

CARVER

P R O F E S S I O N A L

PM-1.5

(INCLUDING PM-1.5L AND PM-1.5 MONO BLOCK)

MAGNETIC FIELD POWER AMPLIFIERS SERVICE MANUAL

CONTENTS	Page
1. SAFETY INFORMATION	3
2. INTRODUCTION	4
3. SPECIFICATIONS	5
4. CIRCUIT DESCRIPTIONS	8
5. TROUBLESHOOTING GUIDE	12
6. CALIBRATION PROCEDURE	17
7. BLOCK DIAGRAM	18
8. SCHEMATICS AND LAYOUTS	19
9. PARTS ORDERING	49
10. PARTS LIST	50
11. VOLTAGE CONVERSION	76
12. SERVICE BULLETINS	78

SECTION 1

SAFETY INFORMATION

WARNING.

Any person performing the procedures described in this manual will be exposed to hazardous voltages and the risk of electric shock.

Carver Corporation assumes that any person who removes the cover from the unit has been properly trained in protecting against avoidable injury and shock.

Therefore, the procedures described here are to be performed by qualified electronics service personnel only.

We recommend that the unit be tested only when line isolation is provided by an isolation transformer. The line cord of the unit must be disconnected and the power supply fully discharged before any components are replaced. Failure to do so may result in severe damage to the unit and the risk of electric shock.

The safety tests described below must be performed properly.

CAUTION:

Before returning the unit to the customer, one of the following safety tests must be performed.

1. Check the leakage current. Connect the unit to 120 VAC supply and turn the power switch "ON". Using an ammeter, measure the current between the neutral side of the AC supply and chassis ground of the unit under test. If leakage current exceeds 0.5mA, the unit is defective.

Reverse the polarity of the AC supply and repeat.

2. Measure the resistance from either side of the linecord to chassis ground. If it is less than 500k ohms, the unit is defective.

WARNING - DO NOT return the unit to the customer if it fails one of these tests until the problem is located and corrected.

CAUTION

	CAUTION RISK OF ELECTRIC SHOCK DO NOT OPEN	
CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK DO NOT REMOVE COVER (OR BACK) NO USER-SERVICEABLE PARTS INSIDE REFER SERVICING TO QUALIFIED PERSONNEL		



The lightning flash with arrowhead symbol within an equilateral triangle is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure, that may be of sufficient magnitude to constitute a risk of electric shock to persons.



The exclamation point within an equilateral triangle is intended to alert the user of the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

SECTION 2

INTRODUCTION

This manual is intended for use by qualified, authorized personnel only.

Due to the unique and complex circuit designs of Carver Corporation, the following procedure is recommended to diagnose & repair problems with speed and accuracy.

The best way to figure out what is wrong is to learn what is working properly first. Then, through the process of elimination, the defective area can be located. Upon locating the defective area, you then would use your own preferred troubleshooting skills.

The removal of parts for testing, should be kept to an absolute minimum. "In circuit" analysis should provide you with enough data to determine correct operation.

At Carver Corporation we continually strive for the most reliable, cost-efficient product available.

When updates and service bulletins are sent to you, please take the time to review them and insert them into the correct service manuals.

The Carver PM-1.5 Magnetic Field Power Amplifier was released in May of 1983, and continued in production until March of 1989. At this point, the basic amplifier design was modified to create the PM-1.5a, later renamed the PM-1200. This manual covers the PM-1.5, along with the PM-1.5L and PM-1.5 Mono Block, models derived from the basic PM-1.5 design. The PM-1.5a/PM-1200 amplifiers are covered in a separate service manual.

The PM-1.5L was designed to accommodate lower impedance loads (down to 2 ohms) than the PM-1.5's recommended 4 ohm minimum. The PM-1.5 Mono Block was a single channel amplifier, capable of producing twice the power of the PM-1.5 into a 4 ohm load. It was also capable of driving lower impedance loads (down to 4 ohms) than the PM-1.5 in bridged mono mode of operation (recommended 8 ohm minimum). Both of these models were produced between 1984 and 1987.

Approximately the first 1000 PM-1.5 amplifiers were equipped with front panel controls for adjusting the shutdown integrator threshold. One pot adjusted the short term 1.5 second limit, and the other pot adjusted the long term 30 second limit, both in terms of the RMS output voltage.

SECTION 3

SPECIFICATIONS

Specifications for the PM-1.5 Magnetic Field Power Amplifier

Power Output:

Continuous Average Output Power, both channels driven:

450 watts per channel into 8 ohms from 20 Hz to 20 kHz, with no more than 0.5% THD

600 watts per channel into 4 ohms from 20 Hz to 20 kHz, with no more than 0.5% THD

Bridged-mono operation:

1200 watts into 8 ohms from 20Hz to 20 kHz, with no more than 0.5% THD

Power at Clipping, both channels driven:

460 watts per channel into 8 ohms at 1 kHz

Dynamic Headroom:	1.9dB @ 8 ohms 2.2dB @ 4 ohms
Frequency Response:	20Hz to 20kHz (+0, - 0.5dB)
Crosstalk:	-47dB, 100Hz-10kHz
Damping Factor:	Greater than 200 at 1kHz
Input Impedance:	15k ohms each leg, balanced to ground
Sensitivity:	3.0V rms for rated power into 8 ohms at 1kHz (up to S/N 10792) 1.5V rms for rated power into 8 ohms at 1kHz (over S/N 10792) <i>See Service Bulletin PM-1.5-1</i>
Gain:	26dB (up to S/N 10792) 32dB (over S/N 10792) <i>See Service Bulletin PM-1.5-1</i>
IM Distortion:	Less than 0.1%
THD:	Less than 0.5%
Noise:	-115dB A-weighted, referenced to rated power -88dBW A-weighted, referenced to 1W (up to S/N 10792) -109dB A-weighted, referenced to rated power -82dBW A-weighted, referenced to 1W (over S/N 10792) <i>See Service Bulletin PM-1.5-1</i>
Slew Rate:	25V/μS
Power Consumption:	1500W at full power
Power Requirements:	120VAC/60Hz (USA and Canada) 230VAC/50Hz (Europe)
Display:	LED Ladder; 7 indicators per channel 1mS attack time; 500mS decay time
Size (H x W x D):	3.5" x 19" x 10.75" (12" overall) 89mm x 483mm x 273mm (305mm overall)
Weight:	21 lbs. 9.5 kg

Test Note: Accurate measurement depends on a sufficiently "stiff" AC supply. The 60 Hz AC line distortion must be below IHF specifications.

Specifications for the PM-1.5L Magnetic Field Power Amplifier

Power Output:

Continuous Average Output Power, both channels driven:

350 watts per channel into 4 ohms from 20 Hz to 20 kHz, with no more than 0.5% THD

450 watts per channel into 2 ohms from 20 Hz to 20 kHz, with no more than 0.5% THD

Bridged-mono operation:

700 watts into 8 ohms from 20Hz to 20 kHz, with no more than 0.5% THD

900 watts into 4 ohms from 20Hz to 20 kHz, with no more than 0.5% THD

Power at Clipping, both channels driven:

350 watts per channel into 4 ohms at 1 kHz

Dynamic Headroom:	1.4dB @ 4 ohms 1.8dB @ 2 ohms
Frequency Response:	20Hz to 20kHz (+0, - 0.5dB)
Crosstalk:	-50dB, 100Hz-10kHz
Damping Factor:	Greater than 600 at 1kHz
Input Impedance:	15k ohms each leg, balanced to ground
Sensitivity:	1.1V rms for rated power into 4 ohms at 1kHz
Gain:	30dB
IM Distortion:	Less than 0.1%
THD:	Less than 0.5%
Noise:	-110dB A-weighted, referenced to rated power -84dBW A-weighted, referenced to 1W
Slew Rate:	25V/ μ S
Power Consumption:	1500W at full power
Power Requirements:	120VAC/60Hz (USA and Canada) 230VAC/50Hz (Europe)
Display:	LED Ladder; 7 indicators per channel 1mS attack time; 500mS decay time
Size (H x W x D):	3.5" x 19" x 10.75" (12" overall) 89mm x 483mm x 273mm (305mm overall)
Weight:	21 lbs. 9.5 kg

Test Note: Accurate measurement depends on a sufficiently "stiff" AC supply. The 60 Hz AC line distortion must be below IHF specifications.

Specifications for the PM-1.5 Mono Block Magnetic Field Power Amplifier

Power Output:

Continuous Average Output Power:

600 watts into 8 ohms from 20 Hz to 20 kHz, with no more than 0.5% THD

1200 watts into 4 ohms from 20 Hz to 20 kHz, with no more than 0.5% THD

Power at Clipping:

720 watts per channel into 8 ohms at 1 kHz

Dynamic Headroom:

1.2dB @ 8 ohms

0.7dB @ 4 ohms

Frequency Response:

20Hz to 20kHz (+0, - 0.5dB)

Damping Factor:

Greater than 400 at 1kHz

Input Impedance:

15k ohms each leg, balanced to ground

Sensitivity:

1.5V rms for rated power into 8 ohms

Gain:

33dB

IM Distortion:

Less than 0.1%

THD:

Less than 0.5%

Noise:

-100dB A-weighted, referenced to rated power

-72dBW A-weighted, referenced to 1W

Slew Rate:

25V/ μ S

Power Consumption:

1500W at full power

Power Requirements:

120VAC/60Hz (USA and Canada)

230VAC/50Hz (Europe)

Display:

LED Ladder; 7 indicators

1mS attack time; 500mS decay time

Size (H x W x D):

3.5" x 19" x 10.75" (12" overall)

89mm x 483mm x 273mm (305mm overall)

Weight:

21 lbs.

9.5 kg

Test Note: Accurate measurement depends on a sufficiently "stiff" AC supply. The 60 Hz AC line distortion must be below IHF specifications.

SECTION 4

CIRCUIT DESCRIPTION PM-1.5

TECHNICAL DESCRIPTION

The magnetic-field power amplifier design incorporated in the PM-1.5 allows a degree of efficiency and protection unequaled in conventional amplifiers.

The high efficiency and protection control are made possible by the triac-controlled primary of the PM-1.5's transformer together with the supply's ability to "track" the audio signal.

These features greatly reduce size, weight, heat and cost per watt.

To better understand this design, which is far from conventional, the following circuit description should be read carefully.

Attempting to repair the unit without the following information may lead to severe damage to the unit.

PRIMARY REGULATOR BOARD

The 230V PM-1.5 is fused with an MDA (or MDL) 6-1/4 amp fuse and the 120V PM-1.5 is fused with an MDA (or MDL) 12 amp fuse. It is thermally protected by a 90° C thermal breaker.

An RC line filter network is used to suppress line noise generated by the conduction of the triac TR1, and to reduce noise already present on the AC line.

The firing angle of triac TR1, which controls the voltage on the primary of the transformer, is determined by the active voltage divider formed by OC1 and R4/R5 on the regulator board. D1, D2, D3 and D4 provide voltage "steering" for OC1, which makes it possible to use the bipolar device for AC control. This voltage divider drives the passive RC phase shift network composed of R3, C3, R2 and C2. When the voltage on C2 reaches the 40V trigger voltage of the diac (DC1), the triac will be triggered (see Figure 1).

If OC1 is turned on hard enough, the voltage necessary to fire the diac will be unobtainable and the unit will turn off. OC1 LED current is zero at this time.

Since it is possible to turn the unit on or off with OC1 on the regulator board, this device is used to provide electrical isolation between the primary and secondary circuits. The current through the LED portion of OC1 is inversely proportional to the voltage available to the primary of the transformer. This means that as OC1 LED current INCREASES, the transformer primary voltage DECREASES.

OC2, which is in series with phase shift network, is used to power the unit ON or OFF. A DC signal supplied from another amplifier provides a method of turning on many amplifiers from one master amplifier.

MAIN POWER SUPPLY

Linear regulation control is achieved by controlling the current through the LED portion of OC1. This current is provided by Q5 and Q6 and their passive control circuitry. R21, R20, R23 and R24 are used to monitor the secondary supply voltages. RP1 is used for manual adjustment of the idle voltage, and R22 limits the range of control.

Active shutdown protection is provided for the following faults:

- A) Overvoltage
- B) Over current
- C) Excessive high frequency
- D) DC offset
- E) ± 12 VDC fault

All shutdown signals are sensed by the differential comparator of Q2 and Q3. During normal operation, Q3 is biased on with a 1.3V reference on its base, and Q2 is off. Q2 will deliver current to the base of the shutdown drive transistor Q4 when the voltage on the base of Q2 exceeds that on the base of Q3. C5 extends the shutdown period by providing base current to Q4 after Q2 has turned off. C5 also helps prevent false triggering of Q4, as current through Q2 initially flows to C5. D32 and D33, in conjunction with R63, provide current limiting for Q4. This prevents excessive current through Q4 during initial shutdown, yet allows Q4 to maintain sufficient drive to OC1 as the 76V supply collapses. The fault indicator LED is in series with Q4 and will light during all fault conditions. The fault LED will also light when the amplifier is switched off. The amplifier may not restart until the fault LED is off.

Overvoltage protection is achieved by comparing a portion of the +124V supply to a preset, regulated reference (5.8V). If the voltage on pin 13 of IC1 exceeds the reference on pin 14 of IC1, then pin 12 will go positive and raise the voltage on the base of Q2. This biases Q2 on and turns the amplifier off. Overvoltage shutdown should occur when the DC supply exceeds 140V. Overcurrent and high frequency shutdown signals from the amplifier cards are sensed by Q1. When Q1 is biased on, the base of Q2 will exceed 1.3V and the amplifier will shutdown.

DC offset is sensed by a lowpass differential amplifier (IC1 pins 1, 2 and 3). C6 and C7 roll off the output in the audio spectrum while DC offset and single channel, low frequency signals (below 3 Hz) will be amplified. If pin 3 goes positive, Q2 will be biased on when its base reaches 1.3V, turning the amplifier off. If pin 3 goes negative, the base of Q3 will be pulled down. If pulled down to less than 0V, Q2 will turn on, shutting the amplifier off.

The positive and negative 12V supplies are summed by R57 and R56, and compared by Q2 and Q3. If the negative 12V supply fails, the cathode of D6 will go positive, raising the voltage on the base of Q2 above 1.3V which will turn the amplifier off. If the positive 12V supply fails, the cathode of D6 will go negative. This will pull the base of Q3 below 0V and turn the amplifier off.

The PM-1.5 transformer secondary consists of 3 pairs of supply voltages (124V, 76V, 36V), each having its own bridge rectifier and filter network. A stable $\pm 12V$ supply is obtained from the 36V supply via D13, Q7 and D14, Q8.

AMPLIFIER BOARDS

If the clipping eliminator switch is on, then the input signal is processed by a circuit which consists of an optocoupler (OC1), a "steering" bridge (D1, D2, D3, D4), and filter network (R96, R98, C33). The clipping eliminator is driven by the error signal on the output of buffer IC1. Distortion in excess of 1% will provide sufficient drive to attenuate the input and light the headroom exhausted LED on the display. This circuit will prevent distortion in excess of 3% with up to 15dB overdrive on the input.

Input buffer IC1 (TL081 op amp) provides a high input impedance for the signal source and a low output impedance for driving the clipping eliminator circuit and succeeding stages.

Local negative feedback from the output of IC1 via R90 and C25 is used for stability, and to reduce overall negative feedback.

The output of the input buffer is coupled to Q14 and Q15 which provides a current source for DC biasing and also provides DC level shifting which is required for referencing the audio signal to the top DC supplies to drive the next stage.

The output of the DC level shifters drives a pair of predriver voltage amplifiers (Q13 and Q20). This stage provides full voltage swing to the following current gain stages and supply "tracking" for the commutator circuits.

The bias network of Q16 and Q17 provides adjustment of the DC idle current through outputs Q5 and Q6. Q16 is mounted on the heatsink and provides thermal feedback to prevent thermal runaway and helps maintain a constant idle current. RP1 on the amp boards adjusts the idle current.

The predrivers drive the "driver" stage (Q8 and Q3) which provides current amplification for driving the outputs and supply commutating circuitry.

Available current to the base of the drivers is limited by the voltage drop across the output emitter resistors R49 and R87. When Q19 is biased on, Q26 is also biased on, providing a shutdown pulse to the supply board.

These are the only two shutdown signals that the supply will get from the amp cards (other than their output signals).

Current from drivers Q8 and Q3 provides drive for the two high gain, high linearity output devices Q6 and Q5. These devices provide full voltage swing and current drive to the loads.

The active, local bias network of Q23, R86, and R85 provides variable "pull down" of the bases of Q6 and Q5 to help prevent common-mode conduction of the output transistors and reduce their turn off time.

The first supply commutator transistors, Q7 and Q4, are used to increase the supply voltages on the collectors of Q6 and Q5 from 36V to 76V as required (see Figure 2). The diode network of D31, D15, D16 and D17 (and their negative equivalents), in the base of Q5 and Q6 provides voltage "lead" time for the first supply commutating transistors Q7 and Q4. This allows the supply voltages to stay ahead of the audio demand. As frequency increases, Q7 and Q4 require additional "lead" time to stay ahead of the audio. This is achieved by C13, R6, D14 and R47 (and their negative equivalents).

The second supply commutator pairs Q9, Q10 and Q1, Q2 increase the supply voltages on the collectors of Q7 and Q4 from 76V to 124V as required. This in turn allows Q7 and Q4 to increase Q6 and Q5 collector voltages to 124V as required (see Figure 2).

The first commutators receive their drive from drivers Q8 and Q3. However, the current at this stage is insufficient to drive the second commutator transistors, and a bootstrap network and current gain stage are required.

The main bootstrap network consists of R33, R92, and C9 (and their equivalents on the negative side). A second bootstrap network is used to provide additional "lead" voltage for the second commutator as required at higher frequencies. This circuit consists of R36, R35 and C10 (and their equivalents on the negative side).

The turn-on threshold for the second commutators is determined by the DC biasing on the base of Q12 and Q21. D12, D13, D23 and D24 prevent current from the higher supplies from flowing back into the lower supplies.

DISPLAY CARD

The PM-1.5 display consists of 2 columns of 7 LED's which monitor the peak output of the right and left channels. The first, or bottom Green LED, is the power indicator and lets the operator know the amplifier is ready for operation. The second through sixth LED's indicate power level with a 1mS attack and 500mS decay. This display operates by incorporating a series of 4 comparators and a resistive ladder network which sets the appropriate reference voltages for each stage. D10 will light at 7Vrms output, D9 at 10V, D8 at 13V, D7 at 21V, and D6 and 28V. The seventh LED is amber and indicates distortion in excess of 1%. It will accurately indicate clipping at any frequency, regardless of load impedance or line voltage.

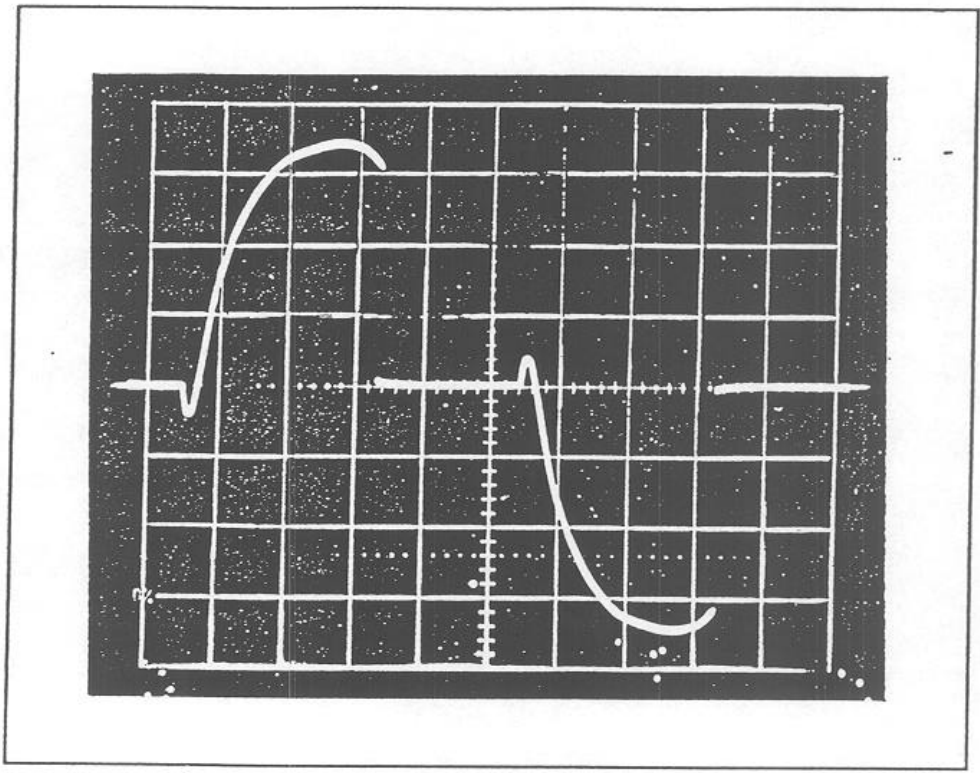


Figure 1: Triac conduction at idle, viewed at MT2 (cathode).

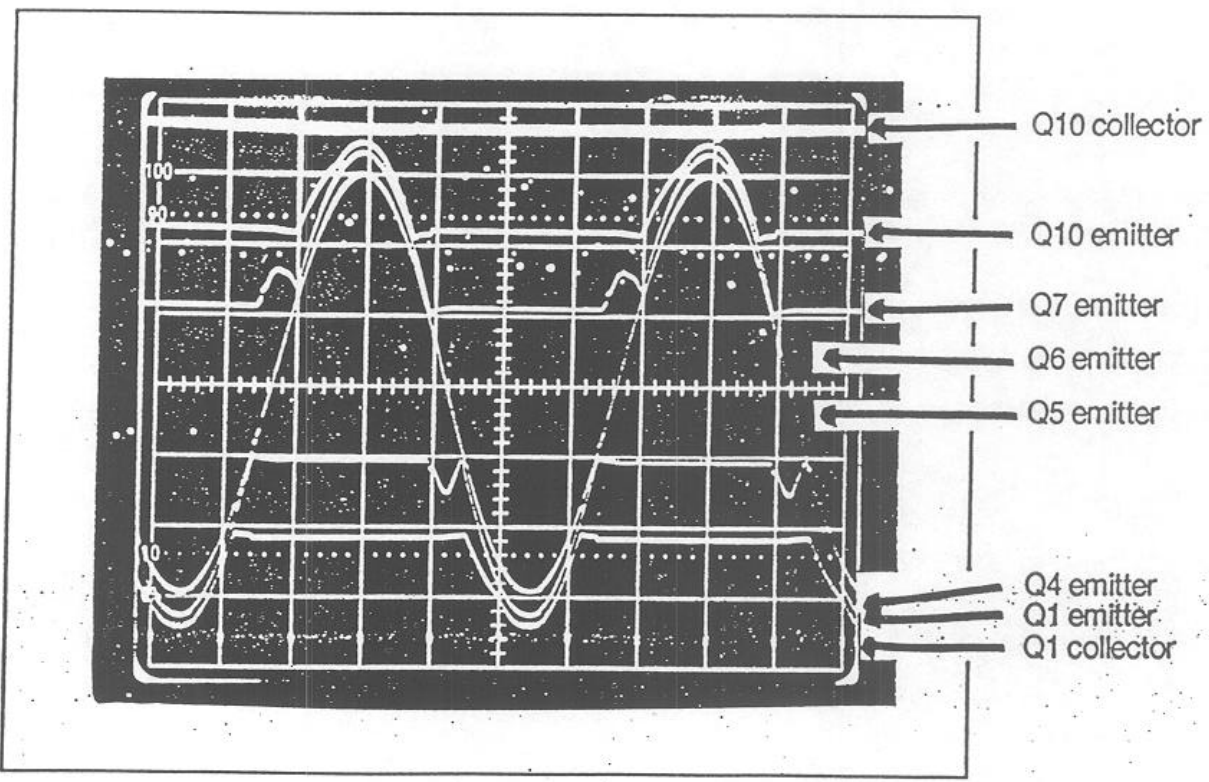


Figure 2: Commutators

SECTION 5

TROUBLESHOOTING GUIDE

The PM-1.5 amplifier is more complex than conventional amplifiers. This guide will help service technicians isolate and repair electrical faults in the amplifier.

Major faults should be investigated with loads removed, and a variac should be used to apply line voltage.

CAUTION:

All primary waveforms must be viewed with an isolated, line triggered scope with no secondary ground reference.

I. No Power.

All LED's fail to light.

- A) Determine if AC line voltage is reaching the triac.
 - 1) Use AC meter from MT1 to MT2 (cathode to anode) on triac.
 - 2) If AC is not present on triac:
 - a) Check fuse and fuse holder.
 - b) Check line cord.
 - c) Check thermal breaker.
 - d) Check primary winding of transformer for continuity.
 - e) Check solder on primary wiring.
 - 3) If AC is present across triac (MT1-MT2) but triac is not firing:
 - a) Check voltage waveform across diac (see Figure 1).
 - 1) If diac is firing and triac is not, then the triac is defective.
 - 2) If diac voltage is exceeding 40V peak and not firing then the triac gate or diac are open.
 - 3) If the voltage across the diac fails to reach 40V peak, then the problem lies in the phase shift network or regulator.
 - a) Check optocoupler OC1 on the regulator board.
 - b) Check steering bridge of D1, D2, D3, D4 on regulator board.
 - c) Check power switch.
 - d) Check passive elements for solder and correct value on regulator board.

II. Fault LED lights when power is applied.

- A) Disable shutdown drive by removing the yellow/white wire from the cathode of the fault LED.

Note: The amplifier is now totally unprotected except for the line fuse. Extreme caution should be used to prevent serious damage to the amplifier. At this point it would be unsafe to increase line voltage until the triac fires because rail voltages might be too high. Therefore, when shutdown drive is removed, you should jumper MT1 and MT2 (cathode to anode) of the triac and increase line voltage just enough to determine the source of the fault (about 20-30VAC).

- B) Determine source of shutdown drive:
- 1) If Q4 is turned on, then the base of Q2 should be at a higher voltage than the base of Q3. If not, the shutdown drive circuit is defective.
 - 2) If the voltage on the base of Q2 does exceed that on the base of Q3, then determine which shutdown sensor circuit is activated.
 - a) Check $\pm 12V$ fault. If cathode of D6 is 0.6V then supplies are okay. If not, check $\pm 12V$ supplies and R56 and R57.
 - b) Check DC Offset/Low Frequency sense signal on pin 3 of IC1. See Section III-
 - c) Check Hi-Frequency/Over Current Trip on collector of Q1 on power supply board. See Section IV.
 - d) Over voltage shutdown, check pin 12 on IC1. See Section V, paragraph A.
- C) When source of shutdown fault is located and repaired, then reconnect fault LED and remove jumper on triac!

III. DC Offset sensor is tripped.

Note: If amplifier output is offset, start at A; if not, go to D.

- A) Check $\pm 12V$ supply.
- 1) Defective Q7 or Q8 on power supply board.
 - 2) Defective D13 or D14 on power supply board.
 - 3) Burned R67 or R68.
- B) Check output of balanced input op-amps on input card (Pins 1 and 7 on IC1).
- C) Check pin 6 on IC1 on amplifier board.
- 1) If offset is in the same direction as the offset on the output of the amp, then:
 - a) IC1 is defective.
 - b) Missing correct feedback.
 - c) Missing correct supply voltages on IC1.
 - 2) If the offset on IC1 pin 6 is in the opposite direction as the offset on the output of the amp, then the problem is somewhere after IC1.
 - 3) If the offset is after IC1, its cause may be determined by measuring the base-emitter voltages on Q14, Q15, Q13, Q20, Q8, Q3, Q6 and Q5.

EXAMPLE: If IC1 pin 6 is offset positive, then Q20 should be off and Q13 should be turned on. It follows that Q3 should be off and Q8 on, etc.

- D) No offset on the output of the amp but output present on pin 3 of IC1 on the power supply board.
- 1) Defective IC1 or missing $\pm 12V$ supply to IC1.
 - 2) If tripped when audio is applied, check passive elements of the differential amplifier.

IV. Over Current/High Frequency Shutdown is activated.

Q1 on the power supply board is turned on.

- A) Shutdown is activated with no signal applied.
- 1) Defective Q1 on power supply board.
 - 2) Defective D6, Q26, Q19 or D18, Q18, D7 on one of the amp boards. You may determine which board by measuring the voltages across R26 on each board. If current flow is indicated through R26 then that limiter is activating the sensor.
 - 3) Oscillation on the output of either amp board.

- B) Shutdown activates too early when signal is applied.
 - 1) Oscillation on output of either channel.
 - 2) Leaky D6, Q26, D18 or D7, Q18, Q19.
 - 3) Defective R87, R49, C30 or R102 on amp board.
 - 4) Defective C2 on the power supply board.

V. Over voltage sensor is on (positive) when variac is brought up toward full line voltage with RP1 on the power supply set at minimum (fully counter-clockwise).

- A) If $\pm 125V$ supply is exceeding 130V then go to step B.
If $\pm 125V$ supply is not exceeding 130V, then go to step C.
- B) No primary transformer regulation.
 - 1) Shorted triac (Check waveform at MT1 and MT2 - See Figure 1).
 - 2) Incorrect regulator drive.
 - a) Check Q5 and Q6 on the power supply board.
 - b) Check R21, R20, R23, R24 on the power supply board.
 - c) Check optocoupler OC1 on the regulator board.
 - d) Check RP1, R22, D34, C21 in the base circuit of Q5 and Q6 on the power supply board.
 - e) Check the passive phase shift network on the regulator board.
- C) Defective sensor circuit.
 - 1) Check reference voltage on pin 14 of IC1 on the power supply board, 5.8V at a $\pm 122VDC$ top rail.
 - 2) Check sample voltage on pin 13 of IC1.
 - a) If the voltage on pin 13 does not exceed that on pin 14 of IC1, yet pin 12 is positive, then IC1 is defective.

VI. Excessive current draw with no signal applied, and before reaching 50Vrms line voltage.

- A) Transformer primary circuit.
 - 1) Defective line filter.
 - 2) Defective triac dv/dt filter formed by C1 and R1 on regulator board.
 - 3) Shorted triac. This will cause excessive primary current at idle. Check voltage waveform across the triac (see Figure 1).

VII. Excessive current draw with no signal applied after triac has fired.

- A) Transformer primary circuit.
 - 1) Triac firing unsymmetrically.
 - a) Defective steering bridge (D1, D2, D3, D4) on regulator board.
 - b) Defective diac. Check diac waveform.
 - c) Defective triac. May be firing in only one quadrant.
- B) Supply secondary.
 - 1) Defective bridge rectifier ($\pm 124V$, $\pm 76V$, $\pm 36V$).
 - 2) Defective supply capacitor ($\pm 124V$, $\pm 76V$, $\pm 36V$).
 - 3) Defective $\pm 12V$ regulators Q7 and Q8 on power supply board.

- C) Damaged amplifier drive circuitry.
 - 1) Blown output transistors (Q6 or Q5).
 - 2) Defective driver transistors (Q8 or Q3).
 - 3) Defective predriver transistors (Q13 or Q20).
 - 4) Defective level shifter transistors (Q14 or Q15).

Note: 1 through 4 may cause offset, depending on other faults, in which case it may be easier to use the troubleshooting procedure in section III. Be sure and remove loads when troubleshooting offset.

- 5) Defective bias network (Q17 or Q16).
- D) Defective or missing mica insulators on any transistor device which is bolted to the heatsink.

VIII. Early clipping on positive or negative side of waveform on one channel or the other.

Note: When troubleshooting early clipping the clipping eliminator should be off (front panel switch).

- A) First commutator not supplying sufficient drive to the outputs.
 - 1) Defective Q7 or Q4 on amp board.
 - 2) Shorted D13 or D24 (this causes commutator current to flow back into the supply rather than to the output transistors).
 - 3) Insufficient voltage lead for first commutator.
 - a) Defective D31, D15, D16 or D17 or their negative equivalents.
 - b) Defective D14, R47, C13, R6 or their negative equivalents.
- B) Second commutator not supplying sufficient current to the outputs.
 - 1) Defective Q9, Q10, Q2 or Q1.
 - a) To see if both Q9 and Q10 (or Q1 and Q2) are working you may check the voltage drops across their emitter resistors R45 and R46 (or R78 and R79) and see that they are within 10% of each other.
 - 2) Insufficient drive to Q9, Q10, Q1 or Q2.
 - a) Check drive transistors Q11, Q12 or Q21, Q22.
 - b) Check bootstrap network.
- C) Defective current limiters.
 - 1) Check D7, Q18 or Q19, D18 (depending on whether early clip is the positive or negative side of the waveform).
- D) Defective drive circuitry:
 - 1) Check drivers Q8 and Q3.
 - 2) Check R21 and R57.
 - 3) Check predrivers Q13 and Q20. Also check R24 and R55.
 - 4) Check level shifters Q14 and Q15.

IX. Clips early, both channels:

- A) Defective secondary supply circuitry:
 - 1) Open supply capacitor (check ripple on supply while applying a signal).
 - 2) Open bridge diode.
 - 3) Open connection between supply and amp boards.
 - 4) Low secondary supply voltages.
 - a) Defective regulator circuit (OC1 on the regulator board, Q5 or Q6 on the power supply board or associated circuitry).

X. Clipping eliminator not working:

- A) Defective switch.
- B) Defective OC1 on amp board.
- C) Defective D33, D1, D2, D3, D4 on amp board.

XI. Excessive noise:

- A) Noisy $\pm 12V$ supply.
- B) Triac misfiring will cause excessive noise.
- C) Bad TL081 op-amp on amp board will cause "hiss" and "popcorn" noise.
- D) Bad TL072 op-amp on input board may cause "hiss" and "popcorn" noise.
- E) Poor grounding "buzzing" and "hum".
- F) Bad volume pots or loose connections will cause "crackling" and "scratching" sounds.
- G) Defective input jacks.

XII. Excessive turn-off thumps:

- A) Front end op-amp.
 - 1) Defective TL081 on amp board.
 - 2) Defective TL072 on input card.
- B) Leaky drivers or predrivers.
- C) Uneven collapse of $\pm 12V$ supply.

XIII. The remote sequencer, display, and fan circuits are very straight forward and may be trouble-shot by inspection after reading the circuit descriptions and schematics.

SECTION 6

CALIBRATION PROCEDURE PM-1.5

High Rail Voltage Adjust

PM-1.5

With no signal and no load:

1. Adjust RP1 on the power supply board for $\pm 124\text{VDC}$ when measured at the large filter capacitors.
2. Verify the following DC voltages on the power supply board:

D23 Cathode	+76.5VDC ($\pm 1\text{V}$)
D24 Anode	-76.5VDC ($\pm 1\text{V}$)
D27 Cathode	+36.5VDC ($\pm 1\text{V}$)
D28 Anode	-36.5VDC ($\pm 1\text{V}$)
IC1 Pin 4	+11.5VDC ($\pm 0.5\text{V}$)
IC1 Pin 8	-11.5VDC ($\pm 0.5\text{V}$)

PM-1.5L

With no signal and no load:

1. Adjust RP1 on the power supply board for $\pm 77\text{VDC}$ when measured at the large filter capacitors.
2. Verify the following DC voltages on the power supply board:

D23 Cathode	+47.5VDC ($\pm 1\text{V}$)
D24 Anode	-47.5VDC ($\pm 1\text{V}$)
D27 Cathode	+20.5VDC ($\pm 1\text{V}$)
D28 Anode	-20.5VDC ($\pm 1\text{V}$)
IC1 Pin 4	+11.5VDC ($\pm 0.5\text{V}$)
IC1 Pin 8	-11.5VDC ($\pm 0.5\text{V}$)

PM-1.5 Mono Block

With no signal and no load:

1. Adjust RP1 on the power supply board for $\pm 129.5\text{VDC}$ when measured at the large filter capacitors.
2. Verify the following DC voltages on the power supply board:

D23 Cathode	+78.0VDC ($\pm 1\text{V}$)
D24 Anode	-78.0VDC ($\pm 1\text{V}$)
D27 Cathode	+38.5VDC ($\pm 1\text{V}$)
D28 Anode	-38.5VDC ($\pm 1\text{V}$)
IC1 Pin 4	+11.5VDC ($\pm 0.5\text{V}$)
IC1 Pin 8	-11.5VDC ($\pm 0.5\text{V}$)

Idle Bias Adjust

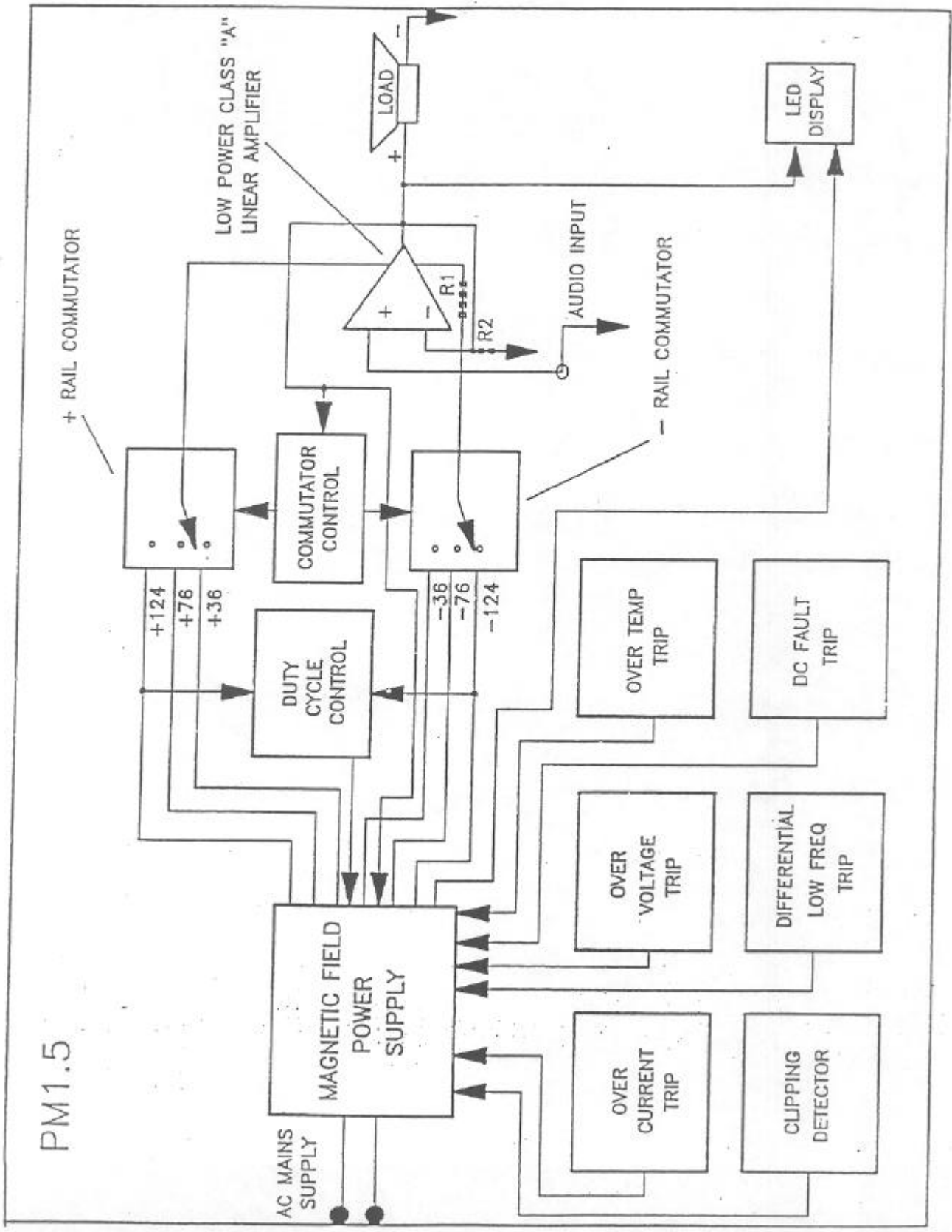
For all version:

With no signal and no load:

1. Adjust RP1 on each amp board for 3.4mV across both emitter resistors (R49/R87).

Note: This adjustment should be made after the amplifier has been on approximately two minutes, while it is still cool. After the amplifier warms up, the bias reading may be higher.

SECTION 7 BLOCK DIAGRAM



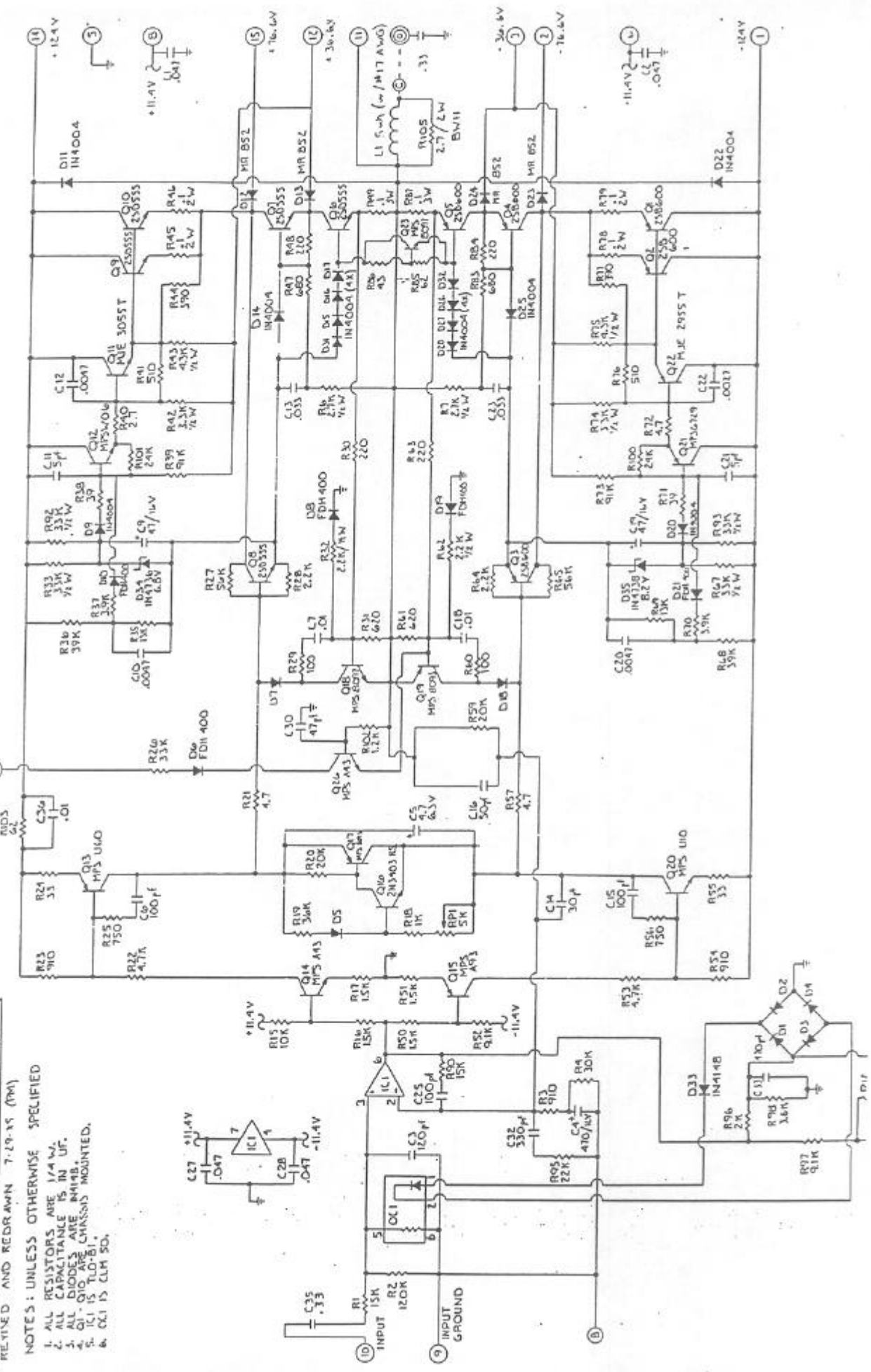


SECTION 8

SCHEMATICS AND LAYOUTS

	Page
PM-1.5 Amp Schematic Rev. J.....	20
PM-1.5 Amp Schematic Rev. P	21
PM-1.5 Amp Board Layout.....	22
PM-1.5 Power Supply Schematic (240V)	23
PM-1.5 Power Supply Schematic.....	24
PM-1.5 Power Supply Board Layout	25
PM-1.5 Power Supply Wiring Detail	26
PM-1.5 Regulator Board Layout	27
PM-1.5 Input Schematic	28
PM-1.5 Input Board Layout	29
PM-1.5 Display Schematic	30
PM-1.5 Display Board Layout.....	31
PM-1.5 Fan Drive Schematic.....	32
PM-1.5 Fan Drive Board Layout	33
PM-1.5 Wiring Diagram	34
PM-1.5 Wiring Diagram (240V)	35
PM-1.5 Final Assembly	36
PM-1.5L Amp Schematic	38
PM-1.5L Amp Board Layout.....	39
PM-1.5L Power Supply Schematic.....	40
PM-1.5L Power Supply Board Layout	41
PM-1.5L Fan Drive Schematic.....	42
PM-1.5L Fan Drive Board Layout	43
PM-1.5L Final Assembly	44
PM-1.5 Mono Block Amp Schematic	46
PM-1.5 Mono Block Power Supply Schematic	47
PM-1.5 Mono Block Input Schematic	48

CARVER CORPORATION	
SCHEMATIC, P1B AMP	
PM1.5 REV J	
DATE	REVISED
7-29-55	1
PART NAME	
7-29-55 (PM1)	
REVISED AND REDRAWN	
7-29-55 (PM1)	
NOTES: UNLESS OTHERWISE SPECIFIED	
1. ALL RESISTORS ARE 1/4 W.	
2. ALL CAPACITANCE IS IN UF.	
3. ALL DIODES ARE 1N4148.	
4. Q1, Q10 ARE CHASSIS MOUNTED.	
5. IC1 IS TLO-81.	
6. CX1 IS CLM 50.	



- NOTES: UNLESS OTHERWISE SPECIFIED
1. ALL RESISTORS ARE 1/4 W.
 2. ALL CAPACITANCE IS IN UF.
 3. ALL DIODES ARE 1N4148.
 4. Q1, Q10 ARE CHASSIS MOUNTED.
 5. IC1 IS TLO-81.
 6. CX1 IS CLM 50.

CARVER CORPORATION SERVICE BULLETIN

Service Bulletin # PM-1200-2 | Model: PM-1200/PM-1.5a/PM-1. | Serial nos. See page 1

5. Solder one end of 2.5" 22AWG black wire (401-10636-00) to #4 solder lug (111-20001-00) and the other end to the ground side of R13 (side nearest edge of board). See Figure 2.
6. Attach 3.3" X 2.5" ragpaper insulator (108-00102-00) and shield (531-00004-00) to underside (foil side) of input board using screw, nut and nylon washers as shown in Figure 3.
 - a) Punch a 1/8" diameter hole in the corner of the ragpaper insulator to accommodate screw as shown in the Figure.
 - b) Install the screw through the ground lug connected to R13 first.
 - c) Use a silicone sealant (RTV) (403-10018-00) or a double-sided tape between the ragpaper insulator and shield to hold the insulator paper in place.
7. Re-install the input board into place.

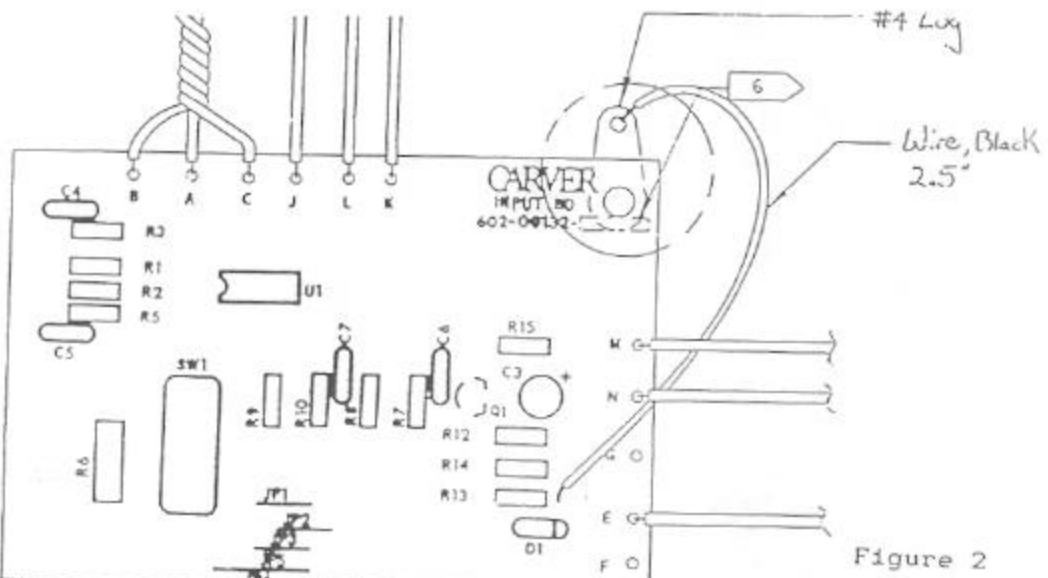


Figure 2

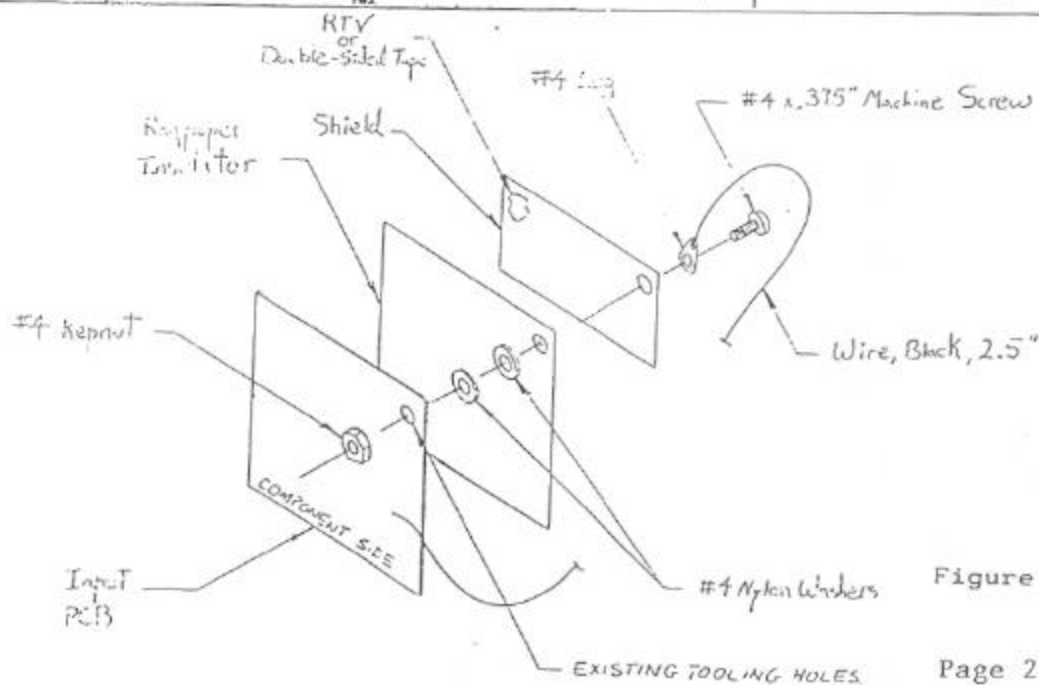


Figure 3

PART NUMBER		DATE		REVISION	
601-00129-03		11-75		1	
601-00127-03		3-75		2	
601-00129-03		5-75		3	
601-00127-03		11-75		4	
601-00129-03		5-76		5	
601-00127-03		11-76		6	
601-00129-03		5-77		7	
601-00127-03		11-77		8	
601-00129-03		5-78		9	
601-00127-03		11-78		10	

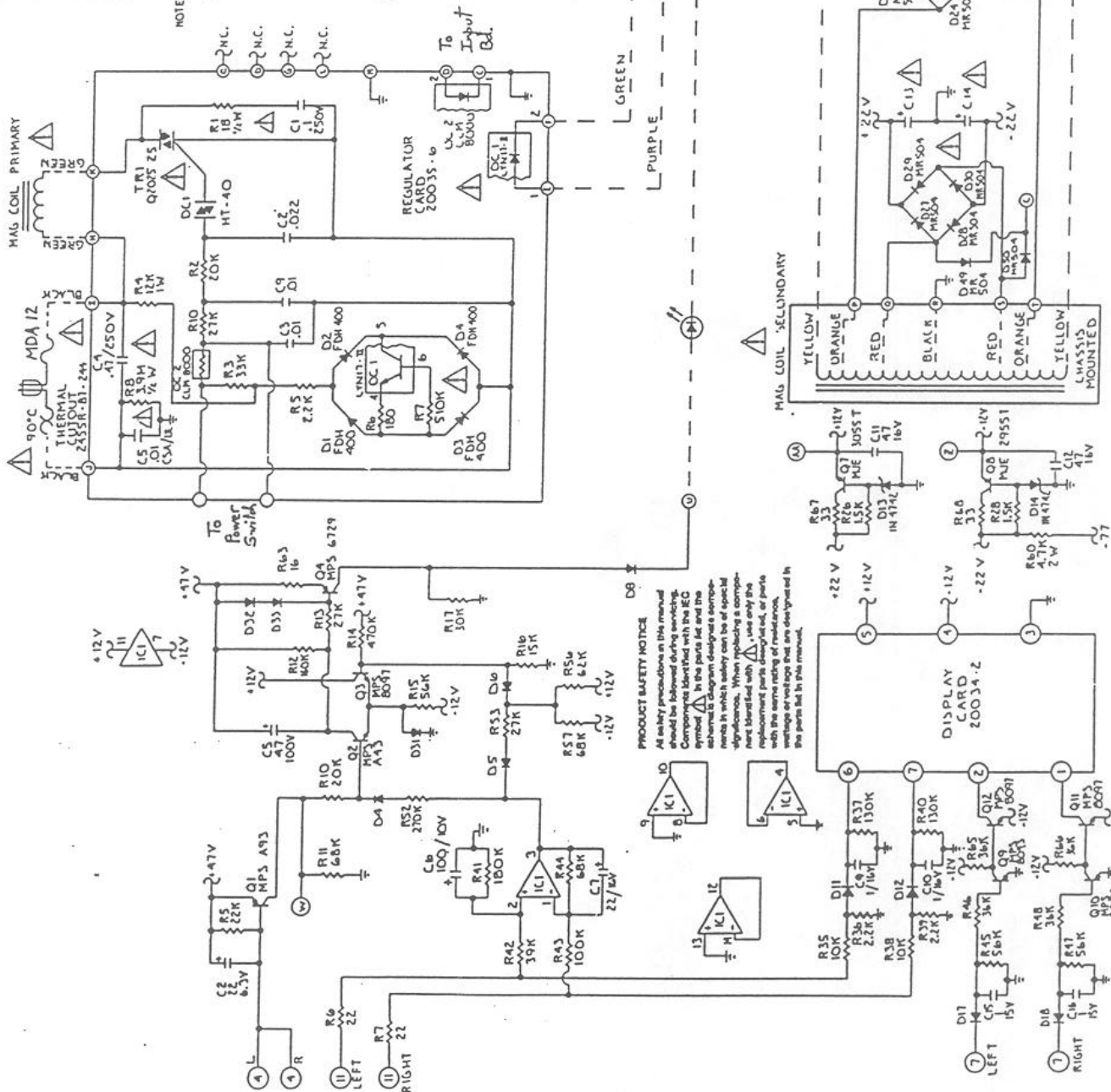
CARVER CORPORATION

SC-1, PCB PWR SUPPLY PM15L 110V
 SC-1, PCB REGULATOR PM15L 110V

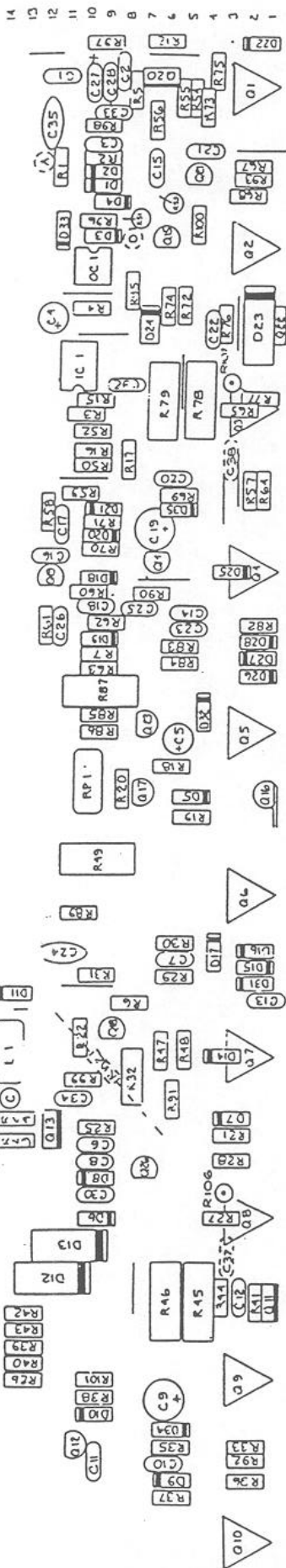
DATE: 11-75
 BY: [Signature]
 CHECKED: [Signature]
 APPROVED: [Signature]

REVISED AND REDRAWN 8-1-85 PM

- NOTES: UNLESS OTHERWISE SPECIFIED,
 1. ALL RESISTORS ARE 1/4W.
 2. ALL DIODES ARE IN-41MB.
 3. ALL CAPACITANCE IS IN UF.
 4. C13 AND C14 ARE DUAL Z200 50/BOV CAPS.
 5. IC1 IS A 4136.



PRODUCT SAFETY NOTICE
 All safety precautions in this manual should be followed during servicing. Components identified with the IEC symbol in the parts list and the schematic diagram designate components in which safety can be of special significance. When replacing a component identified with the IEC symbol, use only the component parts designated, or parts with the same marking or markings, ratings or voltages and are designated in the parts list in this manual.

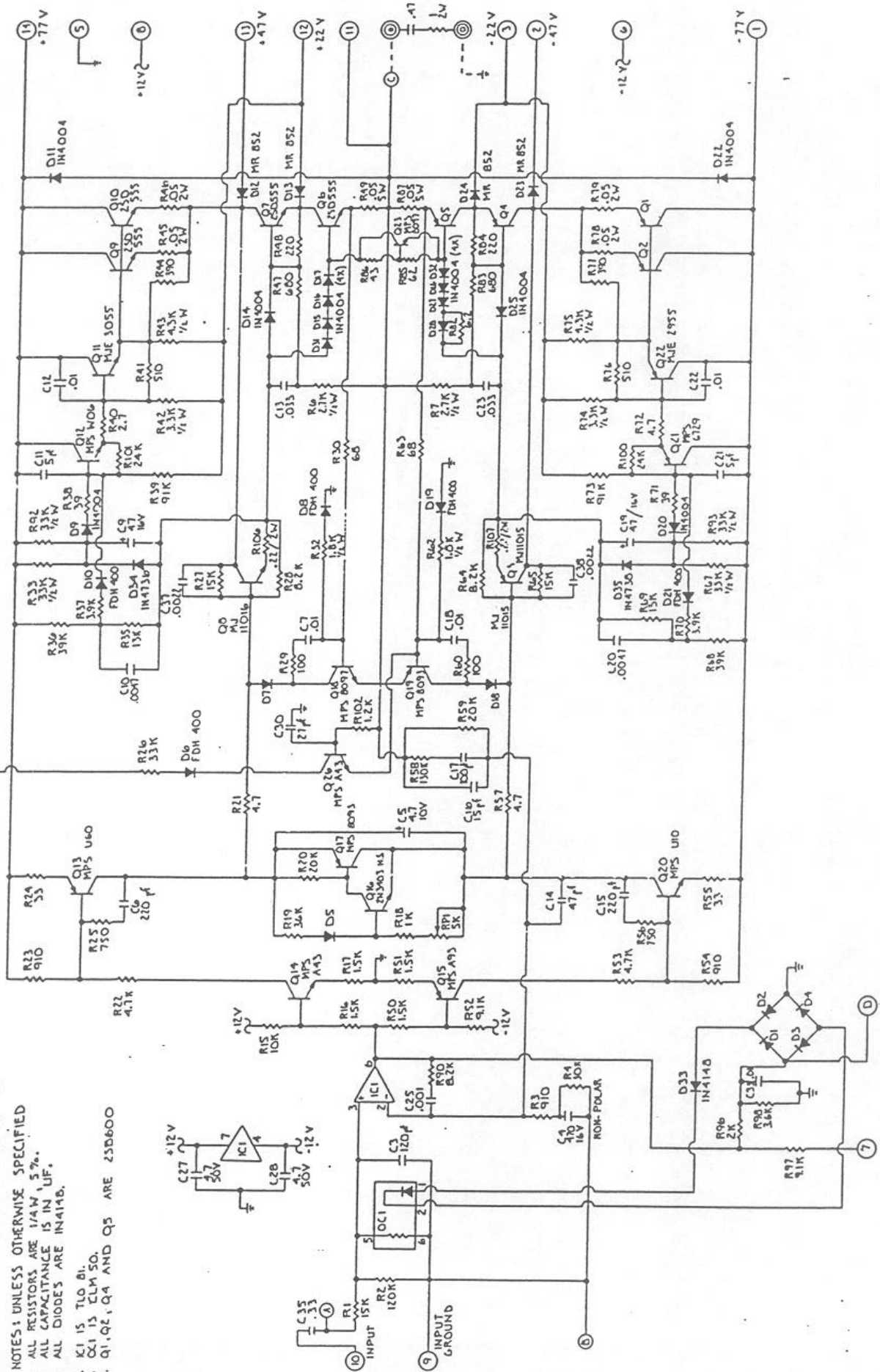


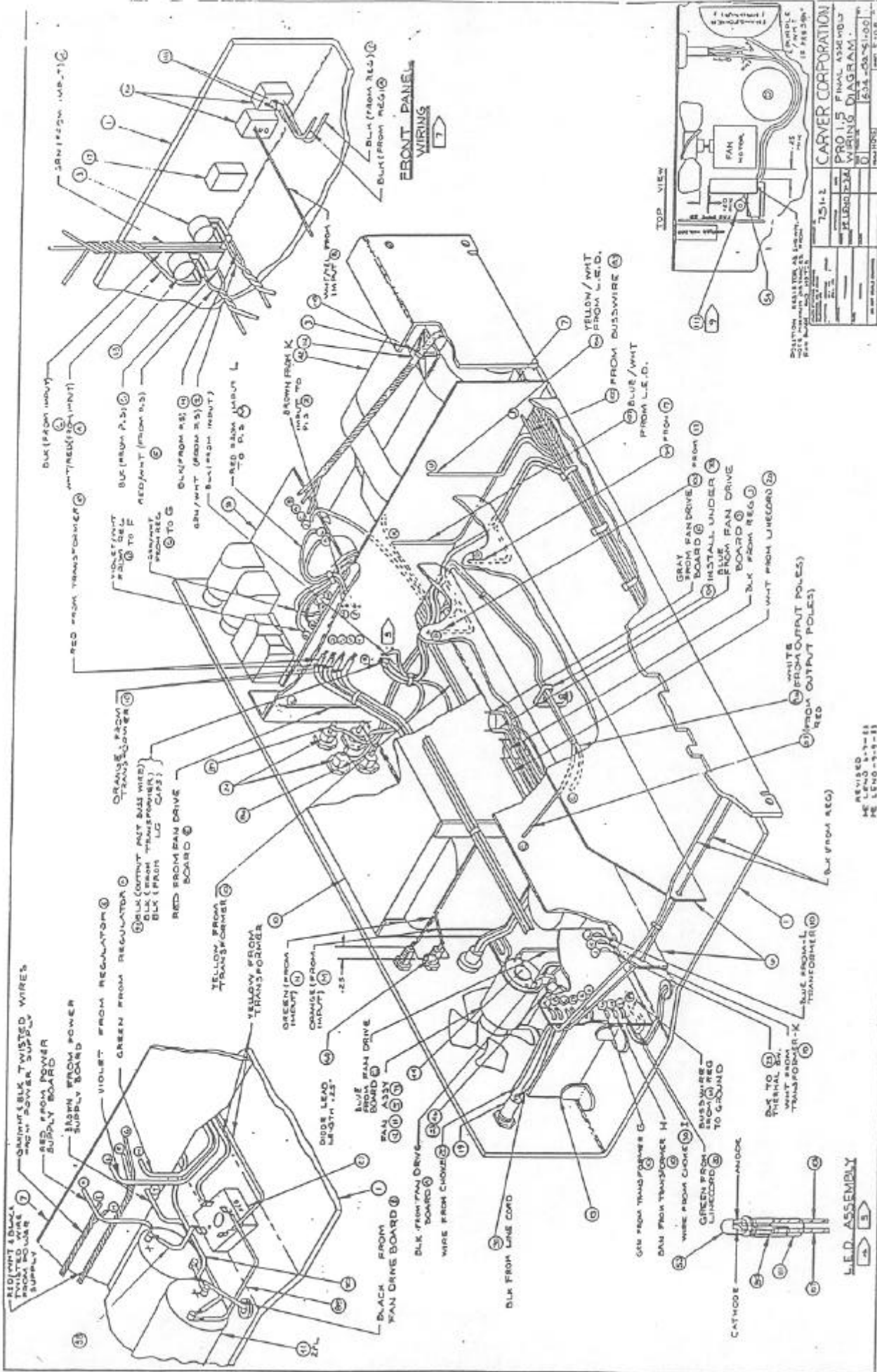
011-010 SOCKETS HAVE
 THIS PIN-OUT.

CARVER CORPORATION
 PH-151AMP CARD
 G.C.I.-00120-03
 Printed in U.S.A.

REVISED AND REDRAWN 7-30-65 P.M.
SCALE NONE
601-00126-03
DATE 7-30-65
DESIGNED BY P. MCGUIRE
CHECKED BY
APPROVED BY
DATE 7-30-65
REV A
PCB AMP
PM15L 110V
CARVER CORPORATION

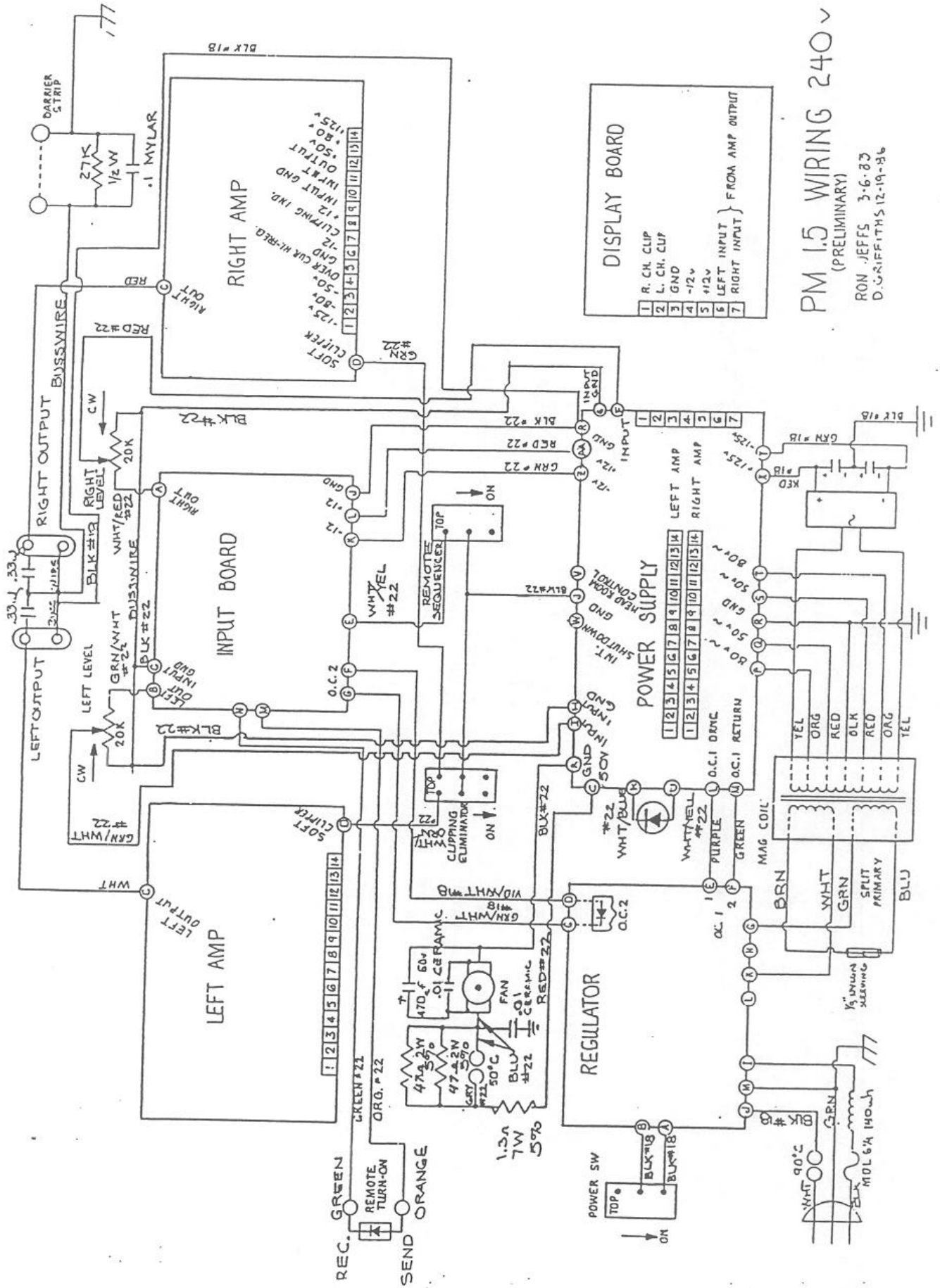
NOTES: UNLESS OTHERWISE SPECIFIED
 1. ALL RESISTORS ARE 1/4W, 5%.
 2. ALL CAPACITANCE IS IN U.F.
 3. ALL DIODES ARE IN414B.
 4. IC1 IS TL081.
 5. OC1 IS CLM 50.
 6. Q1, Q2, Q4 AND Q5 ARE 2SD600





REVISED
 RE LENO 4-1-54
 RE LENO 4-1-54

L.E.D. ASSEMBLY

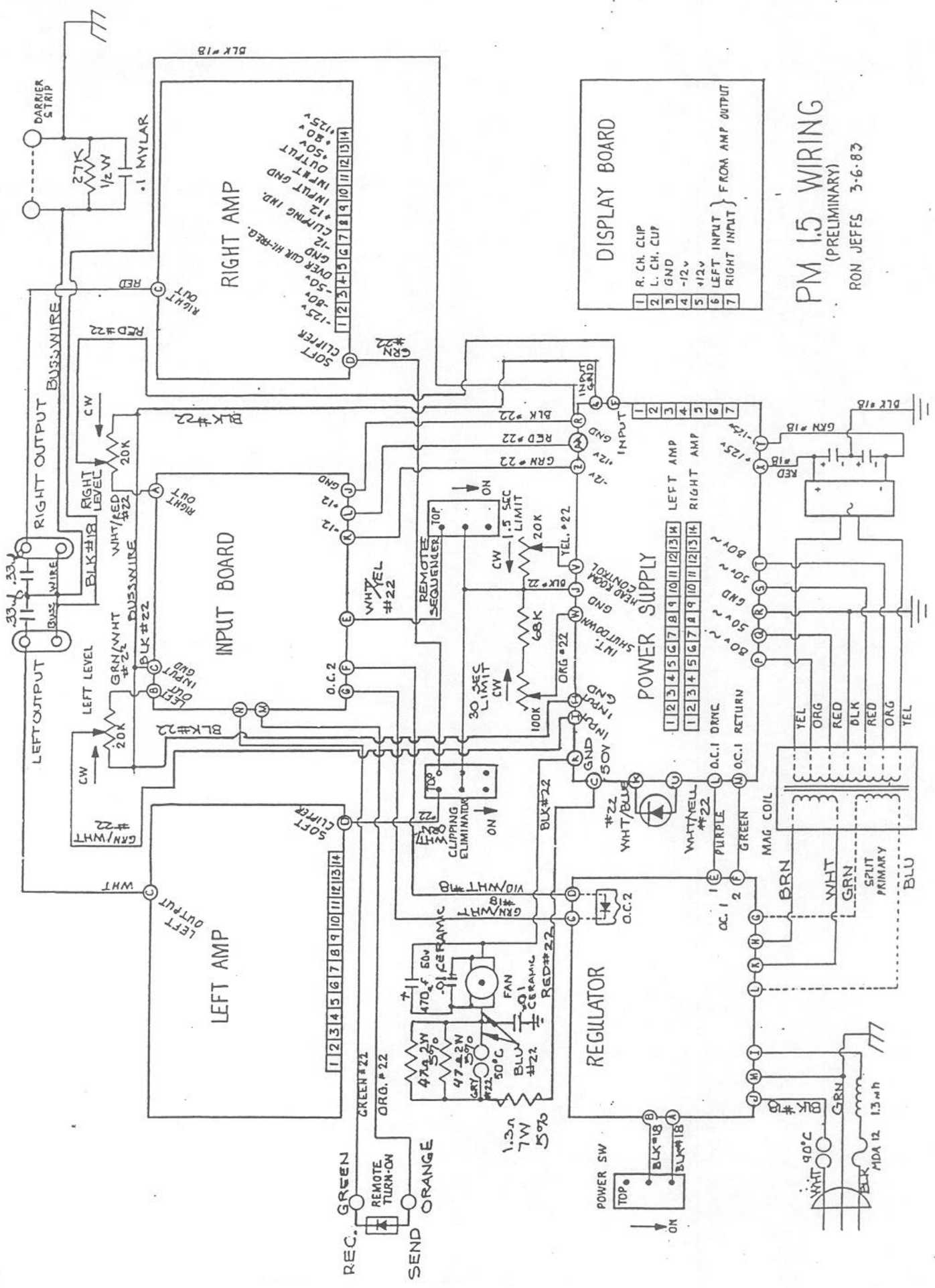


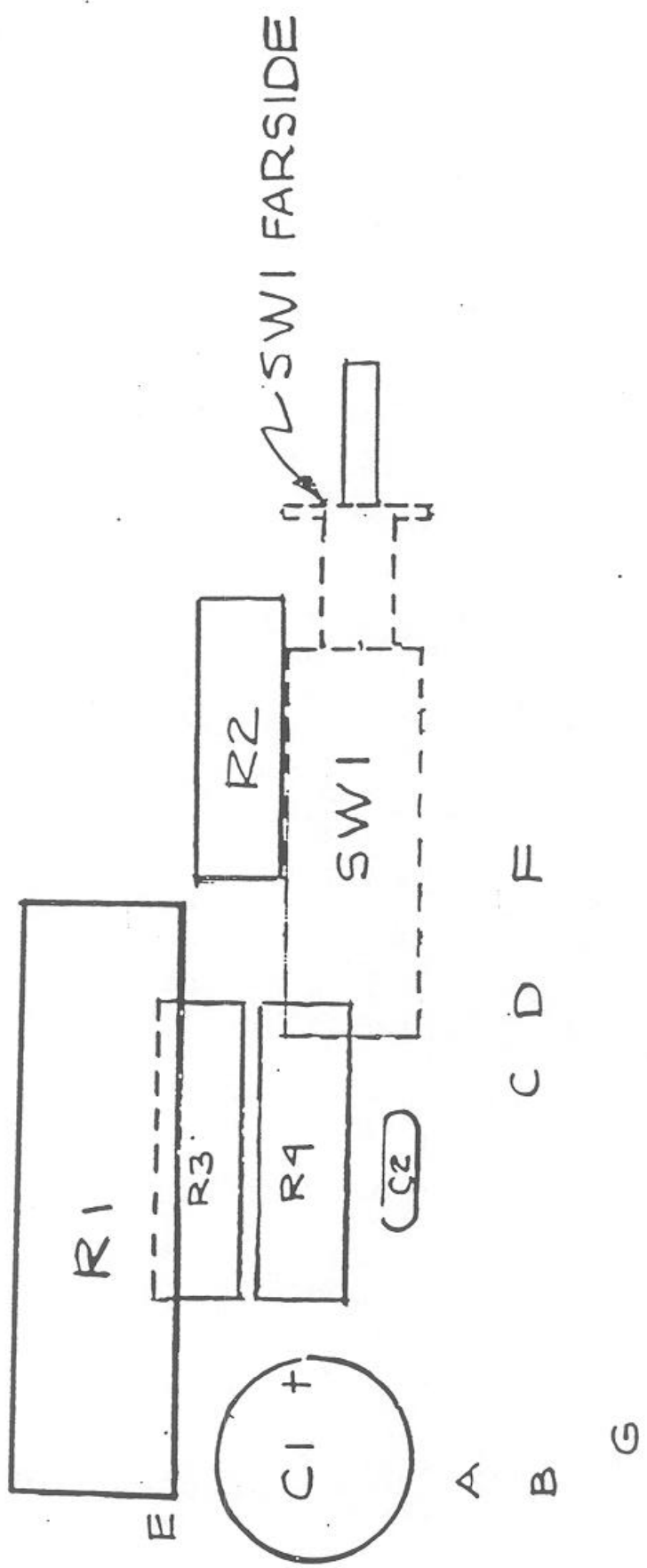
PM 1.5 WIRING 240V
(PRELIMINARY)
RON JEFFS 3-6-83
D. W. RIFFITHS 12-19-86

PM 1.5 WIRING

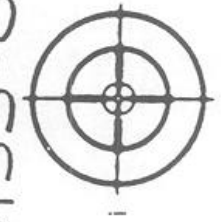
(PRELIMINARY)

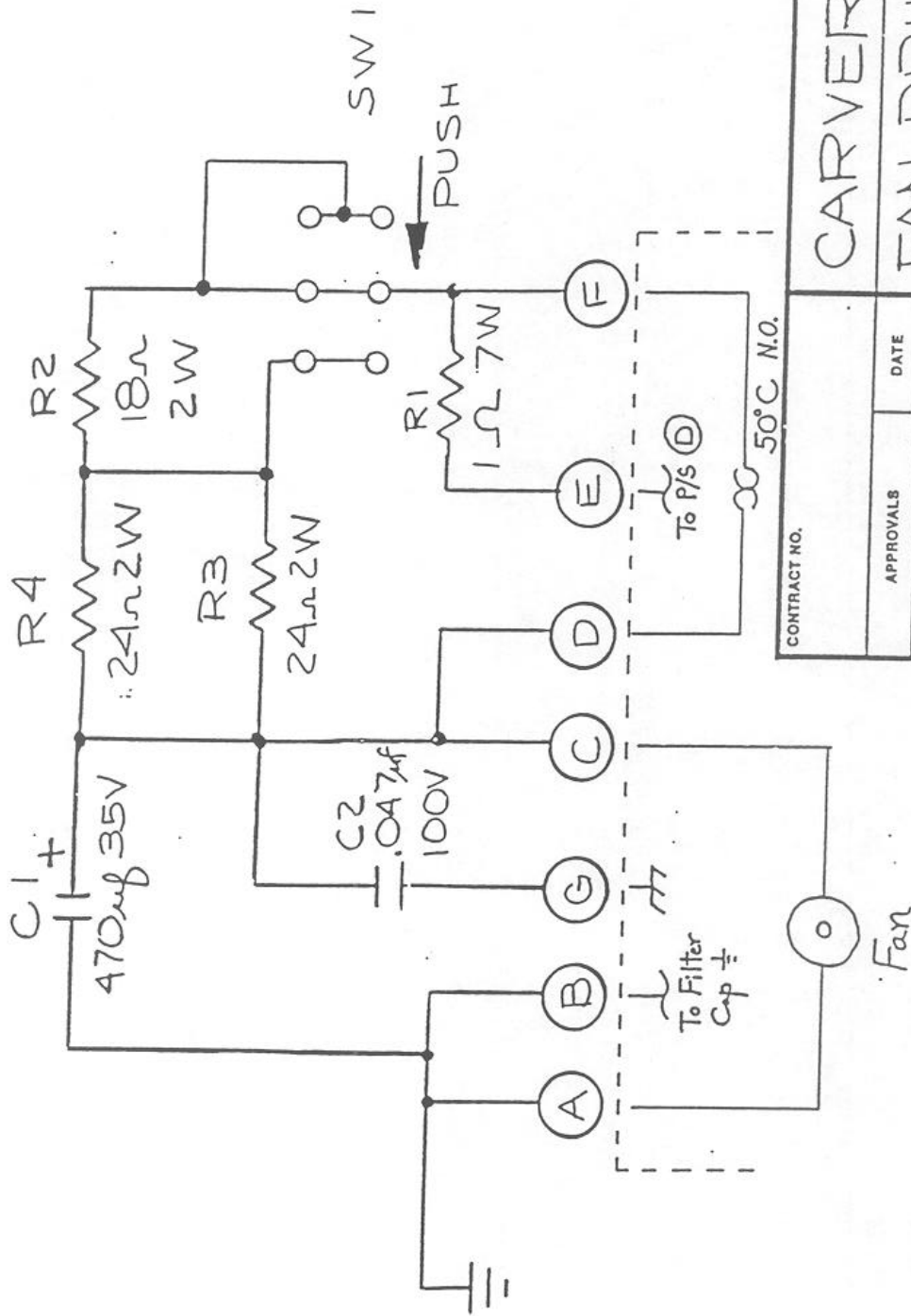
RON JEFFS 3-6-83





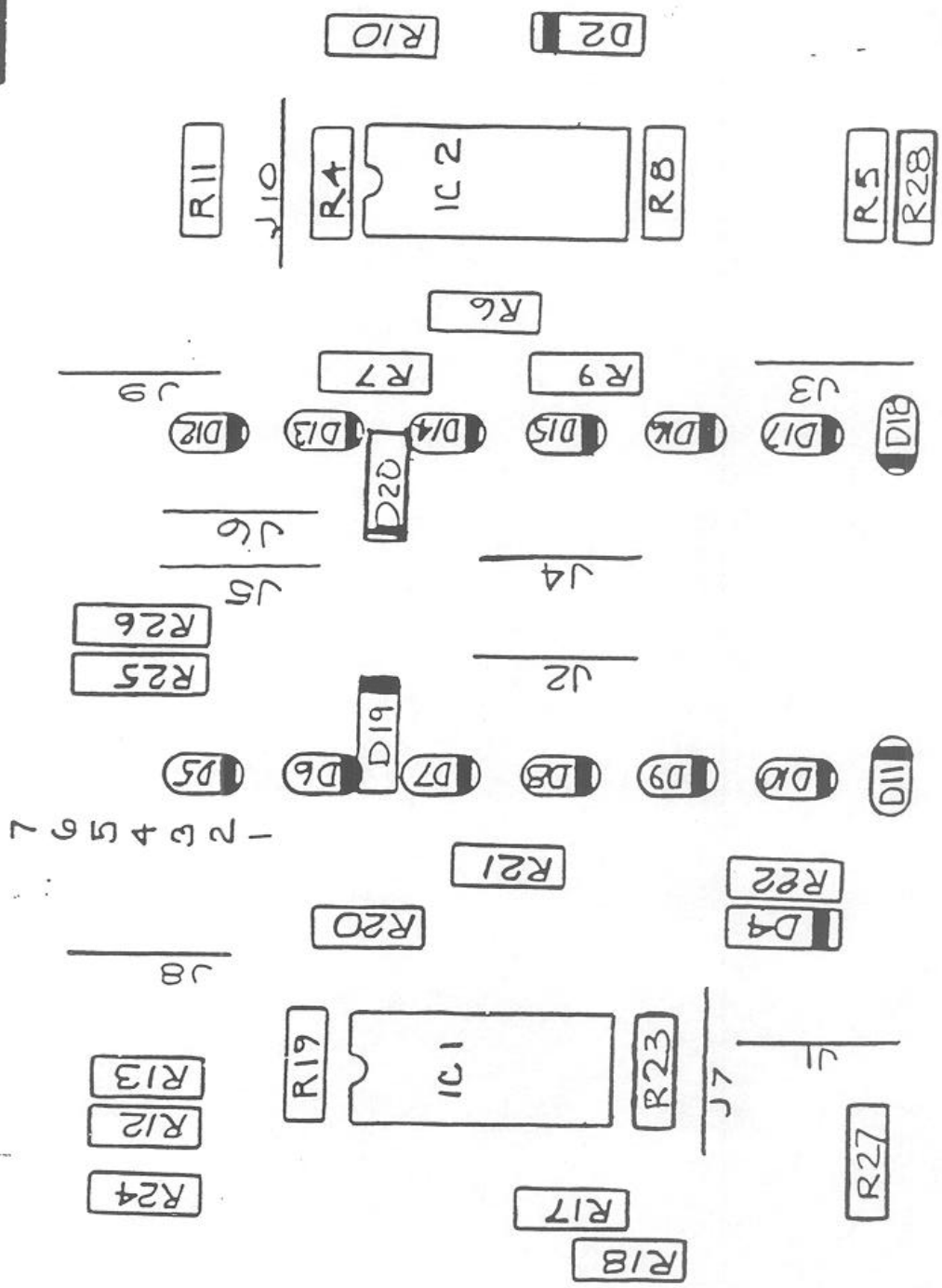
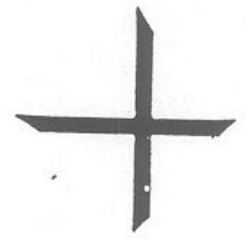
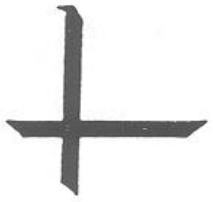
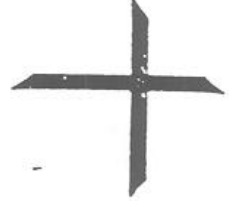
FAN DRIVE
 601-00133-00 REV A



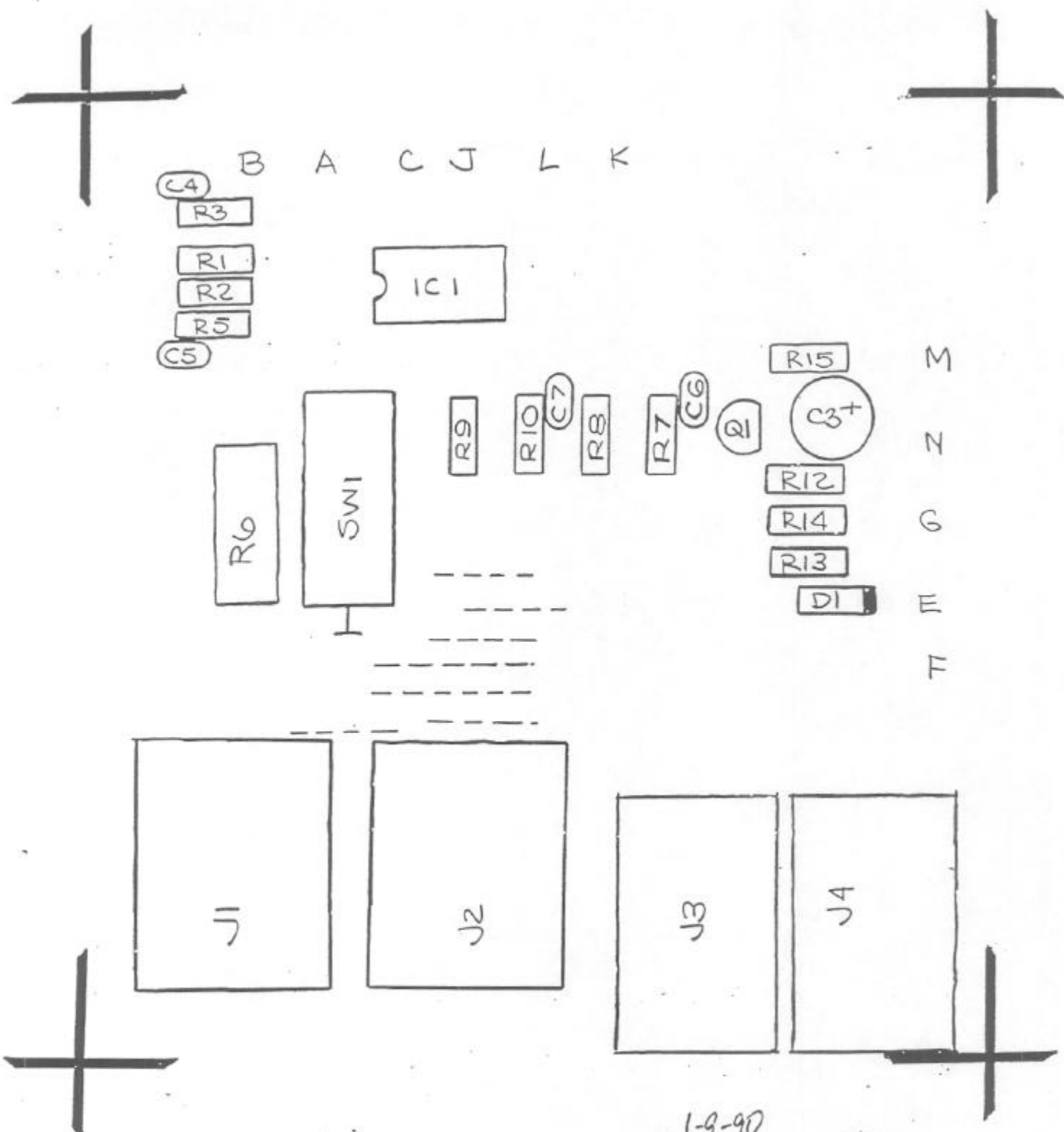


CONTRACT NO.		CARVER CORPORATION	
APPROVALS	DATE	FAN DRIVE SCHEMATIC	
DRAWN	MELENCIO 12-8-83	SIZE	FSCM NO.
CHECKED		A	00133-01
ISSUED		REV.	A
		DWG. NO.	00133-01
		SCALE	—
		SHEET 1 OF 1	

CARVER CORPORATION
 DISPLAY 20034-3



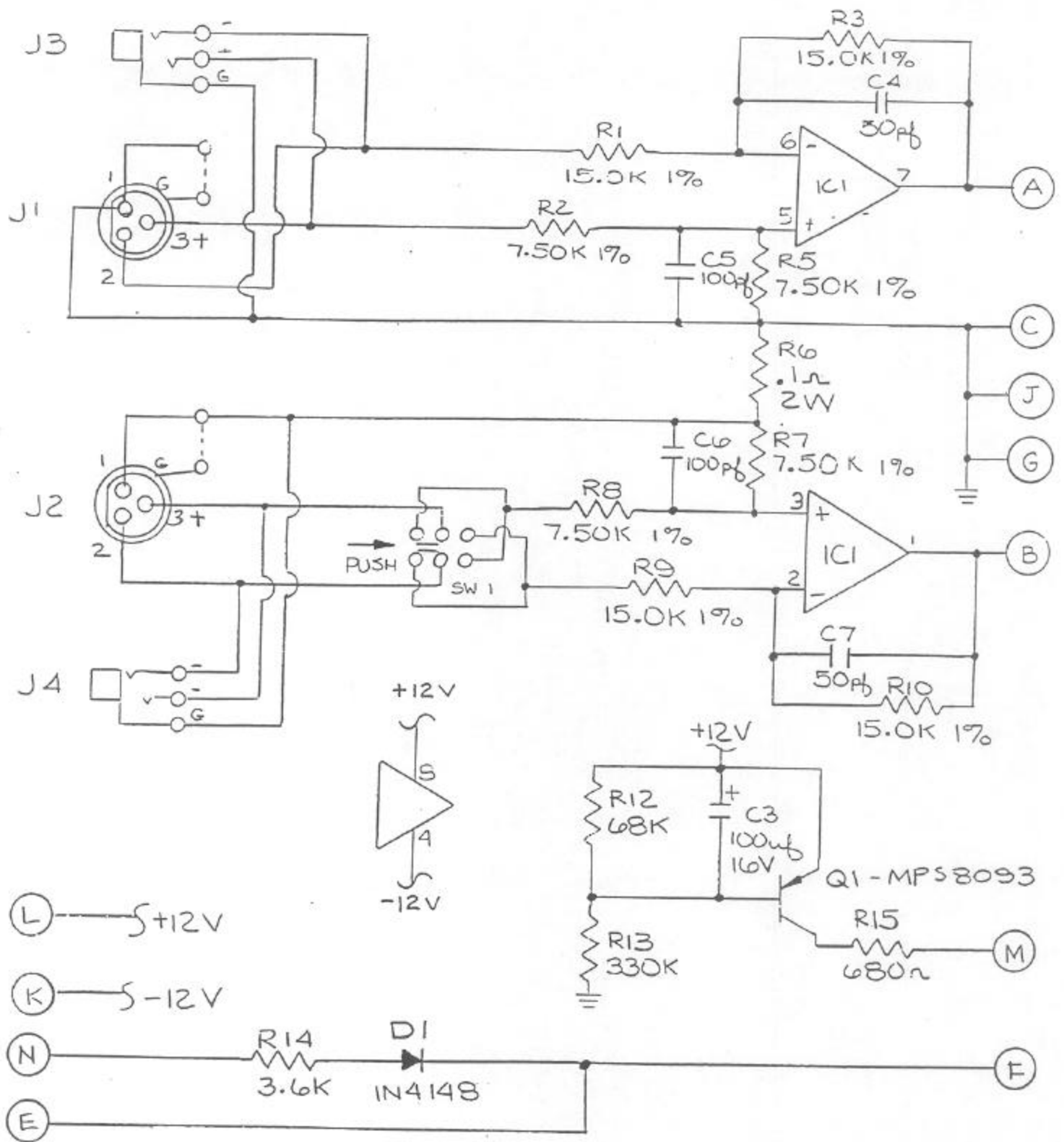
- N 6 4 5 6 7



1-9-90
 gg



PM 1.5 INPUT
 501-00132-01 REV A

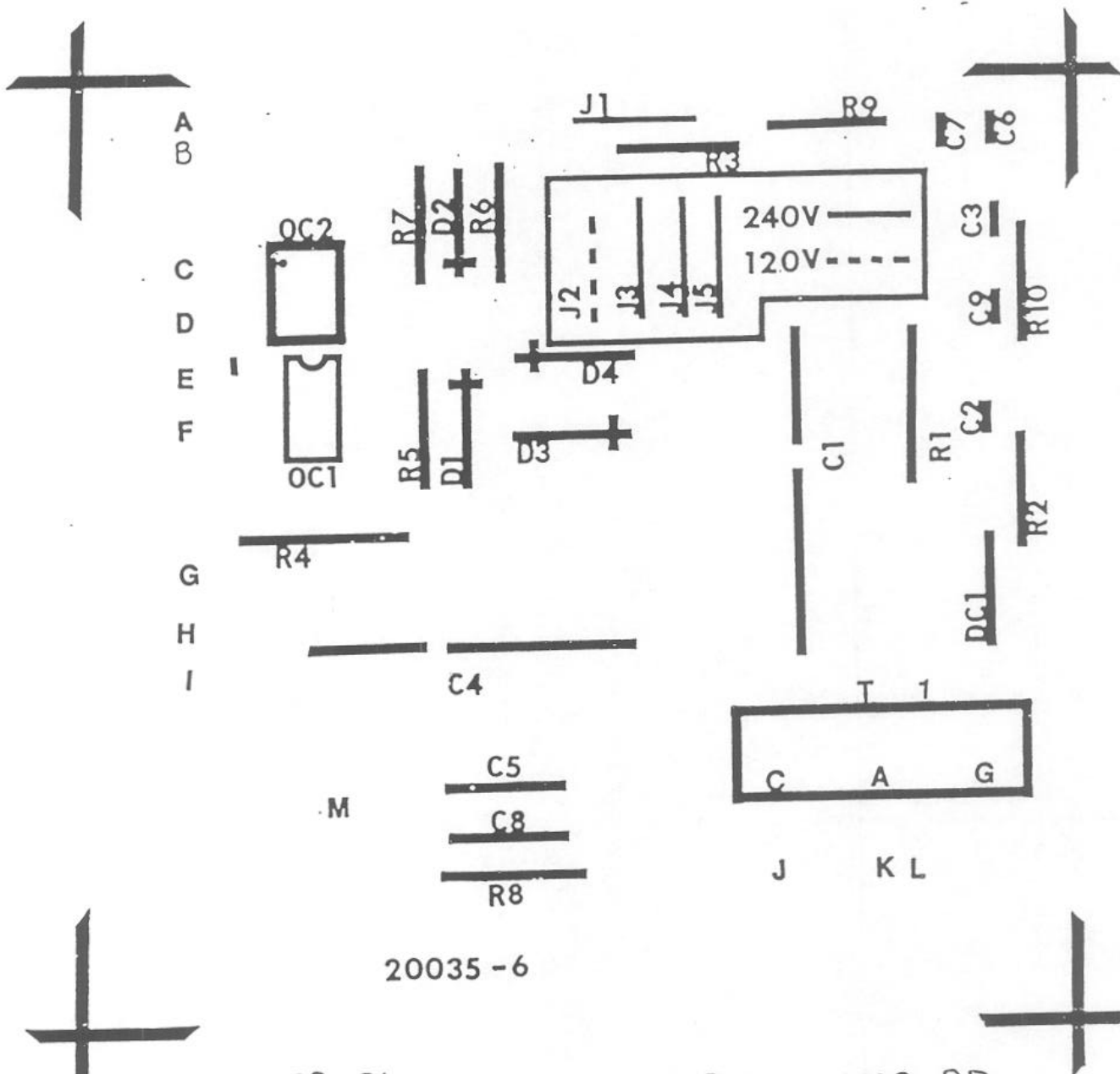


NOTES:

1. IC1 IS A TLO 72
2. UNLESS OTHERWISE NOTED ALL RESISTORS ARE 1/4W.

CARVER CORPORATION	
PM-1.5 INPUT BOARD	
ME. LIENO	1-11-83
REV A	

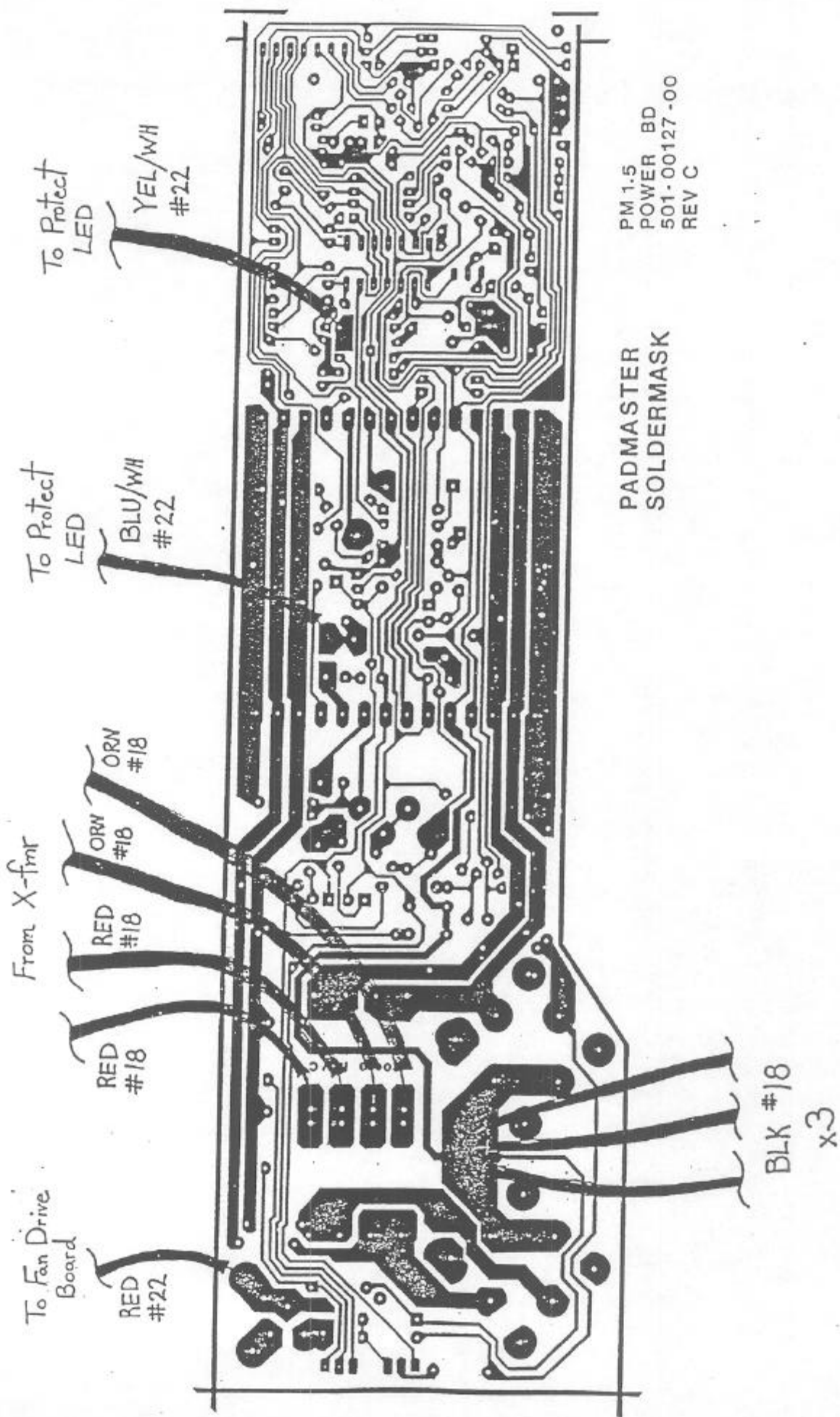
601-00132-01



20035-6

601-00129-01

REGULATOR BD.
PM-1.5

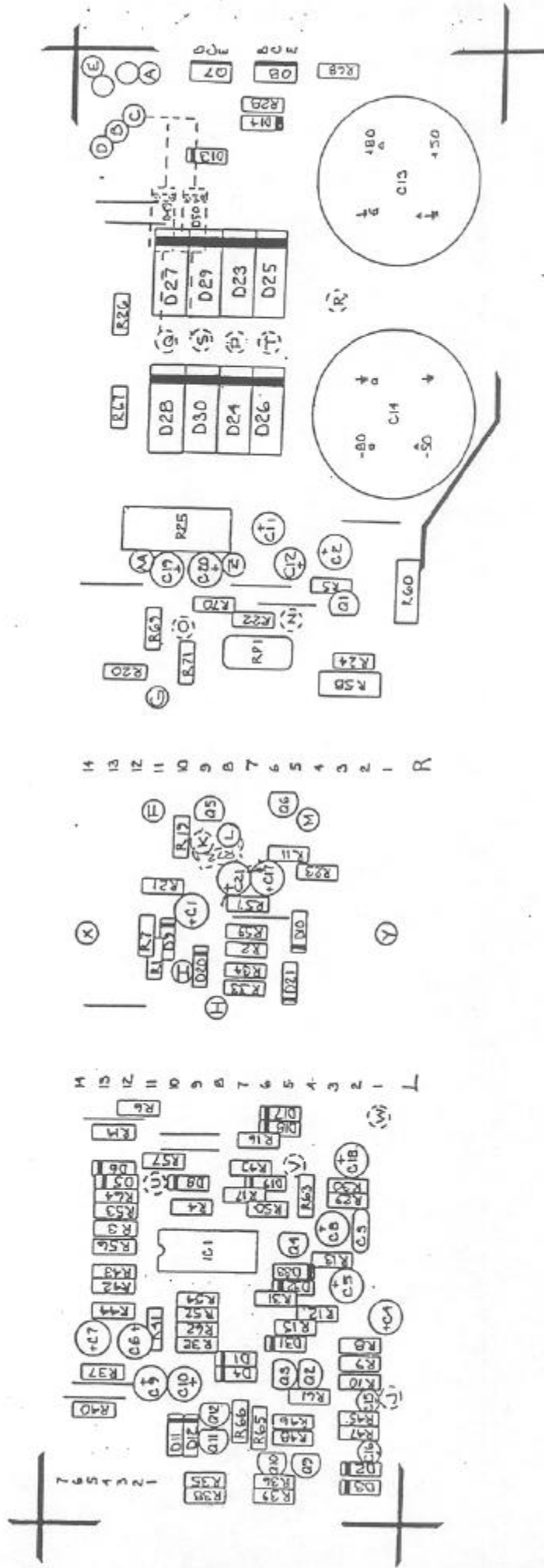


PM 1.5
POWER BD
501-00127-00
REV C

PADMASTER
SOLDERMASK

BLK #18
x3

CARVER CORPORATION
 M-1.5E POWER SUPPLY 20033-3
 PM-1-5



CARVER CORPORATION

SCH. PCB PAIR SUPPLY PH15 110V
 SCH. PCB REGULATOR PH15 110V

REV. 1-20-75
 P. MCGUIRE

DATE: 1-20-75
 BY: P. MCGUIRE

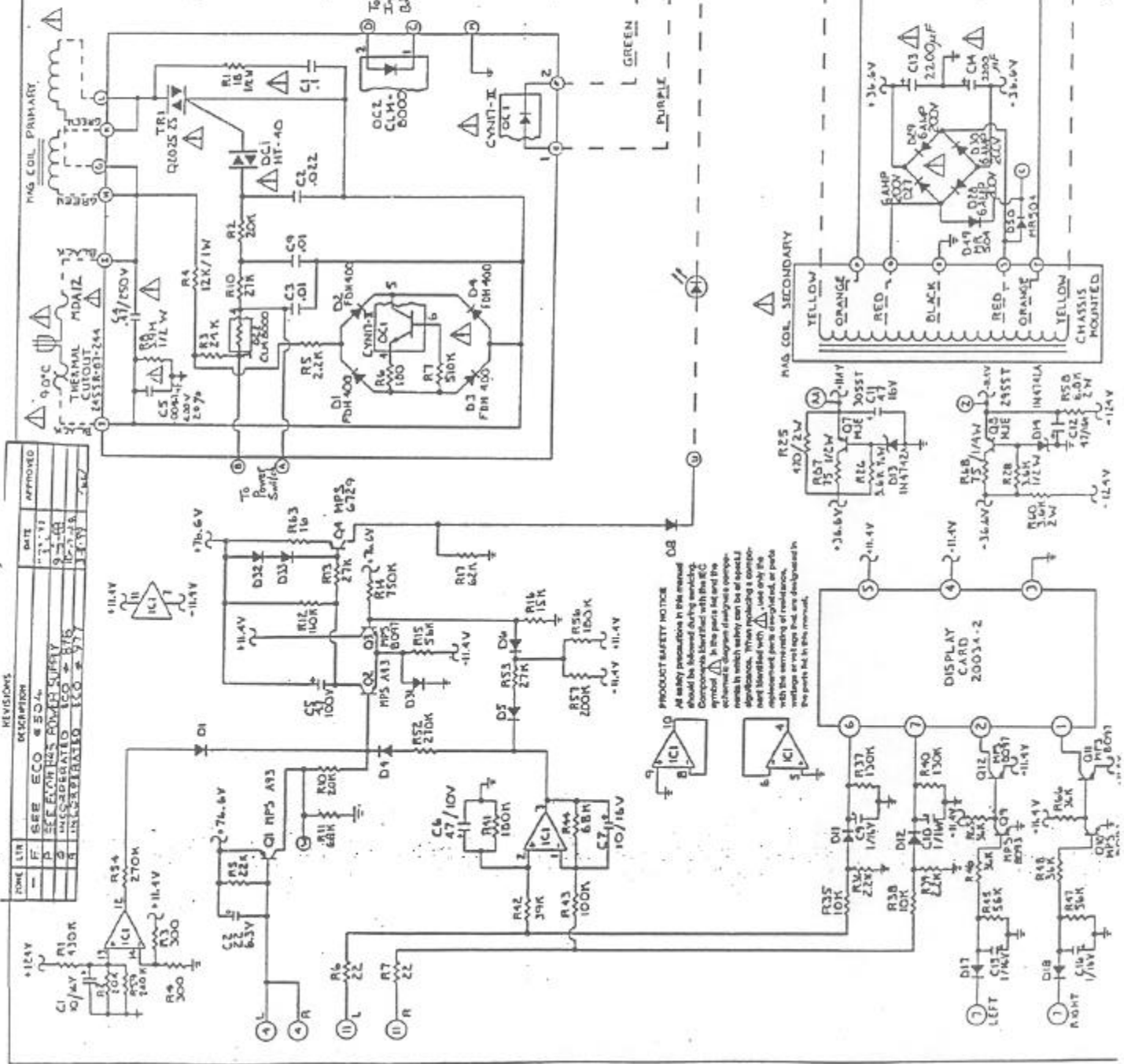
DESIGNED BY: P. MCGUIRE
 CHECKED BY: P. MCGUIRE

REVISIONS

ZONE	DATE	DESCRIPTION	APPROVED
1	1-20-75	SEE ECO # 20-4	
2	1-20-75	SEE ECO # 20-4	
3	1-20-75	SEE ECO # 20-4	
4	1-20-75	SEE ECO # 20-4	
5	1-20-75	SEE ECO # 20-4	
6	1-20-75	SEE ECO # 20-4	
7	1-20-75	SEE ECO # 20-4	
8	1-20-75	SEE ECO # 20-4	
9	1-20-75	SEE ECO # 20-4	
10	1-20-75	SEE ECO # 20-4	
11	1-20-75	SEE ECO # 20-4	
12	1-20-75	SEE ECO # 20-4	
13	1-20-75	SEE ECO # 20-4	
14	1-20-75	SEE ECO # 20-4	
15	1-20-75	SEE ECO # 20-4	
16	1-20-75	SEE ECO # 20-4	
17	1-20-75	SEE ECO # 20-4	
18	1-20-75	SEE ECO # 20-4	
19	1-20-75	SEE ECO # 20-4	
20	1-20-75	SEE ECO # 20-4	

REVISED AND REDRAWN 7-9-75 (7M)

NOTES: UNLESS OTHERWISE SPECIFIED,
 1. ALL RESISTORS ARE 1/4 W.
 2. ALL DIODES ARE 1N4148.
 3. ALL CAPACITANCE IS IN UF.
 4. C13 AND C14 ARE DUAL 2000-UF
 50/80V CAPS.
 5. ICI IS A 4134.

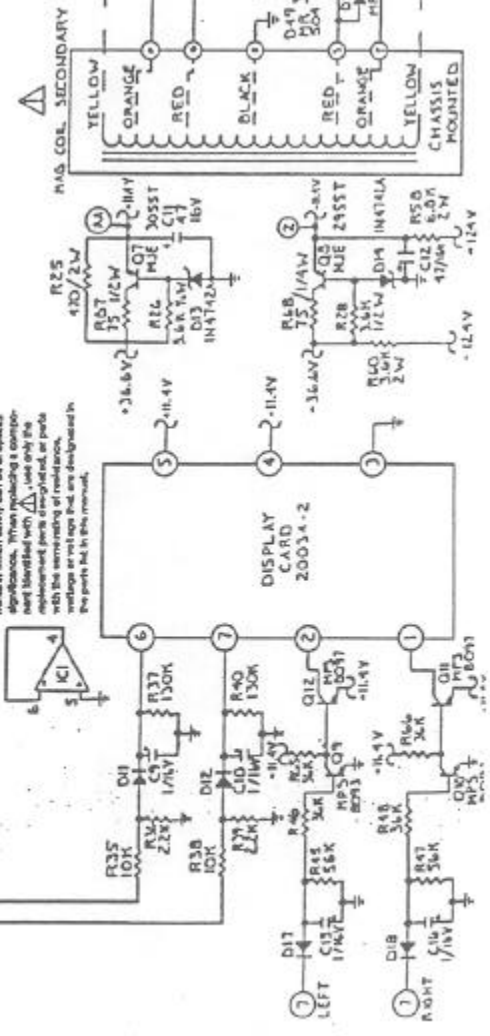


PRODUCT SAFETY NOTICE

All safety precautions in this manual should be followed during servicing. Components identified with the IEC symbol in the parts list and the schematic diagram (display scope) must be safety certified as specified in the IEC standard. This standard is a comprehensive international safety standard for electronic products. It is intended to provide uniformity in the marking of resistance, voltage or wattage that are designated in the parts list in this manual.

REVISIONS

ZONE	DATE	DESCRIPTION	APPROVED
1	1-20-75	SEE ECO # 20-4	
2	1-20-75	SEE ECO # 20-4	
3	1-20-75	SEE ECO # 20-4	
4	1-20-75	SEE ECO # 20-4	
5	1-20-75	SEE ECO # 20-4	
6	1-20-75	SEE ECO # 20-4	
7	1-20-75	SEE ECO # 20-4	
8	1-20-75	SEE ECO # 20-4	
9	1-20-75	SEE ECO # 20-4	
10	1-20-75	SEE ECO # 20-4	
11	1-20-75	SEE ECO # 20-4	
12	1-20-75	SEE ECO # 20-4	
13	1-20-75	SEE ECO # 20-4	
14	1-20-75	SEE ECO # 20-4	
15	1-20-75	SEE ECO # 20-4	
16	1-20-75	SEE ECO # 20-4	
17	1-20-75	SEE ECO # 20-4	
18	1-20-75	SEE ECO # 20-4	
19	1-20-75	SEE ECO # 20-4	
20	1-20-75	SEE ECO # 20-4	



RIGHT LEVEL
 LEFT LEVEL

GREEN
 PURPLE

YELLOW
 ORANGE
 RED
 BLACK
 RED
 ORANGE
 YELLOW

CHASSIS MOUNTED

CHASSIS MOUNTED

CHASSIS MOUNTED

CHASSIS MOUNTED

CHASSIS MOUNTED

CHASSIS MOUNTED

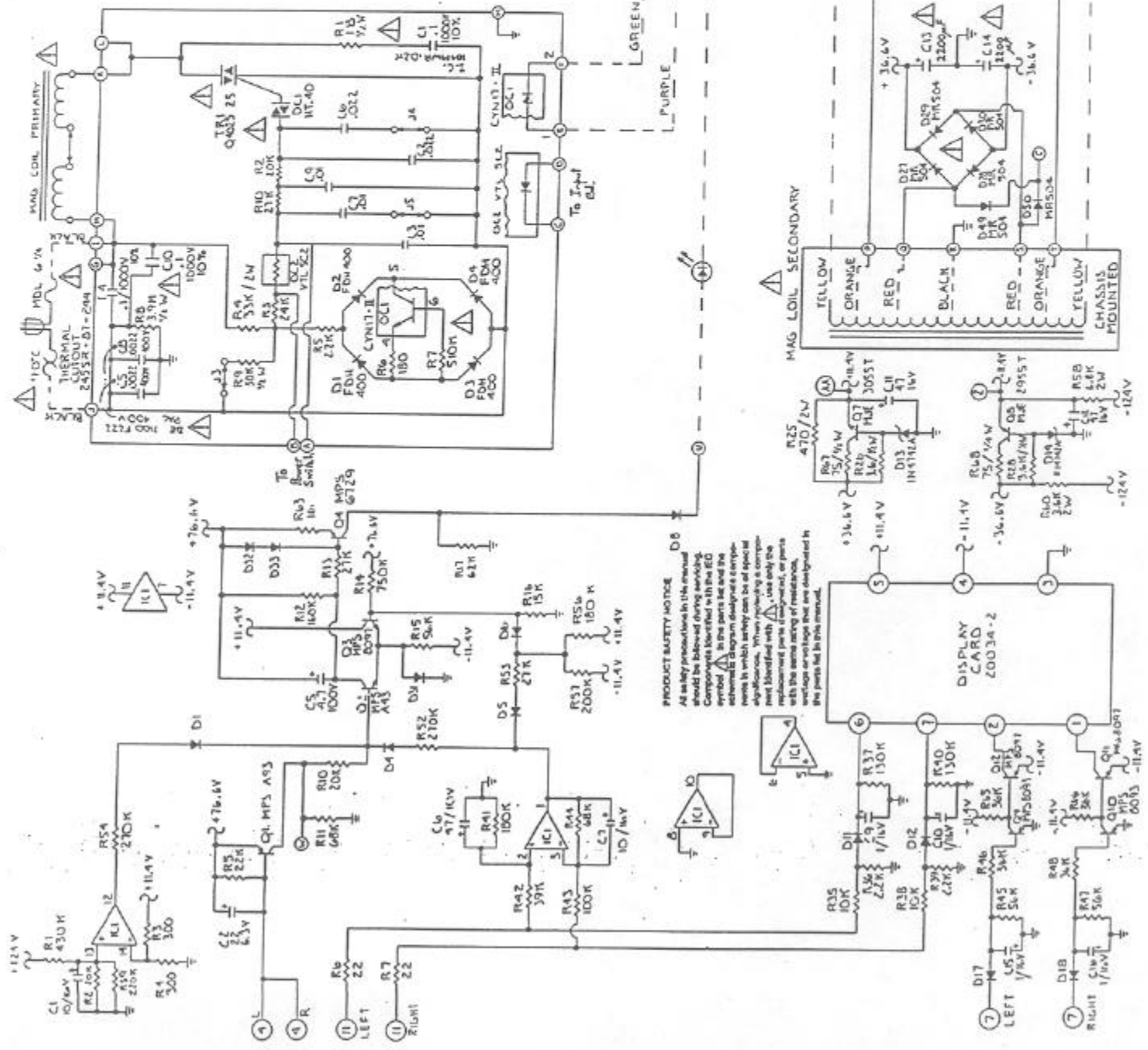
CHASSIS MOUNTED

CHASSIS MOUNTED

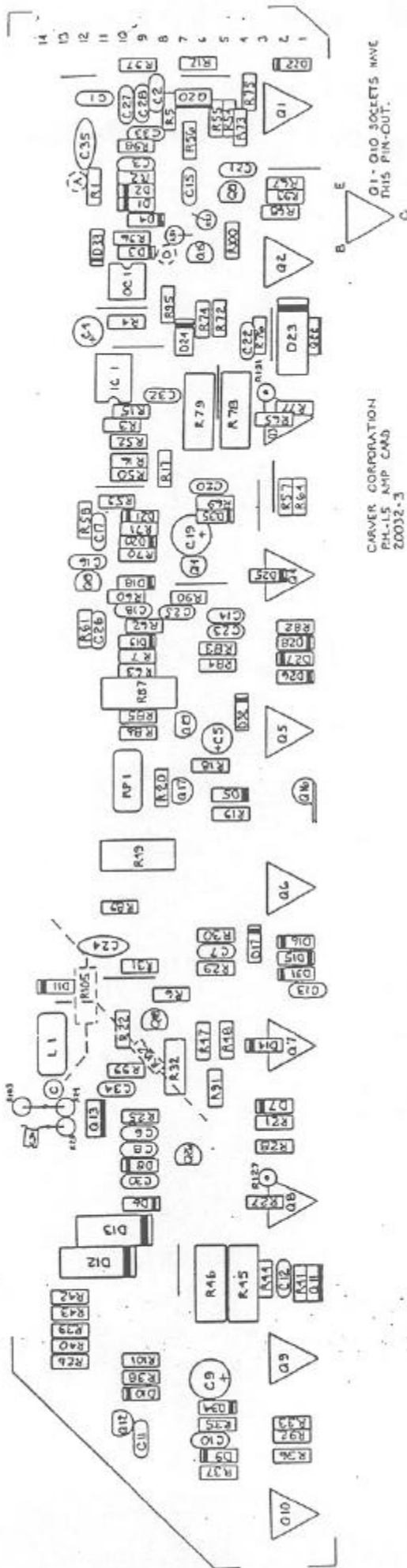
CHASSIS MOUNTED

AUSTRALIA
CARVER CORPORATION
 SCH. PCB PAWR SUPPLY PHLS AJUST
 SCH. PCB REGULATOR PHLS AJUST
 PS 624-78127-D1 REV. 6
 PS 624-78129-D1 REV. 6
 C
 NONE
 7-10-75 (D4)

- REVISED AND REDRAWN 7-10-75 (D4)
- NOTES: UNLESS OTHERWISE SPECIFIED,
 1. ALL RESISTORS ARE 1/4 W.
 2. ALL DIODES ARE 1N4148.
 3. ALL CAPACITANCE IS IN UF.
 4. C13 AND C14 ARE DUAL 2000V.
 5. IC1 IS A 4156.
- RIGHT LEVEL (9)
 LEFT LEVEL (10)



PRODUCT SAFETY NOTICE
 All safety procedures in this manual should be followed during servicing. Components identified with the RED symbol in the parts list and the schematic diagram displace a component in which safety can be of special importance. Where safety is a component identified with the RED symbol, the user should be aware of the safety warning or voltage that are designated in the parts list in this manual.



CARVER CORPORATION
 PH-15 AMP CARD
 20032-3

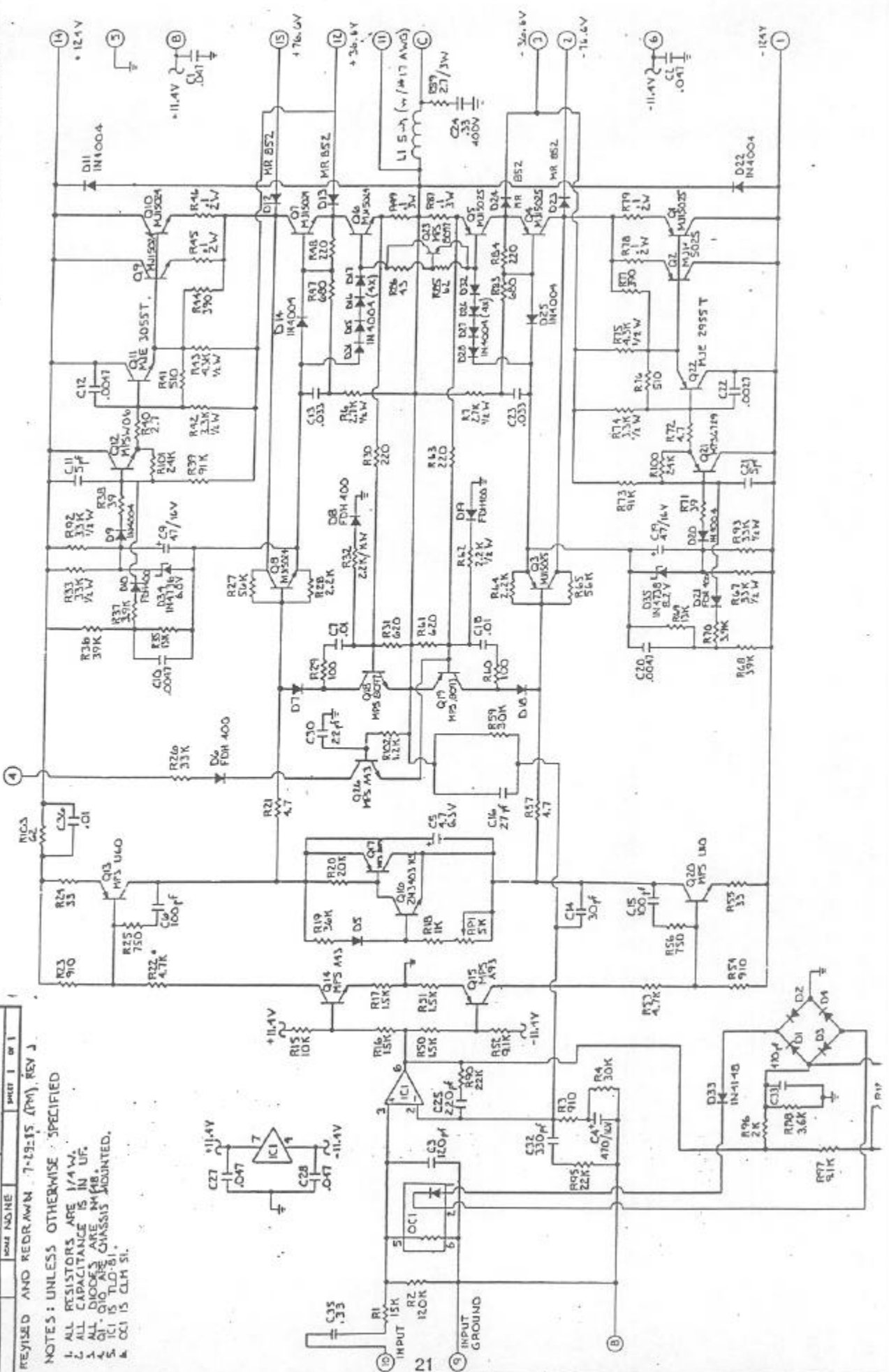
REV	DATE	DESCRIPTION	BY	APPROVED
K	2-8-87	SEE ECO # 479		PM D.L.G.
L	1-15-88	SEE ECO # 627		
M	2-8-88	SEE ECO # 776		
N	11-15-88	DELETE PH1.5A PER ECO # 897		
P	9-22-89	CLAMP TO CLAMP-31 PER ECO # 1231		

REV	DATE	DESCRIPTION	BY	APPROVED
P	7-29-89	SCHEMATIC, PCB AMP REV PH1.5		
C	6-05-00176-01	605-00176-01		

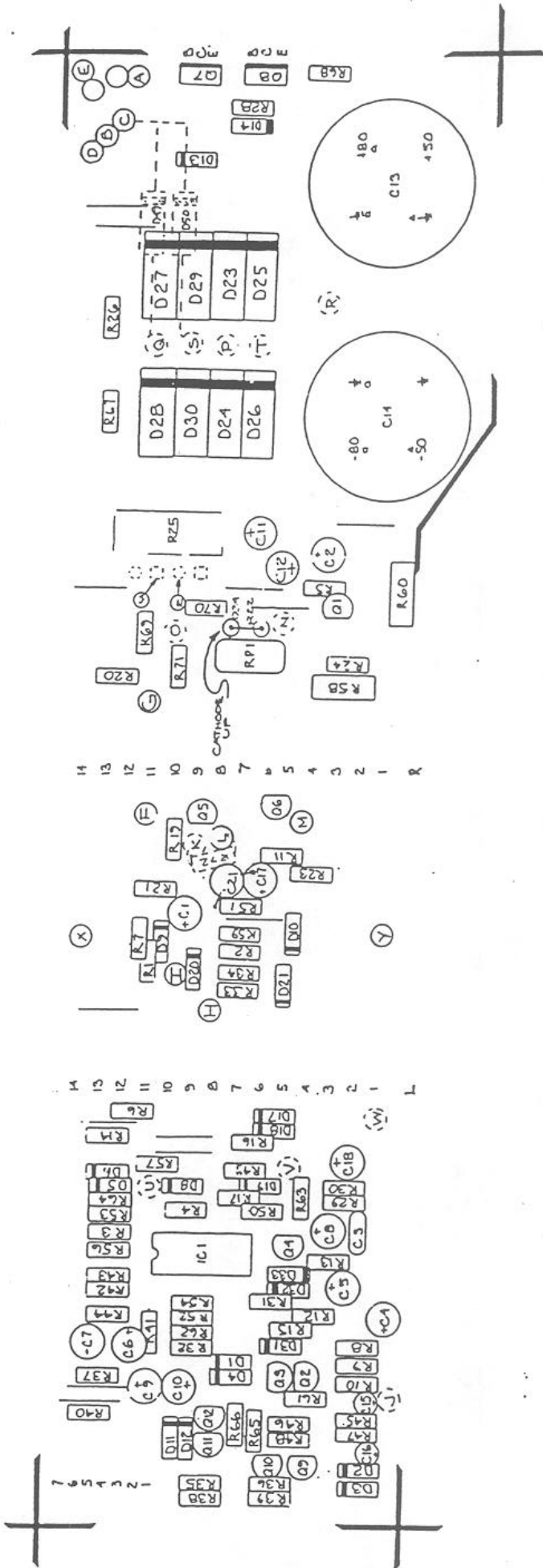
REVISED AND REDRAWN 7-29-89 (PM), REV J

NOTES: UNLESS OTHERWISE SPECIFIED

- 1. ALL RESISTORS ARE 1/4 W.
- 2. ALL CAPACITANCE IS IN UF.
- 3. ALL DIODES ARE 1N4148.
- 4. ICI IS TLO-81.
- 5. ICI IS TLO-81.
- 6. CCI IS CLH 51.

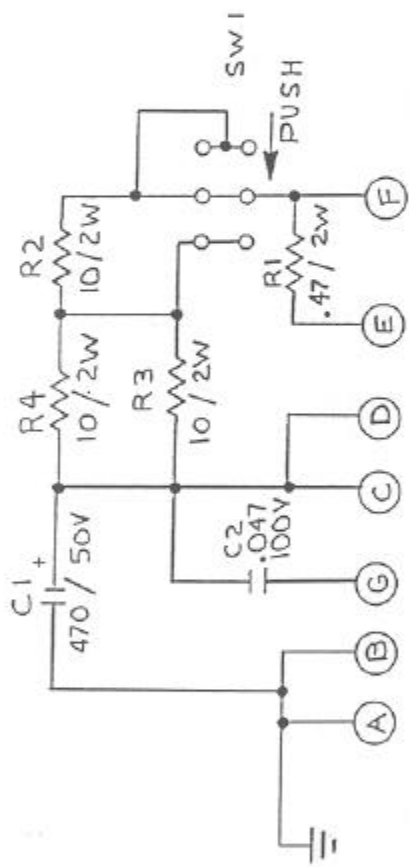


CARVER CORPORATION
 P/M 1.5L
 6.01-003127-03

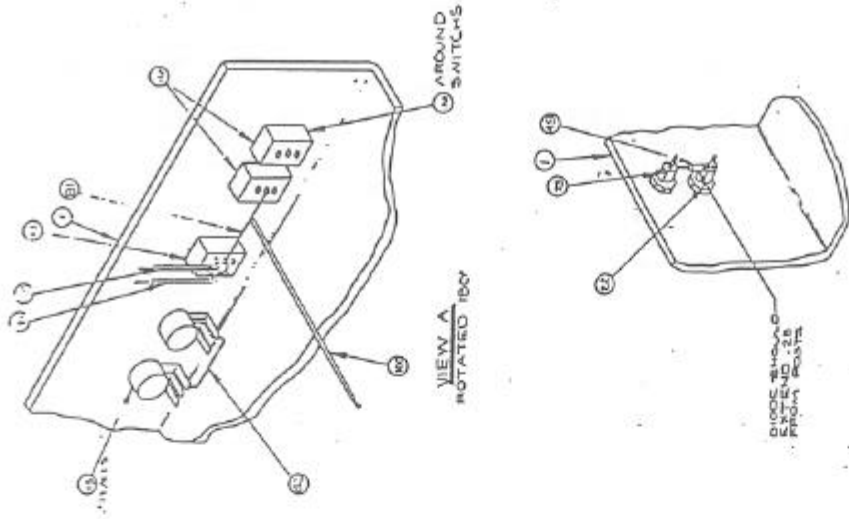
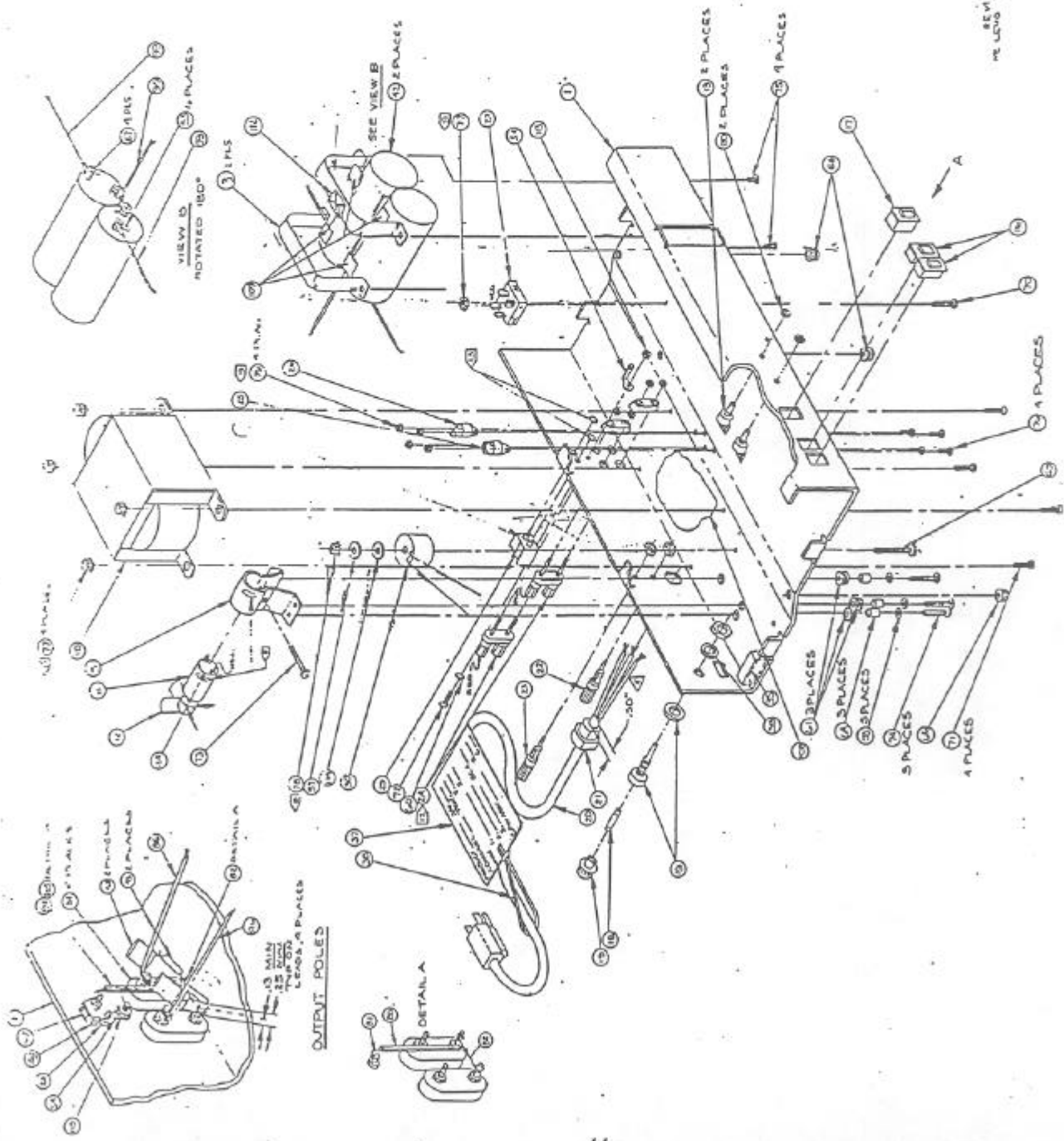


ES: UNLESS OTHERWISE SPECIFIED,
ALL CAPACITANCE IS IN UF.

REVISIONS		DATE	APPROVED
ZONE	LEN		



CONTRACT NO. 20051		REDRAWN 8-1-85 P.E.	
APPROVALS	DATE	CARVER CORPORATION	
EGRI	8-1-85	SCHEMATIC, FAN DRIVE	
CHECKED		PM1.51	REV A
		SIZE: CODE IDENT NO	DRAWING NO
		B	601-00133-03
		SCALE: NONE	SHEET 1 OF 1



MULTIPLE AMPLIFIER POWER PACK SEQUENCER

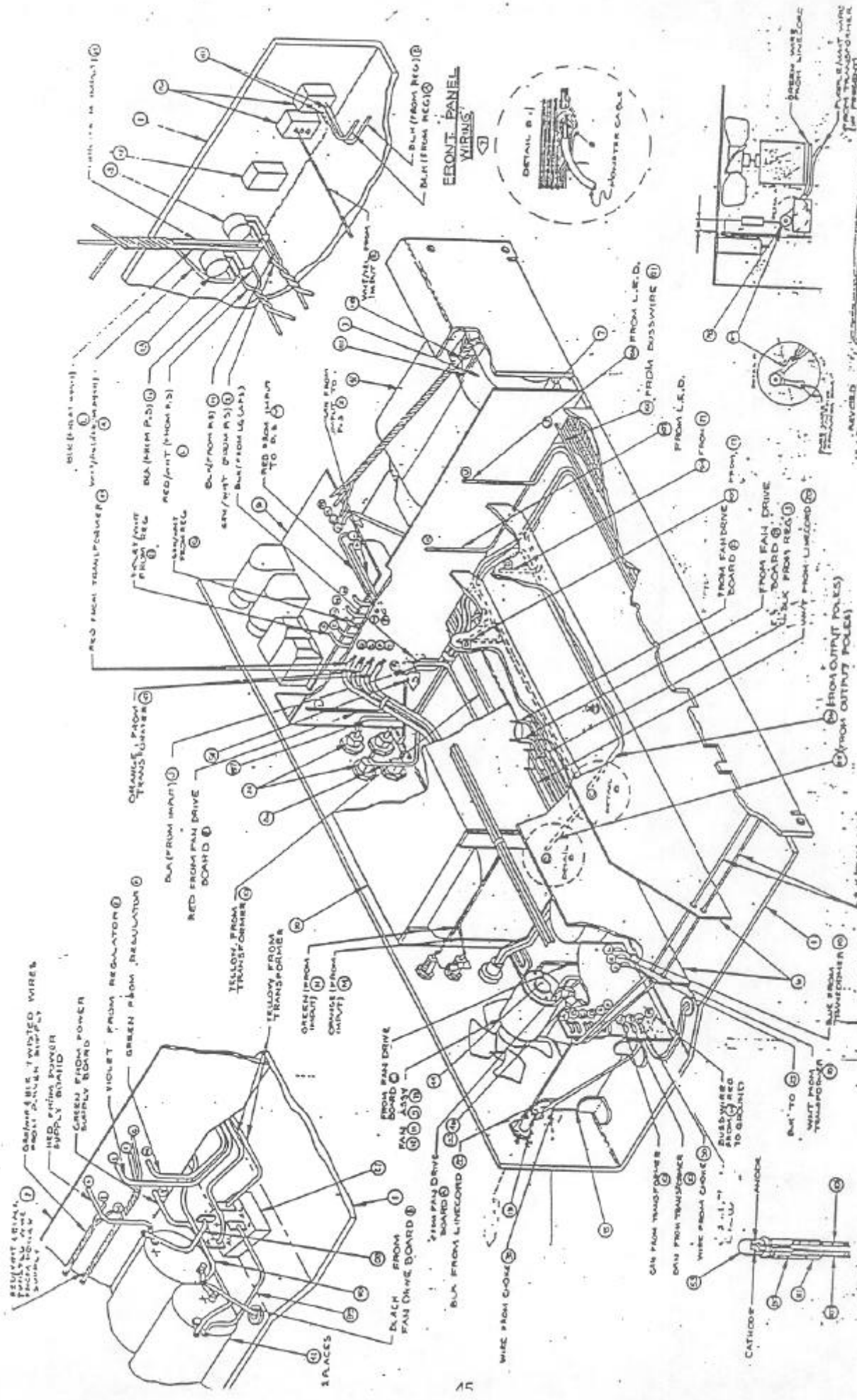
LINECORD DATA

COLOR	LENGTH
WHITE	7'
BLACK	9.5'
GREEN	8.5'

NOTE- THESE LENGTHS ARE FROM END OF INSULATION

Part No.	151-Z	CARVER CORPORATION
Rev.	1	DM1, DFINAL ASSEMBLY
Drawn	J. L. B.	Checked
By	J. L. B.	By
Date	10/1/51	Scale
Project	6031 OD-17100-8	Sheet
Job No.	1001-301-B	Total

REVISED 10-1-51
RE LEAD 10-1-51



FRONT PANEL WIRING



CARTER CORPORATION	
PROJ. SUPPL. ASSEMBLY	
WIRING DIAGRAM 11	
REV.	DATE
1	10-10-48
2	11-10-48
3	12-10-48
4	1-10-49
5	2-10-49
6	3-10-49
7	4-10-49
8	5-10-49
9	6-10-49
10	7-10-49
11	8-10-49
12	9-10-49
13	10-10-49
14	11-10-49
15	12-10-49
16	1-10-50
17	2-10-50
18	3-10-50
19	4-10-50
20	5-10-50
21	6-10-50
22	7-10-50
23	8-10-50
24	9-10-50
25	10-10-50

R.E.D. ASSEMBLY

REVISED 14 JAN 50

11 10 48

11 10 48

11 10 48

11 10 48

11 10 48

11 10 48

11 10 48

11 10 48

11 10 48

11 10 48

11 10 48

11 10 48

11 10 48

11 10 48

11 10 48

11 10 48

11 10 48

11 10 48

11 10 48

11 10 48

11 10 48

11 10 48

11 10 48

11 10 48

11 10 48

11 10 48

11 10 48

11 10 48

11 10 48

11 10 48

11 10 48

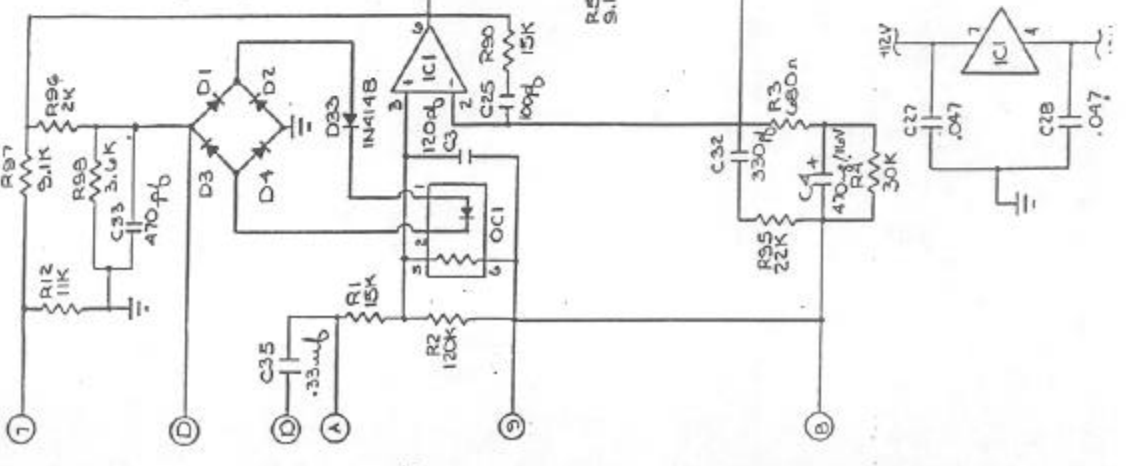
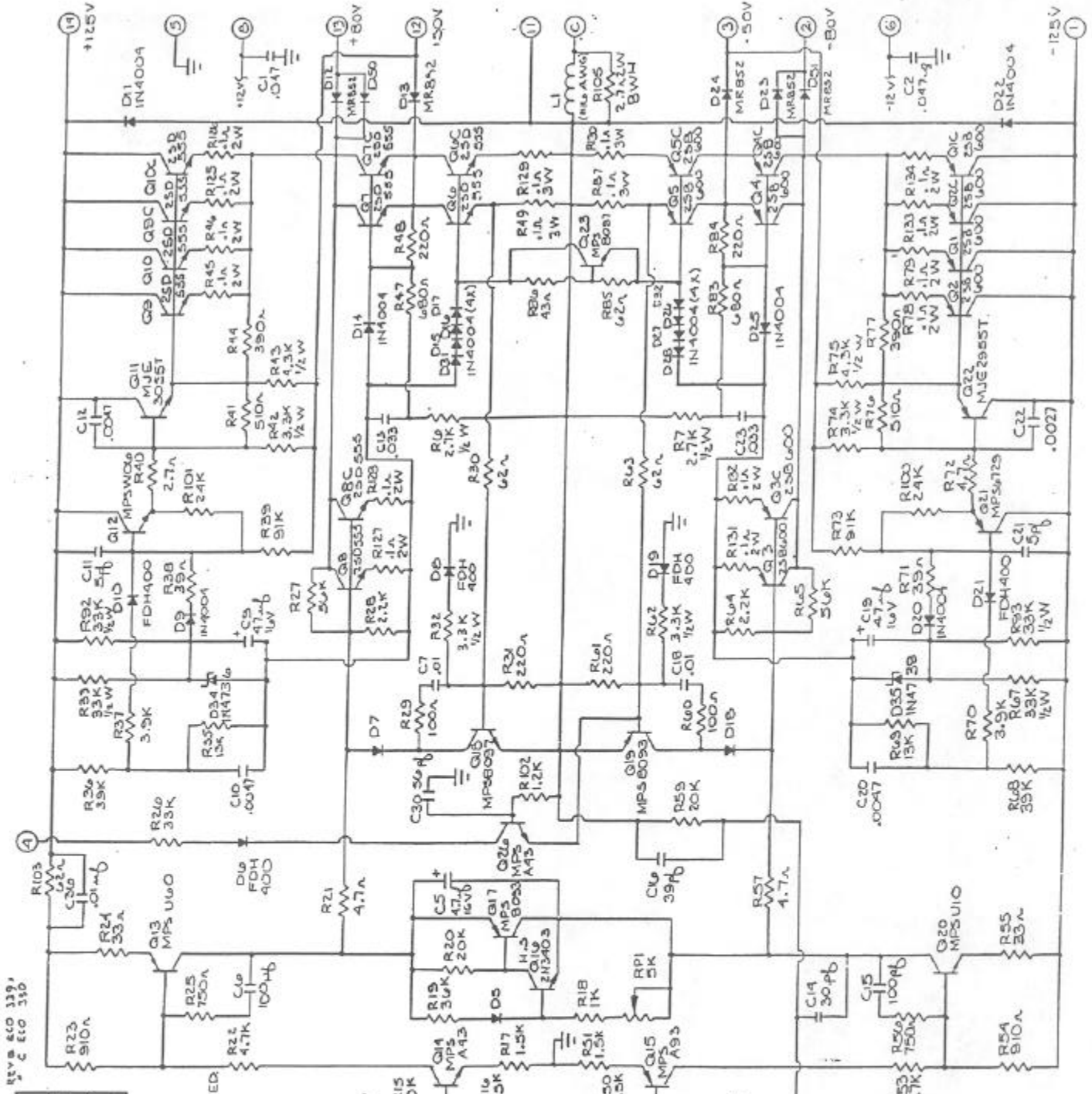
11 10 48

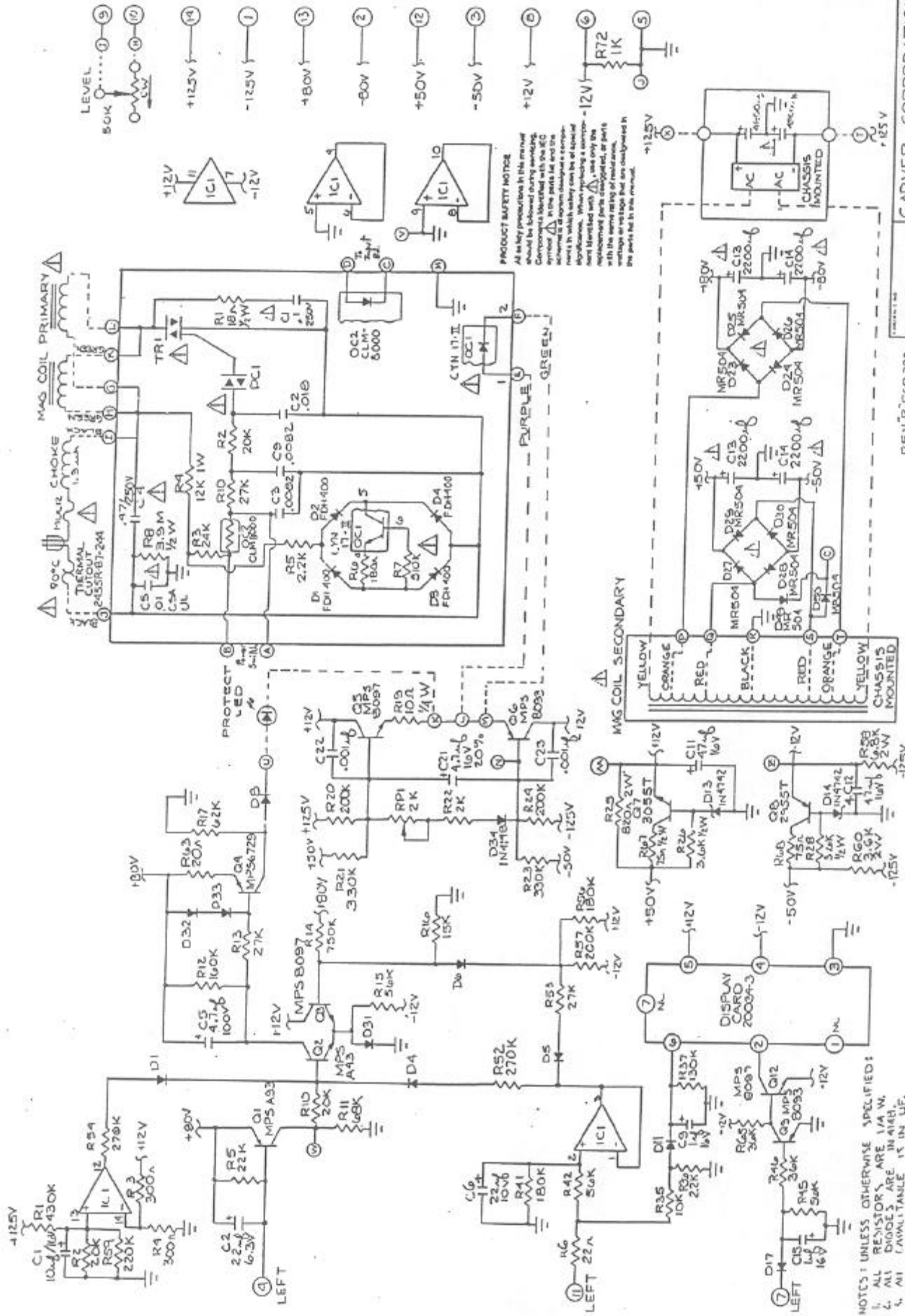
11 10 48

11 10 48

CARVER CORPORATION	
DATE	REVISION
6/15/66	1
SCHEMATIC, PML5 MONO BLOCK AMP CARD	
DESIGNER	DATE
W. J. ...	6-15-66
PROJECT NO.	REV.
601-00126-02	1
PART LIST	

NOTES: UNLESS OTHERWISE NOTED,
 1. ALL RESISTOR ARE 1/4WATT.
 2. ALL CAPACITANCE MEASURED IN UF.
 3. ALL DIODES ARE IN414B.
 4. IC1 IS TLO 81.
 5. OC1 IS CLM 50.
 6. Q1-Q10 AND Q1C-Q10C ARE CHASSIS MOUNTED.





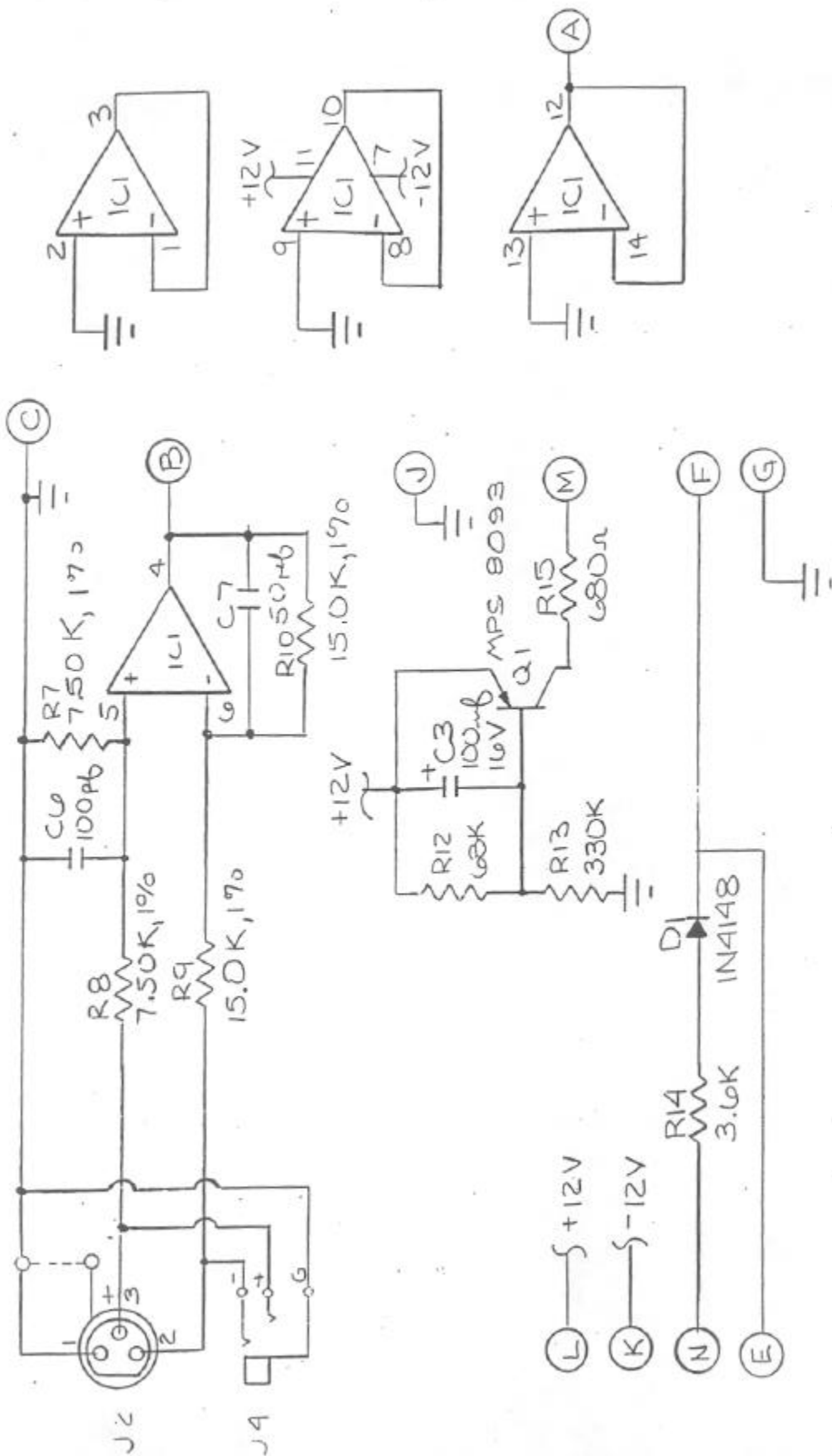
NOTES: UNLESS OTHERWISE SPECIFIED:
 1. ALL RESISTORS ARE 1/4 W.
 2. ALL DIODES ARE IN4148.
 3. ALL CAPACITORS ARE IN UF.
 4. R1, R15, R16 ARE 1%.

PRODUCT SAFETY NOTICE
 All safety precautions in this manual should be followed during servicing. Components identified with the EIC symbol are EIC components. The EIC symbol is a triangle with the letters 'EIC' inside. The EIC symbol is used to identify components in which safety could be affected. When replacing a component, use only the replacement parts designated, or parts with the same rating of resistance, voltage or voltage that are designated in the parts list in this manual.

REV. E		601-0019-02	REV. E
REV. D		601-0019-02	REV. D
REV. C		601-0019-02	REV. C
REV. B		601-0019-02	REV. B
REV. A		601-0019-02	REV. A

REV. E: ECO 333
 " " ECO 370
 REV. E: ELU 422

CARVER CORPORATION
 SCH. PCB PWR AMP PMS MONO BLOCK
 SCH. PCB REGULATOR PMS MONO BLOCK



NOTES: UNLESS OTHERWISE SPECIFIED,
 1. IC1 IS A TL075.
 2. ALL RESISTORS ARE 1/4 W.

CONTRACT NO.		CARVER CORPORATION	
APPROVALS	DATE	SCH. PM1.5 MONO BLOCK	
DRAWN MELENO	11-23-83	INPUT BOARD	
CHECKED		SIZE FSCM NO.	DWG. NO.
ISSUED		A	REV.



SECTION 9

PARTS ORDERING

Please provide the Model numbers of the units involved when ordering genuine CARVER replacement parts. Also provide the CARVER part number and the generic part number to confirm the correct part needed.

The Carver Parts Department is open Monday thru Friday, 7:00 a.m. to 4:45 p.m. PST.

The following phone number is to be used for part orders only!

Technical assistance is not available on this line.

1-800-433-0547

Or if you prefer to FAX in your part order, please use the following FAX number:

1-206-775-9180

From time to time, when it is necessary, we may make a substitution for the original part ordered, due to circuit revisions or part availability.

Random deviation from the original CARVER designated part is not recommended!

Complete PCB replacement is not recommended. You must have prior approval for warranty repair should PCB replacement be necessary.

SECTION 10

PARTS LISTS

PM-1.5 AMP BOARD

P/N 601-00126-01

CAPACITORS

CARVER P/N	DESCRIPTION	REF DESIGNATORS	NOTES
201-00001-00	CAP CER DISC 5pF 10% 1000V	C11,21	
201-20004-00	CAP CER DISC 22pF 10% 1000V	C30	
201-00005-00	CAP CER DISC 27pF 10% 1000V	C16	
201-00012-00	CAP CER DISC 100pF 10% 1000V	C6,15	
201-00013-00	CAP CER DISC 120pF 10% 1000V	C3	
201-00018-00	CAP CER DISC 220pF 10% 1000V	C25	
201-00021-00	CAP CER DISC 330pF 10% 1000V	C32	
201-00023-00	CAP CER DISC 470pF 10% 1000V	C33	
201-00037-00	CAP CER DISC 30pF 10% 1000V	C14	
204-00008-00	CAP MYLAR .0027 μ F	C22	
204-00011-00	CAP MYLAR .0047 μ F	C10,12,20	
204-00015-00	CAP MYLAR .01 μ F	C7,18,36	
204-00022-00	CAP MYLAR .033 μ F 10%	C13,23	
204-00024-00	CAP MYLAR .047 μ F	C1,2,27,28	
204-00031-00	CAP MYLAR .33 μ F	C35	
204-00033-00	CAP MYLAR .33 μ F/400V	C24	Mount on Speaker Terminal
205-00005-00	CAP LYTIC 4.7 μ F/35V RAD	C5	
205-00013-00	CAP LYTIC 47 μ F/25V RAD	C9,19	
205-00021-00	CAP LYTIC 470 μ F/16V RAD	C4	

RESISTORS

CARVER P/N	DESCRIPTION	REF DESIGNATORS	NOTES
251-00008-00	RES CFILM 2.7 OHM 1/4W PREP .4	R40	
251-00014-00	RES CFILM 4.7 OHM 1/4W PREP .4	R21,57,72	
251-00034-00	RES CFILM 33 OHM 1/4W PREP .4	R24,55	
251-00036-00	RES CFILM 39 OHM 1/4W PREP .4	R38,71	
251-00037-00	RES CFILM 43 OHM 1/4W PREP .4	R66	
251-00041-00	RES CFILM 62 OHM 1/4W PREP .4	R85,103	
251-00046-00	RES CFILM 100 OHM 1/4W PREP .4	R29,60	
251-00054-00	RES CFILM 220 OHM 1/4W PREP .4	R30,63	
251-00054-01	RES CFILM 220 OHM 1/4W UNPREP	R48,84	
251-00060-00	RES CFILM 390 OHM 1/4W PREP .4	R44,77	
251-00063-00	RES CFILM 510 OHM 1/4W PREP .4	R41,76	
251-00065-00	RES CFILM 620 OHM 1/4W PREP .4	R31,61	
251-00066-01	RES CFILM 680 OHM 1/4W UNPREP	R47,63	
251-00067-00	RES CFILM 750 OHM 1/4W PREP .4	R25,56	
251-00069-00	RES CFILM 910 OHM 1/4W PREP .4	R3,23,54	

CARVER P/N	DESCRIPTION	REF DESIGNATORS	NOTES
251-00070-00	RES CFILM 1K 1/4W PREP .4	R18	
251-00072-03	RES CFILM 1.2K 1/4W UNPREP	R102	
251-00074-00	RES CFILM 1.5K 1/4W PREP .4	R16,17,50	
251-00074-03	RES CFILM 1.5K 1/4W UNPREP	R51	
251-00077-00	RES CFILM 2.0K 1/4W PREP .4	R96	
251-00078-00	RES CFILM 2.2K 1/4W PREP .4	R28,64	
251-00083-00	RES CFILM 3.6K 1/4W PREP .4	R12,98	
251-00084-00	RES CFILM 3.9K 1/4W PREP .4	R37,70	
251-00086-00	RES CFILM 4.7K 1/4W PREP .4	R22	
251-00086-03	RES CFILM 4.7K 1/4W UNPREP	R53	
251-00083-00	RES CFILM 9.1K 1/4W PREP .4	R52,87	
251-00094-00	RES CFILM 10K 1/4W PREP .4	R15	
251-00097-00	RES CFILM 13K 1/4W PREP .4	R35,69	
251-00098-00	RES CFILM 15K 1/4W PREP .4	R1	
251-00101-00	RES CFILM 20K 1/4W PREP .4	R20	
251-00102-00	RES CFILM 22K 1/4W PREP .4	R90,95	
251-00103-00	RES CFILM 24K 1/4W PREP .4	R100,101	
251-00105-00	RES CFILM 30K 1/4W PREP .4	R4,59	
251-00106-00	RES CFILM 33K 1/4W PREP .4	R26	
251-00107-00	RES CFILM 36K 1/4W PREP .4	R19	
251-00108-01	RES CFILM 39K 1/4W UNPREP	R36,68	
251-00112-00	RES CFILM 56K 1/4W PREP .4	R27,65	
251-00117-00	RES CFILM 91K 1/4W PREP .4	R39,73	
251-00120-00	RES CFILM 120K 1/4W PREP .4	R2	
251-10078-00	RES CFILM 2.2K 1/2W PREP .5	R32,62	
251-10080-00	RES CFILM 2.7K 1/2W PREP .5	R6	
251-10080-03	RES CFILM 2.7K 1/2W UNPREP	R7	
251-10082-03	RES CFILM 3.3K 1/2W UNPREP	R42,74	
251-10085-03	RES CFILM 4.3K 1/2W UNPREP	R43,75	
251-10106-00	RES CFILM 33K 1/2W PREP .5	R33,67,92,93	
253-20001-00	RES WIRE WOUND .1 OHM 2W	R45,46,78,79	
253-30025-00	RES WIRE WOUND 2.7 OHM 3W	R105	
253-40001-00	RES WIRE WOUND .1 OHM 5W	R49,87	
259-20003-00	TRIM POT 5K PCB MOUNT	RP1	

DIODES

CARVER P/N	DESCRIPTION	REF DESIGNATORS	NOTES
320-20001-00	DIODE 1N4148 75V PREP	D1-5,7,18,33	
320-20004-00	DIODE 1N4004 400V PREP .4	D9,11,14-17,20,22,25-28,31,32	
320-20006-00	DIODE BAV20 400V PREP .4	D6,8,10,19,21	
320-20007-03	DIODE MR852	D12,13,23,24	
320-30004-00	DIODE ZENER 1N4736 6.8V PREP	D34	
320-30006-00	DIODE ZENER 1N4738 8.2V PREP	D35	

TRANSISTORS

CARVER P/N	DESCRIPTION	REF DESIGNATORS	NOTES
321-10000-00	XISTOR 152 NPN SM SG MPSW06	Q12	
321-10001-00	XISTOR 152 PNP SM SG MPS6729	Q21	
321-20001-00	XISTOR 202 NPN PWR MPSU10	Q20	
321-20002-00	XISTOR 202 PNP PWR MPSU60	Q13	
321-40000-00	XISTOR TO92 NPN SM SG MPS8097	Q18,23	
321-40001-00	XISTOR TO92 NPN SM SG MPSA43	Q14,26	
321-40003-00	XISTOR TO92 PNP SM SG MPS8093	Q17,19	
321-40004-00	XISTOR TO92 PNP SM SG MPSA93	Q15	
321-50000-00	XISTOR TO98 NPN SM SG 2N3403	Q16	
321-60000-00	XISTOR TO220 NPN PWR MJE3055	Q11	
321-60002-00	XISTOR TO220 PNP PWR MJE2955T	Q22	

INTEGRATED CIRCUITS

CARVER P/N	DESCRIPTION	REF DESIGNATORS	NOTES
330-30002-00	IC TL081 OP AMP BIFET	IC1	
330-40008-00	IC CLM-51 OPTOISOLATOR DIP	OC1	

MISCELLANEOUS ITEMS

CARVER P/N	DESCRIPTION	REF DESIGNATORS	NOTES
118-50002-00	TRANSISTOR SOCKET		Use on Q1-10
160-30006-00	HEADER 7 PIN 90 DEG SLV .156 CTR		
401-30002-00	JUMPER INSULATED #22 .3"		
401-30003-00	JUMPER INSULATED .4"		
402-00001-00	SLEEVING CLEAR 10 GA.		
402-00006-00	SLEEVING BLACK 18 GA. .4"		
501-00126-00	PCB, AMP PM-1,5		
616-00001-00	CHOKE 5 μ H 18 GA. WIRE	L1	

PM-1.5 MONO BLOCK AMP BOARD

P/N 601-00126-02

CAPACITORS

CARVER P/N	DESCRIPTION	REF DESIGNATORS	NOTES
201-00001-00	CAP CER DISC 5pF 10% 1000V	C11,21	
201-00005-00	CAP CER DISC 27pF 10% 1000V	C16	
201-00041-00	CAP CER DISC 56pF 10% 1000V	C30	
201-00012-00	CAP CER DISC 100pF 10% 1000V	C6,15	
201-00013-00	CAP CER DISC 120pF 10% 1000V	C3	
201-00018-00	CAP CER DISC 220pF 10% 1000V	C25	
201-00021-00	CAP CER DISC 330pF 10% 1000V	C32	
201-00023-00	CAP CER DISC 470pF 10% 1000V	C33	
201-00037-00	CAP CER DISC 30pF 10% 1000V	C14	
204-00008-00	CAP MYLAR .0027 μ F	C22	
204-00011-00	CAP MYLAR .0047 μ F	C10,12,20	
204-00015-00	CAP MYLAR .01 μ F	C7,18,26	
204-00022-00	CAP MYLAR .033 μ F 10%	C13,23	
204-00024-00	CAP MYLAR .047 μ F	C12,27,28	
204-00031-00	CAP MYLAR .33 μ F	C35	
204-00033-00	CAP MYLAR .33 μ F/400V	C24	Mount on Speaker Terminal
205-00005-00	CAP LYTIC 4.7 μ F/35V RAD	C5	
205-00013-00	CAP LYTIC 47 μ F/25V RAD	C9,19	
205-00021-00	CAP LYTIC 470 μ F/16V RAD	C4	

RESISTORS

CARVER P/N	DESCRIPTION	REF DESIGNATORS	NOTES
251-00008-00	RES CFILM 2.7 OHM 1/4W PREP A	R40	
251-00014-00	RES CFILM 4.7 OHM 1/4W PREP A	R21,57,72	
251-00034-00	RES CFILM 33 OHM 1/4W PREP A	R24,55	
251-00036-00	RES CFILM 39 OHM 1/4W PREP A	R38,71	
251-00037-00	RES CFILM 43 OHM 1/4W PREP A	R86	
251-00041-00	RES CFILM 62 OHM 1/4W PREP A	R30,63,85,103	
251-00046-00	RES CFILM 100 OHM 1/4W PREP A	R29,50	
251-00054-00	RES CFILM 220 OHM 1/4W PREP A	R31,61	
251-00054-01	RES CFILM 220 OHM 1/4W UNPREP	R48,84	
251-00060-00	RES CFILM 390 OHM 1/4W PREP A	R44,77	
251-00063-00	RES CFILM 510 OHM 1/4W PREP A	R41,76	
251-00065-00	RES CFILM 620 OHM 1/4W PREP A	R31,61	
251-00066-01	RES CFILM 680 OHM 1/4W UNPREP	R47,83	
251-00067-00	RES CFILM 750 OHM 1/4W PREP A	R25,56	
251-00068-00	RES CFILM 910 OHM 1/4W PREP A	R3,23,54	
251-00070-00	RES CFILM 1K 1/4W PREP A	R18	
251-00072-00	RES CFILM 1.2K 1/4W UNPREP	R102	
251-00074-00	RES CFILM 1.5K 1/4W PREP A	R16,17,50	

CARVER P/N	DESCRIPTION	REF DESIGNATORS	NOTES
251-00074-03	RES CFILM 1.5K 1/4W UNPREP	R51	
251-00077-00	RES CFILM 2.0K 1/4W PREP .4	R96	
251-00078-00	RES CFILM 2.2K 1/4W PREP .4	R28,64	
251-00083-00	RES CFILM 3.6K 1/4W PREP .4	R98	
251-00084-00	RES CFILM 3.9K 1/4W PREP .4	R37,70	
251-00086-00	RES CFILM 4.7K 1/4W PREP .4	R22	
251-00088-03	RES CFILM 4.7K 1/4W UNPREP	R53	
251-00093-00	RES CFILM 8.1K 1/4W PREP .4	R52,97	
251-00094-00	RES CFILM 10K 1/4W PREP .4	R15	
251-00095-00	RES CFILM 11K 1/4W PREP .4	R12	
251-00097-00	RES CFILM 13K 1/4W PREP .4	R35,69	
251-00098-00	RES CFILM 15K 1/4W PREP .4	R1,90	
251-00101-00	RES CFILM 20K 1/4W PREP .4	R20	
251-00102-00	RES CFILM 22K 1/4W PREP .4	R95	
251-00103-00	RES CFILM 24K 1/4W PREP .4	R100,101	
251-00105-00	RES CFILM 30K 1/4W PREP .4	R4,59	
251-00106-00	RES CFILM 33K 1/4W PREP .4	R26	
251-00107-00	RES CFILM 36K 1/4W PREP .4	R19	
251-00108-01	RES CFILM 39K 1/4W UNPREP	R36,68	
251-00112-00	RES CFILM 56K 1/4W PREP .4	R27,65	
251-00117-00	RES CFILM 91K 1/4W PREP .4	R39,73	
251-00120-00	RES CFILM 120K 1/4W PREP .4	R2	
251-10078-00	RES CFILM 2.2K 1/2W PREP .5	R32,62	
251-10080-00	RES CFILM 2.7K 1/2W PREP .5	R6	
251-10080-03	RES CFILM 2.7K 1/2W UNPREP	R7	
251-10082-03	RES CFILM 3.3K 1/2W UNPREP	R42,74	
251-10085-03	RES CFILM 4.3K 1/2W UNPREP	R43,75	
251-10106-00	RES CFILM 33K 1/2W PREP .5	R33,67,92,93	
253-20001-00	RES WIRE WOUND .1 OHM 2W	R45,46,78,79,125-128,131-134	
253-30025-00	RES WIRE WOUND 2.7 OHM 3W	R105	
253-40001-00	RES WIRE WOUND .1 OHM 5W	R49,87,129,130	
259-20003-00	TRIM POT 5K PCB MOUNT	RP1	

DIODES

CARVER P/N	DESCRIPTION	REF DESIGNATORS	NOTES
320-20001-00	DIODE 1N4148 75V PREP	D1-5,7,18,33	
320-20004-00	DIODE 1N4004 400V PREP .4	D9,11,14-17,20,22,25-28,31,32	
320-20006-00	DIODE BAV20 400V PREP .4	D6,8,10,19,21	
320-20007-03	DIODE MR852	D12,13,23,24	
320-30004-00	DIODE ZENER 1N4736 6.8V PREP	D34	
320-30006-00	DIODE ZENER 1N4738 8.2V PREP	D35	

TRANSISTORS

CARVER P/N	DESCRIPTION	REF DESIGNATORS	NOTES
321-10000-00	XISTOR 152 NPN SM SG MPSW06	Q12	
321-10001-00	XISTOR 152 PNP SM SG MPS6729	Q21	
321-20001-00	XISTOR 202 NPN PWR MPSU10	Q20	
321-20002-00	XISTOR 202 PNP PWR MPSU60	Q13	
321-40000-00	XISTOR TO92 NPN SM SG MPS8097	Q18,23	
321-40001-00	XISTOR TO92 NPN SM SG MPS443	Q14,26	
321-40003-00	XISTOR TO92 PNP SM SG MPS8093	Q17,19	
321-40004-00	XISTOR TO92 PNP SM SG MPS423	Q15	
321-50000-00	XISTORTO98 NPN SM SG 2N3403 W/TAB	Q16	
321-60000-00	XISTOR TO220 NPN PWR MJE3055	Q11	
321-60002-00	XISTOR TO220 PNP PWR MJE2955T	Q22	

INTEGRATED CIRCUITS

CARVER P/N	DESCRIPTION	REF DESIGNATORS	NOTES
330-30002-00	IC TL081 OP AMP BIFET	IC1	
330-40008-00	IC CLM-51 OPTOISOLATOR DP	OC1	

MISCELLANEOUS ITEMS

CARVER P/N	DESCRIPTION	REF DESIGNATORS	NOTES
118-50002-00	TRANSISTOR SOCKET		Use on Q1-10
160-30006-00	HEADER 7 PIN 90 DEG SLV .156 CTR		
401-30002-00	JUMPER INSULATED #22 .3"		
401-30003-00	JUMPER INSULATED .4"		
402-00001-00	SLEEVING CLEAR 10 GA.		
402-00006-00	SLEEVING BLACK 18 GA. .4"		
501-00126-00	PCB, AMP PM-1.5		
616-00001-00	CHOKE 5 μ H 18 GA. WIRE	L1	

PM-1.5L AMP BOARD P/N 601-00126-03

CAPACITORS

CARVER P/N	DESCRIPTION	REF DESIGNATORS	NOTES
201-00001-00	CAP CER DISC 5pF 10% 1000V	C11,21	
201-00005-00	CAP CER DISC 27pF 10% 1000V	C30	
201-00007-00	CAP CER DISC 47pF 10% 1000V	C14	
201-00012-00	CAP CER DISC 100pF 10% 1000V	C17	
201-00013-00	CAP CER DISC 120pF 10% 1000V	C3	
201-00018-00	CAP CER DISC 220pF 10% 1000V	C6,15	
201-00040-00	CAP CER DISC 15pF 10% 1000V	C16	

CARVER P/N	DESCRIPTION	REF DESIGNATORS	NOTES
204-00003-00	CAP MYLAR .001 μ F	C25	
204-00007-00	CAP MYLAR .0022 μ F	C37,38	
204-00011-00	CAP MYLAR .0047 μ F	C10,20	
204-00015-00	CAP MYLAR .01 μ F	C7,12,18,22,33,36	
204-00022-00	CAP MYLAR .033 μ F 10%	C13,23	
204-00024-00	CAP MYLAR .047 μ F	C1,2	
204-00031-00	CAP MYLAR .33 μ F	C35	
204-00032-00	CAP MYLAR .47 μ F		Mount on Speaker Terminal
205-00005-00	CAP LYTIC 4.7 μ F/35V RAD	C5,27,28	
205-00013-00	CAP LYTIC 47 μ F/25V RAD	C9,19	
205-00021-00	CAP LYTIC 470 μ F/16V RAD	C4	

RESISTORS

CARVER P/N	DESCRIPTION	REF DESIGNATORS	NOTES
251-00008-00	RES CFILM 2.7 OHM 1/4W PREP .A	R40	
251-00014-00	RES CFILM 4.7 OHM 1/4W PREP .A	R21,57,72	
251-00034-00	RES CFILM 33 OHM 1/4W PREP .A	R24,55	
251-00036-00	RES CFILM 39 OHM 1/4W PREP .A	R38,71	
251-00037-00	RES CFILM 43 OHM 1/4W PREP .A	R86	
251-00041-00	RES CFILM 62 OHM 1/4W PREP .A	R85,103	
251-00042-00	RES CFILM 68 OHM 1/4W PREP .A	R30,63	
251-00046-00	RES CFILM 100 OHM 1/4W PREP .A	R29,60	
251-00054-01	RES CFILM 220 OHM 1/4W UNPREP	R48,84	
251-00060-00	RES CFILM 390 OHM 1/4W PREP .A	R44,77	
251-00063-00	RES CFILM 510 OHM 1/4W PREP .A	R41,76	
251-00066-01	RES CFILM 680 OHM 1/4W UNPREP	R47,83	
251-00067-00	RES CFILM 750 OHM 1/4W PREP .A	R25,56	
251-00062-00	RES CFILM 910 OHM 1/4W PREP .A	R3,23,54	
251-00070-00	RES CFILM 1K 1/4W PREP .A	R18	
251-00072-03	RES CFILM 1.2K 1/4W UNPREP	R102	
251-00074-00	RES CFILM 1.5K 1/4W PREP .A	R10,17,50	
251-00074-03	RES CFILM 1.5K 1/4W UNPREP	R51	
251-00077-00	RES CFILM 2.0K 1/4W PREP .A	R96	
251-00078-00	RES CFILM 2.2K 1/4W PREP .A	R28,64	
251-00083-00	RES CFILM 3.6K 1/4W PREP .A	R98	
251-00084-00	RES CFILM 3.9K 1/4W PREP .A	R37,70	
251-00086-00	RES CFILM 4.7K 1/4W PREP .A	R22	
251-00086-03	RES CFILM 4.7K 1/4W UNPREP	R53	
251-00092-00	RES CFILM 8.2K 1/4W PREP .A	R28,64,90	
251-00093-00	RES CFILM 9.1K 1/4W PREP .A	R52,97	
251-00094-00	RES CFILM 10K 1/4W PREP .A	R15	
251-00097-00	RES CFILM 13K 1/4W PREP .A	R35,69	
251-00098-00	RES CFILM 15K 1/4W PREP .A	R1,27,65	
251-00101-00	RES CFILM 20K 1/4W PREP .A	R20	
251-00103-00	RES CFILM 24K 1/4W PREP .A	R100,101	
251-00105-00	RES CFILM 30K 1/4W PREP .A	R4,59	
251-00106-00	RES CFILM 33K 1/4W PREP .A	R26	

CARVER P/N	DESCRIPTION	REF DESIGNATORS	NOTES
251-00107-00	RES CFILM 36K 1/4W PREP .4	R19	
251-00108-01	RES CFILM 30K 1/4W UNPREP	R36,68	
251-00112-00	RES CFILM 56K 1/4W PREP .4	R27,65	
251-00117-00	RES CFILM 91K 1/4W PREP .4	R39,73	
251-00120-00	RES CFILM 120K 1/4W PREP .4	R2	
251-10076-00	RES CFILM 1.8K 1/2W PREP .5	R32,62	
251-10080-00	RES CFILM 2.7K 1/2W PREP .5	R8	
251-10080-03	RES CFILM 2.7K 1/2W UNPREP	R7	
251-10082-03	RES CFILM 3.3K 1/2W UNPREP	R42,74	
251-10085-03	RES CFILM 4.3K 1/2W UNPREP	R43,75	
251-10106-00	RES CFILM 33K 1/2W PREP .5	R33,67,92,93	
253-20000-00	RES WIRE WOUND .05 OHM 2W	R45,46,78,79	
253-20006-00	RES WIRE WOUND .22 OHM 2W	R106,107	
253-20018-00	RES WIRE WOUND 1 OHM 2W		Mount on Speaker Terminal
253-30025-00	RES WIRE WOUND 2.7 OHM 3W	R105	
253-40000-00	RES WIRE WOUND .05 OHM 5W	R49,87	
258-20003-00	TRIM POT 5K PCB MOUNT	RP1	

DIODES

CARVER P/N	DESCRIPTION	REF DESIGNATORS	NOTES
320-20001-00	DIODE 1N4148 75V PREP	D1-5,7,18,33	
320-20004-00	DIODE 1N4004 400V PREP .4	D9,11,14-17,20,22,25-28,31,32	
320-20006-00	DIODE BAV20 400V PREP .4	D6,8,10,19,21	
320-20007-03	DIODE MR852	D12,13,23,24	
320-30004-00	DIODE ZENER 1N4736 6.8V PREP	D34	
320-30008-00	DIODE ZENER 1N4738 8.2V PREP	D35	

TRANSISTORS

CARVER P/N	DESCRIPTION	REF DESIGNATORS	NOTES
321-10000-00	XISTOR 152 NPN SM SG MPSW06	Q12	
321-10001-00	XISTOR 152 PNP SM SG MPS6729	Q21	
321-20001-00	XISTOR 202 NPN PWR MPSU10	Q20	
321-20002-00	XISTOR 202 PNP PWR MPSU60	Q13	
321-40000-00	XISTOR TO92 NPN SM SG MPS8097	Q18,23	
321-40001-00	XISTOR TO92 NPN SM SG MPSA43	Q14,26	
321-40003-00	XISTOR TO92 PNP SM SG MPS8093	Q17,19	
321-40004-00	XISTOR TO92 PNP SM SG MPSA93	Q15	
321-50000-00	XISTOR TO98 NPN SM SG 2N3403	Q16	
321-60000-00	XISTOR TO220 NPN PWR MJE3055	Q11	
321-60002-00	XISTOR TO220 PNP PWR MJE2955T	Q22	

INTEGRATED CIRCUITS


CARVER P/N	DESCRIPTION	REF DESIGNATORS	NOTES
330-30002-00	IC TL081 OP AMP BIFET	IC1	
330-40008-00	IC CLM-81 OPTOISOLATOR DIP	OC1	

MISCELLANEOUS ITEMS

CARVER P/N	DESCRIPTION	REF DESIGNATORS	NOTES
118-50002-00	TRANSISTOR SOCKET		Use on Q1-10
160-30006-00	HEADER 7 PIN 90 DEG SLV .156 CTR		
401-30002-00	JUMPER INSULATED #22 .3"		
401-30003-00	JUMPER INSULATED .4"		
402-00001-00	SLEEVING CLEAR 10 GA. 1.25"		Use on R102
402-00006-00	SLEEVING BLACK 18 GA. .4"		
501-00126-00	PCB, AMP PM-1.5		
816-00001-00	CHOKE 5μH 18 GA. WIRE	L1	

PM-1.5 POWER SUPPLY BOARD P/N 601-00127-01

CAPACITORS


CARVER P/N	DESCRIPTION	REF DESIGNATORS	NOTES
205-00001-00	CAP LYTIC 1μF/50V RAD	C9,10,15,16	
205-00003-00	CAP LYTIC 2.2μF/50V 20% RAD	C21	
205-00009-00	CAP LYTIC 4.7μF/100V RAD	C5	
205-00010-00	CAP LYTIC 10μF/35V RAD	C1,C7	
205-00011-00	CAP LYTIC 22μF/16V RAD	C2	
205-00013-00	CAP LYTIC 47μF/25V RAD	C6,11,12	
205-00028-00	CAP LYTIC 2200μF/50V/80V	C13,14	 Dual Capacitor - No longer available. Replace with Cap Assy P/N 602-00500-01 Pin for pin compatible.

RESISTORS

CARVER P/N	DESCRIPTION	REF DESIGNATORS	NOTES
251-00027-00	RES CFILM 18 OHM 1/4W PREP .A	R63	
251-00030-00	RES CFILM 22 OHM 1/4W PREP .A	R6,7,19	
251-00043-00	RES CFILM 75 OHM 1/4W PREP .A	R68	
251-00057-00	RES CFILM 300 OHM 1/4W PREP .A	R3,4	
251-00067-00	RES CFILM 750 OHM 1/4W UNPREP	R72	Mount on back
251-00077-00	RES CFILM 2.0K 1/4W PREP .A	R22	Standup
251-00078-00	RES CFILM 2.2K 1/4W PREP .A	R36,39	
251-00094-00	RES CFILM 10K 1/4W PREP .A	R35,28	
251-00098-00	RES CFILM 15K 1/4W PREP .A	R16	

CARVER P/N	DESCRIPTION	REF DESIGNATORS	NOTES
251-00101-00	RES CFILM 20K 1/4W PREP .A	R2,10	
251-00102-00	RES CFILM 22K 1/4W PREP .A	R5	
251-00104-00	RES CFILM 27K 1/4W PREP .A	R13,53	
251-00107-00	RES CFILM 36K 1/4W PREP .A	R46,48,65,66	
251-00108-00	RES CFILM 39K 1/4W PREP .A	R42	
251-00112-00	RES CFILM 56K 1/4W PREP .A	R15,45,47	
251-00113-00	RES CFILM 62K 1/4W PREP .A	R17	
251-00114-00	RES CFILM 68K 1/4W PREP .A	R11,44	
251-00118-00	RES CFILM 100K 1/4W PREP .A	R43	
251-00121-00	RES CFILM 130K 1/4W PREP .A	R37,40	
251-00123-00	RES CFILM 160K 1/4W PREP .A	R12	
251-00124-00	RES CFILM 180K 1/4W PREP .A	R41,56	
251-00125-00	RES CFILM 200K 1/4W PREP .A	R57	
251-00127-00	RES CFILM 240K 1/4W PREP .A	R59	
251-00128-00	RES CFILM 270K 1/4W PREP .A	R52,54	
251-00130-00	RES CFILM 330K 1/4W PREP .A	R21,23	
251-00133-00	RES CFILM 430K 1/4W PREP .A	R1	
251-00139-00	RES CFILM 750K 1/4W PREP .A	R14	
251-10043-03	RES CFILM 75 OHM 1/2W PREP .J	R67	
251-10083-03	RES CFILM 3.6K 1/2W PREP .J	R26,28	
251-10125-00	RES CFILM 200K 1/2W UNPREP	R20,24	Was 1/4W
255-20091-00	RES MET OXIDE 470 OHM 2W	R26	
255-20117-00	RES MET OXIDE 3.6K 2W	R60	With Slewing
255-20124-00	RES MET OXIDE 6.8K 2W	R58	
259-20002-00	TRIM POT 2K PCB MOUNT	RP1	

DIODES

CARVER P/N	DESCRIPTION	REF DESIGNATORS	NOTES
320-20001-00	DIODE 1N4148 75V PREP	D1,4-6,8,11,12,17,18,31-34	
320-20005-03	DIODE MRS04 400V UNPREP	D49,50	Mount on back of board
320-20010-00	DIODE 6 AMP 200V PREP .75	D23-30	 Standoff D25,26,29,30
320-30001-00	DIODE ZENER 1N4742 12V PREP .A	D13,14	


TRANSISTORS

CARVER P/N	DESCRIPTION	REF DESIGNATORS	NOTES
321-10001-00	XISTOR 152 PNP 8M 5G MPS6729	Q4	
321-40001-00	XISTOR TO92 NPN 8M 5G MPSA43	Q2	
321-40003-00	XISTOR TO92 PNP 8M 5G MPS8093	Q6,9,10	
321-40004-00	XISTOR TO92 PNP 8M 5G MP9A93	Q1	
321-40000-00 Changed To:	XISTOR TO92 NPN 8M 5G MPS8097		
321-40013-01	XISTOR TO92 NPN 8M 5G MPSA18	Q3,5,11,12	
321-60000-00	XISTOR TO220 NPN PWR MJE3055	Q7	
321-60002-00	XISTOR TO220 PNP PWR MJE2955T	Q8	

INTEGRATED CIRCUITS


CARVER P/N	DESCRIPTION	REF DESIGNATORS	NOTES
330-30003-00	IC QUAD OP AMP (4136)	IC1	

MISCELLANEOUS ITEMS

CARVER P/N	DESCRIPTION	REF DESIGNATORS	NOTES
108-00003-00	MICA INSULATOR TC220 .005" THICK		
151-20001-00	SCREW MACH PP BLK 440 x 1/4"		Use on Q7,8
151-30002-00	SCREW SHF MTL PP BLK 4 x 3/8" A		Use on heatsink
152-10001-00	KEPNUT 4-40 ZC		Use on heatsink
154-40004-00	WASHER SHOULDER #4		Use on Q7,8
159-20002-00	POP RIVET AL OE 1/8" ID x 1/4" L		Use on bracket
160-20002-00	CONNECTOR 7-PIN GOLD		
401-30003-00	JUMPER INSUL .4"	JP1-17	
401-40006-00	WIRE, TWISTED PAIR #22 1 EA RED/WHT, BLK 13"		
401-40007-00	WIRE, TWISTED PAIR #22 1 EA GRN/WHT, BLK 13"		
401-10114-00	WIRE 18 AWG TR-64 RED 6.5"		
401-10117-01	WIRE 18 AWG TR-64 BROWN 7"		
403-20001-00	THERMAL COMPOUND		Use on Q7,8
501-00127-00	PCB POWER SUPPLY PM-1.5		
507-00003-00	BRACKET, MOLEX CONN SUPPORT 90 DG		
511-00004-00	HEATSINK		
600-00500-01	CAPACITOR CARD ASSY		 Replaces C13,14 Dual Capacitors

PM-1.5 MONO BLOCK POWER SUPPLY BOARD P/N 601-00127-02


CAPACITORS

CARVER P/N	DESCRIPTION	REF DESIGNATORS	NOTES
204-00003-00	CAP MYLAR .001 μ F	C22,23	
205-00001-00	CAP LYTIC 1 μ F/50V RAD	C9,15	
205-00052-00	CAP LYTIC 4.7 μ F/35V 20% RAD	C21	
205-00009-00	CAP LYTIC 4.7 μ F/100V RAD	C5	
205-00010-00	CAP LYTIC 10 μ F/35V RAD	C1	
205-00011-00	CAP LYTIC 22 μ F/16V RAD	C2,8	
205-00013-00	CAP LYTIC 47 μ F/25V RAD	C11,12	
205-00028-00	CAP LYTIC 2200 μ F/50V/80V	C13,14	 Dual Capacitor - No longer available Replace with Cap Assy P/N 602-00500-01 Pin for pin compatible.

RESISTORS

CARVER P/N	DESCRIPTION	REF DESIGNATORS	NOTES
251-00022-00	RES CFILM 10 OHM 1/4W PREP .A R19		
251-00029-00	RES CFILM 20 OHM 1/4W PREP .A	R63	
251-00030-00	RES CFILM 22 OHM 1/4W PREP .A	R6,7	
251-00043-00	RES CFILM 75 OHM 1/4W PREP .A	R68	
251-00057-00	RES CFILM 300 OHM 1/4W PREP .A	R3,4	
251-00070-00	RES CFILM 1.0K 1/4W PREP .A	R72	
251-00077-00	RES CFILM 2.0K 1/4W PREP .A	R22	Standup
251-00078-00	RES CFILM 2.2K 1/4W PREP .A	R36	
251-00094-00	RES CFILM 10K 1/4W PREP .A	R35	
251-00098-00	RES CFILM 15K 1/4W PREP .A	R16	
251-00101-00	RES CFILM 20K 1/4W PREP .A	R2,10	
251-00102-00	RES CFILM 22K 1/4W PREP .A	R5	
251-00104-00	RES CFILM 27K 1/4W PREP .A	R13,53	
251-00107-00	RES CFILM 36K 1/4W PREP .A	R46,65	
251-00112-00	RES CFILM 56K 1/4W PREP .A	R15,42,45	
251-00113-00	RES CFILM 62K 1/4W PREP .A	R17	
251-00114-00	RES CFILM 68K 1/4W PREP .A	R11	
251-00121-00	RES CFILM 130K 1/4W PREP .A	R7	
251-00123-00	RES CFILM 160K 1/4W PREP .A	R12	
251-00124-00	RES CFILM 180K 1/4W PREP .A	R41,56	
251-00125-00	RES CFILM 200K 1/4W PREP .A	R20,24,57	
251-00126-00	RES CFILM 220K 1/4W PREP .A	R59	
251-00128-00	RES CFILM 270K 1/4W PREP .A	R52,54	
251-00130-00	RES CFILM 330K 1/4W PREP .A	R21,23	
251-00133-00	RES CFILM 430K 1/4W PREP .A	R1	
251-00139-00	RES CFILM 750K 1/4W PREP .A	R14	
251-10043-03	RES CFILM 75 OHM 1/2W PREP .5	R67	
251-10083-03	RES CFILM 3.6K 1/2W PREP .5	R26,28	
	RES MET OXIDE 820 OHM 2W	R25	No longer available
255-20117-00	RES MET OXIDE 3.6K 2W	R60	With Sleeving
255-20124-00	RES MET OXIDE 6.8K 2W	R58	
259-20002-00	TRIM POT 2K PCB MOUNT	RP1	

DIODES

CARVER P/N	DESCRIPTION	REF DESIGNATORS	NOTES
320-20001-00	DIODE 1N4148 75V PREP	D1,4-6,8,11,17,31-34	
320-20005-03	DIODE MR504 400V UNPREP	D49,50	Mount on back of board
320-20010-00	DIODE 6 AMP 200V PREP .75	D23-30	 Standoff D25,26,29,30
320-30001-00	DIODE ZENER 1N4742 12V PREP .A	D13,14	


TRANSISTORS

CARVER P/N	DESCRIPTION	REF DESIGNATORS	NOTES
321-10001-00	XISTOR 152 PNP SM SG MPS6729	Q4	
321-40001-00	XISTOR TO92 NPN SM SG MP3A43	Q2	
321-40003-00	XISTOR TO92 PNP SM SG MPS8093	Q6,9	
321-40004-00	XISTOR TO92 PNP SM SG MP3A43	Q1	
321-40000-00 Changed To: 321-40013-01	XISTOR TO92 NPN SM SG MPS8097 XISTOR TO92 NPN SM SG MP3A18	Q3,5,12	
321-60000-00	XISTOR TO220 NPN PWR MJE3055	Q7	
321-60002-00	XISTOR TO220 PNP PWR MJE2955T	Q8	

INTEGRATED CIRCUITS

CARVER P/N	DESCRIPTION	REF DESIGNATORS	NOTES
330-30003-00	IC QUAD OP AMP (4136)	IC1	


MISCELLANEOUS ITEMS

CARVER P/N	DESCRIPTION	REF DESIGNATORS	NOTES
108-00003-00	MICA INSULATOR TO220 .005" THICK		
151-20001-00	SCREW MACH PP BLK 440 x 1/4"		Use on Q7,8
151-30002-00	SCREW SHT MTL PP BLK 4 x 3/8" A		Use on heatsink
152-10001-00	KEPNUT 4-40 ZC		Use on heatsink
154-40004-00	WASHER SHOULDER #4		Use on Q7,8
159-20002-00	POP RIVET AL OE 1/8" ID x 1/4" L		Use on bracket
160-20002-00	CONNECTOR 7-PIN GOLD		
401-30003-00	JUMPER INSUL .4"	JP1-17	
401-40006-00	WIRE, TWISTED PAIR #22 1 EA RED/WHT, BLK 13"		
401-40007-00	WIRE, TWISTED PAIR #22 1 EA GRN/WHT, BLK 13"		
401-10114-00	WIRE 18 AWG TR-64 RED 6.5"		
401-10117-01	WIRE 18 AWG TR-64 BROWN 7"		
403-20001-00	THERMAL COMPOUND		Use on Q7,8
501-00127-00	PCB POWER SUPPLY PM-1.5		
507-00003-00	BRACKET, MOLEX CONN SUPPORT 90 DG		
511-00004-00	HEATSINK		
602-00500-01	CAPACITOR CARD ASSY		 Replaces C13,14 Dual Capacitors

PM-1.5L POWER SUPPLY BOARD

P/N 601-00127-03


CAPACITORS

CARVER P/N	DESCRIPTION	REF DESIGNATORS	NOTES
205-00001-00	CAP LYTIC 1 μ F/50V RAD	C8,10,15,16	
205-00003-00	CAP LYTIC 2.2 μ F/50V 20% RAD	C21	
205-00009-00	CAP LYTIC 4.7 μ F/100V RAD	C5	
205-00010-00	CAP LYTIC 10 μ F/35V RAD	C1	
205-00011-00	CAP LYTIC 22 μ F/16V RAD	C2,7	
205-00013-00	CAP LYTIC 47 μ F/25V RAD	C11,12	
205-00015-00	CAP LYTIC 100 μ F/10V RAD	C6	
205-00028-00	CAP LYTIC 2200 μ F/50V/80V	C13,14	 Dual Capacitor - No longer available. Replace with Cap Assy P/N 802-00300-01 Pin for pin compatible.

RESISTORS

CARVER P/N	DESCRIPTION	REF DESIGNATORS	NOTES
251-00027-00	RES CFILM 16 OHM 1/4W PREP A	R53	
251-00030-00	RES CFILM 22 OHM 1/4W PREP A	R6,7,19	
251-00034-00	RES CFILM 33 OHM 1/4W PREP A	R58	
251-00067-03	RES CFILM 750 OHM 1/4W UNPREP	R72	Mount on back
251-00074-00	RES CFILM 1.5K 1/4W PREP A	R26,28	
251-00077-00	RES CFILM 2.0K 1/4W PREP A	R22	Standup
251-00078-00	RES CFILM 2.2K 1/4W PREP A	R36,39	
251-00084-00	RES CFILM 10K 1/4W PREP A	R35,38	
251-00086-00	RES CFILM 15K 1/4W PREP A	R16	
251-00101-00	RES CFILM 20K 1/4W PREP A	R10	
251-00102-00	RES CFILM 22K 1/4W PREP A	R5	
251-00104-00	RES CFILM 27K 1/4W PREP A	R13,53	
251-00105-00	RES CFILM 30K 1/4W PREP A	R17	
251-00107-00	RES CFILM 36K 1/4W PREP A	R46,48,65,68	
251-00108-00	RES CFILM 38K 1/4W PREP A	R42	
251-00112-00	RES CFILM 56K 1/4W PREP A	R15,45,47	
251-00113-00	RES CFILM 62K 1/4W PREP A	R56	
251-00114-00	RES CFILM 68K 1/4W PREP A	R11,44,57	
251-00118-00	RES CFILM 100K 1/4W PREP A	R43	
251-00120-00	RES CFILM 120K 1/4W PREP A	R20,24	
251-00121-00	RES CFILM 130K 1/4W PREP A	R37,40	
251-00123-00	RES CFILM 160K 1/4W PREP A	R12	
251-00124-00	RES CFILM 180K 1/4W PREP A	R41	
251-00125-00	RES CFILM 200K 1/4W PREP A	R21,23	
251-00128-00	RES CFILM 270K 1/4W PREP A	R52	
251-00134-00	RES CFILM 470K 1/4W PREP A	R14	
251-10034-00	RES CFILM 33 OHM 1/2W PREP .5	R67	
255-20120-00	RES MET OXIDE 4.7K 2W	R60	With Bleeding
259-20002-00	TRIM POT 2K PCB MOUNT	RP1	

DIODES

CARVER P/N	DESCRIPTION	REF DESIGNATORS	NOTES
320-20001-00	DIODE 1N4148 75V PREP	D4-6,8,11,12,17,18,31-34	
320-20005-03	DIODE MR504 400V UNPREP	D48,50	Mount on back of board
320-20010-00	DIODE 6 AMP 200V PREP .75	D23-30	 Standoff D25,26,29,30
320-30001-00	DIODE ZENER 1N4742 12V PREP .4	D13,14	

TRANSISTORS

CARVER P/N	DESCRIPTION	REF DESIGNATORS	NOTES
321-10001-00	XISTOR 152 PNP 5M 5G MPS6729	Q4	
321-40001-00	XISTOR TO92 NPN 5M 5G MPS443	Q2	
321-40003-00	XISTOR TO92 PNP 5M 5G MPS8093	Q6,9,10	
321-40004-00	XISTOR TO92 PNP 5M 5G MPS483	Q1	
321-40000-00 Changed To:	XISTOR TO92 NPN 5M 5G MPS8097		
321-40013-01	XISTOR TO92 NPN 5M 5G MPS418	Q3,5,11,12	
321-60000-00	XISTOR TO220 NPN PWR MJE3055	Q7	
321-60002-00	XISTOR TO220 PNP PWR MJE2955T	Q8	

INTEGRATED CIRCUITS

CARVER P/N	DESCRIPTION	REF DESIGNATORS	NOTES
330-30003-00	IC QUAD OP AMP (4136)	IC1	

MISCELLANEOUS ITEMS

CARVER P/N	DESCRIPTION	REF DESIGNATORS	NOTES
106-00003-00	MICA INSULATOR TO220 .005" THICK		
151-20001-00	SCREW MACH PP BLK 440 x 1/4"		Use on Q7,8
181-30002-00	SCREW SHT MTL PP BLK 4 x 3/8" A		Use on heatsink
152-10001-00	KEPHUT 4-40 ZC		Use on heatsink
154-40004-00	WASHER SHOULDER #4		Use on Q7,8
156-20004-00	POP RIVET CE 1/8" .251-.312 GRIP		Use on bracket
160-20002-00	CONNECTOR 7-PIN GOLD 90 DG		
401-30003-00	JUMPER INSUL .4"	JP1-17	
401-40007-00	WIRE, TWISTED PAIR #22 1 EA GRN/WHT, BLK 13"		
401-40010-00	WIRE, TWISTED PAIR #22 1 EA RED/WHT, BLK 13.5"		
401-10114-00	WIRE 18 AWG TR-64 RED 6.5"		
401-10117-00	WIRE 18 AWG TR-64 GREEN 7"		
403-20001-00	THERMAL COMPOUND		Use on Q7,8
501-00127-00	PCB POWER SUPPLY PM-1.5		
507-00003-00	BRACKET, MOLEX CONN SUPPORT		
511-00004-00	HEATSINK		
602-00500-01	CAPACITOR CARD ASSY		 Replaces C13,14 Dual Capacitors

PM-1.5 REGULATOR BOARD
P/N 601-00129-01

CAPACITORS

CARVER P/N	DESCRIPTION	REF DESIGNATORS	NOTES
201-00033-00	CAP CER DISC .0047 μ F/400V 20%	C5	
204-00015-00	CAP MYLAR .01 μ F	C3,9	
204-00020-00	CAP MYLAR .022 μ F	C2	
207-10003-00	CAP MET POLY .1 μ F/250V	C1	
207-10005-00	CAP MET POLY .47 μ F	C4	

RESISTORS

CARVER P/N	DESCRIPTION	REF DESIGNATORS	NOTES
251-00052-00	RES CFILM 180 OHM 1/4W PREP .A	R6	
251-00078-00	RES CFILM 2.2K 1/4W PREP .A	R5	
251-00101-00	RES CFILM 20K 1/4W PREP .A	R2	
251-00103-00	RES CFILM 24K 1/4W PREP .A	R3	
251-00104-00	RES CFILM 27K 1/4W PREP .A	R10	
251-00135-00	RES CFILM 510K 1/4W PREP .A	R7	
251-10028-00	RES CFILM 18 OHM 1/2W PREP .J	R1	
251-10156-00	RES CFILM 3.9M 1/2W PREP .J	R8	
255-10130-00	RES MET OXIDE 12K 1W	R4	

DIODES

CARVER P/N	DESCRIPTION	REF DESIGNATORS	NOTES
320-20006-00	DIODE BAV20 400V PREP .A	D1-4	

INTEGRATED CIRCUITS

CARVER P/N	DESCRIPTION	REF DESIGNATORS	NOTES
330-40002-00	IC CNY17-2 OPTOISOLATOR PHOTOCOUPLER	OC1	
330-40005-00 Changed to: 330-40006-00	IC CLM8000 OPTOISOLATOR AX.220V IC CLM-51 OPTOISOLATOR	OC2	No longer available

MISCELLANEOUS ITEMS

CARVER P/N	DESCRIPTION	REF DESIGNATORS	NOTES
101-22001-00	BRACKET RECTANGLE PCB MNT 1/2"		
158-20001-00	POP RIVET CE 1/8"		
319-00001-00	DIAC 40V 1/8W	DC1	
319-00055-00 Upgraded to: 319-00062-00	TRIAC TO3 F/P 25A 200V TRIAC T3 F/P 35A 400V MOT	TR1	

CARVER P/N	DESCRIPTION	REF DESIGNATORS	NOTES
401-10132-00	WIRE 18 AWG TEW BLACK 8"		
401-10133-00	WIRE 18 AWG TEW BLACK 10"		
401-10134-01	WIRE 18 AWG TEW BROWN 19.25"		
401-10135-00	WIRE 18 AWG TEW GRN/WHIT 19.25"		
401-10136-00	WIRE 18 AWG TEW VIOLET 19.25"		
401-10137-00	WIRE 18 AWG TEW W/WHIT 19.25"		
401-20203-00	BUSS WIRE 22 GA 1.5"		
501-00129-00	PCB REGULATOR PM-1.5		

PM-1.5 MONO BLOCK REGULATOR BOARD P/N 601-00129-02

CAPACITORS

CARVER P/N	DESCRIPTION	REF DESIGNATORS	NOTES
201-00063-00	CAP CER DISC .01 μ F/250VAC UL/CSA	C5	
204-00014-00	CAP MYLAR .0082 μ F	C3,9	
204-00018-00	CAP MYLAR .016 μ F	C2	
207-10003-00	CAP MET POLY .1 μ F/250V	C1	
207-10005-00	CAP MET POLY .47 μ F/250V	C4	

RESISTORS

CARVER P/N	DESCRIPTION	REF DESIGNATORS	NOTES
251-00052-00	RES CFILM 180 OHM 1/4W PREP .4	R6	
251-00076-00	RES CFILM 2.2K 1/4W PREP .4	R5	
251-00101-00	RES CFILM 20K 1/4W PREP .4	R2	
251-00103-00	RES CFILM 24K 1/4W PREP .4	R3	
251-00104-00	RES CFILM 27K 1/4W PREP .4	R10	
251-00135-00	RES CFILM 510K 1/4W PREP .4	R7	
251-10028-00	RES CFILM 18 OHM 1/2W PREP .5	R1	
251-10156-00	RES CFILM 3.9M 1/2W PREP .5	R8	
255-10130-00	RES MET OXIDE 12K 1W	R4	



DIODES

CARVER P/N	DESCRIPTION	REF DESIGNATORS	NOTES
320-20006-00	DIODE BAV20 400V PREP .4	D1-4	

INTEGRATED CIRCUITS

CARVER P/N	DESCRIPTION	REF DESIGNATORS	NOTES
330-40002-00	IC CNY17-2 OPTOISOLATOR PHOTOCOUPLER	OC1	
330-40005-00 Changed to: 330-40008-00	IC CLM8000 OPTOISOLATOR AX 220V	OC2	No longer available
	IC CLM-51 OPTOISOLATOR		

MISCELLANEOUS ITEMS

CARVER P/N	DESCRIPTION	REF DESIGNATORS	NOTES
101-22001-00	BRACKET RECTANGLE PCB MNT 1/2"		
150-20001-00	POP RIVET CE 1/8"		
319-00001-00	DIAC 40V 1/8W	DC1	
319-00055-00 Upgraded to 319-00062-00	TRIAC TOS F/P 25A 200V	TR1	
39-00067-00	TRIAC T3 EP 35A 400V MOT		
401-10132-00	WIRE 18 AWG TEW BLACK 8"		
401-10133-00	WIRE 18 AWG TEW BLACK 10"		
401-10134-01	WIRE 18 AWG TEW BROWN 19.25"		
401-10135-00	WIRE 18 AWG TEW GRN/WHT 19.25"		
401-10136-00	WIRE 18 AWG TEW VIOLET 19.25"		
401-10137-00	WIRE 18 AWG TEW YC/WHT 19.25"		
401-20203-00	BUSS WIRE 22 GA 1.5"		
501-00120-00	PCB REGULATOR PM-1.5		

PM-1.5 INPUT BOARD P/N 601-00132-01

CAPACITORS

CARVER P/N	DESCRIPTION	REF DESIGNATORS	NOTES
201-00006-00	CAP CER DISC 50pF 10% 1000V	C4,7	
201-00012-00	CAP CER DISC 100pF 10% 1000V	C5,6	
205-00016-00	CAP LYTC 100µF/25V RAD	C3	

RESISTORS

CARVER P/N	DESCRIPTION	REF DESIGNATORS	NOTES
251-00066-00	RES CFILM 680 OHM 1/4W PREP A	R15	
251-00063-00	RES CFILM 3.6K 1/4W PREP A	R14	
251-00114-00	RES CFILM 68K 1/4W PREP A	R12	
251-00130-00	RES CFILM 330K 1/4W PREP A	R13	
252-00373-00	RES CFILM 7.50K 1/4W 1% PREP A	R2,5,7,8	
252-00402-00	RES MFILM 15.0K 1/4W 1% PREP A	R1,3,9,10	
253-20001-00	RES WIRE WOUND .1 OHM 2W	R6	Standup

DIODES

CARVER P/N	DESCRIPTION	REF DESIGNATORS	NOTES
320-20001-00	DIODE 1N4148 75V PREP	D1	

TRANSISTORS

CARVER P/N	DESCRIPTION	REF DESIGNATORS	NOTES
321-40003-00	TRANSISTOR TO92 PNP SM 3G MPS8093	Q1	

INTEGRATED CIRCUITS

CARVER P/N	DESCRIPTION	REF DESIGNATORS	NOTES
330-30001-00	IC DUAL OP AMP (TL072)	IC1	Was 4136 or TL075 Quad Op Amp

MISCELLANEOUS ITEMS

CARVER P/N	DESCRIPTION	REF DESIGNATORS	NOTES
109-00002-00	JACK RT ANGLE XLR CONNECTOR	J1,2	
109-20001-00	PHONE JACK 1/4" PC MOUNT	J3,4	
319-10000-00	SWITCH PUSH 1 KEY	SW1	
401-10535-00	WIRE 22 AWG TR-64 BLACK 8"	WP-J	
401-10536-00	WIRE 22 AWG TR-64 RED 4.5"	WP-L	
401-10537-01	WIRE 22 AWG TR-64 BROWN 4.5"	WP-K	
401-10539-00	WIRE 22 AWG TR-64 WHT/YEL 21"	WP-E	
401-10580-00	WIRE 22 AWG TR-64 ORANGE 15.75"	WP-M	
401-10581-01	WIRE 22 AWG TR-64 BROWN 15.75"	WP-N	
401-30003-00	JUMPER INSULATED .4"	JP2,4,5	
401-30006-00	JUMPER INSULATED .5"	JP6,7	
401-40006-00	WIRE T #22 1EA BLACK, GRN, WHT/RD 17"	WP-A,B,C	
501-00132-00	PCB INPUT PM-1.5		
507-00001-00	BRACKET PM-1.5 INPUT BD MOUNT		Holds J1,2 in place

PM-1.5 MONO BLOCK INPUT BOARD P/N 601-00132-02

CAPACITORS

CARVER P/N	DESCRIPTION	REF DESIGNATORS	NOTES
201-00008-00	CAP CER DISC 50pF 10% 1000V	C4	
201-00012-00	CAP CER DISC 100pF 10% 1000V	C5	
205-00018-00	CAP LYTIC 100µF/25V RAD	C3	

RESISTORS

CARVER P/N	DESCRIPTION	REF DESIGNATORS	NOTES
251-00066-00	RES CFILM 680 OHM 1/4W PREP .4	R15	
251-00083-00	RES CFILM 3.6K 1/4W PREP .4	R14	
251-00114-00	RES CFILM 68K 1/4W PREP .4	R12	
251-00130-00	RES CFILM 330K 1/4W PREP .4	R13	
252-00373-00	RES CFILM 7.50K 1/4W 1% PREP .4	R2,5	
252-00402-00	RES MFILM 15.0K 1/4W 1% PREP .4	R1,3	

DIODES

CARVER P/N	DESCRIPTION	REF DESIGNATORS	NOTES
320-20001-00	DIODE 1N4148 75V PREP	D1	

TRANSISTORS

CARVER P/N	DESCRIPTION	REF DESIGNATORS	NOTES
321-40003-00	XISTOR TO18 PNP SM 8G MPS8093	Q1	

INTEGRATED CIRCUITS

CARVER P/N	DESCRIPTION	REF DESIGNATORS	NOTES
330-30001-00	IC DUAL OP AMP (TL072)	IC1	

MISCELLANEOUS ITEMS

CARVER P/N	DESCRIPTION	REF DESIGNATORS	NOTES
109-00002-00	JACK RT ANGLE XLR CONNECTOR	J2	
109-20001-00	PHONE JACK 1/4" PC MOUNT	J4	
401-10535-00	WIRE 22 AWG TR-64 BLACK 8"	WP-J	
401-10536-00	WIRE 22 AWG TR-64 RED 4.5"	WP-L	
401-10537-01	WIRE 22 AWG TR-64 BROWN 4.5"	WP-K	
401-10539-00	WIRE 22 AWG TR-64 WHT/YEL 21"	WP-E	
401-10580-00	WIRE 22 AWG TR-64 ORANGE 15.75"	WP-M	
401-10581-01	WIRE 22 AWG TR-64 BROWN 15.75"	WP-N	
401-30003-00	JUMPER INSULATED .4"	JP2,4,5	
401-30006-00	JUMPER INSULATED .5"	JP6,7	
401-40005-00	WIRE T #22 1EA BLACK, GRN, WHT/RD 17"	WP-A,B,C	
501-00132-00	PCB INPUT PM-1.5		
507-00001-00	BRACKET PM-1.5 INPUT BD MOUNT		Holds J2 in place

PM-1.5 DISPLAY BOARD
P/N 601-00128-01

RESISTORS

CARVER P/N	DESCRIPTION	REF DESIGNATORS	NOTES
251-00080-00	RES CRFM 2.7K 1/4W PREP .4	R13	
251-00085-00	RES CRFM 4.3K 1/4W PREP .4	R27,28	
251-00091-00	RES CRFM 7.5K 1/4W PREP .4	R5,7,9,18,20,22	
251-00094-00	RES CRFM 10K 1/4W PREP .4	R10,12,23	
251-00105-00	RES CRFM 30K 1/4W PREP .4	R4,6,8,11,17,19,21,24	
251-10069-00	RES CRFM 910 OHM 1/2W PREP .5	R25,26	

DIODES

CARVER P/N	DESCRIPTION	REF DESIGNATORS	NOTES
320-20001-00	DIODE 1N4148 75V PREP .4	D2,4,19,20	
320-40001-00	LED RED	D6-10,13-17	
320-40002-00	LED AMBER	D5,12	
320-40004-00	LED GREEN H.E.	D11,18	

INTEGRATED CIRCUITS

CARVER P/N	DESCRIPTION	REF DESIGNATORS	NOTES
330-30003-00	IC QUAD OP AMP (4136)	IC1,2	

MISCELLANEOUS ITEMS

CARVER P/N	DESCRIPTION	REF DESIGNATORS	NOTES
160-30004-00	HEADER 7 PIN GOLD .7	J2	
401-30003-00	JUMPER INSUL .4"	JP1-6	
501-00128-00	PCB DISPLAY, PM1.5		

PM-1.5 FAN DRIVE BOARD
P/N 602-00133-00

CAPACITORS

CARVER P/N	DESCRIPTION	REF DESIGNATORS	NOTES
204-00024-00	CAP MYLAR .047 μ F	C2	
205-00042-00	CAP LYTIC 470 μ F/35V RAD	C1	

RESISTORS

CARVER P/N	DESCRIPTION	REF DESIGNATORS	NOTES
253-50018-00	RES WIRE WOUND 1 OHM 5% 7W	R1	
255-20035-00	RES MET OXIDE 36 OHM 5% 2W	R2	2 in parallel (18 ohm)
255-20060-00	RES MET OXIDE 47 OHM 5% 2W	R3,R4	2 each in parallel (24 ohm)

MISCELLANEOUS ITEMS

CARVER P/N	DESCRIPTION	REF DESIGNATORS	NOTES
101-22001-00	BRACKET RT ANGLE PCB MOUNT (1/2")		
159-20003-00	POP RIVET AL 5/32"DIA x 1/4"L		
318-10000-00	SWITCH PUSH 1 KEY NO FRAME	SW1	
401-10556-00	WIRE 22 AWG TR-64 BLACK 5"		
401-10573-01	WIRE 22 AWG TEW BLACK 24"		
401-10557-00	WIRE 22 AWG TR-64 BLUE 5"		
401-10572-00	WIRE 22 AWG TEW BLUE 10"		
401-10574-00	WIRE 22 AWG TEW RED 21"		
401-10579-00	WIRE 22 AWG TEW GRAY 10.5"		
401-20203-00	BUS3 WIRE 22 GA 1.5"		
501-00133-00	PCB FAN DRIVE PM-1.5		

PM-1.5 MONO BLOCK FAN DRIVE BOARD
P/N 602-00133-01

CAPACITORS

CARVER P/N	DESCRIPTION	REF DESIGNATORS	NOTES
204-00024-00	CAP MYLAR .047 μ F	C2	
205-00042-00	CAP LYTIC 470 μ F/35V RAD	C1	

RESISTORS

CARVER P/N	DESCRIPTION	REF DESIGNATORS	NOTES
253-50018-00	RES WIRE WOUND 1 OHM 5% 7W	R1	
255-20035-00	RES MET OXIDE 36 OHM 5% 2W	R2	2 in parallel (18 ohm)
255-20060-00	RES MET OXIDE 47 OHM 5% 2W	R3,R4	2 each in parallel (24 ohm)

MISCELLANEOUS ITEMS

CARVER P/N	DESCRIPTION	REF DESIGNATORS	NOTES
101-22001-00	BRACKET RT ANGLE PCB MOUNT (1/2")		
150-20003-00	POP RIVET AL 5/32" DIA x 1/4" L		
318-10000-00	SWITCH PUSH 1 KEY NO FRAME	SW1	
401-10556-00	WIRE 22 AWG TR-64 BLACK 5"		
401-10573-01	WIRE 22 AWG TEW BLACK 24"		
401-10557-00	WIRE 22 AWG TR-64 BLUE 5"		
401-10572-00	WIRE 22 AWG TEW BLUE 10"		
401-10574-00	WIRE 22 AWG TEW RED 21"		
401-10575-00	WIRE 22 AWG TEW GRAY 10.5"		
401-20203-00	BUSS WIRE 22 GA 1.5"		
501-00133-00	PCB FAN DRIVE PM-1.5		

PM-1.5L FAN DRIVE BOARD P/N 602-00133-03

CAPACITORS

CARVER P/N	DESCRIPTION	REF DESIGNATORS	NOTES
204-00024-00	CAP MYLAR .047 μ F	C2	
205-00042-00	CAP LYTIC 470 μ F/35V RAD	C1	


RESISTORS

CARVER P/N	DESCRIPTION	REF DESIGNATORS	NOTES
253-20012-00	RES WIRE WOUND .47 OHM 5% 2W	R1	
255-20041-00	RES MET OXIDE 10 OHM 5% 2W	R2,3,4	





MISCELLANEOUS ITEMS

CARVER P/N	DESCRIPTION	REF DESIGNATORS	NOTES
101-22001-00	BRACKET RT ANGLE PCB MOUNT (1/2")		
150-20003-00	POP RIVET AL 5/32" DIA x 1/4" L		
318-10000-00	SWITCH PUSH 1 KEY NO FRAME	SW1	
401-10556-00	WIRE 22 AWG TR-64 BLACK 5"		
401-10573-01	WIRE 22 AWG TEW BLACK 24"		
401-10557-00	WIRE 22 AWG TR-64 BLUE 5"		
401-10572-00	WIRE 22 AWG TEW BLUE 10"		
401-10574-00	WIRE 22 AWG TEW RED 21"		
401-10575-00	WIRE 22 AWG TEW GRAY 10.5"		
401-20203-00	BUSS WIRE 22 GA 1.5"		
501-00133-00	PCB FAN DRIVE PM-1.5		

PM-1.5 FINAL ASSEMBLY
P/N 604-00061-00

CARVER P/N	ITEM NO.	DESCRIPTION	REF DESIGNATORS	NOTES
101-00001-00	29	BARRIER STRIP	TB1	
101-10004-00	12	BLADE, FAN PLASTIC 2.5 CCW		
101-30001-00	39	BUMPONS RUBBER ROUND MEDIUM		
101-30002-00	115	BUMPONS RUBBER ROUND SMALL		Used as spacers on mounting bracket (Item 515)
105-10001-00		FILTER ELEMENT 9" x 3.5" x 3/16" THICK		
105-40002-00	19	FUSEHOLDER PANEL MOUNT DOMESTIC		
106-30001-00	66	GROMMET NEOPRENE		
106-30002-00	61	GROMMET GUM		
107-00001-01	31	HANDLE 2.5" ANO BLACK		
108-00001-00	40	INSULATOR MICA T03		
108-00003-00	41	INSULATOR MICA T0220 .005" THICK		
111-00001-00	35	LABEL DANGER HIGH VOLTAGE		
111-20051-00	54	SOLDER LUG #6		
111-20151-00	55	SOLDER LUG #10		
112-10003-00	11	MOTOR FAN 18V		
112-20001-00	112	MOUNT TYRAP WHITE		Use on large filter capacitors
112-20002-00	104	MOUNT SNAKE LUG		
115-10001-00	24	POST BINDING DUAL RED/BLACK		
115-30004-00	23	POST SPEAKER BINDING GREEN		
115-30005-00	22	POST SPEAKER BINDING ORANGE		
118-80001-00	63	STANDOFF HEX THREADED 440 x 1/4"		
118-80002-00	65	STANDOFF ROUND #6 x 1/4" OD x 7/16" H		
118-80005-00	64	STANDOFF ROUND #6 x 1/4" x 5/16" ALUMINUM		
118-90003-00	21	STRAIN RELIEF MCT, 125 WS, 355 16/3		
151-20155-00	67	SCREW MACH SCKT H BK 10-32 x 5/8		Use on Handles
151-10116-02	68	SCREW METRIC MA/PP PLT M3 x 16mm		
151-20002-00	76	SCREW MACH PP BLK 440 x 3/8"		
151-20052-00	72	SCREW MACH PP BLK 6-32 x 3/8"		
151-20062-00	69	SCREW MACH PP BLK 6-32 x 1-1/2"		
151-20102-00	71	SCREW MACH PP BLK 8-32 x 3/8"		Line Filter (2)
151-20106-00	70	SCREW MACH PP BLK 8-32 x 3/4"		
151-20152-01	83	SCREW MACH PP ZC 10-32 x 3/8"		
151-30052-00	75	SCREW SHT MTL PP BLK 6 x 3/8" "B"		
151-30058-01	73	SCREW SHT MTL PP ZC 6 x 1" "B"		
151-31056-00	74	SCREW SHT MTL FHP 6 x 3/4" BLACK OX		
152-00001-00	113	NUT HEX 6-32 x 5/16" ZC		
152-10001-00	79	KEPNUT 4-40 ZC		
152-10002-00	78	KEPNUT 6-32 x 5/16" ZC		
152-10003-00	77	KEPNUT 8-32 x 11/32" ZC		Line Filter (2)
154-00003-00	58	WASHER COUNTERSUNK .50" OD x .05"		
154-10051-02	57	WASHER FLAT SAE CAD PLTD #6		
154-20052-00	60	WASHER INT LOCK SAE BLK #6		
154-20351-02	59	WASHER INT LOCK CAD PLTD 1/2" ID		
154-40002-01	62	WASHER SHLDR NYL WHT #4		

CARVER P/N	ITEM NO.	DESCRIPTION	REF DESIGNATORS	NOTES
154-40151-01	114	WASHER FLAT NYL #10 .21"ID x .35"OD		
154-40351-01	66	WASHER FLAT NYL 3/8"ID x 5/8"OD		
159-50001-00	118	TYRAP 3-3/8" L WHT		
201-00042-00	44	CAP CER DISC .047µF/100V 20%		
204-00027-00	46	CAP MYLAR .1µF/100V		Use on Fan Motor
205-00030-00	42	CAP LYTIC 4800µF/130V	C15,16	PM-1.5, PM-1.5 Mono Block
205-00044-00	42	CAP LYTIC 16000µF/80V	C15,16	PM-1.5L
207-10002-00	48	CAP MET POLY .1µF/250V 10% AX	C8	Use on 2-pos ground isolation barrier strip
251-10104-03	47	RES CFILM 27K 1/2W UNPREP	R8	Use on 2-pos ground isolation barrier strip
259-10005-00	13	POT 50KΩ PANEL MOUNT		Sub - 259-10067-01
315-13002-00	18	FUSE MDA12		115V Version
315-14004-00	18	FUSE MDQ 6-1/4		230V Version
318-20000-00	17	SWITCH ROCKER DPDT BLK		
318-20001-00	16	SWITCH ROCKER SPDT BLK		
318-50000-00	26	SWITCH THERMAL 50 DEG C		
318-50002-00	25	SWITCH THERMAL 90 DEG C		
319-00059-00	27	RECTIFIER BRIDGE 400V 25A	D1	
320-20004-03	49	DIODE 1N4004 400V UNPREP		Anode to Orange Binding Post
320-40001-00	63	LED RED		
321-30011-00	34	XISTOR TO3 NPN PWR MJ15024	Q6-10	Was 2SD555
321-30012-00	33	XISTOR TO3 PNP PWR MJ15025	Q1-5	Was 2SB600
401-10113-00	88	WIRE 18 AWG TR-64 RED 4"		Use on "+" side of large filter cap
401-10116-01	89	WIRE 18 AWG TR-64 BROWN 4"		Use on "-" side of large filter cap
401-10138-00	91	WIRE 18 AWG TR-64 BLACK 3.5"		
401-10140-00	87	WIRE 18 AWG TR-64 RED 18"		
401-10146-00	86	WIRE 18 AWG TR-64 WHITE 18"		
401-10151-00	90	WIRE 18 AWG TR-64 BLACK 7"		
401-10542-00	100	WIRE 22 AWG TR-64 BLACK 11"		
401-10547-01	94	WIRE 22 AWG TR-64 BROWN 15"		
401-10551-00	105	WIRE 22 AWG TR-64 WHT/ORN 18"		
401-10552-00	106	WIRE 22 AWG TR-64 WHT/YEL 8"		
401-10553-00	107	WIRE 22 AWG TR-64 WHT/BLU 12"		
401-20102-00	93	BUSS WIRE 18 GA 2.5"		
401-20104-00	82	BUSS WIRE 18 GA 2"		
401-20204-00	81	BUSS WIRE 22 GA 3.5"		
401-90002-00	30	LINECORD 16 GA 3-WIRE		PM-1.5L
401-90006-00	30	LINECORD 16 AWG 8YLLAX SJT 6'		PM-1.5, PM-1.5 Mono Block
402-00002-00	85	SLEEVING CLEAR 16 GA 2"		
402-00003-00	103	SLEEVING BLACK 18 GA .75"		
402-00004-00	84	SLEEVING IMPREGNATED FIBERGLASS		
402-10002-00	111	TUBING HEAT SHRINK CLEAR 1/4" DIA, 1" L		Use on LED Assembly
403-10005-00	117	LOCTITE		
403-10007-00	116	PLASTIC ADHESIVE		
403-20001-00	108	THERMALCOTE #253		Use under transformer
403-40001-00	109	TAPE FOAM DOUBLE BACK 1/8" x 1"		Use on large filter capacitors
403-40023-02		VELCRO STRIP .25" x 2.3"		

CARVER P/N	ITEM NO.	DESCRIPTION	REF DESIGNATORS	NOTES
502-30014-02	1	CHASSIS SCREENED PM-1.5		
502-30016-01	1	CHASSIS SCREENED PM-1.5L		
503-40005-01		FRONT PANEL PM-1.5		
504-10004-01	2	COVER XISTOR PAINTED BLACK PM-1.5		
504-20007-01		COVER TOP PAINTED BLACK PM-1.5		
507-00002-00	6	BRACKET PM-1.5 FAN MOUNT		
507-00005-00	3	BRACKET 4800UF/130V CAP MOUNT		
507-00006-00	4	BRACKET 2200UF/50V CAP MOUNT		
508-20011-01		KNOB 12mm KNURL BLACK 180 DEG		
509-10001-01	32	FERRULE 5/16" ANODIZED GRAY		
510-10001-01		HANDLE 2" ANODIZED GRAY		
511-00005-00	14	HEATSINK TRANSFORMER		
512-10401-03	80	NUT METRIC DRESS 7mm CAD		
530-10074-00	92	LABEL "SENSITIVITY 1.5V RMS"		
530-20007-00	36	STICKER SERIAL NUMBER PM-1.5		
532-20006-00		BOX, PACKING		
532-30042-00		FOAM CORNER BLOCK		For Packing (4 per)
602-00126-01	6	ASSY PCB AMP PM-1.5		
602-00127-01	7	ASSY PCB POWER SUPPLY PM-1.5/1.5a/1200		
602-00128-01	101	ASSY PCB DISPLAY PM-1.5/1.5a/1200		
602-00129-01	8	ASSY PCB REGULATOR PM-1.5/1.5a/1200		
602-00132-01	9	ASSY PCB INPUT PM-1.5/1.5a/1200		
602-00133-01	15	ASSY PCB FAN DRIVE PM-1.5		
615-00002-00 Replaced: 615-00051-00		NOISE FILTER TDK ZCB2206-02		
617-10017-00	20	CHOKE POTTED UNE		
617-10021-00	10	TRANSFORMER PM-1.5 115V/230V		
617-10021-00	10	TRANSFORMER PM1.5L 115V/230V		

SECTION 11

VOLTAGE CONVERSION FOR PM-1.5

120V/60Hz to 240V/50Hz

On Regulator Board

Change C4	from .47 μ F/250V	to	.1 μ F/1000V met poly axial (Carver P/N 207-10006-00)
		or	.1 μ F/250V met poly radial (Carver P/N 207-10010-00)
Add C10 (parallel with C4)			.1 μ F/1000V met poly axial (Carver P/N 207-10006-00)
		or	.1 μ F/250V met poly radial (Carver P/N 207-10010-00)
Change C5	from .0047 μ F/400V	to	.0022 μ F/400V (Carver P/N 201-00031-00)
Add C8 (parallel with C5)			.0022 μ F/400V (Carver P/N 207-10010-00)
Add C6 (parallel with C2)			.022 μ F mylar (Carver P/N 204-00020-00)
Add C7 (parallel with C3)			.01 μ F mylar (Carver P/N 204-00015-00)
Change R4	from 12k Ω 1W	to	33k Ω 2W Wire Wound (Carver P/N 253-20140-00)
Add R9 between point "J" and R3			30k Ω 1/2W (Carver P/N 251-10105-03)
Change TR1	from Q2025	to	Q6035, 35A 600V (Carver P/N 319-00063-00)

Note: An alternative to changing all the above parts is to purchase a tested 240V regulator board (Carver P/N 601-76129-01).

On Power Supply Board

Change R19	from 22 Ω 1/4W	to	43 Ω 1/4W (Carver P/N 251-00037-00)
Change R59	from 240k Ω 1/4W	to	220k Ω 1/4W (Carver P/N 251-00126-00)

Other

Change fuse	from MDA12	to	MDA 6-1/4 (Carver P/N 315-13004-00)
Apply label near linecord			220-250V 50Hz (Carver P/N 530-10043-00)
Apply label near fuseholder			6A/240V Slo-Blo 1200W (Carver P/N 530-10072-00)

Power Transformer (Magnetic Field Coil)

If the power transformer has four wires on the primary side, then it has dual windings (split primary) required for 240V conversion. Rewire the primary windings on the regulator board so they are in series (see schematic diagram of 240V power supply). Remove brown and blue wires from regulator board and splice together.

If the power transformer only has two wires on the primary side, then it cannot be converted to 240V. A "universal transformer" must be purchased and installed (Carver P/N 617-10017-00).

PM-1.5 Voltage Conversion 240V/50Hz to 120V/60Hz

On Regulator Board

Change C4	from	.1 μ F/1000V	to	.47 μ F/250V met poly (Carver P/N 207-10005-00)
Remove C10				.1 μ F/1000V metal polyester
Change C5	from	.0022 μ F/400V	to	.0047 μ F/400V (Carver P/N 201-00033-00)
Remove C8				.0022 μ F/400V
Remove C6				.022 μ F mylar
Remove C7				.01 μ F mylar
Change R4	from	33k Ω 2W	to	12k Ω 1W Metal Oxide (Carver P/N 255-10130-00)
Remove R9				30k Ω 1/2W

Note: An alternative to changing all the above parts is to purchase a tested 120V regulator board (Carver P/N 602-00129-01).

On Power Supply Board

Change R19	from	43 Ω 1/4W	to	22 Ω 1/4W (Carver P/N 251-00030-00)
Change R59	from	220k Ω 1/4W	to	240k Ω 1/4W (Carver P/N 251-00127-00)

Other

Change fuse	from	MDA-6 1/4	to	MDA12 (Carver P/N 315-13002-00)
Remove label near linecord				220-250V 50Hz (Carver P/N 530-10043-00)
Remove label near fuseholder				6A/240V Slo-Blo 1200W (Carver P/N 530-10072-00)

Power Transformer (Magnetic Field Coil)

Rewire transformer primary windings on the regulator board so they are in parallel (see schematic diagram of power supply). Separate the brown and blue wires; connect brown wire to point "G" or "H" on the regulator board; connect blue wire to point "K" or "L" on the regulator board.



SECTION 12

SERVICE BULLETINS

Please insert Carver Service Bulletins pertaining to the PM-1.5 here to ensure proper repair in the future.

CARVER CORPORATION SERVICE BULLETIN

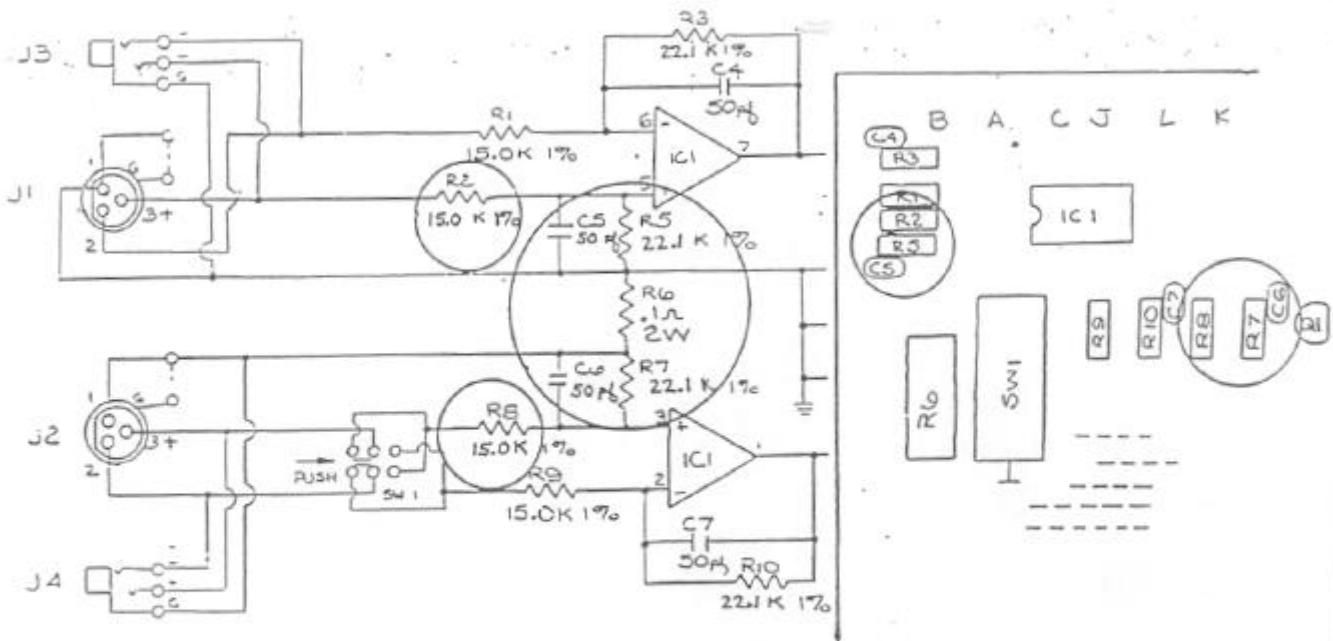
Service Bulletin # PM-1.5A-4 Model PM-1.5/1.5A Serial # AS NEEDED

Reason: To make the input stage truly balanced with balanced drive.

Procedure: At location R2 change from a 6.19K to a 15K 1%.
 At location R5 change from a 9.09K to a 22.1K 1%.
 At location C5 change from a 100pf to a 50pf.
 At location R7 change from a 9.09K to a 22.1K 1%.
 At location R8 change from a 6.19K to a 15K 1%.
 At location C6 change from a 100pf to a 50pf.

Delete: Qty-2 252-00370-00 R2 R8
 Qty-2 252-00377-00 R5 R7
 Qty-2 201-00012-00 C5 C6

Add: Qty-2 252-00402-00 R2 R8
 Qty-2 252-00418-00 R5 R7
 Qty-2 201-00008-00 C5 C6



SERVICE APPROVAL
 ENGINEERING APPROVAL

D. P. [Signature]
Vic. [Signature]

12-14-87

DATE

CARVER CORPORATION SERVICE BULLETIN

Service Bulletin # PM-1200-5

Model: PM-1200, PM-1.5 all versions

Serial Nos. All

REASON: Part is no longer available.

Date: 1/20/92

DELETE

Qty 2 Capacitor, Dual 2200 μ F/50V/80V. (C13,14)
205-00028-00

ADD

Qty 1 Capacitor Card Assy (CCA) (C13,14,22,23)
602-00500-01

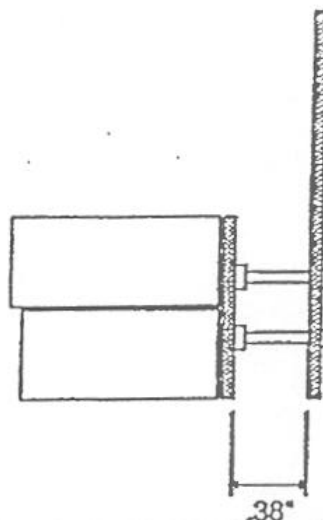
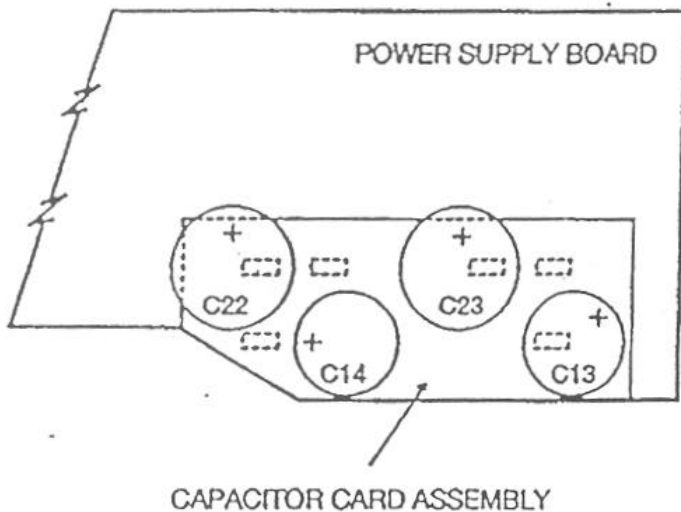
PROCEDURE

The dual capacitors used for C13 and C14 (P/N 205-00028-00) on the power supply board in the Carver PM-1.5, PM-1.5a and PM-1200 power amplifiers are no longer available.

If replacement of C13/C14 becomes necessary, we are providing a substitute part (Capacitor Card Assembly P/N 602-00500-01) which is pin-for-pin compatible with C13 and C14 on the power supply board.

To install the Capacitor Card Assembly:

1. Remove 2 screws from the bottom of the chassis securing the capacitor bracket located on top of C13 and C14.
2. Unsolder C13 and C14 from the power supply board.
Note: There are 8 pins per capacitor; 4 electrical connections and 4 connections for mechanical support.
3. Remove C13 and C14 from the power supply board and from the capacitor bracket.
4. Install the Capacitor Card Assembly so that the angled corner of the Card aligns with the angled corner on the power supply board (see illustration below). Solder into place.
5. Reinstall the 2 screws to secure the capacitor bracket in place.



Service Approval

B. Caplan

Engineering Approval

V. Richardson

1-22-92

CARVER CORPORATION

SERVICE BULLETIN

All PM-1.5a/PM-1.5's as nee

Service Bulletin # PM-1200-2

Model: PM-1200/PM-1.5a/PM-1.5

Serial nos. PM-1200 Below 034

REASON:

Date: 1/28/91

To reduce noise in outputs.

DELETE

Qty 2 Jumpers (JP1, JP3)
401-30003-00

ADD

Qty 1	Wire, Twisted Pair, 22AWG WHT/RED & BLK, 3.5' 401-40003-00
Qty 1	Wire, 22AWG Black, 2.5' 401-10636-00
Qty 1	#4 Solder Lug 111-20001-00
Qty 1	#4 X .375" Machine Screw 151-20002-00
Qty 1	#4 Kepnut 152-10001-00
Qty 2	#4 Nylon Washer 154-40001-00
Qty 1	Ragpaper Insulator 3.3" X 1.5" 108-00102-00
Qty 1	Shield Plate 531-00004-00

PROCEDURE

1. Remove input PC Board by removing two nuts and washers securing the 1/4" phone jacks and two screws securing the PCB mounting bracket.
2. Remove jumpers JP1 and JP3.
3. Cut traces leading from the tip and ring of J4 (left channel input 1/4" jack). See Figure 1.
4. Install twisted pair from J4 tip and ring to center pins of SW1. Be sure to maintain correct polarity as shown in the Figure.

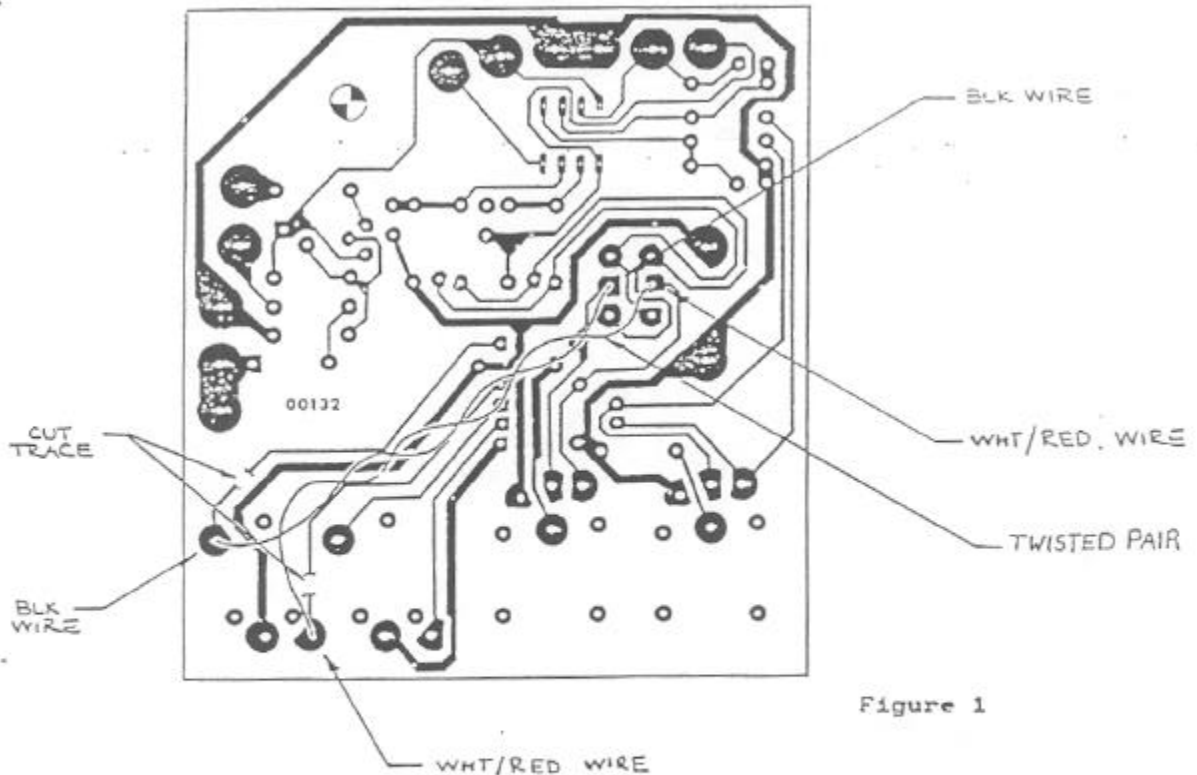


Figure 1

Engineering approval *[Signature]* 1-25-91

Service approval *[Signature]*