

FAME II
TECHNICAL MANUAL

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1. GENERAL INFORMATION	1-1
1.1. Introduction	1-1
1.2. Functional Description	1-1
1.3. Technical Specifications	1-1
1.4. Maintenance Support	1-2
1.5. Related Documentation	1-2
1.6. Firmware Revisions	1-3
2. CENTAUR Logic Board	2-1
2.1. Introduction	2-1
2.2. Central Processor Unit	2-1
2.3. Memory	2-2
2.3.1. Memory Select	2-2
2.3.2. Program ROM	2-2
2.3.3. Data RAM	2-2
2.4. I/O Devices	2-3
2.4.1. I/O Select	2-3
2.4.2. Counter/Timer Circuit	2-3
2.4.3. Serial Interface	2-3
2.5. Clock	2-4
2.5.1. Keyboard Interface	2-4
2.5.2. CRT/Screen Memory Control	2-5
2.5.3. Display Memory	2-6
2.5.4. Character Generation	2-6
2.5.5. Video Signal Generator	2-6
2.5.6. Video Driver	2-6
3. MS-1401 Video Monitor	3-1
3.1. Video Amplifier	3-1
3.2. Horizontal Centering (Delay)	3-1
3.3. Horizontal Deflection	3-1
3.4. Vertical Deflection	3-3
4. Power Supply Model AC8151	4-1
5. Keyboard Logic	5-1
6. Maintenance	6-1
6.1. Introduction	6-1
6.2. Maintenance Access	6-1
6.3. Top Housing Removal	6-1
6.4. Logic Assembly Removal	6-1
6.5. Keyboard Housing Removal	6-1
6.6. Removal and Replacement Procedures	6-2
6.6.1. CRT Safety Precautions	6-2
6.6.2. Disposal of Defective CRTs	6-2
6.6.3. CRT Removal and Replacements	6-2
6.6.4. Monitor Board Removal and Replacement	6-3
6.6.5. Power Supply Assembly Removal and Replacement	6-3
6.6.6. Logic Board Removal and Replacement	6-4
6.6.7. Firmware	6-4
7. Replaceable Parts	7-1
7.1. Ordering Information	7-1
7.2. Replaceable Sub-Assemblies	7-1
7.3. Recommended Spare Modules	7-2

Table of Contents, continued

7.4. Terminal FAME Assembly	7-3
7.5. AC8151 Power Supply - Parts List	7-5
7.6. Dimerco Monitor M12 - Parts List	7-7
7.7. FAME-II Logic Board Assembly Parts List	7-10
7.8. FAME 102 Logic Board Assembly Parts List	7-12
7.9. Keyboard Parts List	7-14

Section 1 - General Information

1. GENERAL INFORMATION

1.1. Introduction

This manual provides technical information on FALCO's FAME line of terminals. Terminals covered by this manual include FAME-II, FAME 50, and FAME 102. Henceforth, this manual will refer to the 'FAME' terminal as a generic term for FAME-II, FAME 102 and FAME 50 terminals. Where information is unique to one of these terminals, not all three, it will be specified. More copies of this manual can be ordered from FALCO (P/N 210015-000). FALCO's FAME III and FAME 78 terminals are covered in the FAME III Technical Manual (P/N 210017-000).

1.2. Functional Description

The FAME terminal system is physically separated into two main components: the display unit and the keyboard unit. As the name implied, the display unit contains a display monitor, as well as a control logic board and a power supply. The keyboard unit houses an electronic keyboard.

The central controller of the system is the CENTAUR logic board contained in the display unit. The CENTAUR logic card, with slight variations, is the logic board used for FAME-II, FAME 50 and FAME 102 terminals. The logic board is connected directly to the power supply assembly, the CRT (Cathode Ray Tube) display monitor and the keyboard.

The power supply converts external AC power source to appropriate DC sources, which supplies the operational power of the whole terminal. The power supply outputs connect physically to the logic board only. Power for the monitor and the keyboard is routed via the logic board. External AC power is supplied through an external power cord. A power switch between the cord and the power supply turns the unit on or off.

The two major components of the monitor are the CRT (cathode ray tube) and the circuit board assembly. The circuit board assembly converts electrical signals from the logic board to visual information to be displayed on the CRT screen.

The keyboard unit connects to the main display unit through a 6-wire coiled cord with telephone type modular plugs. Power for the keyboard is supplied through the cord. When a key is depressed, the keyboard sends a code to the logic board, which processes the code.

Two RS232C compatible communications are available. The ports are connected through two 25-pin D-sub female type connectors.

1.3. Technical Specifications

Display Size: 14 in (350 mm) diagonal screen.

Video Monitor: P31 green phosphor is standard (P134 amber optional).

Resolution: 9x11 character cell with 7x9 character plus lower case

Section 1 - General Information

descender.

Interface: 2 RS-232C communication ports supports multiple baud rates from 50 to 19.2 kilobaud.

Power: 115/230 VAC plus or minus 20%, 50W maximum; 50 or 60 Hz.

Environment: 5 to 45 degrees Centigrade; relative humidity, 10% to 90% non-condensing.

Main Unit dimensions: Height 368 mm (14.5 in); width 363 mm (14.3 in); depth 312 mm (12.5 in).

Keyboard dimensions: Height 32 mm (1.3 in); width 502 mm (19.8 in); depth 184 mm (7.3 in)

1.4. Maintenance Support

Falco Data Products provides full maintenance support for the FAME terminal using the main assembly replacement and module replacement methods of servicing. The main assembly or module may be returned to the main factory or to one of Falco's service depots for repair. Our distributors and Dow Jones and Co. in most cities supply maintenance support as well.

When returning equipment to the factory for repair, the user should provide the following information:

- 1 Company name and location of installation.
- 2 Warranty information, such as date of purchase and P.O. number, if possible.
- 3 Fault symptom, including troubleshooting procedures carried out.
- 4 Any unsuccessful repairs.
- 5 Billing information in cases where the equipment warranty has expired.

1.5. Related Documentation

Information that may be required for reference purposes is listed in Table 1-1.

Table 1-1. Related Documentation	
Title	Part Number
FAME-II User's Manual	210030-000
FAME-102 User's Manual	210102-000
FAME 50 User's Manual	210050-000

Section 1 - General Information

1.6. Firmware Revisions

Revisions in the FAME operating system firmware require the replacement of one or more ROMs on the main logic board. The firmware is proprietary information, protected under copyright. Falco Data Products may revise the firmware to enhance or broaden the functional capabilities of the FAME terminal. Information regarding current firmware versions, relating to product enhancement, may be obtained from the nearest sales office or FALCO Focus Newsletter.

The firmware version number for all FAME terminals is displayed at the bottom of the Setup screen.

Section 2 - Logic Board - Principles of Operation

2. CENTAUR Logic Board

2.1. Introduction

This section contains the principles of operation of the CENTAUR logic board at component level. The CENTAUR logic board, with slight variations is used in the FAME-II, FAME 50 and FAME 102 terminals.

Be sure to refer to the correct schematic for your particular terminal, as all three sets of schematics are included in this section, FAME II/50/102. The following text refers to the same general locations on all of the schematic sets. Particulars unique to a certain set of schematics are noted. In referring to the schematic diagrams, signal names ended with an asterisk, in general, denote negative true logic.

2.2. Central Processor Unit

The CPU (Central Processing Unit) is a Zilog Z80A-CPU. It executes the instructions contained in the ROM (Read Only Memory). The instructions form the operating system program, commonly referred to as the firmware.

The CPU controls and sequences the events that take place in the terminal. It communicates with other logic devices, primarily through an 8-bit bi-directional data bus labeled with signal names DO-D7 on the schematics. A particular device is addressed (selected) by means of a unique bit pattern appearing on a 16-bit address bus (A0-A15). Once the device is selected, the CPU either sends data to the device (write) or takes available data from the device (read).

The CPU is shown on schematics sheet 1. It runs at a clock frequency of approximately 4 MHz (ZCLK). For a detailed description of the Z80A-CPU refer to the Zilog Components Data Book. RESET* of the CPU is driven by an R-C power-on-reset circuit. In normal operation, the signal should be inactive (i.e. high level). NMI* is generated by an CRT timing controller and is used to tell the CPU when a new character row is beginning. INT* is generated by a Z80A-DART or a Z80A-CTC, which are Dual Asynchronous Receiver Transmitter and Counter Timer Circuits, respectively. The WAIT* signal is used to provide timing synchronization with the screen memory. RD*, WR*, IORQ*, MREQ* and M1* are control outputs from the Z80A-CPU, informing the support circuits the nature of the bus cycle.

The CPU connects to an 8-bit bi-directional data bus (DO-D7). The data bus carries information between the CPU and the rest of the board. The CPU also drives the 16-bit address bus (A0-A15). This address bus combining with the control outputs allow the selection of the various memory and I/O devices on board.

When a particular I/O device requires immediate attention from the CPU, the device signals to the CPU through the interrupt lines (INT* or NMI*). The CPU acknowledges the interrupt and determines which device caused the interrupt, then responds to the interrupting device.

Section 2 - Logic Board - Principles of Operation

The response may be to take a character from the device, or to send a character to the device, as in the case of the communications interface with the Z80A-DART.

2.3. Memory

2.3.1. Memory Select

The memory select circuit is shown on schematic sheet 4. It consists mainly of a decoder (reference designator 1B), which is a 74S188-type PROM (Programmable Read Only Memory). When MREQ* is active (low), it decodes the highest order address lines and provides the Chip Enable signals required by the various memory devices. The bit pattern pre-programmed into the PROM determines the address mapping of various memory devices. No more than one output signal should be active at any one time regardless of the address input, such that only one memory device is selected at a time.

2.3.2. Program ROM

The Program ROM (Read Only Memory) is shown on schematic sheet 1 and consists of normally two 2764-type EPROMs (Erasable Programmable Read Only Memory). Each EPROM contains 8K by 8 bits of read only program procedure (firmware). Alternatively, 27128-type ROM can be used, which has a capacity of 16K bytes. Location 3C on the logic board occupies the lower address, and location 3D occupies the higher address. The address range of the firmware chip can be distinguished by its part number. If the last three digits of the part number is -000, then it should go into the lower address location (i.e. 3C). For each type of ROM, a different decoder at 1B must be used to provide the correct address mapping. In general, PROM labeled with CENTAUR1-64 and CENTAUR-128 are for 2764 and 27128 respectively.

2.3.3. Data RAM

The RAM (Random Access Memory) 3E is used by the CPU as for many purposes. One of its function is to store non-volatile information such as the Setup parameters. Battery is provided on board to supply the power while the terminal is turned off. The battery voltage is 2.4V, therefore a low power CMOS RAM is used. Typical manufacturers and part numbers are: Hitachi HM6116LP-4, Fujitsu MB8416-20 or Toshiba TC5517APL-2. The printed circuit board is layout such that a 28-pin device can be used, while a standard 2K by 8 circuit has only 24 pins, therefore the pin numbers on the schematic are normally offset from the physical chip.

To retent the memory during power off, the RAM has to be disabled by an inactive select signal. A special select signal (RMSEL*) is provided through transistor Q1 to ensure the signal is inactive (high, >2.0V) during power off.

Other uses of the RAM are: buffers for the communication ports; scratch pad area for the CPU; storage for the programmable function keys; etc.

Section 2 - Logic Board - Principles of Operation

2.4. I/O Devices

2.4.1. I/O Select

The I/O (Input/Output) select logic is on schematic sheet 3 and consists of a 74LS138 (3E). This circuit generates the chip select signals for the various I/O devices on the board during an I/O request bus cycle. The I/O devices are Z80A-DART, Z80A-CTC, 2672 CRT controller, DAC0832 contrast control and keyboard latch.

2.4.2. Counter/Timer Circuit

The Counter/Timer Circuit is a Z80A-CTC (1E) as shown on schematic sheet 1. Refer to the Zilog Components Data Book on the Z80A-CTC for a detailed functional description. Channels 0 and 1 of the CTC are used to generate the baud rates for RS232C Port A and Port B, respectively. Crystal oscillator 2A provides the original clock. The divisor is under software control such that different baud rates can be set dynamically. Channel 2 is used to generate the tones for the bell. These include the normal bell tone and the keyclick sound of the tactile feedback. During normal operation, the output for channel 0 and 1 should have clock output at 16 times the baud rate. The output for channel 2 should be at a constant level, i.e. no bell output. A key code ready signal from the keyboard circuit connects to the channel 4, which provides the CPU with an interrupt signal when a key code is received.

2.4.3. Serial Interface

The serial interface circuit main components are a Z80A-DART Dual Asynchronous Receiver/Transmitter (1D), four RS232C interface driver/receiver circuits and two DB25 sockets. Z80A-DART is pin compatible with Z80A-SIO, which can be also be used on the logic board. For a detailed functional description refer to the Zilog Components Data Book.

The DART controls two independent bi-directional serial ports. Each channel can be independently programmed to configure the port for the number of stop bits, the number of data bits, and parity arrangement. The baud rate for each port is generated by the Z80A-CTC. Data and control information are transferred via the CPU data bus. The SIOE* signal enables the DART, and address lines A0 and A1 determine which channel and whether data or control information is being transferred. The Z80 vectored interrupt scheme is used and the open-drain INT* of the DART and the CTC are or-tied together with the CPU input. Normally, the DART is enabled for vectored interrupts upon receiving a character or emptying of the transmit buffer.

The interface circuits 1G, 2G, 3G and 4G are used to buffer and convert the signals between TTL and RS232C levels. Following is a list and description of the standard RS232C signals supported.

Section 2 - Logic Board - Principles of Operation

Modem Port or Port A (J5), Port B (J6)- Data Terminal Equipment (DTE) Format			
Pin	Name	Description	Note
1	PGND	Protective (Chassis) Ground	protective/shield ground
2	TXD	Transmit Data	from DART, data
3	RXD	Receive Data	to DART, data
4	RTS	Request To Send	always active
5	CTS	Clear To Send	to DART, enable transmitter
7	GND	Signal Ground	signal reference
20	DTR	Data Terminal Ready	from DART, terminal ready

Printer Port (J6 alternatively)- Data Communication Equipment (DCE) Format			
Pin	Name	Description	Note
1	PGND	Protective (Chassis) Ground	protective/shield ground
2	TXD	Transmit Data	to DART, data
3	RXD	Receive Data	from DART, data
5	CTS	Clear To Send	from DART, terminal ready
6	DSR	Data Set Ready	always active
7	GND	Signal Ground	signal reference
8	DCD	Data Carrier Detected	always active
20	DTR	Data Terminal Ready	to DART, transmitter enable

2.5. Clock

Two crystal oscillators (1A and 2A) provide the clocking source of the logic board. Oscillator 2A provides a 16.537 MHz square wave which is used as the dot clock in 80-column mode. The 16.537 MHz clock is divided down by 4 with a 74LS163 (4A) for the CPU clock, and divided by 9 with another 74LS163 (7A) for the CTC, which in turn divide the signal to the appropriate baud rates. Oscillator 1A provides a 27.562 MHz square wave which is used only as the dot clock during 132-column mode. When 132-column is not used, 1A is not necessary.

2.5.1. Keyboard Interface

The keyboard interface consists of a serial-in parallel-out register and related buffering devices. Connection to the external keyboard is made through connector J7. In addition to the power and ground connections, two interface lines are presented. Both interface lines are designed to allow bi-directional signal transfer.

The terminal logic normally de-asserts the two output buffers such that the interface lines are allowed to float. During normal operation, the keyboard initiates the transfer of data whenever a key is pressed. Transfers are made by the keyboard by shifting out data bits on the DATA line while toggling the CLOCK line. The data bits are

Section 2 - Logic Board - Principles of Operation

always preceded by a start bit. After 8 data bits, the start bit reaches a flip-flop (5D), which in turn asserts the DATA line to a low level. The low level on the DATA line signifies the end of a transfer, which the keyboard interprets as a busy signal. Also, at the same time, an interrupt is sent to the CPU.

The CPU interprets the keyboard interrupt as a key-ready signal. It reads the byte from the serial register (6E) and then resets both the register and the flip-flop. Upon the reset of the flip-flop, the DATA line is again allowed to float, thereby allowing the keyboard to resume data transfer.

2.5.2. CRT/Screen Memory Control

The CRT/Screen Memory Control Circuit is shown on Schematics Sheet #2 and the main component is a 2672 Programmable Video Timing Controller (PVTC). The 2672 is manufactured by Signetics or Motorola, where detailed data sheet can be obtained. The device provides screen memory addressing for the display, horizontal and video sync signals, timing for underlining and blinking, as well as signals for retrace blanking and cursor.

The PVTC is accessed by the CPU through its data bus by an I/O cycle. 8 I/O channels are necessary. Via the I/O channels, the PVTC is programmed to provide specific timing required by the terminal. The HSYNC and VSYNC signals are generated to control the monitor assembly.

There are three control lines of the PVTC which provides the display memory contention logic. PBREQ* is an input generated by the CPU requesting access to the display memory. BEXT* is an output which, when low, indicates that the PVTC has relinquished control of the display memory. BACK* is an output which provides an active low ready signal to the CPU in response to a bus request. The PVTC display memory address bus (DAO-DA13) presents the current display memory location. During CPU display memory access, the PVTC relinquished the bus to allow the CPU address to go through.

When the CPU needs access to the display memory, such as to change the contents of the display, it issues a SMSEL* (PBREQ*) signal via memory read/write operation to address range 8000-BFFF hexadecimal. The PVTC will acknowledge the request (BACK*) and direct the CPU address bus to the display memory address bus through the 74LS541 buffers (3B and 3C).

The INTR* output is programmed to provided an end-of-row interrupt signal. This output is connected to the NMI* of the CPU. The CPU processes the interrupt by loading the memory address for the next row into the PVTC memory pointer.

The CURSOR output determines the position and the shape of the cursor. It is asserted at a specific time during a scan such that a cursor can be superimposed on the normal character image.

Section 2 - Logic Board - Principles of Operation

2.5.3. Display Memory

The Display Memory consists of two 2K by 8 RAMs (HM6116-3), expandable to 8k by 8 (HM6264-15). The screen data are transferred between the CPU and the display memory through one of the two 74LS245 bi-directional buffer (4D), and is fed to a character generator during normal display cycle (6C).

2.5.4. Character Generation

The character generator is a 2732A EPROM. It is programmed with information to generate the dots for each scan line of the displayable characters. This dot information is addressed by the display data bus (which uniquely defines 256 characters), and the scan line counter (which can address up to 16 scan lines). The dot information is then latched into the video generator.

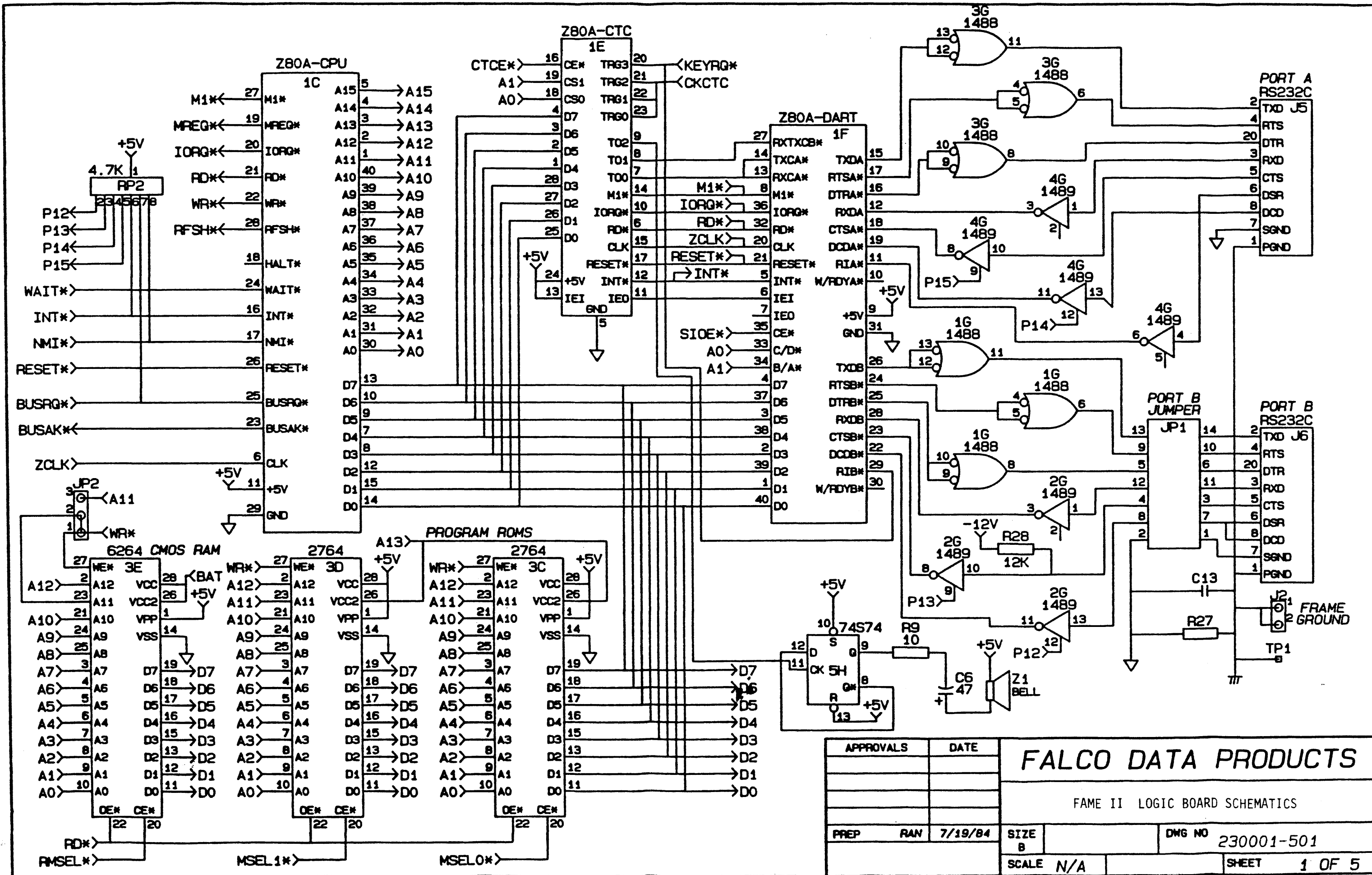
2.5.5. Video Signal Generator

A 2677/2675 Video Attribute Controller (VAC) forms the main circuit of the video signal generator. Detailed description of the VAC can be obtained from Signetics or Motorola. The VAC takes the 8-bit dot data from the character generator, mixes with the 8-bit attribute data from the attribute section of the display memory, and generates a dot stream that drives the monitor assembly. The VAC incorporates most of the attribute modification internally, which include underlining, reverse video, blinking and blanking.

2.5.6. Video Driver

The Video Driver is shown on schematics sheet 3. It is necessary for converting the TTL signals into signals that can control a CRT monitor directly. The video drive circuit consists of various buffers and discrete components. Transistor Q3 is used as the analog driver for the video signal. DAC0832 (6G) is a digital to analog converter which is used to set the video output level. The op-amp LF353 (7H) converts the current output from 6G into a voltage level which provides the base drive of Q3.

The HSYNC and VSYNC signals generated by the 2672 PVTIC are buffered and converted into appropriate vertical and horizontal drive signals for the monitor.

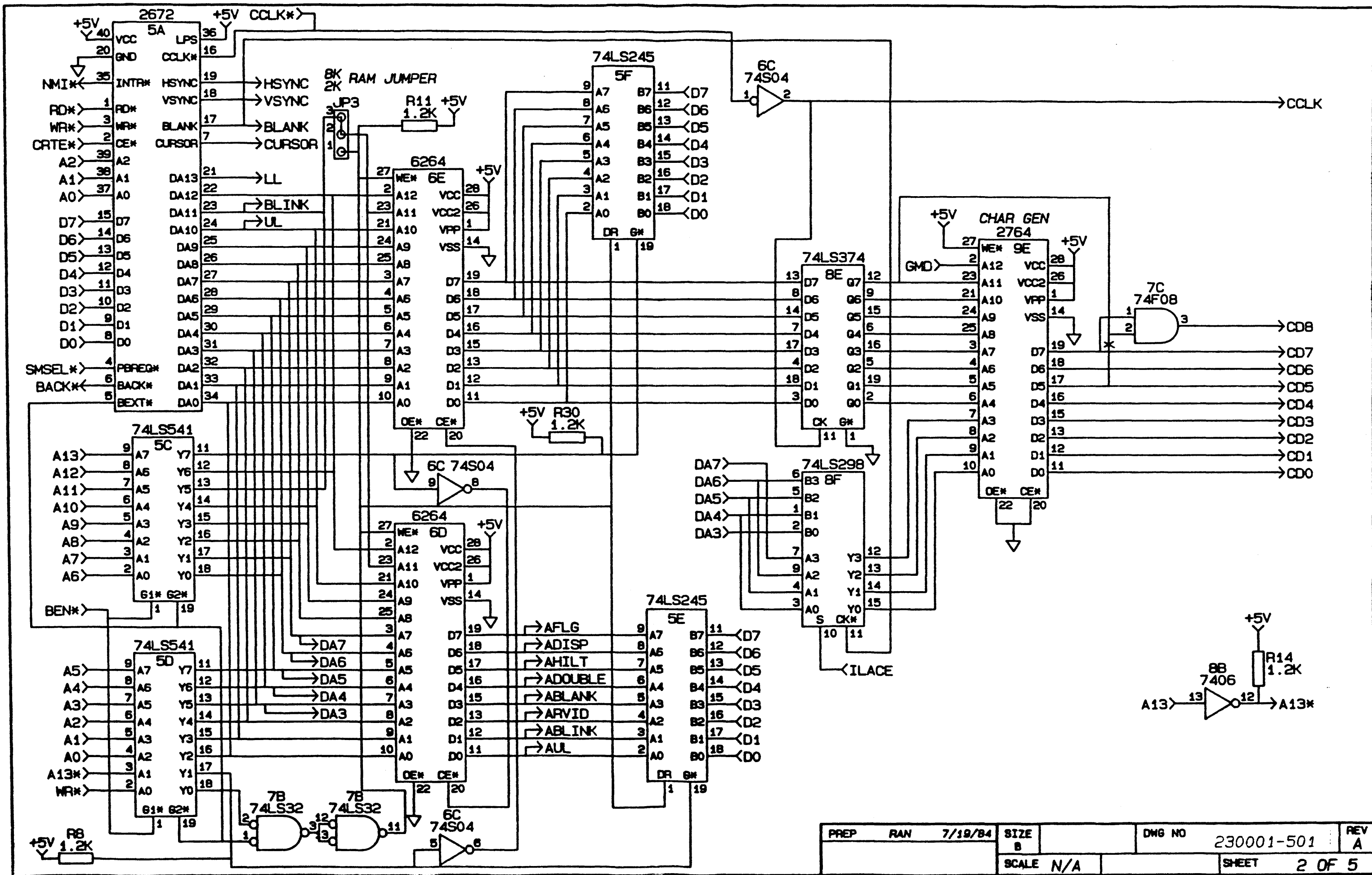


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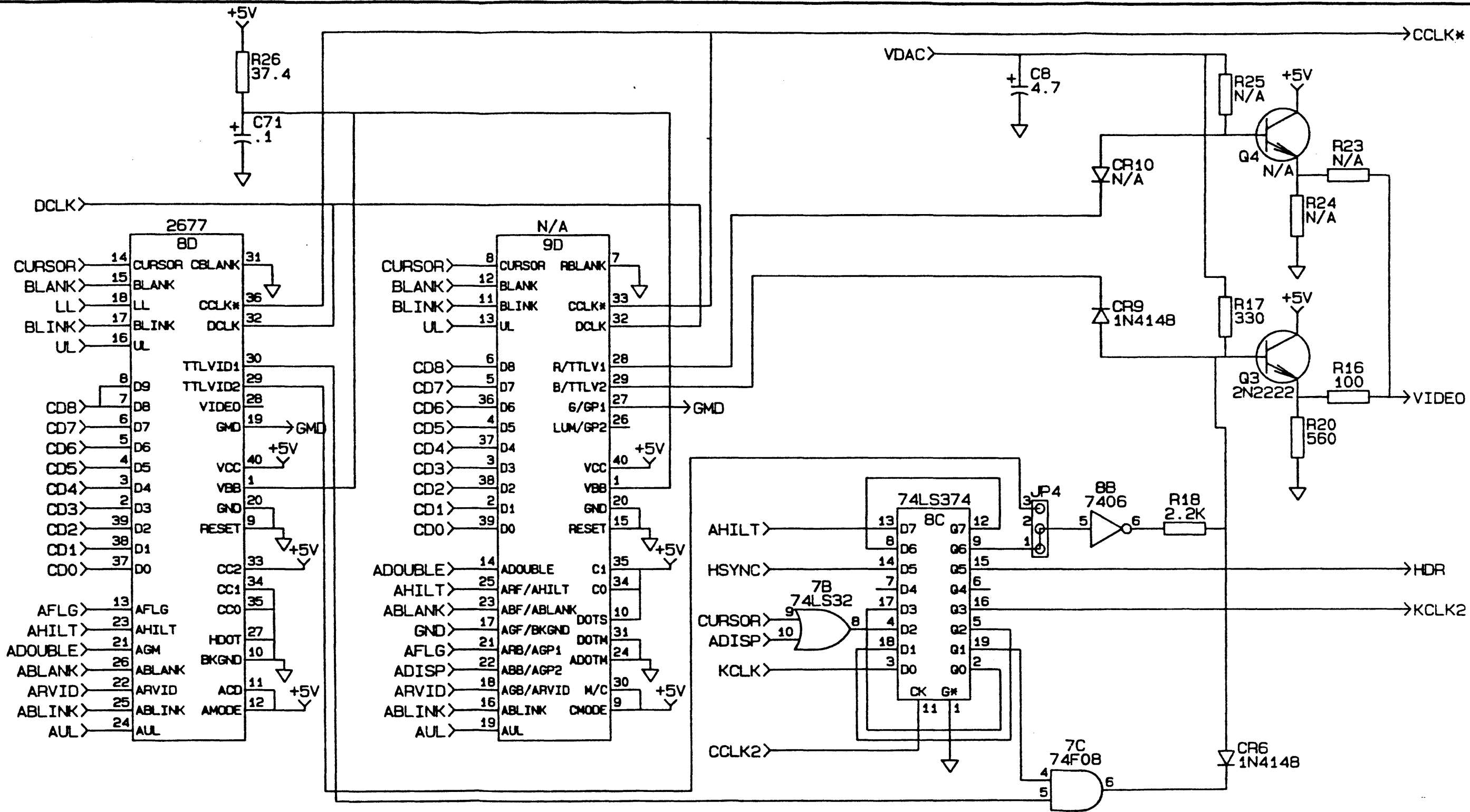
FALCO DATA PRODUCTS

FAME II LOGIC BOARD SCHEMATICS

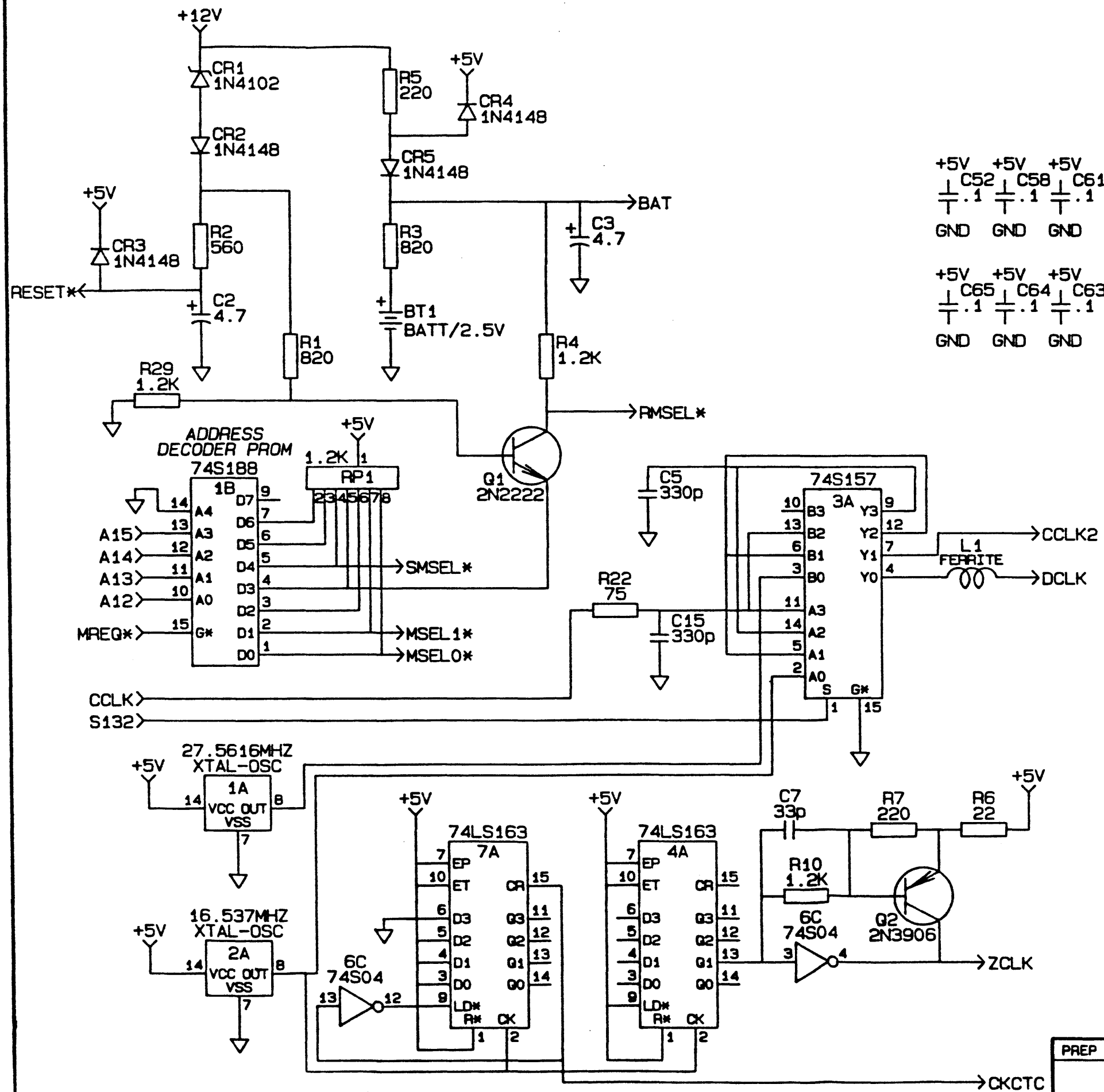
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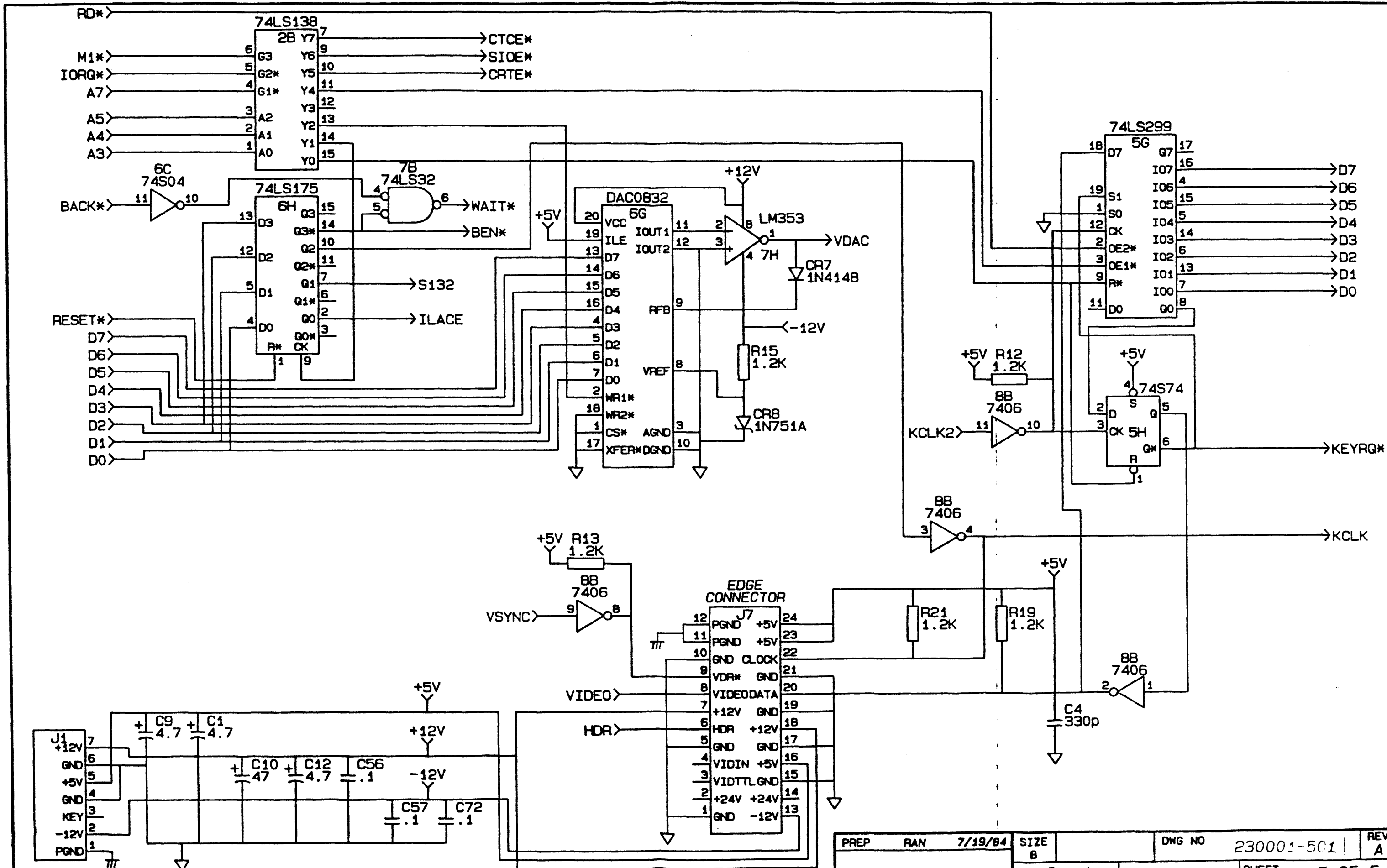


PREP	PKL	2/8/85	SIZE	DWG NO	230001-501	REV
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			SCALE	N/A	SHEET	3 OF 5



- | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| +5V | +5V | +5V | +5V | +5V | +5V | +5V | +5V | +5V |
| C52 | C58 | C61 | C55 | C54 | C53 | C60 | C51 | C59 |
| .1 | .1 | .1 | .1 | .1 | .1 | .1 | .1 | .1 |
| GND | GND | GND | GND | GND | GND | GND | GND | GND |
| +5V | +5V | +5V | +5V | +5V | +5V | +5V | +5V | +5V |
| C65 | C64 | C63 | C62 | C66 | C67 | C69 | C70 | C68 |
| .1 | .1 | .1 | .1 | .1 | .1 | .1 | .1 | .1 |
| GND | GND | GND | GND | GND | GND | GND | GND | GND |

PREP	RAN	2/8/85	SIZE		DWG NO	230001-501	REV	A
			B					
			SCALE	N/A		SHEET	4	OF 5



Section 3 - Monitor Board - Principles of Operation

3. MS-1401 Video Monitor

The following subparagraphs provide a functional description of the monitor assembly. Refer to the schematic shown in Figure 3-1.

3.1. Video Amplifier

The video amplifier circuit consists of the inverter Q101 and transistor amplifier Q102. Q101 is cut off until a positive going signal is applied to its base, at which time it turns on, and this provides the drive to amplifier Q102 emitter. The output from Q102 collector is applied to the CRT cathode via isolation resistor R106, causing modulation of the electron beam. The contrast control VR101 uses voltage divider action to control contrast. VR101 is normally set to the upper limit to allow maximum control range from the logic board. In the inverter stage, C101 and R102 provide high frequency response and R101 determines overall gain. L101 in the amplifier circuit is a peaking inductor. Q102 base is supplied from +12V, filtered by C102 and C103.

3.2. Horizontal Centering (Delay)

The horizontal centering circuit consists of the two-stage monostable multivibrator IC301, together with associated components. The multivibrator is triggered by positive going signals applied to IC301 pin 2. The one-shot timing is determined by R310, VR301, and C303. VR301 is the centering adjust control, labeled H-CENTER, and allows the video to be centered with respect to the raster. The output drives a darlington transistor pair Q301 and Q302, which in turn is coupled to Q303 through C305.

3.3. Horizontal Deflection

The horizontal deflection circuit consists of the output stage Q303, the flyback transformer FBT and the horizontal yoke. The flyback transformer provides power for all CRT control functions except the vertical yoke.

When Q302 is turn off, R305 sources the current to drive Q303 into saturation while charging the coupling capacitor C305. During conduction of Q302, the leading end of C305 is forced to approximately ground level, therefore a negative voltage is presented to the base of Q302. The negative voltage aids in discharging the junction of Q303, therefore turning off Q303 quickly. R307 and D302 is used to clamp the negative going pulse to prevent damage to Q303.

The switching action of Q303 causes the following to occur:

- 1 When Q303 is turned on, the yoke current increases linearly (ramp) and the electron beam is moved from the center of the screen to the right side (viewed from the front).

Section 3 - Monitor Board - Principles of Operation

- 2 At this time Q303 is turned off by the negative voltage at its base, which causes the output circuit to oscillate (ring). A high reactive voltage in the form of a half cycle negative pulse is developed by the yoke's inductance and the primary of FBT. The peak magnetic energy which was stored in the yoke during scan time is then transferred to C312 and the yoke's distributed capacity. During this part of the scanning cycle the beam returns rapidly to the center of the screen.
- 3 The distributed capacity now discharges into the yoke and induces a current in the opposite direction to that of the previous part of the cycle. The magnetic field thus created around the yoke deflects the beam to the left side of the screen.
- 4 The voltage across C312 is then discharged gradually through the yoke and the beam is deflected to the center of the screen. The cycle is repeated when Q303 is turned on again.

L301 is an adjustable width control in series with the horizontal deflection coils. The variable inductive reactance allows a greater or lesser deflection current to flow through the horizontal yoke (deflection coils) and thus varies the width of the horizontal scan. L302 is a variable inductor, functioning as impedance in series with the yoke winding, and depending on current direction improves horizontal scan linearity.

The rapidly changing flyback pulse developed during horizontal retrace time is induced into the secondary of FBT and is used to provide CRT control grid voltages following rectification.

Diode D501 in conjunction with filter capacitor C501 and R508, R501 provides a +550V DC output to Grid 2. VR501, the Focus control, is a voltage divider which provides a positive bias to Grid 4, which is the last control grid and therefore controls focusing of the electron beam.

Diode D502 in conjunction with filter capacitor C504 provides a +50V DC output. Diode D503 in conjunction with filter capacitor C505 provides a -150V DC output. The Brightness control VR502 is connected across the two outputs and provides the bias to Grid 1.

The CRT anode voltage (13KV) is provided by a single diode integral to FBT assembly.

Arc suppression devices are built into the monitor PCB and are shown, as pairs of opposing arrow heads with a gap between them. They are gapped so that the space will ionize and provide a grounding path in the event that the anode arcs to any of the grids, cathode or heater.

3.4. Vertical Deflection

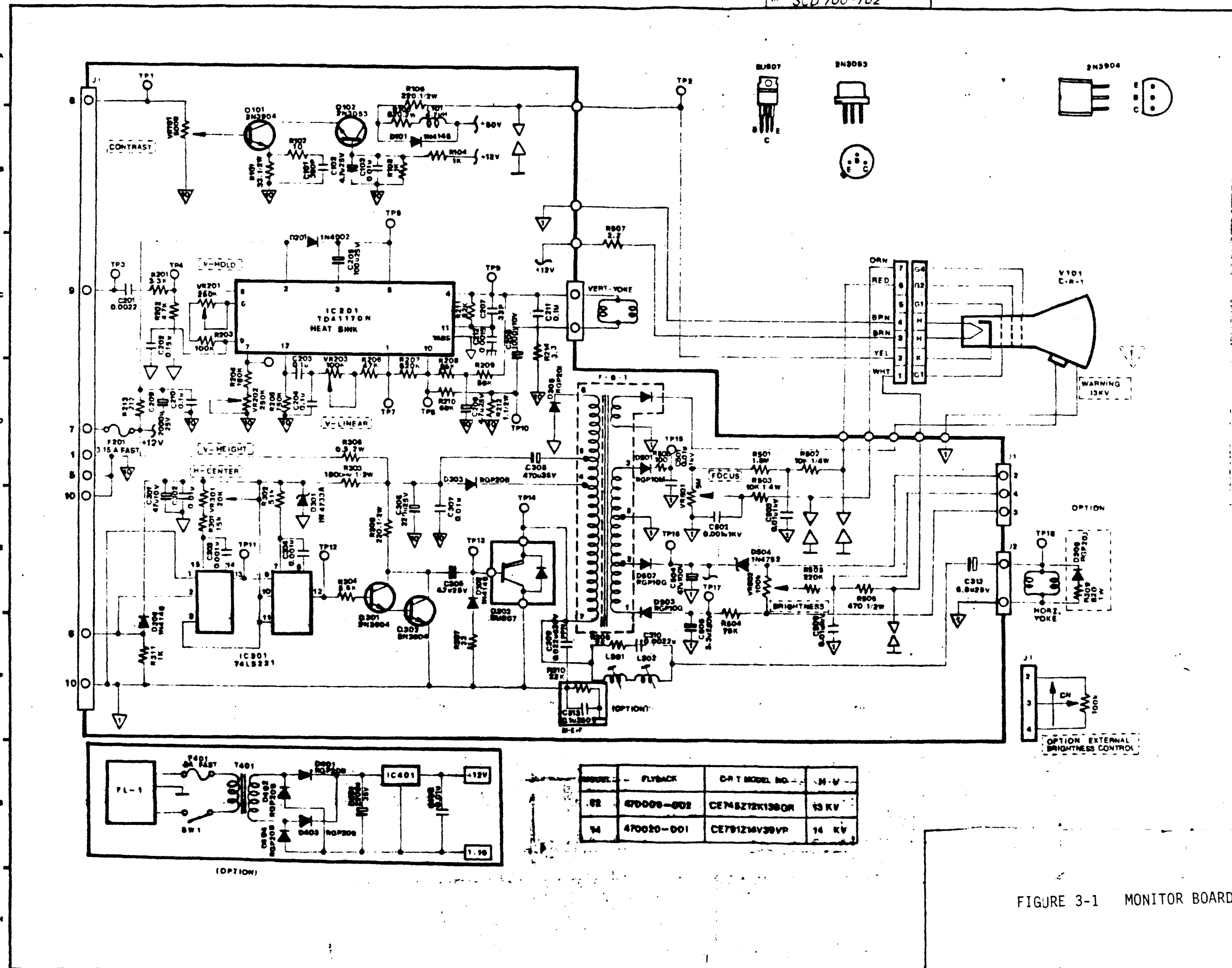
Vertical Sync/Drive pulses from the main logic board are capacitively coupled via C201 to pin 8 of the vertical deflection circuit IC201. The IC (TDA1170) is a monolithic IC incorporating all the functions of a vertical deflection system in one package. These functions include vertical oscillator, ramp generator, voltage regulator, flyback generator, pre-amplifier and output power amplifier. C201 differentiates the the input pulse and R201 and R202 form a voltage divider to provide proper level inputs to IC201.

The power input to the IC is derived from the +12V input to the monitor board at pin 7. Filtering is provided by R213, C209, and C210. Diode D201 and capacitor C205 form a voltage doubler which provides faster vertical retrace. The vertical oscillator frequency determining components are connected between pins 6 and 9 and form an adjustable RC time constant. The reference voltage at pin 6 is varied by the vertical hold potentiometer VR201 to determine the charge time of C202.

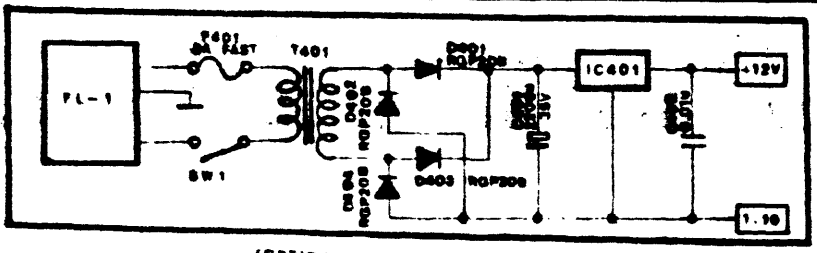
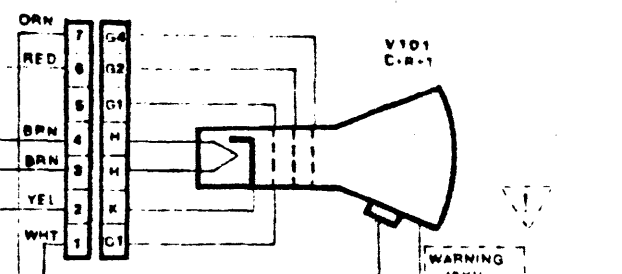
The adjustable Height control VR202 provides current control from pin 7 to ground (return) and effectively controls the peak-to-peak current through the vertical yoke.

The feedback from pin 1 to pin 12 is adjusted by the Vertical Linearity control VR203. It provides control of S shaping for the vertical yoke current ramp. C204 and R205 provide some C shaping for the ramp generator.

R207 provides isolation for the output stage and couples the ramp signal from pin 1 into the preamplifier (pin 10). The output is taken from pin 4 and fed into the vertical yoke. R311 and C207 provide filtering and stabilization of the output. R214 and C211 form a high frequency filter and prevent oscillations at the output. R208 and R209 provide a yoke voltage feedback path from the output to the preamplifier input at pin 10. C208 provides some S shaping of the yoke current and blocks DC yoke current flow to ground. R210 is in the current feedback chain and provides yoke current sampling. R207 provides isolation and also couples the yoke current sample into the preamplifier input at pin 10.



INSLT	ZONE	DESCRIPTION
A		REVISION 1
H	2E	REVISION 2
	2F	REVISION 3
		1-28-1964
C	3E	CRCA (C01M1212C02)
	4C	ADDD (C012C015A)
	5D	TRDI (C01PM) WAS RGP1.1
	6E	RTOA (R5K) WAS 15K
	7E	TRDI (C01M) WAS (C01)
	8D	ADDD (C012) WAS (C01)
	9E	ADDD (C012) WAS (C01)
		1-28-1964
D	3E	TRDI (C01PM) WAS (C01)
	4C	CRCA (C01M1212C02)
	5D	TRDI (C01PM) WAS (C01)
	6E	RTOA (R5K) WAS 15K
	7E	TRDI (C01M) WAS (C01)
	8D	ADDD (C012) WAS (C01)
	9E	ADDD (C012) WAS (C01)
		1-28-1964
E	2E	REVISION 4
		1-28-1964
F		REVISION 5
		1-28-1964



MODEL	FLYBACK	CRT MODEL NO.	H-V
92	470000-002	C6M5Z72K138GR	13 KV
94	470020-001	C6791Z1M439VP	14 KV

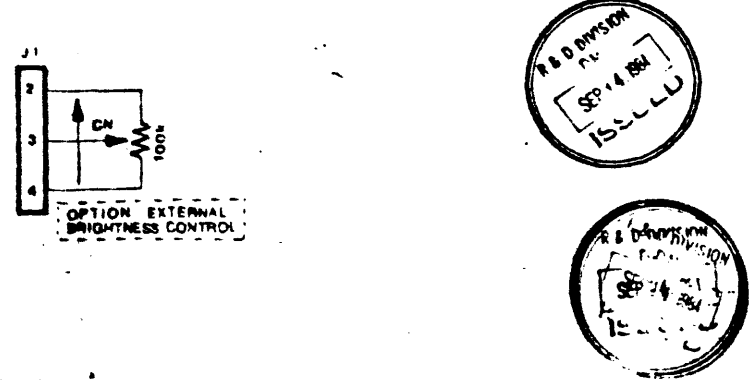
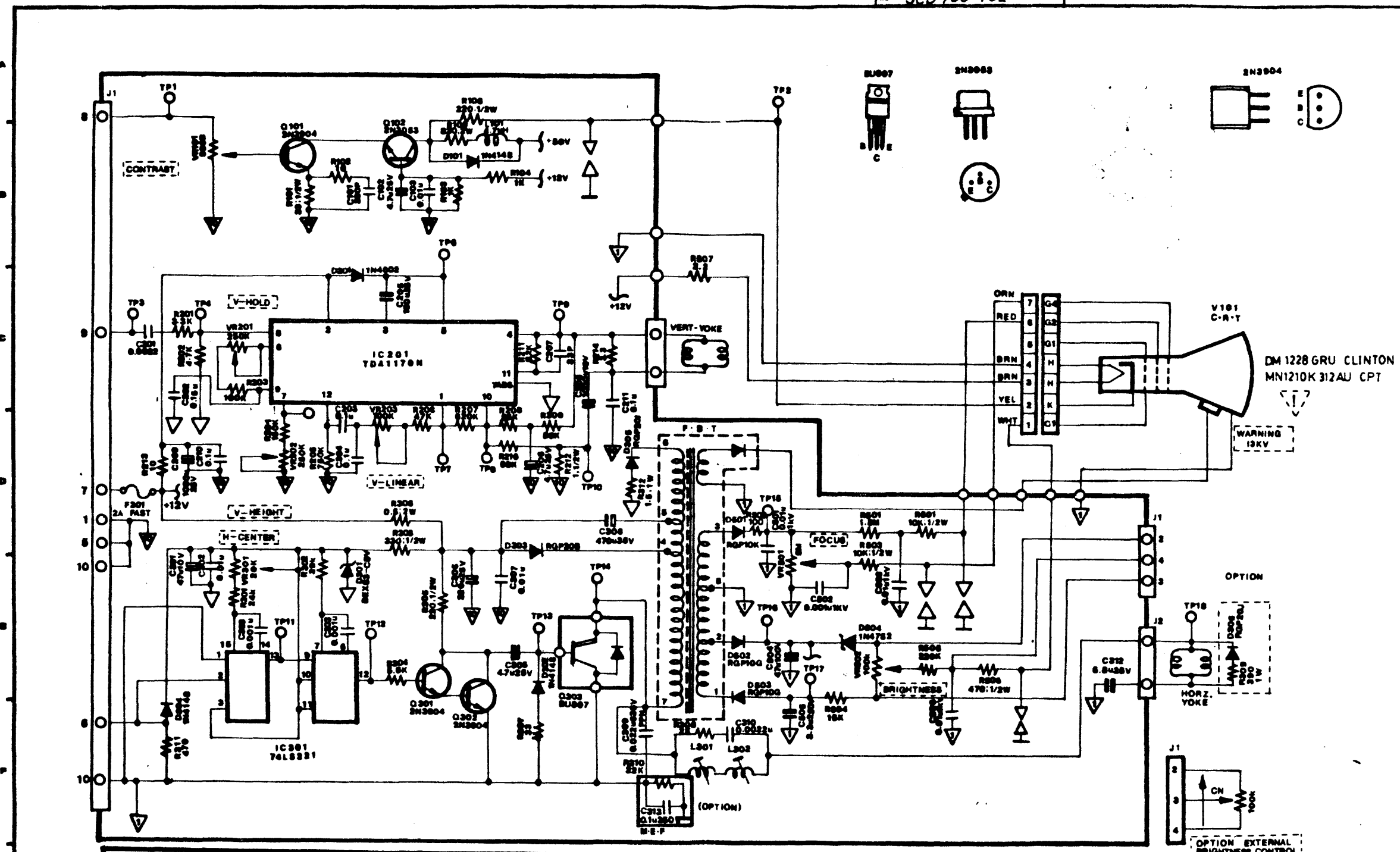
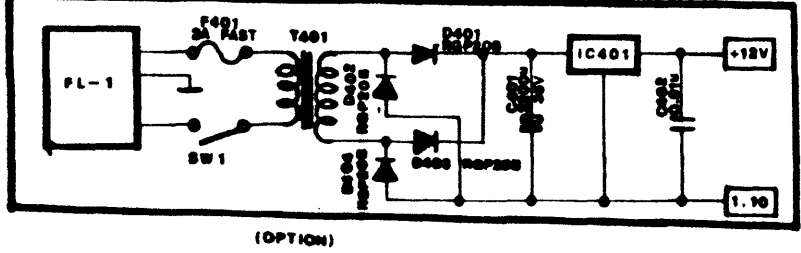


FIGURE 3-1 MONITOR BOARD SCHEMATICS



REVISIONS		
REV. NO.	DATE	DESCRIPTION
A		REL. TO PRODUCTION 7-8-1983



ITEM	PART NO.	DESCRIPTION	QTY	REMARKS
MATERIAL		UNIT: mm		DATE: 7/7/1983
FORM		UNLESS OTHERWISE SHOWN TOLERANCES		DATE: 7/2/1983
REVISION		1X		DATE: 9/16/83
DATE		REV. 1		
OTHER APPLICABLE SPECS		MANUFACTURING LOCATION	DECO	
TITLE		12 1/4 MONITOR SCHEMATIC DIAGRAM		
DRAWN BY		DINERCO 中華製造系統		
CHECKED BY		MANUFACTURING SYSTEM		
DATE		REV. NO. SCD700-102		
SHEET		97		

FALCO F/N 027020-000

Section 4 - Power Supply - Principles of Operation

4. Power Supply Model AC8151

The Model AC8151, manufactured by Astec Components, LTD., Hong Kong, and marketed by Astec USA LTD, Santa Clara, California is the power supply used in the FAME II/102/50 terminals.

The AC8151 is a 40W off-line switch mode power supply. The power converter is arranged in a fly-back configuration.

The AC8151 power supply schematic is shown in Figure 4-1. The power supply consists of a line filter circuit, a rectifier circuit, a power switch circuit with associated transformer and components, a switching control circuit, a regulator circuit, and +5V, +12V, and -12V output circuits.

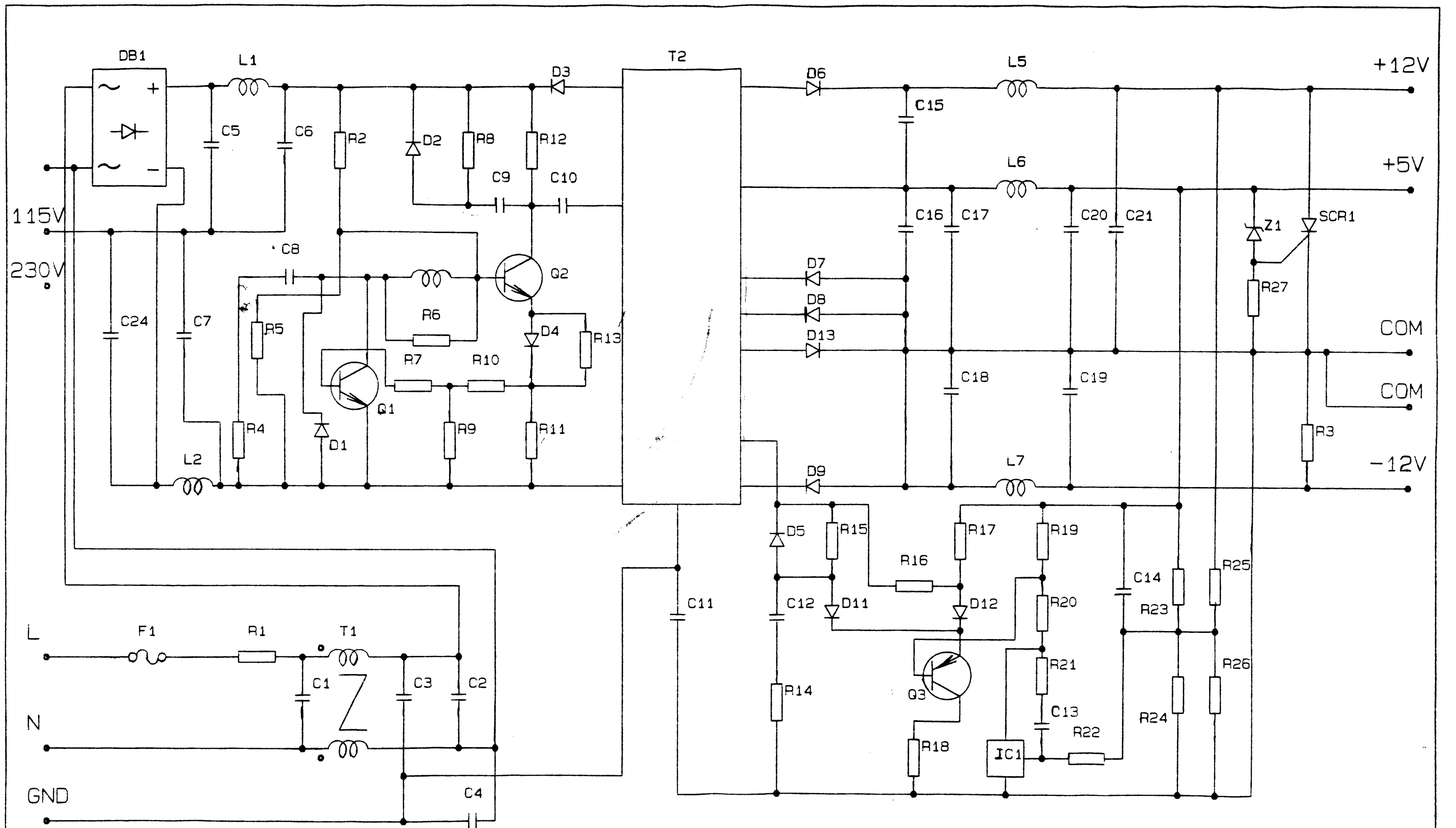
The AC input is fused internally by F1. Power-on protection of the internal circuits is provided by thermistor R1. The line filter circuit is made up of T1, and C1 through C4, It is to provide electrical noise isolation between the DC outputs and the AC power line.

The rectifier circuit (DB1, C5, C6, C7, C24, L1 and L2) functions either as a full-wave bridge or a half-wave doubler circuit depending on whether the supply is configured in 230V or 115V operation respectively. The circuit produces a DC output of approximately 300V.

The switching circuit consists of the power switching transistor Q2 and associated components, power transformer T2, and the switching control transistor Q1. Q2 operates as a high frequency switch, alternately switching current through T2 primary at a frequency determined by Q1 and associated components. Note that the power switching circuits are referenced to the negative side of the raw DC input and not chassis ground. The control circuits are therefore floated at line potential. Therefore, always use a external isolation transformer before servicing the power supply assembly. Isolation of the outputs to primary is provided by the power transformer T2.

The switching control circuit functions as a relaxation oscillator. The frequency and duty cycle are determined by the collector load of Q1 and the bias circuit. The output of this circuit controls the base drive to Q2, which has the main primary winding of T2 as its collector load.

The secondary windings of power switching transformer T2 are coupled to the +5Vdc and +12Vdc, -12Vdc outputs. Half wave rectification of the transformer outputs is provided and PI-filtering circuit is used. Voltage regulation of the supply is provided by IC1, which functions as a voltage comparator. IC1 effectively samples the +5Vdc and +12Vdc through the voltage divider pairs R23, R24 and R25, R26. By controlling the base current of Q3 through IC1, voltage condition is feedback to the primary circuit through an opto-isolator. A crowbar circuit, consisting of SCR1 and Z1 protects the output from over-voltage condition.



POWER SUPPLY AC8151

FIGURE 4-1 POWER SUPPLY SCHEMATICS

Section 5 - Keyboard Theory of Operation

5. Keyboard Logic

The Falco Data Products Fame II, 102, and 50 use an intelligent, microprocessor controlled keyboard. This description refers to Falco Data Products (FDP) schematic D-07-001035 Issue 7 (Figure 5-2). The keyboard has three major sub-sections; Interface, Control, and Matrix. Refer to Figure 5-1, Keyboard Logic Block Diagram.

Interface Pins 1 and 2 are +5 volts. Pin 3 is the CLOCK pin. Pins 4 and 6 are ground and pin 5 is DATA.

Control The control logic scans the switch matrix, reports any key activity to the terminal (key press and release), and determines the matrix configuration. The switch matrix is scanned using decoders U16, 17 and 18, and multiplexer U14. The control selects one of the decoders, and one output of the selected decoder to energize one column of switches. At the same time, one input of the multiplexer is selected.

If a keyswitch at the intersection of the selected row and column is pressed, then flip-flop U1 is set to indicate the key is down. If the key is down, the control logic checks this key three times to assure the key is 'debounced'. If the key is not pressed, the next column is energized to check the next switch. The column address is incremented until the last column is reached, at which time the next input of the multiplexer is selected and the column address is reset to the first column. The next row of the matrix is scanned similarly. This process is repeated continuously to scan all keys.

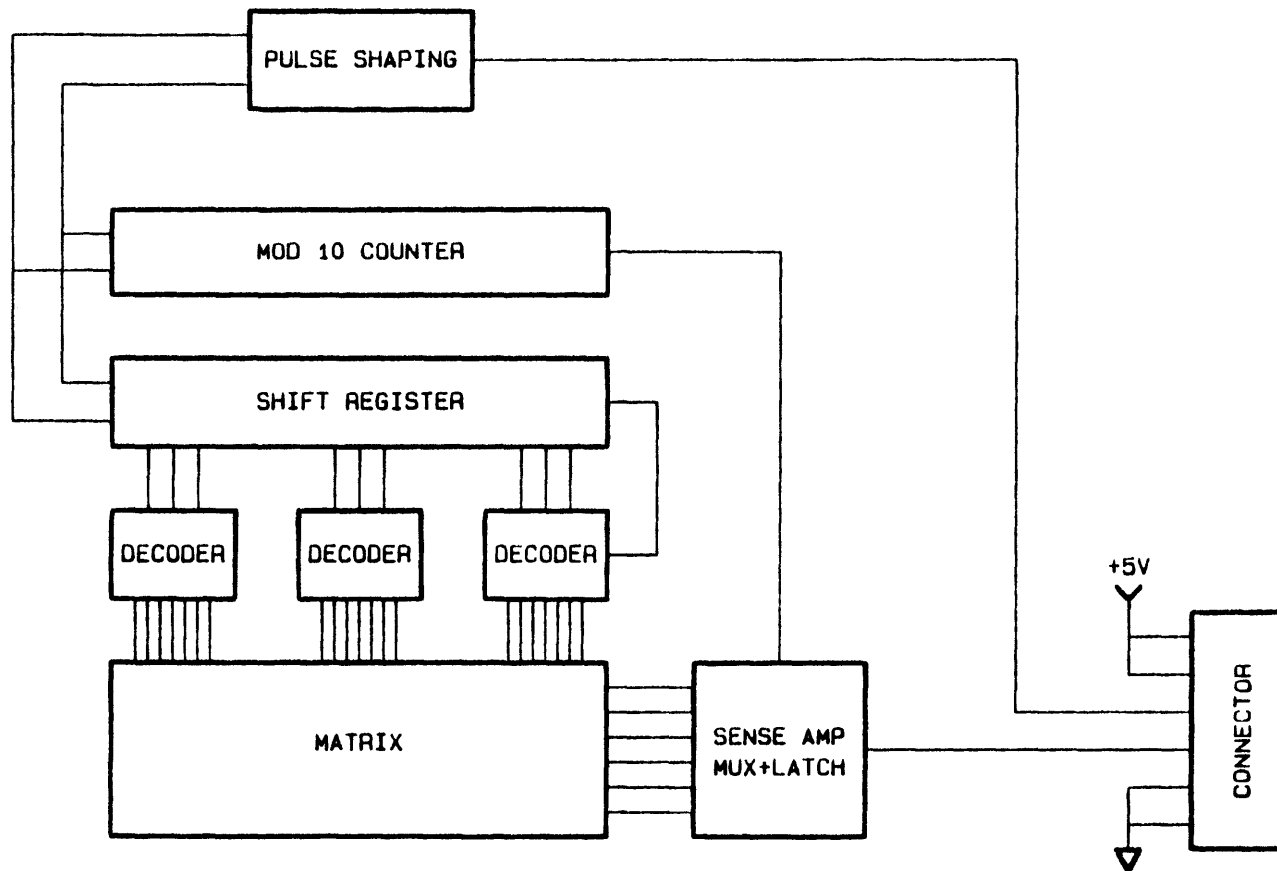
Data is sent to the terminal by shifting out data bits on the DATA line while toggling the CLOCK line.

The matrix configuration is determined by reading the dip switch setting. This function is performed to allow the use of the same keyboard firmware on other keyboards.

Matrix The matrix is actually equivalent to 99 pairs of coils. One coil is an active coil and one is used as a balance coil. When a key is pressed the active coil's inductance is increased yielding a 20-150 millivolt pulse at the sense amplifier's input. This changes the sense amplifier's output, causing the associated output of U15 to change state. The sense amplifier consists of transformers T1 through T6, U15, and R22 through R27.

Pulsing the bias reset is used to reset any magnetic flux in the coils which would have been established had a key depression in the selected column occurred.

Potentiometer R15 establishes the transformers' bias point to a voltage threshold just short of the U15 trip point. The transformers are a 1:10 ratio for impedance matching and afford some gain.



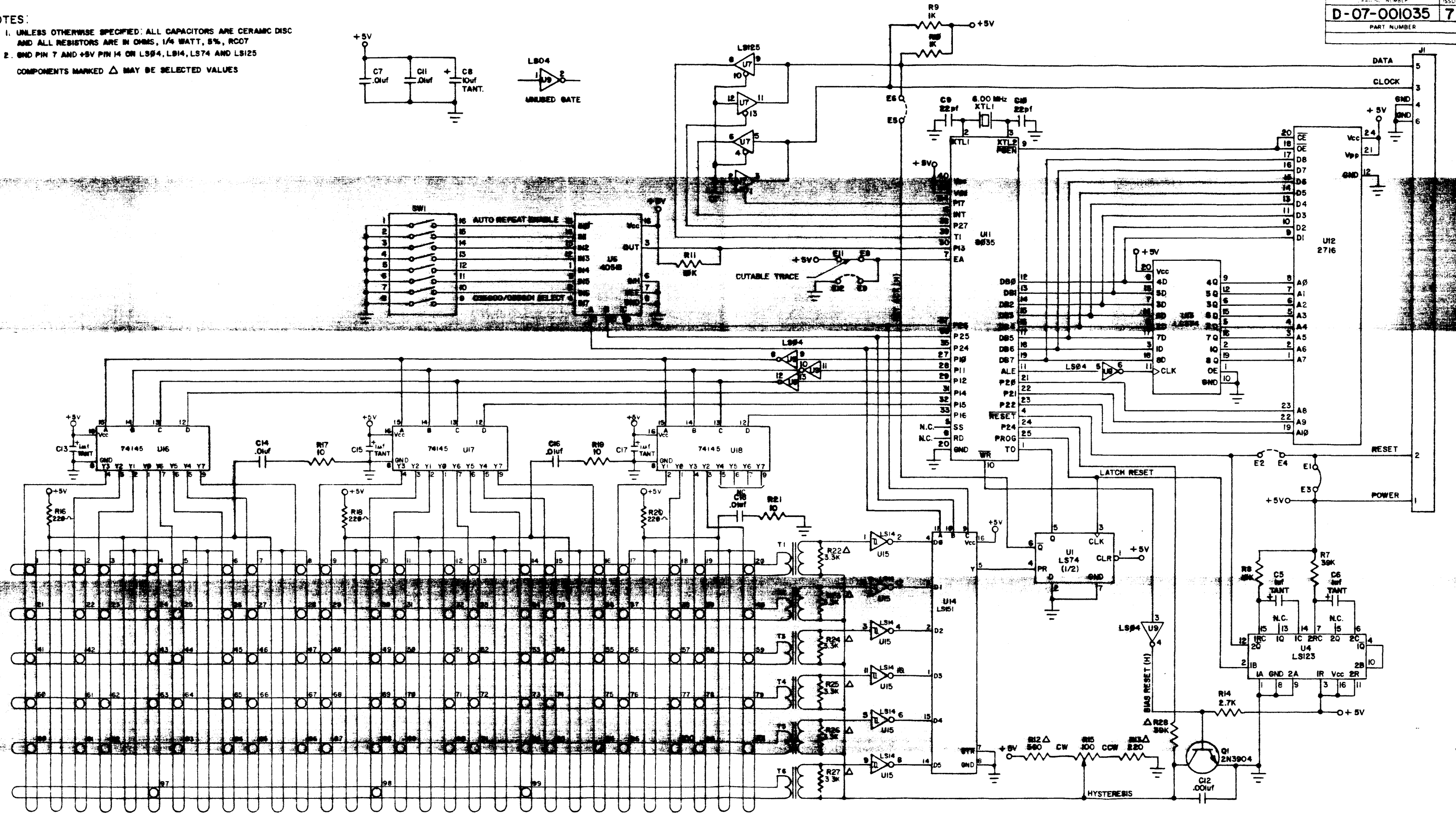
APPROVALS		DATE	FALCO DATA PRODUCTS	
			KEYBOARD LOGIC BLOCK DIAGRAM	
PREP	RAM	8/13/84	SIZE B	DWG NO 130077-000
			SCALE N/A	SHEET 1 OF 1

FIGURE 5 1

NOTES:

- 1. UNLESS OTHERWISE SPECIFIED: ALL CAPACITORS ARE CERAMIC DISC AND ALL RESISTORS ARE IN OHMS, 1/4 WATT, 5%, RC07
 - 2. GND PIN 7 AND +5V PIN 14 ON LS04, LS14, LS74 AND LS125
- COMPONENTS MARKED Δ MAY BE SELECTED VALUES

D-07-001035 7
PART NUMBER



ISSUE NUMBER
ORIGINAL
REV. P/N, TITLE &
REDRAWN ECO 399
3-1-84

FIGURE 5-2 KEYBOARD LOGIC SCHEMATIC

USED WITH 08-001035 REV 3 PCB

SCREEN THREADS TO CLASS 2 FIT UNLESS OTHERWISE SPECIFIED	TOLERANCE UNLESS SPECIFIED	SCHEMATIC	
DIMENSIONS ARE INCHES MILLIMETERS AND INCLUDE THICKNESS OF PLATING	ANGULAR	FALCO 035601-001 & -003 INTELLIGENT	
DO NOT SCALE		DRAWN E.J.O.	DATE 5-17-84
		CHECKED B.H.	DATE 4/27/84
		APPROVED	DATE
			SHEET 1 OF 1

GW Keytek Division
Boo Corporation
9 G.W. Way, Manufacturing Center

D-07-001035 7

Section 6 - Maintenance

6. Maintenance

6.1. Introduction

The FAME II/102/50 terminal requires no periodic maintenance except general cleaning.

6.2. Maintenance Access

The terminal contains no user serviceable parts inside. Only qualified service personnel should try to gain access to the internal parts of the terminal.

Warning

Always turn off the power switch and remove the power cord from the outlet before removing the plastic housing of the display. Exercise caution even while power is removed, the terminal contains power components which can store hazardous levels of residual charge.

6.3. Top Housing Removal

Top housing removal is necessary when servicing the monitor or power supply.

1. Turn off power and disconnect power cable from the back of the terminal.
2. Use a Phillips screwdriver to loosen and remove the two screws shown in Figure 6-1 from the bottom housing.
3. Slide top housing back, then lift it up and off the display unit.

6.4. Logic Assembly Removal

Logic assembly removal is necessary when servicing the logic board or replacing firmware.

1. Turn off power and disconnect all cables from the back of the terminal.
2. Loosen and remove the six screws holding in the I/O panel.
3. Slide the logic assembly out by pulling the I/O panel.

6.5. Keyboard Housing Removal

1. Turn off power.
2. Remove keyboard by disconnecting the coiled cord.

Section 6 - Maintenance

- 3 Turn the keyboard over and remove the six screws that secure the top and bottom housing. Refer to Figure 6-2 for screw locations.

6.6. Removal and Replacement Procedures

The following procedures provide detailed instructions for the removal and replacement of the modular sub-assemblies, including the CRT.

6.6.1. CRT Safety Precautions

1. Always discharge the CRT anode to the grounded metal band around the tube before working with the CRT assembly. When in doubt with the discharging method, stop and consult expert help before continuing.
2. Always wear approved safety glasses.
3. Never handle the CRT roughly. Do not scratch the CRT. Do not strike CRT with hard or sharp objects. Do not handle the CRT by the neck. Use both hands to hold the CRT across the widest dimension.
4. Replacement (spare) CRT's should be kept in their shipping containers with original packing material in place until needed.

6.6.2. Disposal of Defective CRTs

Defective CRTs, which are to be destroyed, should be tightly packed and completely sealed in a strong cardboard container. This method of disposal prevents accidents from occurring to untrained and unsuspecting disposal collection staff.

6.6.3. CRT Removal and Replacements

Warning

The CRT anode is capable of storing charge up to 15KV even when power to the terminal has been disconnected.

1. Turn off power and disconnect power cable from outlet and display.
2. Remove the keyboard.
3. Remove the top housing.
4. Discharge CRT anode to the grounded metal band around the tube.
5. Disconnect connector on rear of CRT.
6. Remove the CRT anode cap.

Section 6 - Maintenance

7. Disconnect the CRT yoke assembly cable at the monitor board.
8. Disconnect ground wire connecting the CRT grounding strap to the monitor board. Always disconnect the ground wire last and reconnect the ground wire first.
9. Remove two mounting screws under the unit which secure the CRT/bezel to the bottom housing.
10. Carefully slide the CRT/bezel out by raising the bezel.
11. Remove the corner mounting hardware which secures the CRT to the bezel.
12. To replace the CRT, use the procedure in reverse order.

6.6.4. Monitor Board Removal and Replacement

1. Turn off power and disconnect power cable from outlet and display.

Warning

Very high voltage can be stored by the CRT even when power is off.

2. Remove the keyboard.
3. Remove the top housing.
4. Discharge the CRT anode to ground.
5. Disconnect the following cables or wires:
 - a. Monitor board to CRT connections as described in CRT removal.
 - b. Monitor board to logic board, by removal of an edge card connector.
6. Remove the monitor board by removing the two mounting screws at the upper corners of the board.
7. To replace a monitor board, use the foregoing procedure in reverse order.

6.6.5. Power Supply Assembly Removal and Replacement

1. Turn off power and disconnect power cable from outlet and display.
2. Remove keyboard.

Section 6 - Maintenance

3. Remove top housing.
4. Remove two mounting screws at the upper corner of the power supply assembly.
4. Disconnect power supply cables to logic board.
5. Disconnect AC power cables going to power switch.
6. Remove the power supply carefully by sliding it upward and out.
7. To replace power supply assembly, use the foregoing procedure in reverse order.

6.6.6. Logic Board Removal and Replacement

Caution

The logic board contains ICs that are sensitive to electro-static discharge. Always discharge the body to ground by hand contact before removing, handling, or replacing a logic board. Do not allow the logic board to contact any of the CRT deflection circuits, the yoke, or CRT anode.

1. Turn off power and disconnect all cables from the back of the unit.
2. Remove keyboard.
3. Loosen back panel--refer to Figure 6-3.
4. Carefully slide logic board out of chassis.
5. Remove I/O panel from logic board.
6. To replace logic board, use the foregoing procedure in reverse order.

6.6.7. Firmware

1. Turn off power and disconnect all cables from the back of the unit.
2. Remove the I/O panel logic assembly.
3. Remove firmware from IC socket.
4. When replacing firmware, make sure pin 1 is aligned.
5. To replace firmware and logic assembly, use the foregoing procedure in reverse order.

Section 6 - Maintenance

6. Always execute a master reset after changing firmware in a terminal. (Master reset on most FAME terminals is Function/Shift/Control/Reset. Consult User Manual.)

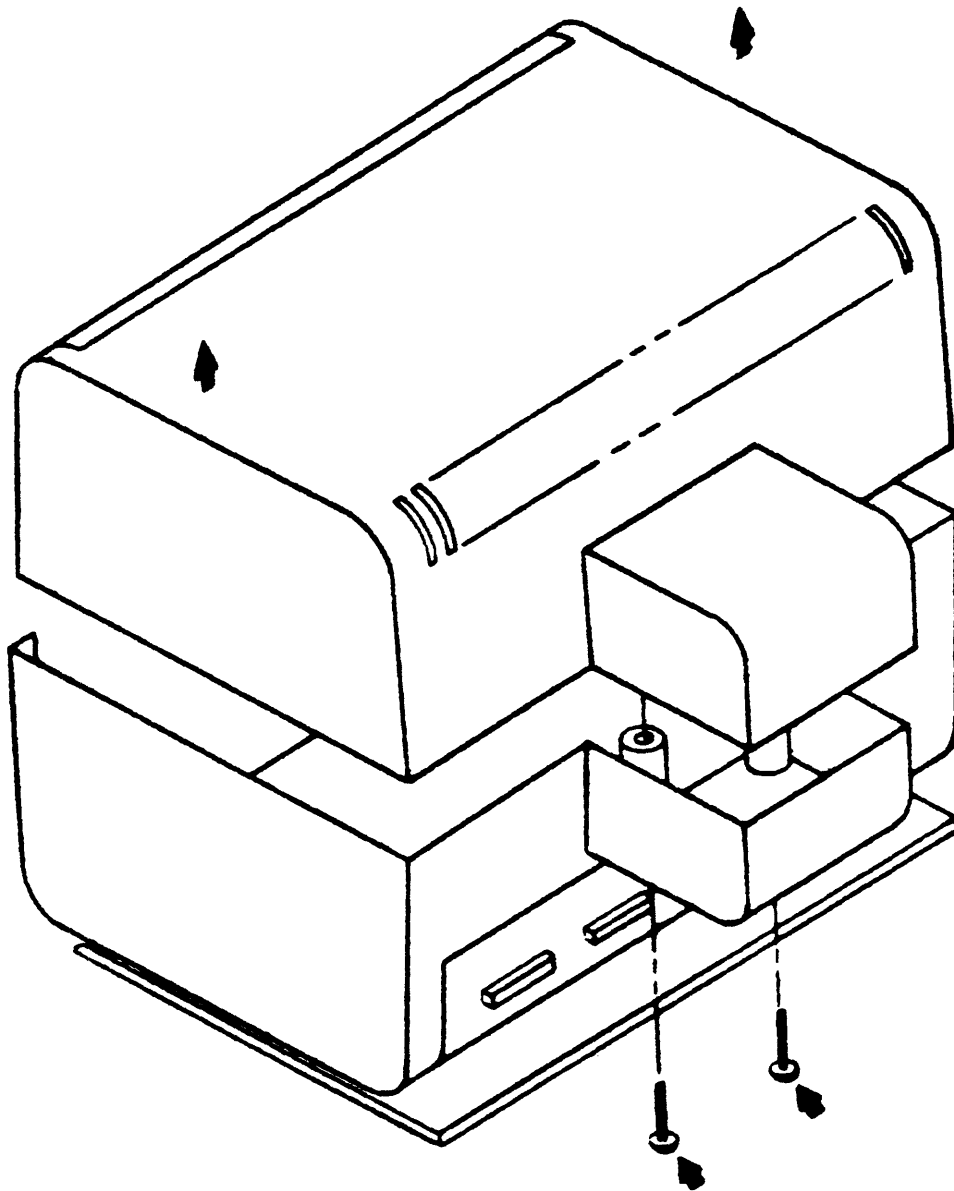
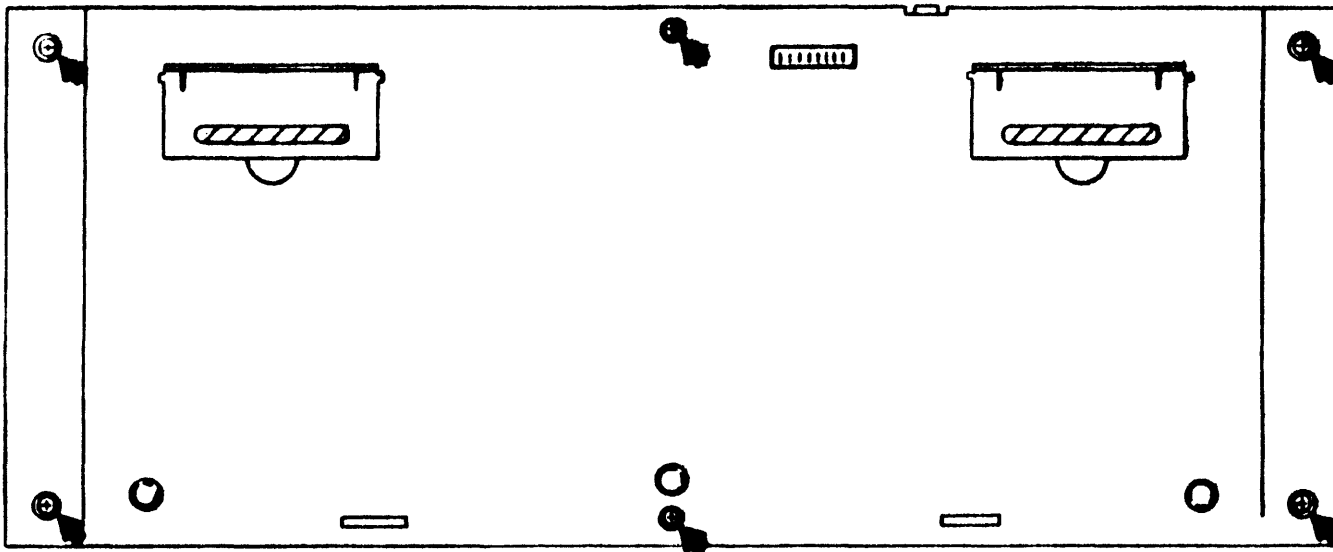


Figure 6-1

Remove Screws
(2 places)

DO NOT INVERT UNIT TO REMOVE SCREWS



Remove Screws (6 places)

FIGURE 6-2 KEYBOARD HOUSING REMOVAL

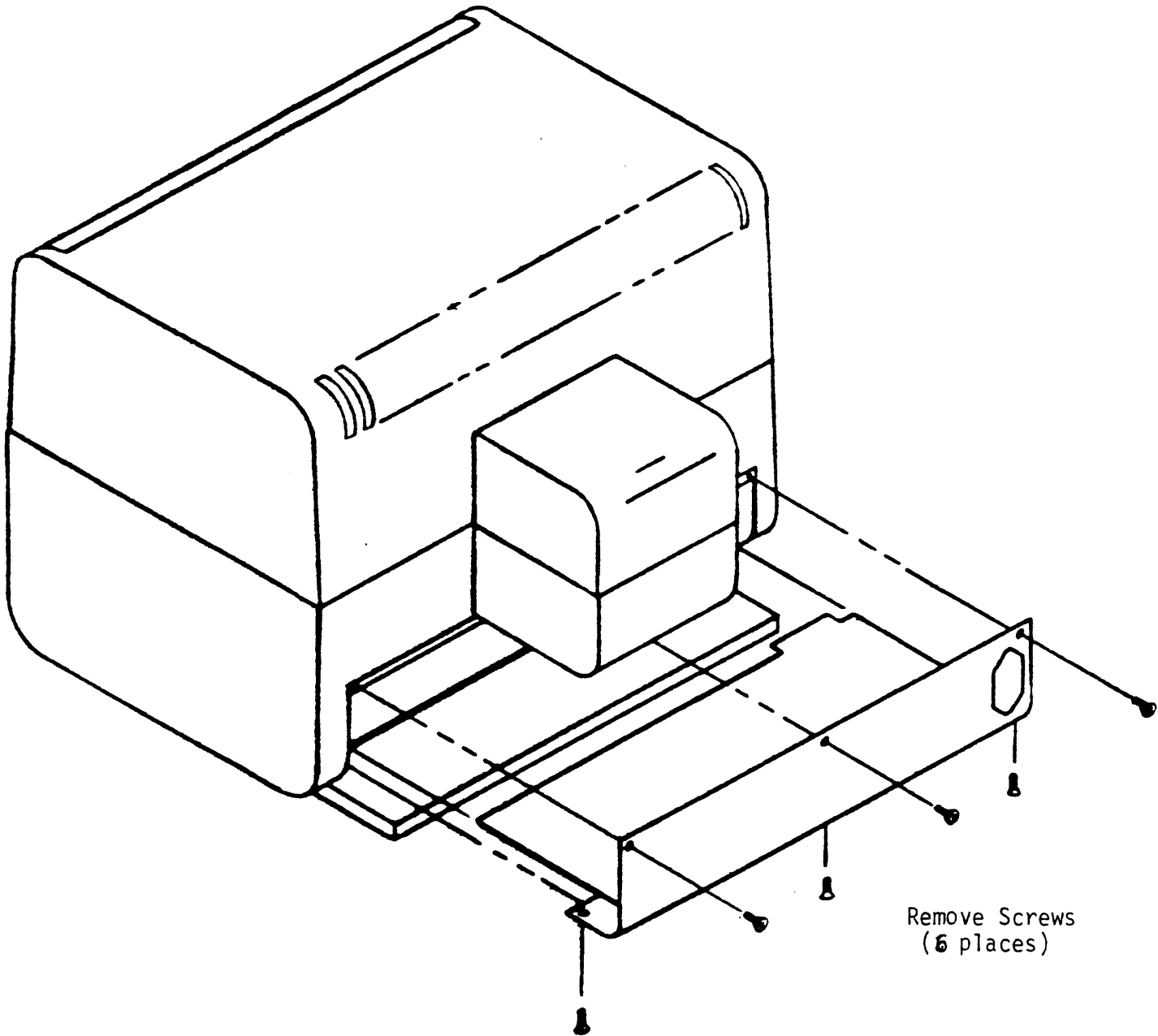


FIGURE 6-3 I/O PANEL LOGIC BOARD REMOVAL

Section 7 - Replaceable Parts

7. Replaceable Parts

7.1. Ordering Information

Parts should be ordered from:

Sales Administration
Falco Data Products
1286 Lawrence Station Rd.
Sunnyvale, CA 94089

Phone: (408) 745-7123

or in California 800-538-5383

or outside California 800-835-8765

Telex: 172494

When ordering parts, please include the following information with each order:

1. Equipment model number
2. Equipment serial number
3. Falco part number
4. Description of part

7.2. Replaceable Sub-Assemblies

FDP Part Number	Description
230001-021	PCB ASSY FM-II
230001-021	PCB ASSY FM 50
230001-021	PCB ASSY FM 102
021110-003	PCB ASSY POWER SUPPLY 40W
027026-000	PCB ASSY MONITOR MOD4
034002-000	CRT K-31, 14" GRN
335601-001	KEYBOARD ASSY, FM-II
335601-007	KEYBOARD ASSY, FM 50
335601-001	KEYBOARD ASSY, FM 102
037500-001	CORD COILED KEYBD 6 FT GREY
037000-001	PWR CORD W/RECEPT

Note: the logic PCB ASSY normally does not include firmware and character generator, check with factory for the latest firmware and its part number.

Section 7 - Replaceable Parts

7.3. Recommended Spare Modules

Module	1-20	21+
Logic Board	1	5%
Power supply	1	5%
Keyboard	1	5%
Monitor board	1	5%
CRT	1	5%

Note: Falco Data Products does not stock component level spare parts for vendor-supplied modules.

To order parts for the Astec Model AC8151 power supply, contact:

Astec Components Ltd.
1101 Space Park Drive
Santa Clara, CA 95050
(408) 727-4120

Include model (AC8151), schematic reference number, part number, and description.

To order parts for the Dimerco MS-1401 monitor board contact:

Dimerco International Company
Los Altos Financial Center
167 South San Antonio Rd.
Suite #3
Los Altos, CA 94022
(415) 949-2720

Include model number (MS-1401), schematic reference, part number and description.

Section 7 - Replaceable Parts

7.4. Terminal FAME Assembly

Refer to Assembly Drawing 130023-000 shown in Figure 9-1.

PART NUMBER	DESCRIPTION
037600-000	CABLE ASSY FAME 3 INTERFACE
037625-000	CABLE ASSY AC SW FM 14
037626-000	CABLE ASSY SW-PS FM 14
046507-000	SWITCH RCKR DPST 19X13MM
061000-000	SCREW 4-40X1/2 PHIL
061000-006	SCREW #4-40X1/4 SOC HD CAP BLK
061001-000	WASHER #6 EXTERNAL TOOTH
061002-001	WASHER #10 SPLIT LOCK
061003-005	SCREW #6-32X1/4 PHIL
061005-001	NUT #6-32 KEP
061006-000	WASHER #4 FLAT
061006-004	WASHER #10 FLAT
061011-001	CARD GUIDE 4" SCANBE
061011-000	CARD GUIDE 4" SCANBE
061017-002	SCREW #10-32X1/2
061018-001	BUMP-ON ROUND GRAY
061028-000	WASHER #6 INTERNAL TOOTH
068011-000	TAPE URTHNE 1/6X1/4DBL CT RL
080067-002	PIVOT BEARING
080102-001	CRT BASE FAME CENTER
080147-001	BEZEL FAME 14
080148-001	CRT HOUSING FAME 14 TOP
080149-001	CRT HOUSING FAME 14 BOTTOM
674037-001	WAVE SPRING/WASHER
760138-001	RETAINING RING
760234-001	BRACKET CRT 14
760237-001	SHIELD FM14
760252-001	BRACKET CRT SHIELD RIGHT
760252-002	BRACKET CRT SHIELD LEFT
850018-001	PIVOT TAPE
027026-000	PCB ASSY MNTR MOD4 60 HTZ W/BD
034002-000	CRT K-31 14" GRN
051002-000	YOKE MODEL 3
001003-000	PLASTIC FAME 14"
014002-000	OPTION PKG FAME 2 STND
015002-000	PKG ASSY FAME 2
021110-003	PCB ASSY P/S 40W AC8151
022008-002	MONITOR SET MODEL 4 K31 14" GN
030016-000	CUST PKG FAME2
037000-001	PWR CORD W/RECEPT
037500-001	CORD COILED KEYBD 6 FT GREY
190017-000	INST VOLT AC8151 110V
061000-006	SCREW #4-40X1/4 SOC HD CAP BLK
061006-000	WASHER #4 FLAT
061022-001	SCREW #4-40 JACK
760235-006	I/O PANEL FM 14 STND

NOTE 1: TAPE TO BE PLACED ON SHIELD BETWEEN P/S & SHIELD, MONITOR BOARD & SHIELD

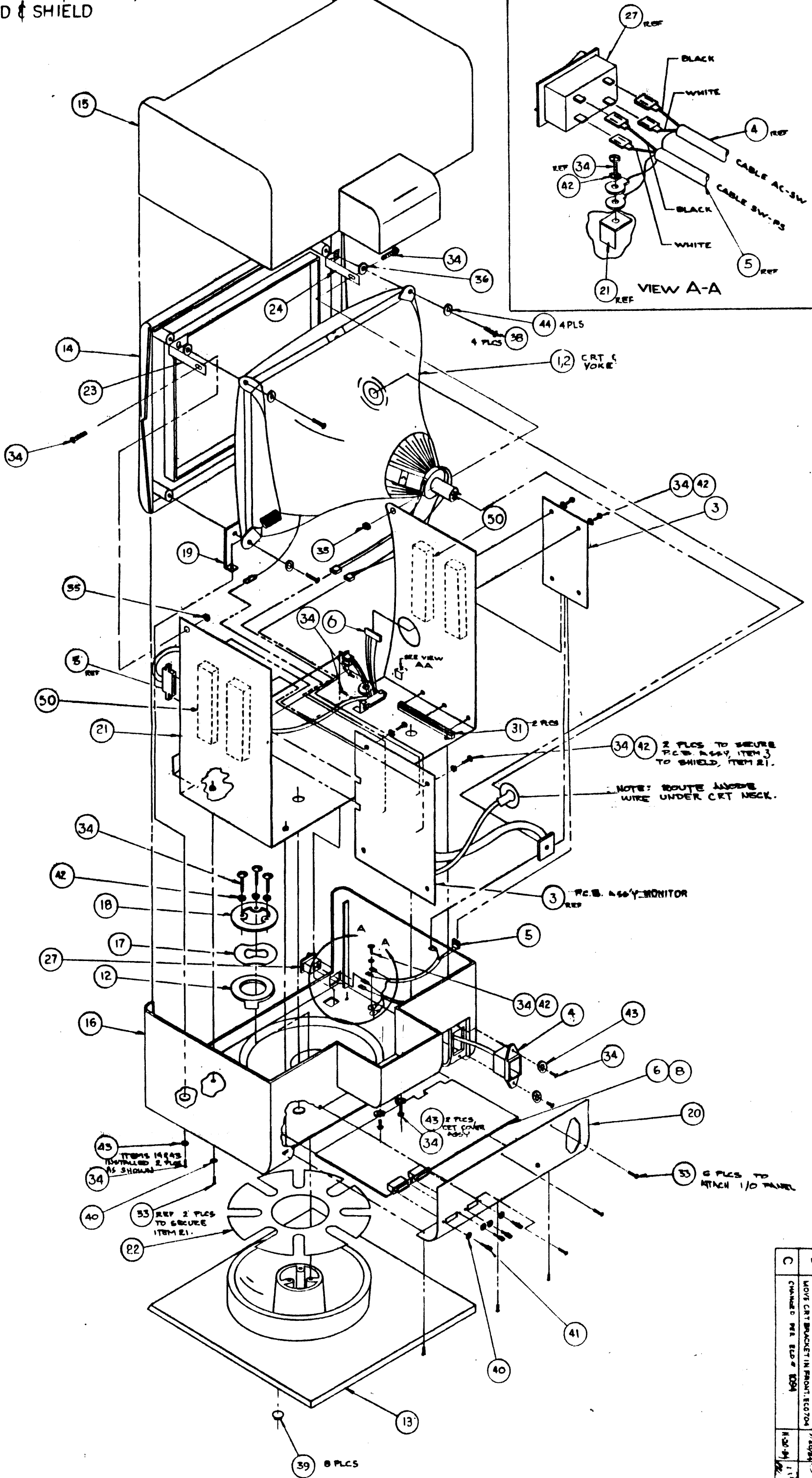


FIGURE 9-1 FAME TERMINAL ASSEMBLY DRAWING

APPROVALS		REVISIONS	
DATE	BY	NO.	DESCRIPTION

FALCO DATA PRODUCTS

FAME 14 ASSEMBLY

DATE: 10/25/64

REV	DESCRIPTION	DATE	APPROV
A	RELEASED PER BOM # 675	10/25/64	
B	DELETE RUBBER WASHER, MOVE CRT BRACKET IN FRONT, EC0704	11/20/64	
C	CHANGED PER EDO # 0294	11/20/64	

Section 7 - Replaceable Parts

7.5. AC8151 Power Supply - Parts List

Refer to Assembly Drawing shown in Figure 9-2.

Code	Description	Part Number
C1	MP. Cap 0. 01uF +20% 250VAC	068-10300010
C2	MP. Cap 0. 1uF +20% 250VAC	068-10400010
C3	Cer. Cap. 4700pF +20% 400VAC	055-47220001
C4	Cer. Cap. 4700pF +20% 400VAC	055-47220001
C5	MTL. Poly Cap 0.22uF +20% 250V	058-22400130
C6	Elect Cap. 100uF +20% 250V	057-10120170
C7	Elect Cap. 100uF +20% 250V	057-10120170
C8	Elect Cap. 220uF +50-10% 10V	057-22120080
C9	Cer. Cap. 470pF +20% 3KV Z5P	055-47167728
C10	Cer. Cap. 0.01uF +20% 1KV Z5U	055-10368925
C11	Cer. Cap. 0.01uF +20% 1KV Z5U (Alternate: 0.01uF 250V)	055-10368925
C12	Poly Cap 0.22uF +20% 100V	058-22400160
C13	Poly Cap 0.022uF +20% 50V	058-22300090
C14	Poly Cap 0.22uF +20% 100V	058-22400160
C15	Elect Cap 1000uF +50 -10% 25V	057-10220040
C16	Elect Cap 1000uF +50 -10% 25V	057-10220040
C17	Elect Cap 1000uF +50 -10% 25V	057-10220040
C18	Elect Cap 330uF +100 -20% 16V	057-33120120
C19	Elect Cap 330uF +100 -20% 16V	057-33120120
C20	Elect Cap 470uF +50 -10% 25V	057-47120110
C21	Elect Cap 2200uF +50 -10% 16V	057-22220020
C24	MTL Poly Cap..22uF+20%250V	058-22400130
D1	Rectifier RGP10A	226-10400050
D2	Rectifier RGP10J	226-10400060
D3	Rectifier RGP10M	226-10400100
D4	Rectifier 1N4001GP	226-10400080
D5	Silicon Diode 1N4606	212-10700210
D6	Rectifier Assembly	853-00200190
D7	Rectifier Assembly	853-00200190
D8	Rectifier Assembly	853-00200190
D9	Rectifier RGP10B	226-10400070
D11	Silicon diode 1N4606	212-10700210
D12	Silicon diode 1N4606	212-10700210
D13	Rectifier 1N4001GP	226-10400080
DB1	Bridge rectifier KBP10	226-30500010
F1	Fuse 2A, 250V	
1C1	Regulator TS431CLP	211-10800100
L1	Filter Choke Coil Assembly	852-20100140
L2	Filter Choke Coil Assembly	852-20100140
L3	Base Choke 2.2uH	328-00100030
L4	Choke 1.5mH	328-00100010
L5	Filter Choke coil assembly	852-20100180

Section 7 - Replaceable Parts

Code	Description	Part Number
L6	Filter choke coil assembly	852-20100180
L7	Choke coil	328-00100060
Q1	NPN transistor SD467	209-11700460
Q2	Power Transistor	853-00400050
Q3	PNP transistor SB561	210-11700350
R1	Thermistor 4R +10%	258-40970015
R2	Resistor carbon film 330K +5% 1/2W	240-33406033
R3	Resistor metal oxide film 220R +5% 1W	248-22106052
R4	Resistor metal oxide film 33R +5% 2W	248-33006063
R5	Resistor carbon film 1K +5% 1/4W	240-10206022
R6	Resistor carbon film 27R +5% 1/4W	240-27006022
R7	Resistor carbon film 68R +5% 1/4W	240-68006022
R8	Resistor metal oxide film 120R +5% 1W	248-12106052
R9	Resistor carbon film 10R +5% 1/4W	240-10006022
R10	Resistor carbon film 10R +5% 1/4W	240-10006022
R11	Resistor metal film 0.7R +5% 1W	247-07586054
R12	Resistor metal film 1R +5% 1W	247-10086054
R13	Resistor carbon film 5.6R +5% 1/4W	240-56906022
R14	Resistor carbon film 68R +5% 1/4W	240-68006022
R15	Resistor carbon film 270R +5% 1/2W	240-27106033
R16	Resistor carbon film 270R +5% 1/2W	240-27106033
R17	Resistor carbon film 8.2R +5% 1/4W	240-82906022
R18	Resistor carbon film 560R +5% 1/4W	240-56106022
R19	Resistor carbon film 56R +5% 1/4W	240-56006022
R20	Resistor carbon film 68R +5% 1/4W	240-56006022
R21	Resistor carbon film 12K +5% 1/4W	240-12306022
R22	Resistor carbon film 470R +5% 1/4W	240-47106022
R23	Resistor metal film 4.7K +2% 1/4W	247-47015022
R24	Resistor carbon film 68K +5% 1/4W	240-68306022
R25	Resistor metal film 22K +2% 1/4W	247-22025022
R26	Resistor metal film 2.7K~100K +2% 1/4W	247-27015022

Section 7 - Replaceable Parts

7.6. Dimerco Monitor M12 - Parts List

Refer to Assembly Drawing shown in Figure 9-3.

Ref. Symbol	Description	Part Number
R1	33, 1/2, 5	22245-3304
R2	10, 1/4, 5	22225-1003
R3	1K, 1/4, 5	22225-1023
R4	1K, 1/4, 5	22225-1023
R5	820, 2, 5	23265-8216
R6	220, 1/2, 5	22245-2214
R7	3.3K, 1/4, 5	22225-3323
R8	4.7K, 1/4, 5	22225-4723
R9	100K, 1/4, 5	22225-1043
R10	180K, 1/4, 5	22225-1843
R11	750K, 1/4, 5	22225-7543
R12	62K, 1/4, 5	22225-6233
R13	620K, 1/4, 5	22225-6243
R14	56K, 1/4, 5	22225-5633
R15	56K, 1/4, 5	22225-5633
R16	68K, 1/4, 5	22225-6833
R17	82K, 1/4, 5	22225-8233
R18	1, 1/2, 5	22245-1094
R19	10, 1/4, 5	22225-1003
R20	0.5, 3, 10	24146-5083
R21	1.5K, 1/4, 5	22225-1523
R22	3.3K, 1/4, 5	22225-3323
R23	4.3K, 1/4, 5	22225-4323
R24	10K, 1/4, 5	22225-1033
R25	8.2K, 1/4, 5	22225-8223
R26	2.2K, 1/4, 5	22225-2223
R27	1.5K, 1/4, 5	22225-1523
R28	33K, 1/4, 5	22225-3333
R29	82, 3, 10	24146-8203
R30	100, 1/2, 5	22245-1014
R31	1.5, 1/2, 5	22245-1594
R32	2K, 1/4, 5	22225-2023
R33	1.8M, 1/4, 5	22225-1853
R34	10K, 1/4, 5	22225-1033
R35	10K, 1/4, 5	22225-1033
R36	75K, 1/4, 5	22225-7533
R37	220K, 1/4, 5	22225-2243
R38	10K, 1/4, 5	22225-1033
R39	1.5, 1, 5	22225-1595
R40	3.3, 1/4, 5	22225-3394
VR1	500, 0.1, 20, B	251012-001
VR2	250K, 0.1, 20, B	251011-001
VR3	250K, 0.1, 20, B	251011-001
VR4	100K, 0.1, 20, B	251009-001
VR5	2.2K, 0.1, 20, B	251013-001
VR6	5M, 0.25, 20, B	251010-001
VR7	100k, 0.1, 20, B	251009-001
C1	390pF, 50, 5	38195-3913

Section 7 - Replaceable Parts

Ref. Symbol	Description	Part Number
C2	4.7uF, 25.	28149-4791
C3	0.01uF, 50, 5	31115-1031
C4	0.001uF, 1 50, 5	31115-1021
C5	0.15uF, 50, 5	31115-1541
C6	0.1uF, 50, 5	31115-1041
C7	0.1uF, 50, 5	31115-1041
C8	100uF, 25, +50 -10	28148-1011
C9	4.7uF, 25, +75 -10	28149-4791
C10	33pF, 50, 5	38115-3303
C11	1000uF, 10 +50 -10	28128-1021
C12	1000uF, 25 +50 -10	28148-1021
C13	0.1uF, 50, 5	31115-1041
C14	0.01uF, 50 5	31115-1031
C15	220uF, 25, +50 -10	28148-2211
C16	0.001uF, 50, 5	31115-1021
C17	0.0022uF, 50, 5	31115-2221
C18	0.0022uF, 50, 5	31115-2221
C19	1uf, 50, +75 -10	28169-1091
C20	220uF, 6.3, +50 -10	28118-2211
C21	0.01uF, 50, 5	31115-1031
C22	0.0022uF, 50, 5	31115-2221
C23	470uF, 10, +50 -10	28128-4711
C24	0.027uF, 630, 10	33166-2731
C25	0.01uF, 1K, 20	39587-1038
C26	0.01uF, 1K, 20	39587-1038
C27	0.01uF, 1K, 20	39587-1038
C28	47uF, 100 +50 -10	28198-4701
C29	0.01uF, 1K, 20	39587-1038
C30	3.3uF, 250 +75 -10	28000-0001
C31	6.8uF, 25, 20	28449-6891
C32	10uF, 25, 20	28449-1001
C33	0.1uF, 50, 5	31115-1041
L1	4.7uH, 5	452003-001
L2	14-53uH,	463001-001
L3	TDK TL284N	463002-001
TR1	2N3904	140017-001
TR2	2N3053	140018-001
TR3	2SC536	140019-001
TR4	2SC536	140019-001
TR5	2SC2314	140020-001
TR6	2SD823	140038-001
D1	1N4002	150019-001
D2	1N4002	150019-001

Section 7 - Replaceable Parts

Ref. Symbol	Description	Part Number
D3	1S2473	150020-001
D4	1S2473	150020-001
D5	1S2473	150020-001
D6	RGP20B	150029-001
D7	RGP20J	150022-001
D8	RGP10J	150021-001
D9	RGP10G	150023-001
D10	1N4752A, 33V	150024-001
D11	RGP10J	150021-001
IC1	TDA1170N	170014-001
T1	H. Drive Transformer	470001-001
T2	Flyback Transformer	470002-001
CRT	12" 90 20mm, 25R	201002-001
	CRT Bonding Wire(GND)	553018-001
	CRT Socket SMK-1C-013	640001-001
	CRT Ground Pin	682003-001
	Rotary Magnetic	620002-001
	Molex 5028 2 Pins (2)	650013-001
	Heat Sink 50x20x40mm	750007-001
	Cover CRT Socket P.C.B.	711011-001
	P.C.B. Main Board (PC75)	110010-001
	P.C.B. CRT Socket Board(PC75)	110010-002
	Fuse 2A 5x20mm UL	490002-001
	AC Cord	560002-001
	P.C.B. Supports TCBS-6N(4)	790015-001
	Fuse Clip (2)	683001-001

Section 7 - Replaceable Parts

7.7. FAME-II Logic Board Assembly Parts List

Refer to Assembly Drawing 230001-021 shown in Figure 9-4.

PART NUMBER	DESCRIPTION	REFERENCE #
130001-003	PWB CENTAUR V003	CARRIER
041028-000	IC 1488	1G, 3G
041029-000	IC 1489	2G, 4G
046021-000	IC 2672	5A
041436-000	IC 2677 25 MHz	8D
041049-000	RAM CMOS 2KX8 250NS	3E
041004-000	IC 7406	8B
041015-000	IC 74LS138	2B
041058-000	IC 74LS163	4A,7A
041018-000	IC 74LS175	6H
041060-000	IC 74LS245	5E,5F
041433-000	IC 74LS298	8F
041092-000	IC 74LS299	5G
041009-000	IC74LS32	7B
041025-000	IC 74LS374	8C,8E
041063-000	IC 74LS541	5C,5D
041003-000	IC 74S04	6C
041432-000	IC 74F08	7C
041057-000	IC 74S157	3A
041054-000	IC 74S74	5H
041035-000	IC Z80A-CPU	1C
041035-001	IC Z80A-CTC	1E
041035-002	IC Z80A-DART	1F
041065-000	IC LF353	7H
041064-000	IC DAC0832	6G
041095-001	IC PROM CENTAUR 1-64	1B
047100-000	BUZZER 14R-06C	Z1
130021-000	BATTERY NICAD 2X1/3AA ASSY	BT1
043310-000	CAP MONOPAK .1UF 50V	C51-C72
043150-000	CAP MONO CERAMIC 330PF 50V	C4,C5,C15
043101-000	CAP MONO CERAMIC 33PF 50V	C7
043900-001	CAP TANT 4.7UF 16V	C1,C2,C3,C10
043308-002	CAP ELEC 47UF 16V	C6,C8,C9
043501-000	CAP DECP LG .10UF 50V 40P 600	8D
047051-000	COIL FERRITE 3 PASS	L1
045303-000	DIODE 1N4102	CR1
045600-000	DIODE 1N4148	CR2-CR7
045602-000	DIODE 1N751A	CR8
042011-000	RES 1.2K OHM 1/4W 5%	R4,R8,R10-R15 R19,R29,R30
042000-000	RES 10 OHM 1/4W 5%	R9
042004-000	RES 100 OHM 1/4W 5%	R16
042001-000	RES 22 OHM 1/4W 5%	R6
042008-000	RES 220 OHM 1/4W 5%	R5,R7
042035-000	RES 1.8K OHM 1/4W 5%	R18
042009-000	RES 330 OHM 1/4W 5%	R21,R17
042042-000	RES 37.4 OHM 1/4W 1%	R26

Section 7 - Replaceable Parts

042026-000	RES 560 OHM 1/4W 5%	R2,R20
042003-000	RES 75 OHM 1/4W 5%	R22
042027-000	RES 820 OHM 1/4W 5%	R1,R3
042904-000	RES SIP 4.7K 8PX7R	RP2
042910-000	RES SIP 1.2K 8PX7R	RP1
044005-000	XSTR 2N2222	Q1,Q3
044004-000	XSTR 2N3906	Q2
046604-000	CONN QUICK DISCONNECT TAB 0.25	J2
046004-002	CONN DB25 METAL HOUSE W/GROUND	J5,J6
046031-000	XSTL OSC 16.537 MHZ	2A
047009-000	XSTL OSC 27.5616 MHZ	1A
046305-000	SOCKET 14 PIN .300	3G,4G
046300-000	SOCKET 16 PIN .300	1B
046303-000	SOCKET 28 PIN .600	3C,3D,6D,6E,9E
046304-000	SOCKET 40 PIN .600	1C,5A,8D
061000-010	SCREW 4-40X38	J5,J6
061005-002	NUT #4-40 KEP	J5,J6

Section 7 - Replaceable Parts

7.8. FAME 102 Logic Board Assembly Parts List

Refer to Assembly Drawing 230001-023 shown in Figure 9-5.

PART NUMBER	DESCRIPTION	REFERENCE #
130001-003	PWB CENTAUR V003	CARRIER
041028-000	IC 1488	1G, 3G
041029-000	IC 1489	2G, 4G
041104-000	IC 2674	5A
041105-000	IC 2675	9D
041049-000	RAM CMOS 2KX8 250NS	3E
041004-000	IC 7406	8B
041015-000	IC 74LS138	2B
041058-000	IC 74LS163	4A,7A
041018-000	IC 74LS175	6H
041060-000	IC 74LS245	5E,5F
041433-000	IC 74LS298	8F
041092-000	IC 74LS299	5G
041009-000	IC74LS32	7B
041025-000	IC 74LS374	8C,8E
041063-000	IC 74LS541	5C,5D
041003-000	IC 74S04	6C
041432-000	IC 74F08	7C
041057-000	IC 74S157	3A
041054-000	IC 74S74	5H
041035-000	IC Z80A-CPU	1C
041035-001	IC Z80A-CTC	1E
041035-002	IC Z80A-DART	1F
041065-000	IC LF353	7H
041064-000	IC DAC0832	6G
041095-001	IC PROM CENTAUR 1-64	1B
047100-000	BUZZER 14R-06C	Z1
130021-000	BATTERY NICAD 2X1/3AA ASSY	BT1
043310-000	CAP MONOPAK .1UF 50V	C51-C72
043150-000	CAP MONO CERAMIC 330PF 50V	C4, C5
043101-000	CAP MONO CERAMIC 33PF 50V	C7
043900-001	CAP TANT 4.7UF 16V	C1, C2, C3, C10
043308-002	CAP ELEC 47UF 16V	C6, C8, C9
043501-000	CAP DECPLG .10UF 50V 40P 600	9D
047051-000	COIL FERRITE 3 PASS	L1
045303-000	DIODE 1N4102	CR1
045600-000	DIODE 1N4148	CR2-CR5, CR7, CR9
045602-000	DIODE 1N751A	CR8
042011-000	RES 1.2K OHM 1/4W 5%	R4, R8, R10-R15 R19, R25, R29, R30
042000-000	RES 10 OHM 1/4W 5%	R9
042004-000	RES 100 OHM 1/4W 5%	R16
042010-000	RES 470 OHM 1/4W 5%	R17
042001-000	RES 22 OHM 1/4W 5%	R6
042008-000	RES 220 OHM 1/4W 5%	R5, R7, R23
042002-001	RES 33 OHM 1/2W 5%	R26
042009-000	RES 330 OHM 1/4W 5%	R21

Section 7 - Replaceable Parts

042026-000	RES 560 OHM 1/4W 5%	R2,R20,R24
042003-000	RES 75 OHM 1/4W 5%	R22
042027-000	RES 820 OHM 1/4W 5%	R1,R3
042910-000	RES SIP 1.2K 8PX7R	RP1
042904-000	RES SIP 4.7K 8PX7R	RP2
044005-000	XSTR 2N2222	Q1,Q3,Q4
044004-000	XSTR 2N3906	Q2
046604-000	CONN QUICK DISCONNECT TAB 0.25	J2
046004-002	CONN DB25 METAL HOUSE W/GROUND	J5,J6
046031-000	XSTL OSC 16.537 MHZ	2A
047009-000	XSTL OSC 27.5616 MHZ	1A
046305-000	SOCKET 14 PIN .300	3G,4G
046300-000	SOCKET 16 PIN .300	1B
046303-000	SOCKET 28 PIN .600	3C,3D,6D,6E,9E
046304-000	SOCKET 40 PIN .600	1C,5A,9D
061000-010	SCREW 4-40X38	J5,J6
061005-002	NUT #4-40 KEP	J5,J6
043003-000	CAP CERM 229 PF 25V	C15

Section 7 - Replaceable Parts

7.9. Keyboard Parts List

Refer to assembly drawing 335600-100 shown in Figure 9-6.

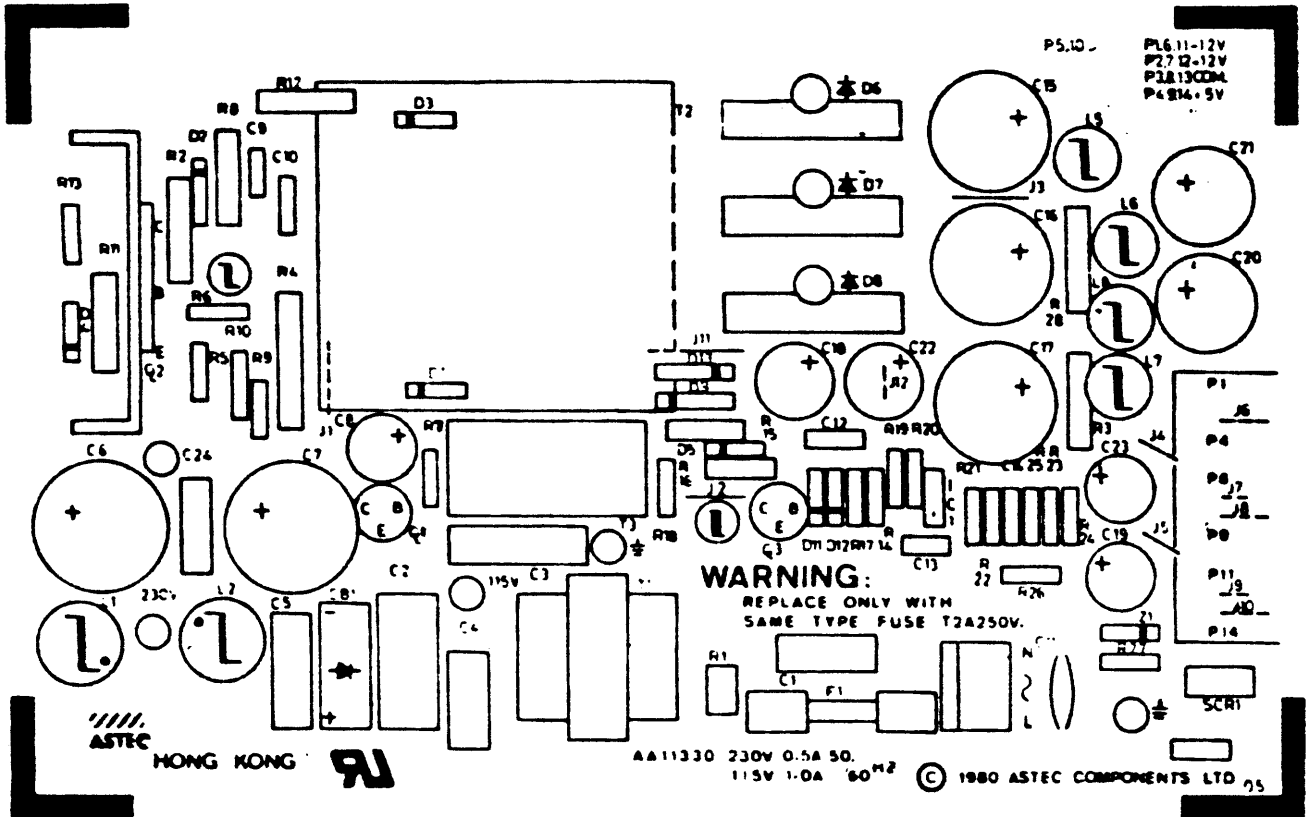
PART NUMBER	DESCRIPTION
036601-000	KEYBD PCB ASSY W/O CP 3 OPN IN
038053-000	SCREW 6-32X3/16 PHIL HD
061028-000	WASHER #6 INTERNAL TOOTH
080062-001	KEYBD TOP FAME 3 OPENING
335550-000	KEYBD BOTTOM ASSY FAME
635601-007	KEYCAP KIT FAME 50
635601-000	KEYCAP KIT FAME II
635601-000	KEYCAP KIT FAME 102
500092-000	ADAPTOR SPACE BAR (B1Z)
501001-000	KEYCAP DIN "SET UP"
501002-000	KEYCAP DIN "F1"
501003-000	KEYCAP DIN "F2"
501004-000	KEYCAP DIN "F3"
501005-000	KEYCAP DIN "F4"
501006-000	KEYCAP DIN "F5"
501007-000	KEYCAP DIN "F6"
501008-000	KEYCAP DIN "F7"
501009-000	KEYCAP DIN "F8"
501010-000	KEYCAP DIN "F9"
501016-000	KEYCAP DIN "(ARROW UP)"
501017-000	KEYCAP DIN "(ARROW DOWN)"
501018-000	KEYCAP DIN "(ARROW)"
501020-000	KEYCAP DIN "ON LINE"
501021-000	KEYCAP DIN "ESCAPE"
501022-000	KEYCAP DIN "1" SR
501023-000	KEYCAP DIN "2" SR
501025-000	KEYCAP DIN "4" SR
501026-000	KEYCAP DIN "5" SR
501027-000	KEYCAP DIN "6" SR
501028-000	KEYCAP DIN "7" SR
501029-000	KEYCAP DIN "8" SR
501030-000	KEYCAP DIN "9" SR
501031-000	KEYCAP DIN "0" SR
501032-000	KEYCAP DIN "-" SR
501033-000	KEYCAP DIN "=" SR
501035-000	KEYCAP DIN "BACK SPACE"
501036-000	KEYCAP DIN "7" FL
501037-000	KEYCAP DIN "8" FL
501038-000	KEYCAP DIN "9" FL
501039-000	KEYCAP DIN "-" FL
501040-000	KEYCAP DIN "BLOCK"
501042-000	KEYCAP DIN "Q"
501043-000	KEYCAP DIN "W"
501044-000	KEYCAP DIN "E"
501045-000	KEYCAP DIN "R"
501046-000	KEYCAP DIN "T"

Section 7 - Replaceable Parts

PART NUMBER	DESCRIPTION
501047-000	KEYCAP DIN "Y"
501048-000	KEYCAP DIN "U"
501049-000	KEYCAP DIN "I"
501050-000	KEYCAP DIN "O"
501051-000	KEYCAP DIN "P"
501052-000	KEYCAP DIN "[" SR
501053-000	KEYCAP DIN "]" SR
501054-000	KEYCAP DIN "DELETE"
501055-000	KEYCAP DIN "4" FL
501056-000	KEYCAP DIN "5" FL
501057-000	KEYCAP DIN "6" FL
501058-000	KEYCAP DIN ", "
501060-000	KEYCAP DIN "CNTRL"
501061-000	KEYCAP DIN "CAPS LOCK"
501062-000	KEYCAP DIN "A"
501063-000	KEYCAP DIN "S"
501064-000	KEYCAP DIN "D"
501065-000	KEYCAP DIN "F"
501066-000	KEYCAP DIN "G"
501067-000	KEYCAP DIN "H"
501068-000	KEYCAP DIN "J"
501069-000	KEYCAP DIN "L"
501070-000	KEYCAP DIN "; "
501071-000	KEYCAP DIN "' " SR
501073-000	KEYCAP DIN "
501074-000	KEYCAP DIN "1" FL
501075-000	KEYCAP DIN "2" FL
501076-000	KEYCAP DIN "3"
501079-000	KEYCAP DIN "SHIFT"
501080-000	KEYCAP DIN "Z"
501081-000	KEYCAP DIN "X"
501082-000	KEYCAP DIN "C"
501083-000	KEYCAP DIN "V"
501084-000	KEYCAP DIN "B"
501085-000	KEYCAP DIN "N"
501086-000	KEYCAP DIN "M"
501087-000	KEYCAP DIN ", " SR
501088-000	KEYCAP DIN ". " SR
501089-000	KEYCAP DIN "/" SR
501091-000	KEYCAP DIN "LINE FEED"
501092-000	KEYCAP DIN "O"
501093-000	KEYCAP DIN ". "
501095-000	KEYCAP DIN "FUNCTION"
501096-000	KEYCAP DIN "(SPACE BAR)"
501097-000	KEYCAP DIN "CORRECT"
501111-000	KEYCAP DIN "HOME" FL
501113-000	KEYCAP DIN "BREAK" FL
501118-000	KEYCAP DIN "3" SR
501119-000	KEYCAP DIN "~" SR
501120-000	KEYCAP DIN "TAB" FL
501121-000	KEYCAP DIN "EDIT F" FL
501122-000	KEYCAP DIN "K"

Section 7 - Replaceable Parts

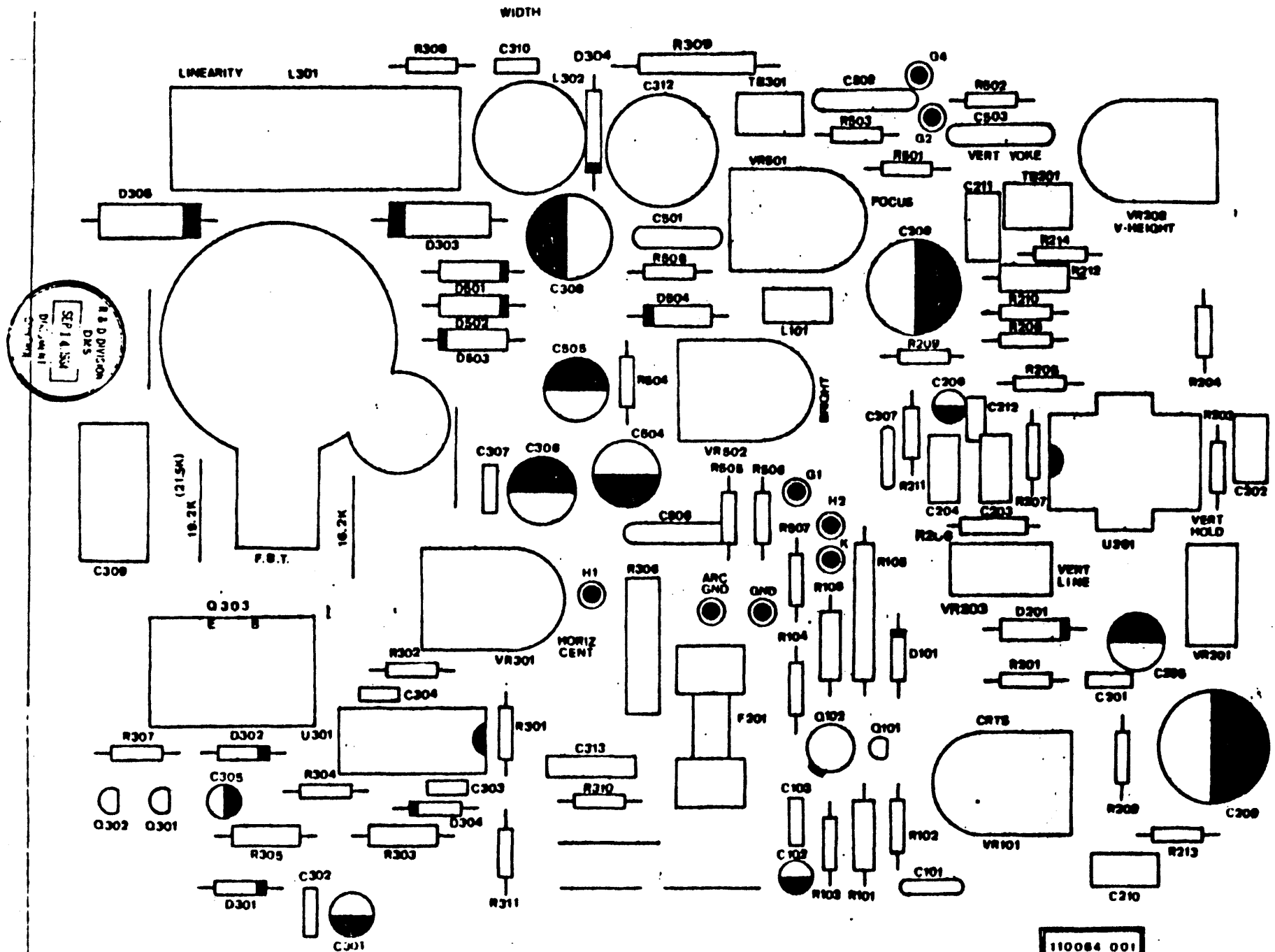
PART NUMBER	DESCRIPTION
501124-000	KEYCAP DIN "NO SCROLL" FL
501125-000	KEYCAP DIN "ENTER" (SR)/FL
501243-000	KEYCAP DIN "RETURN" STEPPED
501246-000	KEYCAP DIN "PAGE" FL
501354-000	KEYCAP DIN "PF1"
501355-000	KEYCAP DIN "PF2"
501356-000	KEYCAP DIN "PF3"
501357-000	KEYCAP DIN "PF4"
*****	FAME 50 Keyboard Only *****
501011-000	KEYCAP DIN "F10"
501012-000	KEYCAP DIN "F11"
501098-000	KEYCAP DIN "F12"
501250-000	KEYCAP DIN "F13"
501398-000	KEYCAP DIN "F14"
501399-000	KEYCAP DIN "F15"
501400-000	KEYCAP DIN "F15"



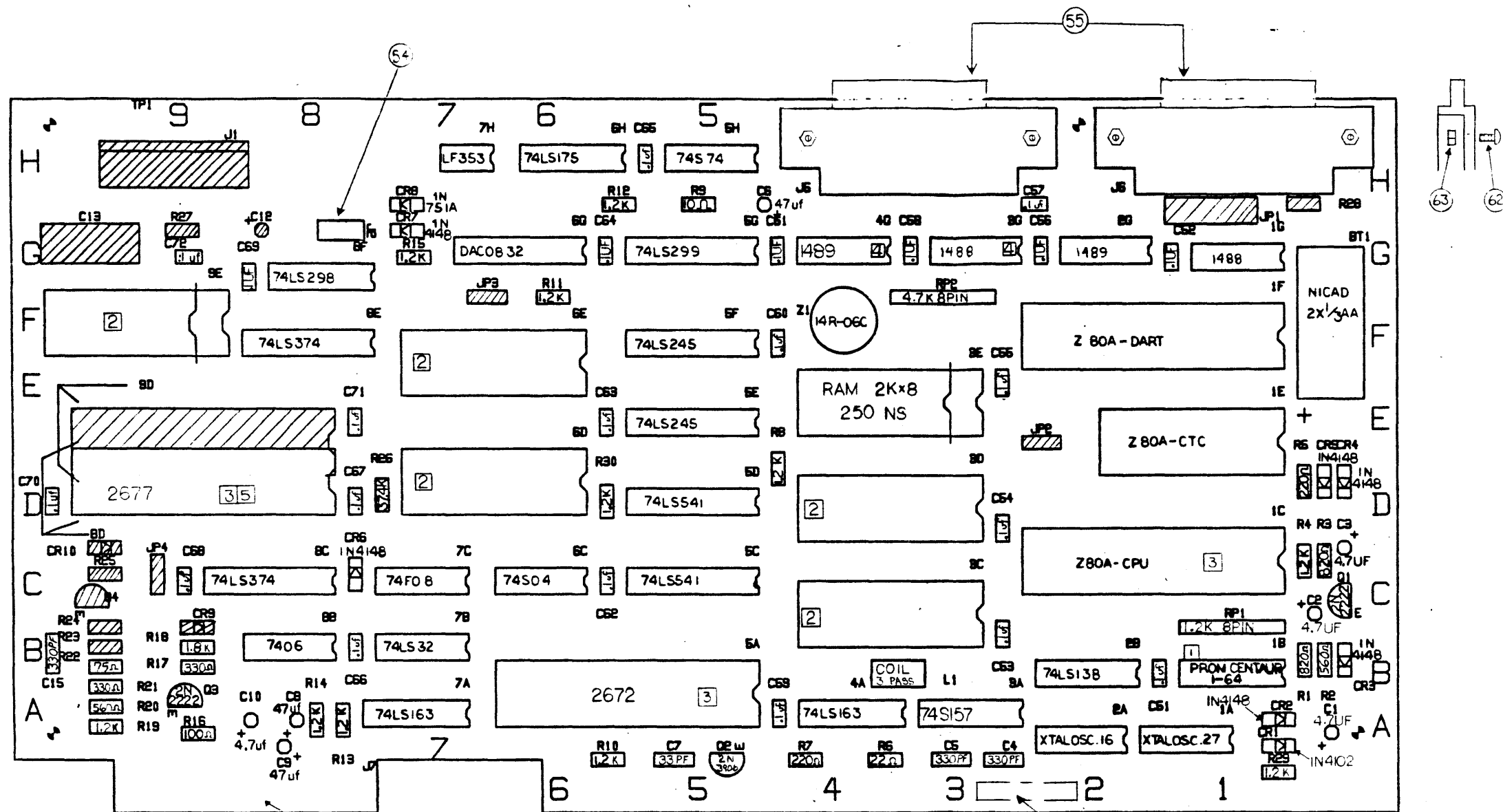
Astec Power Supply AC8151 - PWA

FIGURE 9-2

FIGURE 9-3 MONITOR BOARD ASSEMBLY DRAWING



REV	DESCRIPTION	DATE	APPROVAL
A	RELEASED PER ECO # 1282		
B	CHANGE NOTE 10 ECO # 1374		



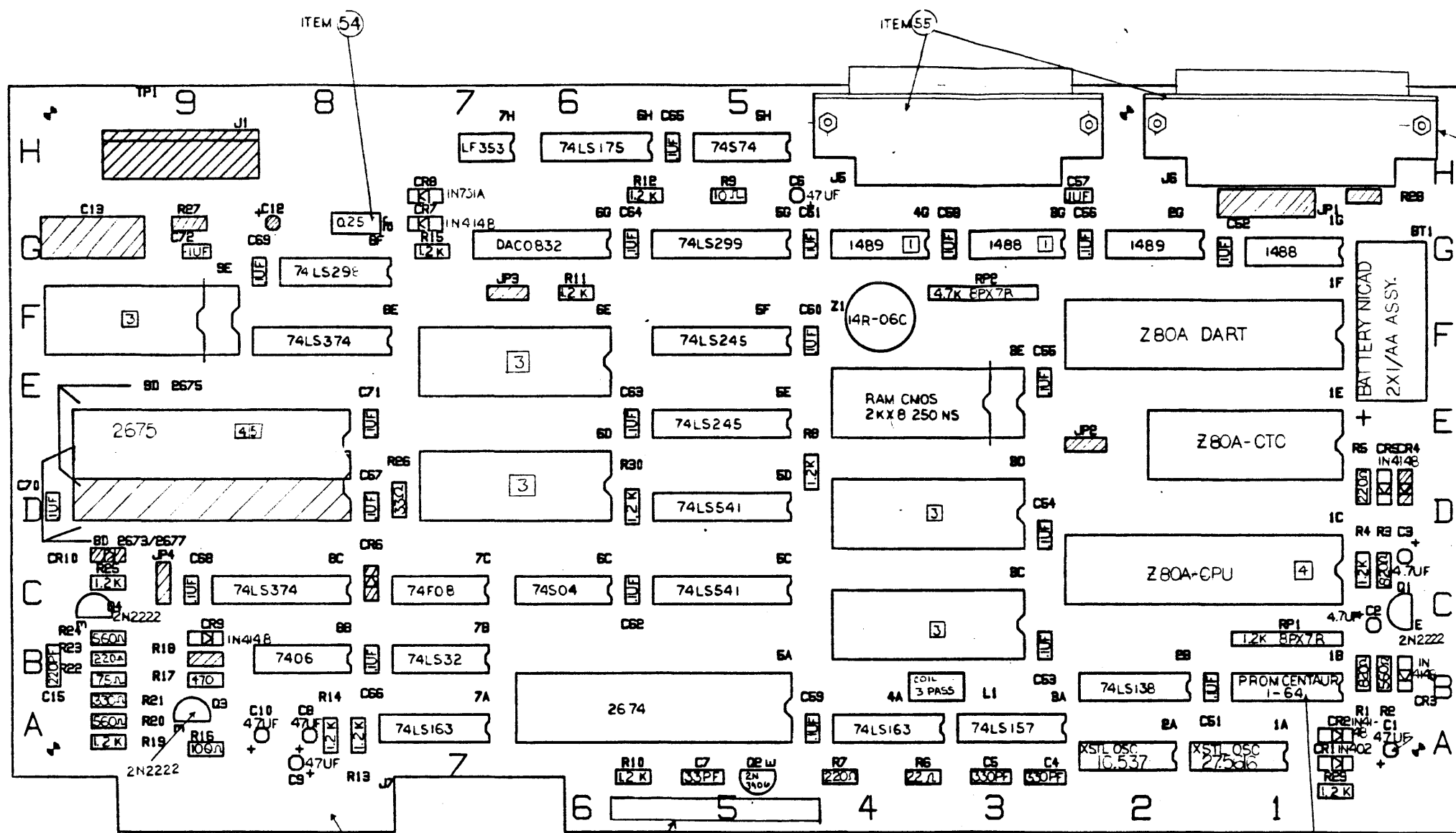
MARK PART NO & REV
230001-C21 REV B

- NOTES:
- 1 INSTALL ITEM 59-16 PIN SOCKET.
 - 2 INSTALL ITEM 60-28 PIN SOCKET.
 - 3 INSTALL ITEM 61-40 PIN SOCKET.
 - 4 INSTALL ITEM 58-14 PIN SOCKET.
 - 5 SOLDER ITEM 34 UNDERNEATH 40 PIN SOCKET AT 8D.
 - 6 INSTALL ALL OTHER SOCKETS.
 - 7 CROSS HATCHED ARE NOT TO BE INSTALLED.
 - 8 GOLD PLATE CONTACTS TO BE FREE FROM SOLDER.
 - 9 CUT TRACE LEADING FROM 7C-2 ON SOLDER SIDE.
 10. CONNECT 7C-2 TO 8E-12 ON COMPONENT SIDE.

FIGURE 9-4 FAME II LOGIC BOARD ASSEMBLY DRAWING

APPROVALS		FALCO DATA PRODUCTS	
DATE	SCALE	APPROVED BY	DRAWN BY
12-26-84			
PCB ASSY CENTAUR 2677 DTE		SIZE: D	REV: B
		DRAWING NUMBER	230001-021

REV.	DESCRIPTION	DATE	APPROVAL
A	RELEASE PER ECO# 1309	2/4/85	[Signature]
B	CHANGE R17 & R23 PER ECO# 1359	3/7/85	[Signature]
C	CHANGE C15 PER ECO# 1368	3/14/85	[Signature]

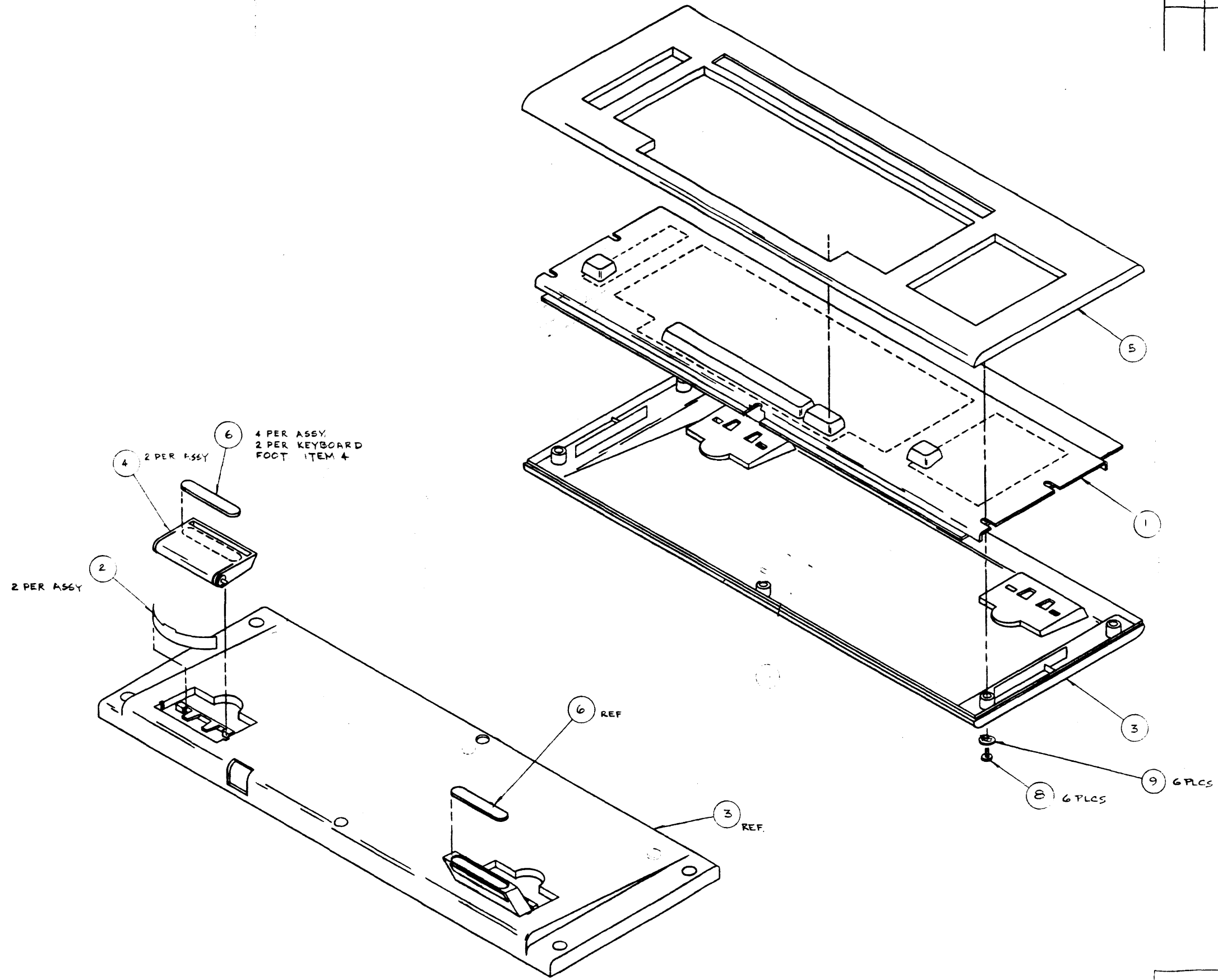


- NOTES:
- 1 INSTALL ITEM 58-14 PIN SOCKET.
 - 2 INSTALL ITEM 59-18 PIN SOCKET.
 - 3 INSTALL ITEM 60-28 PIN SOCKET.
 - 4 INSTALL ITEM 61-40 PIN SOCKET.
 - 5 SOLDER ITEM 34 UNDERNEATH SOCKET AT LOCATION 9D.
 - 6 INSTALL SOCKETS.
 - 7 CROSS HATCHED NOT TO BE INSTALLED.
 - 8 GOLD PLATE CONTACTS TO BE FREE FROM SOLDER.
 - 9 CUT TRACE LEADING FROM 7C-2.
 - 10 CONNECT 7C-2 TO 8E-12.
 - 11 MARK PCB P/N AND REV. (230001-023 REV C)

FIGURE 9-5 FAME 102 LOGIC BOARD ASSEMBLY DRAWING

APPROVALS		DATE	FALCO DATA PRODUCTS	
[Signature]	[Signature]	3/1/85	SCALE:	APPROVED BY:
[Signature]	[Signature]	4/1/85	DATE: 12-26-84	DRAWN BY: MEXIA
[Signature]	[Signature]	4/1/85		REVISED
			P.C.B. ASSY CENTAUR 2675 DTE	
		SIZE:	REV:	DRAWING NUMBER
		6	C	230001-023

REV	DESCRIPTION	BY	DATE	APPROVAL
A	RELEASED TO PRODUCTION TRK QCD # 512		4-2-84 4/3/84	<i>P. D. B...</i> <i>m/k...</i>



2. REFER TO PARTS LIST 335600-XXX AND 335601-XXX FOR ITEM DESCRIPTION
 NOTES 1. ITEM 7 (COILED CORD) TO BE INSTALLED IN MODULAR RECEPTACLE OF ITEM 1

FIGURE 9-6 KEYBOARD ASSEMBLY DRAWING

APPROVALS		DATE	FALCO DATA PRODUCTS	
<i>P. D. B...</i>	<i>P. D. B...</i>	2-27-84	SCALE: 1/2	APPROVED BY:
<i>...</i>	<i>...</i>	1-13-83	DATE 12-13-83	DRAWN BY: <i>...</i>
<i>...</i>	<i>...</i>	11/4/84		REVISED
<i>...</i>	<i>...</i>	11/16/84		
			KEYBD ASSY 3 OPENING SERIES	
			FAME	335600-100