II. PROCESSOR AND SUPPORT CIRCUITRY

D. POWER UP CIRCUIT

1. This power detection circuitry detects the presence or absence of AC power, and is used to reset the C' and inhibit writing to the RAM's when the power is switched off, and put the CMOS RAM's into standby mode, so that they can be powered by the battery with minimal current consumption.

2. The circuitry works by detecting the AC power directly from the power transformer 5 volt secondary winding, and uses this signal reset the 8088 processor and to enable or disable the RAM address decoders.

3. The address decoders are high-speed CMOS devices which are powered from the battery. When AC power is not present, the decoders are disabled, thus pulling all RAM chip-select lines high, inhibiting operation and putting them in low-power standby mode. AC power from the 5v winding of the transformer is full wave rectified and smoothed by CR4, CR5, and C51.

4. This signal then charges C45 through R36 and R38. When C45 becomes charged (after timeconstant RC), it switches on Q2, which is also powered from the battery, enabling the RAM decoders. The large charging timeconstant RC is necessary to ensure that the power supplies have had time to come up and stabilize before enabling the RAM.

5. When AC power is removed, C45 discharges rapidly through CR3 and R37, turning off Q2 and disabling the RAMs before the stored charge on the front end to 5 volt supply has had time to decay below 4.5 volts.
This applies to Cymbal cards made with circuit 32-342, P/N: 1721-1064A.

TRIG A and TRIG B input circuitry also reflects modification to crash cards with 32-342 P/N: 1720-1030.

Cymbal
I. POWER SUPPLIES

General Description

There are three DC power supplies in the 9000; +5 volts, +12 volts and -12 volts. The +5 volts powers all logic circuits, and the +/-12 volts powers the analog circuitry. All power supplies use linear series-pass regulators.

A. +5 Volt SUPPLY

The +5V supply consists of a full-wave rectifier (CR13 & CR15), a filter capacitor (C96), and a series regulator consisting of U90, Q5 and one of the 2N3055's on the rear heatsink through connector "C". Current sensing and limiting is provided by R66 and R67. Trimmer R70 provides output voltage adjustment, and should be adjusted to +5.1V, measuring from pin 40 of U10 to pin 20 of U10.

B. +/- 12 V SUPPLY

The +/- 12 V supplies consist of a full-wave diode bridge rectifier (CR8 - CR11), filter capacitors (C95, C97), and 2 series-pass regulators. The -12V regulator is a 3 terminal IC regulator (VR1). The +12V regulator is designed for higher current rating than the -12V regulator, to accomodate the floppy disk drive. The +12V regulator consists of a 723 IC regulator (U18) and a 2N3055 pass transistor mounted on the rear panel below the 5V heatsink through connector "D".

C. BATTERY CIRCUIT

A 3.6 V battery supply is provided to power the CMOS memory chips when the AC power is turned off, and thus provide a non-volatile memory for the unit. The battery consists of 3 Ni-Cad cells which are re-charged from the +5V supply, though diode CR7, when the AC power is turned on. The battery charging current is limited by R68. With AC power applied, the CMOS memories are powered directly through CR7 from the +5V power supply.