LB-60-70
LOAD BANK

MANUAL CONTAINS OPERATING
INSTRUCTIONS PARTS LIST
WIRING DIAGRAMS
SERVICE INSTRUCTIONS

Eagle Eye Power Solutions, LLC.
6306 Eastwood Ct.
Mequon, WI 53092

CAUTION

THIS LOAD BANK IS DESIGNED FOR THE TESTING AND SERVICING 120/208V 60HZ POWER UNITS. THESE GENERATORS HAVE THE POTENTIAL OF DELIVERING A LETHAL SHOCK. THIS LOAD BANK SHOULD BE USED ONLY BY TRAINED AND QUALIFIED PERSONNEL. THIS LOAD BANK IS DESIGNED FOR TEMPORARY USE ONLY. THE LOAD RESISTORS ARE ENERGIZED WHEN THE RATE SWITCH IS OFF; THEREFORE DO NOT INSERT ANY OBJECTS IN THE GRILL ASSEMBLY. DO NOT BLOCK THE AIR FLOW OR USE IF THE AIR FLOW IS REVERSED.

MANUAL FOR LB-60-70 LOAD BANK

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DESCRIPTION

1-1 PURPOSE OF LOAD BANK: The LB-60-70 is a portable load bank designed to be used for field servicing and testing 60HZ generators and UPS systems. It can be used for checking cables after they have been replaced or repaired. The load bank can also be shipped to different locations using the carrying case.

1-2 RATING OF LOAD BANK: The LB-60-70 is rated at 70 KW full load with all four load steps turned on and the rotary rate switch set to 5KW. The load steps are 5KW, 10KW, 20KW and 30KW plus a rotary rate switch with loads of 1-5KW. This gives a 0-70KW range in 1KW steps. All steps are continuous.

1-3 LOAD BANK DESCRIPTION: The load bank is completely self-contained and needs no power source to operate other than the power being tested. The different sides of the load bank are shown in fig. 1-1. The air enters the right side (fan side) and exits the left side.

<<<< AIR FLOW <<<<

LEFT SIDE----------  ---------- RIGHT SIDE (FAN SIDE)

FIGURE 1-1

LENGTH	22 IN.
WIDTH	8 IN.
HEIGHT	21 IN.
WEIGH	55 LBS.

CONTROL PANEL LAYOUT

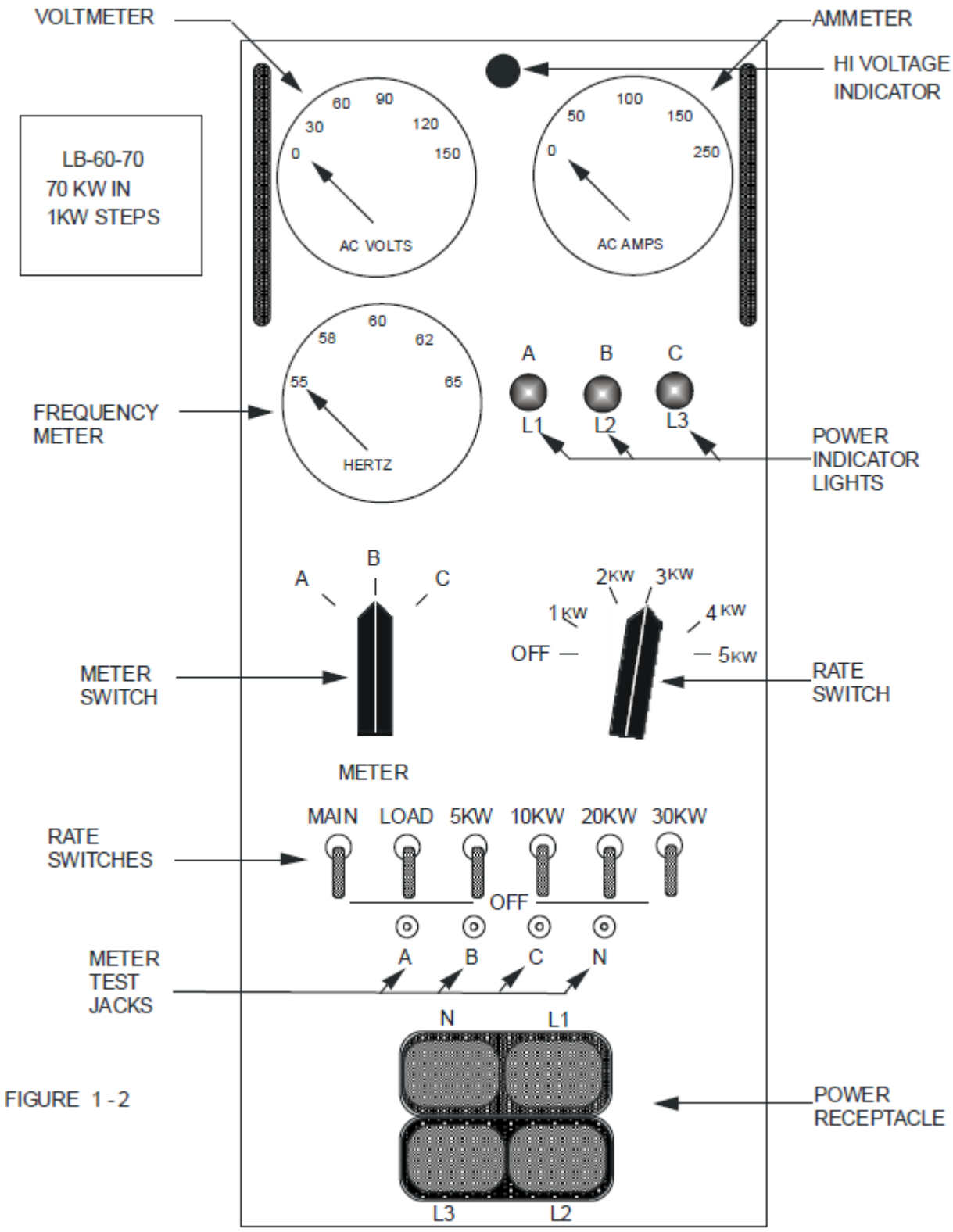

FIGURE 1-2

1-4 CONTROL DESCRIPTION: The following is a description of the controls on the control panel (see figure 1-2 on page 2.

VOLT METER - A 150 volt meter used to measure the line to neutral voltage on the power cable. A, B, or C phase can be selected using the meter selector switch. The meter should read approximately 120 volts. A 150 volt or higher reading would indicate a line and neutral cable switched on the power unit or cable.

AMMETER - A 200 amp ammeter used to measure the load being used by the load bank. It monitors "A" phase.

FREQUENCY METER - A 55-65 HZ meter used to measure the frequency of the power unit. It should read approximately 60HZ.

METER SWITCH - Switch used to select A, B, or C phase on the voltmeter.

RATE SWITCHES - Switch used to select the desired rate on the load bank. The rates are as follows:

1. 5 KW balanced load
2. 10 KW balanced load
3. 20 KW balanced load
4. 30 KW balanced load
5. 1-5 KW balanced load with rotary rate switch

POWER INDICATOR LIGHTS - These lights will light to indicate power on A, B, and C phase. All three lights should be on.

METER TEST JACKS - This provides a place to connect an external meter. There is a test jack for each cable pin.

POWER RECEPTACLE - The power cable from the equipment to be tested is plugged into the load bank through the receptacle.

OPERATION

TESTING 120VAC SINGLE PHASE

2-1 SETTING UP THE LOAD BANK - Place the load bank in an area free from fuel, oil, or any other flammable substance. The load bank should be positioned so that any strong wind or air currents will flow with the air flow of the load bank.

2-2 APPLYING POWER - The load bank should be connected to the power unit to be tested with an output of 120VAC single phase. Make sure that the power unit is off before connecting the cable to the load bank. Use L1 and N, the blue plug, when testing single phase circuits. Plug the power cable plug in to the load bank. DO NOT PLUG THE YELLOW PLUG INTO THE LOAD BANK. Turn on the output of the power unit. If the HI-VOLTAGE light comes on, push the High Voltage reset button if the meter shows 120VAC or less. If the voltage is above 120VAC, turn off the power being tested and fix the high voltage problem, before using the load bank.

2-3 CHECKING THE POWER - check the following:

A. The amber light, “A” should be on.
B. The voltmeter should read 120VAC on “A” phase.
C. The frequency meter should read approximately 60HZ.
D. The ammeter should read 0A.
E. The HI-VOLTAGE light should be off.

2-4 APPLYING THE LOAD - If the above steps checked OK, turn on the main switch. The fans should start up and the airflow should be as indicated by the airflow arrow. Add the load desired with the rate switch.

A. Step 1 is 1.67KW
B. Step 2 is 3.33KW
C. Step 3 is 6.67KW
D. Step 4 is 10KW
E. Rotary Rate Switch 0-1.67KW

Check to see that the voltage and frequency does not drop beyond acceptable limits under load. Return the rate switch to the off position.

2-5 SHUTTING DOWN - After turning the rate off, allow the load bank to cool down before turning the power unit off. Turn the power unit off and disconnect the power cable plug.

OPERATION

TESTING 240VAC SINGLE PHASE

2-1 SETTING UP THE LOAD BANK - Place the load bank in an area free from fuel, oil, or any other flammable substance. The load bank should be positioned so that any strong wind or air currents will flow with the air flow of the load bank.

2-2 APPLYING POWER - The load bank should be connected to the power unit to be tested with an output of 240VAC single phase. Make sure that the power unit is off before connecting the cable to the load bank. Use L1, L2 and N, the blue and yellow plug, when testing 240VAC single phase circuits. Plug the power cable plug in to the load bank. MAKE SURE THE COPPER LUG ON L3 IS INSULATED. Turn on the output of the power unit. If the HI-VOLTAGE light comes on, push the High Voltage reset button if the meter shows 120VAC or less. If the voltage is above 120VAC, turn off the power being tested and fix the high voltage problem, before using the load bank.

2-3 CHECKING THE POWER - check the following:

A. The amber light, “A” and “B” should be on.
B. The voltmeter should read 120VAC on “A” and “B” phase.
C. The frequency meter should read approximately 60HZ.
D. The ammeter should read 0A.
E. The HI-VOLTAGE light should be off.

2-4 APPLYING THE LOAD - If the above steps checked OK, turn on the main switch. The fans should start up and the airflow should be as indicated by the airflow arrow. Add the load desired with the rate switch.

A. Step 1 is 3.33KW
B. Step 2 is 6.66KW
C. Step 3 is 13.33KW
D. Step 4 is 20KW
E. Rotary Rate Switch 0-3.33KW

Check to see that the voltage and frequency does not drop beyond acceptable limits under load. Return the rate switch to the off position.

2-5 SHUTTING DOWN - After turning the rate off, allow the load bank to cool down before turning the power unit off. Turn the power unit off and disconnect the power cable plug.

OPERATION

TESTING 208VAC THREE PHASE

2-1 SETTING UP THE LOAD BANK - Place the load bank in an area free from fuel, oil, or any other flammable substance. The load bank should be positioned so that any strong wind or air currents will flow with the air flow of the load bank.

2-2 APPLYING POWER - The load bank should be connected to the power unit to be tested with an output of 208VAC 3 phase. Make sure that the power unit is off before connecting the cable to the load bank. Use L1, L2, L3 and N, the blue and yellow plug, when testing 208VAC 3 phase circuits. Plug the power cable plug in to the load bank. Turn on the output of the power unit. If the HI-VOLTAGE light comes on, push the High Voltage reset button if the meter shows 120VAC or less. If the voltage is above 120VAC, turn off the power being tested and fix the high voltage problem, before using the load bank.

2-3 CHECKING THE POWER - check the following:

A. The amber light, “A”, “B”,”C” should be on.
B. The voltmeter should read 120VAC on “A”, “B”, and “C” phase.
C. The frequency meter should read approximately 60HZ.
D. The ammeter should read 0A.
E. The HI-VOLTAGE light should be off.

2-4 APPLYING THE LOAD - If the above steps checked OK, turn on the main switch. The fans should start up and the airflow should be as indicated by the airflow arrow. Add the load desired with the rate switch.

A. Step 1 is 5KW
B. Step 2 is 10KW
C. Step 3 is 20KW
D. Step 4 is 30KW
E. Rotary Rate Switch 0-5KW

Check to see that the voltage and frequency does not drop beyond acceptable limits under load. Return the rate switch to the off position.

2-5 SHUTTING DOWN - After turning the rate off, allow the load bank to cool down before turning the power unit off. Turn the power unit off and disconnect the power cable plug.

PARTS INFORMATION

The following pages list the parts used in the load bank. All of the major parts are shown. Wire, screws, bolts, and small miscellaneous hardware are not listed. Parts that are purchased from a vendor will show a vendor name. These names refer to the vendor list is on page 8. Parts manufactured for or by EEPS will not show a vendor name.

A part number can be found by first locating the part on a drawing. After finding the part use the number to refer to the parts list on the opposite page. Each part will have a drawing number, EEPS part number, description and the number used for each load bank.

Parts should be ordered from the address below giving the machine model number, part number and the description.

Contact EEPS

Eagle Eye Power Solutions, LLC.

6306 Eastwood Ct.

Mequon, WI, 53092

TEL: 1-877-805 EEPS (3377) FAX: 1-414-962-3660

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CONTROL PANEL PARTS

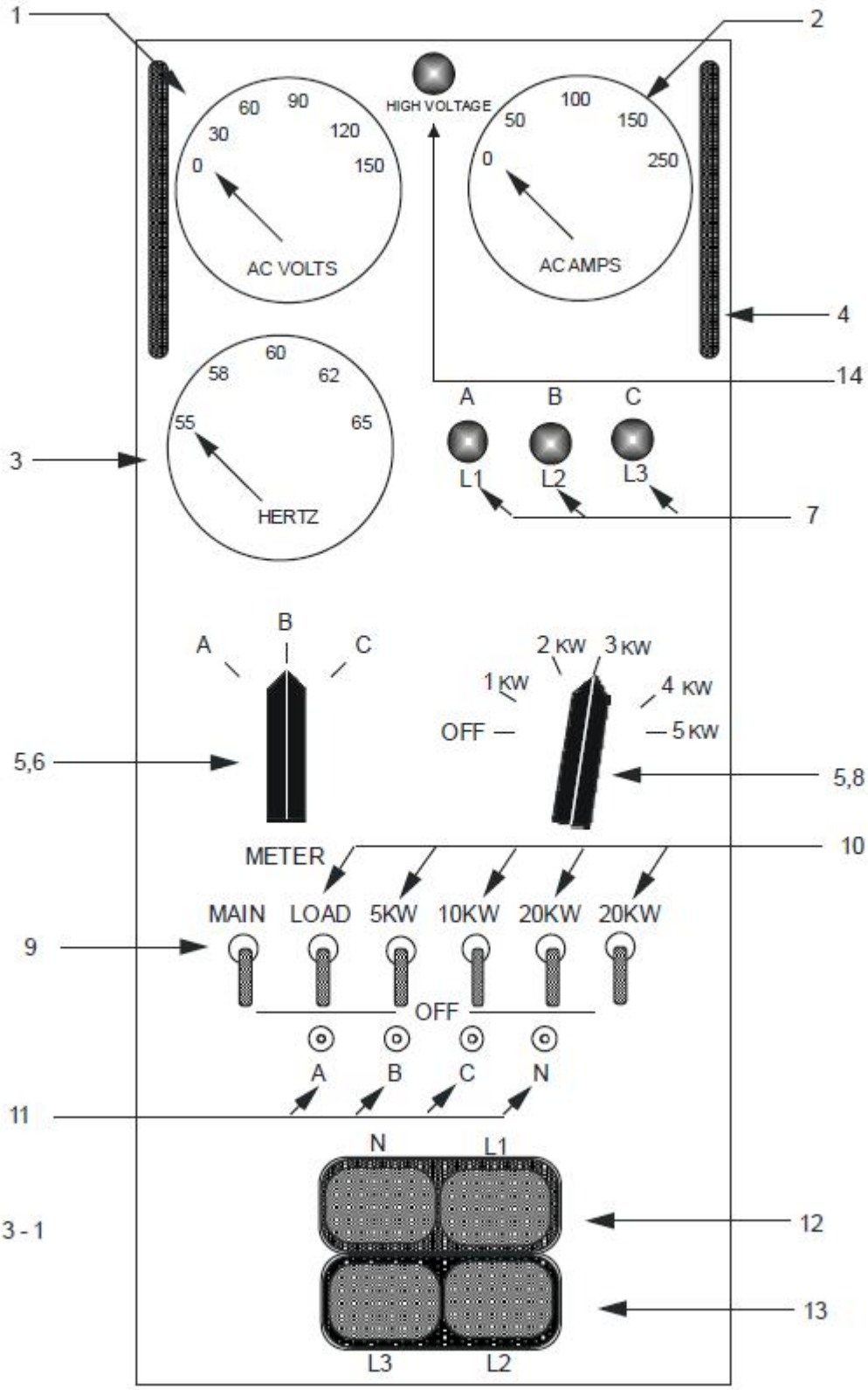


FIGURE 3 - 1

CONTROL PANEL PARTS
FIGURE 3-1

DRAWING NUMBER	PART NUMBER	DESCRIPTION VENDOR NO.	NUMBER USED
1	MR-61	0 - 150V VOLT METER	1
2	MR-25	0 - 250A AMMETER	1
3	MR-60	55-65 HERTZ FREQUENCY METER	1
4	HD-25	HANDLE	2
5	KN-10	POINTER KNOB	2
6	SW-13	ROTARY SWITCH 3 POSITION 1 POLE	1
7	LT-10	115VAC AMBER LIGHT	3
8	SW-31	ROTARY SWITCH 10 POSITION 3 POLE	1
9	SW-22	TOGGLE SWITCH DPST	1
10	SW-21	TOGGLE SWITCH SPST	5
11	TP-10	TEST PIN	4
12	SB-12	SB CONNECTOR 2PIN-YELLOW	1
13	SB-13	SB CONNECTOR 2PIN-BLUE	1
14	LT-25	250VAC RED LIGHT	1

INTERIOR PARTS LAYOUT

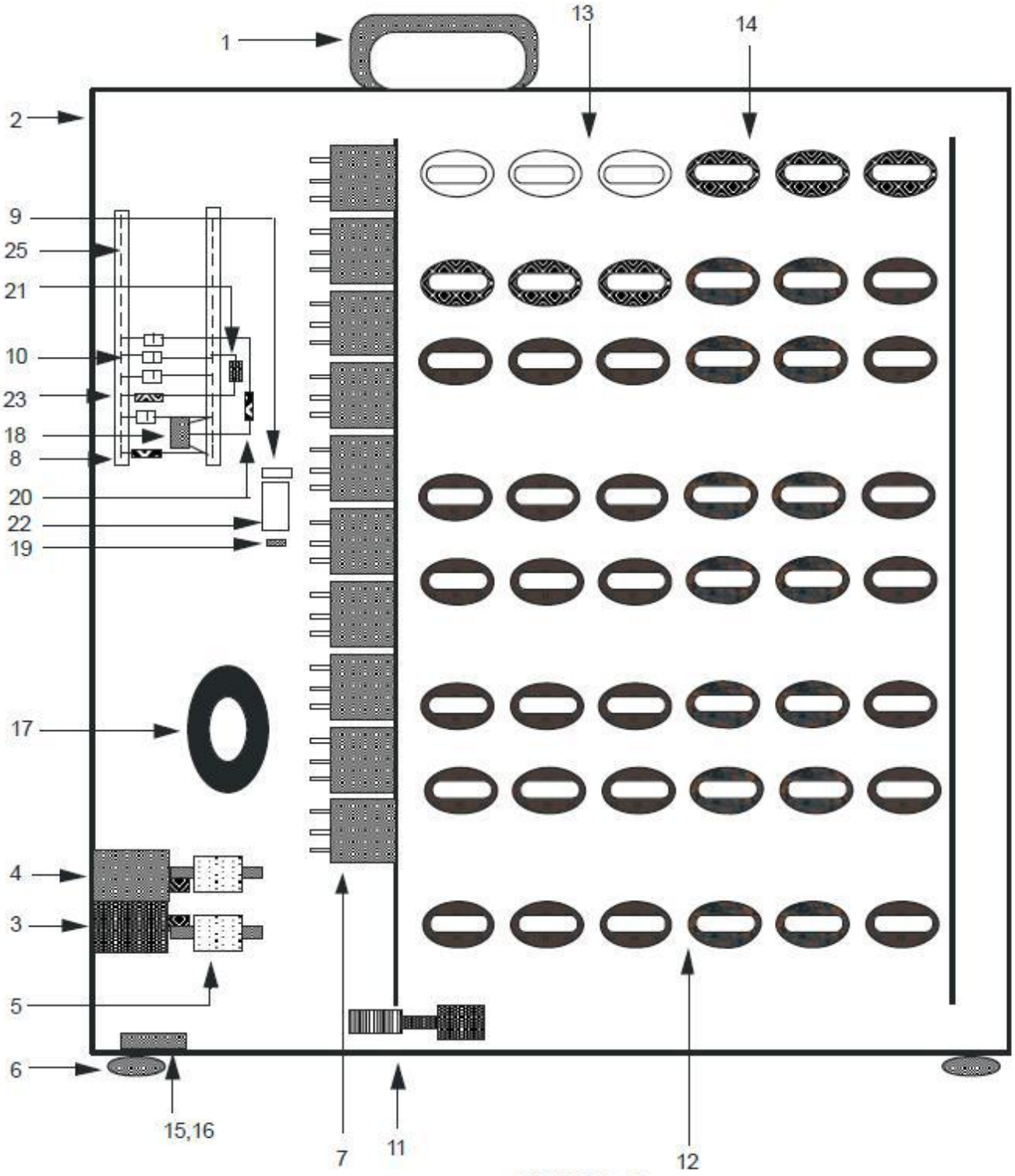


FIGURE 3 - 2

INTERIOR PARTS
FIGURE 3-2

DRAWING NUMBER	PART NUMBER	DESCRIPTION VENDOR NO.	NUMBER USED
1	HD-10	FOLDING HANDLE	1
2	BX-27	20" X 21" X 8" ALUM BOX	1
3	SB-13	SB CONNECTOR-2PIN-BLUE	1
4	SB-12	SB CONNECTOR-2PIN-YELLOW	1
5	FS-25	250A FUSE	3
6	FT-10	GLIDES	8
7	RY-35	RELAY, 120VAC 30A	10
8	RC-30	RESISTOR 100Ω 5W	1
9	CP-22	22UF, 150VDC	1
10	RD-10	DIODE 1A	4
11	SW-11	AIR FLOW SWITCH	1
12	LR-08	8.0Ω RESISTOR	39
13	LR-40	40Ω RESISTOR	3
14	LR-18	18.8Ω RESISTOR	6
15	FH-15	SNAP IN FUSE HOLDER	1
16	FS-10	FUSE, 1A GLASS	1
17	CT-25	250:5 CURRENT TRANSFORMER	1
18	SR-25	SCR 25 AMPS	1
19	ZN-10	ZENER DIODE 10V 5W	1
20	RC-56	RESISTOR 5.6KΩ 5W	1
21	ZN-12	ZENER DIODE 120V 5W	1
22	RY-20F	RELAY 24VDC, 2PDT 3A FLANGE	1
23	RC-09	RESISTOR 10KΩ .5W ADJ	1
24	ZN-24	ZENER DIODE 24V 5W	1
25	TM-13	TERMINAL STRIP	2
*	GL-20	RESISTOR GRILL	2

FAN PANEL PARTS LAYOUT

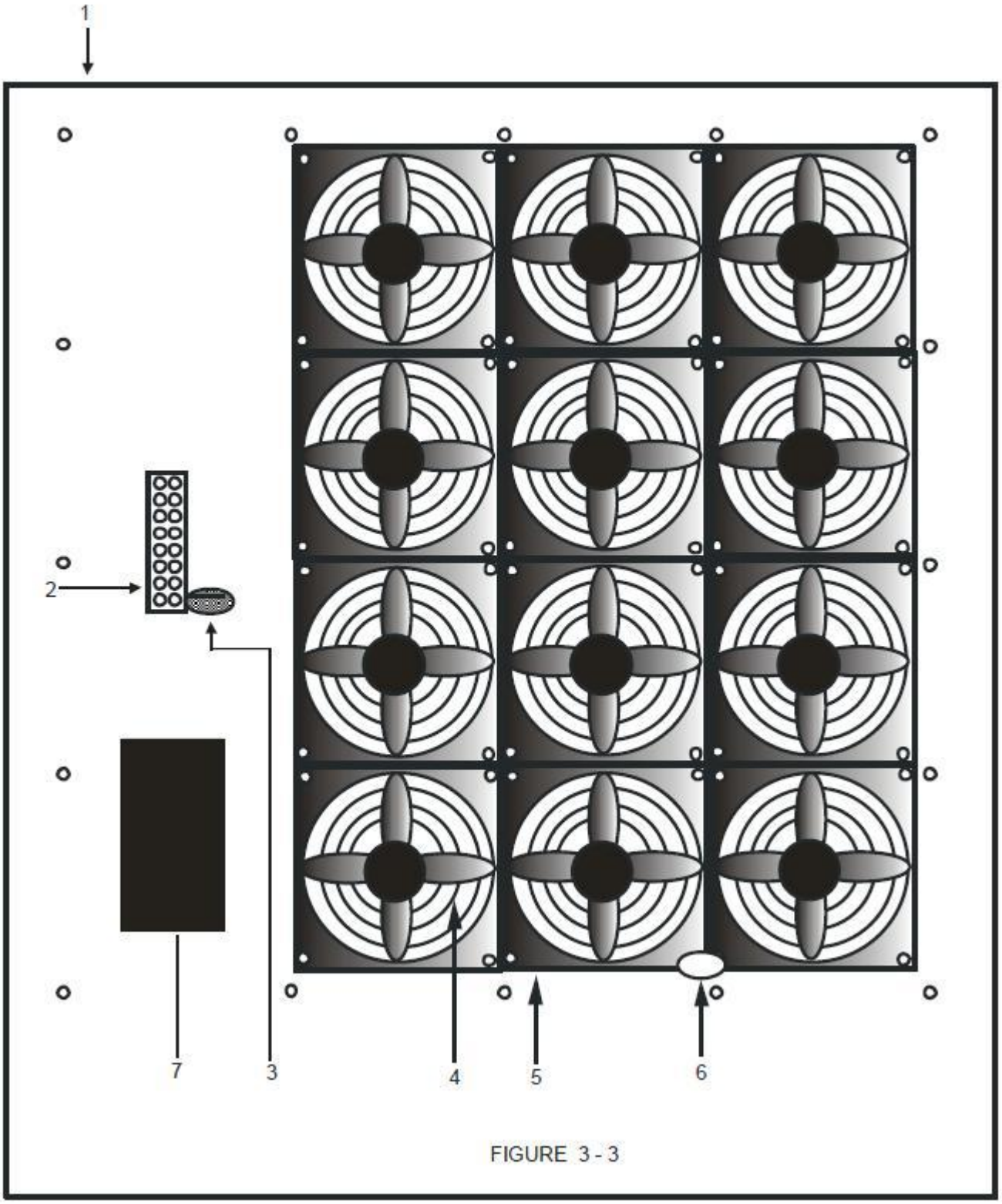


FIGURE 3 - 3

FAN PANEL PARTS
FIGURE 3-3

DRAWING NUMBER	PART NUMBER	DESCRIPTION VENDOR NO.	NUMBER USED
1	FP-57	ALUM. FAN PANEL	1
2	TM-20	8 POSITION TERMINAL STRIP V-BEAU PRODUCTS (78008)	1
3	SW-12	TILT SWITCH	1
4	GL-10	GRILL CHROME	12
5	FN-25	24 VDC FAN	12
6	TS-15	THERMAL SWITCH	1
7	PS-30	POWER SUPPLY 28-33VDC 400W	1

GENERAL SERVICE

There is no regular maintenance required on the load bank. There are no adjustments inside the load bank. It should however be checked periodically for defective fans, burned out light bulbs, and defective meters.

To remove the fan panel, remove the screws around the outer edge.

The meters can be removed and replaced from the front panel.

The fan grills should be kept free of any trash.

Do not place any objects in the fan or resistor grill.

FAN REPLACEMENT

The following are steps to take to replace a defective fan.

1. Remove the screws holding the fan panel to the load bank.
2. Remove the wires on the terminal strip coming from the load bank
3. Drill out the rivets holding the fan (four on each side).
4. Lift up the fan and unplug the wire to the fan. Connect the plug to the new fan.
5. Rivet the new fan back to the fan panel and install the fan guard.
6. Install the wires back on the terminal strip and place the fan panel back on the load bank. Make sure that the wires are on the proper terminals.

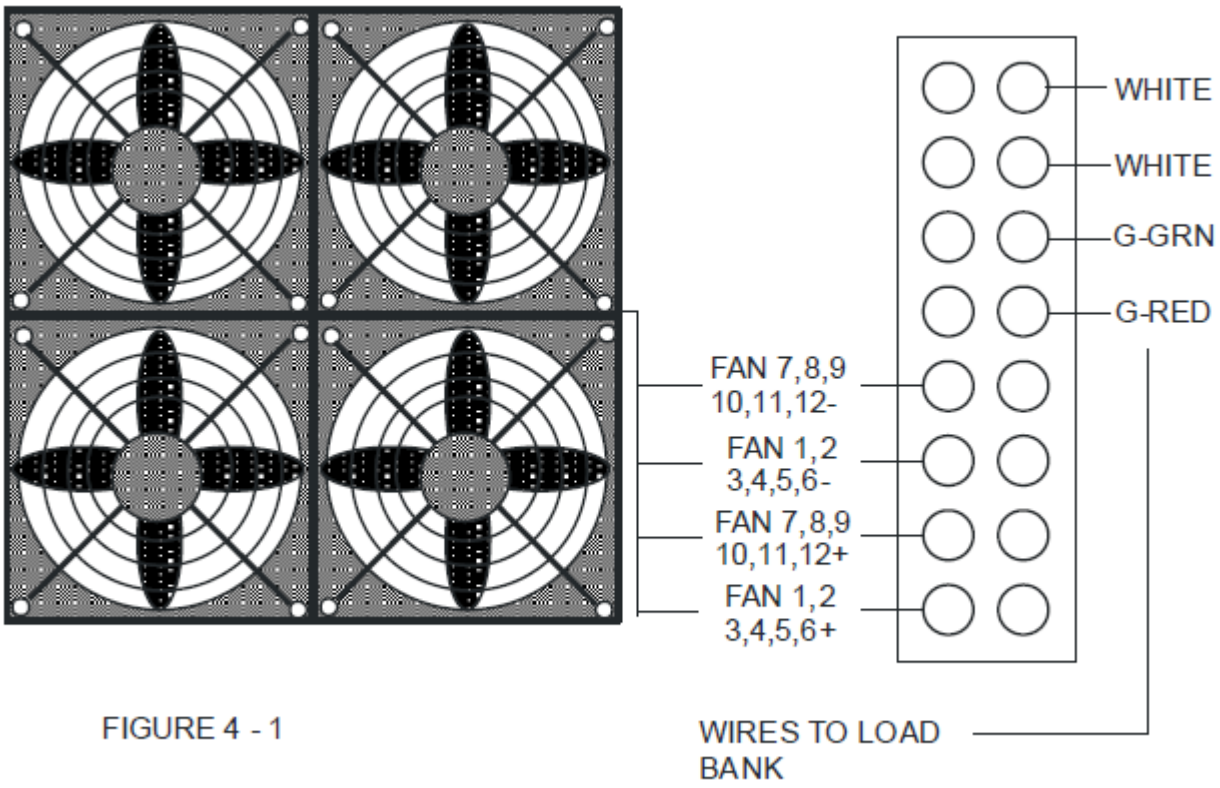


FIGURE 4 - 1

FAN PANEL WIRING

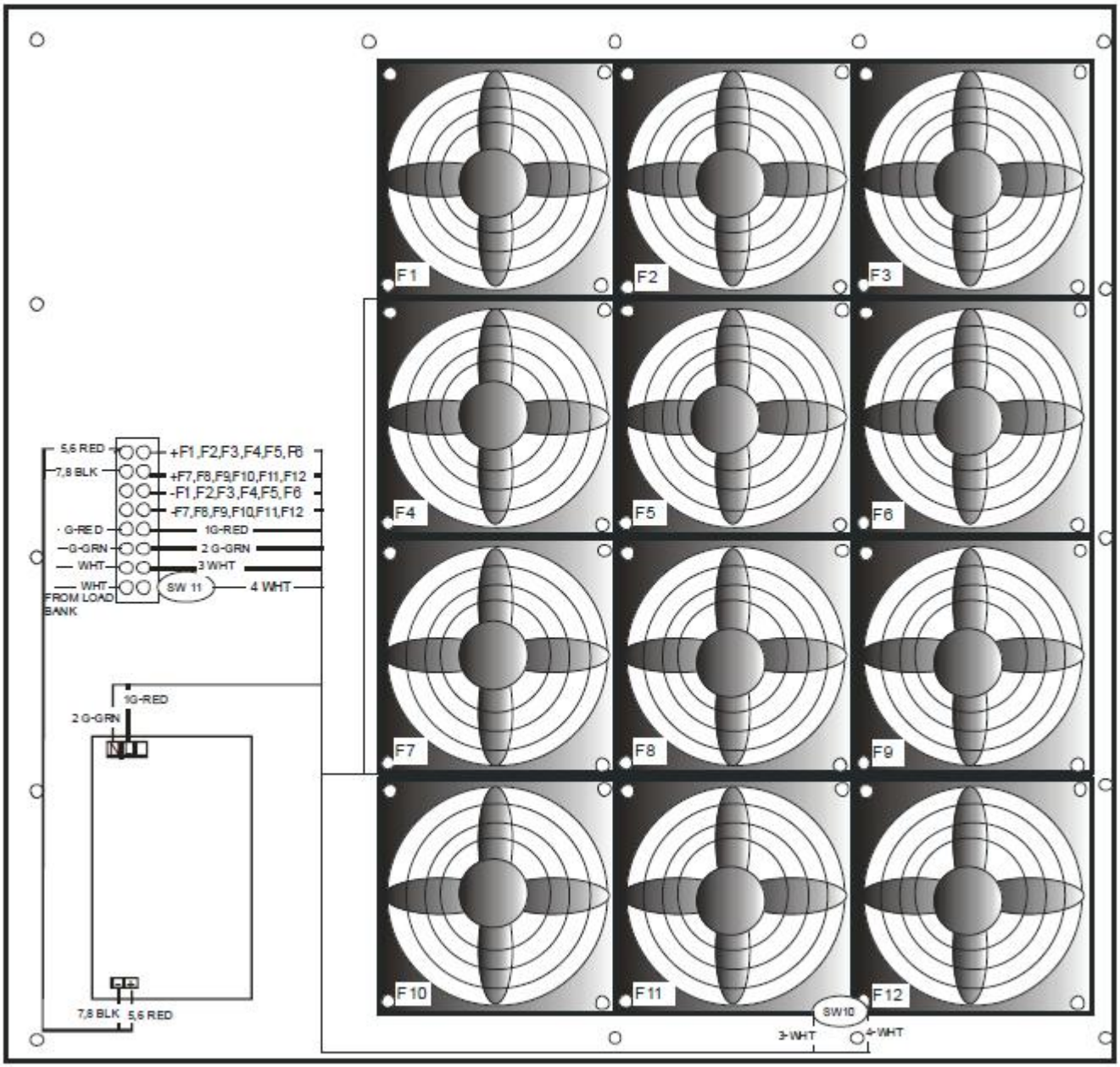


FIGURE 5 - 2

LB-60-70 INTERIOR WIRING

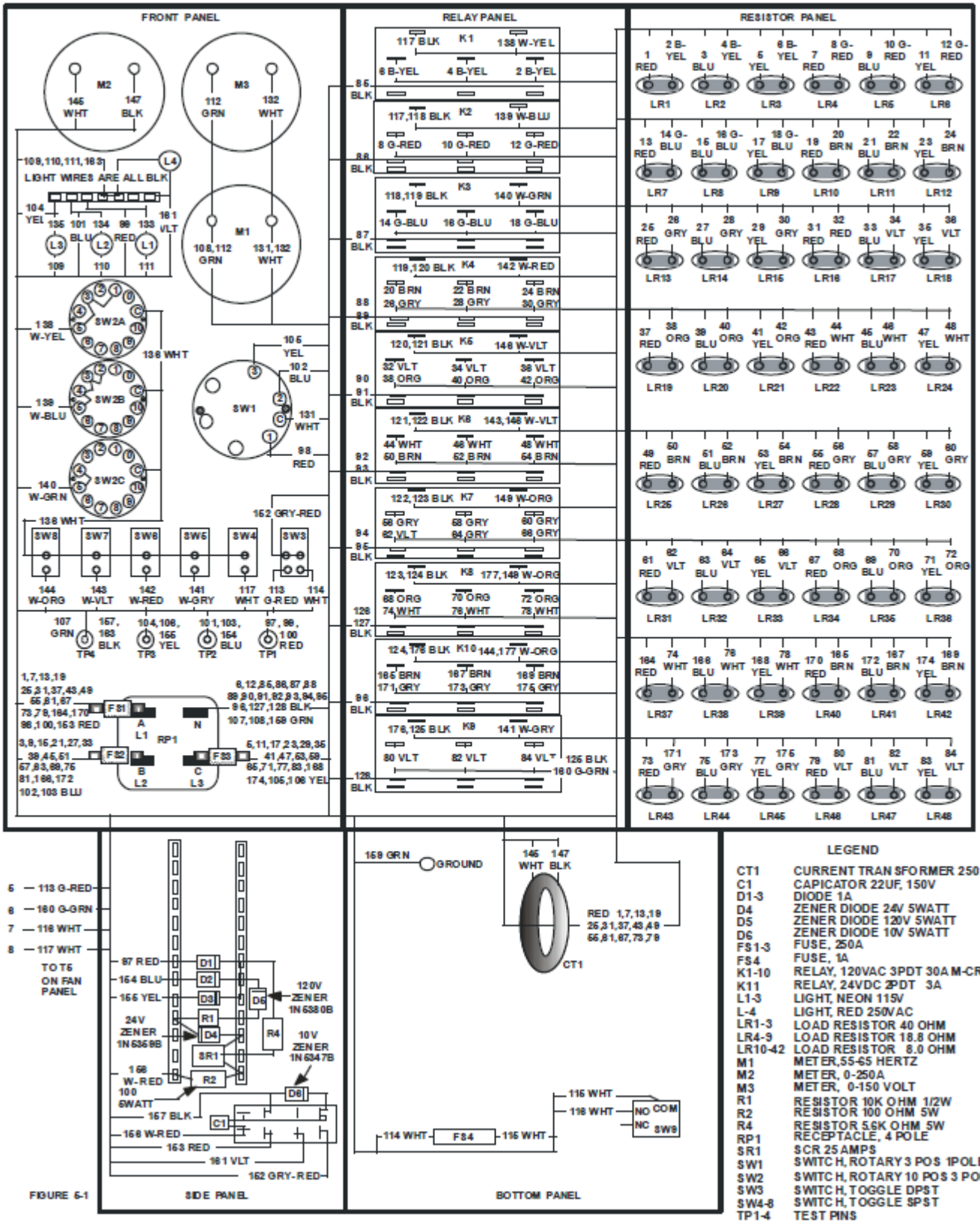
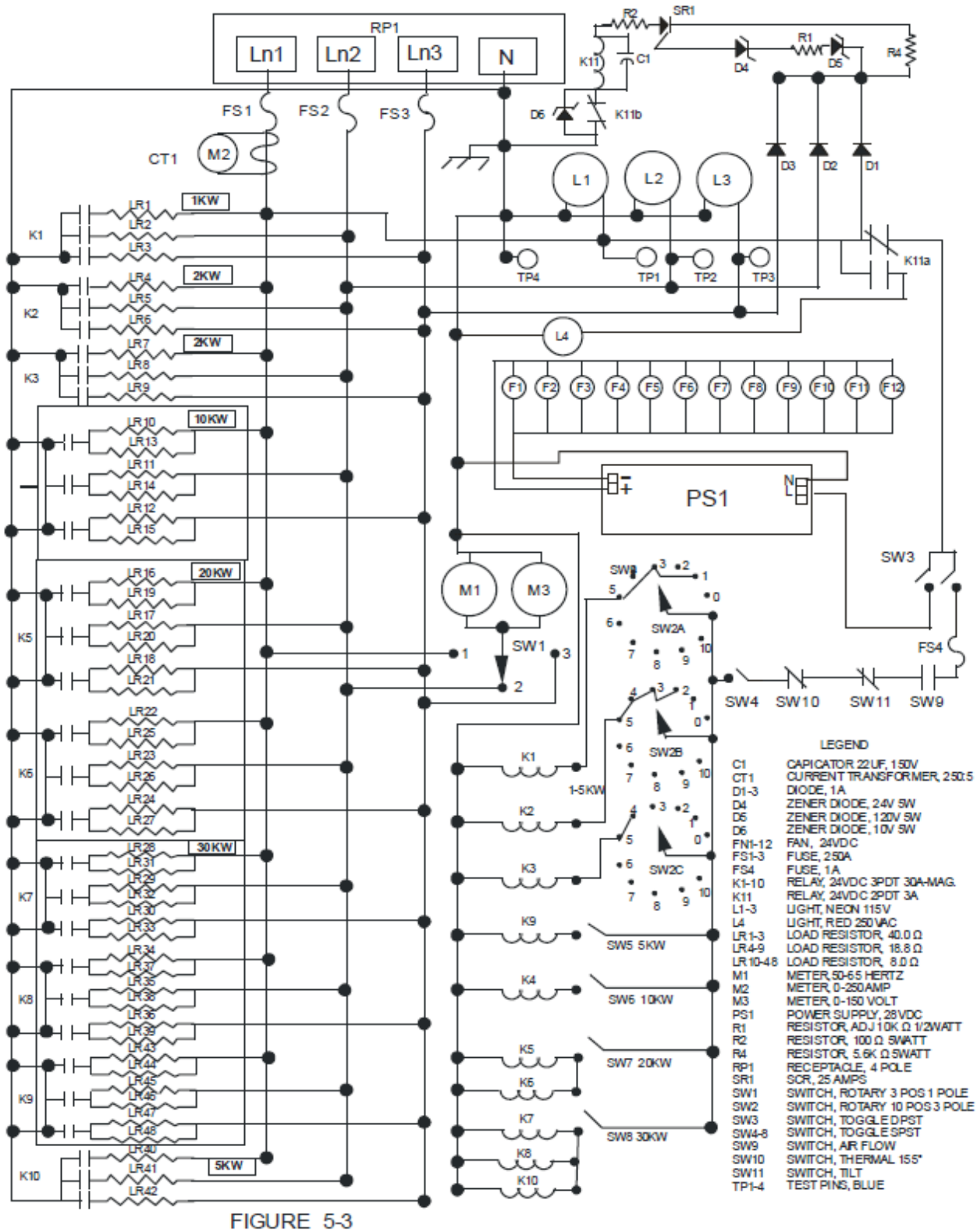


FIGURE 5-1

LEGEND

CT1	CURRENT TRANSFORMER 250:5
C1	CAPICATOR 22UF, 150V
D1-3	DIODE 1A
D4	ZENER DIODE 24V 5WATT
D5	ZENER DIODE 120V 5WATT
D6	ZENER DIODE 10V 5WATT
FS1-3	FUSE, 250A
FS4	FUSE, 1A
K1-10	RELAY, 120VAC 3PDT 30A M-CRAFT
K11	RELAY, 24VDC 2PDT 3A
L1-3	LIGHT, NEON 115V
L-4	LIGHT, RED 250VAC
LR1-3	LOAD RESISTOR 40 OHM
LR4-9	LOAD RESISTOR 18.8 OHM
LR10-42	LOAD RESISTOR 8.0 OHM
M1	METER,55-65 HERTZ
M2	METER, 0-250A
M3	METER, 0-150 VOLT
R1	RESISTOR 10K OHM 1/2W
R2	RESISTOR 100 OHM 5W
R4	RESISTOR 5.6K OHM 5W
RP1	RECEPTACLE, 4 POLE
SR1	SCR 25 AMPS
SW1	SWITCH, ROTARY 3 POS 1POLE
SW2	SWITCH, ROTARY 10 POS 3 POLE
SW3	SWITCH, TOGGLE DPST
SW4-8	SWITCH, TOGGLE SPST
TP1-4	TEST PINS

LB-60-70 SCHEMATIC



LEGEND

C1	CAPICATOR 22 UF, 150V
CT1	CURRENT TRANSFORMER, 250:5
D1-3	DIODE, 1A
D4	ZENER DIODE, 24V 5W
D5	ZENER DIODE, 120V 5W
D6	ZENER DIODE, 10V 5W
FN1-12	FAN, 24VDC
FS1-3	FUSE, 250A
FS4	FUSE, 1A
K1-10	RELAY, 24VDC 3PDT 30A-MAG.
K11	RELAY, 24VDC 2PDT 3A
L1-3	LIGHT, NEON 115V
L4	LIGHT, RED 250 VAC
LR1-3	LOAD RESISTOR, 40.0 Ω
LR4-9	LOAD RESISTOR, 18.8 Ω
LR10-48	LOAD RESISTOR, 8.0 Ω
M1	METER, 50-65 HERTZ
M2	METER, 0-250 AMP
M3	METER, 0-150 VOLT
PS1	POWER SUPPLY, 28 VDC
R1	RESISTOR, ADJ 10K Ω 1/2WATT
R2	RESISTOR, 100 Ω 5WATT
R4	RESISTOR, 5.6K Ω 5WATT
RP1	RECEPTACLE, 4 POLE
SR1	SCR, 25 AMPS
SW1	SWITCH, ROTARY 3 POS 1 POLE
SW2	SWITCH, ROTARY 10 POS 3 POLE
SW3	SWITCH, TOGGLE DPST
SW4-8	SWITCH, TOGGLE SPST
SW9	SWITCH, AIR FLOW
SW10	SWITCH, THERMAL 155°
SW11	SWITCH, TILT
TP1-4	TEST PINS, BLUE

FIGURE 5-3

Contact EEPS

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