

**L- 66  
LOAD BANK**

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

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This load bank is manufactured and protected under U. S. patent number  
4,445,047

# CAUTION

THIS LOAD BANK IS DESIGNED FOR THE TESTING AND SERVICING 120/208V 60HZ POWER UNITS. THESE UNITS 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 L-66 LOAD BANK

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## DESCRIPTION

1-1 PURPOSE OF LOAD BANK: The L-66 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 L-66 is rated at 60 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 20KW plus a rotary rate switch with loads of 1-5KW. This gives a 0-60KW 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.

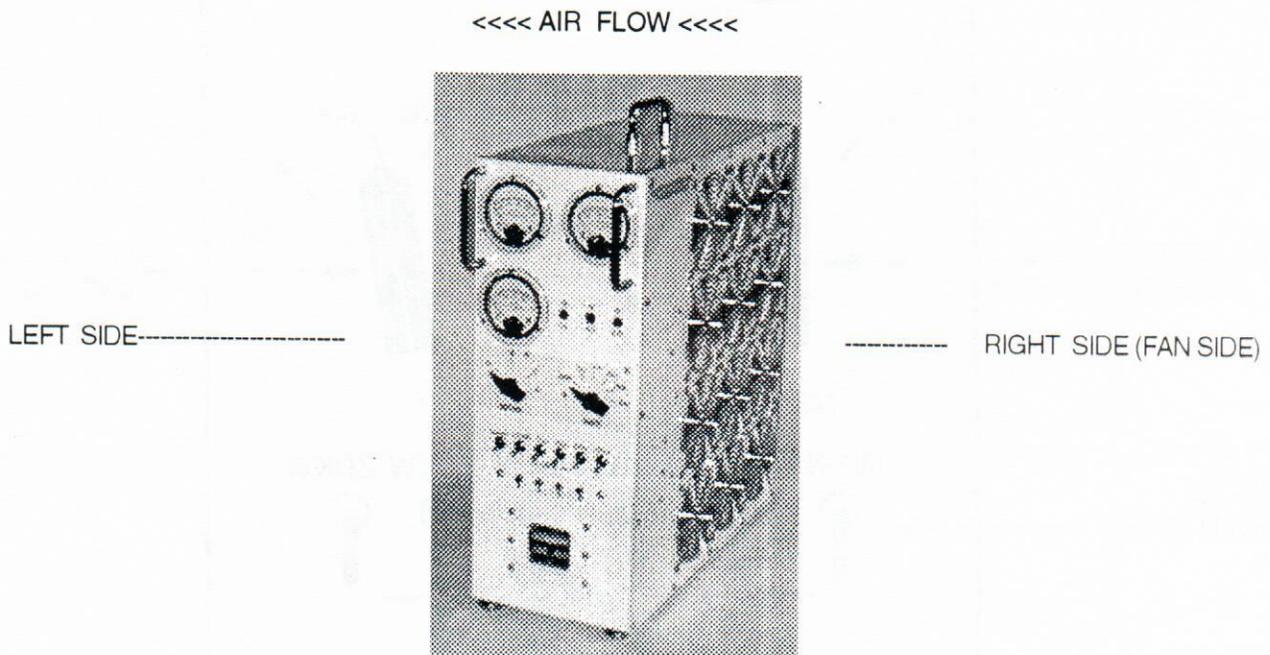


FIGURE 1-1

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

# CONTROL PANEL LAYOUT

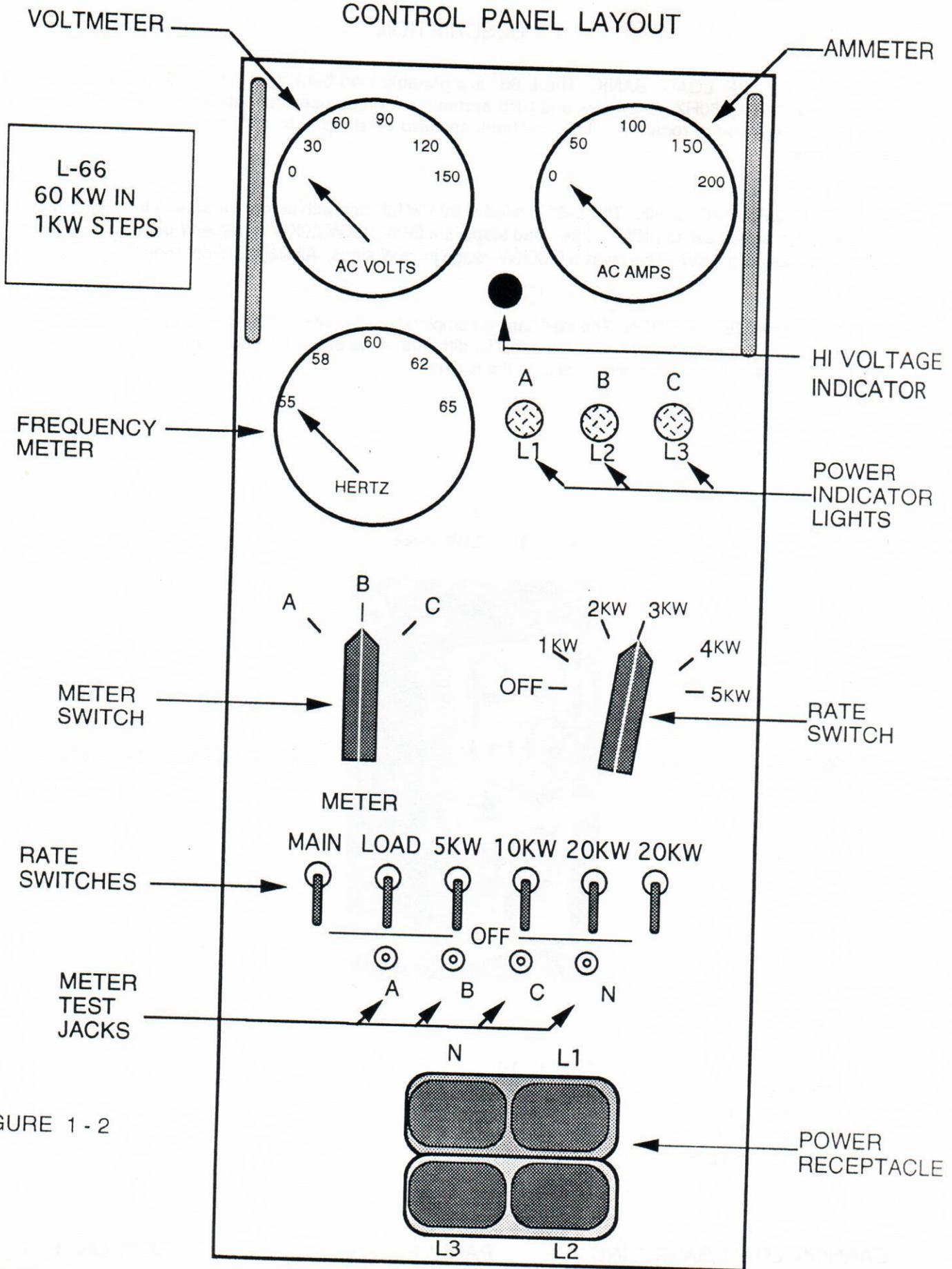


FIGURE 1 - 2

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. 20 KW balanced load
5. 1-5KW 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.

HI VOLTAGE INDICATOR - This lights when the voltage is too high for the load bank to operate.

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 (24KW max)

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, 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. Next turn on the load switch. Add the load desired with the rate switch.

- A. Step 1 is 1.67KW - 13.9A
- B. Step 2 is 3.33KW - 27.8A
- C. Step 3 is 6.67KW - 55.6A
- D. Step 4 is 6.67KW - 55.6A
- E. Rotary rate switch 0-1.67KW- 0-13.9A

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 (4φkW max)

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, turn off the power being tested, and correct the voltage problem before testing again with 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. Next turn on load switch. Add the load desired with the rate switch.

- A. Step 1 is 3.33KW - 27.7A
- B. Step 2 is 6.66KW - 55.5A
- C. Step 3 is 13.33KW - 111.1A
- D. Step 4 is 13.33KW - 111.1A
- E. Rotary rate switch 0-3.33KW 0-27.7A

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 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, turn off the power being tested and correct the voltage problem before testing with 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. Next turn on the load switch. Add the load desired with the rate switch.

- A. Step 1 is 5 KW - 41.6A
- B. Step 2 is 10KW - 83.3A
- C. Step 3 is 20KW - 166.7A
- D. Step 4 is 20KW - 166.7A
- E. Rotary rate switch 0-5KW 0-41.6A

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 Cannon Load Banks 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, Cannon Load Banks 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.

CANNON LOAD BANKS, INC.  
502 PARK STREET  
PALMETTO, GA. 30268  
PHONE 770 - 463 - 0504

# CONTROL PANEL PARTS

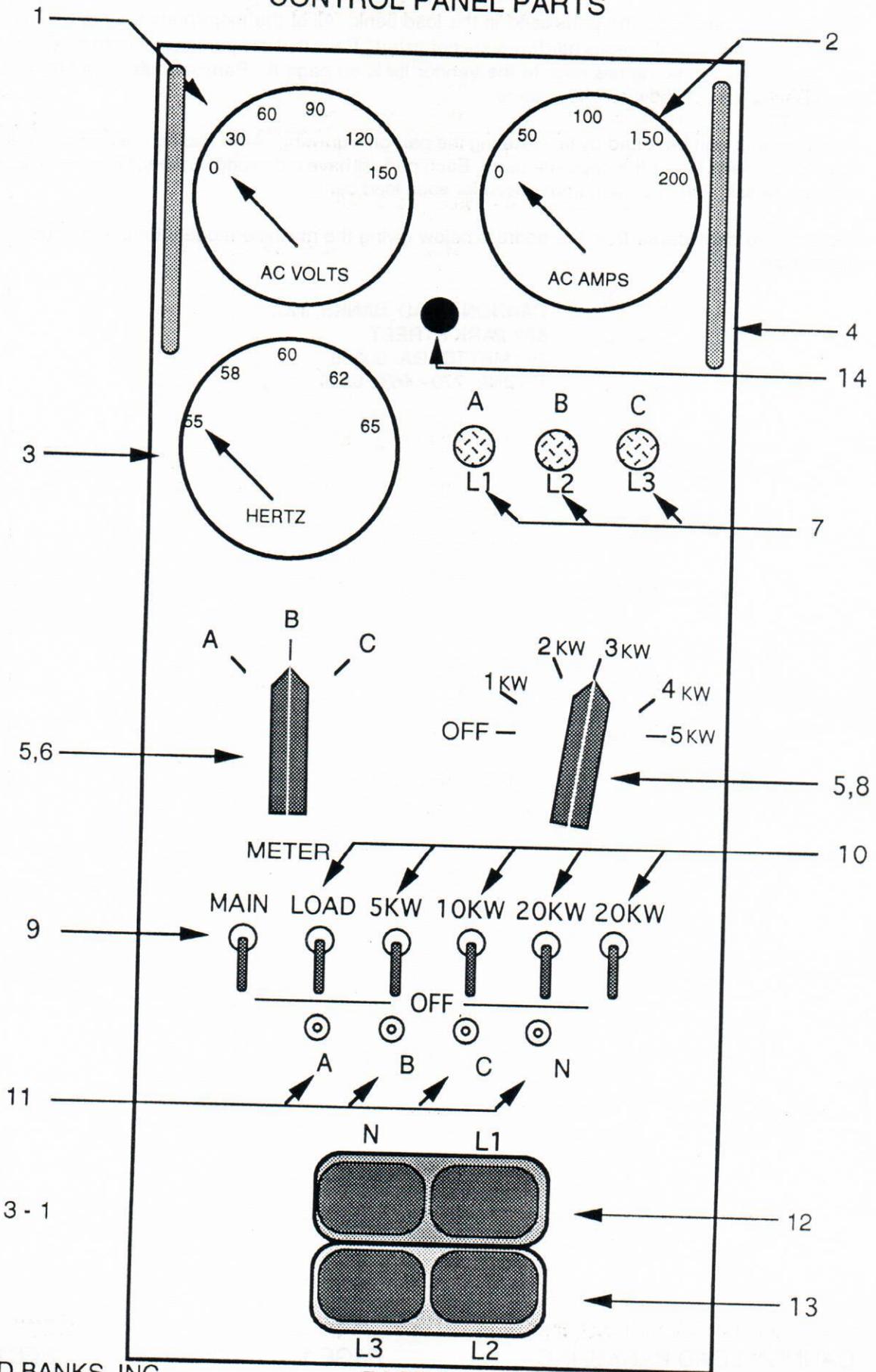


FIGURE 3 - 1

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-66	0 - 200A 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 3POSITION 1 POLE	1
7	LT-15	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--01	250VAC RED LIGHT	1

# INTERIOR PARTS LAYOUT

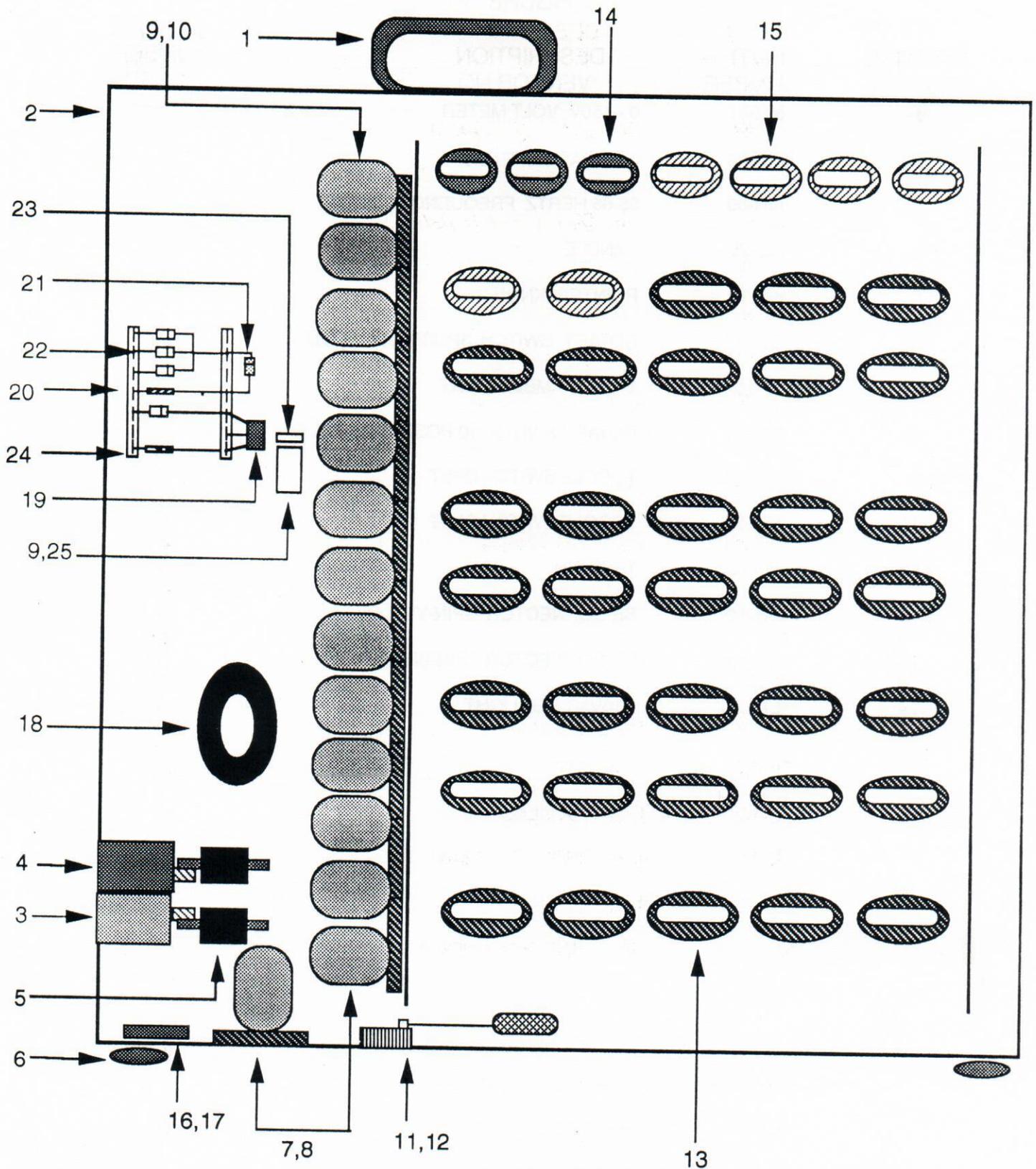


FIGURE 3 - 2

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-11	SB CONNECTOR-2PIN-BLUE	1
4	SB-12	SB CONNECTOR-2PIN-YELLOW	1
5	FS-16	150A FUSE	3
6	FT-10	GLIDES	8
7	RS-15	RELAY SOCKET, 15A	13
8	RY-16	RELAY, 120VAC, 15A	13
9	RS-20	RELAY SOCKET 2P	2
10	RY-23	RELAY, 120VAC, 4PDT,5A	1
11	SW-11	AIR FLOW SWITCH	1
12	SV-09	AIR VANE	1
13	RM-05	7.7Ω RESISTOR	33
14	RM-01	38.5Ω RESISTOR	3
15	RM-02	18.8Ω RESISTOR	6
16	FH-15	SNAP IN FUSE HOLDER	1
17	FS-10	FUSE, 1A GLASS	1
18	CT-20	200:5 CURRENT TRANSFORMER	1
19	SR-25	SCR 25 AMPS	1
20	RC-01	RESISTOR 560K 1/2 WATT	2
21	RD-01	ZENER DIODE 120V 5W	1
22	RD-20	DIODE 1A	4
23	CP-01	15UF, 5W,250VDC	1
24	RC-01	RESISTOR 3KΩ 5W	1
25	RY-20	RELAY 24VDC, 2PDT 3A	1
*	GL-20	RESISTOR GRILL	2

# FAN PANEL PARTS LAYOUT

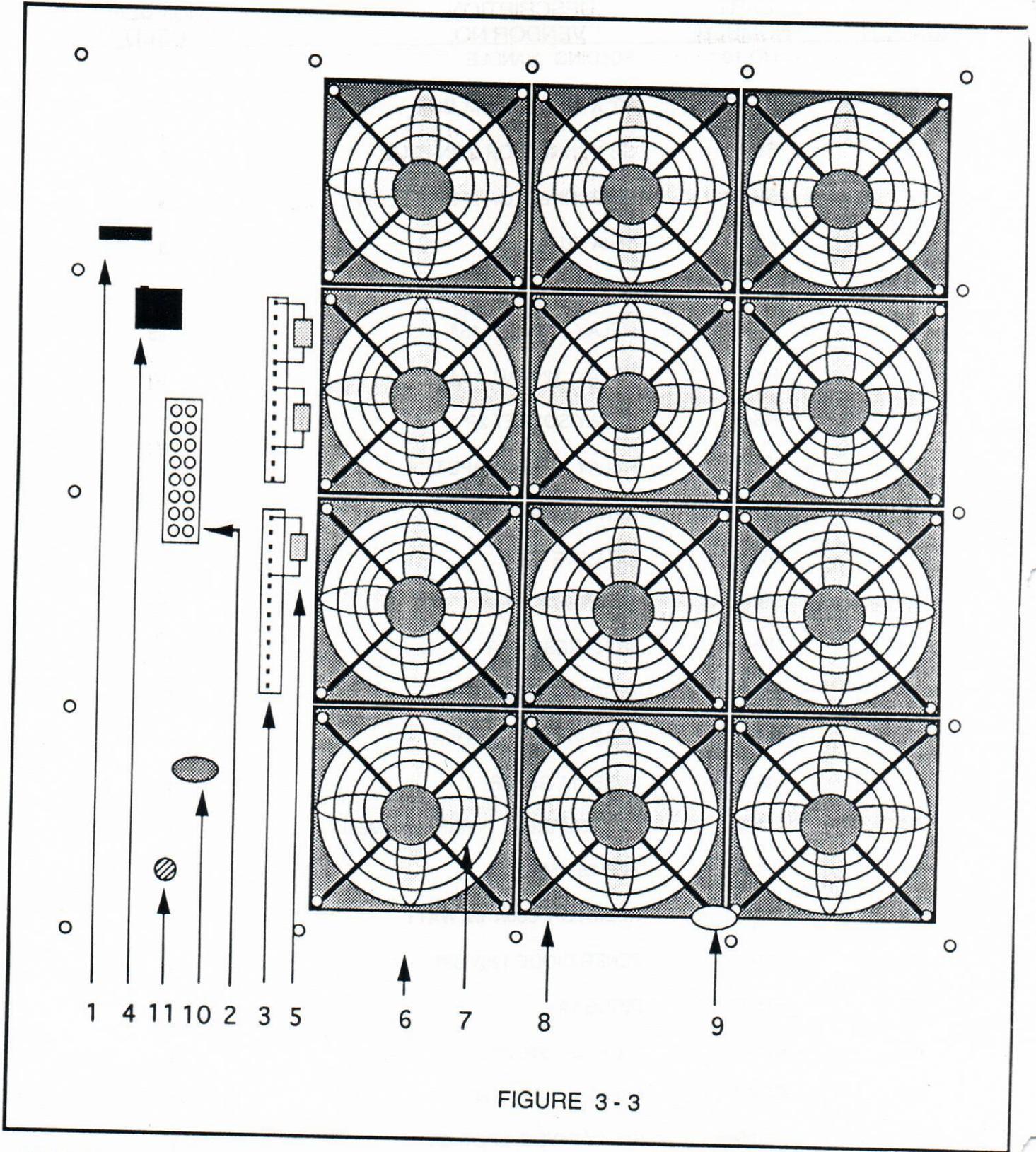


FIGURE 3 - 3

FAN PANEL PARTS  
FIGURE 3-3

DRAWING NUMBER	PART NUMBER	DESCRIPTION VENDOR NO.	NUMBER USED
1	FS-50	FUSE 5A GLASS	1
2	TM-20	8 POSITION TERMINAL STRIP V-BEAU PRODUCTS (78008)	1
3	TM-10	TERMINAL STRIP 13 POS	1
4	RD-04	RECTIFIER 3A	1
5	CP-04	CAPICATOR, 4UF, 250VDC	3
6	FP-57	ALUM. FAN PANEL	1
7	GL-10	FAN GRILL CHROME V-MERRILL (B-22662)	12
8	FN-25	24VDC FAN V-EBM (W2G110-AK43-82)	12
9	TS-14	THERMAL SWITCH V-GEMLINE (L-145)	1
10	SW12	MERCURY SWITCH	1
11	RC-03	RESISTOR 3Ω 25 WATT	1

## VENDOR LIST

The following is a list of vendors for parts shown in the parts list.

### VENDOR

Anderson Power Products  
145 Newton St.  
Boston MA. 02135

Allied Electronics, Inc.  
3425 Corporate Way, Suite A  
Duluth, Ga. 30136

Bussmann Manufacturing  
Distributed by Allied

Control Design Supply  
1939-F Parker CT  
Stone Mountain, GA. 30087

Cutler-Hammer  
Distributed by Peerless

EBM Industries, Inc.  
Distributed by Peerless

E.F. Johnson  
Distributed by Peerless

Electric Supply Co.  
433 Bishop St.  
Atlanta, Ga. 30325

Gemline Products, Inc.  
12472 Edison Way  
Garden Grove, Ca. 92641

Merrill Manufacturing Corporation  
236 South Genesee Street  
Merrill, WI. 54452

Peerless Radio Corporation  
3101 towercreek Pkwy, Suite 590  
Atlanta, GA. 30339

Syrelec Electronics Corp.  
Distributed by Control Design

Vemaline Products  
333 Strawberry Field Rd.  
Warwick, RI. 0288

## 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 cut the wires to the fan. Attach the new fan wires to the cut wires and use the cut wires to pull the new wires to the terminal strip. Remove the old wires from the terminal strip and install the new fan wires.
5. Rivet the new fan back to the fan panel and install the fan guard.
6. Install the seven 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.

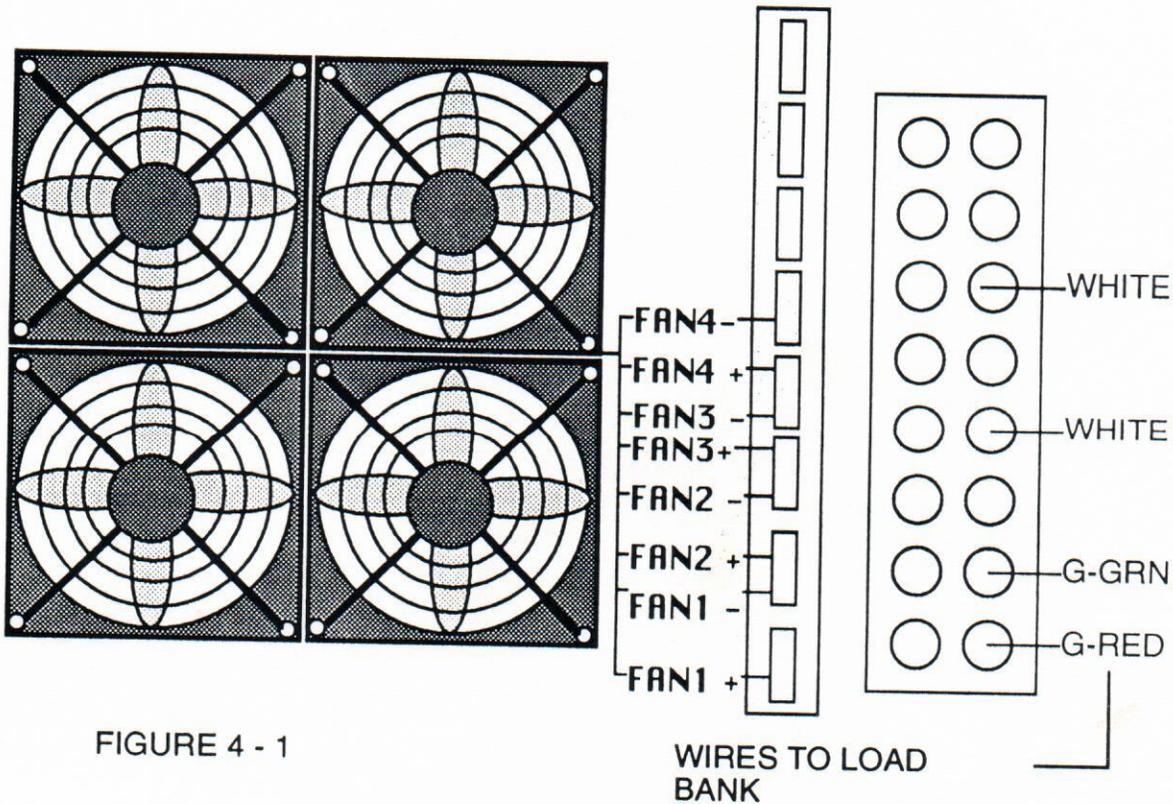
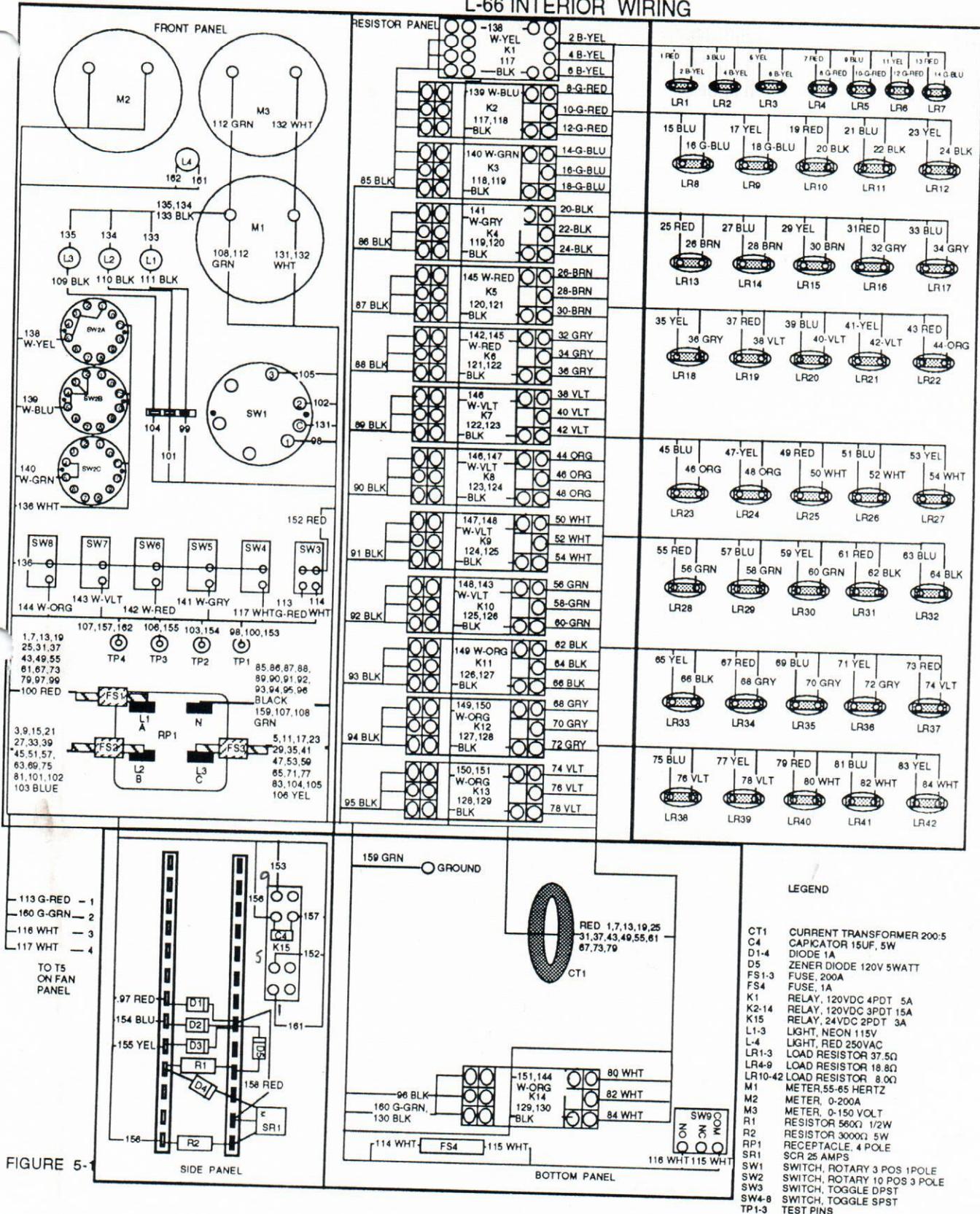


FIGURE 4 - 1

# L-66 INTERIOR WIRING



# FAN PANEL WIRING

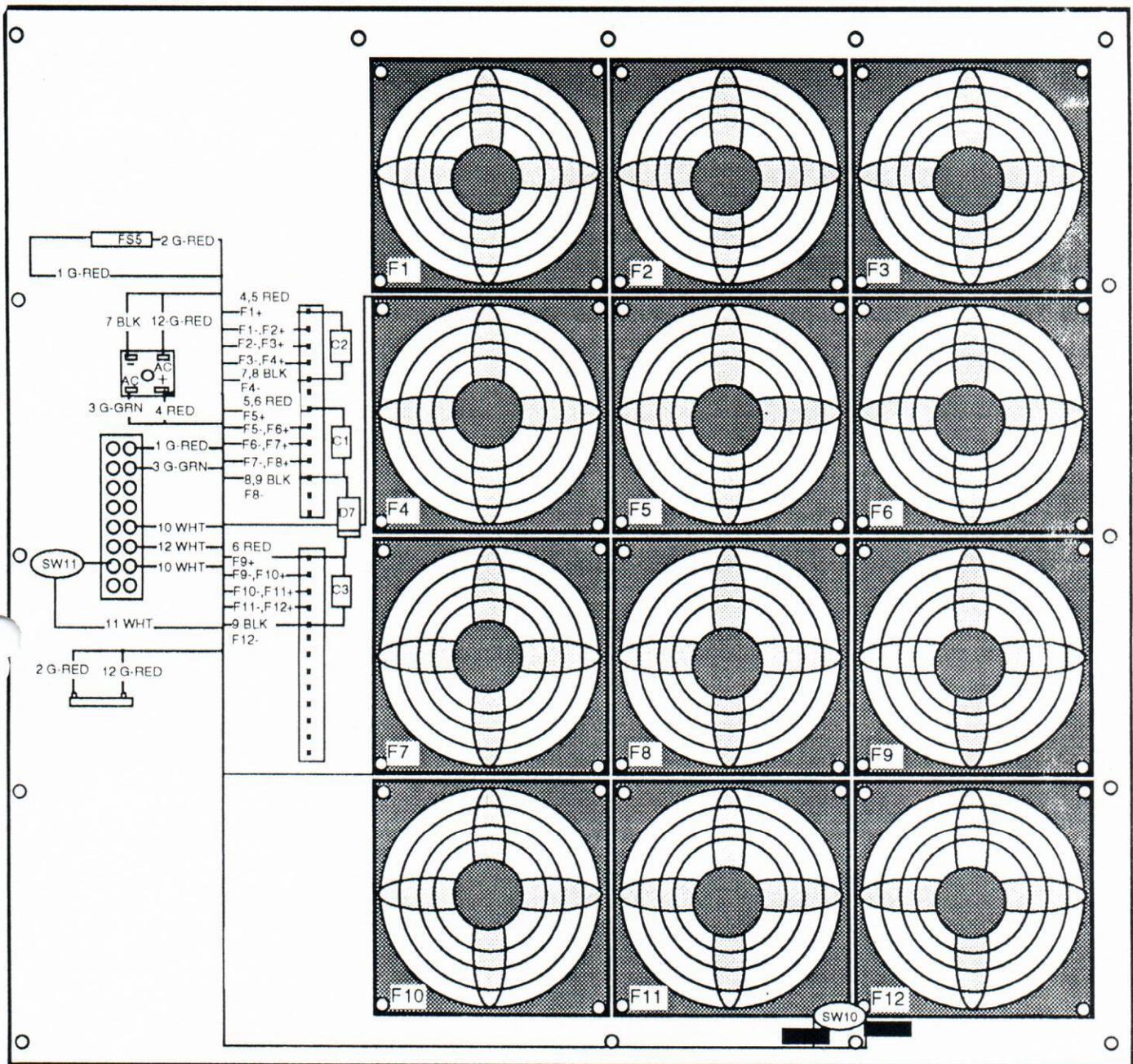
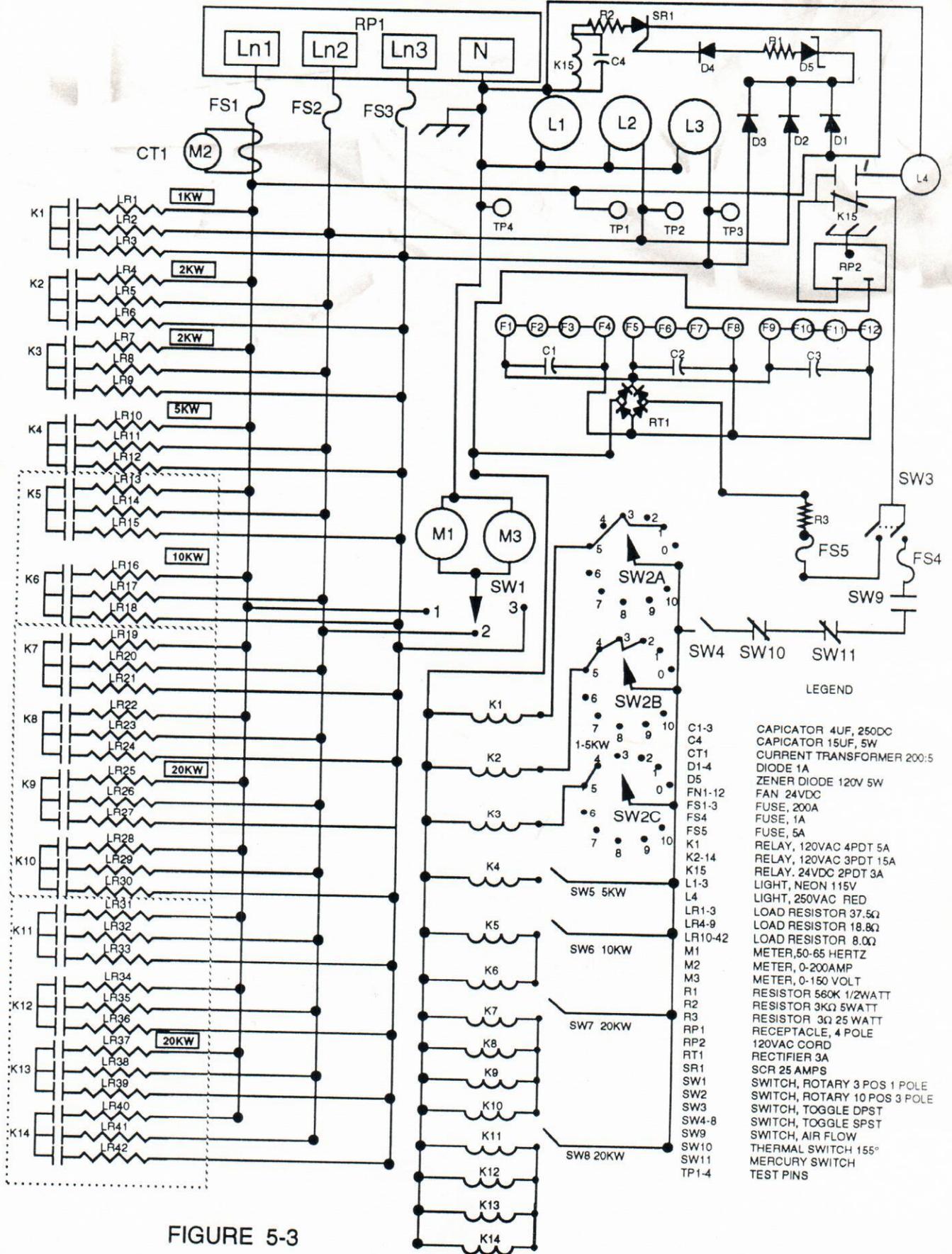


FIGURE 5 - 2

# L-66 SCHEMATIC



- LEGEND
- C1-3 CAPICATOR 4UF, 250DC
  - C4 CAPICATOR 15UF, 5W
  - CT1 CURRENT TRANSFORMER 200:5
  - D1-4 DIODE 1A
  - D5 ZENER DIODE 120V 5W
  - FN1-12 FAN 24VDC
  - FS1-3 FUSE, 200A
  - FS4 FUSE, 1A
  - FS5 FUSE, 5A
  - K1 RELAY, 120VAC 4PDT 5A
  - K2-14 RELAY, 120VAC 3PDT 15A
  - K15 RELAY, 24VDC 2PDT 3A
  - L1-3 LIGHT, NEON 115V
  - L4 LIGHT, 250VAC RED
  - LR1-3 LOAD RESISTOR 37.5Ω
  - LR4-9 LOAD RESISTOR 18.8Ω
  - LR10-42 LOAD RESISTOR 8.0Ω
  - M1 METER, 50-65 HERTZ
  - M2 METER, 0-200AMP
  - M3 METER, 0-150 VOLT
  - R1 RESISTOR 560K 1/2WATT
  - R2 RESISTOR 3KΩ SWATT
  - R3 RESISTOR 3Ω 25 WATT
  - RP1 RECEPTACLE, 4 POLE 120VAC CORD
  - RP2 RECEPTACLE, 3A
  - RT1 RECTIFIER 3A
  - 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 THERMAL SWITCH 155°
  - SW11 MERCURY SWITCH
  - TP1-4 TEST PINS

FIGURE 5-3