

# Service Manual



## 370A Programmable Curve Tracer

070-7780-06

### **Warning**

The servicing instructions are for use by qualified personnel only. To avoid personal injury, do not perform any servicing unless you are qualified to do so. Refer to the Safety Summary prior to performing service.



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## EC Declaration of Conformity

We

Tektronix Holland N.V.  
Marktweg 73A  
8444 AB Heerenveen  
The Netherlands

declare under sole responsibility that the

### **370A Programmable Curve Tracer**

meets the intent of Directive 89/336/EEC for Electromagnetic Compatibility. Compliance was demonstrated to the following specifications as listed in the official Journal of the European Communities:

EN 55011 Class B Radiated and Conducted Emissions

EN 50081-1 Emissions:

EN 60555-2 AC Power Line Harmonic Emissions

EN 50082-1 Immunity:

IEC 801-2 Electrostatic Discharge Immunity

IEC 801-3 RF Electromagnetic Field Immunity

IEC 801-4 Electrical Fast Transient/Burst Immunity

IEC 801-5 Power Line Surge Immunity



## Safety Summary

The Safety Summary is a listing of all safety precautions in the manual. These precautions are gathered here in a single place for convenient review of all precautions, and each also appears at a place in the manual where the reader receives the most benefit from the precaution.

### TERMS

#### IN THIS MANUAL

**CAUTION** statements identify conditions or practices that could result in damage to the equipment or other property.

**WARNING** statements identify conditions or practices that could result in personal injury or loss of life.

#### AS MARKED ON EQUIPMENT

**CAUTION** indicates a personal injury hazard not immediately accessible as one reads the marking, or a hazard to property including the equipment itself.

**DANGER** indicates a personal injury hazard immediately accessible as one reads the marking.

### SYMBOLS

#### IN THIS MANUAL



This symbol indicates where applicable cautionary or other information is to be found.

#### AS MARKED ON EQUIPMENT



**DANGER**—High voltage



Protective ground (earth) terminal



**ATTENTION**—refer to manual

#### WARNING

This instrument operates from a single-phase power source, and has a detachable three-wire power cord with a two-pole, three-terminal grounding-type plug. The voltage to ground (earth) from either pole of the power source must not exceed the maximum rated operating voltage (250 volts rms).

Before making connection to the power source, make sure that the instrument is set for the power source voltage, and is equipped with a suitable plug (two-pole, three-terminal, grounding type).

This instrument is safety class 1 equipment (IEC\* designation). All accessible conductive parts are directly connected through the grounding conductor of the power cord to the grounding contact of the power plug. Therefore, the power plug must only be inserted in a mating receptacle with a grounding contact. Do not defeat the grounding connection. Any interruption of the grounding connection can create an electric shock hazard.

For electric shock protection, connect the instrument to ground before connecting to the instrument input or output terminals.

\*International Electrotechnical Commission.

**WARNING**

Following use of the 370A at high power settings, the device, fixture, or protective cover may be hot enough to cause injury. Avoid touching any of these items until cooled.

Dangerous voltage may appear at the front-panel collector and base terminals. To avoid injury or equipment damage, do not remove the protective cover.

If a device to be tested does not fit under the plastic protective cover, external test fixturing may be required. Refer construction of external test fixturing to a qualified service technician. Refer also to the service manual for information.

The 370A weighs more than 75 lbs. To avoid personal injury, use care when lifting the instrument, and where required, seek help in lifting and positioning the instrument in the rack. Once the 370A is installed in a rack, use care that the extended 370A does not tip the rack forward, causing personal injury or instrument damage.

**CAUTION**

CAUTION is used where, if ignored, damage to the instrument or instrument software could result.

To prevent damage to the instrument, always check the settings of the LINE VOLTAGE SELECTOR switches located on the rear panel of the 370A before connecting the instrument to the line-voltage source.

Double-wide test adapters are designed to fit in the left set of adapter connectors. If you try to forcibly install a double-wide test adapter in the right side, you might damage the connector. The connectors are identified by the following numbers:

- A1006
- A1007
- A1008
- A1009
- A1010
- A1023

Formatting a disk destroys all data stored on the disk. Make sure you no longer need this data before you format the disk.

Do not remove a disk while the disk drive indicator is on. The light indicates that the disk is currently in operation. Removing a disk halts the operation in progress, and could damage or destroy data on the disk.

Use particular care when displaying a spot. A high-intensity spot may burn the CRT phosphor and cause permanent damage to the CRT.



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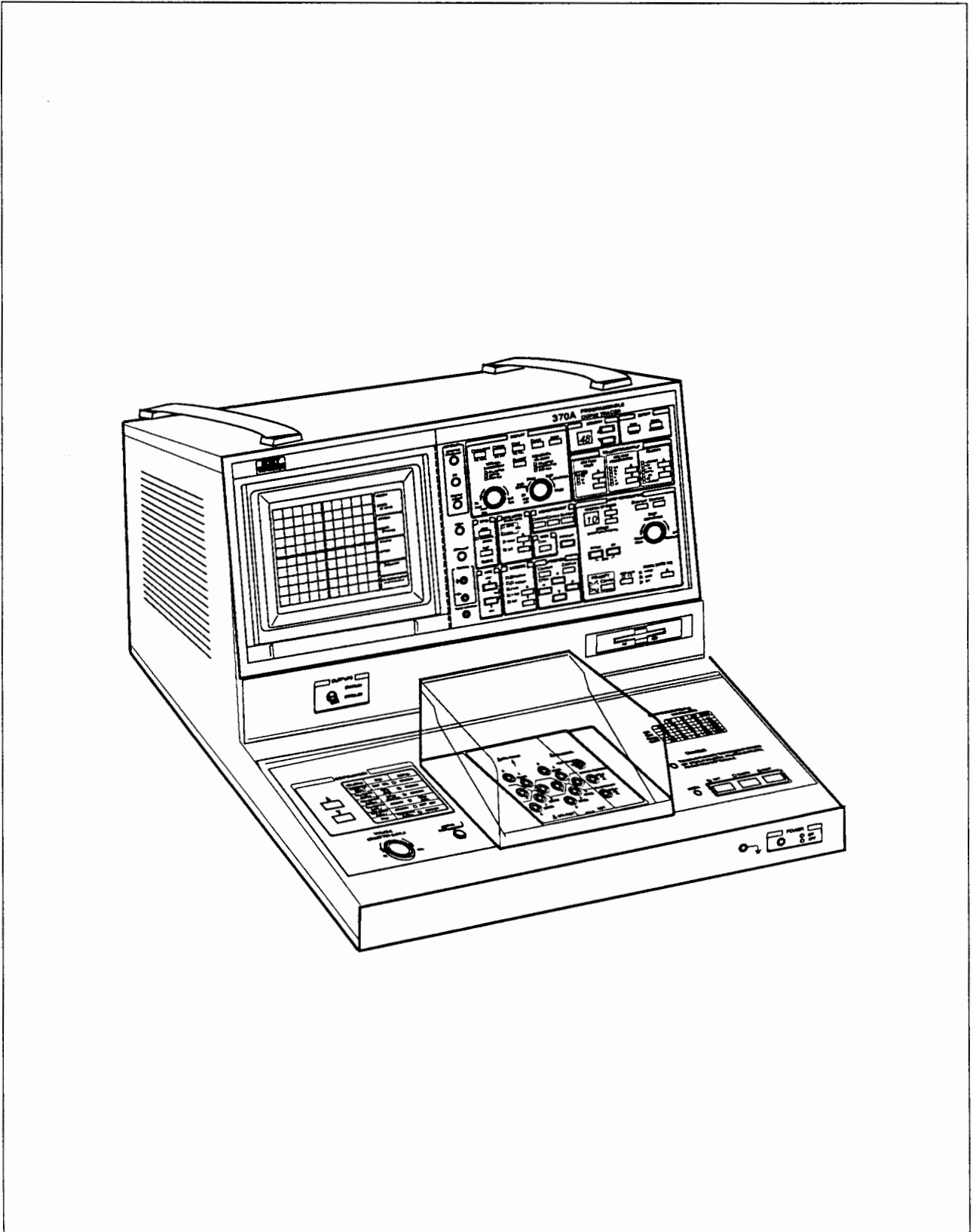
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# **General Information**





# 1

## General Information

### ■ DESCRIPTION

The 370A is a high-performance, GPIB-programmable digital-storage curve tracer that provides static and dynamic semiconductor device testing. This versatile instrument stimulates, measures, and displays the semiconductor characteristics of a variety of two-, three-, and four-terminal devices; including bipolar transistors, field effect transistors, silicon-controlled rectifiers, diodes, thyristors, optoisolators, wafers, integrated circuits, etc. A variety of measurements can be performed using either grounded-emitter or grounded-base configurations.

The side, top, and bottom cabinet panels provide protection to personnel from operating potentials present within the instrument. In addition, they reduce radiation of electromagnetic interference from the instrument. The cabinet panels are held in place by screws and four plastic panel retainers. To remove the panels, remove the four plastic retainers and three additional securing screws at the rear of the instrument. Pull each panel back to release the front edge, then lift the panels away from the instrument. Operate the instrument with the panels in place to protect the interior from dust, and to maintain cooling airflow.

The collector supply produces ac, rectified ac, or dc voltages ranging from 0 to  $\pm 2000$  volts. This high voltage, combined with a current sensitivity of 100 pA/div, permits extended breakdown measurements of a device under test. A step generator produces voltage or current steps of either polarity for application to the base or emitter terminal. The step generator may also be operated in a pulsed mode to control the power dissipated by the DUT.

In addition to conventional curve tracer performance, the 370A includes the following features:

- Digital storage capability that allows bright and stable display and useful cursor measurements. The 370A has a mass storage system consists of non-volatile IC memory and 3.5-inch floppy disk drive. Up to 64 families of characteristic curves and front-panel setups can be stored in a floppy disk. Up to 16 families of characteristic curves and front-panel setups can also be stored in non-volatile IC memory. The stored characteristic curves can be recalled for additional analysis and comparison.
- Two extended acquisition modes, called Averaging and Envelope. Averaging reduces display noise in high sensitivity ranges. Envelope mode displays only the maximum and minimum vertical or horizontal excursion of each curve, which is useful for detecting long-term variations such as thermal drift.
- Almost all of the 370A front-panel settings can be controlled by GPIB commands. (Exceptions are those controls intended only for manual operation, such as INTENSITY, FOCUS, GRAT ILLUM, etc.) Also, curve data can be sent to or received from an external controller through the GPIB.
- The plotter interface permits sending displayed curve data and digital on-screen readouts to a digital plotter without an external controller.
- Other features include an auxiliary voltage supply, cursor measurement readout, and diagnostic routines.

## RELATED DOCUMENTATION

In addition to this service manual, the 370A Operators Manual will also help you understand and operate the 370A.

## INSTALLATION AND INITIAL INSPECTION

This instrument was inspected both mechanically and electrically before shipment. It should be free of marks or scratches and meet or exceed all electrical specifications. To confirm this, inspect the instrument for physical damage incurred in transit and test the electrical performance by following the procedures in Section 4, Performance Check and Adjustment. If there is damage or discrepancy, contact your local Tektronix Field Office or representative.

## POWER SOURCE INFORMATION

This instrument is designed for operation from a power source having a neutral or near ground (earth) potential. It is not intended for operation from two phases of a multi-phase system, or across legs of a single-phase, three wire system. Table 1-1 shows the 370A Line Voltage, Line Frequency, and Power consumption information.

**Table 1-1**  
Line voltage ranges

| RANGE switch             | NOMINAL switch           |               |
|--------------------------|--------------------------|---------------|
|                          | 115VAC                   | 230VAC        |
| HIGH                     | 107VAC-132VAC            | 214VAC-250VAC |
| LOW                      | 90VAC-110VAC             | 180VAC-220VAC |
| <b>Power consumption</b> |                          |               |
| Max.                     | 400W, 3.5A at 132V 60 Hz |               |
| Typical                  | 120W, 1.3A at 115V 50 Hz |               |

## Operating Voltage Selection

### WARNING

Disconnect the 370A from the AC power source before changing operating voltages.

The LINE VOLTAGE SELECTOR switches (NOMINAL and RANGE, located on the rear panel) allow selection of the operating line voltage. To select the correct operating line voltage, first set the NOMINAL switch to the nominal AC power source voltage, then set the RANGE switch to the operating line voltage.

A power cord with the appropriate plug configuration is supplied with each instrument. The color-coding of the power cord conductors is given in Table 1-2. Also, should you require a power-cord plug other than that supplied, refer to Section 5, Table 5-1, Option A1 - A5.

**Table 1-2**  
Power-Cord Color Conductor Identification

| Conductor                    | Color        | Alternate    |
|------------------------------|--------------|--------------|
| Ungrounded (Line)            | Brown        | Black        |
| Grounded (Neutral)           | Light Blue   | White        |
| Grounded (Protective Ground) | Green/Yellow | Green/Yellow |

**WARNING**

This instrument operates from a single-phase power source, and has a detachable three-wire power cord with a two-pole, three-terminal grounding-type power plug. The voltage to ground (earth) from either pole of the power source must not exceed the 250-volt maximum-rated operating voltage.

Before making connection to the power source, determine that the instrument is set for the power source voltage, and has a suitable plug (two-pole, three-terminal, grounding type).

This instrument is safety class 1 equipment (IEC designation) receptacle with a grounding contact. Do not defeat the grounding connection. Any interruption of the grounding connection can create an electric shock hazard.

**OPERATING TEMPERATURE**

The 370A can be operated where the ambient air temperature is between +10° C and +40° C and stored in ambient temperatures from -22° C to +60° C. After storage at temperatures outside the operating limits, allow the instrument temperature to reach a safe operating limit before applying power.

The 370A is cooled by air drawn in through the fan from the rear and blown out through holes on the side panels. To ensure proper cooling of the instrument, maintain the proper clearance at the top, sides, and rear of the instrument.

**OPERATION MODE SELECTIONS**

Several instrument features can be modified by changing internal jumpers, as described below.

**Collector Supply Limit**

For the user who does not need the high-voltage collector supply, the 2000-volt, 400-volt and 80-volt modes can be disabled by jumpers J101 and J102 on the A10 SENSE BOARD. See Adjustment Locations 2 in Section 7 for the location of the jumper. The selections are:

|      |             |                                      |
|------|-------------|--------------------------------------|
| J101 | at pins 1-2 | 2000 V disabled                      |
|      | at pins 2-3 | 2000 V enabled (factory-set)         |
| J102 | at pins 1-2 | 400 V and 80 V disabled              |
|      | at pins 2-3 | 400 V and 80 V enabled (factory-set) |

Jumper connector J34 on the A3 A/D board is provided to select step transition polarity and to generate steps one at a time. See Adjustment Locations 1 in Section 7 for the location of the jumper. The selections are:

|     |             |  |
|-----|-------------|--|
| J34 | at pins 1-2 | Step transition occurs at the zero crossing of the collector supply sweep (factory set). |
|     | at pins 2-3 | Step transition occurs at the peak of the collector supply sweep.                        |
|     | at pins 2-4 | One step occurs each time SINGLE is pressed. STORE mode is disabled.                     |

## REPACKING FOR SHIPMENT

If the 370A is to be shipped long distances, we recommend that the instrument be repackaged the same as when it arrived. The cartons and packaging material in which your instrument was shipped should be saved and used for this purpose.

If your instrument is to be shipped to a Tektronix Service Center for service or repair, attach a tag to the instrument showing the following:

- Owner of the instrument (with address),
- Name of a person at your firm to contact,
- Instrument type,
- Instrument serial number,
- Description of the service required.

If the original packaging is unfit for use or not available, package the instrument as follows:

1. Obtain a corrugated cardboard shipping carton with a 375-pound test strength that has inside dimensions at least six inches greater than the instrument dimensions.
2. Surround the instrument with polyethylene sheeting to protect the finish.
3. Cushion the instrument on all sides by tightly packing dunnage or urethane foam between the carton and the instrument, allowing three inches on all sides.
4. Seal the carton with shipping tape or with an industrial stapler.
5. Write the address of the Tektronix Service Center and your return address on the carton in one or more prominent locations.

## ACCESSORIES

### Standard Accessories

Operators Manual  
Fuse,                   250V, 2A, medium-blow  
                              125V, 4A, medium-blow

Protective Cover

Floppy Disk

Power Cord

### Test Adapters

|                               |       |
|-------------------------------|-------|
| Blank adapter                 | A1001 |
| In line adapter               | A1002 |
| Axial Lead Adapter            | A1005 |
| 4 & 6 Lead Transistor Adapter | A1007 |

### Optional Accessories

|                              |       |
|------------------------------|-------|
| TO-3/TO-66 Adapter           | A1003 |
| Offset Lead/Power Adapter    | A1004 |
| Long Lead Transistor Adapter | A1006 |
| Long Lead FET Adapter        | A1008 |
| 4 and 6-Lead FET Adapter     | A1009 |
| IC Adapter                   | A1010 |

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Camera Adapter for C59A Camera, for C5C Camera, or for C7 Camera.

For part numbers of all accessories, please refer to the Accessories page in the Replaceable Mechanical Parts List at the back of this manual.

# **Theory of Operation**



# 2

## Theory of Operation

This section describes the operation of the 370A circuits. The section is divided into two parts: Block Diagram Description and Detailed Circuit Operation. When reading this section, refer to the foldout schematic diagrams located in the rear of the manual. The diagrams have corresponding titles and numbers to the titles and numbers used in this section.

### BLOCK DIAGRAM DESCRIPTION

The following description is an overview of the 370A operation. Figure 2-1 is an overall block diagram of the 370A. The numbers enclosed in diamonds within each block in Figure 2-1 indicate the schematic diagrams associated with the block.

The 370A is a static and dynamic semiconductor tester that displays and allows measurement of static and dynamic semiconductor characteristics obtained under simulated operating conditions.

The 370A consists of five major functional sections:

1. Collector Supply
2. Data Acquisition and Display
3. Control and Processing
4. Interface
5. Power Supply

### Stimulus Generators

The Stimulus Generators simulate operating conditions for the DUT by producing voltages and currents that are applied to the DUT. They include the Collector Supply, the Step Generator, the Aux Supply, and the PLL and Clock Circuits.

The Collector Supply produces sine-wave ac, full-wave rectified sine waves (positive and negative), and positive and negative DC voltages. The amplitude of the output can be varied from 0 to 2000 volts. The Collector Supply output is applied to either the collector or the base (or equivalent) terminal of the device under test.

The Step Generator Circuit produces ascending or descending steps of current or voltage at a normal rate of one step for each half-sine wave of the Collector Supply. The amount of current or voltage per step, total number of steps and offset voltage and current can be controlled. This Step Generator output may be applied to either the base or the emitter (or equivalent) terminals of the device under test.

The Auxiliary Supply produces auxiliary power for the DUT. The output voltage range is  $\pm 0$  to 40 volts. This output can be applied to any terminal of the DUT.

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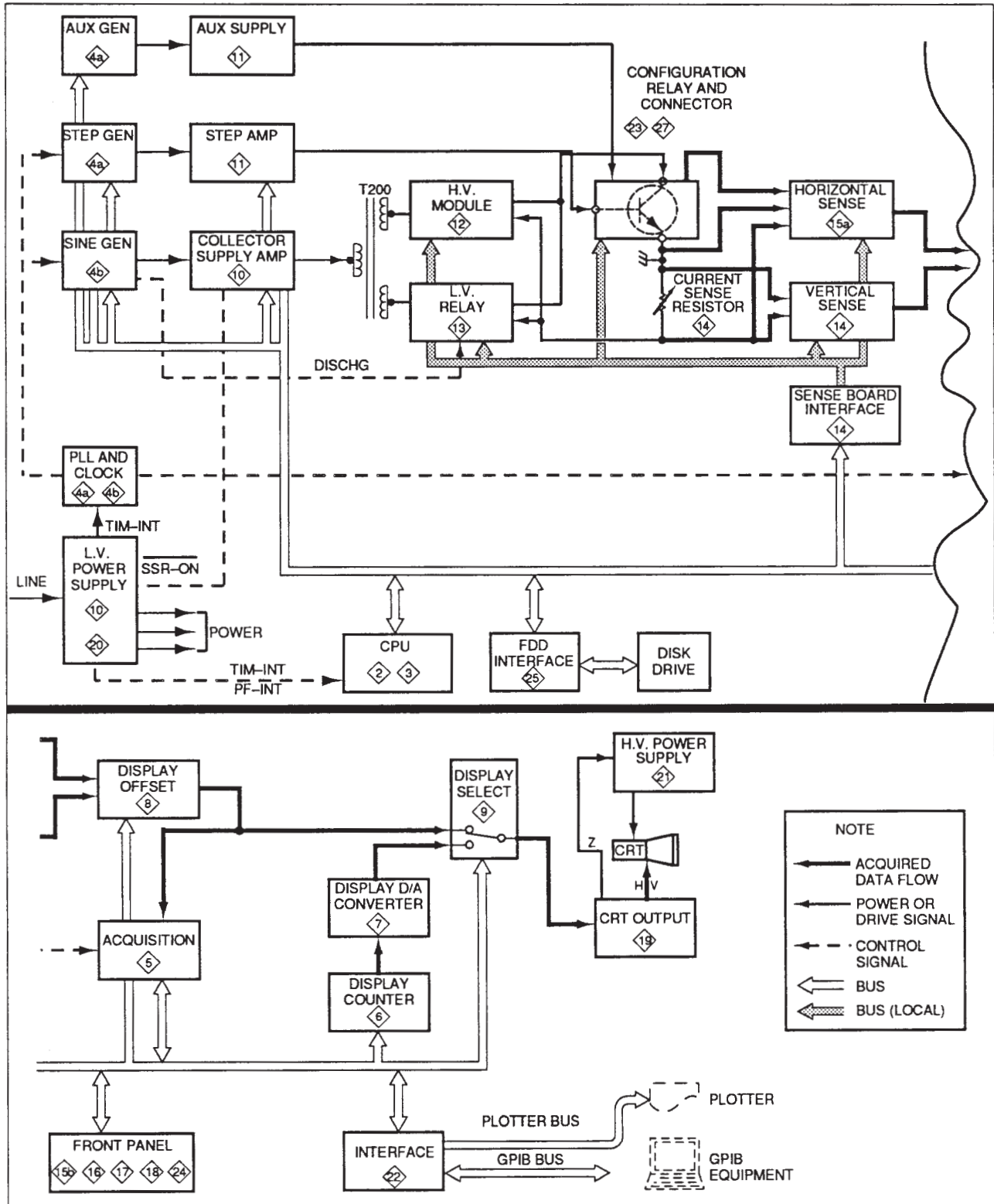


Figure 2-1. 370A Block Diagram.



The PLL and Clock Circuit generates a synchronous signal for the Step Generator and the Sine Wave generator. This Circuit also generates synchronous signals for the Acquisition Circuits.

This block consists of the following circuits.

- AUX GEN Circuit, Diagram 4a
- STEP GEN Circuit, Diagram 4a
- SIN GEN Circuit, Diagram 4b
- PLL and CLOCK Circuit, Diagram 4a
- AUX SUPPLY Circuit, Diagram 11
- Collector Supply Amp Circuit, Diagram 10
- Step Amp Circuit, Diagram 11
- H.V. Module Circuit, Diagram 12
- L.V. Relay Circuit, Diagram 13
- Collector Terminal Circuit, Diagram 27

## Data Acquisition and Display

These circuits sense, acquire, and display the effect of the Collector Supply and Step Generator on the DUT. The block consists mainly of the Sense Circuit, the Acquisition Circuit, the Digital Display Circuit, and the Display Circuit.

The Sense Circuit senses and amplifies voltages and currents of each terminal of the DUT. This circuit also compensates for errors produced by IR drops between the DUT terminals and the supply. The amplifier sensitivity is controllable.

The Acquisition Circuit converts sensed analog data into digital data, that is, the fetch and A/D convert functions. This acquired data is sent to the CPU Circuit.

The Digital Display Circuit converts digital data into analog display signals. This digital data includes stored curve and operating information.

The Display Circuit selects store or non-store data and displays curves and 370A operating information.

The Data Acquisition and Display Circuits consist of the following:

- Acquisition Circuit, Diagram 5
- Display Counter Circuit, Diagram 6
- Display D/A Converter Circuit, Diagram 7
- Display Offset Circuit, Diagram 8
- Display Select Circuit, Diagram 9
- Vertical Sense Circuit, Diagram 14
- Sense Board Interface Circuit, Diagram 14
- Horizontal Sense Circuit, Diagram 15
- CRT Output Circuit, Diagram 19
- H.V. Power Supply Circuit, Diagram 21

## Control and Processing

These circuits control the 370A and process acquired data. They include the CPU Circuit, the Front Panel Circuit, and Floppy Disk Circuit.

The CPU Circuit controls all operations of the 370A, including Collector Supply and Step Generator Control, Sense Circuit Control, CRT Display Control, Front Panel Control, Floppy Disk Control, etc. The circuit also processes the acquired data from the device under test. These operations are controlled by the microprocessor and its operating programs through the Address, Data, and Control Bus lines.

The Front Panel Circuit interfaces the operator to the 370A. This circuit reads keys, switches and rotary encoder information to set the 370A to the desired measurement condition. This also displays these settings to the operator by LED and numerical displays.

The Floppy Disk Circuit memorizes acquired data from the device under test and the 370A setting information. The data and information are stored in the 3.5-inch floppy disk.

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The Control and Processing Circuits consist of the following:

CPU Circuit, Diagram 2 and 3  
Front Panel Circuit, Diagram 15b, 16, 17, 18 and 24  
Floppy Disk Circuit, Diagram 25

### Interface

These circuits interface the microprocessor data with the plotter and the peripheral equipment. The circuit consists of the GPIB (General Purpose Interface Bus) interface Circuit and the Plotter Control Circuit. The circuit is depicted on Diagram 22.

### Power Supply

These circuits supply low-voltage operating power to the 370A. These voltages in turn are used to generate the high voltages, such as that used on the CRT. There are two major circuits, the Power Supply and the Interrupt Signal Generator.

The Power Supply converts the AC line voltages into DC voltages that supply power for 370A operation.

The Interrupt Signal Generator generates timer interrupt and power fail interrupt signals. These signals synchronize the 370A circuits, and provide a harmless shutdown when power fails. The circuits are depicted on Diagrams 10 and 20, the L.V. Power Supply Circuits.

## DETAILED CIRCUIT OPERATION

This part of the Theory of Operation provides a detailed description of the electrical operation of the 370A. Complete schematic diagrams are provided in Section 7, Diagrams and Circuit Board Illustrations. The number enclosed in a diamond preceding a portion of text denotes the schematic diagram under discussion.

### 1 INTERCONNECTION

This circuit is located on the A1 Mother Board. The circuit connects inter-board signals of the 370A. These signals include control signals, drive signals, data signals, reference signals, sense signals, ground lines, and power supply lines.

### 2 MPU

The MPU circuitry is located on the A2 CPU board. It consists of a 68000 Microprocessor, Power-Up Reset Circuit, Clock Generator, Buffers, Wait Timing Generator, and Interrupt Control Logic Circuit.

#### Microprocessor

The 68000 is a 16-data bit, 23-address bit microprocessor. The input and output signals can be grouped in eight categories. The following paragraphs describe each group and the signals in that group.

**Address Bus (A1 through A23).** The Address Bus is a uni-directional, three-state 23-bit bus, providing address information for all on and off board functions requiring address control.

**Data Bus (D0 through D15).** The Data Bus is a 16-bit, bi-directional, three-state bus which is the general purpose data path. It can transfer data in either byte (8-bit) or word (16-bit) lengths.

**Address Strobe (AS).** This signal indicates that there is a valid address on the Address Bus.

**Read/Write (R/W).** This signal defines the Data Bus transfer as a read cycle (logic high) or a write cycle (logic low). The R/W signal also works in conjunction with the upper and lower data strobes as explained in the next paragraph.

**Upper and Lower Data Strobes (UDS and LDS).** These signals control the data on the Data Bus, as shown in Table 2-1. When the R/W line is high, the microprocessor will read from the Data Bus as indicated. When the R/W line is low, the microprocessor will write to the Data Bus as shown.

**Data Transfer Acknowledge (DTACK).** This input indicates that a data transfer is completed. When the microprocessor recognizes DTACK during a read cycle, data is latched and the bus cycle is terminated. When DTACK is recognized during a write cycle, the bus cycle is terminated.

**Interrupt Control (IPL0, IPL1, IPL2).** These input pins indicate the encoded priority level of the device requesting the interrupt. Seven levels are possible using these three pins, with level zero (no pins active) meaning no interrupt is requested.

**System Control.** The system control inputs, HALT and RESET, reset the microprocessor at power on. When the HALT and RESET inputs are driven simultaneously, the microprocessor enters the reset cycle starting at the address pointed by the reset vector.

**Valid Peripheral Address (VPA).** This input indicates that the microprocessor should use automatic vectoring for an interrupt.

**Processor Status (FC0, FC1, FC2).** These function outputs indicate the cycle type currently being executed. When the cycle type is the interrupt acknowledge cycle, all three outputs go high.

**Clock (CLK).** This is the clock input. The clock signal is derived from U100 and divided by two in U120A, resulting in an 8-MHz clock signal applied to the microprocessor.

**Table 2-1**  
**Data Strobe Control of Data Bus**

| UDS  | LDS  | R/W  | D8-D15               | D0-D7                |
|------|------|------|----------------------|----------------------|
| High | High | —    | No Valid data        | No valid data        |
| Low  | Low  | High | Valid data bits 8-15 | Valid data bits 0-7  |
| High | Low  | High | No valid data        | Valid data bits 0-7  |
| Low  | High | High | Valid data bits 8-15 | No valid data        |
| Low  | Low  | Low  | Valid data bits 8-15 | Valid data bits 0-7  |
| High | Low  | Low  | Valid data bits 0-7  | Valid data bits 0-7  |
| Low  | High | Low  | Valid data bits 8-15 | Valid data bits 8-15 |

### Power-Up Reset

The Power-Up Reset Circuit consists of reset controller U400, transistor Q400, resistor R409, and capacitors C400, C404. When the instrument is first powered up, the reset controller's RESET(L) output (pin 5) is low, holding the microprocessor reset. The reset controller then monitors the power supply voltage at its SENSE input at pin 7. When the supply voltage at this input reaches operating tolerance, the reset controller allows an internal current source to begin charging C400 at pin 3. After the time determined by C400, the voltage on C400 triggers an internal comparator in the reset controller and pin 5 of reset controller goes high to enable normal execution to begin, and the microprocessor is directed to the starting address of the power-up routine, which it then performs.

The reset controller continues to monitor the power supply voltage at its SENSE input (pin 7). This voltage is divided by an internal voltage divider and continuously compared against an internal voltage reference. If the power supply drops below operating limits for some reason, the reset controller drives RESET(L) low to reset the microprocessor, and, at the same time, it discharges C400. The normal power-up sequence previously described can then occur when and if the power supply comes back within limits.

### Clock Generator

The Clock Generator consists of 16-MHz oscillator U100 and divider U120A. This circuit generates the 8-MHz clock signal for the microprocessor.

### Address Bus Buffer

Buffers U450 and U452 isolate the Address Bus (A1-A16) for the A3 A/D board, A4 Digital Display board, A5 Display Control board, A10 Sense board, A11 Main Key board, A14 Lower Key board, A22 GPIB Interface board and A23 FDD Interface board.

### Data Bus Buffer

Buffers U454 and U456 isolate the Data Bus when the microprocessor is transceiving data to and from circuits off the CPU board. The CRD(L) line selects which direction data is transmitted through the buffer; the line is high when data is sent from the microprocessor off the CPU board. The N-10(L) line enables or disables the data output.

### Control Bus Buffer

Buffer U458 isolates the Control Bus.

### Silent Bus Buffer

Buffer U462 isolates the Address Bus (SA1-SA7) and data line SD0 for A6 Collector Supply Output board, A7 Step Generator board, and A10 Sense board.

### Wait Timing Generator

The Wait Timing Generator consists of U120B, U300A, U300B, U300D, U310A, U310B, U340A and U340B. This circuit inserts wait cycles by controlling the DTACK(L) input to ensure that I/O devices have time to read or write the data on the bus.

In the following discussion, note that the WAIT(L) line is activated only when the microprocessor communicates with the A4 Digital Display board.

When the microprocessor communicates with the CPU board memories, no wait cycle is required. In this case, the microprocessor sets address line CA19 low, which sets pin 5 of U310A high. Pin 8 of U320B goes low at the next clock, enabling the DTACK(L) input.

When the microprocessor communicates with I/O devices (except the A4 Digital Display board), two wait cycles are required. In this case, the microprocessor sets address line CA19 high, disabling the preset inputs of latches U120B and U310A. When the microprocessor sets the CAS(L) (address strobe) line low, the clear inputs of the latches U120B and U310A are disabled, which enables the latches to be clocked by the 8-MHz clock. Three clock cycles following the activation of the CAS(L) line, pin 8 of U320B goes low and enables the DTACK(L) input.

When the microprocessor communicates with the A4 Digital Display board, the DTACK(L) input is controlled by the WAIT(L) signal. The A4 Digital Display board sets the WAIT(L) line low when the microprocessor accesses it. This low sets pin 13 of U320B low, which sets pin 8 of U320B high, disabling the DTACK(L) signal. When the A4 Digital Display board sets the WAIT(L) line high, pin 8 of U320B goes low at the next clock, activating the DTACK signal.

Counters U340A and U340B prevent the microprocessor from waiting for longer than 128 clock cycles (16 us). When the WAIT(L) line goes low, the counters begin to count. When the count reaches 128, pin 8 of U340 goes high and cancels the WAIT(L) signal on pin 5 of U300B. The output of U340B is also sent to pin 11 of U240B as TIME OUT-INT interrupt signal.

### Interrupt Control

The Interrupt Control Circuit consists of Interrupt Signal Latches U240A, U240B, U250A, and U250B, Interrupt Priority Encoder U260, and Interrupt Acknowledge Logic U200, U210, and U270.

Interrupts inform the microprocessor that something needs attention. There are six interrupt signals; power fail (PF-INT) and timer (TIM-INT) from the A19 L.V. Supply board, time-out (TIME OUT-INT) from the wait control circuit, acquisition-done (DONE-INT) from the A3 A/D Board, and interrupts from GPIB and Plotter Interface (GPIB-INT and PLOT-INT(L)). Each interrupt has its own priority level, as shown in Table 2-2.

When an interrupt occurs, the interrupt signal is latched into U240 or U250 and fed to Priority Encoder U260. U260 encodes the level of the interrupt to the 3-bit binary code onto the IPL0(L), IPL1(L) and IPL2(L) lines. For example, assume that all lines are set low on PF-INT. If the interrupt level is higher than that of the current process, the microprocessor enters the interrupt acknowledge cycle after the completion of the current instruction. It outputs the interrupt level on address lines CA1, CA2 and CA3, asserts CAS(L), and sets the function code lines CFC0, CFC1 and CFC2 high. U210 decodes the address lines CA1, CA2 and CA3, and outputs a clear signal to the interrupt latch. The high on the function code lines set pin 7 of U200 low, causing the microprocessor to enter into auto vector mode.

**Table 2-2**  
**Interrupt Priority**

| Priority    | Interrupt Inputs | Function                        |
|-------------|------------------|---------------------------------|
| 1 (level 7) | PF-INT           | Power failure<br>(Non maskable) |
| 2 (level 6) | Future use       |                                 |
| 3 (level 5) | TIM-INT          | (line frequency)                |
| 4 (level 4) | TIME OUT-INT     | Time out                        |
| 5 (level 3) | GPIB-INT         | GPIB request                    |
| 6 (level 2) | DONE-INT         | Acquisition<br>completed        |
| 7 (level 1) | PLOT-INT(L)      | Plotter request                 |



## 3 MEMORY

The Memory circuit consists of the ROM, RAM, Battery Backup, address selector, and buffers.

### ROM

The 370A firmware is located in two 128K BYTE EPROMs (U600 and U610). The EPROMs are paired to form 16-bit words.

### RAM

RAMs U800 and U810 provide temporary of data used in execution of the various control functions of the CPU. In addition, long-term power-off storage of front-panel settings and characteristic curves is provided. U800 provides lower byte storage and U810 provides upper byte storage. Address strobe signals LCS1(L) and UCS1(L) select addressing for either the lower byte or the upper byte.

**Table 2-3**  
**Decoder Address Assignment**

| A20 | A19 | A18 | A17 | A16 | A15 | A14-A1 | SELECTION             |
|-----|-----|-----|-----|-----|-----|--------|-----------------------|
| 0   | 0   | 0   | X   | X   | X   | X      | ROM (U600&U610)       |
| 0   | 0   | 1   | X   | X   | X   | X      | RAM (U800&U810)       |
| 0   | 1   | 0   | 0   | 0   | 0   | X      | not used (A2 board)   |
| 0   | 1   | 0   | 0   | 0   | 1   | X      | AD(L) (A3 board)      |
| 0   | 1   | 0   | 0   | 1   | 0   | X      | DSP-RAM(L) (A4 board) |
| 0   | 1   | 0   | 0   | 1   | 1   | X      | DSP-IO(L) (A5 board)  |
| 0   | 1   | 0   | 1   | 0   | 0   | X      | KEY(L) (A11 board)    |
| 0   | 1   | 0   | 1   | 0   | 1   | X      | L-KEY(L) (A10 board)  |
| 0   | 1   | 0   | 1   | 1   | 0   | X      | IF-CS(L) (A22 board)  |
| 0   | 1   | 0   | 1   | 1   | 1   | X      | FDC(L) (A23 board)    |
| 0   | 1   | 1   | 0   | 0   | 0   | X      | COLLECT(L) (A6 board) |
| 0   | 1   | 1   | 0   | 0   | 1   | X      | SG(L) (A7 board)      |
| 0   | 1   | 1   | 0   | 1   | 0   | X      | SENSE(L) (A10 board)  |

### Data Bus Buffer

Buffers U484 and U486 isolate the Data Bus. CRD(L) input selects which direction data is transmitted through the buffer. A high on CRD(L) transmits data from the microprocessor to the memories.

### Address Bus Buffer

Buffers U480 and U482 isolate the Address Bus. U480 isolates the lower address and U482 isolates the upper address.

### Address Selector

Decoders U500A, U520, U540, U720A, U720C, and U720D decode address lines A15 - A20 and select addressing for memory or devices on and off the CPU board. See Table 2-3 for the address assignments.

## Battery Backup

The battery backup circuit consists of voltage detector U740, transistor Q747, 3-state bus buffer U770 and associated components. This circuit provides a standby power source used to maintain the contents of the RAMs (U800 and U810) when instrument power is off.

During normal instrument operation, the +5VM3 power line will be operating within its tolerance limits. This initially pulls the voltage detector's VTH sensing input (pin 3) to approximately +1.25 volts through resistive divider R740, R741, and R742. This level is compared to an internal voltage reference of +1.15 volts and switches the Vo control output (pin 4) low, indicating that the normal power supply is operational.

When the pin4 of U740 goes low, an internal transistor turns on and switches the VHYS output (pin 2) to the +5 volt supply level, raising the VTH input level to about +1.3 volts. This hysteresis provides positive, noise-free switching of the output control level. The Low on U740 pin 4 also turns on transistor switch Q747 and the +5VB1 through +5VB6 supply lines are connected to the normal +5VM3 supply line. Battery BT740 charges through R744, R745, CR742 as long as normal instrument power is on.

When instrument power is turned off, the +5VM3 supply line voltage will drop as power is drawn from its storage capacitors. When the voltage level reaches approximately +4.3 volts, the level at the VTH input drops below the internal +1.15 volt level and pin 4 of U740 goes high. This high disables U770 before the power supplies decay to the point where data and enable levels go out of tolerance. Disabling U770 also disables RAMs U800, U810 and prevents erroneous data from being written into the RAMs as the power goes down. When the power supplies finish decaying, power to U770 is removed and the pullup resistor R770 keeps the RAMs disabled.

This high on U740 pin4 also turns Q747 off and battery BT740 begins supplying a positive voltage to the +5VB1, +5VB2 and +5VB5 inputs through R744. This is the positive standby voltage and it is used to maintain the contents of the RAMs when normal power is off.



## GENERATOR

The Generator Circuit is located on the A3 A/D Board.

This circuit is roughly divided into three parts; PLL (Phase Lock Loop), Clock Generator, and Signal Generator. The PLL provides clocks synchronized with the line frequency for the Clock Generator. The Clock Generator provides clocks for the Signal Generator and the Acquisition Clock for the A/D Converter. The Signal Generator generates Step Amplifier signal for the Step Amplifier Circuit, and the AUX signal for the AUX Signal Amplifier Circuit.

### Control Latch and Decoder

Latches U270 and U280 and decoder U430 provide control signals for the on-board circuits. Control signals are set by the microprocessor on the MPU circuit as determined by the front panel controls. See Table 2-4 for the function of these signals.

### PLL

The PLL (Phase Lock Loop) Circuit consists of U100, U110, U140A, U140B, and associated circuitry.

U100 contains an internal phase comparator and VCO (Voltage Controlled Oscillator). The VCO produces an output signal on pin 4, the frequency of which is determined by the pin 9 input voltage, set by R100, R104 and C104. The center frequency is approximately 250 kHz (4096 x line frequency). The maximum and minimum frequency is determined by R100 and R104 respectively. This VCO output is counted down to 1/4096 by frequency divider U110, and applied to pin 3 of U100. U100 compares the phase of this signal with that of the incoming TIME-INT signal (the frequency of which is the same as the line frequency), and produces an error signal on pin 13. The error signal is applied to pin 9 through low pass filter R106-R108-C102, and controls the VCO.

U140A and U140B form a window comparator that detects the unlock state. When the PLL is unlocked, pin 1 of U140A goes low.

**Table 2-4  
Microprocessor Control Signals**

| Signal    | Front-panel Setting  |
|-----------|--|
| S0 - S4   | Indicates number of steps  |
| POSI      | STEP POLARITY: Positive (+)  |
| .1X       | STEP MULTI .1X: ON   |
| CSTOP(L)  | Low when collector supply relays switch  |
| AC        | COLLECTOR SUPPLY POLARITY: AC  |
| LONG      | PULSE: LONG  |
| PULSE(L)  | PULSE: LONG or SHORT   |
| AUX       | AUX SUPPLY is enabled  |
| SINGLE    | MEASUREMENT: SINGLE  |
| +OFFSET   | STEP GENERATOR OFFSET: Positive  |
| VIEW      | VIEW DISPLAY mode  |
| CURVE     | Curve acquisition mode<br>PULSE: OFF & COLLECTOR SUPPLY POLARITY: +, -, AC                                   |
| AD0(L)    |  |
| AD1(L)    |  |
| AD2(L)    |  |
| AUX(L)    | Low while pressing AUX SUPPLY switch   |
| VAR(L)    | Low while COLLECTOR SUPPLY VARIABLE control is rotated   |
| OFFSET(L) | Low while STEP GENERATOR OFFSET switch is pressed  |
| DISCHG(L) | Low when VARIOABLE COLLECTOR SUPPLY control is rotated counterclockwise with the Collector Supply in DC mode |
| DC(L)     | Low when Collector Supply is in DC mode.   |

**Step Generator Clock**

The Step Generator Clock Circuit consists of U120, U160, U170, U180, U190A, U190B, U200B and U410A. This circuit generates clocks for the Step Generator, and the Acquisition Start Signal for the Acquisition Clock Circuit.

Data selector U120 selects clock signals for step counter U160-U170, and acquisition clock counter U400. When the COLLECTOR SUPPLY POLARITY is set to AC, the line frequency clock is supplied to the step counter, and the 1024 x line frequency clock is supplied to the acquisition clock counter. When the COLLECTOR SUPPLY POLARITY control is set other than the 2048 x line frequency clock is supplied to the acquisition clock counter.

Data selector U180 switches the signal path according to the measurement mode of the 370A.

Presetable counters U160 and U170 form a step counter. U170 provides binary data of each step for the step generator, and U160 resets U170 at the end of the step family. The preset count is loaded when the LOAD(L) input is pulled low. The value of the preset count is the same as the number of steps. Counting begins when the LOAD(L) input is pulled high.

Latches U190A, U190B and U200B generate the START signal for data acquisition. In addition, this circuit controls the LOAD(L) input signal when the 370A is in Single mode. DATA acquisition is initiated by the FIRE(L) signal. When the FIRE(L) signal is activated, U200B is cleared, and pin 5 of U190A is set high at the rising edge of the FIRE(L) signal. At the next clock from U410, pin 9 of U190B is set high, activating the START signal.

Jumper J34 sets the step transition phase to occur either at the zero crossing or at the peak of collector supply output: pins 1 and 2 should be shorted for zero, pins 2 and 3 should be shorted for peak. Pin 4 is provided for calibration purpose. When pins 2 and 4 are shorted, a family of steps can be generated step by step by repeatedly pressing the REPEAT switch.



### Collector Supply Enable

The Collector Supply Enable Circuit consists of U200A, U250A, U250B, U250C, U260B, U260C and U260E. This circuit disables the collector supply output when one of the following conditions occur.

1. MAX PEAK VOLTS switch selection
2. LEFT-RIGHT-STANDBY switch selection
3. Energizing relays
4. VIEW display mode of operation
5. PLL unlock
6. CPU reset

The ARC(L) signal is generated by the Arc Killer Circuit on the A10 Sense board, when the LEFT-RIGHT-STANDBY switch is selected. The CSTOP(L) signal is activated when relays on the Collector Supply Circuit is energized. These two signals are provided to suppress the switching arc. When one of these signals is activated, the NST-UNBLK signal is pulled low to prevent a bright spot from appearing on the CRT.

### Pulse Generator

The Pulse Generator Circuit consists of U130A, U130B, U150, U180B, U260A, U290B, U860B, U860D and associated components. U150 is a monostable multivibrator whose time constant is determined by R150, R151, R156 and C151. The LONG (L) signal sets the time constant of U150 to either 300  $\mu$ s or 800  $\mu$ s. When the PULSE(L) signal is low, and the SINGLE signal is high, if pin 5 of U220A is high, the output of U150 is passed through U860B and U180B and is fed to pin 10 of U310C. However, if pin 5 of U220A is low, pin 10 of U310C goes low. Therefore, in the SINGLE mode, in the ready condition, an aiding offset signal is prevented from being output from the step generator. The output of U150 is supplied to the A5 Display Control board as the P-INTEN signal to increase the brightness of the display. The pulse signal is also supplied to U250D as the acquisition clock in the Dot Display mode. the Dot Display mode.

### Acquisition Clock Generator

The Acquisition Clock Generator consists of U210, U220A, U220B, U230B, U240D, U250D, U400, U860A and U860C. This circuit generates the start signal for data acquisition, acquisition clock, and the DONE-INT signal. The DONE-INT signal is an

interrupt signal to inform the microprocessor that acquisition is completed.

Presetable counter U400 generates the acquisition clock for the A/D Timing circuit. The frequency of the acquisition clock is:

$$(\text{Number of steps} + 1) / \text{clock frequency}$$

The preset count is loaded by a low on the LOAD(L) input. The preset value equals 1 - (number of steps). The clock frequency is 2048 x line frequency, except for the AC mode, where the frequency is 1024 x line frequency.

Data selector U210 switches the source of the acquisition clock and end of acquisition signal as determined by the setting of the COLLECTOR SUPPLY POLARITY and STEP GENERATOR PULSE switches.

The Acquisition Clock Generator is initiated by the START signal from U190B pin 9. The START signal sets U220A pin 6 low. A low on U220A pin 6 enables U400 to be clocked, generating an acquisition clock.

When the Acquisition RAM is filled with data, the A11 signal on pin 3 of U210 is activated. This signal asserts the DONE-INT signal. The ABT(L) signal, which is activated by switching the MEASUREMENT switch between REPEAT, SWEEP and SINGLE, also asserts the DONE-INT signal.

### Step Generator

The Step Generator Circuit consists of U300, U310, U320A, U320C, U330, U350, U360, U370, U390A, U440 and U450. This circuit generates the step signal that is applied to the Step Amplifier.

U300 converts the 4-bit digital step data from U170 into an analog step signal. U310A and U310B controls the polarity of steps with the POSI signal. U320A selects the input resistor of U370 and changes the amplitude of steps. When the 370A is in 0.1 x mode, step amplitude is divided by ten.

## 370A Service Manual

U350 is a 12-bit D/A converter. The offset value, which is controlled by the STEP GENERATOR OFFSET control, is supplied to data lines D0 - D11. The data is latched internally by a low on the WR(L) and OFFSET(L) lines. The polarity of the offset, positive or negative, is determined by the voltage on VREF Input (pin 19). This voltage is controlled by the +OFFSET signal from U280.

U370 is a summing operational amplifier, providing at the output a signal representing the sum of the step signal and the offset signal. The output voltage per step is 0.2 volts in all settings of the STEP AMPLITUDE switch.

When the 370A is in the PULSE (LONG or SHORT) mode, a pulse signal from U130 switches the analog switch U310C, which in turn generates the pulse steps as described below. With the POSI signal low, if the +OFFSET signal is high, or with the POSI signal high, if the +OFFSET signal is low, pin 2 of U310C is connected to ground through U440C and U440A or U440C and U440B. Since the step signal and offset signal are constantly added at pin 1 of U310C, a pulse step which includes the offset level with respect to the ground level as a reference appears at pin 15 of U310C. Stated differently, the pulse step signal has the pulse offset signal added to it. If however, both the POSI signal and the +OFFSET signal are low, or both are high, pin 2 of U310C is connected to pin 5 of U450 through either U440C and U440A or U440C and U440B. Therefore, the offset signal is fed to pin 2 of U310C, and the pulse step signal which includes the offset level with respect to the offset level as a reference appears at pin 15 of U310. Stated differently, the pulse step signal has the DC offset signal added to it.

### Aux Signal Generator

The Aux Signal Generator consists of U320B, U340, U380 and U390B. This circuit generates the auxiliary supply signal.

U340 is a 12-bit D/A converter. The signal level, which is controlled by the AUX control, is supplied to the data lines D0 - D11. The data is latched internally with the low on WR(L) and AUX(L) lines. The polarity of the auxiliary supply is controlled by the +AUX signal from U280.



## COLLECTOR SUPPLY GENERATOR

The Collector Supply Generator Circuit, located on the A3 A/D board, consists of a Sine Wave Timing Generator, Sine Wave Generator, Collector Level Control Circuit and High Voltage Sine Wave Attenuator Circuit. These circuits generate a sine wave synchronized to the line frequency, which is the source of the Collector signal.

### Sine Wave Timing Generator

This circuit consists of PLL (Phase-Locked Loop) U470, counter U480 and window comparator U490.

U470 is synchronized with line frequency. It supplies the clock signal for U480, which generates signals 16f, 8f, 4f, 2f and f.

U490A and U490B check the input voltage of the VCO (Voltage Controlled Oscillator) and determine whether the PLL is locked.

### Sine Wave Generator

The Sine Wave Generator Circuit consists of U500, U510A, U510B, U540, U560B, U560C, U560D and U840C. From the 16f, 8f, 4f and 2f signals U500 generates the switching signal for the 1-to-8 line switch U540.

U510A, U510B, U540, U560C, U560D and U840C are an integrating-type ramp signal generator. U540 and U840C control the slope of the ramp waveform. Feedback from U560B generates a sine wave with a fixed amplitude.

### Collector Level Control

The Collector Level Control Circuit controls the amplitude of the Collector Supply.

U550 and U560A convert a digital value set by the VARIABLE COLLECTOR SUPPLY control on the front panel to a DC signal in the range from 0V to -2V.

This DC signal is supplied to the Sine Wave Attenuator Circuit through the Discharge Control Circuit to control the amplitude of the Sine signal, thereby controlling the output level of the collector supply.

### Discharge Control

This circuit consists of analog switches U530B and U530C, monostable multivibrator U790A, comparator U800, operational amplifier U810, resistor R810, capacitor C810 and associated components. When the Collector Supply is in DC mode, and the VARIABLE CORRECTOR SUPPLY control is used to lower the output voltage of the Collector Supply, this circuit generates a control signal which forces the smoothing capacitors on the secondary side of transformer T200 to discharge, so that the output reaches the desired value in a short period of time. Therefore, even if the Collector Supply output voltage is reduced by a large amount, this circuit causes the output to reach the desired value quite quickly.

If the VARIABLE COLLECTOR SUPPLY control is not turned on, the DISCHG(L) signal will remain high, with pin 13 of U790A low. Pin 13 of U790A is connected to the Discharging Circuit (located on diagram 13) as the discharge control signal DISCHG, and is also connected to the control inputs of U530B and U530C. Thus, in this case, the Discharging Circuit is disabled, and the DC signal from the Collector Level Control Circuit passes through U530B, R810 and U810, and is connected to the Sinewave Attenuator Circuit. See Figure 2-2.

If the VARIABLE COLLECTOR SUPPLY control is turned counterclockwise however, a microprocessor generates a discharge trigger signal DISCHG(L) (negative pulse), pin 13 of U790A goes high, and the smoothing capacitors start to discharge through the Discharging Circuit. Simultaneously, U530B and U530C are switched, the DC signal from the Collector Level Control Circuit is applied to inverting input of the comparator U800, and one end of R810 is connected to ground. When one end of R810 is connected to ground, C810, which had been charged to a voltage equal to the DC signal from the Collector Level Control circuit begins to discharge through R810. The time constant of the RC circuit formed by R810 and C810 is approximately the same as the time constant when the smoothing capacitors discharge through the Discharging Circuit. Therefore, it operates as a simulator of the smoothing capacitor discharge.

The voltage on C810 is compared by U800 to the voltage of DC signal from the Collector Level Control Circuit corresponding to the output of the Collector Supply, and when the C810 voltage is equal to the DC signal voltage (i.e., when the voltage on the smoothing capacitors is approximately equal to the desired voltage), pin 7 of U800 goes low, which resets U790A, the DISCHG signal goes low, and the discharge of the smoothing capacitor through the Discharging Circuit stops. After this, the output voltage from the Collector Supply reaches the desired voltage in a very short period of time.

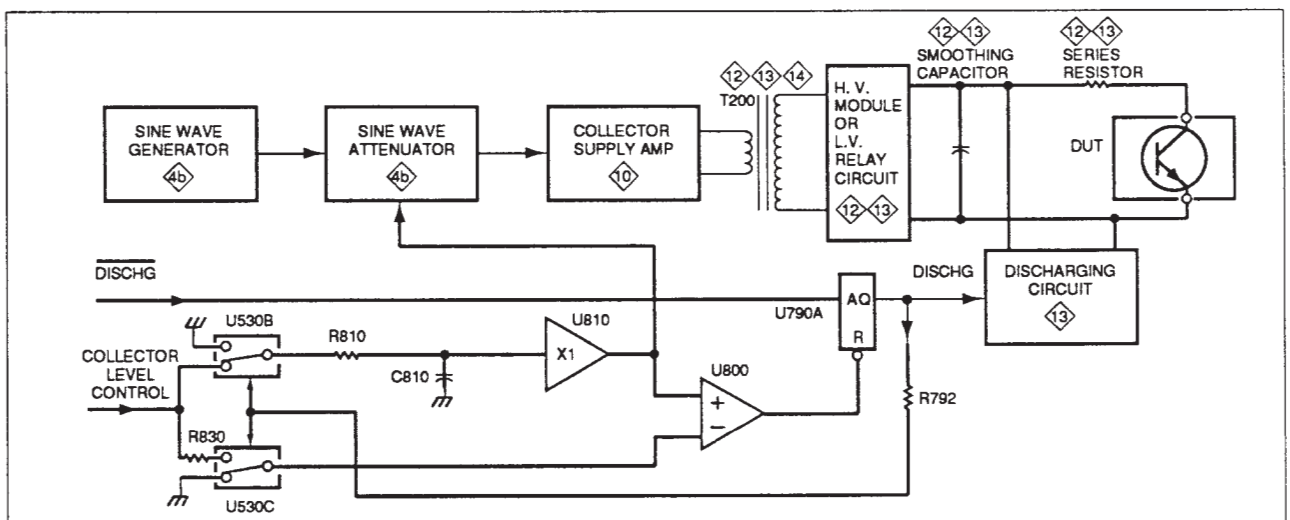


Figure 2-2. Discharge Control Circuit.

The discharge trigger signal is generated even in the case in which the VARIABLE COLLECTOR SUPPLY control is reset to 0% by a change in front-panel settings. It is not generated, however, when the Collector Supply output voltage is increased.

**Sine Wave Attenuator**

The Sine Wave Attenuator circuit consists of analog multiplier U570, operational amplifier U565A and U565B, D-flip flop U230A and analog switch U530A.

The analog multiplier attenuates the amplitude of a 4 Vp-p sine signal supplied from the Sine Wave Generator Circuit by means of a DC signal supplied from the Collector Level Control Circuit, and outputs the result to the A6 Collector Supply Output Board. Figure 2-3 shows the characteristic of the analog multiplier.

Selector U530A switches its output to ground level with the signal from U250A (located on diagram 4a), disabling the Collector Supply output. When the signal from U250A is changed, the f(L) signal is controlled by U230A to switch U530A at a zero-crossing point of the power-line signal.

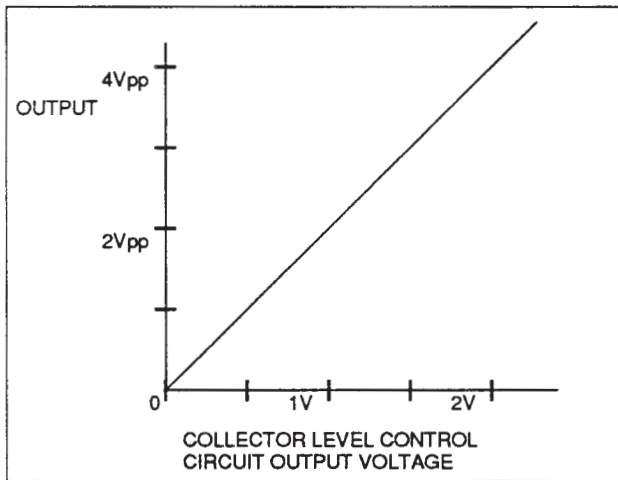


Figure 2-3. Analog Multiplier Characteristic.

**5**

**ACQUISITION**

The Acquisition Circuit, located on the A3 A/D Board, consists of an S/H ( Sample and Hold) and Select Circuit, A/D Circuit, A/D Timing Circuit, Acquisition Memory Control Circuit, Acquisition Memory Circuit and Bus Interface Circuit.

These circuits perform A/D conversion of the HD and VD signals from the A5 Display Control Board, write them into Acquisition memory, and transfer data to the CPU.

**S/H and Select**

The S/H (Sample and Hold) and Select circuit consists of U580A, U580B, U590, U600 and U610. U590 and U600 sample and hold the HD and VD signals respectively, acting on control signals from the A/D Timing Circuit. The VD and HD signals, after being sampled, held and converted to DC, are selected by 4-to-1 line switch U610 and supplied to the A/D Circuit. Operational amplifier U580, diodes CR580, CR581 and resistors R580, R581, R582, R583 make up two diode function generators and limit the input voltage of U590 pin3 between -1 volt and +1 volt. This circuit compares the voltage of the HD signal with the positive and negative limits, which are set by R580, R581, R582 and R583. If the voltage of the HD signal exceed these limits, one of two diode generators U580A or U580B is turned on and the voltage is clamped within upper or lower limits.

**A/D Converter**

The A/D Circuit consists of U620, U630 and U650. U620 is an operational amplifier that converts the output signal from U610, which has been converted to -1V to +1V, to the 0 to 5V signal required by A/D converter U630.

**A/D Timing**

The A/D Timing Circuit controls the timing of operations from sample-and-hold of the analog signal through storage in memory. This circuit operates on a 2.5MHz clock from pin 18 of A/D converter U630. The following description should be read with reference to the timing chart in Figure 2-4.

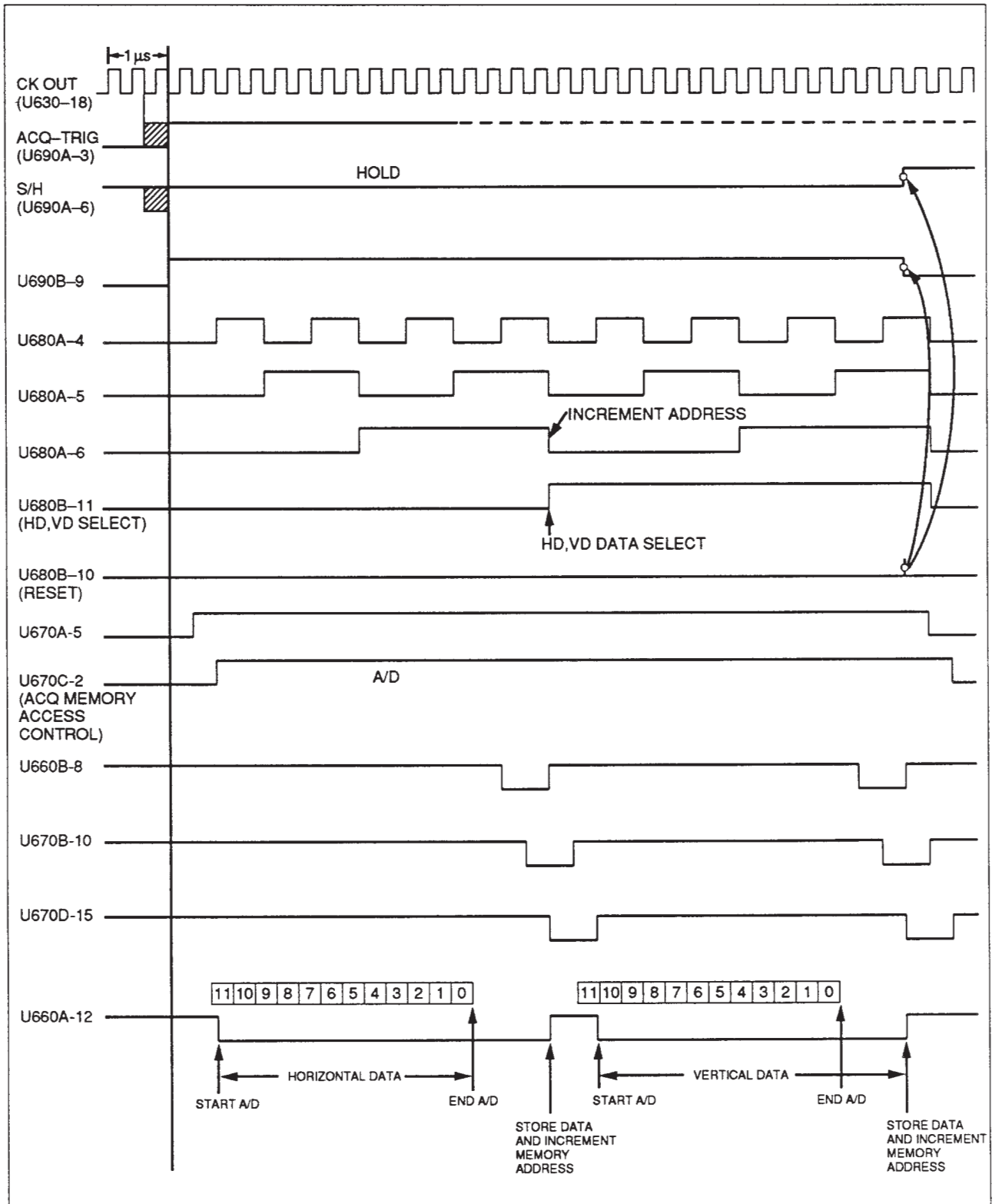


Figure 2-4. Acquisition timing.

## 370A Service Manual

The A/D Timing Circuit begins operation on the rising edge of the ACQCLK signal from the Acquisition Clock Generator Circuit. When the ACQCLK signal sets D flip-flop U690A, U590 and U600 go into the hold state. Two clock cycles later pin 12 of U660A goes low and A/D conversion starts.

Fourteen clock cycles after the start of A/D conversion, pin 12 of U660A goes high and the data are latched in Acquisition Memory U760 and U770. At the same time pin 6 of U680A goes low, address counter U750 increments by 1, counter U680B increments by 1, and U610 switches over to the Vertical signal (VD).

After the Vertical signal has been stored in memory in the same way as the Horizontal signal, U680B increments by 1 and pin 10 of U680B goes high. This resets U690A and U690B, and U590 and U600 begin sampling data again while U690A waits for the next ACQCLK signal.

### Acquisition Memory Control

This circuit consists of U700C, U710 and U750. U710 switches Acquisition Memory access between the microprocessor on the A2 CPU Board and the A/D Circuit. Switching is controlled by the output from pin 5 of U670C. (See Figure 2-4.)

U750 is a 12-bit counter that generates the address signals supplied to Acquisition Memory.

### Acquisition Memory

The Acquisition Memory Circuit consists of U760 and U770. It stores 10-bit data from the A/D Circuit under control of the Acquisition Memory Control Circuit, and is accessed by the CPU. U760 stores five MSBs of data and U770 stores five LSBs of data.

### Bus Interface

The Bus Interface Circuit consists of U290C, U290D, U420C, U720, U730 and U740.

Buffers U770 and U780 are located between the Acquisition Memory Data Bus and CPU Bus and perform control functions to prevent collisions between the two buses. Decoder U720 and gates U290C, U290D and U420C supply the other circuits on this board with control signals from the CPU on the A2 CPU board. The functions of these control signals are as follows:

- ABT(L): Erases the contents of acquisition memory and generates the DONE-INT signal
- ACQ(L): The CPU is accessing acquisition memory
- FIRE(L): Starts data acquisition
- RST(L): Sets the acquisition memory counter to 0 at every data acquisition



## 6 DISPLAY COUNTER CIRCUIT

The Display Counter Circuit is located on the A4 Digital Display Board. The Display Counter Circuit consists of the Bus Buffer, the 4.5-MHz Oscillator, Display Counter, Address Switch & CPU Control, Display RAM, Bus Transceiver, Dot Cursor Generator, Character & Latch Controller. These circuits determine whether the CPU accesses the Display RAM, or whether the Display Counter reads out the Display RAM contents to control signals for the digital display. For the display timing, see Figure 2-5.

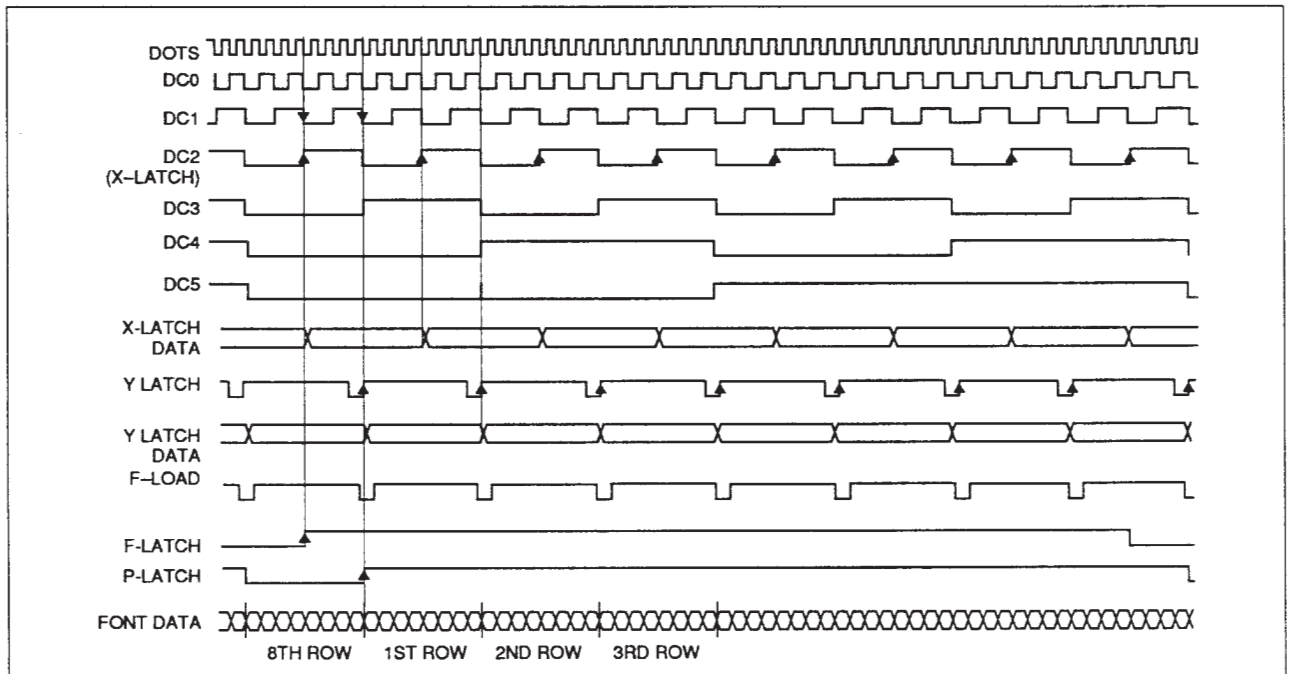


Figure 2-5. Display Timing.

### Bus Buffer

The Bus Buffer Circuit consists of U200, U210 and U220; it isolates address bus A1-A14 and control signals (UDS(L), LDS(L), RD(L), WR(L), DISP-RAM(L), RESET(L), WAIT(L), STATUS-0 and STATUS-1).

### 4.5-MHz Oscillator

C-MOS oscillator U100 provides the 4.5-MHz clock for the Display Counter.

### Display Counter

Dual 4-bit binary counters U110 and U120 make up the 16-bit Display Counter. This circuit counts the output of U100, producing the DC0 through DC14 signals. U110A is clocked by the Dot Cursor Generator output. The DC2 through DC14 signals are supplied to the Address Switch & CPU Control Circuit and become display RAM address inputs.

### Address Switch & CPU Control

This circuit consists of data selector/multiplexer U130, U140, U150, U160, D-flip flop U350B, gates U310A, U310D, U320B, U320C, U330B, and inverter U340F. The circuit provides address inputs and control signals for the Display RAM. The Address Switch, composed of data selector U130 through U160, is controlled by D-flip flop U350B. When U350B pin 9 is high and U280 pin 4 is low, the read/write access of the Display RAM by the CPU is enabled. When U350 pin 9 is low, the Address switch selects the Display counter outputs DC2 through DC14 for Display RAM address inputs to display the Display RAM contents on the CRT. In this case, when U280 pin 4 is low, U330B and U320B supplies CPU control signal WAIT(L) for the CPU until pin 9 of U350B returns high. Table 2-5 shows the relationship between the pin 9 output of U350B and the pin 4 output of U280.

**Table 2-5  
Display RAM States**

| U350B pin 9 | U280 pin 4 | WAIT(L) | Display RAM address | Display RAM status           |
|-------------|------------|---------|---------------------|------------------------------|
| 1           | 0          | 1       | CPU address         | CPU accesses Display RAM     |
| 1           | 1          | 1       | CPU address         | Display RAM not accessed     |
| 0           | 0          | 0       | Display counter     | Counter accesses Display RAM |
| 0           | 1          | 1       | Display counter     | Counter accesses Display RAM |

**Display RAM**

The Display RAM consists of 8-Kbyte static RAM devices U230 and U240. It stores the display data. Figure 2-6 shows the Display RAM memory map.

**Bus Transceiver**

The Bus Transceiver consists of octal bus transceiver U250, U260 and gate U320A. When the pin 9 output of U350B is high and the pin 4 output of U280 is low, the Bus Transceiver is enabled and the Display RAM Bus is connected to the CPU Bus.

**Dot Cursor Generator**

The Dot Cursor Generator consists of dual 4-bit counter U170, gate U310C, U330A, U330C, U330D and inverter U340C, U340D. The circuit generates the dot cursor signal by stopping the Display Counter Clock. When both the STATUS-1 signal and pin 12 of U330D are high, the clock input for U110A is inhibited during the U170A and U170B count for 128 cycles of the the pin 8 output of U110B.

**Character & Latch Controller**

This circuit consists of D-flip flops U350A, U360A & B, U370A & B, and U380; plus gates U300A & C, U320D, and U340A, B, & E. This circuit provides necessary control signals to the Display D/A Converter Circuit. STATUS-0 and STATUS-1 signals that determine the display cycle are also produced by this circuit. The display cycle is shown in Figure 2-7. If the RECALL/DIRECTORY button is pressed while holding down the FAST/SHIFT button to put the 370A in the Directory mode, pin 4 of U270 goes high. This forces the STATUS-0 and STATUS-1 signals low, causing the characteristics curve to be replaced by characters representing the directory. U280 generates a chip select signal for U270.

The STATUS-1 signal provides a display refresh rate of 68.7 Hz (68.5 Hz if the Dot cursor is enabled). The F-LATCH signal latches the character font data. The P-LATCH signal latches the character position data. The F-LOAD signal latches the output of character ROM U620. DC2 latches the curve X data and attributes data (X-LATCH). Y-LATCH latches the curve X,Y data and attributes data. R-SEL selects Z-SEL and DZ(L) signals. DCL3-DCL5 generates Y readout position data.



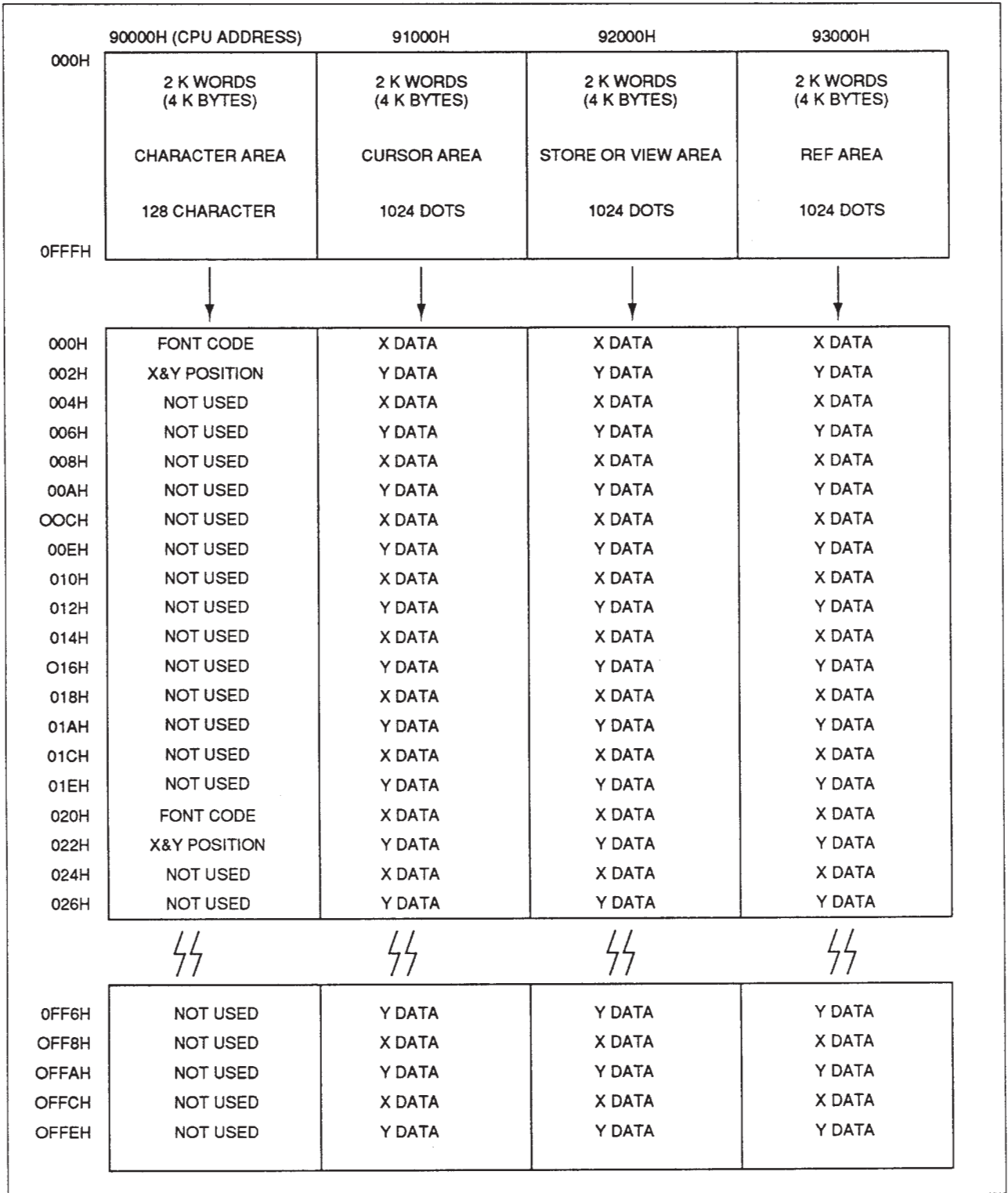


Figure 2-6. Display RAM Memory Map.

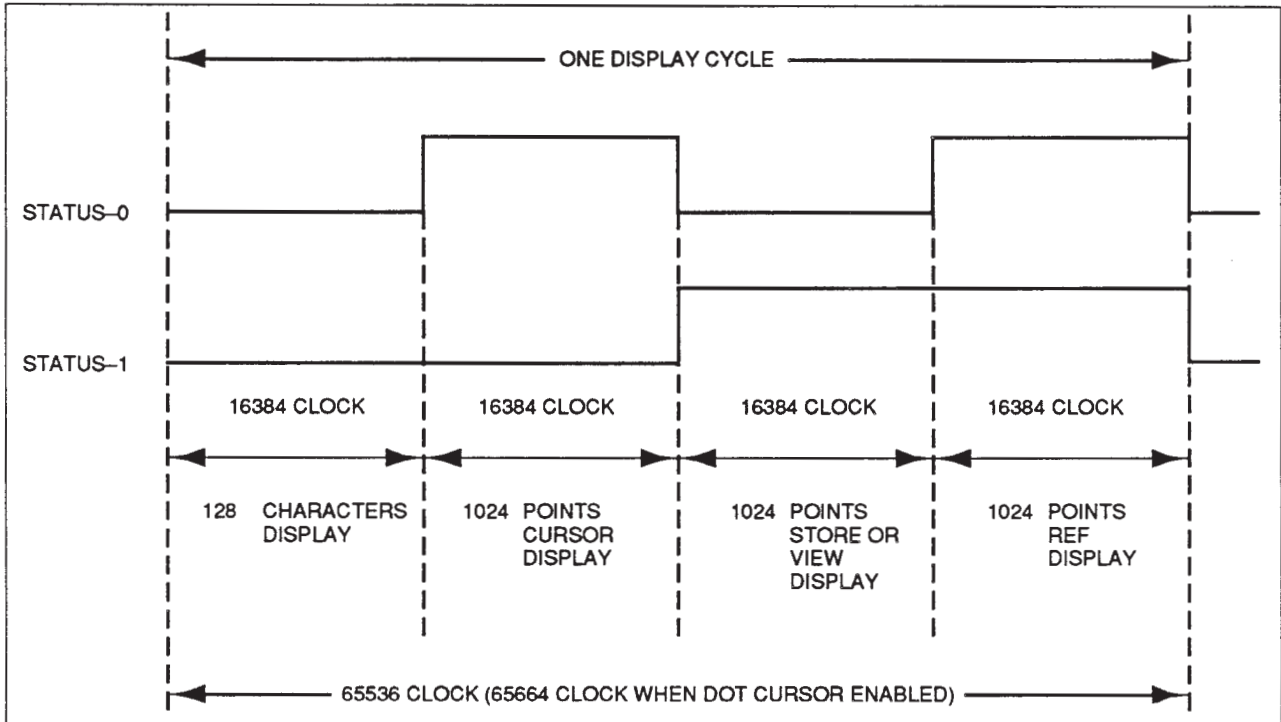


Figure 2-7. Display Cycle.

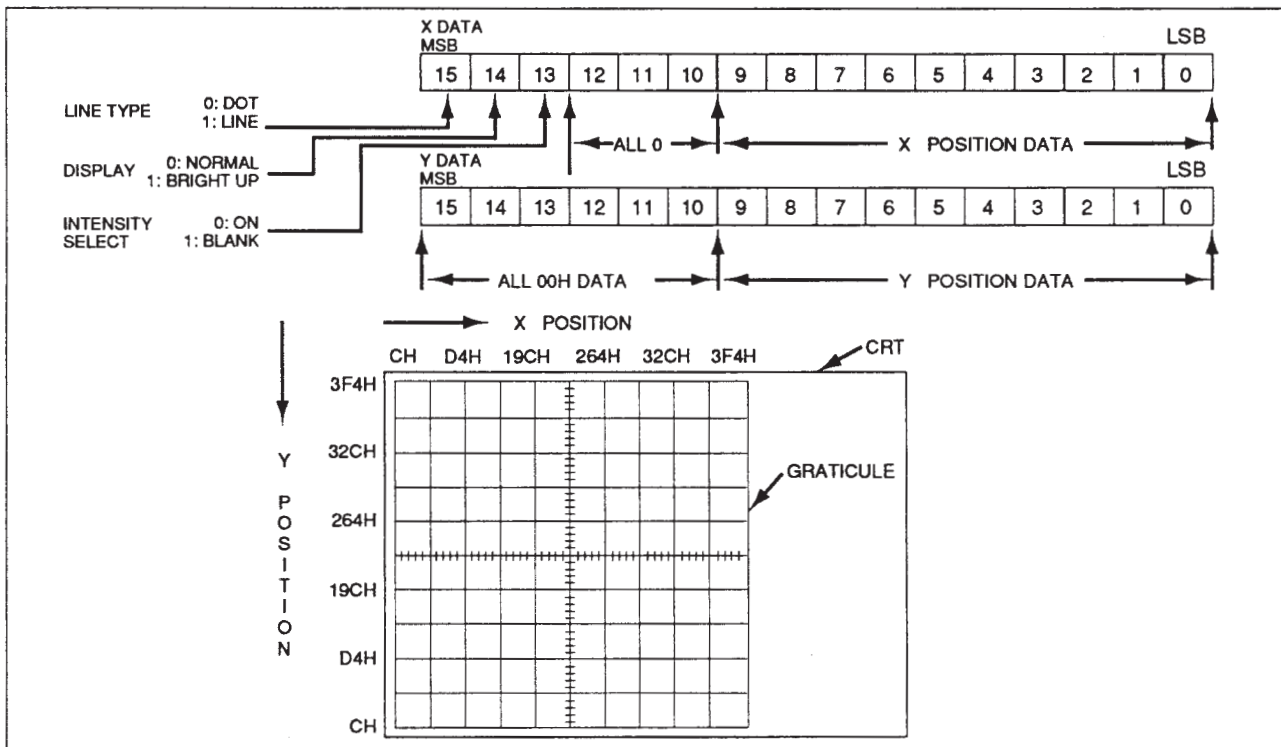


Figure 2-8. X and Y data organization.



## DISPLAY D/A CONVERTER CIRCUIT

The Display D/A Converter Circuit is located on A4 Digital Display Board. The Display D/A Converter Circuit consists of:

1. X data & Attribute Prefetch Latch.
2. X-Y Data & Attribute Load Latch.
3. X 10-bit DAC & Y 10-bit DAC.
4. X & Y Low-pass Filter
5. Font Latch.
6. Character ROM & Shift Register.
7. X & Y Readout Position Latch.
8. Readout Attribute Latch.
9. 8-bit Adder.
10. X Readout Step Generator.
11. X Readout DAC and Y Readout DAC.

These circuits convert the digitized waveform data, readout data and cursor data from the Display RAM into an analog signal and generate the z-axis signal.

### X Data & Attribute Prefetch Latch

The X Data & Attribute Prefetch Latch consists of octal D flip flops U400 and U420. Because X coordinate data comes prior to Y coordinate data from the Display RAM, and the X and Y curve data must simultaneously be latched into the X-Y Data & Attribute Load Latch (attribute data is included in X data), temporary storage of the X curve data is needed. X data is latched by the positive edge of DC2.

### X-Y Data & Attribute Load Latch

This circuit consists of octal D flipflops U440, U460 and U480. The Y-latch signal latches X curve data and Y curve data and provides the data to the X and Y 10 bit DAC. Attribute data included in the X data are also latched. Figure 2-8 shows the X and Y data organization.

### X 10-Bit DAC & Y 10-Bit DAC

The X 10-bit DAC consists of 12-bit DAC U500, operational amplifier U502A and associated components. This circuit converts 10-bit X digital signals (X curve data) from the X-Y Data & Attribute Load Latch circuit into a  $\pm 1$  volt analog signal.

The Y 10-bit DAC consists of 12-bit DAC U520, operational amplifier U502B and associated components. Operation of this circuit is the same as the X 10 bit DAC and  $\pm 1$  volts Y analog signal is generated.

### X Low-pass Filter & Y Low-pass Filter

The X Low-pass Filter consists of operational amplifier U522A, analog switch U540B, resistors R512, R514 and capacitors C508, C510, C512, C528. This circuit is enabled when the pin 17 output of U440 is high, reducing the high frequency elements of the X analog signal so that the dots displayed on the CRT seem to be a line.

The Y Low-pass Filter consists of operational amplifier U522B, analog switch U540C, resistors R532, R534 and capacitors C530, C532. This circuit acts just like the X Low-pass Filter.

### Font Latch

The Font Latch consists of octal D flipflops U600 and stores the font data of the readout character by the F-LATCH signal. Figure 2-9 shows the data format of the font data word.

### Character ROM & Shift Register

This circuit consists of Character ROM U620, shift register U640 and NAND gate U310B. This circuit generates Z signals for the readout character. When the F-load signal is low, the output of Character ROM U620 are loaded into shift register U640 by DOTS(L) signal. When the F-load signal returns to high, loaded data are shifted by the DOTS(L) signal to become the serial readout Z signal. U310B is provided to shorten the readout Z signal active duration.

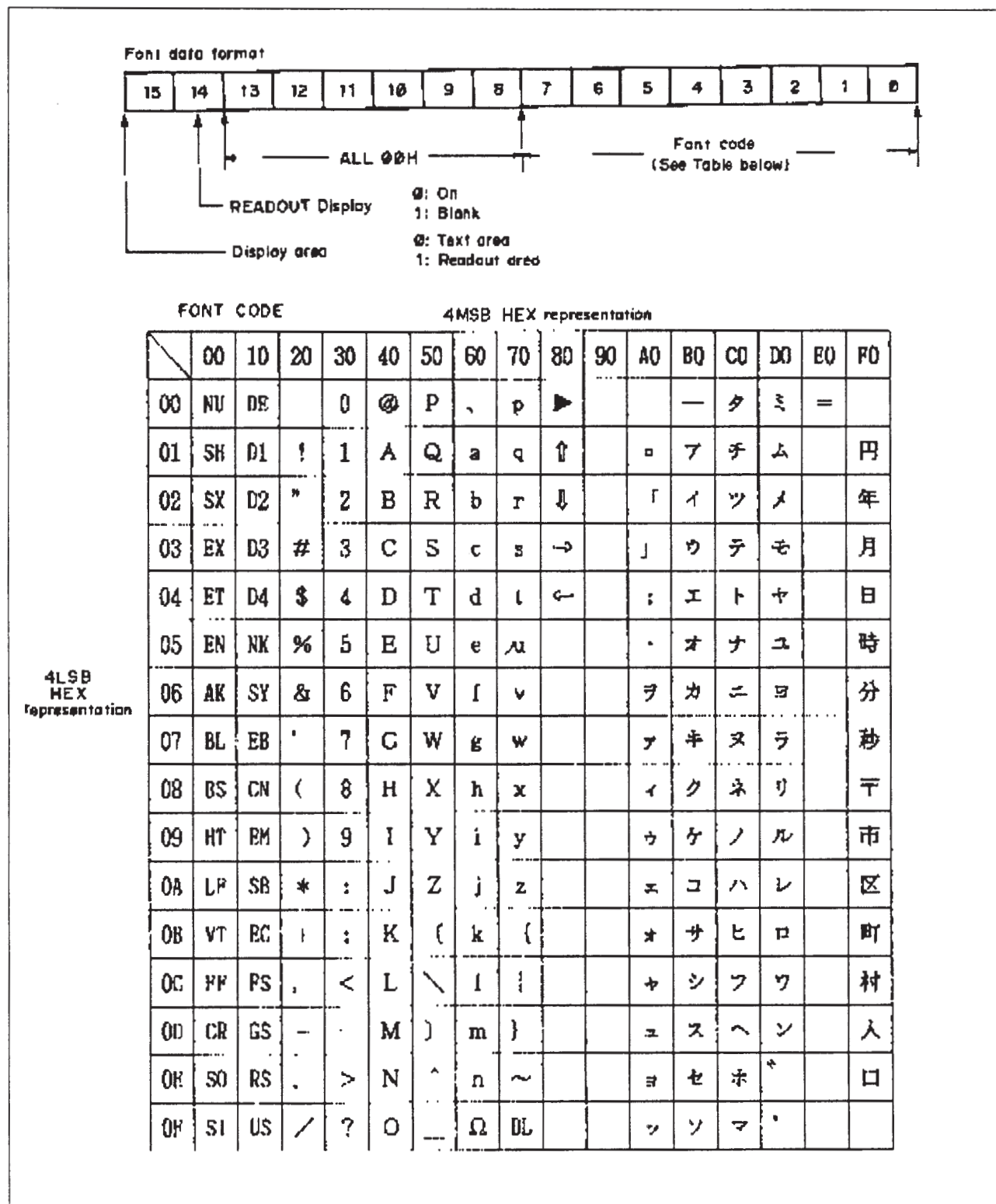


Figure 2-9. Font data word data format.

**X & Y Readout Position Latch**

The X & Y Readout Position Latch consists of octal D flipflops U700 and U710. This circuit stores the X and Y position data for the readout character. The position data are latched by the P-LATCH signal. Figure 2-10 shows the readout position data format.

**8-Bit Adder**

The 8-bit Adder consists of adder U760 and U770. It adds DCL3 through DCL5 to Y readout position data PY0 through PY7. The RY0 through RY7 output of this circuit are supplied to the Y readout DAC as the Y readout data.

**Readout Attribute Latch**

Dual D-type flipflop U660 is the Attribute Latch; it stores readout attribute data prefetched in the X data & attribute prefetch latch. The readout attribute data are latched by the P-LATCH signal.

**X Readout Step Generator**

The X Readout Step Generator consists of U720B, C, D and resistors R700, R702, R704, R710, R712, R714, R716, R718, R720. This circuit generates the X step signal from DC0 through DC2 signals and provides this step signal with the X readout DAC output as the X readout signal.

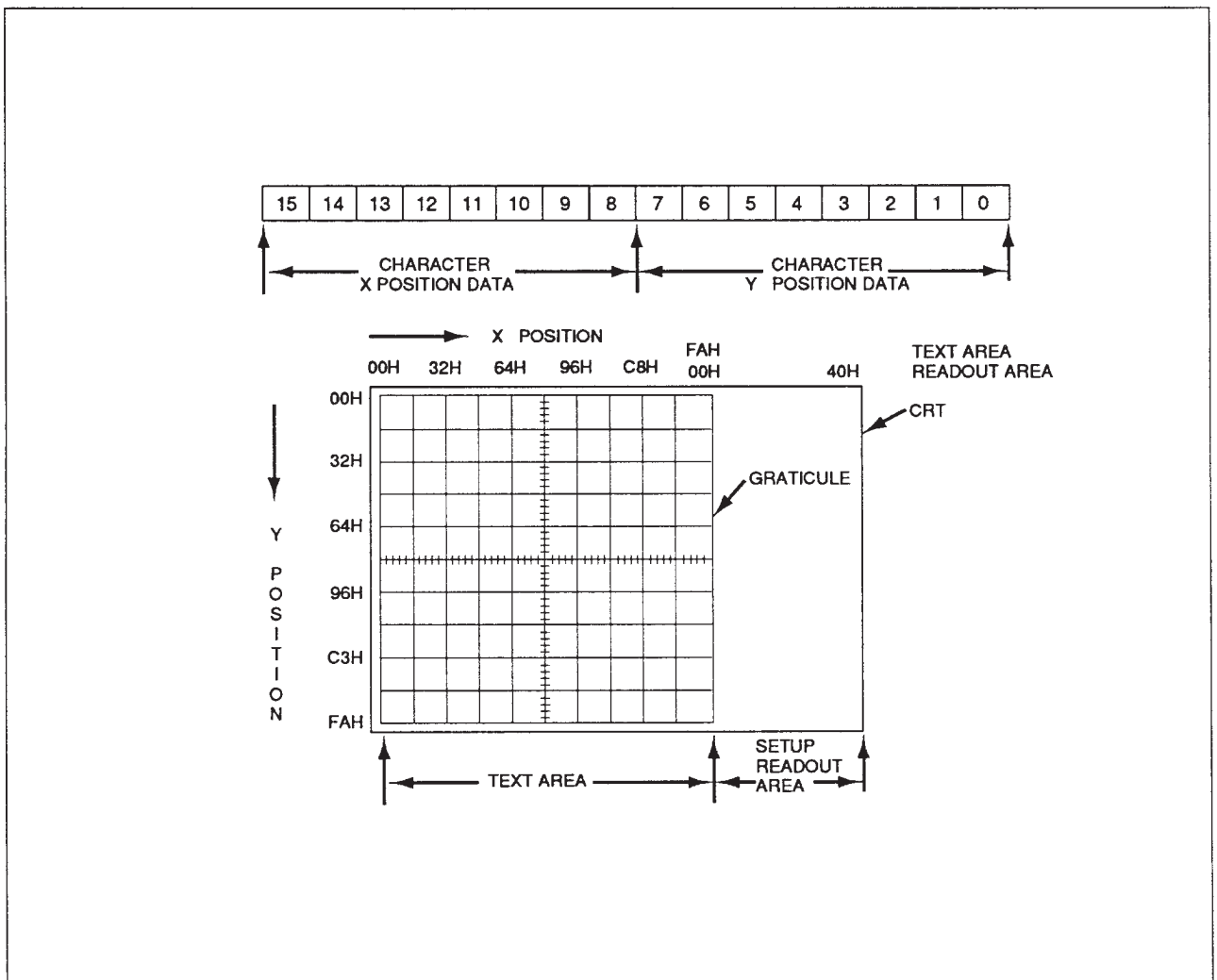


Figure 2-10. Readout character position data format.

### X & Y Readout DAC

The X Readout DAC consists of 8-bit DAC U800, operational amplifier U802A, B, analog switch U540A and their associated components. This circuit converts the X position data output PX0 through PX7 from the X & Y Readout Position Latch into an X analog signal and adds the output of the X Readout Step Generator to the converted output. If pin 5 of the Readout Attribute Latch U660A is high, U540A switches to offset the U802B by the U822B reference voltage so that the readout can be written in the SETUP readout area. The output of U802B provides the X readout signal, RX.

The Y Readout DAC consists of 8 bit DAC U820, operational amplifier U822A and associated components. This circuit converts the RY0 through RY7 outputs of the 8-bit adder into the Y readout signal, RY.



## 8 DISPLAY OFFSET CIRCUIT

The Display Offset Circuit is located on the A5 Display Control Board. The Display Offset Circuit consists of the Control Logic Circuit, Offset D/A Converter, Polarity Select Circuit, Source Select Circuit, Zero & Invert Select Circuit and Gain Select Circuit. These circuits select the horizontal and vertical source inputs for the CRT display and provide them with calibrated offset voltages to execute display functions such as DISPLAY OFFSET, MAG, CRT CAL, DISPLAY INVERT and COLLECTOR SUPPLY POLARITY.

### Control Logic

U100, U120 and U140 are 8-bit addressable latches and U160 form a 3-line to 8-line decoder/multiplexer. These components form the Control Logic stage. This circuit decodes the address A1 through A6 from the CPU. D0 data from the CPU determines the display functions. Table 2-6 shows the display functions that are controlled by the address A1 through A6 and data D0.

### Offset D/A Converter

The Offset D/A Converter consists of dual D/A converter U670, operational amplifiers U662A, U662B, U674, U677 and analog switches U640B, U650B. This circuit generates display offset voltages selected by the front panel Position Control buttons. The DO0 through DO6 output of the Control Logic circuit determines the display offset. This offset output is supplied to the Polarity Select circuit.

### Polarity Select

The Polarity Select Circuit consists of analog switches U680, U685, operational amplifiers U690, U695 and their associated components. This circuit provides display offset resulting from the setting of the front panel COLLECTOR SUPPLY POLARITY switch.

U685 (or U680) pins 9 and 10 provide the display offset when the COLLECTOR SUPPLY POLARITY switch is set to +(NPN), AC or -(PNP).

**Table 2-6**  
**Display Function**

| Address |    |    |    |    |    |      | HEX | Signal | Display function determined by D0 |
|---------|----|----|----|----|----|------|-----|--------|-----------------------------------|
| A6      | A5 | A4 | A3 | A2 | A1 | (A0) |     |        |                                   |
| 0       | 0  | 0  | 0  | 0  | 0  | x    | 00  | DO0    | vertical offset                   |
| 0       | 0  | 0  | 0  | 0  | 1  | x    | 02  | DO1    | vertical offset                   |
| 0       | 0  | 0  | 0  | 1  | 0  | x    | 04  | DO2    | vertical offset                   |
| 0       | 0  | 0  | 0  | 1  | 1  | x    | 06  | DO3    | vertical offset                   |
| 0       | 0  | 0  | 1  | 0  | 0  | x    | 08  | DO4    | vertical offset                   |
| 0       | 0  | 0  | 1  | 0  | 1  | x    | 0A  | DO5    | vertical offset                   |
| 0       | 0  | 0  | 1  | 1  | 0  | x    | 0C  | DO6    | vertical offset                   |
| 0       | 0  | 0  | 1  | 1  | 1  | x    | 0E  | X-Y    | D/A select                        |
| 0       | 0  | 1  | 0  | 0  | 0  | x    | 10  | VO0    | 1 for NPN mode                    |
| 0       | 0  | 1  | 0  | 0  | 1  | x    | 12  | VO1    | 1 for AC mode                     |
| 0       | 0  | 1  | 0  | 1  | 0  | x    | 14  | HO0    | 1 for NPN mode                    |
| 0       | 0  | 1  | 0  | 1  | 1  | x    | 16  | HO1    | 1 for AC mode                     |
| 0       | 0  | 1  | 1  | 0  | 0  | x    | 18  | VSRC   | 1 for SG sig                      |
| 0       | 0  | 1  | 1  | 0  | 1  | x    | 1A  | HSRC   | 1 for SG sig                      |
| 0       | 0  | 1  | 1  | 1  | 0  | x    | 1C  | MOV    |                                   |
| 0       | 0  | 1  | 1  | 1  | 1  | x    | 1E  | MOH    |                                   |
| 0       | 1  | 0  | 0  | 0  | 0  | x    | 20  | CAL    | 0 for cal                         |
| 0       | 1  | 0  | 0  | 0  | 1  | x    | 22  | ZERO   | 1 for zero                        |
| 0       | 1  | 0  | 0  | 1  | 0  | x    | 24  | NV     | 1 for invert                      |
| 0       | 1  | 0  | 0  | 1  | 1  | x    | 26  | VMAG   | 1 for mag                         |
| 0       | 1  | 0  | 1  | 0  | 0  | x    | 28  | HMAG   | 1 for mag                         |
| 0       | 1  | 0  | 1  | 0  | 1  | x    | 2A  | NON-ST | 1 for non-store                   |
| 0       | 1  | 0  | 1  | 1  | 0  | x    | 2C  | VOPOL  | vertical offset polarity          |
| 0       | 1  | 0  | 1  | 1  | 1  | x    | 2E  | HOPOL  | horizontal offset polarity        |
| 0       | 1  | 1  | 0  | 0  | 0  | x    | 30  | DO0    | horizontal offset                 |
| 0       | 1  | 1  | 0  | 0  | 1  | x    | 32  | DO1    | horizontal offset                 |
| 0       | 1  | 1  | 0  | 1  | 0  | x    | 34  | DO2    | horizontal offset                 |
| 0       | 1  | 1  | 0  | 1  | 1  | x    | 36  | DO3    | horizontal offset                 |
| 0       | 1  | 1  | 1  | 0  | 0  | x    | 38  | DO4    | horizontal offset                 |
| 0       | 1  | 1  | 1  | 0  | 1  | x    | 3A  | DO5    | horizontal offset                 |
| 0       | 1  | 1  | 1  | 1  | 0  | x    | 3C  | DO6    | horizontal offset                 |
| 0       | 1  | 1  | 1  | 1  | 1  | x    | 3E  | X-Y    | D/A select                        |
| 1       | 0  | 0  | x  | x  | x  | x    | 40  | LATCH  | D/A latch                         |

### Source Select

The Source Select Circuit consists of analog switches U600 and U610. U610 selects the horizontal source input from the (NPN or PNP) CAL voltages, SG-SIG signal or H OUT signal. U600 selects the vertical source input from the (NPN or PNP) CAL voltages, SG-SIG signal or V-OUT signal.

### Zero & Invert Select

The Zero & Invert Select circuit consists of analog switches U605 and U615. This circuit determines if the ZERO offset voltages (0 volt) is used for the source input and if the source input is inverted. Display offset selected by the Polarity Offset Circuit is applied to this circuit.

**X Gain Select**

The X Gain Select circuit consists of operational amplifier U630, U635, U655, analog switches U650A, U650C and associated components. This circuit determines the gain of the selected X source input as set by the HMAG signal from the Control Logic. When the HMAG signal is high, analog switches U650A and U650C switch so that the X source input is magnified 10 times.

**Y Gain Select**

The Y Gain Select Circuit consists of operational amplifier U620, U625, U645, analog switch U640A, U640C and their associated components. This circuit operates the same as the X Gain Select Circuit. The output of this circuit is supplied to the Display Select Circuit and Acquisition Circuit (part of A3 A/D BOARD).

**9** **DISPLAY SELECT**

The Display Select circuit is located on the A5 Display Control board. The circuit consists of the Signal Select Logic Circuit, Unblank & Z Select Circuit, and the Horizontal & Vertical Preamp. This circuit block selects and amplifies the source inputs that are displayed on the CRT. Selection of the source inputs are performed by the Signal Select Logic Circuit. The Z signal for the source inputs is controlled by the Unblank & Z Select Circuit. Figure 2-11 and Figure 2-12 show the display select timing.

**Signal Select Logic**

The Signal Select Logic Circuit consists of decoder U800B, data selector U810, operational amplifier U820A, NAND gate U850A, B, C, D, U860A, inverter U840A, C, F and associated components. This circuit generates two kinds of select signals: AS (AS0, AS1)

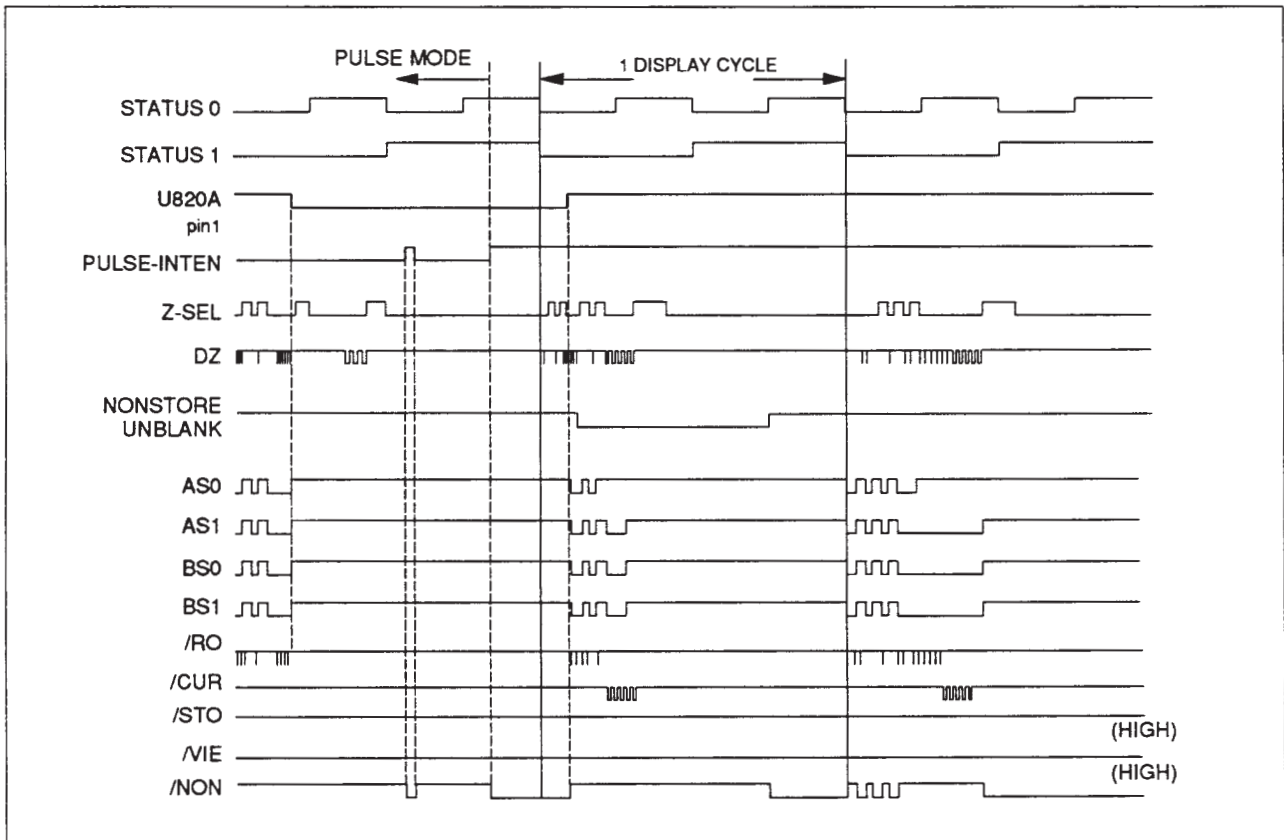


Figure 2-11. Display select timing (with NON-ST high).



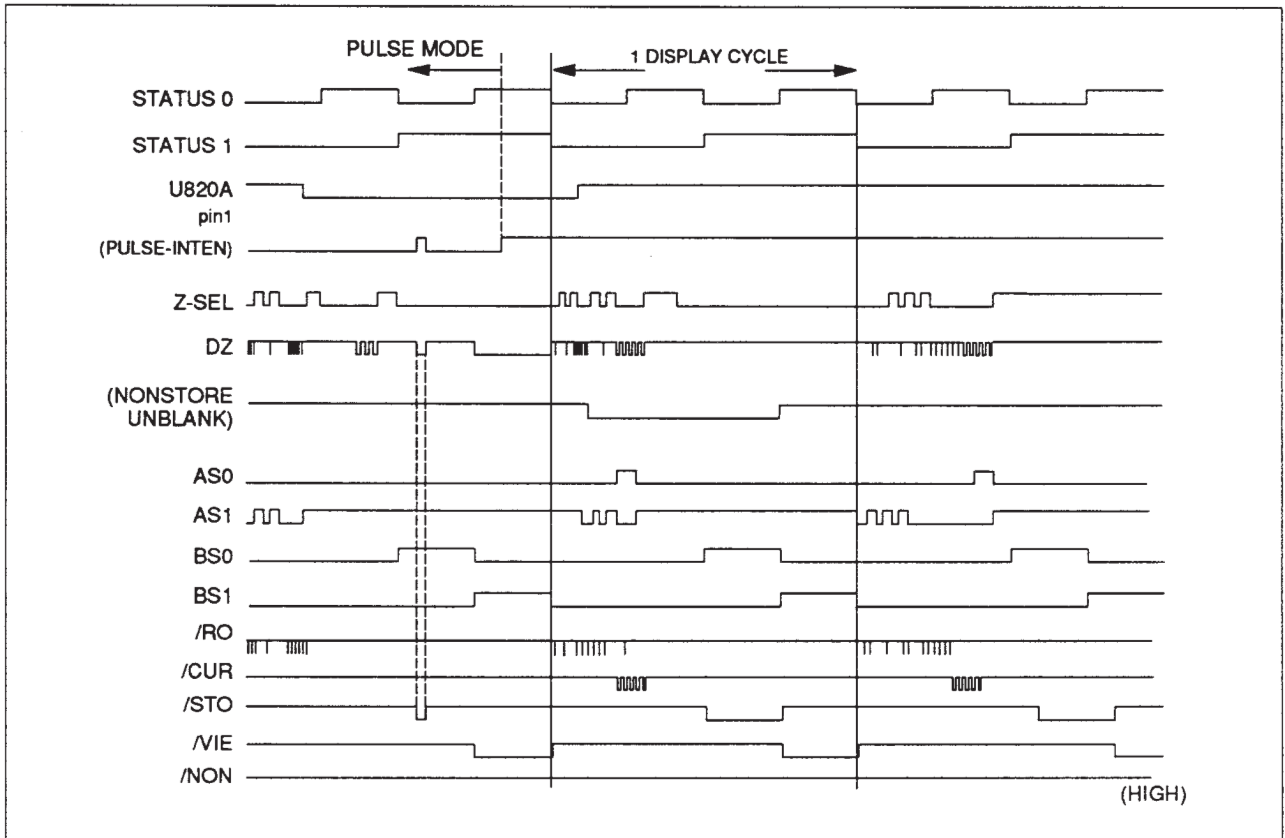


Figure 2-12. Display select timing (with NON-ST low).

and BS (BS0, BS1). Decoder U800B and NAND gate U850B, C, D generate the BS0 and BS1 select signals as follows:

Display cycle signals STATUS-0 and STATUS-1 are applied to decoder U800B, so when the pin 6 output of U850B is high, outputs of U800B are inverted by NAND gate U850C and U850D, becoming the BS0 and BS1 signals. When the pin 6 output of the NAND gate U850B is low, the BS0 and BS1 signals are both high.

The two input signals to NAND gate U850B (NON-ST and AS1) determine the non-store display cycle. When NON-ST is high, the active AS1 signal provides the non-store waveform display cycle. This AS1 signal goes active (high) in one of the following conditions:

1. STATUS-1 is high
2. Z-sel is high
3. Output of comparator U820A is low (this occurs if the front panel READOUT/CURSUR INTENSITY control is adjusted counterclockwise to lower the voltage level of the A-INTEN below 2.5 volts).

The AS1 signal determines the AS0 signal. AS1 signal is applied to the select input (pin 2) of data selector U810 and provides either the NON-ST signal or STATUS-0 signal to its output as AS0.

### Unblank & Z Select

This circuit consists of transistors Q850, Q852, Q860, Q862, Q870, the upper half of data selector U810, demultiplexer U800A, U830B, gate U860C, U860D, U870A and associated components. The unblank logic consists of U810, U860C, U860D and U870A. This circuit is provided to cut off the Z signal when the front-panel switches are changed. When the display mode is NON STORE, U810 selects the pin 3 input. This input is controlled by the P-INTEN and NST-UNBLK signals. When either of these signals turns low, pin 3 input of U810 turns to high, and the pin 7 output of U810 turns all outputs of demultiplexer U800A and U830B high, so that the Z signal is disabled. The Z select circuit outputs the Z signal that corresponds with the display cycle. The Z signal is selected by the AS0, AS1, BS0 and BS1 signals.

### Horizontal & Vertical Preamp

The Horizontal and Vertical Preamp Circuit consists of data selector U500, U520, decoder U830A, transistor Q540A, Q540B, Q542A, Q542B, Q556, Q576, nand gate U860B, inverter U840B, D and their associated components. This circuit selects the horizontal and vertical signals, and amplifies the selected signals. The horizontal signal is selected in data selector U500. AS0 and AS1 signals are decoded by U830A, U840B, U840D, and U860B into signals RON, SON and NON to provide the select input of U500. The selected horizontal signal is applied to the base of Q540A and the H-POS level is applied to the base of Q540B. Transistors Q540A and Q540B are configured as an emitter-coupled, paraphase amplifier, with Q556 acting as a constant-current emitter source. The Vertical Preamp operates the same as the Horizontal preamp but has a different amplification factor.



## COLLECTOR SUPPLY AMPLIFIER

This circuit is located on the A6 Collector Supply board and the A19 L.V. Supply board. The circuit consists of the Collector Supply Amplifier Circuit, the Voltage Limiter Circuit, the Current Limiter Circuit, the Limit Detector Circuit, the Power Supply and Control Circuit and the Control Signal Decoder Circuit. These circuits amplify signals from the Sine Wave Generator (located on the A3 A/D board) and provide driving voltage for collector supply transformer T200.

### Collector Supply Amplifier

This circuit consists of operational amplifier U400, transistors Q424 and Q524, FETs Q438, Q440, Q538 and Q540 and diodes CR402 and CR404. This circuit amplifies the signal from the Sine Wave Attenuator Circuit (A3 A/D Board) into the driving voltage for collector supply transformer T200. U400B and associated components form a low pass filter, and U400A is an inverter. Q424, Q524, Q438, Q538, Q440 and Q540 form a differential output, capacitorless single-ended push-pull circuit. Resistor R412 adjusts final stage offset.

### Voltage Limiter

This circuit consists of operational amplifiers U210 and U212, analog switch U200 and diodes CR210 and CR212. The circuit limits the board output voltage to 100%, 50%, 25% and 5%, under the control of the A2 CPU board. Analog switch U200 selects the output voltage limit. Operational amplifier U212A is a voltage follower and U212B is an inverter. U210 and diodes CR210 and CR212 make up two diode function generators. This circuit compares the output voltage of U400B with the positive and negative limits of the output voltage, which are set by U200. If the output voltage of U400B exceeds these limits, one of two diode generators U210A or U210B is turned on and the output voltage is clamped within upper or lower limits.

### Current Limiter

This circuit consists of transistors Q444 and Q544, resistor pairs R444-R544, R446-R546 and R448-R548, relay drivers U102 and U103, relays K448, K548, K446 and K546 and associated components. This circuit limits the output current of this board to 200 mA, 1.2 A and 2.0 A under the control of relays (K446-K548). When the output current swing exceeds the limit, the voltage drop of each resistor pair turns Q444 or Q544 on and the emitter currents of Q424 and Q524 correspondingly decrease. This in turn decreases the gate-source voltages of Q438 and Q440 or Q538 and Q540 and as a result, output current of this circuit is clamped within the current limit. These limits are set by the A2 CPU board.

### Limit Detector

This circuit consists of operational amplifiers U302A, U302B, U310A and U310B. U302A senses output voltage of this circuit and U302B senses driving voltage of the final stage. These signals are of opposite phase. They are added together and led to window comparator U310A-U310B. If the input voltage exceeds limits, the window comparator transfers the LMTR(L) signal. This LMTR(L) signal is used by the A14 LOR Key board to notify the operator that the current limiter is controlling Collector Supply output.

### Power Supply and Control

This circuit consists of operational amplifier U330A, solid-state relay (SSR) U700, diode CR316, CR710, CR712, CR720, CR722, CR730, transformer T100, capacitor C336, C710, C720, and associated components. The circuit supplies and controls voltages applied to the final stage of the Collector Supply amplifier. To meet various output voltage requirements for the Collector Supply Circuit, this circuit provides two different voltages. If the output voltage of the Collector Supply Amplifier exceeds 60 volts, U330A transfers the SSR-ON(L) signal to U700 and U700 is turned on. This inserts an additional winding of T100 into the supply circuit, increasing the VCC and VDD supply voltages from  $\pm 70$  volts to  $\pm 115$  volts.

### Control Signal Decoder

This circuit consists of 8-bit addressable latch U100. The circuit decodes control signals (SA1-SA3) and generates corresponding control signals (HL0, HL1, VL0 and VL1). These control signals control the voltage limiter and current limiter.



## 11 STEP AMPLIFIER

The Step Amplifier circuits are located on the A7 Step Generator board. This circuit transforms the output of the Step Generator on the A/D Board into current or voltage steps of various amplitudes to be applied to the device under test. The STEP AMPLITUDE switch determines the amplitude of the steps. The circuit consists of the Control Signal Latches, Relay Drivers, 0.5-1-2 Ranging Circuit, and Step Amplifier. This circuit also includes the Auxiliary Supply Circuit.

### Control Signal Latches

Latches U120, U140 and U160 latch the control signals from the microprocessor on the CPU board. Decoder U100 decodes address signals for the latches.

### Relay Driver

Transistor array U180-U190 drives relays K500-K571 to switch the operation mode of the Mode Control Circuit, Current Ranging Circuit and the Current Limiter Circuit. The drive signal is fed from the control signal latches. When the input signal of the driver is high, the corresponding relay is energized.

### 0.5-1-2 Ranging

The 0.5-1-2 Ranging Circuit consists of U200, U300, U310, R300, R302, R304 and associated components. See Table 2-7. This circuit attenuates the output of the Step Generator by a factor of 1, 2, or 4, as determined by the STEP AMPLITUDE switch. Control signals SR0 and SR1 are fed from U120.

**Table 2-7**  
**Ranging Circuit Steps**

| Attenuation | SR0 | SR1 | Output     |
|-------------|-----|-----|------------|
| 4           | 0   | 0   | 50 mV/step |
| 2           | 0   | 1   | 0.1 V/step |
| 1           | 1   | 1   | 0.2 V/step |

This ranging circuit is used for both the current mode and the voltage step mode.

### Step Amplifier

The Step Amplifier Circuit has two modes of operation, current step mode and voltage step mode.

**Current Step Mode.** When the current step mode is selected by the CURRENT switch, the V/I signal from U120 pin 4 goes low. This causes U330C and U370C to provide a signal path through R340, U330C, U340, R370, U370C, and U380. The low of the V/I signal also de-energizes relays K570 and K571. The step signal from the 0.5-1-2 Ranging Circuit is attenuated and inverted by the first amplifier stage, consisting of U340, R340 and R344. Voltage gain of this stage is 0.1, as determined by R340 and R344. The output is then amplified and inverted again by the second amplifier stage, composed of U380, Q400-Q495, R370, R372, R410, R412 and associated circuitry. Voltage gain of this stage is 10, as determined by R370 and R372. U380 is a precision inverting amplifier. Q400-Q495 form a power amplifier with a voltage gain of 11, which is determined by resistors R410 and R412. Q400 and Q450 form a gain cell. Q460 and Q490 form a booster for positive output current. Q480 and Q495 form a booster for negative output current.

The output voltage of the second amplifier stage is transmitted through one of the current setting resistors to the device under test. These resistors determine the current to the device under test. The voltage output of the current-setting resistor is fed back through R342 and U600 to the negative input of U340. The current of the current setting resistor is obtained by the following equation:

$$I_{out} = V_{in}/R_s$$

where

$I_{out}$  is the current to the device under test  
 $V_{in}$  is the input from the 0.5-1-2 Ranging Circuit  
 $R_s$  is the value of the current-setting resistor.

Current to the device under test can be varied in seven steps for each voltage by selecting one of the seven resistors.

U330A, CR340 and CR342 limit the voltage that can be applied to the device under test in the reverse direction when using opposing offset. If, for example, positive-going steps are to be applied to the device under test, the output of U340 is connected to its negative input through U330A and CR340. If negative offset is applied by pushing the OPPOSE button, the output of U340 is limited to the forward threshold level of CR340, approximately +0.6 volts. Because the second amplifier stage inverts this voltage and multiplies it by 10, the output to the device under test will be limited to about -6 volts.

CR402 and CR482 are provided to supply current if more than 0.4 Amps is needed. When the output current increases until the collector voltage of Q490 reaches 11.4 volts (due to the voltage drop across R490), CR402 conducts to supply additional current.

**Voltage Step Mode.** When the voltage step mode is selected by the VOLTAGE switch, the V/I signal goes high. U330C provides a signal path through R330, U330C and U340. U370C and U330B provide a signal path through R350 or R352, U330B, U370C and U380. Relays K570 and K571 are energized.

The step signal from the 0.5-1-2 Ranging Circuit is amplified by U380 and Q400-Q495, and fed to the device under test. U380 is a precision inverting amplifier. Q400-Q495 form a power amplifier with a voltage gain of 11, set by resistors R410 and R412. Q400 and Q450 form a gain cell. Q460 and Q490 form a booster for positive output current. Q480 and Q495 form a booster for negative output current. At the lower voltage ranges (50 mV, 100 mV and 200 mV per step), the overall voltage gain of the amplifier is 1, as determined by resistance ratio between R352 and R356-R357. At the higher voltage ranges (500 mV, 1 V and 2 V per step), the overall voltage gain of the amplifier is 10, as determined by resistance ratio between R350 and R354-R355.

Voltage on the ground sense terminal is fed back through inverter U360 to the negative input of U380. This ensures exact voltage between base and emitter terminal by compensating voltage drop on the emitter terminal.

R520, R522, R524, R536, Q560, and Q562 form a current limiter. When using voltage steps, the current conducted at the step generator input to the device under test may increase rapidly and possibly damage the device under test (especially when testing transistors). The Current Limiter Circuit limits this current in the voltage mode. If, for example, K520S, K522S and K524S are all disconnected, the current to the device under test flows through R536. When the current increases to 20 mA, the voltage across R536 reaches 0.6 V. If positive-going steps are being produced, this voltage forward-biases the base-emitter junction of Q560 and turns it on. When Q560 turns on, the voltage on the output side of R536 becomes 1.4 volts below the base voltage of Q460. As this voltage is almost the same as the emitter voltage of Q490, output current through R536 is disabled. CR450 and CR452 clamp the base-emitter voltage of Q450 to limit current through Q450, CR560 and Q560.

If negative-going steps are being produced, voltage across R536 forward-biases the base-emitter junction of Q562 and turns it on. When Q562 turns on, it supplies the current demanded by CR480. This reduces the base current of Q480 which reduces the drive to Q495 and limits current through R536. Current through Q562 and CR562 is limited by CR480.

In the 370A relays K520 and K522 are always ON and relay K524 always OFF, so the current limit value is fixed at 0.5 A.

R526 and CR526 limit reverse current from the base-emitter junction of the device under test.



## H.V. MODULE

This circuit consists of Transformer T200, H.V. Module U800, Relay Control Signal Decoder Circuit and LOR Relay Circuit and is active when the MAX PEAK VOLTS is set to 2000. These circuits provide the sine-wave ac, the full-wave rectified sine wave and the DC voltage that range from 0 volts to 2000 volts peak. These voltages are applied to the collector of the device under test via the A34 LOR Relay board.

### Transformer

This circuit consists of transformer T200 and associated components. The circuit supplies AC high voltage. The input of T200 is a swept AC sine-wave voltage that ranges from 0 volts to 100 volts from the A6 Collector Supply Output board; the voltage is applied to the primary windings. The range of induced voltage on the secondary windings of T200 is from 0 volts to 2000 volts.

### H.V. Module

H.V. Module consists of Full-wave Rectifier Circuit, Output Power Limiter Circuit and Relay Circuit.

**Full-wave Rectifier.** This circuit consists of diodes CR200, CR202, CR204 and CR206 and forms a full-wave bridge rectifier. They rectify applied voltages ranging from 0 volts to 2000 volts. The output of the circuit is a full-wave rectified sine wave ranging from 0 volts to 2000 volts peak.


**Output Power Limiter.** This circuit consists of resistors R402, R403, R404, R405, R406, R407 and R408. These resistors are selected by the Relay Circuit. The selected resistors are inserted into the output circuit of this module in series to limit the output current. The resulting output power of this circuit is limited to the MAX PEAK POWER control setting. The selectable power limits are 50 watts, 10 watts, 2 watts, 0.4 watts and 0.08 watts.

**Relay.** The Relay Circuit consists of K202, K210, K211, K212, K213, K214, K215, K300, K302, K304, K306, K400, K410, K500, K510 and K600. The Relay Circuit is controlled by the Control Signal

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Decoder Circuit, providing the desired output set by the POLARITY switches, MAX PEAK POWER switches and LEFT-RIGHT-STANDBY switch. As a result, the Collector Supply High Voltage Circuit provides five different outputs (+dc, +full wave rectified sine, ac, -full wave rectified sine and -dc), each ranging from 0.08 watts to 50 watts, to the LEFT and RIGHT connectors. The combinations of the activated relays for each setting are described in Table 2-8. When the ARC signal from U820 goes high, the voltage which had been applied to K600 is removed, and the output is cut off.

**Table 2-8  
Activated Relays for High Voltage**

| Front-panel Setting  |   | Activated Relays |
|----------------------|---|------------------|
| Function             | Position  |                  |
| POLARITY             | +   | K211 and K214    |
|                      | -   | K212 and K213    |
|                      | AC  | K210 and K215    |
|                      | DC  | K400 and K410    |
|                      |  | K202             |
| MAX PEAK POWER WATTS | 50  | K300             |
|                      | 10  | K302             |
|                      | 2   | K304             |
|                      | 0.4   | K306             |
|                      | 0.08  | —                |
| LEFT-RIGHT-STANDBY   | LEFT  | K500             |
|                      | STANDBY   | —                |
|                      | RIGHT   | K510             |

**Relay Control Signal Decoder**

This circuit consists of 8 bit addressable latch U700 and U800 and relay drivers U710, U810 and U820. The circuit decodes control signals from the A2 CPU board and drives corresponding relays. The relay drive signals are transferred to corresponding relays.

**LOR Relay**

The LOR Relay Circuit consists of relays K920, K930 and K940 and diodes CR920, CR930 and CR940. This circuit is controlled by the Control Signal Decoder Circuit, and provides the output from the Collector Supply Low Voltage Circuit to the desired adapter connector selected by the LEFT-RIGHT-STANDBY switch. When the LEFT-RIGHT-STANDBY switch is set to LEFT, a voltage is applied to K940, and when it is set to RIGHT a voltage is applied to relay K930. In the STANDBY position, voltage is applied to neither K940 nor K930. When the ARC signal goes high, the voltage which had been applied to K920 is removed, and the output of the Collector Low Voltage Circuit is cut off.



## COLLECTOR SUPPLY LOW VOLTAGE

This circuit is located on the A9 L.V. Relay board and the A35 Looping board. The circuit consists of Transformer T200, Full-wave Rectifier Circuit, Smoothing Circuit, Output Power Limiter Circuit, Looping Compensator Circuit, Relay Control Signal Decoder Circuit, Relay Circuit and Discharging Circuit. These circuits provide the sine-wave ac, the full-wave rectified sine wave and the DC voltages. These voltages are supplied in three ranges, from 0 volts to 16 volts, from 0 volts to 80 volts and from 0 volts to 400 volts. These voltages are applied to the collector or base of the device under test via the A34 LOR Relay board, the A10 Sense board and the A33 Configuration Relay Board.

### Transformer

This circuit consists of Transformer T200, which supplies low AC voltages. The input of this circuit is a swept AC sine-wave voltage ranging from 0 volts to 100 volts from the A6 Collector Supply Output board; this voltage is applied to the primary windings of T200. The ranges of induced voltages on the three secondary windings of T200 are from 0 volts to 16 volts, from 0 volts to 80 volts and from 0 volts to 400 volts. Depending on the output voltage, waveform and current desired, the output voltages of this circuit are switched to the corresponding processing circuit of the board.

### Full-wave Rectifier

This circuit is actually two full-wave bridge rectifiers. The first bridge rectifier consists of diode pairs CR200, CR202 and CR204, which produce the voltages from which the 0 volts to 16 volts are derived. The second bridge rectifier consists of diode bridge CR300, which produces the voltages from which the 0 volts to 80 volts and 0 volts to 400 volts are derived.

### Smoothing

This circuit comprises three sets of smoothing circuits. The first set consists of resistor R208 and capacitor C209. The second set consists of resistor R319 and capacitor C319. The third set consists of resistors R306 and R307 and capacitors C306 and C307. Each input of the circuit is a full-wave rectified sine wave; the voltage range is from 0 volts to 16 volts, 0 volts to 80 volts and 0 volts to 400 volts, respectively. When this circuit is selected, the ripple component of each input voltage is shunted to ground.

### Output Power Limiter

This circuit consists of resistors R400A, R416, R417, R418 and R419. The resistors are selected by the Relay Circuit. The selected resistors are inserted into the output circuit of this board in series to limit the output current. The resulting output power is limited to the setting of the MAX PEAK POWER WATTS switch, located on the A12 Sub Key board. Output power settings are 220 watts, 50 watts, 10 watts, 2 watts, 0.4 watts and 0.08 watts.

### Looping Compensator

This circuit consists of variable resistors R500, R501, R502, R503 and R504 and capacitors C500, C501, C502, C510, C512, C520 and C522. The circuit neutralizes the effect of stray capacitance by applying reverse voltage to the sensing circuit. This neutralization is adjusted by variable resistors R500, R501, R502, R503 and R504.

### NOTE

To cancel the stray capacitance effect, the 370A uses two different circuits. The first circuit is a neutralizing circuit, and the second is a canceling circuit. The neutralizing circuit reduces the stray capacitance effect before sensing. This circuit is the circuit mentioned in this section. The cancel circuit cancels stray capacitance effect on the sensed signal by a subtraction technique applied after sensing. This circuit is located on the A10 Sense board and is controlled by the LOOPING COMPENSATION control on the 370A front panel.

### Relay Control Signal Decoder

This circuit consists of 3-to-8 demultiplexer U100, 8-bit addressable latches U102, U106 and U110 and relay drivers U104, U108, U109 and U112. This circuit decodes control signals from SA1 to SA7 from the A2 CPU board via the A10 Sense board and generates corresponding relay drive signals.

### Relay

The Relay Circuit consists of K204-K215, K300-K314 K400-K416 and K500-K510. These relays are controlled by the relay address decoder to provide the desired output, set up by the MAX PEAK VOLTS switch (S314 and S315), POLARITY switch (S324 and S325), and MAX PEAK POWER WATTS switch (S322 and S323) on the A12 Sub Key board. This circuit provides five different outputs (+dc, +full wave rectified sine, ac, -full wave rectified sine and -dc), with a range of 0.08 watts to 220 watts. The combinations of the activated relays for each setting are listed in Table 2-9.

### Discharging

The Discharging Circuit consists of photo couplers U210, U220 and U230, gate U300, FETs Q200, Q210, Q220, Q310, Q320 and Q330, transistors Q340, Q350 and Q360, transformer T300, diodes CR315, CR316, CR317 and CR318, resistor R400A, capacitor C302 and associated components.

This circuit, in response to the control signal (DISCHG) from the Discharge Control Circuit (located on diagram 4b), forces the smoothing capacitors connected to the secondary side of transformer T200 to discharge. The DISCHG signal from the Discharge Control Circuit is inverted by U109, and becomes DIS(L), which is fed to pin 2 of U210, U220 and U230. When the DISCHG signal goes high, the gate voltages of Q310, Q320 and Q330 increase, turning on these FETs. This way, the charge on the smoothing capacitors is discharged quickly through the resistor R400A or R330.

The DISCHG signal from the Discharge Control Circuit is also connected to pin 8 of U300C, so that when the DISCHG signal goes high, the oscillator formed by U300A, U300B, R320, R322, and C304 begins to oscillate, thereby generating a voltage across C302 of approximately 12 volts. This voltage is divided by R222 and R224, and applied to Q220. This turns Q220 on, causing the charge of the smoothing capacitor C206 to quickly discharge through the resistor R400A.



**Table 2-9**  
**Activated Relays for Low Voltage**

| A12 Sub Key board setting |               |                     |                  |
|---------------------------|---------------|---------------------|------------------|
| COLLECTOR SUPPLY setting  | Position      | Voltage             | Activated Relays |
| POLARITY                  | +             | 16                  | K210 and K211    |
|                           |               | 80                  | K314             |
|                           | 400           | K314                |                  |
|                           | -             | 16                  | K212 and K213    |
|                           |               | 80                  | K312             |
| 400                       | K312          |                     |                  |
| AC                        | 16            | K214 and K215       |                  |
|                           | 80            | K310                |                  |
| 400                       | K310          |                     |                  |
| DC                        | 16            | K204                |                  |
|                           | 80            | K308                |                  |
| 400                       | K308          |                     |                  |
| Full-wave                 | 16            | K500                |                  |
|                           | 80            | K300, K302 and K510 |                  |
| 400                       | K304 and K306 |                     |                  |
| MAX PEAK POWER WATTS      | 220           | 16                  | K400             |
|                           |               | 80                  | K404             |
|                           |               | 400                 | K408             |
|                           | 50            | 16                  | K402             |
| 80                        |               | K406                |                  |
| 400                       | K410          |                     |                  |
| 10                        | 16            | K404                |                  |
|                           | 80            | K408                |                  |
| 400                       | K412          |                     |                  |
| 0.4                       | 16            | K408                |                  |
|                           | 80            | K412                |                  |
|                           | 400           | K416 and K414       |                  |

# 14 VERTICAL SENSE

This circuit is located on the A10 Sense board, and consists of the Sense Board Interlock Circuit, the Interface Circuit, and the Vertical Sense Circuit. The Interlock Circuit protects this board from generating arcs, overheating, and operation when the cover is open. The Sense Board Interface Circuit interfaces this board with the A2 CPU board. The Vertical Sense Circuit compensates for looping, senses and amplifies collector, emitter and base current.

## Interlock

This circuit consists of the Interlock Circuit and the Arc Killer Circuit, which protect the 370A operator and the 370A from harm. The circuit consists of cover switches S400 and S402, thermal switches S90 and S92 (located on diagram 13 and 10), and relay K700. This circuit prevents potentially dangerous voltages from appearing at the terminals when the protective cover is open. When the protective cover is open, interlock switches S400 and S402 open the relay drive line for K700 and in turn, open the primary input line

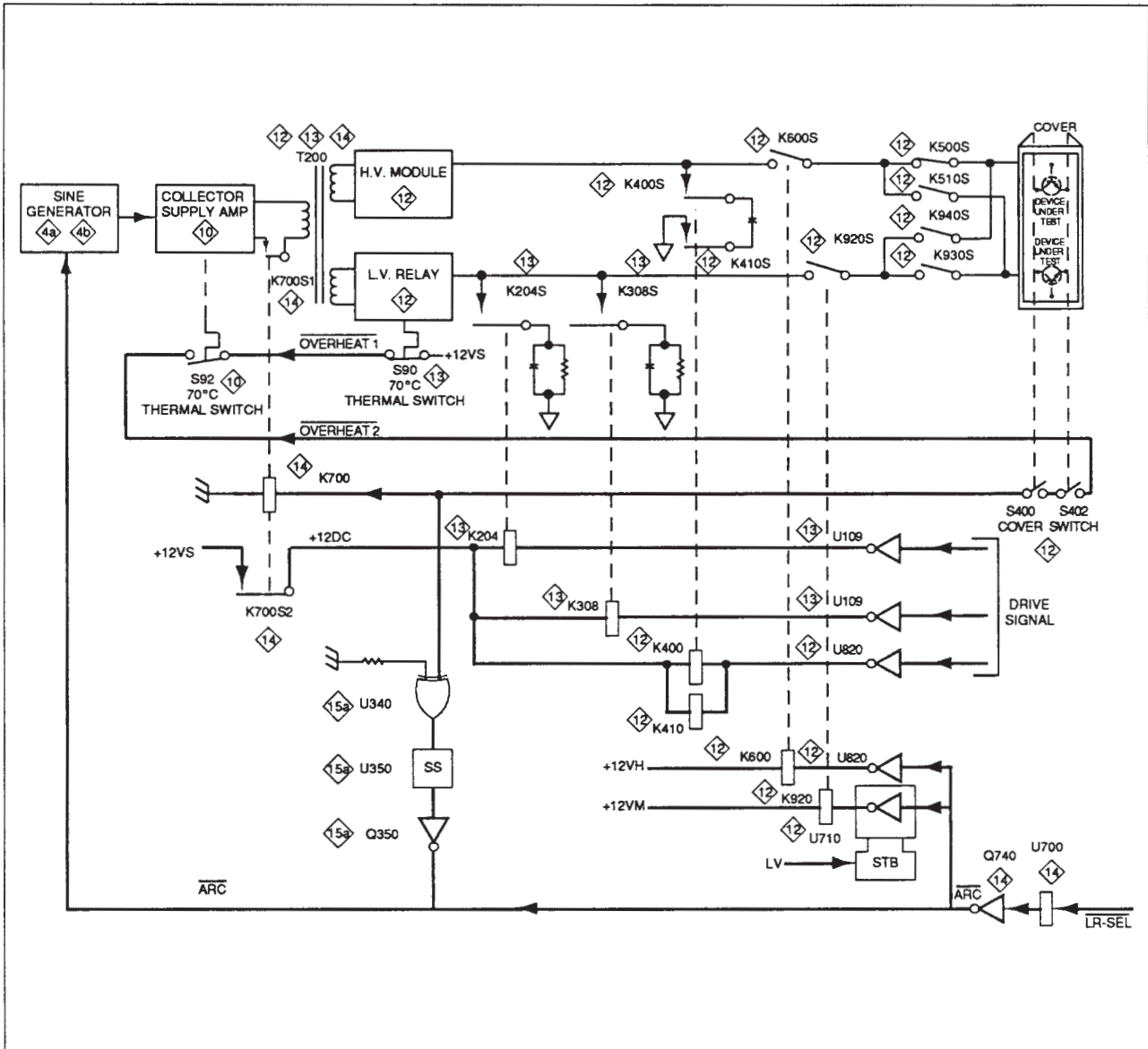


Figure 2-13. Interlock and Arc Killer Circuit.

for collector supply output transformer T200. Another contact point of K700 opens the relay drive line for K400 and K410 of H.V. Module U800, K204 and K308 on the A9 L.V. Relay board. Because these relays are connected to capacitors in which dangerous high voltages are stored, the resultant output voltage of the collector supply remains low. The same occurs when the temperature rises above 70° C at series resistor R400 on the A9 L.V. Relay board and the transistor heat sink on the A6 Collector Supply Output board, because thermal switches S90 and S92 are connected serially with interlock cover switches S400 and S402; see Figure 2-13.

The Arc Killer Circuit consists of monostable multivibrator U700 and transistor Q740. This circuit protects the 370A from dangerous high voltage arc discharge. High voltages that can cause an arc can be generated when the LEFT-RIGHT-STANDBY switch setting is changed while a voltage is applied. When the LEFT-RIGHT-STANDBY switch changes setting, the LR-SEL(L) signal is generated. The LR-SEL(L) signal is expanded by U700 and inverted into ARC(L) by Q740. This ARC(L) signal is used by the A3 A/D Board to cut off the Collector Supply Amplifier output and by H.V. Module U800 and the A9 L.V. Relay boards to cut off the Collector Supply output. The ARC(L) signal is also generated when the MAX PEAK VOLTS switch setting is changed or when the Protective Cover is opened and closed.

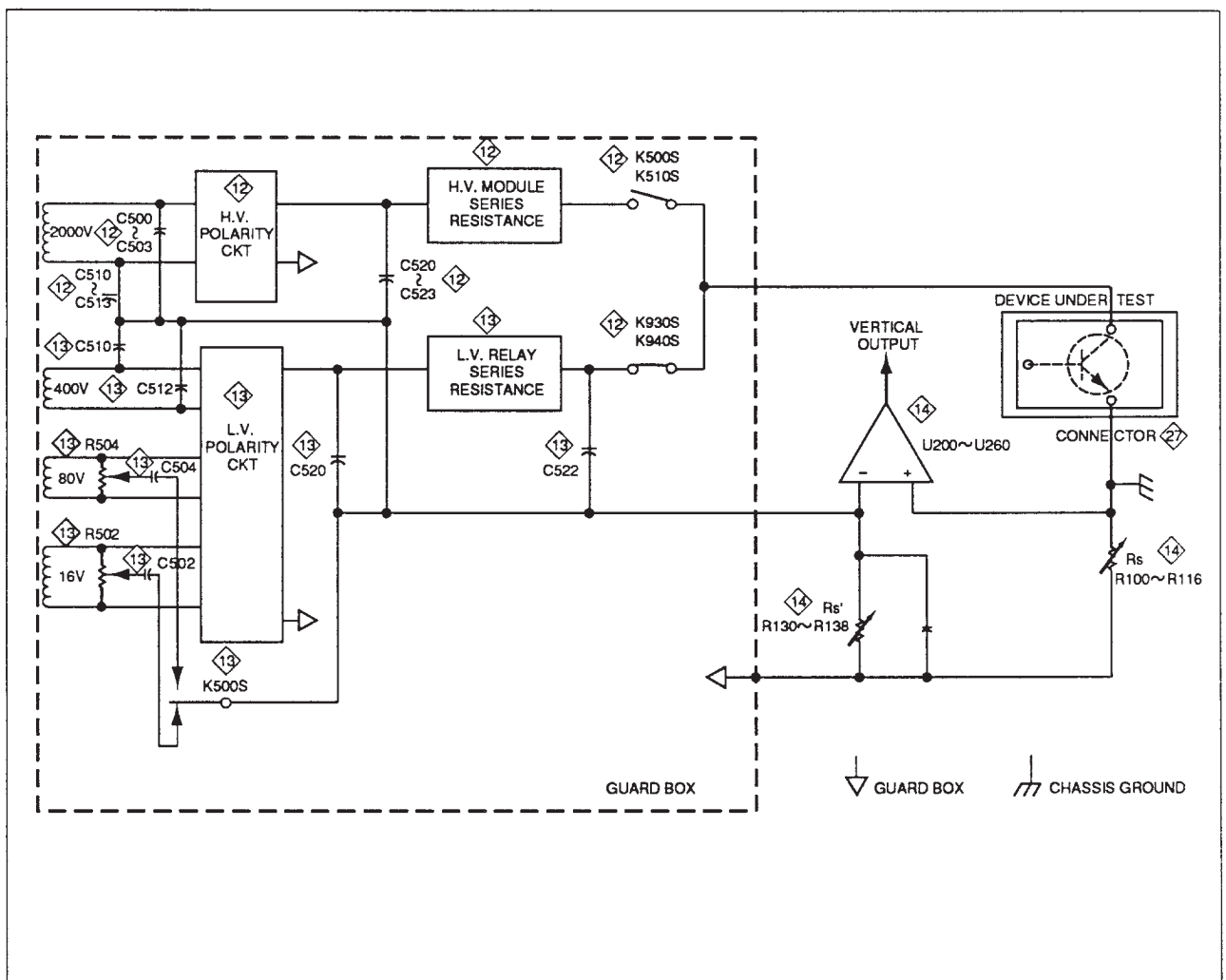


Figure 2-14. Looping Compensation (caused by stray capacitance).

**Interface**

The Interface Circuit consists of 3-to-8 demultiplexer U720, 8-bit addressable latches U730, U740, U750, U760 and U770 and relay drivers U745, U755, U765 and U775. This circuit decodes the control signal from the A2 CPU board and controls the relays. U720 decodes address signals (SA4-SA7) from the A2 CPU board and generates chip select signals for addressable latches U730 through U770. Then the selected addressable latch decodes data (SA1-SA3) and stores the results. This stored data is transferred to corresponding relays through relay drivers. Internal wiring J102 enables or disables the 80 and 400-volt collector supply peak voltage ranges. J101 enables or disables the 2000 volts range.

**Vertical Sense**

This circuit consists of the Looping Compensator Circuit, the Vertical Amplifier Circuit, the Collector Current Sense Circuit, and the Emitter Current Sense Circuit. These circuits compensate for any undesired effect of stray capacitance for measurement, and senses and amplifies the collector, base and emitter current.

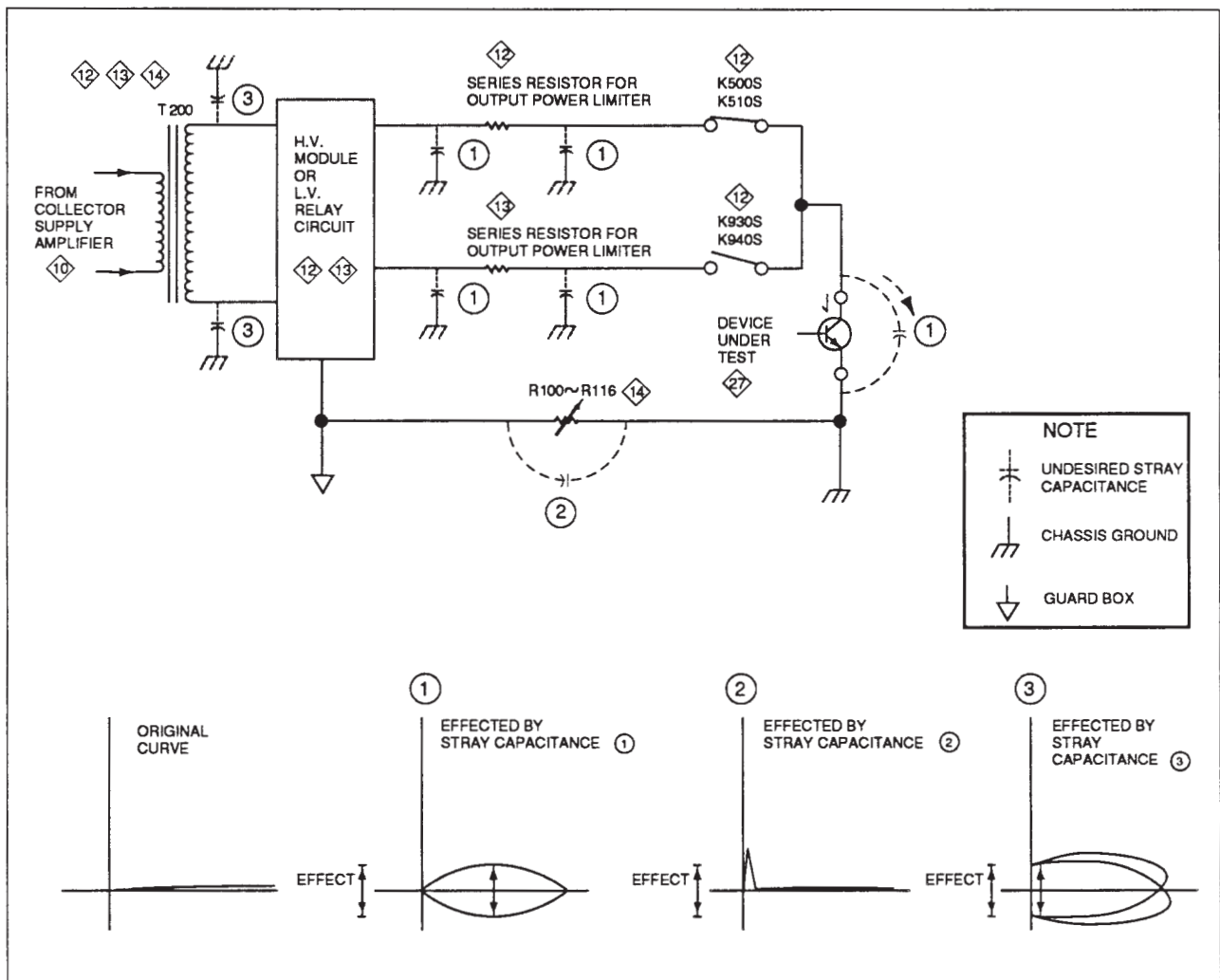


Figure 2-15. Effect of undesired stray capacitance on curve.

There is a certain amount of non-discrete capacitance associated with the collector supply. This undesired capacitance effects the measurement, which shows up in the display as looping. Part of this undesired capacitance is stray capacitance, which provides an AC current path between the collector supply and chassis ground, as does the capacitance of the device under test. The transformer and the guard box also exhibit some undesired capacitance between the guard box potential and chassis ground (see Figure 2-14). To cancel this effect, the 370A uses two different circuits, the Neutralize Circuit and the Cancel Circuit. The Neutralize Circuit reduces the stray capacitance effect before sensing. This circuit is located on the A9 L.V. Relay board and the A35 Looping board. The cancel Circuit cancels stray capacitance effect on the sensed signal through a subtraction technique after sensing.

**The Looping Compensator Circuit** consists of operational amplifiers U220, U230 and U240, diode CR220, resistors R140-R148. This circuit cancels the looping effect. The looping current is measured by placing resistors R140, R142, R144, R146 and R148 between input relay module U300 (located on diagram 15a) and the current return point for the collector supply, then measuring the developed voltage across these resistors. Operational amplifiers U220 and U230 sense and amplify the looping signal. The front-panel LOOPING COMPENSATION adjustment controls the amplitude of this signal. This signal is then isolated by U240 and subtracted electrically from the vertical signal. As a result, the looping effect is canceled. (See Figure 2-15).

**The Vertical Amplifier Circuit** consists of operational amplifiers U200, U210, U250 and U260 and analog switch U270. They form a high input impedance amplifier. The looping signal is subtracted at this stage. U260 and U270 form a 1-2.5-5 gain-selectable amplifier.

**The Collector Current Sense Circuit** consists of resistors R100 through R116. When the COLLECTOR SUPPLY POLARITY switch of the A12 Sub Keyboard is set to + or - dc, + or - full wave rectified sine or ac, this circuit senses the collector or base current of the device under test, according to the setting of the CONFIGURATION switch. The measurement is done by placing resistors R100-R116 between chassis ground and the current return point for the collector supply and measuring the developed voltage across them. Total value of placed resistors can be changed by the relays from 0.025  $\Omega$  to 25 k $\Omega$ . Table 2-10 shows the control signal for the relays.

**The Emitter Current Sense Circuit** consists of resistors R100 through R122 and capacitors C110, C112 and C114. If the COLLECTOR SUPPLY POLARITY switch on the A12 Sub Key board is set to  $\pm$ LEAKAGE, this circuit senses emitter or collector-base current of the device under test. The measurement is done by placing resistors R100-R122 between chassis ground and the common terminal selected by the CONFIGURATION control and measuring the voltage across these resistors. If emitter current is to be measured, the CONFIGURATION control must be set to EMITTER-COMMON and BASE-OPEN or BASE-SHORT. If collector-base current is to be measured, the CONFIGURATION switch must be set to BASE-COMMON and EMITTER-OPEN. The resistor value can be set from 25  $\Omega$  to 25 M $\Omega$ . Table 2-11 shows the control signal for the relays. Remember that the vertical deflection factor is always decreased by 1000 times, the COMMON line is not grounded to the chassis when the LEAKAGE mode is selected, and the Number of Steps is set to zero.

Table 2-10  
Relay Control Signals for Collector Current Sense

| Vertical Current/Div |             | Relay Control Signals |    |    |    |    |    |    |    |    |    |     |     |     |
|----------------------|-------------|-----------------------|----|----|----|----|----|----|----|----|----|-----|-----|-----|
|                      |             | VS<br>RC              | V1 | V2 | V3 | V4 | V5 | V6 | V7 | V8 | V9 | V11 | V13 | V14 |
| STEP GEN             |             | 1                     | 1  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 1   | 0   | 0   |
| COLLECTOR            | 2A          | 0                     | 1  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 1   | 0   | 0   |
|                      | 1A          | 0                     | 1  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 1   | 0   | 1   |
|                      | 500 mA      | 0                     | 0  | 1  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 1   | 1   | 0   |
|                      | 200 mA      | 0                     | 0  | 1  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 1   | 0   | 0   |
|                      | 100 mA      | 0                     | 0  | 1  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 1   | 0   | 1   |
|                      | 50 mA       | 0                     | 0  | 0  | 1  | 0  | 0  | 0  | 0  | 0  | 0  | 0   | 1   | 0   |
|                      | 20 mA       | 0                     | 0  | 0  | 1  | 0  | 0  | 0  | 0  | 0  | 0  | 0   | 0   | 0   |
|                      | 10 mA       | 0                     | 0  | 0  | 1  | 0  | 0  | 0  | 0  | 0  | 0  | 0   | 0   | 1   |
|                      | 5 mA        | 0                     | 0  | 0  | 0  | 1  | 0  | 0  | 0  | 0  | 0  | 0   | 1   | 0   |
|                      | 2 mA        | 0                     | 0  | 0  | 0  | 1  | 0  | 0  | 0  | 0  | 0  | 0   | 0   | 0   |
|                      | 1 mA        | 0                     | 0  | 0  | 0  | 1  | 0  | 0  | 0  | 0  | 0  | 0   | 0   | 1   |
|                      | 500 $\mu$ A | 0                     | 0  | 0  | 0  | 0  | 1  | 0  | 0  | 0  | 0  | 0   | 1   | 0   |
|                      | 200 $\mu$ A | 0                     | 0  | 0  | 0  | 0  | 1  | 0  | 0  | 0  | 0  | 0   | 0   | 0   |
|                      | 100 $\mu$ A | 0                     | 0  | 0  | 0  | 0  | 1  | 0  | 0  | 0  | 0  | 0   | 0   | 1   |
|                      | 50 $\mu$ A  | 0                     | 0  | 0  | 0  | 0  | 0  | 1  | 0  | 0  | 0  | 0   | 1   | 0   |
|                      | 20 $\mu$ A  | 0                     | 0  | 0  | 0  | 0  | 0  | 1  | 0  | 0  | 0  | 0   | 0   | 0   |
|                      | 10 $\mu$ A  | 0                     | 0  | 0  | 0  | 0  | 0  | 1  | 0  | 0  | 0  | 0   | 0   | 1   |
|                      | 5 $\mu$ A   | 0                     | 0  | 0  | 0  | 0  | 0  | 0  | 1  | 0  | 0  | 0   | 1   | 0   |
|                      | 2 $\mu$ A   | 0                     | 0  | 0  | 0  | 0  | 0  | 0  | 1  | 0  | 0  | 0   | 0   | 0   |
|                      | 1 $\mu$ A   | 0                     | 0  | 0  | 0  | 0  | 0  | 0  | 1  | 0  | 0  | 0   | 0   | 1   |

**Table 2-11**  
**Relay Control Signals**

| Vertical Current/Div             |             | Relay Control Signals |    |    |    |    |    |    |    |    |    |     |     |     |
|----------------------------------|-------------|-----------------------|----|----|----|----|----|----|----|----|----|-----|-----|-----|
|                                  |             | VS<br>RC              | V1 | V2 | V3 | V4 | V5 | V6 | V7 | V8 | V9 | V11 | V13 | V14 |
| STEP GEN                         |             | 1                     | 0  | 0  | 0  | 1  | 0  | 0  | 0  | 0  | 0  | 1   | 0   | 0   |
| EMITTER OR<br>COLLECTOR/<br>BASE | 2 mA        | 0                     | 0  | 0  | 0  | 1  | 0  | 0  | 0  | 0  | 0  | 1   | 0   | 0   |
|                                  | 1 mA        | 0                     | 0  | 0  | 0  | 1  | 0  | 0  | 0  | 0  | 0  | 1   | 0   | 1   |
|                                  | 500 $\mu$ A | 0                     | 0  | 0  | 0  | 0  | 1  | 0  | 0  | 0  | 0  | 1   | 1   | 0   |
|                                  | 200 $\mu$ A | 0                     | 0  | 0  | 0  | 0  | 1  | 0  | 0  | 0  | 0  | 1   | 0   | 0   |
|                                  | 100 $\mu$ A | 0                     | 0  | 0  | 0  | 0  | 1  | 0  | 0  | 0  | 0  | 1   | 0   | 1   |
|                                  | 50 $\mu$ A  | 0                     | 0  | 0  | 0  | 0  | 0  | 1  | 0  | 0  | 0  | 1   | 1   | 0   |
|                                  | 20 $\mu$ A  | 0                     | 0  | 0  | 0  | 0  | 0  | 1  | 0  | 0  | 0  | 1   | 0   | 0   |
|                                  | 10 $\mu$ A  | 0                     | 0  | 0  | 0  | 0  | 0  | 1  | 0  | 0  | 0  | 1   | 0   | 1   |
|                                  | 5 $\mu$ A   | 0                     | 0  | 0  | 0  | 0  | 0  | 0  | 1  | 0  | 0  | 1   | 1   | 0   |
|                                  | 2 $\mu$ A   | 0                     | 0  | 0  | 0  | 0  | 0  | 0  | 1  | 0  | 0  | 1   | 0   | 0   |
|                                  | 1 $\mu$ A   | 0                     | 0  | 0  | 0  | 0  | 0  | 0  | 1  | 0  | 0  | 1   | 0   | 1   |
|                                  | 500 nA      | 0                     | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 1  | 0  | 1   | 1   | 0   |
|                                  | 200 nA      | 0                     | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 1  | 0  | 1   | 0   | 0   |
|                                  | 100 nA      | 0                     | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 1  | 0  | 1   | 0   | 1   |
|                                  | 50 nA       | 0                     | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 1  | 1   | 1   | 0   |
|                                  | 20 nA       | 0                     | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 1  | 1   | 0   | 0   |
|                                  | 10 nA       | 0                     | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 1  | 1   | 0   | 1   |
|                                  | 5 nA        | 0                     | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 1   | 1   | 0   |
|                                  | 2 nA        | 0                     | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 1   | 0   | 0   |
|                                  | 1 nA        | 0                     | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 1   | 0   | 1   |

## 15a HORIZONTAL SENSE

This circuit consists of the Collector Voltage Sense Circuit, the Base Voltage Sense Circuit, Overrun Detector Circuit, the Horizontal Amplifier circuit and the Timer Circuit. It measures either collector or base voltage of the device under test and eliminates transient voltage on the Collector or Base Terminal.

### Collector Voltage Sense

The Collector Voltage Sense Circuit consists of operational amplifiers U400, U410, U420, and U490, comparators U480A through U480D, analog switches U430 and U440, diodes CR400, CR402, CR410, CR412, CR420, and CR422, zener diodes VR400 and VR402, input relay module U300, relays K340, K350, K360 and K370 and associated components. This circuit measures the collector voltage of the device under test. (when the CONFIGURATION control is set to BASE = COLLECTOR SUPPLY, this circuit measures the base voltage.) Figure 2-16 shows a simplified collector voltage measurement circuit. (The setting of the CONFIGURATION switch is assumed to be EMITTER: COMMON and COLLECTOR: COLLECTOR SUPPLY).

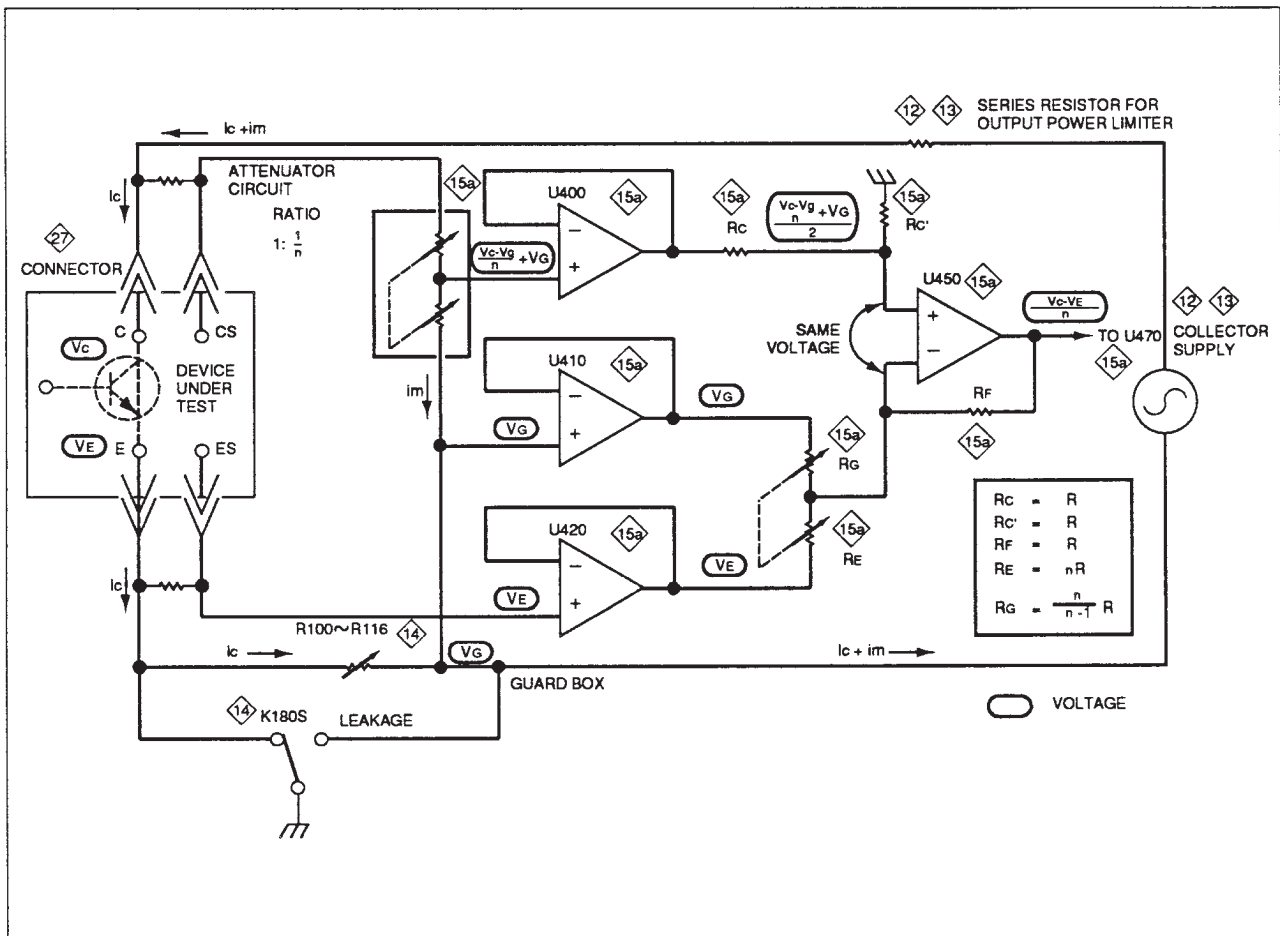


Figure 2-16. Simplified collector voltage measurement circuit.



To avoid the current error caused by an attenuator, both the attenuator and the common current return point of the collector supply are connected to the guard box. The output voltage of U400 is expressed as:

$$V(U400) = (VC - VG) / n + VG$$

where

V (U400) : output voltage of U400

VG : voltage of guard box

VC : voltage of collector terminal

n: ratio of attenuator

If the resistor values are appropriate, the output voltage of U450 is:

$$V(U450) = (VC - VE) / n$$

where

VE : voltage of emitter terminal

The above expression shows that VG is canceled and U450 outputs only net voltage without the VG bias voltage. The appropriate value of resistors to realize this condition is expressed as follows by using resistance unit R. (In the case of the 370A, R is 20 k $\Omega$ .)

$$RC = RC' = R$$

$$RF = R$$

$$RE = n * R$$

$$RG = n * R / (n - 1)$$

U480 and diodes CR480 through CR483 make up four diode function generators. This circuit compares the output voltages of U400 and U410 with the positive and negative limits of the output voltage, which are set by R484 through R487. If the output voltage of U400 or U410 exceeds these limits, one of four diode generators is turned on and the output voltage is clamped within upper or lower limit.

Table 2-12 lists the relay control signals for each setting of the HORIZONTAL VOLTS/DIV control. Relays K6 and K7 of input relay module U300 and K340, K350, K360 and K370 select the attenuator. U400, U410 and U420 are high input impedance buffers. Analog switch U430 selects RE and RG. Analog switch U440 selects the collector voltage or base voltage to be measured. U450 forms a subtractor circuit.

### Base Voltage Sense

The Base Voltage Sense Circuit consists of operational amplifier U500, transistors Q520, Q530 and Q540, diode CR500, zener diodes VR530 and VR534 and constant current diodes CR520 and CR540. This circuit forms a high input impedance buffer that senses the base voltage of the device under test. In order to increase dynamic range, Q520, Q530, and Q540 form a floating power supply circuit for U500.

### Overrun Detector

The Overrun Detector Circuit consists of comparators U560A, U560B, U565A, and U565B, D-flip flop U570A, and associated components. This circuit compares the output voltages of U500 and AUX Supply with the positive and negative limits which are set by R564, R566, R568, and R570. If one of the output voltages exceeds these limits, U570A transfers the OVER-RUN(L) signal to the Status Port circuit (located on diagram 15b) and the Collector Supply output is disabled.

### Horizontal Amplifier

The Horizontal Amplifier Circuit consists of operational amplifier U460, dual 4 to 1 multiplexer U470, and associated components. This circuit forms a 0.4-1-2-4 gain-selectable amplifier.

### Timer

The Timer circuit turns off the Collector Supply momentarily whenever the protective cover is opened or closed. The output of U340A and U340B are always of opposite polarity. When the protective cover is opened or closed, U340A and U340C reverse the state of their outputs. The output of U340A is delayed by the RC circuit preceding U340B. This causes U340D to produce negative pulse. U350 stretches the pulse and turns Q350 on for 100 ms, generating the ARC(L) signal.

Table 2-12  
Relay Control Signals for Horizontal Sense

| HORIZONTAL<br>Volts/Div<br>Setting |           | Relay Control Signal |    |    |    |    |    |    |    |    |    |     |     |   |
|------------------------------------|-----------|----------------------|----|----|----|----|----|----|----|----|----|-----|-----|---|
|                                    |           | HSR                  | H1 | H2 | H3 | H4 | H5 | H6 | H7 | H8 | H9 | H10 | H11 |   |
| STEP GEN                           |           | 1                    | 1  | 0  | 0  | 0  | 0  | 1  | 1  | 0  | 1  | 0   | 0   |   |
| Base                               | 5V        | 0                    | 1  | 0  | 0  | 0  | 0  | 1  | 1  | 0  | 1  | 1   | 1   |   |
|                                    | 2V        | 0                    | 1  | 0  | 0  | 0  | 0  | 1  | 1  | 0  | 1  | 0   | 0   |   |
|                                    | 1V        | 0                    | 1  | 0  | 0  | 0  | 0  | 1  | 1  | 0  | 1  | 1   | 0   |   |
|                                    | .5V       | 0                    | 1  | 0  | 0  | 0  | 0  | 1  | 1  | 0  | 1  | 0   | 1   |   |
|                                    | .2V       | 0                    | 1  | 0  | 0  | 0  | 0  | 1  | 1  | 1  | 0  | 0   | 0   |   |
|                                    | .1V       | 0                    | 1  | 0  | 0  | 0  | 0  | 1  | 1  | 1  | 0  | 1   | 0   |   |
|                                    | .05V      | 0                    | 1  | 0  | 0  | 0  | 0  | 1  | 1  | 1  | 0  | 0   | 1   |   |
|                                    | Collector | 500V                 | 0  | 1  | 0  | 0  | 0  | 0  | 1  | 1  | 0  | 0   | 1   | 1 |
|                                    |           | 200V                 | 0  | 1  | 0  | 0  | 0  | 0  | 1  | 1  | 0  | 0   | 0   | 0 |
|                                    |           | 100V                 | 0  | 1  | 0  | 0  | 0  | 0  | 1  | 1  | 0  | 0   | 1   | 0 |
| 50V                                |           | 0                    | 1  | 0  | 0  | 0  | 0  | 1  | 1  | 0  | 0  | 0   | 1   |   |
| 20V                                |           | 0                    | 0  | 1  | 0  | 0  | 0  | 0  | 1  | 0  | 0  | 0   | 0   |   |
| 10V                                |           | 0                    | 0  | 1  | 0  | 0  | 0  | 0  | 1  | 0  | 0  | 1   | 0   |   |
| 5V                                 |           | 0                    | 0  | 1  | 0  | 0  | 0  | 0  | 1  | 0  | 0  | 0   | 1   |   |
| 2V                                 |           | 0                    | 0  | 0  | 1  | 0  | 1  | 1  | 0  | 0  | 0  | 0   | 0   |   |
| 1V                                 |           | 0                    | 0  | 0  | 1  | 0  | 1  | 1  | 0  | 0  | 0  | 1   | 0   |   |
| .5V                                |           | 0                    | 0  | 0  | 1  | 0  | 1  | 1  | 0  | 0  | 0  | 0   | 1   |   |
| .2V                                |           | 0                    | 0  | 0  | 0  | 1  | 1  | 0  | 0  | 0  | 0  | 0   | 0   |   |
| .1V                                |           | 0                    | 0  | 0  | 0  | 1  | 1  | 0  | 0  | 0  | 0  | 1   | 0   |   |
| .05V                               |           | 0                    | 0  | 0  | 0  | 1  | 1  | 0  | 0  | 0  | 0  | 0   | 1   |   |

## 15b LOR KEY INTERFACE

This circuit is located on the A13 Key Interface board, and consists of the Bus Buffer Circuit, the Address Decoder Circuit, the Rotary Encoder Circuit, the Status Port Circuit and Lower Panel Key and Display Circuit. These circuits interface signals with the A2 CPU board, set up VARIABLE COLLECTOR SUPPLY settings, transfer the status data to the A2 CPU board, control the lower panel LED displays, and transfer the key input data from the lower panel keys.

### Bus Buffer

The Bus Buffer Circuit consists of bus buffers U60 and U100. This circuit isolates the Data Bus (D0-D7) from the A2 CPU board. After isolation, names of these signals are changed to LD0-LD7 and FD0-FD7. The direction of buffering is controlled by the RD(L) signal from the A2 CPU board. This buffering function is activated when the L-KEY(L) or FDD(L) signal from the A2 CPU board is activated low.

### Address Decoder

This circuit consists of dual 2-to-4 demultiplexer U140, and decodes address signals A4-A5 from the A2 CPU board, generating corresponding chip select signals LL0(L), LL1(L), LKRD(L), CCW(L) and CW(L). This decoding function is activated when control signals L-KEY(L) and RD(L) (or L-KEY(L) and WR(L)) from the A2 CPU board is activated low. The L-KEY(L) signal is activated low when the microprocessor accesses address A8000(HEX) through AFFFF(HEX).

### Rotary Encoder

The Rotary Encoder Circuit consists of hex inverter U170, dual D-flip flop U130, dual 4-bit binary counters U150 and U160, octal 3-state D-flip flop U180 and U190 and associated components. U150 and U160 operate as up and down counters. The rotary encoder generates two pulse trains; each is 90 degrees away from the other. Making use of this phase difference, the direction of rotation can be detected. The rotation is encoded into the number of pulses that is proportional to the angle of rotation; this circuit counts these pulses with the up or down counter, according to the

direction of rotation. The pulse shape of the generated pulse train is improved by U130, then sent to U150 and U160.

If S200 (located on diagram 18) rotates clockwise, the pulse train only appears at U130 pin 8, and up counter U150 counts, because the D-flip flop is cleared by the leading pulse. Conversely, if S200 rotates counterclockwise, the pulse train appears only at U130 pin 6, and down counter U160 counts down. This counted data is periodically cleared by the microprocessor of the A2 CPU board and as a result, the counted data expresses the velocity of rotation during a given interval. The rotation velocity data is applied to U180 and U190. When the microprocessor on the A2 CPU board reads address A8000(HEX) and A8010 (HEX), the data of rotating velocity are read by the microprocessor respectively.

### Status Port

This circuit consists of hex 3-state bus buffer U110, and reads the 370A status information such as OVER-RUN (L) (over-run information), OVERHEAT(L) (overheat information), COVER (cover switch information) and BRK1 (Outputs breaker information). To obtain the data, the microprocessor reads address A8020(HEX).

### Lower Panel Key and Display

This circuit consists of hex 3-state bus buffer U70 and 8-bit addressable latches U80 and U90. This circuit reads the CONFIGURATION and LEFT-RIGHT-STANDBY key status, and controls and drives the CONFIGURATION and LEFT-RIGHT-STANDBY LED displays under the control of control signals LKRD(L), LL0(L), LL1(L), LD0, and address signals A1-A3. Among these signals, LKRD(L), LL0(L), LL1(L) are chip select signals, A1-A3 are display codes and LD0 is enable signal. The display information is sent from the A2 CPU board. The chip select signals LL0(L) and LL1(L) select U80 and U90 to fetch and store display information. The enable signal enables information fetching and storing. This stored information is transferred directly to the corresponding LED. The chip select signal LKRD(L) selects U70 to read the key status into the microprocessor.

## 16 FRONT PANEL KEY INTERFACE

This circuit is located on the A11 Main Key board, and consists of the Bus Buffer Circuit, the Address Decoder Circuit, the Variable Control Circuit, and the Switch Matrix Circuit. These circuits interface signals between the A2 CPU board and the A12 Sub Key board, set up VERTICAL, HORIZONTAL and STEP AMPLITUDE settings, and control focus and intensity, etc.

### Bus Buffer

Bus buffer U120 isolates the data bus (D0-D7) from the A2 CPU board. Once through U120, the signal titles are changed to KD0-KD7 and are sent to the A12 Sub Key board. The direction of buffering is controlled by the RD(L) select signal from the A2 CPU board. This buffering function is activated while the KEY(L) signal from the A2 CPU board is activated low.

### Address Decoder

The Address Decoder consists of 3-to-8 demultiplexers U140, U160, U170, and U190 and dual 2-to-4 demultiplexer U180. The circuit decodes address signals A2-A7 from the A2 CPU board and generates corresponding chip select signals L0(L)-/L8(L) and K0(L)-/K7(L). The decoding function of U140, U160, U170 and U190 is activated when control signal KEY(L) and RD(L) (for U160 and U190) or WR(L) (for U140 and U170) are activated low. The KEY(L) signal is activated low when the microprocessor on the A2 CPU board accesses address A0000(HEX) through A7FFF(HEX). U180A is activated when the decoded signal from U160 is the key read signal for S210, S220 and S230. This selection occurs when the microprocessor accesses address A007x (HEX), RD(L) and KEY(L) signals are activated low and A7(L) signal is activated high.

### Variable Control

This circuit consists of variable resistors R302, R312, R322, R330, R340, R350, R360 and R370 and resistors R300, R304, R310, R314, R320, and R324. This circuit adjusts the NONSTORE/STORE/VIEW INTENSITY, the REF INTENSITY, the READOUT/CURSOR INTENSITY, the FOCUS, the SCALE ILLUM, the VERT POSITION, the HORIZ POSITION and the TRACE ROTATION.

### Switch Matrix

The Switch Matrix Circuit consists of rotary switches S210, S220 and S230 and diodes from CR210 through CR221. S210 and its associated diodes CR210, CR213, CR216 and CR219 set the VERTICAL CURRENT/DIV. S220 and diodes CR211, CR214, CR217 and CR220 set the HORIZONTAL VOLTS/DIV. S230 and diodes CR212, CR215, CR218 and CR221 set the STEP AMPLITUDE. Address signals A2 and A3 from the A2 CPU board are decoded by U180A, and applied as A0070, A0074 and A0078 to the Switch Matrix circuit. Depending on the switch setting, these signals are transferred to data bus KD0-KD3 through switches and diodes (see Table 2-13).

**Table 2-13**  
**Switch Matrix Data Input/Output**

| Input | Output | Switch | Data       |     |
|-------|--------|--------|------------|-----|
| A0070 | KD0    | S210   | VERTICAL   | LSB |
|       | KD1    |        | VERTICAL   |     |
|       | KD2    |        | VERTICAL   | MSB |
|       | KD3    |        | VERTICAL   |     |
| A0074 | KD0    | S220   | HORIZONTAL | LSB |
|       | KD1    |        | HORIZONTAL |     |
|       | KD2    |        | HORIZONTAL | MSB |
|       | KD3    |        | HORIZONTAL |     |
| A0078 | KD0    | S230   | STEP       | LSB |
|       | KD1    |        | STEP       |     |
|       | KD2    |        | STEP       | MSB |
|       | KD3    |        | STEP       |     |

## 17 FRONT PANEL LED & KEY

This circuit is located on the A12 Sub Key board, and consists of the Front Panel Display Circuit and the Front Panel Key Matrix Circuit. The circuit is controlled by the A11 Main Key board, displays the Main Key setting information, and transfers key input data from the key matrix.

### Front Panel Display

This circuit consists of 8-bit addressable latches U100, U110, U120, U130, U140, U150, U160, U170 and U180, BCD to seven segment decoder/latch/driver U200, U210 and U220, transistor Q190, LEDs from DS100 through DS167 and seven segment numerical displays DS190, DS200, DS210 and DS220. This circuit controls and drives the front-panel LEDs and the numerical display under the control of control signals L0(L)-L8(L) and KD0 and address signals A1-A3. This display information is sent from the A2 CPU board and processed through the A11 Main Key board. Among these signals, L0(L)-L8(L) are chip select signals, A1-A3 are display codes and KD0 is the enable signal. The chip select signals select one latch among U100 through U180 to fetch and store display information. The enable signal enables information fetching and storing. The stored information is transferred directly to the corresponding LED, with the exception of U170 U180. The signals ID0-ID3 from U170 are the Memory index display information. The signals ID0-ID3 from U180 are the number of steps display information. These signals are decoded to BCD by seven segment decoder/latch/driver U200, U210 and U220 and transferred to numerical display DS200, DS210 and DS220. Signal ID4 is also the number of steps display signal and, through transistor Q190, drives numerical display DS190. If the Memory Index number is set to a value in the range 1 to 9, the 0 BLANK(L) signal goes low, and the seven segment numerical display DS220 which indicates the tenth place is blanked.

### Front Panel Key Matrix

This circuit consists of keys S300-S373 and diodes CR300-CR373, connected as a matrix. The key matrix sweep signals are applied to the matrix as row signal K0(L)-K7(L). The resultant output signals are obtained from the column of the matrix KD0-KD5.

## 18 CONFIGURATION LED

This circuit is located on the A15 Configuration LED board, and consists of LEDs DS100 through DS150, keys S100 and S110, and associated components. LEDs DS100 through DS150 display the CONFIGURATION setting information. When the microprocessor reads address A8030(HEX), the CONFIGURATION key status is read into the microprocessor.

## 19 CRT OUTPUT AMPLIFIER

This circuit is located on the A18 CRT Output board, and consists of the Horizontal Output Amplifier, the Vertical Output Amplifier, and the Z-axis Amplifier. The Horizontal and Vertical Output Amplifiers convert current signals from the preamplifier of the A5 Display Control board into deflection plate driving voltages for the CRT. The Z-axis Amplifier converts the current signal from the unblanking logic of the A5 Display Control board into the driving voltage for the Grid Bias and DC Restorer Circuit of the A20 H.V. REG board. The Horizontal and Vertical Output Amplifiers are similar, so only the Horizontal Output Amplifier is discussed here.

### Horizontal Output Amplifier

The Horizontal Output Amplifier consists of transistors Q100, Q102, Q110, Q112, Q120, Q122, Q130 and Q132, Schottky diodes CR102 and CR104, Zener diode VR100, diodes CR100, CR110 and CR112 and associated components. This circuit symmetrically amplifies both +H and -H signals. Thus, only the -H amplifier Circuit is discussed here.

The bias network, which is composed of CR100 and R100, sets a constant base voltage for Q100. This constant voltage is obtained from the subtraction of the voltage drop at diode CR100 from +6.5 volts. As a result, the emitter voltage of Q100 is a nearly constant +6.5 volts, which forces the preamplifiers of the A5 Display Control board to which forces the preamplifiers of the A5 Display Control board to operate as a current amplifier, making the output

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signal (-H) into constant voltage and variable current. The output stage of this amplifier consists of Q110, Q120 and Q130 and uses a self-biasing configuration, where the bias current for Q110 is supplied through R130. The voltage at the collector of Q120 balances at a level where the current through R130 and CR110 raises the voltage at the collector of Q100 to about zero volts. At this point any change in current through Q100 results in an equal but opposite change in current through R130. The output voltage (-H DEF) change is equal to the change in voltage across R130. Transistor Q130, Zener diode VR100 and resistor R128 form a constant current supply circuit for the output stage. Transistors Q110 and Q120 form a sink for the excess current not carried by R130. Schottky diodes CR102 and CR104 prevent excessive signal difference.

### Vertical Output Amplifier

This circuit consists of transistors Q200, Q202, Q210, Q212, Q220, Q222, Q230 and Q232, Schottky diodes CR202 and CR204, Zener diode VR200, diodes CR200, CR210 and CR212 and associated components. This circuit operates in the same way as does the Horizontal Output Amplifier. Please refer to the Horizontal Output Amplifier description.

### Z-Axis Amplifier

This circuit consists of transistors Q300, Q310, Q312, Q320 and Q330, Schottky diode CR306, diodes CR300, CR302 and CR304 and associated components. The circuit converts the current signal from the unblanking logic of the A5 Display Control board into the driving voltage for the Grid Bias And DC Restorer Circuit of the A20 H.V. REG board. The bias network, which is composed of CR300 and R300, sets up the base bias voltage of Q300 to be a constant voltage. This constant voltage is obtained through the subtraction of voltage drop at diode CR300 from +6.5 volts.

As a result, the emitter voltage of Q300 is an almost constant voltage of +6.5 volts and this, in turn, forces the unblanking logic of the A5 Display Control board to operate as a current amplifier and the output signal Z to be a constant voltage and varying current. The signal current Z from the A5 Display Control board via Q300 develops a voltage across R306. When the Z signal is blanked, the developed voltage turns off diodes CR302 and CR304. Schottky diode CR306 prevents this voltage from exceeding approximately +0.4 volts. Q310, Q312, Q320 and Q330 and associated components form a current-to-voltage inverting amplifier. For a blanked signal, the output voltage from the collectors of Q320 and Q330 is approximately +3.8 volts, and this voltage provides current flow through feedback resistor R308 to bias resistor R310. As a result, bias voltage for Q310 and Q312 are provided. Because diodes CR302 and CR304 are reverse biased and cut off, they don't affect the output of Q310 and Q312. To unblank the CRT, the unblanking logic of the A5 Display Control board reduces the current signal Z. This in turn reduces the voltage across R306 and turns on diodes CR302 and CR304 by forward biasing. The forward-biased diodes sink bias currents of Q310 and Q312 away from each base terminal. These reduced bias currents lower the Q310 base bias and increase Q312 base bias. As a result, the collectors of Q320 and Q330 are forced high, so that the current through R308 can maintain the forward bias current of diodes CR302 and CR304. This output voltage supplies current through R308 to diodes CR302 and CR304. If this current is equal to the current that can maintain diodes CR302 and CR304 at the cut off level, the circuit balances. The maximum output voltage of the amplifier is approximately +25 volts and CRT intensity may be set anywhere between these limits, depending on the value of the Z current signal.



## 20 POWER SUPPLY

This circuit is located on the A19 L.V. Supply board and the A27 Primary board. This board consists of the Primary Circuit, the Low-voltage Power Supply Circuit and the Interrupt Generator Circuit. This circuit supplies low voltage power for the 370A and generates the interrupt signals.

### Primary

This circuit consists of line filter FL100, LINE VOLTAGE SELECTOR switches S200 and S300, transformer T100, spark gaps E100 and E200 and air cooling fan B100. This circuit provides AC line power supply voltages for the 370A. The 370A can be operated from either a 115-volt or a 230-volt nominal line voltage source by setting the LINE VOLTAGE SELECTOR switches (S200 and S300, which are located on the 370A rear panel). In the 115-volt position of S200, the primary windings of T100 are connected parallel. Conversely, in the 230-volt position, the two primary windings of T100 are connected serially. Thus, the output of the secondary windings of T100 is the same if the operator sets S200 correctly. S300 determines how many turns of each primary is used to compensate for variations in line voltage. Spark gaps E100 and E200 protect the rectifier and filter circuit from line surges over 230 volts peak-to-peak. This board also supplies AC power voltages to air cooling fan B100.

### Low-voltage Power Supplies

The Low-voltage Power Supply Circuit provides five regulated voltages (+5V, +6.5V, +12V, -6.5V, -12V) and four unregulated voltages (+12V UNREG, -12V UNREG, +40V UNREG and -40V UNREG). The two reference voltages (+2V REF and -2V REF) and the scale illumination voltage are also provided by this circuit.

**+5V Supply.** This circuit produces regulated +5 volts for the digital circuits and consists of diode CR100, capacitors C100, C102 and C140 and voltage regulator U100. Fixed resistor R102 sets the output of U100 to +5.2 volts.

**+6.5 and -6.5V Supply.** This circuit provides regulated +6.5 and -6.5 volts for analog circuits; the circuit consists of transistors Q130 and Q230, capacitors C134 and C234 and operational amplifier U130. The reference voltage of U130 is supplied by U120, elsewhere on the board. The output voltages of +6.5 volts and -6.5 volts are sensed and divided by resistor pair R134-R136 (+6.5 volts) or R234-R236 (-6.5 volts). These divided voltages are compared with the reference voltage of +2.5V REF and the differential voltages are obtained by U130. U130 amplifies each differential voltage, and this output controls Q130 and Q230, respectively, to make the +6.5 volts and -6.5 volts constant.

**+12V supply.** This circuit consists of diode CR300, capacitors C300 and C312 and voltage regulator U310.

**-12V supply.** This circuit consists of diode CR400, capacitors C400, C422 and C412 and voltage regulator U410.

+12, -12, +40, and -40V unregulated supplies. These supply circuits provide operating power for the Step Generator, the AUX Supply, etc. The unregulated +40 and -40 volts supply consist of diode CR500, capacitors C500 and C502 and resistor R501. Unregulated +12 and -12 volts are obtained from pre-regulated stages of +12 and -12 volts supply, respectively.

**ILLUM voltage supply.** This circuit consists of transistors Q600 and Q602 resistor R602. The circuit supplies current to the A28 LAMP A and A29 LAMP B boards under the control of the the ILLUM signal, the level of which is set by the GRAT ILLUM control of the A11 Main Key board.

**+2.0V and -2.0V REF.** These reference supply circuits consist of operational amplifier U500 and reference regulator U120. Resistors R500 and R516 adjust the +2.0 volts and -2.0 volts, respectively.

### Interrupt Generator

This circuit consists of operational amplifiers U560A and U560B and associated components. The circuit provides interrupt signals for the A2 CPU board and the A3 A/D board, namely, TIM-INT (line frequency timer interrupt) and PF-INT (power fail interrupt).

The TIM-INT Generator Circuit synchronizes the line frequency. Comparator U560A produces the clock signal of the AC line frequency for the PLL and the microprocessor. It consists of diodes CR570 and CR572 and U560A. This TIM-INT clock signal is used by the PLL Circuit on the A3 A/D Board to synchronize waveform generation timing and by the A2 CPU board to initiate periodical input procedures such as keyboard data reading of the microprocessor.

The PF-INT Generator Circuit consists of diode CR560 and CR562, resistor R560 and R562, and capacitors C562 and U560B. When the power supply of the AC line shuts down, this circuit produces the active high PF-INT signal for the microprocessor before the +5-volt supply shuts down, so that the microprocessor has time to initiate and complete the Power Failure support procedure.



## H.V. POWER SUPPLY

The H.V. Power Supply is located on the A20 H.V. REG board. This circuit consists of the High-voltage Generator Circuit, the High-voltage Regulator Circuit, the Grid Bias and DC Restorer Circuit, the Focus Amplifier and DC Restorer Circuit, the Anode Multiplier Circuit, the Rectifier Filter Circuit and the CRT Circuit. This circuit provides the various high voltage operating potentials required by the CRT, and displays the 370A data.

### High-voltage Generator

This circuit consists of transistor Q100 and transformer T100 and associated components. Q100 and two of primary windings of T100 are connected to form an oscillator. The frequency of oscillation is approximately 20 kHz. The 20 kHz AC voltage induces high voltage in the secondary windings of T100.

### High-voltage Regulator

The High-voltage Regulator Circuit consists of U200A and associated components. This circuit monitors the cathode voltage of the CRT and controls base bias current of Q100. This results in a controlled high voltage output from the T100 secondary windings.

### Grid Bias and DC Restorer

The Grid Bias And DC Restorer Circuit provides the CRT control-grid bias voltage and couples both the DC and low frequency components of the Z-OUT drive signal to the CRT control-grid. The circuit operates by impressing the grid bias setting and the Z-OUT drive signal on an AC waveform. This shaped waveform is then ac-coupled to the high-potential CRT environment where the DC components of the original signal are restored. An AC drive voltage of approximately 400 volts peak-to-peak is applied to this circuit from pin 7 of transformer T100. This signal is coupled to the junction of a positive clamp (made up of R208, R210, CR202, VR200 and VR202) and a negative clamp (made up of CR204) through resistor R204 and R206 and capacitor C202. Grid bias potentiometer R210 determines the overall CRT intensity.



The positive and negative clamped AC waveform and Z-axis signal is applied to pin 9 and pin 10 of U100 high voltage module, respectively. The capacitor connected to pin 9 and the two diodes attached to its other terminal in U100 form a rectifier circuit. This circuit changes the capacitor connected to pin 10 to a potential below the -2400 volt level of the CRT cathode. A positive transition of the Z-OUT signal voltage moves the control-grid bias positive by approximately the same voltage, thereby increasing CRT beam current.

### Focus Amplifier and DC Restorer

The Focus Amplifier and DC Restorer Circuit provides the level shifting of the operator-controlled FOCUS signal to the high potential environment of the CRT. This level shifting is done in a manner similar to that just described for the last stage, the Grid Bias and DC Restorer. The active positive clamp, made up of U200, Q200 and their associated components, provides a variable voltage clamp that limits the positive swing of the AC waveform. Diode CR200 limits the negative swing. The 800 volts of AC signal is applied to the clamping node through resistors R200 and R202 and capacitor C200. Operational amplifier U200B changes its output so that feedback through R222 maintains the voltage on pin 6 equal to that on pin 5, which is zero volts. The FOCUS signal from the A11 Main Key board is divided by R226 and R224. FOCUS can be adjusted from zero to +6.5 volts. This provides a range of clamping levels from +650 volts (FOCUS equals zero volt) to +344 volts (FOCUS equals +6.5 volts). Q200 provides voltage isolation for the output of U200B. When CR210 is forward biased by a voltage swing that exceeds the clamping level, U200B absorbs the excess current through R220, Q200 and R228 so that feedback current through R222 can remain unchanged.

The positive and negative clamped AC signal from T100 is fed to pin 7 of U100. The Capacitor connected to pin 7 and the two diodes attached to the capacitor's other terminal within U100 form a rectifier circuit. This circuit changes the capacitor connected to pin 8 to a potential above the -2400 volt level of the CRT cathode. This voltage is applied to the focus-grid of the CRT to control spot size.

### Anode Multiplier

Anode multiplier U300 is a conventional voltage multiplier of 12 stages; it produces 12 kilovolts accelerating potential for the CRT.

### Rectifier Filter

The Rectifier Filter Circuit consists of diodes CR300, CR310 and CR320 and capacitors C300, C310 and C320. This circuit provides approximately +100 volts and +200 volts to the CRT output amplifier from the 200 volts peak-to-peak AC supplied by T100.

### CRT

This circuit consists of the CRT (Cathode Ray Tube), orthogonality coil L120, trace rotation coil L100 and associated components. This circuit displays the 370A data. L100 and L120 control trace rotation and orthogonality of the CRT. Pin assignment of CRT is described in Table 2-14.

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Table 2-14  
CRT Pin Assignment

| Pin number | Pin name                     | Connected signal       |
|------------|------------------------------|------------------------|
| 1<br>14    | Heater power supply          | 6.3-volt heater line   |
| 2          | Cathode                      | Cathode (-2400 volts)  |
| 3          | No. 1 grid                   | Intensity control line |
| 4          | No. 1 plate                  | Focus control line     |
| 5          | No. 2 grid                   | Geometry               |
| 6          | Collector                    | GND                    |
| 7<br>9     | Vertical deflection plates   | -VDEF<br>-VDEF         |
| 11<br>12   | Horizontal deflection plates | -HDEF<br>-HDEF         |



## **GPIB & PLOTTER INTERFACE**

This circuit is located on the A22 GPIB Interface board. The circuit consists of the Bus Buffer Circuit, the Address Decoder Circuit, the GPIB Address Switch, the GPIB Controller Circuit, the GPIB Bus Driver Circuit, the Plotter Controller Circuit and the Plotter Bus Driver Circuit. The function of this circuit is to transfer the microprocessor data to the plotter and to communicate with other instruments via the bidirectional general purpose interface bus (GPIB). These functions are under control of the microprocessor and the communication handling software, which are located on the A2 CPU board.

### **Bus Buffer**

The Bus Buffer Circuit consists of U120 and U140; it isolates data bus D0-D7, address bus A1-A4 and control signals (RD(L), WR(L), RESET(L) and IFCS(L)). After isolation, the names of these signals are changed to IFD0-IFD7 (data bus), IFA1-IFA4 (address bus) and IFRD(L), IFWR(L), IFRESET(L) and IFCE(L) (control signals) respectively. Because the data bus (IFD0-IFD7) is a bidirectional bus, data bus driver U140 switches the direction of buffering under the control of the IFRD(L) signal. The address bus and control signals are unidirectional signals from the A2 CPU board and are isolated by U120 and changed in name as mentioned before.

### **Address Decoder**

The Address Decoder Circuit consists of dual 2-to-4 demultiplexers U220. This circuit generates chip select signals for GPIB controller U300, plotter controller U400, and GPIB address switch U360 by decoding address signals of IFA2, IFA3 and IFA4, which are derived from the A2 CPU board. The decoded signals are transferred to the corresponding circuit of the board when the IFCE(L) control signal is asserted. Address signals of IFA0-IFA4 are also used to select internal registers of GPIB controller U300 and U400 for reference by the microprocessor.

### **GPIB Address Switch**

The GPIB Address Switch Circuit consists of S360 DIP switch and U360, which determine the GPIB address and data delimiter. The right five digits of the switch (No.2-No.6) set GPIB address from 0 to 31 in binary notation. The leftmost digit of the switch (No.1) sets the data delimiter.

### **GPIB Controller**

The GPIB Controller Circuit consists of GPIB controller U300 (TMS-9914A). This circuit manages all interfacing procedures needed to complete GPIB data communication.

### **GPIB Bus Driver**

GPIB Bus Driver U320 and U340 transfers signals to and from the GPIB and the GPIB controller Circuit. U340 drives the GPIB control signals from U300 to the GPIB. U320 drives the GPIB data signals between U300 and the GPIB.

### **Plotter Controller**

The Plotter Controller Circuit consists of GPIB controller U400 (TMS-9914A). This circuit manages all interfacing procedures needed to complete data communication.

### **Plotter Driver**

The Plotter Driver consists of U440 and U460; this circuit transfers the signals between the Plotter Controller and the Plotter Bus. U440 drives the plotter control signals and U460 drives data.

## 23 **CONFIGURATION RELAY**

The Configuration Circuit is located on the A33 Configuration Relayboard. This circuit consists of relays K600 through K640. These relays are driven by the CONFIGURATION control. Table 2-15 shows the control signal for the relays.

**Table 2-15**  
**Relay Control Signals for Configuration Setting**

| Configuration Setting |                  |          | Relay Control Signal |    |    |     |    |    |    |
|-----------------------|------------------|----------|----------------------|----|----|-----|----|----|----|
| Collector             | Base             | Emitter  | T0                   | T1 | T2 | T2' | T3 | T4 | T5 |
| Collector Supply      | Step Gen         | Common   | 1                    | 0  | 0  | 0   | 0  | 0  | 1  |
| Collector Supply      | Open (Ext)       | Common   | 1                    | 0  | 0  | 0   | 1  | 0  | 1  |
| Collector Supply      | Short (Emitter)  | Common   | 1                    | 1  | 0  | 0   | 0  | 0  | 1  |
| Collector Supply      | Common (Ext)     | Open     | 0                    | 0  | 1  | 1   | 1  | 0  | 1  |
| Collector Supply      | Common           | Step Gen | 0                    | 0  | 1  | 1   | 0  | 0  | 1  |
| Open                  | Collector Supply | Common   | 1                    | 1  | 0  | 0   | 0  | 1  | 0  |

## 24 LOR KEY

This circuit is located on the A14 LOR Key board, and consists of LEDs DS100, DS200, DS210, DS220, and DS400, keys S100, S110, and S120, and associated components. LEDs DS200, DS210, and DS220 display the LEFT-RIGHT-STANDBY switch setting information. When the microprocessor reads address A8030(HEX), the LEFT-RIGHT-STANDBY key status is read into the microprocessor. The Warning LED DS100 indicates that dangerous voltage may be applied to the collector or base terminals. The Limiter LED DS400 indicates that the automatic protection is operating.

## 25 FDD INTERFACE

This circuit is located on the A23 FDD Interface board. The circuit consists of the Bus Buffer Circuit, the Address Decoder Circuit, the FDD Controller Circuit and the FDD Bus Driver Circuit. The function of this circuit is to communicate with the FDD unit.

### Bus Buffer

The Bus Buffer Circuit consists of U100 and U120; it isolates data bus D0-D7, address bus A1, A2, A3, A5, A6 and control signals (RD(L), WR(L), and FDD(L)). After isolation, the names of data bus signals are changed to DF0-DF7. Because the data bus (DF0-DF7) is a bidirectional bus, data bus driver U100 switches the direction of buffering under the control of the RD(L) signal. The address bus and control signals are unidirectional signals from the A2 CPU board and are isolated by U120.

### Address Decoder

The Address Decoder Circuit consists of 2-to-4 demultiplexers U140B. This circuit generates chip select signals for FDD controller U400 and 3-state buffer U300 by decoding address signals of A5 and A6, which are derived from the A2 CPU board. The decoded signals are transferred to the corresponding circuit of the board when the FDD(L) control signal is asserted. Address signal A1 is used to select internal registers of FDD controller U400.

### FDD Controller

The FDD Controller Circuit consists of FDD controller U400. This circuit manages all interfacing procedures needed to complete data communication. Octal 3-state buffer U300 reads the interrupt signal from FDD controller U400. To obtain the data, the microprocessor reads address B8020(hex).

### FDD Bus Driver

The FDD Bus Driver consists of U440 and U460; this circuit transfers the signals between the FDD Controller and the FDD Bus.



# Maintenance





# 3

## Maintenance

This section of the manual contains information for performing preventive maintenance, troubleshooting, and corrective maintenance for the 370A Programmable Curve Tracer.

### PREVENTIVE MAINTENANCE

Preventive maintenance, when performed on a regular basis, can prevent instrument breakdown and may improve the reliability of the instrument. The severity of the environment to which the instrument is subjected will determine the frequency of maintenance. A convenient time to perform preventive maintenance is preceding electrical adjustment of the instrument.

### CABINET REMOVAL

#### WARNING

Dangerous potentials exist at several points throughout this instrument. When the instrument is operated with the covers removed, do not touch exposed connections or components. Some transistors have voltages present on the case. Disconnect power before cleaning the instrument or replacing parts.

The side, top, and bottom cabinet panels provide protection to personnel from operating potentials present within the instrument. In addition, they reduce radiation of electromagnetic interference from the instrument. The cabinet panels are held in place by slotted fasteners. To remove the panels, turn each fastener counterclockwise a quarter turn with a large screwdriver. Lift the panels away from the instrument. Operate the instrument with the panels in place to protect the interior from dust.

### CLEANING

The 370A should be cleaned as often as operating conditions require. Accumulation of dirt in the instrument can cause overheating and component breakdown. Dirt on components acts as an insulating blanket and prevents efficient heat dissipation. It also provides an electrical conduction path that may result in instrument failure.

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### CAUTION

Avoid the use of chemical cleaning agents that might damage the plastics used in this instrument. Use a non-residue type of cleaner, preferably Isopropyl alcohol or totally denatured ethyl alcohol. Before using any other type of cleaner, consult your Tektronix Service Center or representative.

### Exterior

Loose dust accumulated on the outside of the instrument can be removed with a soft cloth or small brush. The brush is particularly useful for dislodging dirt on and around the front-panel controls. Dirt that remains can be removed with a soft cloth dampened in a mild detergent and water solution. Abrasive cleaners should not be used.

### CRT

Clean the plastic light filter, implosion shield, and the CRT face plate with a soft, lint-free cloth dampened with denatured alcohol.

### Interior

Cleaning the interior of the instrument should only be occasionally necessary. The best way to clean the interior is to blow off the accumulated dust with dry, low-velocity air (approximately 5 lbs/sq in). Remove any dirt that remains with a soft brush or a cloth dampened with a mild detergent and water solution. A cotton swab is useful for cleaning in narrow spaces, or for cleaning more delicate circuit components.

### CAUTION

Circuit boards and components must be dry before applying power to prevent damage from electrical arcing.

The high-voltage circuits should receive special attention. Excessive dirt in this area may cause high-voltage arcing and result in improper instrument operation.

## VISUAL INSPECTION

The 370A should be inspected occasionally for such defects as broken connections, improperly seated semiconductors, damaged or improperly installed circuit boards, and heat-damaged parts. The corrective procedure for most visible defects is obvious; however, particular care must be taken if heat-damaged parts are found. Overheating usually indicates other trouble in the instrument; therefore, correcting the cause of overheating is important to prevent recurrence of the damage.

## SEMICONDUCTOR CHECKS

Periodic checks of the semiconductors are not recommended. The best check of semiconductor performance is actual operation in the instrument. More details on semiconductors are given under Troubleshooting later in this section.

## PERIODIC ELECTRICAL ADJUSTMENT

To ensure accurate measurements, check the electrical adjustment of this instrument after each 2000 hours of operation, or annually if used infrequently. In addition, replacement of components may necessitate adjustment of the affected circuits. Complete adjustment instructions are given in Section Four, Performance Check and Adjustment. This procedure can be helpful in localizing certain troubles in the instrument, and in some cases, may correct them.

## ■ TROUBLESHOOTING

The following information is provided to facilitate troubleshooting of the 370A Programmable Curve Tracer. Information contained in other sections of this manual should be used in conjunction with the following data to aid in locating a defective component. An understanding of the circuit operation is helpful in locating troubles. See Section Two, Theory of Operation, for this information.

## TROUBLESHOOTING AIDS

### Diagrams

Complete schematic diagrams are given on the pullout pages in Section 7, Diagrams and Circuit Board Illustrations. The component number and electrical value of each component in this instrument are shown on these diagrams. (See the first page of the Diagrams and Circuit Board Illustrations section for definitions of the reference designators and symbols used to identify components in this instrument.) Important voltages and numbered waveform test points are also shown on the diagrams. Important waveforms, and the numbered test points where each was obtained, are located adjacent to each diagram. The portions of circuits mounted on circuit boards are enclosed with heavy solid-black lines.

### Circuit Board Illustrations

To aid in locating circuit boards, a circuit board location illustration appears on the back of the pullout page that faces the appropriate schematic diagram. In addition, circuit board illustrations are included that show the physical location of the components and waveform test points that appear on the schematic diagram. Each circuit board illustration includes a grid locator with an index to aid rapid location of components contained in the schematic diagrams.

### Troubleshooting Charts

Troubleshooting charts are given in Section 7, Diagrams and Circuit Board Illustrations, to aid in locating a defective circuit. The shaded blocks on the Troubleshooting charts indicate circuits that may cause the indicated malfunction. The circuits listed are discussed in detail in Section 2, Theory of Operation.

### Adjustment and Test Point Locations

To aid in locating test points and adjustable components called out in the various portions of the Adjustment procedure, the Adjustment and Test Point Locations pullout pages appear in Section 7, Diagrams and Circuit Board Illustrations.

### Component Color Coding

The instrument contains brown composition resistors, some metal-film resistors, and some wire-wound resistors. The resistance value of a wire-wound resistor is usually printed on the component body. The resistance value of a composition resistor or metal-film resistor is color-coded on the component, using the EIA color code. (Some metal-film resistors may have the value printed on the body.)

The color code is read starting with the stripe nearest the end of the resistor. Composition resistors have four stripes, which consist of two significant figures, a multiplier, and a tolerance value (see Figure 3-1). Metal-film resistors have five stripes that consist of three significant figures, a multiplier, and a tolerance value.

The values of common disc capacitors and small electrolytic capacitors are marked on the side of the component body. The white ceramic and epoxy-coated tantalum capacitors used in the instrument are color coded using a modified EIA code (see Figure 3-1).

The cathode end of glass-encased diodes is indicated by a stripe, a series of stripes, or a dot. The cathode and anode ends of metal-encase diodes can be identified by the diode symbol marked on the body.

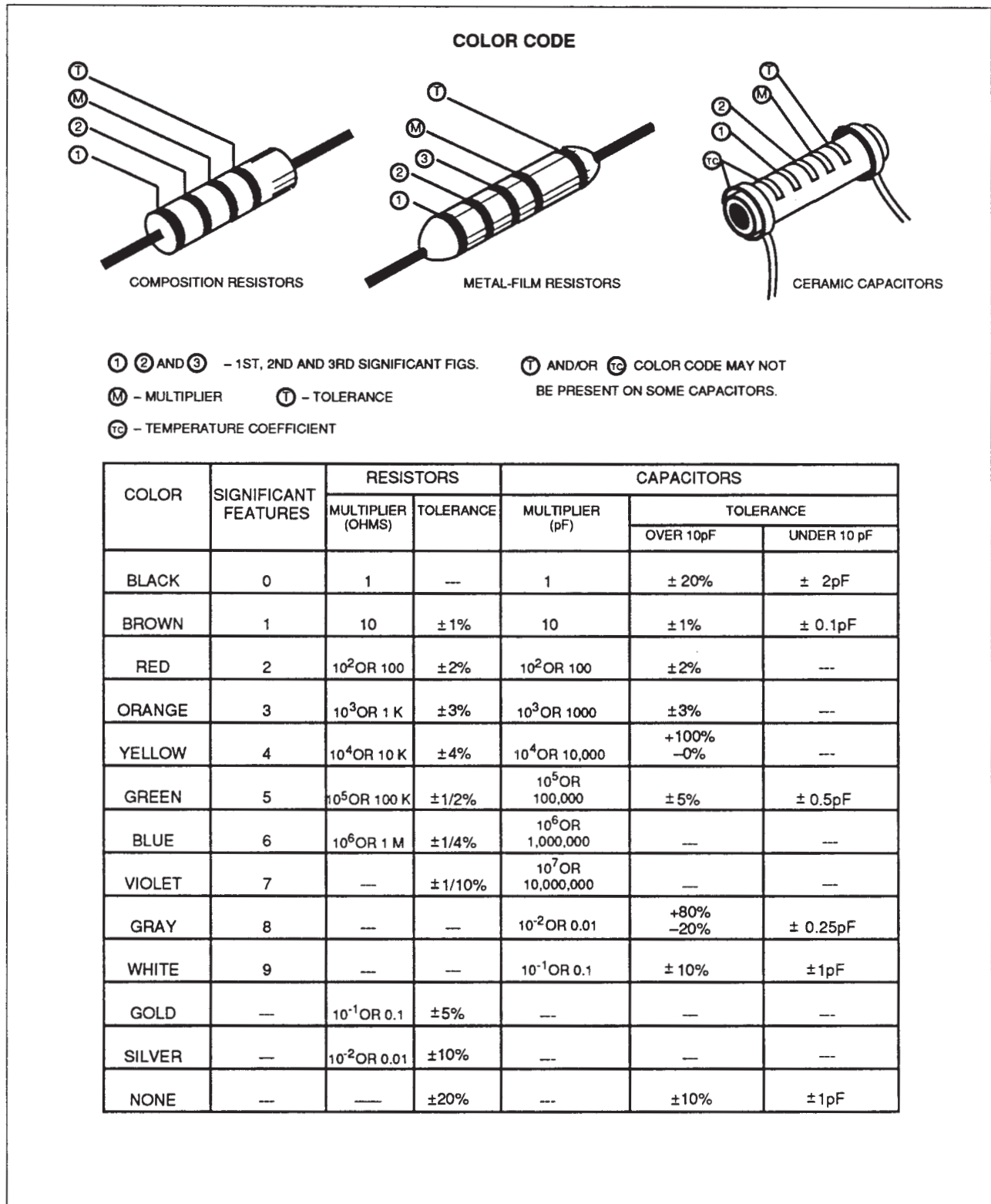


Figure 3-1. Resistor and capacitor color coding.

### Semiconductor Lead Configurations

Lead configurations for semiconductor devices used in the 370A are shown in Figure 3-2.

### STATIC-SENSITIVE DEVICES

#### CAUTION

Static discharge can damage any semiconductor component in this instrument.

This instrument contains electrical components that are susceptible to damage from static discharge. See Table 3-1 to determine the relative susceptibility of various classes of semiconductors. Static voltages of 1 kV to 30 kV are common in unprotected environments.

Observe the following precautions to avoid damage:

1. Minimize handling of static-sensitive components.
2. Transport and store static-sensitive components or assemblies in the original container on a metal rail, or on conductive foam.
3. Discharge the static voltage from your body by wearing a wrist strap while handling static-sensitive components. Servicing static-sensitive components should be performed only at a static-free work station by qualified service personnel. We recommend use of a static-control mat, and wrist strap.
4. Allow nothing capable of generating or holding a static charge on the work station surface.
5. Keep the component leads shorted together whenever possible.
6. Pick up components by the body, never by the leads.
7. Do not slide the component over any surface.
8. Avoid handling components in areas that have a floor or work-surface covering capable of generating a static charge.
9. Use a soldering iron that is connected to earth ground.
10. Use only special antistatic suction-type desoldering tools.

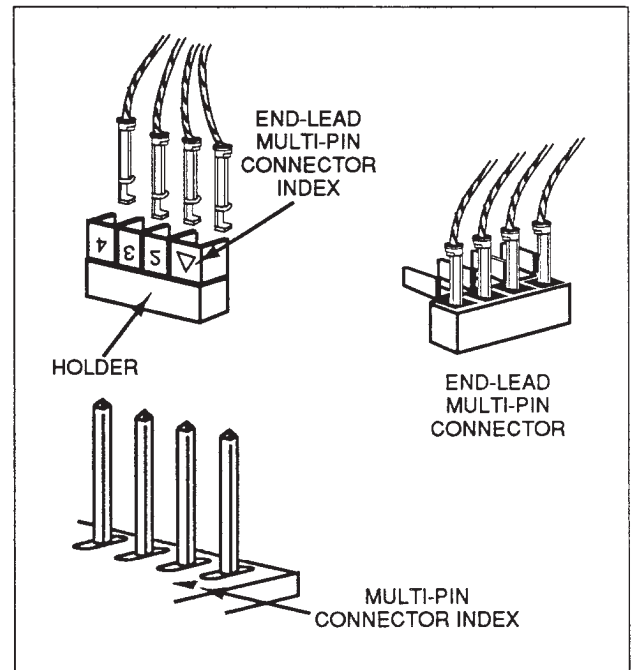


Figure 3-2 Connector pin indexing

**Table 3-1**  
**Relative Susceptibility to Damage from Static Discharge**

| Semiconductor Class  | Relative Susceptibility Level |
|--|-------------------------------|
| MOS or CMOS microcircuits, and discrete or linear microcircuits with MOS inputs (most sensitive) | 1 (100 to 500 volts)          |
| ECL  | 2 (200 to 500 volts)          |
| Schottky Signal Diodes   | 3 (250 volts)                 |
| Schottky TTL   | 4 (500 volts)                 |
| High-frequency bipolar transistors   | 5 (400 to 600 volts)          |
| JFETs  | 6 (600 to 800 volts)          |
| Linear Microcircuits   | 7 (700 to 1000 volts)         |
| Low-power Schottky TTL   | 8 (900 volts)                 |
| TTL (least sensitive)  | 9 (1200 volts)                |
| (Voltage is discharged from a 100 pF capacitor through a resistance of 100 ohms.)                |                               |

**Multi-pin Connector Identification**

Multi-pin (harmonica, ribbon cable) connector pins are marked with a triangle, dot, or square symbol on the connector, which denotes pin 1 of the connector. When making a connection to a circuit board, match the symbol position on the connector to the index symbol that is printed on the board near the connector (see Figure 3-2).

**CAUTION**

Exceptions to the FUJITSU's holders are as follows. The F mark identifies pin 1. From the F mark each slot in the connector is sequentially numbered (2, 3, 4, 5, etc.). Notice that the "." mark does not identify pin 1 but fifth slot from the "F" mark.

**Troubleshooting Equipment**

The following equipment is useful for troubleshooting the 370A Programmable Curve Tracer.

1. Transistor Tester

Description: Dynamic type tester.

Purpose: Test semiconductors.

Recommended type: SONY/TEKTRONIX 370A Programmable Curve Tracer.

2. Digital Multimeter

Description: 10 MΩ input impedance and 0 to 1 kV range, AC and DC; ohmmeter, accuracy, within 0.1%. Test probes must be insulated to prevent accidental shorting.

Purpose: Check voltages and resistances.

Recommended type: TEKTRONIX DM501A Digital Multimeter.

3. Test Oscilloscope

Description: Frequency response, DC to 50 MHz minimum; deflection factor, 2 mV to 5 V/division. A 10X, 10-MΩ voltage probe should be used to reduce circuit loading for voltage measurements.

Purpose: Check operating waveforms.

Recommended type: TEKTRONIX 2445B Oscilloscope.

4. Variable Autotransformer

Description: Output variable from 0 to 140 volts, 10 A minimum rating. Must have three-wire power cord, plug, and receptacle.

Purpose: Vary line voltage when troubleshooting the power-supply.

Recommended type: General Radio W10MT3W Variac Autotransformer.

5. Calibration Fixtures

a. Extender Board

Purpose: Troubleshooting the circuit boards.

Recommended type: TEKTRONIX 670-9303-00 Extender.

#### b. Extension Cable

Purpose: Troubleshooting with the drawer unit extended.

Recommended type: TEKTRONIX 174-1999-00, 174-0352-00.

The above calibration fixtures are obtained in kit from: TEKTRONIX 067-0187-00.

### Troubleshooting Techniques

This troubleshooting procedure is arranged to check the simple trouble possibilities before proceeding with extensive troubleshooting. The first few checks ensure proper connection and operation of associated equipment. If the trouble is not located by these checks, the remaining steps aid in locating the defective component. When the defective component is located, replace it using the replacement procedures given under Corrective Maintenance.

#### 1. Check Control Settings

Incorrect control settings can indicate a trouble that does not exist. If there is any question about the correct function or operation of any control on the the instrument, refer to the Operators Manual.

#### 2. Check Associated Equipment

Before proceeding with troubleshooting, check that the equipment used with this instrument is operating correctly. Also, check that the input signals are properly connected and that the interconnecting cables are not defective. Also check the line-voltage source.

#### 3. Visual Check

Visually check the portion of the instrument in which the trouble is located. Many troubles can be found by visible indications, such as unsoldered connections, loose cable connections, broken wires, damaged circuit boards, and damaged components.

#### 4. Check Instrument Adjustment

Check the electrical adjustment of this instrument, or of the affected circuit if the trouble appears in one circuit. The apparent trouble may only be a result of misadjustment. Complete adjustment instructions are given in Section 4, Performance Check and Adjustment.

#### 5. Isolate Trouble to a Circuit

To isolate trouble to a particular circuit, note the trouble symptom. The symptom often identifies the circuit in which the trouble is located. When trouble symptoms appear in more than one circuit, check the affected circuits by taking voltage and waveform measurements. Also check for the correct output signals at the front- and rear-panel output connectors with a test oscilloscope. If the signal is correct, the circuit is working correctly up to that point.

Incorrect operation of all circuits often indicates trouble in the power supply. Check first for correct voltage of the individual supplies. However, a defective component elsewhere in the instrument can appear as a power-supply trouble and may also affect the operation of other circuits. If incorrect operation of the power supplies is suspected, refer to Troubleshooting the High-efficiency Power Supply given later in this section.

The 370A Troubleshooting charts in the Diagrams and Circuit Board Illustrations, Section 7, provides a guide for locating defective circuits. Start at the top of the chart and perform the checks until one of the checks fails.

#### 6. Check Voltages

Often the defective component can be located by checking for the correct voltages in the circuit. Typical voltages are given in Section 6, Diagrams and Circuit Board Illustrations.

#### NOTE

Voltages appearing in Section 7, Diagrams and Circuit Board Illustrations, are not absolute and may vary slightly between 370A Programmable Curve Tracers. To obtain operating conditions used to take these readings, see the Voltage Conditions adjacent to the schematic diagram.

#### 7. Check Individual Components

The following procedures describe methods of checking individual components in the 370A. Components that are soldered in place (excluding integrated circuits) are best checked by first disconnecting one end. This isolates the measurement from the effects of surrounding circuitry.

**CAUTION**

To avoid electric shock hazard, always turn off the mainframe power switch before removing or replacing components.

**Fuses:** Check for open fuses by checking continuity with an ohmmeter.

**WARNING**

**Before replacing an open fuse, determine the cause of failure. Refer to the Power Supply Board and Interconnect diagrams and the adjacent board illustrations in the foldout section at the rear of this manual for component locations.**

**Transistors:** A good check of transistor operation is actual performance under operating conditions. A transistor can most effectively be checked by substituting a new component for it (or one that has been previously checked). However, be sure that circuit conditions are not such that a replacement transistor might also be damaged. If substitute transistors are not available, use a dynamic tester. Static testers are not recommended, because they do not check operation under simulated operating conditions.

**Integrated Circuits:** These can be checked with a test oscilloscope, digital tester or by direct substitution.

**CAUTION**

Direct substitution must not be attempted with soldered-in integrated circuits. The I.C., circuit board, or both, may be damaged due to the heat required to melt the solder from the connections. Refer to Soldering Techniques later in this section.

Use care when checking voltages and waveforms around the integrated circuits so that adjacent leads are not shorted together. The integrated circuit test clip provides a convenient means of clipping a test probe to the in-line, multi-pin, integrated circuit.

A good understanding of the circuit operation is essential to troubleshooting circuits using integrated circuits. Operating conditions and other information for the integrated circuits are given in Section 2, Theory of Operation, and Section 7, Diagrams and Circuit Board Illustrations.

**Diodes:** A diode can be checked for an open or shorted condition by measuring the resistance between terminals with an ohmmeter on a scale having a low internal source current, such as the R x 1k scale. The resistance should be very high in one direction and very low when the meter leads are reversed.

**CAUTION**

When checking diodes, do not use an ohmmeter scale setting that has a high internal current, because high currents may damage the diodes under test.

**Resistors:** Check the resistors with an ohmmeter. Resistor tolerances are given in Section 6, Replaceable Electrical Parts. Normally, resistors need not be replaced unless the measured value varies widely from the specified value.

**Capacitors:** A leaky or shorted capacitor can best be detected by checking resistance with an ohmmeter on the highest scale. Do not exceed the voltage rating of the capacitor. The resistance reading should be high after initial charge of the capacitor. An open capacitor can best be detected with a capacitance meter or by checking if the capacitor passes AC signals.

**8. Repair and Adjust the Circuit**

If any defective parts are located, follow the replacement procedures given under Component Replacement in this section. Check the performance of any circuit that has been repaired or that has had any electrical components replaced. Adjustment of the circuit may be necessary.



## CORRECTIVE MAINTENANCE

Corrective maintenance consists of component replacement and instrument repair. Special techniques required to replace components in the 370A Programmable Curve Tracer are given here.

## COMPONENT REMOVAL AND REPLACEMENT

### WARNING

To avoid electric-shock hazard, always disconnect the instrument from the power source before removing or replacing components or sub-assemblies.

The exploded-view drawings associated with the Replaceable Mechanical Parts list (located at the rear of this manual) may be helpful in the removal or disassembly of individual components or sub-assemblies.

### Preparations for Component Removal and Replacement

Before removing or replacing a component, it may be necessary to open or remove panels, keyboards, etc. The following is the procedure for these preparations.

#### Cabinet Panel Removal

1. The 370A has three cabinet panels, top, right, and left.
2. Remove the four cabinet panel retainers from each corner of the 370A rear panel.
3. Remove the top cabinet panel by first removing its securing screw at the rear. Slide the panel back to remove it.
4. Remove the right and left cabinet panels by first removing each securing screw at the rear. Pull each panel back slightly to release it from the front casting. Then, move the top of the panel outward. Remove each panel by either sliding it to the rear or by lifting it from the bottom groove in the main body.
5. Replace cabinet panels in the reverse order of removal.

#### Rear Panel Removal

1. Remove the four cabinet panel retainers from each corner of the rear panel.
2. Remove the top, left, and right cabinet panels from the main body of the 370A. (See the Cabinet Panel Removal instructions.)
3. Remove any connector(s) attached to the outside of the rear panel at the IEEE STD 488 PORT, the PLOTTER INTERFACE PORT, or the AC INPUT.
4. Remove the six screws securing the rear panel.
5. Pull the rear panel out and carefully lower it away from the main body. Do not stretch any connector wires inside the panel.

#### NOTE

When removing connectors from a board, tag each one to prevent misconnection while reassembling.

6. Remove the following connectors from inside the rear panel:

J270 and J274 from the A27 Primary circuit board  
P16 and P18 from the FL100 Filter

#### NOTE

Remove the A2 CPU and the A3 A/D circuit boards before the next step. (See the Plug-in Boards removal instructions.)

J220 from the A1 Mother circuit board  
Both ground wires from the main body chassis

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7. Remove the rear panel.

### NOTE

Removal of the A22 Interface circuit board, the A27 Primary circuit board, or the B100 Cooling Fan is described later in this section. To remove one of these circuit boards or the fan from the rear panel, see the removal instructions for that component.

8. Replace the rear panel in the reverse order of removal.

### Connector Replacement

1. The 370A uses many types of connectors; some of them are very similar in appearance. Tag each connector before removing to avoid confusing one connector with another. (See Figure 3-2.)
2. Some connectors have latches to prevent erroneous removal during operation. Release these latches when disconnecting them.
3. Be sure to properly orient each connector when reconnecting it.

### CAUTION

Some connectors are symmetrical. These are indexed by a mark that denotes pin 1.

### Drawer Unit Removal

1. Remove the right and left cabinet panels from the main body.
2. Remove the eight screws (four flat-head and four round-head) from each of the mounting brackets that secure the drawer unit to the main body. Remove both the right and left mounting brackets.
3. Pull the drawer unit forward away from the 370A.
4. Replace the drawer unit in the reverse order of removal.

### NOTE

Before replacing the left or right mounting bracket, make certain that the label on one access hole is properly aligned with the internal potentiometers. (The brackets are interchangeable and could be installed on the wrong side.)

### Cathode-Ray Tube Removal

### NOTE

Before removing the CRT, be certain that removal is necessary by checking associated circuits.

Remove the Cathode-Ray Tube (CRT) as follows:

#### WARNING

The CRT may retain a dangerous electrical charge. Before removing the CRT, the anode must be fully discharged by shorting the CRT anode to the chassis. Wait approximately ten minutes and again firmly short the anode to the chassis, then remove the CRT.

Use extreme care when handling a CRT. Breakage of the CRT causes a high-velocity scattering of glass fragments (implosion). Wear protective clothing and safety glasses. Avoid striking the CRT on any object that might cause it to crack or implode. When storing a CRT, place it in a protective carton or face down in a protected location on a smooth surface with a soft mat under the face plate.

1. Remove the rear panel and the top cabinet panel.
2. Loosen the two screws located on both sides of the CRT base-pin until the tension of the springs on these screws is released.
3. Remove the CRT base-pin socket from the rear of the CRT.
4. Disconnect the CRT anode cap from the jack located on the left side of the CRT. Ground the CRT anode to the chassis to dissipate any stored charge remaining in the CRT.

5. Remove the CRT bezel cover from the lower side of the CRT bezel by pulling it off with your fingernail. Remove the CRT bezel from the front panel by removing the two screws located on the lower side of the bezel.
6. Remove the CRT filter, CRT spacer, and CRT implosion shield from the CRT frame.
7. Remove the four screws located on the inner sides of the frame.
8. Remove the CRT frame by removing the four remaining screws located on the outer sides of the CRT frame. Remove the cushion from the CRT face plate.
9. Remove the graticule illumination lamp assembly from both sides of the CRT.
10. Hold one hand on the CRT face plate and gently pull out the CRT while pushing on the CRT base pins.
7. Replace the CRT base-pin socket on the CRT base pins.
8. Replace the CRT implosion shield, CRT spacer, and CRT filter.
9. Replace the CRT bezel and bezel cover.
10. Reconnect the CRT anode cap.
11. Replace the rear panel and the top cabinet panel.

**NOTE**

Replacing the CRT requires re-adjustment of the 370A.

**BOARDS**

To determine the location of a circuit board, see Figure 7-3 in Section 7.

**Chassis-Mounted Boards**

Remove and replace all chassis-mounted circuit boards as follows:

1. Place four CRT retainers into each guide line located at each corner of the front panel CRT opening.
2. Insert the CRT into the front panel opening and set it firmly against the CRT clamp ring located at the rear of the CRT shield.
3. Clean the CRT face plate and place the A28 and A29 lamp boards on the right and left sides of the CRT, respectively.
4. Replace the CRT cushion. Fasten the CRT frame by fixing four screws located on the outer sides of the CRT frame.
5. Tighten the four screws located on the inner sides of the CRT frame by applying 5 Kg/cm (4.3 inch-lb) of torque.
6. Tighten the two screws beside the CRT base until the springs on the screws are fully compressed.
1. Disconnect all pin connectors attached to the board, or that connect the board to other parts of the instrument.
2. Remove the securing screws.
3. Remove the chassis-mounted board.
4. Replace chassis-mounted boards in the reverse order of removal. Be sure to match the index arrow or index mark on the multi-pin connector to the corresponding arrow on the board.

**NOTE**

To remove a specific circuit board, other circuit boards, chassis parts, or panels may require removal. If such is the case, refer to the removal instructions for that assembly as required.

**Cathode-Ray Tube Replacement**

Replace the Cathode Ray Tube (CRT) as follows:

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### A1 Mother Circuit Board

Remove and replace the A1 Mother circuit board as follows:

1. Remove the top, left, and right cabinet panels from the main body.
2. Remove A2, A3, A4, and A5 circuit boards from the main body. (See the Plug-In Boards removal instructions.)
3. Remove the connectors for J10, J12, J110, J180, J190, J220, J400, J410, and J412 from the board.
4. Remove the connector for J60 from the A6 Collector Supply Output circuit board. Remove the connector for J70 from the A7 Step Generator circuit board. Remove the connector for J192 from the A19 L.V. Supply circuit board.
5. Remove the A1 Mother circuit board by removing the eight screws from the board.
6. Replace the A1 Mother circuit board in the reverse order of removal.

### A2, A3, A4, A5 Plug-in Boards

Remove and replace the plug-in boards as follows:

1. Remove the top cabinet panel from the main body.
2. Remove the two circuit board retainers.
3. Remove the plug-in board by pulling up on the ejector tab at each end of the board.
4. Replace the plug-in board by aligning the board with the guide slots (components on the side away from the CRT) and inserting it, holding the tabs parallel to the top of the board.
5. Slide the board down through the slots until the edge connectors rest on the bus slot connectors on the A1 Mother board.
6. Push the module down into the bus slot connectors of the A1 Mother board. Press firmly on the board, but do not press on components.
7. Replace the two circuit board retainers.

### A6 Collector Supply Output Circuit Board

Remove and replace the A6 Collector Supply Output circuit board as follows:

1. Remove the top and left cabinet panels from the main body.
2. Remove the electrical shield of the A6 Collector Supply Output circuit board from the main body by removing the four securing screws.
3. Remove the connectors for J60 and J62 from the board and remove the connector for J64 from the A19 L.V. Supply circuit board.
4. Remove the four screws that secure the heat sink of the board to the chassis.
5. Remove the A6 Collector Supply Output circuit board by removing the two screws from the board.
6. Replace the A6 Collector Supply Output circuit board in the reverse order of removal.

#### CAUTION

If the transistors with heat sink (Q438, Q440, Q538, Q540) are replaced, make sure that all four insulation washers on the transistors are placed in position. Without these insulators, destructive electric short circuits will occur.

#### NOTE

At the time of replacement, no silicone grease application is required because of the high heat conductivity of the insulation washer.

### A7 Step Generator Circuit Board

Remove and replace the A7 Step Generator circuit board as follows:

1. Remove the right cabinet panel from the main body.
2. Remove the connectors for J70, J72, and J74 from the board.
3. Remove the three screws located on the lower side of the board.
4. Remove the three screws fastening the heat sink of the board to the main body. Support the board as these screws are removed so it does not fall and become damaged.
5. Remove the A7 Step Generator circuit board.
6. Replace the A7 Step Generator circuit board in the reverse order of removal.

### A9 L.V. Relay Circuit Board and A35 Looping Circuit Board

The A35 Looping circuit board is located on the A9 L.V. Relay circuit board. Remove and replace the A9 L.V. Relay circuit board and the A35 Looping circuit board as follows:

1. Pull out the drawer unit from the main body of the 370A.
2. Remove the guard box assembly cover from the drawer unit by removing the four screws.

#### NOTE

When removing connectors from a board, tag each one to prevent misconnection while reassembling.

3. Remove the connectors for J80, J82, J89, J90, J91, J92A, J92B, J93, J94, J95, J97, J98, J99, J150, P160, J400, and J410 from the A9 L.V. Relay circuit board. Remove the connector for J90 from the A10 Sense circuit board, which is located to the right of the A9 L.V. Relay circuit board.

4. Remove the six screws from the board, and remove the two screws that secure the heat sink (and board) to the guard box.
5. Remove the A9 L.V. Relay circuit board by grasping the heat sink and lifting the board.
6. Remove the A35 Looping circuit board from the A9 L.V. Relay circuit board by removing solder for J84 and J85 connectors of the A35 Looping circuit board.

#### NOTE

The heat sink of the A9 L.V. Relay circuit board is also used as the current return of the floating ground. Therefore secure firmly the two screws securing the heat sink to the guard box when replacing the A9 L.V. Relay circuit board.

7. Replace the A9 L.V. Relay circuit board and A35 Looping circuit board in the reverse order of removal.

### A10 Sense Circuit Board and A13 Key Interface Circuit Board

The A13 Key Interface circuit board is located on the A10 Sense circuit board. Remove and replace the A10 Sense circuit board and A13 Key Interface circuit board as follows:

1. Pull out the drawer unit from the main body of the 370A.
2. Remove the connector for J100 from the A13 Key Interface circuit board.
3. Remove the six screws securing the support bracket for the A24 FDD assembly and the A23 FDD Interface circuit board to the chassis.
4. Remove the bracket with the A24 FDD assembly and A23 FDD Interface circuit board attached.
5. Remove the connector for J142 from the A13 Key Interface circuit board.

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### NOTE

Steps 6 and 7 are instructions for removal of the A13 Key Interface board. Proceed to step 8, if you don't need to remove this board.

6. Remove the two screws from the A13 Key Interface circuit board.

### NOTE

The A10 Sense circuit board and A13 Key Interface circuit board are connected to one another by circuit board mounted connectors J130 and P130. Be careful not to damage the connector when removing and replacing the board.

7. Pull up the A13 Key Interface circuit board to disconnect the interface connection between the A10 Sense circuit board and A13 Key Interface circuit board, releasing the two board retaining latches with a pair of pliers.
8. Remove the connectors for J414, J415, J416, J417, and J418 from the A10 Sense circuit board.
9. Remove the P411 connector with cable assembly by removing the two screws securing the P411 connector to the drawer unit.

### NOTE

When removing connectors from a board, tag each one to prevent misconnection while reassembling.

10. Remove the connectors for J90, J104, J140, J301, J302, J330, and J419 from the A10 Sense circuit board, and remove the connector for P160 from the A9 L.V. Relay circuit board.
11. Remove the screw holding the guard box wire lug (which is located to the front in the guard box) to the guard box chassis.
12. Remove the two flat-head screws securing the heat sink of the A10 Sense circuit board to the right side of the drawer unit.
13. Remove the six screws from the A10 Sense circuit board.
14. Remove the A10 Sense circuit board.

15. Replace the A10 Sense circuit board and the A13 Key Interface circuit board in the reverse order of removal.

### NOTE

When troubleshooting the A10 Sense circuit board below the A13 Key Interface, A13 Key Interface circuit board can be used to stand by connecting P131 on the A13 Key Interface circuit board with J131 on the A10 Sense circuit board.

## A11 Main Key Circuit Board

Remove and replace the A11 Main Key circuit board as follows:

1. Remove the CRT bezel from the front panel. (See step 5 of the Cathode-Ray Tube Removal instructions.)
2. Remove the right cabinet panel from the main body.
3. Remove the two securing screws from the right side of the front panel, and pull out the front panel.
4. Remove the connector for J110 from the A1 Mother circuit board and remove the screw holding the ground wire lug. Then remove the front panel.
5. Pull out the eight knobs (three large and five small) from the front panel.
6. Remove the A11 Main Key circuit board by removing the six screws securing the board.

### NOTE

A11 Main Key circuit board and A12 Sub Key circuit board are connected to one another by circuit board mounted connectors J100, J120, P100 and P120. Be careful not to damage the connectors when removing and replacing the board.

7. Replace the A11 Main Key circuit board in the reverse order of removal.

**A12 Sub Key Circuit Board**

Remove and replace the A12 Sub Key circuit board as follows:

1. Remove the A11 Main Key circuit board. (See the NOTE in the last part of the A11 Main Key Circuit Board removal instructions.)
2. Remove the A12 Sub Key circuit board by removing the six spacer posts from the board.
3. Replace the A12 Sub Key circuit board in the reverse order of removal.

**A14 LOR Key Circuit Board**

Remove and replace the A14 LOR Key circuit board as follows:

1. Pull out the drawer unit from the main body of the 370A.
2. Remove the protective box from the Test Adapters.
3. Remove the four flat-head screws securing the Test Adapter Mounting Plate assembly to the center front of the drawer unit.
4. Remove the two flat-head screws securing the right front panel assembly to the right front side of the drawer unit.
5. Remove the right front panel assembly by lifting it out.
6. Remove the connector J140 from the A10 Sense circuit board.
7. Remove the A14 LOR Key circuit board by removing the three nuts securing the board.
8. Replace the A14 LOR Key circuit board in the reverse order of removal.

**A15 Configuration LED Circuit Board****CAUTION**

When replacing or removing the rotary encoder S200, tighten the mounting nuts to a torque of 8 kg/cm when remounting the encoder. Excessive tightening torque can cause failures.

Remove and replace the A15 Configuration LED circuit board as follows:

1. Pull out the drawer unit from the main body of the 370A.
2. Remove the protective box from the Test Adapters.
3. Remove the four flat-head screws securing the Test Adapter Mounting Plate assembly to the center front of the drawer unit.
4. Remove the two flat-head screws securing the left front panel assembly to the left front side of the drawer unit.
5. Remove the left front panel assembly by lifting it out.
6. Remove the connectors for J200 and J210 from the board. Remove the connector for J150 from the A9 L.V. Relay circuit board.
7. Remove the A15 Configuration LED circuit board by removing the two nuts securing the board.
8. Replace the A15 Configuration LED circuit board in the reverse order of removal.

**A18 CRT Output Circuit Board**

Remove and replace the A18 CRT Output circuit board as follows:

1. Remove the top cabinet panel from the main body of the 370A.
2. Remove the (plastic) insulator by removing its four securing screws from the A18 CRT Output circuit board.
3. Remove the connectors for J180, J182, J184, and J186 from the board.

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4. Remove the A18 CRT Output circuit board by removing the four spacer posts from the board.
5. Replace the A18 CRT Output circuit board in the reverse order of removal.

### A19 L.V. Supply Circuit Board

Remove and replace the A19 L.V. Supply Circuit board as follows:

1. Remove the top, left, and right cabinet panels from the main body.
2. Remove the rear panel. (See the Rear Panel Removal instructions.)

#### NOTE

When removing connectors from a board, tag each one to prevent misconnection while reassembling.

3. Remove the connectors for J64, J72, J190, J192, J194, J196, J198, J280, and J290 from the board.
4. Remove the three screws that secure the heat sink of the A19 L.V. Supply circuit board to the chassis.
5. Remove the A19 L.V. Supply circuit board by removing its three securing screws from the rear edge of the board.
6. Replace the A19 L.V. Supply circuit board in the reverse order of removal.

### A20 H.V. Regulator Circuit Board

Remove and replace the A20 H.V. Regulator circuit board as follows:

1. Remove the left cabinet panel from the main body.
2. Remove the shield covering the A20 H.V. Regulator circuit board from the main body by removing the four securing screws.
3. Remove the retainer, that holds the transistor on the board to the chassis, by removing its screw.

#### WARNING

The CRT anode circuit retains up to 2400 Volt of charge. Be sure the anode cap is completely grounded to the chassis before handling the circuit board.

4. Remove the CRT anode cap from the jack on the left side of the CRT.  
Ground the CRT anode cap to the chassis to dispel any stored charge.
5. Remove the connectors for J182, J194, and J200 from the board.
6. Remove the A20 H.V. Regulator circuit board by removing the four screws from the corners of the board.
7. Replace the A20 H.V. Regulator circuit board in the reverse order of removal.



**A22 Interface Circuit Board**

Remove and replace the A22 Interface circuit board as follows:

1. Remove the A2 CPU and the A3 A/D circuit boards. (See the A2, A3, A4, and A5 Plug-in Circuit Board removal instructions.)
2. Remove the connector for J220 from the A1 Mother circuit board.
3. Remove the four screws that secure the IEEE STD 488 PORT connector and the PLOTTER INTERFACE PORT connector to the rear panel.
4. Remove the rear panel. (See the Rear Panel Removal instructions.)
5. Remove the A22 Interface circuit board and its (plastic) insulation cover by removing the four securing screws from the board.
6. Replace the A22 Interface circuit board in the reverse order of removal.

**A23 FDD Interface Circuit Board**

Remove and replace the A23 FDD Interface circuit board as follows:

1. Pull out the drawer unit from the main body of the 370A.
2. Remove the connector for J100 from the A13 Key Interface circuit board.
3. Remove the connector (through the W200 on the A23 FDD Interface circuit board) from the FDD assembly.
4. Remove the A23 FDD Interface circuit board by removing the four securing screws from the board.
5. Replace the A23 FDD Interface circuit board in the reverse order of removal.

**A27 Primary Circuit Board**

Remove and replace the A27 Primary circuit board as follows:

1. Remove the rear panel. (See the Rear Panel Removal instructions.)
2. Remove the connectors for J270, J272, and J274 from the board.

**NOTE**

Removal of connector J272 may be difficult with the (plastic) insulation cover installed over the board. The upper corner of the cover may keep one of the connector's latches from releasing. Remove the cover first if this problem occurs.

3. Remove the (plastic) insulation cover and the A27 Primary circuit board by removing the four securing screws from the board.
4. Replace the A27 Primary circuit board in the reverse order of removal.

**A28, A29 Graticule Illumination Lamp Circuit Board**

Remove and replace A28 and A29 Graticule Illumination Lamp circuit boards as follows:

1. Remove the CRT bezel cover from the lower side of the CRT bezel by pulling it off with your fingernail. Remove the CRT bezel from the front panel by removing the two screws located on the lower side of the bezel.
2. Remove the (blue) CRT filter, the CRT spacer, and the CRT implosion shield from the CRT frame.
3. Remove the CRT frame by first removing the four round head screws from the inner sides of the frame. Then remove the four flat-head screws from the outer sides of the CRT frame.
4. Remove the top cabinet panel.
5. Remove connector(s) J280 and/or J290 from the A19 L.V. Supply circuit board.

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6. Remove the (internal scale illumination) light reflector, the light reflector retainer, and the retainer spring by pulling them out from alongside the CRT face plate.
7. Remove the A28 or A29 Graticule Illumination Lamp circuit board by removing the two screws that secure the board in place.
8. Replace the A28 or A29 Graticule Illumination Lamp circuit board in the reverse order of removal.

### A33 Configuration Relay Circuit Board

Remove and replace the A33 Configuration Relay circuit board as follows:

1. Remove the right front panel assembly. (See step 1 through 5 of the A14 LOR Key circuit board removal instructions.)

#### NOTE

When removing connectors from a board, tag each one to prevent misconnection while reassembling.

2. Remove the connectors for J102, J103, and J104 from the board.
3. Remove the connectors for J302, J330, and J419 from the A10 Sense circuit board.
4. Remove the A33 Configuration Relay circuit board by removing the four screws from the board.
5. Replace the A33 Configuration Relay circuit board in the reverse order of removal.

### A34 LOR Relay Circuit Board

Remove and replace the A34 LOR Relay circuit board as follows:

1. Remove the A9 L.V. Relay circuit board. (See the A9 L.V. Relay Circuit Board removal instructions.)
2. Remove the two screws securing the wires to J91 and J95. Remove the connector for J301 from the A10 Sense circuit board.
3. Remove the A31 Relay circuit board by removing the six screws securing the relays on the board to the guard box chassis.
4. Replace the A34 LOR Relay circuit board in the reverse order of removal.

### A24 Floppy Disk Drive Assembly

Remove and replace the A24 FDD assembly as follows:

1. Pull out the drawer unit from the main body of the 370A.
2. Remove the connector (through the W200 on the A23 FDD Interface circuit board) from the A24 FDD assembly.
3. Remove the A24 FDD assembly by removing the four securing screws from the FDD assembly.
4. Replace the A24 FDD assembly in the reverse order of removal.

### H.V. Relay Module

Remove and replace the H.V. Relay module as follows:

1. Remove the A9 L.V. Relay circuit board. (See the A9 L.V. Relay Circuit Board removal instructions.)
2. Remove the four screws securing the wires to J8, J11, J12, and J13 on the Series Resistor module.
3. Remove the H.V. Relay module by removing the four screws securing the H.V. Relay module to the guard box chassis.
4. Replace the H.V. Relay module in the reverse order of removal.

#### NOTE

See the label on the Series Resistor module showing the destination of each wire and connector.

### Series Resistor Module

Remove and replace the Series Resistor module as follows:

1. Remove the A9 L.V. Relay circuit board. (See the A9 L.V. Relay Circuit Board removal instructions.)

#### NOTE

When removing connectors from a board, tag each one to prevent misconnection while reassembling.

2. Remove the six screws securing the wires to J1, J2, J8, J11, J12, and J13 on the Series Resistor module. Remove the two screws securing the wires to J91 and J95 on the A34 LOR Relay circuit board. Remove the screw securing the wire to J1 on the Input Relay module.
3. Remove the nut holding the guard box wire lug.
4. Remove the Series Resistor module by removing the four screws securing the module to the guard box chassis.

5. Replace the Series Resistor module in the reverse order of removal.

#### NOTE

See the label on the Series Resistor module showing the destination of each wire and connector.

### Input Relay Module

Remove and replace the Input Relay module as follows:

1. Perform parts 1 through 4 of the removal instructions for the A10 Sense circuit board.
2. Remove the three screws securing the wires to J1, J3, and J4 on the Input Relay module.
3. Remove the Input Relay module and the shield by removing the four screws.
4. Replace the Input Relay module in the reverse order of removal.

#### NOTE

See the label on the Input Relay module showing the destination of each wire and connector.

### Cooling Fan

Remove and replace the Cooling Fan (B100) as follows:

1. Remove the rear panel. (See the Rear Panel Removal instructions.)
2. Remove the protective cover and remove the connector for J272 from the A27 Primary Circuit board.
3. Remove the Cooling Fan together with the fan cover, filter, and fan guard by removing four screws and nuts.

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### NOTE

Before reinstalling the cooling fan, be certain that the J272 wires are at the bottom left corner (as facing the rear). Also check that the air flow arrow marked on the fan housing is pointing toward the inside of the 370A.

4. Replace the Cooling Fan in the reverse order of removal.

### Line Fuse

The line fuse used in the 370A is located within the filter unit on the rear panel. Replace the line fuse only with one of proper type and rating.

Remove and replace the line fuse as follows:

1. Remove the AC power cable connector from the line filter housing in the rear panel.
2. Remove the fuse cover by pulling it out from the line filter. Insert some flat-edged tool (such as a straight-slot, screw-driver blade tip) into the small groove in the outer left side of the housing. Use the tool to pull, or pry, the fuse cover loose.
3. Remove the line fuse from its fuse cover.
4. Replace the line fuse in the reverse order of removal.

### Semiconductors

Do not replace semiconductors unless actually defective. If removed from their sockets during routine maintenance, return them to their original sockets. Unnecessary replacement of semiconductors may affect the adjustment of the instrument. When semiconductors are replaced, check the operation of circuits that may be affected.

#### WARNING

**To avoid electric shock hazard, always disconnect the 370A from the power source before removing or replacing components.**

Replacement semiconductors should be of the original type or a direct replacement. When removing soldered-on transistors, use a solder-removing wick to remove the solder from the circuit board pads.

An extracting tool should be used to remove the in-line integrated circuits to prevent damaging the pins. This tool is available from Tektronix, Inc.; order Tektronix part 003-0619-00.

If an extracting tool is not available, use care to avoid damaging the pins. Pull slowly and evenly on both ends of the integrated circuit. Try to avoid disengaging one end from the socket before the other.

### ADJUSTMENT AFTER REPAIR

After any electrical component has been replaced, the adjustment of that particular circuit should be checked, as well as the adjustment of any closely related circuits.

## DIAGNOSTIC ROUTINES

The 370A has four diagnostic routines: Two Power-on Diagnostic routines, a User Initiated Diagnostic routine, and GPIB diagnostic routine.

### Power On Diagnostic Routines

At power on, the 370A runs the Power On Diagnostic routine to execute the following tests:

- System ROM check
- System RAM check
- Display RAM check
- Acquisition RAM check
- Push button test

After completion of Power on Diagnostic routines, the 370A displays a "SELFTTEST PASS" message at the error message area of the CRT and sets the initial settings.

If the 370A is turned on with the FAST/SHIFT key pressed, a more detailed Power On Diagnostic routine is made, in the following order:

- System ROM check
- System RAM check
- Display RAM check
- Acquisition RAM check
- LED check
- Display quality check
- Push button test

To exit this diagnostic routine, press the FAST/SHIFT button.

### System ROM Check

After confirming that the system ROMs are in the correct sockets, the 370A diagnoses the system ROMs by checksum.

If a system ROM fatal error is found, (such as misinsertion) the memory index display blinks with 0 and 1.

When checksum error is found, the error message is displayed on the error message area of the CRT. The format of this messages is as follows:

ROM 000X

When X is the hexadecimal number whose bit 1 through bit 4 respectively indicates the error status of system ROM U600, U610, U620, and U630. (For example, error message "ROM 0002" indicates that checksum error is detected in ROM U610.)

In the above cases, the 370A does not advance the diagnostics routine.

### System RAM Check

The 370A checks the system RAM by read/write operation. If a system RAM fatal error is found (such as bus shorted), the memory index display blinks with 0 and 2.

When read/write errors are found, the error message is displayed on the error message area of the CRT. The format of this message is as follows:

RAM XXXXX YYYY

Where XXXXX is a hexadecimal representation of the address of the RAM in error, and YYYY is a hexadecimal representation of error bits in that address (for example, error message "RAM 00000 0018" indicates that a read/write error is detected in bit 4 and bit 5 of the system RAM at address 00000).

In the above cases, the 370A does not advance the diagnostics routine.

### Display RAM Check

The 370A checks the Display RAM by read/write operation.

If a read/write error is found (such as bus shorted), the memory index display blinks with 0 and 3, and the 370A does not advance the diagnostics routine.

### Acquisition RAM Check

The 370A checks the Acquisition RAM by a read/write operation.

If a read/write error is found (such as bus shorted), the memory index display blinks with 0 and 4, and the 370A does not advance the diagnostics routine. Table 3-2 shows the Power-on System Error Messages displayed on the memory index display.

**Table 3-2**  
**Power on System Error Messages**

| Display     | Meaning  |
|-------------|--|
| 0/1 (blink) | System ROM error (such as mis-insertion)               |
| 0/2 (blink) | System RAM error (such as bus shorted)                 |
| 0/3 (blink) | Display RAM Read/Write error (such as bus shorted)     |
| 0/4 (blink) | Acquisition RAM Read/Write error (such as bus shorted) |

**LED Check**

The 370A turns on all front-panel LEDs sequentially for visual check.

**Display Quality Check**

The 370A displays the Logo mark (SONY/TEKTRONIX), and a CRT adjustment pattern on the CRT for CRT control adjustment. For the implementation of this adjustment pattern, refer to Section 4, Performance Checks and adjustment.

Pressing the FAST/SHIFT key exits this routine.

**Push Button Test**

The 370A executes pushbutton test (FAST/SHIFT button is not tested in this case). If an error is found, the error message is displayed at the bottom of the CRT. The Error Message is indicated by the following format:

<STRING> KEY ERROR

<STRING> identifies the front panel control as listed in Table 3-3.

The following message appears on the text area of the CRT simultaneously with the above error message:

PRESS FAST KEY TO GO ON

You can ignore the displayed error and push the FAST/SHIFT key to carry out the measurement, but the displayed key function will not necessarily occur correctly.

**Table 3-3**  
**Front Panel Control Identification**

| <b>Control</b>                 | <b>Message</b>  |
|--------------------------------|-----------------|
| Display NON STORE              | NON STORE       |
| Display STORE                  | STORE           |
| Display REF                    | REF             |
| Display VIEW                   | VIEW            |
| Display ENTER                  | ENTER           |
| Display INVERT                 | INVERT          |
| MEMORY up                      | MEMORY up       |
| MEMORY down                    | MEMORY down     |
| Setup SAVE                     | SAVE            |
| Setup RECALL                   | RECALL          |
| MAX PEAK VOLTS up              | PEAK VOLTS up   |
| MAX PEAK VOLTS down            | PEAK VOLTS down |
| MAX PEAK POWER WATTS up        | PEAK WATTS up   |
| MAX PEAK POWER WATTS down      | PEAK WATTS down |
| Collector Supply POLARITY up   | POLARITY up     |
| Collector Supply POLARITY down | POLARITY down   |
| GPIB LOCAL                     | LOCAL           |
| GPIB PLOT                      | PLOT            |
| ACQ MODE (STORE MODE) up       | ACQ MODE up     |
| ACQ MODE (STORE MODE) down     | ACQ MODE down   |
| Measurement REPEAT             | REPEAT          |
| Measurement SINGLE             | SINGLE          |

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**Table 3-3 (cont)**  
**Front Panel Control Identification**

| <b>Control</b>               | <b>Message</b>  |
|------------------------------|-----------------|
| Measurement SWEEP            | SWEEP           |
| MAG                          | MAG             |
| FAST/SHIFT                   | FAST/SHIFT      |
| NUMBER OF STEPS up           | # OF STEPS up   |
| NUMBER OF STEPS down         | # OF STEPS down |
| Step Generator VOLTAGE       | VOLTAGE         |
| Step Generator CURRENT       | CURRENT         |
| Step Generator OFFSET OPPOSE | OPPOSE          |
| Step Generator OFFSET AID    | AID             |
| Step Generator POLARITY      | STEP POLARITY   |
| Step Generator MULTI         | STEP MULTI      |
| Step Generator PULSE         | PULSE up        |
| AUX up                       | AUX up          |
| AUX down                     | AUX down        |
| CURSOR Mode up               | CURSOR up       |
| CURSOR Mode down             | CURSOR down     |
| Position CURSOR              | CURSOR          |
| Position DISPLAY             | DISPLAY         |
| Position Control up          | POSITION up     |
| Position Control left        | POSITION left   |
| Position Control down        | POSITION down   |
| Position Control right       | POSITION right  |



**Table 3-3 (cont)**  
**Front Panel Control Identification**

| Control                   | Message                         |
|---------------------------|---------------------------------|
| CONFIGURATION up          | CONFIGURATION up                |
| CONFIGURATION down        | CONFIGURATION down              |
| LEFT                      | LEFT                            |
| STANDBY                   | STANDBY                         |
| RIGHT                     | RIGHT                           |
| INTERLOCK                 | COVER ON<br>COVER OFF           |
| VERTICAL CURRENT/DIV      | VERTICAL XX(0-16)               |
| HORIZONTAL VOLTS/DIV      | HORIZONTAL XX(0-16)             |
| STEP AMPLITUDE            | STEP AMP XX(0-16)               |
| VARIABLE COLLECTOR SUPPLY | VARIABLE XX(0-25)               |
| OUTPUTS                   | OUTPUT ENABLE<br>OUTPUT DISABLE |
| PROTECTIVE COVER          | COVER ON<br>COVER OFF           |

#### User Initiated Diagnostic Routine

Pressing both the FAST/SHIFT key and Position DISPLAY key enters the Users Initiated Diagnostic routine. This routine displays a number or message that corresponds to the front panel push button or rotary switch pressed or rotated. Thus, you can diagnose whether the front panel controls are operating normally. Table 3-3 lists the buttons, switches and associated messages. To exit this routine, press both the FAST/SHIFT key and the Position DISPLAY key again.

#### GPIB Diagnostic Routine

The GPIB TEST? command initiates the 370A system ROM and RAM diagnostic routines. The 370A responds to this command by returning system ROM and RAM information to the controller in the following format:

TEST ROM:000X (ROM error code),  
RAM:YYYY (RAM error code)

The TEST query response consists of two hexadecimal numbers that indicate if a ROM or RAM IC was found to be defective. These numbers must be translated to the binary equivalent to determine the ROM and RAM locations. (If all ROMs and RAMs are good, the TEST query response is ROM:0000, RAM:0000.)



# **Performance Check and Adjustment**



# 4

## Performance Check and Adjustment

The Performance Check and Adjustment Procedure:

- Checks key electrical specifications
- Provides instructions for determining whether adjustment is necessary
- Provides instructions for making all internal adjustments
- Provides optional functional check instructions

### Adjustment Interval

To maintain instrument accuracy, check performance every 2000 hours of operation or annually if used infrequently.


### IMPORTANT:

The Performance Check and Adjustment Procedure is a multipurpose procedure. Time can be saved by performing only those steps necessary for your application. Carefully read Table 4-1 to select the appropriate procedure option for the task to be performed.

**Table 4-1**  
**Performance Check and Adjustment Procedure Options**

| Task  | Procedure Options   |
|---|---|
| <p><b>Performance Check</b><br/>                     (Checking key electrical specifications)</p> | <ul style="list-style-type: none"> <li>• Perform the Power-Up Sequence at the beginning of the Performance Check and Adjustment Procedure.</li> <li>• Perform those steps with titles beginning with "Checking" and identified with a ✓ in the bar above the heading (see the Procedure Index at the beginning of the procedure).</li> </ul> <p>IMPORTANT:<br/>                     If a "Checking" step also contains the word "Adjusting" in the title and a ⊗ in the bar above the title, ignore those parts of the step with adjustment instructions.</p>   |
| <p><b>Adjustment</b></p>  | <ul style="list-style-type: none"> <li>• Perform the Power-Up Sequence at the beginning of the Performance Check and Adjustment Procedure.</li> <li>• Perform only those steps with "Adjusting" in the title and a ⊗ in the bar above the title (see the Procedure Index at the beginning of the procedure).</li> </ul> <p>IMPORTANT:<br/>                     Perform all parts of these adjustment steps; most adjustments are preceded by instructions for determining whether adjustment is necessary and followed by instructions for verifying that the adjustment was correctly performed.</p> |
| <p><b>Performance Check and Adjustment</b></p>  | <ul style="list-style-type: none"> <li>• Perform the Power-Up Sequence at the beginning of the Performance Check and Adjustment Procedure.</li> <li>• Perform all steps in the procedure with a ✓ or a ⊗ (or both) in the bar above the step title (see the Procedure Index at the beginning of the procedure).</li> </ul> <p>IMPORTANT:<br/>                     Steps for "Examining" characteristics only (i.e., those with no "Checking" or "Adjusting" instructions included) are not necessary for checking specifications or making adjustments.</p>   |
| <p><b>Partial Performance Check or Adjustment</b></p>   | <ul style="list-style-type: none"> <li>• Perform the Power-Up Sequence at the beginning of the Performance Check and Adjustment Procedure.</li> <li>• Perform the desired steps (e.g., A1, B3, etc.) using the SETUP CONDITIONS at the beginning of each step.</li> </ul> <p>IMPORTANT:<br/>                     Although a partial adjustment procedure can be performed, we recommend that the entire subsection procedure (e.g., A. Power Supply, F. Step Generator, etc.) be performed if any adjustments are made.</p>   |
| <p><b>Functional Check of Front Panel Controls and Connectors</b></p>                             | <ul style="list-style-type: none"> <li>• Perform the First Time Operation procedure in Section 3 of the 370A Operators Manual.</li> </ul>   |

**Table 4-1 (cont)**  
**Performance Check and Adjustment Procedure Options**

| Task                             | Procedure Options   |
|----------------------------------|---|
| <b>Complete Functional Check</b> | <ul style="list-style-type: none"> <li>• Perform the Power-Up Sequence at the beginning of the Performance Check and Adjustment Procedure.</li> <li>• Perform only those steps with titles beginning with "Checking" or "Examining".</li> </ul> <p><b>IMPORTANT:</b><br/>           If a "Checking" or an "Examining" step also contains the word "Adjusting" in the title and a  in the bar above the title, ignore those parts of the step with adjustment instructions.</p> |

Before making adjustments, thoroughly clean and inspect the 370A instrument as instructed in the Maintenance section of this manual.

## USING THIS PROCEDURE

The following aids are used in this procedure:

**Performance Check Summary.** The Performance Check Summary lists key characteristics checked in the procedure and the procedure steps in which they are checked. It also indicates which steps contain adjustments which may affect the specified performance of characteristics.



**Power-Up Sequence.** The Power-Up Sequence ensures that operating conditions are stable and repeatable, and must be performed before any complete or partial procedure is performed.

**Initializing the 370A.** The 370A is initialized at the beginning of most the 370A procedure steps to prevent the carry-over of inappropriate setup conditions from previous steps. Initialization also allows each step to be performed independently if only portions of the procedure are performed.

**Subsection Headings.** The procedure is divided into subsections by major circuit function. For example: A. Power Supply, B. CRT, etc. Each subsection contains steps to check or adjust characteristics of that major circuit.

**Step Titles and Title Bars.** The title of each step begins with "checking", "adjusting", or "examining", or a combination of these words.

- Checking indicates that an electrical specification is checked.
- Adjusting indicates that instructions are given to make one or more internal adjustments.
- Examining indicates that a functional check of the circuit is performed and that no electrical specifications are checked.

Each step with instructions for checking and/or adjusting instrument characteristics has a title bar positioned over the step title. The title bar contains a  and/or a  to quickly identify the purpose of the step.

**Specifications.** All steps that check specifications list those specifications immediately after the step title.



**Setup Conditions.** Each step has setup conditions enclosed in a box, which include all equipment, connections, and control settings necessary to begin the step.

**Parts of Steps.** Each step is composed of sequential parts with alphabetic indexing. The parts are arranged into functional groups so that, for instance, if a performance check is being performed, adjustment instructions may be skipped.

**Performance Check Summary**

Table 4-2 lists key characteristics checked in this procedure and the steps in which they are checked. Also listed are steps containing adjustment instructions which may affect a characteristic's specified performance. The specifications for characteristics listed in Table 4-2 are given at the beginning of the procedure step in which they are checked.

**Table 4-2  
Performance Check Summary**

| Characteristic  | Checked                       | Adjusted |
|---|-------------------------------|----------|
| <b>COLLECTOR SUPPLY</b>   |                               |          |
| POLARITY  | Not specified; examined in G5 |          |
| +LEAKAGE  | Not specified; examined in G5 |          |
| +DC   | Not specified; examined in G5 |          |
| +  | Not specified; examined in G5 |          |
| AC  | Not specified; examined in G5 |          |
| -  | Not specified; examined in G5 |          |

**Table 4-2  
Performance Check Summary**

| Characteristic   | Checked                           | Adjusted |
|--|-----------------------------------|----------|
| - DC   | Not specified; examined in G5     |          |
| - LEAKAGE  | Not specified; examined in G5     |          |
| DC Mode Ripple   | G3                                |          |
| Max Peak Volts   | G2                                | G2       |
| Voltage Accuracy   | G2                                |          |
| Range  | G2                                |          |
| Max Peak Current   | G4                                |          |
| Series Resistance Available ( $\Omega$ , $\pm 5\%$ or $0.1 \Omega$ ) | G6                                |          |
| Peak Power Watts   | G2, G4, G6                        | G2       |
| Variable Collector 0 to 100.0% Supply                                | Not specified; examined in G5     |          |
| Safety Interlocks  | Not specified; examined in G5     |          |
| Warning Indicator  | Not specified; examined in G5     |          |
| Limiter Indicator  | Not specified; examined in G7, G8 |          |
| Looping compensation   | Not specified; examined in C7     | C7       |
| Voltage limiter  | G7                                |          |
| Current limiter  | G8                                |          |



**Table 4-2**  
**Performance Check Summary**

| Characteristic                                       | Checked          | Adjusted |
|--|------------------|----------|
| <b>STEP GENERATOR</b>                                |                  |          |
| Accuracy (Current or voltage steps including offset) |                  |          |
| Incremental  | F8, F9, F10, F11 | F1, F2   |
| Absolute   | F6, F7, F12, F13 | F1, F2   |
| Offset control range                                 | F6, F7           |          |
| Resolution   | F6               |          |
| Current Mode   |                  |          |
| Amplitude range                                      | F7               |          |
| Max current  | F13              |          |
| Max Voltage  | F16              |          |
| Max Opposing Volts                                   | F17              |          |
| Output Impedance                                     | F3               |          |
| Ripple plus noise                                    | F5               |          |
| Voltage Mode   |                  |          |
| Amplitude switch range                               | F6               |          |
| Max voltage  | F12              |          |
| Max current  | F14              |          |
| Max Opposing Current                                 | F15              |          |
| Ripple plus noise                                    | F4               |          |

**Table 4-2**  
**Performance Check Summary**

| Characteristic                              | Checked                       | Adjusted |
|---|-------------------------------|----------|
| Step Rates                                  | F19                           |          |
| Pulsed Steps                                | F18                           |          |
| Steps and offset polarity                   | F20                           |          |
| Number of Steps                             | F8, F10                       |          |
| <b>AUX SUPPLY</b>                           |                               |          |
| Range (and resolution)                      | H1                            |          |
| Accuracy                                    | H1                            |          |
| Output current                              | H2                            |          |
| Ripple plus noise                           | H3                            |          |
| <b>NON STORE VERTICAL DEFLECTION SYSTEM</b> |                               |          |
| Maximum displayed noise or ripple           | E7                            | C7       |
| Calibrator Voltage                          | Not specified; examined in C1 |          |

**Table 4-2**  
**Performance Check Summary**

| Characteristic                                | Checked                       | Adjusted   |
|---|-------------------------------|------------|
| <b>DIGITAL STORAGE VERTICAL ACQUISITION</b>   |                               |            |
| Collector Current                             |                               |            |
| Range   | E6a, E6b                      |            |
| Accuracy                                      | E6a, E6b                      | E1, E2     |
| Emitter Current                               |                               |            |
| Range   | E5                            |            |
| Accuracy                                      | E5                            | E1, E3     |
| Display offset                                |                               |            |
| Accuracy                                      | C6                            | C2, C3, C4 |
| Display Mag X10 accuracy                      | E5                            |            |
| Display invert accuracy                       | C5                            |            |
| <b>NON STORE HORIZONTAL DEFLECTION SYSTEM</b> |                               |            |
| Collector Volts                               |                               |            |
| Displayed noise                               | D7                            |            |
| Base/Emitter Volts                            |                               |            |
| Input Impedance                               | D6                            |            |
| Displayed noise                               | D7                            |            |
| Calibrator Voltage                            | Not specified; examined in C1 |            |

**Table 4-2**  
**Performance Check Summary**

| Characteristic                                | Checked                       | Adjusted   |
|---|-------------------------------|------------|
| <b>DIGITAL STORAGE HORIZONTAL ACQUISITION</b> |                               |            |
| Collector Volts                               |                               |            |
| Range   | D4, D5                        |            |
| Accuracy                                      | D4, D5                        | D1         |
| Base/Emitter Volts                            |                               |            |
| Range   | D3                            |            |
| Accuracy                                      | D3                            | D1         |
| Display offset                                |                               |            |
| Range   | C6                            |            |
| Accuracy                                      | C6                            | C2, C3, C4 |
| Display Mag X10 accuracy                      | D2                            |            |
| Display invert accuracy                       | C5                            |            |
| <b>CRT</b>                                    |                               |            |
| Cathode Voltage                               | Not specified; examined in B1 |            |
| Intensity                                     | Not specified; examined in B2 | B2         |
| Astigmatism and Focus                         | Not specified; examined in B3 | B3         |

**Table 4-2**  
**Performance Check Summary**

| Characteristic      | Checked                                     | Adjusted |
|---------------------|---|----------|
| Intensity Controls  | Not specified;<br>examined in B4,<br>B5, B6 |          |
| Geometry            | C4  | C4       |
| Orthogonality       | C4  | C4       |
| <b>POWER SUPPLY</b> |   |          |
| Deviation           | Not specified;<br>examined in A1            |          |
| Ripple              | Not specified;<br>examined in A1            |          |
| Reference voltage   | A2  | A2       |

### Power-Up Sequence

The performance of this instrument can be checked at any ambient temperature from +10° C to +40° C unless otherwise stated. Adjustment must be made at an ambient temperature from +15° C to +25° C for the specified tolerances to apply.

#### **WARNING**

**Adjustment of the 370A should only be performed by a qualified service technician.**

1. Check that the 370A has been set for the proper power source, and that a suitable power cord has been attached.
2. Remove the 370A cabinet panels to gain access to internal adjustment and test points.

For instructions on cabinet panel removal, refer to the description under the heading **COMPONENT REMOVAL AND REPLACEMENT** in Section 3 of this manual.

#### **WARNING**

**Use extreme care when operating the 370A with the covers removed, due to the line voltage, high voltage, and high current levels present.**

3. Connect the 370A to a suitable power source.
4. Press the **POWER** button and allow at least 20 minutes warmup before proceeding.

### Initializing the 370A

The following procedure saves the power-up default 370A settings for use when the procedure calls for you to "Initialize the 370A".

1. Press the **SETUP SAVE** button to store the default settings in memory location 1.


These default settings plus the manual initialization settings are used as starting settings throughout this procedure, except as noted otherwise.

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2. Now, to Initialize the 370A:
  - a. Press the SETUP RECALL button (with the MEMORY index set to location 1).
  - b. Make the additional manual settings:

|                  |         |
|------------------|---------|
| OUTPUTS          | ENABLED |
| Protective Cover | Closed  |

The power-up default settings are as follows:

|                    |   |
|--------------------|---|
| DISPLAY            |   |
| Mode               | STORE   |
| VERTICAL           | 2 A COLLECTOR   |
| HORIZONTAL         | 2 V COLLECTOR   |
| INVERT             | Off   |
| COLLECTOR SUPPLY   |   |
| MAX PEAK VOLTS     | 16  |
| MAX PEAK POWER     | 0.08  |
| WATTS              |   |
| POLARITY           | +  |
| STEP GENERATOR     |   |
| Mode               | CURRENT   |
| STEP AMPLITUDE     | 50 nA   |
| NUMBER OF STEPS    | 5   |
| OFFSET             | 0.0 nA  |
| POLARITY           | +   |
| INVERT             | Off   |
| STEP MULTI .1X     | Off   |
| PULSE              | Off   |
| ACQ MODE           | NORM  |
| MEASUREMENT        | REPEAT  |
| MAG X10            | Off   |
| POSITION           | CURSOR  |
| CURSOR             | OFF   |
| AUX SUPPLY         | 0.00 V  |
| CONFIGURATION      | BASE STEP GEN   |
| VARIABLE COLLECTOR | 0 %   |
| SUPPLY             |   |
| LEFT-RIGHT-STANDBY | STANDBY   |

**Test Equipment**

The test equipment listed in Table 4-3 is required for a complete Performance Check and Adjustment of the instrument. However, complete checking or adjusting may not always be necessary or desirable. You may be satisfied with checking only selected characteristics, thereby reducing the amount of test equipment actually required.

The specifications for test equipment listed in Table 4-3 are the minimum required to check performance requirements of the 370A. Detailed operating instructions for test equipment are not given in these procedures; refer to the test equipment instruction manual if more information is needed.

**Special Fixtures**

Special fixtures are used where they facilitate instrument adjustment. These fixtures are available from Tektronix, Inc. Order by part number from Tektronix Field Offices or representatives.

**Test Equipment Alternatives**

The checks and adjustment procedures are based on the first item of equipment given as an example. When other equipment is substituted, control settings or setups may have to be altered. If the exact item of equipment given as an example in Table 4-3 is not available, first check the Minimum Specifications column carefully to see if any other equipment might suffice. Then check the Purpose column to see where this item is used. If used for a performance check or adjustment that is of little or no importance for your measurement requirements, the item and corresponding step(s) can be deleted.

**Table 4-3**  
**Test Equipment**

| Item                  | Minimum Specification  | Purpose  | Example of Applicable Test Equipment  |
|-----------------------|--|--|---|
| 1. Test Oscilloscope  | Bandwidth, DC to 150 MHz; deflection factor, 2 mV to 5 V/DIV (with 10X, 10 M $\Omega$ probe)   | Used to check ripple.  | a. Tektronix 2445B 150 MHz Oscilloscope with P6137 Probe.<br>b. Refer to Tektronix Products catalog for compatible equipment. |
| 2. Calibrator         | Voltage range: 500.0 mV to 1000 V; Accuracy: 0.1 mV; Resolution: 0.1 mV; Current range: 10.00 $\mu$ A to 1.999 A; Accuracy: 0.1 %  | Supplies a reference voltage to the 370A<br><br>Supplies a reference current to the 370A | Fluke 5101B   |
| 3. Digital Multimeter | 4.5 digit DCV: 1000 V, Accuracy: 0.05 %; Resolution: 0.1 mV; Input imp: 10,000 M $\Omega$ (100 mV, 1 V, 10 V range), 10 M $\Omega$ (100 V, 1000 V range); DCA: 1.28 A; Accuracy: 0.1 %; Resolution: 0.1 nA; $\Omega$ : 25 M $\Omega$ ; Accuracy: 0.05 %; Resolution: 0.01 $\Omega$ . | Used throughout the checks and adjustments to measure voltage, current, and resistance   | a. Fluke 8505A Option 02A, 03<br>b. Keithley 195A W/OP 1950   |
|                       | 4.5 digit DCV: 1000 V, Accuracy: 0.05 %; Resolution: 0.1 mV; Input Imp: 10 M $\Omega$ (20 V range)   | Used to examine $-2400$ V  | Tektronix DM501A  |
| 4. Tool, Alignment    | Combination hex wrench and screwdriver tips for electronics use  | Used to perform internal adjustments   | Tektronix Part No. 003-0489-00  |
| 5. Banana Plugs       | Banana plug with cap   | Used to hold resistors and probe hooks   | Tektronix Part No. 134-0016-01 and 134-0198-00  |
| 6. Screw Driver       | POZIDRIV; length: 8 1/2 inch Point size #1, #2   | Used to remove panels and High Voltage shield cover                                      | Tektronix Part No. 003-0293-00  |
| 7. Patch Cord         | Banana Plug-Jack to Banana Plug-Jack   | Used throughout the procedure  | Tektronix Part No. 198-5621-00 and 198-5625-00  |
| 8. High Voltage Probe | Voltage range: 0 - 3 kV (DC, AC); Accuracy: $\pm$ 1%   | Used to examine $-2400$ V  | Fluke 80K-6   |
| 9. Test lead          |  | Used throughout the procedure  | Fluke Y8131   |

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Table 4-3 (cont)  
Test Equipment

| Item                  | Minimum Specification  | Purpose  | Example of Applicable Test Equipment   |
|-----------------------|--|--|--|
| 10. Resistors         | 25 M $\Omega$ , 0.1%, 1/2 W<br>2.5 M $\Omega$ , 0.1%, 1/2 W<br>250 k $\Omega$ , 0.1%, 1/2W<br>1 M $\Omega$ , 5%, 1/4W<br>10 M $\Omega$ , 5%, 1/4W<br>100 $\Omega$ , 5%, 1/4 W<br>0.025 $\Omega$ , 0.1%, 4W | To check:<br>• emitter accuracy<br>• collector accuracy in 500 mA, 1A, 2A range<br>• horizontal displayed noise<br>• base input impedance<br>• step generator accuracy in 100 mA and 200 mA range<br>• step generator ripple<br>To adjust:<br>• step generator | Tektronix Part No. 067-1337-00   |
| 11. Transistor        | 2N3904   | Used as DUT for acquisition of curve data  | Tektronix Part No. 151-0190-00   |
| 12. Plotter           | 8-bit parallel interface; HPGL support   | Used to check the plotter interface  | Tektronix HC100  |
| 13. Controller        | GPIB Support   | Used to check the GPIB   | a. IBM PC with Tektronix GURU card running BASICA<br><br>b. IBM PC with National Instruments PC2 or PC2A card running BASICA<br><br>c. Hewlett-Packard 200 or 300 Series Scientific Computer running 200 or 300 BASIC. |
| 14. Micro floppy disk | 3.5 inch, double sided   | Used to store displayed curve data and instrument settings   | Tektronix Part No. 119-3446-00   |
| 15. Test adapter      |  | Used to hold the DUT   | Tektronix A1007  |
| 16. Extender cables   |  | Operate instrument with drawer unit detached   | Tektronix Part No. 067-0187-00   |

## ■ A. POWER SUPPLY

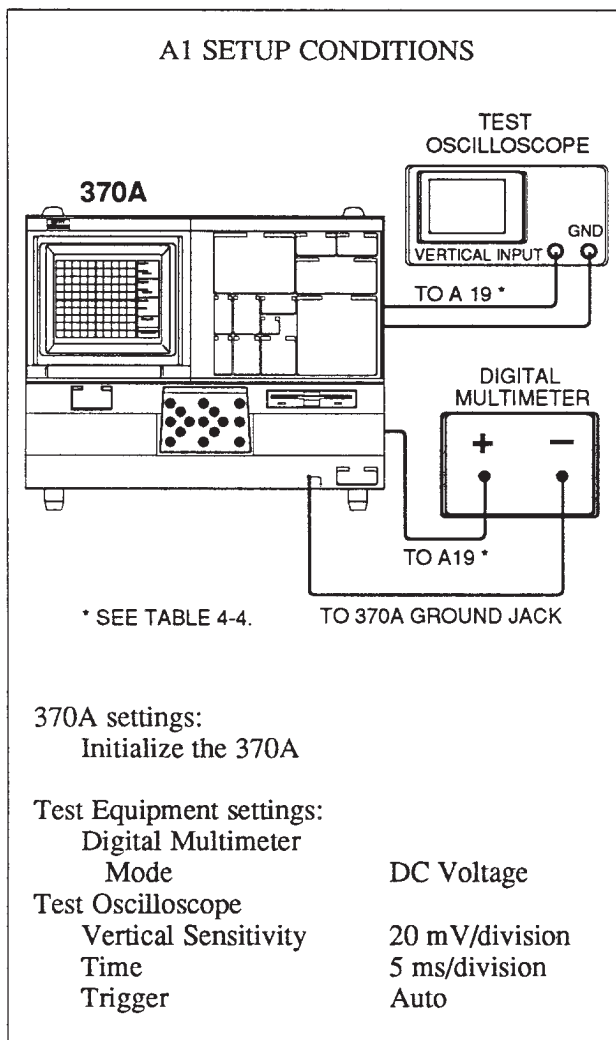
Equipment Required (see Table 4-3):

- Digital Multimeter
- Test Oscilloscope

### A1. Examining Voltage Deviation and Ripple

**IMPORTANT:**

The characteristics examined in this step are examples of typical instrument operation; they are not specifications.



**NOTE**

See Test Point and Adjustment Locations 3 in Section 7 for the location of test points for this step.

#### Examining Voltage Deviation

- Connect the digital multimeter to the +5 test point on the A19 LV Supply board.
- EXAMINE the digital multimeter reading at the +5 test point and each of the other power supply test points listed in Table 4-4 for voltage levels within the given deviation.

#### Examining Ripple

- Disconnect the digital multimeter and connect the test oscilloscope to the +5 test point.
- EXAMINE the test oscilloscope display at each of the test points listed in Table 4-4 for ripple displays within the given deviation.

#### Removing the Setup

- Disconnect the test oscilloscope.

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Table 4-4  
Voltage Regulation and Ripple

| Voltage | Test Point | Deviation Limits (V) | Ripple (mV) |
|---------|------------|----------------------|-------------|
| +5.2 V  | +5         | +4.99 to +5.41       | ≤200        |
| -12 V   | -12        | -11.4 to -12.6       | ≤100        |
| +12 V   | +12        | +11.4 to +12.6       | ≤100        |
| -6.5 V  | -6.5       | -6.35 to -6.65       | ≤50         |
| +6.5 V  | +6.5       | +6.35 to +6.65       | ≤50         |



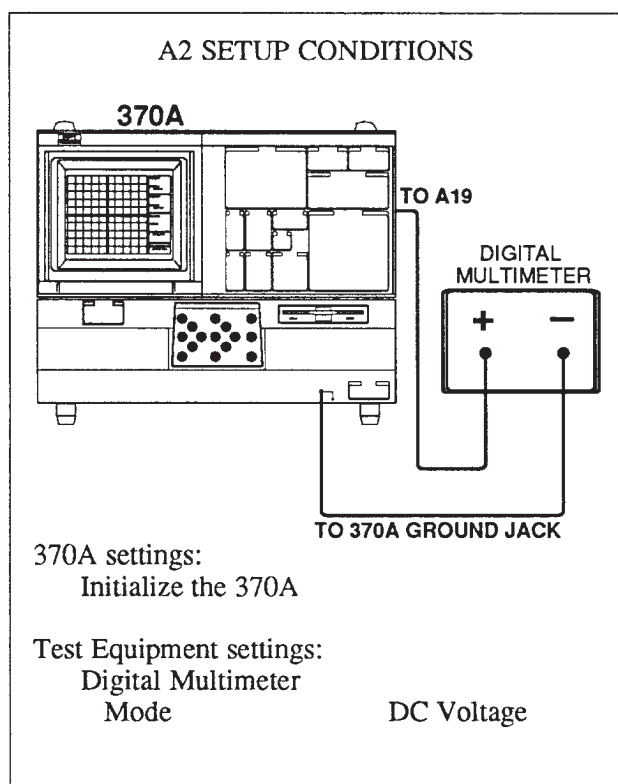


## A2. Checking the +2 V and -2 V Reference

### Adjusting the +2 V and -2 V Reference (A19R500 and R516)

#### Specification:

- The +2 V and -2 V Reference is accurate to within 0.001 V.



#### NOTE

See Test Point and Adjustment Locations 3 in Section 7 for the location of test points and adjustment for this step.

#### Checking the +2 V Reference

- CHECK for a digital multimeter reading of +1.999 V to +2.001 V.

If not within these limits, the following adjustment is necessary.

#### Adjusting the +2 V Reference

- ADJUST +2 V ADJ on the A19 LV Supply Board, for a digital multimeter reading of +2.000 V.

#### Checking the -2 V Reference

- CHECK for a digital multimeter reading of -1.999 V to -2.001 V.

If not within these limits, perform part d.

#### Adjusting the -2 V Reference

- ADJUST -2 V ADJ on the A19 LV Supply Board, for a digital multimeter reading of -2.000 V.

#### Removing the Setup

- Disconnect the positive lead of the digital multimeter from the test point.

## ■ B. CRT

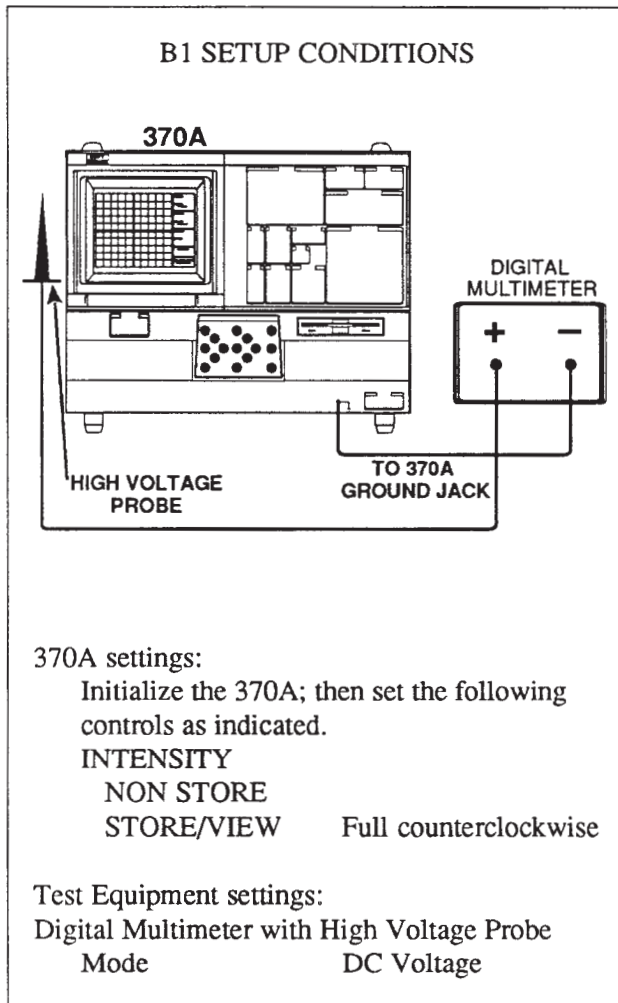
Equipment Required (see Table 4-3):

- Digital Multimeter
- High Voltage Probe for Digital Multimeter
- Pozidrive Screwdriver with #1 Point

### B1. Examining the -2400 V Cathode Supply

**IMPORTANT:**

The characteristics examined in this procedure are provided as examples of typical instrument operation; they are not specifications.



### Removing the High Voltage Shield

**WARNING**

To avoid electric shock hazard, be certain the 370A POWER switch is set to OFF before removing or replacing the high voltage shield and connecting the Digital Multimeter to the 370A. Be certain that the Digital Multimeter ground lead is connected to the 370A ground terminal.

- a. Change the following 370A setting:

POWER OFF

- b. Use a #1 Pozidrive screwdriver to remove the high voltage shield from the left side of the 370A. (There are three shields on the left side; remove the center shield.)

### Measuring the Cathode Voltage

**NOTE**

See test Point and Adjustment Locations 3 in Section 7 for the location of the test point used in this step.

- c. Connect the ground lead of High Voltage Probe to chassis ground, and the High Voltage Probe to TP400 on the A20 HV Regulator Board.

- d. Change the following 370A setting:

POWER ON

- e. EXAMINE the Digital Multimeter for a reading of -2304 V to -2496 V.

### Disconnecting the Meter

- f. Change the following 370A setting:

POWER    OFF

|  |
|--|
| <p><b>WARNING</b><br/>To avoid electric shock hazard, be certain the 370A POWER switch is set to OFF before disconnecting the Digital Multimeter lead.</p> |
|--|

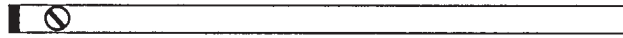
- g. Disconnect the High Voltage Probe and Digital Multimeter from the 370A.

### Replacing the High Voltage Shield

|  |
|--|
| <p><b>WARNING</b><br/>To avoid electric shock hazard, be certain the 370A POWER switch is set to OFF before replacing the high voltage shield.</p> |
|--|

- h. Replace the high voltage shield.
- i. Change the following 370A setting:

POWER    ON



## B2. Examining CRT Bias

### Adjusting CRT Bias (A20R210)

**IMPORTANT:**

The characteristics examined in this step are provided as examples of typical instrument operation to aid in the adjustment of R210; they are not specifications.

**B2 SETUP CONDITIONS**

**370A**

370A settings:  
Initialize the 370A; then set the following controls as indicated.

|                  |           |
|------------------|-----------|
| DISPLAY          |           |
| Mode             | NON STORE |
| COLLECTOR SUPPLY |           |
| POLARITY         | AC        |

### Examining CRT Bias

- a. Change the following 370A settings:

|            |                        |
|------------|------------------------|
| INTENSITY  |                        |
| NON STORE  |                        |
| STORE/VIEW | Fully counterclockwise |
| READOUT    |                        |
| CURSOR     | Fully counterclockwise |
| GRAT ILLUM | Fully counterclockwise |

- b. EXAMINE the CRT for the displayed spot to be barely visible.

If the spot is bright or not visible at all, the following adjustment may be necessary.

### Adjusting CRT Bias

**NOTE**

R210 can be adjusted through the access hole in the high voltage shield.

- c. ADJUST Grid Bias adjustment R210 on the A20 HV Regulator Board until the CRT spot is barely visible.

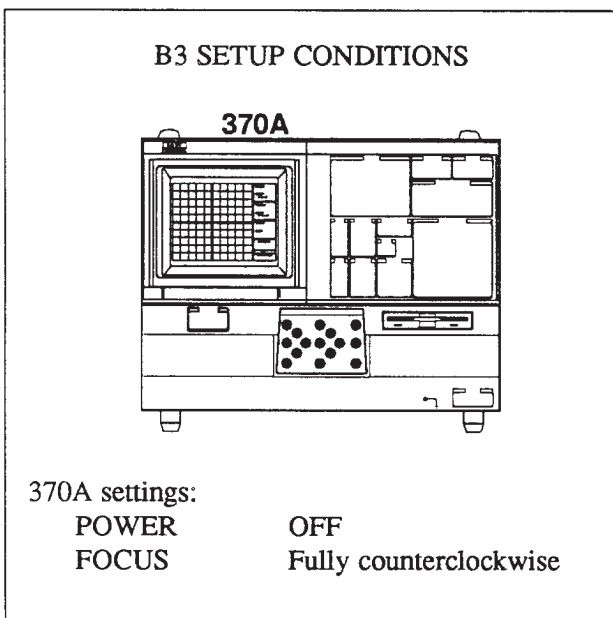


## B3. Examining Astigmatism

### Adjusting Astig (A18R420)

#### IMPORTANT:

The characteristics examined in this step are provided as examples of typical instrument operation to aid in the adjustment of R420; they are not specifications.



- a. While pressing the FAST/SHIFT button, set the 370A POWER switch to ON. This displays the Frame Test Pattern on the CRT.

#### Examining Astigmatism

- b. Change the following 370A settings:

|            |  |
|------------|--|
| INTENSITY  |  |
| NON STORE  |  |
| STORE/VIEW | Largest possible displayed center spot |
| READOUT    |  |
| CURSOR     | Fully counterclockwise                 |

- c. EXAMINE the center spot for a circular shape.

If the center spot is not circular, the following adjustment may be necessary.

#### Adjusting Astigmatism

##### NOTE

See Test Point and Adjustment Location 3 for the location of the adjustment associated with this step.

- d. ADJUST ASTIG adjustment R420 on the A18 CRT Output Board for a circular spot shape.

- e. Change the following 370A settings:

|            |                                      |
|------------|--------------------------------------|
| FOCUS      | Clockwise for smallest possible spot |
| INTENSITY  |                                      |
| NON STORE  |                                      |
| STORE/VIEW | Normal viewing                       |
| READOUT    |                                      |
| CURSOR     | Normal viewing                       |

- f. EXAMINE the CRT for the Frame Test Pattern to be similarly in focused.

If the Frame Test Pattern is not similarly focusing, the following adjustment may be necessary.

- g. READJUST ASTIG adjustment R420 on the A18 CRT Output Board for slightly compromise between the center dot and the outer frame.

#### Removing the Setup

- h. Press the FAST/SHIFT key to exit the Frame Test Pattern.

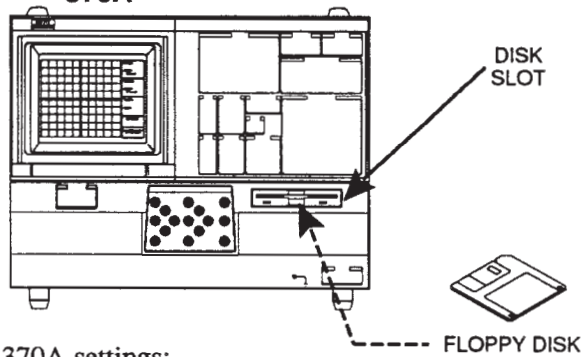
## B4. Examining NON STORE/ STORE/VIEW INTENSITY Operation

**IMPORTANT:**

The characteristics examined in this step are examples of typical instrument operation; they are not specifications.

**B4 SETUP CONDITIONS**

**370A**



DISK  
SLOT

FLOPPY DISK

370A settings:  
Initialize the 370A; then set the following controls as indicated.

|                  |                |
|------------------|----------------|
| <b>DISPLAY</b>   |                |
| VERTICAL         | STEP GEN       |
| OUTPUTS          | ENABLED        |
| <b>VARIABLE</b>  |                |
| COLLECTOR SUPPLY | 100%           |
| Protective Cover | Closed         |
| <b>INTENSITY</b> |                |
| NONSTORE         |                |
| STORE/VIEW       | normal viewing |

**NOTE:**

Be sure to use a formatted floppy disk to perform this procedure.

### Entering waveform data

- a. Set the MEMORY number to 2, using the "up" MEMORY button.
- b. Press ENTER. Examine the display for the "ENTER COMPLETE" message.

### Examining NON STORE Intensity

- c. Change the following 370A setting:

|                  |            |
|------------------|------------|
| <b>DISPLAY</b>   |            |
| Mode             | NONSTORE   |
| <b>VARIABLE</b>  |            |
| COLLECTOR SUPPLY | about 50%. |

- d. EXAMINE the crt for a continuous increase in NON STORE waveform brightness as the NON STORE/STORE/VIEW INTENSITY control is turned from fully counterclockwise to fully clockwise.

### Examining STORE Intensity

- e. Change the following 370A setting:

|                |       |
|----------------|-------|
| <b>DISPLAY</b> |       |
| Mode           | STORE |

- f. EXAMINE the crt for a continuous increase in STORE waveform brightness when the NON STORE/STORE/VIEW INTENSITY control is turned from fully counterclockwise to fully clockwise.

### Examining VIEW Intensity

- g. Change the following 370A setting

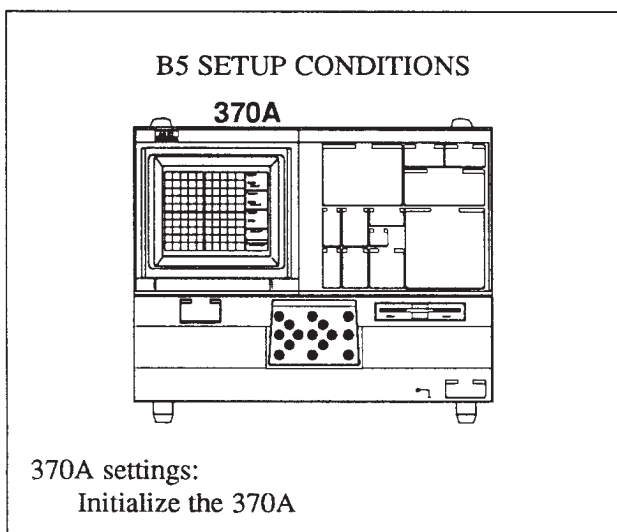
|                |      |
|----------------|------|
| <b>DISPLAY</b> |      |
| Mode           | VIEW |

- h. EXAMINE the crt for a continuous increase in VIEW waveform brightness when the NON STORE/STORE/VIEW INTENSITY control is turned from fully counterclockwise to fully clockwise.

## B5. Examining REF INTENSITY Operation

### IMPORTANT:

The characteristics examined in this step are examples of typical instrument operation; they are not specifications.



- a. Press the REF button.
- b. Change the following 370A setting:

|         |    |
|---------|----|
| DISPLAY | ON |
| INVERT  |    |

- c. EXAMINE the CRT for a continuous increase in brightness of the viewed trace as the REF INTENSITY control is turned from full counterclockwise to fully clockwise.

## B6. Examining READOUT/ CURSOR INTENSITY Operation

**IMPORTANT:**

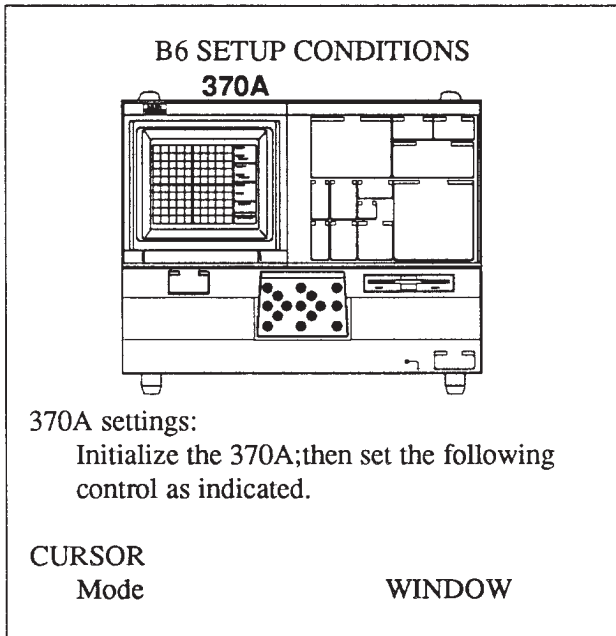
The characteristics examined in this step are examples of typical instrument operation; they are not specifications.

a. EXAMINE the display for a continuous increase in readout and cursor brightness as the READOUT/  
CURSOR INTENSITY control is turned from fully counterclockwise to fully clockwise.

b. Change the following 370A setting:

INTENSITY  
READOUT  
CURSOR

Normal viewing level





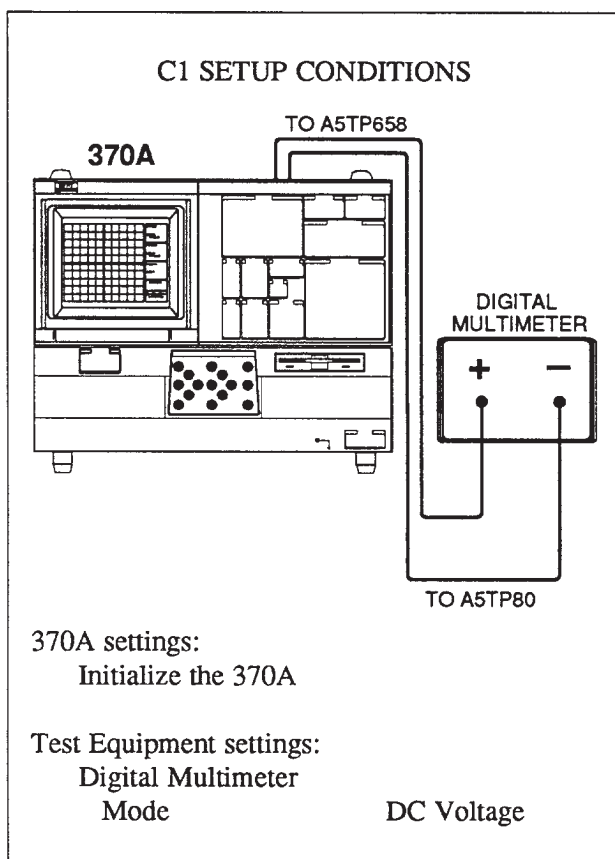
## ■ C. DISPLAY

Equipment Required(see Table 4-3):  
 • Digital Multimeter

### C1. Examining Calibrator Voltage

#### IMPORTANT:

The characteristics examined in this step are examples of typical instrument operation; they are not specifications.



#### NOTE

See Test Point and Adjustment Locations 1 in Section 7 for the location of test points used in this step.

#### Examining Horizontal CAL ZERO

- a. Change the following 370A setting:

|         |          |
|---------|----------|
| DISPLAY | CAL ZERO |
| Mode    |          |

CAL ZERO is initiated by pressing the NON STORE button while holding down the FAST/SHIFT button.

- b. EXAMINE the digital multimeter for a reading between  $-0.995\text{ V}$  and  $-1.005\text{ V}$ .

#### Examining Horizontal CAL FULL

- c. Change the following 370A setting:

|         |          |
|---------|----------|
| DISPLAY | CAL FULL |
| Mode    |          |

CAL FULL is initiated by pressing the REF button while holding down the FAST/SHIFT button.

- d. EXAMINE the digital multimeter for a reading between  $+0.995\text{ V}$  and  $+1.005\text{ V}$ .
- e. Disconnect the digital multimeter positive lead from TP658.

#### Examining Vertical CAL FULL

- f. Connect the digital multimeter positive lead to TP648 on the A5 Display Control Board.
- g. EXAMINE the digital multimeter for a reading between  $+0.995\text{ V}$  and  $+1.005\text{ V}$ .

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### Examining Vertical CAL ZERO

h. Change the following 370A setting:

|         |          |
|---------|----------|
| DISPLAY |          |
| Mode    | CAL ZERO |

i. EXAMINE the digital multimeter for a reading between -0.995 V and -1.005 V.

### Removing the Setup

j. Change the following 370A setting:

|         |         |
|---------|---------|
| DISPLAY |         |
| Mode    | CAL OFF |

CAL OFF is initiated by pressing the STORE button whileholding down the FAST/SHIFT button.

k. Disconnect the digital multimeter from TP648 and TP80.

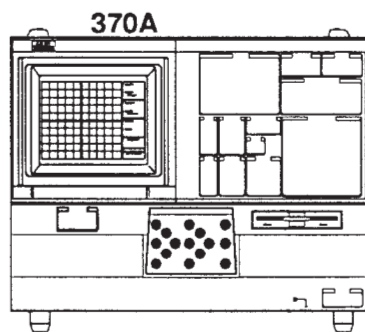


## C2. Adjusting V Zero and H Zero (A3R600 and A3R590)

### IMPORTANT:

The characteristics examined in this step are provided as examples of typical instrument operation to aid in the adjustment of R600 and R590; they are not specifications.

### C2 SETUP CONDITIONS



#### 370A settings:

Initialize the 370A; then set the following controls as indicated.

|                  |          |
|------------------|----------|
| COLLECTOR SUPPLY |          |
| POLARITY         | AC       |
| CURSOR           |          |
| Mode             | DOT      |
| DISPLAY          |          |
| Mode             | CAL ZERO |

CAL ZERO is initiated by pressing the NON STORE button while holding down the FAST/SHIFT button.

### Determining if Adjustment is Necessary

- Examine the vertical CURSOR readout for a reading that does not exceed  $\pm 0.06$  A and the horizontal CURSOR readout for a reading that does not exceed 0.06 V.

If the CURSOR readouts are not within these limits, the following adjustment is necessary.

### Adjusting H Zero and V Zero

#### NOTE

See Test Point and Adjustment Locations 1 in Section 7 for the location of adjustments in this step.

- ADJUST H Zero adjustment R590 and V Zero adjustment R600 on the A3 A/D Board for a CURSOR readout of 0.00 for Vertical and 0.00 for Horizontal.



### C3. Adjusting Storage Gain (A3R610)

**IMPORTANT:**

The characteristics examined in this step are provided as examples of typical instrument operation to aid in the adjustment of R610; they are not specifications.

**C3 SETUP CONDITIONS**

**370A**

370A settings:  
Initialize the 370A; then set the following controls as indicated.

|                 |          |
|-----------------|----------|
| DISPLAY<br>Mode | CAL ZERO |
| CURSOR<br>Mode  | DOT      |

CAL ZERO is initiated by pressing the NON STORE button while holding down the FAST/SHIFT button.

#### Determining if Adjustment is Necessary

- a. EXAMINE the vertical and horizontal CURSOR readouts for readings of  $0.00 \pm 0.06$ .

If the CURSOR readouts are not within these limits, the following adjustment is necessary.

#### Adjusting Storage Gain

**NOTE**

See Test Point and Adjustment Locations 1 in Section 7 for the location of the adjustment in this step.

- b. ADJUST Storage Gain adjustment R610 on the A3 A/D Board for Vertical and Horizontal CURSOR readouts of 0.00.

#### Examining Storage Gain for CAL FULL

- c. Change the following 370A setting:

|                 |          |
|-----------------|----------|
| DISPLAY<br>Mode | CAL FULL |
|-----------------|----------|

CAL FULL is initiated by pressing the REF button while holding down the FAST/SHIFT button.

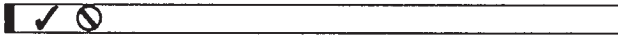
- d. EXAMINE the vertical and horizontal CURSOR readout for a reading of  $20.00 \pm 0.36$ .

#### Removing the Setup

- e. Change the following 370A setting:

|                 |         |
|-----------------|---------|
| DISPLAY<br>Mode | CAL OFF |
|-----------------|---------|

CAL OFF is initiated by pressing the STORE button while holding down the FAST/SHIFT button.



## C4. Checking Orthogonality and Geometry

### Examining Store Position, Non Store Gain, and D/A Gain

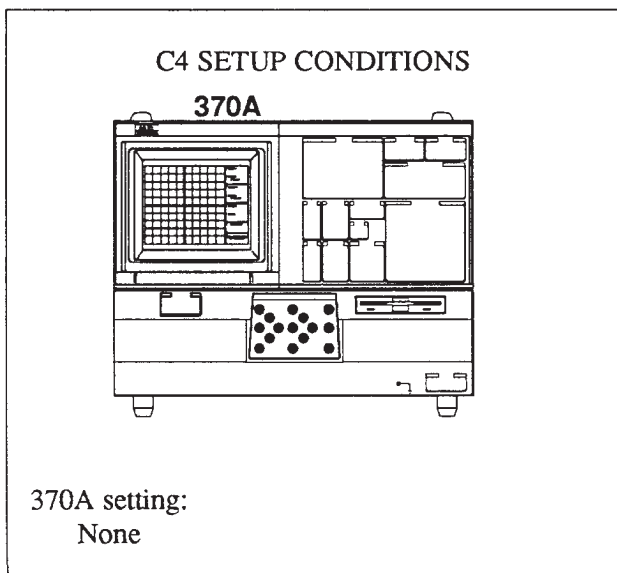
### Adjusting SX Position (A5R508), SY Position (A5R528), D/A Gain (A4R842), X Gain (A5R554), Y Gain (A5R574), Orthogonality (A5R80), Geom (A18R410)

#### Specifications:

- Orthogonality is 90° within 0.3°.
- Geometry includes two categories: (1) Tilt or bowing is no more than 0.5 minor division. (2) Keystone effect is no more than 0.75 minor division.

#### IMPORTANT:

Characteristics in EXAMINE steps are provided as examples of typical instrument operation to aid in adjustment; they are not specifications.



#### NOTE

See Test Point and Adjustment Locations 1 and 3 in Section 7 for the location of adjustments associated with this step.

#### Initiating the Test Pattern

- Change the following 370A setting:

POWER OFF

- Hold the FAST/SHIFT button depressed and set the 370A POWER to ON.

This initiates the diagnostic routine. The Sony/Tektronix logo first appears, followed by the display test pattern shown in Figure 4-1.

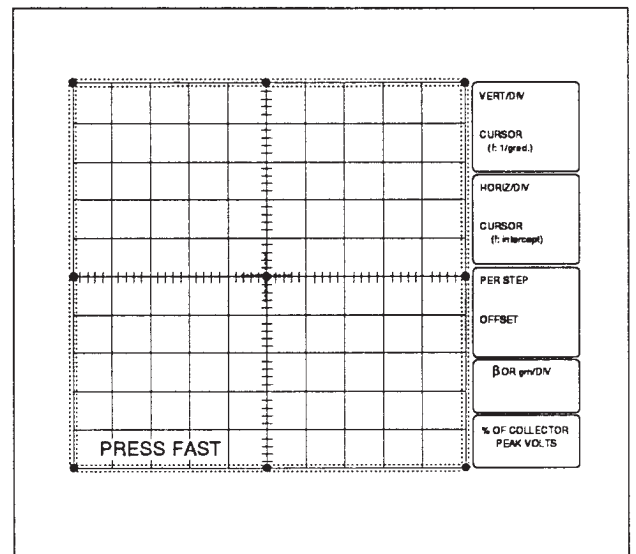


Figure 4-1. Diagnostic test pattern display.

The test pattern consists of the Frame Test Pattern overlaid over the Dot Test Pattern.

- Turn the GRAT ILLUM control fully clockwise for maximum brightness.
- Set the Frame Test Pattern to the same intensity as the graticule using the Intensity READOUT/CURSOR control and set the Dot Test Pattern slightly brighter using the intensity NON STORE/STORE/VIEW INTENSITY control.

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### Examining Store Position

- e. EXAMINE the display to determine whether the center cross mark of the Frame Test Pattern aligns with the center dot of the Dot Pattern.

If the pattern centers do not align, the following adjustments are necessary.

### Adjusting SY Position and SX Position

The SX and SY Position controls change the Frame Test Pattern position without affecting the Dot Test Pattern position.

- f. ADJUST SY Position adjustment R528 and SX Position adjustment R508 on the A5 Display Control Board so that the center cross mark of the Frame Test Pattern conforms to the center dot of the Dot Pattern (not the center of the graticule).

### Examining and Adjusting D/A Gain

- g. EXAMINE the display to determine whether the outer eight dots of the Dot Pattern are located between the inner frame and outer frame of the Frame Test Pattern.

If the location is not correct, the following adjustment is necessary.

- h. ADJUST D/A Gain adjustment R842 on the A4 Digital Display Board to position the outer eight dots between the inner frame and outer frame of the Frame Test Pattern.

D/A Gain adjusts the size of the Frame Test Pattern without changing the Dot Test Pattern size.

### Checking and Adjusting the Display

The Dot and Frame Test Pattern are visual aids for display alignment. Positioning, straightening and sizing of the display involves several adjustments. Three of these adjustments, GEOMETRY, TRACE ROTATION, and ORTHOGONALITY are interactive.

- GEOMETRY adjusts the curvature of the sides, top and bottom of the test pattern:

- TRACE ROTATION tilts the test pattern about a pivot point approximately 2 1/2 divisions from the right side of the graticule on the horizontal center line.

- ORTHOGONALITY changes the test pattern shape from rhombic to rectangular.

- X-GAIN and Y-GAIN change the test pattern from rectangular to square.

- Front-panel POSITION controls change the position of the whole display.

### Checking Orthogonality

- i. Change the following 370A settings:

POSITION controls

Vertical and  
Horizontal

Position the center  
dot to graticule center.

TRACE ROTATION

Position the three  
intermediate horizontal  
dots on the center horizontal  
graticule line.

- j. CHECK that the three intermediate vertical dots conform to the center vertical graticule line within 0.5 minor division.

If the dots do not conform, the following adjustment is necessary.

### Adjusting Orthogonality

- k. ADJUST Orthogonality adjustment R80 on the A5 Display Control Board so that the three intermediate vertical dots conform to the center vertical graticule line.

**Examining Non-Store Gain**

1. EXAMINE the display to determine if the Dot Pattern's outer eight dots are positioned within the inner and outer frame patterns.

If the positioning is not correct, the following adjustment is necessary.

**Adjusting X-Gain and Y-Gain**

- m. ADJUST X-Gain adjustment R554 and Y-Gain adjustment R574 on the A5 Display Control Board to position the Dot Pattern's outer eight dots within the inner and outer Frame Patterns.

**Checking and Adjusting Geometry**

- n. Change the following 370A settings:

POSITION controls

|              |                              |
|--------------|------------------------------|
| Vertical and | Position the center dot of   |
| Horizontal   | the Dot Pattern at graticule |
|              | center.                      |

- o. CHECK the Frame Pattern for  $\leq 0.5$  minor division of bowing and  $\leq 0.75$  minor division of keystone effect. If the bowing and keystone effect are not within these limits, the following adjustment may be necessary.
- p. ADJUST Geometry adjustment R410 on the A18 CRT Output Board (if necessary) for minimum display bowing.

**Examining the Display for Adjustment Interaction**

- q. EXAMINE the display for all dots to be between the outer frame and inner frame of the Frame Test Pattern, within 0.5 minor division.

If not, repeat parts j through n.

- r. EXAMINE the display for the graticule periphery to be between the outer frame and inner frame of the frame test pattern, within 0.5 minor division.

If not, repeat parts j through n.

- s. EXAMINE the display for the center dot to be at graticule center, within 0.5 minor division.

**Removing the Test Pattern**

- t. Press the FAST/SHIFT button to exit the diagnostic routine.



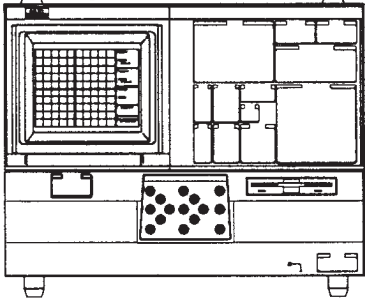
### C5. Checking DISPLAY INVERT Accuracy

Specification:

- DISPLAY INVERT for Digital Storage Vertical and Horizontal acquisition is accurate to within 0.04 of VERT/DIV or HORIZ/DIV setting.

**C5 SETUP CONDITIONS**

**370A**



370A settings:  
Initialize the 370A; then set the following controls as indicated.

|         |          |
|---------|----------|
| DISPLAY |          |
| Mode    | CAL ZERO |
| CURSOR  |          |
| Mode    | DOT      |

- a. Change the following 370A setting:

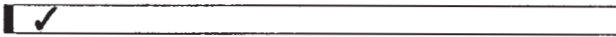
|         |    |
|---------|----|
| DISPLAY |    |
| INVERT  | ON |

The indicator above the INVERT button will light.

- b. Check that the spot moves from lower left corner to the upper right corner of the graticule and the vertical CURSOR readout and horizontal CURSOR readout are  $0.00 \pm 0.08$ .

CAL ZERO is initiated by pressing the NON STORE button while holding down the FAST/SHIFT button.





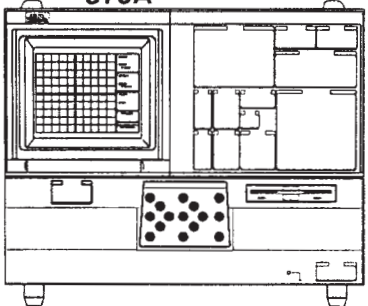
## C6. Checking Display Offset Accuracy

### Specifications:

- For Digital Storage Vertical and Horizontal Acquisition, the center-line display can be vertically and horizontally offset up to ten divisions in 0.1 division steps.
- Display Offset is accurate to within {1.5 % of the offset (in divisions) + 0.01 division of the setting}.

**C6 SETUP CONDITIONS**

**370A**



370A settings:

Initialize the 370A; then set the following controls as indicated.

|          |          |
|----------|----------|
| DISPLAY  |          |
| Mode     | CAL ZERO |
| CURSOR   |          |
| Mode     | DOT      |
| POSITION |          |
| Mode     | DISPLAY  |

Hold down the FAST/SHIFT button and press the NON STORE button to enter the CAL ZERO mode.

### Checking Positive Offset

- EXAMINE the display, as the right Position Control button is pressed, for the spot to move continuously from lower left corner to lower right corner.
- EXAMINE the display, as the up Position Control button is pressed, for the spot to move continuously from lower right corner to upper right corner.
- CHECK the vertical and horizontal CURSOR readout within  $\pm 0.32$ .

### Checking Negative Offset

- Change the following 370A setting:

COLLECTOR SUPPLY  
POLARITY     -     

POSITION     Simultaneously press the up and down Position Control buttons, then simultaneously press the left and right Position Control buttons.

- EXAMINE the display, as the left Position Control button is pressed, for the spot to move continuously from upper right corner to upper left corner.
- EXAMINE the display, as the down Position Control button is pressed, for the spot to move continuously from upper left corner to lower left corner.
- CHECK the vertical and horizontal CURSOR readouts within  $\pm 0.32$ .



**C7. Adjusting Looping Compensation (A10R139, A10R224, A35R500, A35R501, A35R502, A35R03, A35R504).**

**IMPORTANT:**  
 The characteristics examined in this step are provided as examples of typical instrument operation to aid in the adjustment of R139, R224, R500, R501, R502, R503, R504; they are not specifications.

The accuracy of the vertical displayed noise may be affected by these adjustments. See E7.

**NOTE**

See Test Point and Adjustment Locations 2 in Section 7 for the location of the adjustments associated with this step.

- a. Press the “up” Position Control button to move the trace to graticule center.

**NOTE**

Following adjustments from b to f are preliminary adjustment.

**Preliminary adjustment**

- b. Preset the following 370A adjustments:

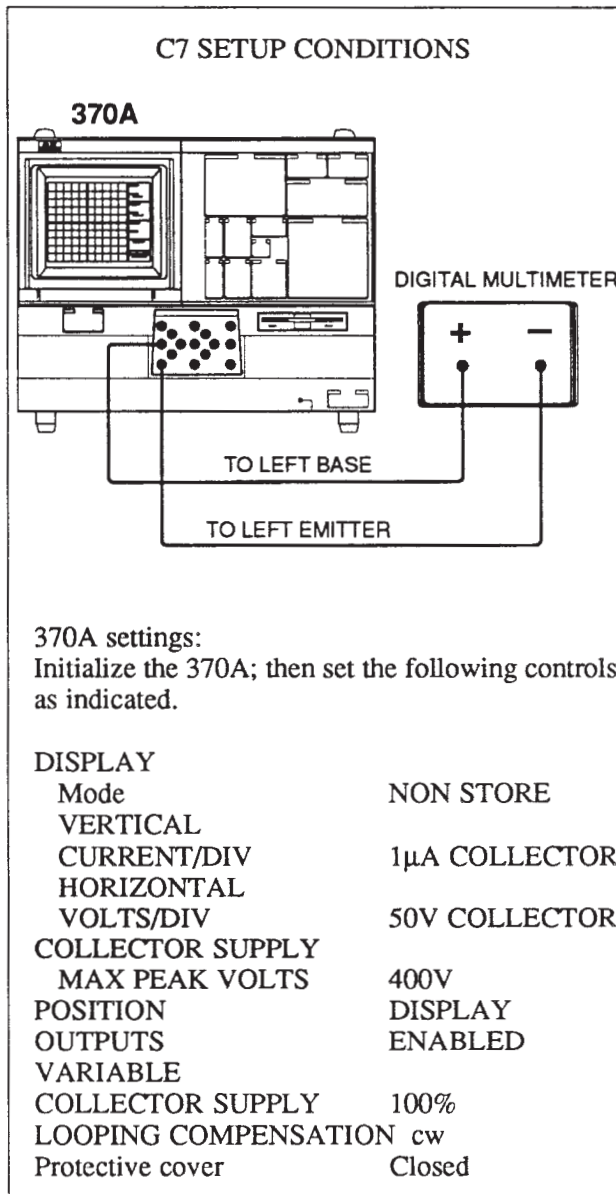
A10R139 (TAN-DELTA)    center  
 A10R224 (LOOP GAIN)    center

A cutout in the right siderail provides adjustment access.

A35R500 (LOOP BALANCE)  
 fully counterclockwise

A cutout in the left side of the guard box provides adjustment access.

- c. ADJUST R224 LOOP GAIN adjustment on the A10 Sense Board to optimum overlay of the right portion of the loop.



- d. ADJUST R501 400 V LOOPING adjustment on the A35 Looping board to optimum overlay of the left portion of the loop.

A cutout in the left of the guard box provides adjustment access.

- e. ADJUST R500 LOOP BALANCE adjustment on the A35 Looping board to minimize the vertical projection on the left portion of the loop using the LOOPING COMPENSATION control. If necessary, repeat d and e.

f. ADJUST R224 LOOP GAIN adjustment on the A10 Looping board to minimize the vertical projection of the left portion of the loop using the LOOPING COMPENSATION control.

If necessary, repeat steps d through f.

**Examining 2000 V LOOPING**

g. Change the following 370A settings:

- DISPLAY
- HORIZONTAL
- VOLTS/DIV                    200 V COLLECTOR
- COLLECTOR SUPPLY
- MAX PEAK VOLTS        2000
- VARIABLE
- COLLECTOR SUPPLY    100 %
- LOOPING
- COMPENSATION            Minimum trace width

h. EXAMINE the left end of the displayed trace for optimum overlay of the loop, and the right side to run parallel with the horizontal graticule lines.

If the overlay is not optimum, and the trace does not parallel the horizontal graticule lines, the following adjustment is necessary.

**Adjusting 2000 V LOOPING**

i. ADJUST R503 2000 V LOOPING adjustment on the A35 Looping board for optimum overlay of the left portion of the loop. See Figure 4-2.

A cutout in the left side of the guard box provides adjustment access.

**Adjusting LOOP BALANCE**

j. ADJUST R500 LOOP BALANCE on the A35 Looping board to align the display with the horizontal graticule line, using the LOOPING COMPENSATION control.

If necessary, repeat steps i and j.

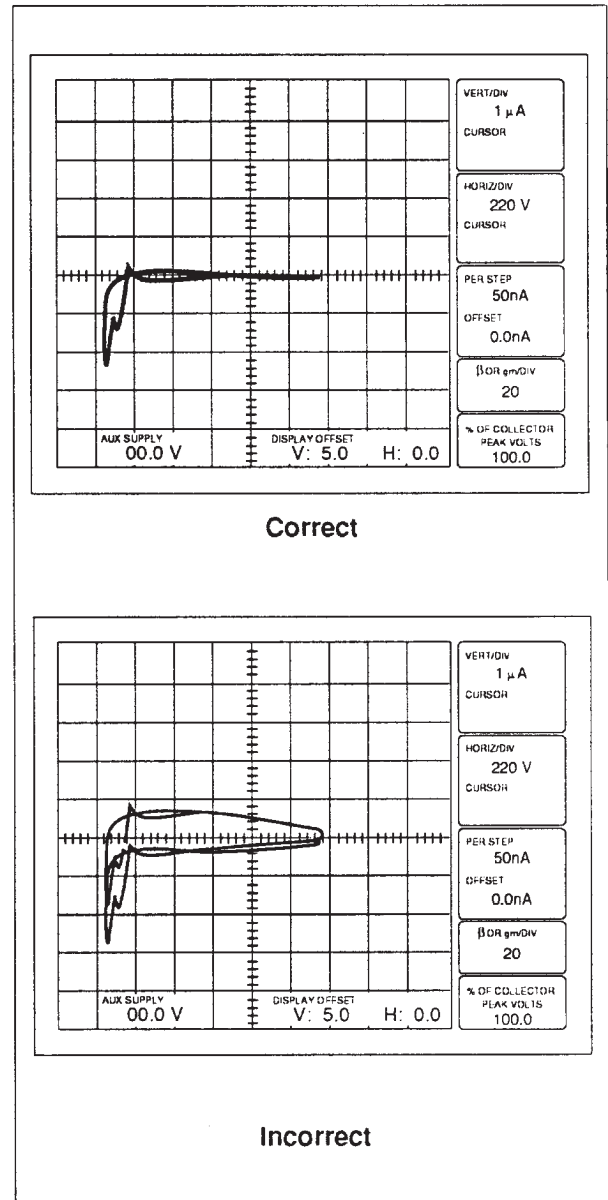


Figure 4-2. Looping compensation display.

## 370A Service Manual

### Adjusting TAN-DELTA

k. Change the following 370A setting:

COLLECTOR SUPPLY  
MAX PEAK POWER WATTS 50

- l. ADJUST TAN-DELTA R139 on the A10 Sense board to align the display with the horizontal graticule line, using the LOOPING COMPENSATION control.

### Readjusting LOOP BALANCE

m. Change the following 370A settings:

COLLECTOR SUPPLY  
MAX PEAK POWER WATTS 0.08

- n. READJUST R500 LOOP BALANCE on the A35 Looping Board to align the display with the horizontal graticule line, using the LOOPING COMPENSATION control.

If necessary, repeat steps k through n.

### Examining 400 V LOOPING

o. Change the following 370A settings:

DISPLAY  
HORIZONTAL  
VOLTS/DIV 50 V COLLECTOR  
COLLECTOR SUPPLY  
MAX PEAK VOLTS 400  
VARIABLE  
COLLECTOR SUPPLY 100 %  
LOOPING  
COMPENSATION Minimum trace width

- p. EXAMINE the left end of the displayed trace for optimum overlay of the trace.

If the left end of the trace doesn't overlay correctly, the following adjustment is necessary.

### Adjusting 400 V LOOPING

- q. ADJUST R501 400 V LOOPING adjustment on the A35 Looping board for optimum overlay of the left end of the trace.

### Examining 80 V LOOPING

r. Change the following 370A settings:

DISPLAY  
HORIZONTAL  
VOLTS/DIV 10 V COLLECTOR  
COLLECTOR SUPPLY  
MAX PEAK VOLTS 80  
VARIABLE  
COLLECTOR SUPPLY 100 %  
LOOPING  
COMPENSATION Minimum trace width

- s. EXAMINE the left portion of the displayed trace for optimum overlay (see Figure 4-2).

If the overlay is not optimum, the following adjustment is necessary.

### Adjusting 80 V LOOPING

- t. ADJUST R502 80 V LOOPING adjustment on the A35 Looping board for optimum overlay of the left portion of the trace.

### Examining 16 V LOOPING

u. Change the following 370A settings:

DISPLAY  
HORIZONTAL  
VOLTS/DIV 2 V COLLECTOR  
COLLECTOR SUPPLY  
MAX PEAK VOLTS 16  
VARIABLE  
COLLECTOR SUPPLY 100 %  
LOOPING  
COMPENSATION Minimum trace width

- v. EXAMINE the left portion of the displayed trace for optimum overlay of the trace (see Figure 4-2).

If the overlay is not optimum, the following adjustment is necessary.

### Adjusting 16 V LOOPING

- w. ADJUST R504 16 V LOOPING adjustment on the A35 Looping board for optimum overlay of the left portion of the trace.

## D. HORIZONTAL

Equipment Required (see Table 4-3):

- Calibrator (DC Voltage Source)
- 1 M $\Omega$ , 5 %, 0.25W Resistor
- 10 M $\Omega$ , 5 %, 0.25W Resistor



### D1. Adjusting H Balance (A10R460)

**IMPORTANT:**

The characteristics examined in this step are provided as examples of typical instrument operation to aid in the adjustment of R460; they are not specifications.

**D1 SETUP CONDITIONS**  
**370A**

370A settings:  
Initialize the 370A; then set the following controls as indicated.

|                         |               |
|-------------------------|---------------|
| <b>COLLECTOR SUPPLY</b> |               |
| POLARITY                | AC            |
| MAG X10                 | On            |
| <b>CURSOR</b>           |               |
| Mode                    | DOT           |
| <b>OUTPUTS</b>          |               |
| ENABLED                 |               |
| LEFT-RIGHT-STANDBY      | LEFT or RIGHT |
| Protective Cover        | Closed        |

### Determining if Adjustment is Necessary

- a. EXAMINE the horizontal CURSOR readout for a reading of 0,  $\pm 60$  mV.

If the reading is not within these limits, the following adjustment is necessary.

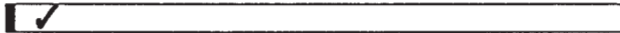
### Adjusting H Balance

**NOTE**

See Test Point and Adjustment Locations 2 in Section 7 for the location of the adjustment for this step.

- b. ADJUST H Balance adjustment R460 on the A10 Sense Board for a horizontal CURSOR readout of 0 mV.

A cutout in the right side rail provides adjustment access.

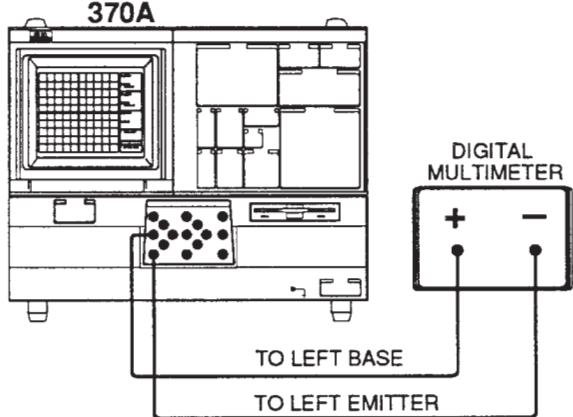


## D2. Checking horizontal MAG X10 Accuracy.

Specification:

- OFFSET with MAG set to x10 is accurate to within (1.5% of the readout +0.3 division of the setting).

**D2 SETUP CONDITIONS**



370A

DIGITAL MULTIMETER

TO LEFT BASE

TO LEFT EMITTER

370A settings:  
Initialize the 370A; then set the following controls as indicated.

|                    |                     |
|--------------------|---------------------|
| MAG                | X10                 |
| COLLECTOR SUPPLY   |                     |
| POLARITY           | AC                  |
| DISPLAY            |                     |
| HORIZONTAL         | 100 mV BASE/EMITTER |
| STEP GENERATOR     |                     |
| Mode               | VOLTAGE             |
| STEP AMPLITUDE     | 1 V                 |
| NUMBER OF STEPS    | 0                   |
| CURSOR             | DOT                 |
| POSITION           |                     |
| Mode               | DISPLAY             |
| OUTPUTS            | ENABLED             |
| Protective Cover   | Closed              |
| LEFT-RIGHT-STANDBY | LEFT                |

Test Equipment setting

|                    |            |
|--------------------|------------|
| Digital Multimeter |            |
| Mode               | DC Voltage |

### Checking horizontal MAG X10 Accuracy

a. CHECK that the difference between horizontal CURSOR readout and Digital Multimeter reading is within  $\pm 30$  mV.

b. Change the following 370A setting:

|                |   |
|----------------|---|
| STEP GENERATOR |   |
| OFFSET         | 10.00 V   |
|                | Use the AID button to set the STEP GENERATOR OFFSET readout.                          |
| POSITION       | Use the left Position Control button to position the spot near the horizontal center. |

c. CHECK that the difference between horizontal CURSOR readout and Digital Multimeter reading is within  $\pm 0.18$  V.

### Removing the Setup

d. Change the following 370A setting:

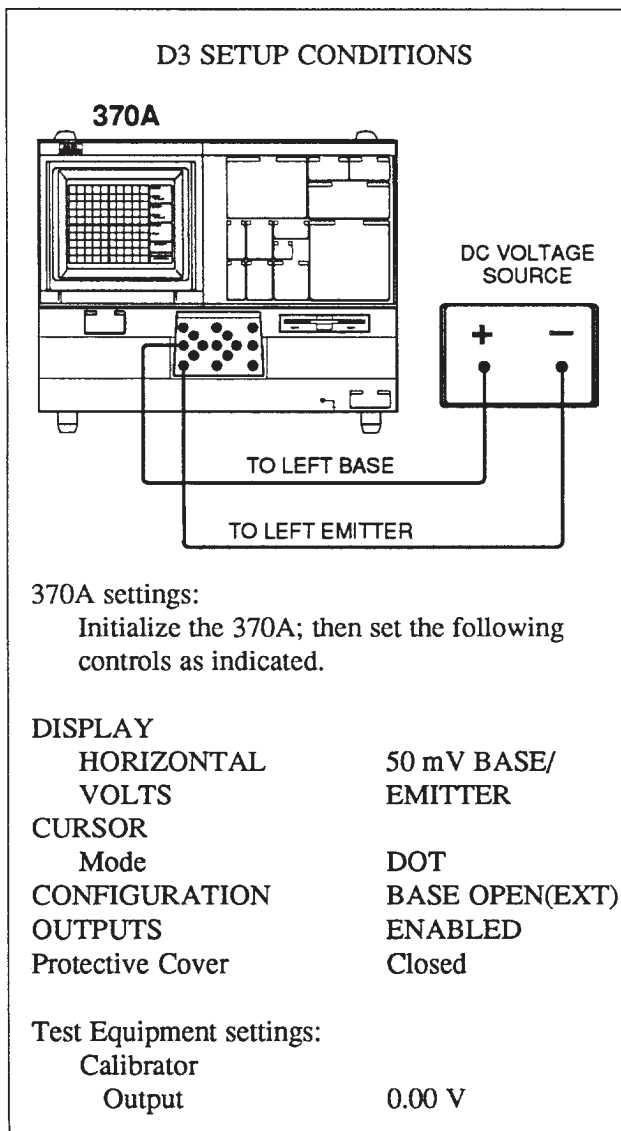
|                    |         |
|--------------------|---------|
| LEFT-RIGHT-STANDBY | STANDBY |
|--------------------|---------|

e. Remove the digital multimeter leads from the 370A.

**D3. Checking HORIZONTAL BASE/EMITTER Accuracy and Range in STORE Mode**

Specifications:

- The range of HORIZONTAL BASE/EMITTER selections in STORE DISPLAY mode is from 50 mV to 5 V in a 1-2-5 sequence of seven steps.
- The BASE/EMITTER settings are accurate to within 1.5 % of the readout + 0.05 division of the setting.



**NOTE**

Disregard the flashing cursor on the 370A display.

**Checking Base/Emitter Accuracy**

a. Change the following 370A setting:

LEFT-RIGHT-STANDBY LEFT

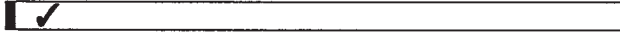
b. CHECK that the horizontal CURSOR readout is within the CURSOR Readout limits for each HORIZONTAL (BASE/EMITTER) VOLTS/DIV and DC Voltage setting listed in Table 4-5.

There are two DC Voltage values given for each HORIZONTAL VOLTS/DIV setting in Table 4-5; check for both.

To check the 2V and 5V Horizontal Volts/Div settings, push the Operate button on the Voltage Source.







### D4. Checking HORIZONTAL COLLECTOR Voltage Accuracy and Range in STORE Mode

**Specifications:**

- The range of HORIZONTAL COLLECTOR settings in STORE DISPLAY mode is from 50 mV/DIV to 500 V/DIV in a 1-2-5 sequence of 13 steps.
- The HORIZONTAL COLLECTOR settings are accurate to within 1.5 % of the readout + 0.05 division of the setting.

**D4 SETUP CONDITIONS**  
**370A**

TO LEFT COLLECTOR  
TO LEFT EMITTER

370A settings:  
Initialize the 370A; then set the following controls as indicated.

|                         |                 |
|-------------------------|-----------------|
| <b>DISPLAY</b>          |                 |
| HORIZONTAL VOLT/DIV     | 50 mV COLLECTOR |
| <b>COLLECTOR SUPPLY</b> |                 |
| MAX PEAK VOLTS          | 400             |
| <b>CURSOR</b>           |                 |
| Mode                    | DOT             |
| Protective Cover        | Closed          |
| LEFT-RIGHT-STANDBY      | LEFT            |

Test Equipment settings:  
Calibrator Voltage      0.00 V DC

**WARNING**  
Extreme caution must be used when performing the following step due to the dangerous potentials present at the input of the 370A.  
The protective cover should be installed.

#### Checking Collector Voltage Accuracy

- CHECK that the horizontal CURSOR readout is within the CURSOR Readout limits for each HORIZONTAL CURRENT VOLTS/DIV and DC Voltage setting listed in Table 4-6.

There are two DC Voltage values given for each HORIZONTAL VOLTS/DIV setting in Table 4-6: Check for both.

#### Removing the Setup

- Change the following 370A setting:

LEFT-RIGHT-STANDBY    STANDBY

- Change the following test equipment setting:

Calibrator Output                      0.00 V

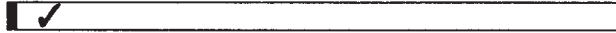
**WARNING**  
Be certain that the output of the Calibrator is set to zero or Standby before connecting or disconnecting the test leads.

- Disconnect the Calibrator leads from the 370A.

370A Service Manual

Table 4-6  
Collector Voltage Accuracy

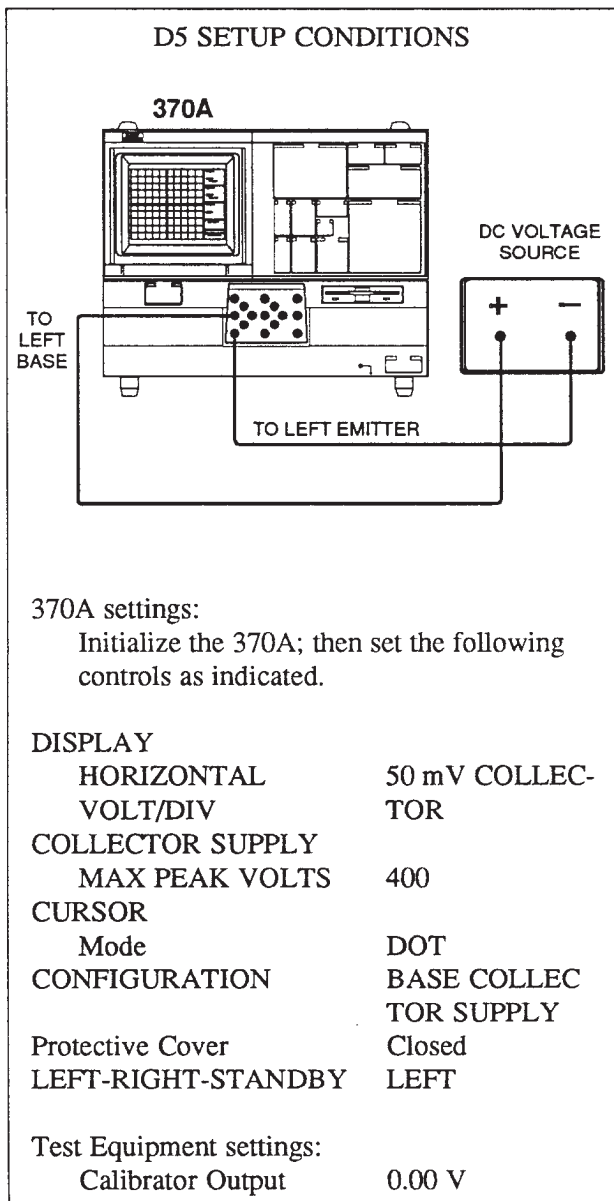
| HORIZONTAL VOLTS/DIV Setting | Calibrator DC Voltage | Horizontal CURSOR Readout        |
|------------------------------|-----------------------|----------------------------------|
| 50 mV                        | 0.00 mV<br>500.0 mV   | $\pm 2.5$ mV<br>490 to 510 mV    |
| 100 mV                       | 0.00 mV<br>1000 mV    | $\pm 5$ mV<br>980 to 1020 mV     |
| 200 mV                       | 0.00 mV<br>2000 mV    | $\pm 10$ mV<br>1960 to 2040 mV   |
| 500 mV                       | 0.00 mV<br>5000 mV    | $\pm 25$ mV<br>4900 to 5100 mV   |
| 1 V                          | 0.00 mV<br>10.00 V    | $\pm 50$ mV<br>9.80 to 10.20 V   |
| 2 V                          | 0.00 mV<br>20.00 V    | $\pm 0.10$ V<br>19.60 to 20.40 V |
| 5 V                          | 0.00 mV<br>50.00 V    | $\pm 0.25$ V<br>49.00 to 51.00 V |
| 10 V                         | 0.00 mV<br>100.0 V    | $\pm 0.5$ V<br>98.0 to 102.0 V   |
| 20 V                         | 0.00 mV<br>200.0 V    | $\pm 1.0$ V<br>196.0 to 204.0 V  |
| 50 V                         | 0.00 mV<br>500.0 V    | $\pm 2.5$ V<br>490.0 to 510.0 V  |
| 100 V                        | 0.00 mV<br>1000 V     | $\pm 5$ V<br>980 to 1020 V       |
| 200 V                        | 0.00 mV<br>1000 V     | $\pm 10$ V<br>976 to 1024 V      |
| 500 V                        | 0.00 mV<br>1000 V     | $\pm 25$ V<br>960 to 1040 V      |



## D5. Checking HORIZONTAL COLLECTOR Voltage Accuracy and Range in CONFIGURATION BASE to COLLECTOR SUPPLY Mode

### Specifications:

- The HORIZONTAL COLLECTOR settings are accurate to within 1.5 % of the readout + 0.05 division of the setting.



### WARNING

Extreme caution must be used when performing the following step due to the dangerous potentials present at the input of the 370A.

### Checking Collector Voltage Accuracy

- CHECK that the horizontal CURSOR readout is within the CURSOR Readout limits for each HORIZONTAL CURRENT VOLTS/DIV and DC Voltage setting listed in Table 4-7.

There are two DC Voltage values given for each HORIZONTAL VOLTS/DIV setting in Table 4-7: Check for both.

### Removing the Setup

- Change the following 370A setting:  
LEFT-RIGHT-STANDBY STANDBY
- Change the following test equipment setting:  
Calibrator Output 0.00 V

### WARNING

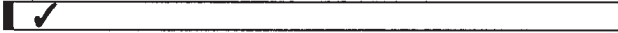
Be certain that the output of the Calibrator is set to zero or Standby before connecting or disconnecting the test leads.

- Disconnect the Calibrator leads from the 370A.
- Replace the Protective Cover in the 370A.

370A Service Manual

**Table 4-7**  
**Collector Voltage Accuracy in CONFIGURATION**  
**BASE to COLLECTOR SUPPLY mode**

| HORIZONTAL VOLTS/DIV Setting | Calibrator DC Voltage | Horizontal CURSOR Readout        |
|------------------------------|-----------------------|----------------------------------|
| 50 mV                        | 0.00 mV<br>500.0 mV   | $\pm 2.5$ mV<br>490 to 510 mV    |
| 100 mV                       | 0.00 mV<br>1000 mV    | $\pm 5$ mV<br>980 to 1020 mV     |
| 200 mV                       | 0.00 mV<br>2000 mV    | $\pm 10$ mV<br>1960 to 2040 mV   |
| 500 mV                       | 0.00 mV<br>5000 mV    | $\pm 25$ mV<br>4900 to 5100 mV   |
| 1 V                          | 0.00 mV<br>10.00 V    | $\pm 50$ mV<br>9.80 to 10.20 V   |
| 2 V                          | 0.00 mV<br>20.00 V    | $\pm 0.10$ V<br>19.60 to 20.40 V |
| 5 V                          | 0.00 mV<br>50.00 V    | $\pm 0.25$ V<br>49.00 to 51.00 V |
| 10 V                         | 0.00 mV<br>100.0 V    | $\pm 0.5$ V<br>98.0 to 102.0 V   |
| 20 V                         | 0.00 mV<br>200.0 V    | $\pm 1.0$ V<br>196.0 to 204.0 V  |
| 50 V                         | 0.00 mV<br>500.0 V    | $\pm 2.5$ V<br>490.0 to 510.0 V  |



## D6. Checking Base Input Impedance

Specifications:

- Input impedance is at least 100 MΩ.

**D6 SETUP CONDITIONS**

370A settings:

Initialize the 370A; then set the following controls as indicated.

|                    |                |
|--------------------|----------------|
| CONFIGURATION      | BASE OPEN(EXT) |
| DISPLAY            |                |
| HORIZONTAL         | 2 V BASE/EMIT- |
| VOLT/DIV           | TER            |
| CURSOR             | DOT            |
| OUTPUTS            | ENABLED        |
| LEFT-RIGHT-STANDBY | LEFT           |
| Protective Cover   | Closed         |

Test Equipment Setting:

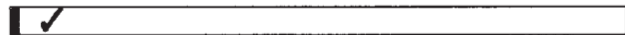
|                   |         |
|-------------------|---------|
| Calibrator Output | 20 V DC |
|-------------------|---------|

### Checking Input Impedance

- CHECK that the horizontal CURSOR reading is within 20 V,  $\pm 2$ V.

### Removing Setup

- Set the Calibrator output to 0 V.
- Remove the resistor and Calibrator.



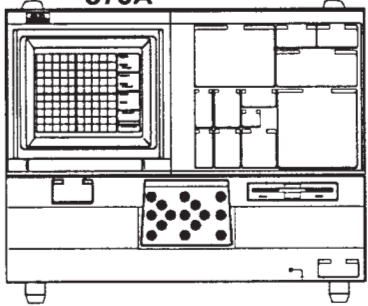
## D7. Checking Horizontal Displayed Noise

Specifications:

- Displayed noise (peak-peak) in COLLECTOR VOLTS is < 0.02% of MAX PEAK VOLTS setting.
- Displayed noise (peak-peak) in BASE/EMITTER VOLTS for each COLLECTOR SUPPLY MAX PEAK VOLTS setting is less than 10 mV when a 1 MΩ resistor is connected between BASE and EMITTER terminals with BASE OPEN (EXT) CONFIGURATION and 0 NUMBER OF STEPS.

**D7 SETUP CONDITIONS**

**370A**



370A settings:  
Initialize the 370A; then set the following controls as indicated.

|                  |              |
|------------------|--------------|
| COLLECTOR SUPPLY |              |
| POLARITY         | AC           |
| MAX PEAK POWER   |              |
| WATTS            | 220          |
| VARIABLE         |              |
| COLLECTOR SUPPLY | 0 %          |
| MAG X10          | On           |
| DISPLAY          |              |
| Mode             | NON STORE    |
| HORIZONTAL       | 5 mV COLLEC- |
| VOLT/DIV         | TOR          |
| OUTPUTS          |              |
|                  | ENABLED      |
| Protective Cover |              |
|                  | Closed       |

## Checking Noise at COLLECTOR VOLTS

- CHECK that the spot width is no more than 3.2 mV (3.2 minor divisions) peak-peak (see Table 4-8).

**Table 4-8**  
Displayed Horizontal Noise

| COLLECTOR SUPPLY MAX PEAK VOLTS | Horizontal Spot Width (Noise)          |                    |
|---------------------------------|--|--------------------|
|                                 | Collector Volts                        | Base/Emitter Volts |
| 16                              | 3.2 mV (3.2 min. div)                  | 10 mV (2 div)      |
| 80                              | 16 mV (3.2 div)                        | 10 mV (2 div)      |
| 400                             | 80 mV (16 div)<br>(1.6 div; 50 mV/DIV) | 10 mV (2 div)      |
| 2000                            | 400 mV<br>(8 div; 50 mV/DIV)           | 10 mV (2 div)      |

- Change the following 370A setting:  

|                |    |
|----------------|----|
| MAX PEAK VOLTS | 80 |
|----------------|----|
- CHECK that the spot width is no more than 16 mV (3.2 divisions) peak-peak (see Table 4-8).
- Change the following 370A setting:  

|                |     |
|----------------|-----|
| MAG X10        | Off |
| MAX PEAK VOLTS | 400 |
- CHECK that the spot width is no more than 80 mV (1.6 divisions) peak-peak (see Table 4-8).
- Change the following 370A setting:  

|                |      |
|----------------|------|
| MAX PEAK VOLTS | 2000 |
|----------------|------|
- CHECK that the spot width is no more than 400 mV (8 divisions) peak-peak (see Table 4-8).

**Checking Noise at BASE/EMITTER VOLTS**

h. Change the following 370A setting:

|                    |                |
|--------------------|----------------|
| MAG X10            | On             |
| HORIZONTAL         | 5 mV           |
|                    | BASE/EMITTER   |
| STEP GEN           |                |
| NUMBER OF STEPS    | 0              |
| CONFIGURATION      | BASE OPEN(EXT) |
| LEFT-RIGHT-STANDBY | LEFT           |

i. Connect a 1 M $\Omega$  resistor between LEFT BASE and LEFT EMITTER. Close protective cover.

j. CHECK that the spot width is no more than 10 mV (2 minor divisions) peak-peak (see Table 4-8).

k. Change the following 370A setting:

|                |     |
|----------------|-----|
| MAX PEAK VOLTS | 400 |
|----------------|-----|

l. CHECK that the spot width is no more than 10 mV (2 minor divisions) peak-peak (see Table 4-8), for each setting of the MAX PEAK VOLTS.

**Removing Setup**

m Disconnect the resistor.

## ■ E. VERTICAL

Equipment Required (see Table 4-3):

- Calibrator (Precision Voltage and Current Source)
- Resistor: 2.5 MΩ, 0.1 %, 0.5W
- Resistor: 250 kΩ, 0.1 %, 0.5W
- Resistor: 25 MΩ, 0.1 %, 0.5W
- Resistor: 0.025 Ω, 0.1 %, 4W



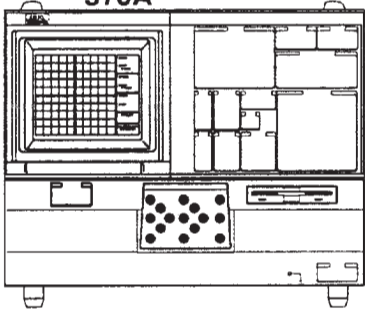
### E1. Adjusting V Balance (A10R250)

**IMPORTANT:**

The characteristics examined in this step are provided as examples of typical instrument operation to aid in the adjustment of R250; they are not specifications.

**E1 SETUP CONDITIONS**

**370A**



370A settings:  
Initialize the 370A; then set the following controls as indicated.

|                         |               |
|-------------------------|---------------|
| <b>COLLECTOR SUPPLY</b> |               |
| POLARITY                | AC            |
| MAG X10                 | On            |
| <b>CURSOR</b>           |               |
| Mode                    | DOT           |
| LEFT-RIGHT-STANDBY      | LEFT or RIGHT |
| Protective Cover        | Closed        |
| OUTPUTS                 | ENABLED       |

### Determining if Adjustment is Necessary

- a. Rotate the LOOPING COMPENSATION control fully clockwise, then counterclockwise.
- b. EXAMINE the vertical CURSOR readout for a reading less than 60 mA.

If the readout is not within these limits, the following adjustment is necessary.

### Adjusting V Balance

**NOTE**

See Test Point and Adjustment Locations 2 in Section 7 for the location of the adjustment for this step.

- c. ADJUST V Balance adjustment R250 on the A10 Sense Board; for a vertical CURSOR readout to 0 mA.

The adjustment is accessible through the right lower rail cutout.



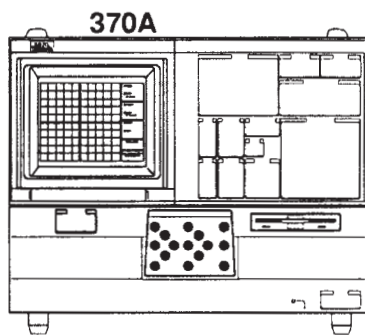


## E2. Adjusting Looping Balance (A10R238)

### IMPORTANT:

The characteristics examined in this step are provided as examples of typical instrument operation to aid in the adjustment of R238; they are not specifications.

### E2 SETUP CONDITIONS



### 370A settings:

Initialize the 370A; then set the following controls as indicated.

#### COLLECTOR SUPPLY

|                    |               |
|--------------------|---------------|
| POLARITY           | AC            |
| MAG X10            | On            |
| CURSOR             |               |
| Mode               | DOT           |
| LEFT-RIGHT-STANDBY | LEFT or RIGHT |
| Protective Cover   | Closed        |
| OUTPUTS            | ENABLED       |

### Determining if Adjustment is Necessary

- Set the LOOPING COMPENSATION control fully clockwise, then counterclockwise.
- Note the vertical CURSOR readout.
- Set the LOOPING COMPENSATION control fully clockwise.
- Note the vertical CURSOR readout.
- EXAMINE the difference of the vertical CURSOR readout between noted part b and d.

If the difference of readout is not within 20 mA, the following adjustment may be necessary.

It is not specification.

### Adjusting Looping Compensation

#### NOTE

See Test Point and Adjustment Locations 2 in Section 7 for the location of the adjustment associated with this step.

- ADJUST Looping Balance adjustment R238 on the A10 Sense Board for a vertical CURSOR readout as noted in part b. Return the LOOPING COMPENSATION control to fully counterclockwise.



### E3. Adjusting Leakage Compensation (A10R270)

**IMPORTANT:**

The characteristics examined in this step are provided as examples of typical instrument operation to aid in the adjustment of R270; they are not specifications.

**E3 SETUP CONDITIONS**

**370A**

370A settings:  
Initialize the 370A; then set the following controls as indicated.

|                         |              |
|-------------------------|--------------|
| <b>COLLECTOR SUPPLY</b> |              |
| POLARITY                | +LEAKAGE     |
| <b>DISPLAY</b>          |              |
| VERTICAL                |              |
| CURRENT/DIV             | 1 nA EMITTER |
| <b>CURSOR</b>           |              |
| Mode                    | DOT          |
| <b>POSITION</b>         |              |
| Mode                    | DISPLAY      |
| <b>OUTPUTS</b>          |              |
|                         | ENABLED      |
| Protective cover        | Closed       |

#### Determining if Adjustment is Necessary

- a. Press the up Position Control button to position the dot center horizontal graticule line.
- b. EXAMINE the vertical CURSOR readout for a reading within 1.00 nA.

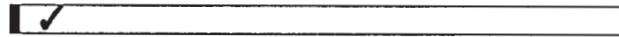
If the readout is not within these limits, the following adjustment may be necessary. Otherwise, proceed to the next step.

#### Adjusting Leakage Compensation

**NOTE**

See Test Point and Adjustment Locations 2 in Section 7 for the location of the adjustment associated with this step.

- c. ADJUST Leakage Compensation adjustment R270 on the A10 Sense Board; for a Vertical CURSOR readout of 0.00 nA.



## E4. Checking vertical MAG X10 Accuracy

### Specification:

- OFFSET with MAG set to x10 is accurate to within (1.5% of the readout +0.3 division of the setting).

### Checking vertical MAG X10 Accuracy

- CHECK that the difference between vertical CURSOR readout and Digital Multimeter reading is within  $\pm 0.3$  mA.
- Change the following 370A setting

#### STEP GENERATOR

OFFSET                    -100.0 mA  
Use the OPPOSE button to set the STEP GENERATOR OFFSET readout.

POSITION                Use the "down" Position control button to set the spot near the vertical center.

- CHECK that the difference between the vertical CURSOR readout and the Digital Multimeter reading is within  $\pm 1.8$  mA.

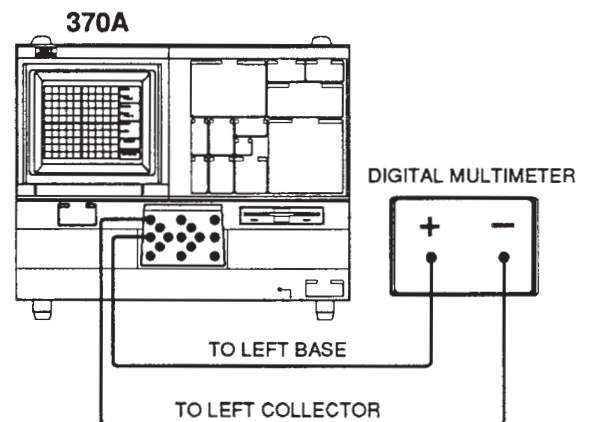
### Removing the Setup

- Change the following 370A setting:

LEFT-RIGHT-STANDBY    STANDBY

- Remove the digital multimeter leads from the 370A.

### E4 SETUP CONDITIONS



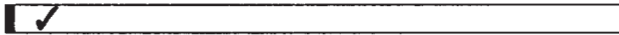
### 370A settings:

Initialize the 370A; then set the following controls as indicated.

|                    |                |
|--------------------|----------------|
| COLLECTOR SUPPLY   |                |
| POLARITY           | AC             |
| MAX PEAK POWER     |                |
| WATTS              | 220            |
| MAGX10             | On             |
| DISPLAY            |                |
| HORIZONTAL         | 50 V COLLECTOR |
| VERTICAL           | 1 mA COLLECTOR |
| STEP GENERATOR     |                |
| Mode               | CURRENT        |
| STEP AMPLITUDE     | 10 mA          |
| NUMBER OF STEPS    | 0              |
| CURSOR             | DOT            |
| POSITION           |                |
| Mode               | DISPLAY        |
| LEFT-RIGHT-STANDBY | LEFT           |
| OUTPUTS            | ENABLED        |
| Protective Cover   | Closed         |

### Test Equipment setting:

Digital Multimeter  
ModeDC                    Current



### E5. Checking EMITTER CURRENT Accuracy and Range in STORE Mode

Specifications:

- STORE mode EMITTER CURRENT/DIV settings are accurate to within 1.5 % of the readout + 0.05 division of the setting + 1 nA.
- The range of STORE mode EMITTER CURRENT/DIV settings is between 1 nA/division and 2 mA/division in a 1-2-5 sequence of 20 steps.

#### Checking 1 nA to 5 nA with 25 MΩ

- CONNECT A 25 MΩ resistor to the Left Base and Left Emitter jacks, then close the protective cover.
- CHECK that the vertical CURSOR readout is within the limits listed in Table 4-9 for each combination of VERTICAL CURRENT/DIV and Calibrator settings for 25 MΩ of resistance.

#### Checking 10 nA to 50 nA with 2.5 MΩ

- Change the following 370A setting:
 

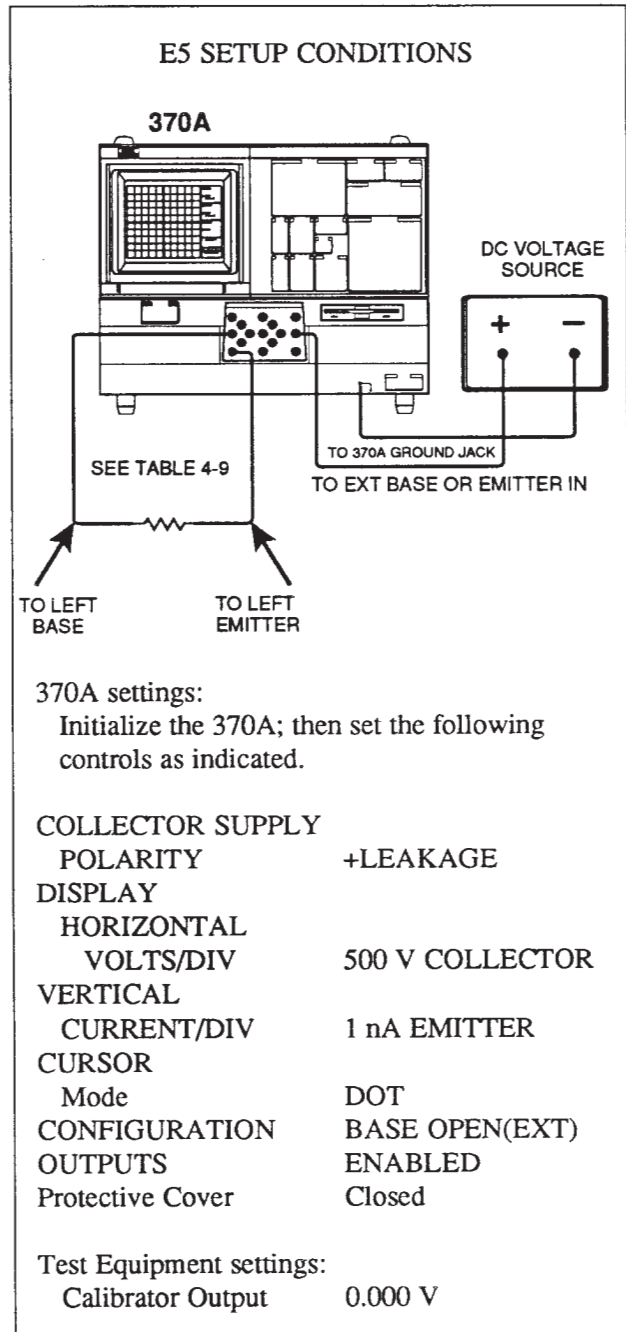
|                  |      |
|------------------|------|
| Protective Cover | Open |
|------------------|------|
- Connect the 2.5 MΩ resistor to the Left Base and Left Emitter jacks.
- Change the following 370A setting:
 

|                  |        |
|------------------|--------|
| Protective Cover | Closed |
|------------------|--------|
- CHECK that the vertical CURSOR readout is within the limits listed in Table 4-9 for each combination of VERTICAL CURRENT/DIV and Calibrator settings for 2.5 MΩ of resistance.

#### Checking 100 nA to 500 nA with 250 kΩ

- Change the following 370A setting:
 

|                  |      |
|------------------|------|
| Protective Cover | Open |
|------------------|------|



- Connect the 250 kΩ resistor to the Left Base and Left Emitter jacks.
- Change the following 370A setting:
 

|                  |        |
|------------------|--------|
| Protective Cover | Closed |
|------------------|--------|

- j. CHECK that the vertical CURSOR readout is within the limits listed in Table 4-9 for each combination of VERTICAL CURRENT/DIV and Calibrator settings for 250 k $\Omega$  of resistance.

### Removing the Setup

- k. Change the following 370A setting:

LEFT-RIGHT-STANDBY      STANDBY

- l. Disconnect the voltage source and resistor from the 370A.

**Table 4-9**  
**Emitter Current Accuracy**

| Resistor       | VERTICAL CURRENT/DIV Setting | Calibrator DC Voltage | Vertical CURSOR Readout                 |
|----------------|------------------------------|-----------------------|---|
| 25 M $\Omega$  | 1 nA                         | 0.000 V<br>0.500 V    | 0.00 $\pm$ 1.05 nA<br>8.80 to 11.20 nA  |
|                | 2 nA                         | 0.000 V<br>1.000 V    | 0.00 $\pm$ 1.10 nA<br>18.60 to 21.40 nA |
|                | 5 nA                         | 0.000 V<br>2.500 V    | 0.00 $\pm$ 1.25 nA<br>48.00 to 52.00 nA |
| 2.5 M $\Omega$ | 10 nA                        | 0.000 V<br>0.500 V    | 0.0 $\pm$ 1.5 nA<br>97.0 to 103.0 nA    |
|                | 20 nA                        | 0.000 V<br>1.000 V    | 0.0 $\pm$ 2.0 nA<br>195.0 to 205.0 nA   |
|                | 50 nA                        | 0.000 V<br>2.500 V    | 0.0 $\pm$ 3.5 nA<br>489.0 to 511.0 nA   |
| 250 k $\Omega$ | 100 nA                       | 0.000 V<br>0.500 V    | 0 $\pm$ 6 nA<br>979 to 1021 nA          |
|                | 200 nA                       | 0.000 V<br>1.000 V    | $\pm$ 10 nA<br>1960 to 2040 nA          |
|                | 500 nA                       | 0.000 V<br>2.500 V    | 0 $\pm$ 25 nA<br>4900 to 5100 nA        |



### E6a. Checking COLLECTOR CURRENT Accuracy and Range in STORE Mode

Specifications:

- STORE mode COLLECTOR CURRENT/DIV settings are accurate to within 1.5 % of the readout + 0.05 division of the setting.
- The range of STORE mode COLLECTOR CURRENT/DIV settings is from 1  $\mu$ A/division to 2 A/division in a 1-2-5 sequence of 20 steps.

**E6a SETUP CONDITIONS**

370A

DC CURRENT SOURCE

TO LEFT COLLECTOR

TO LEFT EMITTER

370A settings:

Initialize the 370A; then set the following controls as indicated.

|                                 |                     |
|---------------------------------|---------------------|
| <b>DISPLAY</b>                  |                     |
| VERTICAL CURRENT/DIV            | 1 $\mu$ A COLLECTOR |
| HORIZONTAL VOLTS/DIV            | 500 V COLLECTOR     |
| <b>COLLECTOR SUPPLY</b>         |                     |
| POLARITY                        | -                   |
| MAX PEAK POWER WATTS            | 220                 |
| <b>CURSOR</b>                   |                     |
| Mode                            | DOT                 |
| LEFT-RIGHT-STANDBY              | LEFT                |
| Protective Cover                | OPEN                |
| <b>Test Equipment settings:</b> |                     |
| Calibrator Output               | 0.00 A              |

a. CHECK that each setting of the VERTICAL CURRENT/DIV control listed in Table 4-10 produces a vertical CURSOR readout within the limits given for a Calibrator setting of 0.00  $\mu$ A (open circuit).

b. Change the following test equipment setting:

|                   |               |
|-------------------|---------------|
| Calibrator Output | 10.00 $\mu$ A |
|-------------------|---------------|

c. CHECK that each combination of VERTICAL CURRENT/DIV and Calibrator settings listed in Table 4-10 produces a vertical CURSOR readout within the given limits.

#### Removing the Setup

d. Change the following Test Equipment setting:

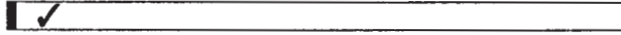
|                   |              |
|-------------------|--------------|
| Calibrator Output | 0.00 $\mu$ A |
|-------------------|--------------|

e. Disconnect the DC current source from the 370A.

f. Close the Protective Cover.

**Table 4-10**  
**Collector Current Accuracy**

| VERTICAL CURRENT/DIV | Calibrator DC Current | Vertical CURSOR READOUT  | VERTICAL CURRENT/DIV | Calibrator DC Current | Vertical CURSOR READOUT |
|----------------------|-----------------------|--------------------------|----------------------|-----------------------|-------------------------|
| 1 $\mu$ A            | 0.00 $\mu$ A          | $\pm 0.05 \mu$ A         | 10 mA                | 0.00 $\mu$ A          | $\pm 0.5$ mA            |
|                      | 10.00 $\mu$ A         | -9.80 to -10.20 $\mu$ A  |                      | 100.0 mA              | -98.0 to -102.0 mA      |
| 2 $\mu$ A            | 0.00 $\mu$ A          | $\pm 0.10 \mu$ A         | 20 mA                | 0.00 $\mu$ A          | $\pm 1.0$ mA            |
|                      | 20.00 $\mu$ A         | -19.60 to -20.40 $\mu$ A |                      | 200.0 mA              | -196.0 to -204.0 mA     |
| 5 $\mu$ A            | 0.00 $\mu$ A          | $\pm 0.25 \mu$ A         | 50 mA                | 0.00 $\mu$ A          | $\pm 2.5$ mA            |
|                      | 50.00 $\mu$ A         | -49.00 to -51.00 $\mu$ A |                      | 500.0 mA              | -490.0 to -510.0 mA     |
| 10 $\mu$ A           | 0.00 $\mu$ A          | $\pm 0.5 \mu$ A          | 100 mA               | 0.00 $\mu$ A          | $\pm 5$ mA              |
|                      | 100.00 $\mu$ A        | -98.0 to -102.0 $\mu$ A  |                      | 1000 mA               | -980 to -1020 mA        |
| 20 $\mu$ A           | 0.00 $\mu$ A          | $\pm 1.0 \mu$ A          | 200 mA               | 0.00 $\mu$ A          | $\pm 10$ mA             |
|                      | 200.00 $\mu$ A        | -196.0 to -204.0 $\mu$ A |                      | 1999 mA               | -1960 to -2040 mA       |
| 50 $\mu$ A           | 0.00 $\mu$ A          | $\pm 2.5 \mu$ A          | 500 mA               | 0.00 $\mu$ A          | $\pm 25$ mA             |
|                      | 500.00 $\mu$ A        | -490.0 to -510.0 $\mu$ A |                      | 1999 mA               | 1945 to -2055 mA        |
| 100 $\mu$ A          | 0.00 $\mu$ A          | $\pm 5 \mu$ A            | 1 A                  | 0.00 $\mu$ A          | $\pm 0.05$ A            |
|                      | 1000 $\mu$ A          | -980 to -1020 $\mu$ A    |                      | 1.999 A               | -1.92 to -2.08 A        |
| 200 $\mu$ A          | 0.00 $\mu$ A          | $\pm 10 \mu$ A           | 2 A                  | 0.00 $\mu$ A          | $\pm 0.10$ A            |
|                      | 2000 $\mu$ A          | -1960 to -2040 $\mu$ A   |                      | 1.999 A               | -1.87 to -2.13 A        |
| 500 $\mu$ A          | 0.00 $\mu$ A          | $\pm 25 \mu$ A           |                      |                       |                         |
|                      | 5000 $\mu$ A          | -4900 to -5100 $\mu$ A   |                      |                       |                         |
| 1 mA                 | 0.00 $\mu$ A          | $\pm 0.05$ mA            |                      |                       |                         |
|                      | 10.00 mA              | -9.80 to -10.20 mA       |                      |                       |                         |
| 2 mA                 | 0.00 $\mu$ A          | $\pm 0.10$ mA            |                      |                       |                         |
|                      | 20.00 mA              | -19.60 to -20.40 mA      |                      |                       |                         |
| 5 mA                 | 0.00 $\mu$ A          | $\pm 0.25$ mA            |                      |                       |                         |
|                      | 50.00 mA              | -49.00 to -51.00 mA      |                      |                       |                         |



### E6b. Checking COLLECTOR CURRENT Accuracy for 500 mA/DIV through 2 A/DIV (Alternate Method)

Specification:

- STORE mode COLLECTOR CURRENT/DIV, MAG mode X10 settings are accurate to within 1.5 % of readout + 0.3 division of setting.

NOTE

This step is recommended for full scale measurement of CURRENT/DIV settings greater than 500 mA/DIV.

**E6b SETUP CONDITIONS**

**370A settings:**  
Initialize the 370A; then set the following controls as indicated.

|                    |                  |
|--------------------|------------------|
| DISPLAY            |                  |
| VERTICAL           |                  |
| CURRENT/DIV        | 500 mA COLLECTOR |
| HORIZONTAL         |                  |
| VOLTS/DIV          | 50 mV COLLECTOR  |
| COLLECTOR SUPPLY   |                  |
| POLARITY           | + DC             |
| MAX PEAK POWER     |                  |
| VOLTS              | 400              |
| CURSOR             |                  |
| Mode               | DOT              |
| POSITION           |                  |
| Mode               | DISPLAY          |
| LEFT-RIGHT-STANDBY | LEFT             |
| OUT PUT            | ENABLED          |
| Protective Cover   | Open             |

**Test Equipment settings:**  
Calibrator Output      125 mV



**Checking Accuracy**

a. Move the spot to the graticule center with the Position Control buttons.

b. Change the following 370A setting:

MAG X10            On

c. Note the Horizontal CURSOR readout.

d. Change the following Test equipment and 370A settings:

Calibrator  
Output            250 mV

370A  
MAG X10            Off  
POSITION            Move the spot to the graticule center with the Position Control buttons.

e. Change the following 370A setting:

370A  
MAG X10            On

f. Note the Horizontal CURSOR readout.

g. Change the following Test Equipment and 370A settings:

Calibrator  
Output            Standby

370A  
MAG X10            Off  
COLLECTOR SUPPLY    16  
MAX PEAK VOLTS      220  
MAX PEAK POWER  
WATTS  
POSITION            Simultaneously press the up and down Position Control buttons, then simultaneously press the left and right Position Control buttons.

h. Disconnect the Calibrator.

i. Connect the 0.025 Ω resistor as shown in Figure 4-3, then close the Protective Cover.

j. Change the following 370A setting:

VARIABLE  
COLLECTOR SUPPLY    Clockwise until the Horizontal CURSOR readout to about 125 mV.

k. Move the spot to the graticule center with the Position Control buttons.

l. Change the following 370A setting:

MAG X10            On  
VARIABLE  
COLLECTOR SUPPLY    Set so the Horizontal CURSOR readout is nearest that noted in part c.

Difference value should be within 0.5 mV.

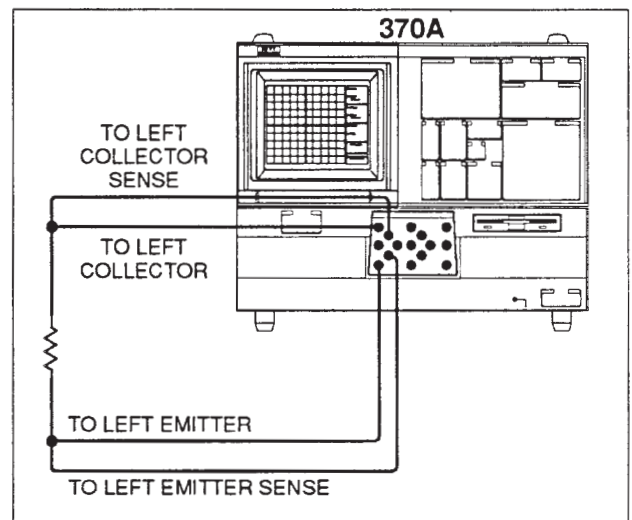


Figure 4-3. Checking Collector high current range.

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- m. CHECK that the Vertical CURSOR readout is within the limits given in Table 4-11 for 50 mA/DIV.

**Table 4-11  
Collector High Current Accuracy**

| VERTICAL CURRENT/DIV Setting | Calibrator DC Voltage | Vertical CURSOR Readout |
|------------------------------|-----------------------|-------------------------|
| 50 mA/DIV                    | 125 mV                | 4910 to 5090 mA         |
| 100 mA/DIV                   | 250 mV                | 9820 to 10180 mA        |
| 200 mA/DIV                   | 250 mV                | 9790 to 10210 mA        |

**Checking 1 A/DIV Accuracy**

- n. Change the following 370A settings:

MAG X10 POSITION Off  
 Simultaneously press the up and down Position Control buttons, then simultaneously press the left and right Position Control buttons.

DISPLAY VERTICAL CURRENT/DIV VARIABLE COLLECTOR SUPPLY 1 A COLLECTOR  
 Clockwise until the Horizontal CURSOR readout to about 250 mV.

- o. Move the spot to the graticule center with the Position Control buttons.

- p. Change the following 370A settings:

MAG X10 VARIABLE COLLECTOR SUPPLY On  
 Set so the Horizontal CURSOR readout is nearest that noted in part f.

Difference value should be within 0.5 mV.

**Checking 2 A/DIV Accuracy**

- q. Change the following 370A settings:

MAG X10 DISPLAY VERTICAL CURRENT/DIV POSITION Off  
 2 A COLLECTOR  
 Move the spot to the graticule center with the Position Control buttons.

- r. Change the following 370A settings:

MAG X10 VARIABLE COLLECTOR SUPPLY On  
 Set so the Horizontal CURSOR readout is nearest that noted in part f.

Difference value should be within 0.5 mV.

- s. CHECK that the Vertical CURSOR readout is within the limits given in Table 4-11 for 200 mA/DIV when the Horizontal CURSOR readout is the same as that in part f.

**Removing the Setup**

- t. Change the following 370A setting:

LEFT-RIGHT-STANDBY STANDBY

- u. Open the Protective Cover.

- v. Remove the resistor.



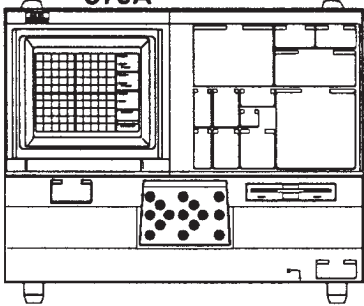
## E7. Checking Vertical Displayed Noise

**Specifications:**

- Collector and Base Current Mode Vertical Displayed noise are accurate to within 1  $\mu\text{A}$  at 16 V and 80 V, 2  $\mu\text{A}$  at 400 V, 5  $\mu\text{A}$  at 2000 V MAX PEAK VOLTS setting, except for switching noise at + and - mode.
- Emitter Current Mode Vertical Displayed noise are accurate to within 1 nA at 16 V and 80 V, 2 nA at 400 V, 5 nA at 2000 V MAX PEAK VOLTS setting.

**E7 SETUP CONDITIONS**

**370A**



370A settings:  
Initialize the 370A; then set the following controls as indicated.

|                           |                           |
|---------------------------|---------------------------|
| DISPLAY Mode              | NON STORE                 |
| VERTICAL CURRENT/DIV      | 1 $\mu\text{A}$ COLLECTOR |
| POSITION Mode             | DISPLAY                   |
| OUTPUTS                   | ENABLED                   |
| VARIABLE COLLECTOR SUPPLY | 100 %                     |
| Protective Cover          | Closed                    |

### Checking Collector Vertical Displayed Noise In CONFIGURATION COLLECTOR to COLLECTOR SUPPLY mode

- Press the up Position Control button to move the displayed waveform to center graticule.
- Set the front-panel LOOPING COMPENSATION to minimum looping.
- CHECK that vertical width of the displayed waveform is within the limits given in Table 4-12 for each combination of settings for the MAX PEAK VOLTS and the HORIZONTAL VOLTS/DIV controls with the 100 % of VARIABLE COLLECTOR SUPPLY setting.

**Table 4-12**  
Displayed Vertical Collector Noise In CONFIGURATION COLLECTOR to COLLECTOR SUPPLY mode

| COLLECTOR SUPPLY MAX PEAK VOLTS | HORIZONTAL COLLECTOR VOLTS/DIV Setting | Vertical width of the waveform |
|---------------------------------|--|--------------------------------|
| 16                              | 2 V/DIV                                | 1 $\mu\text{A}$ (1 div)        |
| 80                              | 10 V/DIV                               | 1 $\mu\text{A}$ (1 div)        |
| 400                             | 50 V/DIV                               | 2 $\mu\text{A}$ (2 div)        |
| 2000                            | 500 V/DIV                              | 5 $\mu\text{A}$ (5 div)        |

### Checking Collector Vertical Displayed Noise in CONFIGURATION BASE to COLLECTOR SUPPLY mode

- Change the following 370A setting:
 

|               |                       |
|---------------|-----------------------|
| CONFIGURATION | BASE COLLECTOR SUPPLY |
|---------------|-----------------------|
- Set the front-panel LOOPING COMPENSATION to minimum looping.

**370A Service Manual**

- f. CHECK that vertical width of the displayed waveform is within the limits given in Table 4-13 for each combination of settings for the MAX PEAK VOLTS and the HORIZONTAL VOLTS/DIV controls with the 100 % of VARIABLE COLLECTOR SUPPLY setting.

**Table 4-13**  
**Displayed Vertical Collector Noise in CONFIGURATION BASE to COLLECTOR SUPPLY mode**

| COLLECTOR SUPPLY MAX PEAK VOLTS | HORIZONTAL COLLECTOR VOLTS/DIV Setting | Vertical width of the waveform |
|---------------------------------|--|--------------------------------|
| 16                              | 2 V/DIV                                | 1 $\mu$ A (1 div)              |
| 80                              | 10 V/DIV                               | 1 $\mu$ A (1 div)              |
| 400                             | 50 V/DIV                               | 2 $\mu$ A (2 div)              |

**Table 4-14**  
**Displayed Vertical Emitter Noise**

| COLLECTOR SUPPLY MAX PEAK VOLTS | HORIZONTAL COLLECTOR VOLTS/DIV Setting | Vertical width of the waveform |
|---------------------------------|--|--------------------------------|
| 16                              | 2 V/DIV                                | 1 nA (1 div)                   |
| 80                              | 10 V/DIV                               | 1 nA (1 div)                   |
| 400                             | 50 V/DIV                               | 2 nA (2 div)                   |
| 2000                            | 500 V/DIV                              | 5 nA (5 div)                   |

**Checking Emitter Vertical Displayed Noise**

- g. Change the following 370A settings:

```

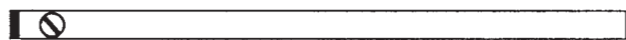
CONFIGURATION   BASE STEP GEN
COLLECTOR SUPPLY
POLARITY        +LEAKAGE
MAX PEAK POWER
WATTS           220
MAX PEAK VOLTS  16
DISPLAY
HORIZONTAL
VOLTS/DIV       2 V COLLECTOR
    
```

- h. CHECK that vertical width of the displayed waveform is within the limits given in Table 4-14 for each combination of settings for the MAX PEAK VOLTS and the HORIZONTAL VOLTS/DIV controls with the 100 % of VARIABLE COLLECTOR SUPPLY setting.

## F. STEP GENERATOR

Equipment Required (see Table 4-3):

- Digital Multimeter
- Resistor, 1 MΩ, 5 %, 0.5 W
- Resistor, 100 Ω, 5%, 0.5 W
- Resistor, 0.025 ohm, 0.1%, 4 W



### F1. Adjusting .1X Balance (A3R332) and Step Generator Offset (A3R360)

**IMPORTANT:**

The characteristic examined in this step is provided as an example of typical instrument operation to aid in the adjustment of R332,R360 ; it is not a specification.

**F1 SETUP CONDITIONS**  
**370A**

370A settings:  
Initialize the 370A; then set the following controls as indicated.

|                         |              |
|-------------------------|--------------|
| <b>COLLECTOR SUPPLY</b> |              |
| POLARITY                | AC           |
| <b>STEP GENERATOR</b>   |              |
| Mode                    | VOLTAGE      |
| STEP MULTI .1X          | On           |
| STEP AMPLITUDE          | 200 mV       |
| NUMBER OF STEPS         | 0            |
| MAG X10                 | On           |
| <b>DISPLAY</b>          |              |
| HORIZONTAL              | 5 mV         |
|                         | BASE/EMITTER |
| <b>OUTPUTS</b>          |              |
| Protective Cover        | ENABLED      |
|                         | Closed       |

**NOTE**

See Test Point and Adjustment Location 1 in Section 7 for the location of the adjustment associated with this step.

### Examining and Adjusting for Zero Output Volts

- a. Note the horizontal spot position.
- b. Change the following 370A setting:

|                |     |
|----------------|-----|
| STEP GENERATOR |     |
| STEP MULTI .1X | Off |

- c. EXAMINE that the spot moves within ± 1 divisions from the noted position of step a.

If the spot is not within this limit, the following adjustment is necessary.

- d. ADJUST .1X Balance adjustment R332 on the A3 A/D board for minimum horizontal display shift, when STEP MULTI .1X is set between On and Off.

### Examining and Adjusting for Step Generator Offset

- e. Set the following Test Equipment setting:

|                    |          |
|--------------------|----------|
| Digital Multimeter |          |
| Mode               | DC Volts |

- f. Connect the Digital Multimeter between the TP310 (SG) and the TP 500(A GND) on the A3 A/D board as shown in Figure 4-4.

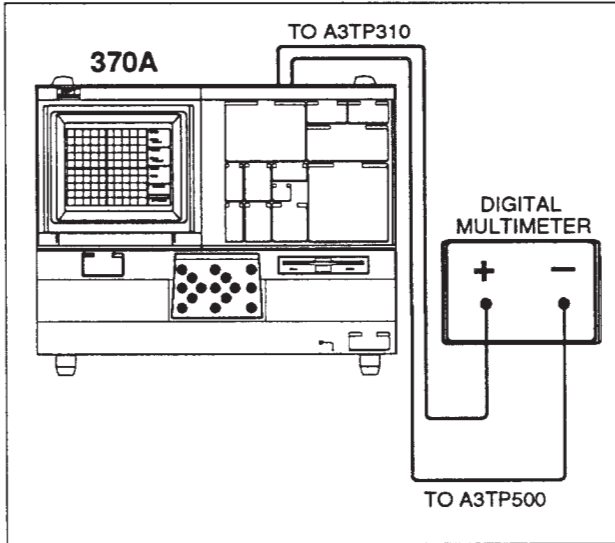


Figure 4-4. Examining and Adjusting for Step Generator Offset.

g. EXAMINE the Digital Multimeter for reading of 0 mV,  $\pm 1$  mV.

If the Digital Multimeter reading is not within this limit, the following adjustment is necessary.

h. ADJUST the Step Generator Offset adjustment R360 on the A3 A/D board for 0 mV of Digital Multimeter reading.

#### Removing Setup

i. Disconnect the Digital Multimeter from 370A.

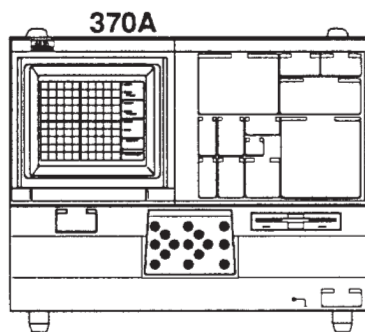


## F2. Adjusting Step Generator Zero (A7R310) Current Amplifier Bias (A7R467) Current Zero (A7R603)

### IMPORTANT:

The characteristic examined in this step is provided as an example of typical instrument operation to aid in the adjustment of R310, R467, R603; it is not a specification.

#### F2 SETUP CONDITIONS



370A settings:  
Initialize the 370A; then set the following controls as indicated.

|                  |           |
|------------------|-----------|
| COLLECTOR SUPPLY |           |
| POLARITY         | AC        |
| STEP GENERATOR   |           |
| VOLTAGE          | On        |
| STEP AMPLITUDE   | 500 mV    |
| NUMBER OF STEPS  | 0         |
| MAG X10          | On        |
| DISPLAY          |           |
| Mode             | NON STORE |
| HORIZONTAL       |           |
| VOLTS/DIV        | 5 mV      |
| OUTPUTS          |           |
| Protective Cover | Closed    |

### NOTE

See Test Point and Adjustment Location 2 in Section 7 for the location of the adjustment associated with this step.

### Examining and Adjusting for Zero Output Volts

- EXAMINE that the spot moves within  $\pm 0.5$  divisions, between the 500 mV and 200 mV of STEP AMPLITUDE setting.

If the spot is not within this limit, the following adjustment is necessary.

- Set the STEP AMPLITUDE to 200 mV, then note the spot position.
- Set the STEP AMPLITUDE to 500 mV.
- ADJUST SG ZERO adjustment R310 on the A7 Step Generator Board to the noted position of part b.

### Adjusting for Current Amplifier Bias

- Set the following 370A and Test Equipment settings:

|                    |          |
|--------------------|----------|
| STEP GENERATOR     |          |
| Mode               | CURRENT  |
| Digital Multimeter |          |
| Mode               | DC Volts |

- Connect the Digital Multimeter across R491 on the A7 Step Generator Board as shown in Figure 4-5.

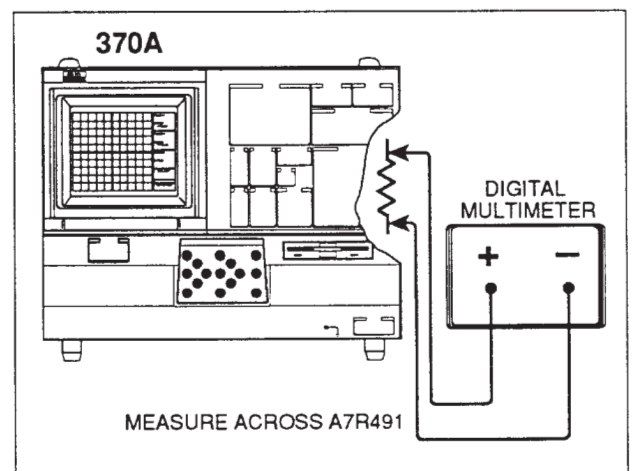


Figure 4-5. Adjusting for Current Amplifier Bias.

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### NOTE

See Test Points and Adjustment Locations 2 for the location of the adjustment made in this step.

- g. ADJUST BIAS adjustment R467 on the A7 Step Generator Board for a Digital Multimeter reading of 6 mV.

This adjustment sets bias current to the optimum level for long term reliability.

### Removing Setup

- h. Disconnect the Digital Multimeter from R491.

### Checking and Adjusting for Zero Output Current

- i. Connect the 100  $\Omega$  resistor to the Left Base and Left Emitter jacks, then close the protective cover.
- j. Change the following 370A settings:

|                    |                     |
|--------------------|---------------------|
| DISPLAY            |                     |
| HORIZONTAL         |                     |
| VOLTS/DIV          | 100 mV BASE/EMITTER |
| STEP GENERATOR     |                     |
| STEP AMPLITUDE     | 100 mA              |
| LEFT-RIGHT-STANDBY | LEFT                |

- k. Note the horizontal position of the spot.

- l. Change the following 370A settings:

|                |                    |
|----------------|--------------------|
| DISPLAY        |                    |
| HORIZONTAL     |                    |
| VOLTS/DIV      | 50 mV BASE/EMITTER |
| STEP GENERATOR |                    |
| STEP AMPLITUDE | 50 mA              |

- m. EXAMINE that the spot moves within  $\pm 0.5$  divisions, between the setting of part j and l.

If the spot is not within this limit, the following adjustment is necessary.

- n. ADJUST Current Zero adjustment R603 on the A7 Step Generator Board to move the spot one-half over the noted position of part k.
- o. If necessary, repeat steps j through n.

### Removing the Setup

- p. Remove the 100  $\Omega$  resistor.





### F3. Adjusting Current Balance (A7R325)

#### IMPORTANT:

The characteristics examined in this step is provided as an example of typical instrument operation to aid in the adjustment of R325; it is not a specification.

**F3 SETUP CONDITIONS**

**370A**

TO LEFT BASE  
PATCH CORD  
TO LEFT EMITTER

370A settings:  
Initialize the 370A; then set the following controls as indicated.

|                      |                |
|----------------------|----------------|
| COLLECTOR SUPPLY     |                |
| MAX PEAK POWER WATTS | 220            |
| STEP GENERATOR       |                |
| STEP AMPLITUDE       | 10 mA          |
| NUMBER OF STEPS      | 0              |
| PULSE                | LONG           |
| DISPLAY              |                |
| VERTICAL             |                |
| CURRENT/DIV          | 1 mA COLLECTOR |
| CURSOR               | DOT            |
| POSITION             | DISPLAY        |
| OUTPUTS              | ENABLED        |
| LEFT-RIGHT-STANDBY   | LEFT           |
| Protective Cover     | Closed         |

#### NOTE

See Test Point and Adjustment Location 2 in Section 7 for the location of the adjustment associated with this step.

#### Examining for Current Balance

- a. Move the spot to vertical graticule center while pressing the "up" Position Control button.
- b. Note the vertical CURSOR readout.
- c. Turn the VARIABLE COLLECTOR SUPPLY for a horizontal cursor readout of 10.00 V.
- d. EXAMINE the vertical CURSOR readout for the difference in value from part c is between 0.00 and 0.30 mA.

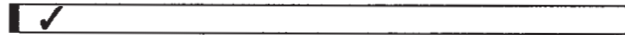
If it is not within this limit, the following adjustment is necessary.

#### Adjusting for Current Balance

- e. Adjust R325 on A7 Step Generator board to the value noted in part c.

#### Removing the Setup

- f. Remove the patch cord.

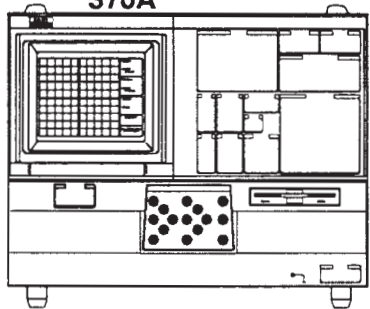


## F4. Checking VOLTAGE Mode Ripple and Noise

Specifications:

- Voltage Mode Ripple and Noise is less than 0.5 % of the STEP AMPLITUDE setting +10 mV.

**F4 SETUP CONDITIONS**  
**370A**



370A settings:  
Initialize the 370A: then set the following controls as indicated.

|                  |              |
|------------------|--------------|
| COLLECTOR SUPPLY |              |
| POLARITY         | AC           |
| STEP GENERATOR   |              |
| Mode             | VOLTAGE      |
| STEP AMPLITUDE   | 50 mV        |
| NUMBER OF STEPS  | 0            |
| OFFSET           | 500 mV       |
| DISPLAY          |              |
| Mode             | NON STORE    |
| HORIZONTAL       |              |
| VOLTS/DIV        | 50 mV        |
| POSITION         | BASE/EMITTER |
| OUTPUTS          | DISPLAY      |
| Protective Cover | ENABLED      |
|                  | Closed       |

### Checking Ripple and Noise

- Move the spot to the graticule center with the left Position Control button, then press the MAG X10 button to On.
- CHECK that the spot width is within 2 horizontal divisions.
- Change the following 370A settings:
 

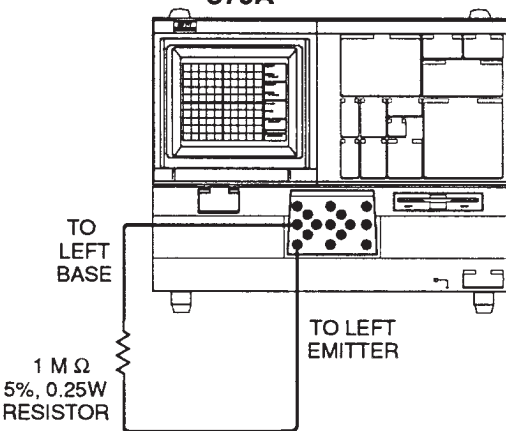
|                 |     |
|-----------------|-----|
| MAG X10         | Off |
| STEP GENERATOR  |     |
| POLARITY INVERT | On  |
- Move the spot to the graticule center with the right Position Control button then press the MAG X10 button to On.
- CHECK that the spot width is within 2 horizontal divisions.

## F5. Checking CURRENT Mode Ripple and Noise

### Specifications:

- Current Mode Ripple and Noise is less than 0.5 % of the STEP AMPLITUDE setting + 10 nA.

**F5 SETUP CONDITIONS**



**370A**

TO LEFT BASE

TO LEFT EMITTER

1 MΩ  
5%, 0.25W  
RESISTOR

370A settings:  
Initialize the 370A; then set the following controls as indicated.

|                         |              |
|-------------------------|--------------|
| <b>COLLECTOR SUPPLY</b> |              |
| POLARITY                | AC           |
| <b>STEP GENERATOR</b>   |              |
| Mode                    | CURRENT      |
| STEP AMPLITUDE          | 50 nA        |
| NUMBER OF STEPS         | 0            |
| OFFSET                  | 500 nA       |
| <b>DISPLAY</b>          |              |
| Mode                    | NON STORE    |
| HORIZONTAL              |              |
| VOLTS/DIV               | 50 mV        |
| POSITION                | BASE/EMITTER |
| LEFT-RIGHT-STANDBY      | LEFT         |
| OUTPUTS                 | ENABLED      |
| Protective Cover        | Closed       |

### Checking Ripple and Noise

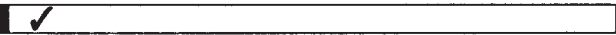
- Move the spot to the graticule center with the left Position Control button then press the MAG X10 button to On.
- CHECK that the spot width is within 2 horizontal divisions.
- Change the following 370A settings:
 

|                 |     |
|-----------------|-----|
| MAG X10         | Off |
| STEP GENERATOR  |     |
| POLARITY INVERT | On  |
- Move the spot to the graticule center with the right Position Control button then press the MAG X10 button to On.
- CHECK that the spot width is within 2 horizontal divisions.

### Removing setup

- Change the following 370A setting:
 

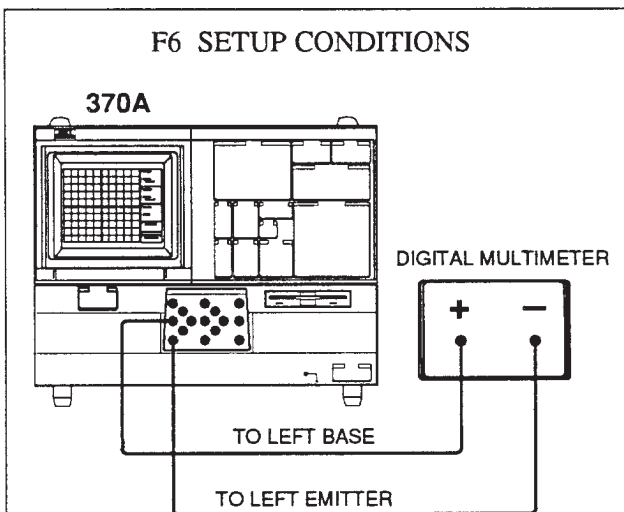
|                    |      |
|--------------------|------|
| LEFT-RIGHT-STANDBY | LEFT |
|--------------------|------|
- Remove the 1 MΩ resistor.



## F6. Checking OFFSET Accuracy in VOLTAGE Mode

Specification:

- Absolute accuracy is less than (1.5 % of the total output + 3 % of the STEP AMPLITUDE setting + 1 mV).
- OFFSET Control Range is variable from -10 times to + 10 times the STEP AMPLITUDE setting.
- AMPLITUDE Range is 50 mV to 2 V in a 1-2-5 sequence of 6 steps.



370A settings:  
Initialize the 370A; then set the following controls as indicated.

- |                    |                  |
|--------------------|------------------|
| DISPLAY            |                  |
| HORIZONTAL         |                  |
| VOLTS/DIV          | 5 V BASE/EMITTER |
| STEP GENERATOR     |                  |
| Mode               | VOLTAGE          |
| STEP AMPLITUDE     | 1 V              |
| NUMBER OF STEPS    | 0                |
| COLLECTOR SUPPLY   |                  |
| POLARITY           | AC               |
| LEFT-RIGHT-STANDBY | LEFT             |
| OUTPUTS            | ENABLED          |
| Protective Cover   | Closed           |

Test Equipment settings:  
Digital Multimeter:  
Mode DC Voltage

## Checking OFFSET resolution

- CHECK that the readings on the Digital Multimeter correspond to the accuracy values listed in Table 4-15, when changing the STEP GENERATOR OFFSET settings.

**Table 4-15**  
**OFFSET Resolution**

| STEP GENERATOR OFFSET | Accuracy          |
|-----------------------|-------------------|
| 0.00 V                | 0 mV ± 30 mV      |
| 0.01 V                | 10 mV ± 30 mV     |
| 0.02 V                | 20 mV ± 30 mV     |
| 0.04 V                | 40 mV ± 31 mV     |
| 0.08 V                | 80 mV ± 31 mV     |
| 0.16 V                | 160 mV ± 32 mV    |
| 0.32 V                | 320 mV ± 35 mV    |
| 0.64 V                | 640 mV ± 40 mV    |
| 1.28 V                | 1.280 V ± 0.049 V |
| 2.56 V                | 2.560 V ± 0.068 V |
| 5.12 V                | 5.120 V ± 0.107 V |

## Checking Zero OFFSET without INVERT

- Change the following 370A settings:

- |                    |        |
|--------------------|--------|
| STEP GENERATOR     |        |
| STEP AMPLITUDE     | 50 mV  |
| OFFSET             | 0.0 mV |
| LEFT-RIGHT-STANDBY | LEFT   |

- CHECK that the digital multimeter measurement is within the limits shown in Table 4-16 under No OFFSET for each setting of the STEP AMPLITUDE control.

**Checking Zero OFFSET Within INVERT**

- d. Change the following 370A setting:

STEP GENERATOR  
POLARITY INVERT            On

The indicator above the INVERT button will light up.

- e. CHECK that the digital multimeter measurement is within the limits shown in Table 4-16 under No OFFSET for each setting of the STEP AMPLITUDE control.

**Checking Maximum OFFSET with INVERT**

- f. Change the following 370A settings:

STEP GENERATOR  
STEP AMPLITUDE            50 mV  
OFFSET AID                    -500 mV

- g. CHECK that the Digital Multimeter measurement is within the limits shown in Table 4-16 under Maximum OFFSET for each setting of the STEP AMPLITUDE control.

**Checking Maximum OFFSET without INVERT**

- h. Change the following 370A setting:

STEP GENERATOR  
POLARITY INVERT            Off

The INVERT indicator will go out.

- i. CHECK that the digital multimeter measurement is within the limits shown in Table 4-16 under Maximum OFFSET for each setting of the STEP AMPLITUDE control.

**Table 4-16**  
**OFFSET Voltage**

| STEP AMPLITUDE | Digital Multimeter Reading (Zero OFFSET) | Digital Multimeter Reading (Max OFFSET) |
|----------------|--|---|
| 50 mV          | $0.0 \pm 2.5$ mV                         | $\pm 490$ to $\pm 510$ mV               |
| 100 mV         | $0.0 \pm 4$ mV                           | $\pm 981$ to $\pm 1019$ mV              |
| 200 mV         | $0.0 \pm 7$ mV                           | $\pm 1963$ to $\pm 2037$ mV             |
| 500 mV         | $0.0 \pm 16$ mV                          | $\pm 4909$ to $\pm 5091$ mV             |
| 1 V            | $0.0 \pm 31$ mV                          | $\pm 9.82$ to $\pm 10.18$ V             |
| 2 V            | $0.0 \pm 61$ mV                          | $\pm 19.64$ to $\pm 20.36$ V            |

**Removing the Setup**

- j. Change the following 370A setting:

LEFT-RIGHT-STANDBY    STANDBY

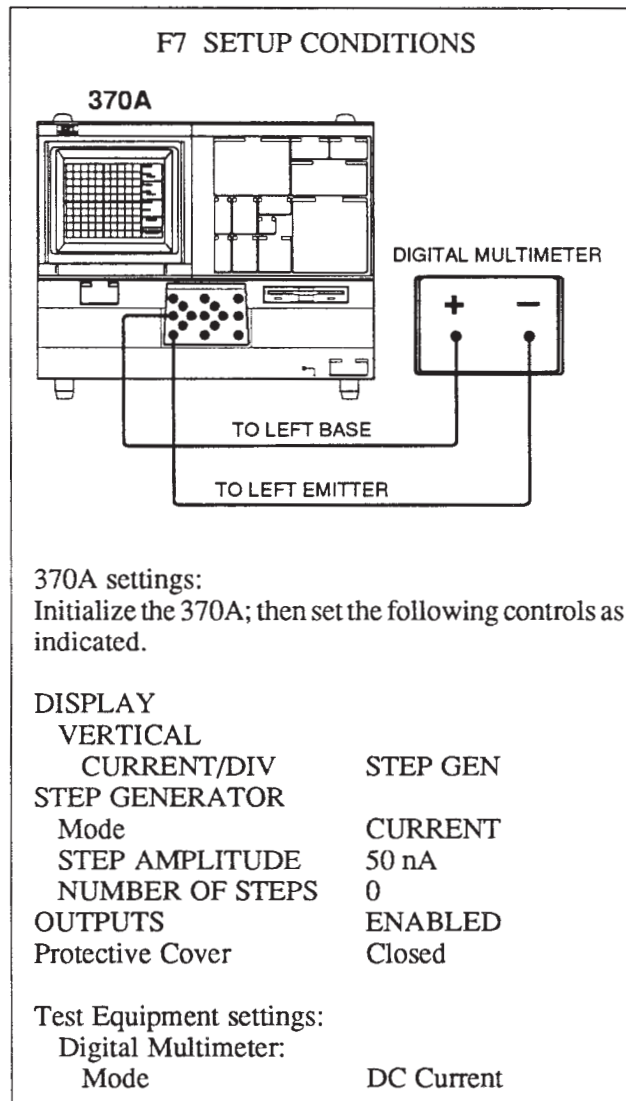
- k. Remove the digital multimeter leads from the 370A.



## F7. Checking OFFSET Accuracy in CURRENT Mode

### Specifications:

- Absolute Accuracy is less than (1.5 % of the total output + 3 % of the STEP AMPLITUDE setting + 1 nA).
- OFFSET Control Range is variable from -10 times to + 10 times the STEP AMPLITUDE setting.
- AMPLITUDE Range is 50 nA to 200 mA in a 1-2-5 sequence of 21 steps.



### NOTE

Before checking these parameters, note the count error of the Digital Multimeter and subtract it from the reading obtained in the procedure.

Use a TEKTRONIX DM501A for measuring the 200 mA range.

### Checking Zero OFFSET without INVERT

- a. Change the following 370A setting:

LEFT-RIGHT-STANDBY    LEFT

- b. CHECK that the digital multimeter measurement is within the limits shown in Table 4-17 under No OFFSET for each setting of the STEP AMPLITUDE control.

### Checking Zero OFFSET Within INVERT

- c. Change the following 370A setting:

STEP GENERATOR  
POLARITY INVERT        On

The indicator above the INVERT button will light up.

- d. CHECK that the digital multimeter measurement is within the limits shown in Table 4-17 under No OFFSET for each setting of the STEP AMPLITUDE control.

### Checking Maximum OFFSET with INVERT

- e. Change the following 370A settings:

STEP GENERATOR  
STEP AMPLITUDE        50 nA  
OFFSET AID                -500 nA

- f. CHECK that the Digital Multimeter measurement is within the limits shown in Table 4-17 under Maximum OFFSET for each setting of the STEP AMPLITUDE control.

### Checking Maximum OFFSET without INVERT

g. Change the following 370A setting:

STEP GENERATOR  
POLARITY INVERT            Off

The INVERT indicator will go out.

h. CHECK that the digital multimeter measurement is within the limits shown in Table 4-17 under Maximum OFFSET for each setting of the STEP AMPLITUDE control.

### Removing the Setup

i. Change the following 370A setting:

LEFT-RIGHT-STANDBY    STANDBY

j. Remove the Digital Multimeter.

### Alternate Method

k. Change the following Test Equipment setting:

Digital Multimeter  
Mode                                    Volts

l. Connect a 0.025  $\Omega$  Resistor to the Left Base jack (B) to the Left Emitter jack (E) and connect the Digital Multimeter to the leads of the Resistor as shown in Figure 4-6.

**Table 4-17**  
**OFFSET Current**

| STEP AMPLITUDE Setting ( $\pm$ ) | Digital Multimeter Reading Limits with zero OFFSET ( $\pm$ ) | Digital Multimeter Reading Limits with max OFFSET ( $\pm$ ) |
|----------------------------------|--|---|
| 50 nA                            | 0 $\pm$ 2.5 nA   | 490 nA to 510 nA  |
| 100 nA                           | 0 $\pm$ 4 nA   | 981 nA to 1019 nA   |
| 200 nA                           | 0 $\pm$ 7 nA   | 1963 nA to 2037 nA  |
| 500 nA                           | 0 $\pm$ 16 nA  | 4909 nA to 5091 nA  |
| 1 $\mu$ A                        | 0 $\pm$ 31 nA  | 9.82 $\mu$ A to 10.18 $\mu$ A                               |
| 2 $\mu$ A                        | 0 $\pm$ 61 nA  | 19.64 $\mu$ A to 20.36 $\mu$ A                              |
| 5 $\mu$ A                        | 0 $\pm$ 0.15 $\mu$ A   | 49.1 $\mu$ A to 50.9 $\mu$ A                                |
| 10 $\mu$ A                       | 0 $\pm$ 0.3 $\mu$ A  | 98.2 $\mu$ A to 101.8 $\mu$ A                               |
| 20 $\mu$ A                       | 0 $\pm$ 0.6 $\mu$ A  | 196.4 $\mu$ A to 203.6 $\mu$ A                              |
| 50 $\mu$ A                       | 0 $\pm$ 1.5 $\mu$ A  | 491 $\mu$ A to 509 $\mu$ A                                  |
| 100 $\mu$ A                      | 0 $\pm$ 3 $\mu$ A  | 982 $\mu$ A to 1018 $\mu$ A                                 |
| 200 $\mu$ A                      | 0 $\pm$ 6 $\mu$ A  | 1964 $\mu$ A to 2036 $\mu$ A                                |
| 500 $\mu$ A                      | 0 $\pm$ 15 $\mu$ A   | 4910 $\mu$ A to 5090 $\mu$ A                                |
| 1 mA                             | 0 $\pm$ 30 $\mu$ A   | 9.82 mA to 10.18 mA   |
| 2 mA                             | 0 $\pm$ 60 $\mu$ A   | 19.64 mA to 20.36 mA  |
| 5 mA                             | 0 $\pm$ 150 $\mu$ A  | 49.1 mA to 50.9 mA  |
| 10 mA                            | 0 $\pm$ 0.3 mA   | 98.2 mA to 101.8 mA   |
| 20 mA                            | 0 $\pm$ 0.6 mA   | 196.4 mA to 203.6 mA  |
| 50 mA                            | 0 $\pm$ 1.5 mA   | 491 mA to 509 mA  |
| 100 mA                           | 0 $\pm$ 3 mA   | 982 mA to 1018 mA   |
| 200 mA                           | 0 $\pm$ 6 mA   | 1974 mA to 2036 mA  |

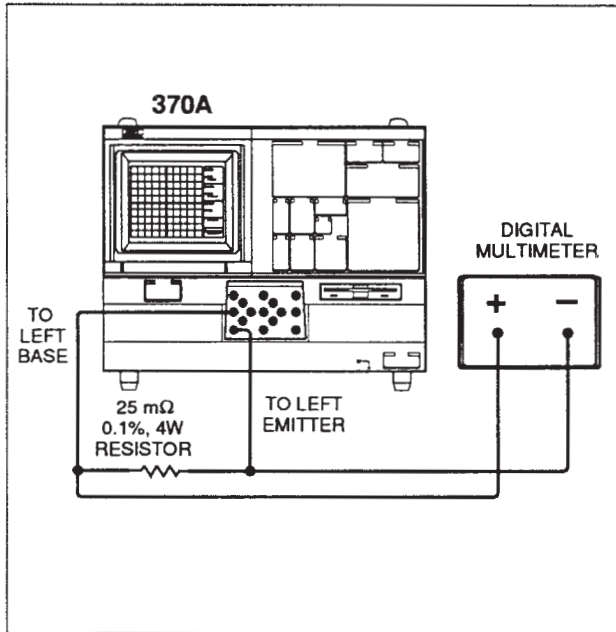


Figure 4-6. Checking for Maximum OFFSET of 200 mA Range.

n. CHECK the digital multimeter for a reading between 49.1 mV to 50.9 mV.

o. Change the following 370A setting:

STEP GENERATOR                      Off  
POLARITY INVERT                      Off

p. CHECK that the Digital Multimeter readout is -49.1 mV to -50.9 mV.

**Removing Setup**

q. Change the following 370A setting:

LEFT-RIGHT-STANDBY      STANDBY

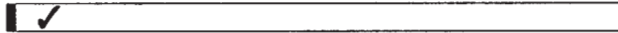
r. Remove the Digital Multimeter.

**Checking Maximum OFFSET of 200 mA Range**

m. Change the following 370A settings:

|                 |         |
|-----------------|---------|
| STEP GENERATOR  |         |
| POLARITY INVERT | Off     |
| STEP AMPLITUDE  | 200 mA  |
| OFFSET          | 2000 mA |





## F8. Checking Step Incremental Accuracy in VOLTAGE Mode

### Specifications:

- Absolute accuracy of the Step Generator is less than 1.5 % of the output voltage +3 % of the STEP AMPLITUDE setting + 1 mV.
- Incremental accuracy is 1.5 %.

### NOTE

See Test Point and Adjustment Locations 1 for the location of the circuit board and jumper associated with this step.

### Moving the Store/Non-Store Jumper

- a. Change the following 370A setting:

POWER                      OFF

- b. Remove the A3 A/D Board from the card cage located on the right side of the 370A.

See Test Point and Adjustment Locations 1 for the location of A3 and jumper J34. For details on removing and replacing Plug-In Boards, see the instructions under "Component Removal and Replacement" in Section 3, Maintenance.

- c. Change the position of Jumper J34 from pins 1-2 to pins 2-4 (CAL position).

When the jumper is moved from pins 1-2 to pins 2-4, STORE Mode is disabled.

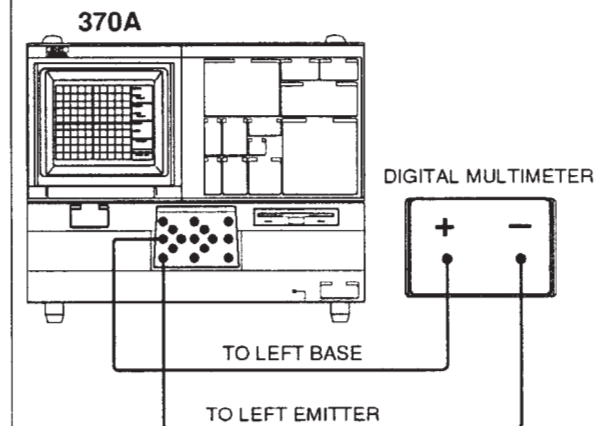
- d. Replace the A3 A/D Board in the 370A card cage. Do not re-install the circuit board retainers.

- e. Change the following 370A setting:

POWER                      ON

- f. Press the up and right Position Control buttons to moved the displayed spot to the graticule center (V:5.0 H:5.0).

### F8 SETUP CONDITIONS



### 370A settings:

Set the following controls as indicated.

|                    |                  |
|--------------------|------------------|
| DISPLAY            |                  |
| Mode               | NON STORE        |
| HORIZONTAL         |                  |
| VOLTS/DIV          | 2 V BASE/EMITTER |
| COLLECTOR SUPPLY   |                  |
| POLARITY           | + DC             |
| STEP GENERATOR     |                  |
| Mode               | VOLTAGE          |
| NUMBER OF STEPS    | 10               |
| STEP AMPLITUDE     | 1 V              |
| POSITION           | DISPLAY          |
| LEFT-RIGHT-STANDBY | LEFT             |
| OUTPUTS            | ENABLED          |
| Protective Cover   | Closed           |

### Test Equipment settings:

|                    |            |
|--------------------|------------|
| Digital Multimeter |            |
| Mode               | DC Voltage |

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**Checking Step 0 and 1**

f. CHECK that the digital multimeter reading is 0.000 V ± 31 mV (as shown in Table 4-18).

g. Change the following 370A setting:

**MEASUREMENT** Press the **MEASUREMENT REPEAT** button to move the displayed spot 0.5 division to the right.

h. CHECK that the digital multimeter reading is 1.000 V ± 46 mV and that the reading for Step 1 differs from the reading for Step 0 by 1.000 V ± 15 mV (as shown in Table 4-18).

**Checking Steps 2 through 10**

i. CHECK that for each time the spot is advanced 0.5 division with the **MEASUREMENT REPEAT** button, the new digital multimeter reading and the voltage difference from the previous reading are within the limits given in Table 4-18.

**Checking INVERT**

j. Change the following 370A setting:

**STEP GENERATOR**  
**POLARITY INVERT** On

Step Generator output should be automatically return to Step 0.

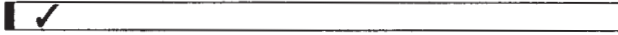
k. CHECK **STEP GENERATOR** step accuracy for **INVERT** by repeating parts f through i (For **INVERT**, the spot will move in the opposite direction).

**IMPORTANT:**

If steps F 9, F10, F11, F12 and F13 will not be performed, complete the instructions given under Replacing the Store/Non-Store Jumper, at the end of Step F13, before proceeding to another step or ending the procedure.

**Table 4-18**  
**Incremental Accuracy in Voltage Mode**

| Step | Digital Multimeter Reading (±) | Difference between Adjacent Steps (±) |
|------|--------------------------------|---------------------------------------|
| 0    | -31 to 31 mV                   | 1.000 V ± 15 mV                       |
| 1    | 0.954 V to 1.046 V             |                                       |
| 2    | 1.939 V to 2.061 V             | 1.000 V ± 15 mV                       |
| 3    | 2.924 V to 3.076 V             | 1.000 V ± 15 mV                       |
| 4    | 3.909 V to 4.091 V             | 1.000 V ± 15 mV                       |
| 5    | 4.894 V to 5.106 V             | 1.000 V ± 15 mV                       |
| 6    | 5.879 V to 6.121 V             | 1.000 V ± 15 mV                       |
| 7    | 6.864 V to 7.136 V             | 1.000 V ± 15 mV                       |
| 8    | 7.849 V to 8.151 V             | 1.000 V ± 15 mV                       |
| 9    | 8.834 V to 9.166 V             | 1.000 V ± 15 mV                       |
| 10   | 9.819 V to 10.181 V            | 1.000 V ± 15 mV                       |



## F9. Checking Step Multi .1X Accuracy in VOLTAGE Mode

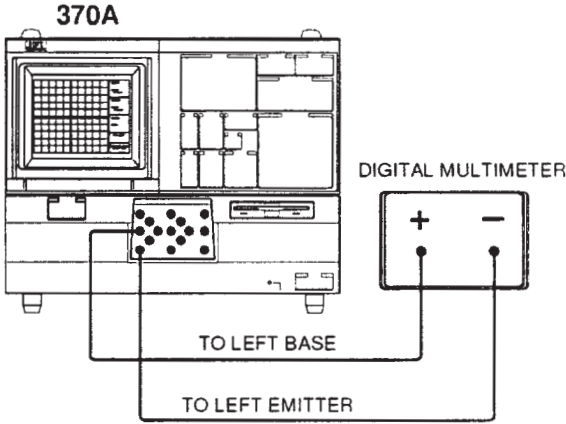
### Specification:

- Accuracy with STEP MULTI .1X pressed is less than (1.5 % of total output + 10 % of the STEP AMPLITUDE setting + 1 mV).
- Incremental accuracy is 1.5 %.

### IMPORTANT:

If the previous step was not performed, complete the instructions given under Moving the Store/Non-Store Jumper, at the beginning of Step F8, before proceeding with this step.

**F9 SETUP CONDITIONS**



**370A settings:**  
Initialize the 370A; then set the following controls as indicated.

|                         |                  |
|-------------------------|------------------|
| <b>DISPLAY</b>          |                  |
| Mode                    | NON STORE        |
| HORIZONTAL              |                  |
| VOLTS/DIV               | 2 V BASE/EMITTER |
| <b>COLLECTOR SUPPLY</b> |                  |
| POLARITY                | + DC             |
| <b>STEP GENERATOR</b>   |                  |
| Mode                    | VOLTAGE          |
| NUMBER OF STEPS         | 10               |
| STEP AMPLITUDE          | 1 V              |
| POSITION                | DISPLAY          |
| LEFT-RIGHT-STANDBY      | LEFT             |
| OUTPUTS                 | ENABLED          |
| Protective Cover        | Closed           |

**Test equipment settings:**

|                           |            |
|---------------------------|------------|
| <b>Digital Multimeter</b> |            |
| Mode                      | DC voltage |

Press the up and right Position Control buttons to move the displayed spot to the graticule center (V:5.0 H:50).

### Checking Step 0 and 1

- a. Change the following 370A settings:

|                       |    |
|-----------------------|----|
| <b>STEP GENERATOR</b> |    |
| STEP MULTI .1X        | On |
| MAG X10               | On |

- b. CHECK the digital multimeter for a reading of 0.00 mV  $\pm$  11 mV (as shown in Table 4-19 for Step 0).

**370A Service Manual**

c. Change the following 370A setting:

**MEASUREMENT** Press the REPEAT button to move the spot 0.5 division to the right.

d. CHECK the digital multimeter for a reading of  $100\text{ mV} \pm 12.5\text{ mV}$  and that the reading for Step 1 differs from the reading for Step 0 by  $100\text{ mV} \pm 1.5\text{ mV}$  (as shown in Table 4-19 for Step 1).

**Checking Steps 2 through 10**

c. CHECK that for each time the spot is advanced 0.5 division with the MEASUREMENT REPEAT button, the new digital multimeter reading and the voltage difference from the previous reading are within the limits given in Table 4-19.

**Checking INVERT**

f. Change the following 370A setting:

**STEP GENERATOR**  
**POLARITY INVERT** On

Step Generator output should be automatically return to Step 0.

g. CHECK STEP GENERATOR step accuracy for INVERT by repeating parts b through e (For INVERT, the spot will move in the opposite direction).

**IMPORTANT:**

If steps F10, F11, F12 and F13 will not be performed, complete the instructions given under Replacing the Store/Non-Store Jumper, at the end of Step F13, before proceeding to another step or ending the procedure.

**Table 4-19**  
**Incremental .1X Accuracy in Voltage Mode**

| Step | Digital Multimeter Reading | Difference between Adjacent Steps |
|------|----------------------------|-----------------------------------|
| 0    | -11.5 mV to 11.5 mV        | $100\text{ mV} \pm 1.5\text{ mV}$ |
| 1    | 87.5 mV to 112.5 mV        |                                   |
| 2    | 186.0 mV to 214.0 mV       | $100\text{ mV} \pm 1.5\text{ mV}$ |
| 3    | 284.5 mV to 315.5 mV       | $100\text{ mV} \pm 1.5\text{ mV}$ |
| 4    | 383.0 mV to 417.0 mV       | $100\text{ mV} \pm 1.5\text{ mV}$ |
| 5    | 481.5 mV to 518.5 mV       | $100\text{ mV} \pm 1.5\text{ mV}$ |
| 6    | 580.0 mV to 620.0 mV       | $100\text{ mV} \pm 1.5\text{ mV}$ |
| 7    | 678.5 mV to 721.5 mV       | $100\text{ mV} \pm 1.5\text{ mV}$ |
| 8    | 777.0 mV to 823.0 mV       | $100\text{ mV} \pm 1.5\text{ mV}$ |
| 9    | 875.5 mV to 924.5 mV       | $100\text{ mV} \pm 1.5\text{ mV}$ |
| 10   | 974.0 mV to 1026.0 mV      | $100\text{ mV} \pm 1.5\text{ mV}$ |



## F10. Checking Step Incremental Accuracy in CURRENT Mode

### Specifications:

- Absolute Accuracy is less than (1.5 % of the total output + 3 % of the STEP AMPLITUDE setting + 1 nA).
- Incremental Accuracy is 1.5 %.

### IMPORTANT:

If previous step was not performed, complete the instruction given under Moving the Store/Non-Store Jumper, at the beginning of Step F8, before proceeding with this step.

**F10 SETUP CONDITIONS**

**370A settings:**  
Initialize the 370A; then set the following controls as indicated.

|                         |           |
|-------------------------|-----------|
| <b>DISPLAY</b>          |           |
| Mode                    | NON STORE |
| VERTICAL                |           |
| CURRENT /DIV            | STEP GEN  |
| <b>COLLECTOR SUPPLY</b> |           |
| POLARITY                | +DC       |
| <b>STEP GENERATOR</b>   |           |
| Mode                    | CURRENT   |
| STEP AMPLITUDE          | 1 mA      |
| NUMBER OF STEPS         | 10        |
| LEFT-RIGHT-STANDBY      | LEFT      |
| OUTPUTS                 | ENABLED   |
| Protective Cover        | Closed    |

**Test equipment settings:**

|                    |            |
|--------------------|------------|
| Digital Multimeter |            |
| Mode               | DC Current |

### Checking Accuracy of Steps 0 and 1

- CHECK that the digital multimeter reading is 0 mA,  $\pm 0.03$  mA.
- Press MEASUREMENT REPEAT once. Note that the displayed spot moves one division higher.
- CHECK that the digital multimeter reading is between 0.955 and 1.045 mA and the difference between Step 0 and Step 1 is 1 mA  $\pm 0.015$  mA.

**Checking Accuracy of Steps 2 through 10**

- d. CHECK that each time MEASUREMENT REPEAT is pressed the displayed spot moves one division higher and the new digital multimeter current reading is within the limits given in Table 4-20.

**Table 4-20  
Incremental Accuracy in Current Mode**

| Step | Digital Multimeter Reading | Difference between Adjacent Steps |
|------|----------------------------|-----------------------------------|
| 0    | 0.000 mA ± 0.030 mA        | 1.000 mA ± 0.015 mA               |
| 1    | 0.955 mA to 1.045 mA       |                                   |
| 2    | 1.94 mA to 2.06 mA         | 1.000 mA ± 0.015 mA               |
| 3    | 2.92 mA to 3.08 mA         | 1.000 mA ± 0.015 mA               |
| 4    | 3.91 mA to 4.09 mA         | 1.000 mA ± 0.015 mA               |
| 5    | 4.90 mA to 5.11 mA         | 1.000 mA ± 0.015 mA               |
| 6    | 5.88 mA to 6.12 mA         | 1.000 mA ± 0.015 mA               |
| 7    | 6.86 mA to 7.14 mA         | 1.000 mA ± 0.015 mA               |
| 8    | 7.85 mA to 8.15 mA         | 1.000 mA ± 0.015 mA               |
| 9    | 8.83 mA to 9.17 mA         | 1.000 mA ± 0.015 mA               |
| 10   | 9.82 mA to 10.18 mA        | 1.000 mA ± 0.015 mA               |

**IMPORTANT:**

If step F11,F12 and F13 will not be performed, complete the instructions given under Replacing the Store/Non-Store Jumper, at the end of Step F13 before proceeding to another step or ending the procedure.

**Removing Setup**

- f. Change the following 370A setting:

LEFT-RIGHT-STANDBY    STANDBY

- g. Remove the Digital Multimeter.



## F11. Checking Step Multi .1X Accuracy in CURRENT Mode

### Specifications:

- Accuracy with STEP MULTI .1X pressed is less than (1.5 % of the total output + 10 % of the STEP AMPLITUDE setting + 1 nA).
- Incremental Accuracy is 1.5 %.

### IMPORTANT:

If previous step was not performed, complete the instructions given under Moving the Store/Non-Store Jumper, at the beginning of Step F8, before proceeding with this step.

**F11 SETUP CONDITIONS**

**370A**

**DIGITAL MULTIMETER**

TO LEFT BASE

TO LEFT EMITTER

**370A settings:**  
Initialize the 370A; then set the following controls as indicated.

|                       |           |
|-----------------------|-----------|
| <b>DISPLAY</b>        |           |
| Mode                  | NON STORE |
| VERTICAL              |           |
| CURRENT /DIV          | STEP GEN  |
| COLLECTOR SUPPLY      |           |
| POLARITY              | + DC      |
| <b>STEP GENERATOR</b> |           |
| Mode                  | CURRENT   |
| STEP MULTI .1X        | On        |
| STEP AMPLITUDE        | 1 mA      |
| NUMBER OF STEPS       | 10        |
| MAG X10               | On        |
| POSITION              | DISPLAY   |
| LEFT-RIGHT-STANDBY    | LEFT      |
| OUTPUTS               | ENABLED   |
| Protective Cover      | Closed    |

**Test equipment settings:**

|                    |            |
|--------------------|------------|
| Digital Multimeter |            |
| Mode               | DC Current |

**Checking Accuracy of Steps 0 and 1**

- a. Press the up and right Position Control buttons to position the spot on the bottom horizontal graticule line (V:45 H:50).
- b. CHECK that the digital multimeter reading is 0 mA,  $\pm 0.1$  mA.
- c. Press MEASUREMENT REPEAT once. Note that the displayed spot moves one division higher.
- d. CHECK that the digital multimeter reading is between 0.885 and 1.115 mA and the difference between Step 0 and Step 1 is  $1 \text{ mA} \pm 0.015 \text{ mA}$ .

**Checking Accuracy of Steps 2 through 10**

- c. CHECK that each time MEASUREMENT REPEAT is pressed the displayed spot moves one division higher and the new digital multimeter current reading is within the limits given in Table 4-21.

**Table 4-21  
Incremental .1X Accuracy in Current Mode**

| Step | Digital Multimeter Reading | Difference between Adjacent Steps |
|------|----------------------------|-----------------------------------|
| 0    | -0.100 mA $\pm$ 0.100 mA   | 1.000 mA $\pm$ 0.015 mA           |
| 1    | 0.885 mA to 1.115 mA       |                                   |
| 2    | 1.870 mA to 2.130 mA       | 1.000 mA $\pm$ 0.015 mA           |
| 3    | 2.855 mA to 3.145 mA       | 1.000 mA $\pm$ 0.015 mA           |
| 4    | 3.840 mA to 4.160 mA       | 1.000 mA $\pm$ 0.015 mA           |
| 5    | 4.825 mA to 5.175 mA       | 1.000 mA $\pm$ 0.015 mA           |
| 6    | 5.810 mA to 6.190 mA       | 1.000 mA $\pm$ 0.015 mA           |
| 7    | 6.795 mA to 7.205 mA       | 1.000 mA $\pm$ 0.015 mA           |
| 8    | 7.780 mA to 8.220 mA       | 1.000 mA $\pm$ 0.015 mA           |
| 9    | 8.765 mA to 9.235 mA       | 1.000 mA $\pm$ 0.015 mA           |
| 10   | 9.750 mA to 10.250 mA      | 1.000 mA $\pm$ 0.015 mA           |

**IMPORTANT:**

If step F12 and F13 will not be performed, complete the instructions given under Replacing the Store/Non-Store Jumper, at the end of Step F13 before proceeding to another step or ending the procedure.

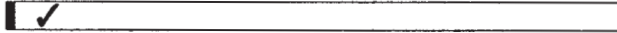
**Removing Setup**

- g. Change the following 370A setting:

LEFT-RIGHT-STANDBY    STANDBY

- h. Remove the Digital Multimeter.





## F12. Checking Maximum Voltage Output in VOLTAGE Mode

### Specifications:

- Absolute accuracy of the Step Generator is less than 1.5 % of the output voltage +3 % of the STEP AMPLITUDE setting + 1 mV.
- Maximum voltage output is 20 times the STEP AMPLITUDE setting.
- STEP AMPLITUDE control range is 50 mV to 2 V in a 1-2-5 sequence of 6 steps.

### IMPORTANT:

If previous step was not performed, complete the instructions given under Moving the Store/Non-Store Jumper, at the beginning of Step F8, before proceeding with this step.

**F12 SETUP CONDITIONS**

370A settings:  
Initialize the 370A; then set the following controls as indicated.

|                    |           |
|--------------------|-----------|
| DISPLAY            |           |
| Mode               | NON STORE |
| HORIZONTAL         |           |
| VOLTS/DIV          | STEP GEN  |
| COLLECTOR SUPPLY   |           |
| POLARITY           | + DC      |
| STEP GENERATOR     |           |
| Mode               | VOLTAGE   |
| STEP AMPLITUDE     | 50 mV     |
| NUMBER OF STEPS    | 10        |
| OFFSET             | 500 mV    |
| POSITION           | DISPLAY   |
| LEFT-RIGHT-STANDBY | LEFT      |
| OUTPUTS            | ENABLED   |
| Protective Cover   | Closed    |

Test equipment settings:

|                    |            |
|--------------------|------------|
| Digital Multimeter |            |
| Mode               | DC Voltage |

### Checking Maximum Voltage

- Simultaneously press the FAST/SHIFT and left Position Control buttons to move the displayed spot to the left-most graticule line.

**370A Service Manual**

b. Change the following 370A setting:

**MEASUREMENT** Press the REPEAT button several times to move the displayed spot to the right-most graticule line.

The Digital Multimeter reading should be approximately 1.000 V.

c. Check that the digital multimeter reading is between 0.983 and 1.017 V (see Table 4-22).

**Table 4-22  
Maximum Voltage Output**

| STEP AMPLITUDE | Digital Multimeter Reading (±) |
|----------------|--------------------------------|
| 50 mV          | 0.983 to 1.017 V               |
| 100 mV         | 1.966 to 2.034 V               |
| 200 mV         | 3.933 to 4.067 V               |
| 500 mV         | 9.834 to 10.166 V              |
| 1 V            | 19.67 to 20.33 V               |
| 2 V            | 39.34 to 40.66 V               |

d. Change the following 370A setting:

**STEP AMPLITUDE** Next setting (see Table 4-22).

**MEASUREMENT** Press the REPEAT button several times to move the displayed spot to the right-most graticule line.

e. CHECK that the digital multimeter is within the tolerance given for the STEP AMPLITUDE setting in Table 4-22.

f. Repeat part d and e for each STEP AMPLITUDE setting in the Table 4-22.

**Checking INVERT**

g. Press the STEP GENERATOR INVERT button to On.

Step Generator output should be automatically return to Step 0.

h. Simultaneously press the FAST/SHIFT and right Position Control buttons to move the displayed spot to the right-most graticule line.

i. Change the following 370A settings:

**STEP AMPLITUDE** 50 mV

**MEASUREMENT** Press the REPEAT button several times to move the displayed spot to the left-most graticule line.

The Digital Multimeter reading should be approximately 1.000 V.

j. Check that the digital multimeter reading is between 0.983 and 1.017 V (see Table 4-22).

k. Change the following 370A settings:

**STEP GENERATOR**

**STEP AMPLITUDE** Next setting (see Table 4-22).

**MEASUREMENT** Press the REPEAT button several times to move the displayed spot to the left-most graticule line.

l. CHECK that the digital multimeter is within the tolerance given for the STEP AMPLITUDE setting in Table 4-22.

m. Repeat k and l for each STEP AMPLITUDE setting in the Table 4-22.

### Removing the Setup

n. Change the following 370A setting:

LEFT-RIGHT-STANDBY    STANDBY

o. Disconnect the digital multimeter leads from the 370A.

#### IMPORTANT:

If step F13 will not be performed, complete the instructions given under Replacing the Store/Non-Store Jumper, at the end of Step F13, before proceeding to another step or ending the procedure.



### F13. Checking Maximum Current Output in CURRENT Mode

Specification:

- Absolute Accuracy is less than (1.5 % of the total output + 3 % of the STEP AMPLITUDE setting + 1 nA).
- Maximum current output is 20 times the STEP AMPLITUDE setting, except at 200 mA, where it is 10 times the setting.

**IMPORTANT:**

If the previous step was not performed, complete the instructions given under Moving the Store/Non-Store Jumper, at the beginning of Step F8, before proceeding with this step.

**F13 SETUP CONDITIONS**

**370A**

**DIGITAL MULTIMETER**

TO LEFT BASE

TO LEFT EMITTER

370A settings:  
Initialize the 370A; then set the following controls as indicated.

|                         |           |
|-------------------------|-----------|
| <b>DISPLAY</b>          |           |
| Mode                    | NON STORE |
| HORIZONTAL              |           |
| VOLTS/DIV               | STEP GEN  |
| <b>COLLECTOR SUPPLY</b> |           |
| POLARITY                | + DC      |
| <b>STEP GENERATOR</b>   |           |
| Mode                    | CURRENT   |
| STEP AMPLITUDE          | 50 nA     |
| NUMBER OF STEPS         | 10        |
| OFFSET                  | 500 nA    |
| POSITION                | DISPLAY   |
| LEFT-RIGHT-STANDBY      | LEFT      |
| OUTPUTS                 | ENABLED   |
| Protective Cover        | Closed    |

Test Equipment settings:  
Digital Multimeter  
Mode DC Current

**NOTE**

Before checking these parameters, note the count error of the Digital Multimeter and subtract it from the reading obtained in the procedure.

**Checking 50 nA Through 50 mA**

a. Simultaneously press the FAST/SHIFT and left Position Control buttons to move the displayed spot to the left-most graticule line.

b. Change the following 370A setting:

**MEASUREMENT** Press the REPEAT button several times to move the displayed spot to the right-most graticule line.

The Digital Multimeter reading should be approximately 1.00  $\mu\text{A}$ .

c. Check that the digital multimeter reading is between 0.983 and 1.017  $\mu\text{A}$  (see Table 4-23).

**Table 4-23**  
**Maximum Current Output**

| STEP AMPLITUDE    | Digital Multimeter            |
|-------------------|-------------------------------|
| 50 nA             | .983 to 1.017 $\mu\text{A}$   |
| 100 nA            | 1.966 to 2.034 $\mu\text{A}$  |
| 200 nA            | 3.933 to 4.067 $\mu\text{A}$  |
| 500 nA            | 9.834 to 10.166 $\mu\text{A}$ |
| 1 $\mu\text{A}$   | 19.67 to 20.33 $\mu\text{A}$  |
| 2 $\mu\text{A}$   | 39.34 to 40.66 $\mu\text{A}$  |
| 5 $\mu\text{A}$   | 98.35 to 101.65 $\mu\text{A}$ |
| 10 $\mu\text{A}$  | 196.7 to 203.3 $\mu\text{A}$  |
| 20 $\mu\text{A}$  | 393.4 to 406.6 $\mu\text{A}$  |
| 50 $\mu\text{A}$  | 983.5 to 1016.5 $\mu\text{A}$ |
| 100 $\mu\text{A}$ | 1.967 to 2.033 mA             |
| 200 $\mu\text{A}$ | 3.934 to 4.066 mA             |
| 500 $\mu\text{A}$ | 9.835 to 10.165 mA            |
| 1 mA              | 19.67 to 20.33 mA             |
| 2 mA              | 39.34 to 40.66 mA             |
| 5 mA              | 98.35 to 101.65 mA            |
| 10 mA             | 196.7 to 203.3 mA             |
| 20 mA             | 393.4 to 406.6 mA             |
| 50 mA             | 983.5 to 1016.5 mA            |
| 100 mA            | 1967 to 2033 mA               |
| 200 mA            | 1964 to 2036 mA               |

## 370A Service Manual

d. Change the following 370A settings:

|                |  |
|----------------|--|
| STEP AMPLITUDE | Next setting (see Table 4-23).   |
| MEASUREMENT    | Press the REPEAT button several times to move the displayed spot to the right-most graticule line. |

- e. CHECK that the digital multimeter is within the tolerance given for the STEP AMPLITUDE setting in Table 4-23.
- f. Repeat part d and e for each STEP AMPLITUDE setting in Table 4-23, except the 200 mA position. In the 200 mA position, set the offset to zero.

### NOTE

Use a TEKTRONIX DM501A to check the 100 mA and 200 mA ranges.

### Checking INVERT

- g. Press the STEP GENERATOR INVERT button to on.

Step Generator output should be automatically return to Step 0.

- h. Simultaneously press the FAST/SHIFT and right Position Control buttons to move the displayed spot to the right-most graticule line.

i. Change the following 370A settings:

|                |   |
|----------------|---|
| STEP AMPLITUDE | 50 nA   |
| MEASUREMENT    | Press the REPEAT button several times to move the displayed spot to the left-most graticule line. |

The Digital Multimeter reading should be approximately 1.00  $\mu$ A.

- j. Check that the digital multimeter reading is between 0.983 and 1.017  $\mu$ A (see Table 4-23).

k. Change the following 370A settings:

|                |   |
|----------------|---|
| STEP AMPLITUDE | Next setting (see Table 4-23).  |
| MEASUREMENT    | Press the REPEAT button several times to move the displayed spot to the left-most graticule line. |

- l. CHECK that the digital multimeter is within the tolerance given for the STEP AMPLITUDE setting in Table 4-23.
- m. Repeat part d and e for each STEP AMPLITUDE setting in Table 4-23, except the 200 mA position. In the 200 mA position, set the offset to zero.

### Removing the Setup

n. Change the following 370A setting:

|                    |         |
|--------------------|---------|
| LEFT-RIGHT-STANDBY | STANDBY |
|--------------------|---------|

- o. Disconnect the digital multimeter leads from the 370A.

### Alternate Method

p. Change the following 370A and Test Equipment settings:

|                 |        |
|-----------------|--------|
| STEP GENERATOR  |        |
| POLARITY INVERT | Off    |
| STEP AMPLITUDE  | 100 mA |

|                    |       |
|--------------------|-------|
| Digital Multimeter |       |
| Mode               | Volts |

- q. Connect a 0.025  $\Omega$  Resistor between the Left Base jack (B) and the Left Emitter jack (E) and connect the Digital Multimeter to the leads of the Resistor as shown in Figure 4-7.

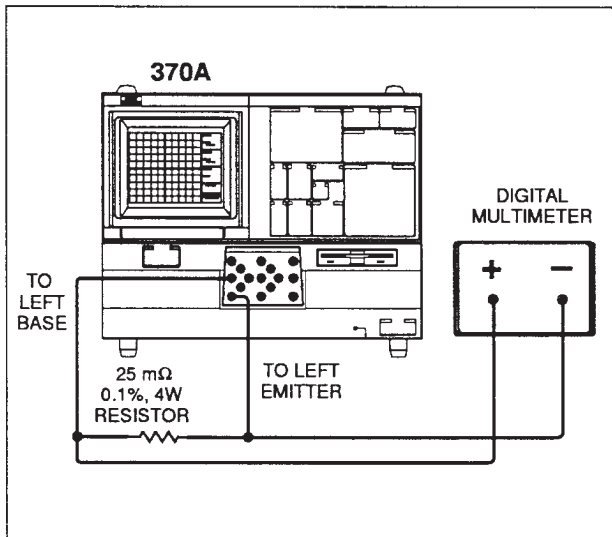


Figure 4-7. Checking for Maximum Current Output of 100 mA and 200 mA range.

#### Checking 100 mA

- r. Simultaneously press the FAST/SHIFT and left Position Control buttons to move the displayed spot to the left-most graticule line.
- s. Change the following 370A settings:

|                    |  |
|--------------------|--|
| LEFT-RIGHT-STANDBY | LEFT   |
| Protective Cover   | Closed   |
| MEASUREMENT        | Press the REPEAT button several times to move the displayed spot to the right-most graticule line. |

- t. CHECK that the Digital Multimeter readout is 49.175 mV to 50.825 mV.

#### Checking 200 mA

- u. Change the following 370A settings:

|                |  |
|----------------|--|
| STEP AMPLITUDE | 200 mA   |
| MEASUREMENT    | Press the REPEAT button several times to move the displayed spot to the right-most graticule line. |

- v. CHECK that the Digital Multimeter readout is more than 50 mV.

#### Checking -100 mA

- w. Change the following 370A settings:

|                 |        |
|-----------------|--------|
| STEP GENERATOR  |        |
| POLARITY INVERT | On     |
| STEP AMPLITUDE  | 100 mA |

- x. Simultaneously press the FAST/SHIFT and right Position Control buttons to move the displayed spot to the right-most graticule line.
- y. CHECK that the Digital Multimeter readout is -49.175 mV to -50.825 mV.

#### Checking -200 mA

- z. Change the following 370A settings:

|                |   |
|----------------|---|
| STEP AMPLITUDE | 200 mA  |
| MEASUREMENT    | Press the REPEAT button several times to move the displayed spot to the left-most graticule line. |

- aa. CHECK that the Digital Multimeter readout is more than -50 mV.

#### Removing the Setup

- ab. Change the following 370A setting:

|                    |         |
|--------------------|---------|
| LEFT-RIGHT-STANDBY | STANDBY |
|--------------------|---------|

- ac. Remove the resistor and the Digital Multimeter.

#### NOTE

Maximum 370A Step Generator current is 2 A; therefore, the 100 mA and 200 mA STEP GENERATOR STEP AMPLITUDE setting have the same performance requirement.

## 370A Service Manual

### Replacing the Store/Non-Store Jumper

ad. Change the following 370A setting:

POWER                      OFF

ae. Remove the A3 A/D Board.

See Test Point and Adjustment Locations 1 for the location of A3 and jumper J34. For details on removing and replacing Plug-in Boards, see the instructions under "Component Removal and Replacement" in Section 3, Maintenance.

af. Move jumper J34 from pins 2-4 to pins 1-2 (ZERO position).

ag. Replace the A3 A/D Board and the circuit board retainers across the top of the card cage.

ah. Change the following 370A setting:

POWER                      ON





## F14. Checking Maximum Current in VOLTAGE Mode

Specification:

- Maximum Current in Voltage Mode is 500 mA for 10 volts or less, 200 mA for 15 V, 10 mA for 40 V.

**F14 SETUP CONDITIONS**

**370A**

TO LEFT COLLECTOR

PATCH CORD

TO LEFT BASE

370A settings:  
Initialize the 370A; then set the following controls as indicated.

|                         |                |
|-------------------------|----------------|
| <b>DISPLAY</b>          |                |
| HORIZONTAL VOLTS/DIV    | 10 V COLLECTOR |
| VERTICAL CURRENT/DIV    | 5 mA COLLECTOR |
| <b>COLLECTOR SUPPLY</b> |                |
| MAX PEAK VOLTS          | 80 V           |
| MAX PEAK POWER WATTS    | 0.4            |
| POLARITY                | AC             |
| <b>STEP GENERATOR</b>   |                |
| Mode                    | VOLTAGE        |
| STEP AMPLITUDE          | 2 V            |
| NUMBER OF STEPS         | 10             |
| OFFSET                  | 20 V           |
| LEFT-RIGHT-STANDBY      | LEFT           |
| OUTPUTS                 | ENABLED        |
| Protective Cover        | Closed         |

### Checking 40 V without INVERT

- Set the VARIABLE COLLECTOR SUPPLY control so the negative travel of the outside right vertical line of the displayed waveform extends past the second horizontal graticule line below graticule center (see Figure 4-8).
- CHECK that the outside right vertical line of the displayed waveform extends past the second horizontal graticule line below graticule center.

### Checking 40 V with INVERT

- Change the following 370A setting:

STEP GENERATOR  
POLARITY INVERT      On

- CHECK that the outside left vertical line of the displayed waveform extends past the second horizontal graticule line above graticule center.

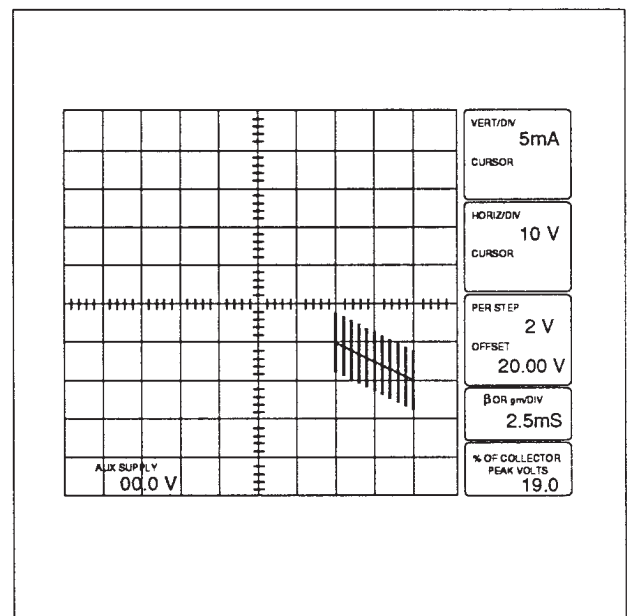


Figure 4-8. First test display for Maximum Current check, left collector and left base connected.

## 370A Service Manual

### Checking 15 V without INVERT

e. Change the following 370A settings:

DISPLAY  
 VERTICAL  
 CURRENT/DIV           100 mA COLLECTOR  
 COLLECTOR SUPPLY  
 MAX PEAK POWER  
 WATTS                   10  
 STEP GENERATOR  
 POLARITY INVERT   Off  
 OFFSET                 5.00 V

f. Set the VARIABLE COLLECTOR SUPPLY control so the negative travel of the center vertical line of the displayed waveform extends past the second horizontal graticule line below graticule center (see figure 4-8).

g. CHECK that the center vertical line of the displayed waveform extends past the second horizontal graticule line below graticule center (see Figure 4-9).

### Checking 15 V with INVERT

h. Change the following 370A setting:

STEP GENERATOR  
 POLARITY INVERT   On

i. CHECK that the center vertical line of the displayed waveform is keep straight on extends past the second horizontal graticule line above graticule center.

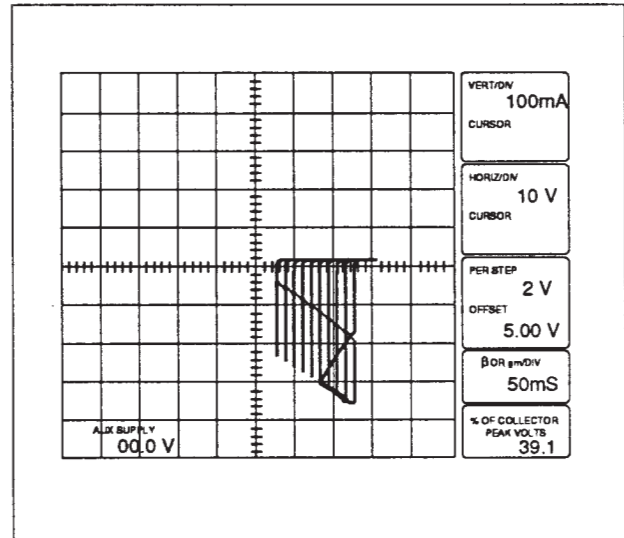


Figure 4-9. Second test display for Maximum Current check.

### Checking 10 V without INVERT

j. Change the following 370A settings:

DISPLAY  
 VERTICAL  
 CURRENT/DIV           200 mA COLLECTOR  
 COLLECTOR SUPPLY  
 MAX PEAK POWER  
 WATTS                   50  
 STEP GENERATOR  
 AMPLITUDE            1 V  
 OFFSET                 5 V  
 POLARITY INVERT   Off

k. Set the VARIABLE COLLECTOR SUPPLY control so the negative travel of the center vertical line of the displayed waveform extends past 2.5 divisions below graticule center (see Figure 4-10).

l. CHECK that the center vertical line of the displayed waveform extends past 2.5 divisions below graticule center.

**Checking 10 V with INVERT**

m. Change the following 370A setting:

STEP GENERATOR  
POLARITY INVERT      On

n. CHECK that the center vertical line of the displayed waveform extends past 2.5 divisions above graticule center.

**Removing the Setup**

o. Change the following 370A setting:

LEFT-RIGHT-STANDBY    STANDBY

p. Remove the patch cord from the 370A.

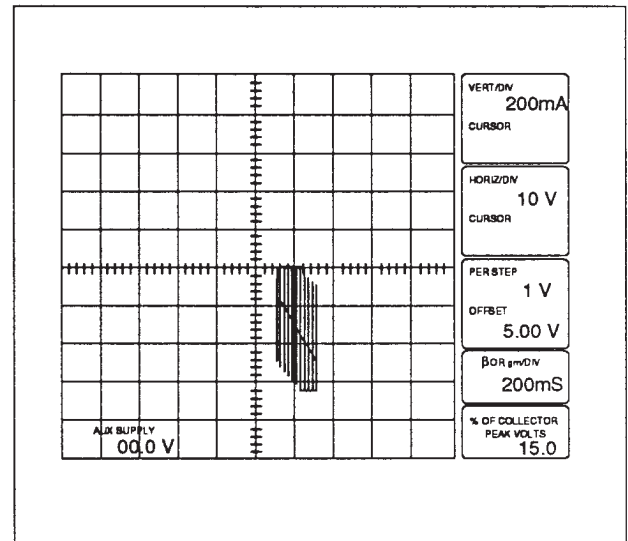


Figure 4-10. Third test display for Maximum Current check.

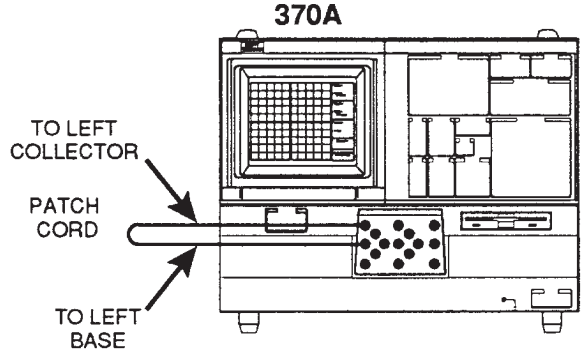


### F15. Checking Maximum Opposing Offset Current in VOLTAGE Mode

Specification:

- Maximum opposing offset current is less than 10 mA.

**F15 SETUP CONDITIONS**



**370A**

TO LEFT COLLECTOR

PATCH CORD

TO LEFT BASE

370A settings:  
Initialize the 370A; then set the following controls as indicated.

|                  |                |
|------------------|----------------|
| DISPLAY          |                |
| VERTICAL         |                |
| CURRENT/DIV      | 5 mA COLLECTOR |
| COLLECTOR SUPPLY |                |
| POLARITY         | AC             |
| MAX PEAK POWER   |                |
| WATTS            | 220            |
| STEP GENERATOR   |                |
| Mode             | VOLTAGE        |
| STEP AMPLITUDE   | 2 V            |
| NUMBER OF STEPS  | 0              |
| OFFSET           | -20V           |
| CURSOR           | DOT            |

#### Checking without INVERT

- Set the LEFT-RIGHT-STANDBY switch to LEFT.
- CHECK for vertical CURSOR reading of less than 20 mA.

#### Checking With INVERT

- Change the following 370A setting:

STEP GENERATOR  
POLARITY INVERT        On

The INVERT indicator will light up.

- CHECK for vertical CURSOR reading less than -20 mA.

#### Removing the Setup

- Change the following 370A setting:

LEFT-RIGHT-STANDBY    STANDBY

- Disconnect the Patch Cord from the 370A.



## F16. Checking Maximum Voltage in CURRENT Mode

**Specification:**

- Maximum Voltage is at least 10 volts.

**F16 SETUP CONDITIONS**

TO LEFT COLLECTOR  
PATCH CORD  
TO LEFT BASE

370A settings:  
Initialize the 370A; then set the following controls as indicated.

|                    |               |
|--------------------|---------------|
| DISPLAY            |               |
| VERTICAL           |               |
| CURRENT/DIV        | 1 A COLLECTOR |
| HORIZONTAL         |               |
| VOLTS/DIV          | 5 V COLLECTOR |
| COLLECTOR SUPPLY   |               |
| POLARITY           | AC            |
| MAX PEAK POWER     |               |
| WATTS              | 50            |
| STEP GENERATOR     |               |
| AMPLITUDE          | 200 mA        |
| NUMBER OF STEPS    | 10            |
| LEFT-RIGHT-STANDBY | LEFT          |
| OUTPUTS            | ENABLED       |
| Protective Cover   | Closed        |

### Checking Maximum Voltage without INVERT

- Set the VARIABLE COLLECTOR SUPPLY control so the positive travel of the bottom horizontal line of the displayed waveform extends past the second vertical graticule line to the right of graticule center (see Figure 4-11).

- CHECK that the bottom horizontal line of the displayed waveform is kept straight and that it extends past the right-hand of second vertical graticule line from graticule center.

### Checking Maximum Voltage Within INVERT

- Change the following 370A setting:

STEP GENERATOR                      On  
POLARITY INVERT                      On

- CHECK that the top horizontal line of the displayed waveform extends past the second vertical graticule line to the left of center.

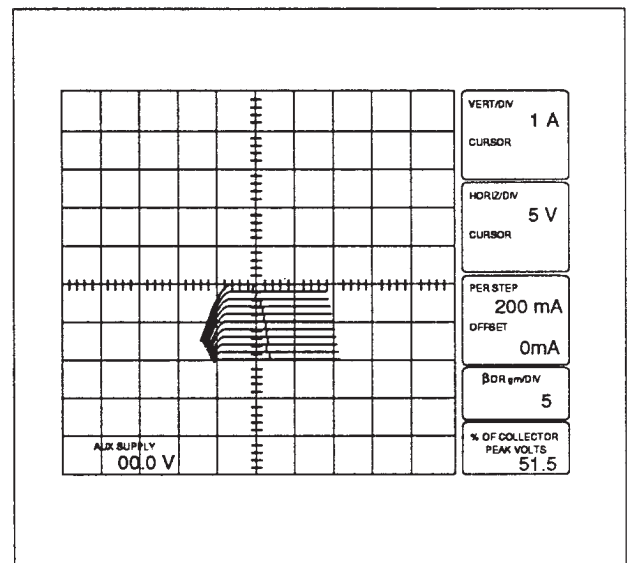
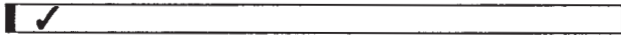


Figure 4-11. Display for Maximum Voltage check, left collector and left base connected.

### Removing the Setup

- Change the following 370A setting:  
LEFT-RIGHT-STANDBY    STANDBY
- Disconnect the Patch Cord from the 370A.



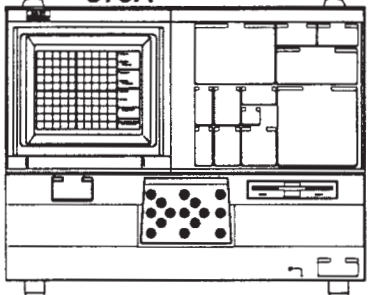
### F17. Checking Maximum Opposing Offset Volts in CURRENT Mode

Specification:

- Maximum Opposing Volts in Current Mode is less than 7 volts.

**F17 SETUP CONDITIONS**

**370A**



370A settings:  
Initialize the 370A; then set the following controls as indicated.

|                           |                  |
|---------------------------|------------------|
| <b>DISPLAY</b>            |                  |
| HORIZONTAL VOLTS/DIV      | 2 V BASE/EMITTER |
| COLLECTOR SUPPLY POLARITY | AC               |
| <b>STEP GENERATOR</b>     |                  |
| Mode                      | CURRENT          |
| AMPLITUDE                 | 200 mA           |
| NUMBER OF STEPS           | 0                |
| OFFSET                    | -2000 mA         |
| CURSOR                    | DOT              |
| OUTPUTS                   | ENABLED          |
| Protective Cover          | Closed           |

#### Checking Maximum Opposing Volts without INVERT

- Set the LEFT-RIGHT-STANDBY switch to LEFT.
- CHECK that the horizontal CURSOR readout is no more than -7.0 V

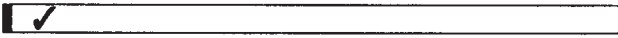
#### Checking Maximum Opposing Volts Within INVERT

- Change the following 370A setting:

STEP GENERATOR POLARITY INVERT      On

The indicator beside the INVERT button will light.

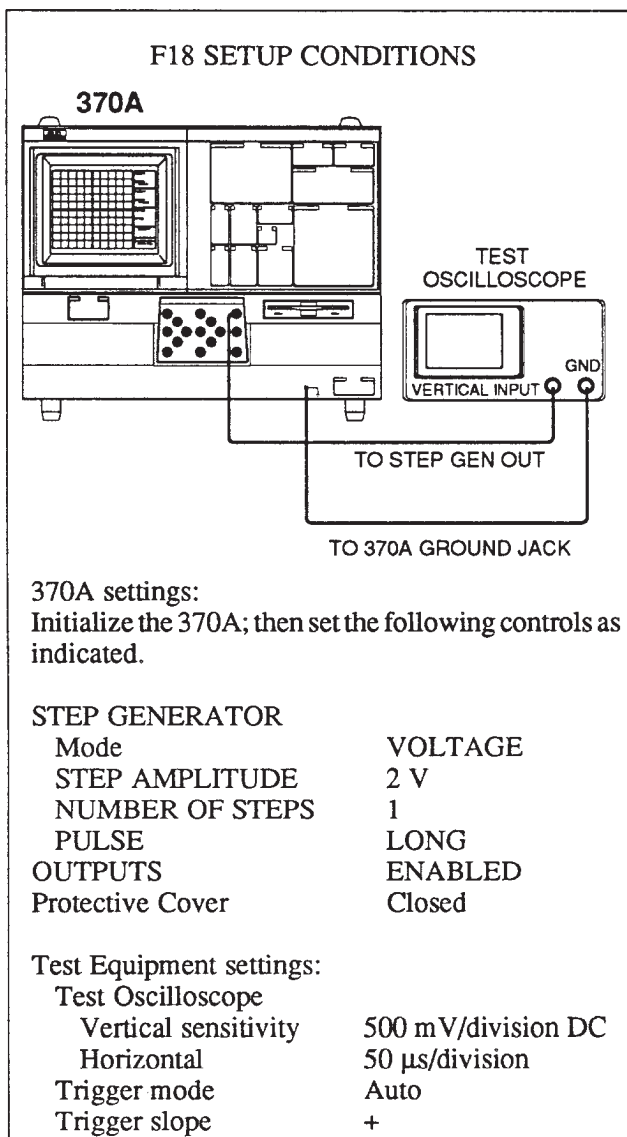
- CHECK that the horizontal CURSOR readout is no more than +7.0 V



## F18. Checking PULSE Width

Specification:

- Pulse Width is  $80 \mu\text{s} \pm 10 \%$  for the SHORT setting of the PULSE selector and  $300 \mu\text{s} \pm 10 \%$  for the LONG setting at half amplitude.



### Checking LONG PULSE Width

- CHECK that the pulse width is  $300 \mu\text{s} \pm 10 \%$  (as measured by the test oscilloscope).

### Checking SHORT PULSE Width

- Change the following 370A and Test Equipment settings:

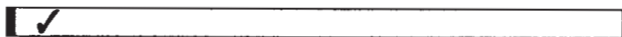
370A:

|                |       |
|----------------|-------|
| STEP GENERATOR |       |
| PULSE          | SHORT |

Test Equipment:

|                   |                            |
|-------------------|----------------------------|
| Test Oscilloscope |                            |
| horizontal        | 10 $\mu\text{s}$ /division |

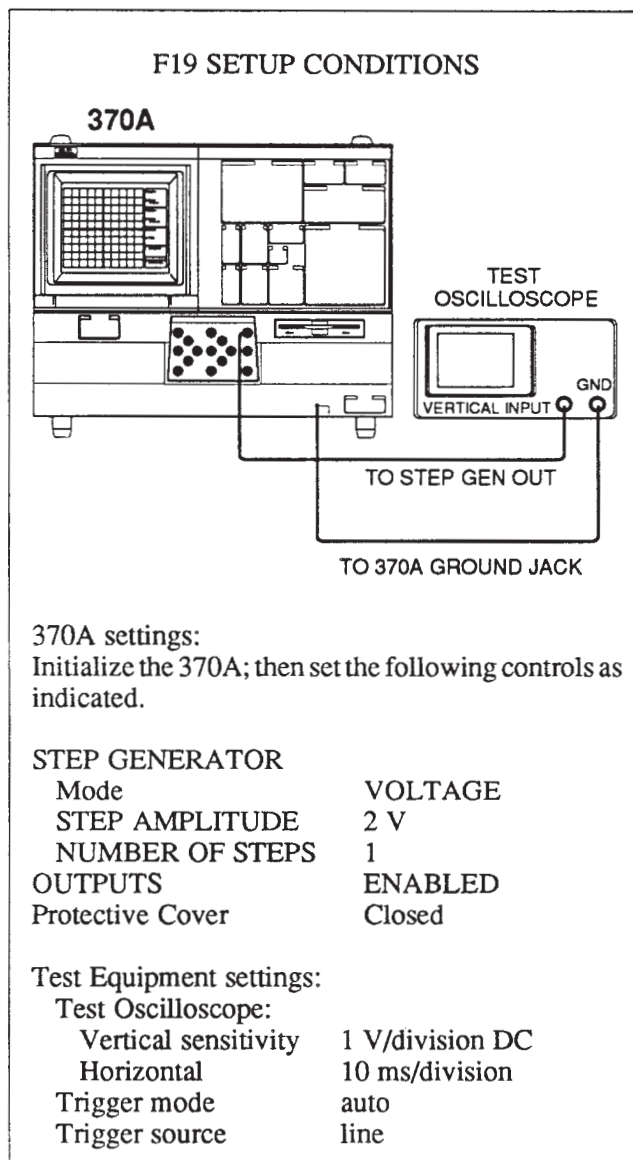
- CHECK that the pulse width is  $80 \mu\text{s} \pm 10 \%$ .



## F19. Checking Step Rate

Specifications:

- Step Rate is twice the line frequency when COLLECTOR SUPPLY POLARITY is set to + or - .
- Step Rate is equal to the line frequency when COLLECTOR SUPPLY POLARITY is set to AC.



### Checking + Step Rate

- CHECK that the interval between steps displayed on the Test Oscilloscope is approximately 8.3 ms (when the power line frequency is 60 Hz) or approximately 10 ms (when the power line frequency is 50 Hz).

### Checking AC Step Rate

- Change the following 370A setting:

COLLECTOR SUPPLY POLARITY                      AC

- CHECK that the interval between steps displayed on the Test Oscilloscope is approximately 16.6 ms (when line frequency is 60 Hz) or approximately 20 ms (when line frequency is 50 Hz).

### Checking - Step Rate

- Change the following 370A setting:

COLLECTOR SUPPLY POLARITY                      -

- CHECK that is the interval between steps displayed on the Test Oscilloscope is approximately 8.3 ms (when the power line frequency is 60 Hz) or approximately 10 ms (when the power line frequency is 50 Hz), and that the staircase waveform displayed on CRT is inverted.

### Removing the Setup

- Disconnect the Test Oscilloscope from the 370A.

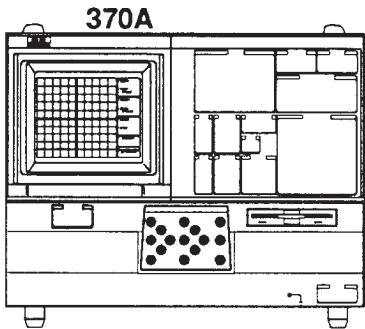


## F20. Examining Step Generator Polarity Operation

### IMPORTANT:

The characteristics examined in this step are examples of typical instrument operation; they are not specifications.

**F20 SETUP CONDITIONS**



370A settings:  
Initialize the 370A; then set the following controls as indicated.

|                  |                     |
|------------------|---------------------|
| DISPLAY          |                     |
| HORIZONTAL       |                     |
| VOLTS/DIV        | 500 mV BASE/EMITTER |
| COLLECTOR SUPPLY |                     |
| POLARITY         | AC                  |
| STEP GENERATOR   |                     |
| Mode             | VOLTAGE             |
| STEP AMPLITUDE   | 100 mV              |
| OFFSET           | 1000 mV             |
| OUTPUTS          | ENABLED             |
| Protective Cover | Closed              |

### Examining POLARITY INVERT Operation

- a. Press the POLARITY INVERT button.
- b. EXAMINE that the red INVERT LED for lights and the green LED in the STEP GENERATOR POLARITY window changes from + to -, and the CRT to see that the displayed waveform changes from right to left from graticule center.

- c. Press the POLARITY INVERT button to OFF.

### Examining the CONFIGURATION BASE COMMON Operation

- d. Change the following 370A setting:

|               |                  |
|---------------|------------------|
| CONFIGURATION | EMITTER STEP GEN |
|---------------|------------------|

- e. EXAMINE the green LED in the STEP GENERATOR POLARITY window changes from + to -, and the CRT to see that the displayed waveform changes from right to left from graticule center.

The red INVERT LED will not light.

- f. Change the following 370A setting:

|               |               |
|---------------|---------------|
| CONFIGURATION | BASE STEP GEN |
|---------------|---------------|

### Examining the COLLECTOR SUPPLY POLARITY Operation

- g. Change the following 370A setting:

|                  |   |
|------------------|---|
| COLLECTOR SUPPLY |   |
| POLARITY         | -  |

- h. EXAMINE the green LED in the STEP GENERATOR POLARITY window changes from + to -, and the CRT to see that the displayed waveform is above the horizontal center graticule line.

The red INVERT LED will not light.

## G. COLLECTOR SUPPLY

Equipment Required(see Table 4-3):

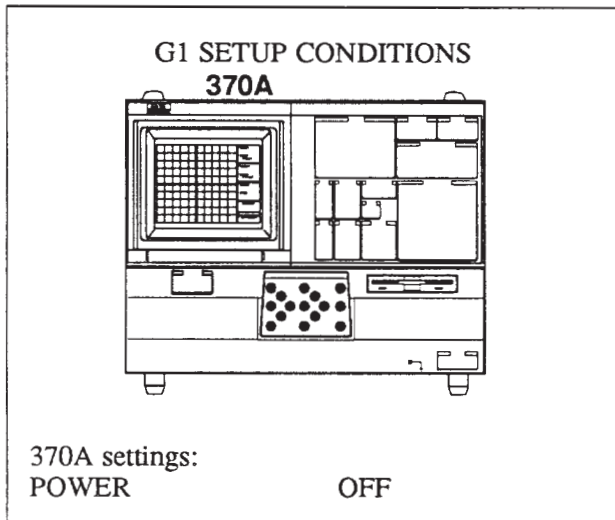
- Digital Multimeter



### G1. Adjusting Collector Supply Amplifier Offset (A6R412)

**IMPORTANT:**

The characteristics examined in this step are examples of typical instrument operation; they are not specifications.



#### Removing the Electrical Shield

a. Change the following 370A setting:

POWER OFF

**WARNING**  
To avoid electric shock hazard, be certain the 370A POWER switch is set to OFF before removing or replacing the electrical shield and connecting the digital multimeter to the 370A.

b. Use a #1 Pozidrive screwdriver to remove the electric shield on the left side of the 370A that covers the A6 Collector Supply Board. (These are three shield on the left side; remove the rear shield.)

#### Adjusting Collector Supply Offset

c. Change the following Test Equipment setting:

Digital Multimeter Mode DC Voltage

d. Connect the Digital Multimeter test leads to pin 1 and pin 3 of P62 as shown in Figure 4-12. (These are the COLLECT-OUT and ground pins.)

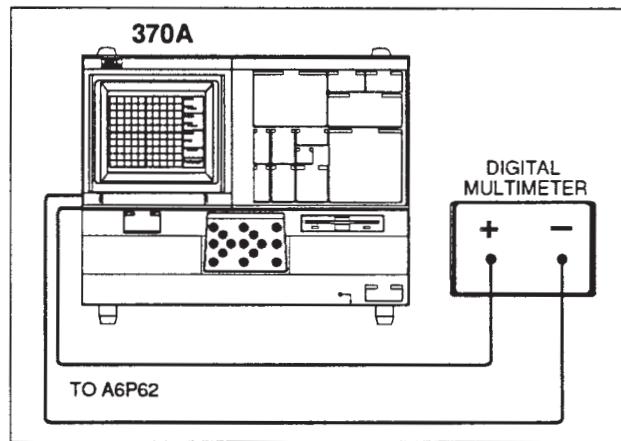


Figure 4-12. Adjusting for Collector Supply Amplifier Offset.

e. Change the following 370A setting:

POWER ON

f. ADJUST CS OFFSET adjustment R412 on the A6 Collector Supply Board for a digital multimeter readout of 0.0 mV ± 1 mV.

#### Removing the Setup

g. Change the following 370A setting:

POWER OFF

h. Remove the digital multimeter test leads from the 370A.

i. Replace the electrical shield.

j. Change the following 370A setting:

POWER ON



## G2. Checking MAX PEAK VOLTS Accuracy

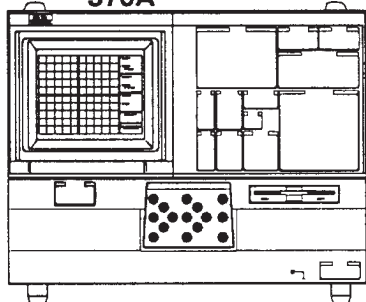
### Adjusting Collector Supply Gain (A6R401)

#### Specification:

- MAX PEAK VOLTS selection include 16, 80, 400, and 2000.
- MAX PEAK VOLTS accuracy for the COLLECTOR SUPPLY is +15% and -0% for 16, 80, 400, and 2000 V settings.

**G2 SETUP CONDITIONS**

**370A**



370A settings:  
Initialize the 370A; then set the following controls as indicated.

|                  |         |
|------------------|---------|
| COLLECTOR SUPPLY |         |
| MAX PEAK POWER   |         |
| WATTS            | 220     |
| POLARITY         | +DC     |
| CURSOR Mode      | DOT     |
| OUTPUTS          | ENABLED |
| VARIABLE         |         |
| COLLECTOR SUPPLY | 100 %   |
| Protective Cover | Closed  |

#### Checking 16 Max Peak Volts

- CHECK the horizontal CURSOR readout for a reading within the limits given in Table 4-24 for 16 MAX PEAK VOLTS.

#### Checking 80, 400, 2000 MAX PEAK VOLTS

- Change the following 370A settings:

|                  |                |
|------------------|----------------|
| DISPLAY          |                |
| HORIZONTAL       |                |
| VOLTS/DIV        | 10 V COLLECTOR |
| COLLECTOR SUPPLY |                |
| MAX PEAK VOLTS   | 80             |
| VARIABLE         |                |
| COLLECTOR SUPPLY | 100 %          |

- CHECK the horizontal CURSOR readout for a reading within the limits given in Table 4-24 for 80 MAX PEAK VOLTS.
- CHECK that the horizontal CURSOR readout is accurate within the limits given in Table 4-24 by repeating steps b and c for each HORIZONTAL VOLTS/DIV and MAX PEAK VOLTS setting in Table 4-24.

MAX PEAK POWER WATTS should automatically change to 50 when the MAX PEAK VOLTS setting is changed from 400 to 2000.

If not within these limits, the following adjustment is necessary.

## 370A Service Manual

### Adjusting Collector Supply Gain

e. Change the following 370A settings:

|                  |               |
|------------------|---------------|
| DISPLAY          |               |
| HORIZONTAL       | 2 V COLLECTOR |
| COLLECTOR SUPPLY |               |
| MAX PEAK VOLTS   | 16            |
| MAX PEAK POWER   |               |
| WATTS            | 220           |
| VARIABLE         |               |
| COLLECTOR SUPPLY | 100%          |

f. ADJUST CS Gain adjustment R401 on the A6 Collector Supply Board for a horizontal CURSOR readout of 17.2 V.

R401 can be adjusted through the access hole in the protective shield.

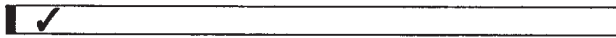
#### NOTE

See Test Point and Adjustment Location 2 in Section 7 for the location of the adjustment associated with this step.

g. Recheck from a to d.

**Table 4-24**  
**Max Peak Volts**

| MAX PEAK VOLTS | HORIZONTAL VOLTS/DIV setting | MAX PEAK POWER WATTS setting | Horizontal CURSOR Readout Limits setting |
|----------------|------------------------------|------------------------------|--|
| 16             | 2 V                          | 220                          | 16.0 V to 18.4 V                         |
| 80             | 10 V                         | 220                          | 80.0 V to 92.0 V                         |
| 400            | 50 V                         | 220                          | 400 V to 460 V                           |
| 2000           | 500 V                        | 50                           | 2000 V to 2300 V                         |

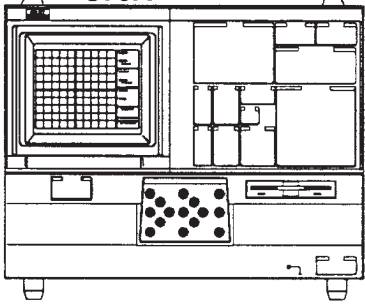


### G3. Checking DC Mode Ripple

- DC Mode Ripple for 2 % of the full range voltage.

**G3 SETUP CONDITIONS**

**370A**



370A settings:  
Initialize the 370A; then set the following controls as indicated.

|                  |           |
|------------------|-----------|
| DISPLAY Mode     | NON STORE |
| COLLECTOR SUPPLY |           |
| MAX PEAK POWER   |           |
| WATTS            | 220       |
| POLARITY         | +DC       |
| POSITION         | DISPLAY   |
| OUTPUTS          | ENABLED   |
| VARIABLE         |           |
| COLLECTOR SUPPLY | 100 %     |
| Protective Cover | Closed    |

### Checking 80, 400, 2000 MAX PEAK VOLTS DC Mode Ripple

- d. Change the following 370A settings:

DISPLAY  
HORIZONTAL VOLTS/DIV 1 V COLLECTOR  
COLLECTOR SUPPLY  
MAX PEAK VOLTS 80  
VARIABLE  
COLLECTOR SUPPLY 100 %

- e. Move the spot to graticule center with the right Position Control button.
- f. CHECK the display spot for its width to be within the limit given in Table 4-25 for 80 MAX PEAK VOLTS.
- g. CHECK that the horizontal CURSOR readout is accurate within the limits given in Table 4-25 by repeating steps from d to f for each HORIZONTAL VOLTS/DIV and MAX PEAK VOLTS setting in Table 4-25.

MAX PEAK POWER WATTS should be automatically change to 50 when the MAX PEAK VOLTS setting is changed from 400 to 2000.

### Checking 16 MAX PEAK VOLTS DC Mode Ripple

- a. Move the spot to graticule center with the Position Control buttons.
- b. Change the following 370A setting:
- |         |    |
|---------|----|
| MAG X10 | On |
|---------|----|
- c. CHECK the display spot for its width to be within the limit given in Table 4-25 for 16 MAX PEAK VOLTS.

370A Service Manual

Table 4-25  
DC Mode Ripple

| MAX PEAK VOLTS setting | HORIZONTAL VOLTS/DIV setting | MAX PEAK POWER WATTS | Maximum Spot Width (Ripple) |
|------------------------|------------------------------|----------------------|-----------------------------|
| 16                     | 200 mV                       | 220                  | 320 mV (1.6 div)            |
| 80                     | 1 V                          | 220                  | 1.6 V (1.6 div)             |
| 400                    | 5 V                          | 220                  | 8.0 V (1.6 div)             |
| 2000                   | 50 V                         | 50                   | 40 V (0.8 div)              |



### G4. Checking Maximum Peak Currents

Specification:

- Minimum Current Available Current is  $\geq 10$  A for the 16 V COLLECTOR SUPPLY,  $\geq 2$  A for 80 V, 400 mA for 400 V, and 50 mA for 2000 V.

**G4 SETUP CONDITIONS**

**370A**

TO RIGHT EMITTER      TO RIGHT COLLECTOR

PATCH CORD

370A settings:  
Initialize the 370A; then set the following controls as indicated.

|                      |         |
|----------------------|---------|
| DISPLAY              |         |
| HORIZONTAL VOLTS/DIV | 500     |
| COLLECTOR SUPPLY     |         |
| MAX PEAK POWER WATTS | 220 W   |
| POLARITY             | +DC     |
| CURSOR MODE          | DOT     |
| OUTPUTS              | ENABLED |
| LEFT-RIGHT-STANDBY   | RIGHT   |
| Protective Cover     | Closed  |

#### Checking 16 V Maximum Current

- CHECK that the trace can reach the value specified in Table 4-26 when VARIABLE COLLECTOR SUPPLY control is turned clockwise.

#### Checking 80, 400, 2000 V Maximum Current

- Change the following 370A settings:

|                      |        |
|----------------------|--------|
| DISPLAY              |        |
| VERTICAL CURRENT/DIV | 500 mA |
| COLLECTOR SUPPLY     |        |
| MAX PEAK VOLTS       | 80     |

- CHECK that the trace can reach the value specified in Table 4-26 when VARIABLE COLLECTOR SUPPLY control is turned clockwise.
- CHECK that the trace can reach the value specified in Table 4-26 by repeating steps b and c for each VERTICAL CURRENT/DIV and MAX PEAK VOLTS setting in Table 4-26.

MAX PEAK POWER WATTS should be automatically change to 50 when the MAX PEAK VOLTS setting is changed from 400 to 2000.

#### Removing the Setup

- Change the following 370A settings:

|                    |         |
|--------------------|---------|
| COLLECTOR SUPPLY   |         |
| MAX PEAK VOLTS     | 16 V    |
| LEFT-RIGHT-STANDBY | STANDBY |

- Remove the patch cord from the 370A.

**Table 4-26**  
Maximum Peak Currents

| MAX PEAK VOLTS Settings | MAX PEAK POWER WATTS | VERTICAL A/DIV Setting | VERTICAL CURSOR Readout |
|-------------------------|----------------------|------------------------|-------------------------|
| 16 V                    | 220 W                | 2 A                    | $\geq 10$ A (5 div)     |
| 80 V                    | 220 W                | 500 mA                 | $\geq 2$ A (4 div)      |
| 400 V                   | 220 W                | 100 mA                 | $\geq 400$ mA (4 div)   |
| 2000 V                  | 50 W                 | 10 mA                  | $\geq 50$ mA (5 div)    |

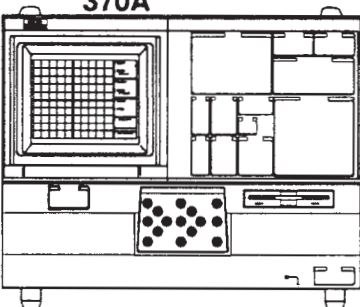
## G5. Examining the Interlock system and POLARITY Settings

### IMPORTANT:

The characteristics examined in this step are examples of typical instrument operation; they are not specifications.

**G5 SETUP CONDITIONS**

**370A**



370A settings:  
Initialize the 370A; then set the following controls as indicated.

|                    |           |
|--------------------|-----------|
| DISPLAY            |           |
| Mode               | NON STORE |
| OUTPUTS            | ENABLED   |
| LEFT-RIGHT-STANDBY | LEFT      |
| Protective Cover   | Closed    |

### Examining Collector Supply Variable Operation and + ∞ POLARITY

- a. EXAMINE the display, as the VARIABLE COLLECTOR SUPPLY control is rotated clockwise, for the trace to become a horizontal line starting in the lower left corner and extending continuously to right along the bottom horizontal graticule.

### Examining Interlock system and Warning LED

- b. EXAMINE that the red LED beside the WARNING lettering is lit.
- c. Open the Protective Cover.
- d. EXAMINE that the red LED display turns off and that the displayed trace is go back to lower left corner.

### Examining OUTPUTS Operation

- e. Close the Protective Cover.
- f. EXAMINE the displayed spot extends toward 100 % as the VARIABLE COLLECTOR SUPPLY control is rotated clockwise.
- g. Set the OUTPUTS to DISABLED.
- h. EXAMINE that the displayed trace goes back to lower left corner and that the OUTPUT DISABLED message appears for a few seconds in the lower left corner of the display.
- i. Set the OUTPUTS to ENABLED.
- j. EXAMINE that the OUTPUT ENABLED message appears in the the lower left corner of the display for a few seconds.

### Examining +DC POLARITY

- k. Change the following 370A and Test Equipment settings:

370A:

|                  |       |
|------------------|-------|
| COLLECTOR SUPPLY |       |
| POLARITY         | +DC   |
| VARIABLE         |       |
| COLLECTOR SUPPLY | 100 % |

Test Oscilloscope:

|              |                 |
|--------------|-----------------|
| Vertical     | 5 V/division DC |
| Trigger Mode | auto            |

1. Connect the Test Oscilloscope as shown in Figure 4-13 and close the Protective Cover.



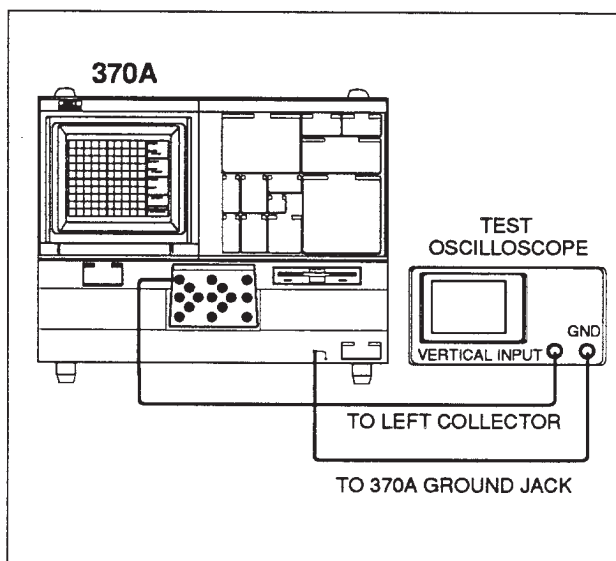


Figure 4-13. Examining for DC and LEAKAGE operation.

- m. EXAMINE the display for the spot to move from the lower left corner along the bottom horizontal graticule line as the VARIABLE COLLECTOR SUPPLY control is rotated clockwise to 100 %.
- n. EXAMINE the Test Oscilloscope display for DC.

#### Examining +LEAKAGE POLARITY

- o. Change the following 370A setting:

|                  |          |
|------------------|----------|
| COLLECTOR SUPPLY |          |
| POLARITY         | +LEAKAGE |

- p. EXAMINE the display for the spot to position the same as in part m.
- q. EXAMINE the Test Oscilloscope display for DC.

#### Examining AC POLARITY

- r. Change the following 370A settings:

|                  |       |
|------------------|-------|
| COLLECTOR SUPPLY |       |
| POLARITY         | AC    |
| VARIABLE         |       |
| COLLECTOR SUPPLY | 100 % |

- s. EXAMINE the display for a horizontal trace starting from graticule center and extending out of the display area.

#### Examining – POLARITY

- t. Change the following 370A settings:

|                  |       |
|------------------|-------|
| COLLECTOR SUPPLY |       |
| POLARITY         | –     |
| VARIABLE         |       |
| COLLECTOR SUPPLY | 100 % |

- u. EXAMINE the display for a horizontal trace extending along the top horizontal graticule line from the upper right corner.

#### Examining –DC POLARITY

- v. Change the following 370A setting:

|                  |     |
|------------------|-----|
| COLLECTOR SUPPLY |     |
| POLARITY         | –DC |

- w. EXAMINE the display for the spot to position the peak of part u.
- x. EXAMINE the Test Oscilloscope display for DC.

#### Examining –LEAKAGE POLARITY

- y. Change the following 370A setting:

|                  |          |
|------------------|----------|
| COLLECTOR SUPPLY |          |
| POLARITY         | –LEAKAGE |

- z. EXAMINE the display for the spot to position the same as part w.
- aa. EXAMINE the Test Oscilloscope display for DC.

#### Removing setup

- ab. Change the following 370A setting:

|                    |         |
|--------------------|---------|
| LEFT-RIGHT-STANDBY | STANDBY |
|--------------------|---------|

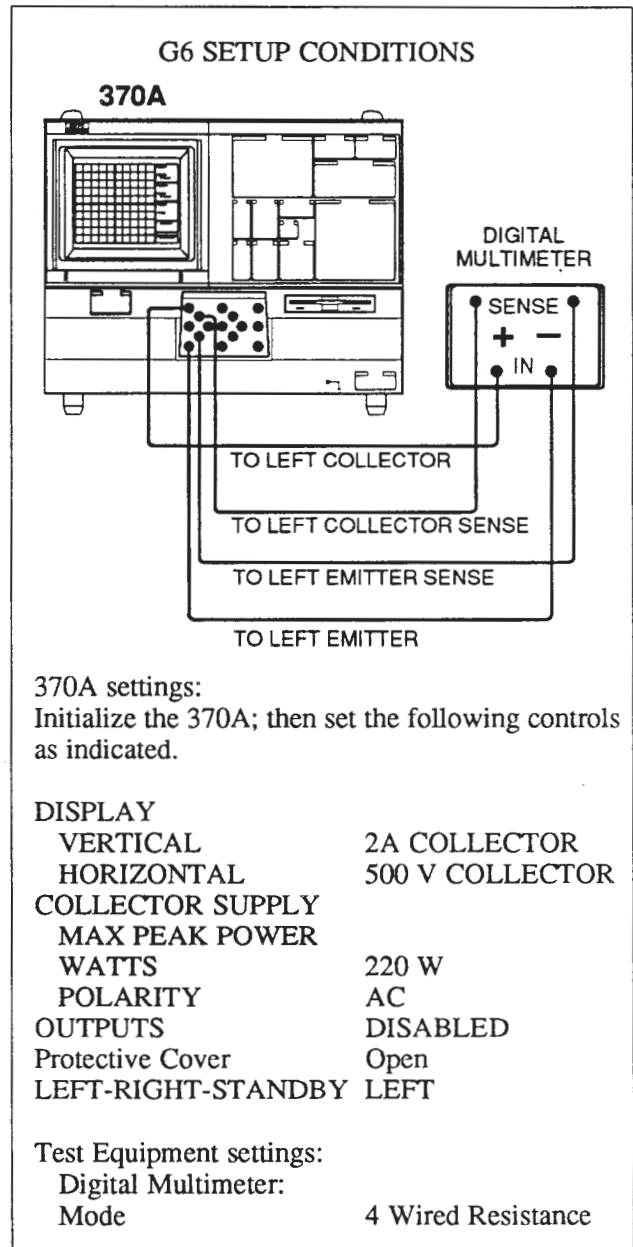
- ac. Disconnect the Test Oscilloscope.



## G6. Checking Series Resistances

### Specification:

- Minimum series resistance values for the 16, 80, 400 and 2000 MAX PEAK VOLTS settings are 0.26  $\Omega$ , 6.4  $\Omega$ , 160  $\Omega$ , and 20 k $\Omega$  respectively.
- Maximum series resistance values are 800  $\Omega$ , 20 k $\Omega$ , 500 k $\Omega$ , and 12.5 M $\Omega$ .
- Series Resistance accuracy is the greater of  $\pm 5\%$  or 0.2  $\Omega$ , and applies to the following resistance values (in  $\Omega$ ): 0.26, 1.3, 6.4, 32, 160, 800, 4 K, 20 K, 100 K, 500 K, 2.5, M, 12.5 M.
- The MAX PEAK POWER WATTS selector selects the following settings (in W): 220, 50, 10, 2, 0.4, 0.08.



### Checking Resistance Accuracy

- CHECK that the digital multimeter reading is within the limits specified in Table 4-27 for every MAX PEAK VOLTS and MAX PEAK POWER WATTS setting.

### Removing the Setup

- Disconnect the digital multimeter from the 370A.

**Table 4-27**  
**Series Resistances**

| <b>MAX PEAK VOLTS Setting</b> | <b>MAX PEAK POWER WATTS Setting</b> | <b>SERIES RESISTORS</b> | <b>Digital Multi Meter Reading</b> |
|-------------------------------|-------------------------------------|-------------------------|------------------------------------|
| 16                            | 220                                 | 0.26 $\Omega$           | 0.06 to 0.46 $\Omega$              |
| 16                            | 50                                  | 1.3 $\Omega$            | 1.1 to 1.5 $\Omega$                |
| 16                            | 10                                  | 6.4 $\Omega$            | 6.08 to 6.72 $\Omega$              |
| 16                            | 2                                   | 32 $\Omega$             | 30.4 to 33.6 $\Omega$              |
| 16                            | 0.4                                 | 160 $\Omega$            | 152 to 168 $\Omega$                |
| 16                            | 0.08                                | 800 $\Omega$            | 760 to 840 $\Omega$                |
| 400                           | 10                                  | 4 k $\Omega$            | 3.8 to 4.2 k $\Omega$              |
| 400                           | 2                                   | 20 k $\Omega$           | 19 to 21 k $\Omega$                |
| 400                           | 0.4                                 | 100 k $\Omega$          | 94.6 to 104.6 k $\Omega$ *         |
| 400                           | 0.08                                | 500 k $\Omega$          | 466 to 514 k $\Omega$ *            |
| 2000                          | 0.4                                 | 2.5 M $\Omega$          | 2.17 to 2.38 M $\Omega$ *          |
| 2000                          | 0.08                                | 12.5 M $\Omega$         | 8.05 to 8.61 M $\Omega$ *          |

\* Includes 25 M $\Omega$  horizontal sense attenuator resistance in parallel.

## G7. Examining the LIMITER Indicator in Voltage Mode

**IMPORTANT:**

The characteristics examined in this step are examples of typical instrument operation; they are not specifications.

**G7 SETUP CONDITIONS**

370A settings:  
Initialize the 370A; then set the following control as indicated.

|                  |         |
|------------------|---------|
| COLLECTOR SUPPLY |         |
| MAX PEAK VOLTS   | 400     |
| OUTPUTS          | ENABLED |
| Protective Cover | Closed  |

### Examining the Limiter Indicator for 400 MAX PEAK VOLTS Range

- a. EXAMINE the LIMITER indicator besides the LEFT-RIGHT-STANDBY for turn on when the VARIABLE COLLECTOR SUPPLY control is rotated clockwise.

### Examining the Limiter Indicator for 2000 MAX PEAK VOLTS Range

- b. Change the following 370A settings:

|                  |      |
|------------------|------|
| COLLECTOR SUPPLY |      |
| MAX PEAK VOLTS   | 2000 |
| MAX PEAK POWER   |      |
| WATTS            | 2    |

- c. EXAMINE the LIMITER indicator for turn on when the VARIABLE COLLECTOR SUPPLY control is rotated clockwise.

- d. Change the following 370A setting:

HORIZONTAL VOLTS/DIV 5 V COLLECTOR

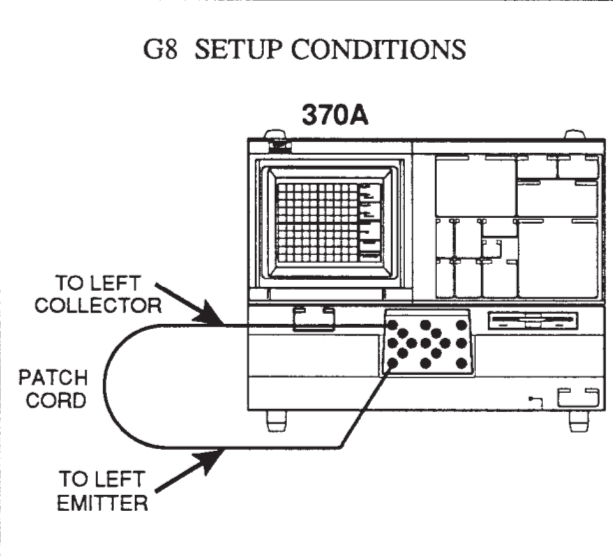
- e. EXAMINE the LIMITER indicator for turn on when the VARIABLE COLLECTOR SUPPLY control is rotated clockwise.

## G8. Examining the LIMITER Indicator in Current Mode

### IMPORTANT:

The characteristics examined in this step are examples of typical instrument operation; they are not specifications.

**G8 SETUP CONDITIONS**



**370A**

TO LEFT COLLECTOR

PATCH CORD

TO LEFT EMITTER

370A settings:  
Initialize the 370A; then set the following controls as indicated.

|                    |                       |
|--------------------|-----------------------|
| DISPLAY            |                       |
| VERTICAL           |                       |
| CURRENT/DIV        | 100 $\mu$ A COLLECTOR |
| COLLECTOR SUPPLY   |                       |
| MAX PEAK VOLTS     | 400                   |
| OUTPUTS            | ENABLED               |
| LEFT-RIGHT-STANDBY | LEFT                  |
| Protective Cover   | Closed                |

### Examining the Limiter for 0.08 MAX PEAK POWER WATTS Range

- a. EXAMINE that the LIMITER indicator next to the LEFT-RIGHT-STANDBY lights when the VARIABLE COLLECTOR SUPPLY control is rotated clockwise and watch for the peak of the trace to be brightening.

### Examining the Limiter for 0.4 MAX PEAK POWER WATTS Range

- b. Change the following 370A settings:

|                      |                       |
|----------------------|-----------------------|
| DISPLAY              |                       |
| VERTICAL CURRENT/DIV | 500 $\mu$ A COLLECTOR |
| COLLECTOR SUPPLY     |                       |
| MAX PEAK POWER WATTS | 0.4                   |

- c. EXAMINE that the LIMITER indicator lights when the VARIABLE COLLECTOR SUPPLY control is rotated clockwise and that the peak of the trace brightens.

### Examining the Limiter for 10 MAX PEAK POWER WATTS Range

- d. Change the following 370A settings:

|                      |                |
|----------------------|----------------|
| DISPLAY              |                |
| VERTICAL CURRENT/DIV | 5 mA COLLECTOR |
| COLLECTOR SUPPLY     |                |
| MAX PEAK POWER WATTS | 10             |

- e. EXAMINE that the LIMITER indicator lights when the VARIABLE COLLECTOR SUPPLY control is rotated clockwise and that the peak of the trace brightens.

### Removing the Setup

- f. Change the following 370A setting:

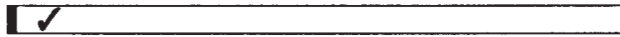
|                    |         |
|--------------------|---------|
| LEFT-RIGHT-STANDBY | STANDBY |
|--------------------|---------|

- g. Remove the Patch Cord from the 370A.

## H. AUX SUPPLY

Equipment Required(see Table 4-3):

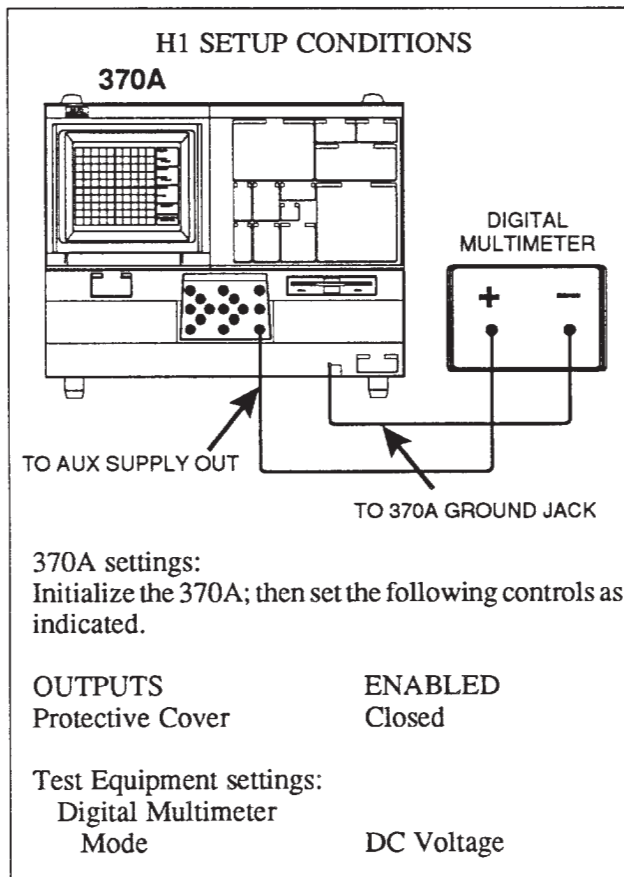
- Test Oscilloscope
- Digital Multimeter



### H1. Checking AUX SUPPLY Accuracy, Resolution, and Range

Specifications:

- The Aux Supply is accurate to less than  $(50 \text{ mV} + 1.5\% \text{ of the total output})$ .
- Resolution is 20 mV.
- Range is from  $-40 \text{ V}$  to  $+40 \text{ V}$ .



#### Checking Accuracy

- a. CHECK that the AUX SUPPLY readout on the 370A display is 0.00 V. (AUX SUPPLY will not show on screen for 0.00 V.)
- b. CHECK that the digital multimeter reading is within the limits given in Table 4-28 for 0.00 V.

**Table 4-28**  
Auxiliary Supply Accuracy

| AUX readout         | Digital Multimeter Reading            |
|---------------------|---------------------------------------|
| 0.00 V (no display) | $\pm 0.05 \text{ V}$                  |
| $-40.00 \text{ V}$  | $-39.35 \text{ to } -40.65 \text{ V}$ |
| $+40.00 \text{ V}$  | $+39.35 \text{ to } +40.65 \text{ V}$ |

#### Checking Resolution

- c. CHECK that each time one of the AUX SUPPLY arrow buttons (up or down) is pressed, the AUX SUPPLY readout and digital multimeter reading change by 20 mV.

#### Checking Range

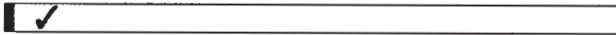
- d. Change the following 370A setting:
 

|            |   |
|------------|---|
| AUX SUPPLY | $-40.00 \text{ V}$ (as indicated in the AUX SUPPLY readout) |
|------------|---|
- e. CHECK that the digital multimeter measurement is within the limits given in Table 4-23 for  $-40.00 \text{ V}$ .
- f. Change the following 370A setting:
 

|            |   |
|------------|---|
| AUX SUPPLY | $+40.00 \text{ V}$ (as indicated in the AUX SUPPLY readout) |
|------------|---|
- g. CHECK that the digital multimeter measurement is within the limits given in Table 4-23 for  $+40.00 \text{ V}$

#### Removing the Setup

- h. Disconnect the digital multimeter leads from the 370A.



## H2. Checking AUX SUPPLY Maximum Output Current

Specification:

- Output Current is at least 10 mA for AUXILIARY SUPPLY output between  $-40\text{ V}$  and  $+40\text{ V}$ , and at least 100 mA between  $-20\text{ V}$  and  $+20\text{ V}$ .

**H2 SETUP CONDITIONS**

**370A**

TO LEFT COLLECTOR      TO AUX SUPPLY OUT

PATCH CORD

370A settings:  
Initialize the 370A; then set the following controls as indicated.

|                    |                |
|--------------------|----------------|
| DISPLAY            |                |
| VERTICAL           |                |
| CURRENT/DIV        | 5 mA COLLECTOR |
| HORIZONTAL         |                |
| VOLTS/DIV          | 10 V COLLECTOR |
| COLLECTOR SUPPLY   |                |
| MAX PEAK POWER     |                |
| WATTS              | 2              |
| MAX PEAK VOLTS     | 80             |
| POLARITY           | AC             |
| AUX                | 40.0 V         |
| LEFT-RIGHT-STANDBY | LEFT           |
| CURSOR Mode        | DOT            |
| OUTPUTS            | ENABLED        |
| Protective Cover   | Closed         |

### Checking 10 mA at $\pm 40\text{ V}$

- a. CHECK that the vertical CURSOR readout is  $-10\text{ mA}$ .

- b. Change the following 370A setting:

AUX  $-40.00\text{ V}$

Press and hold the FAST/SHIFT and down-arrow AUX buttons to set AUX to  $-40.00\text{ V}$ .

- c. CHECK that the vertical CURSOR readout is at least 10 mA. If the readout is flashing, you will have exceeded the specification. This is normal.

### Checking 100 mA at $\pm 20\text{ V}$

- d. Change the following 370A settings:

|                  |                   |
|------------------|-------------------|
| DISPLAY          |                   |
| VERTICAL         |                   |
| CURRENT/DIV      | 50 mA COLLECTOR   |
| COLLECTOR SUPPLY |                   |
| MAX PEAK POWER   |                   |
| WATTS            | 10                |
| AUX              | $+20.00\text{ V}$ |

- e. CHECK that the vertical CURSOR readout is at least  $-100\text{ mA}$ . If the readout is flashing, you will have exceeded the specification. This is normal.

- f. Change the following 370A setting:

AUX  $-20.00\text{ V}$

Press and hold the FAST/SHIFT and down-arrow AUX buttons to set AUX to  $-20.00\text{ V}$ .

- g. CHECK that the vertical CURSOR readout is at least 100 mA.

### Removing the Setup

- h. Change the following 370A settings:

|                    |                               |
|--------------------|-------------------------------|
| AUX                | $0\text{ V}$ (no AUX readout) |
| LEFT-RIGHT-STANDBY | STANDBY                       |

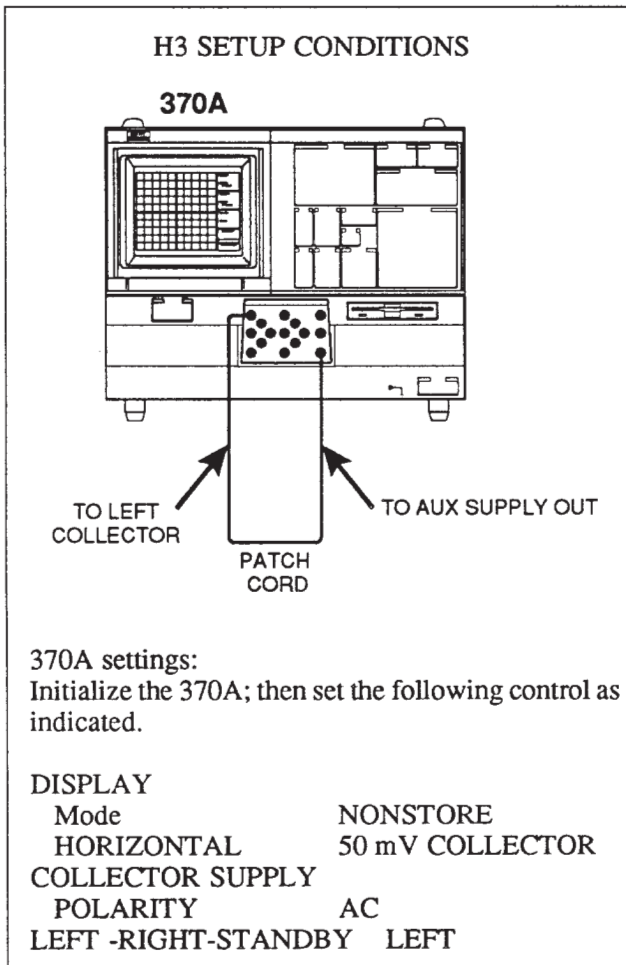
- i. Remove the patch cord from the 370A.



### H3. Checking AUX SUPPLY Ripple and Noise

Specification:

- Displayed Ripple and Noise is less than 50 mV peak to peak.



#### Checking Ripple and Noise

- CHECK that the spot width is within 1 horizontal division.

#### Removing the Setup

- Disconnect the patch cord from the 370A.



## I. CONFIGURATION

Equipment Required (see Table 4-3):

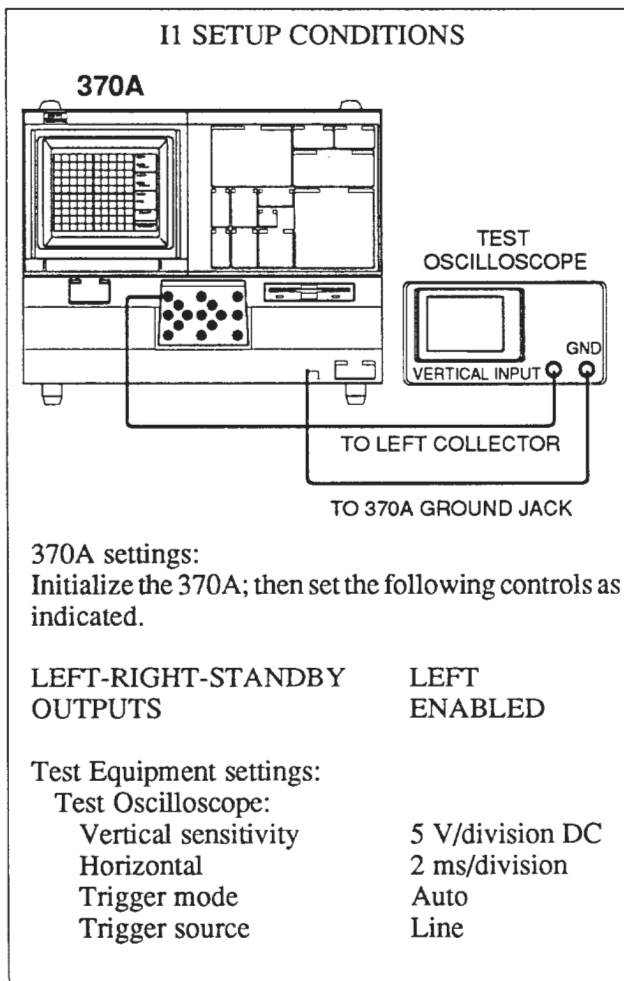
- Digital Multimeter
- Test Oscilloscope

### I1. Examining Collector Configuration

**IMPORTANT:**

The characteristics examined in this step are examples of typical instrument operation; they are not specifications.

The following procedure checks operation of the relays that carry the Collector Supply to the Test Fixture Adapter Jacks.



#### Examining Internal Operation for LEFT

- a. Connect a test lead with a banana plug to the LEFT C(Collector) jack. Connect a Probe hook from the Test Oscilloscope to the test leads clip, and ground lead to the Ground plug.
- b. Close the Protective Cover and turn the VARIABLE COLLECTOR SUPPLY control.
- c. EXAMINE the test oscilloscope for rectified waveform to be displayed.
- d. Change the following 370A setting:

LEFT-RIGHT-STANDBY      STANDBY

- e. EXAMINE the test oscilloscope for no waveform to be displayed.

A small waveform may be displayed by stray capacitance.

#### Examining Internal Operation for RIGHT

- f. Move the test lead with banana plug to the RIGHT C(Collector) and close the Protective Cover.
- g. EXAMINE the test oscilloscope for no waveform to be displayed

A small waveform may be displayed by stray capacitance.

- h. Change the following 370A setting:

LEFT-RIGHT-STANDBY      RIGHT

- i. EXAMINE the test oscilloscope for rectified waveform to be displayed.

#### Examining the Collector for OPEN

- j. Change the following 370A setting:

|                           |                |
|---------------------------|----------------|
| CONFIGURATION<br>VARIABLE | COLLECTOR OPEN |
| COLLECTOR SUPPLY          | 100 %          |

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- k. EXAMINE the test oscilloscope for no waveform display.

A small waveform may be displayed by stray capacitance.

### Removing the Setup

- l. Change the following 370A setting:

LEFT-RIGHT-STANDBY      STANDBY

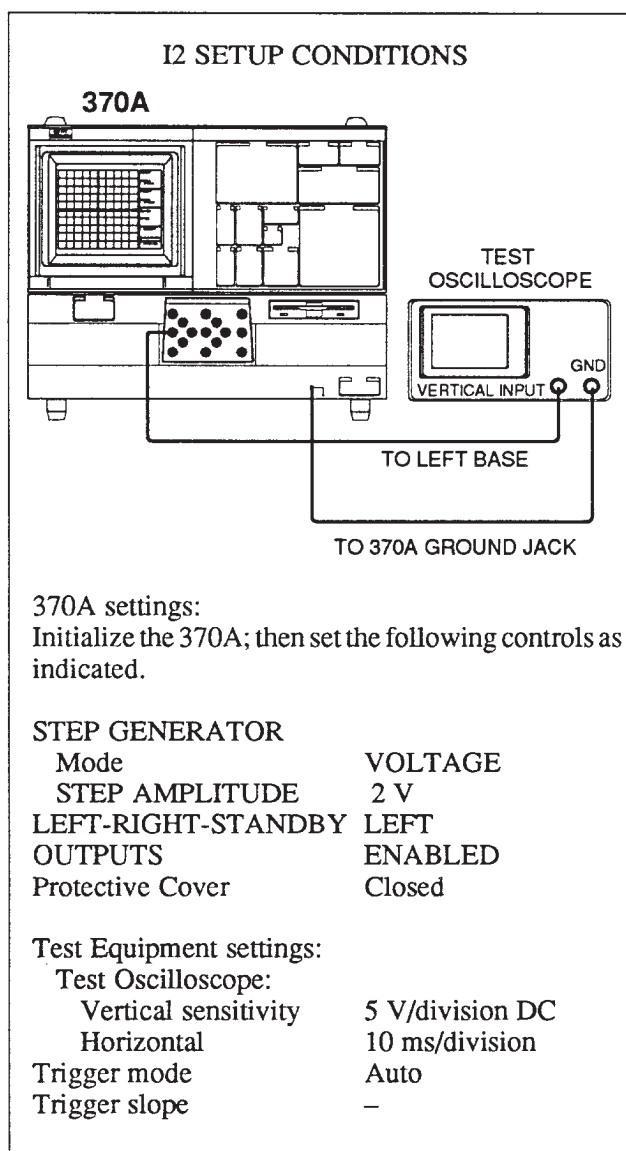
- m. Disconnect the test lead and probe from the 370A.

## I2. Examining Base Configuration

### IMPORTANT:

The characteristics examined in this step are examples of typical instrument operation; they are not specifications.

The following procedure checks operation of the relays that carry the Step Generator signal and Collector Supply to the Test Fixture Adapter Jacks.



### Examining Internal Operation for LEFT

a. EXAMINE the test oscilloscope display for a step waveform.

b. Change the following 370A setting:

LEFT-RIGHT-STANDBY      STANDBY

c. EXAMINE the test oscilloscope for no step waveform display.

A small waveform may be displayed by stray capacitance.

### Examining Internal Operation for RIGHT

d. Connect the test oscilloscope between the RIGHT B(BASE) and ground jacks, and close the protective cover

e. EXAMINE the test oscilloscope for no step waveform display.

A small waveform may be displayed by stray capacitance.

f. Change the following 370A setting:

LEFT-RIGHT-STANDBY      RIGHT

g. EXAMINE the test oscilloscope for a step waveform to be displayed.

### Examining External Base Input

h. Change the following 370A setting:

CONFIGURATION      BASE OPEN(EXT)

i. EXAMINE the test oscilloscope for no step waveform display.

j. Use a patch cord to connect the STEP GEN OUT and EXT BASE or EMITTER IN jacks, and close the protective cover.

k. EXAMINE the test oscilloscope for a step waveform to be displayed.

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**Checking Base SHORT (EMITTER) Configuration**

- l. Disconnect the patch cord and connect the test oscilloscope between the STEP GEN OUT and ground jacks.
- m. Change the following 370A and Test Equipment settings:

370A:

| CONFIGURATION    | BASE SHORT (EMITTER) |
|------------------|----------------------|
| Protective Cover | Closed               |

Digital Multimeter:

|      |          |
|------|----------|
| Mode | $\Omega$ |
|------|----------|

- n. EXAMINE the test oscilloscope does not display a step waveform.
- o. Disconnect the Test Oscilloscope and connect the Digital Multimeter to the RIGHT B(BASE) and E(EMITTER) jacks.
- p. EXAMINE that the RIGHT B and E are shorted.

Resistance is approximately 1  $\Omega$  or less.

- q. Change the following 370A setting:

LEFT-RIGHT-STANDBY LEFT

- r. Connect the Digital Multimeter to the LEFT B(BASE) and E(EMITTER) jacks.
- s. EXAMINE that the LEFT B and E are shorted.

Resistance is approximately 1  $\Omega$  or less.

**Checking Base COLLECTOR SUPPLY CONFIGURATION**

- t. Disconnect the Digital Multimeter.
- u. Change the following 370A and Test Equipment settings:

370A:

| CONFIGURATION | BASE COLLECTOR SUPPLY |
|---------------|-----------------------|
| OUTPUTS       | ENABLED               |

Test Oscilloscope:

|                      |                 |
|----------------------|-----------------|
| Vertical sensitivity | 5 V/division DC |
| Horizontal           | 2 ms/division   |
| Trigger mode         | Auto            |
| Trigger source       | Line            |

- v. Connect a test leads with banana plug to the LEFT B jack. Connect a probe hook from the Test Oscilloscope to the test lead clip, and the ground lead to to the Ground jack.
- w. Close the Protective Cover and turn the VARIABLE COLLECTOR SUPPLY control.
- x. EXAMINE the test oscilloscope for rectified waveform to be displayed.

**Removing the Setup**

- y. Change the following 370A setting:

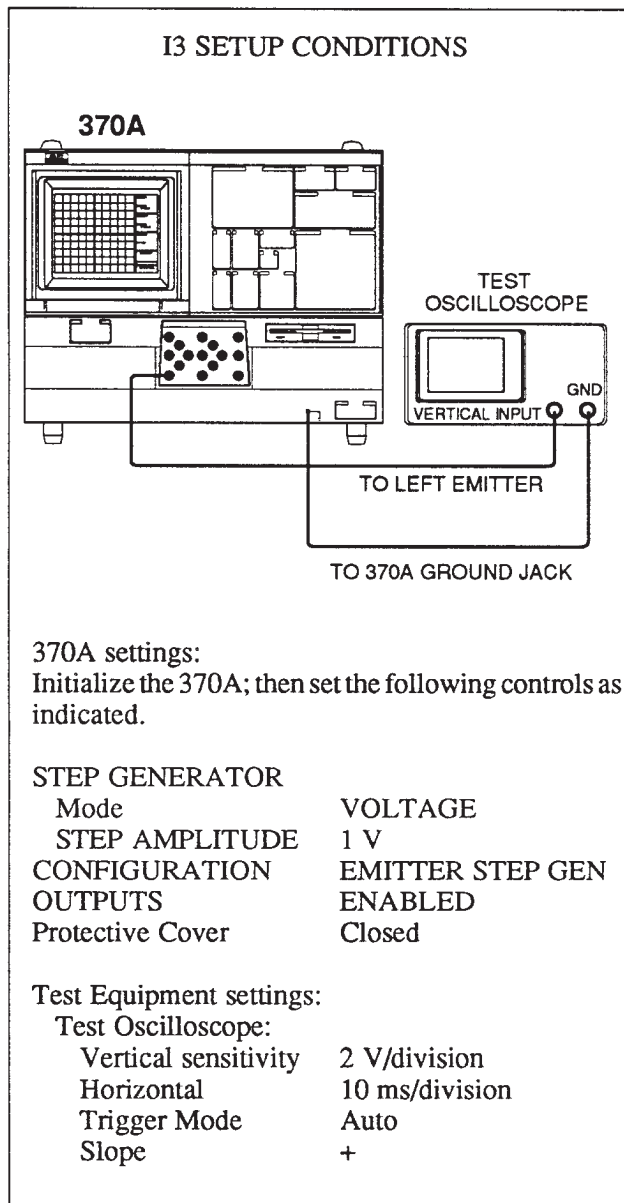
LEFT-RIGHT-STANDBY STANDBY

- z. Disconnect the Test Lead and Probe from the 370A.

### 13. Examining Emitter Configuration

#### IMPORTANT:

The characteristics examined in this step are examples of typical instrument operation; they are not specifications.



#### Examining Internal Operation for LEFT

- a. EXAMINE the test oscilloscope display for a step waveform.

#### Examining Internal Operation for RIGHT

- b. Connect the test oscilloscope between the RIGHT E (Emitter) and ground jacks and close the protective cover.
- c. EXAMINE the test oscilloscope display for a step waveform.

#### Examining External Operation

- d. Change the following 370A setting:

CONFIGURATION    EMITTER OPEN (EXT)

- e. EXAMINE the test oscilloscope for no step waveform display.
- f. Use a patch cord to connect the STEP GEN OUT and EXT BASE or EMITTER IN jacks, and close the protective cover.
- g. EXAMINE the test oscilloscope display for a step waveform.

#### Removing the Setup

- h. Disconnect the test oscilloscope and remove the patch cord from the 370A.

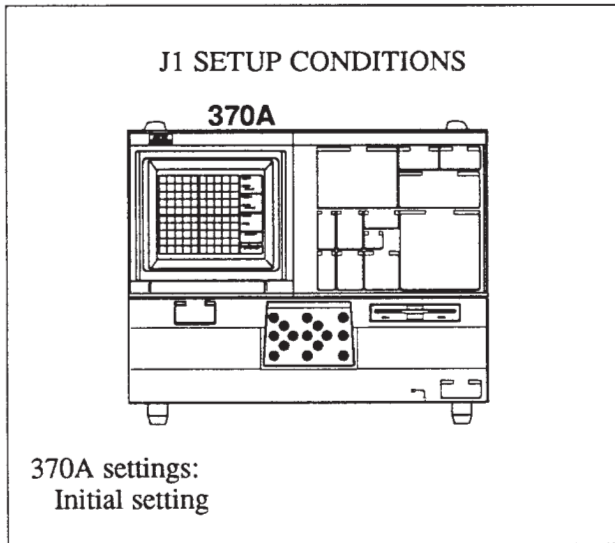
## J. KEY OPERATION AND FLOPPY DISK DRIVE

Equipment Required (see Table 4-3):  
• Double-sided Micro Floppy Disk

### J1. Examining Key Operation

**IMPORTANT:**

The characteristics examined in this step are examples of typical instrument operation; they are not specifications.



### Examining Key Operation

- a. Simultaneously press the FAST/SHIFT and the POSITION DISPLAY buttons to enter "KEY CHECK MODE".
- b. EXAMINE all buttons and knobs while pressing or turning them to change the display.

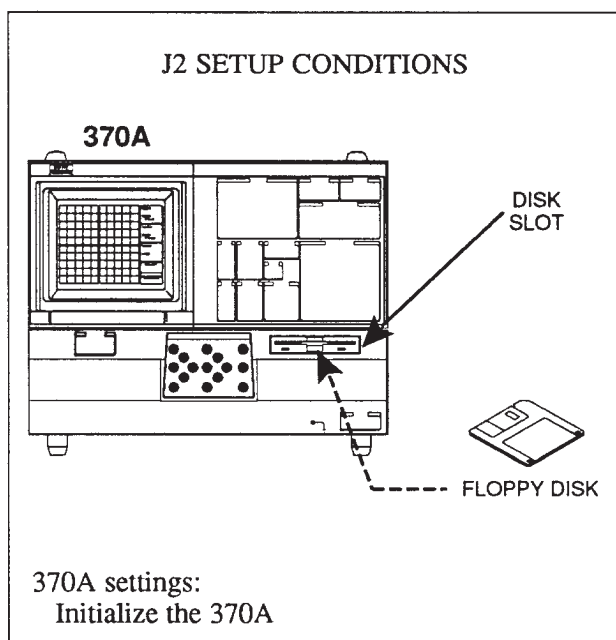
Except the INTENSITY, FOCUS, GRAT ILLUM, POSITION, and TRACE ROTATION controls.

- c. Simultaneously press the FAST/SHIFT and the POSITION DISPLAY buttons to exit "KEY CHECK MODE".

## J2. Examining Floppy Disk Drive Operation

### IMPORTANT:

The characteristics examined in this step are examples of typical instrument operation; they are not specifications.



### Installing the Micro Floppy Disk

- a. Set the write-protect tab of the double-sided micro floppy disk to write-enable position.
- b. Install the double-sided micro floppy disk in the floppy disk slot of the 370A.

### CAUTION

The following step for data formatting will erase all data on the micro floppy disk.

### Formatting the Micro Floppy Disk

- c. Press the SAVE/FORMAT button while holding down the FAST/SHIFT button, then press the SAVE/FORMAT button.
- d. EXAMINE the "FORMAT END" message is displayed after formatting.

### Examining Read Write Operation

- e. Press the RECALL/DIRECTORY button while holding down the FAST/SHIFT button.
- f. Press the up MEMORY button to set the DIRECTORY PAGE to 7.
- g. EXAMINE the <READ ERROR> message is not displayed at any of the memory locations.
- h. EXAMINE the <READ ERROR> message is not displayed at any of the memory locations when repeating steps f and g from DIRECTORY PAGE 8 to 28.
- i. Press the STORE button to exit from the directory display mode.





# Options



# 5 Options







Your instrument may be equipped with one or more instrument options. A brief description of each available option is given in the following discussion. Option information is incorporated into the appropriate sections of the manual. For further information on instrument options, see your Tektronix Products catalog or contact your Tektronix Field Office.

Option 1R    Rack Mounting Adapter

Option A1 - A5 International Power Cords:  
See Table 5-1

370A Service Manual

Table 5-1  
Option A1 - A5

| Plug Configuration  | Usage (Max Rating)         | Reference Standards & Certification                           | Option # |
|---|----------------------------|---|----------|
|    | North American<br>125V/6A  | 1 ANSI C73.11<br>2 NEMA 5-15-P<br>3 IEC 83<br>10 UL<br>11 CSA | Standard |
|    | European<br>220V/6A        | 4 CEE(7),II,<br>IV,VII<br>3 IEC 83<br>8 VDE<br>9 SEMKO        | A1       |
|  | United Kingdom<br>240V/6A3 | 5 BS 1363<br>IEC 83   | A2       |
|  | Australian<br>240V/6A      | 6 AS C112<br>12 ETSA  | A3       |
|  | North American<br>250V/10A | 1 ANSI C73.20<br>2 NEMA 6-15-P<br>3 IEC 83<br>10 UL<br>11 CSA | A4       |
|  | Switzerland<br>240V/6A     | 7 SEV   | A5       |

- 1 ANSI - American National Standards Institute
- 2 NEMA - National Electrical Manufacturer's Association
- 3 IEC - International Electrotechnical Commission
- 4 CEE - International Commission on Rules for the Approval of Electrical Equipment
- 5 BS - British Standards Institution
- 6 AS - Standards Association of Australia
- 7 SEV - Schweizevischer Electrotechischer Verein
- 8 VDE - Verband Deutscher Elektrotechniker
- 9 SEMKO - Swedish Institute for Testing and Approval of Electrical Equipment
- 10 UL - Underwriters Laboratories
- 11 CSA - Canadian Standards Association
- 12 ETSA - Electricity Trust of South Australia

# **Replaceable Electrical Parts**



# Replaceable Electrical Parts

This section contains a list of the electrical components for the 370A. Use this list to identify and order replacement parts.

## Parts Ordering Information

Replacement parts are available through your local Tektronix field office or representative.

Changes to Tektronix products are sometimes made to accommodate improved components as they become available and to give you the benefit of the latest improvements. Therefore, when ordering parts, it is important to include the following information in your order.

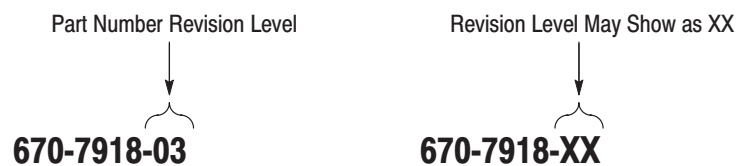
- Part number (see Part Number Revision Level below)
- Instrument type or model number
- Instrument serial number
- Instrument modification number, if applicable

If you order a part that has been replaced with a different or improved part, your local Tektronix field office or representative will contact you concerning any change in part number.

Change information, if any, is located at the rear of this manual.

### Part Number Revision Level

Tektronix part numbers contain two digits that show the revision level of the part. For most parts in this manual, you will find the letters XX in place of the revision level number.



When you order parts, Tektronix will provide you with the most current part for your product type, serial number, and modification (if applicable). At the time of your order, Tektronix will determine the part number revision level needed for your product, based on the information you provide.

## Using the Replaceable Electrical Parts List

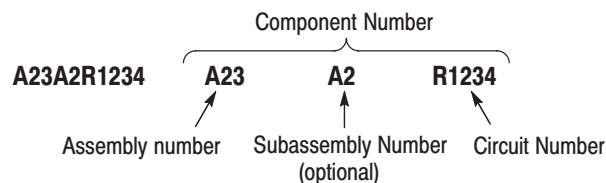
The tabular information in the Replaceable Electrical Parts List is arranged for quick retrieval. Understanding the structure and features of the list will help you find all of the information you need for ordering replacement parts. The following table describes each column of the electrical parts list.

## Parts List Column Descriptions

| Column  | Column Name           | Description  |
|---------|-----------------------|--|
| 1       | Component Number      | The component number appears on diagrams and circuit board illustrations, located in the diagrams section. Assembly numbers are clearly marked on each diagram and circuit board illustration in the <i>Diagrams</i> section, and on the mechanical exploded views in the <i>Replaceable Mechanical Parts</i> list section. The component number is obtained by adding the assembly number prefix to the circuit number (see Component Number illustration following this table).<br><br>The electrical parts list is arranged by assemblies in numerical sequence (A1, with its subassemblies and parts, precedes A2, with its subassemblies and parts).<br><br>Chassis-mounted parts have no assembly number prefix, and they are located at the end of the electrical parts list. |
| 2       | Tektronix Part Number | Use this part number when ordering replacement parts from Tektronix.   |
| 3 and 4 | Serial Number         | Column three indicates the serial number at which the part was first effective. Column four indicates the serial number at which the part was discontinued. No entry indicates the part is good for all serial numbers.  |
| 5       | Name & Description    | An item name is separated from the description by a colon (:). Because of space limitations, an item name may sometimes appear as incomplete. Use the U.S. Federal Catalog handbook H6-1 for further item name identification.   |
| 6       | Mfr. Code             | This indicates the code number of the actual manufacturer of the part.   |
| 7       | Mfr. Part Number      | This indicates the actual manufacturer's or vendor's part number.  |

**Abbreviations** Abbreviations conform to American National Standard ANSI Y1.1–1972.

### Component Number



**Read: Resistor 1234 (of Subassembly 2) of Assembly 23**

### List of Assemblies

A list of assemblies is located at the beginning of the electrical parts list. The assemblies are listed in numerical order. When a part's complete component number is known, this list will identify the assembly in which the part is located.

### Chassis Parts

Chassis-mounted parts and cable assemblies are located at the end of the Replaceable Electrical Parts List.

### Mfr. Code to Manufacturer Cross Index

The table titled Manufacturers Cross Index shows codes, names, and addresses of manufacturers or vendors of components listed in the parts list.



## CROSS INDEX – MFR. CODE NUMBER TO MANUFACTURER

| Mfr. Code | Manufacturer                                     | Address                                      | City, State, Zip Code                |
|-----------|--|--|--------------------------------------|
| S0167     | FUJITSU LTD                                      | 2-3-13 TORANOMON<br>MINATO-KU                | TOKYO JAPAN                          |
| S0293     | MATSUSHITA ELECTRIC WORKS LTD                    | 1048 KADOMA<br>KADOMA-SHI                    | OSAKA 571 JAPAN                      |
| S3385     | SANKEN ELECTRIC CO LTD                           | 1-22-8 NISHI-IKEBUKURO<br>TOSHIMA-KU         | TOKYO JAPAN                          |
| S3774     | OSHINO ELECTRIC LAMP WORKS LTD                   | 5 2 MINAMI SHINAGAWA 2 CHORE<br>SHINAGAWA KU | TOKYO JAPAN                          |
| S4431     | MURATA MFG CO LTD                                | 16 KAIKEN NISHIJM CHO<br>NAGAOKAKY-CITY      | KYOTO JAPAN                          |
| S4549     | JAPAN AVIATION ELECTRONICS IND LTD               | 21 6 DOGUZAKA<br>SHILHUJA QU 1 CHOME         | TOKYO JAPAN                          |
| S4997     | HITACHI KOKI CO LTD<br>ELECTRONICS DEVICES GROUP | 6-2 OTEMACHI<br>2 CHOME CHIYODA KU           | TOKYO 100 JAPAN                      |
| S5011     | ISHIZUKA ELECTRONICS CORP                        | 16-7 HIGASHIKOIWA 3 CHOME<br>EDOGAWA-KU      | TOKYO JAPAN                          |
| S5302     | KOA CO LTD                                       | 3672 INA<br>NATANO-PREF 396                  | JAPAN                                |
| S5518     | ROHM CO LTD                                      | 21 SAIIN MIZOSAKI CHO UKYO KU                | KYOTO 615 JAPAN                      |
| TK0AB     | NATIONAL SEMICONDUCTOR CORP                      | 4-403 IKEBUKURO<br>TOSHIMA-KU                | TOKYO JAPAN                          |
| TK0AC     | ANALOG DEVICES INC                               | 4-7-8 KOUJIMACHI<br>CHIYODA-KU               | TOKYO JAPAN                          |
| TK0BZ     | SANSHIN DENKI CO LTD                             | 4-12 SHIBA, 4-CHOME<br>MINATO-KU             | TOKYO JAPAN                          |
| TK0CJ     | NIKO DENSHI CO LTD                               | 23-15 OHARA 2-CHOME<br>SETAGAYA-KU           | TOKYO JAPAN                          |
| TK0HD     | TOKIN CORP                                       | 2-5-8 KITA-AOYAMA<br>MINATO-KU               | TOKYO JAPAN                          |
| TK00L     | TOSHIBA CO LTD                                   | 1-1-1 SHIBAURA<br>MINATO-KU                  | TOKYO JAPAN                          |
| TK00M     | NIPPON CHEMI-CON COPR.                           | 2-7-8 TOYOMACHI<br>SHINAGAWA-KU              | TOKYO JAPAN                          |
| TK0191    | SONY/TEKTRONIX                                   | 5-9-31 KITASHINAGAWA,<br>SHINAGAWA-KU, TOKYO | TOKYO JAPAN 141-0001                 |
| TK0770    | CARLYLE INC (DIST)                               | 17620 W VALLEY HSY                           | TUKWILA WA 98188                     |
| TK0891    | MICONICS   | 1 FAIRCHILD AVE                              | PLAINVIEW NY 11803                   |
| TK0974    | SANGSHIN CORP                                    | 26830 PACIFIC HWY SOUTH                      | KENT WA 98031                        |
| TK1442    | TAIYO-YUDEN (USA) INC                            | ARLINGTON CENTER<br>714 W ALGONQUIN RD       | ARLINGTON HEIGHTS IL 60005           |
| TK1727    | PHILIPS NEDERLAND BV<br>AFD ELONCO               | POSTBUS 90050                                | 5600 PB EINDHOVEN THE<br>NETHERLANDS |
| TK1743    | UNITRODE (UK) LTD                                | 6 CRESSWELL PARK<br>BLACKHEATH               | LONDON SE 3 9RD ENGLAND              |
| TK2058    | TDK CORPORATION OF AMERICA                       | 1600 FEEHANVILLE DRIVE                       | MOUNT PROSPECT, IL 60056             |

## CROSS INDEX – MFR. CODE NUMBER TO MANUFACTURER

| Mfr. Code | Manufacturer   | Address                                 | City, State, Zip Code       |
|-----------|--|---|-----------------------------|
| TK2611    | STACKPOLE CORPORATION  | PO BOX 14466                            | RALEIGH, NC 27610           |
| 0C8T6     | CITEL AMERICA INC  | 1111 PARK CENTRE BLVD<br>SUITE 474      | MIAMI, FL 33169             |
| 0H1N5     | TOSHIBA MARCON ELECTRONICS<br>AMERICA CORPORATION  | 998 FIRST EDGE DRIVE                    | VERNON HILLS IL 60061       |
| 0J260     | COMTEK MANUFACTURING OF OREGON<br>(METALS)   | PO BOX 4200                             | BEAVERTON OR 97076–4200     |
| 00213     | MSD INC  | 700 ORANGE ST                           | DARLINGTON, SC 29532        |
| 01295     | TEXAS INSTRUMENTS INC<br>SEMICONDUCTOR GROUP   | 13500 N CENTRAL EXPY<br>PO BOX 655303   | DALLAS TX 75262–5303        |
| 02114     | PHILIPS COMPONENTS<br>AMPEREX ELECTRONICS CORP<br>FERROXCUBE DIV                           | 5083 KINGS HWY                          | SAUGERTIES, NY 12477        |
| 04222     | AVX/KYOCERA<br>DIV OF AVX CORP   | 19TH AVE SOUTH<br>P O BOX 867           | MYRTLE BEACH SC 29577       |
| 04713     | MOTOROLA INC<br>SEMICONDUCTOR PRODUCTS SECTOR  | 5005 E MCDOWELL RD                      | PHOENIX AZ 85008–4229       |
| 07716     | IRC, INC   | 2850 MT PLEASANT AVE                    | BURLINGTON IA 52601         |
| 14552     | MICROSEMI CORP   | 2830 S FAIRVIEW ST                      | SANTA ANA CA 92704–5948     |
| 19701     | PHILIPS COMPONENTS DISCRETE<br>PRODUCTS<br>DIV RESISTIVE PRODUCTS FACILITY<br>AIRPORT ROAD | PO BOX 760                              | MINERAL WELLS TX 76067–0760 |
| 22526     | BERG ELECTRONICS INC (DUPONT)  | 857 OLD TRAIL RD                        | ETTERS PA 17319             |
| 23875     | M–TRON INDUSTRIES INC  | PO BOX 630<br>100 DOUGLAS ST            | YANKTON SD 57078–0630       |
| 24355     | ANALOG DEVICES INC   | 1 TECHNOLOGY DRIVE                      | NORWOOD MA 02062            |
| 27014     | NATIONAL SEMICONDUCTOR CORP  | 2900 SEMICONDUCTOR DR                   | SANTA CLARA CA 95051–0606   |
| 32997     | BOURNS INC<br>TRIMPOT DIV  | 1200 COLUMBIA AVE                       | RIVERSIDE CA 92507–2114     |
| 34371     | HARRIS CORP<br>HARRIS SEMICONDUCTOR PRODUCTS<br>GROUP                                      | 200 PALM BAY BLVD<br>PO BOX 883         | MELBOURNE FL 32919          |
| 50139     | ALLEN–BRADLEY CO<br>ELECTRONIC COMPONENTS  | 1414 ALLEN BRADLEY DR                   | EL PASO TX 79936            |
| 50434     | HEWLETT–PACKARD CO<br>OPTOELECTRONICS DIV  | 370 W TRIMBLE RD                        | SAN JOSE CA 95131–1008      |
| 55680     | NICHICON /AMERICA/ CORP  | 927 E STATE PKY                         | SCHAUMBURG IL 60195–4526    |
| 56845     | DALE ELECTRONICS INC   | 2300 RIVERSIDE BLVD<br>PO BOX 74        | NORFOLK NE 68701–2242       |
| 57668     | ROHM CORPORATION   | 15375 BARRANCA PARKWAY<br>SUITE B207    | IRVINE CA 92718             |
| 59660     | TUSONIX INC  | 7741 N BUSINESS PARK DR<br>PO BOX 37144 | TUCSON AZ 85740–7144        |

**CROSS INDEX – MFR. CODE NUMBER TO MANUFACTURER**

| <b>Mfr. Code</b> | <b>Manufacturer</b>  | <b>Address</b>                       | <b>City, State, Zip Code</b> |
|------------------|--|--------------------------------------|------------------------------|
| 61058            | MATSUSHITA ELECTRIC CORP OF AMERICA<br>PANASONIC INDUSTRIAL CO DIV | TWO PANASONIC WAY                    | SECAUCUS NJ 07094            |
| 62643            | UNITED CHEMICON INC  | 9801 W HIGGINS ST<br>SUITE 430       | ROSEMONT, IL 60018–4771      |
| 7W718            | MARQUARDT SWITCHES INC   | 2711 ROUTH 20 EAST                   | CAZENOVIA NY 13035–1219      |
| 80009            | TEKTRONIX INC  | 14150 SW KARL BRAUN DR<br>PO BOX 500 | BEAVERTON OR 97077–0001      |
| 91637            | DALE ELECTRONICS INC   | 2064 12TH AVE<br>PO BOX 609          | COLUMBUS NE 68601–3632       |

### 370A Service Manual

| Component Number | Tektronix Part No. | Serial No. |        | Name & Description   | Mfr. Code | Mfr. Part No. |
|------------------|--------------------|------------|--------|--|-----------|---------------|
|                  |                    | Effective  | Dscont |  |           |               |
| A1               | 671-0236-XX        |            |        | CIRCUIT BD ASSY:MOTHER                                       | 80009     | 6710236XX     |
| A2               | 671-1064-XX        |            |        | CIRCUIT BD ASSY:CPU  | 80009     | 6711064XX     |
| A3               | 671-1044-XX        |            |        | CKT BD ASSY:A/D  | 80009     | 6711044XX     |
| A4               | 670-9306-XX        |            |        | CIRCUIT BD ASSY:DIGITAL DISPLAY                              | 80009     | 6709306XX     |
| A5               | 670-9307-XX        |            |        | CIRCUIT BD ASSY:DISPLAY CONTROL                              | 80009     | 6709307XX     |
| A6               | 670-9308-XX        |            |        | CIRCUIT BD ASSY:COLLECTOR SUPPLY                             | 80009     | 6709308XX     |
| A7               | 670-9309-XX        |            |        | CIRCUIT BD ASSY:STEP GENERATOR                               | 80009     | 6709309XX     |
| A9               | 671-1183-XX        |            |        | CIRCUIT BD ASSY:LV RELAY                                     | 80009     | 6711183XX     |
| A10              | 671-1150-XX        |            |        | CIRCUIT BD ASSY:SENSE BOARD                                  | 80009     | 6711150XX     |
| A11              | 671-1152-XX        |            |        | CIRCUIT BD ASSY:MAIN KEY                                     | 80009     | 6711152XX     |
| A12              | 671-1149-XX        |            |        | CIRCUIT BD ASSY:SUB KEY                                      | 80009     | 6711149XX     |
| A13              | 671-1238-XX        |            |        | CIRCUIT BD ASSY:KEY INTERFACE                                | 80009     | 6711238XX     |
| A14              | 671-1115-XX        |            |        | CIRCUIT BD ASSY:LOR KEY                                      | 80009     | 6711115XX     |
| A15              | 671-1095-XX        |            |        | CIRCUIT BD ASSY:CONFIGURATION LED                            | 80009     | 6711095XX     |
| A18              | 670-9319-XX        |            |        | CIRCUIT BD ASSY:CRT OUTPUT                                   | 80009     | 6709319XX     |
| A19              | 670-9320-XX        |            |        | CIRCUIT BD ASSY:LV SUPPLY                                    | 80009     | 6709320XX     |
| A20              | 670-9321-XX        |            |        | CIRCUIT BD ASSY:H.V. REGULATOR                               | TK0191    | ORDER BY DESC |
| A22              | 671-1182-XX        |            |        | CIRCUIT BD ASSY:INTERFACE                                    | 80009     | 6711182XX     |
| A23              | 671-1094-XX        |            |        | CIRCUIT BD ASSY:FDD INTERFACE                                | 80009     | 6711094XX     |
| A24              | 119-3456-XX        |            |        | FLOPPY DISK UNI:3.5 INCH W/INTERFACE<br>(STANDARD ACCESSORY) | 80009     | 1193456XX     |
| A27              | 670-9323-XX        |            |        | CIRCUIT BD ASSY:PRIMARY                                      | 80009     | 6709323XX     |
| A28              | 670-9324-XX        |            |        | CIRCUIT BD ASSY:LAMP   | 80009     | 6709324XX     |
| A29              | 670-9324-XX        |            |        | CIRCUIT BD ASSY:LAMP   | 80009     | 6709324XX     |
| A33              | 671-1096-XX        |            |        | CIRCUIT BD ASSY:CONFIGURATION RELAY                          | 80009     | 6711096XX     |
| A34              | 671-1140-XX        |            |        | CIRCUIT BD ASSY:LOR RELAY                                    | 80009     | 6711140XX     |
| A35              | 671-1147-XX        |            |        | CIRCUIT BD ASSY:LOOPING                                      | 80009     | 6711147XX     |

| Component Number | Tektronix Part No. | Serial No. |        | Name & Description                        | Mfr. Code | Mfr. Part No. |
|------------------|--------------------|------------|--------|---|-----------|---------------|
|                  |                    | Effective  | Dscont |   |           |               |
| A1               | 671-0236-XX        |            |        | CIRCUIT BD ASSY:MOTHER                    | 80009     | 6710236XX     |
| A1J10            | 131-0608-00        |            |        | CONN,TERMINAL:PRESSFIT/PCB,;MALE,STR      | 22526     | 48283-018     |
| A1J12            | 131-0608-00        |            |        | CONN,TERMINAL:PRESSFIT/PCB,;MALE,STR      | 22526     | 48283-018     |
| A1J20            | 131-3651-00        |            |        | CONN,RCPT,ELEC:HEADER,2 X 32,0.1 SPACING  | 80009     | 131365100     |
| A1J22            | 131-3649-00        |            |        | CONN,RCPT,ELEC:CKT BD,RTANG,2 X 22,0.1 SP | 80009     | 131364900     |
| A1J30            | 131-3651-00        |            |        | CONN,RCPT,ELEC:HEADER,2 X 32,0.1 SPACING  | 80009     | 131365100     |
| A1J32            | 131-3649-00        |            |        | CONN,RCPT,ELEC:CKT BD,RTANG,2 X 22,0.1 SP | 80009     | 131364900     |
| A1J40            | 131-3651-00        |            |        | CONN,RCPT,ELEC:HEADER,2 X 32,0.1 SPACING  | 80009     | 131365100     |
| A1J42            | 131-3649-00        |            |        | CONN,RCPT,ELEC:CKT BD,RTANG,2 X 22,0.1 SP | 80009     | 131364900     |
| A1J50            | 131-3651-00        |            |        | CONN,RCPT,ELEC:HEADER,2 X 32,0.1 SPACING  | 80009     | 131365100     |
| A1J52            | 131-3649-00        |            |        | CONN,RCPT,ELEC:CKT BD,RTANG,2 X 22,0.1 SP | 80009     | 131364900     |
| A1J110           | 131-3660-00        |            |        | CONN,RCPT,ELEC:HEADER,2 X 20              | 80009     | 131366000     |
| A1J180           | 131-0608-00        |            |        | CONN,TERMINAL:PRESSFIT/PCB,;MALE,STR      | 22526     | 48283-018     |
| A1J190           | 131-3668-00        |            |        | CONN,RCPT,ELEC:CKT BD,4 PIN               | 80009     | 131366800     |
| A1J220           | 131-3661-00        |            |        | CONN,RCPT,ELEC:HEADER,2 X 13              | 80009     | 131366100     |
| A1J400           | 131-3662-00        |            |        | CONN,RCPT,ELEC:HEADER,2 X 17              | 80009     | 131366200     |
| A1J410           | 131-0608-00        |            |        | CONN,TERMINAL:PRESSFIT/PCB,;MALE,STR      | 22526     | 48283-018     |
| A1J412           | 131-0608-00        |            |        | CONN,TERMINAL:PRESSFIT/PCB,;MALE,STR      | 22526     | 48283-018     |
| A1W60            | 174-0291-00        |            |        | CA ASSY,SP,ELEC:16,28 AWG,18.5 L,RIBBON   | 80009     | 174029100     |
| A1W70            | 174-0292-00        |            |        | CA ASSY,SP,ELEC:16,28 AWG,4.3 L,RIBBON    | 80009     | 174029200     |
| A1W100           | 131-0566-04        |            |        | BUS,CONDUCTOR:DUMMY RES,18 OD X 3.2MM L   | 80009     | 131056604     |
| A1W192           | 174-0294-00        |            |        | CA ASSY,SP,ELEC:16,28 AWG,12.6 L,RIBBON   | 80009     | 174029400     |
| A1W200           | 131-0566-04        |            |        | BUS,CONDUCTOR:DUMMY RES,18 OD X 3.2MM L   | 80009     | 131056604     |
| A1W300           | 131-0566-04        |            |        | BUS,CONDUCTOR:DUMMY RES,18 OD X 3.2MM L   | 80009     | 131056604     |

### 370A Service Manual

| Component Number | Tektronix Part No. | Serial No. Effective | Dscont | Name & Description                          | Mfr. Code | Mfr. Part No.   |
|------------------|--------------------|----------------------|--------|---|-----------|-----------------|
| A2               | 671-1064-XX        |                      |        | CIRCUIT BD ASSY:CPU                         | 80009     | 6711064XX       |
| A2BT740          | 146-0078-00        |                      |        | BATTERY,STORAGE:8.6V,0.25AH,@8.3MA,NI CAD   | 80009     | 146007800       |
| A2C20            | 290-0745-00        |                      |        | CAP,FXD,ALUM::22UF,20%,50V,8 X 11MM         | 0H1N5     | CEUSM1J220      |
| A2C120           | 290-0778-00        |                      |        | CAP,FXD,ALUM::1UF,20%,50V,5 X 11 MM         | 62643     | SMEBP50VB1R0M5X |
| A2C400           | 290-0745-00        |                      |        | CAP,FXD,ALUM::22UF,20%,50V,8 X 11MM         | 0H1N5     | CEUSM1J220      |
| A2C404           | 281-0775-00        |                      |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA    |
| A2C410           | 290-0745-00        |                      |        | CAP,FXD,ALUM::22UF,20%,50V,8 X 11MM         | 0H1N5     | CEUSM1J220      |
| A2C412           | 281-0775-00        |                      |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA    |
| A2C460           | 281-0814-00        |                      |        | CAP,FXD,CERAMIC:MLC;100 PF,10%,100V         | TK1743    | CGB101KEN       |
| A2C740           | 290-0745-00        |                      |        | CAP,FXD,ALUM::22UF,20%,50V,8 X 11MM         | 0H1N5     | CEUSM1J220      |
| A2C741           | 281-0775-00        |                      |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA    |
| A2C900           | 290-0745-00        |                      |        | CAP,FXD,ALUM::22UF,20%,50V,8 X 11MM         | 0H1N5     | CEUSM1J220      |
| A2C902           | 281-0775-00        |                      |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA    |
| A2C904           | 281-0775-00        |                      |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA    |
| A2C906           | 281-0775-00        |                      |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA    |
| A2C908           | 281-0775-00        |                      |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA    |
| A2C910           | 281-0775-00        |                      |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA    |
| A2C920           | 290-0745-00        |                      |        | CAP,FXD,ALUM::22UF,20%,50V,8 X 11MM         | 0H1N5     | CEUSM1J220      |
| A2C922           | 281-0775-00        |                      |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA    |
| A2C924           | 281-0775-00        |                      |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA    |
| A2C926           | 281-0775-00        |                      |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA    |
| A2C928           | 281-0775-00        |                      |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA    |
| A2C930           | 281-0775-00        |                      |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA    |
| A2C932           | 281-0775-00        |                      |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA    |
| A2C934           | 281-0775-00        |                      |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA    |
| A2C936           | 281-0775-00        |                      |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA    |
| A2C938           | 281-0775-00        |                      |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA    |
| A2C940           | 290-0745-00        |                      |        | CAP,FXD,ALUM::22UF,20%,50V,8 X 11MM         | 0H1N5     | CEUSM1J220      |
| A2C942           | 281-0775-00        |                      |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA    |
| A2C944           | 281-0775-00        |                      |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA    |
| A2C946           | 281-0775-00        |                      |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA    |
| A2C948           | 281-0775-00        |                      |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA    |
| A2C954           | 281-0775-00        |                      |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA    |
| A2C956           | 281-0775-00        |                      |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA    |
| A2C958           | 281-0775-00        |                      |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA    |
| A2C970           | 281-0775-00        |                      |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA    |
| A2C972           | 281-0775-00        |                      |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA    |
| A2C974           | 281-0775-00        |                      |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA    |
| A2C976           | 281-0775-00        |                      |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA    |
| A2C978           | 281-0775-00        |                      |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA    |

| Component Number | Tektronix Part No. | Serial No. Effective | Dscont  | Name & Description                          | Mfr. Code | Mfr. Part No.  |
|------------------|--------------------|----------------------|---------|---|-----------|----------------|
| A2C980           | 281-0775-00        |                      |         | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA   |
| A2C982           | 281-0775-00        |                      |         | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA   |
| A2C984           | 281-0775-00        |                      |         | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA   |
| A2C986           | 281-0775-00        |                      |         | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA   |
| A2C988           | 281-0775-00        |                      |         | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA   |
| A2CR120          | 152-0327-00        |                      |         | SEMICON DVC,DI:SIG,SI,100MA,75V             | 80009     | 152032700      |
| A2CR740          | 152-0327-00        |                      |         | SEMICON DVC,DI:SIG,SI,100MA,75V             | 80009     | 152032700      |
| A2CR742          | 152-0327-00        |                      |         | SEMICON DVC,DI:SIG,SI,100MA,75V             | 80009     | 152032700      |
| A2E710           | 276-0524-00        |                      |         | SHLD BEAD,ELEK:FERRITE                      | 80009     | 276052400      |
| A2E720           | 276-0524-00        |                      |         | SHLD BEAD,ELEK:FERRITE                      | 80009     | 276052400      |
| A2E750           | 276-0524-00        |                      |         | SHLD BEAD,ELEK:FERRITE                      | 80009     | 276052400      |
| A2FL400          | 119-1762-00        |                      |         | FILTER,RFI:0.022UF,+50/-20%,50VW/FERRITE    | 80009     | 119176200      |
| A2L900           | 108-0948-00        | J301393              | J301877 | COIL,RF:FIXED,100UH,10%                     | 80009     | 108094800      |
| A2L900           | 108-1506-00        | J301878              |         | INDUCTOR,FXD:SIGNAL;100UH,10%               | 80009     | 108150600      |
| A2L920           | 108-0948-00        | J301393              | J301877 | COIL,RF:FIXED,100UH,10%                     | 80009     | 108094800      |
| A2L920           | 108-1506-00        | J301878              |         | INDUCTOR,FXD:SIGNAL;100UH,10%               | 80009     | 108150600      |
| A2L940           | 108-0948-00        | J301393              | J301877 | COIL,RF:FIXED,100UH,10%                     | 80009     | 108094800      |
| A2L940           | 108-1506-00        | J301878              |         | INDUCTOR,FXD:SIGNAL;100UH,10%               | 80009     | 108150600      |
| A2P20            | 131-3650-00        |                      |         | CONN,PLUG,ELEC:CKT BD,RTANG,2 X 32,0.1 SP   | 80009     | 131365000      |
| A2P22            | 131-3648-00        |                      |         | CONN,PLUG,ELEC:CKT BD,RTANG,2 X 22,0.1 SP   | 80009     | 131364800      |
| A2Q400           | 151-0190-00        |                      |         | TRANSISTOR,SIG:BIPOLAR,NPN;40V,200MA        | 04713     | 2N3904         |
| A2Q747           | 151-0188-00        |                      |         | TRANSISTOR,SIG:BIPOLAR,PNP;40V,200MA        | 04713     | 2N3906         |
| A2R110           | 315-0472-00        |                      |         | RES,FXD,FILM:4.7K OHM,5%,0.25W              | TK1727    | SFR25 2322-181 |
| A2R121           | 315-0203-00        |                      |         | RES,FXD,FILM:20K OHM,5%,0.25W               | TK1727    | SFR25 2322-181 |
| A2R122           | 315-0103-00        |                      |         | RES,FXD,FILM:10K OHM,5%,0.25W               | TK1727    | SFR25 2322-181 |
| A2R300           | 315-0472-00        |                      |         | RES,FXD,FILM:4.7K OHM,5%,0.25W              | TK1727    | SFR25 2322-181 |
| A2R406           | 315-0103-00        |                      |         | RES,FXD,FILM:10K OHM,5%,0.25W               | TK1727    | SFR25 2322-181 |
| A2R408           | 315-0103-00        | J301393              | J301992 | RES,FXD,FILM:10K OHM,5%,0.25W               | TK1727    | SFR25 2322-181 |
| A2R408           | 315-0102-00        | J301993              |         | RES,FXD,FILM:1K OHM,5%,0.25W                | TK1727    | SFR25 2322-181 |
| A2R409           | 315-0103-00        |                      |         | RES,FXD,FILM:10K OHM,5%,0.25W               | TK1727    | SFR25 2322-181 |
| A2R410           | 307-0923-00        |                      |         | RES NTWK,FXD,FI:(8)330K OHM,5%,0.125W       | 80009     | 307092300      |
| A2R412           | 307-0923-00        |                      |         | RES NTWK,FXD,FI:(8)330K OHM,5%,0.125W       | 80009     | 307092300      |
| A2R414           | 307-0923-00        |                      |         | RES NTWK,FXD,FI:(8)330K OHM,5%,0.125W       | 80009     | 307092300      |
| A2R416           | 307-0923-00        |                      |         | RES NTWK,FXD,FI:(8)330K OHM,5%,0.125W       | 80009     | 307092300      |
| A2R418           | 307-0923-00        |                      |         | RES NTWK,FXD,FI:(8)330K OHM,5%,0.125W       | 80009     | 307092300      |
| A2R420           | 307-0923-00        |                      |         | RES NTWK,FXD,FI:(8)330K OHM,5%,0.125W       | 80009     | 307092300      |
| A2R422           | 307-0923-00        |                      |         | RES NTWK,FXD,FI:(8)330K OHM,5%,0.125W       | 80009     | 307092300      |
| A2R450           | 307-0923-00        |                      |         | RES NTWK,FXD,FI:(8)330K OHM,5%,0.125W       | 80009     | 307092300      |
| A2R452           | 307-0923-00        |                      |         | RES NTWK,FXD,FI:(8)330K OHM,5%,0.125W       | 80009     | 307092300      |
| A2R454           | 307-0923-00        |                      |         | RES NTWK,FXD,FI:(8)330K OHM,5%,0.125W       | 80009     | 307092300      |

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| Component Number | Tektronix Part No. | Serial No. Effective | Dscont  | Name & Description                          | Mfr. Code | Mfr. Part No.   |
|------------------|--------------------|----------------------|---------|---|-----------|-----------------|
| A2R456           | 307-0923-00        |                      |         | RES NTWK,FXD,FI:(8)330K OHM,5%,0.125W       | 80009     | 307092300       |
| A2R458           | 307-0923-00        |                      |         | RES NTWK,FXD,FI:(8)330K OHM,5%,0.125W       | 80009     | 307092300       |
| A2R460           | 307-0923-00        |                      |         | RES NTWK,FXD,FI:(8)330K OHM,5%,0.125W       | 80009     | 307092300       |
| A2R462           | 307-0923-00        |                      |         | RES NTWK,FXD,FI:(8)330K OHM,5%,0.125W       | 80009     | 307092300       |
| A2R465           | 315-0103-00        |                      |         | RES,FXD,FILM:10K OHM,5%,0.25W               | TK1727    | SFR25 2322-181  |
| A2R466           | 315-0104-00        |                      |         | RES,FXD,FILM:100K OHM,5%,0.25W              | TK1727    | SFR25 2322-181  |
| A2R740           | 321-0217-00        |                      |         | RES,FXD,FILM:1.78K OHM,1%,0.125W,TC=T0      | TK1727    | MR25-2322-151-1 |
| A2R741           | 321-0332-00        |                      |         | RES,FXD,FILM:28.0K OHM,1%,0.125W,TC=T0      | 19701     | 5043ED28K00F    |
| A2R742           | 321-0289-00        |                      |         | RES,FXD,FILM:10.0K OHM,1%,0.125W,TC=T0      | 19701     | 5043ED10K00F    |
| A2R744           | 315-0472-00        |                      |         | RES,FXD,FILM:4.7K OHM,5%,0.25W              | TK1727    | SFR25 2322-181  |
| A2R745           | 315-0510-00        |                      |         | RES,FXD,FILM:51 OHM,5%,0.25W                | TK1727    | SFR25 2322-181  |
| A2R747           | 315-0103-00        |                      |         | RES,FXD,FILM:10K OHM,5%,0.25W               | TK1727    | SFR25 2322-181  |
| A2R750           | 315-0101-00        |                      |         | RES,FXD,FILM:100 OHM,5%,0.25W               | TK1727    | SFR25 2322-181  |
| A2R770           | 307-0923-00        |                      |         | RES NTWK,FXD,FI:(8)330K OHM,5%,0.125W       | 80009     | 307092300       |
| A2TP100          | 214-0579-00        | J301393              | J302394 | TERM,TEST POINT:PCB,TEST POINT;EYELET       | 0J260     | ORDER BY DESC   |
| A2TP400          | 214-0579-00        | J301393              | J302394 | TERM,TEST POINT:PCB,TEST POINT;EYELET       | 0J260     | ORDER BY DESC   |
| A2U100           | 119-1408-00        |                      |         | OSC,XTAL CLOCK:16MHZ,0.01%,TTL,4 PIN 14 PIN | 23875     | 792-010         |
| A2U120           | 156-2009-00        |                      |         | IC,DIGITAL:HCMOS,FLIP FLOP;DUAL D-TYPE      | 04713     | MC74HC74AN      |
| A2U200           | 156-2316-00        |                      |         | IC,DIGITAL:HCMOS,DEMUX/DECODER              | 80009     | 156231600       |
| A2U210           | 156-2316-00        |                      |         | IC,DIGITAL:HCMOS,DEMUX/DECODER              | 80009     | 156231600       |
| A2U240           | 156-2009-00        |                      |         | IC,DIGITAL:HCMOS,FLIP FLOP;DUAL D-TYPE      | 04713     | MC74HC74AN      |
| A2U250           | 156-2009-00        |                      |         | IC,DIGITAL:HCMOS,FLIP FLOP;DUAL D-TYPE      | 04713     | MC74HC74AN      |
| A2U260           | 156-2833-00        |                      |         | IC,DIGITAL:HCMOS,MUX/ENCODER                | 80009     | 156283300       |
| A2U270           | 156-2820-00        |                      |         | IC,DIGITAL:HCMOS,GATE;TRIPLE 3-INPUT NAND   | 80009     | 156282000       |
| A2U300           | 156-2026-00        |                      |         | IC,DIGITAL:HCMOS,GATE;QUAD 2-INPUT NOR      | 04713     | MC74HC02AN      |
| A2U310           | 156-2009-00        |                      |         | IC,DIGITAL:HCMOS,FLIP FLOP;DUAL D-TYPE      | 04713     | MC74HC74AN      |
| A2U340           | 156-2813-00        |                      |         | IC,DIGITAL:HCMOS,COUNTER;DUAL 4-BIT BINARY  | 80009     | 156281300       |
| A2U400           | 156-2396-00        |                      |         | IC,MISC:BIPOLAR,PWR SUPPLY SUPERVISOR       | 01295     | TL7705ACP       |
| A2U410           | 156-1445-04        |                      |         | IC,PROCESSOR:NMOS,MICROPROCESSOR            | 80009     | 156144504       |
| A2U430           | 156-2253-00        |                      |         | IC,DIGITAL:HCMOS,GATE;QUAD 2-INPUT NAND     | 80009     | 156225300       |
| A2U450           | 156-2300-00        |                      |         | IC,DIGITAL:HCMOS,TRANSCEIVER;OCTAL          | 80009     | 156230000       |
| A2U452           | 156-2300-00        |                      |         | IC,DIGITAL:HCMOS,TRANSCEIVER;OCTAL          | 80009     | 156230000       |
| A2U454           | 156-2300-00        |                      |         | IC,DIGITAL:HCMOS,TRANSCEIVER;OCTAL          | 80009     | 156230000       |
| A2U456           | 156-2300-00        |                      |         | IC,DIGITAL:HCMOS,TRANSCEIVER;OCTAL          | 80009     | 156230000       |
| A2U458           | 156-2300-00        |                      |         | IC,DIGITAL:HCMOS,TRANSCEIVER;OCTAL          | 80009     | 156230000       |
| A2U460           | 156-2300-00        |                      |         | IC,DIGITAL:HCMOS,TRANSCEIVER;OCTAL          | 80009     | 156230000       |
| A2U462           | 156-2300-00        |                      |         | IC,DIGITAL:HCMOS,TRANSCEIVER;OCTAL          | 80009     | 156230000       |
| A2U480           | 156-2300-00        |                      |         | IC,DIGITAL:HCMOS,TRANSCEIVER;OCTAL          | 80009     | 156230000       |
| A2U482           | 156-2300-00        |                      |         | IC,DIGITAL:HCMOS,TRANSCEIVER;OCTAL          | 80009     | 156230000       |
| A2U484           | 156-1921-00        |                      |         | IC,DIGITAL:HCTCMOS,TRANSCEIVER;OCTAL        | 04713     | MC74HCT245AN    |



| Component Number | Tektronix Part No. | Serial No. Effective | Dscont  | Name & Description                        | Mfr. Code | Mfr. Part No.  |
|------------------|--------------------|----------------------|---------|---|-----------|----------------|
| A2U486           | 156-1921-00        |                      |         | IC,DIGITAL:HCTCMOS,TRANSCEIVER;OCTAL      | 04713     | MC74HCT245AN   |
| A2U500           | 156-2825-00        |                      |         | IC,DIGITAL:HCMOS,DEMUX/DECODER;DUAL       | 80009     | 156282500      |
| A2U520           | 156-2316-00        |                      |         | IC,DIGITAL:HCMOS,DEMUX/DECODER            | 80009     | 156231600      |
| A2U540           | 156-2316-00        |                      |         | IC,DIGITAL:HCMOS,DEMUX/DECODER            | 80009     | 156231600      |
| A2U600           | 160-6101-01        | J301393              | J301399 | MICROCKT,DGTL:128K X 8 EPROM,PRGM         | 80009     | 160610101      |
| A2U600           | 160-6101-02        | J301400              | J301557 | MICROCKT,DGTL:128K X 8 EPROM,PRGM         | 80009     | 160610102      |
| A2U600           | 160-6101-03        | J301558              | J301652 | MICROCKT,DGTL:128K X 8 EPROM,PRGM         | 80009     | 160610103      |
| A2U600           | 160-6101-04        | J301653              | J301702 | MICROCKT,DGTL:128K X 8 EPROM,PRGM         | 80009     | 160610104      |
| A2U600           | 160-6101-05        | J301703              | J301932 | MICROCKT,DGTL:128K X 8 EPROM,PRGM         | 80009     | 160610105      |
| A2U600           | 160-6101-06        | J301933              | J301942 | MICROCKT,DGTL:128K X 8 EPROM,PRGM         | 80009     | 160610106      |
| A2U600           | 160-6101-07        | J301943              | J302057 | MICROCKT,DGTL:128K X 8 EPROM,PRGM         | 80009     | 160610107      |
| A2U600           | 160-6101-08        | J302058              | J302590 | MICROCKT,DGTL:128K X 8 EPROM,PRGM         | 80009     | 160610108      |
| A2U600           | 160-6101-09        | J302591              | J302952 | MICROCKT,DGTL:128K X 8 EPROM,PRGM         | 80009     | 160610109      |
| A2U600           | 160-6101-10        | J302953              |         | MICROCKT,DGTL:128K X 8 EPROM,PRGM         | 80009     | 160610110      |
| A2U610           | 160-6102-01        | J301393              | J301399 | MICROCKT,DGTL:128K X 8 EPROM,PRGM         | 80009     | 160610201      |
| A2U610           | 160-6102-02        | J301400              | J301557 | MICROCKT,DGTL:128K X 8 EPROM,PRGM         | 80009     | 160610202      |
| A2U610           | 160-6102-03        | J301558              | J301652 | MICROCKT,DGTL:128K X 8 EPROM,PRGM         | 80009     | 160610203      |
| A2U610           | 160-6102-04        | J301653              | J301702 | MICROCKT,DGTL:128K X 8 EPROM,PRGM         | 80009     | 160610204      |
| A2U610           | 160-6102-05        | J301703              | J301932 | MICROCKT,DGTL:128K X 8 EPROM,PRGM         | 80009     | 160610205      |
| A2U610           | 160-6102-06        | J301933              | J301942 | MICROCKT,DGTL:128K X 8 EPROM,PRGM         | 80009     | 160610206      |
| A2U610           | 160-6102-07        | J301943              | J302057 | MICROCKT,DGTL:128K X 8 EPROM,PRGM         | 80009     | 160610207      |
| A2U610           | 160-6102-08        | J302058              | J302590 | MICROCKT,DGTL:128K X 8 EPROM,PRGM         | 80009     | 160610208      |
| A2U610           | 160-6102-09        | J302591              | J302952 | MICROCKT,DGTL:128K X 8 EPROM,PRGM         | 80009     | 160610209      |
| A2U610           | 160-6102-10        | J302953              |         | MICROCKT,DGTL:128K X 8 EPROM,PRGM         | 80009     | 160610210      |
| A2U720           | 156-2808-00        |                      |         | IC,DIGITAL:HCMOS,GATE;QUAD 2-INPUT        | 80009     | 156280800      |
| A2U740           | 156-2445-00        |                      |         | IC,LINEAR:BIPOLAR,PWR SUPPLY SUPERVISOR   | 34371     | ICL8212CPA     |
| A2U770           | 156-3681-00        |                      |         | IC,DIGITAL:HCMOS,BUFFER;HEX, 3-STATE      | 80009     | 156368100      |
| A2U800           | 156-3399-00        | J301393              | J302122 | IC,MEMORY:CMOS,SRAM;128K X 8,120NS,MODULE | S4997     | H66204 L-12 32 |
| A2U800           | 156-4279-00        | J302123              |         | IC,MEMORY:CMOS,SRAM;128K X 8,85NS,MODULE  | 80009     | 156427900      |
| A2U810           | 156-3399-00        | J301393              | J302122 | IC,MEMORY:CMOS,SRAM;128K X 8,120NS,MODULE | S4997     | H66204 L-12 32 |
| A2U810           | 156-4279-00        | J302123              |         | IC,MEMORY:CMOS,SRAM;128K X 8,85NS,MODULE  | 80009     | 156427900      |

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| Component Number | Tektronix Part No. | Serial No. |        | Name & Description                          | Mfr. Code | Mfr. Part No.  |
|------------------|--------------------|------------|--------|---|-----------|----------------|
|                  |                    | Effective  | Dscont |   |           |                |
| A3               | 671-1044-XX        |            |        | CKT BD ASSY:A/D                             | 80009     | 6711044XX      |
| A3C100           | 281-0775-00        |            |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA   |
| A3C102           | 290-0746-00        |            |        | CAP,FXD,ALUM;:47UF,+50%-20%,16V             | 55680     | UVX1J470MPA    |
| A3C104           | 283-0603-00        |            |        | CAP,FXD,MICA DI:113PF,2%,300V               | TK0891    | RDM15FD1130G03 |
| A3C110           | 281-0775-00        |            |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA   |
| A3C120           | 281-0775-00        |            |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA   |
| A3C130           | 281-0775-00        |            |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA   |
| A3C150           | 281-0775-00        |            |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA   |
| A3C151           | 285-1117-00        |            |        | CAP,FXD,PLASTIC:0.018UF,2%,100V             | 80009     | 285111700      |
| A3C152           | 281-0775-00        |            |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA   |
| A3C153           | 281-0812-00        |            |        | CAP,FXD,CERAMIC:MLC;1000PF,10%,100V         | 04222     | SA101C102KAA   |
| A3C160           | 281-0775-00        |            |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA   |
| A3C170           | 281-0775-00        |            |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA   |
| A3C180           | 281-0775-00        |            |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA   |
| A3C190           | 281-0775-00        |            |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA   |
| A3C200           | 281-0775-00        |            |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA   |
| A3C210           | 281-0775-00        |            |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA   |
| A3C220           | 281-0775-00        |            |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA   |
| A3C230           | 281-0775-00        |            |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA   |
| A3C240           | 281-0775-00        |            |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA   |
| A3C250           | 281-0775-00        |            |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA   |
| A3C260           | 281-0775-00        |            |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA   |
| A3C270           | 281-0775-00        |            |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA   |
| A3C280           | 281-0775-00        |            |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA   |
| A3C290           | 281-0775-00        |            |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA   |
| A3C300           | 281-0775-00        |            |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA   |
| A3C301           | 281-0773-00        |            |        | CAP,FXD,CERAMIC:MLC;0.01UF,10%,100V         | TK1743    | CGB103KEX      |
| A3C302           | 290-0804-00        |            |        | CAP,FXD,ELCTLT:10UF,+50-20%,25V             | 0H1N5     | CEUSM1E100     |
| A3C320           | 281-0775-00        |            |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA   |
| A3C325           | 281-0775-00        |            |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA   |
| A3C340           | 281-0775-00        |            |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA   |
| A3C350           | 281-0775-00        |            |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA   |
| A3C360           | 281-0775-00        |            |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA   |
| A3C361           | 281-0823-00        |            |        | CAP,FXD,CER DI:470PF,10%,50V                | 04222     | SA101A471KAA   |
| A3C362           | 281-0812-00        |            |        | CAP,FXD,CERAMIC:MLC;1000PF,10%,100V         | 04222     | SA101C102KAA   |
| A3C365           | 281-0775-00        |            |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA   |
| A3C371           | 281-0759-00        |            |        | CAP,FXD,CERAMIC:MLC;22PF,10%,100V           | 04222     | SA102A220KAA   |
| A3C374           | 281-0775-00        |            |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA   |
| A3C380           | 281-0775-00        |            |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA   |
| A3C381           | 281-0775-00        |            |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA   |

| Component Number | Tektronix Part No. | Serial No. Effective | Dscont | Name & Description                          | Mfr. Code | Mfr. Part No.  |
|------------------|--------------------|----------------------|--------|---|-----------|----------------|
| A3C382           | 281-0768-00        |                      |        | CAP,FXD,CER DI:470PF,20%,100V               | 04222     | SA101A471KAA   |
| A3C385           | 281-0775-00        |                      |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA   |
| A3C400           | 281-0775-00        |                      |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA   |
| A3C410           | 281-0775-00        |                      |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA   |
| A3C420           | 281-0775-00        |                      |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA   |
| A3C430           | 281-0775-00        |                      |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA   |
| A3C440           | 281-0775-00        |                      |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA   |
| A3C445           | 281-0775-00        |                      |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA   |
| A3C460           | 281-0775-00        |                      |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA   |
| A3C465           | 281-0775-00        |                      |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA   |
| A3C470           | 281-0775-00        |                      |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA   |
| A3C471           | 281-0775-00        |                      |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA   |
| A3C472           | 281-0775-00        |                      |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA   |
| A3C473           | 290-1007-00        |                      |        | CAP,FXD,ELCTLT:22UF,20%,16V                 | 80009     | 290100700      |
| A3C474           | 283-0603-00        |                      |        | CAP,FXD,MICA DI:113PF,2%,300V               | TK0891    | RDM15FD1130G03 |
| A3C475           | 290-0746-00        |                      |        | CAP,FXD,ALUM:;47UF,+50%-20%,16V             | 55680     | UVX1J470MPA    |
| A3C480           | 281-0775-00        |                      |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA   |
| A3C500           | 281-0775-00        |                      |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA   |
| A3C511           | 281-0773-00        |                      |        | CAP,FXD,CERAMIC:MLC;0.01UF,10%,100V         | TK1743    | CGB103KEX      |
| A3C512           | 290-0804-00        |                      |        | CAP,FXD,ELCTLT:10UF,+50-20%,25V             | 0H1N5     | CEUSM1E100     |
| A3C513           | 290-1007-00        |                      |        | CAP,FXD,ELCTLT:22UF,20%,16V                 | 80009     | 290100700      |
| A3C540           | 281-0775-00        |                      |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA   |
| A3C545           | 281-0775-00        |                      |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA   |
| A3C551           | 281-0812-00        |                      |        | CAP,FXD,CERAMIC:MLC;1000PF,10%,100V         | 04222     | SA101C102KAA   |
| A3C552           | 281-0823-00        |                      |        | CAP,FXD,CER DI:470PF,10%,50V                | 04222     | SA101A471KAA   |
| A3C560           | 281-0775-00        |                      |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA   |
| A3C561           | 283-0167-00        |                      |        | CAP,FXD,CER DI:0.1UF,10%,100V               | 04222     | SR211C104KAA   |
| A3C562           | 281-0850-00        | J310319              |        | CAP,FXD,CERAMIC:MLC;820PF,5%,50VDC          | TK1743    | CGC821JDN      |
| A3C562           | 281-0345-00        | J310320              |        | CAP,FXD,CER DI;820PF,10%,50VDC              | 80009     | 281034500      |
| A3C563           | 290-1007-00        |                      |        | CAP,FXD,ELCTLT:22UF,20%,16V                 | 80009     | 290100700      |
| A3C564           | 281-0775-00        |                      |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA   |
| A3C565           | 281-0775-00        |                      |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA   |
| A3C566           | 283-0027-00        |                      |        | CAP,FXD,CER DI:0.02UF,20%,50V               | 04222     | SR265C203MAA   |
| A3C570           | 281-0775-00        |                      |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA   |
| A3C571           | 281-0775-00        |                      |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA   |
| A3C575           | 281-0775-00        |                      |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA   |
| A3C580           | 281-0775-00        |                      |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA   |
| A3C581           | 290-1007-00        |                      |        | CAP,FXD,ELCTLT:22UF,20%,16V                 | 80009     | 290100700      |
| A3C582           | 290-1007-00        |                      |        | CAP,FXD,ELCTLT:22UF,20%,16V                 | 80009     | 290100700      |
| A3C585           | 281-0775-00        |                      |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA   |

### 370A Service Manual

| Component Number | Tektronix Part No. | Serial No. |        | Name & Description                          | Mfr. Code | Mfr. Part No. |
|------------------|--------------------|------------|--------|---|-----------|---------------|
|                  |                    | Effective  | Dscont |   |           |               |
| A3C591           | 281-0812-00        |            |        | CAP,FXD,CERAMIC:MLC;1000PF,10%,100V         | 04222     | SA101C102KAA  |
| A3C592           | 281-0812-00        |            |        | CAP,FXD,CERAMIC:MLC;1000PF,10%,100V         | 04222     | SA101C102KAA  |
| A3C600           | 281-0775-00        |            |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA  |
| A3C601           | 281-0812-00        |            |        | CAP,FXD,CERAMIC:MLC;1000PF,10%,100V         | 04222     | SA101C102KAA  |
| A3C602           | 281-0812-00        |            |        | CAP,FXD,CERAMIC:MLC;1000PF,10%,100V         | 04222     | SA101C102KAA  |
| A3C605           | 281-0775-00        |            |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA  |
| A3C620           | 281-0775-00        |            |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA  |
| A3C621           | 290-0770-00        |            |        | CAP,FXD,ELCTLT:100UF,+50-20%,25VDC          | 0H1N5     | CEUSM1V101    |
| A3C625           | 281-0775-00        |            |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA  |
| A3C626           | 290-0770-00        |            |        | CAP,FXD,ELCTLT:100UF,+50-20%,25VDC          | 0H1N5     | CEUSM1V101    |
| A3C631           | 290-1007-00        |            |        | CAP,FXD,ELCTLT:22UF,20%,16V                 | 80009     | 290100700     |
| A3C632           | 281-0775-00        |            |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA  |
| A3C633           | 281-0775-00        |            |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA  |
| A3C634           | 290-1007-00        |            |        | CAP,FXD,ELCTLT:22UF,20%,16V                 | 80009     | 290100700     |
| A3C635           | 281-0762-00        |            |        | CAP,FXD,CERAMIC:MLC;27PF,10%,100V,NPO,0.100 | 04222     | SA102A270KAA  |
| A3C636           | 281-0762-00        |            |        | CAP,FXD,CERAMIC:MLC;27PF,10%,100V,NPO,0.100 | 04222     | SA102A270KAA  |
| A3C650           | 290-1007-00        |            |        | CAP,FXD,ELCTLT:22UF,20%,16V                 | 80009     | 290100700     |
| A3C651           | 281-0775-00        |            |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA  |
| A3C652           | 290-1007-00        |            |        | CAP,FXD,ELCTLT:22UF,20%,16V                 | 80009     | 290100700     |
| A3C653           | 281-0775-00        |            |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA  |
| A3C660           | 281-0775-00        |            |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA  |
| A3C670           | 281-0775-00        |            |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA  |
| A3C680           | 281-0775-00        |            |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA  |
| A3C690           | 281-0775-00        |            |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA  |
| A3C700           | 281-0775-00        |            |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA  |
| A3C720           | 281-0775-00        |            |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA  |
| A3C730           | 281-0775-00        |            |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA  |
| A3C740           | 281-0775-00        |            |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA  |
| A3C742           | 281-0775-00        |            |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA  |
| A3C750           | 281-0775-00        |            |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA  |
| A3C760           | 281-0775-00        |            |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA  |
| A3C770           | 281-0775-00        |            |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA  |
| A3C790           | 283-0059-00        |            |        | CAP,FXD,CER DI:1UF,+80-20%,50V              | 04222     | SR305C105MAA  |
| A3C800           | 281-0775-00        |            |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA  |
| A3C810           | 281-0773-00        |            |        | CAP,FXD,CERAMIC:MLC;0.01UF,10%,100V         | TK1743    | CGB103KEX     |
| A3C910           | 290-1007-00        |            |        | CAP,FXD,ELCTLT:22UF,20%,16V                 | 80009     | 290100700     |
| A3C920           | 290-1007-00        |            |        | CAP,FXD,ELCTLT:22UF,20%,16V                 | 80009     | 290100700     |
| A3C930           | 290-0770-00        |            |        | CAP,FXD,ELCTLT:100UF,+50-20%,25VDC          | 0H1N5     | CEUSM1V101    |
| A3C940           | 290-0770-00        |            |        | CAP,FXD,ELCTLT:100UF,+50-20%,25VDC          | 0H1N5     | CEUSM1V101    |
| A3C960           | 290-0770-00        |            |        | CAP,FXD,ELCTLT:100UF,+50-20%,25VDC          | 0H1N5     | CEUSM1V101    |

| Component Number | Tektronix Part No. | Serial No. Effective | Dscont  | Name & Description                        | Mfr. Code | Mfr. Part No.   |
|------------------|--------------------|----------------------|---------|---|-----------|-----------------|
| A3CR150          | 152-0327-00        |                      |         | SEMICON DVC,DI:SIG,SI,100MA,75V           | 80009     | 152032700       |
| A3CR280          | 152-0322-00        |                      |         | DIODE,SIG:SCHTKY,;15V,410MVF AT 1MA,1.2PF | 50434     | 5082-2672-T25   |
| A3CR310          | 152-0327-00        |                      |         | SEMICON DVC,DI:SIG,SI,100MA,75V           | 80009     | 152032700       |
| A3CR511          | 152-0327-00        |                      |         | SEMICON DVC,DI:SIG,SI,100MA,75V           | 80009     | 152032700       |
| A3CR512          | 152-0327-00        |                      |         | SEMICON DVC,DI:SIG,SI,100MA,75V           | 80009     | 152032700       |
| A3CR550          | 152-0327-00        |                      |         | SEMICON DVC,DI:SIG,SI,100MA,75V           | 80009     | 152032700       |
| A3CR580          | 152-0327-00        |                      |         | SEMICON DVC,DI:SIG,SI,100MA,75V           | 80009     | 152032700       |
| A3CR581          | 152-0327-00        |                      |         | SEMICON DVC,DI:SIG,SI,100MA,75V           | 80009     | 152032700       |
| A3CR900          | 152-0832-00        | J302953              |         | SEMICON DVC,DI:SIG,SI,120MA,50V           | 80009     | 152083200       |
| A3J34            | 131-0608-00        |                      |         | CONN,TERMINAL:PRESSFIT/PCB,;MALE,STR      | 22526     | 48283-018       |
| A3J150           | 131-0608-00        |                      |         | CONN,TERMINAL:PRESSFIT/PCB,;MALE,STR      | 22526     | 48283-018       |
| A3J310           | 131-0608-00        |                      |         | CONN,TERMINAL:PRESSFIT/PCB,;MALE,STR      | 22526     | 48283-018       |
| A3L578           | 108-1490-00        |                      |         | COIL,RF:FXD,8MH,20T                       | 80009     | 108149000       |
| A3L650           | 108-0948-00        | J301393              | J301877 | COIL,RF:FIXED,100UH,10%                   | 80009     | 108094800       |
| A3L650           | 108-1506-00        | J301878              |         | INDUCTOR,FXD:SIGNAL;100UH,10%             | 80009     | 108150600       |
| A3L651           | 108-0948-00        | J301393              | J301877 | COIL,RF:FIXED,100UH,10%                   | 80009     | 108094800       |
| A3L651           | 108-1506-00        | J301878              |         | INDUCTOR,FXD:SIGNAL;100UH,10%             | 80009     | 108150600       |
| A3L910           | 108-0948-00        | J301393              | J301877 | COIL,RF:FIXED,100UH,10%                   | 80009     | 108094800       |
| A3L910           | 108-1506-00        | J301878              |         | INDUCTOR,FXD:SIGNAL;100UH,10%             | 80009     | 108150600       |
| A3L920           | 108-0948-00        | J301393              | J301877 | COIL,RF:FIXED,100UH,10%                   | 80009     | 108094800       |
| A3L920           | 108-1506-00        | J301878              |         | INDUCTOR,FXD:SIGNAL;100UH,10%             | 80009     | 108150600       |
| A3L930           | 108-0948-00        | J301393              | J301877 | COIL,RF:FIXED,100UH,10%                   | 80009     | 108094800       |
| A3L930           | 108-1506-00        | J301878              |         | INDUCTOR,FXD:SIGNAL;100UH,10%             | 80009     | 108150600       |
| A3L940           | 108-0948-00        | J301393              | J301877 | COIL,RF:FIXED,100UH,10%                   | 80009     | 108094800       |
| A3L940           | 108-1506-00        | J301878              |         | INDUCTOR,FXD:SIGNAL;100UH,10%             | 80009     | 108150600       |
| A3L950           | 108-0948-00        | J301393              | J301877 | COIL,RF:FIXED,100UH,10%                   | 80009     | 108094800       |
| A3L950           | 108-1506-00        | J301878              |         | INDUCTOR,FXD:SIGNAL;100UH,10%             | 80009     | 108150600       |
| A3P30            | 131-3650-00        |                      |         | CONN,PLUG,ELEC:CKT BD,RTANG,2 X 32,0.1 SP | 80009     | 131365000       |
| A3P32            | 131-3648-00        |                      |         | CONN,PLUG,ELEC:CKT BD,RTANG,2 X 22,0.1 SP | 80009     | 131364800       |
| A3P34            | 131-4311-00        |                      |         | BUS,CONDUCTOR:WHITE,SHUNT ASSY            | 80009     | 131431100       |
| A3P150           | 131-4311-00        |                      |         | BUS,CONDUCTOR:WHITE,SHUNT ASSY            | 80009     | 131431100       |
| A3P310           | 131-4311-00        |                      |         | BUS,CONDUCTOR:WHITE,SHUNT ASSY            | 80009     | 131431100       |
| A3R100           | 321-0331-00        |                      |         | RES,FXD,FILM:27.4K OHM,1%,0.125W,TC=T0    | 91637     | CMF55116G27401F |
| A3R104           | 321-0353-00        |                      |         | RES,FXD,FILM:46.4K OHM,1%,0.125W,TC=T0    | 19701     | 5043ED46K40F    |
| A3R106           | 315-0473-00        |                      |         | RES,FXD,FILM:47K OHM,5%,0.25W             | TK1727    | SFR25 2322-181  |
| A3R108           | 315-0472-00        |                      |         | RES,FXD,FILM:4.7K OHM,5%,0.25W            | TK1727    | SFR25 2322-181  |
| A3R130           | 315-0103-00        |                      |         | RES,FXD,FILM:10K OHM,5%,0.25W             | TK1727    | SFR25 2322-181  |
| A3R140           | 315-0103-00        |                      |         | RES,FXD,FILM:10K OHM,5%,0.25W             | TK1727    | SFR25 2322-181  |
| A3R141           | 315-0103-00        |                      |         | RES,FXD,FILM:10K OHM,5%,0.25W             | TK1727    | SFR25 2322-181  |
| A3R142           | 315-0303-00        |                      |         | RES,FXD,FILM:30K OHM,5%,0.25W             | TK1727    | SFR25 2322-181  |

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|------------------|--------------------|----------------------|--------|---|-----------|-----------------|
| A3R144           | 315-0103-00        |                      |        | RES,FXD,FILM:10K OHM,5%,0.25W           | TK1727    | SFR25 2322-181  |
| A3R150           | 321-0306-00        |                      |        | RES,FXD,FILM:15.0K OHM,1%,0.125W,TC=T0  | 19701     | 5043ED15K00F    |
| A3R151           | 321-0258-00        |                      |        | RES,FXD,FILM:4.75K OHM,1%,0.125W,TC=T0  | 19701     | 5043ED4K750F    |
| A3R152           | 315-0103-00        |                      |        | RES,FXD,FILM:10K OHM,5%,0.25W           | TK1727    | SFR25 2322-181  |
| A3R154           | 315-0103-00        |                      |        | RES,FXD,FILM:10K OHM,5%,0.25W           | TK1727    | SFR25 2322-181  |
| A3R156           | 315-0103-00        |                      |        | RES,FXD,FILM:10K OHM,5%,0.25W           | TK1727    | SFR25 2322-181  |
| A3R170           | 307-0729-00        |                      |        | RES NTWK,FXD,FI:4,10K OHM,10%,0.125W    | 80009     | 307072900       |
| A3R230           | 315-0103-00        |                      |        | RES,FXD,FILM:10K OHM,5%,0.25W           | TK1727    | SFR25 2322-181  |
| A3R250           | 307-0921-00        |                      |        | RES NTWK,FXD,FI:(8)33K OHM,5%,0.125W    | 80009     | 307092100       |
| A3R290           | 315-0101-00        |                      |        | RES,FXD,FILM:100 OHM,5%,0.25W           | TK1727    | SFR25 2322-181  |
| A3R300           | 321-0816-07        |                      |        | RES,FXD,FILM:5K OHM,0.1%,0.125W,TC=T9   | TK1727    | MPR24-2322-141  |
| A3R301           | 321-0105-00        |                      |        | RES,FXD,FILM:121 OHM 1%,0.125W,TC=T0    | TK1727    | MR25 2322-151-1 |
| A3R302           | 315-0472-00        |                      |        | RES,FXD,FILM:4.7K OHM,5%,0.25W          | TK1727    | SFR25 2322-181  |
| A3R310           | 315-0103-00        |                      |        | RES,FXD,FILM:10K OHM,5%,0.25W           | TK1727    | SFR25 2322-181  |
| A3R311           | 315-0103-00        |                      |        | RES,FXD,FILM:10K OHM,5%,0.25W           | TK1727    | SFR25 2322-181  |
| A3R312           | 315-0471-00        |                      |        | RES,FXD,FILM:470 OHM,5%,0.25W           | TK1727    | SFR25 2322-181  |
| A3R313           | 315-0102-00        |                      |        | RES,FXD,FILM:1K OHM,5%,0.25W            | TK1727    | SFR25 2322-181  |
| A3R320           | 315-0103-00        |                      |        | RES,FXD,FILM:10K OHM,5%,0.25W           | TK1727    | SFR25 2322-181  |
| A3R321           | 315-0103-00        |                      |        | RES,FXD,FILM:10K OHM,5%,0.25W           | TK1727    | SFR25 2322-181  |
| A3R322           | 321-0481-07        |                      |        | RES,FXD,FILM:1M OHM,0.1%,0.125W,TC=T9   | 19701     | 5033RE1M000B    |
| A3R323           | 321-0385-07        |                      |        | RES,FXD,FILM:100K OHM,0.1%,0.125W,TC=T9 | TK1727    | MPR24-2322-141  |
| A3R324           | 321-0385-07        |                      |        | RES,FXD,FILM:100K OHM,0.1%,0.125W,TC=T9 | TK1727    | MPR24-2322-141  |
| A3R330           | 321-0222-07        |                      |        | RES,FXD,FILM:2.0K OHM,0.1%,0.125W,TC=T9 | 19701     | 5033RE2K000B    |
| A3R331           | 321-0222-07        |                      |        | RES,FXD,FILM:2.0K OHM,0.1%,0.125W,TC=T9 | 19701     | 5033RE2K000B    |
| A3R332           | 311-1743-02        |                      |        | RES,VAR,NONWW:10K OHM,20%,0.5W          | 80009     | 311174302       |
| A3R360           | 311-1743-02        |                      |        | RES,VAR,NONWW:10K OHM,20%,0.5W          | 80009     | 311174302       |
| A3R370           | 315-0333-00        |                      |        | RES,FXD,FILM:33K OHM,5%,0.25W           | TK1727    | SFR25 2322-181  |
| A3R371           | 321-0385-07        |                      |        | RES,FXD,FILM:100K OHM,0.1%,0.125W,TC=T9 | TK1727    | MPR24-2322-141  |
| A3R372           | 321-0229-00        |                      |        | RES,FXD,FILM:2.37K OHM,1%,0.125W,TC=T0  | TK1727    | 2322-151-2K37   |
| A3R380           | 315-0101-00        |                      |        | RES,FXD,FILM:100 OHM,5%,0.25W           | TK1727    | SFR25 2322-181  |
| A3R381           | 315-0102-00        |                      |        | RES,FXD,FILM:1K OHM,5%,0.25W            | TK1727    | SFR25 2322-181  |
| A3R390           | 321-0256-00        |                      |        | RES,FXD,FILM:4.53K OHM,1%,0.125W,TC=T0  | 19701     | 5033ED4K530F    |
| A3R391           | 321-0414-07        |                      |        | RES,FXD,FILM:200K OHM,0.1%,0.125W,TC=T9 | 07716     | CEA 200 KOHM 0. |
| A3R400           | 307-0882-00        |                      |        | RES NTWK,FXD,FI:8,100K OHM,10%,0.125W   | 80009     | 307088200       |
| A3R401           | 307-0882-00        |                      |        | RES NTWK,FXD,FI:8,100K OHM,10%,0.125W   | 80009     | 307088200       |
| A3R402           | 307-0882-00        |                      |        | RES NTWK,FXD,FI:8,100K OHM,10%,0.125W   | 80009     | 307088200       |
| A3R403           | 307-0882-00        |                      |        | RES NTWK,FXD,FI:8,100K OHM,10%,0.125W   | 80009     | 307088200       |
| A3R450           | 315-0473-00        |                      |        | RES,FXD,FILM:47K OHM,5%,0.25W           | TK1727    | SFR25 2322-181  |
| A3R451           | 321-0385-07        |                      |        | RES,FXD,FILM:100K OHM,0.1%,0.125W,TC=T9 | TK1727    | MPR24-2322-141  |
| A3R452           | 321-0229-00        |                      |        | RES,FXD,FILM:2.37K OHM,1%,0.125W,TC=T0  | TK1727    | 2322-151-2K37   |

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| A3R453           | 321-0385-07        |                      |        | RES,FXD,FILM:100K OHM,0.1%,0.125W,TC=T9 | TK1727    | MPR24-2322-141  |
| A3R470           | 315-0101-00        |                      |        | RES,FXD,FILM:100 OHM,5%,0.25W           | TK1727    | SFR25 2322-181  |
| A3R471           | 315-0103-00        |                      |        | RES,FXD,FILM:10K OHM,5%,0.25W           | TK1727    | SFR25 2322-181  |
| A3R472           | 321-0331-00        |                      |        | RES,FXD,FILM:27.4K OHM,1%,0.125W,TC=T0  | 91637     | CMF55116G27401F |
| A3R473           | 321-0353-00        |                      |        | RES,FXD,FILM:46.4K OHM,1%,0.125W,TC=T0  | 19701     | 5043ED46K40F    |
| A3R474           | 315-0473-00        |                      |        | RES,FXD,FILM:47K OHM,5%,0.25W           | TK1727    | SFR25 2322-181  |
| A3R475           | 315-0472-00        |                      |        | RES,FXD,FILM:4.7K OHM,5%,0.25W          | TK1727    | SFR25 2322-181  |
| A3R500           | 307-0729-00        |                      |        | RES NTWK,FXD,FI:4,10K OHM,10%,0.125W    | 80009     | 307072900       |
| A3R515           | 321-0289-00        |                      |        | RES,FXD,FILM:10.0K OHM,1%,0.125W,TC=T0  | 19701     | 5043ED10K00F    |
| A3R516           | 321-0289-00        |                      |        | RES,FXD,FILM:10.0K OHM,1%,0.125W,TC=T0  | 19701     | 5043ED10K00F    |
| A3R517           | 315-0103-00        |                      |        | RES,FXD,FILM:10K OHM,5%,0.25W           | TK1727    | SFR25 2322-181  |
| A3R518           | 315-0304-00        |                      |        | RES,FXD,FILM:300K OHM,5%,0.25W          | TK1727    | SFR25 2322-181  |
| A3R519           | 315-0304-00        |                      |        | RES,FXD,FILM:300K OHM,5%,0.25W          | TK1727    | SFR25 2322-181  |
| A3R520           | 315-0302-00        |                      |        | RES,FXD,FILM:3K OHM,5%,0.25W            | TK1727    | SFR25 2322-181  |
| A3R531           | 315-0104-00        |                      |        | RES,FXD,FILM:100K OHM,5%,0.25W          | TK1727    | SFR25 2322-181  |
| A3R541           | 321-0403-00        |                      |        | RES,FXD,FILM:154K OHM,1%,0.125W,TC=T0   | 19701     | 5043ED154K0F    |
| A3R542           | 321-0357-00        |                      |        | RES,FXD,FILM:51.1K OHM,1%,0.125W,TC=T0  | 19701     | 5043ED51K10F    |
| A3R543           | 321-0337-00        |                      |        | RES,FXD,FILM:31.6K OHM,1%,0.125W,TC=T0  | 19701     | 5043ED31K60F    |
| A3R544           | 321-0325-00        |                      |        | RES,FXD,FILM:23.7K OHM,1%,0.125W,TC=T0  | 19701     | 5043ED23K70F    |
| A3R545           | 321-0316-00        |                      |        | RES,FXD,FILM:19.1K OHM,1%,0.125W,TC=T0  | 07716     | CEAD19101F      |
| A3R546           | 321-0311-00        |                      |        | RES,FXD,FILM:16.9K OHM,1%,0.125W,TC=T0  | 19701     | 5043ED16K90F    |
| A3R547           | 321-0307-00        |                      |        | RES,FXD,FILM:15.4K OHM,1%,0.125W,TC=T0  | TK1727    | MR25-2322-151-1 |
| A3R548           | 321-0306-00        |                      |        | RES,FXD,FILM:15.0K OHM,1%,0.125W,TC=T0  | 19701     | 5043ED15K00F    |
| A3R560           | 315-0101-00        |                      |        | RES,FXD,FILM:100 OHM,5%,0.25W           | TK1727    | SFR25 2322-181  |
| A3R561           | 321-0424-00        |                      |        | RES,FXD,FILM:255K OHM,1%,0.125W,TC=T0   | 19701     | 5043ED255K0F    |
| A3R562           | 315-0471-00        |                      |        | RES,FXD,FILM:470 OHM,5%,0.25W           | TK1727    | SFR25 2322-181  |
| A3R563           | 315-0471-00        |                      |        | RES,FXD,FILM:470 OHM,5%,0.25W           | TK1727    | SFR25 2322-181  |
| A3R564           | 315-0103-00        |                      |        | RES,FXD,FILM:10K OHM,5%,0.25W           | TK1727    | SFR25 2322-181  |
| A3R565           | 321-0424-00        |                      |        | RES,FXD,FILM:255K OHM,1%,0.125W,TC=T0   | 19701     | 5043ED255K0F    |
| A3R566           | 321-0289-00        |                      |        | RES,FXD,FILM:10.0K OHM,1%,0.125W,TC=T0  | 19701     | 5043ED10K00F    |
| A3R567           | 321-0289-00        |                      |        | RES,FXD,FILM:10.0K OHM,1%,0.125W,TC=T0  | 19701     | 5043ED10K00F    |
| A3R568           | 321-0424-00        |                      |        | RES,FXD,FILM:255K OHM,1%,0.125W,TC=T0   | 19701     | 5043ED255K0F    |
| A3R570           | 321-0612-03        |                      |        | RES,FXD,FILM:500 OHM,0.25%,0.125W,TC=T2 | 19701     | 5033RC500R0C    |
| A3R578           | 315-0101-00        |                      |        | RES,FXD,FILM:100 OHM,5%,0.25W           | TK1727    | SFR25 2322-181  |
| A3R579           | 315-0101-00        |                      |        | RES,FXD,FILM:100 OHM,5%,0.25W           | TK1727    | SFR25 2322-181  |
| A3R580           | 315-0103-00        |                      |        | RES,FXD,FILM:10K OHM,5%,0.25W           | TK1727    | SFR25 2322-181  |
| A3R581           | 315-0113-00        |                      |        | RES,FXD,FILM:11K OHM,5%,0.25W           | TK1727    | SFR25 2322-181  |
| A3R582           | 315-0103-00        |                      |        | RES,FXD,FILM:10K OHM,5%,0.25W           | TK1727    | SFR25 2322-181  |
| A3R583           | 315-0113-00        |                      |        | RES,FXD,FILM:11K OHM,5%,0.25W           | TK1727    | SFR25 2322-181  |
| A3R589           | 315-0103-00        |                      |        | RES,FXD,FILM:10K OHM,5%,0.25W           | TK1727    | SFR25 2322-181  |

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| A3R590           | 311-1740-02        |                      |         | RES,VAR,NONWW:1K OHM,20%,0.5W             | 80009     | 311174002       |
| A3R591           | 315-0103-00        |                      |         | RES,FXD,FILM:10K OHM,5%,0.25W             | TK1727    | SFR25 2322-181  |
| A3R592           | 315-0103-00        |                      |         | RES,FXD,FILM:10K OHM,5%,0.25W             | TK1727    | SFR25 2322-181  |
| A3R593           | 315-0101-00        |                      |         | RES,FXD,FILM:100 OHM,5%,0.25W             | TK1727    | SFR25 2322-181  |
| A3R600           | 311-1740-02        |                      |         | RES,VAR,NONWW:1K OHM,20%,0.5W             | 80009     | 311174002       |
| A3R601           | 315-0103-00        |                      |         | RES,FXD,FILM:10K OHM,5%,0.25W             | TK1727    | SFR25 2322-181  |
| A3R602           | 315-0103-00        |                      |         | RES,FXD,FILM:10K OHM,5%,0.25W             | TK1727    | SFR25 2322-181  |
| A3R610           | 311-1740-02        |                      |         | RES,VAR,NONWW:1K OHM,20%,0.5W             | 80009     | 311174002       |
| A3R611           | 321-0202-00        |                      |         | RES,FXD,FILM:1.24K OHM,1%,0.125W,TC=T0    | TK1727    | MR25 2322-151-1 |
| A3R612           | 321-0280-00        |                      |         | RES,FXD,FILM:8.06K OHM,1%,0.125W,TC=T0    | 19701     | 5033ED8K060F    |
| A3R620           | 321-0291-00        |                      |         | RES,FXD,FILM:10.5K OHM,1%,0.125W,TC=T0    | 19701     | 5033ED10K50F    |
| A3R621           | 315-0822-00        |                      |         | RES,FXD,FILM:8.2K OHM,5%,0.25W            | TK1727    | SFR25 2322-181  |
| A3R622           | 321-0309-00        |                      |         | RES,FXD,FILM:16.2K OHM,1%,0.125W,TC=T0    | 19701     | 5033ED16K20F    |
| A3R623           | 321-0340-00        |                      |         | RES,FXD,FILM:34.0K OHM,1%,0.125W,TC=T0    | TK1727    | 2322-151-34K0   |
| A3R630           | 315-0101-00        |                      |         | RES,FXD,FILM:100 OHM,5%,0.25W             | TK1727    | SFR25 2322-181  |
| A3R780           | 315-0102-00        |                      |         | RES,FXD,FILM:1K OHM,5%,0.25W              | TK1727    | SFR25 2322-181  |
| A3R781           | 315-0112-00        |                      |         | RES,FXD,FILM:1.1K OHM,5%,0.25W            | TK1727    | SFR25 2322-181  |
| A3R782           | 315-0472-00        |                      |         | RES,FXD,FILM:4.7K OHM,5%,0.25W            | TK1727    | SFR25 2322-181  |
| A3R790           | 315-0225-00        | J301393              | J302162 | RES,FXD,FILM:2.2M OHM,5%,0.25W            | TK1727    | SFR25 2322-181  |
| A3R790           | 315-0105-00        | J302163              |         | RES,FXD,FILM:1M OHM,5%,0.25W              | TK1727    | SFR25 2322-181  |
| A3R792           | 315-0103-00        |                      |         | RES,FXD,FILM:10K OHM,5%,0.25W             | TK1727    | SFR25 2322-181  |
| A3R800           | 315-0102-00        |                      |         | RES,FXD,FILM:1K OHM,5%,0.25W              | TK1727    | SFR25 2322-181  |
| A3R810           | 315-0225-00        |                      |         | RES,FXD,FILM:2.2M OHM,5%,0.25W            | TK1727    | SFR25 2322-181  |
| A3R830           | 315-0102-00        |                      |         | RES,FXD,FILM:1K OHM,5%,0.25W              | TK1727    | SFR25 2322-181  |
| A3R900           | 315-0100-00        |                      |         | RES,FXD,FILM:10 OHM,5%,0.25W,             | TK1727    | SFR25 2322-182  |
| A3TP200          | 214-0579-00        |                      |         | TERM,TEST POINT:PCB,TEST POINT;EYELET     | 0J260     | ORDER BY DESC   |
| A3TP290          | 214-0579-00        |                      |         | TERM,TEST POINT:PCB,TEST POINT;EYELET     | 0J260     | ORDER BY DESC   |
| A3TP310          | 214-0579-00        |                      |         | TERM,TEST POINT:PCB,TEST POINT;EYELET     | 0J260     | ORDER BY DESC   |
| A3TP380          | 214-0579-00        |                      |         | TERM,TEST POINT:PCB,TEST POINT;EYELET     | 0J260     | ORDER BY DESC   |
| A3TP500          | 214-0579-00        |                      |         | TERM,TEST POINT:PCB,TEST POINT;EYELET     | 0J260     | ORDER BY DESC   |
| A3TP580          | 214-0579-00        |                      |         | TERM,TEST POINT:PCB,TEST POINT;EYELET     | 0J260     | ORDER BY DESC   |
| A3U100           | 156-0704-00        |                      |         | IC,MISC:CMOS,PLL;LOW SPEED                | 04713     | MC14046BCP      |
| A3U110           | 156-2835-00        |                      |         | IC,DIGITAL:HCMOS,COUNTER;12-BIT BINARY    | 80009     | 156283500       |
| A3U120           | 156-1825-00        |                      |         | MICROCKT,DGTL:C2MOS,DUAL 4 TO 1 LINE MULT | 80009     | 156182500       |
| A3U130           | 156-2809-00        |                      |         | MICROCKT,DGTL:6 BIT 3 STATE BUFFER        | 80009     | 156280900       |
| A3U140           | 156-1778-00        |                      |         | MICROCKT,LINER:DUAL COMPARATOR            | 80009     | 156177800       |
| A3U150           | 156-0402-04        |                      |         | MICROCKT,LINER:TIMER                      | 80009     | 156040204       |
| A3U160           | 156-2798-00        |                      |         | MICROCKT,DGTL:SYNC,4 BIT COUNTER          | 80009     | 156279800       |
| A3U170           | 156-2798-00        |                      |         | MICROCKT,DGTL:SYNC,4 BIT COUNTER          | 80009     | 156279800       |
| A3U180           | 156-1824-00        |                      |         | MICROCKT,DGTL:C2MOS,QUAD 2 TO 1 LINE MULT | 80009     | 156182400       |



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| A3U190           | 156-1828-00        |            |        | MICROCKT,DGTL:C2MOS,DUAL D-TYPE FLIP FLOP | 80009     | 156182800     |
| A3U200           | 156-1828-00        |            |        | MICROCKT,DGTL:C2MOS,DUAL D-TYPE FLIP FLOP | 80009     | 156182800     |
| A3U210           | 156-1824-00        |            |        | MICROCKT,DGTL:C2MOS,QUAD 2 TO 1 LINE MULT | 80009     | 156182400     |
| A3U220           | 156-1828-00        |            |        | MICROCKT,DGTL:C2MOS,DUAL D-TYPE FLIP FLOP | 80009     | 156182800     |
| A3U230           | 156-1828-00        |            |        | MICROCKT,DGTL:C2MOS,DUAL D-TYPE FLIP FLOP | 80009     | 156182800     |
| A3U240           | 156-1831-00        |            |        | MICROCKT,DGTL:C2MOS,GATE 2 INP NOR        | 80009     | 156183100     |
| A3U250           | 156-1766-00        |            |        | MICROCKT,DGTL:CMOS,QUAD 2 INPUT NAND      | 80009     | 156176600     |
| A3U260           | 156-1831-00        |            |        | MICROCKT,DGTL:C2MOS,GATE 2 INP NOR        | 80009     | 156183100     |
| A3U270           | 156-1822-00        |            |        | MICROCKT,DGTL:C2MOS,8 BIT ADDRESSABLE     | 80009     | 156182200     |
| A3U280           | 156-1822-00        |            |        | MICROCKT,DGTL:C2MOS,8 BIT ADDRESSABLE     | 80009     | 156182200     |
| A3U290           | 156-2791-00        |            |        | MICROCKT,DGTL:QUAD,2 INPUT                | 80009     | 156279100     |
| A3U300           | 156-1589-00        |            |        | IC,CONVERTER:BIPOLAR,D/A;12 BIT,CURRENT   | 24355     | DAC312HP      |
| A3U310           | 156-0515-00        |            |        | IC,MISC:CMOS,ANALOG MUX;TRIPLE SPDT       | 04713     | MC14053BCP    |
| A3U320           | 156-0515-00        |            |        | IC,MISC:CMOS,ANALOG MUX;TRIPLE SPDT       | 04713     | MC14053BCP    |
| A3U330           | 156-2795-00        |            |        | MICROCKT,LINEAR:OPERATIONAL PRECISION     | 80009     | 156279500     |
| A3U340           | 156-2810-00        |            |        | MICROCKT,LINEAR:12 BIT,D/A CONV           | 80009     | 156281000     |
| A3U350           | 156-2810-00        |            |        | MICROCKT,LINEAR:12 BIT,D/A CONV           | 80009     | 156281000     |
| A3U360           | 156-2795-00        |            |        | MICROCKT,LINEAR:OPERATIONAL PRECISION     | 80009     | 156279500     |
| A3U370           | 156-2795-00        |            |        | MICROCKT,LINEAR:OPERATIONAL PRECISION     | 80009     | 156279500     |
| A3U380           | 156-2795-00        |            |        | MICROCKT,LINEAR:OPERATIONAL PRECISION     | 80009     | 156279500     |
| A3U390           | 156-1699-00        |            |        | IC,LINEAR:BIFET,OP-AMP;DUAL,LOW OFFSET    | 27014     | LF412CN       |
| A3U400           | 156-2798-00        |            |        | MICROCKT,DGTL:SYNC,4 BIT COUNTER          | 80009     | 156279800     |
| A3U410           | 156-1828-00        |            |        | MICROCKT,DGTL:C2MOS,DUAL D-TYPE FLIP FLOP | 80009     | 156182800     |
| A3U420           | 156-2796-00        |            |        | MICROCKT,DGTL:HEX INVERTER                | 80009     | 156279600     |
| A3U430           | 156-1827-00        |            |        | MICROCKT,DGTL:C2MOS,3 LINE TO 8 LINE      | 80009     | 156182700     |
| A3U440           | 156-0515-00        |            |        | IC,MISC:CMOS,ANALOG MUX;TRIPLE SPDT       | 04713     | MC14053BCP    |
| A3U450           | 156-2795-00        |            |        | MICROCKT,LINEAR:OPERATIONAL PRECISION     | 80009     | 156279500     |
| A3U470           | 156-0704-00        |            |        | IC,MISC:CMOS,PLL;LOW SPEED                | 04713     | MC14046BCP    |
| A3U480           | 156-2835-00        |            |        | IC,DIGITAL:HCMOS,COUNTER;12-BIT BINARY    | 80009     | 156283500     |
| A3U490           | 156-1778-00        |            |        | MICROCKT,LINEAR:DUAL COMPARATOR           | 80009     | 156177800     |
| A3U500           | 156-2836-00        |            |        | IC,DIGITAL:HCMOS,GATE;QUAD 2-INPUT        | 80009     | 156283600     |
| A3U510           | 156-0158-00        |            |        | IC,LINEAR:BIPOLAR,OP-AMP;DUAL             | 01295     | MC1458P       |
| A3U530           | 156-0515-00        |            |        | IC,MISC:CMOS,ANALOG MUX;TRIPLE SPDT       | 04713     | MC14053BCP    |
| A3U540           | 156-0513-00        |            |        | IC,MISC:CMOS,ANALOG MUX;8 CHANNEL         | 04713     | MC14051BCP    |
| A3U550           | 156-2810-00        |            |        | MICROCKT,LINEAR:12 BIT,D/A CONV           | 80009     | 156281000     |
| A3U560           | 156-0495-00        |            |        | IC,LINEAR:BIPOLAR,OP-AMP;QUAD             | 01295     | LM324N        |
| A3U565           | 156-0158-00        |            |        | IC,LINEAR:BIPOLAR,OP-AMP;DUAL             | 01295     | MC1458P       |
| A3U570           | 156-3568-01        |            |        | MICROCKT,LINEAR:MULTIPLIER,DUAL CHANNEL   | 80009     | 156356801     |
| A3U580           | 156-0158-00        |            |        | IC,LINEAR:BIPOLAR,OP-AMP;DUAL             | 01295     | MC1458P       |
| A3U590           | 156-2812-00        |            |        | IC,MISC:SAMPLE/HOLD                       | 80009     | 156281200     |

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| Component Number | Tektronix Part No. | Serial No. |         | Name & Description                          | Mfr. Code | Mfr. Part No. |
|------------------|--------------------|------------|---------|---|-----------|---------------|
|                  |                    | Effective  | Dscont  |   |           |               |
| A3U600           | 156-2812-00        |            |         | IC,MISC:SAMPLE/HOLD                         | 80009     | 156281200     |
| A3U610           | 156-0514-00        |            |         | IC,MISC:CMOS,ANALOG MUX;DUAL 4 CHANNEL      | 04713     | MC14052BCP    |
| A3U620           | 156-2832-01        |            |         | MICROCKT,DGTL:OP AMP;BIFET                  | TK0AB     | LF411CN       |
| A3U630           | 156-3195-00        |            |         | IC,CONVERTER:TTL,A/D;12-BIT,5US,SAR         | TK0AC     | AD7572JN05    |
| A3U650           | 156-3196-00        |            |         | MICROCKT,DGTL:DC-DC CONVERTER               | TK2058    | RZC15N20      |
| A3U660           | 156-2814-00        |            |         | IC,DIGITAL:HCMOS,GATE;TRIPLE 3-INPUT NAND   | 80009     | 156281400     |
| A3U670           | 156-2310-00        |            |         | IC,DIGITAL:HCMOS,FLIP FLOP;HEX, D-TYPE      | 80009     | 156231000     |
| A3U680           | 156-2813-00        |            |         | IC,DIGITAL:HCMOS,COUNTER;DUAL 4-BIT BINARY  | 80009     | 156281300     |
| A3U690           | 156-2009-00        |            |         | IC,DIGITAL:HCMOS,FLIP FLOP;DUAL D-TYPE      | 04713     | MC74HC74AN    |
| A3U700           | 156-2027-00        |            |         | IC,DIGITAL:HCMOS,GATE;HEX INV               | 01295     | SN74HC04N     |
| A3U710           | 156-2088-00        |            |         | IC,DIGITAL:HCMOS,MUX/ENCODER;QUAD           | 80009     | 156208800     |
| A3U720           | 156-2316-00        |            |         | IC,DIGITAL:HCMOS,DEMUX/DECODER              | 80009     | 156231600     |
| A3U730           | 156-1767-00        |            |         | MICROCKT,DGTL:CMOS,OCTAL BUS XCVR           | 80009     | 156176700     |
| A3U740           | 156-1767-00        |            |         | MICROCKT,DGTL:CMOS,OCTAL BUS XCVR           | 80009     | 156176700     |
| A3U750           | 156-2835-00        |            |         | IC,DIGITAL:HCMOS,COUNTER;12-BIT BINARY      | 80009     | 156283500     |
| A3U760           | 156-2838-00        | J301393    | J302258 | IC,MEMORY:CMOS,SRAM;2K x 8,55NS             | 80009     | 156283800     |
| A3U760           | 156-3253-01        | J302259    |         | IC,MEMORY:CMOS,SRAM;2K x 8,55NS             | 80009     | 156325301     |
| A3U770           | 156-2838-00        | J301393    | J302258 | IC,MEMORY:CMOS,SRAM;2K x 8,55NS             | 80009     | 156283800     |
| A3U770           | 156-3253-01        | J302259    |         | IC,MEMORY:CMOS,SRAM;2K x 8,55NS             | 80009     | 156325301     |
| A3U780           | 156-1126-01        |            |         | IC,LINEAR:BIPOLAR,COMPARATOR                | 01295     | LM311P        |
| A3U790           | 156-3202-00        | J301393    | J302162 | IC,DIGITAL:HCMOS,MULTIVIBRATOR;DUAL         | TK00L     | 74HC123P      |
| A3U790           | 156-3202-01        | J302163    |         | IC,DIGITAL:HCMOS, MULTIVIBRATOR;DUAL RETRIG | 80009     | 156320201     |
| A3U800           | 156-1126-01        |            |         | IC,LINEAR:BIPOLAR,COMPARATOR                | 01295     | LM311P        |
| A3U810           | 156-2832-01        |            |         | MICROCKT,DGTL:OP AMP;BIFET                  | TK0AB     | LF411CN       |
| A3U840           | 156-0515-00        |            |         | IC,MISC:CMOS,ANALOG MUX;TRIPLE SPDT         | 04713     | MC14053BCP    |
| A3U860           | 156-2791-00        |            |         | MICROCKT,DGTL:QUAD,2 INPUT AND HC40H008P    | 80009     | 156279100     |
| A3U900           | 156-1822-00        |            |         | MICROCKT,DGTL:C2MOS,8 BIT ADDRESSABLE       | 80009     | 156182200     |
| A3VR470          | 152-0195-00        |            |         | DIODE,ZENER:;5.1V,5%,0.4W                   | 14552     | CD332125      |
| A3VR630          | 152-0195-00        |            |         | DIODE,ZENER:;5.1V,5%,0.4W                   | 14552     | CD332125      |
| A3Y630           | 158-0336-00        |            |         | XTAL UNIT,QTZ:2.5MHZ,30PPM,SER              | TK0CJ     | ORDER BY DESC |
| A3W900           | 175-0733-00        | J302953    |         | WIRE,ELEC:26AWG                             | 80009     | 175073300     |

| Component Number | Tektronix Part No. | Serial No. Effective | Dscont | Name & Description                          | Mfr. Code | Mfr. Part No. |
|------------------|--------------------|----------------------|--------|---|-----------|---------------|
| A4               | 670-9306-XX        |                      |        | CIRCUIT BD ASSY:DIGITAL DISPLAY             | 80009     | 6709306XX     |
| A4C10            | 290-0745-00        |                      |        | CAP,FXD,ALUM::22UF,20%,50V,8 X 11MM         | 0H1N5     | CEUSM1J220    |
| A4C20            | 290-0745-00        |                      |        | CAP,FXD,ALUM::22UF,20%,50V,8 X 11MM         | 0H1N5     | CEUSM1J220    |
| A4C30            | 290-0745-00        |                      |        | CAP,FXD,ALUM::22UF,20%,50V,8 X 11MM         | 0H1N5     | CEUSM1J220    |
| A4C40            | 290-0745-00        |                      |        | CAP,FXD,ALUM::22UF,20%,50V,8 X 11MM         | 0H1N5     | CEUSM1J220    |
| A4C110           | 281-0775-00        |                      |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA  |
| A4C120           | 281-0775-00        |                      |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA  |
| A4C130           | 281-0775-00        |                      |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA  |
| A4C140           | 281-0775-00        |                      |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA  |
| A4C150           | 281-0775-00        |                      |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA  |
| A4C160           | 281-0775-00        |                      |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA  |
| A4C170           | 281-0775-00        |                      |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA  |
| A4C200           | 281-0775-00        |                      |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA  |
| A4C210           | 281-0775-00        |                      |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA  |
| A4C220           | 281-0775-00        |                      |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA  |
| A4C230           | 281-0775-00        |                      |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA  |
| A4C240           | 281-0775-00        |                      |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA  |
| A4C250           | 281-0775-00        |                      |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA  |
| A4C260           | 281-0775-00        |                      |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA  |
| A4C300           | 281-0775-00        |                      |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA  |
| A4C310           | 281-0775-00        |                      |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA  |
| A4C320           | 281-0775-00        |                      |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA  |
| A4C330           | 281-0775-00        |                      |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA  |
| A4C340           | 281-0775-00        |                      |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA  |
| A4C350           | 281-0775-00        |                      |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA  |
| A4C360           | 281-0775-00        |                      |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA  |
| A4C370           | 281-0775-00        |                      |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA  |
| A4C380           | 281-0775-00        |                      |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA  |
| A4C400           | 281-0775-00        |                      |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA  |
| A4C420           | 281-0775-00        |                      |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA  |
| A4C440           | 281-0775-00        |                      |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA  |
| A4C460           | 281-0775-00        |                      |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA  |
| A4C480           | 281-0775-00        |                      |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA  |
| A4C500           | 281-0775-00        |                      |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA  |
| A4C502           | 281-0811-00        |                      |        | CAP,FXD,CERAMIC:MLC;10PF,10%,200V           | 04222     | SA102A100KAA  |
| A4C504           | 281-0775-00        |                      |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA  |
| A4C506           | 281-0775-00        |                      |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA  |
| A4C508           | 281-0775-00        |                      |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA  |
| A4C510           | 281-0814-00        |                      |        | CAP,FXD,CERAMIC:MLC;100 PF,10%,100V         | TK1743    | CGB101KEN     |
| A4C512           | 281-0814-00        |                      |        | CAP,FXD,CERAMIC:MLC;100 PF,10%,100V         | TK1743    | CGB101KEN     |

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| Component Number | Tektronix Part No. | Serial No. |         | Name & Description                          | Mfr. Code | Mfr. Part No. |
|------------------|--------------------|------------|---------|---|-----------|---------------|
|                  |                    | Effective  | Dscont  |   |           |               |
| A4C520           | 281-0775-00        |            |         | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA  |
| A4C522           | 281-0811-00        |            |         | CAP,FXD,CERAMIC:MLC;10PF,10%,200V           | 04222     | SA102A100KAA  |
| A4C524           | 281-0775-00        |            |         | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA  |
| A4C526           | 281-0775-00        |            |         | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA  |
| A4C528           | 281-0775-00        |            |         | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA  |
| A4C530           | 281-0814-00        |            |         | CAP,FXD,CERAMIC:MLC;100 PF,10%,100V         | TK1743    | CGB101KEN     |
| A4C532           | 281-0814-00        |            |         | CAP,FXD,CERAMIC:MLC;100 PF,10%,100V         | TK1743    | CGB101KEN     |
| A4C540           | 281-0775-00        |            |         | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA  |
| A4C542           | 281-0775-00        |            |         | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA  |
| A4C600           | 281-0775-00        |            |         | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA  |
| A4C620           | 281-0775-00        |            |         | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA  |
| A4C640           | 281-0775-00        |            |         | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA  |
| A4C660           | 281-0775-00        |            |         | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA  |
| A4C670           | 281-0775-00        |            |         | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA  |
| A4C680           | 281-0775-00        |            |         | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA  |
| A4C700           | 281-0775-00        |            |         | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA  |
| A4C710           | 281-0775-00        |            |         | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA  |
| A4C720           | 281-0775-00        |            |         | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA  |
| A4C760           | 281-0775-00        |            |         | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA  |
| A4C770           | 281-0775-00        |            |         | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA  |
| A4C800           | 281-0775-00        |            |         | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA  |
| A4C802           | 281-0759-00        |            |         | CAP,FXD,CERAMIC:MLC;22PF,10%,100V           | 04222     | SA102A220KAA  |
| A4C804           | 281-0775-00        |            |         | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA  |
| A4C806           | 281-0775-00        |            |         | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA  |
| A4C808           | 281-0775-00        |            |         | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA  |
| A4C820           | 281-0775-00        |            |         | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA  |
| A4C822           | 281-0759-00        |            |         | CAP,FXD,CERAMIC:MLC;22PF,10%,100V           | 04222     | SA102A220KAA  |
| A4C824           | 281-0775-00        |            |         | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA  |
| A4C826           | 281-0775-00        |            |         | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA  |
| A4C840           | 281-0775-00        |            |         | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA  |
| A4C842           | 281-0775-00        |            |         | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA  |
| A4C900           | 290-0745-00        |            |         | CAP,FXD,ALUM.;22UF,20%,50V,8 X 11MM         | 0H1N5     | CEUSM1J220    |
| A4C1000          | 281-0775-00        |            |         | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA  |
| A4C1002          | 281-0775-00        |            |         | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA  |
| A4CR220          | 152-0327-00        |            |         | SEMICOND DVC,DI:SIG,SI,100MA,75V            | 80009     | 152032700     |
| A4L10            | 108-0948-00        | J301393    | J301877 | COIL,RF:FIXED,100UH,10%                     | 80009     | 108094800     |
| A4L10            | 108-1506-00        | J301878    |         | INDUCTOR,FXD:SIGNAL;100UH,10%               | 80009     | 108150600     |
| A4L20            | 108-0948-00        | J301393    | J301877 | COIL,RF:FIXED,100UH,10%                     | 80009     | 108094800     |
| A4L20            | 108-1506-00        | J301878    |         | INDUCTOR,FXD:SIGNAL;100UH,10%               | 80009     | 108150600     |
| A4L30            | 108-0948-00        | J301393    | J301877 | COIL,RF:FIXED,100UH,10%                     | 80009     | 108094800     |

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| Component Number | Tektronix Part No. | Serial No. Effective | Dscont  | Name & Description                        | Mfr. Code | Mfr. Part No.   |
|------------------|--------------------|----------------------|---------|---|-----------|-----------------|
| A4L30            | 108-1506-00        | J301878              |         | INDUCTOR,FXD:SIGNAL;100UH,10%             | 80009     | 108150600       |
| A4L40            | 108-0948-00        | J301393              | J301877 | COIL,RF:FIXED,100UH,10%                   | 80009     | 108094800       |
| A4L40            | 108-1506-00        | J301878              |         | INDUCTOR,FXD:SIGNAL;100UH,10%             | 80009     | 108150600       |
| A4L900           | 108-0948-00        | J301393              | J301877 | COIL,RF:FIXED,100UH,10%                   | 80009     | 108094800       |
| A4L900           | 108-1506-00        | J301878              |         | INDUCTOR,FXD:SIGNAL;100UH,10%             | 80009     | 108150600       |
| A4P40            | 131-3650-00        |                      |         | CONN,PLUG,ELEC:CKT BD,RTANG,2 X 32,0.1 SP | 80009     | 131365000       |
| A4P42            | 131-3648-00        |                      |         | CONN,PLUG,ELEC:CKT BD,RTANG,2 X 22,0.1 SP | 80009     | 131364800       |
| A4R200           | 307-0923-00        |                      |         | RES NTWK,FXD,FI:(8)330K OHM,5%,0.125W     | 80009     | 307092300       |
| A4R210           | 307-0923-00        |                      |         | RES NTWK,FXD,FI:(8)330K OHM,5%,0.125W     | 80009     | 307092300       |
| A4R220           | 307-0923-00        |                      |         | RES NTWK,FXD,FI:(8)330K OHM,5%,0.125W     | 80009     | 307092300       |
| A4R250           | 307-0923-00        |                      |         | RES NTWK,FXD,FI:(8)330K OHM,5%,0.125W     | 80009     | 307092300       |
| A4R260           | 307-0923-00        |                      |         | RES NTWK,FXD,FI:(8)330K OHM,5%,0.125W     | 80009     | 307092300       |
| A4R500           | 321-0222-00        |                      |         | RES,FXD,FILM:2.00K OHM,1%,0.125W,TC=T0    | 19701     | 5033ED2K00F     |
| A4R502           | 321-0222-00        |                      |         | RES,FXD,FILM:2.00K OHM,1%,0.125W,TC=T0    | 19701     | 5033ED2K00F     |
| A4R504           | 321-0928-07        |                      |         | RES,FXD,FILM:250 OHM,0.1%,0.125W,TC=T9    | TK1727    | MPR24-2322-141  |
| A4R506           | 321-0927-07        |                      |         | RES,FXD,FILM:125 OHM,0.1%,0.125W,TC=T9    | 19701     | 5033RE125ROB    |
| A4R508           | 321-0928-07        |                      |         | RES,FXD,FILM:250 OHM,0.1%,0.125W,TC=T9    | TK1727    | MPR24-2322-141  |
| A4R510           | 315-0100-00        |                      |         | RES,FXD,FILM:10 OHM,5%,0.25W              | TK1727    | SFR25 2322-182  |
| A4R512           | 315-0432-00        |                      |         | RES,FXD,FILM:4.3K OHM,5%,0.25W            | TK1727    | SFR25 2322-181  |
| A4R514           | 315-0432-00        |                      |         | RES,FXD,FILM:4.3K OHM,5%,0.25W            | TK1727    | SFR25 2322-181  |
| A4R520           | 321-0222-00        |                      |         | RES,FXD,FILM:2.00K OHM,1%,0.125W,TC=T0    | 19701     | 5033ED2K00F     |
| A4R522           | 321-0222-00        |                      |         | RES,FXD,FILM:2.00K OHM,1%,0.125W,TC=T0    | 19701     | 5033ED2K00F     |
| A4R524           | 321-0928-07        |                      |         | RES,FXD,FILM:250 OHM,0.1%,0.125W,TC=T9    | TK1727    | MPR24-2322-141  |
| A4R526           | 321-0927-07        |                      |         | RES,FXD,FILM:125 OHM,0.1%,0.125W,TC=T9    | 19701     | 5033RE125ROB    |
| A4R528           | 321-0928-07        |                      |         | RES,FXD,FILM:250 OHM,0.1%,0.125W,TC=T9    | TK1727    | MPR24-2322-141  |
| A4R530           | 315-0100-00        |                      |         | RES,FXD,FILM:10 OHM,5%,0.25W,             | TK1727    | SFR25 2322-182  |
| A4R532           | 315-0432-00        |                      |         | RES,FXD,FILM:4.3K OHM,5%,0.25W            | TK1727    | SFR25 2322-181  |
| A4R534           | 315-0432-00        |                      |         | RES,FXD,FILM:4.3K OHM,5%,0.25W            | TK1727    | SFR25 2322-181  |
| A4R700           | 315-0102-00        |                      |         | RES,FXD,FILM:1K OHM,5%,0.25W              | TK1727    | SFR25 2322-181  |
| A4R702           | 315-0102-00        |                      |         | RES,FXD,FILM:1K OHM,5%,0.25W              | TK1727    | SFR25 2322-181  |
| A4R704           | 315-0102-00        |                      |         | RES,FXD,FILM:1K OHM,5%,0.25W              | TK1727    | SFR25 2322-181  |
| A4R710           | 321-0222-00        |                      |         | RES,FXD,FILM:2.00K OHM,1%,0.125W,TC=T0    | 19701     | 5033ED2K00F     |
| A4R712           | 321-0222-00        |                      |         | RES,FXD,FILM:2.00K OHM,1%,0.125W,TC=T0    | 19701     | 5033ED2K00F     |
| A4R714           | 321-0222-00        |                      |         | RES,FXD,FILM:2.00K OHM,1%,0.125W,TC=T0    | 19701     | 5033ED2K00F     |
| A4R716           | 321-0193-00        |                      |         | RES,FXD,FILM:1K OHM,1%,0.125W,TC=T0       | TK1727    | MR25 2322-151-1 |
| A4R718           | 321-0193-00        |                      |         | RES,FXD,FILM:1K OHM,1%,0.125W,TC=T0       | TK1727    | MR25 2322-151-1 |
| A4R720           | 321-0222-00        |                      |         | RES,FXD,FILM:2.00K OHM,1%,0.125W,TC=T0    | 19701     | 5033ED2K00F     |
| A4R722           | 321-0399-00        |                      |         | RES,FXD,FILM:140K OHM,1%,0.125W,TC=T0     | 19701     | 5043ED140K0F    |
| A4R724           | 321-0399-00        |                      |         | RES,FXD,FILM:140K OHM,1%,0.125W,TC=T0     | 19701     | 5043ED140K0F    |
| A4R726           | 321-0193-00        |                      |         | RES,FXD,FILM:1K OHM,1%,0.125W,TC=T0       | TK1727    | MR25 2322-151-1 |

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| Component Number | Tektronix Part No. | Serial No. Effective | Dscont  | Name & Description                         | Mfr. Code | Mfr. Part No.   |
|------------------|--------------------|----------------------|---------|--|-----------|-----------------|
| A4R800           | 321-0193-00        |                      |         | RES,FXD,FILM:1K OHM,1%,0.125W,TC=T0        | TK1727    | MR25 2322-151-1 |
| A4R802           | 321-0193-00        |                      |         | RES,FXD,FILM:1K OHM,1%,0.125W,TC=T0        | TK1727    | MR25 2322-151-1 |
| A4R804           | 321-0612-00        |                      |         | RES,FXD,FILM:500 OHM,1%,0.125W,TC=T0       | 19701     | 5033RD500R0F    |
| A4R806           | 321-0928-07        |                      |         | RES,FXD,FILM:250 OHM,0.1%,0.125W,TC=T9     | TK1727    | MPR24-2322-141  |
| A4R808           | 321-0612-00        |                      |         | RES,FXD,FILM:500 OHM,1%,0.125W,TC=T0       | 19701     | 5033RD500R0F    |
| A4R810           | 321-0612-00        |                      |         | RES,FXD,FILM:500 OHM,1%,0.125W,TC=T0       | 19701     | 5033RD500R0F    |
| A4R812           | 321-0612-00        |                      |         | RES,FXD,FILM:500 OHM,1%,0.125W,TC=T0       | 19701     | 5033RD500R0F    |
| A4R814           | 315-0100-00        |                      |         | RES,FXD,FILM:10 OHM,5%,0.25W               | TK1727    | SFR25 2322-182  |
| A4R820           | 321-0193-00        |                      |         | RES,FXD,FILM:1K OHM,1%,0.125W,TC=T0        | TK1727    | MR25 2322-151-1 |
| A4R822           | 321-0193-00        |                      |         | RES,FXD,FILM:1K OHM,1%,0.125W,TC=T0        | TK1727    | MR25 2322-151-1 |
| A4R824           | 321-0612-00        |                      |         | RES,FXD,FILM:500 OHM,1%,0.125W,TC=T0       | 19701     | 5033RD500R0F    |
| A4R826           | 321-0928-07        |                      |         | RES,FXD,FILM:250 OHM,0.1%,0.125W,TC=T9     | TK1727    | MPR24-2322-141  |
| A4R828           | 321-0612-00        |                      |         | RES,FXD,FILM:500 OHM,1%,0.125W,TC=T0       | 19701     | 5033RD500R0F    |
| A4R830           | 315-0100-00        |                      |         | RES,FXD,FILM:10 OHM,5%,0.25W               | TK1727    | SFR25 2322-182  |
| A4R840           | 315-0102-00        |                      |         | RES,FXD,FILM:1K OHM,5%,0.25W               | TK1727    | SFR25 2322-181  |
| A4R842           | 311-1621-01        |                      |         | RES,VAR,NONWW:200 OHM,20%,0.5W             | 80009     | 311162101       |
| A4R844           | 321-0239-00        |                      |         | RES,FXD,FILM:3.01K OHM,1%,0.125W,TC=T0     | TK1727    | 2322-151-3K01   |
| A4R846           | 321-0222-00        |                      |         | RES,FXD,FILM:2.00K OHM,1%,0.125W,TC=T0     | 19701     | 5033ED2K00F     |
| A4R848           | 321-0222-00        |                      |         | RES,FXD,FILM:2.00K OHM,1%,0.125W,TC=T0     | 19701     | 5033ED2K00F     |
| A4TP10           | 214-0579-00        | J301393              | J302394 | TERM,TEST POINT:PCB,TEST POINT;EYELET      | 0J260     | ORDER BY DESC   |
| A4TP20           | 214-0579-00        | J301393              | J302394 | TERM,TEST POINT:PCB,TEST POINT;EYELET      | 0J260     | ORDER BY DESC   |
| A4U100           | 119-2312-00        |                      |         | OSCILLATOR:4.5MHZ,CRYSTAL                  | 80009     | 119231200       |
| A4U110           | 156-2813-00        |                      |         | IC,DIGITAL:HCMOS,COUNTER;DUAL 4-BIT BINARY | 80009     | 156281300       |
| A4U120           | 156-2813-00        |                      |         | IC,DIGITAL:HCMOS,COUNTER;DUAL 4-BIT BINARY | 80009     | 156281300       |
| A4U130           | 156-2088-00        |                      |         | IC,DIGITAL:HCMOS,MUX/ENCODER;QUAD          | 80009     | 156208800       |
| A4U140           | 156-2088-00        |                      |         | IC,DIGITAL:HCMOS,MUX/ENCODER;QUAD          | 80009     | 156208800       |
| A4U150           | 156-2088-00        |                      |         | IC,DIGITAL:HCMOS,MUX/ENCODER;QUAD          | 80009     | 156208800       |
| A4U160           | 156-2088-00        |                      |         | IC,DIGITAL:HCMOS,MUX/ENCODER;QUAD          | 80009     | 156208800       |
| A4U170           | 156-2813-00        |                      |         | IC,DIGITAL:HCMOS,COUNTER;DUAL 4-BIT BINARY | 80009     | 156281300       |
| A4U200           | 156-2300-00        |                      |         | IC,DIGITAL:HCMOS,TRANSCEIVER;OCTAL         | 80009     | 156230000       |
| A4U210           | 156-2300-00        |                      |         | IC,DIGITAL:HCMOS,TRANSCEIVER;OCTAL         | 80009     | 156230000       |
| A4U220           | 156-2300-00        |                      |         | IC,DIGITAL:HCMOS,TRANSCEIVER;OCTAL         | 80009     | 156230000       |
| A4U230           | 156-1817-00        |                      |         | IC,MEMORY:CMOS,SRAM;8K X 8                 | 80009     | 156181700       |
| A4U240           | 156-1817-00        |                      |         | IC,MEMORY:CMOS,SRAM;8K X 8                 | 80009     | 156181700       |
| A4U250           | 156-2300-00        |                      |         | IC,DIGITAL:HCMOS,TRANSCEIVER;OCTAL         | 80009     | 156230000       |
| A4U260           | 156-2300-00        |                      |         | IC,DIGITAL:HCMOS,TRANSCEIVER;OCTAL         | 80009     | 156230000       |
| A4U270           | 156-2824-00        |                      |         | IC,DIGITAL:HCMOS,LATCH;8-BIT ADDRESSABLE   | 01295     | SN74HC259N      |
| A4U280           | 156-2825-00        |                      |         | IC,DIGITAL:HCMOS,DEMUX/DECODER;DUAL        | 80009     | 156282500       |
| A4U300           | 156-2814-00        |                      |         | IC,DIGITAL:HCMOS,GATE;TRIPLE 3-INPUT NAND  | 80009     | 156281400       |
| A4U310           | 156-2253-00        |                      |         | IC,DIGITAL:HCMOS,GATE;QUAD 2-INPUT NAND    | 80009     | 156225300       |

| Component Number | Tektronix Part No. | Serial No. Effective | Dscont | Name & Description                        | Mfr. Code | Mfr. Part No. |
|------------------|--------------------|----------------------|--------|---|-----------|---------------|
| A4U320           | 156-2808-00        |                      |        | IC,DIGITAL:HCMOS,GATE;QUAD 2-INPUT        | 80009     | 156280800     |
| A4U330           | 156-2820-00        |                      |        | IC,DIGITAL:HCMOS,GATE;TRIPLE 3-INPUT NAND | 80009     | 156282000     |
| A4U340           | 156-2309-00        |                      |        | IC,DIGITAL:HCMOS,GATE;HEX INV             | 80009     | 156230900     |
| A4U350           | 156-2009-00        |                      |        | IC,DIGITAL:HCMOS,FLIP FLOP;DUAL D-TYPE    | 04713     | MC74HC74AN    |
| A4U360           | 156-2009-00        |                      |        | IC,DIGITAL:HCMOS,FLIP FLOP;DUAL D-TYPE    | 04713     | MC74HC74AN    |
| A4U370           | 156-2009-00        |                      |        | IC,DIGITAL:HCMOS,FLIP FLOP;DUAL D-TYPE    | 04713     | MC74HC74AN    |
| A4U380           | 156-2310-00        |                      |        | IC,DIGITAL:HCMOS,FLIP FLOP;HEX, D-TYPE    | 80009     | 156231000     |
| A4U400           | 156-2821-00        |                      |        | IC,DIGITAL:HCMOS,FLIP FLOP;OCTAL D-TYPE   | 80009     | 156282100     |
| A4U420           | 156-2821-00        |                      |        | IC,DIGITAL:HCMOS,FLIP FLOP;OCTAL D-TYPE   | 80009     | 156282100     |
| A4U440           | 156-2821-00        |                      |        | IC,DIGITAL:HCMOS,FLIP FLOP;OCTAL D-TYPE   | 80009     | 156282100     |
| A4U460           | 156-2821-00        |                      |        | IC,DIGITAL:HCMOS,FLIP FLOP;OCTAL D-TYPE   | 80009     | 156282100     |
| A4U480           | 156-2821-00        |                      |        | IC,DIGITAL:HCMOS,FLIP FLOP;OCTAL D-TYPE   | 80009     | 156282100     |
| A4U500           | 156-1589-00        |                      |        | IC,CONVERTER:BIPOLAR,D/A;12 BIT,CURRENT   | 24355     | DAC312HP      |
| A4U502           | 156-2822-00        |                      |        | MICROCKT,LINEAR:OP-AMP                    | 80009     | 156282200     |
| A4U520           | 156-1589-00        |                      |        | IC,CONVERTER:BIPOLAR,D/A;12 BIT,CURRENT   | 24355     | DAC312HP      |
| A4U522           | 156-1699-00        |                      |        | IC,LINEAR:BIFET,OP-AMP;DUAL,LOW OFFSET    | 27014     | LF412CN       |
| A4U540           | 156-0515-00        |                      |        | IC,MISC:CMOS,ANALOG MUX;TRIPLE SPDT       | 04713     | MC14053BCP    |
| A4U600           | 156-2821-00        |                      |        | IC,DIGITAL:HCMOS,FLIP FLOP;OCTAL D-TYPE   | 80009     | 156282100     |
| A4U620           | 160-3916-01        |                      |        | MICROCKT,DGTL:16384 X 8 EPROM,PRGM        | 80009     | 160391601     |
| A4U640           | 156-2834-00        |                      |        | IC,DIGITAL:HCMOS,REGISTER;8-BIT PISO      | 01295     | SN74HC166N    |
| A4U660           | 156-2009-00        |                      |        | IC,DIGITAL:HCMOS,FLIP FLOP;DUAL D-TYPE    | 04713     | MC74HC74AN    |
| A4U670           | 156-2827-00        |                      |        | IC,DIGITAL:HCMOS,MUX/ENCODER;DUAL         | 80009     | 156282700     |
| A4U680           | 156-2088-00        |                      |        | IC,DIGITAL:HCMOS,MUX/ENCODER;QUAD         | 80009     | 156208800     |
| A4U700           | 156-2821-00        |                      |        | IC,DIGITAL:HCMOS,FLIP FLOP;OCTAL D-TYPE   | 80009     | 156282100     |
| A4U710           | 156-2821-00        |                      |        | IC,DIGITAL:HCMOS,FLIP FLOP;OCTAL D-TYPE   | 80009     | 156282100     |
| A4U720           | 156-2820-00        |                      |        | IC,DIGITAL:HCMOS,GATE;TRIPLE 3-INPUT NAND | 80009     | 156282000     |
| A4U760           | 156-2823-00        |                      |        | IC,DIGITAL:HCMOS,ARITH FUNC;4-BIT FULL    | 80009     | 156282300     |
| A4U770           | 156-2823-00        |                      |        | IC,DIGITAL:HCMOS,ARITH FUNC;4-BIT FULL    | 80009     | 156282300     |
| A4U800           | 156-1255-02        |                      |        | MICROCKT,LINEAR:8 BIT HS MULTI D/A CONV   | 80009     | 156125502     |
| A4U802           | 156-2822-00        |                      |        | MICROCKT,LINEAR:OP-AMP                    | 80009     | 156282200     |
| A4U820           | 156-1255-02        |                      |        | MICROCKT,LINEAR:8 BIT HS MULTI D/A CONV   | 80009     | 156125502     |
| A4U822           | 156-2822-00        |                      |        | MICROCKT,LINEAR:OP-AMP                    | 80009     | 156282200     |
| A4W300           | 131-0566-04        |                      |        | BUS,CONDUCTOR:DUMMY RES,18 OD X 3.2MM L   | 80009     | 131056604     |

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|------------------|--------------------|----------------------|--------|---|-----------|---------------|
| A5               | 670-9307-XX        |                      |        | CIRCUIT BD ASSY:DISPLAY CONTROL             | 80009     | 6709307XX     |
| A5C10            | 290-0745-00        |                      |        | CAP,FXD,ALUM::22UF,20%,50V,8 X 11MM         | 0H1N5     | CEUSM1J220    |
| A5C20            | 290-0745-00        |                      |        | CAP,FXD,ALUM::22UF,20%,50V,8 X 11MM         | 0H1N5     | CEUSM1J220    |
| A5C30            | 290-0745-00        |                      |        | CAP,FXD,ALUM::22UF,20%,50V,8 X 11MM         | 0H1N5     | CEUSM1J220    |
| A5C40            | 290-0745-00        |                      |        | CAP,FXD,ALUM::22UF,20%,50V,8 X 11MM         | 0H1N5     | CEUSM1J220    |
| A5C50            | 290-0745-00        |                      |        | CAP,FXD,ALUM::22UF,20%,50V,8 X 11MM         | 0H1N5     | CEUSM1J220    |
| A5C60            | 290-0745-00        |                      |        | CAP,FXD,ALUM::22UF,20%,50V,8 X 11MM         | 0H1N5     | CEUSM1J220    |
| A5C100           | 281-0775-00        |                      |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA  |
| A5C120           | 281-0775-00        |                      |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA  |
| A5C140           | 281-0775-00        |                      |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA  |
| A5C160           | 281-0775-00        |                      |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA  |
| A5C500           | 281-0775-00        |                      |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA  |
| A5C502           | 281-0775-00        |                      |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA  |
| A5C505           | 281-0812-00        |                      |        | CAP,FXD,CERAMIC:MLC;1000PF,10%,100V         | 04222     | SA101C102KAA  |
| A5C520           | 281-0775-00        |                      |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA  |
| A5C522           | 281-0775-00        |                      |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA  |
| A5C525           | 281-0812-00        |                      |        | CAP,FXD,CERAMIC:MLC;1000PF,10%,100V         | 04222     | SA101C102KAA  |
| A5C555           | 281-0763-00        |                      |        | CAP,FXD,CERAMIC:MLC;47PF,10%,100V           | 04222     | SA102A470KAA  |
| A5C562           | 281-0775-00        |                      |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA  |
| A5C565           | 281-0775-00        |                      |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA  |
| A5C575           | 281-0763-00        |                      |        | CAP,FXD,CERAMIC:MLC;47PF,10%,100V           | 04222     | SA102A470KAA  |
| A5C582           | 281-0775-00        |                      |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA  |
| A5C585           | 281-0775-00        |                      |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA  |
| A5C600           | 281-0775-00        |                      |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA  |
| A5C602           | 281-0775-00        |                      |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA  |
| A5C605           | 281-0775-00        |                      |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA  |
| A5C607           | 281-0775-00        |                      |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA  |
| A5C610           | 281-0775-00        |                      |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA  |
| A5C612           | 281-0775-00        |                      |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA  |
| A5C615           | 281-0775-00        |                      |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA  |
| A5C617           | 281-0775-00        |                      |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA  |
| A5C620           | 281-0775-00        |                      |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA  |
| A5C622           | 281-0775-00        |                      |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA  |
| A5C625           | 281-0775-00        |                      |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA  |
| A5C627           | 281-0775-00        |                      |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA  |
| A5C630           | 281-0775-00        |                      |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA  |
| A5C632           | 281-0775-00        |                      |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA  |
| A5C635           | 281-0775-00        |                      |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA  |
| A5C637           | 281-0775-00        |                      |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA  |
| A5C640           | 281-0775-00        |                      |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA  |



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|                  |                    | Effective  | Dscont  |   |           |               |
| A5C641           | 281-0763-00        |            |         | CAP,FXD,CERAMIC:MLC;47PF,10%,100V           | 04222     | SA102A470KAA  |
| A5C642           | 281-0775-00        |            |         | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA  |
| A5C643           | 281-0763-00        |            |         | CAP,FXD,CERAMIC:MLC;47PF,10%,100V           | 04222     | SA102A470KAA  |
| A5C645           | 281-0775-00        |            |         | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA  |
| A5C647           | 281-0775-00        |            |         | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA  |
| A5C650           | 281-0775-00        |            |         | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA  |
| A5C651           | 281-0763-00        |            |         | CAP,FXD,CERAMIC:MLC;47PF,10%,100V           | 04222     | SA102A470KAA  |
| A5C652           | 281-0775-00        |            |         | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA  |
| A5C653           | 281-0763-00        |            |         | CAP,FXD,CERAMIC:MLC;47PF,10%,100V           | 04222     | SA102A470KAA  |
| A5C655           | 281-0775-00        |            |         | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA  |
| A5C657           | 281-0775-00        |            |         | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA  |
| A5C662           | 281-0775-00        |            |         | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA  |
| A5C670           | 281-0775-00        |            |         | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA  |
| A5C674           | 281-0814-00        |            |         | CAP,FXD,CERAMIC:MLC;100 PF,10%,100V         | TK1743    | CGB101KEN     |
| A5C677           | 281-0814-00        |            |         | CAP,FXD,CERAMIC:MLC;100 PF,10%,100V         | TK1743    | CGB101KEN     |
| A5C680           | 281-0775-00        |            |         | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA  |
| A5C682           | 281-0775-00        |            |         | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA  |
| A5C685           | 281-0775-00        |            |         | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA  |
| A5C687           | 281-0775-00        |            |         | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA  |
| A5C690           | 281-0775-00        |            |         | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA  |
| A5C691           | 281-0812-00        |            |         | CAP,FXD,CERAMIC:MLC;1000PF,10%,100V         | 04222     | SA101C102KAA  |
| A5C692           | 281-0775-00        |            |         | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA  |
| A5C695           | 281-0775-00        |            |         | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA  |
| A5C696           | 281-0812-00        |            |         | CAP,FXD,CERAMIC:MLC;1000PF,10%,100V         | 04222     | SA101C102KAA  |
| A5C697           | 281-0775-00        |            |         | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA  |
| A5C800           | 281-0775-00        |            |         | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA  |
| A5C810           | 281-0775-00        |            |         | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA  |
| A5C820           | 281-0775-00        |            |         | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA  |
| A5C830           | 281-0775-00        |            |         | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA  |
| A5C840           | 281-0775-00        |            |         | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA  |
| A5C850           | 281-0775-00        |            |         | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA  |
| A5C860           | 281-0775-00        |            |         | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA  |
| A5C865           | 281-0812-00        |            |         | CAP,FXD,CERAMIC:MLC;1000PF,10%,100V         | 04222     | SA101C102KAA  |
| A5C870           | 281-0775-00        |            |         | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA  |
| A5CR590          | 152-0327-00        |            |         | SEMICON DVC,DI:SIG,SI,100MA,75V             | 80009     | 152032700     |
| A5L10            | 108-0948-00        | J301393    | J301877 | COIL,RF:FIXED,100UH,10%                     | 80009     | 108094800     |
| A5L10            | 108-1506-00        | J301878    |         | INDUCTOR,FXD:SIGNAL;100UH,10%               | 80009     | 108150600     |
| A5L20            | 108-0948-00        | J301393    | J301877 | COIL,RF:FIXED,100UH,10%                     | 80009     | 108094800     |
| A5L20            | 108-1506-00        | J301878    |         | INDUCTOR,FXD:SIGNAL;100UH,10%               | 80009     | 108150600     |
| A5L30            | 108-0948-00        | J301393    | J301877 | COIL,RF:FIXED,100UH,10%                     | 80009     | 108094800     |

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| A5L30            | 108-1506-00        | J301878              |         | INDUCTOR,FXD:SIGNAL;100UH,10%             | 80009     | 108150600      |
| A5L40            | 108-0948-00        | J301393              | J301877 | COIL,RF:FIXED,100UH,10%                   | 80009     | 108094800      |
| A5L40            | 108-1506-00        | J301878              |         | INDUCTOR,FXD:SIGNAL;100UH,10%             | 80009     | 108150600      |
| A5L50            | 108-0948-00        | J301393              | J301877 | COIL,RF:FIXED,100UH,10%                   | 80009     | 108094800      |
| A5L50            | 108-1506-00        | J301878              |         | INDUCTOR,FXD:SIGNAL;100UH,10%             | 80009     | 108150600      |
| A5L60            | 108-0948-00        | J301393              | J301877 | COIL,RF:FIXED,100UH,10%                   | 80009     | 108094800      |
| A5L60            | 108-1506-00        | J301878              |         | INDUCTOR,FXD:SIGNAL;100UH,10%             | 80009     | 108150600      |
| A5P50            | 131-3650-00        |                      |         | CONN,PLUG,ELEC:CKT BD,RTANG,2 X 32,0.1 SP | 80009     | 131365000      |
| A5P52            | 131-3648-00        |                      |         | CONN,PLUG,ELEC:CKT BD,RTANG,2 X 22,0.1 SP | 80009     | 131364800      |
| A5Q540           | 151-0582-00        |                      |         | TRANSISTOR:NPN,SI,DIFFERENTIAL,DUAL50V    | 80009     | 151058200      |
| A5Q542           | 151-0582-00        |                      |         | TRANSISTOR:NPN,SI,DIFFERENTIAL,DUAL50V    | 80009     | 151058200      |
| A5Q556           | 151-0190-00        |                      |         | TRANSISTOR,SIG:BIPOLAR,NPN;40V,200MA      | 04713     | 2N3904         |
| A5Q576           | 151-0190-00        |                      |         | TRANSISTOR,SIG:BIPOLAR,NPN;40V,200MA      | 04713     | 2N3904         |
| A5Q850           | 151-0190-00        |                      |         | TRANSISTOR,SIG:BIPOLAR,NPN;40V,200MA      | 04713     | 2N3904         |
| A5Q852           | 151-0190-00        |                      |         | TRANSISTOR,SIG:BIPOLAR,NPN;40V,200MA      | 04713     | 2N3904         |
| A5Q860           | 151-0190-00        |                      |         | TRANSISTOR,SIG:BIPOLAR,NPN;40V,200MA      | 04713     | 2N3904         |
| A5Q862           | 151-0190-00        |                      |         | TRANSISTOR,SIG:BIPOLAR,NPN;40V,200MA      | 04713     | 2N3904         |
| A5Q870           | 151-0190-00        |                      |         | TRANSISTOR,SIG:BIPOLAR,NPN;40V,200MA      | 04713     | 2N3904         |
| A5R10            | 315-0102-00        |                      |         | RES,FXD,FILM:1K OHM,5%,0.25W              | TK1727    | SFR25 2322-181 |
| A5R12            | 315-0105-00        |                      |         | RES,FXD,FILM:1M OHM,5%,0.25W              | TK1727    | SFR25 2322-181 |
| A5R15            | 315-0102-00        |                      |         | RES,FXD,FILM:1K OHM,5%,0.25W              | TK1727    | SFR25 2322-181 |
| A5R20            | 315-0102-00        |                      |         | RES,FXD,FILM:1K OHM,5%,0.25W              | TK1727    | SFR25 2322-181 |
| A5R22            | 315-0105-00        |                      |         | RES,FXD,FILM:1M OHM,5%,0.25W              | TK1727    | SFR25 2322-181 |
| A5R25            | 315-0102-00        |                      |         | RES,FXD,FILM:1K OHM,5%,0.25W              | TK1727    | SFR25 2322-181 |
| A5R30            | 315-0102-00        |                      |         | RES,FXD,FILM:1K OHM,5%,0.25W              | TK1727    | SFR25 2322-181 |
| A5R32            | 315-0105-00        |                      |         | RES,FXD,FILM:1M OHM,5%,0.25W              | TK1727    | SFR25 2322-181 |
| A5R35            | 315-0102-00        |                      |         | RES,FXD,FILM:1K OHM,5%,0.25W              | TK1727    | SFR25 2322-181 |
| A5R80            | 311-1743-02        |                      |         | RES,VAR,NONWW:10K OHM,20%,0.5W            | 80009     | 311174302      |
| A5R82            | 315-0470-00        |                      |         | RES,FXD,FILM:47 OHM,5%,0.25W              | TK1727    | SFR25 2322-181 |
| A5R90            | 315-0334-00        |                      |         | RES,FXD,FILM:330K OHM,5%,0.25W            | TK1727    | SFR25 2322-181 |
| A5R91            | 315-0334-00        |                      |         | RES,FXD,FILM:330K OHM,5%,0.25W            | TK1727    | SFR25 2322-181 |
| A5R92            | 315-0334-00        |                      |         | RES,FXD,FILM:330K OHM,5%,0.25W            | TK1727    | SFR25 2322-181 |
| A5R93            | 315-0334-00        |                      |         | RES,FXD,FILM:330K OHM,5%,0.25W            | TK1727    | SFR25 2322-181 |
| A5R94            | 315-0334-00        |                      |         | RES,FXD,FILM:330K OHM,5%,0.25W            | TK1727    | SFR25 2322-181 |
| A5R95            | 315-0334-00        |                      |         | RES,FXD,FILM:330K OHM,5%,0.25W            | TK1727    | SFR25 2322-181 |
| A5R96            | 315-0334-00        |                      |         | RES,FXD,FILM:330K OHM,5%,0.25W            | TK1727    | SFR25 2322-181 |
| A5R97            | 315-0334-00        |                      |         | RES,FXD,FILM:330K OHM,5%,0.25W            | TK1727    | SFR25 2322-181 |
| A5R98            | 315-0334-00        |                      |         | RES,FXD,FILM:330K OHM,5%,0.25W            | TK1727    | SFR25 2322-181 |
| A5R99            | 315-0334-00        |                      |         | RES,FXD,FILM:330K OHM,5%,0.25W            | TK1727    | SFR25 2322-181 |
| A5R102           | 315-0102-00        |                      |         | RES,FXD,FILM:1K OHM,5%,0.25W              | TK1727    | SFR25 2322-181 |

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|------------------|--------------------|----------------------|--------|--|-----------|-----------------|
| A5R103           | 315-0102-00        |                      |        | RES,FXD,FILM:1K OHM,5%,0.25W           | TK1727    | SFR25 2322-181  |
| A5R104           | 315-0102-00        |                      |        | RES,FXD,FILM:1K OHM,5%,0.25W           | TK1727    | SFR25 2322-181  |
| A5R105           | 315-0102-00        |                      |        | RES,FXD,FILM:1K OHM,5%,0.25W           | TK1727    | SFR25 2322-181  |
| A5R106           | 315-0102-00        |                      |        | RES,FXD,FILM:1K OHM,5%,0.25W           | TK1727    | SFR25 2322-181  |
| A5R107           | 315-0102-00        |                      |        | RES,FXD,FILM:1K OHM,5%,0.25W           | TK1727    | SFR25 2322-181  |
| A5R108           | 315-0102-00        |                      |        | RES,FXD,FILM:1K OHM,5%,0.25W           | TK1727    | SFR25 2322-181  |
| A5R109           | 315-0102-00        |                      |        | RES,FXD,FILM:1K OHM,5%,0.25W           | TK1727    | SFR25 2322-181  |
| A5R120           | 315-0102-00        |                      |        | RES,FXD,FILM:1K OHM,5%,0.25W           | TK1727    | SFR25 2322-181  |
| A5R121           | 315-0102-00        |                      |        | RES,FXD,FILM:1K OHM,5%,0.25W           | TK1727    | SFR25 2322-181  |
| A5R122           | 315-0102-00        |                      |        | RES,FXD,FILM:1K OHM,5%,0.25W           | TK1727    | SFR25 2322-181  |
| A5R123           | 315-0102-00        |                      |        | RES,FXD,FILM:1K OHM,5%,0.25W           | TK1727    | SFR25 2322-181  |
| A5R124           | 315-0102-00        |                      |        | RES,FXD,FILM:1K OHM,5%,0.25W           | TK1727    | SFR25 2322-181  |
| A5R125           | 315-0102-00        |                      |        | RES,FXD,FILM:1K OHM,5%,0.25W           | TK1727    | SFR25 2322-181  |
| A5R126           | 315-0102-00        |                      |        | RES,FXD,FILM:1K OHM,5%,0.25W           | TK1727    | SFR25 2322-181  |
| A5R127           | 315-0102-00        |                      |        | RES,FXD,FILM:1K OHM,5%,0.25W           | TK1727    | SFR25 2322-181  |
| A5R140           | 315-0102-00        |                      |        | RES,FXD,FILM:1K OHM,5%,0.25W           | TK1727    | SFR25 2322-181  |
| A5R141           | 315-0102-00        |                      |        | RES,FXD,FILM:1K OHM,5%,0.25W           | TK1727    | SFR25 2322-181  |
| A5R142           | 315-0102-00        |                      |        | RES,FXD,FILM:1K OHM,5%,0.25W           | TK1727    | SFR25 2322-181  |
| A5R143           | 315-0102-00        |                      |        | RES,FXD,FILM:1K OHM,5%,0.25W           | TK1727    | SFR25 2322-181  |
| A5R144           | 315-0102-00        |                      |        | RES,FXD,FILM:1K OHM,5%,0.25W           | TK1727    | SFR25 2322-181  |
| A5R145           | 315-0102-00        |                      |        | RES,FXD,FILM:1K OHM,5%,0.25W           | TK1727    | SFR25 2322-181  |
| A5R146           | 315-0102-00        |                      |        | RES,FXD,FILM:1K OHM,5%,0.25W           | TK1727    | SFR25 2322-181  |
| A5R147           | 315-0102-00        |                      |        | RES,FXD,FILM:1K OHM,5%,0.25W           | TK1727    | SFR25 2322-181  |
| A5R500           | 315-0101-00        |                      |        | RES,FXD,FILM:100 OHM,5%,0.25W          | TK1727    | SFR25 2322-181  |
| A5R502           | 315-0101-00        |                      |        | RES,FXD,FILM:100 OHM,5%,0.25W          | TK1727    | SFR25 2322-181  |
| A5R504           | 315-0101-00        |                      |        | RES,FXD,FILM:100 OHM,5%,0.25W          | TK1727    | SFR25 2322-181  |
| A5R506           | 315-0103-00        |                      |        | RES,FXD,FILM:10K OHM,5%,0.25W          | TK1727    | SFR25 2322-181  |
| A5R508           | 311-1613-00        |                      |        | RES,VAR,NONWW:20K OHM,20%,0.5W         | 80009     | 311161300       |
| A5R520           | 315-0101-00        |                      |        | RES,FXD,FILM:100 OHM,5%,0.25W          | TK1727    | SFR25 2322-181  |
| A5R522           | 315-0101-00        |                      |        | RES,FXD,FILM:100 OHM,5%,0.25W          | TK1727    | SFR25 2322-181  |
| A5R524           | 315-0101-00        |                      |        | RES,FXD,FILM:100 OHM,5%,0.25W          | TK1727    | SFR25 2322-181  |
| A5R526           | 315-0103-00        |                      |        | RES,FXD,FILM:10K OHM,5%,0.25W          | TK1727    | SFR25 2322-181  |
| A5R528           | 311-1613-00        |                      |        | RES,VAR,NONWW:20K OHM,20%,0.5W         | 80009     | 311161300       |
| A5R550           | 315-0101-00        |                      |        | RES,FXD,FILM:100 OHM,5%,0.25W          | TK1727    | SFR25 2322-181  |
| A5R552           | 321-0226-00        |                      |        | RES,FXD,FILM:2.21K OHM,1%,0.125W,TC=T0 | 19701     | 5043ED2K210F    |
| A5R554           | 311-1743-02        |                      |        | RES,VAR,NONWW:10K OHM,20%,0.5W         | 80009     | 311174302       |
| A5R558           | 321-0201-00        |                      |        | RES,FXD,FILM:1.21K OHM,1%,0.125W,TC=T0 | TK1727    | MR252322-151-1K |
| A5R559           | 321-0201-00        |                      |        | RES,FXD,FILM:1.21K OHM,1%,0.125W,TC=T0 | TK1727    | MR252322-151-1K |
| A5R562           | 315-0302-00        |                      |        | RES,FXD,FILM:3K OHM,5%,0.25W           | TK1727    | SFR25 2322-181  |
| A5R563           | 315-0102-00        |                      |        | RES,FXD,FILM:1K OHM,5%,0.25W           | TK1727    | SFR25 2322-181  |

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|------------------|--------------------|----------------------|--------|--|-----------|-----------------|
| A5R564           | 315-0202-00        |                      |        | RES,FXD,FILM:2K OHM,5%,0.25W             | TK1727    | SFR25 2322-181  |
| A5R566           | 321-0217-00        |                      |        | RES,FXD,FILM:1.78K OHM,1%,0.125W,TC=T0   | TK1727    | MR25-2322-151-1 |
| A5R568           | 321-0217-00        |                      |        | RES,FXD,FILM:1.78K OHM,1%,0.125W,TC=T0   | TK1727    | MR25-2322-151-1 |
| A5R569           | 315-0562-00        |                      |        | RES,FXD,FILM:5.6K OHM,5%,0.25W           | TK1727    | SFR25 2322-181  |
| A5R570           | 315-0101-00        |                      |        | RES,FXD,FILM:100 OHM,5%,0.25W            | TK1727    | SFR25 2322-181  |
| A5R572           | 321-0258-00        |                      |        | RES,FXD,FILM:4.75K OHM,1%,0.125W,TC=T0   | 19701     | 5043ED4K750F    |
| A5R574           | 311-1238-01        |                      |        | RES,VAR,NONWW:TRMR,5K OHM,20%,0.5W       | 80009     | 311123801       |
| A5R578           | 321-0202-00        |                      |        | RES,FXD,FILM:1.24K OHM,1%,0.125W,TC=T0   | TK1727    | MR25 2322-151-1 |
| A5R579           | 321-0202-00        |                      |        | RES,FXD,FILM:1.24K OHM,1%,0.125W,TC=T0   | TK1727    | MR25 2322-151-1 |
| A5R582           | 315-0103-00        |                      |        | RES,FXD,FILM:10K OHM,5%,0.25W            | TK1727    | SFR25 2322-181  |
| A5R583           | 315-0102-00        |                      |        | RES,FXD,FILM:1K OHM,5%,0.25W             | TK1727    | SFR25 2322-181  |
| A5R584           | 315-0102-00        |                      |        | RES,FXD,FILM:1K OHM,5%,0.25W             | TK1727    | SFR25 2322-181  |
| A5R586           | 321-0230-00        |                      |        | RES,FXD,FILM:2.43K OHM,1%,0.125W,TC=T0   | TK1727    | 2322-151-2K43   |
| A5R588           | 321-0230-00        |                      |        | RES,FXD,FILM:2.43K OHM,1%,0.125W,TC=T0   | TK1727    | 2322-151-2K43   |
| A5R590           | 321-0258-00        |                      |        | RES,FXD,FILM:4.75K OHM,1%,0.125W,TC=T0   | 19701     | 5043ED4K750F    |
| A5R592           | 321-0204-00        |                      |        | RES,FXD,FILM:1.30K OHM,1%,0.125W,TC=T0   | TK1727    | MR25-2322-151-1 |
| A5R594           | 315-0471-00        |                      |        | RES,FXD,FILM:470 OHM,5%,0.25W            | TK1727    | SFR25 2322-181  |
| A5R596           | 315-0471-00        |                      |        | RES,FXD,FILM:470 OHM,5%,0.25W            | TK1727    | SFR25 2322-181  |
| A5R620           | 321-0289-07        |                      |        | RES,FXD,FILM:10.0K OHM,0.1%,0.125W,TC=T9 | 19701     | 5033RE10K00B    |
| A5R621           | 315-0332-00        |                      |        | RES,FXD,FILM:3.3K OHM,5%,0.25W           | TK1727    | SFR25 2322-181  |
| A5R622           | 321-0289-07        |                      |        | RES,FXD,FILM:10.0K OHM,0.1%,0.125W,TC=T9 | 19701     | 5033RE10K00B    |
| A5R623           | 315-0332-00        |                      |        | RES,FXD,FILM:3.3K OHM,5%,0.25W           | TK1727    | SFR25 2322-181  |
| A5R624           | 321-0289-07        |                      |        | RES,FXD,FILM:10.0K OHM,0.1%,0.125W,TC=T9 | 19701     | 5033RE10K00B    |
| A5R625           | 315-0332-00        |                      |        | RES,FXD,FILM:3.3K OHM,5%,0.25W           | TK1727    | SFR25 2322-181  |
| A5R626           | 321-0385-07        |                      |        | RES,FXD,FILM:100K OHM,0.1%,0.125W,TC=T9  | TK1727    | MPR24-2322-141  |
| A5R627           | 315-0332-00        |                      |        | RES,FXD,FILM:3.3K OHM,5%,0.25W           | TK1727    | SFR25 2322-181  |
| A5R630           | 321-0289-07        |                      |        | RES,FXD,FILM:10.0K OHM,0.1%,0.125W,TC=T9 | 19701     | 5033RE10K00B    |
| A5R631           | 315-0332-00        |                      |        | RES,FXD,FILM:3.3K OHM,5%,0.25W           | TK1727    | SFR25 2322-181  |
| A5R632           | 321-0289-07        |                      |        | RES,FXD,FILM:10.0K OHM,0.1%,0.125W,TC=T9 | 19701     | 5033RE10K00B    |
| A5R633           | 315-0332-00        |                      |        | RES,FXD,FILM:3.3K OHM,5%,0.25W           | TK1727    | SFR25 2322-181  |
| A5R634           | 321-0289-07        |                      |        | RES,FXD,FILM:10.0K OHM,0.1%,0.125W,TC=T9 | 19701     | 5033RE10K00B    |
| A5R635           | 315-0332-00        |                      |        | RES,FXD,FILM:3.3K OHM,5%,0.25W           | TK1727    | SFR25 2322-181  |
| A5R636           | 321-0385-07        |                      |        | RES,FXD,FILM:100K OHM,0.1%,0.125W,TC=T9  | TK1727    | MPR24-2322-141  |
| A5R637           | 315-0332-00        |                      |        | RES,FXD,FILM:3.3K OHM,5%,0.25W           | TK1727    | SFR25 2322-181  |
| A5R640           | 321-0289-07        |                      |        | RES,FXD,FILM:10.0K OHM,0.1%,0.125W,TC=T9 | 19701     | 5033RE10K00B    |
| A5R642           | 321-0289-07        |                      |        | RES,FXD,FILM:10.0K OHM,0.1%,0.125W,TC=T9 | 19701     | 5033RE10K00B    |
| A5R644           | 321-0289-07        |                      |        | RES,FXD,FILM:10.0K OHM,0.1%,0.125W,TC=T9 | 19701     | 5033RE10K00B    |
| A5R646           | 321-0385-07        |                      |        | RES,FXD,FILM:100K OHM,0.1%,0.125W,TC=T9  | TK1727    | MPR24-2322-141  |
| A5R647           | 315-0101-00        |                      |        | RES,FXD,FILM:100 OHM,5%,0.25W            | TK1727    | SFR25 2322-181  |
| A5R648           | 315-0101-00        |                      |        | RES,FXD,FILM:100 OHM,5%,0.25W            | TK1727    | SFR25 2322-181  |

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| A5R650           | 321-0289-07        |                      |         | RES,FXD,FILM:10.0K OHM,0.1%,0.125W,TC=T9 | 19701     | 5033RE10K00B   |
| A5R652           | 321-0289-07        |                      |         | RES,FXD,FILM:10.0K OHM,0.1%,0.125W,TC=T9 | 19701     | 5033RE10K00B   |
| A5R654           | 321-0289-07        |                      |         | RES,FXD,FILM:10.0K OHM,0.1%,0.125W,TC=T9 | 19701     | 5033RE10K00B   |
| A5R656           | 321-0385-07        |                      |         | RES,FXD,FILM:100K OHM,0.1%,0.125W,TC=T9  | TK1727    | MPR24-2322-141 |
| A5R657           | 315-0101-00        |                      |         | RES,FXD,FILM:100 OHM,5%,0.25W            | TK1727    | SFR25 2322-181 |
| A5R658           | 315-0101-00        |                      |         | RES,FXD,FILM:100 OHM,5%,0.25W            | TK1727    | SFR25 2322-181 |
| A5R674           | 321-0385-07        |                      |         | RES,FXD,FILM:100K OHM,0.1%,0.125W,TC=T9  | TK1727    | MPR24-2322-141 |
| A5R675           | 321-0986-07        |                      |         | RES,FXD,FILM:25K OHM,0.1%,0.125W,TC=T9   | TK1727    | MPR24-2322-141 |
| A5R677           | 321-0385-07        |                      |         | RES,FXD,FILM:100K OHM,0.1%,0.125W,TC=T9  | TK1727    | MPR24-2322-141 |
| A5R678           | 321-0986-07        |                      |         | RES,FXD,FILM:25K OHM,0.1%,0.125W,TC=T9   | TK1727    | MPR24-2322-141 |
| A5R680           | 315-0304-00        |                      |         | RES,FXD,FILM:300K OHM,5%,0.25W           | TK1727    | SFR25 2322-181 |
| A5R682           | 321-1747-07        |                      |         | RES,FXD,FILM:320K OHM,0.1%,0.125W,TC=T9  | 80009     | 321174707      |
| A5R684           | 321-1748-07        |                      |         | RES,FXD,FILM:160K OHM,0.1%,0.125W,TC=T9  | 80009     | 321174807      |
| A5R686           | 315-0101-00        |                      |         | RES,FXD,FILM:100 OHM,5%,0.25W            | TK1727    | SFR25 2322-181 |
| A5R688           | 315-0753-00        |                      |         | RES,FXD,FILM:75K OHM,5%,0.25W            | TK1727    | SFR25 2322-181 |
| A5R690           | 315-0304-00        |                      |         | RES,FXD,FILM:300K OHM,5%,0.25W           | TK1727    | SFR25 2322-181 |
| A5R692           | 321-1747-07        |                      |         | RES,FXD,FILM:320K OHM,0.1%,0.125W,TC=T9  | 80009     | 321174707      |
| A5R694           | 321-1748-07        |                      |         | RES,FXD,FILM:160K OHM,0.1%,0.125W,TC=T9  | 80009     | 321174807      |
| A5R696           | 315-0101-00        |                      |         | RES,FXD,FILM:100 OHM,5%,0.25W            | TK1727    | SFR25 2322-181 |
| A5R698           | 315-0753-00        |                      |         | RES,FXD,FILM:75K OHM,5%,0.25W            | TK1727    | SFR25 2322-181 |
| A5R800           | 315-0334-00        |                      |         | RES,FXD,FILM:330K OHM,5%,0.25W           | TK1727    | SFR25 2322-181 |
| A5R801           | 315-0334-00        |                      |         | RES,FXD,FILM:330K OHM,5%,0.25W           | TK1727    | SFR25 2322-181 |
| A5R802           | 315-0334-00        |                      |         | RES,FXD,FILM:330K OHM,5%,0.25W           | TK1727    | SFR25 2322-181 |
| A5R803           | 315-0334-00        |                      |         | RES,FXD,FILM:330K OHM,5%,0.25W           | TK1727    | SFR25 2322-181 |
| A5R804           | 315-0334-00        |                      |         | RES,FXD,FILM:330K OHM,5%,0.25W           | TK1727    | SFR25 2322-181 |
| A5R805           | 315-0334-00        |                      |         | RES,FXD,FILM:330K OHM,5%,0.25W           | TK1727    | SFR25 2322-181 |
| A5R820           | 315-0512-00        | J301393              | J301497 | RES,FXD,FILM:5.1K OHM,5%,0.25W           | TK1727    | SFR25 2322-181 |
| A5R820           | 315-0432-00        | J301498              |         | RES,FXD,FILM:4.3K OHM,5%,0.25W           | TK1727    | SFR25 2322-181 |
| A5R822           | 315-0512-00        |                      |         | RES,FXD,FILM:5.1K OHM,5%,0.25W           | TK1727    | SFR25 2322-181 |
| A5R824           | 315-0104-00        |                      |         | RES,FXD,FILM:100K OHM,5%,0.25W           | TK1727    | SFR25 2322-181 |
| A5R826           | 315-0512-00        |                      |         | RES,FXD,FILM:5.1K OHM,5%,0.25W           | TK1727    | SFR25 2322-181 |
| A5R850           | 315-0102-00        |                      |         | RES,FXD,FILM:1K OHM,5%,0.25W             | TK1727    | SFR25 2322-181 |
| A5R852           | 315-0681-00        |                      |         | RES,FXD,FILM:680 OHM,5%,0.25W            | TK1727    | SFR25 2322-181 |
| A5R854           | 315-0751-00        |                      |         | RES,FXD,FILM:750 OHM,5%,0.25W            | TK1727    | SFR25 2322-181 |
| A5R860           | 315-0102-00        |                      |         | RES,FXD,FILM:1K OHM,5%,0.25W             | TK1727    | SFR25 2322-181 |
| A5R862           | 315-0751-00        |                      |         | RES,FXD,FILM:750 OHM,5%,0.25W            | TK1727    | SFR25 2322-181 |
| A5R864           | 315-0751-00        |                      |         | RES,FXD,FILM:750 OHM,5%,0.25W            | TK1727    | SFR25 2322-181 |
| A5R865           | 315-0203-00        |                      |         | RES,FXD,FILM:20K OHM,5%,0.25W            | TK1727    | SFR25 2322-181 |
| A5R870           | 315-0102-00        |                      |         | RES,FXD,FILM:1K OHM,5%,0.25W             | TK1727    | SFR25 2322-181 |
| A5R872           | 315-0751-00        |                      |         | RES,FXD,FILM:750 OHM,5%,0.25W            | TK1727    | SFR25 2322-181 |

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| A5R880           | 315-0911-00        |                      |        | RES,FXD,FILM:910 OHM,5%,0.25W             | TK1727    | SFR25 2322-181 |
| A5R1002          | 315-0100-00        |                      |        | RES,FXD,FILM:10 OHM,5%,0.25W,             | TK1727    | SFR25 2322-182 |
| A5TP10           | 214-0579-00        |                      |        | TERM,TEST POINT:PCB,TEST POINT;EYELET     | 0J260     | ORDER BY DESC  |
| A5TP20           | 214-0579-00        |                      |        | TERM,TEST POINT:PCB,TEST POINT;EYELET     | 0J260     | ORDER BY DESC  |
| A5TP30           | 214-0579-00        |                      |        | TERM,TEST POINT:PCB,TEST POINT;EYELET     | 0J260     | ORDER BY DESC  |
| A5TP60           | 214-0579-00        |                      |        | TERM,TEST POINT:PCB,TEST POINT;EYELET     | 0J260     | ORDER BY DESC  |
| A5TP70           | 214-0579-00        |                      |        | TERM,TEST POINT:PCB,TEST POINT;EYELET     | 0J260     | ORDER BY DESC  |
| A5TP80           | 214-0579-00        |                      |        | TERM,TEST POINT:PCB,TEST POINT;EYELET     | 0J260     | ORDER BY DESC  |
| A5TP90           | 214-0579-00        |                      |        | TERM,TEST POINT:PCB,TEST POINT;EYELET     | 0J260     | ORDER BY DESC  |
| A5TP100          | 214-0579-00        |                      |        | TERM,TEST POINT:PCB,TEST POINT;EYELET     | 0J260     | ORDER BY DESC  |
| A5TP500          | 214-0579-00        |                      |        | TERM,TEST POINT:PCB,TEST POINT;EYELET     | 0J260     | ORDER BY DESC  |
| A5TP502          | 214-0579-00        |                      |        | TERM,TEST POINT:PCB,TEST POINT;EYELET     | 0J260     | ORDER BY DESC  |
| A5TP648          | 214-0579-00        |                      |        | TERM,TEST POINT:PCB,TEST POINT;EYELET     | 0J260     | ORDER BY DESC  |
| A5TP658          | 214-0579-00        |                      |        | TERM,TEST POINT:PCB,TEST POINT;EYELET     | 0J260     | ORDER BY DESC  |
| A5U100           | 156-2824-00        |                      |        | IC,DIGITAL:HCMOS,LATCH;8-BIT ADDRESSABLE  | 01295     | SN74HC259N     |
| A5U120           | 156-2824-00        |                      |        | IC,DIGITAL:HCMOS,LATCH;8-BIT ADDRESSABLE  | 01295     | SN74HC259N     |
| A5U140           | 156-2824-00        |                      |        | IC,DIGITAL:HCMOS,LATCH;8-BIT ADDRESSABLE  | 01295     | SN74HC259N     |
| A5U160           | 156-2316-00        |                      |        | IC,DIGITAL:HCMOS,DEMUX/DECODER            | 80009     | 156231600      |
| A5U500           | 156-1834-00        |                      |        | MICROCKT,LINEAR:ANALOG MULTIPLEXER HYBRID | 80009     | 156183400      |
| A5U520           | 156-1834-00        |                      |        | MICROCKT,LINEAR:ANALOG MULTIPLEXER HYBRID | 80009     | 156183400      |
| A5U600           | 156-0515-00        |                      |        | IC,MISC:CMOS,ANALOG MUX;TRIPLE SPDT       | 04713     | MC14053BCP     |
| A5U605           | 156-0515-00        |                      |        | IC,MISC:CMOS,ANALOG MUX;TRIPLE SPDT       | 04713     | MC14053BCP     |
| A5U610           | 156-0515-00        |                      |        | IC,MISC:CMOS,ANALOG MUX;TRIPLE SPDT       | 04713     | MC14053BCP     |
| A5U615           | 156-0515-00        |                      |        | IC,MISC:CMOS,ANALOG MUX;TRIPLE SPDT       | 04713     | MC14053BCP     |
| A5U620           | 156-2826-00        |                      |        | MICROCKT,LINEAR:OP-AMP;BIFET              | 80009     | 156282600      |
| A5U625           | 156-2826-00        |                      |        | MICROCKT,LINEAR:OP-AMP;BIFET              | 80009     | 156282600      |
| A5U630           | 156-2826-00        |                      |        | MICROCKT,LINEAR:OP-AMP;BIFET              | 80009     | 156282600      |
| A5U635           | 156-2826-00        |                      |        | MICROCKT,LINEAR:OP-AMP;BIFET              | 80009     | 156282600      |
| A5U640           | 156-0515-00        |                      |        | IC,MISC:CMOS,ANALOG MUX;TRIPLE SPDT       | 04713     | MC14053BCP     |
| A5U645           | 156-2826-00        |                      |        | MICROCKT,LINEAR:OP-AMP;BIFET              | 80009     | 156282600      |
| A5U650           | 156-0515-00        |                      |        | IC,MISC:CMOS,ANALOG MUX;TRIPLE SPDT       | 04713     | MC14053BCP     |
| A5U655           | 156-2826-00        |                      |        | MICROCKT,LINEAR:OP-AMP;BIFET              | 80009     | 156282600      |
| A5U662           | 156-0158-00        |                      |        | IC,LINEAR:BIPOLAR,OP-AMP;DUAL             | 01295     | MC1458P        |
| A5U670           | 156-1815-00        |                      |        | MICROCKT,DGTL:DA CONVERTER DUAL           | 80009     | 156181500      |
| A5U674           | 156-2795-00        |                      |        | MICROCKT,LINEAR:OPERATIONAL PRECISION     | 80009     | 156279500      |
| A5U677           | 156-2795-00        |                      |        | MICROCKT,LINEAR:OPERATIONAL PRECISION     | 80009     | 156279500      |
| A5U680           | 156-0515-00        |                      |        | IC,MISC:CMOS,ANALOG MUX;TRIPLE SPDT       | 04713     | MC14053BCP     |
| A5U685           | 156-0515-00        |                      |        | IC,MISC:CMOS,ANALOG MUX;TRIPLE SPDT       | 04713     | MC14053BCP     |
| A5U690           | 156-2795-00        |                      |        | MICROCKT,LINEAR:OPERATIONAL PRECISION     | 80009     | 156279500      |
| A5U695           | 156-2795-00        |                      |        | MICROCKT,LINEAR:OPERATIONAL PRECISION     | 80009     | 156279500      |

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|------------------|--------------------|----------------------|--------|---|-----------|---------------|
| A5U800           | 156-2825-00        |                      |        | IC,DIGITAL:HCMOS,DEMUX/DECODER          | 80009     | 156282500     |
| A5U810           | 156-2827-00        |                      |        | IC,DIGITAL:HCMOS,MUX/ENCODER            | 80009     | 156282700     |
| A5U820           | 156-1778-00        |                      |        | MICROCKT,LINEAR:DUAL COMPARATOR         | 80009     | 156177800     |
| A5U830           | 156-2825-00        |                      |        | IC,DIGITAL:HCMOS,DEMUX/DECODER          | 80009     | 156282500     |
| A5U840           | 156-2309-00        |                      |        | IC,DIGITAL:HCMOS,GATE;HEX INV           | 80009     | 156230900     |
| A5U850           | 156-2253-00        |                      |        | IC,DIGITAL:HCMOS,GATE;QUAD 2-INPUT NAND | 80009     | 156225300     |
| A5U860           | 156-2253-00        |                      |        | IC,DIGITAL:HCMOS,GATE;QUAD 2-INPUT NAND | 80009     | 156225300     |
| A5U870           | 156-2253-00        |                      |        | IC,DIGITAL:HCMOS,GATE;QUAD 2-INPUT NAND | 80009     | 156225300     |

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| A6               | 670-9308-XX        |                      |         | CIRCUIT BD ASSY:COLLECTOR SUPPLY            | 80009     | 6709308XX     |
| A6C212           | 281-0775-00        |                      |         | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA  |
| A6C302           | 281-0707-00        |                      |         | CAP,FXD,CER DI:15000PF,10%,200V             | 04222     | MA302C153KAA  |
| A6C304           | 281-0773-00        |                      |         | CAP,FXD,CERAMIC:MLC;0.01UF,10%,100V         | TK1743    | CGB103KEX     |
| A6C305           | 281-0814-00        |                      |         | CAP,FXD,CERAMIC:MLC;100 PF,10%,100V         | TK1743    | CGB101KEN     |
| A6C306           | 281-0775-00        |                      |         | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA  |
| A6C336           | 290-1007-00        |                      |         | CAP,FXD,ELCTLT:22UF,20%,16V                 | 80009     | 290100700     |
| A6C400           | 281-0775-00        |                      |         | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA  |
| A6C406           | 290-1007-00        |                      |         | CAP,FXD,ELCTLT:22UF,20%,16V                 | 80009     | 290100700     |
| A6C407           | 290-1007-00        |                      |         | CAP,FXD,ELCTLT:22UF,20%,16V                 | 80009     | 290100700     |
| A6C424           | 283-0923-00        |                      |         | CAP,FXD,CER DI:47PF,10%,500V                | 80009     | 283092300     |
| A6C425           | 283-0643-00        | J310196              |         | CAP,FXD,MICA DI:22PF,0.5PF,500V             | 80009     | 283064300     |
| A6C452           | 283-0000-00        |                      |         | CAP,FXD,CER DI:0.001UF,+100-0%,500V         | 80009     | 283000000     |
| A6C480           | 290-1168-00        | J301393              | J302243 | CAP,FXD,ELCTLT:47UF,20%,16V                 | TK00M     | ORDER BY DESC |
| A6C480           | 290-0848-00        | J302244              |         | CAP,FXD,ALUM::47UF,+100%-20%,16V            | 0H1N5     | CEBPM1E470M   |
| A6C481           | 283-0644-00        | J310126              | J310145 | CAP,FXD,MICA::150PF,1%,500V                 | 80009     | 283064400     |
| A6C481           | 283-0927-00        | J310146              |         | CAP,FXD,CER DI:100PF,10%,2KV                | 80009     | 283092700     |
| A6C524           | 283-0923-00        |                      |         | CAP,FXD,CER DI:47PF,10%,500V                | 80009     | 283092300     |
| A6C525           | 283-0643-00        | J310196              |         | CAP,FXD,MICA DI:22PF,0.5PF,500V             | 80009     | 283064300     |
| A6C552           | 283-0000-00        |                      |         | CAP,FXD,CER DI:0.001UF,+100-0%,500V         | 80009     | 283000000     |
| A6CR210          | 152-0832-00        |                      |         | SEMICON DVC,DI:SW,SI,50V,0.12A,DO-34        | 80009     | 152083200     |
| A6CR212          | 152-0832-00        |                      |         | SEMICON DVC,DI:SW,SI,50V,0.12A,DO-34        | 80009     | 152083200     |
| A6CR316          | 152-0832-00        |                      |         | SEMICON DVC,DI:SW,SI,50V,0.12A,DO-34        | 80009     | 152083200     |
| A6CR402          | 152-0832-00        |                      |         | SEMICON DVC,DI:SW,SI,50V,0.12A,DO-34        | 80009     | 152083200     |
| A6CR404          | 152-0832-00        |                      |         | SEMICON DVC,DI:SW,SI,50V,0.12A,DO-34        | 80009     | 152083200     |
| A6CR446          | 152-0832-00        |                      |         | SEMICON DVC,DI:SW,SI,50V,0.12A,DO-34        | 80009     | 152083200     |
| A6CR448          | 152-0832-00        |                      |         | SEMICON DVC,DI:SW,SI,50V,0.12A,DO-34        | 80009     | 152083200     |
| A6J60            | 131-3672-00        |                      |         | CONN,RCPT,ELEC:HEADER,16 PIN                | 80009     | 131367200     |
| A6J62            | 131-0589-00        |                      |         | TERMINAL,PIN:PRESSFIT/PCB,;MALE,STR         | 22526     | 48283-087     |
| A6J66            | 131-0608-00        |                      |         | CONN,TERMINAL:PRESSFIT/PCB,;MALE,STR        | 22526     | 48283-018     |
| A6K446           | 148-0186-00        |                      |         | RELAY,ARM:1 FORM C,3A,200V,COIL 12VDC       | 80009     | 148018600     |
| A6K448           | 148-0186-00        |                      |         | RELAY,ARM:1 FORM C,3A,200V,COIL 12VDC       | 80009     | 148018600     |
| A6K546           | 148-0186-00        |                      |         | RELAY,ARM:1 FORM C,3A,200V,COIL 12VDC       | 80009     | 148018600     |
| A6K548           | 148-0186-00        |                      |         | RELAY,ARM:1 FORM C,3A,200V,COIL 12VDC       | 80009     | 148018600     |
| A6L306           | 108-0948-00        | J301393              | J301877 | COIL,RF:FIXED,100UH,10%                     | 80009     | 108094800     |
| A6L306           | 108-1506-00        | J301878              |         | INDUCTOR,FXD:SIGNAL;100UH,10%               | 80009     | 108150600     |
| A6L406           | 108-0948-00        | J301393              | J301877 | COIL,RF:FIXED,100UH,10%                     | 80009     | 108094800     |
| A6L406           | 108-1506-00        | J301878              |         | INDUCTOR,FXD:SIGNAL;100UH,10%               | 80009     | 108150600     |
| A6L407           | 108-0948-00        | J301393              | J301877 | COIL,RF:FIXED,100UH,10%                     | 80009     | 108094800     |
| A6L407           | 108-1506-00        | J301878              |         | INDUCTOR,FXD:SIGNAL;100UH,10%               | 80009     | 108150600     |



| Component Number | Tektronix Part No. | Serial No. Effective | Dscont  | Name & Description                        | Mfr. Code | Mfr. Part No.   |
|------------------|--------------------|----------------------|---------|---|-----------|-----------------|
| A6Q424           | 151-0559-00        |                      |         | TRANSISTOR:NPN,SI,PWR                     | S0167     | 2SC2071B        |
| A6Q438           | 151-1201-00        |                      |         | TRANSISTOR:PMOS,FET,PWR,200V              | 80009     | 151120100       |
| A6Q440           | 151-1201-00        |                      |         | TRANSISTOR:PMOS,FET,PWR,200V              | 80009     | 151120100       |
| A6Q444           | 151-0558-00        |                      |         | TRANSISTOR:PNP,SI                         | 80009     | 151055800       |
| A6Q524           | 151-0558-00        |                      |         | TRANSISTOR:PNP,SI                         | 80009     | 151055800       |
| A6Q538           | 151-1202-00        |                      |         | TRANSISTOR:NMOS,FET,PWR,200V              | 80009     | 151120200       |
| A6Q540           | 151-1202-00        |                      |         | TRANSISTOR:NMOS,FET,PWR,200V              | 80009     | 151120200       |
| A6Q544           | 151-0559-00        |                      |         | TRANSISTOR:NPN,SI,PWR                     | S0167     | 2SC2071B        |
| A6R102           | 315-0103-00        |                      |         | RES,FXD,FILM:10K OHM,5%,0.25W             | TK1727    | SFR25 2322-181  |
| A6R104           | 315-0103-00        |                      |         | RES,FXD,FILM:10K OHM,5%,0.25W             | TK1727    | SFR25 2322-181  |
| A6R110           | 307-0885-00        |                      |         | RES NTWK,FXD,FI:5,100K OHM,5%,0.125W      | 80009     | 307088500       |
| A6R200           | 315-0433-00        |                      |         | RES,FXD,FILM:43K OHM,5%,0.25W             | TK1727    | SFR25 2322-181  |
| A6R202           | 315-0103-00        |                      |         | RES,FXD,FILM:10K OHM,5%,0.25W             | TK1727    | SFR25 2322-181  |
| A6R204           | 315-0102-00        |                      |         | RES,FXD,FILM:1K OHM,5%,0.25W              | TK1727    | SFR25 2322-181  |
| A6R206           | 315-0102-00        |                      |         | RES,FXD,FILM:1K OHM,5%,0.25W              | TK1727    | SFR25 2322-181  |
| A6R208           | 315-0431-00        |                      |         | RES,FXD,FILM:430 OHM,5%,0.25W             | TK1727    | SFR25 2322-181  |
| A6R212           | 315-0512-00        |                      |         | RES,FXD,FILM:5.1K OHM,5%,0.25W            | TK1727    | SFR25 2322-181  |
| A6R214           | 321-0289-06        |                      |         | RES,FXD,FILM:10.0K OHM,0.25%,0.125W,TC=T9 | 19701     | 5033RE10K00C    |
| A6R216           | 321-0289-06        |                      |         | RES,FXD,FILM:10.0K OHM,0.25%,0.125W,TC=T9 | 19701     | 5033RE10K00C    |
| A6R300           | 315-0104-00        |                      |         | RES,FXD,FILM:100K OHM,5%,0.25W            | TK1727    | SFR25 2322-181  |
| A6R302           | 315-0103-00        |                      |         | RES,FXD,FILM:10K OHM,5%,0.25W             | TK1727    | SFR25 2322-181  |
| A6R304           | 315-0103-00        |                      |         | RES,FXD,FILM:10K OHM,5%,0.25W             | TK1727    | SFR25 2322-181  |
| A6R305           | 315-0103-00        |                      |         | RES,FXD,FILM:10K OHM,5%,0.25W             | TK1727    | SFR25 2322-181  |
| A6R310           | 321-0289-06        |                      |         | RES,FXD,FILM:10.0K OHM,0.25%,0.125W,TC=T9 | 19701     | 5033RE10K00C    |
| A6R312           | 321-0289-06        |                      |         | RES,FXD,FILM:10.0K OHM,0.25%,0.125W,TC=T9 | 19701     | 5033RE10K00C    |
| A6R314           | 315-0511-00        |                      |         | RES,FXD,FILM:510 OHM,5%,0.25W             | TK1727    | SFR25 2322-181  |
| A6R318           | 321-0211-00        |                      |         | RES,FXD,FILM:1.54K OHM,1%,0.125W,TC=T0    | 19701     | 5043ED1K540F    |
| A6R320           | 321-0401-00        |                      |         | RES,FXD,FILM:147K OHM,1%,0.125W,TC=T0     | TK1727    | 2322-151-147K   |
| A6R322           | 321-0401-00        |                      |         | RES,FXD,FILM:147K OHM,1%,0.125W,TC=T0     | TK1727    | 2322-151-147K   |
| A6R330           | 315-0123-00        |                      |         | RES,FXD,FILM:12K OHM,5%,0.25W             | TK1727    | SFR25 2322-181  |
| A6R332           | 315-0102-00        |                      |         | RES,FXD,FILM:1K OHM,5%,0.25W              | TK1727    | SFR25 2322-181  |
| A6R334           | 315-0204-00        |                      |         | RES,FXD,FILM:200K OHM,5%,0.25W            | TK1727    | SFR25 2322-181  |
| A6R336           | 315-0103-00        |                      |         | RES,FXD,FILM:10K OHM,5%,0.25W             | TK1727    | SFR25 2322-181  |
| A6R340           | 315-0333-00        |                      |         | RES,FXD,FILM:33K OHM,5%,0.25W             | TK1727    | SFR25 2322-181  |
| A6R342           | 315-0511-00        |                      |         | RES,FXD,FILM:510 OHM,5%,0.25W             | TK1727    | SFR25 2322-181  |
| A6R344           | 315-0333-00        |                      |         | RES,FXD,FILM:33K OHM,5%,0.25W             | TK1727    | SFR25 2322-181  |
| A6R346           | 315-0511-00        |                      |         | RES,FXD,FILM:510 OHM,5%,0.25W             | TK1727    | SFR25 2322-181  |
| A6R400           | 321-0929-07        |                      |         | RES,FXD,FILM:2.5K OHM,0.1%,0.125W,TC=T9   | TK1727    | 2322-1412K5     |
| A6R401           | 311-0634-04        |                      |         | RES,VAR,NONWW:TRMR,500 OHM,20%,0.5W       | 80009     | 311063404       |
| A6R402           | 321-0210-07        | J301393              | J301547 | RES,FXD:METAL FILM;1.5K OHM,0.1%,0.125W   | 91637     | CMF55116C15000B |

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| Component Number | Tektronix Part No. | Serial No. Effective | Dscont | Name & Description                       | Mfr. Code | Mfr. Part No.   |
|------------------|--------------------|----------------------|--------|--|-----------|-----------------|
| A6R402           | 321-0206-02        | J301548              |        | RES,FXD,FILM:1.37K OHM,0.5%,0.125W,TC=T2 | 19701     | 5033RC1K370D    |
| A6R403           | 315-0100-00        |                      |        | RES,FXD,FILM:10 OHM,5%,0.25W             | TK1727    | SFR25 2322-182  |
| A6R404           | 321-0414-04        |                      |        | RES,FXD,FILM:200K OHM,0.1%,0.125W,TC=T2  | 19701     | 5033RC200K0B    |
| A6R406           | 315-0392-00        |                      |        | RES,FXD,FILM:3.9K OHM,5%,0.25W           | TK1727    | SFR25 2322-181  |
| A6R408           | 315-0104-00        |                      |        | RES,FXD,FILM:100K OHM,5%,0.25W           | TK1727    | SFR25 2322-181  |
| A6R410           | 315-0221-00        |                      |        | RES,FXD,FILM:220 OHM,5%,0.25W            | TK1727    | SFR25 2322-181  |
| A6R412           | 311-2388-00        |                      |        | RES,VAR,NONWW:TRMR,10K OHM,10%,0.5W      | S4431     | POT1102P-1-103  |
| A6R414           | 315-0103-00        |                      |        | RES,FXD,FILM:10K OHM,5%,0.25W            | TK1727    | SFR25 2322-181  |
| A6R420           | 315-0102-00        |                      |        | RES,FXD,FILM:1K OHM,5%,0.25W             | TK1727    | SFR25 2322-181  |
| A6R422           | 315-0392-00        |                      |        | RES,FXD,FILM:3.9K OHM,5%,0.25W           | TK1727    | SFR25 2322-181  |
| A6R424           | 307-1247-00        |                      |        | RES,FXD,FILM:1K OHM,5%,0.25W             | 80009     | 307124700       |
| A6R428           | 307-1248-00        |                      |        | RES,FXD,FILM:5.1K OHM,5%,0.5W            | 80009     | 307124800       |
| A6R434           | 307-1249-00        |                      |        | RES,FXD,FILM:100 OHM,5%,0.5W             | 80009     | 307124900       |
| A6R436           | 307-1249-00        |                      |        | RES,FXD,FILM:100 OHM,5%,0.5W             | 80009     | 307124900       |
| A6R438           | 307-1286-00        |                      |        | RES,FXD,FILM:1 OHM,5%,2W                 | 80009     | 307128600       |
| A6R440           | 307-1286-00        |                      |        | RES,FXD,FILM:1 OHM,5%,2W                 | 80009     | 307128600       |
| A6R442           | 315-0102-00        |                      |        | RES,FXD,FILM:1K OHM,5%,0.25W             | TK1727    | SFR25 2322-181  |
| A6R444           | 315-0033-00        |                      |        | RES,FXD,CMPSN:3.3 OHM,5%,0.25            | 80009     | 315003300       |
| A6R446           | 307-1294-00        |                      |        | RES,FXD,FILM:0.51 OHM,5%,2W              | 80009     | 307129400       |
| A6R448           | 308-0885-00        |                      |        | RES,FXD,WW:0.3 OHM,1%,2W                 | 80009     | 308088500       |
| A6R452           | 315-0104-00        |                      |        | RES,FXD,FILM:100K OHM,5%,0.25W           | TK1727    | SFR25 2322-181  |
| A6R480           | 315-0153-00        |                      |        | RES,FXD,FILM:15K OHM,5%,0.25W            | TK1727    | SFR25 2322-181  |
| A6R481           | 323-0295-00        |                      |        | RES,FXD,FILM:11.5K OHM,1%,0.5W,TC=TO     | 91637     | CMF65116G11501F |
| A6R520           | 315-0102-00        |                      |        | RES,FXD,FILM:1K OHM,5%,0.25W             | TK1727    | SFR25 2322-181  |
| A6R522           | 315-0392-00        |                      |        | RES,FXD,FILM:3.9K OHM,5%,0.25W           | TK1727    | SFR25 2322-181  |
| A6R524           | 307-1247-00        |                      |        | RES,FXD,FILM:1K OHM,5%,0.25W             | 80009     | 307124700       |
| A6R528           | 307-1248-00        |                      |        | RES,FXD,FILM:5.1K OHM,5%,0.5W            | 80009     | 307124800       |
| A6R534           | 307-1249-00        |                      |        | RES,FXD,FILM:100 OHM,5%,0.5W             | 80009     | 307124900       |
| A6R536           | 307-1249-00        |                      |        | RES,FXD,FILM:100 OHM,5%,0.5W             | 80009     | 307124900       |
| A6R538           | 307-1286-00        |                      |        | RES,FXD,FILM:1 OHM,5%,2W                 | 80009     | 307128600       |
| A6R540           | 307-1286-00        |                      |        | RES,FXD,FILM:1 OHM,5%,2W                 | 80009     | 307128600       |
| A6R542           | 315-0102-00        |                      |        | RES,FXD,FILM:1K OHM,5%,0.25W             | TK1727    | SFR25 2322-181  |
| A6R544           | 315-0033-00        |                      |        | RES,FXD,CMPSN:3.3 OHM,5%,0.25            | 80009     | 315003300       |
| A6R546           | 307-1294-00        |                      |        | RES,FXD,FILM:0.51 OHM,5%,2W              | 80009     | 307129400       |
| A6R548           | 308-0885-00        |                      |        | RES,FXD,WW:0.3 OHM,1%,2W                 | 80009     | 308088500       |
| A6R552           | 315-0104-00        |                      |        | RES,FXD,FILM:100K OHM,5%,0.25W           | TK1727    | SFR25 2322-181  |
| A6S92            | 260-2332-01        |                      |        | SWITCH,THRSTC:NC,OPEN 70 DEG C,3A,250V   | S3385     | ORDER BY DESC   |
| A6U100           | 156-1822-00        |                      |        | MICROCKT,DGTL:C2MOS,8 BIT ADDRESSABLE    | 80009     | 156182200       |
| A6U102           | 156-0447-00        |                      |        | MICROCKT,DGTL:DIGITAL TRANSISTOR         | 80009     | 156044700       |
| A6U103           | 156-0447-00        |                      |        | MICROCKT,DGTL:DIGITAL TRANSISTOR         | 80009     | 156044700       |

| Component Number | Tektronix Part No. | Serial No. |        | Name & Description                     | Mfr. Code | Mfr. Part No. |
|------------------|--------------------|------------|--------|--|-----------|---------------|
|                  |                    | Effective  | Dscont |  |           |               |
| A6U200           | 156-0514-00        |            |        | IC,MISC:CMOS,ANALOG MUX;DUAL 4 CHANNEL | 04713     | MC14052BCP    |
| A6U210           | 156-1771-00        |            |        | MICROCKT,LINEAR:DUAL OP-AMP            | 80009     | 156177100     |
| A6U212           | 156-1771-00        |            |        | MICROCKT,LINEAR:DUAL OP-AMP            | 80009     | 156177100     |
| A6U302           | 156-1771-00        |            |        | MICROCKT,LINEAR:DUAL OP-AMP            | 80009     | 156177100     |
| A6U310           | 156-1778-00        |            |        | MICROCKT,LINEAR:DUAL COMPARATOR        | 80009     | 156177800     |
| A6U330           | 156-2839-00        |            |        | MICROCKT,LINEAR:DUAL OP-AMP            | 80009     | 156283900     |
| A6U400           | 156-1699-00        |            |        | IC,LINEAR:BIFET,OP-AMP;DUAL,LOW OFFSET | 27014     | LF412CN       |
| A6W64            | 174-0301-00        |            |        | CA ASSY,SP,ELEC:4,22 AWG,16.0 L        | 80009     | 174030100     |
| A6W66            | 174-0304-00        |            |        | CA ASSY,SP,ELEC:2,26 AWG,6.0 L,RIBBON  | 80009     | 174030400     |

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| Component Number | Tektronix Part No. | Serial No. Effective | Dscont | Name & Description                          | Mfr. Code | Mfr. Part No.  |
|------------------|--------------------|----------------------|--------|---|-----------|----------------|
| A7               | 670-9309-XX        |                      |        | CIRCUIT BD ASSY:STEP GENERATOR              | 80009     | 6709309XX      |
| A7C20            | 290-0745-00        |                      |        | CAP,FXD,ALUM::22UF,20%,50V,8 X 11MM         | 0H1N5     | CEUSM1J220     |
| A7C30            | 290-0745-00        |                      |        | CAP,FXD,ALUM::22UF,20%,50V,8 X 11MM         | 0H1N5     | CEUSM1J220     |
| A7C40            | 290-1067-01        |                      |        | CAP,FXD,ELCTLT:100UF,20%,63V                | 80009     | 290106701      |
| A7C50            | 290-1067-01        |                      |        | CAP,FXD,ELCTLT:100UF,20%,63V                | 80009     | 290106701      |
| A7C60            | 281-0773-00        |                      |        | CAP,FXD,CERAMIC:MLC;0.01UF,10%,100V         | TK1743    | CGB103KEX      |
| A7C70            | 281-0773-00        |                      |        | CAP,FXD,CERAMIC:MLC;0.01UF,10%,100V         | TK1743    | CGB103KEX      |
| A7C120           | 290-0745-00        |                      |        | CAP,FXD,ALUM::22UF,20%,50V,8 X 11MM         | 0H1N5     | CEUSM1J220     |
| A7C122           | 281-0775-00        |                      |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA   |
| A7C170           | 281-0775-00        | J302153              |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA   |
| A7C180           | 290-0745-00        |                      |        | CAP,FXD,ALUM::22UF,20%,50V,8 X 11MM         | 0H1N5     | CEUSM1J220     |
| A7C200           | 281-0772-00        |                      |        | CAP,FXD,CERAMIC:MLC;4700PF,10%,100V         | 04222     | SA101C472KAA   |
| A7C340           | 281-0814-00        |                      |        | CAP,FXD,CERAMIC:MLC;100 PF,10%,100V         | TK1743    | CGB101KEN      |
| A7C342           | 283-0347-00        |                      |        | CAP,FXD,CER DI:68PF,5%,100V                 | 59660     | 8121 B179 P3K0 |
| A7C354           | 281-0768-00        |                      |        | CAP,FXD,CER DI:470PF,20%,100V               | 04222     | SA101A471KAA   |
| A7C355           | 281-0768-00        |                      |        | CAP,FXD,CER DI:470PF,20%,100V               | 04222     | SA101A471KAA   |
| A7C364           | 281-0814-00        |                      |        | CAP,FXD,CERAMIC:MLC;100 PF,10%,100V         | TK1743    | CGB101KEN      |
| A7C370           | 283-0642-00        |                      |        | CAP,FXD,MICA DI::33PF,2%,500V,0.370 X 0.340 | TK0974    | DM10E330G5     |
| A7C380           | 281-0788-00        |                      |        | CAP,FXD,CERAMIC:MLC;470PF,10%,100V          | 04222     | SA102C471KAA   |
| A7C410           | 281-0758-00        |                      |        | CAP,FXD,CERAMIC:MLC;15PF,20%,100V           | 04222     | SA102A150MAA   |
| A7C462           | 281-0767-00        |                      |        | CAP,FXD,CERAMIC:MLC;330PF,20%,100V          | 04222     | SA102C331MAA   |
| A7C480           | 281-0767-00        |                      |        | CAP,FXD,CERAMIC:MLC;330PF,20%,100V          | 04222     | SA102C331MAA   |
| A7C490           | 281-0773-00        |                      |        | CAP,FXD,CERAMIC:MLC;0.01UF,10%,100V         | TK1743    | CGB103KEX      |
| A7C491           | 290-0821-00        |                      |        | CAP,FXD,ELCTLT:10UF,+50-10%,160V            | 80009     | 290082100      |
| A7C495           | 281-0773-00        |                      |        | CAP,FXD,CERAMIC:MLC;0.01UF,10%,100V         | TK1743    | CGB103KEX      |
| A7C496           | 290-0821-00        |                      |        | CAP,FXD,ELCTLT:10UF,+50-10%,160V            | 80009     | 290082100      |
| A7C561           | 281-0773-00        |                      |        | CAP,FXD,CERAMIC:MLC;0.01UF,10%,100V         | TK1743    | CGB103KEX      |
| A7C600           | 281-0811-00        |                      |        | CAP,FXD,CERAMIC:MLC;10PF,10%,200V           | 04222     | SA102A100KAA   |
| A7C630           | 290-0974-00        |                      |        | CAP,FXD,ALUM::10UF,20%,50V,ESR=16.58 OHM    | 55680     | UVX1H100MAA    |
| A7C800           | 283-0203-00        |                      |        | CAP,FXD,CER DI:0.47UF,20%,50V               | 04222     | SR305C474MAA   |
| A7C801           | 281-0775-00        |                      |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA   |
| A7C814           | 281-0814-00        |                      |        | CAP,FXD,CERAMIC:MLC;100 PF,10%,100V         | TK1743    | CGB101KEN      |
| A7C822           | 281-0814-00        |                      |        | CAP,FXD,CERAMIC:MLC;100 PF,10%,100V         | TK1743    | CGB101KEN      |
| A7C830           | 281-0812-00        |                      |        | CAP,FXD,CERAMIC:MLC;1000PF,10%,100V         | 04222     | SA101C102KAA   |
| A7C850           | 281-0812-00        |                      |        | CAP,FXD,CERAMIC:MLC;1000PF,10%,100V         | 04222     | SA101C102KAA   |
| A7CR340          | 152-0327-00        |                      |        | SEMICON DVC,DI:SIG,SI,100MA,75V             | 80009     | 152032700      |
| A7CR342          | 152-0327-00        |                      |        | SEMICON DVC,DI:SIG,SI,100MA,75V             | 80009     | 152032700      |
| A7CR350          | 152-0327-00        |                      |        | SEMICON DVC,DI:SIG,SI,100MA,75V             | 80009     | 152032700      |
| A7CR351          | 152-0327-00        |                      |        | SEMICON DVC,DI:SIG,SI,100MA,75V             | 80009     | 152032700      |
| A7CR352          | 152-0327-00        |                      |        | SEMICON DVC,DI:SIG,SI,100MA,75V             | 80009     | 152032700      |

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|------------------|--------------------|----------------------|---------|--|-----------|---------------|
| A7CR353          | 152-0327-00        |                      |         | SEMICON DVC,DI:SIG,SI,100MA,75V            | 80009     | 152032700     |
| A7CR354          | 152-0327-00        |                      |         | SEMICON DVC,DI:SIG,SI,100MA,75V            | 80009     | 152032700     |
| A7CR355          | 152-0327-00        |                      |         | SEMICON DVC,DI:SIG,SI,100MA,75V            | 80009     | 152032700     |
| A7CR356          | 152-0327-00        |                      |         | SEMICON DVC,DI:SIG,SI,100MA,75V            | 80009     | 152032700     |
| A7CR357          | 152-0327-00        |                      |         | SEMICON DVC,DI:SIG,SI,100MA,75V            | 80009     | 152032700     |
| A7CR358          | 152-0327-00        |                      |         | SEMICON DVC,DI:SIG,SI,100MA,75V            | 80009     | 152032700     |
| A7CR359          | 152-0327-00        |                      |         | SEMICON DVC,DI:SIG,SI,100MA,75V            | 80009     | 152032700     |
| A7CR402          | 152-0853-00        |                      |         | SEMICON DVC,DI:DUAL RECT,SI,400V,5A        | 80009     | 152085300     |
| A7CR450          | 152-0327-00        |                      |         | SEMICON DVC,DI:SIG,SI,100MA,75V            | 80009     | 152032700     |
| A7CR452          | 152-0327-00        |                      |         | SEMICON DVC,DI:SIG,SI,100MA,75V            | 80009     | 152032700     |
| A7CR480          | 152-0460-00        |                      |         | DIODE,SIG:,REGLTR;100V,1.20MA IP,1.45V VL  | 04713     | 1N5299        |
| A7CR481          | 152-0460-00        |                      |         | DIODE,SIG:,REGLTR;100V,1.20MA IP,1.45V VL  | 04713     | 1N5299        |
| A7CR482          | 152-0853-00        |                      |         | SEMICON DVC,DI:DUAL RECT,SI,400V,5A,TO-220 | 80009     | 152085300     |
| A7CR526          | 152-0853-00        |                      |         | SEMICON DVC,DI:DUAL RECT,SI,400V,5A,TO-220 | 80009     | 152085300     |
| A7CR527          | 152-1033-00        |                      |         | SEMICON DVC,DI:CRD,5.6MA,10%,100V,0.3W     | S5011     | E-562         |
| A7CR560          | 152-0327-00        |                      |         | SEMICON DVC,DI:SIG,SI,100MA,75V            | 80009     | 152032700     |
| A7CR562          | 152-0327-00        |                      |         | SEMICON DVC,DI:SIG,SI,100MA,75V            | 80009     | 152032700     |
| A7CR600          | 152-0327-00        |                      |         | SEMICON DVC,DI:SIG,SI,100MA,75V            | 80009     | 152032700     |
| A7CR601          | 152-0327-00        | J310136              |         | SEMICON DVC,DI:SIG,SI,100MA,75V            | 80009     | 152032700     |
| A7CR602          | 152-0327-00        |                      |         | SEMICON DVC,DI:SIG,SI,100MA,75V            | 80009     | 152032700     |
| A7CR810          | 152-0327-00        |                      |         | SEMICON DVC,DI:SIG,SI,100MA,75V            | 80009     | 152032700     |
| A7CR812          | 152-0327-00        |                      |         | SEMICON DVC,DI:SIG,SI,100MA,75V            | 80009     | 152032700     |
| A7CR830          | 152-0460-00        |                      |         | DIODE,SIG:,REGLTR;100V,1.20MA IP,1.45V VL  | 04713     | 1N5299        |
| A7CR840          | 152-0327-00        |                      |         | SEMICON DVC,DI:SIG,SI,100MA,75V            | 80009     | 152032700     |
| A7CR841          | 152-0327-00        |                      |         | SEMICON DVC,DI:SIG,SI,100MA,75V            | 80009     | 152032700     |
| A7CR842          | 152-0327-00        |                      |         | SEMICON DVC,DI:SIG,SI,100MA,75V            | 80009     | 152032700     |
| A7CR843          | 152-0327-00        |                      |         | SEMICON DVC,DI:SIG,SI,100MA,75V            | 80009     | 152032700     |
| A7F300           | 159-0273-00        | J301393              | J302800 | FUSE,WIRE LEAD:1/16A,125V,FAST             | 80009     | 159027300     |
| A7F300           | 159-0332-00        | J302801              |         | FUSE,WIRE LEAD:1/8A,125V,FAST              | 80009     | 159033200     |
| A7F500           | 159-0318-00        |                      |         | FUSE,WIRE LEAD:200MA,125V,FAST BLOW        | 80009     | 159031800     |
| A7F800           | 159-0318-00        |                      |         | FUSE,WIRE LEAD:200MA,125V,FAST BLOW        | 80009     | 159031800     |
| A7J70            | 131-2230-01        |                      |         | CONN,RCPT,ELEC:HEADER,2 X 8,2.54 SPACING   | 80009     | 131223001     |
| A7J72            | 131-0589-00        |                      |         | TERMINAL,PIN:PRESSFIT/PCB,;MALE,STR        | 22526     | 48283-087     |
| A7J74            | 131-0589-00        |                      |         | TERMINAL,PIN:PRESSFIT/PCB,;MALE,STR        | 22526     | 48283-087     |
| A7K102           | 148-0186-00        |                      |         | RELAY,ARM:1 FORM C,3A,200V,COIL 12VDC      | 80009     | 148018600     |
| A7K500           | 148-0187-00        |                      |         | RELAY,ARM:DPDT,3A,200V,COIL,12VDC          | 80009     | 148018700     |
| A7K502           | 148-0188-00        |                      |         | RELAY,ARM:SPDT,5A,AC380V,COIL,12VDC        | 80009     | 148018800     |
| A7K506           | 148-0186-00        |                      |         | RELAY,ARM:1 FORM C,3A,200V,COIL 12VDC      | 80009     | 148018600     |
| A7K508           | 148-0186-00        |                      |         | RELAY,ARM:1 FORM C,3A,200V,COIL 12VDC      | 80009     | 148018600     |
| A7K510           | 148-0186-00        |                      |         | RELAY,ARM:1 FORM C,3A,200V,COIL 12VDC      | 80009     | 148018600     |

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|------------------|--------------------|------------|---------|---|-----------|----------------|
|                  |                    | Effective  | Dscont  |   |           |                |
| A7K512           | 148-0186-00        |            |         | RELAY,ARM:1 FORM C,3A,200V,COIL 12VDC   | 80009     | 148018600      |
| A7K520           | 148-0186-00        |            |         | RELAY,ARM:1 FORM C,3A,200V,COIL 12VDC   | 80009     | 148018600      |
| A7K522           | 148-0186-00        |            |         | RELAY,ARM:1 FORM C,3A,200V,COIL 12VDC   | 80009     | 148018600      |
| A7K524           | 148-0188-00        |            |         | RELAY,ARM:SPDT,5A,AC380V,COIL,12VDC     | 80009     | 148018800      |
| A7K526           | 148-0187-00        |            |         | RELAY,ARM:DPDT,3A,200V,COIL,12VDC       | 80009     | 148018700      |
| A7K570           | 148-0186-00        |            |         | RELAY,ARM:1 FORM C,3A,200V,COIL 12VDC   | 80009     | 148018600      |
| A7K571           | 148-0186-00        |            |         | RELAY,ARM:1 FORM C,3A,200V,COIL 12VDC   | 80009     | 148018600      |
| A7L20            | 108-0948-00        | J301393    | J301877 | COIL,RF:FIXED,100UH,10%                 | 80009     | 108094800      |
| A7L20            | 108-1506-00        | J301878    |         | INDUCTOR,FXD:SIGNAL;100UH,10%           | 80009     | 108150600      |
| A7L30            | 108-0948-00        | J301393    | J301877 | COIL,RF:FIXED,100UH,10%                 | 80009     | 108094800      |
| A7L30            | 108-1506-00        | J301878    |         | INDUCTOR,FXD:SIGNAL;100UH,10%           | 80009     | 108150600      |
| A7L120           | 108-0948-00        | J301393    | J301877 | COIL,RF:FIXED,100UH,10%                 | 80009     | 108094800      |
| A7L120           | 108-1506-00        | J301878    |         | INDUCTOR,FXD:SIGNAL;100UH,10%           | 80009     | 108150600      |
| A7L801           | 108-0948-00        | J301393    | J301877 | COIL,RF:FIXED,100UH,10%                 | 80009     | 108094800      |
| A7L801           | 108-1506-00        | J301878    |         | INDUCTOR,FXD:SIGNAL;100UH,10%           | 80009     | 108150600      |
| A7Q400           | 151-0770-01        |            |         | TRANSISTOR:NPN,SI,TO-126                | 80009     | 151077001      |
| A7Q450           | 151-0739-01        |            |         | TRANSISTOR:PNP,SI,TO-126                | 80009     | 151073901      |
| A7Q460           | 151-0770-01        |            |         | TRANSISTOR:NPN,SI,TO-126                | 80009     | 151077001      |
| A7Q462           | 151-0561-00        |            |         | TRANSISTOR:NPN,SI,PWR                   | 80009     | 151056100      |
| A7Q480           | 151-0739-01        |            |         | TRANSISTOR:PNP,SI,TO-126                | 80009     | 151073901      |
| A7Q490           | 151-0560-00        |            |         | TRANSISTOR:NPN,SI,PWR                   | 80009     | 151056000      |
| A7Q495           | 151-0560-00        |            |         | TRANSISTOR:NPN,SI,PWR                   | 80009     | 151056000      |
| A7Q560           | 151-0190-00        |            |         | TRANSISTOR,SIG:BIPOLAR,NPN;40V,200MA    | 04713     | 2N3904         |
| A7Q562           | 151-0188-00        |            |         | TRANSISTOR,SIG:BIPOLAR,PNP;40V,200MA    | 04713     | 2N3906         |
| A7Q620           | 151-0562-00        |            |         | TRANSISTOR:PNP,SI,PWR                   | 80009     | 151056200      |
| A7Q630           | 151-0561-00        |            |         | TRANSISTOR:NPN,SI,PWR                   | 80009     | 151056100      |
| A7Q810           | 151-0770-01        |            |         | TRANSISTOR:NPN,SI,TO-126                | 80009     | 151077001      |
| A7Q814           | 151-0739-01        |            |         | TRANSISTOR:PNP,SI,TO-126                | 80009     | 151073901      |
| A7Q816           | 151-0560-00        |            |         | TRANSISTOR:NPN,SI,PWR                   | 80009     | 151056000      |
| A7Q830           | 151-0739-01        |            |         | TRANSISTOR:PNP,SI,TO-126                | 80009     | 151073901      |
| A7Q832           | 151-0560-00        |            |         | TRANSISTOR:NPN,SI,PWR                   | 80009     | 151056000      |
| A7R100           | 307-0923-00        |            |         | RES NTWK,FXD,FI:(8)330K OHM,5%,0.125W   | 80009     | 307092300      |
| A7R110           | 307-0923-00        |            |         | RES NTWK,FXD,FI:(8)330K OHM,5%,0.125W   | 80009     | 307092300      |
| A7R200           | 315-0105-00        |            |         | RES,FXD,FILM:1M OHM,5%,0.25W            | TK1727    | SFR25 2322-181 |
| A7R300           | 321-0222-07        |            |         | RES,FXD,FILM:2.0K OHM,0.1%,0.125W,TC=T9 | 19701     | 5033RE2K000B   |
| A7R302           | 321-0193-07        |            |         | RES,FXD,FILM:1K OHM,0.1%,0.125W,TC=T9   | 19701     | 5033RE1K000B   |
| A7R304           | 321-0193-07        |            |         | RES,FXD,FILM:1K OHM,0.1%,0.125W,TC=T9   | 19701     | 5033RE1K000B   |
| A7R306           | 315-0102-00        |            |         | RES,FXD,FILM:1K OHM,5%,0.25W            | TK1727    | SFR25 2322-181 |
| A7R310           | 311-0633-02        |            |         | RES,VAR,NONWW:TRMR,5K OAM,0.5W          | 80009     | 311063302      |
| A7R311           | 315-0272-00        |            |         | RES,FXD,FILM:2.7K OHM,5%,0.25W          | TK1727    | SFR25 2322-181 |

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|------------------|--------------------|----------------------|--------|--|-----------|-----------------|
| A7R312           | 315-0272-00        |                      |        | RES,FXD,FILM:2.7K OHM,5%,0.25W           | TK1727    | SFR25 2322-181  |
| A7R313           | 315-0102-00        |                      |        | RES,FXD,FILM:1K OHM,5%,0.25W             | TK1727    | SFR25 2322-181  |
| A7R320           | 315-0103-00        |                      |        | RES,FXD,FILM:10K OHM,5%,0.25W            | TK1727    | SFR25 2322-181  |
| A7R321           | 315-0103-00        |                      |        | RES,FXD,FILM:10K OHM,5%,0.25W            | TK1727    | SFR25 2322-181  |
| A7R322           | 315-0103-00        |                      |        | RES,FXD,FILM:10K OHM,5%,0.25W            | TK1727    | SFR25 2322-181  |
| A7R323           | 315-0103-00        |                      |        | RES,FXD,FILM:10K OHM,5%,0.25W            | TK1727    | SFR25 2322-181  |
| A7R324           | 315-0103-00        |                      |        | RES,FXD,FILM:10K OHM,5%,0.25W            | TK1727    | SFR25 2322-181  |
| A7R325           | 311-0605-03        |                      |        | RES,VAR,NONWW:TRMR,200 OHM,20%,0.5W      | 80009     | 311060503       |
| A7R330           | 321-0318-07        |                      |        | RES,FXD,FILM:20.0K OHM,0.1%,0.125W,TC=T9 | 19701     | 5033RE20K00BCM  |
| A7R332           | 321-0318-07        |                      |        | RES,FXD,FILM:20.0K OHM,0.1%,0.125W,TC=T9 | 19701     | 5033RE20K00BCM  |
| A7R340           | 321-0318-07        |                      |        | RES,FXD,FILM:20.0K OHM,0.1%,0.125W,TC=T9 | 19701     | 5033RE20K00BCM  |
| A7R342           | 321-0305-07        |                      |        | RES,FXD,FILM:14.7K OHM,0.1%,0.125W,TC=T9 | S5518     | CRB25 BZ 14.7 K |
| A7R343           | 321-1701-04        |                      |        | RES,FXD,FILM:5.22K OHM,0.1%,0.125W,TC=T2 | 19701     | 5033RC5K220B    |
| A7R344           | 321-0222-07        |                      |        | RES,FXD,FILM:2.0K OHM,0.1%,0.125W,TC=T9  | 19701     | 5033RE2K000B    |
| A7R346           | 315-0100-00        |                      |        | RES,FXD,FILM:10 OHM,5%,0.25W,            | TK1727    | SFR25 2322-182  |
| A7R350           | 321-0222-07        |                      |        | RES,FXD,FILM:2.0K OHM,0.1%,0.125W,TC=T9  | 19701     | 5033RE2K000B    |
| A7R352           | 321-0318-07        |                      |        | RES,FXD,FILM:20.0K OHM,0.1%,0.125W,TC=T9 | 19701     | 5033RE20K00BCM  |
| A7R354           | 321-0289-07        |                      |        | RES,FXD,FILM:10.0K OHM,0.1%,0.125W,TC=T9 | 19701     | 5033RE10K00B    |
| A7R355           | 321-0289-07        |                      |        | RES,FXD,FILM:10.0K OHM,0.1%,0.125W,TC=T9 | 19701     | 5033RE10K00B    |
| A7R356           | 321-0289-07        |                      |        | RES,FXD,FILM:10.0K OHM,0.1%,0.125W,TC=T9 | 19701     | 5033RE10K00B    |
| A7R357           | 321-0289-07        |                      |        | RES,FXD,FILM:10.0K OHM,0.1%,0.125W,TC=T9 | 19701     | 5033RE10K00B    |
| A7R360           | 321-0318-07        |                      |        | RES,FXD,FILM:20.0K OHM,0.1%,0.125W,TC=T9 | 19701     | 5033RE20K00BCM  |
| A7R362           | 321-0318-07        |                      |        | RES,FXD,FILM:20.0K OHM,0.1%,0.125W,TC=T9 | 19701     | 5033RE20K00BCM  |
| A7R364           | 321-0318-07        |                      |        | RES,FXD,FILM:20.0K OHM,0.1%,0.125W,TC=T9 | 19701     | 5033RE20K00BCM  |
| A7R366           | 321-0318-07        |                      |        | RES,FXD,FILM:20.0K OHM,0.1%,0.125W,TC=T9 | 19701     | 5033RE20K00BCM  |
| A7R370           | 321-0222-07        |                      |        | RES,FXD,FILM:2.0K OHM,0.1%,0.125W,TC=T9  | 19701     | 5033RE2K000B    |
| A7R372           | 321-0318-07        |                      |        | RES,FXD,FILM:20.0K OHM,0.1%,0.125W,TC=T9 | 19701     | 5033RE20K00BCM  |
| A7R374           | 321-0481-00        |                      |        | RES,FXD,FILM:1M OHM,1%,0.125W,TC=T0      | TK1727    | 2322-151-1M     |
| A7R400           | 315-0101-00        |                      |        | RES,FXD,FILM:100 OHM,5%,0.25W            | TK1727    | SFR25 2322-181  |
| A7R402           | 315-0222-00        |                      |        | RES,FXD,FILM:2.2K OHM,5%,0.25W           | TK1727    | SFR25 2322-181  |
| A7R410           | 315-0103-00        |                      |        | RES,FXD,FILM:10K OHM,5%,0.25W            | TK1727    | SFR25 2322-181  |
| A7R412           | 315-0102-00        |                      |        | RES,FXD,FILM:1K OHM,5%,0.25W             | TK1727    | SFR25 2322-181  |
| A7R450           | 315-0101-00        |                      |        | RES,FXD,FILM:100 OHM,5%,0.25W            | TK1727    | SFR25 2322-181  |
| A7R460           | 315-0470-00        |                      |        | RES,FXD,FILM:47 OHM,5%,0.25W             | TK1727    | SFR25 2322-181  |
| A7R462           | 315-0102-00        |                      |        | RES,FXD,FILM:1K OHM,5%,0.25W             | TK1727    | SFR25 2322-181  |
| A7R465           | 315-0682-00        |                      |        | RES,FXD,FILM:6.8K OHM,5%,0.25W           | TK1727    | SFR25 2322-181  |
| A7R466           | 315-0302-00        |                      |        | RES,FXD,FILM:3K OHM,5%,0.25W             | TK1727    | SFR25 2322-181  |
| A7R467           | 311-0635-04        |                      |        | RES,VAR,NONWW:TRMR,1K OHM,20%,0.5W       | 80009     | 311063504       |
| A7R480           | 315-0470-00        |                      |        | RES,FXD,FILM:47 OHM,5%,0.25W             | TK1727    | SFR25 2322-181  |
| A7R482           | 315-0102-00        |                      |        | RES,FXD,FILM:1K OHM,5%,0.25W             | TK1727    | SFR25 2322-181  |

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|------------------|--------------------|----------------------|--------|--|-----------|-----------------|
| A7R490           | 308-0949-00        |                      |        | RES,FXD,WW:110 OHM,5%,20W                | 80009     | 308094900       |
| A7R491           | 308-0878-00        |                      |        | RES,FXD,WW:0.3 OHM,10%,2W                | 80009     | 308087800       |
| A7R495           | 308-0949-00        |                      |        | RES,FXD,WW:110 OHM,5%,20W                | 80009     | 308094900       |
| A7R496           | 308-0878-00        |                      |        | RES,FXD,WW:0.3 OHM,10%,2W                | 80009     | 308087800       |
| A7R500           | 308-0880-00        |                      |        | RES,FXD,WW:9.0 OHM,0.1%,2W               | 80009     | 308088000       |
| A7R502           | 308-0879-00        |                      |        | RES,FXD,WW:1.0 OHM,0.1%,3W               | 80009     | 308087900       |
| A7R506           | 321-0097-07        |                      |        | RES,FXD,FILM:100 OHM,0.1%,0.125W,TC=T9   | 57668     | CRB14 BZE 100 O |
| A7R508           | 321-0193-07        |                      |        | RES,FXD,FILM:1K OHM,0.1%,0.125W,TC=T9    | 19701     | 5033RE1K000B    |
| A7R510           | 321-1289-07        |                      |        | RES,FXD,FILM:10.1K OHM,0.1%,0.125W,TC=T9 | 19701     | 5033RE10K10B    |
| A7R512           | 321-1389-07        |                      |        | RES,FXD,FILM:111K OHM,0.1%,0.125W,TC=T9  | 19701     | 5033RE1113B     |
| A7R514           | 321-0481-07        |                      |        | RES,FXD,FILM:1M OHM,0.1%,0.125W,TC=T9    | 19701     | 5033RE1M000B    |
| A7R516           | 315-0101-00        |                      |        | RES,FXD,FILM:100 OHM,5%,0.25W            | TK1727    | SFR25 2322-181  |
| A7R520           | 307-0115-00        | J303054              |        | RES,FXD,CMPSN:7.5 OHM,5%,0.25W           | 50139     | CB75G5 CARD PAC |
| A7R522           | 307-1305-00        |                      |        | RES,FXD,FILM:1.2 OHM,5%,1/2W             | 80009     | 307130500       |
| A7R524           | 308-0878-00        |                      |        | RES,FXD,WW:0.3 OHM,10%,2W                | 80009     | 308087800       |
| A7R526           | 307-1249-00        |                      |        | RES,FXD,FILM:100 OHM,5%,0.5W             | 80009     | 307124900       |
| A7R527           | 321-0289-07        |                      |        | RES,FXD,FILM:10.0K OHM,0.1%,0.125W,TC=T9 | 19701     | 5033RE10K00B    |
| A7R528           | 321-0289-07        |                      |        | RES,FXD,FILM:10.0K OHM,0.1%,0.125W,TC=T9 | 19701     | 5033RE10K00B    |
| A7R536           | 315-0390-00        |                      |        | RES,FXD,FILM:39 OHM,5%,0.25W             | TK1727    | SFR25 2322-181  |
| A7R560           | 315-0100-00        |                      |        | RES,FXD,FILM:10 OHM,5%,0.25W             | TK1727    | SFR25 2322-182  |
| A7R561           | 315-0100-00        |                      |        | RES,FXD,FILM:10 OHM,5%,0.25W             | TK1727    | SFR25 2322-182  |
| A7R562           | 315-0101-00        |                      |        | RES,FXD,FILM:100 OHM,5%,0.25W            | TK1727    | SFR25 2322-181  |
| A7R600           | 315-0104-00        |                      |        | RES,FXD,FILM:100K OHM,5%,0.25W           | TK1727    | SFR25 2322-181  |
| A7R601           | 315-0302-00        |                      |        | RES,FXD,FILM:3K OHM,5%,0.25W             | TK1727    | SFR25 2322-181  |
| A7R602           | 315-0302-00        |                      |        | RES,FXD,FILM:3K OHM,5%,0.25W             | TK1727    | SFR25 2322-181  |
| A7R603           | 311-0633-02        |                      |        | RES,VAR,NONWW:TRMR,5K OHM,0.5W           | 80009     | 311063302       |
| A7R604           | 313-0223-00        | J310136              |        | RES,FXD,FILM:22K OHM,5%,1/6W             | 80009     | 311022300       |
| A7R620           | 315-0103-00        |                      |        | RES,FXD,FILM:10K OHM,5%,0.25W            | TK1727    | SFR25 2322-181  |
| A7R630           | 315-0103-00        |                      |        | RES,FXD,FILM:10K OHM,5%,0.25W            | TK1727    | SFR25 2322-181  |
| A7R800           | 315-0105-00        |                      |        | RES,FXD,FILM:1M OHM,5%,0.25W             | TK1727    | SFR25 2322-181  |
| A7R810           | 315-0101-00        |                      |        | RES,FXD,FILM:100 OHM,5%,0.25W            | TK1727    | SFR25 2322-181  |
| A7R812           | 315-0102-00        |                      |        | RES,FXD,FILM:1K OHM,5%,0.25W             | TK1727    | SFR25 2322-181  |
| A7R814           | 315-0472-00        |                      |        | RES,FXD,FILM:4.7K OHM,5%,0.25W           | TK1727    | SFR25 2322-181  |
| A7R816           | 307-1249-00        |                      |        | RES,FXD,FILM:100 OHM,5%,0.5W             | 80009     | 307124900       |
| A7R820           | 315-0471-00        |                      |        | RES,FXD,FILM:470 OHM,5%,0.25W            | TK1727    | SFR25 2322-181  |
| A7R822           | 315-0103-00        |                      |        | RES,FXD,FILM:10K OHM,5%,0.25W            | TK1727    | SFR25 2322-181  |
| A7R832           | 315-0472-00        |                      |        | RES,FXD,FILM:4.7K OHM,5%,0.25W           | TK1727    | SFR25 2322-181  |
| A7R840           | 307-0107-00        |                      |        | RES,FXD,CMPSN:5.6 OHM,5%,0.25W           | 50139     | CB56G5          |
| A7R841           | 307-0106-00        |                      |        | RES,FXD,CMPSN:4.7 OHM,5%,0.25W           | 50139     | CB47G5          |
| A7R850           | 321-0321-07        |                      |        | RES,FXD,FILM:21.5K OHM,0.1%,0.125W,TC=T9 | TK1727    | MPR24-2322-141  |



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|------------------|--------------------|------------|---------|--|-----------|-----------------|
|                  |                    | Effective  | Dscont  |  |           |                 |
| A7R852           | 321-1746-07        |            |         | RES,FXD,FILM:1.13K OHM,0.1%,0.125W,TC=T9 | 56845     | CMF55118C11300B |
| A7U100           | 156-1827-00        |            |         | MICROCKT,DGTL:C2MOS,3 LINE TO 8 LINE     | 80009     | 156182700       |
| A7U102           | 156-0447-00        |            |         | MICROCKT,DGTL:DIGITAL TRANSISTOR         | 80009     | 156044700       |
| A7U120           | 156-1822-00        | J301393    | J302394 | MICROCKT,DGTL:C2MOS,8 BIT ADDRESSABLE    | 80009     | 156182200       |
| A7U120           | 156-2824-00        | J302395    |         | IC,DIGITAL:HCMOS,LATCH;8-BIT ADDRESSABLE | 01295     | SN74HC259N      |
| A7U140           | 156-1822-00        | J301393    | J302394 | MICROCKT,DGTL:C2MOS,8 BIT ADDRESSABLE    | 80009     | 156182200       |
| A7U140           | 156-2824-00        | J302395    |         | IC,DIGITAL:HCMOS,LATCH;8-BIT ADDRESSABLE | 01295     | SN74HC259N      |
| A7U160           | 156-1822-00        | J301393    | J302394 | MICROCKT,DGTL:C2MOS,8 BIT ADDRESSABLE    | 80009     | 156182200       |
| A7U160           | 156-2824-00        | J302395    |         | IC,DIGITAL:HCMOS,LATCH;8-BIT ADDRESSABLE | 01295     | SN74HC259N      |
| A7U170           | 156-0446-00        |            |         | MICROCKT,DGTL:3-TERM POSI VOL REG +12V   | 80009     | 156044600       |
| A7U180           | 156-1837-00        | J301393    | J302162 | MICROCKT,LINEAR:DRIVER W/STROBE          | 80009     | 156183700       |
| A7U180           | 156-4348-00        | J302163    |         | MICROCKT,LINEAR:DRIVER W/STROBE          | 80009     | 156434800       |
| A7U190           | 156-1837-00        | J301393    | J302162 | MICROCKT,LINEAR:DRIVER W/STROBE          | 80009     | 156183700       |
| A7U190           | 156-4348-00        | J302163    |         | MICROCKT,LINEAR:DRIVER W/STROBE          | 80009     | 156434800       |
| A7U200           | 156-2829-00        |            |         | MICROCKT,LINEAR:OP-AMP                   | 80009     | 156282900       |
| A7U300           | 156-0514-00        |            |         | IC,MISC:CMOS,ANALOG MUX;DUAL 4 CHANNEL   | 04713     | MC14052BCP      |
| A7U310           | 156-2829-00        |            |         | MICROCKT,LINEAR:OP-AMP                   | 80009     | 156282900       |
| A7U330           | 156-0515-00        |            |         | IC,MISC:CMOS,ANALOG MUX;TRIPLE SPDT      | 04713     | MC14053BCP      |
| A7U340           | 156-2829-00        |            |         | MICROCKT,LINEAR:OP-AMP                   | 80009     | 156282900       |
| A7U360           | 156-2829-00        |            |         | MICROCKT,LINEAR:OP-AMP                   | 80009     | 156282900       |
| A7U370           | 156-0515-00        |            |         | IC,MISC:CMOS,ANALOG MUX;TRIPLE SPDT      | 04713     | MC14053BCP      |
| A7U380           | 156-2829-00        |            |         | MICROCKT,LINEAR:OP-AMP                   | 80009     | 156282900       |
| A7U600           | 156-2793-00        |            |         | MICROCKT,LINEAR:OPERATIONAL,BIFET        | 80009     | 156279300       |
| A7U800           | 156-2829-00        |            |         | MICROCKT,LINEAR:OP-AMP                   | 80009     | 156282900       |
| A7VR527          | 152-0283-00        |            |         | DIODE,ZENER:;43V,5%,0.4W                 | 04713     | 1N976B          |
| A7VR528          | 152-0283-00        |            |         | DIODE,ZENER:;43V,5%,0.4W                 | 04713     | 1N976B          |
| A7VR620          | 152-0243-00        |            |         | DIODE,ZENER:;15V,5%,0.4W                 | 04713     | SZ13203         |
| A7VR621          | 152-0679-01        | J310136    |         | DIODE,ZENER:;5.1V                        | 80009     | 152067901       |
| A7VR630          | 152-0243-00        |            |         | DIODE,ZENER:;15V,5%,0.4W                 | 04713     | SZ13203         |

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|------------------|--------------------|------------|---------|--|-----------|---------------|
|                  |                    | Effective  | Dscont  |  |           |               |
| A9               | 671-1183-XX        |            |         | CIRCUIT BD ASSY:LV RELAY                     | 80009     | 6711183XX     |
| A9C100           | 281-0775-00        |            |         | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170  | 04222     | SA105E104MAA  |
| A9C102           | 281-0775-00        |            |         | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170  | 04222     | SA105E104MAA  |
| A9C104           | 281-0775-00        |            |         | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170  | 04222     | SA105E104MAA  |
| A9C106           | 281-0775-00        |            |         | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170  | 04222     | SA105E104MAA  |
| A9C110           | 281-0775-00        |            |         | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170  | 04222     | SA105E104MAA  |
| A9C206           | 285-1373-00        |            |         | CAP,FXD,PLASTIC:0.1UF,10%,2.5KV              | 80009     | 285137300     |
| A9C209           | 290-1138-00        |            |         | CAP,FXD,ELCTLT:1000UF,20%,25V                | 80009     | 290113800     |
| A9C300           | 281-0775-00        |            |         | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170  | 04222     | SA105E104MAA  |
| A9C302           | 281-0773-00        |            |         | CAP,FXD,CERAMIC:MLC;0.01UF,10%,100V          | TK1743    | CGB103KEX     |
| A9C304           | 281-0886-00        |            |         | CAP,FXD,CER DI:220PF,5%,50V                  | 80009     | 281088600     |
| A9C306           | 290-1139-00        |            |         | CAP,FXD,ELCTLT:22UF,+30-10%,350V             | 80009     | 290113900     |
| A9C307           | 290-1139-00        |            |         | CAP,FXD,ELCTLT:22UF,+30-10%,350V             | 80009     | 290113900     |
| A9C312           | 281-0775-00        |            |         | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170  | 04222     | SA105E104MAA  |
| A9C319           | 290-1140-00        |            |         | CAP,FXD,ELCTLT:100UF,20%,160V                | 80009     | 290114000     |
| A9C328           | 281-0759-00        |            |         | CAP,FXD,CERAMIC:MLC;22PF,10%,100V            | 04222     | SA102A220KAA  |
| A9C510           | 283-0928-00        |            |         | CAP,FXD,CER DI:10PF,5%,2KV (TEST SELECTED)   | 80009     | 283092800     |
| A9C512           | 283-0928-00        | J301393    | J301512 | CAP,FXD,CER DI:10PF,5%,2KV                   | 80009     | 283092800     |
| A9C512           | 283-0925-00        | J301513    | J302800 | CAP,FXD,CER DI:22PF,5%,1KVDC                 | 80009     | 283092500     |
| A9C512           | 283-0967-00        | J302801    |         | CAP,FXD,CER DI:18PF,5%,1KVDC                 | 80009     | 283096700     |
| A9C512           | 283-0928-00        | J301513    |         | CAP,FXD,CER DI:22PF,5%,1KVDC (TEST SELECTED) | 80009     | 283092800     |
| A9C520           | 283-1043-00        |            |         | CAP,FXD,CER DI:39PF,5%,1KV                   | 80009     | 283104300     |
| A9C522           | 283-1042-00        |            |         | CAP,FXD,CER DI:33PF,5%,1KV                   | 80009     | 283104200     |
| A9CR200          | 152-0930-00        |            |         | SEMICON DVC,DI:16A,40V                       | 80009     | 152093000     |
| A9CR202          | 152-0929-00        |            |         | SEMICON DVC,DI:8A,40V                        | 80009     | 152092900     |
| A9CR204          | 152-0929-00        |            |         | SEMICON DVC,DI:8A,40V                        | 80009     | 152092900     |
| A9CR205          | 152-0327-00        |            |         | SEMICON DVC,DI:SIG,SI,100MA,75V              | 80009     | 152032700     |
| A9CR207          | 152-0327-00        |            |         | SEMICON DVC,DI:SIG,SI,100MA,75V              | 80009     | 152032700     |
| A9CR208          | 152-0752-00        |            | J310164 | DIODE,RECT:.;1500V,1A,ISFM=30A,25US,7PF      | 80009     | 152075200     |
| A9CR208          | 152-1247-00        | J310165    |         | SEMICON DVC,DI:RECT,SI,1.5KV,0.8A            | 80009     | 152124700     |
| A9CR209          | 152-0752-00        |            | J310164 | DIODE,RECT:.;1500V,1A,ISFM=30A,25US,7PF      | 80009     | 152075200     |
| A9CR209          | 152-1247-00        | J310165    |         | SEMICON DVC,DI:RECT,SI,1.5KV,0.8A            | 80009     | 152124700     |
| A9CR210          | 152-0327-00        |            |         | SEMICON DVC,DI:SIG,SI,100MA,75V              | 80009     | 152032700     |
| A9CR212          | 152-0327-00        |            |         | SEMICON DVC,DI:SIG,SI,100MA,75V              | 80009     | 152032700     |
| A9CR214          | 152-0327-00        |            |         | SEMICON DVC,DI:SIG,SI,100MA,75V              | 80009     | 152032700     |
| A9CR300          | 152-1124-00        |            |         | SEMICON DVC,DI:RECT,SI,600V,5A               | 80009     | 152112400     |
| A9CR301          | 152-0327-00        |            |         | SEMICON DVC,DI:SIG,SI,100MA,75V              | 80009     | 152032700     |
| A9CR303          | 152-0327-00        |            |         | SEMICON DVC,DI:SIG,SI,100MA,75V              | 80009     | 152032700     |
| A9CR304          | 152-0327-00        |            |         | SEMICON DVC,DI:SIG,SI,100MA,75V              | 80009     | 152032700     |
| A9CR306          | 152-0327-00        |            |         | SEMICON DVC,DI:SIG,SI,100MA,75V              | 80009     | 152032700     |

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|------------------|--------------------|------------|--------|---------------------------------------|-----------|---------------|
|                  |                    | Effective  | Dscont |                                       |           |               |
| A9CR308          | 152-0327-00        |            |        | SEMICON DVC,DI:SIG,SI,100MA,75V       | 80009     | 152032700     |
| A9CR310          | 152-0327-00        |            |        | SEMICON DVC,DI:SIG,SI,100MA,75V       | 80009     | 152032700     |
| A9CR312          | 152-0327-00        |            |        | SEMICON DVC,DI:SIG,SI,100MA,75V       | 80009     | 152032700     |
| A9CR314          | 152-0327-00        |            |        | SEMICON DVC,DI:SIG,SI,100MA,75V       | 80009     | 152032700     |
| A9CR315          | 152-0327-00        |            |        | SEMICON DVC,DI:SIG,SI,100MA,75V       | 80009     | 152032700     |
| A9CR316          | 152-0327-00        |            |        | SEMICON DVC,DI:SIG,SI,100MA,75V       | 80009     | 152032700     |
| A9CR317          | 152-0327-00        |            |        | SEMICON DVC,DI:SIG,SI,100MA,75V       | 80009     | 152032700     |
| A9CR318          | 152-0327-00        |            |        | SEMICON DVC,DI:SIG,SI,100MA,75V       | 80009     | 152032700     |
| A9CR400          | 152-0327-00        |            |        | SEMICON DVC,DI:SIG,SI,100MA,75V       | 80009     | 152032700     |
| A9CR402          | 152-0327-00        |            |        | SEMICON DVC,DI:SIG,SI,100MA,75V       | 80009     | 152032700     |
| A9CR404          | 152-0327-00        |            |        | SEMICON DVC,DI:SIG,SI,100MA,75V       | 80009     | 152032700     |
| A9CR406          | 152-0327-00        |            |        | SEMICON DVC,DI:SIG,SI,100MA,75V       | 80009     | 152032700     |
| A9CR408          | 152-0327-00        |            |        | SEMICON DVC,DI:SIG,SI,100MA,75V       | 80009     | 152032700     |
| A9CR410          | 152-0327-00        |            |        | SEMICON DVC,DI:SIG,SI,100MA,75V       | 80009     | 152032700     |
| A9CR412          | 152-0327-00        |            |        | SEMICON DVC,DI:SIG,SI,100MA,75V       | 80009     | 152032700     |
| A9CR414          | 152-0327-00        |            |        | SEMICON DVC,DI:SIG,SI,100MA,75V       | 80009     | 152032700     |
| A9CR416          | 152-0327-00        |            |        | SEMICON DVC,DI:SIG,SI,100MA,75V       | 80009     | 152032700     |
| A9CR500          | 152-0327-00        |            |        | SEMICON DVC,DI:SIG,SI,100MA,75V       | 80009     | 152032700     |
| A9CR505          | 152-0327-00        |            |        | SEMICON DVC,DI:SIG,SI,100MA,75V       | 80009     | 152032700     |
| A9CR510          | 152-0327-00        |            |        | SEMICON DVC,DI:SIG,SI,100MA,75V       | 80009     | 152032700     |
| A9J80            | 131-0608-00        |            |        | CONN,TERMINAL:PRESSFIT/PCB,;MALE,STR  | 22526     | 48283-018     |
| A9J82            | 131-0608-00        |            |        | CONN,TERMINAL:PRESSFIT/PCB,;MALE,STR  | 22526     | 48283-018     |
| A9J89            | 131-0608-00        |            |        | CONN,TERMINAL:PRESSFIT/PCB,;MALE,STR  | 22526     | 48283-018     |
| A9J90            | 131-3659-00        |            |        | TERM,QIK DISC.:CKT,0.187 X 25,TAB     | 80009     | 131365900     |
| A9J91            | 131-3668-00        |            |        | CONN,RCPT,ELEC:CKT BD,4 PIN           | 80009     | 131366800     |
| A9J92            | 131-3666-00        |            |        | CONN,RCPT,ELEC:CKT BD,2 PIN           | 80009     | 131366600     |
| A9J92            | 131-3669-00        |            |        | CONN,RCPT,ELEC:CKT BD,6 PIN           | 80009     | 131366900     |
| A9J93            | 131-0608-00        |            |        | CONN,TERMINAL:PRESSFIT/PCB,;MALE,STR  | 22526     | 48283-018     |
| A9J94            | 131-3668-00        |            |        | CONN,RCPT,ELEC:CKT BD,4 PIN           | 80009     | 131366800     |
| A9J95            | 131-3667-00        |            |        | CONN,RCPT,ELEC:CKT BD,3 PIN           | 80009     | 131366700     |
| A9J97            | 131-3659-00        |            |        | TERM,QIK DISC.:CKT,0.187 X 25,TAB     | 80009     | 131365900     |
| A9J98            | 131-4216-00        |            |        | CONN,RCPT,ELEC:PWR,FEMALE,15A         | 80009     | 131421600     |
| A9J99            | 131-3659-00        |            |        | TERM,QIK DISC.:CKT,0.187 X 25,TAB     | 80009     | 131365900     |
| A9J150           | 131-0608-00        |            |        | CONN,TERMINAL:PRESSFIT/PCB,;MALE,STR  | 22526     | 48283-018     |
| A9J160           | 131-0589-00        |            |        | TERMINAL,PIN:PRESSFIT/PCB,;MALE,STR   | 22526     | 48283-087     |
| A9J400           | 131-0608-00        |            |        | CONN,TERMINAL:PRESSFIT/PCB,;MALE,STR  | 22526     | 48283-018     |
| A9J410           | 131-0589-00        |            |        | TERMINAL,PIN:PRESSFIT/PCB,;MALE,STR   | 22526     | 48283-087     |
| A9K204           | 148-0188-00        |            |        | RELAY,ARM:SPDT,5A,AC380V,COIL,12VDC   | 80009     | 148018800     |
| A9K210           | 148-1015-00        |            |        | RELAY,ARM:SPST,16A 250V AC,COIL 12VDC | 80009     | 148101500     |
| A9K211           | 148-1015-00        |            |        | RELAY,ARM:SPST,16A 250V AC,COIL 12VDC | 80009     | 148101500     |

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|------------------|--------------------|------------|---------|---|-----------|---------------|
|                  |                    | Effective  | Dscont  |   |           |               |
| A9K212           | 148-1015-00        |            |         | RELAY,ARM:SPST,16A 250V AC,COIL 12VDC                     | 80009     | 148101500     |
| A9K213           | 148-1015-00        |            |         | RELAY,ARM:SPST,16A 250V AC,COIL 12VDC                     | 80009     | 148101500     |
| A9K214           | 148-1015-00        |            |         | RELAY,ARM:SPST,16A 250V AC,COIL 12VDC                     | 80009     | 148101500     |
| A9K215           | 148-1015-00        |            |         | RELAY,ARM:SPST,16A 250V AC,COIL 12VDC                     | 80009     | 148101500     |
| A9K300           | 148-0188-00        |            |         | RELAY,ARM:SPDT,5A,AC380V,COIL,12VDC                       | 80009     | 148018800     |
| A9K302           | 148-0188-00        | J301393    | J302337 | RELAY,ARM:SPDT,5A,AC380V,COIL,12VDC                       | 80009     | 148018800     |
| A9K302           | 148-0228-00        | J302338    |         | RELAY,ARM:DPDT,5A,AC250V,COIL,12VDC                       | 80009     | 148022800     |
| A9K304           | 148-0188-00        |            |         | RELAY,ARM:SPDT,5A,AC380V,COIL,12VDC                       | 80009     | 148018800     |
| A9K306           | 148-0188-00        | J301393    | J302337 | RELAY,ARM:SPDT,5A,AC380V,COIL,12VDC                       | 80009     | 148018800     |
| A9K306           | 148-0228-00        | J302338    |         | RELAY,ARM:DPDT,5A,AC250V,COIL,12VDC                       | 80009     | 148022800     |
| A9K308           | 148-0188-00        |            |         | RELAY,ARM:SPDT,5A,AC380V,COIL,12VDC                       | 80009     | 148018800     |
| A9K310           | 148-0228-00        |            |         | RELAY,ARM:DPDT,5A 250VAC,COIL,12VDC480 OHM                | 80009     | 148022800     |
| A9K312           | 148-0228-00        |            |         | RELAY,ARM:DPDT,5A 250VAC,COIL,12VDC480 OHM                | 80009     | 148022800     |
| A9K314           | 148-0228-00        |            |         | RELAY,ARM:DPDT,5A 250VAC,COIL,12VDC480 OHM                | 80009     | 148022800     |
| A9K400           | 148-1015-00        |            |         | RELAY,ARM:SPST,16A 250V AC,COIL 12VDC                     | 80009     | 148101500     |
| A9K402           | 148-1015-00        |            |         | RELAY,ARM:SPST,16A 250V AC,COIL 12VDC                     | 80009     | 148101500     |
| A9K404           | 148-0188-00        |            |         | RELAY,ARM:SPDT,5A,AC380V,COIL,12VDC                       | 80009     | 148018800     |
| A9K406           | 148-0188-00        |            |         | RELAY,ARM:SPDT,5A,AC380V,COIL,12VDC                       | 80009     | 148018800     |
| A9K408           | 148-0188-00        |            |         | RELAY,ARM:SPDT,5A,AC380V,COIL,12VDC                       | 80009     | 148018800     |
| A9K410           | 148-0188-00        |            |         | RELAY,ARM:SPDT,5A,AC380V,COIL,12VDC                       | 80009     | 148018800     |
| A9K412           | 148-0188-00        |            |         | RELAY,ARM:SPDT,5A,AC380V,COIL,12VDC                       | 80009     | 148018800     |
| A9K414           | 148-0188-00        |            |         | RELAY,ARM:SPDT,5A,AC380V,COIL,12VDC                       | 80009     | 148018800     |
| A9K416           | 148-0188-00        |            |         | RELAY,ARM:SPDT,5A,AC380V,COIL,12VDC                       | 80009     | 148018800     |
| A9K500           | 148-0186-00        |            |         | RELAY,ARM:1 FORM C,3A,200V,COIL 12VDC                     | 80009     | 148018600     |
| A9K505           | 148-0186-00        |            |         | RELAY,ARM:1 FORM C,3A,200V,COIL 12VDC                     | 80009     | 148018600     |
| A9K510           | 148-0186-00        |            |         | RELAY,ARM:1 FORM C,3A,200V,COIL 12VDC                     | 80009     | 148018600     |
| A9Q200           | 151-1273-00        |            |         | TRANSISTOR:PWR,FET,N CHAN,SI,900V,3A,100W                 | 80009     | 151127300     |
| A9Q210           | 151-1273-00        |            |         | TRANSISTOR:PWR,FET,N CHAN,SI,900V,3A,100W                 | 80009     | 151127300     |
| A9Q220           | 151-1273-00        |            |         | TRANSISTOR:PWR,FET,N CHAN,SI,900V,3A,100W                 | 80009     | 151127300     |
| A9Q310           | 151-1272-00        |            | J310347 | TRANSISTOR:PWR,FET,N CHAN,SI,500V,5A,50W                  | 80009     | 151127200     |
| A9Q310           | 151-1309-00        | J310348    |         | TRANSISTOR:PWR,MOSFET,N-CH;500V,5A,50W;<br>2SK2356,TO-220 | 80009     | 151130900     |
| A9Q320           | 151-1272-00        |            | J310347 | TRANSISTOR:PWR,FET,N CHAN,SI,500V,5A,50W                  | 80009     | 151127200     |
| A9Q320           | 151-1309-00        | J310348    |         | TRANSISTOR:PWR,MOSFET,N-CH;500V,5A,50W;<br>2SK2356,TO-220 | 80009     | 151130900     |
| A9Q330           | 151-1272-00        |            | J310347 | TRANSISTOR:PWR,FET,N CHAN,SI,500V,5A,50W                  | 80009     | 151127200     |
| A9Q330           | 151-1309-00        | J310348    |         | TRANSISTOR:PWR,MOSFET,N-CH;500V,5A,50W;<br>2SK2356,TO-220 | 80009     | 151130900     |
| A9Q340           | 151-0190-00        |            |         | TRANSISTOR,SIG:BIPOLAR,NPN;40V,200MA                      | 04713     | 2N3904        |
| A9Q350           | 151-0188-00        |            |         | TRANSISTOR,SIG:BIPOLAR,PNP;40V,200MA                      | 04713     | 2N3906        |
| A9Q360           | 151-0190-00        |            |         | TRANSISTOR,SIG:BIPOLAR,NPN;40V,200MA                      | 04713     | 2N3904        |

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|------------------|--------------------|------------|---------|---|-----------|----------------|
|                  |                    | Effective  | Dscont  |   |           |                |
| A9R100           | 307-0922-00        |            |         | RES NTWK,FXD,FI:(8) 100K OHM,5%,0.125W  | 80009     | 307092200      |
| A9R110           | 315-0104-00        |            |         | RES,FXD,FILM:100K OHM,5%,0.25W          | TK1727    | SFR25 2322-181 |
| A9R204           | 307-1288-00        |            |         | RES,FXD,FILM:470 OHM,5%,1W              | 80009     | 307128800      |
| A9R208           | 307-1287-00        | J301393    | J302590 | RES,FXD,FILM:1.5 OHM,5%,1W              | 80009     | 307128700      |
| A9R208           | 307-1287-00        | J302629    |         | RES,FXD,FILM:1.5 OHM,5%,1W              | 80009     | 307128700      |
| A9R209           | 308-0952-00        |            |         | RES,FXD,WW:4.7M OHM,5%,0.25W            | 80009     | 308095200      |
| A9R210           | 315-0391-00        |            |         | RES,FXD,FILM:390 OHM,5%,0.25W           | TK1727    | SFR25 2322-181 |
| A9R219           | 308-0952-00        |            |         | RES,FXD,WW:4.7M OHM,5%,0.25W            | 80009     | 308095200      |
| A9R220           | 315-0391-00        |            |         | RES,FXD,FILM:390 OHM,5%,0.25W           | TK1727    | SFR25 2322-181 |
| A9R222           | 315-0102-00        |            |         | RES,FXD,FILM:1K OHM,5%,0.25W            | TK1727    | SFR25 2322-181 |
| A9R224           | 315-0103-00        |            |         | RES,FXD,FILM:10K OHM,5%,0.25W           | TK1727    | SFR25 2322-181 |
| A9R225           | 315-0391-00        |            |         | RES,FXD,FILM:390 OHM,5%,0.25W           | TK1727    | SFR25 2322-181 |
| A9R229           | 308-0952-00        |            |         | RES,FXD,WW:4.7M OHM,5%,0.25W            | 80009     | 308095200      |
| A9R300           | 307-1290-00        |            |         | RES,FXD,FILM:510K OHM,5%,1W             | 80009     | 307129000      |
| A9R301           | 315-0103-00        |            |         | RES,FXD,FILM:10K OHM,5%,0.25W           | TK1727    | SFR25 2322-181 |
| A9R302           | 307-1290-00        |            |         | RES,FXD,FILM:510K OHM,5%,1W             | 80009     | 307129000      |
| A9R303           | 315-0203-00        |            |         | RES,FXD,FILM:20K OHM,5%,0.25W           | TK1727    | SFR25 2322-181 |
| A9R304           | 307-1292-00        |            |         | RES,FXD,FILM:100K OHM,5%,2W             | 80009     | 307129200      |
| A9R306           | 307-1291-00        | J301393    | J302590 | RES,FXD,FILM:110K OHM,5%,1W             | 80009     | 307129100      |
| A9R306           | 307-1291-00        | J302629    |         | RES,FXD,FILM:110K OHM,5%,1W             | 80009     | 307129100      |
| A9R307           | 307-1291-00        | J301393    | J302590 | RES,FXD,FILM:110K OHM,5%,1W             | 80009     | 307129100      |
| A9R307           | 307-1291-00        | J302629    |         | RES,FXD,FILM:110K OHM,5%,1W             | 80009     | 307129100      |
| A9R314           | 307-1293-00        |            |         | RES,FXD,FILM:5.6K OHM,5%,2W             | 80009     | 307129300      |
| A9R316           | 315-0224-00        |            |         | RES,FXD,FILM:220K OHM,5%,0.25W          | TK1727    | SFR25 2322-181 |
| A9R319           | 307-1289-00        | J301393    | J302590 | RES,FXD,FILM:15K OHM,5%,1W              | 80009     | 307128900      |
| A9R319           | 307-1289-00        | J302629    |         | RES,FXD,FILM:15K OHM,5%,1W              | 80009     | 307128900      |
| A9R320           | 315-0103-00        |            |         | RES,FXD,FILM:10K OHM,5%,0.25W           | TK1727    | SFR25 2322-181 |
| A9R322           | 315-0202-00        |            |         | RES,FXD,FILM:2K OHM,5%,0.25W            | TK1727    | SFR25 2322-181 |
| A9R324           | 315-0224-00        |            |         | RES,FXD,FILM:220K OHM,5%,0.25W          | TK1727    | SFR25 2322-181 |
| A9R325           | 315-0472-00        |            |         | RES,FXD,FILM:4.7K OHM,5%,0.25W          | TK1727    | SFR25 2322-181 |
| A9R328           | 315-0473-00        |            |         | RES,FXD,FILM:47K OHM,5%,0.25W           | TK1727    | SFR25 2322-181 |
| A9R330           | 308-0269-00        |            |         | RES,FXD,WW:22 OHM,5%,3W                 | 00213     | 1240S-22R00J   |
| A9R334           | 315-0224-00        |            |         | RES,FXD,FILM:220K OHM,5%,0.25W          | TK1727    | SFR25 2322-181 |
| A9R350           | 315-0472-00        |            |         | RES,FXD,FILM:4.7K OHM,5%,0.25W          | TK1727    | SFR25 2322-181 |
| A9R416           | 307-1285-00        |            |         | RES,FXD,FILM:160K OHM,2%,3W             | 80009     | 307128500      |
| A9R417           | 307-1285-00        |            |         | RES,FXD,FILM:160K OHM,2%,3W             | 80009     | 307128500      |
| A9R418           | 307-1296-00        |            |         | RES,FXD,FILM:200K OHM,2%,1W             | 80009     | 307129600      |
| A9R419           | 307-1296-00        |            |         | RES,FXD,FILM:200K OHM,2%,1W             | 80009     | 307129600      |
| A9T300           | 120-1832-00        |            |         | XFMR,PWR STPDN:12V IN,24V 5MA OUT,0.12V | 80009     | 120183200      |

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| Component Number | Tektronix Part No. | Serial No. Effective | Dscont  | Name & Description                       | Mfr. Code | Mfr. Part No. |
|------------------|--------------------|----------------------|---------|--|-----------|---------------|
| A9U100           | 156-1822-00        | J301393              | J302394 | MICROCKT,DGTL:C2MOS,8 BIT ADDRESSABLE    | 80009     | 156182200     |
| A9U100           | 156-2824-00        | J302395              |         | IC,DIGITAL:HCMOS,LATCH;8-BIT ADDRESSABLE | 01295     | SN74HC259N    |
| A9U102           | 156-1822-00        | J301393              | J302394 | MICROCKT,DGTL:C2MOS,8 BIT ADDRESSABLE    | 80009     | 156182200     |
| A9U102           | 156-2824-00        | J302395              |         | IC,DIGITAL:HCMOS,LATCH;8-BIT ADDRESSABLE | 01295     | SN74HC259N    |
| A9U104           | 156-1837-00        | J301393              | J302162 | MICROCKT,LINEAR:DRIVER W/STROBE          | 80009     | 156183700     |
| A9U104           | 156-4348-00        | J302163              |         | MICROCKT,LINEAR:DRIVER W/STROBE          | 80009     | 156434800     |
| A9U106           | 156-1822-00        | J301393              | J302394 | MICROCKT,DGTL:C2MOS,8 BIT ADDRESSABLE    | 80009     | 156182200     |
| A9U106           | 156-2824-00        | J302395              |         | IC,DIGITAL:HCMOS,LATCH;8-BIT ADDRESSABLE | 01295     | SN74HC259N    |
| A9U108           | 156-1837-00        | J301393              | J302162 | MICROCKT,LINEAR:DRIVER W/STROBE          | 80009     | 156183700     |
| A9U108           | 156-4348-00        | J302163              |         | MICROCKT,LINEAR:DRIVER W/STROBE          | 80009     | 156434800     |
| A9U109           | 156-1837-00        | J301393              | J302162 | MICROCKT,LINEAR:DRIVER W/STROBE          | 80009     | 156183700     |
| A9U109           | 156-4348-00        | J302163              |         | MICROCKT,LINEAR:DRIVER W/STROBE          | 80009     | 156434800     |
| A9U110           | 156-1822-00        | J301393              | J302394 | MICROCKT,DGTL:C2MOS,8 BIT ADDRESSABLE    | 80009     | 156182200     |
| A9U110           | 156-2824-00        | J302395              |         | IC,DIGITAL:HCMOS,LATCH;8-BIT ADDRESSABLE | 01295     | SN74HC259N    |
| A9U112           | 156-1837-00        | J301393              | J302162 | MICROCKT,LINEAR:DRIVER W/STROBE          | 80009     | 156183700     |
| A9U112           | 156-4348-00        | J302163              |         | MICROCKT,LINEAR:DRIVER W/STROBE          | 80009     | 156434800     |
| A9U210           | 156-3726-00        |                      |         | CPLR,OPTOELECTR:LED & PHOTO              | 80009     | 156372600     |
| A9U220           | 156-3726-00        |                      |         | CPLR,OPTOELECTR:LED & PHOTO              | 80009     | 156372600     |
| A9U230           | 156-3726-00        |                      |         | CPLR,OPTOELECTR:LED & PHOTO              | 80009     | 156372600     |
| A9U300           | 156-2026-00        |                      |         | IC,DIGITAL:HCMOS,GATE;QUAD 2-INPUT NOR   | 04713     | MC74HC02AN    |
| A9U700           | 156-1822-00        | J301393              | J302394 | MICROCKT,DGTL:C2MOS,8 BIT ADDRESSABLE    | 80009     | 156182200     |
| A9U700           | 156-2824-00        | J302395              |         | IC,DIGITAL:HCMOS,LATCH;8-BIT ADDRESSABLE | 01295     | SN74HC259N    |
| A9U710           | 156-1837-00        |                      |         | MICROCKT,LINEAR:DRIVER W/STROBE          | 80009     | 156183700     |
| A9U800           | 156-1822-00        | J301393              | J302394 | MICROCKT,DGTL:C2MOS,8 BIT ADDRESSABLE    | 80009     | 156182200     |
| A9U800           | 156-2824-00        | J302395              |         | IC,DIGITAL:HCMOS,LATCH;8-BIT ADDRESSABLE | 01295     | SN74HC259N    |
| A9U810           | 156-1837-00        | J301393              | J302162 | MICROCKT,LINEAR:DRIVER W/STROBE          | 80009     | 156183700     |
| A9U810           | 156-4348-00        | J302163              |         | MICROCKT,LINEAR:DRIVER W/STROBE          | 80009     | 156434800     |
| A9U820           | 156-1837-00        | J301393              | J302162 | MICROCKT,LINEAR:DRIVER W/STROBE          | 80009     | 156183700     |
| A9U820           | 156-4348-00        | J302163              | J302176 | MICROCKT,LINEAR:DRIVER W/STROBE          | 80009     | 156434800     |
| A9U820           | 156-1837-00        | J302177              |         | MICROCKT,LINEAR:DRIVER W/STROBE          | 80009     | 156183700     |
| A9VR200          | 152-0243-00        |                      |         | DIODE,ZENER:;;15V,5%,0.4W                | 04713     | SZ13203       |
| A9VR210          | 152-0243-00        |                      |         | DIODE,ZENER:;;15V,5%,0.4W                | 04713     | SZ13203       |
| A9W10            | 196-3301-00        |                      |         | LEAD,ELECTRICAL:18 AWG,6.0 L,W/LUG       | 80009     | 196330100     |
| A9W90            | 174-1774-00        |                      |         | CA ASSY,SP,ELEC:40,26 AWG,8.0 L,RIBBON   | 80009     | 174177400     |

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|------------------|--------------------|----------------------|---------|---|-----------|---------------|
| A10              | 671-1150-XX        |                      |         | CIRCUIT BD ASSY:SENSE BOARD                 | 80009     | 6711150XX     |
| A10C110          | 285-1370-00        |                      |         | CAP,FXD,PLASTIC:0.001UF,10%,160V            | 80009     | 285137000     |
| A10C112          | 285-1371-00        |                      |         | CAP,FXD,PLASTIC:0.01UF,10%,160V             | 80009     | 285137100     |
| A10C114          | 285-1372-00        |                      |         | CAP,FXD,PLASTIC:0.1UF,10%,160V              | 80009     | 285137200     |
| A10C138          | 281-0773-00        |                      |         | CAP,FXD,CERAMIC:MLC;0.01UF,10%,100V         | TK1743    | CGB103KEX     |
| A10C139          | 281-0775-00        |                      |         | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA  |
| A10C148          | 283-0051-00        |                      |         | CAP,FXD,CER DI:0.0033UF,5%,100V             | 04222     | SR211A332JAA  |
| A10C149          | 283-1017-00        |                      |         | CAP,FXD,CER DI:4700PF,5%,50V                | 80009     | 283101700     |
| A10C220          | 281-0775-00        |                      |         | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA  |
| A10C234          | 281-0812-00        |                      |         | CAP,FXD,CERAMIC:MLC;1000PF,10%,100V         | 04222     | SA101C102KAA  |
| A10C242          | 281-0763-00        |                      |         | CAP,FXD,CERAMIC:MLC;47PF,10%,100V           | 04222     | SA102A470KAA  |
| A10C246          | 281-0763-00        |                      |         | CAP,FXD,CERAMIC:MLC;47PF,10%,100V           | 04222     | SA102A470KAA  |
| A10C260          | 281-0763-00        |                      |         | CAP,FXD,CERAMIC:MLC;47PF,10%,100V           | 04222     | SA102A470KAA  |
| A10C262          | 281-0775-00        |                      |         | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA  |
| A10C264          | 281-0775-00        |                      |         | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA  |
| A10C300          | 283-0640-00        |                      |         | CAP,FXD,MICA DI:160PF,1%,500V               | TK0891    | RDM15FD161F03 |
| A10C312          | 283-0620-00        |                      |         | CAP,FXD,MICA DI:470PF,1%,500V               | TK0891    | RDM15FD471F03 |
| A10C322          | 283-0620-00        | J301393              | J302534 | CAP,FXD,MICA DI:470PF,1%,500V               | TK0891    | RDM15FD471F03 |
| A10C322          | 283-0637-00        | J302535              |         | CAP,FXD,MICA DI:20PF,2.5%,500V              | TK0891    | RDM15E200D5   |
| A10C340          | 281-0773-00        |                      |         | CAP,FXD,CERAMIC:MLC;0.01UF,10%,100V         | TK1743    | CGB103KEX     |
| A10C342          | 281-0812-00        |                      |         | CAP,FXD,CERAMIC:MLC;1000PF,10%,10           | 04222     | SA101C102KAA  |
| A10C350          | 290-0684-00        |                      |         | CAP,FXD,ELCTLT:10UF,20%,16V                 | 80009     | 290068400     |
| A10C400          | 281-0775-00        |                      |         | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA  |
| A10C410          | 281-0775-00        |                      |         | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA  |
| A10C420          | 281-0775-00        |                      |         | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA  |
| A10C422          | 281-0775-00        |                      |         | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA  |
| A10C430          | 281-0775-00        |                      |         | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA  |
| A10C450          | 281-0763-00        |                      |         | CAP,FXD,CERAMIC:MLC;47PF,10%,100V           | 04222     | SA102A470KAA  |
| A10C452          | 281-0763-00        |                      |         | CAP,FXD,CERAMIC:MLC;47PF,10%,100V           | 04222     | SA102A470KAA  |
| A10C460          | 281-0763-00        |                      |         | CAP,FXD,CERAMIC:MLC;47PF,10%,100V           | 04222     | SA102A470KAA  |
| A10C500          | 283-0260-00        |                      |         | CAP,FXD,CER DI:5.6PF,+/-0.25PF,200V         | 04222     | SR152A5R6CAA  |
| A10C501          | 281-0775-00        |                      |         | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA  |
| A10C504          | 281-0814-00        |                      |         | CAP,FXD,CERAMIC:MLC;100 PF,10%,100V         | TK1743    | CGB101KEN     |
| A10C520          | 283-0178-02        |                      |         | CAP,FXD,CER DI:0.1UF,+80-20%,100V           | 80009     | 283017802     |
| A10C540          | 283-0178-02        |                      |         | CAP,FXD,CER DI:0.1UF,+80-20%,100V           | 80009     | 283017802     |
| A10C570          | 281-0775-00        |                      |         | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA  |
| A10C572          | 281-0775-00        |                      |         | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA  |
| A10C574          | 281-0775-00        |                      |         | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA  |
| A10C700          | 290-1142-00        |                      |         | CAP,FXD,ELCTLT:100UF,20%,25V                | 80009     | 290114200     |
| A10C702          | 290-1142-00        |                      |         | CAP,FXD,ELCTLT:100UF,20%,25V                | 80009     | 290114200     |

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|------------------|--------------------|------------|---------|---|-----------|-----------------|
|                  |                    | Effective  | Dscont  |   |           |                 |
| A10C704          | 290-1142-00        |            |         | CAP,FXD,ELCTLT:100UF,20%,25V  | 80009     | 290114200       |
| A10C706          | 290-1142-00        |            |         | CAP,FXD,ELCTLT:100UF,20%,25V  | 80009     | 290114200       |
| A10C720          | 281-0775-00        |            |         | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170                                     | 04222     | SA105E104MAA    |
| A10C740          | 290-1007-00        |            |         | CAP,FXD,ELCTLT:22UF,20%,16V   | 80009     | 290100700       |
| A10C1000         | 281-0775-00        |            |         | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170                                     | 04222     | SA105E104MAA    |
| A10CR200         | 152-0939-00        |            |         | SEMICON DVC,DI:DUAL,100MA,20V   | 80009     | 152093900       |
| A10CR202         | 152-0939-00        |            |         | SEMICON DVC,DI:DUAL,100MA,20V   | 80009     | 152093900       |
| A10CR204         | 152-0939-00        |            |         | SEMICON DVC,DI:DUAL,100MA,20V   | 80009     | 152093900       |
| A10CR206         | 152-0939-00        |            |         | SEMICON DVC,DI:DUAL,100MA,20V   | 80009     | 152093900       |
| A10CR210         | 152-0939-00        |            |         | SEMICON DVC,DI:DUAL,100MA,20V   | 80009     | 152093900       |
| A10CR212         | 152-0939-00        |            |         | SEMICON DVC,DI:DUAL,100MA,20V   | 80009     | 152093900       |
| A10CR220         | 152-0939-00        |            |         | SEMICON DVC,DI:DUAL,100MA,20V   | 80009     | 152093900       |
| A10CR222         | 152-0939-00        |            |         | SEMICON DVC,DI:DUAL,100MA,20V   | 80009     | 152093900       |
| A10CR348         | 152-0327-00        |            |         | SEMICON DVC,DI:SIG,SI,100MA,75V   | 80009     | 152032700       |
| A10CR400         | 152-0939-00        |            |         | SEMICON DVC,DI:DUAL,100MA,20V   | 80009     | 152093900       |
| A10CR402         | 152-0939-00        |            |         | SEMICON DVC,DI:DUAL,100MA,20V   | 80009     | 152093900       |
| A10CR410         | 152-0936-00        |            |         | SEMICON DVC,DI:DUAL,1A,100V   | 80009     | 152093600       |
| A10CR412         | 152-0937-00        |            |         | SEMICON DVC,DI:DUAL,1A,100V   | 80009     | 152093700       |
| A10CR420         | 152-0937-00        |            |         | SEMICON DVC,DI:DUAL,1A,100V   | 80009     | 152093700       |
| A10CR422         | 152-0936-00        |            |         | SEMICON DVC,DI:DUAL,1A,100V   | 80009     | 152093600       |
| A10CR480         | 152-0327-00        |            |         | SEMICON DVC,DI:SIG,SI,100MA,75V   | 80009     | 152032700       |
| A10CR481         | 152-0327-00        |            |         | SEMICON DVC,DI:SIG,SI,100MA,75V   | 80009     | 152032700       |
| A10CR482         | 152-0327-00        |            |         | SEMICON DVC,DI:SIG,SI,100MA,75V   | 80009     | 152032700       |
| A10CR483         | 152-0327-00        |            |         | SEMICON DVC,DI:SIG,SI,100MA,75V   | 80009     | 152032700       |
| A10CR500         | 152-0939-00        |            |         | SEMICON DVC,DI:DUAL,100MA,20V   | 80009     | 152093900       |
| A10CR520         | 152-0460-00        |            |         | DIODE,SIG:,REGLTR;100V,1.20MA IP,1.45V VL                                       | 04713     | 1N5299          |
| A10CR540         | 152-0460-00        |            |         | DIODE,SIG:,REGLTR;100V,1.20MA IP,1.45V VL                                       | 04713     | 1N5299          |
| A10CR550         | 152-0939-00        |            |         | SEMICON DVC,DI:DUAL,100MA,20V   | 80009     | 152093900       |
| A10E100          | 119-0181-00        |            |         | ARSR,ELEC SURGE:230V, +/-15%  | 0C8T6     | BBS-230V +/-15% |
| A10E200          | 119-0181-00        |            |         | ARSR,ELEC SURGE:230V, +/-15%  | 0C8T6     | BBS-230V +/-15% |
| A10E700          | 119-0181-00        |            |         | ARSR,ELEC SURGE:230V, +/-15%  | 0C8T6     | BBS-230V +/-15% |
| A10J90           | 131-3660-00        |            |         | CONN,RCPT,ELEC:HEADER,2 X 20  | 80009     | 131366000       |
| A10J101          | 131-0608-00        |            |         | CONN,TERMINAL:PRESSFIT/PCB,;MALE,STR  | 22526     | 48283-018       |
| A10J102          | 131-0608-00        |            |         | CONN,TERMINAL:PRESSFIT/PCB,;MALE,STR  | 22526     | 48283-018       |
| A10J104          | 131-3666-00        |            |         | CONN,RCPT,ELEC:CKT BD,2 PIN   | 80009     | 131366600       |
| A10J140          | 131-0608-00        |            |         | CONN,TERMINAL:PRESSFIT/PCB,;MALE,STR  | 22526     | 48283-018       |
| A10J300          | 131-0608-00        |            |         | CONN,TERMINAL:PRESSFIT/PCB,;MALE,STR  | 22526     | 48283-018       |
| A10J301          | 131-3659-00        |            |         | TERM,QIK DISC.:CKT,0.187 X 25,TAB   | 80009     | 131365900       |
| A10J302          | 131-3667-00        | J301393    | J302260 | CONN,RCPT,ELEC:CKT BD,3 PIN   | 80009     | 131366700       |
| A10J302          | 131-5732-00        | J302261    |         | TERM,QUICK DISC:PCB,MALESTR,0.110 X 0.020<br>(REQUIRED THREE TERMS FOR A10J302) | 80009     | 131573200       |



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|------------------|--------------------|----------------------|---------|---------------------------------------|-----------|---------------|
| A10J303          | 131-3659-00        |                      |         | TERM,QIK DISC.:CKT,0.187 X 25,TAB     | 80009     | 131365900     |
| A10J308          | 131-0608-00        |                      |         | CONN,TERMINAL:PRESSFIT/PCB,;MALE,STR  | 22526     | 48283-018     |
| A10J330          | 131-0608-00        |                      |         | CONN,TERMINAL:PRESSFIT/PCB,;MALE,STR  | 22526     | 48283-018     |
| A10J414          | 131-0589-00        |                      |         | TERMINAL,PIN:PRESSFIT/PCB,;MALE,STR   | 22526     | 48283-087     |
| A10J415          | 131-0589-00        |                      |         | TERMINAL,PIN:PRESSFIT/PCB,;MALE,STR   | 22526     | 48283-087     |
| A10J416          | 131-0608-00        |                      |         | CONN,TERMINAL:PRESSFIT/PCB,;MALE,STR  | 22526     | 48283-018     |
| A10J417          | 131-0608-00        |                      |         | CONN,TERMINAL:PRESSFIT/PCB,;MALE,STR  | 22526     | 48283-018     |
| A10J418          | 131-0589-00        |                      |         | TERMINAL,PIN:PRESSFIT/PCB,;MALE,STR   | 22526     | 48283-087     |
| A10J419          | 131-0589-00        |                      |         | TERMINAL,PIN:PRESSFIT/PCB,;MALE,STR   | 22526     | 48283-087     |
| A10K110          | 148-0189-00        |                      |         | RELAY,ARM:DPST,8A,380V,COIL,12VDC     | 80009     | 148018900     |
| A10K120          | 148-0189-00        |                      |         | RELAY,ARM:DPST,8A,380V,COIL,12VDC     | 80009     | 148018900     |
| A10K130          | 148-0191-00        |                      |         | RELAY,ARM:QPST,4A,250V,COIL,12VDC     | 80009     | 148019100     |
| A10K140          | 148-0191-00        |                      |         | RELAY,ARM:QPST,4A,250V,COIL,12VDC     | 80009     | 148019100     |
| A10K150          | 148-0191-00        |                      |         | RELAY,ARM:QPST,4A,250V,COIL,12VDC     | 80009     | 148019100     |
| A10K160          | 148-0191-00        |                      |         | RELAY,ARM:QPST,4A,250V,COIL,12VDC     | 80009     | 148019100     |
| A10K170          | 148-0186-00        |                      |         | RELAY,ARM:1 FORM C,3A,200V,COIL 12VDC | 80009     | 148018600     |
| A10K180          | 148-0192-00        |                      |         | RELAY,ARM:DPDT,4A,250V COIL,12VDC     | 80009     | 148019200     |
| A10K190          | 148-0186-00        |                      |         | RELAY,ARM:1 FORM C,3A,200V,COIL 12VDC | 80009     | 148018600     |
| A10K200          | 148-0186-00        |                      |         | RELAY,ARM:1 FORM C,3A,200V,COIL 12VDC | 80009     | 148018600     |
| A10K230          | 148-0187-00        |                      |         | RELAY,ARM:DPDT,3A,200V,COIL,12VDC     | 80009     | 148018700     |
| A10K340          | 148-0190-00        |                      |         | RELAY,REED:0.25A,100V,COIL,12VDC      | 80009     | 148019000     |
| A10K350          | 148-0190-00        |                      |         | RELAY,REED:0.25A,100V,COIL,12VDC      | 80009     | 148019000     |
| A10K360          | 148-0190-00        |                      |         | RELAY,REED:0.25A,100V,COIL,12VDC      | 80009     | 148019000     |
| A10K370          | 148-0190-00        |                      |         | RELAY,REED:0.25A,100V,COIL,12VDC      | 80009     | 148019000     |
| A10K700          | 148-0207-00        |                      |         | RELAY,ARMATURE:DPST,8A,380V,COIL 9VDC | S0293     | ST2-DC9V      |
| A10L700          | 108-0948-00        | J301393              | J301752 | COIL,RF:FIXED,100UH,10%               | 80009     | 108094800     |
| A10L702          | 108-0948-00        | J301393              | J301877 | COIL,RF:FIXED,100UH,10%               | 80009     | 108094800     |
| A10L702          | 108-1506-00        | J301878              |         | INDUCTOR,FXD:SIGNAL;100UH,10%         | 80009     | 108150600     |
| A10L704          | 108-0948-00        | J301393              | J301877 | COIL,RF:FIXED,100UH,10%               | 80009     | 108094800     |
| A10L704          | 108-1506-00        | J301878              |         | INDUCTOR,FXD:SIGNAL;100UH,10%         | 80009     | 108150600     |
| A10L706          | 108-0948-00        | J301393              | J301877 | COIL,RF:FIXED,100UH,10%               | 80009     | 108094800     |
| A10L706          | 108-1506-00        | J301878              |         | INDUCTOR,FXD:SIGNAL;100UH,10%         | 80009     | 108150600     |
| A10P101          | 131-4311-00        |                      |         | BUS,CONDUCTOR:WHITE,SHUNT ASSY        | 80009     | 131431100     |
| A10P102          | 131-4311-00        |                      |         | BUS,CONDUCTOR:WHITE,SHUNT ASSY        | 80009     | 131431100     |
| A10P130          | 131-2936-01        |                      |         | CONN,RCPT,ELEC:FEMALE,2 X 15          | 80009     | 131293601     |
| A10Q350          | 151-0551-00        | J301393              | J302261 | TRANSISTOR:NPN,SI,TR,30V,TO-92        | 80009     | 151055100     |
| A10Q350          | 151-0764-00        | J302262              |         | TRANSISTOR:NPN,SI,TO-92               | 80009     | 151076400     |
| A10Q520          | 151-0559-00        |                      |         | TRANSISTOR:NPN,SI,PWR                 | S0167     | 2SC2071B      |
| A10Q530          | 151-0559-00        |                      |         | TRANSISTOR:NPN,SI,PWR                 | S0167     | 2SC2071B      |
| A10Q540          | 151-0558-00        |                      |         | TRANSISTOR:PNP,SI                     | 80009     | 151055800     |

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|                  |                    | Effective  | Dscont  |  |           |                 |
| A10Q740          | 151-0551-00        | J301393    | J302261 | TRANSISTOR:NPN,SI,TR,30V,TO-92           | 80009     | 151055100       |
| A10Q740          | 151-0764-00        | J302262    |         | TRANSISTOR:NPN,SI,TO-92                  | 80009     | 151076400       |
| A10R100          | 308-0884-04        |            |         | RES,FXD,WW:0.025 OHM,4W,0.1%             | 80009     | 308088404       |
| A10R104          | 308-0881-00        |            |         | RES,FXD,WW:2.25 OHM,0.1%,2W              | 80009     | 308088100       |
| A10R106          | 308-0882-00        |            |         | RES,FXD,WW:22.5 OHM,0.1%,2W              | 80009     | 308088200       |
| A10R108          | 308-0883-00        |            |         | RES,FXD,WW:225 OHM,0.1%,2W               | 80009     | 308088300       |
| A10R110          | 323-0222-07        |            |         | RES,FXD,FILM:2K OHM,0.1%,0.5W,TC=25PPM   | 80009     | 323022207       |
| A10R112          | 321-0928-07        |            |         | RES,FXD,FILM:250 OHM,0.1%,0.125W,TC=T9   | TK1727    | MPR24-2322-141  |
| A10R114          | 323-0318-07        |            |         | RES,FXD,FILM:20K OHM,0.1%,0.5W,TC=T9     | 19701     | 5053RE20K00B    |
| A10R116          | 321-0929-07        |            |         | RES,FXD,FILM:2.5K OHM,0.1%,0.125W,TC=T9  | TK1727    | 2322-1412K5     |
| A10R118          | 323-0742-07        |            |         | RES,FXD,FILM:250K OHM,0.1%,0.5W,TC=T9    | 07716     | CEC T9 250 K OH |
| A10R119          | 321-0231-00        |            |         | RES,FXD,FILM:2.49K OHM,1%,0.125W,TC=T0   | 19701     | 5033ED2K49F     |
| A10R120          | 325-0403-00        |            |         | RES,FXD,FILM:2.778M OHM,0.1%,0.5W        | 80009     | 325040300       |
| A10R122          | 325-0402-00        |            |         | RES,FXD,FILM:25M OHM,0.1%,0.5W           | 80009     | 325040200       |
| A10R130          | 307-1560-00        |            |         | RES,FXD,FILM:1.2 OHM,0.5W,5%             | 80009     | 307156000       |
| A10R132          | 321-0809-08        |            |         | RES,FXD,FILM:12.5 OHM,0.125W,1%,TC=50PPM | 80009     | 321080908       |
| A10R134          | 321-0927-07        |            |         | RES,FXD,FILM:125 OHM,0.1%,0.125W,TC=T9   | 19701     | 5033RE125ROB    |
| A10R136          | 321-0206-00        |            |         | RES,FXD,FILM:1.37K OHM,1%,0.125W,TC=T0   | 19701     | 5043ED1K370F    |
| A10R138          | 321-0356-00        |            |         | RES,FXD,FILM:49.9K OHM,1%,0.125W,TC=T0   | 19701     | 5033ED49K90F    |
| A10R139          | 311-1619-00        |            |         | RES,VAR,NONWW:100K OHM,20%,0.5W          | 80009     | 311161900       |
| A10R140          | 315-0024-00        |            |         | RES,FXD,CMPSN:2.4 OHM,5%,0.25W           | 80009     | 315002400       |
| A10R141          | 315-0433-00        |            |         | RES,FXD,FILM:43K OHM,5%,0.25W            | TK1727    | SFR25 2322-181  |
| A10R142          | 321-0039-00        |            |         | RES,FXD,FILM:24.9 OHM,1%,0.125W,TC=T0    | TK1727    | MR25 2322-151-9 |
| A10R144          | 321-0135-00        |            |         | RES,FXD,FILM:249 OHM,1%,0.125W,TC=T0     | TK1727    | MR25 2322-151-2 |
| A10R146          | 321-0235-00        |            |         | RES,FXD,FILM:2.74K OHM,1%,0.125W,TC=T0   | 19701     | 5043ED2K740F    |
| A10R148          | 321-0327-00        |            |         | RES,FXD,FILM:24.9K OHM,1%,0.125W,TC=T0   | 07716     | CEAD24901F      |
| A10R200          | 315-0103-00        |            |         | RES,FXD,FILM:10K OHM,5%,0.25W            | TK1727    | SFR25 2322-181  |
| A10R205          | 315-0103-00        |            |         | RES,FXD,FILM:10K OHM,5%,0.25W            | TK1727    | SFR25 2322-181  |
| A10R210          | 315-0103-00        |            |         | RES,FXD,FILM:10K OHM,5%,0.25W            | TK1727    | SFR25 2322-181  |
| A10R212          | 321-0289-07        |            |         | RES,FXD,FILM:10.0K OHM,0.1%,0.125W,TC=T9 | 19701     | 5033RE10K00B    |
| A10R214          | 321-0289-07        |            |         | RES,FXD,FILM:10.0K OHM,0.1%,0.125W,TC=T9 | 19701     | 5033RE10K00B    |
| A10R216          | 321-0289-07        |            |         | RES,FXD,FILM:10.0K OHM,0.1%,0.125W,TC=T9 | 19701     | 5033RE10K00B    |
| A10R218          | 321-0289-07        |            |         | RES,FXD,FILM:10.0K OHM,0.1%,0.125W,TC=T9 | 19701     | 5033RE10K00B    |
| A10R220          | 315-0103-00        |            |         | RES,FXD,FILM:10K OHM,5%,0.25W            | TK1727    | SFR25 2322-181  |
| A10R221          | 315-0102-00        |            |         | RES,FXD,FILM:1K OHM,5%,0.25W             | TK1727    | SFR25 2322-181  |
| A10R222          | 315-0103-00        |            |         | RES,FXD,FILM:10K OHM,5%,0.25W            | TK1727    | SFR25 2322-181  |
| A10R224          | 311-1619-00        |            |         | RES,VAR,NONWW:100K OHM,20%,0.5W          | 80009     | 311161900       |
| A10R227          | 321-0289-00        |            |         | RES,FXD,FILM:10.0K OHM,1%,0.125W,TC=T0   | 19701     | 5043ED10K00F    |
| A10R228          | 321-0350-00        |            |         | RES,FXD,FILM:43.2K OHM,1%,0.125W,TC=T0   | TK1727    | 2322-151-43K2   |
| A10R230          | 321-0289-00        |            |         | RES,FXD,FILM:10.0K OHM,1%,0.125W,TC=T0   | 19701     | 5043ED10K00F    |

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| A10R232          | 321-0340-00        |                      |         | RES,FXD,FILM:34.0K OHM,1%,0.125W,TC=T0   | TK1727    | 2322-151-34K0  |
| A10R233          | 315-0103-00        | J301393              | J301827 | RES,FXD,FILM:10K OHM,5%,0.25W            | TK1727    | SFR25 2322-181 |
| A10R233          | 315-0303-00        | J301828              |         | RES,FXD,FILM:30K OHM,5%,0.25W            | TK1727    | SFR25 2322-181 |
| A10R234          | 321-0289-00        |                      |         | RES,FXD,FILM:10.0K OHM,1%,0.125W,TC=T0   | 19701     | 5043ED10K00F   |
| A10R235          | 315-0101-00        |                      |         | RES,FXD,FILM:100 OHM,5%,0.25W            | TK1727    | SFR25 2322-181 |
| A10R236          | 321-0340-00        |                      |         | RES,FXD,FILM:34.0K OHM,1%,0.125W,TC=T0   | TK1727    | 2322-151-34K0  |
| A10R237          | 315-0204-00        |                      |         | RES,FXD,FILM:200K OHM,5%,0.25W           | TK1727    | SFR25 2322-181 |
| A10R238          | 311-1743-02        |                      |         | RES,VAR,NONWW:10K OHM,20%,0.5W           | 80009     | 311174302      |
| A10R239          | 315-0103-00        |                      |         | RES,FXD,FILM:10K OHM,5%,0.25W            | TK1727    | SFR25 2322-181 |
| A10R240          | 321-0289-07        |                      |         | RES,FXD,FILM:10.0K OHM,0.1%,0.125W,TC=T9 | 19701     | 5033RE10K00B   |
| A10R242          | 321-1752-07        |                      |         | RES,FXD,FILM:16K OHM,0.1%,0.125W,TC=T9   | 80009     | 321175207      |
| A10R244          | 321-0289-07        |                      |         | RES,FXD,FILM:10.0K OHM,0.1%,0.125W,TC=T9 | 19701     | 5033RE10K00B   |
| A10R246          | 321-1752-07        |                      |         | RES,FXD,FILM:16K OHM,0.1%,0.125W,TC=T9   | 80009     | 321175207      |
| A10R250          | 311-1743-02        |                      |         | RES,VAR,NONWW:10K OHM,20%,0.5W           | 80009     | 311174302      |
| A10R251          | 321-0289-07        |                      |         | RES,FXD,FILM:10.0K OHM,0.1%,0.125W,TC=T9 | 19701     | 5033RE10K00B   |
| A10R252          | 321-0289-07        |                      |         | RES,FXD,FILM:10.0K OHM,0.1%,0.125W,TC=T9 | 19701     | 5033RE10K00B   |
| A10R254          | 315-0101-00        |                      |         | RES,FXD,FILM:100 OHM,5%,0.25W            | TK1727    | SFR25 2322-181 |
| A10R255          | 321-0289-07        |                      |         | RES,FXD,FILM:10.0K OHM,0.1%,0.125W,TC=T9 | 19701     | 5033RE10K00B   |
| A10R256          | 315-0103-00        |                      |         | RES,FXD,FILM:10K OHM,5%,0.25W            | TK1727    | SFR25 2322-181 |
| A10R258          | 321-0289-07        |                      |         | RES,FXD,FILM:10.0K OHM,0.1%,0.125W,TC=T9 | 19701     | 5033RE10K00B   |
| A10R260          | 321-0603-07        |                      |         | RES,FXD,FILM:15K OHM,0.1%,0.125W,TC=T9   | 19701     | 5033RE15K00B   |
| A10R262          | 321-0816-07        |                      |         | RES,FXD,FILM:5K OHM,0.1%,0.125W,TC=T9    | TK1727    | MPR24-2322-141 |
| A10R264          | 321-0816-07        |                      |         | RES,FXD,FILM:5K OHM,0.1%,0.125W,TC=T9    | TK1727    | MPR24-2322-141 |
| A10R270          | 311-1743-02        |                      |         | RES,VAR,NONWW:10K OHM,20%,0.5W           | 80009     | 311174302      |
| A10R272          | 315-0472-00        |                      |         | RES,FXD,FILM:4.7K OHM,5%,0.25W           | TK1727    | SFR25 2322-181 |
| A10R274          | 315-0101-00        |                      |         | RES,FXD,FILM:100 OHM,5%,0.25W            | TK1727    | SFR25 2322-181 |
| A10R300          | 301-0471-00        |                      |         | RES,FXD,FILM:470 OHM,5%,0.5W             | TK1727    | SFR30 2322-182 |
| A10R302          | 321-0986-07        |                      |         | RES,FXD,FILM:25K OHM,0.1%,0.125W,TC=T9   | TK1727    | MPR24-2322-141 |
| A10R304          | 315-0104-00        |                      |         | RES,FXD,FILM:100K OHM,5%,0.25W           | TK1727    | SFR25 2322-181 |
| A10R312          | 321-0986-07        |                      |         | RES,FXD,FILM:25K OHM,0.1%,0.125W,TC=T9   | TK1727    | MPR24-2322-141 |
| A10R314          | 315-0104-00        |                      |         | RES,FXD,FILM:100K OHM,5%,0.25W           | TK1727    | SFR25 2322-181 |
| A10R322          | 321-0618-07        |                      |         | RES,FXD,FILM:250K OHM,0.1%,0.125W,TC=T9  | 80009     | 321061807      |
| A10R324          | 315-0104-00        |                      |         | RES,FXD,FILM:100K OHM,5%,0.25W           | TK1727    | SFR25 2322-181 |
| A10R340          | 315-0123-00        |                      |         | RES,FXD,FILM:12K OHM,5%,0.25W            | TK1727    | SFR25 2322-181 |
| A10R342          | 315-0103-00        |                      |         | RES,FXD,FILM:10K OHM,5%,0.25W            | TK1727    | SFR25 2322-181 |
| A10R344          | 315-0102-00        |                      |         | RES,FXD,FILM:1K OHM,5%,0.25W             | TK1727    | SFR25 2322-181 |
| A10R346          | 315-0102-00        |                      |         | RES,FXD,FILM:1K OHM,5%,0.25W             | TK1727    | SFR25 2322-181 |
| A10R348          | 315-0910-00        |                      |         | RES,FXD,FILM:91 OHM,5%,0.25W             | TK1727    | SFR25 2322-181 |
| A10R350          | 315-0103-00        |                      |         | RES,FXD,FILM:10K OHM,5%,0.25W            | TK1727    | SFR25 2322-181 |
| A10R352          | 315-0102-00        |                      |         | RES,FXD,FILM:1K OHM,5%,0.25W             | TK1727    | SFR25 2322-181 |

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| Component Number | Tektronix Part No. | Serial No. Effective | Dscont | Name & Description                       | Mfr. Code | Mfr. Part No.   |
|------------------|--------------------|----------------------|--------|--|-----------|-----------------|
| A10R400          | 315-0103-00        |                      |        | RES,FXD,FILM:10K OHM,5%,0.25W            | TK1727    | SFR25 2322-181  |
| A10R402          | 315-0102-00        |                      |        | RES,FXD,FILM:1K OHM,5%,0.25W             | TK1727    | SFR25 2322-181  |
| A10R410          | 307-1300-00        |                      |        | RES,FXD,FILM:51 OHM,5%,5W                | 80009     | 307130000       |
| A10R411          | 315-0103-00        |                      |        | RES,FXD,FILM:10K OHM,5%,0.25W            | TK1727    | SFR25 2322-181  |
| A10R412          | 315-0102-00        |                      |        | RES,FXD,FILM:1K OHM,5%,0.25W             | TK1727    | SFR25 2322-181  |
| A10R414          | 321-0318-07        |                      |        | RES,FXD,FILM:20.0K OHM,0.1%,0.125W,TC=T9 | 19701     | 5033RE20K00BCM  |
| A10R416          | 321-0414-07        |                      |        | RES,FXD,FILM:200K OHM,0.1%,0.125W,TC=T9  | 07716     | CEA 200 KOHM 0. |
| A10R418          | 315-0205-00        |                      |        | RES,FXD,FILM:2M OHM,5%,0.25W             | TK1727    | SFR25 2322-181  |
| A10R420          | 307-1284-00        |                      |        | RES,FXD,FILM:160 OHM,5%,5W               | 80009     | 307128400       |
| A10R421          | 315-0103-00        |                      |        | RES,FXD,FILM:10K OHM,5%,0.25W            | TK1727    | SFR25 2322-181  |
| A10R422          | 315-0102-00        |                      |        | RES,FXD,FILM:1K OHM,5%,0.25W             | TK1727    | SFR25 2322-181  |
| A10R423          | 315-0102-00        |                      |        | RES,FXD,FILM:1K OHM,5%,0.25W             | TK1727    | SFR25 2322-181  |
| A10R424          | 315-0206-01        |                      |        | RES,FXD,CMPSN:20M OHM,5%,0.25W           | 50139     | CB2065 (ALLEN B |
| A10R426          | 321-0414-00        |                      |        | RES,FXD,FILM:200K OHM,1%,0.125W,TC=T0    | 19701     | 5043ED200K0F    |
| A10R430          | 321-0318-07        |                      |        | RES,FXD,FILM:20.0K OHM,0.1%,0.125W,TC=T9 | 19701     | 5033RE20K00BCM  |
| A10R432          | 321-0318-07        |                      |        | RES,FXD,FILM:20.0K OHM,0.1%,0.125W,TC=T9 | 19701     | 5033RE20K00BCM  |
| A10R434          | 321-0318-07        |                      |        | RES,FXD,FILM:20.0K OHM,0.1%,0.125W,TC=T9 | 19701     | 5033RE20K00BCM  |
| A10R436          | 321-0226-00        |                      |        | RES,FXD,FILM:2.21K OHM,1%,0.125W,TC=T0   | 19701     | 5043ED2K210F    |
| A10R438          | 321-0318-07        |                      |        | RES,FXD,FILM:20.0K OHM,0.1%,0.125W,TC=T9 | 19701     | 5033RE20K00BCM  |
| A10R440          | 321-0130-00        |                      |        | RES,FXD,FILM:221 OHM,1%,0.125W,TC=T0     | 19701     | 5043ED221ROF    |
| A10R442          | 321-0318-07        |                      |        | RES,FXD,FILM:20.0K OHM,0.1%,0.125W,TC=T9 | 19701     | 5033RE20K00BCM  |
| A10R444          | 315-0220-00        |                      |        | RES,FXD,FILM:22 OHM,5%,0.25W             | TK1727    | SFR25 2322-181  |
| A10R446          | 321-0318-07        |                      |        | RES,FXD,FILM:20.0K OHM,0.1%,0.125W,TC=T9 | 19701     | 5033RE20K00BCM  |
| A10R448          | 321-0318-07        |                      |        | RES,FXD,FILM:20.0K OHM,0.1%,0.125W,TC=T9 | 19701     | 5033RE20K00BCM  |
| A10R450          | 321-0318-07        |                      |        | RES,FXD,FILM:20.0K OHM,0.1%,0.125W,TC=T9 | 19701     | 5033RE20K00BCM  |
| A10R452          | 321-0318-07        |                      |        | RES,FXD,FILM:20.0K OHM,0.1%,0.125W,TC=T9 | 19701     | 5033RE20K00BCM  |
| A10R454          | 321-0318-07        |                      |        | RES,FXD,FILM:20.0K OHM,0.1%,0.125W,TC=T9 | 19701     | 5033RE20K00BCM  |
| A10R460          | 311-1743-02        |                      |        | RES,VAR,NONWW:10K OHM,20%,0.5W           | 80009     | 311174302       |
| A10R462          | 315-0101-00        |                      |        | RES,FXD,FILM:100 OHM,5%,0.25W            | TK1727    | SFR25 2322-181  |
| A10R466          | 315-0103-00        |                      |        | RES,FXD,FILM:10K OHM,5%,0.25W            | TK1727    | SFR25 2322-181  |
| A10R470          | 321-0318-07        |                      |        | RES,FXD,FILM:20.0K OHM,0.1%,0.125W,TC=T9 | 19701     | 5033RE20K00BCM  |
| A10R472          | 321-0289-07        |                      |        | RES,FXD,FILM:10.0K OHM,0.1%,0.125W,TC=T9 | 19701     | 5033RE10K00B    |
| A10R474          | 321-0289-07        |                      |        | RES,FXD,FILM:10.0K OHM,0.1%,0.125W,TC=T9 | 19701     | 5033RE10K00B    |
| A10R476          | 321-0289-07        |                      |        | RES,FXD,FILM:10.0K OHM,0.1%,0.125W,TC=T9 | 19701     | 5033RE10K00B    |
| A10R478          | 321-0603-07        |                      |        | RES,FXD,FILM:15K OHM,0.1%,0.125W,TC=T9   | 19701     | 5033RE15K00B    |
| A10R480          | 315-0102-00        |                      |        | RES,FXD,FILM:1K OHM,5%,0.25W             | TK1727    | SFR25 2322-181  |
| A10R481          | 315-0102-00        |                      |        | RES,FXD,FILM:1K OHM,5%,0.25W             | TK1727    | SFR25 2322-181  |
| A10R482          | 315-0102-00        |                      |        | RES,FXD,FILM:1K OHM,5%,0.25W             | TK1727    | SFR25 2322-181  |
| A10R483          | 315-0102-00        |                      |        | RES,FXD,FILM:1K OHM,5%,0.25W             | TK1727    | SFR25 2322-181  |
| A10R484          | 315-0202-00        |                      |        | RES,FXD,FILM:2K OHM,5%,0.25W             | TK1727    | SFR25 2322-181  |

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| Component Number | Tektronix Part No. | Serial No. Effective | Dscont  | Name & Description                       | Mfr. Code | Mfr. Part No.   |
|------------------|--------------------|----------------------|---------|--|-----------|-----------------|
| A10R485          | 315-0622-00        |                      |         | RES,FXD,FILM:6.2K OHM,5%,0.25W           | TK1727    | SFR25 2322-181  |
| A10R486          | 315-0202-00        |                      |         | RES,FXD,FILM:2K OHM,5%,0.25W             | TK1727    | SFR25 2322-181  |
| A10R487          | 315-0622-00        |                      |         | RES,FXD,FILM:6.2K OHM,5%,0.25W           | TK1727    | SFR25 2322-181  |
| A10R490          | 315-0102-00        |                      |         | RES,FXD,FILM:1K OHM,5%,0.25W             | TK1727    | SFR25 2322-181  |
| A10R500          | 301-0105-00        |                      |         | RES,FXD,FILM:1M OHM,5%,0.50W             | TK2611    | RC1/20105J      |
| A10R502          | 315-0103-00        |                      |         | RES,FXD,FILM:10K OHM,5%,0.25W            | TK1727    | SFR25 2322-181  |
| A10R504          | 315-0471-00        |                      |         | RES,FXD,FILM:470 OHM,5%,0.25W            | TK1727    | SFR25 2322-181  |
| A10R506          | 315-0101-00        |                      |         | RES,FXD,FILM:100 OHM,5%,0.25W            | TK1727    | SFR25 2322-181  |
| A10R520          | 315-0101-00        |                      |         | RES,FXD,FILM:100 OHM,5%,0.25W            | TK1727    | SFR25 2322-181  |
| A10R522          | 315-0101-00        |                      |         | RES,FXD,FILM:100 OHM,5%,0.25W            | TK1727    | SFR25 2322-181  |
| A10R540          | 315-0101-00        |                      |         | RES,FXD,FILM:100 OHM,5%,0.25W            | TK1727    | SFR25 2322-181  |
| A10R542          | 315-0101-00        |                      |         | RES,FXD,FILM:100 OHM,5%,0.25W            | TK1727    | SFR25 2322-181  |
| A10R550          | 321-0414-07        |                      |         | RES,FXD,FILM:200K OHM,0.1%,0.125W,TC=T9  | 07716     | CEA 200 KOHM 0. |
| A10R552          | 321-0318-07        |                      |         | RES,FXD,FILM:20.0K OHM,0.1%,0.125W,TC=T9 | 19701     | 5033RE20K00BCM  |
| A10R554          | 321-0289-07        |                      |         | RES,FXD,FILM:10.0K OHM,0.1%,0.125W,TC=T9 | 19701     | 5033RE10K00B    |
| A10R556          | 321-0289-07        |                      |         | RES,FXD,FILM:10.0K OHM,0.1%,0.125W,TC=T9 | 19701     | 5033RE10K00B    |
| A10R558          | 321-0318-07        |                      |         | RES,FXD,FILM:20.0K OHM,0.1%,0.125W,TC=T9 | 19701     | 5033RE20K00BCM  |
| A10R560          | 321-0316-00        | J301393              | J302608 | RES,FXD,FILM:19.1K OHM,1%,0.125W,TC=T0   | 07716     | CEAD19101F      |
| A10R560          | 321-0317-00        | J302609              |         | RES,FXD,FILM:19.6K OHM,1%,0.125W,TC=T0   | 80009     | 321031700       |
| A10R562          | 321-0193-00        |                      |         | RES,FXD,FILM:1K OHM,1%,0.125W,TC=T0      | TK1727    | MR25 2322-151-1 |
| A10R564          | 321-0254-00        |                      |         | RES,FXD,FILM:4.32K OHM,1%,0.125W,TC=T0   | 19701     | 5043ED4K320F    |
| A10R565          | 321-0316-00        | J301393              | J302608 | RES,FXD,FILM:19.1K OHM,1%,0.125W,TC=T0   | 07716     | CEAD19101F      |
| A10R565          | 321-0317-00        | J302609              |         | RES,FXD,FILM:19.6K OHM,1%,0.125W,TC=T0   | 80009     | 321031700       |
| A10R566          | 321-0222-00        |                      |         | RES,FXD,FILM:2.00K OHM,1%,0.125W,TC=T0   | 19701     | 5033ED2K00F     |
| A10R567          | 321-0193-00        |                      |         | RES,FXD,FILM:1K OHM,1%,0.125W,TC=T0      | TK1727    | MR25 2322-151-1 |
| A10R568          | 321-0222-00        |                      |         | RES,FXD,FILM:2.00K OHM,1%,0.125W,TC=T0   | 19701     | 5033ED2K00F     |
| A10R570          | 321-0254-00        |                      |         | RES,FXD,FILM:4.32K OHM,1%,0.125W,TC=T0   | 19701     | 5043ED4K320F    |
| A10R572          | 315-0103-00        |                      |         | RES,FXD,FILM:10K OHM,5%,0.25W            | TK1727    | SFR25 2322-181  |
| A10R574          | 315-0103-00        |                      |         | RES,FXD,FILM:10K OHM,5%,0.25W            | TK1727    | SFR25 2322-181  |
| A10R600          | 301-0471-00        |                      |         | RES,FXD,FILM:470 OHM,5%,0.5W             | TK1727    | SFR30 2322-182  |
| A10R702          | 315-0103-00        |                      |         | RES,FXD,FILM:10K OHM,5%,0.25W            | TK1727    | SFR25 2322-181  |
| A10R704          | 315-0103-00        |                      |         | RES,FXD,FILM:10K OHM,5%,0.25W            | TK1727    | SFR25 2322-181  |
| A10R706          | 315-0103-00        |                      |         | RES,FXD,FILM:10K OHM,5%,0.25W            | TK1727    | SFR25 2322-181  |
| A10R708          | 315-0153-00        |                      |         | RES,FXD,FILM:15K OHM,5%,0.25W            | TK1727    | SFR25 2322-181  |
| A10R718          | 315-0562-00        |                      |         | RES,FXD,FILM:5.6K OHM,5%,0.25W           | TK1727    | SFR25 2322-181  |
| A10R722          | 315-0332-00        |                      |         | RES,FXD,FILM:3.3K OHM,5%,0.25W           | TK1727    | SFR25 2322-181  |
| A10R730          | 307-0909-00        |                      |         | RES NTWK,FXD,FI:(4)10K OHM,5%,0.25W EACH | 80009     | 307090900       |
| A10R732          | 307-0909-00        |                      |         | RES NTWK,FXD,FI:(4)10K OHM,5%,0.25W EACH | 80009     | 307090900       |
| A10R740          | 315-0242-00        |                      |         | RES,FXD,FILM:2.4K OHM,5%,0.25W           | TK1727    | SFR25 2322-181  |
| A10R742          | 315-0332-00        | J301393              | J302162 | RES,FXD,FILM:3.3K OHM,5%,0.25W           | TK1727    | SFR25 2322-181  |

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|------------------|--------------------|----------------------|---------|--|-----------|----------------|
| A10R742          | 315-0471-00        | J302163              |         | RES,FXD,FILM:470 OHM,5%,0.25W              | TK1727    | SFR25 2322-181 |
| A10R750          | 307-0923-00        |                      |         | RES NTWK,FXD,FI:(8)330K OHM,5%,0.125W      | 80009     | 307092300      |
| A10R752          | 315-0334-00        |                      |         | RES,FXD,FILM:330K OHM,5%,0.25W             | TK1727    | SFR25 2322-181 |
| A10R1000         | 315-0100-00        |                      |         | RES,FXD,FILM:10 OHM,5%,0.25W               | TK1727    | SFR25 2322-182 |
| A10TP250         | 214-0579-00        |                      |         | TERM,TEST POINT:PCB,TEST POINT;EYELET      | 0J260     | ORDER BY DESC  |
| A10TP460         | 214-0579-00        |                      |         | TERM,TEST POINT:PCB,TEST POINT;EYELET      | 0J260     | ORDER BY DESC  |
| A10TP708         | 214-0579-00        |                      |         | TERM,TEST POINT:PCB,TEST POINT;EYELET      | 0J260     | ORDER BY DESC  |
| A10U200          | 156-2793-00        |                      |         | MICROCKT,LINEAR:OPERATIONAL,BIFET          | 80009     | 156279300      |
| A10U205          | 156-2793-00        |                      |         | MICROCKT,LINEAR:OPERATIONAL,BIFET          | 80009     | 156279300      |
| A10U210          | 156-2793-00        |                      |         | MICROCKT,LINEAR:OPERATIONAL,BIFET          | 80009     | 156279300      |
| A10U215          | 156-2832-01        | J301393              | J301852 | MICROCKT,DGTL:OP AMP,BIFET                 | TK0AB     | LF411CN        |
| A10U215          | 156-3756-00        | J301753              |         | IC,LINEAR:BIFET,OP-AMP;LOW NOISE,PRECISION | 24355     | AD711KN        |
| A10U220          | 156-2793-00        |                      |         | MICROCKT,LINEAR:OPERATIONAL,BIFET          | 80009     | 156279300      |
| A10U225          | 156-2832-01        | J301393              | J301752 | MICROCKT,DGTL:OP AMP,BIFET                 | TK0AB     | LF411CN        |
| A10U225          | 156-3756-00        | J301753              |         | IC,LINEAR:BIFET,OP-AMP;LOW NOISE,PRECISION | 24355     | AD711KN        |
| A10U230          | 156-2832-01        |                      |         | MICROCKT,DGTL:OP AMP,BIFET                 | TK0AB     | LF411CN        |
| A10U240          | 156-2832-01        |                      |         | MICROCKT,DGTL:OP AMP,BIFET                 | TK0AB     | LF411CN        |
| A10U250          | 156-2832-01        | J301393              | J301752 | MICROCKT,DGTL:OP AMP,BIFET                 | TK0AB     | LF411CN        |
| A10U250          | 156-3756-00        | J301753              |         | IC,LINEAR:BIFET,OP-AMP;LOW NOISE,PRECISION | 24355     | AD711KN        |
| A10U255          | 156-2832-01        | J301393              | J301752 | MICROCKT,DGTL:OP AMP,BIFET                 | TK0AB     | LF411CN        |
| A10U255          | 156-3756-00        | J301753              |         | IC,LINEAR:BIFET,OP-AMP;LOW NOISE,PRECISION | 24355     | AD711KN        |
| A10U260          | 156-2832-01        |                      |         | MICROCKT,DGTL:OP AMP,BIFET                 | TK0AB     | LF411CN        |
| A10U270          | 156-0515-00        |                      |         | IC,MISC:CMOS,ANALOG MUX;TRIPLE SPDT        | 04713     | MC14053BCP     |
| A10U340          | 156-2836-00        |                      |         | IC,DIGITAL:HCMOS,GATE;QUAD 2-INPUT XOR     | 80009     | 156283600      |
| A10U350          | 156-1152-00        |                      |         | IC,DIGITAL:CMOS,MULTIVIBRATOR;DUAL         | 04713     | MC14538BCL     |
| A10U400          | 156-2793-00        |                      |         | MICROCKT,LINEAR:OPERATIONAL,BIFET          | 80009     | 156279300      |
| A10U410          | 156-2793-00        |                      |         | MICROCKT,LINEAR:OPERATIONAL,BIFET          | 80009     | 156279300      |
| A10U420          | 156-2793-00        |                      |         | MICROCKT,LINEAR:OPERATIONAL,BIFET          | 80009     | 156279300      |
| A10U430          | 156-0514-00        |                      |         | IC,MISC:CMOS,ANALOG MUX;DUAL 4 CHANNEL     | 04713     | MC14052BCP     |
| A10U440          | 156-0514-00        |                      |         | IC,MISC:CMOS,ANALOG MUX;DUAL 4 CHANNEL     | 04713     | MC14052BCP     |
| A10U450          | 156-2832-01        | J301393              | J301752 | MICROCKT,DGTL:OP AMP,BIFET                 | TK0AB     | LF411CN        |
| A10U450          | 156-3756-00        | J301753              |         | IC,LINEAR:BIFET,OP-AMP;LOW NOISE,PRECISION | 24355     | AD711KN        |
| A10U460          | 156-2832-01        |                      |         | MICROCKT,DGTL:OP AMP,BIFET                 | TK0AB     | LF411CN        |
| A10U470          | 156-0514-00        |                      |         | IC,MISC:CMOS,ANALOG MUX;DUAL 4 CHANNEL     | 04713     | MC14052BCP     |
| A10U480          | 156-0495-00        |                      |         | IC,LINEAR:BIPOLAR,OP-AMP;QUAD,SINGLE       | 01295     | LM324N         |
| A10U490          | 156-2832-01        | J301393              | J301752 | MICROCKT,DGTL:OP AMP,BIFET                 | TK0AB     | LF411CN        |
| A10U490          | 156-3756-00        | J301753              |         | IC,LINEAR:BIFET,OP-AMP;LOW NOISE,PRECISION | 24355     | AD711KN        |
| A10U500          | 156-2793-00        |                      |         | MICROCKT,LINEAR:OPERATIONAL,BIFET          | 80009     | 156279300      |
| A10U560          | 156-1784-00        |                      |         | MICROCKT,LINEAR:DUAL COMPARATOR            | 80009     | 156178400      |
| A10U565          | 156-1784-00        |                      |         | MICROCKT,LINEAR:DUAL COMPARATOR            | 80009     | 156178400      |

| Component Number | Tektronix Part No. | Serial No. |         | Name & Description                         | Mfr. Code | Mfr. Part No. |
|------------------|--------------------|------------|---------|--|-----------|---------------|
|                  |                    | Effective  | Dscont  |  |           |               |
| A10U570          | 156-1828-00        |            |         | MICROCKT,DGTL:C2MOS,DUAL D-TYPE FLIP FLOP  | 80009     | 156182800     |
| A10U700          | 156-0402-04        |            |         | MICROCKT,LINEAR:TIMER                      | 80009     | 156040204     |
| A10U720          | 156-1827-00        |            |         | MICROCKT,DGTL:C2MOS,3 LINE TO 8 LINE       | 80009     | 156182700     |
| A10U730          | 156-1822-00        | J301393    | J302394 | MICROCKT,DGTL:C2MOS,8 BIT ADDRESSABLE      | 80009     | 156182200     |
| A10U730          | 156-2824-00        | J302395    |         | IC,DIGITAL:HCMOS,LATCH;8-BIT ADDRESSABLE   | 01295     | SN74HC259N    |
| A10U740          | 156-1822-00        | J301393    | J302394 | MICROCKT,DGTL:C2MOS,8 BIT ADDRESSABLE      | 80009     | 156182200     |
| A10U740          | 156-2824-00        | J302395    |         | IC,DIGITAL:HCMOS,LATCH;8-BIT ADDRESSABLE   | 01295     | SN74HC259N    |
| A10U745          | 156-2903-00        |            |         | MICROCKT,DGTL:8 UNIT DARLINGTON XSTR       | 80009     | 156290300     |
| A10U750          | 156-1822-00        | J301393    | J302394 | MICROCKT,DGTL:C2MOS,8 BIT ADDRESSABLE      | 80009     | 156182200     |
| A10U750          | 156-2824-00        | J302395    |         | IC,DIGITAL:HCMOS,LATCH;8-BIT ADDRESSABLE   | 01295     | SN74HC259N    |
| A10U755          | 156-2903-00        |            |         | MICROCKT,DGTL:8 UNIT DARLINGTON XSTR       | 80009     | 156290300     |
| A10U760          | 156-1822-00        | J301393    | J302394 | MICROCKT,DGTL:C2MOS,8 BIT ADDRESSABLE      | 80009     | 156182200     |
| A10U760          | 156-2824-00        | J302395    |         | IC,DIGITAL:HCMOS,LATCH;8-BIT ADDRESSABLE   | 01295     | SN74HC259N    |
| A10U765          | 156-2903-00        |            |         | MICROCKT,DGTL:8 UNIT DARLINGTON XSTR       | 80009     | 156290300     |
| A10U770          | 156-1822-00        | J301393    | J302394 | MICROCKT,DGTL:C2MOS,8 BIT ADDRESSABLE      | 80009     | 156182200     |
| A10U770          | 156-2824-00        | J302395    |         | IC,DIGITAL:HCMOS,LATCH;8-BIT ADDRESSABLE   | 01295     | SN74HC259N    |
| A10U775          | 156-2903-00        |            |         | MICROCKT,DGTL:8 UNIT DARLINGTON XSTR       | 80009     | 156290300     |
| A10VR200         | 152-0395-00        |            |         | DIODE,ZENER::;4.3V,5%,0.4W                 | 04713     | 1N749ARL      |
| A10VR202         | 152-0395-00        |            |         | DIODE,ZENER::;4.3V,5%,0.4W                 | 04713     | 1N749ARL      |
| A10VR400         | 152-0175-00        |            |         | DIODE,ZENER::;5.6V,5%,0.4W                 | 04713     | SZG35008      |
| A10VR402         | 152-0175-00        |            |         | DIODE,ZENER::;5.6V,5%,0.4W                 | 04713     | SZG35008      |
| A10VR530         | 152-0168-00        |            |         | DIODE,ZENER::;12V,5%,0.4W                  | 04713     | 1N963BRL      |
| A10VR534         | 152-0166-00        |            |         | DIODE,ZENER::;6.2V,5%,0.4W                 | 04713     | 1N5995BRL     |
| A10W105          | 196-3275-00        |            |         | LEAD,ELECTRICAL:18 AWG,27.0 L,0-8 W/FASTON | 80009     | 196327500     |
| A10W160          | 198-5466-00        |            |         | WIRE SET,ELEC:                             | 80009     | 198546600     |
| A10W700          | 175-0733-00        | J301753    |         | WIRE,ELECTRICAL:STRD,26 AWG,150V           | TK0770    | 15640-000     |

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| Component Number | Tektronix Part No. | Serial No. |         | Name & Description                          | Mfr. Code | Mfr. Part No.  |
|------------------|--------------------|------------|---------|---|-----------|----------------|
|                  |                    | Effective  | Dscont  |   |           |                |
| A11              | 671-1152-XX        |            |         | CIRCUIT BD ASSY:MAIN KEY                    | 80009     | 6711152XX      |
| A11C10           | 290-1007-00        |            |         | CAP,FXD,ELCTLT:22UF,20%,16V                 | 80009     | 290100700      |
| A11C20           | 290-1007-00        |            |         | CAP,FXD,ELCTLT:22UF,20%,16V                 | 80009     | 290100700      |
| A11C30           | 290-1007-00        |            |         | CAP,FXD,ELCTLT:22UF,20%,16V                 | 80009     | 290100700      |
| A11C100          | 281-0775-00        |            |         | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA   |
| A11CR210         | 152-0327-00        |            |         | SEMICON DVC,DI:SIG,SI,100MA,75V             | 80009     | 152032700      |
| A11CR211         | 152-0327-00        |            |         | SEMICON DVC,DI:SIG,SI,100MA,75V             | 80009     | 152032700      |
| A11CR212         | 152-0327-00        |            |         | SEMICON DVC,DI:SIG,SI,100MA,75V             | 80009     | 152032700      |
| A11CR213         | 152-0327-00        |            |         | SEMICON DVC,DI:SIG,SI,100MA,75V             | 80009     | 152032700      |
| A11CR214         | 152-0327-00        |            |         | SEMICON DVC,DI:SIG,SI,100MA,75V             | 80009     | 152032700      |
| A11CR215         | 152-0327-00        |            |         | SEMICON DVC,DI:SIG,SI,100MA,75V             | 80009     | 152032700      |
| A11CR216         | 152-0327-00        |            |         | SEMICON DVC,DI:SIG,SI,100MA,75V             | 80009     | 152032700      |
| A11CR217         | 152-0327-00        |            |         | SEMICON DVC,DI:SIG,SI,100MA,75V             | 80009     | 152032700      |
| A11CR218         | 152-0327-00        |            |         | SEMICON DVC,DI:SIG,SI,100MA,75V             | 80009     | 152032700      |
| A11CR219         | 152-0327-00        |            |         | SEMICON DVC,DI:SIG,SI,100MA,75V             | 80009     | 152032700      |
| A11CR220         | 152-0327-00        |            |         | SEMICON DVC,DI:SIG,SI,100MA,75V             | 80009     | 152032700      |
| A11CR221         | 152-0327-00        |            |         | SEMICON DVC,DI:SIG,SI,100MA,75V             | 80009     | 152032700      |
| A11L10           | 108-0948-00        | J301393    | J301877 | COIL,RF:FIXED,100UH,10%                     | 80009     | 108094800      |
| A11L10           | 108-1506-00        | J301878    |         | INDUCTOR,FXD:SIGNAL;100UH,10%               | 80009     | 108150600      |
| A11L20           | 108-0948-00        | J301393    | J301877 | COIL,RF:FIXED,100UH,10%                     | 80009     | 108094800      |
| A11L20           | 108-1506-00        | J301878    |         | INDUCTOR,FXD:SIGNAL;100UH,10%               | 80009     | 108150600      |
| A11L30           | 108-0948-00        | J301393    | J301877 | COIL,RF:FIXED,100UH,10%                     | 80009     | 108094800      |
| A11L30           | 108-1506-00        | J301878    |         | INDUCTOR,FXD:SIGNAL;100UH,10%               | 80009     | 108150600      |
| A11P100          | 131-3656-01        |            |         | CONN,RCPT,ELEC:HEADER,STR,15 PIN,0.1 SP     | S4549     | PS-15PA-S4T1-P |
| A11P120          | 131-3656-01        |            |         | CONN,RCPT,ELEC:HEADER,STR,15 PIN,0.1 SP     | S4549     | PS-15PA-S4T1-P |
| A11R110          | 315-0334-00        |            |         | RES,FXD,FILM:330K OHM,5%,0.25W              | TK1727    | SFR25 2322-181 |
| A11R111          | 315-0334-00        |            |         | RES,FXD,FILM:330K OHM,5%,0.25W              | TK1727    | SFR25 2322-181 |
| A11R112          | 315-0334-00        |            |         | RES,FXD,FILM:330K OHM,5%,0.25W              | TK1727    | SFR25 2322-181 |
| A11R113          | 315-0334-00        |            |         | RES,FXD,FILM:330K OHM,5%,0.25W              | TK1727    | SFR25 2322-181 |
| A11R114          | 315-0334-00        |            |         | RES,FXD,FILM:330K OHM,5%,0.25W              | TK1727    | SFR25 2322-181 |
| A11R115          | 315-0334-00        |            |         | RES,FXD,FILM:330K OHM,5%,0.25W              | TK1727    | SFR25 2322-181 |
| A11R116          | 315-0334-00        |            |         | RES,FXD,FILM:330K OHM,5%,0.25W              | TK1727    | SFR25 2322-181 |
| A11R117          | 315-0334-00        |            |         | RES,FXD,FILM:330K OHM,5%,0.25W              | TK1727    | SFR25 2322-181 |
| A11R118          | 315-0334-00        |            |         | RES,FXD,FILM:330K OHM,5%,0.25W              | TK1727    | SFR25 2322-181 |
| A11R119          | 315-0334-00        |            |         | RES,FXD,FILM:330K OHM,5%,0.25W              | TK1727    | SFR25 2322-181 |
| A11R120          | 315-0334-00        |            |         | RES,FXD,FILM:330K OHM,5%,0.25W              | TK1727    | SFR25 2322-181 |
| A11R121          | 315-0334-00        |            |         | RES,FXD,FILM:330K OHM,5%,0.25W              | TK1727    | SFR25 2322-181 |
| A11R122          | 315-0334-00        |            |         | RES,FXD,FILM:330K OHM,5%,0.25W              | TK1727    | SFR25 2322-181 |
| A11R123          | 315-0334-00        |            |         | RES,FXD,FILM:330K OHM,5%,0.25W              | TK1727    | SFR25 2322-181 |
| A11R124          | 315-0334-00        |            |         | RES,FXD,FILM:330K OHM,5%,0.25W              | TK1727    | SFR25 2322-181 |



| Component Number | Tektronix Part No. | Serial No. Effective | Dscont | Name & Description                          | Mfr. Code | Mfr. Part No.  |
|------------------|--------------------|----------------------|--------|---|-----------|----------------|
| A11R125          | 315-0334-00        |                      |        | RES,FXD,FILM:330K OHM,5%,0.25W              | TK1727    | SFR25 2322-181 |
| A11R126          | 315-0334-00        |                      |        | RES,FXD,FILM:330K OHM,5%,0.25W              | TK1727    | SFR25 2322-181 |
| A11R127          | 315-0334-00        |                      |        | RES,FXD,FILM:330K OHM,5%,0.25W              | TK1727    | SFR25 2322-181 |
| A11R128          | 315-0334-00        |                      |        | RES,FXD,FILM:330K OHM,5%,0.25W              | TK1727    | SFR25 2322-181 |
| A11R130          | 315-0102-00        |                      |        | RES,FXD,FILM:1K OHM,5%,0.25W                | TK1727    | SFR25 2322-181 |
| A11R131          | 315-0102-00        |                      |        | RES,FXD,FILM:1K OHM,5%,0.25W                | TK1727    | SFR25 2322-181 |
| A11R132          | 315-0102-00        |                      |        | RES,FXD,FILM:1K OHM,5%,0.25W                | TK1727    | SFR25 2322-181 |
| A11R133          | 315-0102-00        |                      |        | RES,FXD,FILM:1K OHM,5%,0.25W                | TK1727    | SFR25 2322-181 |
| A11R134          | 315-0102-00        |                      |        | RES,FXD,FILM:1K OHM,5%,0.25W                | TK1727    | SFR25 2322-181 |
| A11R135          | 315-0102-00        |                      |        | RES,FXD,FILM:1K OHM,5%,0.25W                | TK1727    | SFR25 2322-181 |
| A11R136          | 315-0102-00        |                      |        | RES,FXD,FILM:1K OHM,5%,0.25W                | TK1727    | SFR25 2322-181 |
| A11R137          | 315-0102-00        |                      |        | RES,FXD,FILM:1K OHM,5%,0.25W                | TK1727    | SFR25 2322-181 |
| A11R300          | 315-0153-00        |                      |        | RES,FXD,FILM:15K OHM,5%,0.25W               | TK1727    | SFR25 2322-181 |
| A11R302          | 311-2457-00        |                      |        | RES,VAR,NONWW:PNL,10K OHM,1/2W,20%          | 80009     | 311245700      |
| A11R304          | 315-0153-00        |                      |        | RES,FXD,FILM:15K OHM,5%,0.25W               | TK1727    | SFR25 2322-181 |
| A11R310          | 315-0153-00        |                      |        | RES,FXD,FILM:15K OHM,5%,0.25W               | TK1727    | SFR25 2322-181 |
| A11R312          | 311-2457-00        |                      |        | RES,VAR,NONWW:PNL,10K OHM,1/2W,20%          | 80009     | 311245700      |
| A11R314          | 315-0153-00        |                      |        | RES,FXD,FILM:15K OHM,5%,0.25W               | TK1727    | SFR25 2322-181 |
| A11R320          | 315-0153-00        |                      |        | RES,FXD,FILM:15K OHM,5%,0.25W               | TK1727    | SFR25 2322-181 |
| A11R322          | 311-2457-00        |                      |        | RES,VAR,NONWW:PNL,10K OHM,1/2W,20%          | 80009     | 311245700      |
| A11R324          | 315-0153-00        |                      |        | RES,FXD,FILM:15K OHM,5%,0.25W               | TK1727    | SFR25 2322-181 |
| A11R330          | 311-2457-00        |                      |        | RES,VAR,NONWW:PNL,10K OHM,1/2W,20%          | 80009     | 311245700      |
| A11R340          | 311-2457-00        |                      |        | RES,VAR,NONWW:PNL,10K OHM,1/2W,20%          | 80009     | 311245700      |
| A11R350          | 311-2456-00        |                      |        | RES,VAR,NONWW:PNL,10K OHM,1/2W,20%          | 80009     | 311245600      |
| A11R360          | 311-2456-00        |                      |        | RES,VAR,NONWW:PNL,10K OHM,1/2W,20%          | 80009     | 311245600      |
| A11R370          | 311-2456-00        |                      |        | RES,VAR,NONWW:PNL,10K OHM,1/2W,20%          | 80009     | 311245600      |
| A11S210          | 260-2325-00        |                      |        | SWITCH,ROTARY:4 BITS,GRAY                   | 80009     | 260232500      |
| A11S220          | 260-2325-00        |                      |        | SWITCH,ROTARY:4 BITS,GRAY                   | 80009     | 260232500      |
| A11S230          | 260-2325-00        |                      |        | SWITCH,ROTARY:4 BITS,GRAY                   | 80009     | 260232500      |
| A11U120          | 156-2300-00        |                      |        | IC,DIGITAL:HCMOS,TRANSCEIVER;OCTAL          | 80009     | 156230000      |
| A11U140          | 156-2316-00        |                      |        | IC,DIGITAL:HCMOS,DEMUX/DECODER;3-TO-8       | 80009     | 156231600      |
| A11U160          | 156-2316-00        |                      |        | IC,DIGITAL:HCMOS,DEMUX/DECODER;3-TO-8       | 80009     | 156231600      |
| A11U170          | 156-2316-00        |                      |        | IC,DIGITAL:HCMOS,DEMUX/DECODER;3-TO-8       | 80009     | 156231600      |
| A11U180          | 156-2825-00        |                      |        | IC,DIGITAL:HCMOS,DEMUX/DECODER;DUAL         | 80009     | 156282500      |
| A11U190          | 156-2316-00        |                      |        | IC,DIGITAL:HCMOS,DEMUX/DECODER;3-TO-8       | 80009     | 156231600      |
| A11W110          | 174-0293-00        |                      |        | CA ASSY,SPELEC:40,28 AWG,4.3 L,RIBBON       | 80009     | 174029300      |
| A11W111          | 196-3096-00        |                      |        | LEAD,ELECTRICAL:18 AWG,3.5 L,5-4            | 80009     | 196309600      |
| A11W112          | 196-3096-00        |                      |        | LEAD,ELECTRICAL:18 AWG,3.5 L,5-4            | 80009     | 196309600      |
| A12              | 671-1149-02        |                      |        | CIRCUIT BD ASSY:SUB KEY                     | 80009     | 671114902      |
| A12C10           | 281-0775-00        |                      |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA   |

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| Component Number | Tektronix Part No. | Serial No. Effective | Dscont | Name & Description                          | Mfr. Code | Mfr. Part No. |
|------------------|--------------------|----------------------|--------|---|-----------|---------------|
| A12C170          | 281-0775-00        |                      |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA  |
| A12CR300         | 152-0327-00        |                      |        | SEMICON DVC,DI:SIG,SI,100MA,75V             | 80009     | 152032700     |
| A12CR301         | 152-0327-00        |                      |        | SEMICON DVC,DI:SIG,SI,100MA,75V             | 80009     | 152032700     |
| A12CR302         | 152-0327-00        |                      |        | SEMICON DVC,DI:SIG,SI,100MA,75V             | 80009     | 152032700     |
| A12CR303         | 152-0327-00        |                      |        | SEMICON DVC,DI:SIG,SI,100MA,75V             | 80009     | 152032700     |
| A12CR304         | 152-0327-00        |                      |        | SEMICON DVC,DI:SIG,SI,100MA,75V             | 80009     | 152032700     |
| A12CR305         | 152-0327-00        |                      |        | SEMICON DVC,DI:SIG,SI,100MA,75V             | 80009     | 152032700     |
| A12CR310         | 152-0327-00        |                      |        | SEMICON DVC,DI:SIG,SI,100MA,75V             | 80009     | 152032700     |
| A12CR311         | 152-0327-00        |                      |        | SEMICON DVC,DI:SIG,SI,100MA,75V             | 80009     | 152032700     |
| A12CR312         | 152-0327-00        |                      |        | SEMICON DVC,DI:SIG,SI,100MA,75V             | 80009     | 152032700     |
| A12CR313         | 152-0327-00        |                      |        | SEMICON DVC,DI:SIG,SI,100MA,75V             | 80009     | 152032700     |
| A12CR314         | 152-0327-00        |                      |        | SEMICON DVC,DI:SIG,SI,100MA,75V             | 80009     | 152032700     |
| A12CR315         | 152-0327-00        |                      |        | SEMICON DVC,DI:SIG,SI,100MA,75V             | 80009     | 152032700     |
| A12CR320         | 152-0327-00        |                      |        | SEMICON DVC,DI:SIG,SI,100MA,75V             | 80009     | 152032700     |
| A12CR321         | 152-0327-00        |                      |        | SEMICON DVC,DI:SIG,SI,100MA,75V             | 80009     | 152032700     |
| A12CR322         | 152-0327-00        |                      |        | SEMICON DVC,DI:SIG,SI,100MA,75V             | 80009     | 152032700     |
| A12CR323         | 152-0327-00        |                      |        | SEMICON DVC,DI:SIG,SI,100MA,75V             | 80009     | 152032700     |
| A12CR324         | 152-0327-00        |                      |        | SEMICON DVC,DI:SIG,SI,100MA,75V             | 80009     | 152032700     |
| A12CR325         | 152-0327-00        |                      |        | SEMICON DVC,DI:SIG,SI,100MA,75V             | 80009     | 152032700     |
| A12CR330         | 152-0327-00        |                      |        | SEMICON DVC,DI:SIG,SI,100MA,75V             | 80009     | 152032700     |
| A12CR331         | 152-0327-00        |                      |        | SEMICON DVC,DI:SIG,SI,100MA,75V             | 80009     | 152032700     |
| A12CR332         | 152-0327-00        |                      |        | SEMICON DVC,DI:SIG,SI,100MA,75V             | 80009     | 152032700     |
| A12CR333         | 152-0327-00        |                      |        | SEMICON DVC,DI:SIG,SI,100MA,75V             | 80009     | 152032700     |
| A12CR335         | 152-0327-00        |                      |        | SEMICON DVC,DI:SIG,SI,100MA,75V             | 80009     | 152032700     |
| A12CR340         | 152-0327-00        |                      |        | SEMICON DVC,DI:SIG,SI,100MA,75V             | 80009     | 152032700     |
| A12CR341         | 152-0327-00        |                      |        | SEMICON DVC,DI:SIG,SI,100MA,75V             | 80009     | 152032700     |
| A12CR342         | 152-0327-00        |                      |        | SEMICON DVC,DI:SIG,SI,100MA,75V             | 80009     | 152032700     |
| A12CR343         | 152-0327-00        |                      |        | SEMICON DVC,DI:SIG,SI,100MA,75V             | 80009     | 152032700     |
| A12CR344         | 152-0327-00        |                      |        | SEMICON DVC,DI:SIG,SI,100MA,75V             | 80009     | 152032700     |
| A12CR345         | 152-0327-00        |                      |        | SEMICON DVC,DI:SIG,SI,100MA,75V             | 80009     | 152032700     |
| A12CR350         | 152-0327-00        |                      |        | SEMICON DVC,DI:SIG,SI,100MA,75V             | 80009     | 152032700     |
| A12CR351         | 152-0327-00        |                      |        | SEMICON DVC,DI:SIG,SI,100MA,75V             | 80009     | 152032700     |
| A12CR353         | 152-0327-00        |                      |        | SEMICON DVC,DI:SIG,SI,100MA,75V             | 80009     | 152032700     |
| A12CR354         | 152-0327-00        |                      |        | SEMICON DVC,DI:SIG,SI,100MA,75V             | 80009     | 152032700     |
| A12CR355         | 152-0327-00        |                      |        | SEMICON DVC,DI:SIG,SI,100MA,75V             | 80009     | 152032700     |
| A12CR360         | 152-0327-00        |                      |        | SEMICON DVC,DI:SIG,SI,100MA,75V             | 80009     | 152032700     |
| A12CR361         | 152-0327-00        |                      |        | SEMICON DVC,DI:SIG,SI,100MA,75V             | 80009     | 152032700     |
| A12CR362         | 152-0327-00        |                      |        | SEMICON DVC,DI:SIG,SI,100MA,75V             | 80009     | 152032700     |
| A12CR363         | 152-0327-00        |                      |        | SEMICON DVC,DI:SIG,SI,100MA,75V             | 80009     | 152032700     |
| A12CR364         | 152-0327-00        |                      |        | SEMICON DVC,DI:SIG,SI,100MA,75V             | 80009     | 152032700     |

| Component Number | Tektronix Part No. | Serial No. |        | Name & Description              | Mfr. Code | Mfr. Part No. |
|------------------|--------------------|------------|--------|---------------------------------|-----------|---------------|
|                  |                    | Effective  | Dscont |                                 |           |               |
| A12CR365         | 152-0327-00        |            |        | SEMICON DVC,DI:SIG,SI,100MA,75V | 80009     | 152032700     |
| A12CR370         | 152-0327-00        |            |        | SEMICON DVC,DI:SIG,SI,100MA,75V | 80009     | 152032700     |
| A12CR371         | 152-0327-00        |            |        | SEMICON DVC,DI:SIG,SI,100MA,75V | 80009     | 152032700     |
| A12CR372         | 152-0327-00        |            |        | SEMICON DVC,DI:SIG,SI,100MA,75V | 80009     | 152032700     |
| A12CR373         | 152-0327-00        |            |        | SEMICON DVC,DI:SIG,SI,100MA,75V | 80009     | 152032700     |
| A12DS100         | 150-1179-00        |            |        | LT EMITTING DIO:GREEN           | 80009     | 150117900     |
| A12DS101         | 150-1179-00        |            |        | LT EMITTING DIO:GREEN           | 80009     | 150117900     |
| A12DS102         | 150-1179-00        |            |        | LT EMITTING DIO:GREEN           | 80009     | 150117900     |
| A12DS103         | 150-1179-00        |            |        | LT EMITTING DIO:GREEN           | 80009     | 150117900     |
| A12DS104         | 150-1179-00        |            |        | LT EMITTING DIO:GREEN           | 80009     | 150117900     |
| A12DS105         | 150-1175-00        |            |        | LT EMITTING DIO:YELLOW          | 80009     | 150117500     |
| A12DS106         | 150-1179-00        |            |        | LT EMITTING DIO:GREEN           | 80009     | 150117900     |
| A12DS107         | 150-1179-00        |            |        | LT EMITTING DIO:GREEN           | 80009     | 150117900     |
| A12DS110         | 150-1179-00        |            |        | LT EMITTING DIO:GREEN           | 80009     | 150117900     |
| A12DS111         | 150-1179-00        |            |        | LT EMITTING DIO:GREEN           | 80009     | 150117900     |
| A12DS112         | 150-1173-00        |            |        | LT EMITTING DIO:RED             | 80009     | 150117300     |
| A12DS113         | 150-1179-00        |            |        | LT EMITTING DIO:GREEN           | 80009     | 150117900     |
| A12DS114         | 150-1179-00        |            |        | LT EMITTING DIO:GREEN           | 80009     | 150117900     |
| A12DS115         | 150-1179-00        |            |        | LT EMITTING DIO:GREEN           | 80009     | 150117900     |
| A12DS116         | 150-1179-00        |            |        | LT EMITTING DIO:GREEN           | 80009     | 150117900     |
| A12DS117         | 150-1179-00        |            |        | LT EMITTING DIO:GREEN           | 80009     | 150117900     |
| A12DS120         | 150-1179-00        |            |        | LT EMITTING DIO:GREEN           | 80009     | 150117900     |
| A12DS121         | 150-1179-00        |            |        | LT EMITTING DIO:GREEN           | 80009     | 150117900     |
| A12DS122         | 150-1173-00        |            |        | LT EMITTING DIO:RED             | 80009     | 150117300     |
| A12DS123         | 150-1179-00        |            |        | LT EMITTING DIO:GREEN           | 80009     | 150117900     |
| A12DS124         | 150-1179-00        |            |        | LT EMITTING DIO:GREEN           | 80009     | 150117900     |
| A12DS125         | 150-1179-00        |            |        | LT EMITTING DIO:GREEN           | 80009     | 150117900     |
| A12DS126         | 150-1179-00        |            |        | LT EMITTING DIO:GREEN           | 80009     | 150117900     |
| A12DS127         | 150-1179-00        |            |        | LT EMITTING DIO:GREEN           | 80009     | 150117900     |
| A12DS130         | 150-1173-00        |            |        | LT EMITTING DIO:RED             | 80009     | 150117300     |
| A12DS131         | 150-1179-00        |            |        | LT EMITTING DIO:GREEN           | 80009     | 150117900     |
| A12DS132         | 150-1179-00        |            |        | LT EMITTING DIO:GREEN           | 80009     | 150117900     |
| A12DS133         | 150-1179-00        |            |        | LT EMITTING DIO:GREEN           | 80009     | 150117900     |
| A12DS134         | 150-1179-00        |            |        | LT EMITTING DIO:GREEN           | 80009     | 150117900     |
| A12DS135         | 150-1179-00        |            |        | LT EMITTING DIO:GREEN           | 80009     | 150117900     |
| A12DS136         | 150-1179-00        |            |        | LT EMITTING DIO:GREEN           | 80009     | 150117900     |
| A12DS137         | 150-1179-00        |            |        | LT EMITTING DIO:GREEN           | 80009     | 150117900     |
| A12DS140         | 150-1179-00        |            |        | LT EMITTING DIO:GREEN           | 80009     | 150117900     |
| A12DS141         | 150-1179-00        |            |        | LT EMITTING DIO:GREEN           | 80009     | 150117900     |
| A12DS142         | 150-1175-00        |            |        | LT EMITTING DIO:YELLOW          | 80009     | 150117500     |

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|------------------|--------------------|----------------------|--------|---------------------------------------|-----------|----------------|
| A12DS143         | 150-1179-00        |                      |        | LT EMITTING DIO:GREEN                 | 80009     | 150117900      |
| A12DS144         | 150-1179-00        |                      |        | LT EMITTING DIO:GREEN                 | 80009     | 150117900      |
| A12DS145         | 150-1179-00        |                      |        | LT EMITTING DIO:GREEN                 | 80009     | 150117900      |
| A12DS146         | 150-1179-00        |                      |        | LT EMITTING DIO:GREEN                 | 80009     | 150117900      |
| A12DS147         | 150-1179-00        |                      |        | LT EMITTING DIO:GREEN                 | 80009     | 150117900      |
| A12DS150         | 150-1175-00        |                      |        | LT EMITTING DIO:YELLOW                | 80009     | 150117500      |
| A12DS151         | 150-1179-00        |                      |        | LT EMITTING DIO:GREEN                 | 80009     | 150117900      |
| A12DS153         | 150-1179-00        |                      |        | LT EMITTING DIO:GREEN                 | 80009     | 150117900      |
| A12DS154         | 150-1173-00        |                      |        | LT EMITTING DIO:RED                   | 80009     | 150117300      |
| A12DS155         | 150-1173-00        |                      |        | LT EMITTING DIO:RED                   | 80009     | 150117300      |
| A12DS156         | 150-1179-00        |                      |        | LT EMITTING DIO:GREEN                 | 80009     | 150117900      |
| A12DS157         | 150-1179-00        |                      |        | LT EMITTING DIO:GREEN                 | 80009     | 150117900      |
| A12DS160         | 150-1179-00        |                      |        | LT EMITTING DIO:GREEN                 | 80009     | 150117900      |
| A12DS161         | 150-1179-00        |                      |        | LT EMITTING DIO:GREEN                 | 80009     | 150117900      |
| A12DS162         | 150-1179-00        |                      |        | LT EMITTING DIO:GREEN                 | 80009     | 150117900      |
| A12DS164         | 150-1179-00        |                      |        | LT EMITTING DIO:GREEN                 | 80009     | 150117900      |
| A12DS165         | 150-1179-00        |                      |        | LT EMITTING DIO:GREEN                 | 80009     | 150117900      |
| A12DS166         | 150-1179-00        |                      |        | LT EMITTING DIO:GREEN                 | 80009     | 150117900      |
| A12DS167         | 150-1179-00        |                      |        | LT EMITTING DIO:GREEN                 | 80009     | 150117900      |
| A12DS190         | 150-1174-00        |                      |        | LT EMITTING DIO:YELLOW,7 SEGMENT      | 80009     | 150117400      |
| A12DS200         | 150-1174-00        |                      |        | LT EMITTING DIO:YELLOW,7 SEGMENT      | 80009     | 150117400      |
| A12DS210         | 150-1174-00        |                      |        | LT EMITTING DIO:YELLOW,7 SEGMENT      | 80009     | 150117400      |
| A12DS220         | 150-1174-00        |                      |        | LT EMITTING DIO:YELLOW,7 SEGMENT      | 80009     | 150117400      |
| A12J100          | 131-3657-01        |                      |        | CONN,PLUG,ELEC:STR,15 PIN,0.1 SPACING | S4549     | PS-15SD-S4TS1  |
| A12J120          | 131-3657-01        |                      |        | CONN,PLUG,ELEC:STR,15 PIN,0.1 SPACING | S4549     | PS-15SD-S4TS1  |
| A12Q190          | 151-0190-00        |                      |        | TRANSISTOR,SIG:BIPOLAR,NPN;40V,200MA  | 04713     | 2N3904         |
| A12R10           | 315-0334-00        |                      |        | RES,FXD,FILM:330K OHM,5%,0.25W        | TK1727    | SFR25 2322-181 |
| A12R11           | 315-0334-00        |                      |        | RES,FXD,FILM:330K OHM,5%,0.25W        | TK1727    | SFR25 2322-181 |
| A12R12           | 315-0334-00        |                      |        | RES,FXD,FILM:330K OHM,5%,0.25W        | TK1727    | SFR25 2322-181 |
| A12R13           | 315-0334-00        |                      |        | RES,FXD,FILM:330K OHM,5%,0.25W        | TK1727    | SFR25 2322-181 |
| A12R14           | 315-0334-00        |                      |        | RES,FXD,FILM:330K OHM,5%,0.25W        | TK1727    | SFR25 2322-181 |
| A12R15           | 315-0334-00        |                      |        | RES,FXD,FILM:330K OHM,5%,0.25W        | TK1727    | SFR25 2322-181 |
| A12R16           | 315-0334-00        |                      |        | RES,FXD,FILM:330K OHM,5%,0.25W        | TK1727    | SFR25 2322-181 |
| A12R17           | 315-0334-00        |                      |        | RES,FXD,FILM:330K OHM,5%,0.25W        | TK1727    | SFR25 2322-181 |
| A12R18           | 315-0334-00        |                      |        | RES,FXD,FILM:330K OHM,5%,0.25W        | TK1727    | SFR25 2322-181 |
| A12R20           | 315-0334-00        |                      |        | RES,FXD,FILM:330K OHM,5%,0.25W        | TK1727    | SFR25 2322-181 |
| A12R21           | 315-0334-00        |                      |        | RES,FXD,FILM:330K OHM,5%,0.25W        | TK1727    | SFR25 2322-181 |
| A12R22           | 315-0334-00        |                      |        | RES,FXD,FILM:330K OHM,5%,0.25W        | TK1727    | SFR25 2322-181 |
| A12R30           | 315-0334-00        |                      |        | RES,FXD,FILM:330K OHM,5%,0.25W        | TK1727    | SFR25 2322-181 |
| A12R100          | 315-0301-00        |                      |        | RES,FXD,FILM:300 OHM,5%,0.25W         | TK1727    | SFR25 2322-181 |

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|------------------|--------------------|----------------------|--------|-------------------------------|-----------|----------------|
| A12R101          | 315-0301-00        |                      |        | RES,FXD,FILM:300 OHM,5%,0.25W | TK1727    | SFR25 2322-181 |
| A12R104          | 315-0301-00        |                      |        | RES,FXD,FILM:300 OHM,5%,0.25W | TK1727    | SFR25 2322-181 |
| A12R110          | 315-0301-00        |                      |        | RES,FXD,FILM:300 OHM,5%,0.25W | TK1727    | SFR25 2322-181 |
| A12R112          | 315-0301-00        |                      |        | RES,FXD,FILM:300 OHM,5%,0.25W | TK1727    | SFR25 2322-181 |
| A12R114          | 315-0301-00        |                      |        | RES,FXD,FILM:300 OHM,5%,0.25W | TK1727    | SFR25 2322-181 |
| A12R120          | 315-0301-00        |                      |        | RES,FXD,FILM:300 OHM,5%,0.25W | TK1727    | SFR25 2322-181 |
| A12R122          | 315-0301-00        |                      |        | RES,FXD,FILM:300 OHM,5%,0.25W | TK1727    | SFR25 2322-181 |
| A12R124          | 315-0301-00        |                      |        | RES,FXD,FILM:300 OHM,5%,0.25W | TK1727    | SFR25 2322-181 |
| A12R130          | 315-0301-00        |                      |        | RES,FXD,FILM:300 OHM,5%,0.25W | TK1727    | SFR25 2322-181 |
| A12R132          | 315-0301-00        |                      |        | RES,FXD,FILM:300 OHM,5%,0.25W | TK1727    | SFR25 2322-181 |
| A12R140          | 315-0301-00        |                      |        | RES,FXD,FILM:300 OHM,5%,0.25W | TK1727    | SFR25 2322-181 |
| A12R142          | 315-0301-00        |                      |        | RES,FXD,FILM:300 OHM,5%,0.25W | TK1727    | SFR25 2322-181 |
| A12R143          | 315-0301-00        |                      |        | RES,FXD,FILM:300 OHM,5%,0.25W | TK1727    | SFR25 2322-181 |
| A12R146          | 315-0301-00        |                      |        | RES,FXD,FILM:300 OHM,5%,0.25W | TK1727    | SFR25 2322-181 |
| A12R157          | 315-0301-00        |                      |        | RES,FXD,FILM:300 OHM,5%,0.25W | TK1727    | SFR25 2322-181 |
| A12R160          | 315-0301-00        |                      |        | RES,FXD,FILM:300 OHM,5%,0.25W | TK1727    | SFR25 2322-181 |
| A12R161          | 315-0301-00        |                      |        | RES,FXD,FILM:300 OHM,5%,0.25W | TK1727    | SFR25 2322-181 |
| A12R165          | 315-0301-00        |                      |        | RES,FXD,FILM:300 OHM,5%,0.25W | TK1727    | SFR25 2322-181 |
| A12R166          | 315-0301-00        |                      |        | RES,FXD,FILM:300 OHM,5%,0.25W | TK1727    | SFR25 2322-181 |
| A12R190          | 315-0301-00        |                      |        | RES,FXD,FILM:300 OHM,5%,0.25W | TK1727    | SFR25 2322-181 |
| A12R191          | 315-0301-00        |                      |        | RES,FXD,FILM:300 OHM,5%,0.25W | TK1727    | SFR25 2322-181 |
| A12R192          | 315-0301-00        |                      |        | RES,FXD,FILM:300 OHM,5%,0.25W | TK1727    | SFR25 2322-181 |
| A12R200          | 315-0301-00        |                      |        | RES,FXD,FILM:300 OHM,5%,0.25W | TK1727    | SFR25 2322-181 |
| A12R201          | 315-0301-00        |                      |        | RES,FXD,FILM:300 OHM,5%,0.25W | TK1727    | SFR25 2322-181 |
| A12R202          | 315-0301-00        |                      |        | RES,FXD,FILM:300 OHM,5%,0.25W | TK1727    | SFR25 2322-181 |
| A12R203          | 315-0301-00        |                      |        | RES,FXD,FILM:300 OHM,5%,0.25W | TK1727    | SFR25 2322-181 |
| A12R204          | 315-0301-00        |                      |        | RES,FXD,FILM:300 OHM,5%,0.25W | TK1727    | SFR25 2322-181 |
| A12R205          | 315-0301-00        |                      |        | RES,FXD,FILM:300 OHM,5%,0.25W | TK1727    | SFR25 2322-181 |
| A12R206          | 315-0301-00        |                      |        | RES,FXD,FILM:300 OHM,5%,0.25W | TK1727    | SFR25 2322-181 |
| A12R210          | 315-0301-00        |                      |        | RES,FXD,FILM:300 OHM,5%,0.25W | TK1727    | SFR25 2322-181 |
| A12R211          | 315-0301-00        |                      |        | RES,FXD,FILM:300 OHM,5%,0.25W | TK1727    | SFR25 2322-181 |
| A12R212          | 315-0301-00        |                      |        | RES,FXD,FILM:300 OHM,5%,0.25W | TK1727    | SFR25 2322-181 |
| A12R213          | 315-0301-00        |                      |        | RES,FXD,FILM:300 OHM,5%,0.25W | TK1727    | SFR25 2322-181 |
| A12R214          | 315-0301-00        |                      |        | RES,FXD,FILM:300 OHM,5%,0.25W | TK1727    | SFR25 2322-181 |
| A12R215          | 315-0301-00        |                      |        | RES,FXD,FILM:300 OHM,5%,0.25W | TK1727    | SFR25 2322-181 |
| A12R216          | 315-0301-00        |                      |        | RES,FXD,FILM:300 OHM,5%,0.25W | TK1727    | SFR25 2322-181 |
| A12R220          | 315-0301-00        |                      |        | RES,FXD,FILM:300 OHM,5%,0.25W | TK1727    | SFR25 2322-181 |
| A12R221          | 315-0301-00        |                      |        | RES,FXD,FILM:300 OHM,5%,0.25W | TK1727    | SFR25 2322-181 |
| A12R222          | 315-0301-00        |                      |        | RES,FXD,FILM:300 OHM,5%,0.25W | TK1727    | SFR25 2322-181 |
| A12R223          | 315-0301-00        |                      |        | RES,FXD,FILM:300 OHM,5%,0.25W | TK1727    | SFR25 2322-181 |

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|------------------|--------------------|----------------------|--------|-------------------------------|-----------|----------------|
| A12R224          | 315-0301-00        |                      |        | RES,FXD,FILM:300 OHM,5%,0.25W | TK1727    | SFR25 2322-181 |
| A12R225          | 315-0301-00        |                      |        | RES,FXD,FILM:300 OHM,5%,0.25W | TK1727    | SFR25 2322-181 |
| A12R226          | 315-0301-00        |                      |        | RES,FXD,FILM:300 OHM,5%,0.25W | TK1727    | SFR25 2322-181 |
| A12S300          | 260-2156-00        |                      |        | SWITCH,KEY:SPST               | 80009     | 260215600      |
| A12S301          | 260-2156-00        |                      |        | SWITCH,KEY:SPST               | 80009     | 260215600      |
| A12S302          | 260-2156-00        |                      |        | SWITCH,KEY:SPST               | 80009     | 260215600      |
| A12S303          | 260-2156-00        |                      |        | SWITCH,KEY:SPST               | 80009     | 260215600      |
| A12S304          | 260-2156-00        |                      |        | SWITCH,KEY:SPST               | 80009     | 260215600      |
| A12S305          | 260-2156-00        |                      |        | SWITCH,KEY:SPST               | 80009     | 260215600      |
| A12S310          | 260-2156-00        |                      |        | SWITCH,KEY:SPST               | 80009     | 260215600      |
| A12S311          | 260-2156-00        |                      |        | SWITCH,KEY:SPST               | 80009     | 260215600      |
| A12S312          | 260-2156-00        |                      |        | SWITCH,KEY:SPST               | 80009     | 260215600      |
| A12S313          | 260-2156-00        |                      |        | SWITCH,KEY:SPST               | 80009     | 260215600      |
| A12S314          | 260-2156-00        |                      |        | SWITCH,KEY:SPST               | 80009     | 260215600      |
| A12S315          | 260-2156-00        |                      |        | SWITCH,KEY:SPST               | 80009     | 260215600      |
| A12S320          | 260-2156-00        |                      |        | SWITCH,KEY:SPST               | 80009     | 260215600      |
| A12S321          | 260-2156-00        |                      |        | SWITCH,KEY:SPST               | 80009     | 260215600      |
| A12S322          | 260-2156-00        |                      |        | SWITCH,KEY:SPST               | 80009     | 260215600      |
| A12S323          | 260-2156-00        |                      |        | SWITCH,KEY:SPST               | 80009     | 260215600      |
| A12S324          | 260-2156-00        |                      |        | SWITCH,KEY:SPST               | 80009     | 260215600      |
| A12S325          | 260-2156-00        |                      |        | SWITCH,KEY:SPST               | 80009     | 260215600      |
| A12S330          | 260-2156-00        |                      |        | SWITCH,KEY:SPST               | 80009     | 260215600      |
| A12S331          | 260-2156-00        |                      |        | SWITCH,KEY:SPST               | 80009     | 260215600      |
| A12S332          | 260-2156-00        |                      |        | SWITCH,KEY:SPST               | 80009     | 260215600      |
| A12S333          | 260-2156-00        |                      |        | SWITCH,KEY:SPST               | 80009     | 260215600      |
| A12S335          | 260-2156-00        |                      |        | SWITCH,KEY:SPST               | 80009     | 260215600      |
| A12S340          | 260-2156-00        |                      |        | SWITCH,KEY:SPST               | 80009     | 260215600      |
| A12S341          | 260-2156-00        |                      |        | SWITCH,KEY:SPST               | 80009     | 260215600      |
| A12S342          | 260-2156-00        |                      |        | SWITCH,KEY:SPST               | 80009     | 260215600      |
| A12S343          | 260-2156-00        |                      |        | SWITCH,KEY:SPST               | 80009     | 260215600      |
| A12S344          | 260-2156-00        |                      |        | SWITCH,KEY:SPST               | 80009     | 260215600      |
| A12S345          | 260-2156-00        |                      |        | SWITCH,KEY:SPST               | 80009     | 260215600      |
| A12S350          | 260-2156-00        |                      |        | SWITCH,KEY:SPST               | 80009     | 260215600      |
| A12S351          | 260-2156-00        |                      |        | SWITCH,KEY:SPST               | 80009     | 260215600      |
| A12S353          | 260-2156-00        |                      |        | SWITCH,KEY:SPST               | 80009     | 260215600      |
| A12S354          | 260-2156-00        |                      |        | SWITCH,KEY:SPST               | 80009     | 260215600      |
| A12S355          | 260-2156-00        |                      |        | SWITCH,KEY:SPST               | 80009     | 260215600      |
| A12S360          | 260-2156-00        |                      |        | SWITCH,KEY:SPST               | 80009     | 260215600      |
| A12S361          | 260-2156-00        |                      |        | SWITCH,KEY:SPST               | 80009     | 260215600      |
| A12S362          | 260-2156-00        |                      |        | SWITCH,KEY:SPST               | 80009     | 260215600      |

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|------------------|--------------------|----------------------|--------|---------------------------------------|-----------|---------------|
| A12S363          | 260-2156-00        |                      |        | SWITCH,KEY:SPST                       | 80009     | 260215600     |
| A12S364          | 260-2156-00        |                      |        | SWITCH,KEY:SPST                       | 80009     | 260215600     |
| A12S365          | 260-2156-00        |                      |        | SWITCH,KEY:SPST                       | 80009     | 260215600     |
| A12S370          | 260-2156-00        |                      |        | SWITCH,KEY:SPST                       | 80009     | 260215600     |
| A12S371          | 260-2156-00        |                      |        | SWITCH,KEY:SPST                       | 80009     | 260215600     |
| A12S372          | 260-2156-00        |                      |        | SWITCH,KEY:SPST                       | 80009     | 260215600     |
| A12S373          | 260-2156-00        |                      |        | SWITCH,KEY:SPST                       | 80009     | 260215600     |
| A12U100          | 156-1822-00        |                      |        | MICROCKT,DGTL:C2MOS,8 BIT ADDRESSABLE | 80009     | 156182200     |
| A12U110          | 156-1822-00        |                      |        | MICROCKT,DGTL:C2MOS,8 BIT ADDRESSABLE | 80009     | 156182200     |
| A12U120          | 156-1822-00        |                      |        | MICROCKT,DGTL:C2MOS,8 BIT ADDRESSABLE | 80009     | 156182200     |
| A12U130          | 156-1822-00        |                      |        | MICROCKT,DGTL:C2MOS,8 BIT ADDRESSABLE | 80009     | 156182200     |
| A12U140          | 156-1822-00        |                      |        | MICROCKT,DGTL:C2MOS,8 BIT ADDRESSABLE | 80009     | 156182200     |
| A12U150          | 156-1822-00        |                      |        | MICROCKT,DGTL:C2MOS,8 BIT ADDRESSABLE | 80009     | 156182200     |
| A12U160          | 156-1822-00        |                      |        | MICROCKT,DGTL:C2MOS,8 BIT ADDRESSABLE | 80009     | 156182200     |
| A12U170          | 156-1822-00        |                      |        | MICROCKT,DGTL:C2MOS,8 BIT ADDRESSABLE | 80009     | 156182200     |
| A12U180          | 156-1822-00        |                      |        | MICROCKT,DGTL:C2MOS,8 BIT ADDRESSABLE | 80009     | 156182200     |
| A12U200          | 156-0795-01        |                      |        | IC,DIGITAL:CMOS,DEMUX/DECODER         | 04713     | MC14511 BCLD  |
| A12U210          | 156-0795-01        |                      |        | IC,DIGITAL:CMOS,DEMUX/DECODER         | 04713     | MC14511 BCLD  |
| A12U220          | 156-0795-01        |                      |        | IC,DIGITAL:CMOS,DEMUX/DECODER         | 04713     | MC14511 BCLD  |

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| A13              | 671-1238-XX        |                      |         | CIRCUIT BD ASSY:KEY INTERFACE               | 80009     | 6711238XX      |
| A13C10           | 290-1007-00        |                      |         | CAP,FXD,ELCTLT:22UF,20%,16V                 | 80009     | 290100700      |
| A13C60           | 281-0775-00        |                      |         | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA   |
| A13C70           | 281-0775-00        |                      |         | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA   |
| A13C80           | 281-0775-00        |                      |         | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA   |
| A13C130          | 281-0775-00        |                      |         | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA   |
| A13C140          | 281-0775-00        |                      |         | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA   |
| A13C160          | 281-0775-00        |                      |         | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA   |
| A13C170          | 281-0775-00        |                      |         | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA   |
| A13C172          | 281-0785-00        | J302629              |         | CAP,FXD,CERAMIC:MLC;68PF,10%,100V           | 80009     | 281078500      |
| A13C173          | 281-0785-00        | J302629              |         | CAP,FXD,CERAMIC:MLC;68PF,10%,100V           | 80009     | 281078500      |
| A13C180          | 281-0775-00        |                      |         | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA   |
| A13C190          | 281-0775-00        |                      |         | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA   |
| A13C200          | 281-0775-00        |                      |         | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA   |
| A13C210          | 281-0775-00        |                      |         | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA   |
| A13CR110         | 152-0327-00        |                      |         | SEMICON DVC,DI:SIG,SI,100MA,75V             | 80009     | 152032700      |
| A13CR111         | 152-0327-00        |                      |         | SEMICON DVC,DI:SIG,SI,100MA,75V             | 80009     | 152032700      |
| A13J100          | 131-3662-00        |                      |         | CONN,RCPT,ELEC:HEADER,2 X 17                | 80009     | 131366200      |
| A13J130          | 131-2944-00        |                      |         | CONN,RCPT,ELEC:HEADER,STRAIGHT,2 X 15       | 80009     | 131294400      |
| A13J131          | 131-5027-00        |                      |         | CONN,HDR:HEADER,2 X 15 RTANG,0.1 CTR        | 80009     | 131502700      |
| A13J142          | 131-3662-00        |                      |         | CONN,RCPT,ELEC:HEADER,2 X 17                | 80009     | 131366200      |
| A13L10           | 108-0948-00        | J301393              | J301877 | COIL,RF:FIXED,100UH,10%                     | 80009     | 108094800      |
| A13L10           | 108-1506-00        | J301878              |         | INDUCTOR,FXD:SIGNAL;100UH,10%               | 80009     | 108150600      |
| A13R60           | 307-0913-00        |                      |         | RES NTWK,FXD,FI:(8)4.7K OHM,5%,0.125W EACH  | 80009     | 307091300      |
| A13R101          | 307-0923-00        |                      |         | RES NTWK,FXD,FI:(8)330K OHM,5%,0.125W       | 80009     | 307092300      |
| A13R102          | 307-0923-00        |                      |         | RES NTWK,FXD,FI:(8)330K OHM,5%,0.125W       | 80009     | 307092300      |
| A13R103          | 307-0923-00        |                      |         | RES NTWK,FXD,FI:(8)330K OHM,5%,0.125W       | 80009     | 307092300      |
| A13R105          | 307-0923-00        |                      |         | RES NTWK,FXD,FI:(8)330K OHM,5%,0.125W       | 80009     | 307092300      |
| A13R110          | 315-0202-00        |                      |         | RES,FXD,FILM:2K OHM,5%,0.25W                | TK1727    | SFR25 2322-181 |
| A13R202          | 315-0103-00        |                      |         | RES,FXD,FILM:10K OHM,5%,0.25W               | TK1727    | SFR25 2322-181 |
| A13R204          | 315-0104-00        |                      |         | RES,FXD,FILM:100K OHM,5%,0.25W              | TK1727    | SFR25 2322-181 |
| A13R212          | 315-0103-00        |                      |         | RES,FXD,FILM:10K OHM,5%,0.25W               | TK1727    | SFR25 2322-181 |
| A13R214          | 315-0104-00        |                      |         | RES,FXD,FILM:100K OHM,5%,0.25W              | TK1727    | SFR25 2322-181 |
| A13U60           | 156-2300-00        |                      |         | IC,DIGITAL:HCMOS,TRANSCEIVER;OCTAL          | 80009     | 156230000      |
| A13U70           | 156-1821-00        |                      |         | MICROCKT,DGTL:C2MOS,HEX NON-INVERTING       | 80009     | 156182100      |
| A13U80           | 156-1822-00        | J301393              | J302394 | MICROCKT,DGTL:C2MOS,8 BIT ADDRESSABLE       | 80009     | 156182200      |
| A13U80           | 156-2824-00        | J302395              |         | IC,DIGITAL:HCMOS,LATCH;8-BIT ADDRESSABLE    | 01295     | SN74HC259N     |
| A13U90           | 156-1822-00        | J301393              | J302394 | MICROCKT,DGTL:C2MOS,8 BIT ADDRESSABLE       | 80009     | 156182200      |
| A13U90           | 156-2824-00        | J302395              |         | IC,DIGITAL:HCMOS,LATCH;8-BIT ADDRESSABLE    | 01295     | SN74HC259N     |
| A13U100          | 156-2300-00        |                      |         | IC,DIGITAL:HCMOS,TRANSCEIVER;OCTAL          | 80009     | 156230000      |



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|------------------|--------------------|------------|--------|---|-----------|---------------|
|                  |                    | Effective  | Dscont |   |           |               |
| A13U110          | 156-1821-00        |            |        | MICROCKT,DGTL:C2MOS,HEX NON-INVERTING     | 80009     | 156182100     |
| A13U120          | 156-1829-00        |            |        | MICROCKT,DGTL:C2MOS,GATE,QUAD 2 INP       | 80009     | 156182900     |
| A13U130          | 156-1828-00        |            |        | MICROCKT,DGTL:C2MOS,DUAL D-TYPE FLIP FLOP | 80009     | 156182800     |
| A13U140          | 156-2825-00        |            |        | IC,DIGITAL:HCMOS,DEMUX/DECODER;DUAL       | 80009     | 156282500     |
| A13U150          | 156-1818-00        |            |        | MICROCKT,DGTL:C2MOS,DUAL 4-BIT BINARY     | 80009     | 156181800     |
| A13U160          | 156-1818-00        |            |        | MICROCKT,DGTL:C2MOS,DUAL 4-BIT BINARY     | 80009     | 156181800     |
| A13U170          | 156-2796-00        |            |        | MICROCKT,DGTL:HEX INVERTER                | 80009     | 156279600     |
| A13U180          | 156-2792-00        |            |        | MICROCKT,DGTL:OCTAL D-F.F                 | 80009     | 156279200     |
| A13U190          | 156-2792-00        |            |        | MICROCKT,DGTL:OCTAL D-F.F                 | 80009     | 156279200     |

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|------------------|--------------------|----------------------|--------|---|-----------|----------------|
| A14              | 671-1115-XX        |                      |        | CIRCUIT BD ASSY:LOR KEY                     | 80009     | 6711115XX      |
| A14C100          | 281-0775-00        |                      |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA   |
| A14DS100         | 150-1176-00        |                      |        | LT EMITTING DIO:RED                         | 80009     | 150117600      |
| A14DS200         | 150-1179-00        |                      |        | LT EMITTING DIO:GREEN                       | 80009     | 150117900      |
| A14DS210         | 150-1179-00        |                      |        | LT EMITTING DIO:GREEN                       | 80009     | 150117900      |
| A14DS220         | 150-1179-00        |                      |        | LT EMITTING DIO:GREEN                       | 80009     | 150117900      |
| A14DS400         | 150-1176-00        |                      |        | LT EMITTING DIO:RED                         | 80009     | 150117600      |
| A14R100          | 315-0102-00        |                      |        | RES,FXD,FILM:1K OHM,5%,0.25W                | TK1727    | SFR25 2322-181 |
| A14R110          | 315-0102-00        |                      |        | RES,FXD,FILM:1K OHM,5%,0.25W                | TK1727    | SFR25 2322-181 |
| A14R120          | 315-0102-00        |                      |        | RES,FXD,FILM:1K OHM,5%,0.25W                | TK1727    | SFR25 2322-181 |
| A14R250          | 315-0301-00        |                      |        | RES,FXD,FILM:300 OHM,5%,0.25W               | TK1727    | SFR25 2322-181 |
| A14R400          | 315-0301-00        |                      |        | RES,FXD,FILM:300 OHM,5%,0.25W               | TK1727    | SFR25 2322-181 |
| A14S100          | 260-2156-00        |                      |        | SWITCH,KEY:SPST                             | 80009     | 260215600      |
| A14S110          | 260-2156-00        |                      |        | SWITCH,KEY:SPST                             | 80009     | 260215600      |
| A14S120          | 260-2156-00        |                      |        | SWITCH,KEY:SPST                             | 80009     | 260215600      |
| A14W100          | 131-0566-04        |                      |        | BUS,CONDUCTOR:DUMMY RES,18 OD X 3.2MM L     | 80009     | 131056604      |
| A14W140          | 174-1832-00        |                      |        | CA ASSY,SP,ELEC:14,28 AWG,23.0 L,RIBBON     | 80009     | 174183200      |

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|------------------|--------------------|------------|---------|---|-----------|----------------|
|                  |                    | Effective  | Dscont  |   |           |                |
| A15              | 671-1095-XX        |            |         | CIRCUIT BD ASSY:CONFIGURATION LED           | 80009     | 6711095XX      |
| A15C100          | 281-0775-00        |            |         | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA   |
| A15DS100         | 150-1179-00        |            |         | LT EMITTING DIO:GREEN                       | 80009     | 150117900      |
| A15DS110         | 150-1179-00        |            |         | LT EMITTING DIO:GREEN                       | 80009     | 150117900      |
| A15DS120         | 150-1179-00        |            |         | LT EMITTING DIO:GREEN                       | 80009     | 150117900      |
| A15DS130         | 150-1179-00        |            |         | LT EMITTING DIO:GREEN                       | 80009     | 150117900      |
| A15DS140         | 150-1179-00        |            |         | LT EMITTING DIO:GREEN                       | 80009     | 150117900      |
| A15DS150         | 150-1179-00        |            |         | LT EMITTING DIO:GREEN                       | 80009     | 150117900      |
| A15J200          | 131-0589-00        |            |         | TERMINAL,PIN:PRESSFIT/PCB,;MALE,STR         | 22526     | 48283-087      |
| A15J210          | 131-0589-00        |            |         | TERMINAL,PIN:PRESSFIT/PCB,;MALE,STR         | 22526     | 48283-087      |
| A15R100          | 315-0102-00        |            |         | RES,FXD,FILM:1K OHM,5%,0.25W                | TK1727    | SFR25 2322-181 |
| A15R110          | 315-0102-00        |            |         | RES,FXD,FILM:1K OHM,5%,0.25W                | TK1727    | SFR25 2322-181 |
| A15R160          | 315-0301-00        |            |         | RES,FXD,FILM:300 OHM,5%,0.25W               | TK1727    | SFR25 2322-181 |
| A15R170          | 315-0103-00        |            |         | RES,FXD,FILM:10K OHM,5%,0.25W               | TK1727    | SFR25 2322-181 |
| A15R180          | 315-0103-00        |            |         | RES,FXD,FILM:10K OHM,5%,0.25W               | TK1727    | SFR25 2322-181 |
| A15S100          | 260-2156-00        |            |         | SWITCH,KEY:SPST                             | 80009     | 260215600      |
| A15S110          | 260-2156-00        |            |         | SWITCH,KEY:SPST                             | 80009     | 260215600      |
| A15W100          | 131-0566-04        |            |         | BUS,CONDUCTOR:DUMMY RES,18 OD X 3.2MM L     | 80009     | 131056604      |
| A15W150          | 174-1775-00        | J301393    | J301497 | CA ASSY,SP,ELEC:16,26 AWG,18.0 L,RIBBON     | 80009     | 174177500      |
| A15W150          | 174-1775-01        | J301498    |         | CA ASSY,SP,ELEC:16,28 AWG,250MM L,RIBBON    | 80009     | 174177501      |

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| A18              | 670-9319-XX        |                      |         | CIRCUIT BD ASSY:CRT OUTPUT                  | 80009     | 6709319XX       |
| A18C50           | 290-0747-00        |                      |         | CAP,FXD,ELCTLT:100UF,+50-20%,25WVDC         | 0H1N5     | CE02W1E101F     |
| A18C52           | 290-0747-00        |                      |         | CAP,FXD,ELCTLT:100UF,+50-20%,25WVDC         | 0H1N5     | CE02W1E101F     |
| A18C60           | 281-0775-00        |                      |         | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA    |
| A18C62           | 281-0775-00        |                      |         | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA    |
| A18C70           | 281-0775-00        |                      |         | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA    |
| A18C82           | 281-0775-00        |                      |         | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA    |
| A18C100          | 283-0002-00        |                      |         | CAP,FXD,CER DI:0.01UF,+80-20%,500V          | 59660     | 811-590-Z5UO-10 |
| A18C102          | 283-0240-00        | J301393              | J302295 | CAP,FXD,CER DI:1PF,20%,500V                 | 80009     | 283024000       |
| A18C102          | 281-0538-00        | J302296              |         | CAP,FXD,CERAMIC:MLC;1PF,20%,500V            | TK2058    | DA12COG2H010M   |
| A18C104          | 283-0240-00        | J301393              | J302295 | CAP,FXD,CER DI:1PF,20%,500V                 | 80009     | 283024000       |
| A18C104          | 281-0538-00        | J302296              |         | CAP,FXD,CERAMIC:MLC;1PF,20%,500V            | TK2058    | DA12COG2H010M   |
| A18C106          | 283-0002-00        |                      |         | CAP,FXD,CER DI:0.01UF,+80-20%,500V          | 59660     | 811-590-Z5UO-10 |
| A18C120          | 281-0775-00        |                      |         | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA    |
| A18C122          | 283-0002-00        |                      |         | CAP,FXD,CER DI:0.01UF,+80-20%,500V          | 59660     | 811-590-Z5UO-10 |
| A18C200          | 283-0002-00        |                      |         | CAP,FXD,CER DI:0.01UF,+80-20%,500V          | 59660     | 811-590-Z5UO-10 |
| A18C202          | 283-0240-00        | J301393              | J302295 | CAP,FXD,CER DI:1PF,20%,500V                 | 80009     | 283024000       |
| A18C202          | 281-0538-00        | J302296              |         | CAP,FXD,CERAMIC:MLC;1PF,20%,500V            | TK2058    | DA12COG2H010M   |
| A18C204          | 283-0240-00        | J301393              | J302295 | CAP,FXD,CER DI:1PF,20%,500V                 | 80009     | 283024000       |
| A18C204          | 281-0538-00        | J302296              |         | CAP,FXD,CERAMIC:MLC;1PF,20%,500V            | TK2058    | DA12COG2H010M   |
| A18C206          | 283-0002-00        |                      |         | CAP,FXD,CER DI:0.01UF,+80-20%,500V          | 59660     | 811-590-Z5UO-10 |
| A18C220          | 281-0775-00        |                      |         | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA    |
| A18C222          | 283-0002-00        |                      |         | CAP,FXD,CER DI:0.01UF,+80-20%,500V          | 59660     | 811-590-Z5UO-10 |
| A18C300          | 281-0775-00        |                      |         | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA    |
| A18C302          | 283-0240-00        | J301393              | J302295 | CAP,FXD,CER DI:1PF,20%,500V                 | 80009     | 283024000       |
| A18C302          | 281-0538-00        | J302296              |         | CAP,FXD,CERAMIC:MLC;1PF,20%,500V            | TK2058    | DA12COG2H010M   |
| A18C304          | 283-0002-00        |                      |         | CAP,FXD,CER DI:0.01UF,+80-20%,500V          | 59660     | 811-590-Z5UO-10 |
| A18C306          | 283-0002-00        |                      |         | CAP,FXD,CER DI:0.01UF,+80-20%,500V          | 59660     | 811-590-Z5UO-10 |
| A18C400          | 283-0002-00        |                      |         | CAP,FXD,CER DI:0.01UF,+80-20%,500V          | 59660     | 811-590-Z5UO-10 |
| A18C420          | 283-0002-00        |                      |         | CAP,FXD,CER DI:0.01UF,+80-20%,500V          | 59660     | 811-590-Z5UO-10 |
| A18CR100         | 152-0832-00        |                      |         | SEMICON DVC,DI:SW,SI,50V,0.12A,DO-34        | 80009     | 152083200       |
| A18CR102         | 152-0322-00        |                      |         | DIODE,SIG:SCHTKY,;15V,410MVF AT 1MA,1.2PF   | 50434     | 5082-2672-T25   |
| A18CR104         | 152-0322-00        |                      |         | DIODE,SIG:SCHTKY,;15V,410MVF AT 1MA,1.2PF   | 50434     | 5082-2672-T25   |
| A18CR110         | 152-0832-00        |                      |         | SEMICON DVC,DI:SW,SI,50V,0.12A,DO-34        | 80009     | 152083200       |
| A18CR112         | 152-0832-00        |                      |         | SEMICON DVC,DI:SW,SI,50V,0.12A,DO-34        | 80009     | 152083200       |
| A18CR200         | 152-0832-00        |                      |         | SEMICON DVC,DI:SW,SI,50V,0.12A,DO-34        | 80009     | 152083200       |
| A18CR202         | 152-0322-00        |                      |         | DIODE,SIG:SCHTKY,;15V,410MVF AT 1MA,1.2PF   | 50434     | 5082-2672-T25   |
| A18CR204         | 152-0322-00        |                      |         | DIODE,SIG:SCHTKY,;15V,410MVF AT 1MA,1.2PF   | 50434     | 5082-2672-T25   |
| A18CR210         | 152-0832-00        |                      |         | SEMICON DVC,DI:SW,SI,50V,0.12A,DO-34        | 80009     | 152083200       |
| A18CR212         | 152-0832-00        |                      |         | SEMICON DVC,DI:SW,SI,50V,0.12A,DO-34        | 80009     | 152083200       |

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|------------------|--------------------|----------------------|--------|--|-----------|----------------|
| A18CR300         | 152-0832-00        |                      |        | SEMICON DVC,DI:SW,SI,50V,0.12A,DO-34     | 80009     | 152083200      |
| A18CR302         | 152-0832-00        |                      |        | SEMICON DVC,DI:SW,SI,50V,0.12A,DO-34     | 80009     | 152083200      |
| A18CR304         | 152-0832-00        |                      |        | SEMICON DVC,DI:SW,SI,50V,0.12A,DO-34     | 80009     | 152083200      |
| A18CR306         | 152-0322-00        |                      |        | DIODE,SIG:SCHTKY,;15V,410MV AT 1MA,1.2PF | 50434     | 5082-2672-T25  |
| A18J180          | 131-0608-00        |                      |        | CONN,TERMINAL:PRESSFIT/PCB,;MALE,STR     | 22526     | 48283-018      |
| A18J182          | 131-0589-00        |                      |        | TERMINAL,PIN:PRESSFIT/PCB,;MALE,STR      | 22526     | 48283-087      |
| A18J184          | 131-0589-00        |                      |        | TERMINAL,PIN:PRESSFIT/PCB,;MALE,STR      | 22526     | 48283-087      |
| A18J186          | 131-0589-00        |                      |        | TERMINAL,PIN:PRESSFIT/PCB,;MALE,STR      | 22526     | 48283-087      |
| A18Q100          | 151-0188-00        |                      |        | TRANSISTOR,SIG:BIPOLAR,PNP;40V,200MA     | 04713     | 2N3906         |
| A18Q102          | 151-0188-00        |                      |        | TRANSISTOR,SIG:BIPOLAR,PNP;40V,200MA     | 04713     | 2N3906         |
| A18Q110          | 151-0190-00        |                      |        | TRANSISTOR,SIG:BIPOLAR,NPN;40V,200MA     | 04713     | 2N3904         |
| A18Q112          | 151-0190-00        |                      |        | TRANSISTOR,SIG:BIPOLAR,NPN;40V,200MA     | 04713     | 2N3904         |
| A18Q120          | 151-0423-00        |                      |        | TRANSISTOR,PWR:BIPOLAR,NPN;400V,1.0A     | TK0BZ     | 2SC2333L       |
| A18Q122          | 151-0423-00        |                      |        | TRANSISTOR,PWR:BIPOLAR,NPN;400V,1.0A     | TK0BZ     | 2SC2333L       |
| A18Q130          | 151-0721-00        |                      |        | TRANSISTOR:PNP,SI,TO-220AB               | 80009     | 151072100      |
| A18Q132          | 151-0721-00        |                      |        | TRANSISTOR:PNP,SI,TO-220AB               | 80009     | 151072100      |
| A18Q200          | 151-0188-00        |                      |        | TRANSISTOR,SIG:BIPOLAR,PNP;40V,200MA     | 04713     | 2N3906         |
| A18Q202          | 151-0188-00        |                      |        | TRANSISTOR,SIG:BIPOLAR,PNP;40V,200MA     | 04713     | 2N3906         |
| A18Q210          | 151-0190-00        |                      |        | TRANSISTOR,SIG:BIPOLAR,NPN;40V,200MA     | 04713     | 2N3904         |
| A18Q212          | 151-0190-00        |                      |        | TRANSISTOR,SIG:BIPOLAR,NPN;40V,200MA     | 04713     | 2N3904         |
| A18Q220          | 151-0423-00        |                      |        | TRANSISTOR,PWR:BIPOLAR,NPN;400V,1.0A     | TK0BZ     | 2SC2333L       |
| A18Q222          | 151-0423-00        |                      |        | TRANSISTOR,PWR:BIPOLAR,NPN;400V,1.0A     | TK0BZ     | 2SC2333L       |
| A18Q230          | 151-0721-00        |                      |        | TRANSISTOR:PNP,SI,TO-220AB               | 80009     | 151072100      |
| A18Q232          | 151-0721-00        |                      |        | TRANSISTOR:PNP,SI,TO-220AB               | 80009     | 151072100      |
| A18Q300          | 151-0188-00        |                      |        | TRANSISTOR,SIG:BIPOLAR,PNP;40V,200MA     | 04713     | 2N3906         |
| A18Q310          | 151-0190-00        |                      |        | TRANSISTOR,SIG:BIPOLAR,NPN;40V,200MA     | 04713     | 2N3904         |
| A18Q312          | 151-0188-00        |                      |        | TRANSISTOR,SIG:BIPOLAR,PNP;40V,200MA     | 04713     | 2N3906         |
| A18Q320          | 151-0721-00        |                      |        | TRANSISTOR:PNP,SI,TO-220AB               | 80009     | 151072100      |
| A18Q330          | 151-0423-00        |                      |        | TRANSISTOR,PWR:BIPOLAR,NPN;400V,1.0A     | TK0BZ     | 2SC2333L       |
| A18R100          | 315-0123-00        |                      |        | RES,FXD,FILM:12K OHM,5%,0.25W            | TK1727    | SFR25 2322-181 |
| A18R102          | 315-0104-00        |                      |        | RES,FXD,FILM:100K OHM,5%,0.25W           | TK1727    | SFR25 2322-181 |
| A18R104          | 321-0222-00        |                      |        | RES,FXD,FILM:2.00K OHM,1%,0.125W,TC=T0   | 19701     | 5033ED2K00F    |
| A18R106          | 321-0222-00        |                      |        | RES,FXD,FILM:2.00K OHM,1%,0.125W,TC=T0   | 19701     | 5033ED2K00F    |
| A18R108          | 315-0104-00        |                      |        | RES,FXD,FILM:100K OHM,5%,0.25W           | TK1727    | SFR25 2322-181 |
| A18R110          | 315-0151-00        |                      |        | RES,FXD,FILM:150 OHM,5%,0.25W            | TK1727    | SFR25 2322-181 |
| A18R112          | 315-0511-00        |                      |        | RES,FXD,FILM:510 OHM,5%,0.25W            | TK1727    | SFR25 2322-181 |
| A18R114          | 315-0471-00        |                      |        | RES,FXD,FILM:470 OHM,5%,0.25W            | TK1727    | SFR25 2322-181 |
| A18R116          | 315-0151-00        |                      |        | RES,FXD,FILM:150 OHM,5%,0.25W            | TK1727    | SFR25 2322-181 |
| A18R118          | 315-0102-00        |                      |        | RES,FXD,FILM:1K OHM,5%,0.25W             | TK1727    | SFR25 2322-181 |
| A18R120          | 315-0471-00        |                      |        | RES,FXD,FILM:470 OHM,5%,0.25W            | TK1727    | SFR25 2322-181 |

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| Component Number | Tektronix Part No. | Serial No. Effective | Dscont  | Name & Description                     | Mfr. Code | Mfr. Part No.   |
|------------------|--------------------|----------------------|---------|--|-----------|-----------------|
| A18R123          | 315-0102-00        |                      |         | RES,FXD,FILM:1K OHM,5%,0.25W           | TK1727    | SFR25 2322-181  |
| A18R128          | 315-0244-00        |                      |         | RES,FXD,FILM:240K OHM,5%,0.25W         | S5302     | CF 1/4 240K JTR |
| A18R130          | 322-0356-00        |                      |         | RES,FXD,FILM:49.9K OHM,1%,0.25W,TC=T0  | 91637     | CMF6042G49901F  |
| A18R132          | 322-0356-00        |                      |         | RES,FXD,FILM:49.9K OHM,1%,0.25W,TC=T0  | 91637     | CMF6042G49901F  |
| A18R140          | 315-0681-00        |                      |         | RES,FXD,FILM:680 OHM,5%,0.25W          | TK1727    | SFR25 2322-181  |
| A18R142          | 315-0431-00        |                      |         | RES,FXD,FILM:430 OHM,5%,0.25W          | TK1727    | SFR25 2322-181  |
| A18R200          | 315-0123-00        |                      |         | RES,FXD,FILM:12K OHM,5%,0.25W          | TK1727    | SFR25 2322-181  |
| A18R202          | 315-0513-00        |                      |         | RES,FXD,FILM:51K OHM,5%,0.25W          | TK1727    | SFR25 2322-181  |
| A18R204          | 321-0241-00        |                      |         | RES,FXD,FILM:3.16K OHM,1%,0.125W,TC=T0 | 19701     | 5043ED3K160F    |
| A18R206          | 321-0241-00        |                      |         | RES,FXD,FILM:3.16K OHM,1%,0.125W,TC=T0 | 19701     | 5043ED3K160F    |
| A18R208          | 315-0513-00        |                      |         | RES,FXD,FILM:51K OHM,5%,0.25W          | TK1727    | SFR25 2322-181  |
| A18R210          | 315-0151-00        |                      |         | RES,FXD,FILM:150 OHM,5%,0.25W          | TK1727    | SFR25 2322-181  |
| A18R212          | 315-0751-00        |                      |         | RES,FXD,FILM:750 OHM,5%,0.25W          | TK1727    | SFR25 2322-181  |
| A18R214          | 315-0471-00        |                      |         | RES,FXD,FILM:470 OHM,5%,0.25W          | TK1727    | SFR25 2322-181  |
| A18R216          | 315-0151-00        |                      |         | RES,FXD,FILM:150 OHM,5%,0.25W          | TK1727    | SFR25 2322-181  |
| A18R218          | 315-0751-00        |                      |         | RES,FXD,FILM:750 OHM,5%,0.25W          | TK1727    | SFR25 2322-181  |
| A18R220          | 315-0471-00        |                      |         | RES,FXD,FILM:470 OHM,5%,0.25W          | TK1727    | SFR25 2322-181  |
| A18R228          | 315-0124-00        |                      |         | RES,FXD,FILM:120K OHM,5%,0.25W         | TK1727    | SFR25 2322-181  |
| A18R230          | 323-0327-00        |                      |         | RES,FXD,FILM:24.9K OHM,1%,0.5W,TC=T0   | 91637     | CMF65116G24901F |
| A18R232          | 323-0327-00        |                      |         | RES,FXD,FILM:24.9K OHM,1%,0.5W,TC=T0   | 91637     | CMF65116G24901F |
| A18R240          | 315-0681-00        |                      |         | RES,FXD,FILM:680 OHM,5%,0.25W          | TK1727    | SFR25 2322-181  |
| A18R242          | 315-0431-00        |                      |         | RES,FXD,FILM:430 OHM,5%,0.25W          | TK1727    | SFR25 2322-181  |
| A18R300          | 315-0123-00        |                      |         | RES,FXD,FILM:12K OHM,5%,0.25W          | TK1727    | SFR25 2322-181  |
| A18R306          | 315-0242-00        |                      |         | RES,FXD,FILM:2.4K OHM,5%,0.25W         | TK1727    | SFR25 2322-181  |
| A18R308          | 323-0327-00        |                      |         | RES,FXD,FILM:24.9K OHM,1%,0.5W,TC=T0   | 91637     | CMF65116G24901F |
| A18R310          | 315-0513-00        |                      |         | RES,FXD,FILM:51K OHM,5%,0.25W          | TK1727    | SFR25 2322-181  |
| A18R312          | 315-0102-00        |                      |         | RES,FXD,FILM:1K OHM,5%,0.25W           | TK1727    | SFR25 2322-181  |
| A18R314          | 315-0682-00        |                      |         | RES,FXD,FILM:6.8K OHM,5%,0.25W         | TK1727    | SFR25 2322-181  |
| A18R316          | 315-0204-00        |                      |         | RES,FXD,FILM:200K OHM,5%,0.25W         | TK1727    | SFR25 2322-181  |
| A18R318          | 315-0271-00        |                      |         | RES,FXD,FILM:270 OHM,5%,0.25W          | TK1727    | SFR25 2322-181  |
| A18R320          | 315-0101-00        |                      |         | RES,FXD,FILM:100 OHM,5%,0.25W          | TK1727    | SFR25 2322-181  |
| A18R322          | 315-0102-00        |                      |         | RES,FXD,FILM:1K OHM,5%,0.25W           | TK1727    | SFR25 2322-181  |
| A18R410          | 311-2377-00        |                      |         | RES,VAR,NONWW:TRMR,500K OHM,0.5W       | 80009     | 311237700       |
| A18R412          | 315-0104-00        |                      |         | RES,FXD,FILM:100K OHM,5%,0.25W         | TK1727    | SFR25 2322-181  |
| A18R420          | 311-2377-00        |                      |         | RES,VAR,NONWW:TRMR,500K OHM,0.5W       | 80009     | 311237700       |
| A18R422          | 315-0164-00        |                      |         | RES,FXD,FILM:160K OHM,5%,0.25W         | TK1727    | SFR25 2322-181  |
| A18TP100         | 214-0579-00        | J301393              | J302394 | TERM,TEST POINT:PCB,TEST POINT;EYELET  | 0J260     | ORDER BY DESC   |
| A18VR100         | 152-0195-00        |                      |         | DIODE,ZENER::;5.1V,5%,0.4W             | 14552     | CD332125        |
| A18VR200         | 152-0195-00        |                      |         | DIODE,ZENER::;5.1V,5%,0.4W             | 14552     | CD332125        |

| Component Number | Tektronix Part No. | Serial No. Effective | Dscont | Name & Description                          | Mfr. Code | Mfr. Part No.   |
|------------------|--------------------|----------------------|--------|---|-----------|-----------------|
| A19              | 670-9320-XX        |                      |        | CIRCUIT BD ASSY:LV SUPPLY                   | 80009     | 6709320XX       |
| A19C100          | 290-1136-00        |                      |        | CAP,FXD,ELCTLT:6800UF,20%,16V               | 80009     | 290113600       |
| A19C102          | 281-0775-00        |                      |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA    |
| A19C120          | 281-0812-00        |                      |        | CAP,FXD,CERAMIC:MLC;1000PF,10%,100V         | 04222     | SA101C102KAA    |
| A19C132          | 281-0812-00        |                      |        | CAP,FXD,CERAMIC:MLC;1000PF,10%,100V         | 04222     | SA101C102KAA    |
| A19C134          | 290-0770-00        |                      |        | CAP,FXD,ELCTLT:100UF,+50-20%,25VDC          | 0H1N5     | CEUSM1V101      |
| A19C140          | 290-0770-00        |                      |        | CAP,FXD,ELCTLT:100UF,+50-20%,25VDC          | 0H1N5     | CEUSM1V101      |
| A19C150          | 281-0775-00        |                      |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA    |
| A19C200          | 290-1136-00        |                      |        | CAP,FXD,ELCTLT:6800UF,20%,16V               | 80009     | 290113600       |
| A19C232          | 281-0812-00        |                      |        | CAP,FXD,CERAMIC:MLC;1000PF,10%,100V         | 04222     | SA101C102KAA    |
| A19C234          | 290-0770-00        |                      |        | CAP,FXD,ELCTLT:100UF,+50-20%,25VDC          | 0H1N5     | CEUSM1V101      |
| A19C300          | 290-0506-01        |                      |        | CAP,FXD,ELCTLT:10000UF,+30-10%,35V          | 80009     | 290050601       |
| A19C312          | 290-0770-00        |                      |        | CAP,FXD,ELCTLT:100UF,+50-20%,25VDC          | 0H1N5     | CEUSM1V101      |
| A19C400          | 290-0506-01        |                      |        | CAP,FXD,ELCTLT:10000UF,+30-10%,35V          | 80009     | 290050601       |
| A19C412          | 290-0770-00        |                      |        | CAP,FXD,ELCTLT:100UF,+50-20%,25VDC          | 0H1N5     | CEUSM1V101      |
| A19C422          | 290-0779-00        |                      |        | CAP,FXD,ALUM:;10UF,20%,100V,.562 X 0.351    | 62643     | 511D106M100BB4D |
| A19C500          | 290-1141-00        |                      |        | CAP,FXD,ELCTLT:220UF,20%,100V               | 80009     | 290114100       |
| A19C502          | 290-1141-00        |                      |        | CAP,FXD,ELCTLT:220UF,20%,100V               | 80009     | 290114100       |
| A19C562          | 281-0775-00        |                      |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA    |
| A19C571          | 281-0775-00        |                      |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA    |
| A19C704          | 285-1272-00        |                      |        | CAP,FXD,PLASTIC:0.22UF,20%,250V             | 61058     | ECQ-E2A224MW    |
| A19C710          | 290-0922-00        |                      |        | CAP,FXD,ALUM:;1000UF,20%,50V,16 X 25MM      | 55680     | UVX1J102MHA     |
| A19C712          | 290-0766-00        |                      |        | CAP,FXD,ALUM:2.2UF,+50-20%,160V,8 X 11.5MM  | 55680     | UVX2E2R2MPA     |
| A19C720          | 290-0922-00        |                      |        | CAP,FXD,ALUM:;1000UF,20%,50V,16 X 25MM      | 55680     | UVX1J102MHA     |
| A19C722          | 290-0766-00        |                      |        | CAP,FXD,ALUM:2.2UF,+50-20%,160V,8 X 11.5MM  | 55680     | UVX2E2R2MPA     |
| A19CR100         | 152-1119-00        |                      |        | SEMICON DVC,DI:RECT,SI,100V,10A             | 80009     | 152111900       |
| A19CR104         | 152-0935-00        |                      |        | SEMICON DVC,DI:SI,1.0A,280V                 | 80009     | 152093500       |
| A19CR130         | 152-0832-00        |                      |        | SEMICON DVC,DI:SW,SI,50V,0.12A,DO-34        | 80009     | 152083200       |
| A19CR200         | 152-1120-00        |                      |        | SEMICON DVC,DI:RECT,SI,100V,10A             | 80009     | 152112000       |
| A19CR230         | 152-0832-00        |                      |        | SEMICON DVC,DI:SW,SI,50V,0.12A,DO-34        | 80009     | 152083200       |
| A19CR300         | 152-1119-00        |                      |        | SEMICON DVC,DI:RECT,SI,100V,10A             | 80009     | 152111900       |
| A19CR310         | 152-0935-00        |                      |        | SEMICON DVC,DI:SI,1.0A,280V                 | 80009     | 152093500       |
| A19CR400         | 152-1120-00        |                      |        | SEMICON DVC,DI:RECT,SI,100V,10A             | 80009     | 152112000       |
| A19CR410         | 152-0935-00        |                      |        | SEMICON DVC,DI:SI,1.0A,280V                 | 80009     | 152093500       |
| A19CR500         | 152-0931-00        |                      |        | SEMICON DVC,DI:BRIDGE,1.5A,200V             | 80009     | 152093100       |
| A19CR560         | 152-0832-00        |                      |        | SEMICON DVC,DI:SW,SI,50V,0.12A,DO-34        | 80009     | 152083200       |
| A19CR562         | 152-0832-00        |                      |        | SEMICON DVC,DI:SW,SI,50V,0.12A,DO-34        | 80009     | 152083200       |
| A19CR570         | 152-0832-00        |                      |        | SEMICON DVC,DI:SW,SI,50V,0.12A,DO-34        | 80009     | 152083200       |
| A19CR572         | 152-0832-00        |                      |        | SEMICON DVC,DI:SW,SI,50V,0.12A,DO-34        | 80009     | 152083200       |
| A19CR604         | 152-0832-00        |                      |        | SEMICON DVC,DI:SW,SI,50V,0.12A,DO-34        | 80009     | 152083200       |

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| Component Number | Tektronix Part No. | Serial No. Effective | Dscont | Name & Description                        | Mfr. Code | Mfr. Part No.  |
|------------------|--------------------|----------------------|--------|---|-----------|----------------|
| A19CR710         | 152-0932-00        |                      |        | SEMICON DVC,DI:4A,100V                    | 80009     | 152093200      |
| A19CR712         | 152-0935-00        |                      |        | SEMICON DVC,DI:SI,1.0A,280V               | 80009     | 152093500      |
| A19CR720         | 152-0932-00        |                      |        | SEMICON DVC,DI:4A,100V                    | 80009     | 152093200      |
| A19CR722         | 152-0935-00        |                      |        | SEMICON DVC,DI:SI,1.0A,280V               | 80009     | 152093500      |
| A19CR730         | 152-0932-00        |                      |        | SEMICON DVC,DI:4A,100V                    | 80009     | 152093200      |
| A19J64           | 131-3668-00        |                      |        | CONN,RCPT,ELEC:CKT BD,4 PIN               | 80009     | 131366800      |
| A19J72           | 131-0589-00        |                      |        | TERMINAL,PIN:PRESSFIT/PCB,;MALE,STR       | 22526     | 48283-087      |
| A19J190          | 131-3668-00        |                      |        | CONN,RCPT,ELEC:CKT BD,4 PIN               | 80009     | 131366800      |
| A19J192          | 131-3658-00        |                      |        | CONN,PLUG,ELEC:HEADER,16 PIN              | 80009     | 131365800      |
| A19J194          | 131-0589-00        |                      |        | TERMINAL,PIN:PRESSFIT/PCB,;MALE,STR       | 22526     | 48283-087      |
| A19J196          | 131-3671-00        |                      |        | CONN,RCPT,ELEC:CKT BD,15 PIN              | 80009     | 131367100      |
| A19J198          | 131-0589-00        |                      |        | TERMINAL,PIN:PRESSFIT/PCB,;MALE,STR       | 22526     | 48283-087      |
| A19J280          | 131-0608-00        |                      |        | CONN,TERMINAL:PRESSFIT/PCB,;MALE,STR      | 22526     | 48283-018      |
| A19J290          | 131-0608-00        |                      |        | CONN,TERMINAL:PRESSFIT/PCB,;MALE,STR      | 22526     | 48283-018      |
| A19Q130          | 151-0562-00        |                      |        | TRANSISTOR:PNP,SI,PWR                     | 80009     | 151056200      |
| A19Q230          | 151-0561-00        |                      |        | TRANSISTOR:NPN,SI,PWR                     | 80009     | 151056100      |
| A19Q600          | 151-0561-00        |                      |        | TRANSISTOR:NPN,SI,PWR                     | 80009     | 151056100      |
| A19Q602          | 151-0188-00        |                      |        | TRANSISTOR,SIG:BIPOLAR,PNP;40V,200MA      | 04713     | 2N3906         |
| A19R100          | 315-0100-00        |                      |        | RES,FXD,FILM:10 OHM,5%,0.25W,             | TK1727    | SFR25 2322-182 |
| A19R102          | 315-0124-00        |                      |        | RES,FXD,FILM:120K OHM,5%,0.25W            | TK1727    | SFR25 2322-181 |
| A19R130          | 315-0151-00        |                      |        | RES,FXD,FILM:150 OHM,5%,0.25W             | TK1727    | SFR25 2322-181 |
| A19R132          | 315-0201-00        |                      |        | RES,FXD,FILM:200 OHM,5%,0.25W             | TK1727    | SFR25 2322-181 |
| A19R134          | 321-0260-00        |                      |        | RES,FXD,FILM:4.99K OHM,1%,0.125W,TC=T0    | 19701     | 5033ED4K990F   |
| A19R136          | 321-0280-00        |                      |        | RES,FXD,FILM:8.06K OHM,1%,0.125W,TC=T0    | 19701     | 5033ED8K060F   |
| A19R138          | 315-0102-00        |                      |        | RES,FXD,FILM:1K OHM,5%,0.25W              | TK1727    | SFR25 2322-181 |
| A19R230          | 315-0151-00        |                      |        | RES,FXD,FILM:150 OHM,5%,0.25W             | TK1727    | SFR25 2322-181 |
| A19R232          | 315-0201-00        |                      |        | RES,FXD,FILM:200 OHM,5%,0.25W             | TK1727    | SFR25 2322-181 |
| A19R234          | 321-0300-00        |                      |        | RES,FXD,FILM:13.0K OHM,1%,0.125W,TC=T0    | 19701     | 5043ED13K00F   |
| A19R236          | 321-0260-00        |                      |        | RES,FXD,FILM:4.99K OHM,1%,0.125W,TC=T0    | 19701     | 5033ED4K990F   |
| A19R238          | 315-0102-00        |                      |        | RES,FXD,FILM:1K OHM,5%,0.25W              | TK1727    | SFR25 2322-181 |
| A19R500          | 311-2328-00        |                      |        | RES,VAR,NONWW:500 OHM,20%,0.5W            | 80009     | 311232800      |
| A19R501          | 315-0104-00        |                      |        | RES,FXD,FILM:100K OHM,5%,0.25W            | TK1727    | SFR25 2322-181 |
| A19R502          | 321-1216-03        |                      |        | RES,FXD,FILM:1.76K OHM,0.25%,0.125W,TC=T2 | 19701     | 5033RC1K760C   |
| A19R504          | 321-0962-03        |                      |        | RES,FXD,FILM:8K OHM,0.25%,0.125W,TC=T2    | TK1727    | MPR24-2322-141 |
| A19R506          | 315-0471-00        |                      |        | RES,FXD,FILM:470 OHM,5%,0.25W             | TK1727    | SFR25 2322-181 |
| A19R508          | 315-0471-00        |                      |        | RES,FXD,FILM:470 OHM,5%,0.25W             | TK1727    | SFR25 2322-181 |
| A19R510          | 315-0472-00        |                      |        | RES,FXD,FILM:4.7K OHM,5%,0.25W            | TK1727    | SFR25 2322-181 |
| A19R512          | 321-0281-00        |                      |        | RES,FXD,FILM:8.25K OHM,1%,0.125W,TC=T0    | TK1727    | 2322-151-8K25  |
| A19R514          | 321-0289-00        |                      |        | RES,FXD,FILM:10.0K OHM,1%,0.125W,TC=T0    | 19701     | 5043ED10K00F   |
| A19R516          | 311-2328-00        |                      |        | RES,VAR,NONWW:500 OHM,20%,0.5W            | 80009     | 311232800      |



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| Component Number | Tektronix Part No. | Serial No. Effective | Dscont | Name & Description                  | Mfr. Code | Mfr. Part No.  |
|------------------|--------------------|----------------------|--------|-------------------------------------|-----------|----------------|
| A19R560          | 315-0154-00        |                      |        | RES,FXD,FILM:150K OHM,5%,0.25W      | TK1727    | SFR25 2322-181 |
| A19R562          | 315-0154-00        |                      |        | RES,FXD,FILM:150K OHM,5%,0.25W      | TK1727    | SFR25 2322-181 |
| A19R564          | 315-0103-00        |                      |        | RES,FXD,FILM:10K OHM,5%,0.25W       | TK1727    | SFR25 2322-181 |
| A19R570          | 315-0752-00        |                      |        | RES,FXD,FILM:7.5K OHM,5%,0.25W      | TK1727    | SFR25 2322-181 |
| A19R571          | 315-0102-00        |                      |        | RES,FXD,FILM:1K OHM,5%,0.25W        | TK1727    | SFR25 2322-181 |
| A19R574          | 315-0102-00        |                      |        | RES,FXD,FILM:1K OHM,5%,0.25W        | TK1727    | SFR25 2322-181 |
| A19R576          | 315-0103-00        |                      |        | RES,FXD,FILM:10K OHM,5%,0.25W       | TK1727    | SFR25 2322-181 |
| A19R600          | 315-0511-00        |                      |        | RES,FXD,FILM:510 OHM,5%,0.25W       | TK1727    | SFR25 2322-181 |
| A19R602          | 307-1294-00        |                      |        | RES,FXD,FILM:0.51 OHM,5%,2W         | 80009     | 307129400      |
| A19R604          | 315-0102-00        |                      |        | RES,FXD,FILM:1K OHM,5%,0.25W        | TK1727    | SFR25 2322-181 |
| A19R606          | 315-0104-00        |                      |        | RES,FXD,FILM:100K OHM,5%,0.25W      | TK1727    | SFR25 2322-181 |
| A19R700          | 315-0203-00        |                      |        | RES,FXD,FILM:20K OHM,5%,0.25W       | TK1727    | SFR25 2322-181 |
| A19R701          | 315-0203-00        |                      |        | RES,FXD,FILM:20K OHM,5%,0.25W       | TK1727    | SFR25 2322-181 |
| A19R702          | 315-0203-00        |                      |        | RES,FXD,FILM:20K OHM,5%,0.25W       | TK1727    | SFR25 2322-181 |
| A19R704          | 315-0101-00        |                      |        | RES,FXD,FILM:100 OHM,5%,0.25W       | TK1727    | SFR25 2322-181 |
| A19R706          | 315-0621-00        |                      |        | RES,FXD,FILM:620 OHM,5%,0.25W       | TK1727    | SFR25 2322-181 |
| A19R712          | 315-0104-00        |                      |        | RES,FXD,FILM:100K OHM,5%,0.25W      | TK1727    | SFR25 2322-181 |
| A19R722          | 315-0104-00        |                      |        | RES,FXD,FILM:100K OHM,5%,0.25W      | TK1727    | SFR25 2322-181 |
| A19R750          | 315-0100-00        |                      |        | RES,FXD,FILM:10 OHM,5%,0.25W,       | TK1727    | SFR25 2322-182 |
| A19TP100         | 131-0589-00        |                      |        | TERMINAL,PIN:PRESSFIT/PCB,;MALE,STR | 22526     | 48283-087      |
| A19TP130         | 131-0589-00        |                      |        | TERMINAL,PIN:PRESSFIT/PCB,;MALE,STR | 22526     | 48283-087      |
| A19TP230         | 131-0589-00        |                      |        | TERMINAL,PIN:PRESSFIT/PCB,;MALE,STR | 22526     | 48283-087      |
| A19TP310         | 131-0589-00        |                      |        | TERMINAL,PIN:PRESSFIT/PCB,;MALE,STR | 22526     | 48283-087      |
| A19TP410         | 131-0589-00        |                      |        | TERMINAL,PIN:PRESSFIT/PCB,;MALE,STR | 22526     | 48283-087      |
| A19TP500         | 131-0589-00        |                      |        | TERMINAL,PIN:PRESSFIT/PCB,;MALE,STR | 22526     | 48283-087      |
| A19TP510         | 131-0589-00        |                      |        | TERMINAL,PIN:PRESSFIT/PCB,;MALE,STR | 22526     | 48283-087      |
| A19TP520         | 131-0589-00        |                      |        | TERMINAL,PIN:PRESSFIT/PCB,;MALE,STR | 22526     | 48283-087      |
| A19U100          | 156-2831-00        |                      |        | MICROCKT,LINEAR:VOLTAGE REG,+5V STR | 80009     | 156283100      |
| A19U120          | 156-1173-00        |                      |        | IC,LINEAR:BIPOLAR,VOLTAGE REFERENCE | 04713     | MC1403U        |
| A19U130          | 156-1771-00        |                      |        | MICROCKT,LINEAR:DUAL OP-AMP         | 80009     | 156177100      |
| A19U310          | 156-2830-00        |                      |        | MICROCKT,LINEAR:VOLTAGE REG,+12V    | 80009     | 156283000      |
| A19U410          | 156-0872-03        |                      |        | MICROCKT,LINEAR:VOLTAGE REGULATOR   | 80009     | 156087203      |
| A19U500          | 156-1771-00        |                      |        | MICROCKT,LINEAR:DUAL OP-AMP         | 80009     | 156177100      |
| A19U560          | 156-1778-00        |                      |        | MICROCKT,LINEAR:DUAL COMPARATOR     | 80009     | 156177800      |
| A19U700          | 148-1010-00        |                      |        | RELAY,SOL STATE:5A,250VAC           | 80009     | 148101000      |

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|------------------|--------------------|------------|---------|--|-----------|-----------------|
|                  |                    | Effective  | Dscont  |  |           |                 |
| A20              | 670-9321-XX        |            |         | CIRCUIT BD ASSY:H.V. REGULATOR                 | TK0191    | ORDER BY DESC   |
| A20C54           | 281-0773-00        |            |         | CAP,FXD,CERAMIC:MLC;0.01UF,10%,100V            | TK1743    | CGB103KEX       |
| A20C56           | 281-0773-00        |            |         | CAP,FXD,CERAMIC:MLC;0.01UF,10%,100V            | TK1743    | CGB103KEX       |
| A20C100          | 290-0927-00        |            |         | CAP,FXD,ELCTLT:330UF,20%,35V                   | 80009     | 290092700       |
| A20C102          | 285-0560-00        |            |         | CAP,FXD,PLASTIC:0.022UF,10%,630V               | 80009     | 285056000       |
| A20C104          | 281-0773-00        |            |         | CAP,FXD,CERAMIC:MLC;0.01UF,10%,100V            | TK1743    | CGB103KEX       |
| A20C200          | 283-0000-00        |            |         | CAP,FXD,CER DI:0.001UF,+100-0%,500V            | 80009     | 283000000       |
| A20C202          | 283-0000-00        |            |         | CAP,FXD,CER DI:0.001UF,+100-0%,500V            | 80009     | 283000000       |
| A20C210          | 283-0002-00        |            |         | CAP,FXD,CER DI:0.01UF,+80-20%,500V             | 59660     | 811-590-Z5UO-10 |
| A20C220          | 283-0013-00        |            |         | CAP,FXD,CER DI:0.01UF,-0+100%,1000V            | 59660     | 818-602ZSUO103P |
| A20C228          | 281-0773-00        |            |         | CAP,FXD,CERAMIC:MLC;0.01UF,10%,100V            | TK1743    | CGB103KEX       |
| A20C230          | 281-0773-00        |            |         | CAP,FXD,CERAMIC:MLC;0.01UF,10%,100V            | TK1743    | CGB103KEX       |
| A20C232          | 281-0775-00        |            |         | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170    | 04222     | SA105E104MAA    |
| A20C300          | 290-0821-00        | J301393    | J302122 | CAP,FXD,ELCTLT:10UF,+50-10%,160V               | 80009     | 290082100       |
| A20C300          | 290-1304-00        | J302123    |         | CAP,FXD,ALUM:47UH,+/-20%,160V,12.5MM           | 80009     | 290130400       |
| A20C310          | 290-0821-00        | J301393    | J302122 | CAP,FXD,ELCTLT:10UF,+50-10%,160V               | 80009     | 290082100       |
| A20C310          | 290-1304-00        | J302123    |         | CAP,FXD,ALUM:47UH,+/-20%,160V,12.5MM           | 80009     | 290130400       |
| A20C320          | 290-0821-00        | J301393    | J302122 | CAP,FXD,ELCTLT:10UF,+50-10%,160V               | 80009     | 290082100       |
| A20C320          | 290-1304-00        | J302123    |         | CAP,FXD,ALUM:47UH,+/-20%,160V,12.5MM           | 80009     | 290130400       |
| A20C340          | 285-1376-00        |            |         | CAP,FXD,PLASTIC:0.01UF,20%,2.5KV               | 80009     | 285137600       |
| A20CR200         | 152-0608-00        |            |         | SEMICON DVC,DI:POWER,SI,1000V,0.2A             | 80009     | 152060800       |
| A20CR202         | 152-0242-00        |            |         | DIODE,SIG:;;225V,200MA                         | 14552     | MT5129          |
| A20CR204         | 152-0242-00        |            |         | DIODE,SIG:;;225V,200MA                         | 14552     | MT5129          |
| A20CR210         | 152-0608-00        |            |         | SEMICON DVC,DI:POWER,SI,1000V,0.2A             | 80009     | 152060800       |
| A20CR300         | 152-0242-00        |            |         | DIODE,SIG:;;225V,200MA                         | 14552     | MT5129          |
| A20CR310         | 152-0242-00        |            |         | DIODE,SIG:;;225V,200MA                         | 14552     | MT5129          |
| A20CR320         | 152-0242-00        |            |         | DIODE,SIG:;;225V,200MA                         | 14552     | MT5129          |
| A20J182          | 131-0589-00        |            |         | TERMINAL,PIN:PRESSFIT/PCB,;MALE,STR            | 22526     | 48283-087       |
| A20J194          | 131-0589-00        |            |         | TERMINAL,PIN:PRESSFIT/PCB,;MALE,STR            | 22526     | 48283-087       |
| A20J200          | 131-0589-00        |            |         | TERMINAL,PIN:PRESSFIT/PCB,;MALE,STR            | 22526     | 48283-087       |
| A20L100          | 108-1431-00        |            |         | COIL,RF:FXD,300UH                              | TKOHD     | ORDER BY DESC   |
| A20Q100          | 151-0563-00        |            |         | TRANSISTOR:NPN,SI                              | 80009     | 151056300       |
| A20Q200          | 151-0769-00        |            |         | TRANSISTOR:NPN,SI,TO-220AB                     | 80009     | 151076900       |
| A20R50           | 315-0104-00        |            |         | RES,FXD,FILM:100K OHM,5%,0.25W                 | TK1727    | SFR25 2322-181  |
| A20R52           | 321-0388-00        |            |         | RES,FXD,FILM:107K OHM,1%,0.125W,TC=T0          | 07716     | CEAD10702F      |
| A20R54           | 321-0205-00        |            |         | RES,FXD,FILM:1.33K OHM,1%,0.125W,TC=T0         | TK1727    | MR25-2322-151-1 |
| A20R56           | 315-0103-00        |            |         | RES,FXD,FILM:10K OHM,5%,0.25W                  | TK1727    | SFR25 2322-181  |
| A20R100          | 315-0152-00        | J302123    | J302800 | RES,FXD,FILM:1.5K OHM,5%,0.25W                 | TK1727    | SFR25 2322-181  |
| A20R100          | 315-0272-00        | J302801    |         | RES,FXD,FILM:2.7K OHM,5%,0.25W                 | TK1727    | SFR25 2322-181  |
| A20R100          | 315-0332-00        | J302801    |         | RES,FXD,FILM:3.3K OHM,5%,0.25W (TEST SELECTED) | TK1727    | SFR25 2322-181  |

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|------------------|--------------------|----------------------|--------|--|-----------|----------------|
| A20R100          | 315-0182-00        | J302801              |        | RES,FXD,FILM:1.8K OHM,5%,0.25W (TEST SELECTED) | TK1727    | SFR25 2322-181 |
| A20R200          | 315-0513-00        |                      |        | RES,FXD,FILM:51K OHM,5%,0.25W                  | TK1727    | SFR25 2322-181 |
| A20R202          | 315-0513-00        |                      |        | RES,FXD,FILM:51K OHM,5%,0.25W                  | TK1727    | SFR25 2322-181 |
| A20R204          | 315-0184-00        |                      |        | RES,FXD,FILM:180K OHM,5%,0.25W                 | TK1727    | SFR25 2322-181 |
| A20R206          | 315-0184-00        |                      |        | RES,FXD,FILM:180K OHM,5%,0.25W                 | TK1727    | SFR25 2322-181 |
| A20R208          | 315-0472-00        |                      |        | RES,FXD,FILM:4.7K OHM,5%,0.25W                 | TK1727    | SFR25 2322-181 |
| A20R210          | 311-1272-00        |                      |        | RES,VAR,NONWW:TRMR,100K OHM,0.5W               | 32997     | 3329P-L58-104  |
| A20R214          | 315-0101-00        |                      |        | RES,FXD,FILM:100 OHM,5%,0.25W                  | TK1727    | SFR25 2322-181 |
| A20R216          | 315-0101-00        |                      |        | RES,FXD,FILM:100 OHM,5%,0.25W                  | TK1727    | SFR25 2322-181 |
| A20R218          | 315-0101-00        |                      |        | RES,FXD,FILM:100 OHM,5%,0.25W                  | TK1727    | SFR25 2322-181 |
| A20R220          | 315-0103-00        |                      |        | RES,FXD,FILM:10K OHM,5%,0.25W                  | TK1727    | SFR25 2322-181 |
| A20R222          | 315-0475-00        |                      |        | RES,FXD,FILM:4.7M OHM,5%,0.25W                 | TK1727    | SFR25 2322-181 |
| A20R224          | 315-0473-00        |                      |        | RES,FXD,FILM:47K OHM,5%,0.25W                  | TK1727    | SFR25 2322-181 |
| A20R226          | 315-0104-00        |                      |        | RES,FXD,FILM:100K OHM,5%,0.25W                 | TK1727    | SFR25 2322-181 |
| A20R228          | 315-0102-00        |                      |        | RES,FXD,FILM:1K OHM,5%,0.25W                   | TK1727    | SFR25 2322-181 |
| A20R230          | 315-0101-00        |                      |        | RES,FXD,FILM:100 OHM,5%,0.25W                  | TK1727    | SFR25 2322-181 |
| A20RT100         | 307-1496-00        |                      |        | RES,THERMAL:8 OHM,15%                          | S5011     | ORDER BY DESC  |
| A20T100          | 120-1679-00        |                      |        | TRANSFORMER,RF:HIGH VOLTAGE                    | 80009     | 120167900      |
| A20TP100         | 214-0579-00        |                      |        | TERM,TEST POINT:PCB,TEST POINT;EYELET          | 0J260     | ORDER BY DESC  |
| A20TP200         | 214-0579-00        |                      |        | TERM,TEST POINT:PCB,TEST POINT;EYELET          | 0J260     | ORDER BY DESC  |
| A20TP300         | 214-0579-00        |                      |        | TERM,TEST POINT:PCB,TEST POINT;EYELET          | 0J260     | ORDER BY DESC  |
| A20TP400         | 214-0579-00        |                      |        | TERM,TEST POINT:PCB,TEST POINT;EYELET          | 0J260     | ORDER BY DESC  |
| A20U100          | 119-1684-01        |                      |        | MULTIPLIER,HV:2X,W/DC RESTORER                 | 80009     | 119168401      |
| A20U200          | 156-1422-00        |                      |        | MICROCKT,LINER:DUAL OPNL AMPL                  | 80009     | 156142200      |
| A20U300          | 119-2162-01        |                      |        | HV MODULER:2KV INPUT,12KV OUTPUT               | 80009     | 119216201      |
| A20VR200         | 152-0286-00        |                      |        | DIODE,ZENER,;75V,5%,0.4W                       | 04713     | SZG35009K16    |
| A20VR202         | 152-0265-00        |                      |        | DIODE,ZENER,;24V,5%,0.4W                       | 04713     | 1N970BRL       |

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|------------------|--------------------|----------------------|--------|---|-----------|----------------|
| A22              | 671-1182-XX        |                      |        | CIRCUIT BD ASSY:INTERFACE                   | 80009     | 6711182XX      |
| A22C100          | 281-0775-00        |                      |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA   |
| A22C120          | 281-0775-00        |                      |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA   |
| A22C140          | 281-0775-00        |                      |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA   |
| A22C220          | 281-0775-00        |                      |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA   |
| A22C240          | 281-0775-00        |                      |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA   |
| A22C300          | 281-0775-00        |                      |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA   |
| A22C320          | 281-0775-00        |                      |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA   |
| A22C340          | 281-0775-00        |                      |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA   |
| A22C360          | 281-0775-00        |                      |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA   |
| A22C400          | 281-0775-00        |                      |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA   |
| A22C440          | 281-0775-00        |                      |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA   |
| A22C460          | 281-0775-00        |                      |        | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA   |
| A22C500          | 290-1007-00        |                      |        | CAP,FXD,ELCTLT:22UF,20%,16V                 | 80009     | 290100700      |
| A22C520          | 290-1007-00        |                      |        | CAP,FXD,ELCTLT:22UF,20%,16V                 | 80009     | 290100700      |
| A22C540          | 290-1007-00        |                      |        | CAP,FXD,ELCTLT:22UF,20%,16V                 | 80009     | 290100700      |
| A22FL200         | 119-1762-00        |                      |        | FILTER,RFI:0.022UF,+50/-20%,50VW/FERRITE    | 80009     | 119176200      |
| A22FL500         | 119-1762-00        |                      |        | FILTER,RFI:0.022UF,+50/-20%,50VW/FERRITE    | 80009     | 119176200      |
| A22FL520         | 119-1762-00        |                      |        | FILTER,RFI:0.022UF,+50/-20%,50VW/FERRITE    | 80009     | 119176200      |
| A22FL540         | 119-1762-00        |                      |        | FILTER,RFI:0.022UF,+50/-20%,50VW/FERRITE    | 80009     | 119176200      |
| A22J350          | 131-3652-00        |                      |        | CONN,RCPT,ELEC:CKT,BD,24 PIN,FEMALE         | 80009     | 131365200      |
| A22J450          | 131-3652-00        |                      |        | CONN,RCPT,ELEC:CKT,BD,24 PIN,FEMALE         | 80009     | 131365200      |
| A22R102          | 315-0103-00        |                      |        | RES,FXD,FILM:10K OHM,5%,0.25W               | TK1727    | SFR25 2322-181 |
| A22R104          | 315-0103-00        |                      |        | RES,FXD,FILM:10K OHM,5%,0.25W               | TK1727    | SFR25 2322-181 |
| A22R112          | 315-0103-00        |                      |        | RES,FXD,FILM:10K OHM,5%,0.25W               | TK1727    | SFR25 2322-181 |
| A22R114          | 315-0103-00        |                      |        | RES,FXD,FILM:10K OHM,5%,0.25W               | TK1727    | SFR25 2322-181 |
| A22R120          | 307-0923-00        |                      |        | RES NTWK,FXD,FI:(8)330K OHM,5%,0.125W       | 80009     | 307092300      |
| A22R121          | 315-0101-00        |                      |        | RES,FXD,FILM:100 OHM,5%,0.25W               | TK1727    | SFR25 2322-181 |
| A22R122          | 315-0101-00        |                      |        | RES,FXD,FILM:100 OHM,5%,0.25W               | TK1727    | SFR25 2322-181 |
| A22R123          | 315-0101-00        |                      |        | RES,FXD,FILM:100 OHM,5%,0.25W               | TK1727    | SFR25 2322-181 |
| A22R124          | 315-0101-00        |                      |        | RES,FXD,FILM:100 OHM,5%,0.25W               | TK1727    | SFR25 2322-181 |
| A22R125          | 315-0101-00        |                      |        | RES,FXD,FILM:100 OHM,5%,0.25W               | TK1727    | SFR25 2322-181 |
| A22R126          | 315-0101-00        |                      |        | RES,FXD,FILM:100 OHM,5%,0.25W               | TK1727    | SFR25 2322-181 |
| A22R140          | 307-0923-00        |                      |        | RES NTWK,FXD,FI:(8)330K OHM,5%,0.125W       | 80009     | 307092300      |
| A22R141          | 315-0101-00        |                      |        | RES,FXD,FILM:100 OHM,5%,0.25W               | TK1727    | SFR25 2322-181 |
| A22R142          | 315-0101-00        |                      |        | RES,FXD,FILM:100 OHM,5%,0.25W               | TK1727    | SFR25 2322-181 |
| A22R143          | 315-0101-00        |                      |        | RES,FXD,FILM:100 OHM,5%,0.25W               | TK1727    | SFR25 2322-181 |
| A22R144          | 315-0101-00        |                      |        | RES,FXD,FILM:100 OHM,5%,0.25W               | TK1727    | SFR25 2322-181 |
| A22R145          | 315-0101-00        |                      |        | RES,FXD,FILM:100 OHM,5%,0.25W               | TK1727    | SFR25 2322-181 |
| A22R146          | 315-0101-00        |                      |        | RES,FXD,FILM:100 OHM,5%,0.25W               | TK1727    | SFR25 2322-181 |

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| Component Number | Tektronix Part No. | Serial No. Effective | Dscont | Name & Description                      | Mfr. Code | Mfr. Part No.  |
|------------------|--------------------|----------------------|--------|---|-----------|----------------|
| A22R147          | 315-0101-00        |                      |        | RES,FXD,FILM:100 OHM,5%,0.25W           | TK1727    | SFR25 2322-181 |
| A22R148          | 315-0101-00        |                      |        | RES,FXD,FILM:100 OHM,5%,0.25W           | TK1727    | SFR25 2322-181 |
| A22R200          | 315-0101-00        |                      |        | RES,FXD,FILM:100 OHM,5%,0.25W           | TK1727    | SFR25 2322-181 |
| A22R300          | 315-0103-00        |                      |        | RES,FXD,FILM:10K OHM,5%,0.25W           | TK1727    | SFR25 2322-181 |
| A22R302          | 315-0103-00        |                      |        | RES,FXD,FILM:10K OHM,5%,0.25W           | TK1727    | SFR25 2322-181 |
| A22R320          | 307-0881-00        |                      |        | RES NTWK,FXD,FI:8,10K OHM,10%,0.125W    | 91637     | CSC09A01-103G  |
| A22R340          | 307-0881-00        |                      |        | RES NTWK,FXD,FI:8,10K OHM,10%,0.125W    | 91637     | CSC09A01-103G  |
| A22R360          | 307-0923-00        |                      |        | RES NTWK,FXD,FI:(8)330K OHM,5%,0.125W   | 80009     | 307092300      |
| A22R440          | 307-0881-00        |                      |        | RES NTWK,FXD,FI:8,10K OHM,10%,0.125W    | 91637     | CSC09A01-103G  |
| A22R460          | 307-0881-00        |                      |        | RES NTWK,FXD,FI:8,10K OHM,10%,0.125W    | 91637     | CSC09A01-103G  |
| A22R550          | 315-0100-00        |                      |        | RES,FXD,FILM:10 OHM,5%,0.25W,           | TK1727    | SFR25 2322-182 |
| A22S360          | 260-2326-00        |                      |        | SWITCH,TOGGLE:DTS-6H                    | 80009     | 260232600      |
| A22U100          | 156-2828-00        |                      |        | IC,DIGITAL:HCMOS,BUFFER;OCTAL           | 80009     | 156282800      |
| A22U120          | 156-2300-00        |                      |        | IC,DIGITAL:HCMOS,TRANSCEIVER;OCTAL      | 80009     | 156230000      |
| A22U140          | 156-2300-00        |                      |        | IC,DIGITAL:HCMOS,TRANSCEIVER;OCTAL      | 80009     | 156230000      |
| A22U200          | 119-2313-00        |                      |        | OSCILLATOR:4MHZ,CRYSTAL                 | 80009     | 119231300      |
| A22U220          | 156-2825-00        |                      |        | IC,DIGITAL:HCMOS,DEMUX/DECODER          | 80009     | 156282500      |
| A22U240          | 156-2026-00        |                      |        | IC,DIGITAL:HCMOS,GATE;QUAD 2-INPUT NOR  | 04713     | MC74HC02AN     |
| A22U300          | 156-1444-01        |                      |        | IC,PROCESSOR:NMOS,CONTROLLER;GPIB       | 80009     | 156144401      |
| A22U320          | 156-1414-00        |                      |        | IC,DIGITAL:LSTTL,TRANSCEIVER;OCTAL      | 01295     | SN75160BN      |
| A22U340          | 156-1415-00        |                      |        | IC,DIGITAL:LSTTL,TRANSCEIVER;OCTAL      | 01295     | SN75161BN      |
| A22U360          | 156-2300-00        |                      |        | IC,DIGITAL:HCMOS,TRANSCEIVER;OCTAL      | 80009     | 156230000      |
| A22U400          | 156-1444-01        |                      |        | IC,PROCESSOR:NMOS,CONTROLLER;GPIB       | 80009     | 156144401      |
| A22U440          | 156-1415-00        |                      |        | IC,DIGITAL:LSTTL,TRANSCEIVER;OCTAL      | 01295     | SN75161BN      |
| A22U460          | 156-1414-00        |                      |        | IC,DIGITAL:LSTTL,TRANSCEIVER;OCTAL      | 01295     | SN75160BN      |
| A22W220          | 174-0295-00        |                      |        | CA ASSY,SP,ELEC:26,28 AWG,11.0 L,RIBBON | 80009     | 174029500      |

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|------------------|--------------------|------------|---------|---|-----------|----------------|
|                  |                    | Effective  | Dscont  |   |           |                |
| A23              | 671-1094-XX        |            |         | CIRCUIT BD ASSY:FDD INTERFACE               | 80009     | 6711094XX      |
| A23C100          | 281-0775-00        |            |         | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA   |
| A23C120          | 281-0775-00        |            |         | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA   |
| A23C140          | 281-0775-00        |            |         | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA   |
| A23C200          | 281-0775-00        |            |         | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA   |
| A23C300          | 281-0775-00        |            |         | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA   |
| A23C360          | 281-0775-00        |            |         | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA   |
| A23C400          | 281-0775-00        |            |         | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA   |
| A23C420          | 281-0775-00        |            |         | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA   |
| A23C430          | 281-0775-00        |            |         | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA   |
| A23C440          | 281-0775-00        |            |         | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA   |
| A23C460          | 281-0775-00        |            |         | CAP,FXD,CERAMIC:MLC;0.1UF,20%,50V,Z5U,0.170 | 04222     | SA105E104MAA   |
| A23C500          | 290-0745-00        |            |         | CAP,FXD,ALUM::22UF,20%,50V,8 X 11MM         | 0H1N5     | CEUSM1J220     |
| A23CR430         | 152-0327-00        |            |         | SEMICON DVC,DI:SIG,SI,100MA,75V             | 80009     | 152032700      |
| A23CR431         | 152-0327-00        |            |         | SEMICON DVC,DI:SIG,SI,100MA,75V             | 80009     | 152032700      |
| A23FL500         | 119-1762-00        |            |         | FILTER,RFI:0.022UF,+50/-20%,50VW/FERRITE    | 80009     | 119176200      |
| A23R100          | 307-0923-00        |            |         | RES NTWK,FXD,FI:(8)330K OHM,5%,0.125W       | 80009     | 307092300      |
| A23R120          | 307-0923-00        |            |         | RES NTWK,FXD,FI:(8)330K OHM,5%,0.125W       | 80009     | 307092300      |
| A23R360          | 315-0101-00        |            |         | RES,FXD,FILM:100 OHM,5%,0.25W               | TK1727    | SFR25 2322-181 |
| A23R400          | 315-0103-00        |            |         | RES,FXD,FILM:10K OHM,5%,0.25W               | TK1727    | SFR25 2322-181 |
| A23R402          | 315-0103-00        |            |         | RES,FXD,FILM:10K OHM,5%,0.25W               | TK1727    | SFR25 2322-181 |
| A23R404          | 315-0103-00        |            |         | RES,FXD,FILM:10K OHM,5%,0.25W               | TK1727    | SFR25 2322-181 |
| A23R406          | 315-0103-00        |            |         | RES,FXD,FILM:10K OHM,5%,0.25W               | TK1727    | SFR25 2322-181 |
| A23R430          | 315-0102-00        |            |         | RES,FXD,FILM:1K OHM,5%,0.25W                | TK1727    | SFR25 2322-181 |
| A23R431          | 315-0101-00        |            |         | RES,FXD,FILM:100 OHM,5%,0.25W               | TK1727    | SFR25 2322-181 |
| A23R432          | 315-0103-00        |            |         | RES,FXD,FILM:10K OHM,5%,0.25W               | TK1727    | SFR25 2322-181 |
| A23R440          | 307-1181-00        |            |         | RES NTWK,FXD,FI:(8) 10K OHM,5%,0.1W         | 80009     | 307118100      |
| A23R450          | 315-0103-00        |            |         | RES,FXD,FILM:10K OHM,5%,0.25W               | TK1727    | SFR25 2322-181 |
| A23R460          | 307-1181-00        |            |         | RES NTWK,FXD,FI:(8) 10K OHM,5%,0.1W         | 80009     | 307118100      |
| A23R470          | 315-0103-00        |            |         | RES,FXD,FILM:10K OHM,5%,0.25W               | TK1727    | SFR25 2322-181 |
| A23TP100         | 131-0589-00        | J301393    | J302394 | TERMINAL,PIN:PRESSFIT/PCB,;MALE,STR         | 22526     | 48283-087      |
| A23TP200         | 131-0589-00        | J301393    | J302394 | TERMINAL,PIN:PRESSFIT/PCB,;MALE,STR         | 22526     | 48283-087      |
| A23U100          | 156-2300-00        |            |         | IC,DIGITAL:HCMOS,TRANSCEIVER;OCTAL          | 80009     | 156230000      |
| A23U120          | 156-2743-00        |            |         | IC,DIGITAL:HCMOS,BUFFER;OCTAL               | 80009     | 156274300      |
| A23U140          | 156-2825-00        |            |         | IC,DIGITAL:HCMOS,DEMUX/DECODER;DUAL         | 80009     | 156282500      |
| A23U200          | 156-2027-00        |            |         | IC,DIGITAL:HCMOS,GATE;HEX INV               | 01295     | SN74HC04N      |
| A23U300          | 156-2743-00        |            |         | IC,DIGITAL:HCMOS,BUFFER;OCTAL               | 80009     | 156274300      |
| A23U360          | 119-2314-00        | J301393    | J302173 | OSCILLATOR,DI:32MHZ,CRYSTAL                 | 80009     | 119231400      |
| A23U360          | 119-2314-01        | J302174    |         | OSCILLATOR,RF:XTAL CONT,32MHZ               | 80009     | 119231401      |
| A23U400          | 156-3701-00        |            |         | MICROCKT,DGTL:FLOPPY DISK CONTROLLER        | 80009     | 156370100      |

| Component Number | Tektronix Part No. | Serial No. |        | Name & Description                         | Mfr. Code | Mfr. Part No. |
|------------------|--------------------|------------|--------|--|-----------|---------------|
|                  |                    | Effective  | Dscont |  |           |               |
| A23U420          | 156-3698-00        |            |        | IC,DIGITAL:HCMOS,MUX/ENCODER;QUAD          | 80009     | 156369800     |
| A23U440          | 156-3712-00        |            |        | IC,DIGITAL:HCMOS,BUFFER;OCTAL INV, 3-STATE | 80009     | 156371200     |
| A23U460          | 156-2743-00        |            |        | IC,DIGITAL:HCMOS,BUFFER;OCTAL              | 80009     | 156274300     |
| A23W100          | 174-1692-00        |            |        | CA ASSY,SP,ELEC:24,28 AWG,12.0 L,RIBBON    | 80009     | 174169200     |
| A23W200          | 174-1611-00        |            |        | CA ASSY,SP,ELEC:34,28 AWG,9.0 L,RIBBON     | 80009     | 174161100     |

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|                  |                    | Effective  | Dscont |  |           |               |
| A24              | 119-3456-XX        |            |        | FLOPPY DISK UNI:3.5 INCH W/INTERFACE<br>(STANDARD ACCESSORY) | 80009     | 1193456XX     |



| Component Number | Tektronix Part No. | Serial No. |        | Name & Description                       | Mfr. Code | Mfr. Part No. |
|------------------|--------------------|------------|--------|--|-----------|---------------|
|                  |                    | Effective  | Dscont |  |           |               |
| A27              | 670-9323-XX        |            |        | CIRCUIT BD ASSY:PRIMARY                  | 80009     | 6709323XX     |
| A27C100          | 285-1377-00        |            |        | CAP,FXD,PLASTIC:0.22UF,20%,250V          | 80009     | 285137700     |
| A27C200          | 285-1377-00        |            |        | CAP,FXD,PLASTIC:0.22UF,20%,250V          | 80009     | 285137700     |
| A27E100          | 307-1324-00        |            |        | RES,V SENSITIVE:240VDC,0.8W              | 80009     | 307132400     |
| A27E200          | 307-1324-00        |            |        | RES,V SENSITIVE:240VDC,0.8W              | 80009     | 307132400     |
| A27J270          | 131-3667-00        |            |        | CONN,RCPT,ELEC:CKT BD,3 PIN              | 80009     | 131366700     |
| A27J272          | 131-3666-00        |            |        | CONN,RCPT,ELEC:CKT BD,2 PIN              | 80009     | 131366600     |
| A27J274          | 131-3669-00        |            |        | CONN,RCPT,ELEC:CKT BD,6 PIN              | 80009     | 131366900     |
| A27S200          | 260-1980-01        |            |        | SWITCH,SLIDE:DPDT,10A,125V,MKD 115V/230V | 7W718     | 4021.1913     |
| A27S300          | 260-1980-00        |            |        | SWITCH,SLIDE:DPDT,10A,125V,HI/LOW        | 7W718     | 4021.1914     |

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|                  |                    | Effective  | Dscont |  |           |               |
| A28              | 670-9324-XX        |            |        | CIRCUIT BD ASSY:LAMP                   | 80009     | 6709324XX     |
| A28DS100         | 150-0097-00        |            |        | LAMP,INCAND:6.3V,0.2A,#7381,WIRE LEADS | S3774     | 0L381BP       |
| A28DS102         | 150-0097-00        |            |        | LAMP,INCAND:6.3V,0.2A,#7381,WIRE LEADS | S3774     | 0L381BP       |
| A28DS104         | 150-0097-00        |            |        | LAMP,INCAND:6.3V,0.2A,#7381,WIRE LEADS | S3774     | 0L381BP       |

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| Component Number | Tektronix Part No. | Serial No. Effective | Dscont | Name & Description                     | Mfr. Code | Mfr. Part No. |
|------------------|--------------------|----------------------|--------|--|-----------|---------------|
| A29              | 670-9324-XX        |                      |        | CIRCUIT BD ASSY:LAMP                   | 80009     | 6709324XX     |
| A29DS100         | 150-0097-00        |                      |        | LAMP,INCAND:6.3V,0.2A,#7381,WIRE LEADS | S3774     | 0L381BP       |
| A29DS102         | 150-0097-00        |                      |        | LAMP,INCAND:6.3V,0.2A,#7381,WIRE LEADS | S3774     | 0L381BP       |
| A29DS104         | 150-0097-00        |                      |        | LAMP,INCAND:6.3V,0.2A,#7381,WIRE LEADS | S3774     | 0L381BP       |

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| Component Number | Tektronix Part No. | Serial No. |         | Name & Description                         | Mfr. Code | Mfr. Part No.   |
|------------------|--------------------|------------|---------|--|-----------|-----------------|
|                  |                    | Effective  | Dscont  |  |           |                 |
| A33              | 671-1096-XX        |            |         | CIRCUIT BD ASSY:CONFIGURATION RELAY        | 80009     | 6711096XX       |
| A33CR600         | 152-0327-00        |            |         | SEMICON DVC,DI:SIG,SI,100MA,75V            | 80009     | 152032700       |
| A33CR602         | 152-0327-00        |            |         | SEMICON DVC,DI:SIG,SI,100MA,75V            | 80009     | 152032700       |
| A33CR604         | 152-0327-00        |            |         | SEMICON DVC,DI:SIG,SI,100MA,75V            | 80009     | 152032700       |
| A33CR608         | 152-0327-00        |            |         | SEMICON DVC,DI:SIG,SI,100MA,75V            | 80009     | 152032700       |
| A33CR610         | 152-0327-00        |            |         | SEMICON DVC,DI:SIG,SI,100MA,75V            | 80009     | 152032700       |
| A33CR612         | 152-0327-00        |            |         | SEMICON DVC,DI:SIG,SI,100MA,75V            | 80009     | 152032700       |
| A33CR614         | 152-0327-00        |            |         | SEMICON DVC,DI:SIG,SI,100MA,75V            | 80009     | 152032700       |
| A33CR630         | 152-0327-00        |            |         | SEMICON DVC,DI:SIG,SI,100MA,75V            | 80009     | 152032700       |
| A33CR640         | 152-0327-00        |            |         | SEMICON DVC,DI:SIG,SI,100MA,75V            | 80009     | 152032700       |
| A33E100          | 276-0752-00        |            |         | CORE,EM:BEAD ON LEAD;UO=850 30%            | TK1442    | BP53-BH3.5X10X4 |
| A33E110          | 276-0752-00        |            |         | CORE,EM:BEAD ON LEAD;UO=850 30%            | TK1442    | BP53-BH3.5X10X4 |
| A33J102          | 131-3666-00        |            |         | CONN,RCPT,ELEC:CKT BD,2 PIN                | 80009     | 131366600       |
| A33J103          | 131-0589-00        |            |         | TERMINAL,PIN:PRESSFIT/PCB,;MALE,STR        | 22526     | 48283-087       |
| A33J104          | 131-3668-00        |            |         | CONN,RCPT,ELEC:CKT BD,4 PIN                | 80009     | 131366800       |
| A33K600          | 148-0189-00        |            |         | RELAY,ARM:DPST,8A,380V,COIL,12VDC          | 80009     | 148018900       |
| A33K602          | 148-0189-00        |            |         | RELAY,ARM:DPST,8A,380V,COIL,12VDC          | 80009     | 148018900       |
| A33K604          | 148-0192-00        |            |         | RELAY,ARM:DPDT,4A,250V COIL,12VDC          | 80009     | 148019200       |
| A33K608          | 148-0192-00        |            |         | RELAY,ARM:DPDT,4A,250V COIL,12VDC          | 80009     | 148019200       |
| A33K610          | 148-0189-00        |            |         | RELAY,ARM:DPST,8A,380V,COIL,12VDC          | 80009     | 148018900       |
| A33K612          | 148-0189-00        |            |         | RELAY,ARM:DPST,8A,380V,COIL,12VDC          | 80009     | 148018900       |
| A33K614          | 148-0228-00        |            |         | RELAY,ARM:DPDT,5A 250VAC,COIL,12VDC480 OHM | 80009     | 148022800       |
| A33K630          | 148-0191-00        |            |         | RELAY,ARM:QPST,4A,250V,COIL,12VDC          | 80009     | 148019100       |
| A33K640          | 148-0191-00        |            |         | RELAY,ARM:QPST,4A,250V,COIL,12VDC          | 80009     | 148019100       |
| A33R600          | 301-0471-00        |            |         | RES,FXD,FILM:470 OHM,5%,0.5W               | TK1727    | SFR30 2322-182  |
| A33W100          | 131-0566-04        |            |         | BUS,CONDUCTOR:DUMMY RES,18 OD X 3.2MM L    | 80009     | 131056604       |
| A33W102          | 131-0566-04        |            |         | BUS,CONDUCTOR:DUMMY RES,18 OD X 3.2MM L    | 80009     | 131056604       |
| A33W110          | 131-0566-04        |            |         | BUS,CONDUCTOR:DUMMY RES,18 OD X 3.2MM L    | 80009     | 131056604       |
| A33W112          | 131-0566-04        |            |         | BUS,CONDUCTOR:DUMMY RES,18 OD X 3.2MM L    | 80009     | 131056604       |
| A33W302          | 198-5676-00        | J301393    | J302261 | WIRE SET,ELEC:                             | 80009     | 198567600       |
| A33W302          | 198-5812-00        | J302262    |         | WIRE SET,ELEC:                             | 80009     | 198581200       |
| A33W330          | 174-1951-00        |            |         | CA ASSY,SELEC:14,28 AWG,11.0 L,RIBBON      | 80009     | 174195100       |
| A33W419          | 198-5675-00        |            |         | WIRE SET,ELEC:                             | 80009     | 198567500       |

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|------------------|--------------------|----------------------|---------|--|-----------|----------------|
| A34              | 671-1140-XX        |                      |         | CIRCUIT BD ASSY:LOR RELAY                  | 80009     | 6711140XX      |
| A34CR920a        | 152-0935-00        |                      |         | SEMICON DVC,DI:SI,1.0A,280V                | 80009     | 152093500      |
| A34CR930         | 152-0935-00        |                      |         | SEMICON DVC,DI:SI,1.0A,280V                | 80009     | 152093500      |
| A34CR940         | 152-0935-00        |                      |         | SEMICON DVC,DI:SI,1.0A,280V                | 80009     | 152093500      |
| A34J91           | 131-4216-00        |                      |         | CONN,RCPT,ELEC:PWR,FEMALE,15A              | 80009     | 131421600      |
| A34J95           | 131-4216-00        |                      |         | CONN,RCPT,ELEC:PWR,FEMALE,15A              | 80009     | 131421600      |
| A34K920          | 148-0210-01        | J301393              | J301792 | RELAY,ARM:SPST,250V,30A,COIL 12VDC,75 OHM  | 80009     | 148021001      |
| A34K920          | 148-0210-02        | J301793              |         | RELAY,ARM:1 FORM A,250V,30A,COIL 12VDC     | 80009     | 148021002      |
| A34K930          | 148-0210-01        | J301393              | J301792 | RELAY,ARM:SPST,250V,30A,COIL 12VDC,75 OHM  | 80009     | 148021001      |
| A34K930          | 148-0210-02        | J301793              |         | RELAY,ARM:1 FORM A,250V,30A,COIL 12VDC     | 80009     | 148021002      |
| A34K940          | 148-0210-01        | J301393              | J301792 | RELAY,ARM:SPST,250V,30A,COIL 12VDC,75 OHM  | 80009     | 148021001      |
| A34K940          | 148-0210-02        | J301793              |         | RELAY,ARM:1 FORM A,250V,30A,COIL 12VDC     | 80009     | 148021002      |
| A34W89           | 198-5688-00        |                      |         | WIRE SET,ELEC:                             | 80009     | 198568800      |
| A34W94           | 196-3276-00        |                      |         | LEAD,ELECTRICAL:18 AWG,37.0 L,9-N          | 80009     | 196327600      |
| A34W97           | 198-5687-00        |                      |         | WIRE SET,ELEC:                             | 80009     | 198568700      |
| A35              | 671-1147-XX        |                      |         | CIRCUIT BD ASSY:LOOPING                    | 80009     | 6711147XX      |
| A35C500          | 283-0631-00        |                      |         | CAP,FXD,MICA DI:95PF,1%,500V               | TK0891    | RDM15FD950F03  |
| A35C501          | 285-1371-00        |                      |         | CAP,FXD,PLASTIC:0.01UF,10%,160V            | 80009     | 285137100      |
| A35C502          | 283-0687-00        |                      |         | CAP,FXD,MICA DI:560PF,2%,300V              | TK0891    | RDM15FC561G03  |
| A35J84           | 131-3782-00        |                      |         | CONN,RCPT,ELEC:HEADER,RTANG,1 X 10,0.1 CTR | 80009     | 131378200      |
| A35J85           | 131-3782-00        |                      |         | CONN,RCPT,ELEC:HEADER,RTANG,1 X 10,0.1 CTR | 80009     | 131378200      |
| A35R200          | 315-0511-00        |                      |         | RES,FXD,FILM:510 OHM,5%,0.25W              | TK1727    | SFR25 2322-181 |
| A35R202          | 315-0511-00        |                      |         | RES,FXD,FILM:510 OHM,5%,0.25W              | TK1727    | SFR25 2322-181 |
| A35R310          | 315-0183-00        |                      |         | RES,FXD,FILM:18K OHM,5%,0.25W              | TK1727    | SFR25 2322-181 |
| A35R312          | 315-0183-00        |                      |         | RES,FXD,FILM:18K OHM,5%,0.25W              | TK1727    | SFR25 2322-181 |
| A35R500          | 311-0606-00        |                      |         | RES,VAR,NONWW:TRMR,500K OHM,0.5W           | 32997     | 3329-H-G48-504 |
| A35R501          | 311-0609-00        |                      |         | RES,VAR,NONWW:TRMR,2K OHM,0.5W             | 32997     | 3329H-L58-202  |
| A35R502          | 311-0609-00        |                      |         | RES,VAR,NONWW:TRMR,2K OHM,0.5W             | 32997     | 3329H-L58-202  |
| A35R503          | 311-0609-00        |                      |         | RES,VAR,NONWW:TRMR,2K OHM,0.5W             | 32997     | 3329H-L58-202  |
| A35R504          | 311-1230-00        |                      |         | RES,VAR,NONWW:TRMR,20K OHM,0.5W            | 32997     | 3386F-1-203    |

### 370A Service Manual

| Component Number | Tektronix Part No. | Serial No. |         | Name & Description                         | Mfr. Code | Mfr. Part No.   |
|------------------|--------------------|------------|---------|--|-----------|-----------------|
|                  |                    | Effective  | Dscont  |  |           |                 |
| B100             | 119-3674-00        | J301393    | J302156 | FAN,TUBEAXIAL:115 VAC,240MA,19W,2650 RPM   | 80009     | 119367400       |
| B100             | 119-2310-01        | J302157    |         | FAN,TUBEXIAL:115VAC,230MA,16W,2650RPM      | 80009     | 119231001       |
| C704             | 281-0773-00        |            |         | CAP,FXD,CERAMIC:MLC;0.01UF,10%,100V        | TK1743    | CGB103KEX       |
| E101             | 276-0635-00        | J301978    |         | CORE,EM:TOROID;FERRITE,UO=5,000 20% (1KHZ) | 02114     | 768 T188/3E2A   |
| E102             | 276-0635-00        | J301978    |         | CORE,EM:TOROID;FERRITE,UO=5,000 20% (1KHZ) | 02114     | 768 T188/3E2A   |
| E103             | 276-0635-00        | J301978    |         | CORE,EM:TOROID;FERRITE,UO=5,000 20% (1KHZ) | 02114     | 768 T188/3E2A   |
| E104             | 276-0635-00        | J301978    |         | CORE,EM:TOROID;FERRITE,UO=5,000 20% (1KHZ) | 02114     | 768 T188/3E2A   |
| E608             | 119-0181-00        |            |         | ARSR,ELEC SURGE:230V, +/-15%; GAS          | 0C8T6     | BBS-230V +/-15% |
| E702             | 119-0181-00        |            |         | ARSR,ELEC SURGE:230V, +/-15%; GAS          | 0C8T6     | BBS-230V +/-15% |
| E704             | 119-0181-00        |            |         | ARSR,ELEC SURGE:230V, +/-15%; GAS          | 0C8T6     | BBS-230V +/-15% |
| F100             | 159-0259-00        |            |         | FUSE,CARTRIDGE:4A,125V,MEDIUM (115V ONLY)  | 80009     | 159025900       |
| F100             | 159-0260-00        |            |         | FUSE,CARTRIDGE:2A,250V,MEDIUM (230V ONLY)  | 80009     | 159026000       |
| FL100            | 119-3603-00        |            |         | FILTER,RFI:115/230V,4A                     | 80009     | 119360300       |
| J500             | 136-0887-00        |            |         | SOCKET,PIN TERM:0.16 DIA,RED               | 80009     | 136088700       |
| J502             | 136-0887-00        |            |         | SOCKET,PIN TERM:0.16 DIA,RED               | 80009     | 136088700       |
| J504             | 136-0888-00        |            |         | SOCKET,PIN TERM:0.16 DIA,GRAY              | 80009     | 136088800       |
| J506             | 136-0888-00        |            |         | SOCKET,PIN TERM:0.16 DIA,GRAY              | 80009     | 136088800       |
| J508             | 136-0888-00        |            |         | SOCKET,PIN TERM:0.16 DIA,GRAY              | 80009     | 136088800       |
| J510             | 136-0888-00        |            |         | SOCKET,PIN TERM:0.16 DIA,GRAY              | 80009     | 136088800       |
| J600             | 136-0887-00        |            |         | SOCKET,PIN TERM:0.16 DIA,RED               | 80009     | 136088700       |
| J602             | 136-0887-00        |            |         | SOCKET,PIN TERM:0.16 DIA,RED               | 80009     | 136088700       |
| J604             | 136-0888-00        |            |         | SOCKET,PIN TERM:0.16 DIA,GRAY              | 80009     | 136088800       |
| J606             | 136-0888-00        |            |         | SOCKET,PIN TERM:0.16 DIA,GRAY              | 80009     | 136088800       |
| J608             | 136-0888-00        |            |         | SOCKET,PIN TERM:0.16 DIA,GRAY              | 80009     | 136088800       |
| J610             | 136-0888-00        |            |         | SOCKET,PIN TERM:0.16 DIA,GRAY              | 80009     | 136088800       |
| J702             | 136-0888-00        |            |         | SOCKET,PIN TERM:0.16 DIA,GRAY              | 80009     | 136088800       |
| J704             | 136-0888-00        |            |         | SOCKET,PIN TERM:0.16 DIA,GRAY              | 80009     | 136088800       |
| J706             | 136-0888-00        |            |         | SOCKET,PIN TERM:0.16 DIA,GRAY              | 80009     | 136088800       |
| L100             | 108-1345-02        |            |         | COIL,TUBE DEFL:TRACE ROTATOR               | 80009     | 108134502       |
| L120             | 108-1347-01        |            |         | COIL,TUBE DEFL:Y-AXIS ALIGNMENT            | 80009     | 108134701       |
| R200             | 301-0104-00        |            |         | RES,FXD,CMPSN:100K OHM,5%,0.5W             | 80009     | 301010400       |
| R202             | 301-0104-00        |            |         | RES,FXD,CMPSN:100K OHM,5%,0.5W             | 80009     | 301010400       |
| R204             | 301-0104-00        |            |         | RES,FXD,CMPSN:100K OHM,5%,0.5W             | 80009     | 301010400       |
| R210             | 311-2457-00        |            |         | RES,VAR,NONWW:PNL,10K OHM,1/2W,20%         | 80009     | 311245700       |
| R300             | 301-0104-00        |            |         | RES,FXD,CMPSN:100K OHM,5%,0.5W             | 80009     | 301010400       |
| R302             | 301-0104-00        |            |         | RES,FXD,CMPSN:100K OHM,5%,0.5W             | 80009     | 301010400       |
| R304             | 301-0104-00        |            |         | RES,FXD,CMPSN:100K OHM,5%,0.5W             | 80009     | 301010400       |
| R400             | 307-1541-01        |            |         | RES,FXD,FILM:1.1 OHM TO 25K OHM,2%,W/CONN  | 80009     | 307154101       |
| S90              | 260-2328-01        |            |         | SWITCH,THRMSTC:NC,OPEN,70.0,3.0 A,250V     | S3385     | 5003F70B1-GUL   |
| S92              | 260-2332-01        |            |         | SWITCH,THRMSTC:NC,OPEN 70 DEG C,3A,250V    | S3385     | ORDER BY DESC   |

| Component Number | Tektronix Part No. | Serial No. |         | Name & Description   | Mfr. Code | Mfr. Part No. |
|------------------|--------------------|------------|---------|--|-----------|---------------|
|                  |                    | Effective  | Dscont  |  |           |               |
| S100             | 260-2323-00        |            |         | SWITCH,PUSH:DPST,15A,250V,ON/OFF                                     | 80009     | 260232300     |
| S200             | 260-2497-01        | J301393    | J302451 | SWITCH,ROTARY:ENCODER  | 80009     | 260249701     |
| S200             | 260-2497-03        | J302452    |         | SWITCH,ROTARY:ENCODER  | 80009     | 260249703     |
| S400             | 260-2324-00        |            |         | SW,SENSITIVE:SPDT,3A,250VAC,INTERLOCK                                | 80009     | 260232400     |
| S402             | 260-2324-00        |            |         | SW,SENSITIVE:SPDT,3A,250VAC,INTERLOCK                                | 80009     | 260232400     |
| S800             | 260-2499-00        |            |         | CIRCUIT BREAKER:SPST,1.5A,250 VAC                                    | 80009     | 260249900     |
| T100             | 120-1678-01        |            |         | XFMR,PWR,STU:100-120VAC IN,48-66HZ                                   | 80009     | 120167801     |
| T200             | 120-1677-01        |            |         | XFMR,PWR,STU:CLCT SUPPLY,70V IN,40-66HZ                              | 80009     | 120167701     |
| U300             | 119-3477-00        | J301393    | J301399 | RELAY MODULE:8 RELAYS  | 80009     | 119347700     |
| U300             | 119-3477-01        | J301400    | J302534 | RELAY MODULE:W/8 RELAYS  | 80009     | 119347701     |
| U300             | 119-3477-02        | J302535    |         | RELAY MODULE:W/8 RELAYS (U300 SHOULD BE CHANGED WITH A10C322 20 PF.) | 80009     | 119347702     |
| U800             | 119-3414-00        | J301393    | J301399 | HV MODULE:W/18 RELAYS  | 80009     | 119341400     |
| U800             | 119-3414-01        | J301400    | J302154 | HIGH V MODULE:W/18 RELAYS,370A                                       | 80009     | 119341401     |
| U800             | 119-3414-02        | J302155    |         | HIGH V MODULE:W/18 RELAYS,370A                                       | 80009     | 119341402     |
| V100             | 154-0928-00        |            |         | ELECTRON TUBE:CRT,P31,INT SCALE                                      | 80009     | 154092800     |
| W3               | 198-5683-00        |            |         | WIRE SET,ELEC:   | 80009     | 198568300     |
| W4               | 198-5700-00        |            |         | WIRE SET,ELEC:   | 80009     | 198570000     |
| W14              | 196-3099-00        |            |         | LEAD,ELECTRICAL:24 AWG,10.0 L  | 80009     | 196309900     |
| W16              | 196-3110-00        |            |         | LEAD,ELECTRICAL:18 AWG,7.0 L,8-0                                     | 80009     | 196311000     |
| W17              | 196-3112-01        |            |         | LEAD,ELECTRICAL:18 AWG,6.0 L,5-4                                     | 80009     | 196311201     |
| W18              | 196-3111-00        |            |         | LEAD,ELECTRICAL:18 AWG,7.0 L,8-9                                     | 80009     | 196311100     |
| W19              | 196-3098-01        |            |         | LEAD,ELECTRICAL:18 AWG,7.0 L,5-4                                     | 80009     | 196309801     |
| W66              | 174-0304-00        |            |         | CA ASSY,SP,ELEC:2,26 AWG,6.0 L,RIBBON                                | 80009     | 174030400     |
| W72              | 174-0310-00        |            |         | CA ASSY,SP,ELEC:10,22 AWG,18.0 L,RIBBON                              | 80009     | 174031000     |
| W91              | 198-5680-01        |            |         | WIRE SET,ELEC:   | 80009     | 198568001     |
| W93              | 198-5696-00        |            |         | WIRE SET,ELEC:   | 80009     | 198569600     |
| W95              | 198-5680-00        |            |         | WIRE SET,ELEC:   | 80009     | 198568000     |
| W102             | 198-5679-00        |            |         | WIRE SET,ELEC:   | 80009     | 198567900     |
| W103             | 198-5682-00        |            |         | WIRE SET,ELEC:   | 80009     | 198568200     |
| W104             | 198-5681-00        | J301393    | J301977 | WIRE SET,ELEC:   | 80009     | 198568100     |
| W104             | 198-5681-01        | J301978    |         | WIRE SET,ELEC:   | 80009     | 198568101     |
| W111             | 196-3096-00        |            |         | LEAD,ELECTRICAL:18 AWG,3.5 L,5-4                                     | 80009     | 196309600     |
| W112             | 196-3096-00        |            |         | LEAD,ELECTRICAL:18 AWG,3.5 L,5-4                                     | 80009     | 196309600     |
| W142             | 174-1693-00        |            |         | CA ASSY,SP,ELEC:34,28 AWG,130.0 L,RIBBON                             | 80009     | 174169300     |
| W180             | 174-0314-00        |            |         | CA ASSY,SP,ELEC:9,26 AWG,7.5 L,RIBBON                                | 80009     | 174031400     |
| W182             | 174-0309-00        |            |         | CA ASSY,SP,ELEC:10,22 AWG,5.0 L,RIBBON                               | 80009     | 174030900     |
| W190             | 174-0328-00        |            |         | CA ASSY,SP,ELEC:4,18 AWG,15.5 L                                      | 80009     | 174032800     |
| W194             | 174-0308-00        |            |         | CA ASSY,SP,ELEC:6,22 AWG,20.0 L,RIBBON                               | 80009     | 174030800     |
| W210             | 198-5686-00        |            |         | WIRE SET,ELEC:   | 80009     | 198568600     |
| W270             | 174-0327-00        |            |         | CA ASSY,SP,ELEC:2,18 AWG,7.0 L                                       | 80009     | 174032700     |

### 370A Service Manual

| Component Number | Tektronix Part No. | Serial No. |         | Name & Description                     | Mfr. Code | Mfr. Part No. |
|------------------|--------------------|------------|---------|--|-----------|---------------|
|                  |                    | Effective  | Dscont  |  |           |               |
| W272             | 161-0255-01        | J301393    | J301412 | CABLE ASSY,PWR,;2,0.75MM SQ,250V,3A    | 80009     | 161025501     |
| W272             | 198-5733-00        | J301413    | J301577 | WIRE SET,ELEC:                         | 80009     | 198573300     |
| W272             | 161-0257-01        | J301578    | J302156 | CABLE ASSY,PWR,;125V,1A,200MM L        | 80009     | 161025701     |
| W280             | 174-0313-00        |            |         | CA ASSY,SP,ELEC:2,26 AWG,30.0 L,RIBBON | 80009     | 174031300     |
| W290             | 174-0312-00        |            |         | CA ASSY,SP,ELEC:2,26 AWG,22.0 L,RIBBON | 80009     | 174031200     |
| W400             | 174-0296-00        |            |         | CA ASSY,SP,ELEC:34,28 AWG,5.5 L,RIBBON | 80009     | 174029600     |
| W401             | 198-5685-00        |            |         | WIRE SET,ELEC:                         | 80009     | 198568500     |
| W402             | 196-3270-00        |            |         | LEAD,ELECTRICAL:26 AWG,28.0 L,N-0      | 80009     | 196327000     |
| W410             | 198-5468-00        |            |         | WIRE SET,ELEC:                         | 80009     | 198546800     |
| W490             | 198-5714-00        |            |         | WIRE SET,ELEC:370A,W/D-SUB CONN        | 80009     | 198571400     |
| W491             | 198-5713-00        |            |         | WIRE SET,ELEC:370A,W/D-SUB CONN        | 80009     | 198571300     |



# Diagrams



# Schematic Diagrams and Circuit Board Illustrations

## Symbols

Graphic symbols and class designation letters are based on ANSI Standard Y32.2-1975.

Logic symbology is based on ANSI/IEEE Std 91-1984 in terms of positive logic. Logic symbols depict the logic function performed and may differ from the manufacturer's data.

The overline on a signal name indicates that the signal performs its intended function when it is in the low state.

Abbreviations are based on ANSI Y1.1-1972.

Other ANSI standards that are used in the preparation of diagrams by Tektronix, Inc. are:

Y14.15, 1966 Drafting Practices.  
 Y14.2, 1973 Line Conventions and Lettering.  
 Y10.5, 1968 Letter Symbols for Quantities Used in Electrical Science and Electrical Engineering.

American National Standard Institute  
 1430 Broadway  
 New York, New York 10018

## Component Values

Electrical components shown on the diagrams are in the following units unless noted otherwise:

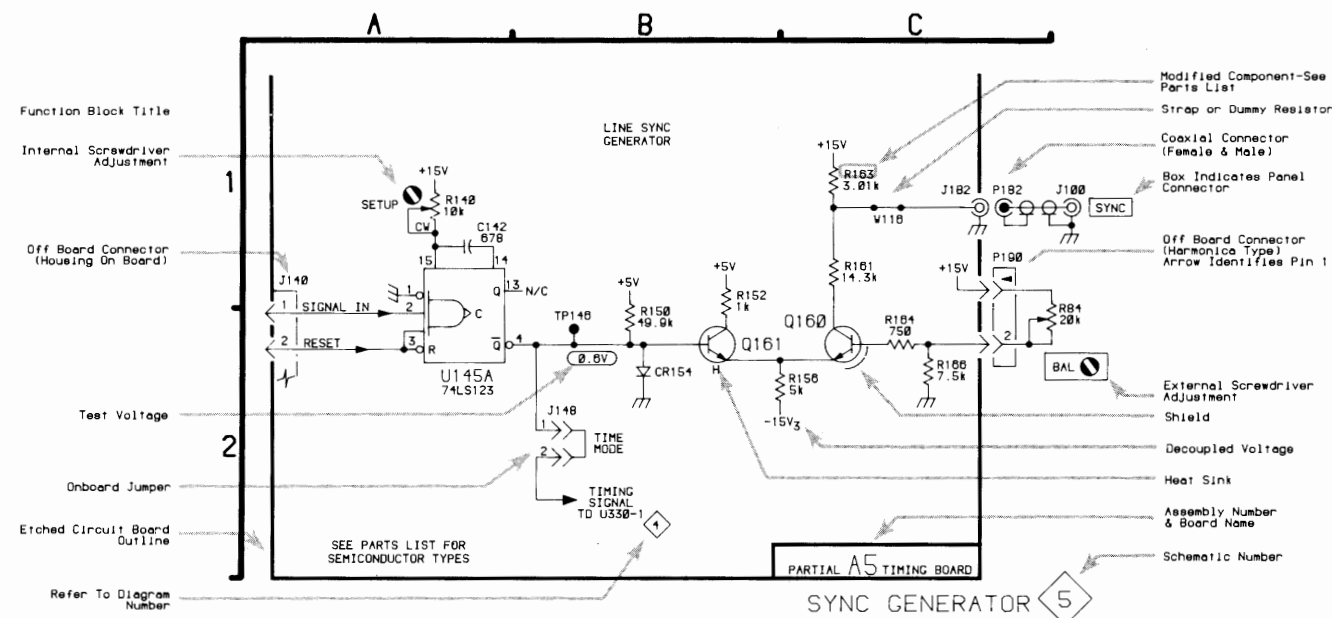
Capacitors = Values one or greater are in picofarads (pF). Values less than one are in microfarads (μF).  
 Resistors = Ohms (Ω).

**The information and special symbols below may appear in this manual.**

## Assembly Numbers and Grid Coordinates

Each assembly in the instrument is assigned an assembly number (e.g., A20). The assembly number appears on the circuit board outline on the diagram, in the title for the circuit board component location illustration, and in the lookup table for the schematic diagram and corresponding component locator illustration. The Replaceable Electrical Parts list is arranged by assemblies in numerical sequence; the components are listed by component number.

The schematic diagram and circuit board component location illustration have grids. A lookup table with the grid coordinates is provided for ease of locating the component. Only the components illustrated on the following diagram are listed in the lookup table. When more than one schematic diagram is used to illustrate the circuitry on a circuit board, the circuit board illustration may only appear previous to the first diagram on which it was illustrated; the lookup table will list the diagram number of other diagrams that the circuitry of the circuit board appears on.



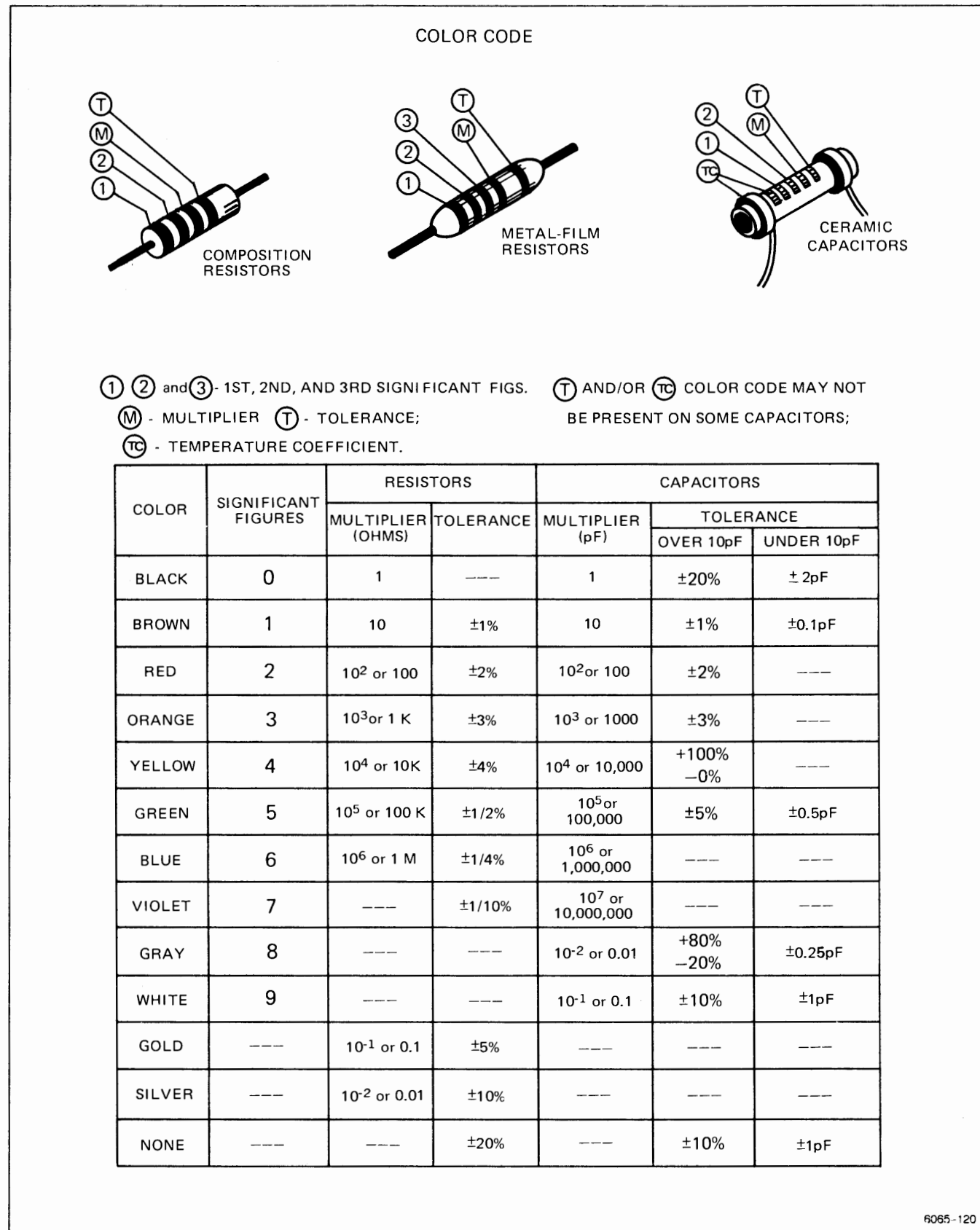
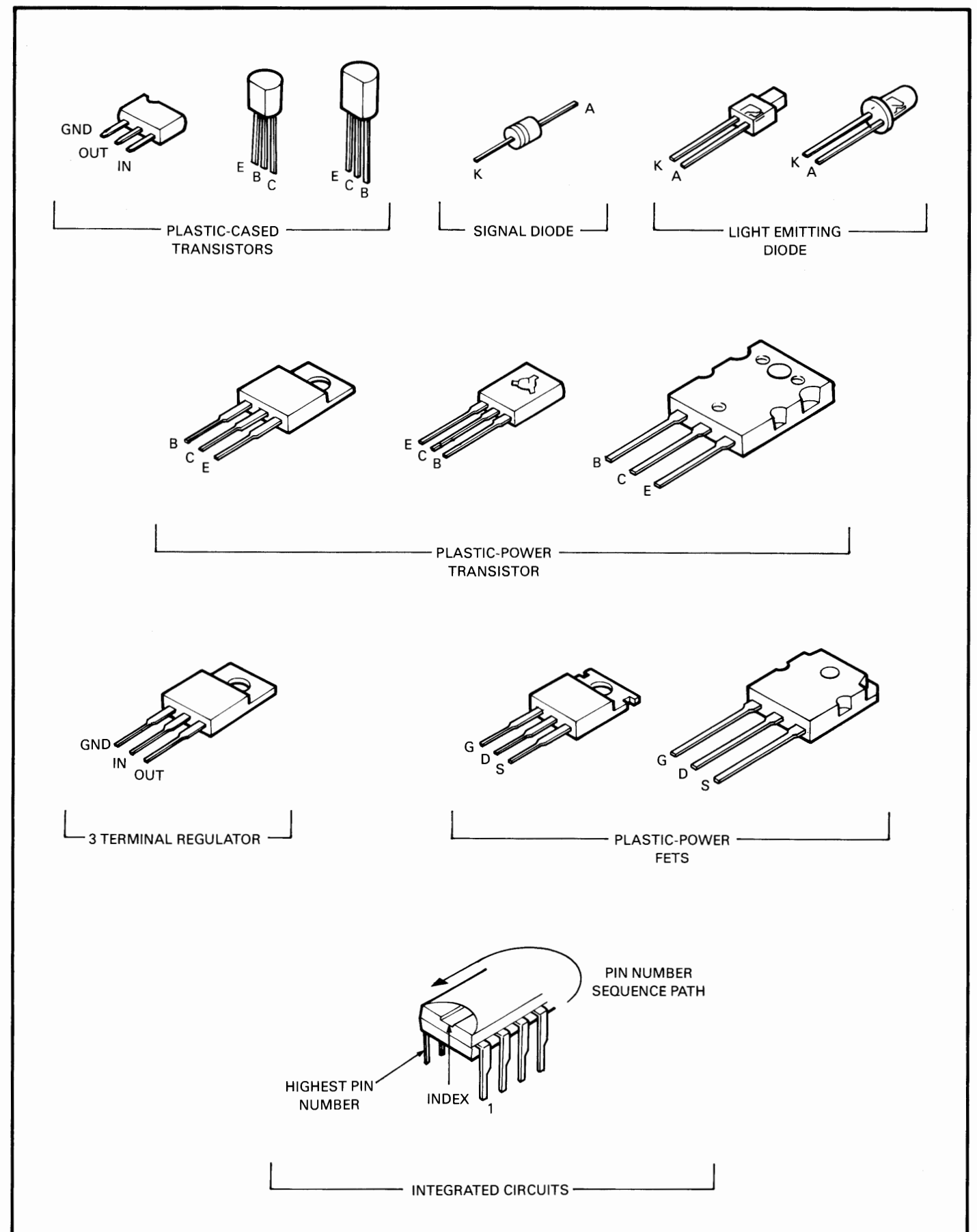
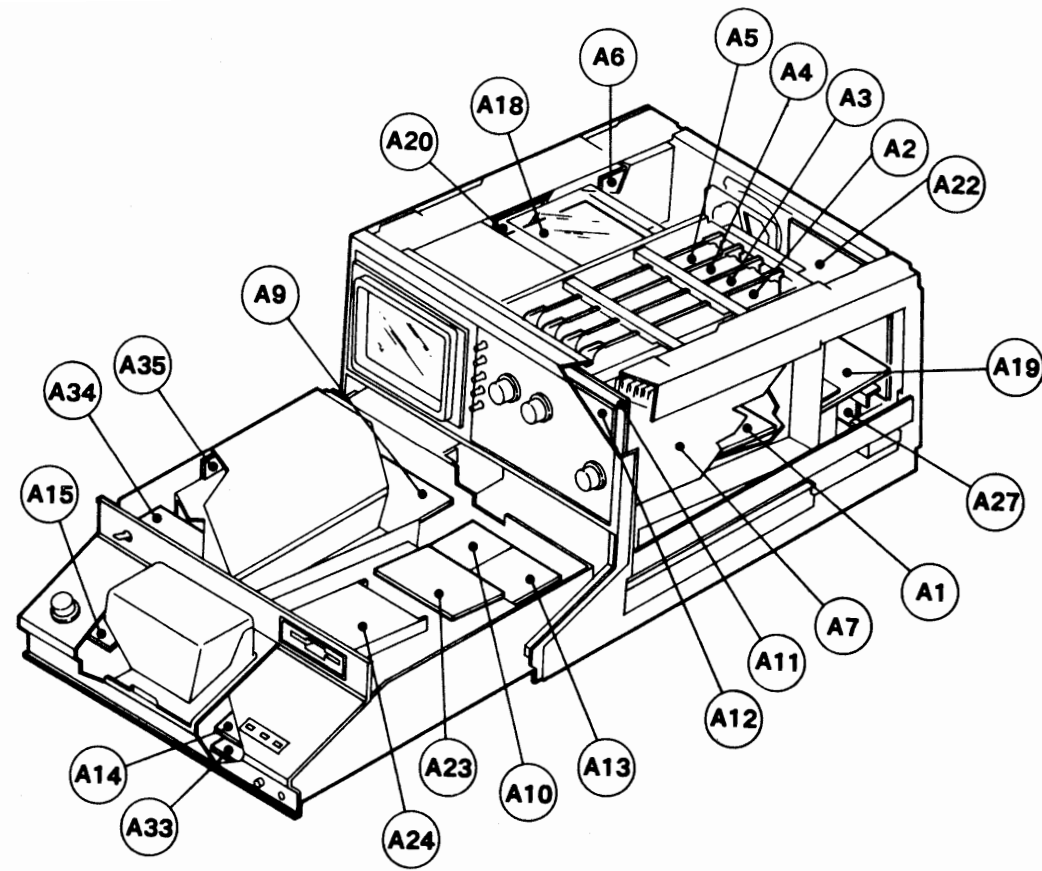


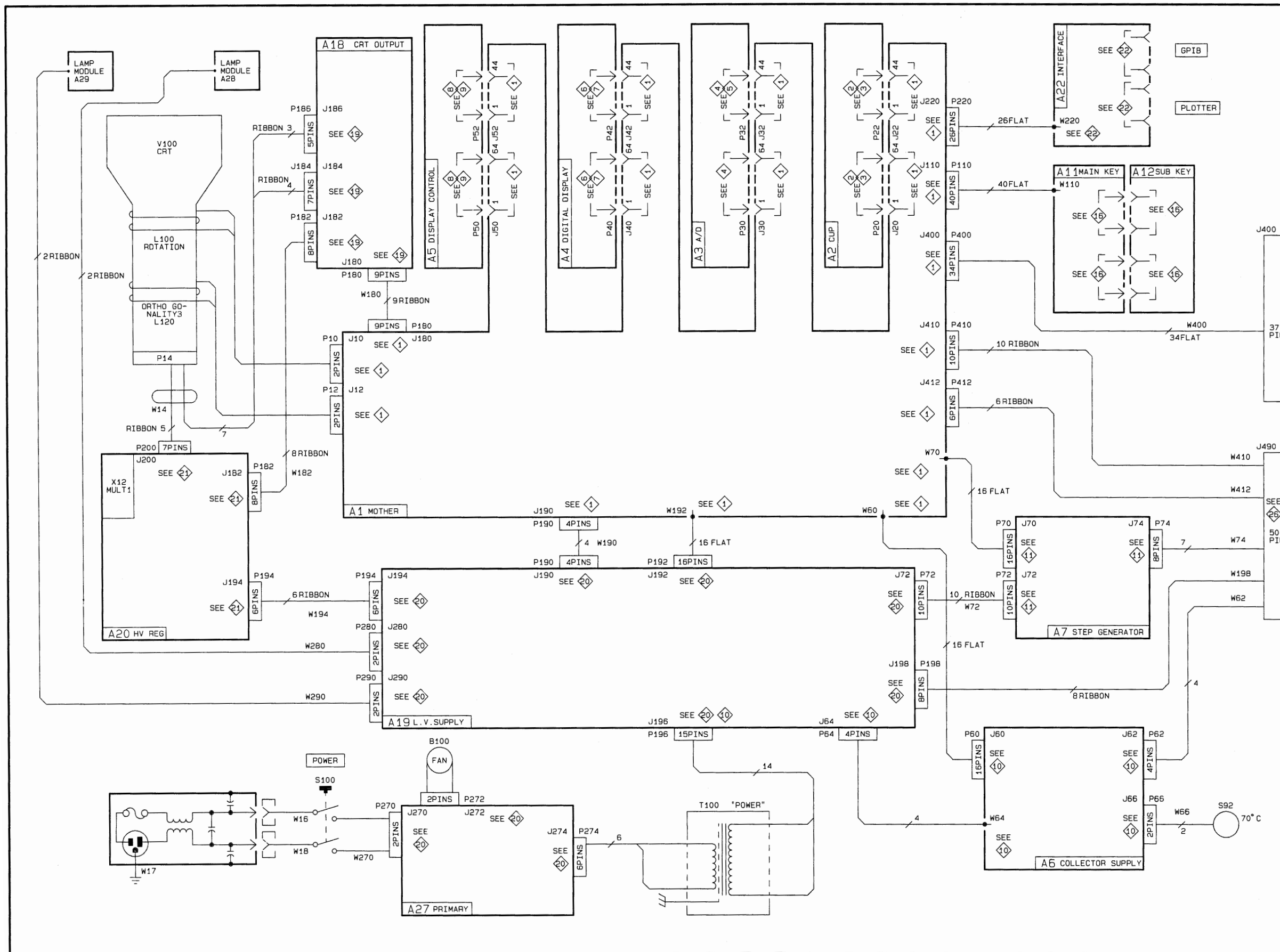
Figure 7-1. Resistor and capacitor color coding.





| ASSEMBLY NUMBER | DIAGRAM NUMBER(S) | ASSEMBLY NUMBER | DIAGRAM NUMBER(S) |
|-----------------|-------------------|-----------------|-------------------|
| A1              | 1,9               | A15             | 18                |
| A2              | 2,3               | A18             | 19                |
| A3              | 4a, 4b, 5         | A19             | 10,20             |
| A4              | 6,7               | A20             | 21                |
| A5              | 8,9               | A22             | 22                |
| A6              | 10                | A23             | 25                |
| A7              | 11                | A24             | NO SCHEMATIC      |
| A9              | 12,13             | A27             | 20                |
| A10             | 14,15a, 15b       | A28             | 20                |
| A11             | 16                | A29             | 20                |
| A12             | 16, 17            | A33             | 23                |
| A13             | 15b               | A34             | 12                |
| A14             | 24                | A35             | 13                |

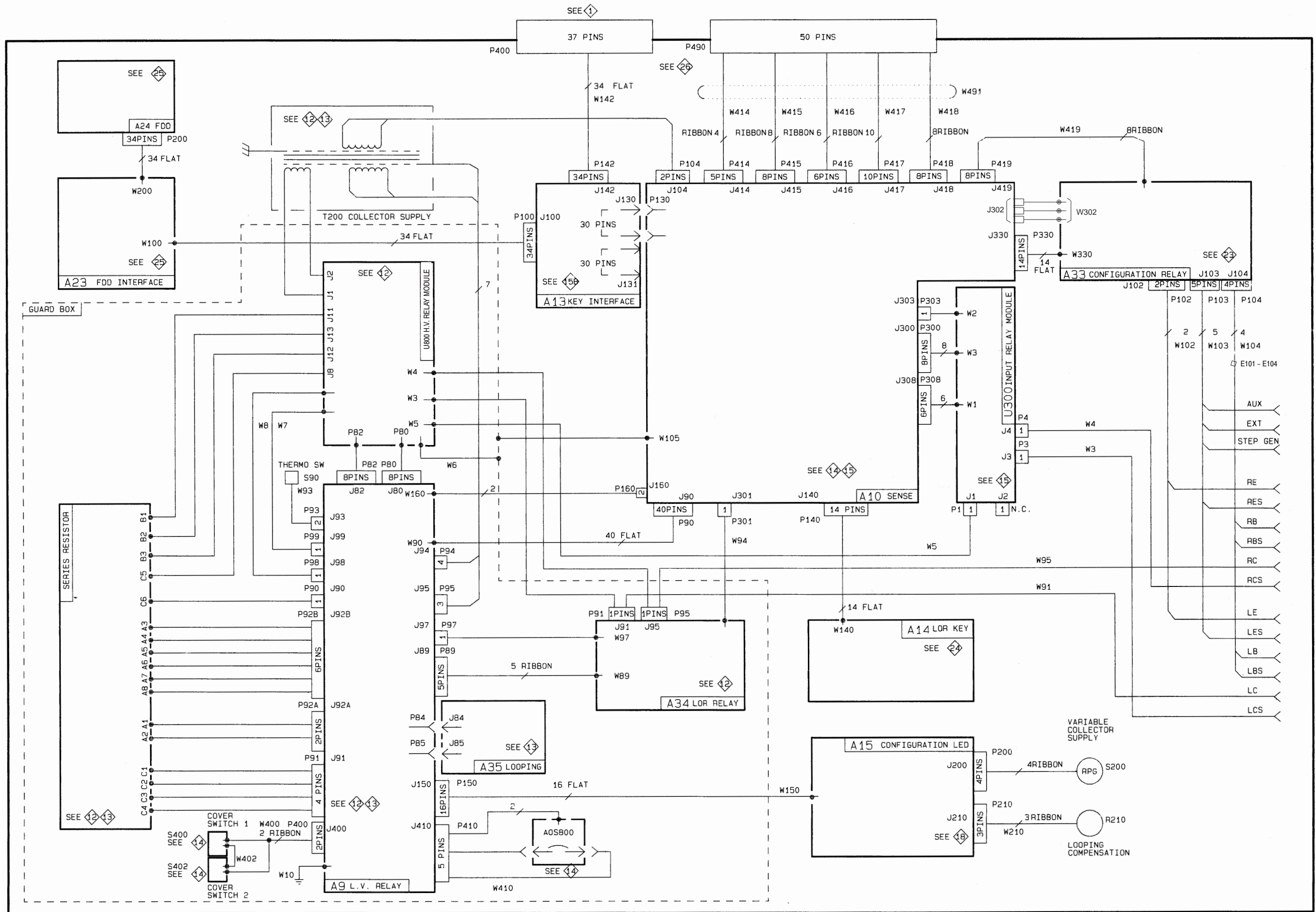
Figure 7-3. 370A Circuit board locator.



CIRCUIT BOARD INTERCONNECTIONS 1

Figure 7-4. Circuit board interconnections.

Please cut out the area below the lines.



REV MAR 96

Figure 7-5. Circuit board interconnections.

CIRCUIT BOARD INTERCONNECTIONS 2

Please cut out the area below the lines.

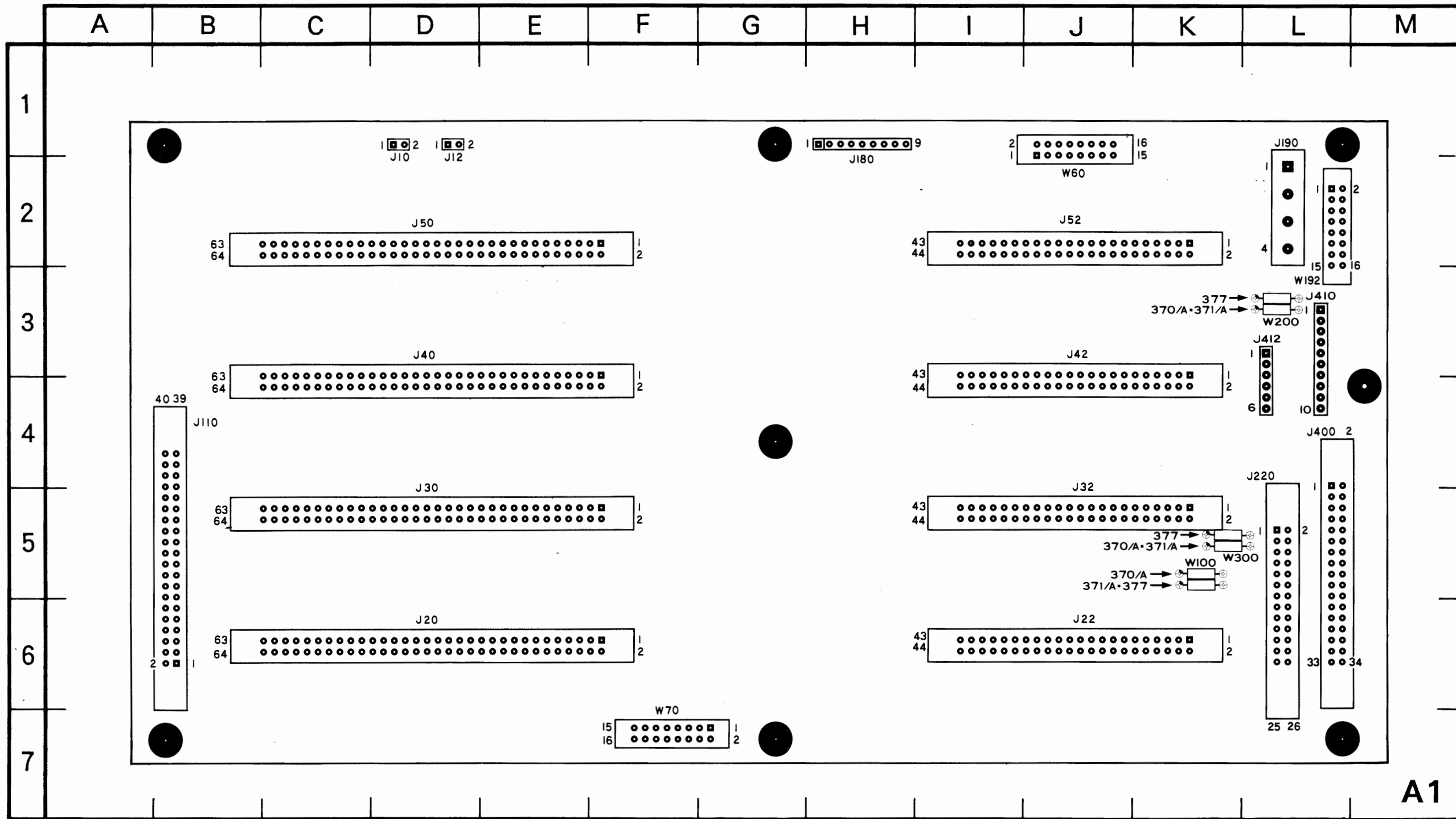


Figure 7-6. A1 — Interconnection circuit board assembly.

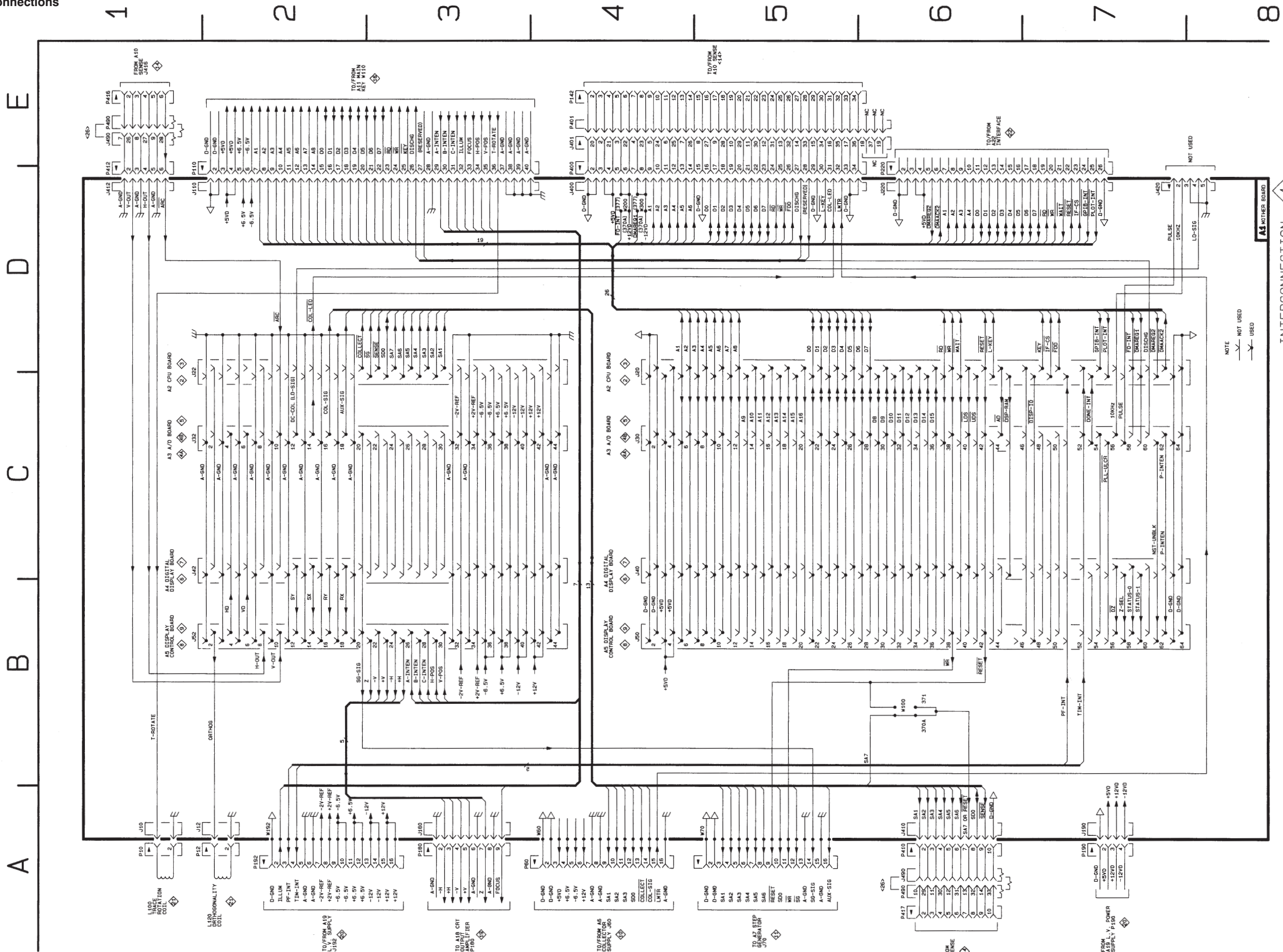


**INTERCONNECTION**



| <b>ASSEMBLY A1</b>           |                |                |                |                |                |                |                |                |
|------------------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| CIRCUIT NUMBER               | SCHEM LOCATION | BOARD LOCATION | CIRCUIT NUMBER | SCHEM LOCATION | BOARD LOCATION | CIRCUIT NUMBER | SCHEM LOCATION | BOARD LOCATION |
| J10                          | A1             | D1             | J50            | B4             | D2             | J412           | D1             | L3             |
| J12                          | A2             | D1             | J52            | B1             | J2             |                |                |                |
| J20                          | D4             | D6             | J110           | D1             | B4             | W60            | A4             | J2             |
| J22                          | D1             | J6             | J180           | A3             | H2             | W70            | A5             | F7             |
| J30                          | C4             | D5             | J190           | A7             | L1             | W100           | B6             | K5             |
| J32                          | C1,J           | 5              | J220           | D6             | L4             | W192           | A2             | L3             |
| J40                          | C4             | D3             | J400           | D4             | L4             | W200           | D4             | L3             |
| J42                          | C1             | J3             | J410           | A6             | L3             | W300           | D4             | K5             |
| <b>CHASSIS MOUNTED PARTS</b> |                |                |                |                |                |                |                |                |
| CIRCUIT NUMBER               | SCHEM LOCATION | BOARD LOCATION | CIRCUIT NUMBER | SCHEM LOCATION | BOARD LOCATION | CIRCUIT NUMBER | SCHEM LOCATION | BOARD LOCATION |
| J401                         | E4             | CHASSIS        | L100           | A1             | CHASSIS        | P401           | E4             | CHASSIS        |
| J490                         | A6,E1          | CHASSIS        | L120           | A2             | CHASSIS        | P490           | A6,E1          | CHASSIS        |

Please cut out the area below the lines.



1 INTERCONNECTION

NOTE  
NOT USED  
USED

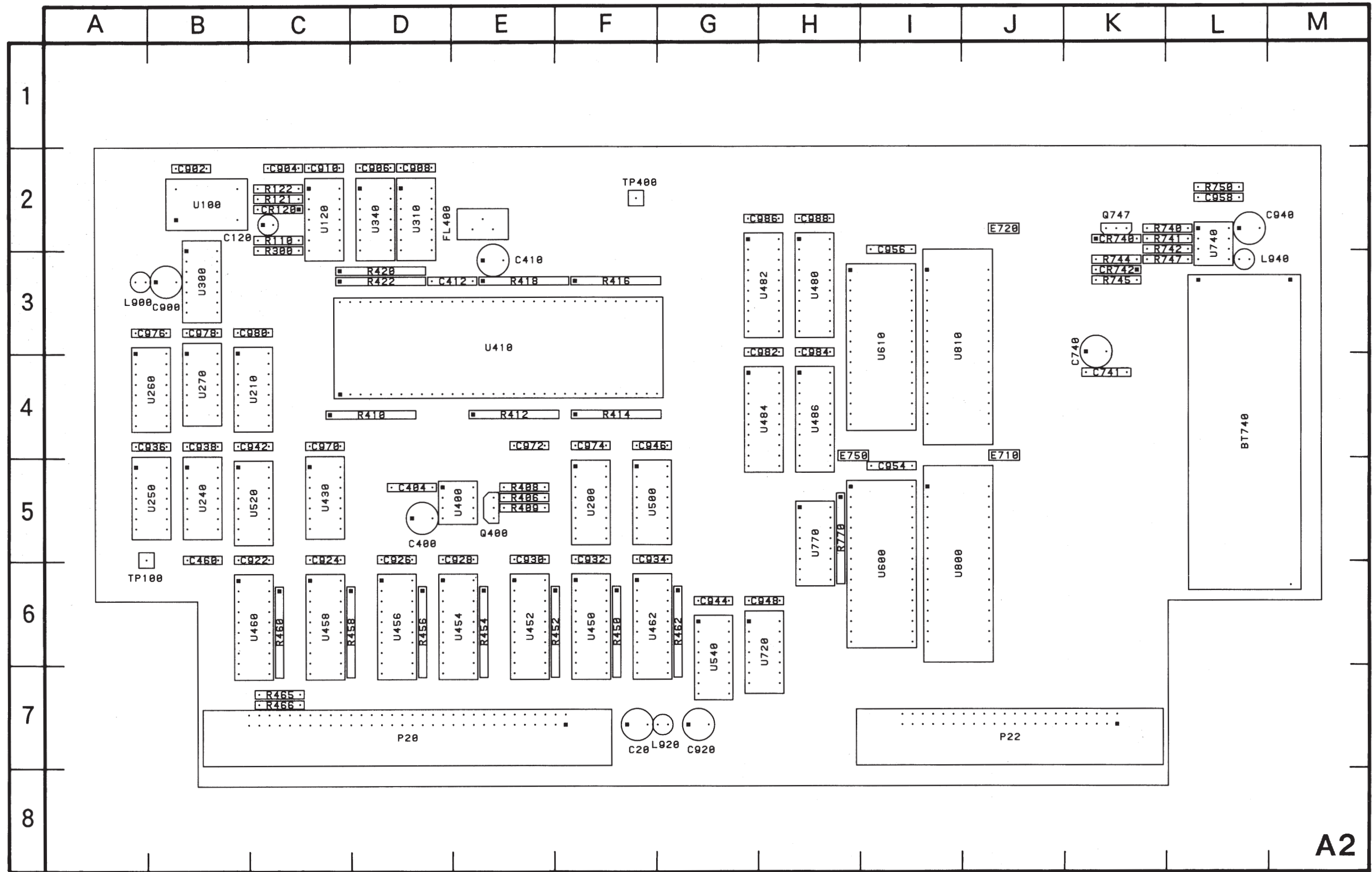


Figure 7-7. A2 — CPU circuit board assembly.

A2 — CPU circuit board illustration to be used with diagrams 2 and 3

Please cut out the area below the lines.

**MPU** 2

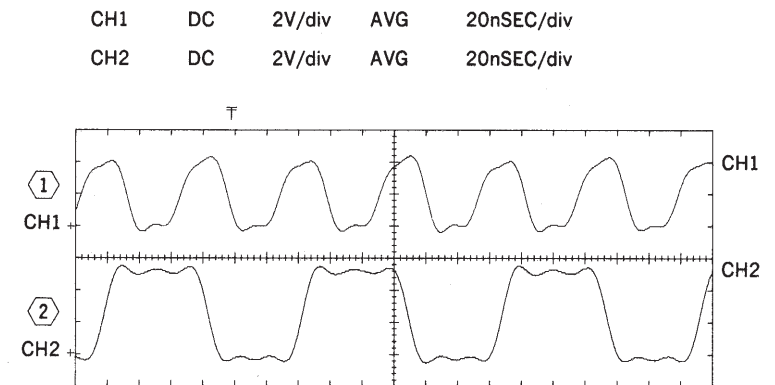
| <b>ASSEMBLY A2</b> |                |                |                |                |                |                |                |                |
|--------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| CIRCUIT NUMBER     | SCHEM LOCATION | BOARD LOCATION | CIRCUIT NUMBER | SCHEM LOCATION | BOARD LOCATION | CIRCUIT NUMBER | SCHEM LOCATION | BOARD LOCATION |
| C20                | A5             | F7             | C986           | B5             | H2             | TP100          | E3             | A6             |
| C120               | B5             | B2             | C988           | B5             | H2             | U100           | A4             | B2             |
| C400               | C5             | D5             | CR120          | B5             | C2             | U120A          | B4             | C2             |
| C404               | C5             | D5             | FL400          | D4             | E2             | U120B          | C4             | C2             |
| C410               | D4             | E3             | L900           | A5             | A3             | U200           | D2             | F5             |
| C412               | D4             | E3             | L920           | A5             | G7             | U210           | C2             | C4             |
| C460               | A2             | B5             | L940           | A5             | M3             | U240A          | C1             | B5             |
| C900               | A5             | B3             | P20            | A1,H1,H3       | D7             | U240B          | C1             | B5             |
| C902               | B5             | B2             | P22            | H2             | J7             | U250A          | C2             | B5             |
| C904               | B5             | C2             | Q400           | C5             | E5             | U250B          | C2             | B5             |
| C906               | B5             | D2             | R110           | B4             | C2             | U260           | D1             | B4             |
| C908               | B5             | D2             | R121           | B4             | C2             | U270A          | C3             | B4             |
| C910               | B5             | C2             | R122           | B4             | C2             | U270B          | C3             | B4             |
| C920               | A5             | G7             | R122           | B4             | C2             | U270C          | C3             | B4             |
| C922               | B5             | C5             | R300           | A4             | C2             | U270D          | C3             | B4             |
| C924               | B5             | C5             | R406           | D4             | E5             | U300A          | C3             | B3             |
| C926               | B5             | D5             | R408           | D5             | E5             | U300B          | C3             | B3             |
| C928               | B5             | E5             | R409           | C4             | E5             | U300C          | C5             | B3             |
| C930               | B5             | E5             | R410           | E3,E4          | D4             | U300D          | B4             | B3             |
| C932               | B5             | F5             | R412           | D3,E5          | E4             | U310A          | C4             | D2             |
| C934               | B5             | F5             | R414           | D2,E1          | F4             | U310B          | C4             | D2             |
| C936               | B5             | B4             | R416           | E1             | F3             | U340A          | A3             | D2             |
| C938               | B5             | B4             | R418           | E2             | E3             | U340B          | B3             | D2             |
| C940               | A5             | M2             | R420           | E2,E4          | D3             | U400           | C4             | E5             |
| C942               | B5             | C4             | R422           | E3             | D3             | U410           | E1             | E3             |
| C944               | B5             | G6             | R450           | F1             | F6             | U430A          | E5             | C5             |
| C946               | B5             | F4             | R452           | G1             | F6             | U430B          | F4             | C5             |
| C948               | B5             | H6             | R454           | G3             | E6             | U430C          | F5             | C5             |
| C954               | B5             | I5             | R456           | G3             | D6             | U430D          | E4             | C5             |
| C956               | B5             | I2             | R458           | H4             | C6             | U450           | F1             | F6             |
| C958               | B5             | L2             | R460           | A1             | C6             | U452           | G1             | E6             |
| C970               | B5             | C4             | R462           | F2             | G6             | U454           | F3             | E6             |
| C972               | B5             | E4             | R465           | A2             | C7             | U456           | G3             | D6             |
| C974               | B5             | F4             | R466           | B2             | C7             | U458           | F5             | C6             |
| C976               | B5             | B3             |                |                |                | U460           | B1             | C6             |
| C978               | B5             | B3             |                |                |                | U462           | F2             | F6             |
| C976               | B5             | B3             |                |                |                |                |                |                |
| C978               | B5             | B3             |                |                |                |                |                |                |
| C980               | B5             | C3             |                |                |                |                |                |                |
| C982               | B5             | H3             |                |                |                |                |                |                |
| C984               | B5             | H3             |                |                |                |                |                |                |

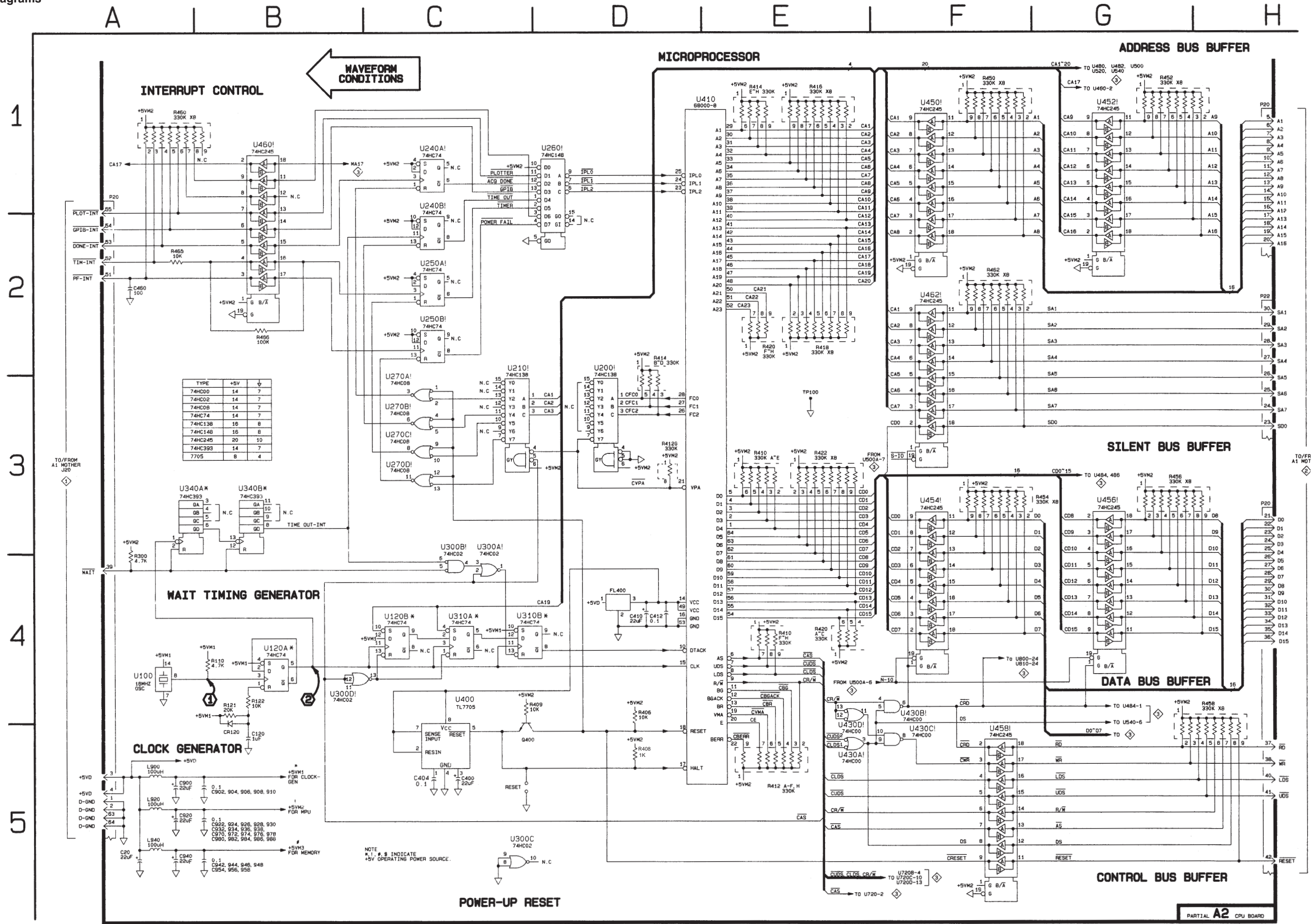
**MEMORY** 3

| <b>ASSEMBLY A3</b> |                |                |                |                |                |                |                |                |
|--------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| CIRCUIT NUMBER     | SCHEM LOCATION | BOARD LOCATION | CIRCUIT NUMBER | SCHEM LOCATION | BOARD LOCATION | CIRCUIT NUMBER | SCHEM LOCATION | BOARD LOCATION |
| BT740              | C3             | L4             | Q747           | C3             | K2             | U484           | A3             | H4             |
| C740               | C3             | K3             | R740           | B3             | L2             | U486           | A4             | H4             |
| C741               | C3             | K4             | R741           | B3             | L2             | U500A          | A2             | F5             |
| CR740              | C3             | K2             | R742           | B3             | L2             | U500B          | A1             | F5             |
| CR742              | C3             | K3             | R744           | C3             | K3             | U520           | A1             | C5             |
| E710               | C3             | J4             | R745           | C3             | K3             | U540           | B1             | G6             |
| E720               | C3             | J2             | R747           | C3             | L3             | U600           | D1             | I6             |
| E750               | C3             | H4             | R750           | C4             | L2             | U610           | D1             | I3             |
| P20                | F1             | D7             | R770           | C2             | H5             | U720A          | B2             | H6             |
| P22                | F2             | J7             | TP400          | D3             | F2             | U720B          | C2             | H6             |
|                    |                |                | U480           | B3             | H3             | U720C          | C1             | H6             |
|                    |                |                | U482           | B4             | H3             | U720D          | C2             | H6             |
|                    |                |                |                |                |                | U740           | C3             | L2             |
|                    |                |                |                |                |                | U770           | C3             | H5             |
|                    |                |                |                |                |                | U800           | E1             | I6             |
|                    |                |                |                |                |                | U810           | E1             | I3             |

**WAVEFORM CONDITIONS**

The waveforms shown below were obtained using a test oscilloscope with 1 MΩ input impedance (Tektronix 2430A with plotter) with the 370A set to the power-up default (initial) settings.





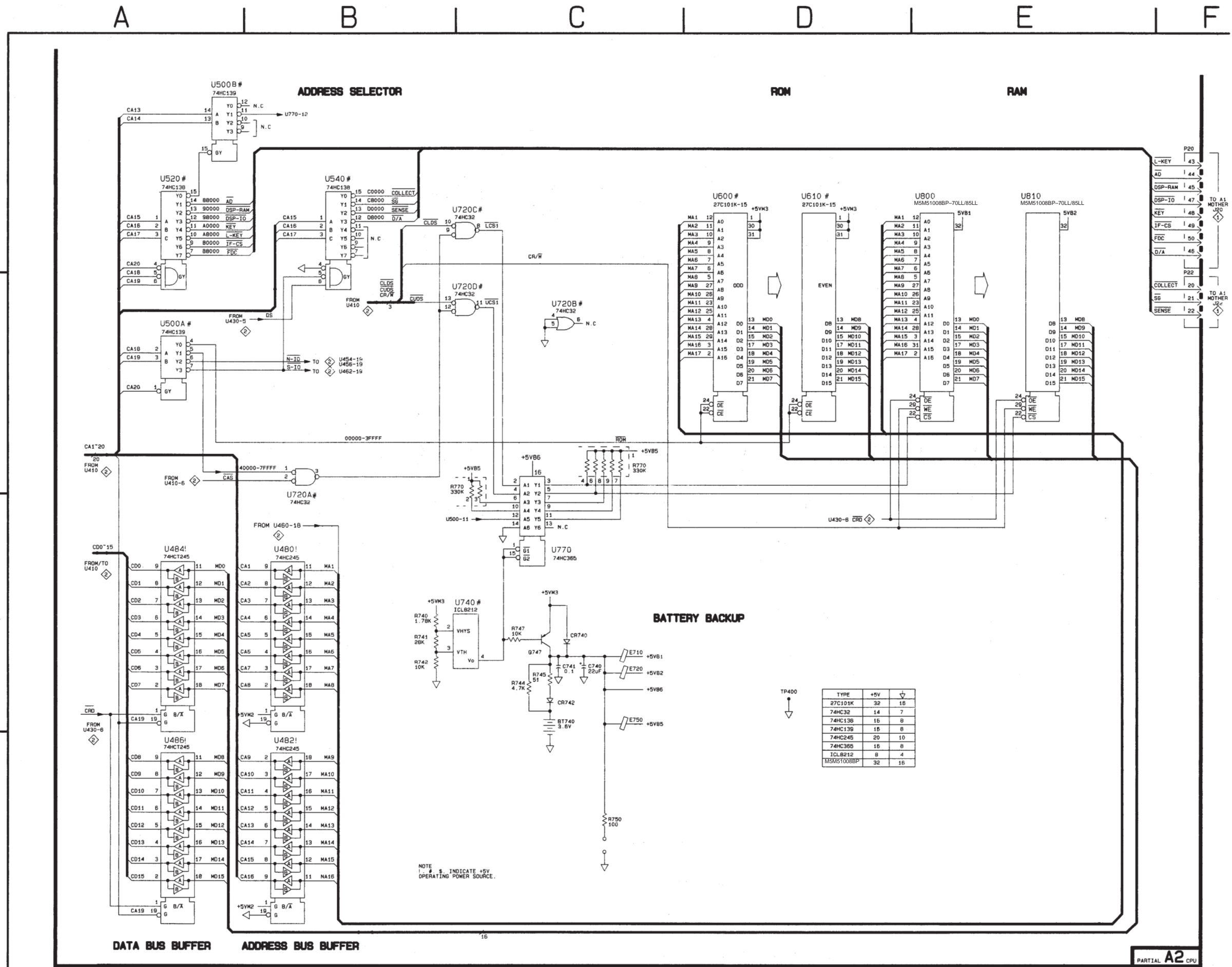
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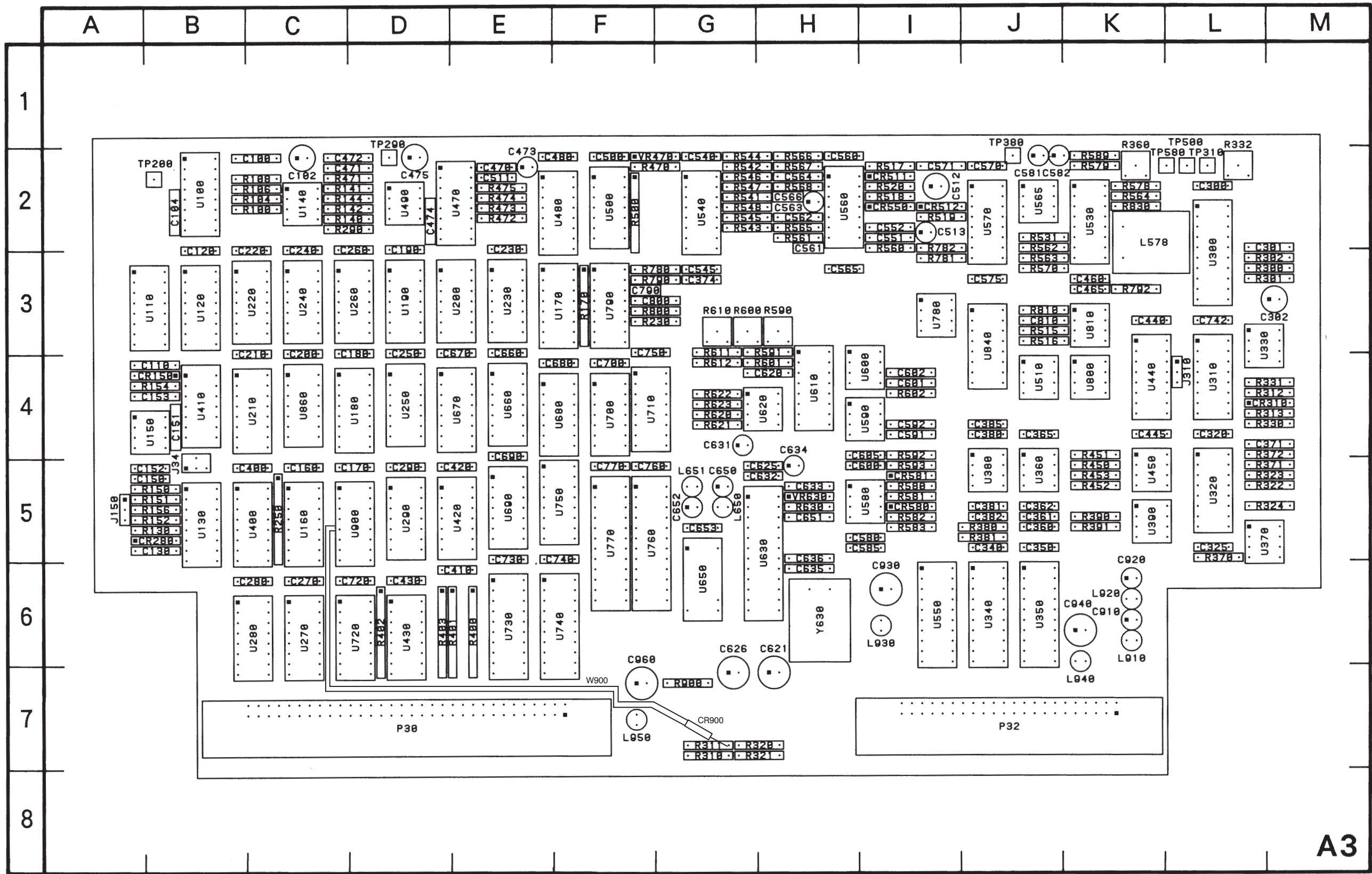
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PARTIAL A2 CPU

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Figure 7-8. A3 — A/D circuit board assembly.

A3 — A/D circuit board assembly to be used with diagrams 4 and 5.

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GENERATOR

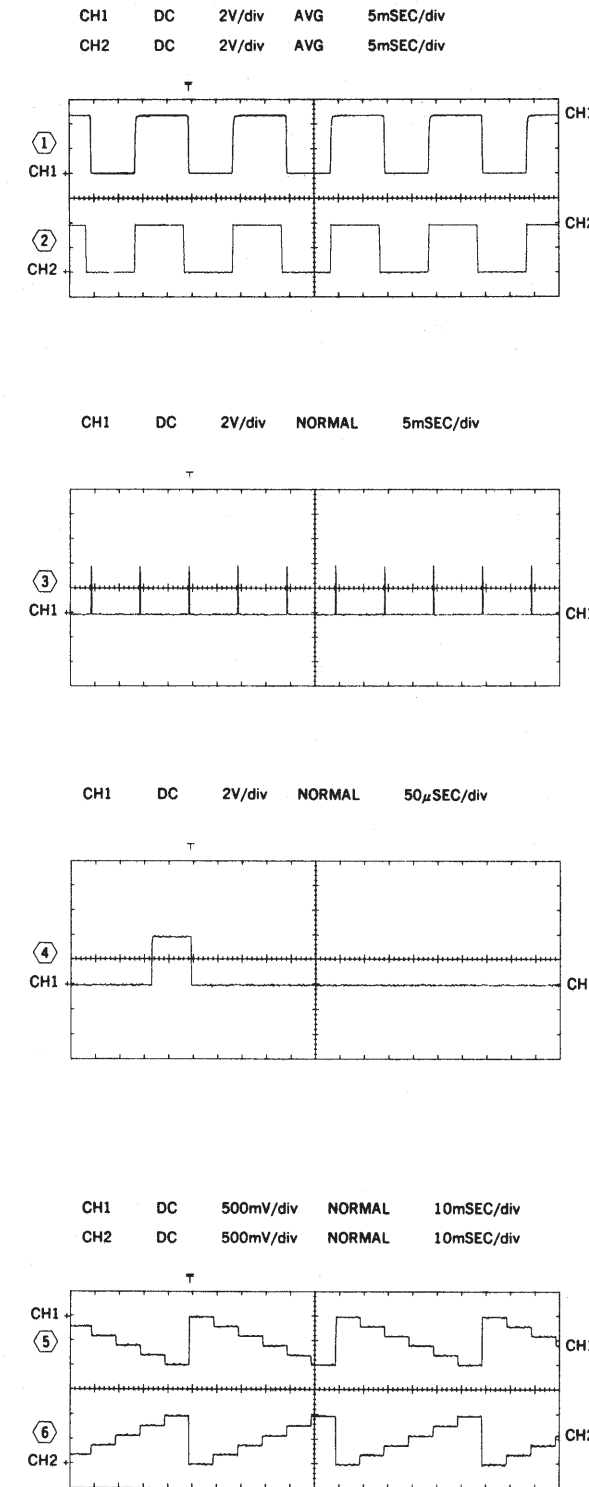


WAVEFORM CONDITIONS

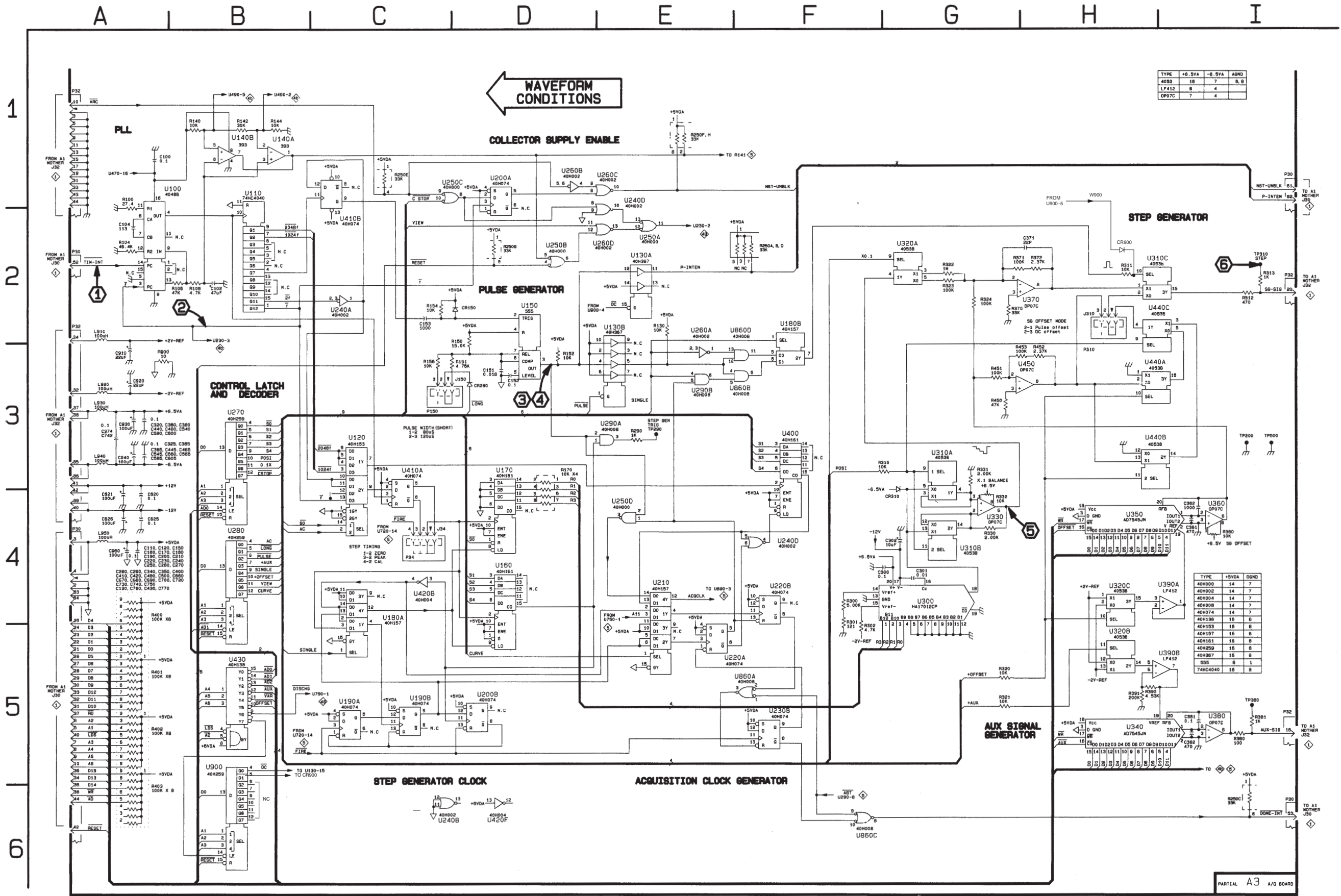
The waveforms shown below were obtained using a test oscilloscope with 1 MΩ input impedance (Tektronix 2430A with plotter) with the 370A set to the power-up default (initial) settings.

| ASSEMBLY A3    |                |                |                |                |                |                |                |                |
|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| CIRCUIT NUMBER | SCHEM LOCATION | BOARD LOCATION | CIRCUIT NUMBER | SCHEM LOCATION | BOARD LOCATION | CIRCUIT NUMBER | SCHEM LOCATION | BOARD LOCATION |
| C100           | A1             | C2             | C920           | A3             | K6             | R452           | H3             | K5             |
| C102           | B2             | C2             | C930           | A3             | I6             | R453           | H3             | K5             |
| C104           | A2             | B2             | C940           | A3             | K6             | R900           | A3             | G7             |
| C110           | A4             | B4             | C960           | A4             | F6             |                |                |                |
| C120           | A4             | B2             |                |                |                | TP200          | I3             | B2             |
| C130           | A4             | B5             | CR150          | D2             | B4             | TP290          | E3             | D1             |
| C150           | A4             | B5             | CR280          | D3             | B5             | TP310          | I2             | L2             |
| C151           | D3             | B4             | CR310          | G4             | M4             | TP380          | I5             | J1             |
| C152           | D3             | B5             | CR900          | H2             | G7             | TP500          | I3             | L1             |
| C153           | C2             | B4             | J34            | C4             | B5             |                |                |                |
| C160           | A4             | C5             | J150           | D3             | A5             | U100           | B1             | B2             |
| C170           | A4             | D5             | J310           | H2             | L4             | U110           | B1             | B3             |
| C180           | A4             | D3             |                |                |                | U120           | C3             | B3             |
| C190           | A4             | D2             | L910           | A2             | K6             | U130A          | E2             | B5             |
| C200           | A4             | C3             | L920           | A3             | K6             | U130B          | E2             | B5             |
| C210           | A4             | C3             | L930           | A3             | I6             | U140A          | B1             | C2             |
| C220           | A4             | C2             | L940           | A3             | K7             | U140B          | B1             | C2             |
| C230           | A4             | E2             | L950           | A4             | F7             | U150           | D2             | B4             |
| C240           | A4             | C2             |                |                |                | U160           | D4             | C5             |
| C250           | A4             | D3             | P30            | A2,A4,I1       | D7             | U170           | D3             | F3             |
| C260           | A4             | D2             |                | I6             |                | U180A          | C4             | D4             |
| C270           | A4             | C6             | P32            | A1,A2,I2       | J7             | U180B          | F2             | D4             |
| C280           | A4             | C6             |                | I5             |                | U190A          | C5             | D3             |
| C290           | A4             | D5             |                |                |                | U190B          | C5             | D3             |
| C300           | G4             | L2             | R100           | A1             | C2             | U200A          | D1             | E3             |
| C301           | G4             | M2             | R104           | A2             | C2             | U200B          | D5             | E3             |
| C302           | G4             | M3             | R106           | B2             | C2             | U210           | E4             | C4             |
| C320           | A3             | L4             | R108           | B2             | C2             | U220A          | E5             | C3             |
| C325           | A3             | L5             | R130           | E2             | B5             | U220B          | F4             | C3             |
| C340           | A4             | J5             | R140           | B1             | D2             | U230B          | F5             | E3             |
| C350           | A4             | J5             | R142           | B1             | D2             | U240A          | C2             | C3             |
| C360           | B3             | J5             | R144           | B1             | D2             | U240B          | C6             | C3             |
| C361           | I4             | J5             | R150           | D2             | B5             | U240D          | E1             | C3             |
| C362           | I4             | J5             | R151           | D3             | B5             | U240D          | F4             | C3             |
| C365           | B3             | J4             | R152           | D3             | B5             | U250A          | E2             | D4             |
| C371           | H2             | M4             | R154           | C2             | B4             | U250B          | D2             | D4             |
| C374           | A3             | G3             | R156           | C3             | B5             | U250C          | C1             | D4             |
| C380           | B3             | J4             | R170           | D3             | F3             | U250D          | E4             | D4             |
| C381           | I5             | J5             | R250A          | F2             | C5             | U260A          | E2             | D3             |
| C382           | I5             | J5             | R250B          | F2             | C5             | U260B          | D1             | D3             |
| C385           | A3             | J4             | R250C          | I6             | C5             | U260C          | E1             | D3             |
| C400           | A4             | C5             | R250D          | F2             | C5             | U260D          | E2             | D3             |
| C410           | A4             | E6             | R250E          | C1             | C5             | U270           | B3             | C6             |
| C420           | A4             | E5             | R250F          | E1             | C5             | U280           | B4             | C6             |
| C430           | A4             | D6             | R250G          | D2             | C5             | U290A          | E3             | D5             |
| C440           | A3             | K3             | R250H          | E1             | C5             | U290B          | E3             | D5             |
| C445           | A3             | K4             | R290           | E3             | D2             | U300           | G4             | L3             |
| C460           | B3             | K3             | R300           | F4             | M3             | U310A          | G3             | L4             |
| C465           | B3             | K3             | R301           | F4             | M3             | U310B          | G4             | L4             |
| C480           | A4             | F2             | R302           | F5             | M3             | U310C          | H2             | L4             |
| C500           | A4             | F2             | R310           | G3             | G7             | U320A          | G2             | L5             |
| C540           | B3             | G2             | R311           | H2             | G7             | U320B          | H5             | L5             |
| C545           | A3             | G3             | R312           | I2             | M4             | U320C          | H4             | L5             |
| C560           | A3             | H2             | R313           | I2             | M4             | U330           | G4             | L3             |
| C565           | B3             | H3             | R320           | G5             | H7             | U340           | H5             | J6             |
| C580           | A3             | I5             | R321           | G5             | H7             | U350           | H4             | J6             |
| C585           | A3             | I5             | R322           | G2             | M5             | U360           | I4             | J5             |
| C600           | B3             | I5             | R323           | G2             | M5             | U370           | H2             | L5             |
| C605           | A3             | I4             | R324           | G2             | M5             | U380           | I5             | J5             |
| C620           | A4             | H4             | R330           | G4             | M4             | U390A          | I4             | K5             |
| C621           | A4             | H6             | R331           | G3             | M4             | U390B          | I5             | K5             |
| C625           | A4             | H5             | R332           | G4             | L2             | U400           | F3             | C5             |
| C626           | A4             | G6             | R360           | I4             | K2             | U410A          | C3             | B4             |
| C660           | A4             | E3             | R370           | G2             | L5             | U410B          | C2             | B4             |
| C670           | A4             | E3             | R371           | G2             | M5             | U420B          | C4             | E5             |
| C680           | A4             | F4             | R372           | H2             | M4             | U420F          | D6             | E5             |
| C690           | A4             | E4             | R380           | I5             | J5             | U430           | B5             | D6             |
| C700           | A4             | F4             | R381           | I5             | J5             | U440A          | H3             | K4             |
| C720           | A4             | D6             | R390           | H5             | K5             | U440B          | H3             | K4             |
| C730           | A4             | E5             | R391           | H5             | K5             | U440C          | H2             | K4             |
| C740           | A4             | F5             | R400           | A4             | E6             | U450           | H3             | K5             |
| C742           | A3             | L3             | R401           | A5             | E6             | U860A          | F5             | C4             |
| C750           | A4             | F3             | R402           | A5             | D6             | U860B          | F3             | C4             |
| C760           | A4             | F5             | R403           | A6             | D6             | U860C          | F6             | C4             |
| C770           | A4             | F5             | R450           | G3             | K5             | U860D          | F2             | C4             |
| C910           | A3             | K6             | R451           | G3             | K4             | U900           | B5             | D5             |
|                |                |                |                |                |                | W900           | H1             | C5~G7          |

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GENERATOR 4a

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**GENERATOR**



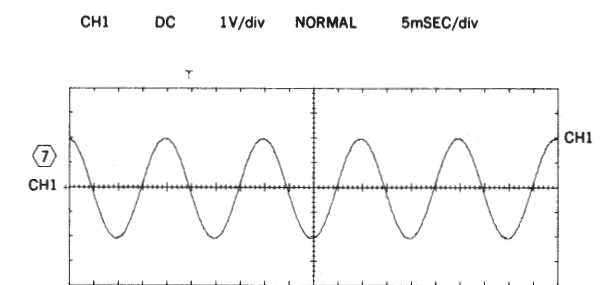
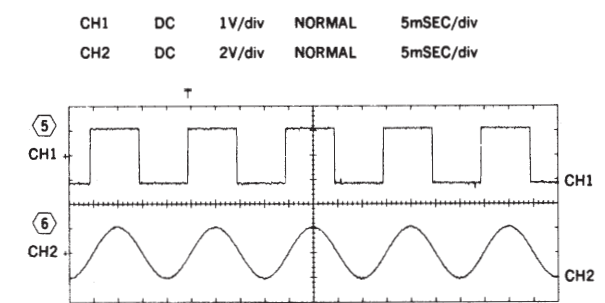
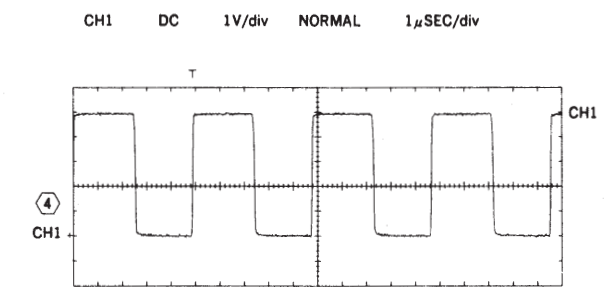
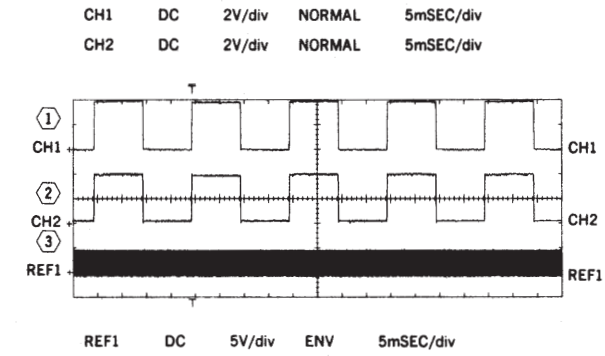
| ASSEMBLY A3    |                |                |                |                |                |                |                |                |
|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| CIRCUIT NUMBER | SCHEM LOCATION | BOARD LOCATION | CIRCUIT NUMBER | SCHEM LOCATION | BOARD LOCATION | CIRCUIT NUMBER | SCHEM LOCATION | BOARD LOCATION |
| C470           | A2             | E2             | R473           | A3             | E2             | R810           | C1             | J3             |
| C471           | A3             | D2             | R474           | B3             | E2             | R830           | C2             | K2             |
| C472           | A2             | D2             | R475           | B3             | E2             |                |                |                |
| C473           | A2             | E2             | R500           | C3             | F2             | TP580          | G2             | L2             |
| C474           | A3             | D2             | R515           | C3             | J3             |                |                |                |
| C475           | B3             | D2             | R516           | C3             | J3             | U230A          | E1             | E3             |
| C511           | A4             | E2             | R517           | C4             | I2             | U470           | A3             | E2             |
| C512           | C4             | I2             | R518           | D4             | I2             | U480           | B3             | F2             |
| C513           | D4             | I2             | R519           | D4             | I2             | U490A          | B4             | D2             |
| C551           | B2             | I2             | R520           | D4             | I2             | U490B          | B4             | D2             |
| C552           | B2             | I2             | R531           | F2             | J2             | U500A          | C3             | F2             |
| C561           | E4             | H2             | R541           | D3             | G2             | U500B          | C3             | F2             |
| C562           | E4             | H2             | R542           | D3             | G2             | U500C          | C3             | F2             |
| C563           | D3             | H2             | R543           | D3             | G2             | U500D          | C3             | F2             |
| C564           | E3             | H2             | R544           | D3             | G2             | U510A          | C3             | J4             |
| C566           | E4             | H2             | R545           | D3             | G2             | U510B          | C3             | J4             |
| C570           | E4             | J2             | R546           | D3             | G2             | U530A          | F2             | K2             |
| C571           | E3             | I2             | R547           | D3             | G2             | U530B          | C1             | K2             |
| C575           | E4             | J3             | R548           | D3             | G2             | U530C          | C2             | K2             |
| C581           | F2             | J2             | R560           | B2             | I2             | U540           | D3             | G2             |
| C582           | F2             | J2             | R561           | E4             | H2             | U550           | B1             | I6             |
| C790           | B1             | F3             | R562           | F3             | J2             | U560A          | B2             | H2             |
| C800           | B1             | G3             | R563           | F3             | J3             | U560B          | C4             | H2             |
| C810           | C2             | J3             | R564           | F3             | K2             | U560C          | E3             | H2             |
|                |                |                | R565           | E4             | H2             | U560D          | E4             | H2             |
| CR511          | C4             | I2             | R566           | D3             | H2             | U565A          | F2             | J2             |
| CR512          | D4             | I2             | R567           | E3             | H2             | U565B          | F3             | J2             |
| CR550          | D4             | I2             | R568           | E3             | H2             | U570           | E3             | J2             |
|                |                |                | R570           | D2             | J3             | U780           | A4             | I3             |
| L578           | G2             | K2             | R578           | G2             | K2             | U790A          | B1             | F3             |
|                |                |                | R579           | F2             | K2             | U790B          | F4             | F3             |
| P30            | G1             | D7             | R589           | F2             | K2             | U800           | D2             | K4             |
| P32            | G2             | J7             | R780           | A4             | G3             | U810           | C2             | K3             |
|                |                |                | R781           | B4             | I3             | U840A          | F3             | J3             |
| R230           | E2             | G3             | R782           | B4             | I2             | U840B          | F3             | J3             |
| R470           | A2             | G2             | R790           | B1             | G3             | U840C          | D3             | J3             |
| R471           | A3             | D2             | R792           | B1             | K3             |                |                |                |
| R472           | A3             | E2             | R800           | D1             | G3             | VR470          | A2             | G2             |

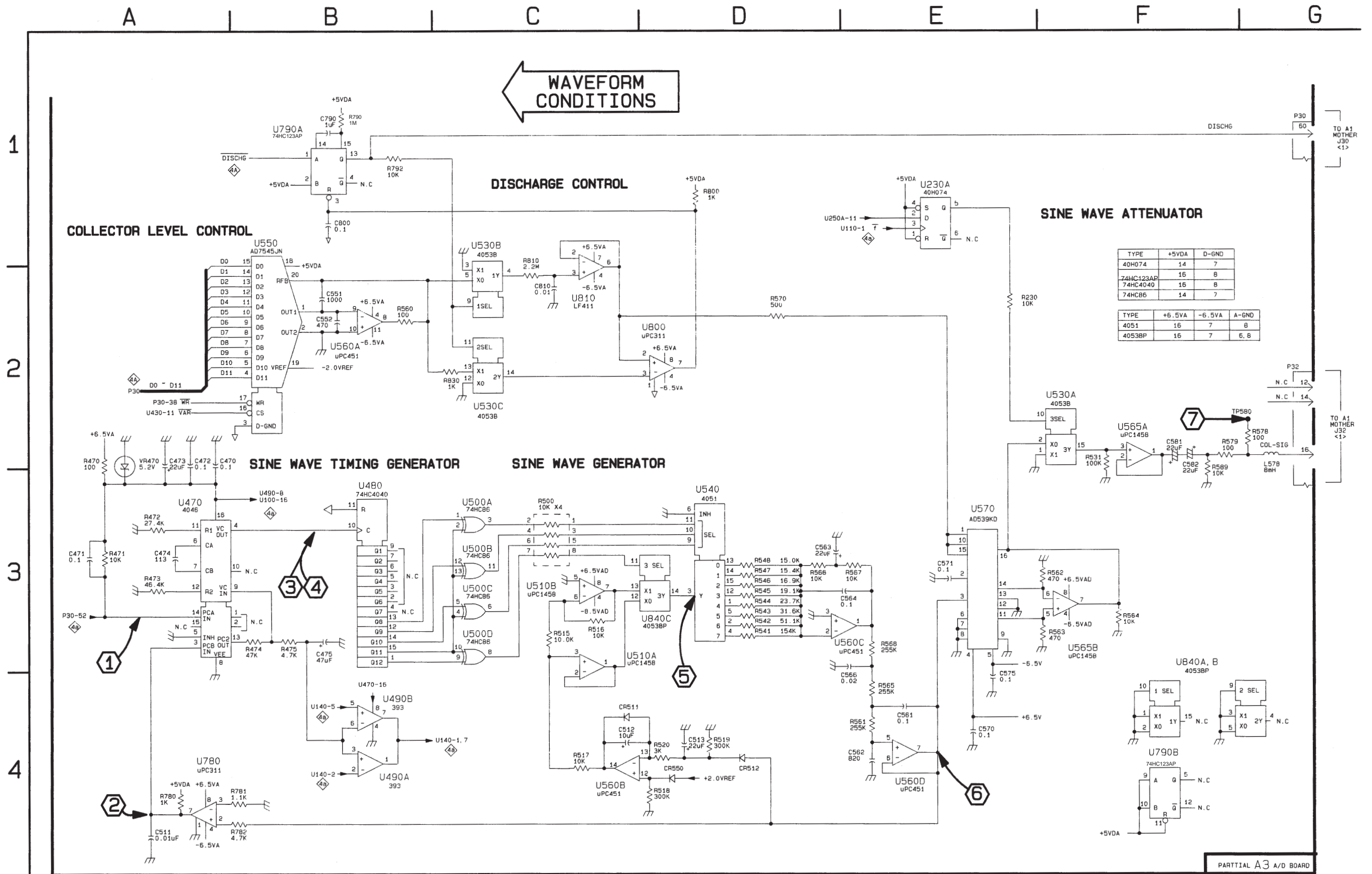
**WAVEFORM CONDITIONS**

The waveforms shown below were obtained using a test oscilloscope with 1 MΩ input impedance (Tektronix 2430A with plotter) with the 370A under the following conditions:

Waveform 1, 2, 3, 4, 5, and 6: These waveforms were obtained from the 370A set to the power-up default (initial) settings.

Waveform 7: This waveform was obtained from the 370A set to the power-up default (initial) settings, except that the VARIABLE COLLECTOR SUPPLY is set to 100%.





WAVEFORM CONDITIONS

COLLECTOR LEVEL CONTROL

DISCHARGE CONTROL

SINE WAVE ATTENUATOR

SINE WAVE TIMING GENERATOR

SINE WAVE GENERATOR

| TYPE      | +5VDA | D-GND |
|-----------|-------|-------|
| 40H074    | 14    | 7     |
| 74HC123AP | 16    | 8     |
| 74HC4040  | 16    | 8     |
| 74HC86    | 14    | 7     |

| TYPE   | +6.5VA | -6.5VA | A-GND |
|--------|--------|--------|-------|
| 4051   | 16     | 7      | 8     |
| 4053BP | 16     | 7      | 6, 8  |

PARTIAL A3 A/D BOARD

REV MAR 96

COLLECTOR SUPPLY GENERATOR 4b

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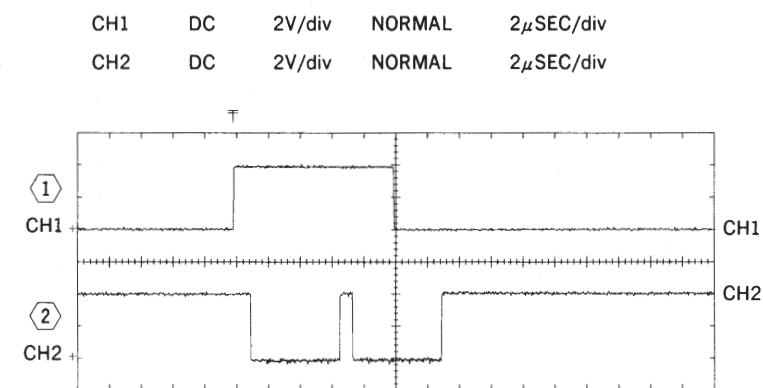
ACQUISITION

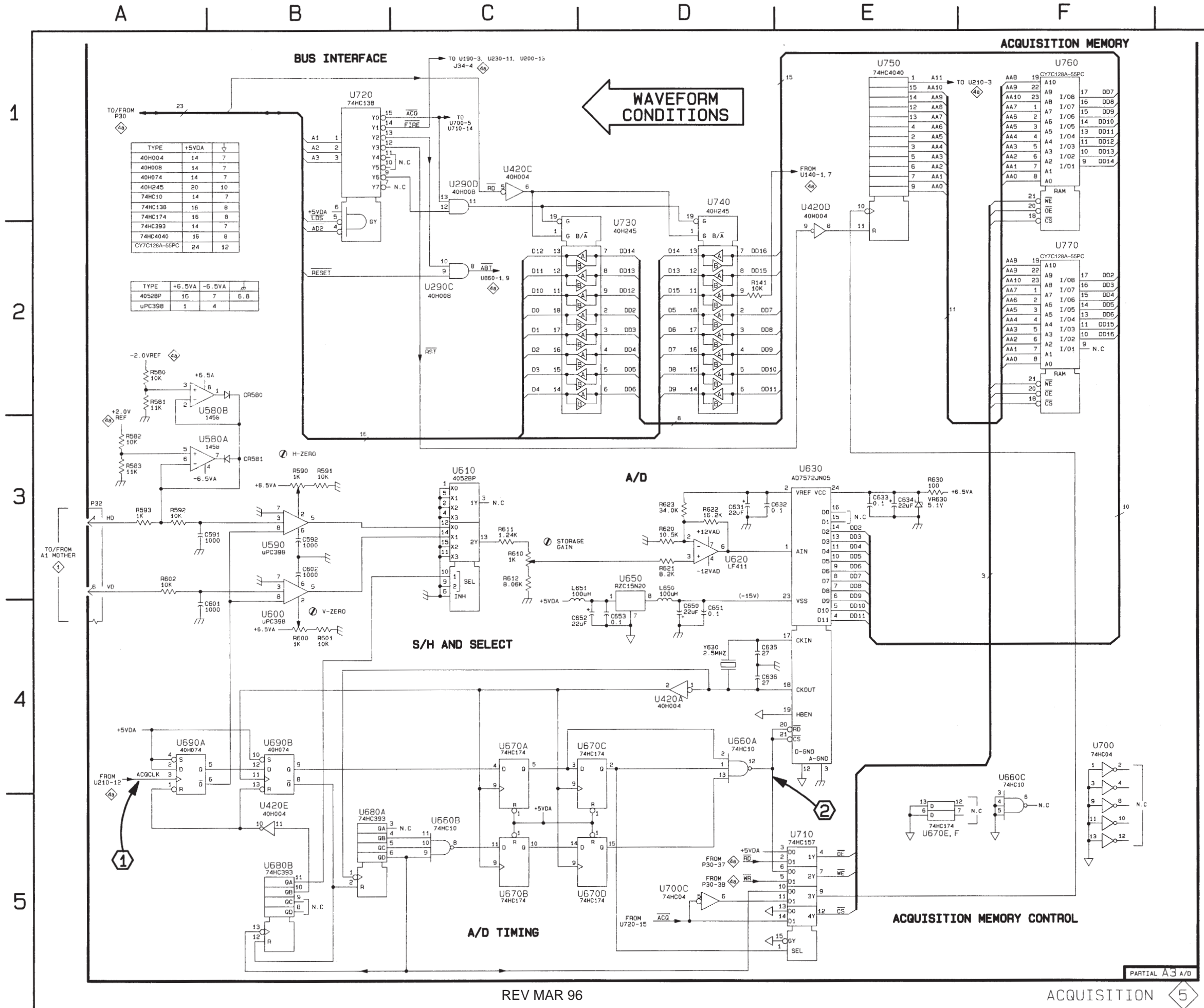


| ASSEMBLY A3    |                |                |                |                |                |                |                |                |
|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| CIRCUIT NUMBER | SCHEM LOCATION | BOARD LOCATION | CIRCUIT NUMBER | SCHEM LOCATION | BOARD LOCATION | CIRCUIT NUMBER | SCHEM LOCATION | BOARD LOCATION |
| C591           | A3             | I4             | R590           | B3             | H3             | U630           | E3             | H5             |
| C592           | B3             | I4             | R591           | B3             | H3             | U650           | D3             | G6             |
| C601           | A4             | I4             | R592           | A3             | I4             | U660A          | D4             | E4             |
| C602           | B3             | I4             | R593           | A3             | I5             | U660B          | C5             | E4             |
| C631           | D3             | G4             | R600           | B4             | G3             | U660C          | F4             | E4             |
| C632           | D3             | H5             | R601           | B4             | H4             | U670A          | C4             | E4             |
| C633           | E3             | H5             | R602           | A3             | I4             | U670B          | C5             | E4             |
| C634           | E3             | H4             | R610           | C3             | G3             | U670C          | D4             | E4             |
| C635           | D4             | H6             | R611           | C3             | G3             | U670D          | D5             | E4             |
| C636           | D4             | H5             | R612           | C3             | G4             | U670E          | E5             | E4             |
| C650           | D4             | G5             | R620           | D3             | G4             | U670F          | E5             | E4             |
| C651           | D4             | H5             | R621           | D3             | G4             | U680A          | B5             | F4             |
| C652           | D4             | G5             | R622           | D3             | G4             | U680B          | B5             | F4             |
| C653           | D4             | G5             | R623           | D3             | G4             | U690A          | A4             | E5             |
| CR580          | B2             | I5             | R630           | E3             | H5             | U690B          | B4             | E5             |
| CR581          | B3             | I5             |                |                |                | U700           | F4             | F4             |
| L650           | D3             | G5             | U290C          | C2             | D5             | U700C          | D5             | F4             |
| L651           | C3             | G5             | U290D          | C1             | D5             | U710           | E5             | F4             |
| P32            | A3             | J7             | U420A          | D4             | E5             | U720           | B1             | D6             |
| R141           | D2             | D2             | U420C          | C1             | E5             | U730           | D2             | E6             |
| R580           | A2             | I5             | U420D          | E1             | E5             | U740           | D1             | F6             |
| R581           | A2             | I5             | U420E          | B5             | E5             | U750           | E1             | F5             |
| R582           | A3             | I5             | U580A          | A3             | I5             | U760           | F1             | F5             |
| R583           | A3             | I5             | U580B          | A2             | I5             | U770           | F2             | F5             |
|                |                |                | U590           | B3             | I4             |                |                |                |
|                |                |                | U600           | B4             | I4             | VR630          | E3             | H5             |
|                |                |                | U610           | C3             | H4             | Y630           | D4             | H6             |
|                |                |                | U620           | D3             | H4             |                |                |                |

WAVEFORM CONDITIONS

The waveforms shown below were obtained using a test oscilloscope with 1 MΩ input impedance (Tektronix 2430A with plotter) with the 370A set to the power-up default (initial) settings.





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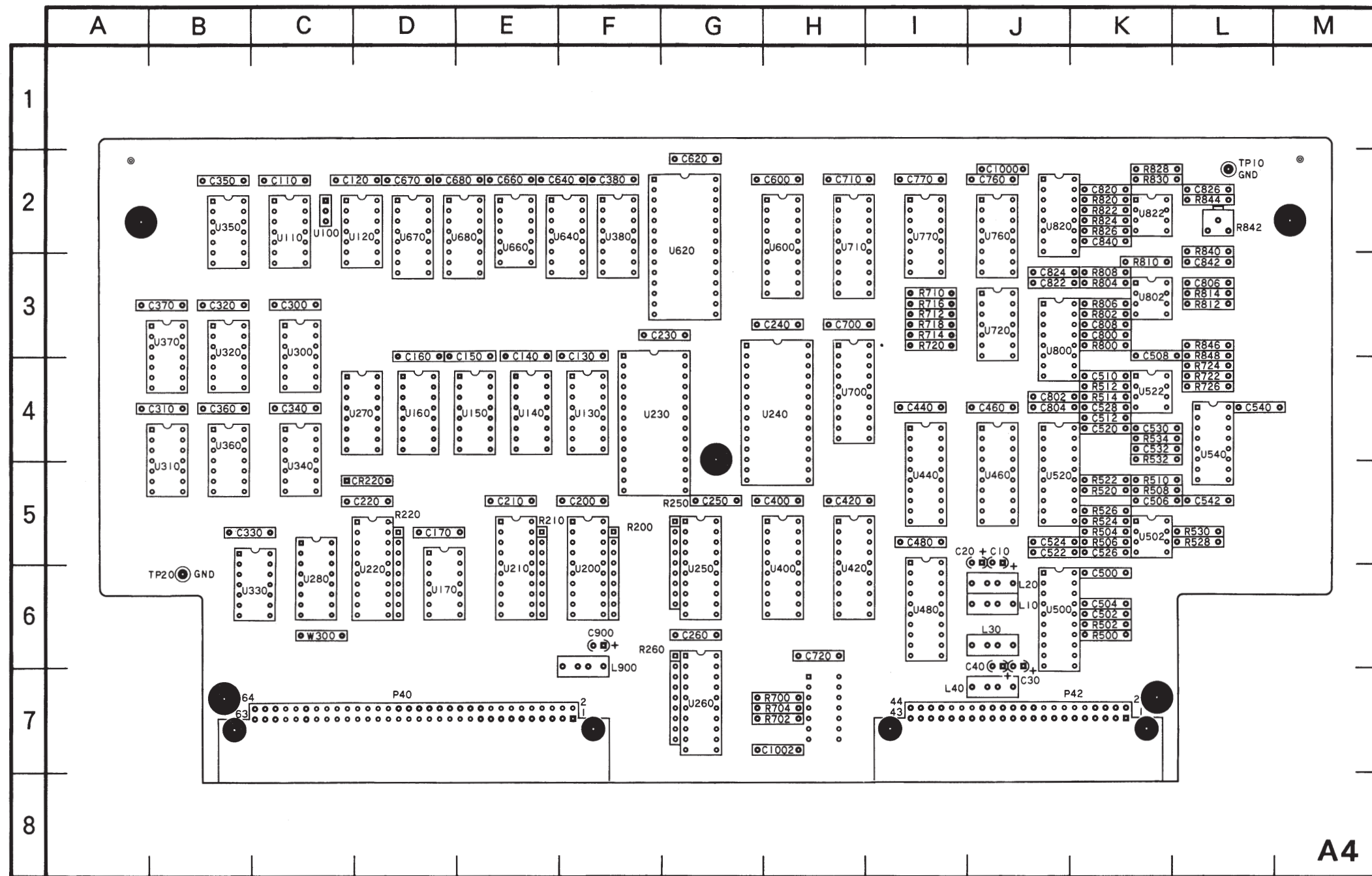


Figure 7-9. A4 — Digital Display circuit board assembly.

A4 — Digital Display circuit board illustration to be used with diagrams 6 and 7.

DISPLAY COUNTER



DISPLAY D/A CONVERTER



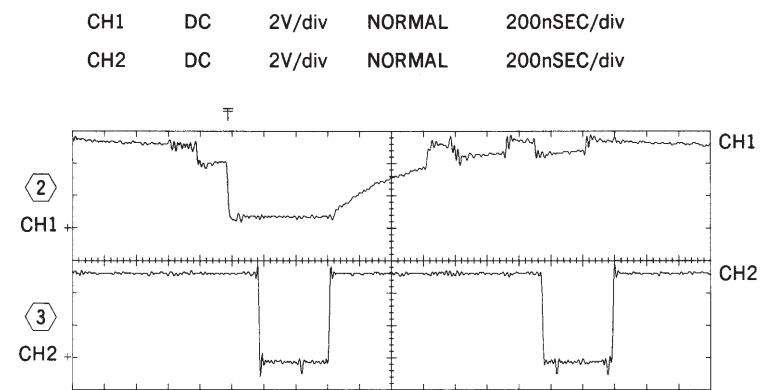
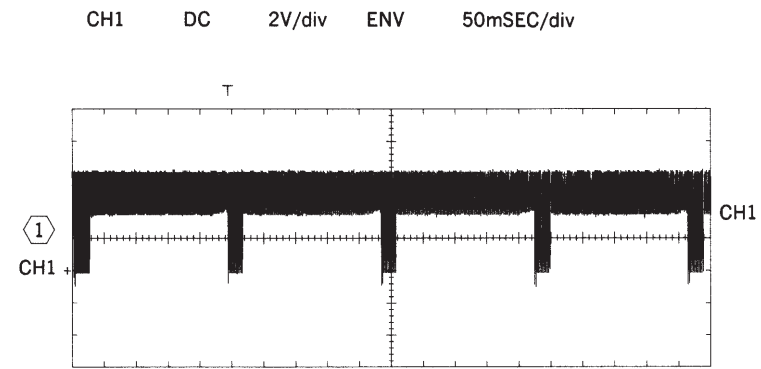
| ASSEMBLY A4    |                |                |                |                |                |                |                |                |
|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| CIRCUIT NUMBER | SCHEM LOCATION | BOARD LOCATION | CIRCUIT NUMBER | SCHEM LOCATION | BOARD LOCATION | CIRCUIT NUMBER | SCHEM LOCATION | BOARD LOCATION |
| C30            | G3             | J7             | C680           | B3             | E2             | U230           | F1             | F4             |
| C40            | G3             | J6             | C700           | B3             | H3             | U240           | F2             | H4             |
| C110           | B3             | C2             | C710           | B3             | H2             | U250           | F1             | G6             |
| C120           | B3             | D2             | C720           | G3             | H6             | U260           | F2             | G7             |
| C130           | B3             | F3             | C760           | B3             | J2             | U270           | D5             | D4             |
| C140           | B3             | E3             | C770           | B3             | I2             | U280A          | C5             | C6             |
| C150           | B3             | E3             | C900           | A3             | F6             | U280B          | C5             | C6             |
| C160           | B3             | D3             |                |                |                | U300A          | E5             | C3             |
| C170           | B3             | D5             | CR220          | B4             | D5             | U300B          | E5             | C3             |
| C200           | B3             | F5             |                |                |                | U300C          | E4             | C3             |
| C210           | B3             | E5             | L30            | G2             | J6             | U310A          | C2             | B5             |
| C220           | B3             | D5             | L40            | G3             | J7             | U310C          | D3             | B5             |
| C230           | B3             | G3             | L900           | A3             | F7             | U310D          | E2             | B5             |
| C240           | B3             | H3             |                |                |                | U320A          | F3             | B3             |
| C250           | B3             | G5             | P40            | A1,G1          | D7             | U320B          | E4             | B3             |
| C260           | B3             | G6             | P42            | G2             | K7             | U320C          | E2             | B3             |
| C300           | B3             | C3             |                |                |                | U320D          | G4             | B3             |
| C310           | B3             | B4             | R200           | A1             | F5             | U330A          | E3             | C6             |
| C320           | B3             | B3             | R210           | A2             | E5             | U330B          | D2             | C6             |
| C330           | B3             | B5             | R220           | A4             | D5             | U330C          | C4             | C6             |
| C340           | B3             | C4             | R250           | G1             | G5             | U330D          | B4             | C6             |
| C350           | B3             | B2             | R260           | G2             | F6             | U340A          | G3             | C5             |
| C360           | B3             | B4             |                |                |                | U340B          | F4             | C5             |
| C370           | B3             | B3             | U100           | C3             | C2             | U340C          | D4             | C5             |
| C380           | B3             | F2             | U110A          | D2             | C2             | U340D          | C4             | C5             |
| C400           | B3             | H5             | U110B          | C2             | C2             | U340E          | E5             | C5             |
| C420           | B3             | H5             | U120A          | D2             | D2             | U340F          | E2             | C5             |
| C440           | B3             | I4             | U120B          | D2             | D2             | U350A          | F4             | B2             |
| C460           | B3             | J4             | U130           | C1             | F4             | U350B          | D2             | B2             |
| C480           | B3             | I5             | U140           | C1             | E4             | U360A          | F5             | B4             |
| C540           | G3             | L4             | U150           | D1             | E4             | U360B          | G5             | B4             |
| C542           | G3             | L5             | U160           | E1             | D4             | U370A          | F4             | B3             |
| C600           | B3             | H2             | U170A          | D3             | D6             | U370B          | F4             | B3             |
| C620           | B3             | G2             | U170B          | D3             | D6             | U380           | F5             | F2             |
| C640           | B3             | F2             | U200           | B1             | F6             |                |                |                |
| C660           | B3             | E2             | U210           | B2             | E6             | W300           | B5             | C6             |
| C670           | B3             | D2             | U220           | B4             | D6             |                |                |                |

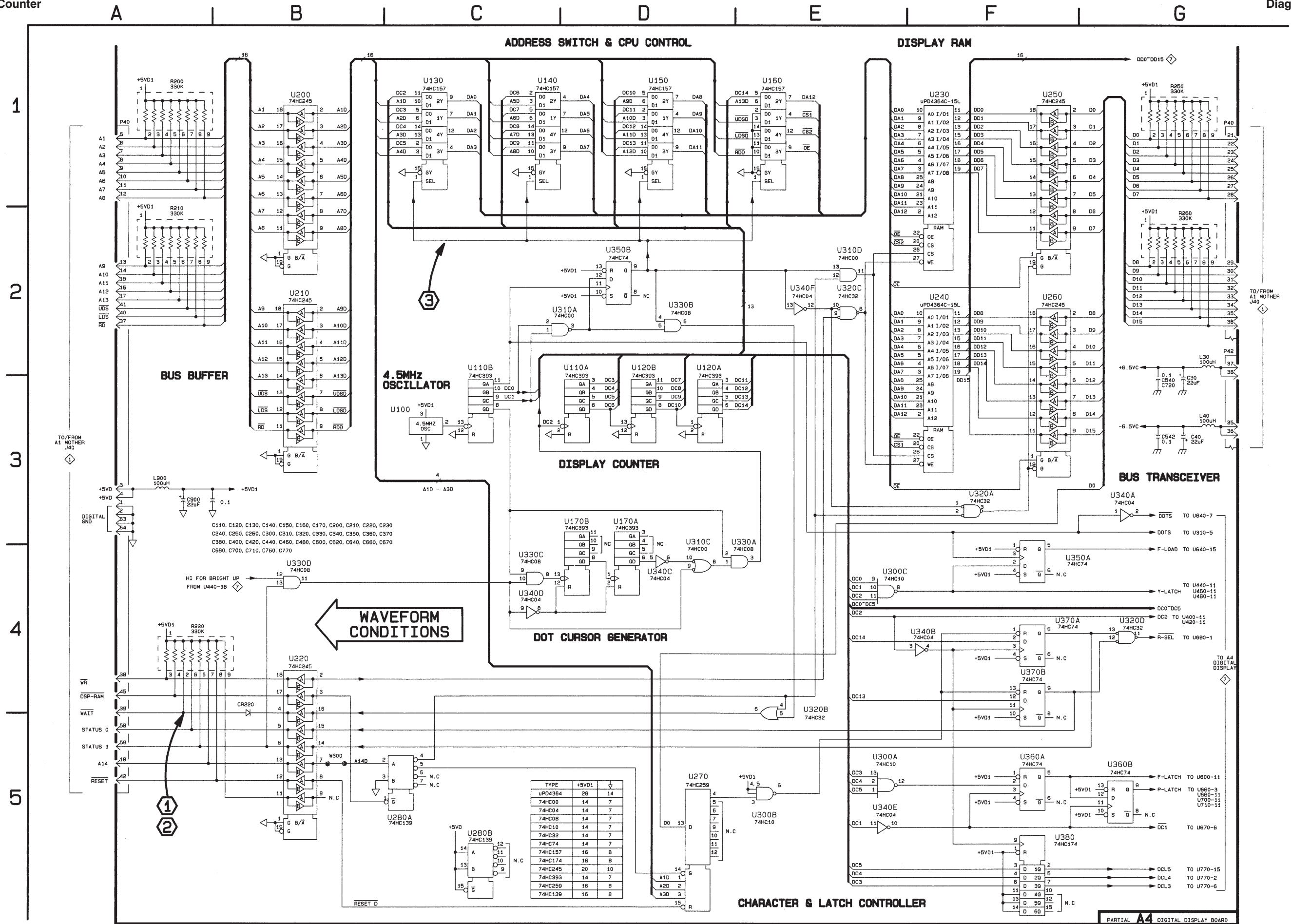
| ASSEMBLY A4    |                |                |                |                |                |                |                |                |
|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| CIRCUIT NUMBER | SCHEM LOCATION | BOARD LOCATION | CIRCUIT NUMBER | SCHEM LOCATION | BOARD LOCATION | CIRCUIT NUMBER | SCHEM LOCATION | BOARD LOCATION |
| C20            | G1             | I5             | R512           | F1             | K4             | TP10           | F1             | L2             |
| C500           | E1             | K6             | R514           | F1             | K4             | TP20           | F1             | B6             |
| C502           | E2             | K6             | R520           | E2             | K5             |                |                |                |
| C504           | E2             | K6             | R522           | E3             | K5             | U310B          | D4             | B5             |
| C506           | F1             | K5             | R524           | E2             | K5             | U400           | B1             | H6             |
| C508           | F1             | K3             | R526           | E2             | K5             | U420           | B2             | H6             |
| C510           | F1             | K4             | R528           | F2             | L5             | U440           | C1             | I5             |
| C512           | F2             | K4             | R530           | F2             | L5             | U460           | C2             | J5             |
| C520           | E2             | K4             | R532           | F2             | K4             | U480           | C2             | I6             |
| C522           | E2             | J5             | R534           | F2             | K4             | U500           | E1             | J6             |
| C524           | E3             | J5             | R700           | E4             | H7             | U502A          | F1             | K5             |
| C526           | F1             | K5             | R702           | E4             | H7             | U502B          | F2             | K5             |
| C528           | F2             | K4             | R704           | E5             | H7             | U520           | E2             | J5             |
| C530           | F2             | K4             | R710           | F4             | I3             | U522A          | F1             | K4             |
| C532           | F3             | K4             | R712           | F4             | I3             | U522B          | F2             | K4             |
| C800           | E3             | K3             | R714           | F5             | I3             | U540A          | G3             | L4             |
| C802           | E3             | J4             | R716           | F4             | I3             | U540B          | G1             | L4             |
| C804           | E3             | J4             | R718           | F5             | I3             | U540C          | G2             | L4             |
| C806           | F3             | L3             | R720           | F5             | I3             | U600           | C4             | H2             |
| C808           | F3             | K3             | R722           | F3             | L4             | U620           | D4             | G2             |
| C820           | E4             | K2             | R724           | F3             | L4             | U640           | D4             | F2             |
| C822           | E4             | J3             | R726           | F3             | L4             | U660A          | B5             | E2             |
| C824           | E4             | J3             | R800           | E3             | K3             | U660B          | C5             | E2             |
| C826           | F4             | L2             | R802           | E3             | K3             | U670A          | D1             | D2             |
| C840           | F4             | K2             | R804           | E3             | K3             | U670B          | D1             | D2             |
| C842           | G4             | L3             | R806           | E3             | K3             | U680           | E5             | E2             |
| C1000          | F3             | J2             | R808           | F3             | K3             | U700           | B3             | H4             |
| C1002          | F3             | H7             | R810           | F3             | K3             | U710           | B4             | H2             |
|                |                |                | R812           | G3             | L3             | U720A          | F5             | J3             |
| L10            | G1             | J6             | R814           | G3             | L3             | U720B          | F5             | J3             |
| L20            | G1             | J6             | R820           | E4             | K2             | U720C          | F4             | J3             |
|                |                |                | R822           | E4             | K2             | U720D          | F4             | J3             |
| P40            | G5             | D7             | R824           | E4             | K2             | U760           | C3             | J2             |
| P42            | G1             | K7             | R826           | E4             | K2             | U770           | C4             | I2             |
|                |                |                | R828           | F3             | K2             | U800           | E3             | J3             |
| R500           | E2             | K6             | R830           | F4             | K2             | U802A          | F3             | K3             |
| R502           | E2             | K6             | R840           | G4             | L3             | U802B          | G3             | K3             |
| R504           | E1             | K5             | R842           | G4             | L2             | U820           | E3             | J2             |
| R506           | E1             | K5             | R844           | G4             | L2             | U822A          | F4             | K2             |
| R508           | F1             | K5             | R846           | F3             | L3             | U822B          | G4             | K2             |
| R510           | F1             | K5             | R848           | F3             | L3             |                |                |                |



### WAVEFORM CONDITIONS

The waveforms shown below were obtained using a test oscilloscope with 1 MΩ input impedance (Tektronix 2430A with plotter) with the 370A set to the power-up default (initial) settings.





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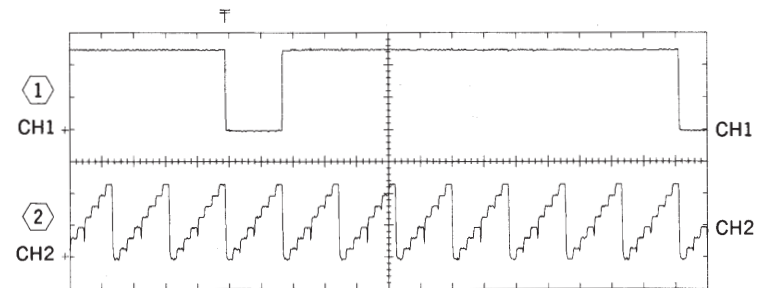
WAVEFORM CONDITIONS

The waveforms shown below were obtained using a test oscilloscope with 1 MΩ input impedance (Tektronix 2430A with plotter) with the 370A under the following conditions:

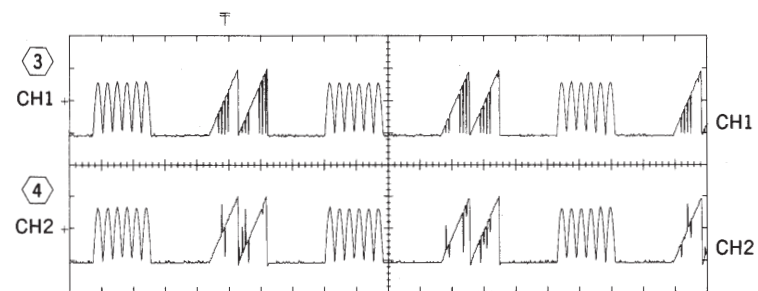
Waveform 1, 2, 5, and 6: These waveforms were obtained from the 370A set to the power-up default (initial) settings.

Waveform 3 and 4: These waveforms were obtained with the 370A set to the power-up default (initial) settings, except that the COLLECTOR SUPPLY MAX PEAK POWER WATTS is set to 0.4 W, the VARIABLE COLLECTOR SUPPLY is set to 100%, the VERTICAL CURRENT/DIV is set to 2 mA, and the LEFT-RIGHT-STANDBY switch is set to RIGHT. A 1 kΩ, 0.5 watt resistor is connected between the right collector terminal and the right emitter terminal.

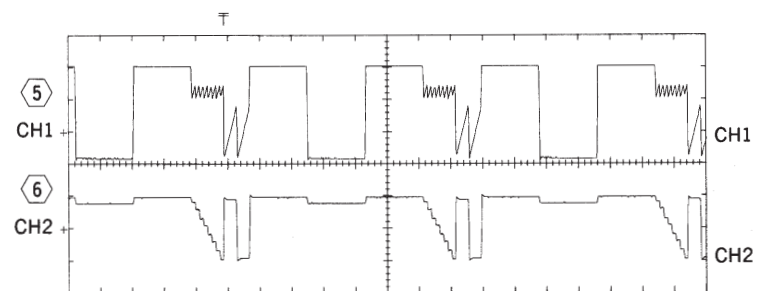
CH1 DC 2V/div AVG 2μSEC/div  
 CH2 DC 2V/div AVG 2μSEC/div

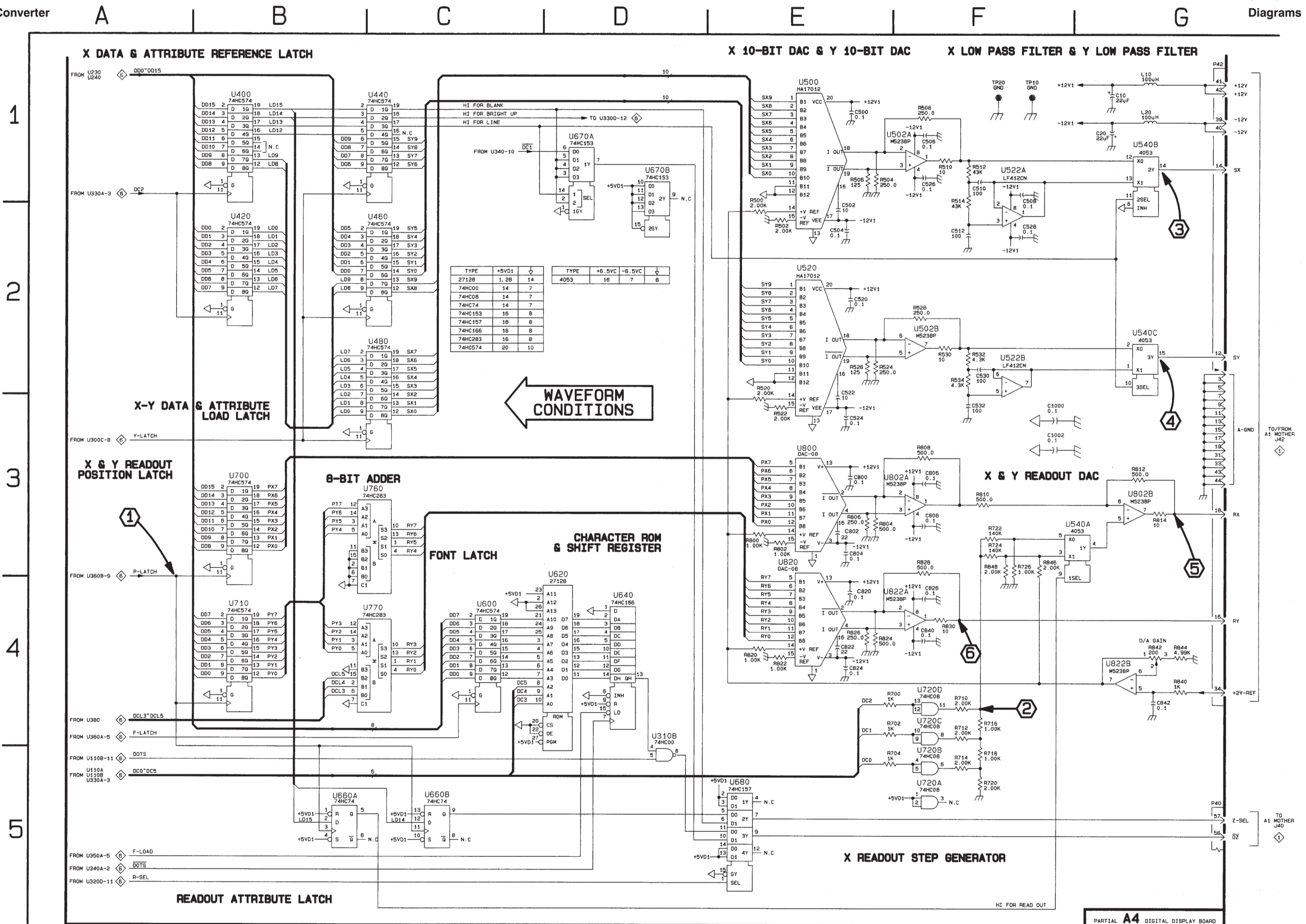


CH1 DC 1V/div NORMAL 2mSEC/div  
 CH2 DC 1V/div NORMAL 2mSEC/div



CH1 DC 1V/div AVG 2mSEC/div  
 CH2 DC 1V/div AVG 2mSEC/div





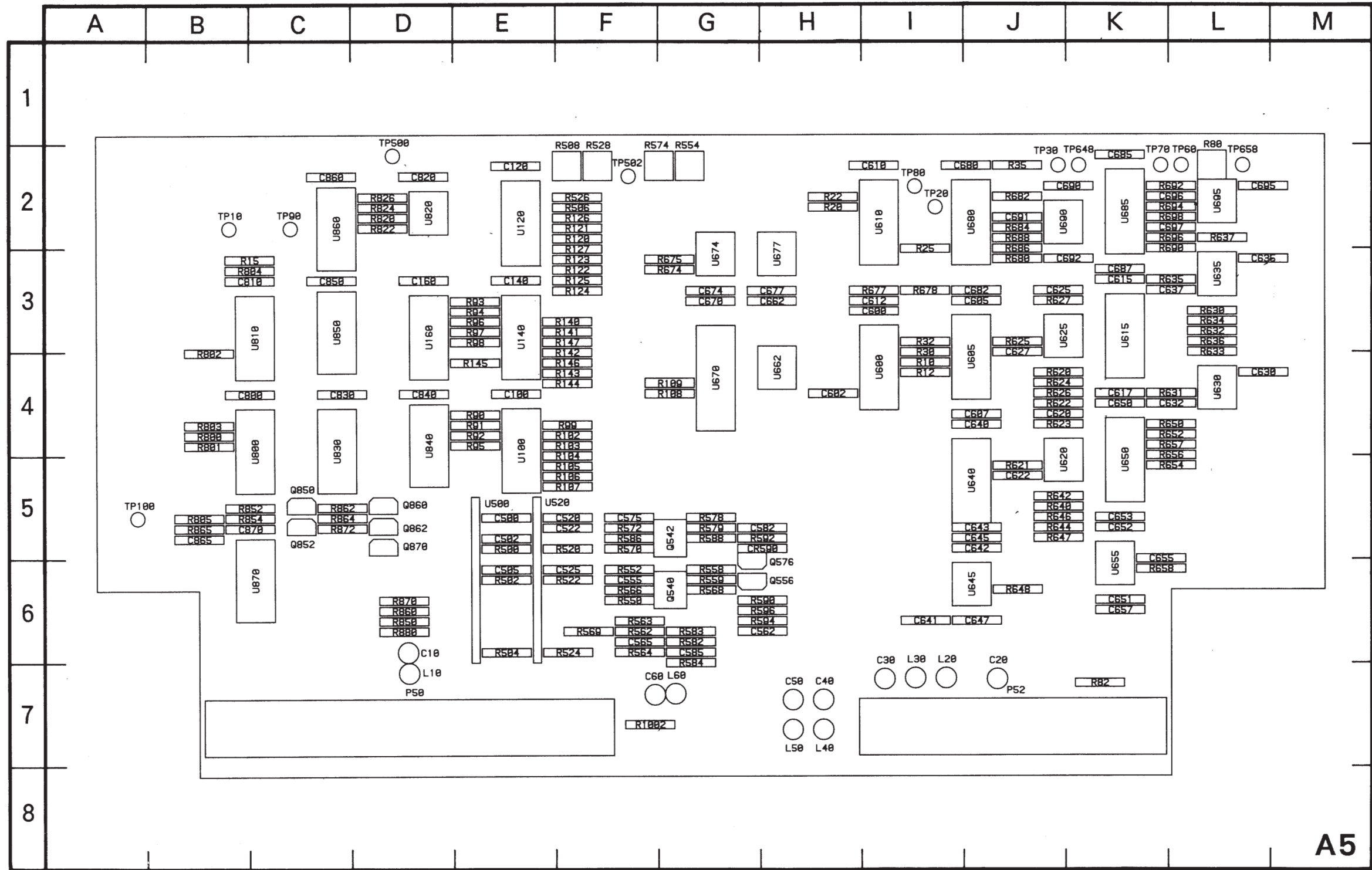


Figure 7-10. A5 — Display Control circuit board assembly.

A5 — Display Control circuit board illustration to be used with diagrams 8 and 9.

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### DISPLAY OFFSET



| ASSEMBLY A5    |                |                |                |                |                |                |                |                |
|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| CIRCUIT NUMBER | SCHEM LOCATION | BOARD LOCATION | CIRCUIT NUMBER | SCHEM LOCATION | BOARD LOCATION | CIRCUIT NUMBER | SCHEM LOCATION | BOARD LOCATION |
| C40            | F2             | H7             | R126           | C2             | F2             | R688           | E1             | J2             |
| C50            | F2             | H7             | R127           | C2             | F3             | R690           | D2             | L2             |
| C641           | F3             | I6             | R140           | C3             | F3             | R692           | E2             | L2             |
| C643           | F3             | J5             | R141           | C3             | F3             | R694           | E2             | L2             |
| C651           | F4             | K6             | R142           | C3             | F4             | R696           | E2             | L2             |
| C653           | F4             | K5             | R143           | C3             | F4             | R698           | E2             | L2             |
| C674           | C1             | G3             | R144           | C3             | F4             |                |                |                |
| C677           | C1             | H3             | R145           | C3             | E4             | TP60           | E2             | L2             |
| C691           | E1             | J2             | R146           | C3             | F4             | TP70           | E1             | K2             |
| C696           | E2             | L2             | R147           | C3             | F3             | TP648          | F3             | K2             |
|                |                |                | R620           | E3             | J4             | TP658          | F3             | L2             |
| L40            | F2             | H7             | R621           | E3             | J5             |                |                |                |
| L50            | F2             | H7             | R622           | E3             | J4             | U100           | B1             | E4             |
|                |                |                | R623           | E3             | J4             | U120           | B2             | E2             |
| P50            | A1             | D7             | R624           | E3             | J4             | U140           | B3             | E3             |
| P52            | A4,G2          | J7             | R625           | E3             | J3             | U160           | B1             | D3             |
|                |                |                | R626           | E3             | J4             | U600           | D3             | I4             |
| R10            | B4             | I4             | R627           | E3             | J3             | U605           | D3             | J4             |
| R12            | A4             | I4             | R630           | E4             | L3             | U610           | D3             | I2             |
| R20            | B4             | H2             | R631           | E4             | L4             | U615           | D3             | K3             |
| R22            | B4             | H2             | R632           | E4             | L3             | U620           | E3             | J5             |
| R30            | B4             | I4             | R633           | E4             | L3             | U625           | E3             | J3             |
| R32            | B4             | I3             | R634           | E4             | L3             | U630           | E3             | L4             |
| R90            | A1             | E4             | R635           | E4             | L3             | U635           | E4             | L3             |
| R91            | A1             | E4             | R636           | E4             | L3             | U640A          | F3             | J5             |
| R92            | A1             | E4             | R637           | E4             | L2             | U640B          | D1             | J5             |
| R93            | A1             | E3             | R640           | E3             | J5             | U640C          | F3             | J5             |
| R94            | A1             | E3             | R642           | E3             | J5             | U645           | F3             | J6             |
| R95            | A2             | E4             | R644           | E3             | J5             | U650A          | F4             | K5             |
| R96            | A2             | E3             | R646           | E3             | J5             | U650B          | D1             | K5             |
| R97            | A2             | E3             | R647           | F3             | J5             | U650C          | F4             | K5             |
| R98            | A2             | E3             | R648           | F3             | J6             | U655           | F4             | K6             |
| R99            | A1             | F4             | R650           | E4             | L4             | U662A          | D1             | H4             |
| R102           | C1             | F4             | R652           | E4             | L4             | U662B          | D1             | H4             |
| R103           | C1             | F4             | R654           | E4             | L5             | U670           | C1             | G4             |
| R104           | C1             | F5             | R656           | E4             | L4             | U674           | C1             | G3             |
| R105           | C1             | F5             | R657           | F3             | L4             | U677           | C2             | H3             |
| R106           | C1             | F5             | R658           | F4             | K6             | U680           | E1             | J2             |
| R107           | C1             | F5             | R674           | D2             | G3             | U685           | E2             | K2             |
| R108           | C1             | G4             | R675           | D2             | G3             | U690           | E1             | J2             |
| R109           | C1             | G4             | R677           | D2             | I3             | U695           | E2             | L2             |
| R120           | C2             | F2             | R678           | D2             | I3             | U820B          | F1             | D2             |
| R121           | C2             | F2             | R680           | D1             | J3             | U840E          | A3             | D4             |
| R122           | C2             | F3             | R682           | E1             | J2             | U870B          | A3             | C6             |
| R123           | C2             | F3             | R684           | E1             | J2             | U870C          | B2             | C6             |
| R124           | C2             | F3             | R686           | E1             | J2             | U870D          | B2             | C6             |
| R125           | C2             | F3             |                |                |                |                |                |                |

### DISPLAY SELECT



| ASSEMBLY A5    |                |                |                |                |                |                |                |                |
|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| CIRCUIT NUMBER | SCHEM LOCATION | BOARD LOCATION | CIRCUIT NUMBER | SCHEM LOCATION | BOARD LOCATION | CIRCUIT NUMBER | SCHEM LOCATION | BOARD LOCATION |
| C10            | A5             | D6             | C860           | B5             | C2             | R584           | G2             | G7             |
| C20            | F5             | J6             | C865           | B3             | B5             | R586           | F2             | F5             |
| C30            | F4             | I6             | C870           | B5             | B5             | R588           | F2             | G5             |
| C60            | F3             | F7             |                |                |                | R590           | F2             | H6             |
| C100           | B5             | E4             | CR590          | E2             | H5             | R592           | E2             | H5             |
| C120           | B5             | E2             |                |                |                | R594           | E2             | H6             |
| C140           | B5             | E3             | L10            | A4             | D7             | R596           | E2             | H6             |
| C160           | B5             | D3             | L20            | G5             | I6             | R800           | A4             | B4             |
| C500           | F4             | E5             | L30            | G4             | I6             | R801           | A4             | B4             |
| C502           | F5             | E5             | L60            | G3             | G7             | R802           | A3             | B4             |
| C505           | D1             | E6             |                |                |                | R803           | A3             | B4             |
| C520           | F4             | F5             | P50            | A3,A4          | D7             | R804           | A3             | B3             |
| C522           | F5             | F5             | P52            | A1,A2,A4       | J7             | R805           | B3             | B5             |
| C525           | D2             | F6             |                | G1             |                | R820           | A3             | D2             |
| C555           | F1             | F6             |                |                |                | R822           | A3             | D2             |
| C562           | E2             | H6             | Q540A          | F1             | G6             | R824           | B4             | D2             |
| C565           | F1             | F6             | Q540B          | F1             | G6             | R826           | B3             | D2             |
| C575           | F3             | F5             | Q542A          | F2             | G5             | R850           | B4             | D6             |
| C582           | E2             | H5             | Q542B          | F2             | G5             | R852           | D4             | B5             |
| C585           | F2             | G6             | Q556           | E2             | H6             | R854           | E4             | B5             |
| C600           | F4             | I3             | Q576           | E2             | H6             | R860           | B4             | D6             |
| C602           | F5             | H4             | Q850           | D4             | C5             | R862           | D4             | C5             |
| C605           | F4             | J3             | Q852           | E4             | C5             | R864           | D4             | C5             |
| C607           | F5             | J4             | Q860           | D4             | D5             | R865           | B3             | B5             |
| C610           | F4             | I2             | Q862           | D4             | D5             | R870           | B4             | D6             |
| C612           | F5             | I3             | Q870           | D4             | D5             | R872           | D4             | C5             |
| C615           | F4             | K3             |                |                |                | R880           | E3             | D6             |
| C617           | F5             | K4             | R15            | B4             | B3             | R1002          | B2             | F7             |
| C620           | F4             | J4             | R25            | F4             | I3             |                |                |                |
| C622           | F5             | J5             | R35            | F4             | J2             | TP10           | B4             | B2             |
| C625           | F4             | J3             | R80            | F3             | L2             | TP20           | F4             | I2             |
| C627           | F5             | J4             | R82            | G3             | K7             | TP30           | F4             | J2             |
| C630           | F4             | L4             | R500           | D1             | E5             | TP80           | F3             | I2             |
| C632           | F5             | L4             | R502           | D1             | E6             | TP90           | A5             | C2             |
| C635           | F4             | L3             | R504           | D1             | E6             | TP100          | F3             | A5             |
| C637           | F5             | L3             | R506           | D1             | F2             | TP500          | E1             | D1             |
| C640           | F4             | J4             | R508           | D1             | F2             | TP502          | E2             | F2             |
| C642           | F5             | J5             | R520           | D2             | F5             |                |                |                |
| C645           | F4             | J5             | R522           | D2             | F6             | U500           | D1             | E5             |
| C647           | F5             | J6             | R524           | D2             | F6             | U520           | D2             | E5             |
| C650           | F4             | K4             | R526           | D2             | F2             | U800A          | D4             | C4             |
| C652           | F5             | K5             | R528           | D2             | F2             | U800B          | B4             | C4             |
| C655           | F4             | K5             | R550           | E1             | F6             | U810           | C3             | C3             |
| C657           | F5             | K6             | R552           | F1             | F6             | U820A          | B3             | D2             |
| C662           | F5             | H3             | R554           | F1             | G2             | U830A          | D3             | C4             |
| C670           | F4             | G3             | R558           | F2             | G6             | U830B          | D4             | C4             |
| C680           | F4             | J2             | R559           | F2             | G6             | U840A          | B4             | D4             |
| C682           | F5             | J3             | R562           | F1             | F6             | U840B          | D3             | D4             |
| C685           | F4             | K2             | R563           | F1             | F6             | U840C          | B3             | D4             |
| C687           | F5             | K3             | R564           | G1             | F6             | U840D          | D3             | D4             |
| C690           | F4             | K2             | R566           | F1             | F6             | U840F          | B3             | D4             |
| C692           | F5             | K3             | R568           | F1             | G6             | U850A          | B3             | C3             |
| C695           | F4             | L2             | R569           | G1             | F6             | U850B          | C3             | C3             |
| C697           | F5             | L2             | R570           | E2             | F5             | U850C          | C4             | C3             |
| C800           | B5             | B4             | R572           | F2             | F5             | U850D          | C4             | C3             |
| C810           | B5             | B3             | R574           | F2             | G2             | U860A          | B4             | C2             |
| C820           | B5             | D2             | R578           | F3             | G5             | U860B          | D3             | C2             |
| C830           | B5             | C4             | R579           | F3             | G5             | U860C          | B3             | C2             |
| C840           | B5             | D4             | R582           | F2             | G6             | U860D          | B3             | C2             |
| C850           | B5             | C3             | R583           | F2             | G6             | U870A          | B3             | C6             |

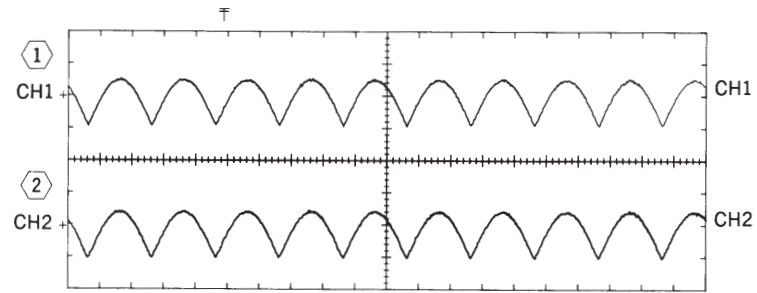
| CHASSIS MOUNTED PARTS |                |                |                |                |                |                |                |                |
|-----------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| CIRCUIT NUMBER        | SCHEM LOCATION | BOARD LOCATION | CIRCUIT NUMBER | SCHEM LOCATION | BOARD LOCATION | CIRCUIT NUMBER | SCHEM LOCATION | BOARD LOCATION |
| L120                  | G3             | CHASSIS        |                |                |                |                |                |                |

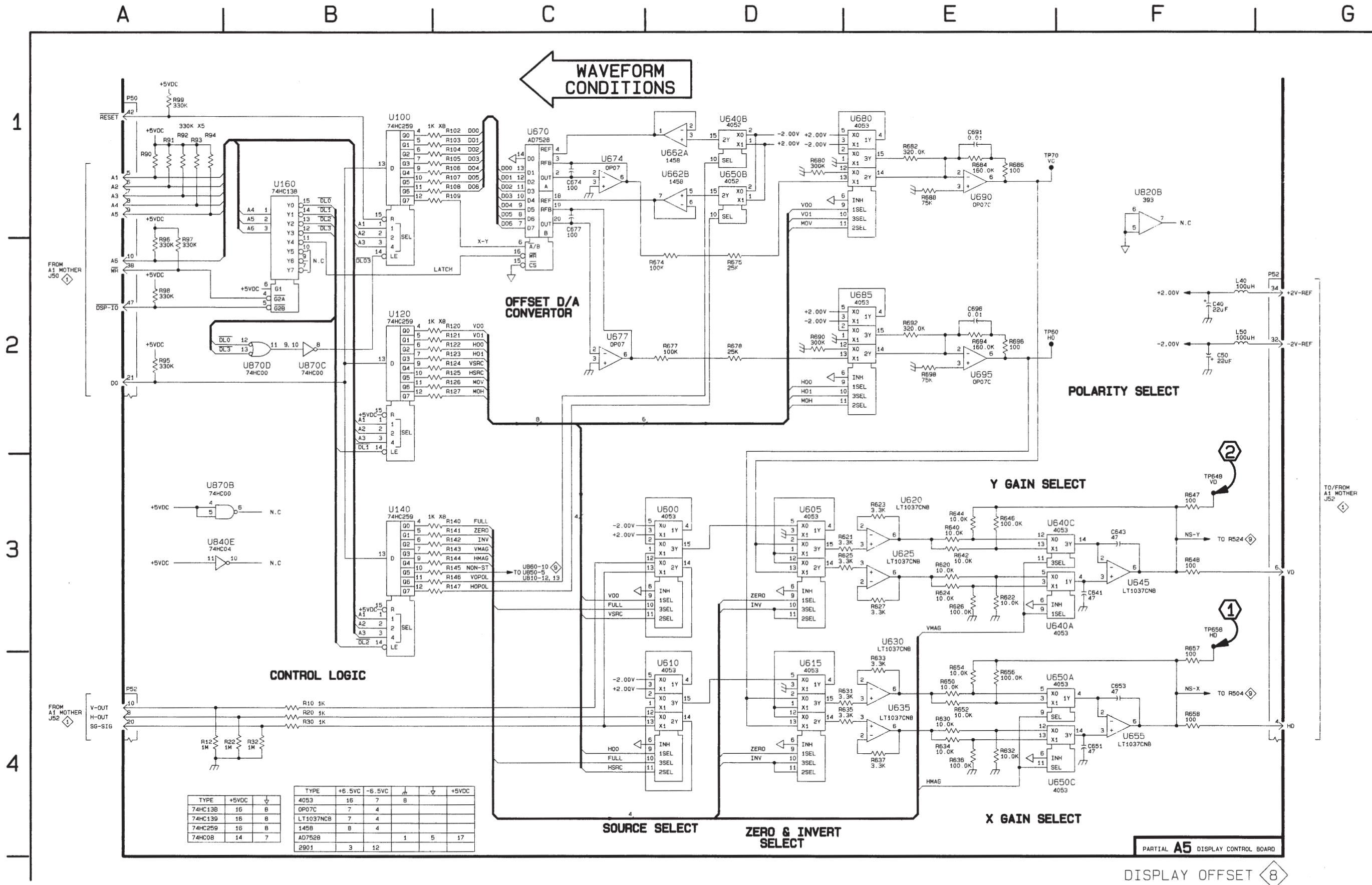
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### WAVEFORM CONDITIONS

The waveforms shown below were obtained using a test oscilloscope with 1 M $\Omega$  input impedance (Tektronix 2430A with plotter) with the 370A set to the power-up default (initial) settings, except that the COLLECTOR SUPPLY MAX PEAK POWER WATTS is set to 0.4 W, the VARIABLE COLLECTOR SUPPLY is set to 100%, the VERTICAL CURRENT/DIV is set to 2 mA, and the LEFT-RIGHT-STANDBY switch is set to RIGHT. A 1 k $\Omega$ , 0.5 watt resistor is connected between the right collector terminal and the right emitter terminal.

|     |    |        |        |           |
|-----|----|--------|--------|-----------|
| CH1 | DC | 1V/div | NORMAL | 5mSEC/div |
| CH2 | DC | 1V/div | NORMAL | 5mSEC/div |





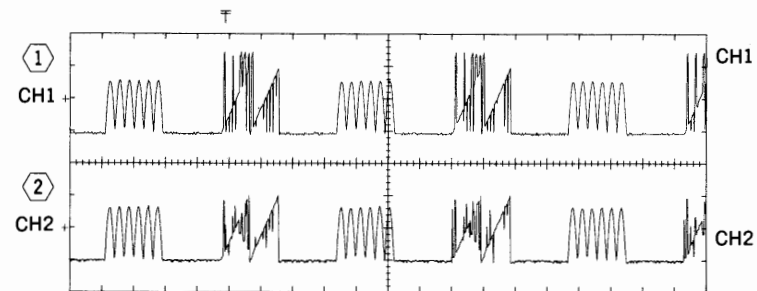


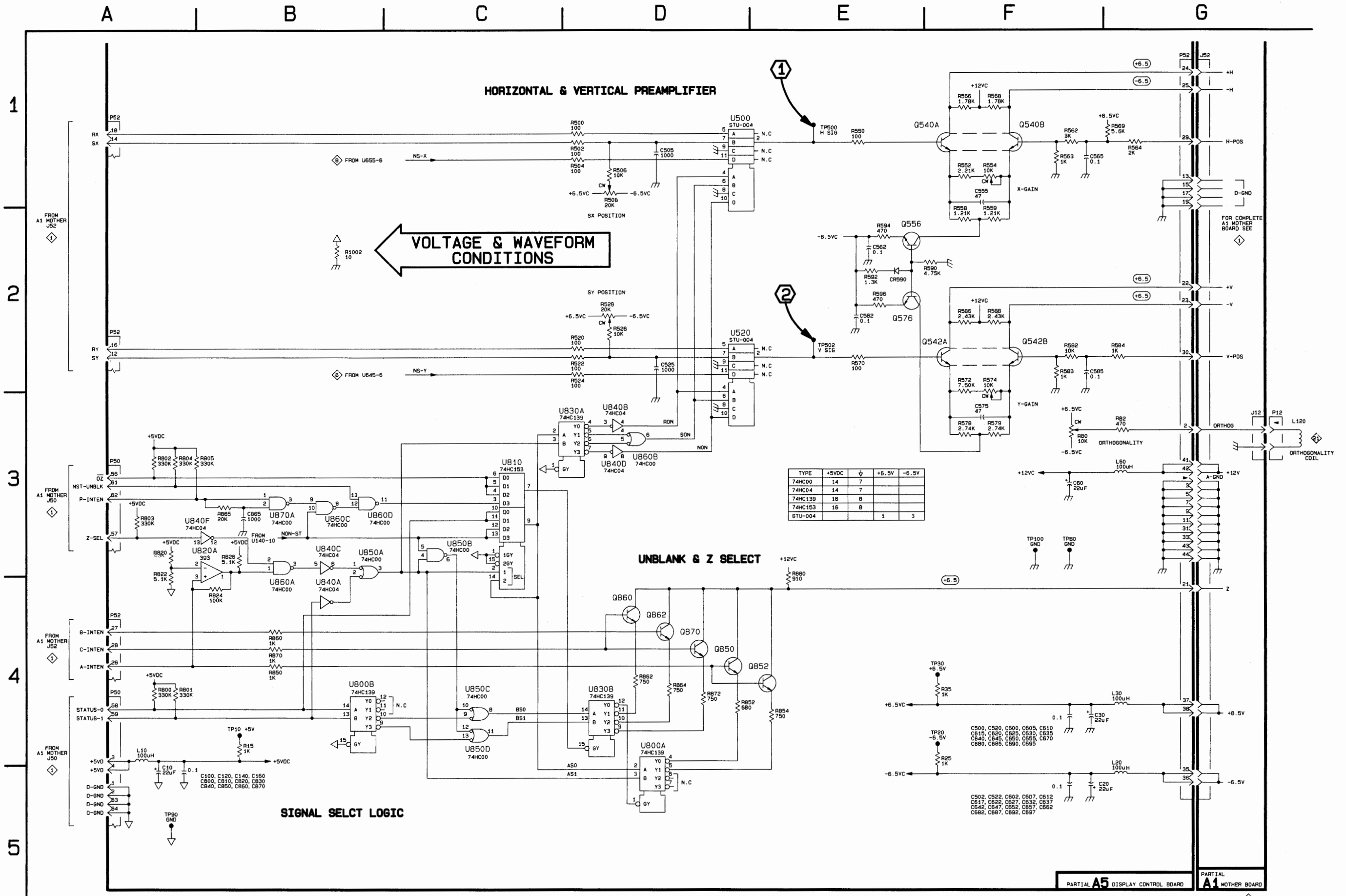
## VOLTAGE AND WAVEFORM CONDITIONS

**Voltage Conditions.** The voltages shown on the diagram were obtained using a digital multimeter with a 10 M $\Omega$  input impedance. These voltages are not affected by the 370A setting.

**Waveform Conditions.** The waveforms shown below were obtained using a test oscilloscope with 1 M $\Omega$  input impedance (Tektronix 2430A with plotter) with the 370A set to the power-up default (initial) settings, except that the COLLECTOR SUPPLY MAX PEAK POWER WATTS is set to 0.4 W, the VARIABLE COLLECTOR SUPPLY is set to 100%, the VERTICAL CURRENT/DIV is set to 2 mA, and the LEFT-RIGHT-STANDBY switch is set to RIGHT. A 1 k $\Omega$ , 0.5 watt resistor is connected between the right collector terminal and the right emitter terminal.

|     |    |        |        |           |
|-----|----|--------|--------|-----------|
| CH1 | DC | 1V/div | NORMAL | 2mSEC/div |
| CH2 | DC | 1V/div | NORMAL | 2mSEC/div |





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DISPLAY SELECT 9

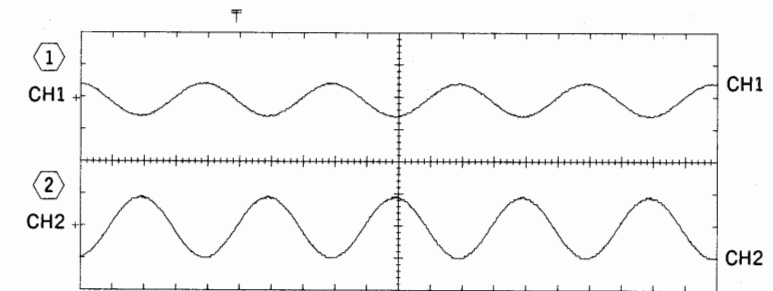
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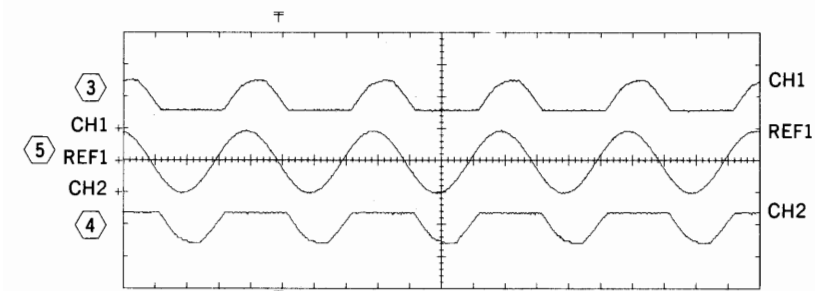
### WAVEFORM CONDITIONS

The waveforms shown below were obtained using a test oscilloscope with 1 M $\Omega$  input impedance (Tektronix 2430A with plotter) with the 370A set to the power-up default (initial) settings, except that the VARIABLE COLLECTOR SUPPLY is set to 50%.

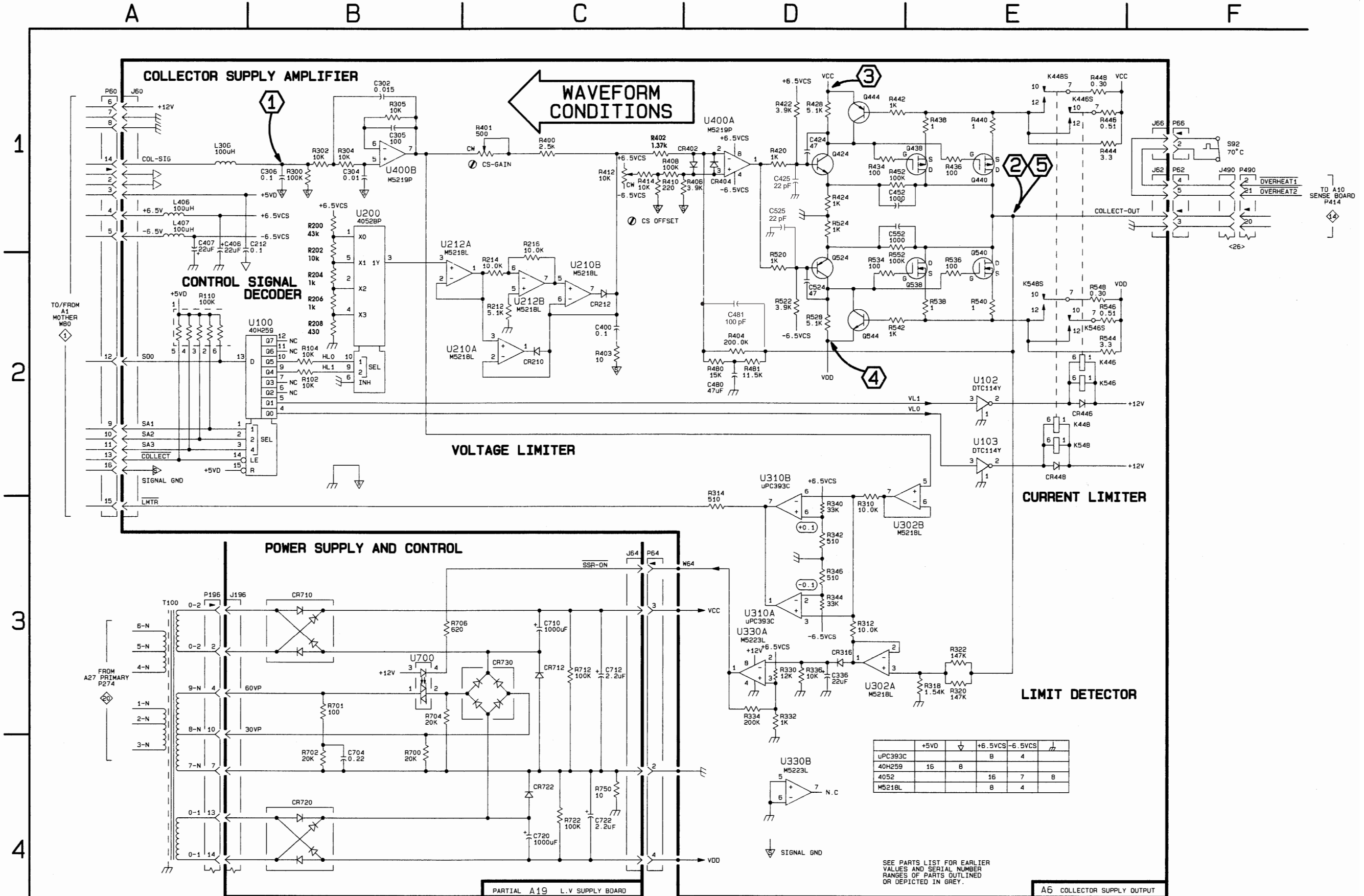
|     |    |         |        |           |
|-----|----|---------|--------|-----------|
| CH1 | DC | 2V/div  | NORMAL | 5mSEC/div |
| CH2 | DC | 50V/div | NORMAL | 5mSEC/div |



|     |    |         |        |           |
|-----|----|---------|--------|-----------|
| CH1 | DC | 50V/div | NORMAL | 5mSEC/div |
| CH2 | DC | 50V/div | NORMAL | 5mSEC/div |



|      |    |         |        |           |
|------|----|---------|--------|-----------|
| REF1 | DC | 50V/div | NORMAL | 5mSEC/div |
|------|----|---------|--------|-----------|



REV MAR 90

COLLECTOR SUPPLY AMPLIFIER 10

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STEP AMPLIFIER



| ASSEMBLY A7    |                |                |                |                |                |                |                |                |
|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| CIRCUIT NUMBER | SCHEM LOCATION | BOARD LOCATION | CIRCUIT NUMBER | SCHEM LOCATION | BOARD LOCATION | CIRCUIT NUMBER | SCHEM LOCATION | BOARD LOCATION |
| C20            | G5             | L5             |                |                |                | R460           | E1             | E3             |
| C30            | G5             | L6             | K502           | F5             | I3             | R462           | E2             | F3             |
| C40            | G4             | K5             | K506           | F5             | J3             | R465           | D2             | F3             |
| C50            | G5             | K6             | K508           | F5             | J4             | R466           | D2             | F3             |
| C60            | G4             | L6             | K510           | F4             | K4             | R467           | D2             | G4             |
| C70            | G4             | L6             | K512           | F5             | K3             | R480           | E2             | G3             |
| C120           | G5             | L6             | K520           | E5             | F4             | R482           | E2             | G3             |
| C122           | G5             | F6             | K522           | E5             | F4             | R490           | E1             | I6             |
| C170           | G5             | K5             | K524           | E5             | F5             | R491           | E2             | F3             |
| C180           | G5             | L5             | K526           | F4             | H4             | R495           | E2             | I6             |
| C200           | A2             | C6             | K570           | G4             | L3             | R496           | E2             | H3             |
| C340           | C2             | C5             | K571           | G5             | L4             | R500           | F2             | I3             |
| C342           | B2             | C5             |                |                |                | R502           | F2             | K2             |
| C354           | F1             | C5             | L20            | G5             | L5             | R506           | F2             | J3             |
| C355           | F1             | C5             | L30            | G5             | L6             | R508           | F2             | K3             |
| C364           | D2             | D3             | L120           | G5             | L7             | R510           | F2             | K3             |
| C370           | C1             | C4             | L801           | D3             | B3             | R512           | F3             | K3             |
| C380           | D2             | D5             |                |                |                | R514           | F3             | K3             |
| C410           | D2             | E4             | Q400           | D1             | D4             | R516           | E2             | G3             |
| C462           | E1             | E3             | Q450           | D1             | E3             | R520           | E2             | G4             |
| C480           | E2             | F3             | Q460           | E1             | F3             | R522           | E2             | G4             |
| C490           | E1             | G6             | Q462           | E2             | F2             | R524           | E3             | G4             |
| C491           | E1             | G6             | Q480           | E2             | F3             | R526           | F1             | H3             |
| C495           | E2             | G6             | Q490           | E1             | F2             | R527           | E1             | D5             |
| C496           | E2             | G6             | Q495           | E2             | G2             | R528           | E1             | D5             |
| C561           | E2             | E4             | Q560           | E2             | F4             | R536           | E2             | G4             |
| C600           | C3             | J4             | Q562           | E2             | E4             | R560           | E2             | E4             |
| C630           | B3             | J5             | Q620           | B3             | I5             | R561           | E2             | E4             |
| C800           | D4             | C3             | Q630           | B3             | I5             | R562           | E2             | E4             |
| C801           | D3             | B3             | Q810           | D3             | C4             | R600           | C3             | K4             |
| C814           | D3             | B3             | Q814           | D3             | B3             | R601           | B3             | J5             |
| C822           | D4             | C3             | Q816           | E3             | C2             | R602           | B3             | J5             |
| C830           | E4             | C3             | Q830           | E4             | C3             | R603           | B3             | K5             |
| C850           | D4             | D3             | Q832           | E4             | D2             | R604           | C3             | I5             |
| CR340          | B2             | B5             | R100           | A3             | F6             | R620           | B3             | I5             |
| CR342          | B2             | B5             | R110           | A4             | F6             | R630           | B3             | I5             |
| CR350          | C2             | C5             | R200           | A2             | C6             | R800           | D3             | B3             |
| CR351          | F1             | D5             | R300           | A1             | C6             | R810           | D3             | C3             |
| CR352          | C2             | C5             | R302           | A2             | D6             | R812           | D3             | B3             |
| CR353          | F1             | D5             | R304           | A2             | D6             | R814           | D3             | B3             |
| CR354          | F1             | D5             | R306           | B1             | C6             | R816           | D3             | B3             |
| CR355          | F1             | D5             | R310           | B1             | B6             | R820           | D4             | C3             |
| CR356          | F1             | D5             | R311           | B1             | B6             | R822           | D4             | C3             |
| CR357          | F1             | D5             | R312           | B1             | B6             | R832           | E4             | C3             |
| CR358          | F1             | D5             | R313           | B1             | B6             | R840           | E3             | D3             |
| CR359          | F1             | D5             | R320           | B2             | C6             | R841           | E4             | D3             |
| CR402          | E1             | H5             | R321           | C2             | D6             | R850           | D4             | D3             |
| CR450          | D1             | E3             | R322           | A2             | C6             | R852           | D4             | C3             |
| CR452          | D1             | E3             | R323           | B2             | D6             |                |                |                |
| CR480          | D2             | G3             | R324           | C2             | C6             | U100           | B4             | E6             |
| CR481          | D2             | F3             | R325           | B2             | C6             | U102           | D4             | D5             |
| CR482          | E3             | H6             | R330           | B1             | B5             | U120           | B4             | D6             |
| CR526          | F2             | G4             | R332           | C1             | B5             | U140           | C4             | D6             |
| CR527          | F2             | H3             | R340           | B2             | B5             | U160           | C4             | E6             |
| CR560          | E2             | E4             | R342           | B2             | B5             | U170           | G5             | K5             |
| CR562          | E2             | E4             | R343           | B2             | C5             | U180           | D4             | D5             |
| CR600          | B3             | J5             | R344           | C2             | B5             | U190           | D5             | E5             |
| CR601          | C3             | J5             | R346           | C3             | J4             | U200           | A1             | C6             |
| CR602          | B3             | J5             | R350           | C1             | B5             | U300           | B1             | B6             |
| CR810          | D3             | B3             | R352           | C2             | B5             | U310           | B2             | B6             |
| CR812          | D3             | B3             | R354           | C1             | C5             | U330A          | C2             | B4             |
| CR830          | D4             | C3             | R355           | F1             | C5             | U330B          | C1             | B4             |
| CR840          | E3             | C3             | R356           | C1             | C5             | U330C          | B1             | B4             |
| CR841          | E3             | C3             | R357           | F1             | C5             | U340           | C1             | C4             |
| CR842          | E4             | C3             | R360           | D2             | E3             | U360           | D2             | D3             |
| CR843          | E4             | D3             | R362           | D2             | D3             | U370A          | G2             | C4             |
|                |                |                | R364           | C2             | C5             | U370B          | G2             | C4             |
|                |                |                | R366           | C2             | C5             | U370C          | D1             | C4             |
| F300           | F1             | K3             | R370           | C1             | C4             | U380           | D1             | D4             |
| F500           | F2             | K2             | R372           | D1             | C4             | U600           | C3             | J4             |
| F800           | E4             | D3             | R374           | C1             | C4             | U800           | D3             | B3             |
| J70            | A1             | F7             | R400           | D1             | D4             |                |                |                |
| J72            | H4             | L6             | R402           | D1             | E3             | VR527          | F1             | G3             |
| J74            | H1             | L3             | R410           | D2             | E4             | VR528          | F2             | G4             |
|                |                |                | R412           | D2             | E4             | VR620          | B3             | I5             |
| K102           | G4             | L3             | R450           | E1             | E3             | VR621          | C3             | I5             |
| K500           | F5             | I4             |                |                |                | VR630          | B2             | I5             |

REV JUL 2000

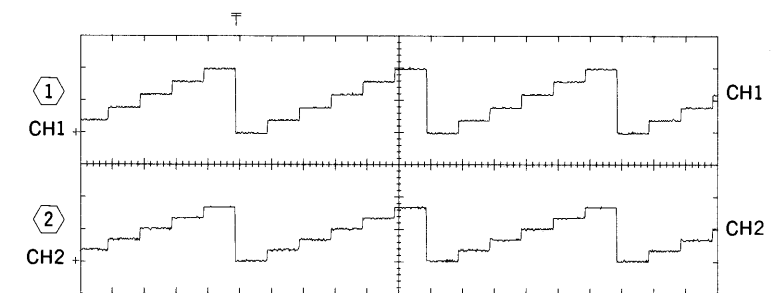
WAVEFORM CONDITIONS

The waveforms shown below were obtained using a test oscilloscope with 1 MΩ input impedance (Tektronix 2430A with plotter) with the 370A under the following conditions:

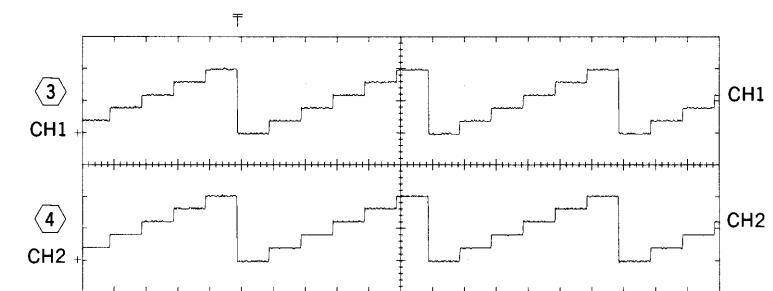
Waveform 1 and 2: These waveforms were obtained with the 370A set to the power-up default (initial) settings, except that the STEP AMPLITUDE is set to 200 mA, and the LEFT-RIGHT-STANDBY switch is set to RIGHT. A patch cord is connected between the right base terminal and the right emitter terminal.

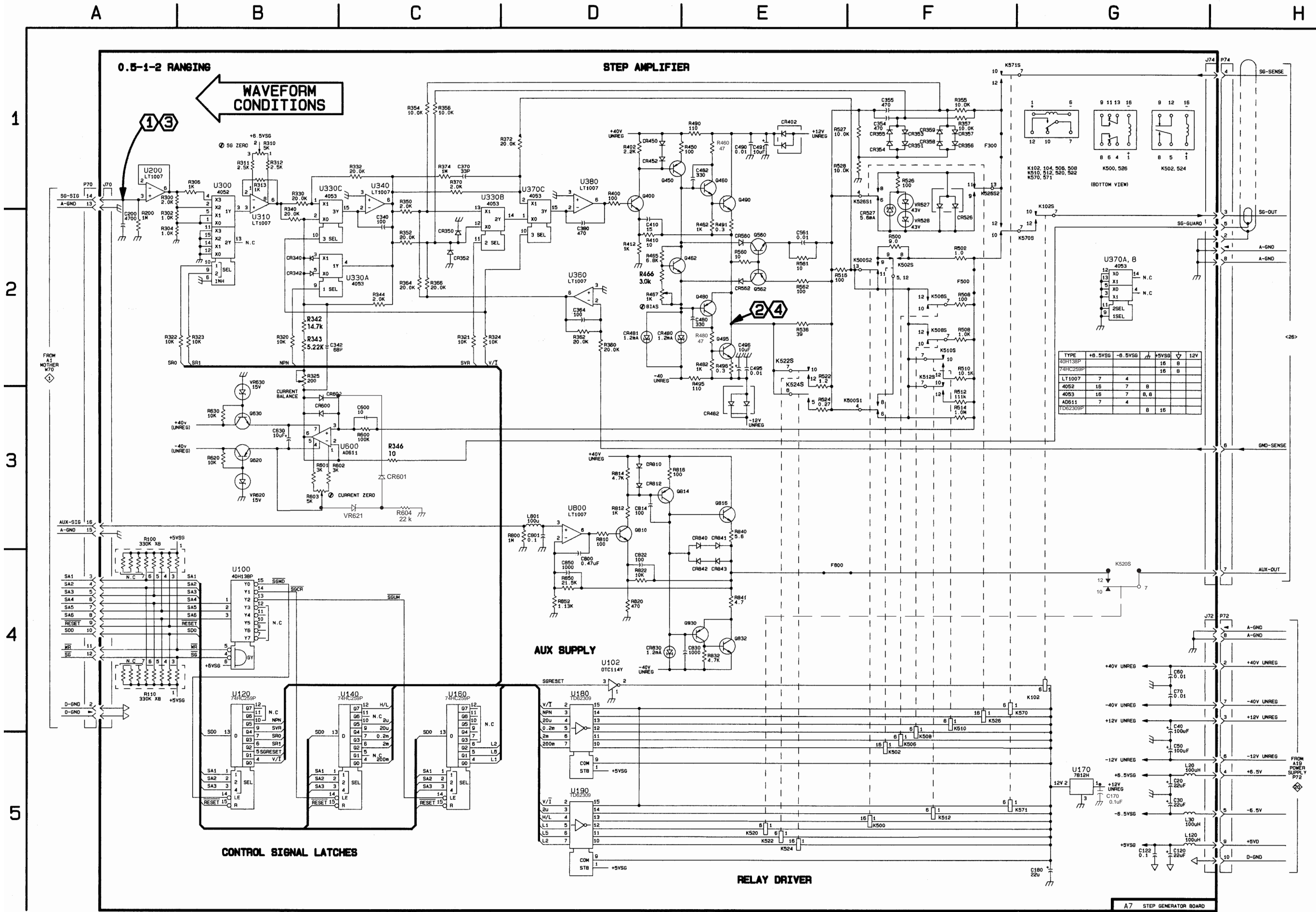
Waveform 3 and 4: These waveforms were obtained with the 370A set to the power-up default (initial) settings, except that the Step Generator output mode is set to VOLTAGE and the STEP AMPLITUDE is set to 2 V.

CH1 DC 500mV/div NORMAL 10mSEC/div  
CH2 DC 1V/div NORMAL 10mSEC/div



CH1 DC 500mV/div NORMAL 10mSEC/div  
CH2 DC 5V/div NORMAL 10mSEC/div





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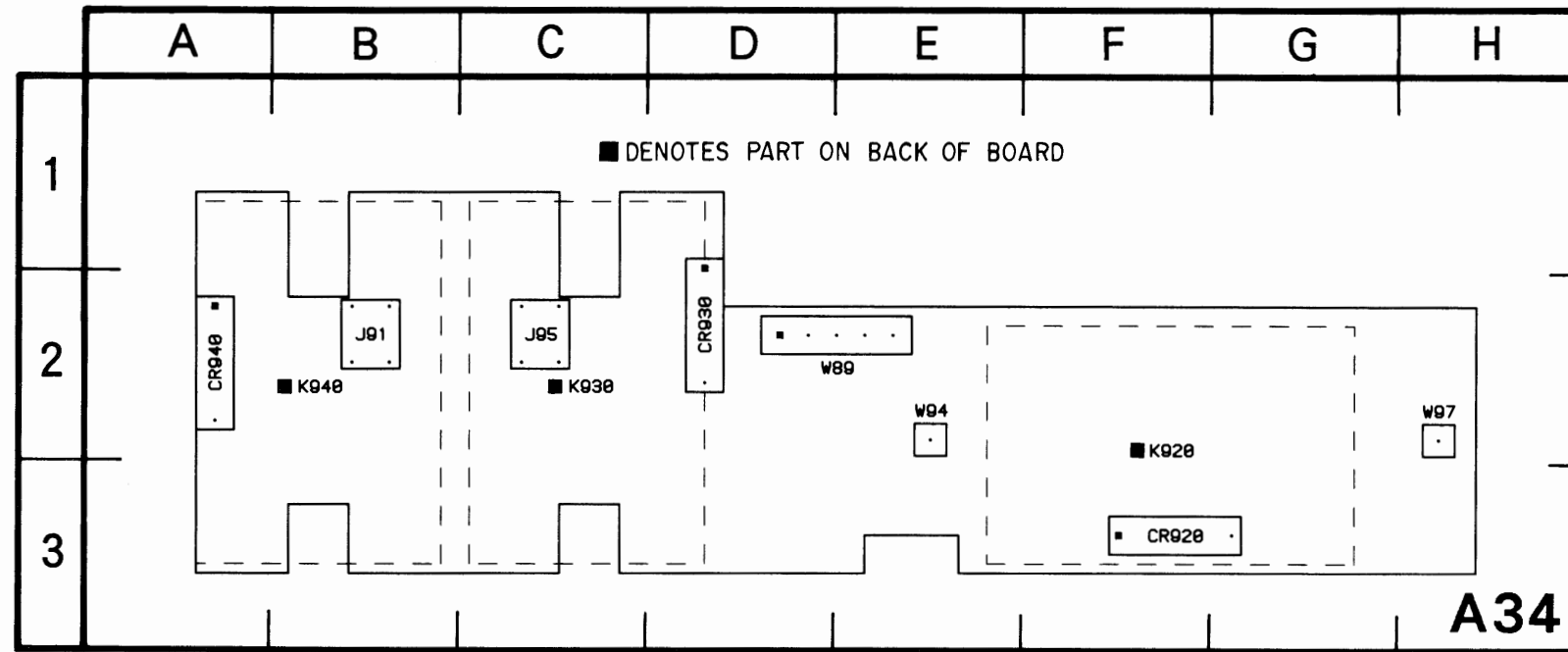
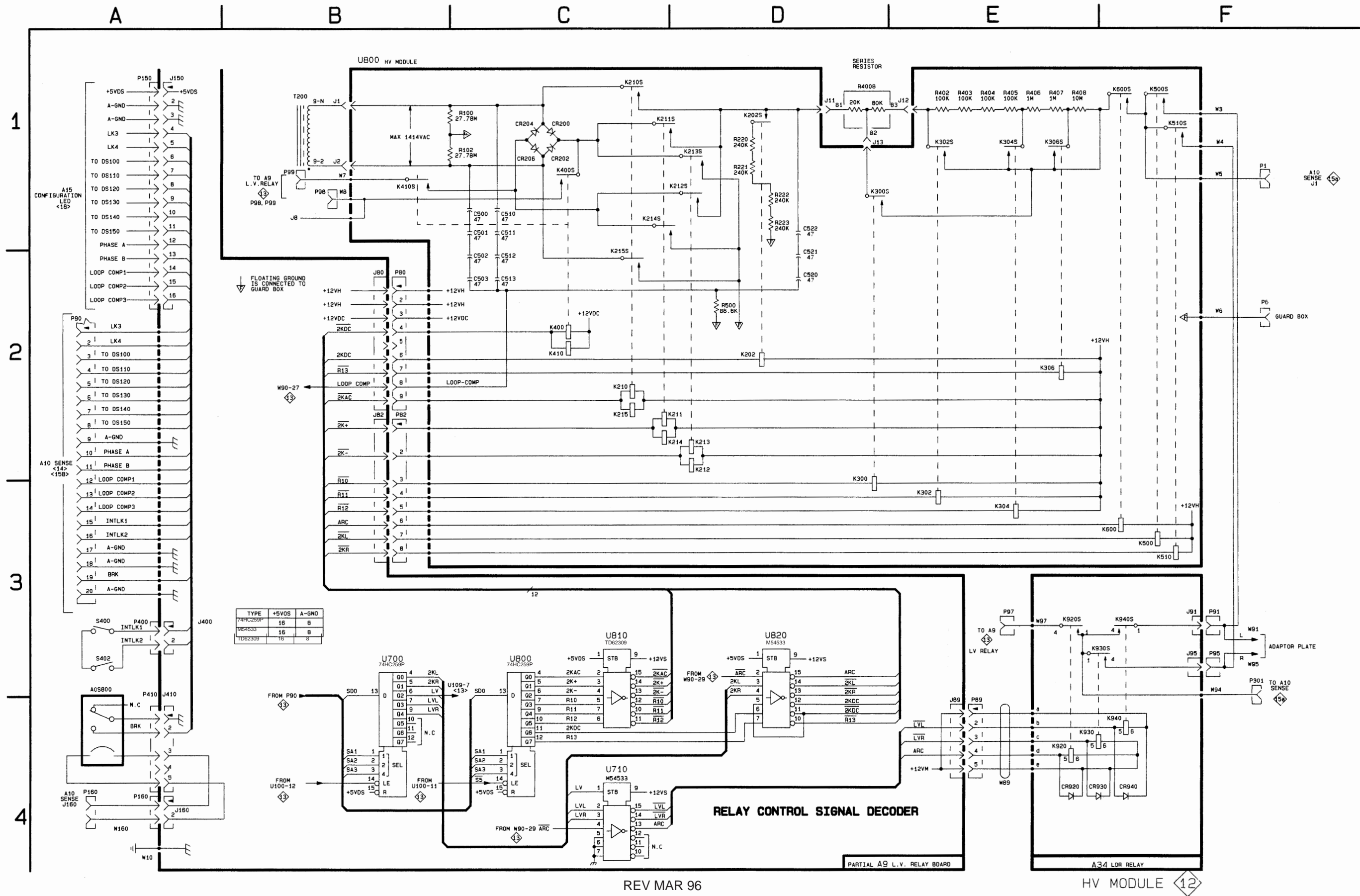


Figure 7-13. A34 — LOR Relay circuit board assembly.

LOR RELAY 12

| ASSEMBLY A34          |                |                |                |                |                |                |                |                |
|-----------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| CIRCUIT NUMBER        | SCHEM LOCATION | BOARD LOCATION | CIRCUIT NUMBER | SCHEM LOCATION | BOARD LOCATION | CIRCUIT NUMBER | SCHEM LOCATION | BOARD LOCATION |
| CR920                 | E4             | F3             | K920           | E4             | F2             |                |                |                |
| CR930                 | E4             | D2             | K930           | E4             | C2             |                |                |                |
| CR940                 | F4             | A2             | K940           | F4             | B2             |                |                |                |
| J91                   | F3             | B2             | W89            | E4             | E2             |                |                |                |
| J95                   | F3             | C2             | W94            | F3             | E2             |                |                |                |
|                       |                |                | W97            | E3             | H2             |                |                |                |
| CHASSIS MOUNTED PARTS |                |                |                |                |                |                |                |                |
| CIRCUIT NUMBER        | SCHEM LOCATION | BOARD LOCATION | CIRCUIT NUMBER | SCHEM LOCATION | BOARD LOCATION | CIRCUIT NUMBER | SCHEM LOCATION | BOARD LOCATION |
| R400B                 | D1             | CHASSIS        |                |                |                |                |                |                |
| T200                  | B1             | CHASSIS        |                |                |                |                |                |                |
| U800                  | B1             | CHASSIS        |                |                |                |                |                |                |



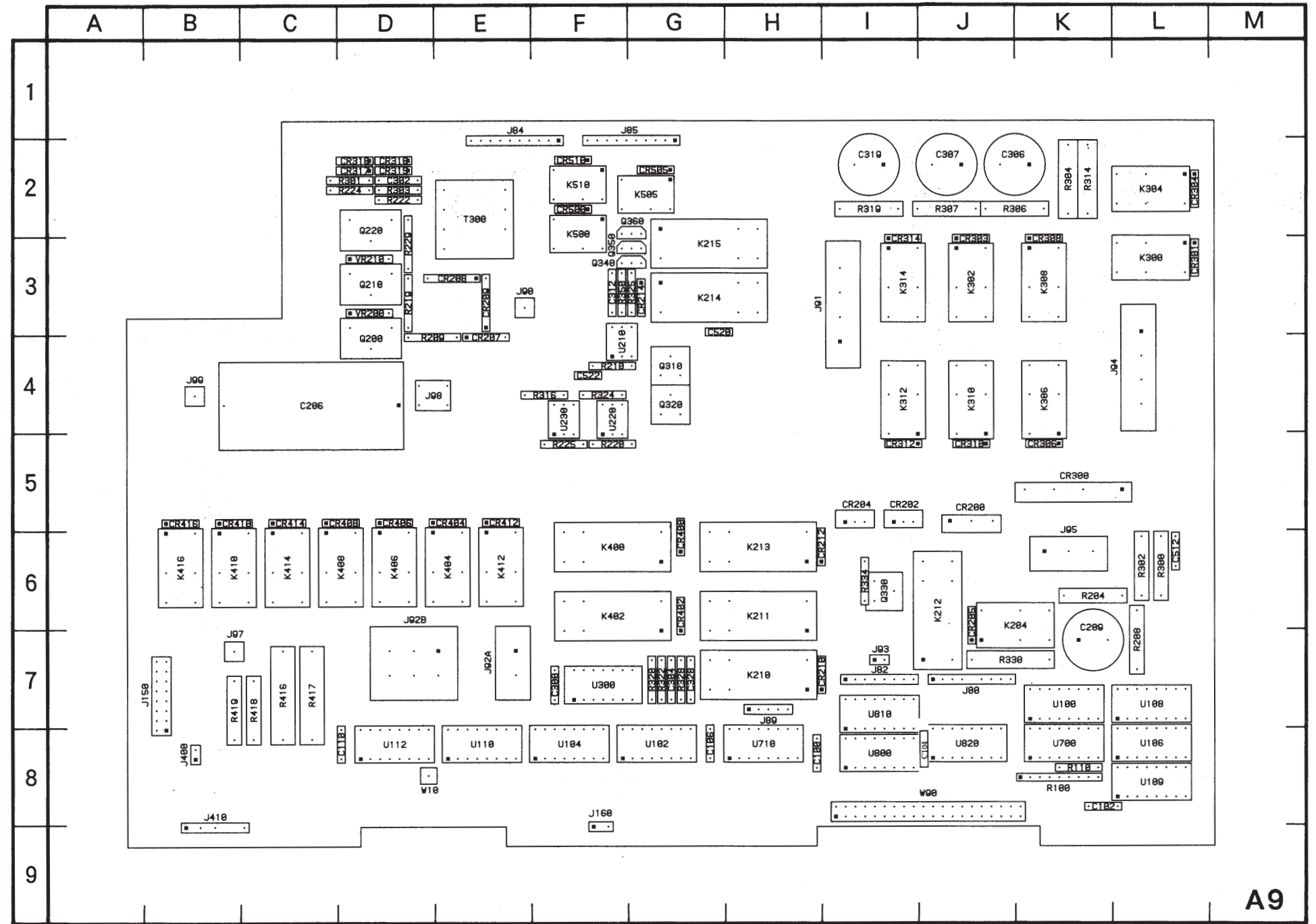


Figure 7-14. A9 — Low Voltage Relay circuit board assembly.

Please cut out the area below the lines.

LOOPING

13

| ASSEMBLY A35          |                |                |                |                |                |                |                |                |
|-----------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| CIRCUIT NUMBER        | SCHEM LOCATION | BOARD LOCATION | CIRCUIT NUMBER | SCHEM LOCATION | BOARD LOCATION | CIRCUIT NUMBER | SCHEM LOCATION | BOARD LOCATION |
| C500                  | E2             | B1             | R200           | D2             | B1             | R502           | E2             | B1             |
| C501                  | E2             | B1             | R202           | E2             | B2             | R503           | D2             | C1             |
| C502                  | E2             | A2             | R310           | E2             | A1             | R504           | E2             | B1             |
| J84                   | D2,F2          | C2             | R312           | E2             | B2             |                |                |                |
| J85                   | E2             | A2             | R500           | E2             | C1             |                |                |                |
|                       |                |                | R501           | E2             | B1             |                |                |                |
| CHASSIS MOUNTED PARTS |                |                |                |                |                |                |                |                |
| CIRCUIT NUMBER        | SCHEM LOCATION | BOARD LOCATION | CIRCUIT NUMBER | SCHEM LOCATION | BOARD LOCATION | CIRCUIT NUMBER | SCHEM LOCATION | BOARD LOCATION |
| R400                  | AB1,C1,E1      | CHASSIS        |                |                |                |                |                |                |
|                       | E3             |                |                |                |                |                |                |                |
| S90                   | E3             | CHASSIS        |                |                |                |                |                |                |
| T200                  | A1             | CHASSIS        |                |                |                |                |                |                |
| U800                  | F1             | CHASSIS        |                |                |                |                |                |                |

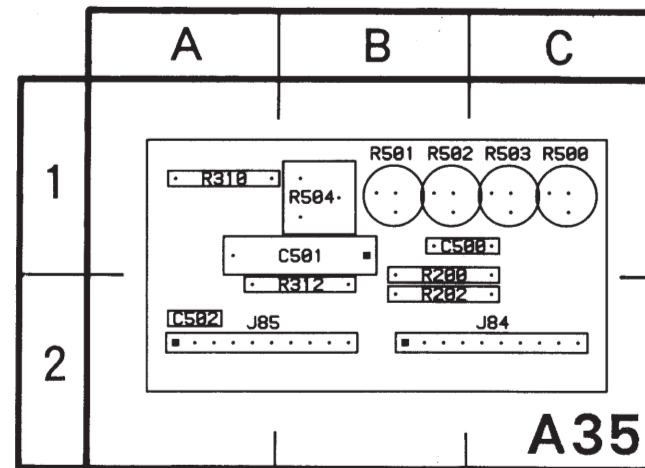


Figure 7-15. A35 — Looping circuit board assembly.

COLLECTOR SUPPLY LOW VOLTAGE

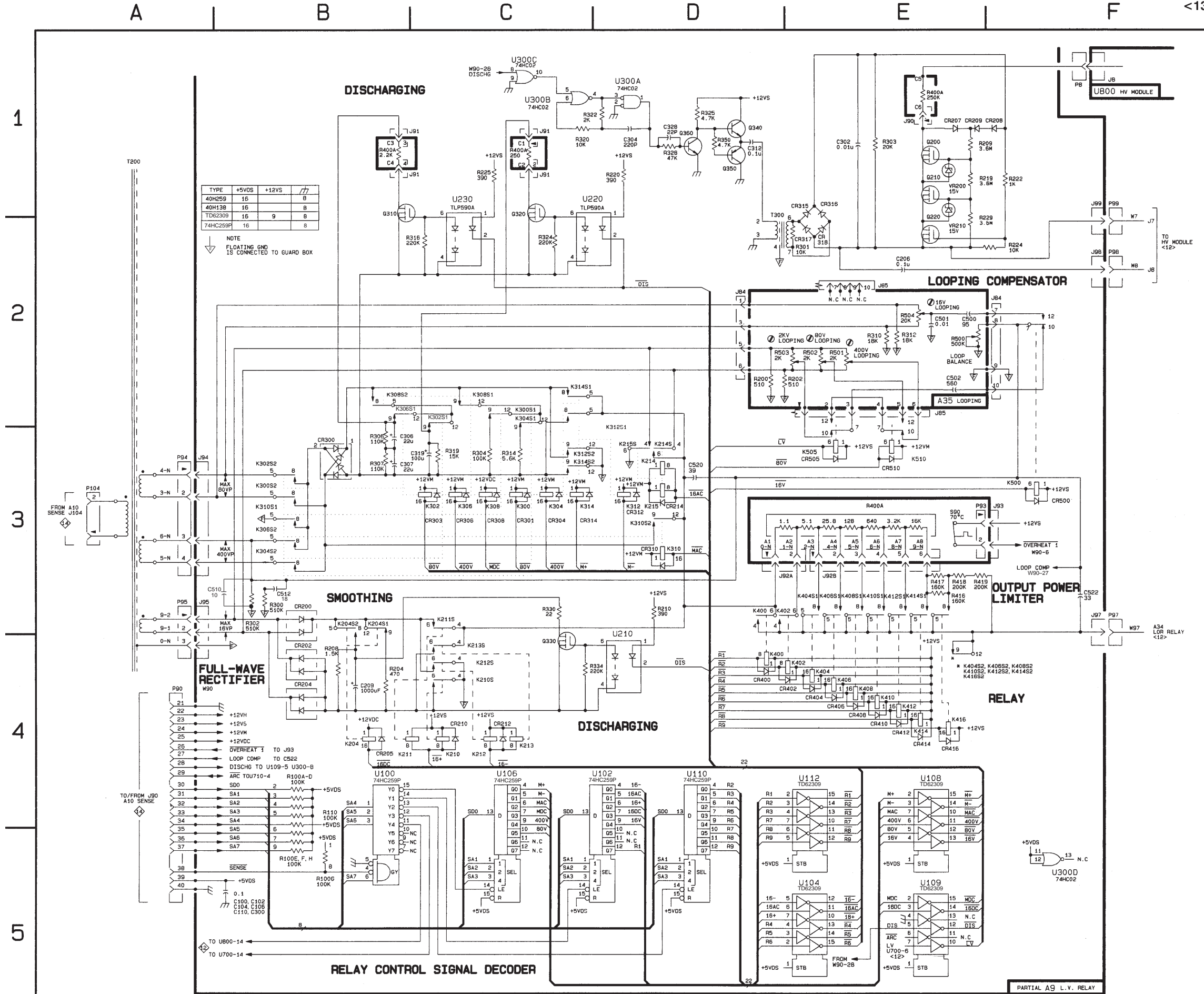
13

| ASSEMBLY A9    |                |                |                |                |                |                |                |                |
|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| CIRCUIT NUMBER | SCHEM LOCATION | BOARD LOCATION | CIRCUIT NUMBER | SCHEM LOCATION | BOARD LOCATION | CIRCUIT NUMBER | SCHEM LOCATION | BOARD LOCATION |
| C100           | B5             | H8             | J90            | E1             | E3             | R208           | B4             | L7             |
| C102           | B5             | K8             | J91            | B1,C1          | H3             | R209           | E1             | D4             |
| C106           | B5             | G8             | J92A           | D3             | E7             | R210           | D3             | F4             |
| C110           | B5             | D8             | J92B           | E3             | D6             | R219           | E1             | D3             |
| C206           | E2             | C4             | J93            | F3             | I7             | R220           | D1             | F5             |
| C209           | B4             | K6             | J94            | A3             | L4             | R222           | F1             | D2             |
| C300           | B5             | F7             | J95            | A3             | K6             | R224           | F2             | D2             |
| C302           | E1             | D2             | J97            | F3             | B7             | R225           | C1             | F5             |
| C304           | D1             | G7             | J98            | F2             | D4             | R229           | E2             | D3             |
| C306           | B3             | J2             | J99            | F1             | B4             | R300           | B3             | L6             |
| C307           | B3             | J2             |                |                |                | R301           | E2             | D2             |
| C312           | D1             | F3             |                |                |                | R302           | B3             | L6             |
| C319           | C3             | I2             | K204           | B4             | J6             | R303           | E1             | D2             |
| C328           | D1             | G7             | K210           | C4             | H7             | R304           | C3             | K2             |
| C510           | B3             | L6             | K211           | B4             | H6             | R306           | B3             | K2             |
| C512           | B3             | L6             | K212           | C4             | J6             | R307           | B3             | J2             |
| C520           | D3             | G3             | K213           | C4             | H6             | R314           | C3             | K2             |
| C522           | F3             | F4             | K214           | D3             | G3             | R316           | C2             | F4             |
|                |                |                | K215           | D3             | G3             | R319           | C3             | I2             |
| CR200          | B3             | J5             | K300           | C3             | L3             | R320           | C1             | G7             |
| CR202          | B4             | I5             | K302           | C3             | J3             | R322           | D1             | G7             |
| CR204          | B4             | I5             | K304           | C3             | L2             | R324           | C2             | F4             |
| CR205          | B4             | J6             | K306           | C3             | K4             | R325           | D1             | G3             |
| CR207          | E1             | E4             | K308           | C3             | K3             | R328           | D1             | G7             |
| CR208          | F1             | E3             | K310           | D3             | J4             | R330           | C3             | J7             |
| CR209          | E1             | E3             | K312           | D3             | I4             | R334           | C4             | I6             |
| CR210          | C4             | H7             | K314           | C3             | I3             | R350           | D1             | F3             |
| CR212          | C4             | H6             | K400           | D4             | F6             | R416           | E3             | C7             |
| CR214          | D3             | G3             | K402           | E4             | F6             | R417           | E3             | C7             |
| CR300          | B3             | K5             | K404           | E4             | E6             | R418           | E3             | C7             |
| CR301          | C3             | L3             | K406           | E4             | D6             | R419           | E3             | B7             |
| CR303          | C3             | J3             | K408           | E4             | D6             |                |                |                |
| CR304          | C3             | L2             | K410           | E4             | B6             | T300           | D2             | E2             |
| CR306          | C3             | K5             | K412           | E4             | E6             |                |                |                |
| CR308          | C3             | K3             | K414           | E4             | C6             | U100           | B4             | K7             |
| CR310          | D3             | J5             | K416           | E4             | B6             | U102           | D4             | G8             |
| CR312          | D3             | I5             | K500           | F3             | F2             | U104           | E5             | F8             |
| CR314          | C3             | I3             | K505           | E3             | G2             | U106           | C4             | L8             |
| CR315          | E1             | D2             | K510           | E3             | F2             | U108           | E4             | L7             |
| CR316          | E1             | D2             |                |                |                | U109           | E5             | L8             |
| CR317          | E2             | D2             | Q200           | E1             | D4             | U110           | D4             | E8             |
| CR318          | E2             | D2             | Q210           | E1             | D3             | U112           | E4             | D8             |
| CR400          | D4             | G6             | Q220           | E2             | D2             | U210           | D4             | F4             |
| CR402          | E4             | G6             | Q310           | B1             | G4             | U220           | D1             | F4             |
| CR404          | E4             | E5             | Q320           | C1             | G4             | U230           | C1             | F4             |
| CR406          | E4             | D5             | Q330           | C4             | I6             | U300A          | D1             | F7             |
| CR408          | E4             | D5             | Q340           | D1             | F3             | U300B          | C1             | F7             |
| CR410          | E4             | B5             | Q350           | D1             | F3             | U300C          | C1             | F7             |
| CR412          | E4             | E5             | Q360           | D1             | G2             | U300D          | F5             | F7             |
| CR414          | E4             | C5             |                |                |                |                |                |                |
| CR416          | E4             | B5             | R100           | B4             | K8             | VR200          | E1             | D3             |
| CR500          | F3             | F2             | R110           | B4             | K8             | VR210          | E2             | D3             |
| CR505          | E3             | G2             | R204           | B4             | K6             |                |                |                |
| CR510          | E3             | F2             |                |                |                | W90            | A4             | J8             |

HV MODULE

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| ASSEMBLY A9    |                |                |                |                |                |                |                |                |
|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| CIRCUIT NUMBER | SCHEM LOCATION | BOARD LOCATION | CIRCUIT NUMBER | SCHEM LOCATION | BOARD LOCATION | CIRCUIT NUMBER | SCHEM LOCATION | BOARD LOCATION |
| J80            | B2             | J7             | J400           | A3             | B8             | U800           | C3             | I8             |
| J82            | B2             | I7             | J410           | A3             | B8             | U810           | C3             | I7             |
| J89            | E4             | H7             |                |                |                | U820           | D3             | J8             |
| J150           | A1             | B7             | U700           | B3             | K8             |                |                |                |
| J160           | A4             | F8             | U710           | C4             | H8             | W10            | A4             | D8             |



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COLLECTOR SUPPLY LOW VOLTAGE

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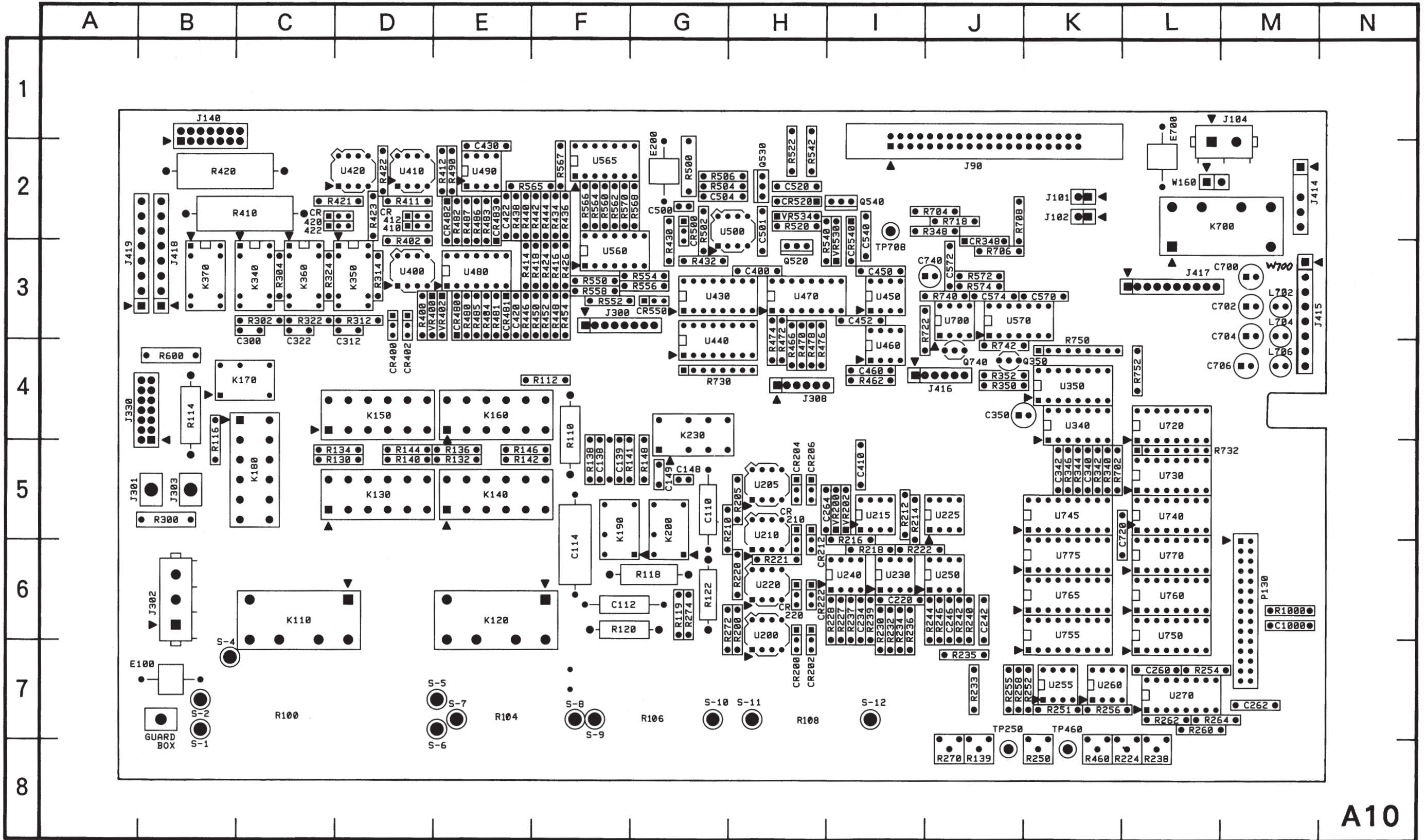





Figure 7-16. A10 — Sense circuit board assembly.

A10 — Sense circuit board illustration to be used with diagrams  ,  , and .

VERTICAL SENSE

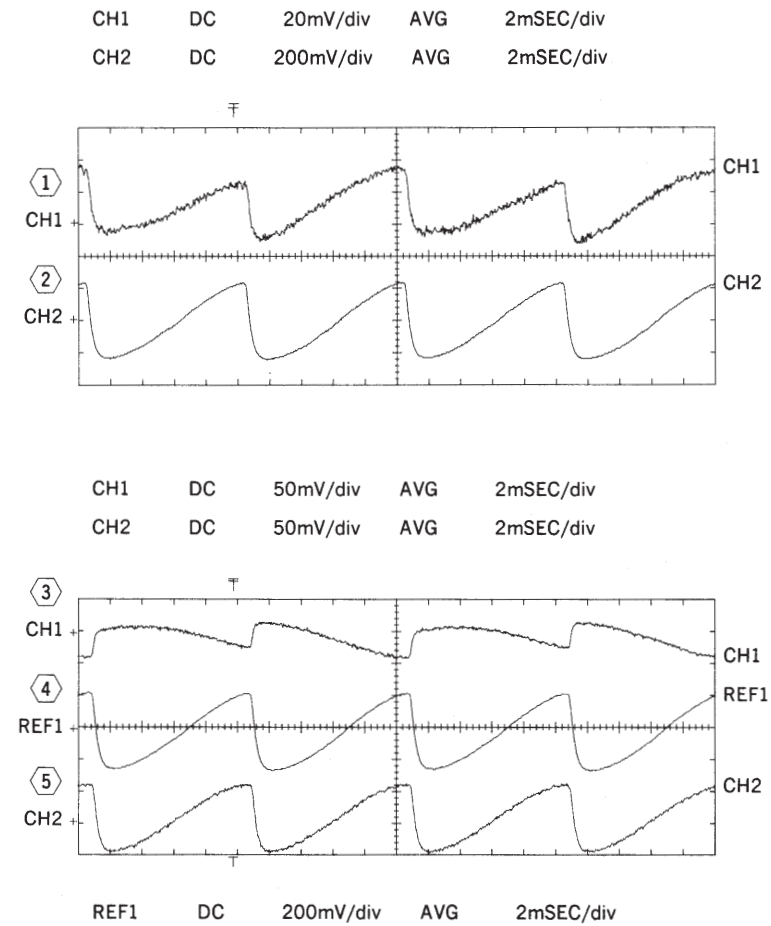


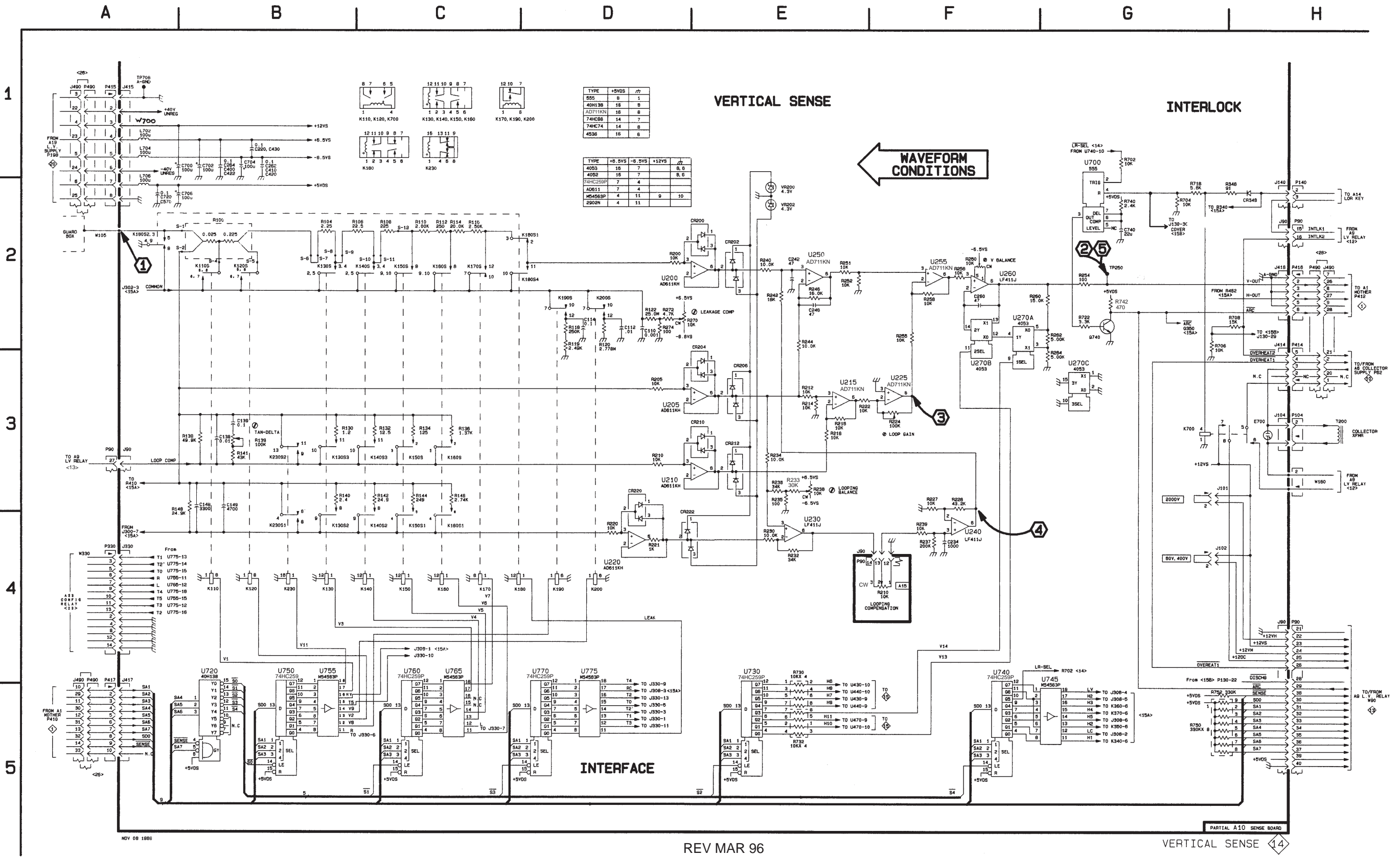
| ASSEMBLY A10                 |                |                |                |                |                |                |                |                |
|------------------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| CIRCUIT NUMBER               | SCHEM LOCATION | BOARD LOCATION | CIRCUIT NUMBER | SCHEM LOCATION | BOARD LOCATION | CIRCUIT NUMBER | SCHEM LOCATION | BOARD LOCATION |
| C110                         | D2             | G5             | K230           | B4             | G4             | R250           | F2             | K8             |
| C112                         | D2             | F6             | K700           | G3             | M2             | R251           | E2             | K7             |
| C114                         | D2             | F6             |                |                |                | R252           | E2             | K7             |
| C138                         | B3             | F5             |                |                |                | R254           | G2             | L7             |
| C139                         | B3             | F5             | L702           | A1             | M3             | R255           | F2             | J7             |
| C148                         | B3             | G5             | L704           | A1             | M3             | R256           | F2             | K7             |
| C149                         | B3             | G5             | L706           | A1             | M4             | R258           | F2             | J7             |
| C220                         | B1             | I6             |                |                |                | R260           | F2             | L7             |
| C234                         | F4             | I6             | Q740           | G2             | J4             | R262           | G2             | L7             |
| C242                         | E2             | J6             |                |                |                | R264           | G3             | L7             |
| C246                         | E2             | J6             | R100           | B2             | C7             | R270           | D2             | J8             |
| C260                         | F2             | L7             | R104           | B2             | E7             | R272           | D2             | G6             |
| C262                         | B1             | M7             | R106           | C2             | G7             | R274           | D2             | G6             |
| C264                         | B1             | I5             | R108           | C2             | H7             | R348           | H2             | J2             |
| C400                         | B1             | H3             | R110           | C2             | F4             | R702           | G1             | K5             |
| C410                         | B1             | I5             | R112           | C2             | F4             | R704           | G2             | J2             |
| C420                         | B1             | E3             | R114           | C2             | B4             | R706           | G2             | J3             |
| C422                         | B1             | E2             | R116           | C2             | B5             | R708           | H2             | J2             |
| C430                         | B1             | E2             | R118           | D2             | G6             | R718           | G2             | J2             |
| C570                         | A2             | K3             | R119           | D2             | G6             | R722           | G2             | J3             |
| C700                         | B1             | M3             | R120           | D2             | F6             | R730           | E4             | G4             |
| C702                         | B1             | M3             | R122           | D2             | G6             | R740           | G2             | J3             |
| C704                         | B1             | M3             | R130           | B3             | D5             | R742           | G2             | J4             |
| C706                         | B2             | M4             | R132           | C3             | E5             | R750           | G5             | K4             |
| C720                         | A2             | L5             | R134           | C3             | D5             | R752           | G5             | L4             |
| C740                         | G2             | J3             | R136           | C3             | E5             |                |                |                |
|                              |                |                | R138           | B3             | F5             | TP250          | G2             | J7             |
| CR200                        | E2             | H7             | R139           | B3             | J8             | TP708          | A1             | I3             |
| CR202                        | E2             | H7             | R140           | B3             | D5             |                |                |                |
| CR204                        | E2             | H5             | R141           | B3             | F5             | U200           | D2             | H6             |
| CR206                        | E3             | H5             | R142           | C3             | E5             | U205           | D3             | H5             |
| CR210                        | E3             | H5             | R144           | C3             | D5             | U210           | D3             | H5             |
| CR212                        | E3             | H6             | R146           | C3             | E5             | U215           | E3             | I5             |
| CR220                        | D3             | H6             | R148           | B3             | G5             | U220           | D4             | H6             |
| CR222                        | D4             | H6             | R200           | D2             | H6             | U225           | F3             | J5             |
| CR348                        | H2             | J3             | R205           | D3             | H5             | U230           | E4             | I6             |
|                              |                |                | R210           | D3             | G5             | U240           | F4             | I6             |
| E700                         | H3             | L1             | R212           | E3             | I5             | U250           | E2             | J6             |
|                              |                |                | R214           | E3             | I5             | U255           | F2             | K7             |
| J90                          | A3,H4,H2       | J2             | R216           | E3             | I6             | U260           | F2             | K7             |
| J101                         | G3             | K2             | R218           | E3             | I6             | U270A          | F2             | L7             |
| J102                         | G4             | K2             | R220           | D4             | H6             | U270B          | F3             | L7             |
| J104                         | H3             | M1             | R221           | D4             | H6             | U270C          | G3             | L7             |
| J140                         | H2             | B1             | R222           | E3             | I6             | U700           | G1             | J3             |
| J330                         | A4             | A4             | R224           | F3             | L8             | U720           | B4             | L4             |
| J414                         | H2             | M2             | R227           | F3             | I6             | U730           | E4             | L5             |
| J415                         | A1             | M3             | R228           | F3             | I6             | U740           | F4             | L5             |
| J416                         | H2             | J4             | R230           | E4             | I6             | U745           | G4             | K5             |
| J417                         | A4             | L3             | R232           | E4             | I6             | U750           | B4             | L6             |
|                              |                |                | R233           | E3             | J7             | U755           | B4             | K6             |
| K110                         | B4             | C6             | R234           | E3             | I6             | U760           | C4             | L6             |
| K120                         | B4             | E6             | R235           | E3             | J7             | U765           | C4             | K6             |
| K130                         | B4             | D5             | R236           | E3             | I6             | U770           | D4             | L6             |
| K140                         | C4             | E5             | R237           | F4             | I6             | U775           | D4             | K6             |
| K150                         | C4             | D4             | R238           | E3             | L8             |                |                |                |
| K160                         | C4             | E4             | R239           | F4             | I6             | VR200          | E2             | I5             |
| K170                         | C4             | C4             | R240           | E2             | J6             | VR202          | E2             | I5             |
| K180                         | C4             | C5             | R242           | E2             | J6             |                |                |                |
| K190                         | D4             | F5             | R244           | E2             | J6             | W105           | A2             | B7             |
| K200                         | D4             | G5             | R246           | E2             | J6             | W160           | H3             | L2             |
|                              |                |                |                |                |                | W700           | A1             | M3             |
| <b>CHASSIS MOUNTED PARTS</b> |                |                |                |                |                |                |                |                |
| CIRCUIT NUMBER               | SCHEM LOCATION | BOARD LOCATION | CIRCUIT NUMBER | SCHEM LOCATION | BOARD LOCATION | CIRCUIT NUMBER | SCHEM LOCATION | BOARD LOCATION |
| J490                         | A1,H2          | CHASSIS        |                |                |                |                |                |                |
| P490                         | A1,H2          | CHASSIS        |                |                |                |                |                |                |
| R210                         | F4             | CHASSIS        |                |                |                |                |                |                |
| T200                         | H3             | CHASSIS        |                |                |                |                |                |                |

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WAVEFORM CONDITIONS

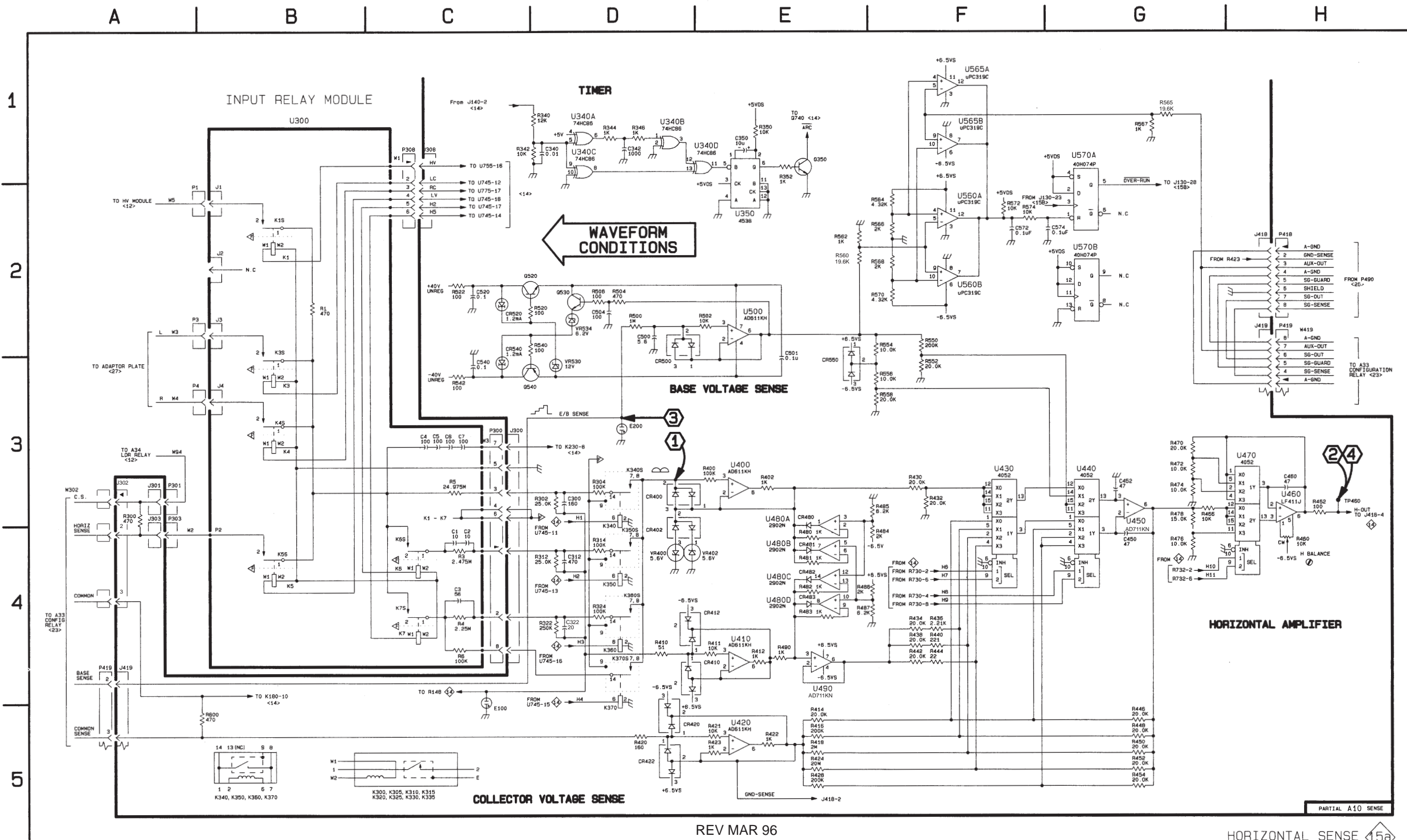
The waveforms shown below were obtained using a test oscilloscope with 1 MΩ input impedance (Tektronix 2430A with plotter) with the 370A the power-up default (initial) settings, except that the VARIABLE COLLECTOR SUPPLY is set to 100%, the VERTICAL CURRENT/DIV is set to 1 μA. The LOOPING COMPENSATION control knob is turned fully counterclockwise.

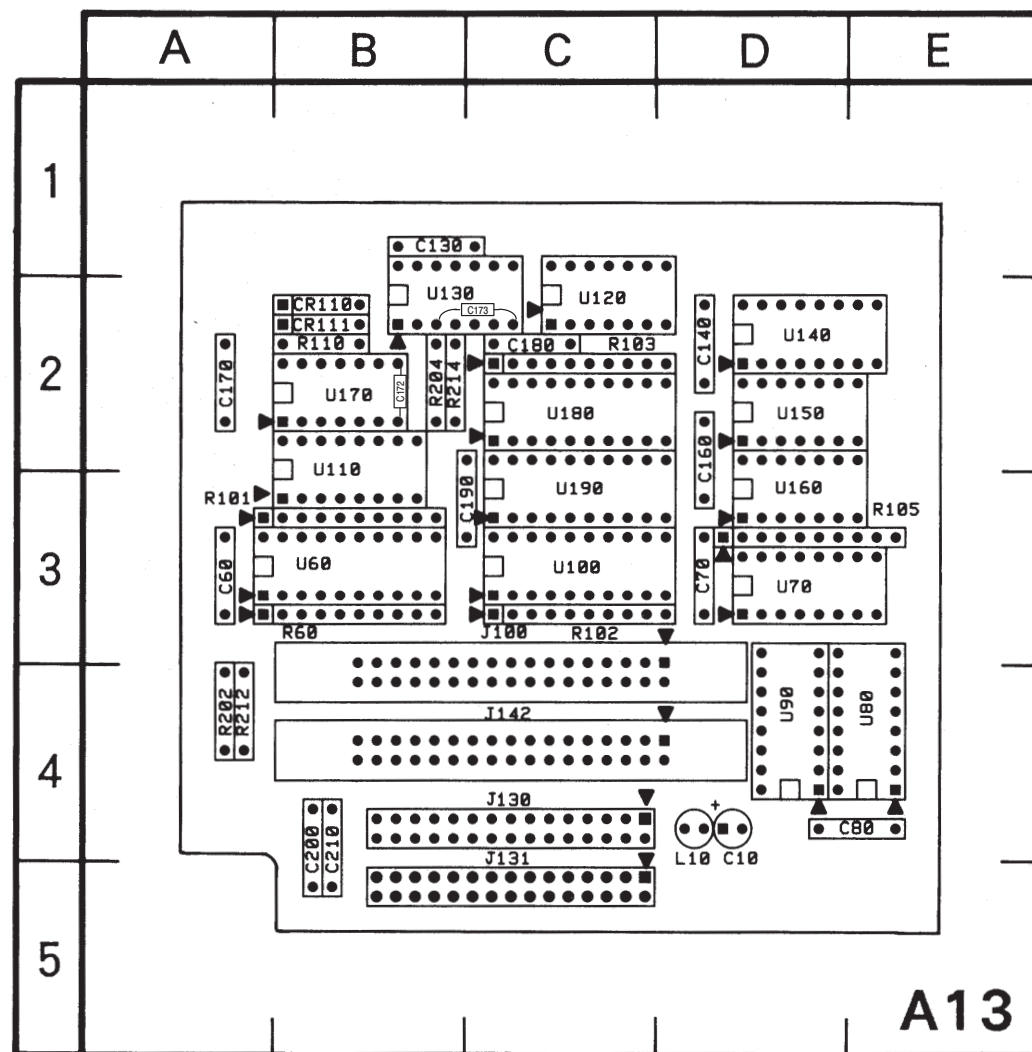













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Figure 7-17. A13 — Key Interface circuit board assembly.

A10 — Sense circuit board illustration and component locator grid is located on the reverse side of .

LOR KEY INTERFACE



**ASSEMBLY A10**

| CIRCUIT NUMBER | SCHEM LOCATION | BOARD LOCATION | CIRCUIT NUMBER | SCHEM LOCATION | BOARD LOCATION | CIRCUIT NUMBER | SCHEM LOCATION | BOARD LOCATION |
|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| C1000          | G3             | M6             | J90            | A1,G2          | J2             | P130           | B1,G1          | M6             |
|                |                |                | J140           | G1,G3          | B1             | R1000          | G3             | M6             |

LOR KEY INTERFACE

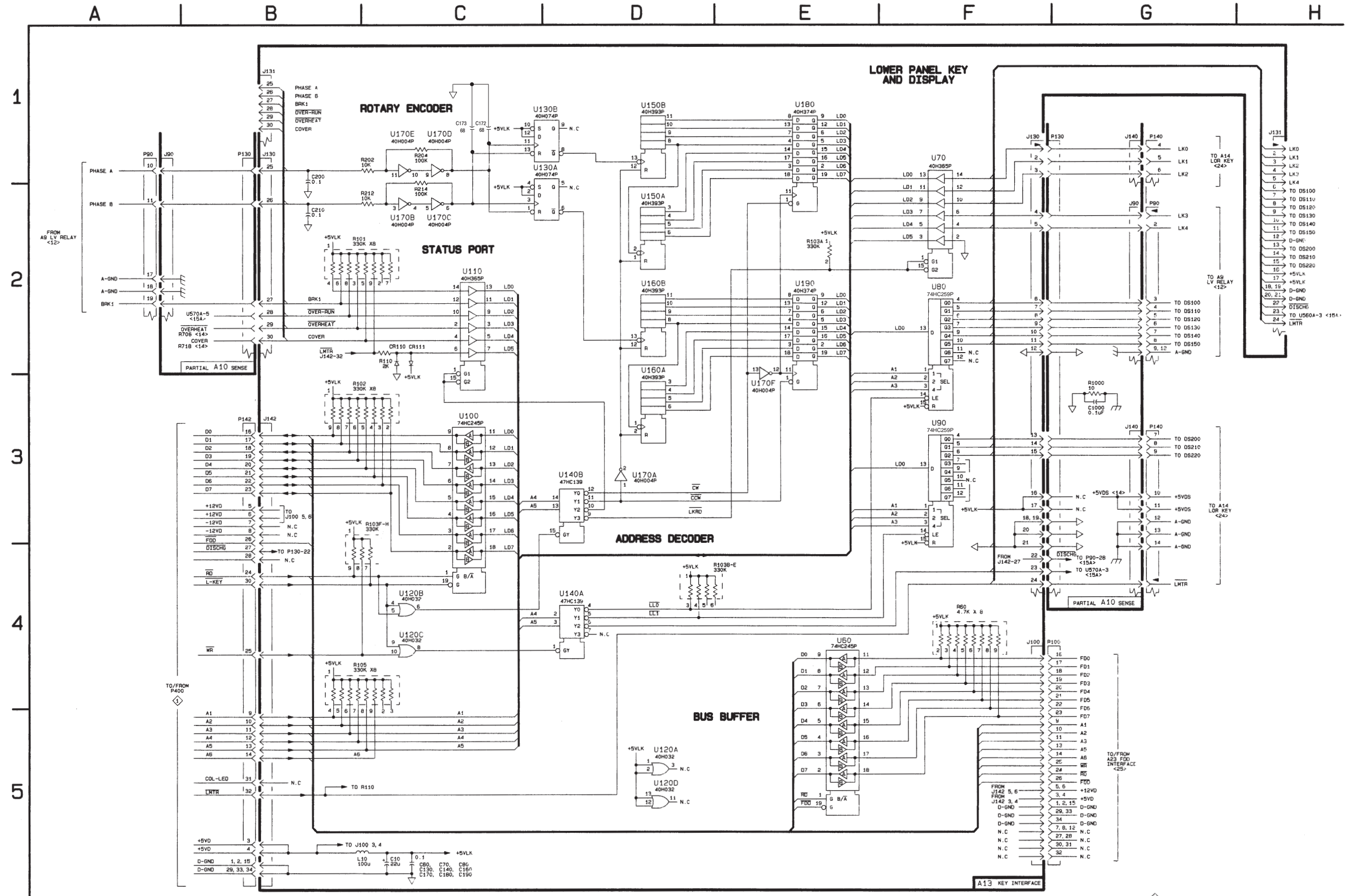


**ASSEMBLY A13**

| CIRCUIT NUMBER | SCHEM LOCATION | BOARD LOCATION | CIRCUIT NUMBER | SCHEM LOCATION | BOARD LOCATION | CIRCUIT NUMBER | SCHEM LOCATION | BOARD LOCATION |
|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| C10            | C5             | D4             | L10            | B5             | D4             | U120B          | C4             | C2             |
| C60            | C5             | A3             |                |                |                | U120C          | C4             | C2             |
| C70            | C5             | D3             |                |                |                | U120D          | D5             | C2             |
| C80            | C5             | E4             | R60            | F4             | B3             | U130A          | D1             | B2             |
| C130           | C5             | B1             | R101           | B2             | A3             | U130B          | D1             | B2             |
| C140           | C5             | D2             | R102           | B3             | C3             | U140A          | D4             | D2             |
| C160           | C5             | D2             | R103           | C3,E4,E2       | C2             | U140B          | D3             | D2             |
| C170           | C5             | A2             | R105           | B4             | E3             | U150A          | D2             | D2             |
| C172           | C1             | B2             | R110           | C2             | B2             | U150B          | D1             | D2             |
| C173           | C1             | C2             | R202           | C1             | A4             | U160A          | D2             | D3             |
| C180           | C5             | C2             | R204           | C1             | B2             | U160B          | D2             | D3             |
| C190           | C5             | C3             | R212           | C2             | A4             | U170A          | D3             | B2             |
| C200           | B1             | B4             | R214           | C2             | B2             | U170B          | C2             | B2             |
| C210           | B2             | B4             |                |                |                | U170C          | C2             | B2             |
| CR110          | C2             | B2             | U60            | E4             | B3             | U170D          | C1             | B2             |
| CR111          | C2             | B2             | U70            | F1             | D3             | U170E          | C1             | B2             |
|                |                |                | U80            | F2             | E4             | U170F          | E3             | B2             |
| J100           | F4             | C3             | U90            | F3             | D4             | U180           | E1             | C2             |
| J130           | B1,F1          | C4             | U100           | C3             | C3             | U190           | E2             | C3             |
| J131           | B1,H1          | C4             | U110           | C2             | B2             |                |                |                |
| J142           | B3             | C4             | U120A          | D5             | C2             |                |                |                |

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REV MAR 96

LOR KEY INTERFACE 15b

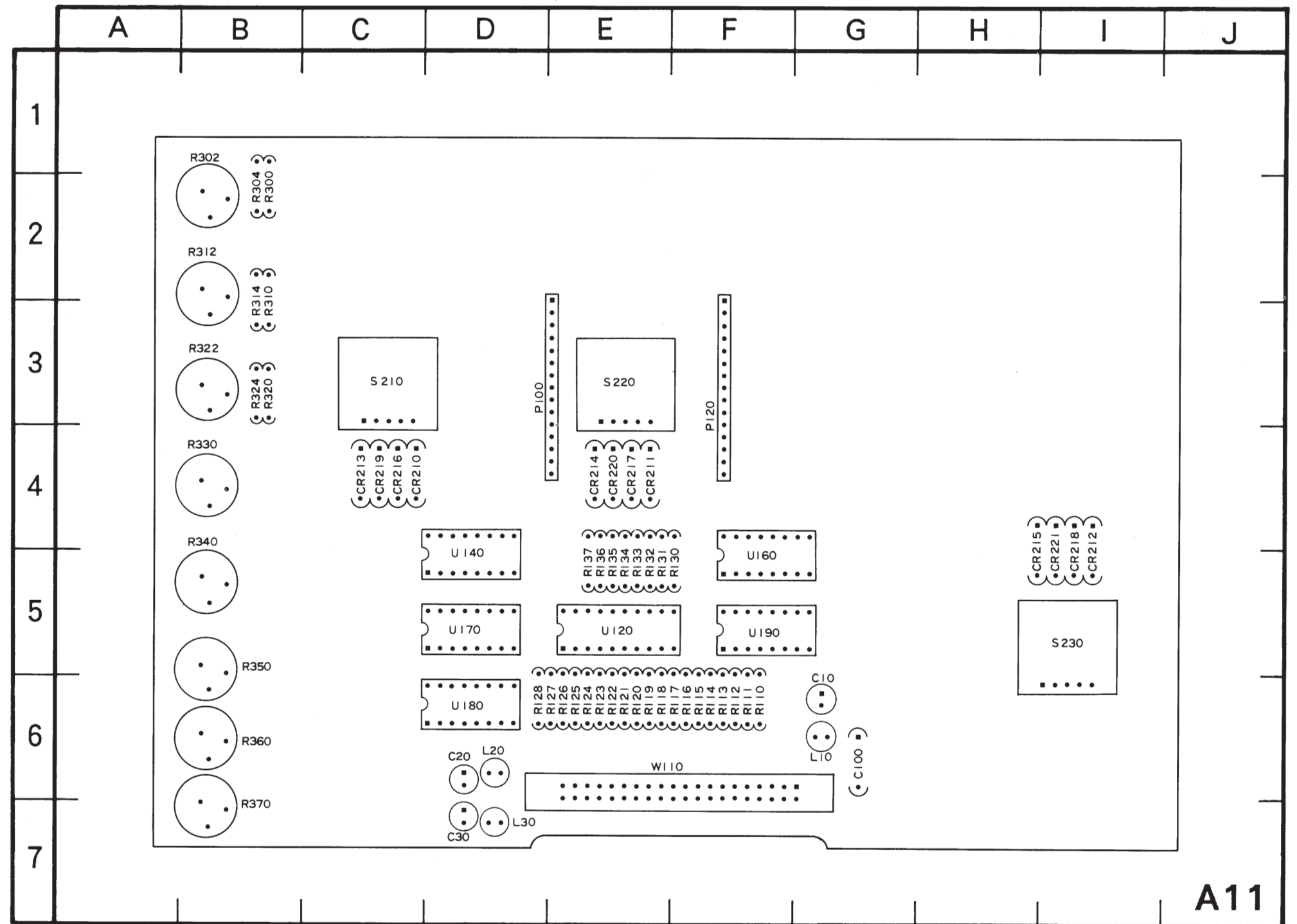


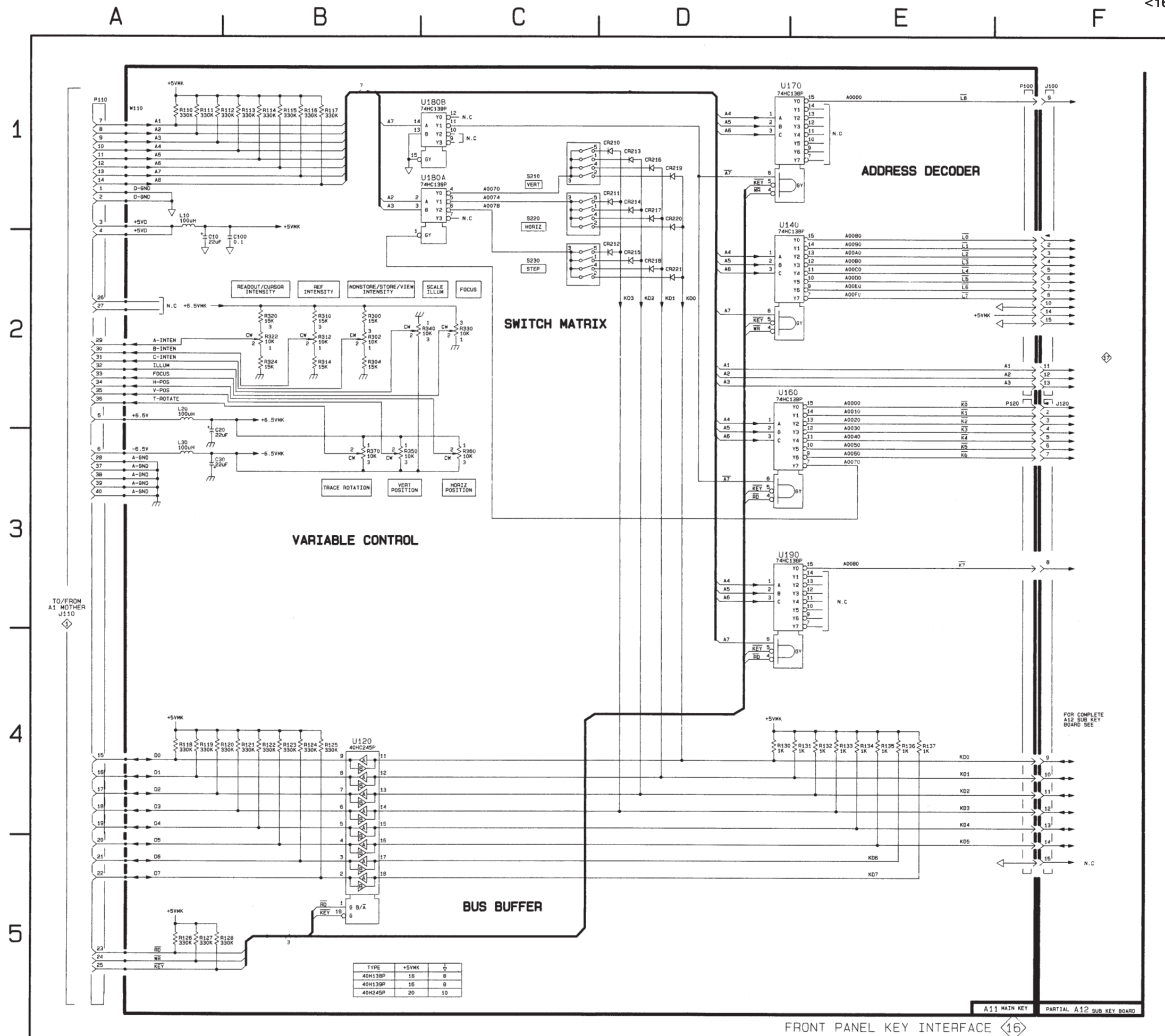
Figure 7-18. A11 — Main Key circuit board assembly.

Please cut out the area below the lines.

**FRONT PANEL KEY INTERFACE**

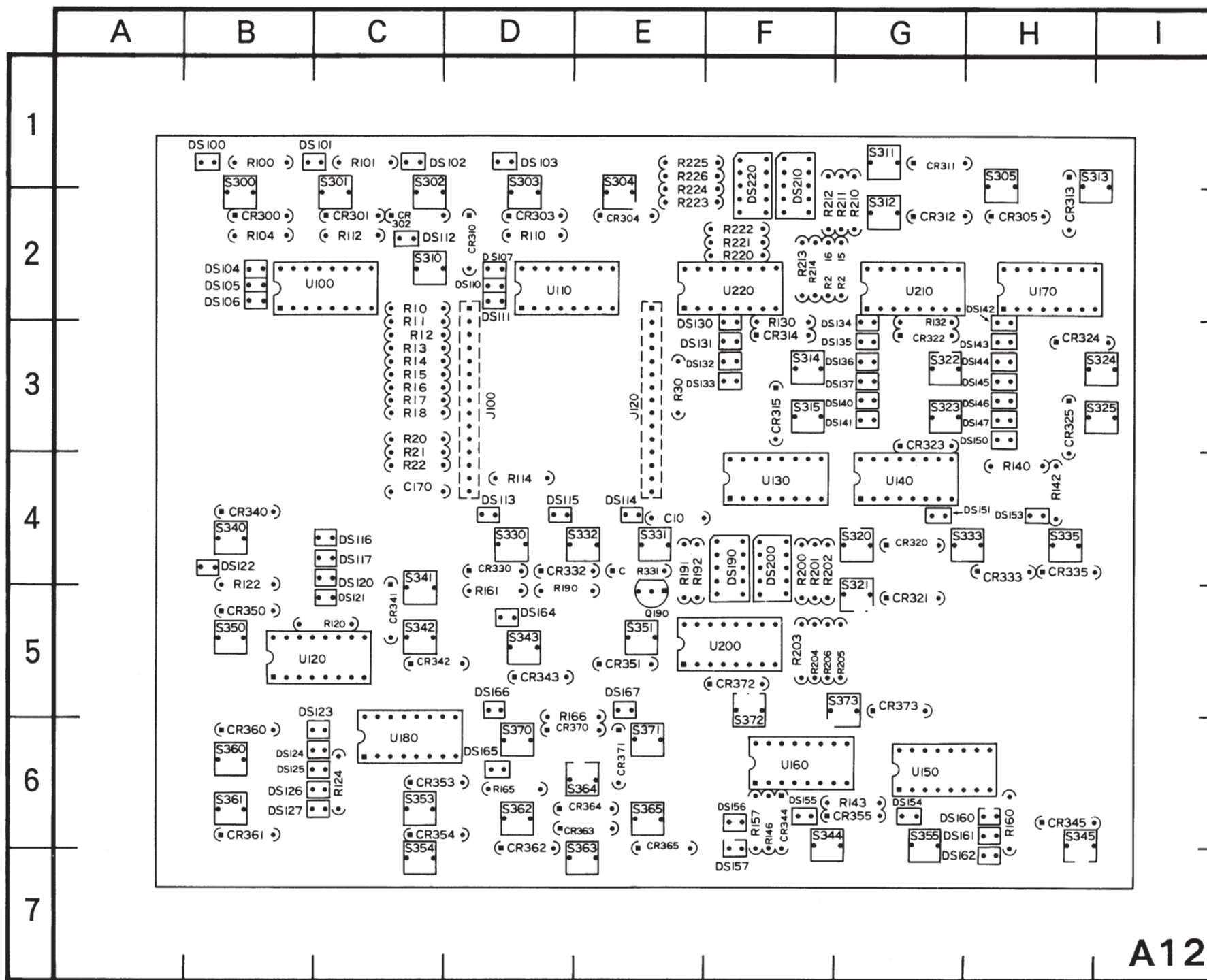


| ASSEMBLY A11   |                |                |                |                |                |                |                |                |
|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| CIRCUIT NUMBER | SCHEM LOCATION | BOARD LOCATION | CIRCUIT NUMBER | SCHEM LOCATION | BOARD LOCATION | CIRCUIT NUMBER | SCHEM LOCATION | BOARD LOCATION |
| C10            | A2             | G6             | R112           | B1             | F6             | R302           | B2             | B1             |
| C20            | A3             | D6             | R113           | B1             | F6             | R304           | B2             | B2             |
| C30            | A3             | D7             | R114           | B1             | F6             | R310           | B2             | B2             |
| C100           | B2             | G6             | R115           | B1             | F6             | R312           | B2             | B2             |
|                |                |                | R116           | B1             | F6             | R314           | B2             | B2             |
| CR210          | D1             | C4             | R117           | B1             | F6             | R320           | B2             | B3             |
| CR211          | D1             | E4             | R118           | A4             | E6             | R322           | B2             | B3             |
| CR212          | D2             | I5             | R119           | A4             | E6             | R324           | B2             | B3             |
| CR213          | D1             | C4             | R120           | B4             | E6             | R330           | C2             | B4             |
| CR214          | D1             | E4             | R121           | B4             | E6             | R340           | C2             | B4             |
| CR215          | D2             | H5             | R122           | B4             | E6             | R350           | B3             | B5             |
| CR216          | D1             | C4             | R123           | B4             | E6             | R360           | C3             | B6             |
| CR217          | D1             | E4             | R124           | B4             | E6             | R370           | B3             | B7             |
| CR218          | D2             | I5             | R125           | B4             | E6             |                |                |                |
| CR219          | D1             | C4             | R126           | A5             | E6             | S210           | C1             | C3             |
| CR220          | D1             | E4             | R127           | A5             | E6             | S220           | C1             | E3             |
| CR221          | D2             | I5             | R128           | B5             | D6             | S230           | C1             | I5             |
|                |                |                | R130           | D4             | F5             |                |                |                |
| L10            | A1             | G6             | R131           | E4             | E5             | U120           | B4             | E5             |
| L20            | A2             | D6             | R132           | E4             | E5             | U140           | D1             | D5             |
| L30            | A3             | D7             | R133           | E4             | E5             | U160           | D2             | F5             |
|                |                |                | R134           | E4             | E5             | U170           | D1             | D5             |
| P100           | F1             | D3             | R135           | E4             | E5             | U180A          | C1             | D6             |
| P120           | F2             | F3             | R136           | E4             | E5             | U180B          | C1             | D6             |
|                |                |                | R137           | E4             | E5             | U190           | D3             | F5             |
| R110           | A1             | F6             | R300           | B2             | B2             |                |                |                |
| R111           | A1             | F6             |                |                |                | W110           | A1             | F6             |



FRONT PANEL KEY INTERFACE 16

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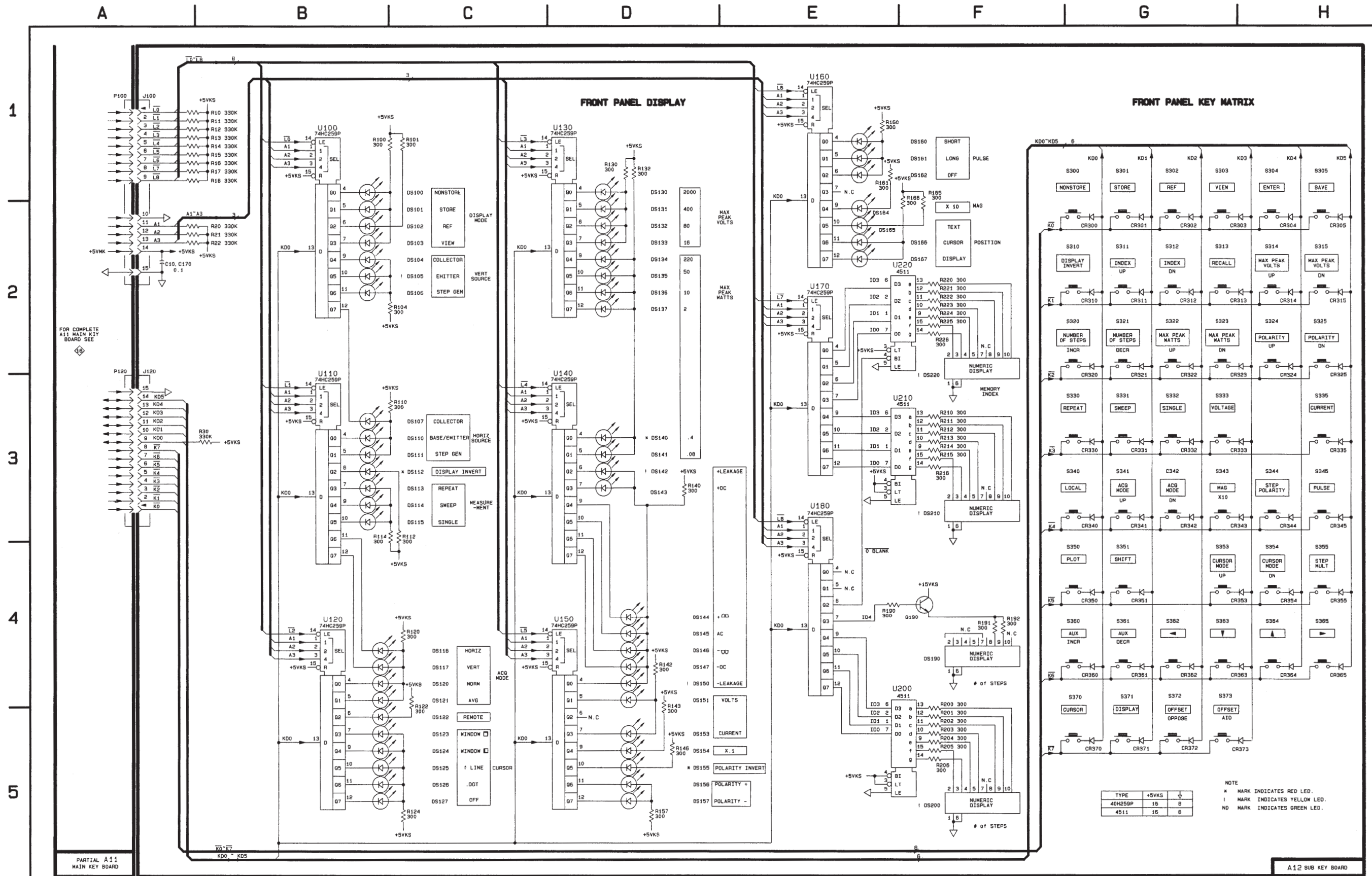
FRONT PANEL LED & KEY

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| ASSEMBLY A12   |                |                |                |                |                |                |                |                |
|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| CIRCUIT NUMBER | SCHEM LOCATION | BOARD LOCATION | CIRCUIT NUMBER | SCHEM LOCATION | BOARD LOCATION | CIRCUIT NUMBER | SCHEM LOCATION | BOARD LOCATION |
| C10            | A2             | E4             | DS134          | D2             | G3             | R204           | F5             | F5             |
| C170           | A2             | C4             | DS135          | D2             | G3             | R205           | F5             | G5             |
| CR300          | G2             | B2             | DS136          | D2             | G3             | R206           | F5             | F5             |
| CR301          | G2             | C2             | DS137          | D2             | G3             | R210           | F3             | G2             |
| CR302          | G2             | C2             | DS140          | D3             | G3             | R211           | F3             | G2             |
| CR303          | H2             | D2             | DS141          | D3             | G3             | R212           | F3             | F2             |
| CR304          | H2             | E2             | DS142          | D3             | H2             | R213           | F3             | F2             |
| CR305          | H2             | H2             | DS143          | D3             | H3             | R214           | F3             | F2             |
| CR310          | G2             | D2             | DS144          | D4             | H3             | R215           | F3             | G2             |
| CR311          | G2             | G1             | DS145          | D4             | H3             | R216           | F3             | F2             |
| CR312          | G2             | G2             | DS146          | D4             | H3             | R220           | F2             | F2             |
| CR313          | H2             | H2             | DS147          | D4             | H3             | R221           | F2             | F2             |
| CR314          | H2             | F3             | DS150          | D4             | H3             | R222           | F2             | F2             |
| CR315          | H2             | F3             | DS151          | D4             | H4             | R223           | F2             | E2             |
| CR320          | G2             | G4             | DS153          | D5             | H4             | R224           | F2             | E1             |
| CR321          | G2             | G5             | DS154          | D5             | G6             | R225           | F2             | E1             |
| CR322          | G2             | G3             | DS155          | D5             | F6             | R226           | F2             | E1             |
| CR323          | H2             | G3             | DS156          | D5             | F6             |                |                |                |
| CR324          | H2             | H3             | DS157          | D5             | F7             | S300           | G2             | B1             |
| CR325          | H2             | H3             | DS160          | E1             | G6             | S301           | G2             | C1             |
| CR330          | G3             | D4             | DS161          | E1             | G6             | S302           | G2             | C1             |
| CR331          | G3             | E4             | DS162          | E1             | G7             | S303           | G2             | D1             |
| CR332          | G3             | D4             | DS164          | E2             | D5             | S304           | H2             | E1             |
| CR333          | H2             | H4             | DS165          | E2             | D6             | S305           | H2             | H1             |
| CR335          | H3             | H4             | DS166          | E2             | D5             | S310           | G2             | C2             |
| CR340          | G3             | B4             | DS167          | E2             | E5             | S311           | G2             | G1             |
| CR341          | G3             | C5             | DS190          | F4             | F4             | S312           | G2             | G2             |
| CR342          | G3             | C5             | DS200          | F5             | F4             | S313           | G2             | I1             |
| CR343          | H2             | D5             | DS210          | F3             | F1             | S314           | H2             | F3             |
| CR344          | H3             | F6             | DS220          | F2             | F1             | S315           | H2             | F3             |
| CR345          | H3             | H6             |                |                |                | S320           | G2             | G4             |
| CR350          | G4             | B5             | J100           | A1             | D3             | S321           | G2             | G4             |
| CR351          | G4             | E5             | J120           | A3             | E3             | S322           | G2             | G3             |
| CR353          | H4             | C6             | Q190           | F4             | E5             | S323           | G2             | G3             |
| CR354          | H4             | C6             |                |                |                | S324           | H2             | I3             |
| CR355          | H4             | G6             |                |                |                | S325           | H2             | I3             |
| CR360          | G4             | B6             | R10            | B1             | C2             | S330           | G3             | D4             |
| CR361          | G4             | B6             | R11            | B1             | C2             | S331           | G3             | E4             |
| CR362          | G4             | D6             | R12            | B1             | C3             | S332           | G3             | E4             |
| CR363          | H4             | E6             | R13            | B1             | C3             | S333           | G3             | H4             |
| CR364          | H4             | E6             | R14            | B1             | C3             | S335           | H3             | H4             |
| CR365          | H4             | E6             | R15            | B1             | C3             | S340           | G3             | B4             |
| CR370          | G5             | D6             | R16            | B1             | C3             | S341           | G3             | C4             |
| CR371          | G5             | E6             | R17            | B1             | C3             | S342           | G3             | C5             |
| CR372          | G5             | F5             | R18            | B1             | C3             | S343           | G3             | D5             |
| CR373          | H5             | G5             | R20            | B2             | C3             | S344           | H3             | F6             |
|                |                |                | R21            | B2             | C3             | S345           | H3             | H6             |
| DS100          | B1             | B1             | R22            | B2             | C4             | S350           | G4             | B5             |
| DS101          | B1             | C1             | R30            | B3             | E3             | S351           | G4             | E5             |
| DS102          | B2             | C1             | R100           | B1             | B1             | S353           | G4             | C6             |
| DS103          | B2             | D1             | R101           | C1             | C1             | S354           | H4             | C6             |
| DS104          | B2             | B2             | R104           | C2             | B2             | S355           | H4             | G6             |
| DS105          | B2             | B2             | R110           | C3             | D2             | S360           | G4             | B6             |
| DS106          | B2             | B2             | R112           | C3             | C2             | S361           | G4             | B6             |
| DS107          | B3             | D2             | R114           | B3             | D4             | S362           | G4             | D6             |
| DS110          | B3             | D2             | R120           | C4             | C5             | S363           | G4             | E6             |
| DS111          | B3             | D2             | R122           | C4             | B4             | S364           | H4             | E6             |
| DS112          | B3             | C2             | R124           | C5             | C6             | S365           | H4             | E6             |
| DS113          | B3             | D4             | R130           | D1             | F2             | S370           | G5             | D6             |
| DS114          | B3             | E4             | R132           | D1             | G2             | S371           | G5             | E6             |
| DS115          | B3             | D4             | R140           | D3             | H4             | S372           | G5             | F6             |
| DS116          | B4             | C4             | R142           | D4             | H4             | S373           | G5             | G5             |
| DS117          | B4             | C4             | R143           | D4             | G6             |                |                |                |
| DS120          | B4             | C4             | R146           | D5             | F6             | U100           | B1             | C2             |
| DS121          | B4             | C5             | R157           | D5             | F6             | U110           | B3             | D2             |
| DS122          | B5             | B4             | R160           | E1             | H6             | U120           | B4             | B5             |
| DS123          | B5             | C5             | R161           | E1             | D5             | U130           | D1             | F4             |
| DS124          | B5             | B6             | R165           | F1             | D6             | U140           | D3             | G4             |
| DS125          | B5             | B6             | R166           | F1             | D5             | U150           | D4             | G6             |
| DS126          | B5             | B6             | R190           | E4             | D5             | U160           | E1             | F6             |
| DS127          | B5             | B6             | R191           | F4             | E4             | U170           | E2             | H2             |
| DS130          | D1             | E3             | R192           | F4             | E4             | U180           | E3             | C6             |
| DS131          | D2             | E3             | R200           | F4             | F4             | U200           | F4             | F5             |
| DS132          | D2             | E3             | R201           | F5             | F4             | U210           | F3             | G2             |
| DS133          | D2             | E3             | R202           | F5             | F4             | U220           | F2             | F2             |
|                |                |                | R203           | F5             | F5             |                |                |                |

Figure 7-19. A12 — Sub Key circuit board assembly.





FRONT PANEL LED & KEY

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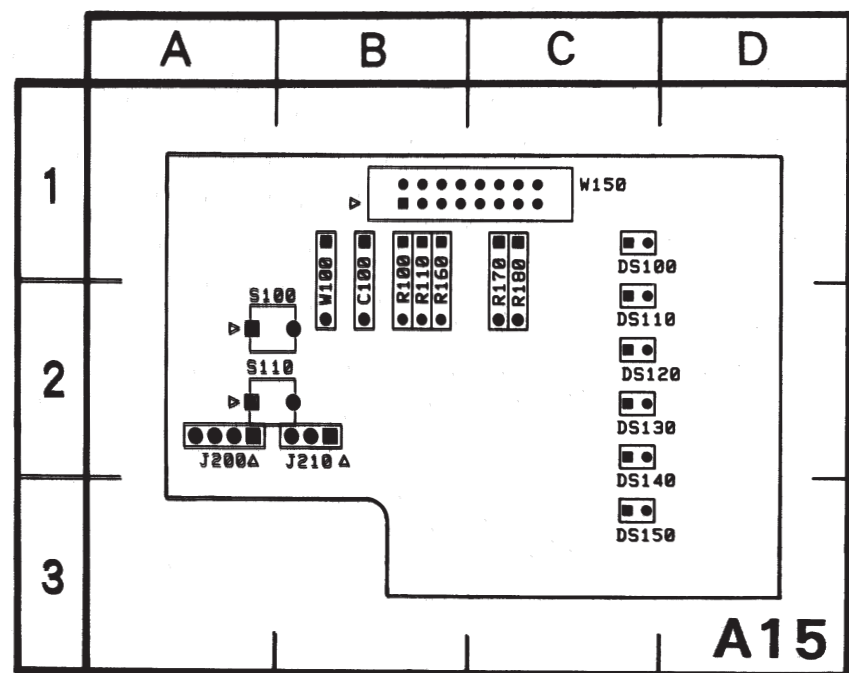
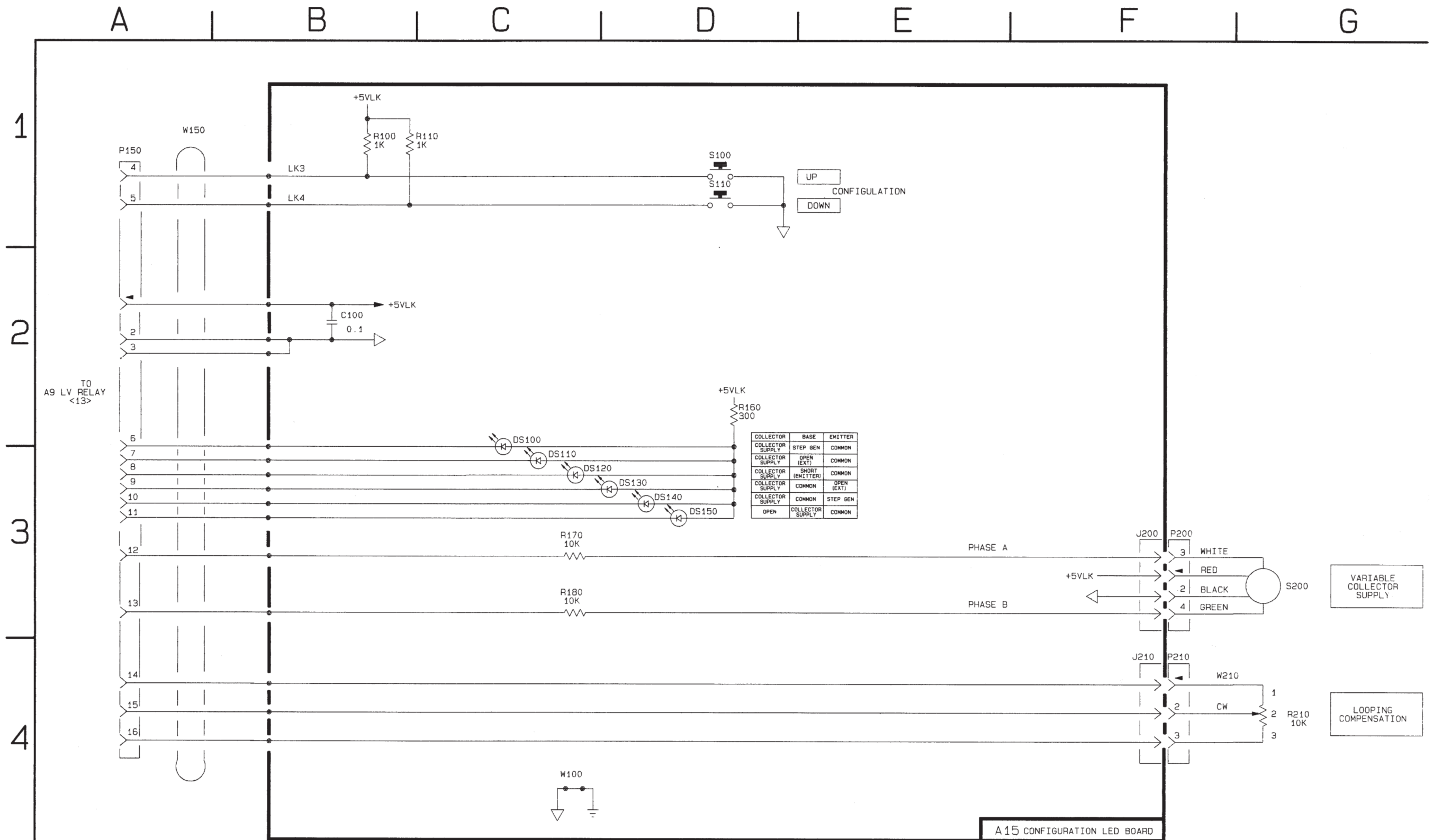


Figure 7-20. A15 — Configuration LED circuit board assembly.

**CONFIGURATION LED**



| ASSEMBLY A15          |                |                |                |                |                |                |                |                |
|-----------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| CIRCUIT NUMBER        | SCHEM LOCATION | BOARD LOCATION | CIRCUIT NUMBER | SCHEM LOCATION | BOARD LOCATION | CIRCUIT NUMBER | SCHEM LOCATION | BOARD LOCATION |
| C100                  | B2             | B1             | J200           | F3             | A2             | S100           | D1             | A2             |
| DS100                 | G2             | G1             | J210           | F4             | B2             | S110           | D1             | A2             |
| DS110                 | G3             | G2             | R100           | B1             | B1             | W100           | G4             | B1             |
| DS120                 | G3             | G2             | R110           | G1             | B1             | W150           | A1             | G1             |
| DS130                 | D3             | G2             | R160           | D2             | B1             |                |                |                |
| DS140                 | D3             | G2             | R170           | G3             | G1             |                |                |                |
| DS150                 | D3             | G3             | R180           | G3             | G1             |                |                |                |
| CHASSIS MOUNTED PARTS |                |                |                |                |                |                |                |                |
| CIRCUIT NUMBER        | SCHEM LOCATION | BOARD LOCATION | CIRCUIT NUMBER | SCHEM LOCATION | BOARD LOCATION | CIRCUIT NUMBER | SCHEM LOCATION | BOARD LOCATION |
| R210                  | G4             | CHASSIS        |                |                |                |                |                |                |
| S200                  | G3             | CHASSIS        |                |                |                |                |                |                |
| W210                  | F4             | CHASSIS        |                |                |                |                |                |                |



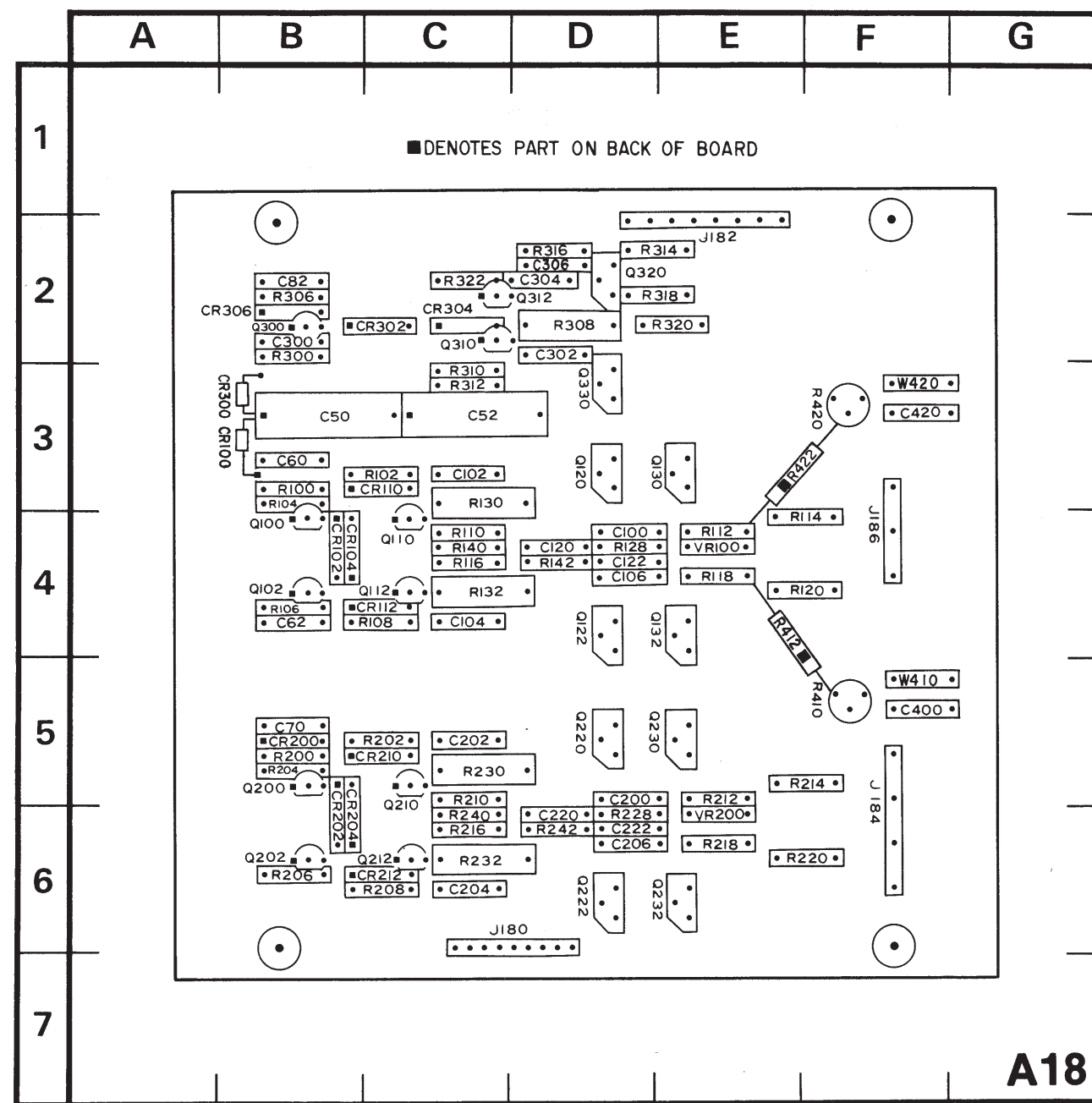
A15 CONFIGURATION LED BOARD

CONFIGURATION LED 18

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CRT OUTPUT AMPLIFIER

19



**ASSEMBLY A18**

| CIRCUIT NUMBER | SCHEM LOCATION | BOARD LOCATION | CIRCUIT NUMBER | SCHEM LOCATION | BOARD LOCATION | CIRCUIT NUMBER | SCHEM LOCATION | BOARD LOCATION |
|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| C50            | F4             | B3             | J180           | A1,D1          | C6             | R128           | C2             | D4             |
| C52            | F3             | C3             | J182           | F3             | E2             | R130           | B1             | C3             |
| C60            | F4             | B3             | J184           | F1             | F6             | R132           | B3             | C4             |
| C62            | F3             | B4             | J186           | C1             | F4             | R140           | B2             | C4             |
| C70            | E4             | B5             |                |                |                | R142           | B2             | D4             |
| C82            | A4             | B2             | Q100           | B1             | B4             | R200           | D2             | B5             |
| C100           | B1             | D4             | Q102           | B3             | B4             | R202           | E2             | C5             |
| C102           | B1             | C3             | Q110           | B1             | C4             | R204           | E2             | B5             |
| C104           | B3             | C4             | Q112           | B3             | C4             | R206           | E2             | B6             |
| C106           | B3             | D4             | Q120           | B1             | D3             | R208           | E3             | C6             |
| C120           | B2             | D4             | Q122           | B3             | D4             | R210           | E1             | C5             |
| C122           | C2             | D4             | Q130           | B1             | E3             | R212           | E1             | E5             |
| C200           | E1             | D5             | Q132           | B3             | E4             | R214           | E1             | E5             |
| C202           | E1             | C5             | Q200           | D1             | B5             | R216           | E3             | C6             |
| C204           | E3             | C6             | Q202           | D3             | B6             | R218           | E3             | E6             |
| C206           | E3             | D6             | Q210           | E1             | C5             | R220           | E3             | F6             |
| C220           | E2             | D6             | Q212           | E3             | C6             | R222           | E2             | D6             |
| C222           | E2             | D6             | Q220           | E1             | D5             | R230           | E1             | C5             |
| C300           | C4             | B2             | Q222           | E3             | D6             | R232           | E3             | C6             |
| C302           | D4             | D2             | Q230           | E1             | E5             | R240           | E2             | C6             |
| C304           | D3             | D2             | Q232           | E3             | E6             | R242           | E2             | D6             |
| C306           | D3             | D2             | Q300           | C4             | B2             | R300           | C4             | B2             |
| C400           | F2             | F5             | Q310           | D4             | C2             | R306           | C4             | B2             |
| C420           | C2             | F3             | Q312           | D3             | D2             | R308           | D4             | D2             |
| CR100          | A2             | B3             | Q320           | D3             | D2             | R310           | D4             | C3             |
| CR102          | B2             | B4             | Q330           | D4             | D3             | R312           | D4             | C3             |
| CR104          | B2             | B4             |                |                |                | R314           | D3             | D2             |
| CR110          | B1             | C3             | R100           | A2             | B3             | R316           | D3             | D2             |
| CR112          | B3             | C4             | R102           | B2             | C3             | R318           | D3             | D2             |
| CR200          | D2             | B5             | R104           | B2             | B3             | R320           | D4             | E2             |
| CR202          | E2             | B6             | R106           | B2             | B4             | R322           | D3             | C2             |
| CR204          | D2             | B6             | R108           | B3             | C4             | R410           | E2             | F5             |
| CR210          | D1             | C5             | R110           | B1             | C4             | R412           | E1             | E4             |
| CR212          | D3             | C6             | R112           | B1             | E4             | R420           | C2             | F3             |
| CR300          | C4             | B3             | R114           | C1             | E4             | R422           | C1             | E3             |
| CR302          | C4             | C2             | R116           | B3             | C4             | VR100          | C2             | E4             |
| CR304          | D4             | C2             | R118           | B3             | E4             | VR200          | E2             | E6             |
| CR306          | C4             | B2             | R120           | C3             | E4             |                |                |                |

Figure 7-21. A18 — CRT Output circuit board assembly.

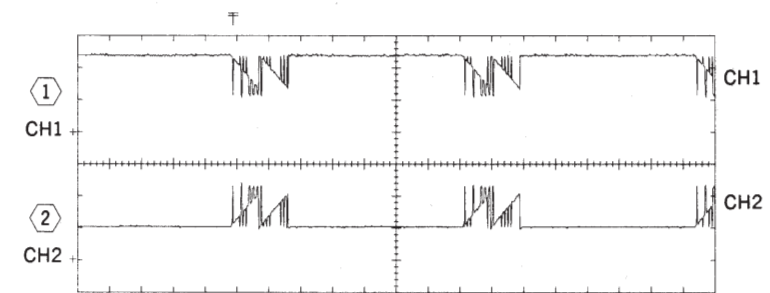
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VOLTAGE AND WAVEFORM CONDITIONS

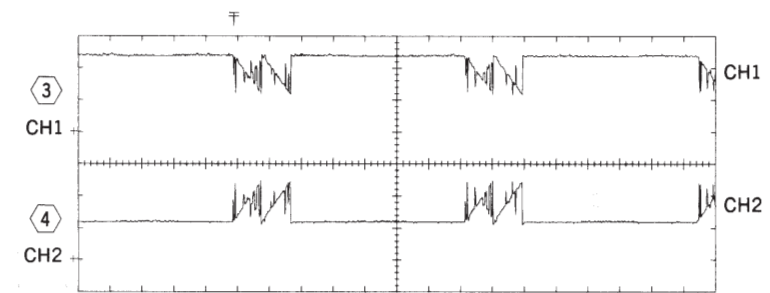
**Voltage Conditions.** The voltages shown on the diagram were obtained using a digital multimeter with a 10 MΩ input impedance. These voltages are not affected by the 370A setting.

**Waveform Conditions.** The waveforms shown below were obtained using a test oscilloscope with 1 MΩ input impedance (Tektronix 2430A with plotter) with the 370A set to the power-up default (initial) settings.

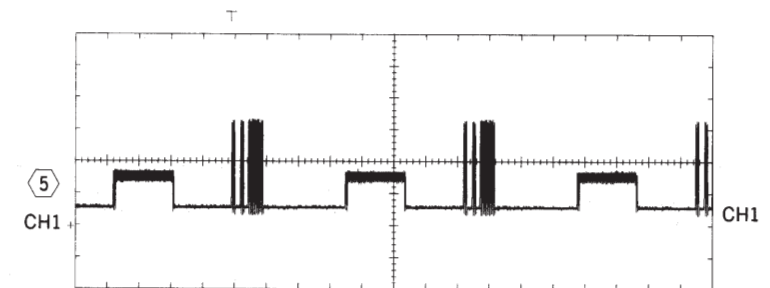
CH1 DC 50V/div NORMAL 2mSEC/div  
 CH2 DC 50V/div NORMAL 2mSEC/div

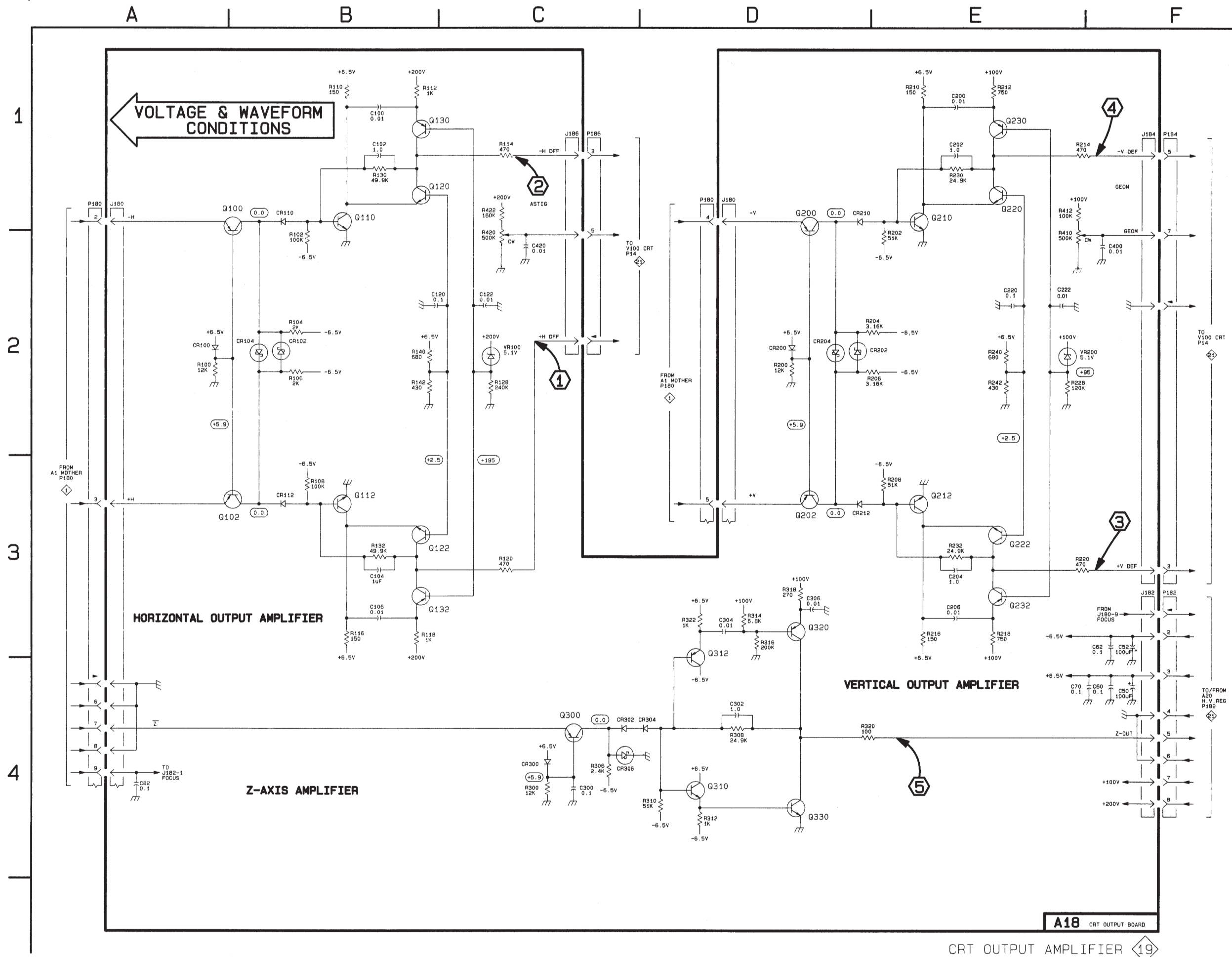


CH1 DC 20V/div NORMAL 2mSEC/div  
 CH2 DC 20V/div NORMAL 2mSEC/div



CH1 DC 10V/div ENV 2mSEC/div





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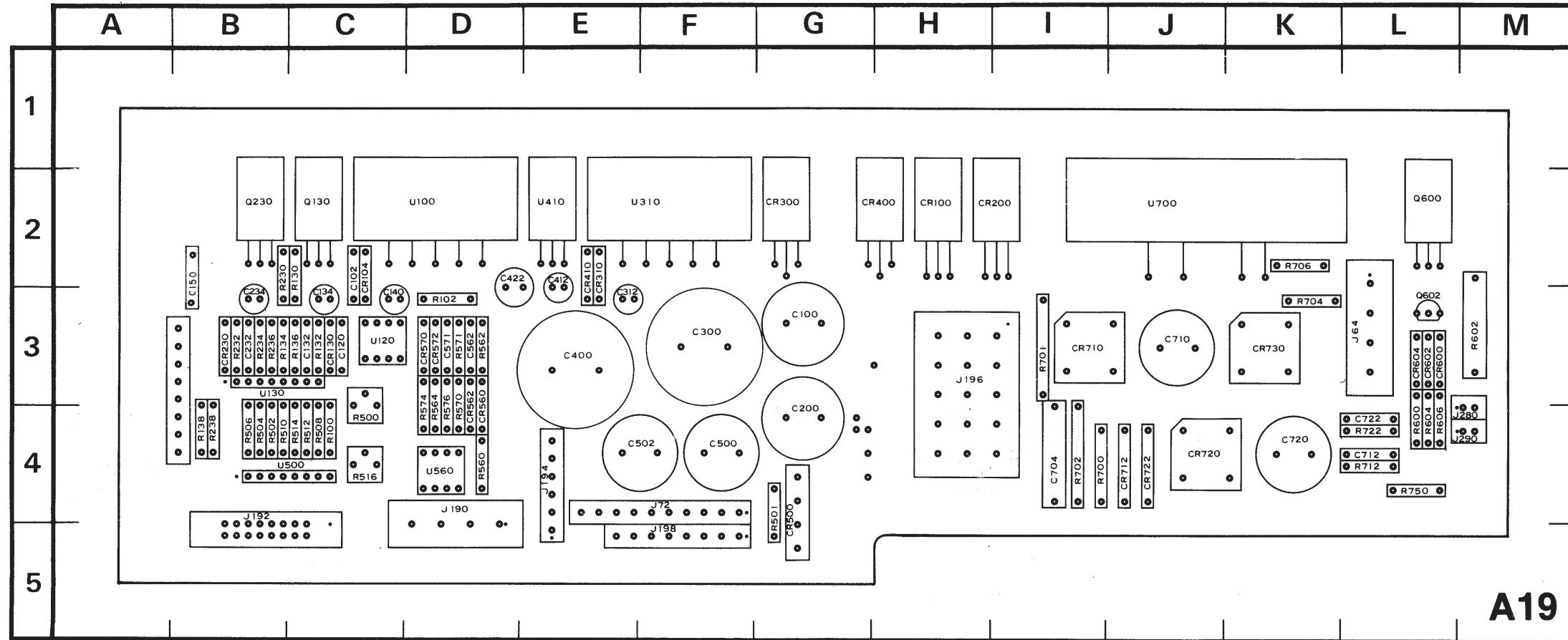


Figure 7-22. A19 — Low Voltage Supply circuit board assembly.

6065-740

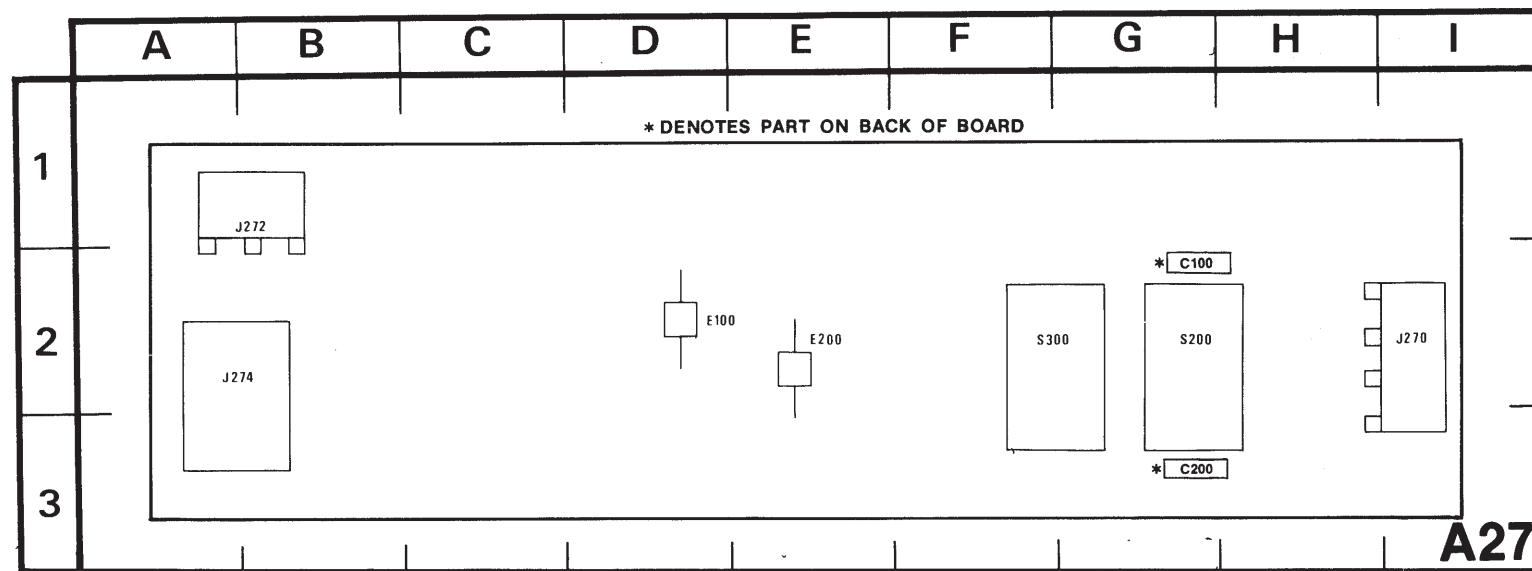


Figure 7-23. A27 — Primary circuit board assembly

6065-741

**COLLECTOR SUPPLY AMPLIFIER**

**10**

| ASSEMBLY A19   |                |                |                |                |                |                |                |                |
|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| CIRCUIT NUMBER | SCHEM LOCATION | BOARD LOCATION | CIRCUIT NUMBER | SCHEM LOCATION | BOARD LOCATION | CIRCUIT NUMBER | SCHEM LOCATION | BOARD LOCATION |
| C704           | B4             | I4             | CR722          | C3             | J4             | R704           | B3             | K3             |
| C710           | C3             | J3             | CR730          | C3             | K3             | R706           | B3             | K2             |
| C712           | C3             | L4             |                |                |                | R712           | C3             | L4             |
| C720           | C3             | K4             | J64            | C3             | L3             | R722           | C3             | L4             |
| C722           | C3             | L4             | J196           | A3             | H3             | R750           | C3             | L4             |
| CR710          | B3             | I3             | R700           | B4             | I4             | U700           | B3             | J2             |
| CR712          | C3             | J4             | R701           | B3             | I3             |                |                |                |
| CR720          | B4             | J4             | R702           | B4             | I4             |                |                |                |

**POWER SUPPLY**

**20**

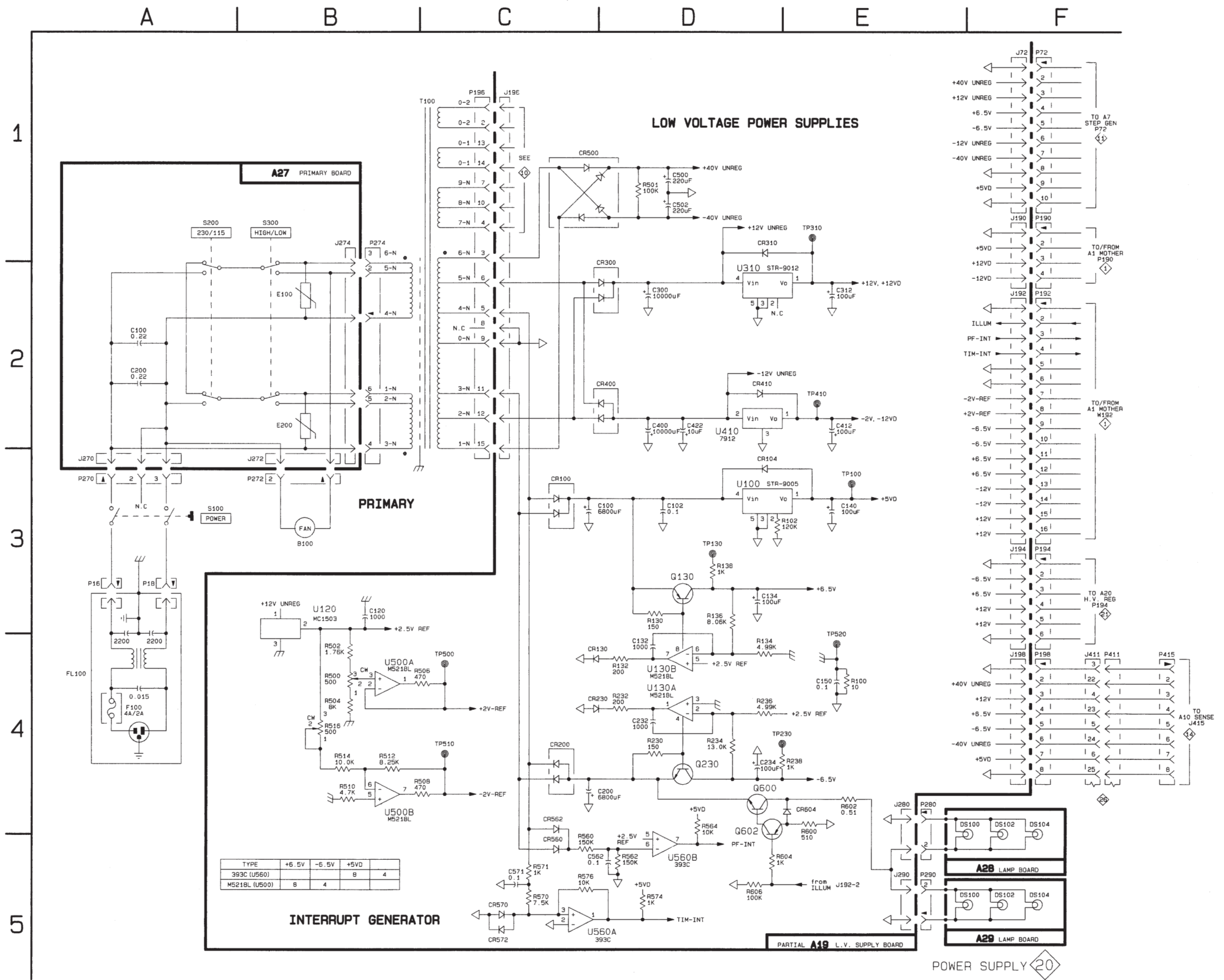
| ASSEMBLY A19   |                |                |                |                |                |                |                |                |
|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| CIRCUIT NUMBER | SCHEM LOCATION | BOARD LOCATION | CIRCUIT NUMBER | SCHEM LOCATION | BOARD LOCATION | CIRCUIT NUMBER | SCHEM LOCATION | BOARD LOCATION |
| C100           | D3             | G3             | J72            | F1             | F4             | R516           | B4             | C4             |
| C102           | D3             | C2             | J190           | F1             | D4             | R560           | C5             | D4             |
| C120           | B3             | C3             | J192           | F2             | B4             | R562           | D5             | D3             |
| C132           | D4             | C3             | J194           | F3             | E4             | R564           | D4             | D4             |
| C134           | D3             | C3             | J196           | C1             | H3             | R570           | C5             | D4             |
| C140           | E3             | C3             | J198           | F4             | F5             | R571           | C5             | D3             |
| C150           | E4             | B2             | J280           | E4             | M4             | R574           | D5             | D4             |
| C200           | D4             | G4             | J290           | E5             | M4             | R576           | C5             | D4             |
| C232           | D4             | B3             |                |                |                | R600           | E4             | L4             |
| C234           | D4             | B3             | Q130           | D3             | C2             | R602           | E4             | M4             |
| C300           | D2             | F3             | Q230           | D4             | B2             | R604           | D5             | L4             |
| C312           | E2             | E3             | Q600           | D4             | L2             | R606           | D5             | L4             |
| C400           | D2             | E3             | Q602           | D4             | L3             |                |                |                |
| C412           | E2             | E2             |                |                |                | TP100          | E3             | A3             |
| C422           | D2             | D2             | R100           | E4             | C4             | TP130          | D3             | A3             |
| C500           | D1             | F4             | R102           | E3             | D3             | TP230          | D4             | A3             |
| C502           | D1             | F4             | R130           | D3             | C2             | TP310          | E1             | A3             |
| C562           | D5             | D3             | R132           | D4             | C3             | TP410          | E2             | A3             |
| C571           | C5             | D3             | R134           | D4             | B3             | TP500          | C4             | A4             |
|                |                |                | R136           | D3             | C3             | TP510          | C4             | A4             |
| CR100          | C3             | H2             | R138           | D3             | B4             | TP520          | E4             | A4             |
| CR104          | D3             | C2             | R230           | D4             | B2             |                |                |                |
| CR130          | C4             | C3             | R232           | D4             | B3             | U100           | D3             | D2             |
| CR200          | C4             | I2             | R234           | D4             | B3             | U120           | B3             | C3             |
| CR230          | C4             | B3             | R236           | D4             | B3             | U130A          | D4             | B3             |
| CR300          | D2             | G2             | R238           | E4             | B4             | U130B          | D4             | B3             |
| CR310          | D1             | E2             | R500           | B4             | C4             | U310           | D2             | F2             |
| CR400          | D2             | H2             | R501           | D1             | G4             | U410           | D2             | E2             |
| CR410          | D2             | E2             | R502           | B4             | B4             | U500A          | B4             | C4             |
| CR500          | C1             | G4             | R504           | B4             | B4             | U500B          | B4             | C4             |
| CR560          | C5             | D4             | R506           | B4             | B4             | U560A          | C5             | D4             |
| CR562          | C4             | D4             | R508           | B4             | C4             | U560B          | D5             | D4             |
| CR570          | C5             | D3             | R510           | B4             | B4             |                |                |                |
| CR572          | C5             | D3             | R512           | B4             | C4             |                |                |                |
| CR604          | E4             | L3             | R514           | B4             | C4             |                |                |                |

**POWER SUPPLY**

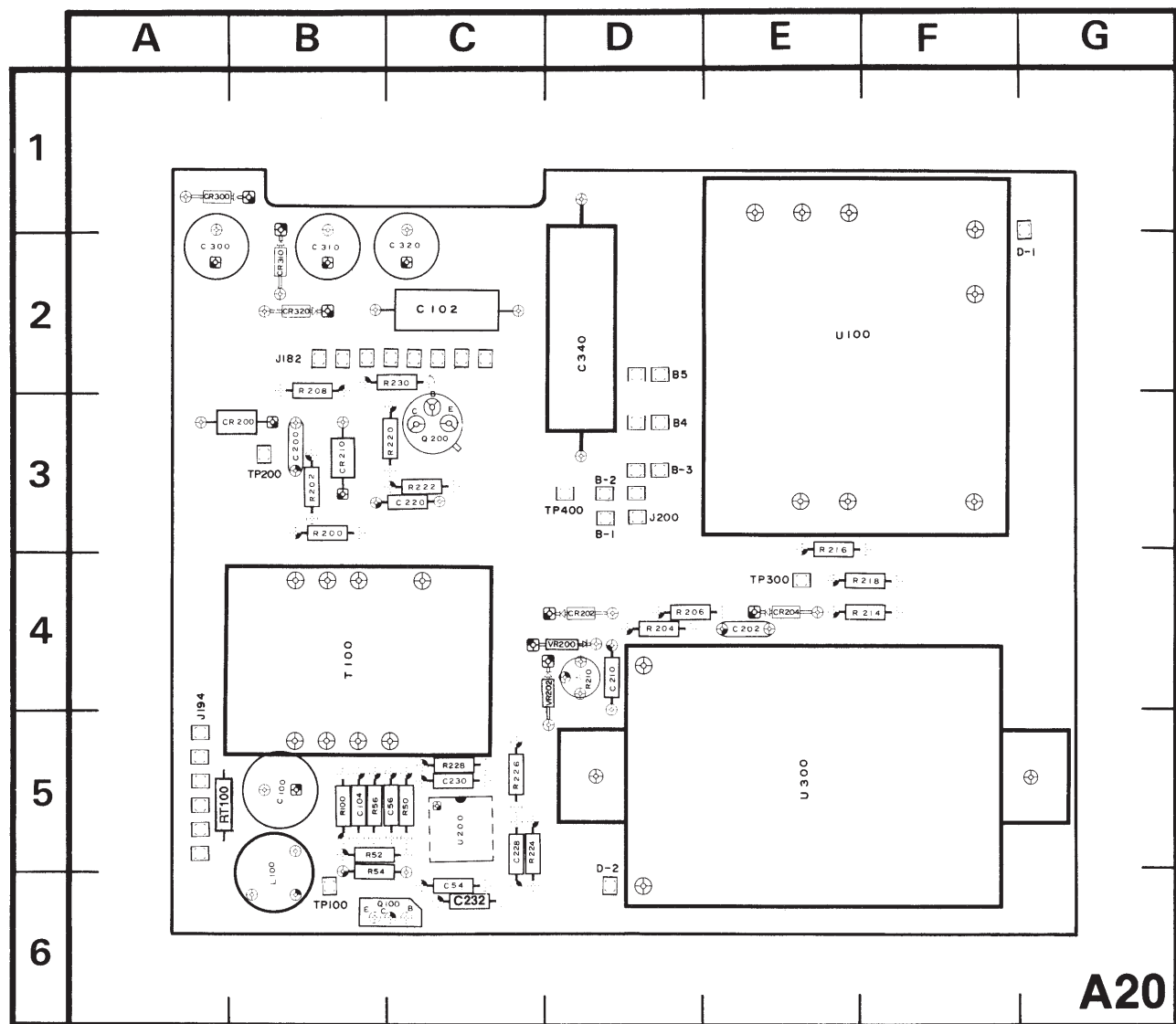
**20**

| ASSEMBLY A27          |                |                |                |                |                |                |                |                |
|-----------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| CIRCUIT NUMBER        | SCHEM LOCATION | BOARD LOCATION | CIRCUIT NUMBER | SCHEM LOCATION | BOARD LOCATION | CIRCUIT NUMBER | SCHEM LOCATION | BOARD LOCATION |
| C100                  | A2             | G1             | J270           | A3             | I2             | S200           | A1             | G2             |
| C200                  | A2             | G2             | J272           | B3             | B1             | S300           | B1             | F2             |
|                       |                |                | J274           | B1             | B2             |                |                |                |
| E100                  | B2             | D2             |                |                |                |                |                |                |
| E200                  | B2             | E2             |                |                |                |                |                |                |
| CHASSIS MOUNTED PARTS |                |                |                |                |                |                |                |                |
| CIRCUIT NUMBER        | SCHEM LOCATION | BOARD LOCATION | CIRCUIT NUMBER | SCHEM LOCATION | BOARD LOCATION | CIRCUIT NUMBER | SCHEM LOCATION | BOARD LOCATION |
| B100                  | B3             | CHASSIS        | J411           | F4             | CHASSIS        | S100           | A3             | CHASSIS        |
| F100                  | A4             | CHASSIS        | P411           | F4             | CHASSIS        | T100           | C1             | CHASSIS        |
| FL100                 | A4             | CHASSIS        |                |                |                |                |                |                |





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6065-743

Figure 7-24. A20 — High Voltage Regulator circuit board assembly.

HIGH VOLTAGE POWER SUPPLY



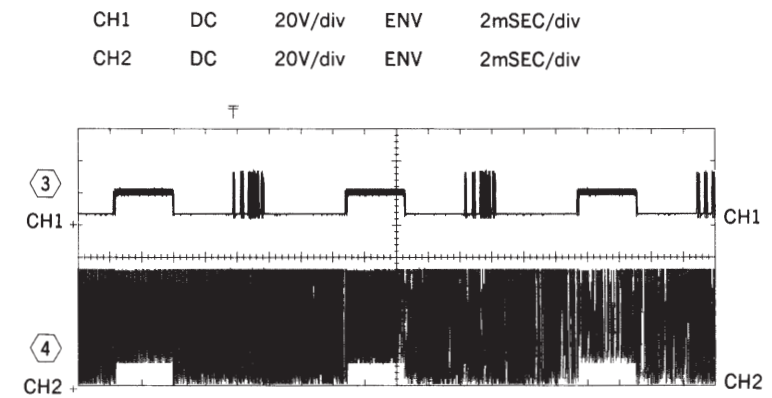
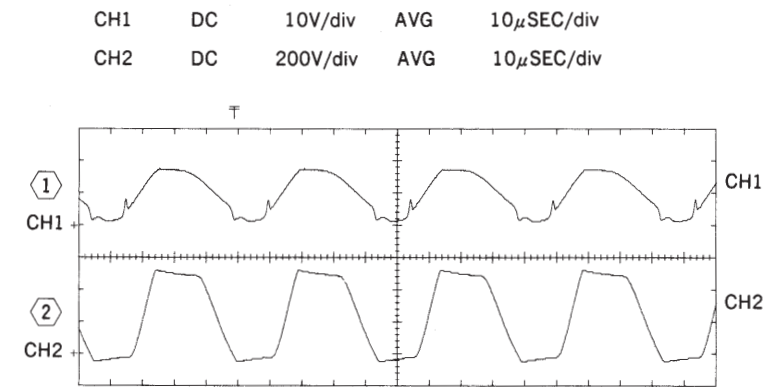
| ASSEMBLY A20          |                |                |                |                |                |                |                |                |
|-----------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| CIRCUIT NUMBER        | SCHEM LOCATION | BOARD LOCATION | CIRCUIT NUMBER | SCHEM LOCATION | BOARD LOCATION | CIRCUIT NUMBER | SCHEM LOCATION | BOARD LOCATION |
| C54                   | C4             | C6             | J182           | E2             | B2             | R220           | C1             | C3             |
| C56                   | C4             | C5             | J194           | A3             | A4             | R222           | C1             | C3             |
| C100                  | A1             | B5             | J200           | E1             | D3             | R224           | B2             | C5             |
| C102                  | B3             | C2             | L100           | A1             | B6             | R226           | B2             | C5             |
| C104                  | B4             | B5             | Q100           | A2             | C6             | R228           | C2             | C5             |
| C200                  | C2             | B3             | Q200           | C2             | C3             | R230           | C2             | C2             |
| C202                  | C2             | E4             | T100           | B1             | B4             |                |                |                |
| C210                  | C3             | D4             | R50            | C4             | C5             | TP100          | A1             | B6             |
| C220                  | C1             | C3             | R52            | C3             | B5             | TP200          | C2             | B3             |
| C228                  | C1             | C5             | R54            | C3             | B6             | TP300          | C2             | E4             |
| C230                  | C3             | C5             | R56            | B4             | B5             | TP400          | E1             | D3             |
| C232                  | C2             | C6             | R100           | A2             | B5             | U100           | D1             | E2             |
| C300                  | D3             | A2             | R200           | B2             | B3             | U200A          | C4             | C5             |
| C310                  | D3             | B2             | R202           | C2             | B3             | U200B          | B2             | C5             |
| C320                  | D3             | C2             | R204           | B2             | D4             | U300           | D4             | E5             |
| C340                  | D2             | D2             | R206           | C2             | D4             | VR200          | C3             | D4             |
| CR200                 | C2             | B3             | R208           | C2             | B2             | VR202          | C3             | D4             |
| CR202                 | C2             | D4             | R210           | C3             | D4             |                |                |                |
| CR204                 | C2             | E4             | R212           | C2             | F4             |                |                |                |
| CR210                 | C2             | B3             | R214           | C2             | F4             |                |                |                |
| CR300                 | D3             | A1             | R216           | C2             | E4             |                |                |                |
| CR310                 | D3             | B2             | R218           | C2             | F4             |                |                |                |
| CR320                 | D3             | B2             |                |                |                |                |                |                |
| CHASSIS MOUNTED PARTS |                |                |                |                |                |                |                |                |
| CIRCUIT NUMBER        | SCHEM LOCATION | BOARD LOCATION | CIRCUIT NUMBER | SCHEM LOCATION | BOARD LOCATION | CIRCUIT NUMBER | SCHEM LOCATION | BOARD LOCATION |
| L100                  | F3             | CHASSIS        | P14            | F1             | CHASSIS        | W10            | F4             | CHASSIS        |
| L120                  | F2             | CHASSIS        | V100           | F4             | CHASSIS        | W12            | E3             | CHASSIS        |

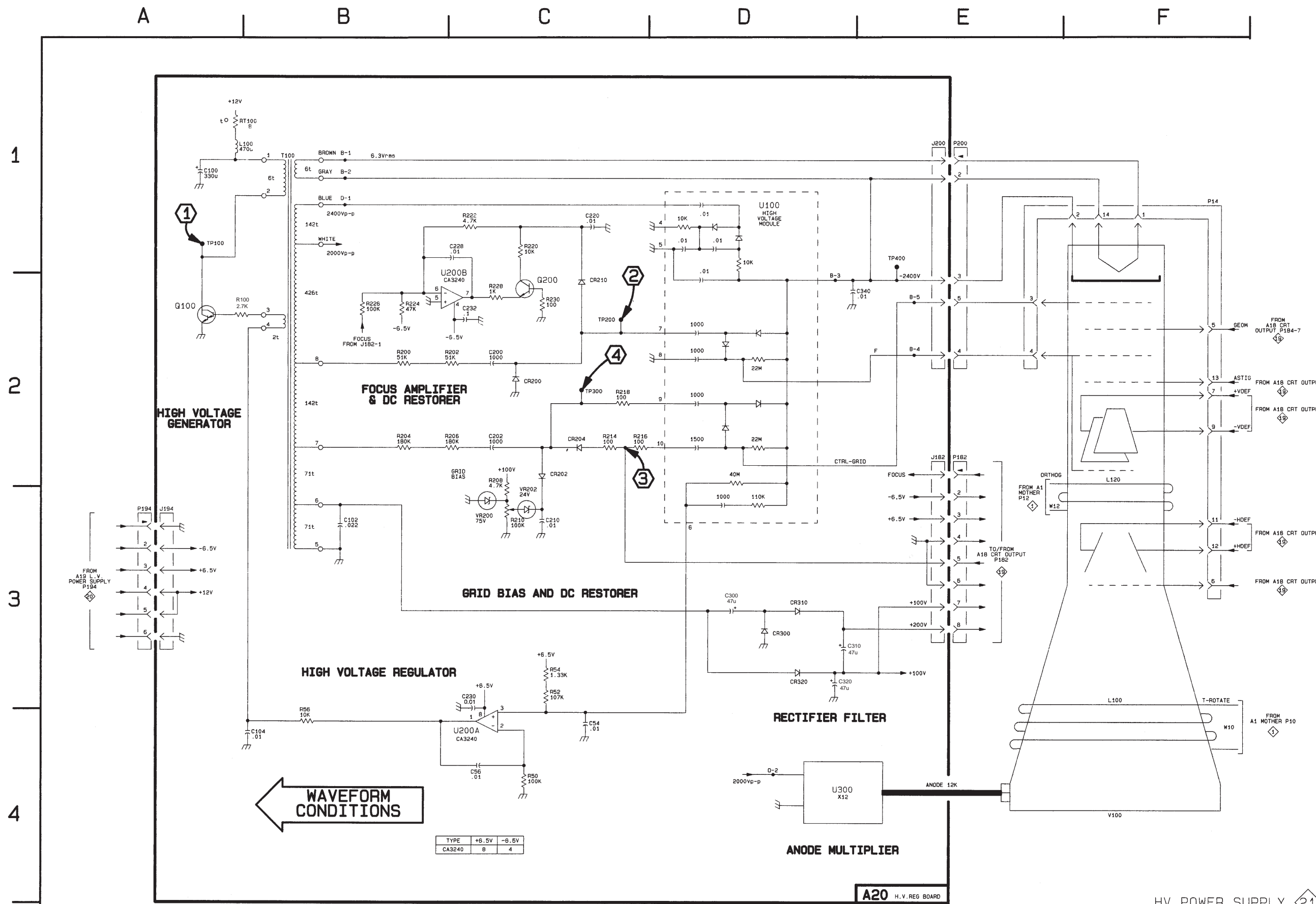
## WAVEFORM CONDITIONS

The waveforms shown below were obtained using a test oscilloscope with 1 M $\Omega$  input impedance (Tektronix 2430A with plotter) with the 370A under the following conditions:

Waveform 1 and 2: These waveforms were obtained with the 370A set to the power-up default (initial) settings. (The waveform 2 was obtained with 1:100 probe.)

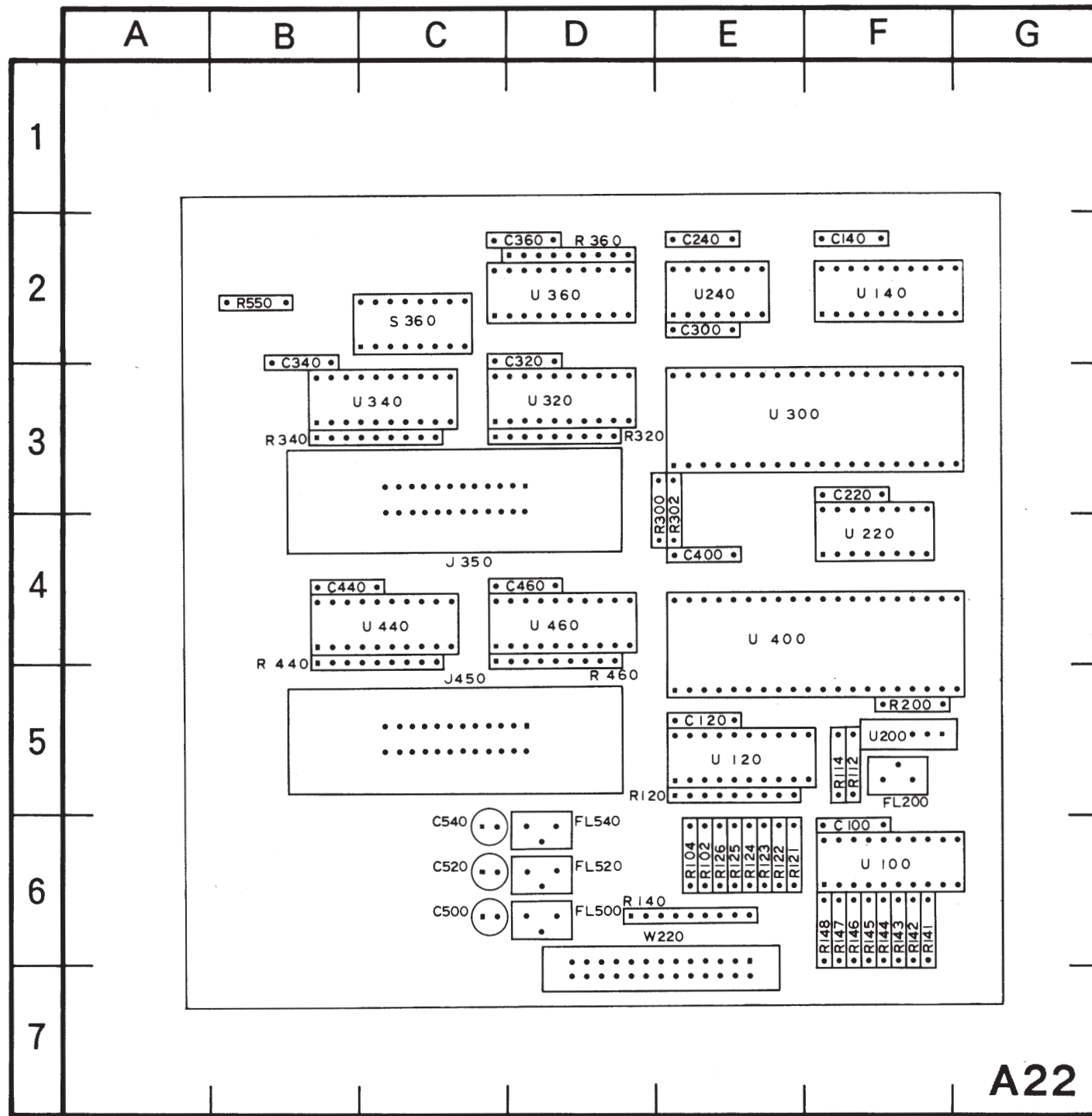
Waveform 3 and 4: These waveforms were obtained with the 370A set to the power-up default (initial) settings. The NON STORE/STORE/VIEW Intensity control and READOUT/CURSOR Intensity control are turned fully clockwise.





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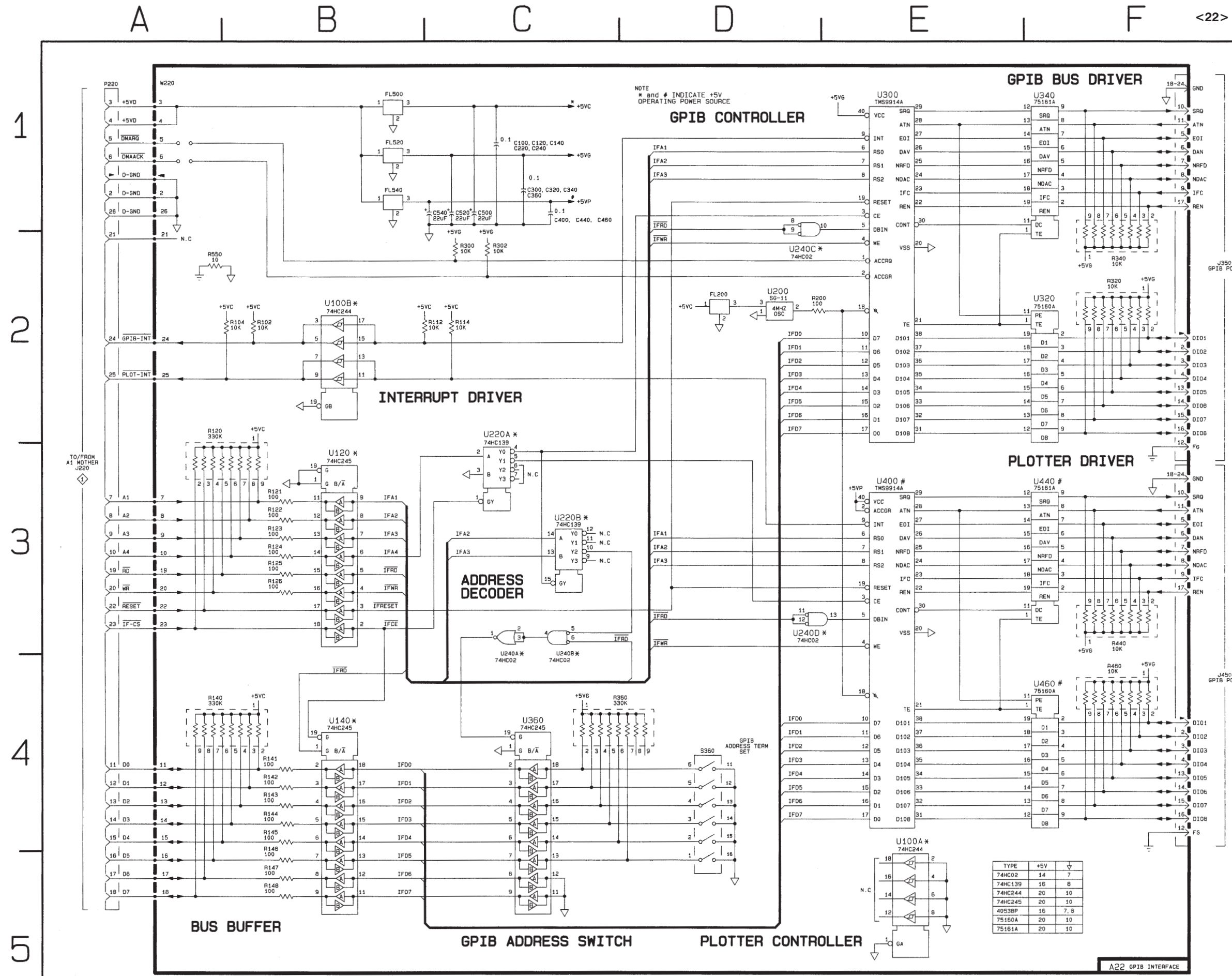


**GPIB & PLOTTER INTERFACE**

22

| ASSEMBLY A22   |                |                |                |                |                |                |                |                |
|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| CIRCUIT NUMBER | SCHEM LOCATION | BOARD LOCATION | CIRCUIT NUMBER | SCHEM LOCATION | BOARD LOCATION | CIRCUIT NUMBER | SCHEM LOCATION | BOARD LOCATION |
| C100           | C1             | F6             | R104           | B2             | E6             | R440           | F3             | B4             |
| C120           | C1             | E5             | R112           | C2             | F5             | R460           | F4             | D5             |
| C140           | C1             | F2             | R114           | C2             | F5             | R550           | A2             | B2             |
| C220           | C1             | F3             | R120           | A2             | D5             | S360           | D4             | C2             |
| C240           | C1             | E2             | R121           | B3             | E6             | U100A          | E4             | F6             |
| C300           | C1             | E2             | R122           | B3             | E6             | U100B          | B2             | F6             |
| C320           | C1             | D2             | R123           | B3             | E6             | U120           | B3             | E5             |
| C340           | C1             | B2             | R124           | B3             | E6             | U140           | B4             | F2             |
| C360           | C1             | D2             | R125           | B3             | E6             | U200           | D2             | F5             |
| C400           | C1             | E4             | R126           | B3             | E6             | U220A          | C2             | F4             |
| C440           | C1             | B4             | R140           | A4             | D6             | U220B          | C3             | F4             |
| C460           | C1             | D4             | R141           | B4             | F6             | U240A          | C3             | E2             |
| C500           | C1             | C6             | R142           | B4             | F6             | U240B          | C3             | E2             |
| C520           | C1             | C6             | R143           | B4             | F6             | U240C          | D2             | E2             |
| C540           | C1             | C6             | R144           | B4             | F6             | U240D          | D3             | E2             |
| FL200          | D2             | F5             | R145           | B4             | F6             | U300           | E1             | E3             |
| FL500          | B1             | D6             | R146           | B4             | F6             | U320           | F2             | D3             |
| FL520          | B1             | D6             | R147           | B5             | F6             | U340           | F1             | C3             |
| FL540          | B1             | D6             | R148           | B5             | F6             | U360           | C4             | D2             |
| J350           | F2             | C4             | R200           | D2             | F5             | U400           | E3             | E4             |
| J450           | F4             | C5             | R300           | C2             | E3             | U440           | F3             | C4             |
| J540           | B1             | D6             | R302           | C2             | E3             | U460           | F4             | D4             |
| R102           | B2             | E6             | R320           | F2             | D3             | W220           | A1             | E6             |
|                |                |                | R340           | F2             | B3             |                |                |                |
|                |                |                | R360           | C4             | D2             |                |                |                |

Figure 7-25. A22 — GPIB Interface circuit board assembly.



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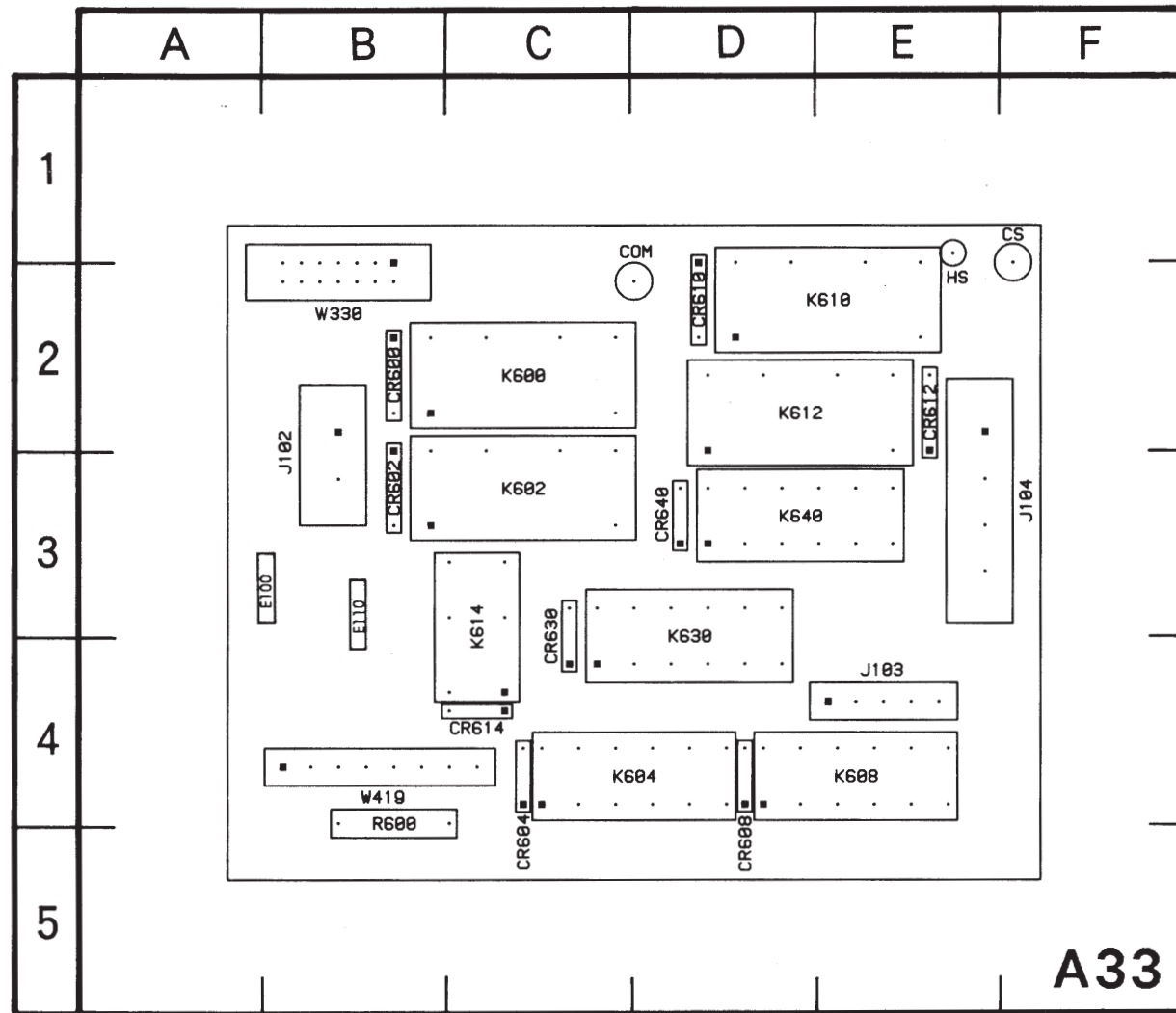


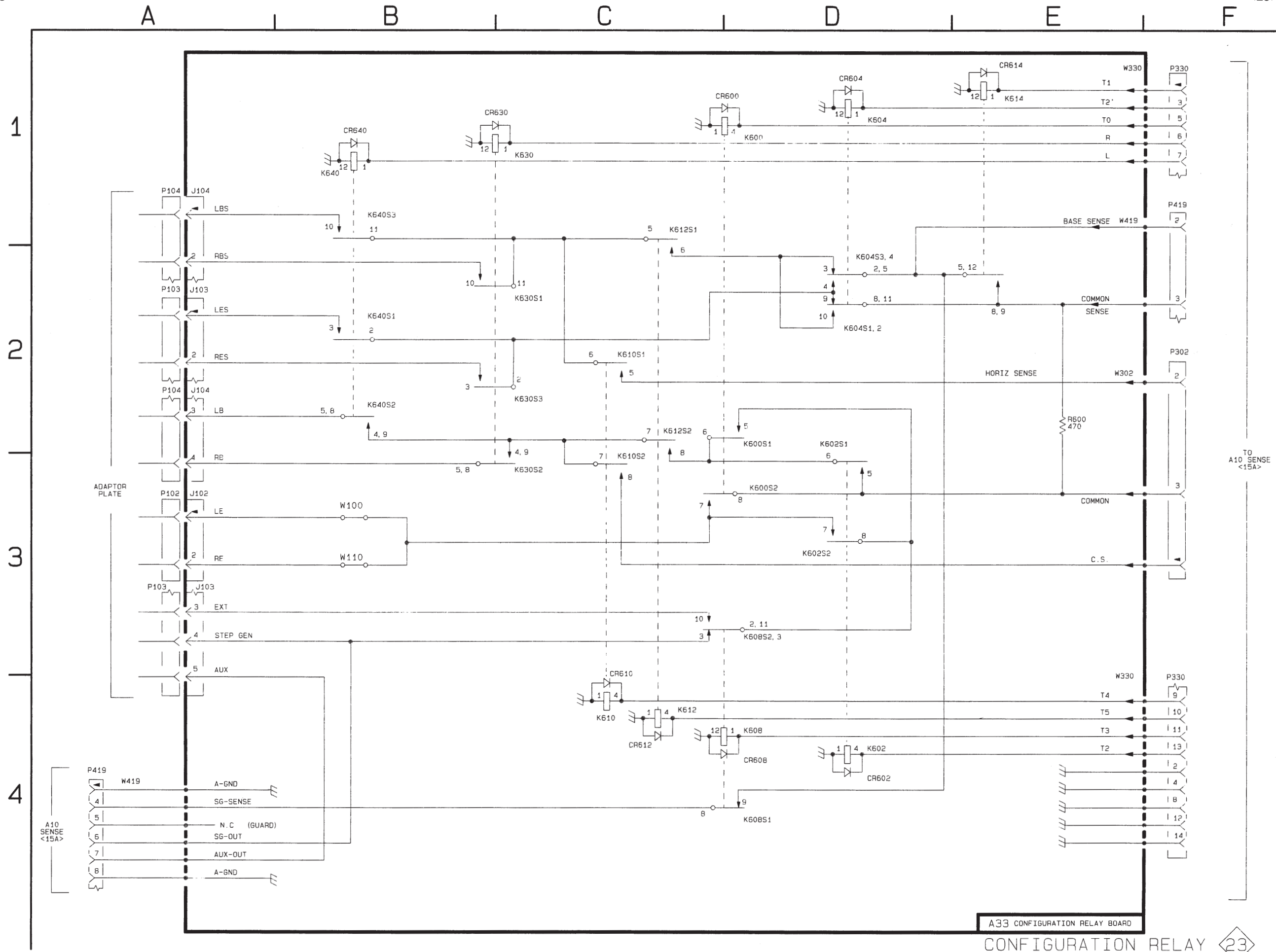
Figure 7-26. A33 — Configuration Relay circuit board assembly.

CONFIGURATION RELAY

23

| ASSEMBLY A33   |                |                |                |                |                |                |                |                |
|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| CIRCUIT NUMBER | SCHEM LOCATION | BOARD LOCATION | CIRCUIT NUMBER | SCHEM LOCATION | BOARD LOCATION | CIRCUIT NUMBER | SCHEM LOCATION | BOARD LOCATION |
| CR600          | D1             | B2             | J102           | A2             | B3             | K614           | E1             | C3             |
| CR602          | D4             | B3             | J103           | A2,A3          | E4             | K630           | C1             | D3             |
| CR604          | D1             | C4             | J104           | A1,A2          | F3             | K640           | B1             | D3             |
| CR608          | D4             | D4             |                |                |                |                |                |                |
| CR610          | C3             | D2             | K600           | D1             | C2             | R600           | E2             | B4             |
| CR612          | C4             | E2             | K602           | D4             | C3             |                |                |                |
| CR614          | E1             | C4             | K604           | D1             | C4             | W100           | B3             | B3             |
| CR630          | B1             | C4             | K608           | D4             | E4             | W110           | B3             | B3             |
| CR640          | B1             | D3             | K610           | C4             | E2             | W330           | E1,E4          | B2             |
|                |                |                | K612           | C4             | D2             | W419           | A4,E1          | B4             |



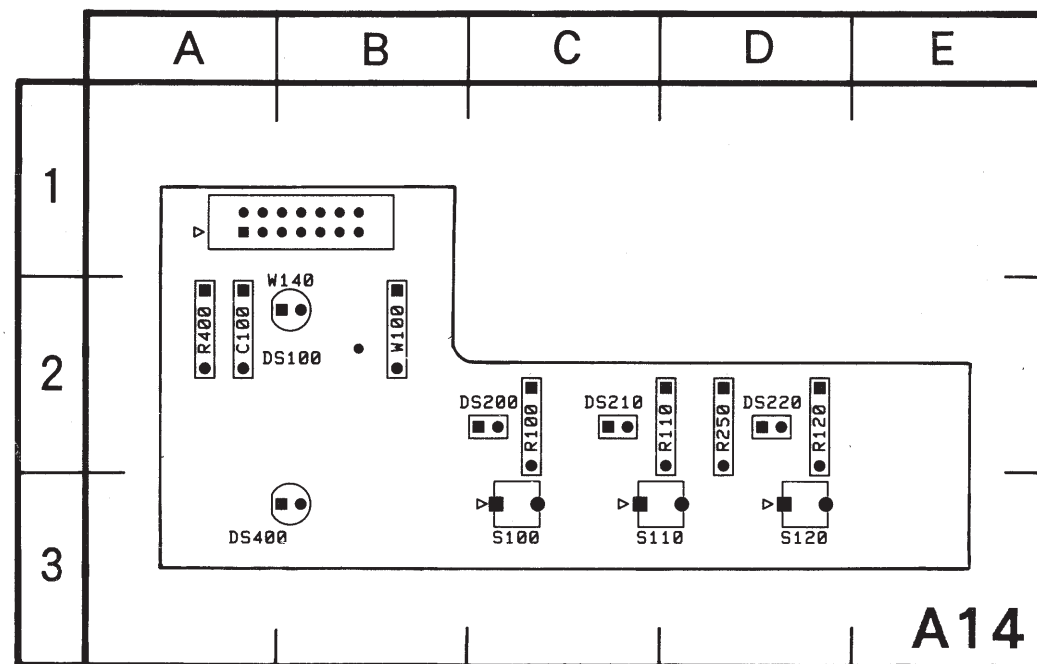


TO  
A10 SENSE  
<15A>

A33 CONFIGURATION RELAY BOARD

CONFIGURATION RELAY 23

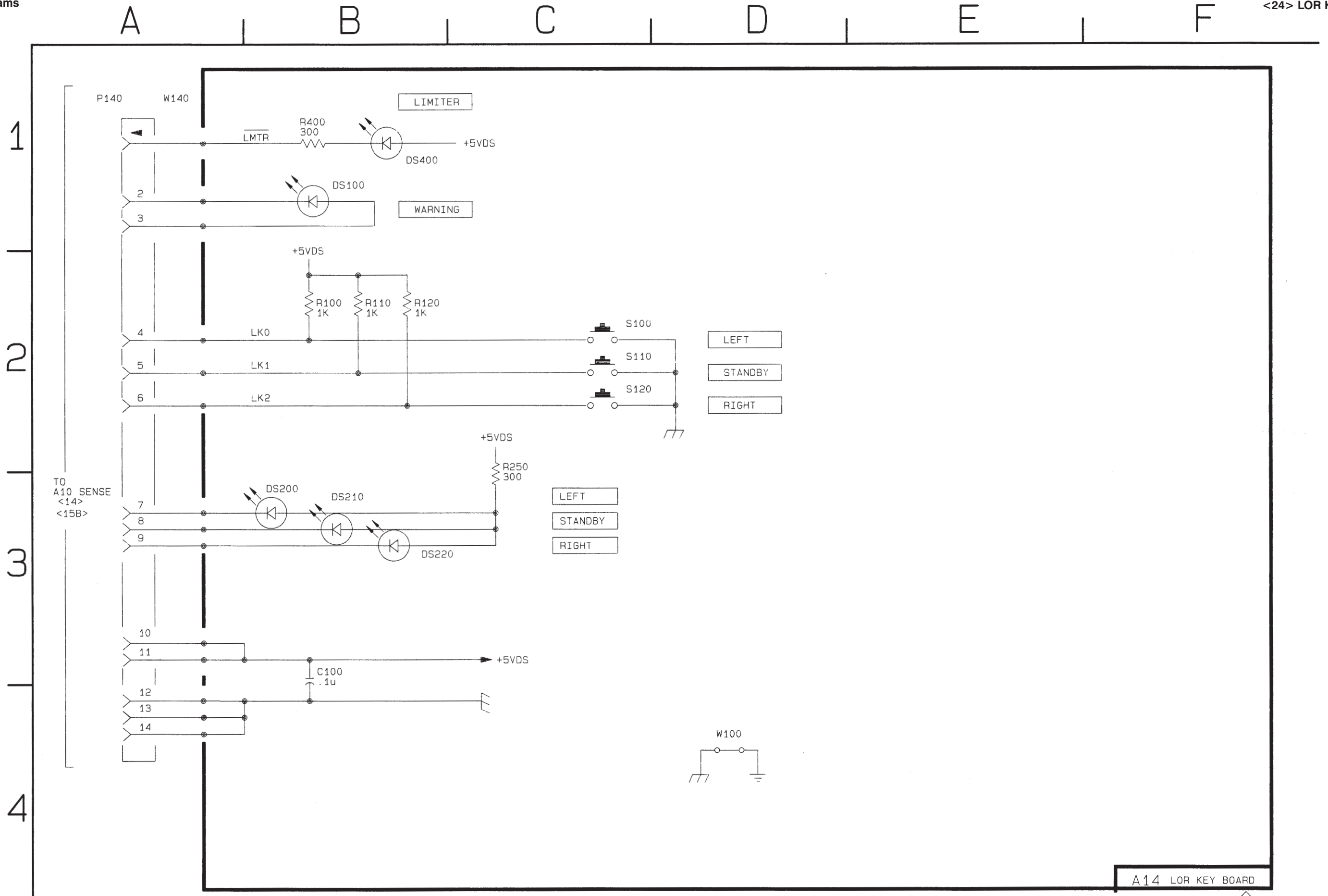
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LOR KEY 24

| ASSEMBLY A14   |                |                |                |                |                |                |                |                |
|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| CIRCUIT NUMBER | SCHEM LOCATION | BOARD LOCATION | CIRCUIT NUMBER | SCHEM LOCATION | BOARD LOCATION | CIRCUIT NUMBER | SCHEM LOCATION | BOARD LOCATION |
| C100           | B3             | A2             | R100           | B2             | C2             | S100           | C2             | C3             |
| DS100          | B1             | B2             | R110           | B2             | D2             | S110           | C2             | D3             |
| DS200          | B3             | C2             | R120           | B2             | D2             | S120           | C2             | D3             |
| DS210          | B3             | C2             | R250           | C2             | D2             | W100           | D4             | B2             |
| DS220          | B3             | D2             | R400           | B1             | A2             | W140           | A1             | B1             |
| DS400          | B1             | B3             |                |                |                |                |                |                |

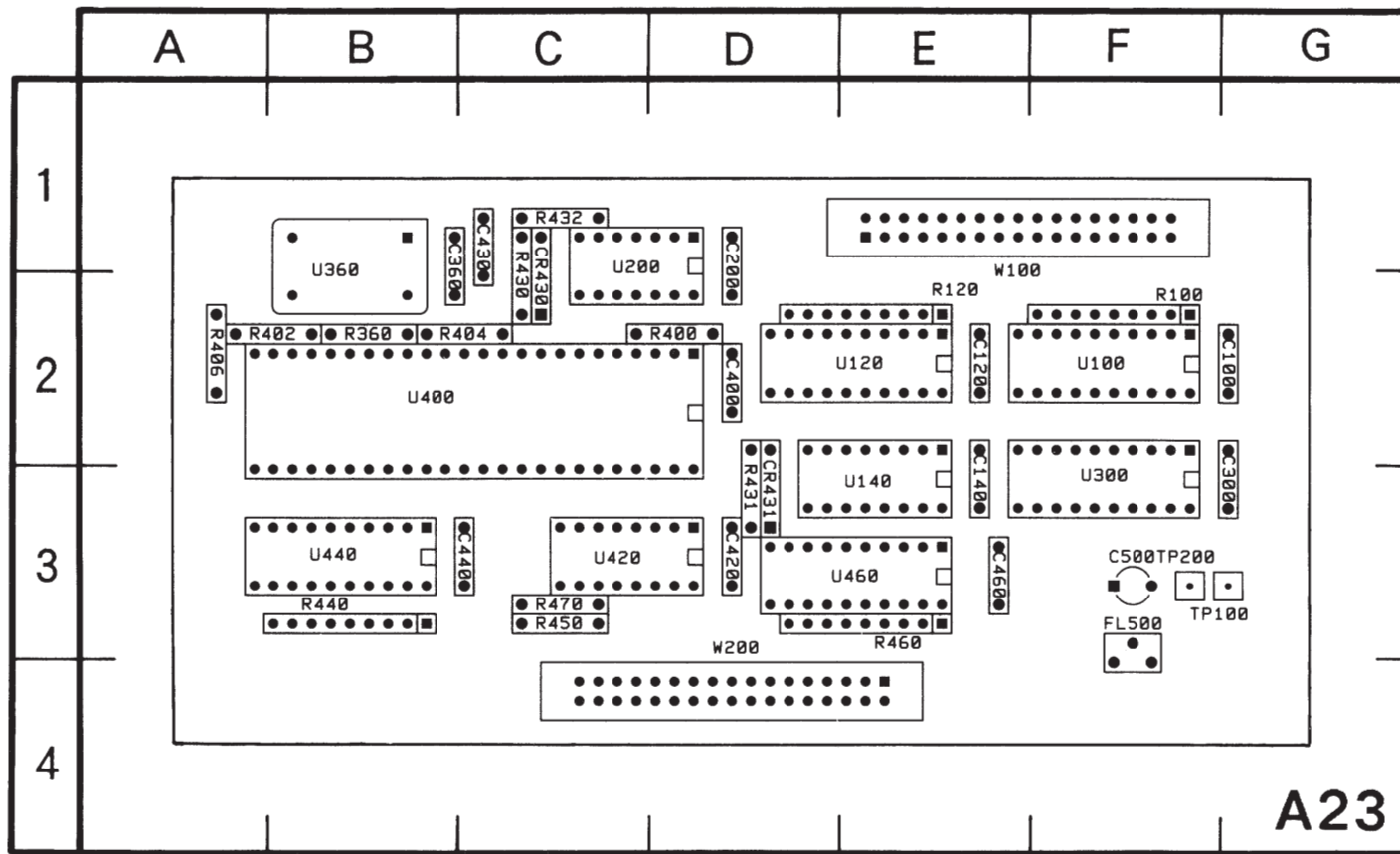
Figure 7-27. A14 — LOR Key circuit board assembly.



A14 LOR KEY BOARD

LOR KEY 24

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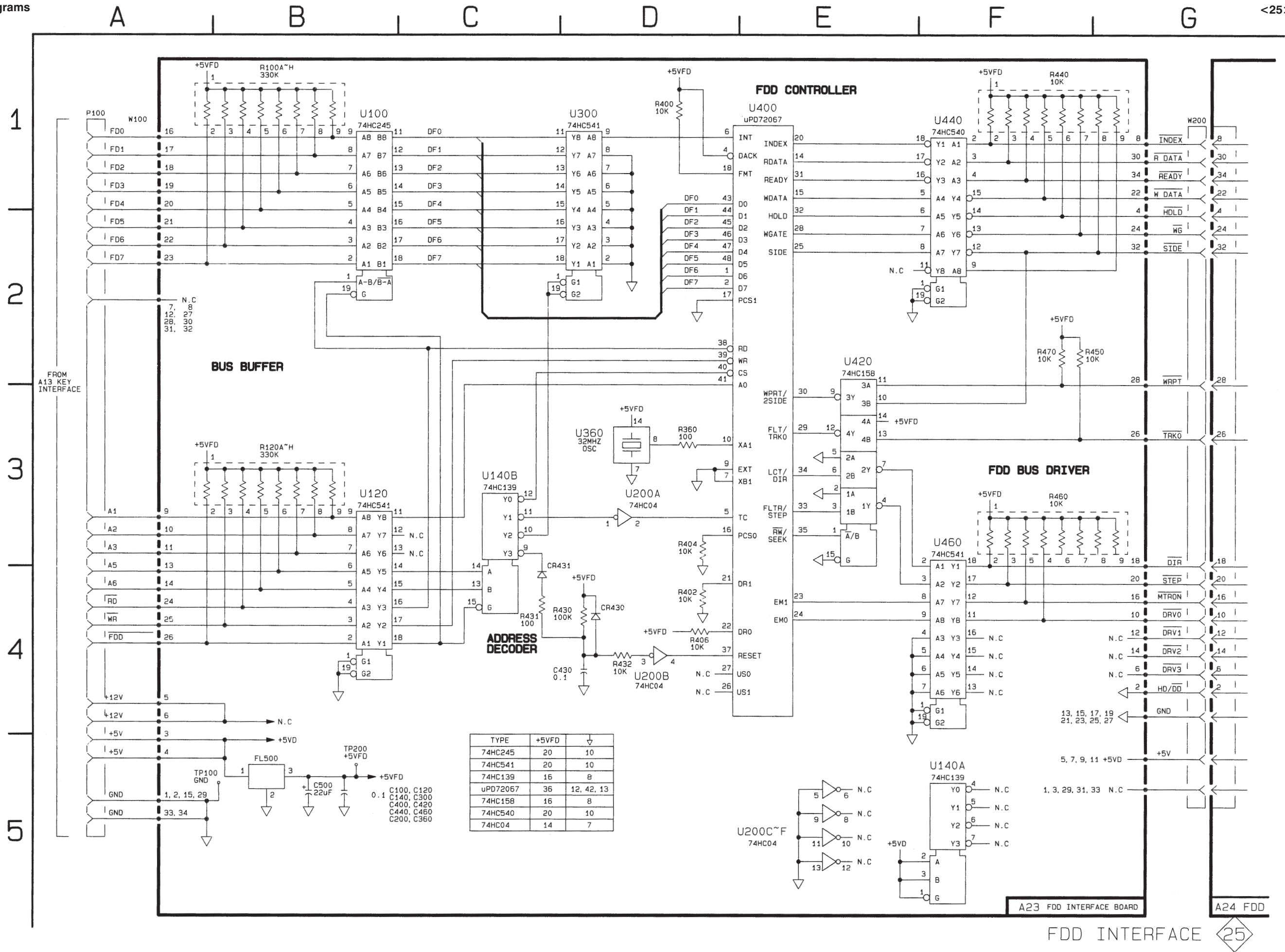


FDD INTERFACE

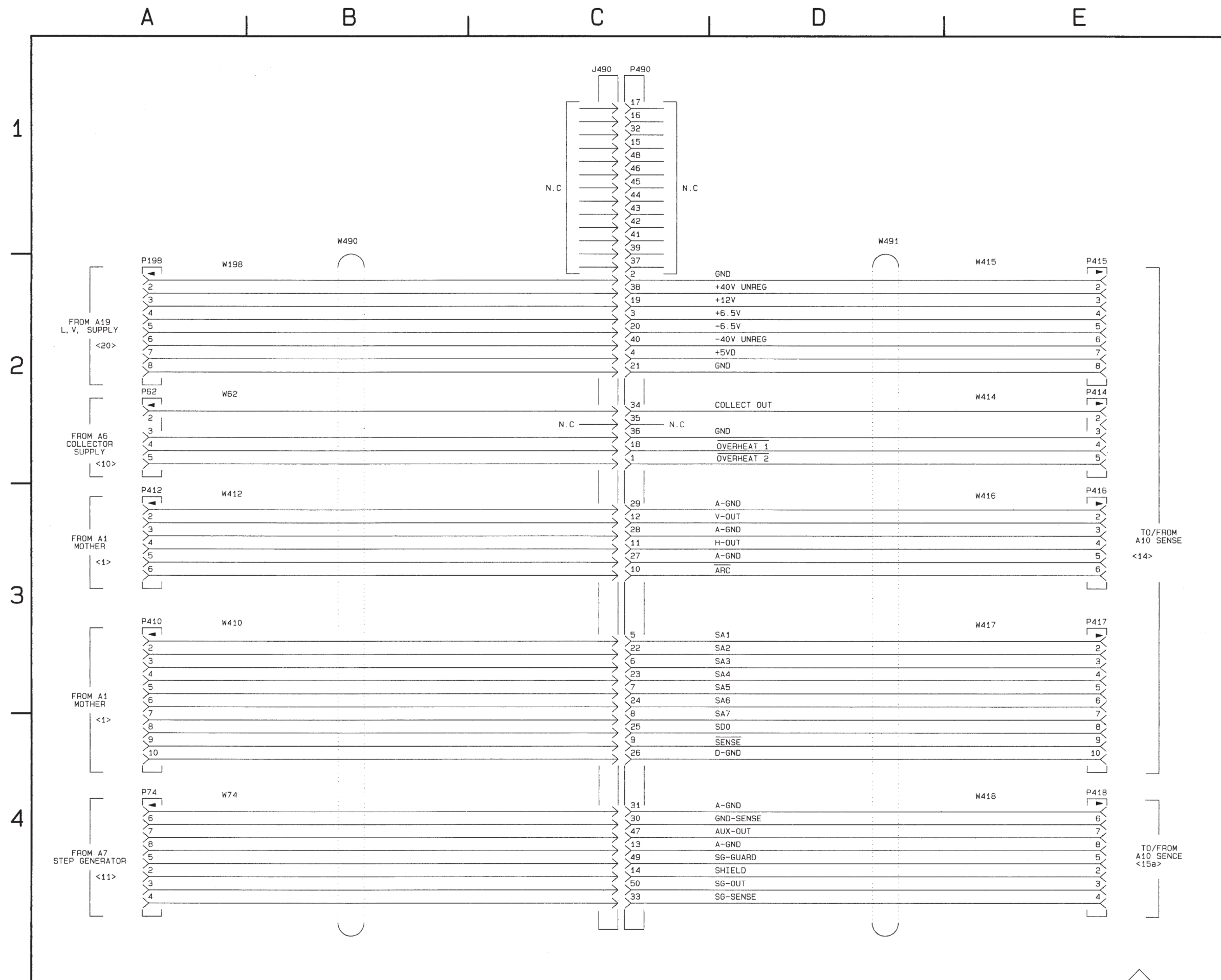


| ASSEMBLY A23   |                |                |                |                |                |                |                |                |
|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| CIRCUIT NUMBER | SCHEM LOCATION | BOARD LOCATION | CIRCUIT NUMBER | SCHEM LOCATION | BOARD LOCATION | CIRCUIT NUMBER | SCHEM LOCATION | BOARD LOCATION |
| C100           | B5             | G2             | R100           | B1             | F2             | U100           | B1             | F2             |
| C120           | C5             | E2             | R120           | B3             | E2             | U120           | B3             | E2             |
| C140           | B5             | E3             | R360           | D3             | B2             | U140A          | F5             | E3             |
| C200           | B5             | D1             | R400           | D1             | D2             | U140B          | C3             | E3             |
| C300           | C5             | G3             | R402           | D4             | B2             | U200A          | D3             | C1             |
| C360           | C5             | B1             | R404           | D3             | C2             | U200B          | D4             | C1             |
| C400           | B5             | D2             | R406           | D4             | A2             | U200C          | E5             | C1             |
| C420           | C5             | D3             | R430           | D4             | C2             | U200D          | E5             | C1             |
| C430           | D4             | C1             | R431           | C4             | D3             | U200E          | E5             | C1             |
| C440           | B5             | C3             | R432           | D4             | C1             | U200F          | E5             | C1             |
| C460           | C5             | E3             | R440           | F1             | B3             | U300           | D1             | F3             |
| C500           | B5             | F3             | R450           | F2             | C3             | U360           | D3             | B1             |
| CR430          | D4             | C2             | R460           | F3             | E3             | U400           | E1             | B2             |
| CR431          | C4             | D3             | R470           | F2             | C3             | U420           | E2             | C3             |
| FL500          | B5             | F3             | TP100          | A5             | F3             | U440           | F1             | B3             |
|                |                |                | TP200          | B5             | F3             | U460           | F3             | E3             |
|                |                |                |                |                |                | W100           | A1             | E1             |
|                |                |                |                |                |                | W200           | G1             | D3             |

Figure 7-28. A33 — Floppy Disk Drive Interface circuit board assembly.



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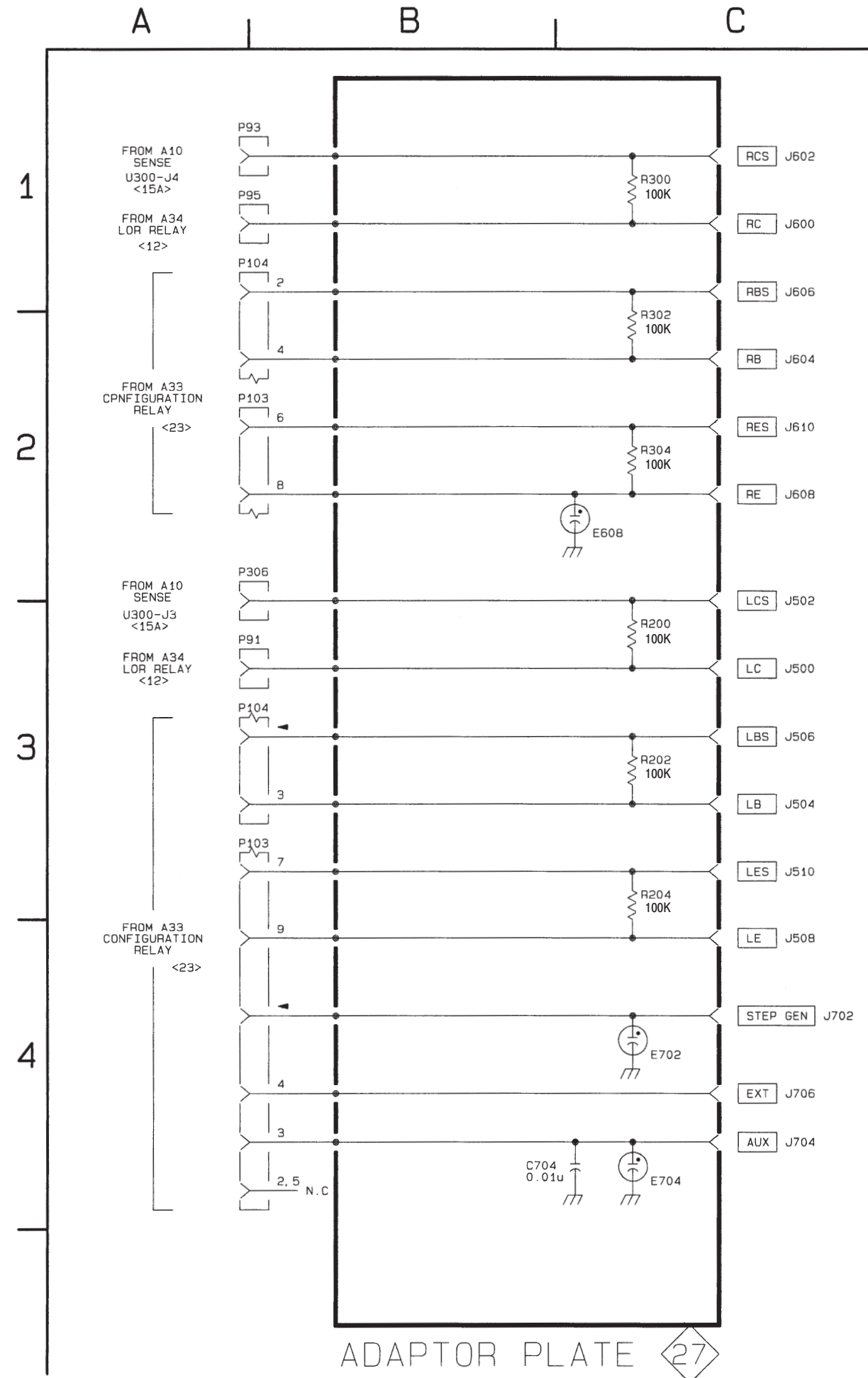


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# ADAPTOR PLATE



| CHASSIS MOUNTED PARTS |                |                |                |                |                |                |                |                |
|-----------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| CIRCUIT NUMBER        | SCHEM LOCATION | BOARD LOCATION | CIRCUIT NUMBER | SCHEM LOCATION | BOARD LOCATION | CIRCUIT NUMBER | SCHEM LOCATION | BOARD LOCATION |
| C704                  | C4             | CHASSIS        | J508           | C4             | CHASSIS        | J706           | C4             | CHASSIS        |
| E608                  | C2             | CHASSIS        | J510           | C3             | CHASSIS        | R200           | C3             | CHASSIS        |
| E702                  | C4             | CHASSIS        | J600           | C1             | CHASSIS        | R202           | C3             | CHASSIS        |
| E704                  | C4             | CHASSIS        | J602           | C1             | CHASSIS        | R204           | C3             | CHASSIS        |
|                       |                |                | J604           | C2             | CHASSIS        | R300           | C1             | CHASSIS        |
|                       |                |                | J606           | C1             | CHASSIS        | R302           | C2             | CHASSIS        |
| J500                  | C3             | CHASSIS        | J608           | C2             | CHASSIS        | R304           | C2             | CHASSIS        |
| J502                  | C2             | CHASSIS        | J610           | C2             | CHASSIS        |                |                |                |
| J504                  | C3             | CHASSIS        | J702           | C4             | CHASSIS        |                |                |                |
| J506                  | C3             | CHASSIS        | J704           | C4             | CHASSIS        |                |                |                |



ADAPTOR PLATE

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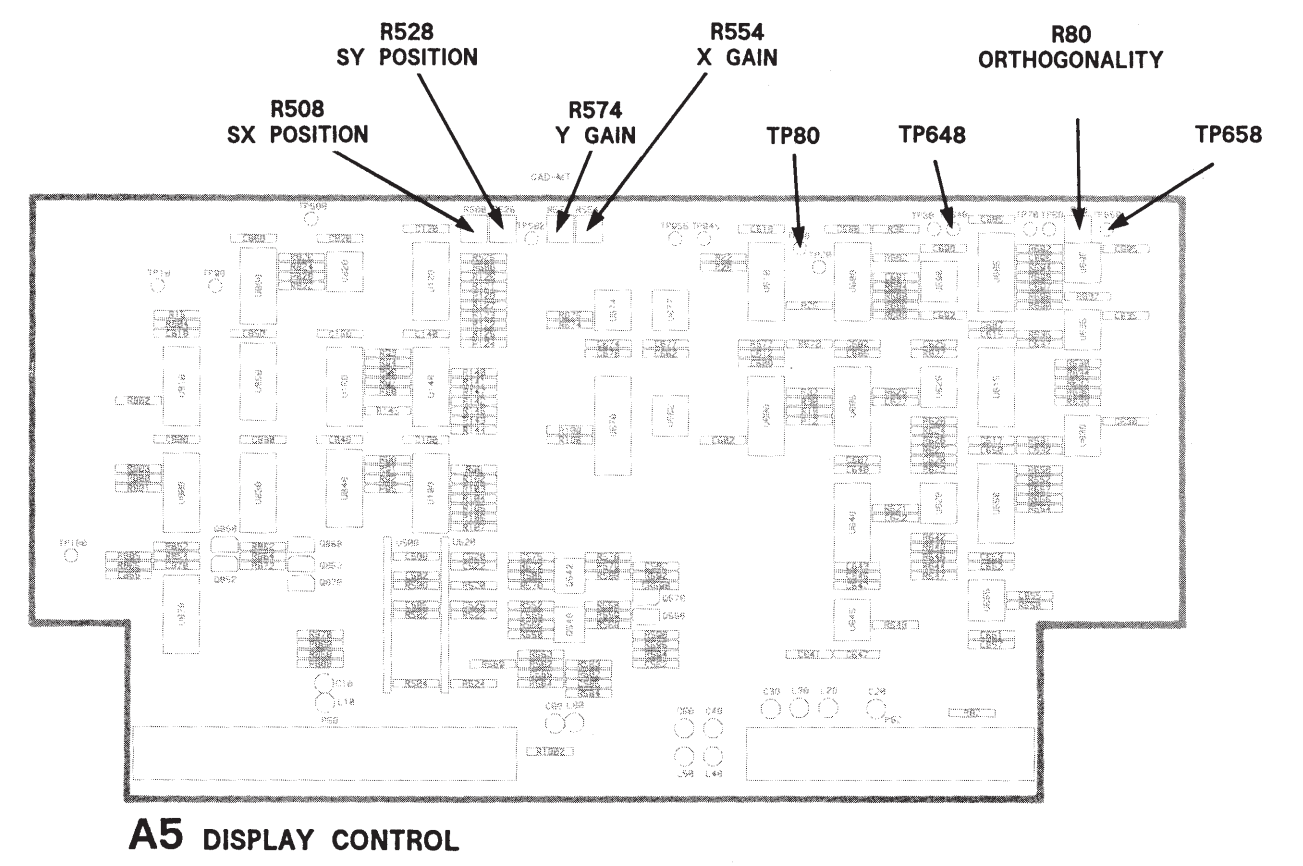
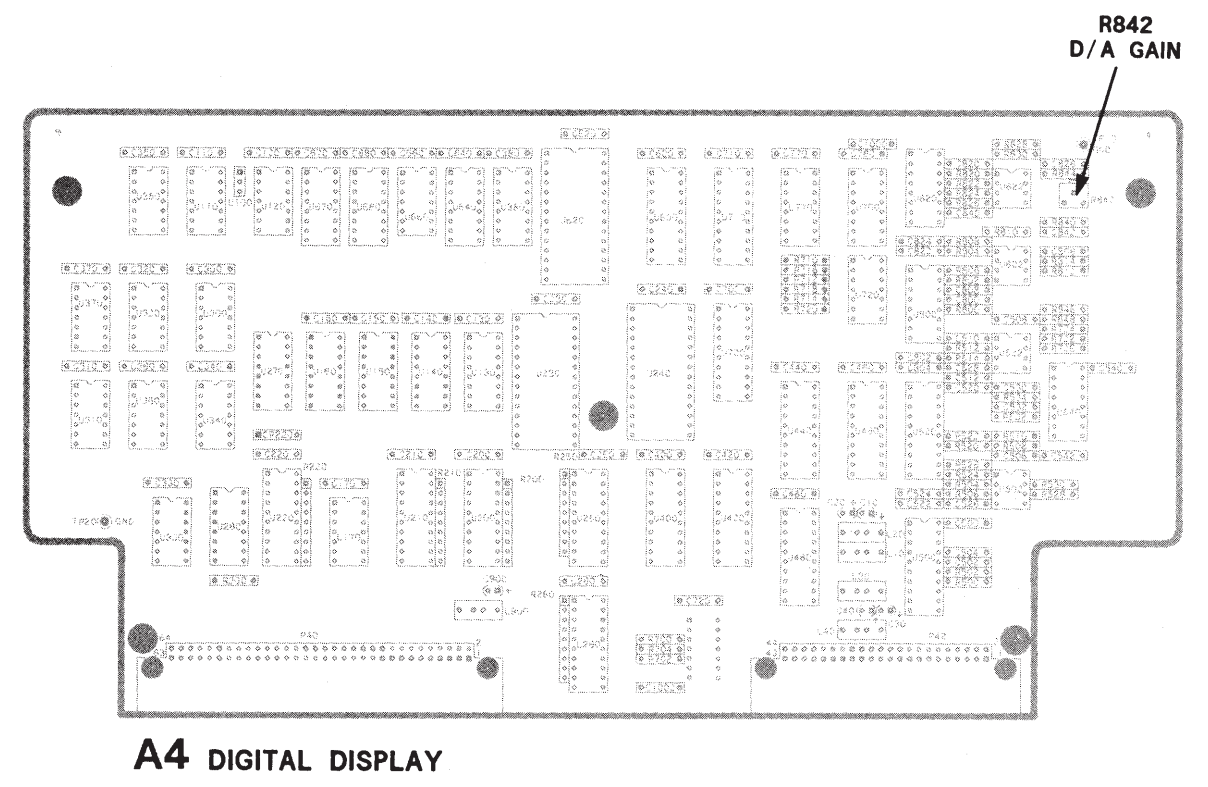
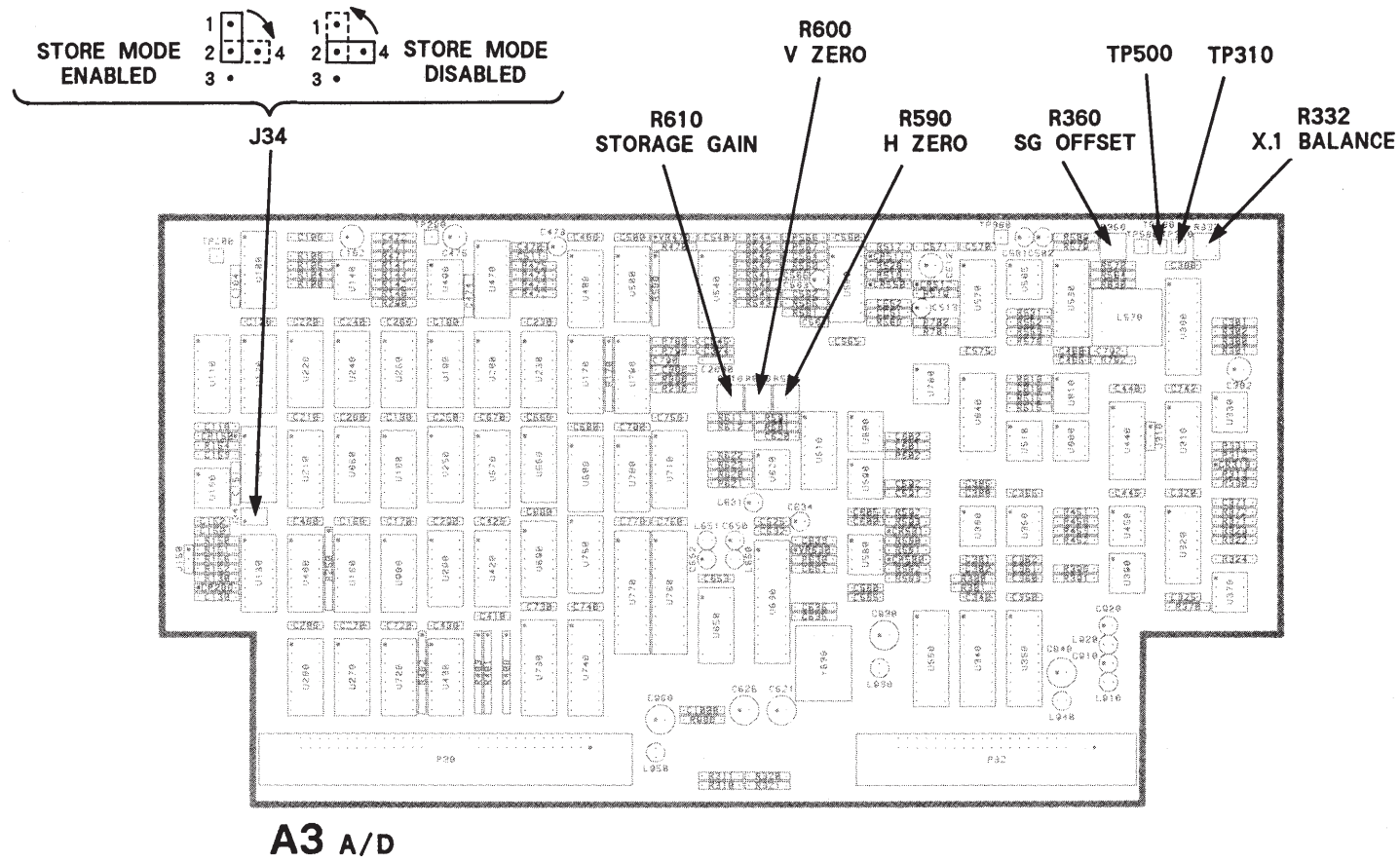
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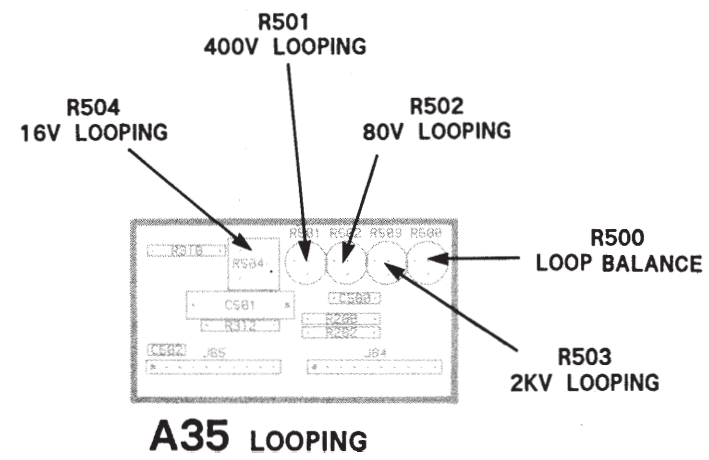
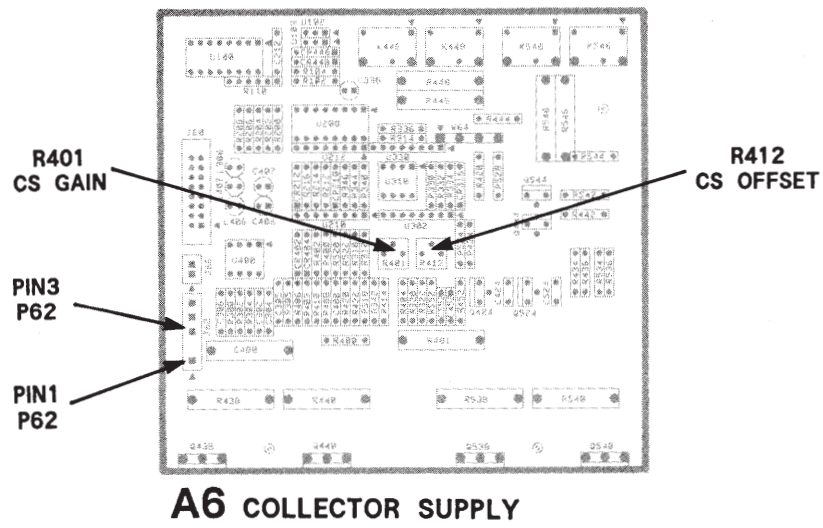
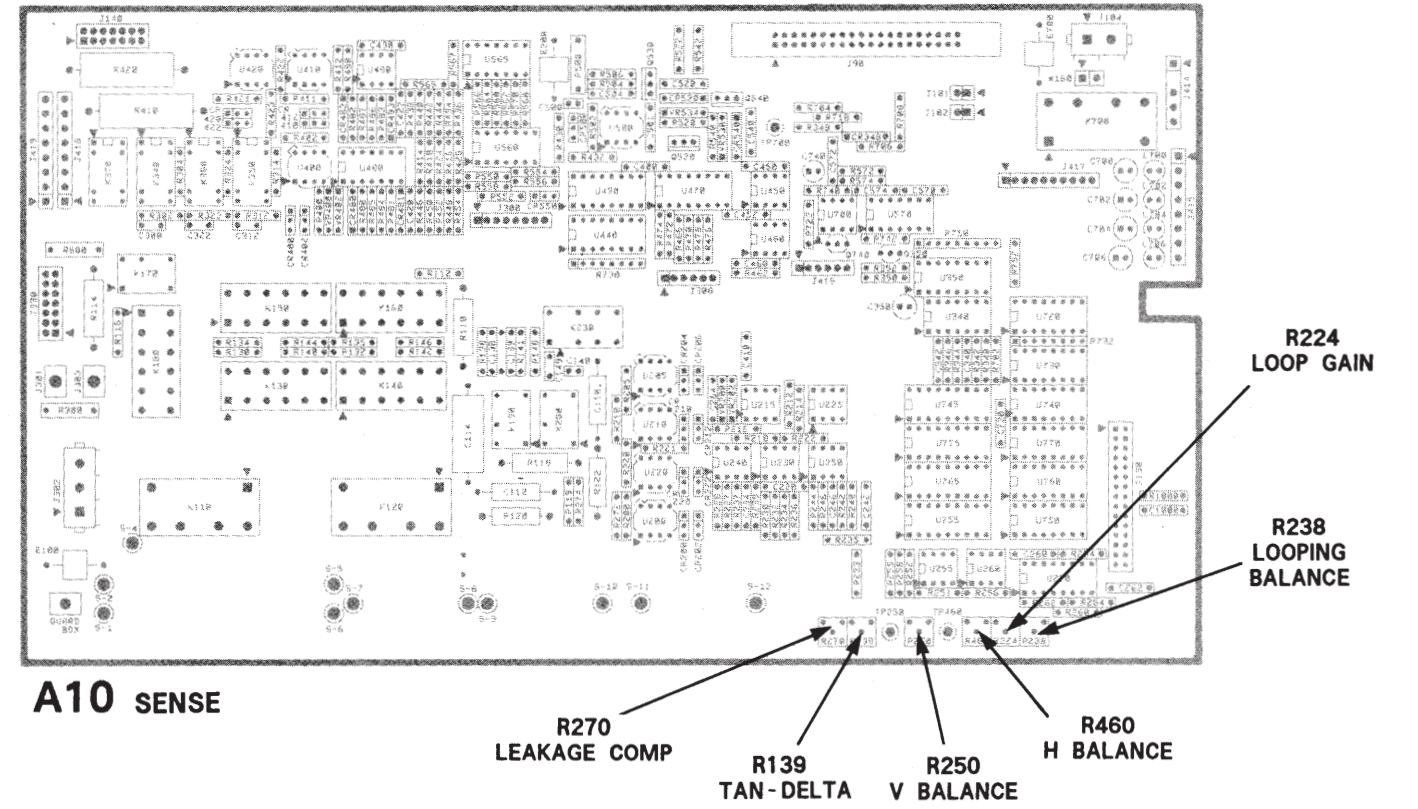
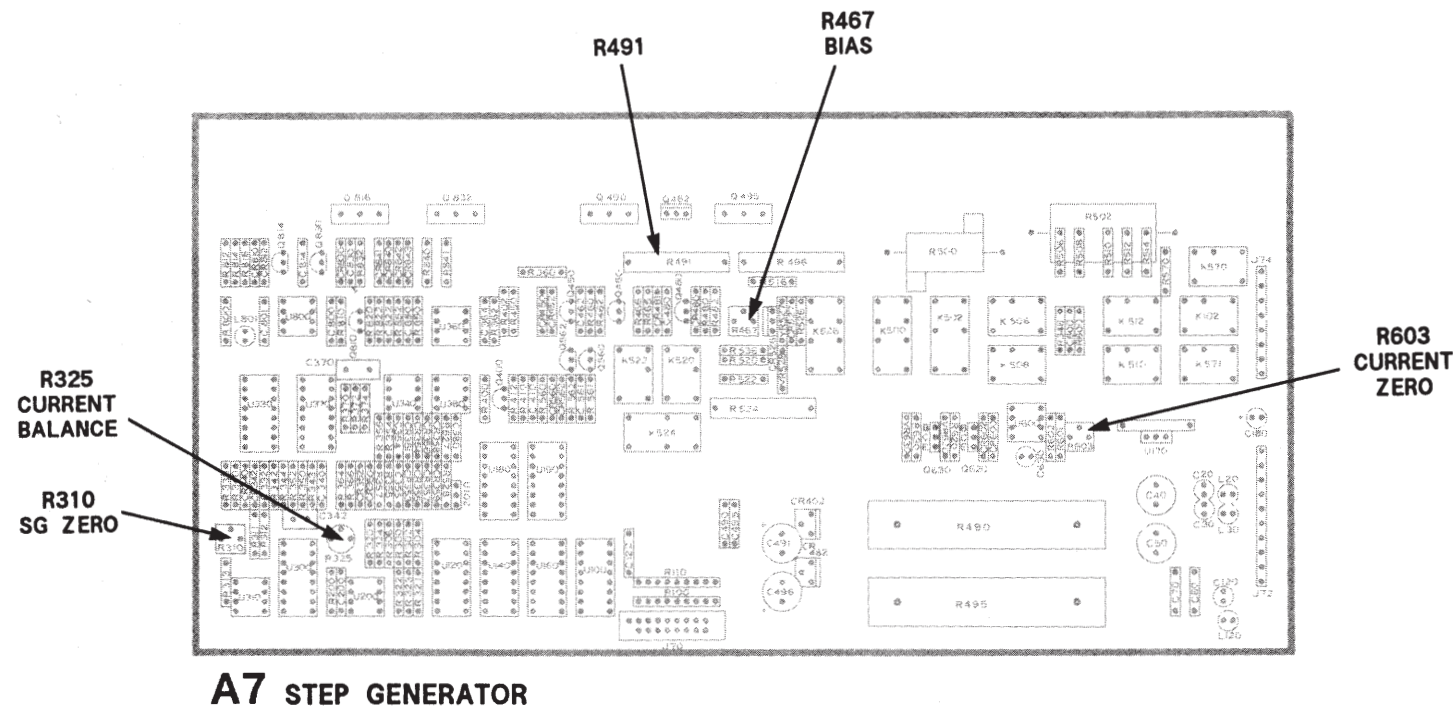
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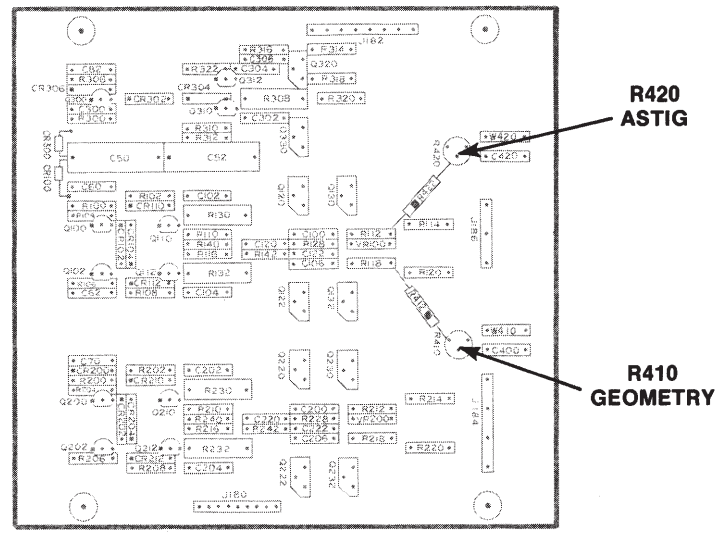
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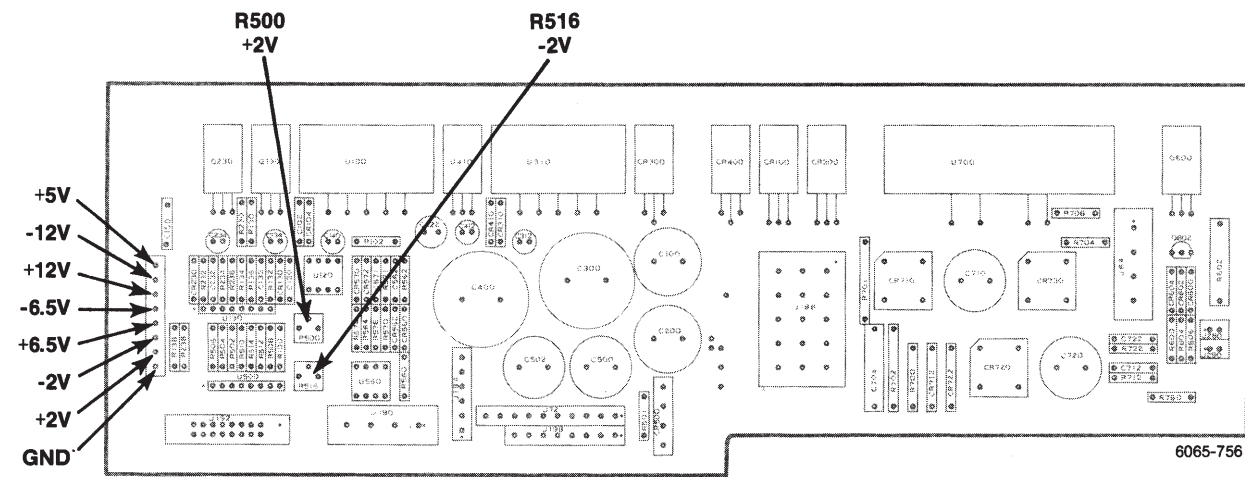


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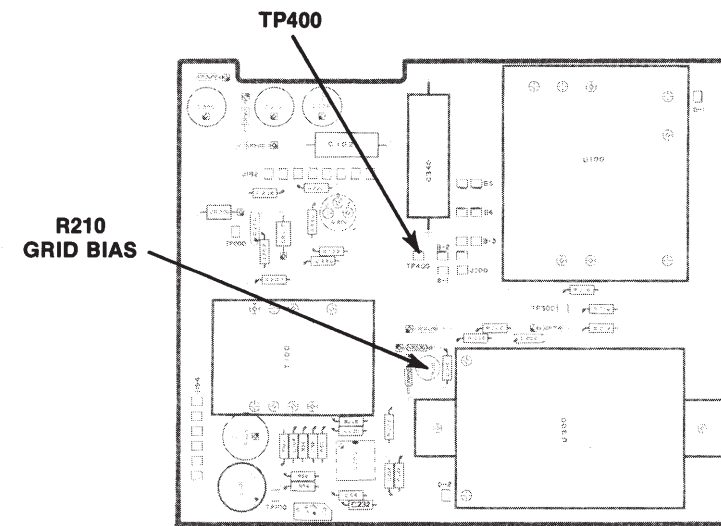




**A18 CRT OUTPUT**



**A19 L.V. SUPPLY**



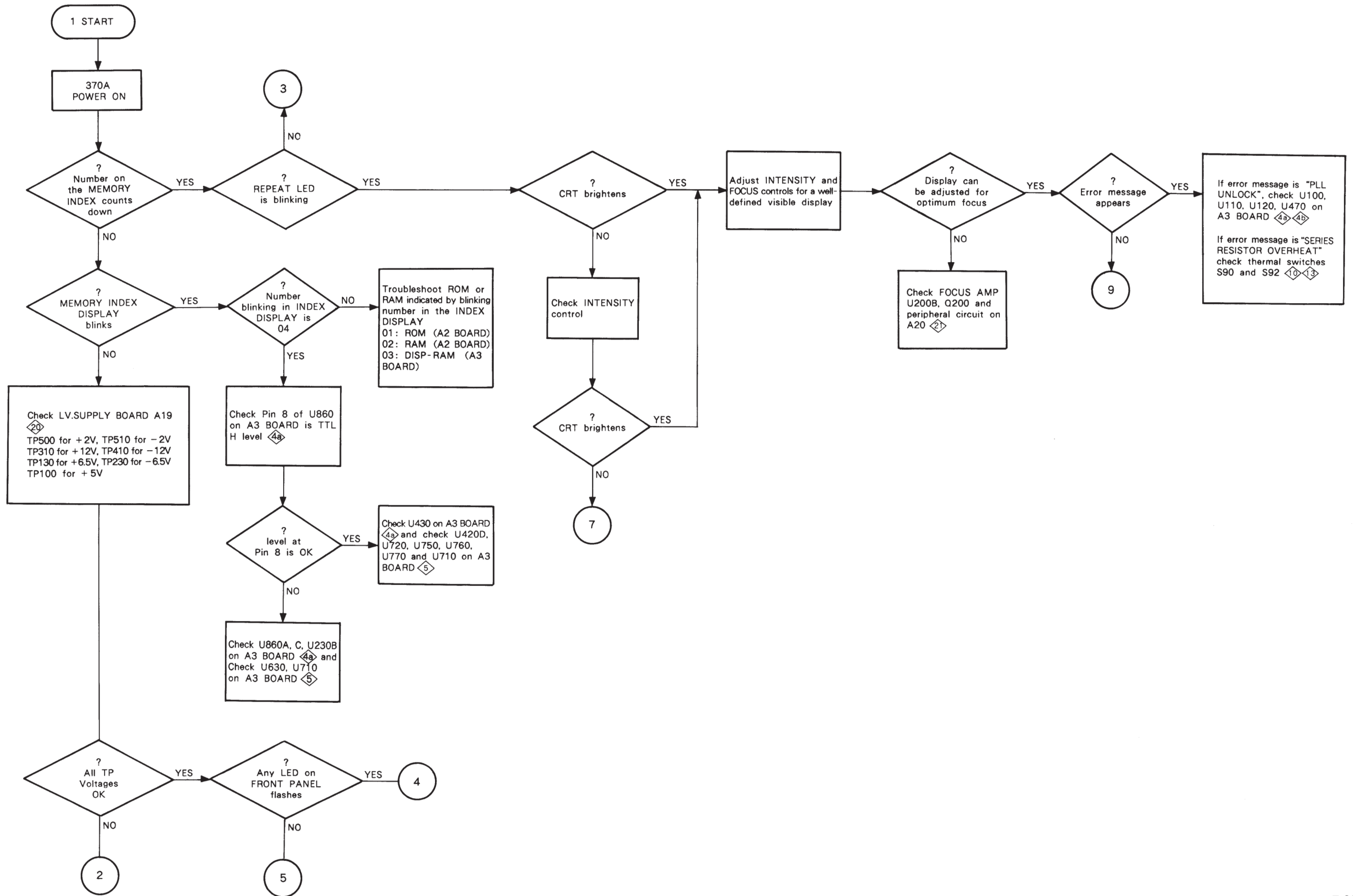
**A20 H.V. REGULATOR**

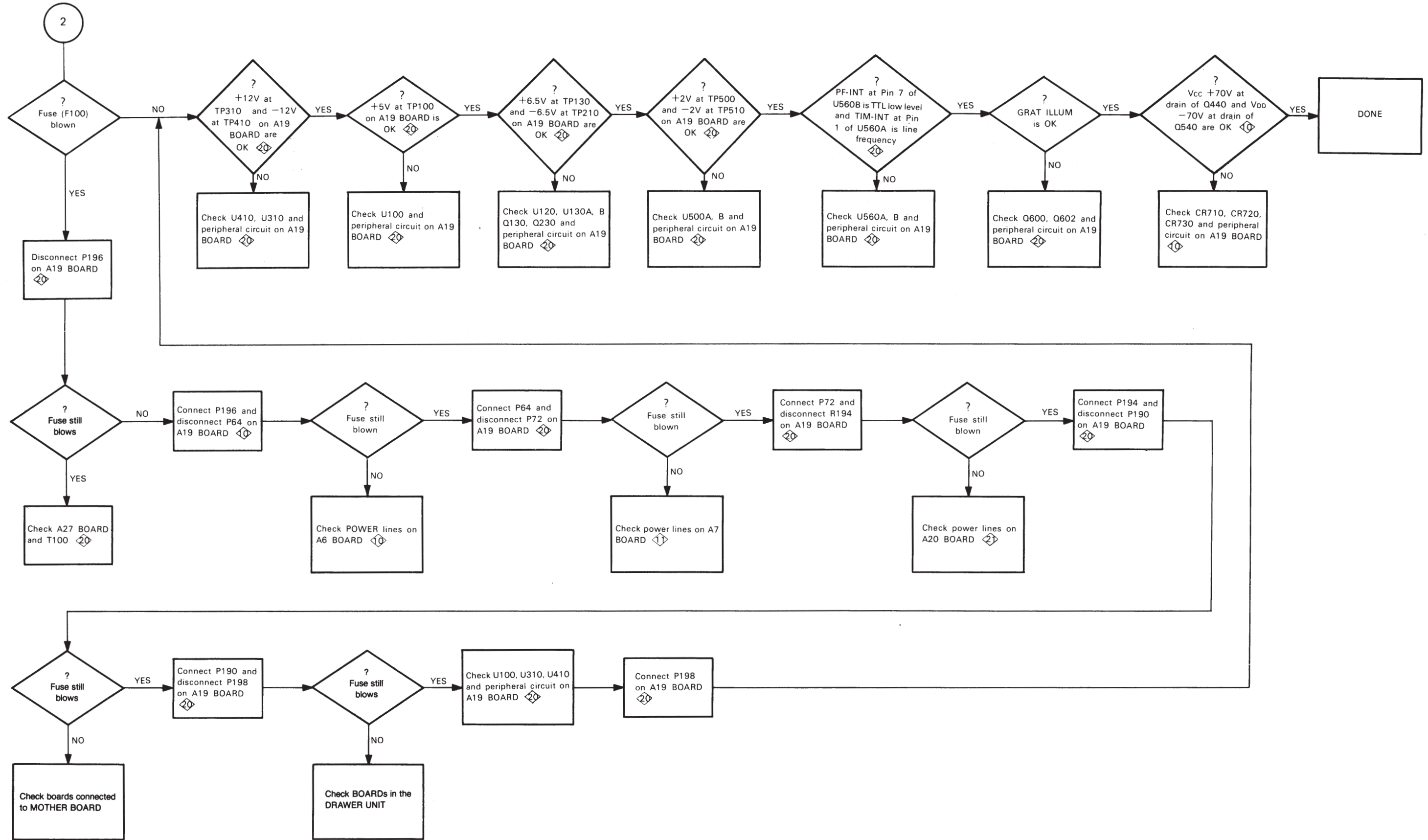
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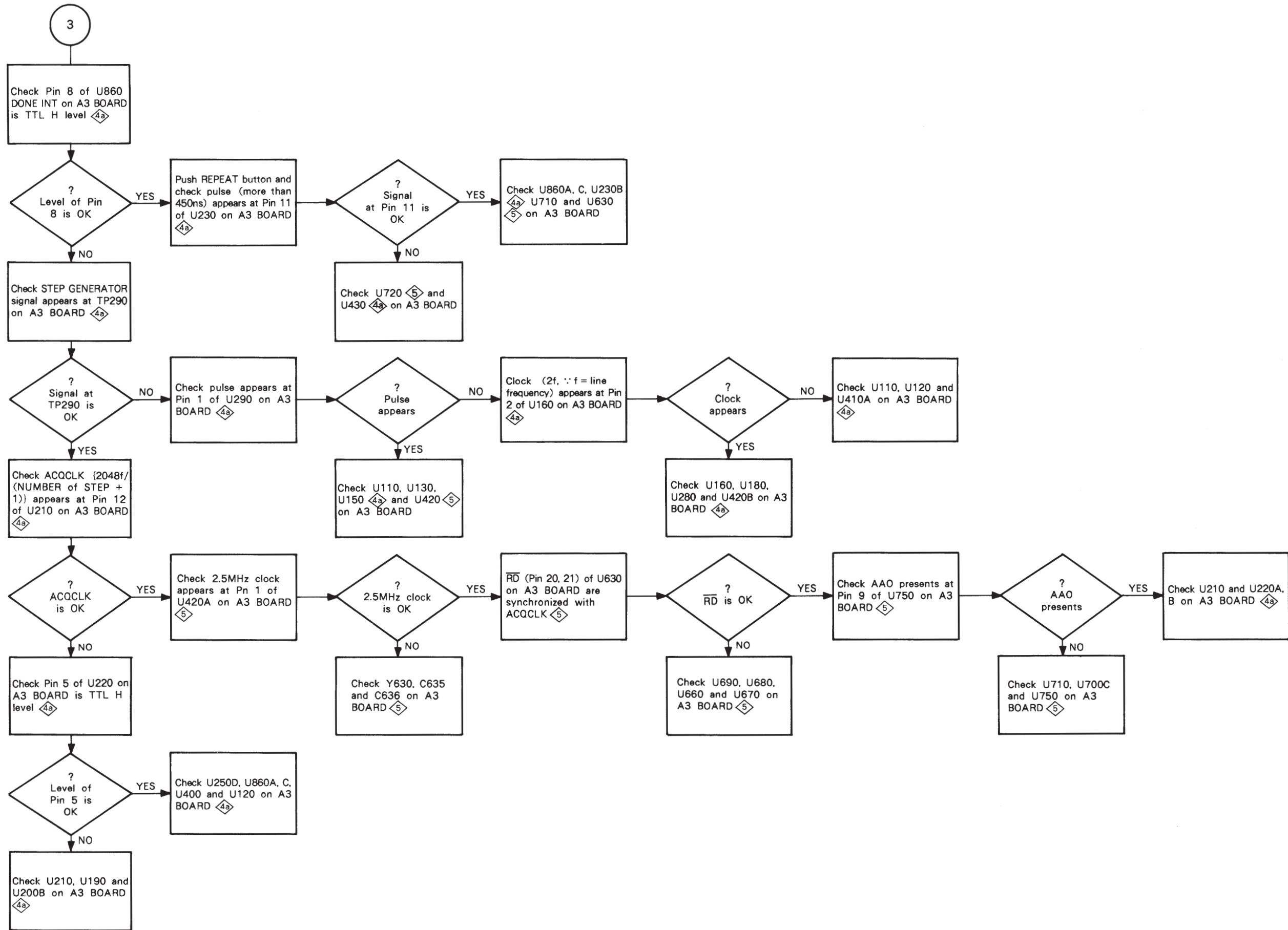
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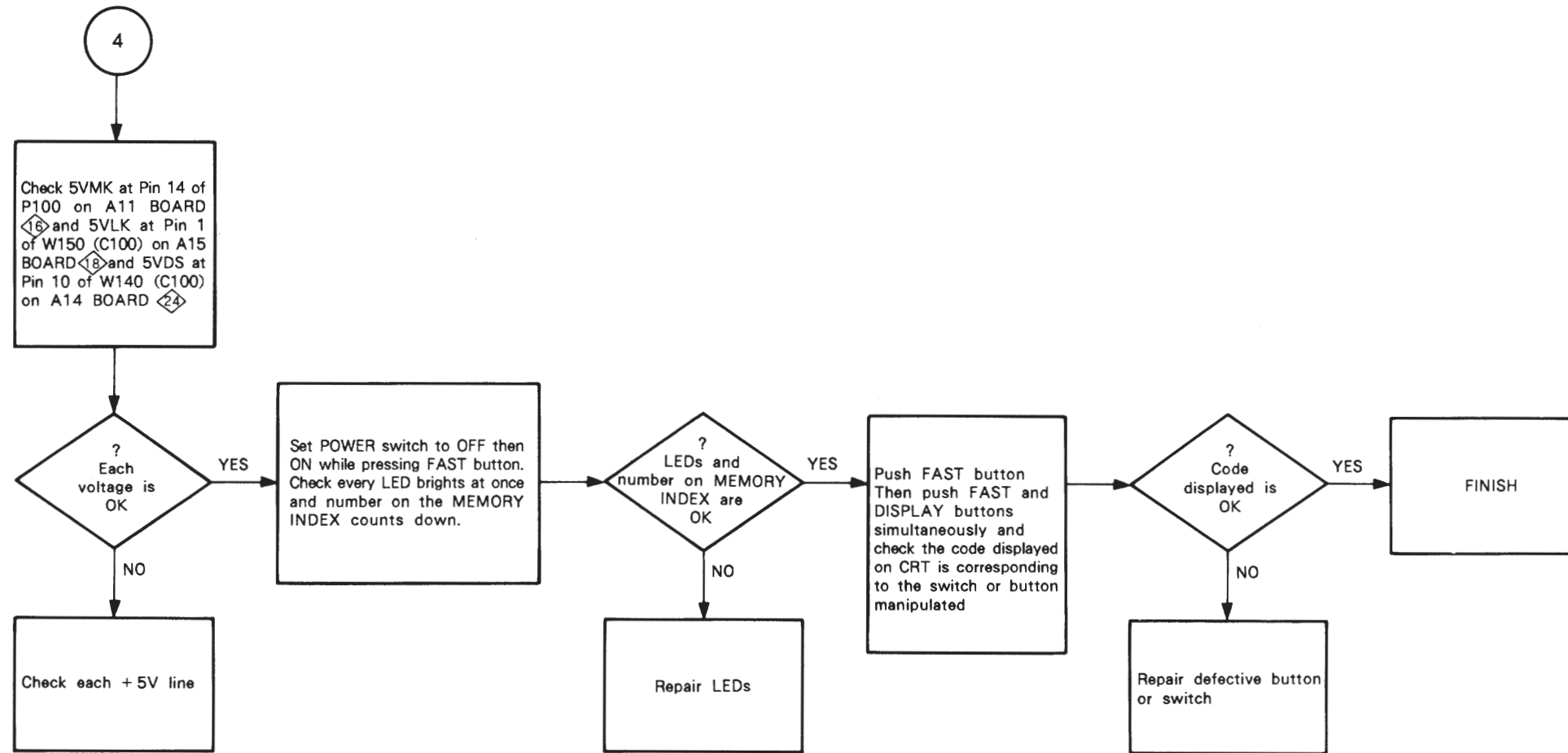
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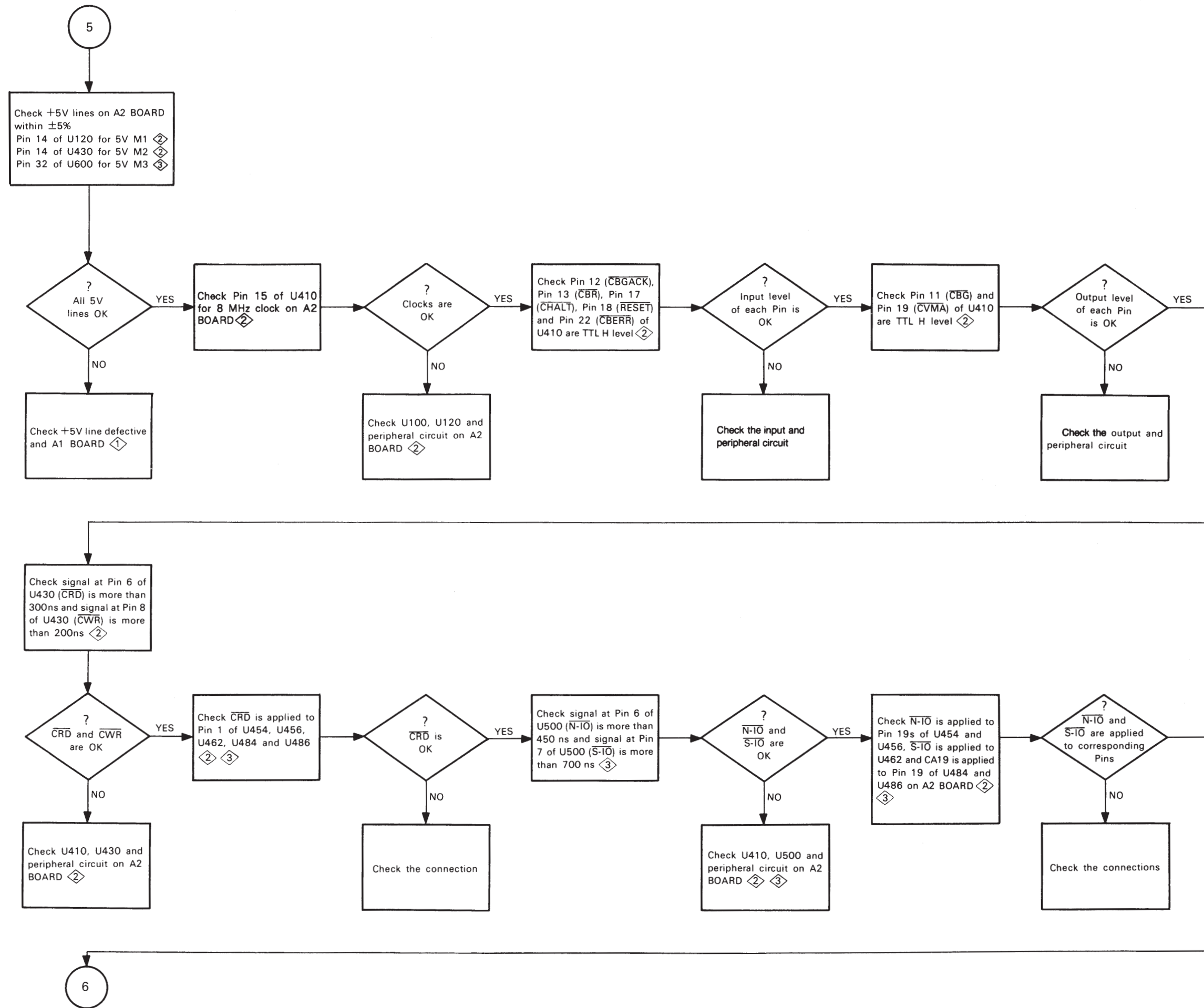


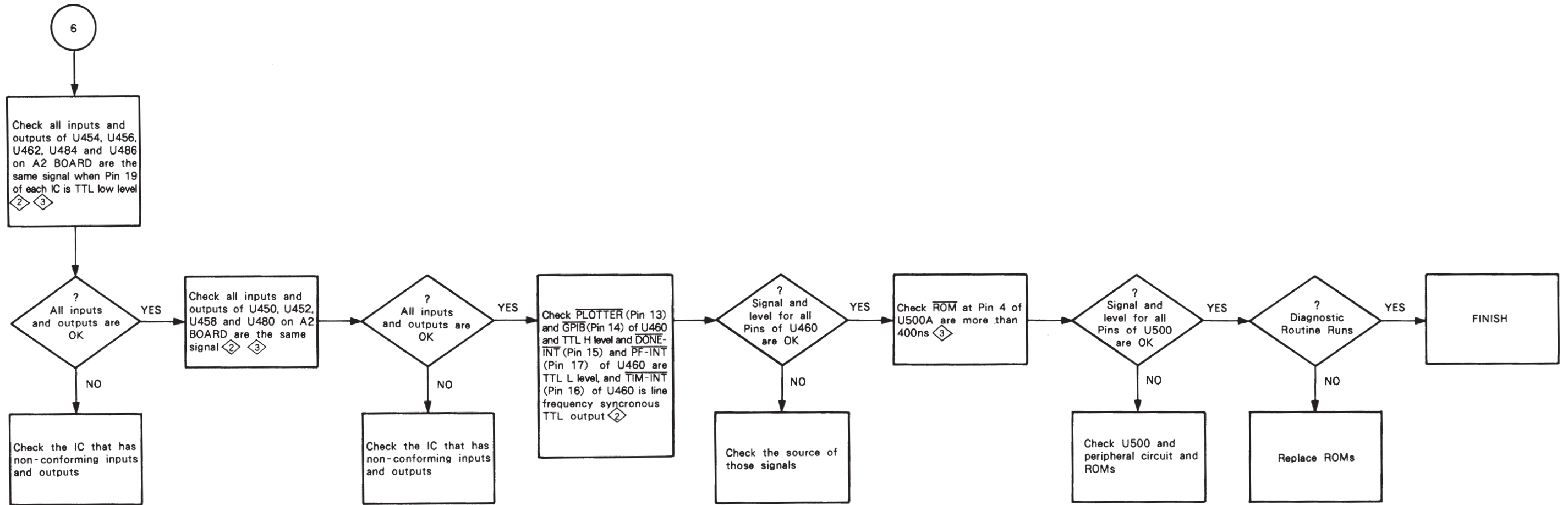


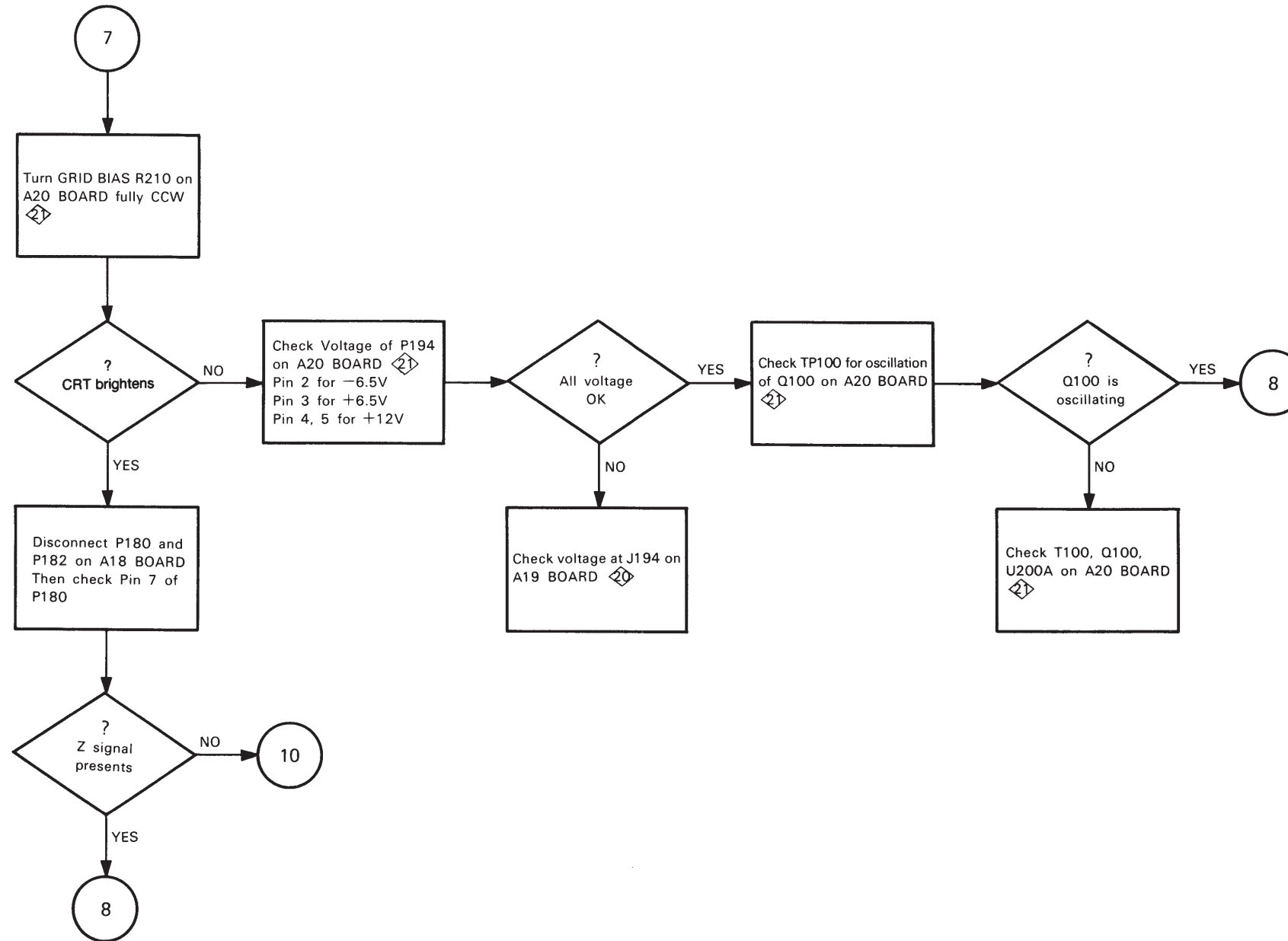


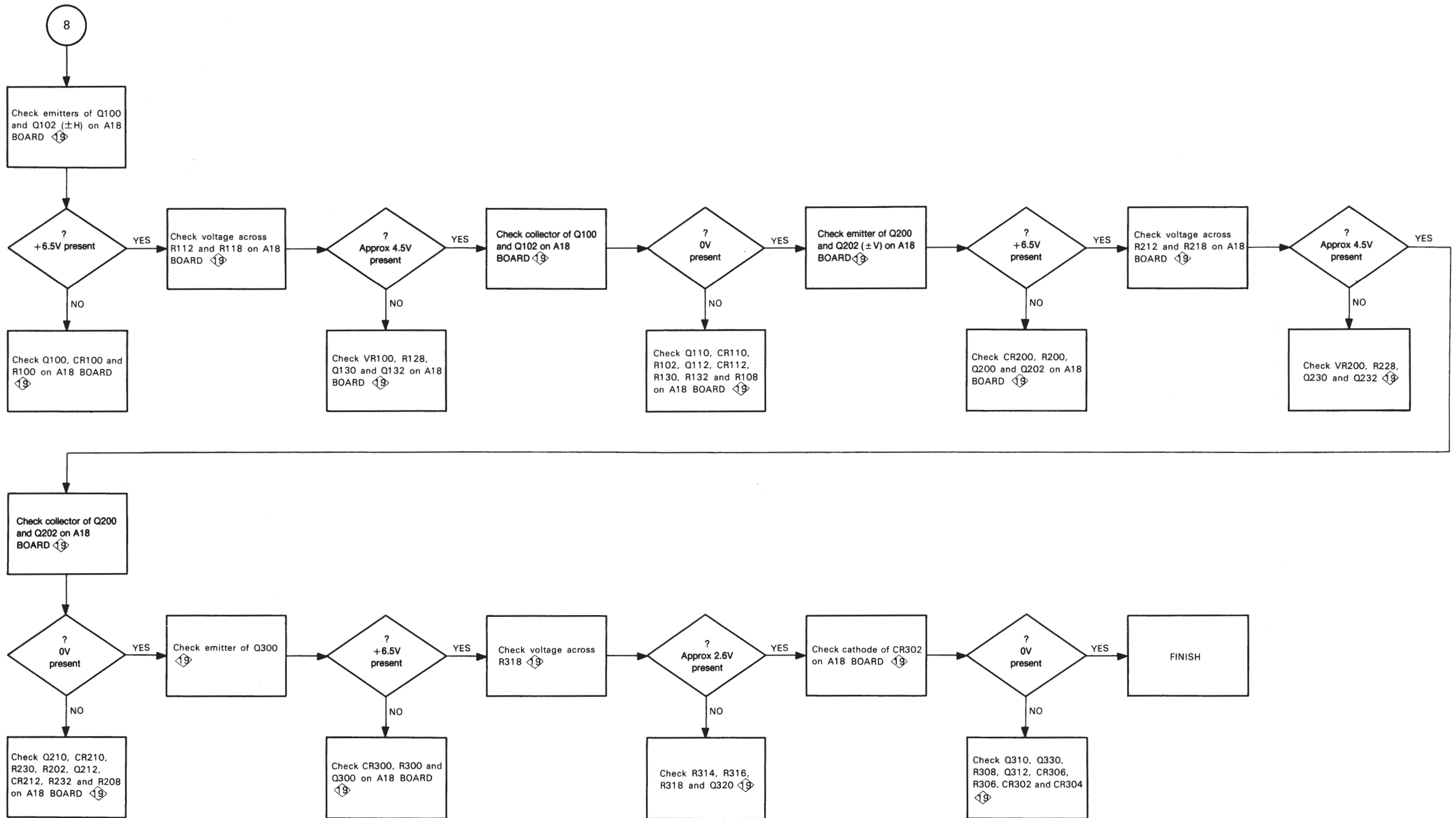


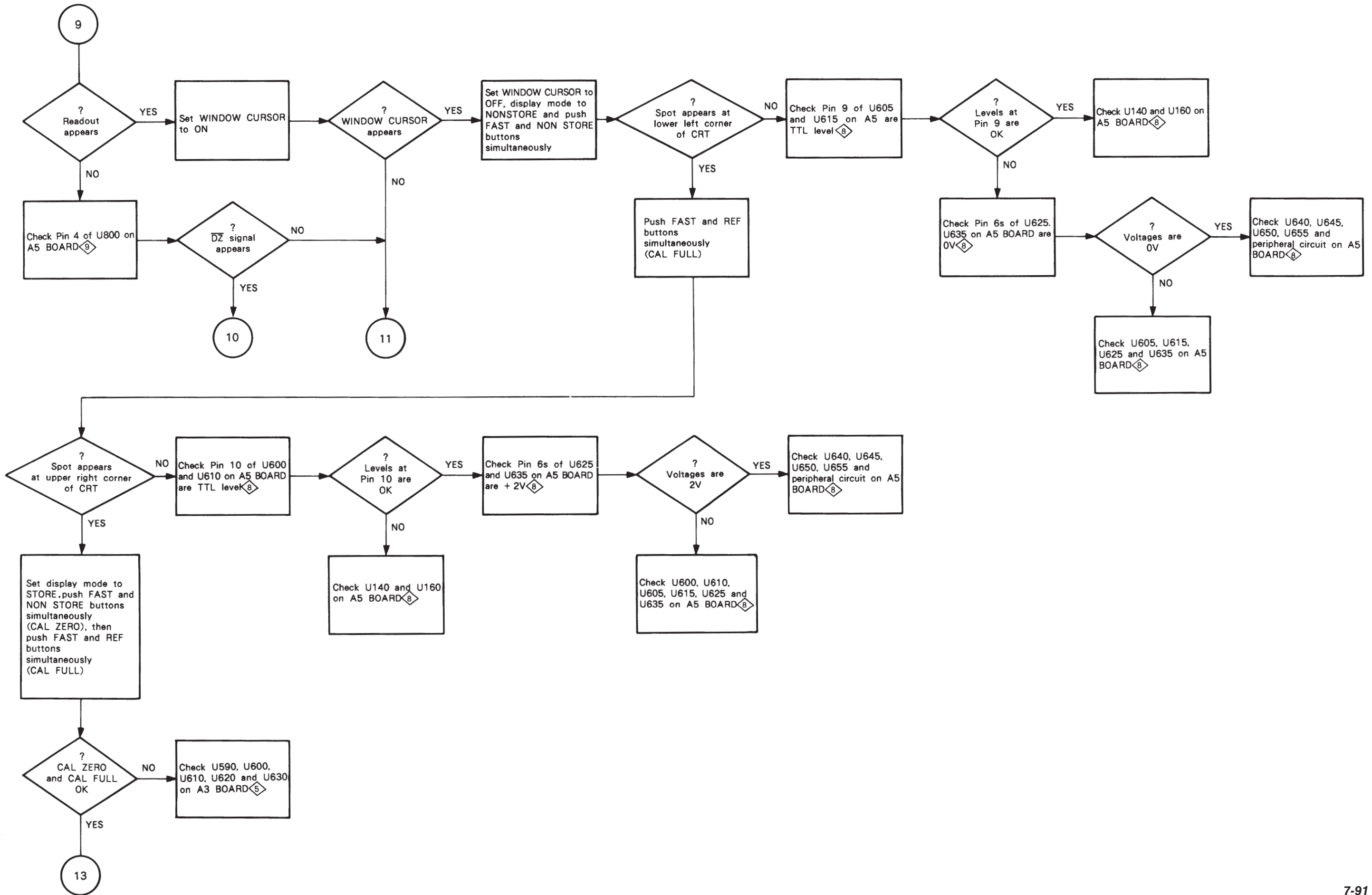


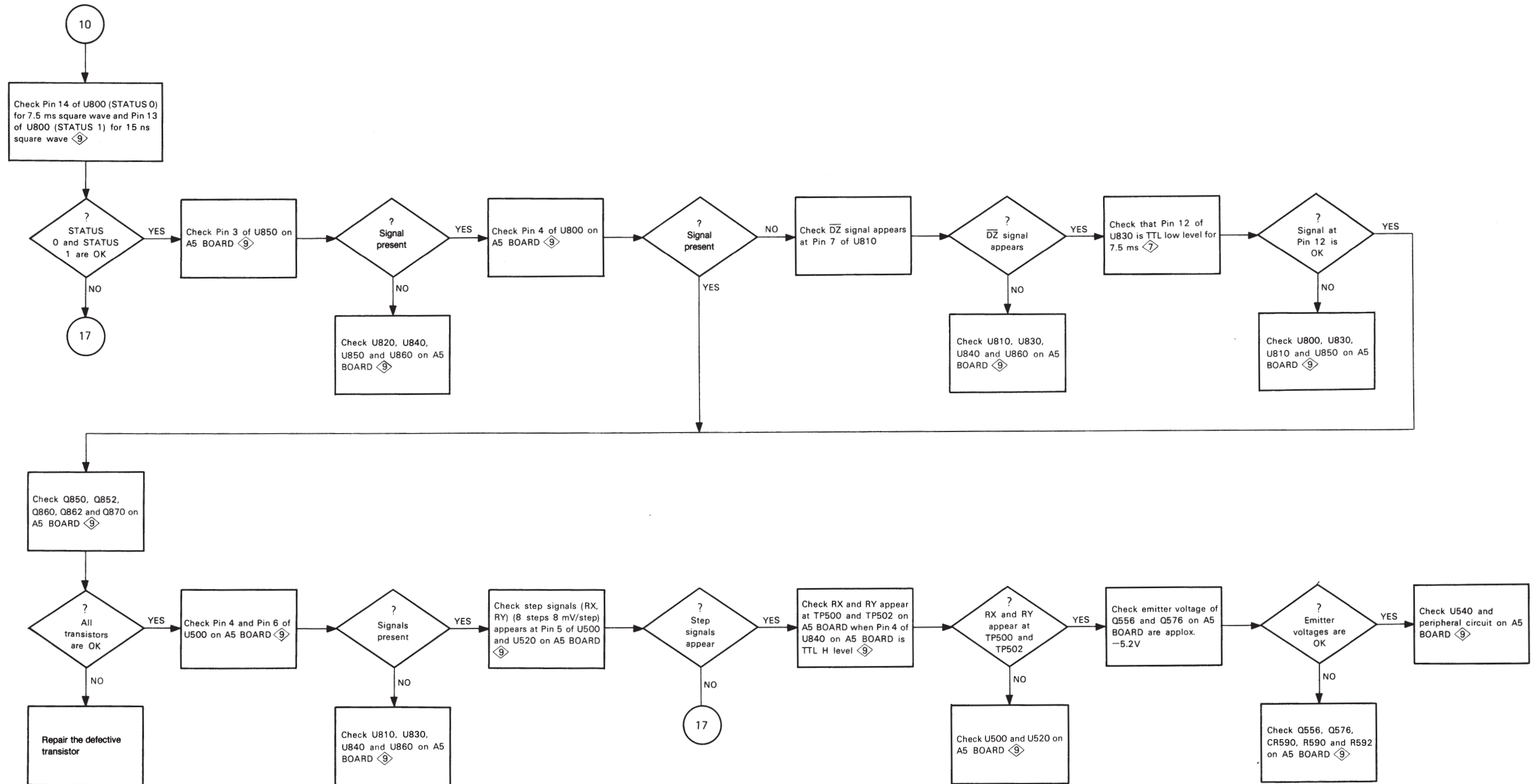


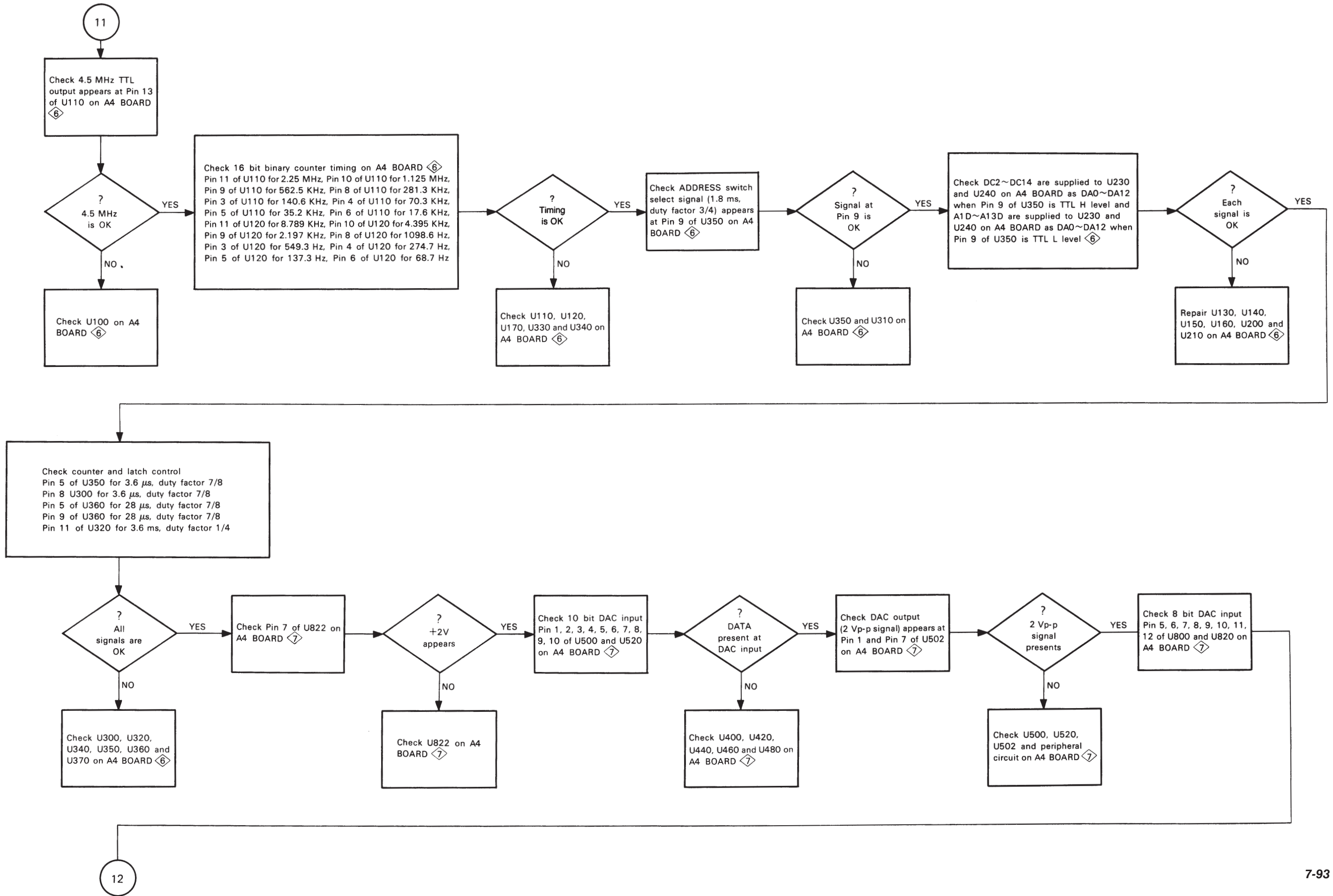


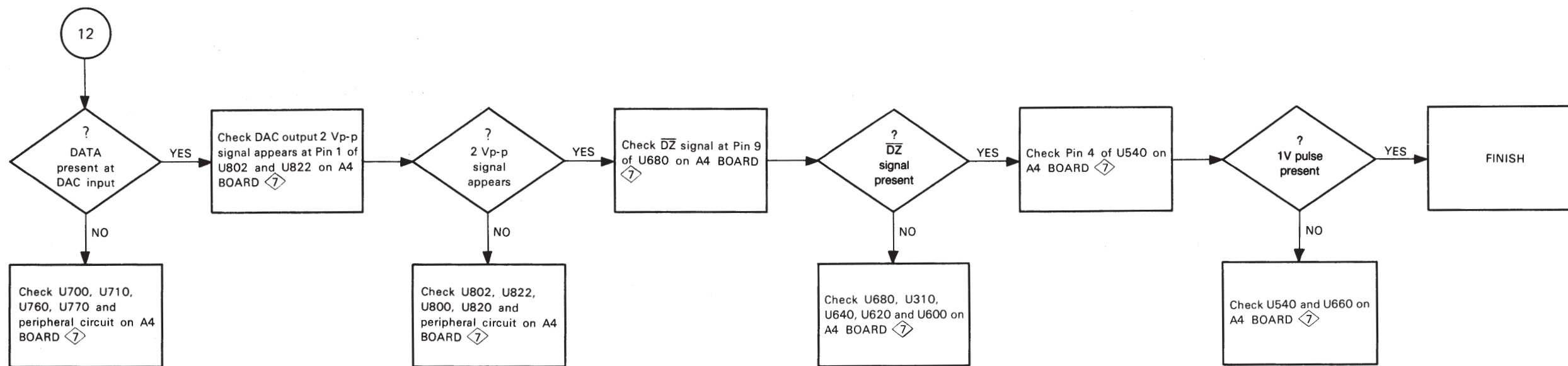




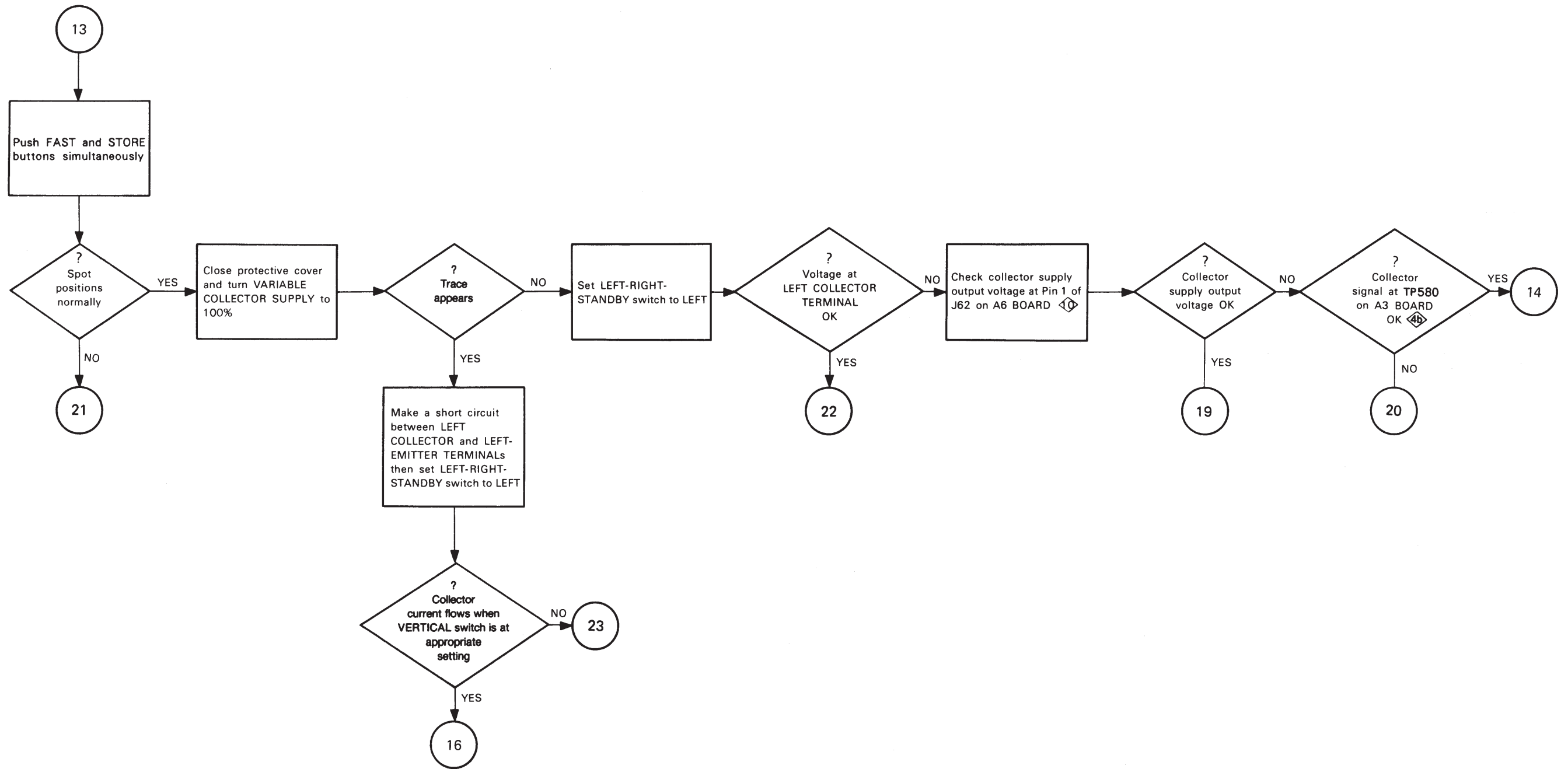


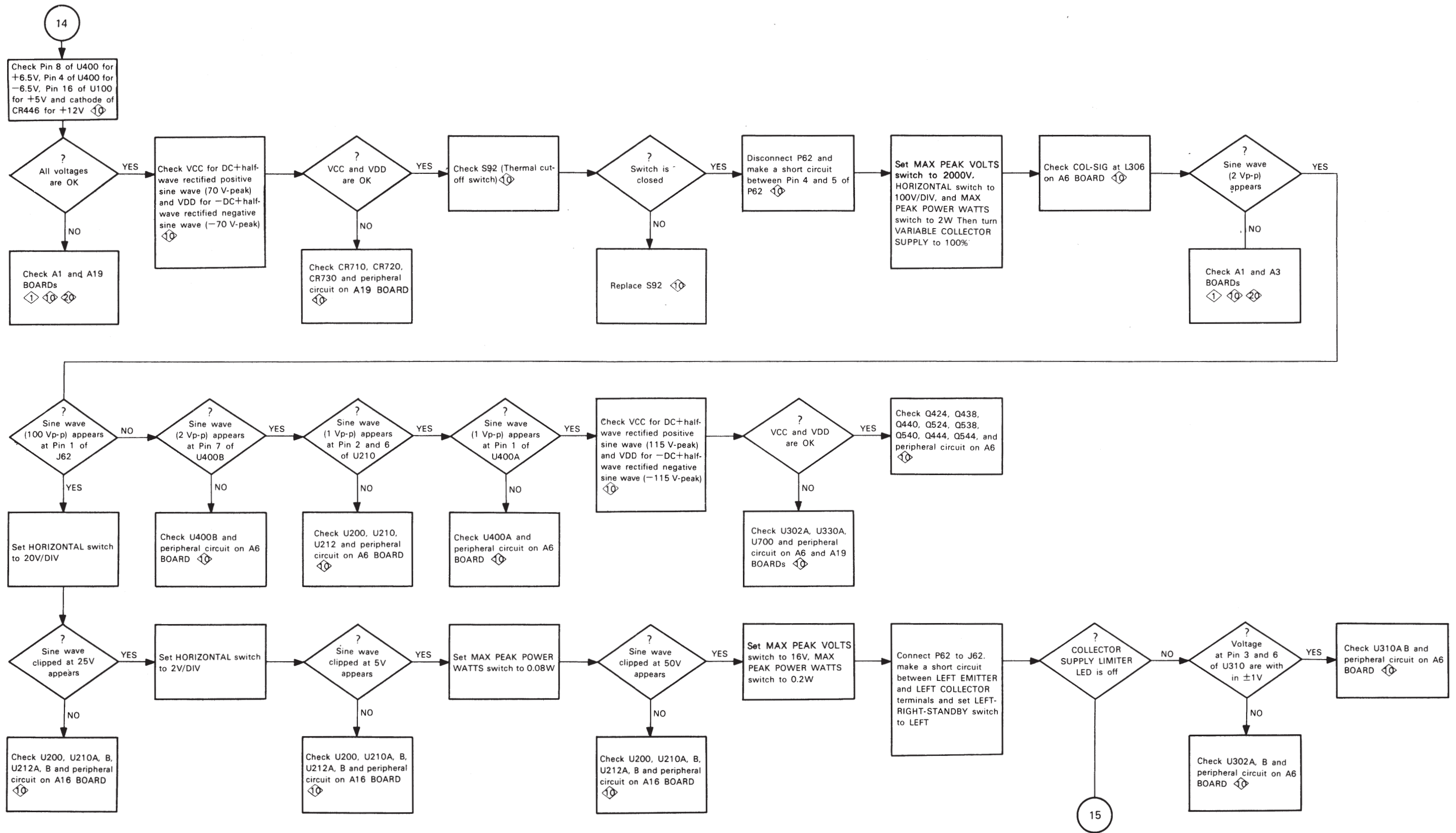


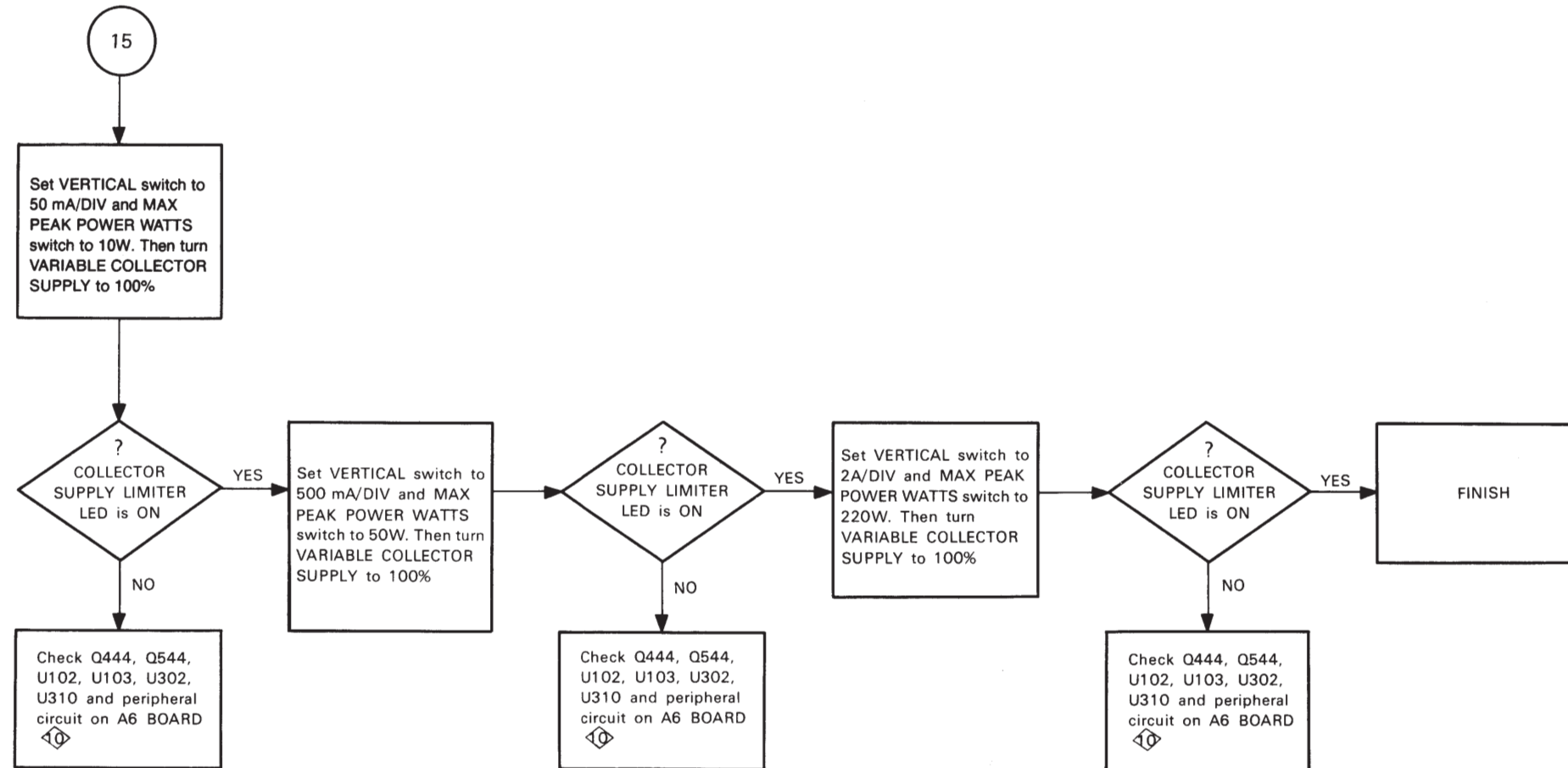


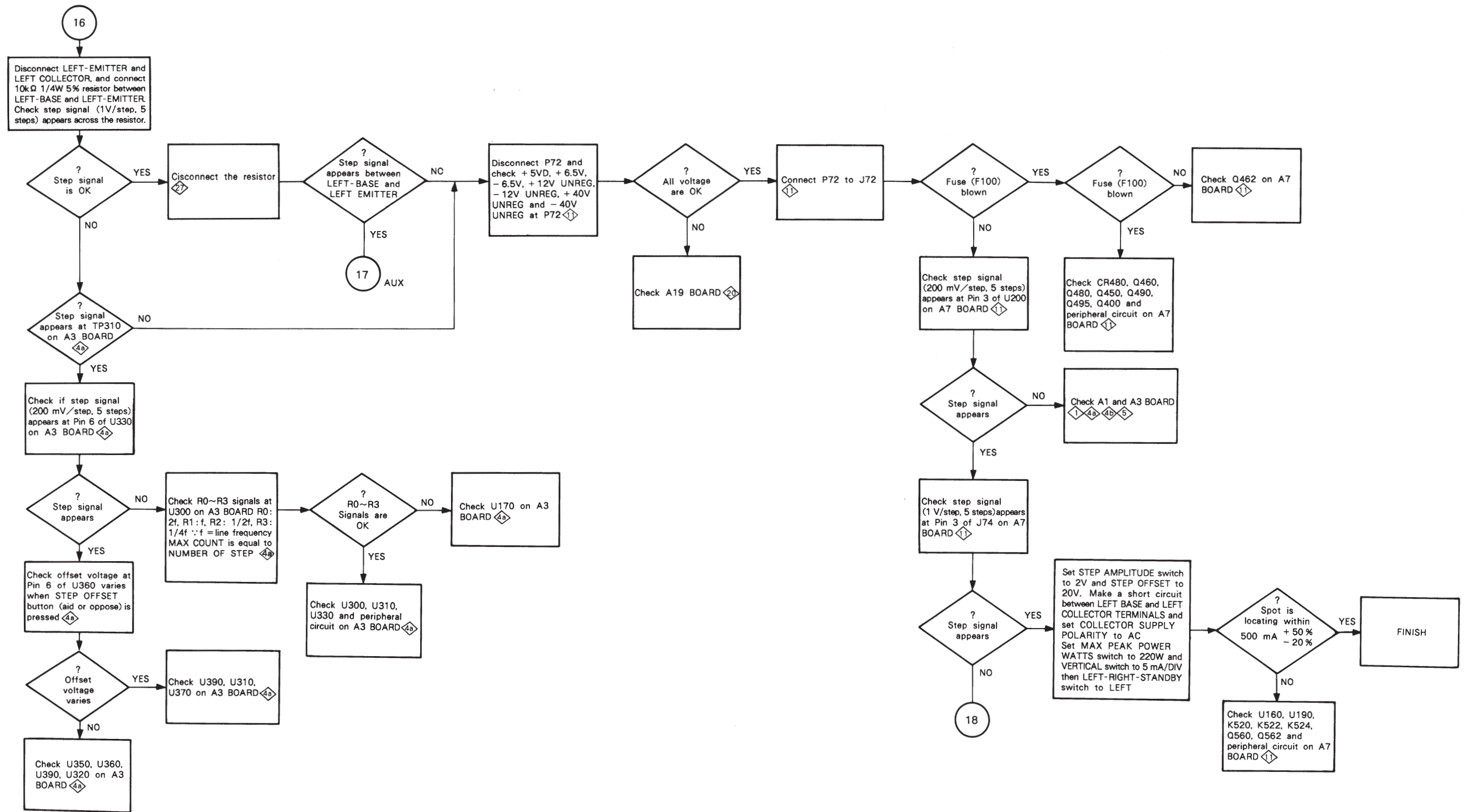


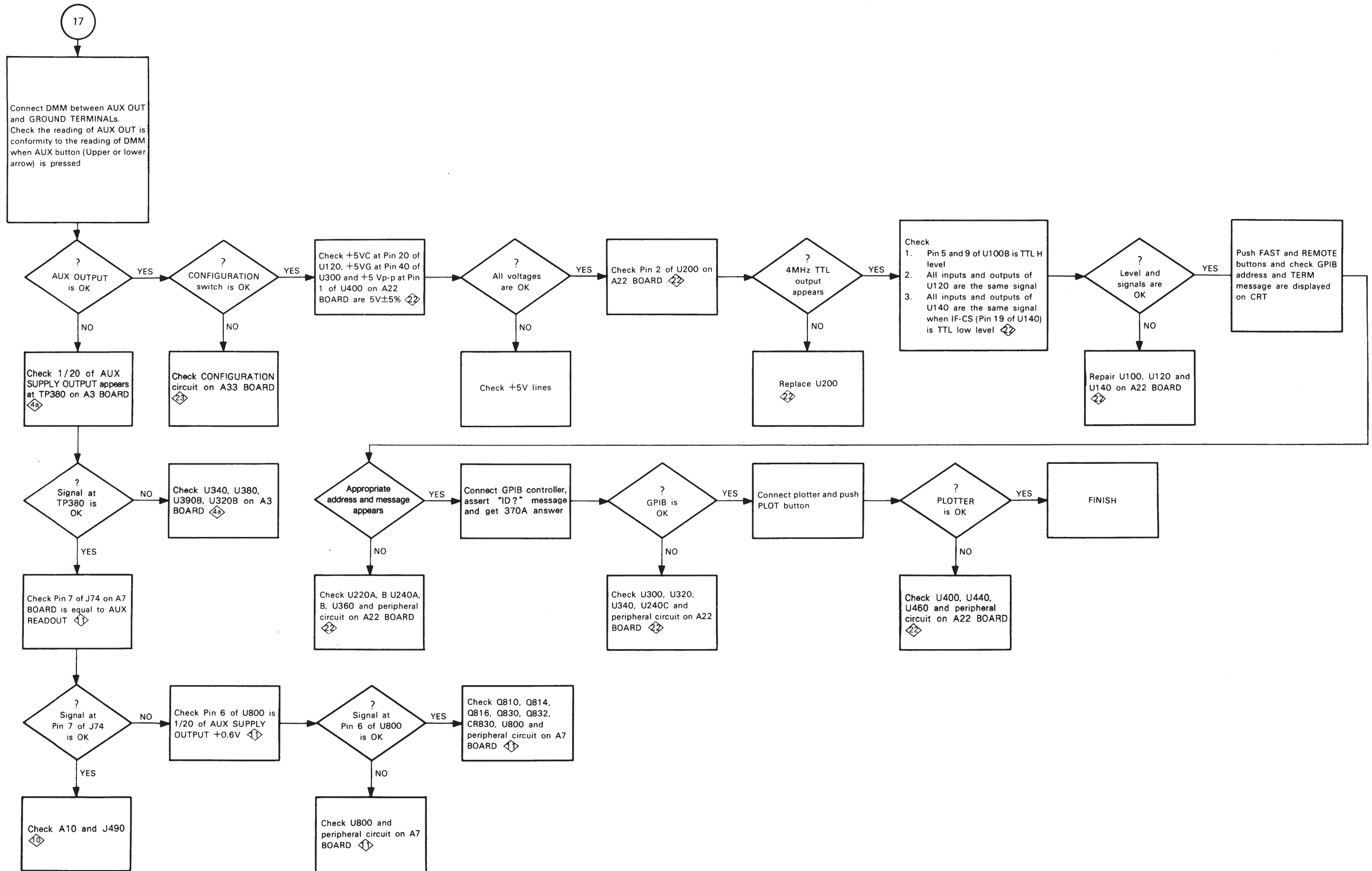


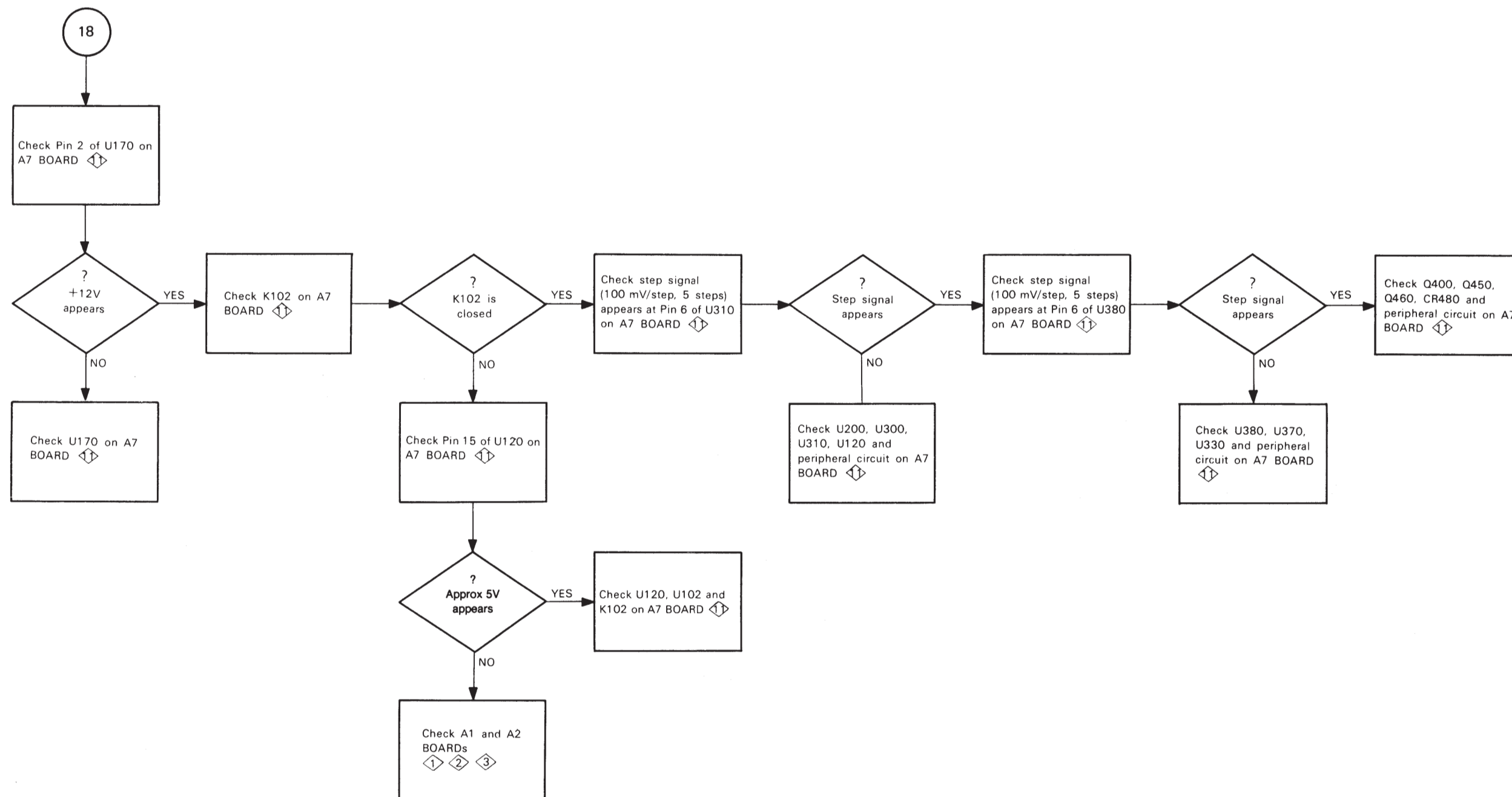


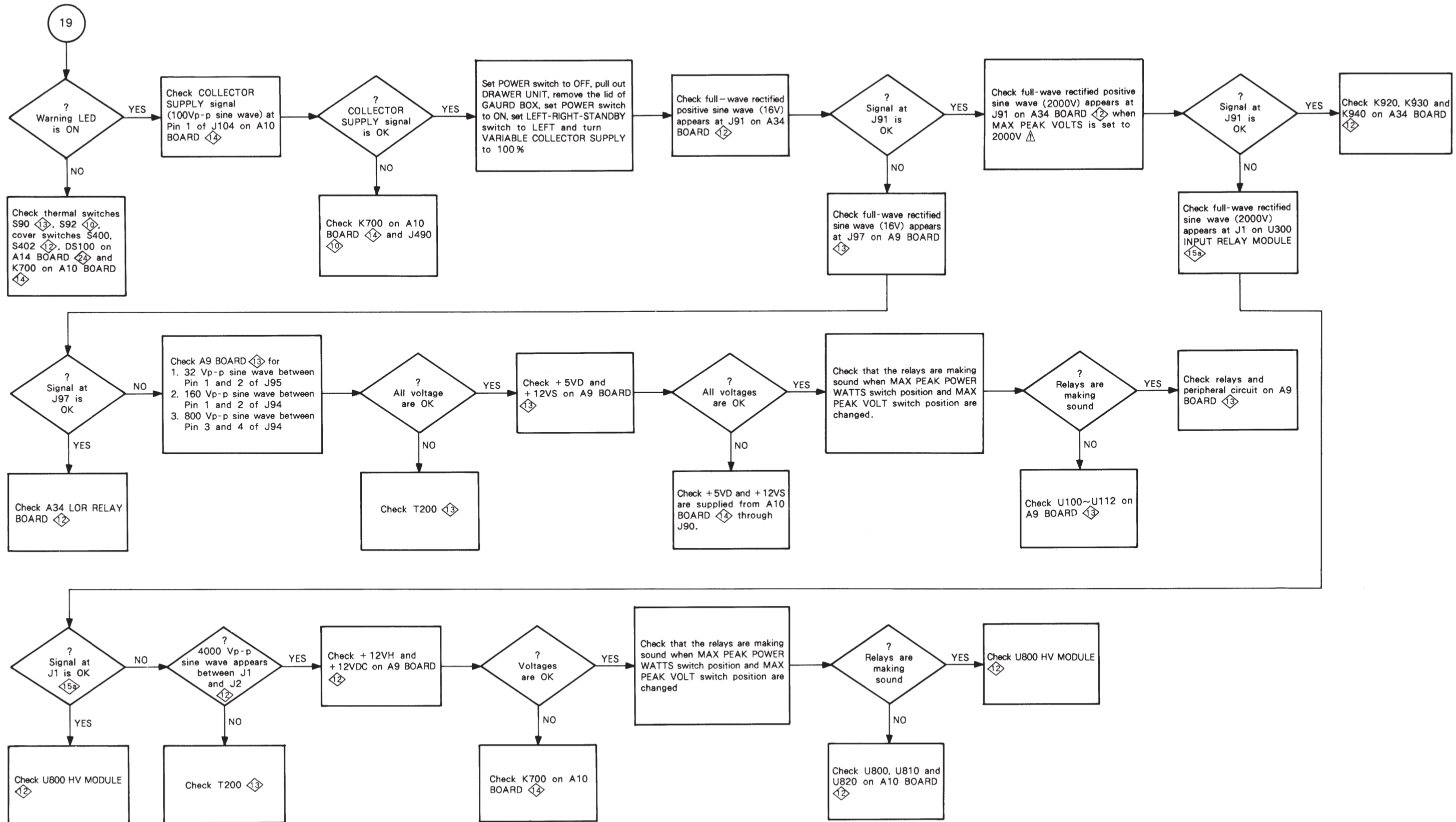




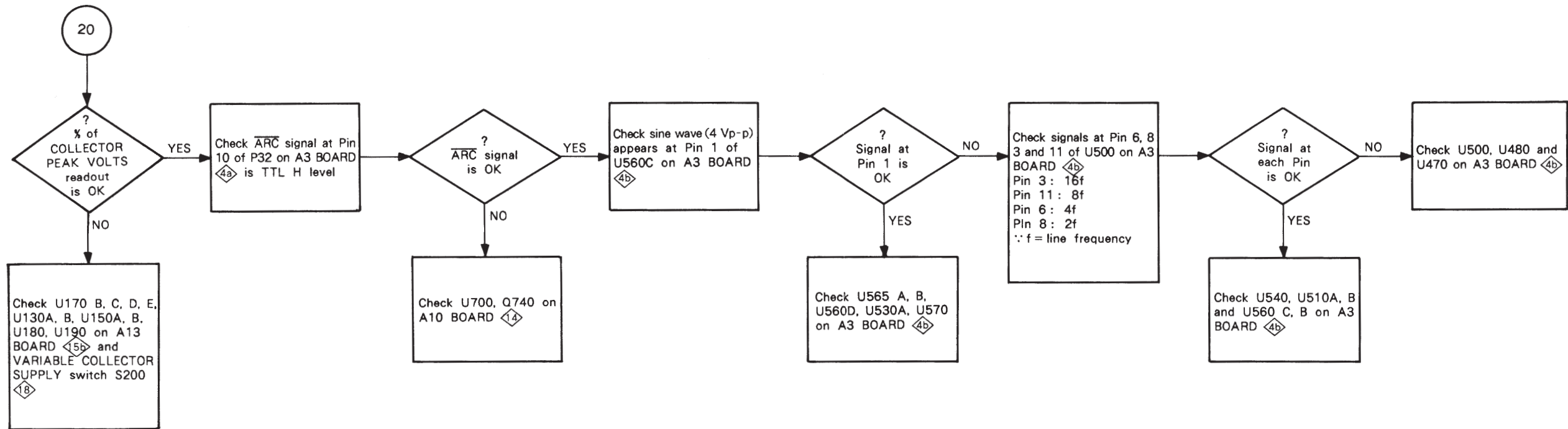




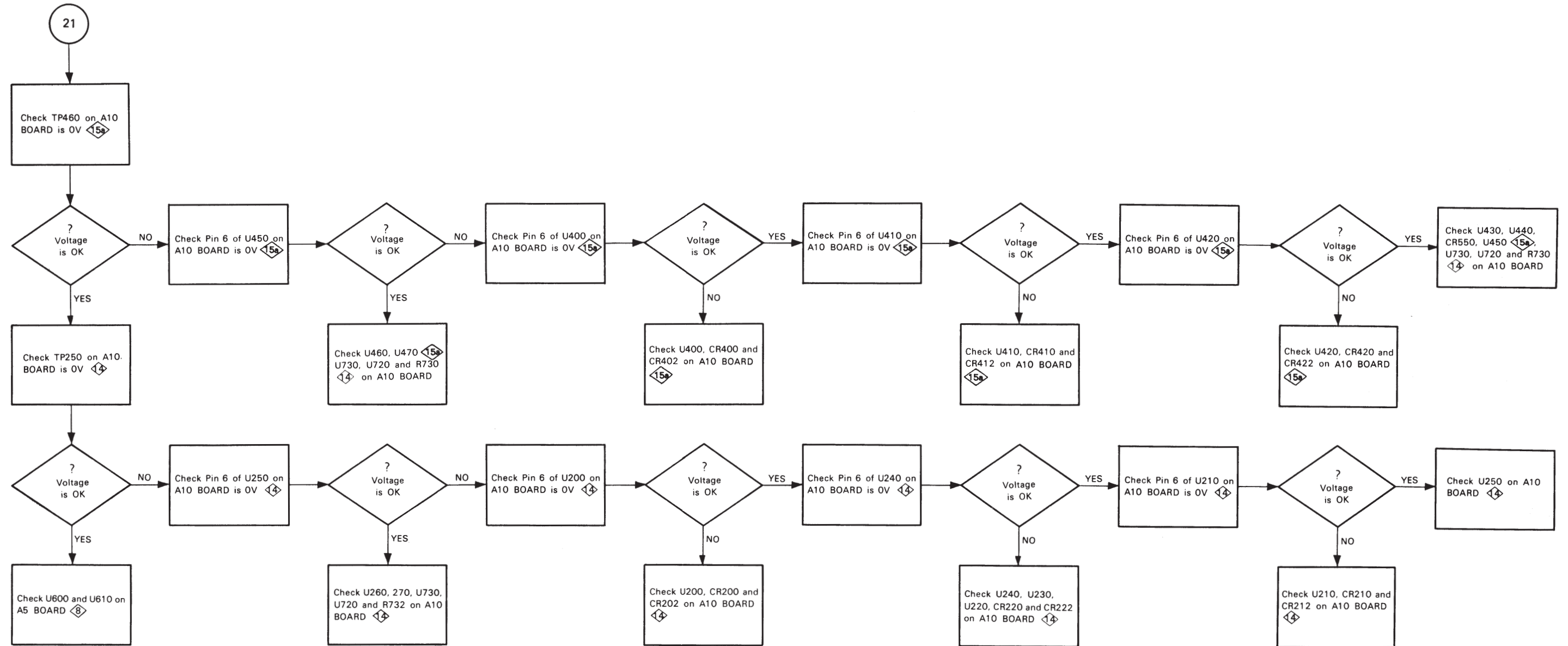


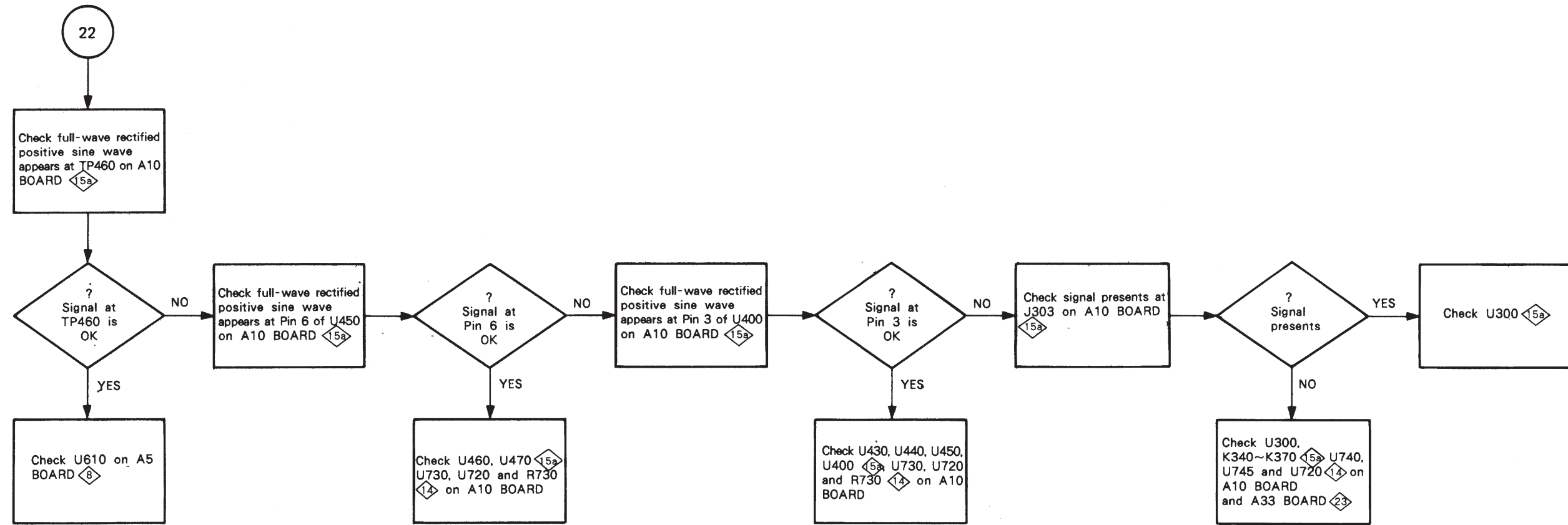


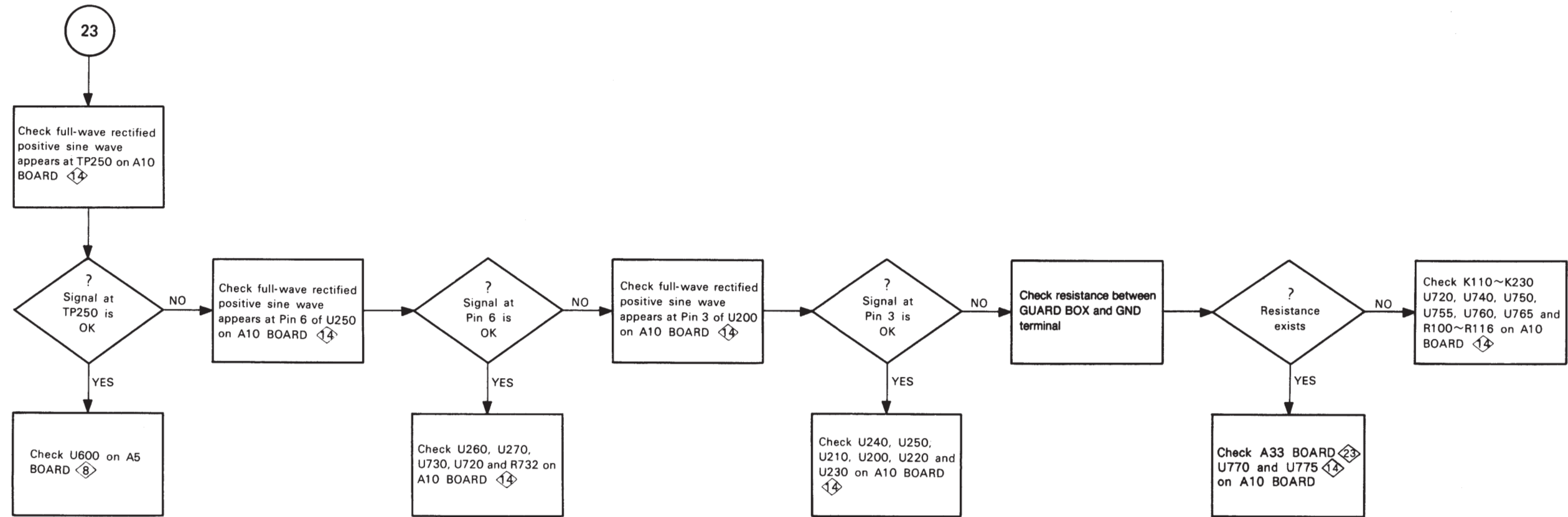
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# **Replaceable Mechanical Parts**



# Replaceable Mechanical Parts

This section contains a list of the replaceable mechanical components for the 370A. Use this list to identify and order replacement parts.

## Parts Ordering Information

Replacement parts are available through your local Tektronix field office or representative.

Changes to Tektronix products are sometimes made to accommodate improved components as they become available and to give you the benefit of the latest improvements. Therefore, when ordering parts, it is important to include the following information in your order.

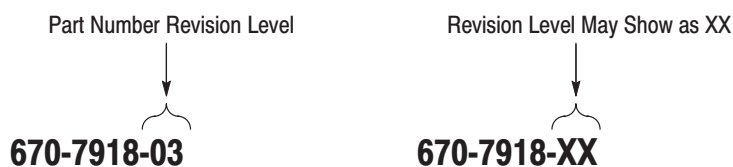
- Part number (see Part Number Revision Level below)
- Instrument type or model number
- Instrument serial number
- Instrument modification number, if applicable

If you order a part that has been replaced with a different or improved part, your local Tektronix field office or representative will contact you concerning any change in part number.

Change information, if any, is located at the rear of this manual.

### Part Number Revision Level

Tektronix part numbers contain two digits that show the revision level of the part. For most parts in this manual, you will find the letters XX in place of the revision level number.



When you order parts, Tektronix will provide you with the most current part for your product type, serial number, and modification (if applicable). At the time of your order, Tektronix will determine the part number revision level needed for your product, based on the information you provide.

## Using the Replaceable Mechanical Parts List

The tabular information in the Replaceable Mechanical Parts List is arranged for quick retrieval. Understanding the structure and features of the list will help you find all of the information you need for ordering replacement parts. The following table describes the content of each column in the parts list.

**Parts List Column Descriptions**

| Column  | Column Name           | Description  |
|---------|-----------------------|--|
| 1       | Figure & Index Number | Items in this section are referenced by figure and index numbers to the exploded view illustrations that follow.   |
| 2       | Tektronix Part Number | Use this part number when ordering replacement parts from Tektronix.   |
| 3 and 4 | Serial Number         | Column three indicates the serial number at which the part was first effective. Column four indicates the serial number at which the part was discontinued. No entries indicates the part is good for all serial numbers.      |
| 5       | Qty                   | This indicates the quantity of parts used.   |
| 6       | Name & Description    | An item name is separated from the description by a colon (:). Because of space limitations, an item name may sometimes appear as incomplete. Use the U.S. Federal Catalog handbook H6-1 for further item name identification. |
| 7       | Mfr. Code             | This indicates the code of the actual manufacturer of the part.  |
| 8       | Mfr. Part Number      | This indicates the actual manufacturer's or vendor's part number.  |

**Abbreviations**      Abbreviations conform to American National Standard ANSI Y1.1–1972.

**Chassis Parts**      Chassis-mounted parts and cable assemblies are located at the end of the Replaceable Electrical Parts List.

**Mfr. Code to Manufacturer Cross Index**      The table titled Manufacturers Cross Index shows codes, names, and addresses of manufacturers or vendors of components listed in the parts list.



## CROSS INDEX – MFR. CODE NUMBER TO MANUFACTURER

| Mfr.<br>Code | Manufacturer  | Address  | City, State, Zip Code      |
|--------------|---|--|----------------------------|
| S3109        | FELLER  | 72 VERONICA AVE<br>UNIT 4                            | SUMMERSET NJ 08873         |
| TK0AR        | KITAGAWA IND CO LTD                                 | 2-4-26 MUROMACHI<br>NIHONBASHI CHUO-KU               | TOKYO JAPAN                |
| TK0AU        | CHIYODA DENSHI CO LTD                               | 2-5-12 MITA<br>MEGURO-KU                             | TOKYO JAPAN                |
| TK0BI        | ACOUS IND CO LTD                                    | 2-6 TA-CO KANDA<br>CHIYODA-KU                        | TOKYO JAPAN                |
| TK0BK        | SHOWA KOSAN CO LTD                                  | 2-947 IKEBUKURO<br>TOSHIMA-KU                        | TOKYO JAPAN                |
| TK0BV        | KYODO LIGHT METAL CO LTD                            | 2-5-3 NIHONBASHI<br>CHUO-KU                          | TOKYO JAPAN                |
| TK0CB        | T K Y MFG CO LTD                                    | 2-18-8 MASUGATA<br>TAMA-KU KAWASAKI-CITY             | KANAGAWA JAPAN             |
| TK0CF        | YASUDA MFG CO LTD                                   | 81-1 OKESHITA<br>NISHIMAKADO NUMAZU-CITY             | SHIZUOKA JAPAN             |
| TK0FB        | NIHON BURNDY  | 3-26-33 TAKANASA<br>MINATO-KU                        | TOKYO JAPAN                |
| TK00Z        | H Y ASSOCIATES CO LTD                               | 1-2-2 MOMOI<br>SIGINAMI-KU                           | TOKYO JAPAN                |
| TK0413       | ADAMS SUPPLY COMPANY                                | 1850 W 205TH ST<br>P O BOX 2938                      | TORRANCE CA 90509          |
| TK0435       | LEWIS SCREW CO                                      | 4300 S RACINE AVE                                    | CHICAGO IL 60609-3320      |
| TK0588       | UNIVERSAL PRECISION PRODUCTS                        | 1775 NW 216TH  | HILLSBORO OR 97123         |
| TK1181       | SEA-TAC INDUSTRIES INC                              | 1217 FOURTH AVE N                                    | KENT WA 98031              |
| TK1267       | BALCK ELECTRIC CORP                                 | P O BOX 50934  | PALO ALTO CA 94303         |
| TK1499       | AMLAN INC   | 97 THORNWOOD RD                                      | STAMFORD CT 06903-2617     |
| TK1665       | PORTLAND DIE AND STAMPING INC                       | 4805 SE 26TH   | PORTLAND OR 97202          |
| TK1741       | COLMAN FASTENERS CO LTD                             | HATTONS ROAD<br>OFF WESTINGHOUSE RD TRAFFORD<br>PARK | MANCHESTER M17 1DF ENGLAND |
| TK1943       | NEILSEN MANUFACTURING INC                           | 3501 PORTLAND ROAD NE                                | SALEM OR 97303             |
| TK2541       | AMERICOR ELECTRONICS LTD                            | 2682 W COYLE AVENUE                                  | ELK GROVE VILLAGE IL 60007 |
| TK2548       | XEROX BUSINESS SERVICES<br>DIV OF XEROX CORPORATION | 14181 SW MILLIKAN WAY                                | BEAVERTON OR 97077         |
| OJR05        | TRIQUEST CORP                                       | 3000 LEWIS AND CLARK HWY                             | VANCOUVER WA 98661-2999    |
| OKB01        | STAUFFER SUPPLY                                     | 810 SE SHERMAN                                       | PORTLAND OR 97214          |
| 07416        | NELSON NAME PLATE CO                                | 3191 CASITAS   | LOS ANGELES CA 90039-2410  |
| 11897        | PLASTIGLIDE MFG CORP                                | 2701 W EL SEGUNDO BLVD                               | HAWTHORNE CA 90250-3318    |
| 12136        | P H C INDUSTRIES INC                                | 1643 HADDON AVE<br>PO BOX 1448                       | CAMDEN NJ 08103-3109       |
| 12327        | FREEWAY CORP  | 9301 ALLEN DR  | CLEVELAND OH 44125-4632    |
| 12697        | CLAROSTAT MFG CO INC                                | 12055 ROJAS DRIVE<br>SUITE K                         | EL PASO, TX 79936          |
| 13103        | THERMALLOY CO INC                                   | 2021 W VALLEY VIEW LN<br>PO BOX 810839               | DALLAS TX 75381            |

**CROSS INDEX – MFR. CODE NUMBER TO MANUFACTURER**

| <b>Mfr. Code</b> | <b>Manufacturer</b>                       | <b>Address</b>                       | <b>City, State, Zip Code</b> |
|------------------|---|--------------------------------------|------------------------------|
| 73743            | FISCHER SPECIAL MFG CO                    | 111 INDUSTRIAL RD                    | COLD SPRING KY 41076–9749    |
| 78189            | ILLINOIS TOOL WORKS INC<br>SHAKEPROOF DIV | ST CHARLES ROAD                      | ELGIN IL 60120               |
| 8X345            | NORTHWEST SPRING & MFG CO                 | 5858 SW WILLOW LANE                  | LAKE OSWEGO OR 97035         |
| 80009            | TEKTRONIX INC                             | 14150 SW KARL BRAUN DR<br>PO BOX 500 | BEAVERTON OR 97077–0001      |
| 83486            | ELCO INDUSTRIES INC                       | 1101 SAMUELSON RD                    | ROCKFORD IL 61101            |
| 86928            | SEASTROM MFG CO INC                       | 701 SONORA AVE                       | GLENDALE CA 91201–2431       |
| 93907            | TEXTRON INC<br>CAMCAR DIV                 | 600 18TH AVE                         | ROCKFORD IL 61108–5181       |
| 99742            | PERMACEL TAPE DIV<br>AN AVERY CO          | U S HIGHWAY 1<br>P O BOX 671         | NEW BRUNSWICK NJ 08903       |

| Fig. & Index No. | Tektronix Part No. | Serial No. Effective Dscont | Qty | 12345 Name & Description                                      | Mfr. Code | Mfr. Part No. |
|------------------|--------------------|-----------------------------|-----|---|-----------|---------------|
| 1-1              | 390-0984-XX        |                             | 1   | CABINET SIDE:LEFT<br>(ATTACHING PARTS)                        | 80009     | 3900984XX     |
| -2               | 211-0504-XX        |                             | 1   | SCREW,MACHINE:6-32 X 0.250,PNH,STL<br>(END ATTACHING PARTS)   | TK0435    | ORDER BY DESC |
| -3               | 367-0116-XX        |                             | 2   | HANDLE,CARRYING:16.54 L,BLUE VINYL<br>(ATTACHING PARTS)       | 12136     | ORDER BY DESC |
| -4               | 212-0628-XX        |                             | 8   | SCREW,SHOULDER:10-32 X 0.4 L,RDH,STL<br>(END ATTACHING PARTS) | 93907     | ORDER BY DESC |
| -5               | 386-1624-XX        |                             | 4   | PLATE,HDL RTNG:STAINLESS STEEL                                | TK1943    | ORDER BY DESC |
| -6               | 386-1283-XX        |                             | 4   | PLATE,HDL MTG:FRONT   | 0JR05     | ORDER BY DESC |
| -7               | 200-0728-XX        |                             | 4   | COVER,HDL END:1.91 X 0.91 X 0.36 BLUEACETAL                   | 0JR05     | 200-0728-XX   |
| -8               | 426-2371-XX        |                             | 1   | FRAME,SECTION:TOP LEFT,TEK TAN,AL<br>(ATTACHING PARTS)        | 80009     | 4262371XX     |
| -9               | 211-0507-XX        |                             | 1   | SCREW,MACHINE:6-32 X 0.312,PNH,STL                            | TK0435    | ORDER BY DESC |
| -10              | 211-0510-XX        |                             | 2   | SCREW,MACHINE:6-32 X 0.375,PNH,STL                            | TK0435    | ORDER BY DESC |
| -11              | 211-0538-XX        |                             | 5   | SCREW,MACHINE:6-32 X 0.312,FLH,STL<br>(END ATTACHING PARTS)   | TK0435    | ORDER BY DESC |
| -12              | 124-0446-XX        |                             | 1   | STRIP,TRIM:TOP RIGHT  | 80009     | 1240446XX     |
| -13              | 426-2372-XX        |                             | 1   | FRAME,SECTION:TOP RIGHT,TEK TAN,AL<br>(ATTACHING PARTS)       | 80009     | 4262372XX     |
| -14              | 211-0507-XX        |                             | 1   | SCREW,MACHINE:6-32 X 0.312,PNH,STL                            | TK0435    | ORDER BY DESC |
| -15              | 211-0538-XX        |                             | 1   | SCREW,MACHINE:6-32 X 0.312,FLH,STL                            | TK0435    | ORDER BY DESC |
| -16              | 211-0510-XX        |                             | 2   | SCREW,MACHINE:6-32 X 0.375,PNH,STL                            | TK0435    | ORDER BY DESC |
| -17              | 211-0504-XX        |                             | 5   | SCREW,MACHINE:6-32 X 0.250,PNH,STL<br>(END ATTACHING PARTS)   | TK0435    | ORDER BY DESC |
| -18              | 124-0447-XX        |                             | 1   | STRIP,TRIM:TOP RIGHT  | 80009     | 1240447XX     |
| -19              | 426-2141-XX        |                             | 1   | FRAME SECT,CAB.:LEFT<br>(ATTACHING PARTS)                     | 80009     | 4262141XX     |
| -20              | 211-0559-XX        |                             | 1   | SCREW,MACHINE:6-32 X 0.375,FLH,STL                            | TK0435    | 1593-300      |
| -21              | 211-0504-XX        |                             | 4   | SCREW,MACHINE:6-32 X 0.250,PNH,STL<br>(END ATTACHING PARTS)   | TK0435    | ORDER BY DESC |
| -22              | 426-2142-XX        |                             | 1   | FRAME SECT,CAB.:RIGHT<br>(ATTACHING PARTS)                    | 80009     | 4262142XX     |
| -23              | 211-0559-XX        |                             | 1   | SCREW,MACHINE:6-32 X 0.375,FLH,STL                            | TK0435    | 1593-300      |
| -24              | 211-0504-XX        |                             | 3   | SCREW,MACHINE:6-32 X 0.250,PNH,STL<br>(END ATTACHING PARTS)   | TK0435    | ORDER BY DESC |
| -25              | 407-3890-XX        |                             | 1   | BRACKET,SUPPORT:ALUMINUM<br>(ATTACHING PARTS)                 | 80009     | 4073890XX     |
| -26              | 212-0002-XX        |                             | 4   | SCREW,MACHINE:8-32 X 0.25,FLH,100 DEG,STL                     | 0KB01     | ORDER BY DESC |
| -27              | 212-0004-XX        |                             | 4   | SCREW,MACHINE:8-32 X 0.312,PNH,STL<br>(END ATTACHING PARTS)   | TK0435    | ORDER BY DESC |
| -28              | 407-3890-XX        |                             | 1   | BRACKET,SUPPORT:ALUMINUM<br>(ATTACHING PARTS)                 | 80009     | 4073890XX     |
| -29              | 212-0002-XX        |                             | 4   | SCREW,MACHINE:8-32 X 0.25,FLH,100 DEG,STL                     | 0KB01     | ORDER BY DESC |
| -30              | 212-0004-XX        |                             | 4   | SCREW,MACHINE:8-32 X 0.312,PNH,STL<br>(END ATTACHING PARTS)   | TK0435    | ORDER BY DESC |
| -31              | 334-7747-XX        |                             | 1   | MARKER,IDENT:   | 80009     | 3347747XX     |

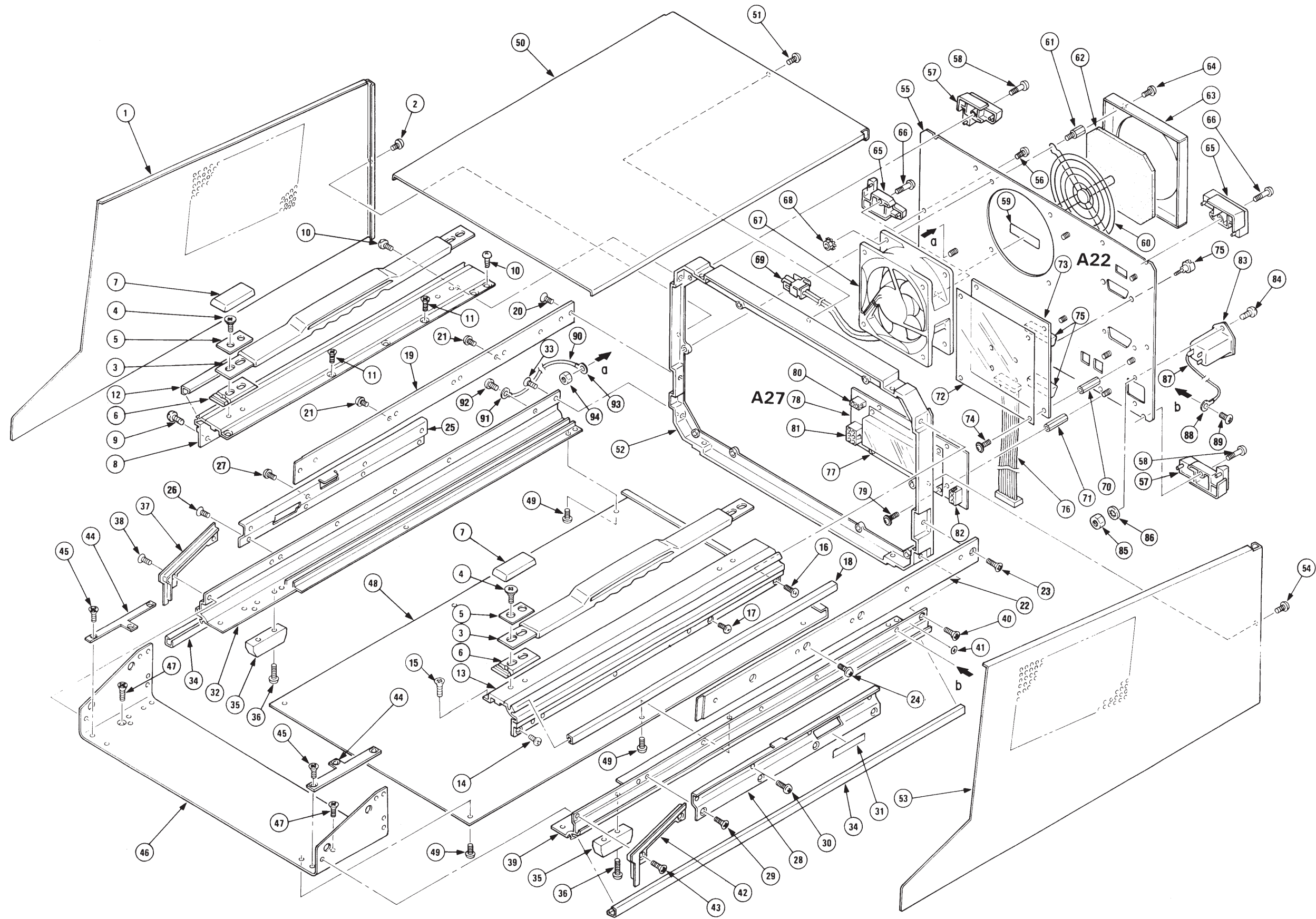
### 370A Service Manual

| Fig. & Index No. | Tektronix Part No. | Serial No. Effective Dscont | Qty | 12345 Name & Description                                    | Mfr. Code | Mfr. Part No. |
|------------------|--------------------|-----------------------------|-----|---|-----------|---------------|
| 1-32             | 426-2211-XX        |                             | 1   | FRAME SECTION:BOTTOM,LEFT<br>(ATTACHING PARTS)              | TK0BV     | ORDER BY DESC |
| -33              | 211-0559-XX        |                             | 2   | SCREW,MACHINE:6-32 X 0.375,FLH,STL<br>(END ATTACHING PARTS) | TK0435    | 1593-300      |
| -34              | 124-0448-XX        |                             | 2   | STRIP,TRIM:BOTTOM   | 80009     | 1240448XX     |
| -35              | 348-0128-XX        |                             | 4   | FOOT,CABINET:BLACK POLYURETHANE<br>(ATTACHING PARTS)        | 80009     | 3480128XX     |
| -36              | 211-0513-XX        |                             | 8   | SCREW,MACHINE:6-32 X 0.625,PNH,STL<br>(END ATTACHING PARTS) | TK0435    | ORDER BY DESC |
| -37              | 426-2134-XX        |                             | 1   | FRAME SECTION:FRONT,LEFT<br>(ATTACHING PARTS)               | TK0CB     | ORDER BY DESC |
| -38              | 211-0538-XX        |                             | 2   | SCREW,MACHINE:6-32 X 0.312,FLH,STL<br>(END ATTACHING PARTS) | TK0435    | ORDER BY DESC |
| -39              | 426-2138-XX        |                             | 1   | FRAME SECTION:BOTTOM,RIGHT<br>(ATTACHING PARTS)             | TK0BV     | ORDER BY DESC |
| -40              | 211-0559-XX        |                             | 2   | SCREW,MACHINE:6-32 X 0.375,FLH,STL<br>(END ATTACHING PARTS) | TK0435    | 1593-300      |
| -41              | 334-3379-XX        |                             | 1   | MARKER,IDENT:MARKED GROUND SYMBOL                           | 07416     | ORDER BY DESC |
| -42              | 426-2135-XX        |                             | 1   | FRAME SECTION:FRONT,RIGHT<br>(ATTACHING PARTS)              | TK0CB     | ORDER BY DESC |
| -43              | 211-0538-XX        |                             | 2   | SCREW,MACHINE:6-32 X 0.312,FLH,STL<br>(END ATTACHING PARTS) | TK0435    | ORDER BY DESC |
| -44              | 351-0770-XX        |                             | 2   | GUIDE,TEST FXTR:BOTTOM<br>(ATTACHING PARTS)                 | 80009     | 3510770XX     |
| -45              | 211-0038-XX        |                             | 6   | SCREW,MACHINE:4-40 X 0.312,FLH,STL<br>(END ATTACHING PARTS) | TK0435    | ORDER BY DESC |
| -46              | 441-1739-XX        |                             | 1   | CHAS,CRV TRACER:BOTTOM<br>(ATTACHING PARTS)                 | 80009     | 4411739XX     |
| -47              | 211-0541-XX        |                             | 2   | SCREW,MACHINE:6-32 X 0.25,FLH,STL<br>(END ATTACHING PARTS)  | TK0435    | ORDER BY DESC |
| -48              | 390-0987-XX        |                             | 1   | CABINET BOTTOM:<br>(ATTACHING PARTS)                        | 80009     | 3900987XX     |
| -49              | 211-0007-XX        |                             | 6   | SCREW,MACHINE:4-40 X 0.188,PNH,STL<br>(END ATTACHING PARTS) | TK0435    | ORDER BY DESC |
| -50              | 390-1088-XX        |                             | 1   | CABINET,TOP:ALUMINUM<br>(ATTACHING PARTS)                   | 80009     | 3901088XX     |
| -51              | 211-0504-XX        |                             | 1   | SCREW,MACHINE:6-32 X 0.250,PNH,STL<br>(END ATTACHING PARTS) | TK0435    | ORDER BY DESC |
| -52              | 426-2136-XX        |                             | 1   | FRAME SECT,CAB.:REAR,AL                                     | 80009     | 4262136XX     |
| -53              | 390-0985-XX        |                             | 1   | CABINET SIDE:RIGHT<br>(ATTACHING PARTS)                     | 80009     | 3900985XX     |
| -54              | 211-0504-XX        |                             | 1   | SCREW,MACHINE:6-32 X 0.250,PNH,STL<br>(END ATTACHING PARTS) | TK0435    | ORDER BY DESC |
| -55              | 333-3717-XX        |                             | 1   | PANEL,REAR:370A,ALUMINUM<br>(ATTACHING PARTS)               | 80009     | 3333717XX     |
| -56              | 211-0507-XX        |                             | 6   | SCREW,MACHINE:6-32 X 0.312,PNH,STL<br>(END ATTACHING PARTS) | TK0435    | ORDER BY DESC |
| -57              | 343-1272-XX        |                             | 2   | RTNR,CAB.COVER:BLUE,PLASTIC<br>(ATTACHING PARTS)            | 80009     | 3431272XX     |

| Fig. & Index No. | Tektronix Part No. | Serial No. Effective Dscont | Qty | 12345 Name & Description  | Mfr. Code | Mfr. Part No.   |
|------------------|--------------------|-----------------------------|-----|---|-----------|-----------------|
| 1-58             | 213-0782-XX        |                             | 2   | SCREW,TPG,TF:8-32 X 0.625,FILH,STL<br>(END ATTACHING PARTS)                             | 83486     | ORDER BY DESC   |
| -59              | -----              |                             | 1   | MARKER,IDENT:MKD SERIAL NO  |           |                 |
| -60              | 200-3300-XX        |                             | 1   | GUARD,FAN:<br>(ATTACHING PARTS)   | 80009     | 2003300XX       |
| -61              | 129-1126-XX        |                             | 4   | SPACER,POST:21.5MM L,4-40,6-32 THD,BRS<br>(END ATTACHING PARTS)                         | 80009     | 129112600       |
| -62              | 378-0278-XX        |                             | 1   | FILTER,AIR:125MM X 5MM THK  | TK0BI     | ORDER BY DESC   |
| -63              | 200-3277-XX        |                             | 1   | COVER,FAN:ALUMINUM<br>(ATTACHING PARTS)   | 80009     | 2003277XX       |
| -64              | 211-0008-XX        |                             | 4   | SCREW,MACHINE:4-40 X 0.25,PNH,STL<br>(END ATTACHING PARTS)                              | TK0435    | ORDER BY DESC   |
| -65              | 343-1271-XX        |                             | 2   | RTNR,CAB.COVER:BLUE,PLASTIC<br>(ATTACHING PARTS)  | 80009     | 3431271XX       |
| -66              | 213-0782-XX        |                             | 2   | SCREW,TPG,TF:8-32 X 0.625,FILH,STL<br>(END ATTACHING PARTS)                             | 83486     | ORDER BY DESC   |
| -67              | -----              |                             | 1   | FAN,TUBEAXIAL:(SEE B100 REPL)<br>(ATTACHING PARTS)                                      |           |                 |
| -68              | 210-0457-XX        |                             | 4   | NUT,PL,ASSEM WA:6-32 X 0.312,STL<br>(END ATTACHING PARTS)                               | TK0435    | ORDER BY DESC   |
| -69              | -----              |                             | 1   | CABLE ASSY,PWR:(SEE W272 REPL)  |           |                 |
| -70              | 129-0992-XX        |                             | 4   | SPACER,POST:0.41 L,4-40 INT,BRS,0.19 HEX  | 80009     | 1290992XX       |
| -71              | 361-0704-XX        |                             | 4   | SPACER,CKT BD:0.504 L X 0.188 HEX,BRS   | 80009     | 3610704XX       |
| -72              | 342-0894-XX        |                             | 1   | INSULATOR,PLATE:CIRCUIT BOARD,PC  | 80009     | 3420894XX       |
| -73              | -----              |                             | 1   | CKT BOARD ASSY:INTERFACE(SEE A22 REPL)<br>(ATTACHING PARTS)                             |           |                 |
| -74              | 211-0661-XX        |                             | 4   | SCR,ASSEM WSHR:4-40 X 0.25,PNH,STL<br>(END ATTACHING PARTS)<br>CKT BOARD ASSY INCLUDES: | TK0435    | ORDER BY DESC   |
| -75              | -----              |                             | 2   | CONN,RCPT,ELEC:(SEE A22J350 & J450 REPL)  |           |                 |
| -76              | -----              |                             | 1   | CA ASSY,SP,ELEC:(SEE A22W220 REPL)  |           |                 |
| -77              | 342-0782-XX        |                             | 1   | INSULATOR,FILM:PRIMARY BOARD  | 80009     | 3420782XX       |
| -78              | -----              |                             | 1   | CKT BOARD ASSY:PRIMARY(SEE A27 REPL)<br>(ATTACHING PARTS)                               |           |                 |
| -79              | 211-0661-XX        |                             | 4   | SCR,ASSEM WSHR:4-40 X 0.25,PNH,STL<br>(END ATTACHING PARTS)<br>CKT BOARD ASSY INCLUDES: | TK0435    | ORDER BY DESC   |
| -80              | -----              |                             | 1   | CONN,RCPT,ELEC:(SEE A27J272 REPL)   |           |                 |
| -81              | -----              |                             | 1   | CONN,RCPT,ELEC:(SEE A27J274 REPL)   |           |                 |
| -82              | -----              |                             | 1   | CONN,RCPT,ELEC:(SEE A27J270 REPL)   |           |                 |
| -83              | -----              |                             | 1   | FILTER:(SEE FL100 REPL)<br>(ATTACHING PARTS)  |           |                 |
| -84              | 211-0537-XX        |                             | 2   | SCREW,MACHINE:6-32 X 0.375,TRH,STL  | TK0435    | ORDER BY DESC   |
| -85              | 210-0407-XX        |                             | 2   | NUT,PLAIN,HEX:6-32 X 0.25,BRS   | 73743     | 3038-402        |
| -86              | 210-0006-XX        |                             | 2   | WASHER,LOCK:#6 INTL,0.018 THK,STL<br>(END ATTACHING PARTS)                              | 78189     | 1206-00-00-0541 |
| -87              | -----              |                             | 1   | LEAD,ELECTRICAL:(SEE W17 REPL)  |           |                 |

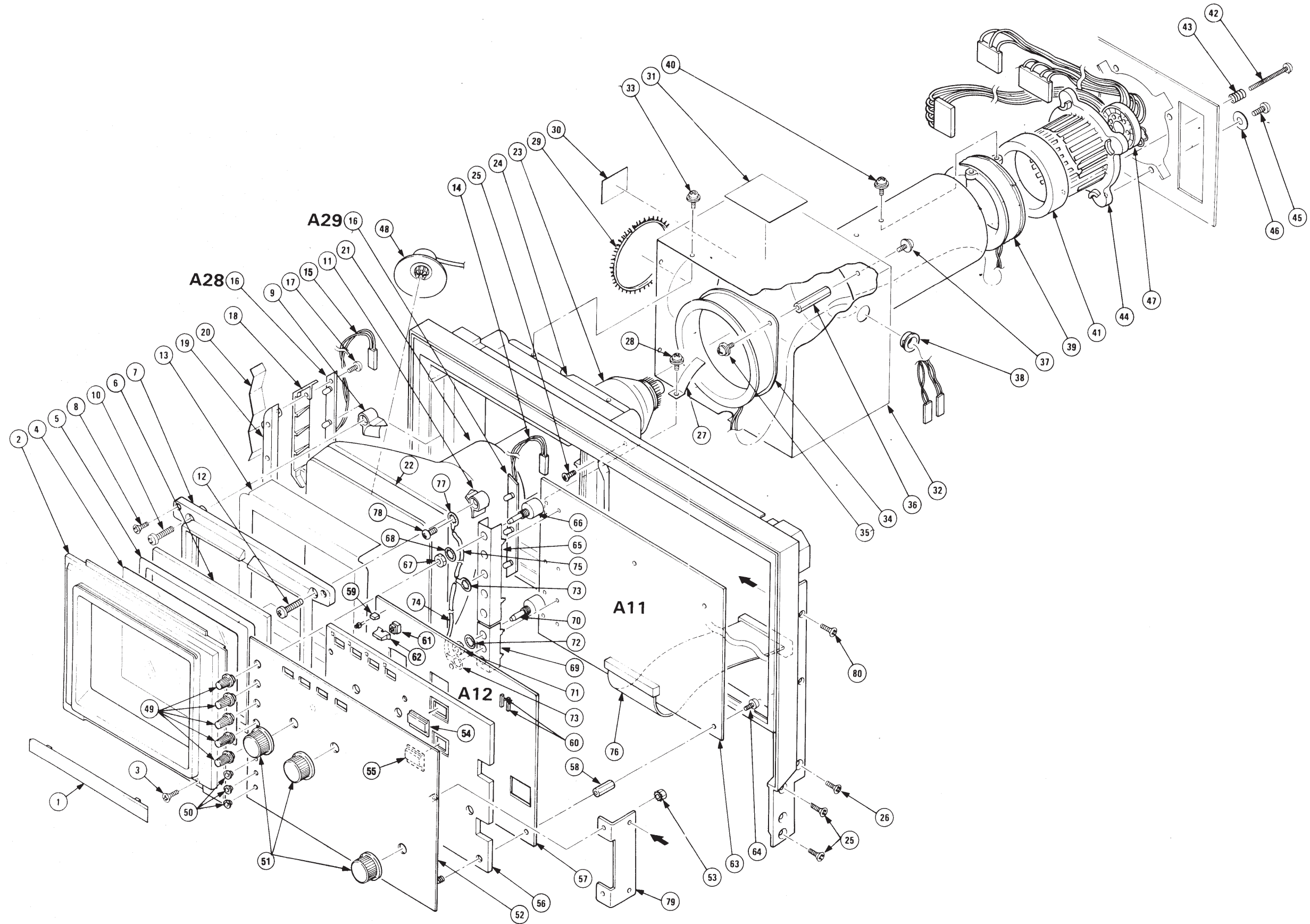
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| Fig. & Index No. | Tektronix Part No. | Serial No. Effective | Dscont | Qty | 12345 Name & Description                                 | Mfr. Code | Mfr. Part No. |
|------------------|--------------------|----------------------|--------|-----|--|-----------|---------------|
| 1-88             | 210-0202-XX        |                      |        | 1   | TERMINAL,LUG:0.146 ID,LOCKING,BRZ (ATTACHING PARTS)      | TK1181    | ORDER BY DESC |
| -89              | 211-0565-XX        |                      |        | 1   | SCREW,MACHINE:6-32 X 0.250,TRH,STL (END ATTACHING PARTS) | TK0435    | ORDER BY DESC |
| -90              | -----              |                      |        | 1   | LEAD,ELECTRICAL:(SEE W19 REPL)                           |           |               |
| -91              | 210-0202-XX        |                      |        | 1   | TERMINAL,LUG:0.146 ID,LOCKING,BRZ (ATTACHING PARTS)      | TK1181    | ORDER BY DESC |
| -92              | 211-0565-XX        |                      |        | 1   | SCREW,MACHINE:6-32 X 0.250,TRH,STL (END ATTACHING PARTS) | TK0435    | ORDER BY DESC |
| -93              | 210-0202-XX        |                      |        | 1   | TERMINAL,LUG:0.146 ID,LOCKING,BRZ (ATTACHING PARTS)      | TK1181    | ORDER BY DESC |
| -94              | 210-0407-XX        |                      |        | 1   | NUT,PLAIN,HEX:6-32 X 0.25,BRS (END ATTACHING PARTS)      | 73743     | 3038-402      |



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| Fig. & Index No. | Tektronix Part No. | Serial No. Effective Dscont | Qty | 12345 Name & Description                                     | Mfr. Code | Mfr. Part No. |
|------------------|--------------------|-----------------------------|-----|--|-----------|---------------|
| 2-1              | 200-3281-XX        |                             | 1   | COVER,BEZEL:POLYCARBONATE,TEK TAN                            | 80009     | 2003281XX     |
| -2               | 200-3276-XX        |                             | 1   | BEZEL,CRT:PC,TEK TAN<br>(ATTACHING PARTS)                    | 80009     | 2003276XX     |
| -3               | 211-0538-XX        |                             | 2   | SCREW,MACHINE:6-32 X 0.312,FLH,STL<br>(END ATTACHING PARTS)  | TK0435    | ORDER BY DESC |
| -4               | 378-0276-XX        |                             | 1   | FILTER,LT,CRT:BLUE,108.4MM X 134.4MM X 1MM                   | 80009     | 3780276XX     |
| -5               | 361-1381-XX        |                             | 1   | SPACER,RING:CRT,0.4MM  | 80009     | 3611381XX     |
| -6               | 337-3328-XX        |                             | 1   | SHIELD,CRT:CLEAR   | 80009     | 3373328XX     |
| -7               | 426-2133-XX        |                             | 1   | FRAME,CRT:<br>(ATTACHING PARTS)                              | 80009     | 4262133XX     |
| -8               | 211-0512-XX        |                             | 4   | SCREW,MACHINE:6-32 X 0.5,FLH,STL<br>(END ATTACHING PARTS)    | TK0435    | ORDER BY DESC |
| -9               | 343-1269-XX        |                             | 2   | RETAINER,CRT:FRONT,(A)<br>(ATTACHING PARTS)                  | 80009     | 3431269XX     |
| -10              | 212-0022-XX        |                             | 2   | SCREW,MACHINE:8-32 X 1.5,PNH,STL<br>(END ATTACHING PARTS)    | TK0435    | 2011-300      |
| -11              | 343-1270-XX        |                             | 2   | RETAINER,CRT:FRONT,(B)<br>(ATTACHING PARTS)                  | 80009     | 3431270XX     |
| -12              | 212-0022-XX        |                             | 2   | SCREW,MACHINE:8-32 X 1.5,PNH,STL<br>(END ATTACHING PARTS)    | TK0435    | 2011-300      |
| -13              | 331-0491-XX        |                             | 1   | MASK,CRT:  | 80009     | 3310491XX     |
| -14              | -----              |                             | 1   | CA ASSY,SPELEC:(SEE W280 REPL)                               |           |               |
| -15              | -----              |                             | 1   | CA ASSY,SPELEC:(SEE W290 REPL)                               |           |               |
| -16              | -----              |                             | 2   | CKT BOARD ASSY:LAMP(SEE A28 & A29 REPL)<br>(ATTACHING PARTS) |           |               |
| -17              | 211-0062-XX        |                             | 4   | SCREW,MACHINE:2-56 X 0.312,PNH,STL<br>(END ATTACHING PARTS)  | TK0435    | ORDER BY DESC |
| -18              | 343-1268-XX        |                             | 2   | RETAINER,LIGHT:REFLECTOR                                     | 80009     | 3431268XX     |
| -19              | 378-0614-XX        |                             | 2   | REFLECTOR,LIGHT:INT SCALE ILLUMINATION                       | 0JR05     | ORDER BY DESC |
| -20              | 214-3886-XX        |                             | 2   | SPRING,RTNR:SCALE LAMP                                       | 80009     | 2143886XX     |
| -21              |                    |                             | 1   | ELECTRON TUBE:(SEE V100 REPL)                                |           |               |
| -22              | 253-0267-XX        |                             | 1   | TAPE,PRESS SENS:0.08 X 20 X 20000MM,AL FOIL                  | 80009     | 2530267XX     |
| -23              | 253-0137-XX        |                             | 1   | TAPE,SILICONE:RED RBR,1.25 X 0.02                            | 99742     | 2650          |
| -24              | 426-2333-XX        |                             | 1   | FRAME,FRONT:<br>(ATTACHING PARTS)                            | 80009     | 4262333XX     |
| -25              | 211-0538-XX        |                             | 8   | SCREW,MACHINE:6-32 X 0.312,FLH,STL                           | TK0435    | ORDER BY DESC |
| -26              | 211-0541-XX        |                             | 2   | SCREW,MACHINE:6-32 X 0.25,FLH,STL<br>(END ATTACHING PARTS)   | TK0435    | ORDER BY DESC |
| -27              | 214-3880-XX        |                             | 1   | CONTACT,SPRING:GROUNDING CRT<br>(ATTACHING PARTS)            | 80009     | 2143880XX     |
| -28              | 211-0661-XX        |                             | 1   | SCR,ASSEM WSHR:4-40 X 0.25,PNH,STL<br>(END ATTACHING PARTS)  | TK0435    | ORDER BY DESC |
| -29              | 255-1106-XX        |                             | 1   | PLASTIC CHANNEL:250 X 3.3 X 4.0MM,NYLON                      | 80009     | 2551106XX     |
| -30              | 334-6691-XX        |                             | 1   | MARKER,IDENT:MKD DANGER                                      | 80009     | 3346691XX     |
| -31              | 334-6805-XX        |                             | 1   | MARKER,IDENT:MKD WARNING                                     | 80009     | 3346805XX     |
| -32              | 337-3325-XX        |                             | 1   | SHIELD,CRT:<br>(ATTACHING PARTS)                             | 80009     | 3373325XX     |

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| 2-33             | 211-0661-XX        |                             | 4   | SCR,ASSEM WSHR:4-40 X 0.25,PNH,STL<br>(END ATTACHING PARTS)                              | TK0435    | ORDER BY DESC |
| -34              | -----              |                             | 1   | COIL,TUBE DEFL:(SEE L100 REPL)<br>(ATTACHING PARTS)                                      |           |               |
| -35              | 211-0661-XX        |                             | 2   | SCR,ASSEM WSHR:4-40 X 0.25,PNH,STL<br>(END ATTACHING PARTS)                              | TK0435    | ORDER BY DESC |
| -36              | 129-1123-XX        |                             | 2   | SPACER,POST:33MM L,4-40 THD,BRASS<br>(ATTACHING PARTS)                                   | 80009     | 1291123XX     |
| -37              | 211-0661-XX        |                             | 2   | SCR,ASSEM WSHR:4-40 X 0.25,PNH,STL<br>(END ATTACHING PARTS)                              | TK0435    | ORDER BY DESC |
| -38              | 348-0948-XX        |                             | 1   | GROMMET,PLASTIC:BLACK,RING,9.5MM ID  | 80009     | 3480948XX     |
| -39              | -----              |                             | 1   | COIL,TUBE DEFL:(SEE L120 REPL)<br>(ATTACHING PARTS)                                      |           |               |
| -40              | 211-0661-XX        |                             | 2   | SCR,ASSEM WSHR:4-40 X 0.25,PNH,STL<br>(END ATTACHING PARTS)                              | TK0435    | ORDER BY DESC |
| -41              | 354-0347-XX        |                             | 1   | RING,CRT CLAMP:2.127 ID X 2.595 OD X 0.563<br>(ATTACHING PARTS)                          | 0JR05     | ORDER BY DESC |
| -42              | 211-0170-XX        |                             | 2   | SCREW,MACHINE:4-40 X 2.25,PNH,SST  | TK0435    | ORDER BY DESC |
| -43              | 214-1333-XX        |                             | 2   | SPRING,HLCPS:0.213 OD X 0.375,CLE,CU-BE<br>(END ATTACHING PARTS)                         | 8X345     | ORDER BY DESC |
| -44              | 343-0205-XX        |                             | 1   | RTNR,ELCTRN TU:3.0 DIA X 1.5 L,DELRIN<br>(ATTACHING PARTS)                               | 80009     | 3430205XX     |
| -45              | 211-0578-XX        |                             | 4   | SCREW,MACHINE:6-32 X 0.438,PNH,STL   | TK0435    | ORDER BY DESC |
| -46              | 210-0949-XX        |                             | 4   | WASHER,FLAT:0.141 ID X 0.5 OD X 0.062,BRS<br>(END ATTACHING PARTS)                       | 12327     | ORDER BY DESC |
| -47              | -----              |                             | 1   | LEAD,ELEC:(SEE W14 REPL)   |           |               |
| -48              | -----              |                             | 1   | ANODE CAP:(PART OF A20U300)  |           |               |
| -49              | 366-0625-XX        |                             | 5   | KNOB:SILVER GRAY,9.5MM OD  | 80009     | 3660625XX     |
| -50              | 358-0378-XX        |                             | 3   | BUSHING,SLEEVE:0.131 ID X 0.18 OD X 0.125L   | 80009     | 3580378XX     |
| -51              | 366-0620-XX        |                             | 3   | KNOB:SILVER GRAY,25MM OD   | 80009     | 3660620XX     |
| -52              | 333-3715-XX        |                             | 1   | PANEL,FRONT:370A<br>(ATTACHING PARTS)  | 80009     | 3333715XX     |
| -53              | 210-0586-XX        |                             | 2   | NUT,PL,ASSEM WA:4-40 X 0.25,STL<br>(END ATTACHING PARTS)                                 | TK0435    | ORDER BY DESC |
| -54              | 378-0349-XX        |                             | 1   | FILTER,LED DSPL:GRAY,10.8 & 18.3M,PC   | 80009     | 3780349XX     |
| -55              | 378-0277-XX        |                             | 1   | FILTER,LT,CRT:SMOKE GRAY   | 80009     | 3780277XX     |
| -56              | 351-0853-XX        |                             | 1   | GUIDE,PB:370A MAIN KEY BD,PC   | 80009     | 3510853XX     |
| -57              | -----              |                             | 1   | CKT BOARD ASSY:SUB KEY(SEE A12 REPL)<br>(ATTACHING PARTS)                                |           |               |
| -58              | 129-1131-XX        |                             | 6   | SPACER,POST:12.7MM L,4-40 THD,BRASS<br>(END ATTACHING PARTS)<br>CKT BOARD ASSY INCLUDES: | 80009     | 1291131XX     |
| -59              | 129-1128-XX        |                             | 54  | .SPACER,POST:5.1MM,L,POLYCARBONATE   | 80009     | 1291128XX     |
| -60              | 131-3677-XX        |                             | 8   | .CONN,RCPT,ELEC:1 X 5 FEMALE   | 80009     | 1313677XX     |

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|------------------|--------------------|-----------------------------|-----|--|-----------|-----------------|
| 2-61             | -----              |                             | 38  | SWITCH,KEY:(SEE A12S300,S301,S302,S303,S304,S305,S310,S311,S312,S313,S314,S315,S320,S321,S322,S323,S324,S325,S330,S331,S332,S333,S335,S350,S351,S353,S354,S355,S360,S361,S362,S363,S364,S365,S370,S371,S372,S373 REPL) |           |                 |
| -62              | 366-0617-XX        |                             | 44  | PUSH BUTTON:SILVER GRAY,9.6 X 4.2 X 8.5MM  | 80009     | 3660617XX       |
| -63              | -----              |                             | 1   | CKT BOARD ASSY:MAIN KEY(SEE A11 REPL)<br>(ATTACHING PARTS)   |           |                 |
| -64              | 211-0661-XX        |                             | 6   | SCR,ASSEM WSHR:4-40 X 0.25,PNH,STL<br>(END ATTACHING PARTS)<br>CKT BOARD ASSY INCLUDES:  | TK0435    | ORDER BY DESC   |
| -65              | 407-3474-XX        |                             | 1   | .BRACKET,ANGLE:VAR RES MTG   | 80009     | 4073474XX       |
| -66              | -----              |                             | 5   | RES,VAR,NONWW:(SEE A11R302,R312,R322,R330,R340 REPL)<br>(ATTACHING PARTS)  |           |                 |
| -67              | 210-0583-XX        |                             | 5   | .NUT,PLAIN,HEX:0.25-32 X 0.312,BRS   | 73743     | 2X-20319-402    |
| -68              | 210-0046-XX        |                             | 4   | .WASHER,LOCK:0.261 ID,INTL,0.018 THK,STL<br>(END ATTACHING PARTS)  | 78189     | 1214-05-00-0541 |
| -69              | 407-3475-XX        |                             | 1   | .BRACKET,ANGLE:VAR RES MTG,W/CUT LEAD  | 80009     | 4073475XX       |
| -70              | -----              |                             | 3   | RES,VAR,NONWW:<br>(SEE A11R350,R360,R370 REPL)<br>(ATTACHING PARTS)  |           |                 |
| -71              | 210-0583-XX        |                             | 3   | .NUT,PLAIN,HEX:0.25-32 X 0.312,BRS   | 73743     | 2X-20319-402    |
| -72              | 210-0046-XX        |                             | 2   | .WASHER,LOCK:0.261 ID,INTL,0.018 THK,STL<br>(END ATTACHING PARTS)  | 78189     | 1214-05-00-0541 |
| -73              | 210-0223-XX        |                             | 2   | .TERMINAL,LUG:0.26 ID,LOCKING,BRZ  | 0KB01     | 210-0223-XX     |
| -74              | -----              |                             | 1   | LEAD,ELECTRICAL:(SEE A11W111 REPL)   |           |                 |
| -75              | -----              |                             | 1   | LEAD,ELECTRICAL:(SEE A11W112 REPL)   |           |                 |
| -76              | -----              |                             | 1   | CA ASSY,SPELEC:(SEE A11W110 REPL)  |           |                 |
| -77              | 210-0201-XX        |                             | 1   | .TERMINAL,LUG:0.12 ID,LOCKING,BRZ  | TK1741    | 2004-4 PHOSPHOR |
| -78              | 211-0008-XX        |                             | 1   | SCREW,MACHINE:4-40 X 0.25,PNH,STL  | TK0435    | ORDER BY DESC   |
| -79              | 407-3851-XX        |                             | 1   | BRACKET,ANGLE:FRONT PANEL MTG,AL<br>(ATTACHING PARTS)  | 80009     | 4073851XX       |
| -80              | 211-0106-XX        |                             | 2   | SCREW,MACHINE:4-40 X 0.625,FLH,STL<br>(END ATTACHING PARTS)  | TK0435    | ORDER BY DESC   |

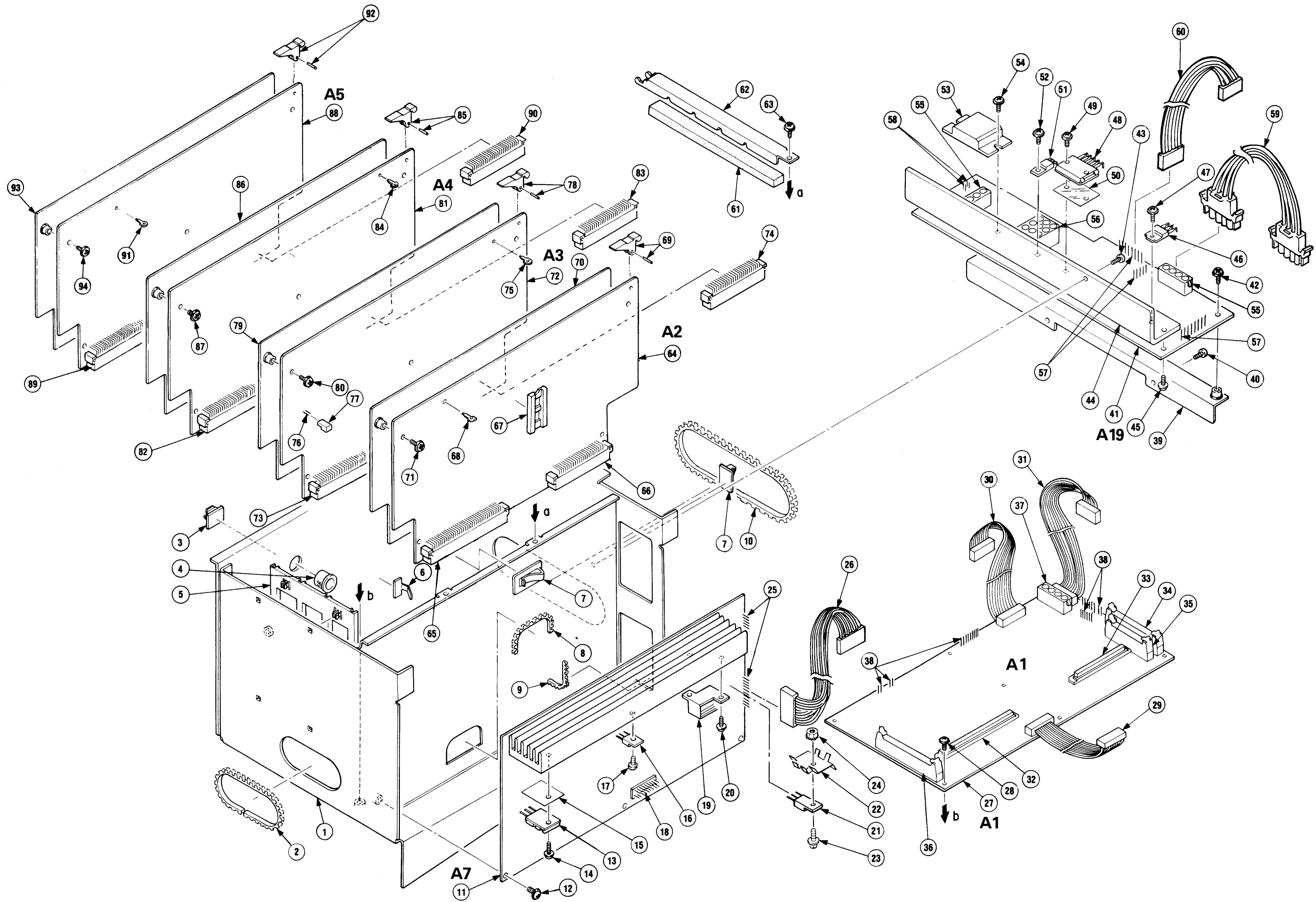
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|------------------|--------------------|-----------------------------|-----|---|-----------|-----------------|
| 3-1              | 441-1740-XX        |                             | 1   | CHASSIS,CKT BD:370,ALUMINUM   | TK0CF     | ORDER BY DESC   |
| -2               | 255-0334-XX        |                             | 1   | PLASTIC CHANNEL:12.75 X 0.175 X 0.155,NYLON   | 11897     | 122-NN-2500-060 |
| -3               | 343-0778-XX        |                             | 2   | CLAMP,CABLE:5MM ID,NYLON  | 80009     | 3430778XX       |
| -4               | 348-0948-XX        |                             | 1   | GROMMET,PLASTIC:BLACK,RING,9.5MM ID   | 80009     | 3480948XX       |
| -5               | 351-0769-XX        |                             | 2   | GUIDE,CKT BD:   | 80009     | 3510769XX       |
| -6               | 343-1289-XX        |                             | 1   | CLAMP,CABLE:STEEL   | 80009     | 3431289XX       |
| -7               | 343-1084-XX        |                             | 3   | CLAMP,CABLE:NYLON   | 80009     | 3431084XX       |
| -8               | 255-1107-XX        |                             | 1   | PLASTIC CHANNEL:500 X 3.7 X 4.0MM,NYLON   | 80009     | 2551107XX       |
| -9               | 255-0334-XX        |                             | 1   | PLASTIC CHANNEL:12.75 X 0.175 X 0.155,NYLON   | 11897     | 122-NN-2500-060 |
| -10              | 255-0334-XX        |                             | 1   | PLASTIC CHANNEL:12.75 X 0.175 X 0.155,NYLON   | 11897     | 122-NN-2500-060 |
| -11              | -----              |                             | 1   | CKT BOARD ASSY:STEP GEN(SEE A7 REPL)<br>(ATTACHING PARTS)                               |           |                 |
| -12              | 211-0661-XX        |                             | 3   | SCR,ASSEM WSHR:4-40 X 0.25,PNH,STL<br>(END ATTACHING PARTS)<br>CKT BOARD ASSY INCLUDES: | TK0435    | ORDER BY DESC   |
| -13              | -----              |                             | 4   | XSTR:(SEE A7Q490,Q495,Q816,Q832 REPL)<br>(ATTACHING PARTS)                              |           |                 |
| -14              | 211-0315-XX        |                             | 4   | .SCR,ASSEM WSHR:4-40 X 0.437,PHN,STL  | TK0435    | ORDER BY DESC   |
| -15              | 342-0787-XX        |                             | 4   | .INSULATOR,PLATE:XSTR,TO-3PSI RUBBER<br>(END ATTACHING PARTS)                           | 80009     | 3420787XX       |
| -16              | -----              |                             | 1   | TRANSISTOR:(SEE A7Q462 REPL)<br>(ATTACHING PARTS)                                       |           |                 |
| -17              | 211-0315-XX        |                             | 1   | .SCR,ASSEM WSHR:4-40 X 0.437,PHN,STL<br>(END ATTACHING PARTS)                           | TK0435    | ORDER BY DESC   |
| -18              | 131-2230-XX        |                             | 1   | .CONN,RCPT,ELEC:HEADER,2 X 8,2.54 SPACING   | 80009     | 1312230XX       |
| -19              | -----              |                             | 1   | RES,FXD,WW:(SEE A7R502 REPL)<br>(ATTACHING PARTS)                                       |           |                 |
| -20              | 211-0661-XX        |                             | 2   | .SCR,ASSEM WSHR:4-40 X 0.25,PNH,STL<br>(END ATTACHING PARTS)                            | TK0435    | ORDER BY DESC   |
| -21              | -----              |                             | 1   | MICROCKT,LI:(SEE A7U170 REPL)   |           |                 |
| -22              | 214-4003-XX        |                             | 1   | .HEAT SINK,XSTR:TO-220,AL<br>(ATTACHING PARTS)  | 80009     | 2144003XX       |
| -23              | 211-0661-XX        |                             | 1   | .SCR,ASSEM WSHR:4-40 X 0.25,PNH,STL   | TK0435    | ORDER BY DESC   |
| -24              | 210-0586-XX        |                             | 1   | .NUT,PL,ASSEM WA:4-40 X 0.25,STL<br>(END ATTACHING PARTS)                               | TK0435    | ORDER BY DESC   |
| -25              | -----              |                             | 2   | TERM,PIN:(SEE A7J72,J74 REPL)   |           |                 |
| -26              | -----              |                             | 1   | CA ASSY,SPELEC:(SEE W72 REPL)   |           |                 |
| -27              | -----              |                             | 1   | CKT BOARD ASSY:MOTHER(SEE A1 REPL)<br>(ATTACHING PARTS)                                 |           |                 |
| -28              | 211-0661-XX        |                             | 8   | SCR,ASSEM WSHR:4-40 X 0.25,PNH,STL<br>(END ATTACHING PARTS)<br>CKT BOARD ASSY INCLUDES: | TK0435    | ORDER BY DESC   |
| -29              | -----              |                             | 1   | CA ASSY,SPELEC:(SEE A1W70 REPL)   |           |                 |
| -30              | -----              |                             | 1   | CA ASSY,SPELEC:(SEE A1W60 REPL)   |           |                 |
| -31              | -----              |                             | 1   | CA ASSY,SPELEC:(SEE A1W192 REPL)  |           |                 |
| -32              | -----              |                             | 4   | CONN,RCPT,ELEC:(SEE A1J20,J30,J40,J50 REPL)   |           |                 |
| -33              | -----              |                             | 4   | CONN,RCPT,ELEC:(SEE A1J22,J32,J42,J52 REPL)   |           |                 |

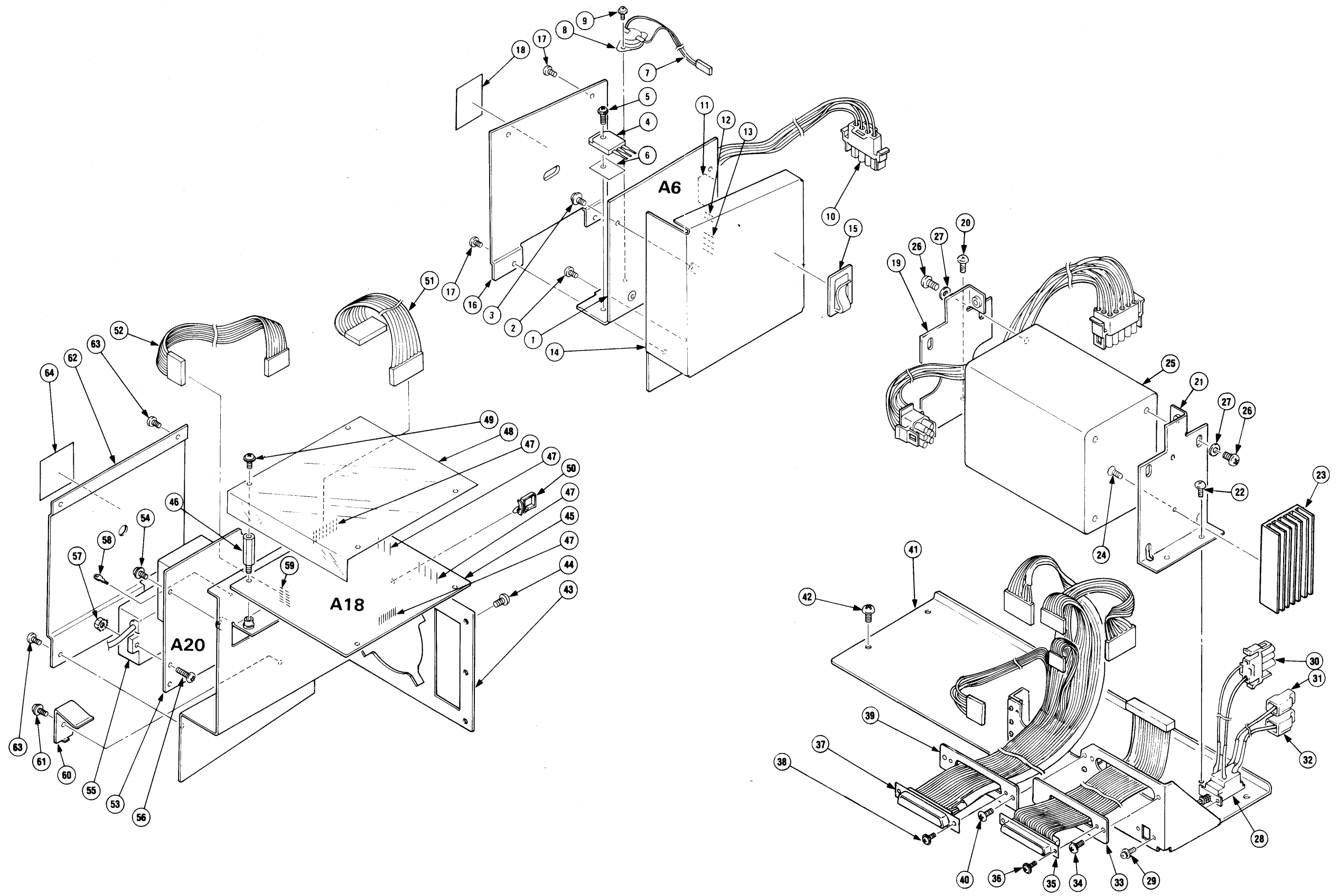
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| 3-34             | -----              |                             | 1   | CONN,RCPT,ELEC:(SEE A1J400 REPL)  |           |               |
| -35              | -----              |                             | 1   | CONN,RCPT,ELEC:(SEE A1J220 REPL)  |           |               |
| -36              | -----              |                             | 1   | CONN,RCPT,ELEC:(SEE A1J110 REPL)  |           |               |
| -37              | -----              |                             | 1   | CONN,RCPT,ELEC:(SEE A1J190 REPL)  |           |               |
| -38              | -----              |                             | 5   | TERM,PIN:(SEE A1J10,J12,J180,J410,J412 REPL)  |           |               |
| -39              | 407-3479-XX        |                             | 1   | BRACKET,CKT BD:ALUMINUM<br>(ATTACHING PARTS)  | 80009     | 4073479XX     |
| -40              | 211-0507-XX        |                             | 2   | SCREW,MACHINE:6-32 X 0.312,PNH,STL<br>(END ATTACHING PARTS)                             | TK0435    | ORDER BY DESC |
| -41              | -----              |                             | 1   | CKT BOARD ASSY:LV SUPPLY(SEE A19 REPL)<br>(ATTACHING PARTS)                             |           |               |
| -42              | 211-0661-XX        |                             | 3   | SCR,ASSEM WSHR:4-40 X 0.25,PNH,STL  | TK0435    | ORDER BY DESC |
| -43              | 211-0507-XX        |                             | 3   | SCREW,MACHINE:6-32 X 0.312,PNH,STL<br>(END ATTACHING PARTS)<br>CKT BOARD ASSY INCLUDES: | TK0435    | ORDER BY DESC |
| -44              | 214-3874-XX        |                             | 1   | .HT SK,PWR SPLY:LV,AL<br>(ATTACHING PARTS)  | 80009     | 2143874XX     |
| -45              | 211-0661-XX        |                             | 3   | .SCR,ASSEM WSHR:4-40 X 0.25,PNH,STL<br>(END ATTACHING PARTS)                            | TK0435    | ORDER BY DESC |
| -46              | -----              |                             | 3   | TRANSISTOR:(SEE A19Q130,Q230,Q600 REPL)<br>(ATTACHING PARTS)                            |           |               |
| -47              | 211-0244-XX        |                             | 3   | .SCR,ASSEM WSHR:4-40 X 0.312,PNH,STL<br>(END ATTACHING PARTS)                           | TK0435    | 7772-312      |
| -48              | -----              |                             | 2   | MICROCKT:(SEE A19U100,U310 REPL)<br>(ATTACHING PARTS)                                   |           |               |
| -49              | 211-0315-XX        |                             | 4   | .SCR,ASSEM WSHR:4-40 X 0.437,PHN,STL  | TK0435    | ORDER BY DESC |
| -50              | 342-0790-XX        |                             | 2   | .INSULATOR,FILM:MICA,0.07MA<br>(END ATTACHING PARTS)                                    | 80009     | 3420790XX     |
| -51              | -----              |                             | 5   | SEMICOND:(SEE A19CR100,CR200,CR300,<br>CR400,U410 REPL)<br>(ATTACHING PARTS)            |           |               |
| -52              | 211-0244-XX        |                             | 5   | .SCR,ASSEM WSHR:4-40 X 0.312,PNH,STL<br>(END ATTACHING PARTS)                           | TK0435    | 7772-312      |
| -53              | -----              |                             | 1   | RELAY,SOL STATE:(SEE A19U700 REPL)<br>(ATTACHING PARTS)                                 |           |               |
| -54              | 211-0244-XX        |                             | 2   | .SCR,ASSEM WSHR:4-40 X 0.312,PNH,STL<br>(END ATTACHING PARTS)                           | TK0435    | 7772-312      |
| -55              | -----              |                             | 2   | CONN,RCPT,ELEC:(SEE A19J64,J190 REPL)   |           |               |
| -56              | -----              |                             | 1   | CONN,RCPT,ELEC:(SEE A19J196 REPL)   |           |               |
| -57              | -----              |                             | 3   | TERM,PIN:(SEE A19J72,J194,J198 REPL)  |           |               |
| -58              | -----              |                             | 2   | TERM,PIN:(SEE A19J280,J290 REPL)  |           |               |
| -59              | -----              |                             | 1   | CA ASSY,SPELEC:(SEE W190 REPL)  |           |               |
| -60              | -----              |                             | 1   | CA ASSY,SPELEC:(SEE W194 REPL)  |           |               |
| -61              | 348-1048-XX        |                             | 2   | PAD,CUSHIONING:150MM X 12MM X 13MM  | TK0AU     | ORDER BY DESC |
| -62              | 343-1273-XX        |                             | 2   | RETAINER,CKT BD:BRASS<br>(ATTACHING PARTS)  | 80009     | 3431273XX     |
| -63              | 211-0504-XX        |                             | 2   | SCREW,MACHINE:6-32 X 0.250,PNH,STL<br>(END ATTACHING PARTS)                             | TK0435    | ORDER BY DESC |

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| 3-64             | -----              |                      |         | 1   | CKT BOARD ASSY:CPU(SEE A2 REPL)   |           |               |
| -65              | -----              |                      |         | 1   | CONN,PLUG,ELEC:(SEE A2P20 REPL)   |           |               |
| -66              | -----              |                      |         | 1   | CONN,PLUG,ELEC:(SEE A2P22 REPL)   |           |               |
| -67              | 136-0973-XX        |                      |         | 2   | .SKT,PL-IN ELEK:MICROCKT,DIP32  | TK0FB     | DILB32P-8J    |
| -68              | -----              |                      |         | 2   | TERM,TEST POINT:(SEE A2TP100,TP400 REPL)  |           |               |
| -69              | 105-0899-XX        | J301393              | J301782 | 2   | .EJECTOR,CKT BD:NYLON   | 80009     | 1050899XX     |
|                  | 105-0978-XX        | J301783              |         | 2   | .EJECTOR,CKT BD:NYLON   | TK00Z     | 21-0608       |
| -70              | 337-3326-XX        | J301393              | J302428 | 1   | .SHIELD,ELEC:CPU BD<br>(ATTACHING PARTS)  | 80009     | 3373326XX     |
| -71              | 211-0661-XX        | J301393              | J302428 | 5   | .SCR,ASSEM WSHR:4-40 X 0.25,PNH,STL<br>(END ATTACHING PARTS)  | TK0435    | ORDER BY DESC |
| -72              | -----              |                      |         | 1   | CKT BOARD ASSY:A/D(SEE A3 REPL)   |           |               |
| -73              | -----              |                      |         | 1   | CONN,PLUG,ELEC:(SEE A3P30 REPL)   |           |               |
| -74              | -----              |                      |         | 1   | CONN,PLUG,ELEC:(SEE A3P32 REPL)   |           |               |
| -75              | -----              |                      |         | 6   | TERM,TEST PT:(SEE A3TP200,TP290,TP310,<br>TP380,TP500,TP580 REPL)                                     |           |               |
| -76              | -----              |                      |         | 1   | TERMINAL,PIN:(SEE A3J34 REPL)   |           |               |
| -77              | -----              |                      |         | 1   | BUS,CONDUCTOR:(SEE A3P34 REPL)  |           |               |
| -78              | 105-0899-XX        | J301393              | J301782 | 2   | .EJECTOR,CKT BD:NYLON   | 80009     | 1050899XX     |
|                  | 105-0978-XX        | J301783              |         | 2   | .EJECTOR,CKT BD:NYLON   | TK00Z     | 21-0608       |
| -79              | 337-3326-XX        |                      |         | 1   | .SHIELD,ELEC:CPU BD<br>(ATTACHING PARTS)  | 80009     | 3373326XX     |
| -80              | 211-0661-XX        | J301393              | J302428 | 5   | .SCR,ASSEM WSHR:4-40 X 0.25,PNH,STL<br>(END ATTACHING PARTS)  | TK0435    | ORDER BY DESC |
| -81              | -----              |                      |         | 1   | CKT BOARD ASSY:DGTL DISPLAY(SEE A4 REPL)  |           |               |
| -82              | -----              |                      |         | 1   | CONN,PLUG,ELEC:(SEE A4P40 REPL)   |           |               |
| -83              | -----              |                      |         | 1   | CONN,PLUG,ELEC:(SEE A4P42 REPL)   |           |               |
| -84              | -----              |                      |         | 1   | TERM,TEST POINT:(SEE A4TP10,TP20 REPL)  |           |               |
| -85              | 105-0899-XX        | J301393              | J301782 | 2   | .EJECTOR,CKT BD:NYLON   | 80009     | 1050899XX     |
|                  | 105-0978-XX        | J301783              |         | 2   | .EJECTOR,CKT BD:NYLON   | TK00Z     | 21-0608       |
| -86              | 337-3326-XX        |                      |         | 1   | .SHIELD,ELEC:CPU BD<br>(ATTACHING PARTS)  | 80009     | 3373326XX     |
| -87              | 211-0661-XX        |                      |         | 5   | .SCR,ASSEM WSHR:4-40 X 0.25,PNH,STL<br>(END ATTACHING PARTS)  | TK0435    | ORDER BY DESC |
| -88              | -----              |                      |         | 1   | CKT BOARD ASSY:DISPLAY CONT(SEE A5 REPL)  |           |               |
| -89              | -----              |                      |         | 1   | CONN,PLUG,ELEC:(SEE A5P50 REPL)   |           |               |
| -90              | -----              |                      |         | 1   | CONN,PLUG,ELEC:(SEE A5P52 REPL)   |           |               |
| -91              | -----              |                      |         | 12  | TERM,TEST POINT:<br>(SEE A5TP10,TP20,TP30,TP60,TP70,TP80,TP90,<br>TP100,TP500,TP502,TP648,TP658 REPL) |           |               |
| -92              | 105-0899-XX        | J301393              | J301782 | 2   | .EJECTOR,CKT BD:NYLON   | 80009     | 1050899XX     |
|                  | 105-0978-XX        | J301783              |         | 2   | .EJECTOR,CKT BD:NYLON   | TK00Z     | 21-0608       |
| -93              | 337-3326-XX        | J301393              | J302428 | 1   | .SHIELD,ELEC:CPU BD<br>(ATTACHING PARTS)  | 80009     | 3373326XX     |
| -94              | 211-0661-XX        | J301393              | J302428 | 5   | .SCR,ASSEM WSHR:4-40 X 0.25,PNH,STL<br>(END ATTACHING PARTS)  | TK0435    | ORDER BY DESC |



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| 4-1              | -----              |                      |         | 1   | CKT BOARD ASSY:COLL SPLY OUT(SEE A6 REPL)<br>(ATTACHING PARTS)                          |           |               |
| -2               | 211-0507-XX        |                      |         | 2   | SCREW,MACHINE:6-32 X 0.312,PNH,STL  | TK0435    | ORDER BY DESC |
| -3               | 211-0661-XX        |                      |         | 2   | SCR,ASSEM WSHR:4-40 X 0.25,PNH,STL<br>(END ATTACHING PARTS)<br>CKT BOARD ASSY INCLUDES: | TK0435    | ORDER BY DESC |
| -4               | -----              |                      |         | 4   | XSTR:(SEE A6Q438,Q440,Q538,Q540 REPL)<br>(ATTACHING PARTS)                              |           |               |
| -5               | 211-0315-XX        |                      |         | 4   | .SCR,ASSEM WSHR:4-40 X 0.437,PHN,STL  | TK0435    | ORDER BY DESC |
| -6               | 342-0787-XX        |                      |         | 4   | .INSULATOR,PLATE:XSTR,TO-3P,SI RUBBER<br>(END ATTACHING PARTS)                          | 80009     | 3420787XX     |
| -7               | -----              |                      |         | 1   | CA ASSY,SP,ELEC:(SEE A6W66 REPL)  |           |               |
| -8               | -----              |                      |         | 1   | SWITCH,THERMOSTATIC:(SEE A6S92 REPL)<br>(ATTACHING PARTS)                               |           |               |
| -9               | 211-0661-XX        |                      |         | 2   | .SCR,ASSEM WSHR:4-40 X 0.25,PNH,STL<br>(END ATTACHING PARTS)                            | TK0435    | ORDER BY DESC |
| -10              | -----              |                      |         | 1   | CA ASSY,SP,ELEC:(SEE A6W64 REPL)  |           |               |
| -11              | -----              |                      |         | 1   | CONN,RCPT,ELEC:(SEE A6J60 REPL)   |           |               |
| -12              | -----              |                      |         | 1   | TERMINAL,PIN:(SEE A6J66 REPL)   |           |               |
| -13              | -----              |                      |         | 1   | TERMINAL,PIN:(SEE A6J62 REPL)   |           |               |
| -14              | 407-3470-XX        |                      |         | 1   | BRACKET,CKT BD:COLLECTOR SUPPLY OUTPUT  | 80009     | 4073470XX     |
| -15              | 343-1084-XX        |                      |         | 2   | CLAMP,CABLE:NYLON   | 80009     | 3431084XX     |
| -16              | 337-3330-XX        | J301393              | J302394 | 1   | SHIELD,ELEC:COLLECTOR SUPPLY<br>(ATTACHING PARTS)                                       | 80009     | 3373330XX     |
| -17              | 211-0008-XX        | J301393              | J302394 | 4   | SCREW,MACHINE:4-40 X 0.25,PNH,STL<br>(END ATTACHING PARTS)                              | TK0435    | ORDER BY DESC |
| -18              | 334-6695-XX        | J301393              | J302394 | 1   | MARKER,IDENT:MKD DANGER & POT   | 80009     | 3346695XX     |
| -19              | 407-3478-XX        |                      |         | 1   | BRACKET,XFMR:LEFT,ALUMINUM<br>(ATTACHING PARTS)   | 80009     | 4073478XX     |
| -20              | 212-0507-XX        |                      |         | 2   | SCREW,MACHINE:10-32 X 0.375,PNH,STL<br>(END ATTACHING PARTS)                            | TK0435    | MACHINE SCREW |
| -21              | 407-3907-XX        |                      |         | 1   | BRACKET,XFMR:RIGHT,ALUMINUM<br>(ATTACHING PARTS)  | 80009     | 4073907XX     |
| -22              | 212-0507-XX        |                      |         | 2   | SCREW,MACHINE:10-32 X 0.375,PNH,STL<br>(END ATTACHING PARTS)                            | TK0435    | MACHINE SCREW |
| -23              | 214-3974-XX        |                      |         | 1   | HEAT SINK,ELEC:TRANSFORMER,ALUMINUM<br>(ATTACHING PARTS)                                | 80009     | 2143974XX     |
| -24              | 211-0538-XX        |                      |         | 2   | SCREW,MACHINE:6-32 X 0.312,FLH,STL<br>(END ATTACHING PARTS)                             | TK0435    | ORDER BY DESC |
| -25              | -----              |                      |         | 1   | XFMR,PWR,STDN:(SEE T100 REPL)<br>(ATTACHING PARTS)                                      |           |               |
| -26              | 212-0507-XX        |                      |         | 8   | SCREW,MACHINE:10-32 X 0.375,PNH,STL   | TK0435    | MACHINE SCREW |
| -27              | 210-1003-XX        |                      |         | 8   | WASHER,FLAT:0.2 ID X 0.438 OD X 0.036 BRS<br>(END ATTACHING PARTS)                      | 12327     | ORDER BY DESC |
| -28              | -----              |                      |         | 1   | SWITCH,PUSH:(SEE S100 REPL)<br>(ATTACHING PARTS)  |           |               |
| -29              | 211-0751-XX        |                      |         | 2   | SCR,ASSEM WSHR:M3 X 8<br>(END ATTACHING PARTS)  | 80009     | 2110751XX     |

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| 4-30             | -----              |                             | 1   | CA ASSY,SPELEC:(SEE W270 REPL)  |           |               |
| -31              | -----              |                             | 1   | LEAD ELECTRICAL:(SEE W16 REPL)  |           |               |
| -32              | -----              |                             | 1   | LEAD,ELECTRICAL:(SEE W18 REPL)  |           |               |
| -33              | 386-5485-XX        |                             | 1   | PLATE,CONN MTG:FEMALE,STEEL<br>(ATTACHING PARTS)  | 80009     | 3865485XX     |
| -34              | 211-0507-XX        |                             | 2   | SCREW,MACHINE:6-32 X 0.312,PNH,STL<br>(END ATTACHING PARTS)                             | TK0435    | ORDER BY DESC |
| -35              | -----              |                             | 1   | CA ASSY,SPELEC:(SEE W400 REPL)<br>(ATTACHING PARTS)                                     |           |               |
| -36              | 211-0661-XX        |                             | 2   | SCR,ASSEM WSHR:4-40 X 0.25,PNH,STL<br>(END ATTACHING PARTS)                             | TK0435    | ORDER BY DESC |
| -37              | -----              |                             | 1   | CA ASSY,SPELEC:(SEE W490 REPL)<br>(ATTACHING PARTS)                                     |           |               |
| -38              | 211-0661-XX        |                             | 2   | SCR,ASSEM WSHR:4-40 X 0.25,PNH,STL<br>(END ATTACHING PARTS)                             | TK0435    | ORDER BY DESC |
| -39              | 386-5909-XX        |                             | 1   | PLATE,CONN MTG:FEMALE,STEEL<br>(ATTACHING PARTS)  | 80009     | 3865909XX     |
| -40              | 211-0507-XX        |                             | 2   | SCREW,MACHINE:6-32 X 0.312,PNH,STL<br>(END ATTACHING PARTS)                             | TK0435    | ORDER BY DESC |
| -41              | 441-1948-XX        |                             | 1   | CHAS ASSY,CURV:TRCR,REAR,AL<br>(ATTACHING PARTS)  | 80009     | 4411948XX     |
| -42              | 211-0507-XX        |                             | 4   | SCREW,MACHINE:6-32 X 0.312,PNH,STL<br>(END ATTACHING PARTS)                             | TK0435    | ORDER BY DESC |
| -43              | 441-1743-XX        |                             | 1   | CHASSIS,CRT:LEFT<br>(ATTACHING PARTS)   | 80009     | 4411743XX     |
| -44              | 211-0504-XX        |                             | 3   | SCREW,MACHINE:6-32 X 0.250,PNH,STL<br>(END ATTACHING PARTS)                             | TK0435    | ORDER BY DESC |
| -45              | -----              |                             | 1   | CKT BOARD ASSY:CRT OUTPUT(SEE A18 REPL)<br>(ATTACHING PARTS)                            |           |               |
| -46              | 129-1139-XX        |                             | 4   | SPACER,POST:25MM L,W4-40 THD,BRASS<br>(END ATTACHING PARTS)<br>CKT BOARD ASSY INCLUDES: | 80009     | 1291139XX     |
| -47              | -----              |                             | 4   | TERM,PIN:(SEE A18J180,J182,J184,J186 REPL)  |           |               |
| -48              | 342-0785-XX        |                             | 1   | INSULATOR,PLATE:CRT OUTPUT<br>(ATTACHING PARTS)   | 80009     | 3420785XX     |
| -49              | 211-0661-XX        |                             | 4   | SCR,ASSEM WSHR:4-40 X 0.25,PNH,STL<br>(END ATTACHING PARTS)                             | TK0435    | ORDER BY DESC |
| -50              | 343-1288-XX        |                             | 1   | CLAMP,CABLE:PLASTIC   | 80009     | 3431288XX     |
| -51              | -----              |                             | 1   | CA ASSY,SPELEC:(SEE W182 REPL)  |           |               |
| -52              | -----              |                             | 1   | CA ASSY,SPELEC:(SEE W180 REPL)  |           |               |
| -53              | -----              |                             | 1   | CKT BOARD ASSY:HV REG(SEE A20 REPL)<br>(ATTACHING PARTS)                                |           |               |
| -54              | 211-0661-XX        |                             | 4   | SCR,ASSEM WSHR:4-40 X 0.25,PNH,STL<br>(END ATTACHING PARTS)<br>CKT BOARD ASSY INCLUDES: | TK0435    | ORDER BY DESC |
| -55              | -----              |                             | 1   | HV MODULE:(SEE A20U300 REPL)<br>(ATTACHING PARTS)                                       |           |               |
| -56              | 211-0012-XX        |                             | 2   | .SCREW,MACHINE:4-40 X 0.375,PNH,STL   | TK0435    | ORDER BY DESC |

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| 4-57             | 210-0586-XX        |                             | 2   | .NUT,PL,ASSEM WA:4-40 X 0.25,STL<br>(END ATTACHING PARTS)   | TK0435    | ORDER BY DESC |
| -58              | -----              |                             | 3   | TERM,TEST POINT:<br>(SEE A20TP200,TP300,TP400 REPL)         |           |               |
| -59              | -----              |                             | 3   | TERM,PIN:(SEE A20J182,J194,J200 REPL)                       |           |               |
| -60              | 343-1275-XX        |                             | 1   | RETAINER,XSTR:HV,SST<br>(ATTACHING PARTS)                   | 80009     | 3431275XX     |
| -61              | 211-0661-XX        |                             | 1   | SCR,ASSEM WSHR:4-40 X 0.25,PNH,STL<br>(END ATTACHING PARTS) | TK0435    | ORDER BY DESC |
| -62              | 337-3329-XX        |                             | 1   | SHIELD,ELEC:HV REG<br>(ATTACHING PARTS)                     | 80009     | 3373329XX     |
| -63              | 211-0008-XX        |                             | 4   | SCREW,MACHINE:4-40 X 0.25,PNH,STL<br>(END ATTACHING PARTS)  | TK0435    | ORDER BY DESC |
| -64              | 334-6694-XX        |                             | 1   | MARKER,IDENT:MKD DANGER & POT                               | 80009     | 3346694XX     |

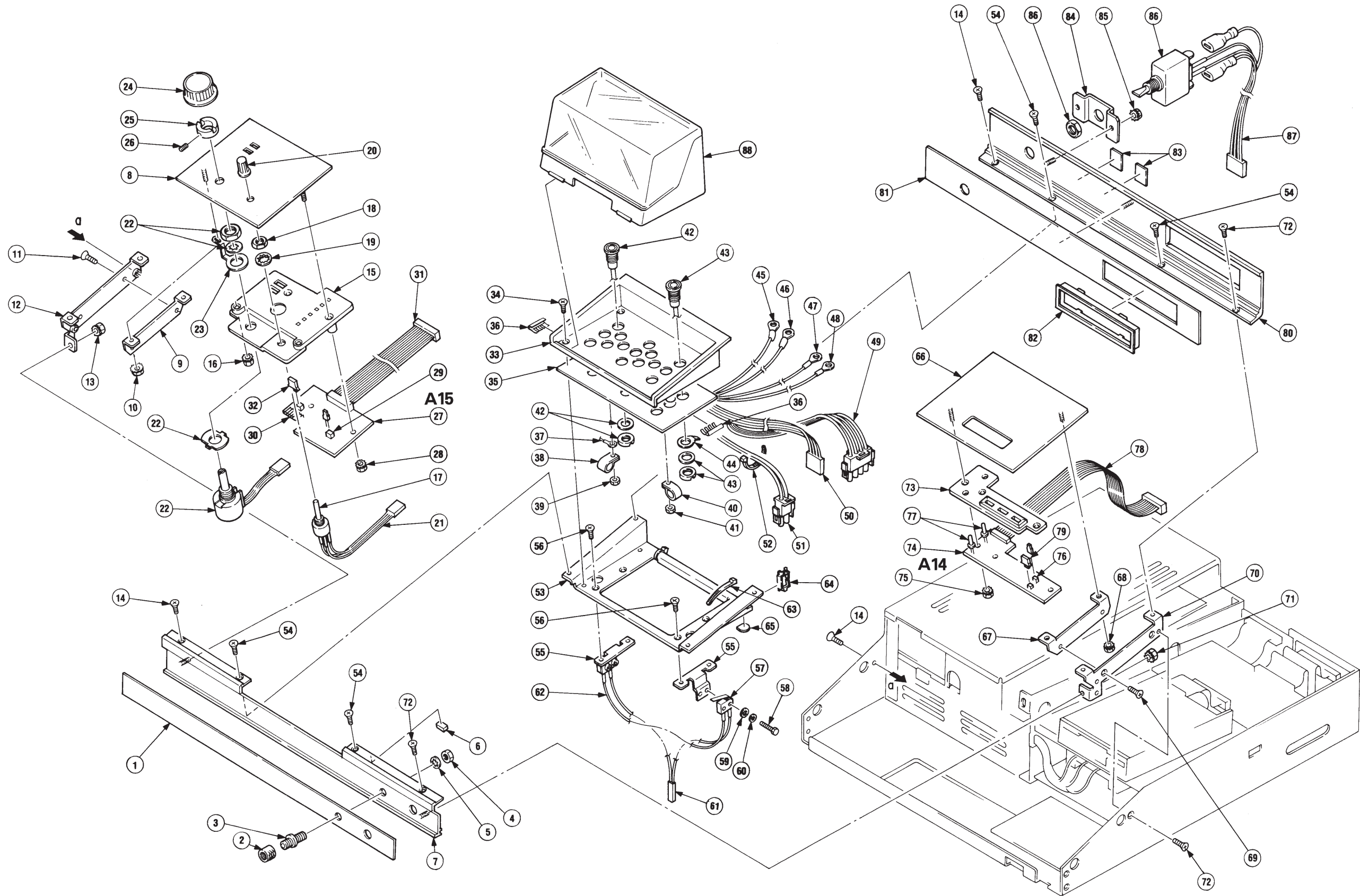
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| Fig. & Index No. | Tektronix Part No. | Serial No. Effective Dscont | Qty | 12345 Name & Description  | Mfr. Code | Mfr. Part No.   |
|------------------|--------------------|-----------------------------|-----|---|-----------|-----------------|
| 5-1              | 333-3514-XX        |                             | 1   | PANEL,FRONT:371.PWR SW (ATTACHING PARTS)  | 80009     | 3333514XX       |
| -2               | 200-0103-XX        |                             | 1   | NUT,PLAIN,KNURL:0.25-28 X 0.375 INCH OD,BRS                                       | TK0588    | ORDER BY DESC   |
| -3               | 355-0507-XX        |                             | 1   | STUD,SHOULDERED:BINDING POST,BRS  | TK0588    | ORDER BY DESC   |
| -4               | 210-0455-XX        |                             | 1   | NUT,PLAIN,HEX:0.25-28 X 0.375,BRS   | 73743     | 3089-402        |
| -5               | 210-0046-XX        |                             | 1   | WASHER,LOCK:0.261 ID,INTL,0.018 THK,STL (END ATTACHING PARTS)                     | 78189     | 1214-05-00-0541 |
| -6               | 344-0396-XX        |                             | 1   | CLIP,CABLE:PVC  | 80009     | 3440396XX       |
| -7               | 426-2334-XX        |                             | 1   | SUBPANEL, TEST F:   | 80009     | 4262334XX       |
| -8               | 333-3718-XX        |                             | 1   | PANEL,FRONT   | 80009     | 3333718XX       |
| -9               | 407-3472-XX        |                             | 1   | BRACKET,ANGLE:LOWER,PANEL (ATTACHING PARTS)                                       | 80009     | 4073472XX       |
| -10              | 210-0586-XX        |                             | 2   | NUT,PL,ASSEM WA:4-40 X 0.25,STL   | TK0435    | ORDER BY DESC   |
| -11              | 211-0038-XX        |                             | 2   | SCREW,MACHINE:4-40 X 0.312,FLH,STL (END ATTACHING PARTS)                          | TK0435    | ORDER BY DESC   |
| -12              | 122-0183-XX        |                             | 1   | ANGLE,RAIL:SUBPANEL MTG,LEFT (ATTACHING PARTS)                                    | 80009     | 1220183XX       |
| -13              | 210-0586-XX        |                             | 1   | NUT,PL,ASSEM WA:4-40 X 0.25,STL   | TK0435    | ORDER BY DESC   |
| -14              | 211-0038-XX        |                             | 5   | SCREW,MACHINE:4-40 X 0.312,FLH,STL (END ATTACHING PARTS)                          | TK0435    | ORDER BY DESC   |
| -15              | 351-0854-XX        |                             | 1   | GUIDE,PB:370A VAR COIL SUPPLY BD,PC (ATTACHING PARTS)                             | 80009     | 3510854XX       |
| -16              | 210-0586-XX        |                             | 2   | NUT,PL,ASSEM WA:4-40 X 0.25,STL (END ATTACHING PARTS)                             | TK0435    | ORDER BY DESC   |
| -17              | -----              |                             | 1   | RES,VAR,NONWW:(SEE R210 REPL) (ATTACHING PARTS)                                   |           |                 |
| -18              | 210-0583-XX        |                             | 1   | NUT,PLAIN,HEX:0.25-32 X 0.312,BRS   | 73743     | 2X-20319-402    |
| -19              | 210-0046-XX        |                             | 1   | WASHER,LOCK:0.261 ID,INTL,0.018 THK,STL (END ATTACHING PARTS)                     | 78189     | 1214-05-00-0541 |
| -20              | 366-0626-XX        |                             | 1   | KNOB:SILVER GRAY,12MM OD  | 80009     | 3660626XX       |
| -21              | -----              |                             | 1   | CA ASSY,SPELEC:(SEE W210 REPL)  |           |                 |
| -22              | -----              |                             | 1   | SWITCH,ROTARY:(SEE S200 REPL) (ATTACHING PARTS)                                   |           |                 |
| -23              | 210-0207-XX        |                             | 1   | TERMINAL,LUG:0.385 OD,PLAIN,BRS (END ATTACHING PARTS)                             | 12697     | 01136902        |
| -24              | 366-0621-XX        |                             | 1   | SHELL,KNOB:TEKTAN,30MM OD X 15MM H,ABS  | 80009     | 3660621XX       |
| -25              | 377-0609-XX        |                             | 1   | INSERT,KNOB:8.6MM ID X 16MM OD X 8MM H,AL (ATTACHING PARTS)                       | 80009     | 3770609XX       |
| -26              | 213-0022-XX        |                             | 1   | SETSCREW:4-40 X 0.188,STL (END ATTACHING PARTS)                                   | 0KB01     | ORDER BY DESC   |
| -27              | -----              |                             | 1   | CKT BOARD ASSY:CONFIG.LED(SEE A15 REPL) (ATTACHING PARTS)                         |           |                 |
| -28              | 210-0586-XX        |                             | 2   | NUT,PL,ASSEM WA:4-40 X 0.25,STL (END ATTACHING PARTS)<br>CKT BOARD ASSY INCLUDES: | TK0435    | ORDER BY DESC   |
| -29              | 129-1128-XX        |                             | 6   | .SPACER,POST:5.1MM,L,POLYCARBONATE  | 80009     | 1291128XX       |
| -30              | -----              |                             | 2   | TERM,PIN:(SEE A15J200,J210 REPL)  |           |                 |
| -31              | -----              |                             | 1   | CA ASSY,SPELEC:(SEE A15W150 REPL)   |           |                 |

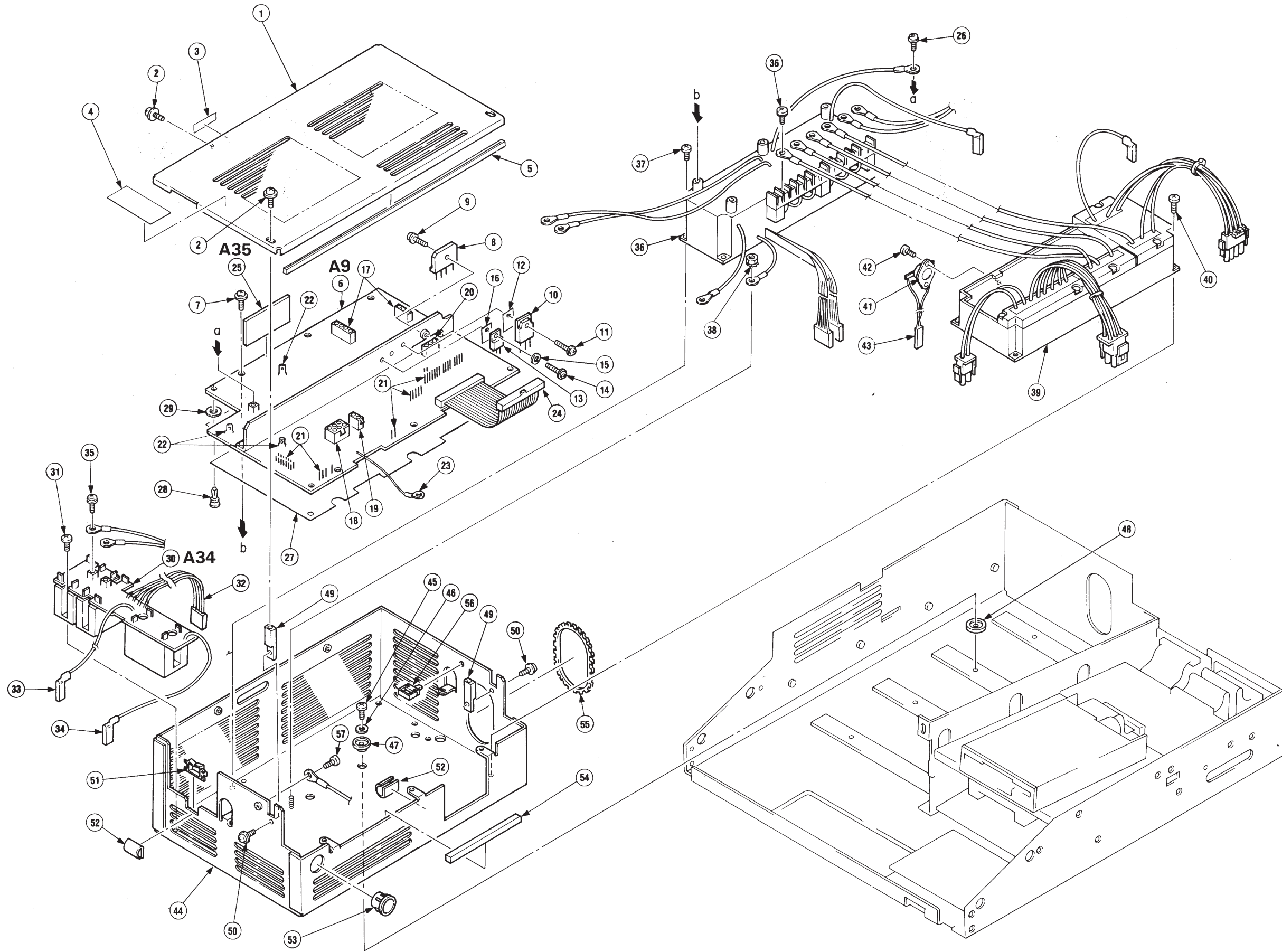
| Fig. & Index No. | Tektronix Part No. | Serial No. Effective Dscont | Qty | 12345 Name & Description                                    | Mfr. Code | Mfr. Part No. |
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| 5-32             | 366-0617-XX        |                             | 2   | PUSH BUTTON:SILVER GRAY,9.6 X 4.2 X 8.5MM                   | 80009     | 3660617XX     |
| -33              | 386-5395-XX        |                             | 1   | PLATE,MTG ASSY:TEST ADAPTER<br>(ATTACHING PARTS)            | 80009     | 3865395XX     |
| -34              | 211-0025-XX        |                             | 4   | SCREW,MACHINE:4-40 X 0.375,FLH,STL<br>(END ATTACHING PARTS) | TK0435    | ORDER BY DESC |
| -35              | 386-5919-XX        |                             | 1   | PLATE,ELEC:GND,ALUMINUM                                     | 80009     | 3865919XX     |
| -36              | 348-0970-XX        |                             | 2   | SHLD GSKT,ELEK:FINGER TYPE,0.75 L                           | 80009     | 3480970XX     |
| -37              | 210-0269-XX        |                             | 1   | TERMINAL,LUG:0.257 ID,PLAIN,BRS TINNED                      | 0KB01     | 905-020       |
| -38              | 343-1367-XX        |                             | 3   | CLAMP,LOOP:3.3MM ID,NYLON<br>(ATTACHING PARTS)              | TK0AR     | 30-0608       |
| -39              | 210-0407-XX        |                             | 3   | NUT,PLAIN,HEX:6-32 X 0.25,BRS<br>(END ATTACHING PARTS)      | 73743     | 3038-402      |
| -40              | 343-1286-XX        |                             | 1   | CLAMP,CABLE:6.8 ID,NYLON<br>(ATTACHING PARTS)               | 80009     | 3431286XX     |
| -41              | 210-0407-XX        |                             | 1   | NUT,PLAIN,HEX:6-32 X 0.25,BRS<br>(END ATTACHING PARTS)      | 73743     | 3038-402      |
| -42              | 136-0887-XX        |                             | 4   | SOCKET,PIN TERM:0.16 DIA,RED                                | 80009     | 1360887XX     |
| -43              | 136-0888-XX        |                             | 11  | SOCKET,PIN TERM:0.16 DIA,GRAY                               | 80009     | 1360888XX     |
| -44              | 210-0241-XX        |                             | 2   | TERMINAL,LUG:0.515 ID,PLAIN,STL                             | TK1665    | ORDER BY DESC |
| -45              | -----              |                             | 1   | LEAD,ELECTRICAL:(SEE W91 REPL)                              |           |               |
| -46              | -----              |                             | 1   | LEAD,ELECTRICAL:(SEE W95 REPL)                              |           |               |
| -47              | -----              |                             | 1   | LEAD,ELECTRICAL:(SEE W3 REPL)                               |           |               |
| -48              | -----              |                             | 1   | LEAD,ELECTRICAL:(SEE W4 REPL)                               |           |               |
| -49              | -----              |                             | 1   | WIRE SET,ELEC:(SEE W104 REPL)                               |           |               |
| -50              | -----              |                             | 1   | CA ASSY,SP,ELEC:(SEE W103 REPL)                             |           |               |
| -51              | -----              |                             | 1   | WIRE SET,ELEC:(SEE W102 REPL)                               |           |               |
| -52              | 343-0549-XX        |                             | 4   | STRAP,TIEDOWN,E:0.098 W X 4.0 L,ZYTEL                       | TK1499    | HW-047        |
| -53              | 407-3889-XX        |                             | 1   | BRACKET,MTG:ADAPTER PL W/PRESSNUT,AL<br>(ATTACHING PARTS)   | 80009     | 4073889XX     |
| -54              | 211-0038-XX        |                             | 4   | SCREW,MACHINE:4-40 X 0.312,FLH,STL<br>(END ATTACHING PARTS) | TK0435    | ORDER BY DESC |
| -55              | 407-3484-XX        |                             | 2   | BRACKET,SW MTG:ALUMINUM<br>(ATTACHING PARTS)                | 80009     | 4073484XX     |
| -56              | 211-0038-XX        |                             | 4   | SCREW,MACHINE:4-40 X 0.312,FLH,STL<br>(END ATTACHING PARTS) | TK0435    | ORDER BY DESC |
| -57              | -----              |                             | 2   | SWITCH,SENS:(SEE S400,S402 REPL)<br>(ATTACHING PARTS)       |           |               |
| -58              | 213-0986-XX        |                             | 4   | SCREW,MACHINE:2-26 X 12MM,HEX,BRS                           | 80009     | 2130986XX     |
| -59              | 210-0938-XX        |                             | 4   | WASHER,FLAT:0.109 ID X 0.25 OD X 0.032,STL                  | TK0413    | ORDER BY DESC |
| -60              | 210-0054-XX        |                             | 4   | WASHER,LOCK:#4 SPLIT,0.025 THK STL<br>(END ATTACHING PARTS) | 86928     | ORDER BY DESC |
| -61              | -----              |                             | 1   | CA ASSY,SP,ELEC:(SEE W401 REPL)                             |           |               |
| -62              | -----              |                             | 1   | LEAD,ELECTRICAL:(SEE W402 REPL)                             |           |               |
| -63              | 343-0549-XX        |                             | 3   | STRAP,TIEDOWN,E:0.098 W X 4.0 L,ZYTEL                       | TK1499    | HW-047        |
| -64              | 344-0395-XX        |                             | 1   | CLIP,CABLE:NYLON  | 80009     | 3440395XX     |
| -65              | 344-0396-XX        |                             | 2   | CLIP,CABLE:PVC  | 80009     | 3440396XX     |

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| 5-66             | 333-3719-XX        |                             | 1   | PANEL,FRONT:   | 80009     | 3333719XX     |
| -67              | 407-3472-XX        |                             | 1   | BRACKET,ANGLE:LOWER,PANEL<br>(ATTACHING PARTS)                                       | 80009     | 4073472XX     |
| -68              | 210-0586-XX        |                             | 2   | NUT,PL,ASSEM WA:4-40 X 0.25,STL  | TK0435    | ORDER BY DESC |
| -69              | 211-0038-XX        |                             | 2   | SCREW,MACHINE:4-40 X 0.312,FLH,STL<br>(END ATTACHING PARTS)                          | TK0435    | ORDER BY DESC |
| -70              | 122-0184-XX        |                             | 1   | ANGLE,RAIL:SUBPANEL MTG,RIGHT<br>(ATTACHING PARTS)                                   | 80009     | 1220184XX     |
| -71              | 210-0586-XX        |                             | 1   | NUT,PL,ASSEM WA:4-40 X 0.25,STL  | TK0435    | ORDER BY DESC |
| -72              | 211-0038-XX        |                             | 5   | SCREW,MACHINE:4-40 X 0.312,FLH,STL<br>(END ATTACHING PARTS)                          | TK0435    | ORDER BY DESC |
| -73              | 351-0855-XX        |                             | 1   | GUIDE,PB:370A LEFT-STANDBY-RIGHT SWBD  | 80009     | 3510855XX     |
| -74              | -----              |                             | 1   | CKT BOARD ASSY:LOR KEY(SEE A14 REPL)<br>(ATTACHING PARTS)                            |           |               |
| -75              | 210-0586-XX        |                             | 3   | NUT,PL,ASSEM WA:4-40 X 0.25,STL<br>(END ATTACHING PARTS)<br>CKT BOARD ASSY INCLUDES: | TK0435    | ORDER BY DESC |
| -76              | 129-1128-XX        |                             | 3   | .SPACER,POST:5.1MM,L,POLYCARBONATE   | 80009     | 1291128XX     |
| -77              | -----              |                             | 2   | LT EMITTING DOI:(SEE A14DS100,DS400 REPL)  |           |               |
| -78              | -----              |                             | 1   | CA ASSY,SP,ELEC:(SEE A14W140 REPL)   |           |               |
| -79              | 366-0617-XX        |                             | 3   | PUSH BUTTON:SILVER GRAY,9.6 X 4.2 X 8.5MM  | 80009     | 3660617XX     |
| -80              | 426-2336-XX        |                             | 1   | SUBPANEL,TEST F:ALUMINUM   | 80009     | 4262336XX     |
| -81              | 333-3716-XX        |                             | 1   | PANEL,FRONT:   | 80009     | 3333716XX     |
| -82              | 426-2331-XX        |                             | 1   | FRAME:POLYCARBONATE  | 80009     | 4262331XX     |
| -83              | 343-1084-XX        |                             | 2   | CLAMP,CABLE:NYLON  | 80009     | 3431084XX     |
| -84              | 407-3857-XX        |                             | 1   | BRACKET,CMPNT:CKT BREAKER,ALUMINUM<br>(ATTACHING PARTS)                              | 80009     | 4073857XX     |
| -85              | 210-0586-XX        |                             | 2   | NUT,PL,ASSEM WA:4-40 X 0.25,STL<br>(END ATTACHING PARTS)                             | TK0435    | ORDER BY DESC |
| -86              | -----              |                             | 1   | SWITCH.CKT BREAKER:(SEE S800 REPL)   |           |               |
| -87              | -----              |                             | 1   | CA ASSY,SP,ELEC:(SEE W410 REPL)  |           |               |
| -88              | 337-3344-XX        |                             | 1   | SHIELD,ELEC:PROTECTIVE BOX,PC  | 80009     | 3373344XX     |



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| Fig. & Index No. | Tektronix Part No. | Serial No. |         | Qty | 12345 Name & Description  | Mfr. Code | Mfr. Part No. |
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|                  |                    | Effective  | Dscont  |     |   |           |               |
| 6-1              | 441-1923-XX        |            |         | 1   | CHAS,TEST FXTR:GUARD BOX COVER,AL<br>(ATTACHING PARTS)                                  | 80009     | 4411923XX     |
| -2               | 211-0661-XX        |            |         | 4   | SCR,ASSEM WSHR:4-40 X 0.25,PNH,STL<br>(END ATTACHING PARTS)                             | TK0435    | ORDER BY DESC |
| -3               | 334-7730-XX        |            |         | 1   | MARKER,IDENT:MKD LOOPING INFO   | 80009     | 3347730XX     |
| -4               | 334-6690-XX        |            |         | 1   | MARKER,IDENT:MKD CAUTION & DANGER   | 80009     | 3346690XX     |
| -5               | 252-0719-XX        |            |         | 1   | PLASTIC SH,CHAN:0.047 X 0.063 THK,39.37 L   | 80009     | 2520719XX     |
| -6               | -----              |            |         | 1   | CKT BOARD ASSY:LV RELAY(SEE A9 REPL)<br>(ATTACHING PARTS)                               |           |               |
| -7               | 211-0729-XX        |            |         | 8   | SCR,ASSEM WSHR:6-32 X 0.437,PH,STL<br>(END ATTACHING PARTS)<br>CKT BOARD ASSY INCLUDES: | TK0435    | ORDER BY DESC |
| -8               | -----              |            |         | 1   | SEMICON,DVC:(SEE A9CR300 REPL)<br>(ATTACHING PARTS)                                     |           |               |
| -9               | 211-0315-XX        |            |         | 1   | .SCR,ASSEM WSHR:4-40 X 0.437,PHN,STL<br>(END ATTACHING PARTS)                           | TK0435    | ORDER BY DESC |
| -10              | -----              |            |         | 1   | SEMICON,DVC:(SEE A9CR200 REPL)<br>(ATTACHING PARTS)                                     |           |               |
| -11              | 211-0315-XX        |            |         | 1   | .SCR,ASSEM WSHR:4-40 X 0.437,PHN,STL  | TK0435    | ORDER BY DESC |
| -12              | 342-0787-XX        |            |         | 1   | .INSULATOR,PLATE:TRANSISTOR,TO-3P<br>(END ATTACHING PARTS)                              | 80009     | 3420787XX     |
| -13              | -----              |            |         | 2   | SEMICON,DVC:(SEE A9CR202,CR204 REPL)<br>(ATTACHING PARTS)                               |           |               |
| -14              | 211-0315-XX        |            |         | 2   | .SCR,ASSEM WSHR:4-40 X 0.437,PHN,STL  | TK0435    | ORDER BY DESC |
| -15              | 210-1178-XX        |            |         | 2   | .WASHER,SHLDR:U/W TO-220 TRANSISTOR   | 13103     | 7721-7PPS     |
| -16              | 342-0163-XX        |            |         | 2   | .INSULATOR,PLATE:TRANSISTOR,SILICON RBR<br>(END ATTACHING PARTS)                        | 80009     | 3420163XX     |
| -17              | -----              |            |         | 2   | CONN,RCPT,ELEC:(SEE A9J91,J94 REPL)   |           |               |
| -18              | -----              |            |         | 1   | CONN,RCPT,ELEC:(SEE A9J92 REPL)   |           |               |
| -19              | -----              |            |         | 1   | CONN,RCPT,ELEC:(SEE A9J92 REPL)   |           |               |
| -20              | -----              |            |         | 1   | CONN,RCPT,ELEC:(SEE A9J95 REPL)   |           |               |
| -21              | -----              |            |         | 8   | TERM,PIN:(SEE A9J80,J82,J89,J93,J150,J160,<br>J400,J410 REPL)                           |           |               |
| -22              | -----              |            |         | 3   | TERM,QIK DISK:(SEE A9J90,J97,J99 REPL)  |           |               |
| -23              | -----              |            |         | 1   | CA ASSY,SPELEC:(SEE A9W10 REPL)   |           |               |
| -24              | -----              |            |         | 1   | LEAD,ELECTRICAL:(SEE A9W90 REPL)  |           |               |
| -25              | -----              |            |         | 1   | CKT BOARD ASSY:LOOPING(SEE A35 REPL)  |           |               |
| -26              | 211-0751-XX        |            |         | 1   | .SCR,ASSEM WSHR:M3 X 8  | 80009     | 2110751XX     |
| -27              | 342-0895-XX        |            |         | 1   | INSULATOR:POLYCARBONATE,LV CKT BD<br>(ATTACHING PARTS)                                  | 80009     | 3420895XX     |
| -28              | 210-3110-XX        |            |         | 4   | RIVET,SOLID:5.5MM L X 3.4MM OD,TRUSS,NYLON  | TK0BK     | 27-0601       |
| -29              | 210-1475-XX        | J301393    | J301917 | 4   | WASHER,PLAIN:3.56 ID X 7.94 OD X 0.8 THK<br>(END ATTACHING PARTS)                       | 80009     | 2101475XX     |
| -30              | -----              |            |         | 1   | CKT BOARD ASSY:LOR RELAY(SEE A34 REPL)<br>(ATTACHING PARTS)                             |           |               |
| -31              | 211-0504-XX        |            |         | 6   | SCREW,MACHINE:6-32 X 0.250,PNH,STL<br>(END ATTACHING PARTS)<br>CKT BOARD ASSY INCLUDES: | TK0435    | ORDER BY DESC |

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| 6-32             | -----              |                             | 1   | CA ASSY,SPELEC:(SEE A34W89 REPL)                                    |           |                 |
| -33              | -----              |                             | 1   | LEAD,ELECTRICAL:(SEE A34W94 REPL)                                   |           |                 |
| -34              | -----              |                             | 1   | LEAD,ELECTRICAL:(SEE A34W97 REPL)                                   |           |                 |
| -35              | 211-0751-XX        |                             | 2   | .SCR,ASSEM WSHR:M3 X 8  | 80009     | 2110751XX       |
| -36              | -----              |                             | 1   | HV MODULE:(SEE U800 REPL)<br>(ATTACHING PARTS)                      |           |                 |
| -37              | 211-0504-XX        |                             | 4   | SCREW,MACHINE:6-32 X 0.250,PNH,STL<br>(END ATTACHING PARTS)         | TK0435    | ORDER BY DESC   |
| -38              | 210-0457-XX        |                             | 1   | NUT,PL,ASSEM WA:6-32 X 0.312,STL                                    | TK0435    | ORDER BY DESC   |
| -39              | -----              |                             | 1   | RESISTOR,SERIES:(SEE R400 REPL)<br>(ATTACHING PARTS)                |           |                 |
| -40              | 211-0504-XX        |                             | 4   | SCREW,MACHINE:6-32 X 0.250,PNH,STL<br>(END ATTACHING PARTS)         | TK0435    | ORDER BY DESC   |
| -41              | -----              |                             | 1   | SWITCH,THERMAL:(SEE S90 REPL)<br>(ATTACHING PARTS)                  |           |                 |
| -42              | 211-0008-XX        |                             | 2   | SCREW,MACHINE:4-40 X 0.25,PNH,STL<br>(END ATTACHING PARTS)          | TK0435    | ORDER BY DESC   |
| -43              | -----              |                             | 1   | CA ASSY,SPELEC:(SEE W93 REPL)                                       |           |                 |
| -44              | 441-1922-XX        |                             | 1   | CHAS,TEST FXTR:GUARD BOX,ALUMINUM<br>(ATTACHING PARTS)              | 80009     | 4411922XX       |
| -45              | 211-0511-XX        |                             | 8   | SCREW,MACHINE:6-32 X 0.5,PNH,STL                                    | TK0435    | ORDER BY DESC   |
| -46              | 210-0803-XX        |                             | 8   | WASHER,FLAT:0.15 ID X 0.375 OD X 0.032,STL<br>(END ATTACHING PARTS) | 12327     | ORDER BY DESC   |
| -47              | 342-0774-XX        |                             | 8   | INSULATOR,BSHG:4MM ID X 6MM THK,16MM OD                             | 80009     | 3420774XX       |
| -48              | 361-1380-XX        |                             | 8   | SPACER,RING:3MM L X 8.1MM ID  | 80009     | 3611380XX       |
| -49              | 220-0105-XX        |                             | 2   | NUT BLOCK:4-40 X 5.5MM,BRS<br>(ATTACHING PARTS)                     | TK0CB     | ORDER BY DESC   |
| -50              | 211-0661-XX        |                             | 2   | SCR,ASSEM WSHR:4-40 X 0.25,PNH,STL<br>(END ATTACHING PARTS)         | TK0435    | ORDER BY DESC   |
| -51              | 344-0395-XX        |                             | 1   | CLIP,CABLE:NYLON  | 80009     | 3440395XX       |
| -52              | 344-0396-XX        |                             | 2   | CLIP,CABLE:PVC  | 80009     | 3440396XX       |
| -53              | 348-0949-XX        |                             | 1   | GROMMET,PLASTIC:BLACK,RING,15MM ID                                  | 80009     | 3480949XX       |
| -54              | 255-1108-XX        |                             | 1   | PLASTIC CHANNEL:1000 X 4.4 X 5.0MM,NYLON                            | 80009     | 2551108XX       |
| -55              | 255-0334-XX        |                             | 1   | PLASTIC CHANNEL:12.75 X 0.175 X 0.155,NYLON                         | 11897     | 122-NN-2500-060 |
| -56              | 343-1288-XX        |                             | 1   | CLAMP,CABLE:PLASTIC   | 80009     | 3431288XX       |
| -57              | 211-0504-XX        |                             | 1   | SCREW,MACHINE:6-32 X 0.250,PNH,STL                                  | TK0435    | ORDER BY DESC   |

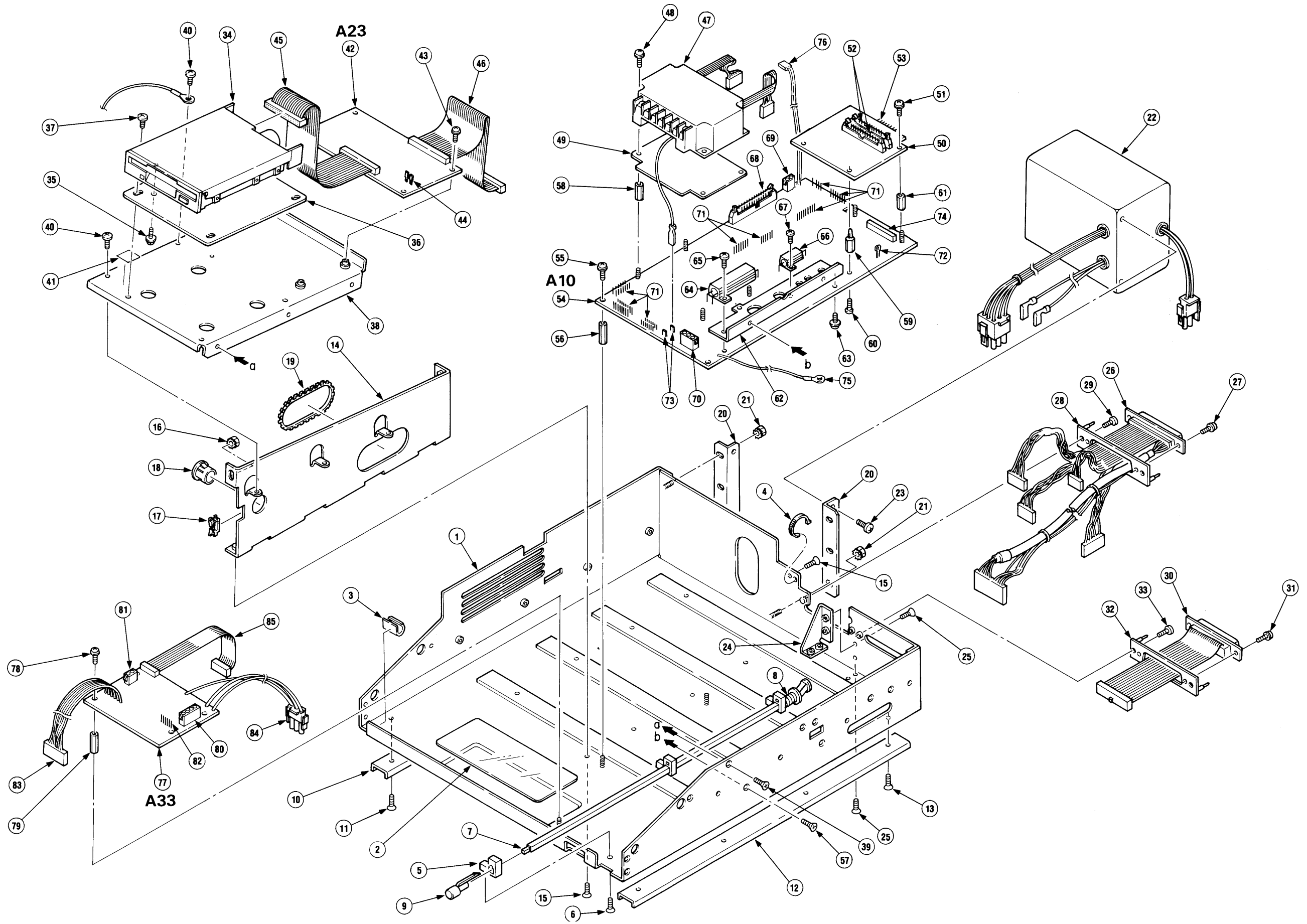
| Fig. & Index No. | Tektronix Part No. | Serial No. Effective Dscont | Qty | 12345 Name & Description   | Mfr. Code | Mfr. Part No.   |
|------------------|--------------------|-----------------------------|-----|--|-----------|-----------------|
| 7-1              | 441-1919-XX        |                             | 1   | CHAS,TEST FXTR:MAIN,AL   | 80009     | 4411919XX       |
| -2               | 342-0776-XX        |                             | 1   | INSULATOR,FILM:370   | 80009     | 3420776XX       |
| -3               | 344-0396-XX        |                             | 1   | CLIP,CABLE:PVC   | 80009     | 3440396XX       |
| -4               | 343-0549-XX        |                             | 1   | STRAP,TIEDOWN,E:0.098 W X 4.0 L,ZYTEL                            | TK1499    | HW-047          |
| -5               | 351-0774-XX        |                             | 3   | GUIDE,SLIDE:PWR SW,POLYCARBONATE (ATTACHING PARTS)               | 80009     | 3510774XX       |
| -6               | 211-0038-XX        |                             | 3   | SCREW,MACHINE:4-40 X 0.312,FLH,STL (END ATTACHING PARTS)         | TK0435    | ORDER BY DESC   |
| -7               | 384-1703-XX        |                             | 1   | EXTENSION SHAFT:PWR SW   | 80009     | 3841703XX       |
| -8               | 214-3420-XX        |                             | 1   | SPRING,HLCPS:10.0MM OD X 9.5MM L,CLE,SST                         | 80009     | 2143420XX       |
| -9               | 366-1767-XX        |                             | 1   | PUSH BUTTON:BLACK,GREEN INDICATOR                                | 80009     | 3661767XX       |
| -10              | 122-0181-XX        |                             | 1   | ANGLE,RAIL:LEFT (ATTACHING PARTS)                                | 80009     | 1220181XX       |
| -11              | 211-0502-XX        |                             | 4   | SCREW,MACHINE:6-32 X 0.188,FLH,STL (END ATTACHING PARTS)         | TK0435    | ORDER BY DESC   |
| -12              | 122-0182-XX        |                             | 1   | ANGLE,RAIL:RIGHT (ATTACHING PARTS)                               | 80009     | 1220182XX       |
| -13              | 211-0502-XX        |                             | 4   | SCREW,MACHINE:6-32 X 0.188,FLH,STL (END ATTACHING PARTS)         | TK0435    | ORDER BY DESC   |
| -14              | 441-1920-XX        |                             | 1   | CHAS,TEST FXTR:ALUMINUM,MID (ATTACHING PARTS)                    | 80009     | 4411920XX       |
| -15              | 211-0538-XX        |                             | 7   | SCREW,MACHINE:6-32 X 0.312,FLH,STL                               | TK0435    | ORDER BY DESC   |
| -16              | 210-0457-XX        |                             | 1   | NUT,PL,ASSEM WA:6-32 X 0.312,STL (END ATTACHING PARTS)           | TK0435    | ORDER BY DESC   |
| -17              | 344-0395-XX        |                             | 1   | CLIP,CABLE:NYLON   | 80009     | 3440395XX       |
| -18              | 348-0949-XX        |                             | 1   | GROMMET,PLASTIC:BLACK,RING,15MM ID                               | 80009     | 3480949XX       |
| -19              | 255-0334-XX        |                             | 1   | PLASTIC CHANNEL:12.75 X 0.175 X 0.155,NYLON                      | 11897     | 122-NN-2500-060 |
| -20              | 407-3486-XX        |                             | 2   | BRACKET,XFMR:ALUMINUM (ATTACHING PARTS)                          | 80009     | 4073486XX       |
| -21              | 220-0410-XX        |                             | 6   | NUT,PL,ASSEM WA:10-32 X 0.375 HEX,STL (END ATTACHING PARTS)      | 0KB01     | 511-101200-50-0 |
| -22              | -----              |                             | 1   | TRANSFORMER:(SEE T200 REPL) (ATTACHING PARTS)                    |           |                 |
| -23              | 212-0507-XX        |                             | 4   | SCREW,MACHINE:10-32 X 0.375,PNH,STL (END ATTACHING PARTS)        | TK0435    | MACHINE SCREW   |
| -24              | 407-3854-XX        |                             | 1   | BRACKET,ANGLE:ALUMINUM,SUPPORT (ATTACHING PARTS)                 | 80009     | 4073854XX       |
| -25              | 211-0538-XX        |                             | 4   | SCREW,MACHINE:6-32 X 0.312,FLH,100 DEG,STL (END ATTACHING PARTS) | TK0435    | ORDER BY DESC   |
| -26              | -----              |                             | 1   | WIRE SET,ELEC:(SEE W491 REPL) (ATTACHING PARTS)                  |           |                 |
| -27              | 211-0661-XX        |                             | 2   | SCR,ASSEM WSHR:4-40 X 0.25,PNH,STL (END ATTACHING PARTS)         | TK0435    | ORDER BY DESC   |
| -28              | 386-5917-XX        |                             | 1   | PLATE,CONN MTG:STEEL (ATTACHING PARTS)                           | 80009     | 3865917XX       |
| -29              | 211-0510-XX        |                             | 2   | SCREW,MACHINE:6-32 X 0.375,PNH,STL (END ATTACHING PARTS)         | TK0435    | ORDER BY DESC   |

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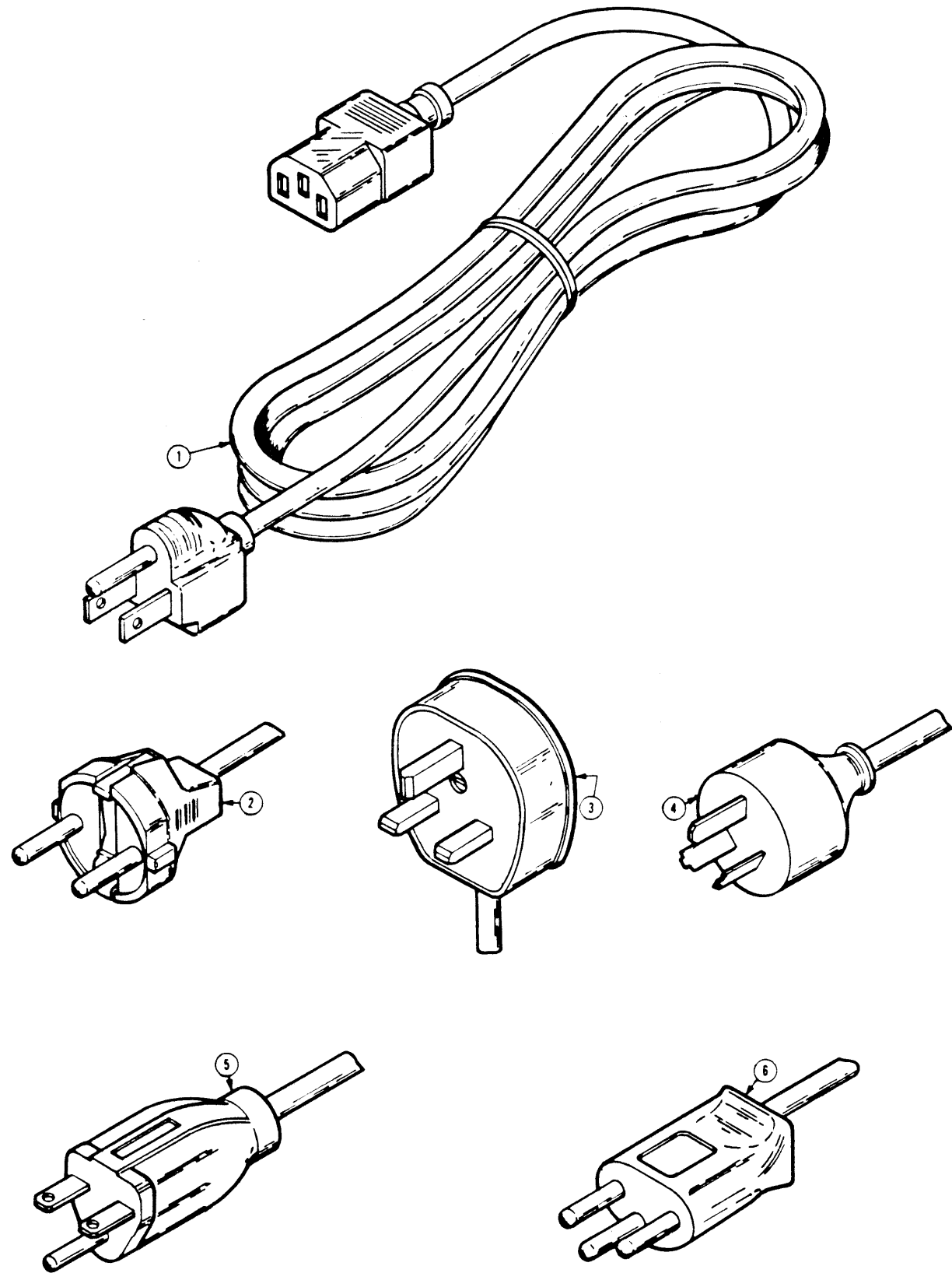
| Fig. & Index No. | Tektronix Part No. | Serial No. Effective Dscont | Qty | 12345 Name & Description  | Mfr. Code | Mfr. Part No. |
|------------------|--------------------|-----------------------------|-----|---|-----------|---------------|
| 7-30             | -----              |                             | 1   | CA ASSY,SPELEC:(SEE W142 REPL)<br>(ATTACHING PARTS)                                     |           |               |
| -31              | 211-0661-XX        |                             | 2   | SCR,ASSEM WSHR:4-40 X 0.25,PNH,STL<br>(END ATTACHING PARTS)                             | TK0435    | ORDER BY DESC |
| -32              | 386-5484-XX        |                             | 1   | PLATE,CONN MTG:MALE,STEEL<br>(ATTACHING PARTS)  | 80009     | 3865484XX     |
| -33              | 211-0510-XX        |                             | 2   | SCREW,MACHINE:6-32 X 0.375,PNH,STL<br>(END ATTACHING PARTS)                             | TK0435    | ORDER BY DESC |
| -34              | -----              |                             | 1   | FLOPPY DISK DRIVE:(SEE A24 REPL)STAND.ACC<br>(ATTACHING PARTS)                          |           |               |
| -35              | 211-0751-XX        |                             | 4   | SCR,ASSEM WSHR:M3 X 8<br>(END ATTACHING PARTS)  | 80009     | 2110751XX     |
| -36              | 337-3588-XX        |                             | 1   | SHIELD,ELEC:ALUMINUM<br>(ATTACHING PARTS)   | 80009     | 3373588XX     |
| -37              | 211-0658-XX        |                             | 4   | SCR,ASSEM WSHR:6-32 X 0.312,PNH,STL,POZ<br>(END ATTACHING PARTS)                        | TK0435    | 17691-300     |
| -38              | 407-3855-XX        |                             | 1   | BRKT,TEST FXTR:ALUMINUM,FDD MTG<br>(ATTACHING PARTS)                                    | 80009     | 4073855XX     |
| -39              | 211-0538-XX        |                             | 3   | SCREW,MACHINE:6-32 X 0.312,FLH,STL  | TK0435    | ORDER BY DESC |
| -40              | 211-0507-XX        |                             | 3   | SCREW,MACHINE:6-32 X 0.312,PNH,STL<br>(END ATTACHING PARTS)                             | TK0435    | ORDER BY DESC |
| -41              | 334-6696-XX        |                             | 1   | MARKER,IDENT:MKD DANGER   | 80009     | 3346696XX     |
| -42              | -----              |                             | 1   | CKT BOARD ASSY:FDD INTERFACE<br>(SEE A23 REPL)<br>(ATTACHING PARTS)                     |           |               |
| -43              | 211-0661-XX        |                             | 4   | SCR,ASSEM WSHR:4-40 X 0.25,PNH,STL<br>(END ATTACHING PARTS)<br>CKT BOARD ASSY INCLUDES: | TK0435    | ORDER BY DESC |
| -44              | -----              |                             | 2   | TERM,TEST POINT:(SEE A23TP100,TP200 REPL)   |           |               |
| -45              | -----              |                             | 1   | CA ASSY,SPELEC:(SEE A23W200 REPL)   |           |               |
| -46              | -----              |                             | 1   | CA ASSY,SPELEC:(SEE A23W100 REPL)   |           |               |
| -47              | -----              |                             | 1   | INPUT RELAY MODULE:(SEE U300 REPL)<br>(ATTACHING PARTS)                                 |           |               |
| -48              | 211-0244-XX        |                             | 4   | SCR,ASSEM WSHR:4-40 X 0.312,PNH,STL<br>(END ATTACHING PARTS)                            | TK0435    | 7772-312      |
| -49              | 337-3629-XX        |                             | 1   | SHIELD,ELEC:INPUT RELAY MODULE,AL   | 80009     | 3373629XX     |
| -50              | -----              |                             | 1   | CKT BD ASSY:KEY INTERFACE(SEE A13 REPL)<br>(ATTACHING PARTS)                            |           |               |
| -51              | 211-0661-XX        |                             |     | SCR,ASSEM WSHR:4-40 X 0.25,PNH,STL<br>(END ATTACHING PARTS)<br>CKT BOARD ASSY INCLUDES: | TK0435    | ORDER BY DESC |
| -52              | -----              |                             | 2   | CONN,RCPT,ELEC:(SEE A13J100,J142 REPL)  |           |               |
| -53              | -----              |                             | 1   | HEADER,R-ANGLE:(SEE A13J131 REPL)   |           |               |
| -54              | -----              |                             | 1   | CKT BOARD ASSY:SENSE(SEE A10 REPL)<br>(ATTACHING PARTS)                                 |           |               |
| -55              | 211-0661-XX        |                             | 6   | SCR,ASSEM WSHR:4-40 X 0.25,PNH,STL  | TK0435    | ORDER BY DESC |
| -56              | 129-0713-XX        |                             | 6   | SPACER,POST:19.05MM L,W/4-40 THD EA END   | 80009     | 1290713XX     |
| -57              | 211-0538-XX        |                             | 2   | SCREW,MACHINE:6-32 X 0.312,FLH,STL  | TK0435    | ORDER BY DESC |
| -58              | 129-1328-XX        |                             | 4   | SPACER,POST:15MM L,4-40 THD,BRASS   | 80009     | 1291328XX     |

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| 7-59             | 343-1446-XX        |                             | 2   | RETAINER,CKT BD:12.7MM L,NYLON   | 80009     | 3431446XX     |
| -60              | 213-0146-XX        |                             | 2   | SCREW,TPG,TF:6-20 X 0.312,TYPE B,PNH,STL   | TK0435    | ORDER BY DESC |
| -61              | 129-1131-XX        |                             | 2   | SPACER,POST:12.7MM L,4-40 THD,BRASS<br>(END ATTACHING PARTS)<br>CKT BOARD ASSY INCLUDES: | 80009     | 1291131XX     |
| -62              | 214-3877-XX        |                             | 1   | .HT SK,CKT BD:AL<br>(ATTACHING PARTS)  | 80009     | 2143877XX     |
| -63              | 211-0661-XX        |                             | 3   | .SCR,ASSEM WSHR:4-40 X 0.25,PNH,STL<br>(END ATTACHING PARTS)                             | TK0435    | ORDER BY DESC |
| -64              | -----              |                             | 1   | RES,FXD,WW:(SEE A10R100 REPL)<br>(ATTACHING PARTS)                                       |           |               |
| -65              | 211-0097-XX        |                             | 2   | .SCREW,MACHINE:4-40 X 0.312,PNH,STL<br>(END ATTACHING PARTS)                             | TK0435    | ORDER BY DESC |
| -66              | -----              |                             | 3   | RES,FXD,WW:(SEE A10R104,R106,R108 REPL)<br>(ATTACHING PARTS)                             |           |               |
| -67              | 211-0062-XX        |                             | 6   | .SCREW,MACHINE:2-56 X 0.312,PNH,STL<br>(END ATTACHING PARTS)                             | TK0435    | ORDER BY DESC |
| -68              | -----              |                             | 1   | CONN,RCPT,ELEC:(SEE A10J90 REPL)   |           |               |
| -69              | -----              |                             | 1   | CONN,RCPT,ELEC:(SEE A10J104 REPL)  |           |               |
| -70              | -----              |                             | 1   | CONN,RCPT,ELEC:(SEE A10J302 REPL)  |           |               |
| -71              | -----              |                             | 12  | TERM,PIN:(SEE A10J101,J102,J140,J300,J308,<br>J330,J414,J415,J416,J417,J418,J419 REPL)   |           |               |
| -72              | -----              |                             | 3   | TERM,TEST POINT:(SEE A10TP250,TP460,<br>TP708 REPL)                                      |           |               |
| -73              | -----              |                             | 2   | TERM.QIK DISC:(SEE A10J301,J303 REPL)  |           |               |
| -74              | -----              |                             | 1   | CONN,RCPT,ELEC:(SEE A10J130 REPL)  |           |               |
| -75              | -----              |                             | 1   | LEAD ELECTRICAL:(SEE A10W105 REPL)   |           |               |
| -76              | -----              |                             |     | CA ASSY,SP,ELEC:(SEE A10W160 REPL)   |           |               |
| -77              | -----              |                             | 1   | CKT BD ASSY:CONFIG.RELAY(SEE A33 REPL)<br>(ATTACHING PARTS)                              |           |               |
| -78              | 211-0661-XX        |                             | 4   | SCR,ASSEM WSHR:4-40 X 0.25,PNH,STL   | TK0435    | ORDER BY DESC |
| -79              | 129-1328-XX        |                             | 4   | SPACER,POST:15MM L,4-40 THD,BRASS<br>(END ATTACHING PARTS)<br>CKT BOARD ASSY INCLUDES:   | 80009     | 1291328XX     |
| -80              | -----              |                             | 1   | CONN,RCPT,ELEC:(SEE A33J104 REPL)  |           |               |
| -81              | -----              |                             | 1   | CONN,RCPT,ELEC:(SEE A33J102 REPL)  |           |               |
| -82              | -----              |                             | 1   | TERM,PIN:(SEE A33J103 REPL)  |           |               |
| -83              | -----              |                             | 1   | CA ASSY,SP,ELEC:(SEE A33W419 REPL)   |           |               |
| -84              | -----              |                             | 1   | WIRE SET,ELEC:(SEE A33W302 REPL)   |           |               |
| -85              | -----              |                             | 1   | CA ASSY,SP,ELEC:(SEE A33W330 REPL)   |           |               |





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| Fig. & Index No.            | Tektronix Part No. | Serial No. Effective Dscont | Qty | 12345 Name & Description                                   | Mfr. Code | Mfr. Part No.   |
|-----------------------------|--------------------|-----------------------------|-----|--|-----------|-----------------|
| <b>STANDARD ACCESSORIES</b> |                    |                             |     |  |           |                 |
|                             | 070-7779-XX        |                             | 1   | MANUAL,TECH:OPERATORS,370A                                 | TK2548    | PER TEK P/N     |
|                             | 159-0260-XX        |                             | 1   | FUSE,CARTRIDGE:2A,250V,MEDIUM                              | 80009     | 1590260XX       |
|                             | 159-0259-XX        |                             | 1   | FUSE,CARTRIDGE:4A,125V,MEDIUM                              | 80009     | 1590259XX       |
|                             | 337-3344-XX        |                             | 1   | SHIELD,ELEC:PROTECTIVE BOX,PC                              | 80009     | 3373344XX       |
|                             | 119-3446-XX        |                             | 1   | FLOPPY DISKETTE:2DD,3.5 INCH                               | 80009     | 1193446XX       |
|                             | -----              |                             | 1   | FLOPPY DISK UNI:(SEE A24 REPL)                             |           |                 |
|                             | -----              |                             | 1   | A1001-ADAPTER,TEST:BLANK                                   |           |                 |
|                             | -----              |                             | 1   | A1002-ADAPTER,TEST:IN-LINE                                 |           |                 |
|                             | -----              |                             | 1   | A1005-ADAPTER,TEST:AXIAL LEAD                              |           |                 |
|                             | -----              |                             | 1   | A1007-ADAPTER,TEST:4 & 6 LEAD TRANSISTOR                   |           |                 |
| 8-1                         | 161-0066-00        |                             | 1   | CA ASSY,PWR:3,18 AWG,250V/10A,98 INCH,STR (STANDARD ONLY)  | S3109     | 161-0066-00     |
| -2                          | 161-0066-09        |                             | 1   | CA ASSY,PWR:3,0.75MM SQ,250V/10A,99 INCH (OPTION A1 ONLY)  | S3109     | 86511000        |
| -3                          | 161-0066-10        |                             | 1   | CA ASSY,PWR:3,0.1MM SQ,250V/10A,2.5 METER (OPTION A2 ONLY) | S3109     | BS/13-H05VVF3G0 |
| -4                          | 161-0066-11        |                             | 1   | CA ASSY,PWR:3,1.0MM SQ,250V/10A,2.5 METER (OPTION A3 ONLY) | S3109     | 198-000         |
| -5                          | 161-0066-12        |                             | 1   | CA ASSY,PWR:3,18 AWG,250V/10A,98 INCH,STR (OPTION A4 ONLY) | TK2541    | 13E68,25-1E-250 |
| -6                          | 161-0157-00        |                             | 1   | CABLE ASSY,PWR,:3 X 0.75MM SQ,250V,7.0 L (OPTION A5 ONLY)  | TK1267    | ORDER BY DESC   |
| <b>OPTIONAL ACCESSORIES</b> |                    |                             |     |  |           |                 |
|                             | 016-0357-XX        |                             | 1   | ADAPTER,HOOD:C5B & OPT 01                                  |           |                 |
|                             | 067-0187-XX        |                             | 1   | FIXTURE,CAL:370A MAINTENANCE                               | 80009     | 0160357XX       |
|                             | 122-0895-XX        |                             | 1   | HOOD,CRT:13 X 14 CM W/LABEL                                | 80009     | 0670187XX       |
|                             | 016-0249-XX        |                             | 1   | ADAPTER,CAMERA:C50   | 80009     | 1220895XX       |
|                             | 070-7780-XX        |                             | 1   | MANUAL,TECH:SERVICE,370A                                   | 80009     | 0160249XX       |
|                             | -----              |                             | 1   | A1003-ADAPTER,TEST:TO-3/TO-66                              | 80009     | 0707780XX       |
|                             | -----              |                             | 1   | A1004-ADAPTER,TEST:OFFSET LEAD/POWER                       |           |                 |
|                             | -----              |                             | 1   | A1006-ADAPTER,TEST:LONG-LEAD XSTR                          |           |                 |
|                             | -----              |                             | 1   | A1008-ADAPTER,TEST:LONG-LEAD FET                           |           |                 |
|                             | -----              |                             | 1   | A1009-ADAPTER,TEST:4 & 6 LEAD FET                          |           |                 |
|                             | -----              |                             | 1   | A1010-ADAPTER,TEST:IC                                      |           |                 |
|                             | -----              |                             | 1   | A1023-ADAPTER,TEST:SOT 23 SMD                              |           |                 |





