



**LB-60-30
LOAD BANK**

**MANUAL CONTAINS
OPERATING INSTRUCTIONS
PARTS LIST
WIRING DIAGRAMS
SERVICE INSTRUCTIONS**

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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-60-30 LOAD BANK

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DESCRIPTION

1-1 PURPOSE OF LOAD BANK: The LB-60-30 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-60-30 is rated at 30 KW full loads with all six load steps turned on. The load steps are 1KW, 2KW, 2KW, 5KW, 10KW and 10KW. This gives a 0-30KW 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.



FIGURE 1-1

LENGTH 20 IN.
WIDTH 8 IN.
HEIGHT 11 IN.
WEIGH 33 LBS.

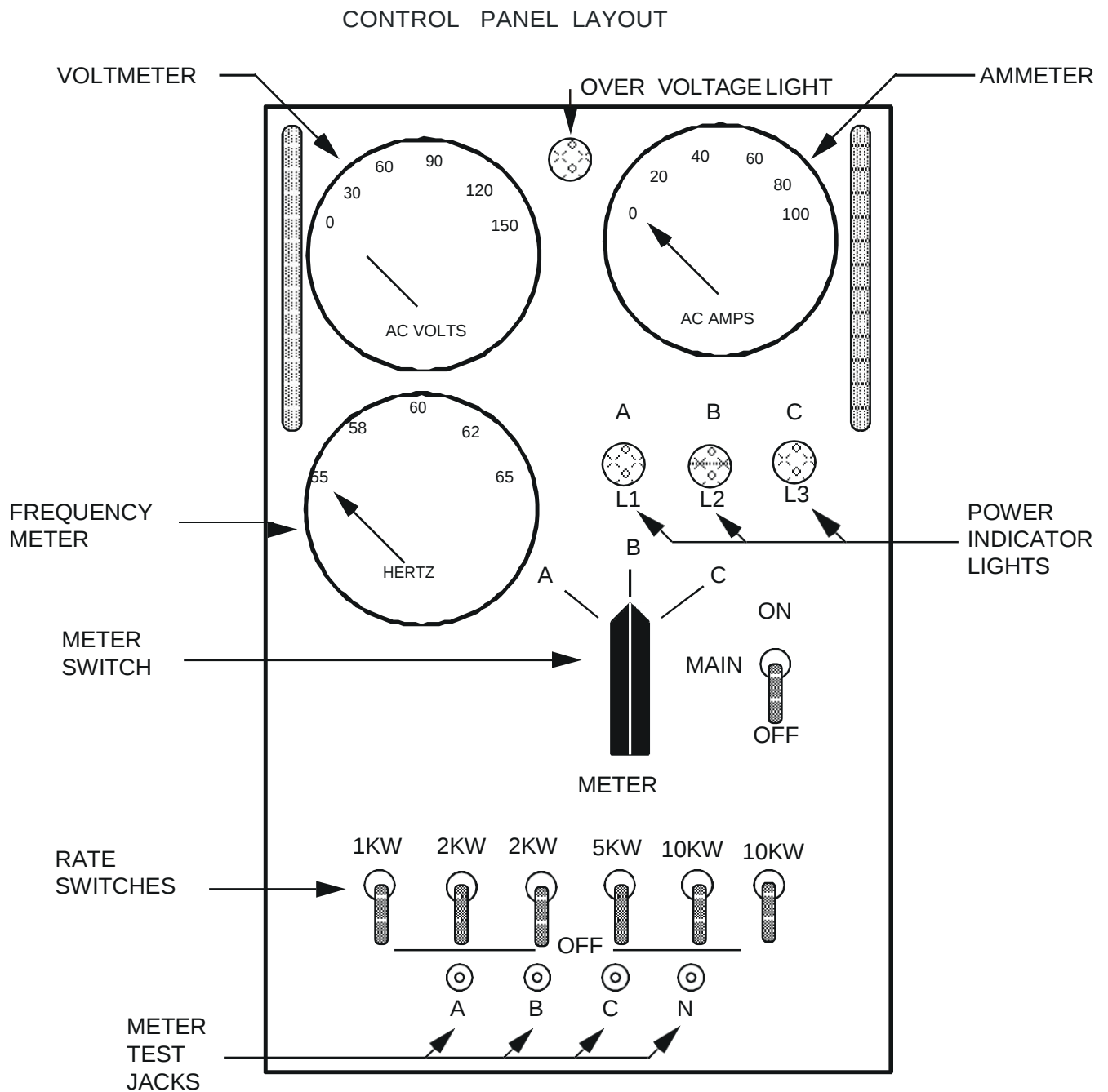


FIGURE 1 - 2

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

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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 100 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. 1 KW balanced load
2. 2 KW balanced load
3. 2 KW balanced load
4. 5 KW balanced load
5. 10 KW balanced load
6. 10 KW balanced load

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 120 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.

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.

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 .33KW - 2.7A
- B. Step 2 is .66KW - 5.5A
- C. Step 3 is .66KW - 5.5A
- D. Step 4 is 1.66KW - 13.8A
- E. Step 5 is 3.33KW - 27.7A
- F. Step 6 is 3.33KW - 27.7A

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.

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.

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 .66KW - 5.5A
- B. Step 2 is 1.33KW - 11.1A
- C. Step 3 is 1.33KW - 11.1A
- D. Step 4 is 3.33KW - 27.7A
- E. Step 5 is 6.66KW - 55.5A
- F. Step 6 is 6.66KW - 55.5A

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.

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.

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 1KW - 8.3A
- B. Step 2 is 2KW - 16.6A
- C. Step 3 is 2KW - 16.6A
- D. Step 4 is 5KW - 41.6A
- E. Step 5 is 10KW - 83.3A
- F. Step 6 is 10KW - 83.3A

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

CONTROL PANEL PARTS

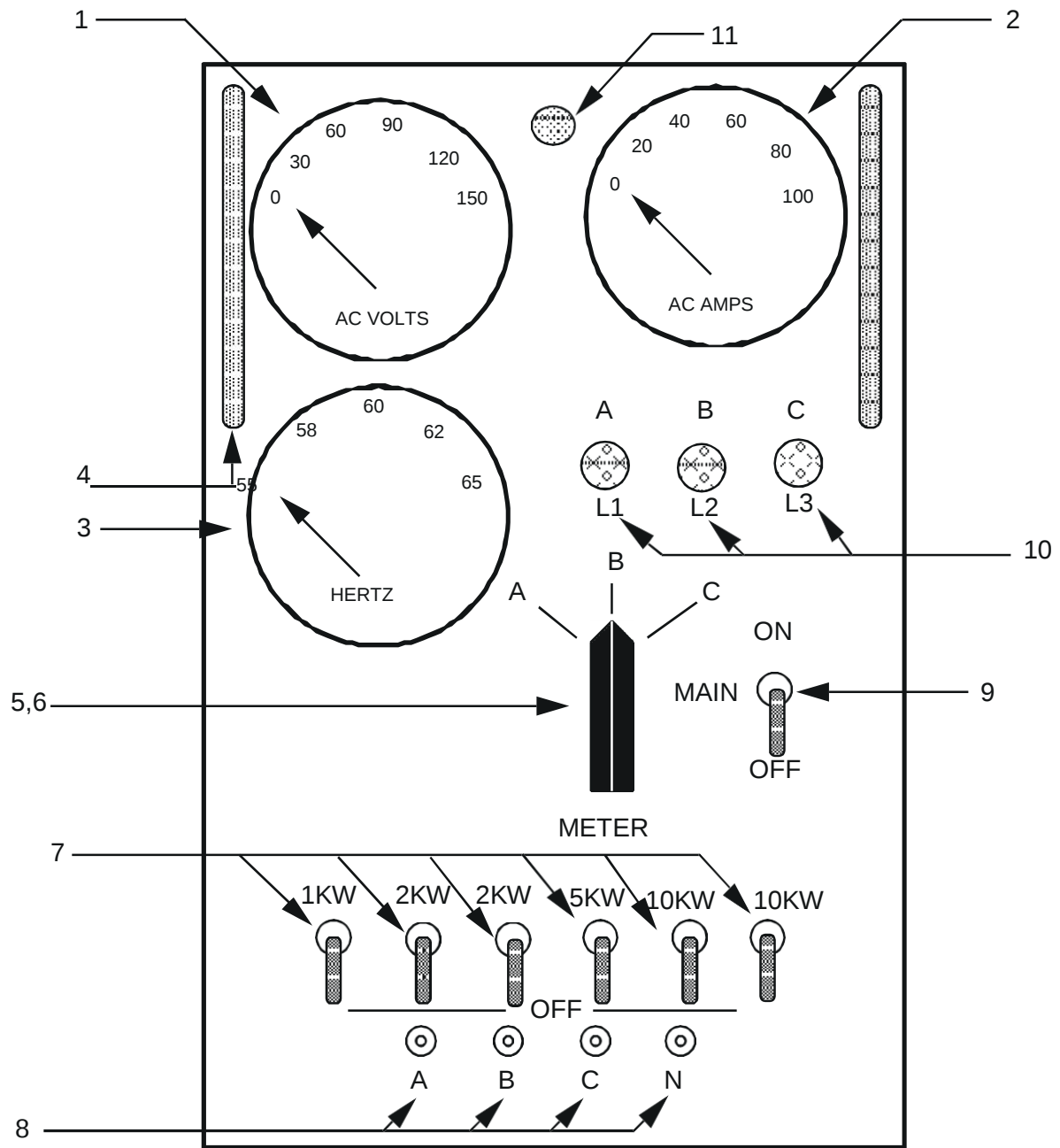


FIGURE 3 - 1

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-64	0 - 100 A AMMETER	1
3	MR-60	55-65 HERTZ FREQUENCY METER	1
4	HD-25	HANDLE	2
5	KN-10	POINTER KNOB	1
6	SW-13	ROTARY SWITCH 3POSITION 1 POLE	1
7	SW-21	TOGGLE SWITCH SPST	6
8	TP-10	TEST PINS	4
9	SW-22	TOGGLE SWITCH DPST	1
10	LT-10	115V AMBER LIGHT	3
11	LT-15	115V RED LIGHT	1

INTERIOR PARTS LAYOUT

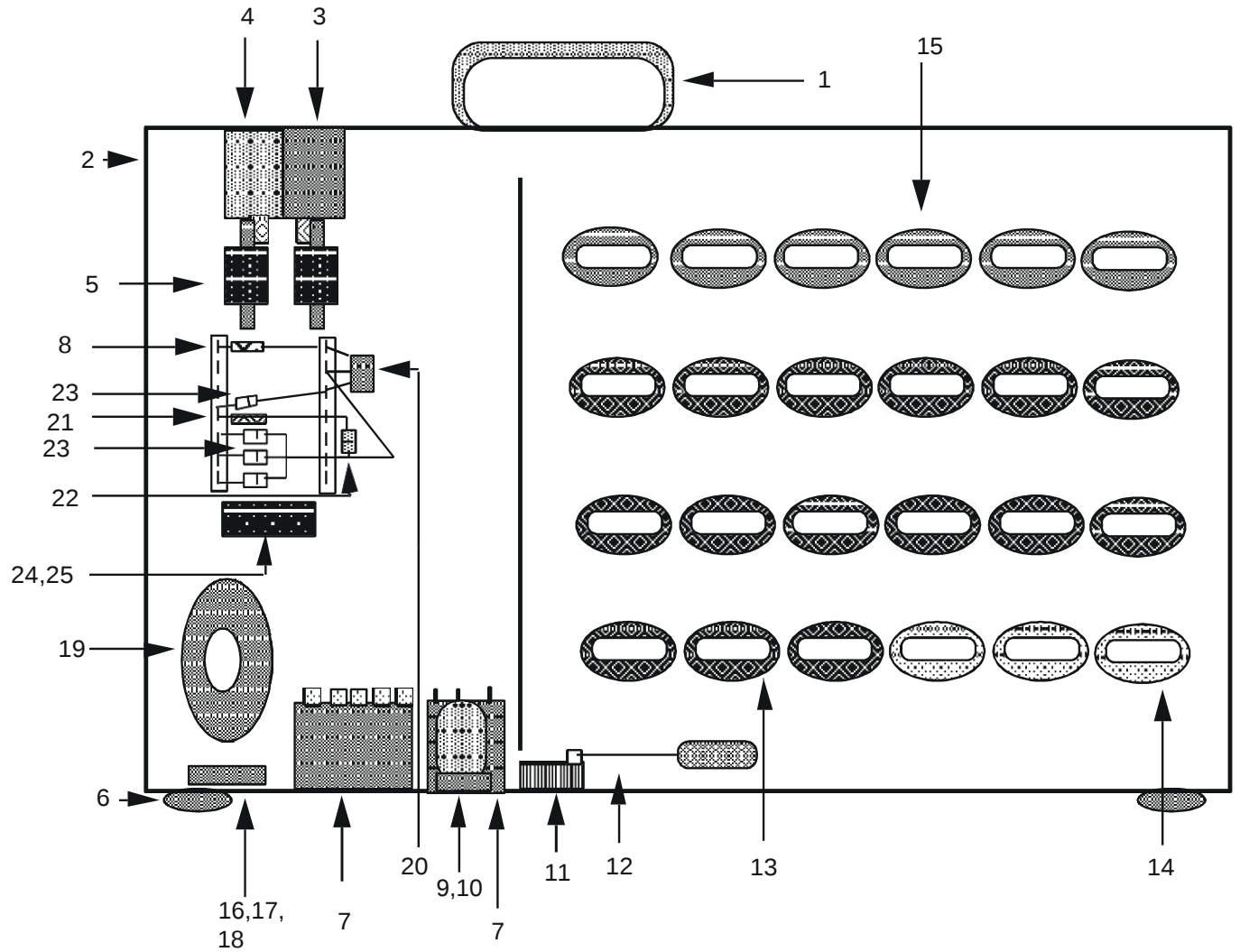


FIGURE 3 - 2

INTERIOR PARTS
FIGURE 3-2

DRAWING NUMBER	PART NUMBER	DESCRIPTION VENDOR NO.	NUMBER USED
1	HD-10	FOLDING HANDLES	1
2	BX-40	20" X 11" X 8" ALUM BOX	1
3	SB-13	SB CONNECTOR-2PIN-BLUE	1
4	SB-12	SB CONNECTOR-2PIN-YELLOW	1
5	FS-17	125A FUSE	3
6	FT-10	GLIDES	4
7	RY-35	RELAY, 120VAC 30A	6
8	RC-25	560Ω RESISTOR 5W	1
9	RC-56	5.6KΩ RESISTOR 5W	1
10	RY-20	RELAY 2PDT 24VDC 3A	1
11	SW-11	AIR FLOW SWITCH	1
12	RS-20	RELAY SOCKET 2P	1
13	LR-08	8.0Ω RESISTOR	15
14	LR-40	40Ω RESISTOR	3
15	LR-18	18.8Ω RESISTOR	6
16	FH-15	SNAP IN FUSE HOLDER	2
17	FS-10	FUSES, 1A GLASS	1
18	FS-12	FUSE, 5A, GLASS	1
19	CT-10	100:5 CURRENT TRANSFORMER	1
20	SR-25	SCR 12 AMPS	1
21	RC-09	RESISTOR 10KΩ 1/2 WATT-ADJ	1
22	RD-12	ZENER DIODE 120V 5W	1
23	RD-10	DIODE 1A	4
*	GL-24	RESISTOR GRILL	1

FAN PANEL PARTS LAYOUT

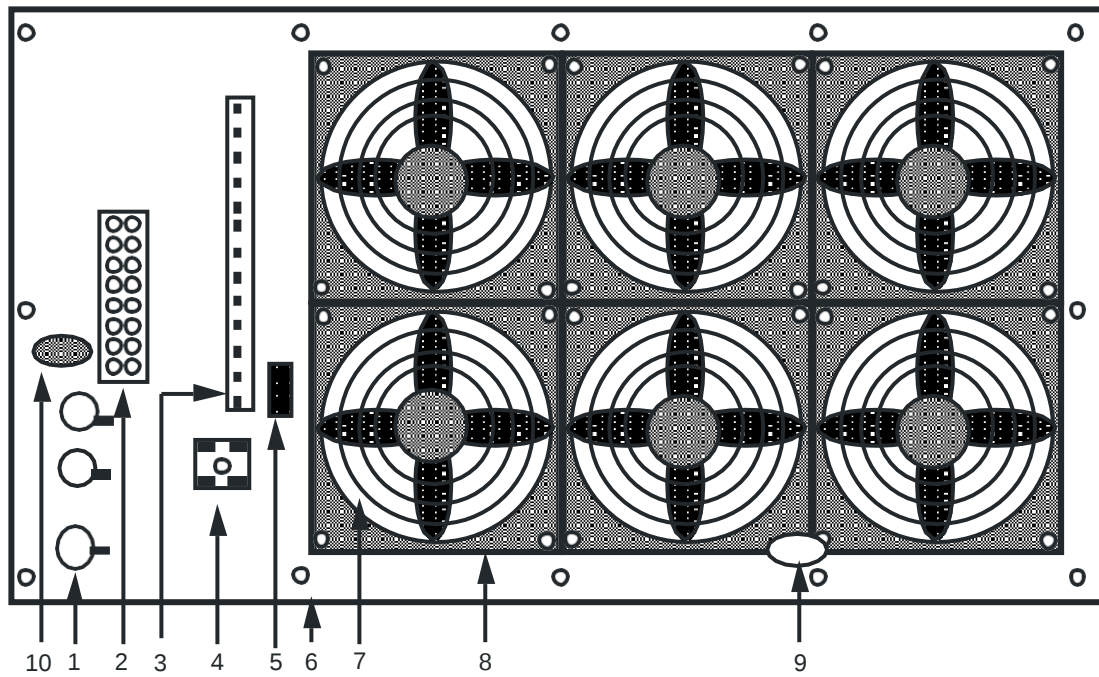


FIGURE 3 - 3

FAN PANEL PARTS
FIGURE 3-3

DRAWING NUMBER	PART NUMBER	DESCRIPTION VENDOR NO.	NUMBER USED
1	RC-05	5Ω RESISTOR 25W	3
2	TM-20	8 POSITION TERMINAL STRIP V-BEAU PRODUCTS (78008)	1
3	TM-10	TERMINAL STRIP 11 POS	1
4	RD-06	RECTIFIER 6A	1
5	CP-35	CAPICATOR, 350UF, 160VDC	1
6	FP-28	ALUM. FAN PANEL	1
7	GL-10	FAN GRILL CHROME V-MERRILL (B-22662)	6
8	FN-25	24VDC FAN V-EBM (W2G110-AK43-31)	6
9	TS-15	THERMAL SWITCH V-GEMLINE (L-145)	1
10	SW-12	TILT SWITCH	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 four 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. Plug the new fan into the wire and put the fan back on the fan panel.
5. Rivet the new fan back to the fan panel.
6. Place the fan panel back on the load bank. Make sure that the wires are on the proper terminals.

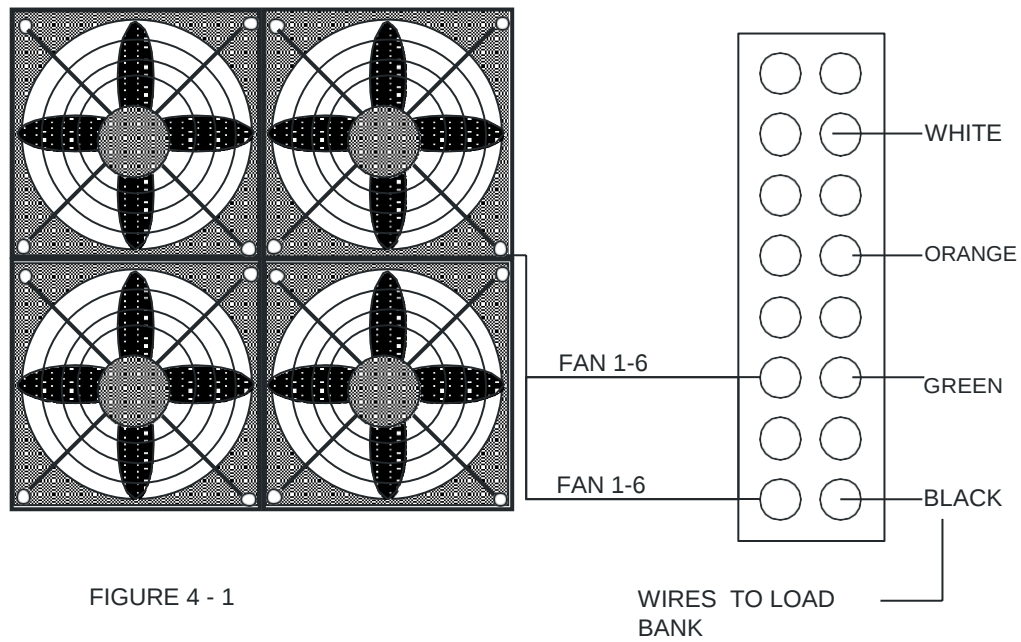


FIGURE 4 - 1

FAN PANEL WIRING

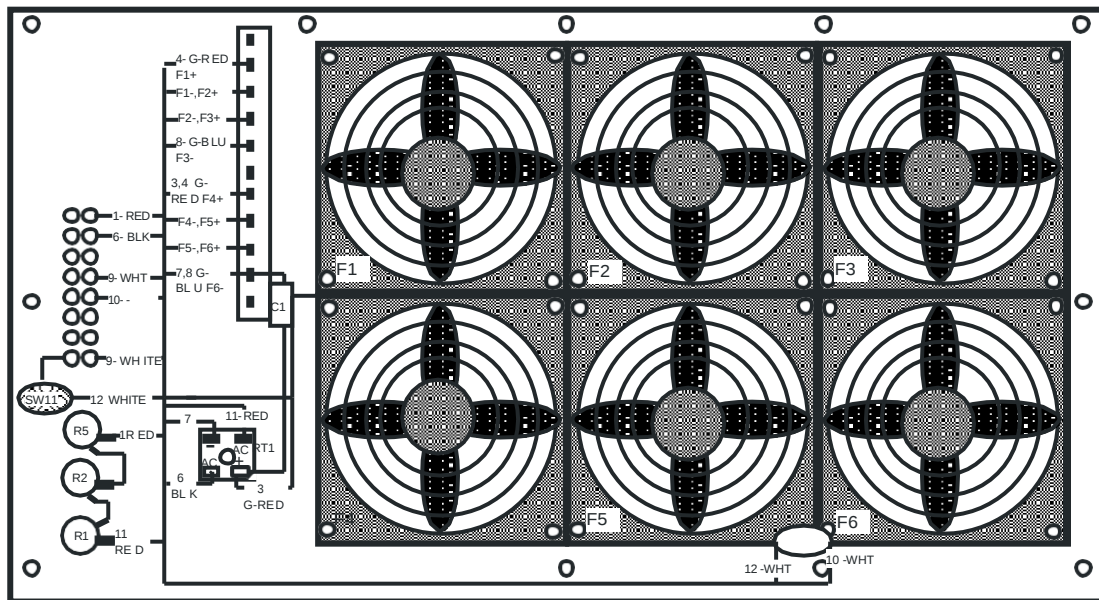
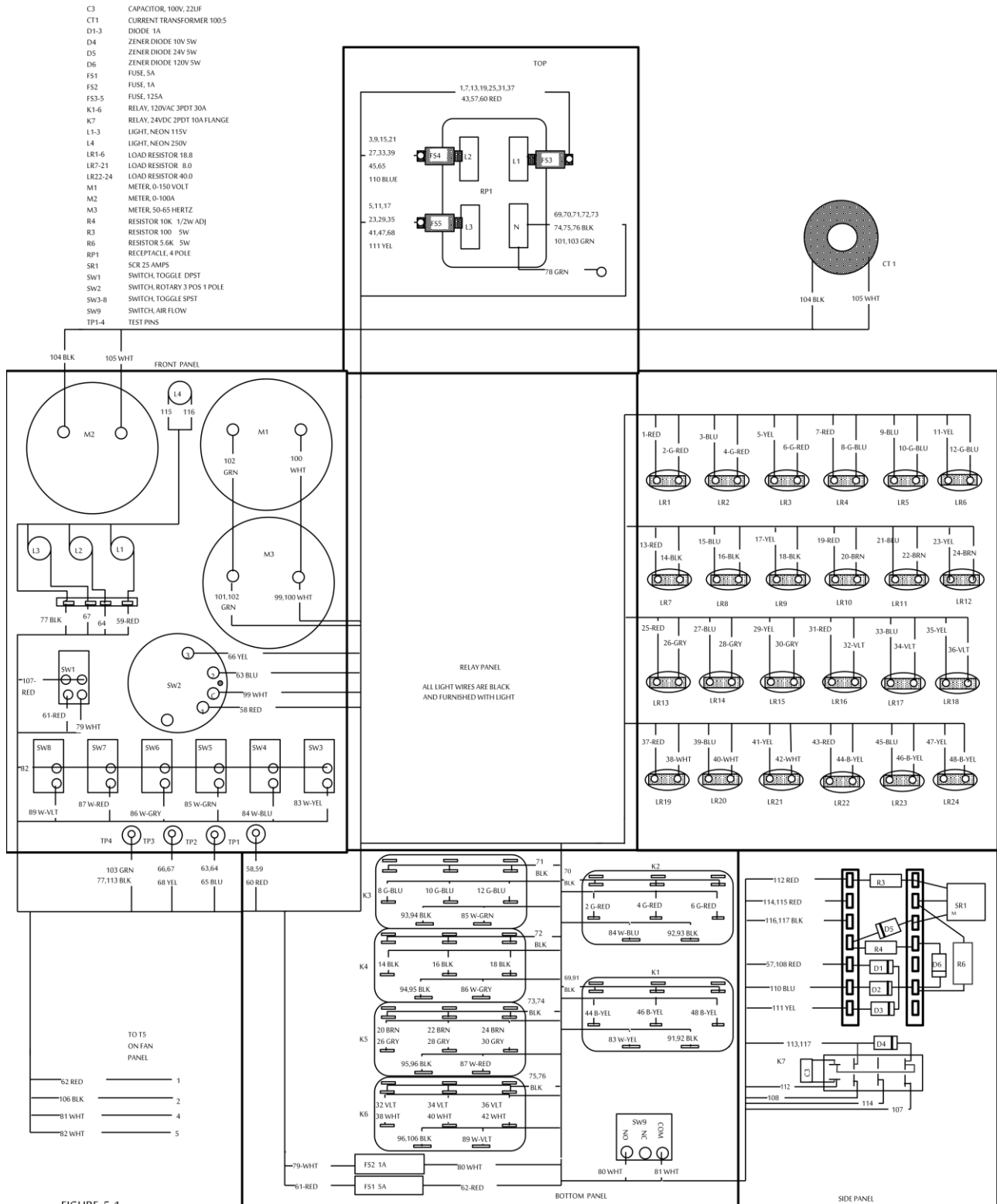


FIGURE 5 - 2

INTERIOR WIRING

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LB-60-30 Schematic

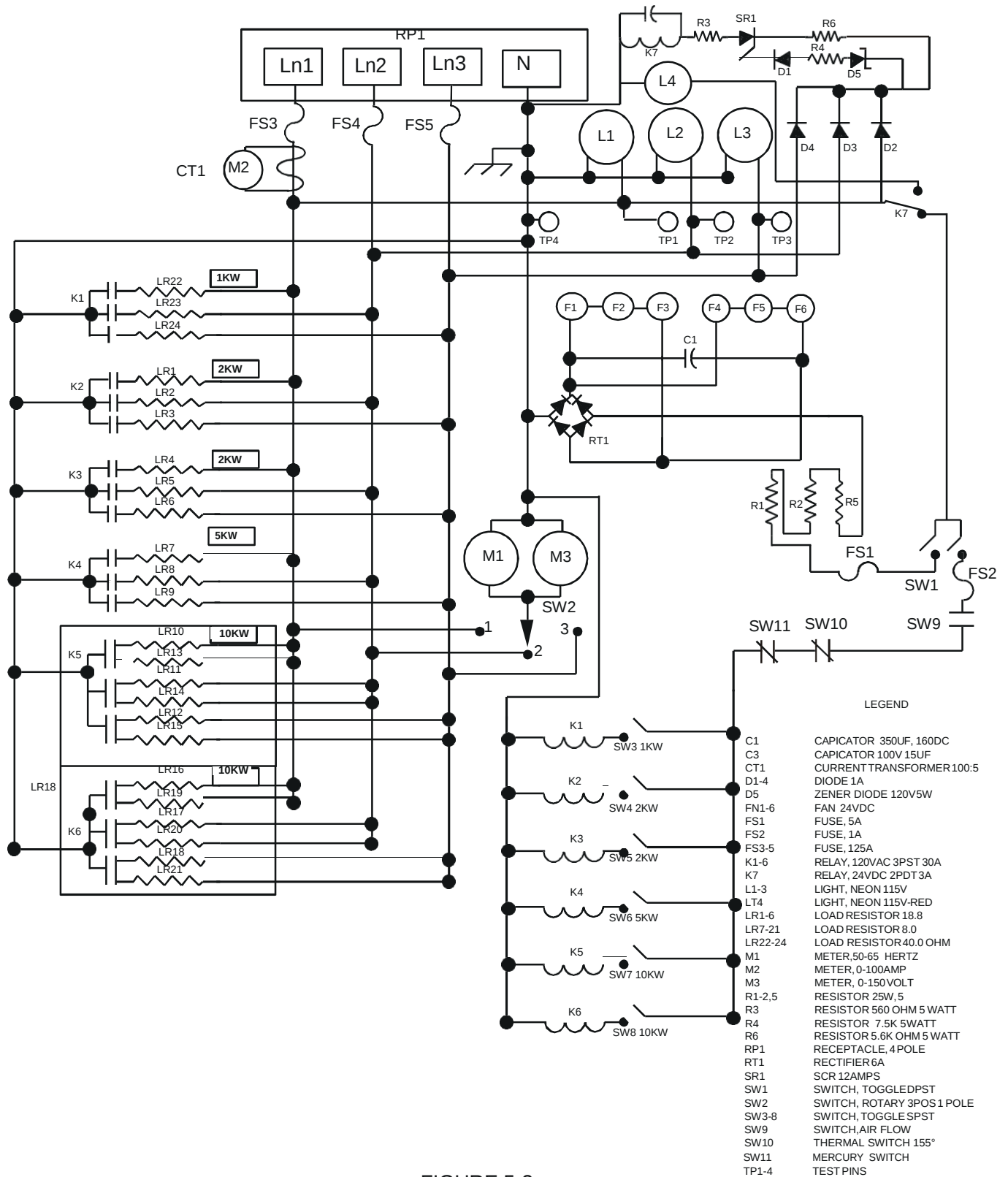


FIGURE 5-3