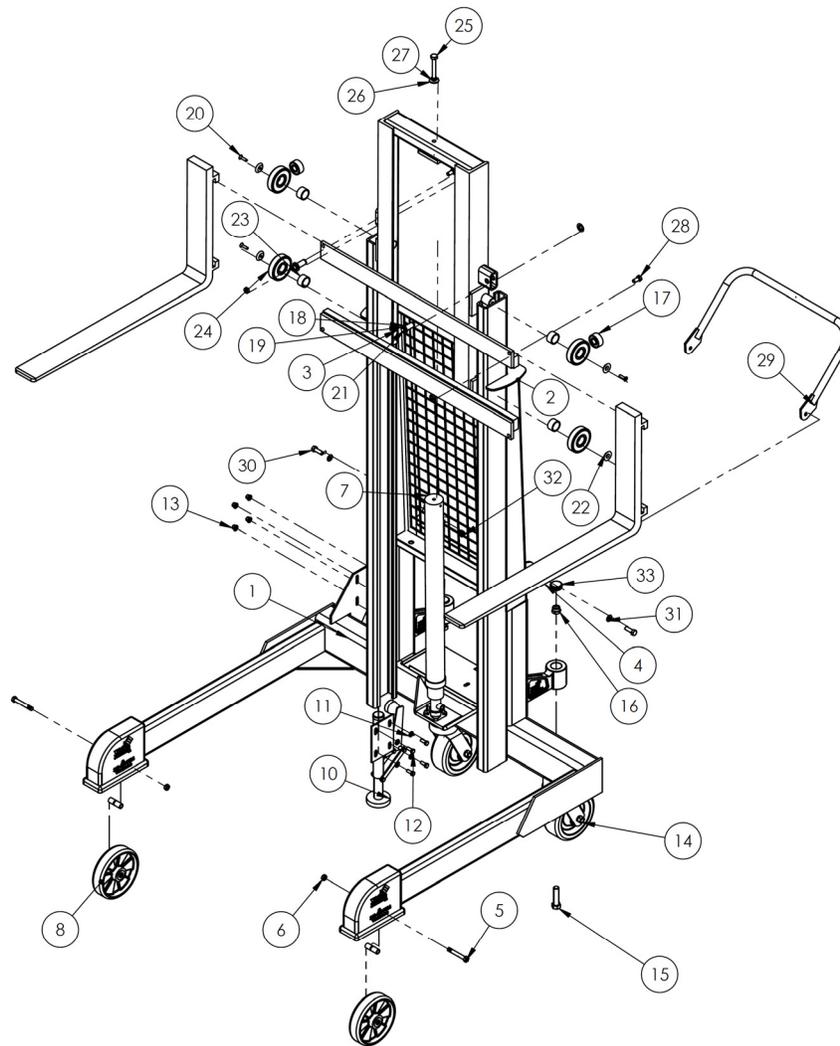
Item no.	Part no.	Description	Qty.	Item no.	Part no.	Description	Qty.
1	15-514-116	Weldment, frame	1	19	38-112-019	Pin, hinge pivot	2
2	15-514-117	Weldment, frame, uprights	1	20	68015	External retaining ring, phosphate, 3/4"	4
3	15-538-005	Weldment, carriage	1	21	38-027-001	Carriage, bearing, roller	4
4	38-028-007	4" x 36" fork	2	22	38-113-005	Spacer	4
5	16-145-031	Bolt with grease zerk, 1/2"-13x3 1/2"	2	23	38-024-015	Roller, end cap	4
6	37032	1/2" nylon insert jam nut	4	24	94257	Bolt, hex head flat socket, FHSCS, 5/16"-18x1 1/4"	4
7	15-021-012	Telescopic cylinder, PMPS-50	1	25	12217	Hex bolt, HHCS #5, 1/2"-13x3 1/2"	1
8	16-132-216	Caster, wheel, GFN-8/2-W	2	26	33012	Flat washer, low carbon, zinc finish, 1/2"	1
9	16-111-003	Sleeve bearing for 2" wheel	2	27	33626	Lock washer, zinc plated, 1/2"	1
10	16-132-081-001	Floor lock assembly, right mount	1	28	11205	Hex bolt, grade A, zinc plated 1/2"-13x1"	2
11	33008	Flat washer, low carbon, USS, zinc-plated 3/8"	8	29	15-525-007	Handle, weldment	1
12	11105	Hex bolt, grade A, zinc-plated, 3/8"-16x1"	4	30	11209	Hex head bolt, HHCS, ASTM grade A, zinc plated, 1/2"-13x1 1/2"	2
13	37024	Nylon insert lock nut, grade 2, zinc-finish 3/8"-16	4	31	33354	1/2" inner diameter Belleville spring washer	4
14	16-132-227	Caster, 8/3-FWB-NTP	2	32	37030	1/2" - 13 Nylon insert lock nut	2
15	37039	Nylock nut, zinc-plated, 3/4"-10	2	33	99-024-003	Guard/cover/endcap/plug	2
16	11365	Hex bolt, HHCS #2, zinc-plated, 3/4"-10x 3"	2	34	99-640-005	Hydraulic foot pump, auto-shifter, 2-speed	1
17	20-110-009	Bearing, ball	2	35	15-016-167	Bracket, top mount	1
18	33424	Machine bushing, low carbon, plain finish, 3/4"-18ga.	4	36	32416	Thread cutting screw, slotted, type F, zinc-plated, 5/16"-18x3/4"	1

FIG. 1B: PMPS-50 exploded parts diagram and bill of materials



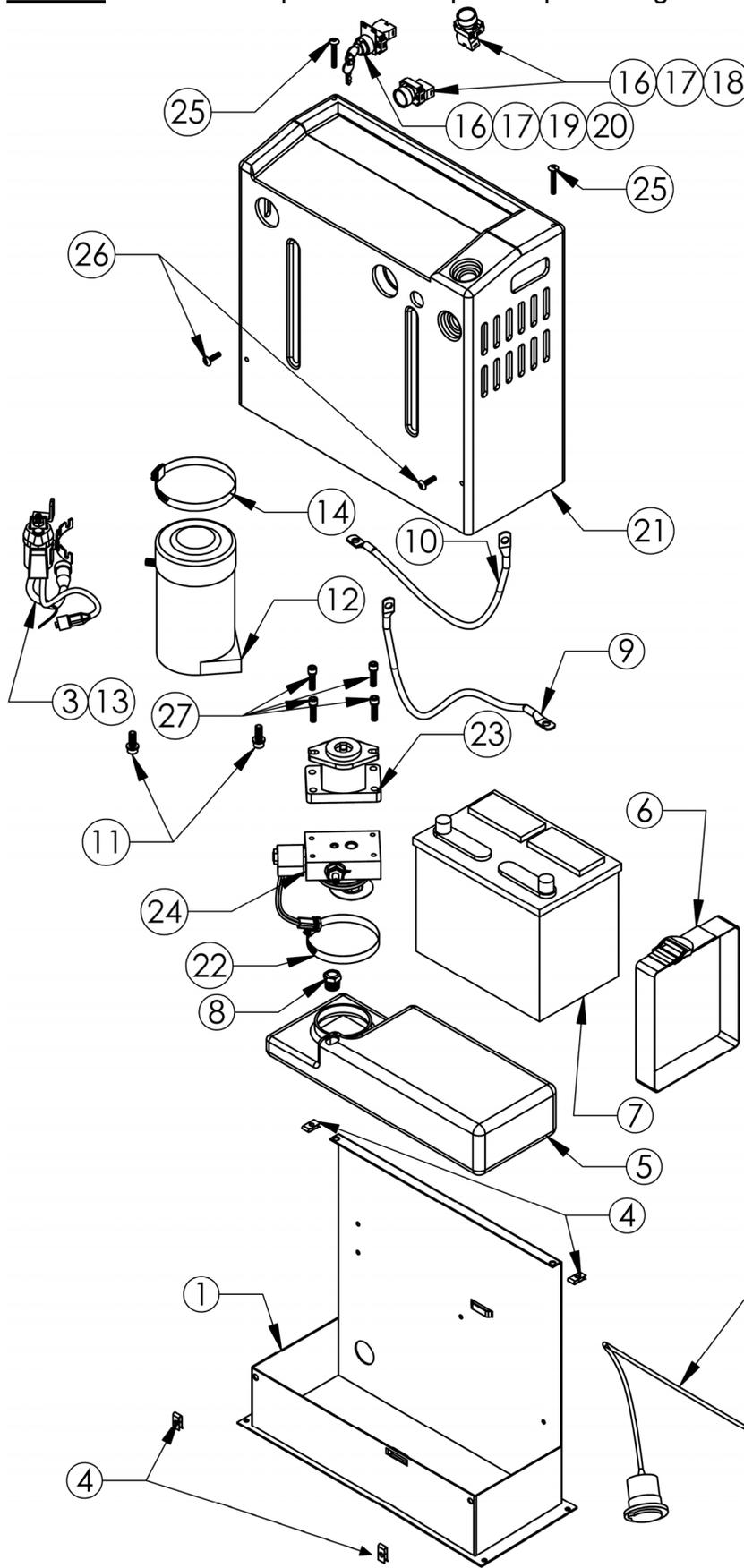
Item no.	Part no.	Description	Qty.	Item no.	Part no.	Description	Qty.
1	15-514-087	Weldment, frame	1	17	20-110-009	Bearing, ball	2
2	15-514-024	Weldment, frame, uprights	1	18	33424	Machine bushing, low carbon, plain finish, 3/4"-18ga.	4
3	15-538-005	Weldment, carriage	1	19	38-112-019	Pin, hinge pivot	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 parts diagram and bill of materials



Item no.	Part no.	Description	Qty.	Item no.	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



Item no.	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	24DC36	Battery	1
8	BV-48	Breather	1
9	15-533-013	Cable, battery, 23" black	1
10	15-533-014	Cable, battery, 23" red	1
11	23305	³ / ₈ " - 16 x 1" utility grade bolt	2
	33688	³ / ₈ " high collar lock washer	2
	33008	³ / ₈ " flat washer	2
12	99-135-011	4", 12VDC motor w/ tang dr.	1
13	15-022-004	12V start solenoid relay	1
14	HS64	Worm gear hose clamp	1
15	BG-12V	Battery gauge	1
16	ZB2BZ009	Base, contact block	3
17	ZB2BE101	Contact block N.O.	3
18	ZB2BA2C	Operator, black, non-illuminated	2
19	ZB2BG4C	Key switch, 2-position	1
20	01-134-007	Legend, ON - OFF	1
21	091802JY	Fiberglass cover	1
22	HS52	Clamp, worm gear	1
23	01-143-906	Pump	1
24	01-627-010	Manifold assembly (exploded view on p. 12)	1
25	29201	¹ / ₄ in. - 20 x 1 ³ / ₄ in. TPHMS zinc-plated	2
26	29185	³ / ₄ in. - 20 x 1in. TPHMS zinc-plated	2
27	23255	SHCS utility grade	4
	33687	High collar lock washer	4
28	152400-03	Molded cord	1
29	150CCTM.OEM	Connector, charge	1
30	3MT ST3540	1in. hook and loop press	10"

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

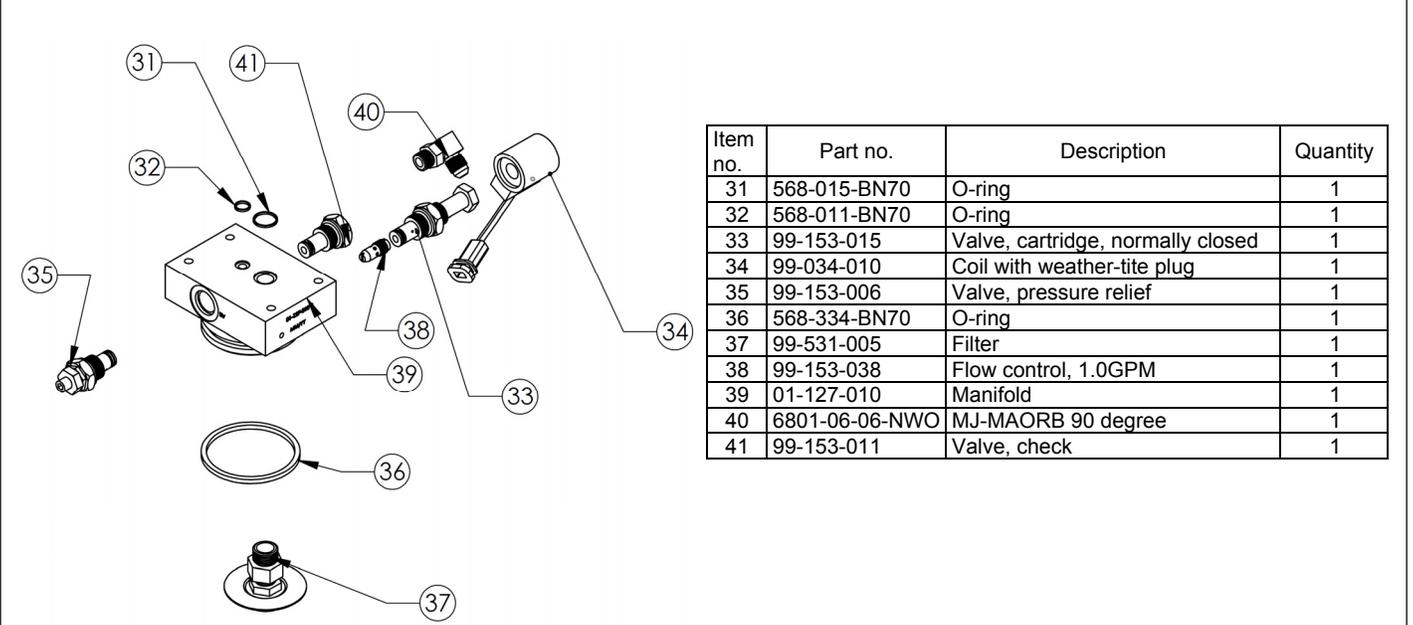


FIG. 4: 12VDC modular power unit electrical circuit diagram

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

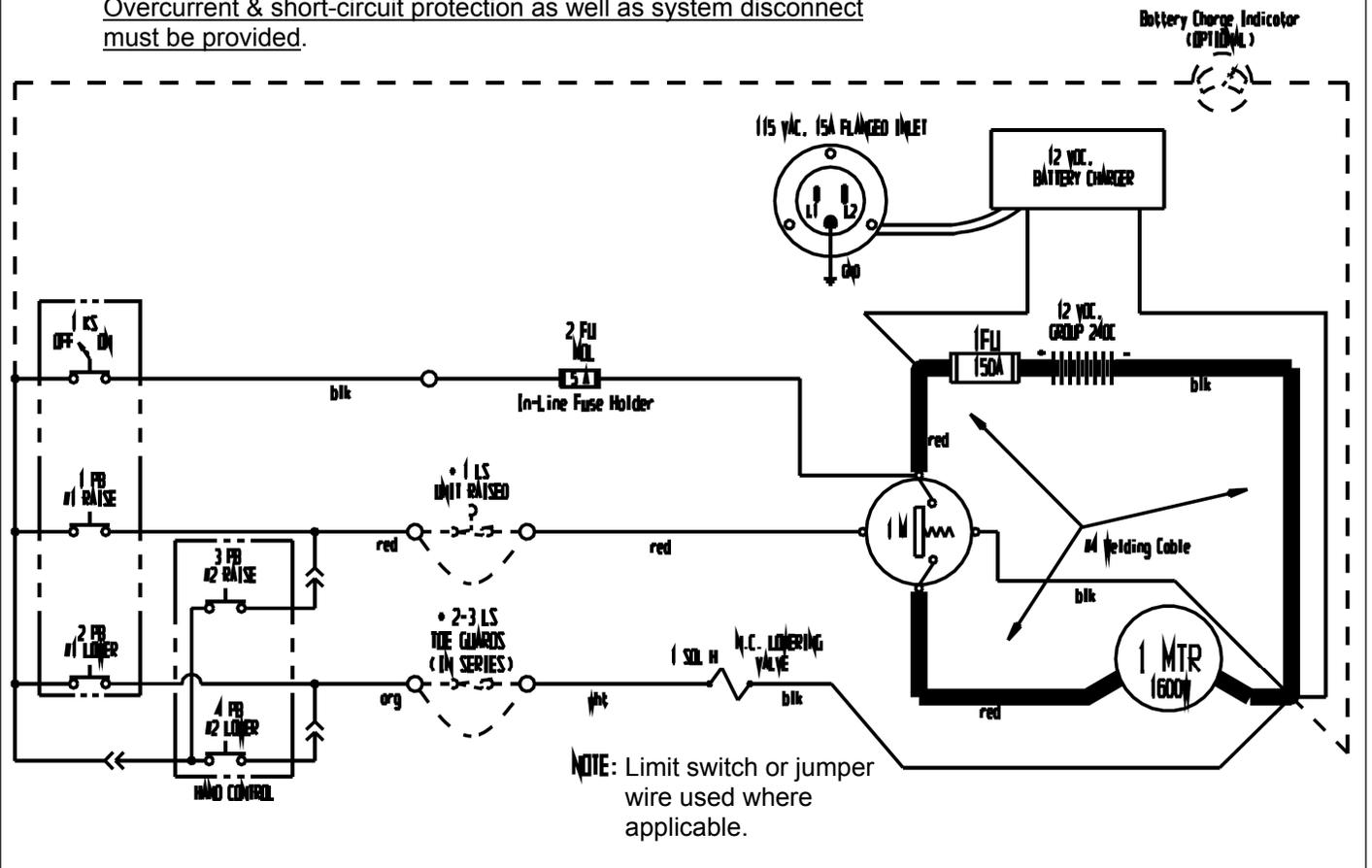


FIG. 5A: 12VDC modular power unit layout (part 1 of 2)

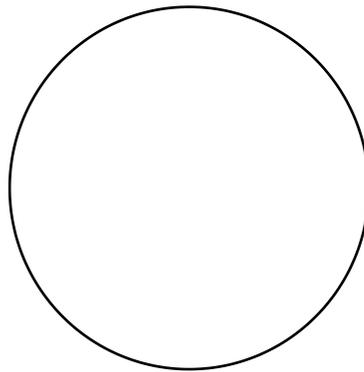


FIG. 5B: 12VDC modular power unit layout (part 2 of 2)

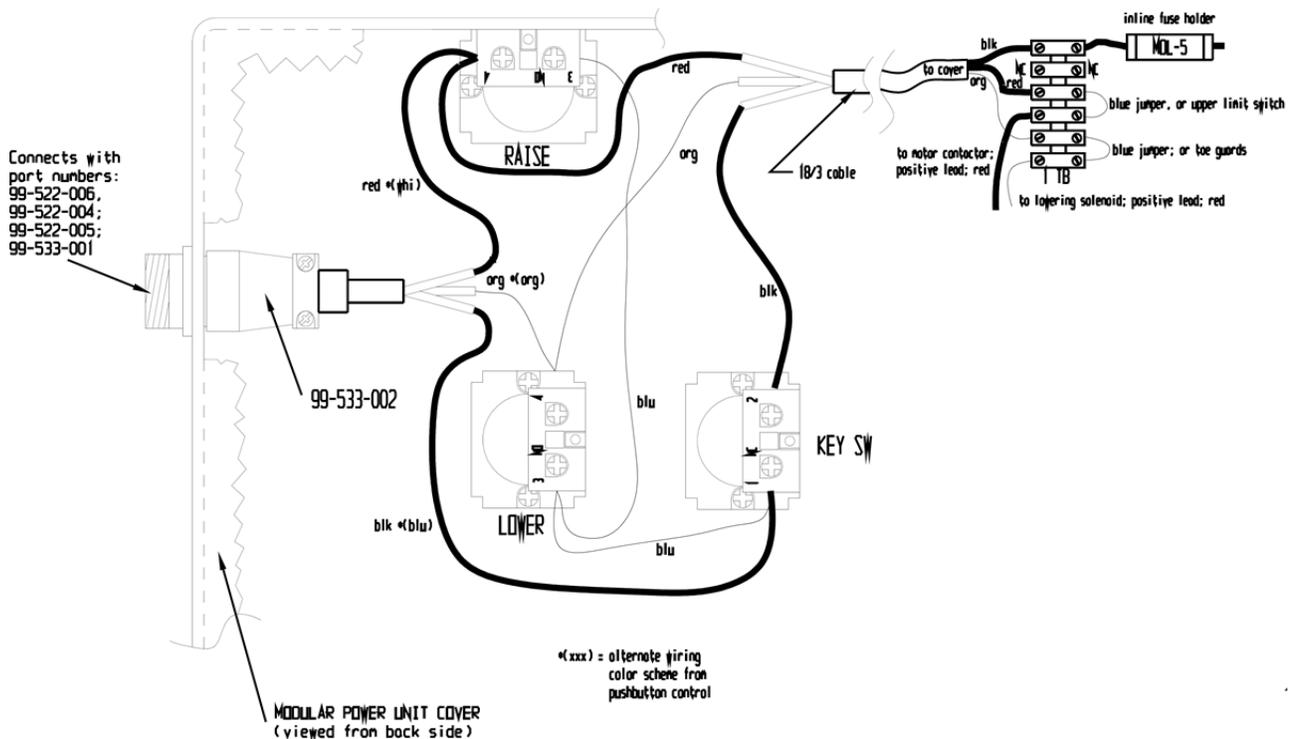
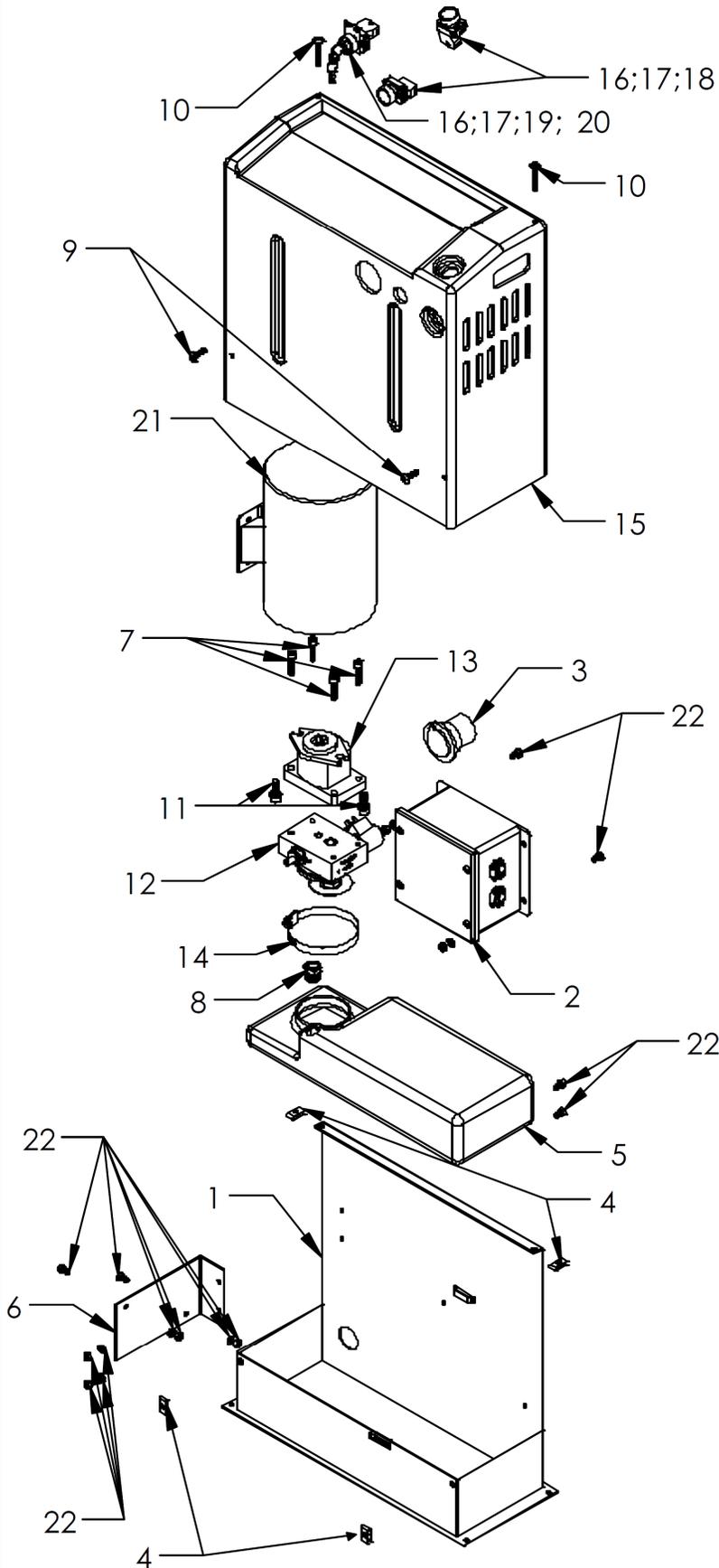
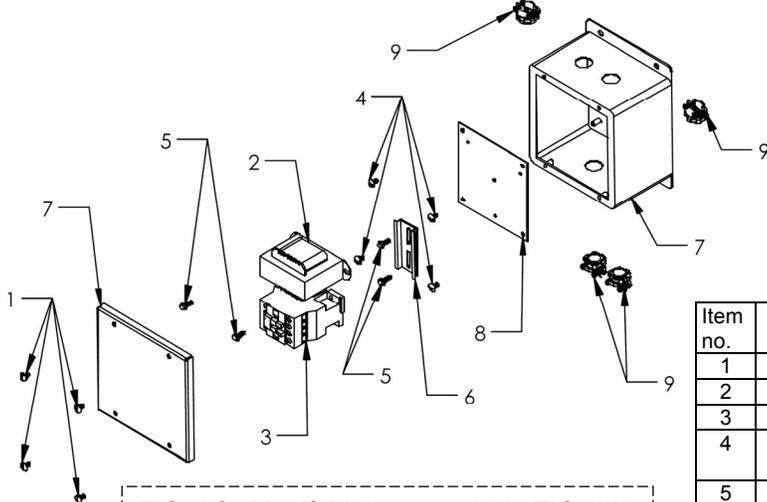


FIG. 6A: AC modular power unit exploded parts diagram and parts list



Item no.	Part no.	Description	Quantity
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 $\frac{3}{16}$ " high collar lock washer	4 4
8	BV-48	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	HS52	Worm gear hose clamp	1
15	091802JY	Fiberglass cover	1
16	ZB2BZ009	Base, contact block	3
17	ZB2BE101	Contact block N.O.	3
18	ZB2BA2C	Operator, black, non-illuminated	2
19	ZB2BG4C	Key switch, 2-position	1
20	01-134-007	Legend, ON - OFF	1
21			1
22	HS52	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 $1\frac{3}{4}$ 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	152400-03	Molded cord	1
29	150CCTM.OEM	Connector, charge	1
30	3MT ST3540	1in. hook and loop press	10"

FIG. 6B: Electrical box (Item no. 2 in FIG. 6A)



Item no.	Part no.	Description	Quantity
1	71616	10 – 32 x 5/8" TSHMS screws	4
2	01-129-001	Transformer	1
3	132560	Motor contactor	1
4	27531	10 – 32 x 1/4" PSHMS zinc-plated screws	4
5	32028	8 – 18 x 1/2" HWH TEK drill and tap screws	4
6	TB-TRACK	Aluminum din rail	3"
7	01-029-006	5/16" – 18 x 1" utility grade bolt	1
8	AB66JP	6" x 6" enclosure plate	1
9	C500	3/8" (1/2" knockout) Romex 2-screw NM clamp connector	4
10	01-127-010	LHL standard manifold, 3" boss	1
11	6801-06-06-NOW	3/8" – 16 x 1" utility grade bolt	2
12	99-153-011	Check valve	1
13	568-015-BN70	O-ring	1
14	568-011-BN70	O-ring	1
15	99-153-015	Normally closed cartridge valve	1
16	99-034-008	24VAC coil	1
17	99-153-006	Pressure relief valve	1
18	568-334-BN70	O-ring	1

FIG. 6C: Manifold (item no. 12 in FIG. 6A)

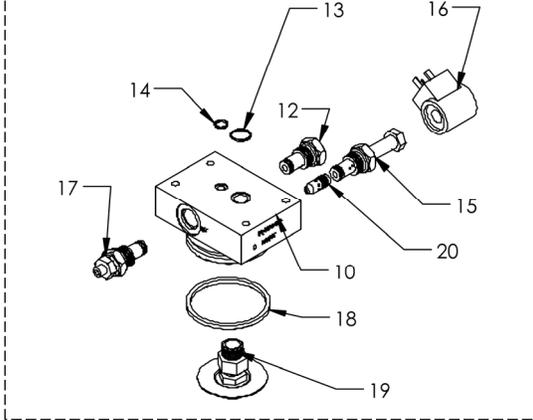
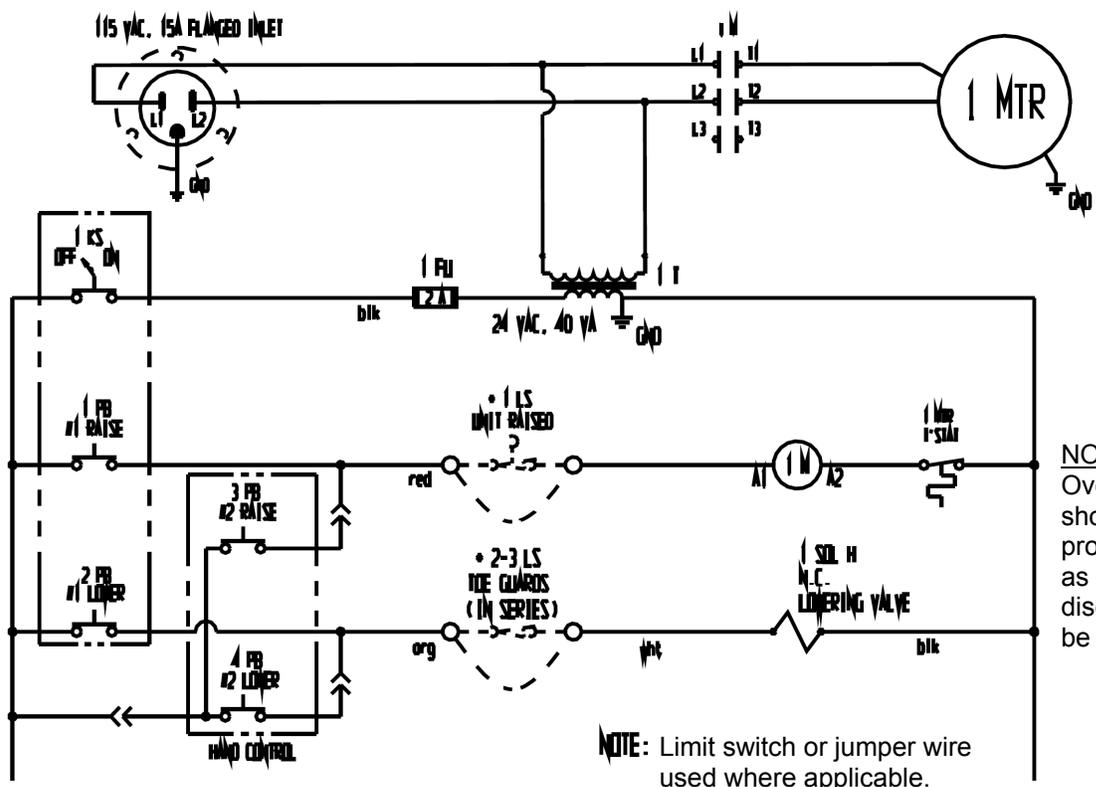


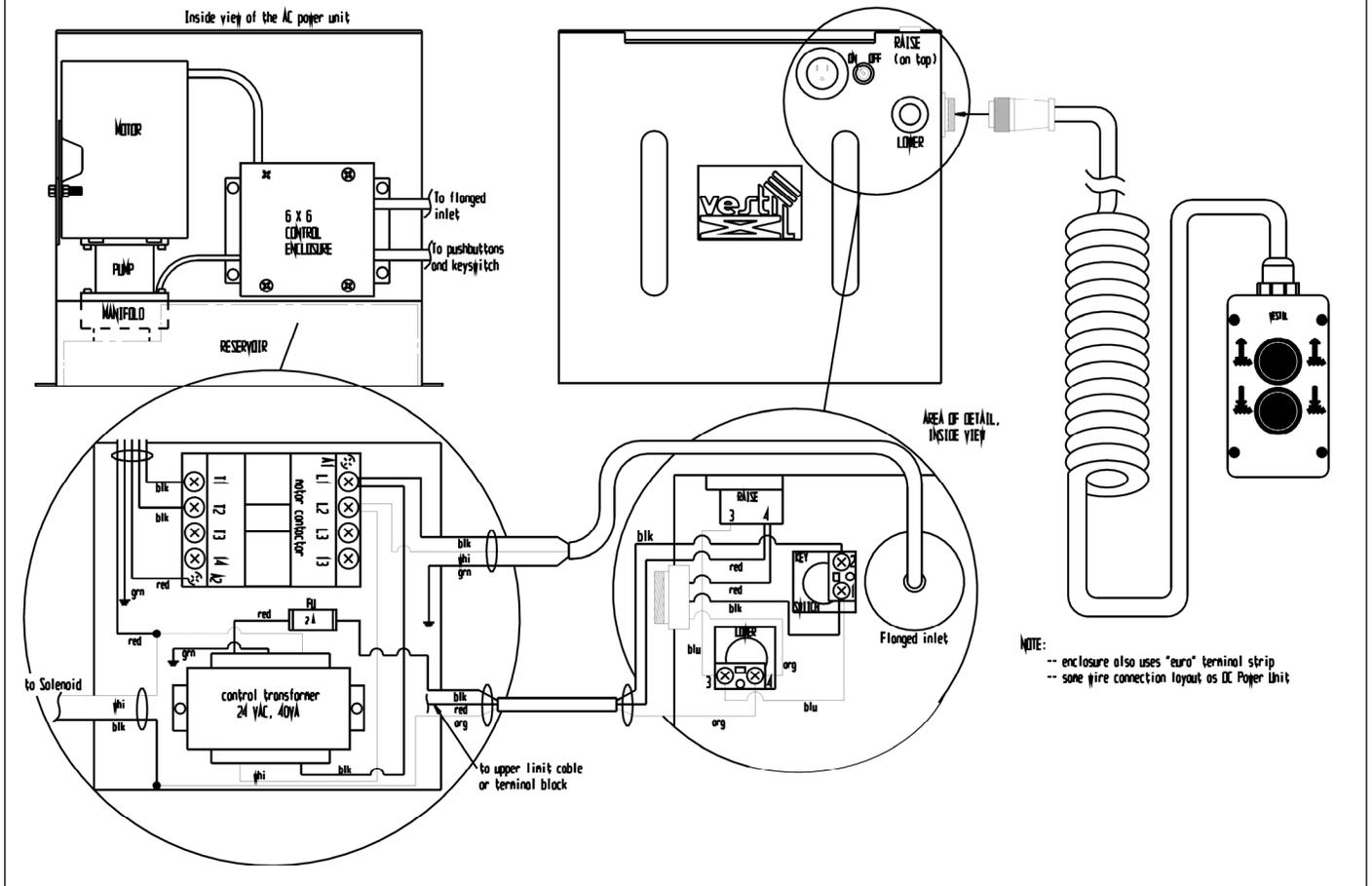
FIG. 7: 115VAC modular power unit electrical circuit diagram



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

NOTE: Limit switch or jumper wire used where applicable.

FIG. 8: 115VAC modular power unit layout

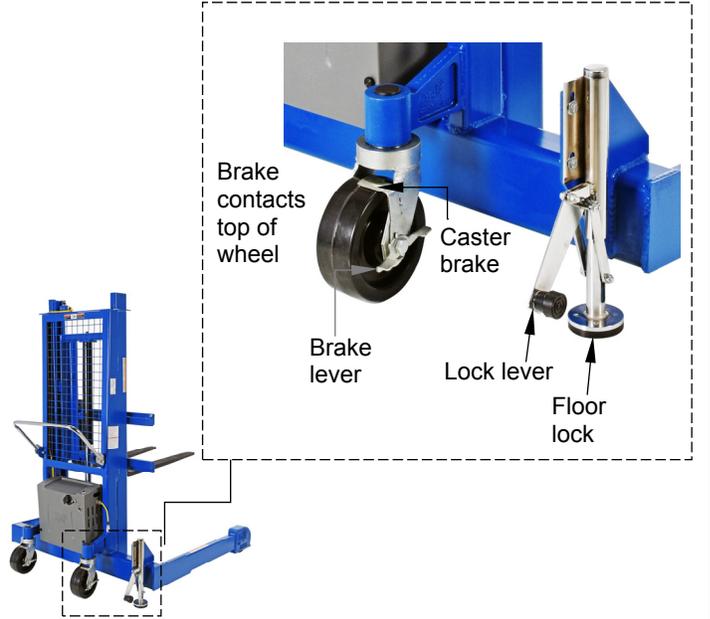


Loading instructions:

The capacity of this PMPS-series lifter is 4,000 lb. Every unit is labeled with this information (see label 287 on p. 20). 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.

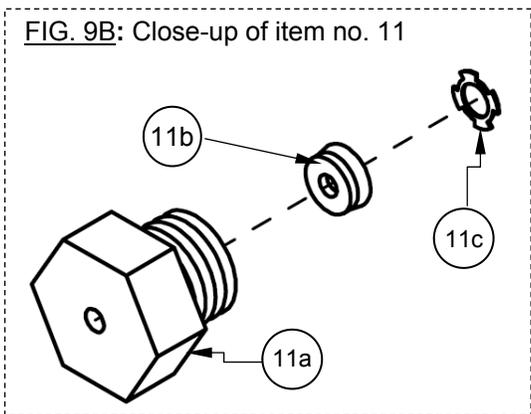


RESPONSIBILITIES OF OWNERS & USERS:

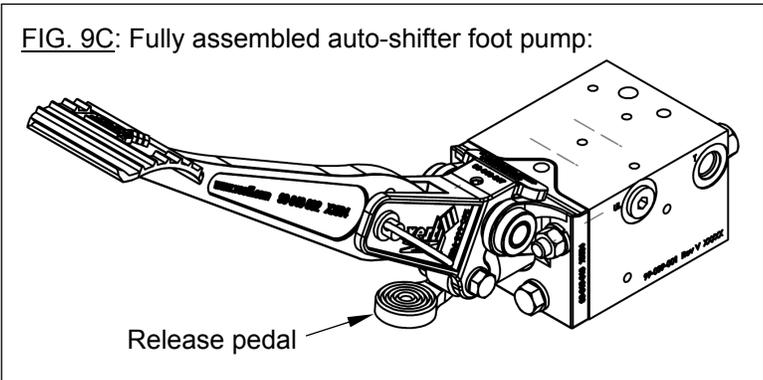
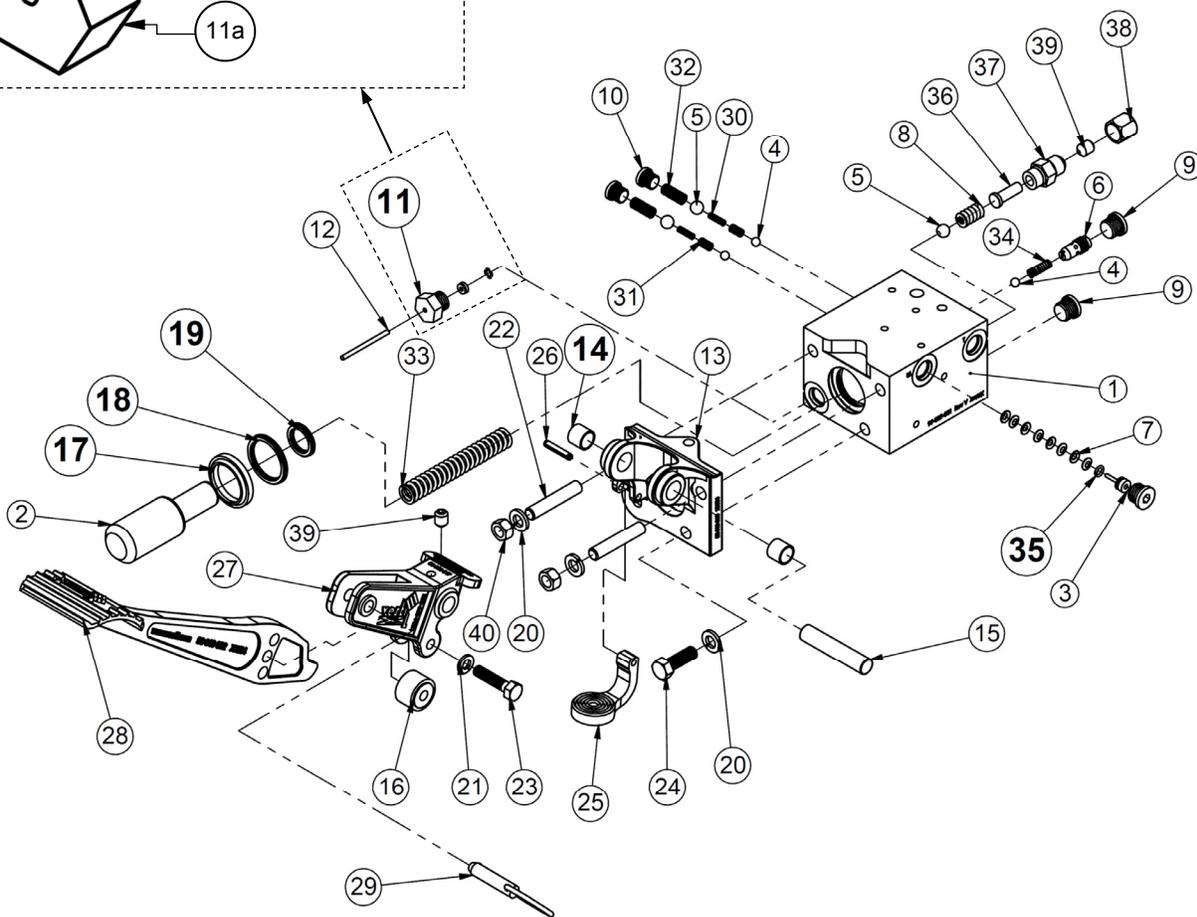
- 1.) Inspect and maintain this product in accordance with this manual (see "Inspections & Maintenance; p. 18). ONLY use the pallet handler if it is in normal operating condition.
- 2.) ONLY use this device after you read and understand all operating procedures and safe use recommendations provided in this Owner's Manual.
- 3.) Lifter must never be overloaded.

FIG. 9A: Auto-shifter 2-Speed Foot Pump Exploded Parts Diagram

[Bill of Materials appears on following page]



Item no.	Part no.	Description	Quantity
11a	99-031-022	Release pin packing nut	1
11b	P12500125	Release valve seal	1
11c	11484-00225	Star washer (seal retainer)	1



Ports in pump body (“1” in diagram):

The auto-shifter foot pump has four possible circuit connections.

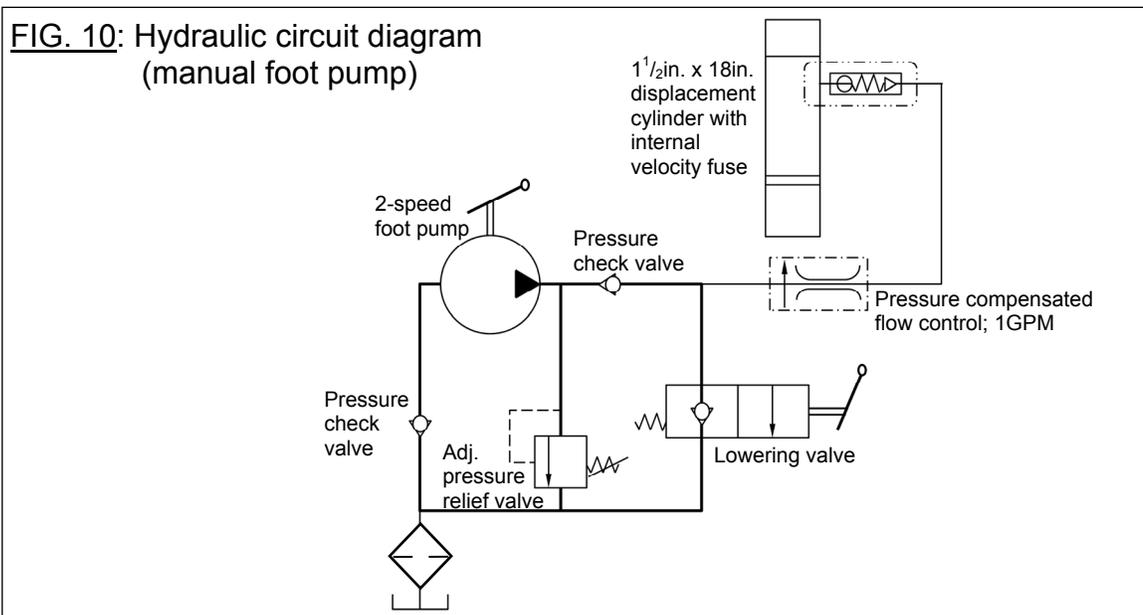
- 2 pressure ports: marked “P” and “FC/P”;
- 2 intake/return ports: marked “T” - one is located on the rear and the other is located on the right side.

Including 2 pressure ports and 2 intake/return ports allows the circuit configuration to be adapted to varied applications. The unused pressure and intake/return ports are each plugged with an SAE #6 port plug.

Auto-Shifter Foot Pump Bill of Materials:

Item no.	Part No.	Description	Quantity
1	99-039-001	Pump body, 1.25/0.75 bore	1
2	99-041-001	Piston, 1.25 x 0.75	1
3	99-041-002	Unloader piston	1
4	0.25 ball	Chrome ball, 1/4in., hardened	3
5	0.375 ball	Chrome ball, 3/8in., hardened	3
6	99-153-038	Flow control valve, pressure compensated, 1gpm	1
7	99-114-001	Beveled spring washer	8
8	99-146-008	Spring, relief	1
9	6409-06	SAE #6 port plug	3
10	6409-04	SAE #4 port plug	2
*11	BY-082306-1	Release seal retainer assembly	1
12	99-112-009	Release pin	1
13	99-016-018	Bracket, pivot plate	1
*14	0808-MRP	1/2in. inner diameter x 1/2in. outer diameter sleeve bearing	2
15	99-112-008	Pivot pin	1
16	CYR-1-S	Cam bearing, 1in. outer diameter x 3/4in. wide	1
*17	D-01250	Wiper, 1.25in. inner diameter x 1.5 outer diameter x 0.1875 high	1
*18	P-1250-1250	Seal 1.25 inner diameter x 0.125 cs	1
*19	RU-12500750-125	U-cup, 0.75in. inner diameter x 0.125 cs	1
20	33622	3/8in. lock washer	3
21	33620	5/16in. lock washer	1
22	25547	3/8in. - 16 x 2in. socket head set screw	2
23	11057	5/16in. x 1 1/4in. hex headed bolt	1
24	11105	3/8in. - 16 x 1 1/4in.	1
25	99040-001	Release pedal/lever	1
26	64133	3/16in. x 1in. spring pin	1
27	99-016-017	Bracket, pedal link	1
28	99-040-002	Lever, foot pedal, 2-speed auto-shifter	1
29	Pin	3/8in. x 1 1/8in. pin	1
30	99-146-004	Spring, inlet check	2
31	99-146-006	Spring, retainer, inlet check	2
32	99-146-005	Spring, outlet check	2
33	99-146-009	Spring, relief	1
34	99-146-007	Spring, release-ball	1
*35	OR-009-N70	O-ring, 1/32in. inner diameter x 11/32in. outer diameter x 1/16in.	1
36	BY042806-1	Spring guide	1
37	BY042706-2	Relief valve body	1
38	304-C-06	Cap, #6 JIC	1
39	25537	3/8in. - 16 set screw	2
40	36106	3/8in. - 16 nut	2

[*Foot pump seal kit 99-136-013 includes items 11, 14, 17-19, & 35.]



Operation Instructions (Manual Units):

This pallet handler features an auto-shifting, two-speed pump, which means that pump speed is automatically selected based on the output pressure of the hydraulic system. For example, when the forks are unloaded, pressure in the hydraulic system is low and the pump operates in high speed mode. Each stroke of the foot pedal pumps approximately 1.2 cubic inches of oil. When weight is applied to the table, system pressure increases. At pressures in the range of 800-1000 psi the pump automatically shifts into low speed mode. In low speed mode, less effort is required to move the pedal because each stroke pumps just ~ 0.44 cubic inches of oil.

The forks rise with each stroke of the foot pedal. However, if too much weight is applied, i.e. weight exceeding the capacity, a pressure relief valve opens and allows oil to flow back to the hydraulic reservoir rather than to the cylinder. As a result, the forks will not rise until the weight of the load is either equal to or less than the capacity (4,000 pounds).

To lower the forks, press the release pedal (see item no. 25 on p. 12). A pressure compensated flow control valve ensures that the fork carriage lowers at a uniform and controlled rate. Never increase the pressure relief setting more than necessary. Never exceed the pressure rating of the components in the hydraulic system.

PUMP PURGING PROCEDURE:

Air will periodically become trapped inside the pump and will have to be removed. When air is present in the hydraulic system, you might notice a spongy feel to the foot pedal while pressing it. To remove air from the system:

1. Completely lower the forks and unload them.
2. Remove the fill plug from the oil reservoir.
3. Disconnect the hydraulic hose from the port on the cylinder and insert the free end of the hose into the fill port of the reservoir;
4. Pump the foot pedal several times and pay close attention to the stream of oil flowing into the reservoir. Pockets of air will escape as oil flows into the reservoir.
5. Once air is completely removed, reconnect the pump to the cylinder by reattaching the hydraulic hose to the cylinder port.
6. Check all of the hydraulic lines for oil leaks.
7. Although air has been removed from the pump, air could still be trapped in the cylinder. The next procedure explains how to remove air from the cylinder.

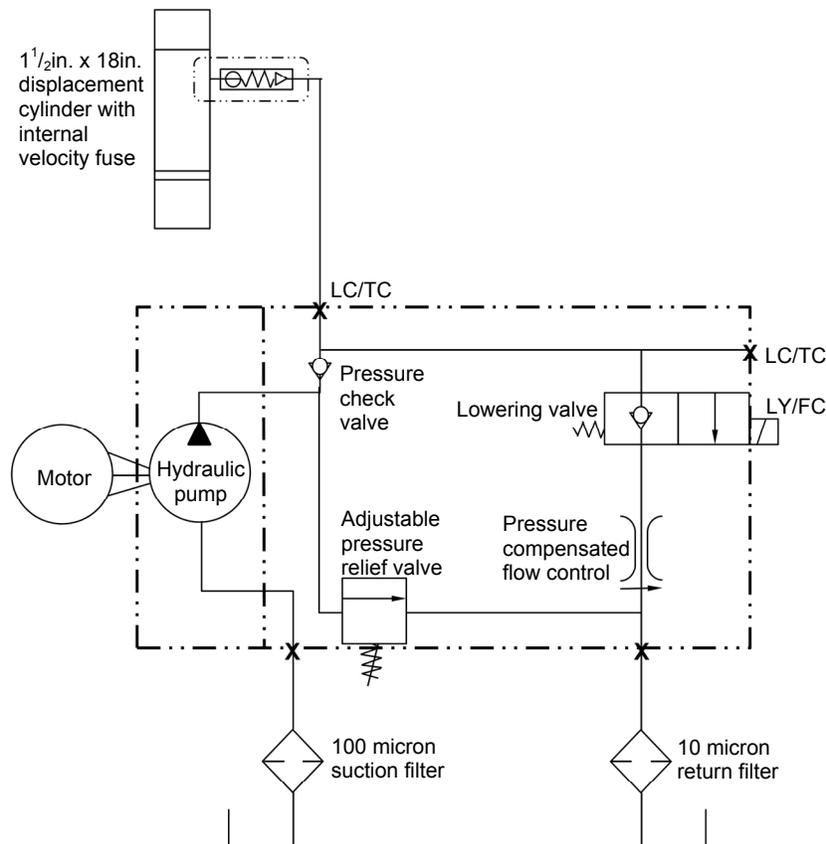
CYLINDER PURGING PROCEDURE:

A bleeder screw is located at the top of the cylinder. The bleed screw includes a hose fitting to allow attachment of a small diameter hose. By attaching a hose to the screw, any oil that escapes during the bleeding process can be directed into a container for proper disposal. To bleed air from the cylinder:

1. Completely lower the forks and unload them.
2. Gently pump the foot pedal once;
3. Carefully open the bleed screw. The pressure built in the system from pumping the pedal causes air (and oil) to flow out of the bleed screw. Pressure will drop as air and oil flow from the cylinder. To pressurize the system, close the bleed screw and pump the pedal once. Open the bleed screw again to allow more trapped air to escape;
4. Repeat step 3 until air is completely removed from the cylinder (only oil flows from the bleed screw);
5. Check all of the hydraulic lines for oil leaks; then return the table to service.

Troubleshooting: Manual Auto-shifter Foot Pump

Issue	Explanation	Remedy
1. Forks do not rise despite pumping pedal	a. Too much weight on the forks (load exceeds capacity). b. Too little oil in hydraulic system c. Pinched hydraulic hose d. Relief valve pressure setting too low	a. Remove enough of load that weight of load is within capacity of lifter b. Add oil until level is within one inch of top of reservoir c. Correct as appropriate d. Increase pressure setting as necessary, but NEVER more than 3,000psi
2. A lot of force is required to pump the pedal and the forks do not rise or rise very slowly	e. Debris under pressure relief valve f. Debris under inlet check valve	e. Remove, disassemble, clean (with mineral spirits or kerosene), reassemble and reinstall pressure relief valve assemblies. f. Remove, disassemble, clean (with mineral spirits or kerosene), reassemble and reinstall check valve assemblies.
3. Forks rise only when unloaded or pedal pumped rapidly; I can pump the pedal but the forks do not move.	g. Pump is air locked h. Debris on seat of inlet check valve i. Pressure setting of relief valve needs adjustment j. Debris on seat of relief valve	g. Remove air from the pump (see "Pump purging procedure," p. 14) h. Remove inlet check valve and clean debris from valve seat (the bottom of the cavity in pump body that valve fits into) i. Increase pressure setting as necessary, but NEVER more than 3,000psi. j. Remove relief valve and clean debris from valve seat in pump body.
4. Forks rise during the down stroke of the pedal, but lower during the upstroke.	k. Outlet check valve stuck in open position	k. Remove, disassemble, clean (with mineral spirits or kerosene), reassemble and reinstall outlet check valve assemblies.
5. Forks rise and maintain elevation, but I have to pump the pedal a million times	l. Autoshifter valve stuck in closed/deactivated position (piston out).	l. Remove port plug from port marked "UL" (on pump body); then remove piston. Inspect piston and springs
6. Forks rise very slowly	m. Autoshifter valve stuck in open/activated position (piston in)	m. Remove port plug from port marked "UL" (on pump body); then remove piston. Inspect piston and springs
7. Pump pedal feels spongy or forks rise in jerks	n. Debris interfering with carriage rollers o. Oil level is low p. Air present in pump and/or cylinders	n. Clean the inside of the mast and surfaces of rollers as necessary o. Add oil until level is within 1in. of top of reservoir. p. Purge air by following "Pump purging procedure" and "Cylinder purging procedure" on p. 14.
8. Forks lower very slowly	q. Flow control valve obstructed	q. Remove valve and inspect for debris or non-operating spool
9. Forks lower too rapidly	r. Flow control valve obstructed or not moving freely	r. Remove valve and inspect for debris or non-operating spool
10. Forks rise part way and then stop	s. Air trapped in small pump chamber	s. Perform "Pump purging procedure" on p. 14.

FIG. 11: Hydraulic circuit diagram (electrically powered units)

Electric PMPS Operation Instructions:

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. 19.

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 the valve 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 BLEED 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 1/4 to 1/2 turn to allow trapped air to escape. Jog the motor to push air out of the system.
- 4.) 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 is equipped with 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 to be 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 a 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 sound.
- 2) Confirm that the AC power source (e.g. wall socket) is supplying power.
- 3) Examine the fuse (see 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.

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.
- 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:

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

1. Wiring: inspect the electrical wiring for cuts or frays;
2. Casters: examine the casters and confirm normal operating condition;
3. Hydraulic hoses: check for pinches, punctures, or loose connections;
4. Structure: inspect the base and 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" (p. 19) and correct as appropriate.)
2. Battery: check the water level in the battery. (*DC models only*)
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 (see diagrams on p. 4-5): 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 (see "Labeling diagram; p. 20): confirm that all labels are in place and easily readable.
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 describes 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 pallet 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 uses carefully selected parts in our equipment. Whenever repairs are necessary, be certain that only manufacturer approved replacement parts are used. To order parts for your equipment, contact Customer Service at the factory. 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.

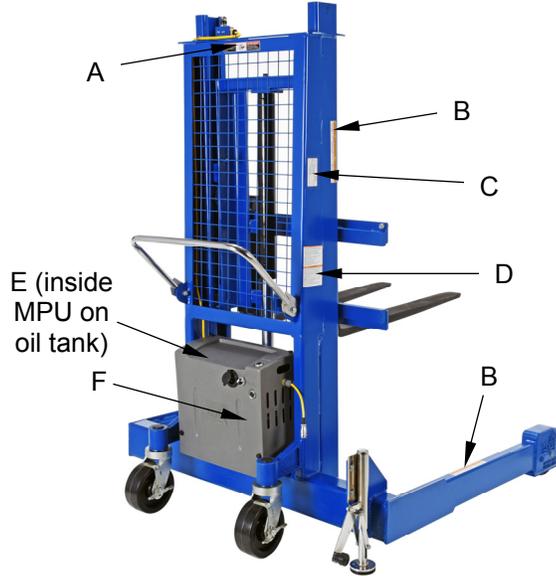
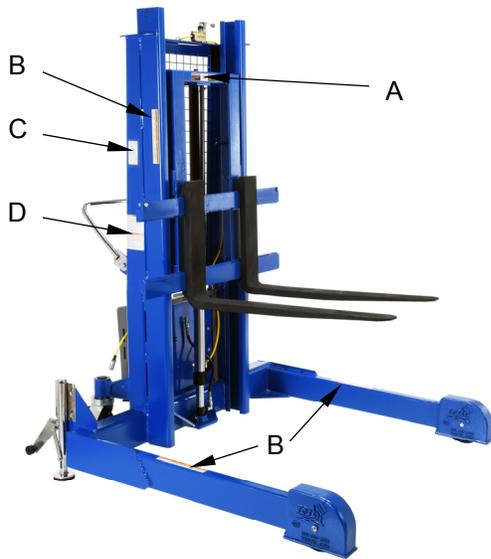
Troubleshooting Guide (Electric PMPS models):

Contact technical support for assistance resolving issue not discussed in the following guide.

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. 16 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. 16.) 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. (Refer to p. 17). l. Correct as appropriate. (See also, 2(f), (h)). 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. "Spongy" 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 bleed procedure (p. 17).
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 and clean filter screen. v. Correct as appropriate. w. Remove and clean flow control valve. Refer to Hydraulic System Diagram on p. 16). x. Align cylinders correctly. y. Remove and clean velocity fuse. Refer to Hydraulic System Diagram on p. 16).
7. Forks lower too quickly.	z. Foreign material stuck in flow control valve. (In this case, 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 System Diagram on p. 16).
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 & 10). cc. See 2 (c). 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 (p. 16). 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 at all times as shown in the diagram below. Replace any label that is damaged and/or not easily readable. Numbers below label images in the diagram correspond to the identification number of each label.



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

VESTIL MANUFACTURING CORPORATION • Phone (260) 665-7586 • Fax (260) 665-1339 • sales@vestil.com • www.vestil.com

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 _____

287 REV 0812

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

206 Rev. 1003

VESTIL MANUFACTURING CORPORATION • Phone (260) 665-7586 • www.vestil.com

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.

295 rev 0111

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.

527 • Rev 1109

LIMITED WARRANTY

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

Who may request service?

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

What is an "original part"?

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

What is a "proper request"?

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

<u>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	sales@vestil.com

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

What is covered under the warranty?

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

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. The warranty periods begin on the date when Vestil ships the product to the warrantee. If the product was purchased from an authorized distributor, the periods begin when the distributor ships the product. Vestil may, at its sole discretion, extend the warranty periods for products shipped from authorized distributors by *up to* 30 days to account for shipping time.

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

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

What is not covered by the warranty?

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

Do any other warranties apply to the product?

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

