

Service Manual



1740A Series, 1750A Series, & 1760 Series Waveform/Vector Monitors S/N B020000 and Above

070-8469-03

This document applies to firmware version 2.00 and above.

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 all safety summaries prior to performing service.

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General Safety Summary

Review the following safety precautions to avoid injury and prevent damage to this product or any products connected to it. To avoid potential hazards, use this product only as specified.

Only qualified personnel should perform service procedures.

To Avoid Fire or Personal Injury

Use Proper Power Cord. Use only the power cord specified for this product and certified for the country of use.

Ground the Product. This product is grounded through the grounding conductor of the power cord. To avoid electric shock, the grounding conductor must be connected to earth ground. Before making connections to the input or output terminals of the product, ensure that the product is properly grounded.

Observe All Terminal Ratings. To avoid fire or shock hazard, observe all ratings and markings on the product. Consult the product manual for further ratings information before making connections to the product.

Do not apply a potential to any terminal, including the common terminal, that exceeds the maximum rating of that terminal.

Do Not Operate Without Covers. Do not operate this product with covers or panels removed.

Use Proper Fuse. Use only the fuse type and rating specified for this product.

Avoid Exposed Circuitry. Do not touch exposed connections and components when power is present.

Do Not Operate With Suspected Failures. If you suspect there is damage to this product, have it inspected by qualified service personnel.

Do Not Operate in Wet/Damp Conditions.

Do Not Operate in an Explosive Atmosphere.

Keep Product Surfaces Clean and Dry.

Provide Proper Ventilation. Refer to the manual's installation instructions for details on installing the product so it has proper ventilation.

Symbols and Terms



Terms in this Manual. These terms may appear in this manual:

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



CAUTION. *Caution statements identify conditions or practices that could result in damage to this product or other property.*

Terms on the Product. These terms may appear on the product:

DANGER indicates an injury hazard immediately accessible as you read the marking.

WARNING indicates an injury hazard not immediately accessible as you read the marking.

CAUTION indicates a hazard to property including the product.

Symbols on the Product. The following symbols may appear on the product:



CAUTION
Refer to Manual



WARNING
High Voltage



Protective Ground
(Earth) Terminal

Service Safety Summary

Only qualified personnel should perform service procedures. Read this *Service Safety Summary* and the *General Safety Summary* before performing any service procedures.

Do Not Service Alone. Do not perform internal service or adjustments of this product unless another person capable of rendering first aid and resuscitation is present.

Disconnect Power. To avoid electric shock, switch off the instrument power, then disconnect the power cord from the mains power.

Use Caution When Servicing the CRT. To avoid electric shock or injury, use extreme caution when handling the CRT. Only qualified personnel familiar with CRT servicing procedures and precautions should remove or install the CRT.

CRTs retain hazardous voltages for long periods of time after power is turned off. Before attempting any servicing, discharge the CRT by shorting the anode to chassis ground. When discharging the CRT, connect the discharge path to ground and then the anode. Rough handling may cause the CRT to implode. Do not nick or scratch the glass or subject it to undue pressure when removing or installing it. When handling the CRT, wear safety goggles and heavy gloves for protection.

Use Care When Servicing With Power On. Dangerous voltages or currents may exist in this product. Disconnect power, remove battery (if applicable), and disconnect test leads before removing protective panels, soldering, or replacing components.

To avoid electric shock, do not touch exposed connections.

X-Radiation. To avoid x-radiation exposure, do not modify or otherwise alter the high-voltage circuitry or the CRT enclosure. X-ray emissions generated within this product have been sufficiently shielded.

Preface

This manual provides servicing information for the 1740A/1750A/1760-Series of instruments. The 1750A is identical to the 1740A, except that the 1750A-Series makes SCH Phase measurements. The 1760-Series adds component analog measurement capability to the basic 1740A-Series, and the 1760-Series Option SC adds the same component analog measurement capability to a 1750A-Series instrument.

Servicing Information

This manual supports both module level (for module exchange) and component level servicing. Module level servicing uses the block diagram and its descriptions to isolate a problem to the circuits on a particular circuit board. Component level servicing also uses the theory of operation, schematic diagrams and circuit board parts locating illustration and cross reference indexes (part location charts).

Specific procedures for troubleshooting and disassembly in this manual should only be attempted by competent service technicians. Be sure to read and follow all *Warnings* and *Cautions* when performing maintenance.

The last sections of this manual contain the Replaceable Parts Lists, Circuit Board Illustrations, and Schematic Diagrams needed to isolate and replace faulty components. Replacement part ordering information can be found in the Maintenance section of this manual.

Performance Verification

These instruments are designed to be returned to operation within stated specifications through a PC-based adjustment procedure. The disk holder for this manual contains two computer disks: 1. A software disk containing instruments operating software (Version 2.2 or greater). 2. A calibration software disk.

An IBM compatible personal computer (PC) with a DOS 3.3 or higher operating system, and a 3¹/₂ inch high density floppy drive is required to perform the readjustment procedure or reload the operating software.

The spare software disk is provided in case the Main circuit board, which contains the software, requires replacement. In all cases, the operating software must be Version 2.2 or above to perform the Readjustment Procedure.

The specifications contained in the Specification section of this manual contain Performance Verification step numbers.

Contacting Tektronix

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* **This phone number is toll free in North America. After office hours, please leave a voice mail message. Outside North America, contact a Tektronix sales office or distributor; see the Tektronix web site for a list of offices.**

Specifications

The tables in this chapter list the specifications for the 1740A, 1750A, and 1760 Series waveform monitors. Items listed in the Performance Requirement column are generally quantitative, and can be tested by the *Performance Verification* procedure in the service manual. Items listed in the Reference Information column are useful operating parameters that have typical values; information in this column is not guaranteed.

The second column of the two column format contains all of the descriptive material about the listed characteristic. The performance verification procedure step number, used to verify the characteristic, is also in this column. This series of instruments is designed to operate on both PAL and NTSC standards, so some of the tolerances are defined in millivolts and IREs; in these dual value tolerances, PAL values appear in parentheses.

Performance Requirements (Req) . Items with this designation are critical to instrument performance. In most cases, a tolerance and a performance verification step number are listed. However, there are a few areas where instrument operation verifies that the performance requirement is met.

Reference Information (RI). This information about the instrument operation may have a tolerance listed, but these should be considered as typical, not absolute.

Performance Verification Step. This item identifies the location of the test method in the *Performance Verification* procedure.

The specifications listed in the Electrical Specifications portion of these tables apply over an ambient temperature range of +0 °C to +40 °C. The rated accuracies are valid when the instrument is calibrated in an ambient temperature range of +20 °C to +30 °C.

Product Description

The 1740A/1750A/1760 Series is a half-rack width by three-rack-unit high instrument. It is a versatile waveform monitor/vectorscope for composite and component television signals. Most circuitry and the mechanical components are shared throughout the series. In addition to NTSC and PAL standard versions, a dual standard (NTSC/PAL) version is available.

These instruments employ a bright, post accelerated CRT with lighted internal graticule. The parallax free internal graticule structure contains targets and markings for both the vector and waveform functions. The “Lightning” graticule, for the 1760 Series, is electronic, in order to keep from complicating the waveform/vector graticule. Option 74, which uses a white phosphor (P4) CRT, is available for all three instrument series.

These monitors are microprocessor controlled to provide greater versatility. Switch settings, affecting the operation of the instrument, are continuously polled by the processor, with any change in status acted upon immediately. Current operating conditions are preserved in Non-Volatile Random Access Memory (NOVRAM), which returns the front panel settings to the current settings, in the event of power interruption (either accidental or routine power down).

Many operational measurements are performed on a repetitive basis, and these instruments provide a method of repeating common measurements by simply selecting stored measurement settings from a CRT menu list. The common measurement front panel settings can be stored and named by the user. Measurement specific, front-panel settings can be recalled by pushing the front-panel Preset Menu button and selecting the desired preset by name or number.

Many functions that were formerly selected by changing internal jumpers and/or wire straps are now accessible through on screen menu selections. Menus are selected by pushing the appropriate front panel Menu selection. Menu items are then selected by pushing one or more of the assignable switches and/or rotating the assigned front-panel control. Once selected these menu choices are retained until changed by subsequent reconfiguration.

The front panel provides both assignable switches (located next to the CRT) and controls (located beneath the CRT), that operate with CRT readout to increase functionality without cluttering the limited front panel area. Function of these switches and controls is dictated by the front-panel Display and initial Menu choices.

The 1740A Series is a full capability waveform/vector monitor that also provides audio and time code measurements. The 1750A Series has all of the capabilities of the 1740A Series, with the addition of SCH phase measurements.

The 1760 Series combines component measurements with the composite capabilities of the 1740A/1750A Series. It incorporates all of the measurements of the 1740A Series with a full set of component analog measurements. The assignable cursors, along with the CRT readout can be used for time, voltage, and phase measurements. The system of Menus and CRT readout simplifies the configuration of this monitor for measurement or monitoring of signal characteristics.

Table 1-1: Waveform vertical deflection

Characteristic	Performance requirement
Deflection Factor	<p>Req: 1 V full scale (X1): 1 volt input displayed within 1% of 140 IRE (1.00 VPAL)</p> <p>X5 Gain: 0.2 volt input displayed within 1% of 140 IRE (1.00 VPAL)</p> <p>X10 Gain: 0.1 volt input displayed within 1% of 140 IRE (1.00 VPAL)</p> <p>RI: Any one of the 8 inputs</p> <p>Performance Verification Procedure Step: 9</p> <p>RI: 1 V, 0.2 V, and 0.1 V from accurate source (VAC) can be made full scale.</p>
Variable Gain Range	<p>Req: 0.2X to 1.4X</p> <p>Performance Verification Procedure Step: 9</p> <p>RI: VAC of 1 V and 0.2 V can be displayed as full scale with appropriate Gain settings.</p>
Overscan	<p>Req: $\leq 1\%$ variation in baseline of chroma when positioned anywhere between sync tip and 100% white</p> <p>RI: X1, X5, or X10 with any variable gain setting</p> <p>Performance Verification Procedure Step: 16</p> <p>RI: 1 V peak to peak Modulated Sin^2 composite video signal.</p> <p>Frequency and Transient response performance requirements (PR), with any gain setting, override any overscan specification.</p>
Video Maximum Operating Input Voltage	RI: -1.8 V to +2.2 V, (all inputs, A - B3) DC+peak AC
Absolute Video Input Voltage	RI: -8.5 V to +8.5 V (DC+peak AC)
Video Input DC Impedance	RI: $\geq 20\text{k } \Omega$
Video Input Return Loss	<p>RI: Typically ≥ 40 dB to 6 MHz</p> <p>RI: Loop through terminated in 75Ω Power on or off.</p>
Video Input DC Offset Between Channels	<p>Req: ≤ 1 IRE (7 mV PAL)</p> <p>RI: Typically ≤ 1 mV</p> <p>Performance Verification Procedure Step: 4</p> <p>RI: Inputs terminated in 75Ω.</p>
Video Input Offset Range	<p>RI: CHA2, A3, B2, & B3 can be offset from CHA1 or CHB1 by ± 350 mV</p> <p>RI: No signal applied, terminated in 75Ω and rotate Variable Gain between minimum and maximum.</p>
Video Input Loop-Through Isolation	RI: Typically ≥ 70 dB
Video Input Crosstalk Between Channels	<p>RI: Typically ≥ 60 dB</p> <p>RI: All inputs terminated in 75Ω.</p>
Frequency Response (Flat)	<p>Req: $\pm 2\%$ to 10 MHz (X1 Gain)</p> <p>$\pm 4\%$ to 10 MHz (X5 and X10 Gain), on screen signal (0.2 V or 0.1 V)</p> <p>RI: Leveled Sinewave Generator</p> <p>RI: All inputs AC or DC coupling</p> <p>Performance Verification Procedure Step: 12</p>

Table 1- 1: Waveform vertical deflection (Cont.)

Characteristic	Performance requirement
Luminance Filter Gain	<p>Req: $1 \pm 1\%$</p> <p>RI: Reference is FLAT at 50 kHz</p> <p>Performance Verification Procedure Step: 13</p> <p>RI: Leveled Sinewave Generator.</p> <p>Luminance and chrominance filter offset is typically 1mV.</p>
Luminance Filter Response	<p>Req: ≤ 3 dB attenuation at 1 MHz</p> <p>≥ 40 dB attenuation at F_{SC}</p> <p>Performance Verification Procedure Step: 13</p> <p>RI: Leveled Sinewave Generator.</p>
Luminance Filter Chrominance Rejection (1745A-1755A-1765 only)	<p>Req: ≥ 34 dB</p> <p>RI: Leveled Sinewave Generator.</p>
Chrominance Filter Gain	<p>Req: $1 \pm 1\%$</p> <p>RI: Ref. is flat at F_{SC} (3.58 or 4.43 MHz)</p> <p>Performance Verification Procedure Step: 14</p> <p>RI: Leveled Sinewave Generator.</p> <p>Luminance and chrominance filter offset is typically 1mV.</p>
Chrominance Filter Bandwidth	<p>Req: $1.5 \text{ MHz} \pm 0.3 \text{ MHz}$</p> <p>RI: Centered at F_{SC}. Passband is typically $F_{SC} +$ and $- 750 \text{ kHz}$</p> <p>RI: Leveled Sinewave Generator</p>
Chrominance Filter Attenuation at $2X F_{SC}$	<p>RI: ≥ 25 dB</p>
Differentiated Step Filter Attenuation at $2X F_{SC}$	<p>RI: ≥ 40 dB</p>
Transient Response	<p>Req: Pulse-to-Bar Ratio 0.99:1 to 1.01:1</p> <p>RI: Preshoot $\leq 1\%$</p> <p>RI: Overshoot $\leq 1\%$</p> <p>RI: Ringing $\leq 1\%$</p> <p>RI: 2T pulse and bar, any gain setting.</p> <p>Req: Field-Rate Tilt $\leq 1\%$</p> <p>RI: Field rate square wave or vertical window signal.</p> <p>Req: Line-Rate Tilt $\leq 1\%$</p> <p>RI: 25 μs bar.</p> <p>RI: Differential Gain $\leq 1\%$</p> <p>Performance Verification Procedure Step: 17</p>
Pix Out Gain	<p>Req: $1 \pm 3\%$</p> <p>RI: Leveled Sinewave Generator and Peak-to-Peak Detector.</p>
Pix Out Frequency Response	<p>Req: $\pm 3\%$ to 6 MHz</p> <p>RI: A leveled sinewave generator with the output terminated in 75 Ω.</p>
Pix Out Differential Gain	<p>RI: $\leq 1\%$</p>

Table 1-1: Waveform vertical deflection (Cont.)

Characteristic	Performance requirement
Pix Out Differential Phase	RI: $\leq 1^\circ$
Pix Out Output Impedance	RI: 75Ω
Pix Out Return Loss	Req: Typically ≥ 30 dB to 6 MHz RI: Power on.
Pix Out Line Select Strobe	RI: (AUD) A DC offset is added to output in line select to bright up the selected line or lines. RI: Checked in both 15-line and 1 line.
DC Restorer 60 Hz (50 Hz) Attenuation	Req: Slow Mode $\leq 10\%$ Fast Mode $\geq 95\%$ RI: Back porch or sync tip clamp point is selected through menu. Performance Verification Procedure Step: 18 RI: 60 Hz (50 Hz) sinewave generator.
DC Restorer Offset Error	Req: ≤ 1 IRE (7 mV PAL) RI: Typically 3 mV Performance Verification Procedure Step: 4 RI: No signal applied, terminated in 75Ω . Rotate Variable Gain between minimum and maximum.
Fast Settling Time	RI: (AUD) ≤ 6 video lines
Blanking Shift with 10 to 90% APL Change	Req: ≤ 1 IRE (7 mV PAL) Performance Verification Procedure Step: 19 RI: APL Bounce signal.
Blanking Shift with Presence and Absence of Burst	Req: ≤ 1 IRE (7 mV PAL) Performance Verification Procedure Step: 19 RI: Typically 3 mV RI: Burst on test signal turned off and on.

Table 1-2: External reference

Characteristic	Description
Input	RI: Composite video or black burst
Maximum Operating Input Voltage	RI: -1.8 V to +2.2 V, DC + peak AC
Absolute Maximum Input Voltage	RI: -8.5 V to +8.5 V, DC + peak AC
DC Input Impedance	RI: $\geq 20 \text{ k } \Omega$
Return Loss	RI: Typically $\geq 40 \text{ dB}$ to 6 MHz Performance Verification Procedure Step: NO TAG RI: Loop-through terminated in $75 \text{ } \Omega$. Power on or off.

Table 1-3: Waveform horizontal deflection

Characteristic	Description
Sweep	Req: Synchronization: Sweep triggered by horizontal and vertical sync pulses RI: Sweep Length: ≈ 12 divisions RI: Sweep freeruns without input Performance Verification Procedure Step: 8
Sweep Timing Accuracy	Req: 1 Line: $5 \text{ } \mu\text{s/division} \pm 1\%$ 2 Line: $10 \text{ } \mu\text{s/division} \pm 1\%$ RI: Checked over the center 10 div. of sweep. RI: 1 Field: displays one full field, including field rate sync 2 Field: displays two full fields and the field rate sync between them Performance Verification Procedure Step: 7
Sweep Linearity	Req: 1 line: $\pm 1\%$ 2 line: $\pm 1\%$ Performance Verification Procedure Step: 7 RI: 0.5 minor division. Checked over the center 10 divisions of sweep.
Magnified Sweep Accuracy	Req: 1 Line: $0.2 \text{ } \mu\text{s/division} \pm 1\%$ 2 Line: $1.0 \text{ } \mu\text{s/division} \pm 1\%$ RI: Checked over the center 10 div. of unmagnified sweep, excluding the first and last 2 div. of magnified display. Performance Verification Procedure Step: 7
Magnified Sweep Linearity	Req: 1 line: $\pm 1\%$ 2 line: $\pm 1\%$ Performance Verification Procedure Step: 7 RI: Checked over the center 10 div. of unmagnified sweep, excluding the first and last 2 div. of magnified display.
Horizontal Position Range	Req: Any portion of the synchronized sweep can be positioned on screen in all sweep modes. Performance Verification Procedure Step: 5 RI: Color bar signal from serial digital generator in magnified 2-line sweep.

Table 1-3: Waveform horizontal deflection (Cont.)

Characteristic	Description
External Horizontal Input	<p>Req: 2 divisions/volt, $\pm 2\%$</p> <p>RI: Menu is selected and enabled by REMOTE connector ground closure.</p> <p>Performance Verification Procedure Step: 29</p> <p>RI: 5 V = 10 divisions</p>
Remote Sync	<p>RI: Input Amplitude: TTL level</p> <p>RI: Frequency: 25 Hz to 100 Hz positive edge-triggered sweep</p> <p>RI: Enabling Signal: TTL low or ground closure</p> <p>Performance Verification Procedure Step: 33</p>

Table 1-4: Measurement cursors

Characteristic	Description
Waveform Accuracy(<i>P-SPEC-CD</i>)	<p>Req: Voltage: 0.5% Timing: 0.5%, for line rate sweeps</p> <p>RI: Typically 0.5% for field rate sweeps</p> <p>Performance Verification Procedure Step: 9 & 6</p> <p>RI: Cursors are calibrated against the VAC.</p>
Vector Accuracy(<i>P-SPEC-CD</i>)	<p>Req: Gain: $\pm 1.5\%$ Phase: $\pm 1^\circ$</p> <p>RI: Measured with respect to the Color Bar signal</p> <p>Performance Verification Procedure Step: 10</p>

Table 1-5: RGB/YRGB

Characteristic	Description
RGB/YRGB	<p>Req: RGB Staircase input gain: 0.8 V/division $\pm 10\%$</p> <p>RI: RGB Sweep Length: 1 Field $\approx 30\%$ of normal 1 Line $\approx 30\%$ of normal</p> <p>RI: (AUD) YRGB Sweep Length: 1 Field $\approx 25\%$ of normal 1 Line $\approx 25\%$ of normal</p> <p>RI: 2 kHz, 10 V square wave through REMOTE connector RGB Input.</p> <p>RI: Maximum staircase operating signal: DC signal plus peakAC not to exceed -12 V to +12 V. Line or field rate sweep.</p> <p>RI: Peak-to-peak AC signal not to exceed 12 V.</p> <p>RI: Sweep Repetition Rate: Field or line rate of displayed video or external sync signal as selected by the front-panel sweep selection</p> <p>Performance Verification Procedure Step: 30</p>

Table 1-6: Calibrator

Characteristic	Description
Waveform Square Wave	<p>Req: Amplitude: 1.0 V \pm 0.5%</p> <p>Performance Verification Procedure Step: 9</p> <p>RI: Calibrated against the VAC.</p> <p>Req: Frequency: 100 kHz \pm 0.1%</p> <p>RI: Frequency counter.</p> <p>RI: Crystal controlled 10 μs square wave</p> <p>Performance Verification Procedure Step: 6</p>
Waveform Sine Wave	<p>Req: Amplitude: 1.0V_{p-p}, \pm 1%</p> <p>RI: Measured against the VAC.</p>
Vector Circle	<p>RI: Circle that approximates the graticule compass rose</p>

Table 1-7: Vector mode

Characteristic	Description
Input Requirements	<p>Req: 1 V peak-peak \pm 6 dB</p> <p>RI: Black burst or composite video.</p> <p>RI: Instrument freeruns with no input</p> <p>RI: External Reference: Black burst or composite video</p> <p>Vector input range is \pm 12 dB.</p>
Nominal Subcarrier Frequency (F _{SC})	<p>RI: NTSC 3.579545 MHz</p> <p>PAL 4.43361875 MHz</p>
Chrominance Processing Bandwidth (-3 dB)	<p>Req: 1 MHz \pm 200 kHz</p> <p>Performance Verification Procedure Step: 15</p> <p>RI: Leveled sinewave generator.</p>
PAL +V	<p>RI: V Axis is inverted at 1/2 video line rate</p>
Display Phase Accuracy Error	<p>Req: \leq 1.25°</p> <p>Performance Verification Procedure Step: 23</p> <p>RI: Color bar generator</p>
Display Gain Accuracy Error	<p>Req: \leq 2.5% with 75% amplitude color bars</p> <p>Performance Verification Procedure Step: 23</p>
Quadrature Phasing Error	<p>Req: \leq 0.5° (RI: Bursts set to targets)</p> <p>Performance Verification Procedure Step: 22</p>
Subcarrier Regenerator Pull-in Range	<p>Req: (AUD) NTSC: \pm 50 Hz</p> <p>PAL: \pm 10 Hz</p> <p>Performance Verification Procedure Step: 24</p>
Subcarrier Regenerator Pull-in Time	<p>RI: \leq 2 seconds</p>

Table 1-7: Vector mode (Cont.)

Characteristic	Description
Phase Shift with F_{SC} Change	Req: NTSC: $\leq 2^\circ$ (F_{SC} to $F_{SC} \pm 50$ Hz) PAL: $\leq 2^\circ$ (F_{SC} to $F_{SC} \pm 10$ Hz)
Phase Shift with Burst Amplitude Change of ± 6 dB	Req: $\leq 2^\circ$ Performance Verification Procedure Step: 25 RI: Color bar generator.
Phase Shift With Video Input Channel Change	Req: $\leq 1^\circ$ RI: With external reference selected. Typically $\leq 0.5^\circ$ Performance Verification Procedure Step: 27
Phase Shift With Variable Gain Control +3 dB to -6 dB	Req: $\leq 0.5^\circ$ Performance Verification Procedure Step: 26 RI: Color bar generator.
Burst Jitter	RI: $\leq 0.5^\circ$ rms RI: 140 IRE (1 V) composite video input.
Clamp Stability	Req: $\leq 1/64$ inch (0.4 mm) RI: Center spot movement with rotation of the phase control Performance Verification Procedure Step: 28
Phase Control Range	RI: 360° continuous rotation Performance Verification Procedure Step: 28
Phase Control Quantization	RI: $\leq 0.2^\circ$
Position Control Range	Req: ≥ 0.236 inch (6 mm) from center Performance Verification Procedure Step: 28 RI: Color bar generator.
Differential Phase	Req: $\leq 1^\circ$ Performance Verification Procedure Step: 21 RI: Measured with 140 IRE (1 Volt) linearity signal (5-step, 10-step, or ramp) with 40 IRE (300 mV) subcarrier.
Differential Gain	Req: $\leq 1\%$ Performance Verification Procedure Step: 21 RI: Measured with 140 IRE (1 V) linearity signal (5-step, 10-step, or ramp) with 40 IRE (300 mV) subcarrier.

Table 1-8: Audio mode

Characteristic	Description
Input	RI: DC coupled, differential input
Input Impedance	RI: 20 k Ω

Table 1-8: Audio mode (Cont.)

Characteristic	Description
Full Scale Selection	RI: 0, 4, 8, & 12 dBm full scale. Menu selected
Full Scale Accuracy	Req: ± 0.5 dB RI: Measured at 1 kHz Performance Verification Procedure Step: 31
Maximum Input Voltage	RI: ± 8 V peak RI: Measured to chassis ground
Bandwidth (-3 dB)	Req: -3 dB ≥ 200.0 kHz Performance Verification Procedure Step: 32 RI: Leveled sinewave generator.
X & Y Input Phase Matching	Req: $\leq 1^\circ$ RI: Measured at 20 kHz Performance Verification Procedure Step: 33

Table 1-9: Time code

Characteristic	Description
Input	RI: Longitudinal Time Code. DC coupled, differential input
Input Impedance	RI: 20 k Ω .
Input Amplitude	RI: 0, 4, 8, & 12 dBm full scale. Menu selectable for 140 IRE (1.0 V) deflection
Maximum Input Voltage	RI: -10 V to +10 V peak
Bandwidth (-3 dB)	Req: ≥ 200.0 kHz Performance Verification Procedure Step: 32 RI: Leveled sinewave generator.

Table 1-10: SCH Phase mode (1750 Series and 1760 Option SC Only)

Characteristic	Description
Absolute Accuracy	Req: $\leq 5^\circ$ RI: Applies over a temperature range of 0 - 50° C RI: Calibrated at 25°C. ± 3 dB input amplitude. Typically $\leq 5^\circ$ with ± 6 dB input amplitude Performance Verification Procedure Step: 34
Relative Accuracy	RI: 2°

Table 1-10: SCH Phase mode (1750 Series and 1760 Option SC Only) (Cont.)

Characteristic	Description
Acquisition Time	RI: ≤ 1 Second
Displayed Phase Error Caused by CRT Geometry Variations	RI: $\pm 1.25^\circ$
Input Timing	RI: Stable display with Video to External Reference timing
Color Frame Range	RI: $\pm 70^\circ$ (Color frame correctly identified when applied external reference signal is $\leq 70^\circ$ of 0° SCH.) Performance Verification Procedure Step: 34

Table 1- 11: Component vector mode (1760 Series Only)

Characteristic	Description
Vertical Bandwidth	Req: -3 dB at ≥ 1.0 MHz RI: Multiburst signal from TSG300.
Horizontal to Vertical Bandwidth Matching	Req: No eye opening at 500 kHz or 2 MHz RI: Trace-width opening with Y, P _R , P _B signal applied.
Vertical Gain Accuracy	Req: $\pm 2.5\%$. RI: With respect to graticule Performance Verification Procedure Step: 35 Specification will apply to the electronic graticule when it becomes available.
Horizontal Gain Accuracy	Req: $\pm 2.5\%$ RI: With respect to graticule Performance Verification Procedure Step: 35 Specification will apply to the electronic graticule when it becomes available.
Display to Graticule Registration	Req: ≤ 0.25 box with the color bar black display dot centered in target RI: Component signal generator.
Vector Display	RI: Ch A2 or B2 is displayed on the horizontal axis and Ch A3 or B3 is displayed on the vertical axis.

Table 1- 12: Lightning mode (1760 Series only)

Characteristic	Description
Vertical Gain Accuracy	Req: $\pm 2\%$ RI: With respect to electronic graticule Performance Verification Procedure Step: 36
Horizontal Gain Accuracy	Req: $\pm 2\%$ RI: With respect to electronic graticule Performance Verification Procedure Step: 36
Electronic Graticule Display	RI: Ch A1 or B1 is displayed vertically. Ch A2 or B2 is displayed horizontally on top half of display. Ch A3 or B3 is displayed horizontally on bottom half of display.

Table 1-13: Bowtie mode (1760 Series only)

Characteristic	Description
Common Mode Rejection Ratio	<p>Req: ≥ 34 dB at 3 MHz</p> <p>RI: Timing error contributed by the specification limit will be less than 0.6 ns.</p> <p>Performance Verification Procedure Step: 39</p> <p>RI: Checked with a multi burst signal. Right side display should be 400 mV. Left side display should be 8 mV.</p>
Electronic Graticule Display	<p>RI: Y minus P_B (CH1- CH2) is displayed on the left half of the display. Y minus P_R (CH1- CH3) is displayed on the right half of the display.</p>

Table 1-14: Transcoded GBR outputs

Characteristic	Description
Input Format	<p>RI: GBR, SMPTE, MII, or Betacam format. Selectable from a menu</p>
Accuracy	<p>Req: $1 \pm 3\%$</p> <p>RI: Typically $<1\%$</p> <p>RI: Use lightning mode of another monitor to check GBR outputs. Color bar dots should be inside targets.</p> <p><u>Alternate Method:</u> Measure GBR output amplitudes with a waveform monitor.</p> <p>RI: No line select strobe on GBR outputs</p> <p>Performance Verification Procedure Step: 42</p> <p>Component generator used to measure transcoder accuracy must have an accuracy of $\leq \pm 1\%$.</p>
GBR Output Impedance	<p>RI: Nominally 75Ω. Back porch clamped to 0V</p>

Specifications

Table 1-15: CRT display

Characteristic	Description
CRT Viewing Area	<p>RI: 80 X 100 mm Horizontal: 12.5 divisions Vertical: 170 IRE (1.19 V)</p> <p>Scan Sensitivity: Vertical: 34.5 to 43.7 V for 80 mm. Horizontal: 91.5 to 118.5 V for 100 mm.</p>
Accelerating Potential	RI: Nominally 13.5 kV
Trace Rotation Range	<p>Req: < + and -1° from horizontal</p> <p>RI: Free-running sweep.</p> <p>RI: Total adjustment range is typically ≥ 8°.</p> <p>Performance Verification Procedure Step: 3</p>
Graticule	RI: Internal with variable illumination

Table 1-16: Power source

Characteristic	Description
Mains Voltage Range	<p>Req: 90 -250 V</p> <p>RI: Check with variable auto transformer and step-up transformer.</p> <p>RI: Continuous range from 90 to 250 V AC</p> <p>Performance Verification Procedure Step: 2</p>
Mains Frequency	RI: 50 or 60 Hz.
Power Consumption	RI: 110 VA (67 watts) maximum; 102 VA (60 watts) typical

Table 1-17: Environmental characteristics

Characteristic	Description
Operating Temperature	Req: 0° to 50° C (+32° to 122° F)
Storage Temperature	Req: -40° to 75° C (-40° to 158° F)
Operating Altitude	Req: To 15,000 feet (4572 meters)
Storage Altitude	Req: To 50,000 feet (15,240 meters)
Vibration	<p>Req: 5 minutes at 5 - 15 Hz with 0.060 inch displacement 5 minutes at 15 - 25 Hz with 0.040 inch displacement 5 minutes at 25 - 55 Hz with 0.020 inch displacement Military Specification: Mil-T-28800D, Paragraph 1.2.2, Class 3</p>
Mechanical Shock	Req: Non Operating: 50 g's 1/2 sine, 11 ms duration 3 shocks per surface (18 total)

Table 1-17: Environmental characteristics (Cont.)

Characteristic	Description
Transportation	Req: Qualified under NSTA Test Procedure 1A, Category II (24 inch drop)
Humidity	Req: Will operate at 95% relative humidity for up to five days. Do not operate with visible moisture on the circuit boards.

Table 1-18: Physical characteristics

Characteristic	Description
Dimensions	Req: Height: 5 1/4 inches (133.4 millimeters) Width: 8 1/2 inches (215.9 millimeters) Depth: 18 1/8 inches (460.4 millimeters)
Weight	Req: Net: 8 pounds (3.8 kilograms) Shipping: 15.7 pounds (7.2 kilograms) <i>approximate</i>

Table 1-19: Certifications and compliances

Category	Standards or description
EC Declaration of Conformity - EMC ¹	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 55103 Product family standard for audio, video, audio-visual and entertainment lighting control apparatus for professional use. ² Environment E2 - commercial and light industrial Part 1 Emission EN 55022 Class B radiated and conducted emissions EN 55103-1, Annex A Radiated magnetic field emissions EN 55103-1, Annex B Inrush current; I peak = 2.5 amps EN-55103-1, Annex E Conducted emissions, signal/control ports Part 2 Immunity IEC 61000-4-2 Electrostatic discharge immunity IEC 61000-4-3 RF electromagnetic field immunity IEC 61000-4-4 Electrical fast transient / burst immunity IEC 61000-4-5 Power line surge immunity IEC 61000-4-6 Conducted RF Immunity IEC 61000-4-11 Voltage dips and interruptions immunity EN 55103-2, Annex A Radiated magnetic field immunity EN 55103-2, Annex B Balanced ports common mode immunity
Australia / New Zealand Declaration of Conformity - EMC	Complies with EMC provision of Radiocommunications Act per the following standard(s): AS/NZS 2064.1/2 Industrial, Scientific, and Medical Equipment: 1992
FCC Compliance	Emissions comply with FCC Code of Federal Regulations 47, Part 15, Subpart B, Class A Limits.
EC Declaration of Conformity - Low Voltage	Compliance was demonstrated to the following specification as listed in the Official Journal of the European Communities: Low Voltage Directive 73/23/EEC, amended by 93/68/EEC EN 61010-1:1993/A2:1995 Safety requirements for electrical equipment for measurement control and laboratory use.
U.S. Nationally Recognized Testing Laboratory Listing	UL3111-1 Standard for electrical measuring and test equipment.
Canadian Certification	CAN/CSA C22.2 No. 1010.1 Safety requirements for electrical equipment for measurement, control, and laboratory use.

¹ **This product complies when installed into any of the following Tektronix instrument enclosures:**
1700F00 Standard Cabinet
1700F02 Portable Cabinet
WFM7F05 Rack Adapter

² **Use only high-quality shielded cables.**

Table 1- 19: Certifications and compliances (cont.)

Category	Standards or description
Additional Compliance	IEC61010-1 Safety requirements for electrical equipment for measurement, control, and laboratory use.
	ISA S82.02.01:1999 Safety standard for electrical and electronic test, measuring, controlling, and related equipment.
Installation (Overvoltage) Category Descriptions	<p>Terminals on this product may have different installation (overvoltage) category designations. The installation categories are:</p> <p>CAT III Distribution-level mains (usually permanently connected). Equipment at this level is typically in a fixed industrial location.</p> <p>CAT II Local-level mains (wall sockets). Equipment at this level includes appliances, portable tools, and similar products. Equipment is usually cord-connected.</p> <p>CAT I Secondary (signal level) or battery operated circuits of electronic equipment.</p>
Pollution Degree Descriptions	<p>A measure of the contaminates that could occur in the environment around and within a product. Typically the internal environment inside a product is considered to be the same as the external. Products should be used only in the environment for which they are rated.</p> <p>Pollution Degree 1 No pollution or only dry, nonconductive pollution occurs. Products in this category are generally encapsulated, hermetically sealed, or located in clean rooms.</p> <p>Pollution Degree 2 Normally only dry, nonconductive pollution occurs. Occasionally a temporary conductivity that is caused by condensation must be expected. This location is a typical office/home environment. Temporary condensation occurs only when the product is out of service.</p> <p>Pollution Degree 3 Conductive pollution, or dry, nonconductive pollution that becomes conductive due to condensation. These are sheltered locations where neither temperature nor humidity is controlled. The area is protected from direct sunshine, rain, or direct wind.</p> <p>Pollution Degree 4 Pollution that generates persistent conductivity through conductive dust, rain, or snow. Typical outdoor locations.</p>
Equipment type	Test and Measurement
Safety Class	Class I
Overvoltage Category	CAT II
Pollution Degree	Pollution Degree 2

Installation

The information contained here deals with the installation and operation of the 1740A/1750A/1760-Series instrument. If the instrument is to be removed from its installed position for servicing, this will provide the information needed to remove it or reinstall it. Note that the repackaging information is located at the end of the Maintenance section.

Standard Accessories

This instrument is shipped with a set of standard accessories. These are the items necessary to place the instrument in service, such as the power cord. When the box for the instrument is opened, it should contain:

- One User Manual.
- Power cord assembly (See Options)
- One cartridge fuse.
- Three replacement graticule light bulbs.
- Three replacement air filters

Two 3.5-inch high density disks are included with this manual. The disks run on an IBM compatible PC with a DOS 3.3 or higher operating system and a 3.5-inch high-density disk drive.

One disk contains the current operating software for the instrument. To determine the level of software loaded in an instrument, perform the following steps:

1. Power up the 1740A/1750A/1760-Series.
2. Push the CONFIG menu button.
3. Select the REMOTE submenu.
4. Read the software version number from the lower right corner of the CRT.

The other disk contains the procedure needed to return the instrument operation to its specified levels. This procedure works in conjunction with the Adjustment Procedures section of this manual. Version 2.2 or higher software must be loaded in the instrument to use the Adjustment procedures.

Mechanical Installation

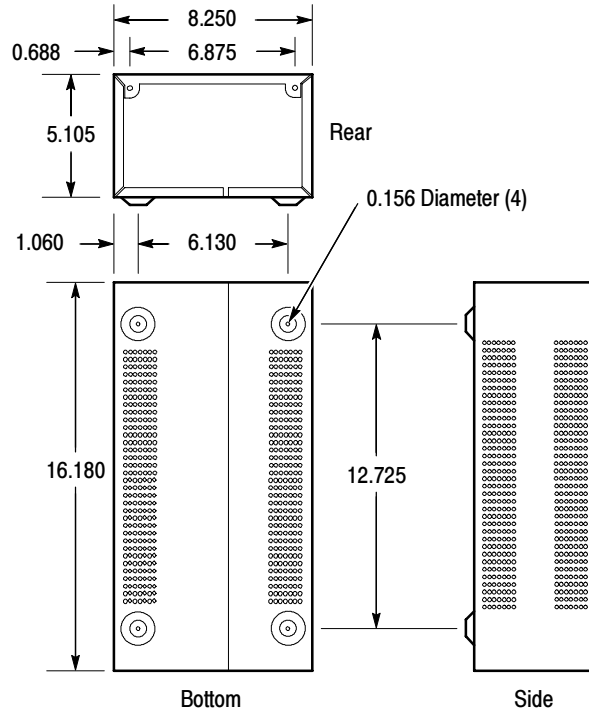


Figure 2- 1: Dimensions of the 1700F00 plain cabinet

Cabinets

The cabinets available for this instrument provide necessary shielding and protection against accidental electrical shock, and also protect internal circuitry against build up of dust. A supply of filtered, cooling air is provided from the rear panel and exits through the cabinet vent holes. Operation in air flow restricted environments may lead to excessive heat build up.

All qualification testing for the 1740A/1750A/1760-Series instruments was performed in a 1700F00 cabinet. To guarantee compliance with specifications, the instrument should be operated in a cabinet. The plain cabinet, 1700F00, is shown in Figure 2-1.

Also available are the 1700F02 Portable carrying case and the WFM7F05 side-by-side rack mount assembly. All of these cabinets are available from Tektronix. If you need one of these cabinets, contact your nearest Tektronix field office or representative for assistance in ordering.

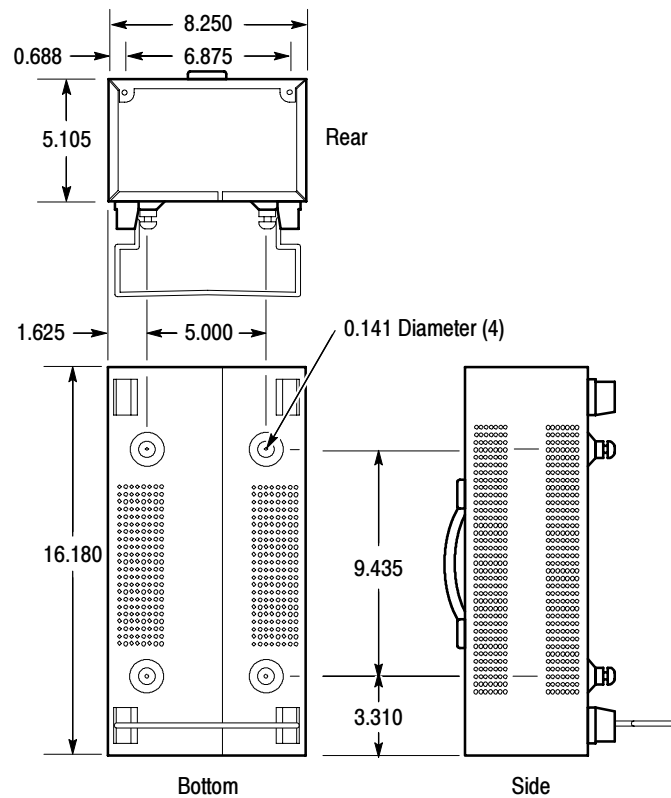


Figure 2-2: 1700F02 portable cabinet

The portable cabinet, 1700F02, is shown in Figure 2-2. The 1700F02 has a handle, four feet, a flip-up stand. The mounting hole sizes and spacing are different from those of the 1700F00.

The 1700F00, 1700F02, and WFM7F05 cabinets, which are available from Tektronix as optional accessories, provide the proper electrical environment for the instrument. They supply adequate shielding, minimize handling damage, and reduce dust accumulation within the instrument.

Installing the Cabinet



CAUTION. Do not attempt to carry an instrument in the cabinet without installing the mounting screws. Without the mounting screws, there is nothing to hold the instrument in the cabinet if it is tipped forward.

The instrument is secured to the cabinet by two 6-32 Pozidrive® screws, located in the upper corners of the rear panel. See Figure 2-3.

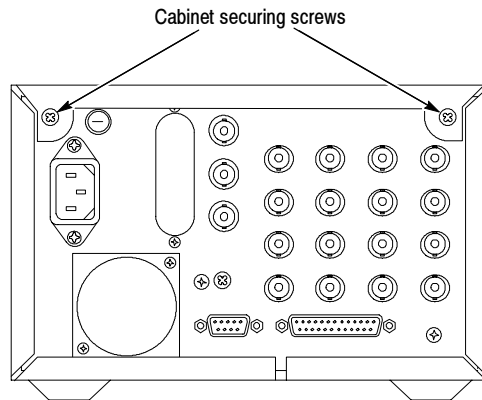


Figure 2-3: Rear view showing the securing screws

Rack Adapter

The optional WFM7F05 side-by-side rack adapter, shown in Figure 2-4, consists of two attached cabinets. It can be used to mount the 1740A/1750A/1760-Series and another half-rack width instrument in a standard 19-inch rack.



CAUTION. Be sure to read and follow the instructions that are shipped with the rack adapter.

Use the correct sleeve for your product. The ventilation holes and EMI shielding on the sleeves are specially designed to meet the requirements of the instruments for which they were intended. If you use the wrong sleeve, it could damage the instrument and cause overheating problems.

When working with instruments that are not enclosed in a chassis, you must observe static precautions. You must also be careful not to damage circuit board mounted components or interconnection wiring when sliding a sleeve over these products.

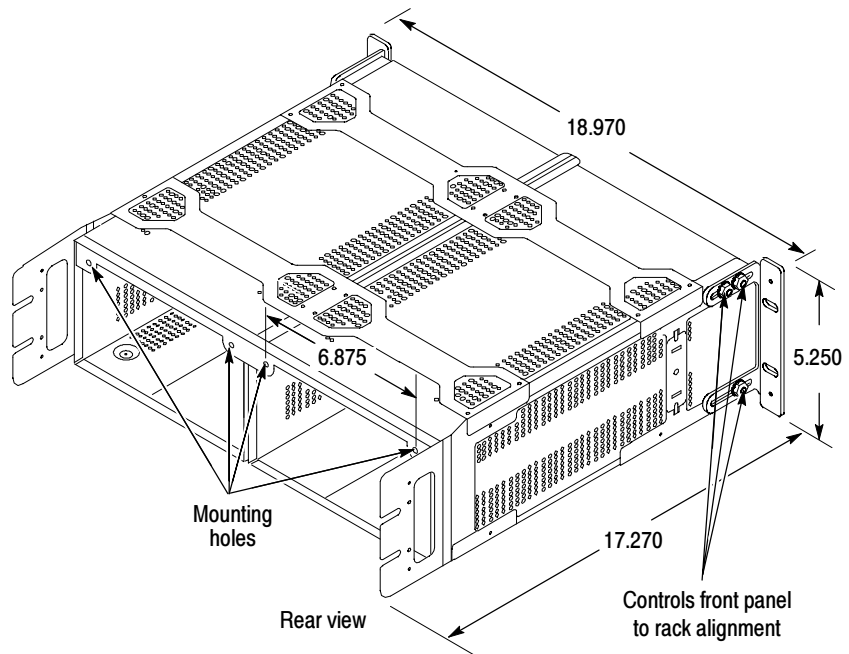


Figure 2-4: The WFM7F05 side-by-side rack adapter

The rack adapter is adjustable, so the instrument can be more closely aligned with other equipment in the rack. See Figure 2-4.

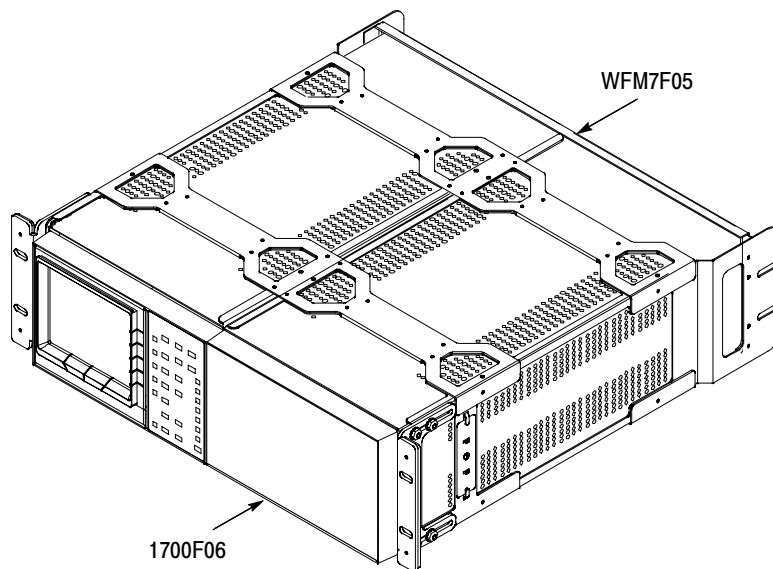


Figure 2-5: A WFM7F05 with a blank front panel (1700F06)

If only one side of the rack adapter is used, a 1700F06 Blank Panel can be inserted in the unused section. See Figure 2-5. The rack adapter and panel are available through your local Tektronix field office or representative.

When only one instrument is mounted in the side-by-side adapter, an accessory drawer (1700F07) can be installed in the blank side of the cabinet. See Figure 2-6.

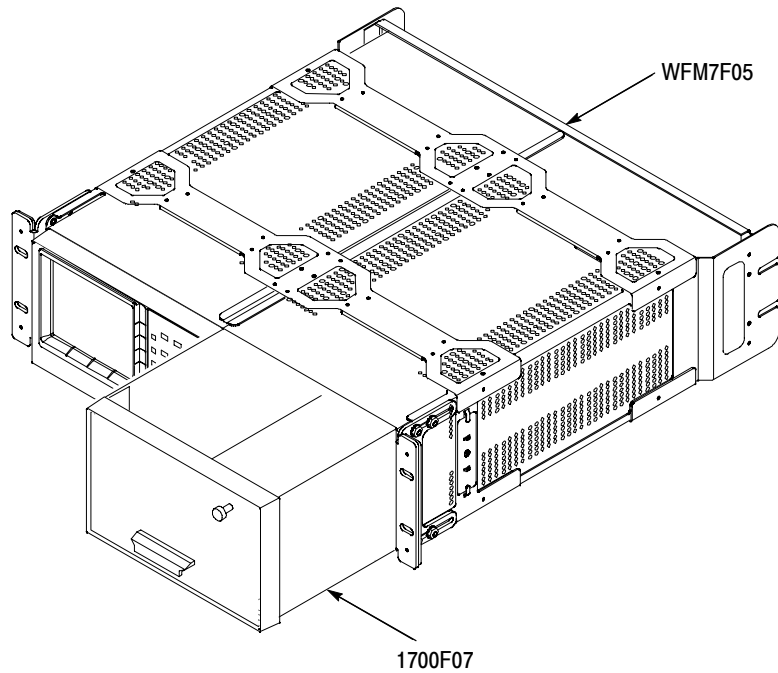


Figure 2-6: WFM7F05 rack mount cabinet with a 1700F07 utility drawer

Custom Installation

For applications such as consoles, the instrument can be mounted with front molding flush or protruding from the console. In both cases, allow approximately 3 inches of rear clearance for BNC and power-cord connections.

To mount the instrument safely, attach it to a shelf strong enough to hold its weight. Install the mounting screws through the four 0.156-inch diameter holes in the bottom of the 1700F00 cabinet. See Figure 2-7.

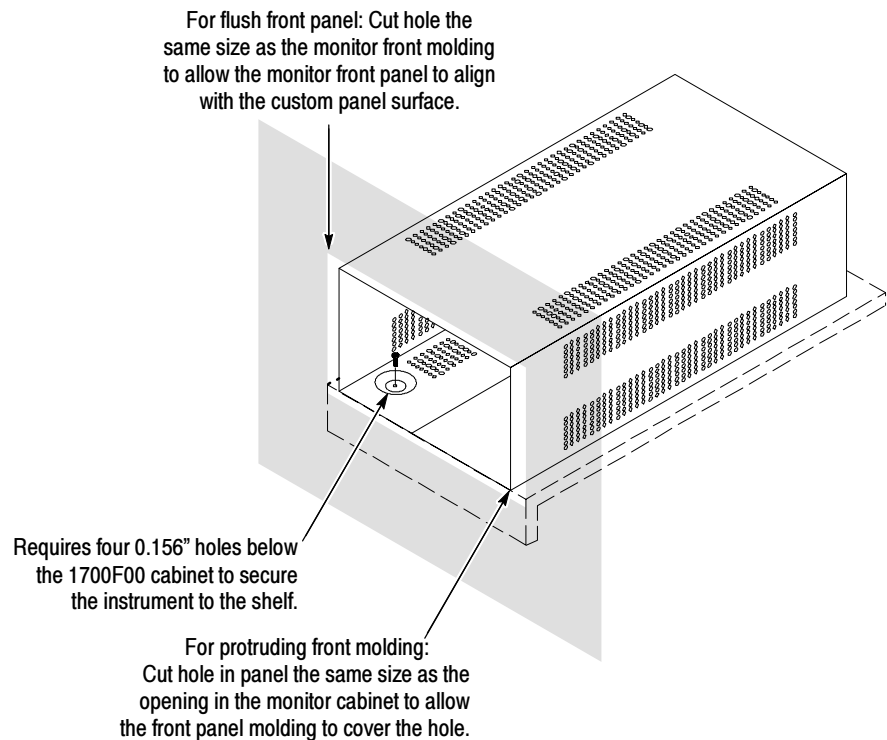


Figure 2-7: Custom installation of an instrument

Electrical Installation

Power Source These monitors are designed to operate from a single-phase power source having one of its current-carrying conductors at or near earth ground (the neutral conductor). Only the line conductor is fused for over-current protection. Systems that have both current-carrying conductors live with respect to ground (such as phase-to-phase on multiphase systems) are not recommended as power sources. A protective ground connection by way of the grounding conductor in the power cord is essential for safe operation.



WARNING. *When power is supplied, line voltage will be present in the instrument, even if the POWER switch is set to STANDBY.*

Mains Frequency and Voltage Range The 1740A/1750A/1760-Series monitors operate at 50 and 60 Hz, over the range of 90-250 Volts, without operator adjustment.

Power Cord Options These instruments ship with a standard North America power cord, unless a power cord option was ordered. Table 7-1 in the *Options* section shows the available options.

Operational Changes No operational modifications are made to this monitor through internal jumper settings.

Rear Panel Connectors

Signals into and out of the instrument are connected via the rear panel. Video signals are input/output through the BNC connectors, except for the RGB staircase signal which is input through the REMOTE connector. General information about the rear panel connectors is provided in the following paragraphs. Figure 2-8 shows the rear panel configuration for a 1760-Series instrument. The only difference between the 1760-Series rear panel and the other instrument rear panels is the presence of the GBR outputs.

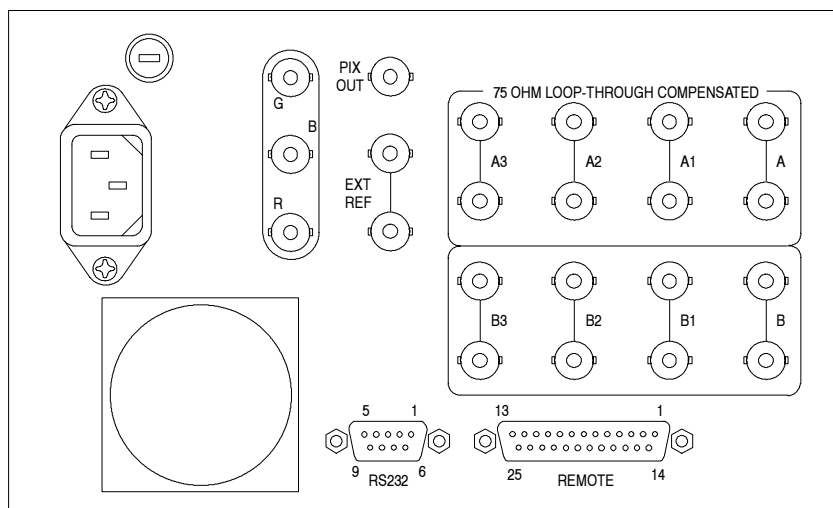


Figure 2-8: Rear panel connectors

75 Ω Loop-Through Video Inputs

There are a total of eight 75 Ω compensated loop-through video input BNC connectors. These inputs are not internally terminated; inputs require 75 Ω external termination to provide accurate measurement capabilities. Inputs A and B are dedicated composite inputs regardless of instrument type. Inputs A1-A2-A3 and B1-B2-B3 can also be used as composite inputs, but if component signals are to be displayed, they become the component inputs.

Maximum operating input voltage for all inputs is -1.8 V to $+2.2\text{ V}$ DC plus peak AC. Absolute maximum input voltage is -8.5 V to $+8.5\text{ V}$ DC plus peak AC.

External Reference (EXT REF)

The external reference input provides both external synchronizing signals and external subcarrier input to these instruments. Input is either black burst or composite video. It is a 75 Ω compensated loop-through input, requiring external termination.

**Picture Monitor Out
(PIX OUT)**

The PIX OUT is a 75 Ω , nonfiltered output designed to drive a picture monitor. A bright-up strobe is added when the instrument is operated in the line select mode. Strobe will either be the line in the selected field, the line in all fields or of 15 lines duration in the selected field or all fields. In the 15-line mode, the bright up starts with the selected line.

GBR Output

1760-Series Only. These three 75 Ω outputs are from the color difference-to-GBR transcoder. When the input is RGB, the transcoder is bypassed. The G (green) output contains sync.

Remote Connector

The rear-panel REMOTE connector is a 25-pin, D-type connector. It provides the input for stereo L and R audio. TTL signal or ground closure to designated pins are the enables. Eight front-panel setups can also be stored and recalled through the Remote connector. Table 2-1 shows pin assignments and Figure 2-9 shows the connector.

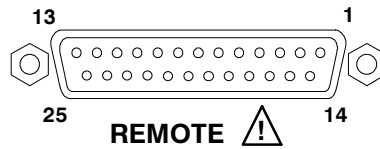


Figure 2-9: Rear panel REMOTE connector.

Table 2-1: Remote connector

Pin number	Function	Signal requirement	Miscellaneous information
1	RGB/YRGB Staircase Input External Horiz. Input	+10 V for RGB/YRGB 0 - +5 V Sawtooth	≈ 9 divisions of sweep. (Staircase/external horizontal and RGB/YRGB selected through the menu.) 10 divisions of horizontal deflection.
2	Ground		
3	Staircase/Ext. Horiz. Enable	Ground (TTL low)	Grounding enables the function. (Staircase or external horizontal selected through the menu.)
4	External Blanking Input	Negative-going signal	Enabled by menu selection.
5	Remote Sync Input	TTL level square wave triggers 2-field sweep.	30/90 Hz for NTSC 25/100 Hz for PAL
6	Remote Sync Enable	Ground (TTL low)	Grounding enables the function.
7	Ground		
8	+Y Audio Input	Max. Input ± 8 V peak.	Left in phase. Measured to Chassis Ground.
9	-Y Audio Input	Max. Input ± 8 V peak.	Left out of phase. Measured to Chassis Ground.
10	+X Audio Input	Max. Input ± 8 V peak.	Right in phase. Measured to Chassis Ground.
11	-X Audio Input	Max. Input ± 8 V peak.	Right out of phase. Measured to Chassis Ground.
12	+ Time Code Input	-10 - +10 V peak.	Longitudinal Time Code, differential.
13	- Time Code Input	-10 - +10 V peak.	Longitudinal Time Code, differential.
14	Ground		
15 & 16	Not used		
17	Preset 1	Ground (TTL low)	Ground pin 17 to recall front-panel setup from preset 1. Ground pins 17 and 25 to store current front-panel setup at preset 1.
18	Preset 2	Ground (TTL low)	Ground pin 18 to recall front-panel setup from preset 2. Ground pins 18 and 25 to store current front-panel setup at preset 2.
19	Preset 3	Ground (TTL low)	Ground pin 19 to recall setup from preset 3. Ground pins 19 and 25 to store current setup at preset 3.
20	Preset 4	Ground (TTL low)	Ground pin 20 to recall setup from preset 4. Ground pins 20 and 25 to store current setup at preset 4.
21	Preset 5	Ground (TTL low)	Ground pin 21 to recall setup from preset 5. Ground pins 21 and 25 to store current setup at preset 5.
22	Preset 6	Ground (TTL low)	Ground pin 22 to recall setup from preset 6. Ground pins 22 and 25 to select preset 6 as storage location for current setup.
23	Preset 7	Ground (TTL low)	Ground pin 23 to recall setup from preset 7. Ground pins 23 and 25 to select preset 7 as storage location for current setup.

Table 2- 1: Remote connector (Cont.)

Pin number	Function	Signal requirement	Miscellaneous information
24	Preset 8	Ground (TTL low)	Ground pin 24 to recall setup from preset 8. Ground pins 24 and 25 to select preset 8 as storage location for current setup.
25	Store	Ground (TTL low)	Ground this pin along with one of the Preset pins to store the current front-panel setup at the selected Preset location.

Remote Connector Converter

If the 1740A/1750A/1760-Series replaces a 1740/1750-Series instrument, rewire the remote cable or provide an adapter as shown in Figure 2-10

If the 1740A/1750A/1760-Series replaces an Option 16 instrument, construct the adapter in the same manner, omitting the pin 3-to-pin-25 connection.

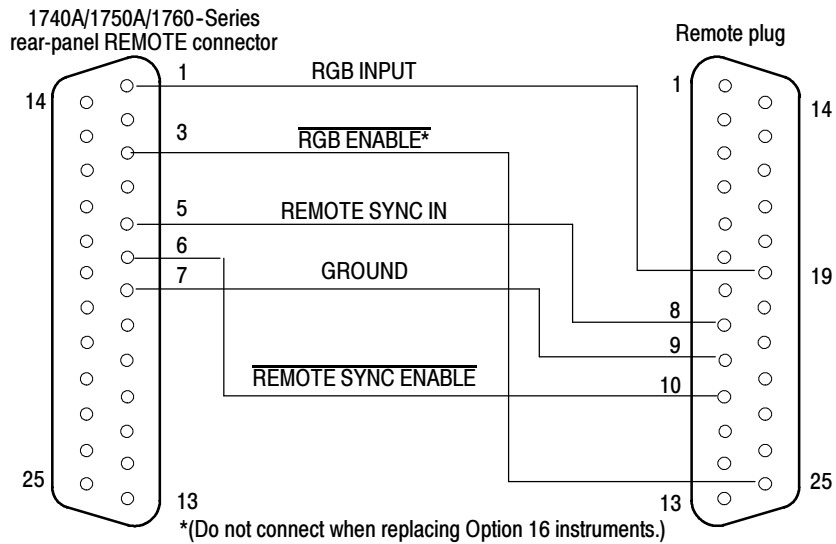


Figure 2- 10: Replacement adapter for 1740/1750

RS232 Connector

This 9-pin subminiature D-type connector provides a serial interface for remote control. It has a driver built in for RS232 serial binary data interchange. The operational mode is full duplex. Data rate = 9600 baud; data type is asynchronous. Figure 2-11 shows pin assignments and connector orientation.

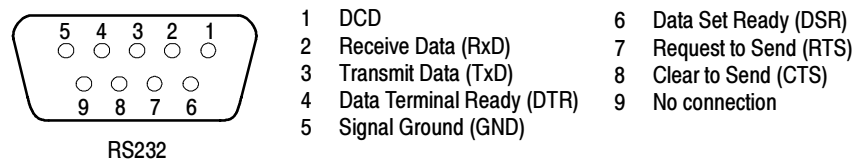


Figure 2- 11: Rear panel RS232 connector

Installing Software

These versatile monitors can be upgraded to perform additional measurements or to revise operations. Software code is contained in Flash EPROM that can be written over when upgrades become available.

If you replace the Flash EPROM, you must reinstall the software from the software disk accompanying this manual.

To find the current version of software, go to the CONFIG menu and then to the REMOTE submenu. The version number, preceded by the letter V, is displayed in the lower right corner of the screen.

Software Disk

The software disk is a 3.5" (1.44MB) high-density disk. It contains all programs necessary to upgrade or reload the operating software in the Tektronix 1740A/1750A/1760-Series instruments. If a disk drive other than 3.5" is to be used, copy the contents of the disk to the desired size disk or to a hard disk directory. The disk contents are:

NVSAVE.EXE. Saves calibration constants and user presets.

CONVERT.EXE. Updates format of calibration and preset data.

UPGRADE.EXE. Performs software upgrade.

NVRESTOR.EXE. Restores calibration constants and user presets.

NEW_CAL.EXE. Used to calibrate new features.

SOFTWARE.BIN. Data file used by UPGRADE.EXE.

Required Equipment

IBM Compatible PC with the following

- DOS 3.3 or Higher.
- 640 K Bytes Random-Access Memory (RAM).
- High Density Floppy Drive (3.5"/1.44 MB).
- Available RS232 Port (COM 1, 2, 3, or 4).
- RS232 Cable to connect PC to the 1740A/1750A/1760-Series RS232 connector.

Instrument Reset

Certain conditions, such as removing the power source while a program is running, may cause the 1740A/1750A/1760-Series instrument front-panel controls to become locked.

Reset as follows:

Turn off instrument power, then depress CLEAR MENU and WAVEFORM, holding in both buttons until you have turned instrument power on again and the instrument has returned to its normal operating state.



CAUTION. Loading new software will result in the loss of instrument calibration constants and user presets. Therefore, the program **NVSAVE** must be run before executing **UPGRADE**.

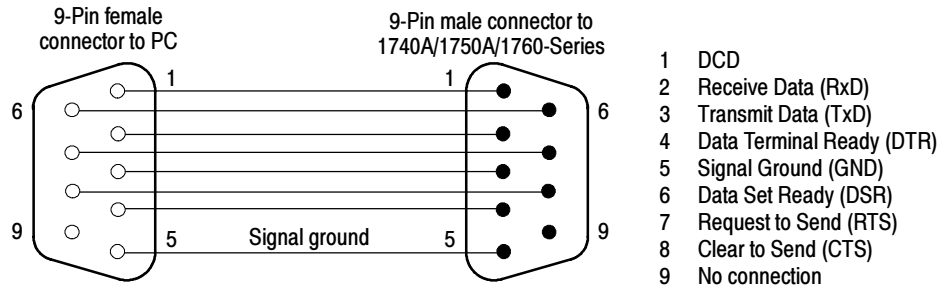
*If a disk is used to upgrade more than one instrument, finish one upgrade, including the **NVRESTOR** program, before running **NVSAVE** on the next instrument. **NVSAVE** will overwrite the temporary files on the disk every time it is run; any previous files will be lost.*

The programs are designed to read or create their respective files in the current DOS directory. If you choose to copy these files to a hard drive, be sure to run them from the directory in which they are contained.

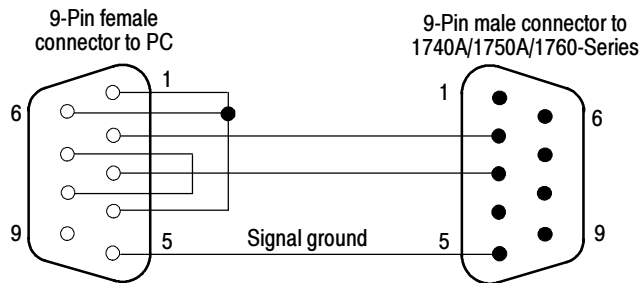
The instrument cannot be used during execution of any of the programs on this disk. If the operation of any of these programs is interrupted, that program must be rerun from the beginning to ensure a proper upgrade.

Loading Software

PC Hookup Hook up the 1740A/1750A/1760-Series rear-panel RS232 connector to the COM 1, 2, 3, or 4 connector on the PC, as shown in Figure 2-12 or Figure 2-13. If pins two and three (RXD and TXD) are swapped, as in some MODEM connections, the upgrade will not operate.



Standard hookup



Alternate hookup

Figure 2- 12: Standard and alternate hookups for the 9-pin connector

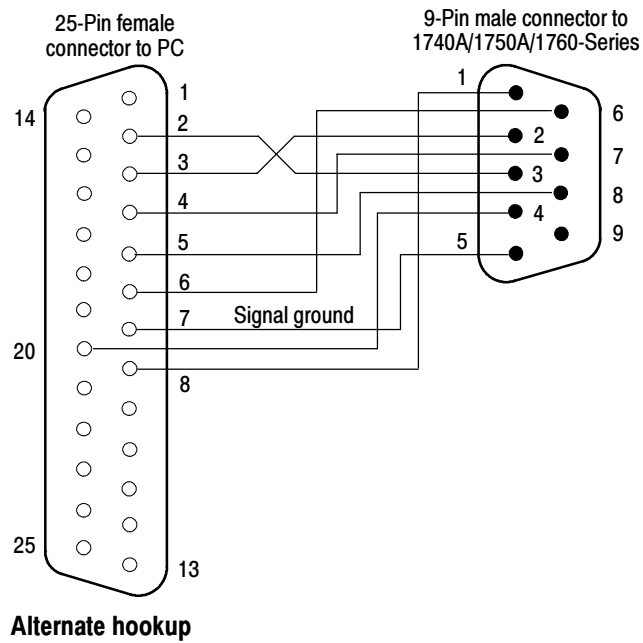
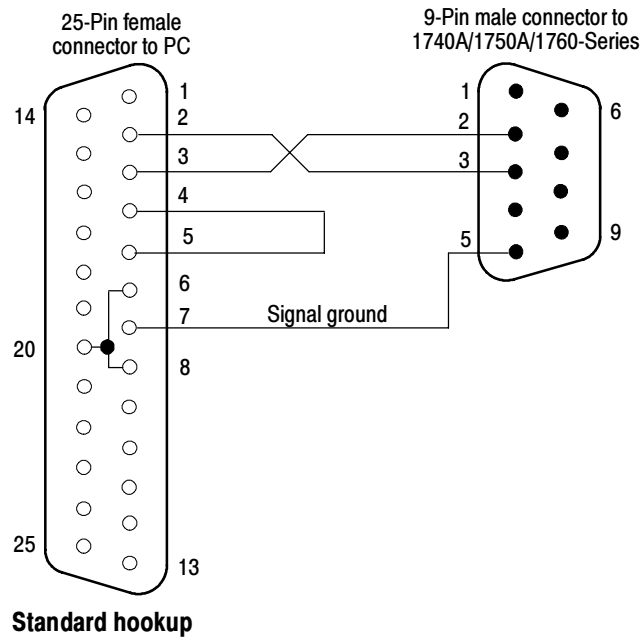


Figure 2-13: Standard and alternate hookups for 25-Pin PC Connector

Procedure for Loading Software

**1. Run NVSAVE
(Execution time <1 minute)**

- a. Power on the 1740A/1750A/1760-Series instrument.

NOTE. *PC Disk Drive or Hard Disk*

On PCs, the drive letter for the disk drive may be A, B, etc. Enter the appropriate letter for your disk drive in the following steps. If the disk contents were copied to a hard disk directory, run the programs from that directory.

- b. Insert disk into PC 3.5 inch disk drive.



CAUTION. *In order to execute “NV SAVE”, the disk is not write protected. Do not place it in write protect mode.*

- c. At the DOS prompt, type “**B:**” and ENTER.
- d. Type “**NVSAVE**” and ENTER. When asked for the COM port, respond with the number of the port you are using. (If you enter an incorrect port number, you will be prompted to try again.)

The program stores the following temporary files on the disk:

- CALS.TMP** (calibration constants)
- PRESET.CUR** (instrument’s current front-panel setup)
- PRESET.001-009** (user-defined presets)
- PRESET.FCT** (factory-defined preset)

- e. Wait for the message that the program execution is completed.

**2. Run CONVERT
(Execution time <1 minute)**

- a. Type “**CONVERT**” and ENTER.

3. Prepare Waveform Monitor for Upgrade

- a. Turn instrument power to STANDBY.



WARNING. *When power is supplied, line voltage will be present in the instrument, even if the POWER switch is set to STANDBY.*

- b. Move the plug jumper on J4 (Main board) to pins 1 and 2 (the pins closest to U14).

- c. Set switch 4 of SW1 to the open position. (SW1 is the red switch on the Main board, near the front of the instrument.)
- d. Turn on the instrument and allow it to boot (wait a few moments until the 1740A/1750A/1760-Series CRT and front-panel LEDs are illuminated as for normal operation).

4. Run UPGRADE (Execution time \approx 12 minutes)

NOTE. *If a power loss to either the PC or the 1740A/1750A/1760-Series occurs during software loading, the instrument may lock up and not restart normally. If this occurs, refer to the special recovery procedure on page 2-20.*

- a. Be sure that **NVSAVE** was executed (step 1).
- b. At the DOS prompt, type "**B:**" and ENTER.
- c. Type "**UPGRADE**" and ENTER. When asked for the COM port, respond with the number of the connector you are using.
- d. Wait for the message that the program execution is completed.
- e. Turn off the 1740A/1750A/1760-Series instrument power.
- f. Return the plug jumper to pins 2 and 3, and return #4 of SW1 to the closed state.
- g. Turn on instrument power to enable the new software.

5. Run NVRESTOR (Execution time <1 minute)

- a. At the DOS prompt, type "**B:**" and ENTER.
- b. Type "**NVRESTOR**" and ENTER. When asked for the COM port, respond with the number of the port you are using.
- c. Wait for the message that the program execution is completed.
- d. Verify that step 4f has been performed.
- e. This completes the Software Upgrade Procedure.

Calibrating New Features

The new instrument features must be calibrated using the following procedure. A color bar signal is required.

1. Run NEW_CAL

- a. After installing the new version software, with the RS232 cable still attached and the instrument operating, type “NEW_CAL” and ENTER.

NOTE. Each time an adjustment is indicated in the following steps, type the given letter on the PC keyboard, and then press the up/down or left/right keyboard arrows as many times as required to achieve the described adjustment. The arrows function as follows:

→	↑
large increase	small increase
←	↓
large decrease	small decrease

2. Calibrate the new features.

- a. Perform steps A through I for all instruments.
- b. Perform steps J and K for 1760-Series.
- c. Type X to exit the program.

Special Recovery for Power Loss During the Execution of UPGRADE

If there is a power failure to either the instrument or the PC while the software is loading, the following recovery procedure is necessary:

1. Turn the 1740A/1750A/1760-Series front-panel POWER switch to STAND-BY.
2. Start the PC upgrade procedure program and proceed through the menus until the SELECT COM PORT menu is on screen.
3. Type in the number of the COM PORT, but **do not** press RETURN.
4. Turn the 1740A/1750A/1760-Series front-panel POWER switch to ON.
5. Within 6 seconds, press RETURN on the PC.

Operating Information

This section contains a brief introduction, minimal operating instructions, general menu information, an overview of the instrument functions, and brief instructions for displaying the desired signal. Consult the user manual if you need a more complete explanation.

Getting Started

You should be aware of the following special characteristics of the 1740A/1750A/1760-Series:

- Composite (NTSC or PAL) signals can be connected to any or all of the eight input channels. Three-channel component (for example, GBR or Y, P_B, P_R) signals should be connected to inputs A1-A2-A3 and B1-B2-B3. Select the CONFIG/INPUT display to configure the “A123” and “B123” inputs for the type of signal you are monitoring.
- Each type of Waveform display (one line, two line, one field, and two field) has one level of horizontal magnification that can be turned on and off with the MAG button. The level of magnification depends on the display type; you can sequentially display the four magnified views by repeatedly pressing the Line/Field SWEEP button (once SWEEP MAG has been selected).
- The 1760-Series BOWTIE Display subtracts channels 2 and 3 from channel 1 and automatically displays the results in a parade format; when “A123” is selected, the A1 minus A2 waveform is shown to the left of the A1 minus A3 waveform. This lets you use the Tektronix-developed Bowtie test signal to check and adjust inter-channel timing on component systems.
- The rear-panel REMOTE connector accepts audio signals. See Appendix B of the user manual for the pin assignments.
- The five buttons arranged vertically to the right of the display are called *Bezel Buttons*. Use these buttons to toggle or select on-screen menu options.
- The middle three knobs under the display are called *Bezel controls*. Turn these knobs to adjust the parameters (or scroll through the lists) that appear above them on the display screen.

Operating Instructions

1. Connect the instrument to the desired signal path(s). Remember to connect component signals to A1-2-3 or B1-2-3. Be sure that all paths are terminated; add a termination to the loop-through connector, as necessary.
2. Plug the instrument in and switch it on. The On/Standby (POWER) switch is on the bottom right corner of the front panel.
3. Select the CONFIG menu with its front-panel button and adjust the parameters as required for your particular installation.

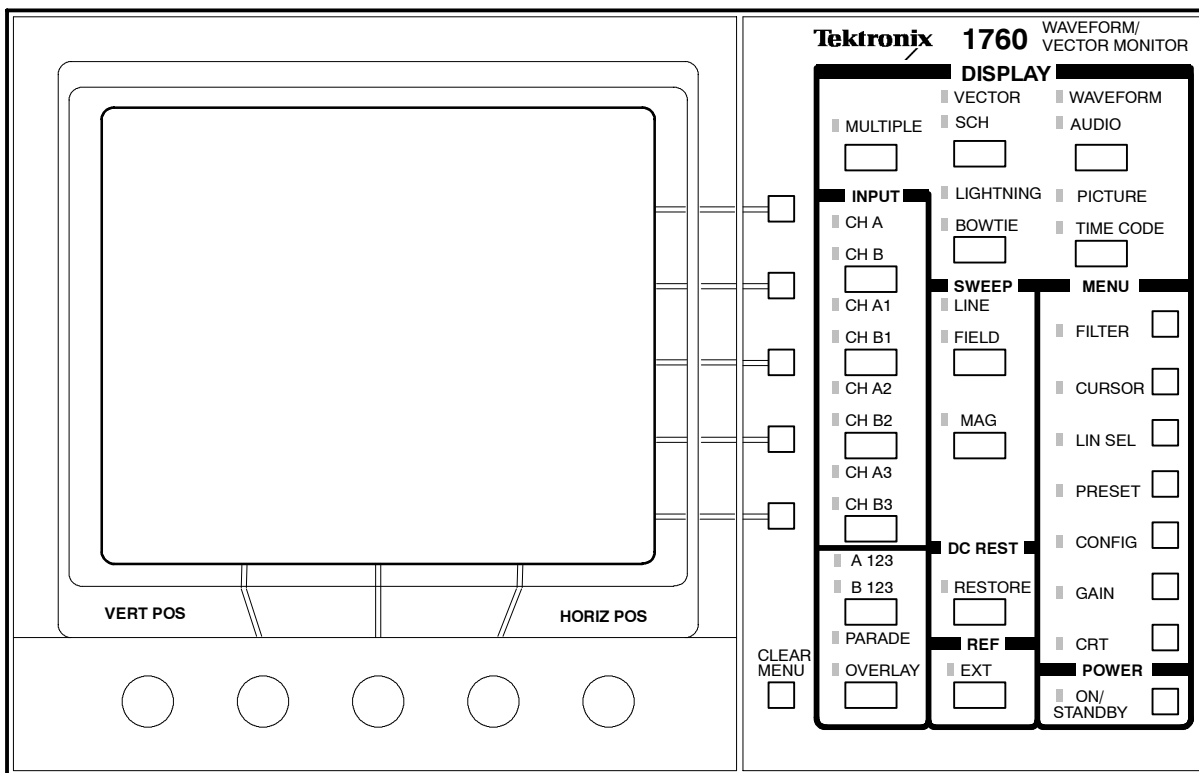


Figure 2-14: 1760 front panel

4. Use the DISPLAY and INPUT buttons to view some aspect of the desired signal.
5. Select the CRT menu to adjust the waveform, readout, and scale brightness, and the waveform focus. Press the CLEAR MENU button to remove the menu from the display.
6. Use the front panel controls (Figure 2-14) to observe and measure the desired signals. For more details, see the following pages or the user manual.

General Menu Information

The next few paragraphs describe the general techniques for using the menus.

To get started, press a MENU button (on the far right of the front panel) to call up one of the menu readouts.

Multi-Use Bezel Controls and Buttons

Menu selections appear along the right side of the screen. Descriptive labels, when present, appear in *ITALIC* text. Selections appear in Roman (standard) text, with the current selection outlined. Use the five bezel buttons along the right side of the CRT to change the selections. Figure 2-15 shows the bezel controls and buttons.

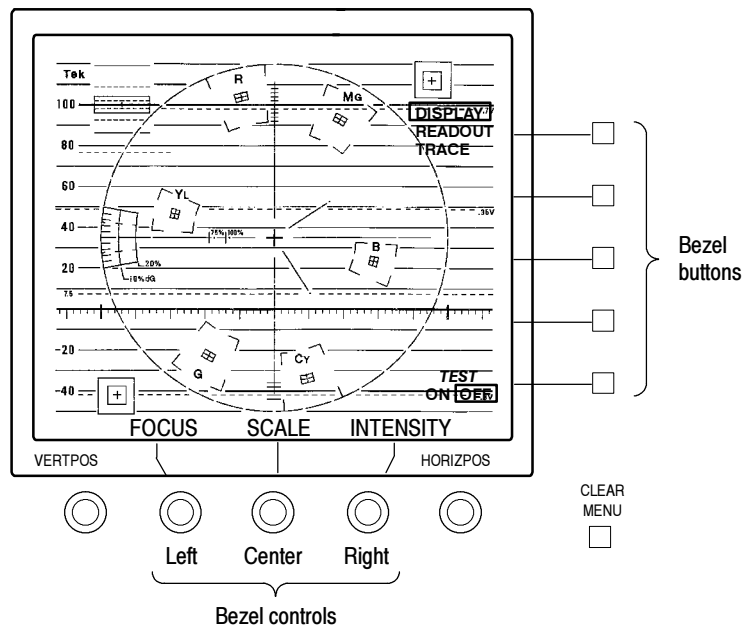


Figure 2-15: The CRT menu, with the bezel controls and buttons

The center three controls under the CRT are referred to as Left, Center, and Right bezel controls. Control functions vary with menu choice; a readout just above each active knob shows its present function. The knobs are used as variable analog controls to set values such as phase, amplitude, and intensity. The left control is also used to scroll and select categories within the CONFIG menu.

Moving Between Menus

Selecting a second menu removes the present menu display, but the functions typically remain active (with the menu LED remaining lighted to show this state). To reinstate a menu display, press that menu button again. CRT, PRESET, and CONFIG menus are exited completely when another menu button is pressed.

Clear Menu

Press CLEAR MENU to clear part of the menu display, but leave essential readout elements such as control assignments and measurement readouts. (The menu LED remains lighted to show this state.) Press the menu button to bring back the full display. CRT, PRESET, and CONFIG menus are exited completely when CLEAR MENU is pressed.

Exiting a Menu Function

To exit a menu function while its display is present, press that menu button. (The menu button functions as an on-off toggle switch). If the menu display is not present, but the menu function is still in effect (LED is lighted), press the menu button to bring back the full display, then press it again to exit the menu.

Functional Overview

The *Functional Overview* tells how to use your instrument to monitor a signal. To select a particular signal, see *Displaying a Signal* on page 2-27.

Display Modes

The displays that can be chosen for each type of signal are listed in Table 2-2 and explained in the following paragraphs.

Table 2-2: The available display modes

Mode	Composite	Component
Vector	Yes	1760-Series only
SCH	1750A-Series & 1760-Series, Option SC only	
Waveform	Yes	Yes
Audio	Yes (using REMOTE input)	Yes, using REMOTE input
Lightning & Diamond		1760-Series only
Bowtie		1760-Series only
Picture	Yes	Yes
Time Code	Yes	Yes
Multiple Displays	Yes	Yes

Vector

The vector mode presents an XY plot of demodulated chrominance phase and amplitude. The angle represents chrominance phase and the distance from the center represents chrominance amplitude. A bezel control adjusts vector phase.

With a component input (A123 or B123), the vector display is channel 3 (typically R-Y or P_R) versus channel 2 (typically B-Y or P_B).

SCH

SCH (the 1750A-Series and 1760-Series with option SC only) provides a vector display of the subcarrier-to-horizontal-sync phase relationship. The burst vector and the phase of the 50% point of the leading edge of sync are displayed.

Subcarrier-to-horizontal phase and color framing are displayed graphically in the polar SCH display. Sync jitter over the field shows as a moving sync vector dot. You can verify correct color framing by the position of the single sync vector dot relative to the color subcarrier vector when the monitor is externally referenced.

The SCH phase of the reference signal is separately sensed to allow reliable color framing comparison. Using this method of determining relative color framing

eliminates the requirement for a precise horizontal timing match between the reference and measured signals.

Waveform The waveform monitor portion of the instrument provides a voltage-versus-time display of the video signal. The selected input can be displayed in one or two line, or one or two field sweeps. In LINE SELECT mode, identified lines of any field can be selected and displayed. Multiple inputs can be displayed, or multiple filters can be used on one input for signal analysis. TIME and VOLTAGE cursors can be activated and positioned for reference or measurement.

Audio Audio amplitude and phase is monitored using a calibrated X/Y Lissajous display. You can verify that the program audio will be properly reproduced on both monaural and stereo receivers. Correct phasing between two audio channels is verified by the direction of the display.

**Lightning and Diamond
(1760-Series only)**

The front-panel LIGHTNING button is used for both the Lightning and the Diamond displays. Use the *DISPLAY* button on the CONFIG/FORMAT menu to toggle between the Lightning and Diamond displays. Press the front panel CLEAR MENU button to remove the menu from the screen.

Selecting Lightning mode forces the instrument to A123 input display; it can be changed to B123 with the front-panel button.

NOTE. A123 (or B123) must be configured as a component input (through the COMPONENT/INPUT menu) for proper LIGHTNING or DIAMOND display.

Bowtie In BOWTIE mode (1760-Series only), the display is forced to a two line or field sweep and the A123 input is selected. The left half of the display shows CH-1 minus CH-2 and the right half shows CH-1 minus CH-3. If the timing between channels is matched, the centers of the bowties will be centered and not skewed. If CH-2 is delayed with respect to CH-1, the skew moves to the right. If CH-2 is advanced with respect to CH-1, the skew moves to the left.

NOTE. A123 (or B123) must be configured as a component input (through the COMPONENT/INPUT menu) for proper BOWTIE display.

Picture The PICTURE mode allows the operator to verify the signal source. In PICTURE mode with LINE SELECT on, a bright-up marker identifies the selected line in the picture.

- Time Code** Longitudinal time code is monitored in a frame-rate display to allow observation of amplitude, synchronization, and phase with respect to reference vertical sync. Synchronization is confirmed by the stationary display and time code phase is determined by horizontal position of the time code sync word on the CRT.
- Multiple** When MULTIPLE is pushed, WAVEFORM, VECTOR, and SCH (Option SC only) can be selected at the same time.
- When exiting MULTIPLE, the instrument will return to the previous (non-MULTIPLE) display settings. When entering MULTIPLE again, the previous MULTIPLE display settings will be restored.

Displaying a Signal

The following paragraphs describe how to use the front-panel buttons to display exactly the signal or signals you want.

- Inputs** There are eight rear-panel loop-through inputs, which may eliminate the need for an external routing switcher. The inputs can be displayed singly or in several different combinations.

Without PARADE or OVERLAY selected, only one input selection can be made at a time. Each input channel button (including A123/B123 or SELA/SELB) toggles between A and B, and is cancelled when another input button is pressed.

With PARADE or OVERLAY selected, the input channels can be displayed in combination. Pressing an input channel button sequences through the labeled channels, both, then off. Pressing another input button does not cancel the current selection, but adds to it. To return to “single input” operation, press the PARADE/OVERLAY button until it is off (LED is no longer lighted).

Inputs A1-A2-A3 and B1-B2-B3 may be used either as inputs for three-wire component signals, or inputs for three separate composite signals. (The CONFIG/INPUTS menu settings must match the actual signal type.)

- A123/B123** Selecting A123 provides a side-by-side display of the CH-A1, CH-A2, and CH-A3 inputs (B123 displays the CH-B1, CH-B2, and CH-B3 inputs).

When PARADE or OVERLAY is selected, A123 and B123 can be displayed together and in combination with other inputs. If both A123 and B123 are selected, the display will consist of a side-by-side display of channels A1, A2, and A3, overlaid with a side-by-side display of channels B1, B2, and B3.

Parade Selecting PARADE independent of A123/B123 displays the input channels last selected for PARADE, allowing a custom configuration of inputs. In PARADE mode, the LINE/FIELD button offers only two choices: one line and one field.

PARADE allows up to four channels to be displayed side-by-side. Additional channels will be overlaid.

Overlay OVERLAY superimposes the selected input signals. In OVERLAY mode, the LINE/FIELD button remains a four-way toggle, providing one line, two line, one field, and two field displays.

Sweep Sweep buttons select the waveform sweep rate. LINE/FIELD toggles through four sweep rate selections: one line, two line, one field, and two field. In PARADE mode, the LINE/FIELD button becomes a two-way switch, toggling between line and field.

The MAG button is used with LINE/FIELD to provide horizontal magnification of each rate as follows:

- One line magnified = 200 ns/division
- Two line magnified = 1 μ s/division
- One field or two field magnified = approximately X20 magnification.

Block Diagram Description

The 1740A Series of monitors provides the typical composite displays used to monitor video quality. The 1750A Series adds SCH phase measurements. The 1760 Series provides both composite and component analog capabilities. Option SC added to the 1760 Series provides SCH phase measurements.

The three block diagrams discussed here are located in the *Diagrams and Circuit Board Illustrations*, at the rear of this volume. Circuits shown on a diagonal patterned background are not present in the 1740A Series instruments; these are the unique circuits for the 1750A Series and the 1760 Series.

Signal flow, microprocessor-generated levels, and feedback lines are shown as solid lines. Control lines are shown as dashed lines. Signal flow is from left to right on these diagrams.

Block Diagram 1: Input and Waveform Monitor

Input Amplifier, Clamp, and Input Selection

There are eight identical clamped input amplifiers. Their gain is approximately unity. They are of the bridging loop-through type and are compensated for 75Ω characteristic input impedance. All inputs are active and a multiplexer is used to select signals for display. All three instrument series can accept both composite and component inputs. Input coupling can be either ac or dc as selected from the Configure menu. Clamp timing and clamping point are selected in the same manner. Coupling and clamping selections are for all inputs; they cannot be individually changed.

The Input Multiplexer provides the means to select the input signal for display. Selection of signals is controlled by the Line Rate Controller in response to front panel switch selections. The choices are: a single input, a parade of three inputs, or an overlaid display of the same three inputs. Overlay display is at the selected line or field rate. Parade display is three consecutive lines or fields beginning with the A1 or B1 input signal followed by A2 or B2 and A3 or B3.

Horizontal Reference Multiplexer and Reference Switch

In addition to driving the Input Multiplexer the video signal also drives the Horizontal Reference Multiplexer to select the internal sync and subcarrier references for the Line Rate Controller, chroma for the vectorscope, and SCH Phase.

The Internal/External Reference switch selects either the internal video or the external reference input as the instrument sync and subcarrier reference. Both the Multiplexer and the Reference Switch are controlled by outputs from the Line Rate Controller.

Pix Out, Filters, and Calibrator

The Input Multiplexer drives both the Picture Monitor Out (Pix Out) and the chrominance and luminance filters. The filters can be bypassed to provide an unfiltered (Flat) display. The Pix Out signal, with or without line select bright up (strobe), is the buffered, unprocessed input signal from the Input Multiplexer. The Pix Out has a characteristic output impedance of 75Ω to match the input impedance of picture monitors.

In addition to removing chrominance for the displayed video, the Luminance Filter drives the Diff Step Filter, and an input to the Horizontal Amplifier where the monochrome Pix Mon intensity signal is derived.

There are chrominance filters for both of the color standards that filter both the input video signal and the output of the F_{SC} Oscillator. The F_{SC} Oscillator generates the test circle for the vectorscope. Output of the appropriate color standard Chroma Filter is selected by a microprocessor-generated switching signal. The chrominance signal is routed through the Vertical Amplifier, is buffered, and drives the vectorscope Chroma Amplifier.

The calibrator provides a 1 volt, 100 kHz output. Its amplitude is controlled by the microprocessor and its timing is set by the Line Rate Controller.

Auxiliary Switching

The Auxiliary Switching, controlled by the Line Rate Controller extends the number of signals that can be input to the Filter Selection Multiplexer. In addition to being an input to the Auxiliary Switching the differential time code input is recovered, buffered, and output to the microprocessor which generates time code display synchronizing signals.

Filter Selection Multiplexer

The Filter Selection Multiplexer selects one of seven inputs, including the Auxiliary Switching, to be displayed. The vectorscope R-Y and the component vertical signal outputs are input through this multiplexer.

Vertical Amplifier

The Vertical Amplifier is a variable gain amplifier that has controlling inputs driven by either microprocessor or synchronous Line Rate Controller outputs. Stage gain is controlled by the microprocessor-generated DAC converted control voltages. Magnification is switched by a signal from the Line Rate Controller. An offset voltage from the DACs vertically positions the display.

When the CRT readout is being processed, the Line Rate Controller changes the gain of the amplifier. The differential output of the Vertical Amplifier drives the vertical output amplifier to normalize signal amplitude and drive the CRT deflection plates.

An additional internal amplifier stage provides a chrominance differential output to drive the vector chroma amplifier. Gain of the chrominance signal is controlled by the microprocessor.

Sweep Generators and Horizontal Signal Multiplexer

Line and Field Rate signal generators are started and stopped by the retrace signals from the Line Rate Controller. Sweep ramp run up times ≈ 17 ms for the field sweep and $64 \mu\text{s}$ for the line sweep are controlled by the microprocessor.

The Horizontal Signal Multiplexer is controlled by the Line Rate Controller to select a signal to drive the horizontal circuitry. The vectorscope B-Y and the component horizontal signal outputs are input through this multiplexer.

Horizontal Amplifier

The Horizontal Amplifier is a variable gain amplifier with controlling inputs from either the microprocessor or the Line Rate Controller. Stage gain is controlled by the microprocessor-generated control voltages. Magnification is switched by a signal from the Line Rate Controller.

An offset voltage horizontally positions the display. The amount of positioning offset required for the Waveform mode is significantly greater than that required for the other display modes; therefore, a separate offset is required. When CRT readout is being processed the gain of the amplifier is changed by the Readout Select signal from the Line Rate Controller.

The differential output of the Horizontal Amplifier drives the horizontal output amplifier to normalize signal amplitude and drive the CRT deflection plates.

An additional amplifier stage within the Horizontal Amplifier provides a differential output that controls the intensity for the Picture Monitor mode. Picture Monitor contrast is controlled by the microprocessor.

Blanking Logic

The Blanking Logic is a multiplexer that is controlled by the Line Rate Controller. It selects the blanking/unblanking signals that drive the Z-Axis Amplifier, which drives the CRT control grid.

Block Diagram 2: Vector - SCH - Component

The vector circuits on this page are common to all monitors of this family. The SCH circuitry, in the upper left corner, is used by the 1750A Series and the 1760 Series Option SC. Component circuits located in the lower right corner of this page are used only by the 1760 Series.

Subcarrier Regenerator and Phase Shifter

Chrominance from the incoming video signal, either internal or from the external reference, is conditioned by a chrominance amplifier and input to the Phase Detector at burst time. The chrominance input to the Lock Detector is delayed by 90° and compared to the regenerated subcarrier, from the VCO, with the output low pass filtered and buffered. The resulting signal is a pulse, when burst is present, that clamps the Phase Detector output. It is also checked for phase lock and, if unlocked, an output is supplied to the Error Amplifier to increase its bandwidth for faster locking.

When the Calibrator (Cal Sig On) is selected (from the Configure menu in Vector mode) the Error Amplifier is forced into an unlocked state to provide the test circle. The regenerated subcarrier output by the VCO can be phase shifted up to 360° by a digital phase shifter whose output is buffered and input to the demodulators.

Demodulators

These instruments employ quadrature demodulation, which consists of delaying the regenerated subcarrier by 90° to the R-Y (U) Demodulator. The incoming chrominance is compared to the regenerated subcarrier and the output is low pass filtered and amplified. Center dot clamping is used to keep the effects of chrominance from distorting the display center dot.

For PAL signals the regenerated subcarrier is switched between + and - inputs of the R-Y (U) Demodulator to accommodate the 180° phase shift between subsequent lines. When +V is selected the V-Axis switcher clamps one regenerated subcarrier input of the R-Y (U) demodulator to ground to force demodulation on a single phase and disable the PAL switching.

SCH (1750A-Series & 1760 Series Opt. SC only)

A regenerated subcarrier signal is phase locked to the 50% point of sync. The subcarrier is then demodulated to produce an on-screen dot display in a vectorscope-type presentation. Actual SCH phase is determined by measuring the dot displacement from the displayed burst vector.

The 50% Detectors compare levels at backporch (burst gate) and sync tip to output transitions coincident with a point half way between the back porch and the sync tip. The $4 \times F_{SC}$ oscillator is harmonically locked to the transition from this 50% point detector. The resultant output for internal reference is a propeller (2 SCH dots 180° apart) display. When color framing of two signals is needed an external reference signal is required.

The display logic is developed by comparing incoming reference video SCH and sync and then comparing the result to the subcarrier generated by the $4 \times F_{SC}$ Oscillator, providing a single dot display. The relationship of the two subcarriers is determined by measuring the displacement of the SCH dot from the burst vector.

Component Input Switching and Amplifier (1760 Series only)

Output of the CH1, 2, and 3 (either A or B) Input Amplifiers drives the Component input switching matrix. Switch output is buffered and becomes the CH1, CH2, and CH3 inputs to the Component display mode switching.

Color Difference to GBR Transcoder and GBR Outputs (1760 Series only)

The three channel outputs drive both the Component Display mode switching matrix and the Color Difference to GBR Transcoder. Either a GBR input signal or the transcoded color difference signal can be buffered to drive the back porch clamped GBR Output Amplifiers. GBR outputs are compensated in 75Ω .

**GBR to Diamond
Transcoder and Mode
Switching
(1760 Series only)**

GBR signals from the Color Difference to GBR Transcoder are input to the GBR to Diamond Transcoder to be matrixed and applied to the Component Mode switching. The outputs from the Transcoder are 0.5 times G+B or R or B-G. These outputs drive the vertical and horizontal axes for the diamond display. Mode switching provides the inputs to the axes for Lightning, Diamond, Component Vector, and Bowtie displays.

**Horizontal and Vertical
Component Outputs
(1760 Series only)**

The Vertical Output Amplifier is a backporch clamped differential amplifier with unity gain. Its output is low-pass filtered (1.5 MHz) for all display modes except Bowtie, which bypasses the filter. The Horizontal Output Amplifier is a backporch clamped buffer whose output is low-pass filtered (1.5 MHz). The outputs of both the amplifiers are input into the Output Amplifier Switching. In addition, the output of the Horizontal Amplifier drives the transition intensifier that causes the Z-Axis to brighten enough to make the vector and lightning transitions clearly visible.

Block Diagram 3: Microprocessor and Line Rate Controller

The heart of these instruments is a microprocessor. It controls all aspects of the instruments operation. Where synchronous control signals are required a Line Rate Controller is employed.

Microprocessor

The 16-bit microprocessor has its program code stored in a Flash Erasable Programmable Read-Only Memory (EPROM). The nonVolatile Random Access Memory (NOVRAM) stores all of the constants used by the microprocessor. The Random Access Memory (RAM) is used to move system level code for execution by the microprocessor. The Read-Only Memory (ROM) contains microprocessor code that is output on the 8 most significant bits to the data bus.

The Address Buffer is unidirectional to select the addresses in the storage devices (RAM, ROM, and EPROM) while the Data Buffer is bidirectional for two-way communication with the storage devices.

Component

The control circuitry for the component circuit board (1760-Series) is controlled by the microprocessor.

Line Rate Controller

The Line Rate Controller is loaded from the microprocessor, synchronized to the incoming video reference, and outputs the synchronous switching signals that are required to make the displays viewed on the CRT.

Sync Separators

Two sync separators time the line rate controller. One strips sync from the internal video signal, while the second strips sync from the external reference video. Two separators are required to support color field identification (SCH).

Synchronous Outputs Data from the microprocessor is loaded into latches that are clocked by the Line Rate Controller to lock their outputs to the incoming video signal.

Readout State Machine The Readout State Machine interprets the readout instructions from the microprocessor and loads digital data into the DAC. Analog output of the DAC drives the stroke generators to create the readout segments that are displayed on the CRT.

Serial Static Outputs This is a serial in/parallel out register for signals that do not need to be synchronized to the video signal.

Serial Interface The Serial Interface is a latch, driven by the microprocessor, that outputs the chip select and enables for the serial devices, such as the DACs and the serial/parallel registers used for the Remote and Front Panel.

Digital-to-Analog Converter There are a number of D-to-A Converters (DAC) used to decode microprocessor instructions and output positioning, gain, and DC levels to the various circuits throughout the instrument. The DACs are part of serially loaded and clocked devices that are commonly referred to as daculators.

RS232 Calibrates the instrument. Consists of a 9-pin connector and a line driver.

Remote The Remote input consists of a 25-pin connector and parallel in/serial out registers to provide an external interface for remote control of the instrument.

Circuit Theory

This section discusses the circuit theory of these instruments to the component level. It is arranged according to the schematic diagrams located in the Diagrams and Circuit Board Illustrations, near the back of the manual.

Diagrams <1> and <2> Channel A and Channel B Inputs

All of the video input circuits appearing on these two diagrams are identical; therefore, only the Channel A Input circuits are shown.

Input Amplifiers

The input is a high impedance bridging loopthrough, compensated for operation in a 75Ω environment. Q2 is an FET that turns on and bypasses the AC coupling capacitor when the $\overline{\text{ACDC SEL}}$ control line goes low. Gain through the input and switch is approximately 0.8.

The input amplifier (U2) is a noninverting, current-driven feedback amplifier, whose gain is approximately 1.09. When the DC Restorer is off, U1D is closed to couple a positioning offset (V REF A) to the - input of the amplifier.

When the DC Restorer is turned on U1D opens and the feedback amplifier becomes an error amplifier that outputs a DC level whenever the clamp pulse occurs. U4 is a hold capacitor that charges toward the DC level. U4 is paralleled when slow restorer is selected; Q1 turns on and provides a ground for C3. The charge on the hold capacitor begins discharging when the clamp pulse ends and offsets the - input of the amplifier.

The three switching levels ($\overline{\text{ACDC SEL}}$, $\overline{\text{SLOWFAST}}$, and DCREST ON) are generated by digital-to-analog converters controlled by the Microprocessor. The CLAMP PLS is output by the Line Rate Controller at a time coincident with either the back porch or sync tip of the incoming video signal.

External Reference Input

The EXT REF input is a high impedance bridging loopthrough compensated for operation in a 75Ω environment. Q18 is an emitter-follower to provide the high input impedance. CR1 and CR2 prevent the power supply impedance from affecting the return loss characteristics of the loop-through input when the power supply is turned off.

Diagram <3> Vertical Input

- Input MUX** The Input MUX is an 8-to-1 multiplexer (U79) controlled by the Line Rate Controller on Diagram 7. It selects one or a combination of the input signals to drive the Pix Out, the Filters, the Internal Video Sync Separator (Diagram 7), and the flat input of the Filter Multiplexer (Diagram 4).
- Pix Out** The Pix Out Amplifier is a negative feedback operational amplifier, U81, whose output is 2V peak-to-peak across a 75 Ω load (R316). Q23 increases the DC level of the Pix Out signal when the line strobe pulse from the Line Rate Controller (Diagram 7) occurs. Strobe pulse width can be up to 15 lines in duration.
- Horiz Ref MUX** The multiplexer is made up of two 4-to-1, Line Rate Controller asserted multiplexers, U74 and U75. Selection of an internal reference channel is controlled by two control lines and the chip selects. If neither chip select (REFCH SEL2 or 3) is asserted, there will be no output. This occurs when External Reference is selected.
- When the INT $\overline{\text{EXT}}$ control line is asserted (goes low) U70D and U70A close to drive Q19 from the EXT REF input. Q19 is an emitter-follower providing a high impedance output that drives a sync separator on Diagram 7. Q17 clamps the input side of U70A to ground when Internal Reference is selected.
- Luminance/Diff Step Filters** The output of the Input MUX drives the luminance filter through R302. L5 and L6 are adjusted for a white bar square corner while C131 is adjusted for minimum chrominance. The filtered output drives U72B to output the luminance signal for the Picture Monitor mode and component analog applications (J13) for the 1760 Series. The output signal from U72B also drives the Diff Step Filter.
- The input stage of the Diff Step Filter is an active low-pass filter (U72A) that drives an integrator consisting of C111 and R249. The integrator circuit converts staircase risers into sharp spikes that are amplified by a factor of approximately 5 by U65.
- Chroma Filter** There are two chroma filters, driven in parallel, by the Input MUX. Construction of the filters is identical, with the component values selected for the appropriate subcarrier frequency. The PAL filter is centered on 4.43 MHz and the NTSC on 3.58 MHz. U80 the chrominance amplifier is driven by either the video signal or the test circle oscillator, depending on whether U76B or U76C is closed.

The chroma-filtered video appropriate for the input color standard (PAL or NTSC) is selected by the Microprocessor through a Serial Converter on Diagram 9. Either the PAL $\overline{\text{NTSC}}$ (for NTSC) or the NTSC $\overline{\text{PAL}}$ (for PAL) control signal is asserted to close U76A or U76D to route the filtered video to the Vertical Amplifier (Diagram 4) and subsequently to the vectorscope demodulators.

F_{SC} Oscillator

The F_{SC} Oscillator generates the test circle pattern used to check vectorscope calibration. It is a crystal controlled, fed back, voltage-controlled oscillator (VCXO). There is a crystal for each of the color standards. Crystal selection is accomplished by turning on a switching transistor that provides a ground to complete the circuit through the crystal. When PAL is selected U83E completes the circuit through Y2, which drives Q22 and Q21, a high gain amplifier. The output of the oscillator is filtered by a low-pass filter consisting of C158, C169, L9, and C160.

The filtered output is then fed back to the emitter of U83A, which along with U83B, forms a comparator. The comparison is with the DC level through the emitter of U83B, supplied by a DAC shown on Diagram 9.

When NTSC is selected Y3, the NTSC crystal, is activated and C157 is added to the output filter in parallel with C169.

The output of the F_{SC} Oscillator is input to the Chroma Filter when $\overline{\text{OSC SEL}}$ goes low to close U76B, and OSC SEL goes high to open U76C and disconnect the incoming video signal.

Diagram <4> Vertical Output

Square Wave Calibrator

The input CAL LEVEL is from a DAC, shown on Diagram 9. It drives the inverting input of U47A, an operational amplifier. Q20 is a saturating switch driven by a 100 kHz output from the Line Rate Controller on Diagram 7. The square wave output is 1.096V.

Filter MUX

The Filter MUX is an 8-to-1 multiplexer controlling the input selection for the Vertical Amplifier. In order to accommodate an additional 3 inputs U66 selects the signal to be applied to the AUX input of U67. Switches are closed when their control lines are asserted low by synchronous outputs from the Line Rate Controller shown on Diagram 7. The Y Audio and Time Code inputs are differential. U84A (Audio) and U88B (Time Code) are converters, for the differential inputs, that output a single-ended signal to drive the Filter MUX.

Vertical Amplifier

The Vertical Amplifier, U55, contains two independent amplifiers. The external gain controlled Auxiliary amplifier is used as a differential output chrominance amplifier. The output of the Chroma Filter Amplifier (Diagram 3) is input to the + input of the Aux amplifier. Its gain is controlled by the CHROM GAIN level from a DAC shown on Diagram 9. The differential output is converted to a single-ended output by U73 to drive the Vector Chroma Amplifier shown on Diagram 13.

The main Vertical Amplifier has inputs for the filtered video signal and the differential readout signal. The single-ended output from the Filter MUX is converted to the differential output required to drive the Vertical Deflection Amplifier. Output is switched between video signal and the readout by the V RO SEL signal from the Line Rate Controller.

Vertical control levels, such as Gain, and Position from the DACs (Diagram 9) and the Magnifier control signal from the Line Rate Controller (Diagram 7) control the output gain and positioning of the displayed signal. Gain and frequency response characteristics of the CRT are compensated for by a network between the VOUT+ and VOUT- terminals of U55.

Vertical Deflection

Q10 and Q16 are power transistors that drive the CRT deflection plates. A sample of the horizontal output voltage is fed into the emitters of the transistors to compensate for CRT orthogonality error. U57A and B are noninverting buffer amplifiers driving U64B, which converts the differential signals to a single-ended voltage that is applied through R168, the Y Align adjustment.

Diagram <5> Horizontal

Sweep Generators The sweep generators are nearly identical buffered integrators. They are started by either the line or field sweep speed signal from a DAC shown on Diagram 9. For purposes of simplicity we will discuss only the Field Sweep generator.

The FLD SWP SPD signal from the DAC is filtered by an input filter with a 0.1 second time constant, R83 and C55. U39A is a buffer to drive U62A, an integrator. C101 is the integrator capacitance. When retrace occurs, U63B closes and discharges C101. When the FLD SWP SPD goes high, and U63B is open, the output of U62A ramps up and provides the vertical sweep to the Vertical Input Switch (Picture mode) and the Horizontal Signal Multiplexer.

Horizontal Signal MUX The Horizontal Signal input selection consists of dual-in-line package (DIP) switch segments (U59, U63, U70, and U94) and an 3-to-8 line decoder (U50). The decoder is controlled by 3 synchronous outputs from the Line Rate Controller (Diagram 7). It is permanently enabled (pins 4, 5, and 6) so that any change in state of the control lines (pins 1, 2, and 3) will pull one of the six outputs (Y0-Y6) low and close the appropriate DIP switch segment.

Horizontal Amplifier The Horizontal Amplifier, U56, contains two independent amplifiers. The external gain controlled Auxiliary Amplifier is used as a single-ended luminance amplifier. The output of the Luminance Filter Amplifier (Diagram 3) is input to the + input of the Aux amplifier. Its gain is controlled by the PIX CONTRAST level from a DAC shown on Diagram 9. The single-ended output drives an inverting operational amplifier, U73B. The minus input of U47B is a summing junction for the PIX BK LVL (black level) and the luminance from U56. The output of U47B is the picture monitor intensity signal to the Z-Axis control circuit.

The main Horizontal Amplifier, which has inputs for horizontal signals and the readout signal, converts the single-ended input from the Horizontal MUX to a differential output. In addition, it amplifies the differential input of the readout signal. U47D is an inverter to generate the -H RO SIG. Output is controlled by the H RO SEL signal from the Line Rate Controller.

Horizontal levels, such as Gain and Position from the DACs (Diagram 9), and control signals, such as Mag from the Line Rate Controller (Diagram 7), are input through U56, the Horizontal Amplifier. Gain and frequency response characteristics of the CRT are compensated for by a network between the VOUT+ and VOUT- terminals. The + and -H signals from the VOUT terminals are also supplied to the Vertical Deflection Amplifier (Diagram 6) for orthogonality adjustment (Y-Align).

Horizontal Deflection

The Horizontal Deflection circuit consists of seven discrete transistors to drive the horizontal deflection plates of the CRT with a differential signal.

Q28 is the current source for this paraphrase amplifier. The amplifier itself is driven from inputs Q12 and Q13. Their bases are a summing junction for the input signal and compensated feedback. Q11 and Q13 are common base amplifiers with the bases held at -3 V. Q8 and Q15 are driven independently. Shunting resistors across Q8 and Q15 lessen power dissipation in the current source (Q28).

CR8 is a boot strap circuit to divert current to the negative-going side when the amplifier is slewing rapidly.

Diagram <6> Microprocessor

The Microprocessor controls the functions of the 1740A/1750A/1760 Series. It has a 32-bit internal architecture and operates with a 16-bit data bus and a 24-bit address bus.

Microprocessor

U18 is the Microprocessor. It is crystal controlled, with Y1 as the active element of the clock oscillator. DS1 is an indicator that turns on and holds when the 5V supply stabilizes during turn on. U7 senses the 5V supply and pulls the $\overline{\text{RESET}}$ line low if the 5V supply goes low.

SP1 is a permanent magnet-type speaker for audible feedback that is driven by Q3. CR2 is an inductive compensation for the speaker voice coil. U13 is a Read Only Memory (ROM) with 18 addresses; it outputs the 8 Most Significant Bits (MSB) to the data bus.

Data and Address Buffers

U5, U8, and U12 are the address buffers for the 24-bit address bus. The bus is enabled by $\overline{\text{ADDR EN2}}$ from the decoder. The DIR control line is held high allowing the processor to write to the buffer whenever the $\overline{\text{ADDR EN2}}$ is pulled down. The buffered address bus selects addresses in the NOVRAM, RAM, and FLASH EPROM.

The Data Buffers, U15 and U19, are bidirectional. When the DIR control line is low data from the NOVRAM, RAM, and FLASH EPROM is read into the Microprocessor data bus on the $\overline{\text{DATA EN2}}$. When DIR is pulled high, and $\overline{\text{DATA EN2}}$ is pulled down (by the Decoder), the Microprocessor writes to the Data Buffers on the data bus.

NOVRAM, RAM, & Flash EPROM

The NOVRAM (U14) stores all of the constants used by the Microprocessor. The Microprocessor writes the 8 MSBs into the NOVRAM when both $\overline{\text{CE}}$ and $\overline{\text{WE}}$ are pulled low. $\overline{\text{RW}}$ from the Microprocessor pulls down $\overline{\text{WE}}$. $\overline{\text{CE}}$ is pulled low by $\overline{\text{NOVRAM}}$ which is decoded by the address decoder. Content of the

NOVRAM is read back out to the Microprocessor, through the Data Buffer (U19) when \overline{RW} goes high and the \overline{CE} and \overline{OE} are pulled low by \overline{NOVRAM} .

System level code is loaded into RAM (for reading by the Microprocessor) from the Flash EPROM, where it is stored. Unless VPP is high (for programming purposes) the Flash EPROM, U10 & U16, functions as a 256k X 8 Read Only Memory (ROM). (Write instructions are ignored.) U10 stores the lower 8 bits and U16 the upper 8 bits. It is read out when \overline{FLASH} and $\overline{RD LO}$ and $\overline{RD HI}$ are pulled low.

Flash EPROM output is written into the Random Access Memory (RAM), U11 & U17, when \overline{SRAM} and $\overline{WR LO}$ and $\overline{WR HI}$ are pulled low. The Microprocessor reads the RAM when \overline{SRAM} and $\overline{RD LO}$ and $\overline{RD HI}$ are pulled low.

Decoders

The Address Decoder is U21. It is a 3-line to 8-line decoder using the 3 MSBs of the address bus to output 5 control signals. The decoder is enabled when the Microprocessor pulls \overline{DECODE} and $\overline{ADDR EN}$ low.

U2 is a logic array that decodes Microprocessor outputs. It uses buffered address 0 (BA0) as a clock. Its outputs enable the data and address buffers, control read and write for the RAM and Flash EPROM, and output 2 control signals for digital expansion.

Buffered Output

U23 buffers 5 outputs and 1 input for the Microprocessor. It is permanently enabled by pulling pins 1G and 2G low. 2G is set up to be pulled low when a Component (1760 Series) board is installed.

Diagram <7> Dynamic Control

Microprocessor instructions are synchronized to line and field rates to generate time-dependent control signals by the circuitry on this diagram.

Sync Separator

The sync separator consists of U68 and U71. The V sync and H sync outputs are used to synchronize the Line Rate Controller (U34). The two integrated circuits are identical; one is driven by the internal video that drives the vertical deflection circuits and the other is driven by the selected reference input.

Line Rate Controller

The Line Rate Controller (U34) is a programmable logic device. It is capable of logic and timing simulations. It has three separate clock signals; 6 MHz from U93, 16 MHz from the Microprocessor, and a 5 MHz clock signal from an ECL oscillator. In order to lock the internal clock to video, U34 asserts $\overline{\text{START}}$ at the leading edge of H sync. When $\overline{\text{START}}$ goes low, it remains low for approximately 60 μs ; it then goes high to shut off the oscillator (Q4, Q5, Q6, and U26C) until the next cycle.

U34 has 144 configurable blocks of RAM that are loaded from ROM at power up. U40 is a first-in/first-out RAM that is loaded from the Microprocessor, and read out to the Line Rate Controller and synchronous latches on command from the Line Rate Controller. U40 can be written to by the Microprocessor and read from by the Line Rate Controller independently.

Synchronous Outputs

Output signals from the Microprocessor are timed out to analog switches and DACs by the Line Rate Controller clocks synchronous latches. Each latch is clocked by its own individual output from the Line Rate Controller.

Diagram <8> Readout

The Readout Control state machine interprets the readout instructions from the Microprocessor and loads digital data into the DAC. Analog output of the DAC drives the stroke generators to create the readout segments that are displayed on the CRT.

Readout Control

The Readout Control is a programmable logic device, U27, configured as a state machine. It uses 13 buffered addresses and 8 buffered data bits to produce an 8-bit data word (R0 - R7) that is converted by an 8-bit DAC (U37). Device clock is the buffered 16 MHz from the Microprocessor. When Readout Control is off U36, a RAM, can be written to directly by the Microprocessor, through its 13 bit address port. A screen draw requires 13 bits.

U37 is a dual DAC, which decodes the Microprocessor instructions. The A output drives the Vertical Readout Stroke Generator and the B half performs the same function for the Horizontal Readout Stroke Generator. Calibration constants are provided by the serial digital-to-analog DACs (Diagram 9).

Readout Stroke Generator

The Readout Stroke Generator consists of two identical circuits. Each generator has an inverting buffer amplifier, U48A or U48B, whose gain is unity. The output of the buffer amplifier drives a sample-and-hold, U54A or U54C. Timing for the sample-and-holds is identical and determined by a single RC circuit (R376 and C76). The output of the sample-and-hold drives an integrator, U48C or U48D, whose output is a negative-going sawtooth waveform. Charging current is controlled by the Shape adjustment (R134 or R135). The output of the Readout Stroke Generator drives the Vertical and Horizontal deflection circuits when readout is enabled.

Diagram <9> DACS & Serial

Serial Interface & Serial Static Outputs

U24 is a 4-line to 8-line decoder that outputs chip select and enable signals for the nonsynchronous switching control lines. U9 is an 8-bit parallel load serial output shift register. Status of the A, B, C, and D input lines identify the Main circuit board revision level. SW1 is included for troubleshooting purposes. R28 is a set of pull-up resistors for 8 parallel inputs and 3 of the Microprocessor (Diagram 6) control lines.

U77 and U82 are 8-bit serial in/parallel out shift registers. Their outputs are asynchronous switching control lines. Q24 is a driver for the 8 input coupling AC/DC switches.

D/A Converters

U32 and U38 are 8-bit serial in/parallel out shift registers that generate DAC load and chip enable signals. These signals are used by the DACs, Remote interface parallel in/serial out shift registers (Diagram 10), and the chip selects for the Bezel Controls A/D converters on Diagram 11.

U31, U35, and U86 are serial digital-to-analog converters with 16x12 static RAM. VOUT (0-15) are the analog outputs, each of which has a sample-and-hold for the output level. Serial data is loaded from the serial bus (BMOSI) when the LD goes low. The clock signal (BSCK) is from the Microprocessor. Output voltage levels provide the instrument's operating levels.

U39C and U39D are buffer amps. U45A and U45B are adders for horizontal and vertical positioning voltages. RC circuits across the adders are low-pass filters.

Diagram <10> Remote & 1760 Series / XROM Bus Connectors

RS232 U92 is an RS232 line driver receiver. C175 is part of the internal voltage doubler circuit and C171 is part of a voltage inverter circuit. Input and output signals are TTL. Chip output will be low with an input signal of +2.4 V or more.

Remote U90 and U91 are 8-bit parallel-load, serial-output shift registers. Levels at the parallel inputs are loaded into the shift register and clocked out by the serial clock (BSCK). U90 and U91 are cascaded by taking the serial output of U91 and tying it to the serial input of U90. Inputs to the registers are asserted TTL low; R356 is a pull-up resistor to set the inputs to a TTL high when they are not asserted. Serial output to the Microprocessor is from pin 9 of U90.

1760 Series Digital Bus Connectors (1760 Series Only)

The Component circuit board (assembly A7) for the 1760 Series plugs into J2 and J5. Not all signals routed through the connectors are used by the Component board. The serial digital bus (MISO) is routed to the Component circuit board.

Diagram <11> Z-Axis & Control

- Bezel Controls** The bezel controls are the five, two-section, potentiometers located below the CRT. The outside two are dedicated controls for vertical and horizontal positioning. The center three potentiometers are assigned by menu selection.
- U3 and U4 are 8-bit switched capacitor successive approximation A-to-D converters with serial output. Levels, from the potentiometers, are input on the AN inputs, converted, and output as serial data that can be read by the Microprocessor (Diagram 6) on the serial bus (MISO).
- Blanking Logic** U49 is a 4-section, Dual In-line Package (DIP) switch. Blanking selection signals, from the Dynamic Control (Diagram 7), going low close the switch elements. CR4 serves as an OR gate. The output of CR4 drives Q7, which is the current drive for the Z-Axis amplifier on Diagram 22. The higher the collector current the greater the CRT intensity.
- CR5 is also an OR gate. The $\overline{\text{OPT BLANK}}$ originates on the Component circuit board for the 1760 Series. $\overline{\text{BLANK}}$ is from the Dynamic Control (Diagram 7) and pulls low, to ground the base of Q7 when the CRT is blanked.
- Trace Rotation** Trace rotation is controlled by an output from one of the DACs on Diagram 9. U5A drives a coil around the CRT that is located inside the CRT shield.
- Graticule Lights** U1D is an oscillator with a 600 ms period. Its output drives U1A directly and U1B through a comparator (U1C). The output of U1A and U1B is a 50% duty cycle, with each amplifier driving two of the four graticule light bulbs. Only two of the bulbs are lit at one time.
- +8 V & -8 V Supplies and VPP1 Supply** The +8 V and -8 V supplies are nearly identical. They consist of bipolar voltage regulators (U53 and U78) with output clamping and parallel resistance power dissipation compensation.
- The VPP1 supply is used to program the Flash EPROM. For normal operation, P4 is in the 2-3 position. U20 is a voltage sensing regulator whose output voltage is established by R46 and R47.

Diagram <12> Front Panel

Switching There are 28 momentary contact switches arranged in a matrix. When U7, a serial in/parallel out shift register, is loaded, shifted, and read, PB8 - PB10 are pulled low along with the CS (chip select and $\overline{SH/LD}$ (shift/load) for U6 and U8. When one or more of the push-button switches is closed a low state is loaded into one of the U6 parallel inputs. The levels on the inputs are clocked into and through the serial output by the BSCK (buffered serial clock). The serial output is put onto the MOSI (serial interface bus) to be read by the Microprocessor.

LED Drivers Low levels to complete the LED circuits are loaded into the serial in/parallel out shift registers (U2, U3, U4, and U5) from BMOSI (buffered serial interface bus). Levels are then shifted into the parallel register by the $\overline{LED CS}$ and clocked out by the $\overline{LED EN}$, which is delayed by U10A, a D-type flip-flop.

Diagram <13> DACs & Digital Control

Chrominance Amplifier & Switch The reference signal is AC-coupled through a tuned circuit, C102 and L11, to drive the Chroma Amplifier, Q33 and Q34. Luminance is removed and in normal operation the chrominance is amplified by about three times.

U12, Q13, and Q14 form a chrominance switch that selects either chrominance from the Vertical Amplifier (Diagram 4) or the SCH Signal (1750A Series or 1760 Series Option SC) to drive the chrominance input to the Demodulators (Diagram 16). Q13 and Q14 clamp the input side of U12A or U12D to ground when the switch is open.

DAC U18 is a series of serial input DACs. Serial data is loaded from BMOS (buffered serial bus) when LD goes low. Output levels, from the internal sample and holds, are clocked out by the buffered serial clock (BSCK) from the Microprocessor.

Serial Address DeMUX U19 is a serial in/parallel out shift register used to decode the vector/SCH-related instructions from the serial bus. It outputs chip selects and enables for SCH board identification, to control the DACs, and to enable the Vector Locked, SCH Locked, and Burst Present outputs to the serial interface bus.

8-Bit Serial Output U22 is a serial in/parallel out shift register to output asynchronous switching signals for the Vector and SCH modes.

SCH Board ID If an SCH board is installed, the SCH ID0-SCH ID3 inputs to U27 are held low for recognition by the Microprocessor (when it requests ID over the buffered serial bus).

Diagram <14> Subcarrier Regenerator

45° Phase Flipper When PAL subcarrier is input to the Loop Phase Detector, a 90° phase shift is required on alternate lines. This is accomplished by either delaying or advancing the demodulator carrier inputs by 45°.

U28B, which is clocked at an H rate, provides the flipper control signals that alternately turn Q31 and Q32 on and off to provide a 90° subcarrier input phase shift between lines. C100, R188, and R189 provide the 45° phase delay when Q31 is turned on and Q32 is turned off. C101, R184, and R205 provide the 45° advance when Q32 is turned on and Q31 turned off.

When an NTSC signal is input, the preset for U28B is pulled high to turn on Q32 and keep Q31 turned off. When Q32 is on, the input subcarrier signal is correctly phased for NTSC signals.

Loop Phase Detector U31 is the Loop Phase Detector. It is a balanced demodulator, whose carrier input is driven by the VCXO CW sine wave and its signal input is driven by burst gate from the Line Rate Controller. The output of this phase detector is an AC multiplication of the input signals, which occurs only during the time that both of the input signals are present and the demodulator is turned on by the Burst Gate signal. Q36 is the gate switch for the Loop Phase Detector. The average DC output level is proportional to the difference in phase between the inputs. When the loop is locked up, the output of U31 (p in 12) is 0.

The output corresponding in time to the burst packet is low-pass filtered to remove any chrominance and harmonics to drive U26. The filter (L6, C74, and C71) has a 377 kHz bandwidth. U26 is a noninverting, high-gain operational amplifier, which drives the Error Amplifier.

Error Amplifier U24A is a noninverting amplifier, whose RC feedback network acts as a low-pass filter to determine the Subcarrier Regenerator loop response. Any input voltage to U24A is amplified and biases the VCXO varicap (Diagram 15).

Loop frequency determines the speed that the loop locks up. When the phase-lock loop is not locked up, a wider bandwidth is needed. If the loop is unlocked, C58, R108, R107, and C65 are the filter elements. When lockup is achieved, U20B closes and shunts another filter, consisting of C59, R109, and C66, across the filter to slow down filter response and make it less sensitive to noise.

Lock Detector

The Lock Detector is similar to the Loop Phase Detector, except that the + Carrier input signal is phase shifted by 90° . This results in the output of the Lock Detector being maximum when the output of the Loop Phase Detect or is zero. Since Loop Phase Detector output is zero (phases are matched) during burst, the Lock Detector provides a large-amplitude pulse occurring only during burst time. When NTSC is selected, Q30 is turned on to provide an additional 45° fixed phase shift.

U24B is an integrating amplifier that outputs a low level when the loop is locked. When the subcarrier regenerator is unlocked, the output of U24B will be alternately positive and negative, making a net output term of 0. When the output of U24B is low (locked), the output of U23A goes high and U20C turns on to close switch U20B, which slows down the loop response. The output of U23A (LOCKED) is also read by the microprocessor to determine when the loop is locked.

Burst Detector

Q16 and Q17 form an envelope detector with a current output. When the Subcarrier Regenerator is locked, burst current flows through Q21 to U26. Before lockup, the burst gate is steered through Q15 to U26. When lockup occurs, burst sampling occurs on burst. When the Subcarrier Regenerator is not locked, sampling occurs in a window corresponding to the Burst Gate signal.

Q35 is an inverter amplifier that sends a burst sample pulse to the lock detector circuit on Diagram 13.

PAL Phase Initializer

The phase alternate line characteristic of the PAL signal makes it possible for the Subcarrier Regenerator to lock up 180° out of phase. If lockup is attempted in this condition, the output of the Lock Detector will be positive for one burst and negative for the other, instead of high for both bursts.

When the Subcarrier Regenerator is locked to F_{SC} , the Lock Detector outputs only a high at burst time. If the Lock Detector outputs a low at burst time, U23B outputs a low. A low output from U23B turns on Q19 to charge an RC network (C84 and R160) with a time constant of approximately 50 ms. The output of the RC network turns on Q20 which keeps the output of U23B high.

The output of U23B pulls the Preset of U28B down, which pulls up on its Q output. When the Q output goes high Q32, in the 45° Phase Flipper, turns on. The next -45° PAL burst that occurs will cause the output of U31 to go low and U30 to go high, which is the locked-up state.

When lockup occurs, Q18 turns on to lock out the PAL Phase Initializer and the Subcarrier Regenerator is locked to the correct phase. In addition, when U23B is locked out the Preset line for U28B goes high, which allows it to be clocked by the H rate clock signal.

Diagram <15> Phase Shifter

VCXO The VCXO is a crystal-controlled, ECL oscillator consisting of U29A and B. Center frequency is established by Y1 for PAL and Y2 for NTSC. The center frequency for the crystal oscillator is fine tuned by Netting Capacitor adjustments C106 and C109.

Subcarrier Regenerator error voltage (Diagram 14) is applied across a varactor, CR8, which changes capacity with a voltage change. This provides the frequency correction for the VCXO.

When the CAL mode is selected, Q23, is turned on hard and saturates to place a high on the control line to freerun the oscillator and, if there is a subcarrier present on the input, provide a display of circles.

The 4 x subcarrier output of the oscillator is input to a Johnson Counter, U25A and U25B, which divides its input frequency by 4 to yield a PAL or NTSC in-phase and a quadrature output.

The in-phase output provides the F_{SC} signal back to the Subcarrier Regenerator to complete the phase-lock loop.

Phase Shift The Vector Phase control output is read by the Microprocessor to provide DAC Sine and Cosine signals that drive the Control inputs of demodulators, U14 and U15.

The $\div 4$ Johnson counter provides in-phase and quadrature outputs to the Phase Shift mixers. Pins 8 and 10 of both mixers have ECL levels of the subcarrier. Pin 1 of both U14 and U15 have levels between + and -2.5 V, generated by the Microprocessor, corresponding to the current setting of the front-panel Vector Phase control.

The output of the mixers, pin 12, is the result of multiplying and adding the in-phase and quadrature components of subcarrier with the sine and cosine levels. L5, C41, and C44 form a filter to remove unwanted resultants. Q10 is a limiter driving a filter consisting of L3, C35, C33, and C25 that outputs a clean phase-shifted PAL or NTSC subcarrier to drive the Demodulators (Diagram 15).

Post Regulators The + and -11 V supplies generated on the Power Supply circuit board are further regulated to meet the on-board needs of the Main (A3) circuit board. U10 and U9 are the post regulators for the -8 V and +8 V supplies.

Diagram <16> Demodulator

Incoming chrominance is band-pass filtered, clamped at sync tip time, and compared to the phase-shifted, regenerated subcarrier signal for demodulation. Subcarrier signal is quadrature shifted (90°) before input to the R-Y (V) demodulator. In addition, for PAL applications, and any time the front-panel selected Test Circle is enabled, a V-Axis switcher shifts the subcarrier input by 180° for alternate lines.

Output signal from the Demodulators is low-pass filtered and amplified before driving the Horizontal and Vertical Output Amplifiers.

V-Axis Switcher

V-axis switching displays the PAL signal with the -V lines overlaid on the +V lines. The resulting display appears as though only the +V signal is displayed, similar to an NTSC display. This display evaluates relative differences between the +V and -V lines, just as the signal is decoded in a PAL receiver. The Microprocessor pulls the Preset input of U3B (a D-type flip-flop) high, which allows the horizontal sync, clock pulses to toggle its outputs at a line rate. The D input is controlled by another flip-flop, U28A (on Diagram 14), which has identified the +V lines (for PAL) in the Subcarrier Regenerator.

The flip-flop outputs drive Q5 and Q6. A high output turns on the corresponding transistor to shunt the signal at its collector to ground. This alternately grounds and drives the + and - carrier inputs on the V Demodulator with subcarrier to demodulate the -V lines 180° away from the +V lines.

Chrominance Demodulators

The chrominance demodulators, U26 and U28, are double-balanced demodulators, whose outputs are voltages proportional to the phase difference between the signal input (pins 1 and 4) and the carrier input (pins 8 and 10). The signal inputs are driven by chrominance from the Chroma Amplifier (Diagram 13). The carrier inputs are driven by a continuous sine wave, at subcarrier frequency, from the Subcarrier Regenerator (Diagram 14). T1 is a balanced transformer driving an LRC delay network, with L3 adjusted for PAL quad phase and C26 adjusted for NTSC quad phase. The V-Axis Switching circuit, when operating, determines which carrier input of the R-Y (V) Demodulator is driven by subcarrier. When NTSC is selected, U3B Preset input is forced low to turn on Q6 and ground the + Carrier input.

The demodulator gains are set by R36 for R-Y and R52 for B-Y. R36 is the +V Balance which provides offset voltage for pins 2 and 3. The bias is controlled by the Center Dot Position Clamp circuits.

Demodulator Output Filters and Amplifiers

A four-pole, active, low-pass filter (Q2 and Q3 for the R-Y (V) and Q1 and Q4 for the B-Y (U)) removes the high-frequency components of the demodulation process. These filters determine the bandwidth of the Vector mode signal path to control the rise time and delay of the demodulated signal.

U1 (for the R-Y/V) and U2 (for the B-Y/U) are inverting operational amplifiers with a gain of about 15.

Vector Center Dot Position Clamp

The R-Y (V) Demodulator output is also fed back through U4B to a clamp circuit consisting of U4A. U4A is an operational transconductance amplifier used in a sample-and-hold circuit. The demodulated R-Y chrominance drives the negative input (pin 2), while the R-Y Offset from Diagram 13 is the reference level to the positive input (pin 3).

The B-Y (U) Demodulator output is also fed back through U7B to a clamp circuit consisting of U7A. U7A is an operational transconductance amplifier used in a sample-and-hold circuit. The demodulated B-Y chrominance drives the negative input (pin 2), while the B-Y Offset from Diagram 13 is reference level to the positive input (pin 3).

Diagram <17> Internal SCH**50% Point Detector**

Q8, Q9, and Q12 form an inverting amplifier with a gain of 8. R34 and R26 determine the AC gain. U4 and U7 (sample-and-holds) sample the amplifier output at back porch and sync tip time. Timing for the back porch and sync tip sample-and-holds is provided by the Line Rate Controller. Burst Gate occurs during sync back porch, while the sync tip sample pulse is coincident with the sync tip. A resistive divider (R46 - R51) derives a voltage halfway between the back porch and sync tip. U29 is a comparator that provides an output pulse when inverted sync (through L3) and the 50% transition are coincident.

The 50% level is also stored on C27. Q10 (an emitter-follower) buffers the voltage and feeds it to the amplifier input through R27. This sets the 50% sync point at the amplifier output, which is approximately +3 V.

Q9, in the operational amplifier, saturates when the amplifier output drops below 0 V. This saturation condition, coupled with the clamp feedback, is used to strip off large amplitude video what would otherwise break down the comparator.

SCH Sync Locked Oscillator

U11 and U27 form a $4 \times F_{SC}$ oscillator that is series tuned by a selected crystal Y1 (NTSC) or Y2 (PAL) and varactor CR10. C42 and C46 are adjusted so that the oscillator runs at $4 \times F_{SC}$ when there is 5.5 V on the varactor.

Sync Delay The transitions from the 50% point detector are one input to a one shot, U12A. The other input is the sync gate from the Line Rate Controller. When the 50% transition occurs during sync time (active video line), U12A switches and generates a pulse whose duration is dependent on the current through Q15. Q15 is controlled by a DAC level from the Vector board (Diagram 13). The trailing edge of the pulse output by U12A triggers U12B, another one shot, whose output is a 126 ns pulse. When this pulse straddles a zero crossing of subcarrier the charge pump detector outputs a DC level.

Charge Pump Comparator The phase-shifted differential F_{SC} signal, output by U9, is fed to a phase detector, U23D. U23, Q19, and Q20 form the charge pump phase detector. The phase detector is gated on with a sample pulse from U12B. During the time the phase detector is gated on, current flows in and out of the integrating capacitors, C70 and C71.

The direction of the current flow is controlled by the F_{SC} feedback signal driving U23D pins 2 and 4. When pin 2 is low and pin 4 is high, current flows out of the integrating capacitors through the collector of U23D (pin 5). When pin 2 is high and pin 4 is low, the current from U23 is routed into a current mirror (Q19 and Q20) and added to the integrating capacitors. An equilibrium condition exists when the net charge transfer is zero; therefore, the transitions at pin 2 will occur at the mid point of the 126 ns pulse from U12B when the loop is locked. R122 and the integrating capacitors, C70 and C71, form the loop filter that controls the phase-lock loop response. The net current flow into the loop filter produces the VCO control voltage, which controls the varactor, CR10, through R96.

Lock Detector The lock detector is made up of U14A and U28. When lock is achieved, the output of U28 is high, which has the gate of Q26 high and keeps it turned off. In addition, the output of U28 is the SCH locked level (high for locked and low for unlocked) that is detected by the SCH lock detector on Diagram 13. When the charge pump detector outputs a sawtooth waveform, the output of U28 goes low and turns on Q26, which connects the -8 V supply directly to R153 to boost the current through the charge pump detector to speed lockup. In addition to speeding up the detector, the SCH Locked line goes low, causing the SCH lock detector on Diagram 13 to output a low to the Microprocessor.

4 F_{SC} Divider U9 is a Programmable Array Logic (PAL) device. It contains all of the logic required to output a signal that can be converted to an analog sync coincident sine wave for plotting against the burst locked sine wave in a vector-type display. The resultant difference is the horizontal-to-subcarrier phase error.

The oscillator output is divided by 4 with a Johnson counter internal to U9. The counter's four outputs are 90° apart. The four output signals drive a 4:1 multiplexer also internal to U9. The multiplexer is controlled by the NTSC and PAL pulses from U24 (Diagram 18) and pulses and levels from the Line Rate Controller (Diagram 7). By controlling the multiplexer, the F_{SC} signal output can be phase shifted in 90° increments.

In NTSC, there are 227.5 cycles of F_{SC} per horizontal line. Thus, when the F_{SC} signal is sampled each line, the samples will differ 180° from one line to the next. However, phase shifting the F_{SC} signal by 180° from line to line provides successive samples that will be in phase. The counter and multiplexer in U9 provide the line rate phase shifting. In PAL, a similar phase shift occurs, except that the shift is 90° per line.

F_{SC} and $\overline{F_{SC}}$ signals are fed back as one set of inputs to the phase detector (U23). For internal SCH phase, U9 outputs two phases, 180° degrees apart. U35A and Q29 provide gain control. Gain is controlled by the Microprocessor through a DAC on the Vector circuit board (Diagram 13).

The collector of Q22 drives a filter that converts the digital output to an analog sine wave. U25 is an inverting amplifier that outputs a sync-coincident sine wave that is switched in to drive the demodulator chroma input when sync phase is to be displayed. See Diagram 13.

When external reference is used to display SCH, the display also provides color frame information for color field 1. The display is a single dot for NTSC and a blanked area in the vector circle for PAL. When this determination is being made, U9 requires additional inputs from the NTSC and PAL pulse generators on Diagram 18, plus inputs from the Line Rate Controller to assist in locating line 21 (NTSC) or line 18 (PAL), which are by definition, in color frame 1.

Diagram <18> Reference SCH

50% Point Detector

Q6, Q3, and Q11 form an inverting amplifier with a gain of 8. R8 and R18 determine the AC gain. U1 and U5 (sample-and-holds) sample the amplifier output at back porch and sync tip time. Timing for the back porch and sync tip sample-and-holds is provided by the Line Rate Controller. Burst Gate occurs during back porch, while the sync tip sample pulse is coincident with the sync tip. A resistive divider (R29 - R32) derives a voltage halfway between the back porch and sync tip. U31 is a comparator providing an output when inverted sync (through L1) and the 50% transition are coincident.

The 50% level is also stored on C7. Q4 (an emitter-follower) buffers the voltage and feeds it to the amplifier input through R9. This sets the 50% sync point at the amplifier output, which is approximately +3 V. Q3, in the operational amplifier, saturates when the amplifier output drops below 0 V. This saturation condition, coupled with the clamp feedback, is used to strip off large amplitude video that would otherwise break down the comparator.

SCH Sync Locked Oscillator

U18 and U15 form an F_{SC} oscillator that is series tuned by a selected crystal, Y3 (NTSC) or Y4 (PAL), and varactors CR3 and CR4. C69 and C54 are adjusted so that the oscillator runs at F_{SC} when there is 7.5 V on the varactor.

Sync Delay and Charge Pump Comparator

The transitions from the 50% point detector are one input to a one shot, U8A. The other input is the sync gate from the Line Rate Controller. When the 50% transition occurs during sync time, U8A switches and generates a pulse whose duration is dependent on the current through Q14. Q14 is controlled by a DAC level from the Vector board (Diagram 13). The trailing edge of the pulse output by U8A triggers U8B, another one shot, whose output is a 126 ns pulse. When this pulse straddles a zero crossing of subcarrier, the charge pump detector (U13) outputs a DC level.

The differential F_{SC} signal, output by U18B, is fed to a phase detector, U13D. U13, Q16, and Q17 form a charge pump phase detector. It is gated on with a sample pulse from U8B. During the time the phase detector is gated on, current flows in and out of the integrating capacitors C40 and C41. The direction of the current flow is controlled by the F_{SC} feedback signal driving U13D pin 2. When pin 2 is low and pin 4 is high, current flows out of the integrating capacitors through the collector of U13D (pin 5). When pin 2 is high and pin 4 is low, the current from U13 is routed into a current mirror (Q16 and Q17) and then added to the integrating capacitors.

An equilibrium condition exists when the net charge transfer is zero causing the fed back F_{SC} to be locked to the mid point of the 126 ns pulse. R73 and the integrating capacitors, C40 and C41, form the loop filter that controls the phase locked loop response. The net current flow into the loop filter produces the VCO control voltage, which controls the varactors, CR3 and CR4, through U14B.

Mixer & Pulse Generator

U17 is a double balanced demodulator used as a mixer. Its differential voltage output is proportional to the phase difference between the signal input (the reference video burst) and the carrier input (the sync-locked F_{SC} output of the oscillator). U22A is a comparator that outputs a positive-going Ref SCH pulse every other line for NTSC and a pair of pulses every fourth line for PAL. U24 is a pair of one-shots that lengthen the pulses from the comparator so that they can be used by the clocking logic internal to U9 to generate the SCH FIELD signal for the Microprocessor. See Figures 3-1 and 3-2.

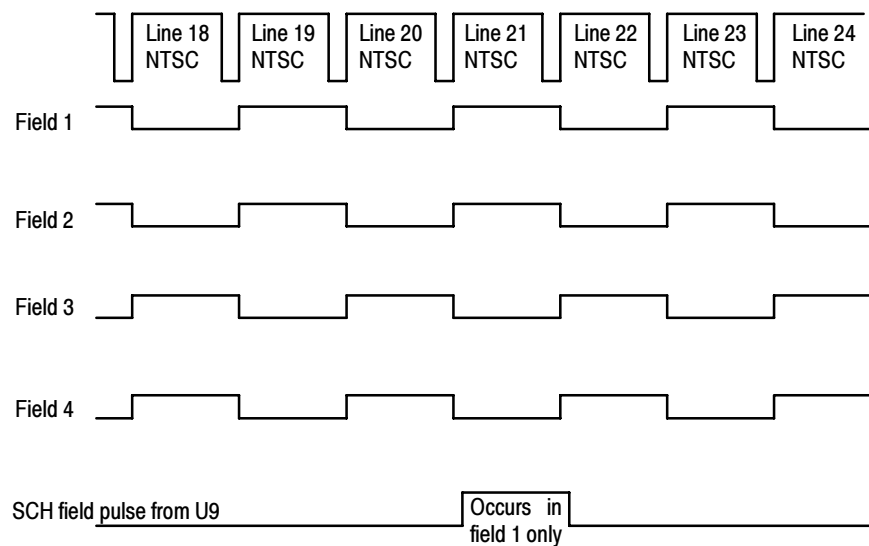
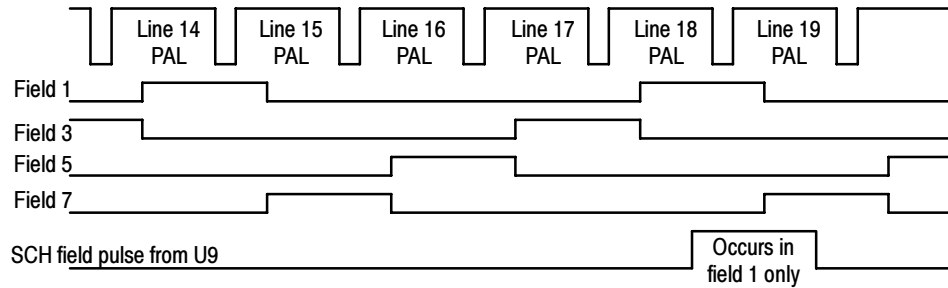


Figure 3-1: NTSC line count (U24) & color frame 1 SCH field pulse

Even fields



Odd fields

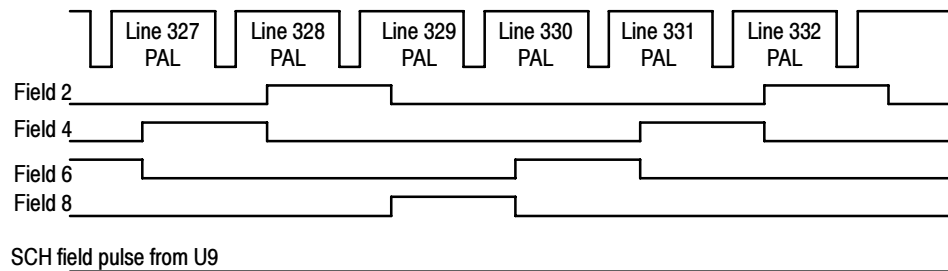


Figure 3-2: PAL line count (U24) & color frame 1 SCH field pulse

Diagram <19> Component Inputs, Transcoders, & RGB Outputs

This schematic diagram is used only with 1760 Series instruments.

Input Selection

Video from the A1, A2, A3 and B1, B2, B3 input amplifiers is routed to emitter-followers Q2 and Q3 for channel 1 (A1 or B1), Q12 and Q13 for channel 2, and Q22 and Q23 for channel 3. Q1, Q11, and Q21 ground the input emitter-followers when composite input is selected.

When A123 is selected from the front panel, Q204 is turned on and provides emitter voltage to Q2, Q12, and Q22, which turns them on as emitter-followers. When Q2, Q12, and Q22 are on, CR2, CR12, and CR22 are forward-biased to couple the incoming video signals through to the channel 1, 2, and 3 drivers.

If the composite inputs are selected (A or B), Q201 is turned on to turn on Q1, Q2, and Q3 to ground the input drivers. The output and differential amplifiers and transcoders are driven by low output impedance emitter-followers to reduce crosstalk. Q4 and Q5 form the channel 1 (Y) driver, Q14 and Q15 are the channel 2 (P_B) driver, and Q24 and Q25 are the channel 3 (P_R) driver.

RGB Transcoder

Driven by the output emitter-followers, the Color Difference to RGB Transcoder consists of three operational amplifiers and switchable resistance matrices. The GBR outputs are always active. When the input signal is a color difference signal, it must be transcoded to RGB for output. When the input signal is RGB, the transcoder is bypassed.

The operational amplifiers and the resistance matrices are signal mixers. Subtraction and addition of signals is accomplished by presenting the color difference components to either the inverting or noninverting inputs of the amplifiers. The resultant signal proportions are shown in Table 3-1. Note that Y is input to the noninverting input of all three amplifiers (U41, U212, and U61), and that both P_B and P_R are input to the inverting input of U41 (the G transcoder). This makes the output mix for SMPTE format $Y - 0.3441 P_B - 0.7141 P_R$.

Table 3-1: Transcoder signal mixing

GBR	SMPTE	BETA 60
Green	$Y - 0.3441 P_B - 0.7141 P_R$	$Y - 0.7079 (0.3441 P_B + 0.7141 P_R)$
Blue	$Y + 1.772 P_B$	$Y + 0.7079 (1.772 P_B)$
Red	$Y + 1.402 P_R$	$Y + 0.7079 (1.402 P_R)$

When Beta format is selected, the four DIP switches, U40C, U40D, U51C, and U52C, are open and the gain of the amplifiers changes to reduce the P_R and P_B components of the RGB signal by about 30%. When SMPTE format is selected, the switches are closed and the P_R , P_B components are at full amplitude.

When the input signal is RGB, it is routed around the transcoder amplifiers. To accomplish this, U40A, U51A, and U52A close, and U40B, U51B and U52B open. Conversely, when the input signal is color difference, the transcoder output is from closing the B switches and opening the A switches.

RGB Output

The RGB output amplifiers, along with the Diamond Transcoder, are driven by emitter-followers (Q51, Q53, and Q61). The emitter-followers provide a low output impedance to reduce crosstalk between channels. The output amplifiers are noninverting, clamped operational amplifiers with a gain of 1.5 to compensate for the drop across the 75Ω series output resistance. Clamping occurs at back porch time when the Line Rate Controller outputs the OPT PLS. The level at back porch time charges the hold capacitors (C80, C90, and C100) and applies the level to the output amplifier.

Diamond Transcoder

The diamond transcoder consists of three emitter-followers and an inverting operational amplifier, U70. Its output is the four signals required to create the diamond display (G+R, G+B, B-G, and R-G). Signal gain is approximately 0.5. C74 is adjusted for clean, sharp transitions between the dots.

Diagram <20> Component Control and Switching (1760 Series Only)

Controller U206 is a First-In First-Out (FIFO) memory. It is written to asynchronously by the Microprocessor and synchronously read out. U207 controls the readout of the memory to synchronize the output to sync. U208 and U209 are shift registers that are also clocked by an output from U207 to ensure that the switching required to build the component displays remains synchronous. U204 and U205 are asynchronous registers that handle transactions that do not need to be synchronized to the instrument sync.

Sync Blanking In all display modes, except Lightning, the display is kept blanked until a point well into the back porch. To keep the display blanked, a pair of one-shot multivibrators are used. U502A fires when blanking occurs and holds its output high for approximately the active portion of the line. When the Q output of U502A again goes low, U502B fires just long enough to blank sync.

When the Lightning display is selected, the sync dot, at center screen, needs to be unblanked. In order to display the sync dot, the Clear input for U502B goes low to clear it.

Output Switching Signal selection for the component displays is accomplished by a series of DIP switches activated by the Controller switch enable signals SW1 - SW11. Signals to input for the various displays are routed to the vertical inverting and noninverting amplifier inputs and to the noninverting horizontal amplifier as shown in Table 3-2. Switch enable signals that are asserted to close the individual switches are included in parentheses.

Table 3-2: Component display output switching

CRT display	Line	Inputs		
		Vertical noninverting	Vertical inverting	Horizontal noninverting
Component Vector	All	P _R (SW 4)	Ground (SW 5)	P _B (SW 6)
Lightning (Difference)	X	Y (SW 3)	Ground (SW 5)	P _R (SW 11)
	X+1	Ground (SW 2)	Y (SW 3)	P _B (SW 6)
Diamond (RGB)	X	G+B (SW 1)	Ground (SW 5)	B-G (SW 1)
	X+1	Ground (SW 2)	G+R (SW 8)	R-G (SW 8)
Bowtie (Difference)	X	Y (SW 3)	Ground (SW 5)	P _B (SW 10)
	X+1	Y (SW 3)	Ground (SW 5)	P _R (SW 11)

Vertical Amplifier

The Vertical Amplifier has an inverting and noninverting input. The noninverting input from U101 (a four-section DIP switch) drives Q111. The collector of Q111 drives either an active low-pass filter Q131, Q134, and Q136, or is switched past the filter for bowtie display.

The low-pass filter consists of three emitter-follower stages with an overall gain of less than unity. C135 and C136 are adjusted for the straightest transitions between dots on the component vector display.

When the signal from the inverted input is switched in, U101C grounds the base of Q111 and U103 or U102C, which provides the input signal to the emitter of Q111 through Q127, an emitter-follower. The output of Q111 can be back-porch clamped. Because the signal can be deflected positive and negative from center, a different clamp level is required for positive-going signals than for the negative-going signals.

The sample capacitors, C120 and C121, are charged whenever the OPT PLS (from the Line Rate Controller, Diagram 7) goes low and either locally generated TOP or BOTTOM is asserted. This causes the output of U125A or U125B to go low and close either U124A or U124D. The clamped amplifiers, U126A and U126B, have a DC level at their noninverting inputs. When the Lightning display is selected, this voltage is adjusted to overlay the back porch levels at the vertical center point of the positive and negative excursions.

Q112 and Q114 are an emitter-coupled pair driving Q116 to output the clamp level on the collector output of Q111.

Horizontal Amplifier

The horizontal amplifier is driven by Q180 and emitter-follower to provide a high output impedance. Q151 and Q157 form an active low-pass filter that is used by all of the component outputs. U162A and U162B are clamped amplifiers. Their operation is very similar to that of the vertical amplifier clamps. R159 aligns the top and bottom halves of the display along the vertical center line, at back porch time.

GBR Intensification

In order to measure the variations in the horizontal transitions of the Lightning display, it is necessary to brighten them up. U171 is employed as a dual comparator mixer to provide an output pulse to the Z-Axis Amplifier on Diagram 21. As the horizontal signal deflects from center, both of the active inputs to U171 change. When the changes are compared to a fixed level (the opposite side of the comparator amplifier) the mixer output changes to create a bright-up level.

Diagram <21> Low Voltage Power Supply

The Low Voltage Power Supply converts the mains line voltage (90–250 VAC) to supply the power requirements of the instrument. The voltages supplied by the Low Voltage Power Supply are +40 V, ± 15 V, and +5 V.

The Low Voltage Power Supply is called a flyback switcher. When switcher mosfet Q14 is turned on, its drain voltage drops to approximately 0 V. The current through the 350 μ H primary winding of T3 begins ramping up. The voltages present at all secondaries is such that the rectifier diodes are reverse biased. Energy is being stored in the magnetic field of T3. When Q14 turns off, the drain voltage “flies back” in a positive direction. Current now flows in all of the secondary windings and supplies power.

Line Rectifier and Filter

The input line voltage is filtered by the rear-panel connector to reduce the electrical noise conducted into or out of the instrument. R123 limits the initial charging current through the rectifier diodes and C71.

CR32, CR33, CR34, and CR35 form a bridge rectifier. C71 filters the 110 - 350 VDC rectifier output. L8 filters the switching noise produced by the switcher. R116 reduces the circulating current in the parallel circuit consisting of L8 and C52. DS7, R116, and R118 form a line voltage indicator. R120 and R122 charge C62, which provides power to U6 until the primary housekeeping winding provides power through CR22.

VR3 is the source of the +5 V required by the transformer driver to operate the Power switch. When power is connected to the instrument, it gets enough current from R119 and R121 to zener and provide the power required to operate the transformer driver oscillator.

Transformer Driver

The transformer driver is a Colpitts oscillator whose inductive resonator is the isolation transformer T2. The front-panel Power switch is a momentary push button that shorts the secondary of the transformer and causes the oscillator to stop when it's pushed. When the secondary shorts, Q13 stops oscillating. Q12 turns off and starts U5A, a one-shot multivibrator, that clocks U8A, which is the Power switch memory. It changes state every time the front-panel Power switch is pushed.

If power is removed from the instrument, U8A retains its memory due to the storage capacitor, C58. C58 is capable of holding its charge for a week or more at a time. In order to prevent the one-shot multivibrator, U5A, from tripping U8A if power is lost, a short-time constant (C56 and R89) pulls V_{CC} for U5A down before Q13 stops oscillating.

Pulse Width Modulator

U6 is a current-mode pulse width modulator that uses two feedback loops. The inner current-feedback loop directly controls the switcher mosfet peak current. The outer voltage-feedback loop programs the inner loop peak current trip point.

U6 pin 2 is the inverting input of an internal operational amplifier. The noninverting input is set to 2.5 V by an internal voltage reference. Current from the peak detector flows through R87 and R94. R86 provides a 100 μ A offset. The voltage at pin 1 will vary in order to maintain pin 2 at 2.5 V.

The voltage at U6 pin 1 is modified by an internal circuit and sets the trip point of the internal comparator. Pin 3 is the external input to the comparator. Pin 4 sets the internal oscillator to 80 kHz; R92 and C55 determine the frequency.

The pulse-width modulator works as follows: The oscillator resets the latch and U6 pin 6 goes high, turning the switcher mosfet on. The current through the switcher mosfet increases, causing the voltage across R90 to increase. This voltage is divided across R91 and R92, to input to the comparator (pin 3). When the voltage at pin 3 reaches the comparator trip point, the latch toggles and the switcher mosfet is turned off. This process is repeated at an 80 kHz rate. Switching the mosfet oscillator on and off drives the power transformer, T3.

C53 increases the noise immunity by rolling off the internal operational amplifier frequency response. R97 holds the switcher mosfet off as the circuit is powering up. R93 slows the turn-on of the switcher mosfet while CR26 speeds up the turn off.

Snubber

The primary winding (pins 1 and 2) has a shadow winding (pins 3 and 4) with one end connected to ground. The B+ end of the primary winding is in phase with the grounded end of the shadow winding. The signal ends of both windings are connected together through C51. Because both windings have the same number of turns and their signal ends are connected, the signal voltages on the windings are forced to be the same regardless of stray inductance in the transformer. CR23 ties the signal end of the shadow winding to the B+ end of the primary winding to prevent it from having a peak signal voltage greater than B+. This also prevents the primary winding from having a peak signal voltage greater than B+.

The signal end of the primary winding can go no more than $2 \times B+$ (about 700 V with a 250 V mains) because the other end of its winding is at B+. Holding the signal voltage at 700 V or less protects the switching transistor, Q14.

Rise time snubbing is done with CR25, R88, and C59. Slowing the risetime of Q14 reduces RF interference.

Output Filters

The three output windings supply four output voltages. Each output is rectified by a single diode and filtered by an LC pi filter.

Error Amplifier

The error amplifier regulates the +5 V output by feeding an error signal to the pulse width modulator. U3A is a voltage reference that outputs 2.5 V for the operational amplifier, U3B. R71 and R73 provide a feedback voltage for the error amplifier. C42 and R77 form a frequency-dependent network for loop stabilization. The output of the error amplifier operational amplifier drives the light emitting diode input stage of the optoisolator, U4.

An optoisolator consists of a light-emitting diode as a transmitting device, and a light-sensitive transistor as a receiver. When the intensity of the LED changes, the base current in the receiver changes equivalently to alter the pulse-width modulator feedback voltage.

Shutdown Logic

U7 is a quad comparator, whose outputs are open collectors. All four comparator outputs are connected in parallel, and under normal operating conditions are high. Whenever the output of any one of the comparators goes low, Q15 will turn off and the pulse-width modulator current sense line will go high and shut down the power supply.

U7B is the comparator for the +16 V supply. U7C is the line voltage comparator, sensing the rectified AC primary. If either output is low, Q15 turns off to shut down the power supply. U7A senses the power switch status from the Q output of U8A. Whenever the output of Q8A is low, the output of U7A will also go low.

U7D prevents the power supply from running on in the event of a +5 V supply short. Shorting the 5 V supply disables the optoisolator, which causes the error voltage to fall below 2.5 V. After a short period of time C65 discharges and causes the output of U7D to go low and shut down the power supply.

Over Voltage Protection

Q11 is a silicon-controlled rectifier (SCR) that is triggered if the +5 V output rises above approximately 5.5 V. If the SCR triggers, the +5 V is shorted to ground. The supply shuts down and waits a few milliseconds before attempting to restart. Over-voltage shutdown can be tested by shorting R74 and R78 together.

DS6, an LED that is internal to the instrument, is lit whenever the +5 V supply is running. This is a servicing aid, which makes it possible to determine if the power supply is operating without having to look at the front panel.

Diagram <22> High Voltage Power Supply

HV Osc and Error Amp

The High Voltage Power Supply is generated by a sine-wave oscillator and step-up transformer. Q7 and T1 are the principal elements of an Armstrong oscillator running at about 22 kHz. Error amplifier U2 regulates the +100 V output and keeps the High Voltage Power Supply constant under varying load conditions by controlling the base current to Q7.

The +100 V output is regulated directly, and the High Voltage Power Supply is indirectly regulated through a current feedback circuit.

R40, C15, R66, and R61 form the High Voltage Power Supply current feedback circuit. As the current from the High Voltage Power Supply is increased, the voltage to the + side of the error amplifier (U2) increases, which increases the base drive to Q7, the HV Osc. This current feedback compromises the regulation of the +100 V supply to keep the high voltage constant with varying intensities.

C25 and Q8 are a start delay circuit that holds the error amplifier output low, through CR12, until C25 is charged. Delaying the start of the high voltage oscillator allows the Low Voltage Power Supply to start, unencumbered by the load from the high voltage oscillator.

Power Supply Outputs

CR7 is the high voltage rectifier. Filter capacitors C6 and C7 work with CR7 to provide -2530 V to the CRT cathode. U1 is a four-times multiplier providing +11 kV to the CRT anode.

Focus Amplifier

Q1 and Q2 form an operational amplifier that sets the voltage at the bottom of the focus divider. The front-panel FOCUS control determines what that voltage will be. The Center Focus control, R9, is set for optimum beam focus, as viewed on the CRT, with the front-panel FOCUS control set to mid range. Once the Center Focus has been adjusted, the front-panel FOCUS control changes the voltage at the bottom end of the divider and, consequently, the voltage on the CRT focus anode.

Grid Drive Circuit

The cathode of the CRT is at a -2530 V potential with the grid coupled to the Z-Axis Amplifier by the grid drive circuit. The grid is approximately 75 V negative with respect to the cathode. The 200 V p-to-p sine wave present at the cathode of CR11 is input to the grid drive circuit where it is clipped for use as CRT control grid bias.

The sine wave from the cathode of CR11 is coupled through R41 to a clipping circuit consisting of CR8 and CR9. Clipping level for the positive excursion of the sine wave is set by the CRT Bias adjustment, R53. The negative clipping level is set by the front-panel INTENSITY control through the Z-Axis Amplifier. The clipped sine wave is coupled through C12 to a rectifier made up of CR5 and CR6. The rectified, clipped sine wave is the CRT control grid bias voltage. C8 couples the blanking signal from the Z-Axis Amplifier to the CRT control grid. DS1 and DS2 limit the CRT grid to cathode voltage at instrument turn on or off. DS4 limits the CRT heater to cathode voltage.

Z-Axis Amplifier

The junction of R10 and R5 is the summing junction for the amplifier. It is at +5 VDC. R6 and R17 are a voltage level shifter to bias the base of Q3 at 0 V, when the summing junction is at +5 V. R5 is the feedback resistor, which sets the overall amplifier gain at 36 V/mA of input current. Q3 is an emitter-follower that drives Q4, a common emitter amplifier. Q6 is a common base stage driven from Q4. The collector of Q6 is the output of the amplifier. Q5 is a constant current source that is the collector load for Q6. C11 is a speedup capacitor that modulates the constant current source to increase amplifier rise time.

CRT The pinout for the CRT is shown in Figure 3-3.

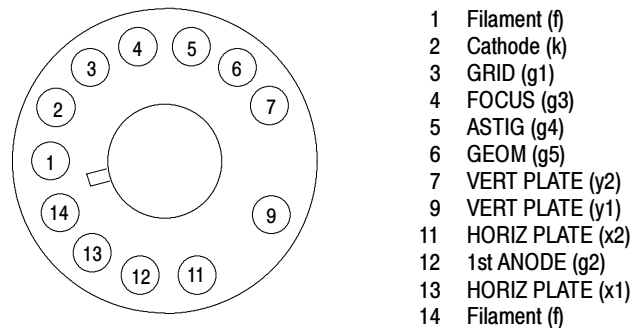


Figure 3-3: Pinout of the CRT socket

Performance Verification

Recommended Equipment List

The following equipment and accessory items are required to do the Performance Verification Procedure. Broad specifications are followed by an example of equipment that meet these specifications.

Electrical Instruments

1. Test Oscilloscope

Vertical Amplifier:
30 MHz Bandwidth, 2 mV sensitivity.

Time Base:
10 ns/Div to 5 ms/Div sweep speeds, triggering to 50 MHz.

For example:
A TEKTRONIX TAS 465 Oscilloscope. Also 10X probe, P6109B, and 1X probe, P6119B.

2. Television Signal Generator

Color test signals for the television standard of the monitor to be tested: color bar signal, linearity staircase and variable apl, pulse and bar; with 2T pulse, 2T bar, and modulated pulse, field square wave signal, and black burst signal.

For example:
NTSC TEKTRONIX 1410 with Option AA and Option AB (modified SPG2 and TSG7), TSG3, and TSG5.

PAL TEKTRONIX 1411 with Option AA and Option AB (modified SPG12 and TSG17), TSG13, and TSG15.

The signal generator can be ordered with one or both options (AA and AB).

The TSG3 and TSG13 are Modulated Staircase Generators with variable APL.

The TSG5 and TSG15 are Pulse and Bar Generators with modulated pulse and field square wave signals.

NOTE. *1410-Series Generators:*

The 1410-Series generators with standard SPG and TSG modules can be used, but not all checks and adjustments can be made. The standard SPG2/SPG12 modules will not check lock to changes in sync amplitude, cw lock to changes in burst amplitude, and frequency lock to burst offset frequency changes.

3. Digital Television Signal Generator

For example:

TEKTRONIX	TSG-170A	NTSC
TEKTRONIX	TSG-271	PAL
TEKTRONIX	TSG-300	Component

4. Swept Sine Wave Generator

Frequencies from 50 kHz to 10 MHz. CW signal can be used as time marks.

For example:

HP3336C, Option 005. Option 005 provides increased flatness and attenuator accuracy (+0.07 dB flatness in CW mode). The standard frequency accuracy (+5 ppm of programmed frequency) is sufficient for time base verification.

5. Leveled Sine Wave Generator

Output Level Range: -11.55 dBm (200 mV) to 0.43 dBm (800 mV).

Frequency: 50 kHz to 10 MHz.

For example:

TEKTRONIX SG503 installed in a TM500-Series Power Module.

6. Function Generator

Range: 0.1 to 5 V_{p-p} when loaded by 75 Ω; 10 V_{p-p} when unloaded.

Frequency: 10 Hz to 2 kHz.

For example:

TEKTRONIX FG503 installed in a TM500-Series Power Module.

7. Variable Autotransformer

For example:

General Radio Metered Auto Transformer W10MT3W. If 220 V operation must be checked, a conversion transformer or appropriate 220 V autotransformer is needed.

8. Voltmeter

Range: 0 to > 100 Vdc. Accuracy: $\pm 0.1\%$.

For example:

TEKTRONIX DM501A installed in a TM500-Series Power Module.

9. Frequency Counter

Range: 10 Hz to 10 MHz. Accuracy: $\pm 0.001\%$.

For example:

TEKTRONIX DC503A installed in a TM500-Series Power Module.

10. Video Amplitude Calibrator (VAC)

Signal: Adjustable square wave 0.0 to 999.9 mV_{p-p}. Resolution: 0.1 mV.
Accuracy: 0.05%. Frequency: Approximately 270 Hz.

For example:

TEKTRONIX 067-0916-00 installed in a TM500-Series Power Module.

11. Peak-to-Peak Detector

Input Signal Range: 0.25 to 1.0 V_{p-p}. Flatness: $\pm 0.2\%$ 50 kHz to 10 MHz.
Input Impedance: 75 Ω .

For example:

Tektronix Part No. 015-0408-00 (includes Peak-to-Peak Detector Head 015-0413-00) installed in a TM500-Series Power Module.

12. Power Module

For powering and housing Tektronix SG503, FG503, DM501A, DC503A, 067-0916-00, and a 015-0408-00.

For example:

Tektronix TM500-Series Power Module.

Auxiliary Equipment

13. 75 Ω Terminators

Six required; two should be end-line, and four should be feed-through type.

For example:

End-line, 75 Ω terminator (Tektronix Part No. 011-0102-00). Feed-through, 75 Ω terminator (Tektronix Part No. 011-0103-02).

14. Coaxial Cables

Three 75 Ω cables required, one precision (1%) 50 Ω cable required.

For example:

75 Ω - 42-inch (Tektronix Part No. 012-0159-00).

50 Ω - 36-inch 1% precision (Tektronix Part No. 012-0482-00).

15. Dual Input Coupler

Matched BNC cable-T for making phase comparisons between two inputs. Matched length of the two arms within ±0.1 inch.

For example:

Tektronix Part No. 067-0525-02.

16. External Horizontal/RGB and YRGB Cable Adapter

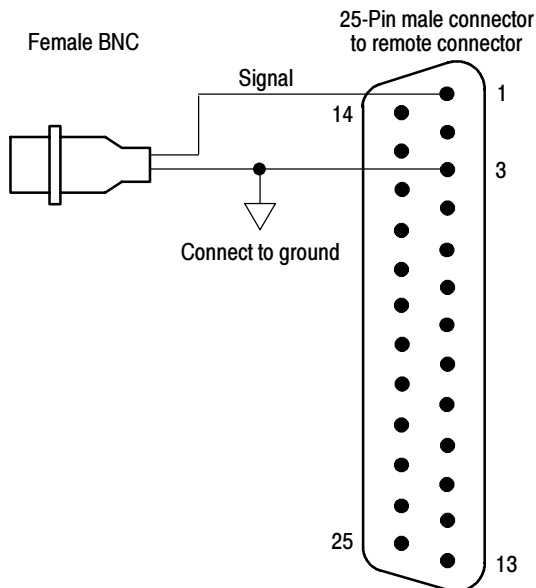


Figure 4- 1: External Horizontal or RGB/YRGB Cable Adapter

17. Remote Sync Cable Adapter

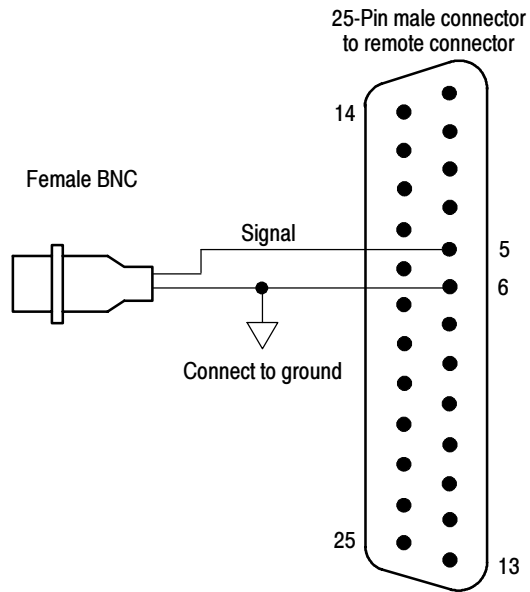


Figure 4-2: Remote Sync Cable Adapter

18. Audio and Timecode Cable Adapter

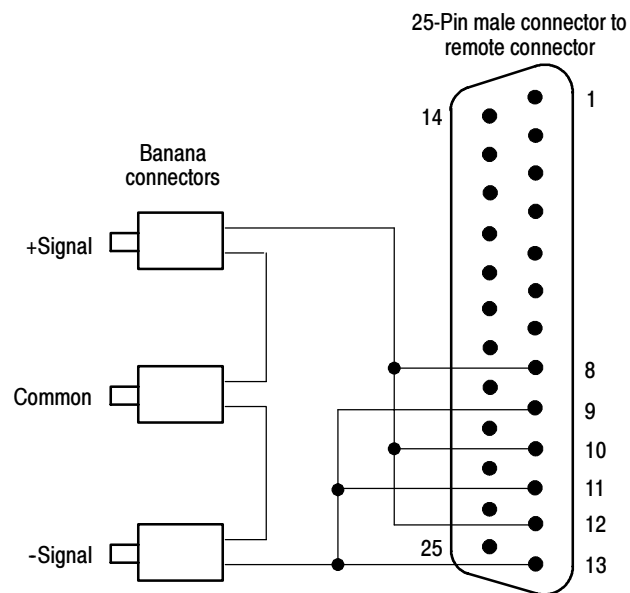


Figure 4-3: Audio and Timecode Cable Adapter

Performance Check Procedure Short-Form Reference

The short-form reference table is intended for those who are familiar with the complete Performance Check procedure. Step and page numbers provide easy cross-reference to the long-form procedure on the following pages.

Table 4-1: Short-Form Performance Check

Step #	Step Name	Step Requirement	Page #
1	Preliminary Setup	Initial equipment connections and control settings.	4-9
2	Power Supply Operation	Stable operation over an AC input range of 90 - 250 V.	4-10
3	Trace Rotation Range and Graticule Illumination	Rotation of $\geq \pm 1^\circ$ from the horizontal.	4-10
4	Input Channel DC and Restorer Offsets	DC Offset between input channels ≤ 1 IRE (7 mV PAL). DC Restorer Offset between input channels ≤ 1 IRE (7 mV PAL).	4-10
5	Horizontal Mag Registration and Position Range	Any portion of the synchronized sweep can be positioned on screen in all sweep modes.	4-12
6	Calibrator Timing Frequency	Frequency: 100 kHz $\pm 0.1\%$.	4-13
7	Timing and Linearity	Sweep Timing Accuracy: 5 μ s/Div. (1 Line), 10 μ s/Div. (2 Line), 0.2 μ s/Div. (1 Line + MAG), 1.0 μ s/Div. (2 Line + MAG), $\pm 1\%$. Sweep Linearity: 1 Line and 2 Line sweeps unmagnified or magnified, $\pm 1\%$.	4-13
8	Sweep Length	Sweep Length: 12 divisions ± 0.5 minor division.	4-14
9	Vertical Gain, Calibrator Amplitude, and Variable Gain Range	1 Volt Full Scale (X1): 1 V input displayed within 1% of 140 IRE (1.00 V PAL) graticule. X5 Gain: 0.2 V input displayed within 1% of 140 IRE (1.00 V PAL) graticule. X10 Gain: 0.1 V input displayed within 1% of 140 IRE (1.00 V PAL) graticule. Calibrator Amplitude: Square Wave: 140 IRE (1.0 V PAL) $\pm 0.5\%$; Sine Wave: 140 IRE (1.0 V PAL) $\pm 1\%$. Variable Gain Range: 0.2X to 1.4X.	4-14
10	Voltage, Timing, and Vector Cursors	Voltage Accuracy: $\pm 0.5\%$. Timing Accuracy: $\pm 0.5\%$, for line rate sweeps. Vector Accuracy: Gain $\pm 1.5\%$, Phase $\pm 1^\circ$.	4-16
11	PIX OUT Gain and Response	Gain: $\pm 3\%$. Frequency Response: $\pm 3\%$ to 6 MHz.	4-17
12	Input Channel Frequency Response	X1 Flat Response (No Filter): $\pm 2\%$ to 10 MHz. X5 and X10 Flat Response: $\pm 4\%$ to 10 MHz.	4-18
13	Luminance Filter Gain and Frequency Response	Gain: $\pm 1\%$. Frequency Response: ≤ 3 dB attenuation at 1 MHz. ≥ 40 dB attenuation at F_{SC} . Chrominance Rejection (1745A - 1755A - 1765 only) > 34 dB	4-19
14	Chrominance Filter Gain and Frequency Response (Waveform Display)	Gain: $\pm 1\%$.	4-20
15	Chrominance Filter Frequency Response (Vector Display)	Chrominance Bandwidth: 1 MHz ± 200 kHz. (Center frequency is F_{SC} .)	4-21
16	Overscan	Overscan Baseline Distortion: $\leq 1\%$ (7 mV) variation.	4-22
17	Transient Response (Waveform Display)	Preshoot, Overshoot, and Ringing: $\leq 1\%$. Pulse-to-Bar Ratio: 0.99:1 to 1.01:1. Field Rate Tilt: $\leq 1\%$.	4-22

Table 4-1: Short-Form Performance Check

Step #	Step Name	Step Requirement	Page #
18	Restorer Response	60 Hz (50 Hz PAL) Attenuation: Slow Mode $\leq 10\%$. Fast Mode $\geq 95\%$.	4-23
19	DC Restorer Blanking Shift	Blanking shift with Presence or Absence of Burst: ≤ 1 IRE (7 mV PAL). Blanking shift with 10-90% APL Change: ≤ 1 IRE (7 mV PAL).	4-24
20	Differentiated Step Filter	Attenuation: ≥ 40 dB at F_{SC} . Step Amplitude: Within 2% of flat display.	4-25
21	Amplifier Linearity	Differential Phase: $\leq 1^\circ$. Differential Gain: $\leq 1\%$. (Measured with a 140 IRE (1 V PAL) linearity signal (5-step, 10-step, or ramp) with 40 IRE (300 mV PAL) subcarrier.	4-26
22	Quadrature Phase and R-Y Balance and Display	Quadrature Phasing Error: $\leq 0.5\%$.	4-26
23	Vector Phase, Gain, and Transients	Phase Accuracy Error: $\leq 1.25^\circ$. Gain Accuracy Error: $\leq 2.5\%$.	4-27
24	Lock-In Range	Subcarrier Regenerator Pull-in Range: NTSC ± 50 Hz. PAL ± 10 Hz.	4-28
25	Burst Phase with Burst Amplitude Change	Phase Shift with Burst Amplitude Change of ± 6 dB: $\leq 2^\circ$.	4-28
26	Vector Phase Shift with Variable Gain Change	Phase Shift with Variable Gain Control +3 to -6 dB: $\leq 0.5^\circ$.	4-29
27	Channel Phase Match	Phase Shift with Video Input Channel Change: $\leq 1^\circ$.	4-29
28	Clamp Stability, Phase Control, and Position Control Range	Clamp Stability: $\leq 1/64$ inch (0.4 mm). Phase Control Range: 360° continuous rotation. Position Control Range: ≥ 0.236 inch (6 mm) from center.	4-29
29	External Horizontal Gain	External Horizontal Gain: 2 divisions/Volt $\pm 2\%$.	4-30
30	RGB/YRGB	RGB Staircase Input Gain: 0.8 division $\pm 10\%$.	4-31
31	Audio and Timecode Modes	Audio Mode Full Scale Accuracy: ± 0.5 dB. Timecode Mode Input Amplitude: Menu selectable for 140 IRE (1.0 V PAL) deflection.	4-31
32	Audio Phasing, and Audio and Timecode Bandwidths	X/Y Input Phase Match: $\leq 1^\circ$ (measured at 20 kHz). Audio Bandwidth and Timecode Bandwidth: ≥ 500 kHz at -3 dB.	4-32
33	Remote Sync	Remote Sync Frequency: 30 Hz, 90 Hz (25 Hz, 100 Hz PAL).	4-33
34	SCH Phase Mode (1750A-Series, 1760-Series Option SC Only)	Absolute Accuracy: $\leq 5^\circ$. Color Frame Range: $\pm 70^\circ$.	4-34
35	Component Vector Gain (1760-Series Only)	Vertical and Horizontal Gain Accuracy: $\pm 2.5\%$.	4-35
36	Lightning Gain (1760-Series Only)	Vertical Gain Accuracy: $\pm 2\%$.	4-35
37	Option Blanking Pulse (1760-Series Only)	The falling edge of the option blanking pulse occurs $0.5 \mu\text{s}$ (1 μs PAL) before the 50% point of the falling edge of the sync pulse $\pm 0.25 \mu\text{s}$.	4-36
38	Bowtie Gain and Offset (1760-Series Only)	Bowtie gain matches CH-A1 INPUT gain $\pm 2\%$. Bowtie DC offset between channels < 5 mV.	4-36
39	Bowtie Common Mode Rejection Ratio (1760-Series Only)	≥ 34 dB at 3 MHz.	4-37

Table 4- 1: Short-Form Performance Check

Step #	Step Name	Step Requirement	Page #
40	Component Vector Registration and Phase (1760-Series Only)	Vector Registration - X5 Gain: within 0.25 inches of CRT graticule center. X10 Gain: within 0.5 inch of CRT graticule center. Vector Phase - Less than a trace-width eye opening.	4-38
41	Diamond Display Phase (1760-Series Only)	Opening of <2 minor divisions on the vertical transition.	4-39
42	GBR Picture Monitor Outputs (1760-Series Only)	Accuracy: $\pm 3\%$.	4-39

Performance Check Procedure

1. Preliminary Setup

- a. Connect the 1740A/1750A/1760-Series AC power cord to the variable autotransformer. Set the mains Power switch for the autotransformer to On and set the autotransformer to the local nominal mains voltage (110 V or 220 V).
- b. Connect a television test signal generator color bar signal, via a 75 Ω feed-through termination and dual-input connector, to the 1740A/1750A/1760-Series CH-A and CH-A1 INPUTs.
- c. Connect the television test signal generator black burst signal to the 1740A/1750A/1760-Series EXT REF connector. Connect a 75 Ω end-line termination to the remaining side of the EXT REF loop-through connector.
- d. Set the 1740A/1750A/1760-Series instrument POWER switch to ON (front panel).

NOTE. *External Reference Signal:*

Leave the Black Burst signal connected to the EXT REF connector throughout the entire Performance Check Procedure except when directed otherwise.

NOTE. *Instrument Warm-up:*

Once the instrument is powered up, allow at least 20 minutes of warm-up time before continuing.

- e. Set the 1740A/1750A/1760-Series front-panel controls and menu selections to the factory settings by entering the Preset menu and selecting FACTORY and then selecting RECALL (CRT menu).

NOTE. *Factory Front-Panel Presets:*

Periodically throughout this procedure, the front-panel controls and menu selections will be reset to the factory settings from the Preset menu. Control and menu changes needed for that particular step will then be listed. Detailed information about the factory settings is found in Section 2.

- f. Enter the CRT menu and adjust the FOCUS, SCALE, and INTENSITY controls (bezel knobs) for best viewing of the display. Exit the CRT menu.

2. Power Supply Operation

Requirement - Stable operation over an AC input range of 90 - 250 V.

- a. Vary the autotransformer from low-line to high-line voltage (90 - 132 V for 110 V, or 180 - 250 V for 220 V operation).
- b. **Check** - for stable instrument operation over the prescribed voltage range.
- c. Set the autotransformer to the nominal mains voltage.

3. Trace Rotation Range and Graticule Illumination

Requirement - Rotation of $\geq \pm 1^\circ$ from the horizontal.

- a. Enter the CRT menu and select TRACE (CRT menu).
- b. Position the trace to the graticule baseline.
- c. **Check** - that the TRACE ROTATE control (bezel knob) moves the trace $\geq \pm 1^\circ$ from the graticule baseline.
- d. Adjust the TRACE ROTATE control (bezel knob) for a level trace across the graticule baseline.
- e. From the CRT menu select DISPLAY (CRT menu).
- f. **Check** - that the SCALE control changes the graticule illumination from completely extinguished to fully illuminated.
- g. Adjust the SCALE control (bezel knob) for the desired graticule illumination.
- h. Exit the CRT menu.

4. Input Channel DC and Restorer Offsets

Requirement - DC Offset between input channels ≤ 1 IRE (7 mV PAL).
DC Restorer Offset between input channels ≤ 1 IRE (7 mV PAL).

- a. Turn off the DC REST (front panel) and then position the signal blanking level to the CRT graticule baseline.
- b. Select PARADE (front panel). Note: CH-A, CH-A1, CH-A2, and CH-A3 INPUTs should be selected.
- c. Enter the GAIN menu and select X10 (CRT menu). If desired, press the CLEAR MENU button (front panel) to remove the readout.

- d. **Check** - that the CH-A and CH-A1 baselines are within ≤ 1 IRE (7 mV PAL) of each other (1 major division).
- e. **Check** - that the CH-A2 and CH-A3 baselines are within ≤ 1 IRE (7 mV PAL) of the CH-A baseline (1 major division) by moving the dual-input coupler to each respective input channel.
- f. Move the dual-input coupler from the CH-A3 to the CH-B INPUT.
- g. Select CH-A and CH-B INPUTs (front panel). Note: Deselect the other input channels.
- h. **Check** - that the CH-A and CH-B baselines are within ≤ 1 IRE (7 mV PAL) of each other (1 major division).
- i. Select CH-A, CH-B1, CH-B2, and CH-B3 INPUTs (front panel). Note: Deselect CH-B INPUT.
- j. **Check** - that the CH-B1, CH-B2, and CH-B3 baselines are within ≤ 1 IRE (7 mV PAL) of the CH-A baseline (1 major division) by moving the dual-input coupler to each respective input channel.
- k. Enter the CONFIG menu and select AC COUPLING. If desired, press the CLEAR MENU button to remove the readout.
- l. Move the dual-input coupler from the CH-B3 to the CH-A1 INPUT.
- m. Select CH-A, CH-A1, CH-A2, and CH-A3 INPUTs. Note: Deselect CH-B1, CH-B2, and CH-B3 INPUTs.
- n. Position the signal blanking level to the CRT graticule baseline.
- o. **Check** - that the CH-A and CH-A1 baselines are within ≤ 1 IRE (7 mV PAL) of each other (1 major division). Note: Allow a few seconds for the signal to settle when moving the input cable between channels.
- p. **Check** - that the CH-A2 and CH-A3 baselines are within ≤ 1 IRE (7 mV PAL) of the CH-A baseline (1 major division) by moving the dual-input coupler to each respective input channel.
- q. Move the dual-input coupler from the CH-A3 to the CH-B INPUT.
- r. Select CH-A and CH-B INPUTs. Note: Deselect the other input channels.
- s. **Check** - that the CH-A and CH-B baselines are within ≤ 1 IRE (7 mV PAL) of each other (1 major division).
- t. Select CH-A, CH-B1, CH-B2, and CH-B3 INPUTs. Note: Deselect CH-B INPUT.

- u. **Check** - that the CH-B1, CH-B2, and CH-B3 baselines are within ≤ 1 IRE (7 mV PAL) of the CH-A baseline (1 major division) by moving the dual-input coupler to each respective input channel.
- v. Turn on the DC REST and select EXT REF.
- w. Move the dual-input coupler from the CH-B3 to the CH-A1 INPUT.
- x. Select CH-A, CH-A1, CH-A2, and CH-A3 INPUTs. Note: Deselect CH-B1, CH-B2, and CH-B3 INPUTs.
- y. Position the signal blanking level to the CRT graticule baseline.
- z. **Check** - that the CH-A and CH-A1 baselines are within ≤ 1 IRE (7 mV PAL) of each other (1 major division).
- aa. **Check** - that the CH-A2 and CH-A3 baselines are within ≤ 1 IRE (7 mV PAL) of the CH-A baseline (1 major division) by moving the dual-input coupler to each respective input channel.
- ab. Move the dual-input coupler from the CH-A3 to the CH-B INPUT.
- ac. Select CH-A and CH-B INPUTs. Note: Deselect the other input channels.
- ad. **Check** - that the CH-A and CH-B baselines are within ≤ 1 IRE (7 mV PAL) of each other (1 major division).
- ae. Select CH-A, CH-B1, CH-B2, and CH-B3 INPUTs. Note: Deselect CH-B INPUT.
- af. **Check** - that the CH-B1, CH-B2, and CH-B3 baselines are within ≤ 1 IRE (7 mV PAL) of the CH-A baseline (1 major division) by moving the dual-input coupler to each respective input channel.
- ag. Enter the CONFIG menu and select DC COUPLING. Exit the CONFIG menu.
- ah. Enter the GAIN menu and select X1. Exit the GAIN menu.
- ai. Turn off the DC REST and PARADE, and select INT REF.
- aj. Remove the dual-input coupler from the CH-A and CH-B3 INPUTs.

5. Horizontal Mag Registration and Position Range

Requirement - Any portion of the synchronized sweep can be positioned on screen in all sweep modes.

- a. Connect the color bar signal to the CH-A INPUT and terminate the loop-through connector in 75Ω .

- b. Horizontally center the display, and then turn on the MAG SWEEP.
- c. **Check** - that part of the sync pulse and burst is displayed.
- d. **Check** - by adjusting the HORIZ POS control, that both ends of the display can be positioned past the center of the CRT.
- e. Turn off the MAG SWEEP.

6. Calibrator Timing Frequency

Requirement - Frequency: 100 kHz \pm 0.1%.

- a. Set the frequency counter Timing to 1 S.
- b. Connect a X1 probe from the frequency counter to the ribbon cable side of A3R274 (Main board).
- c. Adjust the frequency counter controls for a stable readout.
- d. **Check** - that the counter reading is 100 kHz \pm 0.1 kHz.
- e. Remove the frequency counter probe from A3R274.

7. Timing and Linearity

Requirement - Sweep Timing Accuracy: 5 μ s/Div. (1 Line), 10 μ s/Div. (2 Line), 0.2 μ s/Div. (1 Line + MAG), 1.0 μ s/Div. (2 Line + MAG), \pm 1%. Sweep Linearity: 1 Line and 2 Line sweeps unmagnified or magnified, \pm 1%.

- a. Enter the CONFIG menu. Select CALIBRATE, then select CAL SIG ON (100 kHz rate). If desired, press the CLEAR MENU button to remove the readout.
- b. **Check** - for one cycle of calibrator signal per major division \pm 0.5 minor division over the center 10 divisions.
- c. Turn on the MAG SWEEP.
- d. **Check** - for one cycle of calibrator signal per 10 major divisions \pm 0.5 minor division over the center 10 divisions.
- e. **Check** - both ends of the magnified sweep for one cycle of calibrator signal per 10 major divisions \pm 0.5 minor division over the center 10 divisions.
- f. Turn off the MAG SWEEP and select 1 LINE SWEEP (5 μ s/div).
- g. **Check** - for one cycle of calibrator signal per two major divisions \pm 1 minor division over the center 10 divisions.

- h.** Enter the CONFIG menu and select CAL SIG OFF. Exit the CONFIG menu.
- i.** Connect the output of the Multiburst generator to the digital counter. Set the Multiburst generator to Low, Continuous, Manual, and turn the Markers Off. Adjust the Multiburst frequency to 5.0 MHz.
- j.** Replace the color bar signal on the CH-A INPUT with the multiburst signal. Leave the loop-through connector terminated.
- k.** Turn on the MAG SWEEP.
- l.** Set the Multiburst generator to Composite.
- m. Check** - for one cycle per division ± 0.5 minor division.
- n.** Turn off the MAG SWEEP.

8. Sweep Length

Requirement - Sweep Length: 12 divisions ± 0.5 minor division.

- a.** Replace the multiburst signal on the CH-A INPUT with the color bar signal. Leave the loop-through connector terminated.
- b.** Select 1 FIELD SWEEP.
- c. Check** - for 12 divisions of signal ± 0.5 minor division.
- d.** Select 2 FIELD SWEEP.
- e. Check** - for 12 divisions of signal ± 0.5 minor division.
- f.** Select 2 LINE SWEEP (10 $\mu\text{s}/\text{div}$).

9. Vertical Gain, Calibrator Amplitude, and Variable Gain Range

Requirement - 1 Volt Full Scale (X1): 1 V input displayed within 1% of 140 IRE (1.00 V PAL) graticule. X5 Gain: 0.2 V input displayed within 1% of 140 IRE (1.00 V PAL) graticule. X10 Gain: 0.1 V input displayed within 1% of 140 IRE (1.00 V PAL) graticule. Calibrator Amplitude: Square Wave: 140 IRE (1.0 V PAL) $\pm 0.5\%$; Sine Wave: 140 IRE (1.0 V PAL) $\pm 1\%$. Variable Gain Range: 0.2X to 1.4X.

- a.** Replace the color bar signal on the CH-A INPUT with the output from the VAC. Remove the loop-through terminator. Set the VAC amplitude to 999.9 mV, and select +LUM.
- b.** Select EXT REF.

- c. **Check** - that the signal display is $140 \text{ IRE} \pm 1.4 \text{ IRE}$ ($1.0 \text{ V} \pm 10 \text{ mV}$ PAL).
- d. Enter the GAIN menu and select X5. If desired, press the CLEAR MENU button to remove the readout.
- e. Set the VAC amplitude to 199.9 mV.
- f. **Check** - that the signal display is $140 \text{ IRE} \pm 1.4 \text{ IRE}$ ($1.0 \text{ V} \pm 10 \text{ mV}$ PAL).
- g. Enter the GAIN menu and select X10. If desired, press the CLEAR MENU button to remove the readout.
- h. Set the VAC amplitude to 99.9 mV.
- i. **Check** - that the signal display is $140 \text{ IRE} \pm 1.4 \text{ IRE}$ ($1.0 \text{ V} \pm 10 \text{ mV}$ PAL).
- j. Enter the GAIN menu and select X1. Exit the GAIN menu.
- k. Enter the CONFIG menu. Select CALIBRATE, then select CAL SIG ON (100 kHz rate) (CRT menu). If desired, press the CLEAR MENU button to remove the readout.
- l. **Check** - for a calibrator signal display of $140 \text{ IRE} \pm 0.7 \text{ IRE}$ ($1.0 \text{ V} \pm 5 \text{ mV}$ PAL).
- m. Enter the CONFIG menu and select FSC OSC.
- n. **Check** - for a calibrator signal display of $140 \text{ IRE} \pm 1.4 \text{ IRE}$ ($1.0 \text{ V} \pm 10 \text{ mV}$ PAL).
- o. From the CONFIG menu, select 100KHZ, then select CAL SIG OFF. Exit the CONFIG menu.
- p. Set the VAC amplitude to 999.9 mV.
- q. Enter the GAIN menu and select VARIABLE ON. If desired, press the CLEAR MENU button to remove the readout.
- r. **Check** - by adjusting the 1740A/1750A/1760-Series VAR GAIN control (front panel), that the signal amplitude can be adjusted to $< 28 \text{ IRE}$ (200 mV PAL).
- s. Set the VAC amplitude to 499.9 mV.
- t. **Check** - by adjusting the VAR GAIN control (bezel knob), that the signal amplitude can be adjusted to $> 100 \text{ IRE}$ (700 mV PAL).
- u. Enter the GAIN menu and select VARIABLE OFF. Exit the GAIN menu.

10. Voltage, Timing, and Vector Cursors

Requirement - Voltage Accuracy: $\pm 0.5\%$. Timing Accuracy: $\pm 0.5\%$, for line rate sweeps. Vector Accuracy: Gain $\pm 1.5\%$, Phase $\pm 1^\circ$.

- Set the VAC amplitude to 999.9 mV.
- Vertically position the signal to range from the 100 IRE to the -40 IRE graticules (1.0 V to the 0 V graticules PAL).
- Enter the CURSOR menu (VOLT should be selected). If desired, press the CLEAR MENU button (front panel) to remove the readout.
- Use the appropriate bezel knob to set the Volt1 cursor to the 100 IRE (1.0 V PAL) graticule.
- Set the Volt2 cursor to the -40 IRE (0 V PAL) graticule.
- Check** - that the cursor reading is 140 IRE ± 0.7 IRE (1000 mV ± 5 mV PAL).
- In the CURSOR menu select TIME.
- Use the bezel knob to set the Time1 cursor to the 10 μ s graticule mark, and set the Time2 cursor to the 110 μ s graticule mark. See Figure 4-4.

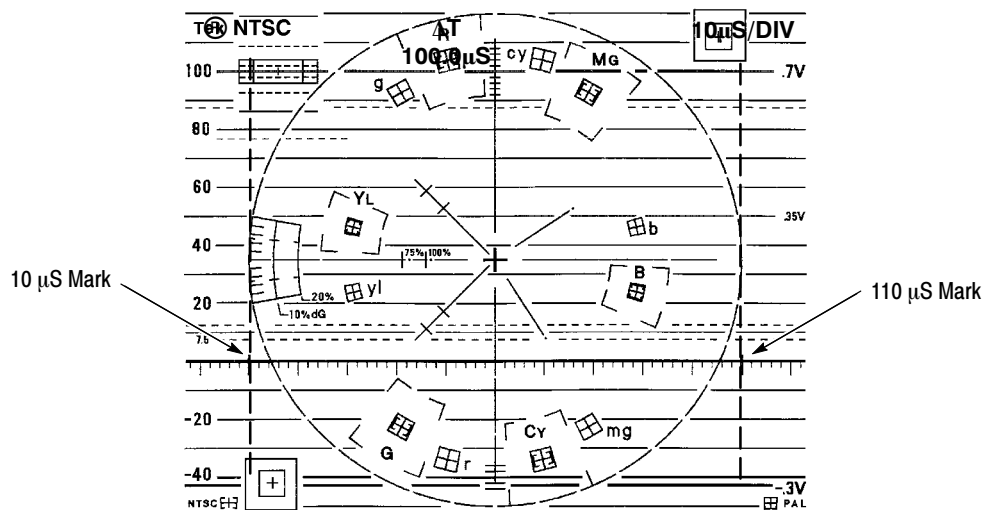


Figure 4-4: Timing Cursor Check

- Check** - that the cursor reading is 100 μ s ± 0.5 μ s.
- Replace the VAC output on the CH-A INPUT with the color bar signal. Terminate the loop-through in 75 Ω .

- k. Select VECTOR DISPLAY. Adjust the AMPLITUDE and PHASE bezel knob controls for readouts of 0.0 IRE (0.0 mV PAL) and 0.0°.
- l. Exactly center the vector display using the VERT and HORIZ POS controls. Adjust the VECTOR PHASE control to place the burst vector on the 0° graticule line.
- m. Center the vector cursor on the Red vector dot using the AMPLITUDE and PHASE controls.
- n. **Check** - for AMPL and PHASE readouts as listed in Table 4-2.

Table 4-2: Vector cursor readout values

VECTOR	AMPL READOUT	PHASE READOUT
Red	NTSC 87.7 IRE \pm 1.5% (86.4 to 89.1 IRE). PAL 664 mV \pm 1.5% (654 to 674 mV).	103.5° \pm 1°.
Yellow	NTSC 62.1 IRE \pm 1.5% (61.1 to 63.0 IRE). PAL 471 mV \pm 1.5% (464 to 478 mV).	167.1° \pm 1°.
Cyan	NTSC 87.7 IRE \pm 1.5% (86.4 to 89.1 IRE). PAL 664 mV \pm 1.5% (654 to 674 mV).	283.5° \pm 1°.
Blue	NTSC 62.1 IRE \pm 1.5% (61.1 to 63.0 IRE). PAL 471 mV \pm 1.5% (464 to 478 mV).	347.1° \pm 1°.

- o. Repeat step n. for each of the vectors listed in Table 4-2.
- p. Exit the CURSOR menu, then select WAVEFORM DISPLAY.

11. PIX OUT Gain and Response

Requirement - Gain: \pm 3%. Frequency Response: \pm 3% to 6 MHz.

- a. Connect the output from the VAC to the test oscilloscope. Set the VAC amplitude to 999.9 mV.
- b. Set the test oscilloscope Volts/Div to 0.2, Coupling to DC, and Time/Div to 0.5 ms.
- c. Adjust the test oscilloscope Variable Gain control to set the display amplitude to exactly 1 V.
- d. Replace the color bar signal on the CH-A INPUT with the output from the VAC. Remove the loop-through terminator.
- e. Connect a 75 Ω cable from the 1740A/1750A/1760-Series PIX OUT to the test oscilloscope, terminating the oscilloscope end of the cable with a 75 Ω feedthrough terminator.

- f. **Check** - for a signal amplitude on the test oscilloscope of 1 V \pm 0.75 minor division.
- g. Replace the VAC output on the CH-A INPUT with the leveled sine wave generator output. Terminate the loop-through in 75 Ω .
- h. Set the leveled sine wave generator frequency to 50 kHz and adjust its amplitude for a 1 V display on the test oscilloscope. Set the generator frequency to 1.0 MHz.
- i. **Check** - that the amplitude on the test oscilloscope is 1 V \pm 0.75 minor division while varying the leveled sine wave generator frequency from 1.0 to 6.0 MHz.
- j. Remove the PIX OUT cable from the 1740A/1750A/1760-Series and the test oscilloscope.

12. Input Channel Frequency Response

Requirement - X1 Flat Response (No Filter): \pm 2% to 10 MHz. X5 and X10 Flat Response: \pm 4% to 10 MHz.

- a. Verify that EXT REF is selected, then remove the terminator on the CH-A INPUT.
- b. Connect the 015-0413-00 Peak-to-Peak Detector Head to the open CH-A INPUT and connect the other end to the 015-0408-00 Peak-to-Peak Detector + Input.
- c. Connect the Peak-to-Peak Detector Output to either an oscilloscope or DMM. Note: The DMM must have a "Reading Null" ability, or else use the oscilloscope.
- d. Set the leveled sine wave generator frequency to 50 kHz and adjust the generator amplitude for exactly 100 IRE (700 mV PAL) of display on the 1740A/1750A/1760-Series.
- e. Adjust the Peak-to-Peak Detector plus amplifier and input control until the Green LED is on.
- f. Null the DMM readout to 0.00 mV or center the trace on the oscilloscope graticule.
- g. Set the sine wave generator frequency to 1 MHz.
- h. **Check** - that the signal amplitude is 100 IRE \pm 2 IRE (700 mV \pm 14 mV PAL) while varying the leveled sine wave generator frequency from 1.0 to 10.0 MHz.
- i. Remove the Peak-to-Peak Detector Head from the CH-A INPUT and terminate the loop-through in 75 Ω .

- j. Set the sine wave generator frequency to 1 MHz.
- k. Enter the GAIN menu and select X5. If desired, press the CLEAR MENU button to remove the readout.
- l. Adjust the sine wave generator amplitude for a 100 IRE (700 mV PAL) signal on the 1740A/1750A/1760-Series.
- m. **Check** - that the signal amplitude is 100 IRE \pm 4 IRE (700 mV \pm 28 mV PAL) while varying the leveled sine wave generator frequency from 1.0 to 10.0 MHz.
- n. Enter the GAIN menu and select X10. If desired, press the CLEAR MENU button to remove the readout.
- o. Adjust the sine wave generator amplitude for a 100 IRE (700 mV PAL) signal on the 1740A/1750A/1760-Series.
- p. **Check** - that the signal amplitude is 100 IRE \pm 4 IRE (700 mV \pm 28 mV PAL) while varying the leveled sine wave generator frequency from 1.0 to 10.0 MHz.
- q. Enter the GAIN menu and select X1. Exit the GAIN menu.
- r. Repeat parts b. through h. for CH-A1, CH-A2, CH-A3, CH-B, CH-B1, CH-B2, and CH-B3 by moving the leveled sine wave generator output and terminator to each of the respective INPUTs.
- s. Select INT REF.
- t. Disconnect the leveled sine wave generator and terminator from the 1740A/1750A/1760-Series.

13. Luminance Filter Gain and Frequency Response

Requirement - Gain: \pm 1%. Frequency Response: \leq 3 dB attenuation at 1 MHz. \geq 40 dB attenuation at F_{SC} . Chrominance Rejection (1745A-1755A-1765 only) \geq 34 dB.

- a. Connect the function generator output to the CH-A INPUT, then terminate the loop-through in 75 Ω . Select CH-A INPUT.
- b. Set the function generator for a sine wave output. Adjust the frequency to 15 kHz and adjust the amplitude for a 100 IRE (700 mV PAL) display on the 1740A/1750A/1760-Series.
- c. Enter the FILTER menu.
- d. **Check** - by switching between FLAT and LUM(CRT menu), that the amplitude changes $<$ 1 IRE (7 mV PAL).

- e. In the FILTER menu select LUM.
- f. Set the function generator frequency to 1.0 MHz.
- g. **Check** - that the displayed amplitude is > 70 IRE (490 mV PAL).
- h. In the FILTER menu select FLAT.
- i. Replace the function generator output on the CH-A INPUT with the output of the leveled sine wave generator.
- j. Set the leveled sine wave generator frequency to 50 kHz and adjust the amplitude for 10 vertical divisions of display on the 1740A/1750A/1760-Series.
- k. In the FILTER menu select LUM.
- l. Enter the GAIN menu and select X10. If desired, press the CLEAR MENU button to remove the readout.

NOTE. For 1745A-1755A-1765 skip steps m and n. Go to step o.

- m. Set the leveled sine wave generator frequency to 3.58 MHz (4.43 MHz PAL).
- n. **Check** - that the displayed amplitude is < 1 major division.

NOTE. Perform steps o. through r. for 1745A-1755A-1765 only.

- o. Set the leveled sine wave generator frequency to 3.58 MHz.
- p. **Check** - that the displayed amplitude is ≤ 2 major divisions.
- q. Set the leveled sine wave generator frequency to 4.43 MHz PAL.
- r. **Check** - that the displayed amplitude is ≤ 2 major divisions.

14. Chrominance Filter Gain and Frequency Response (Waveform Display)

Requirement - Gain: $\pm 1\%$.

- a. Enter the GAIN menu and select X1. Exit the GAIN menu.
- b. Enter the FILTER menu and select FLAT.
- c. Adjust the leveled sine wave generator amplitude for a 100 IRE (700 mV PAL) display on the 1740A/1750A/1760-Series.

- d. **Check** - by switching between FLAT and CHROM, that the amplitude changes < 1 IRE (7 mV PAL).
- e. In the FILTER menu select CHROM.
- f. Set the leveled sine wave generator frequency to 2.68 MHz (3.53 MHz PAL).
- g. **Check** - that the displayed amplitude is < 70 IRE (490 mV PAL).
- h. Set the leveled sine wave generator frequency to 2.98 MHz (3.83 MHz PAL).
- i. **Check** - that the displayed amplitude is > 70 IRE (490 mV PAL).
- j. Set the leveled sine wave generator frequency to 4.48 MHz (5.33 MHz PAL).
- k. **Check** - that the displayed amplitude is < 70 IRE (490 mV PAL).
- l. Set the leveled sine wave generator frequency to 4.18 MHz (5.03 MHz PAL).
- m. **Check** - that the displayed amplitude is > 70 IRE (490 mV PAL).
- n. Enter the GAIN menu and select X10. If desired, press the CLEAR MENU button to remove the readout.
- o. Set the leveled sine wave generator frequency to 7.2 MHz (8.8 MHz PAL).
- p. **Check** - that the displayed amplitude is < 5.6 IRE (39 mV PAL).
- q. Enter the GAIN menu and select X1. Exit the GAIN menu.

15. Chrominance Filter Frequency Response (Vector Display)

Requirement - Chrominance Bandwidth: 1 MHz \pm 200 kHz. (Center frequency is F_{SC} .)

- a. Select VECTOR DISPLAY.
- b. Set the leveled sine wave generator frequency to 3.58 MHz (4.43 MHz PAL), and adjust the amplitude to place the signal on the compass rose.
- c. Set the leveled sine wave generator frequency to 2.98 MHz (3.83 MHz PAL).
- d. **Check** - that the circle is inside the 3 dB marks.
- e. Set the leveled sine wave generator frequency to 3.18 MHz (4.03 MHz PAL).

- f. **Check** - that the circle is outside the 3 dB marks.
- g. Set the leveled sine wave generator frequency to 4.18 MHz (5.03 MHz PAL).
- h. **Check** - that the circle is inside the 3 dB marks.
- i. Set the leveled sine wave generator frequency to 3.98 MHz (4.83 MHz PAL).
- j. **Check** - that the circle is outside the 3 dB marks.
- k. Select WAVEFORM DISPLAY.
- l. Enter the FILTER menu and select FLAT. Exit the FILTER menu.

16. Overscan

Requirement - Overscan Baseline Distortion: $\leq 1\%$ (7 mV) variation.

- a. Replace the leveled sine wave generator output on the CH-A INPUT with the pulse and bar signal from the television signal generator. Leave the loop-through terminated.
- b. Select 1 LINE SWEEP (5 $\mu\text{s}/\text{div}$).
- c. Enter the GAIN menu and select X10. If desired, press the CLEAR MENU button (front panel) to remove the readout.
- d. Set the pulse and bar signal Field Sq Wave to Off.
- e. **Check** - that the bottom of the mod pulse baseline varies ≤ 7 mV (0.7 major division), while being positioned vertically over the entire 140 IRE (1.0 V PAL) graticule area.
- f. Enter the GAIN menu and select X1. Exit the GAIN menu.

17. Transient Response (Waveform Display)

Requirement - Preshoot, Overshoot, and Ringing: $\leq 1\%$. Pulse-to-Bar Ratio: 0.99:1 to 1.01:1. Field Rate Tilt: $\leq 1\%$.

- a. Select 2 LINE SWEEP (10 $\mu\text{s}/\text{div}$) and turn on the MAG SWEEP.
- b. Set the pulse and bar signal controls as follows: Overlay On, Amplitude Full, Luminance On, Setup Off (NTSC only), Window Off, Field Sq Wave Off, Burst On, T Pulse On, and T Bar On.
- c. **Check** - that the preshoot, overshoot, and ringing is within $\pm 1\%$ (0.5 minor division).

- d. **Check** - that the pulse amplitude is within ± 1 IRE (0.7 mV PAL) of the bar amplitude (0.5 minor division).
- e. Enter the GAIN menu and select X10. If desired, press the CLEAR MENU button to remove the readout.
- f. **Check** - that the preshoot, overshoot, and ringing is within $\pm 1\%$ (1 major division).
- g. **Check** - that the pulse amplitude is within ± 1 IRE (0.7 mV PAL) of the bar amplitude (1 major division).
- h. Select 1 FIELD SWEEP and turn Off the MAG SWEEP.
- i. Set pulse and bar signal Field Sq Wave to On.
- j. **Check** - for tilt of $\leq 1\%$ (1 major division).
- k. Enter the GAIN menu and select X1. Exit the GAIN menu.

18. Restorer Response

Requirement - 60 Hz (50 Hz PAL) Attenuation: Slow Mode $\leq 10\%$. Fast Mode $\geq 95\%$.

- a. Select 2 LINE SWEEP (10 μ s/div).
- b. Replace the pulse and bar signal on the CH-A INPUT with the function generator output. Leave the loop-through connector terminated.
- c. Set the function generator frequency to 60.0 Hz (50.0 Hz PAL), and adjust the amplitude for a 140 IRE (1.0 V PAL) display.
- d. Turn on the DC REST and select INT REF.
- e. Enter the CONFIG menu. Select INPUT, then select CLAMP ST (Sync Tip) . If desired, press the CLEAR MENU button to remove the readout.
- f. **Check** - that the displayed amplitude is > 126 IRE (900 mV PAL).
- g. Enter the CONFIG menu and select CLAMP BP (backporch). If desired, press the CLEAR MENU button to remove the readout.
- h. **Check** - that the displayed amplitude is > 126 IRE (900 mV PAL).
- i. Enter the CONFIG menu and select DC RESTORER FAST. Enter the GAIN menu and select X10. Press the CLEAR MENU button.
- j. Select 2 FIELD SWEEP and EXT REF.

- k. **Check** - that the sine wave portion of the signal is ≤ 7 major divisions (5 major divisions PAL). Note: Disregard the spike on the signal. See Figure 4-5.

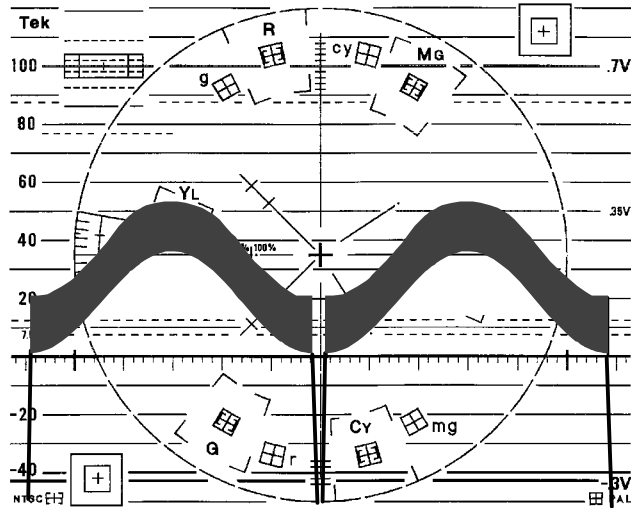


Figure 4-5: Fast DC Restorer Response

- l. Enter the CONFIG menu and select CLAMP ST (Sync Tip). If desired, press the CLEAR MENU button to remove the readout.
- m. **Check** - that the sine wave portion of the signal is ≤ 7 major divisions (5 major divisions PAL). Note: Disregard the spike on the signal.
- n. Exit the CONFIG and GAIN menus.

19. DC Restorer Blanking Shift

Requirement - Blanking shift with Presence or Absence of Burst: ≤ 1 IRE (7 mV PAL). Blanking shift with 10-90% APL Change: ≤ 1 IRE (7 mV PAL).

- a. Enter the PRESET menu and select RECALL FACTORY. Exit the PRESET menu.
- b. Replace the function generator output on the CH-A INPUT with the color bar signal from the television signal generator. Leave the loop-through connector terminated.
- c. Enter the GAIN menu and select X10. If desired, press the CLEAR MENU button to remove the readout.

- d. **Check** - that the blanking level does not shift more than 1 major division (0.7 major division PAL) while switching the color bar signal Burst, On and Off (for PAL generators, push U and Y together).
- e. Replace the color bar signal on the CH-A INPUT with the television signal generator linearity signal. Leave the loop-through terminated.
- f. Set the linearity signal controls as follows: AC Bounce On, Full Field On, 5 Steps On, and 180° Subcarrier On and 40 IRE (U Subcarrier On and 280 mV PAL).
- g. **Check** - that the blanking shift is within ± 1 major division (0.7 major division PAL) while APL bounces.
- h. Turn off the DC REST.
- i. Enter the GAIN menu and select X1. Exit the GAIN menu.

20. Differentiated Step Filter

Requirement - Attenuation: ≥ 40 dB at F_{SC} . Step Amplitude: Within 2% of flat display.

- a. Turn the linearity signal AC Bounce Off.
- b. Select 1 LINE SWEEP (5 μ s/div).
- c. Enter the FILTER menu and select DIFF. If desired, press the CLEAR MENU button to remove the readout.
- d. Enter the GAIN menu and select VARIABLE ON . If desired, press the CLEAR MENU button to remove the readout.
- e. Adjust the VAR GAIN control (bezel knob) so that the amplitude of the differential spikes are 100 IRE (700 mV PAL).
- f. Enter the GAIN menu and select X5. If desired, press the CLEAR MENU button to remove the readout.
- g. **Check** - that the differential spike tip amplitudes are within 2% (1 major division) of each other.
- h. Enter the GAIN menu and select X1. If desired, press the CLEAR MENU button to remove the readout.
- i. Replace the linearity signal on the CH-A INPUT with the output from the leveled sine wave generator. Leave the loop-through terminated.
- j. Enter the FILTER menu and select FLAT. If desired, press the CLEAR MENU button to remove the readout.

- k. Adjust the leveled sine wave generator frequency to 3.58 MHz (4.43 MHz PAL), and the generator amplitude for a 100 IRE (700 mV PAL) signal display on the 1740A/1750A/1760-Series.
- l. Enter the FILTER menu and select DIFF. If desired, press the CLEAR MENU button (front panel) to remove the readout.
- m. **Check** - for ≤ 1 IRE (7 mV PAL) of signal display.
- n. Enter the FILTER menu and select FLAT. Exit the FILTER menu.

21. Amplifier Linearity

Requirement - Differential Phase: $\leq 1^\circ$. Differential Gain: $\leq 1\%$. (Measured with a 140 IRE (1 V PAL) linearity signal (5-step, 10-step, or ramp) with 40 IRE (300 mV PAL) subcarrier.

- a. Replace the leveled sine wave generator output on the CH-A INPUT with the television signal generator linearity signal. Leave the loop-through terminated.
- b. Select VECTOR DISPLAY.
- c. Enter the GAIN menu and select X5 and VARIABLE ON. If desired, press the CLEAR MENU button to remove the readout.
- d. Use the VAR GAIN and VECTOR PHASE controls (bezel knobs) to position the vector dot (representing the subcarrier on the staircase) to the 0° mark on the compass rose.
- e. **Check** - that the dots are overlaid $\pm 1^\circ$ phase and $\pm 1\%$ gain.

22. Quadrature Phase and R-Y Balance and Display

Requirement - Quadrature Phasing Error: $\leq 0.5\%$.

- a. Replace the linearity signal on the CH-A INPUT with the television signal generator color bar signal. Leave the loop-through terminated.
- b. Enter the GAIN menu and select X1. Set the VARIABLE GAIN control to maximum (bezel knob).
- c. Use the VECTOR PHASE control (bezel knob) to position the burst to the 0° mark.
- d. Enter the CONFIG menu. Select VECTOR, then select VECTOR TEST ON.
- e. **Check** - for the best overlay of the circles without any separation, and best center dot overlay (should appear to be one dot).

- f. Exit the CONFIG menu, then enter the GAIN menu. Select VARIABLE OFF. Exit the GAIN menu.
- g. Select WAVEFORM DISPLAY.
- h. Enter the FILTER menu and select R-Y.
- i. **Check** - for the R-Y display. See Figure 4-6.

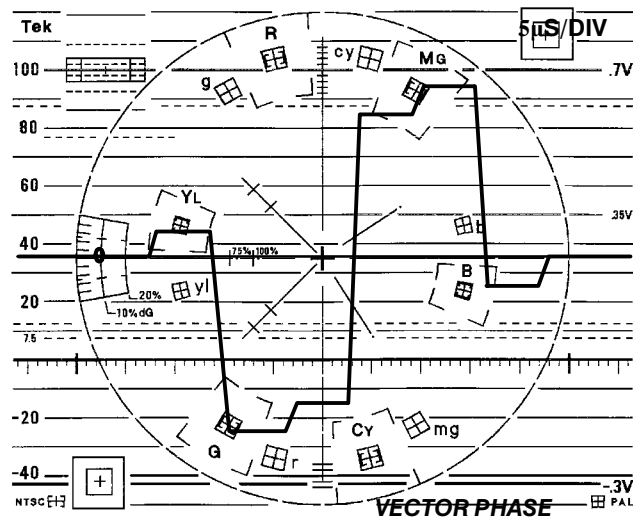


Figure 4-6: R-Y Display

- j. Enter the FILTER menu and select FLAT. Exit the FILTER menu.

23. Vector Phase, Gain, and Transients

Requirement - Phase Accuracy Error: $\leq 1.25^\circ$. Gain Accuracy Error: $\leq 2.5\%$.

- a. Select VECTOR DISPLAY and EXT REF.
- b. **Check** - that all the color vector dots can be placed within the boxes $\pm 1.25^\circ$ and an amplitude of $\pm 2.5\%$. Note: The burst vector position is not critical.
- c. **Check** - that the dots on the vector display are clear and do not have tails and the lines between the dots are reasonably straight.
- d. Select 100% bars on the color bar signal.
- e. Enter the CONFIG menu. Select VECTOR, then select 100% BARS. If desired, press the CLEAR MENU button to remove the readout.

- f. **Check** - that all the color vector dots can be placed within the boxes $\pm 1.25^\circ$ and an amplitude of $\pm 2.5\%$. Note: The burst vector position is not critical.
- g. **Check** - that the dots on the vector display are clear and do not have tails and the lines between the dots are reasonably straight.
- h. Select 75% bars on the color bar signal.
- i. Enter the CONFIG menu and select 75% BARS. Exit the CONFIG menu.
- j. (PAL ONLY) Enter the CONFIG menu and select VECTOR, and then select +V ON. If desired, press the CLEAR MENU button to remove the readout.
- k. (PAL ONLY) **Check** - that the burst vectors can be overlaid within $\pm 2^\circ$.
- l. (PAL ONLY) Enter the CONFIG menu and select +V OFF.
- m. Select INT REF.

24. Lock-In Range

Requirement - Subcarrier Regenerator Pull-in Range: NTSC ± 50 Hz. PAL ± 10 Hz.

- a. Set the television signal generator SPG2 Option AA Variable Subcarrier Frequency Offset push-button switch to On. Set the Frequency button to offset the frequency 50 Hz for NTSC. (For PAL, use the SPG12 Option AA button to offset the frequency 10 Hz.)
- b. On the television signal generator, press the ± 50 Hz button (± 10 Hz button for PAL).
- c. **Check** - that the display is locks ≤ 1 second.
- d. Select EXT REF and repeat parts a. through d.
- e. Select INT REF.

25. Burst Phase with Burst Amplitude Change

Requirement - Phase Shift with Burst Amplitude Change of ± 6 dB: $\leq 2^\circ$.

- a. Remove the color bar signal from the CH-A INPUT. Move the black burst signal from the EXT REF INPUT and connect it to the CH-A INPUT. Leave the CH-A INPUT terminated.
- b. Select MULTIPLE DISPLAY. Vector and waveform displays selected.

- c. **Check** - that while varying the sync generator Variable Burst amplitude control from 20 to 57 IRE (145 to 400 mV PAL) on the waveform display, that the burst vector changes $\leq 2^\circ$ on the vector display.

26. Vector Phase Shift with Variable Gain Change

Requirement - Phase Shift with Variable Gain Control +3 to -6 dB: $\leq 0.5^\circ$.

- a. Select VECTOR DISPLAY.
- b. Remove the terminator from the CH-A INPUT.
- c. Position the center dot on the Vector Cross Hairs. Position the burst vector to 0° .
- d. Enter the GAIN menu and select VARIABLE ON.
- e. **Check** - that the burst vector changes $\leq 0.5^\circ$ while varying the VARIABLE GAIN control (bezel knob) from minimum gain to setting the burst on the compass rose.

27. Channel Phase Match

Requirement - Phase Shift with Video Input Channel Change: $\leq 1^\circ$.

- a. Move the black burst signal from the CH-A INPUT to the EXT REF INPUT. Leave the EXT REF INPUT terminated in 75Ω .
- b. Connect the color bar signal via a 75Ω termination to the dual-input coupler. Connect the dual-input coupler to the CH-A and CH-B INPUTS.
- c. Select EXT REF. Enter the GAIN menu.
- d. Set the RED vector to the 0° graticule on the compass rose using VECTOR PHASE and VARIABLE GAIN controls (bezel knobs). If desired, press the CLEAR MENU button to remove the readout.
- e. **Check** - while changing between the CH-A and CH-B INPUTS, that the phase change is $\leq 1^\circ$.
- f. Enter the GAIN menu and select VARIABLE OFF. Exit the GAIN menu.

28. Clamp Stability, Phase Control, and Position Control Range

Requirement - Clamp Stability: $\leq 1/64$ inch (0.4 mm). Phase Control Range: 360° continuous rotation. Position Control Range: ≥ 0.236 inch (6 mm) from center.

- a. Select CH-A INPUT and INT REF.

- b. Remove the dual-input coupler from the 1740A/1750A/1760-Series. Connect the television signal generator color bar signal to the CH-A INPUT. Terminate the loop-through in 75Ω .
- c. **Check** - while rotating the VECTOR PHASE control 360° (bezel knob), that the center dot shifts $\leq 1/64$ inch (0.4 mm).
- d. **Check** - while rotating the VECTOR PHASE control 360° (bezel knob), that the vectors move in a smooth continuous motion.
- e. **Check** - while varying the VERT and HORIZ POS controls, that the center dot can be positioned at least $\pm 1/4$ inch (6 mm) from the centered position.
- f. Return the vector dot to the centered position.

29. External Horizontal Gain

Requirement - External Horizontal Gain: 2 divisions/Volt $\pm 2\%$.

- a. Enter the PRESET menu and select RECALL FACTORY.
- b. Enter the CONFIG menu. Select the REMOTE submenu. Select REM INPUT EXT HORIZ, and STAIRCASE:RGB.
- c. Set the function generator frequency for a 1 kHz square wave, with an amplitude of 0 to +5 V as measured on the test oscilloscope. (5 V square wave to Staircase and Horizontal In on the remote connector.)
- d. Connect the function generator output via the Ext Horiz/RGB and YRGB remote cable adapter to the REMOTE INPUT connector pin 1. See Figure 4-1.
- e. Set pin 3 of the remote cable low.
- f. **Check** - that the two vertical lines are 10.0 divisions apart ± 1 minor division.
- g. Set pin 3 of the remote cable high.

30. RGB/YRGB

Requirement - RGB Staircase Input Gain: 0.8 division $\pm 10\%$.

- a. In the CONFIG menu select REM INPUT:RGB STAIRCASE.
- b. Set the function generator amplitude to 0 to +10 V as measured on the test oscilloscope. (10 V square wave to Staircase and Horizontal In on the remote connector pin 1.)
- c. Set pin 3 of the remote cable low.
- d. **Check** - that the signal separation from the beginning of first color bar display to the beginning of the second color bar display is between 7.2 and 8.8 divisions.

31. Audio and Timecode Modes

Requirement - Audio Mode Full Scale Accuracy: ± 0.5 dB. Timecode Mode Input Amplitude: Menu selectable for 140 IRE (1.0 V PAL) deflection.

- a. Select AUDIO DISPLAY.
- b. Enter the GAIN menu and select 0 DBM.
- c. Center the display dot using the VERT and HORIZ POS controls.
- d. Set the function generator for a sine wave output. Adjust the frequency to 1 kHz and the amplitude to 2.19 V.
- e. Connect the function generator output via the Audio and Timecode remote cable adapter to the REMOTE INPUT connector pins 8 and 10. Ground pins 9, 11, and 13 of the REMOTE INPUT connector. See Figure 4-3.
- f. **Check** - that the trace ends land on the audio box cross hairs.
- g. Select TIMECODE DISPLAY.
- h. Enter the GAIN menu and select 0 DBM.
- i. Connect the function generator output to the REMOTE INPUT connector pin 12.
- j. **Check** - for a 140 IRE display ± 7 IRE (1.0 V ± 50 mV PAL).
- k. Repeat parts a. through j. using the Gain and signal amplitude settings in Table 4-3.

Table 4-3: Audio and Timecode Values

GAIN	SIGNAL AMPLITUDE (V_{p-p})
0 dBm	2.19 V
4 dBm	3.47 V
8 dBm	5.50 V
12 dBm	8.71 V

- l.** Remove Audio and Timecode remote cable adapter from the REMOTE INPUT.

32. Audio Phasing, and Audio and Timecode Bandwidths

Requirement - X/Y Input Phase Match: $\leq 1^\circ$ (measured at 20 kHz). Audio Bandwidth and Timecode Bandwidth: ≥ 500 kHz at -3 dB.

- a.** Select AUDIO DISPLAY.
- b.** Center the display dot using the VERT and HORIZ POS controls.
- c.** Set the function generator frequency to 20 kHz and amplitude to 2.19 V.
- d.** Connect the sine wave generator output via the Audio and Timecode remote cable adapter to the REMOTE INPUT connector pins 8 and 10.
- e. Check** - for up to a trace width of eye opening in the audio trace (1%). See Figure 4-7.

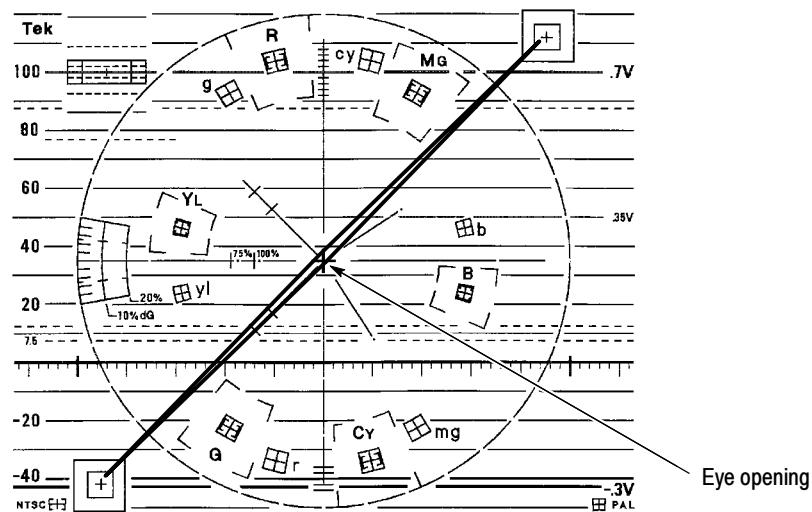


Figure 4-7: Audio Display

- f. Set the function generator frequency to 500 kHz.
- g. **Check** - that the audio trace extends past the compass rose.
- h. Select TIMECODE DISPLAY.
- i. **Check** - for a display amplitude of ≥ 98 IRE (700 mV PAL).

33. Remote Sync

Requirement - Remote Sync Frequency: 30 Hz, 90 Hz (25 Hz, 100 Hz PAL).

- a. Replace the color bar signal on the CH-A INPUT with the output of the function generator. Leave the loop-through terminated.
- b. Connect the Trig Out from the function generator to the Remote Sync cable adapter. See Figure 4-2.
- c. Enter the PRESET menu and select RECALL FACTORY. Exit the PRESET menu. Select 1 FIELD SWEEP.
- d. Set the function generator for a sine wave output. Adjust the generator frequency to 30 Hz, and the amplitude for a 1 V display on the 1740A/1750A/1760-Series.
- e. **Check** - the display for a locked sine wave.
- f. Set the function generator frequency to 60 Hz.

- g. **Check** - the display for a locked sine wave.
- h. Set the function generator frequency to 90 Hz.
- i. **Check** - the display for a locked sine wave.
- j. Remove the function generator output and the Remote Cable Adapter from the 1740A/1750A/1760-Series.

This completes the 1740A-Series Performance Verification procedure.

34. SCH Phase Mode (1750A-Series, 1760-Series Option SC Only)

Requirement - Absolute Accuracy: $\leq 5^\circ$. Color Frame Range: $\pm 70^\circ$.

- a. Connect the color bar signal from the TSG-170A to the CH-A INPUT. Terminate the loop-through in 75Ω .
- b. Connect the TSG-170A Black Out to the EXT REF INPUT and terminate the loop-through in 75Ω .
- c. Select SCH DISPLAY.
- d. Center the burst dot using the VERT and HORIZ POS controls. Position the burst vector to 0° using the VECTOR PHASE control (bezel knob).
- e. Select EXT REF (front panel) and then reposition the burst vector to 0° using the VECTOR PHASE control.
- f. **Check** - that the SCH dots are on the compass rose.
- g. **Check** - that the SCH dots are within $\leq 5^\circ$ of the 0° SCH line when either EXT or INT REF are selected. Note: Leave INT REF selected.
- h. Enter the LINE SELECT menu and select Line 11 (Line 7 PAL) using the LINE SELECT control (bezel knob).
- i. Connect a 75Ω cable from the PIX OUT connector to CH1 of the test oscilloscope, terminating the oscilloscope end of the cable in 75Ω .
- j. Connect a frame black signal to CH2 of the test oscilloscope, terminating the oscilloscope end of the cable in 75Ω .
- k. Set the test oscilloscope controls as follows: CH1 Volts/Div to 500 mV, DC Coupling, CH2 Volts/Div to 5 V, Chop Display Mode, DC Coupling, Trigger Source to CH2, Negative Trigger, and Time/Div to 2 ms.
- l. **Check** - that a positive-going pulse in the test oscilloscope CH1 (PIX OUT) display occurs at the same time as the pulse in the CH2 display (frame black signal).

- m. Remove the TSG-170A signals and terminators from the CH-A and EXT REF INPUTs.
- n. Connect the 1410 Black Burst signal to the CH-A INPUT. Connect a 75 Ω cable from the CH-A INPUT loop-through to the EXT REF INPUT. Terminate the EXT REF INPUT in 75 Ω .
- o. Exit the LINE SELECT menu and select EXT REF (front panel).
- p. Adjust the television signal generator Subcarrier Phase control to place on SCH dot on the 0° SCH line.
- q. **Check** - while adjusting the television signal generator Subcarrier Phase control, that the display flip occurs after the SCH dot has moved $\pm 70^\circ$ from the 0° SCH line.
- r. Disconnect all cables and terminators from the 1750A/1760-Series.

This completes the 1750A-Series Performance Verification procedure.

35. Component Vector Gain (1760-Series Only)

Requirement - Vertical and Horizontal Gain Accuracy: $\pm 2.5\%$.

- a. Connect the component signals Y, B-Y, and R-Y to the CH-A1, CH-A2, and CH-A3 INPUTs respectively. Terminate the loop-throughs in 75 Ω . Set the component signal generator for SMPTE 100% color bars.
- b. Select VECTOR DISPLAY and A123.
- c. Enter the CONFIG menu. Select VECTOR and then select BARS 100%.
- d. In the Config menu, select FORMAT, then select LIGHTNING DISPLAY, and then select SMPTE/EBU.
- e. **Check** - that the component vector dots are in the graticule boxes $\pm 2.5\%$.
- f. **Check** - that the component vector gain does not change while switching the component signal generator and the 1760-Series between 100% and 75% Bars.
- g. When this step is completed, leave the generator and instrument in 100% Bars.

36. Lightning Gain (1760-Series Only)

Requirement - Vertical Gain Accuracy: $\pm 2\%$.

- a. Select LIGHTNING DISPLAY.

- b. **Check** - that the lightning display dots are in the electronic graticule boxes $\pm 2\%$.

37. Option Blanking Pulse (1760-Series Only)

Requirement - The falling edge of the option blanking pulse occurs $0.5 \mu\text{s}$ ($1 \mu\text{s}$ PAL) before the 50% point of the falling edge of the sync pulse $\pm 0.25 \mu\text{s}$.

- a. Connect the G OUTPUT to the CH2 oscilloscope input with a 75Ω feed-through terminator.
- b. Connect a X10 probe from the CH1 oscilloscope input to A7U602 pin 9.
- c. Set the oscilloscope for $10 \mu\text{s}/\text{Div}$ and position the sync pulse (CH2) to the CRT graticule center.
- d. Select X10 Mag on the oscilloscope.
- e. **Check** - that the falling edge of the option blanking pulse (CH1) occurs $0.5 \mu\text{s}$ ($1 \mu\text{s}$ PAL) before the 50% point of the falling edge of the sync pulse (CH2) $\pm 2.5 \mu\text{s}$. See Figure 4-8.

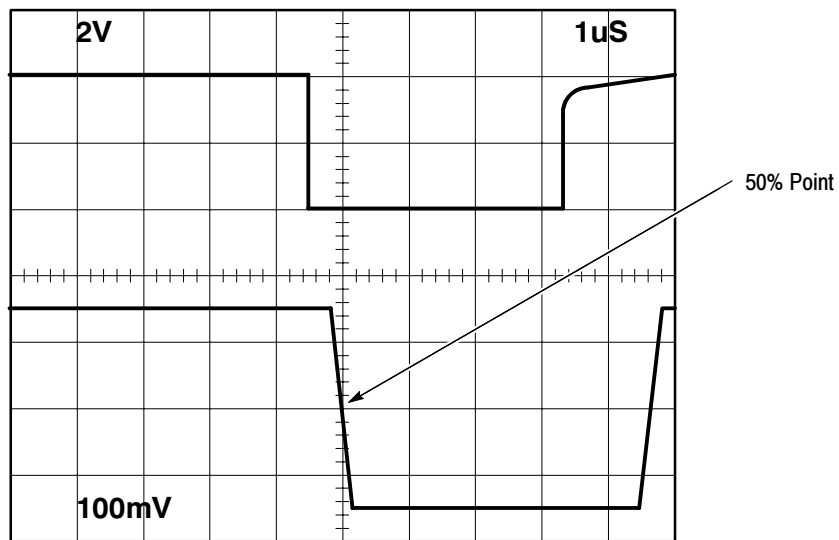


Figure 4- 8: Option Blanking Pulse

38. Bowtie Gain and Offset (1760-Series Only)

Requirement - Bowtie gain matches CH-A1 INPUT gain $\pm 2\%$. Bowtie DC offset between channels $<5 \text{ mV}$.

- a. Enter the PRESET menu and select FACTORY RECALL. Select A123.
- b. Note the amplitude of the CH-A1 INPUT display.
- c. Disconnect the CH-A2 INPUT signal and select BOWTIE DISPLAY.
- d. **Check** - that the amplitude of the Bowtie display matches the amplitude noted in step a. $\pm 2\%$ (2.8 IRE or 20 mV PAL).
- e. Reconnect the CH-A2 INPUT signal.
- f. Enter the GAIN menu and select X10.
- g. **Check** - that the offset between the two lines is less than 0.5 major divisions.
- h. Connect the component signals Y, B-Y, and R-Y to the CH-B1, CH-B2, and CH-B3 INPUTs respectively. Terminate the loop-throughs in 75Ω . Leave the signal generator set for 100% SMPTE Color Bars.
- i. Select B123.
- j. **Check** - that the offset between the two lines is less than 5 mV (0.75 major division or 0.5 major division PAL).

39. Bowtie Common Mode Rejection Ratio (1760-Series Only)

Requirement - ≥ 34 dB at 3 MHz.

- a. Select the multiburst signal on the component signal generator.
- b. Disconnect the signals and terminators from the CH-B1, CH-B2, and CH-B3 INPUTs.
- c. Connect the component signal Y to the CH-A1 and CH-A2 INPUTs via a 75Ω terminator and T connector.
- d. Select A123. Enter the GAIN menu and select X5.
- e. **Check** - that the amplitude of the 3 MHz packet is < 0.4 division. See Figure 4-9.

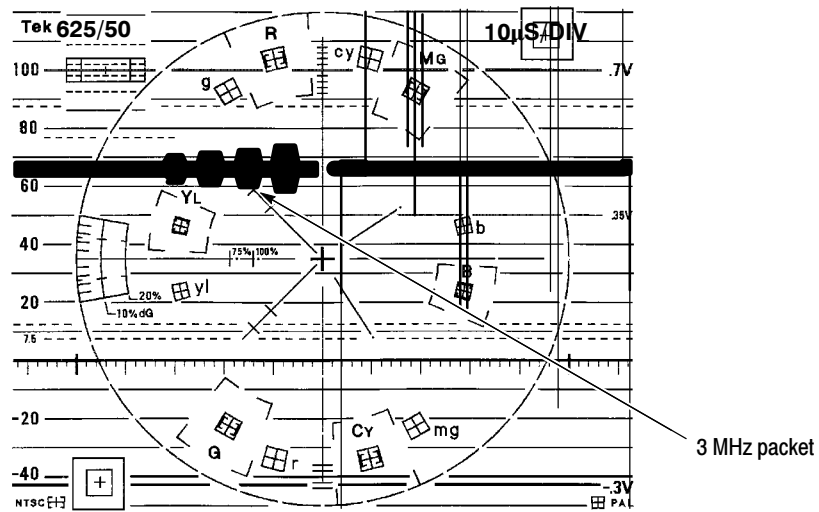


Figure 4-9: Bowtie Common Mode Rejection Ratio

- f. Disconnect the T connector and terminator from the CH-A1 and CH-A2 INPUTs.
- g. Connect the component signals Y, B-Y, and R-Y to the CH-A1, CH-A2, and CH-A3 INPUTs respectively. Terminate the loop-throughs in 75 Ω.
- h. Select Bowtie on the component signal generator.
- i. From the GAIN menu select X1.
- j. **Check** - for a marker in the center of the null between each channel display.

40. Component Vector Registration and Phase (1760-Series Only)

Requirement - Vector Registration - X5 Gain: within 0.25 inches of CRT graticule center. X10 Gain: within 0.5 inch of CRT graticule center. Vector Phase - Less than a trace-width eye opening.

- a. Select the 100% SMPTE color bars signal from the component signal generator.
- b. Select VECTOR DISPLAY and center the display with the VERT and HORIZ POS controls.
- c. Enter the GAIN menu and select X5.
- d. **Check** - that the signal center dot is within 1/4 inch of the CRT graticule center.

- e. Select X10 from the GAIN menu.
- f. **Check** - that the signal center dot is within 1/2 inch of the CRT graticule center.
- g. Select the multiburst signal on the component signal generator.
- h. Select X1 from the GAIN menu.
- i. **Check** - for a straight line with less than a trace-width eye opening.

41. Diamond Display Phase (1760-Series Only)

Requirement - Opening of <2 minor divisions on the vertical transition.

- a. Select the 100% GBR color bars signal on the component signal generator.
- b. Select LIGHTNING DISPLAY and MAG SWEEP on.
- c. Enter the CONFIG menu. Select FORMAT, then select DISPLAY DIAMOND and GBR.
- d. In the CONFIG menu select VECTOR, then select 100% BARS.
- e. **Check** - for an opening of < 2 minor divisions on the vertical transition.

42. GBR Picture Monitor Outputs (1760-Series Only)

Requirement - Accuracy: $\pm 3\%$.

- a. Connect the G OUTPUT to the test oscilloscope using a 75 Ω feed-through terminator. Set the oscilloscope for 0.1 V/Div and 10 μ s/Div.
- b. Enter the PRESET menu and select FACTORY RECALL. Select LIGHTNING DISPLAY and A123.
- c. Enter the CONFIG menu and select VECTOR, then select 100% BARS.
- d. In the CONFIG menu select FORMAT, then select DISPLAY LIGHTNING and SMPTE/EBU.
- e. **Check** - for signal amplitude on the oscilloscope of 7.0 divisions $\pm 3\%$ (0.75 division) from the baseline to the top of the 100% white bar.
- f. Repeat step e. for the FORMAT menu selections of BETA, GBR, and MII.
- g. Repeat steps d. through f. for the B and R OUTPUTS.

This completes the 1760-Series Performance Verification procedure.

Adjustments

The adjustment procedures for the 1740A/1750A/1760 Series are loaded on the 3 1/2 inch high-density disk included in this manual (Tektronix part number 063-1690-XX).

This section lists recommended equipment, shows initial setups and provides board locations for adjustments. The instrument software version must be 2.2 or greater to use this Adjustment Procedure.

To determine the software version loaded in the instrument, check the lower right corner of the REMOTE submenu of the front panel selected CONFIG menu. If the software version is lower than 2.2, load new operating software from the software disk included with this manual. See *Installation* for instructions.

Required Equipment

The following equipment and accessory items are required to perform the adjustment procedures. Broad specifications are followed by an example of specific equipment that meet these specifications.

Electrical Instruments

1. IBM Compatible PC

System requirements:

DOS 3.3 or higher.

640K bytes of random-access memory (RAM).

High-density floppy drive (3.5 inch/144 MB).

Available RS232 Port (COM 1, 2, 3, or 4).

2. Test Oscilloscope

Vertical Amplifier:

30 MHz Bandwidth, 2 mV Sensitivity.

Time Base:

10 ns/div to 5 ms/div sweep speeds, Triggering to 50 MHz.

For example:

A TEKTRONIX TAS 465 Oscilloscope. Also 10X probe, P6109B, and 1X probe, P6119B.

3. Television Signal Generator

Color test signals for the television standard of the monitor to be tested:
Color bar signal, multiburst signal, and black burst signal.

For example:

NTSC Tektronix 1410 with Option AA and Option AB (modified SPG2 and TSG7), TSG3, and TSG5.

PAL Tektronix 1411 with Option AA and Option AB (modified SPG12 and TSG17), TSG13, and TSG15.

NOTE. *1410-Series Generators:*

The 1410-Series generators with standard SPG and TSG modules can be used, but not all checks and adjustments can be made. The standard SPG2/SPG12 modules will not check lock to changes in sync amplitude, cw lock to changes in burst amplitude, or frequency lock to burst offset frequency changes.

The signal generator can be ordered with one or both options (AA and AB).

4. Digital Television Signal Generator

For example:

Tektronix	TSG-170A	NTSC
Tektronix	TSG-271	PAL
Tektronix	TSG-300	Component

5. Swept Sine Wave Generator

Frequencies from 50 kHz to 10 MHz. CW signal can be used as time marks.

For example:

HP3336C, Option 005. Option 005 provides increased flatness and attenuator accuracy (+0.07 dB flatness in CW mode). The standard frequency accuracy (+5 ppm of programmed frequency) is sufficient for time base verification.

6. Square Wave Generator

Range: 0.1 to 5 V_{p-p} when loaded by 75 Ω; 10 V_{p-p} when unloaded.
Frequency: 10 Hz to 2 kHz.

For example:

Tektronix FG503 installed in a TM500-Series Power Module.

7. Variable Autotransformer

For example:

General Radio Metered Auto Transformer W10MT3W. If 220 V operation must be checked, a conversion transformer or appropriate 220 V autotransformer is needed.

8. Voltmeter

Range: 0 to > 100 Vdc. Accuracy: $\pm 0.1\%$.

For example:

Tektronix DM501A installed in a TM500-Series Power Module.

9. Video Amplitude Calibrator (VAC)

Signal: Adjustable square wave 0.0 to 999.9 mVp-p. Resolution: 0.1 mV. Accuracy: 0.05%. Frequency: Approximately 270 Hz.

For example:

Tektronix 067-0916-00 installed in a TM500-Series Power Module.

10. Peak-to-Peak Detector

Input Signal Range: 0.25 to 1.0 Vp-p. Flatness: $\pm 0.2\%$ 50 kHz to 10 MHz. Input Impedance: 75 Ω .

For example:

Tektronix Part No. 015-0408-00 (includes Peak-to-Peak Detector Head 015-0413-00) installed in a TM500-Series Power Module.

11. Power Module

For powering and housing Tektronix SG505, FG503, DM501A, DC503A, 067-0916-00, and a 015-0408-00.

For example:

Tektronix TM500-Series Power Module.

12. Low-Distortion Oscillator

1-kHz balanced output, 387 mV to 1.54 V amplitude.

For example:

Tektronix FG501A

Auxiliary Equipment

13. 75 Ω Terminators

14. Six required; two end-line and four feed-through type.

For example:

End-line, 75 Ω terminator (Tektronix Part No. 011-0102-00).

Feed-through, 75 Ω terminator (Tektronix Part No. 011-0103-02).

15. Coaxial Cable

Three 75 Ω cables required; one 50 Ω cable required.

For example:

75 Ω - 42-inch RG59U (Tektronix Part No. 012-0159-00).

50 Ω - 42-inch RG58U (Tektronix Part No. 012-0057-01).

16. Dual-Input Coupler

Matched BNC cable-T for making phase comparisons between two inputs.

Matched length of the two arms within ± 0.1 inch.

For example:

Tektronix Part No. 067-0525-02.

17. BNC Female-to-Dual Banana Adapter

Two required.

For example:

Tektronix Part No. 103-0090-00.

18. External horizontal/RGB and YRGB cable adapter

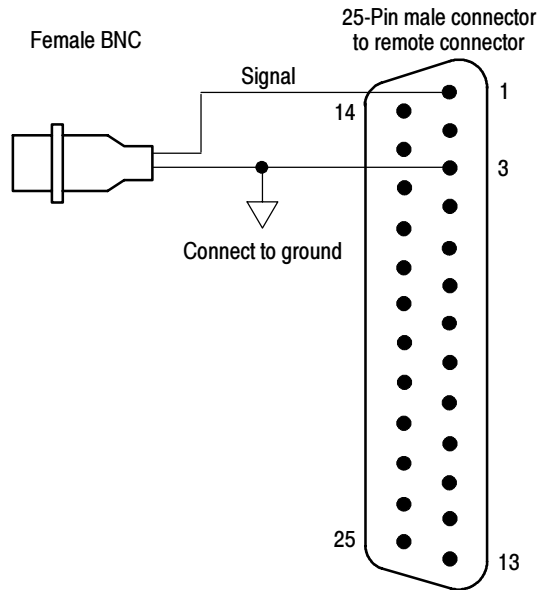


Figure 5-1: External horizontal/RGB and YRGB cable adapter

19. Remote sync cable adapter

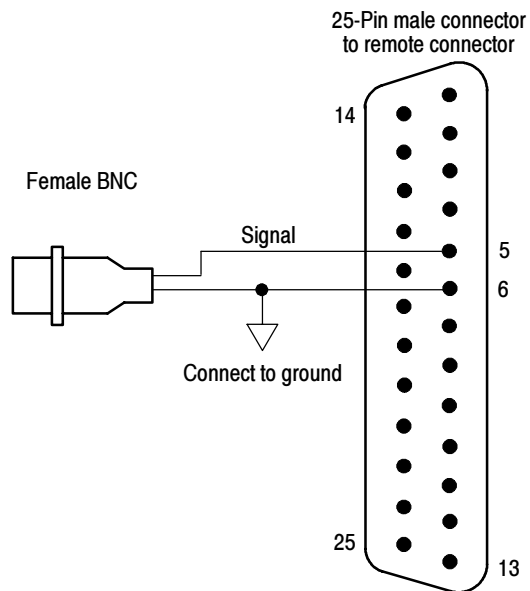


Figure 5-2: Remote sync cable adapter

20. Audio and timecode cable adapter

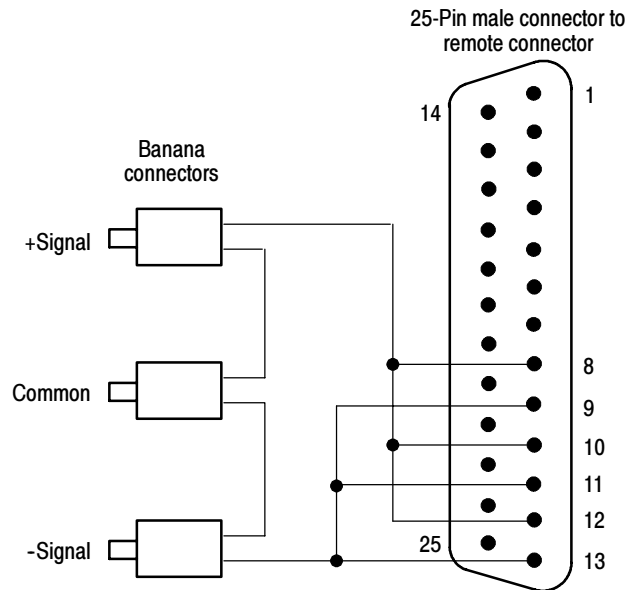
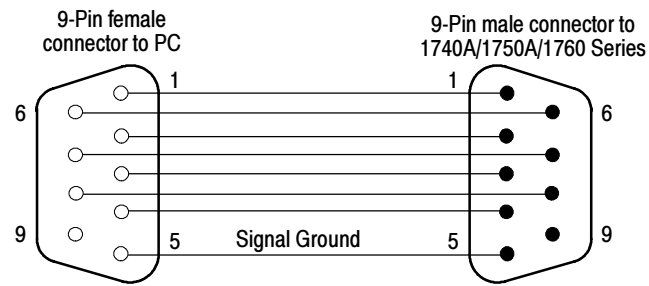
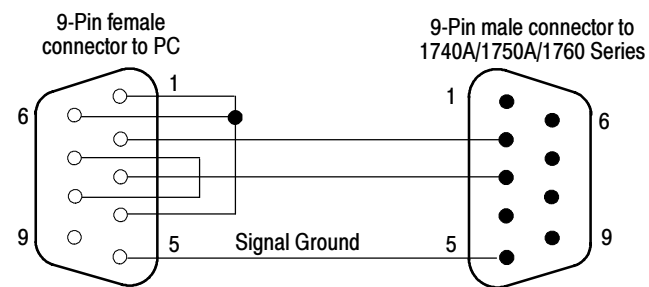
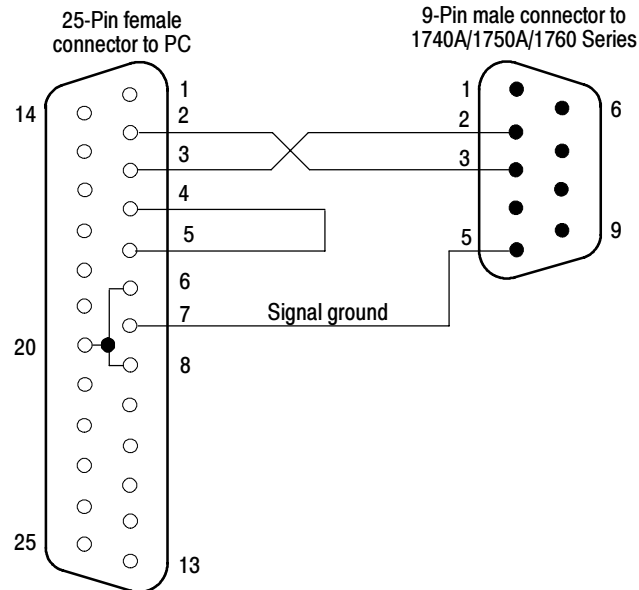


Figure 5-3: Audio and Timecode Cable Adapter

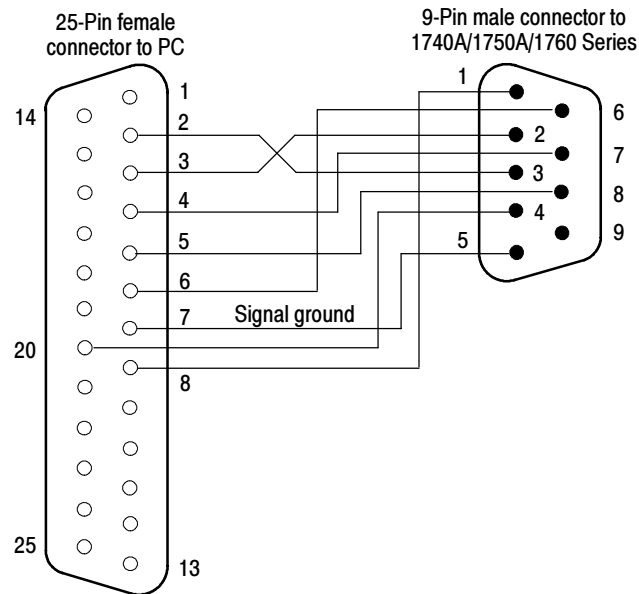
21. RS232 Cable

Connector or adapter that allows connection between the PC and the waveform monitor. Figure 5-4 shows the cable connections for a 9-pin PC connector. For a 25-pin to 9-pin adapter, construct one as shown in Figure 5-5 or purchase an RS232 DTE cable or adapter. Do not use a DCE or modem cable.

**Standard hookup****Alternate hookup****Figure 5-4: RS232 cable standard and alternate connections for 9-pin PC connector**



Standard hookup



Alternate hookup

Figure 5- 5: RS232 cable standard and alternate hookups for 25-pin PC connector

Optional Equipment

22. Magnifying Glass

May be useful for viewing the CRT graticule.

Initial Setup

1. Initial Equipment Setup

- a. Connect an RS232 cable from the 1740A/1750A/1760 Series rear-panel RS232 connector to the COM 1, 2, 3, or 4 connector on the PC. See the Required Equipment List for the cable wiring illustrations.

NOTE. *Cable Wiring: If the RXD and TXD pins are swapped, as in some modem connections, the Adjustment Procedures program will not operate.*

- b. Connect the power source to the 1740A/1750A/1760 Series and turn on the instrument.

NOTE. *Instrument Power: The 1740A/1750A/1760 Series power switch must be set to ON before the Adjustment Procedures program is started. If the instrument is not turned on, the PC will not be able to establish communications with the instrument. Turning the instrument power ON after the Adjustment Procedures program is started can cause the PC to lock up, requiring a system reset.*

- c. Enter the Configure menu on the 1740A/1750A/1760 Series. From the menu, select REMOTE and then BAUD 9600. Exit the Configure menu.

NOTE. *The 1740A/1750A/1760 Series RS232 interface baud rate must be set to 9600 baud. If the baud rate is set to 1200 or 4800 baud, the PC will not be able to establish communications with the instrument.*

2. Load the Adjustment Procedures program:

- a. This manual section was written for the Adjustment Procedures program version 1.0. Verify that the Adjustment Procedures disk is version 1.0.
- b. Insert the Adjustment Procedures disk into the PC disk drive.
- c. At the PC DOS prompt, type the drive letter for the floppy drive to be used, followed by a colon, and then press the Return key.
For Example, A: <RETURN>

NOTE. *The Adjustment Procedures program will run faster if loaded on the PC hard drive. To load the program on the PC hard drive, create a directory on the PC hard drive and copy the contents of the disk into the directory.*

- d. Type **CAL** and then press the Return key. The program will prompt for a few parameters before the adjustment steps start.

Functional Description of PC Display

Figure 5-6 shows a sample adjustment screen on the PC. The numbers above and below the illustration match with descriptions on the following page.

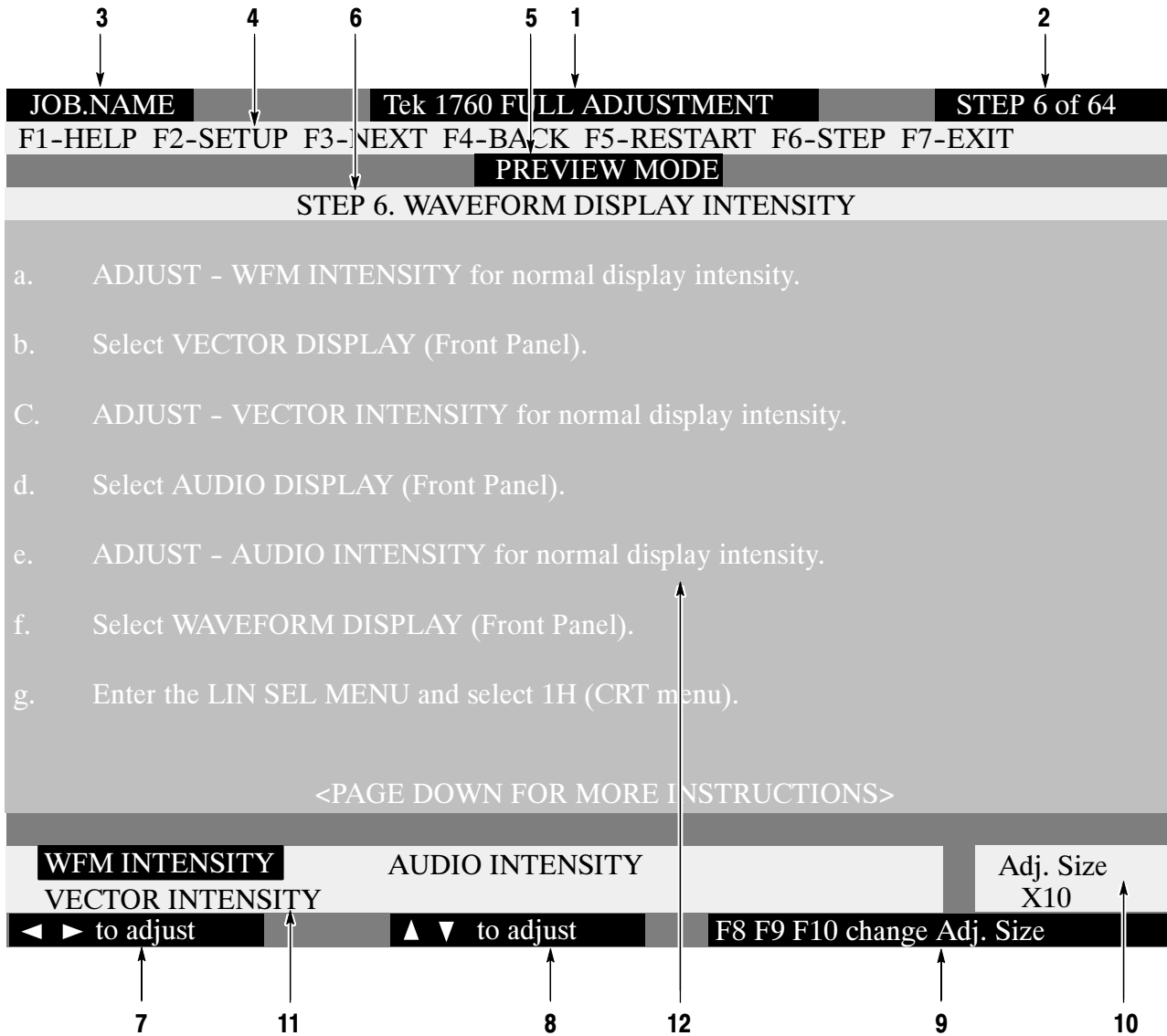


Figure 5-6: Typical adjustment procedures PC screen display

- 1** Instrument type and procedure being performed.
- 2** Current step number and how many steps are in the procedure being performed.
- 3** Name of the job. Appears when the procedure being performed is a saved job.
- 4** Function keys that are active during the program. They function as follows:
 - F1 Opens the Help Menu.
 - F2 Opens the Setup Window, showing the initial equipment connections for the current step. These are the only connections that should be in place when the step is started; remove all other connections from previous steps.
 - F3 Goes to the next step in the adjustment procedure.
 - F4 Goes to the previous step in the adjustment procedure.
 - F5 Goes to the beginning of the current step; front-panel / internal instrument settings return to the state they were in when the current step was started.
 - F6 Opens the Select Step window, where you can select any step in the procedure to perform. To select a step, press PAGE UP or PAGE DOWN. To close the window and return to the current step, press ESC.
 - F7 Opens the Exit Menu, where you can change procedure types, save the current Adjustment job, or exit to DOS.
- 5** Indicates that the procedure is in the Preview Mode.
- 6** Displays the current step number and title.
- 7/8** Indicates which arrow keys control the adjustment. (Appears when the current step has adjustments controlled by the arrow keys.)
- 9** Function keys set the adjustment amount of the Up /Down arrow keys. (Appears when the current step has an adjustment controlled by the Up/Down arrow keys.)
 - F8 Selects X1; use to fine tune an adjustment to exact position.
 - F9 Selects X10; (default) use to bring an adjustment close to proper position.
 - F10 Selects X100; use for roughing in adjustments that are far out of position.
- 10** Displays the current arrow key adjustment size.
- 11** Lists adjustments for the current step. The active adjustment is highlighted. The Left/Right PC arrow keys control the adjustment selection.
- 12** Displays the procedure steps to be performed. If additional steps are indicated, press PAGE DOWN.

Circuit Board Adjustment Locations

Figures 5-7 through 5-11 show the adjustment locations on the circuit boards.

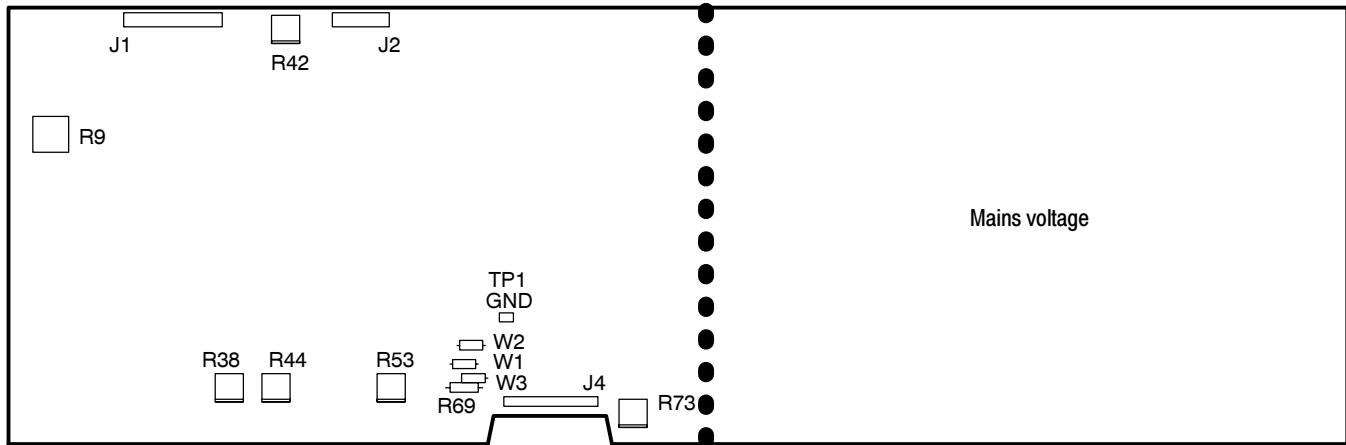


Figure 5-7: A1 Power Supply board

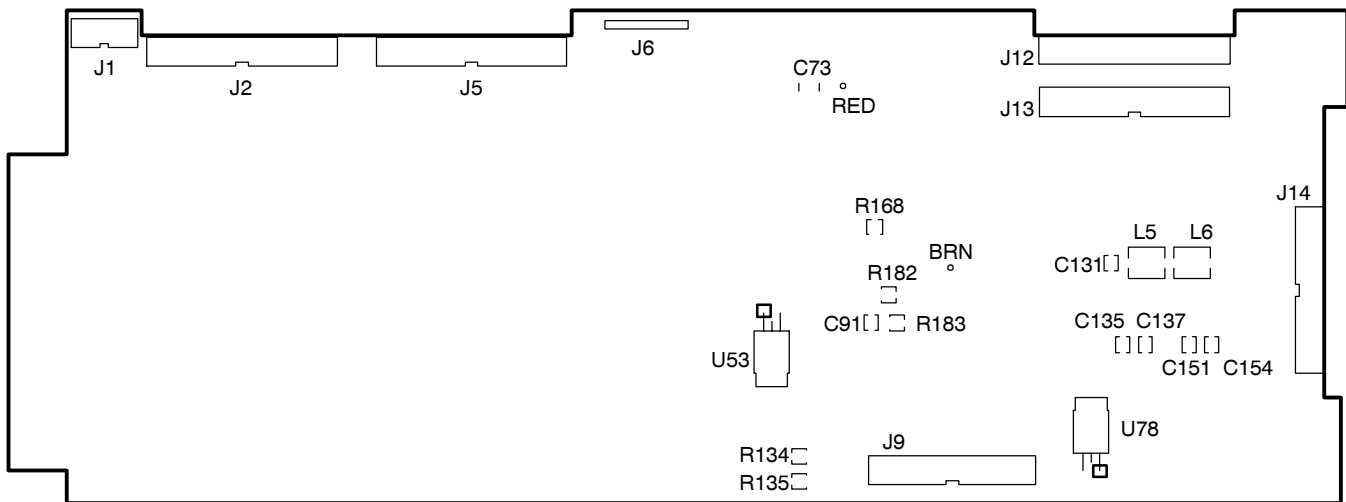


Figure 5-8: A3 Main board

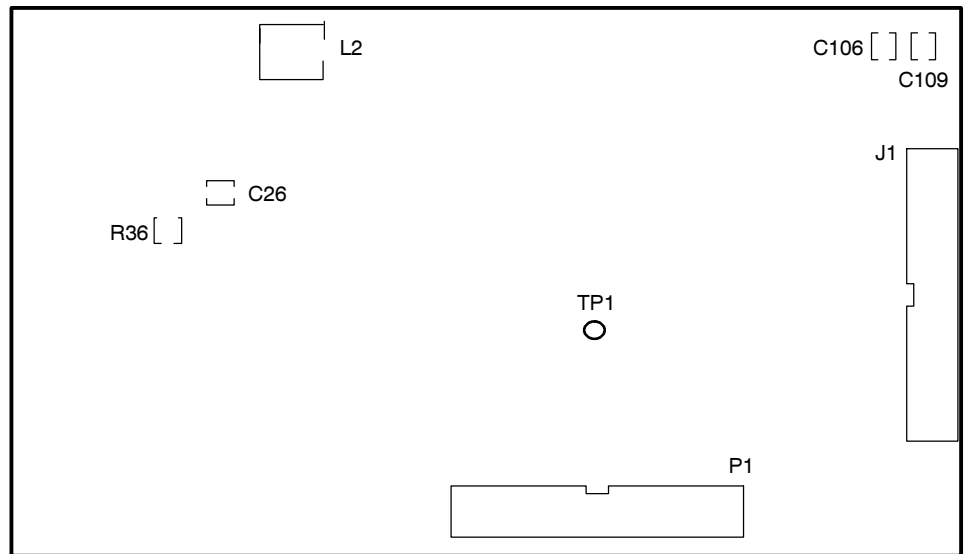


Figure 5-9: A5 Vector board

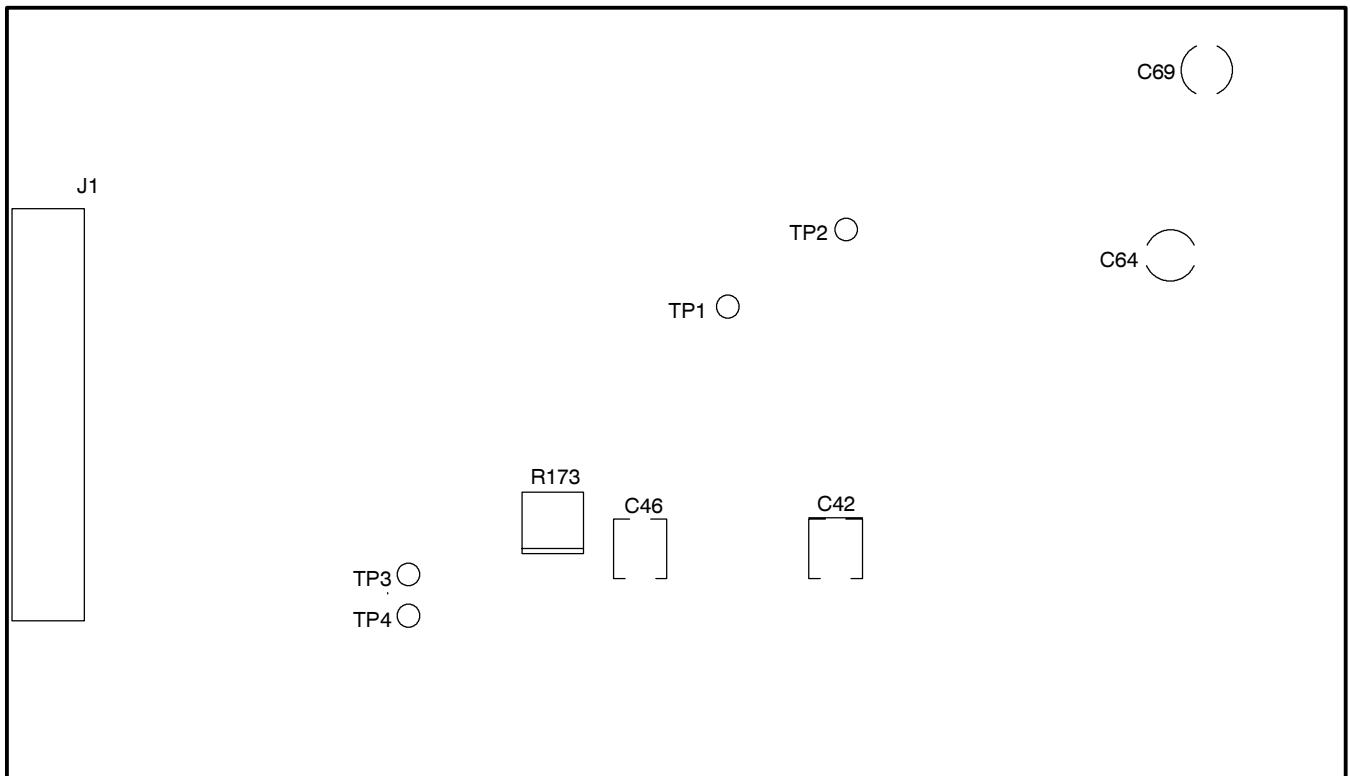


Figure 5-10: A6 SCH board

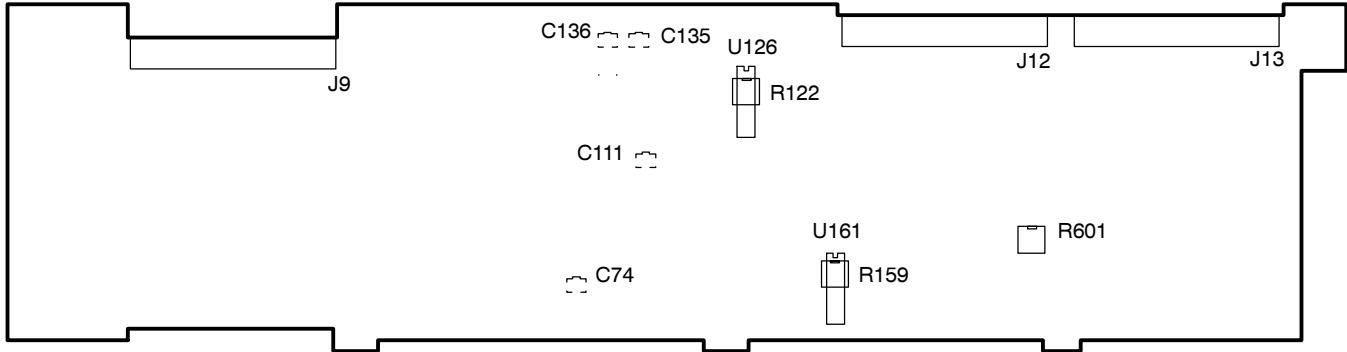


Figure 5- 11: A7 Component board

Waveform Illustrations

The following waveform illustrations are provided as a reference. The illustrations are of the 1765 unless otherwise noted.

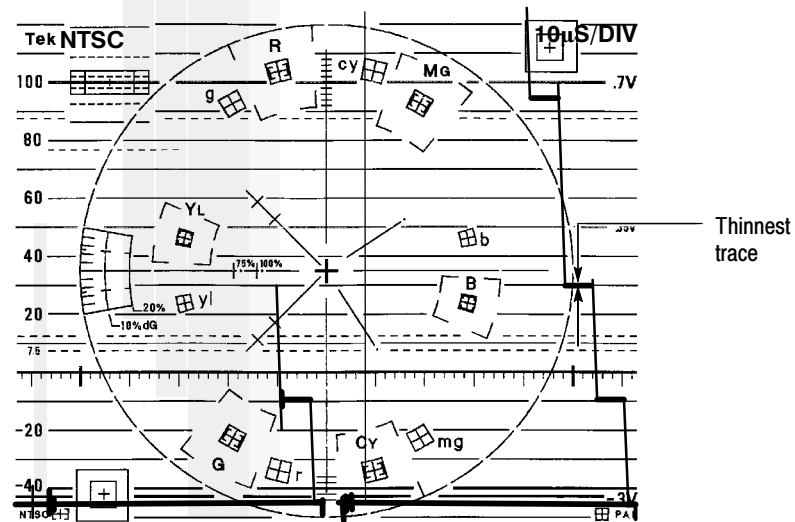


Figure 5-12: Adjusting for thinnest luminance step

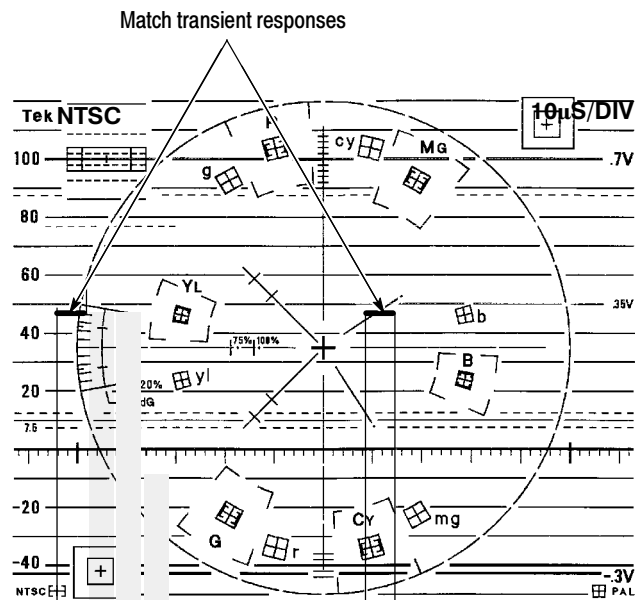


Figure 5-13: Matching flat and luminance filter responses

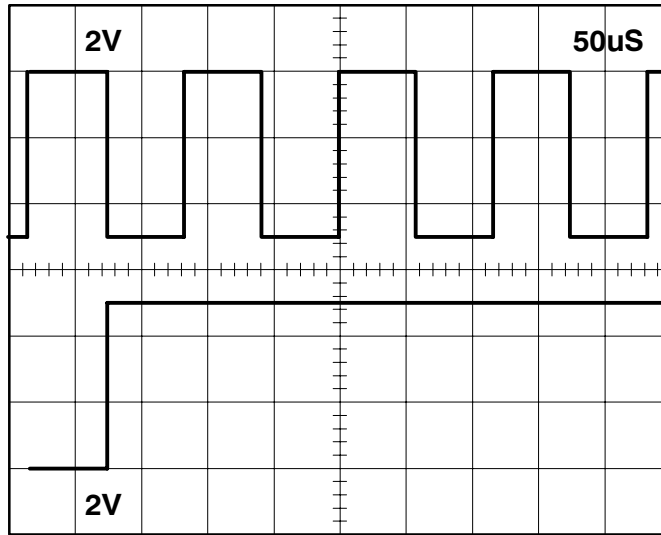


Figure 5-14: Adjusting the NTSC SCH on the oscilloscope

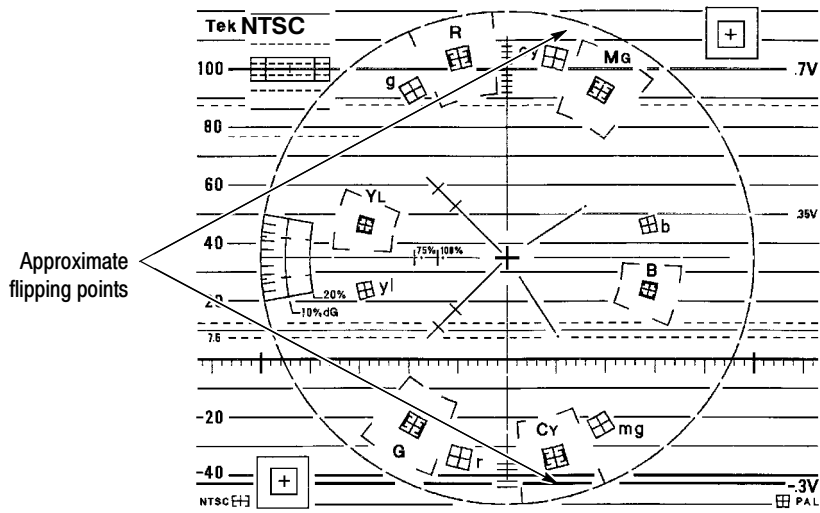


Figure 5-15: Matching the SCH dot flipping points

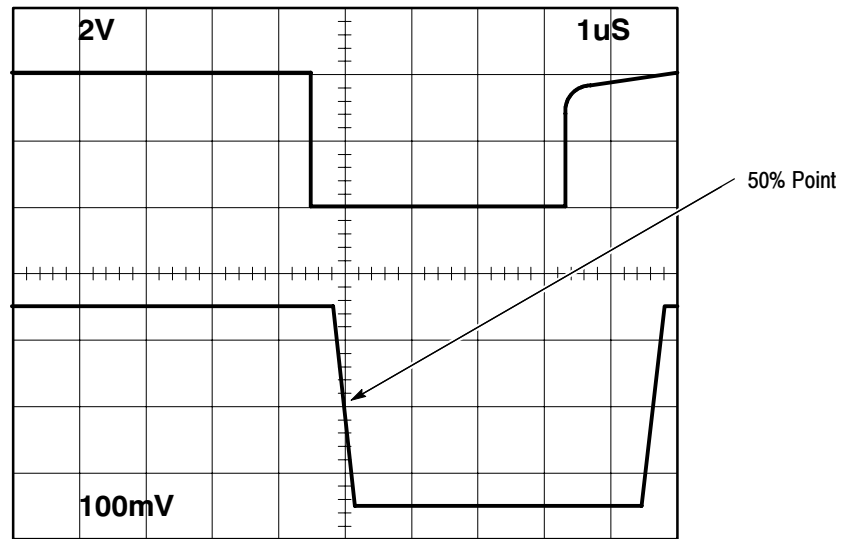


Figure 5-16: Adjusting the option blanking pulse

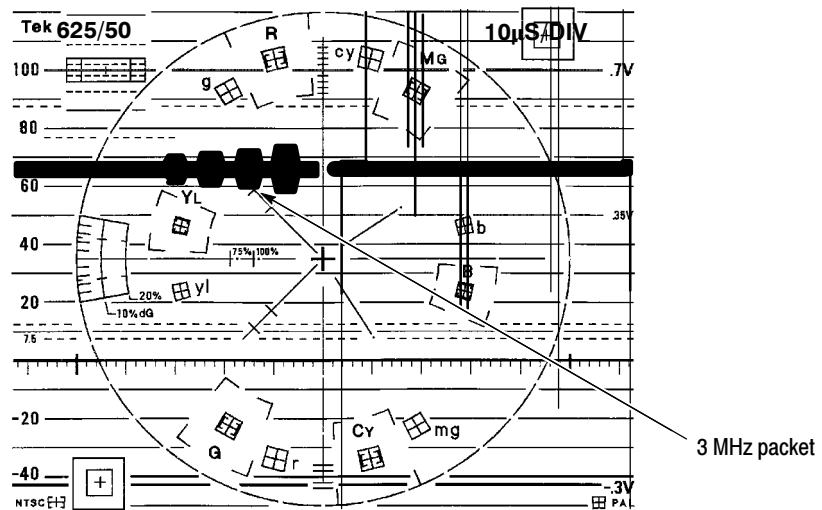


Figure 5-17: Adjusting for minimum Bowtie amplitude

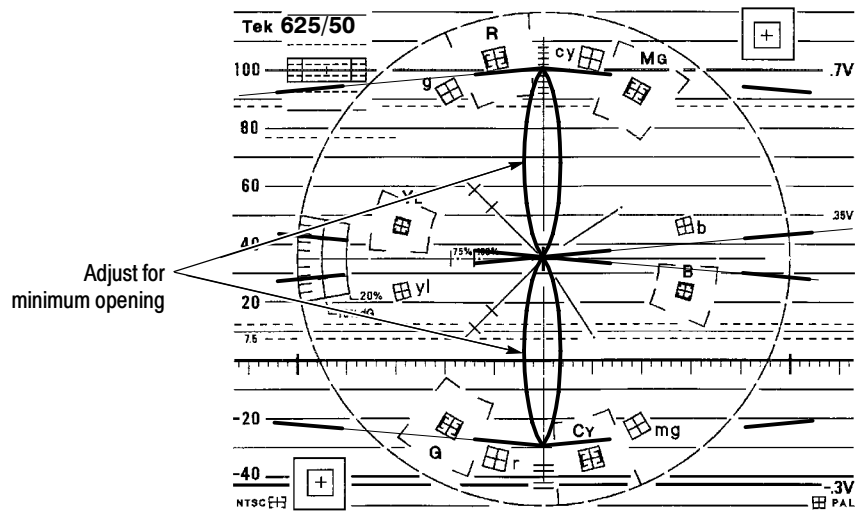


Figure 5-18: Adjusting Diamond display phase

Maintenance

This section contains instructions for preventive maintenance, general troubleshooting, and corrective maintenance. If the instrument does not function properly, troubleshooting and corrective measures should be taken immediately to circumvent additional problems.

Preventing ESD



CAUTION. *Static discharge can damage any semiconductor component in this instrument.*

When performing any service which requires internal access to the instrument, adhere to the following precautions to avoid damaging internal modules and their components due to electrostatic discharge (ESD).

1. Minimize handling of static-sensitive circuit boards and components.
2. Transport and store static-sensitive modules in their static protected containers or on a metal rail. Label packages containing static-sensitive boards.
3. Discharge the static voltage from your body by wearing a grounded antistatic wrist strap while handling these modules. Do service of static-sensitive modules only at a static-free work station.
4. Nothing capable of generating or holding a static charge should be allowed on the work station surface.
5. Handle circuit boards by the edges when possible.
6. Do not slide the circuit boards over any surface.
7. Avoid handling circuit boards in areas that have a floor or work-surface covering capable of generating a static charge.

Preventive Maintenance

Preventive maintenance consists of inspection and cleaning, performance checks, and, if needed, readjustment. The preventive maintenance schedule established for the instrument should be based on the environment in which it is operated and the amount of use. Under average conditions, scheduled preventive maintenance should be performed every 2000 hours of operation.

Performance Checks and Adjustments

Instrument performance should be checked after each 2000 hours of operation, or every 12 months. This will help to ensure maximum performance and assist in locating defects that may not be apparent during regular operation. The Performance Check Procedure and the Adjustment Procedures are included in this manual.

Inspection and Cleaning

Inspection and Cleaning describes how to inspect for dirt and damage. It also describes how to clean the exterior and interior of the instrument. Inspection and cleaning are done as preventive maintenance. Preventive maintenance, when done regularly, may prevent instrument malfunction and enhance its reliability.

Preventive maintenance consists of visually inspecting and cleaning the instrument and using general care when operating it.

How often to do maintenance depends on the severity of the environment in which the instrument is used. A proper time to perform preventive maintenance is just before instrument adjustment.

General Care

The cabinet helps keep dust out of the instrument and should normally be in place when operating the instrument.



WARNING. Before performing any procedure that follows, power down the instrument and disconnect it from line voltage.

Interior Cleaning

Use a dry, low-velocity stream of air to clean the interior of the chassis. Use a soft-bristle, nonstatic-producing brush for cleaning around components. If you must use a liquid for minor interior cleaning, use a 75% isopropyl alcohol solution and rinse with deionized water.



CAUTION. Avoid the use of chemical cleaning agents which might damage the plastics used in this instrument. Use only deionized water when cleaning the menu buttons or front-panel buttons. Use a 75% isopropyl alcohol solution as a cleaner and rinse with deionized water. Before using any other type of cleaner, consult your Tektronix Service Center or representative.

Exterior Cleaning

Clean the exterior surfaces of the chassis with a dry lint-free cloth or a soft-bristle brush. If any dirt remains, use a cloth or swab dipped in a 75% isopropyl alcohol solution. Use a swab to clean narrow spaces around controls and connectors. Do not use abrasive compounds on any part of the chassis that may damage the chassis.

Clean the On/Standby switch using a dampened cleaning towel. Do not spray or wet the switch directly.

Inspect the outside of the instrument for damage, wear, and missing parts, using Table 6-1 as a guide. Immediately repair defects that could cause personal injury or lead to further damage to the instrument.

Table 6-1: External inspection check list

Item	Inspect for	Repair action
Cabinet, front panel, cover	Cracks, scratches, deformations, damaged hardware	Repair or replace defective module.
Front-panel knobs	Missing, damaged, or loose knobs	Repair or replace missing or defective knobs.
Connectors	Broken shells, cracked insulation, and deformed contacts. Dirt in connectors.	Repair or replace defective modules. Clear or wash out dirt.
Carrying handle, cabinet feet	Correct operation	Repair or replace defective module.
Accessories	Missing items or parts of items, bent pins, broken or frayed cables, damaged connectors	Repair or replace damaged or missing items, frayed cables, and defective modules.

Cleaning the CRT

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

Maintaining the Air Filter

The instrument requires a clean, unrestricted internal air flow. The air filter is located on the rear panel and should be checked frequently for dust and grime buildup. A supply of replacement filters was shipped with this instrument.

The air filters supplied with this instrument can be washed in warm water and detergent and reused. To replace a filter, remove two screws from the fan cover, lift out the old filter and replace it. Install the cover with the two mounting screws. Do not overtighten the screws.

You can order additional air filters directly from Tektronix. The part number for the air filters is listed with the Optional Accessories at the rear of the Mechanical Replaceable Parts list, at the back of this manual.

Software Version

An instrument may contain older software and therefore not perform up to the expected level. Before servicing, enter the REMOTE submenu from the main

CONFIG menu and verify the software version number in the lower right corner of the screen. To update the operating software, go to page 2-14.

General Troubleshooting Techniques

1. Ensure that the malfunction exists in the instrument. Ensure that the instrument is operating as intended by Tektronix (see Operating Instructions), and check that a malfunction has not occurred up stream from the waveform monitor.
2. Determine and evaluate all trouble symptoms. Isolate the problem to a general area such as an assembly. Use the block diagram to help in signal tracing and circuit isolation.



CAUTION. *Use extreme care when probing with meter leads or probes, because of the high component density and limited access within the instrument. The inadvertent movement of leads or a probe could cause a short circuit or transient voltages capable of destroying components.*

3. Determine the nature of the problem. Determine whether the instrument is out of calibration or if there has been a component failure. Then identify the functional area most likely at fault.
4. Inspect the suspect assembly for defects. Look for broken or loose components, improperly seated components, overheated or burned components, chafed insulation, etc. Repair or replace all obvious defects. Determine and correct the cause of any overheating before reapplying power.
5. Use successive electrical checks to locate the source of the problem. Use the Performance Check Procedure to determine if a circuit is operating within specifications. It may be necessary to change a calibration adjustment to determine if a circuit is operational, but since this can destroy instrument calibration, care should be exercised. Before changing an adjustment, note its position so that it can be returned to its original setting.
6. Determine the extent of the repair. If the necessary repair is complex, it may be advisable to contact Tektronix before continuing. If the repair is minor, such as replacing a component, see the parts list for replacement information.



CAUTION. *Always remove the assembly from the instrument before replacing a soldered-in component. See Corrective Maintenance for the correct procedure.*

Replacing the Line Fuse

This instrument is protected with an F-type cartridge fuse, located in a holder, directly above the line cord receptacle on the rear panel. The fuse should only be replaced with the correct type and value. Using a higher rated or slo blo fuse could cause circuit damage. The correct value and type is silk screened on the rear panel, adjacent to the fuse holder.

Troubleshooting



WARNING. *Read Instructions! To avoid personal injury or damage to equipment, do not attempt to troubleshoot this Power Supply without reading the following instructions.*

Power Supply

The Power Supply is a switching type and requires a specific troubleshooting procedure to avoid personal danger or instrument damage. The following Troubleshooting procedure will help to isolate a problem to a specific circuit. Then you can analyze the circuit or use part substitution to find the defective component(s).

Troubleshooting Procedure

The equipment needed to troubleshoot the power supply:

- Digital Multimeter (DMM), with a diode check function
- Oscilloscope
- 20 VDC Variable Power Supply
- 5 VDC Power Supply
- High Voltage Probe, $\geq 1 \text{ G } \Omega$ input resistance

NOTE. *You should read the power supply Theory of Operation before repairing the power supply.*

Introduction

The Troubleshooting Procedure for the Power Supply (Assembly A1) is split into two sections: the Low Volts and High Volts Supplies. Start the procedure by determining which section of the Power Supply the problem is in. With the Power Supply installed in the instrument, apply AC power and turn on the front-panel POWER switch. From Table 6-2, determine which symptom the Power Supply exhibits and refer to the corresponding procedure.

Table 6-2: Power supply fault symptoms

Symptom	Procedure
Line fuse open	Rectifier/Switcher/Snubber Check
Power Supply cycles OFF/ON Note: Check instrument for shorts.	Output Check Error Amplifier Check Shutdown Logic Check
Does not power up	Controller/Gate Drive Check Transformer Driver Check Error Amplifier Check Shutdown Logic Check Rectifier/Switcher/Snubber Check
+5 V not regulating	Error Amplifier Check
Improper CRT display	High Volts Supply Checks

Low Volts Supply**1. Preliminary Checks**

- a. A properly functioning and loaded Low Volts Supply will output the voltages listed in Table 6-3. Use the DMM to measure the voltages between TP1 and the voltage test points. If the supply is not regulating properly, continue with the procedure.

Table 6-3: Low volts supply voltages

Test Point	Voltage Range
W1 - (+5 V)	+5.0 V
W4 - (+11 V)	+10.5 to +12.0 V
W3 - (-11 V)	-10.5 to -12.0 V
W2 - (+40 V)	+39.0 to +41.0 V

NOTE. *Troubleshoot the Low Volts power supply without applying AC power.*

- b. Disconnect AC power from the instrument. Disconnect the instrument from the Power Supply by removing the plug jumper from J4.
- c. Use the digital multimeter to measure the voltage between TP2 and the tab (drain) of Q14. Check that the voltage is near 0 V.



WARNING. To prevent personal injury or damage to equipment, do not proceed until the drain of Q14 is near 0 V. Dangerous voltage potentials are present in the circuit until the capacitors discharge.

2. Rectifier/Switcher/Snubber Check

- a. Use the digital multimeter to measure the voltage between TP2 and TP3. Be sure the voltage is near 0 V before proceeding.
- b. Remove the plug jumper P7.
- c. With the negative lead of the digital multimeter connected to TP3 and the positive lead connected to TP2, measure the circuit resistance. A resistance of less than 20 k Ω indicates a shorted mosfet (Q14). If the mosfet is shorted, replace it and perform the Control Circuit Check.
- d. Using the digital multimeter diode test function, test CR32, CR33, CR34, and CR35 for shorts. Diode replacements must be fast reverse recovery (300 ns) types to reduce conducted noise.
- e. Using the digital multimeter diode test function, test the snubber diodes CR23 and CR25 for shorts.
- f. Replace P7.

3. Output Check

- a. Connect the negative output from the 20 VAC Power Supply to TP1 and its positive output to W3 (+11 V). The circuit should draw less than 20 mA. Excessive current draw can be caused by CR16 or U2 (High Volts power supply).

NOTE. The variable power supply used in the following checks must have a current limit of 1 ampere or less.

- b. Connect the negative output from the 20 VAC Power Supply to TP1 and the positive output to R69 (+40 V). The circuit should draw less than 20 mA. Excessive current draw can be caused by CR19 or Q7 (High Volts Power Supply).
- c. Connect the positive output from the 20 Power Supply to TP1 and the negative output to W2 (-11 V). The circuit should draw less than 20 mA. Excessive current draw can be caused by CR18.
- d. Connect the negative output from the 5 Power Supply to TP1 and the positive output to W1 (+5 V). The circuit should draw less than 20 mA. Excessive current draw can be caused by CR17 or Q1 and Q2 (High Volts Power Supply).

4. Controller/Gate Drive Check

- a. Connect the negative 20 VDC Power Supply output to TP3. Connect the positive output to the cathode of CR22. Short the emitter and base of Q15 together. Connect the oscilloscope probe ground to TP3. When the control circuit functions properly, the signals in Table 6-4 are present.
- b. Use the oscilloscope to observe the signal at the cathode of CR28. It should be an 80 kHz square wave, switching between -1 and 12 volts. The fall time is 0.2 μ s and the rise time is 1 μ s.
- c. Remove the short from across Q15.

Table 6-4: Control Circuit Test Points

Circuit Location	Signal
U6, pin 1	Approximately 5 VDC
U6, pin 2	Approximately 1 to 2 VDC
U6, pin 3	0 V
U6, pin 4	80 kHz triangle wave, 2 V p-p
U6, pin 6	80 kHz square wave, 18 V p-p

5. Transformer Driver Check

- a. Connect the negative output from the 20 VDC Power Supply to TP3. Connect the positive output to the cathode of CR22.
- b. Connect the negative output from the 5 VDC Power Supply to TP3. Connect the positive output to the cathode of VR3.
- c. Connect the oscilloscope probe ground to TP3.
- d. Using the oscilloscope, observe the signal at U8, pin 5. It should toggle between 0 and 5 VDC when J3 is shorted and unshorted. If the pulse is not present, continue with the check.
- e. Using the oscilloscope, observe the signal at U8, pin 3. A positive-going, 100 ms pulse should occur when J3 is shorted and unshorted.

If the pulse is not present, use the oscilloscope to observe the signal at U5, pin 1. It should be a logical high when J3 is unshorted and a logical low when it is shorted.

If the signal is not present, use the oscilloscope to observe the signal at the collector of Q13. With J3 unshorted, this point should have a 1 V, 170 kHz sine wave riding on 5 VDC. With J3 shorted this point should be at 5 VDC.

6. Error Amplifier/Voltage Reference/Over Voltage Check

- a. Set the variable Power Supply to 4.6 VDC. Connect the negative lead to TP1 and the positive output to W1 (+5 V).
- b. Connect the digital multimeter common lead to TP1.
- c. Using the digital multimeter, measure the voltage at U3, pin 6. It should be 0 V.
- d. Using the digital multimeter measure the voltage at U3, pin 1. It should be 2.5 V.
- e. Set the variable Power Supply to 5.4 V.
- f. Using the digital multimeter measure the voltage at U3, pin 6. It should be 5 V.
- g. Slowly increase the voltage of the variable Power Supply. Before 6 V is reached, the over voltage protection circuit should fire and pull the voltage below 1 V.

7. Shut Down Logic Check

- a. Connect the negative output of the 20 VDC Power Supply to TP3. Connect the positive output to the cathode of CR22.
- b. Connect the digital multimeter common lead to TP3.
- c. Measure the voltages according to Table 6-5 to see if the shut down logic circuit is functioning properly.

Table 6-5: Shut down logic levels

Circuit Location	Approximate Voltage
U7, pin 1	0 V
U7, pin 4	2 VDC
U7, pin 6	3 VDC
U7, pin 7	4.15 VDC
U7, pin 9	0.3 VDC

- d. Using the digital multimeter, measure the voltage at U6, pin 3. It should be approximately 5 VDC. Short the base to the emitter of Q15. Pin 3 should now measure 0 V.

High Volts Supply



WARNING. *Dangerous potentials exist on this circuit board. To avoid personal injury or damage to equipment, exercise extreme care when troubleshooting these circuits.*

1. Preliminary Checks

- a. Table 6-6 lists the High Volts Supply fault symptoms and procedures.

Table 6-6: High Volts Supply Fault Symptoms

Symptom	Procedure
Unable to focus CRT using the front-panel control	Focus Amplifier Check
Unable to adjust CRT intensity using the front-panel control	Z-Axis Amplifier Check Grid Drive Check
No CRT display	High Voltage Oscillator Check CRT Voltage Check

- b. Load the Low Volts Supply with the instrument.

2. Focus Amplifier Check

- a. Using the digital multimeter, measure the voltage between TP1 and the collector of Q2.
- b. It should vary from 0 to -300 VDC when the front-panel FOCUS control is rotated.

3. Z-Axis Amplifier Check

- a. Using the digital multimeter, measure the voltage between TP1 and the collector of Q6.
- b. Short together the base and emitter of Q3. The collector of Q6 should be near 0 V.
- c. Short together the base and emitter of Q4. The collector of Q6 should be near 0 V.

4. Grid Drive Check

- a. Turn off the Power Supply. Use the diode check on the digital multimeter to test CR2, CR5, CR6, CR8, and CR9 for shorts.
- b. Power up the Power Supply.
- c. Using the digital multimeter, measure the voltage between TP1 and the cathode of CR8. It should vary between approximately +40 and +170 V as R58 (CRT Bias) is adjusted.

5. High Voltage Oscillator Check

- a. Connect the oscilloscope probe to T1 pin 3 (Q6 collector) and the probe ground to TP1. Power up the supply. The signal should be a +70 V p-p, 22 kHz sine wave.
- b. Check the voltages listed in Table 6-7 using the digital multimeter:

Table 6-7: High voltage oscillator test points

Circuit location	Voltage
T1, pin 4	Approximately +40 V
T1, pin 13	Less than +2 V
U2, pin 2	Approximately +4.8 V
U2, pin 6	+4 to +11 V
CR9, cathode	Approximately +100 V

6. CRT Voltage Check

NOTE. *High-Voltage Probe: This check requires a high-voltage probe having an input resistance of 1 G Ω or more.*

- a. Connect the high-voltage probe ground to TP1.
- b. Power up the Power Supply.
- c. Use the high-voltage probe to measure the voltage at the anode of CR4. It should be approximately -2530 V.
- d. Measure the voltage at the anode end of CR3. It should be 50-150 V more negative than the reading from the anode of CR4.

Corrective Maintenance

Tektronix maintains a service organization that can provide a number of services to assist in maintaining the instrument(s) operation at its specified levels. For more information, refer to *Contacting Tektronix* on page xiv.

Circuit Boards

The circuit boards are designated as assemblies, which are listed at the beginning of the Replaceable Electrical Parts list in this manual. Figure 6-1 shows the locations of all circuit board assemblies. An instrument with serial number above B030000 is illustrated, but the circuit board locations are also valid for instruments from B020000 to B029999.

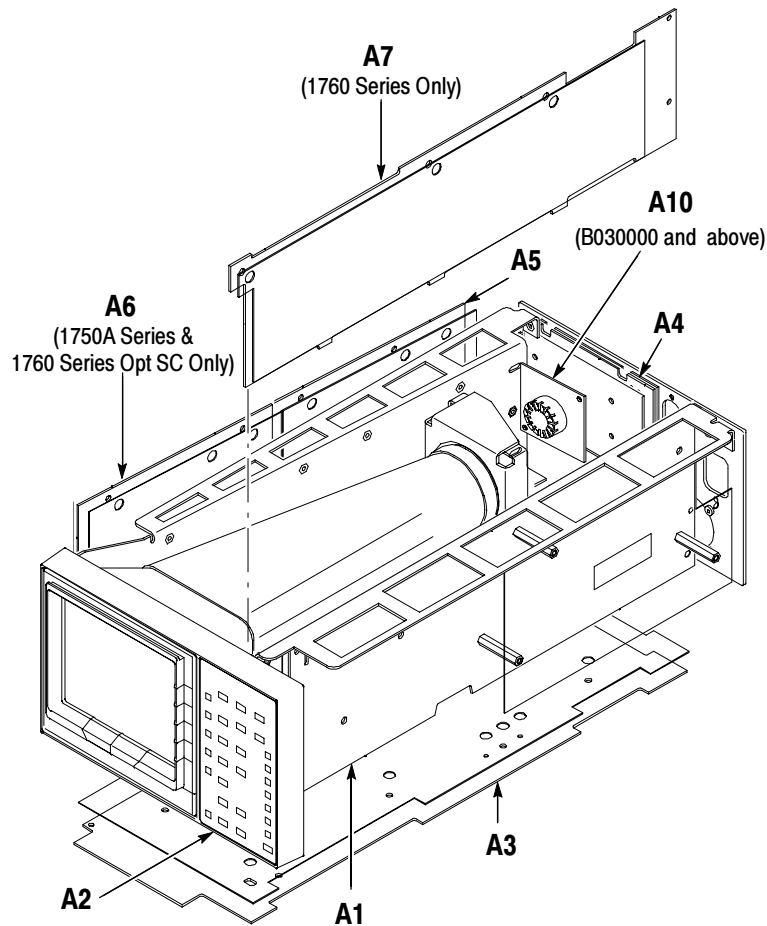


Figure 6-1: Instrument etched circuit board assemblies

Mechanical Disassembly/Assembly

The instructions contained here are for disassembly. Reassembly is performed by reversing the order of the steps used to disassemble the instrument.



WARNING. To avoid personal injury or damage to equipment, disconnect the power cord before attempting any disassembly of the instrument.



CAUTION. Do not reinsert screws in the rear panel when the instrument is removed from the cabinet.

Removing the Bezel

1. Remove the five knobs located below the CRT, using a $\frac{1}{16}$ -inch Allen wrench. See Figure 6-2.

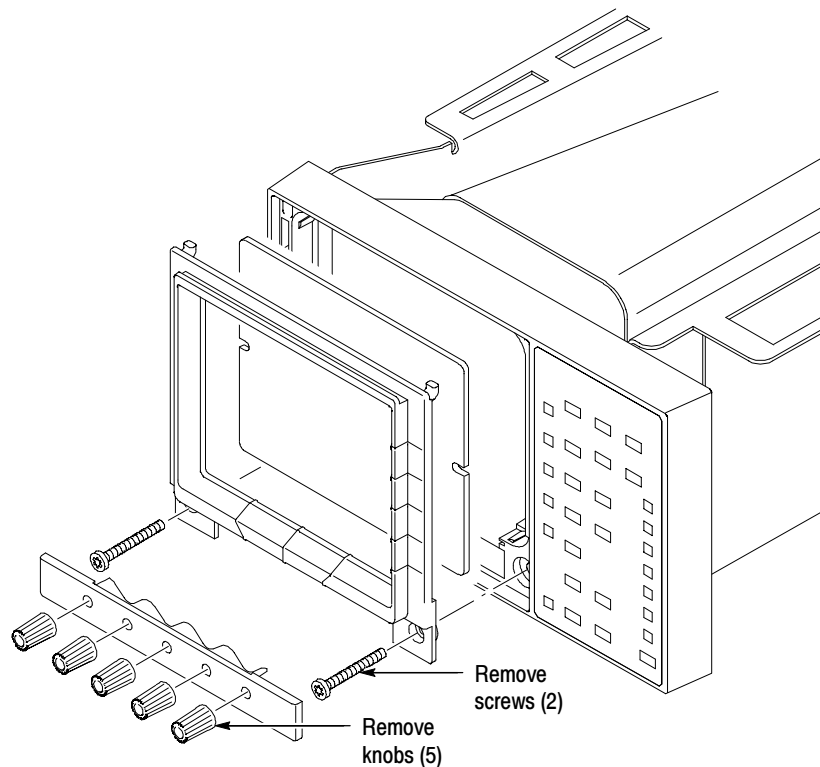


Figure 6-2: Removing the CRT bezel

2. Use the screwdriver tip to push out on the inside of the center of the small panel located immediately below the CRT. This exposes the two bezel mounting screws.

NOTE. All screws, unless otherwise noted, are TORX screws and can be removed with a T15 screwdriver tip. The exception is #2 Pozidrive screws which can be removed with a #1 Pozidrive tip).

3. Remove the two bezel screws.
4. Grasping the bottom of the bezel, pull straight out and upward. There are two hinges at the top of the bezel that hold it in place; once the bezel is at an approximate 45° angle with the front panel they will disengage.
5. To replace, reverse the procedure, pushing in on the small panel instead of out.

Replacing the Graticule Light

For graticule light removal and replacement, tweezers with curved, serrated tips are recommended. For example, Miltex PL312,6-100 (equivalent to PL312) or PL317 (longer than PL312).

Replacement bulbs are supplied with this instrument as Standard Accessories. Additional bulbs can be purchased from Tektronix (see Replaceable Electrical Parts list) or from local electronics distribution sources.



CAUTION. Needle-nosed pliers are not recommended for bulb replacement.

1. Procedure
2. Remove the bezel according to the preceding instructions.
3. To remove a bulb, position the tweezer tips or grasp the thin, flat portion of the bulb (close to the plastic socket). Carefully pull the bulb straight out. See Figure 6-3.

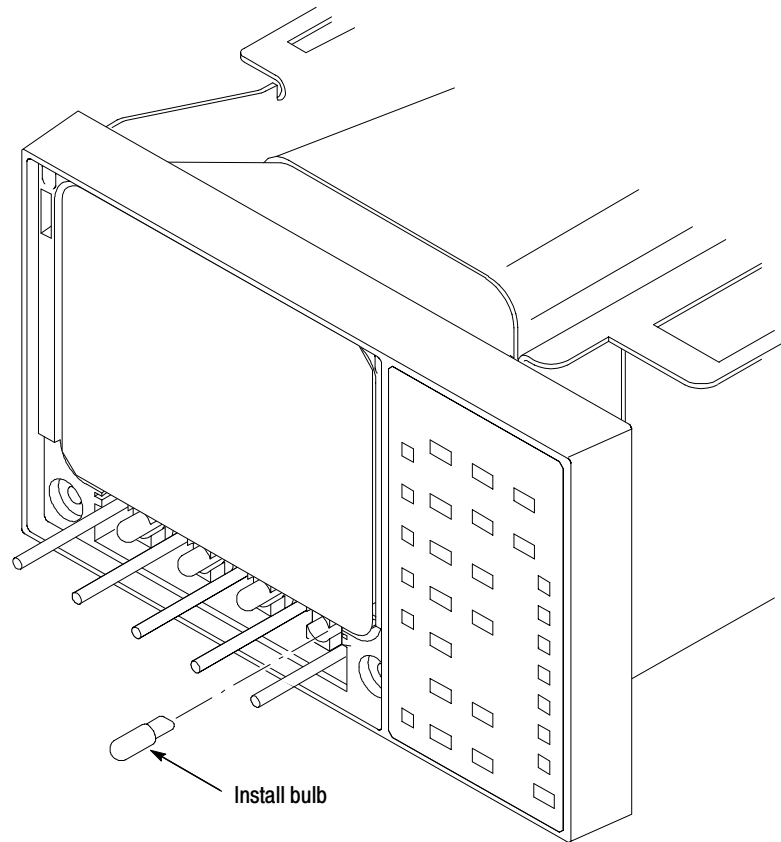


Figure 6-3: Replacing graticule light bulbs

4. To install a bulb, hold it with the tweezers or fingers as described in step two, position it in front of the socket, and push the bulb with your finger until it snaps into place.
5. Replace the bezel.

Removing the CRT

To replace a CRT in an instrument with serial number below B030000, order an upgrade kit from Tektronix and follow the instructions in the kit.

To remove the CRT in an instrument with serial number B030000 or greater, use the following procedure. Figure 6-4 illustrates the CRT removal.



WARNING. *The CRT is a high vacuum device and must be handled with care. To avoid personal injury, always wear safety glasses, gloves, and protective clothing when handling CRTs.*

1. Remove the bezel and the CRT light filter. See *Removing the CRT Bezel* on page 6-13.
2. Cut the retaining clip that goes around the CRT shield.



CAUTION. *When disconnecting the CRT Socket board from the CRT, be careful not to bend the pins on the back of the CRT.*

3. Carefully disconnect the CRT socket board from the back of the CRT. Pull the board straight out so that you do not bend the CRT pins.
4. Disconnect the cable from J3 (trace rotation) on the Main board and push the connector through the hole in the board.



WARNING. *The CRT may retain a dangerous charge. To avoid personal injury or damage to equipment, ground the anode to discharge the CRT. Do not allow the conductor to touch your body or any circuitry.*

5. If you will be installing a new CRT, do the following:
 - a. Slide a long screwdriver with an insulated handle under the anode cap on the side of the CRT, keeping the screwdriver on the metal chassis to discharge any remaining charge. **DO NOT** touch the metal shaft of the screwdriver or the chassis while doing this.
 - b. Disconnect the anode cap by prying it gently away from the CRT. Figure 6-4 shows the anode cap.
6. If you will be reinstalling your CRT, disconnect the anode by separating the anode connector. Immediately discharge the connector tip to the chassis.
7. The CRT can now be pulled away from the CRT Socket board and straight out of the chassis (some pressure may be needed). The CRT shield, along with the rubber manchet around its back, should come out with the CRT.

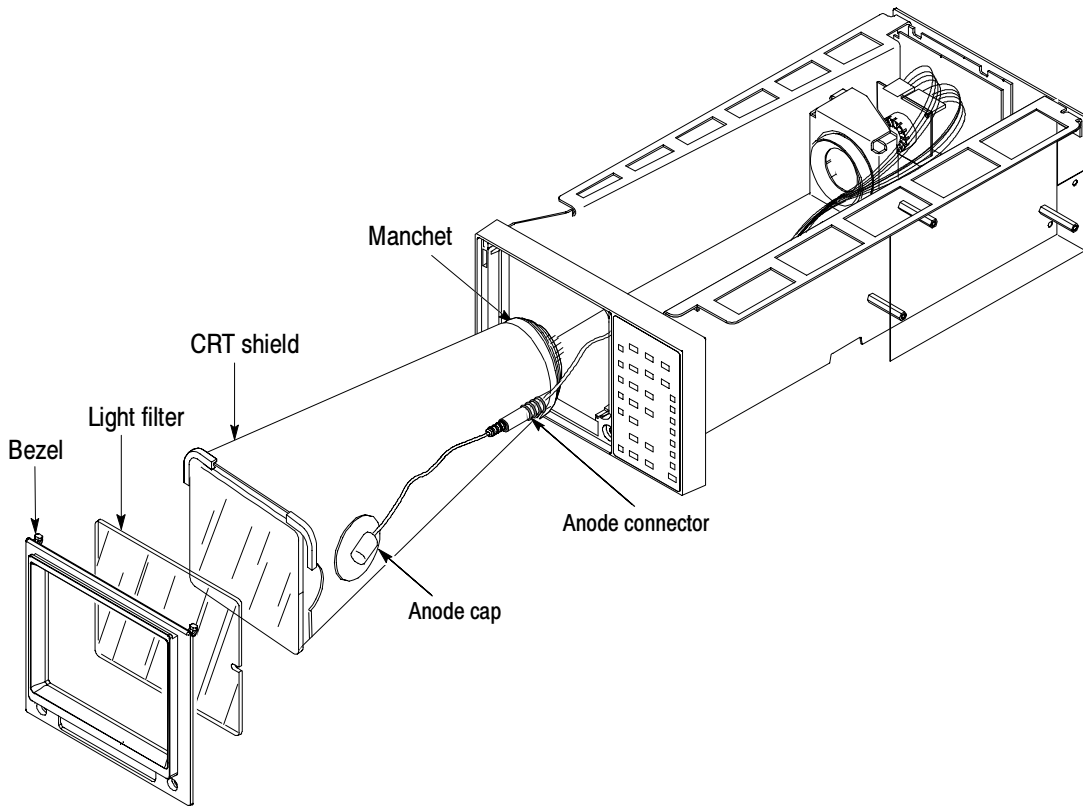


Figure 6-4: Removing or replacing the CRT

Replacing the CRT

To install a CRT in an instrument with serial number below B030000, follow instructions in the CRT upgrade kit.

To install a CRT in an instrument with serial number greater than B030000, use the following procedure. Figure 6-4 shows the CRT removal and replacement.



WARNING. *The CRT is a high vacuum device and must be handled with care. To avoid personal injury, always wear safety glasses, gloves, and protective clothing when handling CRTs.*

1. If you are reinstalling your CRT, skip to step 2. If you are installing a new CRT, do the following:
 - a. Snap the anode lead onto the anode connector on the side of the new CRT.
 - b. Place the CRT face down on a protective surface (such as the foam packing in which it was shipped) and slide the CRT shield (with four corner supports still attached) over the CRT.
 - c. Install the manchet on the back of the CRT shield.
2. Slip the CRT part way into position and feed the trace rotation wires (and plug) through the hole in the Main board.



WARNING. *The CRT may retain a dangerous charge. To avoid personal injury, or damage to the equipment, ground the the anode connector to discharge the CRT. Do not allow the conductor to touch your body or any circuitry.*

3. Slide the CRT into the instrument, guiding the rubber manchet on the end of the shield into the rear CRT support.
4. Align the socket on the A10 CRT Socket board with the pins and key on the CRT. Gently push the CRT and the socket board together until the CRT pins are fully seated in the socket.
5. Replace the trace rotation connector (J3, Main board).
6. If you are reinstalling your CRT, carefully clean the face of the CRT. See *Cleaning the CRT* on page 6-3. If you are installing a new CRT, remove the protective plastic sheet from the face of the CRT.
7. Clean the CRT light filter and position it in front of the CRT screen.
8. Replace the bezel. If the fit is too tight to allow the bezel to go into position, reposition the CRT bracket (refer to step 10).

9. Place the bottom of the instrument on a flat surface, with the front casting flat against the surface. Check that the rear panel is flat against the surface, to within 0.2 in. If it is not, reposition the CRT bracket (refer to step 10).
10. Adjust the CRT bracket if necessary (see steps 8 and 9):
 - a. Remove the Vector board to provide access to the nuts that hold the bracket in place (see *Removing the Vector Board* on page 6-25).
 - b. Loosen the two nuts that hold the bracket in place.
 - c. With the CRT and bezel in place, push the bracket toward the front of the instrument until it is snug against the rubber manchet on the rear of the CRT shield.
 - d. Tighten the two support nuts.
11. Recheck step 9.

Removing the Rear Panel

1. Remove the nine rear screws. See Figure 6-5.
2. Disconnect the plug from J12 on the Main (A3) etched circuit board.
3. Pull the rear panel free from the main chassis enough to be able to slip P12 through the notch in the chassis.
4. Unplug the fan leads from J5 on the Power Supply (A1) circuit board assembly, and carefully slip the fan cable free.
5. Once the plug on J12 is free from the chassis notch, the rear panel can be removed to gain access to the Input (A4) assembly.

Removing the Input and BNC Circuit Boards

1. Remove the rear panel.
2. Use a $\frac{5}{16}$ -inch nut driver or box end wrench to remove the four securing screws. See Figure 6-6.
3. To replace the rear panel and Input assembly, reverse the procedure.

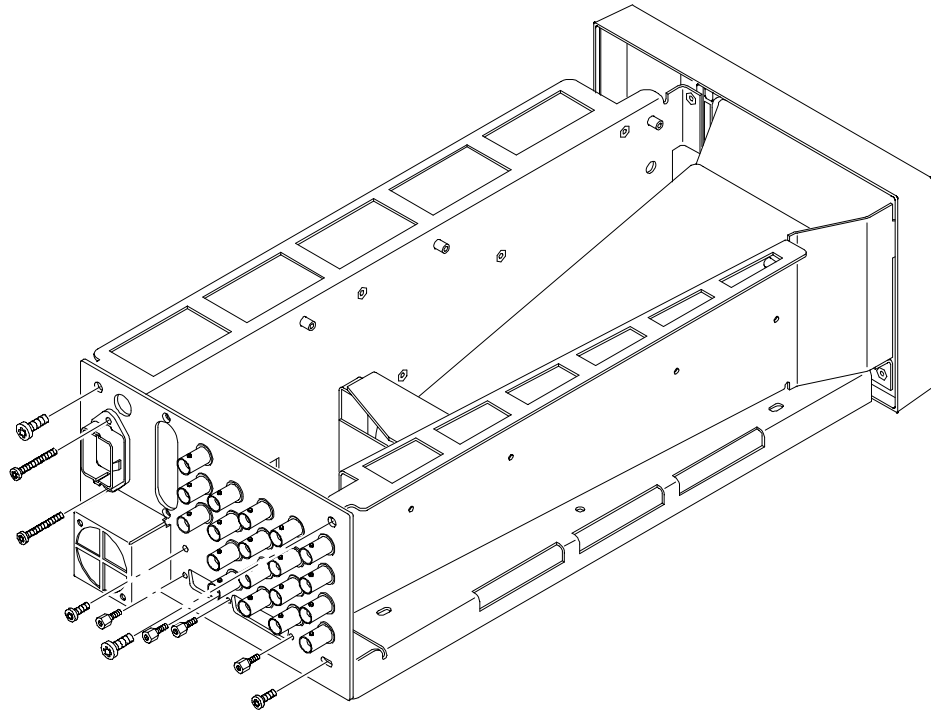


Figure 6-5: Removing the rear panel and Input/BNC assembly

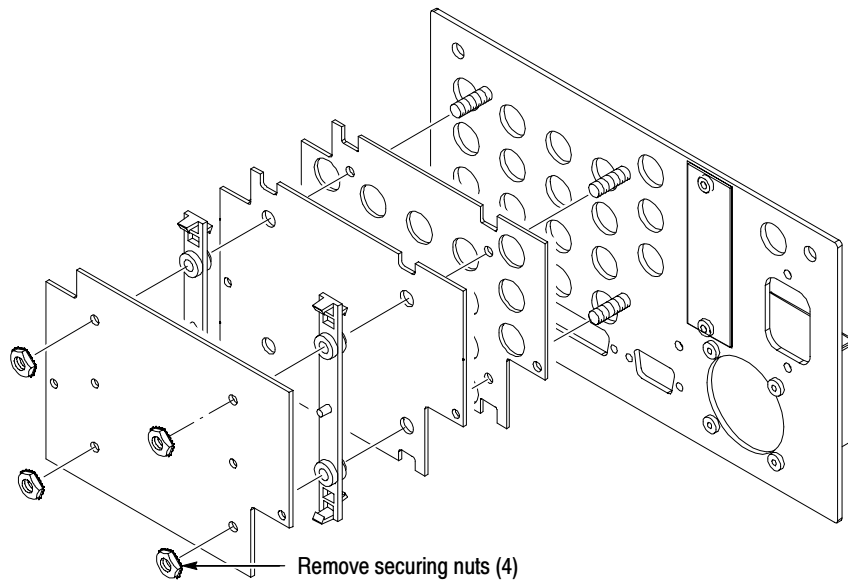
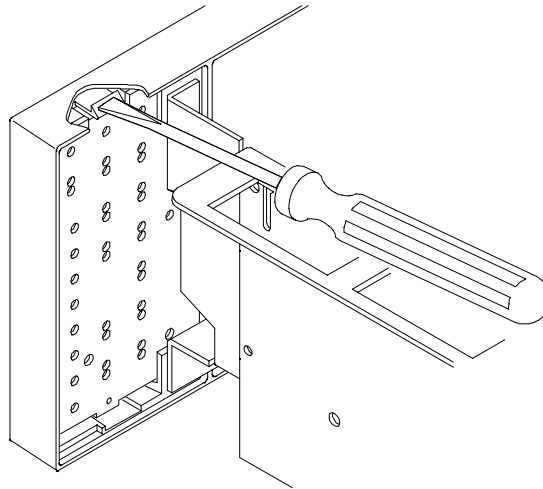


Figure 6-6: Disassembling Input/BNC assembly A4/A4-A1

**Removing the Front Panel
and the Front Panel
Circuit Board**

1. Remove the blue multiwire connector from J154.
2. Push down on the clip located on the top of the front-panel assembly and push outward on the upper part of the assembly. See Figure 6-7.

**Figure 6-7: Removing the front-panel assembly**

3. Remove the board by slipping it through the front-panel opening.
4. To access the Front Panel board components:
 - a. Use a $\frac{1}{4}$ inch nut driver or box end wrench to remove the four nuts holding the assembly together. See Figure 6-8.
 - b. The board should now separate from the front panel, spacer, and the switches to make the components accessible.
5. To reassemble, reverse the procedure.

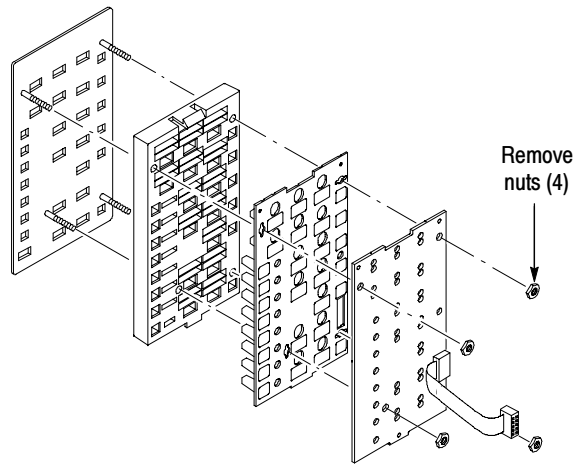


Figure 6-8: Front Panel circuit board assembly

Removing the Main Board

1. Remove the plugs from the connectors as shown in Table 6-8.

Table 6-8: Main Board Plug Connections

Plug from jack number	Location	From	Instrument type
A3J1	Main circuit board	Front Panel circuit board	All
A3J2	Main circuit board	Component circuit board	1760 Series
A3J3	Main circuit board	Trace Rotation coil (CRT)	All
A3J5	Main circuit board	Component circuit board	1760 Series
A3J9	Main circuit board	Vector circuit board	All
A3J12	Main circuit board	Input circuit board	All
A3J13	Main circuit board	Component circuit board	1760 Series
A1J4	Power Supply circuit board	Main circuit board	All

2. Use a 1/16-inch Allen wrench to remove the five front-panel knobs immediately below the CRT. Remove the small panel from immediately below the CRT bezel. See *Removing the CRT Bezel* on page 6-13.
3. Slip the CRT and trace rotation leads through the appropriate holes in the Main board.
4. Use a 3/16-inch nut driver or box end wrench to remove the mounting studs for the rear-panel RS232 and REMOTE connectors.
5. Remove the eight screws that are holding the board in place. See Figure 6-9.

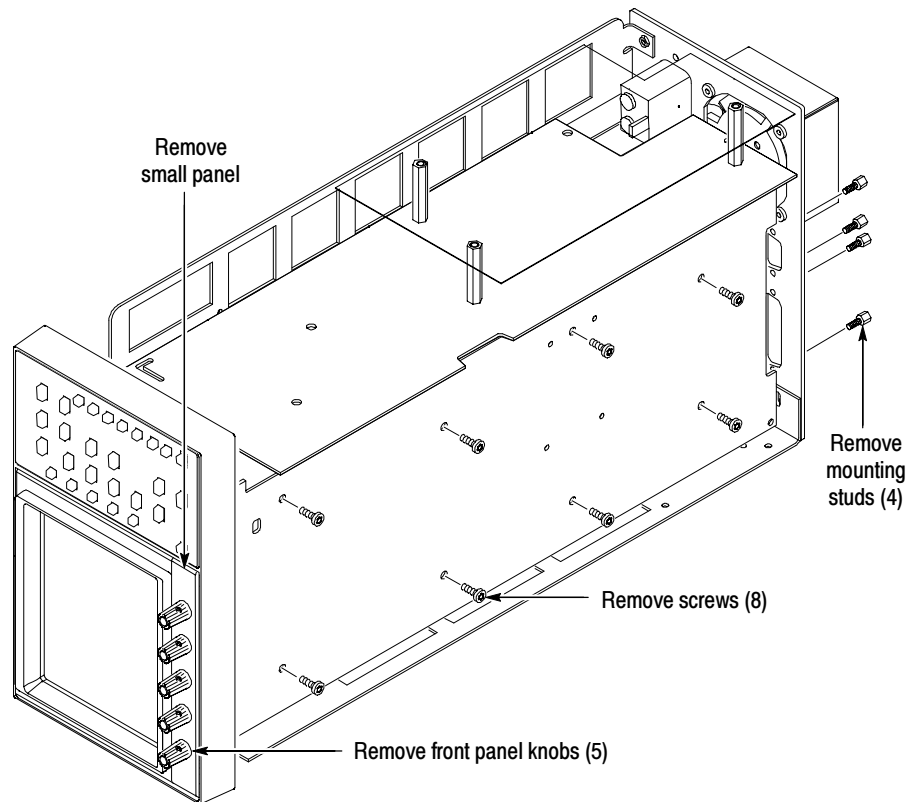


Figure 6-9: Screws holding the Main circuit board in place

6. Slide the Main circuit board as far forward as space allows to remove the REMOTE and RS232 connectors from the rear panel.
7. Remove the board by sliding it slightly upward and toward the rear panel until the control shafts on the front of the board clear the front, then lift out.
8. To replace the Main board, lay the board flat and slide it back into place, and then reverse the rest of the steps in the removal procedure.

Removing the Power Supply Board



1. Be sure that the instrument is unplugged from the power source and that DS7 on the Power Supply is extinguished.

WARNING. *Circuitry under the plastic shield is at line potential. To avoid personal injury or damage to equipment, do not remove this shield when instrument is plugged into the power source. DS7 can be used as an indicator; if it is lighted or flashing, dangerous potentials exist under the plastic shield.*

2. Remove the plug from J4 on the Power Supply board. This is the connection to the Main board.

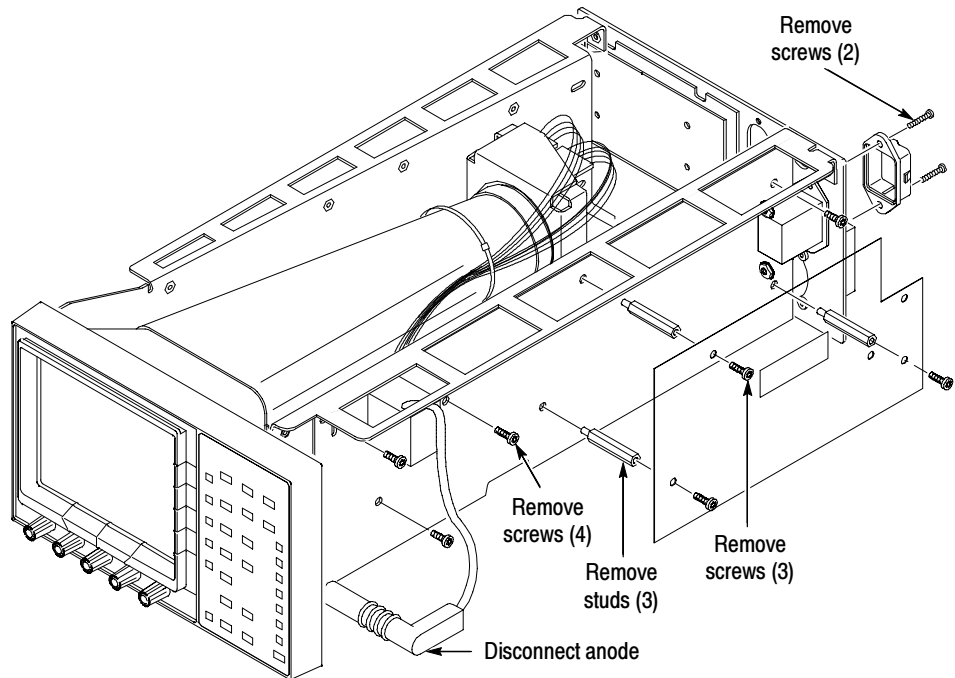


Figure 6-10: Securing screws for the Power Supply circuit

3. Disconnect the CRT anode connection at its disconnect point and discharge it to ground. See Figure 6-10.



WARNING. *The CRT may retain a dangerous charge. To avoid personal injury or damage to equipment, ground the conductor of the anode to discharge the CRT. Do not allow the conductor to touch your body or any circuitry.*

4. Remove the connectors on J1, J2, J4, and J5.

5. Remove the four screws that hold the Power Supply board down, and the three screws that hold the plastic shield in place. See Figure 6-10.
6. Use a $\frac{1}{4}$ -inch nut driver or box end wrench to remove the 3 studs that support the plastic shield.
7. Remove the board by sliding it forward and lifting it up.
8. To replace the board, reverse this procedure.

Removing the Vector Board

1. Unplug the cable to A3J9 (Main circuit board) and feed the cable and plug through the chassis.
2. If there is an SCH circuit board, unplug A5J1.

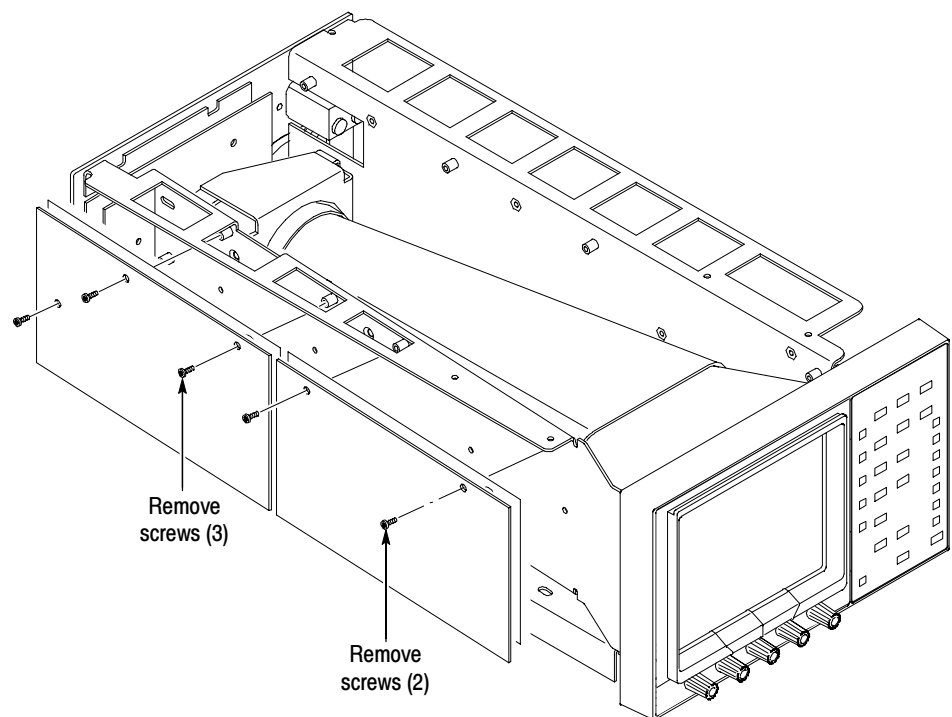


Figure 6-11: Mounting hardware for the Vector and SCH circuit boards

3. Remove the three screws holding the circuit board in place. See Figure 6-11.
4. Move top of circuit board out and up to remove.
5. To install the circuit board, reverse the procedure.

Removing the SCH Board

(1750A Series & 1760 Series
Option SC only)

1. Unplug the cable from A5J1 (Vector circuit board).
2. Remove the two screws holding the SCH circuit board in place. See Figure 6-11.
3. Move top of circuit board out and up to remove.
4. To install the circuit board, reverse the removal procedure.

Removing the Component Board

(1760 Series only)

1. Unplug the connectors on A7J9, J11, and J13.
2. Remove the two rear-panel screws securing the GBR connectors. See Figure 6-12.

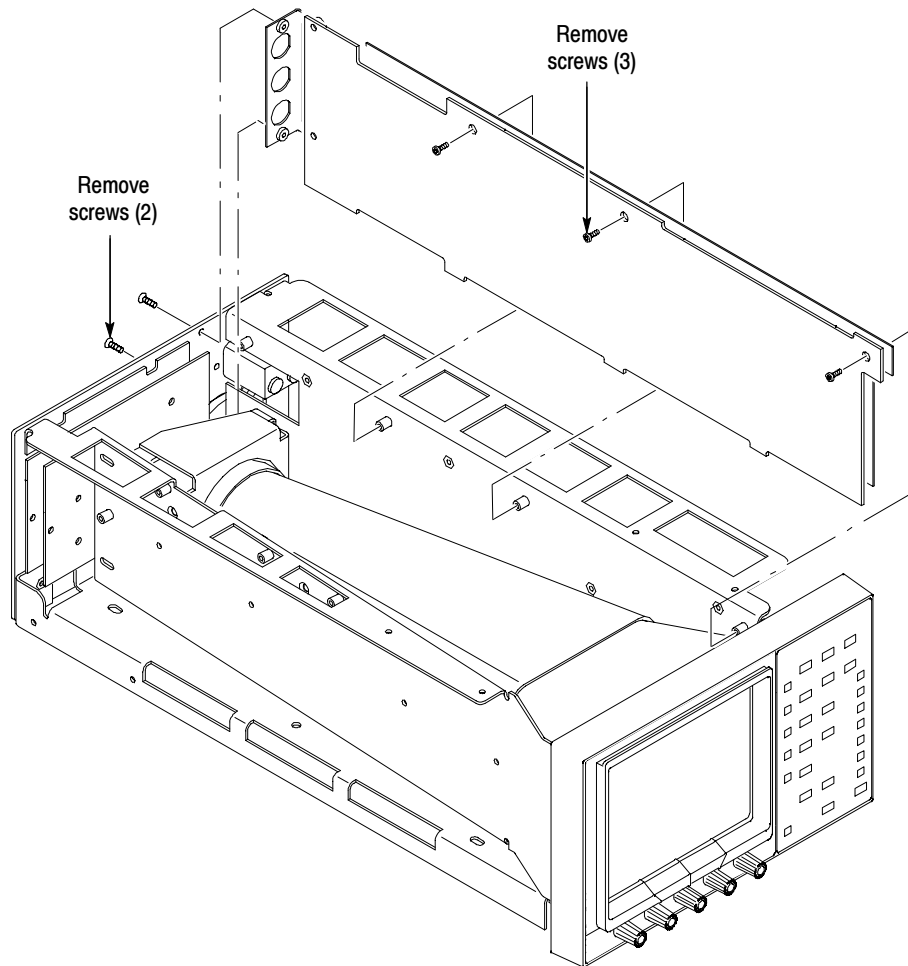


Figure 6-12: Component circuit board mounting hardware

3. Remove the three screws holding the circuit board. See Figure 6-12.
4. Move the circuit board up to remove.
5. To install the circuit board, reverse the removal procedure.

Repackaging

Repackage the instrument in the original manner to provide adequate protection (see Figure 6-13). If the original packaging is not available or is unfit for use, repackage the instrument as follows:

1. Obtain a corrugated cardboard carton whose inside dimensions are at least six inches greater than the dimensions of the instrument to allow room for cushioning. The shipping carton should have a test strength of at least 275 pounds.
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. Allow three inches on all sides for cushioning.
4. Seal the carton with shipping tape or an industrial stapler.

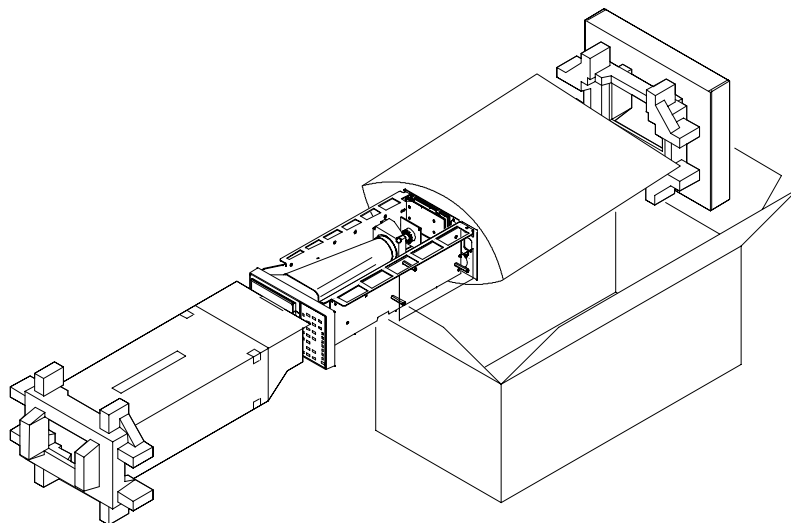


Figure 6-13: Repackaging a 1740A, 1750A, or 1760 Series instrument

Shipping to the Service Center

Contact the Service Center to get an RMA (return material authorization) number, and any return or shipping information you may need.

If the instrument is being shipped to a Tektronix Service Center, enclose the following information:

- The RMA number.
- The owner's address.
- Name and phone number of a contact person.
- Type and serial number of the instrument.
- Reason for returning.
- A complete description of the service required.

Mark the address of the Tektronix Service Center and the return address on the shipping carton in two prominent locations.

Options and Accessories

This section lists the available instrument options and accessories.

Options

You can order the following options with your instrument. Option SC is for the 1760-Series only. All other options can be ordered for any product in the 1740A/1750A/1760-Series instrument.

1760-Series Option SC

The 1760-Series can perform SCH Phase and Color Frame measurements when it is equipped with an Option SC (A6 Assembly SCH circuit board and appropriate software). Option SC is a catalog option to allow the instrument to make all measurements that the 1750A-Series can make. Existing instruments can be upgraded; contact your Tektronix representative for more information.

CRT Options

The standard instrument is shipped with a P31 (green) phosphor CRT installed. If Option 74 is ordered, the instrument is shipped with a P4 (white) phosphor CRT installed. The Option 74 CRT part number is given at the end of the Replaceable Electrical Parts list.

Standard Accessories

The following accessories are shipped with each instrument. Part numbers are listed at the end of the *Replaceable Mechanical Parts* list at the end of this manual.

- Power cord (described under *Optional Accessories*).
- *1740A/1750A/1760-Series Waveform Monitors User Manual*

Optional Accessories

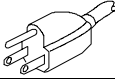
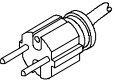

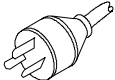
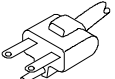
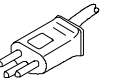
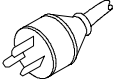
You can order any of the following optional accessories to use with your instrument. Part numbers are listed at the end of the *Replaceable Mechanical Parts* list at the end of this manual.

Service Manual *1740A/1750A/1760-Series Waveform Monitors Service Manual*

Power Cords All instruments in the series are shipped with one of the power cord options listed in Table 7-1. Power cord part numbers are shown at the end of the Replaceable Mechanical Parts List. If no power cord option is ordered, the instrument is shipped with a standard North America 120 V power cord.

Power cords for use in North America are UL listed and CSA certified. Cords for use in areas other than North America are approved by at least one authority acceptable in the country to which the product is shipped.

Table 7-1: Power cord identification

Plug configuration	Normal usage	Option number
	North America 120 V	Standard
	Universal Euro	A1
	United Kingdom	A2
	Australia	A3
	North America 240 V	A4
	Switzerland	A5
	China	AC
	No power cord supplied.	A99

Cabinets

All of the Safety and EMI tests used to qualify the 1740A/1750A/1760-Series were performed in a cabinet. There are two optional cabinets and a dual rack adapter available for the installation of these instruments. Cabinet measurements are supplied in the *Installation* section of this manual.

You can order any of these cabinets:

- **1700F00 Plain Cabinet.** Plain cabinet without any feet or carrying handle. The pattern of ventilating holes in top, bottom, and sides provides adequate air circulation for any heat generated within the instrument. When being permanently mounted, care must be taken to allow the free circulation of air to and from these ventilating holes. A dimensional drawing of this cabinet, that can be used as an installation guide is located in the *Installation* section of this manual.
- **1700F02 Portable Cabinet.** Portable carrying case with handle and feet. The front feet flip down to form a stand.
- **WFM7F05 Rack Adapter.** Dual side-by-side adapter for installing your half-rack monitors in a rack. This adapter uses two types of sleeves for different types of half-rack instruments.

The type of sleeves included with the WFM7F05 rack adapter kit is configured by the option ordered. The available options are:

- Option NN: Includes two WFM7F00 sleeves to rackmount two WFM700 instruments.
- Option NO: Includes one WFM7F00 sleeve and one 1700F00A sleeve to rackmount one WFM700 instrument and one of the following: 1700 Series instruments, WFM601 Series instruments, 760A, 764, older half rack instruments
- Option OO: Includes two 1700F00A sleeves to rackmount two of the following instrument types: 1700 Series instruments, WFM601 Series instruments, 760A, 764, Older half rack instruments



CAUTION. 1700 Series waveform monitors cannot be installed in the WFM700 sleeves.

- **1700F06 Blank Panel.** If only one 1700-Series instrument is to be installed in the Side-by-Side Rack Adapter, a blank panel can be installed for air flow protection and appearance.
- **1700F07 Utility Drawer.** When only one side of a dual rack adapter is used, an alternate to the blank panel is the 1700F07 utility drawer. This drawer provides over $\frac{1}{3}$ -cubic foot of accessory storage. The drawer kit includes a permanently mounted tray.

Replaceable Electrical Parts

This section contains a list of the electrical components for the <instrument>. 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
- 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.

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.

Manufacturers cross index

Mfr. code	Manufacturer	Address	City, state, zip code
00213	MSD INC.	700 ORANGE ST	DARLINGTON, SC 29532
00779	TYCO ELECTRONICS CORPORATION	CUSTOMER SERVICE DEPT PO BOX 3608	HARRISBURG, PA 17105-3608
01295	TEXAS INSTRUMENTS INC	SEMICONDUCTOR GROUP 13500 N CENTRAL EXPRESSWAY PO BOX 655303	DALLAS, TX 75272-5303
02113	COILCRAFT	1102 SILVER LAKE ROAD	CARY, IL 60013
04222	AVX/KYOCERA	PO BOX 867	MYRTLE BEACH, SC 29577
07263	FAIRCHILD SEMICONDUCTOR CORPORATION	CORPORATE HEADQUARTERS 333 WESTERN AVENUE	SOUTH PORTLAND, ME 04106-1705
09922	FCI USA INC	825 OLD TRAIL ROAD	ETTERS, PA 17319-9769
09969	DALE ELECTRONIC COMPONENTS	EAST HWY 50 P.O. BOX 180	YANKTON, SD 57078
0B0A9	DALLAS SEMICONDUCTOR	4401 S BELTWOOD PARKWAY	DALLAS, TX 75244
0DWW6	MICRO POWER ELECTRONICS INC	22990 NW BENNETT ST	HILLSBORO, OR 97124
0GV52	SCHAFFNER EMC INC	9-B FADEM ROAD	SPRINGFIELD, NJ 07081
0JR03	ZMAN MAGNETICS INC	22404 66TH AVENUE SOUTH	KENT, WA 98032
0JR04	TOSHIBA AMERICA INC.	ELECTRONICS COMPONENTS DIV 9775 TOLEDO WAY	IRVINE, CA 92718
0KB01	STAUFFER SUPPLY CO	810 SE SHERMAN	PORTLAND, OR 97214-4657
12697	CLAROSTAT SENSORS & CONTROLS INC	12055 ROJAS DR SUITE K	EL PASO, TX 79936
12954	MICROSEMI CORP	SCOTTSDALE DIVISION 8700 EAST THOMAS RD PO BOX 1390	SCOTTSDALE, AZ 85252
13103	AAVID THERMALLOY	80 COMMERCIAL ST	CONCORD, NH 03301
14301	ANDERSON ELECTRONICS INC	PO BOX 89	HOLLIDAYSBURG, PA 16648-0089
14433	ITT SEMICONDUCTORS	2540 N 1ST STREET SUITE 203	SAN JOSE, CA 95131-1016
15454	KETEMA INC	RODAN DIVISION 2900 BLUE STAR ST	ANAHEIM, CA 92806-2591
17856	VISHAY SILICONIX	2201 LAURELWOOD RD	SANTA CLARA, CA 95084-1516
1CH66	PHILIPS SEMICONDUCTORS	811 E ARQUES AVE PO BOX 3409	SUNNYVALE, CA 94088-3409
1MQ07	ON SEMICONDUCTOR LLC	5005 EAST MCDOWELL	PHOENIX, AZ 85008
24355	ANALOG DEVICES	1 TECHNOLOGY DRIVE	NORWOOD, MA 02062
24546	DALE ELECTRONICS INC	550 HIGH ST	BRADFORD, PA 16701
26364	COMPONENTS CORPORATION	6 KINSEY PLACE	DENVILLE, NJ 07834
27264	MOLEX PRODUCTS COMPANY	2222 WELLINGTON CT.	LISLE, IL 60532
31433	KEMET ELECTRONICS CORP	P O BOX 5928	GREENVILLE, SC 29606
32997	BOURNS INC	TRIMPOT DIVISION 1200 COLUMBIA AVE	RIVERSIDE, CA 92507-2114
34371	INTERSIL CORPORATION	SEMICONDUCTOR SECTOR MS 58-71 PO BOX 883	MELBOURNE, FL 32902-0883
37942	NORTH AMERICAN CAPACITOR CO	INDIANAPOLIS ROAD, HWY 240 PO BOX 240	GREEN CASTLE, IN 46135
37964	GENNUM CORPORATION	STATION A PO BOX 489	BURLINGTON, ONTARIO CA L7R 3Y3
4U402	ROEDERSTEIN ELECTRONICS INC	2100 W FRONT STREET PO BOX 5579	STATESVILLE, NC 28687
50434	AGILENT TECHNOLOGIES	SEMICONDUCTOR PRODUCTS 370 W TRIMBLE ROAD	SAN JOSE, CA 95131-1008
52769	SPRAGUE-GOODMAN ELECT INC	1700 SHAMES DRIVE	WESTBURY, NY 11590
53387	3M COMPANY	3M AUSTIN CENTER INTERCONNECT SOLUTIONS DIVISION 6801 RIVERPLACE BLVD	AUSTIN, TX 78769-2963
55335	JKL COMPONENTS	13343 PAXTON ST	PACOIMA, CA 91331
55680	NICHICON (AMERICA) CORP	927 E STATE PARKWAY	SCHAUMBURG, IL 60195-4526
57924	BOURNS INC	INTEGRATED TECHNOLOGY DIV. 1400 NORTH 1000 WEST	LOGAN, UT 84321

Manufacturers cross index (Cont.)

Mfr. code	Manufacturer	Address	City, state, zip code
58050	TEKA INTERCONNECTION SYSTEMS	45 SALEM ST	PROVIDENCE, RI 02907
59660	TUSONIX INC	7741 N BUSINESS PARK DR PO BOX 37144	TUCSON, AZ 85740-7144
5Y400	TRIAx METAL PRODUCTS INC	1880 SW MERLO DRIVE	BEAVERTON, OR 97006
60705	CERA-MITE CORP	CORPORATE OFFICE 1327 6TH AVE	GRAFTON, WI 53024
61058	PANASONIC INDUSTRIAL CO ECG	M/S 7H-4 TWO PANASONIC WAY	SECAUCUS, NJ 07094
61429	FOX ELECTRONICS	DIV OF FOX ENTERPRISED INC 5842 CORPORATION CIRCLE	FORT MEYERS, FL 33905
61935	SCHURTER INC	1016 CLEGG CT PO BOX 750158	PETALUMA, CA 94975-0158
62643	UNITED CHEMI-CON INC	9801 W HIGGINS RD	ROSEMONT, IL 60018-4771
65786	CYPRESS SEMICONDUCTOR CORP	CORPORATE HEADQUARTERS 3901 NORTH FIRST STREET	SAN JOSE, CA 95134-1506
71744	CHICAGO MINIATURE LAMP INC	CHEVY CHASE BUSINESS PK 1080 JOHNSON DR	BUFFALO GROVE, IL 60089-0089
73743	FISCHER SPECIAL MFG CO	111 INDUSTRIAL RD PO BOX 76500	COLD SPRINGS, KY 41076
75042	IRC INC	401 NORTH BROAD STREET	PHILADELPHIA, PA 19108
75915	LITTELFUSE INC	800 E NORTHWEST HWY	DES PLAINES, IL 60016-3049
80009	TEKTRONIX INC	14150 SW KARL BRAUN DR PO BOX 500	BEAVERTON, OR 97077-0001
81073	GRAYHILL INC	561 HILLGROVE AVE PO BOX 10373	LAGRANGE, IL 60525
83701	ELECTRONIC DEVICES INC	ATTN: ACCOUNTS RECEIVABLE 21 GRAY OAKS AVE	YONKERS, NY 10710
91637	DALE ELECTRONIC COMPONENTS	1122 23RD ST	COLUMBUS, NE 68601
95263	LIGHTING COMPONENTS & DESIGN INC	692 S MILITARY TRAIL	DEERFIELD BEACH, FL 33442
98291	ITT CANNON RF PRODUCTS	585 EAST MAIN STREET	NEW BRITAIN, CT 06051
S4537	STAR MICRONICS CO LTD	20-10 NAKAYOSHIDA	SHIZUOKA, SHIZUOKA JP 422-8654
TK0891	MICONICS	1 FAIRCHILD AVE	PLAINVIEW, NY 11803
TK0978	KINSEKI LTD	1-8-1 IZUMIHON-CHO KOMAE-SHI	TOKYO, JP
TK1947	NORTHWEST ETCH TECHNOLOGY	2601 S HOOD ST PO BOX 110610	TACOMA, WA 98411-0610
TK2441	INTERNATIONAL MICROELECTRONIC PRODUCTS	2830 NORTH 1ST ST	SAN JOSE, CA 95134
TK2540	SONY ELECTRONICS INC	10833 VALLEY VIEW ST	CYPRESS, CA 90630-0016
TK6159	ARROW/RICHEY ELECTRONICS	ARROW/RICHEY VALUE ADDED 3601 SW MURRY BLVD SUITE 60	BEAVERTON, OR 97005
TK6399	VISHAY BC COMPONENTS	3939 BELTILINE RD SUITE 710	ADDISON, TX 75001

Replaceable electrical parts list

Component number	Tektronix part number	Effective	Discont'd	Name and description	Mfr. code	Mfr. part no.
A1	671-2484-05		B029999	CIRCUIT BD ASSY:POWER SUPPLY	80009	671-2484-05
A1	671-2484-06	B030000		CIRCUIT BD ASSY:POWER SUPPLY	80009	671-2484-06
A2	671-2356-02	B020000	B031065	CIRCUIT BD ASSY:FRONT PANEL	80009	671-2356-01
A2	671-2356-03	B031066		CIRCUIT BD ASSY:FRONT PANEL	80009	671-2356-01
A3	671-2355-11		B029999	CIRCUIT BD ASSY:MAIN	80009	671-2355-11
A3	671-2355-12	B030000	B034401	CIRCUIT BD ASSY:MAIN	80009	671-2355-12
A3	671-2355-13	B034402	B034604	CIRCUIT BD ASSY:MAIN	80009	671-2355-13
A3	671-2355-14	B034605	B036877	CIRCUIT BD ASSY:MAIN	80009	671-2355-14
A3	671-2355-16	B036878	B037757	CIRCUIT BD ASSY:MAIN	80009	671-2355-16
A3	671-2355-18	B037758		CIRCUIT BD ASSY:MAIN	80009	671-2355-18
A3	671-2355-20			CIRCUIT BD ASSY:MAIN	80009	671-2355-18
A4	672-1396-06	B020000		CIRCUIT BD ASSY:INPUT	80009	672-1396-05
A4	672-1396-07		B046031	CIRCUIT BD ASSY:INPUT & BNC	80009	672-1396-07
A4	672-1396-08	B046032		CIRCUIT BD ASSY:INPUT & BNC	80009	672-1396-08
A4A1	-----			CIRCUIT BD ASSY:BNC		
A5	671-2339-05		B037757	CIRCUIT BD ASSY:VECTORSCOPE	80009	671-2339-05
A5	671-2339-06	B037758		CIRCUIT BD ASSY:VECTORSCOPE	80009	671-2339-06
A6	671-2472-06	B020000		CIRCUIT BD ASSY:SCH (1750-SERIES,1760-SERIES OPT SC ONLY)	80009	671-2472-05
A7	671-2471-04	B014745		CIRCUIT BD ASSY:COMPONENT	80009	671-2471-04
A10	671-3637-00	B030000		CIRCUIT BD ASSY:CRT	80009	671-3637-00
A1	671-2484-05		B029999	CIRCUIT BD ASSY:POWER SUPPLY	80009	671-2484-05
A1	671-2484-06	B030000		CIRCUIT BD ASSY:POWER SUPPLY	80009	671-2484-06
				* ATTACHED PARTS*		
	337-3801-00	671-2484-00	671-2484-00	SHIELD,ELEC:POWER SUPPLY	TK1947	337-3801-00
				END ATTACHED PARTS		

Replaceable electrical parts list (Cont.)

Component number	Tektronix part number	Effective	Discont'd	Name and description	Mfr. code	Mfr. part no.
A1C1	283-0429-00			CAP,FXD,CER DI:270PF,20%,2000V	18796	DHR12-Z5U271M-2
A1C2	281-0775-01			CAP,FXD,CERAMIC:MCL;0.1UF,20%,50V,Z5U,0.170	04222	SA105E104MAA
A1C3	283-0021-00			CAP,FXD,CER DI:0.001UF,20%,5000V	TK2058	TCK45YS3H102M-A
A1C4	283-0639-01			CAP,FXD,MICA DI:56PF,1%,500V	09023	CDA15ED560F03
A1C5	283-0339-01			CAP,FXD,CERAMIC:MLC;0.22UF,10%,50V,X7R,0.300 X 0.300	TK2058	FK22X7R1H224K-T
A1C6	283-0261-00			CAP,FXD,CER DI:0.01UF,20%,4000V	18796	DHR28Z5U103M4KV
A1C7	283-0261-00			CAP,FXD,CER DI:0.01UF,20%,4000V	18796	DHR28Z5U103M4KV
A1C8	283-0261-00			CAP,FXD,CER DI:0.01UF,20%,4000V	18796	DHR28Z5U103M4KV
A1C9	285-1341-01			CAP,FXD,PLSTC:MTLZD FILM;0.1UF,20%,100V,POLYESTER	TK1913	MKS 2 0.1UF 20%
A1C10	281-0775-01			CAP,FXD,CERAMIC:MCL;0.1UF,20%,50V,Z5U,0.170	04222	SA105E104MAA
A1C11	283-0000-04			CAP,FXD,CER DI:0.001UF,+100-0X,500V	18796	DD05-90HAY5U102
A1C12	283-0021-00			CAP,FXD,CER DI:0.001UF,20%,5000V	TK2058	TCK45YS3H102M-A
A1C13	283-0189-00			CAP,FXD,CER DI:0.1UF,20%,400V	04222	SR508C104MAA
A1C14	285-1341-01			CAP,FXD,PLSTC:MTLZD FILM;0.1UF,20%100V,POLYESTER	TK1913	MKS 2 0.1UF 20%
A1C15	290-1311-00			CAP,FXD,ALUM:10UF,20%,50V,ESR=1.4 OHM (100KHZ,20C),5X11MM,105C,5000HRS	55680	UPL1H100MDH1TD
A1C16	283-0084-02			CAP,FXD,CER DI:270PF,5%,1000V,DISC	60705	562CRE102EF271J
A1C17	285-1341-01			CAP,FXD,PLSTC:MTLZD FILM;0.1UF,20%,100V,POLYESTER	TK1913	MKS 2 0.1UF 20%
A1C18	283-0189-00			CAP,FXD,CER DI:0.1UF,20%,400V	04222	SR508C104MAA
A1C19	285-1341-01			CAP,FXD,PLSTC:MTLZD FILM;0.1UF,20%,100V,POLYESTER	TK1913	MKS 2 0.1UF 20%
A1C20	283-0189-00			CAP,FXD,CER DI:0.1UF,20%,400V	04222	SR508C104MAA
A1C21	290-1311-00			CAP,FXD,ALUM:10UF,20%,50V,ESR=1.4 OHM (100KHZ,20C),5X11MM,105C,5000HRS	55680	UPL1H100MDH1TD
A1C22	290-0939-00			CAP,FXD,ELCTLT:10UF,+100-10%,100V	62643	LX100VB10RM10X2
A1C23	285-1189-00			CAP,FXD,MTLZD:0.1 UF,5%,100 V	05292	PMT 3R .1J 100
A1C24	285-1328-00			CAP,FXD,PLSTC:MTLZD FILM;0.01UF,5%,2000V,POLYPROPYLENE,1.25X.95	TK1913	FKP1 .01/2000/5
A1C25	290-1310-00			CAP,FXD,ALUM:10UF,20%,160V,ESR=24.9 OHM (120HZ,20C),LS=0.200 INCH,13X20MM,105C,5000HRS	0H1N5	CEJSM2C100M
A1C26	290-1311-00			CAP,FXD,ALUM:10UF,20%,50V,ESR=1.4 OHM (100KHZ,20C),5X11MM,105C,5000HRS	55680	UPL1H100MDH1TD
A1C27	283-0339-01			CAP,FXD,CERAMIC:MLC;0.22UF,10%,50V,X7R,0.300 X 0.300	TK2058	FK22X7R1H224K-T
A1C28	281-0775-01			CAP,FXD,CERAMIC:MCL;0.1UF,20%,50V,Z5U,0.170	04222	SA105E104MAA
A1C29	290-1302-00			CAP,FXD,ALUM:1000UF,20%,35V,12.5 X 30MM(0.492 X 1.180)	0H1N5	CEEFM1V102M7
A1C30	290-1310-00			CAP,FXD,ALUM:10UF,20%,160V,ESR=24.9 OHM (120HZ,20C),LS=0.200 INCH,13X20MM,105C,5000HRS	0H1N5	CEJSM2C100M
A1C31	290-1267-00			CAP,FXD,ALUM:560UF,20%,50V,ESR=0.40 OHM (100KHZ,20C)	0H1N5	CEEFM1H561M7
A1C32	290-0939-00			CAP,FXD,ELCTLT:10UF,+100-10%,100V	62643	LX100VB10RM10X2
A1C33	290-0939-00			CAP,FXD,ELCTLT:10UF,+100-10%,100V	62643	LX100VB10RM10X2

Replaceable electrical parts list (Cont.)

Component number	Tektronix part number	Effective	Discont'd	Name and description	Mfr. code	Mfr. part no.
A1C34	290-1309-00			CAP,FXD,AL:100UF,20%,63V,10 X 20MM,RDL,105 DEG,LOW Z	0H1N5	CEEFM1J101M6-T4
A1C35	290-1314-00			CAP,FXD,ALUM:330UF,20%,63V,ESR=0.049 OHM (100KHZ,20C),12.5X25MM,105C,LOW IMP	55680	UPL1J331MRH1TD
A1C36	290-1302-00			CAP,FXD,ALUM:1000UF,20%,35V,12.5 X 30MM(0.492 X 1.180)	0H1N5	CEEFM1V102M7
A1C37	290-1309-00			CAP,FXD,AL:100UF,20%,63V,10 X 20MM,RDL,105 DEG,LOW Z	0H1N5	CEEFM1J101M6-T4
A1C38	281-0775-01			CAP,FXD,CERAMIC:MCL:0.1UF,20%,50V,Z5U,0.170	04222	SA105E104MAA
A1C40	290-1309-00			CAP,FXD,AL:100UF,20%,63V,10 X 20MM,RDL,105 DEG,LOW Z	0H1N5	CEEFM1J101M6-T4
A1C41	290-1267-00			CAP,FXD,ALUM:560UF,20%,50V,ESR=0.40 OHM (100KHZ,20C)	0H1N5	CEEFM1H561M7
A1C42	281-0773-00			CAP,FXD,CERAMIC:MLC:0.01UF,10%,100V	TK1743	CGB103KEX
A1C43	281-0775-01			CAP,FXD,CERAMIC:MCL:0.1UF,20%,50V,Z5U,0.170	04222	SA105E104MAA
A1C44	285-1420-00			CAP,FXD,PLSTC:FILM&FOIL:4700PF,63V,5%	TK1913	FKP2 4700/63/5
A1C45	281-0775-01			CAP,FXD,CERAMIC:MCL:0.1UF,20%,50V,Z5U,0.170	04222	SA105E104MAA
A1C46	281-0775-01			CAP,FXD,CERAMIC:MCL:0.1UF,20%,50V,Z5U,0.170	04222	SA105E104MAA
A1C47	281-0813-00			CAP,FXD,CERAMIC:MLC:0.047UF,20%,50V,0.100	04222	SA105E473MAA
A1C48	283-0111-04			CAP,FXD,CER DI:0.1UF,20%,50V	04222	SR595C104MAAAP1
A1C49	281-0775-01			CAP,FXD,CERAMIC:MCL:0.1UF,20%,50V,Z5U,0.170	04222	SA105E104MAA
A1C51	285-1331-00			CAP,FXD,MTLZD:0.47UF,5%,400V	TK1913	MKS4 .47/400/5
A1C52	285-1331-00			CAP,FXD,MTLZD:0.47UF,5%,400V	TK1913	MKS4 .47/400/5
A1C53	281-0823-00			CAP,FXD,CER DI:470PF,10%,50V	04222	SA101A471KAA
A1C55	281-0786-00			CAP,FXD,CERAMIC:MLC:150PF,10%,100V,0.100 X0.170	04222	SA101A151KAA
A1C56	290-1315-00			CAP,FXD,ALUM:47UF,20%,35V,ESR=0.34 OHM (100KHZ,20C),6X11MM,LOW IMP	55680	UPL1V470MEH1TD
A1C57	285-1251-00			CAP,FXD,PLSTC:0.033UF,10%,400VAC	TK0515	PMR10 333 K400
A1C58	290-1264-00			CAP,FXD,ELCTLT:0.047F,-20%/+80%,5.5V,0.53OD	61058	PANASONIC EECF5
A1C59	285-1470-00			CAP,FXD,PLSTC:MTLZD FILM:330PF,1600VDC/500VAC	TK1913	FKP1 330/1600/5
A1C60	285-1420-00			CAP,FXD,PLSTC:FILM&FOIL:4700PF,63V,5%	TK1913	FKP2 4700/63/5
A1C61	281-0775-01			CAP,FXD,CERAMIC:MCL:0.1UF,20%,50V,Z5U,0.170	04222	SA105E104MAA
A1C62	290-1314-00			CAP,FXD,ALUM:330UF,20%,63V,ESR=0.049 OHM (100KHZ,20C),12.5X25MM,105C,LOW IMP	55680	UPL1J331MRH1TD
A1C63	281-0775-01			CAP,FXD,CERAMIC:MCL:0.1UF,20%,50V,Z5U,0.170	04222	SA105E104MAA
A1C64	281-0775-01			CAP,FXD,CERAMIC:MCL:0.1UF,20%,50V,Z5U,0.170	04222	SA105E104MAA
A1C65	281-0775-01			CAP,FXD,CERAMIC:MCL:0.1UF,20%,50V,Z5U,0.170	04222	SA105E104MAA
A1C66	285-1246-00			CAP,FXD,PPR DI:0.022UF,20%,250VAC	TK0515	PME 289 MB 5220
A1C67	281-0765-00			CAP,FXD,CER DI:100PF,5%,100V	04222	SA102A101JAA
A1C68	281-0765-00			CAP,FXD,CER DI:100PF,5%,100V	04222	SA102A101JAA
A1C69	281-0775-01			CAP,FXD,CERAMIC:MCL:0.1UF,20%,50V,Z5U,0.170	04222	SA105E104MAA
A1C70	281-0775-01			CAP,FXD,CERAMIC:MCL:0.1UF,20%,50V,Z5U,0.170	04222	SA105E104MAA

Replaceable electrical parts list (Cont.)

Component number	Tektronix part number	Effective	Discont'd	Name and description	Mfr. code	Mfr. part no.
A1C71	290-1275-00			CAP,FXD,ALUM:330UF,20%,400V,35X35MM,105C	55680	LGQ2G331MHSC
A1C72	281-0765-00			CAP,FXD,CER DI:100PF,5%,100V	04222	SA102A101JAA
A1C74	285-1246-00			CAP,FXD,PPR DI:0.022UF,20%,250VAC	TK0515	PME 289 MB 5220
A1C75	285-1222-00			CAP,FXD,PLSTC:0.068UF,20%,250V	TK0515	PME 271 M 568
A1C76	281-0775-01			CAP,FXD,CERAMIC:MCL;0.1UF,20%,50V,Z5U,0.170	04222	SA105E104MAA
A1C77	283-0339-01			CAP,FXD,CERAMIC:MLC;0.22UF,10%,50V,X7R,0.300 X 0.300	TK2058	FK22X7R1H224K-T
A1CR1	152-0141-02			DIODE,SIG:ULTRA FAST;40V,150MA,4NS,2PF	27014	FDH9427
A1CR2	152-0061-00			DIODE,SIG:200V,0.1A,700NS,4.0PF	12969	PV122
A1CR3	152-0141-02			DIODE,SIG:ULTRA FAST;40V,150MA,4NS,2PF	27014	FDH9427
A1CR4	152-0061-00			DIODE,SIG:200V,0.1A,700NS,4.0PF	12969	PV122
A1CR5	152-0061-00			DIODE,SIG:200V,0.1A,700NS,4.0PF	12969	PV122
A1CR6	152-0061-00			DIODE,SIG:200V,0.1A,700NS,4.0PF	12969	PV122
A1CR7	152-0409-00			DIODE,RECT:FAST RCVRY;12KV,10MA,250NS	83701	CRVT150
A1CR8	152-0061-00			DIODE,SIG:200V,0.1A,700NS,4.0PF	12969	PV122
A1CR9	152-0061-00			DIODE,SIG:200V,0.1A,700NS,4.0PF	12969	PV122
A1CR10	152-0400-00			DIODE,RECT:FAST RCVRY;400V,1A,200NS	0LUA3	1N4936
A1CR11	152-0400-00			DIODE,RECT:FAST RCVRY;400V,1A,200NS	0LUA3	1N4936
A1CR12	152-0141-02			DIODE,SIG:ULTRA FAST;40V,150MA,4NS,2PF	27014	FDH9427
A1CR13	152-0141-02			DIODE,SIG:ULTRA FAST;40V,150MA,4NS,2PF	27014	FDH9427
A1CR14	152-0141-02			DIODE,SIG:ULTRA FAST;40V,150MA,4NS,2PF	27014	FDH9427
A1CR15	152-0400-00			DIODE,RECT:FAST RCVRY;400V,1A,200NS	0LUA3	1N4936
A1CR16	152-0720-00			DIODE,RECT:ULTRA FAST;200V,8A,25NS,100A IF SM *ATTACHED PARTS*	0LUA3	BYW29-200
	210-0406-00			NUT,PLAIN,HEX:4-40 X 0.188,BRS CD PL	73743	12161-50
	211-0008-00			SCREW,MACHINE:4-40 X 0.25,PNH,STL	TK0435	ORDER BY DESC
	214-3841-00			HEAT SINK,SEMIC:XTR,TO-220;VERTICALMOUNT,(2) SOLDERABLE TABS,ALUMINUM,BLACK ANODIZE *END ATTACHED PARTS*	13103	6021PB
A1CR17	152-0720-00			DIODE,RECT:ULTRA FAST;200V,8A,25NS,100A IF SM *ATTACHED PARTS*	0LUA3	BYW29-200
	210-0406-00			NUT,PLAIN,HEX:4-40 X 0.188,BRS CD PL	73743	12161-50
	211-0008-00			SCREW,MACHINE:4-40 X 0.25,PNH,STL	TK0435	ORDER BY DESC
	214-3841-00			HEAT SINK,SEMIC:XTR,TO-220;VERTICALMOUNT,(2) SOLDERABLE TABS,ALUMINUM,BLACK ANODIZE *END ATTACHED PARTS*	13103	6021PB
A1CR18	152-0720-00			DIODE,RECT:ULTRA FAST;200V,8A,25NS,100A IF SM *ATTACHED PARTS*	0LUA3	BYW29-200
	210-0406-00			NUT,PLAIN,HEX:4-40 X 0.188,BRS CD PL	73743	12161-50

Replaceable electrical parts list (Cont.)

Component number	Tektronix part number	Effective	Discont'd	Name and description	Mfr. code	Mfr. part no.
	211-0008-00			SCREW,MACHINE:4-40 X 0.25,PNH,STL	TK0435	ORDER BY DESC
	214-3841-00			HEAT SINK,SEMIC:XTR,TO-220;VERTICALMOUNT,(2) SOLDERABLE TABS,ALUMINUM,BLACK ANODIZE *END ATTACHED PARTS*	13103	6021PB
A1CR19	152-0863-00			DIODE,RECT:ULTRA FAST;600V,1A,30NS,SOFT RCVRY	0LUA3	BYV26C
A1CR20	152-0141-02			DIODE,SIG:ULTRA FAST;40V,150MA,4NS,2PF	27014	FDH9427
A1CR21	152-0141-02			DIODE,SIG:ULTRA FAST;40V,150MA,4NS,2PF	27014	FDH9427
A1CR22	152-0400-00			DIODE,RECT:FAST RCVRY;400V,1A,200NS	0LUA3	1N4936
A1CR23	152-0897-00			DIODE,RECT:FAST RCVRY;1000V,1.5A,300NS,SOFT RCVRY	0LUA3	BYV96E
A1CR24	152-0863-00			DIODE,RECT:ULTRA FAST;600V,1A,30NS,SOFT RCVRY	0LUA3	BYV26C
A1CR25	152-0897-00			DIODE,RECT:FAST RCVRY;1000V,1.5A,300NS,SOFT RCVRY	0LUA3	BYV96E
A1CR26	152-0400-00			DIODE,RECT:FAST RCVRY;400V,1A,200NS	0LUA3	1N4936
A1CR27	152-0141-02			DIODE,SIG:ULTRA FAST;40V,150MA,4NS,2PF	27014	FDH9427
A1CR28	152-0863-00			DIODE,RECT:ULTRA FAST;600V,1A,30NS,SOFT RECOVERY	0LUA3	BYV26C
A1CR29	152-0141-02			DIODE,SIG:ULTRA FAST;40V,150MA,4NS,2PF	27014	FDH9427
A1CR30	152-0141-02			DIODE,SIG:ULTRA FAST;40V,150MA,4NS,2PF	27014	FDH9427
A1CR31	152-0141-02			DIODE,SIG:ULTRA FAST;40V,150MA,4NS,2PF	27014	FDH9427
A1CR32	152-1165-00			DIODE,RECT:ULTRA FAST;600V,4A,50NS	04713	MUR460RL
A1CR33	152-1165-00			DIODE,RECT:ULTRA FAST;600V,4A,50NS	04713	MUR460RL
A1CR34	152-1165-00			DIODE,RECT:ULTRA FAST;600V,4A,50NS	04713	MUR460RL
A1CR35	152-1165-00			DIODE,RECT:ULTRA FAST;600V,4A,50NS	04713	MUR460RL
A1DS1	150-0050-00			LAMP,GLOW:135V MAX,1.9MA,C2A-T,WIRE LEAD	0J9R2	NE-2Q-11R-T
A1DS2	150-0050-00			LAMP,GLOW:135V MAX,1.9MA,C2A-T,WIRE LEAD	0J9R2	NE-2Q-11R-T
A1DS3	150-0050-00			LAMP,GLOW:135V MAX,1.9MA,C2A-T,WIRE LEAD	0J9R2	NE-2Q-11R-T
A1DS4	150-0050-00			LAMP,GLOW:135V MAX,1.9MA,C2A-T,WIRE LEAD	0J9R2	NE-2Q-11R-T
A1DS5	150-0050-00			LAMP,GLOW:135V MAX,1.9MA,C2A-T,WIRE LEAD	0J9R2	NE-2Q-11R-T
A1DS6	150-1152-00			DIO,OPTO:LED;HIGH EFFIC. RED,635NM,INTEGRAL RES	50434	HLMP-1600-002
A1DS7	150-0050-00			LAMP,GLOW:135V MAX,1.9MA,C2A-T,WIRE LEAD	0J9R2	NE-2Q-11R-T
A1F1	159-0021-00			FUSE,CARTRIDGE:3AG,2A,250V,FAST BLOW *MOUNTING PARTS*	71400	AGC-2
	200-2264-00			CAP,FUSEHOLDER:3AG FUSES	61935	FEK 031 1666
	204-0906-00			BODY,FUSEHOLDER:3AG & 5 X 20MM FUSES *END MOUNTING PARTS*	61935	TYPE FAU 031.35
A1J1	131-5338-00			CONN,HDR:PCB/WIREWRAP;MALE,STR,1 X 7,0.15CTR, 0.230 MLG X 0.285 TAIL,30 GLD,SIDE BY SIDE STACKABLE	22526	65561-107
A1J2	131-5337-00			CONN,HDR:PCB/WIREWRAP;MALE,STR,1 X 4,0.150	22526	65561-104
A1J3	131-4794-00			CONN,HDR:PCB;MALE,STR,1 X 2,0.1 CTR,0.235 MLG X 0.112 TAIL,30GOLD,0.035 DIA PCB	53387	2402-6112 UB

Replaceable electrical parts list (Cont.)

Component number	Tektronix part number	Effective	Discont'd	Name and description	Mfr. code	Mfr. part no.
A1J4	131-3392-00			CONN,HDR:PCB;MALE,STR,1 X 10,0.1 CTR,0.230	00779	1-102844-1
A1J5	131-4794-00		671-2484-05	CONN,HDR:PCB;MALE,STR,1 X 2,0.1 CTR,0.235 MLG X 0.112 TAIL,30GOLD,0.035 DIA PCB	53387	2402-6112 UB
A1J5	131-3270-00	671-2484-06		CONN,HDR; PCB,;MALE,STR,1 X 2,0.1 CTR,0.295 MLG X 0.140 TAIL,TIN,PLZ WALL,W/FRICTION LOCK	27264	22-23-2021
A1J6	131-4794-00			CONN,HDR:PCB;MALE,STR,1 X 2,0.1 CTR,0.235 MLG X 0.112 TAIL,30GOLD,0.035 DIA PCB	53387	2402-6112 UB
A1J7	131-4794-00			CONN,HDR:PCB;MALE,STR,1 X 2,0.1 CTR,0.235 MLG X 0.112 TAIL,30GOLD,0.035 DIA PCB	53387	2402-6112 UB
A1J8	119-1946-00			FILTER,RFI:1A,250V,400HZ W/PC TERMINAL	0GV52	FN326-1/02-K-D-
A1L1	108-1262-00			INDUCTOR,FXD:POWER;100UH,10%,I<0.75A,RDC<0.23 OHM,Q>15,SRF>5.4MHZ,BOBBIN CORE	TK2058	TSL0807-101KR75
A1L2	108-1262-00			INDUCTOR,FXD:POWER;100UH,10%,I<0.75A,RDC<0.23 OHM,Q>15,SRF>5.4MHZ,BOBBIN CORE	TK2058	TSL0807-101KR75
A1L3	108-1412-00			INDUCTOR,FXD:POWER;4.7UH,20%,I<3.7A,RDC<0.017 OHM,Q>10,SRF>30MHZ,BOBBIN	TK2058	TSL0807-4R7M3R0
A1L4	108-1411-00			INDUCTOR,FXD:POWER;47UH,10%,IDC<0.96 A,RDC<0.17 OHM,Q>20,SRF>7.6 MHZ,BOBBIN	TK2058	TSL0707-470KR94
A1L5	108-1411-00			INDUCTOR,FXD:POWER;47UH,10%,IDC<0.96 A,RDC<0.17 OHM,Q>20,SRF>7.6 MHZ,BOBBIN	TK2058	TSL0707-470KR94
A1L6	108-1411-00			INDUCTOR,FXD:POWER;47UH,10%,IDC<0.96 A,RDC<0.17 OHM,Q>20,SRF>7.6 MHZ,BOBBIN	TK2058	TSL0707-470KR94
A1L7	108-1412-00			INDUCTOR,FXD:POWER;4.7UH,20%,I<3.7A,RDC<0.017 OHM,Q>10,SRF>30MHZ,BOBBIN	TK2058	TSL0807-4R7M3R0
A1L8	108-0205-00			INDUCTOR,FXD:POWER;1MH,5%,IDC<400 MA,RDC<2.12 OHM,Q>47@0.25MHZ	76493	8209
A1P8	131-3199-00			CONN,SHUNT:SHUNT;FEMALE,STR,1 X 2,0.1 CTR, 0.2 H,LOW PROFILE,JUMPER	22526	68786-202
A1P9	131-3199-00			CONN,SHUNT:SHUNT;FEMALE,STR,1 X 2,0.1 CTR, 0.2 H,LOW PROFILE,JUMPER	22526	68786-202
A1Q1	151-0190-00			XTR,SIG:BIPOLAR,NPN;40V,200MA,300MHZ,AMPL	04713	2N3904
A1Q2	151-0749-00			XTR,SIG:BIPOLAR,PNP;400V,500MA,50MHZ,AMPL	04713	MPSA94
A1Q3	151-0188-00			XTR,SIG:BIPOLAR,PNP;40V,200MA,250MHZ,AMPL	04713	2N3906
A1Q4	151-0190-00			XTR,SIG:BIPOLAR,NPN;40V,200MA,300MHZ,AMPL	04713	2N3904
A1Q5	151-0350-03			XTR,SIG:BIPOLAR,PNP;150V,600MA,100MHZ,AMPL	04713	2N5401RLRP
A1Q6	151-0347-02			XTR,SIG:BIPOLAR,NPN;160V,600MA,100MHZ,AMPL	04713	2N5551RLRP
A1Q7	151-0476-00			XTR,PWR:BIPOLAR,NPN;100V,3.0A,3.0MHZ,AMPL *ATTACHED PARTS*	04713	TIP31C
	210-0406-00			NUT,PLAIN,HEX:4-40 X 0.188,BRS CD PL	73743	12161-50
	211-0008-00			SCREW,MACHINE:4-40 X 0.25,PNH,STL	TK0435	ORDER BY DESC
	214-3841-00			HEAT SINK,SEMIC:XTR,TO-220;VERTICALMOUNT,(2)SOLD- ERABLE TABS,ALUMINUM,BLACK ANODIZE *END ATTACHED PARTS*	13103	6021PB
A1Q8	151-0216-04			XTR,SIG:BIPOLAR,PNP;25V,100MA,170MHZ,AMPL	04713	MPS6523RLRP

Replaceable electrical parts list (Cont.)

Component number	Tektronix part number	Effective	Discont'd	Name and description	Mfr. code	Mfr. part no.
A1Q9	151-0188-00			XTR,SIG:BIPOLAR,PNP;40V,200MA,250MHZ,AMPL	04713	2N3906
A1Q10	151-0190-00			XTR,SIG:BIPOLAR,NPN;40V,200MA,300MHZ,AMPL	04713	2N3904
A1Q11	151-0528-00			THYRISTOR,PWR:BIPOLAR,SCR;50V,16A RMS,PHASE	04713	2N6400
A1Q12	151-0188-00			XTR,SIG:BIPOLAR,PNP;40V,200MA,250MHZ,AMPL	04713	2N3906
A1Q13	151-0190-00			XTR,SIG:BIPOLAR,NPN;40V,200MA,300MHZ,AMPL	04713	2N3904
A1Q14	151-1286-00			XTR,PWR:MOS,N-CH;800V,4.0A,3.0 OHM	0LUA3	BUK456-800A
				ATTACHED PARTS		
	210-0406-00			NUT,PLAIN,HEX:4-40 X 0.188,BRS CD PL	73743	12161-50
	211-0008-00			SCREW,MACHINE:4-40 X 0.25,PNH,STL	TK0435	ORDER BY DESC
	214-4197-00			HTSK:XTR,T0=218,ALW/SOLDERABLE ROLL PINS,5298B	13103	6298B MODIFIED
				END ATTACHED PARTS		
A1Q15	151-0188-00			XTR,SIG:BIPOLAR,PNP;40V,200MA,250MHZ,AMPL	04713	2N3906
A1R1	301-0225-02			RES,FXD,CMPSN:2.2M OHM,5%,0.5W	50139	EB2255
A1R2	303-0155-00			RES,FXD,CMPSN:1.5M OHM,5%,1W	50139	GB1555
A1R3	303-0155-00			RES,FXD,CMPSN:1.5M OHM,5%,1W	50139	GB1555
A1R4	303-0155-00			RES,FXD,CMPSN:1.5M OHM,5%,1W	50139	GB1555
A1R5	322-3344-00		B029999	RES,FXD,FILM:37.4K OHM,1%,0.2W,TC=T0MI,SM BODY	91637	CCF501G37401F
A1R5	322-3329-00	B030000		RES,FXD,FILM; 26.1K OHM,1%,0.2W,TC=T0 MI,SMALL BODY	91637	CCF50-2612F-R36
A1R6	322-3251-00			RES,FXD,FILM:4.02K OHM,1%,0.2W,TC=T0TAPED &	91637	CCF501G40200F
A1R8	322-3097-00			RES,FXD:METAL FILM;100 OHM,1%,0.2W,TC=100 PPM	91637	CCF501G100R0F
A1R9	311-1256-00			RES,VAR,TRMR:CERMET;2.5M OHM,10%,0.5W,0.375	32997	3386F-1-255
A1R10	322-3385-00			RES,FXD:METAL FILM;100K OHM,1%,0.2W,TC=100 PPM	91637	CCF501G10002F
A1R11	322-3097-00			RES,FXD:METAL FILM;100 OHM,1%,0.2W,TC=100 PPM	91637	CCF501G100R0F
A1R12	322-3097-00			RES,FXD:METAL FILM;100 OHM,1%,0.2W,TC=100 PPM	91637	CCF501G100R0F
A1R13	303-0155-00			RES,FXD,CMPSN:1.5M OHM,5%,1W	50139	GB1555
A1R14	322-3339-00			RES,FXD:METAL FILM;33.2K OHM,1%,0.2W,TC=100	91637	CCF50-2-G3322FT
A1R15	322-3481-00			RES,FXD,FILM:1M OHM,1%,0.2W,TC=T0MI,SMALL BODY	91637	CCF501G10003F
A1R16	315-0101-03			RES,FXD,CMPSN:100 OHM,5%,0.25W	50139	CB1015
A1R17	322-3254-00			RES,FXD,FILM:4.32K OHM,1%,0.2W,TC=T0MI,SM BODY	91637	CCF502G4321FT
A1R18	322-3162-00			RES,FXD:METAL FILM;475 OHM,1%,0.2W,TC=100 PPM	91637	CCF50G475R0F
A1R19	315-0223-03	B030000		RES,FXD,CMPSN:22K OHM,5%,0.25 WALLEEN BRADLEY	50139	CB2235 ALLEN BR
A1R20	315-0102-03			RES,FXD,CMPSN:1K OHM,5%,0.25W	50139	CB1025 (CARD PA
A1R21	322-3306-00			RES,FXD:METAL FILM;15K OHM,1%,0.2W,TC=100 PPM	91637	CCF50-2-G1502F
A1R22	322-3105-00			RES,FXD:METAL FILM;121 OHM,1%,0.2W,TC=100 PPM	91637	CCF501G121ROF
A1R23	322-3385-00			RES,FXD:METAL FILM;100K OHM,1%,0.2W,TC=100 PPM	91637	CCF501G10002F
A1R24	322-3222-00			RES,FXD:METAL FILM;2K OHM,1%,0.2W,TC=100 PPM	91637	CCF501G20000F

Replaceable electrical parts list (Cont.)

Component number	Tektronix part number	Effective	Discont'd	Name and description	Mfr. code	Mfr. part no.
A1R25	322-3034-00			RES,FXD:METAL FILM;22.1 OHM,1%,0.2W,TC=100 PPM	91637	CCF50-2-G22R10F
A1R26	315-0470-03			RES,FXD,CMPSN:47 OHM,5%,0.25W	50139	CB4705
A1R27	322-3162-00			RES,FXD:METAL FILM;475 OHM,1%,0.2W,TC=100 PPM	91637	CCF50G475R0F
A1R28	322-3222-00			RES,FXD:METAL FILM;2K OHM,1%,0.2W,TC=100 PPM	91637	CCF501G20000F
A1R29	322-3001-00			RES,FXD:METAL FILM;10 OHM,1%,0.2W,TC=100 PPM	91637	CCF501G10R00F
A1R30	315-0226-01			RES,FXD,CMPSN:22 M OHM,5%,0.25WALLEN BRADLEY	50139	CB2265
A1R31	315-0471-03			RES,FXD,CMPSN:470 OHM,5%,0.25W	50139	CB4715
A1R32	315-0471-03			RES,FXD,CMPSN:470 OHM,5%,0.25W	50139	CB4715
A1R33	322-3354-00			RES,FXD:METAL FILM;47.5K OHM,1%,0.2W,TC=100	91637	CCF501G47501F
A1R34	315-0471-03			RES,FXD,CMPSN:470 OHM,5%,0.25W	50139	CB4715
A1R35	322-3273-00			RES,FXD:METAL FILM;6.81K OHM,1%,0.2W,TC=100	91637	CCF50-2-G68100F
A1R36	315-0102-03			RES,FXD,CMPSN:1K OHM,5%,0.25W	50139	CB1025 (CARD PA
A1R37	322-3385-00		B029999	RES,FXD:METAL FILM;100K OHM,1%,0.2W,TC=100 PPM	91637	CCF501G10002F
A1R37	322-3373-00	B030000				
A1R38	311-2239-00			RES,VAR,TRMR:CERMET;100K OHM,20%,0.5W,0.197	TK2073	GF06UT2 104 M L
A1R39	322-3001-00			RES,FXD:METAL FILM;10 OHM,1%,0.2W,TC=100 PPM	91637	CCF501G10R00F
A1R40	322-3239-00			RES,FXD,FILM:3.01K OHM,1%,0.2W,TC=T0MI,SM BODY	91637	CCF501G30100F
A1R41	322-3435-00			RES,FXD:METAL FILM;332K OHM,1%,0.2W,TC=100 PPM	91637	CCF50-2-33202FT
A1R42	311-2240-00			RES,VAR,NONWW:TRMR,200K OHM,20%,0.5W LINEAR	TK2073	GF06UT2 204 M L
A1R43	322-3273-00			RES,FXD:METAL FILM;6.81K OHM,1%,0.2W,TC=100	91637	CCF50-2-G68100F
A1R44	311-2239-00		B029999	RES,VAR,TRMR:CERMET;100K OHM,20%,0.5W,0.197	TK2073	GF06UT2 104 M L
A1R44	311-2237-00	B030000		HARDWARE KIT; REPLACEMENT;K4000	TK2476	020-2363-00
A1R45	322-3001-00			RES,FXD:METAL FILM;10 OHM,1%,0.2W,TC=100 PPM	91637	CCF501G10R00F
A1R46	322-3322-00			RES,FXD:METAL FILM;22.1K OHM,1%,0.2W,TC=100	91637	CCF501G22101F
A1R47	322-3001-00			RES,FXD:METAL FILM;10 OHM,1%,0.2W,TC=100 PPM	91637	CCF501G10R00F
A1R48	322-3001-00			RES,FXD:METAL FILM;10 OHM,1%,0.2W,TC=100 PPM	91637	CCF501G10R00F
A1R49	322-3024-00			RES,FXD,FILM:17.4 OHM,1%,0.2W,TC=T0,SMALL BODY	91637	CCF50-2-G17R40F
A1R50	322-3322-00			RES,FXD:METAL FILM;22.1K OHM,1%,0.2W,TC=100	91637	CCF501G22101F
A1R51	322-3001-00			RES,FXD:METAL FILM;10 OHM,1%,0.2W,TC=100 PPM	91637	CCF501G10R00F
A1R52	322-3193-00			RES,FXD:METAL FILM;1K OHM,1%,0.2W,TC=100 PPM	91637	CCF501G10000F
A1R53	311-2239-00			RES,VAR,TRMR:CERMET;100K OHM,20%,0.5W,0.197	TK2073	GF06UT2 104 M L
A1R54	322-3193-00			RES,FXD:METAL FILM;1K OHM,1%,0.2W,TC=100 PPM	91637	CCF501G10000F
A1R55	322-3481-00			RES,FXD,FILM:1M OHM.1%.0.2W,TC=T0MI,SMALL BODY	91637	CCF501G10003F
A1R56	322-3193-00			RES,FXD:METAL FILM;1K OHM,1%,0.2W,TC=100 PPM	91637	CCF501G10000F
A1R57	322-3235-00			RES,FXD:METAL FILM;2.74K OHM,1%,0.2W,TC=100	91637	CCF501G27400F
A1R58	322-3193-00			RES,FXD:METAL FILM;1K OHM,1%,0.2W,TC=100 PPM	91637	CCF501G10000F

Replaceable electrical parts list (Cont.)

Component number	Tektronix part number	Effective	Discont'd	Name and description	Mfr. code	Mfr. part no.
A1R59	322-3193-00			RES,FXD:METAL FILM;1K OHM,1%,0.2W,TC=100 PPM	91637	CCF501G10000F
A1R60	322-3260-00			RES,FXD,FILM:4.99K OHM,1%,0.2W,TC=T0	91637	CCF501G49900F
A1R61	322-3261-00			RES,FXD,FILM:5.11K OHM,1%,0.2W,TC=T0MI,SM BODY	91637	CCF50G5111FT
A1R62	322-3097-00			RES,FXD:METAL FILM;100 OHM,1%,0.2W,TC=100 PPM	91637	CCF501G100R0F
A1R63	322-3001-00			RES,FXD:METAL FILM;10 OHM,1%,0.2W,TC=100 PPM	91637	CCF501G10R00F
A1R64	322-3001-00			RES,FXD:METAL FILM;10 OHM,1%,0.2W,TC=100 PPM	91637	CCF501G10R00F
A1R65	322-3201-00			RES,FXD:METAL FILM;1.21K OHM,1%,0.2W,TC=100	91637	CCF501G12100F
A1R66	322-3385-00			RES,FXD:METAL FILM;100K OHM,1%,0.2W,TC=100 PPM	91637	CCF501G10002F
A1R67	322-3385-00			RES,FXD:METAL FILM;100K OHM,1%,0.2W,TC=100 PPM	91637	CCF501G10002F
A1R68	322-3339-00			RES,FXD:METAL FILM;33.2K OHM,1%,0.2W,TC=100	91637	CCF50-2-G3322FT
A1R69	307-0106-00			RES,FXD,CMPSN:4.7 OHM,5%,0.25W	50139	CB47G5
A1R70	303-0100-00			RES,FXD,CMPSN:10 OHM,5%,1W,COMPOSITION OR FILM	24546	FP32 OR FP1 10
A1R71	322-3222-00			RES,FXD:METAL FILM;2K OHM,1%,0.2W,TC=100 PPM	91637	CCF501G20000F
A1R72	322-3289-00			RES,FXD:METAL FILM;10K OHM,1%,0.2W,TC=100 PPM	91637	CCF50G10001F
A1R73	311-2238-00			RES,VAR,TRMR:CERMET;50K OHM,20%,0.5W,0.197 SQ,SIDE ADJUST	TK2073	GF06UT2 503 M L
A1R74	322-3289-00			RES,FXD:METAL FILM;10K OHM,1%,0.2W,TC=100 PPM	91637	CCF50G10001F
A1R75	322-3306-00			RES,FXD:METAL FILM;15K OHM,1%,0.2W,TC=100 PPM	91637	CCF50-2-G1502F
A1R76	322-3222-00			RES,FXD:METAL FILM;2K OHM,1%,0.2W,TC=100 PPM	91637	CCF501G20000F
A1R77	322-3352-00			RES,FXD,FILM:45.3K OHM,1%,0.2W,TC=T0MI,SM BODY	91637	CCF501G45301F
A1R78	322-3225-00			RES,FXD,FILM:2.15K OHM,1%,0.2W,TC=T0	91637	CCF501G21500F
A1R79	322-3193-00			RES,FXD:METAL FILM;1K OHM,1%,0.2W,TC=100 PPM	91637	CCF501G10000F
A1R80	322-3327-00			RES,FXD,FILM:24.9K OHM,1%,0.2W,TC=T0MI,SM BODY	91637	CCF50-2-G24901F
A1R81	322-3322-00			RES,FXD:METAL FILM;22.1K OHM,1%,0.2W,TC=100	91637	CCF501G22101F
A1R82	322-3322-00			RES,FXD:METAL FILM;22.1K OHM,1%,0.2W,TC=100	91637	CCF501G22101F
A1R83	322-3418-00			RES,FXD:METAL FILM;221K OHM,1%,0.2W,TC=100 PPM	91637	CCF501G22102F
A1R84	322-3235-00			RES,FXD:METAL FILM;2.74K OHM,1%,0.2W,TC=100	91637	CCF501G27400F
A1R85	322-3481-00			RES,FXD,FILM:1M OHM.1%,0.2W,TC=T0MI,SMALL BODY	91637	CCF501G10003F
A1R86	322-3254-00			RES,FXD,FILM:4.32K OHM,1%,0.2W,TC=T0MI,SM BODY	91637	CCF502G4321FT
A1R87	322-3289-00			RES,FXD:METAL FILM;10K OHM,1%,0.2W,TC=100 PPM	91637	CCF50G10001F
A1R88	305-0242-00			RES,FXD,CMPSN:2.4K OHM,5%,2W	11502	GF-3 OR GS-3 24
A1R89	322-3369-00			RES,FXD:METAL FILM;68.1K OHM,1%,0.2W,TC=100	57668	CRB20 FXE 68R1
A1R90	308-0793-00			RES,FXD:0.51 OHM,5%,1WTC=150PPM/DEG C,MI	75042	BW20 .51OHM 5PE
A1R91	322-3193-00			RES,FXD:METAL FILM;1K OHM,1%,0.2W,TC=100 PPM	91637	CCF501G10000F
A1R92	322-3205-00			RES,FXD,FILM:1.33K OHM,1%,0.2W,TC=T0	91637	CCF501G13300F
A1R93	322-3121-00			RES,FXD:METAL FILM;178 OHM,1%,0.2W,TC=100 PPM	91637	CCF501G178R0F

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Component number	Tektronix part number	Effective	Discont'd	Name and description	Mfr. code	Mfr. part no.
A1R94	322-3347-00			RES,FXD,FILM:40.2K OHM,1%,0.2W,TC=T0MI,SM BODY	91637	CCF50-2-G40201F
A1R95	322-3260-00			RES,FXD,FILM:4.99K OHM,1%,0.2W,TC=T0	91637	CCF501G49900F
A1R96	322-3034-00			RES,FXD:METAL FILM;22.1 OHM,1%,0.2W,TC=100 PPM	91637	CCF50-2-G22R10F
A1R97	322-3226-00			RES,FXD:METAL FILM;2.21K OHM,1%,0.2W,TC=100	91637	CCF501G22100F
A1R98	322-3256-00			RES,FXD,FILM:4.53K OHM,1%,0.2W,TC=T0MI,SM BODY	91637	CCF50-2-G4531FT
A1R99	322-3222-00			RES,FXD:METAL FILM;2K OHM,1%,0.2W,TC=100 PPM	91637	CCF501G20000F
A1R100	322-3385-00			RES,FXD:METAL FILM;100K OHM,1%,0.2W,TC=100 PPM	91637	CCF501G10002F
A1R101	322-3222-00			RES,FXD:METAL FILM;2K OHM,1%,0.2W,TC=100 PPM	91637	CCF501G20000F
A1R102	322-3193-00			RES,FXD:METAL FILM;1K OHM,1%,0.2W,TC=100 PPM	91637	CCF501G10000F
A1R103	322-3289-00			RES,FXD:METAL FILM;10K OHM,1%,0.2W,TC=100 PPM	91637	CCF50G10001F
A1R104	322-3435-00			RES,FXD:METAL FILM;332K OHM,1%,0.2W,TC=100 PPM	91637	CCF50-2-33202FT
A1R105	322-3431-00			RES,FXD,FILM:301K OHM,1%,0.2W,TC=T0,SMALL BODY	91637	CCF501G30102F
A1R106	322-3339-00			RES,FXD:METAL FILM;33.2K OHM,1%,0.2W,TC=100	91637	CCF50-2-G3322FT
A1R107	322-3239-00			RES,FXD,FILM:3.01K OHM,1%,0.2W,TC=T0MI,SM BODY	91637	CCF501G30100F
A1R108	322-3222-00			RES,FXD:METAL FILM;2K OHM,1%,0.2W,TC=100 PPM	91637	CCF501G20000F
A1R109	322-3431-00			RES,FXD,FILM:301K OHM,1%,0.2W,TC=T0,SMALL BODY	91637	CCF501G30102F
A1R110	322-3322-00			RES,FXD:METAL FILM;22.1K OHM,1%,0.2W,TC=100	91637	CCF501G22101F
A1R111	322-3351-00			RES,FXD:METAL FILM;44.2K OHM,1%,0.2W,TC=100	91637	CCF501G4422FT
A1R112	322-3452-00			RES,FXD,FILM:499K OHM,1%,0.2W,TC=T0MI,SMALL	91637	CCF50-2-G4993FT
A1R113	322-3452-00			RES,FXD,FILM:499K OHM,1%,0.2W,TC=T0MI,SMALL	91637	CCF50-2-G4993FT
A1R114	322-3339-00			RES,FXD:METAL FILM;33.2K OHM,1%,0.2W,TC=100	91637	CCF50-2-G3322FT
A1R115	322-3401-00			RES,FXD,FILM:147K OHM,1%,0.2W,TC=T0MI,SMALL	57668	CRB20 FXE 147K
A1R116	308-0290-00			RES,FXD,WW:8 OHM,5%,5W	91637	CW52-8R000J T/R
A1R117	322-3393-00			RES,FXD:METAL FILM;121K OHM,1%,0.2W,TC=100 PPM	91637	CCF501G12102F
A1R118	322-3393-00			RES,FXD:METAL FILM;121K OHM,1%,0.2W,TC=100 PPM	91637	CCF501G12102F
A1R119	305-0154-00			RES,FXD,CMPSN:150K OHM,5%,2W	50139	HB1545
A1R120	306-0104-00			RES,FXD,CMPSN:100K OHM,10%,2W	24546	FP42 OR FP2 100
A1R121	305-0154-00			RES,FXD,CMPSN:150K OHM,5%,2W	50139	HB1545
A1R122	306-0104-00			RES,FXD,CMPSN:100K OHM,10%,2W	24546	FP42 OR FP2 100
A1R123	307-0353-00			RES,THERMAL:5 OHM,10%	15454	5DA5R0K-RO-220-
A1R124	322-3322-00			RES,FXD:METAL FILM;22.1K OHM,1%,0.2W,TC=100	91637	CCF501G22101F
A1R125	322-3481-00			RES,FXD,FILM:1M OHM.1%,0.2W,TC=T0MI,SMALL BODY	91637	CCF501G10003F
A1R126	322-3254-00			RES,FXD,FILM:4.32K OHM,1%,0.2W,TC=T0MI,SM BODY	91637	CCF502G4321FT
A1T1	120-1695-00			TRANSFORMER,PWR:HIGH VOLTAGE,FEEDBACK 3V, RESONANT 231V, 100V 1MA,2750V 3.3MA, 6.3V 86MA	75498	120-1695-00

Replaceable electrical parts list (Cont.)

Component number	Tektronix part number	Effective	Discont'd	Name and description	Mfr. code	Mfr. part no.
A1T2	120-1532-00			TRANSFORMER,RF:TOROID,ISOLATION,RATIO 1:1,IND 100-300 UH, DCR 1.5 OHM POTTED, PKG 0.8 X 0.65,0.55 HIGH	75498	128-8036-01
A1T3	120-1921-00			TRANSFORMER,RF:PCB;INPUT,88V@0.9A,88V@0.20A, 15V@0.20A,OUTPUT +/- 11V@0.8A,5V@2A,40V@0.385A, PRIIND 280UH	75498	129-2023-EB
A1TP1	214-4085-00			TERM,TEST POINT:0.070 ID,0.220 H,0.063 DIAP CB,0.015 X 0.032 BRASS,W/RED NYLON COLLAR	26364	104-01-02
A1TP2	214-4085-00			TERM,TEST POINT:0.070 ID,0.220 H,0.063 DIAP CB,0.015 X 0.032 BRASS,W/RED NYLON COLLAR	26364	104-01-02
A1TP3	214-4085-00			TERM,TEST POINT:0.070 ID,0.220 H,0.063 DIAP CB,0.015 X 0.032 BRASS,W/RED NYLON COLLAR	26364	104-01-02
A1U1	152-0900-00			MODULE,HV:7.5KVAC IN,15KVDC OUT,POTTED MODULE	51406	MSL2556
A1U2	156-0067-00			IC,LINEAR:BIPOLAR,OP-AMP	01295	UA741CP
A1U3	156-1719-00			IC,LINEAR:BIPOLAR,OP-AMP;LOW VOLTAGEOPERATION, W/VOLTAGE REFERENCE	27014	LM10CN
A1U4	156-0885-00			IC, OPTOCOUPLER:7.5KV ISOL, VCEO 70V, I COLL 100MA, HFE 400; 6 PIN DIP	04713	CNY17-1
A1U5	156-2761-01			IC,DIGITAL:HCMOS,MULTIVIBRATOR;DUPLICATE OF	0JR04	TC74HC221AP
A1U6	156-2524-00			IC,LINEAR:BIPOLAR,SW-REGULATOR CONTROLLER;PWM, CURRENT MODE,SINGLE TOTEM POLE OUTPUT	48726	UC3842N
A1U7	156-0411-00			IC,LINEAR:BIPOLAR,COMPARATOR;QUAD,SGL SPLY,300NS	01295	LM339N
A1U8	156-2009-00			IC,DIGITAL:HCMOS,FLIP FLOP;DUAL D-TYPE	04713	MC74HC74AN
A1VR1	152-0195-00			DIODE,ZENER:5.1V,5%,0.4W	14552	CD332125
A1VR3	152-0175-00			DIODE,ZENER:5.6V,5%,0.4W	04713	SZG35008 (1N752
A1W1	131-0566-00			BUS,CONDUCTOR:DUMMY RES,0.094 OD X 0.225L	24546	OMA0207
A1W2	131-0566-00			BUS,CONDUCTOR:DUMMY RES,0.094 OD X 0.225L	24546	OMA0207
A1W3	131-0566-00			BUS,CONDUCTOR:DUMMY RES,0.094 OD X 0.225L	24546	OMA0207
A2	671-2356-02	B020000	B031065	CIRCUIT BD ASSY:FRONT PANEL	80009	671-2356-01
A2	671-2356-03	B031066		CIRCUIT BD ASSY:FRONT PANEL	80009	671-2356-01
A2J2	174-1168-00	671-2356-02	671-2356-02	CA ASSY,SP:RIBBON;IDC,10,28AWG,4.25L,2X10, 0.1,PCB,X 2X10,0.1,CTRPLZ,RCPT	TK1386	174-1168-00
A2J2	174-3620-00	671-2356-03		CA ASSY,SP:RIBBON,IDC,10,28 AWG,5.0L,2X5,0.1CTR,PCB X 2X5,0.1CTR,RCPT,CTR PLZ,OPOSITE SIDE *ATTACHED PARTS*	53387	174-3620-00
	276-0838-00	671-2356-02	671-2356-02	CORE,EM HALF EMI SUPPRESS,IMPED 298 OHM AT 100MHZ, PKG,2-HALFS W/ CLAMP,0.705 X 0.725,1.28 L,0.276 DIA HOLE *END ATTACHED PARTS*	TK1386	276-0838-00
A2R2	321-5045-00			RES,FXD:THICK FILM;68.1 OHM,1%,0.125W,TC=100 PPM	50139	BCD68R1FT
A2R3	321-5045-00			RES,FXD:THICK FILM;68.1 OHM,1%,0.125W,TC=100 PPM	50139	BCD68R1FT
A2R4	321-5045-00			RES,FXD:THICK FILM;68.1 OHM,1%,0.125W,TC=100 PPM	50139	BCD68R1FT
A2R5	321-5045-00			RES,FXD:THICK FILM;68.1 OHM,1%,0.125W,TC=100 PPM	50139	BCD68R1FT

Replaceable electrical parts list (Cont.)

Component number	Tektronix part number	Effective	Discont'd	Name and description	Mfr. code	Mfr. part no.
A2R6	321-5045-00			RES,FXD:THICK FILM;68.1 OHM,1%,0.125W,TC=100 PPM	50139	BCD68R1FT
A2R7	321-5045-00			RES,FXD:THICK FILM;68.1 OHM,1%,0.125W,TC=100 PPM	50139	BCD68R1FT
A2R8	321-5045-00			RES,FXD:THICK FILM;68.1 OHM,1%,0.125W,TC=100 PPM	50139	BCD68R1FT
A2R9	321-5045-00			RES,FXD:THICK FILM;68.1 OHM,1%,0.125W,TC=100 PPM	50139	BCD68R1FT
A2R10	321-5045-00			RES,FXD:THICK FILM;68.1 OHM,1%,0.125W,TC=100 PPM	50139	BCD68R1FT
A2R11	321-5045-00			RES,FXD:THICK FILM;68.1 OHM,1%,0.125W,TC=100 PPM	50139	BCD68R1FT
A2R12	321-5045-00			RES,FXD:THICK FILM;68.1 OHM,1%,0.125W,TC=100 PPM	50139	BCD68R1FT
A2R13	321-5045-00			RES,FXD:THICK FILM;68.1 OHM,1%,0.125W,TC=100 PPM	50139	BCD68R1FT
A2R14	321-5045-00			RES,FXD:THICK FILM;68.1 OHM,1%,0.125W,TC=100 PPM	50139	BCD68R1FT
A2R15	321-5045-00			RES,FXD:THICK FILM;68.1 OHM,1%,0.125W,TC=100 PPM	50139	BCD68R1FT
A2R16	321-5045-00			RES,FXD:THICK FILM;68.1 OHM,1%,0.125W,TC=100 PPM	50139	BCD68R1FT
A2R17	321-5045-00			RES,FXD:THICK FILM;68.1 OHM,1%,0.125W,TC=100 PPM	50139	BCD68R1FT
A2R18	321-5045-00			RES,FXD:THICK FILM;68.1 OHM,1%,0.125W,TC=100 PPM	50139	BCD68R1FT
A2R19	321-5045-00			RES,FXD:THICK FILM;68.1 OHM,1%,0.125W,TC=100 PPM	50139	BCD68R1FT
A2R20	321-5045-00			RES,FXD:THICK FILM;68.1 OHM,1%,0.125W,TC=100 PPM	50139	BCD68R1FT
A2R21	321-5045-00			RES,FXD:THICK FILM;68.1 OHM,1%,0.125W,TC=100 PPM	50139	BCD68R1FT
A2R22	321-5045-00			RES,FXD:THICK FILM;68.1 OHM,1%,0.125W,TC=100 PPM	50139	BCD68R1FT
A2R23	321-5045-00			RES,FXD:THICK FILM;68.1 OHM,1%,0.125W,TC=100 PPM	50139	BCD68R1FT
A2R24	321-5045-00			RES,FXD:THICK FILM;68.1 OHM,1%,0.125W,TC=100 PPM	50139	BCD68R1FT
A2R25	321-5045-00			RES,FXD:THICK FILM;68.1 OHM,1%,0.125W,TC=100 PPM	50139	BCD68R1FT
A2R26	321-5045-00			RES,FXD:THICK FILM;68.1 OHM,1%,0.125W,TC=100 PPM	50139	BCD68R1FT
A2R27	321-5045-00			RES,FXD:THICK FILM;68.1 OHM,1%,0.125W,TC=100 PPM	50139	BCD68R1FT
A2R28	321-5045-00			RES,FXD:THICK FILM;68.1 OHM,1%,0.125W,TC=100 PPM	50139	BCD68R1FT
A2R29	321-5045-00			RES,FXD:THICK FILM;68.1 OHM,1%,0.125W,TC=100 PPM	50139	BCD68R1FT
A2R30	321-5045-00			RES,FXD:THICK FILM;68.1 OHM,1%,0.125W,TC=100 PPM	50139	BCD68R1FT
A2R31	321-5045-00			RES,FXD:THICK FILM;68.1 OHM,1%,0.125W,TC=100 PPM	50139	BCD68R1FT
A2R32	321-5045-00			RES,FXD:THICK FILM;68.1 OHM,1%,0.125W,TC=100 PPM	50139	BCD68R1FT
A2R33	321-5045-00			RES,FXD:THICK FILM;68.1 OHM,1%,0.125W,TC=100 PPM	50139	BCD68R1FT
A2R34	321-5018-00			RES,FXD:THICK FILM;1.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1001FT
A2R35	321-5018-00			RES,FXD:THICK FILM;1.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1001FT
A2R36	321-5018-00			RES,FXD:THICK FILM;1.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1001FT
A2R37	321-5018-00			RES,FXD:THICK FILM;1.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1001FT
A2R38	321-5030-00			RES,FXD:THICK FILM;10.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1002FT
A2R39	321-5030-00			RES,FXD:THICK FILM;10.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1002FT
A2R40	321-5030-00			RES,FXD:THICK FILM;10.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1002FT
A2R41	321-5030-00			RES,FXD:THICK FILM;10.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1002FT

Replaceable electrical parts list (Cont.)

Component number	Tektronix part number	Effective	Discont'd	Name and description	Mfr. code	Mfr. part no.
A2R42	321-5030-00			RES,FXD:THICK FILM;10.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1002FT
A2R43	321-5030-00			RES,FXD:THICK FILM;10.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1002FT
A2R44	321-5030-00			RES,FXD:THICK FILM;10.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1002FT
A2R45	321-5030-00			RES,FXD:THICK FILM;10.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1002FT
A2R47	321-5113-00			RES,FXD:THICK FILM;75 OHM,1%,0.125W,TC=100 PPM	56845	CRCW1206-75ROFT
A2R48	321-5045-00			RES,FXD:THICK FILM;68.1 OHM,1%,0.125W,TC=100 PPM	50139	BCD68R1FT
A2R49	321-5045-00			RES,FXD:THICK FILM;68.1 OHM,1%,0.125W,TC=100 PPM	50139	BCD68R1FT
A2R50	321-5045-00			RES,FXD:THICK FILM;68.1 OHM,1%,0.125W,TC=100 PPM	50139	BCD68R1FT
A2R51	321-5045-00			RES,FXD:THICK FILM;68.1 OHM,1%,0.125W,TC=100 PPM	50139	BCD68R1FT
A2R52	321-5045-00			RES,FXD:THICK FILM;68.1 OHM,1%,0.125W,TC=100 PPM	50139	BCD68R1FT
A2U1	156-5304-01			IC,DIGITAL:HCTCMOS,BUFFER;QUAD BUFFER, /OE	01295	SN74HCT125DR
A2U2	156-5480-01			IC,DIG:HCMOS,RGTR;8-BIT SHIFT RGTR,W/OUTPUT LATCHES	0JR04	TC74HC595AFN(EL
A2U3	156-5480-01			IC,DIG:HCMOS,RGTR;8-BIT SHIFT RGTR,W/OUTPUT LATCHES	0JR04	TC74HC595AFN(EL
A2U4	156-5480-01			IC,DIG:HCMOS,RGTR;8-BIT SHIFT RGTR,W/OUTPUT LATCHES	0JR04	TC74HC595AFN(EL
A2U5	156-5480-01			IC,DIG:HCMOS,RGTR;8-BIT SHIFT RGTR,W/OUTPUT LATCHES	0JR04	TC74HC595AFN(EL
A2U6	156-5358-00			IC,DIGITAL:HCMOS,RGTR;8-BIT PISO SHIFT RGTR	04713	MC74HC165D
A2U7	156-5480-01			IC,DIG:HCMOS,RGTR;8-BIT SHIFT RGTR,W/OUTPUT-LATCHES	0JR04	TC74HC595AFN(EL
A2U8	156-5358-00			IC,DIG:HCMOS,RGTR;8-BIT PISO SHIFT RGTR	04713	MC74HC165D
A2U9	156-5480-01			IC,DIG:HCMOS,RGTR;8-BIT SHIFT RGTR,W/OUTPUT LATCHES	0JR04	TC74HC595AFN(EL
A2U10	156-5074-00			IC,DIGITAL:HCMOS,FLIP FLOP;DUAL D-TYPE	01295	SN74HC74D
A2CR1	152-5038-00			DIODE,SIG:30V,1.5PF,VF = 600MV @ 10MA	04713	MMBD301LT1
A2CR2	152-5038-00			DIODE,SIG:30V,1.5PF,VF = 600MV @ 10MA	04713	MMBD301LT1
A2CR3	152-5038-00			DIODE,SIG:30V,1.5PF,VF = 600MV @ 10MA	04713	MMBD301LT1
A2CR4	152-5038-00			DIODE,SIG:30V,1.5PF,VF = 600MV @ 10MA	04713	MMBD301LT1
A2DS1	150-5011-00			DIODE,OPTO:LED;HIGH EFF,GRN,569NM,1MCD AT 10MA,125 DEG VIEW ANGL, YOKE LEAD BEND	50434	HLMP-P505-021
A2DS2	150-5011-00			DIODE,OPTO:LED;HIGH EFF,GRN,569NM,1MCD AT 10MA,125 DEG VIEW ANGL, YOKE LEAD BEND	50434	HLMP-P505-021
A2DS3	150-5011-00			DIODE,OPTO:LED;HIGH EFF,GRN,569NM,1MCD AT 10MA,125 DEG VIEW ANGL, YOKE LEAD BEND	50434	HLMP-P505-021
A2DS4	150-5011-00			DIODE,OPTO:LED;HIGH EFF,GRN,569NM,1MCD AT 10MA,125 DEG VIEW ANGL, YOKE LEAD BEND	50434	HLMP-P505-021
A2DS5	150-5011-00			DIODE,OPTO:LED;HIGH EFF,GRN,569NM,1MCD AT 10MA,125 DEG VIEW ANGL, YOKE LEAD BEND	50434	HLMP-P505-021
A2DS6	150-5011-00			DIODE,OPTO:LED;HIGH EFF,GRN,569NM,1MCD AT 10MA,125 DEG VIEW ANGL, YOKE LEAD BEND	50434	HLMP-P505-021

Replaceable electrical parts list (Cont.)

Component number	Tektronix part number	Effective	Discont'd	Name and description	Mfr. code	Mfr. part no.
A2DS7	150-5011-00			DIODE,OPTO:LED;HIGH EFF,GRN,569NM,1MCD AT 10MA,125 DEG VIEW ANGL,YOKE LEAD BEND	50434	HLMP-P505-021
A2DS8	150-5011-00			DIODE,OPTO:LED;HIGH EFF,GRN,569NM,1MCD AT 10MA,125 DEG VIEW ANGL,YOKE LEAD BEND	50434	HLMP-P505-021
A2DS9	150-5011-00			DIODE,OPTO:LED;HIGH EFF,GRN,569NM,1MCD AT 10MA,125 DEG VIEW ANGL,YOKE LEAD BEND	50434	HLMP-P505-021
A2DS10	150-5011-00			DIODE,OPTO:LED;HIGH EFF,GRN,569NM,1MCD AT 10MA,125 DEG VIEW ANGL,YOKE LEAD BEND	50434	HLMP-P505-021
A2DS11	150-5011-00			DIODE,OPTO:LED;HIGH EFF,GRN,569NM,1MCD AT 10MA,125 DEG VIEW ANGL,YOKE LEAD BEND	50434	HLMP-P505-021
A2DS12	150-5011-00			DIODE,OPTO:LED;HIGH EFF,GRN,569NM,1MCD AT 10MA,125 DEG VIEW ANGL,YOKE LEAD BEND	50434	HLMP-P505-021
A2DS13	150-5011-00			DIODE,OPTO:LED;HIGH EFF,GRN,569NM,1MCD AT 10MA,125 DEG VIEW ANGL,YOKE LEAD BEND	50434	HLMP-P505-021
A2DS14	150-5011-00			DIODE,OPTO:LED;HIGH EFF,GRN,569NM,1MCD AT 10MA,125 DEG VIEW ANGL,YOKE LEAD BEND	50434	HLMP-P505-021
A2DS15	150-5011-00			DIODE,OPTO:LED;HIGH EFF,GRN,569NM,1MCD AT 10MA,125 DEG VIEW ANGL,YOKE LEAD BEND	50434	HLMP-P505-021
A2DS16	150-5011-00			DIODE,OPTO:LED;HIGH EFF,GRN,569NM,1MCD AT 10MA,125 DEG VIEW ANGL,YOKE LEAD BEND	50434	HLMP-P505-021
A2DS17	150-5011-00			DIODE,OPTO:LED;HIGH EFF,GRN,569NM,1MCD AT 10MA,125 DEG VIEW ANGL,YOKE LEAD BEND	50434	HLMP-P505-021
A2DS18	150-5011-00			DIODE,OPTO:LED;HIGH EFF,GRN,569NM,1MCD AT 10MA,125 DEG VIEW ANGL,YOKE LEAD BEND	50434	HLMP-P505-021
A2DS19	150-5011-00			DIODE,OPTO:LED;HIGH EFF,GRN,569NM,1MCD AT 10MA,125 DEG VIEW ANGL,YOKE LEAD BEND	50434	HLMP-P505-021
A2DS20	150-5011-00			DIODE,OPTO:LED;HIGH EFF,GRN,569NM,1MCD AT 10MA,125 DEG VIEW ANGL,YOKE LEAD BEND	50434	HLMP-P505-021
A2DS21	150-5011-00			DIODE,OPTO:LED;HIGH EFF,GRN,569NM,1MCD AT 10MA,125 DEG VIEW ANGL,YOKE LEAD BEND	50434	HLMP-P505-021
A2DS22	150-5011-00			DIODE,OPTO:LED;HIGH EFF,GRN,569NM,1MCD AT 10MA,125 DEG VIEW ANGL,YOKE LEAD BEND	50434	HLMP-P505-021
A2DS23	150-5011-00			DIODE,OPTO:LED;HIGH EFF,GRN,569NM,1MCD AT 10MA,125 DEG VIEW ANGL,YOKE LEAD BEND	50434	HLMP-P505-021
A2DS24	150-5011-00			DIODE,OPTO:LED;HIGH EFF,GRN,569NM,1MCD AT 10MA,125 DEG VIEW ANGL,YOKE LEAD BEND	50434	HLMP-P505-021
A2DS25	150-5011-00			DIODE,OPTO:LED;HIGH EFF,GRN,569NM,1MCD AT 10MA,125 DEG VIEW ANGL,YOKE LEAD BEND	50434	HLMP-P505-021
A2DS26	150-5011-00			DIODE,OPTO:LED;HIGH EFF,GRN,569NM,1MCD AT 10MA,125 DEG VIEW ANGL,YOKE LEAD BEND	50434	HLMP-P505-021
A2DS27	150-5011-00			DIODE,OPTO:LED;HIGH EFF,GRN,569NM,1MCD AT 10MA,125 DEG VIEW ANGL,YOKE LEAD BEND	50434	HLMP-P505-021
A2DS28	150-5011-00			DIODE,OPTO:LED;HIGH EFF,GRN,569NM,1MCD AT 10MA,125 DEG VIEW ANGL,YOKE LEAD BEND	50434	HLMP-P505-021
A2DS29	150-5011-00			DIODE,OPTO:LED;HIGH EFF,GRN,569NM,1MCD AT 10MA,125 DEG VIEW ANGL,YOKE LEAD BEND	50434	HLMP-P505-021
A2DS30	150-5011-00			DIODE,OPTO:LED;HIGH EFF,GRN,569NM,1MCD AT 10MA,125 DEG VIEW ANGL,YOKE LEAD BEND	50434	HLMP-P505-021

Replaceable electrical parts list (Cont.)

Component number	Tektronix part number	Effective	Discont'd	Name and description	Mfr. code	Mfr. part no.
A2DS31	150-5011-00			DIODE,OPTO:LED;HIGH EFF,GRN,569NM,1MCD AT 10MA,125 DEG VIEW ANGL, YOKE LEAD BEND	50434	HLMP-P505-021
A2DS32	150-5011-00			DIODE,OPTO:LED;HIGH EFF,GRN,569NM,1MCD AT 10MA,125 DEG VIEW ANGL, YOKE LEAD BEND	50434	HLMP-P505-021
A2DS33	150-5011-00			DIODE,OPTO:LED;HIGH EFF,GRN,569NM,1MCD AT 10MA,125 DEG VIEW ANGL, YOKE LEAD BEND	50434	HLMP-P505-021
A2DS34	150-5011-00			DIODE,OPTO:LED;HIGH EFF,GRN,569NM,1MCD AT 10MA,125 DEG VIEW ANGL, YOKE LEAD BEND	50434	HLMP-P505-021
A2DS35	150-5011-00			DIODE,OPTO:LED;HIGH EFF,GRN,569NM,1MCD AT 10MA,125 DEG VIEW ANGL, YOKE LEAD BEND	50434	HLMP-P505-021
A2DS36	150-5011-00			DIODE,OPTO:LED;HIGH EFF,GRN,569NM,1MCD AT 10MA,125 DEG VIEW ANGL, YOKE LEAD BEND	50434	HLMP-P505-021
A2DS37	150-5011-00			DIODE,OPTO:LED;HIGH EFF,GRN,569NM,1MCD AT 10MA,125 DEG VIEW ANGL, YOKE LEAD BEND	50434	HLMP-P505-021
A2DS38	150-5011-00			DIODE,OPTO:LED;HIGH EFF,GRN,569NM,1MCD AT 10MA,125 DEG VIEW ANGL, YOKE LEAD BEND	50434	HLMP-P505-021
A3	671-2355-11		B029999	CIRCUIT BD ASSY:MAIN	80009	671-2355-11
A3	671-2355-12	B030000	B034401	CIRCUIT BD ASSY:MAIN	80009	671-2355-12
A3	671-2355-13	B034402	B034604	CIRCUIT BD ASSY:MAIN	80009	671-2355-13
A3	671-2355-14	B034605	B036877	CIRCUIT BD ASSY:MAIN	80009	671-2355-14
A3	671-2355-16	B036878	B037757	CIRCUIT BD ASSY:MAIN	80009	671-2355-16
A3	671-2355-18	B037758		CIRCUIT BD ASSY:MAIN	80009	671-2355-18
A3	671-2355-20			CIRCUIT BD ASSY:MAIN	80009	671-2355-18
				ATTACHED PARTS		
	337-0607-00			PLATE,ELEC SHLD:CIRCUIT BOARD	0J260	337-0607-00
				END ATTACHED PARTS		
A3C1	290-5037-01			CAP,FXD,ALUM:10UF,20%,35V,5.7 H X 5 DIA MM	62643	MVK35VC10RME60T
A3C2	283-5114-00			CAP,FXD,CERAMIC:MLC,0.1UF,10%,50V,X7R,1206,SMD	04222	12065C104KAT2A MYRTLE BEACH
A3C3	290-5037-01			CAP,FXD,ALUM:10UF,20%,35V,5.7 H X 5 DIA MM	62643	MVK35VC10RME60T
A3C4	283-5114-00			CAP,FXD,CERAMIC:MLC,0.1UF,10%,50V,X7R,1206,SMD	04222	12065C104KAT2A MYRTLE BEACH
A3C5	283-5114-00			CAP,FXD,CERAMIC:MLC,0.1UF,10%,50V,X7R,1206,SMD	04222	12065C104KAT2A MYRTLE BEACH
A3C6	290-5037-01			CAP,FXD,ALUM:10UF,20%,35V,5.7 H X 5 DIA MM	62643	MVK35VC10RME60T
A3C7	283-5114-00			CAP,FXD,CERAMIC:MLC,0.1UF,10%,50V,X7R,1206,SMD	04222	12065C104KAT2A MYRTLE BEACH
A3C8	283-5114-00			CAP,FXD,CERAMIC:MLC,0.1UF,10%,50V,X7R,1206,SMD	04222	12065C104KAT2A MYRTLE BEACH
A3C9	290-5024-00			CAP,FXD,TANT:3.3UF,20%,25V,0.236 X 0.126,6032	04222	TAJC335M025
A3C10	283-5114-00			CAP,FXD,CERAMIC:MLC,0.1UF,10%,50V,X7R,1206,SMD	04222	12065C104KAT2A MYRTLE BEACH

Replaceable electrical parts list (Cont.)

Component number	Tektronix part number	Effective	Discont'd	Name and description	Mfr. code	Mfr. part no.
A3C11	283-5114-00			CAP,FXD,CERAMIC:MLC,0.1UF,10%,50V,X7R,1206,SMD	04222	12065C104KAT2A MYRTLE BEACH
A3C12	283-5114-00			CAP,FXD,CERAMIC:MLC,0.1UF,10%,50V,X7R,1206,SMD	04222	12065C104KAT2A MYRTLE BEACH
A3C13	283-5114-00			CAP,FXD,CERAMIC:MLC,0.1UF,10%,50V,X7R,1206,SMD	04222	12065C104KAT2A MYRTLE BEACH
A3C14	283-5107-00			CAP,FXD,CERAMIC:MLC;22PF,5%,100V,NPO,1206	04222	12061A220JAT1A
A3C15	283-5114-00			CAP,FXD,CERAMIC:MLC,0.1UF,10%,50V,X7R,1206,SMD	04222	12065C104KAT2A MYRTLE BEACH
A3C16	283-5114-00			CAP,FXD,CERAMIC:MLC,0.1UF,10%,50V,X7R,1206,SMD	04222	12065C104KAT2A MYRTLE BEACH
A3C17	283-5114-00			CAP,FXD,CERAMIC:MLC,0.1UF,10%,50V,X7R,1206,SMD	04222	12065C104KAT2A MYRTLE BEACH
A3C18	283-5107-00			CAP,FXD,CERAMIC:MLC;22PF,5%,100V,NPO,1206	04222	12061A220JAT1A
A3C19	283-5114-00			CAP,FXD,CERAMIC:MLC,0.1UF,10%,50V,X7R,1206,SMD	04222	12065C104KAT2A MYRTLE BEACH
A3C20	290-5037-01			CAP,FXD,ALUM:10UF,20%,35V,5.7 H X 5 DIA MM	62643	MVK35VC10RME60T
A3C21	283-5114-00			CAP,FXD,CERAMIC:MLC,0.1UF,10%,50V,X7R,1206,SMD	04222	12065C104KAT2A MYRTLE BEACH
A3C22	283-5114-00			CAP,FXD,CERAMIC:MLC,0.1UF,10%,50V,X7R,1206,SMD	04222	12065C104KAT2A MYRTLE BEACH
A3C23	283-5114-00			CAP,FXD,CERAMIC:MLC,0.1UF,10%,50V,X7R,1206,SMD	04222	12065C104KAT2A MYRTLE BEACH
A3C24	283-5114-00			CAP,FXD,CERAMIC:MLC,0.1UF,10%,50V,X7R,1206,SMD	04222	12065C104KAT2A MYRTLE BEACH
A3C25	283-5114-00			CAP,FXD,CERAMIC:MLC,0.1UF,10%,50V,X7R,1206,SMD	04222	12065C104KAT2A MYRTLE BEACH
A3C26	283-5267-00			CAP,FXD,CERAMIC:MLC;1UF,+80%-20%,25V,Y5V,1206	04222	12063G105ZAT1A
A3C27	283-5114-00			CAP,FXD,CERAMIC:MLC,0.1UF,10%,50V,X7R,1206,SMD	04222	12065C104KAT2A MYRTLE BEACH
A3C28	283-5114-00			CAP,FXD,CERAMIC:MLC,0.1UF,10%,50V,X7R,1206,SMD	04222	12065C104KAT2A MYRTLE BEACH
A3C29	283-5114-00			CAP,FXD,CERAMIC:MLC,0.1UF,10%,50V,X7R,1206,SMD	04222	12065C104KAT2A MYRTLE BEACH
A3C30	283-5114-00			CAP,FXD,CERAMIC:MLC,0.1UF,10%,50V,X7R,1206,SMD	04222	12065C104KAT2A MYRTLE BEACH
A3C31	283-5267-00			CAP,FXD,CERAMIC:MLC;1UF,+80%-20%,25V,Y5V,1206	04222	12063G105ZAT1A
A3C32	283-5114-00			CAP,FXD,CERAMIC:MLC,0.1UF,10%,50V,X7R,1206,SMD	04222	12065C104KAT2A MYRTLE BEACH
A3C33	283-5114-00			CAP,FXD,CERAMIC:MLC,0.1UF,10%,50V,X7R,1206,SMD	04222	12065C104KAT2A MYRTLE BEACH
A3C34	283-5114-00			CAP,FXD,CERAMIC:MLC,0.1UF,10%,50V,X7R,1206,SMD	04222	12065C104KAT2A MYRTLE BEACH
A3C35	283-5114-00			CAP,FXD,CERAMIC:MLC,0.1UF,10%,50V,X7R,1206,SMD	04222	12065C104KAT2A MYRTLE BEACH

Replaceable electrical parts list (Cont.)

Component number	Tektronix part number	Effective	Discont'd	Name and description	Mfr. code	Mfr. part no.
A3C36	283-5114-00			CAP,FXD,CERAMIC:MLC,0.1UF,10%,50V,X7R,1206,SMD	04222	12065C104KAT2A MYRTLE BEACH
A3C37	283-5114-00			CAP,FXD,CERAMIC:MLC,0.1UF,10%,50V,X7R,1206,SMD	04222	12065C104KAT2A MYRTLE BEACH
A3C38	283-5114-00			CAP,FXD,CERAMIC:MLC,0.1UF,10%,50V,X7R,1206,SMD	04222	12065C104KAT2A MYRTLE BEACH
A3C39	290-5037-01			CAP,FXD,ALUM:10UF,20%,35V,5.7 H X 5 DIA MM	62643	MVK35VC10RME60T
A3C40	283-0620-01			CAP,FXD,MICA DI:470PF,1%,500V	09023	CDA15FD471F03
A3C41	283-5098-00		B020100	CAP,FXD,CERAMIC:MLC;0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A3C41	283-5267-00	B020101		CAP,FXD,CERAMIC:MLC,1.0UF,+80%-20%,25V,Y5V,1206	04222	12063G105ZAT4A
A3C42	283-5114-00			CAP,FXD,CERAMIC:MLC,0.1UF,10%,50V,X7R,1206,SMD	04222	12065C104KAT2A MYRTLE BEACH
A3C43	283-5114-00			CAP,FXD,CERAMIC:MLC,0.1UF,10%,50V,X7R,1206,SMD	04222	12065C104KAT2A MYRTLE BEACH
A3C44	283-5114-00			CAP,FXD,CERAMIC:MLC,0.1UF,10%,50V,X7R,1206,SMD	04222	12065C104KAT2A MYRTLE BEACH
A3C45	283-5114-00			CAP,FXD,CERAMIC:MLC,0.1UF,10%,50V,X7R,1206,SMD	04222	12065C104KAT2A MYRTLE BEACH
A3C46	283-5114-00			CAP,FXD,CERAMIC:MLC,0.1UF,10%,50V,X7R,1206,SMD	04222	12065C104KAT2A MYRTLE BEACH
A3C48	283-5098-00		B020100	CAP,FXD,CERAMIC:MLC;0.1UF,+80%-20%,50V,Z5U,1206	04222	12065E104ZAT3A
A3C48	283-5267-00	B020101		CAP,FXD,CERAMIC:MLC,1.0UF,+80%-20%,25V,Y5V,1206	04222	12063G105ZAT4A
A3C49	283-5114-00			CAP,FXD,CERAMIC:MLC,0.1UF,10%,50V,X7R,1206,SMD	04222	12065C104KAT2A MYRTLE BEACH
A3C50	283-5197-00			CAP,FXD,CERAMIC:MLC;330PF,5%,100V,NPO,1206	04222	12061A331JAT1A
A3C51	283-5267-00			CAP,FXD,CERAMIC:MLC;1UF,+80%-20%,25V,Y5V,1206	04222	12063G105ZAT1A
A3C52	283-5114-00			CAP,FXD,CERAMIC:MLC,0.1UF,10%,50V,X7R,1206,SMD	04222	12065C104KAT2A MYRTLE BEACH
A3C53	283-5114-00			CAP,FXD,CERAMIC:MLC,0.1UF,10%,50V,X7R,1206,SMD	04222	12065C104KAT2A MYRTLE BEACH
A3C54	283-5114-00			CAP,FXD,CERAMIC:MLC,0.1UF,10%,50V,X7R,1206,SMD	04222	12065C104KAT2A MYRTLE BEACH
A3C55	281-0775-01			CAP,FXD,CERAMIC:MCL;0.1UF,20%,50V,Z5U,0.170	04222	SA105E104MAA
A3C56	281-0775-01			CAP,FXD,CERAMIC:MCL;0.1UF,20%,50V,Z5U,0.170	04222	SA105E104MAA
A3C57	283-5114-00			CAP,FXD,CERAMIC:MLC,0.1UF,10%,50V,X7R,1206,SMD	04222	12065C104KAT2A MYRTLE BEACH
A3C58	283-5114-00			CAP,FXD,CERAMIC:MLC,0.1UF,10%,50V,X7R,1206,SMD	04222	12065C104KAT2A MYRTLE BEACH
A3C59	283-5114-00			CAP,FXD,CERAMIC:MLC,0.1UF,10%,50V,X7R,1206,SMD	04222	12065C104KAT2A MYRTLE BEACH
A3C60	283-5114-00			CAP,FXD,CERAMIC:MLC,0.1UF,10%,50V,X7R,1206,SMD	04222	12065C104KAT2A MYRTLE BEACH
A3C61	283-5114-00			CAP,FXD,CERAMIC:MLC,0.1UF,10%,50V,X7R,1206,SMD	04222	12065C104KAT2A MYRTLE BEACH

Replaceable electrical parts list (Cont.)

Component number	Tektronix part number	Effective	Discont'd	Name and description	Mfr. code	Mfr. part no.
A3C62	283-5114-00			CAP,FXD,CERAMIC:MLC,0.1UF,10%,50V,X7R,1206,SMD	04222	12065C104KAT2A MYRTLE BEACH
A3C63	283-5114-00			CAP,FXD,CERAMIC:MLC,0.1UF,10%,50V,X7R,1206,SMD	04222	12065C104KAT2A MYRTLE BEACH
A3C64	283-5114-00			CAP,FXD,CERAMIC:MLC,0.1UF,10%,50V,X7R,1206,SMD	04222	12065C104KAT2A MYRTLE BEACH
A3C65	283-5114-00			CAP,FXD,CERAMIC:MLC,0.1UF,10%,50V,X7R,1206,SMD	04222	12065C104KAT2A MYRTLE BEACH
A3C66	283-5114-00			CAP,FXD,CERAMIC:MLC,0.1UF,10%,50V,X7R,1206,SMD	04222	12065C104KAT2A MYRTLE BEACH
A3C67	283-5114-00			CAP,FXD,CERAMIC:MLC,0.1UF,10%,50V,X7R,1206,SMD	04222	12065C104KAT2A MYRTLE BEACH
A3C68	283-5203-00			CAP,FXD,CERAMIC:MLC;1000PF,10%,100V,X7R,1206	04222	12061C102KAT1A
A3C69	283-5114-00			CAP,FXD,CERAMIC:MLC,0.1UF,10%,50V,X7R,1206,SMD	04222	12065C104KAT2A MYRTLE BEACH
A3C70	283-5203-00			CAP,FXD,CERAMIC:MLC;1000PF,10%,100V,X7R,1206	04222	12061C102KAT1A
A3C71	283-5114-00			CAP,FXD,CERAMIC:MLC,0.1UF,10%,50V,X7R,1206,SMD	04222	12065C104KAT2A MYRTLE BEACH
A3C72	283-5114-00			CAP,FXD,CERAMIC:MLC,0.1UF,10%,50V,X7R,1206,SMD	04222	12065C104KAT2A MYRTLE BEACH
A3C73	283-5256-00			CAP,FXD:CERAMIC,MLC;0.1UF,CONTROL +/-10%,200V,0.180 X 0.250 X7R	04222	18252C104KATRA
A3C74	283-5114-00			CAP,FXD,CERAMIC:MLC,0.1UF,10%,50V,X7R,1206,SMD	04222	12065C104KAT2A MYRTLE BEACH
A3C75	290-5037-01			CAP,FXD,ALUM:10UF,20%,35V,5.7 H X 5 DIA MM	62643	MVK35VC10RME60T
A3C76	283-5114-00			CAP,FXD,CERAMIC:MLC,0.1UF,10%,50V,X7R,1206,SMD	04222	12065C104KAT2A MYRTLE BEACH
A3C77	283-5114-00			CAP,FXD,CERAMIC:MLC,0.1UF,10%,50V,X7R,1206,SMD	04222	12065C104KAT2A MYRTLE BEACH
A3C78	283-5314-00			CAP,FXD,CERAMIC:MLC;0.7PF,+/-0.1PF,100V,+20	80009	283-5314-00
A3C79	283-5114-00			CAP,FXD,CERAMIC:MLC,0.1UF,10%,50V,X7R,1206,SMD	04222	12065C104KAT2A MYRTLE BEACH
A3C80	283-5114-00			CAP,FXD,CERAMIC:MLC,0.1UF,10%,50V,X7R,1206,SMD	04222	12065C104KAT2A MYRTLE BEACH
A3C81	283-5114-00			CAP,FXD,CERAMIC:MLC,0.1UF,10%,50V,X7R,1206,SMD	04222	12065C104KAT2A MYRTLE BEACH
A3C82	283-5068-00			CAP,FXD,CERAMIC:MLC;2200PF,10%,50V,X7R,1206	04222	12065C222KAT1A
A3C83	283-5001-00		B020100	CAP,FXD,CERAMIC:MLC;100PF,5%,50V,NPO,1206	TK2058	C3216C0G1H101J-
A3C83	283-5188-00	B020101		CAP,FXD,CERAMIC:MLC;100PF,5%,100V,NPO,SMD	04222	12061A101JAT2A
A3C84	283-5001-00		B020100	CAP,FXD,CERAMIC:MLC;100PF,5%,50V,NPO,1206	TK2058	C3216C0G1H101J-
A3C84	283-5188-00	B020101		CAP,FXD,CERAMIC:MLC;100PF,5%,100V,NPO,SMD	04222	12061A101JAT2A
A3C85	283-5114-00			CAP,FXD,CERAMIC:MLC,0.1UF,10%,50V,X7R,1206,SMD	04222	12065C104KAT2A MYRTLE BEACH
A3C86	283-5114-00			CAP,FXD,CERAMIC:MLC,0.1UF,10%,50V,X7R,1206,SMD	04222	12065C104KAT2A MYRTLE BEACH

Replaceable electrical parts list (Cont.)

Component number	Tektronix part number	Effective	Discont'd	Name and description	Mfr. code	Mfr. part no.
A3C87	283-5267-00			CAP,FXD,CERAMIC:MLC;1UF,+80%-20%,25V,Y5V,1206	04222	12063G105ZAT1A
A3C88	283-5259-00			CAP,FXD,CERAMIC:MLC;6.8PF,+/-0.25PF,100V,NPO	04222	12061A6R8CAT1A
A3C89	283-5114-00			CAP,FXD,CERAMIC:MLC,0.1UF,10%,50V,X7R,1206,SMD	04222	12065C104KAT2A MYRTLE BEACH
A3C90	283-5114-00			CAP,FXD,CERAMIC:MLC,0.1UF,10%,50V,X7R,1206,SMD	04222	12065C104KAT2A MYRTLE BEACH
A3C91	281-0271-00			CAP,VAR,CER DI:7-50PF,50V	51406	TZBX4R500BA110T
A3C92	283-5188-00	B020101		CAP,FXD,CERAMIC:MLC,100PF,5%,100V,NPO,SMD	04222	12061A101JAT2A
A3C93	283-5259-00			CAP,FXD,CERAMIC:MLC;6.8PF,+/-0.25PF,100V,NPO	04222	12061A6R8CAT1A
A3C94	283-5314-00			CAP,FXD,CERAMIC:MLC;0.7PF,+/-0.1PF,100V,+20	80009	283-5314-00
A3C95	283-5114-00			CAP,FXD,CERAMIC:MLC,0.1UF,10%,50V,X7R,1206,SMD	04222	12065C104KAT2A MYRTLE BEACH
A3C96	283-5114-00			CAP,FXD,CERAMIC:MLC,0.1UF,10%,50V,X7R,1206,SMD	04222	12065C104KAT2A MYRTLE BEACH
A3C97	283-5114-00			CAP,FXD,CERAMIC:MLC,0.1UF,10%,50V,X7R,1206,SMD	04222	12065C104KAT2A MYRTLE BEACH
A3C98	283-5188-00	B020101		CAP,FXD,CERAMIC:MLC,100PF,5%,100V,NPO,SMD	04222	12061A101JAT2A
A3C99	283-5114-00			CAP,FXD,CERAMIC:MLC,0.1UF,10%,50V,X7R,1206,SMD	04222	12065C104KAT2A MYRTLE BEACH
A3C100	283-5114-00			CAP,FXD,CERAMIC:MLC,0.1UF,10%,50V,X7R,1206,SMD	04222	12065C104KAT2A MYRTLE BEACH
A3C101	285-1349-00			CAP,FXD,MTLZD:0.1UF,5%,63VDC	TK1913	MKS2 .1/63/5
A3C102	283-5114-00			CAP,FXD,CERAMIC:MLC,0.1UF,10%,50V,X7R,1206,SMD	04222	12065C104KAT2A MYRTLE BEACH
A3C103	290-5037-01			CAP,FXD,ALUM:10UF,20%,35V,5.7 H X 5 DIA MM	62643	MVK35VC10RME60T
A3C104	283-5114-00			CAP,FXD,CERAMIC:MLC,0.1UF,10%,50V,X7R,1206,SMD	04222	12065C104KAT2A MYRTLE BEACH
A3C105	283-0934-00			CAP,FXD,PLSTC:0.0022UF,5%,100WVDC	TK1913	FKP2 2200/100/5
A3C106	283-5114-00			CAP,FXD,CERAMIC:MLC,0.1UF,10%,50V,X7R,1206,SMD	04222	12065C104KAT2A MYRTLE BEACH
A3C107	283-5114-00			CAP,FXD,CERAMIC:MLC,0.1UF,10%,50V,X7R,1206,SMD	04222	12065C104KAT2A MYRTLE BEACH
A3C108	283-5114-00			CAP,FXD,CERAMIC:MLC,0.1UF,10%,50V,X7R,1206,SMD	04222	12065C104KAT2A MYRTLE BEACH
A3C110	283-5114-00			CAP,FXD,CERAMIC:MLC,0.1UF,10%,50V,X7R,1206,SMD	04222	12065C104KAT2A MYRTLE BEACH
A3C111	283-5189-00			CAP,FXD,CERAMIC:MLC;220PF,5%,100V,NPO,1206	04222	12061A221JAT1A
A3C112	283-5114-00			CAP,FXD,CERAMIC:MLC,0.1UF,10%,50V,X7R,1206,SMD	04222	12065C104KAT2A MYRTLE BEACH
A3C113	283-5114-00			CAP,FXD,CERAMIC:MLC,0.1UF,10%,50V,X7R,1206,SMD	04222	12065C104KAT2A MYRTLE BEACH
A3C115	283-5114-00			CAP,FXD,CERAMIC:MLC,0.1UF,10%,50V,X7R,1206,SMD	04222	12065C104KAT2A MYRTLE BEACH

Replaceable electrical parts list (Cont.)

Component number	Tektronix part number	Effective	Discont'd	Name and description	Mfr. code	Mfr. part no.
A3C116	283-5114-00			CAP,FXD,CERAMIC:MLC,0.1UF,10%,50V,X7R,1206,SMD	04222	12065C104KAT2A MYRTLE BEACH
A3C117	283-5188-00	B020101		CAP,FXD,CERAMIC:MLC,100PF,5%,100V,NPO,SMD	04222	12061A101JAT2A
A3C118	283-5188-00	B020101		CAP,FXD,CERAMIC:MLC,100PF,5%,100V,NPO,SMD	04222	12061A101JAT2A
A3C119	283-5114-00			CAP,FXD,CERAMIC:MLC,0.1UF,10%,50V,X7R,1206,SMD	04222	12065C104KAT2A MYRTLE BEACH
A3C120	283-5267-00			CAP,FXD,CERAMIC:MLC;1UF,+80%-20%,25V,Y5V,1206	04222	12063G105ZAT1A
A3C121	283-5114-00			CAP,FXD,CERAMIC:MLC,0.1UF,10%,50V,X7R,1206,SMD	04222	12065C104KAT2A MYRTLE BEACH
A3C122	283-5114-00			CAP,FXD,CERAMIC:MLC,0.1UF,10%,50V,X7R,1206,SMD	04222	12065C104KAT2A MYRTLE BEACH
A3C123	283-5114-00			CAP,FXD,CERAMIC:MLC,0.1UF,10%,50V,X7R,1206,SMD	04222	12065C104KAT2A MYRTLE BEACH
A3C124	283-5114-00			CAP,FXD,CERAMIC:MLC,0.1UF,10%,50V,X7R,1206,SMD	04222	12065C104KAT2A MYRTLE BEACH
A3C125	283-0698-01			CAP,FXD,MICA DI:390PF,1%,500V	09023	CDA15FD391F03
A3C126	283-5108-00			CAP,FXD,CERAMIC:MLC;68PF,5%,100V,NPO,1206	04222	12061A680JAT1A
A3C127	283-5114-00			CAP,FXD,CERAMIC:MLC,0.1UF,10%,50V,X7R,1206,SMD	04222	12065C104KAT2A MYRTLE BEACH
A3C128	283-5201-00			CAP,FXD,CERAMIC:MLC;33PF,5%,100V,NPO,1206	04222	12061A330JAT1A
A3C129	283-5195-00			CAP,FXD,CERAMIC:MLC;10PF,5%,100V,NPO,1206	04222	12061A100JAT1A
A3C130	283-5107-00			CAP,FXD,CERAMIC:MLC;22PF,5%,100V,NPO,1206	04222	12061A220JAT1A
A3C131	281-5007-00			CAP,VAR,CERAMIC:4.5-20PF,100V,N750+/-300PPM/C,4 X 4.5 X 2.7MM	52769	GKG20066-##
A3C132	283-0640-01			CAP,FXD,MICA DI:160PF,1%,100V	TK0891	ADVISE
A3C133	283-5188-00	B020101		CAP,FXD,CERAMIC:MLC,100PF,5%,100V,NPO,SMD	04222	12061A101JAT2A
A3C134	283-5108-00			CAP,FXD,CERAMIC:MLC;68PF,5%,100V,NPO,1206	04222	12061A680JAT1A
A3C135	281-0271-00			CAP,VAR,CER DI:7-50PF,50V	51406	TZBX4R500BA110T
A3C136	283-5114-00			CAP,FXD,CERAMIC:MLC,0.1UF,10%,50V,X7R,1206,SMD	04222	12065C104KAT2A MYRTLE BEACH
A3C138	283-5003-00			CAP,FXD,CERAMIC:MLC;0.01UF,10%,50V,X7R,1206	TK2058	C3216X7R1H103K-
A3C139	290-5037-01			CAP,FXD,ALUM:10UF,20%,35V,5.7 H X 5 DIA MM	62643	MVK35VC10RME60T
A3C140	283-5267-00			CAP,FXD,CERAMIC:MLC;1UF,+80%-20%,25V,Y5V,1206	04222	12063G105ZAT1A
A3C141	283-5114-00			CAP,FXD,CERAMIC:MLC,0.1UF,10%,50V,X7R,1206,SMD	04222	12065C104KAT2A MYRTLE BEACH
A3C142	283-5114-00			CAP,FXD,CERAMIC:MLC,0.1UF,10%,50V,X7R,1206,SMD	04222	12065C104KAT2A MYRTLE BEACH
A3C143	283-5114-00			CAP,FXD,CERAMIC:MLC,0.1UF,10%,50V,X7R,1206,SMD	04222	12065C104KAT2A MYRTLE BEACH
A3C144	283-0639-01			CAP,FXD,MICA DI:56PF,1%,500V	09023	CDA15ED560F03
A3C145	283-5108-00			CAP,FXD,CERAMIC:MLC;68PF,5%,100V,NPO,1206	04222	12061A680JAT1A
A3C146	283-5196-00			CAP,FXD,CERAMIC:MLC;47PF,5%,100V,NPO,1206	04222	12061A470JAT1A

Replaceable electrical parts list (Cont.)

Component number	Tektronix part number	Effective	Discont'd	Name and description	Mfr. code	Mfr. part no.
A3C147	283-5114-00			CAP,FXD,CERAMIC:MLC,0.1UF,10%,50V,X7R,1206,SMD	04222	12065C104KAT2A MYRTLE BEACH
A3C148	283-5114-00			CAP,FXD,CERAMIC:MLC,0.1UF,10%,50V,X7R,1206,SMD	04222	12065C104KAT2A MYRTLE BEACH
A3C149	283-5267-00			CAP,FXD,CERAMIC:MLC;1UF,+80%-20%,25V,Y5V,1206	04222	12063G105ZAT1A
A3C150	283-5114-00			CAP,FXD,CERAMIC:MLC,0.1UF,10%,50V,X7R,1206,SMD	04222	12065C104KAT2A MYRTLE BEACH
A3C151	281-0271-00			CAP,VAR,CER DI:7-50PF,50V	51406	TZBX4R500BA110T
A3C152	283-5188-00	B020101		CAP,FXD,CERAMIC:MLC,100PF,5%,100V,NPO,SMD	04222	12061A101JAT2A
A3C153	283-5114-00			CAP,FXD,CERAMIC:MLC,0.1UF,10%,50V,X7R,1206,SMD	04222	12065C104KAT2A MYRTLE BEACH
A3C154	283-5106-00			CAP,FXD,CERAMIC:MLC;470PF,5%,100V,NPO,1206	04222	12061A471JAT1A
A3C155	283-5197-00	B020101		CAP,FXD,CERAMIC:MLC,330PF,5%,100V,NPO,SMD	04222	12061A331JAT2A
A3C156	283-5114-00			CAP,FXD,CERAMIC:MLC,0.1UF,10%,50V,X7R,1206,SMD	04222	12065C104KAT2A MYRTLE BEACH
A3C157	283-5114-00			CAP,FXD,CERAMIC:MLC,0.1UF,10%,50V,X7R,1206,SMD	04222	12065C104KAT2A MYRTLE BEACH
A3C158	281-0271-00			CAP,VAR,CER DI:7-50PF,50V	51406	TZBX4R500BA110T
A3C159	283-5114-00			CAP,FXD,CERAMIC:MLC,0.1UF,10%,50V,X7R,1206,SMD	04222	12065C104KAT2A MYRTLE BEACH
A3C160	283-5106-00			CAP,FXD,CERAMIC:MLC;470PF,5%,100V,NPO,1206	04222	12061A471JAT1A
A3C161	283-5106-00			CAP,FXD,CERAMIC:MLC;470PF,5%,100V,NPO,1206	04222	12061A471JAT1A
A3C162	283-5267-00	B020101		CAP,FXD,CERAMIC:MLC,1.0UF,+80%-20%,25V,Y5V	04222	12063G105ZAT4A
A3C163	283-5114-00			CAP,FXD,CERAMIC:MLC,0.1UF,10%,50V,X7R,1206,SMD	04222	12065C104KAT2A MYRTLE BEACH
A3C164	283-5114-00			CAP,FXD,CERAMIC:MLC,0.1UF,10%,50V,X7R,1206,SMD	04222	12065C104KAT2A MYRTLE BEACH
A3C165	283-5189-00			CAP,FXD,CERAMIC:MLC;220PF,5%,100V,NPO,1206	04222	12061A221JAT1A
A3C166	283-5114-00			CAP,FXD,CERAMIC:MLC,0.1UF,10%,50V,X7R,1206,SMD	04222	12065C104KAT2A MYRTLE BEACH
A3C167	283-5197-00	B020101		CAP,FXD,CERAMIC:MLC,330PF,5%,100V,NPO,SMD	04222	12061A331JAT2A
A3C168	283-5114-00			CAP,FXD,CERAMIC:MLC,0.1UF,10%,50V,X7R,1206,SMD	04222	12065C104KAT2A MYRTLE BEACH
A3C169	283-5109-00			CAP,FXD,CERAMIC:MLC;680PF,5%,100V,NPO,1206	04222	12061A681JAT1A
A3C170	290-5036-01		671-2355-13	CAP,FXD,ALUM:22UF,20%,16V,5.7MM(0.224)	62643	MVK16VC22RME60T
A3C170	283-5267-00	671-2355-14		CAP,FXD,CERAMIC:MLC,1.0UF,+80%-20%,25V,1206,SMD	04222	12063G105ZAT4A
A3C171	290-5036-01		671-2355-13	CAP,FXD,ALUM:22UF,20%,16V,5.7MM(0.224)	62643	MVK16VC22RME60T
A3C171	283-5267-00	671-2355-14		CAP,FXD,CERAMIC:MLC,1.0UF,+80%-20%,25V,1206,SMD	04222	12063G105ZAT4A
A3C172	290-5036-01		671-2355-13	CAP,FXD,ALUM:22UF,20%,16V,5.7MM(0.224)	62643	MVK16VC22RME60T
A3C172	283-5267-00	671-2355-14		CAP,FXD,CERAMIC:MLC,1.0UF,+80%-20%,25V,1206,SMD	04222	12063G105ZAT4A
A3C173	283-5114-00			CAP,FXD,CERAMIC:MLC,0.1UF,10%,50V,X7R,1206,SMD	04222	12065C104KAT2A MYRTLE BEACH

Replaceable electrical parts list (Cont.)

Component number	Tektronix part number	Effective	Discont'd	Name and description	Mfr. code	Mfr. part no.
A3C174	283-5114-00			CAP,FXD,CERAMIC:MLC;0.1UF,10%,50V,X7R,1206,SMD	04222	12065C104KAT2A MYRTLE BEACH
A3C175	290-5036-01		671-2355-13	CAP,FXD,ALUM:22UF,20%,16V,5.7MM(0.224)	62643	MVK16VC22RME60T
A3C175	283-5267-00	671-2355-14		CAP,FXD,CERAMIC:MLC;1.0UF,+80%-20%,25V1206,SMD	04222	12063G105ZAT4A
A3C176	283-5188-00	B020101		CAP,FXD,CERAMIC:MLC;100PF,5%,100V,NPO,SMD	04222	12061A101JAT2A
A3C177	283-5114-00			CAP,FXD,CERAMIC:MLC;0.1UF,10%,50V,X7R,1206,SMD	04222	12065C104KAT2A MYRTLE BEACH
A3C178	283-5188-00	B020101		CAP,FXD,CERAMIC:MLC;100PF,5%,100V,NPO,SMD	04222	12061A101JAT2A
A3C179	283-5267-00			CAP,FXD,CERAMIC:MLC;1UF,+80%-20%,25V,Y5V,1206	04222	12063G105ZAT1A
A3C180	283-5267-00			CAP,FXD,CERAMIC:MLC;1UF,+80%-20%,25V,Y5V,1206	04222	12063G105ZAT1A
A3C181	283-5197-00	B020101		CAP,FXD,CERAMIC:MLC;330PF,5%,100V,NPO,SMD	04222	12061A331JAT2A
A3C182	283-5114-00			CAP,FXD,CERAMIC:MLC;0.1UF,10%,50V,X7R,1206,SMD	04222	12065C104KAT2A MYRTLE BEACH
A3C190	283-5248-00			CAP,FXD,CERAMIC:MLC;82 PF,5%,200V,NPO;1206	95275	VJ1206Q820J-NCAT
A3C191	283-5267-00	B020101		CAP,FXD,CERAMIC:MLC;1.0UF,+80%-20%,25V,Y5V	04222	12063G105ZAT4A
A3C192	283-5267-00	B020101		CAP,FXD,CERAMIC:MLC;1.0UF,+80%-20%,25V,Y5V,1206	04222	12063G105ZAT4A
A3C221	283-5106-00	B020101		CAP,FXD,CERAMIC:MLC;470PF,5%,100V,NPO,SMD	04222	12061A471JAT2A
A3J1	131-3718-00			CONN,HDR:PCB;MALE,STR,2 X 5,0.1 CTR,0.385H X 0.120 TAIL,SHRD/4 SIDES,CTR PLZ,30 GOLD,0.150 END DIM	TK1462	FAP-10-08-4-OAS
A3J2	131-3323-00			CONN,HDR:PCB;MALE,STR,2 X 20,0.1 CTR,0.365D	22526	66506-025
A3J3	131-4752-00			CONN,HDR::PCB;MALE,45 DEG,1 X 2,0.1CTR,0.240 MLG X 0.110 TAIL,30 GOLD	58050	082-0243-AS10
A3J4	131-4530-00			CONN,HDR:PCB;MALE,STR,1 X 3,0.1 CTR,0.230 MLG X 0.120 TAIL,30GOLD,BD RETENTION	00779	104344-1
A3J5	131-3323-00			CONN,HDR:PCB;MALE,STR,2 X 20,0.1 CTR,0.365D	22526	66506-025
A3J6	175-9797-00			CA ASSY,SP:FLAT FLEX;FLX,10,27 AWG,2.5 L,1X10,BOX X STR,SLDR TAB,CONN NON PLZ	TK2469	175-9797-00
A3J9	131-3364-00			CONN,HDR:PCB;MALE,STR,2 X 17,0.1 CTR,0.365D	53387	2534-6002UB
A3J12	131-3181-00			CONN,HDR:PCB;MALE,RTANG,2 X 20,0.1CTR,0.330 H X 0.112 TAIL,SHRD/4 SIDES,CTR PLZ,30 GOLD,0.390 MLG,HIGH TEMP	22526	69155-440R
A3J13	131-3323-00			CONN,HDR:PCB;MALE,STR,2 X 20,0.1 CTR,0.365D	22526	66506-025
A3J14	174-2743-00			CA ASSY SP:RIBBON;IDC,34,28 AWG,2X17,0.1 CTR,PCB X 25 POS,DSUB,THD INSERTS,1.2 L & 9POS,DSUB,FEMALE, THD INSERTS,2.2 L	53387	174-2743-00
A3L1	108-5018-00			INDUCTOR,FXD:POWER;4.7UH,20%,I<0.315 A,RDC< 1 OHM,Q>50,SRF>45 MHZ	TK2058	NL453232T-4R7M
A3L2	108-5018-00			INDUCTOR,FXD:POWER;4.7UH,20%,I<0.315 A,RDC< 1 OHM,Q>50,SRF>45 MHZ	TK2058	NL453232T-4R7M
A3L3	108-5002-00			INDUCTOR,FXD:SIGNAL;15UH,10%,I<0.2A,RDC<2.5 OHM,Q>50,SRF>20MHZ	TK2058	NL453232T-150K
A3L4	108-5002-00			INDUCTOR,FXD:SIGNAL;15UH,10%,I<0.2A,RDC<2.5 OHM,Q>50,SRF>20MHZ	TK2058	NL453232T-150K

Replaceable electrical parts list (Cont.)

Component number	Tektronix part number	Effective	Discont'd	Name and description	Mfr. code	Mfr. part no.
A3L5	114-0482-00			INDUCTOR,VAR:SHIELDED;32-48UH,Q>32@L=40UH,E	02113	SLOT TEN-04-11
A3L6	114-0482-00			INDUCTOR,VAR:SHIELDED;32-48UH,Q>32@L=40UH,E	02113	SLOT TEN-04-11
A3L7	108-5002-00			INDUCTOR,FXD:SIGNAL;15UH,10%,I<0.2A,RDC<2.5 OHM,Q>50,SRF>20MHZ	TK2058	NL453232T-150K
A3L8	108-5002-00			INDUCTOR,FXD:SIGNAL;15UH,10%,I<0.2A,RDC<2.5 OHM,Q>50,SRF>20MHZ	TK2058	NL453232T-150K
A3L9	108-5018-00			INDUCTOR,FXD:POWER;4.7UH,20%,I<0.315 A,RDC<1 OHM,Q>50,SRF>45 MHZ	TK2058	NL453232T-4R7M
A3P4	131-3199-00			CONN,SHUNT:SHUNT;FEMALE,STR,1 X 2,0.1 CTR, 0.2 H,LOW PROFILE,JUMPER	22526	68786-202
A3Q1	151-5021-00			XTR,SIG:BIPOLAR,NPN;40V,600MA,300MHZ,AMPL	04713	MMBT2222ALT1
A3Q2	151-5021-00			XTR,SIG:BIPOLAR,NPN;40V,600MA,300MHZ,AMPL	04713	MMBT2222ALT1
A3Q3	151-5001-00			XTR,SIG:BIPOLAR,NPN;40V,200MA,300MHZ,AMPL	0LUA3	PMBT3904TRL
A3Q4	151-5000-00			XTR,SIG:BIPOLAR,PNP;40V,200MA,250MHZ,AMPL	0LUA3	PMBT3906TRL
A3Q5	151-5000-00			XTR,SIG:BIPOLAR,PNP;40V,200MA,250MHZ,AMPL	0LUA3	PMBT3906TRL
A3Q6	151-5001-00			XTR,SIG:BIPOLAR,NPN;40V,200MA,300MHZ,AMPL	0LUA3	PMBT3904TRL
A3Q7	151-5001-00			XTR,SIG:BIPOLAR,NPN;40V,200MA,300MHZ,AMPL	0LUA3	PMBT3904TRL
A3Q8	151-0350-03			XTR,SIG:BIPOLAR,PNP;150V,600MA,100MHZ,AMPL	04713	2N5401RLRP
A3Q9	151-5035-00	B020101		XTR,SIG:BIPOLAR,NPN;25V,30MA,650MHZ,AMPL	1MQ07	MMBTH10LT1
A3Q10	151-0211-00			XTR,SIG:BIPOLAR,NPN;30V VCEO,55V VCBO,400MA, 500MHZ,AMPL *ATTACHED PARTS*	04713	2N3866
	214-2593-00			HEAT SINK,SEMIC:XTR/IC,TO-5/TO-39;PRESS-ON,0.5" DIA,ALUMINUM,BLACK ANODIZE *END ATTACHED PARTS*	13103	2257B
A3Q11	151-0347-02			XTR,SIG:BIPOLAR,NPN;160V,600MA,100MHZ,AMPL	04713	2N5551RLRP
A3Q12	151-5000-00			XTR,SIG:BIPOLAR,PNP;40V,200MA,250MHZ,AMPL	0LUA3	PMBT3906TRL
A3Q13	151-0347-02			XTR,SIG:BIPOLAR,NPN;160V,600MA,100MHZ,AMPL	04713	2N5551RLRP
A3Q14	151-5000-00			XTR,SIG:BIPOLAR,PNP;40V,200MA,250MHZ,AMPL	0LUA3	PMBT3906TRL
A3Q15	151-0350-03			XTR,SIG:BIPOLAR,PNP;150V,600MA,100MHZ,AMPL	04713	2N5401RLRP
A3Q16	151-0211-00			XTR,SIG:BIPOLAR,NPN;30V VCEO,55V VCBO,400MA, 500MHZ,AMPL *ATTACHED PARTS*	04713	2N3866
	214-2593-00			HEAT SINK,SEMIC:XTR/IC,TO-5/TO-39;PRESS-ON,0.5" DIA,ALUMINUM,BLACK ANODIZE *END ATTACHED PARTS*	13103	2257B
A3Q17	151-5001-00			XTR,SIG:BIPOLAR,NPN;40V,200MA,300MHZ,AMPL	0LUA3	PMBT3904TRL
A3Q19	151-5000-00			XTR,SIG:BIPOLAR,PNP;40V,200MA,250MHZ,AMPL	0LUA3	PMBT3906TRL
A3Q20	151-5029-00			XTR,SIG:BIPOLAR,NPN;15V,500MA,SWITCHING	04713	MMBT2369LT1
A3Q21	151-5001-00			XTR,SIG:BIPOLAR,NPN;40V,200MA,300MHZ,AMPL	0LUA3	PMBT3904TRL
A3Q22	151-5000-00			XTR,SIG:BIPOLAR,PNP;40V,200MA,250MHZ,AMPL	0LUA3	PMBT3906TRL

Replaceable electrical parts list (Cont.)

Component number	Tektronix part number	Effective	Discont'd	Name and description	Mfr. code	Mfr. part no.
A3Q23	151-5000-00			XTR,SIG:BIPOLAR,PNP;40V,200MA,250MHZ,AMPL	0LUA3	PMBT3906TRL
A3Q24	151-5000-00			XTR,SIG:BIPOLAR,PNP;40V,200MA,250MHZ,AMPL	0LUA3	PMBT3906TRL
A3Q25	151-5001-00			XTR,SIG:BIPOLAR,NPN;40V,200MA,300MHZ,AMPL	0LUA3	PMBT3904TRL
A3Q26	151-5001-00			XTR,SIG:BIPOLAR,NPN;40V,200MA,300MHZ,AMPL	0LUA3	PMBT3904TRL
A3Q27	151-5001-00			XTR,SIG:BIPOLAR,NPN;40V,200MA,300MHZ,AMPL	0LUA3	PMBT3904TRL
A3Q28	151-5002-00			XTR,SIG:JFET,N-CH;5V,75MA,60 OHM,SWITCH	04713	MMBF4392LT1
A3Q29	151-5001-00			XTR,SIG:BIPOLAR,NPN;40V,200MA,300MHZ,AMPL	0LUA3	PMBT3904TRL
A3R1	321-5042-00			RES,FXD:THICK FILM;39.2 OHM,1%,0.125W,TC=100 PPM	57668	MCR18FWEA39E2
A3R2	321-5042-00			RES,FXD:THICK FILM;39.2 OHM,1%,0.125W,TC=100 PPM	57668	MCR18FWEA39E2
A3R3	321-5042-00			RES,FXD:THICK FILM;39.2 OHM,1%,0.125W,TC=100 PPM	57668	MCR18FWEA39E2
A3R4	321-5042-00			RES,FXD:THICK FILM;39.2 OHM,1%,0.125W,TC=100 PPM	57668	MCR18FWEA39E2
A3R5	321-5018-00			RES,FXD:THICK FILM;1.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1001FT
A3R6	311-2442-02			RES,VAR,PNL:CP;10K OHM,10%,0.5W,LINEAR,CONTINIOUS ROTATION,0.5 SQ,2.0 LONG SHAFT	12697	S-1-20629
A3R7	311-2442-02			RES,VAR,PNL:CP;10K OHM,10%,0.5W,LINEAR,CONTINIOUS ROTATION,0.5 SQ,2.0 LONG SHAFT	12697	S-1-20629
A3R8	311-2442-02			RES,VAR,PNL:CP;10K OHM,10%,0.5W,LINEAR,CONTINIOUS ROTATION,0.5 SQ,2.0 LONG SHAFT	12697	S-1-20629
A3R9	311-2442-02			RES,VAR,PNL:CP;10K OHM,10%,0.5W,LINEAR,CONTINIOUS ROTATION,0.5 SQ,2.0 LONG SHAFT	12697	S-1-20629
A3R10	311-2442-02			RES,VAR,PNL:CP;10K OHM,10%,0.5W,LINEAR,CONTINIOUS ROTATION,0.5 SQ,2.0 LONG SHAFT	12697	S-1-20629
A3R11	321-5024-00			RES,FXD:THICK FILM;3.32K OHM,1%,0.125W,TC=100 PPM	50139	BCK3321FT
A3R12	321-5018-00			RES,FXD:THICK FILM;1.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1001FT
A3R13	321-5024-00			RES,FXD:THICK FILM;3.32K OHM,1%,0.125W,TC=100 PPM	50139	BCK3321FT
A3R14	321-5030-00			RES,FXD:THICK FILM;10.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1002FT
A3R15	321-5047-00			RES,FXD:THICK FILM;100K OHM,1%,0.125W,TC=100 PPM	50139	BCK1003FT
A3R16	321-5034-00			RES,FXD:THICK FILM;22.1K OHM,1%,0.125W,TC=100 PPM	50139	BCK2212FT
A3R17	321-5034-00			RES,FXD:THICK FILM;22.1K OHM,1%,0.125W,TC=100 PPM	50139	BCK2212FT
A3R18	321-5034-00			RES,FXD:THICK FILM;22.1K OHM,1%,0.125W,TC=100 PPM	50139	BCK2212FT
A3R19	321-5000-00			RES,FXD:THICK FILM;10 OHM,1%,0.125W,TC=100 PPM	59124	RK73H2B10R0FT
A3R20	321-5020-00			RES,FXD:THICK FILM;1.5K OHM,1%,0.125W,TC=100 PPM	50139	BCK1501FT
A3R21	307-5041-00			RES NTWK,FXD,FI:4.7K OHM,2%,0.125W	57924	4816P-002-472
A3R22	321-5042-00			RES,FXD:THICK FILM;39.2 OHM,1%,0.125W,TC=100 PPM	57668	MCR18FWEA39E2
A3R23	321-5051-00			RES,FXD:THICK FILM;0 OHM,1%,0.125W,TC=100 PPM	09969	CRCW1206 JUMPER
A3R24	321-5030-00			RES,FXD:THICK FILM;10.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1002FT
A3R25	321-5051-00			RES,FXD:THICK FILM;0 OHM,1%,0.125W,TC=100 PPM	09969	CRCW1206 JUMPER
A3R26	321-5051-00			RES,FXD:THICK FILM;0 OHM,1%,0.125W,TC=100 PPM	09969	CRCW1206 JUMPER

Replaceable electrical parts list (Cont.)

Component number	Tektronix part number	Effective	Discont'd	Name and description	Mfr. code	Mfr. part no.
A3R27	321-5051-00			RES,FXD:THICK FILM;0 OHM,1%,0.125W,TC=100 PPM	09969	CRCW1206 JUMPER
A3R28	307-5041-00			RES NTWK,FXD,FI:4.7K OHM,2%,0.125W	57924	4816P-002-472
A3R29	321-5018-00			RES,FXD:THICK FILM;1.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1001FT
A3R30	321-5026-00			RES,FXD:THICK FILM;4.75K OHM,1%,0.125W,TC=100 PPM	50139	BCK4751FT
A3R31	321-5026-00			RES,FXD:THICK FILM;4.75K OHM,1%,0.125W,TC=100 PPM	50139	BCK4751FT
A3R32	321-5208-00			RES,FXD:THICK FILM;10M OHM,5%,0.125W,TC=100	59124	RK73H2B1005FT
A3R33	321-5048-00			RES,FXD:THICK FILM;332K OHM,1%,0.125W,TC=100 PPM	57668	MCR18FXEA332K
A3R34	321-5026-00			RES,FXD:THICK FILM;4.75K OHM,1%,0.125W,TC=100 PPM	50139	BCK4751FT
A3R35	321-5026-00			RES,FXD:THICK FILM;4.75K OHM,1%,0.125W,TC=100 PPM	50139	BCK4751FT
A3R36	321-5026-00			RES,FXD:THICK FILM;4.75K OHM,1%,0.125W,TC=100 PPM	50139	BCK4751FT
A3R37	321-5026-00			RES,FXD:THICK FILM;4.75K OHM,1%,0.125W,TC=100 PPM	50139	BCK4751FT
A3R38	321-5026-00			RES,FXD:THICK FILM;4.75K OHM,1%,0.125W,TC=100 PPM	50139	BCK4751FT
A3R39	321-5026-00			RES,FXD:THICK FILM;4.75K OHM,1%,0.125W,TC=100 PPM	50139	BCK4751FT
A3R40	321-5030-00			RES,FXD:THICK FILM;10.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1002FT
A3R41	321-5030-00			RES,FXD:THICK FILM;10.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1002FT
A3R42	321-5026-00			RES,FXD:THICK FILM;4.75K OHM,1%,0.125W,TC=100 PPM	50139	BCK4751FT
A3R43	321-5030-00			RES,FXD:THICK FILM;10.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1002FT
A3R44	321-5012-00			RES,FXD:THICK FILM;332 OHM,1%,0.125W,TC=100	50139	BCK3320FT
A3R45	321-5042-00			RES,FXD:THICK FILM;39.2 OHM,1%,0.125W,TC=100 PPM	57668	MCR18FWEA39E2
A3R46	321-5090-00			RES,FXD:THICK FILM; 20K OHM,0.125W,100 PPM,1206,T&R	50139	BCK2002FT
A3R47	321-5022-00			RES,FXD:THICK FILM;2.21K OHM,1%,0.125W,TC=100 PPM	50139	BCK2211FT
A3R48	321-5030-00			RES,FXD:THICK FILM;10.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1002FT
A3R49	321-5030-00			RES,FXD:THICK FILM;10.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1002FT
A3R50	321-5030-00			RES,FXD:THICK FILM;10.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1002FT
A3R51	321-5030-00			RES,FXD:THICK FILM;10.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1002FT
A3R52	321-5030-00			RES,FXD:THICK FILM;10.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1002FT
A3R53	321-5169-00			RES,FXD:THICK FILM;475K OHM,1%,0.125W,TC=100 PPM	59124	RK73H2B4753FT
A3R54	321-5035-00			RES,FXD:THICK FILM;27.4K OHM,1%,0.125W,TC=100 PPM	50139	BCK2742FT
A3R55	321-5030-00			RES,FXD:THICK FILM;10.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1002FT
A3R56	321-5042-00			RES,FXD:THICK FILM;39.2 OHM,1%,0.125W,TC=100 PPM	57668	MCR18FWEA39E2
A3R57	321-5015-00			RES,FXD:THICK FILM;562 OHM,1%,0.125W,TC=100	50139	BCK5620FT
A3R58	321-5030-00			RES,FXD:THICK FILM;10.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1002FT
A3R59	321-5030-00			RES,FXD:THICK FILM;10.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1002FT
A3R60	321-5030-00			RES,FXD:THICK FILM;10.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1002FT
A3R61	321-5169-00			RES,FXD:THICK FILM;475K OHM,1%,0.125W,TC=100 PPM	59124	RK73H2B4753FT
A3R62	321-5020-00			RES,FXD:THICK FILM;1.5K OHM,1%,0.125W,TC=100 PPM	50139	BCK1501FT

Replaceable electrical parts list (Cont.)

Component number	Tektronix part number	Effective	Discont'd	Name and description	Mfr. code	Mfr. part no.
A3R63	321-5093-00			RES,FXD,FILM:200 OHM,1%,0.125W,1206,8MM	91637	CRCW12062000FT
A3R64	321-5030-00			RES,FXD:THICK FILM;10.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1002FT
A3R65	321-5009-00			RES,FXD:THICK FILM;182 OHM,1%,0.125W,TC=100	50139	BCK1820FT
A3R66	321-5009-00			RES,FXD:THICK FILM;182 OHM,1%,0.125W,TC=100	50139	BCK1820FT
A3R67	321-5042-00			RES,FXD:THICK FILM;39.2 OHM,1%,0.125W,TC=100 PPM	57668	MCR18FWEA39E2
A3R68	321-5011-00			RES,FXD:THICK FILM;274 OHM,1%,0.125W,TC=100	50139	BCK2740FT
A3R69	321-5011-00			RES,FXD:THICK FILM;274 OHM,1%,0.125W,TC=100	50139	BCK2740FT
A3R70	321-5017-00			RES,FXD:THICK FILM;825 OHM,1%,0.125W,TC=100	50139	BCK8250FT
A3R71	321-5013-00			RES,FXD:THICK FILM;392 OHM,1%,0.125W,TC=100	50139	BCK3920FT
A3R72	321-5026-00			RES,FXD:THICK FILM;4.75K OHM,1%,0.125W,TC=100 PPM	50139	BCK4751FT
A3R73	321-5030-00			RES,FXD:THICK FILM;10.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1002FT
A3R74	321-5015-00			RES,FXD:THICK FILM;562 OHM,1%,0.125W,TC=100	50139	BCK5620FT
A3R75	321-5030-00			RES,FXD:THICK FILM;10.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1002FT
A3R76	321-5090-00			RES,FXD:THICK FILM; 20K OHM,0.125W,100 PPM,1206,T&R	50139	BCK2002FT
A3R77	321-5027-00			RES,FXD:THICK FILM;5.62K OHM,1%,0.125W,TC=100 PPM	50139	BCK5621FT
A3R78	321-5021-00			RES,FXD:THICK FILM;1.82K OHM,1%,0.125W,TC=100 PPM	50139	BCK1821FT
A3R79	321-5022-00			RES,FXD:THICK FILM;2.21K OHM,1%,0.125W,TC=100 PPM	50139	BCK2211FT
A3R80	321-5037-00			RES,FXD:THICK FILM;39.2K OHM,1%,0.125W,TC=100 PPM	50139	BCK3922FT
A3R81	321-5037-00			RES,FXD:THICK FILM;39.2K OHM,1%,0.125W,TC=100 PPM	50139	BCK3922FT
A3R82	307-5041-00			RES NTWK,FXD,FI:4.7K OHM,2%,0.125W	57924	4816P-002-472
A3R83	321-5047-00			RES,FXD:THICK FILM;100K OHM,1%,0.125W,TC=100 PPM	50139	BCK1003FT
A3R84	321-5037-00			RES,FXD:THICK FILM;39.2K OHM,1%,0.125W,TC=100 PPM	50139	BCK3922FT
A3R85	321-5037-00			RES,FXD:THICK FILM;39.2K OHM,1%,0.125W,TC=100 PPM	50139	BCK3922FT
A3R86	321-5047-00			RES,FXD:THICK FILM;100K OHM,1%,0.125W,TC=100 PPM	50139	BCK1003FT
A3R87	321-5030-00			RES,FXD:THICK FILM;10.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1002FT
A3R88	321-5122-00			RES,FXD,FILM:499 OHM,1%,0.125W,1206,8MM	91637	CRCW1206-4990FT
A3R89	321-5004-00			RES,FXD:THICK FILM;22.1 OHM,1%,0.125W,TC=100 PPM	57668	MCR18FWEA22E1
A3R90	321-5004-00			RES,FXD:THICK FILM;22.1 OHM,1%,0.125W,TC=100 PPM	57668	MCR18FWEA22E1
A3R91	321-5166-00			RES,FXD:THICK FILM;150K OHM,1%,0.125W,TC=100 PPM	59124	RK73H2B1503FT
A3R92	321-5166-00			RES,FXD:THICK FILM;150K OHM,1%,0.125W,TC=100 PPM	59124	RK73H2B1503FT
A3R93	321-5166-00			RES,FXD:THICK FILM;150K OHM,1%,0.125W,TC=100 PPM	59124	RK73H2B1503FT
A3R94	321-5166-00			RES,FXD:THICK FILM;150K OHM,1%,0.125W,TC=100 PPM	59124	RK73H2B1503FT
A3R95	321-5166-00			RES,FXD:THICK FILM;150K OHM,1%,0.125W,TC=100 PPM	59124	RK73H2B1503FT
A3R96	321-5166-00			RES,FXD:THICK FILM;150K OHM,1%,0.125W,TC=100 PPM	59124	RK73H2B1503FT
A3R97	321-5047-00			RES,FXD:THICK FILM;100K OHM,1%,0.125W,TC=100 PPM	50139	BCK1003FT
A3R99	321-5030-00			RES,FXD:THICK FILM;10.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1002FT

Replaceable electrical parts list (Cont.)

Component number	Tektronix part number	Effective	Discont'd	Name and description	Mfr. code	Mfr. part no.
A3R100	321-5031-00			RES,FXD:THICK FILM;12.1K OHM,1%,0.125W,TC=100 PPM	50139	BCK1212FT
A3R101	321-5036-00			RES,FXD:THICK FILM;33.2K OHM,1%,0.125W,TC=100 PPM	50139	BCK3322FT
A3R102	321-5035-00			RES,FXD:THICK FILM;27.4K OHM,1%,0.125W,TC=100 PPM	50139	BCK2742FT
A3R103	321-5023-00			RES,FXD:THICK FILM;2.74K OHM,1%,0.125W,TC=100 PPM	50139	BCK2741FT
A3R104	321-5028-00			RES,FXD:THICK FILM;6.81K OHM,1%,0.125W,TC=100 PPM	50139	BCK6811FT
A3R105	321-5028-00			RES,FXD:THICK FILM;6.81K OHM,1%,0.125W,TC=100 PPM	50139	BCK6811FT
A3R106	321-5023-00			RES,FXD:THICK FILM;2.74K OHM,1%,0.125W,TC=100 PPM	50139	BCK2741FT
A3R107	321-5033-00			RES,FXD:THICK FILM;18.2K OHM,1%,0.125W,TC=100 PPM	50139	BCK1822FT
A3R108	321-5047-00			RES,FXD:THICK FILM;100K OHM,1%,0.125W,TC=100 PPM	50139	BCK1003FT
A3R109	321-5122-00			RES,FXD,FILM:499 OHM,1%,0.125W,1206,8MM	91637	CRCW1206-4990FT
A3R110	321-5028-00			RES,FXD:THICK FILM;6.81K OHM,1%,0.125W,TC=100 PPM	50139	BCK6811FT
A3R111	321-5021-00			RES,FXD:THICK FILM;1.82K OHM,1%,0.125W,TC=100 PPM	50139	BCK1821FT
A3R112	321-5037-00			RES,FXD:THICK FILM;39.2K OHM,1%,0.125W,TC=100 PPM	50139	BCK3922FT
A3R113	321-5026-00			RES,FXD:THICK FILM;4.75K OHM,1%,0.125W,TC=100 PPM	50139	BCK4751FT
A3R114	321-5020-00			RES,FXD:THICK FILM;1.5K OHM,1%,0.125W,TC=100 PPM	50139	BCK1501FT
A3R115	321-5023-00			RES,FXD:THICK FILM;2.74K OHM,1%,0.125W,TC=100 PPM	50139	BCK2741FT
A3R116	321-5023-00			RES,FXD:THICK FILM;2.74K OHM,1%,0.125W,TC=100 PPM	50139	BCK2741FT
A3R117	321-5020-00			RES,FXD:THICK FILM;1.5K OHM,1%,0.125W,TC=100 PPM	50139	BCK1501FT
A3R118	321-5030-00			RES,FXD:THICK FILM;10.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1002FT
A3R119	321-5017-00			RES,FXD:THICK FILM;825 OHM,1%,0.125W,TC=100	50139	BCK8250FT
A3R120	321-5026-00			RES,FXD:THICK FILM;4.75K OHM,1%,0.125W,TC=100 PPM	50139	BCK4751FT
A3R121	321-5026-00			RES,FXD:THICK FILM;4.75K OHM,1%,0.125W,TC=100 PPM	50139	BCK4751FT
A3R122	321-5013-00			RES,FXD:THICK FILM;392 OHM,1%,0.125W,TC=100	50139	BCK3920FT
A3R123	321-5030-00			RES,FXD:THICK FILM;10.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1002FT
A3R124	321-5047-00			RES,FXD:THICK FILM;100K OHM,1%,0.125W,TC=100 PPM	50139	BCK1003FT
A3R125	321-5032-00			RES,FXD:THICK FILM;15.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1502FT
A3R126	321-5036-00			RES,FXD:THICK FILM;33.2K OHM,1%,0.125W,TC=100 PPM	50139	BCK3322FT
A3R127	321-5017-00	B020101		RES,FXD:THICK FILM,825 OHM,1%,0.125W	50139	BCK8250FT
A3R128	321-5020-00			RES,FXD:THICK FILM;1.5K OHM,1%,0.125W,TC=100 PPM	50139	BCK1501FT
A3R129	321-5025-00			RES,FXD:THICK FILM;3.92K OHM,1%,0.125W,TC=100 PPM	50139	BCK3921FT
A3R130	321-5020-00			RES,FXD:THICK FILM;1.5K OHM,1%,0.125W,TC=100 PPM	50139	BCK1501FT
A3R131	321-5020-00			RES,FXD:THICK FILM;1.5K OHM,1%,0.125W,TC=100 PPM	50139	BCK1501FT
A3R132	321-5020-00			RES,FXD:THICK FILM;1.5K OHM,1%,0.125W,TC=100 PPM	50139	BCK1501FT
A3R133	321-5020-00			RES,FXD:THICK FILM;1.5K OHM,1%,0.125W,TC=100 PPM	50139	BCK1501FT
A3R134	311-5036-00			RES,VAR,TRMR:CERMET;5K OHM,25%,0.25W,4MM SQ,TOP ADJ	TK2073	G4DT502E

Replaceable electrical parts list (Cont.)

Component number	Tektronix part number	Effective	Discont'd	Name and description	Mfr. code	Mfr. part no.
A3R135	311-5036-00			RES,VAR,TRMR:CERMET;5K OHM,25%,0.25W,4MM SQ,TOP ADJ	TK2073	G4DT502E
A3R136	321-5023-00			RES,FXD:THICK FILM;2.74K OHM,1%,0.125W,TC=100 PPM	50139	BCK2741FT
A3R137	321-5047-00			RES,FXD:THICK FILM;100K OHM,1%,0.125W,TC=100 PPM	50139	BCK1003FT
A3R138	321-5000-00			RES,FXD:THICK FILM;10 OHM,1%,0.125W,TC=100 PPM	59124	RK73H2B10R0FT
A3R139	321-5013-00			RES,FXD:THICK FILM;392 OHM,1%,0.125W,TC=100	50139	BCK3920FT
A3R140	321-5027-00			RES,FXD:THICK FILM;5.62K OHM,1%,0.125W,TC=100 PPM	50139	BCK5621FT
A3R141	321-5012-00			RES,FXD:THICK FILM;332 OHM,1%,0.125W,TC=100	50139	BCK3320FT
A3R142	321-5012-00			RES,FXD:THICK FILM;332 OHM,1%,0.125W,TC=100	50139	BCK3320FT
A3R143	321-5012-00			RES,FXD:THICK FILM;332 OHM,1%,0.125W,TC=100	50139	BCK3320FT
A3R144	321-5012-00			RES,FXD:THICK FILM;332 OHM,1%,0.125W,TC=100	50139	BCK3320FT
A3R145	321-5006-00			RES,FXD:THICK FILM;100 OHM,1%,0.125W,TC=100	50139	BCK1000FT
A3R146	321-5006-00			RES,FXD:THICK FILM;100 OHM,1%,0.125W,TC=100	50139	BCK1000FT
A3R147	321-5006-00			RES,FXD:THICK FILM;100 OHM,1%,0.125W,TC=100	50139	BCK1000FT
A3R148	321-5023-00			RES,FXD:THICK FILM;2.74K OHM,1%,0.125W,TC=100 PPM	50139	BCK2741FT
A3R149	321-5025-00			RES,FXD:THICK FILM;3.92K OHM,1%,0.125W,TC=100 PPM	50139	BCK3921FT
A3R150	321-5023-00			RES,FXD:THICK FILM;2.74K OHM,1%,0.125W,TC=100 PPM	50139	BCK2741FT
A3R151	321-5047-00			RES,FXD:THICK FILM;100K OHM,1%,0.125W,TC=100 PPM	50139	BCK1003FT
A3R152	321-5016-00			RES,FXD:THICK FILM;681 OHM,1%,0.125W,TC=100	50139	BCK6810FT
A3R153	321-5047-00			RES,FXD:THICK FILM;100K OHM,1%,0.125W,TC=100 PPM	50139	BCK1003FT
A3R154	321-5020-00			RES,FXD:THICK FILM;1.5K OHM,1%,0.125W,TC=100 PPM	50139	BCK1501FT
A3R155	321-5012-00			RES,FXD:THICK FILM;332 OHM,1%,0.125W,TC=100	50139	BCK3320FT
A3R156	321-5015-00			RES,FXD:THICK FILM;562 OHM,1%,0.125W,TC=100	50139	BCK5620FT
A3R157	321-5012-00			RES,FXD:THICK FILM;332 OHM,1%,0.125W,TC=100	50139	BCK3320FT
A3R158	321-5012-00			RES,FXD:THICK FILM;332 OHM,1%,0.125W,TC=100	50139	BCK3320FT
A3R159	321-5012-00			RES,FXD:THICK FILM;332 OHM,1%,0.125W,TC=100	50139	BCK3320FT
A3R160	321-5012-00			RES,FXD:THICK FILM;332 OHM,1%,0.125W,TC=100	50139	BCK3320FT
A3R161	321-5012-00			RES,FXD:THICK FILM;332 OHM,1%,0.125W,TC=100	50139	BCK3320FT
A3R162	321-5012-00			RES,FXD:THICK FILM;332 OHM,1%,0.125W,TC=100	50139	BCK3320FT
A3R163	321-5012-00			RES,FXD:THICK FILM;332 OHM,1%,0.125W,TC=100	50139	BCK3320FT
A3R164	321-5012-00			RES,FXD:THICK FILM;332 OHM,1%,0.125W,TC=100	50139	BCK3320FT
A3R165	321-5022-00			RES,FXD:THICK FILM;2.21K OHM,1%,0.125W,TC=100 PPM	50139	BCK2211FT
A3R166	321-5009-00			RES,FXD:THICK FILM;182 OHM,1%,0.125W,TC=100	50139	BCK1820FT
A3R167	321-5047-00			RES,FXD:THICK FILM;100K OHM,1%,0.125W,TC=100 PPM	50139	BCK1003FT
A3R168	311-5041-00			RES,VAR,TRMR:CERMET;100K OHM,25%,0.25W,4MMSQ, TOP ADJ	TK2073	G4DT104-M
A3R169	321-5143-00			RES,FXD,FILM:301 OHM,1%,0.125W	91637	CRCW12063010FT

Replaceable electrical parts list (Cont.)

Component number	Tektronix part number	Effective	Discont'd	Name and description	Mfr. code	Mfr. part no.
A3R170	321-5022-00			RES,FXD:THICK FILM;2.21K OHM,1%,0.125W,TC=100 PPM	50139	BCK2211FT
A3R171	321-5009-00			RES,FXD:THICK FILM;182 OHM,1%,0.125W,TC=100	50139	BCK1820FT
A3R172	321-5047-00			RES,FXD:THICK FILM;100K OHM,1%,0.125W,TC=100 PPM	50139	BCK1003FT
A3R173	321-5012-00			RES,FXD:THICK FILM;332 OHM,1%,0.125W,TC=100	50139	BCK3320FT
A3R174	321-5027-00			RES,FXD:THICK FILM;5.62K OHM,1%,0.125W,TC=100 PPM	50139	BCK5621FT
A3R175	321-5012-00			RES,FXD:THICK FILM;332 OHM,1%,0.125W,TC=100	50139	BCK3320FT
A3R176	321-5012-00			RES,FXD:THICK FILM;332 OHM,1%,0.125W,TC=100	50139	BCK3320FT
A3R177	321-5012-00			RES,FXD:THICK FILM;332 OHM,1%,0.125W,TC=100	50139	BCK3320FT
A3R178	321-5012-00			RES,FXD:THICK FILM;332 OHM,1%,0.125W,TC=100	50139	BCK3320FT
A3R179	321-5012-00			RES,FXD:THICK FILM;332 OHM,1%,0.125W,TC=100	50139	BCK3320FT
A3R180	321-5143-00			RES,FXD,FILM:301 OHM,1%,0.125W	91637	CRCW12063010FT
A3R181	321-5012-00			RES,FXD:THICK FILM;332 OHM,1%,0.125W,TC=100	50139	BCK3320FT
A3R182	311-5032-00			RES,VAR,TRMR:CERMET;200 OHM,25%,0.25W,4MM SQ,TOP ADJ	TK2073	G4DT201M
A3R183	311-5032-00			RES,VAR,TRMR:CERMET;200 OHM,25%,0.25W,4MM SQ,TOP ADJ	TK2073	G4DT201M
A3R184	321-5047-00			RES,FXD:THICK FILM;100K OHM,1%,0.125W,TC=100 PPM	50139	BCK1003FT
A3R185	321-5047-00			RES,FXD:THICK FILM;100K OHM,1%,0.125W,TC=100 PPM	50139	BCK1003FT
A3R186	321-5000-00			RES,FXD:THICK FILM;10 OHM,1%,0.125W,TC=100 PPM	59124	RK73H2B10R0FT
A3R187	321-5020-00			RES,FXD:THICK FILM;1.5K OHM,1%,0.125W,TC=100 PPM	50139	BCK1501FT
A3R188	321-5020-00			RES,FXD:THICK FILM;1.5K OHM,1%,0.125W,TC=100 PPM	50139	BCK1501FT
A3R189	321-5012-00			RES,FXD:THICK FILM;332 OHM,1%,0.125W,TC=100	50139	BCK3320FT
A3R190	321-5012-00			RES,FXD:THICK FILM;332 OHM,1%,0.125W,TC=100	50139	BCK3320FT
A3R191	321-5012-00			RES,FXD:THICK FILM;332 OHM,1%,0.125W,TC=100	50139	BCK3320FT
A3R192	321-5012-00			RES,FXD:THICK FILM;332 OHM,1%,0.125W,TC=100	50139	BCK3320FT
A3R193	321-5012-00			RES,FXD:THICK FILM;332 OHM,1%,0.125W,TC=100	50139	BCK3320FT
A3R194	321-5012-00			RES,FXD:THICK FILM;332 OHM,1%,0.125W,TC=100	50139	BCK3320FT
A3R195	321-5046-00			RES,FXD:THICK FILM;82.5 OHM,1%,0.125W,TC=100 PPM	50139	BCK82R5FT
A3R196	321-5006-00			RES,FXD:THICK FILM;100 OHM,1%,0.125W,TC=100	50139	BCK1000FT
A3R197	321-5006-00			RES,FXD:THICK FILM;100 OHM,1%,0.125W,TC=100	50139	BCK1000FT
A3R198	321-5006-00			RES,FXD:THICK FILM;100 OHM,1%,0.125W,TC=100	50139	BCK1000FT
A3R199	321-5014-00			RES,FXD:THICK FILM;475 OHM,1%,0.125W,TC=100	50139	BCK4750FT
A3R200	321-5047-00			RES,FXD:THICK FILM;100K OHM,1%,0.125W,TC=100 PPM	50139	BCK1003FT
A3R201	321-5087-00			RES,FXD,FILM:620 OHM,5%,0.125W	50139	BCK6200JT
A3R202	321-5024-00			RES,FXD:THICK FILM;3.32K OHM,1%,0.125W,TC=100 PPM	50139	BCK3321FT
A3R203	321-5020-00			RES,FXD:THICK FILM;1.5K OHM,1%,0.125W,TC=100 PPM	50139	BCK1501FT
A3R204	321-5030-00			RES,FXD:THICK FILM;10.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1002FT

Replaceable electrical parts list (Cont.)

Component number	Tektronix part number	Effective	Discont'd	Name and description	Mfr. code	Mfr. part no.
A3R205	321-5027-00			RES,FXD:THICK FILM;5.62K OHM,1%,0.125W,TC=100 PPM	50139	BCK5621FT
A3R210	321-5006-00			RES,FXD:THICK FILM;100 OHM,1%,0.125W,TC=100	50139	BCK1000FT
A3R211	321-5021-00			RES,FXD:THICK FILM;1.82K OHM,1%,0.125W,TC=100 PPM	50139	BCK1821FT
A3R212	321-5026-00			RES,FXD:THICK FILM;4.75K OHM,1%,0.125W,TC=100 PPM	50139	BCK4751FT
A3R213	321-5047-00			RES,FXD:THICK FILM;100K OHM,1%,0.125W,TC=100 PPM	50139	BCK1003FT
A3R214	321-5014-00			RES,FXD:THICK FILM;475 OHM,1%,0.125W,TC=100	50139	BCK4750FT
A3R215	321-5113-00			RES,FXD:THICK FILM;75 OHM,1%,0.125W,TC=100 PPM	56845	CRCW1206-75ROFT
A3R216	321-5033-00			RES,FXD:THICK FILM;18.2K OHM,1%,0.125W,TC=100 PPM	50139	BCK1822FT
A3R217	321-5266-00			RES,FXD:THICK FILM;11K OHM,1%,0.125W,TC=100	59124	RK73H2B1102FT
A3R218	321-5087-00			RES,FXD,FILM:620 OHM,5%,0.125W	50139	BCK6200JT
A3R219	321-5024-00			RES,FXD:THICK FILM;3.32K OHM,1%,0.125W,TC=100 PPM	50139	BCK3321FT
A3R220	321-5015-00			RES,FXD:THICK FILM;562 OHM,1%,0.125W,TC=100	50139	BCK5620FT
A3R221	321-5015-00			RES,FXD:THICK FILM;562 OHM,1%,0.125W,TC=100	50139	BCK5620FT
A3R224	321-5026-00			RES,FXD:THICK FILM;4.75K OHM,1%,0.125W,TC=100 PPM	50139	BCK4751FT
A3R225	321-5006-00			RES,FXD:THICK FILM;100 OHM,1%,0.125W,TC=100	50139	BCK1000FT
A3R226	321-5033-00			RES,FXD:THICK FILM;18.2K OHM,1%,0.125W,TC=100 PPM	50139	BCK1822FT
A3R227	321-5033-00			RES,FXD:THICK FILM;18.2K OHM,1%,0.125W,TC=100 PPM	50139	BCK1822FT
A3R228	321-5266-00			RES,FXD:THICK FILM;11K OHM,1%,0.125W,TC=100	59124	RK73H2B1102FT
A3R229	321-5266-00			RES,FXD:THICK FILM;11K OHM,1%,0.125W,TC=100	59124	RK73H2B1102FT
A3R230	321-5033-00			RES,FXD:THICK FILM;18.2K OHM,1%,0.125W,TC=100 PPM	50139	BCK1822FT
A3R231	321-5041-00			RES,FXD:THICK FILM;82.5K OHM,1%,0.125W,TC=100 PPM	50139	BCK8252FT
A3R232	321-5034-00			RES,FXD:THICK FILM;22.1K OHM,1%,0.125W,TC=100 PPM	50139	BCK2212FT
A3R234	321-5000-00			RES,FXD:THICK FILM;10 OHM,1%,0.125W,TC=100 PPM	59124	RK73H2B10R0FT
A3R235	321-5055-00			RES,FXD:THICK FILM;681K OHM,1%,0.125W,TC=100 PPM	59124	RK73H2B6813FT
A3R237	321-5024-00			RES,FXD:THICK FILM;3.32K OHM,1%,0.125W,TC=100 PPM	50139	BCK3321FT
A3R241	321-5000-00			RES,FXD:THICK FILM;10 OHM,1%,0.125W,TC=100 PPM	59124	RK73H2B10R0FT
A3R242	321-5020-00			RES,FXD:THICK FILM;1.5K OHM,1%,0.125W,TC=100 PPM	50139	BCK1501FT
A3R243	321-5055-00			RES,FXD:THICK FILM;681K OHM,1%,0.125W,TC=100 PPM	59124	RK73H2B6813FT
A3R244	321-5018-00			RES,FXD:THICK FILM;1.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1001FT
A3R245	321-5018-00			RES,FXD:THICK FILM;1.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1001FT
A3R246	321-5022-00			RES,FXD:THICK FILM;2.21K OHM,1%,0.125W,TC=100 PPM	50139	BCK2211FT
A3R247	321-5023-00			RES,FXD:THICK FILM;2.74K OHM,1%,0.125W,TC=100 PPM	50139	BCK2741FT
A3R248	321-5026-00			RES,FXD:THICK FILM;4.75K OHM,1%,0.125W,TC=100 PPM	50139	BCK4751FT
A3R249	321-5014-00			RES,FXD:THICK FILM;475 OHM,1%,0.125W,TC=100	50139	BCK4750FT
A3R250	321-5047-00			RES,FXD:THICK FILM;100K OHM,1%,0.125W,TC=100 PPM	50139	BCK1003FT
A3R251	321-5047-00			RES,FXD:THICK FILM;100K OHM,1%,0.125W,TC=100 PPM	50139	BCK1003FT

Replaceable electrical parts list (Cont.)

Component number	Tektronix part number	Effective	Discont'd	Name and description	Mfr. code	Mfr. part no.
A3R252	321-5000-00			RES,FXD:THICK FILM;10 OHM,1%,0.125W,TC=100 PPM	59124	RK73H2B10R0FT
A3R253	321-5032-00			RES,FXD:THICK FILM;15.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1502FT
A3R254	321-5023-00			RES,FXD:THICK FILM;2.74K OHM,1%,0.125W,TC=100 PPM	50139	BCK2741FT
A3R255	321-5006-00			RES,FXD:THICK FILM;100 OHM,1%,0.125W,TC=100	50139	BCK1000FT
A3R258	321-5025-00			RES,FXD:THICK FILM;3.92K OHM,1%,0.125W,TC=100 PPM	50139	BCK3921FT
A3R259	321-5021-00			RES,FXD:THICK FILM;1.82K OHM,1%,0.125W,TC=100 PPM	50139	BCK1821FT
A3R260	321-5021-00			RES,FXD:THICK FILM;1.82K OHM,1%,0.125W,TC=100 PPM	50139	BCK1821FT
A3R261	321-5014-00			RES,FXD:THICK FILM;475 OHM,1%,0.125W,TC=100	50139	BCK4750FT
A3R262	321-5006-00			RES,FXD:THICK FILM;100 OHM,1%,0.125W,TC=100	50139	BCK1000FT
A3R263	321-5022-00			RES,FXD:THICK FILM;2.21K OHM,1%,0.125W,TC=100 PPM	50139	BCK2211FT
A3R264	321-5014-00			RES,FXD:THICK FILM;475 OHM,1%,0.125W,TC=100	50139	BCK4750FT
A3R265	321-5039-00			RES,FXD:THICK FILM;56.2K OHM,1%,0.125W,TC=100 PPM	50139	BCK5622FT
A3R266	321-5033-00			RES,FXD:THICK FILM;18.2K OHM,1%,0.125W,TC=100 PPM	50139	BCK1822FT
A3R267	321-5006-00			RES,FXD:THICK FILM;100 OHM,1%,0.125W,TC=100	50139	BCK1000FT
A3R268	321-5006-00			RES,FXD:THICK FILM;100 OHM,1%,0.125W,TC=100	50139	BCK1000FT
A3R269	321-5034-00			RES,FXD:THICK FILM;22.1K OHM,1%,0.125W,TC=100 PPM	50139	BCK2212FT
A3R270	321-5022-00			RES,FXD:THICK FILM;2.21K OHM,1%,0.125W,TC=100 PPM	50139	BCK2211FT
A3R271	321-5018-00			RES,FXD:THICK FILM;1.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1001FT
A3R272	321-5212-00			RES,FXD:THICK FILM;4.99K OHM,1%,0.125W,TC=100 PPM	91637	CRCW-1206-4991F
A3R273	321-5024-00			RES,FXD:THICK FILM;3.32K OHM,1%,0.125W,TC=100 PPM	50139	BCK3321FT
A3R274	321-5030-00			RES,FXD:THICK FILM;10.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1002FT
A3R275	321-5033-00			RES,FXD:THICK FILM;18.2K OHM,1%,0.125W,TC=100 PPM	50139	BCK1822FT
A3R276	321-5047-00			RES,FXD:THICK FILM;100K OHM,1%,0.125W,TC=100 PPM	50139	BCK1003FT
A3R277	321-5018-00			RES,FXD:THICK FILM;1.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1001FT
A3R278	321-5113-00			RES,FXD:THICK FILM;75 OHM,1%,0.125W,TC=100 PPM	56845	CRCW1206-75ROFT
A3R279	321-5113-00			RES,FXD:THICK FILM;75 OHM,1%,0.125W,TC=100 PPM	56845	CRCW1206-75ROFT
A3R280	321-5113-00			RES,FXD:THICK FILM;75 OHM,1%,0.125W,TC=100 PPM	56845	CRCW1206-75ROFT
A3R281	321-5011-00			RES,FXD:THICK FILM;274 OHM,1%,0.125W,TC=100	50139	BCK2740FT
A3R282	321-5266-00			RES,FXD:THICK FILM;11K OHM,1%,0.125W,TC=100	59124	RK73H2B1102FT
A3R283	321-5033-00			RES,FXD:THICK FILM;18.2K OHM,1%,0.125W,TC=100 PPM	50139	BCK1822FT
A3R284	321-5006-00			RES,FXD:THICK FILM;100 OHM,1%,0.125W,TC=100	50139	BCK1000FT
A3R285	321-5266-00			RES,FXD:THICK FILM;11K OHM,1%,0.125W,TC=100	59124	RK73H2B1102FT
A3R286	321-5033-00			RES,FXD:THICK FILM;18.2K OHM,1%,0.125W,TC=100 PPM	50139	BCK1822FT
A3R287	321-5266-00			RES,FXD:THICK FILM;11K OHM,1%,0.125W,TC=100	59124	RK73H2B1102FT
A3R288	321-5012-00			RES,FXD:THICK FILM;332 OHM,1%,0.125W,TC=100	50139	BCK3320FT
A3R289	321-5006-00			RES,FXD:THICK FILM;100 OHM,1%,0.125W,TC=100	50139	BCK1000FT

Replaceable electrical parts list (Cont.)

Component number	Tektronix part number	Effective	Discont'd	Name and description	Mfr. code	Mfr. part no.
A3R290	321-5006-00			RES,FXD:THICK FILM;100 OHM,1%,0.125W,TC=100	50139	BCK1000FT
A3R291	321-5030-00			RES,FXD:THICK FILM;10.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1002FT
A3R292	321-5047-00			RES,FXD:THICK FILM;100K OHM,1%,0.125W,TC=100 PPM	50139	BCK1003FT
A3R293	321-5000-00			RES,FXD:THICK FILM;10 OHM,1%,0.125W,TC=100 PPM	59124	RK73H2B10R0FT
A3R294	321-5032-00			RES,FXD:THICK FILM;15.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1502FT
A3R295	321-5043-00			RES,FXD:THICK FILM;47.5 OHM,1%,0.125W,TC=100 PPM	57668	MCR18FWEA47E5
A3R296	321-5025-00			RES,FXD:THICK FILM;3.92K OHM,1%,0.125W,TC=100 PPM	50139	BCK3921FT
A3R297	321-5010-00			RES,FXD:THICK FILM;221 OHM,1%,0.125W,TC=100	50139	BCK221FT
A3R298	321-5023-00			RES,FXD:THICK FILM;2.74K OHM,1%,0.125W,TC=100 PPM	50139	BCK2741FT
A3R299	321-5034-00			RES,FXD:THICK FILM;22.1K OHM,1%,0.125W,TC=100 PPM	50139	BCK2212FT
A3R300	321-5006-00			RES,FXD:THICK FILM;100 OHM,1%,0.125W,TC=100	50139	BCK1000FT
A3R301	321-5006-00			RES,FXD:THICK FILM;100 OHM,1%,0.125W,TC=100	50139	BCK1000FT
A3R302	321-5014-00			RES,FXD:THICK FILM;475 OHM,1%,0.125W,TC=100	50139	BCK4750FT
A3R303	321-5113-00			RES,FXD:THICK FILM;75 OHM,1%,0.125W,TC=100 PPM	56845	CRCW1206-75ROFT
A3R304	321-5006-00			RES,FXD:THICK FILM;100 OHM,1%,0.125W,TC=100	50139	BCK1000FT
A3R305	321-5030-00			RES,FXD:THICK FILM;10.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1002FT
A3R306	321-5034-00			RES,FXD:THICK FILM;22.1K OHM,1%,0.125W,TC=100 PPM	50139	BCK2212FT
A3R307	321-5020-00			RES,FXD:THICK FILM;1.5K OHM,1%,0.125W,TC=100 PPM	50139	BCK1501FT
A3R308	321-5049-00			RES,FXD:THICK FILM;1M OHM,1%,0.125W,TC=100 PPM	57668	MCR18FXEA1M
A3R309	321-5044-00			RES,FXD:THICK FILM;56.2 OHM,1%,0.125W,TC=100 PPM	50139	BCD56R2FT
A3R310	321-5026-00			RES,FXD:THICK FILM;4.75K OHM,1%,0.125W,TC=100 PPM	50139	BCK4751FT
A3R311	321-5026-00			RES,FXD:THICK FILM;4.75K OHM,1%,0.125W,TC=100 PPM	50139	BCK4751FT
A3R312	321-5020-00			RES,FXD:THICK FILM;1.5K OHM,1%,0.125W,TC=100 PPM	50139	BCK1501FT
A3R313	321-5014-00			RES,FXD:THICK FILM;475 OHM,1%,0.125W,TC=100	50139	BCK4750FT
A3R314	321-5015-00			RES,FXD:THICK FILM;562 OHM,1%,0.125W,TC=100	50139	BCK5620FT
A3R315	321-5006-00			RES,FXD:THICK FILM;100 OHM,1%,0.125W,TC=100	50139	BCK1000FT
A3R316	321-5113-00			RES,FXD:THICK FILM;75 OHM,1%,0.125W,TC=100 PPM	56845	CRCW1206-75ROFT
A3R317	321-5013-00			RES,FXD:THICK FILM;392 OHM,1%,0.125W,TC=100	50139	BCK3920FT
A3R318	321-5013-00			RES,FXD:THICK FILM;392 OHM,1%,0.125W,TC=100	50139	BCK3920FT
A3R319	321-5038-00			RES,FXD:THICK FILM;47.5K OHM,1%,0.125W,TC=100 PPM	50139	BCK4752FT
A3R320	321-5032-00			RES,FXD:THICK FILM;15.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1502FT
A3R321	321-5020-00			RES,FXD:THICK FILM;1.5K OHM,1%,0.125W,TC=100 PPM	50139	BCK1501FT
A3R322	321-5026-00			RES,FXD:THICK FILM;4.75K OHM,1%,0.125W,TC=100 PPM	50139	BCK4751FT
A3R323	321-5026-00			RES,FXD:THICK FILM;4.75K OHM,1%,0.125W,TC=100 PPM	50139	BCK4751FT
A3R324	321-5090-00			RES,FXD:THICK FILM; 20K OHM,0.125W,100 PPM,1206,T&R	50139	BCK2002FT
A3R325	321-5026-00			RES,FXD:THICK FILM;4.75K OHM,1%,0.125W,TC=100 PPM	50139	BCK4751FT

Replaceable electrical parts list (Cont.)

Component number	Tektronix part number	Effective	Discont'd	Name and description	Mfr. code	Mfr. part no.
A3R326	321-5030-00			RES,FXD:THICK FILM;10.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1002FT
A3R327	321-5030-00			RES,FXD:THICK FILM;10.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1002FT
A3R328	321-5090-00			RES,FXD:THICK FILM; 20K OHM,0.125W,100 PPM,1206,T&R	50139	BCK2002FT
A3R329	321-5026-00			RES,FXD:THICK FILM;4.75K OHM,1%,0.125W,TC=100 PPM	50139	BCK4751FT
A3R330	321-5090-00			RES,FXD:THICK FILM; 20K OHM,0.125W,100 PPM,1206,T&R	50139	BCK2002FT
A3R331	321-5047-00			RES,FXD:THICK FILM;100K OHM,1%,0.125W,TC=100 PPM	50139	BCK1003FT
A3R332	321-5006-00			RES,FXD:THICK FILM;100 OHM,1%,0.125W,TC=100	50139	BCK1000FT
A3R333	321-5047-00			RES,FXD:THICK FILM;100K OHM,1%,0.125W,TC=100 PPM	50139	BCK1003FT
A3R334	321-5017-00			RES,FXD:THICK FILM;825 OHM,1%,0.125W,TC=100	50139	BCK8250FT
A3R335	321-5047-00			RES,FXD:THICK FILM;100K OHM,1%,0.125W,TC=100 PPM	50139	BCK1003FT
A3R336	321-5169-00			RES,FXD:THICK FILM;475K OHM,1%,0.125W,TC=100 PPM	59124	RK73H2B4753FT
A3R337	321-5030-00			RES,FXD:THICK FILM;10.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1002FT
A3R338	321-5030-00			RES,FXD:THICK FILM;10.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1002FT
A3R339	321-5018-00			RES,FXD:THICK FILM;1.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1001FT
A3R340	321-5031-00			RES,FXD:THICK FILM;12.1K OHM,1%,0.125W,TC=100 PPM	50139	BCK1212FT
A3R341	321-5029-00			RES,FXD:THICK FILM;8.25K OHM,1%,0.125W,TC=100 PPM	50139	BCK8251FT
A3R342	321-5090-00			RES,FXD:THICK FILM; 20K OHM,0.125W,100 PPM,1206,T&R	50139	BCK2002FT
A3R343	321-5030-00			RES,FXD:THICK FILM;10.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1002FT
A3R344	321-5020-00			RES,FXD:THICK FILM;1.5K OHM,1%,0.125W,TC=100 PPM	50139	BCK1501FT
A3R345	321-5030-00			RES,FXD:THICK FILM;10.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1002FT
A3R346	321-5090-00			RES,FXD:THICK FILM; 20K OHM,0.125W,100 PPM,1206,T&R	50139	BCK2002FT
A3R347	321-5027-00			RES,FXD:THICK FILM;5.62K OHM,1%,0.125W,TC=100 PPM	50139	BCK5621FT
A3R348	321-5026-00			RES,FXD:THICK FILM;4.75K OHM,1%,0.125W,TC=100 PPM	50139	BCK4751FT
A3R349	321-5030-00			RES,FXD:THICK FILM;10.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1002FT
A3R350	321-5030-00			RES,FXD:THICK FILM;10.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1002FT
A3R351	321-5030-00			RES,FXD:THICK FILM;10.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1002FT
A3R352	321-5030-00			RES,FXD:THICK FILM;10.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1002FT
A3R353	321-5030-00			RES,FXD:THICK FILM;10.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1002FT
A3R354	321-5030-00			RES,FXD:THICK FILM;10.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1002FT
A3R355	321-5090-00			RES,FXD:THICK FILM; 20K OHM,0.125W,100 PPM,1206,T&R	50139	BCK2002FT
A3R356	307-5041-00			RES NTWK,FXD,FI:4.7K OHM,2%,0.125W	57924	4816P-002-472
A3R357	321-5023-00			RES,FXD:THICK FILM;2.74K OHM,1%,0.125W,TC=100 PPM	50139	BCK2741FT
A3R358	321-5015-00			RES,FXD:THICK FILM;562 OHM,1%,0.125W,TC=100	50139	BCK5620FT
A3R359	321-5026-00			RES,FXD:THICK FILM;4.75K OHM,1%,0.125W,TC=100 PPM	50139	BCK4751FT
A3R360	321-5047-00			RES,FXD:THICK FILM;100K OHM,1%,0.125W,TC=100 PPM	50139	BCK1003FT
A3R361	321-5013-00			RES,FXD:THICK FILM;392 OHM,1%,0.125W,TC=100	50139	BCK3920FT

Replaceable electrical parts list (Cont.)

Component number	Tektronix part number	Effective	Discont'd	Name and description	Mfr. code	Mfr. part no.
A3R362	321-5018-00			RES,FXD:THICK FILM;1.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1001FT
A3R363	321-5022-00			RES,FXD:THICK FILM;2.21K OHM,1%,0.125W,TC=100 PPM	50139	BCK2211FT
A3R364	321-5010-00			RES,FXD:THICK FILM;221 OHM,1%,0.125W,TC=100	50139	BCK221FT
A3R365	321-5010-00			RES,FXD:THICK FILM;221 OHM,1%,0.125W,TC=100	50139	BCK221FT
A3R366	321-5033-00			RES,FXD:THICK FILM;18.2K OHM,1%,0.125W,TC=100 PPM	50139	BCK1822FT
A3R367	321-5047-00			RES,FXD:THICK FILM;100K OHM,1%,0.125W,TC=100 PPM	50139	BCK1003FT
A3R368	321-5006-00			RES,FXD:THICK FILM;100 OHM,1%,0.125W,TC=100	50139	BCK1000FT
A3R369	321-5006-00			RES,FXD:THICK FILM;100 OHM,1%,0.125W,TC=100	50139	BCK1000FT
A3R370	321-5006-00			RES,FXD:THICK FILM;100 OHM,1%,0.125W,TC=100	50139	BCK1000FT
A3R371	321-5006-00			RES,FXD:THICK FILM;100 OHM,1%,0.125W,TC=100	50139	BCK1000FT
A3R372	321-5006-00			RES,FXD:THICK FILM;100 OHM,1%,0.125W,TC=100	50139	BCK1000FT
A3R373	321-5006-00			RES,FXD:THICK FILM;100 OHM,1%,0.125W,TC=100	50139	BCK1000FT
A3R374	321-5006-00			RES,FXD:THICK FILM;100 OHM,1%,0.125W,TC=100	50139	BCK1000FT
A3R375	321-5006-00			RES,FXD:THICK FILM;100 OHM,1%,0.125W,TC=100	50139	BCK1000FT
A3R376	321-5010-00			RES,FXD:THICK FILM;221 OHM,1%,0.125W,TC=100	50139	BCK221FT
A3R377	321-5047-00			RES,FXD:THICK FILM;100K OHM,1%,0.125W,TC=100 PPM	50139	BCK1003FT
A3R378	321-5016-00			RES,FXD:THICK FILM;681 OHM,1%,0.125W,TC=100	50139	BCK6810FT
A3R379	321-5003-00			RES,FXD:THICK FILM;18.2 OHM,1%,0.125W,TC=100 PPM	59124	RK73H2B18R2FT
A3R412	321-5044-00	B020101		RES,FXD:THICK FILM,56.2 OHM,1%,0.125W	50139	BCD56R2FT
A3R416	321-5488-00	B020101		RES,FXD:THICK FILM,2.4 OHM,5%,SMD,1206,T&R	09969	CRCW1206-2R4J-RT 1
A3R417	321-5488-00	B020101		RES,FXD:THICK FILM,2.4 OHM,5%,SMD,1206,T&R	09969	CRCW1206-2R4J-RT 1
A3R418	321-5113-00	B020101		RES,FXD:THICK FILM,75 OHM,1%,0.125W,TC=100 PPM	59124	RK73H2B75R0FT
A3R419	321-5113-00	B020101		RES,FXD:THICK FILM,75 OHM,1%,0.125W,TC=100 PPM	59124	RK73H2B75R0FT
A3R420	321-5113-00	B020101		RES,FXD:THICK FILM,75 OHM,1%,0.125W,TC=100 PPM	59124	RK73H2B75R0FT
A3R421	321-5113-00	B020101		RES,FXD:THICK FILM,75 OHM,1%,0.125W,TC=100 PPM	59124	RK73H2B75R0FT
A3R422	321-5113-00	B020101		RES,FXD:THICK FILM,75 OHM,1%,0.125W,TC=100 PPM	59124	RK73H2B75R0FT
A3R423	321-5113-00	B020101		RES,FXD:THICK FILM,75 OHM,1%,0.125W,TC=100 PPM	59124	RK73H2B75R0FT
A3R424	321-5113-00	B020101		RES,FXD:THICK FILM,75 OHM,1%,0.125W,TC=100 PPM	59124	RK73H2B75R0FT
A3R425	321-5113-00	B020101		RES,FXD:THICK FILM,75 OHM,1%,0.125W,TC=100 PPM	59124	RK73H2B75R0FT
A3R426	321-5113-00	B020101		RES,FXD:THICK FILM,75 OHM,1%,0.125W,TC=100 PPM	59124	RK73H2B75R0FT
A3R427	321-5113-00	B020101		RES,FXD:THICK FILM,75 OHM,1%,0.125W,TC=100 PPM	59124	RK73H2B75R0FT
A3R428	321-5113-00	B020101		RES,FXD:THICK FILM,75 OHM,1%,0.125W,TC=100 PPM	59124	RK73H2B75R0FT
A3R429	321-5113-00	B020101		RES,FXD:THICK FILM,75 OHM,1%,0.125W,TC=100 PPM	59124	RK73H2B75R0FT
A3R430	321-5113-00	B020101		RES,FXD:THICK FILM,75 OHM,1%,0.125W,TC=100 PPM	59124	RK73H2B75R0FT
A3R431	321-5113-00	B020101		RES,FXD:THICK FILM,75 OHM,1%,0.125W,TC=100 PPM	59124	RK73H2B75R0FT

Replaceable electrical parts list (Cont.)

Component number	Tektronix part number	Effective	Discont'd	Name and description	Mfr. code	Mfr. part no.
A3R432	321-5113-00	B020101		RES,FXD:THICK FILM,75 OHM,1%,0.125W,TC=100 PPM	59124	RK73H2B75R0FT
A3R433	321-5113-00	B020101		RES,FXD:THICK FILM,75 OHM,1%,0.125W,TC=100 PPM	59124	RK73H2B75R0FT
A3R434	321-5113-00	B020101		RES,FXD:THICK FILM,75 OHM,1%,0.125W,TC=100 PPM	59124	RK73H2B75R0FT
A3R435	321-5113-00	B020101		RES,FXD:THICK FILM,75 OHM,1%,0.125W,TC=100 PPM	59124	RK73H2B75R0FT
A3R436	321-5113-00	B020101		RES,FXD:THICK FILM,75 OHM,1%,0.125W,TC=100 PPM	59124	RK73H2B75R0FT
A3R437	321-5113-00	B020101		RES,FXD:THICK FILM,75 OHM,1%,0.125W,TC=100 PPM	59124	RK73H2B75R0FT
A3R438	321-5113-00	B020101		RES,FXD:THICK FILM,75 OHM,1%,0.125W,TC=100 PPM	59124	RK73H2B75R0FT
A3R439	321-5113-00	B020101		RES,FXD:THICK FILM,75 OHM,1%,0.125W,TC=100 PPM	59124	RK73H2B75R0FT
A3R440	321-5113-00	B020101		RES,FXD:THICK FILM,75 OHM,1%,0.125W,TC=100 PPM	59124	RK73H2B75R0FT
A3R441	321-5113-00	B020101		RES,FXD:THICK FILM,75 OHM,1%,0.125W,TC=100 PPM	59124	RK73H2B75R0FT
A3R442	321-5113-00	B020101		RES,FXD:THICK FILM,75 OHM,1%,0.125W,TC=100 PPM	59124	RK73H2B75R0FT
A3R443	321-5113-00	B020101		RES,FXD:THICK FILM,75 OHM,1%,0.125W,TC=100 PPM	59124	RK73H2B75R0FT
A3R444	321-5113-00	B020101		RES,FXD:THICK FILM,75 OHM,1%,0.125W,TC=100 PPM	59124	RK73H2B75R0FT
A3R445	321-5113-00	B020101		RES,FXD:THICK FILM,75 OHM,1%,0.125W,TC=100 PPM	59124	RK73H2B75R0FT
A3R446	321-5113-00	B020101		RES,FXD:THICK FILM,75 OHM,1%,0.125W,TC=100 PPM	59124	RK73H2B75R0FT
A3R447	321-5113-00	B020101		RES,FXD:THICK FILM,75 OHM,1%,0.125W,TC=100 PPM	59124	RK73H2B75R0FT
A3R448	321-5113-00	B020101		RES,FXD:THICK FILM,75 OHM,1%,0.125W,TC=100 PPM	59124	RK73H2B75R0FT
A3R449	321-5113-00	B020101		RES,FXD:THICK FILM,75 OHM,1%,0.125W,TC=100 PPM	59124	RK73H2B75R0FT
A3R450	321-5113-00	B020101		RES,FXD:THICK FILM,75 OHM,1%,0.125W,TC=100 PPM	59124	RK73H2B75R0FT
A3R451	321-5113-00	B020101		RES,FXD:THICK FILM,75 OHM,1%,0.125W,TC=100 PPM	59124	RK73H2B75R0FT
A3R452	321-5113-00	B020101		RES,FXD:THICK FILM,75 OHM,1%,0.125W,TC=100 PPM	59124	RK73H2B75R0FT
A3R453	321-5113-00	B020101		RES,FXD:THICK FILM,75 OHM,1%,0.125W,TC=100 PPM	59124	RK73H2B75R0FT
A3R454	321-5113-00	B020101		RES,FXD:THICK FILM,75 OHM,1%,0.125W,TC=100 PPM	59124	RK73H2B75R0FT
A3R455	321-5113-00	B020101		RES,FXD:THICK FILM,75 OHM,1%,0.125W,TC=100 PPM	59124	RK73H2B75R0FT
A3R456	321-5113-00	B020101		RES,FXD:THICK FILM,75 OHM,1%,0.125W,TC=100 PPM	59124	RK73H2B75R0FT
A3R457	321-5113-00	B020101		RES,FXD:THICK FILM,75 OHM,1%,0.125W,TC=100 PPM	59124	RK73H2B75R0FT
A3R458	321-5113-00	B020101		RES,FXD:THICK FILM,75 OHM,1%,0.125W,TC=100 PPM	59124	RK73H2B75R0FT
A3R459	321-5113-00	B020101		RES,FXD:THICK FILM,75 OHM,1%,0.125W,TC=100 PPM	59124	RK73H2B75R0FT
A3R480	321-5113-00	B034402				RK73H2B75R0FT
A3S1	260-1965-00			SWITCH,ROCKER:DIP;RAISED ROCKER,4 POSITION, TOP SEALED,150MA 30VDC	81073	76SB04S
A3T1	120-1057-00			TRANSFORMER,SIG:TRIFILAR;450-675UH,TOROID CORE 276-0614-00,8 TURNS WITH 31 AWG WIRE 176-0014-XX	0JR03	120-1057-00
A3T2	120-1057-00			TRANSFORMER,SIG:TRIFILAR;450-675UH,TOROID CORE 276-0614-00,8 TURNS WITH 31 AWG WIRE 176-0014-XX	0JR03	120-1057-00
A3U1	156-2051-01			MICROCKT,LINEAR:OPERATIONAL AMPL,QUAD,JET INPUT	01295	LF347DR
A3U2	160-8970-00			IC,DIGITAL:CMOS,PLD;EEPLD,16V8,15NS,90MA	80009	160-8970-00

Replaceable electrical parts list (Cont.)

Component number	Tektronix part number	Effective	Discont'd	Name and description	Mfr. code	Mfr. part no.
A3U3	156-6007-00			IC, CONV:CMOS,A/D;8-BIT,13US,11 CHAN MUX,SER OUT	01295	TLC540IFN
A3U4	156-6007-00			IC, CONV:CMOS,A/D;8-BIT,13US,11 CHAN MUX,SER OUT	01295	TLC540IFN
A3U5	156-6256-01			IC, LINEAR:BIPOLAR,OP-AMP;DUAL,HIGH OUTPUT CUR	04713	MC33178DR2
A3U6	156-5058-01			IC,DIGITAL:FTTL,BUS XCVR;OCTAL, NONINV, 3-STATE	01295	SN74F245DWR
A3U7	156-5489-01			IC,MISC:BIPOLAR,PWR SUPPLY SUPERVISOR;MPU RESET GENERATOR,5V SUPPLY SENSING	01295	TL7705ACDR
A3U8	156-5058-01			IC,DIGITAL:FTTL,BUS XCVR;OCTAL, NONINV, 3-STATE	01295	SN74F245DWR
A3U9	156-5358-00			IC,DIGITAL:HCMOS,RGTR;8-BIT PISO SHIFT RGTR	04713	MC74HC165D
A3U11	156-6151-00			IC, MEMORY:CMOS,SRAM;128K X 8,100NS,15UA,OE	TK1146	M5M51008FP-10LL
A3U12	156-5058-01			IC,DIGITAL:FTTL,BUS XCVR;OCTAL, NONINV, 3-STATE	01295	SN74F245DWR
A3U13	160-8969-01			IC, MEMORY:CMOS,EPROM;128K X 8,120NS,PLCC32	80009	160-8969-01
				MOUNTING PARTS		
	136-5011-00			SOCKET,PLCC:SMD;32 POS,0.05 CTR,0.800X 0.700 INCH WIDE,0.200 H,BE/CU,TIN,W/O PLZ POSTS	22526	69802-132
				END MOUNTING PARTS		
A3U14	156-4224-00			IC, MEMORY:CMOS,NVRAM;8K X 8,100NS,INTEGRALBTRY	0B0A9	DS1225AD-85
A3U15	156-5058-01			IC,DIGITAL:FTTL,BUS XCVR;OCTAL, NONINV, 3-STATE	01295	SN74F245DWR
A3U17	156-6151-00			IC, MEMORY:CMOS,SRAM;128K X 8,100NS,15UA,OE	TK1146	M5M51008FP-10LL
A3U18	156-6454-00			IC, PROCESSOR:HCMOS,MICROCONTROLLER;32-BIT, 16.78MHZ,2K RAM	04713	MC68332CFC
A3U19	156-5058-01			IC,DIGITAL:FTTL,BUS XCVR;OCTAL, NONINV, 3-STATE	01295	SN74F245DWR
A3U20	156-5441-01			IC,LIN:BIPOLAR,VR;POS,ADJUST,100MA,2% MICROPWR	27014	LP2951CMX
A3U21	156-5190-01			IC,DIGITAL:FTTL,DEMUX/DECODER;1-OF-8 DECODER	01295	SN74F138DR
A3U22	156-5304-01			IC,DIGITAL:HCTCMOS,BUFFER;QUAD BUFFER, /OE	01295	SN74HCT125DR
A3U23	156-5057-01			IC,DIGITAL:FTTL,BUFFER;OCTAL,3-STATE	01295	SN74F244DWR
A3U24	156-5123-00			IC,DIGITAL:HCTCMOS,DEMUX/DCDR;4-TO-16 DCDR	1CH66	74HCT154D
A3U25	156-5304-01			IC,DIGITAL:HCTCMOS,BUFFER;QUAD BUFFER, /OE	01295	SN74HCT125DR
A3U26	156-5863-00			IC,DIGITAL:ECL,GATE;QUAD 2-INPUT OR	04713	MC10H103FN
A3U27	156-6147-00			IC,DIGITAL:CMOS,PLD;FPGA,XC3000 FAMILY,3030,100 CLBS,80 IOBS,74 I/O,70 MHZ	68994	XC3030-70PC84C
A3U28	156-5052-01			IC,DIGITAL:FTTL,GATE;HEX INV	01295	SN74F04DR
A3U29	156-5304-01			IC,DIGITAL:HCTCMOS,BUFFER;QUAD BUFFER, /OE	01295	SN74HCT125DR
A3U30	156-5304-01			IC,DIGITAL:HCTCMOS,BUFFER;QUAD BUFFER, /OE	01295	SN74HCT125DR
A3U31	156-6224-00			IC, CONVERTER:CMOS,D/A;12 BIT,VOLTAGE OUT,16	TK2441	I10412-01
A3U32	156-5480-01			IC,DIGITAL:HCMOS,RGTR;8-BIT SHIFT RGTR,WITH OUTPUT LATCHES	0JR04	TC74HC595AFN(EL
A3U33	156-5299-01			IC, LINEAR:BIPOLAR,VOLTAGE REGULATOR;NEGATIV E,-5V,100MA,5%	01295	MC79L05ACDR
A3U34	156-6194-00			IC,DIGITAL:CMOS,PLD;FPGA,XC3000 FAMILY,3042 ,144 CLBS,96 IOBS,74 I/O,70 MHZ	68994	XC3042-70PC84C

Replaceable electrical parts list (Cont.)

Component number	Tektronix part number	Effective	Discont'd	Name and description	Mfr. code	Mfr. part no.
A3U35	156-6224-00			IC, CONVERTER: CMOS, D/A; 12 BIT, VOLTAGE OUT, 16	TK2441	I10412-01
A3U36	156-5011-01			IC, MEMORY: CMOS, SRAM; 8K X 8, 150NS, OE	44648	KM6264BLG-12T
A3U37	156-6425-01			IC, CONVERTER: CMOS, D/A; DUAL, 12 BIT, US, VOLTAGE OUT, 8-BIT MPU COMPATIBLE, REFERENCE	24355	AD7237JR-REEL
A3U38	156-5480-01			IC, DIGITAL: HCMOS, RGTR; 8-BIT SHIFT RGTR, WITH OUTPUT LATCHES	0JR04	TC74HC595AFN(EL
A3U39	156-2051-01			MICROCKT, LINEAR: OPERATIONAL AMPL, QUAD, JET INPUT	01295	LF347DR
A3U40	156-6619-01			IC, MEMORY: CMOS, FIFO; 512 X 9, 35NS	34335	AM7201-35JCTR
A3U41	156-5571-00			IC, MISC: CMOS, ANALOG MUX; TRIPLE, 2 CHAN	04713	MC14053BD
A3U42	156-5289-01			IC, DIGITAL: HCTCMOS, FLIP FLOP; OCTAL D-TYPE, 3-STATE	04713	MC74HCT574ADWR 2
A3U43	156-5289-01			IC, DIGITAL: HCTCMOS, FLIP FLOP; OCTAL D-TYPE, 3-STATE	04713	MC74HCT574ADWR 2
A3U44	156-5289-01			IC, DIGITAL: HCTCMOS, FLIP FLOP; OCTAL D-TYPE, 3-STATE	04713	MC74HCT574ADWR 2
A3U45	156-5138-01			IC, LINEAR: BIFET, OP-AMP; DUAL	01295	TL072CDR
A3U46	156-5571-00			IC, MISC: CMOS, ANALOG MUX; TRIPLE, 2 CHAN	04713	MC14053BD
A3U47	156-2051-01			MICROCKT, LINEAR: OPERATIONAL AMPL, QUAD, JET INPUT	01295	LF347DR
A3U48	156-2051-01			MICROCKT, LINEAR: OPERATIONAL AMPL, QUAD, JET INPUT	01295	LF347DR
A3U49	156-6059-01			IC, MISC: CMOS, ANALOG SWITCH; QUAD	1ES66	DG444DY-T
A3U50	156-5571-00			IC, MISC: CMOS, ANALOG MUX; TRIPLE, 2 CHAN	04713	MC14053BD
A3U51	156-5289-01			IC, DIGITAL: HCTCMOS, FLIP FLOP; OCTAL D-TYPE, 3-STATE	04713	MC74HCT574ADWR 2
A3U52	156-5289-01			IC, DIGITAL: HCTCMOS, FLIP FLOP; OCTAL D-TYPE, 3-STATE	04713	MC74HCT574ADWR 2
A3U53	156-4234-00			IC, LINEAR: BIPOLAR, VR; NEGATIVE, -8.0 VOLTS, 1.0A, 2%	44648	KA7908T
A3U54	156-6446-01			IC, MISC: CMOS, SAMPLE/HOLD; QUAD, 9USTO 0.01	24355	SMP04ESR
A3U55	234-0739-22			IC, ASIC: BIPOLAR, VIDEO DISPLAY OUTPUT AMP; QC6-40, M639-039	80009	234-0739-22
A3U56	234-0739-22			IC, ASIC: BIPOLAR, VIDEO DISPLAY OUTPUT AMP; QC6-40, M639-039	80009	234-0739-22
A3U57	156-5138-01			IC, LINEAR: BIFET, OP-AMP; DUAL	01295	TL072CDR
A3U59	156-6059-01			IC, MISC: CMOS, ANALOG SWITCH; QUAD	1ES66	DG444DY-T
A3U60	156-5088-01			IC, DIGITAL: HCTCMOS, DEMUX/DECODER; 3-TO-8 DCDR	0JR04	TC74HCT138AFN(E
A3U62	156-5138-01			IC, LINEAR: BIFET, OP-AMP; DUAL	01295	TL072CDR
A3U63	156-6059-01			IC, MISC: CMOS, ANALOG SWITCH; QUAD	1ES66	DG444DY-T
A3U64	156-5138-01			IC, LINEAR: BIFET, OP-AMP; DUAL	01295	TL072CDR
A3U65	156-5853-01			IC, LINEAR: BIPOLAR, OP-AMP; 35MHZ, UNITYGAIN STABLE	27014	LM6361MX
A3U66	156-6059-01			IC, MISC: CMOS, ANALOG SWITCH; QUAD	1ES66	DG444DY-T
A3U67	234-0728-22			IC, ASIC: BIPOLAR, VIDEO MULTIPLEXER, QC6-40, M639-028; PLCC44, T&R	80009	234-0728-22

Replaceable electrical parts list (Cont.)

Component number	Tektronix part number	Effective	Discont'd	Name and description	Mfr. code	Mfr. part no.
A3U68	156-5694-00			MICROCKT,LINEAR:BIPOLAR,VIDEO SYNC SEPARATOR	27014	LM1881M
A3U70	156-6059-01			IC,MISC:CMOS,ANALOG SWITCH;QUAD	1ES66	DG444DY-T
A3U71	156-5694-00			MICROCKT,LINEAR:BIPOLAR,VIDEO SYNC SEPARATOR	27014	LM1881M
A3U72	156-6279-01			IC,LINEAR:BIFET,OP-AMP;DUAL,TWO POLEFREQ COMP	04713	MC33282DR2
A3U73	156-6415-00			IC,LINEAR:BIPOLAR,OP-AMP;CURRENT FEEDBACK, 100MHZ,W/DISABLE,1 TO10 GAIN RANGE	80009	156-6415-00
A3U74	156-6462-01			IC,MISC:BIPOLAR,ANALOG MUX;VIDEO CROSSPOINT	37964	GX214ACTB
A3U75	156-6462-01			IC,MISC:BIPOLAR,ANALOG MUX;VIDEO CROSSPOINT	37964	GX214ACTB
A3U76	156-6059-01			IC,MISC:CMOS,ANALOG SWITCH;QUAD	1ES66	DG444DY-T
A3U77	156-5480-01			IC,DIGITAL:HCMOS,RGTR;8-BIT SHIFT RGTR,WITH OUTPUT LATCHES	0JR04	TC74HC595AFN(EL
A3U78	156-2959-00			IC,LINEAR:BIPOLAR,VR;POSITIVE,8.0V,1.0A,2%	04713	MCT7808CT
A3U79	234-0728-22			IC,ASIC:BIPOLAR,VIDEO MULTIPLEXER,QC6-40,M639-028; PLCC44,T&R	80009	234-0728-22
A3U80	156-6415-00			IC,LINEAR:BIPOLAR,OP-AMP;CURRENT FEEDBACK, 100MHZ,W/DISABLE,1 TO10 GAIN RANGE	80009	156-6415-00
A3U81	156-6415-00			IC,LINEAR:BIPOLAR,OP-AMP;CURRENT FEEDBACK, 100MHZ,W/DISABLE,1 TO10 GAIN RANGE	80009	156-6415-00
A3U82	156-5480-01			IC,DIGITAL:HCMOS,RGTR;8-BIT SHIFT RGTR,WITH OUTPUT LATCHES	0JR04	TC74HC595AFN(EL
A3U83	156-5692-00			IC,LINEAR:BIPOLAR,XTR ARRAY;FIVE,NPN,15V,100MA, 450MHZ,MONOLITHIC,INDEPENDENT	34371	CA3083M
A3U84	156-5138-01			IC,LINEAR:BIFET,OP-AMP;DUAL	01295	TL072CDR
A3U85	156-5299-01			IC,LINEAR:BIPOLAR,VR;NEGATIVE,-5V,100MA,5%	01295	MC79L05ACDR
A3U86	156-6224-00			IC,CONVERTER:CMOS,D/A;12 BIT,VOLTAGE OUT,16	TK2441	I10412-01
A3U87	156-5304-01			IC,DIGITAL:HCTCMOS,BUFFER;QUAD BUFFER, /OE	01295	SN74HCT125DR
A3U88	156-5138-01			IC,LINEAR:BIFET,OP-AMP;DUAL	01295	TL072CDR
A3U89	156-5000-01			IC,LINEAR:BIPOLAR,COMPARATOR;OPEN COLLECTOR, 200NS	01295	LM311DR
A3U90	156-5358-00			IC,DIGITAL:HCMOS,RGTR;8-BIT PISO SHIFT RGTR	04713	MC74HC165D
A3U91	156-5358-00			IC,DIGITAL:HCMOS,RGTR;8-BIT PISO SHIFT RGTR	04713	MC74HC165D
A3U92	156-5776-00			IC,MISC:CMOS,INTERFACE;DUAL RS-232LINE DRIVER/RECEIVER,+5V VCC,EXTERNAL CAPS REQUIRED	1ES66	MAX232CWE
A3U93	158-5024-00			OSCILLATOR,RF:CRYSTAL CONTROLLED;6MHZ,+/-0.01%, TTL OUTPUT,SMD,FSO TYPE,24MM T&R	61429	FSO 6 MHZ
A3U94	156-5571-00			IC,MISC:CMOS,ANALOG MUX;TRIPLE,2 CHAN	04713	MC14053BD
A3U95	156-5298-01			IC,LINEAR:BIPOLAR,VR;POSITIVE,5V,100MA,5%	01295	UA78L05ACDR
A3Y1	158-5013-00			XTAL UNIT QTZ:32.768KHZ,+/- 0.002%, RS 60KOHM,CS 0.85PF,SMT,FSM PKG.0.41 X 0.16,0.14 HIGH	61429	FSM327
A3Y2	158-0367-00			XTAL UNIT,QTZ:4.421303MHZ,+/-0.002%,PRL30PF,MINI DIP PKG,8 PIN DIPCOMPATIBLE	14301	016-210-00054
A3Y3	158-0368-00			XTAL UNIT,QTZ:3.589MHZ,0.002%,PAR,32PF,MINI	14301	016-210-00053

Replaceable electrical parts list (Cont.)

Component number	Tektronix part number	Effective	Discont'd	Name and description	Mfr. code	Mfr. part no.
A3CR1	152-5018-00			DIODE,SIG:ULTRA FAST;100V,0.74VF,4NS,2.0PF,SER-PAIR	27014	MMBD1203
A3CR2	152-5062-00			DIO,SIG:ULTRA FAST;100V,0.74VF,4NS,2.0PF,COM-ANODE	27014	MMBD1205
A3CR3	152-5062-00			DIO,SIG:ULTRA FAST;100V,0.74VF,4NS,2.0PF,COM-ANODE	27014	MMBD1205
A3CR4	152-5062-00			DIO,SIG:ULTRA FAST;100V,0.74VF,4NS,2.0PF,COM-ANODE	27014	MMBD1205
A3CR5	152-5062-00			DIO,SIG:ULTRA FAST;100V,0.74VF,4NS,2.0PF,COM-ANODE	27014	MMBD1205
A3CR6	152-5018-00			DIODE,SIG:ULTRA FAST;100V,0.74VF,4NS,2.0PF,SER-PAIR	27014	MMBD1203
A3CR8	152-5047-00			DIODE,SIG:ULTRA FAST;100V,0.74VF,4NS,2.0PF,COM-CATH	27014	MMBD1204
A3CR9	152-5018-00			DIODE,SIG:ULTRA FAST;100V,0.74VF,4NS,2.0PF,SER-PAIR	27014	MMBD1203
A3DS1	150-5008-00			DIODE,OPTO:LED;GRN,569NM,4.2MCD AT 10MA,28	50434	HLMP-6505-021
A3DS2	150-0168-00			LAMP,INCAND:14V,0.08A,WEDGE BASE,T1.75FOR SKT MT *MOUNTING PARTS*	55335	73W
	136-1185-00			SOCKET,LPHLDR:PCB,WEDGE BASE;FEMALE,RTANG, SINGLE,0.328 H X 0.172 TAIL,TIN,T-1.75 *END MOUNTING PARTS*	95263	53-35XP11
A3DS3	150-0168-00			LAMP,INCAND:14V,0.08A,WEDGE BASE,T1.75FOR SKT MT *MOUNTING PARTS*	55335	73W
	136-1185-00			SOCKET,LPHLDR:PCB,WEDGE BASE;FEMALE,RTANG, SINGLE,0.328 H X 0.172 TAIL,TIN,T-1.75 *END MOUNTING PARTS*	95263	53-35XP11
A3DS4	150-0168-00			LAMP,INCAND:14V,0.08A,WEDGE BASE,T1.75FOR SKT MT *MOUNTING PARTS*	55335	73W
	136-1185-00			SOCKET,LPHLDR:PCB,WEDGE BASE;FEMALE,RTANG, SINGLE,0.328 H X 0.172 TAIL,TIN,T-1.75 *END MOUNTING PARTS*	95263	53-35XP11
A3DS5	150-0168-00			LAMP,INCAND:14V,0.08A,WEDGE BASE,T1.75FOR SKT MT *MOUNTING PARTS*	55335	73W
	136-1185-00			SOCKET,LPHLDR:PCB,WEDGE BASE;FEMALE,RTANG, SINGLE,0.328 H X 0.172 TAIL,TIN,T-1.75 *END MOUNTING PARTS*	95263	53-35XP11
A3LS1	119-2101-00			XDCR,AUDIO:6V NOM,40 MA,IMP 90 OHM,OUTPUT 85 DB MIN @ 10 CM,FREQ2K-2.5K,MACHINE INSERTABLE/WASHABLE	63791	SMX-06
A3VR1	152-5011-01			DIO,ZENER:6.2V,5%,225MW;MMBZ5234BL,SOT-23,8MM TR	80009	152-5011-01
A3VR2	152-5011-01			DIO,ZENER:6.2V,5%,225MW;MMBZ5234BL,SOT-23,8MM TR	80009	152-5011-01
A3VR3	152-5011-01			DIO,ZENER:6.2V,5%,225MW;MMBZ5234BL,SOT-23,8MM TR	80009	152-5011-01
A3VR4	152-5002-00			DIODE,ZENER:3.6V,5%,225MW	04713	MMBZ5227LBT1
A4	672-1396-05			CIRCUIT BD ASSY:INPUT & BNC	80009	672-1396-05
A4	672-1396-06			CIRCUIT BD ASSY:INPUT & BNC	80009	672-1396-06
A4	672-1396-07		B046031	CIRCUIT BD ASSY:INPUT & BNC	80009	672-1396-07
A4	672-1396-08	B046032		CIRCUIT BD ASSY:INPUT & BNC	80009	672-1396-08

Replaceable electrical parts list (Cont.)

Component number	Tektronix part number	Effective	Discont'd	Name and description	Mfr. code	Mfr. part no.
A4A2	-----			CKT BD SUBASSY:671-2357-01,INPUT,UNTESTED		
A4C1	283-5004-00			CAP,FXD,CERAMIC:MLC;0.1UF,10%,25V,X7R,1206	TK2058	C3216X7R1E104K-
A4C2	283-5004-00			CAP,FXD,CERAMIC:MLC;0.1UF,10%,25V,X7R,1206	TK2058	C3216X7R1E104K-
A4C3	283-5004-00			CAP,FXD,CERAMIC:MLC;0.1UF,10%,25V,X7R,1206	TK2058	C3216X7R1E104K-
A4C4	283-5203-00			CAP,FXD,CERAMIC:MLC;1000PF,10%,100V,X7R,1206	04222	12061C102KAT1A
A4C5	290-5008-00			CAP,FXD,TANT:1UF,20%,35V,0.138 X 0.110;3528,SMD,T&R	04222	TAJB105M035
A4C6	283-5004-00			CAP,FXD,CERAMIC:MLC;0.1UF,10%,25V,X7R,1206	TK2058	C3216X7R1E104K-
A4C7	290-5008-00			CAP,FXD,TANT:1UF,20%,35V,0.138 X 0.110;3528,SMD,T&R	04222	TAJB105M035
A4C8	283-5004-00			CAP,FXD,CERAMIC:MLC;0.1UF,10%,25V,X7R,1206	TK2058	C3216X7R1E104K-
A4C9	290-1289-00			CAP,FXD,ALUM:47UF,20%,16V,0.250 X 0.276;RDL,NONPOLAR,BULK	55680	USP1C470MCA1TP
A4C10	283-5004-00			CAP,FXD,CERAMIC:MLC;0.1UF,10%,25V,X7R,1206	TK2058	C3216X7R1E104K-
A4C11	283-5004-00			CAP,FXD,CERAMIC:MLC;0.1UF,10%,25V,X7R,1206	TK2058	C3216X7R1E104K-
A4C12	283-5004-00			CAP,FXD,CERAMIC:MLC;0.1UF,10%,25V,X7R,1206	TK2058	C3216X7R1E104K-
A4C13	283-5203-00			CAP,FXD,CERAMIC:MLC;1000PF,10%,100V,X7R,1206	04222	12061C102KAT1A
A4C14	290-1289-00			CAP,FXD,ALUM:47UF,20%,16V,0.250 X 0.276;RADIAL,NONPOLAR,BULK	55680	USP1C470MCA1TP
A4C15	283-5004-00			CAP,FXD,CERAMIC:MLC;0.1UF,10%,25V,X7R,1206	TK2058	C3216X7R1E104K-
A4C16	283-5004-00			CAP,FXD,CERAMIC:MLC;0.1UF,10%,25V,X7R,1206	TK2058	C3216X7R1E104K-
A4C17	283-5004-00			CAP,FXD,CERAMIC:MLC;0.1UF,10%,25V,X7R,1206	TK2058	C3216X7R1E104K-
A4C18	283-5203-00			CAP,FXD,CERAMIC:MLC;1000PF,10%,100V,X7R,1206	04222	12061C102KAT1A
A4C19	290-1289-00			CAP,FXD,ALUM:47UF,20%,16V,0.250 X 0.276;RADIAL,NONPOLAR,BULK	55680	USP1C470MCA1TP
A4C20	283-5004-00			CAP,FXD,CERAMIC:MLC;0.1UF,10%,25V,X7R,1206	TK2058	C3216X7R1E104K-
A4C21	283-5004-00			CAP,FXD,CERAMIC:MLC;0.1UF,10%,25V,X7R,1206	TK2058	C3216X7R1E104K-
A4C22	283-5004-00			CAP,FXD,CERAMIC:MLC;0.1UF,10%,25V,X7R,1206	TK2058	C3216X7R1E104K-
A4C23	283-5203-00			CAP,FXD,CERAMIC:MLC;1000PF,10%,100V,X7R,1206	04222	12061C102KAT1A
A4C24	290-1289-00			CAP,FXD,ALUM:47UF,20%,16V,0.250 X 0.276;RADIAL,NONPOLAR,BULK	55680	USP1C470MCA1TP
A4C25	283-5004-00			CAP,FXD,CERAMIC:MLC;0.1UF,10%,25V,X7R,1206	TK2058	C3216X7R1E104K-
A4C26	283-5004-00			CAP,FXD,CERAMIC:MLC;0.1UF,10%,25V,X7R,1206	TK2058	C3216X7R1E104K-
A4C27	283-5004-00			CAP,FXD,CERAMIC:MLC;0.1UF,10%,25V,X7R,1206	TK2058	C3216X7R1E104K-
A4C28	283-5203-00			CAP,FXD,CERAMIC:MLC;1000PF,10%,100V,X7R,1206	04222	12061C102KAT1A
A4C29	290-1289-00			CAP,FXD,ALUM:47UF,20%,16V,0.250 X 0.276;RADIAL,NONPOLAR,BULK	55680	USP1C470MCA1TP
A4C30	283-5004-00			CAP,FXD,CERAMIC:MLC;0.1UF,10%,25V,X7R,1206	TK2058	C3216X7R1E104K-
A4C31	283-5004-00			CAP,FXD,CERAMIC:MLC;0.1UF,10%,25V,X7R,1206	TK2058	C3216X7R1E104K-
A4C32	283-5004-00			CAP,FXD,CERAMIC:MLC;0.1UF,10%,25V,X7R,1206	TK2058	C3216X7R1E104K-

Replaceable electrical parts list (Cont.)

Component number	Tektronix part number	Effective	Discont'd	Name and description	Mfr. code	Mfr. part no.
A4C33	283-5203-00			CAP,FXD,CERAMIC:MLC;1000PF,10%,100V,X7R,1206	04222	12061C102KAT1A
A4C34	290-1289-00			CAP,FXD,ALUM:47UF,20%,16V,0.250 X 0.276;RADIAL,NONPOLAR,BULK	55680	USP1C470MCA1TP
A4C35	283-5004-00			CAP,FXD,CERAMIC:MLC;0.1UF,10%,25V,X7R,1206	TK2058	C3216X7R1E104K-
A4C36	283-5004-00			CAP,FXD,CERAMIC:MLC;0.1UF,10%,25V,X7R,1206	TK2058	C3216X7R1E104K-
A4C37	283-5004-00			CAP,FXD,CERAMIC:MLC;0.1UF,10%,25V,X7R,1206	TK2058	C3216X7R1E104K-
A4C38	283-5203-00			CAP,FXD,CERAMIC:MLC;1000PF,10%,100V,X7R,1206	04222	12061C102KAT1A
A4C39	290-1289-00			CAP,FXD,ALUM:47UF,20%,16V,0.250 X 0.276;RADIAL,NONPOLAR,BULK	55680	USP1C470MCA1TP
A4C40	283-5004-00			CAP,FXD,CERAMIC:MLC;0.1UF,10%,25V,X7R,1206	TK2058	C3216X7R1E104K-
A4C41	283-5004-00			CAP,FXD,CERAMIC:MLC;0.1UF,10%,25V,X7R,1206	TK2058	C3216X7R1E104K-
A4C42	283-5004-00			CAP,FXD,CERAMIC:MLC;0.1UF,10%,25V,X7R,1206	TK2058	C3216X7R1E104K-
A4C43	283-5203-00			CAP,FXD,CERAMIC:MLC;1000PF,10%,100V,X7R,1206	04222	12061C102KAT1A
A4C44	290-1289-00			CAP,FXD,ALUM:47UF,20%,16V,0.250 X 0.276;RADIAL,NONPOLAR,BULK	55680	USP1C470MCA1TP
A4C45	283-5001-00			CAP,FXD,CERAMIC:MLC;100PF,5%,50V,NPO,1206	TK2058	C3216C0G1H101J-
A4C46	283-5001-00			CAP,FXD,CERAMIC:MLC;100PF,5%,50V,NPO,1206	TK2058	C3216C0G1H101J-
A4C47	283-5001-00			CAP,FXD,CERAMIC:MLC;100PF,5%,50V,NPO,1206	TK2058	C3216C0G1H101J-
A4C48	283-5001-00			CAP,FXD,CERAMIC:MLC;100PF,5%,50V,NPO,1206	TK2058	C3216C0G1H101J-
A4C49	283-5001-00			CAP,FXD,CERAMIC:MLC;100PF,5%,50V,NPO,1206	TK2058	C3216C0G1H101J-
A4C50	283-5001-00			CAP,FXD,CERAMIC:MLC;100PF,5%,50V,NPO,1206	TK2058	C3216C0G1H101J-
A4C51	283-5001-00			CAP,FXD,CERAMIC:MLC;100PF,5%,50V,NPO,1206	TK2058	C3216C0G1H101J-
A4C52	283-5001-00			CAP,FXD,CERAMIC:MLC;100PF,5%,50V,NPO,1206	TK2058	C3216C0G1H101J-
A4C54	283-5004-00			CAP,FXD,CERAMIC:MLC;0.1UF,10%,25V,X7R,1206	TK2058	C3216X7R1E104K-
A4C55	283-5004-00			CAP,FXD,CERAMIC:MLC;0.1UF,10%,25V,X7R,1206	TK2058	C3216X7R1E104K-
A4C56	283-5004-00			CAP,FXD,CERAMIC:MLC;0.1UF,10%,25V,X7R,1206	TK2058	C3216X7R1E104K-
A4C57	283-5004-00			CAP,FXD,CERAMIC:MLC;0.1UF,10%,25V,X7R,1206	TK2058	C3216X7R1E104K-
A4C58	283-5004-00			CAP,FXD,CERAMIC:MLC;0.1UF,10%,25V,X7R,1206	TK2058	C3216X7R1E104K-
A4C59	283-5004-00			CAP,FXD,CERAMIC:MLC;0.1UF,10%,25V,X7R,1206	TK2058	C3216X7R1E104K-
A4C60	283-5004-00			CAP,FXD,CERAMIC:MLC;0.1UF,10%,25V,X7R,1206	TK2058	C3216X7R1E104K-
A4C61	283-5004-00			CAP,FXD,CERAMIC:MLC;0.1UF,10%,25V,X7R,1206	TK2058	C3216X7R1E104K-
A4C62				(TEST SELECTED)		
A4C63				(TEST SELECTED)		
A4C64				(TEST SELECTED)		
A4C65				(TEST SELECTED)		
A4C66				(TEST SELECTED)		
A4C67				(TEST SELECTED)		

Replaceable electrical parts list (Cont.)

Component number	Tektronix part number	Effective	Discont'd	Name and description	Mfr. code	Mfr. part no.
A4C68				(TEST SELECTED)		
A4C69				(TEST SELECTED)		
A4J1	174-2745-00			CA ASSY,SP,ELEC:40,20 AWG,8.25 L,RIBBON	53387	174-2745-00
A4L1	108-5002-00			INDUCTOR,FXD:SIGNAL;15UH,10%,I<0.2A,RDC<2.5 OHM,Q>50,SRF>20MHZ	TK2058	NL453232T-150K
A4L2	108-5002-00			INDUCTOR,FXD:SIGNAL;15UH,10%,I<0.2A,RDC<2.5 OHM,Q>50,SRF>20MHZ	TK2058	NL453232T-150K
A4L3	108-5002-00			INDUCTOR,FXD:SIGNAL;15UH,10%,I<0.2A,RDC<2.5 OHM,Q>50,SRF>20MHZ	TK2058	NL453232T-150K
A4L4	108-5002-00			INDUCTOR,FXD:SIGNAL;15UH,10%,I<0.2A,RDC<2.5 OHM,Q>50,SRF>20MHZ	TK2058	NL453232T-150K
A4L5	108-5002-00			INDUCTOR,FXD:SIGNAL;15UH,10%,I<0.2A,RDC<2.5 OHM,Q>50,SRF>20MHZ	TK2058	NL453232T-150K
A4L6	108-5002-00			INDUCTOR,FXD:SIGNAL;15UH,10%,I<0.2A,RDC<2.5 OHM,Q>50,SRF>20MHZ	TK2058	NL453232T-150K
A4L7	108-5002-00			INDUCTOR,FXD:SIGNAL;15UH,10%,I<0.2A,RDC<2.5 OHM,Q>50,SRF>20MHZ	TK2058	NL453232T-150K
A4L8	108-5002-00			INDUCTOR,FXD:SIGNAL;15UH,10%,I<0.2A,RDC<2.5 OHM,Q>50,SRF>20MHZ	TK2058	NL453232T-150K
A4Q1	151-5001-00			XTR,SIG:BIPOLAR,NPN;40V,200MA,300MHZ,AMPL	0LUA3	PMBT3904TRL
A4Q2	151-5002-00			XTR,SIG:JFET,N-CH;5V,75MA,60 OHM,SWITCH	04713	MMBF4392LT1
A4Q4	151-5001-00			XTR,SIG:BIPOLAR,NPN;40V,200MA,300MHZ,AMPL	0LUA3	PMBT3904TRL
A4Q5	151-5002-00			XTR,SIG:JFET,N-CH;5V,75MA,60 OHM,SWITCH	04713	MMBF4392LT1
A4Q6	151-5001-00			XTR,SIG:BIPOLAR,NPN;40V,200MA,300MHZ,AMPL	0LUA3	PMBT3904TRL
A4Q7	151-5002-00			XTR,SIG:JFET,N-CH;5V,75MA,60 OHM,SWITCH	04713	MMBF4392LT1
A4Q8	151-5001-00			XTR,SIG:BIPOLAR,NPN;40V,200MA,300MHZ,AMPL	0LUA3	PMBT3904TRL
A4Q9	151-5002-00			XTR,SIG:JFET,N-CH;5V,75MA,60 OHM,SWITCH	04713	MMBF4392LT1
A4Q10	151-5001-00			XTR,SIG:BIPOLAR,NPN;40V,200MA,300MHZ,AMPL	0LUA3	PMBT3904TRL
A4Q11	151-5002-00			XTR,SIG:JFET,N-CH;5V,75MA,60 OHM,SWITCH	04713	MMBF4392LT1
A4Q12	151-5001-00			XTR,SIG:BIPOLAR,NPN;40V,200MA,300MHZ,AMPL	0LUA3	PMBT3904TRL
A4Q13	151-5002-00			XTR,SIG:JFET,N-CH;5V,75MA,60 OHM,SWITCH	04713	MMBF4392LT1
A4Q14	151-5001-00			XTR,SIG:BIPOLAR,NPN;40V,200MA,300MHZ,AMPL	0LUA3	PMBT3904TRL
A4Q15	151-5002-00			XTR,SIG:JFET,N-CH;5V,75MA,60 OHM,SWITCH	04713	MMBF4392LT1
A4Q16	151-5001-00			XTR,SIG:BIPOLAR,NPN;40V,200MA,300MHZ,AMPL	0LUA3	PMBT3904TRL
A4Q17	151-5002-00			XTR,SIG:JFET,N-CH;5V,75MA,60 OHM,SWITCH	04713	MMBF4392LT1
A4Q18	151-5012-00			XTR,SIG:BIPOLAR,PNP;15V,10MA,2.0GHZ,AMPL	04713	MMBTH69LT1
A4R1	321-5012-00			RES,FXD:THICK FILM;332 OHM,1%,0.125W,TC=100	50139	BCK3320FT
A4R2	321-5009-00			RES,FXD:THICK FILM;182 OHM,1%,0.125W,TC=100	50139	BCK1820FT
A4R3	321-5034-00			RES,FXD:THICK FILM;22.1K OHM,1%,0.125W,TC=100 PPM	50139	BCK2212FT
A4R4	321-5018-00			RES,FXD:THICK FILM;1.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1001FT

Replaceable electrical parts list (Cont.)

Component number	Tektronix part number	Effective	Discont'd	Name and description	Mfr. code	Mfr. part no.
A4R8	321-5033-00			RES,FXD:THICK FILM;18.2K OHM,1%,0.125W,TC=100 PPM	50139	BCK1822FT
A4R9	321-5049-00			RES,FXD:THICK FILM;1M OHM,1%,0.125W,TC=100 PPM	57668	MCR18FXEA1M
A4R10	321-5018-00			RES,FXD:THICK FILM;1.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1001FT
A4R11	321-5018-00			RES,FXD:THICK FILM;1.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1001FT
A4R12	321-5113-00			RES,FXD:THICK FILM;75 OHM,1%,0.125W,TC=100 PPM	56845	CRCW1206-75ROFT
A4R14	321-5033-00			RES,FXD:THICK FILM;18.2K OHM,1%,0.125W,TC=100 PPM	50139	BCK1822FT
A4R15	321-5012-00			RES,FXD:THICK FILM;332 OHM,1%,0.125W,TC=100	50139	BCK3320FT
A4R16	321-5012-00			RES,FXD:THICK FILM;332 OHM,1%,0.125W,TC=100	50139	BCK3320FT
A4R17	321-5009-00			RES,FXD:THICK FILM;182 OHM,1%,0.125W,TC=100	50139	BCK1820FT
A4R18	321-5034-00			RES,FXD:THICK FILM;22.1K OHM,1%,0.125W,TC=100 PPM	50139	BCK2212FT
A4R19	321-5018-00			RES,FXD:THICK FILM;1.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1001FT
A4R23	321-5033-00			RES,FXD:THICK FILM;18.2K OHM,1%,0.125W,TC=100 PPM	50139	BCK1822FT
A4R24	321-5049-00			RES,FXD:THICK FILM;1M OHM,1%,0.125W,TC=100 PPM	57668	MCR18FXEA1M
A4R25	321-5018-00			RES,FXD:THICK FILM;1.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1001FT
A4R26	321-5018-00			RES,FXD:THICK FILM;1.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1001FT
A4R27	321-5012-00			RES,FXD:THICK FILM;332 OHM,1%,0.125W,TC=100	50139	BCK3320FT
A4R28	321-5009-00			RES,FXD:THICK FILM;182 OHM,1%,0.125W,TC=100	50139	BCK1820FT
A4R29	321-5034-00			RES,FXD:THICK FILM;22.1K OHM,1%,0.125W,TC=100 PPM	50139	BCK2212FT
A4R30	321-5018-00			RES,FXD:THICK FILM;1.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1001FT
A4R34	321-5033-00			RES,FXD:THICK FILM;18.2K OHM,1%,0.125W,TC=100 PPM	50139	BCK1822FT
A4R35	321-5049-00			RES,FXD:THICK FILM;1M OHM,1%,0.125W,TC=100 PPM	57668	MCR18FXEA1M
A4R36	321-5018-00			RES,FXD:THICK FILM;1.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1001FT
A4R37	321-5018-00			RES,FXD:THICK FILM;1.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1001FT
A4R38	321-5012-00			RES,FXD:THICK FILM;332 OHM,1%,0.125W,TC=100	50139	BCK3320FT
A4R39	321-5009-00			RES,FXD:THICK FILM;182 OHM,1%,0.125W,TC=100	50139	BCK1820FT
A4R40	321-5034-00			RES,FXD:THICK FILM;22.1K OHM,1%,0.125W,TC=100 PPM	50139	BCK2212FT
A4R41	321-5018-00			RES,FXD:THICK FILM;1.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1001FT
A4R45	321-5033-00			RES,FXD:THICK FILM;18.2K OHM,1%,0.125W,TC=100 PPM	50139	BCK1822FT
A4R46	321-5049-00			RES,FXD:THICK FILM;1M OHM,1%,0.125W,TC=100 PPM	57668	MCR18FXEA1M
A4R47	321-5018-00			RES,FXD:THICK FILM;1.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1001FT
A4R48	321-5018-00			RES,FXD:THICK FILM;1.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1001FT
A4R49	321-5012-00			RES,FXD:THICK FILM;332 OHM,1%,0.125W,TC=100	50139	BCK3320FT
A4R50	321-5009-00			RES,FXD:THICK FILM;182 OHM,1%,0.125W,TC=100	50139	BCK1820FT
A4R51	321-5034-00			RES,FXD:THICK FILM;22.1K OHM,1%,0.125W,TC=100 PPM	50139	BCK2212FT
A4R52	321-5018-00			RES,FXD:THICK FILM;1.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1001FT
A4R56	321-5033-00			RES,FXD:THICK FILM;18.2K OHM,1%,0.125W,TC=100 PPM	50139	BCK1822FT

Replaceable electrical parts list (Cont.)

Component number	Tektronix part number	Effective	Discont'd	Name and description	Mfr. code	Mfr. part no.
A4R57	321-5049-00			RES,FXD:THICK FILM;1M OHM,1%,0.125W,TC=100 PPM	57668	MCR18FXEA1M
A4R58	321-5018-00			RES,FXD:THICK FILM;1.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1001FT
A4R59	321-5018-00			RES,FXD:THICK FILM;1.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1001FT
A4R60	321-5012-00			RES,FXD:THICK FILM;332 OHM,1%,0.125W,TC=100	50139	BCK3320FT
A4R61	321-5009-00			RES,FXD:THICK FILM;182 OHM,1%,0.125W,TC=100	50139	BCK1820FT
A4R62	321-5034-00			RES,FXD:THICK FILM;22.1K OHM,1%,0.125W,TC=100 PPM	50139	BCK2212FT
A4R63	321-5018-00			RES,FXD:THICK FILM;1.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1001FT
A4R67	321-5033-00			RES,FXD:THICK FILM;18.2K OHM,1%,0.125W,TC=100 PPM	50139	BCK1822FT
A4R68	321-5049-00			RES,FXD:THICK FILM;1M OHM,1%,0.125W,TC=100 PPM	57668	MCR18FXEA1M
A4R69	321-5018-00			RES,FXD:THICK FILM;1.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1001FT
A4R70	321-5018-00			RES,FXD:THICK FILM;1.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1001FT
A4R71	321-5012-00			RES,FXD:THICK FILM;332 OHM,1%,0.125W,TC=100	50139	BCK3320FT
A4R72	321-5009-00			RES,FXD:THICK FILM;182 OHM,1%,0.125W,TC=100	50139	BCK1820FT
A4R73	321-5034-00			RES,FXD:THICK FILM;22.1K OHM,1%,0.125W,TC=100 PPM	50139	BCK2212FT
A4R74	321-5018-00			RES,FXD:THICK FILM;1.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1001FT
A4R78	321-5033-00			RES,FXD:THICK FILM;18.2K OHM,1%,0.125W,TC=100 PPM	50139	BCK1822FT
A4R79	321-5049-00			RES,FXD:THICK FILM;1M OHM,1%,0.125W,TC=100 PPM	57668	MCR18FXEA1M
A4R80	321-5018-00			RES,FXD:THICK FILM;1.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1001FT
A4R81	321-5018-00			RES,FXD:THICK FILM;1.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1001FT
A4R82	321-5012-00			RES,FXD:THICK FILM;332 OHM,1%,0.125W,TC=100	50139	BCK3320FT
A4R83	321-5009-00			RES,FXD:THICK FILM;182 OHM,1%,0.125W,TC=100	50139	BCK1820FT
A4R84	321-5034-00			RES,FXD:THICK FILM;22.1K OHM,1%,0.125W,TC=100 PPM	50139	BCK2212FT
A4R85	321-5018-00			RES,FXD:THICK FILM;1.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1001FT
A4R89	321-5033-00			RES,FXD:THICK FILM;18.2K OHM,1%,0.125W,TC=100 PPM	50139	BCK1822FT
A4R90	321-5049-00			RES,FXD:THICK FILM;1M OHM,1%,0.125W,TC=100 PPM	57668	MCR18FXEA1M
A4R91	321-5018-00			RES,FXD:THICK FILM;1.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1001FT
A4R92	321-5018-00			RES,FXD:THICK FILM;1.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1001FT
A4R93	321-5028-00			RES,FXD:THICK FILM;6.81K OHM,1%,0.125W,TC=100 PPM	50139	BCK6811FT
A4R94	321-5266-00			RES,FXD:THICK FILM;11K OHM,1%,0.125W,TC=100	59124	RK73H2B1102FT
A4R95	321-5028-00			RES,FXD:THICK FILM;6.81K OHM,1%,0.125W,TC=100 PPM	50139	BCK6811FT
A4R96	321-5266-00			RES,FXD:THICK FILM;11K OHM,1%,0.125W,TC=100	59124	RK73H2B1102FT
A4R97	321-5020-00			RES,FXD:THICK FILM;1.5K OHM,1%,0.125W,TC=100 PPM	50139	BCK1501FT
A4R98	321-5042-00			RES,FXD:THICK FILM;39.2 OHM,1%,0.125W,TC=100 PPM	57668	MCR18FWEA39E2
A4R99	321-5042-00			RES,FXD:THICK FILM;39.2 OHM,1%,0.125W,TC=100 PPM	57668	MCR18FWEA39E2
A4R100	321-5042-00			RES,FXD:THICK FILM;39.2 OHM,1%,0.125W,TC=100 PPM	57668	MCR18FWEA39E2
A4R101	321-5042-00			RES,FXD:THICK FILM;39.2 OHM,1%,0.125W,TC=100 PPM	57668	MCR18FWEA39E2

Replaceable electrical parts list (Cont.)

Component number	Tektronix part number	Effective	Discont'd	Name and description	Mfr. code	Mfr. part no.
A4R102	321-5042-00			RES,FXD:THICK FILM;39.2 OHM,1%,0.125W,TC=100 PPM	57668	MCR18FWEA39E2
A4R103	321-5042-00			RES,FXD:THICK FILM;39.2 OHM,1%,0.125W,TC=100 PPM	57668	MCR18FWEA39E2
A4R104	321-5042-00			RES,FXD:THICK FILM;39.2 OHM,1%,0.125W,TC=100 PPM	57668	MCR18FWEA39E2
A4R105	321-5042-00			RES,FXD:THICK FILM;39.2 OHM,1%,0.125W,TC=100 PPM	57668	MCR18FWEA39E2
A4R106	321-5009-00			RES,FXD:THICK FILM;182 OHM,1%,0.125W,TC=100	50139	BCK1820FT
A4R107	321-5009-00			RES,FXD:THICK FILM;182 OHM,1%,0.125W,TC=100	50139	BCK1820FT
A4R108	321-5009-00			RES,FXD:THICK FILM;182 OHM,1%,0.125W,TC=100	50139	BCK1820FT
A4R109	321-5009-00			RES,FXD:THICK FILM;182 OHM,1%,0.125W,TC=100	50139	BCK1820FT
A4R110	321-5009-00			RES,FXD:THICK FILM;182 OHM,1%,0.125W,TC=100	50139	BCK1820FT
A4R111	321-5009-00			RES,FXD:THICK FILM;182 OHM,1%,0.125W,TC=100	50139	BCK1820FT
A4R112	321-5009-00			RES,FXD:THICK FILM;182 OHM,1%,0.125W,TC=100	50139	BCK1820FT
A4R113	321-5009-00			RES,FXD:THICK FILM;182 OHM,1%,0.125W,TC=100	50139	BCK1820FT
A4U1	156-6059-01			IC,MISC:CMOS,ANALOG SWITCH;QUAD	1ES66	DG444DY-T
A4U2	156-6407-00			IC,LINEAR:BIPOLAR AMPL;100MHZ,CURRENT FEEDBACK,SAMPLE/HOLD,VIDEO DC RESTORATION	80009	156-6407-00
A4U3	156-6407-00			IC,LINEAR:BIPOLAR AMPL;100MHZ,CURRENT FEEDBACK,SAMPLE/HOLD,VIDEO DC RESTORATION	80009	156-6407-00
A4U4	156-6407-00			IC,LINEAR:BIPOLAR AMPL;100MHZ,CURRENT FEEDBACK,SAMPLE/HOLD,VIDEO DC RESTORATION	80009	156-6407-00
A4U5	156-6407-00			IC,LINEAR:BIPOLAR AMPL;100MHZ,CURRENT FEEDBACK,SAMPLE/HOLD,VIDEO DC RESTORATION	80009	156-6407-00
A4U6	156-6059-01			IC,MISC:CMOS,ANALOG SWITCH;QUAD	1ES66	DG444DY-T
A4U7	156-6407-00			IC,LINEAR:BIPOLAR AMPL;100MHZ,CURRENT FEEDBACK,SAMPLE/HOLD,VIDEO DC RESTORATION	80009	156-6407-00
A4U8	156-6407-00			IC,LINEAR:BIPOLAR AMPL;100MHZ,CURRENT FEEDBACK,SAMPLE/HOLD,VIDEO DC RESTORATION	80009	156-6407-00
A4U9	156-6407-00			IC,LINEAR:BIPOLAR AMPL;100MHZ,CURRENT FEEDBACK,SAMPLE/HOLD,VIDEO DC RESTORATION	80009	156-6407-00
A4U10	156-6407-00			IC,LINEAR:BIPOLAR AMPL;100MHZ,CURRENT FEEDBACK,SAMPLE/HOLD,VIDEO DC RESTORATION	80009	156-6407-00
A4CR1	152-5018-00			DIODE,SIG:ULTRA FAST;100V,0.74VF,4NS,2.0PF,SER-PAIR	27014	MMBD1203
A4CR2	152-5018-00			DIODE,SIG:ULTRA FAST;100V,0.74VF,4NS,2.0PF,SER-PAIR	27014	MMBD1203
A4A1	-----			CIRCUIT BD ASSY:BNC		
A4A1J2	131-5436-00		672-1396-07	CONN,RF JACK:BNC;50 OHM,FEMALE,STR,PCB,0.450 H X (4)0.040 SQ,0.189 TAIL,ON 0.250 CTRPCB	24931	28JR299-3
A4A1J2	131-5647-00	672-1396-08		CONN,RF,JACK; BNC;75 OHM,FEMALE,STR,PCB,4,0.04 SQ 0.189 L TAILS ON 0.25 CTR,0.038 DIA CTR COND	98291	058-151-0019-910
A4A1J3	131-5436-00		672-1396-07	CONN,RF JACK:BNC;50 OHM,FEMALE,STR,PCB,0.450 H X (4)0.040 SQ,0.189 TAIL,ON 0.250 CTRPCB	24931	28JR299-3
A4A1J3	131-5647-00	672-1396-08		CONN,RF,JACK; BNC;75 OHM,FEMALE,STR,PCB,4,0.04 SQ 0.189 L TAILS ON 0.25 CTR,0.038 DIA CTR COND	98291	058-151-0019-910

Replaceable electrical parts list (Cont.)

Component number	Tektronix part number	Effective	Discont'd	Name and description	Mfr. code	Mfr. part no.
A4A1J4	131-5436-00		672-1396-07	CONN,RF JACK;BNC;50 OHM,FEMALE,STR,PCB,0.450 H X (4)0.040 SQ,0.189 TAIL,ON 0.250 CTRPCB	24931	28JR299-3
A4A1J4	131-5647-00	672-1396-08		CONN,RF,JACK; BNC;75 OHM,FEMALE,STR,PCB,4,0.04 SQ 0.189 L TAILS ON 0.25 CTR,0.038 DIA CTR COND	98291	058-151-0019-910
A4A1J5	131-5436-00		672-1396-07	CONN,RF JACK;BNC;50 OHM,FEMALE,STR,PCB,0.450 H X (4)0.040 SQ,0.189 TAIL,ON 0.250 CTRPCB	24931	28JR299-3
A4A1J5	131-5647-00	672-1396-08		CONN,RF,JACK; BNC;75 OHM,FEMALE,STR,PCB,4,0.04 SQ 0.189 L TAILS ON 0.25 CTR,0.038 DIA CTR COND	98291	058-151-0019-910
A4A1J6	131-5436-00		672-1396-07	CONN,RF JACK;BNC;50 OHM,FEMALE,STR,PCB,0.450 H X (4)0.040 SQ,0.189 TAIL,ON 0.250 CTRPCB	24931	28JR299-3
A4A1J6	131-5647-00	672-1396-08		CONN,RF,JACK; BNC;75 OHM,FEMALE,STR,PCB,4,0.04 SQ 0.189 L TAILS ON 0.25 CTR,0.038 DIA CTR COND	98291	058-151-0019-910
A4A1J7	131-5436-00		672-1396-07	CONN,RF JACK;BNC;50 OHM,FEMALE,STR,PCB,0.450 H X (4)0.040 SQ,0.189 TAIL,ON 0.250 CTRPCB	24931	28JR299-3
A4A1J7	131-5647-00	672-1396-08		CONN,RF,JACK; BNC;75 OHM,FEMALE,STR,PCB,4,0.04 SQ 0.189 L TAILS ON 0.25 CTR,0.038 DIA CTR COND	98291	058-151-0019-910
A4A1J8	131-5436-00		672-1396-07	CONN,RF JACK;BNC;50 OHM,FEMALE,STR,PCB,0.450 H X (4)0.040 SQ,0.189 TAIL,ON 0.250 CTRPCB	24931	28JR299-3
A4A1J8	131-5647-00	672-1396-08		CONN,RF,JACK; BNC;75 OHM,FEMALE,STR,PCB,4,0.04 SQ 0.189 L TAILS ON 0.25 CTR,0.038 DIA CTR COND	98291	058-151-0019-910
A4A1J9	131-5436-00		672-1396-07	CONN,RF JACK;BNC;50 OHM,FEMALE,STR,PCB,0.450 H X (4)0.040 SQ,0.189 TAIL,ON 0.250 CTRPCB	24931	28JR299-3
A4A1J9	131-5647-00	672-1396-08		CONN,RF,JACK; BNC;75 OHM,FEMALE,STR,PCB,4,0.04 SQ 0.189 L TAILS ON 0.25 CTR,0.038 DIA CTR COND	98291	058-151-0019-910
A4A1J10	131-5436-00		672-1396-07	CONN,RF JACK;BNC;50 OHM,FEMALE,STR,PCB,0.450 H X (4)0.040 SQ,0.189 TAIL,ON 0.250 CTRPCB	24931	28JR299-3
A4A1J10	131-5647-00	672-1396-08		CONN,RF,JACK; BNC;75 OHM,FEMALE,STR,PCB,4,0.04 SQ 0.189 L TAILS ON 0.25 CTR,0.038 DIA CTR COND	98291	058-151-0019-910
A4A1J11	131-5436-00		672-1396-07	CONN,RF JACK;BNC;50 OHM,FEMALE,STR,PCB,0.450 H X (4)0.040 SQ,0.189 TAIL,ON 0.250 CTRPCB	24931	28JR299-3
A4A1J11	131-5647-00	672-1396-08		CONN,RF,JACK; BNC;75 OHM,FEMALE,STR,PCB,4,0.04 SQ 0.189 L TAILS ON 0.25 CTR,0.038 DIA CTR COND	98291	058-151-0019-910
A4A1J12	131-5436-00		672-1396-07	CONN,RF JACK;BNC;50 OHM,FEMALE,STR,PCB,0.450 H X (4)0.040 SQ,0.189 TAIL,ON 0.250 CTRPCB	24931	28JR299-3
A4A1J12	131-5647-00	672-1396-08		CONN,RF,JACK; BNC;75 OHM,FEMALE,STR,PCB,4,0.04 SQ 0.189 L TAILS ON 0.25 CTR,0.038 DIA CTR COND	98291	058-151-0019-910
A4A1J13	131-5436-00		672-1396-07	CONN,RF JACK;BNC;50 OHM,FEMALE,STR,PCB,0.450 H X (4)0.040 SQ,0.189 TAIL,ON 0.250 CTRPCB	24931	28JR299-3
A4A1J13	131-5647-00	672-1396-08		CONN,RF,JACK; BNC;75 OHM,FEMALE,STR,PCB,4,0.04 SQ 0.189 L TAILS ON 0.25 CTR,0.038 DIA CTR COND	98291	058-151-0019-910
A4A1J14	131-5436-00		672-1396-07	CONN,RF JACK;BNC;50 OHM,FEMALE,STR,PCB,0.450 H X (4)0.040 SQ,0.189 TAIL,ON 0.250 CTRPCB	24931	28JR299-3
A4A1J14	131-5647-00	672-1396-08		CONN,RF,JACK; BNC;75 OHM,FEMALE,STR,PCB,4,0.04 SQ 0.189 L TAILS ON 0.25 CTR,0.038 DIA CTR COND	98291	058-151-0019-910
A4A1J15	131-5436-00		672-1396-07	CONN,RF JACK;BNC;50 OHM,FEMALE,STR,PCB,0.450 H X (4)0.040 SQ,0.189 TAIL,ON 0.250 CTRPCB	24931	28JR299-3
A4A1J15	131-5647-00	672-1396-08		CONN,RF,JACK; BNC;75 OHM,FEMALE,STR,PCB,4,0.04 SQ 0.189 L TAILS ON 0.25 CTR,0.038 DIA CTR COND	98291	058-151-0019-910

Replaceable electrical parts list (Cont.)

Component number	Tektronix part number	Effective	Discont'd	Name and description	Mfr. code	Mfr. part no.
A4A1J16	131-5436-00		672-1396-07	CONN,RF JACK:BNC;50 OHM,FEMALE,STR,PCB,0.450 H X (4)0.040 SQ,0.189 TAIL,ON 0.250 CTRPCB	24931	28JR299-3
A4A1J16	131-5647-00	672-1396-08		CONN,RF,JACK; BNC;75 OHM,FEMALE,STR,PCB,4,0.04 SQ 0.189 L TAILS ON 0.25 CTR,0.038 DIA CTR COND	98291	058-151-0019-910
A4A1J17	131-5436-00		672-1396-07	CONN,RF JACK:BNC;50 OHM,FEMALE,STR,PCB,0.450 H X (4)0.040 SQ,0.189 TAIL,ON 0.250 CTRPCB	24931	28JR299-3
A4A1J17	131-5647-00	672-1396-08		CONN,RF,JACK; BNC;75 OHM,FEMALE,STR,PCB,4,0.04 SQ 0.189 L TAILS ON 0.25 CTR,0.038 DIA CTR COND	98291	058-151-0019-910
A4A1J18	131-5436-00		672-1396-07	CONN,RF JACK:BNC;50 OHM,FEMALE,STR,PCB,0.450 H X (4)0.040 SQ,0.189 TAIL,ON 0.250 CTRPCB	24931	28JR299-3
A4A1J18	131-5647-00	672-1396-08		CONN,RF,JACK; BNC;75 OHM,FEMALE,STR,PCB,4,0.04 SQ 0.189 L TAILS ON 0.25 CTR,0.038 DIA CTR COND	98291	058-151-0019-910
A4A1J19	131-5436-00		672-1396-07	CONN,RF JACK:BNC;50 OHM,FEMALE,STR,PCB,0.450 H X (4)0.040 SQ,0.189 TAIL,ON 0.250 CTRPCB	24931	28JR299-3
A4A1J19	131-5647-00	672-1396-08		CONN,RF,JACK; BNC;75 OHM,FEMALE,STR,PCB,4,0.04 SQ 0.189 L TAILS ON 0.25 CTR,0.038 DIA CTR COND	98291	058-151-0019-910
A4A1J100	131-5436-00		672-1396-07	CONN,RF JACK:BNC;50 OHM,FEMALE,STR,PCB,0.450 H X (4)0.040 SQ,0.189 TAIL,ON 0.250 CTRPCB	24931	28JR299-3
A4A1J100	131-5647-00	672-1396-08		CONN,RF,JACK; BNC;75 OHM,FEMALE,STR,PCB,4,0.04 SQ 0.189 L TAILS ON 0.25 CTR,0.038 DIA CTR COND	98291	058-151-0019-910
A5	671-2339-05			CIRCUIT BD ASSY:VECTORSCOPE	80009	671-2339-05
A5C1	283-0728-01			CAP,FXD,MICA DI:120PF,1%,500V	09023	CDA15FD121F03
A5C2	283-0625-01			CAP,FXD,MICA DI:220PF,1%,500V	09023	CDA10FD221F03
A5C3	290-0973-01			CAP,FXD,ALUM:100UF,20%,25VDC	55680	UVX1E101MEA1TA
A5C4	283-0796-01			CAP,FXD,MICA DI:100PF,5%,500V	09023	CDA10FD101J03
A5C5	283-0625-01			CAP,FXD,MICA DI:220PF,1%,500V	09023	CDA10FD221F03
A5C6	283-0644-01			CAP,FXD,MICA DI:150PF,1%,500V	TK0891	ADVISE
A5C7	283-5004-00			CAP,FXD,CERAMIC:MLC;0.1UF,10%,25V,X7R,1206	TK2058	C3216X7R1E104K-
A5C8	283-5004-00			CAP,FXD,CERAMIC:MLC;0.1UF,10%,25V,X7R,1206	TK2058	C3216X7R1E104K-
A5C9	283-0796-01			CAP,FXD,MICA DI:100PF,5%,500V	09023	CDA10FD101J03
A5C10	283-5004-00			CAP,FXD,CERAMIC:MLC;0.1UF,10%,25V,X7R,1206	TK2058	C3216X7R1E104K-
A5C11	283-5004-00			CAP,FXD,CERAMIC:MLC;0.1UF,10%,25V,X7R,1206	TK2058	C3216X7R1E104K-
A5C12	283-5004-00			CAP,FXD,CERAMIC:MLC;0.1UF,10%,25V,X7R,1206	TK2058	C3216X7R1E104K-
A5C13	283-5004-00			CAP,FXD,CERAMIC:MLC;0.1UF,10%,25V,X7R,1206	TK2058	C3216X7R1E104K-
A5C14	283-5004-00			CAP,FXD,CERAMIC:MLC;0.1UF,10%,25V,X7R,1206	TK2058	C3216X7R1E104K-
A5C15	290-0973-01			CAP,FXD,ALUM:100UF,20%,25VDC	55680	UVX1E101MEA1TA
A5C17	283-5004-00			CAP,FXD,CERAMIC:MLC;0.1UF,10%,25V,X7R,1206	TK2058	C3216X7R1E104K-
A5C18	283-5004-00			CAP,FXD,CERAMIC:MLC;0.1UF,10%,25V,X7R,1206	TK2058	C3216X7R1E104K-
A5C19	283-5004-00			CAP,FXD,CERAMIC:MLC;0.1UF,10%,25V,X7R,1206	TK2058	C3216X7R1E104K-
A5C20	283-0728-01			CAP,FXD,MICA DI:120PF,1%,500V	09023	CDA15FD121F03

Replaceable electrical parts list (Cont.)

Component number	Tektronix part number	Effective	Discont'd	Name and description	Mfr. code	Mfr. part no.
A5C21	283-5004-00			CAP,FXD,CERAMIC:MLC;0.1UF,10%,25V,X7R,1206	TK2058	C3216X7R1E104K-
A5C22	283-5003-00			CAP,FXD,CERAMIC:MLC;0.01UF,10%,50V,X7R,1206	TK2058	C3216X7R1H103K-
A5C23	283-5004-00			CAP,FXD,CERAMIC:MLC;0.1UF,10%,25V,X7R,1206	TK2058	C3216X7R1E104K-
A5C24	283-0663-01			CAP,FXD,MICA DI:16.8PF,500V	TK0891	RDM15CD16R8D03
A5C25	283-0728-01			CAP,FXD,MICA DI:120PF,1%,500V	09023	CDA15FD121F03
A5C26	281-5007-00			CAP,VAR,CERAMIC:4.5-20PF,100V	52769	GKG20066-##
A5C27	283-5004-00			CAP,FXD,CERAMIC:MLC;0.1UF,10%,25V,X7R,1206	TK2058	C3216X7R1E104K-
A5C28	283-5004-00			CAP,FXD,CERAMIC:MLC;0.1UF,10%,25V,X7R,1206	TK2058	C3216X7R1E104K-
A5C29	283-5004-00			CAP,FXD,CERAMIC:MLC;0.1UF,10%,25V,X7R,1206	TK2058	C3216X7R1E104K-
A5C30	283-5004-00			CAP,FXD,CERAMIC:MLC;0.1UF,10%,25V,X7R,1206	TK2058	C3216X7R1E104K-
A5C31	283-0796-01			CAP,FXD,MICA DI:100PF,5%,500V	09023	CDA10FD101J03
A5C32	283-5004-00			CAP,FXD,CERAMIC:MLC;0.1UF,10%,25V,X7R,1206	TK2058	C3216X7R1E104K-
A5C33	283-5201-00			CAP,FXD,CERAMIC:MLC;33PF,5%,100V,NPO,1206	04222	12061A330JAT1A
A5C34	290-0944-01			CAP,FXD,ELCTLT:220UF,20%,10V,LEADSPACING 0.2	0H1N5	CEBSM1C221M-T4
A5C35	283-0785-01			CAP,FXD,MICA DI:250PF,1%,500V	09023	CDA15FD251F03
A5C36	283-0677-01			CAP,FXD,MICA DI:82PF,1%,500V	09023	CDA15ED820F03
A5C37	283-5203-00			CAP,FXD,CERAMIC:MLC;1000PF,10%,100V,X7R,1206	04222	12061C102KAT1A
A5C38	283-5201-00			CAP,FXD,CERAMIC:MLC;33PF,5%,100V,NPO,1206	04222	12061A330JAT1A
A5C39	290-0944-01			CAP,FXD,ELCTLT:220UF,20%,10V,LEADSPACING 0.2	0H1N5	CEBSM1C221M-T4
A5C40	283-5004-00			CAP,FXD,CERAMIC:MLC;0.1UF,10%,25V,X7R,1206	TK2058	C3216X7R1E104K-
A5C41	283-5195-00			CAP,FXD,CERAMIC:MLC;10PF,5%,100V,NPO,1206	04222	12061A100JAT1A
A5C42	283-5004-00			CAP,FXD,CERAMIC:MLC;0.1UF,10%,25V,X7R,1206	TK2058	C3216X7R1E104K-
A5C43	283-5004-00			CAP,FXD,CERAMIC:MLC;0.1UF,10%,25V,X7R,1206	TK2058	C3216X7R1E104K-
A5C44	283-5267-00			CAP,FXD,CERAMIC:MLC;1UF,+80%-20%,25V,Y5V,1206	04222	12063G105ZAT1A
A5C45	283-5004-00			CAP,FXD,CERAMIC:MLC;0.1UF,10%,25V,X7R,1206	TK2058	C3216X7R1E104K-
A5C46	283-5004-00			CAP,FXD,CERAMIC:MLC;0.1UF,10%,25V,X7R,1206	TK2058	C3216X7R1E104K-
A5C47	283-5004-00			CAP,FXD,CERAMIC:MLC;0.1UF,10%,25V,X7R,1206	TK2058	C3216X7R1E104K-
A5C48	283-5004-00			CAP,FXD,CERAMIC:MLC;0.1UF,10%,25V,X7R,1206	TK2058	C3216X7R1E104K-
A5C49	283-5004-00			CAP,FXD,CERAMIC:MLC;0.1UF,10%,25V,X7R,1206	TK2058	C3216X7R1E104K-
A5C50	283-5004-00			CAP,FXD,CERAMIC:MLC;0.1UF,10%,25V,X7R,1206	TK2058	C3216X7R1E104K-
A5C51	283-5004-00			CAP,FXD,CERAMIC:MLC;0.1UF,10%,25V,X7R,1206	TK2058	C3216X7R1E104K-
A5C52	283-5106-00			CAP,FXD,CERAMIC:MLC;470PF,5%,100V,NPO,1206	04222	12061A471JAT1A
A5C53	283-5004-00			CAP,FXD,CERAMIC:MLC;0.1UF,10%,25V,X7R,1206	TK2058	C3216X7R1E104K-
A5C54	283-5004-00			CAP,FXD,CERAMIC:MLC;0.1UF,10%,25V,X7R,1206	TK2058	C3216X7R1E104K-
A5C55	283-5004-00			CAP,FXD,CERAMIC:MLC;0.1UF,10%,25V,X7R,1206	TK2058	C3216X7R1E104K-
A5C56	283-5004-00			CAP,FXD,CERAMIC:MLC;0.1UF,10%,25V,X7R,1206	TK2058	C3216X7R1E104K-

Replaceable electrical parts list (Cont.)

Component number	Tektronix part number	Effective	Discont'd	Name and description	Mfr. code	Mfr. part no.
A5C57	283-5004-00			CAP,FXD,CERAMIC:MLC;0.1UF,10%,25V,X7R,1206	TK2058	C3216X7R1E104K-
A5C58	283-5001-00			CAP,FXD,CERAMIC:MLC;100PF,5%,50V,NPO,1206	TK2058	C3216C0G1H101J-
A5C59	283-5003-00			CAP,FXD,CERAMIC:MLC;0.01UF,10%,50V,X7R,1206	TK2058	C3216X7R1H103K-
A5C60	283-5106-00			CAP,FXD,CERAMIC:MLC;470PF,5%,100V,NPO,1206	04222	12061A471JAT1A
A5C61	283-5004-00			CAP,FXD,CERAMIC:MLC;0.1UF,10%,25V,X7R,1206	TK2058	C3216X7R1E104K-
A5C62	283-5004-00			CAP,FXD,CERAMIC:MLC;0.1UF,10%,25V,X7R,1206	TK2058	C3216X7R1E104K-
A5C63	283-5004-00			CAP,FXD,CERAMIC:MLC;0.1UF,10%,25V,X7R,1206	TK2058	C3216X7R1E104K-
A5C64	283-5004-00			CAP,FXD,CERAMIC:MLC;0.1UF,10%,25V,X7R,1206	TK2058	C3216X7R1E104K-
A5C65	283-5239-00			CAP,FXD,CERAMIC:MLC;1200PF,5%,100V,NPO,1206	04222	12061A122JAT1A
A5C66	283-5004-00			CAP,FXD,CERAMIC:MLC;0.1UF,10%,25V,X7R,1206	TK2058	C3216X7R1E104K-
A5C67	283-5004-00			CAP,FXD,CERAMIC:MLC;0.1UF,10%,25V,X7R,1206	TK2058	C3216X7R1E104K-
A5C68	283-5001-00			CAP,FXD,CERAMIC:MLC;100PF,5%,50V,NPO,1206	TK2058	C3216C0G1H101J-
A5C69	283-5267-00			CAP,FXD,CERAMIC:MLC;1UF,+80%-20%,25V,Y5V,1206	04222	12063G105ZAT1A
A5C70	283-5189-00			CAP,FXD,CERAMIC:MLC;220PF,5%,100V,NPO,1206	04222	12061A221JAT1A
A5C71	283-5106-00			CAP,FXD,CERAMIC:MLC;470PF,5%,100V,NPO,1206	04222	12061A471JAT1A
A5C72	283-5004-00			CAP,FXD,CERAMIC:MLC;0.1UF,10%,25V,X7R,1206	TK2058	C3216X7R1E104K-
A5C73	283-5004-00			CAP,FXD,CERAMIC:MLC;0.1UF,10%,25V,X7R,1206	TK2058	C3216X7R1E104K-
A5C74	283-5068-00			CAP,FXD,CERAMIC:MLC;2200PF,10%,50V,X7R,1206	04222	12065C222KAT1A
A5C75	283-5195-00			CAP,FXD,CERAMIC:MLC;10PF,5%,100V,NPO,1206	04222	12061A100JAT1A
A5C76	283-5004-00			CAP,FXD,CERAMIC:MLC;0.1UF,10%,25V,X7R,1206	TK2058	C3216X7R1E104K-
A5C77	283-0677-01			CAP,FXD,MICA DI:82PF,1%,500V	09023	CDA15ED820F03
A5C78	283-5001-00			CAP,FXD,CERAMIC:MLC;100PF,5%,50V,NPO,1206	TK2058	C3216C0G1H101J-
A5C79	283-5004-00			CAP,FXD,CERAMIC:MLC;0.1UF,10%,25V,X7R,1206	TK2058	C3216X7R1E104K-
A5C80	283-5004-00			CAP,FXD,CERAMIC:MLC;0.1UF,10%,25V,X7R,1206	TK2058	C3216X7R1E104K-
A5C81	283-5004-00			CAP,FXD,CERAMIC:MLC;0.1UF,10%,25V,X7R,1206	TK2058	C3216X7R1E104K-
A5C82	283-5004-00			CAP,FXD,CERAMIC:MLC;0.1UF,10%,25V,X7R,1206	TK2058	C3216X7R1E104K-
A5C83	283-5106-00			CAP,FXD,CERAMIC:MLC;470PF,5%,100V,NPO,1206	04222	12061A471JAT1A
A5C84	283-5003-00			CAP,FXD,CERAMIC:MLC;0.01UF,10%,50V,X7R,1206	TK2058	C3216X7R1H103K-
A5C85	290-5036-01			CAP,FXD,ALUM:22UF,20%,16V,5.7MM(0.224)	62643	MVK16VC22RME60T
A5C86	283-5004-00			CAP,FXD,CERAMIC:MLC;0.1UF,10%,25V,X7R,1206	TK2058	C3216X7R1E104K-
A5C87	283-5001-00			CAP,FXD,CERAMIC:MLC;100PF,5%,50V,NPO,1206	TK2058	C3216C0G1H101J-
A5C88	290-5034-01			CAP,FXD,ALUM:33UF,20%,10V,5.7MM(0.224)	62643	MVK10VC33RME60T
A5C90	283-5066-00			CAP,FXD,CERAMIC:MLC;150PF,10%,100V,NPO,1206	04222	12061A151KAT1A
A5C91	283-5004-00			CAP,FXD,CERAMIC:MLC;0.1UF,10%,25V,X7R,1206	TK2058	C3216X7R1E104K-
A5C92	283-5106-00			CAP,FXD,CERAMIC:MLC;470PF,5%,100V,NPO,1206	04222	12061A471JAT1A
A5C93	283-5068-00			CAP,FXD,CERAMIC:MLC;2200PF,10%,50V,X7R,1206	04222	12065C222KAT1A

Replaceable electrical parts list (Cont.)

Component number	Tektronix part number	Effective	Discont'd	Name and description	Mfr. code	Mfr. part no.
A5C94	283-5187-00			CAP,FXD,CERAMIC:MLC;15PF,5%,100V,NPO,1206	04222	12061A150JAT1A
A5C95	283-5004-00			CAP,FXD,CERAMIC:MLC;0.1UF,10%,25V,X7R,1206	TK2058	C3216X7R1E104K-
A5C96	283-0677-01			CAP,FXD,MICA DI:82PF,1%,500V,T&R	09023	CDA15ED820F03
A5C97	283-5004-00			CAP,FXD,CERAMIC:MLC;0.1UF,10%,25V,X7R,1206	TK2058	C3216X7R1E104K-
A5C98	283-5004-00			CAP,FXD,CERAMIC:MLC;0.1UF,10%,25V,X7R,1206	TK2058	C3216X7R1E104K-
A5C99	283-5004-00			CAP,FXD,CERAMIC:MLC;0.1UF,10%,25V,X7R,1206	TK2058	C3216X7R1E104K-
A5C100	283-5108-00			CAP,FXD,CERAMIC:MLC;68PF,5%,100V,NPO,1206	04222	12061A680JAT1A
A5C101	283-5108-00			CAP,FXD,CERAMIC:MLC;68PF,5%,100V,NPO,1206	04222	12061A680JAT1A
A5C102	283-5001-00			CAP,FXD,CERAMIC:MLC;100PF,5%,50V,NPO,1206	TK2058	C3216C0G1H101J-
A5C103	283-5004-00			CAP,FXD,CERAMIC:MLC;0.1UF,10%,25V,X7R,1206	TK2058	C3216X7R1E104K-
A5C104	283-5187-00			CAP,FXD,CERAMIC:MLC;15PF,5%,100V,NPO,1206	04222	12061A150JAT1A
A5C105	283-5004-00			CAP,FXD,CERAMIC:MLC;0.1UF,10%,25V,X7R,1206	TK2058	C3216X7R1E104K-
A5C106	281-5007-00			CAP,VAR,CERAMIC:4.5-20PF,100V,N750+/-300PPM/C,4 X 4.5 X 2.7MM	52769	GKG20066-##
A5C107	283-5108-00			CAP,FXD,CERAMIC:MLC;68PF,5%,100V,NPO,1206	04222	12061A680JAT1A
A5C108	283-5004-00			CAP,FXD,CERAMIC:MLC;0.1UF,10%,25V,X7R,1206	TK2058	C3216X7R1E104K-
A5C109	281-5007-00			CAP,VAR,CERAMIC:4.5-20PF,100V,N750+/-300PPM/C,4 X 4.5 X 2.7MM	52769	GKG20066-##
A5C110	283-5004-00			CAP,FXD,CERAMIC:MLC;0.1UF,10%,25V,X7R,1206	TK2058	C3216X7R1E104K-
A5C111	283-0640-01			CAP,FXD,MICA DI:160PF,1%,100V	TK0891	ADVISE
A5C112	283-5187-00			CAP,FXD,CERAMIC:MLC;15PF,5%,100V,NPO,1206	04222	12061A150JAT1A
A5C113	283-5004-00			CAP,FXD,CERAMIC:MLC;0.1UF,10%,25V,X7R,1206	TK2058	C3216X7R1E104K-
A5C114	283-5004-00			CAP,FXD,CERAMIC:MLC;0.1UF,10%,25V,X7R,1206	TK2058	C3216X7R1E104K-
A5C115	283-5004-00			CAP,FXD,CERAMIC:MLC;0.1UF,10%,25V,X7R,1206	TK2058	C3216X7R1E104K-
A5J1	131-3364-00			CONN,HDR:PCB;MALE,STR,2 X 17,0.1 CTR,0.365D	53387	2534-6002UB
A5L1	108-5009-00			INDUCTOR,FXD:POWER;82UH,10%,I<0.12A,RDC<7.0	TK2058	NL453232T-820K
A5L2	114-0478-00			INDCTR,VAR:SHIELDED;11.2-16.8UH,Q>32@14UH,E CORE	02113	SLOT TEN-4-08
A5L3	108-5023-00			INDUCTOR,FXD:POWER;5.6UH,20%,I<0.3A,RDC<1.1	TK2058	NL453232T-5R6M
A5L4	108-5057-00			INDUCTOR,FXD:POWER;68UH,10%,I<0.13A,RDC<6.0	TK2058	NL453232T-680K
A5L5	108-5002-00			INDUCTOR,FXD:SIGNAL;15UH,10%,I<0.2A,RDC<2.5 OHM,Q>50,SRF>20MHZ	TK2058	NL453232T-150K
A5L6	108-5015-00			INDUCTOR,FXD:SIGNAL;100UH,10%,I<0.11A,RDC<8.0 OHM,Q>40,SRF>8.0 MHZ	TK2058	NL453232T-101K
A5L7	108-5015-00			INDUCTOR,FXD:SIGNAL;100UH,10%,I<0.11A,RDC<8.0 OHM,Q>40,SRF>8.0 MHZ	TK2058	NL453232T-101K
A5L8	108-5015-00			INDUCTOR,FXD:SIGNAL;100UH,10%,I<0.11A,RDC<8.0 OHM,Q>40,SRF>8.0 MHZ	TK2058	NL453232T-101K
A5L9	108-5015-00			INDUCTOR,FXD:SIGNAL;100UH,10%,I<0.11A,RDC<8.0 OHM,Q>40,SRF>8.0 MHZ	TK2058	NL453232T-101K

Replaceable electrical parts list (Cont.)

Component number	Tektronix part number	Effective	Discont'd	Name and description	Mfr. code	Mfr. part no.
A5L10	108-5015-00			INDUCTOR,FXD:SIGNAL;100UH,10%,I<0.11A,RDC<8.0 OHM,Q>40,SRF>8.0 MHZ	TK2058	NL453232T-101K
A5L11	108-5002-00			INDUCTOR,FXD:SIGNAL;15UH,10%,I<0.2A,RDC<2.5 OHM,Q>50,SRF>20MHZ	TK2058	NL453232T-150K
A5P1	174-2744-00			CA ASSY,SP,ELEC:34,28 AWG, 3.25 L,RIBBON	53387	174-2744-00
A5Q1	151-5001-00			XTR,SIG:BIPOLAR,NPN;40V,200MA,300MHZ,AMPL	0LUA3	PMBT3904TRL
A5Q2	151-5001-00			XTR,SIG:BIPOLAR,NPN;40V,200MA,300MHZ,AMPL	0LUA3	PMBT3904TRL
A5Q3	151-5001-00			XTR,SIG:BIPOLAR,NPN;40V,200MA,300MHZ,AMPL	0LUA3	PMBT3904TRL
A5Q4	151-5001-00			XTR,SIG:BIPOLAR,NPN;40V,200MA,300MHZ,AMPL	0LUA3	PMBT3904TRL
A5Q5	151-5001-00			XTR,SIG:BIPOLAR,NPN;40V,200MA,300MHZ,AMPL	0LUA3	PMBT3904TRL
A5Q6	151-5001-00			XTR,SIG:BIPOLAR,NPN;40V,200MA,300MHZ,AMPL	0LUA3	PMBT3904TRL
A5Q7	151-5002-00			XTR,SIG:JFET,N-CH;5V,75MA,60 OHM,SWITCH	04713	MMBF4392LT1
A5Q8	151-5000-00			XTR,SIG:BIPOLAR,PNP;40V,200MA,250MHZ,AMPL	0LUA3	PMBT3906TRL
A5Q9	151-5001-00			XTR,SIG:BIPOLAR,NPN;40V,200MA,300MHZ,AMPL	0LUA3	PMBT3904TRL
A5Q10	151-5001-00			XTR,SIG:BIPOLAR,NPN;40V,200MA,300MHZ,AMPL	0LUA3	PMBT3904TRL
A5Q11	151-5001-00			XTR,SIG:BIPOLAR,NPN;40V,200MA,300MHZ,AMPL	0LUA3	PMBT3904TRL
A5Q12	151-5002-00			XTR,SIG:JFET,N-CH;5V,75MA,60 OHM,SWITCH	04713	MMBF4392LT1
A5Q13	151-5001-00			XTR,SIG:BIPOLAR,NPN;40V,200MA,300MHZ,AMPL	0LUA3	PMBT3904TRL
A5Q14	151-5001-00			XTR,SIG:BIPOLAR,NPN;40V,200MA,300MHZ,AMPL	0LUA3	PMBT3904TRL
A5Q15	151-5001-00			XTR,SIG:BIPOLAR,NPN;40V,200MA,300MHZ,AMPL	0LUA3	PMBT3904TRL
A5Q16	151-5000-00			XTR,SIG:BIPOLAR,PNP;40V,200MA,250MHZ,AMPL	0LUA3	PMBT3906TRL
A5Q17	151-5000-00			XTR,SIG:BIPOLAR,PNP;40V,200MA,250MHZ,AMPL	0LUA3	PMBT3906TRL
A5Q18	151-5001-00			XTR,SIG:BIPOLAR,NPN;40V,200MA,300MHZ,AMPL	0LUA3	PMBT3904TRL
A5Q19	151-5000-00			XTR,SIG:BIPOLAR,PNP;40V,200MA,250MHZ,AMPL	0LUA3	PMBT3906TRL
A5Q20	151-5002-00			XTR,SIG:JFET,N-CH;5V,75MA,60 OHM,SWITCH	04713	MMBF4392LT1
A5Q21	151-5000-00			XTR,SIG:BIPOLAR,PNP;40V,200MA,250MHZ,AMPL	0LUA3	PMBT3906TRL
A5Q22	151-5000-00			XTR,SIG:BIPOLAR,PNP;40V,200MA,250MHZ,AMPL	0LUA3	PMBT3906TRL
A5Q23	151-5000-00			XTR,SIG:BIPOLAR,PNP;40V,200MA,250MHZ,AMPL	0LUA3	PMBT3906TRL
A5Q24	151-5000-00			XTR,SIG:BIPOLAR,PNP;40V,200MA,250MHZ,AMPL	0LUA3	PMBT3906TRL
A5Q25	151-5000-00			XTR,SIG:BIPOLAR,PNP;40V,200MA,250MHZ,AMPL	0LUA3	PMBT3906TRL
A5Q26	151-5000-00			XTR,SIG:BIPOLAR,PNP;40V,200MA,250MHZ,AMPL	0LUA3	PMBT3906TRL
A5Q27	151-5000-00			XTR,SIG:BIPOLAR,PNP;40V,200MA,250MHZ,AMPL	0LUA3	PMBT3906TRL
A5Q28	151-5000-00			XTR,SIG:BIPOLAR,PNP;40V,200MA,250MHZ,AMPL	0LUA3	PMBT3906TRL
A5Q29	151-5001-00			XTR,SIG:BIPOLAR,NPN;40V,200MA,300MHZ,AMPL	0LUA3	PMBT3904TRL
A5Q30	151-5001-00			XTR,SIG:BIPOLAR,NPN;40V,200MA,300MHZ,AMPL	0LUA3	PMBT3904TRL
A5Q31	151-5001-00			XTR,SIG:BIPOLAR,NPN;40V,200MA,300MHZ,AMPL	0LUA3	PMBT3904TRL
A5Q32	151-5001-00			XTR,SIG:BIPOLAR,NPN;40V,200MA,300MHZ,AMPL	0LUA3	PMBT3904TRL

Replaceable electrical parts list (Cont.)

Component number	Tektronix part number	Effective	Discont'd	Name and description	Mfr. code	Mfr. part no.
A5Q33	151-5001-00			XTR,SIG:BIPOLAR,NPN;40V,200MA,300MHZ,AMPL	0LUA3	PMBT3904TRL
A5Q34	151-5000-00			XTR,SIG:BIPOLAR,PNP;40V,200MA,250MHZ,AMPL	0LUA3	PMBT3906TRL
A5Q35	151-5001-00			XTR,SIG:BIPOLAR,NPN;40V,200MA,300MHZ,AMPL	0LUA3	PMBT3904TRL
A5R1	321-5018-00			RES,FXD:THICK FILM;1.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1001FT
A5R2	321-5018-00			RES,FXD:THICK FILM;1.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1001FT
A5R4	321-5022-00			RES,FXD:THICK FILM;2.21K OHM,1%,0.125W,TC=100 PPM	50139	BCK2211FT
A5R5	321-5025-00			RES,FXD:THICK FILM;3.92K OHM,1%,0.125W,TC=100 PPM	50139	BCK3921FT
A5R6	321-5022-00			RES,FXD:THICK FILM;2.21K OHM,1%,0.125W,TC=100 PPM	50139	BCK2211FT
A5R7	321-5018-00			RES,FXD:THICK FILM;1.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1001FT
A5R8	321-5018-00			RES,FXD:THICK FILM;1.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1001FT
A5R9	321-5027-00			RES,FXD:THICK FILM;5.62K OHM,1%,0.125W,TC=100 PPM	50139	BCK5621FT
A5R10	321-5018-00			RES,FXD:THICK FILM;1.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1001FT
A5R11	321-5018-00			RES,FXD:THICK FILM;1.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1001FT
A5R12	321-5024-00			RES,FXD:THICK FILM;3.32K OHM,1%,0.125W,TC=100 PPM	50139	BCK3321FT
A5R13	321-5025-00			RES,FXD:THICK FILM;3.92K OHM,1%,0.125W,TC=100 PPM	50139	BCK3921FT
A5R14	321-5024-00			RES,FXD:THICK FILM;3.32K OHM,1%,0.125W,TC=100 PPM	50139	BCK3321FT
A5R15	321-5018-00			RES,FXD:THICK FILM;1.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1001FT
A5R16	321-5018-00			RES,FXD:THICK FILM;1.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1001FT
A5R17	321-5020-00			RES,FXD:THICK FILM;1.5K OHM,1%,0.125W,TC=100 PPM	50139	BCK1501FT
A5R18	321-5006-00			RES,FXD:THICK FILM;100 OHM,1%,0.125W,TC=100	50139	BCK1000FT
A5R19	321-5034-00			RES,FXD:THICK FILM;22.1K OHM,1%,0.125W,TC=100 PPM	50139	BCK2212FT
A5R20	321-5022-00			RES,FXD:THICK FILM;2.21K OHM,1%,0.125W,TC=100 PPM	50139	BCK2211FT
A5R21	321-5006-00			RES,FXD:THICK FILM;100 OHM,1%,0.125W,TC=100	50139	BCK1000FT
A5R22	321-5000-00			RES,FXD:THICK FILM;10 OHM,1%,0.125W,TC=100 PPM	59124	RK73H2B10R0FT
A5R23	321-5006-00			RES,FXD:THICK FILM;100 OHM,1%,0.125W,TC=100	50139	BCK1000FT
A5R24	321-5006-00			RES,FXD:THICK FILM;100 OHM,1%,0.125W,TC=100	50139	BCK1000FT
A5R25	321-5018-00			RES,FXD:THICK FILM;1.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1001FT
A5R26	321-5022-00			RES,FXD:THICK FILM;2.21K OHM,1%,0.125W,TC=100 PPM	50139	BCK2211FT
A5R27	321-5006-00			RES,FXD:THICK FILM;100 OHM,1%,0.125W,TC=100	50139	BCK1000FT
A5R28	321-5013-00			RES,FXD:THICK FILM;392 OHM,1%,0.125W,TC=100	50139	BCK3920FT
A5R29	321-5024-00			RES,FXD:THICK FILM;3.32K OHM,1%,0.125W,TC=100 PPM	50139	BCK3321FT
A5R31	321-5013-00			RES,FXD:THICK FILM;392 OHM,1%,0.125W,TC=100	50139	BCK3920FT
A5R32	321-5006-00			RES,FXD:THICK FILM;100 OHM,1%,0.125W,TC=100	50139	BCK1000FT
A5R33	321-5034-00			RES,FXD:THICK FILM;22.1K OHM,1%,0.125W,TC=100 PPM	50139	BCK2212FT
A5R35	321-5006-00			RES,FXD:THICK FILM;100 OHM,1%,0.125W,TC=100	50139	BCK1000FT
A5R36	311-5039-00			RES,VAR:CERMET;1K OHM,25%,0.25W,4MM SQ,TOP ADJ	TK2073	G4DT102M

Replaceable electrical parts list (Cont.)

Component number	Tektronix part number	Effective	Discont'd	Name and description	Mfr. code	Mfr. part no.
A5R37	321-5006-00			RES,FXD:THICK FILM;100 OHM,1%,0.125W,TC=100	50139	BCK1000FT
A5R38	321-5006-00			RES,FXD:THICK FILM;100 OHM,1%,0.125W,TC=100	50139	BCK1000FT
A5R39	321-5014-00			RES,FXD:THICK FILM;475 OHM,1%,0.125W,TC=100	50139	BCK4750FT
A5R40	321-5014-00			RES,FXD:THICK FILM;475 OHM,1%,0.125W,TC=100	50139	BCK4750FT
A5R41	321-5020-00			RES,FXD:THICK FILM;1.5K OHM,1%,0.125W,TC=100 PPM	50139	BCK1501FT
A5R42	321-5027-00			RES,FXD:THICK FILM;5.62K OHM,1%,0.125W,TC=100 PPM	50139	BCK5621FT
A5R43	321-5018-00			RES,FXD:THICK FILM;1.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1001FT
A5R44	321-5013-00			RES,FXD:THICK FILM;392 OHM,1%,0.125W,TC=100	50139	BCK3920FT
A5R45	321-5013-00			RES,FXD:THICK FILM;392 OHM,1%,0.125W,TC=100	50139	BCK3920FT
A5R46	321-5006-00			RES,FXD:THICK FILM;100 OHM,1%,0.125W,TC=100	50139	BCK1000FT
A5R47	321-5006-00			RES,FXD:THICK FILM;100 OHM,1%,0.125W,TC=100	50139	BCK1000FT
A5R48	321-5000-00			RES,FXD:THICK FILM;10 OHM,1%,0.125W,TC=100 PPM	59124	RK73H2B10R0FT
A5R49	321-5020-00			RES,FXD:THICK FILM;1.5K OHM,1%,0.125W,TC=100 PPM	50139	BCK1501FT
A5R50	321-5047-00			RES,FXD:THICK FILM;100K OHM,1%,0.125W,TC=100 PPM	50139	BCK1003FT
A5R51	321-5006-00			RES,FXD:THICK FILM;100 OHM,1%,0.125W,TC=100	50139	BCK1000FT
A5R52	321-5018-00			RES,FXD:THICK FILM;1.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1001FT
A5R53	321-5030-00			RES,FXD:THICK FILM;10.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1002FT
A5R54	321-5021-00			RES,FXD:THICK FILM;1.82K OHM,1%,0.125W,TC=100 PPM	50139	BCK1821FT
A5R55	-----			(TEST SELECTED)		
A5R56	321-5013-00			RES,FXD:THICK FILM;392 OHM,1%,0.125W,TC=100	50139	BCK3920FT
A5R57	321-5006-00			RES,FXD:THICK FILM;100 OHM,1%,0.125W,TC=100	50139	BCK1000FT
A5R58	321-5024-00			RES,FXD:THICK FILM;3.32K OHM,1%,0.125W,TC=100 PPM	50139	BCK3321FT
A5R59	321-5038-00			RES,FXD:THICK FILM;47.5K OHM,1%,0.125W,TC=100 PPM	50139	BCK4752FT
A5R60	321-5026-00			RES,FXD:THICK FILM;4.75K OHM,1%,0.125W,TC=100 PPM	50139	BCK4751FT
A5R61	-----			(TEST SELECTED)		
A5R62	321-5049-00			RES,FXD:THICK FILM;1M OHM,1%,0.125W,TC=100 PPM	57668	MCR18FXEA1M
A5R63	321-5006-00			RES,FXD:THICK FILM;100 OHM,1%,0.125W,TC=100	50139	BCK1000FT
A5R64	321-5038-00			RES,FXD:THICK FILM;47.5K OHM,1%,0.125W,TC=100 PPM	50139	BCK4752FT
A5R65	321-5036-00			RES,FXD:THICK FILM;33.2K OHM,1%,0.125W,TC=100 PPM	50139	BCK3322FT
A5R66	321-5030-00			RES,FXD:THICK FILM;10.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1002FT
A5R67	321-5022-00			RES,FXD:THICK FILM;2.21K OHM,1%,0.125W,TC=100 PPM	50139	BCK2211FT
A5R68	321-5030-00			RES,FXD:THICK FILM;10.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1002FT
A5R69	321-5038-00			RES,FXD:THICK FILM;47.5K OHM,1%,0.125W,TC=100 PPM	50139	BCK4752FT
A5R70	321-5022-00			RES,FXD:THICK FILM;2.21K OHM,1%,0.125W,TC=100 PPM	50139	BCK2211FT
A5R71	321-5006-00			RES,FXD:THICK FILM;100 OHM,1%,0.125W,TC=100	50139	BCK1000FT
A5R72	321-5006-00			RES,FXD:THICK FILM;100 OHM,1%,0.125W,TC=100	50139	BCK1000FT

Replaceable electrical parts list (Cont.)

Component number	Tektronix part number	Effective	Discont'd	Name and description	Mfr. code	Mfr. part no.
A5R73	321-5034-00			RES,FXD:THICK FILM;22.1K OHM,1%,0.125W,TC=100 PPM	50139	BCK2212FT
A5R74	321-5020-00			RES,FXD:THICK FILM;1.5K OHM,1%,0.125W,TC=100 PPM	50139	BCK1501FT
A5R75	321-5266-00			RES,FXD:THICK FILM;11K OHM,1%,0.125W,TC=100	59124	RK73H2B1102FT
A5R76	321-5016-00			RES,FXD:THICK FILM;681 OHM,1%,0.125W,TC=100	50139	BCK6810FT
A5R77	321-5028-00			RES,FXD:THICK FILM;6.81K OHM,1%,0.125W,TC=100 PPM	50139	BCK6811FT
A5R78	321-5016-00			RES,FXD:THICK FILM;681 OHM,1%,0.125W,TC=100	50139	BCK6810FT
A5R79	321-5006-00			RES,FXD:THICK FILM;100 OHM,1%,0.125W,TC=100	50139	BCK1000FT
A5R80	-----			(TEST SELECTED)		
A5R81	-----			(TEST SELECTED)		
A5R82	321-5030-00			RES,FXD:THICK FILM;10.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1002FT
A5R83	321-5049-00			RES,FXD:THICK FILM;1M OHM,1%,0.125W,TC=100 PPM	57668	MCR18FXEA1M
A5R84	321-5049-00			RES,FXD:THICK FILM;1M OHM,1%,0.125W,TC=100 PPM	57668	MCR18FXEA1M
A5R85	321-5034-00			RES,FXD:THICK FILM;22.1K OHM,1%,0.125W,TC=100 PPM	50139	BCK2212FT
A5R86	321-5030-00			RES,FXD:THICK FILM;10.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1002FT
A5R87	321-5030-00			RES,FXD:THICK FILM;10.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1002FT
A5R88	321-5028-00			RES,FXD:THICK FILM;6.81K OHM,1%,0.125W,TC=100 PPM	50139	BCK6811FT
A5R89	321-5030-00			RES,FXD:THICK FILM;10.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1002FT
A5R90	321-5030-00			RES,FXD:THICK FILM;10.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1002FT
A5R91	321-5030-00			RES,FXD:THICK FILM;10.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1002FT
A5R92	321-5030-00			RES,FXD:THICK FILM;10.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1002FT
A5R93	321-5016-00			RES,FXD:THICK FILM;681 OHM,1%,0.125W,TC=100	50139	BCK6810FT
A5R94	321-5023-00			RES,FXD:THICK FILM;2.74K OHM,1%,0.125W,TC=100 PPM	50139	BCK2741FT
A5R95	321-5030-00			RES,FXD:THICK FILM;10.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1002FT
A5R96	321-5006-00			RES,FXD:THICK FILM;100 OHM,1%,0.125W,TC=100	50139	BCK1000FT
A5R97	321-5023-00			RES,FXD:THICK FILM;2.74K OHM,1%,0.125W,TC=100 PPM	50139	BCK2741FT
A5R98	321-5022-00			RES,FXD:THICK FILM;2.21K OHM,1%,0.125W,TC=100 PPM	50139	BCK2211FT
A5R99	321-5006-00			RES,FXD:THICK FILM;100 OHM,1%,0.125W,TC=100	50139	BCK1000FT
A5R100	321-5006-00			RES,FXD:THICK FILM;100 OHM,1%,0.125W,TC=100	50139	BCK1000FT
A5R101	321-5022-00			RES,FXD:THICK FILM;2.21K OHM,1%,0.125W,TC=100 PPM	50139	BCK2211FT
A5R102	321-5008-00			RES,FXD:THICK FILM;150 OHM,1%,0.125W,TC=100	50139	BCK1500FT
A5R103	321-5030-00			RES,FXD:THICK FILM;10.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1002FT
A5R104	321-5015-00			RES,FXD:THICK FILM;562 OHM,1%,0.125W,TC=100	50139	BCK5620FT
A5R105	321-5006-00			RES,FXD:THICK FILM;100 OHM,1%,0.125W,TC=100	50139	BCK1000FT
A5R106	321-5034-00			RES,FXD:THICK FILM;22.1K OHM,1%,0.125W,TC=100 PPM	50139	BCK2212FT
A5R107	321-5049-00			RES,FXD:THICK FILM;1M OHM,1%,0.125W,TC=100 PPM	57668	MCR18FXEA1M
A5R109	321-5047-00			RES,FXD:THICK FILM;100K OHM,1%,0.125W,TC=100 PPM	50139	BCK1003FT

Replaceable electrical parts list (Cont.)

Component number	Tektronix part number	Effective	Discont'd	Name and description	Mfr. code	Mfr. part no.
A5R110	321-5015-00			RES,FXD:THICK FILM;562 OHM,1%,0.125W,TC=100	50139	BCK5620FT
A5R111	321-5006-00			RES,FXD:THICK FILM;100 OHM,1%,0.125W,TC=100	50139	BCK1000FT
A5R112	321-5006-00			RES,FXD:THICK FILM;100 OHM,1%,0.125W,TC=100	50139	BCK1000FT
A5R113	321-5014-00			RES,FXD:THICK FILM;475 OHM,1%,0.125W,TC=100	50139	BCK4750FT
A5R114	321-5030-00			RES,FXD:THICK FILM;10.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1002FT
A5R115	321-5000-00			RES,FXD:THICK FILM;10 OHM,1%,0.125W,TC=100 PPM	59124	RK73H2B10R0FT
A5R116	321-5015-00			RES,FXD:THICK FILM;562 OHM,1%,0.125W,TC=100	50139	BCK5620FT
A5R117	321-5015-00			RES,FXD:THICK FILM;562 OHM,1%,0.125W,TC=100	50139	BCK5620FT
A5R118	321-5016-00			RES,FXD:THICK FILM;681 OHM,1%,0.125W,TC=100	50139	BCK6810FT
A5R119	321-5090-00			RES,FXD:THICK FILM; 20K OHM,0.125W,100 PPM,1206,T&R	50139	BCK2002FT
A5R120	321-5169-00			RES,FXD:THICK FILM;475K OHM,1%,0.125W,TC=100 PPM	59124	RK73H2B4753FT
A5R121	321-5030-00			RES,FXD:THICK FILM;10.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1002FT
A5R122	321-5026-00			RES,FXD:THICK FILM;4.75K OHM,1%,0.125W,TC=100 PPM	50139	BCK4751FT
A5R123	321-5169-00			RES,FXD:THICK FILM;475K OHM,1%,0.125W,TC=100 PPM	59124	RK73H2B4753FT
A5R124	321-5026-00			RES,FXD:THICK FILM;4.75K OHM,1%,0.125W,TC=100 PPM	50139	BCK4751FT
A5R125	321-5090-00			RES,FXD:THICK FILM; 20K OHM,0.125W,100 PPM,1206,T&R	50139	BCK2002FT
A5R126	321-5026-00			RES,FXD:THICK FILM;4.75K OHM,1%,0.125W,TC=100 PPM	50139	BCK4751FT
A5R127	321-5064-00			RES,FXD:THICK FILM;200K OHM,1%,0.125W,TC=100 PPM	59124	RK73H2B2003FT
A5R128	321-5036-00			RES,FXD:THICK FILM;33.2K OHM,1%,0.125W,TC=100 PPM	50139	BCK3322FT
A5R129	321-5026-00			RES,FXD:THICK FILM;4.75K OHM,1%,0.125W,TC=100 PPM	50139	BCK4751FT
A5R130	321-5030-00			RES,FXD:THICK FILM;10.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1002FT
A5R131	321-5026-00			RES,FXD:THICK FILM;4.75K OHM,1%,0.125W,TC=100 PPM	50139	BCK4751FT
A5R132	321-5011-00			RES,FXD:THICK FILM;274 OHM,1%,0.125W,TC=100	50139	BCK2740FT
A5R133	321-5006-00			RES,FXD:THICK FILM;100 OHM,1%,0.125W,TC=100	50139	BCK1000FT
A5R134	321-5026-00			RES,FXD:THICK FILM;4.75K OHM,1%,0.125W,TC=100 PPM	50139	BCK4751FT
A5R135	321-5022-00			RES,FXD:THICK FILM;2.21K OHM,1%,0.125W,TC=100 PPM	50139	BCK2211FT
A5R136	321-5030-00			RES,FXD:THICK FILM;10.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1002FT
A5R137	321-5030-00			RES,FXD:THICK FILM;10.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1002FT
A5R138	321-5030-00			RES,FXD:THICK FILM;10.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1002FT
A5R139	321-5030-00			RES,FXD:THICK FILM;10.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1002FT
A5R140	321-5030-00			RES,FXD:THICK FILM;10.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1002FT
A5R141	321-5015-00			RES,FXD:THICK FILM;562 OHM,1%,0.125W,TC=100	50139	BCK5620FT
A5R142	321-5030-00			RES,FXD:THICK FILM;10.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1002FT
A5R143	321-5026-00			RES,FXD:THICK FILM;4.75K OHM,1%,0.125W,TC=100 PPM	50139	BCK4751FT
A5R144	321-5167-00			RES,FXD:THICK FILM;221K OHM,1%,0.125W,TC=100 PPM	59124	RK73H2B2213FT
A5R145	321-5012-00			RES,FXD:THICK FILM;332 OHM,1%,0.125W,TC=100	50139	BCK3320FT

Replaceable electrical parts list (Cont.)

Component number	Tektronix part number	Effective	Discont'd	Name and description	Mfr. code	Mfr. part no.
A5R146	321-5018-00			RES,FXD:THICK FILM;1.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1001FT
A5R147	321-5021-00			RES,FXD:THICK FILM;1.82K OHM,1%,0.125W,TC=100 PPM	50139	BCK1821FT
A5R148	321-5014-00			RES,FXD:THICK FILM;475 OHM,1%,0.125W,TC=100	50139	BCK4750FT
A5R149	321-5034-00			RES,FXD:THICK FILM;22.1K OHM,1%,0.125W,TC=100 PPM	50139	BCK2212FT
A5R150	321-5030-00			RES,FXD:THICK FILM;10.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1002FT
A5R151	321-5000-00			RES,FXD:THICK FILM;10 OHM,1%,0.125W,TC=100 PPM	59124	RK73H2B10R0FT
A5R152	321-5011-00			RES,FXD:THICK FILM;274 OHM,1%,0.125W,TC=100	50139	BCK2740FT
A5R153	321-5030-00			RES,FXD:THICK FILM;10.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1002FT
A5R154	321-5030-00			RES,FXD:THICK FILM;10.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1002FT
A5R155	321-5006-00			RES,FXD:THICK FILM;100 OHM,1%,0.125W,TC=100	50139	BCK1000FT
A5R156	321-5026-00			RES,FXD:THICK FILM;4.75K OHM,1%,0.125W,TC=100 PPM	50139	BCK4751FT
A5R157	321-5015-00			RES,FXD:THICK FILM;562 OHM,1%,0.125W,TC=100	50139	BCK5620FT
A5R158	321-5015-00			RES,FXD:THICK FILM;562 OHM,1%,0.125W,TC=100	50139	BCK5620FT
A5R159	321-5022-00			RES,FXD:THICK FILM;2.21K OHM,1%,0.125W,TC=100 PPM	50139	BCK2211FT
A5R160	321-5208-00			RES,FXD:THICK FILM;10M OHM,5%,0.125W,TC=100	59124	RK73H2B1005FT
A5R161	321-5030-00			RES,FXD:THICK FILM;10.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1002FT
A5R162	321-5020-00			RES,FXD:THICK FILM;1.5K OHM,1%,0.125W,TC=100 PPM	50139	BCK1501FT
A5R163	321-5022-00			RES,FXD:THICK FILM;2.21K OHM,1%,0.125W,TC=100 PPM	50139	BCK2211FT
A5R164	321-5015-00			RES,FXD:THICK FILM;562 OHM,1%,0.125W,TC=100	50139	BCK5620FT
A5R165	321-5030-00			RES,FXD:THICK FILM;10.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1002FT
A5R166	321-5014-00			RES,FXD:THICK FILM;475 OHM,1%,0.125W,TC=100	50139	BCK4750FT
A5R167	321-5006-00			RES,FXD:THICK FILM;100 OHM,1%,0.125W,TC=100	50139	BCK1000FT
A5R168	321-5006-00			RES,FXD:THICK FILM;100 OHM,1%,0.125W,TC=100	50139	BCK1000FT
A5R169	321-5015-00			RES,FXD:THICK FILM;562 OHM,1%,0.125W,TC=100	50139	BCK5620FT
A5R170	321-5006-00			RES,FXD:THICK FILM;100 OHM,1%,0.125W,TC=100	50139	BCK1000FT
A5R171	321-5018-00			RES,FXD:THICK FILM;1.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1001FT
A5R174	321-5021-00			RES,FXD:THICK FILM;1.82K OHM,1%,0.125W,TC=100 PPM	50139	BCK1821FT
A5R175	321-5030-00			RES,FXD:THICK FILM;10.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1002FT
A5R176	321-5018-00			RES,FXD:THICK FILM;1.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1001FT
A5R177	321-5006-00			RES,FXD:THICK FILM;100 OHM,1%,0.125W,TC=100	50139	BCK1000FT
A5R178	321-5014-00			RES,FXD:THICK FILM;475 OHM,1%,0.125W,TC=100	50139	BCK4750FT
A5R179	321-5006-00			RES,FXD:THICK FILM;100 OHM,1%,0.125W,TC=100	50139	BCK1000FT
A5R180	321-5014-00			RES,FXD:THICK FILM;475 OHM,1%,0.125W,TC=100	50139	BCK4750FT
A5R182	321-5018-00			RES,FXD:THICK FILM;1.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1001FT
A5R183	321-5006-00			RES,FXD:THICK FILM;100 OHM,1%,0.125W,TC=100	50139	BCK1000FT
A5R184	321-5010-00			RES,FXD:THICK FILM;221 OHM,1%,0.125W,TC=100	50139	BCK221FT

Replaceable electrical parts list (Cont.)

Component number	Tektronix part number	Effective	Discont'd	Name and description	Mfr. code	Mfr. part no.
A5R185	321-5006-00			RES,FXD:THICK FILM;100 OHM,1%,0.125W,TC=100	50139	BCK1000FT
A5R186	321-5006-00			RES,FXD:THICK FILM;100 OHM,1%,0.125W,TC=100	50139	BCK1000FT
A5R187	321-5018-00			RES,FXD:THICK FILM;1.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1001FT
A5R188	321-5010-00			RES,FXD:THICK FILM;221 OHM,1%,0.125W,TC=100	50139	BCK221FT
A5R189	321-5143-00			RES,FXD,FILM:301 OHM,1%,0.125WTAPE & REELED	91637	CRCW12063010FT
A5R190	321-5006-00			RES,FXD:THICK FILM;100 OHM,1%,0.125W,TC=100	50139	BCK1000FT
A5R191	321-5006-00			RES,FXD:THICK FILM;100 OHM,1%,0.125W,TC=100	50139	BCK1000FT
A5R192	321-5018-00			RES,FXD:THICK FILM;1.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1001FT
A5R193	321-5006-00			RES,FXD:THICK FILM;100 OHM,1%,0.125W,TC=100	50139	BCK1000FT
A5R194	321-5018-00			RES,FXD:THICK FILM;1.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1001FT
A5R195	321-5021-00			RES,FXD:THICK FILM;1.82K OHM,1%,0.125W,TC=100 PPM	50139	BCK1821FT
A5R196	321-5015-00			RES,FXD:THICK FILM;562 OHM,1%,0.125W,TC=100	50139	BCK5620FT
A5R197	321-5027-00			RES,FXD:THICK FILM;5.62K OHM,1%,0.125W,TC=100 PPM	50139	BCK5621FT
A5R198	321-5015-00			RES,FXD:THICK FILM;562 OHM,1%,0.125W,TC=100	50139	BCK5620FT
A5R199	321-5015-00			RES,FXD:THICK FILM;562 OHM,1%,0.125W,TC=100	50139	BCK5620FT
A5R200	321-5026-00			RES,FXD:THICK FILM;4.75K OHM,1%,0.125W,TC=100 PPM	50139	BCK4751FT
A5R201	321-5049-00			RES,FXD:THICK FILM;1M OHM,1%,0.125W,TC=100 PPM	57668	MCR18FXEA1M
A5R202	321-5015-00			RES,FXD:THICK FILM;562 OHM,1%,0.125W,TC=100	50139	BCK5620FT
A5R203	321-5006-00			RES,FXD:THICK FILM;100 OHM,1%,0.125W,TC=100	50139	BCK1000FT
A5R204	321-5018-00			RES,FXD:THICK FILM;1.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1001FT
A5R205	321-5143-00			RES,FXD,FILM:301 OHM,1%,0.125WTAPE & REELED	91637	CRCW12063010FT
A5R206	321-5018-00			RES,FXD:THICK FILM;1.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1001FT
A5R207	321-5034-00			RES,FXD:THICK FILM;22.1K OHM,1%,0.125W,TC=100 PPM	50139	BCK2212FT
A5R208	321-5034-00			RES,FXD:THICK FILM;22.1K OHM,1%,0.125W,TC=100 PPM	50139	BCK2212FT
A5R209	321-5021-00			RES,FXD:THICK FILM;1.82K OHM,1%,0.125W,TC=100 PPM	50139	BCK1821FT
A5R210	321-5015-00			RES,FXD:THICK FILM;562 OHM,1%,0.125W,TC=100	50139	BCK5620FT
A5R211	321-5025-00			RES,FXD:THICK FILM;3.92K OHM,1%,0.125W,TC=100 PPM	50139	BCK3921FT
A5R212	321-5030-00			RES,FXD:THICK FILM;10.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1002FT
A5R213	321-5030-00			RES,FXD:THICK FILM;10.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1002FT
A5R214	321-5030-00			RES,FXD:THICK FILM;10.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1002FT
A5R215	321-5047-00			RES,FXD:THICK FILM;100K OHM,1%,0.125W,TC=100 PPM	50139	BCK1003FT
A5R216	321-5047-00			RES,FXD:THICK FILM;100K OHM,1%,0.125W,TC=100 PPM	50139	BCK1003FT
A5R217	321-5026-00			RES,FXD:THICK FILM;4.75K OHM,1%,0.125W,TC=100 PPM	50139	BCK4751FT
A5R218	321-5018-00			RES,FXD:THICK FILM;1.0K OHM,1%,0.125W,TC=100 PPM	50139	BCK1001FT
A5R219	321-5048-00			RES,FXD:THICK FILM;332K OHM,1%,0.125W,TC=100 PPM	57668	MCR18FXEA332K
A5R220	321-5006-00			RES,FXD:THICK FILM;100 OHM,1%,0.125W,TC=100	50139	BCK1000FT

Replaceable electrical parts list (Cont.)

Component number	Tektronix part number	Effective	Discont'd	Name and description	Mfr. code	Mfr. part no.
A5R223	322-3343-00			RES,FXD,FILM:36.5K OHM,1%,0.2W,TC=T0,MI,SMALL BODY	91637	CCF50-3652F-R36
A5T1	120-1057-00			TRANSFORMER,SIG:TRIFILAR;450-675UH,TOROID CORE 276-0614-00,8 TURNS WITH 31 AWG WIRE 176-0014-XX	0JR03	120-1057-00
A5U1	156-5853-01			IC,LINEAR:BIPOLAR,OP-AMP;35MHZ,UNITYGAIN STABLE	27014	LM6361MX
A5U2	156-5853-01			IC,LINEAR:BIPOLAR,OP-AMP;35MHZ,UNITYGAIN STABLE	27014	LM6361MX
A5U3	156-5145-01			IC,DIGITAL:HCTCMOS,FLIP FLOP;DUAL D-TYPE	01295	SN74HCT74D
A5U4	156-5138-01			IC,LINEAR:BIFET,OP-AMP;DUAL	01295	TL072CDR
A5U5	156-6059-01			IC,MISC:CMOS,ANALOG SWITCH;QUAD	1ES66	DG444DY-T
A5U6	156-5136-00			IC,MISC:BIPOLAR,MOD/DEMODO;BALANCED	27014	LM1496M
A5U7	156-5138-01			IC,LINEAR:BIFET,OP-AMP;DUAL	01295	TL072CDR
A5U8	156-5136-00			IC,MISC:BIPOLAR,MOD/DEMODO;BALANCED	27014	LM1496M
A5U9	156-2959-00			IC,LINEAR:BIPOLAR,VR;POSITIVE,8.0V,1.0A,2%	04713	MCT7808CT
A5U10	156-4234-00			IC,LINEAR:BIPOLAR,VR;NEGATIVE,-8.0 VOLTS,1.0A,2%	44648	KA7908T
A5U11	156-5081-01			IC,DIGITAL:HCTCMOS,GATE;HEX INVERTER	0JR04	TC74HCT04AFN(EL
A5U12	156-6059-01			IC,MISC:CMOS,ANALOG SWITCH;QUAD	1ES66	DG444DY-T
A5U13	156-6059-01			IC,MISC:CMOS,ANALOG SWITCH;QUAD	1ES66	DG444DY-T
A5U14	156-5136-00			IC,MISC:BIPOLAR,MOD/DEMODO;BALANCED	27014	LM1496M
A5U15	156-5136-00			IC,MISC:BIPOLAR,MOD/DEMODO;BALANCED	27014	LM1496M
A5U16	156-5299-01			IC,LINEAR:BIPOLAR,VR;NEGATIVE,-5V,100MA,5%	01295	MC79L05ACDR
A5U17	156-5304-01			IC,DIGITAL:HCTCMOS,BUFFER;QUAD BUFFER, /OE	01295	SN74HCT125DR
A5U18	156-6224-00			IC,CONVERTER:CMOS,D/A;12 BIT,VOLTAGE OUT,16	TK2441	I10412-01
A5U19	156-5480-01			IC,DIGITAL:HCMOS,RGTR;8-BIT SHIFT RGTR,WITH OUTPUT LATCHES	0JR04	TC74HC595AFN(EL
A5U20	156-6059-01			IC,MISC:CMOS,ANALOG SWITCH;QUAD	1ES66	DG444DY-T
A5U21	156-5304-01			IC,DIGITAL:HCTCMOS,BUFFER;QUAD BUFFER, /OE	01295	SN74HCT125DR
A5U22	156-5480-01			IC,DIGITAL:HCMOS,RGTR;8-BIT SHIFT RGTR,WITH OUTPUT LATCHES	0JR04	TC74HC595AFN(EL
A5U23	156-5019-01			IC,LINEAR:BIPOLAR,COMPARATOR;DUAL,SINGLE SUPPLY	01295	LM393DR
A5U24	156-6279-01			IC,LINEAR:BIFET,OP-AMP;DUAL,TWO POLEFREQ COMP	04713	MC33282DR2
A5U25	156-5221-01			IC,DIGITAL:ECL,FLIP FLOP;DUAL D-TYPE	04713	MC10H131FNR2
A5U26	156-5487-01			IC,LINEAR:BIPOLAR,OP-AMP;TRANSCONDUCTANCE	34371	CA3080AM96
A5U27	156-5358-00			IC,DIGITAL:HCMOS,RGTR;8-BIT PISO SHIFT RGTR	04713	MC74HC165D
A5U28	156-5145-01			IC,DIGITAL:HCTCMOS,FLIP FLOP;DUAL D-TYPE	01295	SN74HCT74D
A5U29	156-5361-00			IC,DIGITAL:ECL,RECEIVER;TRIPLE LINE	04713	MC10116FN
A5U30	156-5136-00			IC,MISC:BIPOLAR,MOD/DEMODO;BALANCED	27014	LM1496M
A5U31	156-5136-00			IC,MISC:BIPOLAR,MOD/DEMODO;BALANCED	27014	LM1496M
A5Y1	158-0270-00			XTAL UNIT,QTZ:17.734MHZ,0.001%	33096	CCAT101823

Replaceable electrical parts list (Cont.)

Component number	Tektronix part number	Effective	Discont'd	Name and description	Mfr. code	Mfr. part no.
A5Y2	158-0308-00			XTAL UNIT,QTZ:14.31818MHZ,0.003%,PARALLEL,CL=30PF,PKG HC-49/U	TK0978	53590
A5CR1	152-5018-00			DIODE,SIG:ULTRA FAST;100V,0.74VF,4NS,2.0PF,SER-PAIR	27014	MMBD1203
A5CR2	152-5018-00			DIODE,SIG:ULTRA FAST;100V,0.74VF,4NS,2.0PF,SER-PAIR	27014	MMBD1203
A5CR3	152-5018-00			DIODE,SIG:ULTRA FAST;100V,0.74VF,4NS,2.0PF,SER-PAIR	27014	MMBD1203
A5CR4	152-5062-00			DIO,SIG:ULTRA FAST;100V,0.74VF,4NS,2.0PF,COM-ANODE	27014	MMBD1205
A5CR5	152-5062-00			DIO,SIG:ULTRA FAST;100V,0.74VF,4NS,2.0PF,COM-ANODE	27014	MMBD1205
A5CR6	152-5062-00			DIO,SIG:ULTRA FAST;100V,0.74VF,4NS,2.0PF,COM-ANODE	27014	MMBD1205
A5CR7	152-5062-00			DIO,SIG:ULTRA FAST;100V,0.74VF,4NS,2.0PF,COM-ANODE	27014	MMBD1205
A5CR8	152-0269-01			DIODE,SIG:VVC;C4=33PF,5%,C4/C20=2	04713	SMV1263-1
A5CR9	152-5062-00			DIO,SIG:ULTRA FAST;100V,0.74VF,4NS,2.0PF,COM-ANODE	27014	MMBD1205
A5CR10	152-5062-00			DIO,SIG:ULTRA FAST;100V,0.74VF,4NS,2.0PF,COM-ANODE	27014	MMBD1205
A5VR1	152-5023-00			DIODE,ZENER:5.1V,5%,225MW	04713	MMBZ5231BLT1
A5VR2	152-5002-00			DIODE,ZENER:3.6V,5%,225MW	04713	MMBZ5227LBT1
A5VR3	152-5002-00			DIODE,ZENER:3.6V,5%,225MW	04713	MMBZ5227LBT1
A6	671-2472-05			CIRCUIT BD ASSY:SCH (1750-SERIES,1760-SERIES OPT SC ONLY) *ATTACHED PARTS*	80009	671-2472-05
	337-3104-00			SHIELD,ELEC:CKT BD *END ATTACHED PARTS*	80009	337-3104-00
A6C1	281-0777-00			CAP,FXD,CERAMIC:MLC;51PF,5%,200V,0.100 X 0.170	04222	SA102A510JAA
A6C2	290-1289-00			CAP,FXD,ALUM:47UF,20%,16V,0.250 X 0.276;RADIAL,NONPOLAR,BULK	55680	USP1C470MCA1TP
A6C3	290-1311-00			CAP,FXD,ALUM:10UF,20%,50V,ESR=1.4 OHM (100KHZ,20C),5X11MM,105C,5000HRS	55680	UPL1H100MDH1TD
A6C4	283-0651-00			CAP,FXD,MICA DI:430PF,1%,500V	TK0891	RDM15FD431F03
A6C5	290-1311-00			CAP,FXD,ALUM:10UF,20%,50V,ESR=1.4 OHM (100KHZ,20C),5X11MM,105C,5000HRS	55680	UPL1H100MDH1TD
A6C6	283-0622-00			CAP,FXD,MICA DI:450PF,1%,300V	TK0891	RDM15FD451F03
A6C7	281-0775-01			CAP,FXD,CERAMIC:MCL;0.1UF,20%,50V,Z5U,0.170	04222	SA105E104MAA
A6C8	283-0674-01			CAP,FXD,MICA DI:85PF,500V	TK0891	RDM15FD850F03
A6C9	290-1289-00			CAP,FXD,ALUM:47UF,20%,16V,0.250 X 0.276;RADIAL,NONPOLAR,BULK	55680	USP1C470MCA1TP
A6C10	290-1311-00			CAP,FXD,ALUM:10UF,20%,50V,ESR=1.4 OHM (100KHZ,20C),5X11MM,105C,5000HRS	55680	UPL1H100MDH1TD
A6C11	281-0864-00			CAP,FXD,CERAMIC:MLC;430PF,5%,100V,0.100 X 0.170	04222	SA101A431JAA
A6C12	283-0672-01			CAP,FXD,MICA DI:200PF,1%,500V	09023	CDA15FD201F03
A6C13	283-0600-01			CAP,FXD,MICA DI:43PF,5%,500V	09023	CDA10ED430J03

Replaceable electrical parts list (Cont.)

Component number	Tektronix part number	Effective	Discont'd	Name and description	Mfr. code	Mfr. part no.
A6C14	281-0772-00			CAP,FXD,CERAMIC:MLC;4700PF,10%,100V,0.100 X	04222	SA101C472KAA
A6C15	281-0775-01			CAP,FXD,CERAMIC:MCL;0.1UF,20%,50V,Z5U,0.170	04222	SA105E104MAA
A6C16	281-0772-00			CAP,FXD,CERAMIC:MLC;4700PF,10%,100V,0.100 X	04222	SA101C472KAA
A6C17	281-0775-01			CAP,FXD,CERAMIC:MCL;0.1UF,20%,50V,Z5U,0.170	04222	SA105E104MAA
A6C18	281-0775-01			CAP,FXD,CERAMIC:MCL;0.1UF,20%,50V,Z5U,0.170	04222	SA105E104MAA
A6C19	283-0674-01			CAP,FXD,MICA DI:85PF,500V	TK0891	RDM15FD850F03
A6C21	281-0772-00			CAP,FXD,CERAMIC:MLC;4700PF,10%,100V,0.100 X	04222	SA101C472KAA
A6C22	281-0775-01			CAP,FXD,CERAMIC:MCL;0.1UF,20%,50V,Z5U,0.170	04222	SA105E104MAA
A6C23	281-0772-00			CAP,FXD,CERAMIC:MLC;4700PF,10%,100V,0.100 X	04222	SA101C472KAA
A6C24	281-0775-01			CAP,FXD,CERAMIC:MCL;0.1UF,20%,50V,Z5U,0.170	04222	SA105E104MAA
A6C25	283-0642-01			CAP,FXD,MICA DI:33PF,2%,500V	09023	CDA10ED330G03
A6C26	281-0775-01			CAP,FXD,CERAMIC:MCL;0.1UF,20%,50V,Z5U,0.170	04222	SA105E104MAA
A6C27	283-0177-05			CAP,FXD,CER DI:1UF,+80-20%,25V	04222	SR303E105ZAAAP1
A6C28	281-0775-01			CAP,FXD,CERAMIC:MCL;0.1UF,20%,50V,Z5U,0.170	04222	SA105E104MAA
A6C29	283-0642-01			CAP,FXD,MICA DI:33PF,2%,500V	09023	CDA10ED330G03
A6C30	281-0775-01			CAP,FXD,CERAMIC:MCL;0.1UF,20%,50V,Z5U,0.170	04222	SA105E104MAA
A6C31	281-0756-00			CAP,FXD,CER:MLC;2.2PF,+/-0.5PF,200V,NPO,0.100 X 0.170	04222	SA102A2R2DAA
A6C32	283-0644-01			CAP,FXD,MICA DI:150PF,1%,500V	TK0891	ADVISE
A6C33	281-0775-01			CAP,FXD,CERAMIC:MCL;0.1UF,20%,50V,Z5U,0.170	04222	SA105E104MAA
A6C34	283-0633-01			CAP,FXD,MICA DI:77PF,1%,500V,RDL,TAPE &AMMO PACK	09023	CDA15ED770F03
A6C35	281-0775-01			CAP,FXD,CERAMIC:MCL;0.1UF,20%,50V,Z5U,0.170	04222	SA105E104MAA
A6C36	283-0642-01			CAP,FXD,MICA DI:33PF,2%,500V	09023	CDA10ED330G03
A6C37	283-0633-01			CAP,FXD,MICA DI:77PF,1%,500V,RDL,TAPE &AMMO PACK	09023	CDA15ED770F03
A6C38	283-0597-00			CAP,FXD,MICA DI:470PF,10%,300V	TK0891	RDM15FD471K03
A6C39	281-0761-00			CAP,FXD,CERAMIC:MLC;27PF,5%,100V,0.100 X 0.170	04222	SA102A270JAA
A6C40	283-0100-00			CAP,FXD,CER DI:0.0047UF,10%,200V	04222	SR302A472KAA
A6C41	281-0920-00			CAP,FXD:CER,MLC,1000PF,5%,50V,0.170 X 0.1;NPO,AXIAL	04222	SA105A102JAA
A6C42	281-0184-00			CAP,VAR,PLSTC:2-18PF,500VDC	TK1727	2222-809-05003
A6C43	281-0775-01			CAP,FXD,CERAMIC:MCL;0.1UF,20%,50V,Z5U,0.170	04222	SA105E104MAA
A6C44	281-0773-00			CAP,FXD,CERAMIC:MLC;0.01UF,10%,100V	TK1743	CGB103KEX
A6C45	281-0773-00			CAP,FXD,CERAMIC:MLC;0.01UF,10%,100V	TK1743	CGB103KEX
A6C46	281-0184-00			CAP,VAR,PLSTC:2-18PF,500VDC	TK1727	2222-809-05003
A6C47	281-0775-01			CAP,FXD,CERAMIC:MCL;0.1UF,20%,50V,Z5U,0.170	04222	SA105E104MAA
A6C48	290-1311-00			CAP,FXD,ALUM:10UF,20%,50V,ESR=1.4 OHM (100KHZ,20C),5X11MM,105C,5000HRS	55680	UPL1H100MDH1TD
A6C49	283-0597-00			CAP,FXD,MICA DI:470PF,10%,300V	TK0891	RDM15FD471K03

Replaceable electrical parts list (Cont.)

Component number	Tektronix part number	Effective	Discont'd	Name and description	Mfr. code	Mfr. part no.
A6C51	281-0775-01			CAP,FXD,CERAMIC:MCL;0.1UF,20%,50V,Z5U,0.170	04222	SA105E104MAA
A6C52	281-0775-01			CAP,FXD,CERAMIC:MCL;0.1UF,20%,50V,Z5U,0.170	04222	SA105E104MAA
A6C53	281-0775-01			CAP,FXD,CERAMIC:MCL;0.1UF,20%,50V,Z5U,0.170	04222	SA105E104MAA
A6C54	281-0775-01			CAP,FXD,CERAMIC:MCL;0.1UF,20%,50V,Z5U,0.170	04222	SA105E104MAA
A6C55	283-0644-01			CAP,FXD,MICA DI:150PF,1%,500V	TK0891	ADVISE
A6C56	281-0775-01			CAP,FXD,CERAMIC:MCL;0.1UF,20%,50V,Z5U,0.170	04222	SA105E104MAA
A6C57	281-0775-01			CAP,FXD,CERAMIC:MCL;0.1UF,20%,50V,Z5U,0.170	04222	SA105E104MAA
A6C59	281-0775-01			CAP,FXD,CERAMIC:MCL;0.1UF,20%,50V,Z5U,0.170	04222	SA105E104MAA
A6C60	281-0920-00			CAP,FXD:CER,MLC,1000PF,5%,50V,0.170 X 0.1;NPO,AXIAL	04222	SA105A102JAA
A6C61	281-0864-00			CAP,FXD,CERAMIC:MLC;430PF,5%,100V,0.100 X 0.170	04222	SA101A431JAA
A6C62	283-0625-01			CAP,FXD,MICA DI:220PF,1%,500V	09023	CDA10FD221F03
A6C64	281-0302-00			CAP,VAR,PLSTC:1.2-4PF,100V	52769	GXL4R000
A6C65	281-0863-00			CAP,FXD,CERAMIC:MLC;240PF,5%,100V,0.100 X 0.170	04222	SA101A241JAA
A6C66	281-0775-01			CAP,FXD,CERAMIC:MCL;0.1UF,20%,50V,Z5U,0.170	04222	SA105E104MAA
A6C67	281-0775-01			CAP,FXD,CERAMIC:MCL;0.1UF,20%,50V,Z5U,0.170	04222	SA105E104MAA
A6C69	281-0302-00			CAP,VAR,PLSTC:1.2-4PF,100V	52769	GXL4R000
A6C70	281-0826-00			CAP,FXD,CERAMIC:MLC;2200PF,10%,100V,0.100 X	TK1743	CGB222KEX
A6C71	283-0239-02			CAP,FXD,CER DI:0.022UF,10%,50WVDC,X7R	04222	SR595C223KAAAP1
A6C72	281-0775-01			CAP,FXD,CERAMIC:MCL;0.1UF,20%,50V,Z5U,0.170	04222	SA105E104MAA
A6C73	283-0687-00			CAP,FXD,MICA DI:560PF,2%,300V	TK0891	RDM15FC561G03
A6C74	283-0687-00			CAP,FXD,MICA DI:560PF,2%,300V	TK0891	RDM15FC561G03
A6C75	281-0863-00			CAP,FXD,CERAMIC:MLC;240PF,5%,100V,0.100 X 0.170	04222	SA101A241JAA
A6C77	283-0680-00			CAP,FXD,MICA DI:330PF,1%,500V	TK0891	RDM15FD331F03
A6C80	281-0775-01			CAP,FXD,CERAMIC:MCL;0.1UF,20%,50V,Z5U,0.170	04222	SA105E104MAA
A6C81	283-0479-00			CAP,FXD,CER DI:0.47UF,+80-20%,25VDIP STYLE	04222	MD025E474ZAB
A6C83	281-0775-01			CAP,FXD,CERAMIC:MCL;0.1UF,20%,50V,Z5U,0.170	04222	SA105E104MAA
A6C84	281-0775-01			CAP,FXD,CERAMIC:MCL;0.1UF,20%,50V,Z5U,0.170	04222	SA105E104MAA
A6C85	281-0775-01			CAP,FXD,CERAMIC:MCL;0.1UF,20%,50V,Z5U,0.170	04222	SA105E104MAA
A6C86	281-0775-01			CAP,FXD,CERAMIC:MCL;0.1UF,20%,50V,Z5U,0.170	04222	SA105E104MAA
A6C87	281-0775-01			CAP,FXD,CERAMIC:MCL;0.1UF,20%,50V,Z5U,0.170	04222	SA105E104MAA
A6C88	281-0775-01			CAP,FXD,CERAMIC:MCL;0.1UF,20%,50V,Z5U,0.170	04222	SA105E104MAA
A6C89	281-0775-01			CAP,FXD,CERAMIC:MCL;0.1UF,20%,50V,Z5U,0.170	04222	SA105E104MAA
A6C91	281-0765-00			CAP,FXD,CER DI:100PF,5%,100V	04222	SA102A101JAA
A6D1	152-0269-01			DIODE,SIG:VVC;C4=33PF,5%,C4/C20=2	04713	SMV1263-1
A6J1	174-2747-00			CA ASSY,SP,ELEC:2 X 17,28 AWG,1.75 L,RIBBON	53387	174-2747-00

Replaceable electrical parts list (Cont.)

Component number	Tektronix part number	Effective	Discont'd	Name and description	Mfr. code	Mfr. part no.
A6L1	108-0317-01			INDUCTOR,FXD:CUSTOM,POWER;15UH,10%,IDC<460 MA,RDC<1.2 OHM,Q>55@2.5MHZ,SRF>30 MHZ	0JR03	108-0317-01
A6L2	108-1212-00			INDUCTOR,FXD:CUSTOM,SIGNAL;9UH,2%,IDC<300 MA,RDC<1.6 OHM,Q>60@4MHZ,SRF>50 MHZ	0JR03	108-1212-00
A6L3	108-0317-01			INDUCTOR,FXD:CUSTOM,POWER;15UH,10%,IDC<460 MA,RDC<1.2 OHM,Q>55@2.5MHZ,SRF>30 MHZ	0JR03	108-0317-01
A6L4	108-1212-00			INDUCTOR,FXD:CUSTOM,SIGNAL;9UH,2%,IDC<300 MA,RDC<1.6 OHM,Q>60@4MHZ,SRF>50 MHZ	0JR03	108-1212-00
A6L5	108-1212-00			INDUCTOR,FXD:CUSTOM,SIGNAL;9UH,2%,IDC<300 MA,RDC<1.6 OHM,Q>60@4MHZ,SRF>50 MHZ	0JR03	108-1212-00
A6L6	108-1212-00			INDUCTOR,FXD:CUSTOM,SIGNAL;9UH,2%,IDC<300 MA,RDC<1.6 OHM,Q>60@4MHZ,SRF>50 MHZ	0JR03	108-1212-00
A6Q1	151-0190-00			XTR,SIG:BIPOLAR,NPN;40V,200MA,300MHZ,AMPL	04713	2N3904
A6Q2	151-0190-00			XTR,SIG:BIPOLAR,NPN;40V,200MA,300MHZ,AMPL	04713	2N3904
A6Q3	151-0223-06			XTR,SIG:BIPOLAR,NPN;15V,500MA,SWITCHING	04713	MPS2369ARLRP
A6Q4	151-0195-02			XTR,SIG:BIPOLAR,NPN;25V,100MA,200MHZ,AMPL	04713	SPS8801RLRP
A6Q5	151-0190-00			XTR,SIG:BIPOLAR,NPN;40V,200MA,300MHZ,AMPL	04713	2N3904
A6Q6	151-0188-00			XTR,SIG:BIPOLAR,PNP;40V,200MA,250MHZ,AMPL	04713	2N3906
A6Q7	151-0188-00			XTR,SIG:BIPOLAR,PNP;40V,200MA,250MHZ,AMPL	04713	2N3906
A6Q8	151-0188-00			XTR,SIG:BIPOLAR,PNP;40V,200MA,250MHZ,AMPL	04713	2N3906
A6Q9	151-0223-06			XTR,SIG:BIPOLAR,NPN;15V,500MA,SWITCHING	04713	MPS2369ARLRP
A6Q10	151-0195-02			XTR,SIG:BIPOLAR,NPN;25V,100MA,200MHZ,AMPL	04713	SPS8801RLRP
A6Q11	151-0190-00			XTR,SIG:BIPOLAR,NPN;40V,200MA,300MHZ,AMPL	04713	2N3904
A6Q12	151-0190-00			XTR,SIG:BIPOLAR,NPN;40V,200MA,300MHZ,AMPL	04713	2N3904
A6Q13	151-0188-00			XTR,SIG:BIPOLAR,PNP;40V,200MA,250MHZ,AMPL	04713	2N3906
A6Q14	151-0216-04			XTR,SIG:BIPOLAR,PNP;25V,100MA,170MHZ,AMPL	04713	MPS6523RLRP
A6Q15	151-0216-04			XTR,SIG:BIPOLAR,PNP;25V,100MA,170MHZ,AMPL	04713	MPS6523RLRP
A6Q16	151-0216-04			XTR,SIG:BIPOLAR,PNP;25V,100MA,170MHZ,AMPL	04713	MPS6523RLRP
A6Q17	151-0216-04			XTR,SIG:BIPOLAR,PNP;25V,100MA,170MHZ,AMPL	04713	MPS6523RLRP
A6Q19	151-0216-04			XTR,SIG:BIPOLAR,PNP;25V,100MA,170MHZ,AMPL	04713	MPS6523RLRP
A6Q20	151-0216-04			XTR,SIG:BIPOLAR,PNP;25V,100MA,170MHZ,AMPL	04713	MPS6523RLRP
A6Q21	151-0711-02			XTR,SIG:BIPOLAR,NPN;25V,50MA,650MHZ,AMPL	04713	MPSH10RLRP
A6Q22	151-0711-02			XTR,SIG:BIPOLAR,NPN;25V,50MA,650MHZ,AMPL	04713	MPSH10RLRP
A6Q26	151-1039-00			XTR,SIG:JFET,P-CH;9V,16MA,2MS,GENERAL	04713	2N5462
A6Q27	151-0188-00			XTR,SIG:BIPOLAR,PNP;40V,200MA,250MHZ,AMPL	04713	2N3906
A6Q28	151-0190-00			XTR,SIG:BIPOLAR,NPN;40V,200MA,300MHZ,AMPL	04713	2N3904
A6Q29	151-0195-02			XTR,SIG:BIPOLAR,NPN;25V,100MA,200MHZ,AMPL	04713	SPS8801RLRP
A6R1	322-3258-00			RES,FXD:METAL FILM;4.75K OHM,1%,0.2W,TC=100	56845	CCF50-2-G4751FT
A6R2	322-3226-00			RES,FXD:METAL FILM;2.21K OHM,1%,0.2W,TC=100	91637	CCF501G22100F

Replaceable electrical parts list (Cont.)

Component number	Tektronix part number	Effective	Discont'd	Name and description	Mfr. code	Mfr. part no.
A6R4	322-3300-02			RES,FXD,FILM:13K OHM,0.5%,0.2W,TC=T2	91637	CCF501D13001D
A6R5	322-3258-00			RES,FXD:METAL FILM;4.75K OHM,1%,0.2W,TC=100	56845	CCF50-2-G4751FT
A6R6	322-3226-00			RES,FXD:METAL FILM;2.21K OHM,1%,0.2W,TC=100	91637	CCF501G22100F
A6R7	322-3289-00			RES,FXD:METAL FILM;10K OHM,1%,0.2W,TC=100 PPM	91637	CCF50G10001F
A6R8	322-3231-00			RES,FXD,FILM:2.49K OHM,1%,0.2W,TC=T0MI,SM BODY	91637	CCF50-1G24900F
A6R9	322-3177-02			RES,FXD,FILM:681 OHM,0.5%,0.2W,TC=T2	91637	CMF501D681ROD
A6R13	131-0566-00			BUS,CONDUCTOR:DUMMY RES,0.094 OD X 0.225L	24546	OMA0207
A6R14	131-0566-00			BUS,CONDUCTOR:DUMMY RES,0.094 OD X 0.225L	24546	OMA0207
A6R15	131-0566-00			BUS,CONDUCTOR:DUMMY RES,0.094 OD X 0.225L	24546	OMA0207
A6R16	322-3097-00			RES,FXD:METAL FILM;100 OHM,1%,0.2W,TC=100 PPM	91637	CCF501G100R0F
A6R17	322-3354-00			RES,FXD:METAL FILM;47.5K OHM,1%,0.2W,TC=100	91637	CCF501G47501F
A6R18	322-3318-00			RES,FXD:METAL FILM;20K OHM,1%,0.2W,TC=100 PPM	91637	CCF501G20001F
A6R19	322-3239-00			RES,FXD,FILM:3.01K OHM,1%,0.2W,TC=T0MI,SM BODY	91637	CCF501G30100F
A6R21	131-0566-00			BUS,CONDUCTOR:DUMMY RES,0.094 OD X 0.225L	24546	OMA0207
A6R22	322-3097-00			RES,FXD:METAL FILM;100 OHM,1%,0.2W,TC=100 PPM	91637	CCF501G100R0F
A6R23	322-3258-00			RES,FXD:METAL FILM;4.75K OHM,1%,0.2W,TC=100	56845	CCF50-2-G4751FT
A6R24	322-3226-00			RES,FXD:METAL FILM;2.21K OHM,1%,0.2W,TC=100	91637	CCF501G22100F
A6R25	322-3354-00			RES,FXD:METAL FILM;47.5K OHM,1%,0.2W,TC=100	91637	CCF501G47501F
A6R26	322-3231-00			RES,FXD,FILM:2.49K OHM,1%,0.2W,TC=T0MI,SM BODY	91637	CCF50-1G24900F
A6R27	322-3185-00			RES,FXD:METAL FILM;825 OHM,1%,0.2W,TC=100 PPM	91637	CCF501G825ROF
A6R28	322-3097-00			RES,FXD:METAL FILM;100 OHM,1%,0.2W,TC=100 PPM	91637	CCF501G100R0F
A6R29	322-3193-00			RES,FXD:METAL FILM;1K OHM,1%,0.2W,TC=100 PPM	91637	CCF501G10000F
A6R30	322-3258-00			RES,FXD:METAL FILM;4.75K OHM,1%,0.2W,TC=100	56845	CCF50-2-G4751FT
A6R31	322-3162-00			RES,FXD:METAL FILM;475 OHM,1%,0.2W,TC=100 PPM	91637	CCF50G475R0F
A6R32	322-3193-00			RES,FXD:METAL FILM;1K OHM,1%,0.2W,TC=100 PPM	91637	CCF501G10000F
A6R33	322-3289-00			RES,FXD:METAL FILM;10K OHM,1%,0.2W,TC=100 PPM	91637	CCF50G10001F
A6R34	322-3306-00			RES,FXD:METAL FILM;15K OHM,1%,0.2W,TC=100 PPM	91637	CCF50-2-G1502F
A6R35	322-3239-00			RES,FXD,FILM:3.01K OHM,1%,0.2W,TC=T0MI,SM BODY	91637	CCF501G30100F
A6R36	322-3160-00			RES,FXD,FILM:453 OHM,1%,0.2W,TC=T0MI,SMALL BODY	91637	CCF50G453R0F
A6R37	322-3226-00			RES,FXD:METAL FILM;2.21K OHM,1%,0.2W,TC=100	91637	CCF501G22100F
A6R38	322-3289-00			RES,FXD:METAL FILM;10K OHM,1%,0.2W,TC=100 PPM	91637	CCF50G10001F
A6R39	322-3258-00			RES,FXD:METAL FILM;4.75K OHM,1%,0.2W,TC=100	56845	CCF50-2-G4751FT
A6R40	322-3385-00			RES,FXD:METAL FILM;100K OHM,1%,0.2W,TC=100 PPM	91637	CCF501G10002F
A6R42	322-3162-00			RES,FXD:METAL FILM;475 OHM,1%,0.2W,TC=100 PPM	91637	CCF50G475R0F
A6R43	322-3255-00			RES,FXD,FILM:4.42K OHM,1%,0.2W,TC=T0MI,SM BODY	91637	CCF501G44200F
A6R44	322-3297-00			RES,FXD:METAL FILM;12.1K OHM,1%,0.2W,TC=100	91637	CCF501G12101F

Replaceable electrical parts list (Cont.)

Component number	Tektronix part number	Effective	Discont'd	Name and description	Mfr. code	Mfr. part no.
A6R45	322-3354-00			RES,FXD:METAL FILM;47.5K OHM,1%,0.2W,TC=100	91637	CCF501G47501F
A6R46	322-3193-07			RES,FXD,FILM:1K OHM,0.1%,0.2W,TC=T9	91637	CCF501C10000B
A6R48	322-3385-00			RES,FXD:METAL FILM;100K OHM,1%,0.2W,TC=100 PPM	91637	CCF501G10002F
A6R50	322-3354-00			RES,FXD:METAL FILM;47.5K OHM,1%,0.2W,TC=100	91637	CCF501G47501F
A6R51	322-3193-07			RES,FXD,FILM:1K OHM,0.1%,0.2W,TC=T9	91637	CCF501C10000B
A6R54	322-3254-00			RES,FXD,FILM:4.32K OHM,1%,0.2W,TC=T0MI,SM BODY	91637	CCF502G4321FT
A6R55	322-3132-00			RES,FXD,FILM:232 OHM,1%,0.2W,TC=T0MI,SMALL BODY	91637	CCF50-2-G232ROF
A6R57	322-3275-00			RES,FXD,FILM:7.15K OHM,1%,0.2W,TC=T0MI,SM BODY	91637	CCF501G71500F
A6R58	322-3132-00			RES,FXD,FILM:232 OHM,1%,0.2W,TC=T0MI,SMALL BODY	91637	CCF50-2-G232ROF
A6R59	322-3266-00			RES,FXD,FILM:5.76K OHM,1%,0.2W,TC=T0MI,SM BODY	91637	CCF501G57600F
A6R60	322-3001-00			RES,FXD:METAL FILM;10 OHM,1%,0.2W,TC=100 PPM	91637	CCF501G10R00F
A6R61	322-3266-00			RES,FXD,FILM:5.76K OHM,1%,0.2W,TC=T0MI,SM BODY	91637	CCF501G57600F
A6R62	322-3233-00			RES,FXD,FILM:2.61K OHM,1%,0.2W,TC=T0MI,SM BODY	91637	CCF50-2-G2611FT
A6R63	322-3184-00			RES,FXD,FILM:806 OHM,1%,0.2W,TC=T0,SMALL BODY	91637	CCF501G806FOR
A6R64	322-3184-00			RES,FXD,FILM:806 OHM,1%,0.2W,TC=T0,SMALL BODY	91637	CCF501G806FOR
A6R65	322-3276-00			RES,FXD,FILM:7.32K OHM,1%,0.2W,TC=T0	91637	CCF50G73200F
A6R66	322-3325-00			RES,FXD,FILM:23.7K OHM,1%,0.2W,TC=T0	91637	CCF501G23701F
A6R67	322-3357-00			RES,FXD,FILM:51.1K OHM,1%,0.2W,TC=T0	91637	CCF501G51101F
A6R68	322-3169-00			RES,FXD:METAL FILM;562 OHM,1%,0.2W,TC=100 PPM	91637	CCF50-2F562R0F
A6R69	322-3169-00			RES,FXD:METAL FILM;562 OHM,1%,0.2W,TC=100 PPM	91637	CCF50-2F562R0F
A6R70	322-3239-00			RES,FXD,FILM:3.01K OHM,1%,0.2W,TC=T0MI,SM BODY	91637	CCF501G30100F
A6R71	322-3097-00			RES,FXD:METAL FILM;100 OHM,1%,0.2W,TC=100 PPM	91637	CCF501G100R0F
A6R72	322-3097-00			RES,FXD:METAL FILM;100 OHM,1%,0.2W,TC=100 PPM	91637	CCF501G100R0F
A6R73	322-3431-00			RES,FXD,FILM:301K OHM,1%,0.2W,TC=T0,SMALL BODY	91637	CCF501G30102F
A6R74	322-3126-00			RES,FXD,FILM:200 OHM,1%,0.2W,TC=T0MI,SMALL BODY	91637	CCF501G200ROF
A6R76	322-3169-00			RES,FXD:METAL FILM;562 OHM,1%,0.2W,TC=100 PPM	91637	CCF50-2F562R0F
A6R78	322-3126-00			RES,FXD,FILM:200 OHM,1%,0.2W,TC=T0MI,SMALL BODY	91637	CCF501G200ROF
A6R79	322-3204-00			RES,FXD,FILM:1.3K OHM,1%,0.2W,TC=T0MI,SMALL	91637	CCF501G13000F
A6R80	322-3289-00			RES,FXD:METAL FILM;10K OHM,1%,0.2W,TC=100 PPM	91637	CCF50G10001F
A6R81	322-3155-00			RES,FXD,FILM:402 OHM,1%,0.2W,TC=T0MI,SMALL BODY	91637	CCF501G402ROF
A6R82	322-3289-00			RES,FXD:METAL FILM;10K OHM,1%,0.2W,TC=100 PPM	91637	CCF50G10001F
A6R83	322-3265-00			RES,FXD:METAL FILM;5.62K OHM,1%,0.2W,TC=100	91637	CCF501G56200F
A6R84	322-3265-00			RES,FXD:METAL FILM;5.62K OHM,1%,0.2W,TC=100	91637	CCF501G56200F
A6R85	322-3265-00			RES,FXD:METAL FILM;5.62K OHM,1%,0.2W,TC=100	91637	CCF501G56200F
A6R87	322-3193-00			RES,FXD:METAL FILM;1K OHM,1%,0.2W,TC=100 PPM	91637	CCF501G10000F
A6R88	322-3356-00			RES,FXD,FILM:49.9K OHM,1%,0.2W,TC=T0MI,SM BODY	91637	CCF501G49901F

Replaceable electrical parts list (Cont.)

Component number	Tektronix part number	Effective	Discont'd	Name and description	Mfr. code	Mfr. part no.
A6R89	322-3162-00			RES,FXD:METAL FILM;475 OHM,1%,0.2W,TC=100 PPM	91637	CCF50G475R0F
A6R90	322-3393-00			RES,FXD:METAL FILM;121K OHM,1%,0.2W,TC=100 PPM	91637	CCF501G12102F
A6R91	322-3097-00			RES,FXD:METAL FILM;100 OHM,1%,0.2W,TC=100 PPM	91637	CCF501G100R0F
A6R92	322-3393-00			RES,FXD:METAL FILM;121K OHM,1%,0.2W,TC=100 PPM	91637	CCF501G12102F
A6R93	322-3097-00			RES,FXD:METAL FILM;100 OHM,1%,0.2W,TC=100 PPM	91637	CCF501G100R0F
A6R94	322-3265-00			RES,FXD:METAL FILM;5.62K OHM,1%,0.2W,TC=100	91637	CCF501G56200F
A6R95	322-3001-00			RES,FXD:METAL FILM;10 OHM,1%,0.2W,TC=100 PPM	91637	CCF501G10R00F
A6R96	322-3393-00			RES,FXD:METAL FILM;121K OHM,1%,0.2W,TC=100 PPM	91637	CCF501G12102F
A6R100	322-3487-00			RES,FXD,FILM:500 OHM,1%,0.2W,TC=TO	91637	CCF501G500R0F
A6R101	322-3487-00			RES,FXD,FILM:500 OHM,1%,0.2W,TC=TO	91637	CCF501G500R0F
A6R102	322-3193-00			RES,FXD:METAL FILM;1K OHM,1%,0.2W,TC=100 PPM	91637	CCF501G10000F
A6R103	322-3001-00			RES,FXD:METAL FILM;10 OHM,1%,0.2W,TC=100 PPM	91637	CCF501G10R00F
A6R104	322-3204-00			RES,FXD,FILM:1.3K OHM,1%,0.2W,TC=T0MI,SMALL	91637	CCF501G13000F
A6R105	322-3132-00			RES,FXD,FILM:232 OHM,1%,0.2W,TC=T0MI,SMALL BODY	91637	CCF50-2-G232ROF
A6R106	322-3258-00			RES,FXD:METAL FILM;4.75K OHM,1%,0.2W,TC=100	56845	CCF50-2-G4751FT
A6R107	322-3239-00			RES,FXD,FILM:3.01K OHM,1%,0.2W,TC=T0MI,SM BODY	91637	CCF501G30100F
A6R108	322-3239-00			RES,FXD,FILM:3.01K OHM,1%,0.2W,TC=T0MI,SM BODY	91637	CCF501G30100F
A6R109	322-3258-00			RES,FXD:METAL FILM;4.75K OHM,1%,0.2W,TC=100	56845	CCF50-2-G4751FT
A6R110	322-3193-00			RES,FXD:METAL FILM;1K OHM,1%,0.2W,TC=100 PPM	91637	CCF501G10000F
A6R111	322-3193-00			RES,FXD:METAL FILM;1K OHM,1%,0.2W,TC=100 PPM	91637	CCF501G10000F
A6R112	322-3132-00			RES,FXD,FILM:232 OHM,1%,0.2W,TC=T0MI,SMALL BODY	91637	CCF50-2-G232ROF
A6R113	322-3132-00			RES,FXD,FILM:232 OHM,1%,0.2W,TC=T0MI,SMALL BODY	91637	CCF50-2-G232ROF
A6R114	322-3318-00			RES,FXD:METAL FILM;20K OHM,1%,0.2W,TC=100 PPM	91637	CCF501G20001F
A6R115	322-3155-00			RES,FXD,FILM:402 OHM,1%,0.2W,TC=T0MI,SMALL BODY	91637	CCF501G402ROF
A6R116	322-3231-00			RES,FXD,FILM:2.49K OHM,1%,0.2W,TC=T0MI,SM BODY	91637	CCF50-1G24900F
A6R117	322-3158-00			RES,FXD,FILM:432 OHM,1%,0.2W,TC=T0MI,SMALL BODY	57668	CRB2D FXE 432
A6R121	322-3385-00			RES,FXD:METAL FILM;100K OHM,1%,0.2W,TC=100 PPM	91637	CCF501G10002F
A6R122	322-3435-00			RES,FXD:METAL FILM;332K OHM,1%,0.2W,TC=100 PPM	91637	CCF50-2-33202FT
A6R123	322-3173-00			RES,FXD,FILM:619 OHM,1%,0.2W,TC=T0MI,SMALL BODY	91637	CCF50-2F619R0F
A6R124	322-3158-00			RES,FXD,FILM:432 OHM,1%,0.2W,TC=T0MI,SMALL BODY	57668	CRB2D FXE 432
A6R125	322-3173-00			RES,FXD,FILM:619 OHM,1%,0.2W,TC=T0MI,SMALL BODY	91637	CCF50-2F619R0F
A6R128	322-3243-00			RES,FXD:METAL FILM;3.32K OHM,1%,0.2W,TC=100	91637	CCF50-1-G33200F
A6R129	322-3193-00			RES,FXD:METAL FILM;1K OHM,1%,0.2W,TC=100 PPM	91637	CCF501G10000F
A6R130	322-3281-00			RES,FXD:METAL FILM;8.25K OHM,1%,0.2W,TC=100	91637	CCF501G82500F
A6R131	322-3126-00			RES,FXD,FILM:200 OHM,1%,0.2W,TC=T0MI,SMALL BODY	91637	CCF501G200ROF
A6R132	322-3126-00			RES,FXD,FILM:200 OHM,1%,0.2W,TC=T0MI,SMALL BODY	91637	CCF501G200ROF

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Component number	Tektronix part number	Effective	Discont'd	Name and description	Mfr. code	Mfr. part no.
A6R133	322-3184-00			RES,FXD,FILM:806 OHM,1%,0.2W,TC=T0,SMALL BODY	91637	CCF501G806FOR
A6R134	322-3230-00			RES,FXD,FILM:2.43K OHM,1%,0.2W,TC=T0MI,SM BODY	91637	CCF50-2-G2431FT
A6R135	322-3184-00			RES,FXD,FILM:806 OHM,1%,0.2W,TC=T0,SMALL BODY	91637	CCF501G806FOR
A6R136	322-3385-00			RES,FXD:METAL FILM;100K OHM,1%,0.2W,TC=100 PPM	91637	CCF501G10002F
A6R137	322-3385-00			RES,FXD:METAL FILM;100K OHM,1%,0.2W,TC=100 PPM	91637	CCF501G10002F
A6R139	322-3193-00			RES,FXD:METAL FILM;1K OHM,1%,0.2W,TC=100 PPM	91637	CCF501G10000F
A6R140	322-3193-00			RES,FXD:METAL FILM;1K OHM,1%,0.2W,TC=100 PPM	91637	CCF501G10000F
A6R141	322-3373-00			RES,FXD,FILM:75K OHM,1%,0.2W,TC=T0MI,SMALL BODY	91637	CCF501G75001F
A6R143	322-3201-00			RES,FXD:METAL FILM;1.21K OHM,1%,0.2W,TC=100	91637	CCF501G12100F
A6R144	322-3193-00			RES,FXD:METAL FILM;1K OHM,1%,0.2W,TC=100 PPM	91637	CCF501G10000F
A6R145	322-3339-00			RES,FXD:METAL FILM;33.2K OHM,1%,0.2W,TC=100	91637	CCF50-2-G3322FT
A6R146	322-3201-00			RES,FXD:METAL FILM;1.21K OHM,1%,0.2W,TC=100	91637	CCF501G12100F
A6R150	322-3085-00			RES,FXD:METAL FILM;75 OHM,1%,0.2W,TC=100 PPM	91637	CCF501G75R00F
A6R153	322-3162-00			RES,FXD:METAL FILM;475 OHM,1%,0.2W,TC=100 PPM	91637	CCF50G475R0F
A6R154	322-3385-00			RES,FXD:METAL FILM;100K OHM,1%,0.2W,TC=100 PPM	91637	CCF501G10002F
A6R155	322-3222-00			RES,FXD:METAL FILM;2K OHM,1%,0.2W,TC=100 PPM	91637	CCF501G20000F
A6R156	322-3385-00			RES,FXD:METAL FILM;100K OHM,1%,0.2W,TC=100 PPM	91637	CCF501G10002F
A6R157	322-3318-00			RES,FXD:METAL FILM;20K OHM,1%,0.2W,TC=100 PPM	91637	CCF501G20001F
A6R163	322-3481-00			RES,FXD,FILM:1M OHM.1%,0.2W,TC=T0MI,SMALL BODY	91637	CCF501G10003F
A6R164	322-3465-00			RES,FXD,FILM:681K OHM,1%,0.2W,TC=T0MI,SMALL	91637	CCF50-2-G6813F
A6R165	322-3465-00			RES,FXD,FILM:681K OHM,1%,0.2W,TC=T0MI,SMALL	91637	CCF50-2-G6813F
A6R167	322-3169-00			RES,FXD:METAL FILM;562 OHM,1%,0.2W,TC=100 PPM	91637	CCF50-2F562R0F
A6R168	322-3193-00			RES,FXD:METAL FILM;1K OHM,1%,0.2W,TC=100 PPM	91637	CCF501G10000F
A6R169	322-3132-00			RES,FXD,FILM:232 OHM,1%,0.2W,TC=T0MI,SMALL BODY	91637	CCF50-2-G232R0F
A6R170	322-3233-00			RES,FXD,FILM:2.61K OHM,1%,0.2W,TC=T0MI,SM BODY	91637	CCF50-2-G2611FT
A6R171	322-3354-00			RES,FXD:METAL FILM;47.5K OHM,1%,0.2W,TC=100	91637	CCF501G47501F
A6R172	322-3318-00			RES,FXD:METAL FILM;20K OHM,1%,0.2W,TC=100 PPM	91637	CCF501G20001F
A6R173	311-2238-00			RES,VAR:CERMET;50K OHM,20%,0.5W,0.197SQ,SIDE ADJ	TK2073	GF06UT2 503 M L
A6R174	322-3226-00			RES,FXD:METAL FILM;2.21K OHM,1%,0.2W,TC=100	91637	CCF501G22100F
A6R175	322-3283-00			RES,FXD,FILM:8.66K OHM,1%,0.2W,TC=T0MI,SM BODY	57668	CRR20 FXE 8K66
A6R176	322-3176-00			RES,FXD,FILM:665 OHM,1%,0.2W,TC=T0MI,SMALL BODY	91637	CCF50-2-G6650FT
A6R177	322-3385-00			RES,FXD:METAL FILM;100K OHM,1%,0.2W,TC=100 PPM	91637	CCF501G10002F
A6R178	322-3385-00			RES,FXD:METAL FILM;100K OHM,1%,0.2W,TC=100 PPM	91637	CCF501G10002F
A6R179	322-3239-00			RES,FXD,FILM:3.01K OHM,1%,0.2W,TC=T0MI,SM BODY	91637	CCF501G30100F
A6R180	322-3260-00			RES,FXD,FILM:4.99K OHM,1%,0.2W,TC=T0	91637	CCF501G49900F
A6R181	322-3318-00			RES,FXD:METAL FILM;20K OHM,1%,0.2W,TC=100 PPM	91637	CCF501G20001F

Replaceable electrical parts list (Cont.)

Component number	Tektronix part number	Effective	Discont'd	Name and description	Mfr. code	Mfr. part no.
A6R182	322-3126-00			RES,FXD,FILM:200 OHM,1%,0.2W,TC=T0MI,SMALL BODY	91637	CCF501G200ROF
A6R183	322-3201-00			RES,FXD:METAL FILM;1.21K OHM,1%,0.2W,TC=100	91637	CCF501G12100F
A6R184	322-3212-00			RES,FXD,FILM:1.58K OHM,1%,0.2W,TC=T0MI,SM BODY	91637	CCF501G15800F
A6R185	322-3369-00			RES,FXD:METAL FILM;68.1K OHM,1%,0.2W,TC=100	57668	CRB20 FXE 68R1
A6R186	322-3273-00			RES,FXD:METAL FILM;6.81K OHM,1%,0.2W,TC=100	91637	CCF50-2-G68100F
A6R187	322-3289-00			RES,FXD:METAL FILM;10K OHM,1%,0.2W,TC=100 PPM	91637	CCF50G10001F
A6U1	156-0433-00			IC,LIN:EAR:SAMPLE & HOLD	27014	LF398N
A6U4	156-0433-00			IC,LIN:EAR:SAMPLE & HOLD	27014	LF398N
A6U5	156-0433-00			IC,LIN:EAR:SAMPLE & HOLD	27014	LF398N
A6U6	156-1191-00			IC,LIN:EAR:BIFET,OP-AMP;DUAL	01295	TL072ACP
A6U7	156-0433-00			IC,LIN:EAR:SAMPLE & HOLD	27014	LF398N
A6U8	156-1335-00			IC,DGTL:LSTTL,MULTIVIBRATOR;DUAL RETRIG MONOSTABL	27014	DM96LS02N
A6U9	160-8968-00			IC,DIGITAL:CMOS,PLD;EEPLD,20RA10,30NS,100MA *MOUNTING PARTS*	80009	160-8968-00
	136-1005-00			SOCKET,PLCC:PCB;28 POS,0.05 CTR,0.360H X 0.125 TAIL,TIN,0.055-0.075 IC SHOULDER *END MOUNTING PARTS*	00779	3-821581-1
A6U10	156-1191-00			IC,LIN:EAR:BIFET,OP-AMP;DUAL	01295	TL072ACP
A6U11	156-0860-02			IC,DIGITAL:ECL,RECEIVER	04713	MC10116P
A6U12	156-1335-00			IC,DGTL:LSTTL,MULTIVIBRATOR;DUAL RETRIG MONOSTABL	27014	DM96LS02N
A6U13	156-0048-00			IC,LIN:EAR:BIPOLAR,XTR ARRAY;(5),NPN,(1)DIFF PAIR, (3)IND,15V,50MA,300MHZ,AMPLIFIER	34371	CA3046
A6U14	156-1191-00			IC,LIN:EAR:BIFET,OP-AMP;DUAL	01295	TL072ACP
A6U15	156-1225-00			IC,LIN:BIPOLAR,CMPRTR;DUAL,OPEN COLLECTOR,300NS	01295	LM393P
A6U17	156-2460-00			IC,MISC:BIPOLAR,MOD/DEMOD;BALANCED	04713	MC1496P
A6U18	156-0295-02			IC,DIGITAL:ECL,GATE	04713	MC10107P
A6U22	156-1225-00			IC,LIN:BIPOLAR,CMPRTOR;DUAL,OPEN COLLECTOR,300N	01295	LM393P
A6U23	156-0048-00			IC,LIN:EAR:BIPOLAR,XTR ARRAY;(5),NPN,(1)DIFF PAIR, (3)IND,15V,50MA,300MHZ,AMPLIFIER	34371	CA3046
A6U24	156-2761-01			IC,DIGITAL:HCMOS,MULTIVIBRATOR	0JR04	TC74HC221AP
A6U25	156-3226-00			IC,LIN:EAR:BIPOLAR,OP-AMP;35 MHZ,UNITY GAINSTABLE	27014	LM6361N
A6U27	156-1225-00			IC,LIN:BIPOLAR,CMPRTR;DUAL,OPEN COLLECTOR,300NS	01295	LM393P
A6U28	156-1225-00			IC,LIN:BIPOLAR,CMPRTR;DUAL,OPEN COLLECTOR,300NS	01295	LM393P
A6U29	156-4135-00			IC,LIN:EAR:BIPOLAR,COMPARATOR;TTL OUT,9NS,LATCH	1ES66	MAX9686BCPA
A6U30	156-4135-00			IC,LIN:EAR:BIPOLAR,COMPARATOR;TTL OUT,9NS,LATCH	1ES66	MAX9686BCPA
A6U31	156-4135-00			IC,LIN:EAR:BIPOLAR,COMPARATOR;TTL OUT,9NS,LATCH	1ES66	MAX9686BCPA
A6U32	156-1150-01			IC,LIN:EAR:BIPOLAR,VR;NEGATIVE,-5.0V,100MA,4%	27014	LM79L05ACZ/T4
A6U33	156-0991-02			IC,LIN:EAR:BIPOLAR,VR;POSITIVE,5.0V,100MA,5%	01295	UA78L05ACLPM

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Component number	Tektronix part number	Effective	Discont'd	Name and description	Mfr. code	Mfr. part no.
A6U34	156-0991-02			IC,LINEAR:BIPOLAR,VR;POSITIVE,5.0V,100MA,5%	01295	UA78L05ACLPM
A6U35	156-1191-00			IC,LINEAR:BIFET,OP-AMP;DUAL	01295	TL072ACP
A6Y1	158-0308-00			XTAL UNIT,QTZ:14.31818MHZ,0.003%,PARALLEL,CL=30PF,PKG HC-49/U	TK0978	53590
A6Y2	158-0270-00			XTAL UNIT,QTZ:17.734MHZ,0.001%	33096	CCAT101823
A6Y3	158-0396-00			XTAL,UNIT QTZ:3.587412MHZ,+/-0.005%,SERIES,CL 16PF,4 PIN MINI DIP PKG	14301	016-210-00071
A6Y4	158-0395-00			XTAL,UNIT QTZ:4.4375MHZ,+/-0.005%,SERIES,CL 16PF,4 PIN MINI DIP PKG	14301	016-210-00072
A6CR1	152-0141-02			DIODE,SIG:ULTRA FAST;40V,150MA,4NS,2PF	27014	FDH9427
A6CR2	152-0141-02			DIODE,SIG:ULTRA FAST;40V,150MA,4NS,2PF	27014	FDH9427
A6CR3	152-1187-00			DIODE,SIG:VVC;30V,11PF AT 3V,2.1PF AT 25V,C3/C25=5.2,Q=300,IR=50NA	80009	152-1187-00
A6CR4	152-1187-00			DIODE,SIG:VVC;30V,11PF AT 3V,2.1PF AT 25V,C3/C25=5.2,Q=300,IR=50NA	80009	152-1187-00
A6CR5	152-0141-02			DIODE,SIG:ULTRA FAST;40V,150MA,4NS,2PF	27014	FDH9427
A6CR6	152-0141-02			DIODE,SIG:ULTRA FAST;40V,150MA,4NS,2PF	27014	FDH9427
A6CR7	152-0141-02			DIODE,SIG:ULTRA FAST;40V,150MA,4NS,2PF	27014	FDH9427
A6CR8	152-0141-02			DIODE,SIG:ULTRA FAST;40V,150MA,4NS,2PF	27014	FDH9427
A6CR9	152-0141-02			DIODE,SIG:ULTRA FAST;40V,150MA,4NS,2PF	27014	FDH9427
A6TP1	214-4085-00			TERM,TEST POINT:0.070 ID,0.220 H,0.063 DIAP	26364	104-01-02
A6TP2	214-4085-00			TERM,TEST POINT:0.070 ID,0.220 H,0.063 DIAP	26364	104-01-02
A6TP3	214-4085-00			TERM,TEST POINT:0.070 ID,0.220 H,0.063 DIAP	26364	104-01-02
A6TP4	214-4085-00			TERM,TEST POINT:0.070 ID,0.220 H,0.063 DIAP	26364	104-01-02
A7	671-2471-04			CIRCUIT BD ASSY:COMPONENT	80009	671-2471-04
A7C1	281-0775-01			CAP,FXD,CERAMIC:MCL;0.1UF,20%,50V,Z5U,0.170	04222	SA105E104MAA
A7C2	281-0775-01			CAP,FXD,CERAMIC:MCL;0.1UF,20%,50V,Z5U,0.170	04222	SA105E104MAA
A7C3	281-0775-01			CAP,FXD,CERAMIC:MCL;0.1UF,20%,50V,Z5U,0.170	04222	SA105E104MAA
A7C5	281-0775-01			CAP,FXD,CERAMIC:MCL;0.1UF,20%,50V,Z5U,0.170	04222	SA105E104MAA
A7C8	281-0928-00			CAP,FXD,CER DI:150PF,5%	04222	SA101A151JAA
A7C9	281-0775-01			CAP,FXD,CERAMIC:MCL;0.1UF,20%,50V,Z5U,0.170	04222	SA105E104MAA
A7C18	281-0928-00			CAP,FXD,CER DI:150PF,5%	04222	SA101A151JAA
A7C19	281-0775-01			CAP,FXD,CERAMIC:MCL;0.1UF,20%,50V,Z5U,0.170	04222	SA105E104MAA
A7C25	281-0775-01			CAP,FXD,CERAMIC:MCL;0.1UF,20%,50V,Z5U,0.170	04222	SA105E104MAA
A7C28	281-0928-00			CAP,FXD,CER DI:150PF,5%	04222	SA101A151JAA
A7C36	281-0765-00			CAP,FXD,CER DI:100PF,5%,100V	04222	SA102A101JAA
A7C41	281-0775-01			CAP,FXD,CERAMIC:MCL;0.1UF,20%,50V,Z5U,0.170	04222	SA105E104MAA
A7C42	281-0775-01			CAP,FXD,CERAMIC:MCL;0.1UF,20%,50V,Z5U,0.170	04222	SA105E104MAA

Replaceable electrical parts list (Cont.)

Component number	Tektronix part number	Effective	Discont'd	Name and description	Mfr. code	Mfr. part no.
A7C46	281-0819-00			CAP,FXD,CERAMIC:MLC;33 PF,5%,50V,0.100 X 0.170	04222	SA102A330JAA
A7C47	281-0898-00			CAP,FXD,CER DI:7.5PF,+/-0.5PF,500VTUBULAR,MI	04222	MA107A7R5DAA
A7C48	281-0898-00			CAP,FXD,CER DI:7.5PF,+/-0.5PF,500VTUBULAR,MI	04222	MA107A7R5DAA
A7C51	281-0775-01			CAP,FXD,CERAMIC:MCL;0.1UF,20%,50V,Z5U,0.170	04222	SA105E104MAA
A7C52	281-0775-01			CAP,FXD,CERAMIC:MCL;0.1UF,20%,50V,Z5U,0.170	04222	SA105E104MAA
A7C53	281-0904-00			CAP,FXD,CERAMIC:MLC;12PF,10%,100V,0.100 X 0.170	04222	SA102A120JAA
A7C57	281-0960-00			CAP,FXD,CERAMIC:MLC;10PF,+/- .25PF,200V,NPO,.170X.100	04222	SA102A100CAA
A7C61	281-0775-01			CAP,FXD,CERAMIC:MCL;0.1UF,20%,50V,Z5U,0.170	04222	SA105E104MAA
A7C62	281-0775-01			CAP,FXD,CERAMIC:MCL;0.1UF,20%,50V,Z5U,0.170	04222	SA105E104MAA
A7C63	281-0761-00			CAP,FXD,CERAMIC:MLC;27PF,5%,100V,0.100 X 0.170	04222	SA102A270JAA
A7C66	281-0904-00			CAP,FXD,CERAMIC:MLC;12PF,10%,100V,0.100 X 0.170	04222	SA102A120JAA
A7C73	281-0775-01			CAP,FXD,CERAMIC:MCL;0.1UF,20%,50V,Z5U,0.170	04222	SA105E104MAA
A7C74	281-0140-00			CAP,VAR,CER DI:5-25PF,100V	59660	518-038A-5-25
A7C75	281-0775-01			CAP,FXD,CERAMIC:MCL;0.1UF,20%,50V,Z5U,0.170	04222	SA105E104MAA
A7C80	281-0775-01			CAP,FXD,CERAMIC:MCL;0.1UF,20%,50V,Z5U,0.170	04222	SA105E104MAA
A7C90	281-0775-01			CAP,FXD,CERAMIC:MCL;0.1UF,20%,50V,Z5U,0.170	04222	SA105E104MAA
A7C91	281-0775-01			CAP,FXD,CERAMIC:MCL;0.1UF,20%,50V,Z5U,0.170	04222	SA105E104MAA
A7C92	281-0775-01			CAP,FXD,CERAMIC:MCL;0.1UF,20%,50V,Z5U,0.170	04222	SA105E104MAA
A7C100	281-0775-01			CAP,FXD,CERAMIC:MCL;0.1UF,20%,50V,Z5U,0.170	04222	SA105E104MAA
A7C111	281-0139-00			CAP,VAR,CER DI:2.5-9PF,100V	59660	518-031 A 2.5-9
A7C118	281-0773-00			CAP,FXD,CERAMIC:MLC;0.01UF,10%,100V	TK1743	CGB103KEX
A7C119	281-0773-00			CAP,FXD,CERAMIC:MLC;0.01UF,10%,100V	TK1743	CGB103KEX
A7C120	281-0775-01			CAP,FXD,CERAMIC:MCL;0.1UF,20%,50V,Z5U,0.170	04222	SA105E104MAA
A7C121	281-0775-01			CAP,FXD,CERAMIC:MCL;0.1UF,20%,50V,Z5U,0.170	04222	SA105E104MAA
A7C130	283-0633-01			CAP,FXD,MICA DI:77PF,1%,500V,RDL	09023	CDA15ED770F03
A7C131	283-0647-01			CAP,FXD,MICA DI:70PF,1%,500V	09023	CDA15ED700F03
A7C133	283-0649-01			CAP,FXD,MICA DI:105PF,1%,500V	09023	CDA15FD(105)F03
A7C134	283-0779-00			CAP,FXD,MICA DI:27 PF,2%,500V	TK0891	RDM15ED270G03
A7C135	281-0140-00			CAP,VAR,CER DI:5-25PF,100V	59660	518-038A-5-25
A7C136	281-0140-00			CAP,VAR,CER DI:5-25PF,100V	59660	518-038A-5-25
A7C141	281-0563-00			CAP,FXD,CERAMIC:MLC;0.47UF,20%,50V,0.150 X0.290	04222	SA305E474MAA
A7C151	283-0633-01			CAP,FXD,MICA DI:77PF,1%,500V,RDL	09023	CDA15ED770F03
A7C152	283-0647-01			CAP,FXD,MICA DI:70PF,1%,500V	09023	CDA15ED700F03
A7C155	283-0649-01			CAP,FXD,MICA DI:105PF,1%,500V	09023	CDA15FD(105)F03
A7C156	283-0636-01			CAP,FXD,MICA DI:36PF,1%,500V	09023	CDA15ED360G03
A7C162	281-0775-01			CAP,FXD,CERAMIC:MCL;0.1UF,20%,50V,Z5U,0.170	04222	SA105E104MAA

Replaceable electrical parts list (Cont.)

Component number	Tektronix part number	Effective	Discont'd	Name and description	Mfr. code	Mfr. part no.
A7C163	281-0775-01			CAP,FXD,CERAMIC:MCL;0.1UF,20%,50V,Z5U,0.170	04222	SA105E104MAA
A7C164	281-0773-00			CAP,FXD,CERAMIC:MLC;0.01UF,10%,100V	TK1743	CGB103KEX
A7C165	281-0773-00			CAP,FXD,CERAMIC:MLC;0.01UF,10%,100V	TK1743	CGB103KEX
A7C170	281-0767-00			CAP,FXD,CERAMIC:MLC;330PF,20%,100V,0.100 X0.170	04222	SA102C331MAA
A7C172	281-0775-01			CAP,FXD,CERAMIC:MCL;0.1UF,20%,50V,Z5U,0.170	04222	SA105E104MAA
A7C174	281-0767-00			CAP,FXD,CERAMIC:MLC;330PF,20%,100V,0.100 X0.170	04222	SA102C331MAA
A7C176	281-0765-00			CAP,FXD,CER DI:100PF,5%,100V	04222	SA102A101JAA
A7C180	281-0775-01			CAP,FXD,CERAMIC:MCL;0.1UF,20%,50V,Z5U,0.170	04222	SA105E104MAA
A7C181	290-1311-00			CAP,FXD,ALUM:10UF,20%,50V,ESR=1.4 OHM (100KHZ,20C),5X11MM,105C,5000HRS	55680	UPL1H100MDH1TD
A7C190	281-0775-01			CAP,FXD,CERAMIC:MCL;0.1UF,20%,50V,Z5U,0.170	04222	SA105E104MAA
A7C191	290-1311-00			CAP,FXD,ALUM:10UF,20%,50V,ESR=1.4 OHM (100KHZ,20C),5X11MM,105C,5000HRS	55680	UPL1H100MDH1TD
A7C202	281-0775-01			CAP,FXD,CERAMIC:MCL;0.1UF,20%,50V,Z5U,0.170	04222	SA105E104MAA
A7C205	281-0775-01			CAP,FXD,CERAMIC:MCL;0.1UF,20%,50V,Z5U,0.170	04222	SA105E104MAA
A7C206	281-0775-01			CAP,FXD,CERAMIC:MCL;0.1UF,20%,50V,Z5U,0.170	04222	SA105E104MAA
A7C207	281-0775-01			CAP,FXD,CERAMIC:MCL;0.1UF,20%,50V,Z5U,0.170	04222	SA105E104MAA
A7C338	281-0765-00			CAP,FXD,CER DI:100PF,5%,100V	04222	SA102A101JAA
A7C358	281-0765-00			CAP,FXD,CER DI:100PF,5%,100V	04222	SA102A101JAA
A7C408	281-0775-01			CAP,FXD,CERAMIC:MCL;0.1UF,20%,50V,Z5U,0.170	04222	SA105E104MAA
A7C418	281-0775-01			CAP,FXD,CERAMIC:MCL;0.1UF,20%,50V,Z5U,0.170	04222	SA105E104MAA
A7C428	281-0775-01			CAP,FXD,CERAMIC:MCL;0.1UF,20%,50V,Z5U,0.170	04222	SA105E104MAA
A7C601	281-0910-00			CAP,FXD,CER DI:1800PF,1%,50V	04222	MA205A182FAA
A7C603	281-0865-00			CAP,FXD,CER DI:1000PF,5%,100V	04222	SA201A102JAA
A7C604	281-0775-01			CAP,FXD,CERAMIC:MCL;0.1UF,20%,50V,Z5U,0.170	04222	SA105E104MAA
A7C605	281-0775-01			CAP,FXD,CERAMIC:MCL;0.1UF,20%,50V,Z5U,0.170	04222	SA105E104MAA
A7C606	281-0775-01			CAP,FXD,CERAMIC:MCL;0.1UF,20%,50V,Z5U,0.170	04222	SA105E104MAA
A7C607	281-0775-01			CAP,FXD,CERAMIC:MCL;0.1UF,20%,50V,Z5U,0.170	04222	SA105E104MAA
A7C608	281-0775-01			CAP,FXD,CERAMIC:MCL;0.1UF,20%,50V,Z5U,0.170	04222	SA105E104MAA
A7J9	131-3181-00			CONN,HDR:PCB;MALE,RTANG,2X20,0.1CTR,0.330H X 0.112	22526	69155-440R
A7J12	131-3181-00			CONN,HDR:PCB;MALE,RTANG,2X20,0.1CTR,0.330H X 0.112	22526	69155-440R
A7J13	131-3181-00			CONN,HDR:PCB;MALE,RTANG,2 X 20,0.1CTR,0.330 H X 0.112 TAIL,SHRD/4 SIDES,CTR PLZ,30 GOLD,0.390 MLG,HI TEMP	22526	69155-440R
A7J81	131-3378-00			CONN,RF JACK:BNC;50 OHM,FEMALE,RTANG,PCB/REAR PNL,0.5-28 THD,0.625 H X 0.187 TAIL,W/O	00779	227677-1
A7J82	131-3378-00			CONN,RF JACK:BNC;50 OHM,FEMALE,RTANG,PCB/REAR PNL,0.5-28 THD,0.625 H X 0.187 TAIL,W/O	00779	227677-1
A7J83	131-3378-00			CONN,RF JACK:BNC;50 OHM,FEMALE,RTANG,PCB/REAR PNL,0.5-28 THD,0.625 H X 0.187 TAIL,W/O	00779	227677-1

Replaceable electrical parts list (Cont.)

Component number	Tektronix part number	Effective	Discont'd	Name and description	Mfr. code	Mfr. part no.
A7Q1	151-0711-02			XTR,SIG:BIPOLAR,NPN;25V,50MA,650MHZ,AMPL	04713	MPSH10RLRP
A7Q2	151-0711-02			XTR,SIG:BIPOLAR,NPN;25V,50MA,650MHZ,AMPL	04713	MPSH10RLRP
A7Q3	151-0711-02			XTR,SIG:BIPOLAR,NPN;25V,50MA,650MHZ,AMPL	04713	MPSH10RLRP
A7Q4	151-0711-02			XTR,SIG:BIPOLAR,NPN;25V,50MA,650MHZ,AMPL	04713	MPSH10RLRP
A7Q5	151-0369-03			XTR,SIG:BIPOLAR,PNP;15V,30MA,2.0GHZ,AMPL	04713	MPSH69RLRP
A7Q11	151-0711-02			XTR,SIG:BIPOLAR,NPN;25V,50MA,650MHZ,AMPL	04713	MPSH10RLRP
A7Q12	151-0711-02			XTR,SIG:BIPOLAR,NPN;25V,50MA,650MHZ,AMPL	04713	MPSH10RLRP
A7Q13	151-0711-02			XTR,SIG:BIPOLAR,NPN;25V,50MA,650MHZ,AMPL	04713	MPSH10RLRP
A7Q14	151-0711-02			XTR,SIG:BIPOLAR,NPN;25V,50MA,650MHZ,AMPL	04713	MPSH10RLRP
A7Q15	151-0369-03			XTR,SIG:BIPOLAR,PNP;15V,30MA,2.0GHZ,AMPL	04713	MPSH69RLRP
A7Q21	151-0711-02			XTR,SIG:BIPOLAR,NPN;25V,50MA,650MHZ,AMPL	04713	MPSH10RLRP
A7Q22	151-0711-02			XTR,SIG:BIPOLAR,NPN;25V,50MA,650MHZ,AMPL	04713	MPSH10RLRP
A7Q23	151-0711-02			XTR,SIG:BIPOLAR,NPN;25V,50MA,650MHZ,AMPL	04713	MPSH10RLRP
A7Q24	151-0711-02			XTR,SIG:BIPOLAR,NPN;25V,50MA,650MHZ,AMPL	04713	MPSH10RLRP
A7Q25	151-0369-03			XTR,SIG:BIPOLAR,PNP;15V,30MA,2.0GHZ,AMPL	04713	MPSH69RLRP
A7Q51	151-0190-00			XTR,SIG:BIPOLAR,NPN;40V,200MA,300MHZ,AMPL	04713	2N3904
A7Q52	151-0188-00			XTR,SIG:BIPOLAR,PNP;40V,200MA,250MHZ,AMPL	04713	2N3906
A7Q53	151-0188-00			XTR,SIG:BIPOLAR,PNP;40V,200MA,250MHZ,AMPL	04713	2N3906
A7Q54	151-0188-00			XTR,SIG:BIPOLAR,PNP;40V,200MA,250MHZ,AMPL	04713	2N3906
A7Q61	151-0188-00			XTR,SIG:BIPOLAR,PNP;40V,200MA,250MHZ,AMPL	04713	2N3906
A7Q62	151-0188-00			XTR,SIG:BIPOLAR,PNP;40V,200MA,250MHZ,AMPL	04713	2N3906
A7Q111	151-0711-02			XTR,SIG:BIPOLAR,NPN;25V,50MA,650MHZ,AMPL	04713	MPSH10RLRP
A7Q112	151-0188-00			XTR,SIG:BIPOLAR,PNP;40V,200MA,250MHZ,AMPL	04713	2N3906
A7Q114	151-0188-00			XTR,SIG:BIPOLAR,PNP;40V,200MA,250MHZ,AMPL	04713	2N3906
A7Q116	151-0190-00			XTR,SIG:BIPOLAR,NPN;40V,200MA,300MHZ,AMPL	04713	2N3904
A7Q127	151-0711-02			XTR,SIG:BIPOLAR,NPN;25V,50MA,650MHZ,AMPL	04713	MPSH10RLRP
A7Q131	151-0190-00			XTR,SIG:BIPOLAR,NPN;40V,200MA,300MHZ,AMPL	04713	2N3904
A7Q134	151-0188-00			XTR,SIG:BIPOLAR,PNP;40V,200MA,250MHZ,AMPL	04713	2N3906
A7Q136	151-0190-00			XTR,SIG:BIPOLAR,NPN;40V,200MA,300MHZ,AMPL	04713	2N3904
A7Q143	151-0711-02			XTR,SIG:BIPOLAR,NPN;25V,50MA,650MHZ,AMPL	04713	MPSH10RLRP
A7Q151	151-0190-00			XTR,SIG:BIPOLAR,NPN;40V,200MA,300MHZ,AMPL	04713	2N3904
A7Q157	151-0188-00			XTR,SIG:BIPOLAR,PNP;40V,200MA,250MHZ,AMPL	04713	2N3906
A7Q180	151-0188-00			XTR,SIG:BIPOLAR,PNP;40V,200MA,250MHZ,AMPL	04713	2N3906
A7Q201	151-0190-00			XTR,SIG:BIPOLAR,NPN;40V,200MA,300MHZ,AMPL	04713	2N3904
A7Q204	151-0190-00			XTR,SIG:BIPOLAR,NPN;40V,200MA,300MHZ,AMPL	04713	2N3904
A7Q207	151-0190-00			XTR,SIG:BIPOLAR,NPN;40V,200MA,300MHZ,AMPL	04713	2N3904

Replaceable electrical parts list (Cont.)

Component number	Tektronix part number	Effective	Discont'd	Name and description	Mfr. code	Mfr. part no.
A7Q210	151-0190-00			XTR,SIG:BIPOLAR,NPN;40V,200MA,300MHZ,AMPL	04713	2N3904
A7R2	322-3097-00			RES,FXD:METAL FILM;100 OHM,1%,0.2W,TC=100 PPM	91637	CCF501G100R0F
A7R3	322-3097-00			RES,FXD:METAL FILM;100 OHM,1%,0.2W,TC=100 PPM	91637	CCF501G100R0F
A7R4	322-3230-00			RES,FXD,FILM:2.43K OHM,1%,0.2W,TC=T0MI,SM BODY	91637	CCF50-2-G2431FT
A7R5	322-3230-00			RES,FXD,FILM:2.43K OHM,1%,0.2W,TC=T0MI,SM BODY	91637	CCF50-2-G2431FT
A7R6	322-3230-00			RES,FXD,FILM:2.43K OHM,1%,0.2W,TC=T0MI,SM BODY	91637	CCF50-2-G2431FT
A7R7	322-3261-00			RES,FXD,FILM:5.11K OHM,1%,0.2W,TC=T0MI,SM BODY	91637	CCF50G5111FT
A7R8	322-3258-00			RES,FXD:METAL FILM;4.75K OHM,1%,0.2W,TC=100	56845	CCF50-2-G4751FT
A7R9	322-3193-00			RES,FXD:METAL FILM;1K OHM,1%,0.2W,TC=100 PPM	91637	CCF501G10000F
A7R11	322-3097-00			RES,FXD:METAL FILM;100 OHM,1%,0.2W,TC=100 PPM	91637	CCF501G100R0F
A7R12	322-3097-00			RES,FXD:METAL FILM;100 OHM,1%,0.2W,TC=100 PPM	91637	CCF501G100R0F
A7R13	322-3097-00			RES,FXD:METAL FILM;100 OHM,1%,0.2W,TC=100 PPM	91637	CCF501G100R0F
A7R14	322-3230-00			RES,FXD,FILM:2.43K OHM,1%,0.2W,TC=T0MI,SM BODY	91637	CCF50-2-G2431FT
A7R15	322-3230-00			RES,FXD,FILM:2.43K OHM,1%,0.2W,TC=T0MI,SM BODY	91637	CCF50-2-G2431FT
A7R16	322-3230-00			RES,FXD,FILM:2.43K OHM,1%,0.2W,TC=T0MI,SM BODY	91637	CCF50-2-G2431FT
A7R17	322-3261-00			RES,FXD,FILM:5.11K OHM,1%,0.2W,TC=T0MI,SM BODY	91637	CCF50G5111FT
A7R18	322-3258-00			RES,FXD:METAL FILM;4.75K OHM,1%,0.2W,TC=100	56845	CCF50-2-G4751FT
A7R19	322-3193-00			RES,FXD:METAL FILM;1K OHM,1%,0.2W,TC=100 PPM	91637	CCF501G10000F
A7R20	322-3097-00			RES,FXD:METAL FILM;100 OHM,1%,0.2W,TC=100 PPM	91637	CCF501G100R0F
A7R21	322-3097-00			RES,FXD:METAL FILM;100 OHM,1%,0.2W,TC=100 PPM	91637	CCF501G100R0F
A7R22	322-3097-00			RES,FXD:METAL FILM;100 OHM,1%,0.2W,TC=100 PPM	91637	CCF501G100R0F
A7R23	322-3097-00			RES,FXD:METAL FILM;100 OHM,1%,0.2W,TC=100 PPM	91637	CCF501G100R0F
A7R24	322-3230-00			RES,FXD,FILM:2.43K OHM,1%,0.2W,TC=T0MI,SM BODY	91637	CCF50-2-G2431FT
A7R25	322-3230-00			RES,FXD,FILM:2.43K OHM,1%,0.2W,TC=T0MI,SM BODY	91637	CCF50-2-G2431FT
A7R26	322-3230-00			RES,FXD,FILM:2.43K OHM,1%,0.2W,TC=T0MI,SM BODY	91637	CCF50-2-G2431FT
A7R27	322-3261-00			RES,FXD,FILM:5.11K OHM,1%,0.2W,TC=T0MI,SM BODY	91637	CCF50G5111FT
A7R28	322-3258-00			RES,FXD:METAL FILM;4.75K OHM,1%,0.2W,TC=100	56845	CCF50-2-G4751FT
A7R29	322-3193-00			RES,FXD:METAL FILM;1K OHM,1%,0.2W,TC=100 PPM	91637	CCF501G10000F
A7R36	322-3097-00			RES,FXD:METAL FILM;100 OHM,1%,0.2W,TC=100 PPM	91637	CCF501G100R0F
A7R40	321-0317-00			RES,FXD,FILM:19.6K OHM,1%,0.125W,TC=T0MI	19701	5043ED19K60F
A7R41	322-3287-00			RES,FXD,FILM:9.53K OHM,1%,0.2W,TC=T0MI,SM BODY	91637	CCF50G95300F
A7R42	322-3281-00			RES,FXD:METAL FILM;8.25K OHM,1%,0.2W,TC=100	91637	CCF501G82500F
A7R43	322-3221-00			RES,FXD,FILM:1.96K OHM,1%,0.2W,TC=T0MI,SM BODY	91637	CCF50-2F19600F
A7R44	322-3222-07			RES,FXD,FILM:2K OHM,0.1%,0.2W TC=T9,SMALL BODY	91637	CCF501C20000B
A7R45	321-0210-07			RES,FXD:METAL FILM;1.5K OHM,0.1%,0.125W,TC=25 PPM	91637	CMF55116C15000B
A7R46	322-3258-00			RES,FXD:METAL FILM;4.75K OHM,1%,0.2W,TC=100	56845	CCF50-2-G4751FT

Replaceable electrical parts list (Cont.)

Component number	Tektronix part number	Effective	Discont'd	Name and description	Mfr. code	Mfr. part no.
A7R47	322-3222-07			RES,FXD,FILM:2K OHM,0.1%,0.2W TC=T9,SMALL BODY	91637	CCF501C20000B
A7R48	322-3222-07			RES,FXD,FILM:2K OHM,0.1%,0.2W TC=T9,SMALL BODY	91637	CCF501C20000B
A7R49	322-3250-00			RES,FXD:METAL FILM;3.92K OHM,1%,0.2W,TC=100	91637	CCF50-2F39200F
A7R50	322-3193-00			RES,FXD:METAL FILM;1K OHM,1%,0.2W,TC=100 PPM	91637	CCF501G10000F
A7R51	322-3222-07			RES,FXD,FILM:2K OHM,0.1%,0.2W TC=T9,SMALL BODY	91637	CCF501C20000B
A7R52	321-0210-07			RES,FXD:METAL FILM;1.5K OHM,0.1%,0.125W,TC=25 PPM	91637	CMF55116C15000B
A7R53	321-0929-07			RES,FXD,FILM:2.5K OHM,0.1%,0.125W,TC=T9	TK1727	2322-141-2K5
A7R54	321-0929-07			RES,FXD,FILM:2.5K OHM,0.1%,0.125W,TC=T9	TK1727	2322-141-2K5
A7R55	322-3222-07			RES,FXD,FILM:2K OHM,0.1%,0.2W TC=T9,SMALL BODY	91637	CCF501C20000B
A7R56	322-3222-07			RES,FXD,FILM:2K OHM,0.1%,0.2W TC=T9,SMALL BODY	91637	CCF501C20000B
A7R57	321-0929-07			RES,FXD,FILM:2.5K OHM,0.1%,0.125W,TC=T9	TK1727	2322-141-2K5
A7R58	322-3250-00			RES,FXD:METAL FILM;3.92K OHM,1%,0.2W,TC=100	91637	CCF50-2F39200F
A7R59	322-3193-00			RES,FXD:METAL FILM;1K OHM,1%,0.2W,TC=100 PPM	91637	CCF501G10000F
A7R60	322-3193-07			RES,FXD,FILM:1K OHM,0.1%,0.2W,TC=T9	91637	CCF501C10000B
A7R61	322-3220-00			RES,FXD,FILM:1.91K OHM,1%,0.2W,TC=T0MI,SM BODY	91637	CCF501G19100F
A7R62	322-3193-07			RES,FXD,FILM:1K OHM,0.1%,0.2W,TC=T9	91637	CCF501C10000B
A7R63	322-3222-07			RES,FXD,FILM:2K OHM,0.1%,0.2W TC=T9,SMALL BODY	91637	CCF501C20000B
A7R64	322-3222-07			RES,FXD,FILM:2K OHM,0.1%,0.2W TC=T9,SMALL BODY	91637	CCF501C20000B
A7R65	322-3222-07			RES,FXD,FILM:2K OHM,0.1%,0.2W TC=T9,SMALL BODY	91637	CCF501C20000B
A7R66	322-3222-07			RES,FXD,FILM:2K OHM,0.1%,0.2W TC=T9,SMALL BODY	91637	CCF501C20000B
A7R67	322-3250-00			RES,FXD:METAL FILM;3.92K OHM,1%,0.2W,TC=100	91637	CCF50-2F39200F
A7R68	322-3193-00			RES,FXD:METAL FILM;1K OHM,1%,0.2W,TC=100 PPM	91637	CCF501G10000F
A7R70	322-3222-07			RES,FXD,FILM:2K OHM,0.1%,0.2W TC=T9,SMALL BODY	91637	CCF501C20000B
A7R71	322-3222-07			RES,FXD,FILM:2K OHM,0.1%,0.2W TC=T9,SMALL BODY	91637	CCF501C20000B
A7R72	322-3222-07			RES,FXD,FILM:2K OHM,0.1%,0.2W TC=T9,SMALL BODY	91637	CCF501C20000B
A7R73	322-3222-07			RES,FXD,FILM:2K OHM,0.1%,0.2W TC=T9,SMALL BODY	91637	CCF501C20000B
A7R74	322-3222-07			RES,FXD,FILM:2K OHM,0.1%,0.2W TC=T9,SMALL BODY	91637	CCF501C20000B
A7R75	322-3222-07			RES,FXD,FILM:2K OHM,0.1%,0.2W TC=T9,SMALL BODY	91637	CCF501C20000B
A7R76	322-3222-07			RES,FXD,FILM:2K OHM,0.1%,0.2W TC=T9,SMALL BODY	91637	CCF501C20000B
A7R77	322-3222-07			RES,FXD,FILM:2K OHM,0.1%,0.2W TC=T9,SMALL BODY	91637	CCF501C20000B
A7R78	322-3222-07			RES,FXD,FILM:2K OHM,0.1%,0.2W TC=T9,SMALL BODY	91637	CCF501C20000B
A7R79	322-3222-07			RES,FXD,FILM:2K OHM,0.1%,0.2W TC=T9,SMALL BODY	91637	CCF501C20000B
A7R80	322-3193-07			RES,FXD,FILM:1K OHM,0.1%,0.2W,TC=T9	91637	CCF501C10000B
A7R81	322-3193-07			RES,FXD,FILM:1K OHM,0.1%,0.2W,TC=T9	91637	CCF501C10000B
A7R82	322-3222-00			RES,FXD:METAL FILM;2K OHM,1%,0.2W,TC=100 PPM	91637	CCF501G20000F
A7R83	322-3346-00			RES,FXD:METAL FILM;39.2K OHM,1%,0.2W,TC=100	91637	CCF50-2-G39201F

Replaceable electrical parts list (Cont.)

Component number	Tektronix part number	Effective	Discont'd	Name and description	Mfr. code	Mfr. part no.
A7R85	322-3085-07			RES,FXD:METAL FILM;75 OHM,0.1%,0.2W,TC=25 PPM	91637	CCF502-C75ROOBT
A7R90	322-3193-07			RES,FXD,FILM:1K OHM,0.1%,0.2W,TC=T9	91637	CCF501C10000B
A7R91	322-3193-07			RES,FXD,FILM:1K OHM,0.1%,0.2W,TC=T9	91637	CCF501C10000B
A7R92	322-3222-00			RES,FXD:METAL FILM;2K OHM,1%,0.2W,TC=100 PPM	91637	CCF501G20000F
A7R93	322-3346-00			RES,FXD:METAL FILM;39.2K OHM,1%,0.2W,TC=100	91637	CCF50-2-G39201F
A7R95	322-3085-07			RES,FXD:METAL FILM;75 OHM,0.1%,0.2W,TC=25 PPM	91637	CCF502-C75ROOBT
A7R100	322-3193-07			RES,FXD,FILM:1K OHM,0.1%,0.2W,TC=T9	91637	CCF501C10000B
A7R101	322-3193-07			RES,FXD,FILM:1K OHM,0.1%,0.2W,TC=T9	91637	CCF501C10000B
A7R102	322-3222-00			RES,FXD:METAL FILM;2K OHM,1%,0.2W,TC=100 PPM	91637	CCF501G20000F
A7R103	322-3346-00			RES,FXD:METAL FILM;39.2K OHM,1%,0.2W,TC=100	91637	CCF50-2-G39201F
A7R105	322-3085-07			RES,FXD:METAL FILM;75 OHM,0.1%,0.2W,TC=25 PPM	91637	CCF502-C75ROOBT
A7R110	322-3354-00			RES,FXD:METAL FILM;47.5K OHM,1%,0.2W,TC=100	91637	CCF501G47501F
A7R111	322-3097-00			RES,FXD:METAL FILM;100 OHM,1%,0.2W,TC=100 PPM	91637	CCF501G100R0F
A7R112	322-3193-00			RES,FXD:METAL FILM;1K OHM,1%,0.2W,TC=100 PPM	91637	CCF501G10000F
A7R113	322-3193-00			RES,FXD:METAL FILM;1K OHM,1%,0.2W,TC=100 PPM	91637	CCF501G10000F
A7R114	322-3235-00			RES,FXD:METAL FILM;2.74K OHM,1%,0.2W,TC=100	91637	CCF501G27400F
A7R115	322-3261-00			RES,FXD,FILM:5.11K OHM,1%,0.2W,TC=T0MI,SM BODY	91637	CCF50G5111FT
A7R116	322-3097-00			RES,FXD:METAL FILM;100 OHM,1%,0.2W,TC=100 PPM	91637	CCF501G100R0F
A7R117	322-3226-00			RES,FXD:METAL FILM;2.21K OHM,1%,0.2W,TC=100	91637	CCF501G22100F
A7R118	322-3243-00			RES,FXD:METAL FILM;3.32K OHM,1%,0.2W,TC=100	91637	CCF50-1-G33200F
A7R119	322-3385-00			RES,FXD:METAL FILM;100K OHM,1%,0.2W,TC=100 PPM	91637	CCF501G10002F
A7R120	322-3289-00			RES,FXD:METAL FILM;10K OHM,1%,0.2W,TC=100 PPM	91637	CCF50G10001F
A7R121	322-3289-00			RES,FXD:METAL FILM;10K OHM,1%,0.2W,TC=100 PPM	91637	CCF50G10001F
A7R122	311-2269-00			RES,VAR,NONWW:TRMR,20K OHM,20%,0.5WLINEAR,MI	TK2073	GF06VT2 203 M L
A7R123	322-3154-00			RES,FXD:METAL FILM;392 OHM,1%,0.2W,TC=100 PPM	91637	CCF501G392R0F
A7R124	322-3222-00			RES,FXD:METAL FILM;2K OHM,1%,0.2W,TC=100 PPM	91637	CCF501G20000F
A7R125	322-3204-00			RES,FXD,FILM:1.3K OHM,1%,0.2W,TC=T0MI,SMALL	91637	CCF501G13000F
A7R126	322-3175-00			RES,FXD,FILM:649 OHM,1%,0.2W,TC=T0,SMALL BODY	91637	CCF50G649R0F
A7R127	322-3097-00			RES,FXD:METAL FILM;100 OHM,1%,0.2W,TC=100 PPM	91637	CCF501G100R0F
A7R128	322-3175-00			RES,FXD,FILM:649 OHM,1%,0.2W,TC=T0,SMALL BODY	91637	CCF50G649R0F
A7R130	322-3193-00			RES,FXD:METAL FILM;1K OHM,1%,0.2W,TC=100 PPM	91637	CCF501G10000F
A7R131	322-3193-00			RES,FXD:METAL FILM;1K OHM,1%,0.2W,TC=100 PPM	91637	CCF501G10000F
A7R132	322-3239-00			RES,FXD,FILM:3.01K OHM,1%,0.2W,TC=T0MI,SM BODY	91637	CCF501G30100F
A7R133	322-3193-00			RES,FXD:METAL FILM;1K OHM,1%,0.2W,TC=100 PPM	91637	CCF501G10000F
A7R134	322-3193-00			RES,FXD:METAL FILM;1K OHM,1%,0.2W,TC=100 PPM	91637	CCF501G10000F
A7R135	322-3239-00			RES,FXD,FILM:3.01K OHM,1%,0.2W,TC=T0MI,SM BODY	91637	CCF501G30100F

Replaceable electrical parts list (Cont.)

Component number	Tektronix part number	Effective	Discont'd	Name and description	Mfr. code	Mfr. part no.
A7R136	322-3165-00			RES,FXD,FILM:511 OHM,1%,0.2W,TC=T0MI,SMALL BODY	91637	CCF501G511R0F
A7R137	322-3210-00			RES,FXD:METAL FILM;1.5K OHM,1%,0.2W,TC=100 PPM	91637	CCF501G15000F
A7R140	322-3354-00			RES,FXD:METAL FILM;47.5K OHM,1%,0.2W,TC=100	91637	CCF501G47501F
A7R141	322-3289-00			RES,FXD:METAL FILM;10K OHM,1%,0.2W,TC=100 PPM	91637	CCF50G10001F
A7R142	322-3289-00			RES,FXD:METAL FILM;10K OHM,1%,0.2W,TC=100 PPM	91637	CCF50G10001F
A7R143	322-3173-00			RES,FXD,FILM:619 OHM,1%,0.2W,TC=T0MI,SMALL BODY	91637	CCF50-2F619R0F
A7R150	322-3354-00			RES,FXD:METAL FILM;47.5K OHM,1%,0.2W,TC=100	91637	CCF501G47501F
A7R151	322-3193-00			RES,FXD:METAL FILM;1K OHM,1%,0.2W,TC=100 PPM	91637	CCF501G10000F
A7R152	322-3193-00			RES,FXD:METAL FILM;1K OHM,1%,0.2W,TC=100 PPM	91637	CCF501G10000F
A7R153	322-3239-00			RES,FXD,FILM:3.01K OHM,1%,0.2W,TC=T0MI,SM BODY	91637	CCF501G30100F
A7R155	322-3193-00			RES,FXD:METAL FILM;1K OHM,1%,0.2W,TC=100 PPM	91637	CCF501G10000F
A7R156	322-3193-00			RES,FXD:METAL FILM;1K OHM,1%,0.2W,TC=100 PPM	91637	CCF501G10000F
A7R157	322-3210-00			RES,FXD:METAL FILM;1.5K OHM,1%,0.2W,TC=100 PPM	91637	CCF501G15000F
A7R158	322-3385-00			RES,FXD:METAL FILM;100K OHM,1%,0.2W,TC=100 PPM	91637	CCF501G10002F
A7R159	311-2269-00			RES,VAR,NONWW:TRMR,20K OHM,20%,0.5WLINEAR,MI	TK2073	GF06VT2 203 M L
A7R160	322-3154-00			RES,FXD:METAL FILM;392 OHM,1%,0.2W,TC=100 PPM	91637	CCF501G392R0F
A7R162	322-3289-00			RES,FXD:METAL FILM;10K OHM,1%,0.2W,TC=100 PPM	91637	CCF50G10001F
A7R163	322-3289-00			RES,FXD:METAL FILM;10K OHM,1%,0.2W,TC=100 PPM	91637	CCF50G10001F
A7R164	322-3250-00			RES,FXD:METAL FILM;3.92K OHM,1%,0.2W,TC=100	91637	CCF50-2F39200F
A7R170	322-3097-00			RES,FXD:METAL FILM;100 OHM,1%,0.2W,TC=100 PPM	91637	CCF501G100R0F
A7R171	322-3261-00			RES,FXD,FILM:5.11K OHM,1%,0.2W,TC=T0MI,SM BODY	91637	CCF50G5111FT
A7R172	322-3261-00			RES,FXD,FILM:5.11K OHM,1%,0.2W,TC=T0MI,SM BODY	91637	CCF50G5111FT
A7R173	322-3175-00			RES,FXD,FILM:649 OHM,1%,0.2W,TC=T0,SMALL BODY	91637	CCF50G649R0F
A7R174	322-3097-00			RES,FXD:METAL FILM;100 OHM,1%,0.2W,TC=100 PPM	91637	CCF501G100R0F
A7R175	322-3097-00			RES,FXD:METAL FILM;100 OHM,1%,0.2W,TC=100 PPM	91637	CCF501G100R0F
A7R176	322-3097-00			RES,FXD:METAL FILM;100 OHM,1%,0.2W,TC=100 PPM	91637	CCF501G100R0F
A7R177	322-3306-00			RES,FXD:METAL FILM;15K OHM,1%,0.2W,TC=100 PPM	91637	CCF50-2-G1502F
A7R180	322-3097-00			RES,FXD:METAL FILM;100 OHM,1%,0.2W,TC=100 PPM	91637	CCF501G100R0F
A7R181	322-3239-00			RES,FXD,FILM:3.01K OHM,1%,0.2W,TC=T0MI,SM BODY	91637	CCF501G30100F
A7R201	322-3277-00			RES,FXD,FILM:7.5K OHM,1%,0.2W,TC=T0,SMALL BODY	91637	CCF501G75000F
A7R202	322-3289-00			RES,FXD:METAL FILM;10K OHM,1%,0.2W,TC=100 PPM	91637	CCF50G10001F
A7R203	322-3289-00			RES,FXD:METAL FILM;10K OHM,1%,0.2W,TC=100 PPM	91637	CCF50G10001F
A7R204	322-3277-00			RES,FXD,FILM:7.5K OHM,1%,0.2W,TC=T0,SMALL BODY	91637	CCF501G75000F
A7R205	322-3289-00			RES,FXD:METAL FILM;10K OHM,1%,0.2W,TC=100 PPM	91637	CCF50G10001F
A7R206	322-3289-00			RES,FXD:METAL FILM;10K OHM,1%,0.2W,TC=100 PPM	91637	CCF50G10001F
A7R207	322-3277-00			RES,FXD,FILM:7.5K OHM,1%,0.2W,TC=T0,SMALL BODY	91637	CCF501G75000F

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Component number	Tektronix part number	Effective	Discont'd	Name and description	Mfr. code	Mfr. part no.
A7R208	322-3289-00			RES,FXD:METAL FILM;10K OHM,1%,0.2W,TC=100 PPM	91637	CCF50G10001F
A7R209	322-3289-00			RES,FXD:METAL FILM;10K OHM,1%,0.2W,TC=100 PPM	91637	CCF50G10001F
A7R210	322-3297-00			RES,FXD:METAL FILM;12.1K OHM,1%,0.2W,TC=100	91637	CCF50G12101F
A7R211	322-3289-00			RES,FXD:METAL FILM;10K OHM,1%,0.2W,TC=100 PPM	91637	CCF50G10001F
A7R301	322-3097-00			RES,FXD:METAL FILM;100 OHM,1%,0.2W,TC=100 PPM	91637	CCF50G100R0F
A7R302	322-3097-00			RES,FXD:METAL FILM;100 OHM,1%,0.2W,TC=100 PPM	91637	CCF50G100R0F
A7R303	322-3097-00			RES,FXD:METAL FILM;100 OHM,1%,0.2W,TC=100 PPM	91637	CCF50G100R0F
A7R312	322-3097-00			RES,FXD:METAL FILM;100 OHM,1%,0.2W,TC=100 PPM	91637	CCF50G100R0F
A7R336	322-3097-00			RES,FXD:METAL FILM;100 OHM,1%,0.2W,TC=100 PPM	91637	CCF50G100R0F
A7R338	322-3097-00			RES,FXD:METAL FILM;100 OHM,1%,0.2W,TC=100 PPM	91637	CCF50G100R0F
A7R358	322-3097-00			RES,FXD:METAL FILM;100 OHM,1%,0.2W,TC=100 PPM	91637	CCF50G100R0F
A7R408	322-3001-00			RES,FXD:METAL FILM;10 OHM,1%,0.2W,TC=100 PPM	91637	CCF50G100R0F
A7R418	322-3051-00			RES,FXD:METAL FILM;33.2 OHM,1%,0.2W,TC=100 PPM	57668	CRB20FXE33E2
A7R428	322-3085-00			RES,FXD:METAL FILM;75 OHM,1%,0.2W,TC=100 PPM	91637	CCF50G75R00F
A7R601	311-2269-00			RES,VAR,NONWWW:TRMR,20K OHM,20%,0.5WLINEAR,MI	TK2073	GF06VT2 203 M L
A7R602	322-3369-00			RES,FXD:METAL FILM;68.1K OHM,1%,0.2W,TC=100	57668	CRB20 FXE 68R1
A7R603	322-3281-00			RES,FXD:METAL FILM;8.25K OHM,1%,0.2W,TC=100	91637	CCF50G82500F
A7U40	156-3972-00			IC,MISC:CMOS,ANALOG SW;QUAD SPST,100 OHM,400NS	17856	DG444DJ
A7U41	156-3226-00			IC,LINEAR:BIPOLAR,OP-AMP;35 MHZ,UNITY GAINSTABLE	27014	LM6361N
A7U51	156-3972-00			IC,MISC:CMOS,ANALOG SW;QUAD SPST,100 OHM,400NS	17856	DG444DJ
A7U52	156-3972-00			IC,MISC:CMOS,ANALOG SW;QUAD SPST,100 OHM,400NS	17856	DG444DJ
A7U61	156-3226-00			IC,LINEAR:BIPOLAR,OP-AMP;35 MHZ,UNITY GAINSTABLE	27014	LM6361N
A7U70	156-3226-00			IC,LINEAR:BIPOLAR,OP-AMP;35 MHZ,UNITY GAINSTABLE	27014	LM6361N
A7U80	156-4150-00			IC,LINEAR:BIPOLAR,AMPL;100MHZ,CURRENT FEEDBACK,SAMPLE/HOLD,VIDEO DC RESTORATION	64762	EL2090CN
A7U90	156-4150-00			IC,LINEAR:BIPOLAR,AMPL;100MHZ,CURRENT FEEDBACK,SAMPLE/HOLD,VIDEO DC RESTORATION	64762	EL2090CN
A7U100	156-4150-00			IC,LINEAR:BIPOLAR,AMPL;100MHZ,CURRENT FEEDBACK,SAMPLE/HOLD,VIDEO DC RESTORATION	64762	EL2090CN
A7U101	156-3972-00			IC,MISC:CMOS,ANALOG SW;QUAD SPST,100 OHM,400NS	17856	DG444DJ
A7U102	156-3972-00			IC,MISC:CMOS,ANALOG SW;QUAD SPST,100 OHM,400NS	17856	DG444DJ
A7U103	156-3972-00			IC,MISC:CMOS,ANALOG SW;QUAD SPST,100 OHM,400NS	17856	DG444DJ
A7U124	156-3972-00			IC,MISC:CMOS,ANALOG SW;QUAD SPST,100 OHM,400NS	17856	DG444DJ
A7U125	156-2463-00			IC,DIGITAL:HCMOS,GATE;QUAD 2-INPUT OR	01295	SN74HC32N
A7U126	156-1688-00			IC,LINEAR:BIFET,OP-AMP;DUAL,LOW OFFSET,LOW DRIFT	01295	TL287CP
A7U151	156-3972-00			IC,MISC:CMOS,ANALOG SWI;QUAD SPST,100 OHM,400NS	17856	DG444DJ
A7U161	156-3972-00			IC,MISC:CMOS,ANALOG SW;QUAD SPST,100 OHM,400NS	17856	DG444DJ

Replaceable electrical parts list (Cont.)

Component number	Tektronix part number	Effective	Discont'd	Name and description	Mfr. code	Mfr. part no.
A7U162	156-1688-00			IC,LINER:BIFET,OP-AMP;DUAL,LOW OFFSET,LOW DRIFT	01295	TL287CP
A7U171	156-2460-00			IC,MISC:BIPOLAR,MOD/DEM;BALANCED	04713	MC1496P
A7U180	156-2959-00			IC,LINER:BIPOLAR,VR;POSITIVE,8.0V,1.0A,2%	04713	MCT7808CT
A7U190	156-4234-00			IC,LINER:BIPOLAR,VR;NEGATIVE,-8.0 VOLTS,1.0A,2%	44648	KA7908T
A7U202	156-2583-00			IC,DGTL:HCMOS,DEMUX/DCDR;3-TO-8DCDR,ACTIVE LOW	0JR04	TC74HC138P
A7U203	156-3065-00			IC,DGTL:HCMOS,SHIFT RGTR;8-BITPISO	01295	SN74HC165N
A7U204	156-2357-00			IC,DGTL:HCTCMOS,FLIP FLOP;OCTAL D-TYPE,NONINV, 3-STATE	01295	SN74HCT574N
A7U205	156-2349-00			IC,DGTL:HCMOS,RGTR;8-BIT SIPO,LATCHED 3-STATE	0JR04	TC74HC595AP
A7U206	156-4009-00			IC,MEMORY:CMOS,FIFO;512 X 9,65NS,7201-65,DIP28.6	34335	AM7201-50PC
A7U207	160-9401-00			IC,DIGITAL:CMOS,PLD;EEPLD,22V10,130MA,25NS,PLCC28	80009	160-9401-00
				MOUNTING PARTS		
	136-1005-00			SOCKET,PLCC:PCB;28 POS,0.05 CTR,0.360H X 0.125 TAIL,TIN,0.055-0.075 IC SHOULDER	00779	3-821581-1
				END MOUNTING PARTS		
A7U208	156-2357-00			IC,DIGITAL:HCTCMOS,FLIP FLOP;OCTAL D-TYPE, NONINV, 3-STATE	01295	SN74HCT574N
A7U209	156-2357-00			IC,DIGITAL:HCTCMOS,FLIP FLOP;OCTAL D-TYPE,NONINV, 3-STATE	01295	SN74HCT574N
A7U211	156-2707-00			IC,DIGITAL:HCMOS,BUFFER;QUAD BUFFER, /OE, 3-STATE	01295	SN74HC125N
A7U212	156-3226-00			IC,LINER:BIPOLAR,OP-AMP;35 MHZ,UNITY GAINSTABLE	27014	LM6361N
A7U602	156-1335-00			IC,DGTL:LSTTL,MULTIVIBRATOR;DUAL RETRIGMONOSTABL	27014	DM96LS02N
A7U603	156-2026-00			IC,DIGITAL:HCMOS,GATE;QUAD 2-INPUT NOR	04713	MC74HC02AN
A7CR1	152-0141-02			DIODE,SIG:ULTRA FAST;40V,150MA,4NS,2PF	27014	FDH9427
A7CR2	152-0141-02			DIODE,SIG:ULTRA FAST;40V,150MA,4NS,2PF	27014	FDH9427
A7CR3	152-0141-02			DIODE,SIG:ULTRA FAST;40V,150MA,4NS,2PF	27014	FDH9427
A7CR11	152-0141-02			DIODE,SIG:ULTRA FAST;40V,150MA,4NS,2PF	27014	FDH9427
A7CR12	152-0141-02			DIODE,SIG:ULTRA FAST;40V,150MA,4NS,2PF	27014	FDH9427
A7CR13	152-0141-02			DIODE,SIG:ULTRA FAST;40V,150MA,4NS,2PF	27014	FDH9427
A7CR21	152-0141-02			DIODE,SIG:ULTRA FAST;40V,150MA,4NS,2PF	27014	FDH9427
A7CR22	152-0141-02			DIODE,SIG:ULTRA FAST;40V,150MA,4NS,2PF	27014	FDH9427
A7CR23	152-0141-02			DIODE,SIG:ULTRA FAST;40V,150MA,4NS,2PF	27014	FDH9427
A7CR180	152-0141-02			DIODE,SIG:ULTRA FAST;40V,150MA,4NS,2PF	27014	FDH9427
A7CR181	152-0141-02			DIODE,SIG:ULTRA FAST;40V,150MA,4NS,2PF	27014	FDH9427
A7CR190	152-0141-02			DIODE,SIG:ULTRA FAST;40V,150MA,4NS,2PF	27014	FDH9427
A7CR191	152-0141-02			DIODE,SIG:ULTRA FAST;40V,150MA,4NS,2PF	27014	FDH9427
A7VR4	152-0395-00			DIODE,ZENER:4.3V,5%,0.4W	04713	1N749ARL
A7VR14	152-0395-00			DIODE,ZENER:4.3V,5%,0.4W	04713	1N749ARL

Replaceable electrical parts list (Cont.)

Component number	Tektronix part number	Effective	Discont'd	Name and description	Mfr. code	Mfr. part no.
A7VR24	152-0395-00			DIODE,ZENER:4.3V,5%,0.4W	04713	1N749ARL
A7VR201	152-0149-00			DIODE,ZENER:10V,5%,0.4W	04713	1N961BRL
A7VR204	152-0149-00			DIODE,ZENER:10V,5%,0.4W	04713	1N961BRL
A7VR207	152-0149-00			DIODE,ZENER:10V,5%,0.4W	04713	1N961BRL
B100	119-4038-01		B038751	FAN,DC:TUBEAXIAL;12V,6.7CFM,7,500RPM,32DBA	0DWW6	FBK-04F12H (100
B100	119-5995-00	B038752	671-2484-05	FAN,DC:TUBEAXIAL;12V,8.12CFM,7,400RPM,29DBA	00795	DFB0412H
B100	119-5995-01	671-2484-06		FAN,DC; TUBEAXIAL, 12V, 0.08A, 8.12CFM, 7400 RPM	TK2476	020-2363-00
V1	154-0965-00		B029999	ELECTRON TUBE:CRT (STANDARD,1740A/1750A/1760 ONLY)	80009	154-0965-00
V1	154-0992-00	B030000		ELECTRON TUBE:CRT (STANDARD,1740A/1750A/1760 ONLY)	TK0JJ	D14-375GH/992/A88
V1	154-0965-16		B029999	ELECTRON TUBE:CRT (OPT 74,1740A/1750A/1760 ONLY)	80009	154-0965-16
V1	154-0992-16	B030000		ELECTRON TUBE:CRT (OPT 74,1740A/1750A/1760 ONLY)	TK0JJ	D14-375WA/992/A88
V1	154-0966-00		B029999	ELECTRON TUBE:CRT (STANDARD,1741A/1751A/1761 ONLY)	80009	154-0966-00
V1	154-0993-00	B030000		ELECTRON TUBE:CRT (STANDARD,1741A/1751A/1761 ONLY)	TK0JJ	D14-375GH/993/A88
V1	154-0966-16		B029999	ELECTRON TUBE:CRT (OPT 74,1741A/1751A/1761 ONLY)	80009	154-0966-16
V1	154-0993-16	B030000		ELECTRON TUBE:CRT (OPT 74,1741A/1751A/1761 ONLY)	TK0JJ	D14-375WA/993/A88
V1	154-0967-00		B029999	ELECTRON TUBE:CRT (STANDARD,1745A/1755A/1765 ONLY)	80009	154-0967-00
V1	154-0994-00	B030000		ELECTRON TUBE:CRT (STANDARD,1745A/1755A/1765 ONLY)	TK0JJ	D14-375GH/994/A88
V1	154-0967-16		B029999	ELECTRON TUBE:CRT (OPT 74,1745A/1755A/1765 ONLY)	80009	154-0967-16
V1	154-0994-16	B030000		ELECTRON TUBE:CRT (OPT 74,1745A/1755A/1765 ONLY)	TK0JJ	D14-375WA/994/A88
W1	174-2746-00			CA ASSY,SP,ELEC:2 X 20,28 AWG,5.5 L,RIBBON (CONNECTED @ A3J5 & A8J1,1740A/1750A-SERIES ONLY)	TK2469	174-2746-00
W3	174-2746-00			CA ASSY,SP,ELEC:2 X 20,28 AWG,5.5 L,RIBBON (CONNECTED @ A3J2 & A8J3,1740A/1750A-SERIES ONLY)	TK2469	174-2746-00
W9	174-2746-00			CA ASSY,SP,ELEC:2 X 20,28 AWG,5.5 L,RIBBON (CONNECTED @ A3J13 & A7J9,1760-SERIES ONLY)	TK2469	174-2746-00
W12	174-2746-00			CA ASSY,SP,ELEC:2 X 20,28 AWG,5.5 L,RIBBON (CONNECTED @ A3J5 & A7J12,1760-SERIES ONLY)	TK2469	174-2746-00
W13	174-2746-00			CA ASSY,SP,ELEC:2 X 20,28 AWG,5.5 L,RIBBON (CONNECTED @ A3J2 & A7J13,1760-SERIES ONLY)	TK2469	174-2746-00

Diagrams/Circuit Board Illustrations

Symbols

Graphic symbols and class designation letters are based on ANSI Standard Y32.2-1975.

Logic symbology is based on ANSI Y32.14-1973 in terms of positive logic. Logic symbols depict the logic function performed and may differ from the manufacturer's data.

Overline, parenthesis, or leading slash indicate a low asserting state.

Example: $\overline{\text{ID CONTROL}}$, (ID CONTROL), or /ID CONTROL.

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).

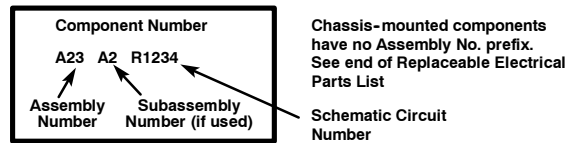
Resistors Ohms (Ω).

The following information and special symbols may appear in this manual.

Assembly Numbers

Each assembly in the instrument is assigned an assembly number (e.g., A20). The assembly number appears on the diagram (in circuit board outline), circuit board illustration title, and lookup table for the schematic diagram.

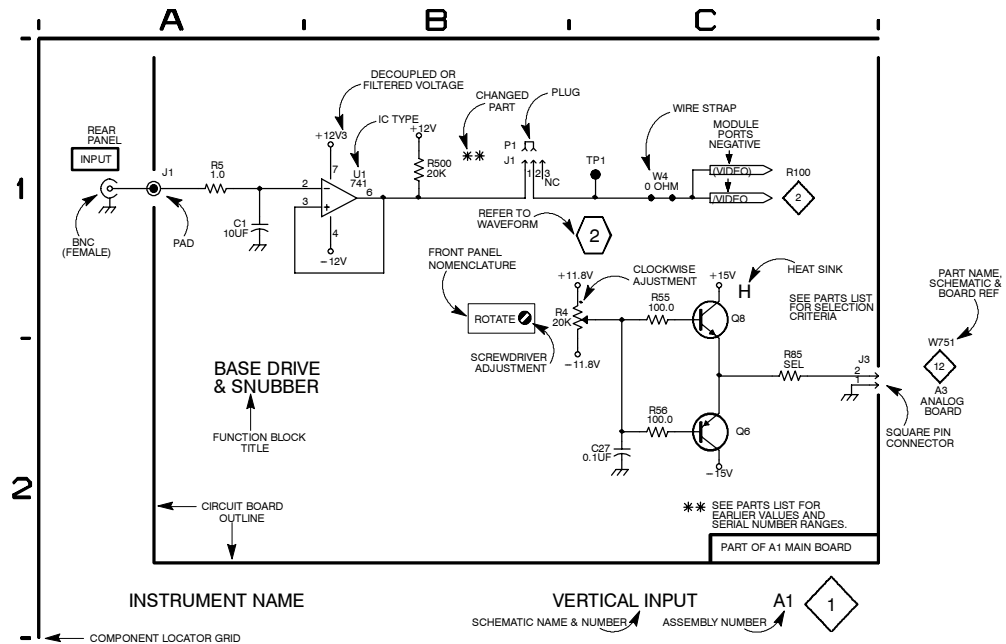
The Replaceable Electrical Parts List is arranged by assembly number in numerical sequence; the components are listed by component number. Example:

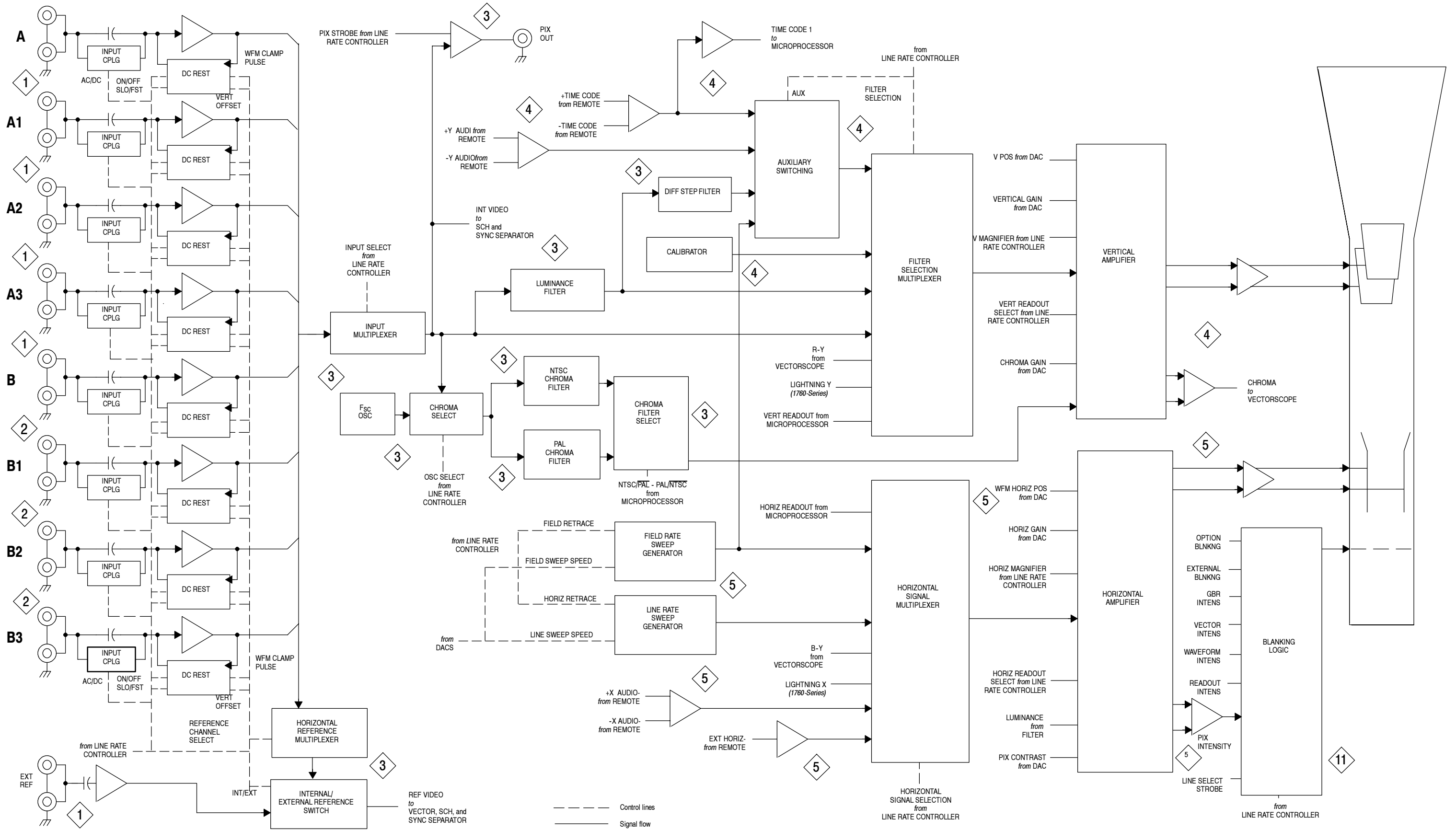


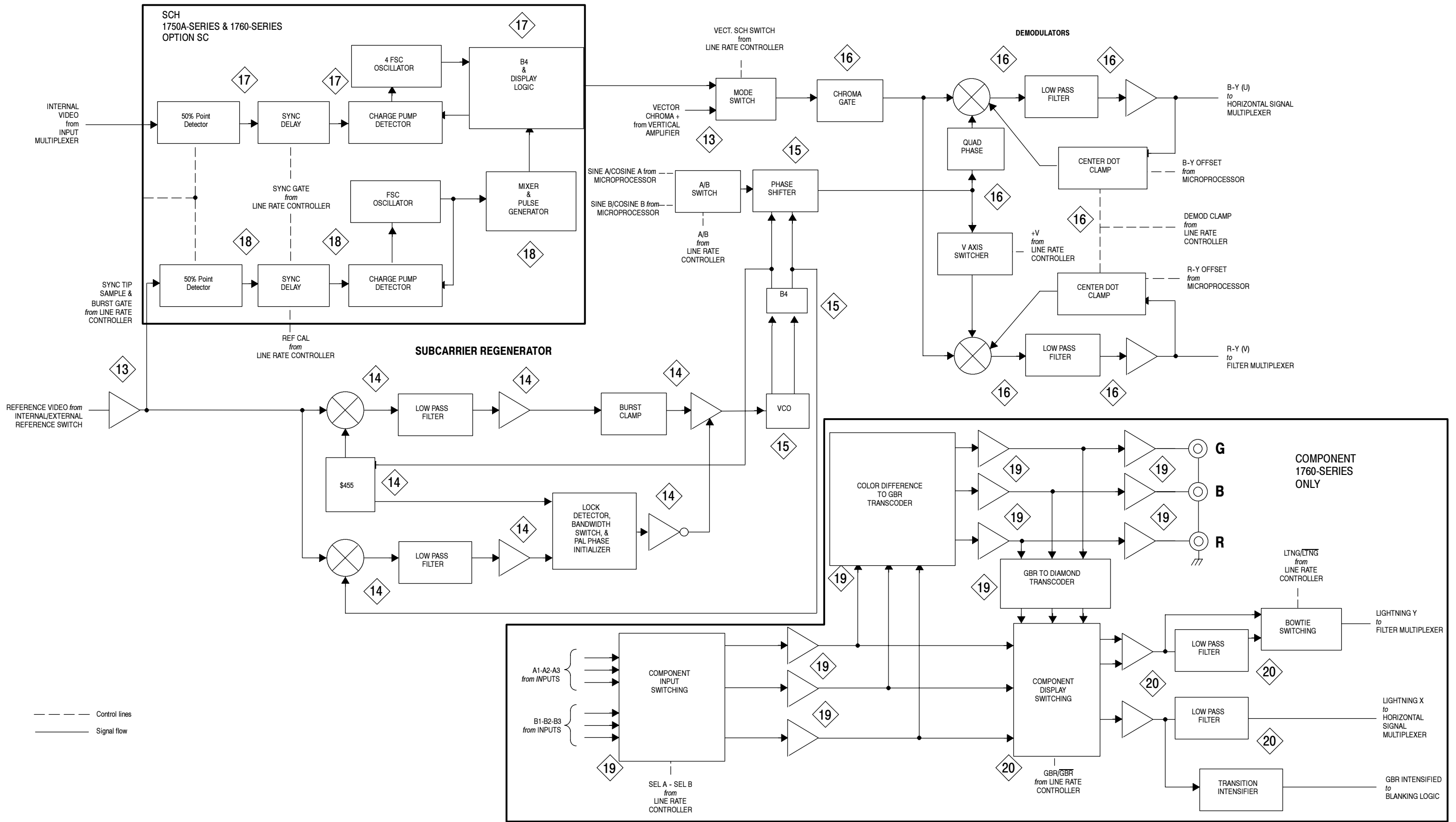
Grid Coordinates

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 facing diagram are listed in the lookup table.

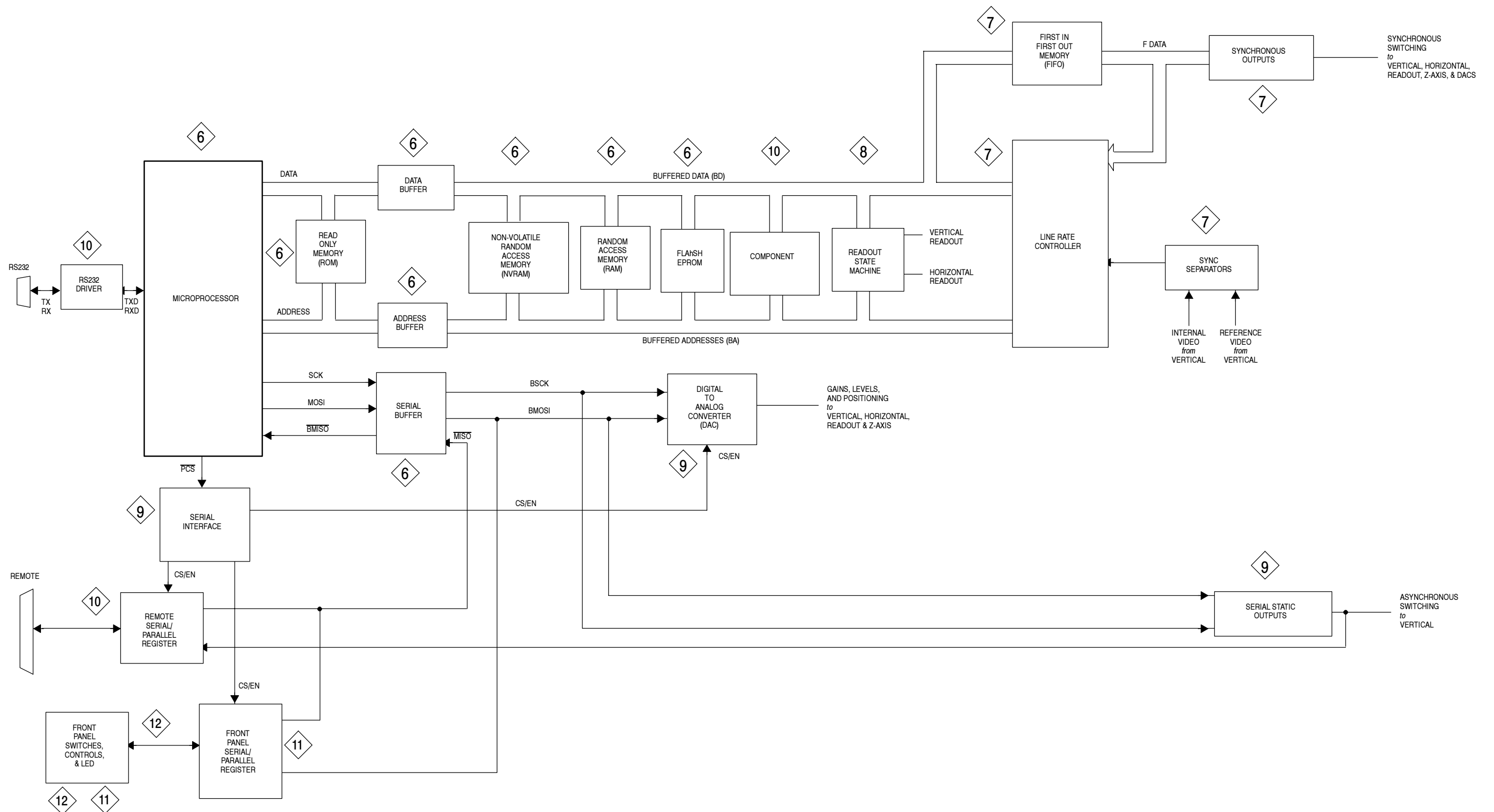
When more than one schematic diagram is used to illustrate the circuitry on a circuit board, the circuit board illustration will only appear opposite the first diagram; the lookup table will list the diagram number of other diagrams that the other circuitry appears on.







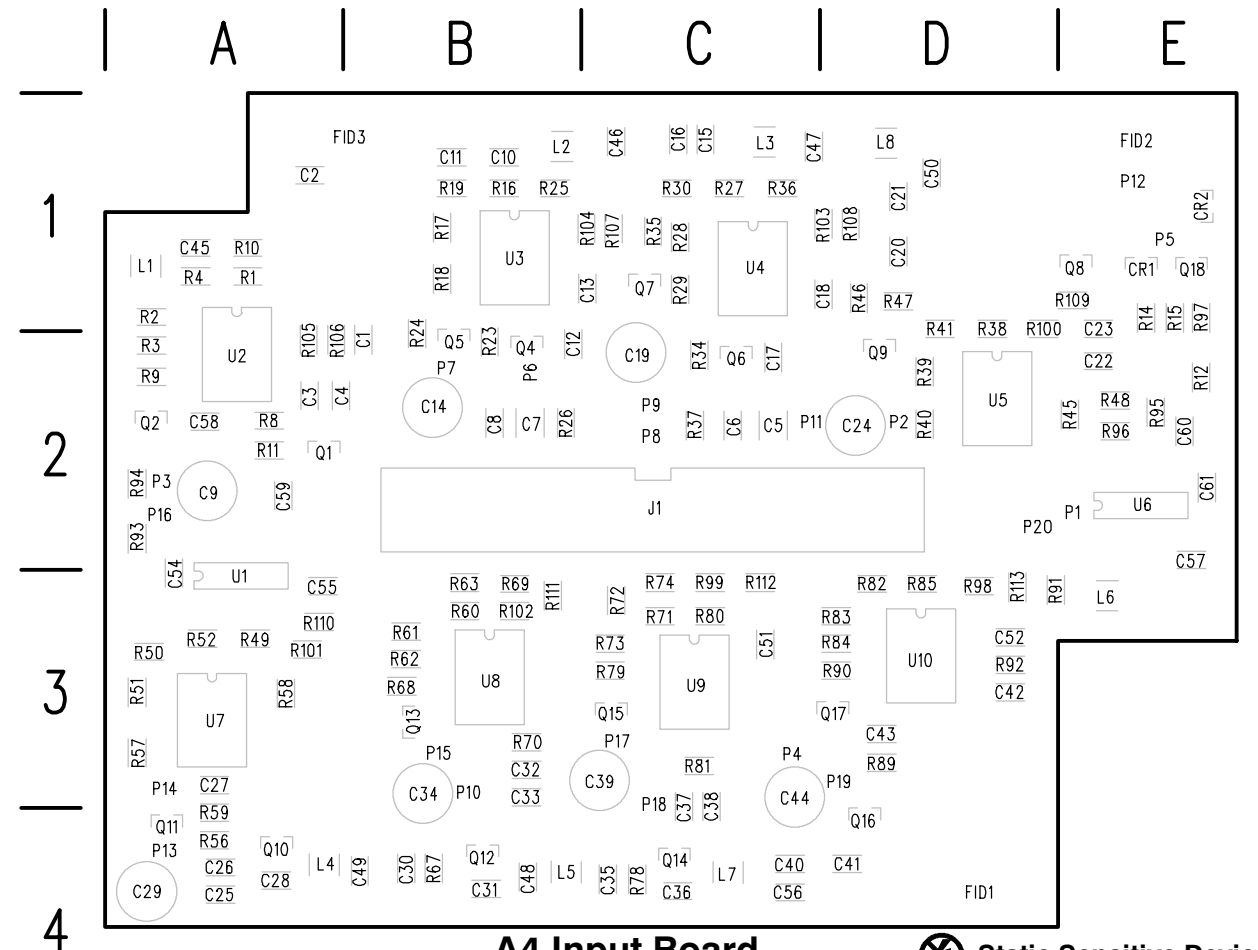
VECTOR - SCH - COMPONENT BLOCK DIAGRAM



A4 Input Board Component Locator Chart

(with cross-references to schematic diagrams 1 and 2)

Comp No	Diag No	Diag Loc	Bd Loc	Comp No	Diag No	Diag Loc	Bd Loc	Comp No	Diag No	Diag Loc	Bd Loc	Comp No	Diag No	Diag Loc	Bd Loc
C1	1	G1	B2	C56	2	E4	C4	Q17	2	C5	D3	R71	2	E3	C3
C2	1	G1	A1	C57	2	E5	E2	Q18	1	C5	E1	R72	2	D3	C3
C3	1	D1	A2	C58	1	F2	A2					R73	2	D3	C3
C4	1	E1	B2	C59	1	F3	A2	R1	1	E1	A1	R74	2	D3	C3
C5	2	H3	C2	C60	1	F4	E2	R2	1	D1	A1	R78	2	C4	C4
C6	2	H3	C2	C61	1	F5	E2	R3	1	E1	A2	R79	2	C4	C3
C7	2	H4	B2					R4	1	E1	A1	R80	2	E3	C3
C8	2	H4	B2	CR1	1	C5	E1	R8	1	D1	A2	R81	2	E4	C3
C9	1	D1	A2	CR2	1	C5	E1	R9	1	D1	A2				
C10	1	G2	B1					R10	1	F1	A1	R82	2	E4	D3
C11	1	G2	B1	J1	2	H2	C2	R11	1	F1	A2	R83	2	D5	D3
C12	1	D2	B2	L1	1	F1	A1	R12	1	C5	E2	R84	2	D4	D3
C13	1	E2	C1	L2	1	F2	B1	R14	1	B5	E1	R85	2	D4	D3
C14	1	D2	B2	L3	1	F3	C1	R15	1	B5	E1	R89	2	C5	D3
C15	1	G3	C1	L4	2	E1	A4	R16	1	E2	B1	R90	2	C5	D3
C16	1	G3	C1	L5	2	E2	B4	R17	1	D2	B1	R91	2	E5	E3
C17	1	D4	C2	L6	2	E5	E3	R18	1	E2	B1	R92	2	E5	D3
C18	1	E4	D1	L7	2	E3	C4	R19	1	E2	B1	R93	2	E1	A2
C19	1	D3	C2	L8	1	F5	D1	R23	1	D3	B2	R94	2	E2	A2
C20	1	G5	D1					R24	1	D2	B2	R95	2	E4	E2
C21	1	G5	D1	P1	1	B5	E2	R25	1	F2	B1	R96	2	E4	E2
C22	1	D5	E2	P2	1	B5	D2	R26	1	F2	B2	R97	1	C5	E1
C23	1	E5	E2	P3	1	B1	A2	R27	1	E3	C1	R98	2	E4	D3
C24	1	D4	D2	P4	2	B4	C3					R99	2	E3	C3
C25	2	G1	A4	P5	2	B5	E1	R28	1	D3	C1	R100	1	F4	D2
C26	2	G1	A4	P6	1	B2	B2	R29	1	E3	C1	R101	2	E1	A3
C27	2	D1	A3	P7	1	B2	B2	R30	1	E3	C1	R102	2	E2	B3
C28	2	D1	A4	P8	1	B3	C2	R34	1	D4	C2	R103	1	F3	D1
C29	2	D1	A4	P9	1	B3	C2	R35	1	D4	C1	R104	1	F2	C1
C30	2	G1	B4	P10	2	B2	B3	R36	1	F3	C1				
C31	2	G1	B4	P11	1	B4	C2	R37	1	F4	C2	R105	1	F1	A2
C32	2	D3	B3	P12	2	B5	E1	R38	1	E4	D2	R106	1	F1	B2
C33	2	D3	B3	P13	2	B1	A4	R39	1	D4	D2	R107	1	F2	C1
C34	2	D2	B3	P14	2	B1	A3	R40	1	E4	D2	R108	1	F3	D1
C35	2	G1	C4	P15	2	B2	B3					R109	1	F4	D1
C36	2	G1	C4	P16	1	B1	A2	R41	1	E4	D2	R110	2	F1	A3
C37	2	D4	C4	P17	2	B3	C3	R45	1	D5	E2	R111	2	F2	B3
C38	2	D4	C4	P18	2	B3	C4	R46	1	D5	D1	R112	2	F3	C3
C39	2	D3	C3	P19	2	B5	D3	R47	1	F4	D1	R113	2	F4	D3
C40	2	G2	C4	P20	1	B5	D2	R48	1	F5	E2				
C41	2	G2	D4	Q1	1	D1	A2	R49	2	E1	A3	U1A	2	E2	A2
C42	2	D5	D3	Q2	1	D1	A2	R50	2	D1	A3	U1B	2	E3	A2
C43	2	D5	D3	Q4	1	D3	B2	R51	2	D1	A3	U1C	1	E3	A2
C44	2	D5	D3	Q5	1	D2	B2	R52	2	D1	A3	U1D	1	E1	A2
C45	1	F1	A1	Q6	1	D4	C2	R56	2	C1	A4	U2	1	E1	A2
C46	1	F2	C1	Q7	1	D5	E1					U3	1	E2	B1
C47	1	F3	D1	Q8	1	D5	D2	R57	2	C1	A3	U4	1	E3	C1
C48	2	E2	B4	Q9	1	D5	D2	R58	2	E1	A3	U5	1	E4	D2
C49	2	E1	B4	Q10	2	D1	A4	R59	2	E1	A4				
C50	1	F5	D1	Q11	2	C1	A4	R60	2	E2	B3	U6A	2	E4	E2
C51	2	E3	C3	Q12	2	D3	B4	R61	2	D2	B3	U6B	2	E5	E2
C52	2	E5	D3	Q13	2	C2	B3	R62	2	D2	B3	U6C	1	E5	E2
C54	2	E2	A3	Q14	2	D4	C4	R63	2	D2	B3	U6D	1	E4	E2
C55	2	E3	A3	Q15	2	C3	C3	R67	2	C3	B4	U7	2	E1	A3
				Q16	2	D5	D4	R68	2	C3	B3	U8	2	E2	B3
								R69	2	E2	B3	U9	2	E3	C3
								R70	2	E3	B3	U10	2	E5	D3



A4 Input Board

Static Sensitive Devices
See Maintenance Section

Schematic Diagram <1> Component Locator Chart

The schematic diagram has an alphanumeric grid to assist in locating parts within that diagram.

Assembly A4. Partial Assembly A4 also shown on Schematic 2.

Comp No	Diag Loc	Bd Loc	Comp No	Diag Loc	Bd Loc	Comp No	Diag Loc	Bd Loc	Comp No	Diag Loc	Bd Loc	Comp No	Diag Loc	Bd Loc
A4 Board			C59	F3	A2	Q8	D5	E1	R34	D4	C2	U5	E4	D2
C1	G1	B2	C60	F4	E2	Q9	D5	D2	R35	D4	C1	U6C	E5	E2
C2	G1	A1	C61	F5	E2	Q18	C5	E1	R36	F3	C1	U6D	E4	E2
C3	D1	A2							R37	F4	C2			
C4	E1	B2	CR1	C5	E1	R1	E1	A1	R38	E4	D2	A4A1 Board (Front)		
C9	D1	A2	CR2	C5	E1	R2	D1	A1				P1	B5	E2
C10	G2	B1				R3	E1	A2	R39	D4	D2	P2	B1	D2
C11	G2	B1	L1	F1	A1	R4	E1	A1	R40	E4	D2	P3	B4	A2
C12	D2	B2	L2	F2	B1	R8	D1	A2	R41	E4	D2	P6	B3	B2
C13	E2	C1	L3	F3	C1	R9	D1	A2	R45	D5	E2	P7	B3	B2
C14	D2	B2	L8	F5	D1	R10	F1	A1	R46	D5	D1	P8	B2	C2
C15	G3	C1	P1	B5	E2	R11	F1	A2	R47	F4	D1	P9	B2	C2
C16	G3	C1	P2	B5	D2	R12	C5	E2	R48	F5	E2	P11	B1	C2
C17	D4	C2	P3	B1	A2	R14	B5	E1	R97	C5	E1	P16	B5	A2
C18	E4	D1	P6	B2	B2	R15	B5	E1	R100	F4	D2	P20	B5	D2
			P7	B2	B2	R16	E2	B1	R103	F3	D1	A4A1 Board (Back)		
C19	D3	C2				R17	D2	B1	R104	F2	C1	J2	A5	A2
C20	G5	D1	P8	B3	C2	R18	E2	B1	R105	F1	A2	J3	A3	B2
C21	G5	D1	P9	B3	C2				R106	F1	B2	J4	A4	B2
C22	D5	E2	P11	B4	C2	R19	E2	B1	R107	F2	C1	J5	A2	C1
			P16	B1	A2	R23	D3	B2				J6	A2	C2
C23	E5	E2	P20	B5	D2	R24	D2	B2	R108	F3	D1	J7	A1	D1
C24	D4	D2				R25	F2	B1	R109	F4	D1	J8	A1	D2
C45	F1	A1	Q1	D1	A2	R26	F2	B2				J17	A5	D2
			Q2	D1	A2	R27	E3	C1	U1C	E3	A2	J18	A5	D2
C46	F2	C1	Q4	D3	B2	R28	D3	C1	U1D	E1	A2	J100	A4	A1
C47	F3	D1	Q5	D2	B2				U2	E1	A2			
C50	F5	D1	Q6	D4	C2	R29	E3	C1	U3	E2	B1			
C58	F2	A2	Q7	D3	C1	R30	E3	C1	U4	E3	C1			

A B C D E F G H

1

2

3

4

5

A

A1

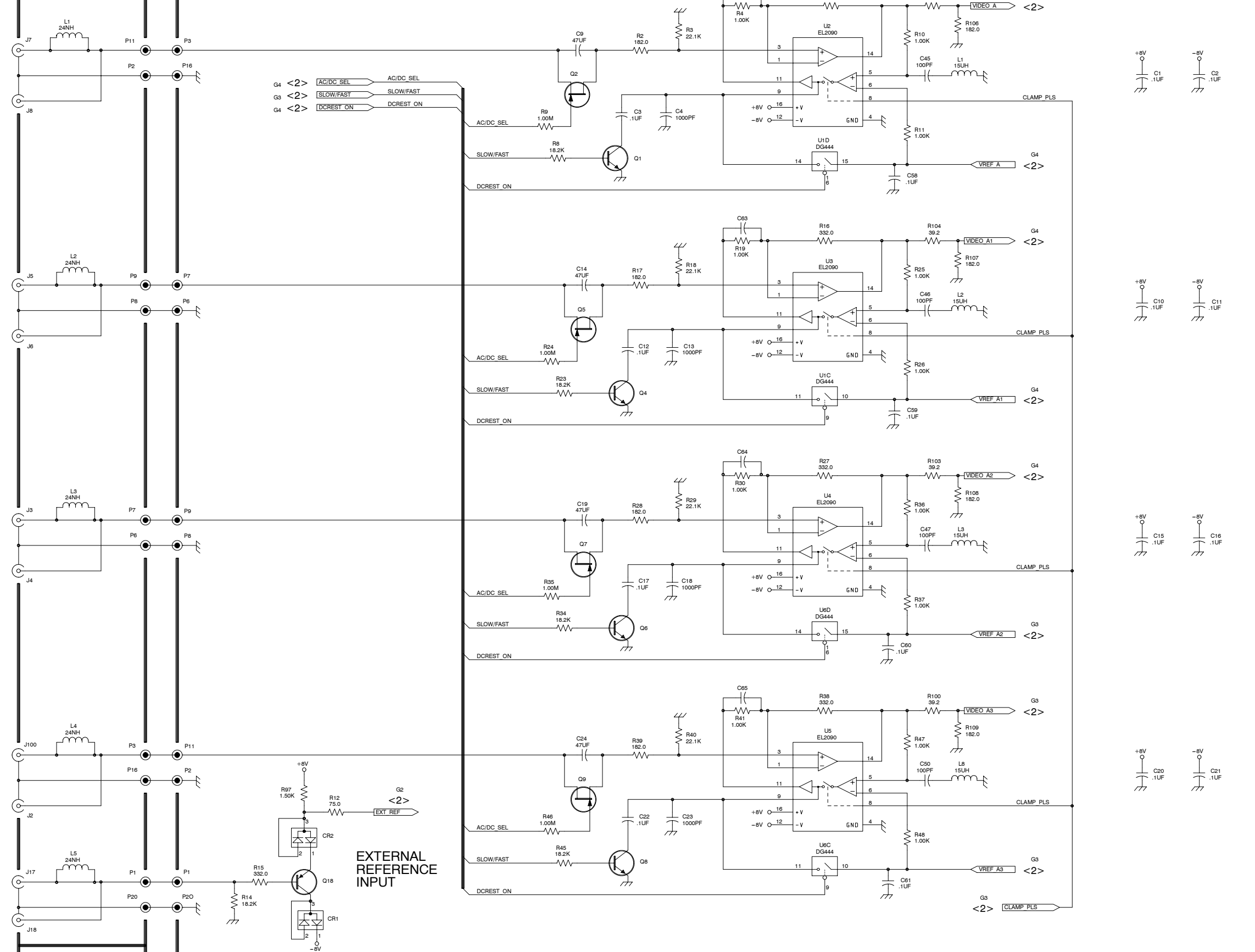
INPUTS

A2

A3

EXT REF

INPUT AMPLIFIERS



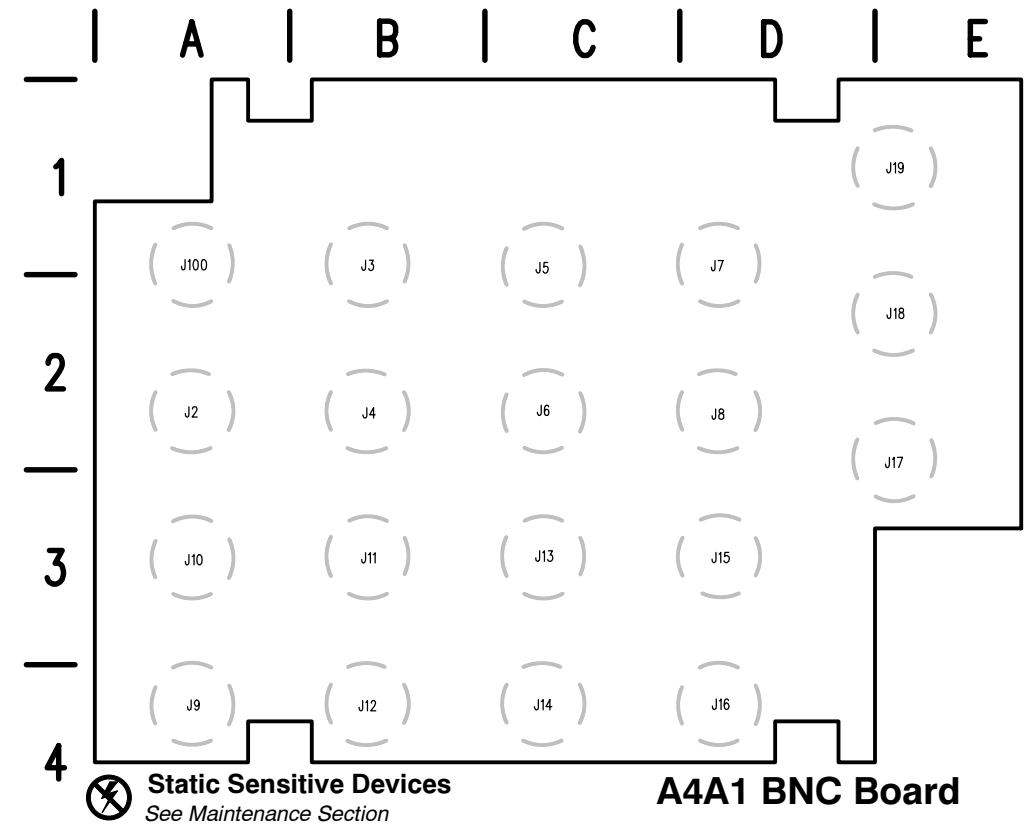
PART OF A4A1 BNC BOARD

PART OF A4 INPUT BOARD

A4A1 BNC Board Component Locator Chart

(with cross-references to schematic diagrams 1 and 2)

Comp No	Diag No	Diag Loc	Bd Loc	Comp No	Diag No	Diag Loc	Bd Loc
Front of Board				Back of Board			
P1	1	B5	E2	J2	1	A5	A2
P2	1	B1	D2	J3	1	A3	B2
P3	1	B4	A2	J4	1	A4	B2
P4	2	B1	C3	J5	1	A2	C1
P5	2	B5	E1	J6	1	A2	C2
P6	1	B3	B2	J7	1	A1	D1
P7	1	B3	B2	J8	1	A1	D2
P8	1	B2	C2	J9	2	A4	A4
P9	1	B2	C2	J10	2	A5	A3
P10	2	B3	B3	J11	2	A3	B3
P11	1	B1	C2	J12	2	A4	B4
P12	2	B5	E1	J13	2	A2	C3
P13	2	B5	A4	J14	2	A2	C4
P14	2	B4	A4	J15	2	A1	D3
P15	2	B3	B3	J16	2	A1	D4
P16	1	B5	A2	J17	1	A5	D2
P17	2	B2	C3	J18	1	A5	D2
P18	2	B2	C3	J19	2	A5	D1
P19	2	B1	D3	J100	1	A4	A1
P20	1	B5	D2				



Schematic Diagram <2> Component Locator Chart

The schematic diagram has an alphanumeric grid to assist in locating parts within that diagram.

Assembly A4. Partial Assembly A4 also shown on Schematic 1.

Comp No	Diag Loc	Bd Loc	Comp No	Diag Loc	Bd Loc	Comp No	Diag Loc	Bd Loc	Comp No	Diag Loc	Bd Loc
A4 Board			J1	H2	C2	R61	D2	B3	R111	F2	B3
C5	H3	C2	L4	E1	A4	R62	D2	B3	R112	F3	C3
C6	H3	C2	L5	E2	B4	R63	D2	B3	R113	F4	D3
C7	H4	B2	L6	E5	E3	R67	C3	B4	U1A	E2	A2
C8	H4	B2	L7	E3	C4	R68	C3	B3	U1B	E3	A2
C25	G1	A4	P4	B4	C3	R69	E2	B3	U6A	E4	E2
C26	G1	A4	P5	B5	E1	R70	E3	B3	U6B	E5	E2
C27	D1	A3	P10	B2	B3	R71	E3	C3	U7	E1	A3
C28	D1	A4	P12	B5	E1	R72	D3	C3	U8	E2	B3
C29	D1	A4	P13	B1	A4	R73	D3	C3	U9	E3	C3
C30	G1	B4	P14	B1	A3	R74	D3	C3	U10	E5	D3
C31	G1	B4	P15	B2	B3	R78	C4	C4	A4A1 Board (Front)		
C32	D3	B3	P17	B3	C3	R79	C4	C3	P4	B1	C3
C33	D3	B3	P18	B3	C4	R80	E3	C3	P5	B5	E1
C34	D2	B3	P19	B5	D3	R81	E4	C3	P10	B3	B3
C35	G1	C4	Q10	D1	A4	R82	E4	D3	P12	B5	E1
C36	G1	C4	Q11	C1	A4	R83	D5	D3	P13	B5	A4
C37	D4	C4	Q12	D3	B4	R84	D4	D3	P14	B4	A4
C38	D4	C4	Q13	C2	B3	R85	D4	D3	P15	B3	B3
C39	D3	C3	Q14	D4	C4	R89	C5	D3	P17	B2	C3
C40	G2	C4	Q15	C3	C3	R90	C5	D3	P18	B2	C3
C41	G2	D4	Q16	D5	D4	R91	E5	E3	P19	B1	D3
C42	D5	D3	Q17	C5	D3	R92	E5	D3	A4A1 Board (Back)		
C43	D5	D3	R49	E1	A3	R93	E1	A2	J9	A4	A4
C44	D5	C4	R50	D1	A3	R94	E2	A2	J10	A5	A3
C48	E2	B4	R51	D1	A3	R95	E4	E2	J11	A3	B3
C49	E1	B4	R52	D1	A3	R96	E4	E2	J12	A4	B4
C51	E3	C3	R56	C1	A4	R98	E4	D3	J13	A2	C3
C52	E5	D3	R57	C1	A3	R99	E3	C3	J14	A2	C4
C54	E2	A3	R58	E1	A3	R101	E1	A3	J15	A1	D3
C55	E3	A3	R59	E1	A4	R102	E2	B3	J16	A1	D4
C56	E4	C4	R60	E2	B3	R110	F1	A3	J19	A5	D1
C57	E5	E2									

A B C D E F G H

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B

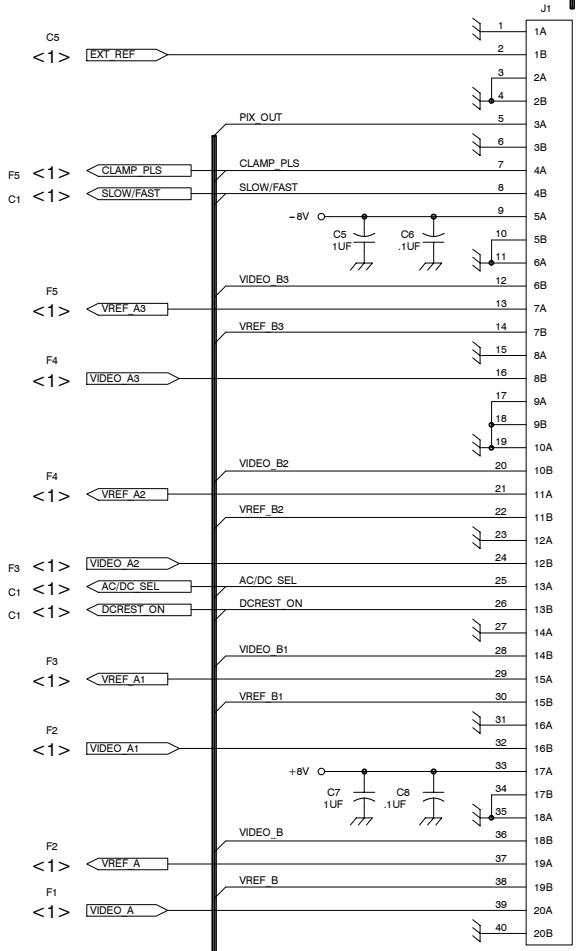
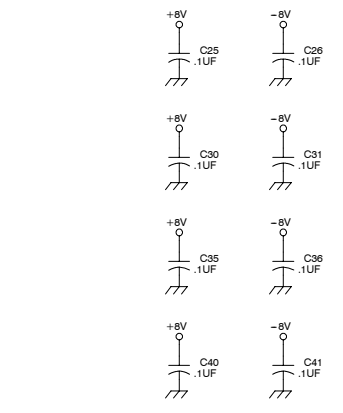
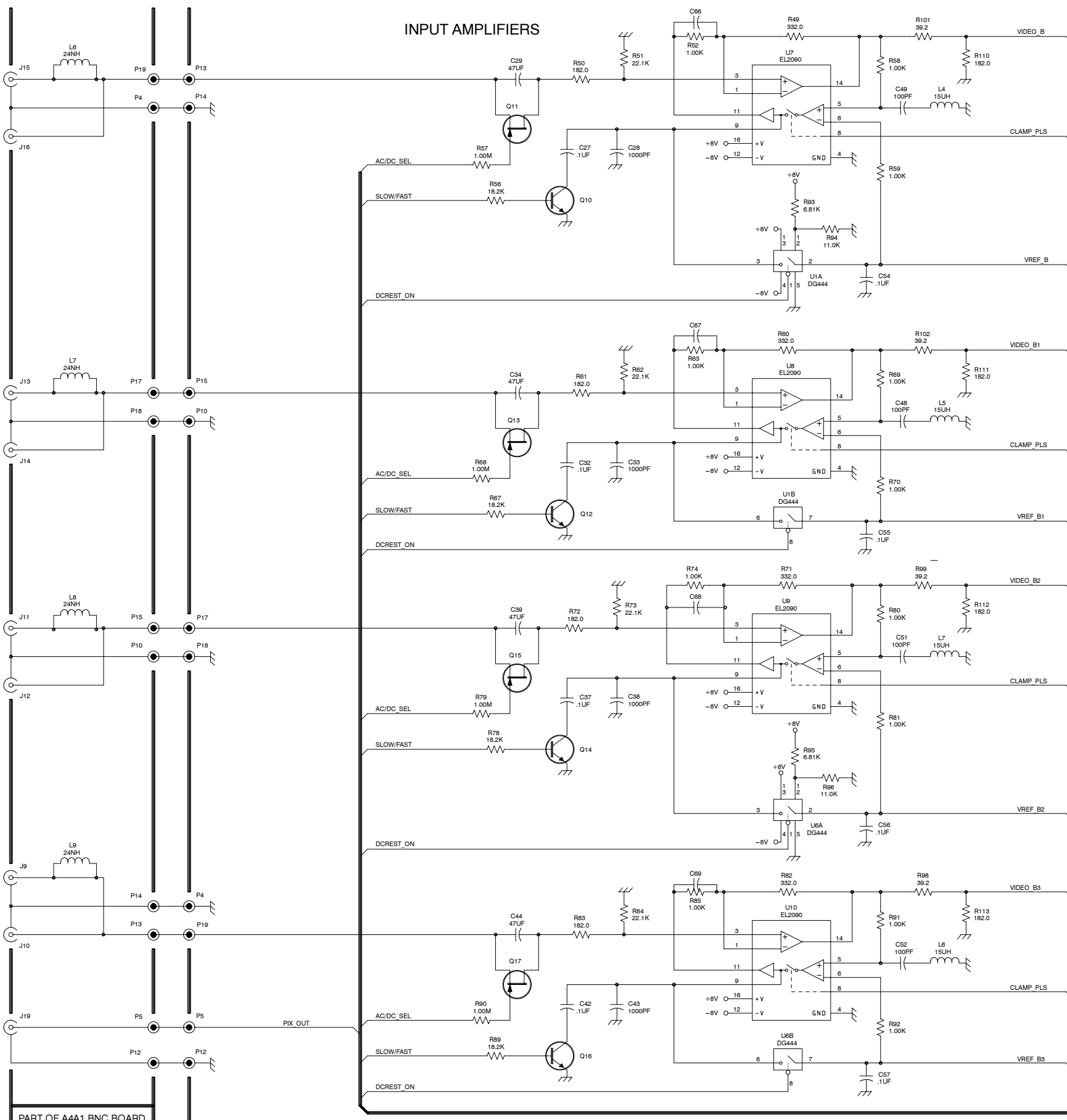
B1

INPUTS

B2

B3

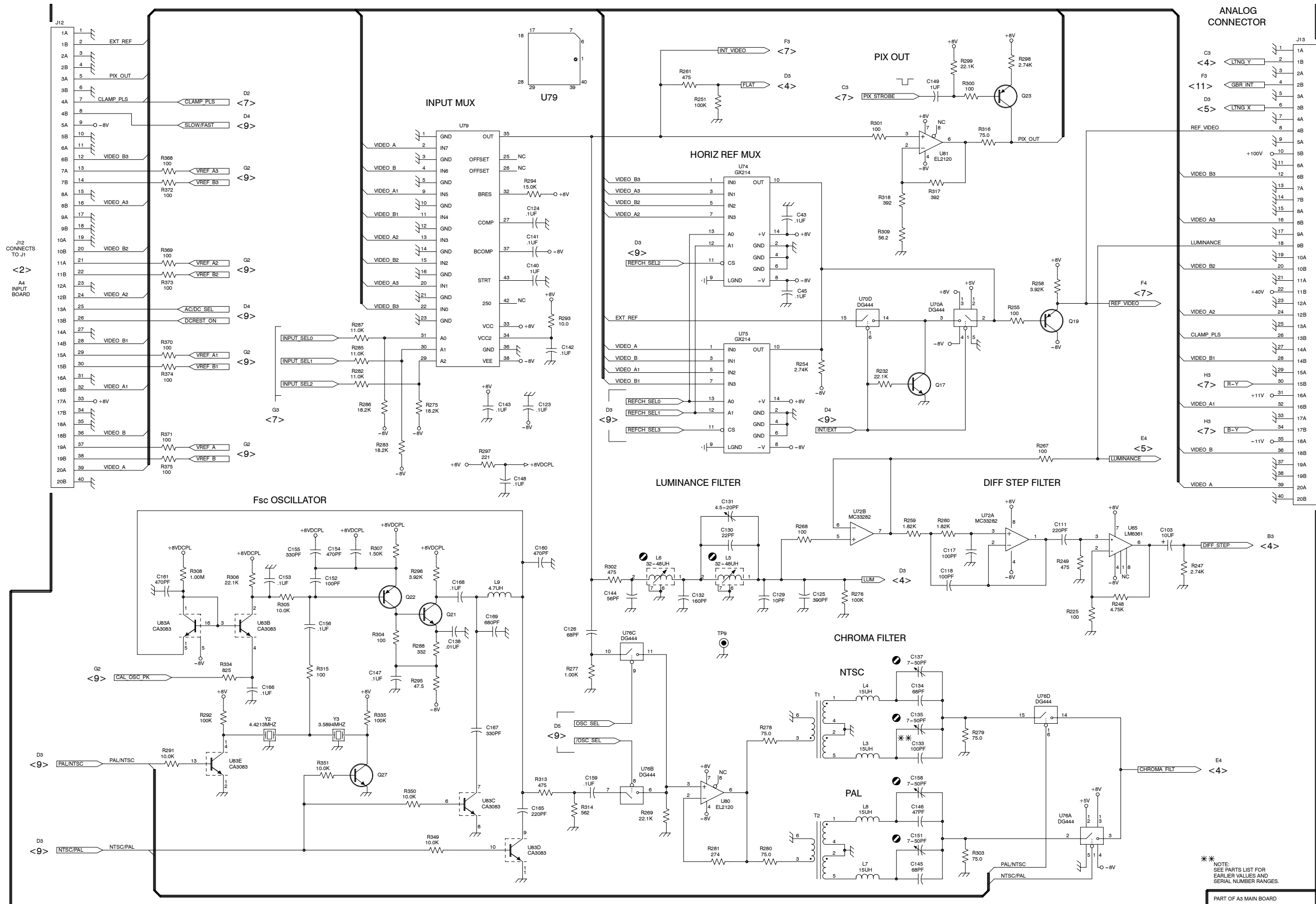
PIX OUT



J1 CONNECTS TO J12 A3 MAIN BOARD

PART OF A4A1 BNC BOARD

PART OF A4 INPUT BOARD

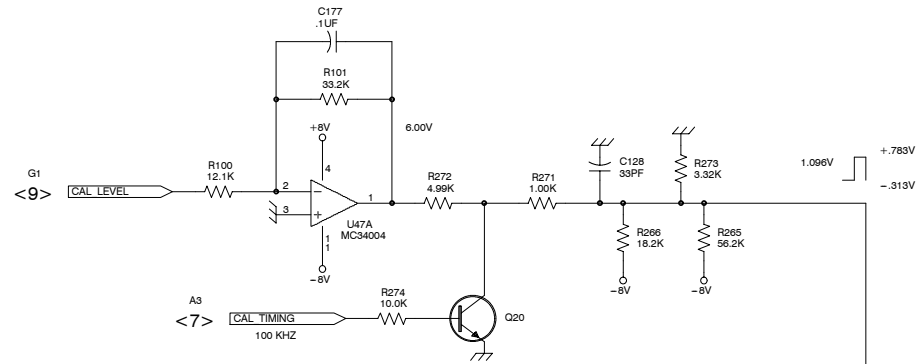


NOTE:
SEE PARTS LIST FOR
EARLIER VALUES AND
SERIAL NUMBER RANGES.

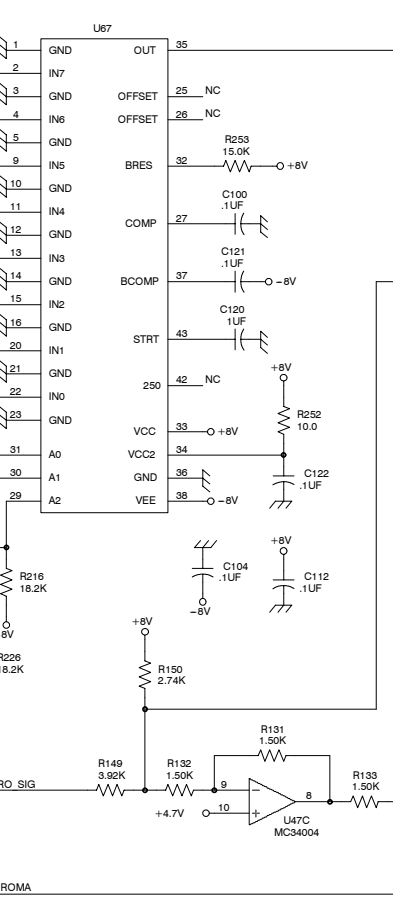
PART OF A3 MAIN BOARD

* 1760 SERIES ONLY
J13 CONNECTS TO J9
A7 COMPONENT BOARD

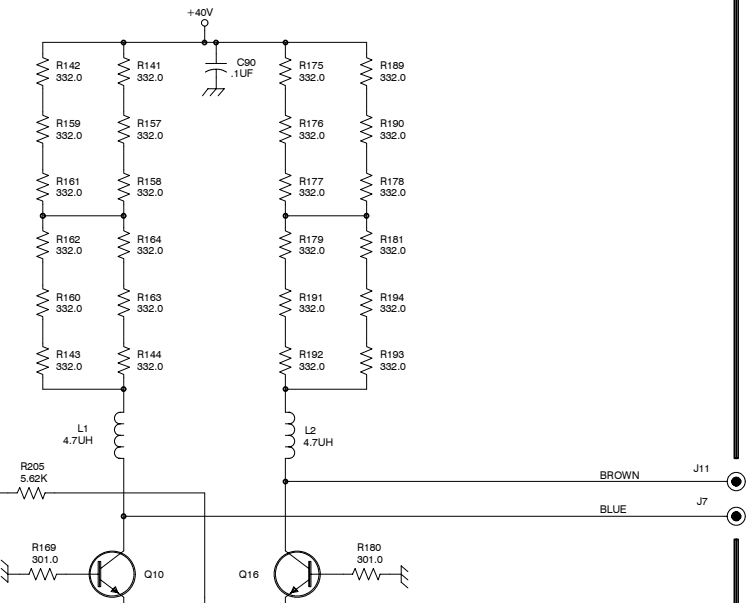
SQUARE WAVE CALIBRATOR



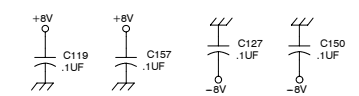
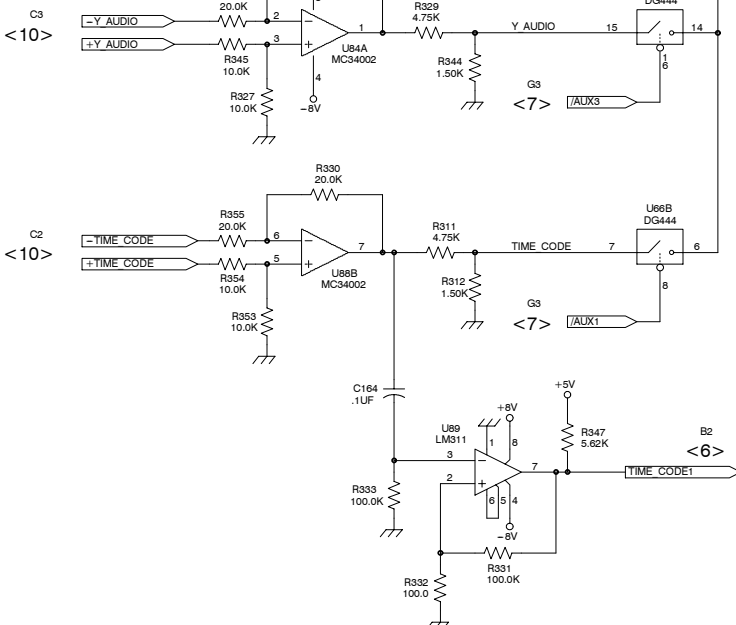
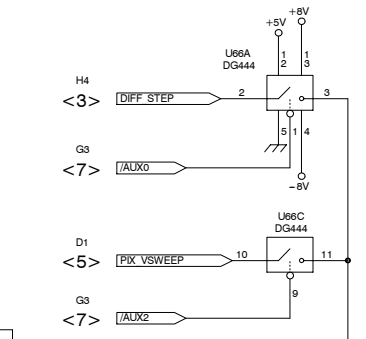
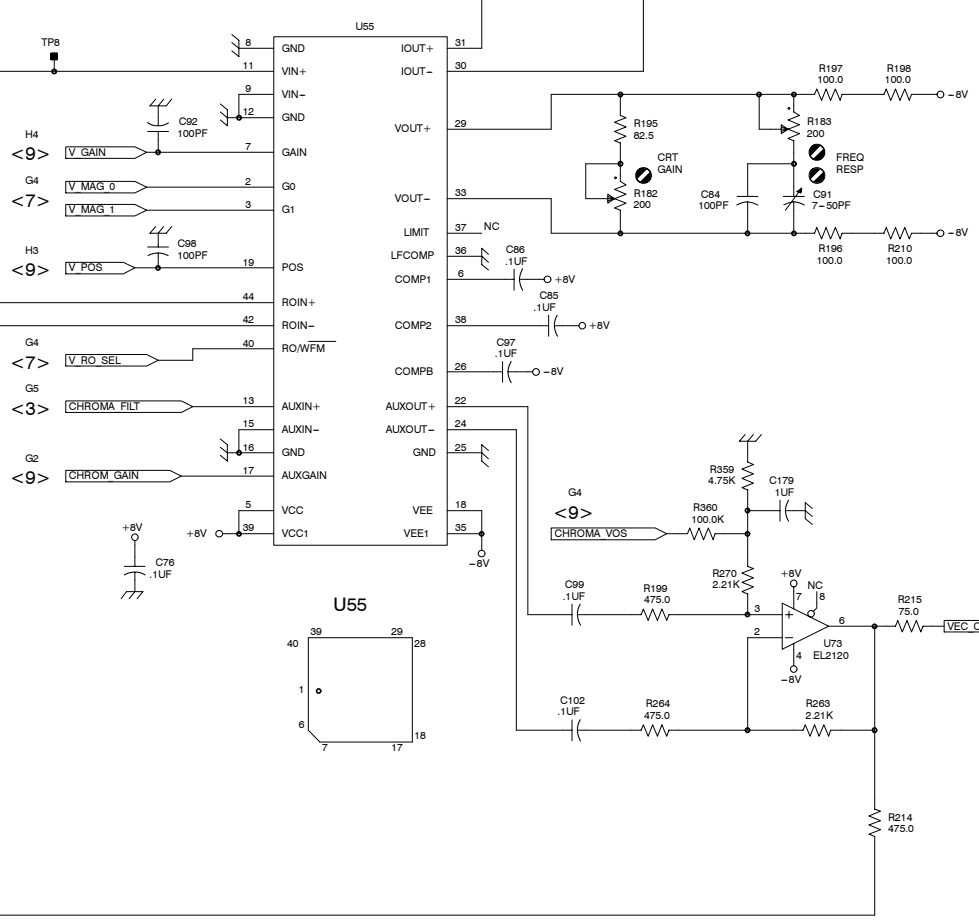
FILTER MUX



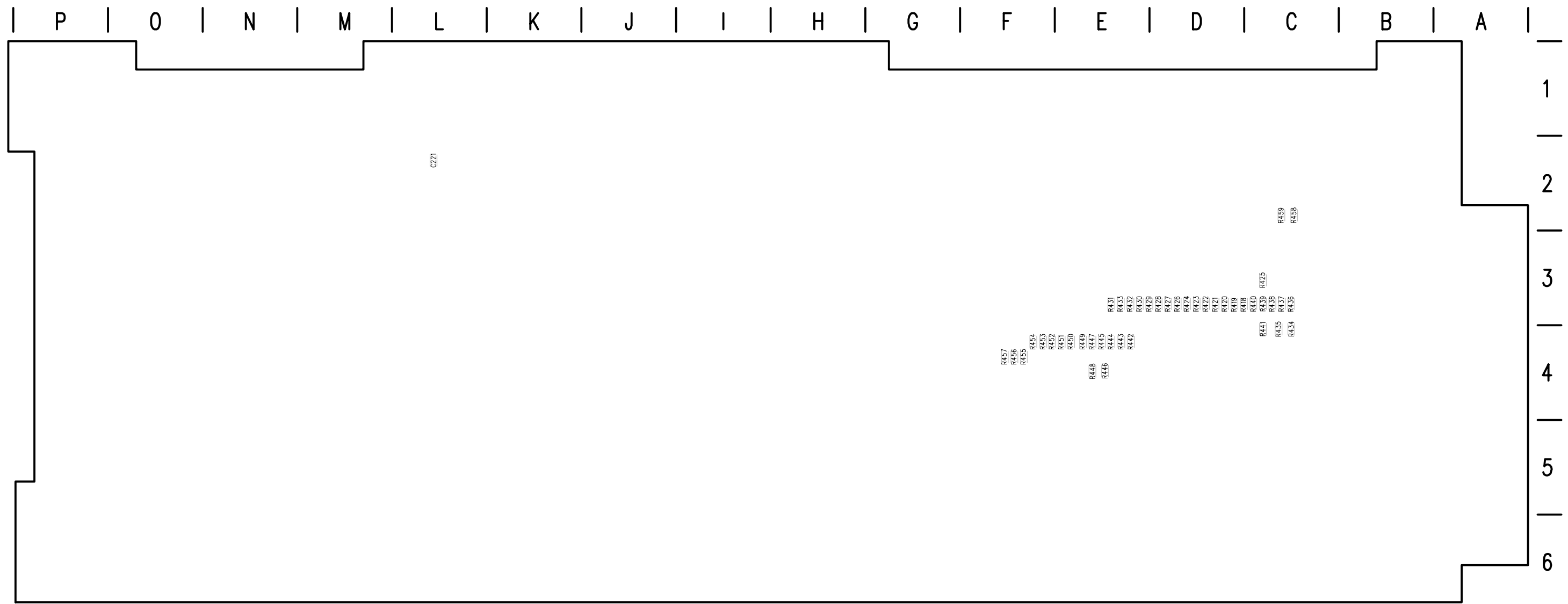
VERTICAL DEFLECTION



VERTICAL AMPLIFIER



PART OF A3 MAIN BOARD



A3 Main Board – Back

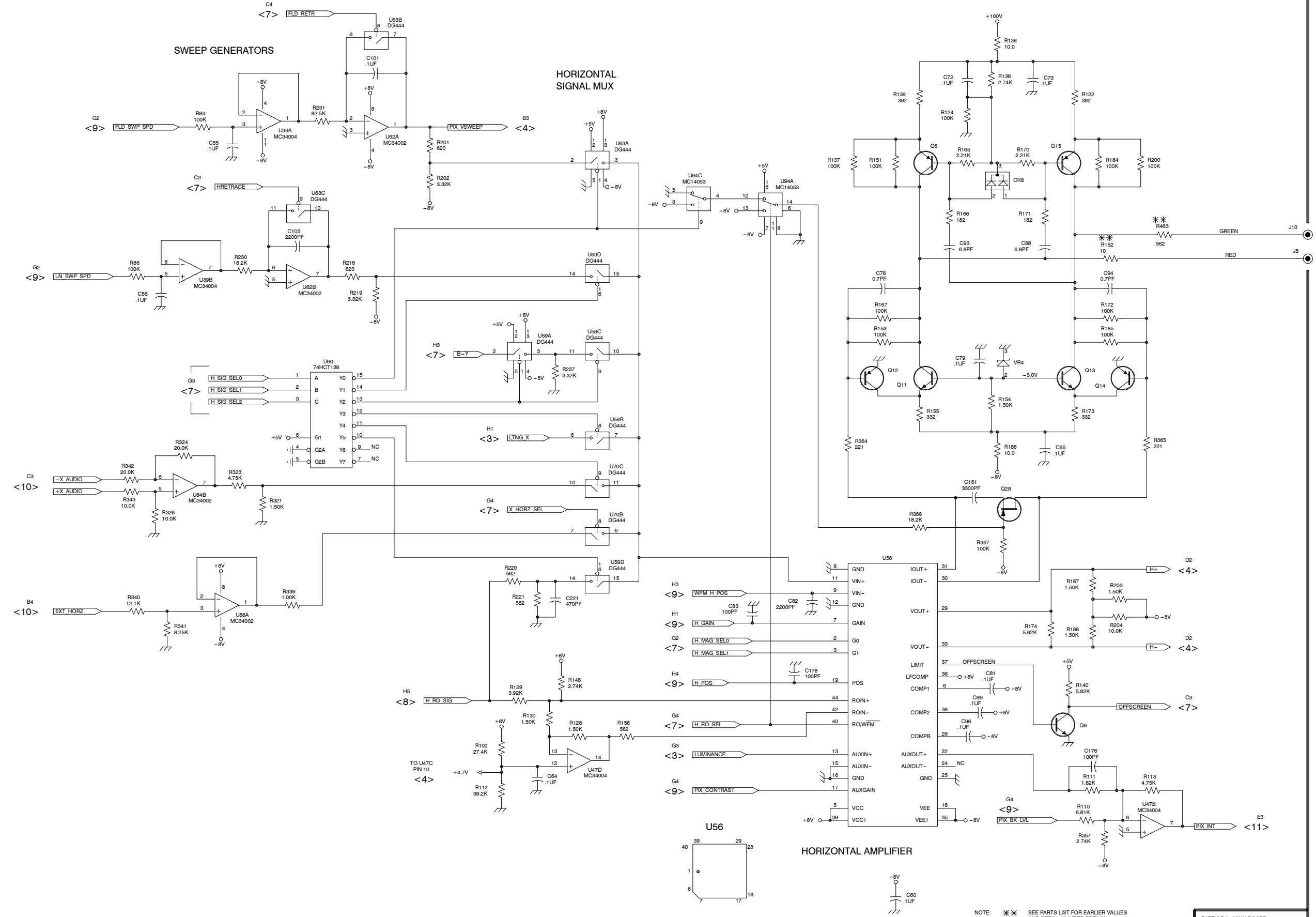
Board locator chart is on the back of Schematic 3 (integrated with the chart for the front of the board).

The schematic diagram has an alphanumeric grid to assist in locating parts within that diagram.

Schematic Diagram <5> Component Locator Chart

Assembly A3. Partial Assembly A3 also shown on Schematics 3, 4, 6, 7, 8, 9, 10, and 11.

Comp No	Diag Loc	Bd Loc	Comp No	Diag Loc	Bd Loc	Comp No	Diag Loc	Bd Loc	Comp No	Diag Loc	Bd Loc	Comp No	Diag Loc	Bd Loc	Comp No	Diag Loc	Bd Loc	Comp No	Diag Loc	Bd Loc	Comp No	Diag Loc	Bd Loc	Comp No	Diag Loc	Bd Loc			
C55	B1	I1	C93	F2	K1	J8	H2	J1	R102	D4	I5	R139	F1	J1	R171	G2	K1	R204	G4	L2	R340	B4	P4	U47B	G5	J5	U63C	B2	L2
C56	B2	I2	C94	G2	K1	J10	H2	L1	R110	G5	I5	R140	G4	J2	R172	G2	K1	R218	C2	L1	R341	B4	P3	U47D	D5	J5			
C64	D5	I5	C95	G3	L2	Q8	F1	J1	R111	G5	I5	R148	D4	J5	R173	G3	K2	R219	C2	L1	R342	B3	P4	U56	F4	K3	U63D	D2	L2
C72	F1	J1	C96	F4	K3	Q9	G4	J2	R112	D5	I5	R151	F1	J1	R174	G4	K2	R220	D4	L2	R343	B3	P4	U59A	D2	L2	U70B	D3	M1
C73	G1	J1	C101	C1	L1	Q11	F3	K1	R113	G5	I5	R152	G2	J1	R184	G1	L1	R221	D4	L2	R357	G5	I5	U59B	D3	L2	U70C	D3	M1
C78	F2	K1	C105	B2	L1	Q12	F3	K2	R122	G1	J1	R153	F2	K1	R185	G2	K1	R230	B2	L1	R364	F3	K2	U59C	D2	L2	U84B	B3	O4
C79	F2	J2	C176	G5	I5	Q13	G3	K1	R124	F1	J1	R154	F3	J2	R186	F3	K2	R231	C1	L1	R365	G3	K2	U59D	D4	L2	U88A	B4	P3
C80	F5	J3	C178	E4	L3	Q14	G3	K2	R128	D4	J5	R155	F3	K2	R187	G4	K2	R237	D3	L2	R366	F3	L3	U60	C3	L3			
C81	F4	J3	C181	F3	K2	Q15	G1	L1	R129	D4	J5	R156	D4	J2	R188	G4	L2	R321	B3	O3	R367	F3	L3	U62A	C1	L1	U94A	E2	K2
C82	E4	J3	C221	D4	back	Q28	F3	K2	R130	D4	J5	R165	F1	K1	R200	G1	L1	R323	B3	O4	R463	G2	back	U62B	B2	L1	U94C	E2	K2
C83	E4	J3							R136	F1	J1	R166	F2	K1	R201	C1	L1	R324	B3	O4				U63A	D1	L2			
C88	G2	K1	CR8	F2	K1	R83	B1	I1	R137	F1	J1	R167	F2	K1	R202	C2	L1	R326	B3	O4	U39A	B1	I2	U63B	C1	L2	VR4	F2	J2
C89	F4	J2				R86	B2	I2	R138	F1	J1	R170	G1	K1	R203	G4	L1	R339	B4	P3	U39B	B2	I2						



NOTE: ** SEE PARTS LIST FOR EARLIER VALUES AND SERIAL NUMBER BREAKS.

PART OF A3 MAIN BOARD

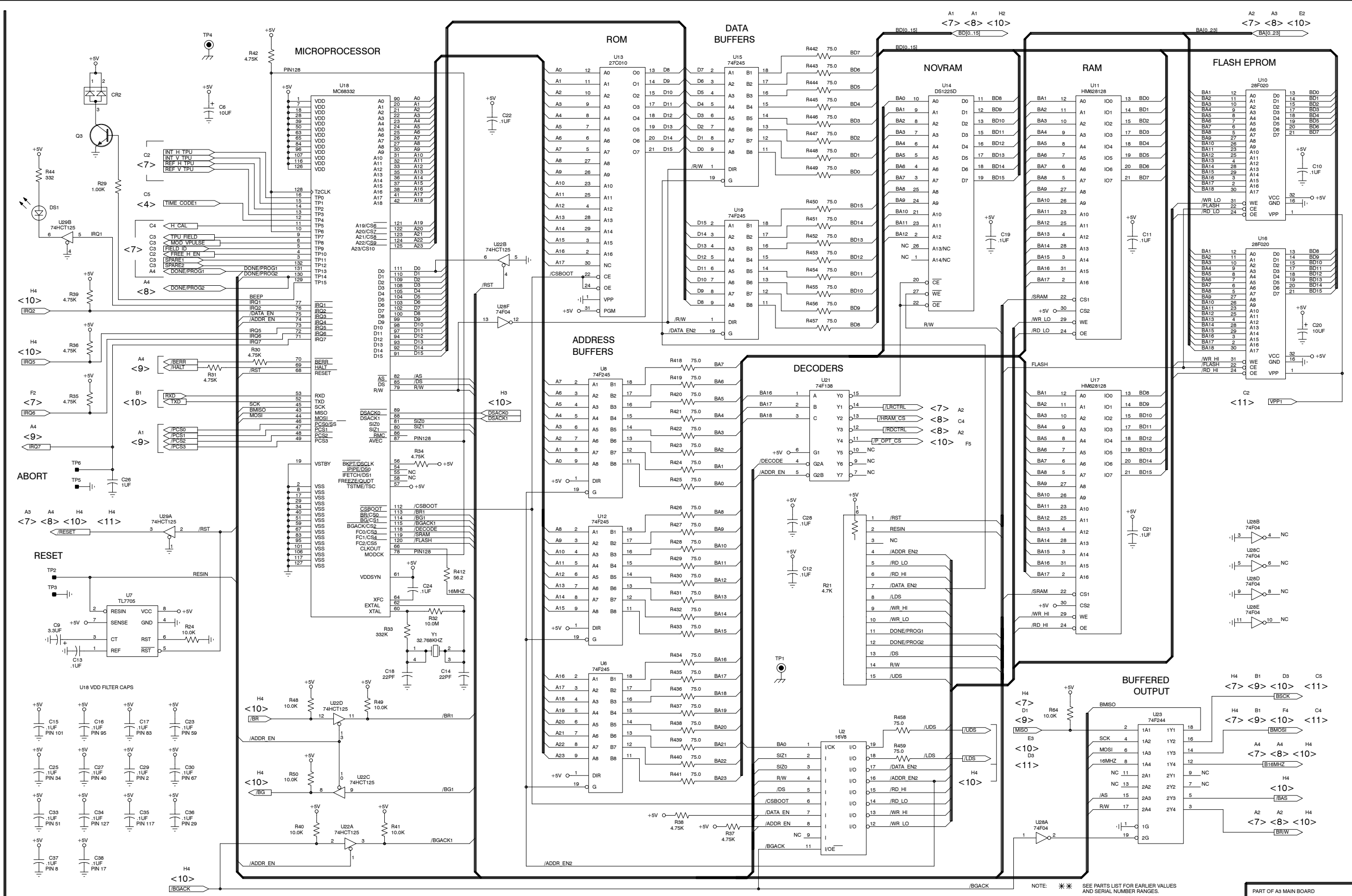
Schematic Diagram <6> Component Locator Chart

The schematic diagram has an alphanumeric grid to assist in locating parts within that diagram.

Assembly A3. Partial Assembly A3 also shown on Schematics 3, 4, 5, 7, 8, 9, 10, and 11.

Comp No	Diag Loc	Bd Loc	Comp No	Diag Loc	Bd Loc	Comp No	Diag Loc	Bd Loc
C6	B1	C4	R38	D5	E6	R454	E2	back
C9	A4	C5	R39	A2	F6	R455	E2	back
C10	H1	C2	R40	B5	F3			
C11	G2	C3	R41	C5	F3	R456	E2	back
C12	D3	C3				R457	E2	back
			R42	B1	F4	R458	F5	back
C13	A4	C4	R44	A1	F6	R459	F5	back
C14	C4	D6	R48	B4	F3			
C15	A4	D5	R49	C4	F3	TP1	E4	C2
C16	A4	D5	R50	B5	F3	TP2	A4	C4
C17	A4	D6				TP3	A4	C4
			R64	G4	G5	TP4	B1	D6
C18	C4	D6	R412	C4	back	TP5	A3	E6
C19	F2	E1	R418	E3	back	TP6	A3	E6
C20	H2	E3	R419	E3	back			
C21	G3	E3	R420	E3	back	U2	E4	C2
C22	E2	E4				U6	D4	C4
			R421	E3	back	U7	A4	C4
C23	B4	E5	R422	E3	back	U8	D3	D4
C24	C4	D6	R423	E3	back	U10	H1	D2
C25	A5	E5	R424	E3	back			
C26	A3	E6	R425	E3	back	U11	G1	C3
C27	A5	E5				U12	D3	D4
			R426	E3	back	U13	D1	D4
C28	E3	F2	R427	E3	back	U14	F1	D2
C29	A5	F5	R428	E4	back	U15	E1	E4
C30	B5	F6	R429	E4	back			
C33	A5	F5	R430	E4	back	U16	H2	E3
C34	A5	F5				U17	G3	E3
			R431	E4	back	U18	B1	F5
C35	A5	F5	R432	E4	back	U19	E2	E4
C36	B5	F5	R433	E4	back	U21	E3	F3
C37	A5	F6	R434	E4	back			
C38	A5	F6	R435	E4	back	U22A	C5	F3
						U22B	C2	F3
CR2	A1	D6	R436	E4	back	U22C	C5	F3
			R437	E4	back	U22D	C4	F3
DS1	A2	G6	R438	E5	back	U23	G5	F5
			R439	E5	back			
LS1	A1	C6	R440	E5	back	U28A	G5	G5
						U28B	H3	G5
Q3	A1	D6	R441	E5	back	U28C	H4	G5
			R442	E1	back	U28D	H4	G5
R21	E3	C3	R443	E1	back	U28E	H4	G5
R24	B4	C4	R444	E1	ck			
R29	A1	D6	R445	E1	back	U28F	C2	G5
R30	B2	D6				U29A	B3	G6
R31	B3	D6	R446	E1	back	U29B	A2	G6
			R447	E1	back			
R32	C4	D6	R448	E1	back	Y1	C4	D6
R33	C4	D6	R449	E1	back			
R34	C3	D6	R450	E2	back			
R35	A3	E6						
R36	A2	E6	R451	E2	back			
			R452	E2	back			
R37	E5	E6	R453	E2	back			

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NOTE: ** SEE PARTS LIST FOR EARLIER VALUES AND SERIAL NUMBER RANGES.

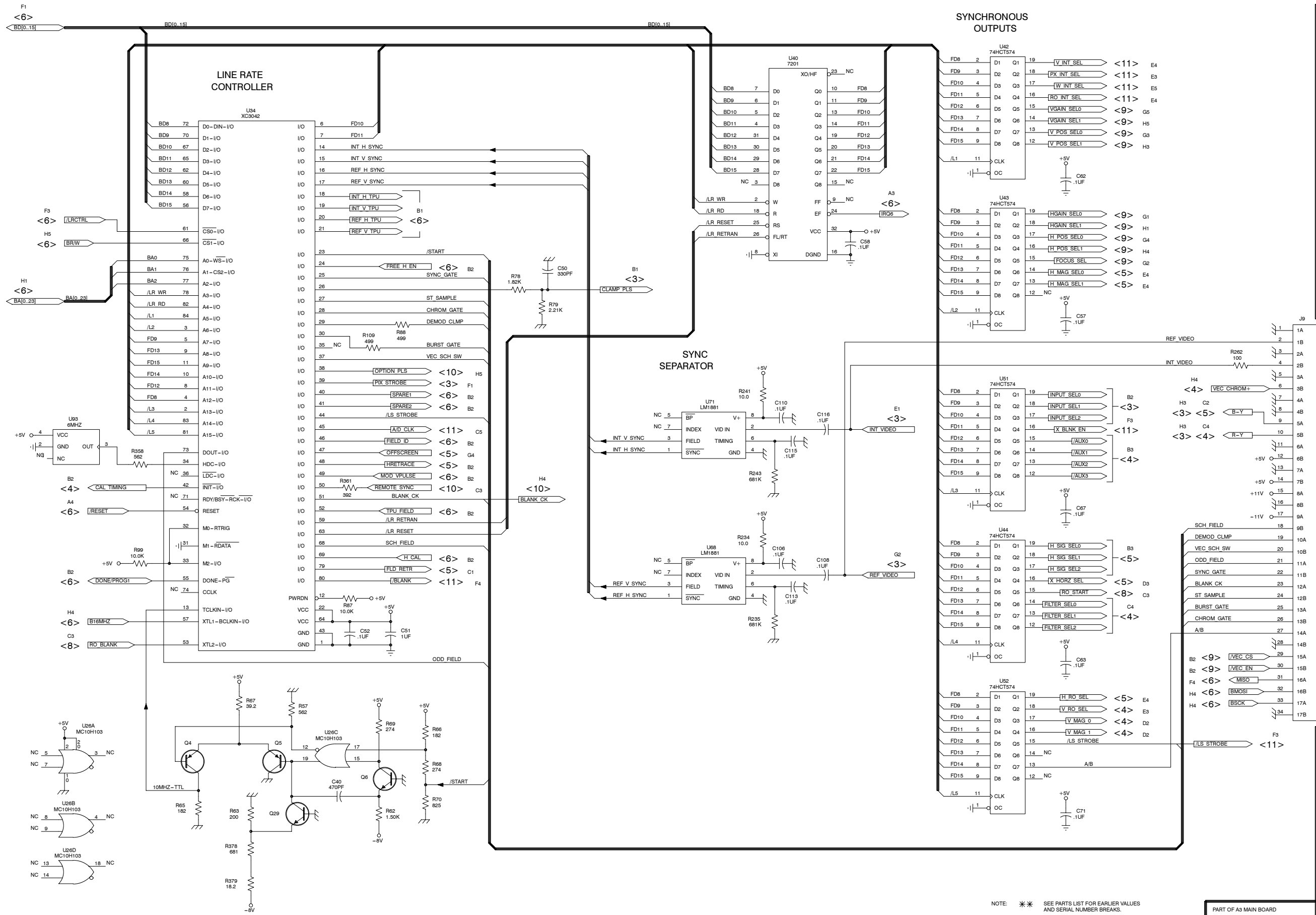
PART OF A3 MAIN BOARD

Schematic Diagram <7> Component Locator Chart

The schematic diagram has an alphanumeric grid to assist in locating parts within that diagram.

Assembly A3. Partial Assembly A3 also shown on Schematics 3, 4, 5, 6, 8, 9, 10, and 11.

Comp No	Diag Loc	Bd Loc	Comp No	Diag Loc	Bd Loc	Comp No	Diag Loc	Bd Loc
C40	C5	F2	Q29	B5	G2	R262	H2	M4
C50	D2	H2						
C51	C4	H4	R57	B4	G3	R358	A3	G3
C52	C4	I4	R62	C5	G2	R361	C3	P6
			R63	B5	G2	R378	B5	G2
C57	G2	I2	R65	B5	G2	R379	B5	G2
C58	E2	I5						
C62	G1	I3	R66	C4	G3	U26A	A5	F3
C63	G4	I3	R67	B4	G3	U26B	A5	F3
			R68	C5	G3	U26C	B5	F3
C67	G3	J3	R69	C4	G3	U26D	A5	F3
C71	G5	J3						
C106	E4	L2	R70	C5	G3	U34	B1	I2
C108	E4	M2	R78	D2	H2	U40	E1	I4
			R79	D2	H2	U42	F1	I2
C110	E3	L3	R87	C4	H4	U43	F2	I3
C113	E4	M2						
C115	E3	M3	R88	C2	I4	U44	F3	I3
C116	E3	M4	R99	A4	I2	U51	F3	I3
			R109	C2	I5	U52	F4	I3
J9	H2	K6	R234	E3	L2	U68	E4	M2
Q4	B5	G3	R235	E4	M2	U71	E3	M3
Q5	B5	G3	R241	E3	M3	U93	A3	G3
Q6	C5	G3	R243	E3	M3			



NOTE: ** SEE PARTS LIST FOR EARLIER VALUES AND SERIAL NUMBER BREAKS. PART OF A3 MAIN BOARD

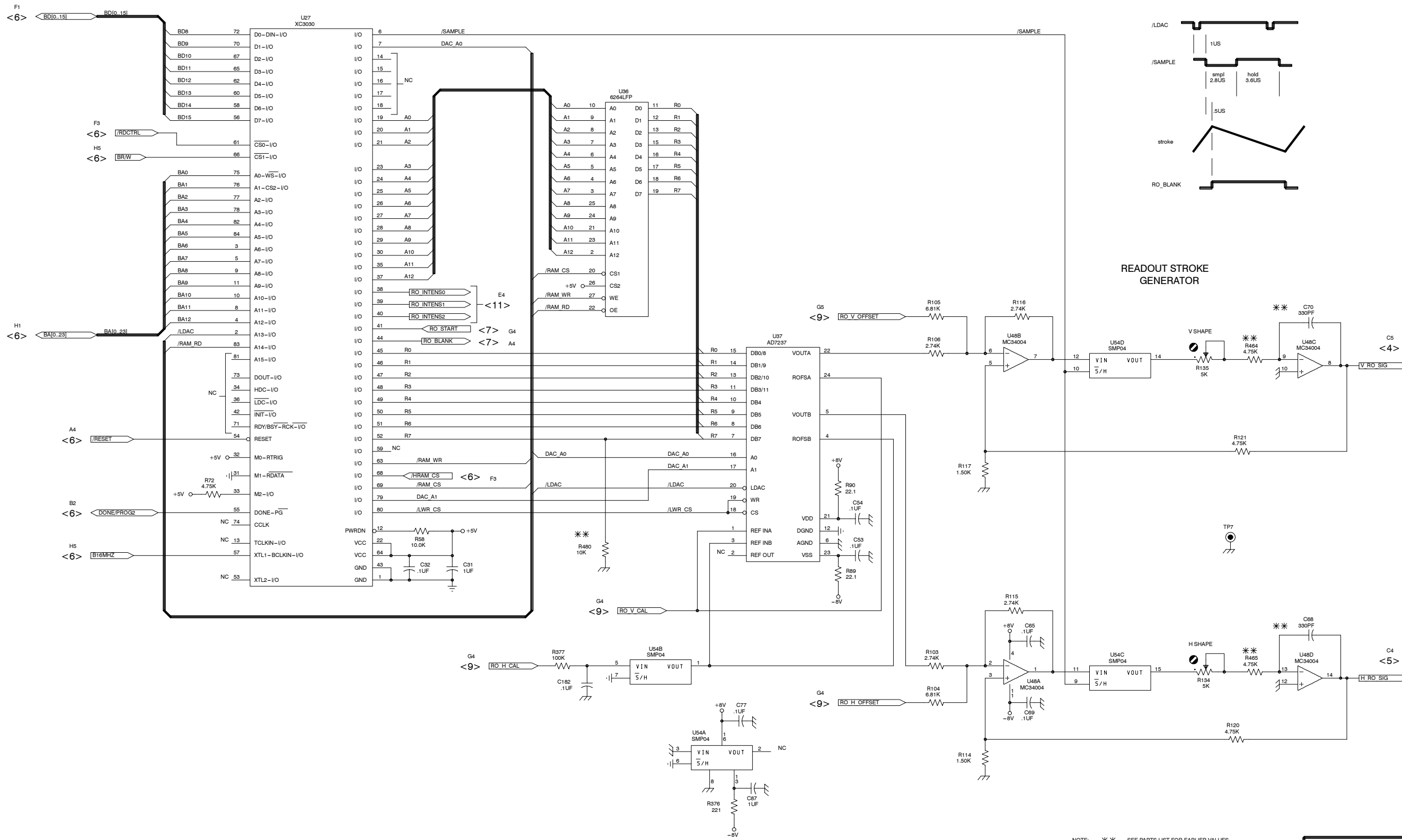
Schematic Diagram <8> Component Locator Chart

The schematic diagram has an alphanumeric grid to assist in locating parts within that diagram.

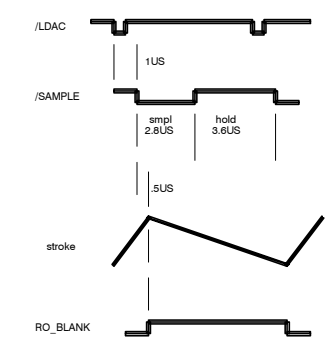
Assembly A3. Partial Assembly A3 also shown on Schematics 3, 4, 5, 6, 7, 9, 10, and 11.

Comp No	Diag Loc	Bd Loc	Comp No	Diag Loc	Bd Loc	Comp No	Diag Loc	Bd Loc
C31	C4	F4	R103	F4	I6	TP7	G4	I6
C32	C4	F4	R104	F5	I6			
C53	E4	H5	R105	F3	I6	U27	B1	F4
C54	E4	H5	R106	F3	I6	U36	D2	H4
						U37	E3	H5
C65	F4	I6	R114	F5	I6	U48A	F4	J6
C68	H4	J6	R115	F4	I6			
C69	F5	J6	R116	F3	I6	U48B	F3	J6
C70	H3	J6	R117	F3	I6	U48C	H3	J6
						U48D	H5	J6
C77	G3	J5	R120	G5	I6	U54A	G3	J6
C87	G3	K6	R121	G3	I6			
C182	D5	J6	R134	G4	J6	U54B	D4	J6
			R135	G3	J6	U54C	G5	J6
R58	C4	F5				U54D	D5	J6
R72	B4	G5	R376	G3	K6			
R89	E4	H5	R377	D4	J6			
R90	E4	H5						

READOUT CONTROL



READOUT STROKE GENERATOR



NOTE: ** SEE PARTS LIST FOR EARLIER VALUES AND SERIAL NUMBER RANGES.

PART OF A3 MAIN BOARD

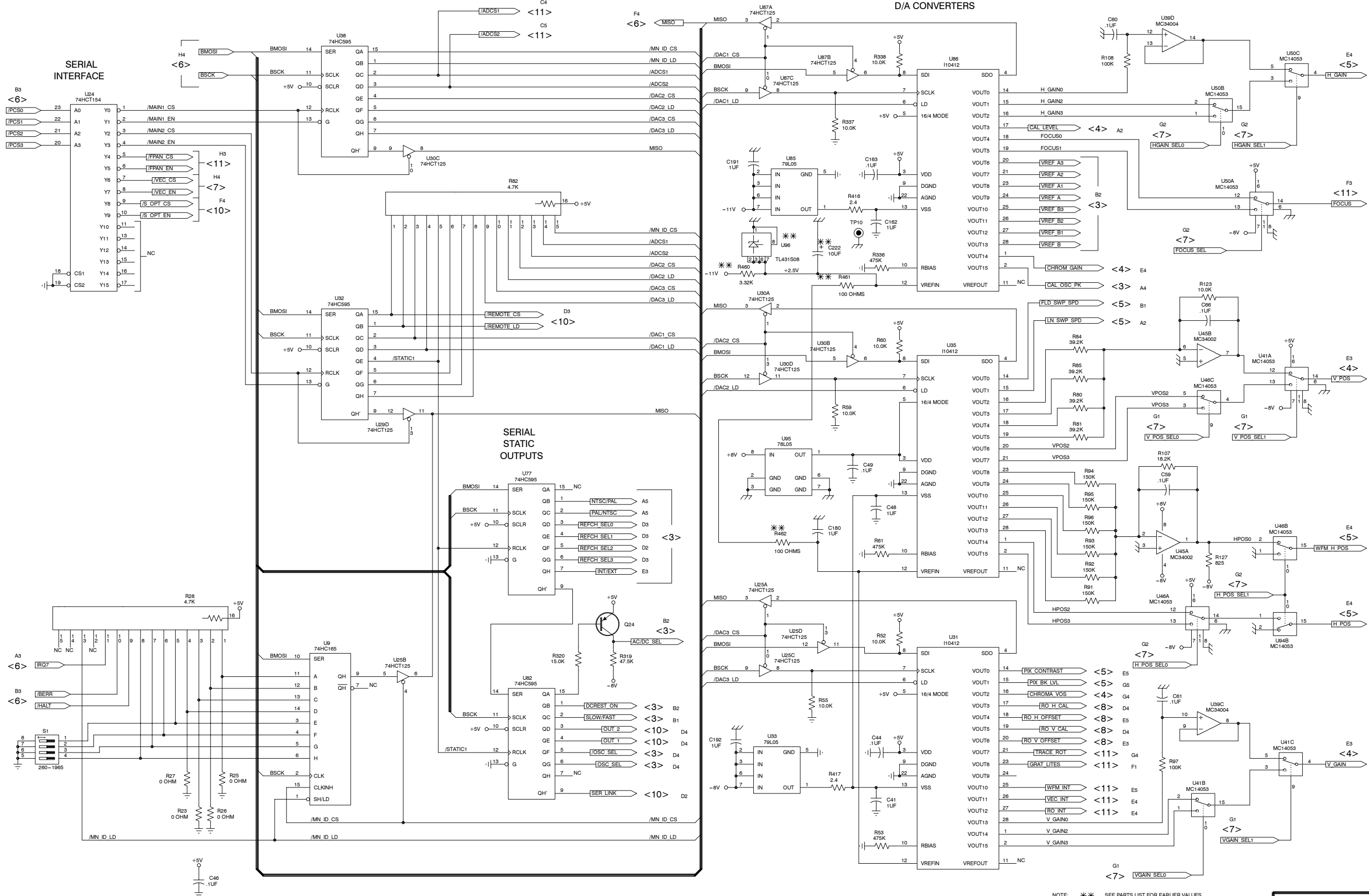
Schematic Diagram <9> Component Locator Chart

The schematic diagram has an alphanumeric grid to assist in locating parts within that diagram.

Assembly A3. Partial Assembly A3 also shown on Schematics 3, 4, 5, 6, 7, 8, 10, and 11.

Comp No	Diag Loc	Bd Loc	Comp No	Diag Loc	Bd Loc	Comp No	Diag Loc	Bd Loc
C41	E5	G2	R91	G4	I1	U30C	C1	G2
C44	F5	G1	R92	G4	I1	U30D	E3	G2
C46	B5	G6	R93	G4	I1	U31	F4	G1
C48	F3	G2	R94	G3	I1	U32	B2	H6
C49	E3	H1	R95	G3	I1	U33	E5	H2
C59	G3	I1	R96	G3	I1	U35	F3	H1
C60	G1	I2	R97	G5	I1	U38	B1	H6
C61	G4	I2	R107	G3	I1	U39C	G4	I2
C66	G2	J1	R108	G1	I2	U39D	G1	I2
C162	F2	O1	R123	G2	J1	U41A	H3	I1
C163	F2	O1	R127 *	H4	H2	U41B	G5	I1
C180	E3	H2	R319	D4	O3	U41C	H5	I1
Q24	D4	O3	R320	D4	O3	U45A	G3	I1
R23	B5	C5	R336	F2	P2	U45B	G2	I1
R25	B5	C5	R337	E1	P2	U46A	G4	I1
R26	B5	C5	R338	F1	P2	U46B	H3	I1
R27	B5	C5	R362	E3	H2	U46C	G3	I1
R28	A4	D6	R363	E4	I2	U50A	H2	J2
R52	F4	G1	S1	A5	C6	U50B	G1	J2
R53	F5	G1	TP10	E2	O1	U50C	H1	J2
R55	E4	G2	U9	B4	C5	U77	C3	M3
R59	E3	G1	U24	A1	F6	U82	C4	O3
R60	F2	G2	U25A	E4	G2	U85	E2	O1
R61	F4	G2	U25B	C4	G2	U86	F1	O1
R80	G3	H2	U25C	E4	G2	U87A	E1	O2
R81	G3	H2	U25D	E4	G2	U87B	E1	O2
R82	C2	H6	U29D	C3	G6	U87C	E1	O2
R84	G2	H2	U30A	E2	G2	U94B	H4	K2
R85	G3	H2	U30B	E2	G2	U95	E3	H1

* See Parts List for earlier serial number ranges.



NOTE: ** SEE PARTS LIST FOR EARLIER VALUES AND SERIAL NUMBER RANGES.

PART OF A3 MAIN BOARD

Schematic Diagram <10> Component Locator Chart

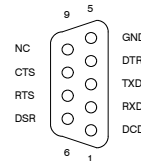
The schematic diagram has an alphanumeric grid to assist in locating parts within that diagram.

Assembly A3. Partial Assembly
A3 also shown on Schematics 3, 4,
5, 6, 7, 8, 9, and 11.

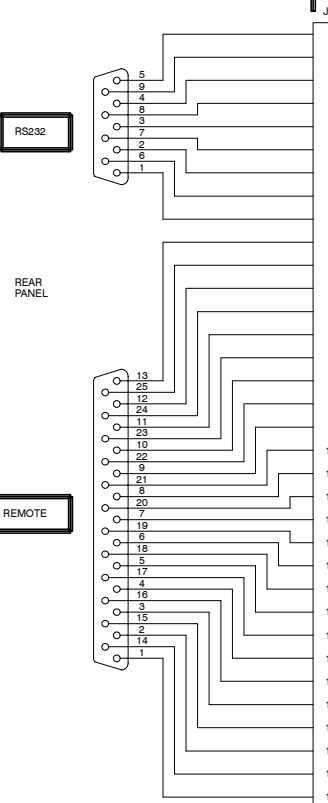
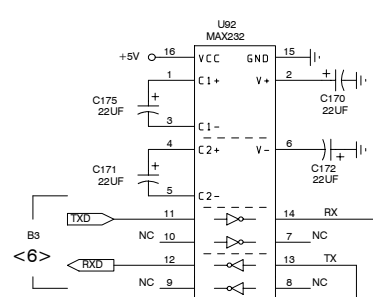
Comp No	Diag Loc	Bd Loc
C170	C1	P1
C171	B1	P3
C172	C1	P2
C173	D5	P5
C174	E5	P6
C175	B1	P1
J2	F2	B1
J5	G2	E1
J14	B2	P3
Q25	C4	P4
Q26	C4	P5
R43	H3	F5
R51	H3	F5
R310	C4	O4
R322	C4	O3
R325	C4	O4
R348	C4	P5
R352	D3	P6
R356	D1	P6
U87D	E3	O2
U90	D3	P5
U91	D2	P6
U92	C1	P1

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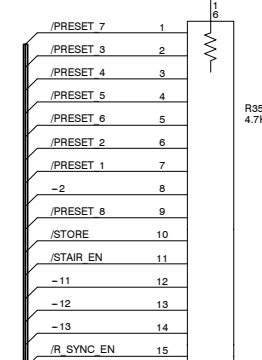
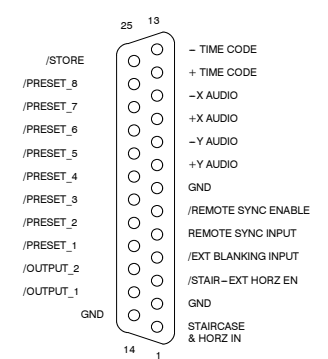
SERIAL PORT



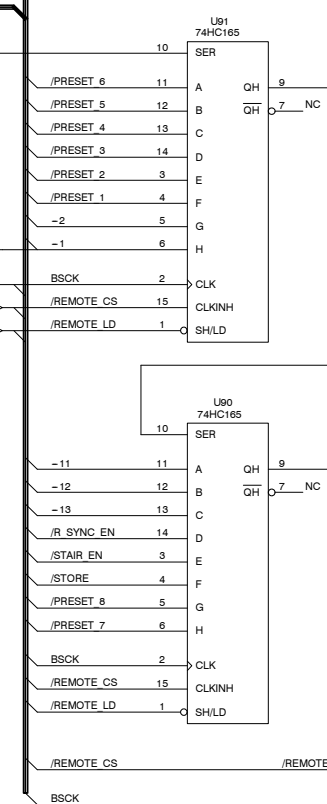
RS232



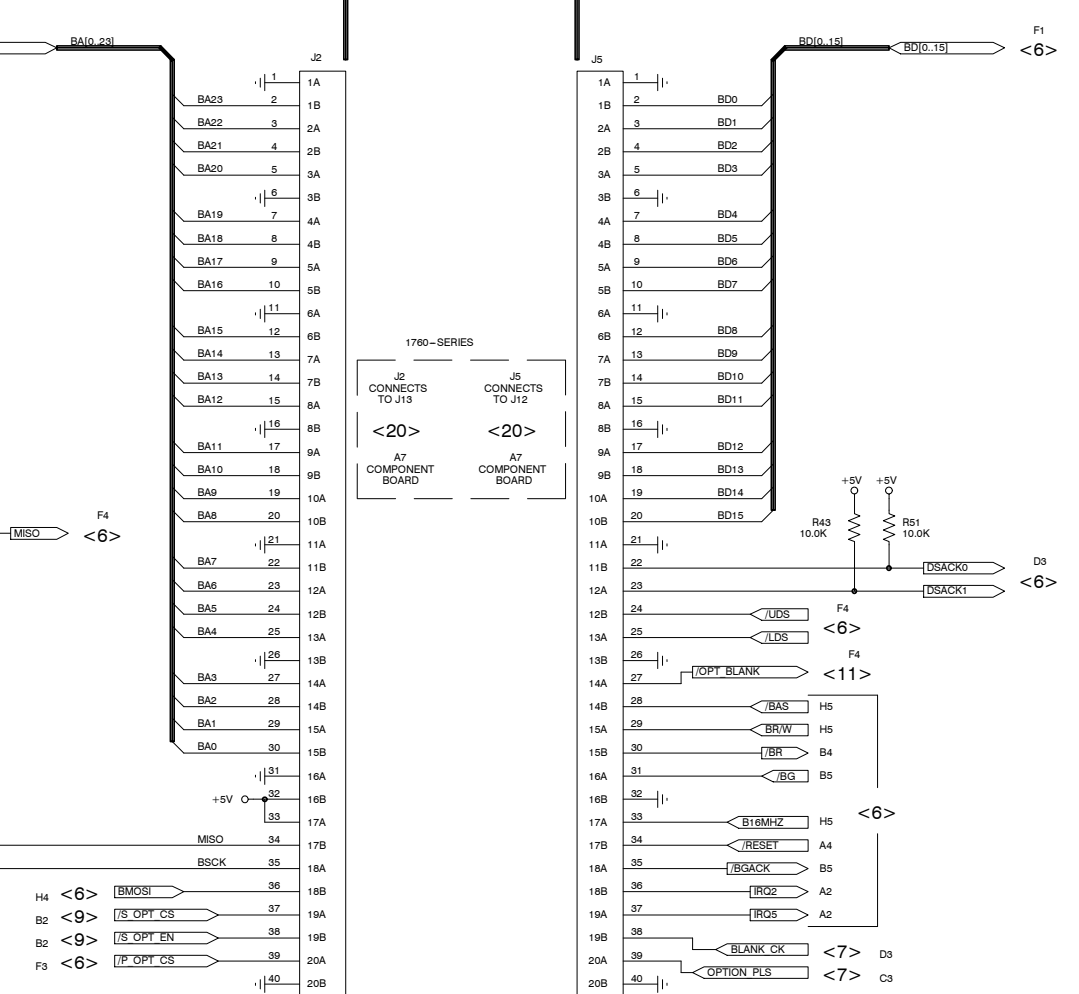
REMOTE PORT



REMOTE



1760-SERIES DIGITAL BUS CONNECTORS



PART OF A3 MAIN BOARD

Schematic Diagram <11> Component Locator Chart

The schematic diagram has an alphanumeric grid to assist in locating parts within that diagram.

Assembly A3. Partial Assembly A3 also shown on Schematics 3, 4, 5, 6, 7, 8, 9, and 10.

Comp No	Diag Loc	Bd Loc	Comp No	Diag Loc	Bd Loc	Comp No	Diag Loc	Bd Loc
C1	A5	A3	R1	G1	A1	R119	G4	J2
C2	A5	A4	R2	G1	A1	R125	G3	J2
C3	G1	B1	R3	G1	A1			
C4	E2	B1	R4	H1	A2	R126	G3	J2
C5	F2	B1	R5	G2	A2	R145	C1	J4
						R146	C1	J4
C7	D5	C4	R6	B3	B2	R147	C2	J4
C8	D4	C5	R7	B5	B3	R284	B1	N6
C39	C2	F2	R8	B4	B4			
C42	B2	F2	R9	B4	B5	R289	B1	N6
C74	C1	J4	R10	B3	B6	R290	B1	N6
C75	D1	J5	R11	G1	B1	SKT1	H2	A3
C107	E1	L2	R12	G2	B2	SKT2	H2	A4
C136	B1	N6	R13	G2	B2	SKT3	H1	A5
C139	C1	N5	R14	E2	B1	SKT4	H1	A5
			R15	E2	B2			
CR1	G4	C2				U1A	F1	B2
CR3	G3	J2	R16	F2	B2	U1B	F2	B2
CR4	F3	I2	R17	F2	B2	U1C	F2	B2
CR5	F4	I2	R18	E2	B1	U1D	E2	B2
CR6	D1	J4	R19	A5	B2	U3	C4	C4
CR9	B1	N6	R20	H5	C2			
						U4	C3	C5
DS2	H1	A5	R22	H5	C2	U5A	G4	C2
DS3	H1	A5	R45	A2	F2	U5B	G5	C2
DS4	H2	A4	R46	B2	F2	U20	B2	F2
DS5	H2	A3	R47	B2	F2	U29C	F3	G6
			R54	A2	G2			
J1	H3	A1				U49A	E3	J2
J3	H4	B2	R56	A2	F2	U49B	E4	J2
J4	C2	E2	R71	F3	G6	U49C	E4	J2
J6	H3	H1	R73	G3	I1	U49D	E5	J2
			R74	E4	H1	U53	C1	I4
P4	C2		R75	E4	H1	U78	B1	M6
Q1	G2	A2	R76	E4	H1	VR1	A2	F1
Q2	G1	B2	R77	E4	H2	VR2	A2	F1
Q7	G4	I2	R118	F3	I2	VR3	A2	F1

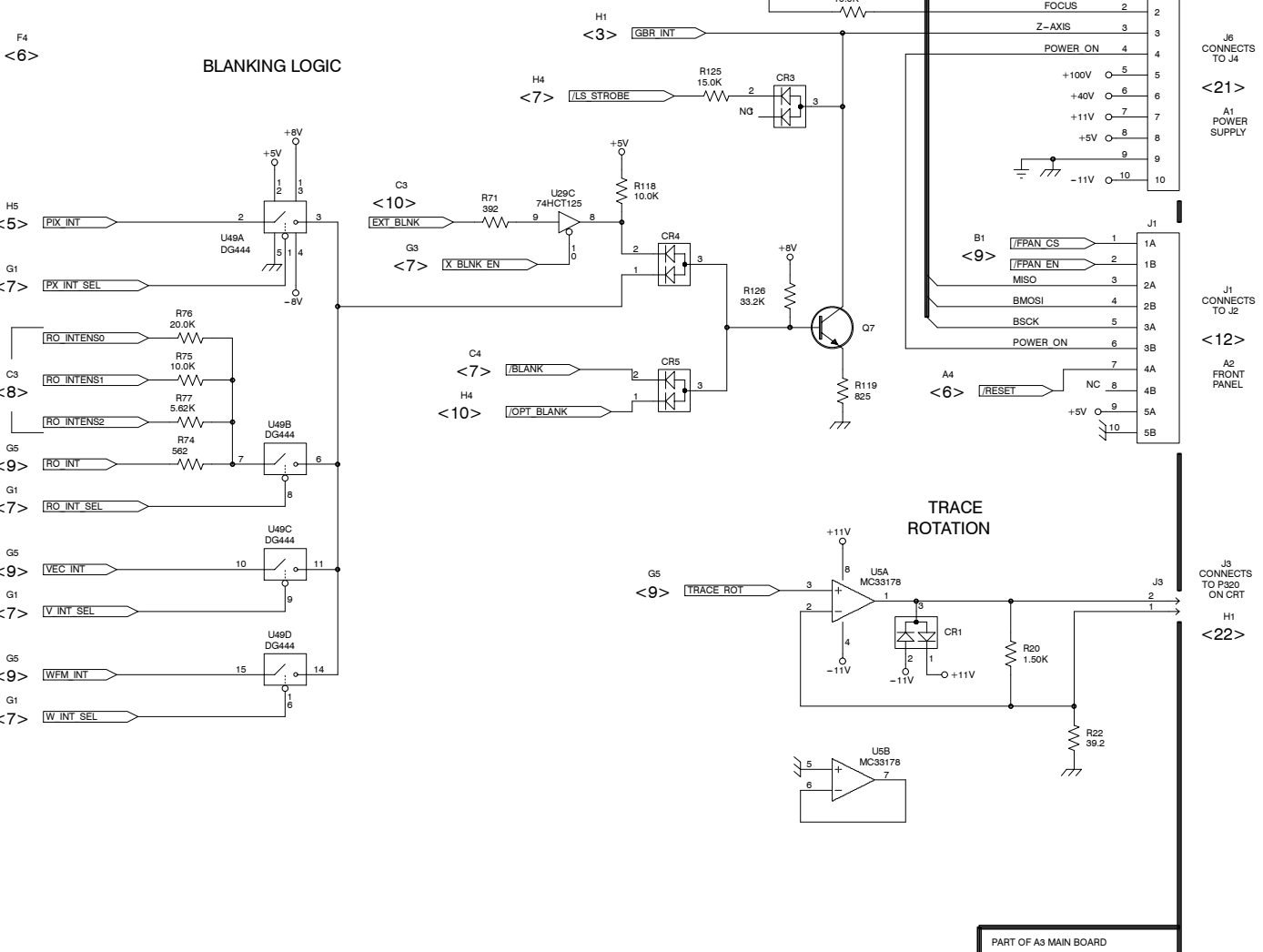
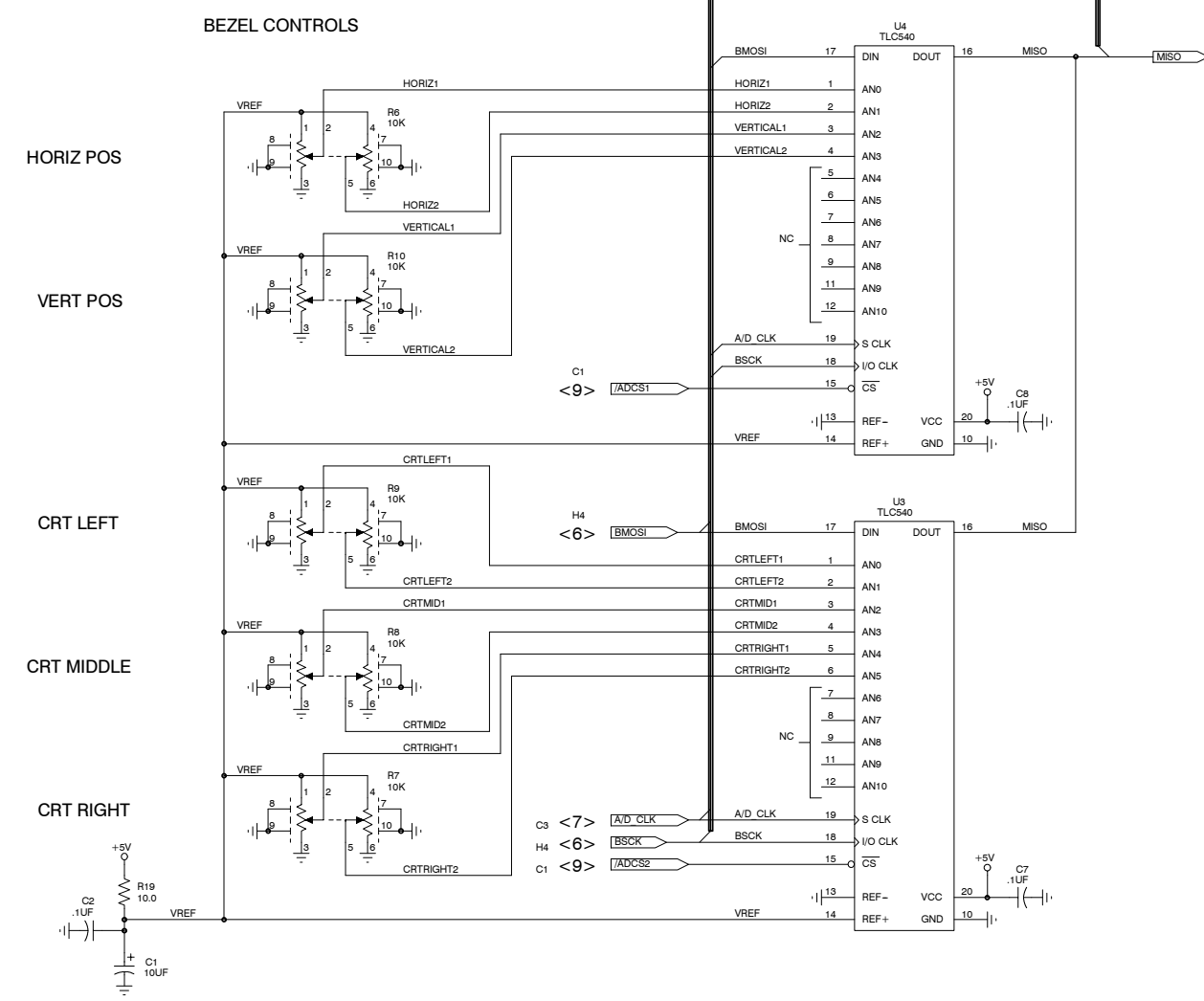
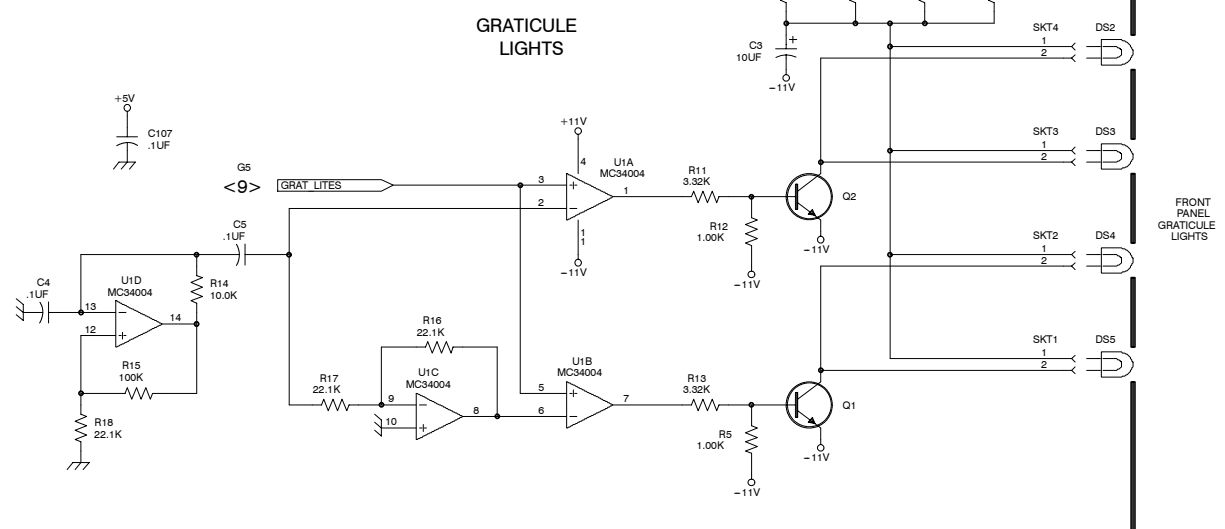
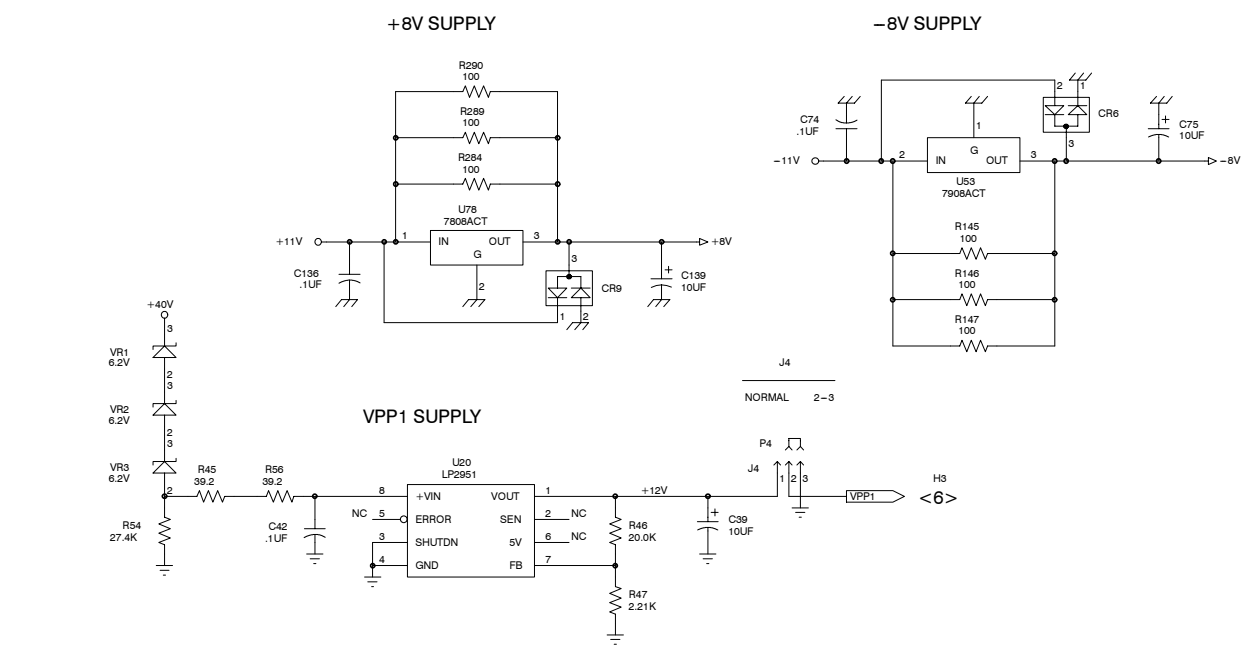
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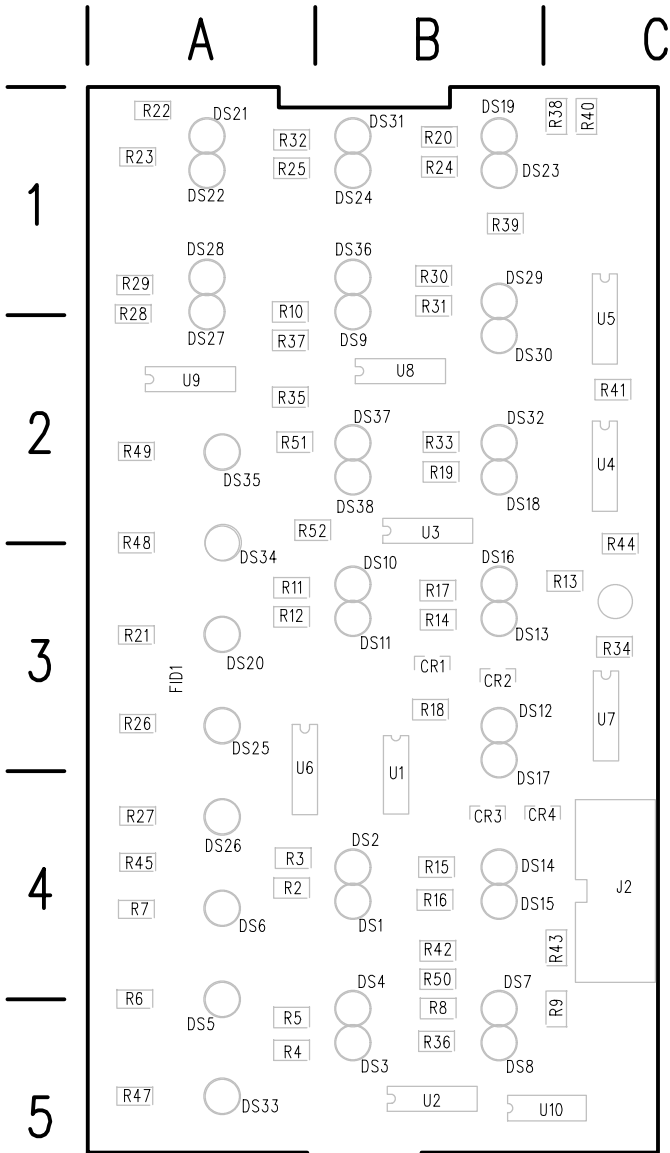


PART OF A3 MAIN BOARD

A2 Front Panel Board and Schematic Diagram <12> Component Locator Chart

The schematic diagram has an alphanumeric grid to assist in locating parts within that diagram.

Assembly A2.



A2 Front Panel Board

Static Sensitive Devices
See Maintenance Section

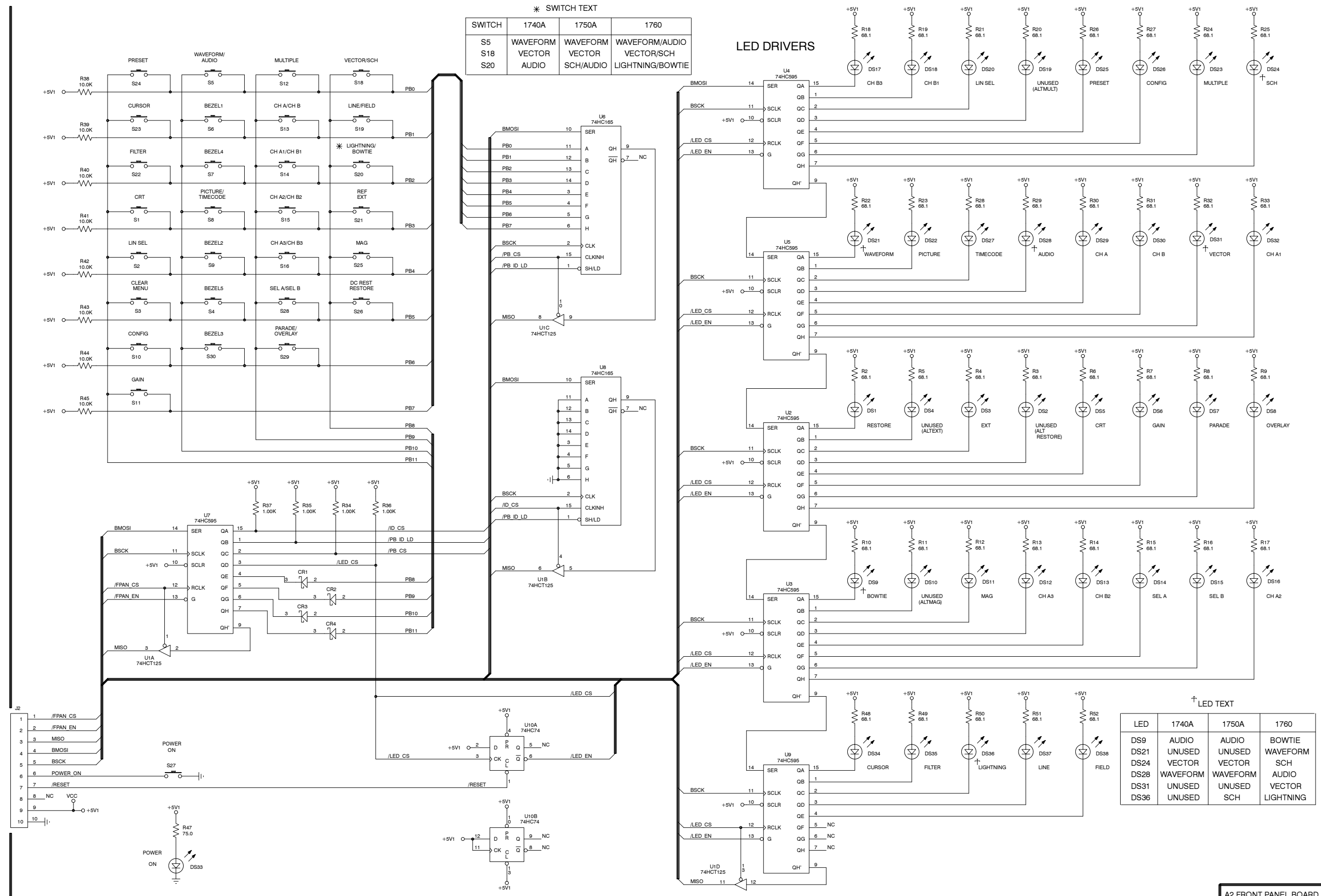
Comp No	Diag Loc	Bd Loc	Comp No	Diag Loc	Bd Loc
Front of Board			R26	G1	A3
CR1	C4	B3	R27	G1	A4
CR2	C4	B3	R28	F2	A2
CR3	C4	B4	R29	G2	A1
CR4	C4	B4	R30	G2	B1
			R31	G2	B2
DS1	F3	B4	R32	H2	A1
DS2	G3	B4	R33	H2	B2
DS3	F3	B5	R34	C3	C3
DS4	F3	B4	R35	B3	B2
DS5	G3	A5	R36	C3	B5
DS6	G3	A4	R37	B3	A2
DS7	H3	B4	R38	A1	B1
DS8	H3	B5	R39	A1	B1
DS9	F4	A2	R40	A2	C1
DS10	F4	B3	R41	A2	C2
DS11	F4	B3	R42	A2	B4
DS12	G4	B3	R43	A2	B4
DS13	G4	B3	R44	A3	C3
DS14	G4	B4	R45	A3	A4
DS15	H4	B4	R47	B5	A5
DS16	H4	B3	R48	F4	A3
DS17	F1	B4	R49	F4	A2
DS18	F1	B2	R50	F4	B4
DS19	G1	B1	R51	G4	A2
DS20	F1	A3	R52	G4	A2
DS21	F2	A1	U1A	B4	B3
DS22	F2	A1	U1B	D4	B3
DS23	H1	B1	U1C	D2	B3
DS24	H1	B1	U1D	E5	B3
DS25	G1	A3	U2	E3	B5
DS26	G1	A4	U3	E4	B2
DS27	F2	A2	U4	E1	C2
DS28	G2	A1	U5	E2	C1
DS29	G2	B1	U6	D1	A3
DS30	G2	B2	U7	B3	C3
DS31	H2	B1	U8	D3	B2
DS32	H2	B2	U9	E5	A2
DS33	B5	A5	U10A	D5	C5
DS34	F5	A3	U10B	D5	C5
DS35	F5	A2			
DS36	F5	B1			
			Back of Board		
DS37	G5	B2	S1	B2	A5
DS38	G5	B2	S2	B2	A3
			S3	B2	C5
J2	A4	C4	S4	B2	C3
			S5	B1	A1
R2	F3	A4	S6	B1	C1
R3	G3	A4	S7	B1	C3
R4	F3	A5	S8	B2	A2
R5	F3	A5	S9	B2	C2
R6	G3	A5	S10	B2	A4
R7	G3	A4			
R8	H3	B5	S11	B3	A4
R9	H3	B4	S12	B1	B1
R10	F3	A1	S13	B1	B2
R11	F3	A3	S14	B1	B2
			S15	B2	B3
R12	F3	A3	S16	B2	B4
R13	G3	C3	S18	C1	B1
R14	G3	B3	S19	C1	A2
R15	G3	B4	S20	C1	B2
R16	H3	B4	S21	C2	B5
R17	H3	B3			
R18	F1	B3	S22	B1	A2
R19	F1	B2	S23	B1	A3
R20	G1	B1	S24	B1	A3
R21	F1	A3	S25	C2	A3
			S26	C2	B4
R22	F2	A1	S27	B5	A5
R23	F2	A1	S28	B2	B4
R24	H1	B1	S29	B2	B5
R25	H1	A1	S30	B2	C2

A B C D E F G H

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* SWITCH TEXT

SWITCH	1740A	1750A	1760
S5	WAVEFORM	WAVEFORM	WAVEFORM/AUDIO
S18	VECTOR	VECTOR	VECTOR/SCH
S20	AUDIO	SCH/AUDIO	VECTOR/SCH LIGHTNING/BOWTIE



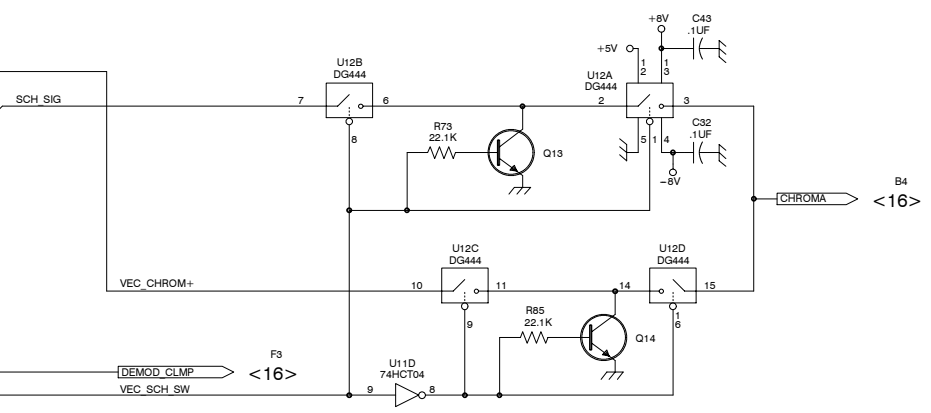
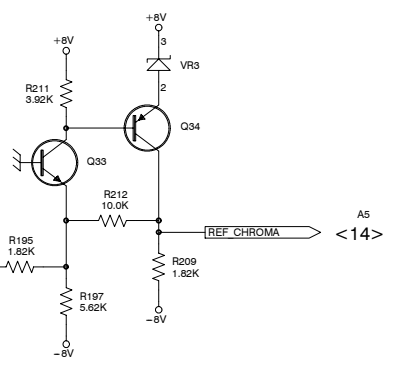
† LED TEXT

LED	1740A	1750A	1760
DS9	AUDIO	AUDIO	BOWTIE
DS21	UNUSED	UNUSED	WAVEFORM
DS24	VECTOR	VECTOR	SCH
DS28	WAVEFORM	WAVEFORM	AUDIO
DS31	UNUSED	UNUSED	VECTOR
DS36	UNUSED	SCH	LIGHTNING

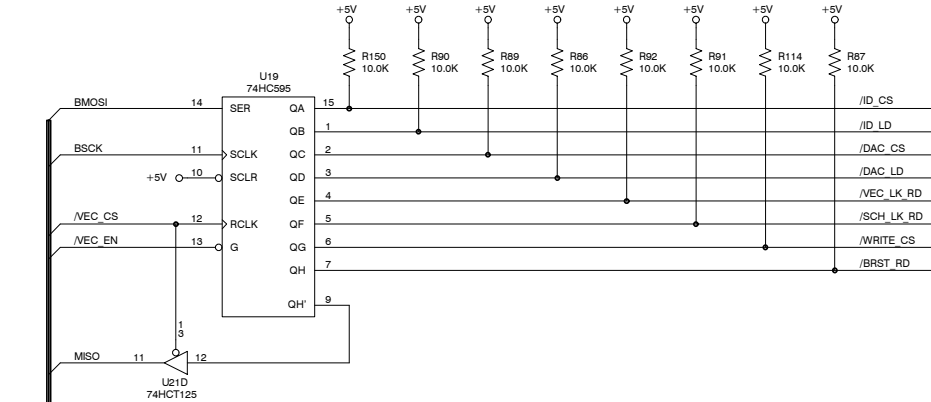
A5 Vector Board Component Locator Chart (with cross-references to Schematics 13, 14, 15, and 16)

Comp No	Diag No	Diag Loc	Bd Loc	Comp No	Diag No	Diag Loc	Bd Loc	Comp No	Diag No	Diag Loc	Bd Loc	Comp No	Diag No	Diag Loc	Bd Loc	Comp No	Diag No	Diag Loc	Bd Loc
C1	16	E2	A1	C96	15	B4	F1	R12	16	G2	A3	R108*	14	G4	D2	R205	14	B4	F2
C2	16	F2	A2	C97	14	C3	F2	R13	16	G2	A3	R109	14	G4	D3	R206	14	C5	F3
C3	16	E1	A1	C98	14	B4	F2	R14	16	G4	A3	R110	15	E3	D1	R207	14	C5	F3
C4	16	F2	A2	C99	14	B4	F2	R15	16	G4	A3	R111	15	E2	D1	R208	14	C4	F3
C5	16	F4	A4	C100	14	B4	F2	R16	16	F3	A4	R112	15	E2	D1	R209	13	C2	F4
C6	16	E2	A1	C101	14	C4	F3	R17	16	E1	A1	R113	14	E2	D2	R210	15	B5	G1
C7	16	G2	A3	C102	13	B2	F4	R18	16	E1	A1	R114	13	D4	D3	R211	13	B1	G4
C8	16	D5	A3	C103	15	B4	F1	R19	16	F2	A3	R115	15	D1	D1	R212	13	C2	G4
C9	16	F4	A4	C104	14	A4	F2	R20	16	F4	A3	R116	15	E1	D1	R213	13	H1	C3
C10	16	G4	A3	C105	14	B3	F3	R21	16	E3	A4	R117	15	E2	D1	R214	13	H1	C2
C11	16	D2	A2	C106	15	B4	F1	R22	16	E1	A1	R118	14	G1	F3	R215	13	G1	C3
C12	16	F3	A2	C107	14	B3	F2	R23	16	E2	A2	R119	14	F2	D2	R216	13	G1	C3
C13	16	D5	A3	C108	14	C5	F4	R24	16	F2	A2	R120	14	G4	D3	R217	14	D1	D2
C14	16	F4	A3	C109	15	B4	G1	R25	16	F2	A2	R121	14	F2	D2	R218	14	E1	D1
C15	16	E3	A4	C110	15	B5	G1	R26	16	F2	A2	R122	14	G3	D3	R219	14	E1	D1
C16	16	E4	A4	C111	15	B5	G1	R27	16	F3	A4	R123	14	G3	D3	R220	14	E5	F3
C17	16	C3	B1	C112	16	G2	A3	R28	16	C3	A1	R124	14	D1	D1				
C18	16	F5	A2	C113	13	H1	C3	R29	16	E2	A2	R125	14	D1	D2	T1	16	A1	B1
C19	16	F3	A3	C114	13	H1	C2	R31	16	C2	A1	R126	14	F2	D2				
C20	16	E3	A4	C115	14	F1	D1	R32	16	D2	B1	R127	14	E2	D2	TP1	14	H3	D2
C21	16	C2	B1					R33	16	F4	A3	R128	14	D1	E1				
C22	16	C4	B3	CR1	16	C4	B3	R35	16	D2	B1	R129	14	F3	E2	U1	16	G2	A2
C23	16	C4	B4	CR2	15	F5	B4	R36	16	D2	B2	R130	14	E3	E2	U2	16	G4	A3
C24	16	B2	B1	CR3	15	E5	C4	R37	16	D2	B3	R131	14	D2	E2	U3A	16	C5	A1
C25	15	H2	B2	CR4	14	F2	D2	R38	16	D4	B3	R132	14	F4	D3	U3B	16	C2	A1
C26	16	B3	B2	CR5	14	G3	D3	R39	16	D4	B3	R133	14	D1	E2	U4A	16	F2	A2
C27	16	E4	B2	CR6	14	F2	D1	R40	16	D4	B3	R134	14	E3	E2	U4B	16	G2	A2
C28	16	C4	B3	CR7	14	G2	E3	R41	16	E3	B4	R135	14	G4	E2	U5A	16	D5	A3
C29	15	F5	B4	CR8	15	B2	E1	R42	16	E4	B4	R136	14	D2	E3	U5B	16	G4	A3
C30	16	D3	B2	CR9	15	C4	G1	R43	16	E3	B4	R137	13	E4	E3	U5C	16	E5	A3
C31	16	B1	B1	CR10	14	E1	D1	R44	16	C2	B1	R138	13	F4	E3	U5D	16	G2	A3
C32	13	D2	B3					R45	16	C2	B1	R139	13	F4	E4	U6	16	D1	A2
C33	15	H2	B1	J1	13	H3	G1	R46	16	D2	B3	R140	13	F4	E4	U7A	16	F4	A2
C34	15	H5	B4					R47	16	D4	B3	R141	15	C2	E1	U7B	16	G4	A2
C35	15	H2	B1	L1	16	B2	B1	R48	16	E3	B4	R142	15	B3	E1	U8	16	D3	B3
C36	15	G2	C2	L2	16	B2	C1	R49	16	D4	B4	R143	14	D2	E2	U9	15	F5	B4
C37	15	G2	C1	L3	15	H2	B1	R50	16	C2	B2	R144	14	E3	E2	U10	15	D5	B4
C38	15	G2	C2	L4	15	G2	C1	R51	16	E3	B2	R145	14	G4	E3	U11A	15	D3	B2
C39	15	E5	C4	L5	15	F1	C2	R52	16	D4	B3	R146	15	C4	E1	U11B	13	A4	B2
C40	15	G2	C1	L6	14	E4	E3	R53	16	C4	B3	R147	14	D1	E1	U11C	13	A4	B2
C41	15	F1	C2	L7	14	A4	F1	R54	16	C4	B4	R148	14	C2	E2	U11D	13	C3	B2
C42	13	F1	C2	L8	14	A4	F2	R55	15	F5	B4	R149	14	F4	E3	U11E	13	A5	B2
C43	13	D2	C3	L9	14	C2	F2	R56	16	D3	B2	R150	13	C4	E3	U11F	13	B3	B2
C44	15	F1	C2	L10	14	B5	F2	R57	16	D3	B2	R151	15	B3	E1	U12A	13	D2	C3
C45	13	F2	C3	L11	13	B2	F4	R58	16	E4	B3	R152	14	D2	E1	U12B	13	C2	C3
C46	15	D5	C4					R59	16	B5	B3	R153	14	E3	E2	U12C	13	C3	C3
C47	15	F3	C1	P1	13	A2	F4	R60	16	B4	B3	R154	15	A1	E2	U12D	13	D3	C3
C48	15	D3	C2					R61	15	F5	B4	R155	14	F4	E2	U13A	15	E4	C2
C49	13	E2	C3	Q1	16	F3	A4	R62	16	A3	B2	R156	14	H2	E3	U13B	15	E2	C2
C50	15	E4	C2	Q2	16	F1	A2	R63	16	D3	B2	R157	15	C3	E1	U13C	15	E2	C2
C51	15	F3	C1	Q3	16	F2	A2	R64	16	B4	B3	R158	15	B2	E1	U13D	15	E3	C2
C52	15	E3	C1	Q4	16	F3	A4	R65	16	B4	B3	R159	15	A2	E2	U14	15	F3	C1
C53	15	F2	C1	Q5	16	C3	A1	R66	16	B5	B3	R160	14	E3	E2	U15	15	F2	C1
C54	15	E3	C2	Q6	16	C2	B1	R67	16	B4	B3	R161	14	E3	E2	U16	13	E1	C3
C55	14	G1	D1	Q7	16	C5	B3	R68	16	A4	B2	R162	14	B2	E3	U17A	13	E1	C3
C56	15	F1	D2	Q8	16	B4	B3	R69	15	G2	B2	R163	14	D3	E3	U17B	13	E1	C3
C57	14	G2	D3	Q9	16	A4	B2	R70	16	B4	C3	R164	15	B2	F1	U17C	13	E5	C3
C58	14	G4	D2	Q10	15	G2	B2	R71	15	G2	C1	R165	15	A2	F2	U17D	13	E5	C3
C59	14	G4	D2	Q11	16	B4	B3	R72	15	G2	C2	R166	14	C2	E2	U18	13	F1	D2
C60	15	E2	D1	Q12	16	B4	B3	R73	13	C2	C3	R167	14	B2	E2	U19	13	B4	D3
C61	15	D2	D1	Q13	13	C2	B3	R74	15	G1	C1	R168	14	D4	E3	U20A	14	G2	D3
C62	15	D1	D1	Q14	13	C3	C3	R75	15	G2	C2	R169	15	C2	F1	U20B	14	G4	D3
C63	14	G1	F3	Q15	14	F2	D2	R76	15	E2	C1	R170	14	H3	F3	U20C	14	G5	D3
C64	14	E2	D2	Q16	14	D1	D1	R77	15	E2	C1	R171	14	G2	F3	U20D	14	F5	D3
C65	14	H5	D2	Q17	14	D1	E1	R78	15	F1	C2	R174	15	B2	F1	U21A	13	E3	D3
C66	14	H4	D3	Q18	14	E3	E2	R79	15	F1	C3	R175	15	A2	F2	U21B	13	F5	D3
C67	14	G2	D3	Q19	14	E3	E2	R80	15	D5	C4	R176	14	B3	F2	U21C	13	E4	D3
C68	13	B3	D3	Q20	14	E3	E2	R81	15	D5	C4	R177	14	D5	F3	U21D	13	B5	D3
C69	14	E2	D2	Q21	14	F4	E3	R82	13	F1	C2	R178	14	D4	F4	U22	13	E2	D3
C70	14	G4	D3	Q22	14	C2	E2	R83	13	F2	C2	R179	14	B3	F3	U23A	14	E2	D2
C71	14	E4	D3	Q23	15	A1	E2	R84	13	F2	C3	R180	14	E4	F4	U23B	14	E3	D2
C72	14	F4	D3	Q24	14	B2	E3	R85	13	C3	C3	R182	14	B5	F2	U24A	14	G3	D2
C73	14	F2	E2	Q25	14	C2	F2	R86	13	C4	C4	R183	14	A4	F2	U24B	14	E2	D2
C74	14	E4	E3	Q26	14	D4	F3	R87	13	D4	C4	R184	14	B4	F2	U25A	15	C2	D1
C75	15	B2	E1	Q27	14	D4	F4	R88	15	E3	C1	R185	14	B3	F2	U25B	15	C3	D1
C76	15	B3	E1	Q28	14	E4	F3	R89	13	C4	C4	R186	14	B3	F3	U26	14	F4	E3
C77	15	C3	E1	Q29	14	B4	F2	R90	13	C4	C4	R187	14	B3	F3	U27	13	F4	E3
C78*	14	G4	D2	Q30	14	A3	G2	R91	13	D4	C4	R188	14	B5	F3	U28A	14	G2	E3
C79	14	D2	E1	Q31	14	C5	G3	R92	13	D4	C4	R189	14	B5	F3	U28B	14	G3	E3
C80	14	F3	E2	Q32	14	C4	G3	R93	15	E3	C1	R190	14	D4	F3	U29A	15	B3	E1
C81	14	F4	E3	Q33	13	B1	G4	R94	15	F3	C1	R191	14	D4	F3	U29B	15	B2	E1
C82	15	B3	E1	Q34	13	C1	G4	R95	13	B4	C4	R192	14	C4	F3	U29C	15	B2	E1
C83	15	B3	E1	Q35	14	E1	D1	R96	15	E3	D1	R193	14	C5	F4	U30	14	C3	F2
C84	14	E3	E2					R97	15	F2	C1	R194	14	C5	F4	U31	14	D4	F3
C85	13	A3	E4	R1	16	F2	A2	R98	15	E3	C1	R195	13	B2	F4				
C86	14	C3	E2	R2	16	G2	A2	R99	15	E3	D1	R196	15	B4	F1	VR1	14	G1	D2
C87	14	H3	E3	R4	16	G2	A3	R100	15	E2	D1	R197	13	B2	F4	VR2	14	G1	F4
C88	14	C3	F3	R5	16	G3	A3	R101	15	E2	D1	R198	15	B4	F1	VR3	13	C1	G4
C89	15	B2	F1	R6	16	G4	A3	R102	14	G1	D2	R199	15	B5	F1				

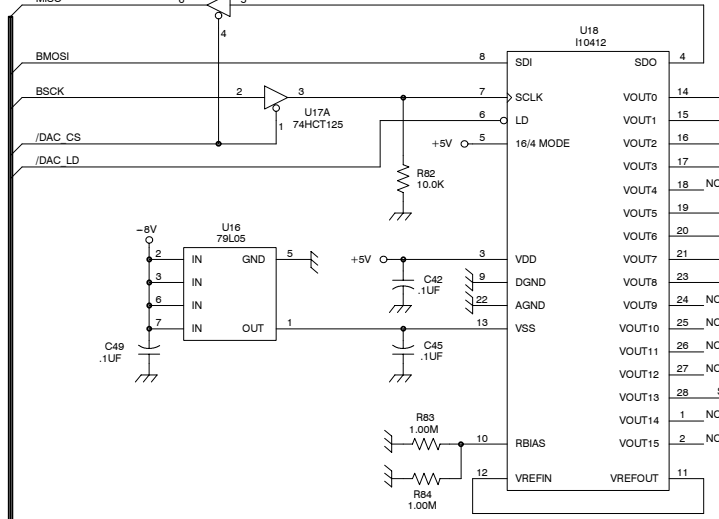
CHROMA AMP



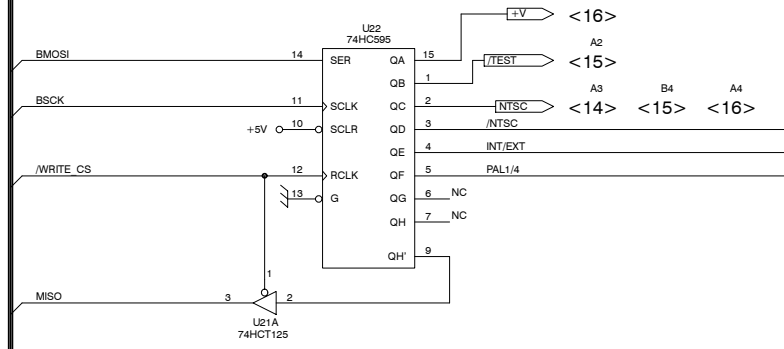
SERIAL ADDRESS DEMUX



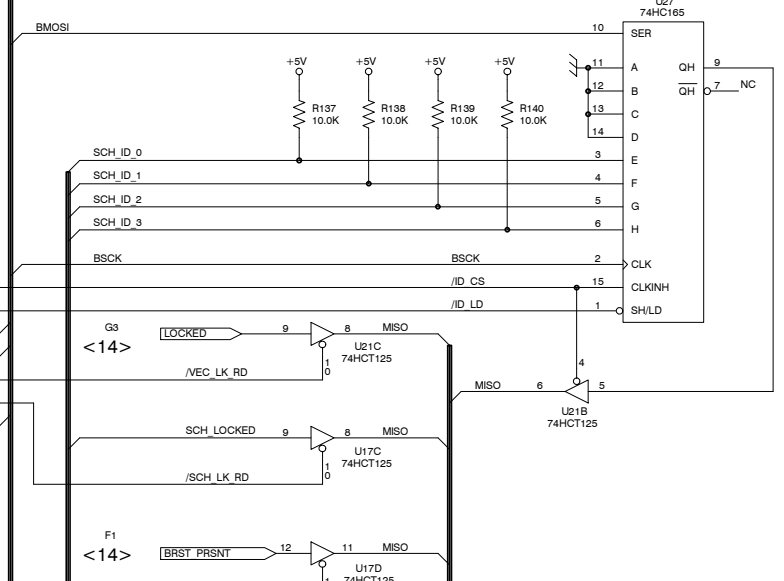
DAC



8 BIT SERIAL OUTPUT



SCH BOARD ID



P1 CONNECTS TO J9
<7>
A3 MAIN BOARD

J1 CONNECTS TO J1
<17>
A6 SCH BOARD

PART OF A5 VECTOR BOARD

Schematic Diagram <14> Component Locator Chart

The schematic diagram has an alphanumeric grid to assist in locating parts within that diagram.

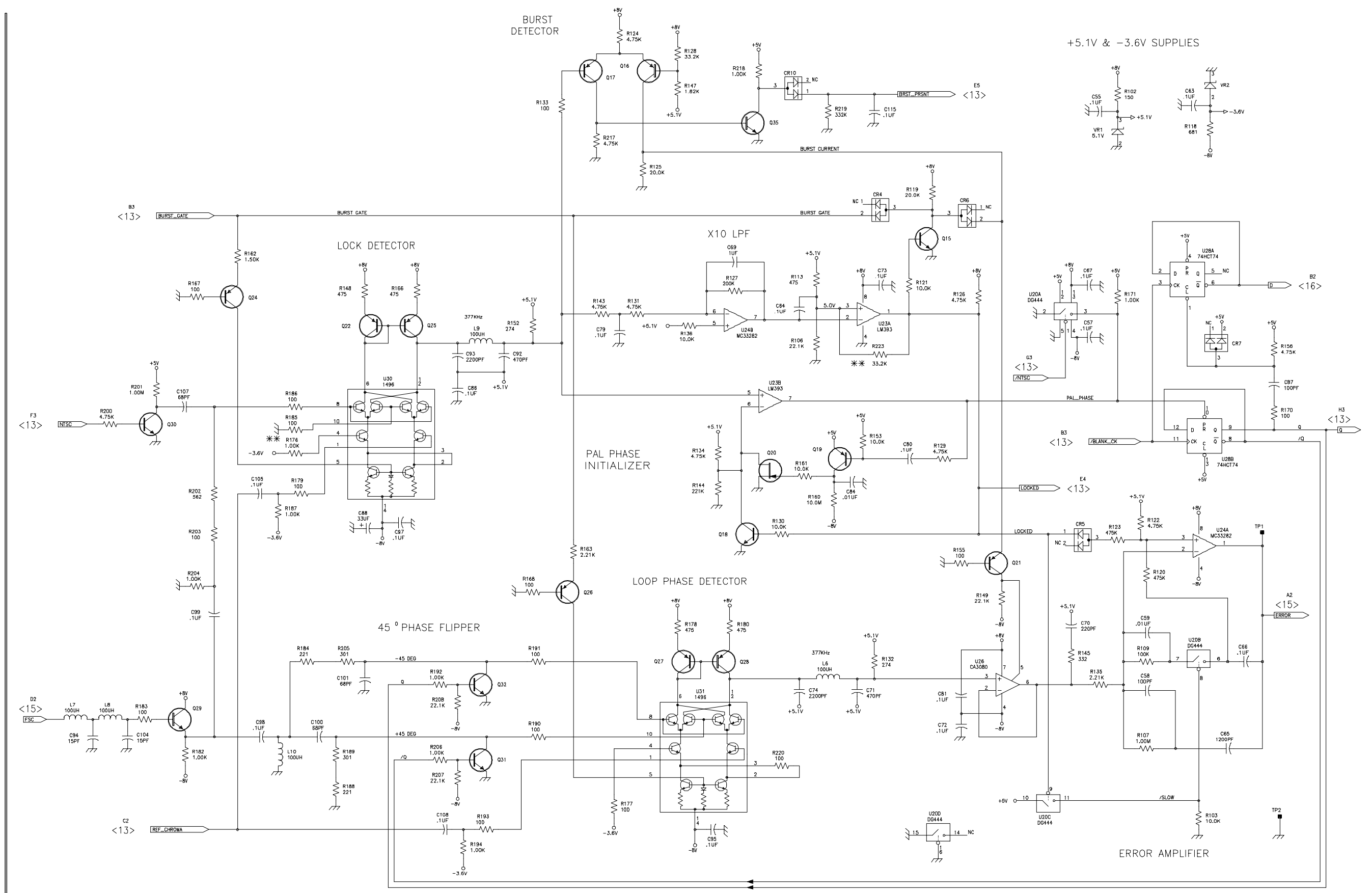
Assembly A5. Partial Assembly A5 also shown on Schematics 13, 15, and 16.

Comp No	Diag Loc	Bd Loc	Comp No	Diag Loc	Bd Loc	Comp No	Diag Loc	Bd Loc
C55	G1	D1	Q21	F4	E3	R166	C2	E2
C57	G2	D3	Q22	C2	E2	R167	B2	E2
C58	G4	D2	Q24	B2	E3	R168	D4	E3
C59	G4	D2	Q25	C2	F2	R170	H3	F3
C63	G1	F3				R171	G2	F3
			Q26	D4	F3			
C64	E2	D2	Q27	D4	F4	R176	B3	F2
C65	H5	D2	Q28	E4	F3	R177	D5	F3
C66	H4	D3	Q29	B4	F2	R178	D4	F4
C67	G2	D3	Q30	A3	G2	R179	B3	F3
C69	E2	D2				R180	E4	F4
			Q31	C5	G3			
C70	G4	D3	Q32	C4	G3	R182	B5	F2
C71	E4	D3	Q35	E1	D1	R183	A4	F2
C72	F4	D3				R184	B4	F2
C73	F2	E2	R102	G1	D2	R185	B3	F2
C74	E4	E3	R103	G5	D3	R186	B3	F3
			R106	E2	D2			
C78 *	G4	D2	R107	G5	D2	R187	B3	F3
C79	D2	E1	R108 *	G4	D2	R188	B5	F3
C80	F3	E2				R189	B5	F3
C81	F4	E3	R109	G4	D3	R190	D4	F3
C84	E3	E2	R113	E2	D2	R191	D4	F3
			R118	G1	F3			
C86	C3	E2	R119	F2	D2	R192	C4	F3
C87	H3	E3	R120	G4	D3	R193	C5	F4
C88	C3	F3				R194	C5	F4
C92	C2	F2	R121	F2	D2	R200	A3	G2
C93	C2	F2	R122	G3	D3	R201	A3	F2
			R123	G3	D3			
C94	A4	F1	R124	D1	D1	R202	B3	F2
C95	E5	F3	R125	D1	D2	R203	B3	F2
C97	C3	F2				R204	B4	F2
C98	B4	F2	R126	F2	D2	R205	B4	F2
C99	B4	F2	R127	E2	D2	R206	C5	F3
			R128	D1	E1			
C100	B4	F2	R129	F3	E2	R207	C5	F3
C101	C4	F3	R130	E3	E2	R208	C4	F3
C104	A4	F2				R217	D1	D2
C105	B3	F3	R131	D2	E2	R218	E1	D1
C107	B3	F2	R132	F4	D3	R219	E1	D1
			R133	D1	E2	R220	E5	F3
C108	C5	F4	R134	E3	E2			
C115	F1	D1	R135	G4	E2	TP1	H3	D2
CR4	F2	D2	R136	D2	E3	U20A	G2	D3
CR5	G3	D3	R143	D2	E2	U20B	G4	D3
CR6	F2	D1	R144	E3	E2	U20C	G5	D3
CR7	G2	E3	R145	G4	E3	U20D	F5	D3
CR10	E1	D1	R147	D1	E1	U23A	E2	D2
L6	E4	E3	R148	C2	E2	U23B	E3	D2
L7	A4	F1	R149	F4	E3	U24A	G3	D2
L8	A4	F2	R152	D2	E1	U24B	E2	D2
L9	C2	F2	R153	E3	E2	U26	F4	E3
L10	B5	F2	R155	F4	E2	U28A	G2	E3
Q15	F2	D2	R156	H2	E3	U28B	G3	E3
Q16	D1	D1	R160	E3	E2	U30	C3	F2
Q17	D1	E1	R161	E3	E2	U31	D4	F3
Q18	E3	E2	R162	B2	E3			
Q19	E3	E2	R163	D3	E3	VR1	G1	D2
						VR2	G1	F4
Q20	E3	E2						

* See Parts List for earlier serial number ranges.

A B C D E F G H

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NOTE: ** SEE PARTS LIST FOR EARLIER VALUES AND SERIAL NUMBER RANGES. PART OF AS VECTOR BOARD

Schematic Diagram <15> Component Locator Chart

The schematic diagram has an alphanumeric grid to assist in locating parts within that diagram.

Assembly A5. Partial Assembly A5 also shown on Schematics 13, 14, and 16.

Comp No	Diag Loc	Bd Loc	Comp No	Diag Loc	Bd Loc	Comp No	Diag Loc	Bd Loc
C25	H2	B2	CR2	F5	B4	R115	D1	D1
C29	F5	B4	CR3	E5	C4	R116	E1	D1
C33	H2	B1	CR8	B2	E1	R117	E2	D1
C34	G5	B4	CR9	C4	G1			
C35	H2	B1				R141	C2	E1
			L3	H2	B1	R142	B3	E1
C36	G2	C2	L4	G2	C1	R146	C4	E1
C37	G2	C1	L5	F1	C2	R151	B3	E1
C38	G2	C2				R154	A1	E2
C39	E5	C4	Q10	G2	B2			
C40	G2	C1	Q23	A1	E2	R157	C3	E1
						R158	B2	E1
C41	F1	C2	R55	F5	B4	R159	A2	E2
C44	F1	C2	R61	F5	B4	R164	B2	F1
C46	D5	C4	R69	G2	B2	R165	A2	F2
C47	F3	C1	R71	G2	C1			
C48	D3	C2	R72	G2	C2	R169	C2	F1
						R174	B2	F1
C50	E4	C2	R74	G1	C1	R175	A2	F2
C51	F3	C1	R75	G2	C2	R196	B4	F1
C52	E3	C1	R76	E2	C1	R198	B4	F1
C53	F2	C1	R77	E2	C1			
C54	E3	C2	R78	F1	C2	R199	B5	F1
						R210	B5	G1
C56	F1	D2	R79	F1	C3			
C60	E2	D1	R80	D5	C4	U9	F5	B4
C61	D2	D1	R81	D5	C4	U10	D5	B4
C62	D1	D1	R88	E3	C1	U11A	D3	B2
C75	B2	E1	R93	E3	C1	U13A	E4	C2
						U13B	E2	C2
C76	B3	E1	R94	F3	C1			
C77	C3	E1	R96	E3	D1	U13C	E2	C2
C82	B3	E1	R97	F2	C1	U13D	E3	C2
C83	B3	E1	R98	E3	C1	U14	F3	C1
C90	B2	F1	R99	E3	D1	U15	F2	C1
						U25A	C2	D1
C91	B2	F1	R100	E2	D1			
C96	B4	F1	R101	E2	D1	U25B	C3	D1
C103	B4	F1	R104	E3	D1	U29A	B3	E1
C106	B4	F1	R105	E3	D1	U29B	B2	E1
C109	B4	G1	R110	E3	D1	U29C	B2	E1
C110	B5	G1	R111	E2	D1	Y1	B4	F1
C111	B5	G1	R112	E2	D1	Y2	B5	F2

A B C D E F G H

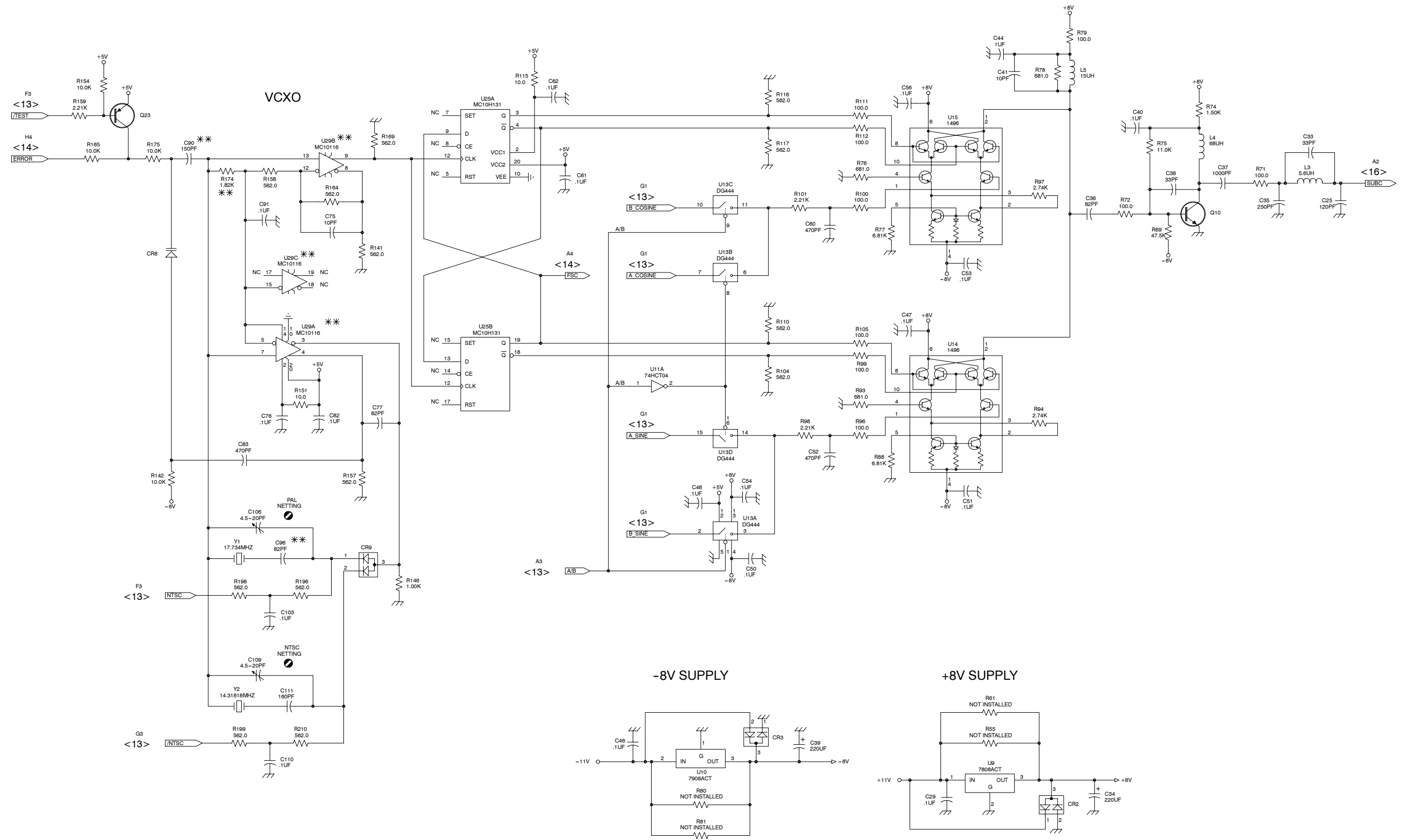
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NOTE: * * * SEE PARTS LIST FOR EARLIER VALUES AND SERIAL NUMBER RANGES.

PART OF A5 VECTOR BOARD

Schematic Diagram <16> Component Locator Chart

The schematic diagram has an alphanumeric grid to assist in locating parts within that diagram.

Assembly A5. Partial Assembly A5 also shown on Schematics 13, 14, and 15.

Comp No	Diag Loc	Bd Loc	Comp No	Diag Loc	Bd Loc	Comp No	Diag Loc	Bd Loc
C1	E2	A1	Q9	A4	B2	R43	E3	B4
C2	F2	A2	Q11	B4	B3			
C3	E1	A1	Q12	B4	B3	R44	C2	B1
C4	F2	A2				R45	C2	B1
C5	F4	A4	R1	F2	A2	R46	D2	B3
			R2	G2	A2	R47	D4	B3
C6	E2	A1	R4	G2	A3	R48	E3	B4
C7	G2	A3	R5	G3	A3			
C8	D5	A3	R6	G4	A3	R49	C4	B4
C9	F4	A4				R50	D2	B2
C10	G4	A3	R7	F3	A4	R51	E3	B2
			R8	F4	A4	R52	D4	B3
C11	D2	A2	R9	E2	A1	R53	C4	B3
C12	F3	A2	R10	E1	A1			
C13	D5	A3	R11	F2	A2	R54	C4	B4
C14	F4	A3				R56	D3	B2
C15	E3	A4	R12	G2	A3	R57	D3	B2
			R13	G2	A3	R58	E4	B3
C16	E4	A4	R14	G4	A3	R59	B5	B3
C17	C3	B1	R15	G4	A3			
C18	F5	A2	R16	F3	A4	R60	B4	B3
C19	F3	A3				R62	A3	B2
C20	E3	A4	R17	E1	A1	R63	D3	B2
			R18	E1	A1	R64	B4	B3
C21	C2	B1	R19	F2	A3	R65	B4	B3
C22	C4	B3	R20	F4	A3			
C23	C4	B4	R21	E3	A4	R66	B5	B3
C24	B2	B1				R67	B4	B3
C26	B3	B2	R22	E1	A1	R68	A4	B2
			R23	E2	A2	R70	B4	C3
C27	E4	B2	R24	F2	A2			
C28	C4	B3	R25	F2	A2	T1	A1	B1
C30	D3	B2	R26	F2	A2			
C31	B1	B1				U1	G2	A2
C112	G2	A3	R27	F3	A4	U2	G4	A3
			R28	C3	A1	U3A	C5	A1
CR1	C4	B3	R29	E2	A2	U3B	C2	A1
			R31	C2	A1	U4A	F2	A2
L1	B2	B1	R32	D2	B1			
L2	B2	C1				U4B	G2	A2
			R33	F4	A3	U5A	D5	A3
Q1	F3	A4	R35	D2	B1	U5B	G4	A3
Q2	F1	A2	R36	D2	B2	U5C	E5	A3
Q3	F2	A2	R37	D2	B3	U5D	G2	A3
Q4	F3	A4	R38	D4	B3			
Q5	C3	A1				U6	D1	A2
			R39	D4	B3	U7A	F4	A2
Q6	C2	B1	R40	D4	B3	U7B	G4	A2
Q7	C5	B3	R41	E3	B4	U8	D3	B3
Q8	B4	B3	R42	E4	B4			

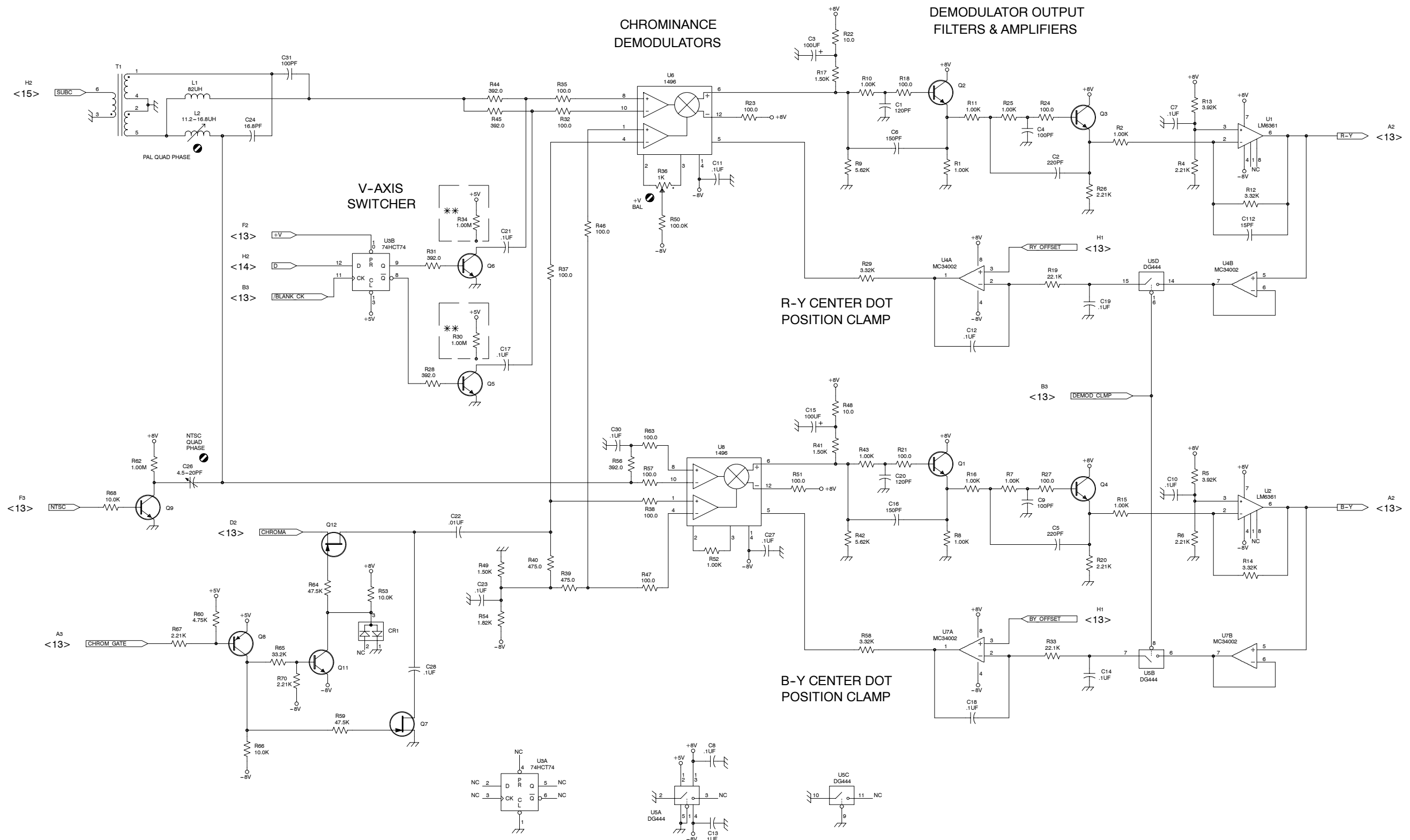
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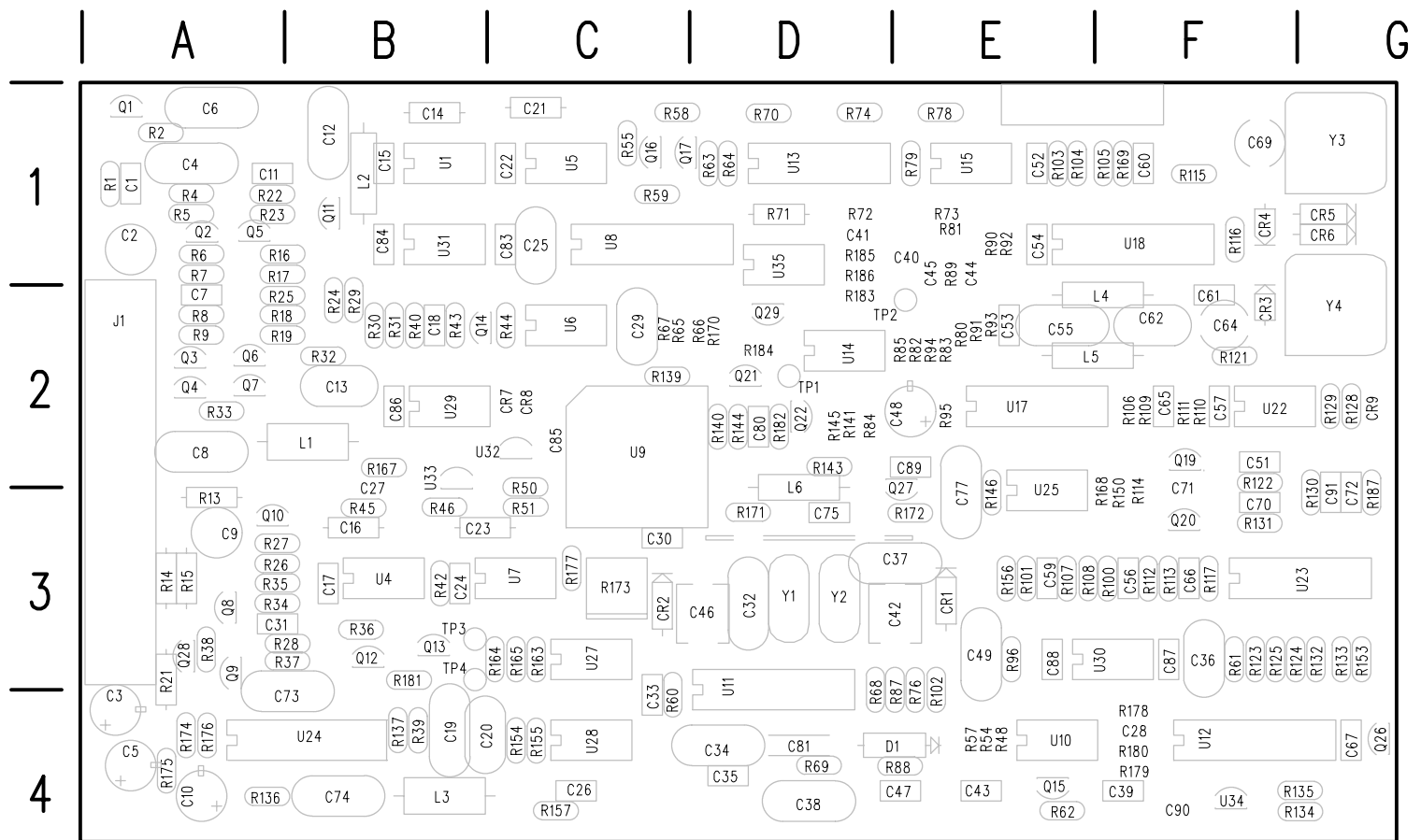


NOTE: ** SEE PARTS LIST FOR EARLIER VALUES AND SERIAL NUMBER RANGES.

PART OF A5 VECTOR BOARD

A6 SCH Board Component Locator Chart (with cross-references to Schematics 17 and 18)

Comp No	Diag No	Diag Loc	Bd Loc	Comp No	Diag No	Diag Loc	Bd Loc	Comp No	Diag No	Diag Loc	Bd Loc	Comp No	Diag No	Diag Loc	Bd Loc	Comp No	Diag No	Diag Loc	Bd Loc
C1	18	A1	A1	C73	18	G3	A4	R14	17	B4	A3	R91	18	G1	E2	R179	17	C4	F4
C2	18	A5	A1	C74	18	H3	B4	R15	17	B4	A3	R92	18	E3	E1	R180	17	C4	F4
C3	17	D1	A4					R16	18	B4	A1	R93	18	G1	E2	R181	17	B2	B3
C4	18	C1	A1	C75	17	G1	D3	R17	18	C4	A1	R94	18	G1	E2	R182	17	H1	D2
C5	17	E1	A4	C77	17	H1	E3	R18	18	B5	A2	R95	18	G2	E2	R183	17	H2	D2
C6	18	C1	A1	C80	17	H1	D2	R19	18	B5	A2	R96	17	D3	E3	R184	17	H2	D2
C7	18	C4	A2	C81	17	F5	D4	R20	18	B4	A4	R97	17	D3	F3	R185	17	D2	D1
C8	18	B5	A2	C83	18	D5	C1	R21	17	B4	A4	R98	17	D3	F3	R186	17	D2	D1
C9	17	A2	A3	C84	18	D5	B1	R22	18	B1	A1	R99	17	D3	E3	R187	18	G4	G3
C10	17	D1	A4	C85	17	D1	C2	R23	18	B1	A1	R100	17	D3	F3				
				C86	17	E1	B2	R24	18	B1	B2	R101	17	D3	E3				
				C87	17	D1	F3	R25	18	C4	A2	R102	17	E3	E4				
				C88	17	E1	E3	R26	17	A2	A3	R103	18	D1	E1	TP1	17	E5	D2
				C89	17	H1	E2	R27	17	A1	A3	R104	18	D2	E1	TP2	18	E3	D2
				C90	17	D4	F4	R28	17	B1	A3	R105	18	C2	F1	TP3	18	H3	B3
				C91	18	G4	G3	R29	18	C4	B2	R106	18	G2	F2	TP4	18	H3	B3
								R30	18	B5	B2	R107	17	C3	E3				
C11	18	B1	A1	CR1	17	D3	E3	R31	18	B5	B2	R108	17	C3	F3	U1	18	C4	B1
C12	18	C1	B1	CR2	17	D3	C3	R32	18	C4	B2	R109	18	G2	F2	U4	17	B1	B3
C13	18	B5	B2	CR3	18	E2	F2	R33	18	A5	A2	R110	18	H1	F2	U5	18	C5	C1
C14	18	C4	B1	CR4	18	E2	F1	R34	17	A2	A3	R111	18	H1	F2	U6A	18	D3	C2
C15	18	B2	B1	CR5	18	F2	G1	R35	17	A2	A3	R112	17	F3	F3	U6B	18	D3	C2
C16	17	B1	B3	CR6	18	F2	G1	R36	17	A2	A3	R113	17	G3	F3	U7	17	B2	B3
C17	17	E1	B3	CR7	17	C2	C2	R37	17	A1	A3	R114	17	B2	F3	U8A	18	D4	C1
C18	18	C3	B2	CR8	17	C2	C2	R38	17	A1	A3	R115	18	F2	F1	U8B	18	E4	C1
C19	17	B3	B4	CR9	18	F4	G2	R39	17	B3	B4	R116	18	D2	F1	U9	17	G1	C2
C20	17	B3	B4	CR10(D1)	17	D3	D4	R40	18	C3	B2	R117	17	G4	F3	U10A	17	C4	E4
								R41	18	B3	B4					U10B	17	C4	E4
C21	18	C4	C1					R42	17	B2	B3	R121	18	E2	F2	U11A	17	E3	C4
C22	18	B2	C1	J1	17	A3	A1	R43	18	D3	B2	R122	17	E4	F3	U11B	17	E3	C4
C23	17	B2	B3					R44	18	D3	C2	R123	17	G4	F3	U11C	17	E2	C4
C24	17	E1	B3	L1	18	B5	B2	R45	17	C1	B3	R124	17	G4	G3	U12A	17	D4	F4
C25	18	E4	C1	L2	18	C1	B1	R46	17	C1	B3	R125	17	G4	F3	U12B	17	F4	F4
C26	17	E1	C4	L3	17	B2	B4					R126	18	H1	G2	U13A	18	F4	D1
C27	17	B1	B3	L4	18	D1	F2	R48	17	B4	E4	R127	18	H1	G2	U13B	18	F4	D1
C28	17	B4	F4	L5	18	D1	E2	R49	17	C2	C3	R128	18	H2	G3	U13C	17	H3	D1
C29	18	D4	C2	L6	17	H1	D3	R50	17	C2	C3	R129	18	H2	F3	U13D	18	E4	D1
C30	17	D1	C3					R51	17	C2	C3	R130	17	F4	G3				
								R52	17	C2	C3	R131	17	G5	F3	U14A	17	E5	E2
C31	17	A2	A3	Q1	18	C2	A1	R53	17	F4	G3	R132	17	F4	G3	U14B	18	E3	E2
C32	17	D3	D3	Q2	18	B1	A1	R54	17	C4	E4					U14C	18	D3	E1
C33	17	E3	C4	Q3	18	B4	A2	R55	18	F3	C1	R133	17	F4	G3	U15A	18	D3	E1
C34	17	E3	D4	Q4	18	A4	A2	R56	17	D2	E4	R134	17	G5	F4	U15B	18	D2	E1
C35	17	E3	D4	Q5	18	B1	B1	R57	18	E3	C1	R135	18	G2	A4	U17	18	G1	E2
C36	17	F4	F3	Q6	18	B5	A2	R58	18	E4	C1	R136	18	H3	B4	U18A	18	D2	F1
C37	17	D3	D3	Q7	18	B5	A2	R59	18	E4	C1	R137	18	H3	B4	U18B	18	E2	F1
C38	17	E3	D4	Q8	17	A2	A3	R60	17	E3	C4	R138	17	G1	C2	U18C	18	G4	F1
C39	17	D4	F4	Q9	17	A1	A4	R61	17	F4	F3	R139	17	G2	D2	U18D	18	G4	F1
C40	18	E3	E1	Q10	17	A1	B3					R140	17	G2	D2	U22A	18	H1	F2
								R62	17	D4	E4	R141	17	G2	D2	U22B	18	G3	F2
C41	18	E4	D1					R63	18	E4	D1	R142	17	G1	D2				
C42	17	D3	D3	Q11	18	B4	B1	R64	18	E5	D1	R143	17	H1	D2				
C43	18	B2	E4	Q12	17	B1	B3	R65	18	E3	C2	R144	17	H1	D2				
C44	18	F2	E2	Q13	17	B3	B3	R66	18	E4	D2					U23A	17	G4	G3
C45	18	F2	E2	Q14	18	D3	B2	R67	18	E4	C2	R145	17	G2	D2	U23B	17	G4	G3
C46	17	D3	D3	Q15	17	C4	E4	R68	17	E2	D4	R146	17	H1	E3	U23C	17	H4	G3
C47	17	E2	D4	Q16	18	F3	C1	R69	17	E3	D4	R147	17	H3	F3	U23D	17	G4	G3
C48	18	G2	E2	Q17	18	E3	D1	R70	18	F5	D1	R148	17	G5	G3	U24A	18	G3	B4
C49	17	D3	E3	Q18	17	G3	F2	R71	18	F4	D1	R149	17	F5	C4	U24B	18	H3	B4
C50	18	B2	F2	Q19	17	F3	F3	R72	18	F4	D1	R150	17	F5	C4	U25	17	H1	E3
				Q20	17	F3	F3	R73	18	E4	E1	R151	17	D4	E3	U27A	17	C3	C3
C51	18	D1	E1	Q21	17	G1	D2	R74	18	E5	C3	R152	17	E5	C3	U27B	17	C3	C3
C52	18	D2	E2					R75	18	E4	E1	R153	17	D5	C3	U28A	17	E5	C4
C53	18	D2	E2					R76	18	E5	D1	R154	17	D5	C3	U28B	17	E5	C4
C54	18	C2	E1	Q22	17	G1	D2	R77	18	E4	E1	R155	17	D5	C3	U29	17	C1	B2
C55	18	D2	E2	Q26	17	F5	G4	R78	18	E4	E1	R156	17	G1	B2	U30	17	F3	E3
C56	17	C3	F3	Q27	17	G2	D3	R79	18	D3	E1	R157	17	D4	E3	U31	18	D4	B2
C57	17	E1	F2	Q28	17	B1	A4	R80	18	F2	E2	R158	18	C2	F1	U32	17	B5	B2
C58	18	D2	F1	Q29	17	H2	D2	R81	18	F3	E1	R159	17	H2	D2	U33	17	B5	B3
C59	17	C3	E3					R82	18	F2	E2	R160	18	C2	F1	U34	17	C5	F4
C60	18	D2	F2					R83	18	G2	E2	R161	17	H2	D2	U35A	17	G2	D2
C61	18	E2	F1	R1	18	B2	A1	R84	18	F1	D2	R162	17	F2	E3	U35B	17	C2	D2
C62	18	D2	F2	R2	18	A1	A1	R85	18	F2	E2	R163	17	F2	E3				
				R3	18	B1	A1	R86	18	F2	E2	R164	17	D5	C3	Y1	17	D3	D3
C63	17	E1	F3	R4	18	B1	A1	R87	17	D3	E4	R165	17	D5	C3	Y2	17	D3	D3
C64	18	E2	F2	R5	18	B1	A1	R88	17	E3	D4	R166	17	G1	B2	Y3	18	E2	G1
C65	18	G1	F2	R6	18	B4	A1	R89	18	F1	D2	R167	17	G1	B2	Y4	18	E2	G1
C66	17	E1	F3	R7	18	B4	A1	R90	18	E3	E1	R168	17	H1	F3				
C67	17	E1	G4	R8	18	A5	A2					R169	18	C2	F1				
C68	18	E2	F1	R9	18	A4	A2					R170	17	H2	D2				
C69	17	E4	F3	R10	18	A4	A2					R171	17	G3	D3				
C70	17	E4	F3	R11	18	A4	A2					R172	17	F2	E3				
C71	17	E4	F3	R12	18	A4	A2					R173	17	G3	D3				
C72	18	H1	G3	R13	17	B4	A3					R174	17	B1	A4				
												R175	17	B2	A4				



Static Sensitive Devices
See Maintenance Section

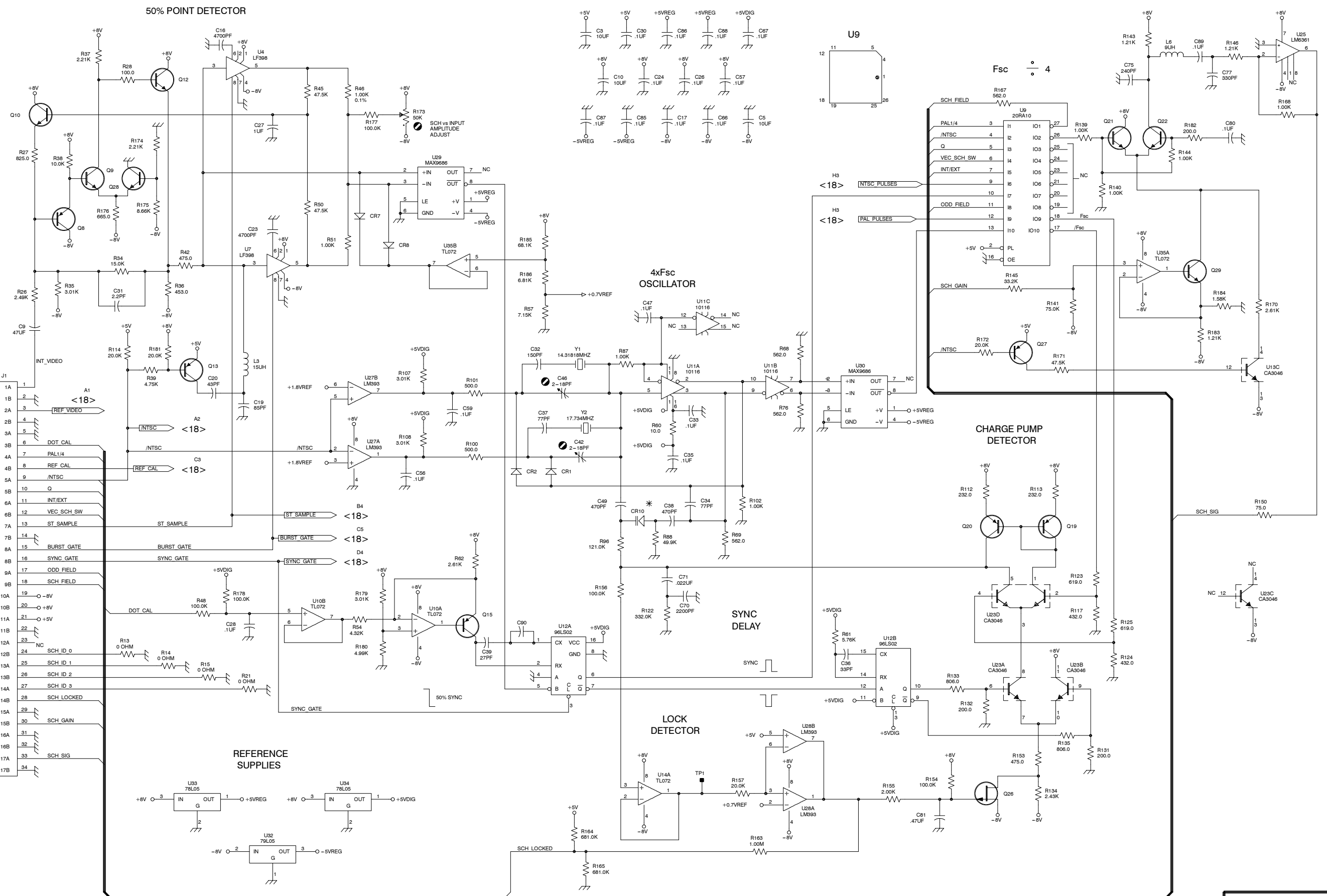
A6 SCH Board

Schematic Diagram <17> Component Locator Chart

The schematic diagram has an alphanumeric grid to assist in locating parts within that diagram.

Assembly A6. Partial Assembly A6 also shown on Schematic 18.

Comp No	Diag Loc	Bd Loc	Comp No	Diag Loc	Bd Loc	Comp No	Diag Loc	Bd Loc	Comp No	Diag Loc	Bd Loc	Comp No	Diag Loc	Bd Loc	Comp No	Diag Loc	Bd Loc
C3	D1	A4	C67	E1	G4	Q22	G1	D2	R76	E3	E4	R154	F5	C4	U10A	C4	E4
C5	E1	A4	C70	E4	F3	Q26	F5	G4	R87	D3	E4	R155	F5	C4	U10B	C4	E4
C9	A2	A3	C71	E4	F3	Q27	G2	D3	R88	E3	D4	R156	F4	E3	U10C	E3	C4
C10	D1	A4	C75	G1	D3	Q28	B1										



Schematic Diagram <18> Component Locator Chart

The schematic diagram has an alphanumeric grid to assist in locating parts within that diagram.

Assembly A6. Partial Assembly A6 also shown on Schematic 17.

Comp No	Diag Loc	Bd Loc	Comp No	Diag Loc	Bd Loc	Comp No	Diag Loc	Bd Loc
C1	A1	A1	Q5	B1	B1			
C2	A5	A1				R89	F1	E2
C4	C1	A1	Q6	B5	A2	R90	E3	E1
C6	C1	A1	Q7	B5	A2	R91	G1	E2
C7	C4	A2	Q11	B4	B1	R92	E3	E1
			Q14	D3	B2	R93	G1	E2
C8	B5	A2	Q16	F3	C1			
C11	B1	A1	Q17	E3	D1	R94	G1	E2
C12	C1	B1				R95	G2	E2
C13	B5	B2	R1	B2	A1	R103	D1	E1
C14	C4	B1	R2	A1	A1	R104	D2	E1
			R4	B1	A1	R105	C2	F1
C15	B2	B1	R5	B1	A1			
C18	C3	B2	R6	B4	A1	R106	G2	F2
C21	C4	C1				R109	G2	F2
C22	B2	C1	R7	B4	A1	R110	H1	F2
C25	E4	C1	R8	A5	A2	R111	H1	F2
			R9	A4	A2	R115	F2	F1
C29	D4	C2	R16	B4	A1			
C40	E3	E1	R17	C4	A1	R116	D2	F1
C41	E4	D1				R121	E2	F2
C43	B2	E4	R18	B5	A2	R128	H1	G2
C44	F2	E2	R19	B5	A2	R129	H1	G2
			R22	B1	A1	R130	H2	G3
C45	F2	E2	R23	B1	A1			
C48	G2	E2	R24	B1	B2	R136	G2	A4
C51	B2	F2				R137	H3	B4
C52	D1	E1	R25	C4	A2	R169	C2	F1
C53	D2	E2	R29	C4	B2	R187	G4	G3
			R30	B5	B2			
C54	C2	E1	R31	B5	B2	TP2	E3	D2
C55	D2	E2	R32	C4	B2	TP3	H3	B3
C60	D2	F1				TP4	H3	B3
C61	E2	F2	R33	A5	A2			
C62	D2	F2	R40	C3	B2	U1	C4	B1
			R43	D3	B2	U5	C5	C1
C64	E2	F2	R44	D3	C2	U6A	D3	C2
C65	G1	F2	R55	F3	C1	U6B	D3	C2
C69	E2	F1				U8A	D4	C1
C72	H1	G3	R58	E3	C1			
C73	G3	A4	R59	E4	C1	U8B	E4	C1
			R63	E4	D1	U13A	F4	D1
C74	H3	B4	R64	E5	D1	U13B	F4	D1
C83	D5	C1	R65	E3	C2	U13D	E4	D1
C84	D5	B1				U14B	E3	E2
C91	G4	G3	R66	E4	D2			
			R67	E4	C2	U15A	D3	E1
CR3	E2	F2	R70	F5	D1	U15B	D2	E1
CR4	E2	F1	R71	F4	D1	U17	G1	E2
CR5	F2	G1	R72	F4	D1	U18A	D2	F1
CR6	F2	G1				U18B	E2	F1
CR9	F4	G2	R73	E4	E1			
			R74	E5	D1	U18C	G4	F1
L1	B5	B2	R78	E4	E1	U22A	H1	F2
L2	C1	B1	R79	D3	E1	U22B	G3	F2
L4	D1	F2	R80	F2	E2	U24A	G3	B4
L5	D1	E2				U24B	H3	B4
			R81	F3	E1	U31	D4	B2
Q1	C2	A1	R82	F2	E2			
Q2	B1	A1	R83	G2	E2	Y3	E2	G1
Q3	B4	A2	R84	F1	D2	Y4	E2	G1
Q4	A4	A2	R85	F2	E2			

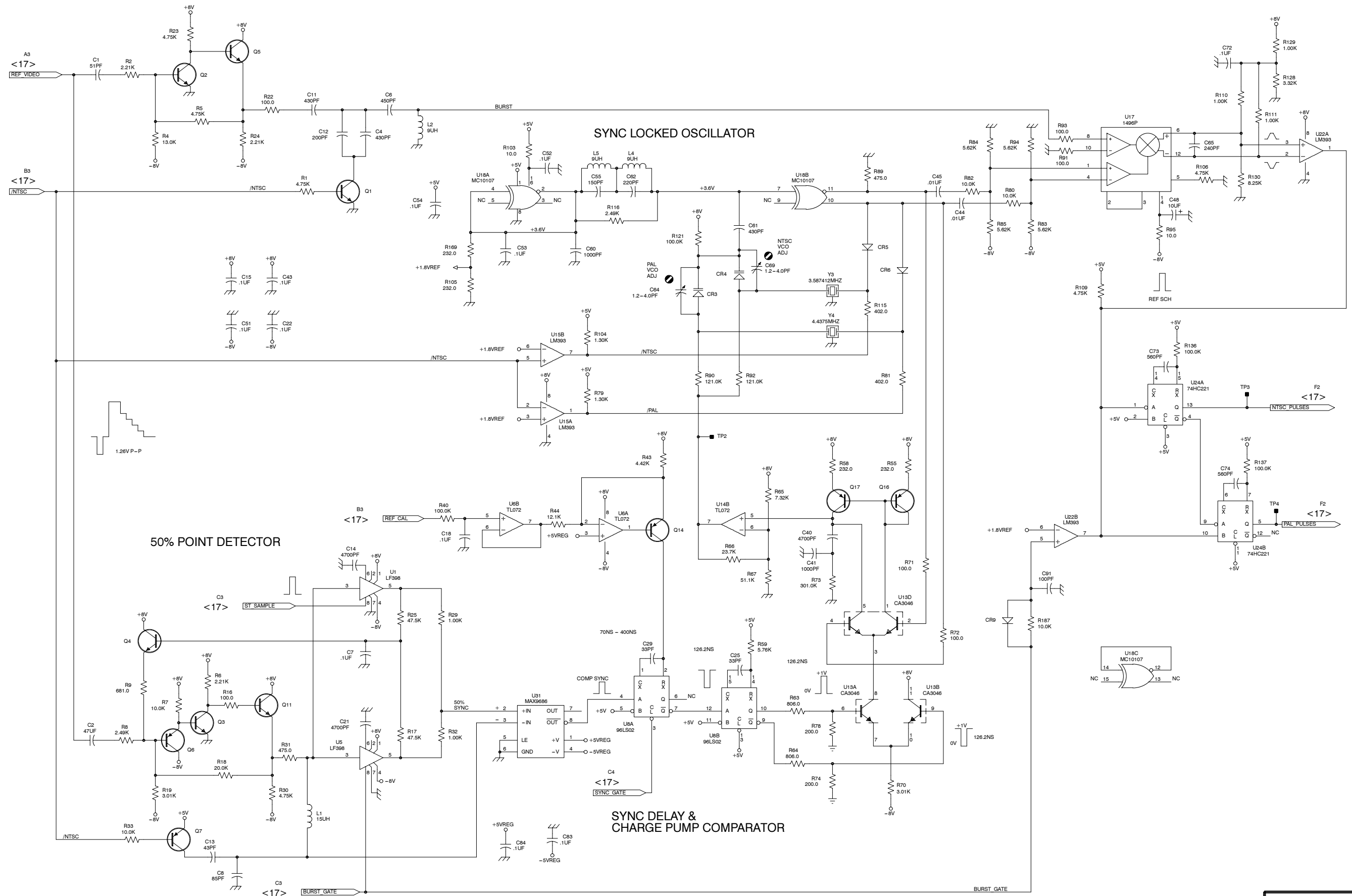
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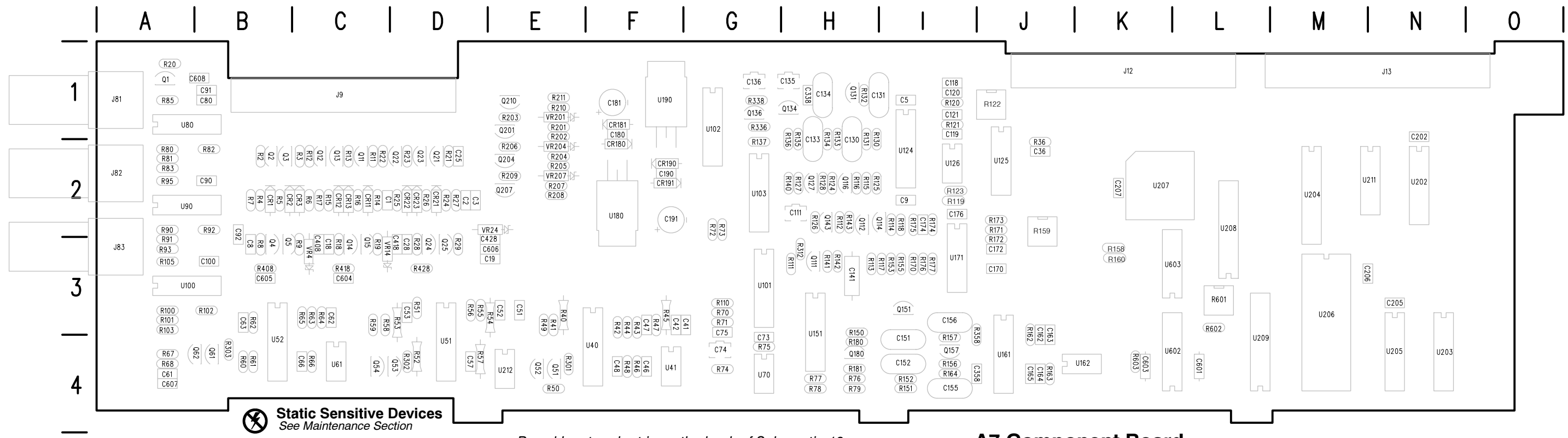
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PART OF A6 SCH BOARD



Board locator chart is on the back of Schematic 19.

A7 Component Board

Schematic Diagram <19> Component Locator Chart

The schematic diagram has an alphanumeric grid to assist in locating parts within that diagram.

Assembly A7. Partial Assembly A7 also shown on Schematic 20.

Comp No	Diag Loc	Bd Loc	Comp No	Diag Loc	Bd Loc	Comp No	Diag Loc	Bd Loc	Comp No	Diag Loc	Bd Loc	Comp No	Diag Loc	Bd Loc	Comp No	Diag Loc	Bd Loc
C1	B1	C2	C181	D5	F1	Q2	C2	B2	R9	C2	C3	R51	D2	D3	R83	G1	A2
C2	B2	D2	C190	E5	F2	Q3	C2	B2	R11	B3	C2	R52	D2	D4	U40B	F1	F3
C3	B2	D2	C191	F5	F2	Q4	C1	B2	R12	B3	C2				U40C	D2	F3
C5	D1	I1	C408	D1	C2	Q5	C1	B2				R53	D3	D3	U40D	E1	F3
C8	C1	B3	C418	D3	D2	Q11	C3	C2	R13	B4	C2	R54	D3	E3	U41	E1	F4
C9	C2	I2	C428	D4	D3	Q12	C3	C2	R14	B3	C2	R55	D3	D3	U51A	F3	D3
C18	C3	C3	C604	C5	C3	Q13	C4	C2	R15	B3	C2	R56	E3	D3	R92	H2	B2
C19	C3	D3	C605	B5	B3	Q14	C3	C2	R16	B4	C2	R57	E3	D4	R93	G1	A3
C25	D4	D2				Q15	C3	C2	R17	C3	C2	R58	F3	C3	R95	H2	A2
C28	C4	D3	C606	C5	D3				R18	C3	C3	R59	G3	C3	R100	G3	A3
			C607	C5	A4	Q21	C4	D2	R19	C3	C3	R60	D4	B4	R101	G2	A3
C41	E1	G3	C608	C5	A1	Q22	C4	D2	R20	B1	A1	R61	D4	B4	R102	H3	B3
C42	E2	F3				Q23	C5	D2	R21	B4	D2	R62	D4	B3	R103	G2	A3
C46	D2	F4	CR1	C1	B2	Q24	C5	D2	R22	B4	C2						
C47	E2	F3	CR2	C2	B2	Q25	C4	D2				R63	D4	C3	R105	H3	A3
C48	E1	F4	CR3	C2	C2	Q51	F1	E4	R23	B5	D2	R64	D4	C3	R201	A5	E1
C51	E3	E3	CR11	C3	C2	Q52	G3	E4	R24	B4	D2	R65	E4	C3	R202	A5	E2
C52	E3	E3	CR12	C3	C2	Q53	F3	C4	R25	B5	D2	R66	E4	C4	R203	A5	E1
C53	D3	D3	CR13	C4	C2	Q54	G4	C4	R26	B5	D2	R67	F4	A4	R204	A4	E2
C57	E2	D4				Q61	F4	B4	R27	C4	D2	R68	G5	A4	R205	A4	E2
C61	E4	A4	CR21	C4	D2				R28	C4	D3	R70	G3	G3	R206	A4	E2
			CR22	C5	D2	Q62	G5	A4	R29	C5	D3	R71	H3	G3	R207	A4	E2
C62	E4	C3	CR23	C5	D2	Q201	A5	E1	R40	D1	E3	R72	G5	G2	R208	A5	E2
C63	D4	B3	CR180	D5	F2	Q204	A4	E2	R41	D1	E3	R73	G5	G2	R209	A4	E2
C66	E4	C4	CR181	D5	F1	Q207	A4	E2	R42	D1	F3						
C73	G4	G4	CR190	E5	F2	Q210	F5	E1				R74	G4	G4	R210	F5	E1
C74	G4	G4	CR191	E5	F2				R43	D1	F3	R75	G4	G4	R211	F5	E1
C75	G5	G4							R44	E1	F3	R76	H4	H4	R301	F2	E4
C80	G1	B1	J9	A1	D1	R2	B2	B2	R45	D2	F3	R77	H4	H4	R302	F3	D4
C90	G2	B2	J81	H1	A1	R3	B2	C2	R46	D2	F4	R78	H4	H4	R303	F4	B4
C91	B5	B1	J82	H2	A1	R4	B1	B2	R47	E2	F3	R79	H5	H4	R408	C1	B3
C92	C5	B2	J83	H3	A2	R5	B2	B2	R48	E1	F4	R80	G1	A2	R418	C3	C3
						R6	B2	C2	R49	F2	E3	R81	G1	A2	R428	C4	D3
C100	G3	B3	Q1	C1	A1	R7	C1	B2	R50	F2	E3	R82	H1	B2	U40A	F2	F3
C180	D5	F1				R8	C1	B3									

A B C D E F G H

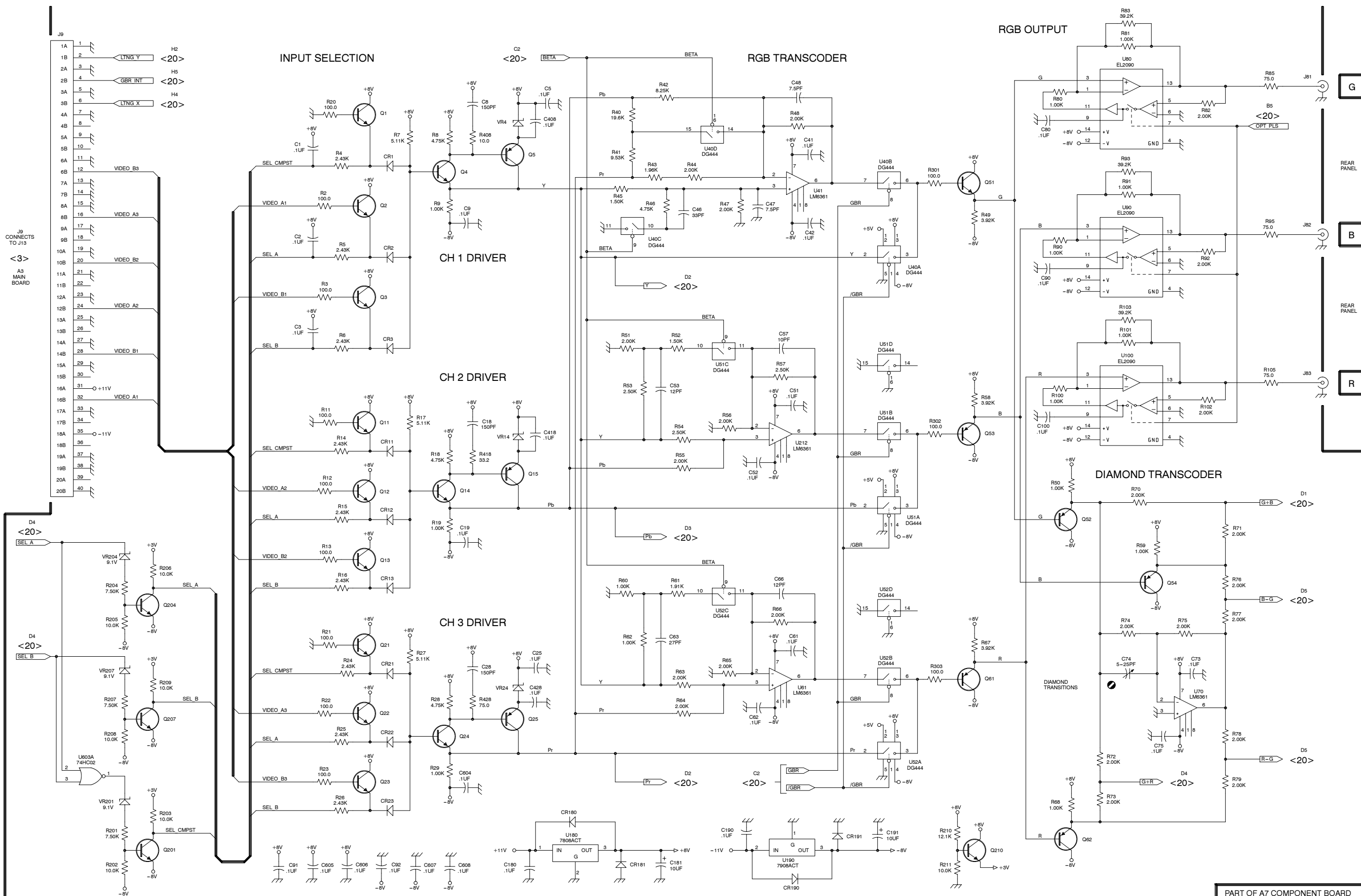
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A7 Component Board Component Locator Chart

(with cross-references to Schematics 19 and 20)

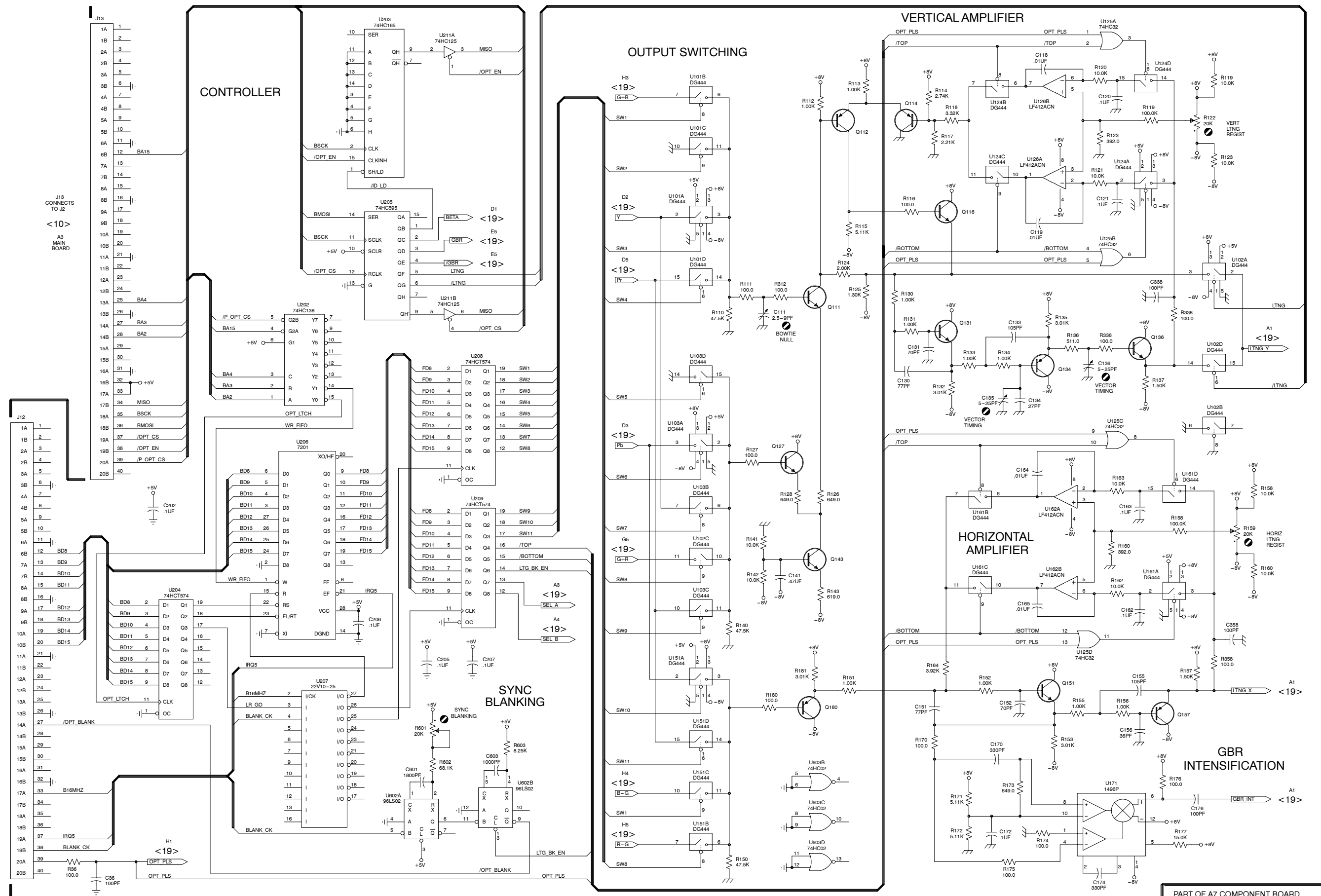
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C1	19	B1	C2	C608	19	C5	A1	R19	19	C3	C3	R118	20	F1	I2	U51A	19	F3	D3
C2	19	B2	D2					R20	19	B1	A1	R119	20	G1	I2	U51B	19	F3	D3
C3	19	B2	D2	CR1	19	C1	B2	R21	19	B4	D2	R120	20	G1	I1	U51C	19	E2	D3
C5	19	D1	I1	CR2	19	C2	B2	R22	19	B4	C2	R121	20	G2	I1	U51D	19	F2	D3
C8	19	C1	B3	CR3	19	C2	C2					R122	20	H1	I2	U52A	19	F5	B3
C9	19	C2	I2	CR11	19	C3	C2	R23	19	B5	D2	R123	20	G1	I2				
C18	19	C3	C3	CR12	19	C3	C2	R24	19	B4	D2	R124	20	F2	H2	U52B	19	F4	B3
C19	19	C3	D3	CR13	19	C4	C2	R25	19	B5	D2	R125	20	F2	H2	U52C	19	E4	B3
C25	19	D4	D2					R26	19	B5	D2	R126	20	F3	H2	U52D	19	F4	B3
C28	19	C4	D3	CR21	19	C4	D2	R27	19	C4	D2					U61	19	E4	C4
				CR22	19	C5	D2	R28	19	C4	D3	R127	20	E3	H2	U70	19	G4	G4
C36	20	A5	J2	CR23	19	C5	D2	R29	19	C5	D3	R128	20	E3	H2	U80	19	G1	A1
C41	19	E1	G3	CR180	19	D5	F2	R36	20	A5	J2	R130	20	F2	H1	U90	19	G2	A2
C42	19	E2	F3	CR181	19	D5	F1	R40	19	D1	E3	R131	20	F2	H1	U100	19	G3	A3
C46	19	D2	F4	CR190	19	E5	F2	R41	19	D1	E3	R132	20	F3	H1	U101A	20	E2	G3
C47	19	E2	F3	CR191	19	E5	F2					R133	20	F3	H1	U101B	20	E1	G3
C48	19	E1	F4					R42	19	D1	F3	R134	20	G3	H1				
C51	19	E3	E3	J9	19	A1	D1	R43	19	D1	F3	R135	20	G2	H1	U101C	20	E1	G3
C52	19	E3	E3	J12	20	A3	L1	R44	19	E1	F3	R136	20	G2	H1	U101D	20	E2	G3
C53	19	D3	D3	J13	20	A1	O1	R45	19	D2	F3	R137	20	G3	G2	U102A	20	H2	G1
C57	19	E2	D4	J81	19	H1	A1	R46	19	D2	F4					U102B	20	H3	G1
				J82	19	H2	A1	R47	19	E2	F3	R140	20	E4	H2	U102C	20	E4	G1
C61	19	E4	A4	J83	19	H3	A2	R48	19	E1	F4	R141	20	E3	H3	U102D	20	H2	G1
C62	19	E4	C3					R49	19	F2	E3	R142	20	E4	H3	U103A	20	E3	G2
C63	19	D4	B3	Q1	19	C1	A1	R50	19	G3	E4	R143	20	F4	H2	U103B	20	E3	G2
C66	19	E4	C4	Q2	19	C2	B2					R150	20	E5	H4	U103C	20	E4	G2
C73	19	G4	G4	Q3	19	C2	B2	R51	19	D2	D3	R151	20	F4	I4	U103D	20	E3	G2
C74	19	G4	G4	Q4	19	C1	B2	R52	19	D2	D4	R152	20	F4	I4				
C75	19	G5	G4	Q5	19	C1	B2	R53	19	D3	D3	R153	20	G5	I3	U124A	20	G1	H2
C80	19	G1	B1	Q11	19	C3	C2	R54	19	D3	E3	R155	20	G4	I3	U124B	20	G1	H2
C90	19	G2	B2	Q12	19	C3	C2	R55	19	D3	D3	R156	20	G4	I4	U124C	20	G1	H2
C91	19	B5	B1	Q13	19	C4	C2	R56	19	E3	D3					U124D	20	G1	H2
				Q14	19	C3	C2	R57	19	E3	D4	R157	20	H4	I4	U125A	20	G1	J1
C92	19	C5	B2	Q15	19	C3	C2	R58	19	F3	C3	R158	20	H3	J4	U125B	20	G2	J1
C100	19	G3	B3					R59	19	G3	C3	R159	20	H3	J4	U125C	20	G3	J1
C111	20	E2	H2	Q21	19	C4	D2	R60	19	D4	B4	R160	20	G3	J4	U125D	20	G4	J1
C118	20	G1	I1	Q22	19	C4	D2					R162	20	G4	J3	U126A	20	G1	I2
C119	20	G2	I1	Q23	19	C5	D2	R61	19	D4	B4	R163	20	G3	J4	U126B	20	G1	I2
C120	20	G1	I1	Q24	19	C5	D2	R62	19	D4	B3	R164	20	F4	I4				
C121	20	G2	I1	Q25	19	C4	D2	R63	19	D4	C3	R170	20	F5	I3	U151A	20	E4	H3
C130	20	F3	H1	Q51	19	F1	E4	R64	19	D4	C3	R171	20	F5	J2	U151B	20	E5	H3
C131	20	F2	H1	Q52	19	G3	E4	R65	19	E4	C3	R172	20	F5	J3	U151C	20	E5	H3
C133	20	G2	H1	Q53	19	F3	C4	R66	19	E4	C4					U151D	20	E5	H3
				Q54	19	G4	C4	R67	19	F4	A4	R173	20	G5	J2	U161A	20	H4	J3
C134	20	G3	H1	Q61	19	F4	B4	R68	19	G5	A4	R174	20	G5	I2	U161B	20	F3	J3
C135	20	G3	H1					R70	19	G3	G3	R175	20	G5	I2	U161C	20	F4	J3
C136	20	G3	G1	Q62	19	G5	A4	R71	19	H3	G3	R176	20	H5	I3	U161D	20	H3	J3
C141	20	E4	H3	Q111	20	E2	H3					R177	20	H5	I3	U162A	20	G3	J4
C151	20	F4	I4	Q112	20	F1	H2	R72	19	G5	G2	R180	20	E4	H4	U162B	20	G4	J4
C152	20	G4	I4	Q114	20	F1	H2	R73	19	G5	G2	R181	20	E4	H4				
C155	20	G4	I4	Q116	20	F2	H2	R74	19	G4	G2	R201	19	A5	E1	U171	20	G5	I3
C156	20	G5	I3	Q127	20	E3	H2	R75	19	G4	G4	R202	19	A5	E2	U180	19	D5	F2
C162	20	G4	J3	Q131	20	F2	H1	R76	19	H4	H4	R203	19	A5	E1	U190	19	E5	F1
C163	20	G3	J3	Q134	20	G2	H1	R77	19	H4	H4					U202	20	B2	N2
				Q136	20	G2	G1	R78	19	H5	H4	R204	19	A4	E2	U203	20	C1	N3
C164	20	G3	J4	Q143	20	E4	H2	R79	19	H5	H4	R205	19	A4	E2	U204	20	B4	M2
C165	20	G4	J4					R80	19	G1	A2	R206	19	A4	E2	U205	20	C2	N3
C170	20	G5	J3	Q151	20	G4	I3	R81	19	G1	A2	R207	19	A4	E2	U206	20	B3	M3
C172	20	G5	J3	Q157	20	G4	I4					R208	19	A5	E2	U207	20	C4	K2
C174	20	G5	I2	Q180	20	E4	H4	R82	19	H1	B2	R209	19	A4	E2	U208	20	C3	L2
C176	20	H5	I2	Q201	19	A5	E1	R83	19	G1	A2	R210	19	F5	E1				
C180	19	D5	F1	Q204	19	A4	E2	R85	19	H1	A1	R211	19	F5	E1	U209	20	C3	L3
C181	19	D5	F1	Q207	19	A4	E2	R90	19	G2	A2	R301	19	F2	E4	U211A	20	C1	M2
C190	19	E5	F2	Q210	19	F5	E1	R91	19	G2	A3	R302	19	F3	D4	U211B	20	C2	M2
C191	19	F5	F2					R92	19	H2	B2					U212	19	E3	E4
				R2	19	B2	B2	R93	19	G1	A3	R303	19	F4	B4	U602A	20	C5	L4
C202	20	B3	N2	R3	19	B2	C2	R95	19	H2	A2	R312	20	E2	H3	U602B	20	D5	L4
C205	20	C4	N3	R4	19	B1	B2	R100	19	G3	A3	R336	20	G2	G1	U603A	19	A5	L3
C206	20	C4	M3	R5	19	B2	B2	R101	19	G2	A3	R338	20	H2	G1	U603B	20	E5	L3
C207	20	C4	K2	R6	19	B2	C2					R358	20	H4	J4	U603C	20	E5	L3
C338	20	G2	H1	R7	19	C1	B2	R102	19	H3	B3	R408	19	C1	B3	U603D	20	E5	L3
C358	20	H4	J4	R8	19	C1	B3	R103	19	G2	A3	R418	19	C3	C3				
C408	19	D1	C2	R9	19	C2	C3	R105	19	H3	A3	R428	19	C4	D3	VR4	19	D1	C3
C418	19	D3	D2	R11	19	B3	C2	R110	20	E2	G3	R601	20	C4	L3	VR14	19	D3	C3
C428	19	D4	D3	R12	19	B3	C2	R111	20	E2	H3	R602	20	C5	L3	VR24	19	D4	D2
C601	20	C5	L4					R112	20	F1	H2	R603	20	D5	K4	VR201	19	A5	E1
				R13	19	B4	C2	R113	20	F1	H3					VR204	19	A4	E2
C603	20	D5	K4	R14	19	B3	C2	R114	20	F1	I2	U40A	19	F2	F3	VR207	19	A4	E2
C604	19	C5	C3	R15	19	B3	C2	R115	20	F2	H2	U40B	19	F1	F3				
C605	19	B5	B3	R16	19	B4	C2	R116	20	F2	H2	U40C	19	D2	F3				
C606	19	C5	D3	R17	19	C3	C2					U40D	19	E1	F3				
C607	19	C5	A4	R18	19	C3	C3	R117	20	F1	I3	U41	19	E1	F4				

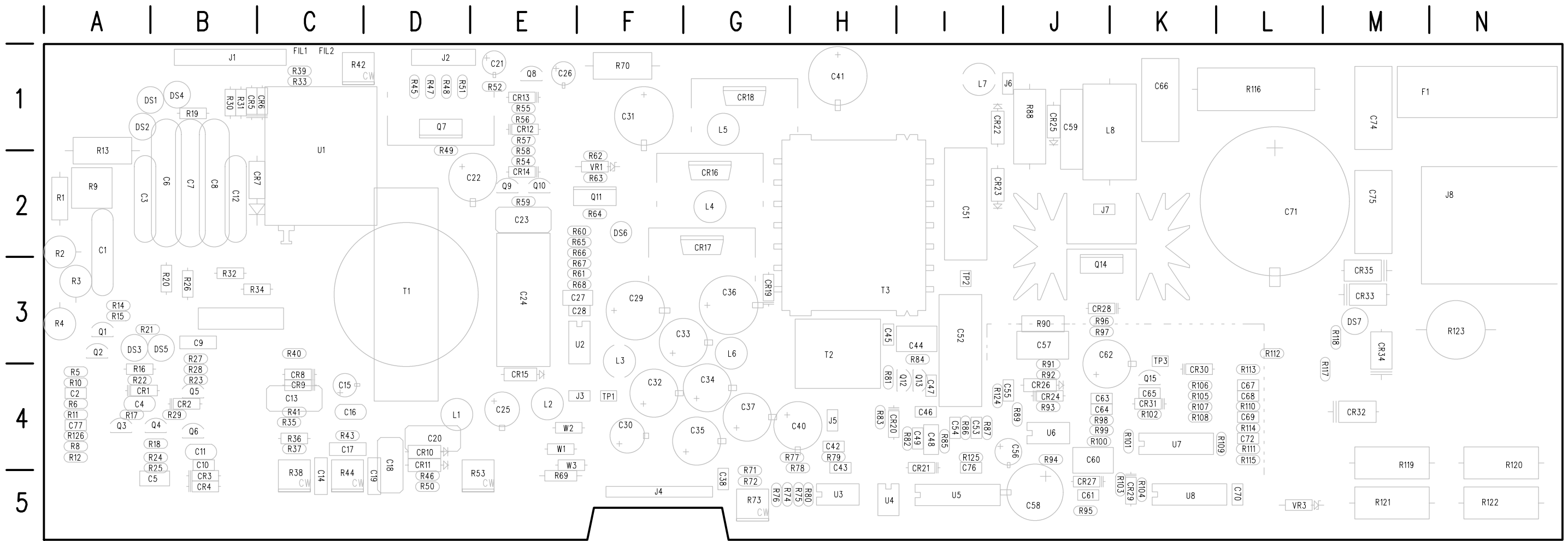
Schematic Diagram <20> Component Locator Chart

The schematic diagram has an alphanumeric grid to assist in locating parts within that diagram.

Assembly A7. Partial Assembly A7 also shown on Schematic 19.

Comp No	Diag Loc	Bd Loc	Comp No	Diag Loc	Bd Loc	Comp No	Diag Loc	Bd Loc	Comp No	Diag Loc	Bd Loc	Comp No	Diag Loc	Bd Loc
C36	A5	J2	C603	D5	K4	R125	F2	H2	R173	G5	J2	U125B	G2	J1
C111	E2	H2				R126	F3	H2	R174	G5	I2	U125C	G3	J1
C118	G1	I1	J12	A3	L1	R127	E3	H2				U125D	G4	J1
C119	G2	I1	J13	A1	O1	R128	E3	H2	R175	G5	I2	U126A	G1	I2
C120	G1	I1							R176	H5	I3	U126B	G1	I2
			Q111	E2	H3	R130	F2	H1	R177	H5	I3	U126B	G1	I2
C121	G2	I1	Q112	F1	H2	R131	F2	H1	R180	E4	H4			





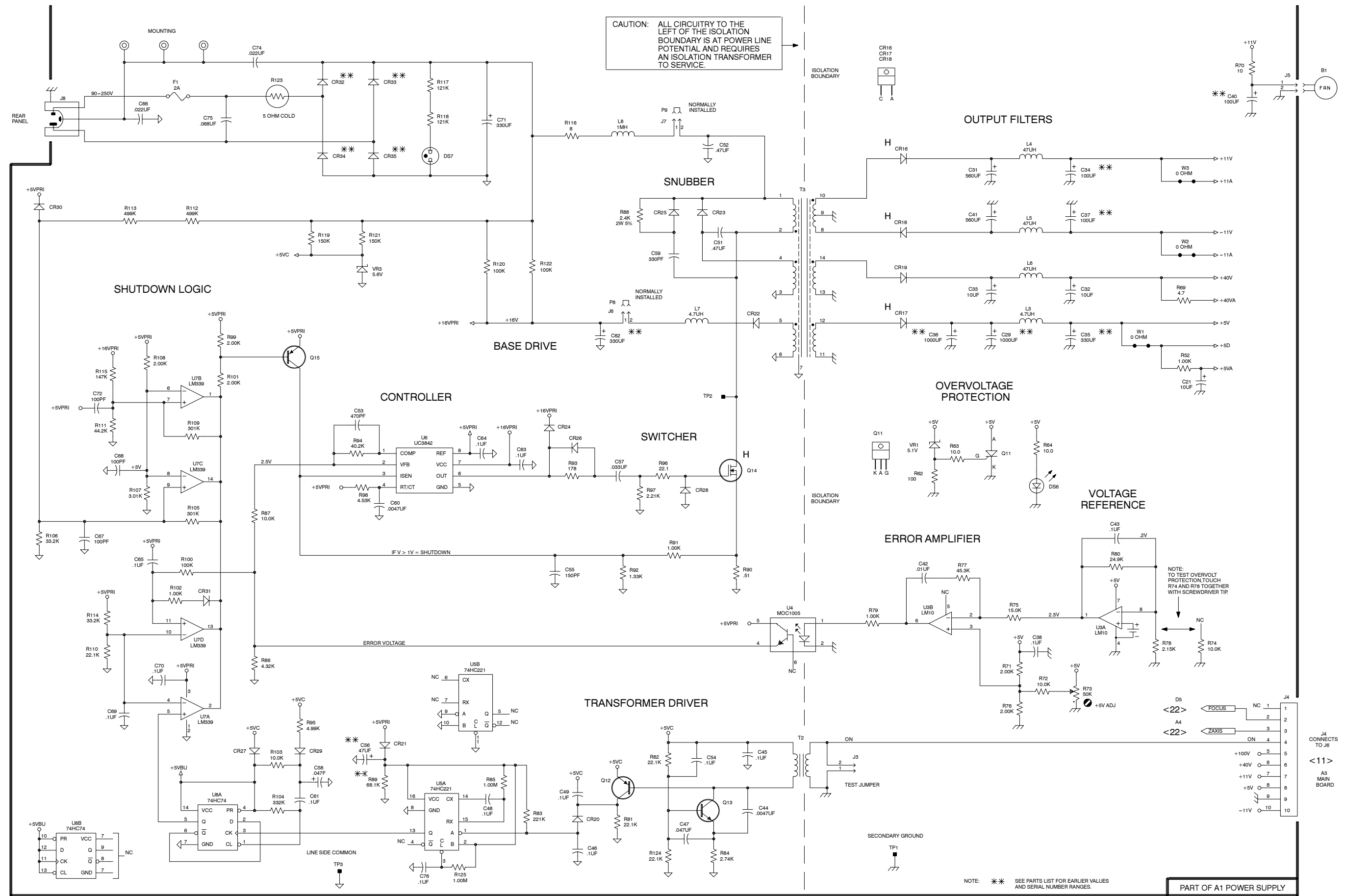
A1 Power Supply Board

Static Sensitive Devices
See Maintenance Section

A1 Power Supply Board Component Locator Chart (with cross-references to Schematics 21 and 22)

Comp No	Diag No	Diag Loc	Bd Loc	Comp No	Diag No	Diag Loc	Bd Loc	Comp No	Diag No	Diag Loc	Bd Loc	Comp No	Diag No	Diag Loc	Bd Loc	Comp No	Diag No	Diag Loc	Bd Loc	Comp No	Diag No	Diag Loc	Bd Loc	Comp No	Diag No	Diag Loc	Bd Loc	Comp No	Diag No	Diag Loc	Bd Loc					
C1	22	F4	A2	C32	21	G2	F4	C64	21	C3	J4	CR19	21	F2	G3	J2	22	F2	D1	Q14	21	E3	J3	R31	22	E3	B1	R92	21	D4	J4	R123	21	B1	N4	
C2	22	B4	A4	C32	21	G2	F4	C65	21	A4	K4	CR20	21	D5	H4	J3	21	F5	F4	Q15	21	B2	K4	R32	22	E2	B3	R93	21	D3	J4	R124	21	D5	I4	
C3	22	D3	A2	C33	21	F2	F3	C66	21	A1	K1	CR21	21	C5	I5	J4	21	H4	F5	R33	22	E3	C1	R32	22	E2	B3	R94	21	C3	J4	R125	21	C5	I4	
C4	22	B5	A4	C34	21	G1	G4	C67	21	A3	L4					J5	21	H1	H4	R33	22	E3	F2	R34	22	D2	B3	R95	21	B4	J5	R126	22	C5	A4	
C5	22	C5	A5	C35	21	G2	G4	C68	21	A3	L4	CR22	21	E2	I1	J6	21	D2	J1	R34	22	D2	B3	R35	22	F3	C4	R96	21	D3	J3					
C6	22	D3	B2	C36	21	F2	G3	C69	21	A4	L4	CR23	21	E2	I2	J7	21	D1	K2	R35	22	F3	C4	R36	22	F1	C4	R97	21	D3	J3	T1	22	C2	D3	
C7	22	D3	B2	C37	21	G2	G4	C70	21	A4	L5	CR24	21	D3	J4	J8	21	A1	N2	R36	22	F1	C4	R37	22	F2	C4	R98	21	C3	J4	T2	21	E5	H3	
C8	22	E2	B2	C38	21	G4	G5	C71	21	C1	L2	CR25	21	D2	J1					R37	22	F2	C4	R38	22	F2	C5	R99	21	B2	J4	T3	21	E2	H3	
C9	22	D4	B3	C40	21	H1	H4					CR26	21	D3	J4	L1	22	B2	D4	R38	22	F2	C5	R39	22	E3	C1	R100	21	B4	J4					
C10	22	C4	B4					C72	21	A3	L4	CR27	21	B5	J5	L2	22	D1	E4	R39	22	E3	C1	R40	22	C2	C3	R101	21	B3	K4	TP1	21	F5	F4	
				C41	21	F2	H1	C74	21	B1	M1	CR28	21	E3	J3	L3	21	G2	F3	R40	22	F4	A2	R41	22	D2	C4	R71	21	F4	G5	TP2	21	E3	I3	
				C42	21	F4	H4	C75	21	B1	M2	CR29	21	B5	K5	L4	21	G1	G2	R10	22	B4	A4	R42	22	E3	D1	R41	22	D2	C4	TP3	21	B5	K4	
				C43	21	G3	H5	C76	21	C5	I5	CR30	21	A2	K4	L5	21	G2	G1	R11	22	B4	A4	R43	22	F3	C4	R72	21	G4	G5					
				C44	21	E5	I3	C77	22	C5	A4	CR31	21	B4	K4	L6	21	G2	G3					R44	22	F3	C4	R73	21	G4	G5					
				C45	21	E5	H3									L7	21	E2	I1	R12	22	D5	A4	R45	22	F2	D1	R74	21	H4	G5					
				C46	21	D5	I4	CR1	22	C4	A4	CR32	21	B1	M4	L8	21	D1	J1	R13	22	E3	A2	R46	22	F2	C5	R75	21	F4	H5	U1	22	D1	C2	
				C47	21	E5	I4	CR2	22	D4	B4	CR33	21	C1	M3					R14	22	E5	A3	R47	21	F4	G5	R76	21	F4	G5	U2	22	B2	F4	
				C48	21	C5	I4	CR3	22	C4	B5	CR34	21	B1	M3	P8	21	D2		R15	22	E5	A3	R48	22	F2	D1	R77	21	F4	G4	U3A	21	G4	H5	
				C49	21	D5	I4	CR4	22	D5	B5	CR35	21	C1	M3	P9	21	D1		R16	22	D4	A4	R49	22	F2	D1	R78	21	G4	H5	U3B	21	F4	H5	
				C51	21	E2	I2	CR5	22	E2	B1									R17	22	C5	A4	R48	22	F3	D1	R79	21	F4	H4	U4	21	A2	K4	
								CR6	22	E2	C1	DS1	22	E2	A1	Q1	22	E5	A3	R18	22	C4	A4	R49	22	B3	D2	R80	21	G4	H5	U5A	21	C5	I5	
				C52	21	E1	I3	CR7	22	D3	B2	DS2	22	E3	A1	Q2	22	E5	A3	R19	22	D3	B1	R50	22	D2	D5	R81	21	D5	H4	U5B	21	C4	I5	
				C53	21	C3	I4	CR8	22	D2	C4	DS3	22	E4	A3	Q3	22	C4	A4	R20	22	D3	B3	R51	22	F3	D1					U6	21	C3	J4	
				C54	21	E5	I4	CR9	22	E2	C4	DS4	22	D3	B1	Q4	22	D4	B4	R21	22	E5	A3					R82	21	D5	I4	U7A	21	B4	K5	
				C55	21	D4	J4	CR10	22	D2	D4	DS5	22	E4	B3	Q5	22	D4	B4					R83	21	D5	H4	R83	21	D5	H4	U7B	21	B3	K5	
				C56	21	C5	J4					DS6	21	G3	F2	Q6	22	D4	B4	R22	22	B5	A4	R84	21	E5	I3	R84	21	E5	I3	U7C	21	B3	K5	
				C57	21	D3	J3	CR11	22	D2	D4	DS7	21	C1	M3	Q7	22	B2	D1	R23	22	C4	B4	R85	21	E2	E2	R85	21	E2	E2	U7D	21	B4	K5	
				C58	21	B5	J5	CR12	22	A2	E1									R24	22	C4	A4	R86	21	B4	I4	R86	21	B4	I4	U8A	21	B5	K5	
				C59	21	D2	J1	CR13	22	A2	E1	F1	21	B1	M1	Q8	22	A2	E1	R25	22	C5	A5	R87	21	B3	I4	R87	21	B3	I4	U8B	21	A5	K5	
				C60	21	C3	J4	CR14	22	B2	E2					Q9	22	A2	E2	R26	22	D3	B3	R88	21	D2	J1	R88	21	D2	J1					
				C61	21	B5	J5	CR15	22	C1	E4	FIL1	22	C3	C1	Q10	22	B2	E2	R27	22	D4	B3	R89	21	C5	J4	R89	21	C5	J4					
								CR16	21	F1	F2	FIL2	22	C3	C1	Q11	21	F3	E2	R28	22	C4	B4	R90	21	E4	J3	R90	21	E4	J3					
				C62	21	D2	J3	CR17	21	F2	G3					Q12	21	D5	I4	R29	22	D4	B4	R91	21	D4	J4	R91	21	D4	J4					
				C63	21	D3	J4	CR18	21	F2	G1	J1	22	F3	B1	Q13	21	E5	I4	R30	22	E2	B1	R61	22	C2	E3					W1	21	G2	E4	
																																	W2	21	G2	E4
																																W3	21	G2	E4	

CAUTION: ALL CIRCUITRY TO THE LEFT OF THE ISOLATION BOUNDARY IS AT POWER LINE POTENTIAL AND REQUIRES AN ISOLATION TRANSFORMER TO SERVICE.



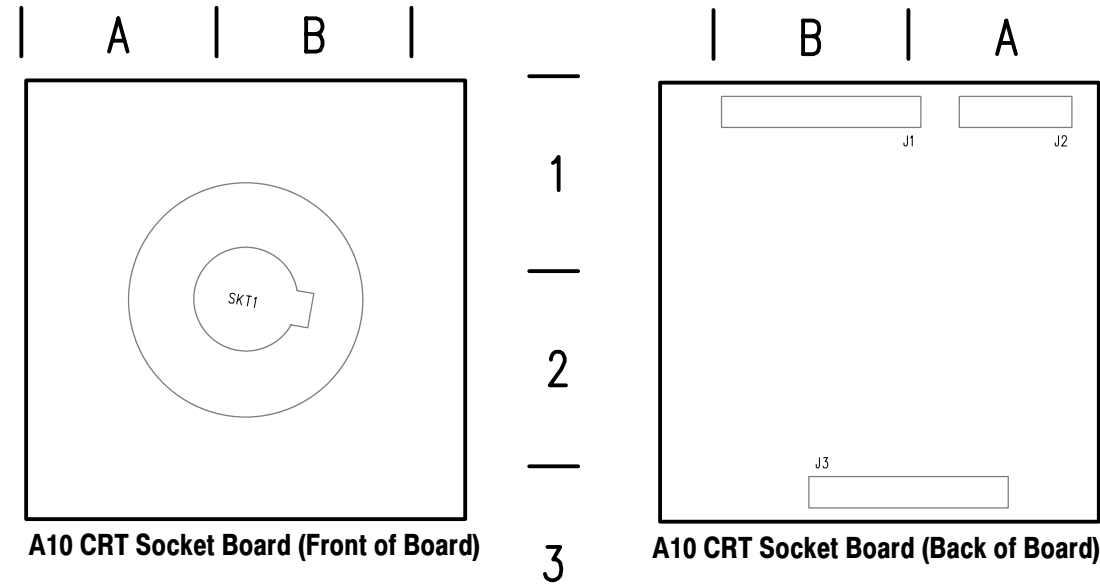
NOTE: ** SEE PARTS LIST FOR EARLIER VALUES AND SERIAL NUMBER RANGES.

PART OF A1 POWER SUPPLY

Schematic Diagram <21> Component Locator Chart

The schematic diagram has an alphanumeric grid to assist in locating parts within that diagram.

Assembly A1. Partial Assembly A1 also shown on Schematic 22.



A10 CRT Socket Board (Front of Board)

A10 CRT Socket Board (Back of Board)

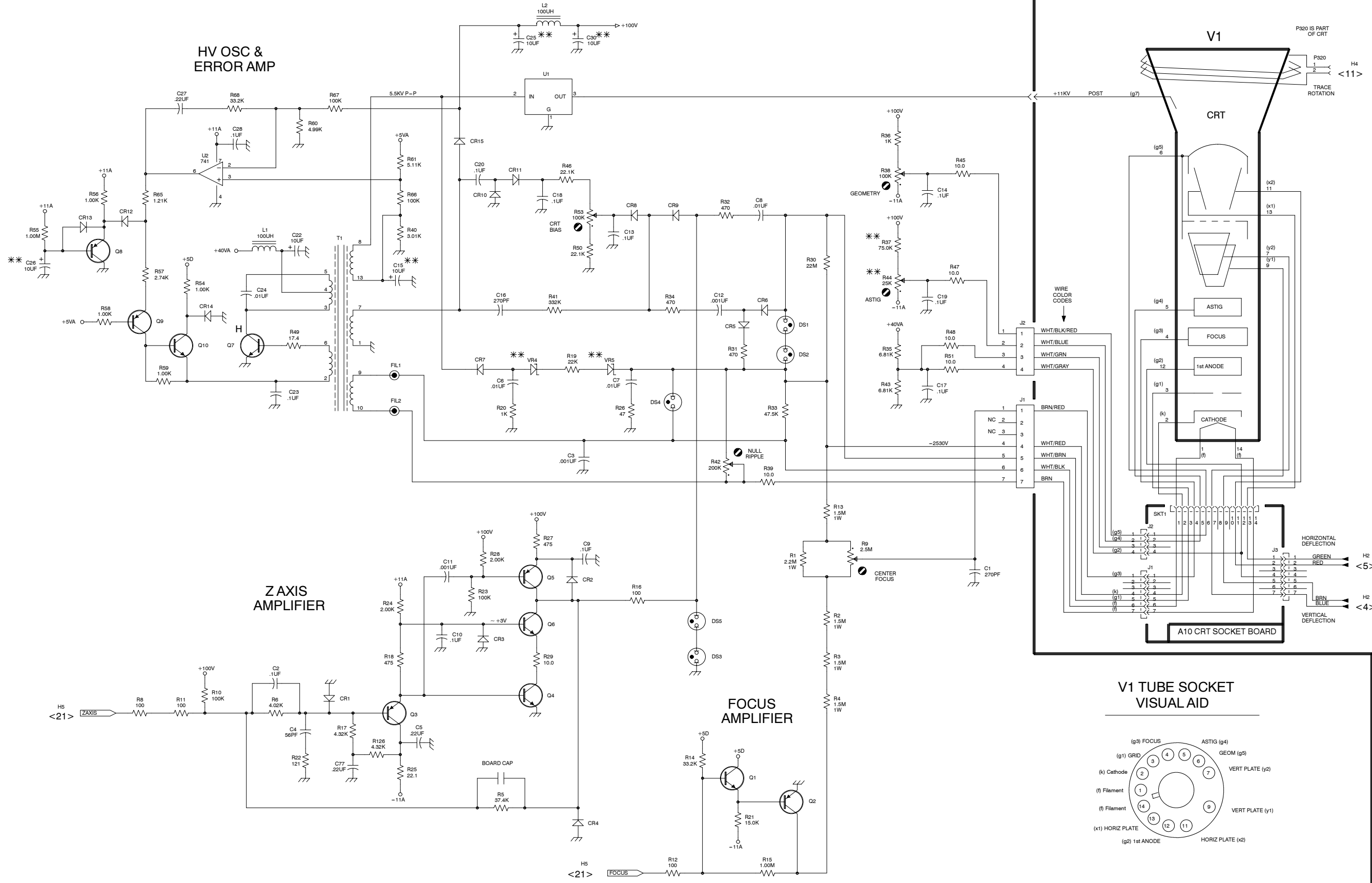
Comp No	Diag Loc	Bd Loc	Comp No	Diag Loc	Bd Loc	Comp No	Diag Loc	Bd Loc	Comp No	Diag Loc	Bd Loc	Comp No	Diag Loc	Bd Loc
C21	H3	E1	C67	A3	L4	J5	H1	H4	R82	D5	I4	R117	C1	L3
C29	F2	F3	C68	A3	L4	J6	D2	J1	R83	D5	H4	R118	C1	M3
C31	F1	F1	C69	A4	L4	J7	D1	K2	R84	E5	I3	R119	B2	M4
C32	G2	F4	C70	A4	L5	J8	A1	N2				R120	C2	N4
C33	F2	F3	C71	C1	L2				R85	C5	I4	R121	C2	M5
C34	G1	G4	C72	A3	L4	L3	G2	F3	R86	B4	I4	R122	D2	N5
C35	G2	G4	C74	B1	M1	L4	G1	G2	R87	B3	I4	R123	B1	N4
C36	F2	G3	C75	B1	M2	L5	G2	G1	R88	D2	J1	R124	D5	I4
C37	G2	G4	C76	C5	I5	L6	G2	G3	R89	C5	J4	R125	C5	I4
C38	G4	G5				L7	E2	I1	R90	E4	J3			
			CR16	F1	F2	L8	D1	J1	R91	D4	J4	T2	E5	H3
C40	H1	H4	CR17	F2	G3				R92	D4	J4	T3	E2	H3
C41	F2	H1	CR18	F2	G1	P8	D2		R93	D3	J4			
C42	F4	H4	CR19	F2	G3	P9	D1		R94	C3	J4	TP1	F5	F4
C43	G3	H5	CR20	D5	H4							TP2	E3	I3
C44	E5	I3	CR21	C5	I5	Q11	F3	E2	R95	B4	J5	TP3	B5	K4
C45	E5	H3	CR22	E2	I1	Q12	D5	I4	R96	D3	J3			
C46	D5	I4	CR23	E2	I2	Q13	E5	I4	R97	D3	J3	U3A	G4	H5
C47	E5	I4	CR24	D3	J4	Q14	E3	J3	R98	C3	J4	U3B	F4	H5
C48	C5	I4	CR25	D2	J1	Q15	B2	K4	R99	B2	J4	U4	E4	H5
C49	D5	I4							R100	B4	J4	U5A	C5	I5
			CR26	D3	J4	R52	G3	E1	R101	B3	K4	U5B	C4	I5
C51	E2	I2	CR27	B5	J5	R62	F3	F2	R102	A4	K4	U6	C3	J4
C52	E1	I3	CR28	E3	J3	R63	F3	F2	R103	B5	K5	U7A	B4	K5
C53	C3	I4	CR29	B5	K5	R64	G3	F2	R104	B5	K5	U7B	B3	K5
C54	E5	I4	CR30	A2	K4	R69	G2	E5				U7C	B3	K5
C55	D4	J4	CR31	B4	K4	R70	H1	F1	R105	B3	K4	U7D	B4	K5
C56	C5	J4	CR32	B1	M4	R71	F4	G5	R106	A3	K4	U8A	B5	K5
C57	D3	J3	CR33	C1	M3	R72	G4	G5	R107	A3	K4	U8B	A5	K5
C58	B5	J5	CR34	B1	M3	R73	G4	G5	R108	A2	K4			
C59	D2	J1	CR35	C1	M3	R74	H4	G5	R109	B3	L4	VR1	F3	F2
C60	C3	J4							R110	A4	L4	VR3	C2	L5
			DS6	G3	F2	R75	F4	H5	R111	A3	L4			
C61	B5	J5	DS7	C1	M3	R76	F4	G5	R112	B2	L3	W1	G2	E4
C62	D2	J3				R77	F4	G4	R113	A2	L4	W2	G2	E4
C63	D3	J4	F1	B1	M1	R78	G4	H5	R114	A4	L4	W3	G2	E4
C64	C3	J4				R79	F4	H4						
C65	A4	K4	J3	F5	F4	R80	G4	H5	R115	A3	L4			
C66	A1	K1	J4	H4	F5	R81	D5	H4	R116	D1	L1			

Schematic Diagram <22> Component Locator Chart

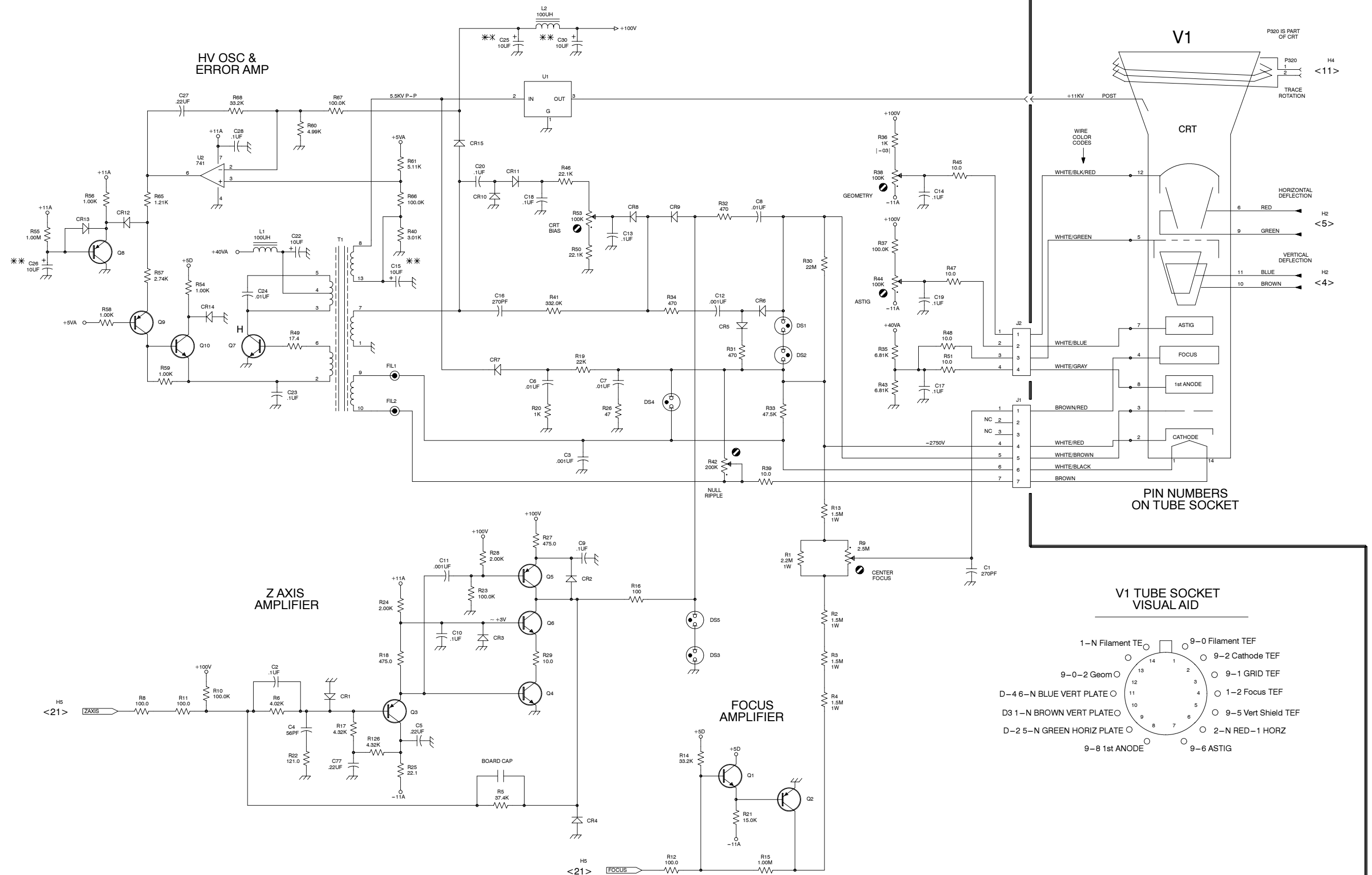
The schematic diagram has an alphanumeric grid to assist in locating parts within that diagram.

Assembly A1. Partial Assembly A1 also shown on Schematic 21.

Comp No	Diag Loc	Bd Loc	Comp No	Diag Loc	Bd Loc	Comp No	Diag Loc	Bd Loc	Comp No	Diag Loc	Bd Loc	Comp No	Diag Loc	Bd Loc
C1	F4	A2				L2	D1	E4	R19*	D3	B1	R46	D2	D5
C2	B4	A4	CR1	C4	A4				R20	D3	B3	R47	F2	D1
C3	D3	A2	CR2	D4	B4	Q1	E5	A3	R21	E5	A3	R48	F3	D1
C4	B5	A4	CR3	C4	B5	Q2	E5	A3				R49	B3	D2
C5	C5	A5	CR4	D5	B5	Q3	C4	A4	R22	B5	A4	R50	D2	D5
C6	D3	B2	CR5	E2	B1	Q4	D4	B4	R23	C4	B4	R51	F3	D1
C7	D3	B2	CR6	E2	C1	Q5	D4	B4	R24	C4	A4			
C8	E2	B2	CR7	D3	B2	Q6	D4	B4	R25	C5	A5	R53	D2	E5
C9	D4	B3	CR8	D2	C4	Q7	B2	D1	R26	D3	B3	R54	B2	E2
C10	C4	B4	CR9	E2	C4	Q8	A2	E1	R27	D4	B3	R55	A2	E1
			CR10	D2	D4	Q9	A2	E2	R28	C4	B4	R56	A2	E1
C11	C4	B4				Q10	B2	E2	R29	D4	B4	R57	B2	E1
C12	E2	B2	CR11	D2	D4				R30	E2	B1	R58	A2	E2
C13	D2	C4	CR12	A2	E1	R1	E4	A2	R31	E3	B1	R59	B3	E2
C14	F2	C5	CR13	A2	E1	R2	E4	A2				R60	B1	E2
C15	C2	C4	CR14	B2	E2	R3	E4	A3	R32	E2	B3	R61	C2	E3
C16	D2	C4	CR15	C1	E4	R4	E4	A3	R33	E3	C1	R65	B2	E2
C17	F3	C4				R5*	D5	A4	R34	D2	B3			
C18	D2	D4	DS1	E2	A1	R6	B4	A4	R35	F3	C4	R66	C2	E2
C19	F2	D5	DS2	E3	A1	R8	A4	A4	R36	F1	C4	R67	C1	E3
C20	C2	D4	DS3	E4	A3	R9	F4	A2	R37*	F2	C4	R68	B1	E3
			DS4	D3	B1	R10	B4	A4	R38	F2	C5	R126	C5	A4
			DS5	E4	B3	R11	B4	A4	R39	E3	C1			
C22	B2	D2							R40	C2	C3	T1	C2	D3
C23	B3	E2							R41	D2	C4			
C24	B2	E3	FIL1	C3	C1	R12	D5	A4				U1	D1	C2
C25	D1	E4	FIL2	C3	C1	R13	E3	A2				U2	B2	F4
C26	A2	E1				R14	E5	A3	R42	E3	D1			
C27	B1	E3	J1	F3	B1	R15	E5	A3	R43	F3	C4			
C28	B1	E3	J2	F2	D1	R16	D4	A4	R44*	F2	C5	VR4*	D3	
C30	D1	F4				R17	C5	A4	R45	F2	D1	VR5*	D3	
C77	C5	A4	L1	B2	D4	R18	C4	A4						



NOTE: * * * SEE PARTS LIST FOR EARLIER VALUES AND SERIAL NUMBER RANGES. PART OF A1 POWER SUPPLY



NOTE: ** SEE PARTS LIST FOR EARLIER VALUES AND SERIAL NUMBER RANGES.

PART OF A1 POWER SUPPLY (B029999 & Below)

Replaceable Mechanical Parts

This section contains a list of the replaceable mechanical components for the 1740A Series, 1750A Series, and 1760 Series monitors. 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
- 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.

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 entry 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.

Manufacturers cross index

Mfr. code	Manufacturer	Address	City, state, zip code
06383	PANDUIT CORP	17301 RIDGELAND	TINLEY PARK IL 07094-2917
07416	NELSON NAME PLATE CO	3191 CASITAS	LOS ANGELES CA 90039-2410
0KB01	STAUFFER SUPPLY	810 SE SHERMAN	PORTLAND OR 97214
18677	SCANBE MFG CO, DIV OF ZERO CORP	3445 FLETCHER AVE	EL MONTE CA 91731
24931	SPECIALTY CONNECTOR CO INC	2100 EARLYWOOD DR, PO BOX 547	FRANKLIN IN 46131
34785	DEK INC	3480 SWENSON AVE	ST CHARLES IL 60174-3450
70903	COOPER BELDEN ELECTRONICS WIRE AND C		
73743	FISCHER SPECIAL MFG CO	111 INDUSTRIAL RD	COLD SPRING KY 41076-9749
75915	LITTELFUSE INC	800 E NORTHWEST HWY	DES PLAINES IL 60016-3049
78189	ILLINOIS TOOL WORKS INC, SHAKEPROOF DIV	ST CHARLES ROAD	ELGIN IL 60120
80009	TEKTRONIX INC	PO BOX 500	BEAVERTON OR 97077-0001
80126	PACIFIC ELECTRICORD CO	747 W REDONDO BEACH, PO BOX 10	GARDENA CA 90247-4203
83385	MICRODOT MFG INC, GREER-CENTRAL DIV	3221 W BIG BEAVER RD	TROY MI 48098
83486	ELCO INDUSTRIES INC	1101 SAMUELSON RD	ROCKFORD IL 61101
93907	TEXTRON INC, CAMCAR DIV	600 18TH AVE	ROCKFORD IL 61108-5181
TK0435	LEWIS SCREW CO	4300 S RACINE AVE	CHICAGO IL 60609-3320
TK1373	PATELEC-CEM (ITALY)	10156 TORINO	VAICENTALLO 62/45S ITALY
TK1543	CAMCAR/TEXTRON	600 18TH AVE	ROCKFORD IL 61108-5181

Replaceable mechanical parts list

Fig. & index number	Tektronix part number	Serial no. effective	Serial no. discont'd	Qty	Name & description	Mfr. code	Mfr. part number
-1	-----	B030000		1	CRT (SEE V1 REPL)		
-2	386-6911-00		B030000	4	SUPPORT,SHIELD:CRT,FRONT,PLASTIC	80009	386691100
-3	337-4087-00	B030000	B033428	1	SHIELD,ELEC:CRT,STL	0J9P9	337-4087-00
-3	337-4087-01	B033429		1	SHIELD,ELEC:CRT,STL	0J9P9	337-4087-01
-4	346-0133-00				STRAP, TIEDOWN; 14.0 X 0.091, NYLON	56501	TY234M EURO DIRECT PURCH
-5	334-1379-00			1	MARKER,IDENT:MKD HI VACUUM	07416	ORDER BY DESC
-6	348-1464-00	B030000		1	MANCHET; CRT,END RUBBER MANCHET,31.5MM THK X 63MM OD,50.5 ID, SAFETY CONTROLLED	TK0JJ	55460
-7	407-4395-00	B030000		1	BRACKET,CRT; BACK,0.062,ALUM, SAFETY CONTROLLED *MOUNTING PARTS*		
-8	-----	B030000		1	CIRCUIT BD ASSY:CRT (SEE A10 REPL) *MOUNTING PARTS*		
-9	344-0111-01	B030000					
-10	179-2997-00	B020000	B029999	1	WIRE HARNESS; DESCRETE,CRT ASSY;CPD,5,24 AWG,5,26 AWG,1X4,0.1 CTR & 1X7,RCPT X 1X4 & 1X7,0.1 RCPT,SAFETY CONTROLLED		
-10	179-2997-01	B030000		1	WIRE HARNESS; DESCRETE,CRT ASSY 5,24AGW,5,26 AGW,1 X 4, 0.1 CTR & 1 X 7, RCPT X 1 X 4 & 1 X 7,0.1 RCPT,SAFETY CONTROLLED	TK6159	179-2997-01
-11	210-0457-00			4	NUT,PL,ASSEM WA:6-32 X 0.312,STL CD PL *END MOUNTING PARTS*	TK0435	ORDER BY DESC
-12	-----			1	CIRCUIT BD ASSY:INPUT & BNC (SEE A4 REPL) *MOUNTING PARTS*		
-13	344-0467-00			2	CLIP,INPUT:POLYCARBONATE	TK1163	344-0467-00
-14	-----			1	CIRCUIT BD ASSY:BNC (SEE A4A1 REPL)		
-15	337-3842-00		B019999	1	SHEILD,ELEC:PLASTIC,BNC	85471	337-3842-00
-15	361-1655-00	B020000		1	SLEEVE,SPACER:A SHAPED,BNC SPACER	80009	361-1655-00
-16	333-4022-01			1	PANEL,REAR *MOUNTING PARTS*	TK1935	333-4022-01
-17	211-0720-01			2	SCREW,MACH:6-32 X 0.50,PNH,STL,TORX T-15WITH SLOT	0KB01	211-0720-01
-18	211-0101-00			2	SCREW,MACHINE:4-40 X 0.25,FLH,100 DEG,STL *END MOUNTING PARTS*	TK0435	ORDER BY DESC
-19	214-3903-01			4	SCREW,JACK:4-40 X 0.312 EXT THD,4-40 INT THD,0.188 HEX,STEEL,CADPLATE	0KB01	214-3903-01
-20	131-3573-00			1	CONN,PLUG,ELEC:MALE,W/LOCKING ADAPTER	80126	B-0779
-21	211-0014-00			2	SCREW,MACH:4-40 X 0.5,PNH,STL *END MOUNTING PARTS*	TK0435	ORDER BY DESC
-22	211-0027-00			2	SCREW,MACHINE:4-40 X 1.5,PNH,STL *END MOUNTING PARTS*	3M099	ORDER BY DESC

Replaceable mechanical parts list (Cont.)

Fig. & index number	Tektronix part number	Serial no. effective	Serial no. discont'd	Qty	Name & description	Mfr. code	Mfr. part number
-23	200-4047-00			1	COVER,FAN *MOUNTING PARTS*	TK1935	200-4047-00
-24	378-0335-00			1	FILTER,AIR:1.6 X 1.6,30PPI,0.188 THK	2K262	ORDER BY DESC
-25	211-0020-00			2	SCREW,MACHINE:4-40 X 1.125,PNH,STL *END MOUNTING PARTS*	TK0435	ORDER BY DESC
-26	200-4051-00			1	GUARD,FAN:1.500 INCH,WIRE FORM,NICKEL CHROME PLATED	80009	200405100
-27	-----			1	FAN,DC:TUBEAXIAL (SEE B100 REPL) *MOUNTING PARTS*		
-28	211-0721-00			2	SCREW,MACH:6-32 X 0.375,PNH,STL,CDPL,T-15 TORX DR *END MOUNTING PARTS*	OKB01	ORDER BY DESC
-29	211-0008-00			2	SCREW,MACHINE:4-40 X 0.25,PNH,STL (1760-SERIES ONLY)	TK0435	ORDER BY DESC
-30	-----			1	CIRCUIT BD ASSY:COMPONENT (SEE A7 REPL,1760-SERIES ONLY) *MOUNTING PARTS*		
-31	337-3838-00			1	SHEILD,ELEC:PLASTIC,COMPONENT (1760-SERIES ONLY)	80009	337383800
-32	426-2464-00			1	MOUNT,BNC (1760-SERIES ONLY)	TK1935	426-2464-00
	200-4054-00			1	COVER,BNC (1740A/1750A-SERIES ONLY) *MOUNTING PARTS*	80009	200405400
-33	210-1039-00			3	WASHER,LOCK:0.521 ID,INT,0.025 THK,SST (1760-SERIES ONLY) *END MOUNTING PARTS*	OKB01	1224-02-00-0541
-34	220-0497-00			6	NUT,PLAIN,HEX:0.5-28 X 0.562 HEX,BRS CD PL (1760-SERIES ONLY)	73743	ORDER BY DESC
-35	426-2454-00		B019999	1	FRAME,CHASSIS:ALUMINUM	TK1935	426-2454-00
-35	426-2454-01	B020000		1	FRAME,CHASSIS:ALUMINUM	TK1935	426-2454-01
-36	337-3841-01			1	SHEILD,ELEC:PLASTIC,POWER SUPPLY	85471	337-3841-00
-37	-----			1	CIRCUIT BD ASSY:POWER SUPPLY (SEE A1 REPL) *MOUNTING PARTS*		
-38	337-3796-01	B020000		1	SHIELD, ELEC,LINE FILTER GROUNDING: 0.032 BRASS, C26000, 0.5 HARD		
-39	334-3003-00			1	MARKER,IDENT:MKD DANGER	TK0860	ORDER BY DESC
-40	337-3802-00			1	SHIELD,ELEC:LEXAN *MOUNTING PARTS*	85471	337-3802-00
-41	129-1410-00			3	SPACER,POST:1.312 SPACING,6-32 INT & EXT,0.250 HEX, STL,CAD PLATING CHROMATE CONVERSION COAT(YEL)	05791	ST6981-1.312-32
-42	211-0720-01			1	SCREW,MACH:6-32 X 0.50,PNH,STL,TORX T-15WITH SLOT	OKB01	211-0720-01
-43	343-0916-00			1	CLAMP,LOOP:0.5 ID,NYLON	34785	029-500
-44	343-0013-00			1	CLAMP,LOOP; 0.375 ID,PLASTIC SAFETY CONTROLLED	74594	343-0013-00

Replaceable mechanical parts list (Cont.)

Fig. & index number	Tektronix part number	Serial no. effective	Serial no. discont'd	Qty	Name & description	Mfr. code	Mfr. part number
-45	129-1308-00			1	SPACER,POST; 6-32 X 0.75,HEX,STL,CAD PL	55566	4538-632-S-3
-46	-----			1	CIRCUIT BD ASSY:MAIN (SEE A3 REPL) *MOUNTING PARTS*		
-47	337-3837-00		B031959	1	SHEILD,ELEC:PLASTIC,MAIN	85471	337-3837-00
-47	337-3837-01	B031960		1	SHEILD,ELEC:PLASTIC,MAIN	85471	337-3837-01
-48	211-0721-00			8	SCREW,MACH:6-32 X 0.375,PNH,STL,CDPL,T-15 TORX DR *END MOUNTING PARTS*	0KB01	ORDER BY DESC
-49	346-0120-00	B030000		2	STRAP,TIEDOWN,E:5.5 L MIN,PLASTIC,WHITE	06383	SST1.5M
-50	426-2456-01			1	FRAME SECT,CAB:FRONT *MOUNTING PARTS*	TK1163	426-2456-00
-51	211-0721-00			2	SCREW,MACH:6-32 X 0.375,PNH,STL,CDPL,T-15 TORX DR *END MOUNTING PARTS*	0KB01	ORDER BY DESC
-52	210-0407-00			4	NUT,PLAIN,HEX:6-32 X 0.25,BRS CD PL *END MOUNTING PARTS*	73743	3038-402
-53	-----			1	CIRCUIT BD ASSY:FRONT PANEL (SEE A2 REPL) *MOUNTING PARTS*		
-54	119-4381-00			1	KEYPAD ASSY	31918	900259
-55	361-1620-00			1	SPACER,FR PNL:POLYCARBONATE	TK1163	361-1620-00
-56	333-4024-00			1	PANEL,FRONT (1740A ONLY)	0KB05	333-4024-00
	333-4017-00			1	PANEL,FRONT (1741A ONLY)	0KB05	333-4017-00
	333-4018-00			1	PANEL,FRONT (1745A ONLY)	0KB05	333-4018-00
	333-4019-00			1	PANEL,FRONT (1750A ONLY)	0KB05	333-4019-00
	333-4020-00			1	PANEL,FRONT (1751A ONLY)	0KB05	333-4020-00
	333-4016-00			1	PANEL,FRONT (1755A ONLY)	0KB05	333-4016-00
	333-4014-00			1	PANEL,FRONT (1760 ONLY)	0KB05	333-4014-00
	333-4015-00			1	PANEL,FRONT (1761 ONLY)	0KB05	333-4015-00
	333-4021-00			1	PANEL,FRONT (1765 ONLY)	0KB05	333-4021-00
-57	211-0690-02			2	SCREW,MACHINE:6-32 X 0.875,PNH,SST *END MOUNTING PARTS*	93907	B20-70430
-58	366-0649-00			5	KNOB:GY,0.127 ID X 0.392 OD X 0.5 H	80009	366064900
-59	333-4023-00			1	PANEL,FRONT:CRT	TK1163	333-4023-00
-60	426-2455-00			1	FRAME,CRT:BEZEL *MOUNTING PARTS*	TK1163	426-2455-00
-61	378-0258-00			1	FILTER:GRAY,POLYCARBONATE	80009	378-0258-00

Replaceable mechanical parts list (Cont.)

Fig. & index number	Tektronix part number	Serial no. effective	Serial no. discont'd	Qty	Name & description	Mfr. code	Mfr. part number
-61	348-0660-00		B029999	4	CUSHION,CRT:POLYURETHANE	80009	348-0660-00
-62	386-6911-00	B030000		4	CUSHION,CRT:POLYURETHANE		
-63	348-0171-00			1	GROMMET,PLASTIC:BLACK,U-SHAPED,0.276 ID	0KBZ5	NA
-64	351-0688-00			1	GUIDE,CKT BOARD:NYLON,12.0 L	18677	11633-5
-65	211-0721-00			3	SCREW,MACH:6-32 X 0.375,PNH,STL,CDPL,T-15 TORX DR (1760-SERIES ONLY)	0KB01	ORDER BY DESC
-66	-----			1	CIRCUIT BD ASSY:SCH (SEE A6 REPL,1750A/1760-SERIES OPT SC ONLY) *MOUNTING PARTS*		
-67	337-3839-00	B010100	B012374	1	SHEILD,ELEC:PLASTIC,VECTOR (1750A-SERIES/1760-SERIES OPT SC ONLY)	85471	337-3839-00
-67	337-3839-01	B012375		1	SHIELD,ELEC:PLASTIC,VECTOR (1750A-SERIES/1760-SERIES OPT SC ONLY)	85471	337-3839-01
-68	211-0720-00			2	SCR,ASSEM WSHR:6-32 X 0.500,PNH,STL,CDPL,T-15 TORX DR,MACHINE (1750A-SERIES/1760-SERIES OPT SC ONLY) *END MOUNTING PARTS*	0KB01	ORDER BY DESC
-69	211-0721-00			3	SCREW,MACH:6-32 X 0.375,PNH,STL,CDPL,T-15 TORX DR *END MOUNTING PARTS*	0KB01	ORDER BY DESC
-70	-----			1	CIRCUIT BD ASSY:VECTORSCOPE (SEE A5 REPL) *MOUNTING PARTS*		
-71	337-3839-00	B010100	B012374	1	SHEILD,ELEC:PLASTIC,VECTOR	85471	337-3839-00
-71	337-3839-01	B012375		1	SHIELD,ELEC:PLASTIC,VECTOR	85471	337-3839-01
-72	211-0721-00			2	SCREW,MACH:6-32 X 0.375,PNH,STL,CDPL,T-15 TORX DR *END MOUNTING PARTS*	0KB01	ORDER BY DESC
-73	174-3511-00	B030000	05/01/1996	1	DEFLECTION LEAD ASSY: CRT	9M860	174-3511-00
-74	174-3511-01	05/02/1996		1	CA ASSY,SP; DISCRETE,;CPD,4,24 AWG, 8.0L,1X7,0.1CTR & 2, 24 AWG, 8.5L X STRAIN RELIEF PCB; SAFETY CONTROLLED		
-75	386-4443-00		B029999	1	SUPPORT,SHIELD:CRT,FRONT,PLASTIC	80009	386691100
-76	337-3487-00		B029999	1	SHIELD,ELEC:CRT,STL	0J9P9	337-4087-00
-77	136-1247-00		B030000	1	SKT,CRT ASSY:HARNESS;14 POS 136-0202-04X 13,24-26 AWG,300V,UL1430WIRE W/ULTRA-HI CRIMP TERMINALS	9M860	136-1247-00
-78	426-2096-01		B030000	1	MOUNT,RESILIENT *MOUNTING PARTS*	TK1155	426-2096-01
-79	200-4042-00		B030000	1	CAP:CRT SOCKET	80009	200-4042-00

Replaceable mechanical parts list (Cont.)

Fig. & index number	Tektronix part number	Serial no. effective	Serial no. discount'd	Qty	Name & description	Mfr. code	Mfr. part number
STANDARD ACCESSORIES							
-80	161-0216-00			1	CABLE ASSY,PWR:3,18 AWG,2.5M L,BLACK, (STANDARD ONLY)	80126	C7120-25M-BL
	070-8470-02			1	MANUAL,TECH:USER (1740A SERIES AND 1750A SERIES ONLY)	TK2548	070-8470-02
	070-8470-03			1	MANUAL,TECH:USER (1740A SERIES AND 1750A SERIES ONLY)	TK2548	070-8470-03
	070-8470-04			1	MANUAL,TECH:USER (1740A SERIES AND 1750A SERIES ONLY)	TK2548	070-8470-04
	070-8470-05		B046031	1	MANUAL,TECH:USER (1740A SERIES AND 1750A SERIES ONLY)	TK2548	070-8470-05
	070-8470-06	B046032		1	MANUAL,TECH:USER (1740A SERIES AND 1750A SERIES ONLY)	TK2548	070-8470-06
	070-8473-01			1	MANUAL,TECH:USER (1760A SERIES ONLY)	TK2548	070-8473-01
	070-8473-02			1	MANUAL,TECH:USER (1760A SERIES ONLY)	TK2548	070-8473-02
	070-8473-03			1	MANUAL,TECH:USER (1760A SERIES ONLY)	TK2548	070-8473-03
	070-8473-04		B046031	1	MANUAL,TECH:USER (1760A SERIES ONLY)	TK2548	070-8473-04
	070-8473-05	B046032		1	MANUAL,TECH:USER (1760A SERIES ONLY)	TK2548	070-8473-05
	150-0168-00			3	LAMP,INCAND:14V,0.08A,WEDGE BASE,T1.75FOR SKT MT	55335	73W
	159-0021-00			1	FUSE,CARTRIDGE:3AG,2A,250V,FAST BLOW	71400	AGC-2
	378-0335-00			3	FILTER,AIR:1.6 X 1.6,30PPI,0.188 THK	2K262	ORDER BY DESC
OPTIONAL ACCESSORIES							
	161-0215-00			1	CABLE ASSY,PWR:3,0.75MU,2.5MM L,GREY (OPTION A1 EUROPEAN ONLY)	80126	0-5335-008-GY
	161-0066-10			1	CABLE ASSY,PWR:3,0.1MM SQ,250V/10A,2.5 METER (OPTION A2 UNITED KINGDOM ONLY)	S3109	BS/13-H05VVF3G0
	161-0066-11			1	CABLE ASSY,PWR:3,1.0MM SQ,250V/10A,2.5 METER (OPTION A3 AUSTRALIAN ONLY)	S3109	198-000
	161-0066-12			1	CABLE ASSY,PWR:3,18 AWG,250V/10A,98 INCH (OPTION A4 NORTH AMERICAN ONLY)	TK2541	13E68,25-1E-250
	161-0154-00			1	CA ASSY,PWR:3,1.0MM SQ,250V/10A,2.5 METER,STR, (OPTION A5 SWISS ONLY)	S3109	12-H05VVF3G 00-
	161-0304-00			1	CABLE ASSY,PWR: 3,1.0MM SQ,250V/10A,2.5 METER,STR,IEC320,RCPT,CHINA,SAFETY CONTROLLED (OPTION AC CHINA ONLY)	TK6253	161-0304-00
	016-0475-00			1	VIEWING HOOD	80009	016-0475-00
	063-1670-01		B036877	1	DISK:3.5 INCH,1.44 MEG,PROGRAMMED V2.2	80009	063-1670-01
	063-1670-03	B036878		1	DISK:3.5 INCH,1.44 MEG,PROGRAMMED V2.4	80009	063-1670-03
	063-1690-00		B029999	1	DISK:3.5 INCH,1.44 MEG,PROGRAMMED CAL PROCEDURE	80009	063-1690-00

Replaceable mechanical parts list (Cont.)

Fig. & index number	Tektronix part number	Serial no. effective	Serial no. discont'd	Qty	Name & description	Mfr. code	Mfr. part number
	063-1690-01	B030000		1	DISK:3.5 INCH,1.44 MEG,PROGRAMMED CAL PROCEDURE	80009	063-1690-01
	070-8469-00	B010100	B019999	1	MANUAL,TECH:SERVICE & 063-1690-XX & 063-1670-XX PROGRAMMED DISKS	TK2541	070-8469-00
	070-8469-03	B020000		1	MANUAL,TECH:SERVICE & 063-1690-XX & 063-1670-XX PROGRAMMED DISKS	TK2541	070-8469-03
	200-3897-01			1	COVER,FRONT:1700F02	80009	200389701
-----				1	PLAIN CASE:1700F00		
-----				1	CARRYING CASE:1700F02		
-----				1	RACK ADAPTER,SIDE-BY-SIDE:WFM7F05		
-----				1	FILLER PANEL:1700F06		
-----				1	UTILITY DRAWER:1700F07		
-----				1	PLAIN CASE:1700F00		

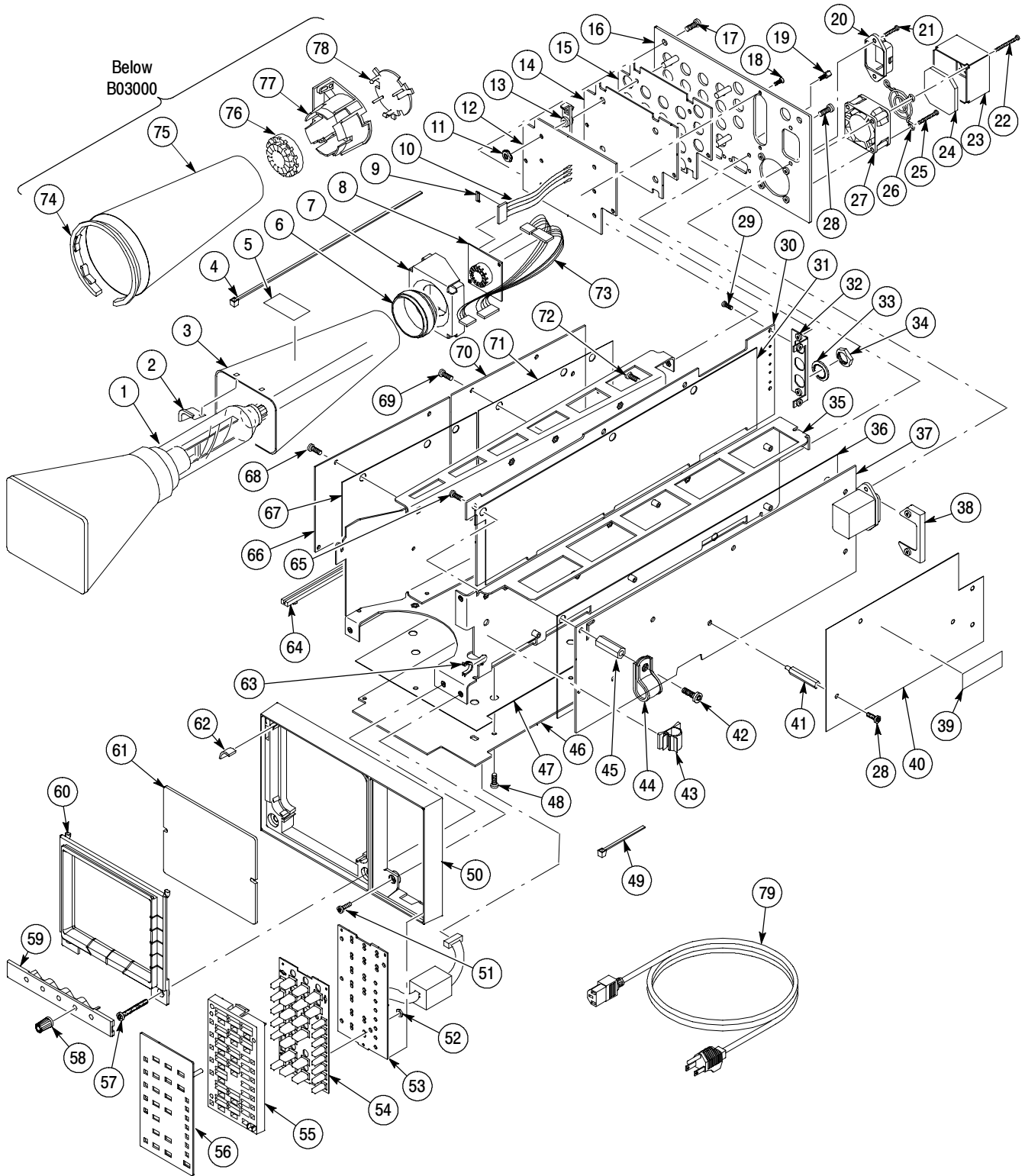


Figure 10-1: Exploded View

Glossary

Accuracy

The closeness of the indicated value to the true value.

AC Coupled

A connection which removes the constant voltage (DC component) on which the signal (AC component) is riding. Usually implemented by passing the signal through a capacitor.

APL

(Average Picture Level.) The average signal level (with respect to blanking) during active picture time, expressed as a percentage of the difference between the blanking and reference white levels.

Backporch

The portion of the video signal which lies between the trailing edge of the horizontal sync pulse and the start of the active picture time. Burst is located on backporch.

Bandwidth

The range of frequencies over which signal amplitude remains constant (within some limit) as it is passed through a system.

Baseband

Refers to the composite video signal as it exists before modulating the picture carrier. Composite video distributed throughout a studio and used for recording is at baseband.

Black Burst (NTSC)

Also called “color black,” black burst is a composite video signal consisting of all horizontal and vertical synchronization information, burst, and usually setup. Typically used as the house reference synchronization signal in television facilities.

Black Burst (PAL)

Also called “color black,” black burst is a composite video signal consisting of all horizontal and vertical synchronization information and burst. Typically used as the house reference synchronization signal in television facilities.

Blanking Level

Refers to the 0-IRE level for NTSC systems (0.3-volt level, with respect to sync tip, for PAL systems) which exists before and after horizontal sync and during the vertical interval.

Bowtie

Bowtie display. A display used to assess relative timing and gain through a three-channel component system.

Breezeway

The portion of the video signal which lies between the trailing edge of the horizontal sync pulse and the start of burst. Breezeway is part of backporch.

Broad Pulses

Another name for the vertical synchronizing pulses in the center of the vertical interval. These pulses are long enough to be distinguished from all others, and are the part of the signal actually detected by vertical sync separators.

Bruch Blanking (PAL)

A four-field burst blanking sequence employed in PAL signals to ensure that burst phase is the same at the end of each vertical interval.

Burst (NTSC)

A small reference packet of the subcarrier sine wave, typically eight or nine cycles, which is sent on every line of video. Since the carrier is suppressed, this phase and frequency reference is required for synchronous demodulation of the color information in the receiver.

Burst (PAL)

A small reference packet of the subcarrier sine wave sent during the horizontal blanking interval on every line of video. Since the carrier is suppressed, this phase and frequency reference is required for synchronous demodulation of the color difference signals in the receiver.

B-Y (NTSC)

One of the color difference signals used in the NTSC system, obtained by subtracting luminance from the blue camera signal. This is the signal which drives the horizontal axis of a vectorscope.

B-Y (PAL)

One of the color difference signals used in the PAL system, obtained by subtracting luminance (Y) from the blue camera signal (B).

Chrominance

Chrominance refers to the color information in a television picture. Chrominance can be further broken down into two properties of color: hue and saturation.

Chrominance Signal

The high-frequency portion of the video signal which is obtained by quadrature amplitude modulation of a 3.58 MHz (NTSC) or 4.43 MHz (PAL) subcarrier with R-Y and B-Y information.

Color Black

See Black Burst.

Color Difference Signals

Signals used by color television systems to convey color information in such a way that the signals go to zero when there is no color in the picture. R-Y, B-Y, I, and Q are all color difference signals for the NTSC system; U and V are color difference signals for the PAL system. Component system color difference signal is Y, P_B, P_R as specified by SMPTE and CCIR standards.

Color Gamut

The area between minimum and maximum reproducible limits for elements of the color difference or RGB signals.

Component Video

Video which exists in the form of three separate signals, all of which are required in order to completely specify the color picture. For example, R, G, and B; or Y, R-Y, and B-Y.

Composite Video

A single video signal containing all of the necessary information to reproduce a color picture. Created by adding quadrature amplitude modulated R-Y and B-Y to the luminance signal for NTSC systems or U and V to the luminance signal for PAL systems.

CW

Continuous Wave. Refers to a separate subcarrier sine wave used for synchronization of chrominance information.

dB (Decibel)

A decibel is a logarithmic unit used to describe signal ratios. For voltages, $dB = 20 \text{ Log}_{10} (V_1/V_2)$.

DC-Coupled

A connection configured so that both the signal (ac component) and the constant voltage on which it is riding (dc component) are passed through.

DC Restorer

A circuit used in picture monitors and waveform monitors to clamp one point of the waveform to a fixed dc level.

Demodulator

In general, this term refers to any device which recovers the original signal after it has modulated a high-frequency carrier. In television it may refer to:

(1) An instrument, such as a TEKTRONIX 1450, which takes video in its transmitted form (modulated onto the picture carrier) and converts it to baseband.

(2) The circuits which recover R-Y and B-Y for NTSC systems or U and V for PAL systems from the composite signal.

Diamond

Diamond display. A simplified vector display for RGB signals that defines the valid gamut limits in the form of two diamonds.

Distortion

If a sine wave of a single frequency is put into a system, and harmonic content at multiples of that frequency appears at the output, there is harmonic distortion present in the system. Harmonic distortion is caused by nonlinearities in the system.

Equalizer

The pulses which occur before and after the broad pulses in the vertical interval.

Envelope Detection

A demodulation process in which the shape of the RF envelope is sensed. This is the process used by a diode detector.

Field

In interlaced scan systems, the information for one picture is divided up into two fields. Each field contains one half of the lines required to produce the entire picture. Adjacent lines in the picture are in alternate fields.

Frequency Modulation (FM)

is the process by which the frequency of a carrier signal is varied in proportion to the signal of interest. In both the NTSC and PAL television systems, audio information is transmitted using FM.

Frame

A frame (sometimes called a “picture”) contains all the information required for a complete picture. For interlaced scan systems, there are two fields in a frame.

Front Porch

The portion of the video signal between the end of active picture time and the leading edge of horizontal sync.

Gamma (NTSC)

Since picture monitors have a nonlinear relationship between the input voltage and brightness, the signal must be correspondingly predistorted. Gamma correction is always done at the source (camera) in television systems: the R, G, and B signals are converted to $R^{1/\gamma}$, $G^{1/\gamma}$, and $B^{1/\gamma}$. Values of about 2.2 are typically used for gamma.

Gamma (PAL)

Since picture monitors have a nonlinear relationship between the input voltage and brightness, the signal must be correspondingly predistorted. Gamma correction is always done at the source (camera) in television systems: the R, G, and B signals are converted to $R^{1/\gamma}$, $G^{1/\gamma}$, and $B^{1/\gamma}$. Values for gamma range from 2.2 to 2.8.

Gamut

See Color Gamut.

GBR

The same signals as RGB, but rearranged in sequence to correspond with SMPTE specification.

Gen Lock

The process of locking both sync and burst of one signal to sync and burst of another, making the two signals completely synchronous.

Graticule

The scale which is used to quantify the information on a waveform monitor or vectorscope display. Graticules may either be screened onto the faceplate of the crt itself (internal graticule), or onto a piece of glass or plastic which fits in front of the crt (external graticule). They can also be electronically generated.

Horizontal Blanking

Horizontal blanking is the entire time between the end of the active picture time of one line and the beginning of active picture time of the next line. It extends from the start of front porch to the end of backporch.

Horizontal Sync

Horizontal sync is the -40 IRE pulse in NTSC systems (-300 mV pulse for PAL systems) occurring at the beginning of each line. This pulse signals the picture monitor to go back to the left side of the screen and trace another horizontal line of picture information.

Hue

Hue is the property of color which allows us to distinguish between colors such as red, yellow, purple, etc.

Hum

Hum refers to the undesirable coupling of the 60 Hz power sine wave for NTSC systems (50 Hz power sine wave in PAL systems) into other electrical signals.

ITS (PAL)

Insertion Test Signal. A test signal which is inserted in one line of the vertical interval to facilitate in-service testing.

IRE (NTSC)

A unit equal to 1/140 of the peak-to-peak amplitude of the video signal, which is typically 1 volt. The 0 IRE point is at blanking level, with sync tip at -40 IRE and white extending to +100 IRE. IRE stands for Institute of Radio Engineers, the organization which defined the unit.

Lightning

Lightning display. A display, for use with SMPTE specified color difference signal (Y, P_B, P_R), that plots the two color difference signals against luminance to create a display similar in appearance to a lightning bolt.

Linear Distortion

Refers to distortions which are independent of signal amplitude.

Luminance

The signal which represents brightness, or the amount of light in the picture. This is the only signal required for black and white pictures, and for color systems it is obtained as a weighted sum ($Y = 0.3R + 0.59G + 0.11B$) of the R, G, and B signals.

Modulated (NTSC)

When referring to television test signals, this term implies that chrominance information is present. (For example, a modulated staircase has subcarrier on each step.)

Modulated (PAL)

When referring to television test signals, this term implies that chrominance information is present. (For example, a modulated ramp has subcarrier on each step.)

Modulation

A process which allows signal information to be moved to other frequencies in order to facilitate transmission or frequency-domain multiplexing. See **AM** and **FM** for details.

Non-Linear Distortion

Refers to distortions which are amplitude-dependent.

NTSC

National Television System Committee. The organization which developed the television standard currently in use in the United States, Canada, and Japan. Now generally used to refer to that standard.

PAL

Phase Alternate Line. Refers to one of the television systems used in Europe and many other parts of the world. The phase of one of the color difference signals alternates from line to line to help cancel out phase errors.

Quadrature AM

A process which allows two different signals to modulate a single carrier frequency. The two signals of interest Amplitude Modulate carrier signals which are the same frequency but differ in phase by 90 degrees (hence the Quadrature notation). The two resultant signals can be added together, and both signals recovered at the other end, if they are also demodulated 90 degrees apart.

Quadrature Distortion

Distortion resulting from the asymmetry of sidebands used in vestigial sideband television transmission. Quadrature distortion appears when envelope detection is used, but can be eliminated by using a synchronous demodulator.

RF

Radio Frequency. In television applications, RF generally refers to the television signal after the picture carrier modulation process.

RGB

Red, Green, and Blue. Also referred to as GBR. The three primary colors used in color television's additive color reproduction system. These are the three color signals generated by the camera and used by the picture monitor to produce a picture.

R-Y

One of the color difference signals is obtained by subtracting luminance (Y) from the red camera signal.

Saturation

The property of color which relates to the amount of white light in the color. Highly saturated colors are vivid, while less saturated colors have more white mixed in and, therefore, appear pastel. For example, red is highly saturated, while pink is the same hue, but much less saturated.

In signal terms, saturation is determined by the ratio between luminance level and chrominance amplitude. It should be noted that a vectorscope does not display saturation; the length of the vectors represents chrominance amplitude. In order to verify that the saturation of the colors in a color bar signal is correct, you must check luminance amplitudes with a waveform monitor in addition to observing the vectors.

SCH

The timing relationship between the horizontal sync pulses and the zero crossings of the reference subcarrier (burst).

Setup

In NTSC systems, video black is typically 7.5 IRE above the blanking level. This 7.5 IRE level is referred to as the black setup level, or simply as setup.

Subcarrier

The modulation sidebands of the color subcarrier contain the R-Y (V) and B-Y (U) information. For NTSC, subcarrier frequency is 3.579545 MHz. For PAL, subcarrier frequency is 4,433,618.75 Hz.

Synchronous Detection

A demodulation process in which the original signal is recovered by multiplying the modulated signal with the output of a synchronous oscillator locked to the carrier.

Termination

To accurately send a signal through a transmission line, there must be an impedance at the end which matches the impedance of the source and of the line itself. Amplitude errors and reflections will otherwise result. Video is a 75 Ω system, so a 75 Ω terminator must be put at the end of the signal path.

Time Code, Longitudinal (LTC)

LTC is an 80-bit signal with information which makes it possible to accurately identify an individual frame. The LTC signal is typically recorded on an audio channel.

Time Code, Vertical (VITC)

VITC is a signal in the vertical interval of video, which makes it possible to accurately identify an individual field.

U

The B-Y signal after a weighting factor of 0.493 has been applied. The weighting is necessary to reduce peak modulation in the composite signal.

Unmodulated

When used to describe television test signals, this term refers to pulses and pedestals which do not have high-frequency chrominance information added to them.

V

The R-Y signal after a weighting factor of 0.877 has been applied. The weighting is necessary to reduce peak modulation in the composite signal.

Vectorscope

A specialized oscilloscope which demodulates the video signal and presents a display of R-Y versus B-Y in NTSC systems (or V versus U in PAL systems). The angle and magnitude of the displayed vectors are respectively related to hue and saturation.

Vertical Interval

The synchronizing information which appears between fields and signals the picture monitor to go back to the top of the screen to begin another vertical scan.

Waveform Monitor

A specialized oscilloscope that plots voltage versus time to evaluate television signals.

Y

Abbreviation for luminance.

Zero Carrier Reference

A pulse in the vertical interval which is produced by the demodulator to provide a reference for evaluating depth of modulation.

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