VESTIL MANUFACTURING CORP.
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CB-PMPS Series Counterbalanced Pallet Handlers

Instruction Manual

Receiving Instructions:

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

NOTE:

Compliance with laws, regulations, codes, and non-voluntary standards enforced in the location where the product is *used* is exclusively the responsibility of the end-user.

Table of Contents

Hazard identification with signal words

This manual uses SIGNAL WORDS to identify dangers that might arise during use 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. Signal words used in this manual appear below along with their definitions.

DANGER	**Identifies a hazardous situation which, if not avoided, WILL result in DEATH or SERIOUS INJURY. Use of this signal word is limited to the most extreme situations.**
WARNING	**Identifies a hazardous situation which, if not avoided, COULD result in DEATH or SERIOUS INJURY.**
CAUTION	**Indicates a hazardous situation which, if not avoided, COULD result in MINOR or MODERATE injury.**
NOTICE	Identifies practices likely to result in product/property damage, such as operation that might damage the product.

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

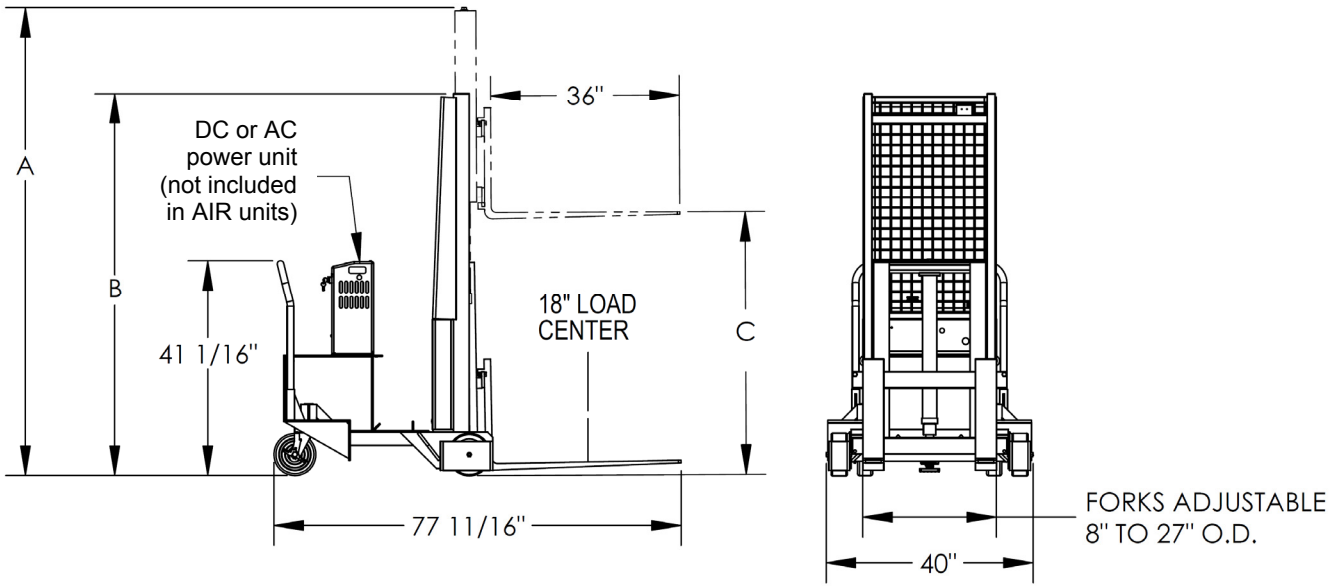
Safe use recommendations:

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

WARNING Improper or careless use of this product might result in serious personal injuries or even death.

- ***Read and understand the entire manual before assembling, installing, using or servicing the product.***
- Read the manual to refresh your understanding of proper use and maintenance procedures.
- DO NOT modify the product in any way UNLESS you first obtain written approval from Vestil. Unauthorized modifications might make the lift unsafe to use and automatically void the Limited Warranty (see p. 23).
- DO NOT exceed the maximum rated load (see “Specifications” table on p. 3; Label 287 on product).
- Inspect the product before each use according to the instructions on p. 21.
  - A. DO NOT use this product if the inspection reveals structural damage. Examples of structural damage include, but are not limited to, the following: 1) Cracked, broken or deformed load-bearing members (forks, fork carriage, mast, wheels, and frame); 2) cracked welds; 3) corrosion or severe wear; 4) damaged, e.g. leaking, hydraulic system (cylinder, hoses, reservoir, etc.). Remove the product from service if it fails any part of the inspection. DO NOT use the product until it is fully restored to normal condition. 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 such as gangrene.
  - B. DO NOT use the product if any unusual noise or movement is observed. If a malfunction occurs, remove the unit from service and notify your supervisor & maintenance personnel about the issue.
  - C. ONLY use manufacturer-approved replacement parts.
- DO NOT change the setting of the pressure relief valve.
- Whenever using this product, carefully watch the lifter and the load.
- DO NOT use this device UNLESS all product labels (see “Labeling Diagram” on p. 22) are readable and undamaged AND all machine guards (i.e. the expanded metal mast guard and formed wheel guards) are in place.
- This product is NOT a personnel lift. DO NOT use the pallet handler to lift people.
- DO NOT walk or stand beneath the forks at any time.
- DO NOT leave the pallet handler unattended while it is loaded. ALWAYS fully lower the forks and engage the floor lock before leaving the pallet handler unattended.
- ONLY transport loads with the forks no higher than is necessary to fully support the load and avoid obstacles.
- To pick up a pallet with this lifter, insert the forks into the fork pockets of the selected pallet until it firmly contacts the upright portion of both forks (i.e. the “heels”).
- DO NOT continue to push the “UP” button on the controller if the forks do not rise. Remove the unit from service and report the problem to maintenance personnel.

Specifications:



Model	Capacity	Fork Dimensions (W x L)	A: Overall height with forks fully raised	B: Overall height with forks lowered	C: Service Range (of Forks)	Net Weight
CB-PMPS-6-50	600 lb. ~273 kg	4 in. x 36 in. 10 cm x 91 cm	91 in. 231 cm	73½ in. 187 cm	3 in. to 50 in. 7.6 cm x 127 cm	2,033 lb. 923.8 kg
CB-PMPS-10-50	1000 lb. ~455 kg	4 in. x 36 in. 10 cm x 91 cm	91 in. 231 cm	73½ in. 187 cm	3 in. to 50 in. 7.6 cm x 127 cm	2,033 lb. 923.8 kg
CB-PMPS-6-60	600 lb. ~273 kg	4 in. x 36 in. 10 cm x 91 cm	91 in. 231 cm	83½ in. 212 cm	3 in. to 60 in. 7.6 cm x 152 cm	2,087 lb. 948.3 kg
CB-PMPS-10-60	1000 lb. ~455 kg	4 in. x 36 in. 10 cm x 91 cm	91 in. 231 cm	83½ in. 212 cm	3 in. to 60 in. 7.6 cm x 152 cm	2,087 lb. 948.3 kg

Diagram of Hydraulic System:

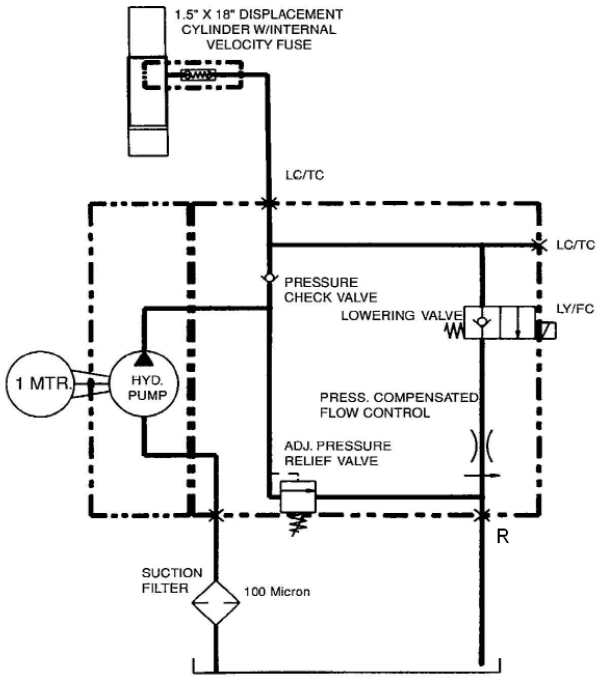
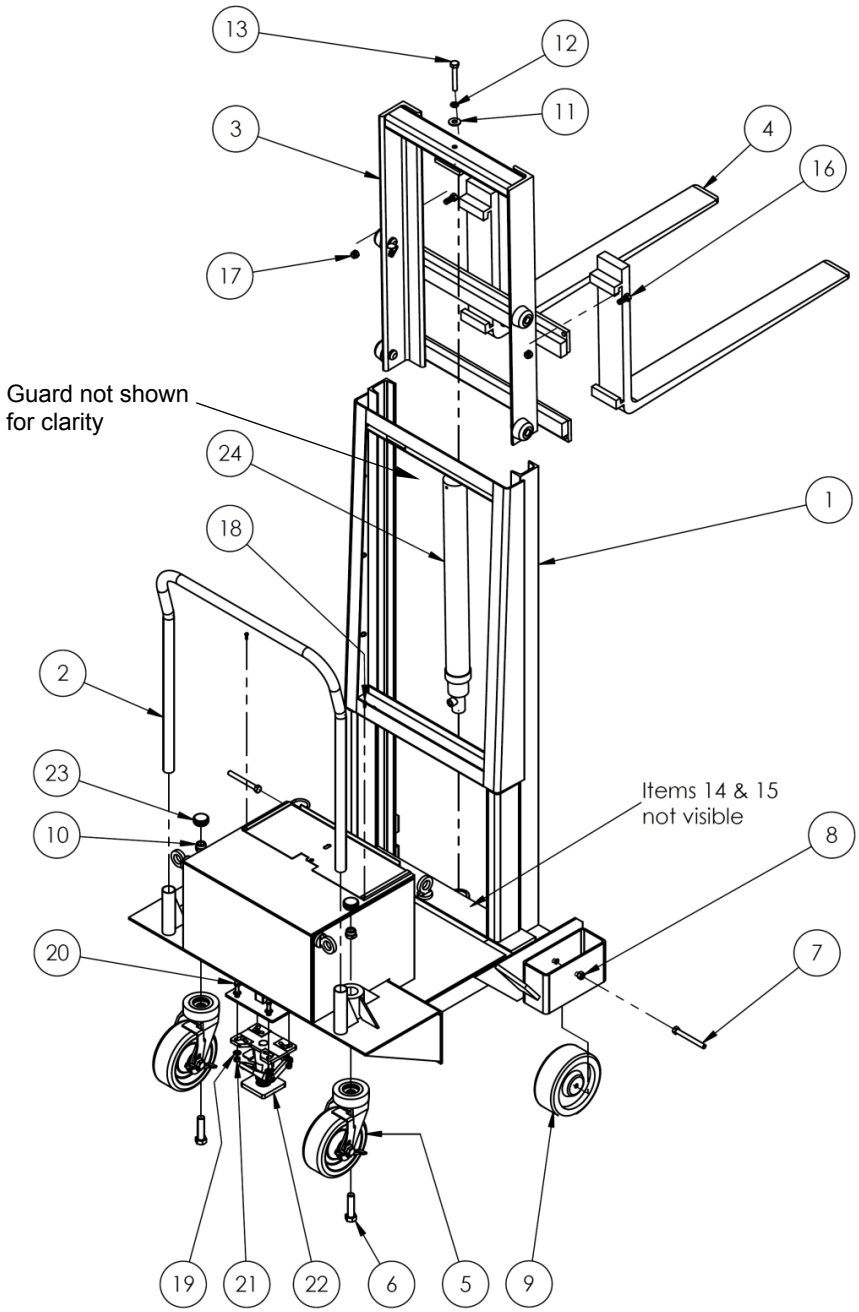
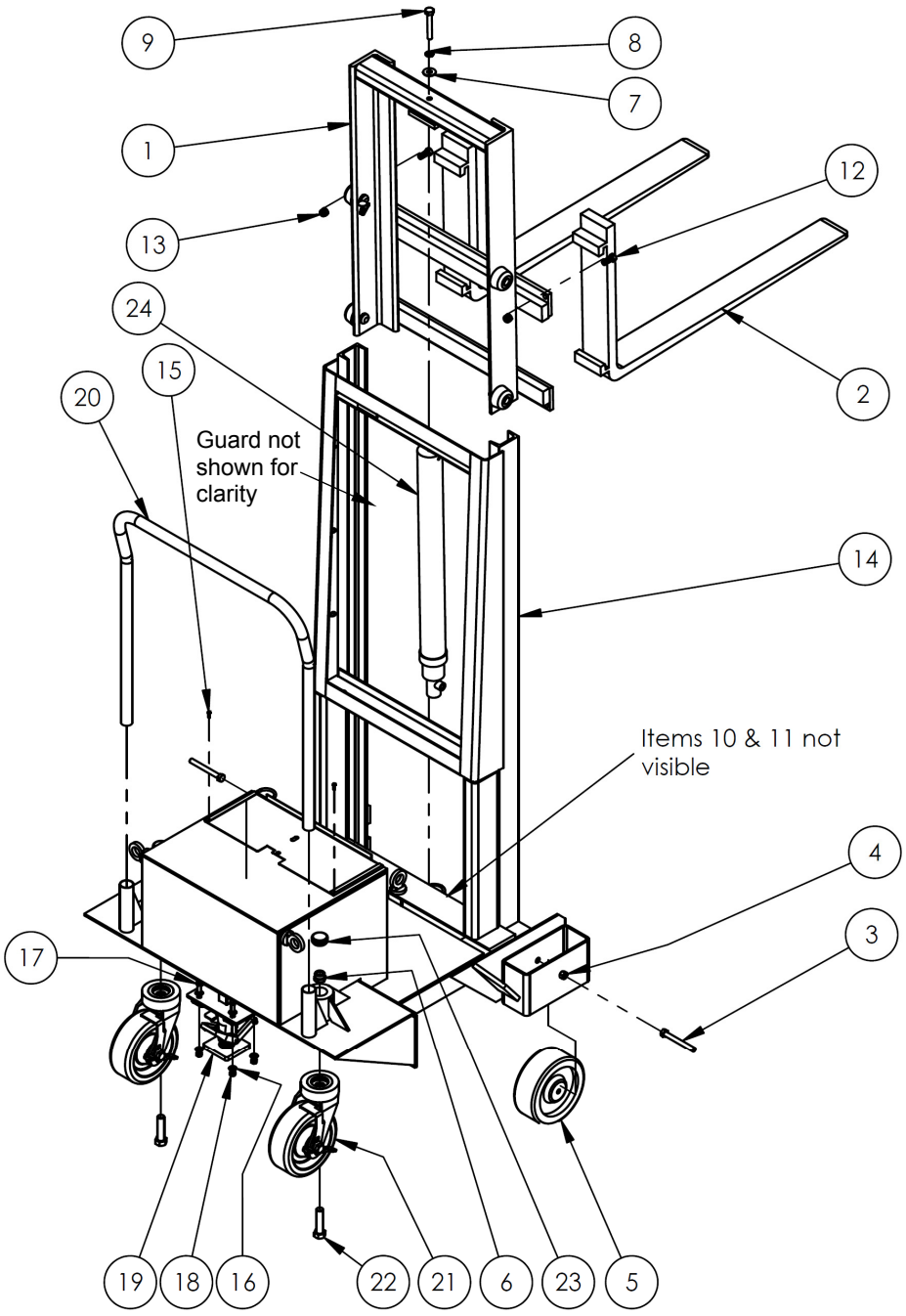


FIG. 1: CB-PMPS-6-50 Exploded Parts Diagram and Bill of Materials



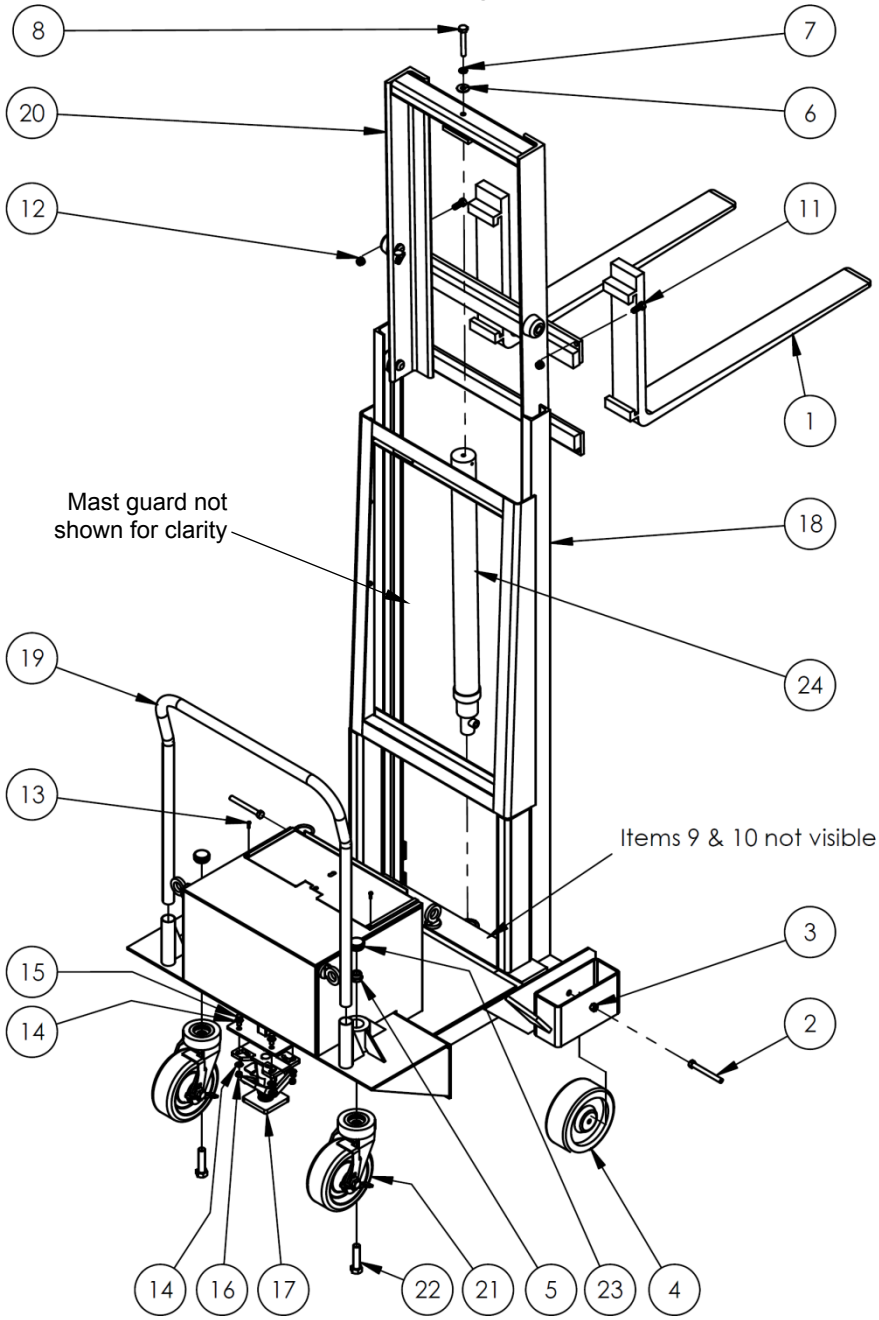
Item no.	Part no.	Description	Qty.	Item no.	Part no.	Description	Qty.
1	15-514-111	Weldment, frame	1	13	12217	1/2in. – 13 x 3 1/2in. HHCS #5 bolt	1
2	16-025-028	Handle, push, chromed	1	14	01-118-001	Cylinder retaining bolt	1
3	38-538-003	Frame, weldment, carriage	1	15	36209	1/2in. – 13 plain hex jam nut	1
4	38-028-007	4in. x 36in.	2	16	11207	1/2in. – 13 x 1 1/4in. HHCS #2 zinc-plated bolt	2
5	16-132-227	Caster, 8/3-FWB-NTP	2	17	37030	1/2in. – 13 Nylon insert lock nut	2
6	11365	Bolt, HHCS #2, zinc-plated, 3/4"-10x3"		18	32030	8-18 x 3/4in. HWH tek drill & tap	2
7	11211	1/2in. – 13 UNC x 4 1/2in. hex head bolt	2	19	33008	3/8in. USS zinc-plated flat washer	8
8	36109	1/2in. – 13 UNC hex nut	2	20	11105	3/8in. – 16 x 1in. HHCS #2 zinc-plated bolt	4
9	16-132-173	PH-8/3 caster wheel	2	21	36106	3/8in. – 16 zinc-plated hex nut	4
10	37039	3/4in. – 10 zinc-plated Nylock nut	2	22	16-001-190	Floor lock, model FL-ADJ-810	1
11	33012	1/2in. USS zinc-plated flat washer	1	23	99-024-003	Guard,/Cover/End Cap/Plug	2
12	33625	1/2in. lock washer	1	24	99-021-12	Telescoping cylinder, PMPS-50	1

FIG. 2: CB-PMPS-10-50 Exploded Parts Diagram and Bill of Materials



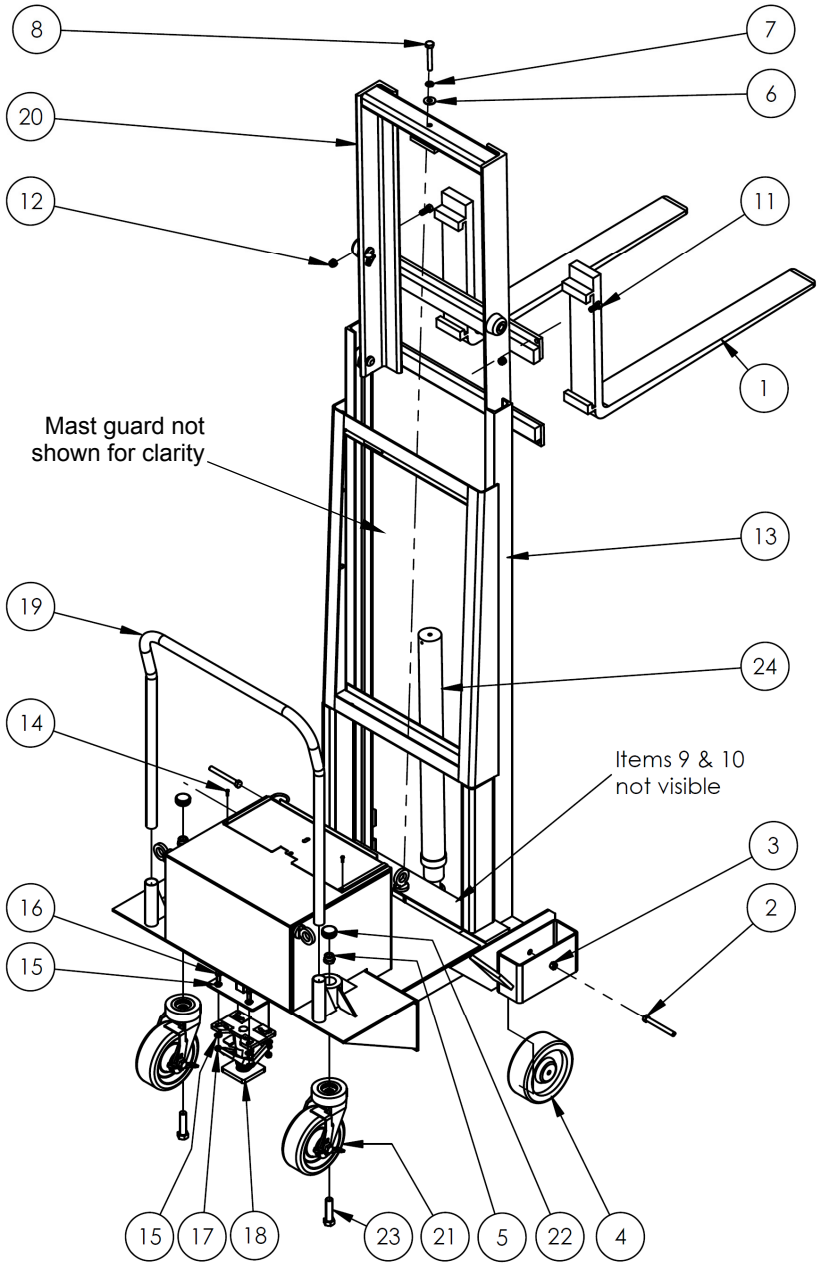
Item no.	Part no.	Description	Qty.	Item no.	Part no.	Description	Qty.
1	38-538-003	Frame, weldment, carriage	1	13	37030	1/2in. – 13 Nylon insert lock nut	2
2	38-028-007	4in. x 36in. fork	2	14	15-514-119	Weldment, frame	1
3	11221	1/2in. – 13 UNC x 4 1/2in. hex head bolt	2	15	32030	8-18 x 3/4in. HWH tek drill & tap	2
4	36109	1/2in. – 13 UNC hex nut	2	16	33008	3/8in. USS zinc-plated flat washer	8
5	16-132-173	Caster wheel, PH-8/3	2	17	11105	3/8in. – 16 x 1in. HHCS #2 zinc-plated bolt	4
6	37039	3/4in. – 10 zinc-plated Nylock nut	2	18	36106	3/8in. – 16 zinc-plated hex nut	4
7	33012	1/2in. USS zinc-plated flat washer	1	19	16-001-190	Floor lock	1
8	33625	1/2in. lock washer	1	20	16-025-028	Handle, push, chromed	1
9	12217	1/2in. – 13 x 3 1/2in. HHCS #5 bolt	1	21	16-132-227	Caster, 8/3-FWB-NTP	2
10	01-118-001	Cylinder retaining bolt	1	22	11365	Bolt, HHCS #2, zinc-plated, 3/4”-10x3”	2
11	36209	1/2in. – 13 plain hex jam nut	1	23	99-024-003	Guard, cover/endcap/plug	2
12	11207	1/2in. – 13 x 1 1/4in. HHCS #2 zinc-plated bolt	2	24	99-021-921	Telescopic cylinder, PMPS-50	1

FIG. 3: CB-PMPS-6-60 Exploded Parts Diagram and Bill of Materials



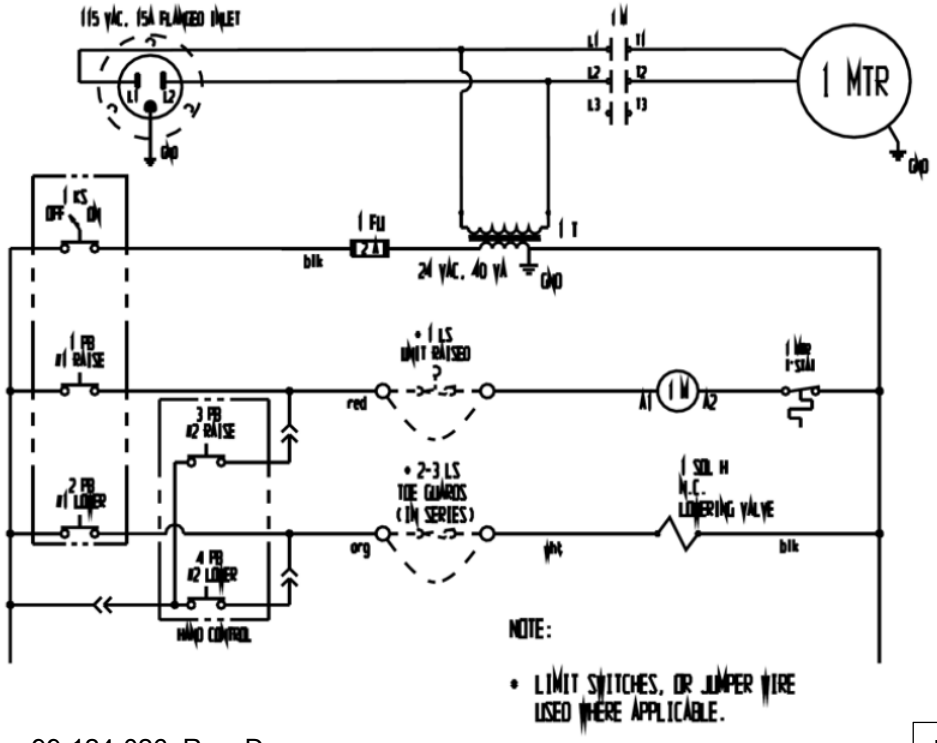
Item no.	Part no.	Description	Quantity	Item no.	Part no.	Description	Quantity
1	38-028-007	Fork	2	13	32030	8-18 x 3/4in. HWH tek drill & tap	2
2	11221	1/2in. – 13 UNC x 4 1/2in. hex head bolt	2	14	33008	3/8in. USS zinc-plated flat washer	8
3	36109	1/2in. – 13 hex nut, grade A, plain	2	15	11105	3/8in. – 16 x 1in. HHCS #2 zinc-plated bolt	4
4	16-132-173	PH-8/3 caster wheel	2	16	36106	3/8in. – 16 zinc-plated hex nut	4
5	37039	3/8in. – 10 zinc-plated Nylock nut	2	17	16-001-190	FL-ADJ-810 adjustable floor lock	1
6	33012	1/2in. USS zinc-plated flat washer	1	18	15-514-112	Weldment, frame	1
7	33625	1/2in. lock washer	1	19	16-025-028	Handle, push handles, chromed	1
8	12217	1/2in. – 13 x 3 1/2in. HHCS #5 bolt	1	20	38-538-004	Frame, weldment, carriage	1
9	01-118-001	Cylinder retaining bolt	1	21	16-132-227	Caster, 8/3-FWB-NTP	2
10	36209	1/2in. – 13 plain hex jam nut	1	22	11365	3/4in.-10x3in. HHCS #2 zinc-plated bolt	2
11	11207	1/2in. – 13 x 1 1/4in. HHCS #2 zinc-plated bolt	2	23	99-024-003	Guard/cover/endcap/plug	2
12	37030	1/2in. – 13 Nylon insert lock nut	2	24	99-021-913	Telescopic cylinder, 58in. stroke	1

FIG. 4: CB-PMPS-10-60 Exploded Parts Diagram and Bill of Materials



Item no.	Part no.	Description	Quantity	Item no.	Part no.	Description	Quantity
1	38-028-007	Fork	2	13	15-514-120	Weldment, frame	1
2	11221	1/2in. – 13 UNC x 4 1/2in. hex head bolt	2	14	32030	8-18 x 3/4in. HWH tek drill & tap	2
3	36109	1/2in. – 13 hex nut, grade A, plain	2	15	33008	3/8in. USS zinc-plated flat washer	8
4	16-132-173	PH-8/3 caster wheel	2	16	11105	3/8in. – 16 x 1in. HHCS #2 zinc-plated bolt	4
5	37039	3/8in. – 10 zinc-plated Nylock nut	2	17	36106	3/8in. – 16 zinc-plated hex nut	4
6	33012	1/2in. USS zinc-plated flat washer	1	18	16-001-190	FL-ADJ-810 adjustable floor lock	1
7	33625	1/2in. lock washer	1	19	16-025-028	Handle, push handles, chromed	1
8	12217	1/2in. – 13 x 3 1/2in. HHCS #5 bolt	1	20	38-538-004	Frame, weldment, carriage	1
9	01-118-001	Cylinder retaining bolt	1	21	16-132-227	Caster, 8/3-FWB-NTP	2
10	36209	1/2in. – 13 plain hex jam nut	1	22	99-024-003	Guard/cover/endcap/plug	2
11	11207	1/2in. – 13 x 1 1/4in. HHCS #2 zinc-plated bolt	2	23	11365	3/4in.-10x3in. HHCS #2 zinc-plated bolt	2
12	37030	1/2in. – 13 Nylon insert lock nut	2	24	99-021-913	Telescopic cylinder, 58in. stroke	1

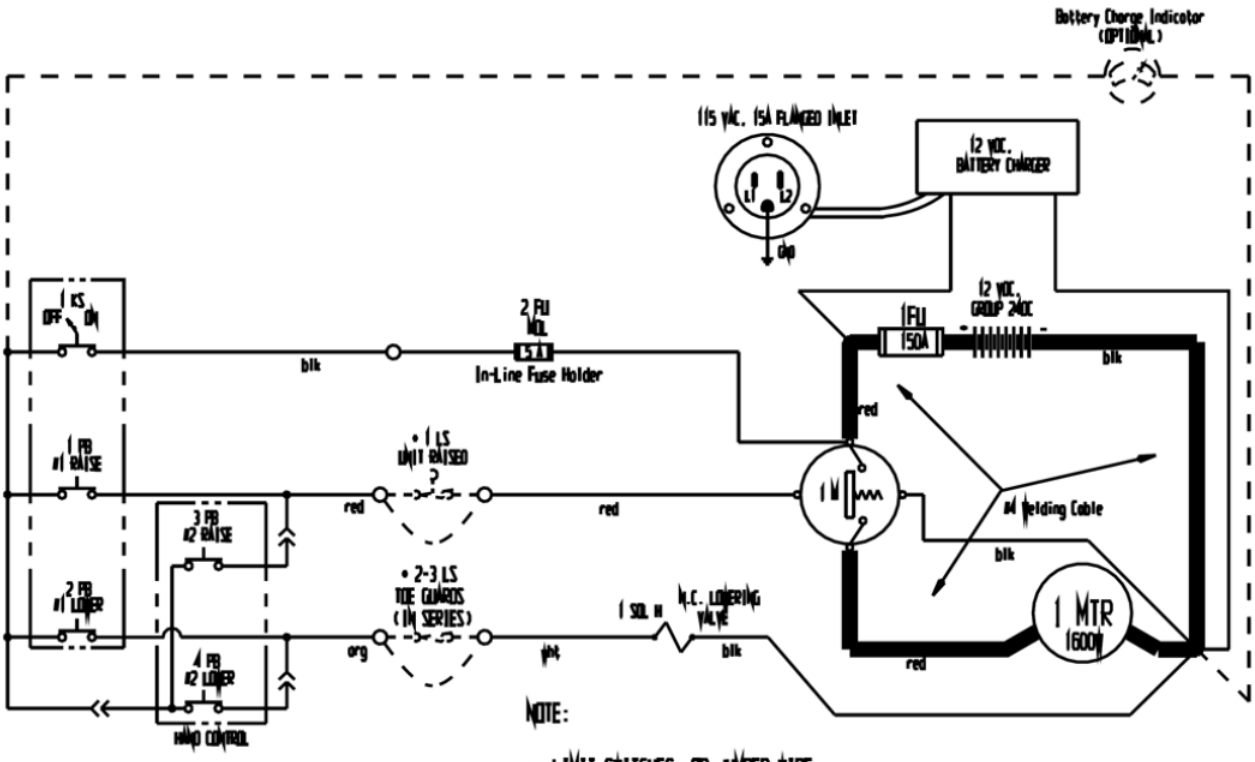
FIG. 5: 115VAC Modular power unit electrical circuit diagram



Drawing no. 99-124-026, Rev. D

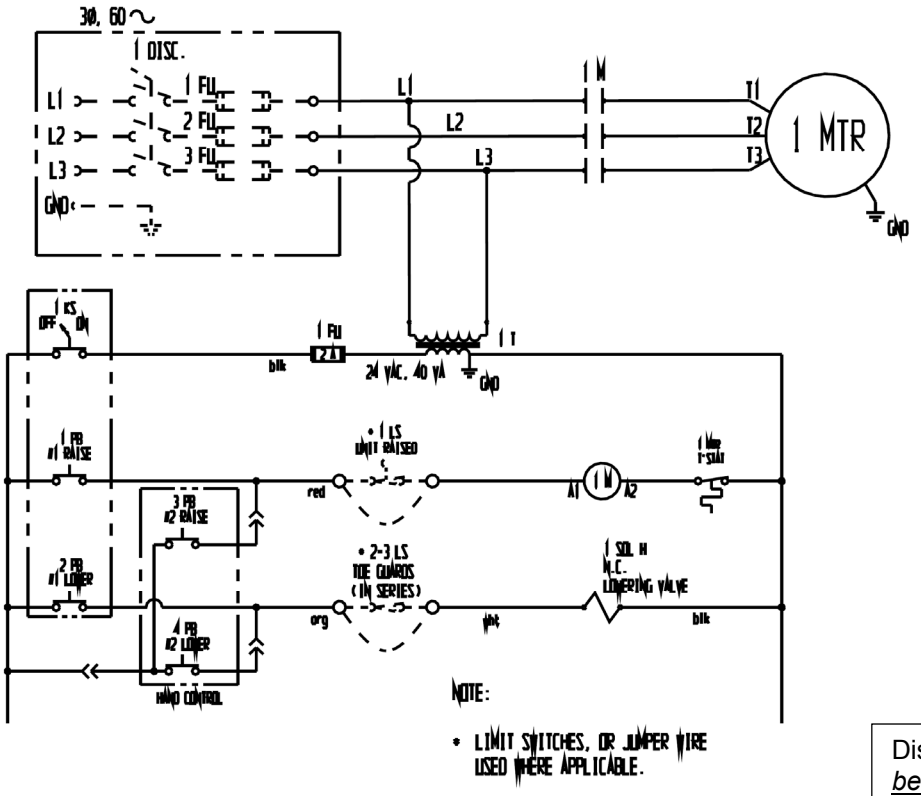
Disconnect power *before* working on the power unit!

FIG. 6: 12VDC Modular power unit electrical circuit diagram



Drawing no. 99-124-026, Rev. D

FIG. 7: 3-Phase AC Modular Power Unit Diagram

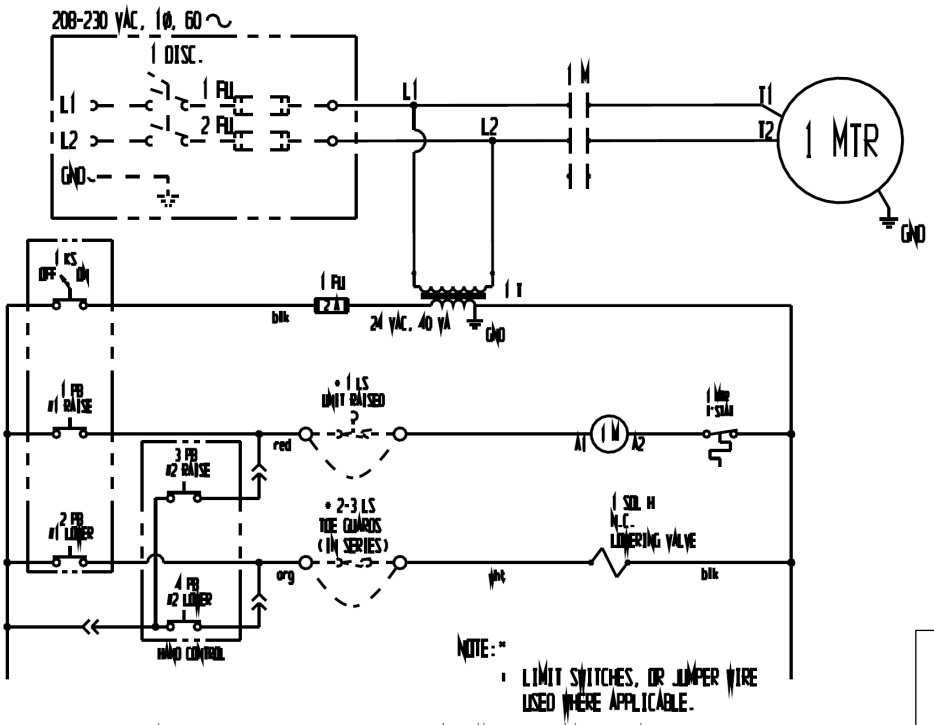


OVERCURRENT & SHORT-CIRCUIT PROTECTION, AND DISCONNECT, ARE TO BE PROVIDED BY THE END-USER PER THE NEC (NFPA 70) AND LOCAL CODES.

Disconnect power *before* working on the power unit!

Drawing no. 99-124-032

FIG. 7: Single Phase 208/230VAC Modular Power Unit Diagram



OVERCURRENT & SHORT-CIRCUIT PROTECTION, AND DISCONNECT, ARE TO BE PROVIDED BY THE END-USER PER THE NEC (NFPA 70) AND LOCAL CODES.

Disconnect power *before* working on the power unit!

Drawing no. 99-124-033

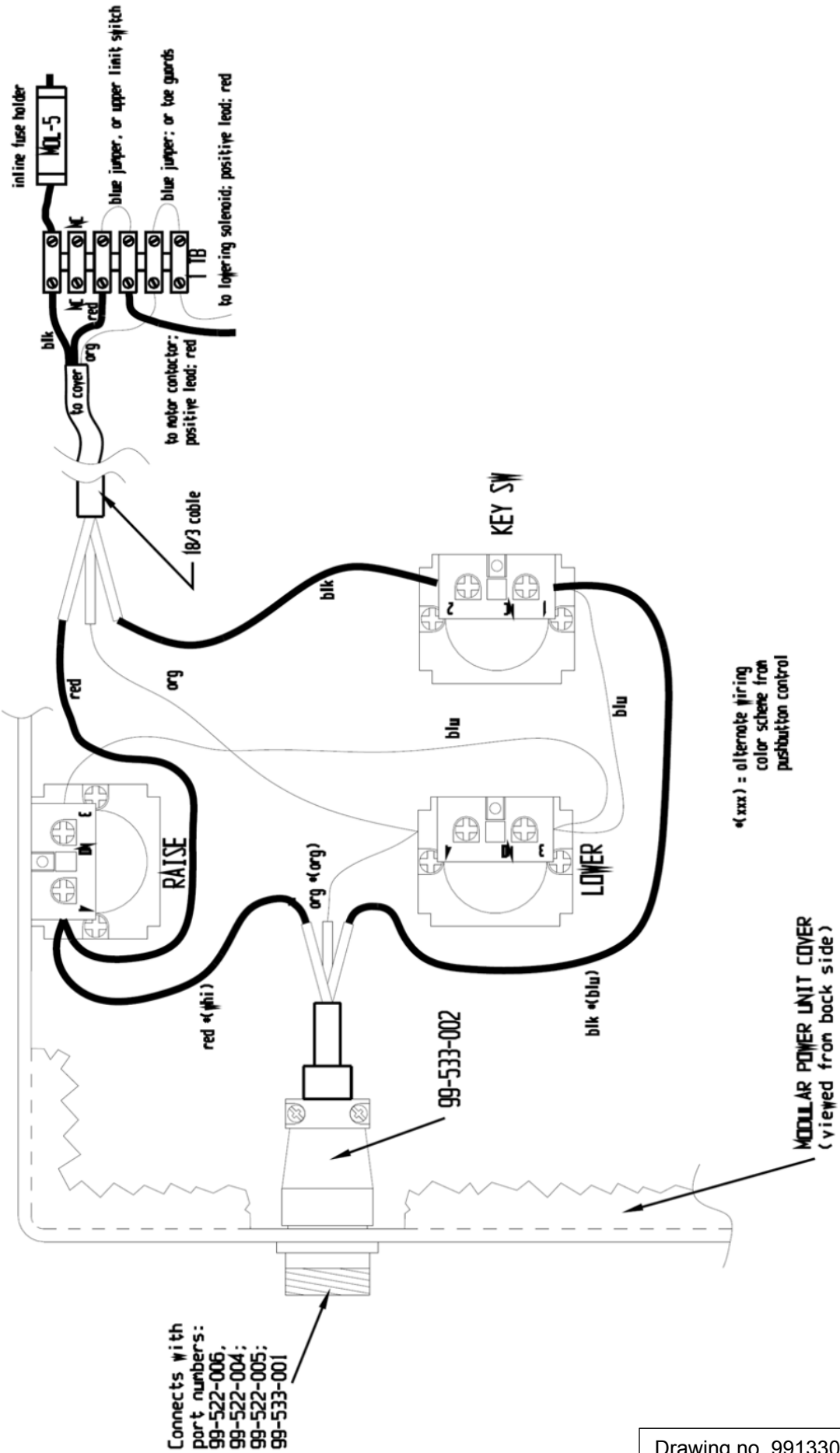


FIG. 9A: 12VDC Modular Power Unit Layout (part 1 of 2)

Drawing no. 99133001 rev. A

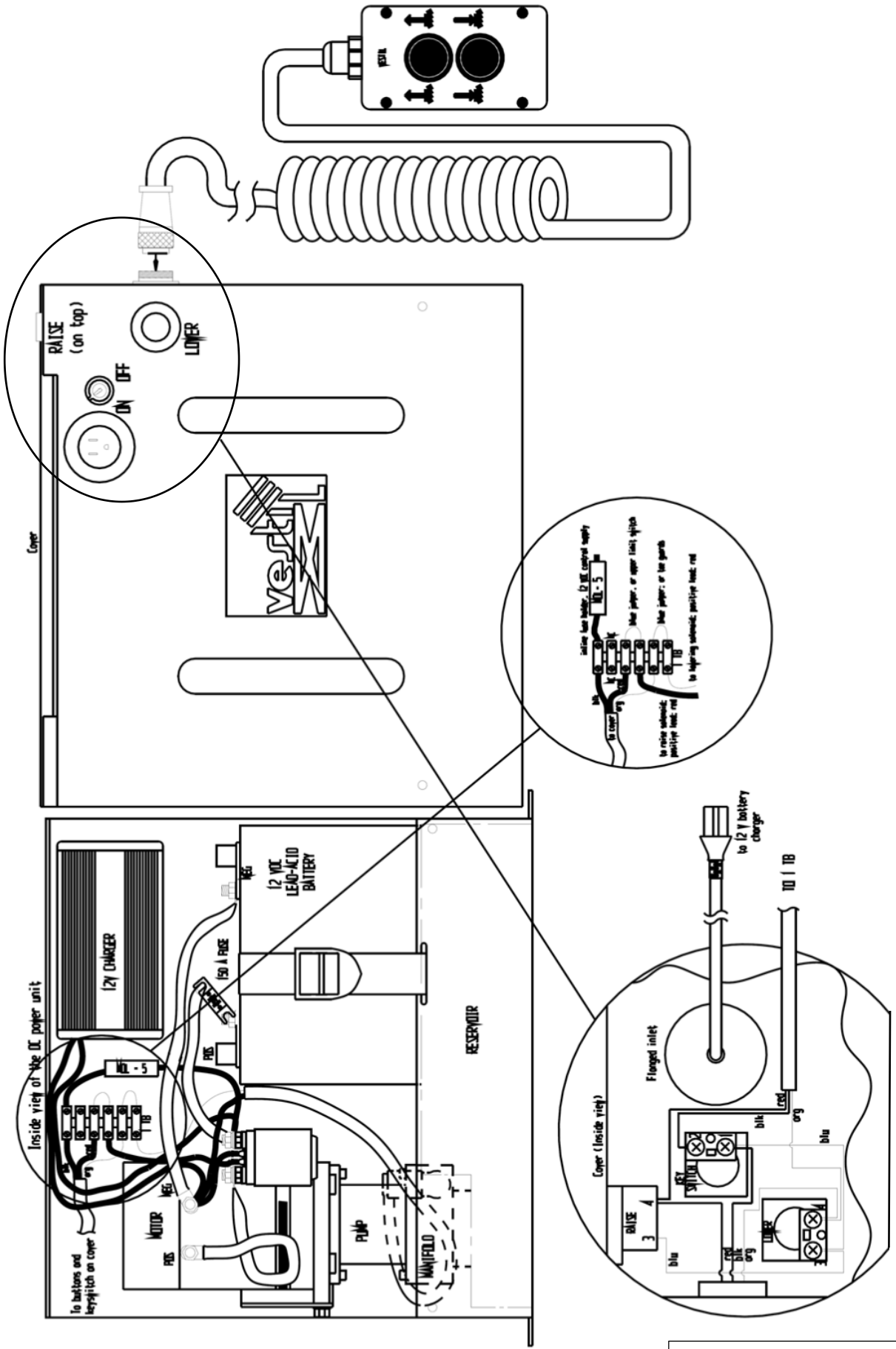


FIG. 9B: 12VDC Modular Power Unit Layout (part 2 of 2)

Drawing no. 99133002 rev. A

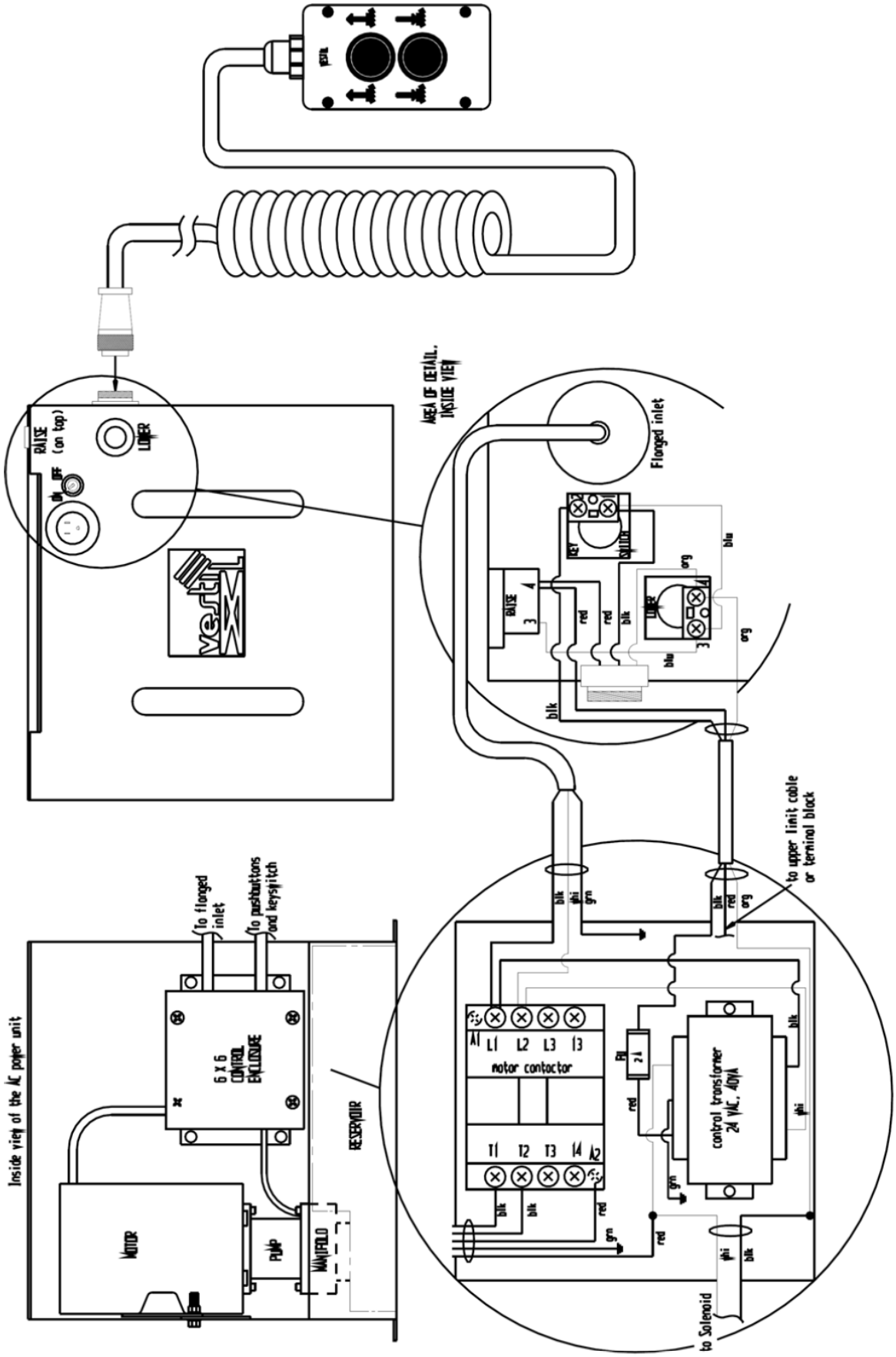
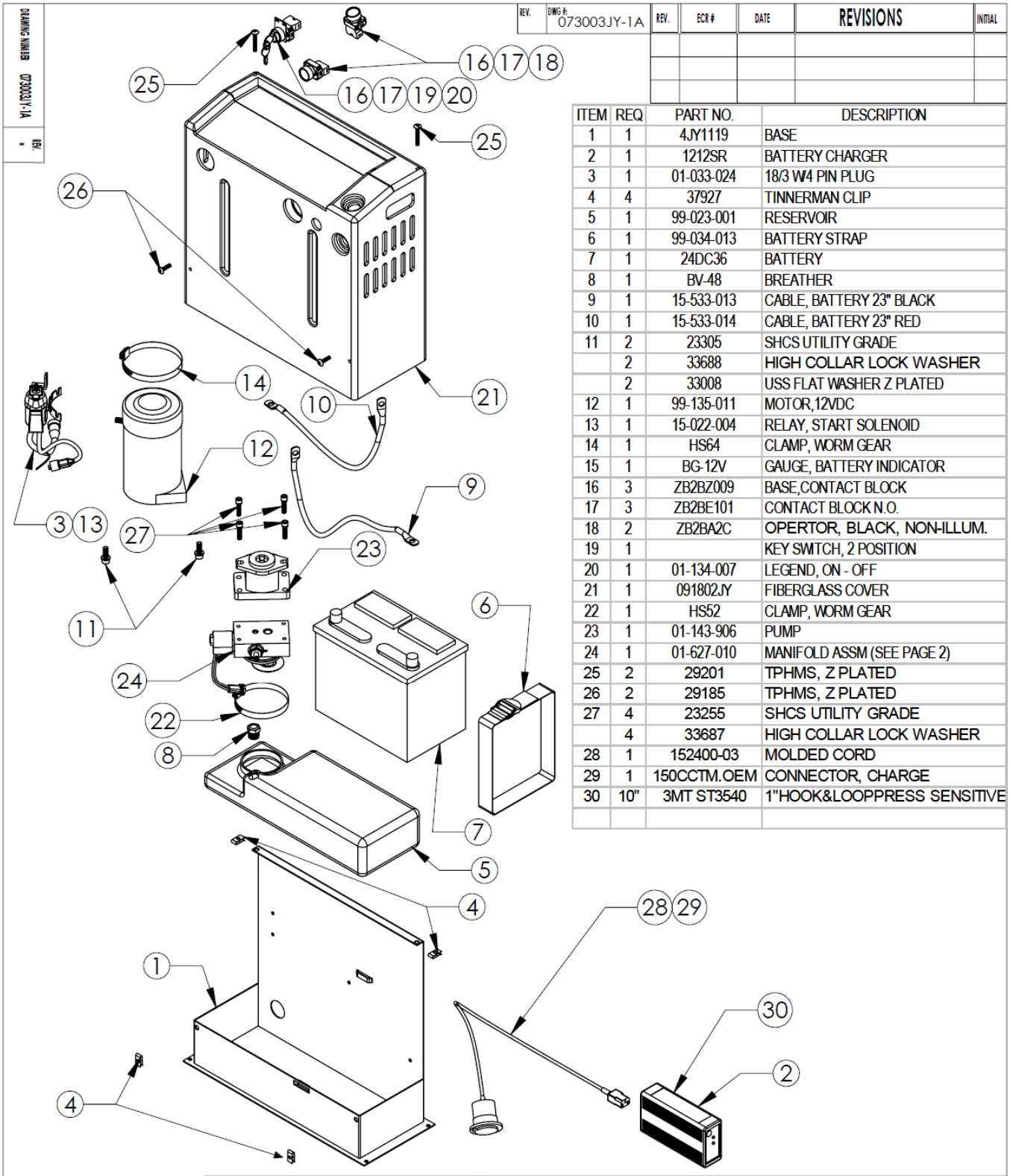


FIG. 10: AC Modular Power Unit Layout

Drawing no. 99133003 rev. A

FIG. 11A: DC Modular Power Unit Exploded Parts Diagram



ITEM	REQ	PART NO.	DESCRIPTION
1	1	4JY1119	BASE
2	1	1212SR	BATTERY CHARGER
3	1	01-033-024	18/3 W4 PIN PLUG
4	4	37927	TINNERMAN CLIP
5	1	99-023-001	RESERVOIR
6	1	99-034-013	BATTERY STRAP
7	1	24DC36	BATTERY
8	1	BV-48	BREATHER
9	1	15-533-013	CABLE, BATTERY 23" BLACK
10	1	15-533-014	CABLE, BATTERY 23" RED
11	2	23305	SHCS UTILITY GRADE
	2	33688	HIGH COLLAR LOCK WASHER
	2	33008	USS FLAT WASHER Z PLATED
12	1	99-135-011	MOTOR,12VDC
13	1	15-022-004	RELAY, START SOLENOID
14	1	HS64	CLAMP, WORM GEAR
15	1	BG-12V	GAUGE, BATTERY INDICATOR
16	3	ZB2BZ009	BASE,CONTACT BLOCK
17	3	ZB2BE101	CONTACT BLOCK N.O.
18	2	ZB2BA2C	OPERTOR, BLACK, NON-ILLUM.
19	1		KEY SWITCH, 2 POSITION
20	1	01-134-007	LEGEND, ON - OFF
21	1	091802JY	FIBERGLASS COVER
22	1	HS52	CLAMP, WORM GEAR
23	1	01-143-906	PUMP
24	1	01-627-010	MANIFOLD ASSM (SEE PAGE 2)
25	2	29201	TPHMS, Z PLATED
26	2	29185	TPHMS, Z PLATED
27	4	23255	SHCS UTILITY GRADE
	4	33687	HIGH COLLAR LOCK WASHER
28	1	152400-03	MOLDED CORD
29	1	150CCTM.OEM	CONNECTOR, CHARGE
30	10"	3MT ST3540	1"HOOK&LOOPPRESS SENSITIVE

REMOVE ALL BURRS AND SHARP EDGES

CONCENTRIC	.006 TIR	.060 TIR
ANGLES	+/- 0° 30'	+/- 1° 0'
DECIMALS	x.xxx +/- .005 x.xx +/- .010 x.x +/- .025	+/- .015
FRACTIONS	+/- 1/32	+/- 1/16
TOLERANCE	MACHINE	WELDMENT

T & S EQUIPMENT COMPANY

SCALE: NTS | APPROVED BY: | DRAWN BY: J.YOUNG

DATE: 07/30/03 | SIZE: A

DC MODULAR POWER UNIT

MATERIAL: | DRAWING NUMBER: 073003JY-1A | REV:

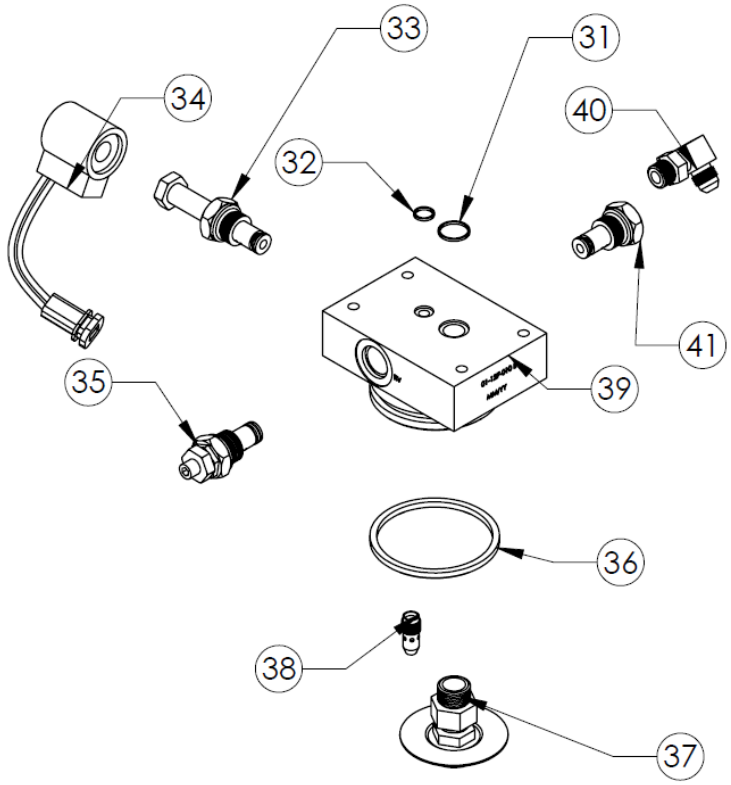
FIG. 11B: DC Modular Power Unit Exploded Parts Diagram

DRAWING NUMBER 073003-JY-1B REV: *

REV.	DWG #: 073003JY-1B

REV.	ECR #	DATE	REVISIONS	INITIAL

ITEM	REQ	PART NO.	DESCRIPTION
31	1	568-015-BN70	O-RING
32	1	568-011-BN70	O-RING
33	1	99-153-015	VALVE,CARTRIDGE,NC
34	1	99-034-010	COIL, WEATHER TITE PLUG
35	1	99-153-006	VALVE, PRESSURE RELIEF
36	1	568-334-BN70	O-RING
37	1	99-531-005	FILTER
38	1	99-153-038	FLOW CONTROL, 1.0 GPM
39	1	01-127-010	MANIFOLD
40	1	6801--06-06-NOW	MJ-MAORB 90 DEG.
41	1	99-153-011	VALVE, CHECK



REMOVE ALL BURRS AND SHARP EDGES

CONCENTRIC	.006 TIR	.060 TIR
ANGLES	+/- 0° 30'	+/- 1° 0'
DECIMALS	x.xxx +/- .005 x.xx +/- .010 x.x +/- .025	+/- .015
FRACTIONS	+/- 1/32	+/- 1/16
TOLERANCE	MACHINE	WELDMENT

T & S EQUIPMENT COMPANY

SCALE: NTS | APPROVED BY: | DRAWN BY: J.YOUNG

DATE: 07/30/03 | SIZE: A

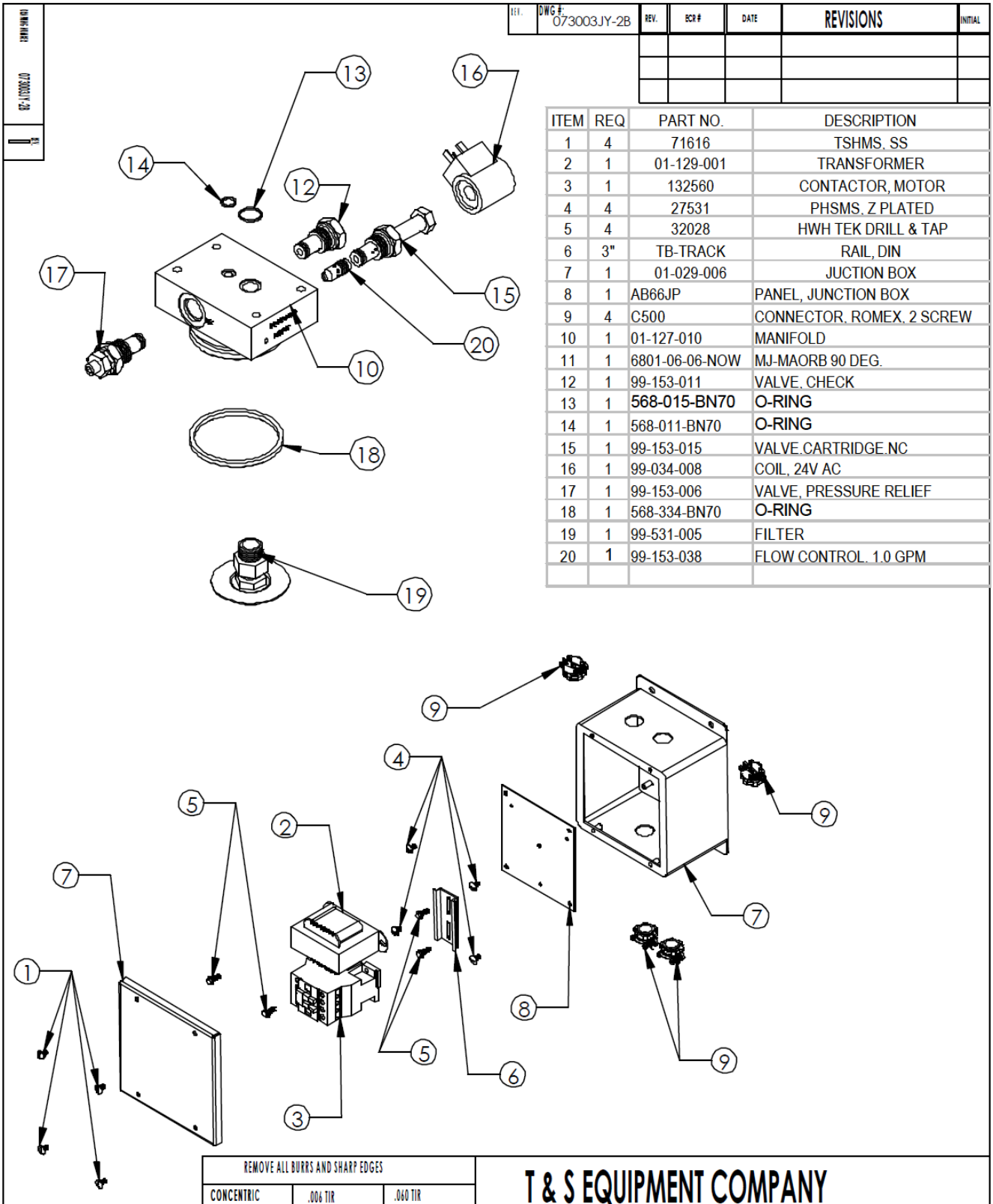
DC MODULAR POWER UNIT

MATERIAL: | DRAWING NUMBER: 073003JY-1B | REV:

FIG. 12A: AC Modular Power Unit Exploded Parts Diagram

REV.	DWG #: 073003JY-2B	REV.	ECR #	DATE	REVISIONS	INITIAL

ITEM	REQ	PART NO.	DESCRIPTION
1	4	71616	TSHMS, SS
2	1	01-129-001	TRANSFORMER
3	1	132560	CONTACTOR, MOTOR
4	4	27531	PHSMS, Z PLATED
5	4	32028	HWH TEK DRILL & TAP
6	3"	TB-TRACK	RAIL, DIN
7	1	01-029-006	JUCTION BOX
8	1	AB66JP	PANEL, JUNCTION BOX
9	4	C500	CONNECTOR, ROMEX, 2 SCREW
10	1	01-127-010	MANIFOLD
11	1	6801-06-06-NOW	MJ-MAORB 90 DEG.
12	1	99-153-011	VALVE, CHECK
13	1	568-015-BN70	O-RING
14	1	568-011-BN70	O-RING
15	1	99-153-015	VALVE,CARTRIDGE,NC
16	1	99-034-008	COIL, 24V AC
17	1	99-153-006	VALVE, PRESSURE RELIEF
18	1	568-334-BN70	O-RING
19	1	99-531-005	FILTER
20	1	99-153-038	FLOW CONTROL, 1.0 GPM



REMOVE ALL BURRS AND SHARP EDGES

CONCENTRIC	.006 TIR	.060 TIR
ANGLES	+/- 0° 30'	+/- 1° 0'
DECIMALS	x.xxx +/- .005 x.xx +/- .010 x.x +/- .025	+/- .015
FRACTIONS	+/- 1/32	+/- 1/16
TOLERANCE	MACHINE	WELDMENT

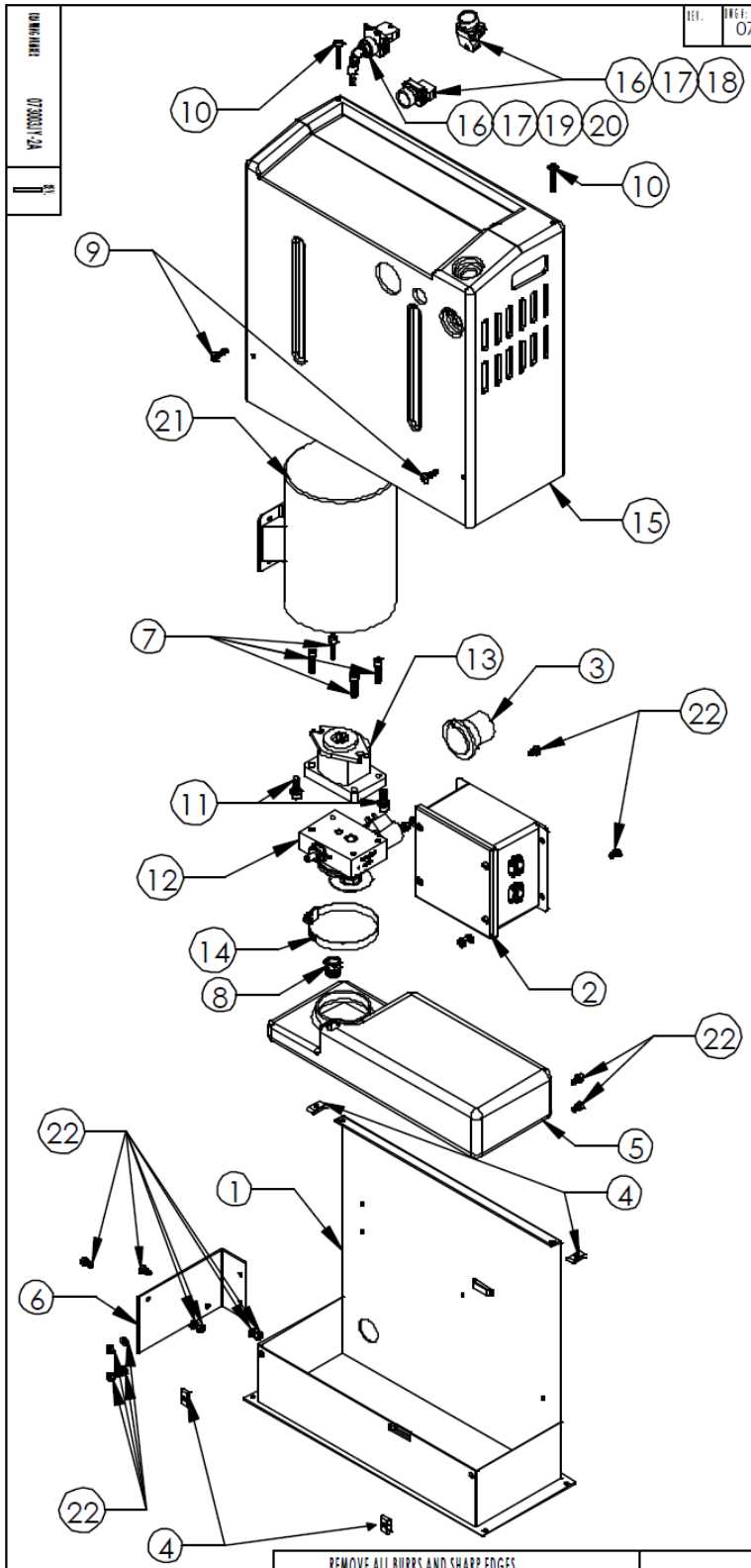
T & S EQUIPMENT COMPANY

SCALE: NTS | APPROVED BY: | DRAWN BY: J.YOUNG
DATE: 07/03/03 | SIZE: A

AC MODULAR POWER UNIT

MATERIAL: | DRAWING NUMBER: 073003JY-2B | REV:

FIG. 12B: AC Modular Power Unit Exploded Parts Diagram



DWG #: 073003JY-2A	REV.	ECR #	DATE	REVISIONS	INITIAL

ITEM	REQ	PART NO.	DESCRIPTION
1	1	4JY1119	BASE
2	1		ELECTRIC BOX (SEE PAGE 2)
3	1	21-034-005	AC ADAPTER PLUG
4	4	37927	TINNERMAN CLIP
5	1	99-023-001	RESERVOIR
6	1		MOTOR BRACE
7	4	23255	SHCS UTILITY GRADE
	4	33687	HIGH COLLAR LOCK WASHER
8	1	BV-48	BREATHER
9	2	29185	TPHMS, Z PLATED
10	2	29201	TPHMS, Z PLATED
11	2	23305	SHCS UTILITY GRADE
	2	33688	HIGH COLLAR LOCK WASHER
	2	33008	USS FLAT WASHER Z PLATED
12	1	01-627-010	MANIFOLD ASSM (SEE PAGE 2)
13	1	01-143-906	PUMP
14	1	HS52	CLAMP, WORM GEAR
15	1	091802JY	FIBERGLASS COVER
16	3	ZB2BZ009	BASE,CONTACT BLOCK
17	3	ZB2BE101	CONTACT BLOCK N.O.
18	2	ZB2BA2C	OPERATOR, BLACK, NON-ILLUM.
19	1	ZB2BG4C	SWITCH, KEY, 2 POSITION
20	1	01-134-007	LEGEND, ON - OFF
21	1	99-135-003	MOTOR, ELECTRIC, 1PH
22	6	11005	HHCS, Z PLATED
	6	33004	USS FLAT WASHER, Z PLATED
	6	33618	LOCK WASHER, Z PLATED
	6	36102	HEX NUT, Z PLATED

REMOVE ALL BURRS AND SHARP EDGES

CONCENTRIC	.006 TIR	.060 TIR
ANGLES	+/- 0° 30'	+/- 1° 0'
DECIMALS	x.xxx +/- .005 x.xx +/- .010 x.x +/- .025	+/- .015
FRACTIONS	+/- 1/32	+/- 1/16
TOLERANCE	MACHINE	WELDMENT

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T & S EQUIPMENT COMPANY

SCALE: NTS	APPROVED BY:	DRAWN BY: J.YOUNG
DATE: 07/30/03		SIZE: A

AC MODULAR POWER UNIT

MATERIAL:	DRAWING NUMBER: 073003JY-2A	REV:

REPLACEMENT PARTS:
Our company takes pride in using the finest available parts for our equipment. 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 the voltage of the equipment.

LOADING INSTRUCTIONS

The capacity of the CB-PMPS appears on label 287 (see p. 23). DO NOT apply a load to the pallet handler that exceeds the capacity, because personal injury or permanent damage to the handler might result.

When loading the PMPS, always follow these guidelines:

1. The load should firmly contact the upright portions 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.

RESPONSIBILITIES OF OWNERS & USERS:
1.) Inspect and maintain this product in accordance with this manual (see “Inspections & Maintenance; p. 21-22).
2.) DO NOT use the pallet handler unless it is in normal operating condition. Always inspect the CB-PMPS according to the maintenance recommendations on p. 21-22.
3.) Lift should only be used by trained and authorized personnel. All lift operators must have read and understood all operating procedures and safety guidelines in this Owner's Manual.
4.) Lift must never be overloaded.
5.) Operator must ensure that all safety features of the lift are functioning properly before each use.
6.) Any modifications to the lift must be approved in writing by the manufacturer.

HYDRAULIC SYSTEM

Pushbutton controls are standard equipment on CB-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 and oil from the reservoir then flows through the suction filter and into the pump. The pump delivers pressurized oil to the cylinders 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 running. This holds oil in the cylinders and maintains any particular elevation for extended periods of time.

If the load exceeds the capacity of the pallet handler, when the **UP** button is activated, pressure will build up in the circuit between the pump and the cylinders. This pressure forces the relief valve to unseat which in turn allows the pump flow to circulate to the reservoir. This pressure relief mechanism prevents damage to the hydraulic system and structure of the pallet handler.

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 will stop retracting. The unit will maintain the particular elevation 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. 4, p 4-6) refer to the solutions presented in “Troubleshooting” on p. 21-22. To clean the lowering solenoid, follow this procedure:

1. Completely lower the fork carriage.
2. Use a sharp object to push the poppet in from the bottom and open the valve.
3. Repeat several times while immersing the valve in kerosene or mineral spirits. 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 torn or cut, replace it.
6. Reinstall the valve. The valve should be tightened to approximately 20 ft. lbs. of torque.

VELOCITY FUSE:

There is a brass velocity fuse with a stainless steel spring in the base of each cylinder. In the event of a hydraulic hose or fitting failure, the platform starts to lower at a fast rate. As soon as the descent speed exceeds the preset speed, the Velocity Fuse will shut off the oil flow and the platform will remain nearly stationary until pressure is reapplied. This safety feature reduces the possibility of accidental personal injury or damage to the pallet handler or load

If air enters the 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, fully lower the carriage and remove the load from the forks. Cycle the carriage 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 Pallet Server utilizes 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 with approximately a 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 fitting. When you observe only oil flowing from the bleeder, retighten the bleeder screw.

DC-POWERED HYDRAULIC SYSTEM TROUBLESHOOTING GUIDE

⚠WARNING Before performing maintenance on this product, unload the forks and completely lower the carriage.

Observation	Possible Cause	Remedy
1. Unit does not raise, 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. Unit does 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 may be leaking air, due to loose fittings. h. Filter/Breather cap on tank might be clogged. i. Lowering solenoid valve might be energized by faulty wiring or might be stuck open. j. Hydraulic pump might be inoperative.	c. Measure voltage at motor terminals or as near as possible, while pump is running under load. Check for loose connections. d. Add fluid. Refer to Owner's Manual for proper fluid levels. e. DO NOT CHANGE RELIEF VALVE SETTING. Instead, reduce the load to rated capacity. f. Remove and clean. g. Inspect all fittings for proper tightness. h. Remove and clean. i. Remove lowering solenoid valve. Check and clean. (Refer to “Lowering Solenoid Valves”.) j. Disconnect hydraulic line at power unit. Put pressure line in a large container and operate the pump. If no output, check the pump motor coupling which may be defective, and correct as necessary. If pump is worn, consult factory for replacement parts.
3. Unit rises too slowly.	k. Foreign material stuck in down solenoid valve, causing some 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 deck. Remove the down solenoid valve and clean. (Refer to Hydraulic Section of Owners Manual). l. Correct as necessary. (See also, 2(f), (h)). m. See 2 (b) n. See 2 (e) o. See 2 (j)
4. Motor labors or is excessively hot.	p. Voltage may be low. q. Oil starvation causing pump to bind & high internal heat develops. If this occurs, pump can be permanently damaged. r. Binding cylinders.	p. See 2 (b) q. See 2 (d), (f), (g), (h), (j) r. Align cylinders correctly.

5. "Spongy· or "Jerky· unit operation.	s. Fluid starvation. t. Air in system.	s. See 2 (d), (f), (g), (j) t. See air bleed procedure (p. 19).
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 necessary. w. Remove and clean flow control valve. Refer to Hydraulic System Diagram on p. 3). x. Align cylinders correctly. y. Remove and clean velocity fuse. Refer to Hydraulic System Diagram on p. 3).
7. Unit lowers 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. 3).
8. Unit raises then lowers slowly.	aa. Lowering solenoid valve may be incorrectly wired or is stuck open bb. Check valve may be stuck open. cc. Check for leaking hoses, fittings, pipes. dd. Cylinder packings may be worn or damaged.	aa. See 3 (a). bb. Remove and clean check valve; (Refer to Hydraulic Section of Owner's Manual). cc. See 2 (c). dd. Replace packings (contact factory for replacement parts).
9. 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. If the carriage lowers too rapidly, air is present in the hydraulic system causing the velocity fuse to activate and shut off the oil flow from the cylinders. Consequently, the deck will not lower.	ee. Correct per diagram (p. 8-10). 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 down solenoid valve fro the block as the unit will come down at a dangerous speed. hh. See 4 (c). ii. To unlock, re-pressurize the hydraulic system.

BATTERY CHARGER OPERATION

WARNING Working with or near 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 expose the battery to sparks or flames, i.e. DO NOT SMOKE NEAR THE BATTERY!!
- ONLY charge batteries in clean, dry, and well ventilated locations.
- DO NOT lay tools or any metallic item on top of a battery.
- When working with batteries, 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 a low battery voltage can cause premature motor contact failure.
- The charger is equipped with an external ground wire (small green). 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.
- Replace defective 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 CB-PMPS is equipped with an onboard battery charger having 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 to 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 pallet handler. Failure to do so could cause damage to cords, receptacles, or other equipment.

TROUBLESHOOTING

If the charger does not work:

1) Make sure all battery connections are electrically and mechanically sound.
2) Confirm that the AC source (e.g. wall socket) for power.
3) Check the fuse. Replace only with a fuse having the same rating as originally supplied.
4) Determine battery condition. It may take some time before current begins to flow through a highly sulfated battery.

INSPECTIONS & MAINTENANCE:

NOTICE Proper use, maintenance, and storage are essential for this product to function properly.
- Always use this product in accordance with the instructions in this manual and consistent 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.
- 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 SDS information.

Inspections:

(A) Before Each Use—visually inspect the following:

1. Wiring: inspect the electrical wiring for cuts, frays etc.
2. Casters: examine each caster and confirm normal operating condition, i.e. rolls smoothly without wobbling, not cracked, or severely worn,
3. Hydraulic hoses: check for pinches, punctures, and 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 wiring inside the controller housing.

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

1. Oil level. Oil should be 1" to *1-1/2"* below the top of the tank with the lift in the fully lowered position. Add as necessary. Look for oil leaking from hoses, the cylinder, or the reservoir. See “Troubleshooting” (p. 21-22) and correct as necessary.
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 controller: Check for worn or damaged hydraulic hoses, electrical wires, and cords. Repair as necessary.
5. Carriage rollers (see diagrams on p. 4-7): check rollers and retaining hardware for normal condition.
6. Forks, carriage and mast: cycle the forklift function up (to the top) and back down while listening and watching for unusual noise, motion, or binding.
7. Labels (see “Label placement diagram; p. 23): confirm that all labels are in place and in good, readable condition.
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:

The end-user/your employer should 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.

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

Step 1: Tag the 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 CB-PMPS.

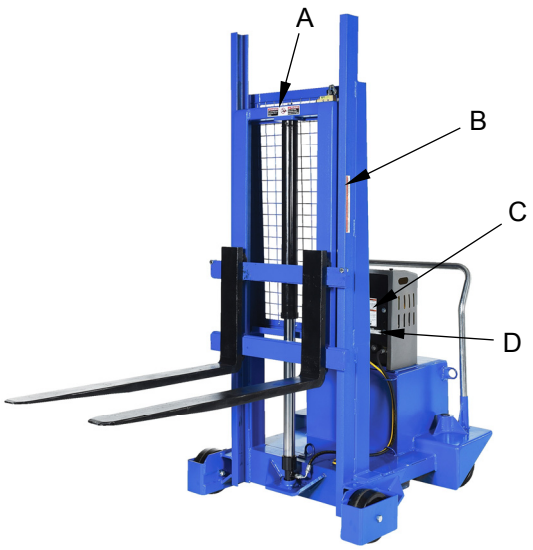
NOTE: An adjustment is a simple correction that restores the lifter to normal operating condition, such as tightening loose fasteners, or removing dirt or other debris from the surface of the dumper. A repair refers to replacing worn parts with new replacement parts. A modification is a change that alters the machine from normal operating condition, like bending the structural members or removing a part or several parts. DO NOT modify the lifter in any way.

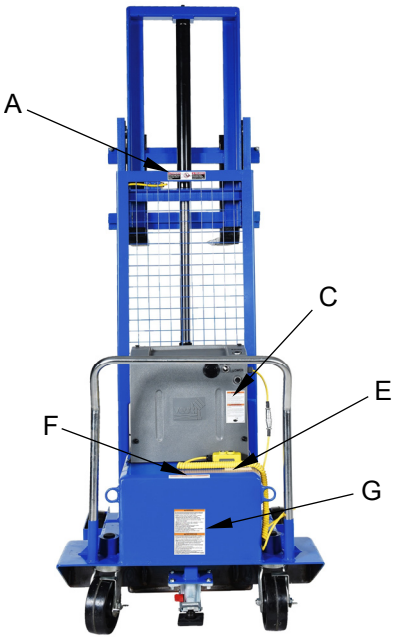
⚠WARNING DO NOT use the lifter if adjustments and repairs are incomplete! Return it to service ONLY after finishing all necessary repairs and adjustments.
NEVER modify the unit. Modifications automatically void the Limited Warranty and might make the pallet handler unsafe to use.

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

Label Placement 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 220

⚠WARNING	⚠ADVERTENCIA	⚠AVERTISSEMENT
KEEP CLEAR WHEN IN USE	MANTENGASE ALEJADO CUANDO SE ESTA OPERANDO	SE TENIR À DISTANCE LORS DU FONCTIONNEMENT

220 rev 0111

B: Label 208

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

208A

C: Label 295

⚠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 bateria incluida continue materiales peligrosos.

NO use la bateria incluida A NO SER que lleve proteccion de ojos y otros equipos de proteccion apropiados para el personal.

NO tenga contacto directo en la piel con la bateria.

NO exponga a destellos o a calor excesivo, la bateria contiene gases explosivos.

295 rev 0111

D: Label 206

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

E: Label 287

DATE / FECHA/ DATE:
MODEL / MODELO / MODELE
SERIAL / SERIE / SERIE
CAPACITY / CAPACIDAD / CAPACITE

SUPPLY VOLTAGE / SUMINISTRO DE VOLTAJE / TENSION D'ALIMENTATION: ..... AC
FREQUENCY / FRECUENCIA / FREQUENCE: ..... HZ
PHASE / FASE / PHASE: .....
FULL LOADS AMPS / AMPS DE CARGA COMPLETA / COURANT A PLEINE CHARGE: ..... A
ELECTRICAL DIAGRAM / DIAGRAMA ELECTRICO / SCHEMA ELECTRIQUE: .....

F: Label 212

⚠WARNING	⚠ADVERTENCIA	⚠AVERTISSEMENT
LOCK CASTER and/or **FLOOR LOCK** when loading and unloading	**La RUEDECILLA de la CERRADURA** y/o **el PISO CIERRAN** al cargar y descargar	**LOCK CASTER** et/ou **SOL LOCK** lors du chargement et de déchargement

212 Rev 0111

G: Label 527

⚠ WARNING

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

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

⚠ ADVERTENCIA

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

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

Mail	Fax	Email
Vestil Manufacturing Corporation	(260) 665-1339	sales@vestil.com
2999 North Wayne Street, PO Box 507	Phone	
Angola, IN 46703	(260) 665-7586	

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 components is 1 year. The warranty period begins on the date when Vestil ships the product to the warrantee. If the product was purchased from an authorized distributor, the period begins when the distributor ships the product. Vestil may extend the 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?
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.