RCA

Mobile Communication Equipment

Series 1000

Base Station Power Supply

MI-559472

SUP7IIM

IB-8027297

N3LKL

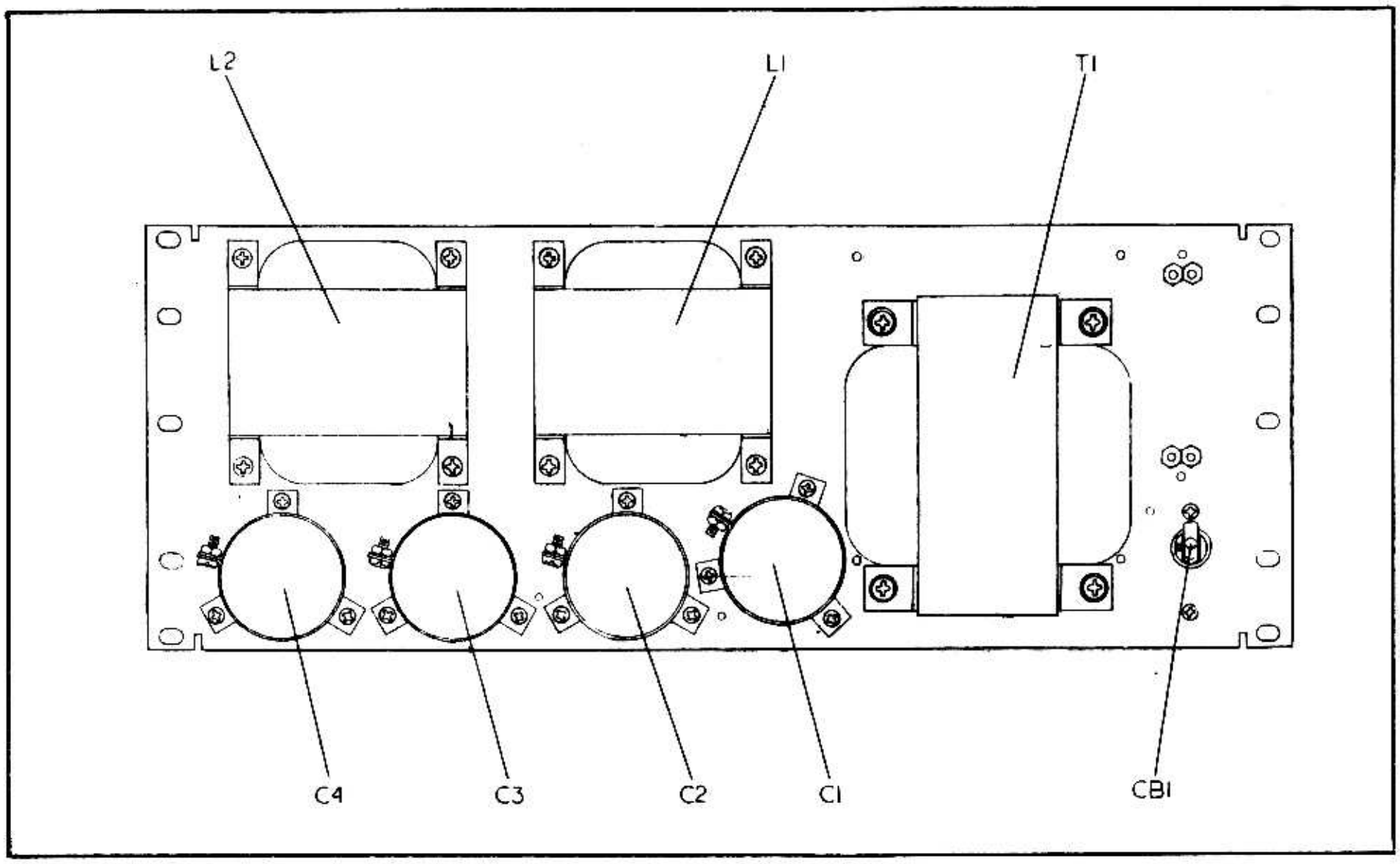


Figure 1. Power Supply Panel - Front View

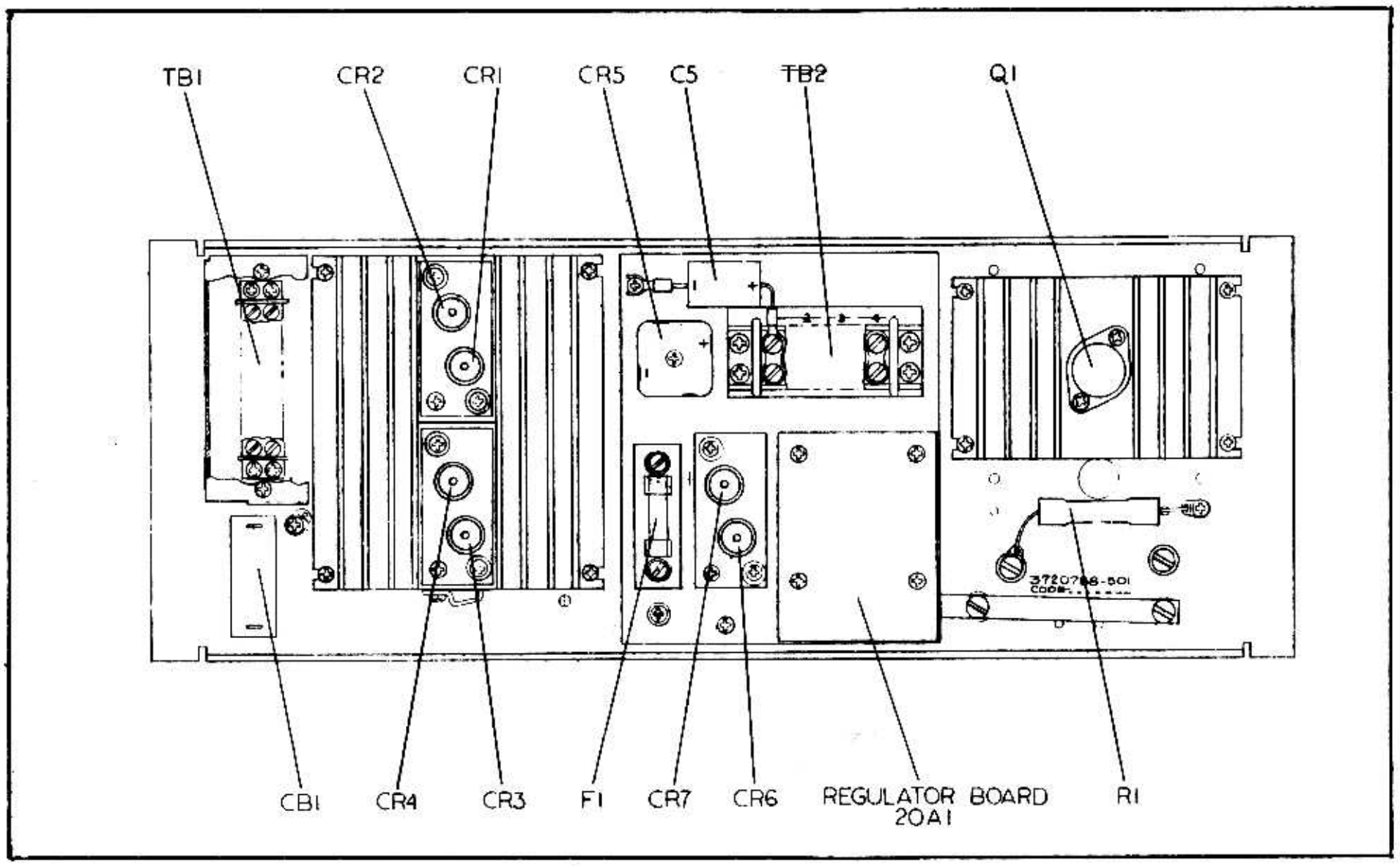


Figure 2. Power Supply Panel - Rear View

TECHNICAL DATA

EQUIPMENT DESIGNATION
MI-559472 Power Supply Panel

AC INPUT VOLTAGE
109, 121, 133 V AC
(tap adjustable)
121 V AC (nominal)
50/60 Hz

AC INPUT CURRENT
0.5 Amperes (no load)
6 Amperes (full load)

Derived from 3720987 REV 1

UNREGULATED DC OUTPUT
13.0 V DC (full load)
18.0 V DC (no load)

REGULATED DC OUTPUT
13.8 V DC

±2% regulation for ±10% line voltage variation

CURRENT OVERLOAD PROTECTION
Transformer Primary - 9 Amp Circuit Breaker
Regulated +13.8V Circuit - 5 Amp Fuse

GENERAL INFORMATION

This instruction book contains descriptive and servicing information for the Power Supply Panel, MI-559472, used in Series 1000 Base Stations. The panel has two separate power supply circuits operating from a common power transformer: a high current transmitter power supply (+12.8V @ 22 A), and a regulated +13.8 V supply for the receiver, exciter, and control circuitry. Terminals are provided for connection of an emergency DC power source. The power transformer primary has taps for 109, 121, and 133 V AC. The supply operates from either 50 or 60 Hz.

CIRCUIT DESCRIPTION

TRANSFORMER PRIMARY

Refer to Figure 4. The jumper from 20TB1 terminal 1 to terminal 2, 3, or 4 selects the primary tap for 109, 121, or 133 V AC lines. If an external power off-on switch is desired, it should be connected in place of this jumper.

12.8V HIGH CURRENT SUPPLY

Refer to Figure 4. Rectifiers 20CR1, CR2, CR3, and CR4 are arranged in a full wave bridge configuration, the output of which supplies the filter network consisting of 20L1, C1, C2, L2, C3 and R1. 20R1 maintains a minimum current level through the swinging choke 20L1 to improve no load to full load regulation.

13.8V REGULATED SUPPLY

Refer to Figures 3 and 4.

Output of the full wave bridge rectifier stack 20CR5 is filtered by capacitor 20C4 and applied to the input of the regulator board 20A1.

Components 8Q6, 8Q7, R2, R3, R7, R12, R13, CR7, C4, R1 and C2 on Regulator board 20A1 are not used in this application. The circuit is disabled by removal of 8R13 (during assembly), thus assuring that 8Q5 will be biased into saturation at all times returning 8Q1 base and CR5 to ground through R6, and assuring normal operation of the regulator.

EMERGENCY POWER SOURCE

The emergency power source is connected to 20TB2 terminals 3 (+) and 4 (-). The source should provide +13.8 V DC, and have a current capacity of 30 amperes. If the source is connected with the polarity reversed, diodes 20CR6 and 20CR7 will block current flow and prevent damage to the source and the base station.

MAINTENANCE

GENERAL

The power supply has been tested and adjusted for the proper output voltages with a 121 V AC input before shipment. During initial adjustment or after making repairs, 8R10 on the regulator board may be adjusted for +13.8 V output at 20TB2-1 under full load conditions (transmitter keyed).

WARNING: This equipment contains dangerous voltages which are accessible when the cover over 20TB1 is removed.

EMERGENCY SUBSTITUTION LIST - SOLID STATE DEVICES

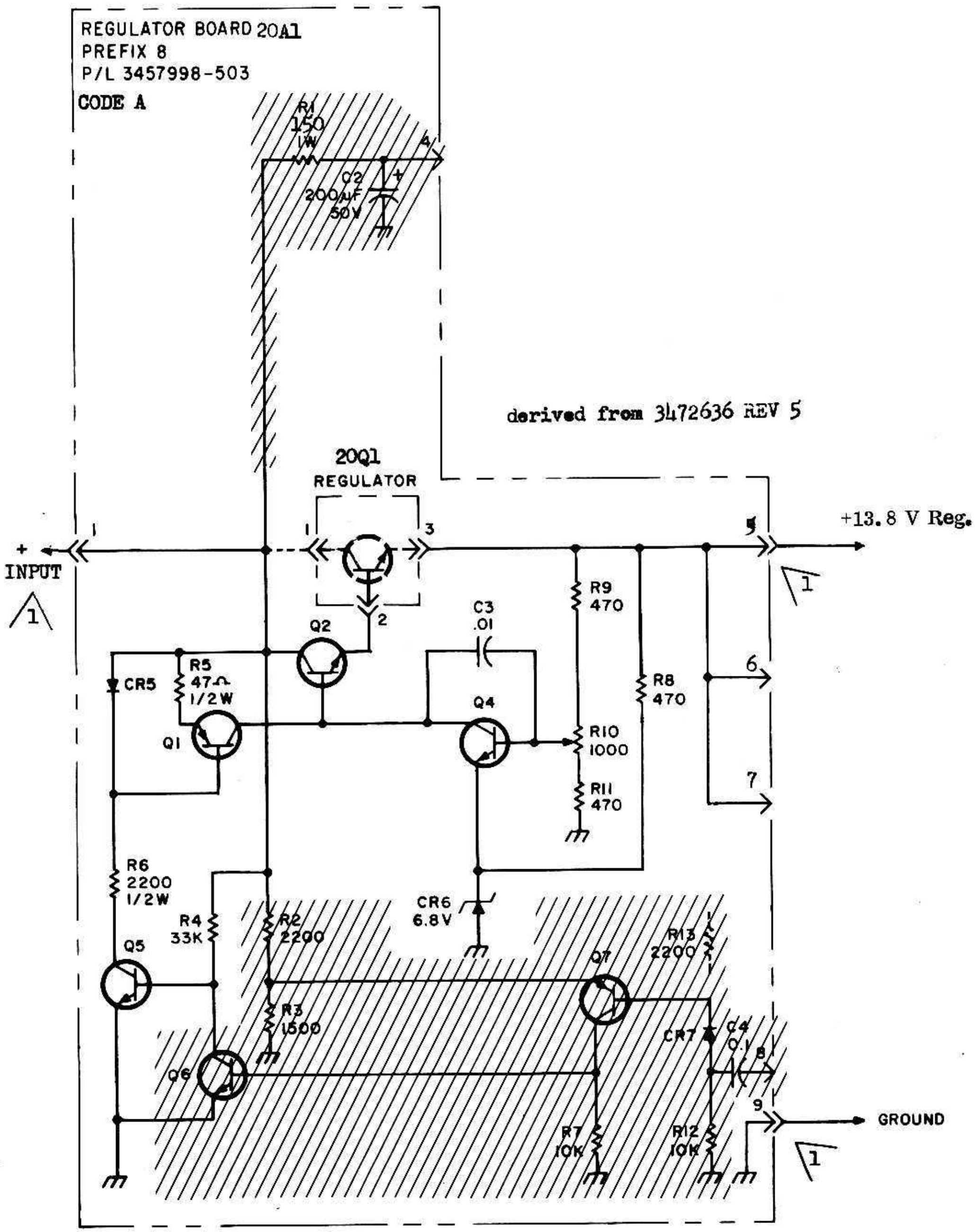
In the event of a semiconductor failure, the exact replacement part listed in the Replacement Parts list should be ordered from:

RCA Parts and Accessories
2000 Clements Bridge Road
Deptford, New Jersey 08086
Emergency Service Phone: (609) 848-5900

In an emergency, to minimize equipment downtime, the following types may be temporarily used. Use of these substitutes may degrade system performance; therefore, order the exact replacement as soon as possible.

Component Location	Component Designation	Emergency Substitute
Power Supply Assembly	20CR1	1N3659, 30A, 50V PIV
	20CR2	1N3659R, 30A, 50V PIV
	20CR3	1N3659, 30A, 50V PIV
	20CR4	1N3659R, 30A, 50V PIV
	20CR5	MDA 980-1
	20CR6	1N3659R, 30A, 50V PIV
	20CR7	1N3650R, 30A, 50V PIV
	20Q1	2N3055
Regulator Circuit Board	8Q1	2N4126
	8Q2	40250V1
	8Q4	2N3053
	8Q5	2N4124
	8Q6	2N4124*
	8Q7	2N4126*
	8CR5	No common substitute
	8CR6	1N4736 6.8V, 1W zener
	8CR7	1N914*

*Not operative in this application.



1 SEE FIGURE 4 FOR CONNECTIONS

//// NOT OPERATIVE IN THIS APPLICATION

Figure 3. Regulator Board - Schematic Diagram

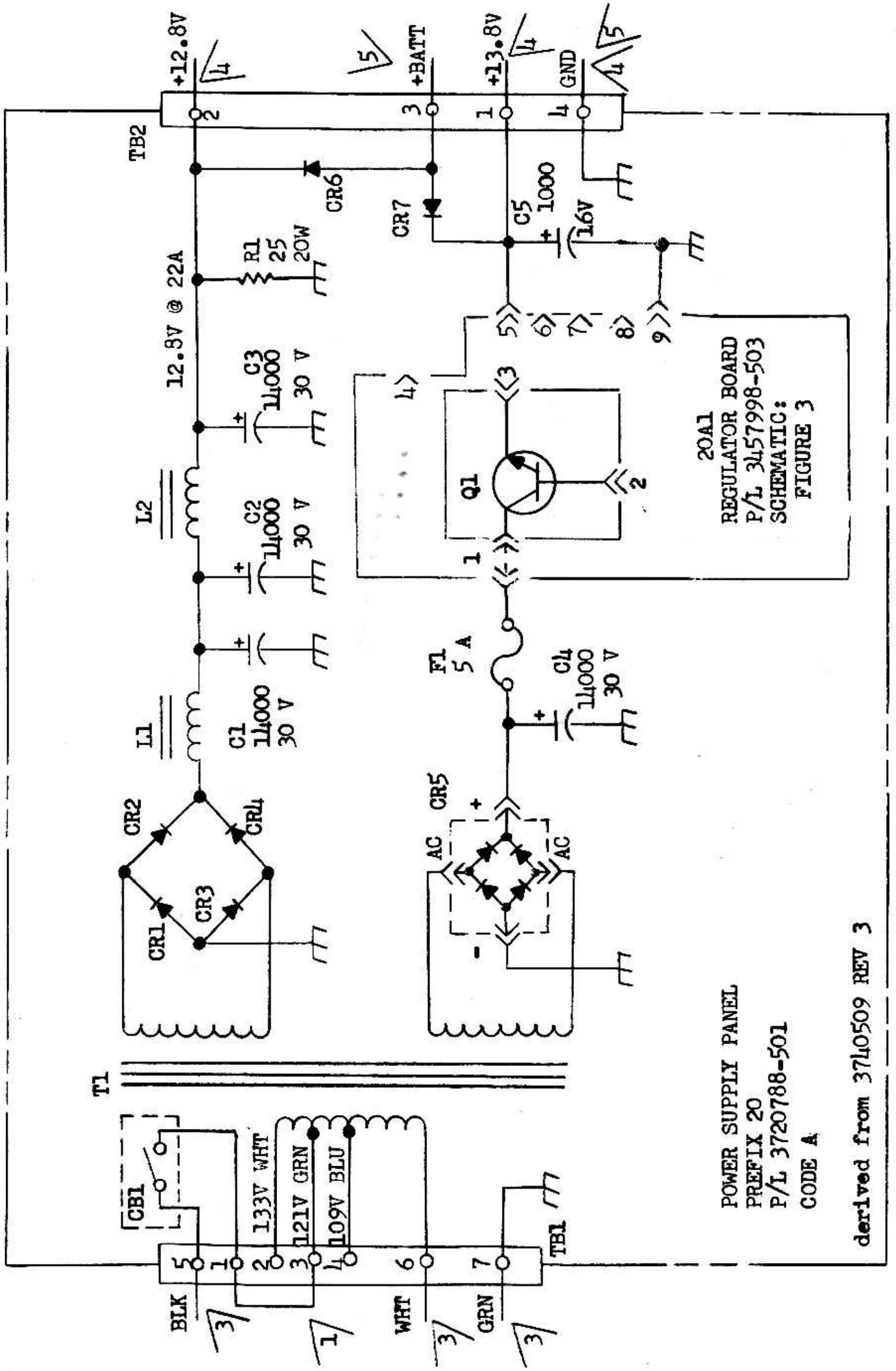


Figure 4. Power Supply Panel - Schematic Diagram