

M49-024 AND M49-026 SWITCHING REGULATED POWER SUPPLY INSTRUCTION MANUAL

CONSISTS OF:

Information Specification	34-017M04R01A12
Schematic	34-017M04R06D08
Schematic	34-017M05R02D08
Schematic	34-020M04R06D08
Schematic	34-020M05R02D08
Component Locator	35-543R07D03
Component Locator	35-545R06D03
Chassis Assembly	34-017M04R02D03
Chassis Assembly	34-020M04R01D03


INTERDATA®

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M49-024 AND M49-026

SWITCHING REGULATED POWER SUPPLY

INFORMATION SPECIFICATION

1. INTRODUCTION

This specification provides the necessary information for the installation, operation, and maintenance of several INTERDATA power supplies. These power supplies are very similar in their basic design approach. A given power supply described by the marketing number (a number preceded by M and appearing on the front cover of this manual) may have several variations. The variations are identified by INTERDATA part numbers - a number beginning with 34. All power supplies described by the marketing number have the same output rating and are interchangeable. The following is a list of the supplies covered in this manual.

<u>Marketing Number</u>	<u>Part Numbers</u>	<u>P5 Output Rating</u>
M49-024	34-017M04	24A
	34-017M05	24A
M49-026	34-020M04	50A
	34-020M05	50A

1.1 Drawings

This manual provides a schematic drawing, chassis assembly drawing, and component locator drawing (printed circuit board) for each power supply listed above. All drawings appear at the back of this manual. The following list describes the drawings that apply to each power supply.

Power Supply Part Number	Schematic	Chassis Assembly	Component Locator
34-017M04	34-017M04D08	34-017M05D03	35-545D03
34-017M05	34-017M05D08	34-017M05D03	35-545D03
34-020M04	34-020M04D08	34-017M05D03	35-543D03
34-020M05	34-020M05D08	34-017M05D03	35-543D03

2. GENERAL DESCRIPTION

The power supplies are designed to provide operating voltages of +5, +16 and -16 volts for INTERDATA Processors. Access to all components (for primary power conversion option, maintenance, and trouble shooting) is made through a removable front panel and a combination hinged top and back panel. Refer to the maintenance section for details.

The power supplies are contained in a hinge mounted chassis. The 24A power supplies connect to the Processor via two cables, combined in one harness, and to the primary power source by a two wire plus safety ground AC power line. The 50A power supplies have an additional cable which supplies an additional back panel. This is discussed in Section 5 on Cabling.

The two cables between the power supplies and the Processor provide the three operating voltages, Line voltage for the external exhaust fans, leads to the external power switch, and the Primary Power Failure (PPF) line from the power supply to the Processor.

3. CONFIGURATION DATA

3.1 Chassis and Power Supply Compatibility

INTERDATA has manufactured two different chassis. One of these chassis, termed the "former chassis", is no longer in production. The former chassis can be used with the power supplies described by this manual, only when they are connected for 115 volt line operation. The other chassis, termed the "new chassis", is now in production and is compatible for both 115 volt and 230 volt line operation. The difference in the former and the new chassis is the way in which the chassis fans are wired. The former chassis fans were wired for 115 volt only. The new chassis includes a switch on the back panel to switch the chassis fan input from 115 to 230 VAC operation. See Figures 1 and 2 for an illustration of former and new chassis fan connectors.

3.2 Chassis Fan Jumper Cables

When more than one chassis is to be powered by a power supply, fan jumper cables must be used to power the second card file fans. Two jumper cables are available. Cable 17-181 is wired with two male connectors and cable 17-287 is wired with one male and one female connector. Choice of cable required can be determined from Figures 1 and 2.

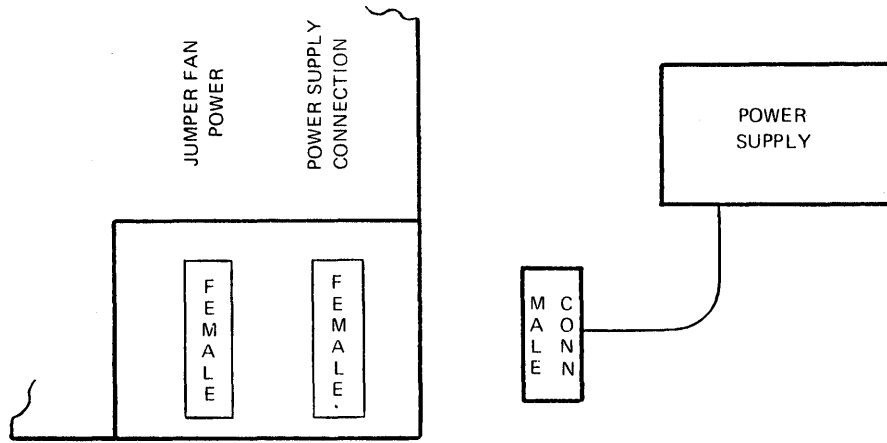


Figure 1. Former Chassis

NOTE

The "new chassis" (1 or 2 fan) is wired for 115/230V fan operation and equipped with one male and one female connector for fan power. See Figure 2.

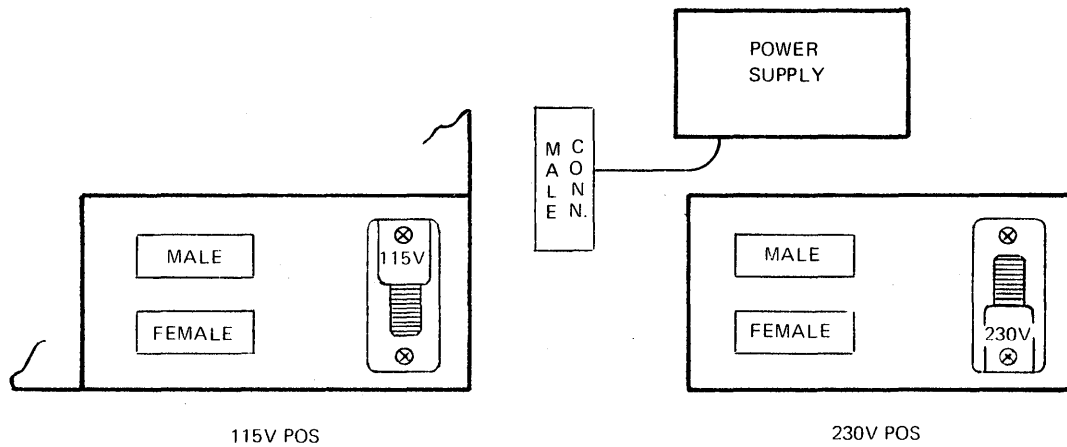


Figure 2. New Chassis

NOTE

The "former chassis" can be converted to a "new chassis" with Kits 39-020F01 (1 fan) and 39-020F02 (2 fans).

3.3 Exhaust Fans

New exhaust fan plates are equipped with a switch to provide either 115 or 230VAC operation. See Figure 3.

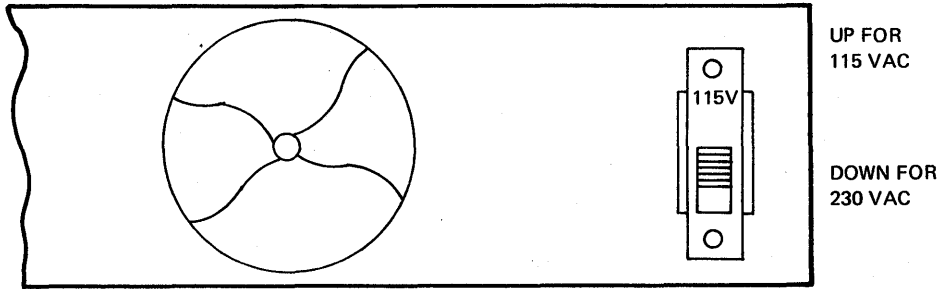


Figure 3. Fan Switch Setting

CAUTION

ALL AC FAN CONNECTORS ON POWER SUPPLIES WHICH ARE NOT CONNECTED TO MATING RECEPTACLES MUST REMAIN COVERED OR SHORTING MAY OCCUR. SEE FIGURE 4.

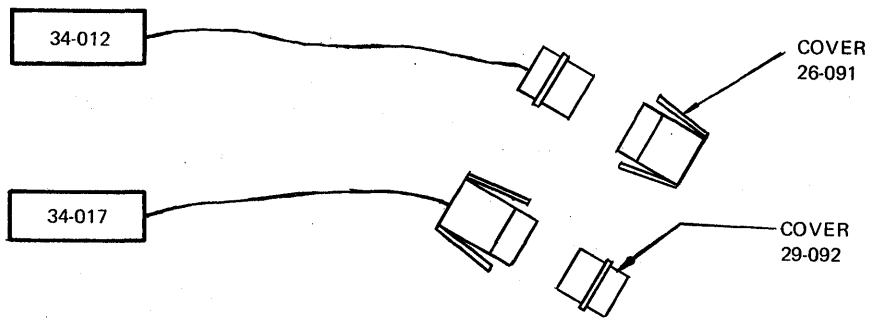


Figure 4. Fan Connector Caps

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4. INSTALLATION

INTERDATA Digital Systems feature a highly modular structure which permits configurations to suit the user's exact needs. This structure provides the means for convenient expansion as the user's requirements grow. This document describes the power supply mounting and the interconnecting cables. Note that the following discussion assumes that the equipment is mounted in standard INTERDATA cabinets.

4.1 Mechanical Components

This section is intended to familiarize the reader with the mechanical components that are discussed here (i.e., Cabinet Uprights, Chassis Support Rails, and Filler Panels). Figures 5 through 10 provide the dimensions and mounting configurations for the Rack, Chassis Support Rails, and Filler/Display Panels. Note in Figure 10, that while 3 1/4", 7" and 10 1/2" Filler Panels and the Display Panel mount the same way (via retaining brackets), the smaller 1 3/4" Filler Panel mounts with spring clips.

4.2 Power Supply Mounting

The power supply mounts in the rear of the cabinet, behind the Processor or expansion chassis. It is attached to the right mounting upright (looking from rear). The Power Supply attaches to the mounting upright via four 10-32 X 1/2 pan head Phillips screws. See Figure 5.

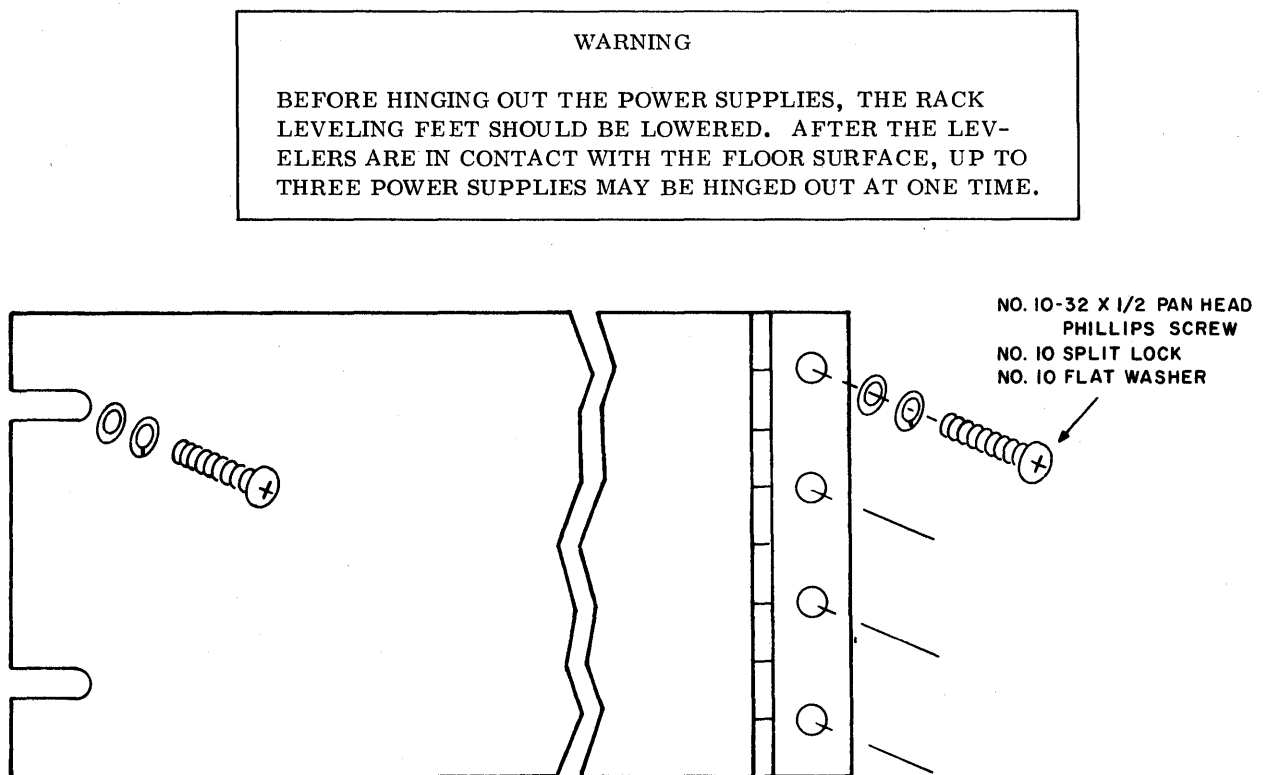


Figure 5. 34-017 Power Supply Mounting

When the power supply is in the installed operating position, it is secured to the left rear upright by two 10-32 screws. The power supply cable connects to terminal lugs at the right rear (looking from rear) of its respective Processor or expansion Chassis via faston lugs and a connector for fan AC power. Refer to Figure 6. There is adequate slack provided in the cable to allow the power supply to hinge out freely. To prevent the cable from being pinched between the power supply and the chassis support rails, a service loop is required. A maximum of five power supplies may be mounted in one rack.

NOTE

The A.C. convenience panel must be equipped with a 30 Amp circuit breaker if more than 3 power supplies are being used.

Refer to the related Processor manual installation specification for expansion chassis/power supply mounting details.

NOTE

When the Power Supply is mounted in a chassis equipped with two female plugs for A. C. fan power, jumper cable 17-181 must be used. Chassis equipped with the 115-230 VAC fan power conversion switch do not require this cable.

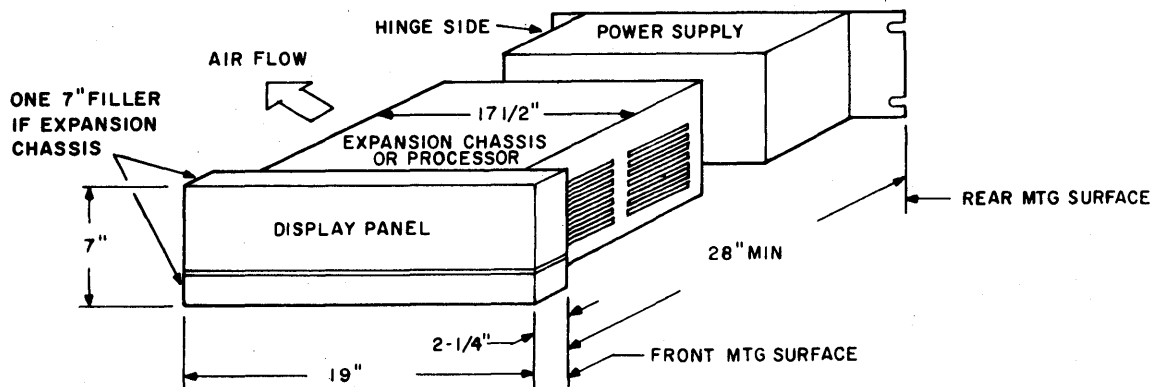


Figure 6. Expansion Chassis Location

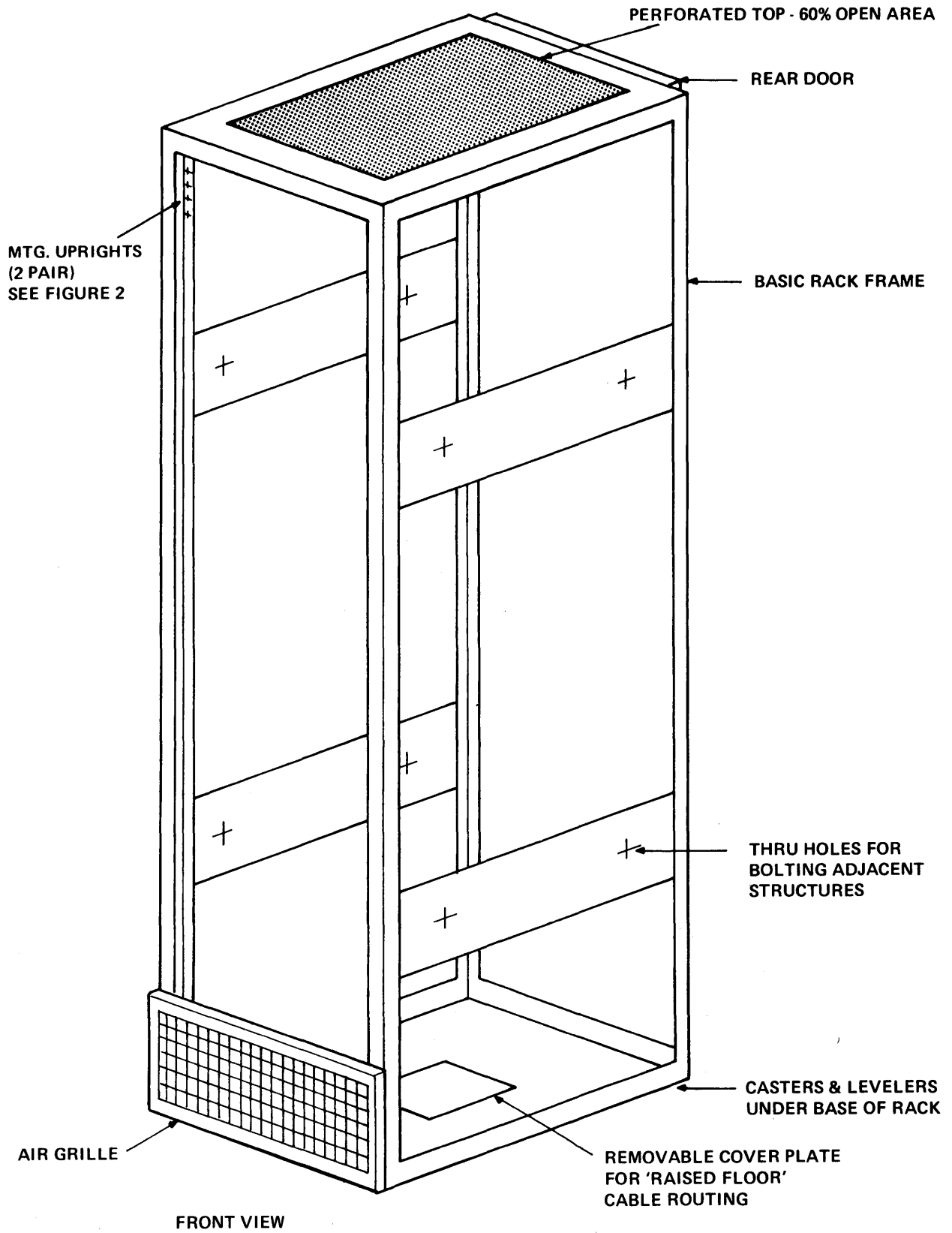


Figure 7. Basic Cabinet

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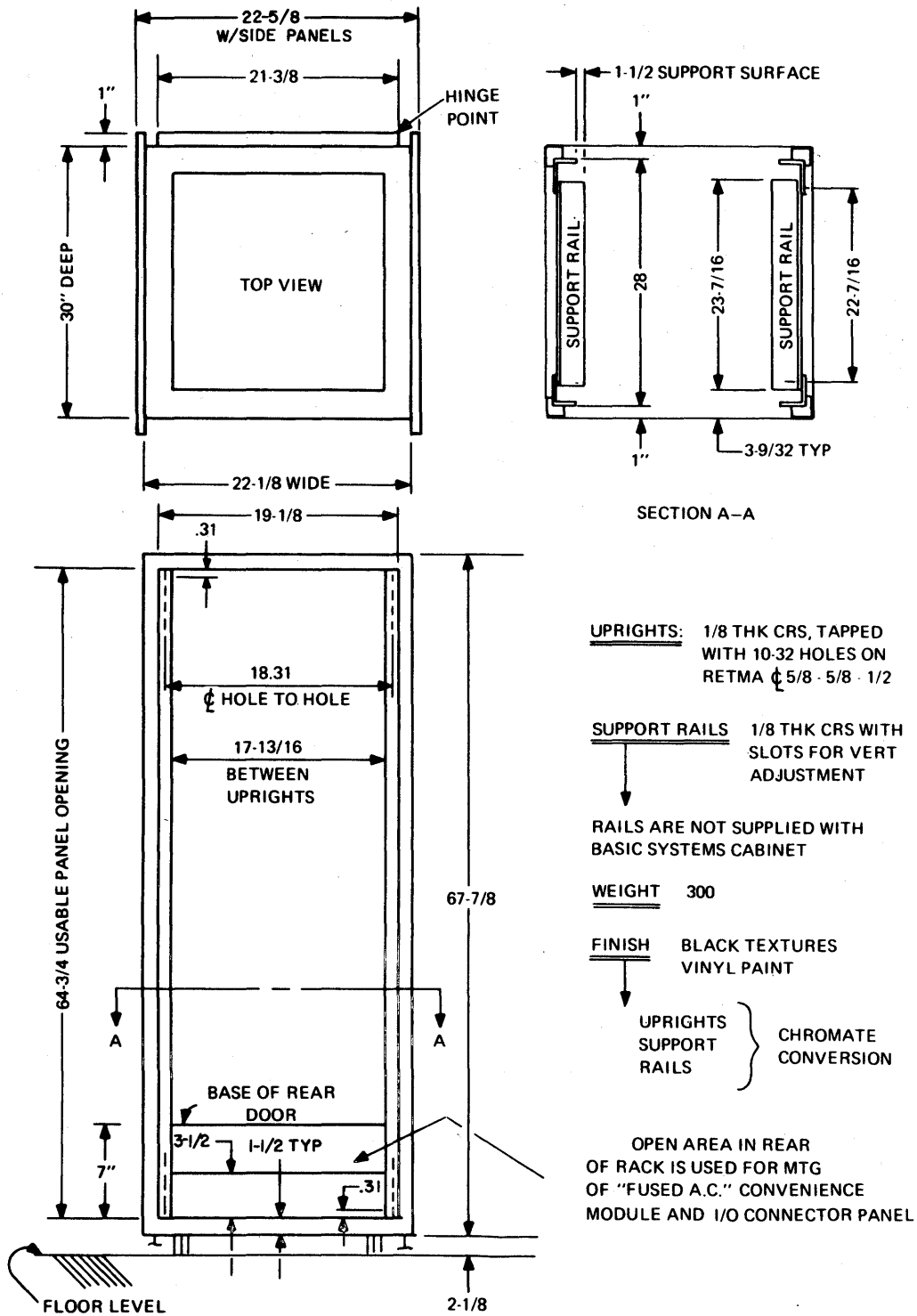


Figure 8. Basic Cabinet Physical Dimensions

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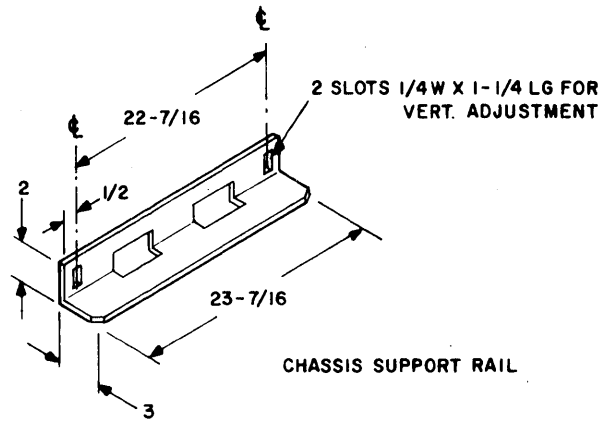


Figure 9. Chassis Support Rail

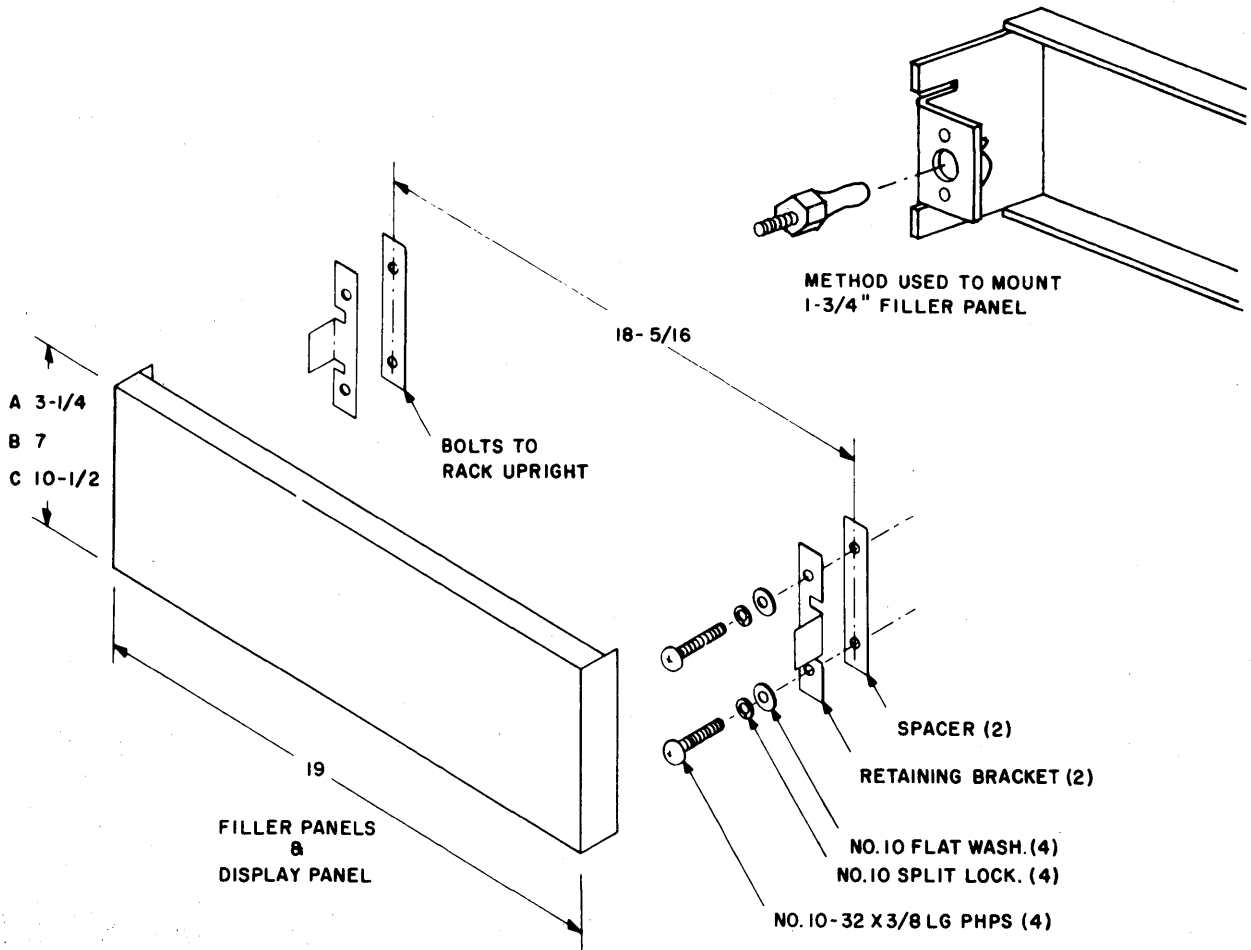


Figure 10. Typical Mounting Configuration for Display and Filler Panels

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5. PRIMARY POWER CONVERSION

The primary power is limited to 115 VAC or 230 VAC $\pm 10\%$, 47 to 63 Cycles Per Second (CPS), depending on the strapping options shown on Terminal Board 1 (TB1) in the Functional Schematic for the given power supply. INTERDATA Power Supplies are shipped from the factory strapped for the 115 volts $\pm 10\%$, 47 to 63 CPS, option unless otherwise specified. Two conversion procedures exist:

Power supplies with part number including M04 must use the M04 procedure below. Power supplies with part number including M05 must use M05 procedure below.

M04 Conversion Procedure

1. Remove the front panel from the power supply chassis to expose TB1.
2. Ascertain that the TB1 terminals are strapped in this following manner for the 115 VAC option.

1 to 2

3 to 4

5 to 6

8 to 9

3. Remove the four straps.
4. For 230 VAC option, add the four straps to the following TB1 terminals.

2 to 3

4 to 5

6 to 7

9 to 10

5. Replace the front panel to the power supply chassis.
6. When the conversion to 230 VAC is completed, add the designation F01 to the INTERDATA Switching Regulated Power Supply part number.

M05 Conversion Procedure

1. Same
2. Same
3. Same
4. For 230 VAC option add the four straps to the following TB1 terminals.

2 to 3 (use two straps)

4 to 5 (use two straps)

Two straps for each connection are used to keep four straps available in the event the 115 VAC option is later desired.

5. Same

6. CABLING

All INTERDATA power supply output cables are equipped with "Fastons" which are intended to connect to the "Faston tabs" located on back panels of INTERDATA chassis. The Fastons and the Faston tabs are labeled to conveniently guide the installation of power supplies. The fan connection does not use Fastons. It uses a three prong nylon connector (only two prongs are used by the fans).

As previously mentioned, some power supplies are equipped with output cables designed to feed two back panels.

7. OPERATION

7.1 General

Although the following describes power supply 34-017M05, the same information applies to all other power supplies covered by this manual. During the following power supply operating procedures, refer to Functional Schematic 34-017M05D08 and the power supply block diagram in Figure 11.

To operate the power supply in the 115 VAC or 230 VAC mode, connect the power cable to the primary power source.

WARNING

WHENEVER THE POWER SUPPLY IS CONNECTED TO A PRIMARY POWER SOURCE, 115 VAC OR 230 VAC (DEPENDENT ON THE REQUIRED STRAP OPTION) IS PRESENT AT TB1 (B4) AND THE PRIMARY OF THE 12 VAC CONTROL TRANSFORMER T1 (D4).

Turn the external Power switch on the Processor to the ON or LOCK position. The 12 VAC Relay K-1 (D6) energizes causing the following:

- Normally open K-1 contacts 4 and 7 (1D3) close, providing 12 VAC to the rectifiers CR4, 5, 6 and 7 which develop filtered unregulated DC of approximately 15 volts. This voltage is regulated by Zener Diode CR24 and Transistor Q10 to provide 10 volts to the driver transistors, timer, (IC10) voltage regulator IC6 (1M5), and driver balance potentiometer (R19). The 10 volts also feeds the IC7 voltage regulator which provides the P5L (V_{CC}) to IC 1, 2, 3, 4, and 5 (N5).
- Normally open K-1 contacts 5, 8, 9 and 6 (1C1) close, operating the power supply fan (1C3) and the external fans in the Processor (1A1). Voltage is applied to the bridge rectifier BR1, via the input surge limiting resistor R1 (1D1). Note that R1 is needed to limit the inrush current during the initial turn-on, since the capacitors C2, C3, C4 and C5 are in a discharged condition and appear as an instantaneous short circuit.

Transistors Q22, Q23, Q24, Q25, Q26, Q27 and Q28 comprise a delaying enable circuit. Approximately 1.5 seconds after K1 becomes energized, Capacitors C55 and C56 (1E7) charge to 6 volts. This causes the collector of Q26 (1G7) to go high enabling Timer IC3 (1K6). It also causes the collector of Q28 (1G6) to go low enabling driver Transistors Q3 and Q4 to turn on as directed by Timer IC10 (1L1). The Timer IC10 is triggered by the control causing execution of power transformer T2.

Rectifier circuit CR13, CR14, CR15, CR16, C24, C25, C46, C47, L2 and L3 (2C3) produces ± 30 volts (approximated). The minus 30 volts energizes Relay K2 through R94 (2B4) whose contacts short out the surge limiting resistor, R1 (1D1).

Using the 115 VAC option, Capacitors C2 and C3 (F2) form a voltage doubler, maintaining a constant 300 volts across switches Q1 and Q2 (H2). Effectively, the collector of Q1 is +150 volts (A2) and the emitter of Q2 is -150 volts (H3). Using the 230 VAC option, the bridge rectifier operates as a full wave rectifier. Capacitors C2 and C3 charge to 300 volts to maintain a constant 300 volts across switches Q1 and Q2.

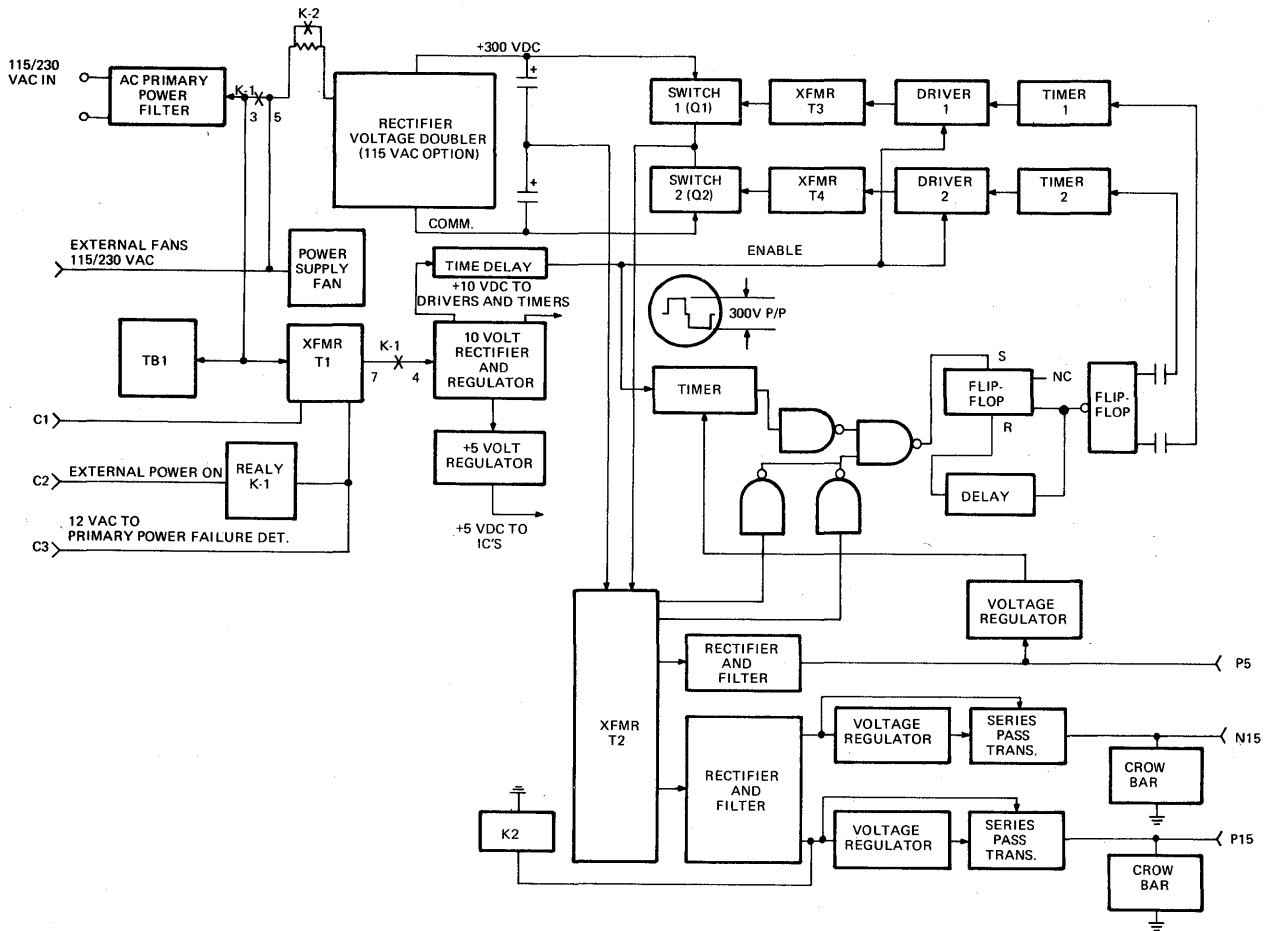


Figure 11. Switching Regulated Power Supply (Simplified Block Diagram)

7.2 +5 Volts (P5)

The 19-094 regulator (IC6) monitors the +5 volt (P5) output. Any variation in the P5 output is corrected via a regulating circuit, by increasing or decreasing the interval of the pulses feeding transformer T2 (F7). Refer to Figures 11 and 12.

As the +5 output volt varies from line or load changes and ripple, the regulating circuit is in turn constantly compensating for the changes in the +5 volt output.

The general theory of operation of the switching power supply refers to Figures 11 and 12 and Functional Schematics 34-017D08 and 34-020D08 in conjunction with text.

AC primary power is routed to the power supply through a dual section LC filter. This filter suppresses high frequency noise from either entering or leaving the power supply. To provide operation on either 115 or 230 volts, the rectifier circuit, consisting of bridge rectifier BR1, and filter Capacitors C2 and C3, is wired to terminal block TB1. The movable jumpers on TB1, when in the 115 volt position, convert the rectifier circuit to a voltage doubler. This provides the same high voltage DC potential (300 volts) for the switching transistors as when operating from 230 VAC and using the rectifier as a full wave bridge.

Note that the developed DC is higher than the AC voltage applied since the rectifier charges the capacitor to a peak which is greater than the RMS value. AC primary power is also applied to the control transformer T1 which has several functions as follows:

1. Develop 12 VAC for operating the power control relay K1 via an external switch connected to terminals C1 and C2.
2. Develop 12 VAC across terminals C1 and C3 to operate an external primary fail detector.
3. Operate the power supply cooling fan at 115 VAC by means of a dual primary (connected as a step-down auto transformer on 230 VAC input).
4. Develop +10 VDC by means of a rectifier bridge and regulator, to power the drivers and timers used within the power supply. (A small IC regulator also uses the +10V to furnish +5V to the various IC's in the supply.)

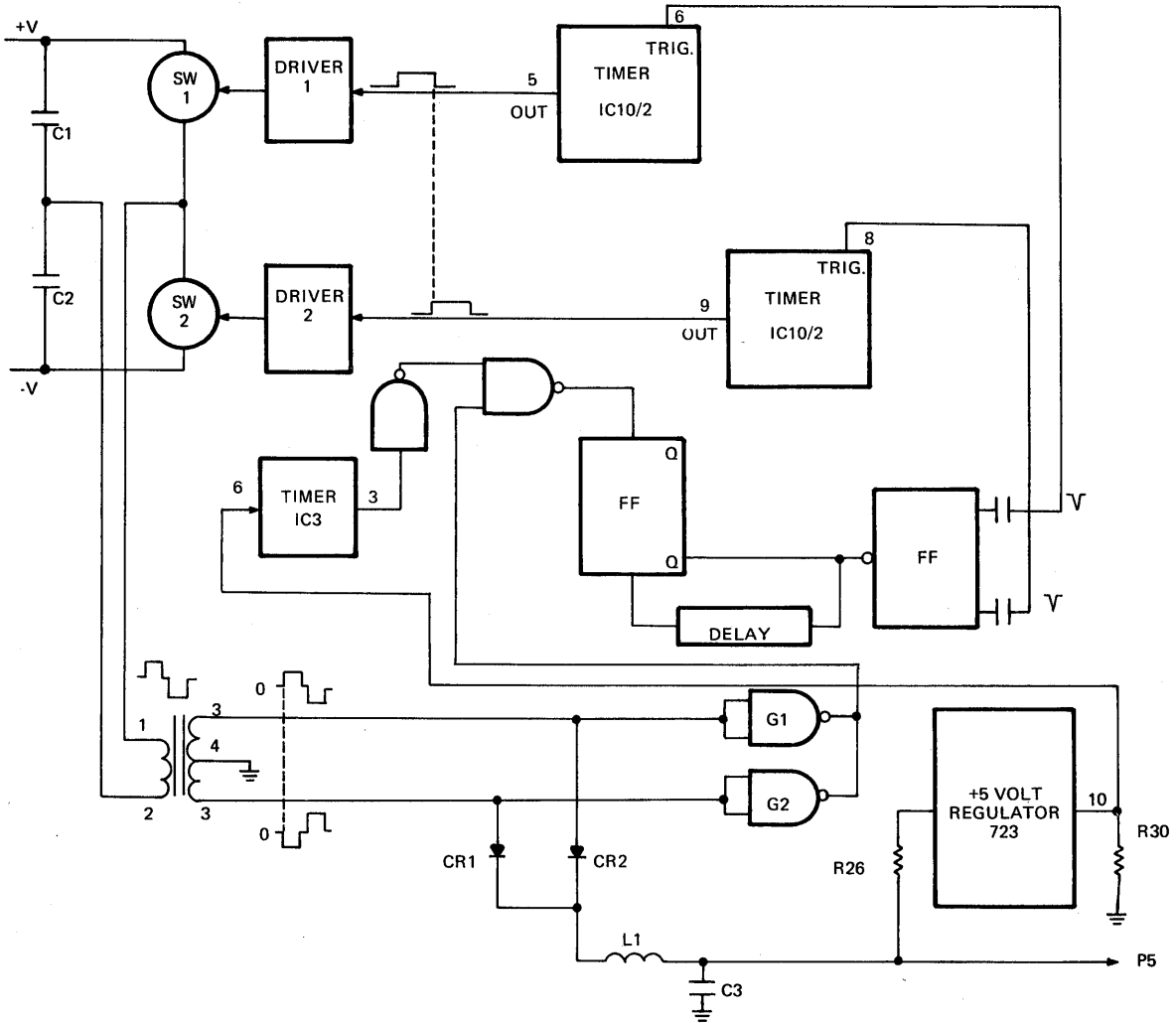


Figure 12. Simplified +5 Volt Control Logic Diagram

IC6 operates as a comparator. When the output voltage P5 is below the regulation level (normally 5.00 volts), the IC6 output (Pin 4) is +5 volts or higher. When P5 is above the regulation level, the IC6 output is +5 volts or lower. When output P5 is too low, the IC6 output charges C14 through R102, Q20, CR35, and CR34 (1M5). When C14 is charged to 3.3 volts, the IC3 Timer output at Pin 3 (1K5) goes low. This low output causes IC4, Pin 6 (1N3) to go low which toggles IC4. One of the two outputs of IC4 goes low, is differentiated, and triggers one of the two timers of IC10 (1L2). The two IC10 timers produce 25 usec pulses (never simultaneously) to drive the high voltage switches Q1 or Q2 (1G3) through Q3 or Q4 (1K1). When Q3 or Q4 is producing a 25 usec drive pulse, they are also resetting the IC3 Timer (1K5) through CR38 or CR39 (1J2). The two collector ORed gates of IC5 (1H6) delay subsequent pulses until the finish of a preceding pulse. They do this by turning on anytime T2 is driven by the high voltage switches (Q1 or Q2). The collector ORed gates of IC5 are enabled one at a time by the IC4 flip-flop pins 10 and 11 (1N3).

Transistors Q29 and Q30 (1L4) form a delay circuit which resets the IC4 flip-flop (1K3) approximately four microseconds after it becomes set.

Diodes CR11 and CR12 rectify the high current secondary of T2 (1E9). The rectified high current secondary is filtered by L1 (1H8) and C29 (1L8) to produce P5 (+5 volts). R25 (1J8) produces a voltage to IC6 which limits the current during overloads to protect the Power Supply from component failures.

7.3 -16 Volts (N16) and +16 (P16)

Power to operate the positive and negative 16 volt regulators is derived from an additional secondary winding on the high frequency power transformer (T2). Rectifiers CR13 and CR16, Choke L3 and Capacitor C25 and C47 form the positive unregulated voltage source which operates the regulator IC9 and the series pass transistors Q7 and Q8.

Rectifiers CR14 and CR15, Choke L2 and Capacitors C24 and C46 form the negative unregulated voltage source which operates the regulator IC8 and the series pass transistors Q5 and Q6.

The negative regulator is the master control and the positive regulator is a tracking slave to it. Terminals TA and TB are provided so that an external thermistor can be used to automatically vary the ± 16 volt outputs as a function of ambient temperature. This feature is mainly for use with some magnetic core memories. If the power supply is to be used in a system where the output voltage should remain constant over the ambient temperature range, a 1000 ohm metal film resistor must be connected across terminals TA and TB.

The network comprised of R45, R46, R47, R48 and Q13 serves two functions. First, it linearizes the thermistor temperature coefficient curve so as to cause the ± 16 volt outputs to follow a prescribed voltage vs. temperature curve (see Figure 13). Secondly, it provides a means for adjusting the output voltage over the range of 14.5 to 18.2 volts.

Each pass transistor (Q5, Q6, Q7 and Q8) has a ballast resistor in series with the emitter lead to compensate for differences in the base-emitter voltage of each paralleled pair. This equalizes the current shared by each transistor. Current limiting is provided to prevent damage to the circuitry in the event of a short circuit on the output.

Resistor R129 and Transistors Q18 and Q19 are the main components providing current limiting for the N15 Regulator. Resistor R39 and Transistor Q9 are the main components providing current limiting for the P15 regulator.

A Fenwal thermistor #KA31J1 is used in the computer and is placed approximately one foot away from the power supply. The sensor shall control the ± 16 V supplies as follows:

50^oC shall produce ± 15.00 VDC
10^oC shall produce ± 17.50 VDC
0^oC shall produce ± 18.13 VDC

The temperature voltage relationship of the ± 16 VDC output shall not fall outside of the limits shown in Figure 13.

The sensor shall program the -16 VDC supply. The +16 VDC supply shall track the -16 VDC supply within ± 50 millivolts.

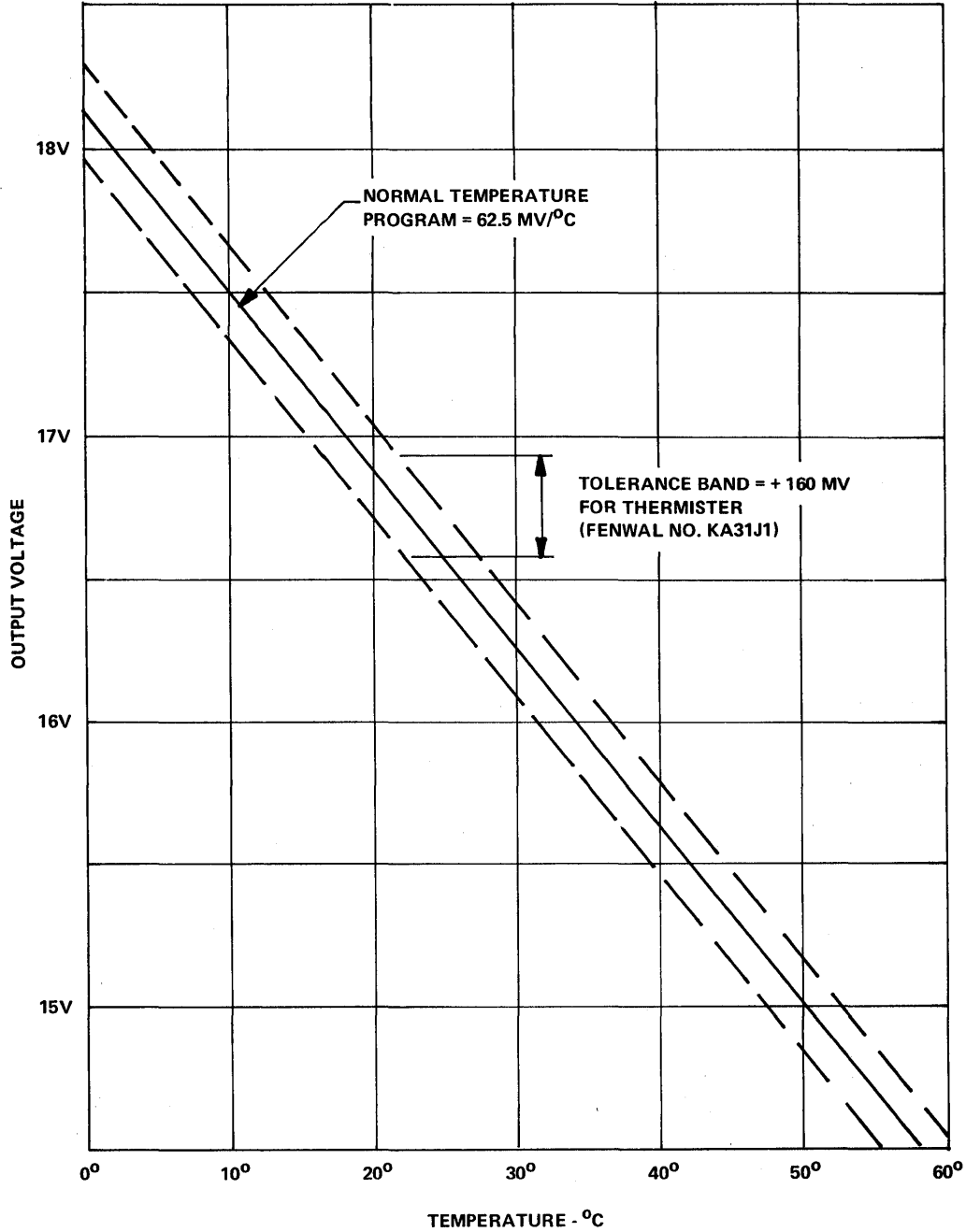


Figure 13. Thermister Temperature Program

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7.4 Voltage Adjustments

WARNING
USE INSULATED ADJUSTER SCREWDRIVER.

Voltage adjustments for the P5, N16 and P16 output voltages can be made by adjusting the appropriate potentiometer in the power supply. These potentiometers are easily accessible through a slot in the top of the power supply marked P16, N16 and P5. When adjusting the P16 and N16 voltages, the N16 is always adjusted first as the P16 voltage tracks the N16 voltage output.

7.5 Over Voltage Protection and Driver Balance Adjustments

To adjust or readjust the over voltage protection potentiometers for the P16 and N16, and the driver balance potentiometer, the power supply hinged top and back panel must be opened to allow access to the internal components. Refer to Figure 14 and the following steps:

1. Remove the two screws from the top of the power supply.
2. Remove the two screws holding the top to the front panel of the power supply and swing the hinged top and back panel open.
3. Adjust or re-adjust the P16, N16 or BD (balance driver) as required.
4. Reassemble the power supply by swinging the hinged top and back into place and replace the four screws.

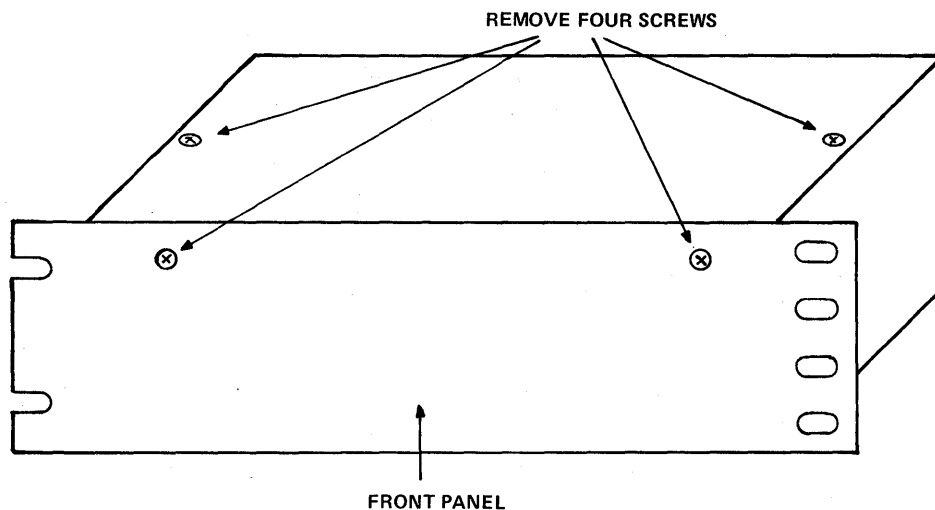


Figure 14. Power Supply Access

7.5.1 Over Voltage Protection Adjustment. The power supply has over-voltage protection in the form of crow bar connections across the P16 and N16 outputs. The crow bar circuits are SCRs, connected directly across the voltage source, which fire when a pre-determined voltage is reached, thus short circuiting the voltage source. Tolerance specification is over the entire temperature range of 0° - 55°C.

Adjustments and adjustment ranges are as follows:

<u>OUTPUT</u>	<u>STANDARD ADJUSTMENT</u>	<u>ADJUSTMENT RANGE (MIN)</u>	<u>FIRING VOLTAGE TOLERANCE</u>
+ 16 V	19.5 V	17.5 to 20.5 V	± 0.5 V
- 16 V	19.5 V	17.5 to 20.5 V	± 0.5 V

These voltages are adjusted at the factory prior to the shipment of the power supply.

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7.5.2 Driver Balance. Potentiometer R19 is the balance potentiometer which must be adjusted properly for reliable operation. The adjustment of R19 is done at the factory and should never be done in the field unless the following procedure is used. The field adjustment of R19 is required only if Q1, Q2, Q14, Q15, IC10, C10 or C11 is replaced. The procedure for adjusting 34-017M04 is different and more difficult than that for 34-020M04.

The procedure for adjusting the 34-017 is:

1. With the power supply off, turn R19 counter clockwise 20 turns, then clockwise 10 turns. This puts the Potentiometer at the mid point.
2. Fully load the outputs of the Power Supply
 - P5 = +5.00 Volts @ 24 Amps.
 - P15 = +16.5 Volts @ 2.8 Amps.
 - N16 = -16.5 Volts @ 2.8 Amps.
3. Measure the T2 primary current with a P6021 Tektronix Current Probe or equivalent and a Scope.
4. Adjust R19 while observing the T2 Primary Current. Adjust for a .5 Amp tail on either the positive or negative trailing edge of the current curve form as shown in Figure 15 or 16.

CAUTION

CARE SHOULD BE TAKEN NOT TO ALLOW THE POWER SUPPLY TO OPERATE FOR MORE THAN A FEW SECONDS WITH A "TAIL" OF GREATER AMPLITUDE THAN THAT SHOWN BY FIGURES 15 AND 16.

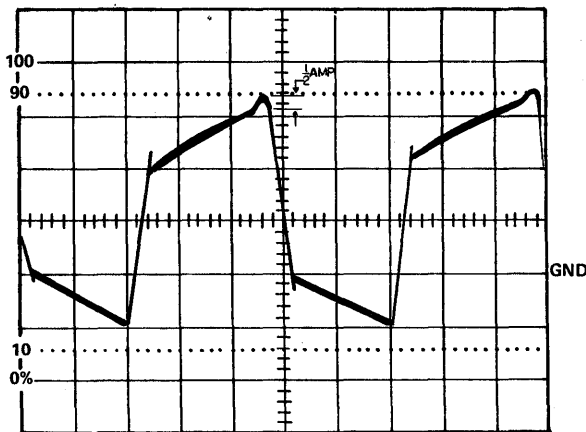


Figure 15. 10us/div, 2 amps/div (34-017), 4 amps/div (34-020)

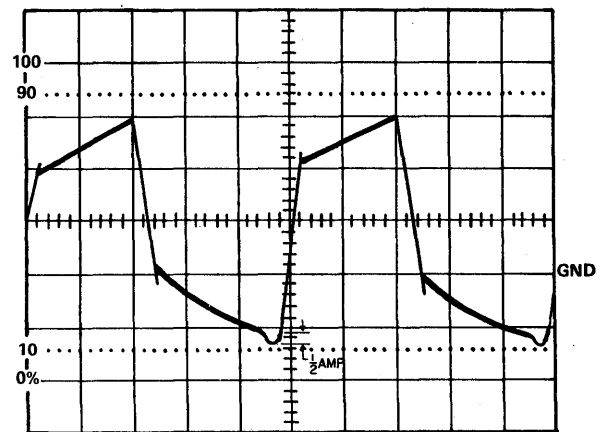


Figure 16. 10us/div, 2 amps/div (34-017), 4 amps/div (34-020)

5. After the .5 Amp tail has been adjusted for, R19 must then be rotated until a .5 Amp tail of opposite polarity is achieved. In doing this, the number of turns R19 is rotated from "tail to tail" is counted. Set the potentiometer at the mid point of the "tail to tail" range. The adjustment is done.

The procedure for adjusting the 34-020 is:

1. Remove Fuse F7
2. Adjust wave form on collectors of Q3 and Q4 for equal pulse widths at 5 volt level. Adjustment is done.

7.6 Fuse Protection

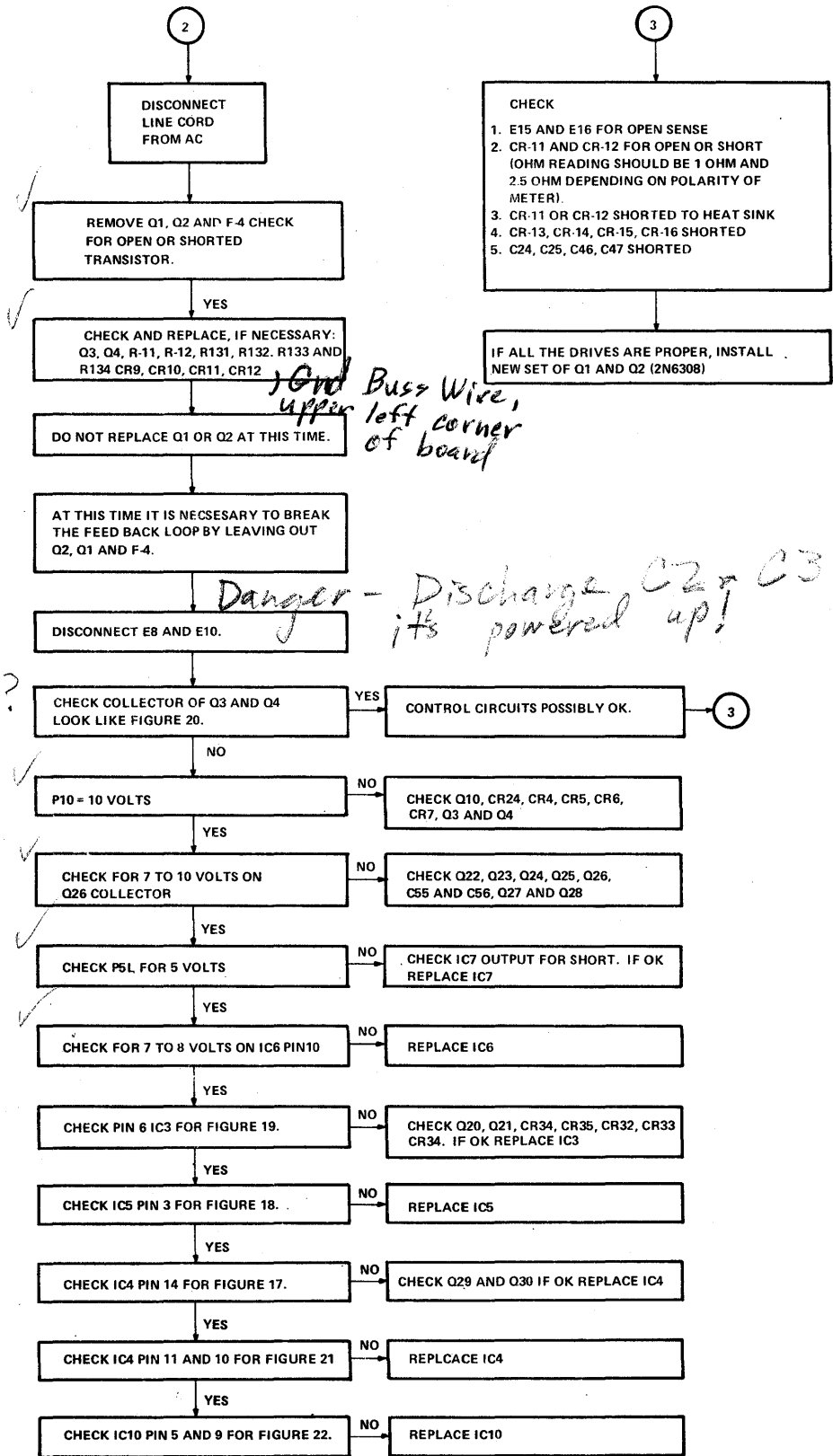
The six fuses in the 34-017 power supply service the following functions:

<u>FUSE</u>	<u>AMPERE</u>	<u>LOCATION</u>	<u>PURPOSE</u>
F1	8A	Primary Line	Power Supply Protect
F2	8A	Primary Line	Power Supply Protect
F3	1A	12 VAC T1	Protect 12 VAC Power Supply
F4	5A	High Voltage Circuit	Opens 300 Volt to Switches Q1 and Q2
F5	5A	N17 Emitter	Protects N16 Rectifiers and Components
F6	5A	P16 Emitter Circuit	Protects P16 Rectifiers and Components
F7	.5A (SLO-BLOW)	Primary Line	Protects P. C. Board from being burned by R1 in the event K2 fails to operate

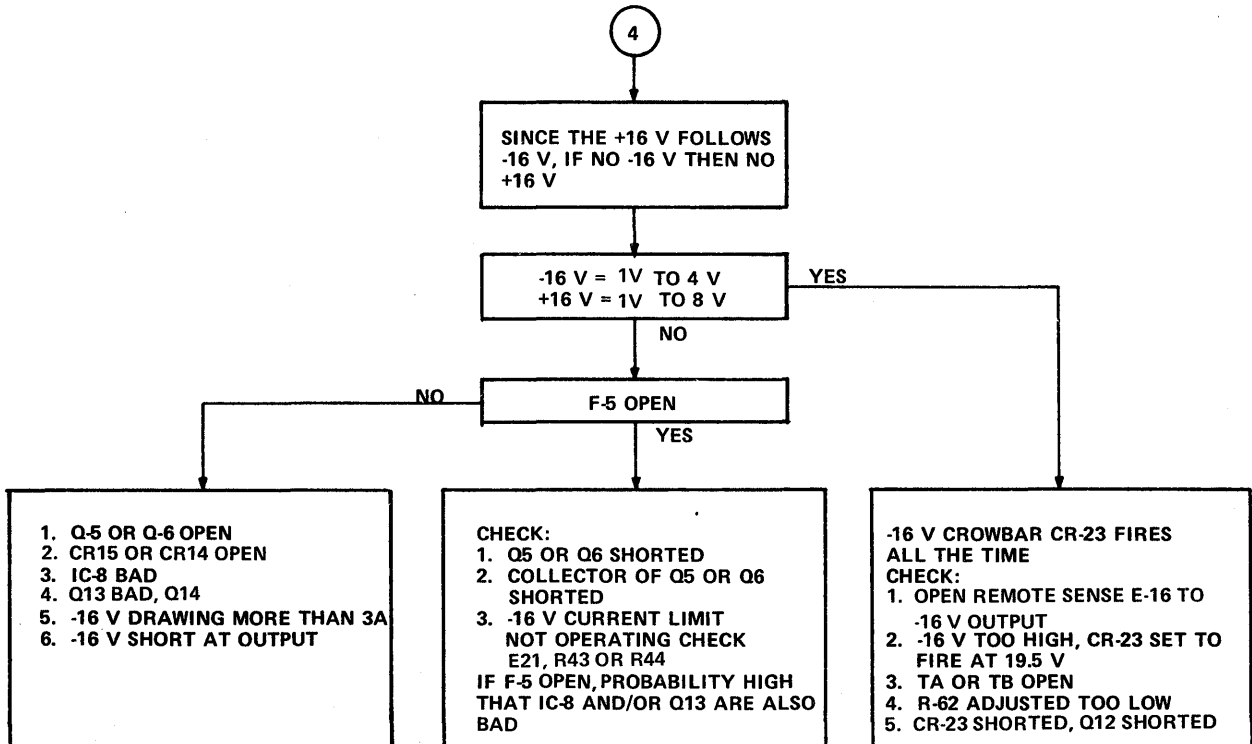
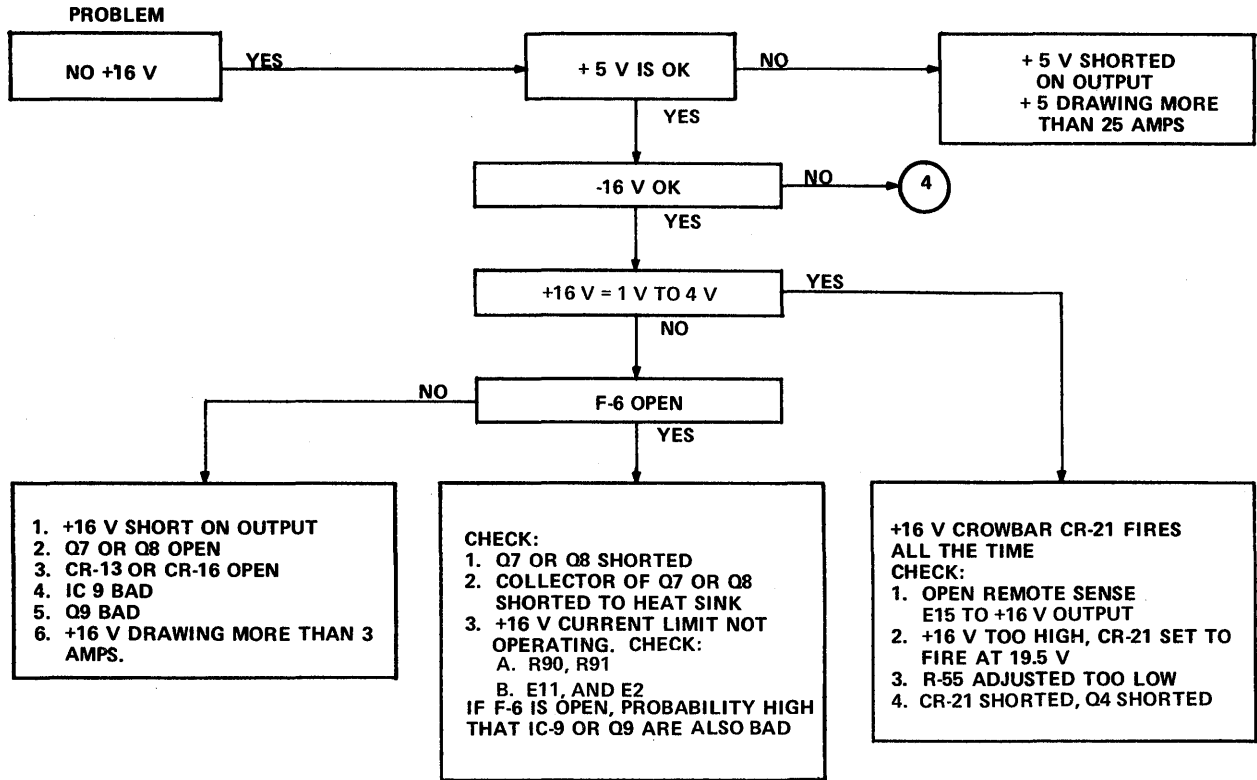
8. MAINTENANCE

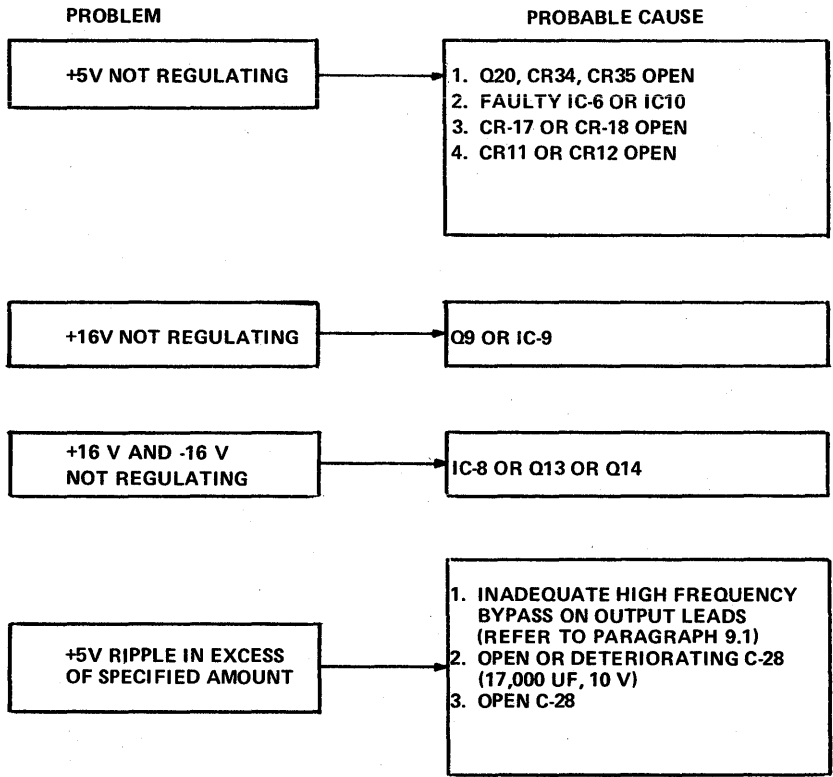
WARNING

THE INPUT CIRCUIT, INCLUDING THE 300 VOLT FILTER CAPACITORS, SWITCHING TRANSISTORS AND PRIMARY OF THE HIGH FREQUENCY POWER TRANSFORMER, IS TIED DIRECTLY TO THE A. C. POWER LINE (MAINS). ANY TEST EQUIPMENT, SUCH AS AN OSCILLOSCOPE, MUST NOT BE GROUNDED WHEN SERVICING THE POWER SUPPLY. THIS PLACES A HAZARDOUS POTENTIAL ON THE CASE OF THE TEST EQUIPMENT IN RESPECT TO GROUND. DO NOT TOUCH!



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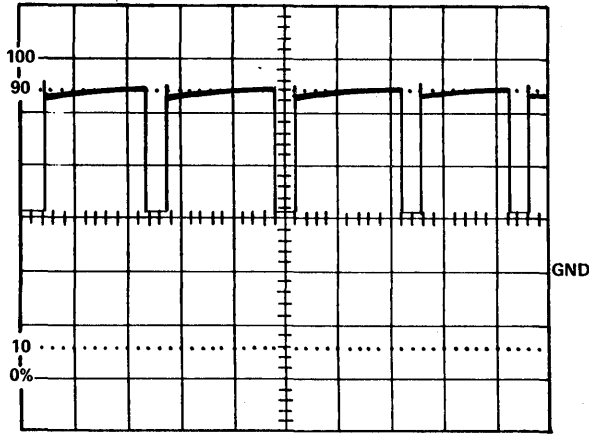


Figure 17. IC4 Pin 14, 2V/div 10us/div

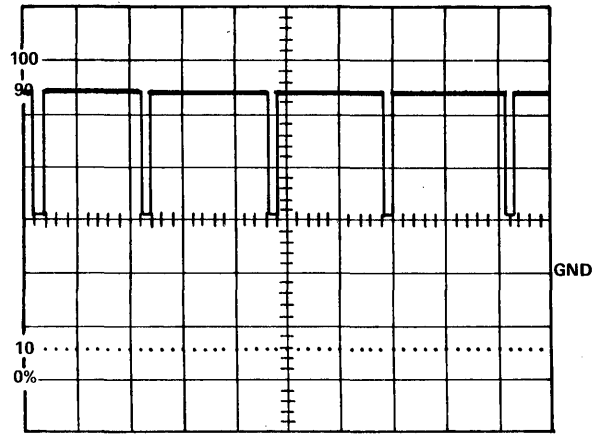


Figure 18. IC5 Pin 3, 2V/div 10us/div

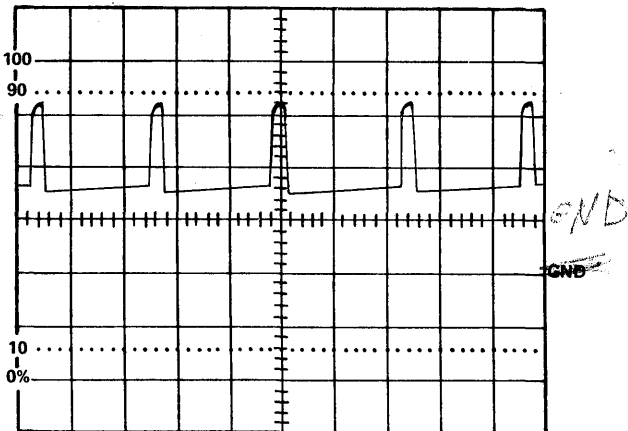


Figure 19. IC3 Pin 6, 2V/div 10us/div

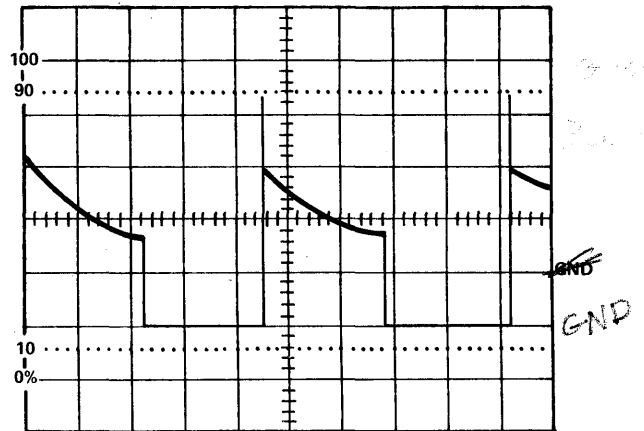


Figure 20. Q3, Q4 Collector, 10V/div 10us/div

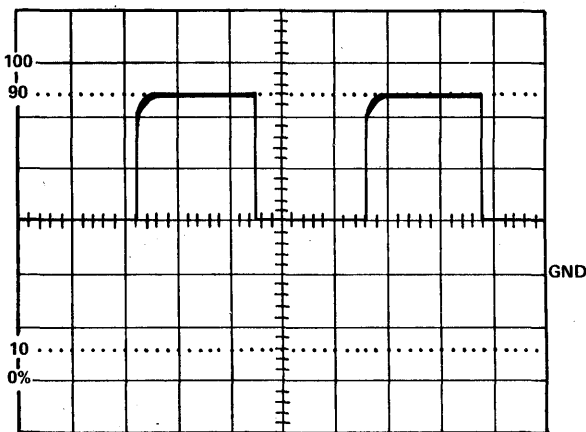


Figure 21. IC4 Pin 11, 2V/div, 10us/div

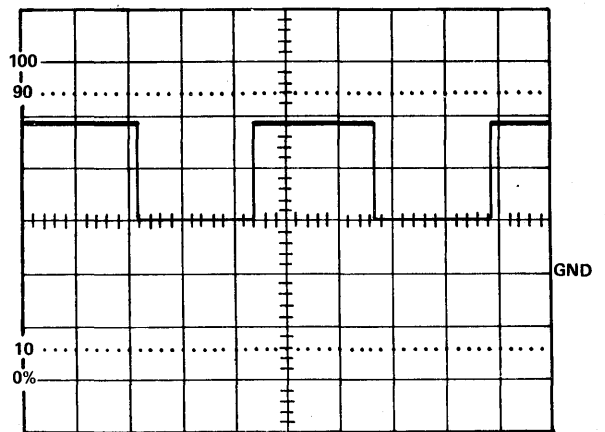


Figure 22. IC10 Pin 5 or 9, 5V/div, 10us/div

9. TEST SET UP

Refer to Figure 23.

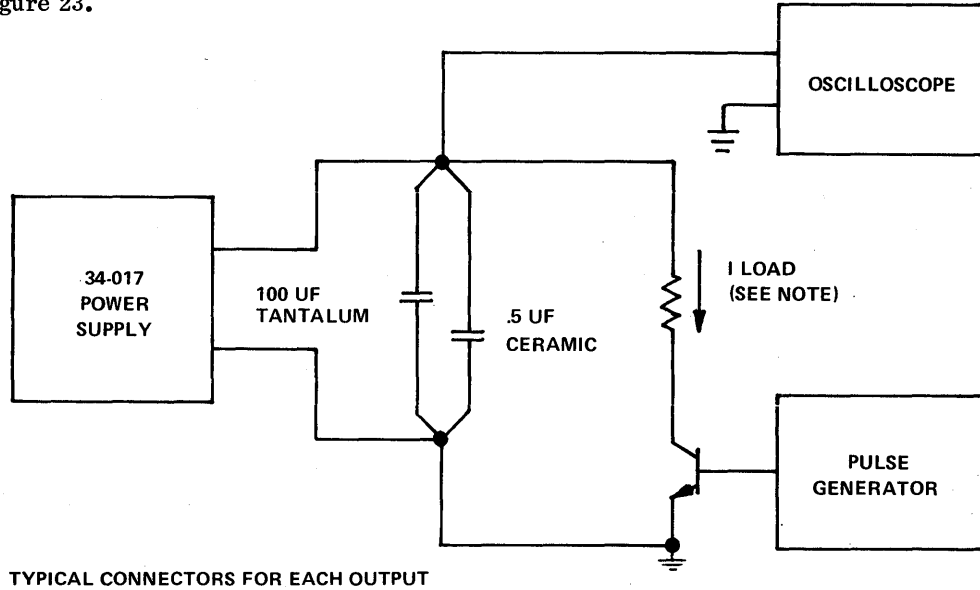


Figure 23. Test Set-Up

9.1 Ripple and Noise (PARD)

Periodic and random deviations about the nominal output, at any given condition, shall not exceed 60 millivolt peak at the output terminals.

NOTE

Each output is to be terminated with 100 microfarad (MFD) - 0, +50% of low E. S. R capacitance (tantalum or better) and a 0.5 microfarad (MFD) ceramic capacitor.

9.2 Transient Response ($\pm 16V$ outputs)

Output shall not change more than $\pm 1\%$ with linear load change of 100%/10 microsecond.

9.2.1 Transient Response (+5V output). Output shall not change more than $\pm 1\%$ with linear change of 25%/10 microsecond.

9.3 Operating Temperature Range

Supply shall be capable of operating continuously under the following loading and temperature conditions:

	Ambient Air Temperature	+16 Load	-16 Load	+5 Load
34-017 24A	0°C	18.2V @ 3.0A	18.2V @ 3.5A	5.1V @ 24A
	55°C	14.6V @ 2.4A	14.6V @ 2.8A	5.1V @ 24A
34-020 50A	0°C	18.2V @ 3.8A	18.2V @ 3.8A	5.1V @ 50A
	55°C	14.6V @ 3.8A	14.6V @ 3.8A	5.1V @ 50A

Ambient air temperature is the air temperature which the sensor experiences. It is assumed that the input to the power supply is the same temperature as the sensor experiences.

NOTE

If the power supply is operated in a system where a thermistor is not used to program the voltage, the maximum current available at a given voltage output, is a function of the ambient temperature. e.g. @ 27.5°C with the voltage set to 16.5, the maximum allowable current from the minus 16.5 V output is 3.2 Amp and 2.7 Amp from the positive 16.5 V output. It is also possible to add the two maximum outputs and divide by two, if equal output currents are being used, i.e., 2.95 Amp from each 16.5 V output @ 27.5°C.

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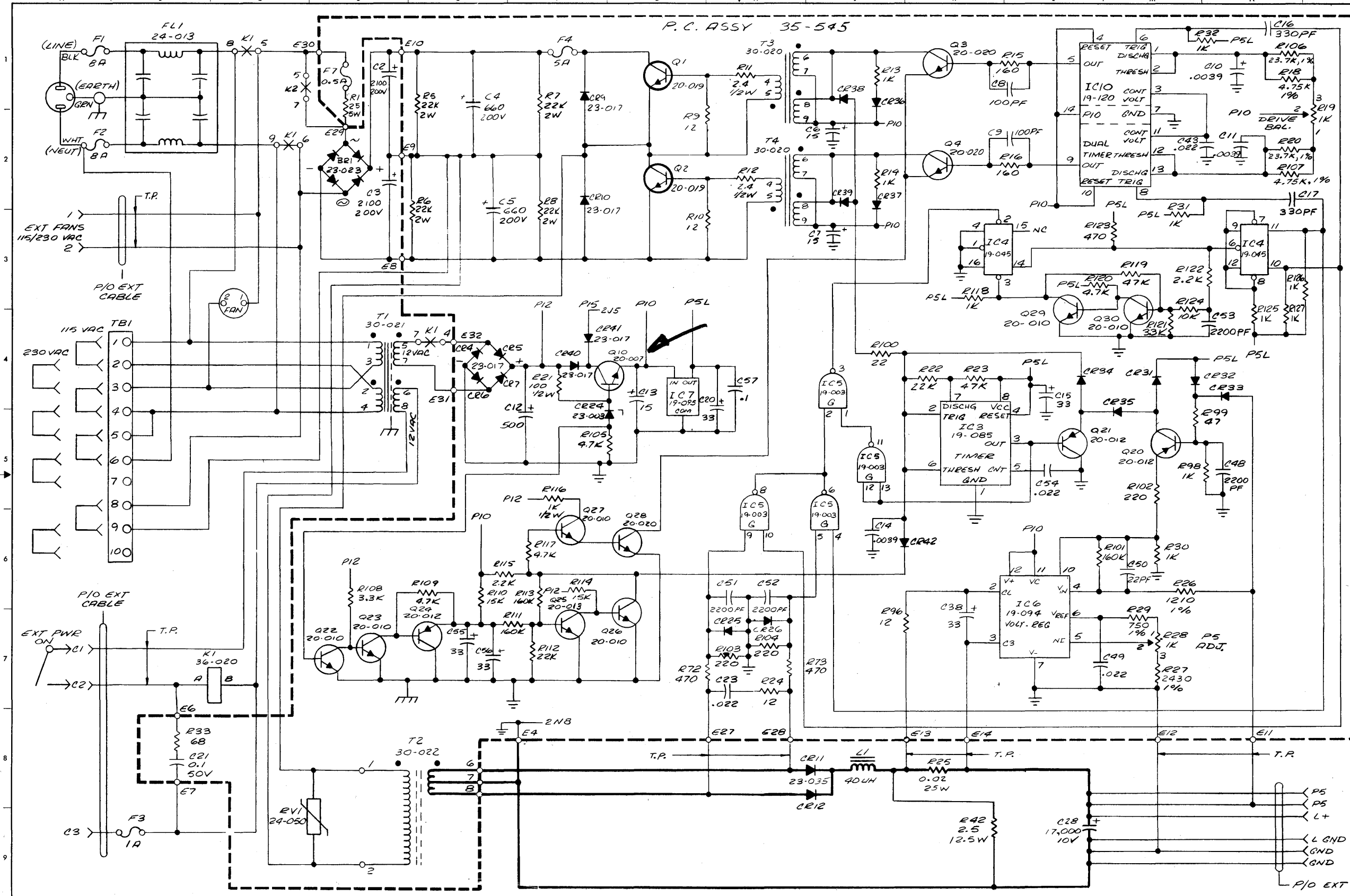
9. SPARE PARTS

It is suggested that the following spare parts be kept available for each power supply.

INTERDATA Part Number	Reference Designation	Description	Qty.	
			34-017	34-020
23-023	BR1	Bridge	1	1
23-024	CR11, CR12	Power Rectifier	2	2
23-025	CR13, CR14 CR15, CR16	High Speed Rectifier	2	2
23-028	CR21, CR23	S. C. R.	1	1
36-020	K1	Relay	1	1
36-010	K2	Relay	1	1
20-006	Q5, Q6, Q7, Q8, Q9	Transistor	3	3
20-012	Q11, Q12, Q13 Q20, Q21	Transistor	1	1
20-019	Q1, Q2, Q14, Q15	Transistor	4	8
20-020	Q3, Q4, Q28	Transistor	4	4
20-010	Q19, Q22, Q23, Q26, Q27, Q29, Q30	Transistor	4	4
21-001F04	R9, R10	Resistor	4	4
21-013F10	R11, R12	Resistor	4	4
23-017		Rectifier	4	1
19-085		Timer	1	1
19-003		IC	1	1
19-045		IC	1	1
19-092		IC	1	1
19-093		IC	1	1
19-094		IC	1	1
19-095		IC	1	1
19-120		IC	1	1
24-042F01	F1, F2	Fuse, 8A	5	
24-037	F1, F2	Fuse, 15A		5
24-011F06	F3	Fuse, 1A	5	5
24-011F01	F4, F5, F6	Fuse, 5A	5	5
24-055	F7	Fuse .5 Amp. SLO-BLOW	5	5
23-003	CR24	Zener Diode	1	1
21-011F08	R1	Resistor	1	1
20-025	Q18	Transistor	1	1
21-013	Q25	Transistor	1	1

P.C. ASSY 35-545

REVISIONS	
PRE PRODUCTION APPROVAL	LIMIT DATE
3051-11	5-17-74
3051-12	5-27-74
3051-13	5-27-74
3051-14	5-27-74
3051-15	5-27-74
3051-16	5-27-74
3051-17	5-27-74
3051-18	5-27-74
3051-19	5-27-74
3051-20	5-27-74
3051-21	5-27-74
3051-22	5-27-74
3051-23	5-27-74
3051-24	5-27-74
3051-25	5-27-74
3051-26	5-27-74
3051-27	5-27-74
3051-28	5-27-74
3051-29	5-27-74
3051-30	5-27-74
3051-31	5-27-74
3051-32	5-27-74
3051-33	5-27-74
3051-34	5-27-74
3051-35	5-27-74
3051-36	5-27-74
3051-37	5-27-74
3051-38	5-27-74
3051-39	5-27-74
3051-40	5-27-74
3051-41	5-27-74
3051-42	5-27-74
3051-43	5-27-74
3051-44	5-27-74
3051-45	5-27-74
3051-46	5-27-74
3051-47	5-27-74
3051-48	5-27-74
3051-49	5-27-74
3051-50	5-27-74

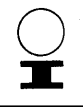


NOTES

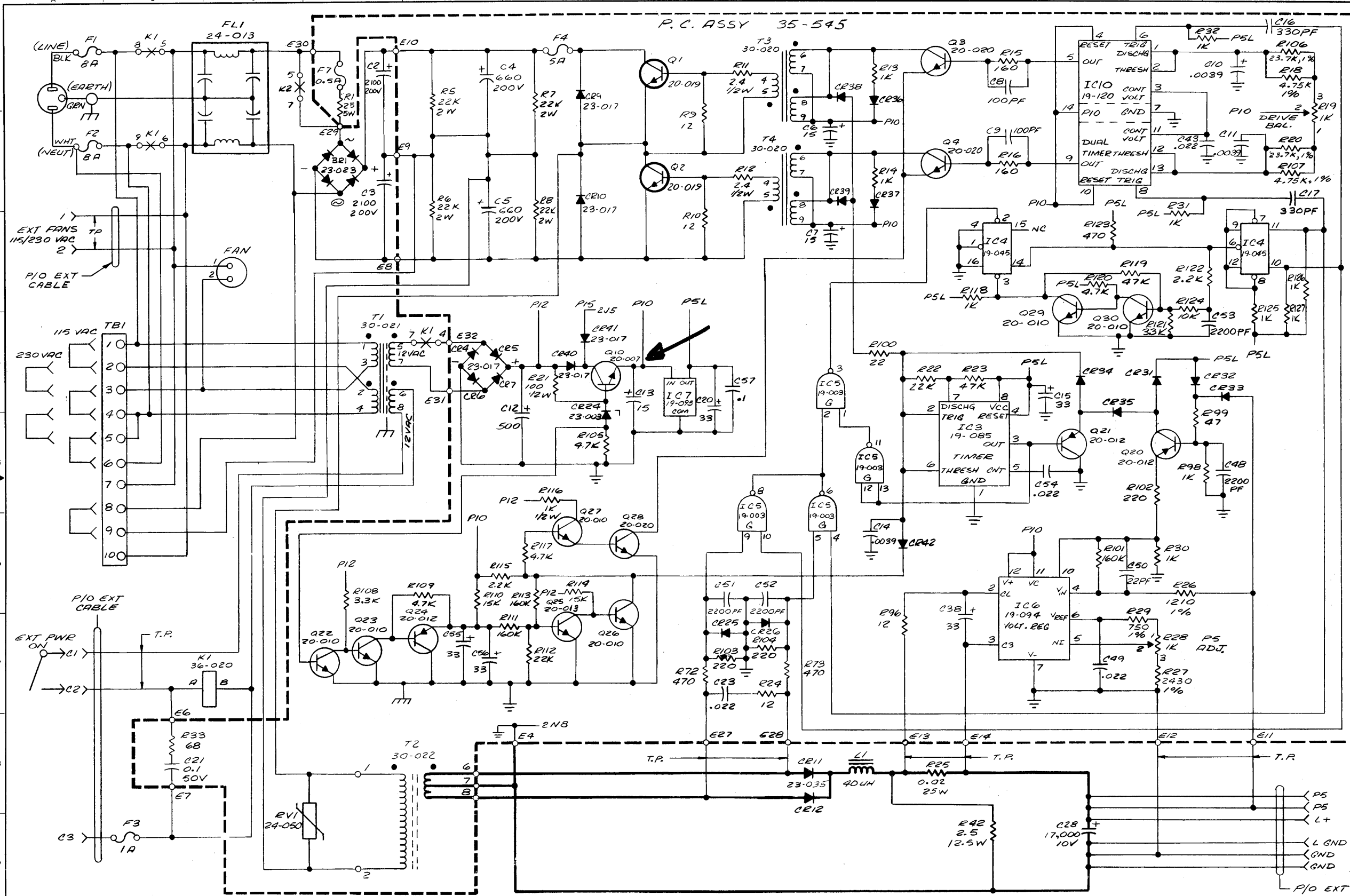
1. UNLESS OTHERWISE SPECIFIED:
 A. RESISTOR VALUES ARE IN OHMS, 1/4W.
 B. CAPACITORS ARE IN MICROFARADS.
 C. DIODES ARE 23-001.

NAME	TITLE	DATE	TITLE
G. MELTON	DRAFT	5-14-74	SWITCHING REGULATED
H. MATTER	CHK	9-12-74	POWER SUPPLY 25AMP
E. CENTOFANTI	ENGR	9-12-74	
L. PERZI	MAN ENGR	9-12-74	
	DIR ENG		

BRUNING 44-231 1604Z



REVISIONS	
PRE PRODUCTION APPROVAL	INIT DATE
E29 WAS 1650, E27 WAS 4750	
SHT 2 WAS R00.	
W/EXL 3051-128	9-5-74 R01
SHT 2 WAS R01	
W/EXL 3051-14	9-5-74 R02
RELEASED FOR PRODUCTION	
MFG. ENG. 66	DATE 12-74

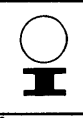


NOTES
 1. UNLESS OTHERWISE SPECIFIED:
 A. RESISTORS VALUES ARE IN OHMS,
 1/4W.
 B. CAPACITORS ARE IN MICROFARADS.

C. DIODES ARE 23-001.

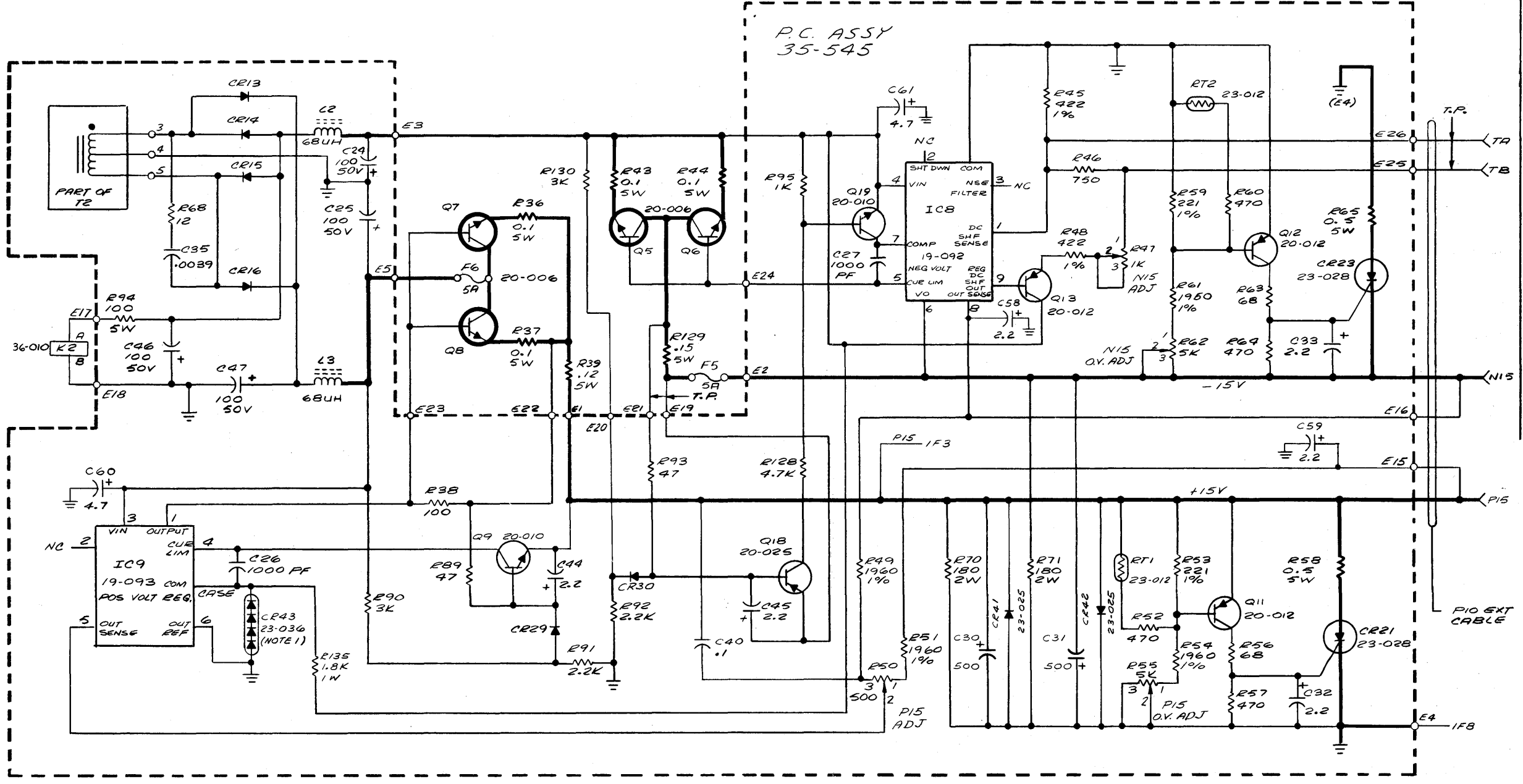
NAME	TITLE	DATE	TITLE
G. MEXTON	DRAFT	5-14-74	SCHEMATIC
H. MATTER	CHK	9-12-74	SWITCHING REGULATED
E. CENTOFANTI	ENGR	9-12-74	POWER SUPPLY 25AMP
H. ROSS	QC		
L. PERRI	DIR ENG	9-14-74	

BRUNING 44-231 16042



REVISIONS			
AREA C7, REPLACED E4, 1K5190 WITH CR43. R135 WAS R40, 1125190; CONNECTED FROM IC9-CASE TO N15			
#1	3051-128	9-5-74	R01
ADDED C49, C60, C61			
#2	3051-128	9-5-74	R02

P.C. ASSY
35-545



NOTES 1. CR43 MAY BE A 1N4733, 5V ZENER.
IF CR43 IS A 1N4733, POLARITY WILL BE REVERSE OF THAT SHOWN.

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NAME	TITLE	DATE	TITLE
G. MELTON	DRAFT		SCHEMATIC
	CHK		SWITCHING REGULATED
	ENGR		POWER SUPPLY 25 AMP
	DIR ENG		

TASK NO. 03020	SHEET OF 2-2
QWC NO. 34-017 MOS P02D08	

BRUNING 44-231 16042

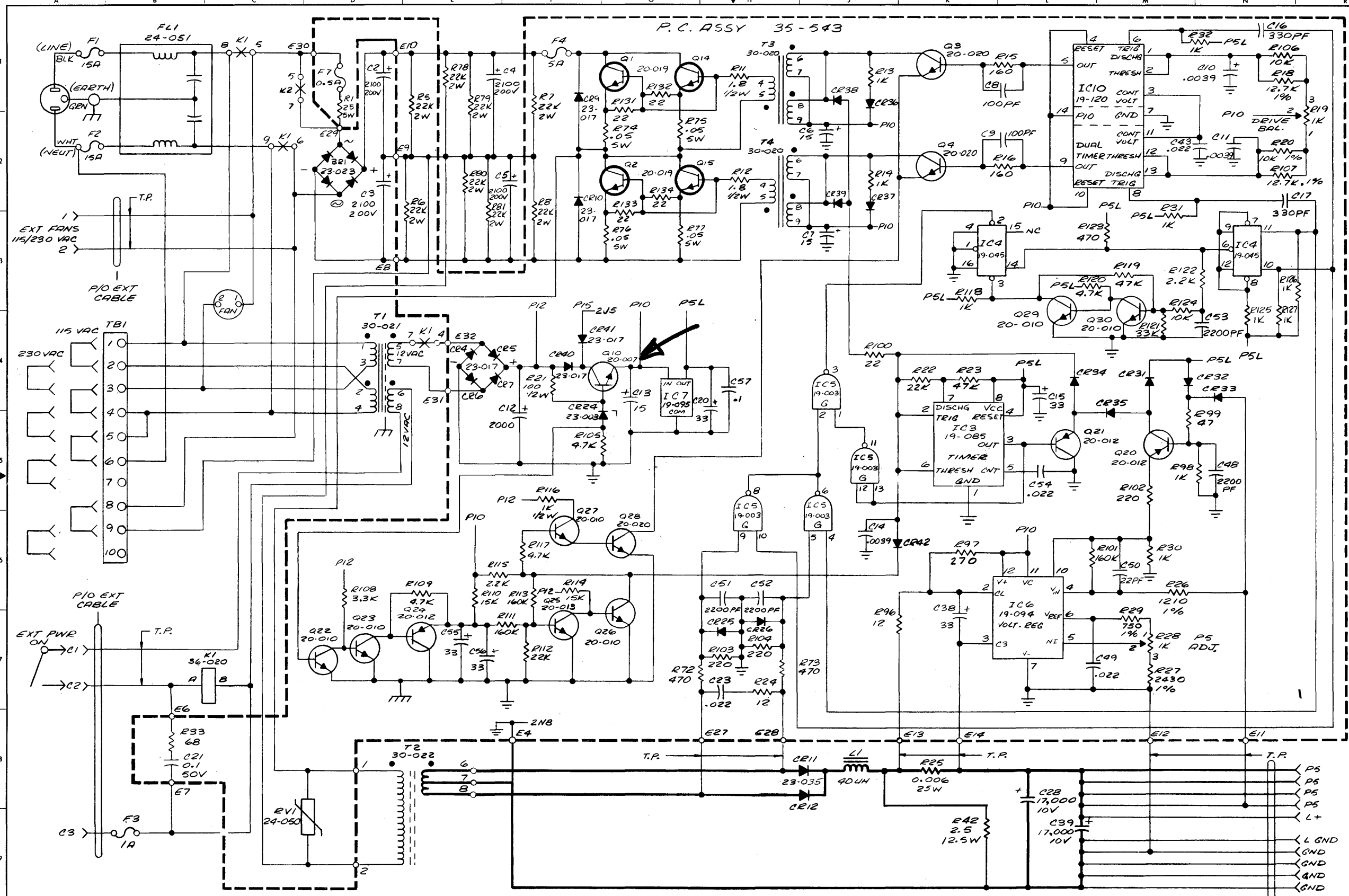
P.C. ASSY 35-543

REV.	DATE	DESCRIPTION
1	5-17-74	INITIAL DESIGN
2	5-17-74	PRODUCTION APPROVAL
3	8-28-74	R97 WAS 1G0-A, CHG CONN. OPT. OF R42
4	8-28-74	R23 WAS 20-010, R23 WAS 22K, AREA K3, R18 WAS R13, R14 WAS TO R10.
5	8-28-74	R14 WAS TO R10.
6	8-28-74	SMT 2 WAS R02
7	8-28-74	SMT 2 WAS R03
8	8-28-74	SMT 2 WAS R04
9	8-30-74	SMT 2 WAS R05
10	9-3-74	SMT 2 WAS R06

RELEASED FOR PRODUCTION
MFG. ENG. H.M. DATE 8-12-74

DO NOT MANUFACTURE W/O AUTH.

SUPERSEDED
BY PART NO. 34-020M06R06008
PER REV. NO. 3051-13
BY H. MATTEE DATE 9-12-74



NOTES
1. UNLESS OTHERWISE SPECIFIED:
A. RESISTOR VALUES ARE IN OHMS,
1/4 W.
B. CAPACITORS ARE IN MICROFARADS.

C. DIODES ARE 23-001.

NAME	TITLE	DATE	TITLE
G. MELTON	DRAFT	5-14-74	SCHEMATIC
H. MATTEE	CHK	8-12-74	SWITCHING REGULATED
E. CENTOFANTI	ENGR	8-12-74	POWER SUPPLY 50AMP
L. PEEBI	DIR ENG	9-12-74	

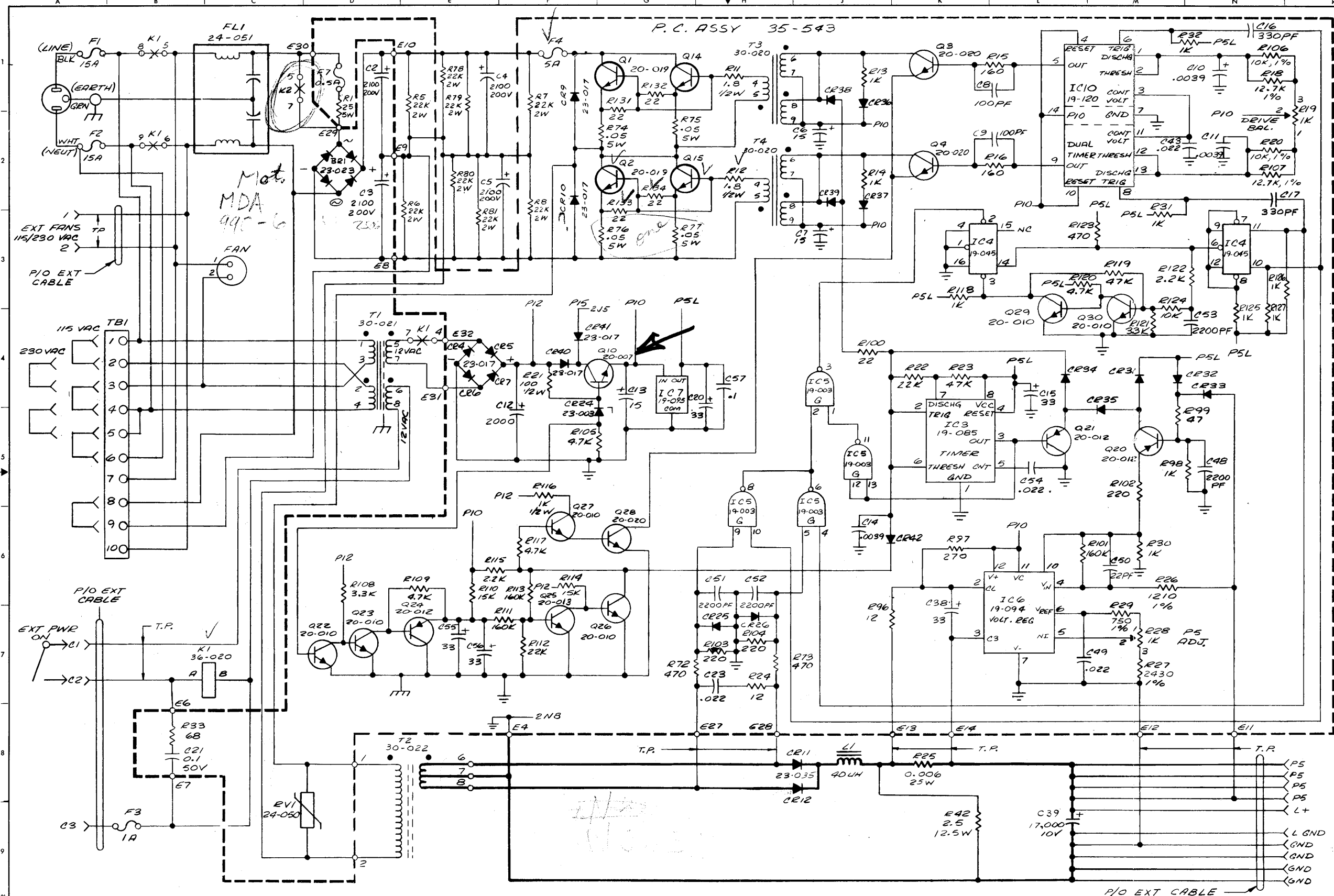
REV. NO. 3051
34-020M06R06008

SHEET OF 1-2

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BRUNING 44-231 1604Z

REVISIONS	
PRE APPROVAL	INIT DATE
PRODUCTION	DEV
APPROVAL	PROD.
R29 WAS 1650, R27 WAS 4750	
SMT 2 WAS 200.	
3/1/74 3051-14	9-5-74 202
3/1/74 3051-14	9-5-74 202
RELEASED FOR PRODUCTION	
MFG. ENG. B.C. DATE 7-12-74	



NOTES
 1. UNLESS OTHERWISE SPECIFIED:
 A. RESISTORS VALUES ARE IN OHMS, 1/4W.
 B. CAPACITORS ARE IN MICROFARADS.
 C. DIODES ARE 23-001.

34-20 1705 805

Bob Chambers
 8466-439-8062

NAME	TITLE	DATE	TITLE
G. MELTON	DRAFT	5-14-74	SCHMATIC
H. MATTEE	CHK	7-12-74	POWER SUPPLY 50 AMP
E. BENTOFANTI	ENGR	8-12-74	
H. ROSS	QC		
L. PEREPI	DIR ENG	9-12-74	

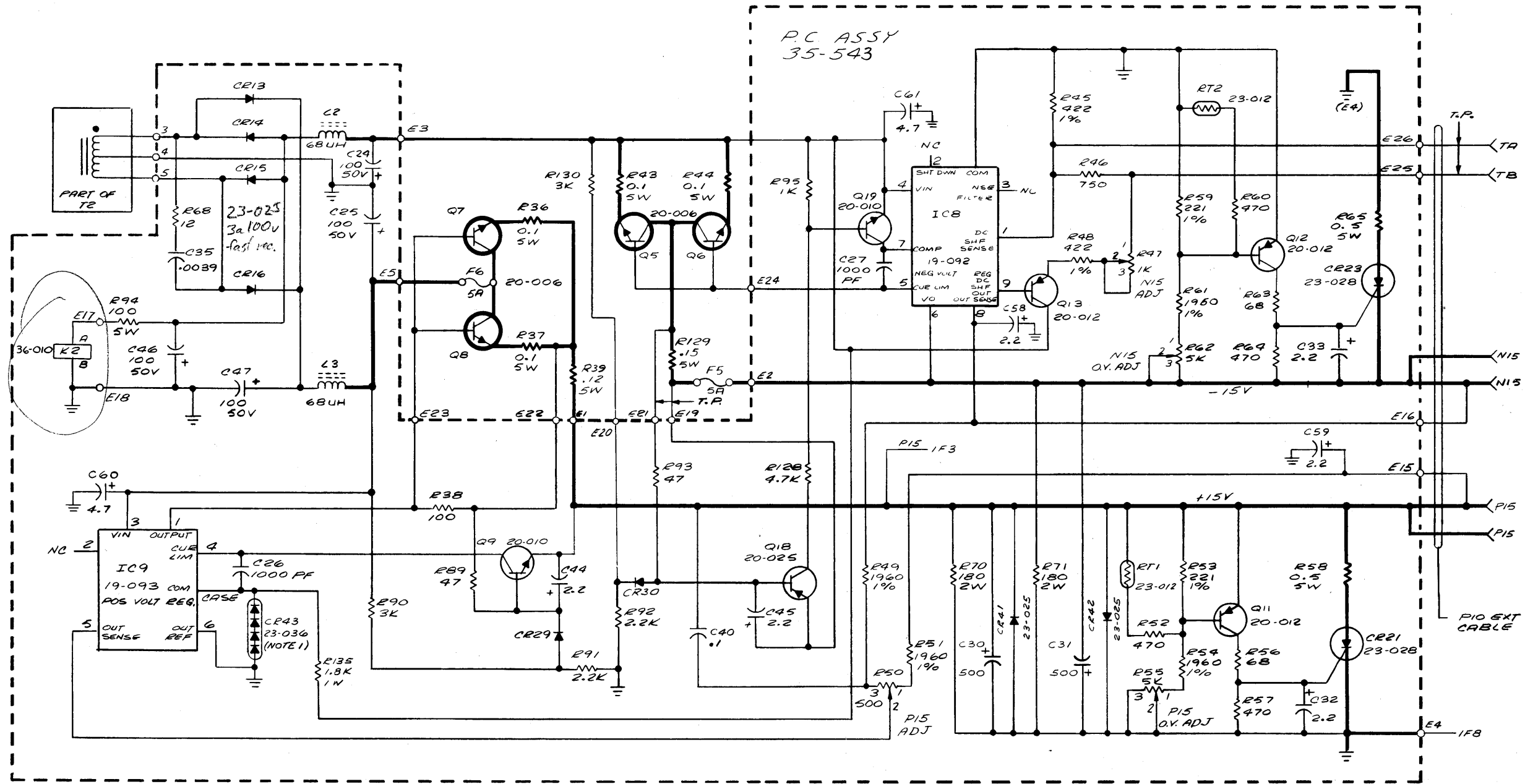
34-020 M05 R02 D08

BRUNING 44-231 TEO42

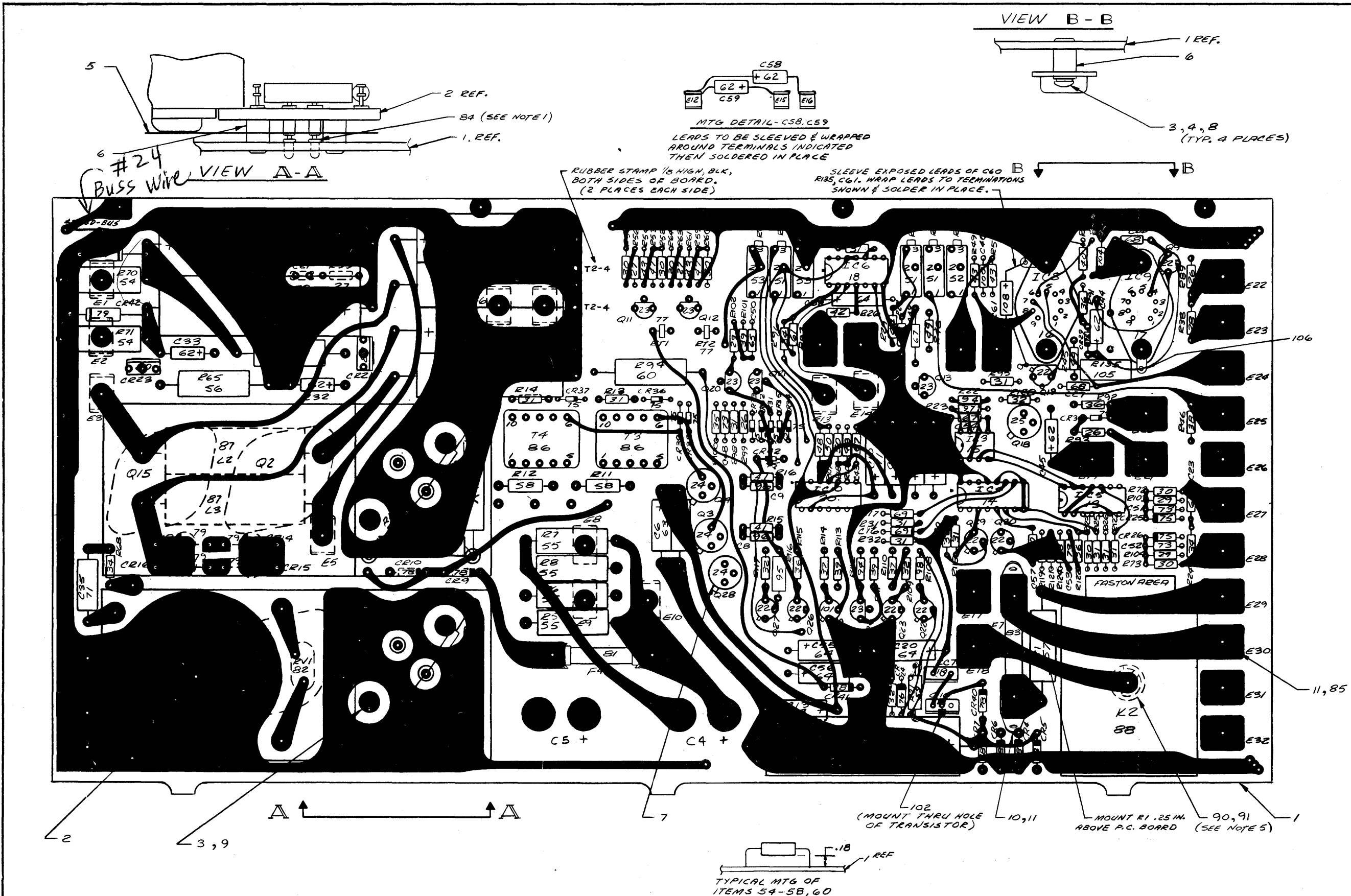
Leading CR 9, 10, 11, 12
 all ...

REVISIONS			
AREA C7, REPLACED 241	1		
1K190 WITH CR43,			
R135 WAS R40, 11251703			
CONNECTED FROM IC9 -			
CASE TO N15			
AW 3051-128	9-5-74	RD1	
ADDED C49, C60, C61			
AW 3051-128	9-5-74	RD2	
AW 3051-128			

P.C. ASSY
35-543



REVISIONS			
PRE PRODUCTION APPROVAL	INIT DEV	DATE	
		5-17-74	
R37 WAS ITEM 41.			
WZ	3051-08	5-21-74	R01
R25 WAS ITEM 22.			
ADDED ITEM 102			
R23 WAS ITEM 94			
AM	3051-08	6-26-74	R02
ADDED CR41, CR42			
AM	3051-11	8-24-74	R03
DELETED C29, C40.			
ADDED C58, C59, AND STRAP ABOVE CR41.			
AM	3051-12A	8-29-74	R04
CR43 WAS R41, ITEM 46			
DELETED R40, ITEM 46			
ADDED ITEM 104-106			
AM	3051-12B	8-30-74	R05
ADDED C60 & C61			
AM	3051-14	9-3-74	R06
ADDED RUBBER STAMP INFO 172-A ON HOLE BY C24-(4). ADDED C40.			
AM	3051-15	9-3-74	R07
RELEASED FOR PRODUCTION			
MFG. ENG.	JB	DATE	1-12-74



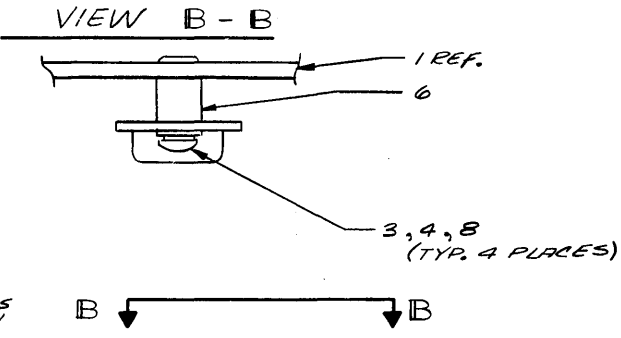
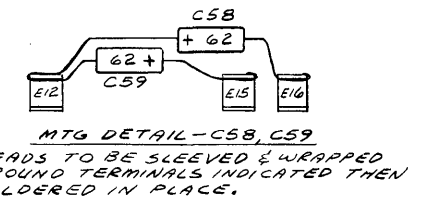
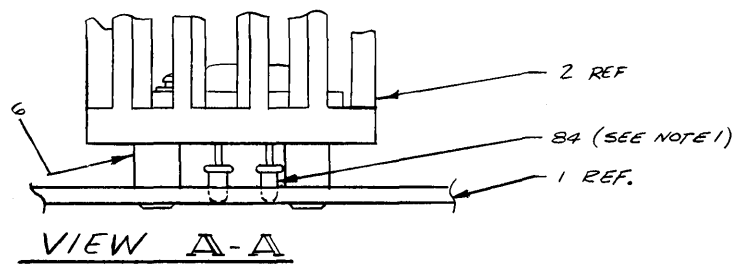
NOTES:
 1. INTERIOR PORTION OF ITEM 84 TO BE FREE OF SOLDER.
 2. ITEMS: 3, 2, 87, 5, 9, 83 & 82 TO BE ASSEMBLED AFTER SOLDERING

3. MOUNT THE FOLLOWING ITEMS ON THE SOLDER SIDE OF BOARD:
 ITEM 76 (E1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 12, 14, ITEM 82 & ITEM 87,

4. MOUNT CR40 ON P.C. BOARD.
 5. PLASTIC SHOULD ON RELAY MUST BE DRILLED TO PERMIT MOUNTING.

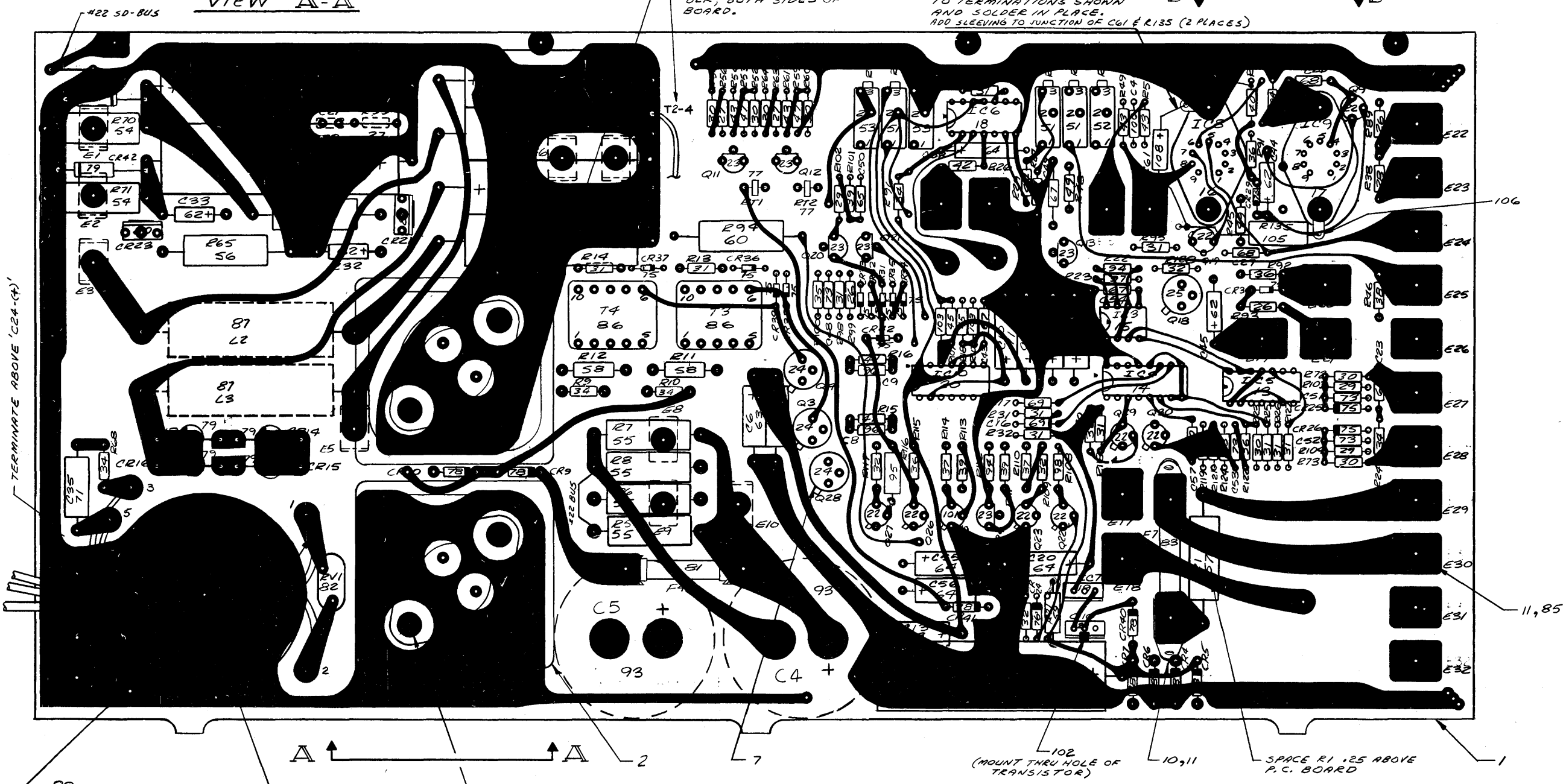
NAME	TITLE	DATE	TITLE
G. MELTON	DRAFT	5-2-74	ASSEMBLY
H. MATTER	CHK	9-12-74	REGULATED
E. CONTOFRANT	ENGR	9-12-74	POWER SUPPLY
E. PERZI	DIR ENG	9-12-74	

TASK NO. 03051
 SHEET OF 1-1
 NO. 35-543 R07D2



RUBBER STAMP 1/8 HIGH, BLK, BOTH SIDES OF BOARD.

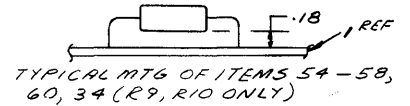
SLEEVE EXPOSED LEADS OF C60 & C61. WRAP LEADS TO TERMINATIONS SHOWN AND SOLDER IN PLACE. ADD SLEEVING TO JUNCTION OF C61 & R135 (2 PLACES)



REVISIONS		
PRE PRODUCTION APPROVAL	INIT	DATE
	MB	3-7-74
R18, 20, 106, 107 WERE ITEM 48, 925 WAS ITEM 22. ADDED ITEM 102 & NOTE. R23 WAS ITEM 94.		
MB	3051-08	8-24-74 R01
ADDED CR41, CR42		
MB	3051-11	8-28-74 R02
ADDED JUMPER FROM R8 TO R5.		
DELETED C33		
ADDED C59, C59', S28		
STRAP ABOVE CR41.		
MB	3051-12A	8-28-74 R03
CR43 WAS R41, ITEM 46		
DELETED R40, ITEM 46		
ADDED ITEMS 104-106		
R27 WAS ITEM 45		
MB	3051-12B	8-30-74 R04
ADDED C60 & C61		
MB	3051-14	9-3-74 R05
REROUTED T2-4 LEAD & ADDED RUBBER STAMP INFO. ON HOLE BY 'CR4-C4'		
ADDED C40		
MB	3051-15	9-10-74 R06
RELEASED FOR PRODUCTION		
MFG. ENG. MB DATE 2/2/74		

NOTES:
 1. INTERIOR PORTION OF ITEM 84 TO BE FREE OF SOLDER.
 2. ITEMS: 3, 2, 87, 5, 9, 83 & 82 TO BE ASSEMBLED AFTER SOLDERING

3. MOUNT THE FOLLOWING ITEMS ON THE SOLDER SIDE OF BOARD:
 ITEM 76 (E1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 12, 14, ITEM 82 & ITEM 87)

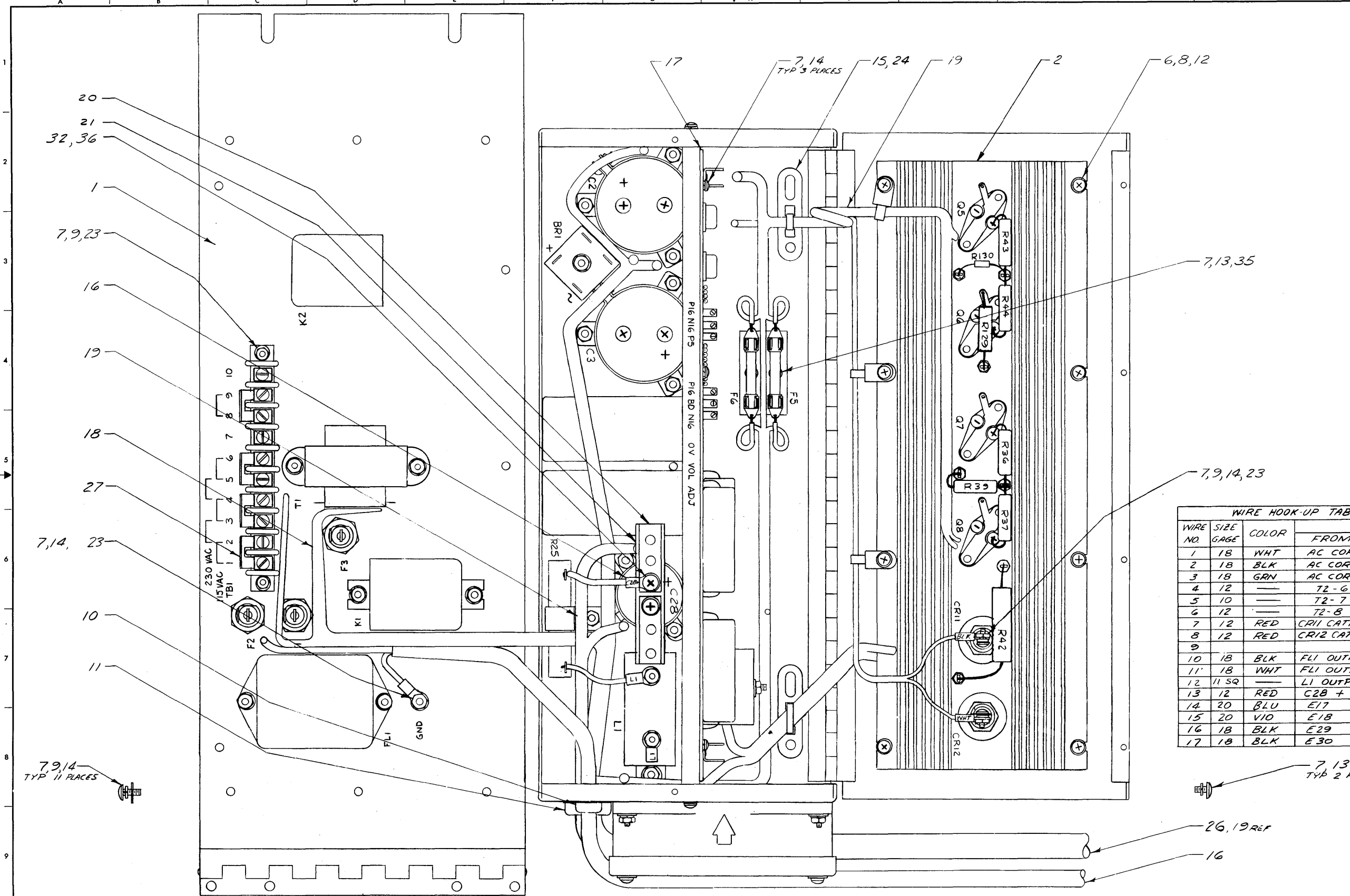


NAME	TITLE	DATE	TITLE
G. MELTON	DRAFT	5-2-74	ASSEMBLY
H. MATTER	CHK		REGULATED
E. CONTOFRANT	ENGR		POWER SUPPLY
E. PEZZI	MSR		
	DIR ENG		

TASK NO. 03020
 SHEET 1-1
 DOC NO. 35-545.R.004

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REVISIONS		
PRE PRODUCTION APPROVAL	INIT DATE	5-17-74
APPROVAL	PROD	MB
ADDED ITEMS 2 & 29		
MB	3051-08	10-25-74 R01
ADDED ITEM 20 & 21		
MB	3051-12A	10-30-74 R02
RELEASED FOR PRODUCTION		
MFG. ENG.	MB	DATE 9-12-74



WIRE HOOK-UP TABLE

WIRE NO.	SIZE	GAGE	COLOR	WIRED	
				FROM	TO
1	18		WHT	AC CORD	F2
2	18		BLK	AC CORD	F1
3	18		GRN	AC CORD	GND (PANEL)
4	12			T2-6	CR11 ANODE
5	10			T2-7	C28 -
6	12			T2-8	CR12 ANODE
7	12		RED	CR11 CATH	L1 INPUT
8	12		RED	CR12 CATH	L1 INPUT
9					
10	18		BLK	FL1 OUTPUT	TBI-1
11	18		WHT	FL1 OUTPUT	TBI-4
12	11 SQ			L1 OUTPUT	R25 RIGHT
13	12		RED	C28 +	R25 LEFT
14	20		BLU	E17	K2-A
15	20		VIO	E18	K2-B
16	18		BLK	E29	K2-7
17	18		BLK	E30	K2-5

7,9,14
TYP 11 PLACES

7,13
TYP 2 PLACES

26,19 REF

16

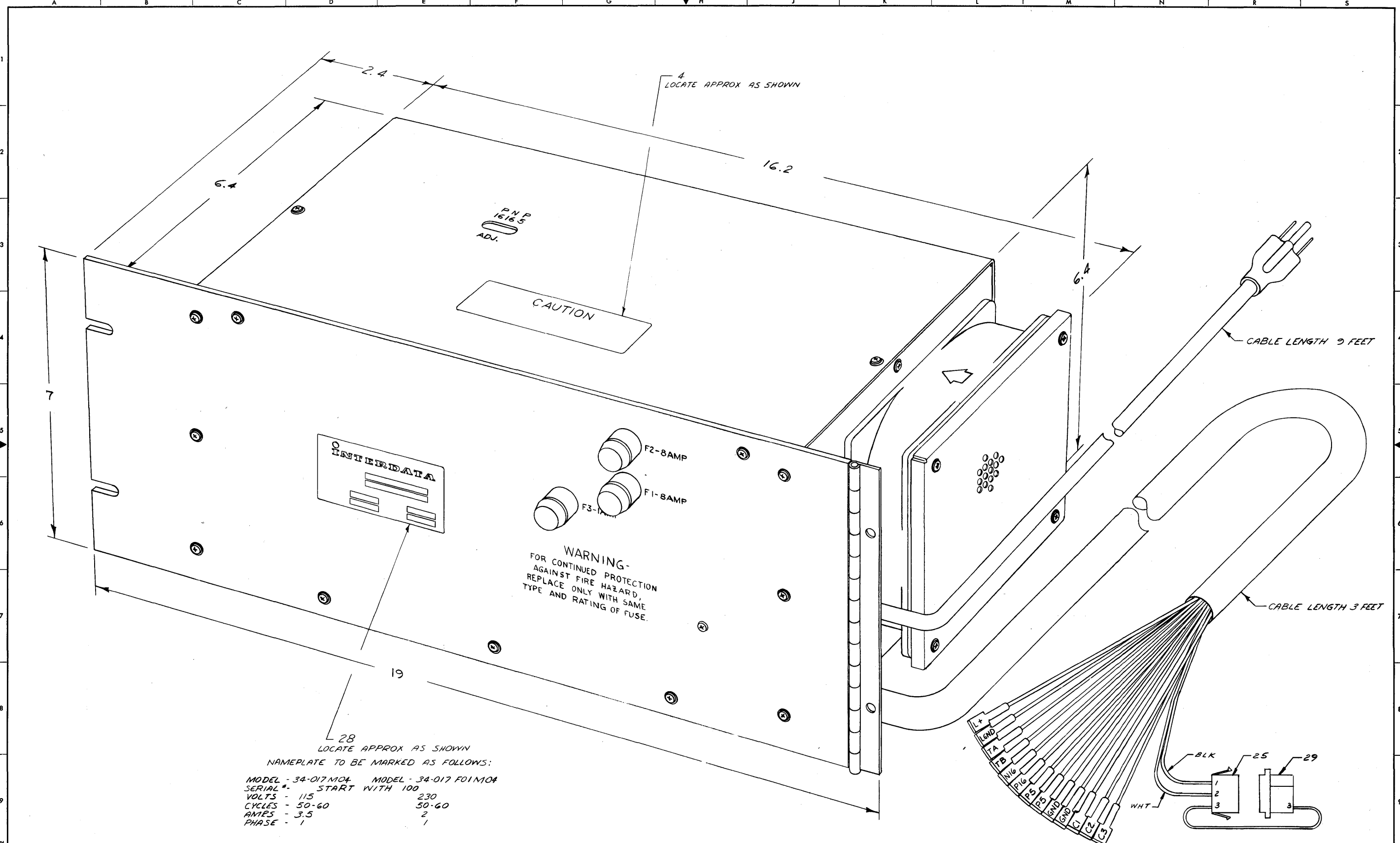
NOTES

NAME	TITLE	DATE	TITLE
W. ZILLGER	DRAFT	5-16-74	SWITCHING REGULATED POWER SUPPLY
H. MATTER	CHK	9-12-74	
E. CENTOFANTI	ENGR	9-12-74	
L. PEZZI	MGR	9-12-74	
	DIR ENG		

REV	NO	DATE	BY
	03020		
34-017M04R02 D03			SHEET OF 1-2

BRUNING 44-231 1604Z





28
LOCATE APPROX AS SHOWN

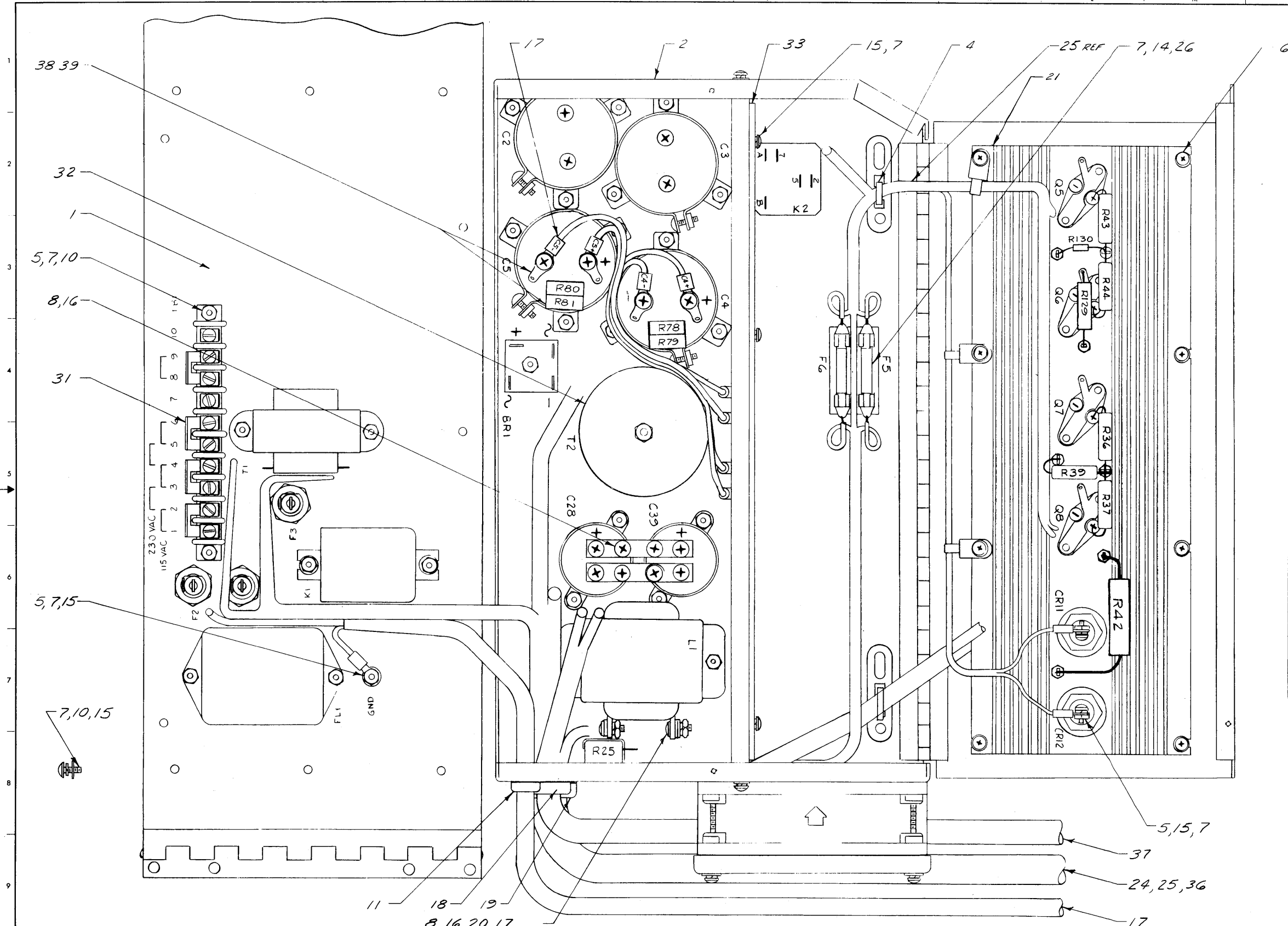
NAMEPLATE TO BE MARKED AS FOLLOWS:

MODEL - 34-017 M04	MODEL - 34-017 FO1 M04
SERIAL # - 115	START WITH 100 230
VOLTS - 50-60	50-60
CYCLES - 3.5	2
PHASE - 1	1

NOTES	THIS INFORMATION IS PROPRIETARY AND IS SUPPLIED BY INTERDATA FOR THE SOLE PURPOSE OF MAINTAINING AND USING INTERDATA SUPPLIED EQUIPMENT AND SHALL NOT BE USED FOR ANY OTHER PURPOSE UNLESS SPECIFICALLY INDICATED			
	NAME	TITLE	DATE	TITLE
	W. ZILLGER	DRAFT	3-30-73	POWER SUPPLY TYPE 34-017
		CHK		
	ENGR			
	DIR ENG			
	TASK NO. 03020	SHEET OF 2-2		
	REV. NO. 34-017 M04 R0203			

BRUNING 44-231 16042

REVISIONS		
PRE PRODUCTION APPROVAL	DEV PROD	INIT DATE
		5-17-74
ADDED ITEMS: R1, 29		
MFG. ENG. JMB DATE 2-12-74		
RELEASED FOR PRODUCTION		
MFG. ENG. JMB DATE 2-12-74		



WIRE HOOK-UP TABLE

WIRE NO.	SIZE	GAGE	COLOR	WIRED FROM	WIRED TO
1	18		WHT	AC CORD	F2 TOP
2	18		BLK	AC CORD	F1 TOP
3	18		GRN	AC CORD	GND (PANEL)
4	16			T2-1	P.C. BD-1
5	16			T2-2	P.C. BD-2
6	16			T2-3	P.C. BD-3
7	2/16			T2-4	P.C. BD-4
8	16			T2-5	P.C. BD-5
9	2/12			T2-6	CR11 ANODE
10	8			T2-7	C39 -
11	2/12			T2-8	CR12 ANODE
12	10		RED	CR11 CATH	L1 INPUT
13	10		RED	CR12 CATH	L1 INPUT
14					
15	18		BLK	FL1 LOAD	TBI-1
16	18		WHT	FL1 LOAD	TBI-4
17	10		RED	L1 OUTPUT	R25 TOP
18	10		RED	C28 +	R25 BOT
19	12		RED	P.C. BD C4+	C4+
20	12		BLK	P.C. BD C4-	C4-
21	12		RED	P.C. BD C5+	C5+
22	12		BLK	P.C. BD C5-	C5-
23	20		BLU	E17	K2-A
24	20		VIO	E18	K2-B
25	18		BLK	E29	K2-7
26	18		BLK	E30	K2-5
27	20		VIO	C4-(-)	C2-(-)

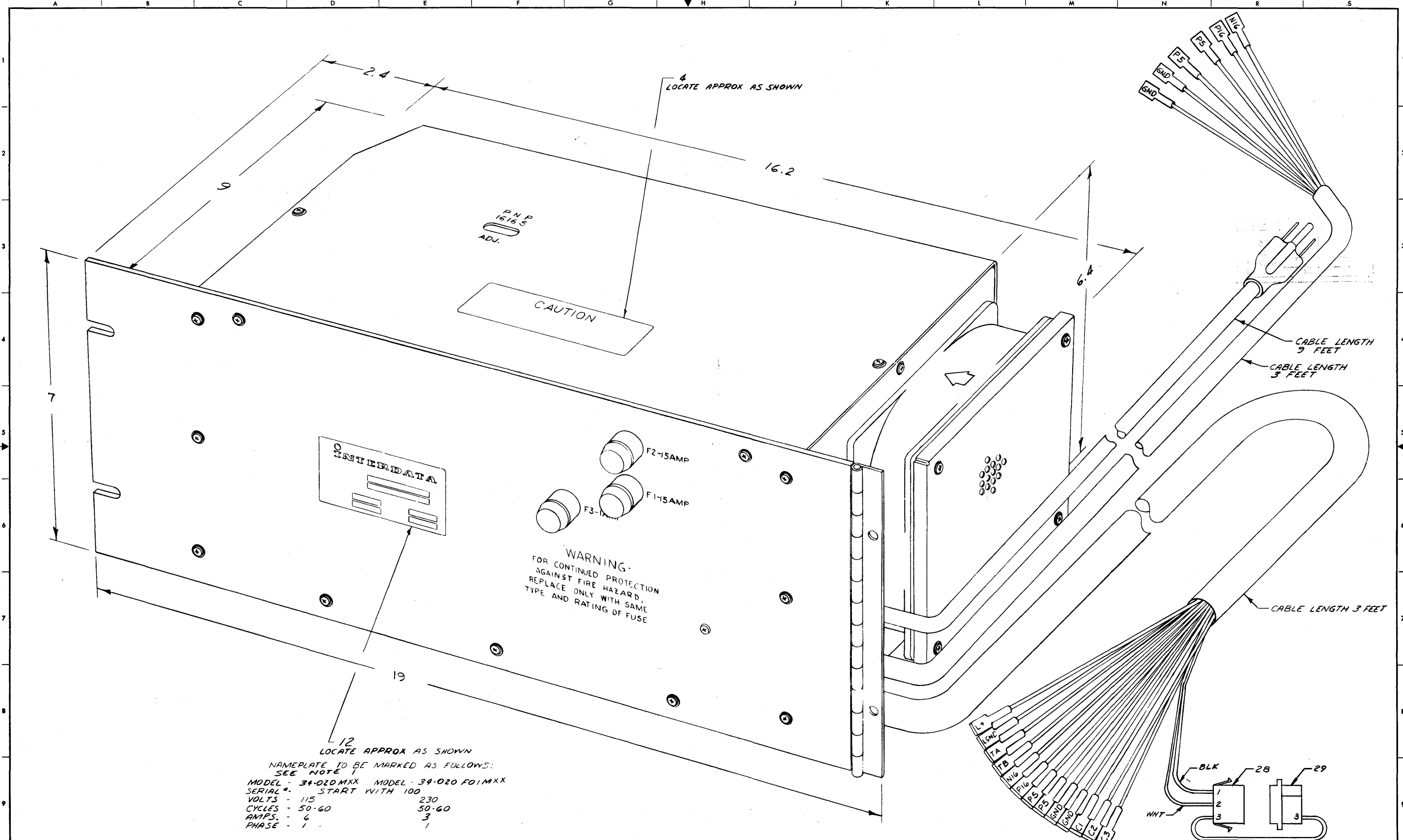
NOTES

NAME	TITLE	DATE	TITLE
W. ZILLGER	DRAFT	5-6-74	50 AMP SWITCHING REG. POWER SUPPLY
H. MATTER	CHK	8-12-74	
E. CENTOFANTI	ENGR	9-12-74	
L. PEEZ	MGR/ENGR	9-12-74	

SHEET NO. 03051
 SHEET OF 1-2
 DWG. NO. 34-020 NO. 9.01/003

BRUNING 44.231 1604Z

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12 LOCATE APPROX AS SHOWN
 NAMEPLATE TO BE MARKED AS FOLLOWS:
 SEE NOTE 1
 MODEL - 34-020MXX MODEL - 34-020 FO1MXX
 SERIAL # - START WITH 100
 VOLTS - 115 230
 CYCLES - 50-60 50-60
 AMPS - 6 3
 PHASE - 1 1

NOTES 1. MODEL NUMBER SHALL BE IDENTICAL TO THE PARTS LIST TO WHICH THIS ASSY WAS BUILT.

PRE PRODUCTION APPROVAL	INIT DATE	NAME	TITLE	DATE	TITLE
DEV PROD		W. ZILGER	DRAFT	5-6-74	POWER SUPPLY TYPE 34-020
			CHK		
			ENGR		
			DIR ENG		
<small>THIS INFORMATION IS PROPRIETARY AND IS SUPPLIED BY INTERDATA FOR THE SOLE PURPOSE OF MAINTAINING AND USING INTERDATA SUPPLIED EQUIPMENT AND SHALL NOT BE USED FOR ANY OTHER PURPOSE UNLESS SPECIFICALLY INDICATED.</small>					PART NO. 03051 SHEET OF 2-2 DRAWING NO. 34-020MXX/RWD03

DRAWING 44-231 16042

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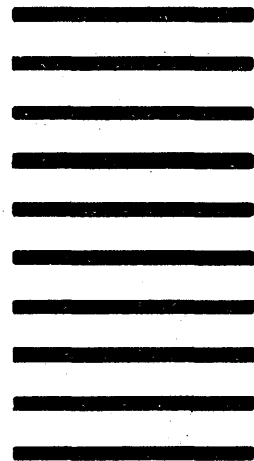
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**SUPPLEMENT TO SWITCHING REGULATED
POWER SUPPLY INSTRUCTION MANUAL
Publication Number 29-397R01**

Publication number 29-397R02 consists of a 29-397R01 manual and this supplement.

An M06 version of the 34-017 24 Amp Power Supply has been manufactured. While functionally similar, the new board (35-561) contains slight differences which affect the schematics.

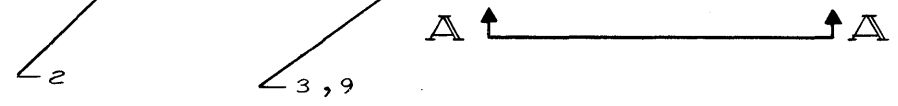
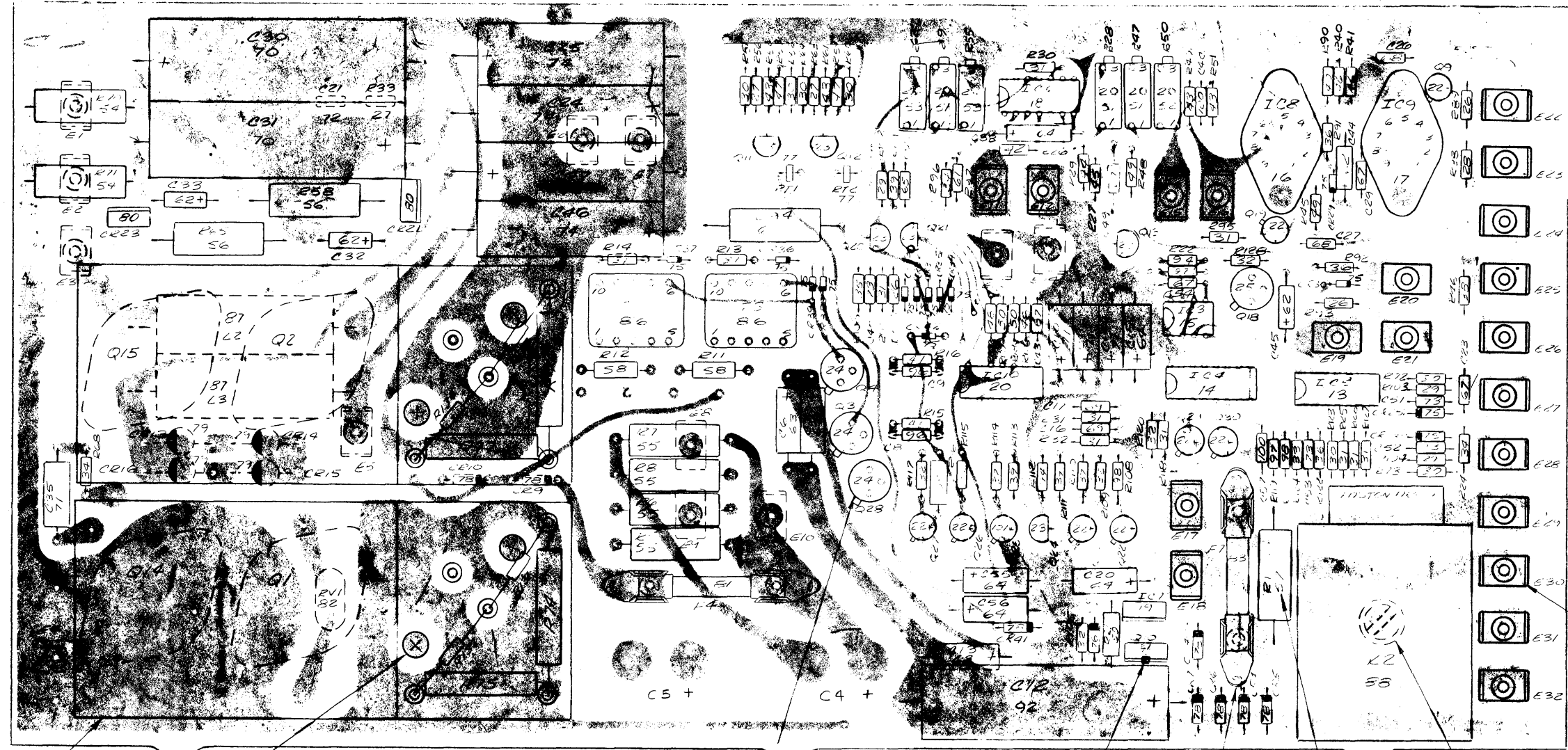
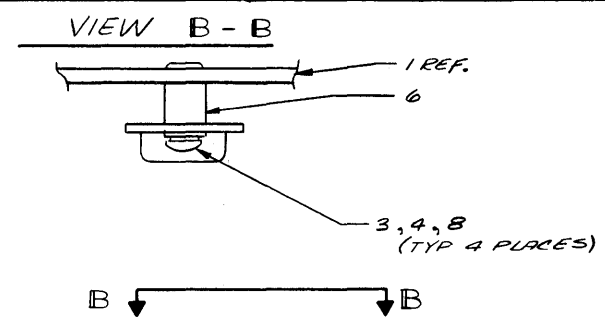
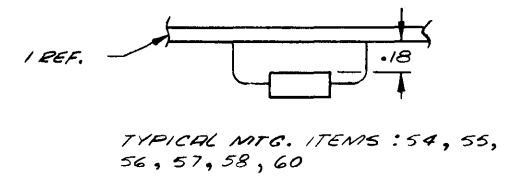
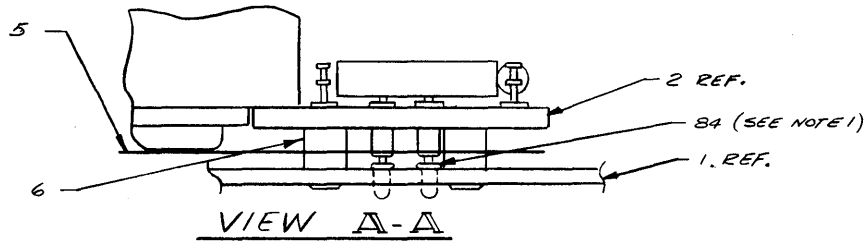
This board is covered in the attached drawings:

34-017M06D08
35-561D03

Functional Schematic
Component Locator

NOTE

Since the M06 version has no affect on chassis mounted components, the 34-017M05D03 component locator should be used.



102 (MOUNT THRU HOLE OF TRANSISTOR)

10, 11

MOUNT R1 .25 IN. ABOVE P.C. BOARD (SEE NOTE 5)

90, 91

11, 85

REVISIONS			
PRE PRODUCTION APPROVAL	INIT	DATE	
		5-17-74	
R37 WAS ITEM 41.			
		5-21-74	RO1
Q24 WAS ITEM 22.			
ADDED ITEM 102			
R23 WAS ITEM 94			
		5-26-74	R02

NOTES:

- INTERIOR PORTION OF ITEM 84 TO BE FREE OF SOLDER.
- ITEMS 3, 2, 87, 5, 9, 83 & 82 TO BE ASSEMBLED AFTER SOLDERING

- MOUNT THE FOLLOWING ITEMS ON THE SOLDER SIDE OF BOARD: ITEM 76 (51, 2, 3, 4, 5, 6, 7, 8, 9, 10, 12, 14, ITEM 82 & ITEM 87,

- PLASTIC SHROUD ON RELAY MUST BE DRILLED TO PERMIT MOUNTING.

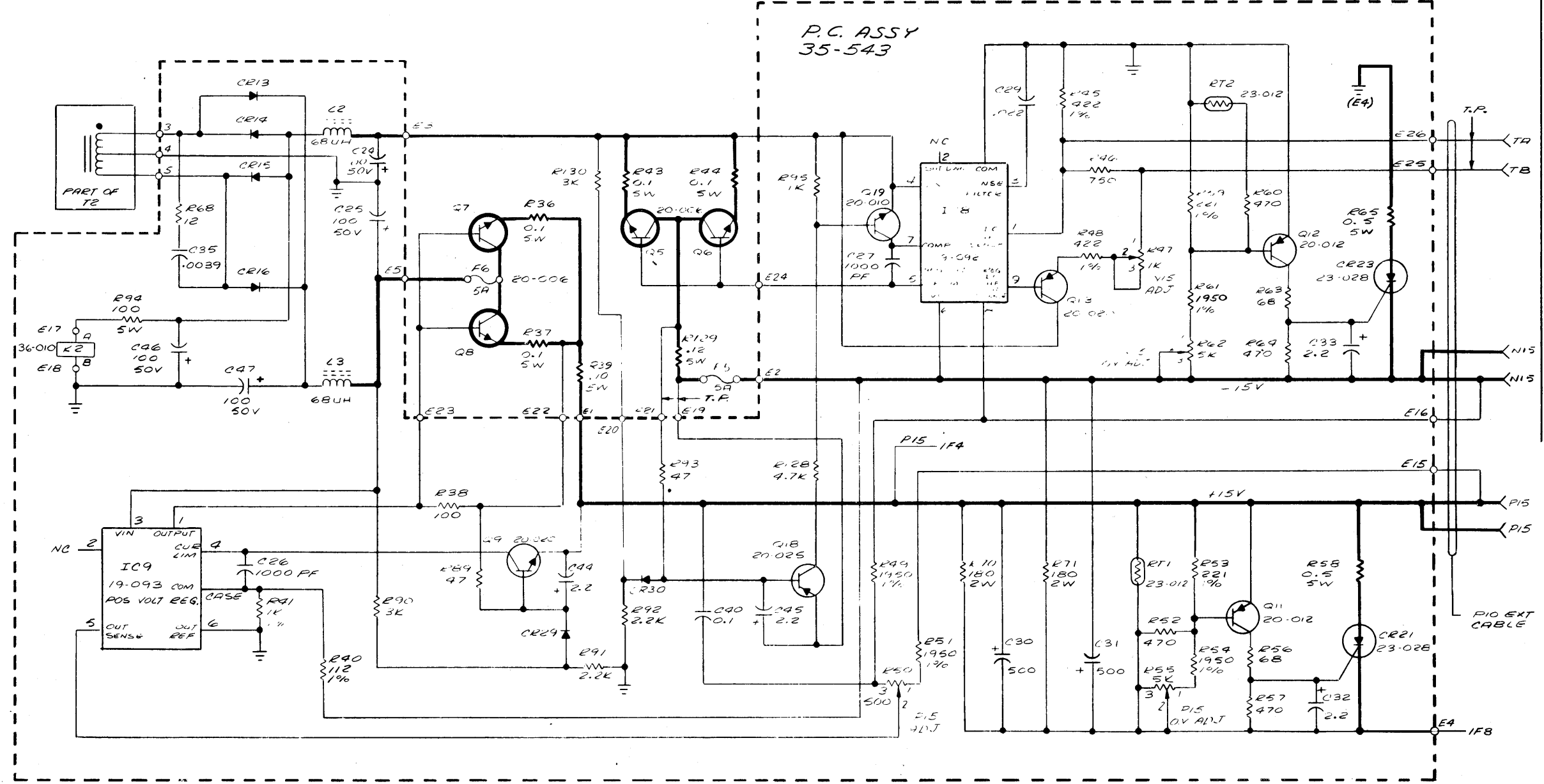
NAME	TITLE	DATE	TITLE
G. MELTON	DRAFT	5-2-74	ASSEMBLY
H. MATTER	CHK		REGULATED
E. CONTOFANT	ENGR		POWER SUPPLY
E. PERZI	DIR ENG		

35-543 R02.DWG

SHEET OF 1-1

REVISIONS	
Q19, AREA H3, WAS Q1 REVERSED POLARITY OF C24.	
MFC 3051-08	26-20-74 P02

P.C. ASSY
35-543



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NOTES	DESIGNED BY	G. MELTON	DATE	11-20-74
	CHECKED BY		DATE	
	TITLE SCHEMATIC			
	SWITCHING REGULATED POWER SUPPLY 25 AMP			
	NO	03051	REV	2 2
	34-020/MARDO			

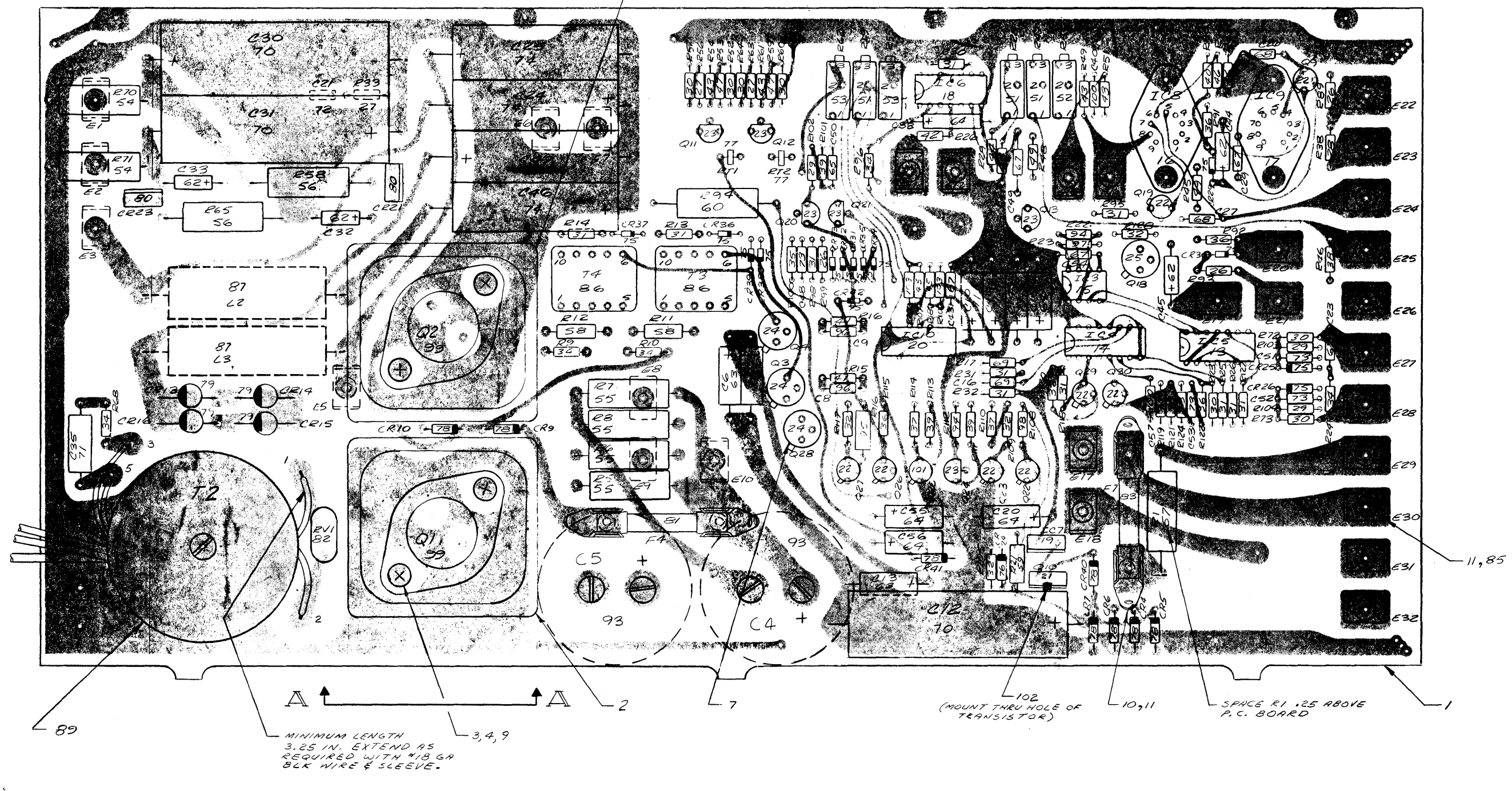
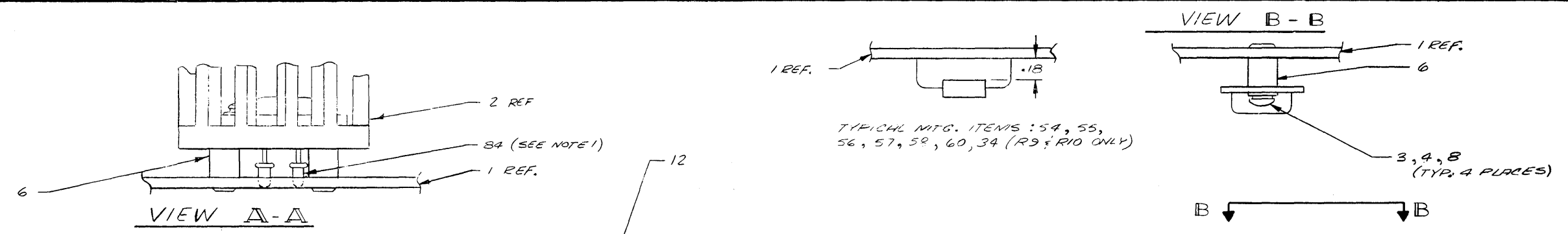
BRUNING 44 231 16042

REVISIONS

PRE APPROVAL	DEV. BY	INIT	DATE
	BC		5-17-74
	PROD		5-17-74

R18, 20, 106, 107 WERE
 ITEM 48. Q25 WAS ITEM 22.
 ADDED ITEM 102 & NOTE.
 R23 WAS ITEM 94.

FORM 35-3051-08 11-6-74 201



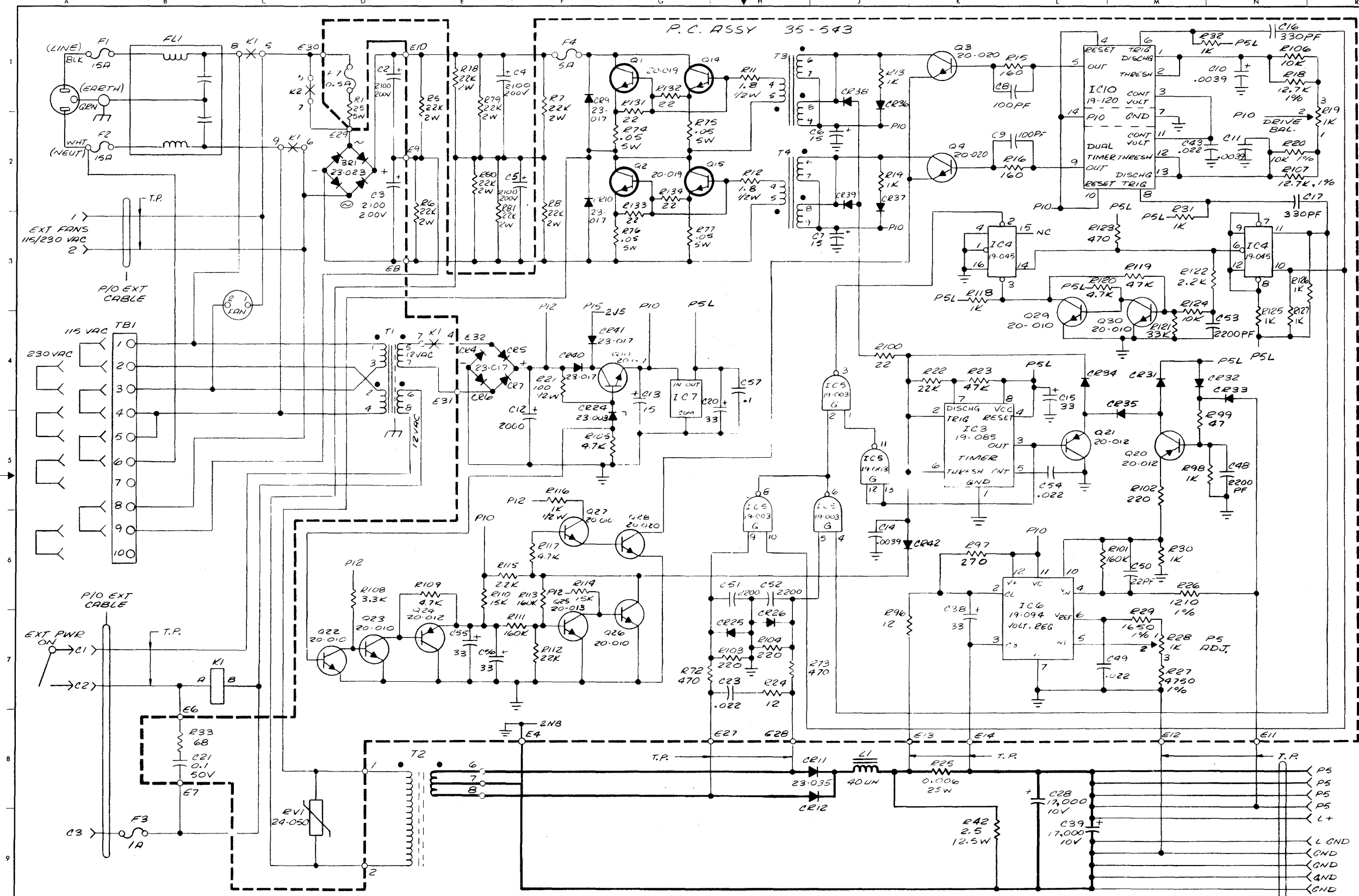
NOTES:

1. INTERIOR PORTION OF ITEM 84 TO BE FREE OF SOLDER.
2. ITEMS: 3, 2, 87, 5, 9, 23 & 82 TO BE ASSEMBLED AFTER SOLDERING

3. MOUNT THE FOLLOWING ITEMS ON THE SOLDER SIDE OF BOARD:
 ITEM 70 (E1, 2), 3, 4, 5, 6, 7, 8, 9, 10, 12, 14, ITEM 82 & ITEM 27.

NAME	TITLE	DATE	TITLE
G. MELTON	DRAFT	5-2-74	ASSEMBLY
H. MATTER	CHK		REGULATED
E. CONTORANTI	ENGR		POWER SUPPLY
E. PEZZI	DIR ENGR		

35-545 REV D AS 1-1



REVISIONS		
PRE PRODUCTION APPROVAL	DEV. CHK	INIT DATE
		5-17-74
R97 WAS 160Ω.		
CHG CONN. PT. OF R42		
W2 WAS 3051 15-2278 R01		
R25 WAS 20-010. R23 WAS 22K.		
AREA K3, R18 WAS R13.		
R14 WAS TO P10.		
VM RUC3051-08 16-20-74 R02		

NOTES

1. UNLESS OTHERWISE SPECIFIED:
 A. RESISTORS VALUES ARE IN OHMS, 1/4W.
 B. CAPACITORS ARE IN MICROFARADS.
 C. DIODES ARE 23-001.

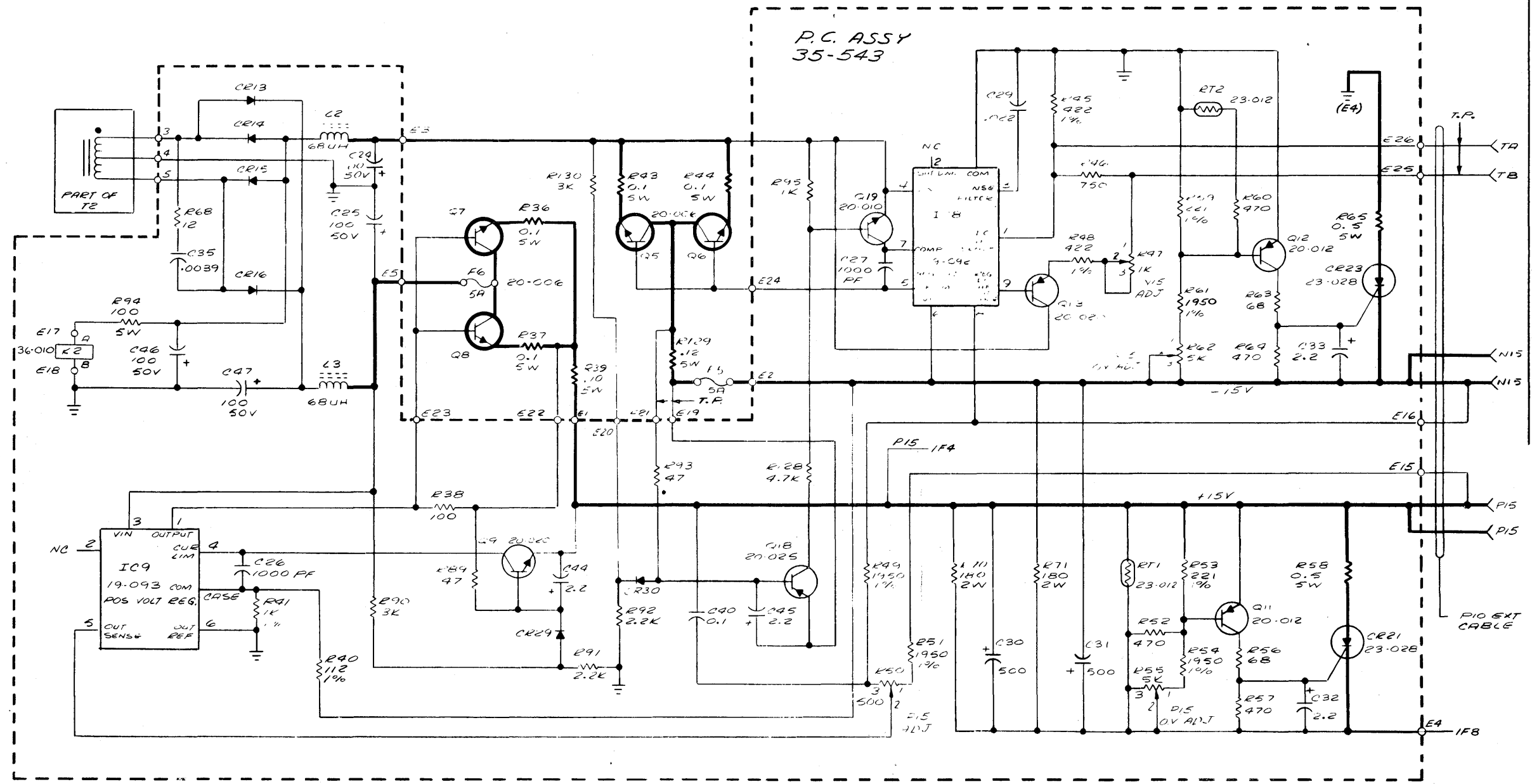
NAME:	G. MELTON	TITLE:	SCHEMATIC
DRAWN:	H. MATTER	DATE:	5-19-74
ENGR:	E. CENTOFANTI	CHK:	
DRW ENGR:	L. PEZZI	ENGR:	
NO.	03051	SHEET OF	1 2
REV	34-020M/R02		

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DRAWING 44-231 16042

REVISIONS	
Q19, AREA H3, HAS Q1 REVERSED POLARITY OF C24.	
MFC 3051-08	26-20-74 P02

P.C. ASSY
35-543



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BRUNING 44 231 16042

NOTES

DESIGNER: G. M. BERTON

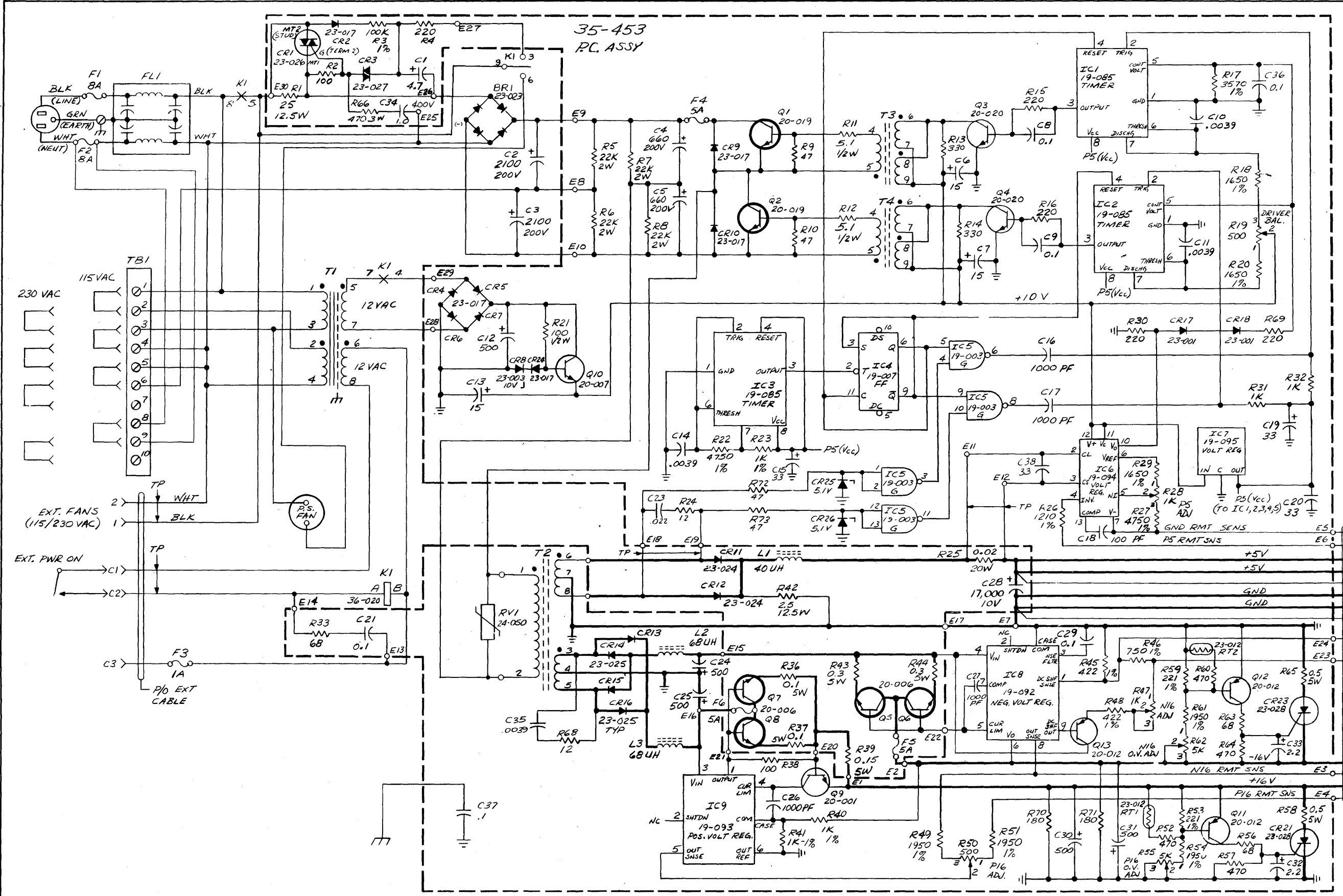
TITLE: SCHEMATIC
SWITCHING REGULATED
POWER SUPPLY 25 AMP

03051
34-020 MCH 1000 2 2



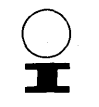
35-453
P.C. ASSY

REVISIONS		
PRE PRODUCTION APPROVAL	DEV	INIT DATE
W2V/1/3030	031	6-27-73 R01
REVISED CIRCUITRY		
ADDED RVI (24-050)		
W2V/1/3030	004	11-17-73 R02
RELEASED FOR PRODUCTION		
MFG. ENG. DATE		
R11 & R12 WERE 5.1K		
W2V/1/3030	005	11-10-73 R03
RGG WAS 1/2 W. (R2)		
W2V/1/2026	006	11-20-73 R04
R11 & R12 WERE 2.4K		
ADDED C36 & GND SYMBOL		
ADDED LEADS TO TBI-8, 9.		
ADDED (2) STRAP OPTION JUMPERS.		
W2V/1/2046	007	11-17-74 R05
REVISED P.S. FAN & KI		
RELAY AREA EI & D6		
SM/1/2209	008	11-18-74 R06

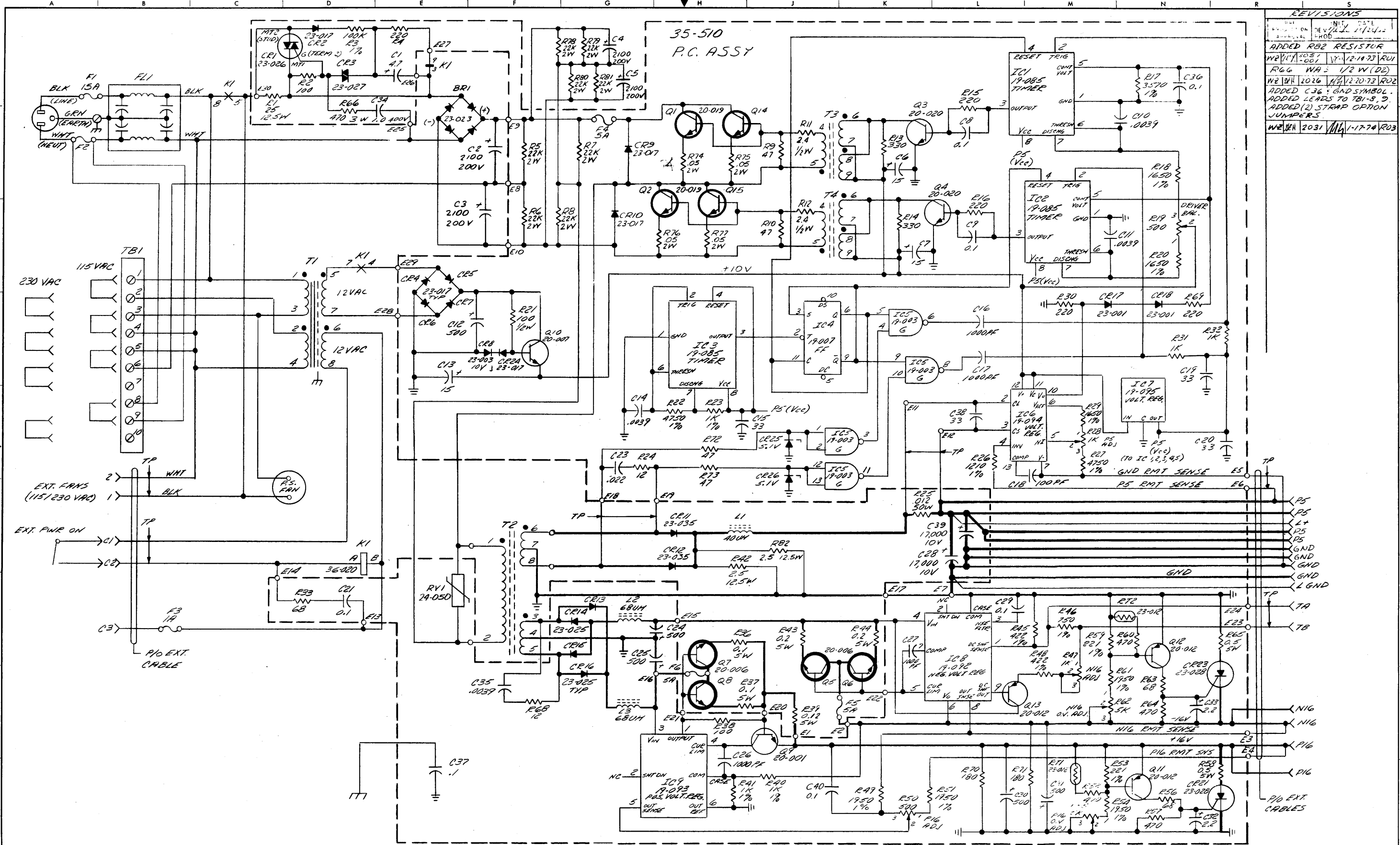


NOTES 1. UNLESS OTHERWISE SPECIFIED, RESISTOR VALUES ARE IN OHMS-1/4W; CAPACITOR VALUES ARE IN MICROFARADS.

NAME	TITLE	DATE	TITLE
J.F. FLEMING	DRAFT	10-25-72	SCHEMATIC
W. ZILBER	CHK	1-26-73	SWITCHING REGULATED
T. LAUGSEN, PCY	ENGR	3/9/73	POWER SUPPLY
L. REZZI	MGR	1/11/74	
	DIR ENG		



BRUNING 44-231 16042



REVISIONS			
REV.	DATE	INIT.	BY
1	11/24/72		
2	12/14/73		
3	1/20/73		
4	1/17/74		

ADDED R82 RESISTOR
 R66 WAS 1/2 W (D2)
 W2 W/ 12026 W/ 22073 R02
 ADDED C36 GND SYMBOL
 ADDED LEADS TO TB1-8, 9
 ADDED (2) STRAP OPTION JUMPERS
 W2 W/ 2031 W/ 1-17-74 R03

NOTES 1. UNLESS OTHERWISE SPECIFIED, RESISTOR VALUES ARE IN OHMS- μ W, CAPACITOR VALUES ARE IN MICRO- μ F.

NAME	TITLE	DATE	TITLE
F. (WARD)	SWITCHING REGULATED POWER SUPPLY	10-1-73	
W. (ILLGER)			
T. (MURPHY)			
N. (M...)			
R. (G...)			
L. (3...)			

TASK NO. 03051
 SHEET OF 1-1

BRUNING 44-231 16042