

Instruction Manual



1735 HD High Definition Waveform Monitor (SN B030000 and Above)

070-8462-03

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.

While using this product, you may need to access other parts of the system. Read the *General Safety Summary* in other system manuals for warnings and cautions related to operating the system.

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.

Connect and Disconnect Properly. Do not connect or disconnect probes or test leads while they are connected to a voltage source.

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.

Connect the ground lead of the probe to earth ground only.

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.

Wear Eye Protection. Wear eye protection if exposure to high-intensity rays or laser radiation exists.

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:



Preface

This manual documents the TEKTRONIX 1735 HD High Definition Waveform Monitor.

The information in this manual is intended for instrument operators and service technicians. Operators should be familiar with basic television terms and measurements. Qualified service technicians also should be familiar with television terms and measurements, and have moderate experience with analog and logic circuits.

The manual is divided into two parts: Operator's Information and Service Information. The Operator's Information is useful to both operators and service technicians. The Service Information is intended only for qualified service technicians.

Operator's Section

The Operator's section includes Sections 1 and 2.

Getting Started includes a general description of the instrument and describes Options and Accessories.

Installation includes electrical and mechanical installation information. The electrical installation information includes power mains conversion, adjustments, and operational changes available with the instrument. The mechanical installation information includes rackmounting, custom installation, and portable use.

Operating Basics familiarizes the user with the front- and rear-panel controls, connectors, and indicators; includes an operator's checkout procedure and other operator familiarization information.

Service Section

The Service section contains information required by service technicians to install, calibrate, maintain, and troubleshoot the instrument. This is included in the remaining sections of the manual.

Specifications includes references to the corresponding *Performance Check* steps.

Theory of Operation provides an overall block diagram description and detailed circuit descriptions. Read the block diagram description for an overview of the instrument. The detailed circuit descriptions should be used with the block diagram and schematic diagrams in the foldout pages for specific information about individual circuits.

Performance Verification and Adjustment Procedures includes the Performance Check Procedure and the Adjustment Procedure. The Performance Check Procedure is used to verify that the instrument's performance is within its specifications, and the Adjustment Procedure is used to adjust the instrument to meet its specifications. The procedures are preceded by a list of recommended test equipment. Each procedure has a short form listing of the individual steps.

Maintenance includes preventive, troubleshooting, and corrective information.

Replaceable Electrical Parts includes order information and part numbers for all replaceable electrical parts.

Diagrams contains servicing illustrations. These include adjustment locations, circuit board part locations, a block diagram, schematic diagrams, and waveforms. Parts locating tables are included that cross-reference the circuit board illustrations and the schematic diagrams.

Replaceable Mechanical Parts includes ordering information and part numbers for all replaceable mechanical parts. This parts list is referenced to an exploded view mechanical drawing. Also included are lists of accessories and optional accessories.

Options documents instrument options. The information in this section summarizes the options. Additional details are included in appropriate places throughout the manual.

Contacting Tektronix

Product Support	<p>For application-oriented questions about a Tektronix measurement product, call toll free in North America: 1-800-TEK-WIDE (1-800-835-9433 ext. 2400) 6:00 a.m. – 5:00 p.m. Pacific time</p> <p>Or contact us by e-mail: tm_app_supp@tektronix.com</p> <p>For product support outside of North America, contact your local Tektronix distributor or sales office.</p>
Service Support	<p>Contact your local Tektronix distributor or sales office. Or visit our web site for a listing of worldwide service locations.</p> <p>www.tektronix.com</p>
For other information	<p>In North America: 1-800-TEK-WIDE (1-800-835-9433) An operator will direct your call.</p>
To write us	<p>Tektronix, Inc. P.O. Box 1000 Wilsonville, OR 97070-1000</p>



Getting Started

Getting Started

The 1735 HD is a multi-standard waveform monitor accommodating six composite or two component input signals. The 1735 HD provides a true input ground for each of the component input sets, selected via the front panel. The monitor is 8-1/2 inches wide by 5-1/4 inches high, weighing approximately 10.3 pounds.

The on-screen menu allows the operator to select from the following field/line rates. The menu is divided into progressive and interlaced pages, as shown in Figure 1-1.

312/75/1	NEXT PAGE	525/60/2	1250/50/2
312/100/1		625/50/2	PREV PAGE
312/125/1		875/60/2	
525/60/1		875/60/2BV	
625/50/1		1023/60/2	
750/60/1		1050/60/2	
787/60/1		1112/60/2	
1050/60/1		1117/60/2	
1250/60/1		1118/60/2	
1250/50/1		1125/60/2	

Progressive Formats **Interlaced Formats**

Figure 1-1: On-screen menu

Front-panel selections and readout functions are controlled by a microprocessor that polls the front-panel switches and remote ground closures. Front-panel controls and indicators consist of variable controls, momentary contact push-button switches, and LED indicators. Outlined front-panel selections are accessed by holding the switch approximately one second.

The signal is displayed on a bright CRT capable of displaying one line per frame. It is of the mesh type, for better geometry, and uses an internal graticule to reduce parallax. Variable graticule scale illumination provides even lighting over the usable graticule area to increase measurement accuracy and improve the quality of waveform pictures. Option 74 provides a P4 (white) phosphor tube.

The six video inputs and the External Reference signal input are high impedance bridging loop-throughs, which protects the integrity of the signal paths. Synchronization can be either external or internal (channel 1).

The vertical signal processing provides a choice of clamped or unclamped display, with clamp speed selected through the menu. The input signal can be flat (unfiltered) or filtered. The filter is turned on or off through the front-panel FILTER switch. When the switch is held, and either the two line or two field sweep rate is employed, the display consists of one line or field filtered and the second unfiltered. The filter type (noise or diff step) is selected through the on-screen menu.

Vertical amplitudes can be displayed in a calibrated X1 or X5 gain mode, or can be set to a specific amplitude using the variable gain control. Pushing and holding the switch accesses X5 magnification and the variable at the same time.

Sweep Rates

The 1735 HD offers the following sweep rates: one-line, two-line, three-line, one-field, two-field, and three-field. Both one line and one field operation allow overlay of any combination of the six inputs. The six loop-through input connectors can be used as two, three-wire component inputs (A and B) or six composite inputs (A1, A2, A3, B1, B2, and B3).

Two line and two field operation provide a two-line and two-field display, respectively, and allow channels A and B on together, with channel 1, 2, or 3 selected.

Three-line and three-field operation provide a side-by-side display of channels 1, 2, and 3, with the overlay of two parades when channels A and B are both selected. The channel 2-3 offset (when enabled through the menu) allows the operator to position the second and third signals with respect to the first signal, or to position channel B with respect to channel A.

Typical Configurations

The 1735 HD is suitable for component or composite format HDTV, medical, computer graphics, or machine video applications with analog bandwidths of up to 30 MHz.

For high-definition television applications, the 1735 HD replaces the 1730 HD, with improved video bandwidth, frequency response flatness, and off-screen recovery at high vertical magnification. DC channel balance and stability has also been improved. The 1735 HD is well suited for use in a VCR bridge. With the factory preset measurement routines, accessed through the rear-panel REMOTE connector, it is possible to have one-button measurements of key parameters, including various vectorscope measurements.

The 1735 HD is also useful for monitoring multiple component or composite video signals, whether in HDTV, NTSC, or PAL standards. Input signals can be

displayed separately, in parade mode, or in overlay mode. Composite input signals can be selected individually, and component signals are selected in sets of three.

In addition to the VCR bridge and the typical Master Control monitoring applications, this monitor can be used in camera chains. It has a 3 Line/Field Parade display, with the Parade signal and enable input through the rear-panel REMOTE connector. Ground closures are used to control the remote functions.

Options

CRT Options The standard instrument is shipped with a P31 (green) phosphor CRT installed. Option 74 instruments are shipped with a P4 (white) phosphor CRT installed.

Power Cord Options Any of the power cord options described in Appendix A can be ordered for the 1735 HD. If no power cord option is ordered, instruments are shipped with a North American 125 V power cord. CSA certification applies only to products using CSA certified power cords. Options A1, A2, and A3 are not CSA certified.

Accessories

Standard Accessories The standard 1735 HD is shipped with these standard accessories part numbers are available in the *Replaceable Mechanical Parts list*:

- 1 Manual, Instruction
- 3 Replacement light bulbs for graticule
- 3 Replacement air filters for fan
- 1 Cable assembly for selected power plug option
- 1 Replacement cartridge fuse (correct rating for the power plug option)

Optional Accessories You can order these optional accessories for use with the 1735 HD:

Viewing Hood (016-0475-00)
Front Panel Cover (200-3897-01)
Extender Board (order 2) (670-7981-00)

Field Installable Upgrades

You can order these upgrades to install on your 1735 HD:

- | | |
|---------|---|
| 1700F00 | Plain Cabinet, painted silver-gray |
| 1700F02 | Portable Cabinet painted silver-gray, with front-panel cover, handle, feet and flip stand |
| 1700F05 | Side-by-Side Rack Adapter |
| 1700F06 | Blank Half-Rack Width Panel |
| 1700F07 | Utility Half-Rack Width Drawer |

Installation

The shipping carton and pads provide protection for the instrument during transit, and should be retained in case subsequent shipment becomes necessary. Repackaging instructions are located in the *Maintenance* section.

Electrical Installation

Power Source This instrument is 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 in multiphase systems) are not recommended as power sources.

Mains Frequency and Voltage Ranges The 1735 HD operates over a frequency range of 48 to 66 Hz, over the range of 90 to 250 V, without operator adjustment.

Operating Options The 1735 HD provides operating flexibility through internal jumper selections, which are shown in Table 1–1. If any of these jumpers are placed in the optional position, be sure that all personnel are aware of the changes.

Table 1–1: Internal jumper selection

Jumper	Name	Jumper	Function
A3A1 J100	Light Enable	1–2†	Lights Enabled
		2–3	Lights Disabled
A3 J6	RGB/YRGB	1–2†	3 Step
		2–3	4 Step
A3 J5	RGB Staircase / EXT Horizontal Polarity	1–2	Inverted Polarity
		2–3†	Normal Polarity
A4 J2	Remote Sync Polarity	1–2†	Rising Edge Trigger
		2–3	Falling Edge Trigger

† Factory preset condition.

REMOTE Connector

The rear-panel REMOTE connector is a subminiature 15-pin D-type receptacle with female contacts. All of the active remote control lines can be forced low by remote ground closures or TTL levels.

The THREE Line or Field REMOTE input provides a Three Line/Field parade display. No staircase signal is required to produce the parade display. One, two, or three video signals can be input.

Pin assignments for the REMOTE connector are shown in Figure 1–2 and Table 1–2.

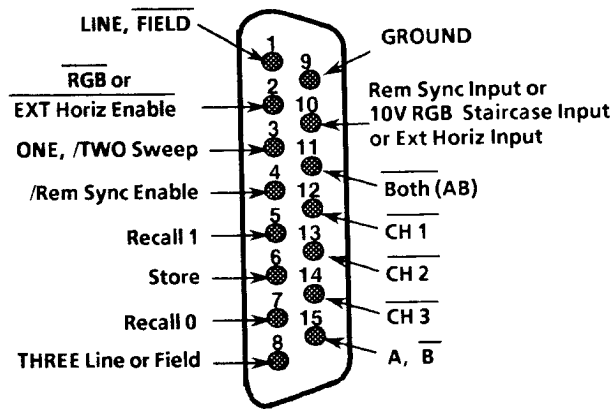


Figure 1–2: REMOTE connector

Table 1–2: REMOTE connector pin assignments and functions

Pin	Name	Function / Description
1	LINE, /FIELD	High = Line Low = Field High-to-Low transition turns Field on and turns Line off. Low-to-High transition turns Line on and turns Field off.
2	/RGB Enable or /EXT Horizontal Enable	Low = RGB Enable or EXT Horizontal Enable (EXT Horizontal selected by front-panel MENU selection). Level sensitive, allowing instrument to recognize RGB or External Horizontal display modes during power-up. Low level routes the signal on pin 10 to the Horizontal amplifier, where it is added to the ramps from the Ramp Generator. In RGB mode (selected by A3J6), ramp generator reduces the ramp to 1/3 or 1/4 size. If External Horizontal is turned on (via the MENU), the ramp generators will not run at all. This is the only difference between RGB and External Horizontal.

/ A slanted line before a control line name indicates an active low.

Table 1-2: REMOTE connector pin assignments and functions (Cont.)

Pin	Name	Function / Description
3	ONE, / TWO Sweep	High = ONE Sweep (Line or Field) Low = TWO Sweep (Line or Field) When going from ONE or TWO to THREE Sweep, input channels 1, 2, and 3 will be forced on. When going from THREE to ONE or TWO, input channels will be returned to pre-THREE status if possible.
4	/Remote Sync Enable	Low enables Remote Sync. Level sensitive to enable and edge sensitive to disable. A Low level turns off CH1 Reference, turns off External Reference, routes TTL Remote Sync (pin 10) around the sync stripper and directly into the sweep-gating circuitry. A Low-to-High transition restores previous reference. If CH1 Reference is selected, Remote Sync will turn it off, and deselecting Remote will turn it back on.
5	Recall 1	Low-to-High or High-to-Low transition will cause the instrument status to be recalled from one of four memory locations, determined by the status of pins 5 and 7. The four possible combinations are: <i>Memory Pin 5 Pin 7</i> 1 Low Low 2 Low High 3 High Low 4 High High
6	Store	High-to-Low transition will cause the current instrument status to be stored in one of four possible locations. Refer to the description of Pin 5.
7	Recall 0	Low-to-High or High-to-Low transition will cause the instrument status to be recalled from one of four memory locations. Refer to the description of Pin 5.
8	/THREE Line or Field	Low = THREE Sweep (Line or Field). This pin overrides pins 3, 12, 13, and 14, automatically placing the instrument in a THREE Line or Field Sweep mode with Channels 1, 2, and 3 turned on. Low-to-High transition releases the override on pins 3, 12, 13, and 14. The state of those pins is then determined by the current status of their remote control lines.
9	Ground	
10	Input for: TTL Remote Sync, or 10 V RGB Staircase, or External Horizontal	50 K input impedance to ground. No pull-up resistor provided for TTL inputs. Polarity of RGB Staircase and EXTERNAL Horizontal selected by internal jumper setting (A3J5).
11	/Both (CHA & CHB)	Use with CH1, CH2, and /or CH3 Low = Both CHA and CHB On High-to-Low transition forces the reference to external and turns both CHA and CHB on. Low-to-High transition has no effect.

Table 1–2: REMOTE connector pin assignments and functions (Cont.)

Pin	Name	Function / Description
12	/CH 1	Pins 12, 13, and 14 work alike. They are used with CHA and/or CHB. A High-to-Low transition for pin 12, 13, or 14 turns on the corresponding input channel. In one line/field operation, the other two input channels are unaffected. In two line/field operation, the other two channels are turned off, and all three channels are always on in three line/field operation.
13	/CH 2	Refer to pin 12 description.
14	/CH 3	Refer to pin 12 description.
15	A, /B	Use with CH1, CH2, and/or CH3 High = CHA Low = CHB High-to-Low transition turns on CHA and turns off CHB. Low-to-High transition turns on CHB and turns off CHA. Front-panel button turns A or B off. When going from either A or B to BOTH, REF is forced to External. When going from BOTH to either A or B, REF is restored to pre-BOTH status.

Remote Operation

All front-panel controls operate in their usual manner during remote operation. Functions selected through remote ground closures may be changed with the front-panel controls. Once this occurs, the remote selection can be reinstated either with the front-panel control, or by removing and reattaching the ground closure.

Front-panel LED indicators light to show the current selection in all cases.

Table 1–2 describes the remote functions that may be selected. A logic NOT, or low, means that the specified REMOTE pin must be low (0 V to +0.8 V) to achieve that function. A high means that the pin is left open (with no signal), or accepts a 2 V to 5 V signal, to achieve the desired function.

Remote Sync input (pin 10) works with TTL level squarewaves, and requires an input signal of approximately 1.3 kHz to synchronize the 1735 HD. Polarity is internal jumper selected, as shown in Table 1–1.

Both (pin 11) turns both Channel A and Channel B on when grounded. As with the front-panel, various input channel combinations may be achieved. These selections also work in conjunction with the ONE, TWO, THREE, and the LINE and FIELD functions. Refer to *Operating Basics*, especially Table 2–1, for more information about Line and Field selections.

AUXILIARY Connector

At the time of this writing, the rear-panel AUXILIARY connector is not used.

Mechanical Installation

Cabinet Options

NOTE. Cabinet drawings are provided for installation information only, and are not to scale. All dimensions are in inches.

All qualification testing for the 1735 HD was performed with a 1700F00 cabinet installed. To guarantee compliance with specifications, the instrument should be operated in a cabinet. The plain cabinet, 1700F00, is shown in Figure 1-3. The portable cabinet, 1700F02, is shown in Figure 1-4. The 1700F02 has a handle, four feet, a flipstand, and has different hole sizes and spacing than the 1700F00.

All of the 1700-Series metal cabinets available from Tektronix as Optional Accessories provide the proper electrical environment for the instrument, supply adequate shielding, minimize handling damage, and reduce dust collection within the instrument.

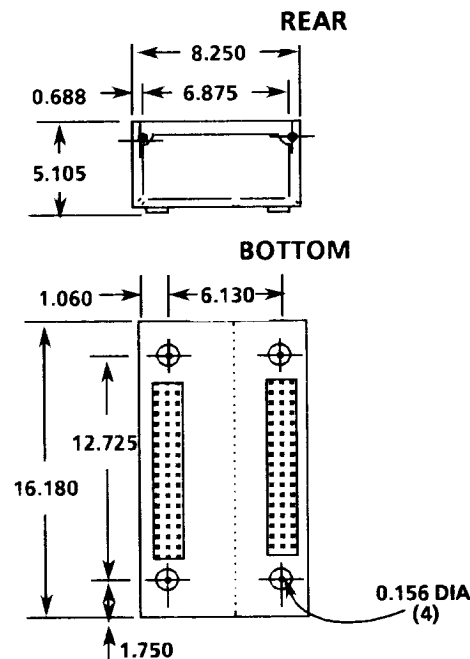


Figure 1-3: 1700F00 plain cabinet

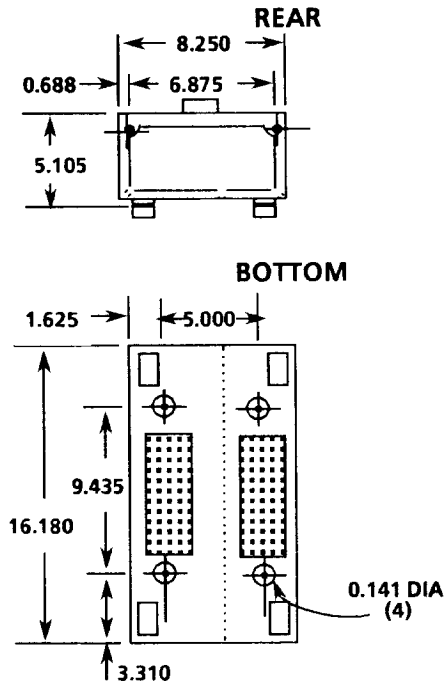


Figure 1-4: 1700F02 portable cabinet

Installing in the Cabinet



WARNING. Do not attempt to carry an instrument in a cabinet without installing 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 1-5.

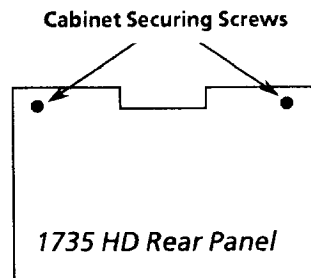


Figure 1-5: Cabinet securing screws

Rackmounting The optional 1700F05 Side-By-Side Rack Adapter shown in Figure 1–6 includes two attached cabinets, and can be used to mount the 1735 HD in a standard 19-inch rack with another half-rack-sized instrument.

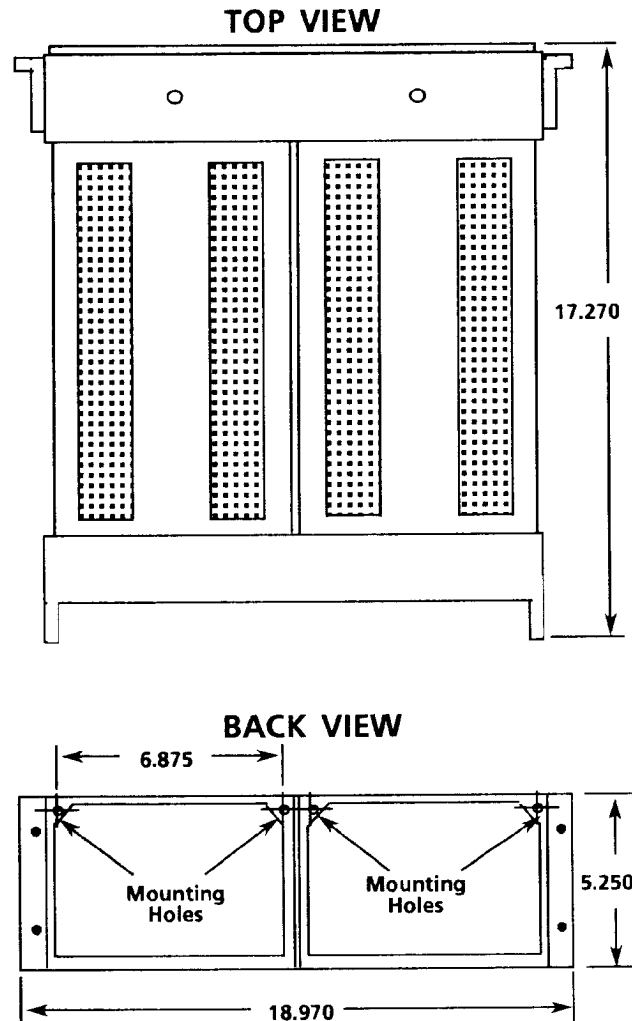


Figure 1–6: 1700F05 Rack Adapter

The rack adapter is adjustable, so the 1735 HD can be more closely aligned with other equipment in the rack. See Figure 1–7.

If only one section of the rack adapter is used, a 1700F07 Utility Drawer or a 1700F06 Blank Panel can be inserted in the unused section. Figure 1–8 shows the utility drawer on the left, and the blank panel on the right. The rack adapter, utility drawer, and blank panel are available through your local Tektronix field office or representative.

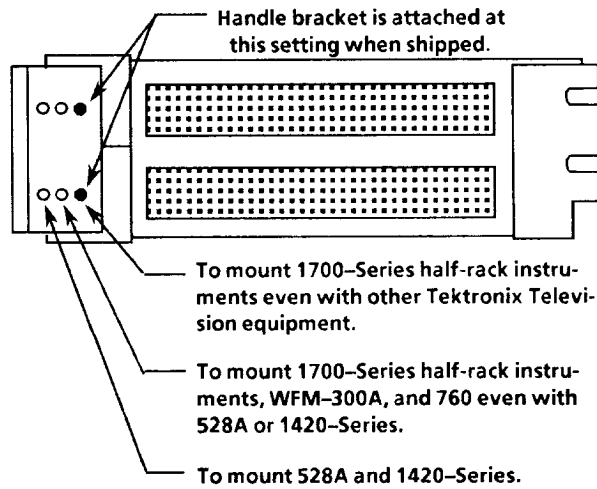


Figure 1-7: 1700F05 Rack Adapter adjustment

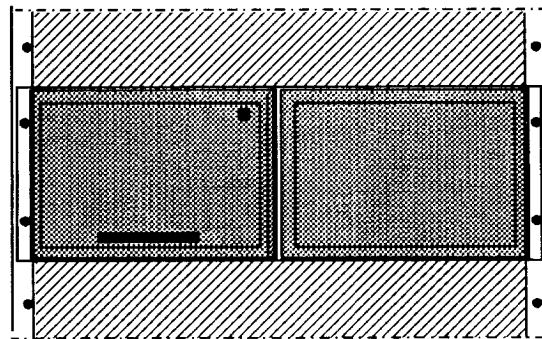
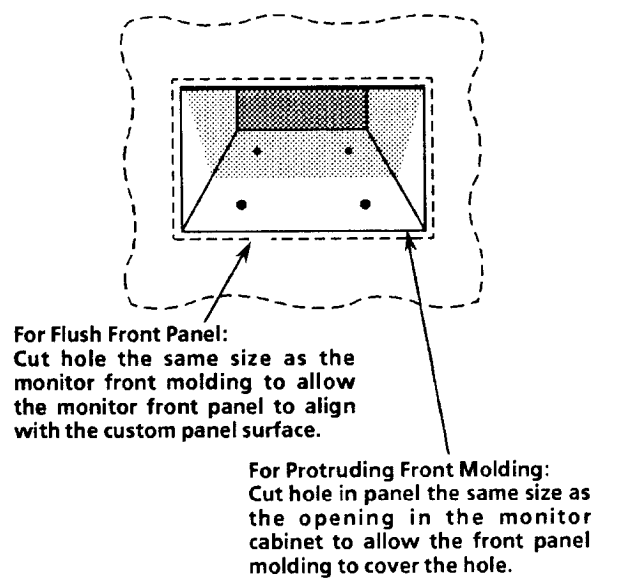


Figure 1-8: 1700F07 Utility drawer and 1700F06 Blank panel installed in a 1700F05

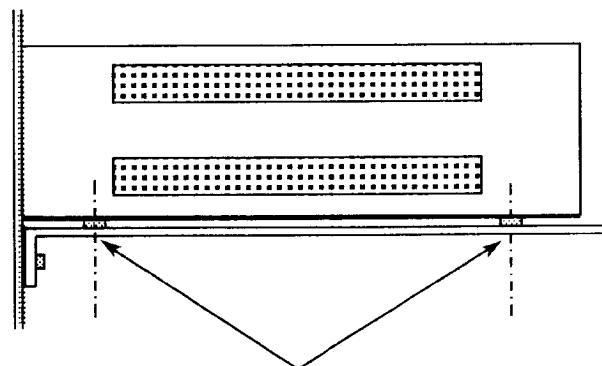
Custom Installation

For applications such as consoles, shown in Figure 1-9, 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 1735 HD safely, attach it to a shelf strong enough to hold its weight, using the four 0.156-inch diameter holes in the bottom of the 1700F00 cabinet. See Figure 1-9B.



A. Front view of console.



Requires four 0.156" holes below the 1700F00 cabinet to secure the instrument to the shelf.

B. Inside view of console.

Figure 1-9: Typical custom installation



Operating Basics

Operating Basics

Front-Panel Controls and Indicators

The front-panel controls and indicators consist of momentary contact push-button switches, variable controls, and LED selection indicators. See Figure 2–1 for control and indicator locations. The line select functions are displayed on the CRT.

Outlined front-panel push button switch selections are accessed by holding the switch down for approximately one second.

The numbered text paragraphs in the following section relate to the numbers in Figure 2–1.

Input 1. CH 1 / CH 2 / CH 3

These three On/Off push buttons allow the selection of rear-panel input Channels 1, 2, and 3 for display. Together with the A and B switches, they select up to six composite inputs or two 3-wire component inputs.

Possible input channel combinations are shown in Table 2–1.

1. CH A / CH B

These two On/Off push buttons allow the selection of input Channels A and B for display. Push and hold either switch for both A and B On together. A momentary push of either A or B selects that channel and exits the both mode.

Table 2–1: Input channels displayed

Mode	Possible Input Channels Displayed	Position of Display
ONE LINE / ONE FIELD	1A, 2A, 3A, 1B, 2B, & 3B	Selected channels overlaid.
TWO LINE / TWO FIELD	1A & 1B or 2A & 2B or 3A & 3B	CH A & B side-by-side.
THREE LINE / THREE FIELD	1A, 2A, 3A, 1B, 2B, & 3B	CH 1, 2, & 3 side-by-side. CH A & B overlaid.

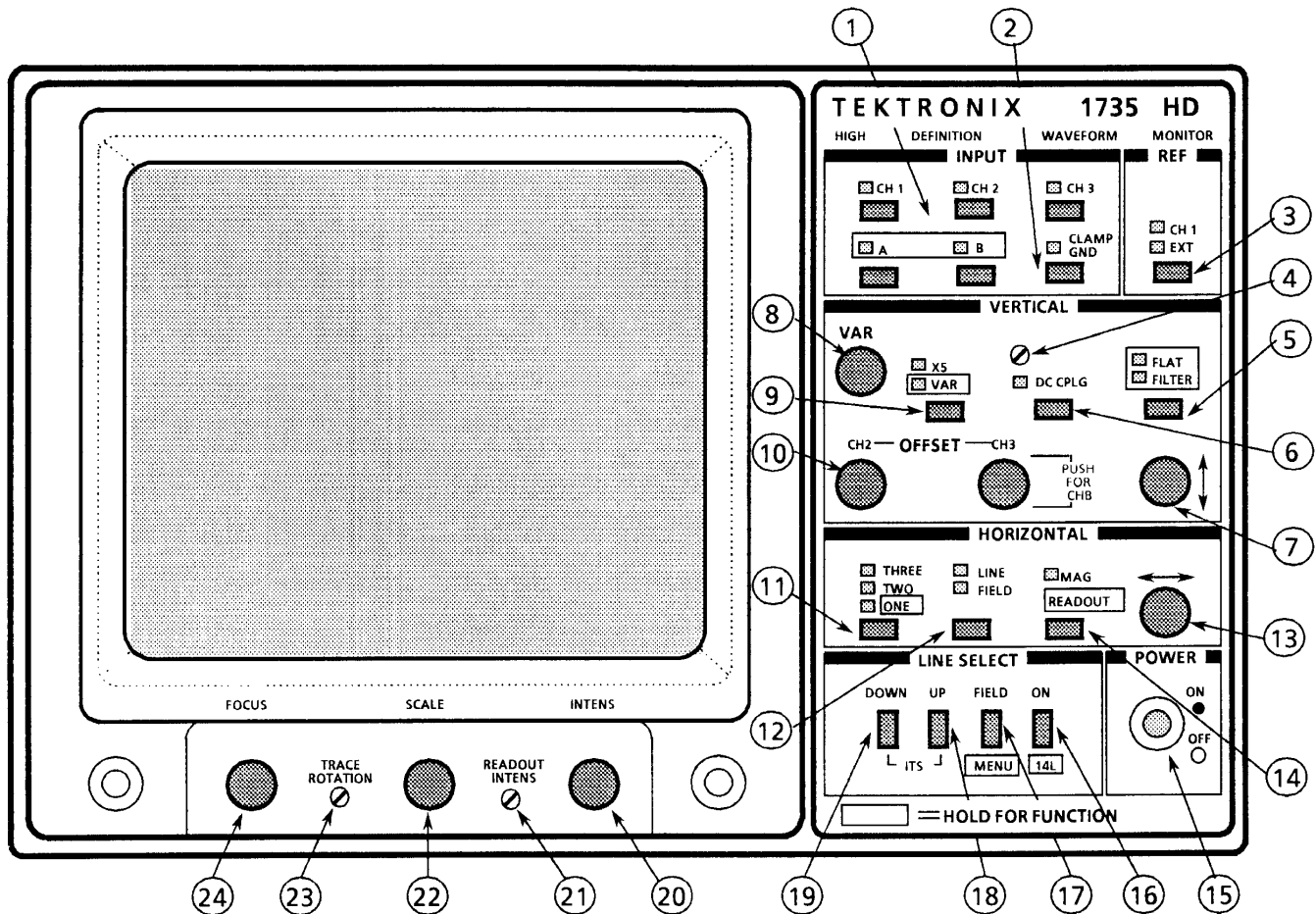


Figure 2-1: 1735 HD High Definition Waveform Monitor

Clamp 2. CLAMP / GND

This switch toggles between On and Off. When DC CPLG is selected, it controls the input ground relays (to ground the inputs for checking DC levels). When DC CPLG is deselected, it controls the input clamps (providing a choice of clamped or unclamped display). The clamp can be set for FAST or SLOW through the menu.

NOTE. When the DC CPLG & GND LEDs are on, the inputs are grounded.

Reference 3. REF

This switch toggles between CH1 (A or B) and EXT REF.

NOTE. When both CH A and CH B are on, reference is forced to EXT, and returns to previous reference when the AB mode is exited.

Vertical **4. Vertical Gain CALIBRATION**

Access the internal calibrator signal through the menu. The display should be two horizontal traces, about 700 mV apart. Use this front-panel screwdriver adjustment to set the vertical signal amplitude for exactly 700 mV. Exit the calibrator mode by using any other front-panel control.

5. FILTER

The filter switch toggles between FLAT and FILTER. The filter type (DIFF STEP or NOISE) is selected through the menu.

In TWO LINE or TWO FIELD sweep mode, a combination filtering routine, consisting of filtered and flat for alternate lines or fields, can be accessed by pushing and holding the FILTER push button. In this dual filter mode, both front-panel LEDs will light. The filtered line or field will always be on the right side of the CRT. To exit the dual filter mode, select either FLAT or FILTER with a momentary push of the button.

The dual filter cannot be accessed when the 1735 HD is in THREE LINE or THREE FIELD sweep mode, LINE SELECT mode, or when more than one input is selected. To determine whether the instrument is in LINE SELECT mode, it is necessary to enable the readout (push and hold the MAG / READOUT switch). Filtering always returns to FLAT when coming out of the combination filtering routine.

6. DC CPLG

When DC coupling is selected (the corresponding LED lights), the input channels are DC coupled; when it is not selected, the inputs are AC coupled. When DC coupling is selected and GND is also selected, the inputs are grounded.

7. VERTICAL POSITION

This variable control positions the waveform display vertically.

8. VARIABLE (Control)

The VAR adjusts amplifier input gain from +0 dB to -14 dB. The control has no detent; its action is continuous.

9. GAIN (Switch)

A momentary touch of this switch toggles X5 Gain between On and Off (X1). Pressing and holding the switch toggles the VAR Gain between On and Off. Both X5 and VAR can be on at the same time, and can be turned off independently.

10. CH2-CH3 OFFSET

When enabled through the menu, these controls can be used to position CH2 and CH3 vertically with respect to CH1. When pushed, the CH 3 OFFSET control positions CH B with respect to CH A. When offsets are disabled, the signals are aligned.

Horizontal 11. ONE / TWO / THREE

This switch works in combination with the LINE / FIELD switch to provide the displays shown in Table 2–2.

Table 2–2: ONE / TWO / THREE sweep

Mode	Sweep	Display
FIELD	ONE	2 Field display with one field on screen.
FIELD	TWO	2 Field display with both fields on screen.
FIELD	THREE	3 Field display with all three fields on screen.
LINE	ONE	2 Line display with one line on screen.
LINE	TWO	2 Line display with both lines on screen.
LINE	THREE	3 Line display with all three lines on screen.

This switch toggles between TWO and THREE Line or Field. Push and hold the switch to access ONE Line or Field, and with a momentary push, the instrument will revert to TWO Line or Field. THREE Line or Field cannot be accessed from LINE SELECT mode. (To determine whether the instrument is in LINE SELECT mode, the READOUT must be enabled.)

12. LINE / FIELD

This switch toggles between Line and Field. Both vertical intervals are continuously displayed in ONE FIELD and TWO FIELD modes.

13. HORIZONTAL POSITION

This variable control positions the waveform display horizontally.

14. MAGNIFIER / READOUT

A momentary push of this switch toggles between MAG On and Off. It operates in conjunction with the LINE/FIELD and ONE/ TWO/THREE sweep modes to provide usable sweep rates as shown in Table 2–3.

Pushing and holding the MAG push button enables the READOUT. Lines per frame, frame rate, fields per frame, and time per division are shown across the bottom of the screen. In LINE SELECT, the number of the selected line is displayed in the upper portion of the screen. If both fields are selected (using the FIELD button), the word ALL: precedes the line number readout. If 14-LINE mode is also selected, [14] is shown to the right of the selected line number. To disable the readout, push and hold the button again.

Table 2-3: Sweep rates

Field / Line Rate	Sweep Rate		
	One Line	Two Line	Three Line
525/60/2	5 μ s/200 ns	10 μ s/1 μ s	15 μ s/600 ns
625/50/2	5 μ s/200 ns	10 μ s/1 μ s	15 μ s/600 ns
750/60/1	2 μ s/100 ns	4 μ s/300 ns	6 μ s/200 ns
787/60/1	2 μ s/100 ns	3.5 μ s/300 ns	5 μ s/200 ns
1050/60/1	1.25 μ s/100 ns	2.5 μ s/200 ns	3.5 μ s/100 ns
1250/50/1	1.25 μ s/100 ns	2.5 μ s/200 ns	3.5 μ s/100 ns
All other rates listed in LINES / FRAME Menu	2.5 μ s/100 ns	5 μ s/500 ns	7.5 μ s/300 ns

Power 15. ON – OFF

This switch turns the external power to the 1735 HD ON and OFF (standby). A mechanical indicator appears when the switch is in the ON position.

Line Select 16. ON

This On/Off push button enables the LINE SELECT mode.

In LINE SELECT mode, the selected line is displayed in ONE LINE sweep rate, the selected line is displayed first in the TWO LINE sweep rate, and a brightup marks the selected line in TWO FIELD sweep rate. Line Select is disabled in THREE LINE/FIELD sweep; THREE LINE/FIELD sweeps are not available in LINE SELECT mode.

CRT readout is present when operating in Line Select with the readout enabled (push and hold the MAG/READOUT button). In ONE LINE and TWO LINE sweep rates, the selected line number is displayed in the upper portion of the CRT.

A momentary push of the FIELD switch will select the field from which the line is displayed. The line number is changed with the UP and DOWN buttons.

14 LINE display is accessed by holding the LINE SELECT ON button until there is recognition. In TWO FIELD mode, the 14 lines are intensified in the display. In ONE or TWO LINE, the 14 lines are overlaid and the readout, if enabled, gives the number of the first displayed line, followed by a bracketed 14. For example: ' 525 [14] '. A momentary push of the FIELD button determines whether the displayed lines are from field one, field two, or both fields (ALL: appears on the readout).

Push and hold both the UP and DOWN buttons to display a predefined line.

NOTE. Lines displayed in LINE SELECT mode have their active video intensified on the PIX MON OUT signal.

17. FIELD / MENU

In this documentation, the FIELD/MENU button is referred to as the FIELD button when describing its use to select fields, and the MENU button when describing menu uses.

Push this three-way toggle button to choose field one, field two, or both fields (ALL) in LINE SELECT ON mode of operation. When ALL is selected, the readout displays 'ALL:' followed by the selected line number for field one.

Push and hold this button to enter the menu. An on-screen menu display provides diagnostics, line rate selection, calibrator, clamp setting, filter selection, and enabling for External Horizontal, CH1B subtract, or front-panel offsets. The menu is exited by a momentary push of the MENU button.

18. UP

This momentary push button increases the selected line number. When readout is enabled (push and hold the MAG / READOUT button), the CRT readout identifies the selected line.

19. DOWN

This momentary push button decreases the selected line number. When readout is enabled (push and hold the MAG / READOUT button), the CRT readout identifies the selected line.

Push and hold both the UP and DOWN buttons to display a predefined line.

Display 20. INTENSITY

Use this control to adjust waveform display brightness.

21. READOUT INTENSITY

Use this screwdriver adjustment to vary the intensity of the LINE SELECT and MENU readout portions of the display relative to the waveform intensity.

22. SCALE

Use this control to adjust the level of graticule illumination.

23. TRACE ROTATION

Use this screwdriver adjustment to align the display with the graticule lines.

24. FOCUS

Use this control to adjust the CRT beam for optimum definition.

Configuring Menus

The 1735 HD allows a number of operational settings to be selected through the menu. With the exception of “TEST,” all items on the menu are used to configure the 1735 HD for specific measurement applications. (The TEST menu selection is used for diagnostics and is described starting on page 2–12.)

To enter the menu, push and hold the 1735 HD front-panel MENU button. The graticule scale illumination will be dimmed and the main menu will be displayed on the CRT screen. See Figure 2–2.

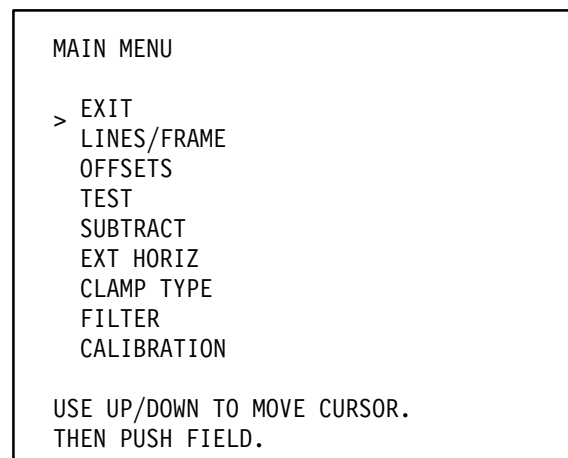


Figure 2–2: 1735 HD main menu

Once the main menu is displayed, any of the following sequences may be performed.

- Lines / Frame** Use the DOWN button to position the cursor next to LINES/FRAME, then push MENU. The available scanning standards will be displayed, divided into two screens: progressive formats and interlaced formats. Navigation between these two menus is accomplished by placing the cursor beside the NEXT or PREV PAGE items and pressing MENU. A set of Progressive Formats or Interlaced Formats will be displayed.
- Offsets** Use the DOWN button to position the cursor next to OFFSETS, and then push MENU. Use the UP / DOWN buttons to toggle the setting between offsets enabled/disabled. When offsets are enabled, the front-panel OFFSET controls can be used to position CH2 and CH3 vertically with respect to CH1. When pushed, the CH 3 OFFSET control positions CH B with respect to CH A. When these controls are disabled, the signals are aligned. Once selection is made, press MENU once to return to the main menu or twice to return to normal front-panel controlled operation.
- Subtract** Use the DOWN button to position the cursor next to SUBTRACT, and then push MENU. Use the UP / DOWN buttons to toggle between YES and NO. Selecting YES enables the 1735 HD to subtract the CH1B input from the front-panel selected inputs. Once selection is made, press MENU once to return to the main menu or twice to return to normal front-panel controlled operation.
- Ext Horiz** Use the DOWN button to position the cursor next to EXT HORIZ, and then push MENU. Use the UP / DOWN buttons to toggle between YES and NO. Selecting YES switches operation to the External horizontal input. The input is through the rear-panel connector (shown in the *Installation* section). Internal jumper selection provides choice of positive or inverted polarity. Once the selection is made, press MENU once to return to the main menu or twice to return to normal front-panel controlled operation.
- Clamp Type** Use the DOWN button to position the cursor next to CLAMP, then push MENU. Use the UP / DOWN buttons to toggle between FAST and SLOW. Once selection is made, press MENU once to return to the main menu or twice to return to normal front-panel controlled operation.
- Filter** Use the DOWN button to position the cursor next to FILTER, and then push MENU. Use the UP / DOWN buttons to toggle between DIFF STEP and NOISE. Once selection is made, press MENU once to return to the main menu or twice to return to normal front-panel controlled operation.

Calibration Use the UP / DOWN buttons to position the cursor next to CALIBRATOR, then push MENU. Use the DOWN button to select the Calibrator signal (or return to main menu). If you have selected the calibrator, press MENU once and the calibrator will appear on the screen. It should consist of two horizontal traces, approximately 700 mV apart. Use the front-panel VERTICAL screwdriver adjustment to set the calibrator to exactly 700 mV, then press any front-panel control to exit the Calibrator and return to normal front-panel controlled operation.

Rear-Panel Connectors

Refer to Figure 2–3 for rear-panel connector locations.

Loop-Through Inputs

1. INPUTS

These six high-impedance loop-through video inputs (Channels 1A, 2A, 3A, 1B, 2B, and 3B) correspond to front-panel push-button selections. These inputs are compensated for 75 Ω , but are not internally terminated.

2. EXT REF

This high-impedance loop-through video input is compensated for 75 Ω but not internally terminated. This input is AC coupled.

3. PIX MON

The PIX MON 75 Ω output signal corresponds to the front-panel-selected display. This signal has a brightup pulse in the LINE SELECT mode, and is used to drive a picture monitor.

Multi-Pin Connectors

4. REMOTE

The REMOTE 15-pin D-type connector provides the following remote control functions and inputs:

- a. Turn input channels On / Off.
- b. Select sweep rates.
- c. Remote Sync input and enable.
- d. 10V RGB staircase input and enable.
- e. External Horizontal input and enable.
- f. Store and Recall.

Remote functions are activated by polled ground closure. The 1735 HD only responds only to changes in the REMOTE status. This allows the front panel to remain fully operational during remote operation.

For more details, refer to the heading “Remote Operation” in *Installation*.

5. AUXILIARY

At the time of this printing, the auxiliary communication line is not used.

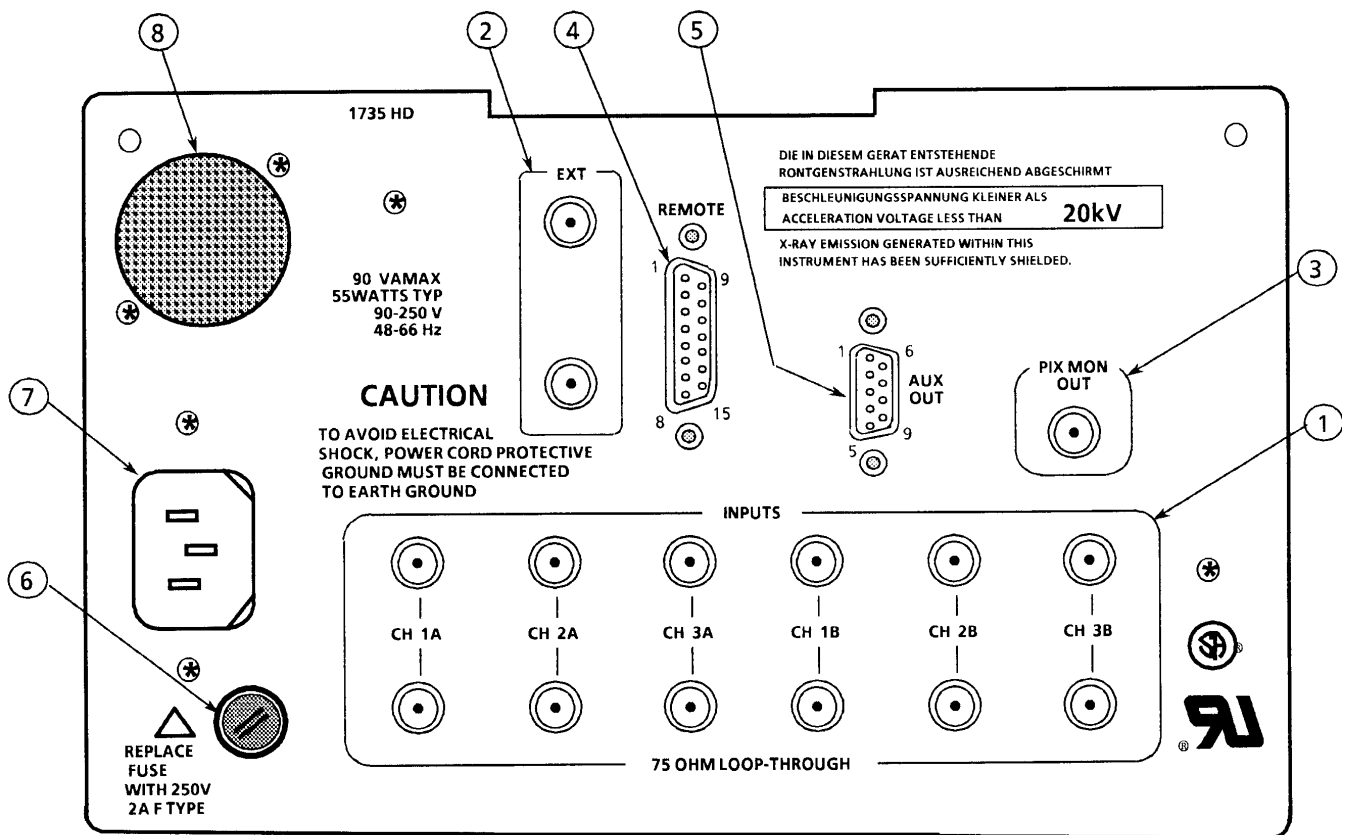


Figure 2-3: 1735 HD rear panel

Power Input 6. AC FUSE HOLDER

This is the holder for the instrument's mains fuse.

7. AC POWER

This is a standard AC plug receptacle. The instrument accepts AC power over the range of 90 – 250 VAC. The plug is compatible with any of the three power cord options available for the 1735 HD.

Fan 8. FAN

Replacement fan filters are included with the instrument; the filter part number is shown in the Replaceable Mechanical Parts list under Standard Accessories.

Graticule

The 1735 HD graticule is internally scribed on the same plane as the CRT phosphor to prevent parallax errors when viewing or photographing the displays. See Figure 2-4.

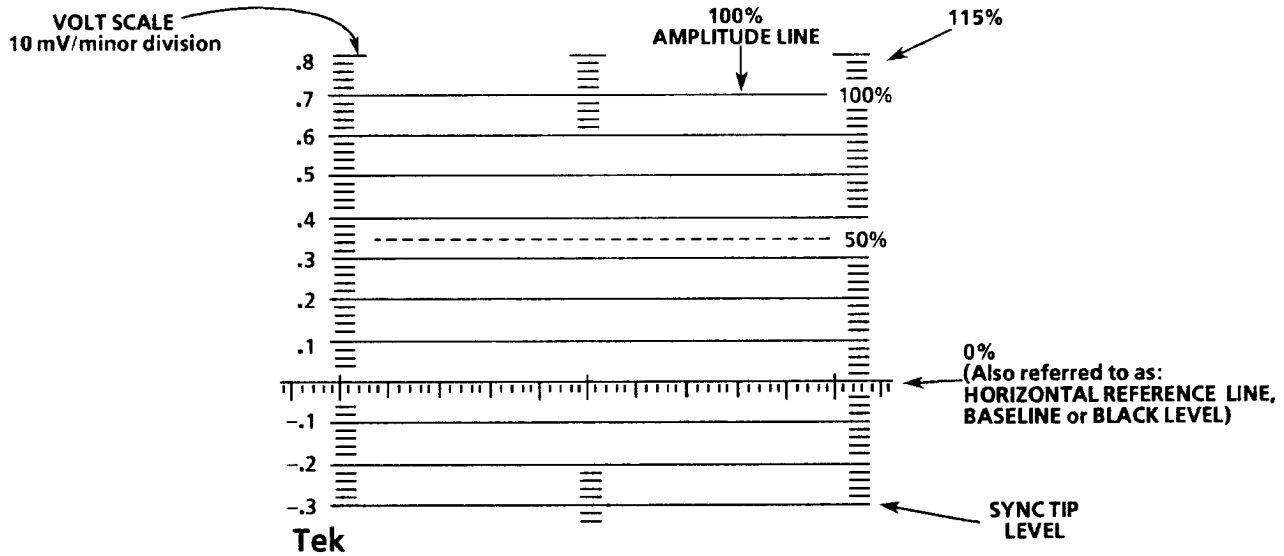


Figure 2-4: Internal graticule

Vertical Scales

The graticule is scribed with two vertical scales to facilitate waveform measurements. The left side scale is marked in millivolts (mV) and extends from -300 mV to 800 mV. Each minor division represents 20 mV; each major division equals 100 mV.

The scale on the right side of the graticule is used for measuring signal amplitude as a percentage of a 1 Volt signal, and extends from 0% to 115%.

Horizontal Scale

The horizontal reference line, which is divided into 12.4 divisions, is also referred to as the baseline, 0% line, 0 mV, zero line, blanking level, and black level.

The time period between major graticule divisions is dependent upon the 1735 HD sweep rate. For example, two-line sweep for 525/60 has a rate of 10 μ s/division, while one line is 5 μ s/division and three-line is 15 μ s/division. Field rate sweeps do not assign an exact period of time to the graticule divisions.

Front Panel Diagnostics

The 1735 HD has several diagnostic routines that can be run to assist in locating operating system failures. Key to the diagnostics is the microcontroller. It tests the digital interfaces (front-panel switches, auxiliary interface, Non-Volatile Random Access Memory, and the front-panel light drivers), along with the Digital-to-Analog Converter.

To enable the diagnostic tests, first push and hold the MENU button to access the main Menu (Figure 2–2). Use the DOWN button to move the cursor to TEST, then push the MENU button again. The Test Menu will appear, as shown in Figure 2–5. Use the UP / DOWN buttons to move the cursor to the desired test, then push the MENU button to begin the test.

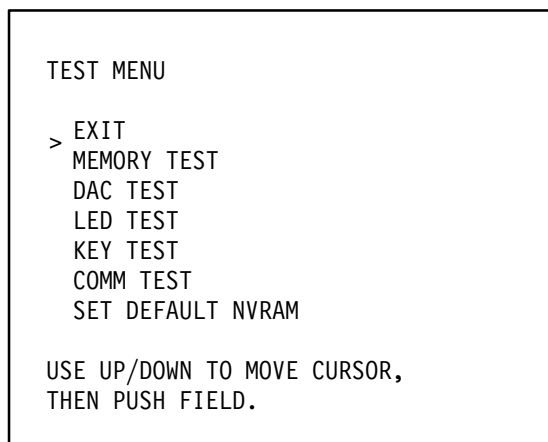


Figure 2–5: 1735 HD Test menu, for selection of diagnostic routines

For Memory and Communication tests, a CRT display informs the operator whether the instrument passed or failed the test. If the instrument should fail a test, refer it to a qualified service technician.

- Memory Test** This is a test of the instrument's capability to write, store, and read the NOVRAM. In addition, the first message in this test mode gives the reference number for the software version, the manufacturer's nomenclature for the NOVRAM (such as 2444), and the software copyright information.
- DAC (Digital-to-Analog Converter) Test** Because the 1735 HD combines analog and digital capabilities, conversion from digital to analog signals is an essential operation for the microcontroller. To test this function, a test pattern (shown in Figure 2-6) is programmed into the system.

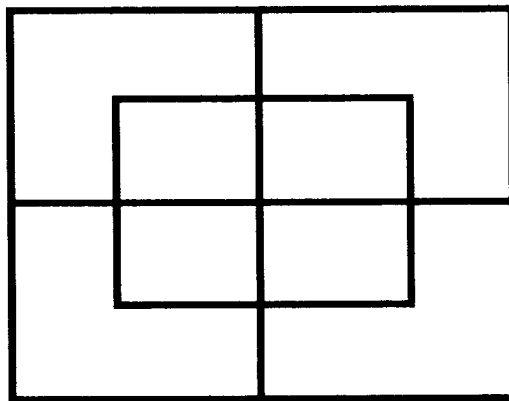


Figure 2-6: 1735 HD DAC Test pattern

- Light Emitting Diode (LED) Test** Selecting this option alternately enables and disables all front-panel LEDs simultaneously. Press any key to exit.
- Key Test** The Key test determines whether the front-panel switches are operational. When this test is selected, and a front-panel momentary-contact switch is pressed, the name of that switch is displayed on the CRT. The MENU button is an exception; it is known to be functional if the menu can be successfully entered / exited.
- Communications (Comm) Test** The MASTER / SLAVE test evaluates communications between the Microcontroller and the slave microprocessor.

Set Default NVRAM

Resets the contents of NVRAM to factory defaults. This is especially necessary when upgrading the instrument firmware. After setting NVRAM to defaults, it returns to the main menu.

Operator's Checkout Procedure

The following procedure is provided as an aid in obtaining a display on the 1735 HD Waveform Monitor. This procedure may be used for operator familiarization and as a check of basic instrument operation. This procedure checks instrument functions rather than measurements or specifications.



WARNING. *Be sure that the cabinet is installed on the instrument to avoid personal injury. When power is supplied, line voltage will be present in the instrument, even if the power switch is set to standby.*

All checks are made with the cabinet installed to maintain the proper environment for the instrument, keep dust out and provide proper EMI shielding. All internal jumpers are in their factory installed position.

If performing the *Operator's Checkout Procedure* reveals improper operation or instrument malfunction, first check the operation of the associated equipment. If the associated equipment is operating normally but the 1735 HD is not, it should be repaired or adjusted by qualified service personnel.

When a complete check of instrument performance is desired, refer qualified service personnel to the *Performance Verification* procedure provided in this manual.

Recommended Equipment

The Operator's Checkout Procedure requires a source of composite video. The television signal generator must be capable of delivering a color bar test signal, a five-step linearity signal, a multiburst signal and a sync signal for the television standard of the monitor to be tested. A Tektronix TSG 1001 was used in this procedure.

Be sure that the instrument is configured for the scanning standard used for this procedure. See "Configuring Menus" (earlier in this section) for the procedure to select the scanning standard.

Procedure

1. Initial Hook-up

Connect the generator G/Y OUT to the 1735 HD CH 1A connector, as shown in Figure 2-7. Terminate the loop-through in 75 Ω .

2. Initial Generator Setup

Select the NTSC Format SMPTE Bars signal from the TSG 1001. The 5-step linearity and multiburst signals will also be used later in this procedure. Note that these are not full amplitude signals.

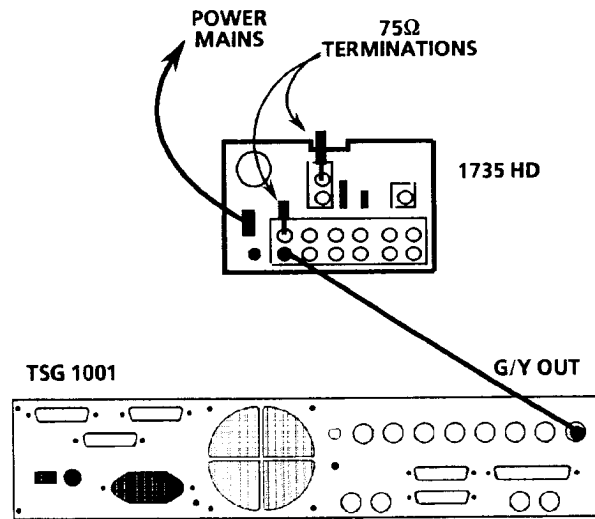


Figure 2-7: Initial equipment connections

3. Apply Power

Connect the 1735 HD to a suitable AC power source and push the POWER button. A dot should appear in the center of the button to indicate that the instrument is on.

NOTE. Do not set any of the front-panel screwdriver controls until after the instrument warms up (20 minutes minimum).

4. Initial Front-Panel Setup

Set the 1735 HD front panel as shown in Table 2-4.

Table 2-4: Initial settings for adjustment procedure

Front-Panel Control	Setting
POWER	ON
REF	CH 1
INPUT	CH 1A
CLAMP	off
VERTICAL	
VAR	off
X5	off
DC CPLG	off

Table 2-4: Initial settings for adjustment procedure (Cont.)

Front-Panel Control	Setting
FLAT – FILTER	FLAT
HORIZONTAL	
ONE – TWO – THREE	ONE
LINE – FIELD	LINE
MAG – READOUT	off
LINE SELECT	off
MENU	off
MENU SETTINGS OFFSETS	DISABLED
FOCUS	as desired
SCALE	as desired
INTENS	as desired

5. Obtain Display

- a. Adjust the INTENS and FOCUS controls for the desired brightness and a well-defined display.
- b. Adjust the multi-turn VERTICAL POSITION control to place the display blanking level on the graticule 300 mV line.
- c. Center the display with the HORIZONTAL Position control. Figure 2-8 shows a two-line display; the SMPTE format color bar display will vary somewhat from the illustration.
- d. Adjust the SCALE illumination control for the desired graticule scale brightness.

6. Check the Rotation of the Display

NOTE. *Variations in the earth’s magnetic field may make adjustment of the TRACE ROTATION control necessary when the instrument is first installed and when it is moved.*

Check that the display blanking level is parallel to the horizontal axis. If it is not, adjust the TRACE ROTATION screwdriver adjustment until the sweep is parallel to the horizontal axis.

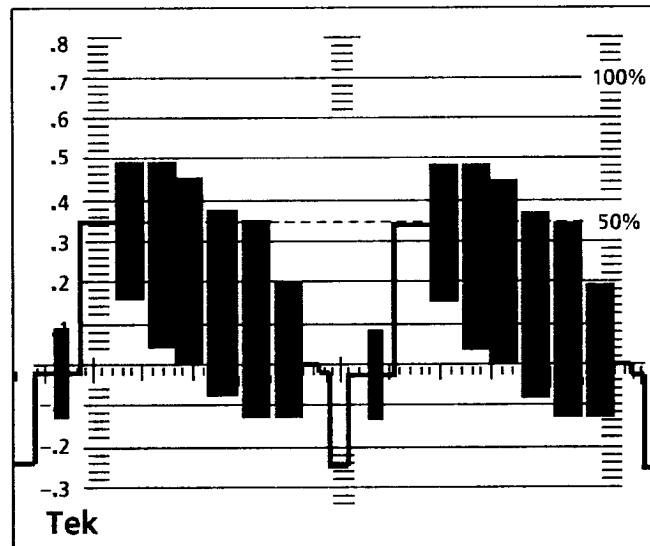


Figure 2-8: 2 Line color bar display

7. Using the Menu

- a. Instrument configurations such as clamp type, filter type, and lines/frame are made through the menu. Once a setting is made through the menu, it will remain in effect until altered by entering the menu again.
- b. Enter the menu by pushing and holding the LINE SELECT FIELD/MENU button, as shown in Figure 2-2 on page 2-7. (For simplicity, this button is referred to as the MENU button while describing menus.)
- c. Move the caret to the desired function using the UP or DOWN button, then push the MENU button. A submenu will appear.
- d. Use the UP or DOWN button to position the caret as desired, then push the MENU button once. In most cases, the desired setting or enable will become effective, and the main menu will be displayed, then the MENU button is pushed again to exit the menu entirely. CALIBRATION and TEST are exceptions. CALIBRATION is described in step 8 of this procedure, and TEST is described in the preceding section called "FRONT PANEL DIAGNOSTICS."
- e. When TEST is selected, the submenu presents a choice of tests, each of which may have a submenu to enable. More information regarding these tests is located in the preceding section called "FRONT PANEL DIAGNOSTICS."

8. Calibrate Display

- a. Push and hold the MENU button to enter the menu, and then move the caret to CALIBRATION. Select calibrator signal enabled, and push the MENU button again. The calibrator signal shown in Figure 2–9 should be displayed.

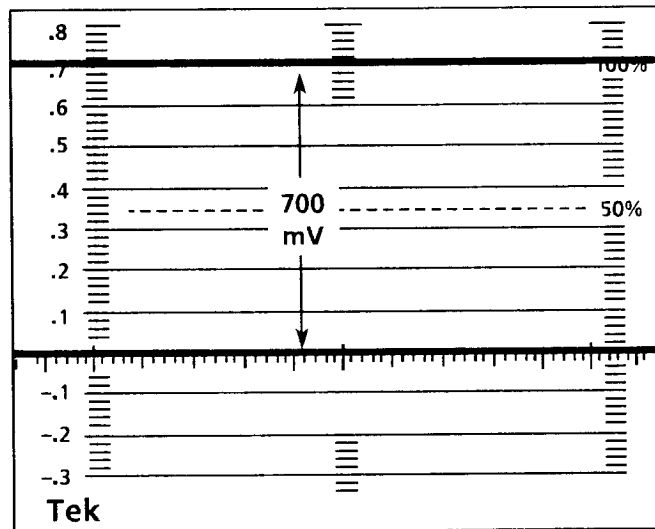


Figure 2–9: 1735 HD calibrator signal

- b. Use the VERTICAL screwdriver adjustment to set the vertical signal amplitude for exactly 700 mV.
 - c. Exit the calibrator mode by using any other front-panel control.
- 9. Select Timing Reference**
- a. Vertically position the waveform blanking level to the base line.
 - b. Set the REFERENCE to EXT. The REFERENCE button selects between internal (CH1) and external timing reference signals. With the button set to EXT and no external reference signal applied to the instrument, the sweep will be free running rather than synchronized.
 - c. Connect the TSG 1001 Sync Out to the 1735 HD rear-panel EXT connector and terminate the remaining side of the loop-through input with 75 Ω .
 - d. Check that the 1735 HD sweep locks to the external reference signal.
 - e. Set the REF to CH1.

10. Select Input

NOTE. Several combinations of the six input channels (1A, 2A, 3A, 1B, 2B, and 3B) can be selected using the INPUT buttons. Possible combinations are shown in Table 2–5.

Table 2–5: Input channels displayed

Mode	Possible Input Channels Displayed	Position of Display
ONE LINE / ONE FIELD	Select as many of the six channels as desired: 1A, 2A, 3A, 1B, 2B and/or 3B	Selected channels overlaid.
TWO LINE / TWO FIELD	1A & 1B or 2A & 2B or 3A & 3B	CH A & B side-by-side.
THREE LINE / THREE FIELD	1A, 2A, 3A, 1B, 2B & 3B	CH 1, 2, & 3 side-by-side, CH A & B overlaid.
THREE LINE / THREE FIELD	1A, 2A & 3A or 1B, 2B & 3B	CH 1, 2, & 3 side-by-side, CH A or B displayed.

- a. Set up the TSG 1001 to output a different signal from each of the three channels (G/Y, B/P_B, and R/P_R). Be sure that all three TSG 1001 output channels are turned on.
- b. Connect the three outputs to the 1735 HD channels 1A, 1B, and 3A. Terminate the three loop-throughs in 75 Ω.
- c. Set the 1735 HD for a two-line display.
- d. To select channels 1A and 1B, push CH A and CH B at the same time, and then push CH 1. Look for a display of channel 1A on the left and channel 1B on the right.
- e. Move the generator signal from the CH 1B input connector to the CH 2A input connector.
- f. Select a three-line display.
- g. Push CH A by itself to deselect CH B. Push CH 2 and CH 3 to add channels 2A and 3A to the display. Channels 1A, 2A, and 3A will be displayed side by side. Figure 2–10 shows this display, with a color bar signal being input to CH 1A, a 5-step staircase to CH 2A, and a multiburst signal to CH 3A.

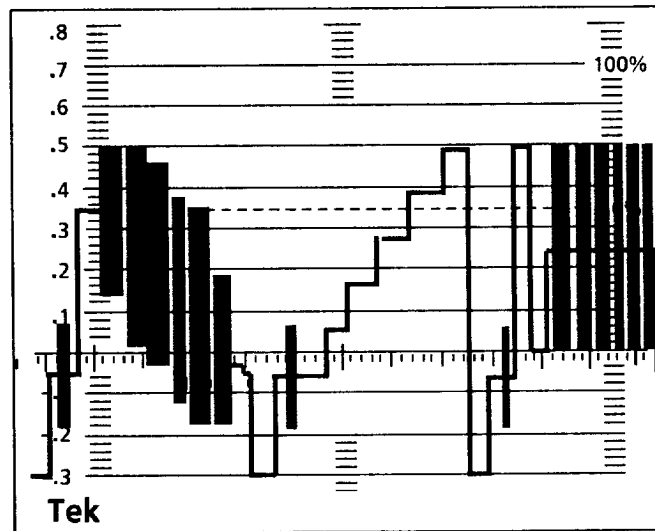


Figure 2-10: Side-by-side display of the three input channels

11. CH 2-CH 3 OFFSET

- a. Enable the offsets through the menu.
- b. Rotate the 1735 HD CH 2 and CH 3 OFFSET controls counterclockwise out of the detent position.
- c. Note that the channel 2 and channel 3 displays can be moved vertically with respect to each other and with respect to the channel 1 display.
- d. Move the generator signal from the CH 3A rear-panel input connector to the CH 1B connector.
- e. Select a one-line display. Select CH 1A and CH 1B INPUT.
- f. Push the CH 3 OFFSET control. Note that the channel B signal can now be moved with respect to the channel A signal.
- g. Through the menu, disable the offsets. Channels 2 and 3 will again be aligned with channel 1.

12. Gain Control

- a. The gain switch (VAR/X5) toggles between variable, X5, and off. Holding the switch accesses both variable and X5 gain. Hold this switch in until the VAR indicator lights.
- b. Rotate the VARiable control to increase and decrease the signal amplitude. Return the control to its detent position.

- c. Push the gain switch (do not hold in) again to select X5 and VAR. Check that both the X5 and VAR indicators light, and that the vertical signal amplitude is increased X5.
- d. Adjust the VAR control and check that it is possible to reduce display gain to display the color bar signal on the graticule.
- e. Push and hold the gain button until only the X5 indicator is lit. Move the VERTICAL position control and check that the displayed sync pulse amplitude is greater than the vertical graticule scale.
- f. Push the gain button and check that both indicators are off and a normal amplitude color bar signal is displayed.

13. Filter Selection

- a. Set HORIZONTAL for TWO LINE and make sure that the VERTICAL filter FLAT indicator is lit. Figure 2-8 shows the color bar signal displayed in the FLAT response position.
- b. Select Multiburst on the TSG1001 and note a display of multiburst signal. See Figure 2-11.

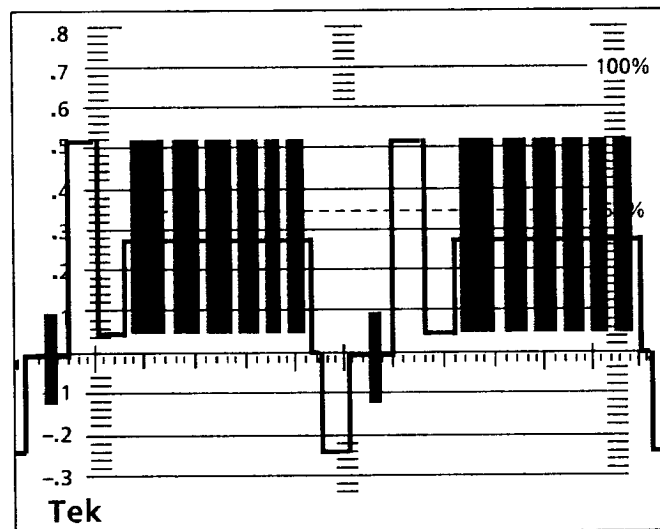


Figure 2-11: Multiburst signal; two-line flat display

- c. Select the NOISE filter through the menu.
- d. Push and hold the FILTER button until both the FLAT and FILTER indicators light. Look for a display similar to that in Figure 2-12, with the flat display on the left and the filtered on the right.

- e. Push the FILTER button again to exit the dual filtering mode. Note that the function always returns to FLAT when coming out of the combination filtering routine. Turn the filter off.
- f. Push and hold the FIELD/MENU button to enter the menu. Select the DIFF STEP filter, then exit the menu.
- g. Select the 5-Step Linearity signal on the TSG 1001. Note the staircase display.
- h. Turn the filter on and note that spikes replace the staircase steps. Turn off the filter.

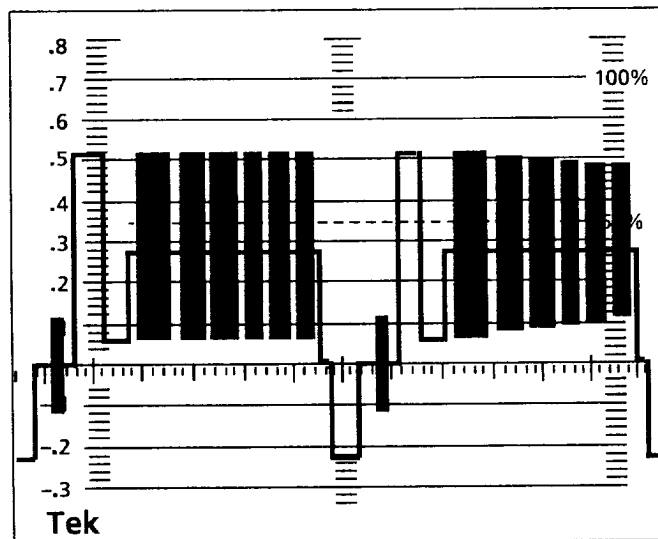


Figure 2-12: Multiburst signal; alternate lines filtered and flat

14. Sweep Speeds

- a. Select the Color Bar signal on the TSG1001.
- b. Push and hold the HORIZONTAL ONE – TWO – THREE button until there is a one-line display of the color bar signal.
- c. Push the ONE – TWO – THREE button twice to select three-line sweep.
- d. Use the HORIZONTAL position control to move the display to the right until the burst for the first line is near the horizontal center of the graticule.
- e. Push the HORIZONTAL MAG button, and adjust the position control if necessary to return burst to the center of the graticule.

- f. Observe that the burst waveform appears to be unlocked (burst cycles of both polarities displayed).
- g. Push the HORIZONTAL ONE – TWO – THREE button to select two-line sweep.
- h. Observe that the burst is now locked and shows only one polarity of burst.
- i. Push the MAG button to turn off the horizontal magnifier.
- j. Push and hold the ONE – TWO – THREE button until there is a one-line color bar display.
- k. Push the HORIZONTAL FIELD button and check for a one-field display.
- l. Push the HORIZONTAL MAG button and adjust the HORIZONTAL position control to place the interval on the screen. Check for a display beginning with the trailing edge of the broad pulse, the equalizing pulses and vertical (field) interval lines.
- m. Push the ONE – TWO – THREE button for a two-field display, and adjust the HORIZONTAL position control so that the interval between fields is displayed.
- n. Push the ONE – TWO – THREE button for a three-field display, and adjust the HORIZONTAL position control so that the interval between first and second field is displayed. Observe that all of the vertical (field) interval is displayed.
- o. Push the HORIZONTAL MAG button to turn off the magnifier.
- p. Adjust the HORIZONTAL position control to place all of the display on the graticule, and observe that three fields are displayed.

15. Channel 1B Subtract Mode

- a. Use a dual-input connector to feed the same signal to the 1735 HD CH 2B input as to the CH 1B input. Select CH 2B input for display.
- b. Select a two-line display.
- c. Enable SUBTRACT through the menu.
- d. Observe the nulling of the signals.
- e. Enter the menu again and disable the SUBTRACT mode. Observe that the signal is restored.

16. Line Selection

- a. Observe the CRT and check to see if the readout is turned on, as shown in Figure 2–13. If the readout is not on, push and hold the HORIZONTAL MAG/READOUT until the readout is displayed. (If the magnifier stays on when readout is displayed, momentarily push the MAG/READOUT button.)

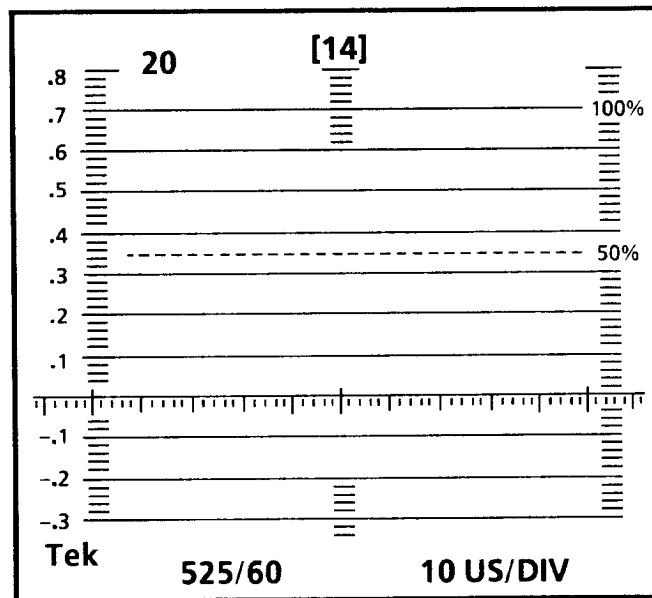


Figure 2–13: 1735 HD on-screen readout for line-select operation, with 14-line selected

- b. Push the LINE SELECT ON button and observe the line number appearing in the upper left corner of the screen. See Figure 2–13.
- c. Push the FIELD button, and the line number changes to a line from the opposite field.
- d. Push the LINE SELECT ON button and note that the line number disappears.
- e. Push and hold the LINE SELECT ON button and look for the [14] to appear at the top of the CRT screen.
- f. Push the LINE SELECT ON button and note that the line number and the [14] disappear.

- g.** Push the LINE SELECT ON and observe that the line number and [14] reappear. Push and hold the LINE SELECT ON and observe that the [14] disappears.
- h.** Push the LINE SELECT UP button and observe that the line numbers increase.
- i.** Push the LINE SELECT DOWN button, hold it in, and watch the line numbers decrease. Hold the button in until lines from the vertical (field) interval are displayed.
- j.** Push the LINE SELECT ON button to turn off the line select function.



Specifications

Specifications

The Performance Requirements listed in the Electrical Specifications apply over an ambient temperature range of 0 °C to +50 °C. The rated accuracies are valid when the instrument is calibrated at an ambient temperature range of +20 °C to +30 °C, after a warm-up time of 20 minutes.

Test equipment used to verify Performance Requirements must be calibrated and working within the limits specified in the Recommended Equipment List located in the *Performance Verification* section.

Table 3-1: Vertical deflection system

Characteristic	Performance requirements	Supplemental information	Check step
Frequency Response 1 V Full Scale FLAT (X1 and X5)	50 kHz to 30 MHz within 2% of response at 50 kHz.	Specifications apply for 1 V video input signal (700 mV sinewave), with VAR gain off. Verification may be limited by test equipment capabilities.	16
FILTER	>20 dB of attenuation at 20 MHz.	Response at 15 kHz does not vary between FLAT and FILTER by more than 1% when NOISE filter is selected.	22
Transient Response 1 V Full Scale or X5 Gain FLAT Preshoot, Overshoot, and Ringing.	1% or less.	X1 Specifications apply for 700 mV, 33 ns risetime step, with VAR gain off.	19, 20
Tilt Field Rate Square Wave or Vertical Window	1% or less.		21
Deflection Factor 1 V Full Scale	1.0 V within 1% with 1 V input.	FLAT response selected.	8
X5 Gain	Gain Accuracy $\pm 5\%$.	200 mV input signal.	
Variable Gain Range	+5 dB, -20 dB.		10
Position Range	1 V signal can be positioned so that peak white or sync tip can be placed at blanking level.	CLAMP on, any gain setting.	10

Table 3-1: Vertical deflection system (Cont.)

Characteristic	Performance requirements	Supplemental information	Check step
Offset	CH2 and/or CH3 can be offset from CH1 by ± 350 mV. CHB can be offset from CHA by ± 350 mV.		14
DC Channel Matching	± 1 mV.		
Maximum Absolute Input Level		± 12 VDC + peak AC. Input levels in excess of 1.0 V peak-to-peak may cause frequency response aberrations.	
DC Input Impedance (Unterminated)	Greater than 15 k Ω .		
Return Loss (75 Ω) Video Inputs	At least 35 dB from 50 kHz to 30 MHz.	Loop-through terminated in 75 Ω . Input in use or not in use, instrument power on, all deflection factor settings.	23
Crosstalk between Displayed Channels		Greater than 45 dB of isolation between channels. Measured at 30 MHz.	
Loop-Through Isolation		Greater than 80 dB of isolation between loop-throughs, measured at 30 MHz.	
CH1B Subtract Common Mode Rejection	> 30 dB from 50 kHz to 15 MHz. >23 dB from 15 MHz to 30 MHz.		18
PIX MON OUT Frequency Response	50 kHz to 30 MHz, within 5% of response at 50 kHz.	Terminated in 75 Ω . With 700 mV p-p test signal.	17
Differential Gain (50% APL)	Less than 1% with a 1.0 V display.	At 4.43 MHz.	
DC Level on Output	± 0.1 V or less into 75 Ω load.	No input signal.	12
Intensification (Brightup)		During Line Select only. Active video of selected lines has a DC offset of approx. 180 mV.	11
Output Impedance		75 Ω (Nominal).	
Return Loss (75 Ω)	At least 26 dB, 50 kHz to 30 MHz.	With instrument turned on.	23
Input to PIX MON Output Gain Ratio	1:1 $\pm 5\%$ at 15 kHz.		11

Table 3-2: DC restoration

Characteristic	Performance requirements	Supplemental information	Check step
DC Restorer Clamp Point		Back Porch.	
Frequency Response at 50 Hz	SLOW CLAMP passes >90% of 50 Hz mains hum. FAST CLAMP removes >95% of 50 Hz mains hum.		15
Blanking Level Shift with APL change	Blanking level shifts 1% or less of the APL change.		15
DC Restorer Level	DC level of blanking is 0 V, ± 100 mV.		15

Table 3-3: Calibrator

Characteristic	Performance requirements	Supplemental information	Check step
Amplitude	700 mV display to within 1%.		9
Position		Bottom of calibrator waveform must be on the 0 V line on graticule (± 100 mV) when back porch of video signal is positioned to 0 V line with CLAMP on.	

Table 3-4: Horizontal deflection system

Characteristic	Performance requirements	Supplemental information	Check step
Sweep		Sweep occurs in all HORIZONTAL mode settings with or without synchronization.	4
Repetition Rate			
1 Field Sweep		Equal to frame rate of applied video or external sync.	
2 Field Sweep		Equal to half frame rate of applied video or external sync.	
1 Line Sweep		Equal to line rate of applied video or external sync.	

Table 3-4: Horizontal deflection system (Cont.)

Characteristic	Performance requirements	Supplemental information	Check step
2 Line Sweep		Equal to half line rate of applied video or external sync.	
Sweep Magnifier Registration		Magnification occurs about the center of the screen in TWO LINE operation.	
Timing Accuracy		All timing and linearity specifications exclude the first and last major divisions of the unmagnified display.	5
10 μ s/div. (TWO LINE)	Within 2%.	525/625 line standards	5
5 μ s/div. (ONE LINE)	Within 2%.	525/625 line standards	5
1 μ s/div. (TWO LINE+MAG)	Within 2%.	525/625 line standards	5
0.2 μ s/div. (ONE LINE+MAG)	Within 2%.	525/625 line standards	5
Integral Linearity	Within 1%.	Measured between the 10 μ s and 110 μ s points on the 10 μ s/division sweep. Time marks fall exactly on graticule marks.	5
HORIZONTAL Position	Any portion of a synchronized video sweep can be positioned on screen in all sweep modes except ONELINE and ONEFIELD. Second sync can be positioned on screen.		4
LINE SELECT		<p>Displays the selected line in ONE LINE. Displays the selected line first in TWO LINE.</p> <p>Intensifies selected line in TWO FIELD.</p> <p>In 14-LINE, displays overlaid lines in ONE LINE or TWO LINE, intensifies the selected 14 lines in TWO FIELD. A bracketed 14 follows the line number on the CRT Readout in 14-LINE mode.</p>	
READOUT		<p>When READOUT is selected:</p> <p>Lines per Frame/Frame Rate, and Time/Div are shown across the bottom of the screen.</p> <p>In Line Select, the number of the selected line is displayed in the upper left portion of the screen. If 14-LINE mode is also selected, [14] is shown to the right of the selected line number.</p>	

Table 3-5: RGB/YRGB mode

Characteristic	Performance requirements	Supplemental information	Check step
RGB/YRGB	Will display either a 3-step or 4-step RGB/ YRGB parade or overlaid display.	Internal jumper is used to change from 3-step to 4-step capability. Factory set to 3-step.	6
Staircase Amplitude RGB or YRGB	A 10 V input will result in a horizontal display of 9 divisions ± 1 major division.	Internal jumper is used to select Positive or Inverted polarity. 12 V p-p AC component. Signal voltage not to exceed ± 10 VDC plus peak AC. Internal adjustment offsets any incoming signal DC component between ± 10 V. Input Impedance approximately 20 k Ω .	6
Sweep Repetition Rate	Field or line rate of displayed video or external sync signal as selected by front-panel HORIZONTAL controls.	Field or line rate, if enabled from the REMOTE connector.	6
Control		RGB/YRGB mode and Parade/Overlay selected by applying ground (TTL low) at the RGB Enable pin on the rear-panel REMOTE connector. RGB components may be overlaid with normal sweep length by not activating RGB Enable.	
MAGnifier		Approx. X20 in TWOFIELD, X10 in TWOLINE, X25 in ONELINE or THREELINE.	
Sweep Length	3-step: 3.4 – 4.1 div. 4-step: 2.5 – 3.1 div.	Field or line rate sweeps. A 1FIELD sweep is selected by grounding the 1FIELD/1LINE pin of the rear-panel REMOTE connector.	6

Table 3–6: External horizontal

Characteristic	Performance requirements	Supplemental information	Check step
External Horizontal	A +5 V to –5 V ramp will result in a left-to-right displacement of 9 div., ±1 major div.	Internal jumper is used to select Positive or Inverted polarity.	7

Table 3–7: Synchronization

Characteristic	Performance requirements	Supplemental information	Check step
Input Requirements			
internal reference	Video or black burst with sync amplitudes 300 mV ±6 dB or tri-level sync of ±300 mV ±6 dB.		4
external reference	Sync amplitude between 143 mV and 4 V will synchronize sweeps.		4
EXT REF Input			
DC Input Impedance (Unterminated)	Greater than 15 kΩ.		
Return Loss (75 Ω)	At least 33 dB from 50 kHz to 30 MHz.	Loop-through terminated in 75 Ω, instrument power on or off.	23
Absolute Maximum Input Voltage		±12 VDC plus peak AC.	
Remote Sync			
Amplitude	TTL threshold.	Input and enabled through rear-panel REMOTE connector. 30/60 Hz (25/50 Hz) squarewave will sync TWO FIELD sweep. Remote sync bypasses sync stripper and field ID circuits.	
Remote Sync Polarity		Internal jumper selects polarity. Normal: Negative-going edge line sync, positive edge of field sync. Inverted: Positive-going edge line sync, negative edge of field sync.	

Table 3–8: CRT display

Characteristic	Performance requirements	Supplemental information	Check step
CRT Viewing Area		80 × 100 mm. Horizontal = 12.5 div. Vertical = 1.19 V.	
Accelerating Potential		Nominally 13.75 kV.	
Trace Rotation Range	Greater than ±1° from horizontal.	Total adjustment range is typically 8°.	3
Graticule		Internal, variable illumination.	

Table 3–9: Power source

Characteristic	Performance requirements	Supplemental information	Check step
Mains Voltage Ranges	90–250 V		2
Mains Frequency Range	48 Hz to 66 Hz.		
Power Consumption		90 VA maximum 55 Watts typical	

Table 3–10: Environmental characteristics

Characteristic	Supplemental information
Temperature	
Non-Operating	–55 °C to +75 °C.
Operating	0 °C to +50 °C.
Altitude	
Non-Operating	To 50,000 feet.
Operating	To 15,000 feet.
Vibration Operating	15 minutes each axis at 0.015 inch, frequency varied from 10–55–10 Hz in 1- minute cycles with instrument secured to vibration platform. Ten minutes each axis at any resonant point or at 55 Hz if no resonant point is found.
Shock Non-Operating	30 g's, 1/2 sine, 11 ms duration, 3 shocks per surface (18 total).
Transportation	This product qualified under NSTA (National Safe Transit Association) preshipment test procedures, Project 1A–B–1.
Humidity	Will operate at 95% relative humidity for up to five days.

Table 3–11: Physical characteristics

Characteristic	Supplemental information
Dimensions	5 1/4 inches (133.4 mm).
Height	
Width	8 1/2 inches (215.9 mm).
Length	18 1/8 inches (460.4 mm).
Weight	Approximately 10.3 lbs (approximately 4.7 kg).

Table 3–12: Certifications and compliances

Category	Standards or description
EC Declaration of Conformity – EMC ¹	<p>Meets 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 Union:</p> <p>EN 50081-1 Emissions: EN 55022 Class B Radiated and Conducted Emissions</p> <p>EN 50082-1 Immunity: IEC 801-2 Electrostatic Discharge Immunity IEC 801-3 RF Electromagnetic Field Immunity IEC 801-4 Electrical Fast Transient/Burst Immunity</p> <p>¹ High-quality shielded cables must be used to ensure compliance to the above listed standards.</p> <p>This product complies when installed into any of the following Tektronix instrument enclosures: 1700F00 Standard Cabinet 1700F02 Portable Cabinet 1700F05 Rack Adapter</p>
FCC Compliance	Emissions comply with FCC Code of Federal Regulations 47, Part 15, Subpart B, Class A Limits.
Installation (Overvoltage) Category	<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	<p>A measure of the contaminants 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>

Table 3–12: Certifications and compliances (cont.)

Category	Standards or description	
	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.
	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.
	Pollution Degree 4	Pollution that generates persistent conductivity through conductive dust, rain, or snow. Typical outdoor locations.
Safety Standards		
U.S. Nationally Recognized Testing Laboratory Listing	UL1244	Standard for electrical and electronic measuring and test equipment.
Canadian Certification	CAN/CSA C22.2 No. 231	CSA safety requirements for electrical and electronic measuring and test equipment.
European Union Compliance	Low Voltage Directive 73/23/EEC, amended by 93/69/EEC EN 61010-1	Safety requirements for electrical equipment for measurement, control, and laboratory use.
Additional Compliance	IEC61010-1	Safety requirements for electrical equipment for measurement, control, and laboratory use.
Safety Certification Compliance		
Temperature, operating	+5 to +40° C	
Altitude (maximum operating)	2000 meters	
Equipment Type	Test and measuring	
Safety Class	Class 1 (as defined in IEC 1010-1, Annex H) – grounded product	
Overvoltage Category	Overvoltage Category II (as defined in IEC 1010-1, Annex J)	
Pollution Degree	Pollution Degree 2 (as defined in IEC 1010-1). Note: Rated for indoor use only.	

WARNING

The following servicing instructions are for use only by qualified personnel. To avoid injury, do not perform any servicing other than that stated in the operating instructions unless you are qualified to do so. Refer to all safety summaries before performing any service.



Theory of Operation

Theory Of Operation

The Theory of Operation section is divided into three parts. First is the Instrument Overview, followed by the Block Diagram Overview that describes the architecture of the 1735 HD in function blocks. Last are the Circuit Descriptions of the schematic diagrams.

Instrument Overview

The 1735 HD is a multi-standard, six input waveform monitor. It is designed for component or composite format HDTV, medical, computer graphics, or machine video applications with analog bandwidths of up to 30 MHz. Special line rate applications include standards development in HDTV systems, video monitoring in medical x-ray and CAT scanning systems, monitoring of computer graphics video, and monitoring of high-bandwidth video used in precision machine positioning.

Full line-select capability, with on-screen identification of selected rate and field/line, is provided for every field/line rate.

The 1735 HD can be operated from AC mains over the range of 90–250 V, 48–66 Hz without operator adjustment.

Block Diagram Overview

The discussions in this section rely on the main Block Diagram and the individual schematic diagrams, located on foldout pages in the *Diagrams* section of the manual. A simplified block diagram of the 1735 HD is also shown in Figure 4-1.

On the main Block Diagram, the microcontroller signal names are identified using upper case ITALIC type. Circuit blocks are accompanied by a number in the following format: <1>, <2>. This number indicates which foldout schematic diagram details that circuit block.

Vertical The 1735 HD has six identical video input amplifiers, arranged in two banks of three. Each amplifier has its own back-porch clamp, with clamp timing specific for each of the video line rates supported by this instrument. These amplifiers may be in fast clamp mode, slow clamp mode, DC coupled mode, or input grounded. All six of the video input amplifiers must operate in the same mode, with the same clamp timing.

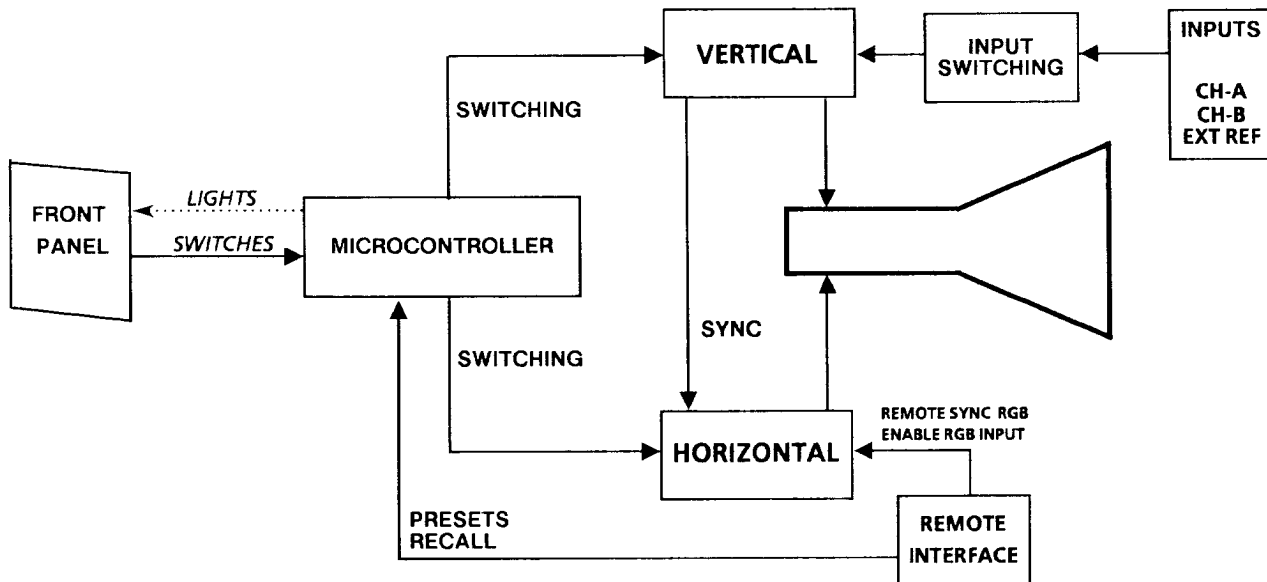


Figure 4-1: Simplified basic block diagram of the 1735 HD High Definition Waveform Monitor

A one-of-eight video switch (multiplexer) selects a video input, or a sequence of video inputs, to provide overlaid or parade displays, or a vertical calibration display. The output of this video switch is available at the rear-panel PIX MON OUT, with a brightup strobe added for the line select displays. If subtract mode is enabled, the video from CH 1B can be subtracted from the output of the one-of-eight video switch at the input to the filter switch. The filter select switch selects full bandwidth or reduced bandwidth to remove high frequency noise.

The gain cell sets the vertical gain, and if the vertical VAR gain is enabled, it provides front panel control of vertical gain.

The front-panel vertical position control is a backlash potentiometer, which has two ranges of adjustment. When the limits of the fine adjustment are reached, a coarse adjustment is activated to change the positioning window of the fine adjustment.

When overlaid or parade displays are selected, positioning of all vertical signal elements is required. The vertical level shift combines these vertical positioning signals with the video from the filter switch.

When the vertical X5 magnifier is enabled, the vertical limiter provides a five times gain increase. The vertical limiter clips the portions of the positioned vertical signal that would be far off-screen, reducing the dynamic range and power dissipation required in the vertical deflection amplifier.

The vertical deflection amplifier is a differential cascode amplifier that drives the capacitive load of the CRT vertical deflection plates. The differential amplitude

is approximately 24 V for a full-scale display, and is dependent on the CRT vertical deflection sensitivity. When alphanumeric readout is active, a vertical readout signal drives the vertical deflection amplifier, while the signal from the vertical limiter is disabled.

Horizontal Deflection

The sweep generator consists of a current source, capacitor, and discharge switch. It is controlled by the microcontroller, producing a linear sweep signal which is synchronized to the selected sync source.

The horizontal level shift adds an offset to the sweep generator output to provide horizontal position control. The front-panel horizontal position control is a backlash potentiometer, which has two ranges of adjustment. When the limits of the fine adjustment are reached, a coarse adjustment is activated to change the positioning window of the fine adjustment.

The horizontal limiter is an inverting operational amplifier that outputs a negative-going ramp. Horizontal magnification is accomplished here by changing the gain in the feedback loop to provide magnification up to X25. The horizontal limiter clips the portions of the positioned horizontal sweep signal that would be off screen, reducing the dynamic range (and power dissipation) required in the horizontal deflection amplifier. The horizontal limiter also outputs a signal that turns off the CRT beam during the clipped portions of the sweep.

The paraphase horizontal deflection amplifier has a gain of approximately seven. It is capacitively loaded by the CRT deflection plates and employs shunt capacitors to speed charging for high slew rate signals. Full-scale deflection requires approximately 50 V, depending on the CRT deflection sensitivity. When alphanumeric readout is active, a horizontal readout signal drives the horizontal deflection amplifier, while the signal from the horizontal limiter is disabled.

Microcontroller

The microcontroller consists of two microprocessors serially connected in a master-slave relationship. Operating software is contained in EPROM (Erasable/Programmable Read-Only Memory). The master processor handles all traffic to and from the front panel, readout enable, and character generation, through DACs (digital-to-analog converters).

The master processor continuously polls the front-panel switch data for changes. The front-panel indicators and the NOVRAM (non-volatile random access memory) are updated to relay current conditions and enable the instrument to power up again in the same configuration. The slave processor controls line rate switching of the inputs, sweep generator, line select, and all other remaining control functions.

Sync is derived from the CH 1A, CH 1B, or EXT SYNC inputs (front-panel selectable). The sync stripper output follows the negative sync tip, with no special provision for tri-level sync. The timing relationships for frame and line sweeps and back porch clamp are determined by table look up from the LINES/FRAME selection in the menu. In addition, accommodation is made for remote sync input and enable through the rear-panel REMOTE connector.

Low Voltage Power Supply

The low voltage power supply is of the flyback type. It converts the mains line voltage (between 90 and 250 volts) to supply the power requirements of the instrument. The low voltages supplied from the central power supply are +40 V, +15 V, +5 V, and -15 V.

High Voltage Power Supply

The high voltage oscillator is an Armstrong oscillator operating at about 25 kHz. The +100 V supply and the current in the HV secondary winding are monitored to set the static voltage level and keep the high voltage constant under changing load conditions.

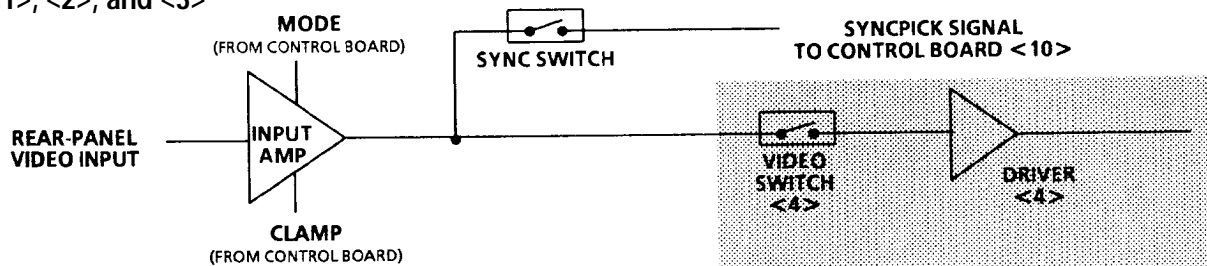
The grid drive is supplied by capacitively coupling the Z-axis amplifier output directly to the CRT control grid. Low frequency Z-Axis information is DC restored to set the DC bias on the CRT control grid.

The focus amplifier is an operational amplifier to control the voltage at the bottom of the focus voltage divider. Its output level is set by the front-panel FOCUS control.

Circuit Descriptions

The following are component-level circuit descriptions which explain the operation of the individual circuits in the 1735HD. The descriptions are presented in a schematic-by-schematic order.

Vertical Input Diagrams <1>, <2>, and <3>



Inputs. Each of the six video input channels of the 1735 HD has an identical video input amplifier. These channels are arranged in two groups of three each (1A-2A-3A and 1B-2B-3B). CH 1A circuit numbers are used here.

Each amplifier is a non-inverting feedback amplifier with two additional low frequency feedback paths. One of these paths, the clamp feedback path, implements the back-porch clamp function. The other path, the DC feedback path, prevents DC offset and drift due to the bias current at the input of the high-speed op-amp (U52 pin 3), and implements the DC block function.

The effect of the DC feedback path is to supply bias current for U52, and to short circuit DC block capacitor C239. The high frequency feedback path (R476, R477, and R478) provides a video gain of +1.12 from U52 pin 3 to U52 pin 6, and a clamp gain of -0.12 from clamp output (U49B pin 7) to U52 pin 6. The DC feedback path (R450, R448, and R474) provides unity gain from U52 pin 3 to U43B pin 5, and subtracts the clamp output. In the DC-coupled mode, U43B's gain is unity, and integrator U43A delivers bias current through R509 to U52 pin 3, so that the voltage at U43B pin 5 tracks the voltage at the video input. At higher frequencies, the DC feedback loop, working through R531, cannot affect the voltage across DC block capacitor C239, and relinquishes control of U52 to the high frequency feedback path. The DC feedback match to unity gain, and C139, C209, C195, R391, and C182 help to smooth this transition.

In the AC-coupled mode, the integrator at U43B is enabled, so the DC feedback path forces a DC average of zero at U43B, pin 5. The integration time constant (0.75 sec) is determined by R333 and C154. At higher frequencies, the gain through U43B is unity, as it was in the DC-coupled mode, so the gain is unaffected for frequencies above frame rate.

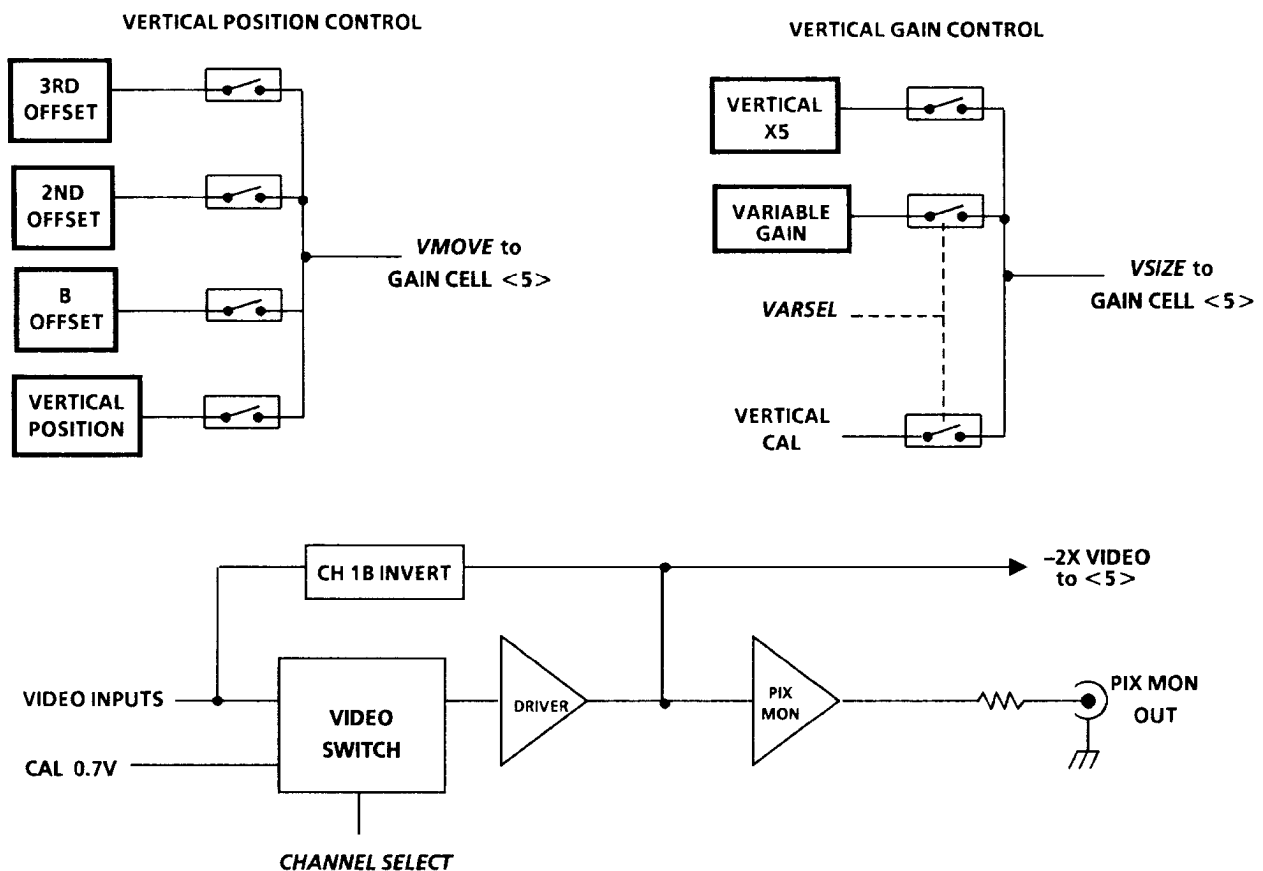
The back porch clamp is used to restore the DC level of AC-coupled video signals. The integrate/hold amplifier U49B integrates during during the back porch sample time, charging its hold capacitor (C125), and moving the back porch voltage level of the video output (U52 pin 6) toward zero. An additional hold capacitor (C141) is switched in for slow clamp mode. The high-frequency feedback and DC feedback paths are scaled to subtract the clamp output (U39B pin 7) and the video output (U52 pin 6), so that the clamp does not affect the operation of the DC feedback loop.

At high frequencies where the DC feedback loop is inactive, R532, R509 and the input impedance of U52 pin 3 appear as resistance to ground. At low frequencies, the DC feedback loop makes the input resistance infinite, and is therefore unstable without a resistor to ground. A single resistor would be sufficient for DC feedback loop stability, but resistors R531, R506, C238, R533, R508, and C125 are scaled to provide a broadband constant input resistance (approximately 18K). C238 effectively un-grounds the 18K formed by this network at frequencies where the DC feedback loop is inactive. C226 cancels the effect of the clamp.

Input Relays. The high-input impedance of the input amplifiers (U52 for CH 1A) is lost when the power is turned off. Comparator U8A turns off the channel input relays (K1 for CH 1A) whenever it detects low power supply voltage. When power is switched off, the relays disconnect the video input amplifiers from the rear-panel video loop-through input, so video routed through the 1735 HD is not affected. These relays are also used to provide a ground level check controlled from the front panel. To reduce displayed crosstalk, serial register U59 switches the relays to disconnect undisplayed input channels.

Sync Switch (for internal sync). The 1735 HD can use sync from the video on CH 1A or CH 1B, or from EXT SYNC on the rear panel. Sync from CH 1A is enabled by a current-mode switch. Common-base amplifier Q35 converts the video from CH 1A to a current signal. A TTL low signal at the base of Q36 shunts this current to ground. A TTL high signal switches the video signal current to Q37. Q38, Q39, and Q40 form an identical switch for CH 1B.

Video Multiplexer / Vertical Gain Diagram <4>



Video Switch and Pix Mon. Multiplexer U50 selects a signal from one of its eight video inputs, controlled by the three select signals VMUX0, VMUX1, and VMUX2. The video switch has unity gain. The driver gain is 1.78, and the video gain from the rear panel to the driver output (U38, pin 6) is approximately 2.

U21 provides a 75 Ω back-terminated PIX MON output for the rear-panel BNC. The PIX MON output signal consists of the video switch output signal with a brightup strobe added. When /STROBE is low, U19B adds approximately 400 mV to the 2X video at U21, pin 6.

Two of the eight video switch inputs are used for the CAL display function. The 0.700 volts at U50, pin 22 is from a precision voltage divider and voltage reference (series pass regulator). The grounded input at U50, pin 2 is also used for the no input display when no inputs are selected.

CH1B Invert. When subtract mode is enabled, the output of amplifier U16, pin 6, is the difference between CH 1B and the selected channel. When enabled, the CH 1B invert amplifier (U47) acts as a follower. Its gain (adjusted by R383) and delay (through filter C131, C144, L10, and L11) match the CH 1B video signal path through the video switch (U50) and driver amplifier (U38). When CH 1B is selected and subtract mode is enabled, the null at the output of the difference amplifier (U16, pin 6) shows the accuracy of this match.

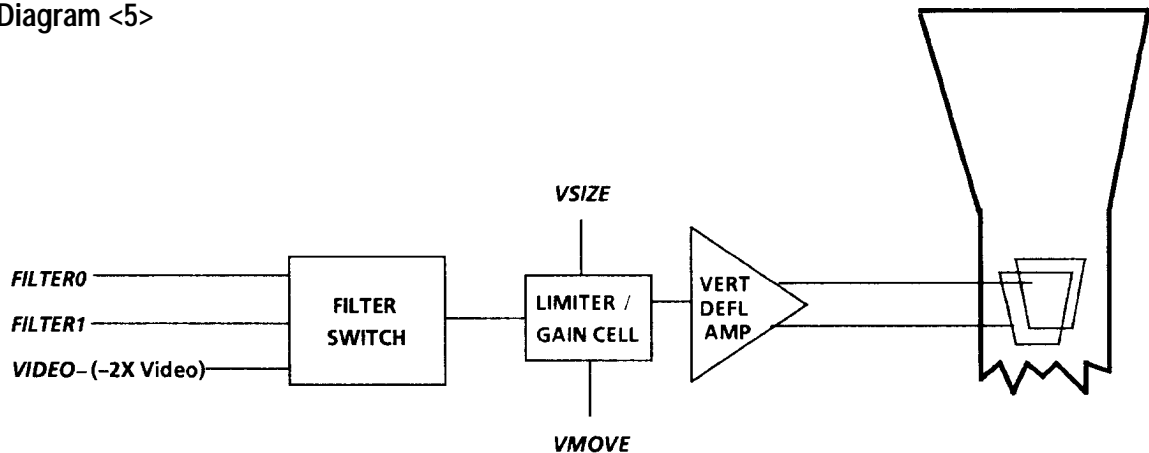
When subtract mode is not enabled, the CH 1B invert amplifier output (U47, pin 6) is an open circuit, grounded through its feedback resistors and through the terminating resistors of the delay match filter (R365 and R72). The difference amplifier output (U16, pin 6) is inverted 2X video.

Vertical Position Control and Vertical Gain Control. The Gain Cell (in U25, Diagram 5) is used for video channel gain calibration, vertical X5 mag calibration, front-panel gain cal adjust, and front-panel variable gain.

The vertical level shift is used for vertical positioning. If offsets are enabled, offset controls are added to the vertical position control. Control signals 2OFFSEL, 3OFFSEL, and BOFFSEL to U27 switch in front-panel offset controls for CH2 OFFSET, CH3 OFFSET, and CHB OFFSET. Summing amplifier U28A determines the nominal voltage and range for the VMOVE control signal for the vertical level shift.

When vertical X5 gain is selected, control signal VERT5X to U30C switches in R128. When vertical variable gain is selected, control signal VARSEL to U30A and U30B switches from the front-panel CAL control to the front-panel VAR control. Summing amplifier U28B determines the nominal voltage and range for the VSIZE control signal for the gain cell.

Vertical Output Diagram <5>



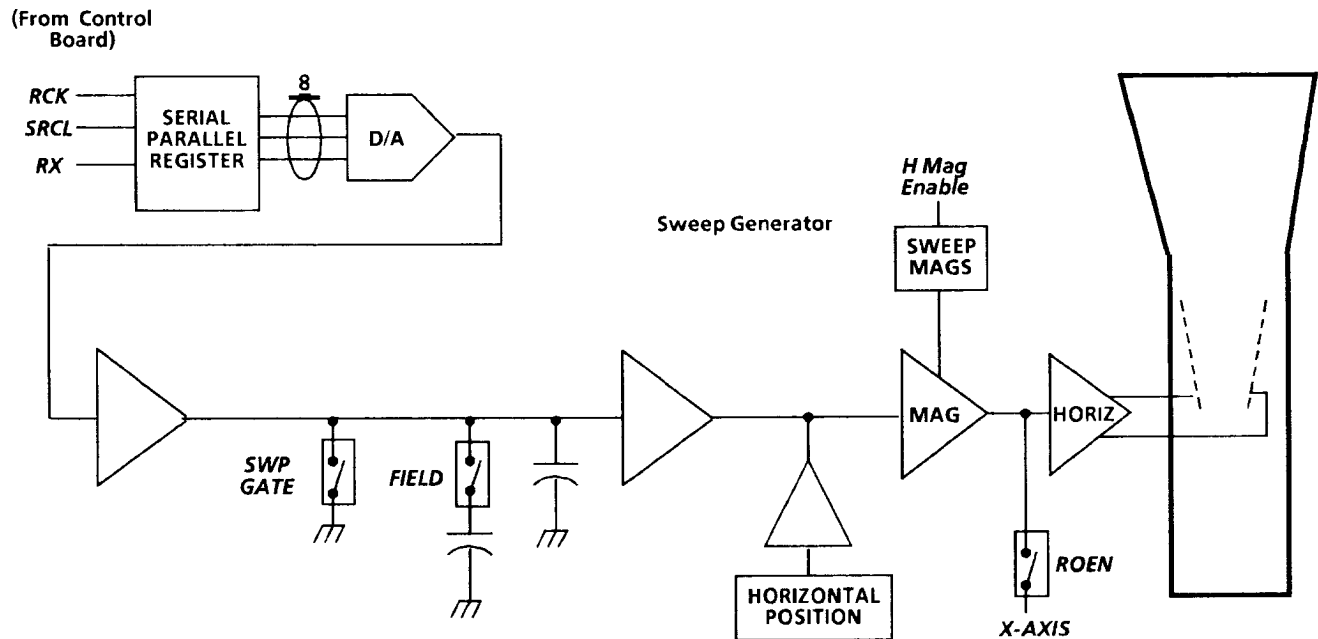
Filter Select. When no filter is selected (FLAT), full bandwidth video passes through U10 to the gain cell in U25; U15 and U9 are disabled. When the NOISE filter is selected, filtered video passes through U15 to the gain cell in U25; U10 and U9 are disabled. When the DIFF STEP filter is selected, filtered video passes through U9 to U25.

Vertical Limiter and Vertical Deflection. The vertical limiter, gain cell, and vertical level shift are in U25 (a Tektronix ASIC). The inverted 2X video from the filter switch is attenuated to 1X video by R64 and R137 at U25 pin 9. Analog control signals *VSIZE* and *VMOVE* control the gain cell and vertical level shift. The vertical limiter clips portions of the video that would be far off screen, reducing the dynamic range needed in the vertical deflection amplifier. This limit corresponds to approximately 2 V differential between U25, pins 29 and 33. The control signal *VERT5X* selects five times gain at the limiter (in U25).

The vertical deflection amplifier is a differential cascode stage driven by U25. The resistors at U25, pins 29 and 33 determine the operating current and current gain at U25, pins 30 and 31. This current is converted back to a voltage gain by resistors at the collectors of Q26 and Q34. T-coil peaking (L8 and L9) at the output to the deflection plates improves the bandwidth. The voltage output at the collector of each cascode (Q26 and Q34) is approximately 19 V at the center of the screen, 19 V \pm 6 V at a graticule edge, or 19 V \pm 10 V at a limit. Transistors Q24 and Q33 hold -0.7 V at U25 pins 30 and 31, and dissipate power that is not needed by the output cascode.

When readout is active, the vertical deflection amplifier input is disconnected from the video at the limiter output and switched to the readout amplifier (internal to U25, controlled by *ROEN*). U24 scales and shifts the vertical readout signal (*ROVERT*) for U25.

Horizontal Diagram <6>



Sweep Generator. The sweep generator is controlled by the microcontroller. Sweep and retrace are directly enabled and disabled by the control line /SWPGATE, which is high for retrace and low for sweep. If Q16 is off, the sweep ramps up at a rate determined by the current from the DAC (U17) and the timing capacitor (C63 for line rate sweeps or C63 with C62 in parallel for field rate sweeps).

Line rate ramps are generated by an integrator consisting of amplifier U26A, timing capacitor C63, and a programmable current from the DAC, along with a current mirror consisting of Q10, Q9, Q14, & Q15.

To generate a field-rate ramp, C62 is added in parallel with C63 by turning on Q8. The output of U26A is a positive ramp of approximately 4 V or 8 V, depending upon the selection (either 1 line, field or 2 line, field). The DAC's data inputs are latched from U14, which is a serial-to-parallel shift register. The data input to U14 comes directly from the microprocessor (Diagram 8).

Horizontal Level Shift. The front-panel HORIZONTAL position control setting is fed to the Main board through the Control board. The position voltage is input to pin 2 of U23A, which buffers the positioning voltage. This voltage is summed at the input of the horizontal mag amplifier. During sweep (no readout), Q11 is saturated and U26B operates as a conventional inverting amplifier. During readout, the horizontal positioning voltage from U23A is applied to inverting and non-inverting inputs to U26B so that the position control does not affect the readout. U23B is a comparator with its output (pin 7) high for sweep and low for readout.

Selection is accomplished by the readout enable (ROEN) from the microcontroller, through U23B. When the control line goes high, U23B (pin 7) goes low to turn off Q11. When Q11 is off, U26B common-modes out the horizontal position control voltage and U26B (pin 7) is at 0 V regardless of the front-panel position control setting.

RGB or X Input Amplifier. Q13 and Q12 form the input amplifier for RGB/ YRGB staircase input to the Horizontal Output Amplifier. Input is through the rear-panel REMOTE connector.

In non-RGB operation, the RGBEN control line is low, saturating Q7, Q13, and Q12. The collector of Q13 is at 0 V and the RGB input is disabled.

To enable RGB, the control line is pulled high, un-saturating the amplifier and allowing the output signal to be summed into the horizontal magnifier amplifier summing point, instead of the ramp from the sweep generator. In addition, when RGB is enabled, Q18 is turned on to shorten the horizontal sweep. A jumper at J6 allows for selection of either 3-step staircase (for RGB) or 4-step staircase (for YRGB). The input staircase is a negative-going signal of approximately 10 V peak-to-peak. The offset control (R92) provides adjustment for the different average DC levels from the cameras. C57 is the input compensation adjustment.

When external horizontal input is used to drive the horizontal axis, the sweep generator is turned off by keeping Q16 on (/SWPGATE high). A negative voltage applied to the rear-panel REMOTE connector (pin 2) deflects the horizontal sweep from the left to the right at approximately 1 division per volt.

Horizontal Limit Amplifier. The horizontal limit amplifier, which consists of Q25A, Q25B and Q22, controls the gain of the sweep ramps. The input is a summing junction at the base of Q25B, adding the output currents from the sweep generator, HORIZONTAL position, and the RGB staircase input amplifier. The output is the collector of Q22. Limiting occurs when the output is driven above 9 V (Q22 saturates) or below ground (CR10 turns on).

Feedback through R154 and R204 can be selectively shunted by turning on combinations of Q17, Q19, and Q20.

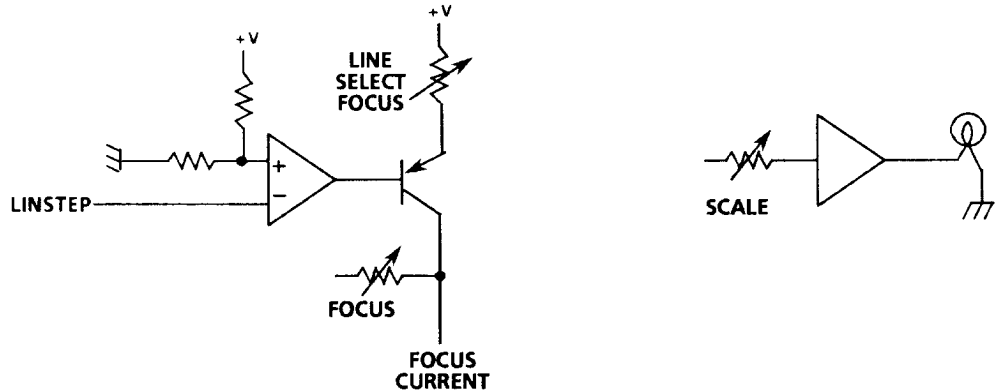
U20B is an adjustable voltage supply to provide the registration needed to magnify the trace at the center of the CRT.

Off-screen Blanking. Comparators U29A and B sense the output of the horizontal limit amplifier. If Q22 is saturated or cut off (which corresponds to the CRT beam being off screen to the right or left), the output of either U29A or B goes low and causes the CRT beam to be blanked. Q23 and Q21 form a fast pull-up to unblank the CRT when the beam comes back into the screen area.

Horizontal Deflection Amplifier. The horizontal deflection amplifier consists of Q32, Q31, Q29, Q28, Q30, and Q27. It differentially drives the CRT horizontal deflection plates. The base of Q29 is the summing junction input for the horizontal deflection amplifier. Q29 and Q28 form a differential pair that converts a single-ended input to paraphase output and drives the output transistors (Q30 and Q27). Common-mode voltage is fed from each output into the emitters of Q28 and Q29 through R208 and R213. Q31 and Q32 are current sources for the output stages.

When readout is active, the microcontroller switches off the sweep generator, the horizontal position, and the RGB input amplifier. Diode switch CR9 is turned on to enable the horizontal readout signal (ROHORIZ).

Control / Post Regulators Diagram <7>



Focus Amplifier. The FOCUS control affects two different display modes; normal mode and LINE SELECT mode. In the normal mode of operation, the focus voltage will be selected by the control setting only (Q1). When a LINE SELECT (LINSTEP) pulse occurs, U3A turns off and additional current flows through Q1. The LINE SELECT FOCUS adjustment (R6) is adjusted for optimum focus while operating in LINE SELECT mode at the normal display focus setting.

Graticule Illumination. U4A is a triangle generator whose output is compared to the front-panel SCALE control output level by U4B (a comparator). Whenever the output of U4A is higher than the level from the front-panel SCALE control, Q4 is turned on, and current is drawn through DS100, DS200, and DS300 to ground. The duty cycle of Q4 is determined by the front-panel SCALE control.

J1 is normally in the 1–2 position (lights enabled). In the 2–3 position, the graticule scale illumination is disabled.

Series Pass Regulators. The + and supplies generated on the Power Supply circuit board are further regulated here. To meet the on-board needs of the 1735 HD Main (A3) circuit board, ± 10 V, ± 8 V, and 5 V are provided. The regulators are U1 and U11 (+10 V and 10 V supplies), U2 and U13 (+8 V and -8 V supplies), and U12 (-5 V supply).

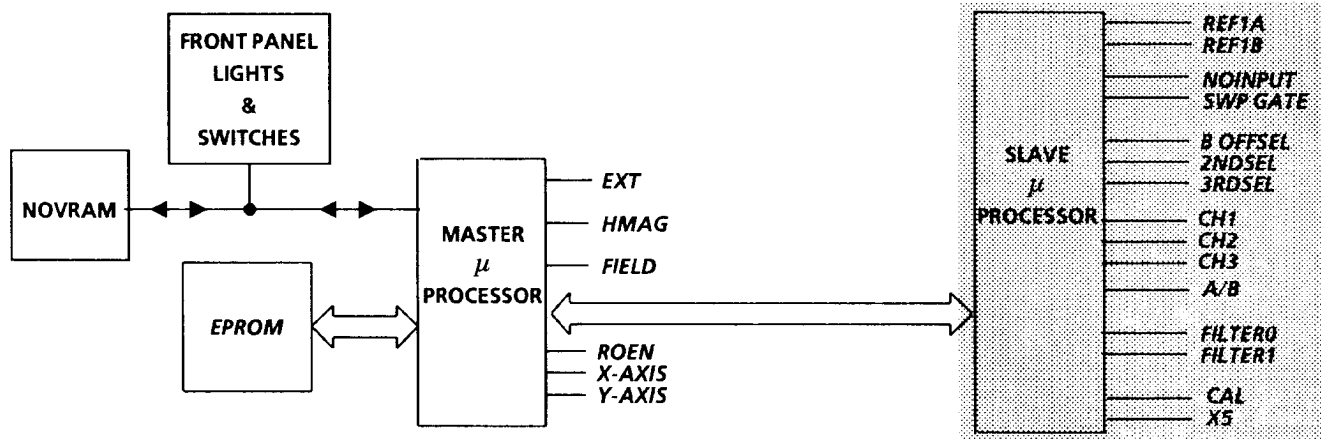
Microprocessor-generated control signals are represented in a simplified form on the Main Block Diagram, located in the fold-out section at the rear of the manual. The Block Diagram signal names are shown, along with their actual schematic diagram equivalents, in Table 4-1.

Table 4-1: Control signals grouped by function

Block diagram		Corresponding schematic diagram signal names
Circuit block	Control signal	
INPUT	MODE	/GND DCBLOCKEN CLAMPFAST
INPUT	CLAMP	CLAMPEN CLAMPULSE
SYNC SWITCH	SYNC SELECT	EXTSEL REF1A
CH 1B INVERT	SUBTRACT CH 1B	NEG1B
VIDEO SWITCH	CHANNEL SELECT	VMUX0 VMUX1 VMUX2
FILTER SWITCH	FILTER SELECT	FILTER0 FILTER1
VERTICAL LEVEL SHIFT	OFFSET SELECT	BOFFSEL 2OFFSEL 3OFFSEL
VERTICAL LIMITER	V MAG	VERT5X
VERTICAL DEFLECTION	VERT READOUT	ROEN ROVERT
SWEEP GENERATOR	SWEEP TIMING	RX RCK SRCLK /SWPGATE FLDRATE
HORIZONTAL LIMITER	H MAG	HMAG1 HMAG2 HMAG3
HORIZONTAL DEFLECTION	HORIZONTAL READOUT	ROEN ROHORIZ

Table 4-1: Control signals grouped by function (Cont.)

Block diagram		Corresponding schematic diagram signal names
Circuit block	Control signal	
FRONT PANEL	SWITCHES	ROW0 ROW1 ROW2 ROW3 COL0 COL1 COL2 COL3
FRONT PANEL	LIGHTS	DIGIT1 DIGIT2 DIGIT3 DIGIT4 S0 S1 S2 S3 S4 S5

Microcontroller
Diagram <8>

Master Processor. The master processor consists of U33 and U32. U32 is the erasable-programmable read-only memory (EPROM) containing the instruction code for the microprocessor, U33. Port 0 of U33 is used for multiplexed address and data lines. U31 is a tri-state octal D-Type latch which determines the address lines. The front-panel switch matrix is read directly by U33 through Port 1 which provides a stimulus via ROW 0–3, and evaluates the response through COL 0–3.

The front-panel Light-Emitting Diode (LED) matrix is driven by U33 through U34. Each individual LED's data is written in when /WR and the data input (U34, pins 2–9) are low. Data is latched when /WR goes high. LED refresh occurs continuously.

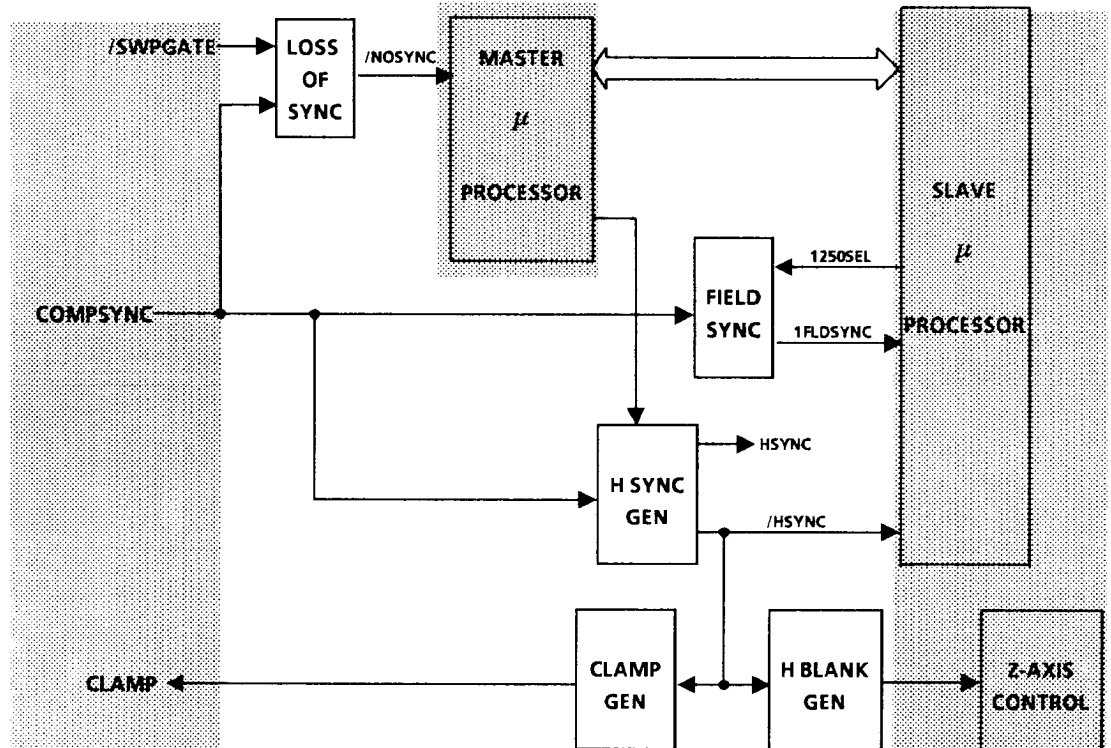
NOVRAM. U42 and U35 form the master microprocessor NOVRAM (non-volatile memory) that retains the current front-panel and auxiliary control status. Data is written in and read out through pins 3 and 4; the master microprocessor controls data in and out along with providing the serial clock. Each RAM has its own enable provided by the master microprocessor. These three lines (Clock, Read/Write, and Enable) are activated when the power is turned on, when any front-panel switch is pressed, or when a store/recall is requested.

U38 detects the loss of instrument power in time for the NOVRAM to execute a save operation. When the +5 V supply drops a few hundred millivolts, pin 7 is pulled low, causing the NOVRAM to store the current status. The front panel and auxiliary control data is saved in milliseconds when the power starts to drop below safe operating levels for the NOVRAM. U41 is a three-terminal regulator operating from the +13 V supply. As soon as the +13 V raises enough to provide a +5 V output from U41, the NOVRAM recalls the data saved so that it is available to the microprocessor when all supplies are up to their operating tolerances.

Master to Readout Interface. The CRT readout is drawn with a series of dots. Port 4 of the master microprocessor (U33) defines the horizontal component of the readout dot, while port 5 defines the vertical component of the dot. U39 and U36 are current output DACs. U43A and B convert the readout DAC output current to voltage.

R156 and R145 adjust the position of the readout on the CRT. Readout gain adjustments are in the horizontal and vertical amplifier circuits. The horizontal and vertical readout is enabled by ROEN from Port 6 of U33.

Timing
Diagram <9>



Horizontal Sync Generator. The horizontal sync generator produces a pulse that starts just before sync and ends at the leading edge of sync. Since the 1735 HD is a multi-standard instrument, the time from the leading edge of sync to the start of the pulse is programmable and controlled by U33 (Diagram 8). The ramp starts up at the leading edge of sync. A voltage comparator determines when the HSYNC pulse starts and the ramp resets.

The ramp generator consists of a current source (Q11), a capacitor (C52), a transistor (Q14) to discharge the capacitor, and an FET input operational amplifier (U24A) to provide a low impedance output. U19 is a current output DAC controlled by the master processor (U33).

U9A, a JK flip-flop, is cleared by the output of comparator U7D. When U9A is cleared, Q14 saturates and C52 discharges. When C52 is discharged, the comparator releases U9A Clear, and the flip-flop is ready for a composite sync clock.

Horizontal Blanking Generator. The horizontal blanking starts before horizontal sync and ends after horizontal sync. It is used to blank sweep retrace and switching transients.

Comparator U7C determines the leading edge of horizontal blanking by clocking U9B. C13, R26, and CR3 form a differentiator that detects the trailing edge of horizontal sync. U5 (pin 19) ends horizontal blanking by clearing U9B. The slave processor can inhibit horizontal blanking by setting /HBLANK EN high at U5, pin 9.

U10D provides a means for the slave processor to choose whether horizontal blanking will be generated on the next sync. U9B Preset lets the slave microprocessor blank the sweep directly when necessary.

1-Field Sync Generator. The 1FLDSYNC negative edge identifies the first line of field 1 for the slave microprocessor. U7B outputs a positive edge at one quarter line, and U7A outputs a positive edge at three quarters line. U6 is an asynchronous state machine that looks at where broad pulses occur to recognize fields.

Clamp Pulse Generator. The clamp pulse occurs during back porch. Its position and width are independently programmable by the slave microprocessor. The clamp ramp generator is comprised of a current source controlled by DAC U19, timing capacitor C53, and reset switch Q13. The clamp ramp starts and resets at the same time as horizontal blanking ramp. A voltage divider catches the clamp ramp at about 6 V.

Comparator U16A provides the clock to start the clamp pulse and U16B clears. The comparator thresholds are controlled by dual DAC U28. Back porch clamps are inhibited during broad pulses. They can also be inhibited directly by the slave processor to turn off the clamp pulses.

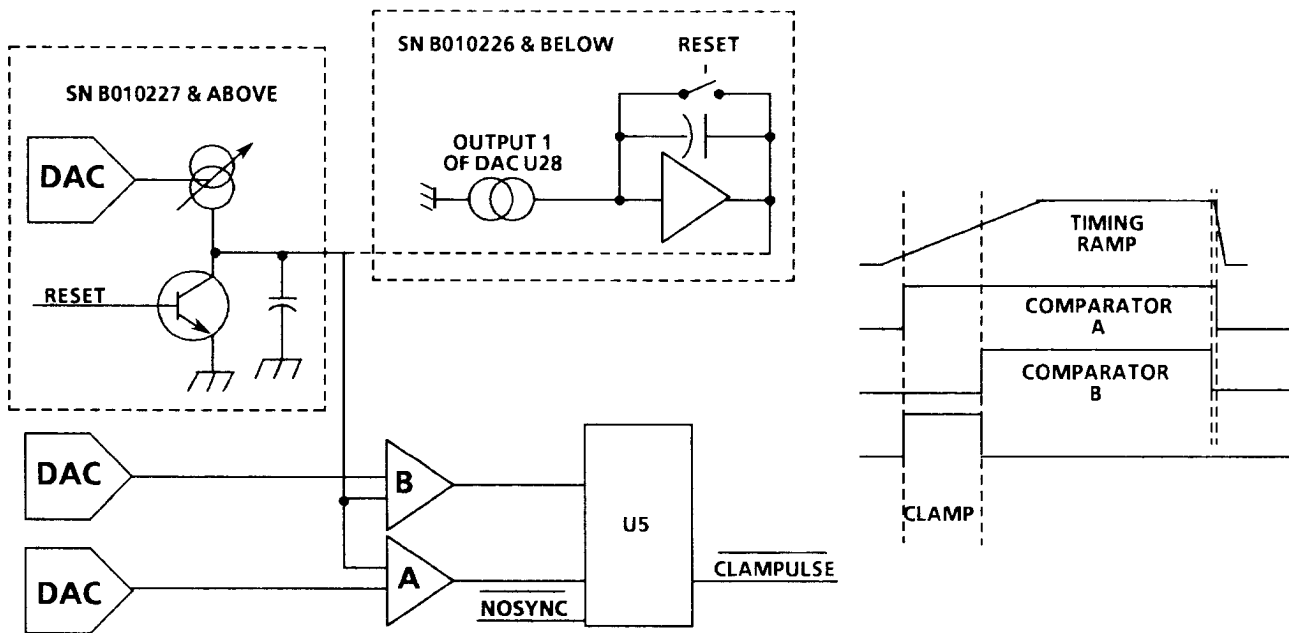
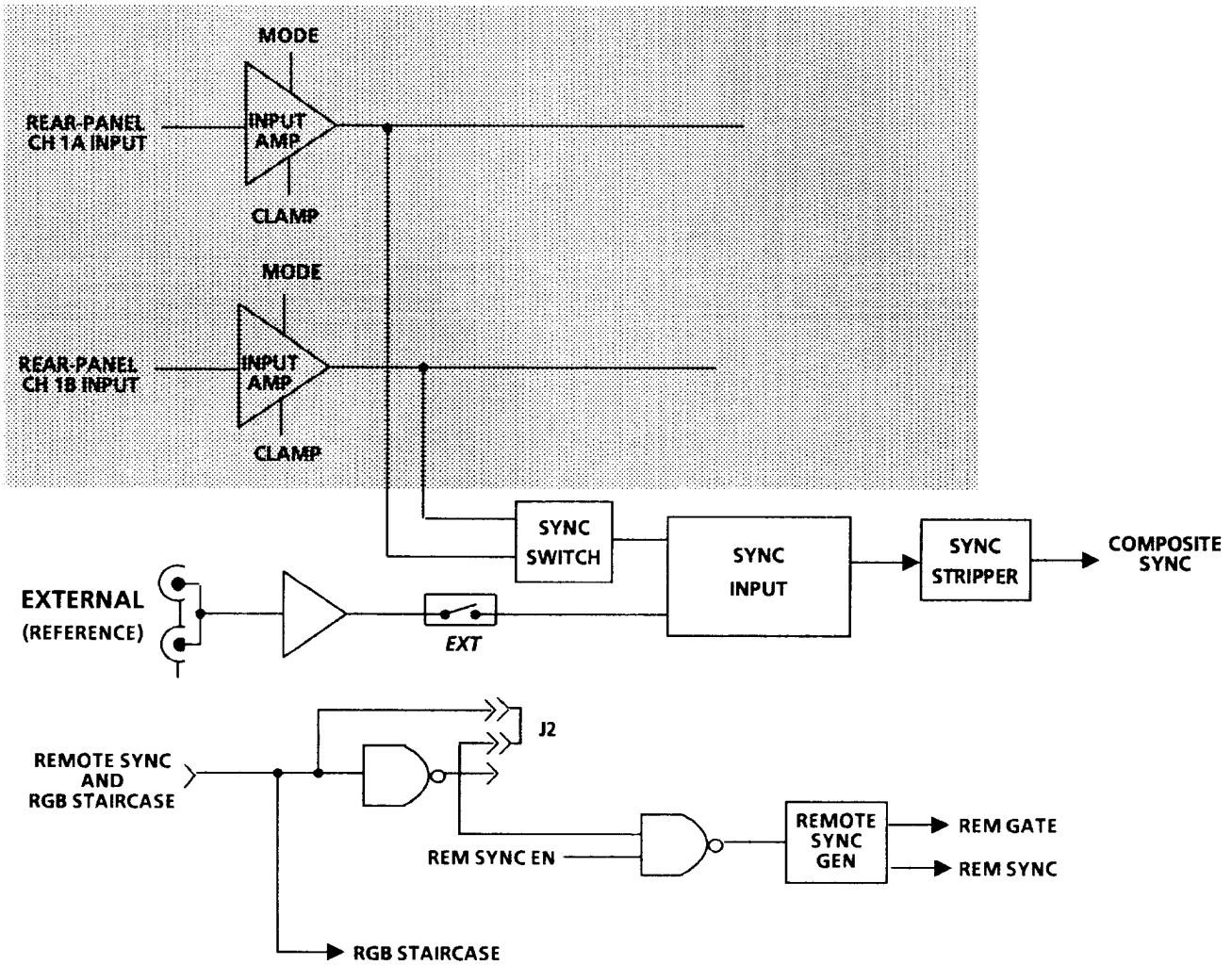


Figure 4-2: 1735 HD Clamp pulse generator

SYNC (Internal,
External, & Remote)
Diagram <10>



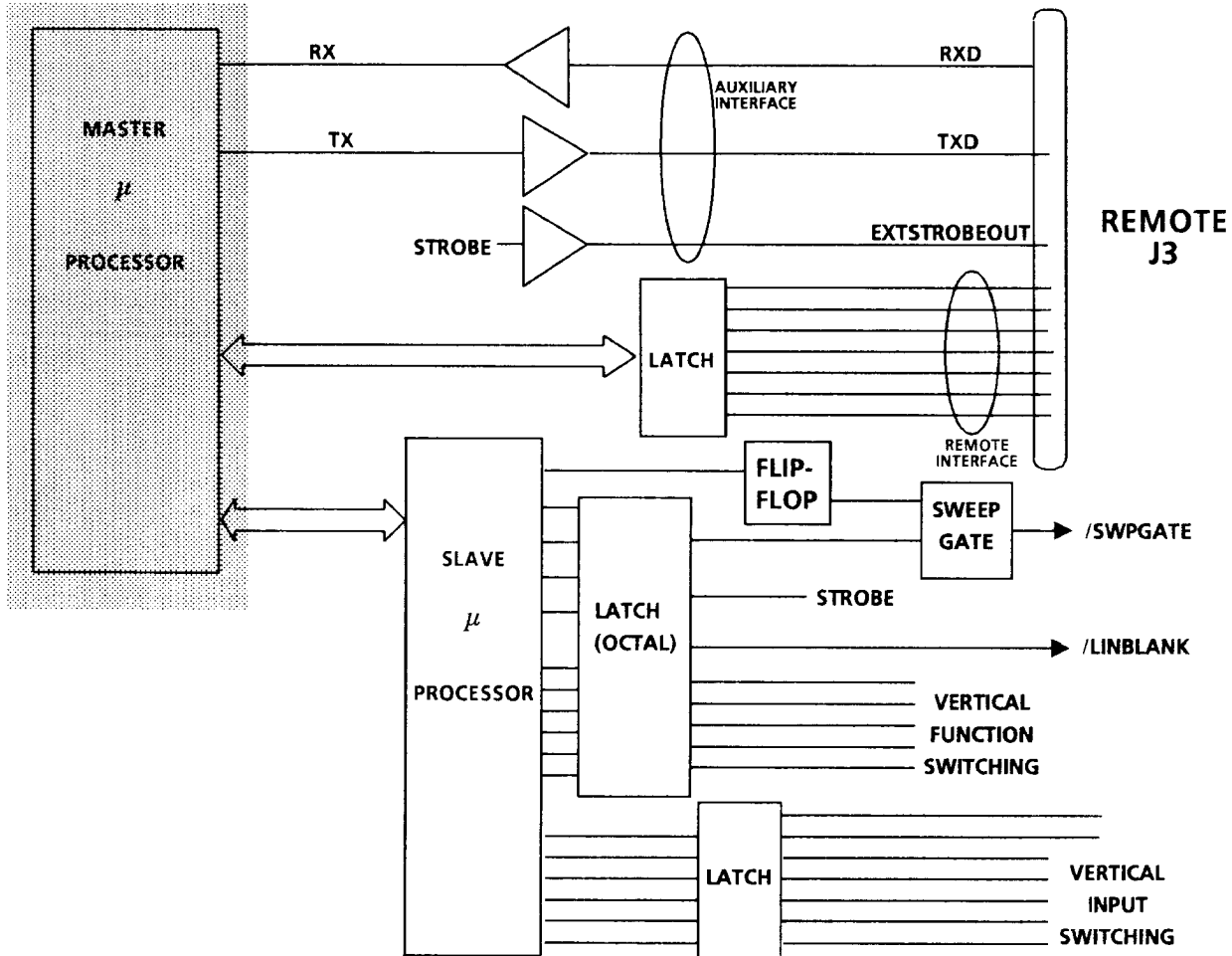
Sync Switch (for EXT SYNC). U1 and Q6 form a non-inverting feedback amplifier with R14 as the feedback resistor. Input resistors R10 and R11 bias the output to 4 V, and, with the feedback resistor, determine the amplifier gain (approximately 2). Q6 provides a low output impedance for the amplifier. R15 determines the amplifier bias currents and C7 and R25 provide compensation.

R6, R1, and R7 form a voltage divider that biases the bases of Q2 (at approximately 4 V) and Q5 (at approximately 2 V).

R8 converts the external reference voltage to current which drives Q5 and Q1. When external reference is selected, Q1 turns off and Q5 turns on. The external reference current from the collector of Q5 is added to the reference summing junction at the emitter of Q4. Q3 improves the off isolation of the external reference switch.

Sync Stripper. U2 is the sync stripper. It is a fixed gain, fixed threshold sync stripper with a sync-tip clamp. R17 is the feedback resistor for the amplifier, and R16 is the input resistor. C9 is a speed-up cap for the detector that follows the amplifier. R22 and C5 are power supply decoupling components.

Remote Sync. The Remote Sync and RGB Staircase share a common emitter follower input stage, Q8. U3D is an inverter that is used with negative-going sync signals. Sync inversion is selected by placing a plug jumper on pins 2 and 3 of J5. U3C generates the clock for U13B by ANDing remote sync with the microprocessor-generated REM SYNC EN. U13B is a JK flip-flop that is preset and cleared by the slave microprocessor (Diagram 11).

Input / Output
Diagram <11>

Master Slave Interface. The slave microprocessor (U11) acts as the main link between the master microprocessor and the hardware of the instrument. Constant serial communications between the processors keep the slave informed of any front panel changes. The slave then configures the instrument hardware to produce the correct display. The slave is also responsible for handling line counting in LINE SELECT mode.

Master Remote Interface. U17 and U25 are non-inverting tri-state buffers. They provide the means for the master microprocessor to poll the status of the REMOTE input connector (J401) through J3. Both A0 and /RD from the master microprocessor must be low to read the TTL levels on J3. If either of these lines goes high, the buffer goes to the high impedance state.

Sweep Gate. U15B NORs REM_SYNC with HSYNC, and outputs the clock signal for U12, U13A, and U14.

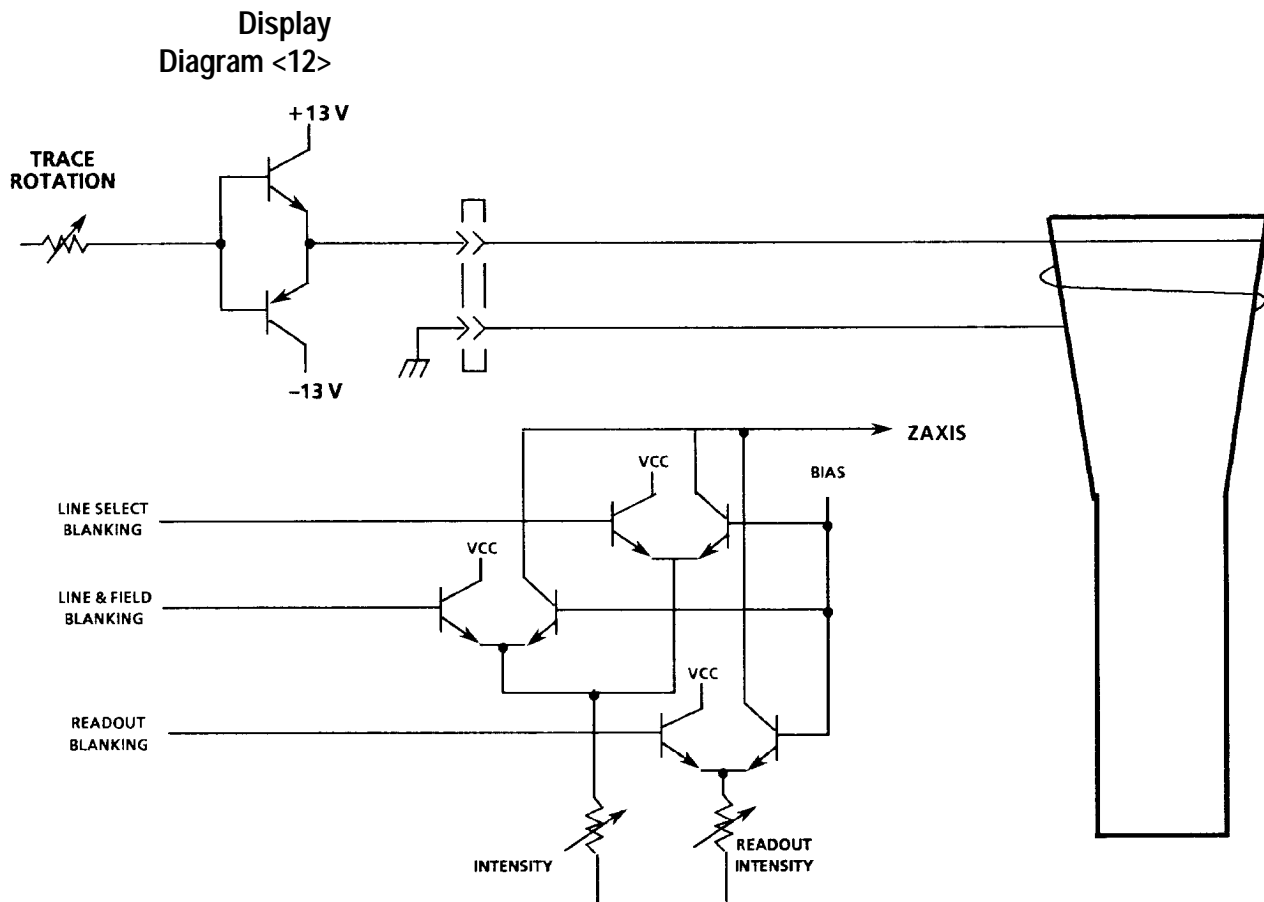
U13A is a J-K flip-flop enabled by the slave microprocessor. Its output is a single negative-going pulse. When either H SYNC or /ONELINE goes high, U15C has a low output that is inverted by U10A to satisfy one input to the /SWPGATE generator.

U14 is an 8-input D-type flip-flop that is cleared by /ROEN. It latches through slave microprocessor-generated signals VERT5X, FILTER0, FILTER1, /STRB, LINBLANK, LINSTEP, and the line sweep enable. The line sweep enable (LINSWPEN) is one of the signals used to generate the sweep gate. Clearing U14 during readout with /ROEN disables all functions that affect the display, such as vertical magnification or filters. This ensures that the readout always appears properly.

The sweep gate generator, U10B, is a 2-input NAND gate, ANDing HSYNC and LINE SWEEP ENABLE to generate the /SWPGATE used by the horizontal timing circuits (Main circuit board).

During line-rate sweeps, the slave microprocessor sets U14 pin 16 high and U13A gates through Hsync pulses to U10B at the selected period (two line or three line). During field rate sweeps, the slave microprocessor uses U13A to set U10A, pin 3 high. U14, pin 15 then directly controls sweep gating, through U10B.

U12 is an 8-input D-Type flip-flop used as a latch for the slave microprocessor video input channel select and offset select control signals.



Trace Rotate. Trace rotation is necessary to compensate for changes in the magnetic field surrounding the 1735 HD. Q18 and Q19 are emitter followers that provide the trace rotation current to a coil located inside the CRT shield, around the tube. Current amplitude and polarity are controlled by the front-panel ROTATE screwdriver adjustment.

Z-Axis Control. The outputs of four switchable current sources, combined in parallel, drive the Z-axis amplifier (the base of Q3, shown on Diagram 15). If there is no current going to the Z-axis amplifier, the CRT will be blanked (no trace).

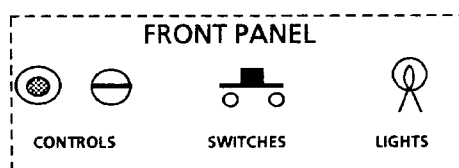
Current source U44A is described in detail below. U44B, U45A, and U45B operate similarly.

Currents from R115 and R173 sum at U44A pin 3. If the switch control input at U44A pin 1 is a logic low, the current source is ON, and the current is passed to the Z-axis amplifier input via U44A pin 13. Otherwise the current source is OFF, and the current is passed to the +5 V supply via U44A pin 14. The current source is biased by R97, CR4, and CR5 so that the logic threshold at pin 1 is near 1.3 V, and current input at pin 3 is near ground.

The front-panel intensity control sets the currents for U44A and U44B via U46B. U21A and U21B switch the current sources off during off-screen blanking, retrace blanking, and display blanking during readout time. The LINSTEP signal turns current source U44A on to boost the trace brightness during line select mode only.

The front-panel readout intensity control sets the current for U45B via U46A. The ROBLANK signal switches the current source off except during readout time.

Front Panel
Diagram <13>



Indicators and Switches. The front-panel LED indicators are arranged in seven columns returned to a current source by four returns, designated as rows, in order to provide the microprocessor with a set of column/row matrix addresses. An LED indicator lights when there is a complete circuit from the light driver (U34 on Diagram 8) through the LED and back to ground through the light driver transistor array (U37 on Diagram 8).

Switches complete a simple matrix that is read by port 1 of the microprocessor. Key condition (depressed front-panel switch) is detected using the row/column lines (ROW0–ROW3 and COL0–COL3). These lines, and their connections to the front-panel switches, are shown in Diagram 13. For this example, suppose that the front-panel REF switch is depressed. To poll the switches, the controller resets all of the row lines low and sets all of the column lines high. It then monitors the column lines, waiting for one of them to be pulled low (indicating a depressed key condition).

To determine which key is depressed, the Controller first sets all row/column lines high except ROW0, which is reset low. Next, the controller looks at the column lines again. Since the CH 2, CH 3, A, and B keys are tied to ROW0, and ROW0 is low, if one of those keys were depressed, the corresponding column line would be pulled low. In this case, the controller does not find a low on any of the column lines, so it is known that the depressed key is not CH 2, CH 3, A, or B.

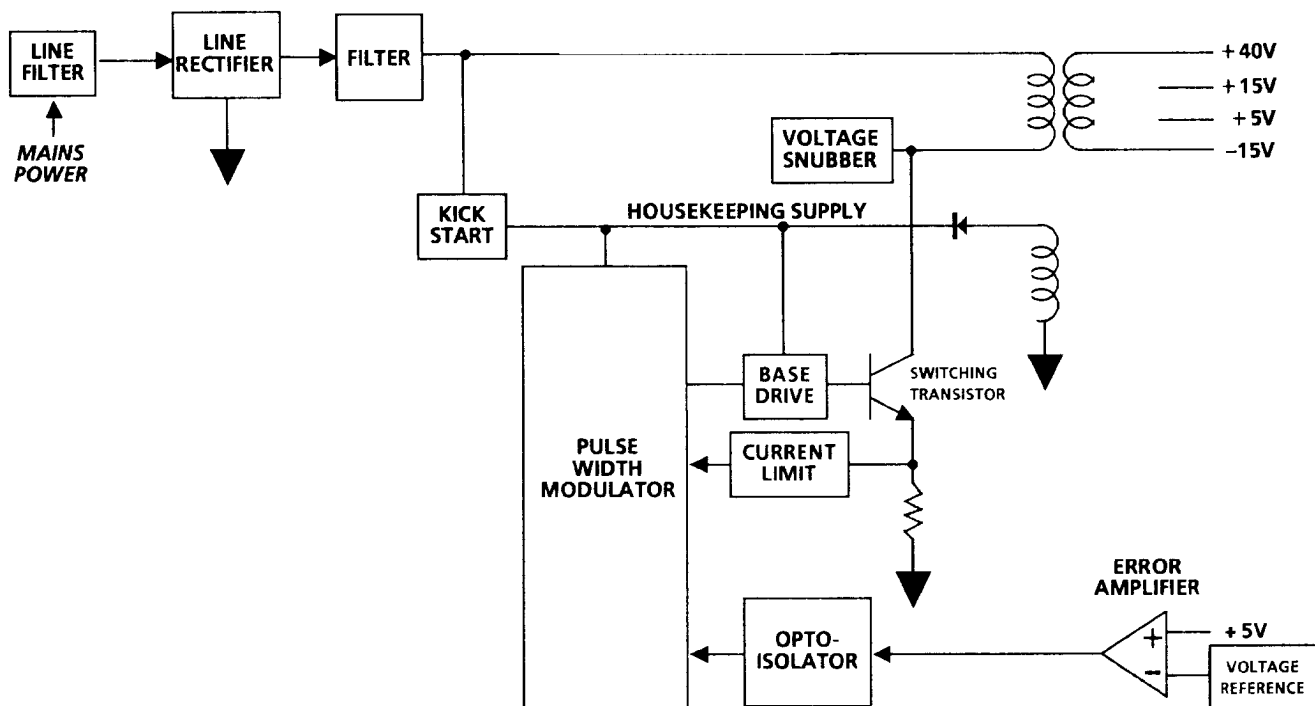
The controller next sets ROW0 high and resets ROW1 low. Again it looks at the column lines. Since one of the switches connected to ROW1 is depressed (REF), the controller finds that the corresponding column line (COL2) has now been forced low. The controller now knows that the depressed key is REF, and responds by turning on the front-panel REF LED and the associated control I/O.

After finding a key condition, the controller debounces and checks again.

Controls. A set of variable controls consisting of the horizontal position, vertical position, vertical calibration, scale and focus controls select a DC voltage level between +11.8 V and -11.8 V.

The INTENSITY control operates in conjunction with the Z-Axis control circuit on Diagram 12. DC levels for Intens 1, Intens 2, and Intens 3 depend on the operating mode selected, which dictates the level on each of the leads.

Low Voltage Power Supply
Diagram <14>



The low voltage power supply converts the mains line voltage (between 90 and 250 volts) to supply the power requirements of the instrument. The low voltages supplied from the central power supply are +40 V, +15 V, +5 V, and -15 V.

Line Rectifier and Filter. The input line voltage is filtered in the rear-panel connector to prevent AC line noise from affecting instrument performance, and to prevent any noise generated within the waveform monitor from getting back to the AC line. R125 and R131 provide surge protection, limiting initial turn-on current through the rectifier and capacitors.

The rectifier is a full-wave bridge. DS7, along with R129, C62, and R130, form a relaxation oscillator, with DS7 flashing whenever line voltage is present. In addition, C62 serves as a smoothing capacitor for the approximate 110 to 350 V rectifier output. (Rectifier output voltage is dependent on input mains voltage.) R124, L8 and C44 provide additional EMI filtering.

Controller. The controller is a pulse-width modulator which uses U4, a current-mode controller, to regulate the duty cycle driving the switcher. C45 and R98, connected to pin 4, are the timing elements for an internal oscillator that sets the operating frequency to about 80 kHz. The output at pin 6 is an 80 kHz repetition rate, variable duty cycle, square-wave signal that drives the switcher. Pin 8 supplies a 5 V reference, and pin 3 is the current sensing of the switcher source current.

When the switcher is running, V_{CC} for the controller is supplied by a housekeeping supply. CR20 is the coupling diode for this supply. Before controller start-up, C42 is charged from the line, through parallel resistors R200 and R201. Charging current is approximately 2 mA. When the charge on C42 reaches approximately 16 V, U4 starts and provides the switcher driving waveform. Once the switcher is operating, the 16 V housekeeping supply is provided from T2, through CR20.

Switching Transistor. The low-voltage power supply is of the flyback type. Q16 is the main switching transistor, switching at 80 kHz. When it is turned on, its drain voltage is 0 V and the current raises linearly, charging T2 with a current ramp. When Q16 turns off, the drain voltage “flies back” in a positive direction. This flyback action on the primary of the transformer drives the secondary windings with the correct voltage. The amount of power delivered to the secondaries is dependent on the duty cycle driving the gate of the switching transistor.

Voltage Snubber. CR21 and C43 form a voltage snubber to keep the voltage on the drain of Q16 from getting too high. CR24 and C49 slow the rising edge of the switching transistor pulse to reduce electrical noise.

When the switcher is running, a voltage ramp representing the source current of Q16 is applied to pin 3 of U4. Pin 1 is the DC level output of an internal error amplifier. The internal error amplifier compares the current sense voltage ramp to the DC level at pin 2. R87 provides a negative feedback voltage from pin 1 to the current node at pin 2. The current into the pin 2 node is approximately 1 mA/–10 V of DC level. This current is comprised of the power supply secondary error voltage, coupled through T3, and the negative feedback through R87. It holds the output of the controller to 5 V.

The timing waveform for the internal 80 kHz oscillator is a sawtooth waveform whose repetition rate and slope are determined by C45 and R98.

Shutdown Logic. Shutdown logic consists of three comparators that drive Q19. When the output of one or more of the comparators goes negative, Q19 pulls pin 3 of U4 high and shuts off the controller. U5B, C, and D are all wired as comparators.

U5D provides short-circuit protection. When the error voltage goes low, C56 starts to discharge through R99. If the error voltage stays low, the output of U5D goes low and causes Q19 to turn off the controller. Once turned off, the supply will attempt to restart at a repetition rate of about once or twice per second. There will be an audible ticking sound when the supply attempts to start under shorted conditions.

U5C is the low-line voltage disable. It outputs a low that turns off the controller (through Q19) anytime the incoming line voltage drops below about 80 VAC. U5B shuts down the power supply if the housekeeping supply falls below approximately +13 V.

Transformer Driver, Peak Detector, and Power Switch Receiver. Secondary circuits are isolated from the primary by T2 and T3. T2 is the power transformer and T3 couples needed feedback from the power supply secondary circuits to the isolated primary side. The sawtooth waveform used for controller timing is emitter-follower coupled to U5A, a square wave generator that drives Q18 with an 80 kHz square wave. Current through Q18 is the primary current for T3. Q12, across the secondary, is driven by the Error Amplifier. The signal voltage on the primary is a reflection of the secondary loading, and is detected by the peak detector.

The peak detector consists of CR23 and Q14. Its output is the negative feedback for the controller output.

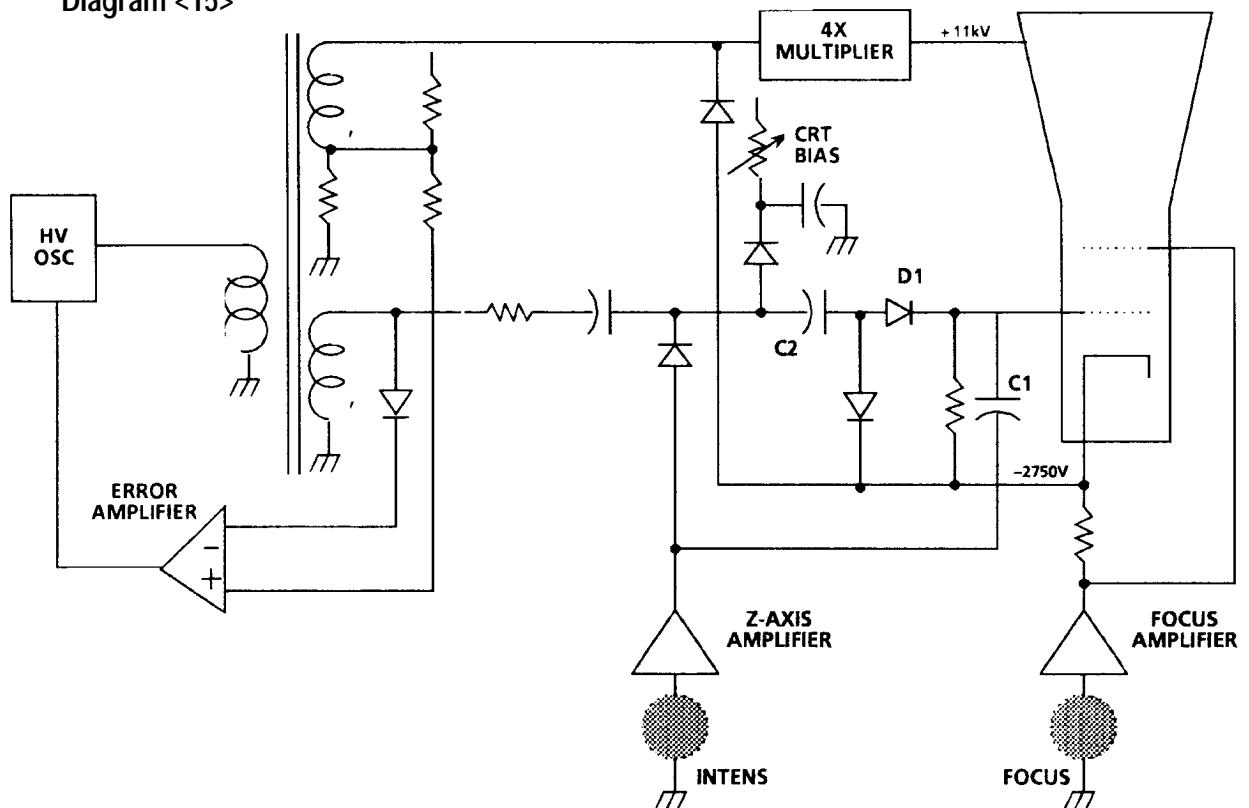
Q13 and Q15 form the power switch receiver. When the instrument POWER switch is on, its contacts are open. With the switch contacts open, Q18 drives the primary of T3 positive and allows the primary to “fly back.” When the primary flies back, Q13 is turned on and its collector goes low, keeping Q15 turned off. When the POWER switch is turned off (contacts closed), there is no signal voltage developed across the transformer, which causes Q13 to turn off and Q15 to turn on. The collector of Q15 pulls down and turns on Q19, which pulls pin 3 of the controller high and turns it off.

Output Filters. Two of the three secondary windings produce a single voltage level (+5 V and +40 V). The third winding is center tapped and outputs +15 V and 15 V. Each supply is rectified by a single diode (frequency is 80 kHz) and smoothed by an LC pi filter, consisting of a single inductor and 2 filter capacitors.

Over-Voltage Protection. Over-voltage protection is provided to protect the instrument from damage if the supply fails to regulate. If the +5 V supply rises to approximately 5.8 V, VR1 conducts, causing Q11 to conduct and ground the +5 V supply. This forces the supply into current limit and shuts the controller down.

Voltage Reference and Error Amplifier. The internal reference for U3A is 0.2 V. R79 (Rf) and R77 (Ri) set the reference output to 2.5 V. U3B is a comparator. R70 is the 5 V ADJ, which allows variations in the 5 V supply to modulate the secondary of T3 and generate the waveform sampled by the peak detector circuit. C41 and R76 dampen high frequency oscillations.

High Voltage Power
Supply
Diagram <15>



The High Voltage Power Supply generates the heater, cathode, control grid, focus anode, and post accelerating potentials required to display the outputs of the Vertical and Horizontal Output Amplifiers.

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 25 kHz. The 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, through Q9 and Q10. The +100 V output is monitored directly, while the high voltage power supply is monitored through a feedback circuit.

R40, C15, and R63 form the high voltage power supply positive 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 reduces the base drive to Q7, the high volts oscillator. This positive feedback compromises the regulation of the 100 V supply to keep the high voltage constant with varying intensities.

C26 and Q8 are a start delay circuit that holds the error amplifier output low, through CR11, until C26 is charged from the 15 V supply. 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. CR6 is the high voltage rectifier. Smoothing capacitors C6 and C7 work with CR6 to provide -2750 V to the CRT cathode. U1 is a four-times multiplier, providing +11 kV to the CRT anode.

Focus Amplifier. Q2 and Q1 form an operational amplifier that sets the voltage at the bottom of the focus divider. The front-panel FOCUS control determines the voltage at the bottom of the focus divider. The Center Focus control, R10, 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 adjustment has been set, adjusting 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 grid and the cathode of the CRT are at a 2750 V potential with the grid effectively DC coupled to the Z-axis amplifier by the Grid Drive circuit. The unrectified, 25 kHz sine-wave output from the +100 V supply winding is input to a modulating circuit, where it is clipped and rectified for use as CRT control grid bias.

The sine wave from the 100 V supply winding of T1 is coupled through C16 to a clipping circuit consisting of CR7 and CR8. Clipping level for the positive excursion of the sine wave is set by the CRT Bias adjustment, R52; negative clipping level is set by the front-panel intensity control through the Z-axis amplifier. The clipped sine wave is coupled through C11 to a rectifier made up of CR4 and CR5.

The rectified, clipped sine wave is the CRT control grid bias voltage. C8 is a speedup capacitor for the fast transitions of the blanking signal, from the Z-axis amplifier. DS1 and DS2, and DS4 limit the CRT grid to cathode voltage at instrument turn on and off.

Z-Axis Amplifier. This is a high gain inverting amplifier with feedback. R5 stabilizes the gain at a low value. The input is the summing junction at pin1 of J5, which is set to +5 V by R6 and R18, so that the Z-axis control circuit on the Main circuit board (A3) can drive this amplifier. When there is no input current from the Z-axis control, the output is set to +10 V by R11. When there is input current, the output is driven more positive. Q3 is an emitter follower that drives Q4, which with Q6 forms a cascade pair for good high frequency performance. Q5 is a constant current source that is the collector load for Q6. The collector of Q6 is the output of the Z-axis amplifier. C12 speeds up the constant current source, Q5, for the fast transitions of the blanking pulses. DS5 and DS3 are neon bulbs intended to prevent damage to the Z-axis amplifier if there is a CRT high voltage discharge.



Performance Verification

Performance Verification

This sections consists of two separate procedures. First is the Performance Check, used to determine compliance with the Performance Requirements in the Specification. Next is the Adjustment Procedure, used to return the instrument to operation within specifications.

In both procedures, controls and connectors on the 1735 HD front panel and rear panel are fully capitalized (such as TWOLINE). Control and connector names on test equipment, as well as internal controls and adjustments for the instrument under test, are initial capitalized (such as Time/Div).

Recommended Equipment List

The following equipment and accessory items are required to do the Performance Check and/or Adjustment Procedures. Broad specifications are followed by an example of equipment that meets these specifications. In most cases, the following procedures were prepared using the recommended equipment.

Table 5-1: Recommended equipment list

Description	Requirements	Example
Electrical Instruments		
Test Oscilloscope		Tektronix 2465B Oscilloscope with an Opt. 05 (TV Trigger), and a 10X probe (P6137).
Vertical Amplifier:	100 MHz Bandwidth, 5 mV Sensitivity.	
Time Base:	10 ns/div to 5 ms/div sweep speeds, triggering to 5 MHz.	
Television Signal Generator	The generator must be capable of delivering a Color Bar test signal, a Five-Step Linearity signal, a Field Rate Square Wave signal, a 10% to 90% DC Bounce signal, a swept wave of 0-30 MHz $\pm 2\%$, and a Sync signal for the television standard of the monitor to be tested.	Tektronix TSG 1001.
Sine-Wave Generator	Frequency Range: at least 250 kHz to 30 MHz.	Tektronix SG503 Leveled Sine-Wave Generator installed in a Tektronix TM500 Series Power Module.
Function Generator	Signal: capable of a +5 V / -5 V square wave at 2 kHz.	Tektronix FG 502 Function Generator installed in a Tektronix TM500 Series Power Module.
Calibration Generator	Signal: 0-1 V fast rise pulse with trigger output.	Tektronix FG 506A Calibration Generator installed in a Tektronix TM500 Series Power Module.

Table 5-1: Recommended equipment list (Cont.)

Description	Requirements	Example
Voltmeter	Range: 0 to greater than 100 VDC. Accuracy: $\pm 0.1\%$.	Tektronix DM501A in a TM500 Series Power Module.
Video Amplitude Calibrator	Signal: adjustable square wave 0.0 mV to 999.9 mV p-p with a resolution of 0.1 mV. Accuracy: $\pm 0.05\%$. Frequency: approximately 270 Hz.	Tektronix 067-0916-00 in a TM500 Series Power Module.
Peak-to-Peak Detector Amplifier		Tektronix Part Number 015-0408-00 (includes one 015-0413-00 Peak-to-Peak Detector Head), installed in a Tektronix TM500 Series Power Module.
Power Module	For powering up and housing SG503, DM501A, 067-0916-00, and 015-0408-00.	Tektronix TM506 Power Module.
Variable Autotransformer		General Radio Metered Auto Transformer W10MT3W. If 220 V operation must be checked, a conversion transformer or appropriate 220 V autotransformer is needed.
Spectrum Analyzer	With a Tracking Generator.	Tektronix 2712 Spectrum Analyzer.
Auxiliary Equipment and Accessories		
Return Loss Bridge	For use with the spectrum analyzer.	Wide Band Engineering Company RF Bridge model A57T.
75 Ω Precision High Frequency End-Line Termination	0.25% DC accuracy, with return loss of 42 dB or greater up to 30 MHz. (For use with the Return Loss Bridge.)	Wide Band Engineering Company precision fixed terminator model A56T75B.
Sine-Squared Pulse Filter	Having a 7-pole Thomson filter.	Allen Avionics Sine-Squared Pulse and Bar Network model 4249.
75 Ω End-Line Terminations (at least seven are needed)	75 Ω end-line termination	Tektronix Part No. 011-0102-00.
75 Ω Feed-Through Termination (two are needed)		Tektronix Part No. 011-0055-01.
Dual Input Coupler	Matched BNC cable-T. Matched length of the two arms within ± 0.1 inch.	Tektronix Part No. 067-0525-02.
50-to-75 Ω Minimum Loss Attenuator (two are needed)		Tektronix Part No. 011-0057-00.
75 Ω Coaxial Cables (at least four are needed)	42-inch, with male BNC connectors.	Tektronix Part No. 012-0074-00.
50 Ω Precision Coaxial Cable (two are needed)	42-inch, with male BNC connectors.	Tektronix Part No. 012-0482-00.
50 Ω Cable to Square Pin Jumper Adapter	Make an adapter which consists of a BNC barrel connector, a BNC male connector, a short length (six inches) of 50 Ω coaxial cable, and a two-pin square pin jumper.	

Table 5-1: Recommended equipment list (Cont.)

Description	Requirements	Example
BNC Female to Dual Banana Plug Adapter		Tektronix Part No. 103-0090-00.
RGB Test Connector	15-pin, subminiature, D-type connector modified as shown in Figure 5-1.	

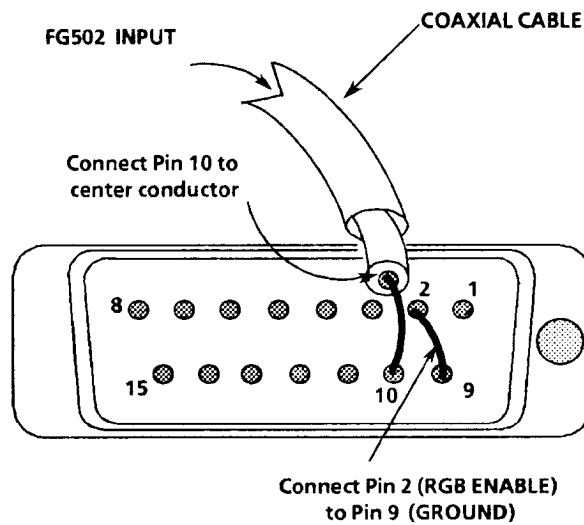


Figure 5-1: REMOTE connector modified to check RGB operation

Performance Check

The Short Form Performance Check is provided for those familiar with the complete check procedure, and the Standard Performance Check Procedure is provided for those who need more detailed instructions.

Both forms of the performance check procedure use the same step numbers, so the short form can be used as an index to the standard form.

Short-Form Procedure

1. Preliminary Setup
2. Check Power Supply Operation
3. Check Trace Rotation Range
4. Check Sweep Operation
5. Check Sweep Timing and Linearity
6. Check RGB/YRGB Display
7. Check Operation of External Horizontal
8. Check X1 and X5 Vertical Gain
9. Check Calibrator Amplitude
10. Check Vertical Position Range and Variable Gain Range
11. Check PIX MON OUT Gain and Strobe Pulse
12. Check PIX MON OUT DC Level
13. Check Clamped and Unclamped DC Levels
14. Check Offset Operation
15. Check DC Restorer Operation
16. Check X1 and X5 Flat Response
17. Check PIX MON OUT Frequency Response
18. Check CH 1B Subtract
19. Check X1 Transient Response
20. Check X5 Transient Response
21. Check Square Wave Tilt
22. Check Noise Filter Response
23. Check Return Loss

Standard Performance Check Procedure

NOTE. When selecting an input channel, CH1, CH2, or CH3 must be selected as well as A or B. (For example, push the CH1 and A buttons for a display of CH1A.)

When selecting a sweep rate, the ONE/TWO/THREE and LINE/FIELD buttons must both be pushed. (For example, push ONE and LINE for a one-line display.)

1. Preliminary Setup

- a. Connect the 1735 HD AC power cord to the variable autotransformer as shown in Figure 5–2. Turn power on and set the autotransformer for the voltage shown by the rear-panel line voltage indication.
- b. Set the 1735 HD front panel as shown in Table 5–2.

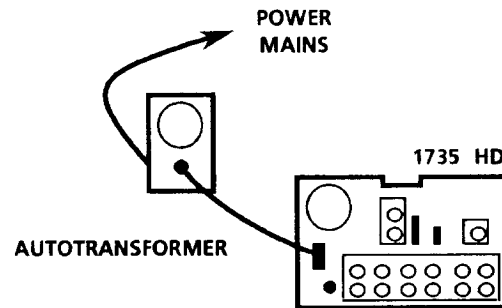


Figure 5–2: Initial equipment hookup for Performance Checks

Table 5–2: 1735 HD initial control settings

Control	Setting
POWER	ON
INPUT	CH 1A
CLAMP	off
REF	CH 1
VAR	Off
FILTER	FLAT
ONE – TWO – THREE	ONE
LINE – FIELD	LINE
MAG – READOUT	Off
LINE SELECT	Off
FOCUS	as desired

Table 5-2: 1735 HD initial control settings (Cont.)

Control	Setting
SCALE	as desired
INTENS	as desired

2. Check Power Supply Operation

Requirement: Operation over any mains voltage of 90 – 250 V.

- a. Turn ON the 1735 HD and adjust the controls for a usable display.
- b. Turn READOUT On and verify that the 1735 HD is set for the desired line rate. If the line rate must be changed, enter the MENU, select LINES/FRAME, then select the desired line rate, then exit the MENU. Turn Off the READOUT.
- c. Vary the autotransformer from low-line to high-line voltage (90–132 V for 110 V operation, or 180–250 V for 220 V operation).
- d. Check for stable operation over the prescribed voltage range.

3. Check Trace Rotation Range

Requirement: Adjustment range should be more than $\pm 1^\circ$ from horizontal.

- a. Check that the trace rotates more than $\pm 1^\circ$ from the base line as the front-panel TRACE ROTATION control is turned throughout its range.
- b. Set the TRACE ROTATION control so the trace is aligned parallel to the graticule base line.

4. Check Sweep Operation

Requirement: Sweep occurs in all horizontal sweep modes with or without synchronization. TWO FIELD sweep repetition rate is equal to frame rate of applied video or external sync. Synchronization: Internally, sweep will synchronize to a sync amplitude of 300 mV peak-to-peak ± 6 dB or tri-level sync of ± 300 mV ± 6 dB; externally 143 mV to 4 V.

- a. Check that a sweep occurs in all the horizontal sweep modes when no signals or external reference are applied to the instrument.
- b. Connect a 75 Ω cable from the TSG 1001 G/Y output to the 1735 HD CH 1A INPUT. Terminate the remaining side of the loop-through input in 75 Ω . Connect the TSG 1001 SYNC OUT signal to the 1735 HD EXT Input and terminate the remaining side of the loop-through input in 75 Ω .

- c. Select CH 1A INPUT and EXT REF. Sync amplitude should be 300mV when loaded by 75 Ω .
 - d. Check that a sweep occurs in all the unmagnified horizontal sweep modes. TWO FIELD Sweep should be equal to the frame rate of the applied video or external sync.
 - e. Remove the termination from the EXT REF connector.
 - f. Check that the waveform display stays locked.
 - g. Connect three 75 Ω terminations to the EXT REF Input.
 - h. Check that the waveform display stays locked.
 - i. Remove two of the terminations from the EXT REF connector.
 - j. Remove the termination from the CH 1A INPUT. Loop-through connect the input signal from CH 1A to CH 2A and CH 3A. Terminate CH 3A in 75 Ω .
 - k. Check that the ONE LINE, TWO LINE, and THREE LINE Sweep modes display one, two, and three lines of the Color Bar signal, respectively.
 - l. Select TWO LINE Sweep and center the display. Push the MAG button.
 - m. Check that some portion of the sync pulse is displayed.
 - n. Check that both lines of the display can be positioned on screen with the HORIZONTAL Position control.
 - o. Select TWO FIELD Sweep and turn On the MAG.
 - p. Check that both ends of the display can be positioned on screen.
 - q. Select THREE LINE Sweep.
 - r. Check that all three lines of the display can be positioned on screen.
 - s. Remove the loop-through cables and move the 75 Ω termination to CH 1 A INPUT.
5. Check Sweep Timing and Linearity

Requirement: 10 μ s/division (TWO LINE Sweep), timing accuracy to within $\pm 2\%$. 5 μ s/division (ONE LINE Sweep), timing accuracy to within $\pm 2\%$. 1 μ s/division (TWO LINE Sweep with MAG On), timing accuracy to within $\pm 2\%$, Integral Linearity to within $\pm 1\%$. 0.2 μ s/division (ONE LINE Sweep with MAG On), timing accuracy to within 3%.

- a. On the TSG 1001, select Zone Plates Signal Set, and press the Monitor Setup button.

- b. Set the sine wave frequency to 100 kHz.
- c. Select CH 1A INPUT and TWO LINE Sweep on the 1735 HD.
- d. Use the 1735 HD VERTICAL and HORIZONTAL Position controls as needed to position the first line of the display so that the tips of the sine wave align with major divisions on the graticule blanking level. See Figure 5-3a.

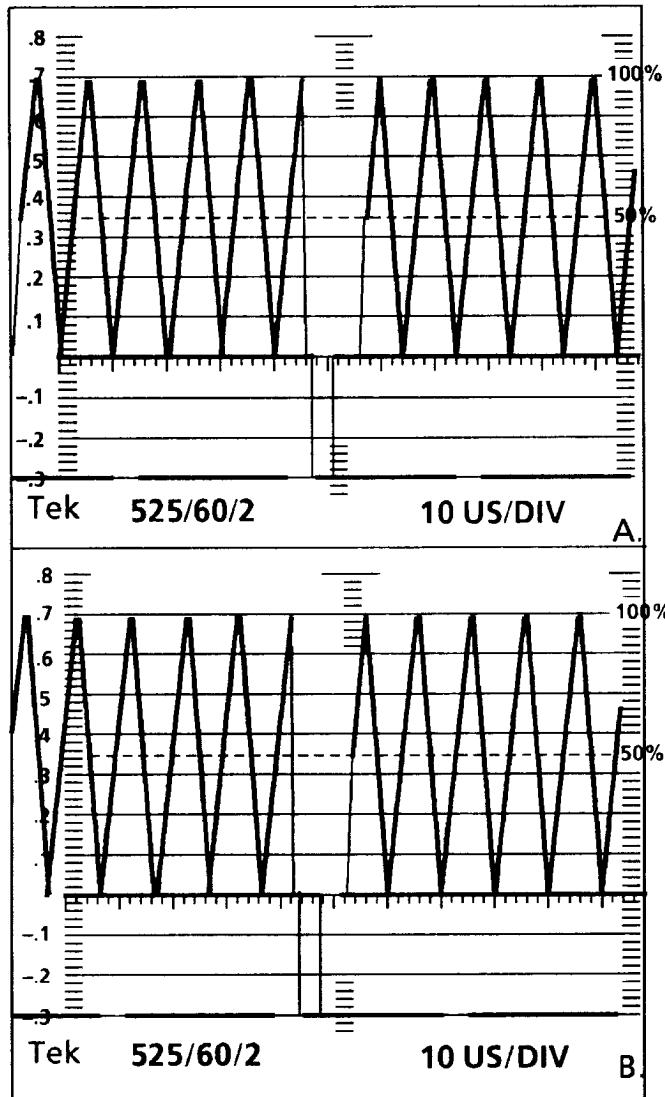


Figure 5-3: Checking horizontal timing

- e. Check for one cycle/division on the first line of the display, with each of the other marks falling within one minor division of a major division graticule mark.
 - f. Use the HORIZONTAL Position control to position the second line of display so that the tips of the sine wave align with major divisions on the graticule blanking level. See Figure 5–3b.
 - g. Check for one cycle/division on the second line of the display, with each of the other marks falling within one minor division of a major division graticule mark.
 - h. Set the TSG 1001 sine wave frequency to 1 MHz.
 - i. Turn the 1735 HD MAG On.
 - j. Check for one cycle/division over the center 10 divisions of the display, with each of the other marks falling within one minor division of a major division graticule mark.
 - k. Adjust the TSG 1001 sine wave frequency, if necessary, for exactly one cycle/division over the center 10 divisions of the display.
 - l. Check for one cycle/division over the center 10 divisions of the display, with each of the other marks falling within 0.5 minor divisions of a major division graticule mark.
 - m. Select ONE LINE Sweep and MAG Off on the 1735 HD.
 - n. Set the TSG 1001 sine wave frequency to 200 kHz.
 - o. Check for 1 cycle/division over the center 10 divisions, to $\pm 3\%$ (.3 major division).
 - p. Turn the 1735 HD MAG On.
 - q. Set the TSG 1001 frequency control to 5MHz.
 - r. Check for 1 time mark per major division over the center 10 divisions, to $\pm 3\%$ (.3 major division).
 - s. Turn Off the 1735 HD MAG.
6. Check RGB/YRGB Display

Requirement: Attenuated sweep: 3.4 to 4.1 divisions for 3-step display, or 2.5 to 3.1 divisions for 4-step display. Staircase input gain: a 10 V input will equal 9 horizontal divisions, ± 1 division. Attenuated sweep responds to sweep rate and magnification controls.

- a. On the TSG 1001, select Ram Board signal set, and the NTSC SMPTE Bars signal.

- b.** Display the SMPTE Bars signal in TWO LINE Sweep and center the display.
 - c.** Set the function generator for a -5 to $+5$ V, 2 kHz square wave.
 - d.** Connect the output of the function generator to pin 10 of the REMOTE connector and connect pin 2 (RGB Enable) to pin 9 (Ground) as shown in Figure 5–1.
 - e.** Check that the sweep has shortened to 3.4 to 4.1 divisions for a 3-step display, and 2.5 to 3.1 divisions for a 4-step display (moving A3J6 as needed to obtain 3-step and 4-step displays).
 - f.** Check for a one line display.
 - g.** Select FIELD Sweep.
 - h.** Check for a one field display.
 - i.** Turn On the 1735 HD MAG.
 - j.** Check that the sweep is magnified.
 - k.** Check that the display can be moved to the sides of the screen with the HORIZONTAL Position control.
 - l.** Turn Off the MAG and select LINE Sweep.
 - m.** Check that there are 8 to 10 divisions of separation between the start of the first display and the start of the second display.
 - n.** Return A3J6 to the desired operating position.
- 7.** Check Operation of External Horizontal

Requirement: A 10V input will result in a horizontal display of 9 divisions, ± 1 major division.

- a.** Leave the function generator and REMOTE connector set up as in Step 6.
- b.** Enter the MENU and select EXT HORIZ YES. Exit the MENU.
- c.** Check that there are 8 to 10 divisions of horizontal deflection.
- d.** Enter the MENU and select EXT HORIZ NO. Exit the MENU.
- e.** Disconnect the REMOTE connector and the TSG 1001 signal from the 1735 HD. (Leave the EXT REF connections in place.)

8. Check X1 and X5 Vertical Gain

Requirement: With VAR Gain control in detent and 1 V signal applied, the vertical deflection of the displayed signal should be 1 V peak-to-peak within a tolerance of $\pm 1\%$. X5 Gain within 5% with 200 mV input.

- a. Connect a 999.9 mV signal from the VAC to the 1735 HD CH 1A INPUT. Leave the loop-through unterminated.
- b. Select the following settings on the VAC: CHR P-P, NTSC, and Manual.
- c. Select 1735 HD CH 1A INPUT (all other input channels off).
- d. Check that the peak-to-peak amplitude of the display is 1 V. Measure from the -0.3 graticule line to the 0.7 graticule line. Tolerance is $\pm 1\%$ (10 mV).
- e. Repeat steps a. through d. for INPUTs CH2A, CH 3A, CH 1B, CH 2B, and CH 3B.
- f. Connect the VAC signal to the 1735 HD CH1A INPUT.
- g. Set the VAC to 200.0 mV and change the 1735 HD Gain to X5.
- h. Select the 1735 HD CH 1A INPUT (all other input channels off).
- i. Check that the peak-to-peak amplitude of the display is 1 V, $\pm 5\%$ (50 mV).
- j. Repeat steps f. through i. for INPUTs CH2A, CH 3A, CH 1B, CH 2B, and CH 3B.

9. Check Calibrator Amplitude

Requirement: Amplitude should be 700 mV within a tolerance of $\pm 1\%$.

- a. Enter the 1735 HD MENU and select the Calibration signal through the MENU.
- b. Check for a displayed amplitude of 700 mV, $\pm 1\%$ (7 mV).
- c. Press the FIELD button to exit the CALIBRATION mode.

10. Check Vertical Position Range and Variable Gain Range

Requirement: Position Range: 1 V signal can be positioned so that peak white or sync tip can be placed at blanking level, with Clamp on in any gain setting. Variable Gain Range = +5 dB, -20 dB

- a. Disconnect the VAC signal from the 1735 HD. Connect the TSG 1001 G/Y output to the 1735 HD CH 1A input and terminate the loop-through in 75Ω .

- b.** Select CH 1A INPUT, X5 maximum VAR Gain, and CLAMP On.
- c.** Check that the white bar and sync tip can be positioned to the blanking level.
- d.** Select X1 minimum VAR Gain.
- e.** Check that the white bar and sync tip can be positioned to the blanking level.
- f.** Turn Off the CLAMP.
- g.** Remove the TSG 1001 signal and terminator from the 1735 HD CH 1A INPUT. Connect a 999.9 mV signal from the VAC to the CH 1A INPUT.
- h.** Check using VAR Gain, that the signal can be adjusted to 100mV or less.
- i.** Set the VAC Amplitude to 562.0 mV.
- j.** Check using VAR Gain, that the signal can be adjusted to 1 V or more.
- k.** Turn Off VAR Gain.

11. Check PIX MON OUT Gain and Strobe Pulse

Requirement: Rear panel input to PIX MON OUT has unity gain, to $\pm 5\%$. Selected line DC offset by approximately 180mV.

- a.** Set the VAC Amplitude to 999.9 mV and select ONE LINE Sweep on the 1735 HD.
- b.** Connect a 75 Ω cable with a 75 Ω in-line termination from the 1735 HD rear-panel PIX MON OUT to the test oscilloscope vertical input.
- c.** Set the test oscilloscope as follows:

Volts /Div	200 mV
Coupled	DC
Time/Div	10 ms
Trig	Int/Auto/AC
Trig Slope	–

Adjust for a triggered display.

- d.** Check that the amplitude of the VAC signal, as viewed on the test oscilloscope, is between .950 and 1.05 V.
- e.** Disconnect the VAC signal from CH 1A INPUT.
- f.** Turn On the 1735 HD LINE SELECT.
- g.** Set the test oscilloscope for 5 ms/Div and adjust for a triggered display.

- h.** Check that the intensified pulse has a DC level shift of approximately 180 mV.
- i.** Turn OFF the 1735 HD LINE SELECT.
- j.** Check using VAR Gain, that the signal can be adjusted to 100 mV or less.
- k.** Set the VAC Amplitude to 562.0 mV.
- l.** Check using VAR Gain, that the signal can be adjusted to 1V or more.
- m.** Turn Off VAR Gain.

12. Check PIX MON OUT DC Level

Requirement: DC level within $\pm 100\text{mV}$ of 0V.

- a.** Terminate all six video inputs (CH 1A through CH 3B) in $75\ \Omega$.
- b.** Set the test oscilloscope as follows:

Time	20 μs
Trig In	Auto/Ac
Slope	–
Volts per Div.	50 mV
Trig	Int/Auto/AC
Coupling	DC
- c.** Set the test oscilloscope Coupling to Ground. Set reference to center screen, then return the Coupling to DC.
- d.** Select no INPUTs, EXT REF, TWO LINE Sweep, CLAMP Off, and READOUT Off.
- e.** Check that the level at the PIX MON OUT is 0 V, $\pm 100\text{ mV}$.
- f.** Disconnect PIX MON OUT from the test oscilloscope.

13. Check Clamped and Unclamped DC Levels

Requirement: DC level of blanking is 0 V, $\pm 100\text{ mV}$ with the DC Restorer On or Off for DC coupled, and DC Restorer On for AC coupled.

- a.** Select A INPUT, X5 Gain, THREE LINE Sweep, and GND On.
- b.** Position the trace to the 0 mV line, and turn Off the GND.
- c.** Check CH 1A, CH 2A, and CH 3A for a DC level of 0 V, $\pm 1\text{ mV}$ as viewed on the 1735 HD.
- d.** Select the B INPUT on the 1735 HD.

- e. Check CH 1B, CH 2B, and CH 3B for a DC level of 0 V, ± 1 mV as viewed on the 1735 HD.
- f. Turn Off DC CPLG and select CLAMP.
- g. Check CH 1B, CH 2B, and CH 3B for a DC level of 0 V, ± 1 mV as viewed on the 1735 HD.
- h. Select the A INPUT on the 1735 HD.
- i. Check CH 1A, CH 2A, and CH 3A for a DC level of 0 V, ± 1 mV as viewed on the 1735 HD.
- j. Turn Off the CLAMP and return Gain to X1.
- k. Connect the TSG 1001 G/Y output to the 1735 HD CH 1A INPUT.
- l. Select CH 1A INPUT, INT REF, and TWO LINE Sweep.
- m. Position the blanking level to the 0 V graticule line on the 1735 HD, and turn the CLAMP On.
- n. Check that the signal is clamped to within ± 100 mV of the 0 V graticule line.
- o. Remove the signal from the CH 1A INPUT, select EXT REF, and THREE LINE Sweep.

14. Check Offset Operation

Requirement: CH 2 and/or CH 3 can be offset from CH 1 by ± 350 mV. CH B can be offset from CH A by ± 350 mV.

- a. Position the trace to the 0 mV line on the CRT.
- b. Enter the MENU and select OFFSETS, then ENABLED. Exit the MENU.
- c. Use the VERTICAL Position to place the CH 1 INPUT trace on the 400 mV graticule line.
- d. Check using the CH 2 and CH 3 OFFSET controls, that CH 2 and CH 3 can each be positioned to the +750 mV graticule line and to the +50 mV graticule line.
- e. Select DC CPLG, then select GND.
- f. Select B INPUT and position the trace to the 400 mV line on the CRT.
- g. Turn Off the GND and DC CPLG.
- h. Select both A and B INPUTS on together.

- i. Check using the CH B OFFSET control (push in and rotate), that CH 1B, CH2B, and CH 3B can be positioned to the +750 mV graticule line and to the +50 mV graticule line.
- j. Enter the MENU and select OFFSETS, then DISABLED. Exit the MENU.

15. Check DC Restorer Operation

Requirement: Attenuation of 50 Hz input signal: Slow Clamp passes >80% of 50 Hz signal; Fast Clamp removes >95% of 50 Hz signal. Blanking level shift with APL change, less than 1% (7 mV).

- a. Connect the Sync Out signal from the TSG1001 to the 1735 HD EXT REF Input.
- b. Connect a 50 Ω precision cable and 50–75 Ω minimum loss attenuator from the output of the function generator to the 1735 HD CH 1A INPUT.
- c. Select CH 1A INPUT, CLAMP On, EXT REF, and TWO LINE Sweep on the 1735 HD.
- d. Set the function generator Frequency to 50 Hz, and adjust the Amplitude of the sine wave for 700 mV on the 1735 HD.
- e. Enter the 1735 HD MENU and select SLOW CLAMP. Exit the MENU.
- f. Check for more than 560 mV of sine wave on the 1735 HD.
- g. Enter the 1735 HD MENU and select FAST CLAMP. Exit the MENU.
- h. Check for less than 35 mV of sine wave on the 1735 HD.
- i. Replace the function generator signal on the CH1A INPUT with a 10% to 90% DC Bounce signal.
- j. Select the 1735 HD CH 1A INPUT.
- k. Position the blanking level to the baseline.
- l. Check for less than 7 mV (1%) shift of the blanking level as the signal bounces between 10% and 90% APL.
- m. Changing input cables and 1735 HD INPUT selection to each input channel in turn, repeat steps k. and l. for all remaining input channels: CH 2A, CH 3A, CH 1B, CH 2B, and CH 3B.
- n. Turn Off the CLAMP and disconnect the input cable and terminations from the 1735 HD.

16. Check X1 and X5 Flat Response

Requirement: Flat response with 50kHz as a reference; 50 kHz to 30 MHz within $\pm 2\%$. X5 Flat response with 50 kHz as a reference; 250 kHz to 30 MHz, within $\pm 2\%$.

- a. Connect the leveled sine-wave generator Output, through a 50 Ω precision cable and a 50-to-75 Ω minimum loss attenuator, to the 1735 HD CH1A INPUT.
- b. Connect the peak-to-peak detector head to the remaining side of the 1735 HD CH 1A INPUT. Connect the peak-to-peak detector head to the + (plus) input of the peak-to-peak detector. Connect the output of the peak-to-peak detector, through a bnc-to-dual banana plug adapter, to the Digital Voltmeter (DVM). Enable the peak-to-peak detector + (plus) input.
- c. Select CH 1A INPUT, FLAT Filter, and ONE LINE Sweep on the 1735 HD.
- d. Set the leveled sine-wave generator Frequency Range to 50 kHz and adjust its Output Amplitude for a 700 mV display on the 1735 HD.
- e. Set the DVM range for three-place accuracy and adjust the peak-to-peak detector + level for a reading as close to zero as possible. Note the reference reading.

NOTE. To calculate the deviation from flatness, set the leveled sine-wave generator to the frequency being checked and adjust the output amplitude to obtain the same level on screen as seen at the 50 kHz reference. Note the DVM reading at the frequency being checked and subtract it from the DVM reading observed at the 50 kHz reference.

- f. Use the leveled sine-wave generator Frequency controls to provide all frequencies from 250 kHz to 30 MHz.
- g. Check frequency response for $\pm 2\%$ or 14 mV from 250 kHz to 30 MHz.
- h. Repeat steps a. through g. for CH 2A, CH3A, CH 1B, CH 2B, and CH 3B.
- i. Select the 1735 HD X5 Gain.
- j. Connect the leveled sine-wave generator Output to the 1735 HD CH 3B INPUT. Select CH 3B INPUT on the 1735 HD.
- k. Connect the peak-to-peak detector Head to the CH 3B INPUT.
- l. Set the leveled sine-wave generator to 50 kHz and adjust its Output Amplitude for a 700 mV display.

- m. Set the DVM range for three-place accuracy and adjust the peak-to-peak detector + level for a reading as close to zero as possible. Note the reference reading.
- n. Use the leveled sine-wave generator Frequency controls to provide all frequencies from 250 kHz to 30 MHz.
- o. Check frequency response for $\pm 2\%$ or 14 mV from 250 kHz to 30 MHz.
- p. Repeat steps j. through o. for CH 2B, CH1B, CH 3A, CH 2A, and CH 1A.
- q. Return the 1735 HD to X1 Gain.

17. Check PIX MON OUT Frequency Response

Requirement: Frequency Response within $\pm 5\%$ of 50 kHz, up to 30 MHz.

- a. Connect the peak-to-peak detector head to PIX MON OUT.
- b. Connect the leveled sine-wave generator to the 1735 HD CH1 A. Terminate the loop-through in 75Ω .
- c. Select CH 1A INPUT on the 1735 HD.
- d. Set the leveled sine-wave generator Frequency Range to 50 kHz and adjust its Output Amplitude for a 700 mV display on the 1735 HD.
- e. Set the DVM range for three-place accuracy and adjust the peak-to-peak detector level for a reading as close to zero as possible. Note the reference reading.
- f. Use the leveled sine-wave generator Frequency controls to provide all frequencies from 250 kHz to 30 MHz.
- g. Check that display voltage on the DVM is equal to that noted at 50 kHz, $\pm 5\%$ (35 mV).
- h. Disconnect all inputs and 75Ω terminations from the 1735 HD.

18. Check CH 1B Subtract

Requirement: A INPUT: >30 dB (<22 mV) from 50 kHz to 15 MHz. >23 dB (<49.5 mV) from 15 MHz to 30 MHz.

- a. Connect the output cable from the leveled sine wave generator, through a 50Ω precision cable, a 50-to- 75Ω minimum loss attenuator, a 75Ω in-line termination and dual-input connector, to the 1735 HD CH1A and CH 1B INPUTs.

NOTE. Leave the CH 1B INPUT connected through the end of this step.

- b. Select the 1735 HD CH 1B INPUT.
- c. Set the leveled sine-wave generator Frequency to 50 kHz and adjust the Amplitude for a 700 mV display on the 1735 HD.
- d. Enter the 1735 HD MENU, select SUBTRACT, then YES. Exit the MENU.
- e. Select the 1735 HD CH 1A INPUT.
- f. Use the VERTICAL Position control to position the trace to a minor graticule mark at center screen.
- g. Check while varying the frequency on the leveled sine-wave generator from 50 kHz to 15 MHz, for <22 mV of residual sine wave; while varying the frequency from 15 MHz to 30 MHz, for <49.5 mV of residual sine wave.
- h. Repeat step g. for CH 2A, CH 3A, CH 2B, and CH 3B, moving the CH 1A leveled sine wave generator input and 1735 HD INPUT selection accordingly.
- i. Disconnect the leveled sine wave generator from the 1735 HD.
- j. Select MENU. Select SUBTRACT, then NO. Exit the MENU.

19. Check X1 Transient Response

Requirement: Transient response for the 700 mV, 33 ns rise-time step: preshoot, overshoot, and ringing 1% or less.

- a. Connect a precision 50 Ω cable from the PG506A 0 to 1 V fast rise pulse Output to a 50-to-75 Ω minimum loss attenuator. Connect the attenuator to the sine-squared filter input, and then connect the sine-squared filter output to the CH 1A INPUT on the 1735 HD.
- b. Connect the Trigger Out from the PG506A to the 1735 HD EXT REF Input. Set the PG506A for a 0.1 ms period.
- c. Select CH 1A INPUT, EXT REF, and TWO LINE Sweep on the 1735 HD. Terminate all six video INPUTs in 75 Ω .
- d. Set the PG506A Amplitude for a 700 mV signal on the 1735 HD.
- e. Use the VERTICAL Position control to position the display between the 0 V and 700 mV graticule lines. Use the HORIZONTAL Position control to view the positive-going transition.
- f. Check for less than $\pm 1\%$ preshoot, overshoot, and ringing.

- g. Change the PG506A connection and 1735 HD channel selection to each INPUT channel in turn, repeating step f. for all remaining channels: CH 2A, CH 3A, CH1B, CH 2B, and CH 3B.

20. Check X5 Transient Response

Requirement: Transient response for a 140 mV, 150 ns rise-time step: preshoot, overshoot, and ringing 1% or less.

- a. Select X5 Gain on the 1735 HD.
- b. Set the PG506A controls for a 700 mV output.
- c. Use the VERTICAL Position controls to position the display between the 0 V and 700 mV graticule lines. Use the HORIZONTAL Position control to view the positive-going transition.
- d. Check for less than 1% preshoot, overshoot, and ringing.
- e. Change the PG506A connection and 1735 HD channel selection to each INPUT channel in turn, repeating step d. for all remaining channels: CH 1B, CH 2B, CH1A, CH 2A, and CH 3A.
- f. Disconnect all INPUT signals and terminations from the 1735 HD.

21. Check Square Wave Tilt

Requirement: Field Rate Square Wave or Vertical Window, 1% or less tilt.

- a. Connect the TSG 1001 G/Y output to the 1735 HD CH 1A INPUT. Terminate the loop-through in 75 Ω .
- b. Select a Field-Rate Square Wave signal with a 700 mV bar amplitude.
- c. Select CH 1A INPUT, FLAT Filter, X1 Gain, and TWO FIELD Sweep on the 1735 HD.
- d. Check that there is 1% or less tilt on the bar top, as viewed on the 1735 HD.

22. Check Noise Filter Response

Requirement: Response at 15 kHz does not vary between FLAT and FILTER by more than 1% when NOISE Filter is selected. >20 dB of attenuation at 20 MHz.

- a. Select EXT REF and ONE LINE Sweep on the 1735 HD.
- b. Connect a precision 50 Ω cable and 50-to-75 Ω minimum loss attenuator from the function generator output to the CH 1A INPUT.
- c. Set the function generator for a 15 kHz sine wave. Adjust the amplitude for a 700 mV display on the 1735 HD.

- d.** Enter the 1735 HD MENU and select NOISE FILTER. Exit the MENU.
- e.** Switch back and forth between FILTER and FLAT Filter.
- f.** Check that the amplitude of the display in FILTER, is within 1% of the displayed amplitude in the FLAT Filter mode.
- g.** Set the 1735 HD to FLAT Filter.
- h.** Disconnect the precision 50 Ω cable and 50-to-75 Ω minimum loss attenuator from the function generator Output. Use the 50 Ω precision cable and 50-to-75 Ω minimum loss attenuator to connect the output of the leveled sine-wave generator to the 1735 HD CH 1A INPUT.
- i.** Set the leveled sine-wave generator Frequency to 50 kHz, and adjust the amplitude to 700 mV as viewed on the 1735 HD.
- j.** Select FILTER.
- k.** Check that the displayed amplitude rolls off to 70 mV or less at 20 MHz, and continues to roll off at frequencies up to 30MHz.
- l.** Select FLAT Filter on the 1735 HD and disconnect all inputs and terminations.

23. Check Return Loss

Requirement: for video inputs: >35 dB from 50 kHz to 30 MHz, external reference input: >33 dB from 50 kHz to 30 MHz, power on or off. For PIX MON OUT: >26 dB from 50 kHz to 30 MHz, power on only.

- a.** Connect a precision 50 Ω cable to the spectrum analyzer RF Input, and another precision 50 Ω cable to the TG Output.
- b.** Connect the TG Output cable to the RF Input on the RF Bridge.
- c.** Connect the RF Input cable to the RF Output on the RF Bridge.
- d.** Select Demod/TG on the spectrum analyzer and turn on the analyzer Tracking Generator.
- e.** Set the spectrum analyzer Tracking Generator Fixed Level to 0.00 dBm.
- f.** Set the spectrum analyzer Span/Div to 10 MHz and the resolution bandwidth to 3 kHz.
- g.** Set the Reference Level to the first major division from the top on the spectrum analyzer, and turn on the marker.
- h.** Set the vertical scale to 10 dB.
- i.** Remove one of the cables from the RF Bridge.

- j.** Set the spectrum analyzer cursor to 30 MHz and then set the marker to 30 MHz.
- k.** Reconnect the cable to the RF Bridge.
- l.** Note the Reference Level Readout.
- m.** Adjust the spectrum analyzer External Attenuation Amplitude by the amount noted in step l. Note: The Reference Level Readout should now be 0.00 dBm.
- n.** Connect the precision high-frequency terminator to the Device Under Test connector on the RF Bridge.
- o.** Check that the frequency response from 0 MHz to 30 MHz is >35 dBm.
- p.** Return the frequency marker to 30 MHz if it was moved.
- q.** Remove the precision high-frequency terminator from the RF Bridge.
- r.** Connect the Device Under Test connector on the RF Bridge to the CH 1A INPUT on the 1735 HD through a male-to-male BNC adapter. Terminate the CH 1A loop-through with the precision high-frequency terminator used in step n.
- s.** Select CH 1, CH 2, and CH 3 INPUTs, both A and B INPUTs (all INPUT Channel LEDs should be on), and ONE LINE Sweep.
- t.** Check for a Reference Level Readout on the spectrum analyzer of >35 dBm.
- u.** On the 1735 HD, switch between GND Off and On and check that the Reference Level Readout on the spectrum analyzer does not change by more than ± 2 dBm.
- v.** Move the RF Bridge and loop-through precision high-frequency terminator to each of the video INPUT channels, and repeat steps t. and u. for each of them.
- w.** Move the RF Bridge and loop-through precision high-frequency terminator to the EXT REF Input.
- x.** Check for a Reference Level Readout on the spectrum analyzer of >33 dBm.
- y.** On the 1735 HD, switch between GND Off and On and check that the Reference Level Readout on the spectrum analyzer does not change by more than ± 2 dBm.
- z.** Move the RF Bridge to the PIX MON OUT connector, with the 1735 HD POWER ON.

- aa.** Check for a Reference Level Readout on the spectrum analyzer of >26 dBm.

This concludes the Performance Checks Procedure.



Adjustment Procedure

Adjustment Procedure

The Adjustment Procedure covers only adjustments. Checks, other than those that must be made to ensure a step is completed, are in the Performance Check Procedure. The Short Form Adjustment Procedure is provided for those familiar with the adjustments, while the Standard Adjustment Procedure is provided for those who need more detailed instructions. Both forms of the adjustment procedure use the same step numbers, so the short form can be used as an index to the standard form.

Allow 20 minutes of warm-up time, at normal room temperature (approximately 25 °C), before making any adjustments to the instrument.

Short-Form Procedure

Components to be adjusted are listed in the title of each step. See Figures 6–1 and 6–2 for their locations.

1. Adjust +5 Volts Supply (A1R70).
2. Check Power Supplies.
3. Adjust Plate Average (A3R108).
4. Adjust CRT Bias (A1R52).
5. Adjust Trace Rotation (front panel).
6. Adjust Center Focus, Astigmatism, and Geometry (A1R10, A1R38, A1R43).
7. Adjust Horizontal Sync Timing (A4R93).
8. Adjust Blanking Width (A4R39).
9. Adjust Clamp Pulse Start and Width (A4R99, A4R104).
10. Adjust Return Loss (A3C257, A3C258, A3C259, A3C260, A3C261, A3C262).
11. Adjust Low-Frequency Input Compensation (A3R447–A3C139, A3R432–A3C126, A3R459–A3C119, A3R440–A3C103, A3R466–A3C135, A3R468–A3C137).
12. Adjust DC Coupled Position (A3R330, A3R304, A3R308, A3R277, A3R315, A3R326).
13. Adjust Clamped Position (A3R313, A3R354, A3R372, A3R358, A3R348, A3R349).

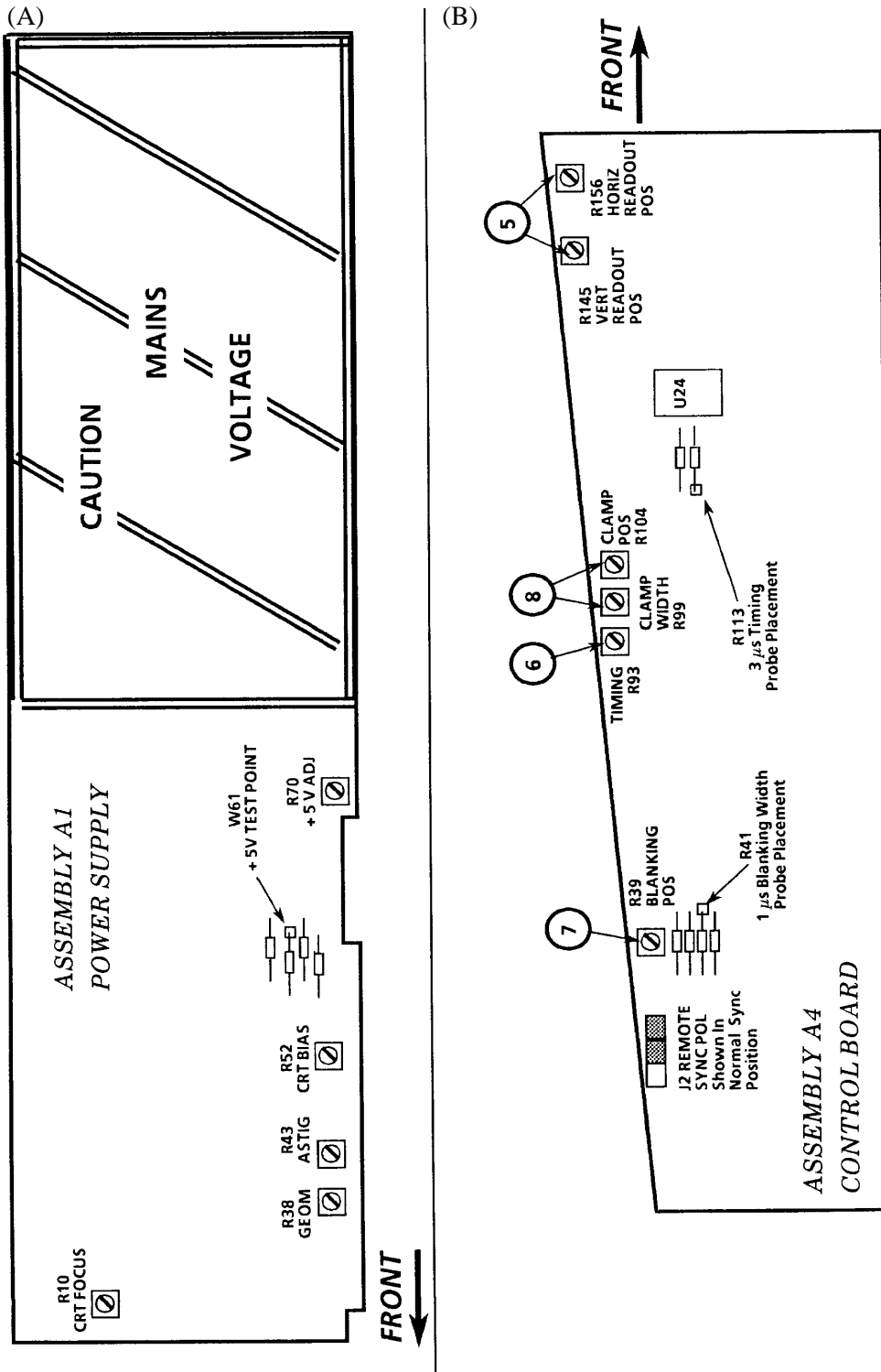


Figure 6-1: (A) Adjustment locations on the Power Supply circuit board (Assembly A1). (B) Adjustment locations on the Control circuit board

14. Adjust Overdrive Recovery (A3R145, A3L8, A3L9).
15. Adjust X1 Flat Gain (front panel VERTICAL Cal).
16. Adjust X5 Gain (A3R128).
17. Adjust X5 Mag Registration (A3R568).
18. Check Calibrator Amplitude.
19. Adjust Flat Response (A3R50, A3R578, A3C15, A3C26).
20. Check X1 and X5 Flat Response.
21. Check PIX MON OUT Frequency Response.
22. Adjust CH 1B Subtract (A3R383, A3C144).
23. Check CH 1B Subtract.
24. Adjust Filter Gain (A3R577, A3R84).
25. Adjust Noise Filter Response (A3L3, A3L5).
26. Adjust Diff Step Filter Response (A3R567, A3L2, A3L4).
27. Adjust Timing (A3R158, A3R163, A3R164).
28. Adjust MAG Registration (A3R78).
29. Adjust RGB/YRGB Display (A3R89, A3R92, A3C57).
30. Adjust CRT Bias (A3R6, A1R52).
31. Adjust CRT Readout (A4R156, A4R145, A3R579, A3R6).

Standard Adjustment Procedure

The initial settings of the front-panel controls to start this procedure are shown in Table 6–1. Adjustment locations are shown in Figures 6–1 and 6–2.

NOTE. When selecting an input channel for display, CH1, CH 2, or CH 3 as well as A or B must be pushed. For example, push CH 1 and A for a display of the CH 1A input.

When selecting a sweep rate, both ONE/TWO/ THREE and LINE/FIELD must be pushed. For example, push ONE and LINE for a one-line display.

Table 6–1: Initial settings for Adjustment Procedure

Front-panel control	Setting
POWER	ON
REF	CH 1
INPUT	CH 1A
CLAMP	off
VERTICAL	
VAR	off
X5	off
DC CPLG	off
FLAT – FILTER	FLAT
HORIZONTAL	
ONE – TWO – THREE	ONE
LINE – FIELD	LINE
MAG – READOUT	off
LINE SELECT	off
MENU	off
MENU SETTINGS OFFSETS	DISABLED
FOCUS	as desired
SCALE	as desired
INTENS	as desired

Power Supply Board (A1)

Refer to Figure 6-1A.

1. Adjust +5 Volts Supply

- a. Connect a 75 Ω cable from the TSG 1001 G/Y Output to the 1735 HD CH 1A INPUT. Terminate the remaining side of the loop-through input with a 75 Ω terminator. Select the NTSC Format SMPTE Bars signal from the TSG 1001.
- b. Connect the TSG 1001 Sync Out to the 1735 HD EXT INPUT and terminate the remaining side of the loop-through input with a 75 Ω terminator. See Figure 6-3.
- c. Connect the voltmeter leads between the +5 V test point (A1W61) and ground. See Figure 6-1A.
- d. Adjust +5 V Adj (A1R70) for +5.0 V.

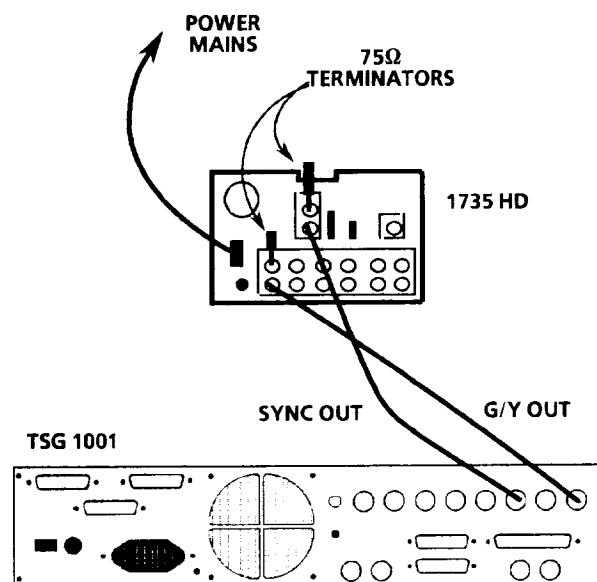


Figure 6-3: Initial equipment hook-up for the Adjustment Procedure

Main Board (A3)

Refer to Figure 6-2.

2. Check Power Supplies

- a. Connect the voltmeter between the +10 V test point (pin 2 of A3U1) and ground. See Figure 6-2.
- b. Check for +10.0 V, $\pm 2\%$.

- c. Connect the voltmeter between the -10 V test point (pin 3 of A3U11) and ground.
 - d. Check for -10 V , $\pm 2\%$.
 - e. Connect the voltmeter between the $+8\text{ V}$ test point (pin 2 of A3U2) and ground.
 - f. Check for $+8\text{ V}$, $\pm 2\%$.
 - g. Connect the voltmeter between the -5 V test point (pin 3 of A3U12) and ground.
 - h. Check for -5 V , 2% .
3. Adjust Plate Average
- a. Connect the voltmeter leads between A3TP1 and A3TP2. See Figure 6–2 for locations.
 - b. Adjust A3R108 (Plate Avg) for $+5\text{ V}$.
 - c. Remove the voltmeter leads from the test points.

Power Supply Board (A1)

Refer to Figure 6–1A.

4. Adjust CRT Bias
- a. Adjust VERTICAL and HORIZONTAL Position controls to place the display at center screen.
 - b. Turn the front-panel SCALE and INTENS controls fully counterclockwise.
 - c. Adjust A1R52 (CRT Bias) until the trace is just extinguished.
 - d. Set the front-panel INTENS and SCALE controls for desired brightness.
5. Adjust Trace Rotation
- a. Select CH 2A INPUT on the 1735 HD.
 - b. Use the VERTICAL Position control to place the trace on the base line.
 - c. Adjust the front-panel TRACE ROTATION control so the trace is parallel to the base line.
 - d. Select CH 1A INPUT on the 1735 HD.
6. Adjust Center Focus, Astigmatism, and Geometry
- a. Select the 1735 HD MENU. The MENU readout will be displayed on screen.

- b. Adjust A4R145 (Vertical Readout Position) and A4R156 (Horizontal Readout Position) if needed to view the MENU display. (A4R145 and A4R156 will be adjusted more precisely in a later step.)
- c. Select TEST, then DAC TEST from the MENU.
- d. Set the 1735 HD front-panel FOCUS control to approximately mid range.
- e. Adjust A1R10 (Center Focus) and A1R43 (Astig) for the most clearly defined display.
- f. Adjust A1R38 (Geometry) for minimum bowing.
- g. Return to the MAIN MENU, and leave the MENU displayed for the next step.

Control Board (A4) Refer to Figure 6–1B.

7. Adjust Horizontal Sync Timing

- a. Select LINES/FRAME from the MENU. Choose the NTSC (525/60/2) or PAL (625/ 50/2) standard, depending on the type of television test signal generator being used. Exit the MENU.
- b. Select CH 1A INPUT, CH 1 REF, and TWO LINE Sweep on the 1735 HD.
- c. Connect a X10 probe from Channel1 on the test oscilloscope to A4R113. See Figure 6–1B.
- d. Set the test oscilloscope as follows:

Volts/Div	2
Time/Div	10 μ s
Mag	X10
Trig Slope Level	–
- e. Adjust A4R93 (Timing) for a 3 μ s pulse width. See Figure 6–4.

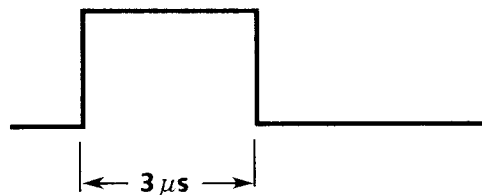


Figure 6–4: Adjusting horizontal sync timing

8. Adjust Blanking Width

- a. Connect the test oscilloscope X10 probe to A4R41. See Figure 6–1B.
- b. Trigger the test oscilloscope on the negative-going edge (–edge).
- c. Adjust A4R39 (Blanking Position) for a 1 μ s pulse width. See Figure 6–5.

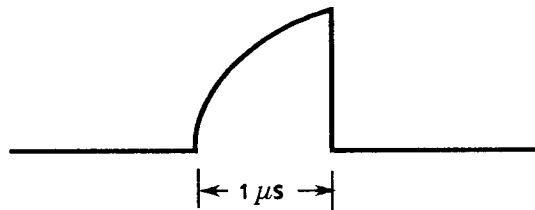


Figure 6–5: Setting blanking position

9. Adjust Clamp Pulse Start and Width

- a. Connect a X10 probe from the test oscilloscope Ch 1 Input to A3U36, pin1. See Figure 6–2.
- b. Connect a 75 Ω cable with a 75 Ω in-line terminator from the 1735 HD PIX MON OUT to the test oscilloscope Ch2 Input.
- c. Set the test oscilloscope as follows:

Trigger source	Ch 2
Display Mode	Alternate
Time/Div	10 μ s/div
Mag	X 10
Slope Level	+
Ch 1 Volts/Div	2 V
Ch 2 Volts/Div	200 mV

- d. Push the 1735 HD CLAMP switch.
- e. Adjust test oscilloscope triggering for a stable display.
- f. Adjust A4R104 (Clamp Position) for clamp pulse start 5.6 μ s after the leading edge of sync. See Figure 6–6.
- g. Adjust A4R99 (Clamp Width) for a 3 μ s pulse width.
- h. Turn off the 1735 HD CLAMP. Remove the test probe. Remove the cable and terminator from the CH 1A INPUT.

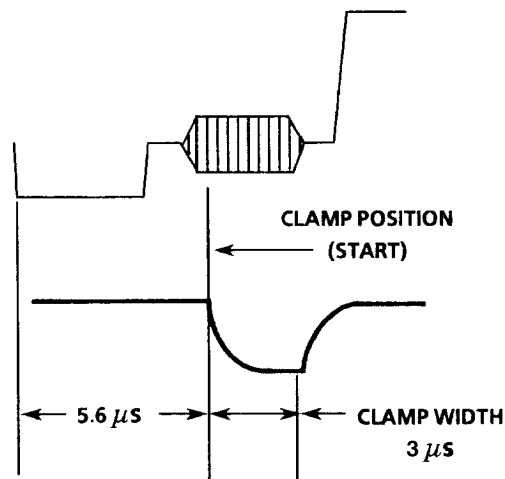


Figure 6-6: Adjusting clamp position and width

Main Board (A3)

Refer to Figure 6-2.

10. Adjust Return Loss

- a. Connect a precision 50 Ω cable to the spectrum analyzer RF Input, and another precision 50 Ω cable to the TG Output.
- b. Connect the TG Output cable to the RF Input on the RF Bridge.
- c. Connect the RF Input cable to the RF Output on the RF Bridge.
- d. Select Demod/TG on the spectrum analyzer and turn on the analyzer Tracking Generator.
- e. Set the spectrum analyzer Tracking Generator Fixed Level to 0.00 dBm.
- f. Set the spectrum analyzer Span/Div to 10 MHz and the resolution bandwidth to 3 kHz.
- g. Set the Reference Level to the first major division from the top on the spectrum analyzer.
- h. Set the vertical scale to 10 dB.
- i. Remove one of the cables from the RF Bridge.
- j. Set the spectrum analyzer cursor to 30 MHz and then set the marker to 30 MHz.
- k. Reconnect the cable to the RF Bridge.
- l. Note the Reference Level Readout.

- m. Adjust the spectrum analyzer External Attenuation Amplitude by the amount noted in step l. Note: The Reference Level Readout should now be 0.00 dBm.
- n. Connect a precision high-frequency terminator to the Device Under Test connector on the RF Bridge.
- o. Check that the frequency response from 0 MHz to 30 MHz is >35 dBm.
- p. Return the frequency marker to 30 MHz if it was moved.
- q. Remove the precision high-frequency terminator from the RF Bridge.
- r. Connect the Device Under Test connector on the RF Bridge to the CH 1A INPUT on the 1735 HD through a male-to-male BNC adapter. Terminate the CH 1A loop-through with the precision high-frequency terminator used in step n.
- s. Select CH 1, CH 2, and CH 3 INPUTs, both A and B INPUTs (all INPUT Channel LEDs should be on), and ONE LINE Sweep.
- t. Adjust A3C257 for a Reference Level Readout on the spectrum analyzer of >35 dBm.
- u. On the 1735 HD, switch between GND Off and On and check that the Reference Level Readout on the spectrum analyzer does not change by more than ± 2 dBm. Repeat adjustment as necessary to obtain reading.
- v. Move the RF Bridge and loop-through precision high-frequency terminator to each of the INPUT channels listed in Table 6–2, and repeat step t. and u. for each of them.

Table 6–2: Return loss adjustments

Apply Signal	Adjustment
CH 1A	A3C257
CH 2A	A3C258
CH 3A	A3C259
CH 1B	A3C260
CH 2B	A3C261
CH 3B	A3C262

11. Adjust Low-Frequency Input Compensation

- a. Select CH 1A INPUT on the 1735 HD and terminate all six input connectors in 75 Ω .
- b. Connect a Field-Rate Square Wave signal from the TSG 1001 to the CH 1A INPUT.
- c. Connect a X10 probe from A3TP3 on the 1735 HD to the test oscilloscope CH1 input.
- d. Set the test oscilloscope as follows:

Volts/Div	100 mV
Coupling	DC
Time/Div	1 ms
Trig	TV Field
20 MHz BW Limit	On
- e. Adjust A3R447 (LFR 1A) and A3C139 (LFC 1A) for the best corner on the leading edge of the square wave signal.
- f. Repeat steps c. and e. for the remaining INPUT channels, as shown in Table 6–3.
- g. Remove the X10 probe and signal cable from the 1735 HD. Turn off the 20 MHz BW Limit on the test oscilloscope.

Table 6–3: Flat response adjustments

Input	Test Point	Adjustment
CH 1A	A3TP3	A3R447 (LFR 1A) A3C139 (LFC 1A)
CH 2A	A3TP4	A3R432 (LFR 3A) A3C126 (LFC 2A)
CH 3A	A3TP5	A3R459 (LFR 3A) A3C119 (LFC 3A)
CH 1B	A3TP6	A3R440 (LFR 1B) A3C103 (LFC 1B)
CH 2B	A3TP7	A3R466 (LFR 2B) A3C135 (LFC 2B)
CH 3B	A3TP8	A3R468 (LFR 3B) A3C137 (LFC 3B)

12. Adjust DC Coupled Position

- a. Set the 1735 HD as follows:

INPUTs	Off
Sweep	THREE LINE
MAG	X5
REF	EXT
DC CPLG	On

- b. Use the VERTICAL Position control to position the trace on the 0V graticule line.
- c. Select INPUT – A.
- d. Adjust A3R330 (DC 1A), A3R304 (DC 2A), and A3R308 (DC 3A) to return the three traces to the 0 V graticule line.
- e. Deselect INPUT – A.
- f. Use the front-panel controls to return the trace to the 0 V graticule line.
- g. Select INPUT – B.
- h. Adjust A3R277 (DC 1B), A3R315 (DC 2B), and A3R326 (DC 3B) to return the three traces to the 0 V graticule line.
- i. Deselect the DC CPLG.

13. Adjust Clamped Position

- a. Turn On the 1735 HD CLAMP and turn Off all INPUTs.
- b. Use the VERTICAL Position control to position the trace on the 0 V graticule line.
- c. Select INPUT – B.
- d. Adjust A3R313 (CL 1B), A3R354 (CL 2B), and A3R372 (CL 3B) to position the three traces to the 0 V graticule line.
- e. Deselect INPUT – B and Select INPUT – A.
- f. Adjust A3R358 (CL 1A), A3R348 (CL 1B), and A3R349 (CL 3A) to position the three traces on the 0 V graticule line.
- g. Turn Off the CLAMP.

14. Adjust Overdrive Recovery

- a.** Connect the trigger output from the PG506A to the EXT REF Input on the 1735 HD.
- b.** Turn the 1735 HD OFF and unsolder one end of A3W2. Turn the 1735 HD back ON.
- c.** Connect the 0 to 1 V Fast Rise Pulse, through a 50 Ω cable adapter (described in the equipment list in the front of this section), to pin 1 of A3J25.
- d.** Select the 1735 HD MAG On, EXT REF, and ONE LINE Sweep.
- e.** Set the PG506A controls to: Fast Rise, Period .1ms, Variable Amp Max.
- f.** Use the Variable on the Time Period to position the positive-going edge of the pulse at center screen on the 1735 HD.
- g.** Adjust A3R145, A3L9, and A3L8 for best corner on the leading edge of the square wave as viewed on the 1735 HD.
- h.** Remove the cable from A3J25. Turn OFF the 1735 HD, resolder A3W2, and turn the 1735 HD ON.
- i.** Remove all cables and terminators from the 1735 HD.

15. Adjust X1 Flat Gain

- a.** Connect the VAC to the CH 1A INPUT on the 1735 HD. Do not terminate the loop-through. Set the VAC for a 999.9 mV signal output.
- b.** Select CH 1A INPUT, CH 1 REF, FLAT Filter, Gain Off, and TWO LINE Sweep on the 1735 HD.
- c.** Adjust the front-panel VERTICAL Cal screwdriver adjustment for a 1 V signal.
- d.** Move the VAC signal to the CH 2A INPUT and select CH 2 INPUT on the front panel.
- e.** Check for a 1 V display on the 1735 HD.
- f.** Repeat steps d. and e. for the remaining INPUT channels (CH 3A, CH 1B, CH 2B, and CH 3B).

16. Adjust X5 Gain

- a.** Set the VAC Amplitude to 200.0 mV.
- b.** Select X5 Gain on the 1735 HD.
- c.** Adjust A3R128 (X5 Gain) for a 1 V display.

- d. Remove the signal cable from the 1735 HD.

17. Adjust X5 Mag Registration

- a. Connect the TSG 1001 G/Y output to the 1735 HD CH 1A INPUT and terminate the loop-through in 75 Ω .
- b. Select the NTSC format 5-Step Linearity signal from the TSG 1001.
- c. Select CH 1A INPUT and ONE LINE Sweep on the 1735 HD.
- d. Turn Off the X5 Gain and use the front-panel VERTICAL Position control to position the trace to the center of the CRT.
- e. Turn On the 1735 HD X5 Gain. Enter the MENU and select the DIFF FILTER. Exit the MENU.
- f. Adjust A3R568 (X5 Mag Reg) to return the trace to the center of the CRT.
- g. Repeat steps d. through f. until there is less than one major division of DC shift when the X5 Gain is turned On and Off.
- h. Turn Off the X5 Gain.

18. Check Calibrator Amplitude

- a. Select MENU on the 1735 HD and select the Calibration signal. Exit the MENU.
- b. Check for a 7 division display, ± 7 mV, on the 1735 HD graticule.
- c. Press any front-panel button to exit the Calibrator mode.

19. Adjust X1 Flat Response

- a. Connect the TSG 1001 G/Y Output to the 1735 HD CH 1A INPUT and terminate the loop-through in 75 Ω .
- b. Set the TSG 1001 as follows:

Signal Set	Zone Plates
Format	NTSC
Line Rate	525/59.94/2:1
Field	Flat
Horiz Swp Freq	30 MHz
- c. Adjust A3R50, A3R578, A3C15, and A3C26 for the best flat response on the 1735 HD.
- d. Remove the input cable and terminator from the 1735 HD.

20. Check X1 and X5 Flat Response

- a.** Connect the leveled sine wave generator output, through a 50 Ω precision cable and a 50-to-75 Ω minimum loss attenuator, to the 1735 HD CH 1A INPUT.
- b.** Connect the peak-to-peak detector head to the remaining side of the 1735 HD CH 1A INPUT. Connect the peak-to-peak detector head to the + (plus) input of the peak-to-peak detector. Connect the output of the peak-to-peak detector, through a BNC-to-dual banana plug adapter, to the digital voltmeter (DVM). Enable the peak-to-peak detector + (plus) input.
- c.** Select CH 1A INPUT, CH 1 REF, FLAT Filter, and ONE LINE Sweep on the 1735 HD.
- d.** Set the leveled sine wave generator Frequency Range to 50 kHz and adjust its Output Amplitude for a 700 mV display on the 1735 HD.
- e.** Set the DVM range for three-place accuracy and adjust the peak-to-peak detector + level for a reading as close to zero as possible. Note the reference reading.

NOTE. To calculate the deviation from flatness, set the leveled sine wave generator to the frequency being checked and adjust the output amplitude to obtain the same level on screen as seen at the 50 kHz reference. Note the DVM reading at the frequency being checked and subtract it from the DVM reading observed at the 50 kHz reference.

- f.** Use the leveled sine wave generator Frequency controls to provide all frequencies from 250 kHz to 30 MHz.
- g.** Check frequency response for $\pm 2\%$ or 14 mV from 250 kHz to 30 MHz. Note: If this check does not pass, then repeat Step 19.
- h.** Repeat steps a. through g. for CH 2A, CH 3A, CH 1B, CH 2B, and CH 3B.
- i.** Select the 1735 HD X5 Gain.
- j.** Set the leveled sine wave generator to 50 kHz and adjust its Output Amplitude for a 700 mV display.
- k.** Use the leveled sine wave generator frequency controls to provide all frequencies from 250 kHz to 30 MHz.
- l.** Check frequency response for $\pm 2\%$ or 14 mV from 250 kHz to 30 MHz.
- m.** Repeat steps j. through l. for CH 1A, CH 2A, CH 3A, CH 1B, and CH 2B.

- n. Return 1735 HD to X1 Gain.

21. Check PIX MON OUT Frequency Response

- a. Connect the peak-to-peak detector head to the 1735 HD PIX MON OUT connector.
- b. Connect the leveled sine wave generator to the 1735 HD CH 1A. Terminate the loop-through in 75Ω .
- c. Select CH 1A INPUT on the 1735 HD.
- d. Set the leveled sine wave generator Frequency Range to 50 kHz and adjust its Output Amplitude for a 700mV display on the 1735 HD.
- e. Set the DVM range for three-place accuracy and adjust the peak-to-peak detector level for a reading as close to zero as possible. Note the reference reading.
- f. Use the leveled sine wave generator frequency controls to provide all frequencies from 250 kHz to 30 MHz.
- g. Check that display voltage on the DVM is equal to that noted at 50 kHz, $\pm 5\%$ (35 mV).
- h. Disconnect all cables and 75Ω terminators from the 1735 HD.

22. Adjust CH 1B Subtract

- a. Connect the TSG 1001 G/Y Output to the CH 1B INPUT and terminate the loop-through in 75Ω .
- b. Enter the 1735 HD MENU. Select SUBTRACT, then YES. Exit the MENU.
- c. Select CH 1B INPUT, CH 1 REF, and X5 Gain.
- d. Select Zone Plate Signal Set and Flat Field on the TSG 1001. Adjust the horizontal sine wave frequency for 30 MHz sweep.
- e. Adjust A3R383 (Inv1B Gain) and A3C144 (CH 1 Response) for the best null of the sweeps as displayed on the 1735 HD.
- f. Select X1 Gain on the 1735 HD.

23. Check CH 1B Subtract

- a. Connect the output cable from the leveled sine wave generator, through a 50Ω precision cable, a 50-to- 75Ω minimum loss attenuator, a 75Ω in-line terminator and dual-input connector, to the 1735 HD CH 1A and CH 1B INPUTs.

NOTE. Leave the CH 1B INPUT connected through the end of step 23.

- b.** Select the 1735 HD CH 1B INPUT.
- c.** Enter the 1735 HD MENU, select SUBTRACT NO, and exit the MENU.
- d.** Set the leveled sine wave generator frequency to 50 kHz and adjust the amplitude for a 700 mV display on the 1735 HD.
- e.** Enter the 1735 HD MENU, select SUBTRACT YES, and exit the MENU.
- f.** Select the 1735 HD CH 1A INPUT and X5 Gain.
- g.** Use the VERTICAL Position control to position the trace to a minor graticule mark at center screen.
- h.** Check while varying the frequency on the leveled sine wave generator from 50 kHz to 15 MHz, for less than 5% (22 mV) of residual sine wave; while varying the frequency from 15 MHz to 30 MHz, for less than 6% (44 mV) of residual sine wave.
- i.** Repeat step h. for CH 2A, CH 3A, CH 2B, and CH 3B. Move the CH 1A leveled sine wave generator input and 1735 HD input selection accordingly.
- j.** Disconnect the leveled sine wave generator from the 1735 HD.
- k.** Enter the 1735 HD MENU, select SUBTRACT NO, and exit the MENU.

24. Adjust Filter Gain

- a.** Connect the VAC output to the 1735 HD CH 1A INPUT. Do not terminate.
- b.** Set the VAC to 999.9 mV.
- c.** Select the 1735 HD CH 1A INPUT, FLAT Filter, and ONE LINE Sweep.
- d.** Use the VERTICAL Position control to position the traces on the -0.3 and $+0.7$ graticule lines.
- e.** Enter the 1735 HD MENU, select NOISE FILTER, and exit the MENU.
- f.** Select FLAT and FILTER together.
- g.** Adjust A3R577 (Filter DC Position) and A3R84 (Filter Gain) to overlay the two displays and make the filtered display match the DC level and gain of the flat display, $\pm 1\%$ (10 mV).

- h.** Select FLAT Filter.

25. Adjust Noise Filter Response

- a.** Connect the output of the PG506A 0 to 1 V fast rise pulse, through a 50 Ω cable and 50-to-75 Ω minimum loss attenuator, to the CH 1A INPUT on the 1735 HD.
- b.** Set the PG506A Period to 10 μ s.
- c.** Select CH 1A INPUT, MAG On, FILTER, and ONE LINE Sweep on the 1735 HD.
- d.** Adjust A3L3 and A3L5 for the best corner on the leading positive-going pulse as viewed on the 1735 HD.

26. Adjust Diff Step Filter Response

- a.** Enter the 1735 HD MENU, select DIFF STEP FILTER, and exit the MENU. Ensure that the front-panel FILTER LED is illuminated.
- b.** Adjust A3R139 (Diff Step Filter Gain) to midrange.
- c.** Adjust A3R567, A3L2, and A3L4 to null the ringing on the trailing edge of the differentiated pulse.
- d.** Disconnect the PG506A from the 1735 HD.

27. Adjust Timing

- a.** Connect the TSG 1001 G/Y Output to the 1735 HD CH 1A INPUT. Terminate the loop-through in 75 Ω .
- b.** Set the TSG 1001 to the Zone Plate signal set, 525/59.94/2:1 Formats, and press the Monitor Setup button.
- c.** Adjust the TSG 1001 sine wave frequency for 100 kHz \pm .0100 kHz.
- d.** Select CH 1A INPUT, CH 1 REF, FLAT Filter, and TWO LINE Sweep on the 1735 HD.
- e.** Use the 1735 HD VERTICAL and HORIZONTAL Position controls as needed to position the display so that the tips of the sine waves align with major divisions on the graticule blanking level.
- f.** Adjust A3R158 (10 μ s Timing) for one cycle/division on the first line display.
- g.** Check for one cycle/division on the second line of display, using the HORIZONTAL Position control to line up the signal on the major graticule divisions.
- h.** Select MAG on the 1735 HD.

- i. Set the TSG 1001 sine wave frequency to 1 MHz.
- j. Adjust A3R163 (1 μ s Timing) for one cycle/major division over the center 10 divisions of the display.
- k. Select ONE LINE Sweep on the 1735 HD.
- l. Set the TSG 1001 sine wave frequency to 5 MHz.
- m. Adjust A3R164 (0.1 μ s Timing) for one cycle/major division over the center 10 divisions, \pm 3%.
- n. Turn Off the 1735 HD MAG.

28. Adjust MAG Registration

- a. Select TWO LINE Sweep on the 1735 HD.
- b. Select Ram Board signal set, and NTSC Format (SMPTE Bars) on the TSG 1001.
- c. Use the HORIZONTAL Position control to place the sync pulse at the horizontal center of screen.
- d. Turn On the 1735 HD MAG.
- e. Adjust A3R78 (Horiz MAG Registration) to place the sync at center screen.
- f. Repeat steps c. through e. until there is no change between MAG On and MAG Off. Turn Off the MAG.

29. Adjust RGB/YRGB Display

- a. Use the HORIZONTAL Position control to center the display on the 1735 HD.
- b. Connect the output of the function generator to pin10 of the REMOTE Connector. Connect the REMOTE Connector pin2 (RGB ENABLE) to pin9 (GROUND). See Figure 5-1.
- c. Set the function generator for a +5 V to -5 V square wave at 2 kHz.

NOTE. Positive polarity is selected with A3J5 in the 2-3 position (factory setting), inverted polarity is selected with A3J5 in the 1-2 position.

- d. Adjust A3R92 (RGB Offset, for positive polarity) or A3R89 (RGB Inv Gain, for inverted polarity) for maximum separation of the two displays.

- e. Check that there are 8 to 10 divisions of separation between the leading edge of sync of the first display and leading edge of sync of the second display.
 - f. Check that the sweep has shortened to 3.4 to 4.1 divisions for a 3-step display, and 2.5 to 3.1 divisions for a 4-step display (moving A3J6 as needed to obtain 3-step and 4-step displays).
 - g. Move A3J6 to the 4-step (YRGB) position. Select ONE LINE Sweep.
 - h. Check that the shortened sweep is a one line display.
 - i. Select TWO FIELD Sweep.
 - j. Check that the shortened sweep is a two field display.
 - k. Turn On the MAG.
 - l. Check that the sweep is magnified.
 - m. Check that the display can be moved to the sides of the screen with the HORIZONTAL Position control.
 - n. Turn Off the MAG.
 - o. Return A3J6 to the desired operating position.
 - p. Enter the MENU, select EXT HORIZONTAL, and exit the MENU.
 - q. Adjust A3C57 (RGB Comp) for best transient response and no smearing.
 - r. Enter the MENU, deselect EXT HORIZONTAL, and exit the MENU.
 - s. Remove the remote cable from the 1735 HD.
- 30. Adjust CRT Bias**
- a. Turn READOUT and LINE SELECT READOUT On. Select Line19.
 - b. Adjust A3R6 (Line Select Focus) for best focus of Line19.
 - c. Set INTENS, READOUT INTENS, and SCALE fully counterclockwise.
 - d. Adjust A1R52 (CRT Bias) until display just disappears.
 - e. Adjust INTENS, READOUT INTENS, and SCALE for a usable display on the 1735 HD.

31. Adjust CRT Readout

- a. Select CH 1A INPUT, CH 1 REF, ONE LINE Sweep, and LINE SELECT Line 14.
- b. Adjust Horizontal Readout Position (A4R156) to horizontally center the readout. Position the '[14]' directly above the small horizontal marks in the graticule center.
- c. Adjust A4R145 (Vertical Readout Position) and A3R579 (Vertical Readout Gain) to vertically center and align the readout. Align the sweep rate readout with the word 'TEK' at the bottom of the CRT screen, and position the '[14]' just above the top (+0.8) graticule line. See Figure 6-7.
- d. Adjust A3R6 (Line Select Focus) for best definition of the readout characters.
- e. Turn off LINE SELECT.

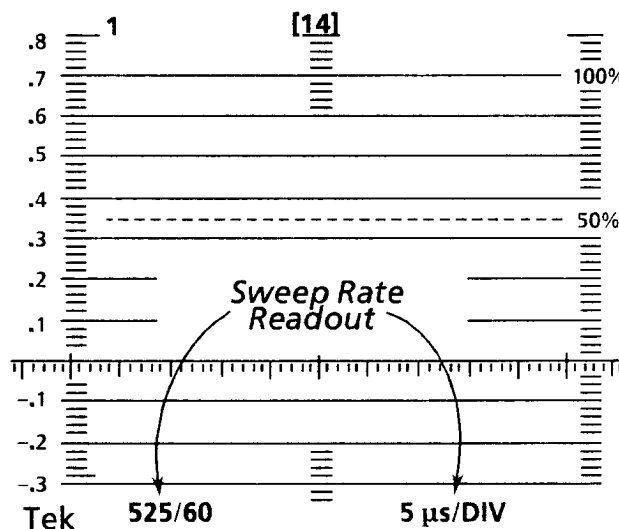


Figure 6-7: A sample 1735 HD readout correctly positioned on the CRT

This completes the Adjustment Procedure.



Maintenance

Preventive Maintenance

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

Performance Checks and Readjustments

Instrument performance should be checked after each 2000 hours of operation, or every 12 months if used intermittently. This will help ensure maximum performance and assist in locating defects that may not be apparent during regular operation. The *Performance Verification and Adjustment Procedure* sections.



CAUTION. Do not allow water to get inside any enclosed assembly or component. Do not clean any plastic materials with benzene, toluene, xylene, acetone, or similar compounds, because they may damage the plastic.

Cleaning

The instrument should be cleaned often enough to prevent dust and dirt from accumulating. Dirt acts as a thermal insulator, preventing effective heat dissipation, and can also provide high-resistance electrical leakage paths between conductors or components in a humid environment.

- Exterior** Clean the dust from the outside of the instrument with a soft cloth or small brush. A brush is especially useful for removing dust from around the selector buttons, knobs, and connectors. Hardened dirt may be removed using a cloth dampened with a mild detergent and water solution. Abrasive cleaners should not be used.
- CRT** Clean the face of the CRT with a soft, lint-free cloth dampened in isopropyl alcohol or glass cleaner solution. Abrasive cleaners should not be used.
- Interior** Loosen dust with a soft, dry brush and remove it with low-pressure air (high-velocity air can damage some parts). Hardened dirt or grease can be removed with a cotton-tipped applicator dampened with a mild detergent and water solution. Abrasive cleaners should not be used.

A 2% RMA flux content solder is recommended for making repairs in this instrument. Cleaning of rosin residue is not recommended. Most cleaning solvents tend to reactivate the rosin and spread it under components where it may cause corrosion under humid conditions. The rosin residue, if left alone, does not exhibit these corrosive properties.

If the circuit board assemblies must be removed for cleaning, follow the instructions for removal/ replacement under the heading of Corrective Maintenance.

After cleaning, allow the interior to dry thoroughly before applying power to the instrument.

Visual Inspection

After cleaning, check the instrument carefully for improperly seated transistors or integrated circuits, defective connections, and damaged parts. To prevent additional damage in the case of heat-damaged parts, determine the cause of overheating before replacing the damaged part.

Periodic checks of the transistors and integrated circuits are not recommended. The best measure of performance is the actual operation of the component in the circuit.

Static-sensitive Components

This instrument contains electrical components that are susceptible to damage from static discharge. Static voltages from 1 kV to 30 kV are common in unprotected environments. Table 7-1 shows the relative static discharge susceptibility of various semiconductor classes.

Table 7-1: Static susceptibility

Relative susceptibility levels		Voltage*
1	MOS and CMOS	100 to 500 V
2	ECL	200 to 500 V
3	SCHOTTKY SIGNAL DIODES	250 V
4	SCHOTTKY TTL	500 V
5	HF BIPOLAR TRANSISTORS	400 to 600 V
6	JFETS	600 to 800 V
7	LINEAR CIRCUITS	400 to 1000 V est.
8	LOW POWER SCHOTTKY TTL	900 V

Table 7-1: Static susceptibility (Cont.)

Relative susceptibility levels		Voltage*
9	TTL	1200 V

* Voltage equivalent for levels (voltage discharged from a 100 pF capacitor through a resistance of 100 Ω).

Observe the following precautions to avoid damage:

1. Minimize handling of static-sensitive components.
2. Transport and store static-sensitive components or assemblies in their original containers, on a metal rail, or on conductive foam. Label any package that contains static-sensitive components or assemblies.
3. Discharge the static voltage from your body by wearing a grounding wrist strap while handling these components. Static-sensitive assemblies or components should be serviced only at a static-free work station by qualified personnel.
4. Nothing capable of generating or holding a static charge should be allowed on the work station surface.
5. Keep component leads shorted together whenever possible.
6. Handle components by the body, never by the leads.
7. Do not slide components over any surface.
8. Avoid handling components in areas that have a floor or work surface covering capable of generating a static charge.
9. Use a soldering iron that is connected to earth ground.
10. Use only wick-type or special antistatic suction desoldering tools.

Troubleshooting

Since this manual is a troubleshooting aid, its organization is described here. This material is general, and does not cover specific cases.

Troubleshooting Aids

Foldout Pages The foldout pages at the back of the manual contain block and schematic diagrams, circuit board illustrations, and look-up charts. See Figure 7-1.

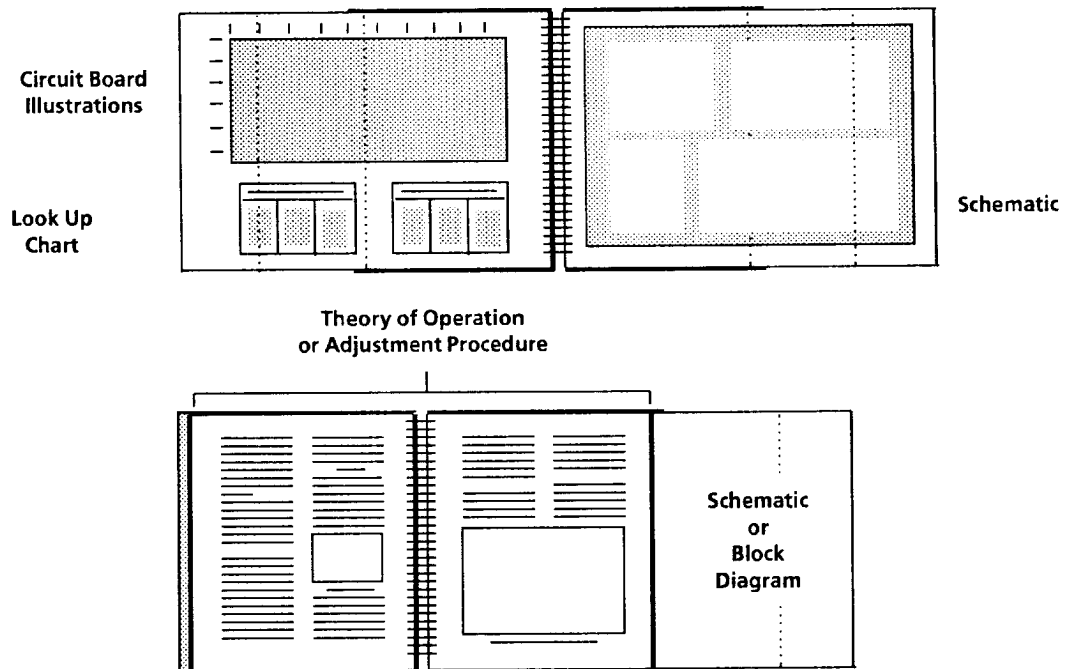


Figure 7-1: Using foldout pages

Diagrams. Schematic diagrams show the circuit number and electrical value of each component. Symbols used on these diagrams are defined on the first page of the *Diagrams* section. Circuit boards are indicated by a heavy border.

Refer to the *Replaceable Electrical Parts* for a complete description of each component.

NOTE. *Check the Change Information section in the rear of the manual for corrections and modifications to the instrument and the manual.*

Look Up Charts. Each schematic diagram is assigned an alpha-numeric grid and a look-up chart which lists the grid location of components on that schematic and on the circuit board.

Circuit Board Illustrations. Electrical components, connectors, and test points are identified on circuit board illustrations, which are located on the back of the schematic diagrams. Circuit board illustrations are assigned an alpha-numeric grid which corresponds to the lookup charts accompanying the schematics.

Assembly and Circuit Numbering. All circuit board assemblies are assigned assembly or “A” numbers. Figure 7–2 shows the assembly numbers and their locations for this instrument.

NOTE. *Always check the parts list for part numbers and descriptions when ordering replacement parts. Some parts may have been replaced or have a different value in an individual instrument.*

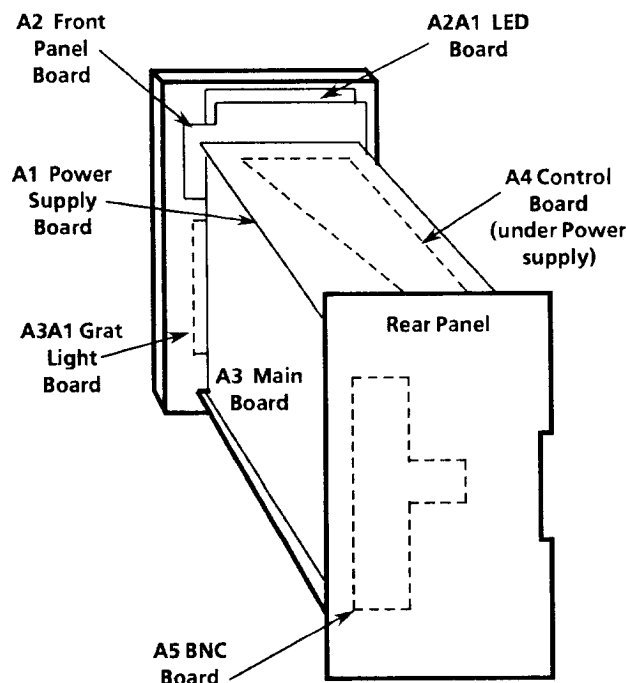


Figure 7-2: Circuit board assembly locations

Parts List

There are two separate parts lists in this manual. The *Replaceable Electrical Parts* precedes the schematic diagrams, and the *Replaceable Mechanical Parts* follows them.

Replaceable Electrical Parts. This list is arranged by assembly (as designated in ANSI Standard Y32.16-1975), beginning with the etched circuit board assemblies. These are followed by the individual components, which combine the assembly number with the individual circuit number.

EXAMPLE: R117 on the Power Supply board (A1) would be shown in the *Replaceable Electrical Parts* as A1R117.

Replaceable Mechanical Parts List and Exploded View Drawing. Parts listed in the *Replaceable Mechanical Parts* are assigned index numbers which correspond to circled numbers on the exploded view drawing(s).

Accessories List. Standard accessories are illustrated in the exploded view drawing. Part numbers of standard and optional accessories are given at the end of the *Replaceable Mechanical Parts*.

Major Assembly Interconnection

Signals and power supply voltages are passed through the instrument using a system of interconnecting cables.

- | | |
|--|---|
| 24 & 32 Pin Connectors | The male connectors on the cables fit into the connectors that are mounted on the circuit boards. A triangular symbol identifies pin 1 on both connectors, and the remaining pins are numbered. See Figure 7-3. |
| Square Pin Connectors | Pin 1 is marked by a triangular symbol on the circuit board and on the connector. |
| Connectors with Center Polarizers | These polarizers serve as a key for proper mating with the connector on the circuit board. Pin 1 is also marked with a triangular symbol on both connectors. |

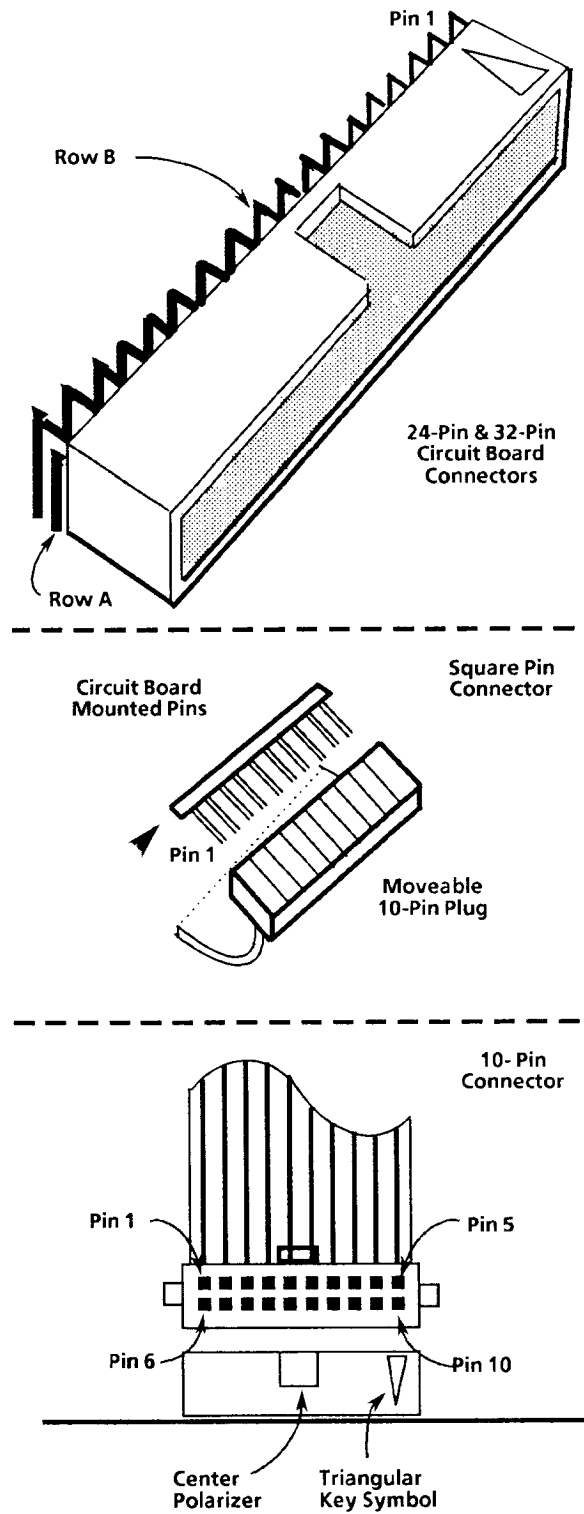


Figure 7-3: Multiple pin connectors

General Troubleshooting Techniques

1. Be sure the instrument is malfunctioning. See *Operating Basics* to determine whether the instrument is operating properly. Check the operation of front-panel controls, associated equipment, and input signal connections.



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.

2. Determine the nature of the problem. Determine whether the instrument is out of calibration or there has been a component failure. Once the type of failure has been determined, identify the functional area most likely at fault.
3. Isolate the problem to a circuit or assembly. Use the block diagram as an aid to signal tracing and circuit isolation.



CAUTION. Always remove the assembly from the instrument prior to attempting to replace a soldered-in component. See *Corrective Maintenance for the correct procedure*.

4. Visually inspect the suspect assembly for obvious defects. Look for chafed insulation, components that are broken, loose, improperly seated, overheated or burned, etc. Repair or replace all obvious defects. In the case of overheated components, determine and correct the cause of overheating before re-applying power.
5. Use successive electrical checks to locate the source of the problem. The primary tool for problem isolation is the oscilloscope. Use the *Performance Verification* section 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. Use caution, since this can destroy instrument calibration. Note the adjustment position before making changes, so that it can be returned to the same position.
6. Determine the extent of the repair. If the necessary repair is complex, it may be advisable to contact your local Tektronix field office or representative before continuing. If the repair is minor, such as replacing a component, see the parts list for replacement information. Removal and replacement procedures for the assemblies can be found under *Corrective Maintenance*.

Corrective Maintenance

NOTE. No repair should be attempted during the warranty period.



CAUTION. A 2% RMA flux content solder is recommended for making repairs in this instrument. Cleaning of rosin residue is not recommended. Most cleaning solvents tend to reactivate the rosin and spread it under components where it may cause corrosion under humid conditions. The rosin residue, if left alone, does not exhibit these corrosive properties.

Obtaining Replacement Parts

Replacement parts are available through the local Tektronix, Inc., field office or representative. However, many common electronic parts are available through local sources. Using a local source where possible will eliminate shipping delays.

Changes to Tektronix instruments are sometimes made to accommodate improved components, as they become available, and to improve circuit performance. Therefore, it is important to include the following information when ordering parts:

1. Part Number
2. Instrument Type or Number
3. Serial Number
4. Modification or Option Number (if applicable)

If a part has been replaced with a new or improved part, the new part will be shipped (if it is a direct replacement). If not directly replaceable, the local Tektronix field office or representative will contact the customer concerning any changes. After any repair, circuit readjustment may be required.

Selected Components

The 1735 HD has only one test selectable part. Capacitor C255 on the A3 Main board has a nominal value of 22 pF. If necessary to meet the CH 3A Subtract specification, this capacitor may be changed to 15 pF.

Mechanical Disassembly/Assembly

Use these instructions for disassembly and reverse them for reassembly, unless otherwise noted.



WARNING. Before attempting any disassembly/ assembly of the instrument, be sure to disconnect the power cord.



CAUTION. Do not re-insert screws in the rear panel when the instrument is removed from the cabinet.

NOTE. All screws, unless otherwise noted, are TORX® screws and can be removed with a T15 screwdriver tip (Tektronix part number 003-0966-00). The exception is #2 Pozidrive® screws which can be removed with a #1 Pozidrive® tip (003-0443-00).

Bezel Removal

1. Remove the two bezel screws. Remove the FOCUS, SCALE, and INTENS controls. See Figure 7-4.

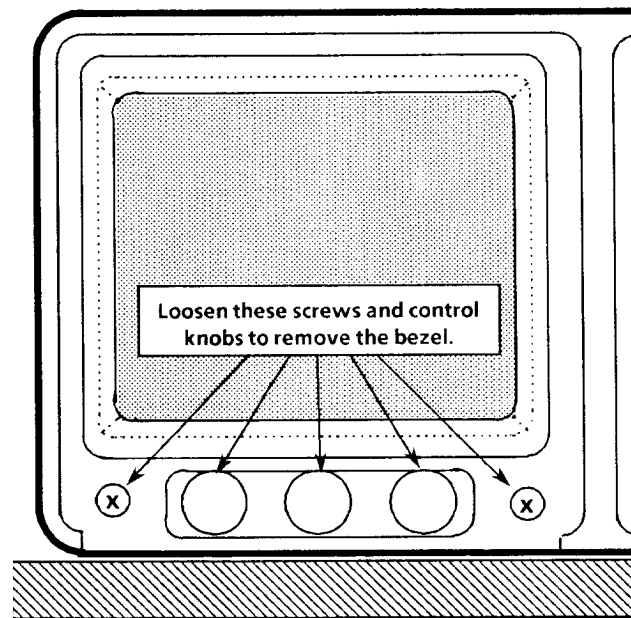


Figure 7-4: Bezel screws

2. 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.

Graticule Light Tools

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).



CAUTION. *Needle-nosed pliers are not recommended.*

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

Graticule Light Replacement Procedure

1. Remove the bezel according to the preceding instructions.
2. To remove a bulb, position the tweezer tips on the thin, flat portion of the bulb (close to the plastic socket). Carefully pull the bulb straight out.
3. To install a bulb, hold it with the tweezers as described in step 2, position it in front of the socket, and push the bulb until it snaps into place.
4. Replace the bezel.

Removing the CRT



WARNING. *The CRT is a high vacuum device and must be handled with care. Safety glasses, gloves, and protective clothing should always be worn when handling CRTs.*

1. Remove the bezel.
2. Disconnect the Trace Rotation connector, J4, from the Control board (A4).
3. Disconnect all four deflection leads (red, green, blue, and brown) from the CRT.



WARNING. *The CRT may retain a dangerous charge. Ground the conductor of the anode to discharge the CRT. Do not allow the conductor to touch your body or any circuitry.*

4. With one hand, grasp the CRT just behind the anode cap. Push the CRT out far enough to allow access to the anode connector (some pressure is needed).

There are four cushions in the front panel opening which should be in place when the CRT is reinstalled.

5. Disconnect the anode by separating the connector from the multiplier on the Power Supply board (A1). Do not touch the exposed tip of the connector. Discharge the connector tip to the chassis. Disconnect J5 from the Control board if necessary to reach the anode connector.

Replacement of the CRT

1. Slide the CRT partially into position and reconnect J4 to the Control board, with the red lead to the top of the instrument.
2. Position the base of the CRT near the plastic CRT mount.
3. A socket and clear plastic cover are contained in the plastic CRT mount. Remove the clear plastic cover (but do not remove the socket) from the CRT mount. The two nuts that attach the mount to the instrument chassis can be removed, so that the mount can be moved if desired.



CAUTION. *Avoid bending the CRT base pins when pushing the CRT into the socket. Do not pinch wires between the CRT and socket.*

4. Slide the CRT back toward the CRT socket. Holding the socket from behind, align the socket to match the CRT base pins and push the CRT into the socket, matching up the notches in the CRT with those in the mount.
5. Reinstall the clear plastic cover on the back of the CRT socket.
6. Be sure that the four cushions are in place in the corners of the front panel opening.
7. If the CRT mount nuts were removed in step 4, push the CRT into place and position the CRT mount on the chassis posts. Replace and tighten the CRT mount nuts.
8. Connect all four deflection leads (red, green, blue, and brown) to the CRT. See Figure 7-5.
9. Clean the face of the CRT to remove fingerprints.
10. Reconnect the anode connector to the HV Multiplier on the Power Supply board.
11. Install the bezel.

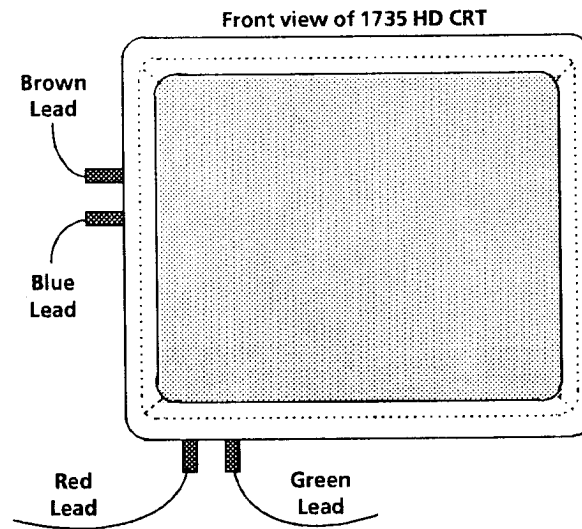


Figure 7-5: Positions of CRT deflection leads

Removing the Rear-Panel Assembly

To remove the rear-panel assembly (including the BNC board), proceed as follows:

1. Unsolder the leads from the following 12 locations on the BNC board: P605, P607, P609, P615, P619, P625, P629, P635, P639, P645, P647, and P649.

NOTE. There are two cables that connect the rear panel with the Main and Control boards. These may be unplugged from those boards, as outlined in steps 2 and 3. Alternately, these cables may be disconnected at the rear panel by removing two screws from the REMOTE, two screws from the AUX OUT, and the nut (with lockwasher) from the PIX MON OUT.

2. Disconnect the split ribbon cable connector from J3 on the Control board. (This cable comes from the rear-panel REMOTE and AUX OUT connectors.)
3. Disconnect the cable from J4 on the back of the Main board.
4. Disconnect the cable from J243 on the BNC board.
5. Disconnect the cable from J501 on the Power Supply board.
6. Remove the two screws and nuts (with captive lockwashers) from the ac line filter. See Figure 7-6.

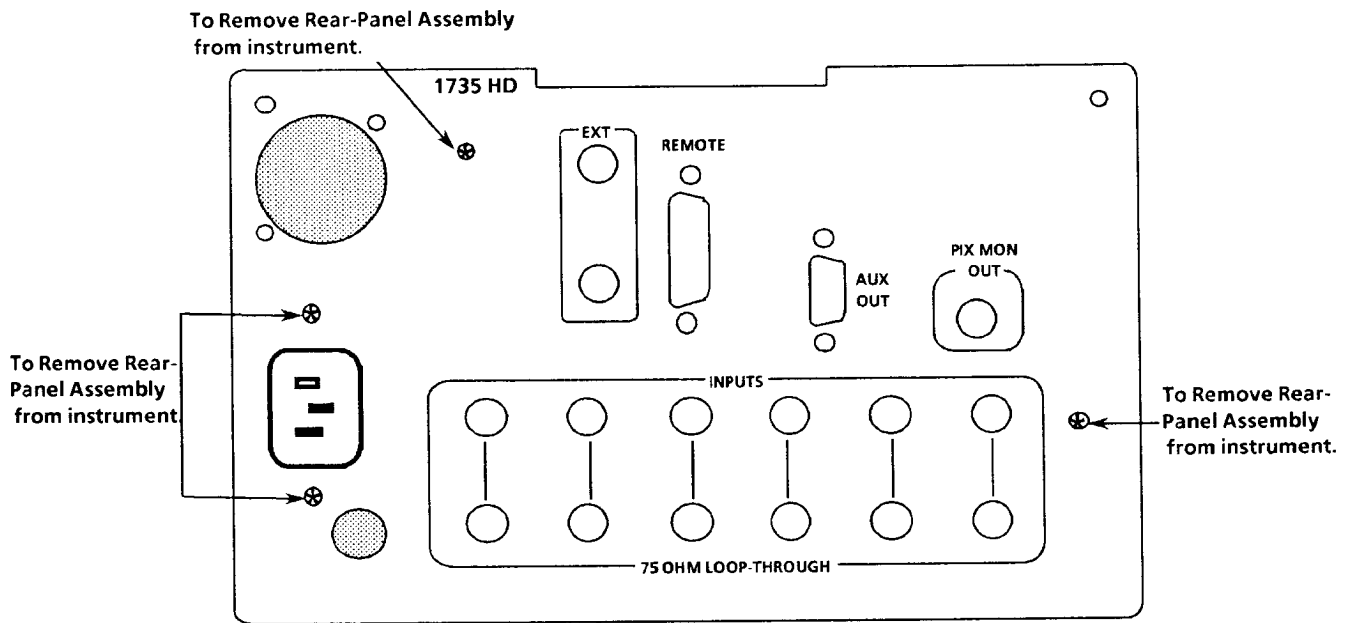


Figure 7-6: Screws that fasten the rear-panel assembly to the instrument

7. Remove the remaining two screws that hold the rear panel to the chassis.
8. Pull the rear panel, with BNC board still attached, free from the chassis.

Separating BNC Board from Rear Panel

1. Follow the procedure for Removing the Rear Panel assembly.
2. Remove the nut (with captive lockwasher) from each bnc-type connector on the outside of the rear panel.
3. Separate the BNC board from the rear panel.

Removing the Front-Panel Assembly

1. Disconnect the ribbon cables from J5 and J6 on the Control board.
2. Remove the two screws located above and below the Front Panel board as shown in Figure 7-7. Remove the front-panel assembly, including the Front Panel board, by pushing it through the opening in the frame.

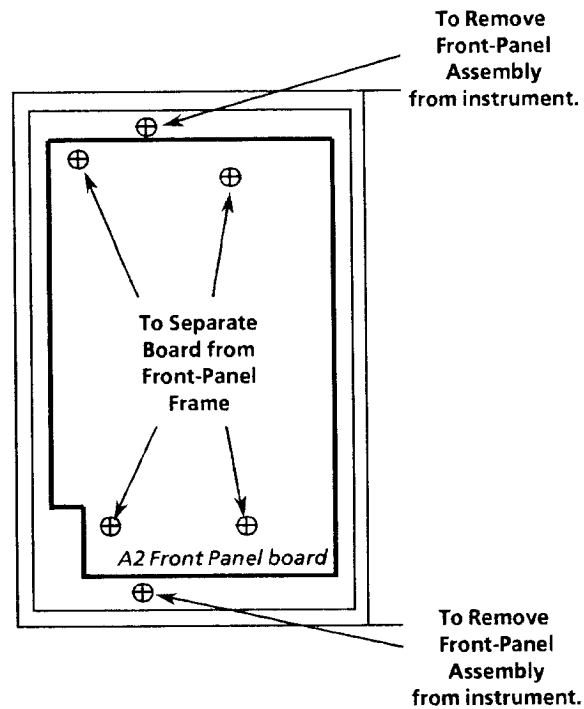


Figure 7-7: Screws that hold the front panel board (A2) in place

3. To separate the Front Panel board from the assembly, proceed as follows:
 - a. Remove the control knobs from the front of the instrument.
 - b. Remove the four screws from the rear side of the assembly. See Figure 7-7 for locations.
 - c. Separate the board from the assembly.

Removing the Control Board

1. Remove the three screws near the top of board. These screws hold the board in place.
2. Unplug the Control board from the bottom edge connectors (J3 and J8 on the Main board).
3. Raise the Control board sufficiently to disconnect the ribbon cable connectors from J3, J4, J5, J6.
4. Disconnect the cable from J1 on the Control board. Remove the Control board.

Removing the Main Board

1. Unsolder the wires (Tektronix part number 196-3146-00) from the following 12 locations on the BNC board: P605, P607, P609, P615, P619, P625, P629, P635, P639, P645, P647, and P649.
2. If the Main board is to be replaced, remove the wires and install them on the replacement board. Insulated 18 gauge wire straps may also be used.
3. Unplug all four CRT deflection plate leads (red, green, brown, and blue) from the CRT.
4. Unplug J4 on the Main board and J5 (Low Voltage Power) on the Power Supply board.
5. Remove the following knobs: FOCUS, SCALE, and INTENS.
6. Remove the eight screws (shown in Figure 7-8) that hold the Main board in place.
7. Carefully unplug the Main board from the two connectors on the Control board.
8. After the Main board has been pulled outward sufficiently to clear the Control board connectors and the rear panel, slide the Main board toward the rear of the instrument until the control shafts have cleared the front frame. Lift the board out.
9. When reinstalling the Main board, refer to Figure 7-5 for correct positioning of CRT deflection leads.

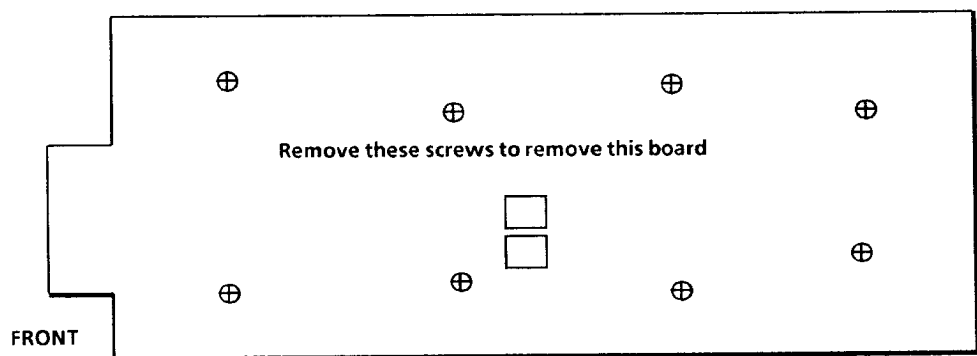


Figure 7-8: Screws that hold the Main board (A3) in place

Removing the Power Supply Board



1. Remove the plug (from A1J5) that connects the Power Supply board to the Main board.

WARNING. The CRT may retain a dangerous charge. Ground the conductor of the anode to discharge the CRT. Do not allow the conductor to touch your body or any circuitry.

2. Remove the anode connector from the CRT and discharge it to ground.
3. Unplug the following from the Power Supply board: J1, J3 (the focus lead), and J4.
4. Detach the AC line filter assembly from the rear panel by removing the two mounting screws with their nuts and captive lockwashers.
5. Use a #1 Pozidrive® tip to disconnect the POWER ON/OFF switch from the front casting.
6. Remove the seven screws that hold the Power Supply board in place. See Figure 7-9.
7. Remove the board by sliding it toward the front panel and lifting it up.

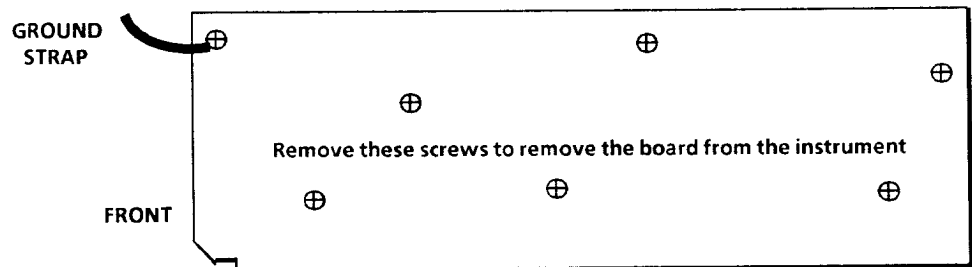


Figure 7-9: Screws that hold the Power Supply board (A1) in place

Repackaging

Identification Tag

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

1. Owner (with complete address) and the name of the person at your firm that can be contacted.
2. Instrument serial number and a description of the service required.

Repackaging for Shipment

Repackaging the instrument in the original manner provides adequate protection. Use the following procedure only if the original packaging material is unavailable or unfit for use.

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. Put corrugated cardboard around the instrument for protection. See Figure 7-10.
4. 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.
5. Seal the carton with shipping tape or industrial stapler.

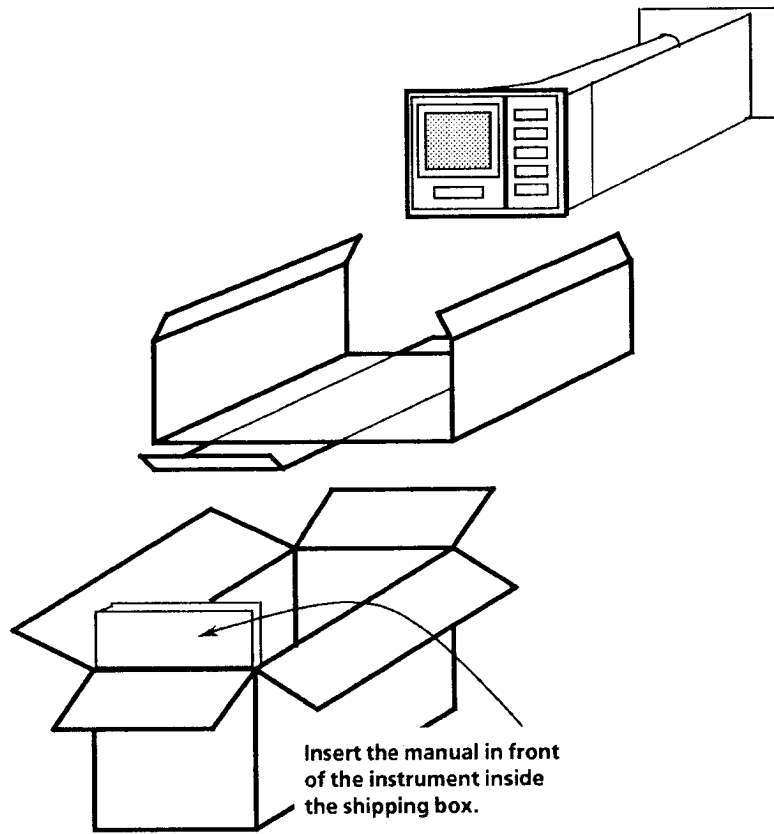


Figure 7-10: Repackaging



Replaceable Electrical Parts

Replaceable Electrical Parts

This section contains a list of the electrical components for the 1735 HD. 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.

Change information, if any, is located at the rear of this manual.

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	AMP INC	2800 FULLING MILL PO BOX 3608	HARRISBURG PA 17105
01295	TEXAS INSTRUMENTS INC SEMICONDUCTOR GROUP	13500 N CENTRAL EXPY PO BOX 655303	DALLAS TX 75262-5303
04222	AVX/KYOCERA DIV OF AVX CORP	19TH AVE SOUTH P O BOX 867	MYRTLE BEACH SC 29577
04713	MOTOROLA INC SEMICONDUCTOR PRODUCTS SECTOR	5005 E MCDOWELL RD	PHOENIX AZ 85008-4229
09023	CORNELL-DUBILIER ELECTRONICS DIV FEDERAL PACIFIC ELECTRIC CO	2652 DALRYMPLE ST	SANFORD NC 27330
09969	DALE ELECTRONICS INC	EAST HIGHWAY 50 P O BOX 180	YANKTON SD 57078
11236	CTS CORPORATION RESISTOR NETWORKS DIVISION	406 PARR ROAD	BERNE IN 46711-9506
11502	IRC, INC	PO BOX 1860	BOONE NC 28607-1860
12697	CLAROSTAT MFG CO INC	12055 ROJAS DRIVE SUITE K	EL PASO, TX 79936
12969	MICROSEMI CORPORATION WATERTOWN DIVISION	530 PLEASANT STREET	WATERTOWN MA 02172
14301	ANDERSON ELECTRONICS INC	PO BOX 89	HOLLIDAYSBURG PA 16648-0089
14552	MICROSEMI CORP	2830 S FAIRVIEW ST	SANTA ANA CA 92704-5948
17856	SILICONIX INC	2201 LAURELWOOD RD	SANTA CLARA CA 95054-1516
18796	MURATA ELECTRONICS NORTH AMERICA INC. STATE COLLEGE OPERATIONS	1900 W COLLEGE AVE	STATE COLLEGE PA 16801-2723
19701	PHILIPS COMPONENTS DISCRETE PROD- UCTS DIV RESISTIVE PRODUCTS FACILITY AIRPORT ROAD	PO BOX 760	MINERAL WELLS TX 76067-0760
22526	BERG ELECTRONICS INC (DUPONT)	857 OLD TRAIL RD	ETTERS PA 17319
24355	ANALOG DEVICES INC	1 TECHNOLOGY DRIVE	NORWOOD MA 02062
24546	DALE ELECTRONICS A VISHAY INTERTECHNOLOGY INC CO	550 HIGH ST	BRADFORD PA 16701-3737
26364	COMPONENTS CORP	6 KINSEY PLACE	DENVILLE NJ 07834-2611
27014	NATIONAL SEMICONDUCTOR CORP	2900 SEMICONDUCTOR DR	SANTA CLARA CA 95051-0606
34361	OMRON ELECTRONICS INC.	2105 HAMILTON AVE SUITE 160	SAN JOSE, CA 95125
37942	NORTH AMERICAN CAPACITOR CO	INDIANAPOLIS ROAD, HWY 240 PO BOX 240	GREEN CASTLE, IN 46135
50434	HEWLETT-PACKARD CO OPTOELECTRONICS DIV	370 W TRIMBLE RD	SAN JOSE CA 95131-1008
50444	HEWLETT-PACKARD CO H P LABORATORIES	1501 PAGE MILL RD	PALO ALTO CA 94304-1126

Manufacturers cross index (Cont.)

Mfr. code	Manufacturer	Address	City, state, zip code
51406	MURATA ELECTRONICS NORTH AMERICA INC HEADQUARTERS AND GEORGIA OPERATIONS	2200 LAKE PARK DR	SMYRNA GA 30080
52769	SPRAGUE-GOODMAN ELECTRONICS INC	1700 SHAMES DRIVE	WESTBURY, NY 11590
53387	3M COMPANY ELECTRONIC PRODUCTS DIV	3M AUSTIN CENTER	AUSTIN TX 78769-2963
55680	NICHICON /AMERICA/ CORP	927 E STATE PKY	SCHAUMBURG IL 60195-4526
56845	DALE ELECTRONICS INC	2300 RIVERSIDE BLVD PO BOX 74	NORFOLK NE 68701-2242
57668	ROHM CORPORATION	15375 BARRANCA PARKWAY SUITE B207	IRVINE CA 92718
58050	TEKA PRODUCTS INC	45 SALEM ST	PROVIDENCE RI 02907
59660	TUSONIX INC	7741 N BUSINESS PARK DR PO BOX 37144	TUCSON AZ 85740-7144
60395	XICOR INC	851 BUCKEYE CT	MILPITAS CA 95035-7408
73743	FISCHER SPECIAL MFG CO	111 INDUSTRIAL RD	COLD SPRING KY 41076-9749
75498	MULTICOMP INC	3005 SW 154TH TERRACE #3	BEAVERTON OR 97006
76493	BELL INDUSTRIES INC JW MILLER DIV	306 E ALONDRA BLVD PO BOX 2859	GARDENA, CA 90247-1059
80009	TEKTRONIX INC	14150 SW KARL BRAUN DR PO BOX 500	BEAVERTON OR 97077-0001
91637	DALE ELECTRONICS INC	2064 12TH AVE PO BOX 609	COLUMBUS NE 68601-3632
TK1462	YAMAICHI ELECTRONICS CO LTD 2ND FLOOR NEW KYOEI BLDG 17-11	3-CHROME SHIBAURA MINATO-KU	TOKYO JAPAN
TK1913	WIMA THE INTER-TECHNICAL GROUP IND	2269 SAW MILL RIVER ROAD PO BOX 127	ELMSFORD NY 10523

Replaceable electrical parts list

Component number	Tektronix part number	Serial no. effective	Serial no. discontinued	Name & description	Mfr. code	Mfr. part number
A1	671-2271-07			CIRCUIT BD ASSY:POWER SUPPLY	80009	671-2271-07
A2	671-2319-02			CIRCUIT BD ASSY:FRONT PANEL	80009	671-2319-02
A2A1	671-0573-05			CIRCUIT BD ASSY:LED	80009	671-0573-05
A3	672-1375-04			CIRCUIT BD ASSY:MAIN	80009	672-1375-04
A3A1	671-1796-01			CIRCUIT BD ASSY:GRATICULE LIGHT	80009	671-1796-01
A4	671-2480-04			CIRCUIT BD ASSY:CONTROL	80009	671-2480-04
A5	671-2481-00			CIRCUIT BD ASSY:BNC	80009	671-2481-00

Replaceable Electrical Parts

Replaceable electrical parts list (Cont.)

Component number	Tektronix part number	Serial no. effective	Serial no. discont'd	Name & description	Mfr. code	Mfr. part number
A1	671-2271-07			CIRCUIT BD ASSY:POWER SUPPLY	80009	671-2271-07
				ATTACHED PARTS		
	337-3801-00			SHIELD,ELEC:PWR SPLY	80009	337-3801-00
				END ATTACHED PARTS		
A1C1	283-0021-00			CAP,FXD,CER DI:0.001UF,20%,5000V	18796	DE1310Y5P102M6K V
A1C2	281-0775-01			CAP,FXD,CER:MCL:0.1UF,20%,50V,Z5U,0.170 X 0.100;AXIAL	04222	SA105E104MAA
A1C3	283-0021-00			CAP,FXD,CER DI:0.001UF,20%,5000V	18796	DE1310Y5P102M6K V
A1C4	283-0639-01			CAP,FXD,MICA DI:56PF,1%,500V,T&A	09023	CDA15ED560F03
A1C5	283-0339-00			CAP,FXD,CER:MCL:0.22UF,10%,50V,X7R,0.30 X 0.30,0.20 LS	04222	SR305C224KAA
A1C6	283-0261-00			CAP,FXD,CER DI:0.01UF,20%,4000V	51406	DHR28Z5U103M4K V
A1C7	283-0261-00			CAP,FXD,CER DI:0.01UF,20%,4000V	51406	DHR28Z5U103M4K V
A1C8	283-0261-00			CAP,FXD,CER DI:0.01UF,20%,4000V	51406	DHR28Z5U103M4K V
A1C9	285-1341-01			CAP,FXD,MTLZD:0.1UF,20%,100VDC	84411	X674L .1 20 100
A1C10	281-0775-01			CAP,FXD,CER:MCL:0.1UF,20%,50V,Z5U,0.170 X 0.100;AXIAL	04222	SA105E104MAA
A1C11	283-0021-00			CAP,FXD,CER DI:0.001UF,20%,5000V	18796	DE1310Y5P102M6K V
A1C12	283-0000-00			CAP,FXD,CER DI:0.001UF,+100-0%,500V	80009	283-0000-00
A1C13	283-0189-00			CAP,FXD,CER DI:0.1UF,20%,400V	04222	SR508C104MAA
A1C14	285-1341-01			CAP,FXD,MTLZD:0.1UF,20%,100VDC	84411	X674L .1 20 100
A1C15	290-1277-00			CAP,FXD,AL:10UF,20%,50V,5 X 11;RDL,105 DEG,BULK	80009	290-1277-00
A1C16	283-0084-00			CAP,FXD,CER DI:270PF,5%,1000V	80009	283-0084-00
A1C17	285-1341-01			CAP,FXD,MTLZD:0.1UF,20%,100VDC	84411	X674L .1 20 100
A1C18	283-0189-00			CAP,FXD,CER DI:0.1UF,20%,400V	04222	SR508C104MAA
A1C19	285-1341-01			CAP,FXD,MTLZD:0.1UF,20%,100VDC	84411	X674L .1 20 100
A1C20	290-0939-00			CAP,FXD,ELCTLT:10UF,+100-10%,100V	80009	290-0939-00
A1C21	283-0189-00			CAP,FXD,CER DI:0.1UF,20%,400V	04222	SR508C104MAA
A1C22	290-1277-00			CAP,FXD,AL:10UF,20%,50V,5 X 11;RDL,105 DEG,BULK	80009	290-1277-00
A1C23	285-1189-00			CAP,FXD,MTLZD:0.1 UF,5%,100 V	55112	160/.1/J/100/C
A1C24	285-1328-00			CAP,FXD,PLSTC:MTLZD FILM;0.01UF,5%,2000V,POLYPROPYLENE,1.25X.95;RDL,T/A	TK1573	FKP1 .01/2000/5
A1C25	290-1276-00	671-2271-02	671-2271-02	CAP,FXD,AL:10UF,20%,160V,60 X 20;105 DEG,RDL,.2 LEADS	80009	290-1276-00
A1C25	290-1310-00	671-2271-02		CAP,FXD,ALUM:10UF,20%,160V,13 X 20MM;RDL,0.2LS,105 DEG,5000 HR	80009	290-1310-00
A1C26	290-0920-00			CAP,FXD,ALUM:33UF,20%,50V,6 X 11MM,0.1SP,RADIAL,BULK	62643	SME50VB33RM6X11 LL
A1C27	283-0339-00			CAP,FXD,CER:MCL:0.22UF,10%,50V,X7R,0.30 X 0.30,0.20 LS	04222	SR305C224KAA

Replaceable electrical parts list (Cont.)

Component number	Tektronix part number	Serial no. effective	Serial no. discount'd	Name & description	Mfr. code	Mfr. part number
A1C28	281-0775-01			CAP,FXD,CER:MCL:0.1UF,20%,50V,Z5U,0.170 X 0.100;AXIAL	04222	SA105E104MAA
A1C29	290-1310-00			CAP,FXD,ALUM:10UF,20%,160V,13 X 20MM;RDL,0.2LS,105 DEG,5000 HR	80009	290-1310-00
A1C30	290-1267-00			CAP,FXD,AL:560UF,20%,50V,12.5 X 31.5,LOW IMP;RDL	80009	290-1267-00
A1C31	290-1069-00			CAP,FXD,ELCTLT:1000UF,20%,6.3V	80009	290-1069-00
A1C32	290-0939-00			CAP,FXD,ELCTLT:10UF,+100-10%,100V	80009	290-0939-00
A1C33	290-0939-00			CAP,FXD,ELCTLT:10UF,+100-10%,100V	80009	290-0939-00
A1C34	290-1034-00			CAP,FXD,ALUM:330UF,20%,25V,13 X 25MM;RDL	TK1424	CEUFM1E331
A1C35	290-1069-00			CAP,FXD,ELCTLT:1000UF,20%,6.3V	80009	290-1069-00
A1C36	290-1309-00			CAP,FXD,AL:100UF,20%,63V,10 X 20MM,RDL,105 DEG,LOW Z,T&A	80009	290-1309-00
A1C37	281-0775-01			CAP,FXD,CER:MCL:0.1UF,20%,50V,Z5U,0.170 X 0.100;AXIAL	04222	SA105E104MAA
A1C38	290-1309-00			CAP,FXD,AL:100UF,20%,63V,10 X 20MM,RDL,105 DEG,LOW Z,T&A	80009	290-1309-00
A1C39	290-1277-00			CAP,FXD,AL:10UF,20%,50V,5 X 11;RDL,105 DEG,BULK	80009	290-1277-00
A1C40	290-1267-00			CAP,FXD,AL:560UF,20%,50V,12.5 X 31.5,LOW IMP;RDL	80009	290-1267-00
A1C41	281-0772-00			CAP,FXD,CER:MLC:4700PF,10%,100V,0.100 X 0.170;AXIAL	04222	SA101C472KAA
A1C42	290-1034-00			CAP,FXD,ALUM:330UF,20%,25V,13 X 25MM;RDL	TK1424	CEUFM1E331
A1C43	285-1331-00			CAP,FXD,MTLZD:0.47UF,5%,400V	TK1573	MKS4.47/400/5
A1C44	285-1331-00			CAP,FXD,MTLZD:0.47UF,5%,400V	TK1573	MKS4.47/400/5
A1C45	285-1420-00			CAP,FXD,PLSTC:FILM&FOIL:4700PF,63V,5%,POLYPROPYLENE,6X7.2MM,RDL, 5 MM LS	TK1913	FKP2 4700/63/5
A1C46	281-0773-00			CAP,FXD,CER:MLC:0.01UF,10%,100V,SAF,0.100 X 0.170;AXIAL,MI	80009	281-0773-00
A1C47	285-1251-00			CAP,FXD,PLSTC:0.033UF,10%,400VAC	80009	285-1251-00
A1C48	281-0786-00			CAP,FXD,CER:MLC:150PF,10%,100V,0.100 X 0.170;AXIAL,MI	04222	SA101A151KAA
A1C49	285-1470-00			CAP,FXD,PLSTC:	80009	285-1470-00
A1C50	285-1246-00			CAP,FXD,PPR DI:0.022UF,20%,250VAC	80009	285-1246-00
A1C51	281-0823-00			CAP,FXD,CER DI:470PF,10%,50V	04222	SA101A471KAA
A1C52	290-1309-00			CAP,FXD,AL:100UF,20%,63V,10 X 20MM,RDL,105 DEG,LOW Z,T&A	80009	290-1309-00
A1C53	281-0775-01			CAP,FXD,CER:MCL:0.1UF,20%,50V,Z5U,0.170 X 0.100;AXIAL	04222	SA105E104MAA
A1C54	281-0775-01			CAP,FXD,CER:MCL:0.1UF,20%,50V,Z5U,0.170 X 0.100;AXIAL	04222	SA105E104MAA
A1C55	281-0773-00			CAP,FXD,CER:MLC:0.01UF,10%,100V,SAF,0.100 X 0.170;AXIAL,MI	80009	281-0773-00
A1C56	281-0925-01			CAP,FXD,CER:MLC:0.22UF,20%,50V,Z5U.0.170 X 0.120;AXIAL,MI	04222	SA115E224MAA
A1C57	281-0759-00			CAP,FXD,CER:MLC:22PF,10%,100V,0.100 X 0.170;AXIAL,MI	80009	281-0759-00
A1C58	281-0775-01			CAP,FXD,CER:MCL:0.1UF,20%,50V,Z5U,0.170 X 0.100;AXIAL	04222	SA105E104MAA
A1C59	281-0765-00			CAP,FXD,CER DI:100PF,5%,100V	04222	SA102A101JAA
A1C60	281-0765-00			CAP,FXD,CER DI:100PF,5%,100V	04222	SA102A101JAA

Replaceable Electrical Parts

Replaceable electrical parts list (Cont.)

Component number	Tektronix part number	Serial no. effective	Serial no. discont'd	Name & description	Mfr. code	Mfr. part number
A1C61	281-0775-01			CAP,FXD,CER:MCL:0.1UF,20%,50V,Z5U,0.170 X 0.100:AXIAL	04222	SA105E104MAA
A1C62	290-1275-00			CAP,FXD,AL:330UF,20%,400V,35 X 35;105 DEG,SNAP IN	80009	290-1275-00
A1C63	281-0765-00			CAP,FXD,CER DI:100PF,5%,100V	04222	SA102A101JAA
A1C64	285-1246-00			CAP,FXD,PPR DI:0.022UF,20%,250VAC	80009	285-1246-00
A1C65	285-1222-00			CAP,FXD,PLSTC:0.068UF,20%,250V	37942	158/068/M/250/H
A1C66	290-0973-03			CAP,FXD,ELCTL:100UF,20%,25VDC	55680	UVX1V101MPA1TD
A1CR1	152-0141-02			DIO,SIG:ULTRA FAST;40V,150MA,4NS,2PF;1N4152,DO-35	80009	152-0141-02
A1CR2	152-0141-02			DIO,SIG:ULTRA FAST;40V,150MA,4NS,2PF;1N4152,DO-35	80009	152-0141-02
A1CR3	152-0061-00			DIO,SIG:200V,0.1A,700NS,4.0PF;FDH2161,T&R	07263	FDH2161
A1CR4	152-0061-00			DIO,SIG:200V,0.1A,700NS,4.0PF;FDH2161,T&R	07263	FDH2161
A1CR5	152-0061-00			DIO,SIG:200V,0.1A,700NS,4.0PF;FDH2161,T&R	07263	FDH2161
A1CR6	152-0409-00			DIO,RECT:FAST RCVRY;12KV,10MA,250NS;CRVT150,AXIAL LEAD	80009	152-0409-00
A1CR7	152-0061-00			DIO,SIG:200V,0.1A,700NS,4.0PF;FDH2161,T&R	07263	FDH2161
A1CR8	152-0061-00			DIO,SIG:200V,0.1A,700NS,4.0PF;FDH2161,T&R	07263	FDH2161
A1CR9	152-0400-00			DIO,RECT:FAST RCVRY;400V,1A,200NS;1N4936,DO-41,T&R	80009	152-0400-00
A1CR10	152-0400-00			DIO,RECT:FAST RCVRY;400V,1A,200NS;1N4936,DO-41,T&R	80009	152-0400-00
A1CR11	152-0141-02			DIO,SIG:ULTRA FAST;40V,150MA,4NS,2PF;1N4152,DO-35	80009	152-0141-02
A1CR12	152-0141-02			DIO,SIG:ULTRA FAST;40V,150MA,4NS,2PF;1N4152,DO-35	80009	152-0141-02
A1CR13	152-0141-02			DIO,SIG:ULTRA FAST;40V,150MA,4NS,2PF;1N4152,DO-35	80009	152-0141-02
A1CR14	152-0400-00			DIO,RECT:FAST RCVRY;400V,1A,200NS;1N4936,DO-41,T&R	80009	152-0400-00
A1CR16	152-0720-00			DIO,RECT:ULTRA FAST;100V,8A,25NS,100A IFSM;BYW29-100,TO-220	80009	152-0720-00
				MOUNTING PARTS		
	210-0406-00			NUT,PLAIN,HEX:4-40 X 0.188,BRS CD PL	73743	12161-50
	211-0008-00			SCR,MACH:4-40 X 0.25,PNH,STL	93907	ORDER BY DESCR
	214-3841-00			HTSK,XSTR:TO-220 W/SOLDERABLE TABS,AL	80009	214-3841-00
				END MOUNTING PARTS		
A1CR17	152-0720-00			DIO,RECT:ULTRA FAST;100V,8A,25NS,100A IFSM;BYW29-100,TO-220	80009	152-0720-00
				MOUNTING PARTS		
	210-0406-00			NUT,PLAIN,HEX:4-40 X 0.188,BRS CD PL	73743	12161-50
	211-0008-00			SCR,MACH:4-40 X 0.25,PNH,STL	93907	ORDER BY DESCR
	214-3841-00			HTSK,XSTR:TO-220 W/SOLDERABLE TABS,AL	80009	214-3841-00
				END MOUNTING PARTS		
A1CR18	152-0720-00			DIO,RECT:ULTRA FAST;100V,8A,25NS,100A IFSM;BYW29-100,TO-220	80009	152-0720-00
				MOUNTING PARTS		
	210-0406-00			NUT,PLAIN,HEX:4-40 X 0.188,BRS CD PL	73743	12161-50
	211-0008-00			SCR,MACH:4-40 X 0.25,PNH,STL	93907	ORDER BY DESCR

Replaceable electrical parts list (Cont.)

Component number	Tektronix part number	Serial no. effective	Serial no. discont'd	Name & description	Mfr. code	Mfr. part number
	214-3841-00			HTSK,XSTR:TO-220 W/SOLDERABLE TABS,AL	80009	214-3841-00
				END MOUNTING PARTS		
A1CR19	152-0863-00			SEMICON DVC,DI:RECT,SI,600V,1A,30NS	80009	152-0863-00
A1CR20	152-0400-00			DIO,RECT:FAST RCVRY;400V,1A,200NS;1N4936,DO-41,T&R	80009	152-0400-00
A1CR21	152-0897-00			DIO,RECT:FAST RCVRY;1000V,1.5A,300NS,SOFT RCVRY;BYV96E,T&R	80009	152-0897-00
A1CR22	152-0863-00			SEMICON DVC,DI:RECT,SI,600V,1A,30NS	80009	152-0863-00
A1CR23	152-0141-02			DIO,SIG:ULTRA FAST;40V,150MA,4NS,2PF;1N4152,DO-35	80009	152-0141-02
A1CR24	152-0897-00			DIO,RECT:FAST RCVRY;1000V,1.5A,300NS,SOFT RCVRY;BYV96E,T&R	80009	152-0897-00
A1CR25	152-0400-00			DIO,RECT:FAST RCVRY;400V,1A,200NS;1N4936,DO-41,T&R	80009	152-0400-00
A1CR26	152-0863-00			SEMICON DVC,DI:RECT,SI,600V,1A,30NS	80009	152-0863-00
A1CR27	152-0141-02			DIO,SIG:ULTRA FAST;40V,150MA,4NS,2PF;1N4152,DO-35	80009	152-0141-02
A1CR28	152-0141-02			DIO,SIG:ULTRA FAST;40V,150MA,4NS,2PF;1N4152,DO-35	80009	152-0141-02
A1CR29	152-1165-00			DIO,RECT:ULTRA FAST;600V,4A,50NS;MUR460,T&R	80009	152-1165-00
A1CR30	152-1165-00			DIO,RECT:ULTRA FAST;600V,4A,50NS;MUR460,T&R	80009	152-1165-00
A1CR31	152-1165-00			DIO,RECT:ULTRA FAST;600V,4A,50NS;MUR460,T&R	80009	152-1165-00
A1CR32	152-1165-00			DIO,RECT:ULTRA FAST;600V,4A,50NS;MUR460,T&R	80009	152-1165-00
A1CR33	152-0061-00			DIO,SIG:200V,0.1A,700NS,4.0PF;FDH2161,T&R	07263	FDH2161
A1DS1	150-0050-00			LAMP,GLOW:135V MAX,1.9MA,C2A-T,WIRE LEAD	74276	LT2-24-2 (NE2H)
A1DS2	150-0050-00			LAMP,GLOW:135V MAX,1.9MA,C2A-T,WIRE LEAD	74276	LT2-24-2 (NE2H)
A1DS3	150-0050-00			LAMP,GLOW:135V MAX,1.9MA,C2A-T,WIRE LEAD	74276	LT2-24-2 (NE2H)
A1DS4	150-0050-00			LAMP,GLOW:135V MAX,1.9MA,C2A-T,WIRE LEAD	74276	LT2-24-2 (NE2H)
A1DS5	150-0050-00			LAMP,GLOW:135V MAX,1.9MA,C2A-T,WIRE LEAD	74276	LT2-24-2 (NE2H)
A1DS6	150-1152-00			DIO,OPTO:LED;HI EFFIC. RED,635NM,INT RES;HLMP-1600-002,T1,T&R	50434	HLMP-1600-002
A1DS7	150-0050-00			LAMP,GLOW:135V MAX,1.9MA,C2A-T,WIRE LEAD	74276	LT2-24-2 (NE2H)
A1F1	159-0021-00			FUSE,CARTRIDGE:3AG,2A,250V,FAST BLOW	75915	312 002
				MOUNTING PARTS		
	200-2264-00			CAP,FSHLDR:3AG FUSES	S3629	FEK 031 1666
	204-0906-00			BODY,FSHLDR:3AG & 5 X 20MM FUSES	S3629	TYPEFAU031.3573
				END MOUNTING PARTS		
A1J1	131-5338-00			CONN,HDR:	80009	131-5338-00
A1J2	131-4794-00			CONN,HDR:PCB:MALE,STR,1 X 2,0.1 CTR,0.235 MLG X 0.112 TAIL,30 GLD,0.035 DIA PCB	80009	131-4794-00
A1J4	131-5337-00			CONN,HDR:	80009	131-5337-00
A1J5	131-3392-00			CONN,HDR:PCB:MALE,STR,1 X 10,0.1 CTR,0.230 MLG X 0.120 TAIL,30 GLD,BD RETENTION	80009	131-3392-00
A1J7	131-4794-00			CONN,HDR:PCB:MALE,STR,1 X 2,0.1 CTR,0.235 MLG X 0.112 TAIL,30 GLD,0.035 DIA PCB	80009	131-4794-00

Replaceable electrical parts list (Cont.)

Component number	Tektronix part number	Serial no. effective	Serial no. discont'd	Name & description	Mfr. code	Mfr. part number
A1J8	131-4794-00			CONN,HDR:PCB;MALE,STR,1 X 2,0.1 CTR,0.235 MLG X 0.112 TAIL,30 GLD,0.035 DIA PCB	80009	131-4794-00
A1J9	131-4794-00			CONN,HDR:PCB;MALE,STR,1 X 2,0.1 CTR,0.235 MLG X 0.112 TAIL,30 GLD,0.035 DIA PCB	80009	131-4794-00
A1J10	119-1946-00			FLTR,RF:1A,250V,400HZ W/PC TERM	S4307	FN326-1/02-K-D-T
A1J501	131-4794-00			CONN,HDR:PCB;MALE,STR,1 X 2,0.1 CTR,0.235 MLG X 0.112 TAIL,30 GLD,0.035 DIA PCB	80009	131-4794-00
A1L1	108-1262-00			COIL,RF:FXD,100UH,10%,Q=30,SRF 8.2MHZ,DCR 0.23 OHM,I MAX 0.75ARDL LEAD	80009	108-1262-00
A1L2	108-1262-00			COIL,RF:FXD,100UH,10%,Q=30,SRF 8.2MHZ,DCR 0.23 OHM,I MAX 0.75ARDL LEAD	80009	108-1262-00
A1L3	108-1524-00			COIL,RF:TOROID,FXD,1.05 - 1.25UH/1.14UH,1.0 MILLIAMPS,4 TURN	80009	108-1524-00
A1L4	108-1412-00			COIL,RF:FXD, 4.7 UH, +/- 20 %, Q 25, SRF 50 MHZ, DCR 0.017 OHM I MAX 3.7 A,RDL LEAD	54583	TSL08074R7M3RO
A1L5	108-1411-00			COIL,RF:FXD, 47UH, 10%,Q=45,SRF11 MHZ,DCR 0.17 OHM,I MAX 0.96ARDL LEAD	54583	TSL0707-470 KR94
A1L6	108-1411-00			COIL,RF:FXD, 47UH, 10%,Q=45,SRF11 MHZ,DCR 0.17 OHM,I MAX 0.96ARDL LEAD	54583	TSL0707-470 KR94
A1L7	108-1411-00			COIL,RF:FXD, 47UH, 10%,Q=45,SRF11 MHZ,DCR 0.17 OHM,I MAX 0.96ARDL LEAD	54583	TSL0707-470 KR94
A1L8	108-0205-00			COIL,RF:INDUCTOR:FXD,1MH,+/-5%, DCR 2.12 OHMS, FER-RITE CORE	76493	8209
A1L9	108-1411-00			COIL,RF:FXD, 47UH, 10%,Q=45,SRF11 MHZ,DCR 0.17 OHM,I MAX 0.96ARDL LEAD	54583	TSL0707-470 KR94
A1L83	108-0245-00			CHOKE,RF:FXD,3.9UH, +/- 10 %, Q 35, DCR 0.264 OHM, SRF 61 MHZON PWRD IRON FORM	76493	B6310-1
A1P8	131-3199-00			CONN,SHUNT:FEM,STR,1 X 2,0.1 CTR,0.2 H,LOW PROFILE,JUMPER	80009	131-3199-00
A1P9	131-3199-00			CONN,SHUNT:FEM,STR,1 X 2,0.1 CTR,0.2 H,LOW PROFILE,JUMPER	80009	131-3199-00
A1Q1	151-0190-00			XSTR,SIG:BIPOLAR,NPN;40V,200MA,300MHZ,AMPL;2N3904,TO-92 EBC	80009	151-0190-00
A1Q2	151-0749-00			XSTR,SIG:BIPOLAR,PNP;400V,500MA,50MHZ,AMPL;MPSA94,TO-92 EBC	80009	151-0749-00
A1Q3	151-0188-00			XSTR,SIG:BIPOLAR,PNP;40V,200MA,250MHZ,AMPL;2N3906,TO-92 EBC	80009	151-0188-00
A1Q4	151-0190-00			XSTR,SIG:BIPOLAR,NPN;40V,200MA,300MHZ,AMPL;2N3904,TO-92 EBC	80009	151-0190-00
A1Q5	151-0350-00			XSTR,SIG:BIPOLAR,PNP;150V,600MA,100MHZ,AMPL;2N5401,TO-92 EBC	04713	2N5401
A1Q6	151-0347-00			XSTR,SIG:BIPOLAR,NPN;160V,600MA,100MHZ,AMPL;2N5551,TO-92 EBC	80009	151-0347-00
A1Q7	151-0476-00			XSTR,PWR:BIPOLAR,NPN;100V,3.0A,3.0MHZ,AMPL;TIP31C,TO-220	80009	151-0476-00

MOUNTING PARTS

Replaceable electrical parts list (Cont.)

Component number	Tektronix part number	Serial no. effective	Serial no. discont'd	Name & description	Mfr. code	Mfr. part number
	210-0406-00			NUT,PLAIN,HEX:4-40 X 0.188,BRS CD PL	73743	12161-50
	211-0008-00			SCR,MACH:4-40 X 0.25,PNH,STL	93907	ORDER BY DESCR
	214-3841-00			HTSK,XSTR:TO-220 W/SOLDERABLE TABS,AL	80009	214-3841-00
				END MOUNTING PARTS		
A1Q8	151-0216-04			XSTR,SIG:BIPOLAR,PNP;25V,100MA,170MHZ,AMPL;MPS6523,TO-92 EBC,T&A	80009	151-0216-04
A1Q9	151-0188-00			XSTR,SIG:BIPOLAR,PNP;40V,200MA,250MHZ,AMPL;2N3906,TO-92 EBC	80009	151-0188-00
A1Q10	151-0190-00			XSTR,SIG:BIPOLAR,NPN;40V,200MA,300MHZ,AMPL;2N3904,TO-92 EBC	80009	151-0190-00
A1Q11	151-0528-00			THYR,PWR:BIPOLAR,SCR;50V,16A RMS,PHASE CONT;2N6400,TO-220	80009	151-0528-00
A1Q12	151-0216-04			XSTR,SIG:BIPOLAR,PNP;25V,100MA,170MHZ,AMPL;MPS6523,TO-92 EBC,T&A	80009	151-0216-04
A1Q13	151-0190-00			XSTR,SIG:BIPOLAR,NPN;40V,200MA,300MHZ,AMPL;2N3904,TO-92 EBC	80009	151-0190-00
A1Q14	151-0190-00			XSTR,SIG:BIPOLAR,NPN;40V,200MA,300MHZ,AMPL;2N3904,TO-92 EBC	80009	151-0190-00
A1Q15	151-0190-00			XSTR,SIG:BIPOLAR,NPN;40V,200MA,300MHZ,AMPL;2N3904,TO-92 EBC	80009	151-0190-00
A1Q16	151-1286-00			XSTR,PWR:MOS,N-CH;800V,4.0A,3.0 OHM;BUK456-800A,TO-220	80009	151-1286-00
				MOUNTING PARTS		
	210-0406-00			NUT,PLAIN,HEX:4-40 X 0.188,BRS CD PL	73743	12161-50
	211-0008-00			SCR,MACH:4-40 X 0.25,PNH,STL	93907	ORDER BY DESCR
	214-4197-00			HTSK:XSTR,T0=218,AL	80009	214-4197-00
				END MOUNTING PARTS		
A1Q17	151-0190-00			XSTR,SIG:BIPOLAR,NPN;40V,200MA,300MHZ,AMPL;2N3904,TO-92 EBC	80009	151-0190-00
A1Q18	151-0188-00			XSTR,SIG:BIPOLAR,PNP;40V,200MA,250MHZ,AMPL;2N3906,TO-92 EBC	80009	151-0188-00
A1Q19	151-0188-00			XSTR,SIG:BIPOLAR,PNP;40V,200MA,250MHZ,AMPL;2N3906,TO-92 EBC	80009	151-0188-00
A1R1	301-0225-02			RES,FXD,CMPSN:2.2M OHM,5%,0.5W	80009	301-0225-02
A1R2	303-0155-00			RES,FXD,CMPSN:1.5M OHM,5%,1W	80009	303-0155-00
A1R3	303-0155-00			RES,FXD,CMPSN:1.5M OHM,5%,1W	80009	303-0155-00
A1R4	303-0155-00			RES,FXD,CMPSN:1.5M OHM,5%,1W	80009	303-0155-00
A1R5	322-3344-00			RES,FXD,FILM:37.4K OHM,1%,0.2W,TC=T0	80009	322-3344-00
A1R6	322-3251-00			RES,FXD,FILM:4.02K OHM,1%,0.2W,TC=T0	57668	CRB20 FXE 4K02
A1R9	322-3097-00			RES,FXD,MET FILM;100 OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	57668	CRB20 FXE 100E
A1R10	311-1256-00			RES,VAR,TRMR:CERMET;2.5M OHM,10%,0.5W,0.375 SQ,TOP ADJUST;BULK	80009	311-1256-00

Replaceable electrical parts list (Cont.)

Component number	Tektronix part number	Serial no. effective	Serial no. discont'd	Name & description	Mfr. code	Mfr. part number
A1R11	322-3385-00			RES,FXD:MET FILM;100K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	57668	CRB20 FXE 100K
A1R12	322-3097-00			RES,FXD:MET FILM;100 OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	57668	CRB20 FXE 100E
A1R13	322-3097-00			RES,FXD:MET FILM;100 OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	57668	CRB20 FXE 100E
A1R14	303-0155-00			RES,FXD,CMPSN:1.5M OHM,5%,1W	80009	303-0155-00
A1R15	322-3339-00			RES,FXD:MET FILM;33.2K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	80009	322-3339-00
A1R16	322-3481-00			RES,FXD,FILM:1M OHM.1%,0.2W,TC=T0	80009	322-3481-00
A1R17	315-0101-03			RES,FXD,CMPSN:100 OHM,5%,0.25W	80009	315-0101-03
A1R18	322-3300-02			RES,FXD,FILM:13K OHM,0.5%,0.2W,TC=T2	57668	CRB20 DYE 13K0
A1R19	322-3162-00			RES,FXD:MET FILM;475 OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	80009	322-3162-00
A1R20	315-0223-03			RES,FXD,CMPSN:22K OHM,5%,0.25 W	80009	315-0223-03
A1R21	315-0102-03			RES,FXD,CMPSN:1K OHM,5%,0.25W	80009	315-0102-03
A1R22	322-3306-00			RES,FXD:MET FILM;15K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	57668	CRB20 FXE 15K0
A1R23	322-3105-00			RES,FXD:MET FILM;121 OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	80009	322-3105-00
A1R24	322-3385-00			RES,FXD:MET FILM;100K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	57668	CRB20 FXE 100K
A1R25	322-3222-00			RES,FXD:MET FILM;2K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	57668	CRB20 FXE 2K00
A1R26	322-3034-00			RES,FXD:MET FILM;22.1 OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	57668	CRB20FXE2K94
A1R27	315-0470-03			RES,FXD,CMPSN:47 OHM,5%,0.25W	80009	315-0470-03
A1R28	322-3162-00			RES,FXD:MET FILM;475 OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	80009	322-3162-00
A1R29	322-3222-00			RES,FXD:MET FILM;2K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	57668	CRB20 FXE 2K00
A1R30	315-0226-01			RES,FXD,CMPSN:22 M OHM,5%,0.25W	80009	315-0226-01
A1R31	315-0471-03			RES,FXD,CMPSN:470 OHM,5%,0.25W	80009	315-0471-03
A1R32	315-0471-03			RES,FXD,CMPSN:470 OHM,5%,0.25W	80009	315-0471-03
A1R33	322-3354-00			RES,FXD:MET FILM;47.5K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	80009	322-3354-00
A1R34	315-0471-03			RES,FXD,CMPSN:470 OHM,5%,0.25W	80009	315-0471-03
A1R35	322-3273-00			RES,FXD:MET FILM;6.81K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	80009	322-3273-00
A1R36	315-0102-03			RES,FXD,CMPSN:1K OHM,5%,0.25W	80009	315-0102-03
A1R37	322-3385-00			RES,FXD:MET FILM;100K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	57668	CRB20 FXE 100K
A1R38	311-2239-00			RES,VAR,TRMR:CERMET;100K OHM,20%,0.5W,0.197 SQ,SIDE ADJUST;T&R	TK1450	GF06UT 100K

Replaceable electrical parts list (Cont.)

Component number	Tektronix part number	Serial no. effective	Serial no. discount'd	Name & description	Mfr. code	Mfr. part number
A1R39	322-3001-00			RES,FXD:MET FILM;10 OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	80009	322-3001-00
A1R40	322-3239-00			RES,FXD,FILM:3.01K OHM,1%,0.2W,TC=T0	57668	CRB20 FXE 3K01
A1R41	322-3385-00			RES,FXD:MET FILM;100K OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	57668	CRB20 FXE 100K
A1R42	322-3273-00			RES,FXD:MET FILM;6.81K OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	80009	322-3273-00
A1R43	311-2239-00			RES,VAR,TRMR:CERMET;100K OHM,20%,0.5W,0.197 SQ,SIDE ADJUST;T&R	TK1450	GF06UT 100K
A1R44	322-3001-00			RES,FXD:MET FILM;10 OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	80009	322-3001-00
A1R45	322-3322-00			RES,FXD:MET FILM;22.1K OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	80009	322-3322-00
A1R46	322-3001-00			RES,FXD:MET FILM;10 OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	80009	322-3001-00
A1R47	322-3001-00			RES,FXD:MET FILM;10 OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	80009	322-3001-00
A1R48	322-3024-00			RES,FXD,FILM:17.4 OHM,1%,0.2W,TC=T0	57668	CRB20FXE1K62
A1R49	322-3322-00			RES,FXD:MET FILM;22.1K OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	80009	322-3322-00
A1R50	322-3001-00			RES,FXD:MET FILM;10 OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	80009	322-3001-00
A1R51	322-3193-00			RES,FXD:MET FILM;1K OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	57668	CRB20 FXE 1K00
A1R52	311-2239-00			RES,VAR,TRMR:CERMET;100K OHM,20%,0.5W,0.197 SQ,SIDE ADJUST;T&R	TK1450	GF06UT 100K
A1R53	322-3193-00			RES,FXD:MET FILM;1K OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	57668	CRB20 FXE 1K00
A1R54	322-3481-00			RES,FXD,FILM:1M OHM.1%,0.2W,TC=T0	80009	322-3481-00
A1R55	322-3193-00			RES,FXD:MET FILM;1K OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	57668	CRB20 FXE 1K00
A1R56	322-3235-00			RES,FXD:MET FILM;2.74K OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	57668	CRB20 FXE 2K74
A1R57	322-3193-00			RES,FXD:MET FILM;1K OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	57668	CRB20 FXE 1K00
A1R58	322-3193-00			RES,FXD:MET FILM;1K OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	57668	CRB20 FXE 1K00
A1R59	322-3260-00			RES,FXD,FILM:4.99K OHM,1%,0.2W,TC=T0	57668	CRB20 FXE 4K99
A1R60	322-3261-00			RES,FXD,FILM:5.11K OHM,1%,0.2W,TC=T0	80009	322-3261-00
A1R62	322-3201-00			RES,FXD:MET FILM;1.21K OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	80009	322-3201-00
A1R63	322-3385-00			RES,FXD:MET FILM;100K OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	57668	CRB20 FXE 100K
A1R64	322-3385-00			RES,FXD:MET FILM;100K OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	57668	CRB20 FXE 100K

Replaceable electrical parts list (Cont.)

Component number	Tektronix part number	Serial no. effective	Serial no. discont'd	Name & description	Mfr. code	Mfr. part number
A1R65	322-3339-00			RES,FXD:MET FILM;33.2K OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	80009	322-3339-00
A1R66	307-0106-00			RES,FXD,CMPSN:4.7 OHM,5%,0.25W	01121	CB47G5
A1R69	322-3289-00			RES,FXD:MET FILM;10K OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	80009	322-3289-00
A1R70	311-2238-00			RES,VAR,TRMR:CERMET;50K OHM,20%,0.5W,0.197 SQ,SIDE ADJUST;T&R	TK1450	GF06UT 50 K
A1R71	322-3001-00			RES,FXD:MET FILM;10 OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	80009	322-3001-00
A1R72	322-3289-00			RES,FXD:MET FILM;10K OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	80009	322-3289-00
A1R73	322-3222-00			RES,FXD:MET FILM;2K OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	57668	CRB20 FXE 2K00
A1R74	322-3001-00			RES,FXD:MET FILM;10 OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	80009	322-3001-00
A1R75	322-3097-00			RES,FXD:MET FILM;100 OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	57668	CRB20 FXE 100E
A1R76	322-3385-00			RES,FXD:MET FILM;100K OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	57668	CRB20 FXE 100K
A1R77	322-3225-00			RES,FXD,FILM:2.15K OHM,1%,0.2W,TC=T0	57668	CRB20 FXE 2K15
A1R78	322-3306-00			RES,FXD:MET FILM;15K OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	57668	CRB20 FXE 15K0
A1R79	322-3327-00			RES,FXD,FILM:24.9K OHM,1%,0.2W,TC=T0	80009	322-3327-00
A1R80	322-3226-00			RES,FXD:MET FILM;2.21K OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	57668	CRB20 FXE 2K21
A1R81	322-3165-00			RES,FXD,FILM:511 OHM,1%,0.2W,TC=T0	57668	CRB20 FXE 511E
A1R82	322-3222-00			RES,FXD:MET FILM;2K OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	57668	CRB20 FXE 2K00
A1R84	322-3354-00			RES,FXD:MET FILM;47.5K OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	80009	322-3354-00
A1R85	305-0242-00			RES,FXD,CMPSN:2.4K OHM,5%,2W	80009	305-0242-00
A1R86	322-3193-00			RES,FXD:MET FILM;1K OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	57668	CRB20 FXE 1K00
A1R87	322-3289-00			RES,FXD:MET FILM;10K OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	80009	322-3289-00
A1R88	322-3231-00			RES,FXD,FILM:2.49K OHM,1%,0.2W,TC=T0	80009	322-3231-00
A1R89	322-3193-00			RES,FXD:MET FILM;1K OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	57668	CRB20 FXE 1K00
A1R90	308-0793-00			RES,FXD:0.51 OHM,5%,1WTC=150PPM/DEG C,MI	80009	308-0793-00
A1R91	322-3193-00			RES,FXD:MET FILM;1K OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	57668	CRB20 FXE 1K00
A1R92	322-3239-00			RES,FXD,FILM:3.01K OHM,1%,0.2W,TC=T0	57668	CRB20 FXE 3K01
A1R93	322-3121-00			RES,FXD:MET FILM;178 OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	80009	322-3121-00

Replaceable electrical parts list (Cont.)

Component number	Tektronix part number	Serial no. effective	Serial no. discount'd	Name & description	Mfr. code	Mfr. part number
A1R94	322-3335-00			RES,FXD,FILM:30.1K OHM,1%,0.2W,TC=T0	57668	CRB20 FXE 30K1
A1R95	322-3164-00			RES,FXD,FILM:499 OHM,1%,0.2W,TC=T0	57668	CRB20 FXE 499E
A1R96	322-3081-00			RES,FXD:MET FILM;68.1 OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	80009	322-3081-00
A1R97	322-3226-00			RES,FXD:MET FILM;2.21K OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	57668	CRB20 FXE 2K21
A1R98	322-3256-00			RES,FXD,FILM:4.53K OHM,1%,0.2W,TC=T0	80009	322-3256-00
A1R99	322-3385-00			RES,FXD:MET FILM;100K OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	57668	CRB20 FXE 100K
A1R100	-----			(TEST SELECTED)		
A1R101	322-3254-00			RES,FXD,FILM:4.32K OHM,1%,0.2W,TC=T0	80009	322-3254-00
A1R102	322-3193-00			RES,FXD:MET FILM;1K OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	57668	CRB20 FXE 1K00
A1R103	322-3193-00			RES,FXD:MET FILM;1K OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	57668	CRB20 FXE 1K00
A1R104	322-3222-00			RES,FXD:MET FILM;2K OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	57668	CRB20 FXE 2K00
A1R105	322-3222-00			RES,FXD:MET FILM;2K OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	57668	CRB20 FXE 2K00
A1R106	322-3258-00			RES,FXD:MET FILM;4.75K OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	80009	322-3258-00
A1R107	322-3205-00			RES,FXD,FILM:1.33K OHM,1%,0.2W,TC=T0	57668	CRB20 FXE 1K33
A1R108	322-3431-00			RES,FXD,FILM:301K OHM,1%,0.2W,TC=T0	57668	CRB20 FXE 301K
A1R109	322-3097-00			RES,FXD:MET FILM;100 OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	57668	CRB20 FXE 100E
A1R110	322-3205-00			RES,FXD,FILM:1.33K OHM,1%,0.2W,TC=T0	57668	CRB20 FXE 1K33
A1R111	322-3339-00			RES,FXD:MET FILM;33.2K OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	80009	322-3339-00
A1R112	322-3239-00			RES,FXD,FILM:3.01K OHM,1%,0.2W,TC=T0	57668	CRB20 FXE 3K01
A1R113	322-3222-00			RES,FXD:MET FILM;2K OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	57668	CRB20 FXE 2K00
A1R114	322-3431-00			RES,FXD,FILM:301K OHM,1%,0.2W,TC=T0	57668	CRB20 FXE 301K
A1R115	322-3322-00			RES,FXD:MET FILM;22.1K OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	80009	322-3322-00
A1R116	322-3351-00			RES,FXD:MET FILM;44.2K OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	80009	322-3351-00
A1R117	322-3350-00			RES,FXD,FILM:43.2K OHM,1%,0.2W,TC=T0	80009	322-3350-00
A1R118	322-3277-00			RES,FXD,FILM:7.5K OHM,1%,0.2W,TC=T0	57668	CRB20 FXE 7K50
A1R119	322-3193-00			RES,FXD:MET FILM;1K OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	57668	CRB20 FXE 1K00
A1R120	322-3452-00			RES,FXD,FILM:499K OHM,1%,0.2W,TC=T0	91637	CCF50-2-G4993FT
A1R121	322-3452-00			RES,FXD,FILM:499K OHM,1%,0.2W,TC=T0	91637	CCF50-2-G4993FT

Replaceable Electrical Parts

Replaceable electrical parts list (Cont.)

Component number	Tektronix part number	Serial no. effective	Serial no. discont'd	Name & description	Mfr. code	Mfr. part number
A1R122	322-3331-00			RES,FXD;MET FILM;27.4K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	80009	322-3331-00
A1R123	322-3401-00			RES,FXD,FILM:147K OHM,1%,0.2W,TC=T0	80009	322-3401-00
A1R124	308-0838-00			RES,FXD,WW:12.0 OHM 1%,5.0 W	07088	
A1R125	307-0353-00			RES,THRM:5 OHM,10%	80009	307-0353-00
A1R129	322-3393-00			RES,FXD;MET FILM;121K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	80009	322-3393-00
A1R130	322-3393-00			RES,FXD;MET FILM;121K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	80009	322-3393-00
A1R131	307-0353-00			RES,THRM:5 OHM,10%	80009	307-0353-00
A1R132	322-3001-00			RES,FXD;MET FILM;10 OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	80009	322-3001-00
A1R200	306-0104-00			RES,FXD,CMPSN:100K OHM,10%,2W	01121	HB1041
A1R201	306-0104-00			RES,FXD,CMPSN:100K OHM,10%,2W	01121	HB1041
A1R202	305-0560-00			RES,FXD,CMPSN:56 OHM,5%,2W	80009	305-0560-00
A1R203	322-3205-00			RES,FXD,FILM:1.33K OHM,1%,0.2W,TC=T0	57668	CRB20 FXE 1K33
A1R204	322-3205-00			RES,FXD,FILM:1.33K OHM,1%,0.2W,TC=T0	57668	CRB20 FXE 1K33
A1R205	308-0555-00			RES,FXD,WW:5 OHM,5%,3W AXIAL LEAD	00213	1200S-5.0-5
A1R206	308-0555-00			RES,FXD,WW:5 OHM,5%,3W AXIAL LEAD	00213	1200S-5.0-5
A1T1	120-1695-00			XFMR,PWR:HI V,FDBK 3V, RESONANT 231V, 100V 1MA	80009	120-1695-00
A1T2	120-1855-00			XFMR,RF:FLYBK,40V 0.385A,+/-15V 0.8A,5V 2A,W/SNUBBER,W/HSEKPG 15V 0.2A,70 KHZ	80009	120-1855-00
A1T3	120-1532-00			XFMR,RF:	75498	128-8036-EB
A1TP1	214-4085-00			TERM,TEST PT:0.070 ID,0.220 H,0.063 DIA PCB,0.015 X 0.032 BRS,W/ RED NYL CLR	26364	104-01-02
A1TP2	214-4085-00			TERM,TEST PT:0.070 ID,0.220 H,0.063 DIA PCB,0.015 X 0.032 BRS,W/ RED NYL CLR	26364	104-01-02
A1TP3	214-4085-00			TERM,TEST PT:0.070 ID,0.220 H,0.063 DIA PCB,0.015 X 0.032 BRS,W/ RED NYL CLR	26364	104-01-02
A1U1	152-0900-00			MOD,HV:7.5KVAC IN,15KVDC OUT,POTTED MOD;MSL2556	80009	152-0900-00
A1U2	156-0067-00			IC,LIN:BIPOLAR,OP-AMP;741C,DIP08.3	80009	156-0067-00
A1U3	156-1719-00			IC,LIN:BIPOLAR,OP-AMP;LOW V OPN,W/V REF;LM10CN,DIP08.3	TK1468	LM10CN
A1U4	156-2524-00			IC,LIN:	12969	UC3842N
A1U5	156-0411-00			IC,LIN:BIPOLAR,COMPTR:QUAD,SGL SPLY,300NS;LM339N,DIP14.3	80009	156-0411-00
A1VR1	152-0195-00			DIO,ZENER:5.1V,5%,0.4W;1N751A FMLY,DO-35 OR 7	80009	152-0195-00
A1W61	131-0566-00			BUS,CNDCT:DUM RES,0.094 OD X 0.225 L	80009	131-0566-00
A1W67	131-0566-00			BUS,CNDCT:DUM RES,0.094 OD X 0.225 L	80009	131-0566-00
A1W68	131-0566-00			BUS,CNDCT:DUM RES,0.094 OD X 0.225 L	80009	131-0566-00

Replaceable electrical parts list (Cont.)

Component number	Tektronix part number	Serial no. effective	Serial no. discount'd	Name & description	Mfr. code	Mfr. part number
A2	671-2319-02			CIRCUIT BD ASSY:FRONT PANEL	80009	671-2319-02
A2R210	311-2540-00			RES,VAR,PNL:CP,20K OHM,20%,0.5W,LINEAR,W/ GROUNDING LUG,0.5 IN DIA	12697	311-2540-00
				ATTACHED PARTS		
	214-4725-00			SPRING:COMPRESSION SPRING,0.026,302 STAINLESS STEEL,0.313,+/-,0.0A0	80009	214-4725-00
				END ATTACHED PARTS		
A2R230	311-2288-00			RES,VAR,NONWW:TRMR,20K OHM,10%,0.25W	12697	CM45211
A2R310	311-2540-00			RES,VAR,PNL:CP,20K OHM,20%,0.5W,LINEAR,W/ GROUNDING LUG,0.5 IN DIA	12697	311-2540-00
				ATTACHED PARTS		
	214-4725-00			SPRING:COMPRESSION SPRING,0.026,302 STAINLESS STEEL,0.313,+/-,0.0A0	80009	214-4725-00
				END ATTACHED PARTS		
A2R320	311-2433-00			RES,VAR,NONWW:20K OHM X 20K OHM +/-10%,0.5WATT/ SECTION,LIN	12697	CM45266
A2R340	311-2419-00			RES,FXD,NONWW:20K	12697	CM45265
A2R341	322-3299-00			RES,FXD,FILM:12.7K OHM,1%,0.2W,TC=T0	80009	322-3299-00
A2R342	322-3367-00			RES,FXD,FILM:64.9K OHM,1%,0.2W,TC=T0	80009	322-3367-00
A2R440	311-2419-00			RES,FXD,NONWW:20K	12697	CM45265
A2R441	322-3299-00			RES,FXD,FILM:12.7K OHM,1%,0.2W,TC=T0	80009	322-3299-00
A2R442	322-3367-00			RES,FXD,FILM:64.9K OHM,1%,0.2W,TC=T0	80009	322-3367-00
A2S110	260-2300-00			SW,SIG:SPST;PUSH,MOM,NO,W/GND TERM,MNL INSER- TION,100 GRAMS,SIL,SLD:B3F1152	34361	B3F1152
A2S111	260-2300-00			SW,SIG:SPST;PUSH,MOM,NO,W/GND TERM,MNL INSER- TION,100 GRAMS,SIL,SLD:B3F1152	34361	B3F1152
A2S120	260-2300-00			SW,SIG:SPST;PUSH,MOM,NO,W/GND TERM,MNL INSER- TION,100 GRAMS,SIL,SLD:B3F1152	34361	B3F1152
A2S121	260-2300-00			SW,SIG:SPST;PUSH,MOM,NO,W/GND TERM,MNL INSER- TION,100 GRAMS,SIL,SLD:B3F1152	34361	B3F1152
A2S130	260-2300-00			SW,SIG:SPST;PUSH,MOM,NO,W/GND TERM,MNL INSER- TION,100 GRAMS,SIL,SLD:B3F1152	34361	B3F1152
A2S131	260-2300-00			SW,SIG:SPST;PUSH,MOM,NO,W/GND TERM,MNL INSER- TION,100 GRAMS,SIL,SLD:B3F1152	34361	B3F1152
A2S140	260-2300-00			SW,SIG:SPST;PUSH,MOM,NO,W/GND TERM,MNL INSER- TION,100 GRAMS,SIL,SLD:B3F1152	34361	B3F1152
A2S220	260-2300-00			SW,SIG:SPST;PUSH,MOM,NO,W/GND TERM,MNL INSER- TION,100 GRAMS,SIL,SLD:B3F1152	34361	B3F1152
A2S230	260-2300-00			SW,SIG:SPST;PUSH,MOM,NO,W/GND TERM,MNL INSER- TION,100 GRAMS,SIL,SLD:B3F1152	34361	B3F1152
A2S240	260-2300-00			SW,SIG:SPST;PUSH,MOM,NO,W/GND TERM,MNL INSER- TION,100 GRAMS,SIL,SLD:B3F1152	34361	B3F1152
A2S410	260-2300-00			SW,SIG:SPST;PUSH,MOM,NO,W/GND TERM,MNL INSER- TION,100 GRAMS,SIL,SLD:B3F1152	34361	B3F1152

Replaceable electrical parts list (Cont.)

Component number	Tektronix part number	Serial no. effective	Serial no. discont'd	Name & description	Mfr. code	Mfr. part number
A2S420	260-2300-00			SW,SIG:SPST:PUSH,MOM,NO,W/GND TERM,MNL INSERTION,100 GRAMS,SIL,SLD;B3F1152	34361	B3F1152
A2S430	260-2300-00			SW,SIG:SPST:PUSH,MOM,NO,W/GND TERM,MNL INSERTION,100 GRAMS,SIL,SLD;B3F1152	34361	B3F1152
A2S510	260-2300-00			SW,SIG:SPST:PUSH,MOM,NO,W/GND TERM,MNL INSERTION,100 GRAMS,SIL,SLD;B3F1152	34361	B3F1152
A2S511	260-2300-00			SW,SIG:SPST:PUSH,MOM,NO,W/GND TERM,MNL INSERTION,100 GRAMS,SIL,SLD;B3F1152	34361	B3F1152
A2S520	260-2300-00			SW,SIG:SPST:PUSH,MOM,NO,W/GND TERM,MNL INSERTION,100 GRAMS,SIL,SLD;B3F1152	34361	B3F1152
A2S530	260-2300-00			SW,SIG:SPST:PUSH,MOM,NO,W/GND TERM,MNL INSERTION,100 GRAMS,SIL,SLD;B3F1152	34361	B3F1152
A2W400	174-1194-00			CA ASSY,SP,ELEC:24 PIN,8.0 L	TK1148	ORDER BY DESC
A2A1	671-0573-05			CIRCUIT BD ASSY:LED	80009	671-0573-05
A2A1DS500	150-5003-00			DIO,OPTO:LED:GRN,569NM,1MCD AT 10MA,90 DEG VIEW ANGL,YOKE LEADBEND;HLMP-6500-T21,T&R	80009	150-5003-00
A2A1DS501	150-5003-00			DIO,OPTO:LED:GRN,569NM,1MCD AT 10MA,90 DEG VIEW ANGL,YOKE LEADBEND;HLMP-6500-T21,T&R	80009	150-5003-00
A2A1DS502	150-5003-00			DIO,OPTO:LED:GRN,569NM,1MCD AT 10MA,90 DEG VIEW ANGL,YOKE LEADBEND;HLMP-6500-T21,T&R	80009	150-5003-00
A2A1DS503	150-5003-00			DIO,OPTO:LED:GRN,569NM,1MCD AT 10MA,90 DEG VIEW ANGL,YOKE LEADBEND;HLMP-6500-T21,T&R	80009	150-5003-00
A2A1DS504	150-5003-00			DIO,OPTO:LED:GRN,569NM,1MCD AT 10MA,90 DEG VIEW ANGL,YOKE LEADBEND;HLMP-6500-T21,T&R	80009	150-5003-00
A2A1DS505	150-5003-00			DIO,OPTO:LED:GRN,569NM,1MCD AT 10MA,90 DEG VIEW ANGL,YOKE LEADBEND;HLMP-6500-T21,T&R	80009	150-5003-00
A2A1DS506	150-5003-00			DIO,OPTO:LED:GRN,569NM,1MCD AT 10MA,90 DEG VIEW ANGL,YOKE LEADBEND;HLMP-6500-T21,T&R	80009	150-5003-00
A2A1DS507	150-5003-00			DIO,OPTO:LED:GRN,569NM,1MCD AT 10MA,90 DEG VIEW ANGL,YOKE LEADBEND;HLMP-6500-T21,T&R	80009	150-5003-00
A2A1DS510	150-5004-00			DIO,OPTO:LED:HI EFFIC RED,635NM,1.0 MCD AT 10MA,YOKE LEAD BEND;HLMP-6300-021,12MM T&R	80009	150-5004-00
A2A1DS511	150-5003-00			DIO,OPTO:LED:GRN,569NM,1MCD AT 10MA,90 DEG VIEW ANGL,YOKE LEADBEND;HLMP-6500-T21,T&R	80009	150-5003-00
A2A1DS512	150-5003-00			DIO,OPTO:LED:GRN,569NM,1MCD AT 10MA,90 DEG VIEW ANGL,YOKE LEADBEND;HLMP-6500-T21,T&R	80009	150-5003-00
A2A1DS513	150-5003-00			DIO,OPTO:LED:GRN,569NM,1MCD AT 10MA,90 DEG VIEW ANGL,YOKE LEADBEND;HLMP-6500-T21,T&R	80009	150-5003-00
A2A1DS514	150-5006-00			DIO,OPTO:	80009	150-5006-00
A2A1DS530	150-5003-00			DIO,OPTO:LED:GRN,569NM,1MCD AT 10MA,90 DEG VIEW ANGL,YOKE LEADBEND;HLMP-6500-T21,T&R	80009	150-5003-00
A2A1DS531	150-5003-00			DIO,OPTO:LED:GRN,569NM,1MCD AT 10MA,90 DEG VIEW ANGL,YOKE LEADBEND;HLMP-6500-T21,T&R	80009	150-5003-00

Replaceable electrical parts list (Cont.)

Component number	Tektronix part number	Serial no. effective	Serial no. discont'd	Name & description	Mfr. code	Mfr. part number
A2A1DS532	150-5003-00			DIO,OPTO:LED:GRN,569NM,1MCD AT 10MA,90 DEG VIEW ANGL,YOKE LEADBEND:HLMP-6500-T21,T&R	80009	150-5003-00
A2A1DS533	150-5003-00			DIO,OPTO:LED:GRN,569NM,1MCD AT 10MA,90 DEG VIEW ANGL,YOKE LEADBEND:HLMP-6500-T21,T&R	80009	150-5003-00
A2A1DS534	150-5003-00			DIO,OPTO:LED:GRN,569NM,1MCD AT 10MA,90 DEG VIEW ANGL,YOKE LEADBEND:HLMP-6500-T21,T&R	80009	150-5003-00
A2A1DS535	150-5003-00			DIO,OPTO:LED:GRN,569NM,1MCD AT 10MA,90 DEG VIEW ANGL,YOKE LEADBEND:HLMP-6500-T21,T&R	80009	150-5003-00
A2A1DS536	150-5003-00			DIO,OPTO:LED:GRN,569NM,1MCD AT 10MA,90 DEG VIEW ANGL,YOKE LEADBEND:HLMP-6500-T21,T&R	80009	150-5003-00
A2A1R500	321-5021-00			RES,FXD:THK FILM;1.82K OHM,1%,0.125W,TC=100 PPM;1206,T&R	80009	321-5021-00
A2A1R501	321-5021-00			RES,FXD:THK FILM;1.82K OHM,1%,0.125W,TC=100 PPM;1206,T&R	80009	321-5021-00
A2A1R502	321-5021-00			RES,FXD:THK FILM;1.82K OHM,1%,0.125W,TC=100 PPM;1206,T&R	80009	321-5021-00
A2A1R503	321-5021-00			RES,FXD:THK FILM;1.82K OHM,1%,0.125W,TC=100 PPM;1206,T&R	80009	321-5021-00
A2A1R504	321-5021-00			RES,FXD:THK FILM;1.82K OHM,1%,0.125W,TC=100 PPM;1206,T&R	80009	321-5021-00
A2A1R505	321-5021-00			RES,FXD:THK FILM;1.82K OHM,1%,0.125W,TC=100 PPM;1206,T&R	80009	321-5021-00
A2A1R510	321-5021-00			RES,FXD:THK FILM;1.82K OHM,1%,0.125W,TC=100 PPM;1206,T&R	80009	321-5021-00
A2A1R511	321-5021-00			RES,FXD:THK FILM;1.82K OHM,1%,0.125W,TC=100 PPM;1206,T&R	80009	321-5021-00
A2A1R512	321-5021-00			RES,FXD:THK FILM;1.82K OHM,1%,0.125W,TC=100 PPM;1206,T&R	80009	321-5021-00
A2A1R513	321-5021-00			RES,FXD:THK FILM;1.82K OHM,1%,0.125W,TC=100 PPM;1206,T&R	80009	321-5021-00
A2A1R514	321-5021-00			RES,FXD:THK FILM;1.82K OHM,1%,0.125W,TC=100 PPM;1206,T&R	80009	321-5021-00
A2A1R515	321-5021-00			RES,FXD:THK FILM;1.82K OHM,1%,0.125W,TC=100 PPM;1206,T&R	80009	321-5021-00
A2A1R516	321-5021-00			RES,FXD:THK FILM;1.82K OHM,1%,0.125W,TC=100 PPM;1206,T&R	80009	321-5021-00
A2A1R517	321-5021-00			RES,FXD:THK FILM;1.82K OHM,1%,0.125W,TC=100 PPM;1206,T&R	80009	321-5021-00
A2A1R520	321-5021-00			RES,FXD:THK FILM;1.82K OHM,1%,0.125W,TC=100 PPM;1206,T&R	80009	321-5021-00
A2A1R521	321-5021-00			RES,FXD:THK FILM;1.82K OHM,1%,0.125W,TC=100 PPM;1206,T&R	80009	321-5021-00
A2A1R522	321-5021-00			RES,FXD:THK FILM;1.82K OHM,1%,0.125W,TC=100 PPM;1206,T&R	80009	321-5021-00
A2A1R523	321-5021-00			RES,FXD:THK FILM;1.82K OHM,1%,0.125W,TC=100 PPM;1206,T&R	80009	321-5021-00

Replaceable Electrical Parts

Replaceable electrical parts list (Cont.)

Component number	Tektronix part number	Serial no. effective	Serial no. discont'd	Name & description	Mfr. code	Mfr. part number
A2A1R524	321-5021-00			RES,FXD:THK FILM;1.82K OHM,1%,0.125W,TC=100 PPM;1206,T&R	80009	321-5021-00
A2A1R525	321-5021-00			RES,FXD:THK FILM;1.82K OHM,1%,0.125W,TC=100 PPM;1206,T&R	80009	321-5021-00
A2A1R526	321-5021-00			RES,FXD:THK FILM;1.82K OHM,1%,0.125W,TC=100 PPM;1206,T&R	80009	321-5021-00
A2A1R527	321-5021-00			RES,FXD:THK FILM;1.82K OHM,1%,0.125W,TC=100 PPM;1206,T&R	80009	321-5021-00
A2A1R530	321-5021-00			RES,FXD:THK FILM;1.82K OHM,1%,0.125W,TC=100 PPM;1206,T&R	80009	321-5021-00
A2A1R531	321-5021-00			RES,FXD:THK FILM;1.82K OHM,1%,0.125W,TC=100 PPM;1206,T&R	80009	321-5021-00
A2A1W395	174-1195-00			CA ASSY,SP,ELEC:10 CON,8.0 L,FLAT FLEX	80009	174-1195-00

Replaceable electrical parts list (Cont.)

Component number	Tektronix part number	Serial no. effective	Serial no. discount'd	Name & description	Mfr. code	Mfr. part number
A3	672-1375-04			CIRCUIT BD ASSY:MAIN *ATTACHED PARTS*	80009	672-1375-04
	337-0896-00			PLATE,ELEC SHLD:B SWEEP CKT BD (QUANTITY 5) *END ATTACHED PARTS*	TK2278	ORDER BY DESCR
A3C1	281-0775-01			CAP,FXD,CER:MCL:0.1UF,20%,50V,Z5U,0.170 X 0.100;AXIAL	04222	SA105E104MAA
A3C2	290-1295-00			CAP,FXD,ALUM:10UF,20%,16V,5 X 9 MM;RDL,105 DEG,BULK	80009	290-1295-00
A3C3	290-1296-00			CAP,FXD,ALUM:100UF,20%,25V,8 X 9MM;RDL,105 DEG	80009	290-1296-00
A3C4	281-0775-01			CAP,FXD,CER:MCL:0.1UF,20%,50V,Z5U,0.170 X 0.100;AXIAL	04222	SA105E104MAA
A3C5	281-0775-01			CAP,FXD,CER:MCL:0.1UF,20%,50V,Z5U,0.170 X 0.100;AXIAL	04222	SA105E104MAA
A3C6	281-0773-00			CAP,FXD,CER:MLC:0.01UF,10%,100V,SAF,0.100 X 0.170;AXIAL,MI	80009	281-0773-00
A3C7	281-0775-01			CAP,FXD,CER:MCL:0.1UF,20%,50V,Z5U,0.170 X 0.100;AXIAL	04222	SA105E104MAA
A3C8	281-0775-01			CAP,FXD,CER:MCL:0.1UF,20%,50V,Z5U,0.170 X 0.100;AXIAL	04222	SA105E104MAA
A3C9	281-0775-01			CAP,FXD,CER:MCL:0.1UF,20%,50V,Z5U,0.170 X 0.100;AXIAL	04222	SA105E104MAA
A3C10	281-0773-00			CAP,FXD,CER:MLC:0.01UF,10%,100V,SAF,0.100 X 0.170;AXIAL,MI	80009	281-0773-00
A3C11	281-0775-01			CAP,FXD,CER:MCL:0.1UF,20%,50V,Z5U,0.170 X 0.100;AXIAL	04222	SA105E104MAA
A3C12	281-0920-00			CAP,FXD:CER,MLC,1000PF,5%,50V,0.170 X 0.1;NPO,AXIAL,T&R	80009	281-0920-00
A3C13	281-0775-01			CAP,FXD,CER:MCL:0.1UF,20%,50V,Z5U,0.170 X 0.100;AXIAL	04222	SA105E104MAA
A3C14	290-1295-00			CAP,FXD,ALUM:10UF,20%,16V,5 X 9 MM;RDL,105 DEG,BULK	80009	290-1295-00
A3C15	281-0184-00			CAP,VAR,PLSTC:2-18PF,500VDC	80009	281-0184-00
A3C16	281-0775-01			CAP,FXD,CER:MCL:0.1UF,20%,50V,Z5U,0.170 X 0.100;AXIAL	04222	SA105E104MAA
A3C17	281-0773-00			CAP,FXD,CER:MLC:0.01UF,10%,100V,SAF,0.100 X 0.170;AXIAL,MI	80009	281-0773-00
A3C18	281-0775-01			CAP,FXD,CER:MCL:0.1UF,20%,50V,Z5U,0.170 X 0.100;AXIAL	04222	SA105E104MAA
A3C19	281-0775-01			CAP,FXD,CER:MCL:0.1UF,20%,50V,Z5U,0.170 X 0.100;AXIAL	04222	SA105E104MAA
A3C20	281-0775-01			CAP,FXD,CER:MCL:0.1UF,20%,50V,Z5U,0.170 X 0.100;AXIAL	04222	SA105E104MAA
A3C21	281-0775-01			CAP,FXD,CER:MCL:0.1UF,20%,50V,Z5U,0.170 X 0.100;AXIAL	04222	SA105E104MAA
A3C22	281-0773-00			CAP,FXD,CER:MLC:0.01UF,10%,100V,SAF,0.100 X 0.170;AXIAL,MI	80009	281-0773-00
A3C23	281-0775-01			CAP,FXD,CER:MCL:0.1UF,20%,50V,Z5U,0.170 X 0.100;AXIAL	04222	SA105E104MAA
A3C24	281-0775-01			CAP,FXD,CER:MCL:0.1UF,20%,50V,Z5U,0.170 X 0.100;AXIAL	04222	SA105E104MAA
A3C25	281-0775-01			CAP,FXD,CER:MCL:0.1UF,20%,50V,Z5U,0.170 X 0.100;AXIAL	04222	SA105E104MAA
A3C26	281-0184-00			CAP,VAR,PLSTC:2-18PF,500VDC	80009	281-0184-00
A3C27	283-0594-02			CAP,FXD,MICA DI:1000PF,1%,100V,T&A	09023	CDA15FA102F03
A3C28	281-0775-01			CAP,FXD,CER:MCL:0.1UF,20%,50V,Z5U,0.170 X 0.100;AXIAL	04222	SA105E104MAA
A3C29	290-1295-00			CAP,FXD,ALUM:10UF,20%,16V,5 X 9 MM;RDL,105 DEG,BULK	80009	290-1295-00
A3C30	290-1295-00			CAP,FXD,ALUM:10UF,20%,16V,5 X 9 MM;RDL,105 DEG,BULK	80009	290-1295-00

Replaceable electrical parts list (Cont.)

Component number	Tektronix part number	Serial no. effective	Serial no. discont'd	Name & description	Mfr. code	Mfr. part number
A3C31	281-0775-01			CAP,FXD,CER:MCL:0.1UF,20%,50V,Z5U,0.170 X 0.100;AXIAL	04222	SA105E104MAA
A3C32	281-0775-01			CAP,FXD,CER:MCL:0.1UF,20%,50V,Z5U,0.170 X 0.100;AXIAL	04222	SA105E104MAA
A3C33	281-0775-01			CAP,FXD,CER:MCL:0.1UF,20%,50V,Z5U,0.170 X 0.100;AXIAL	04222	SA105E104MAA
A3C34	281-0775-01			CAP,FXD,CER:MCL:0.1UF,20%,50V,Z5U,0.170 X 0.100;AXIAL	04222	SA105E104MAA
A3C35	290-1295-00			CAP,FXD,ALUM:10UF,20%,16V,5 X 9 MM;RDL,105 DEG,BULK	80009	290-1295-00
A3C36	290-1295-00			CAP,FXD,ALUM:10UF,20%,16V,5 X 9 MM;RDL,105 DEG,BULK	80009	290-1295-00
A3C37	281-0775-01			CAP,FXD,CER:MCL:0.1UF,20%,50V,Z5U,0.170 X 0.100;AXIAL	04222	SA105E104MAA
A3C38	281-0861-00			CAP,FXD,CER DI:270PF,5%,50V	04222	SA101A271JAA
A3C39	281-0775-01			CAP,FXD,CER:MCL:0.1UF,20%,50V,Z5U,0.170 X 0.100;AXIAL	04222	SA105E104MAA
A3C40	281-0775-01			CAP,FXD,CER:MCL:0.1UF,20%,50V,Z5U,0.170 X 0.100;AXIAL	04222	SA105E104MAA
A3C41	281-0775-01			CAP,FXD,CER:MCL:0.1UF,20%,50V,Z5U,0.170 X 0.100;AXIAL	04222	SA105E104MAA
A3C42	290-1295-00			CAP,FXD,ALUM:10UF,20%,16V,5 X 9 MM;RDL,105 DEG,BULK	80009	290-1295-00
A3C43	283-0594-02			CAP,FXD,MICA DI:1000PF,1%,100V,T&A	09023	CDA15FA102F03
A3C44	283-0641-00			CAP,FXD,MICA DI:180PF,1%,100V	80009	283-0641-00
A3C45	281-0775-01			CAP,FXD,CER:MCL:0.1UF,20%,50V,Z5U,0.170 X 0.100;AXIAL	04222	SA105E104MAA
A3C46	283-0594-02			CAP,FXD,MICA DI:1000PF,1%,100V,T&A	09023	CDA15FA102F03
A3C47	283-0637-00			CAP,FXD,MICA DI:20PF,2.5%,500V	80009	283-0637-00
A3C48	281-0775-01			CAP,FXD,CER:MCL:0.1UF,20%,50V,Z5U,0.170 X 0.100;AXIAL	04222	SA105E104MAA
A3C49	283-0665-00			CAP,FXD,MICA DI:190PF,1%,100V	80009	283-0665-00
A3C50	283-0603-01			CAP,FXD,MICA DI:113PF,2%,500V,T&A	09023	CDA15FD(113)G03
A3C51	283-0642-01			CAP,FXD,MICA DI:33PF,2%,500V	09023	CDA10ED330G03
A3C52	281-0767-00			CAP,FXD,CER:MCL:330PF,20%,100V,0.100 X 0.170;AXIAL,MI	04222	SA102C331MAA
A3C53	281-0767-00			CAP,FXD,CER:MCL:330PF,20%,100V,0.100 X 0.170;AXIAL,MI	04222	SA102C331MAA
A3C54	281-0775-01			CAP,FXD,CER:MCL:0.1UF,20%,50V,Z5U,0.170 X 0.100;AXIAL	04222	SA105E104MAA
A3C55	283-0796-01			CAP,FXD,MICA DI:100PF,5%,500V,TAPE & AMMO	09023	CDA10FD101J03
A3C56	283-0663-00			CAP,FXD,MICA DI:16.8PF,+/-0.5PF,500V	80009	283-0663-00
A3C57	281-0184-00			CAP,VAR,PLSTC:2-18PF,500VDC	80009	281-0184-00
A3C58	281-0757-00			CAP,FXD,CER DI:10PF,20%,100V TUBULAR,MI	80009	281-0757-00
A3C59	281-0775-01			CAP,FXD,CER:MCL:0.1UF,20%,50V,Z5U,0.170 X 0.100;AXIAL	04222	SA105E104MAA
A3C60	281-0775-01			CAP,FXD,CER:MCL:0.1UF,20%,50V,Z5U,0.170 X 0.100;AXIAL	04222	SA105E104MAA
A3C61	281-0775-01			CAP,FXD,CER:MCL:0.1UF,20%,50V,Z5U,0.170 X 0.100;AXIAL	04222	SA105E104MAA
A3C62	285-1306-00			CAP,FXD,PLSTC:1.0UF,1%,50V	14752	650D1A105F
A3C63	281-0910-00			CAP,FXD,CER DI:1800PF,1%,50V	04222	MA205A182FAA
A3C64	281-0775-01			CAP,FXD,CER:MCL:0.1UF,20%,50V,Z5U,0.170 X 0.100;AXIAL	04222	SA105E104MAA
A3C65	281-0775-01			CAP,FXD,CER:MCL:0.1UF,20%,50V,Z5U,0.170 X 0.100;AXIAL	04222	SA105E104MAA
A3C66	281-0775-01			CAP,FXD,CER:MCL:0.1UF,20%,50V,Z5U,0.170 X 0.100;AXIAL	04222	SA105E104MAA
A3C67	283-0059-02			CAP,FXD,CER DI:1UF,20%,50V,X7R	04222	SR305C105MAAAP1
A3C68	281-0798-00			CAP,FXD,CER DI:51PF,1%,100V	80009	281-0798-00

Replaceable electrical parts list (Cont.)

Component number	Tektronix part number	Serial no. effective	Serial no. discount'd	Name & description	Mfr. code	Mfr. part number
A3C69	290-0920-00			CAP,FXD,ELCTLT:33UF,+50-20%,35VVDC	55680	UVX1H330MAA
A3C70	281-0759-00			CAP,FXD,CER:MLC;22PF,10%,100V,0.100 X 0.170;AXIAL,MI	80009	281-0759-00
A3C71	281-0775-01			CAP,FXD,CER:MCL:0.1UF,20%,50V,Z5U,0.170 X 0.100;AXIAL	04222	SA105E104MAA
A3C72	281-0775-01			CAP,FXD,CER:MCL:0.1UF,20%,50V,Z5U,0.170 X 0.100;AXIAL	04222	SA105E104MAA
A3C73	281-0775-01			CAP,FXD,CER:MCL:0.1UF,20%,50V,Z5U,0.170 X 0.100;AXIAL	04222	SA105E104MAA
A3C74	281-0775-01			CAP,FXD,CER:MCL:0.1UF,20%,50V,Z5U,0.170 X 0.100;AXIAL	04222	SA105E104MAA
A3C75	290-1296-00			CAP,FXD,ALUM:100UF,20%,25V,8 X 9MM;RDL,105 DEG	80009	290-1296-00
A3C76	281-0775-01			CAP,FXD,CER:MCL:0.1UF,20%,50V,Z5U,0.170 X 0.100;AXIAL	04222	SA105E104MAA
A3C77	281-0775-01			CAP,FXD,CER:MCL:0.1UF,20%,50V,Z5U,0.170 X 0.100;AXIAL	04222	SA105E104MAA
A3C78	281-0775-01			CAP,FXD,CER:MCL:0.1UF,20%,50V,Z5U,0.170 X 0.100;AXIAL	04222	SA105E104MAA
A3C79	281-0775-01			CAP,FXD,CER:MCL:0.1UF,20%,50V,Z5U,0.170 X 0.100;AXIAL	04222	SA105E104MAA
A3C80	281-0811-00			CAP,FXD,CER:MLC;10PF,10%,100V,0.100 X 0.170;AXIAL,MI	04222	SA102A100KAA
A3C81	281-0775-01			CAP,FXD,CER:MCL:0.1UF,20%,50V,Z5U,0.170 X 0.100;AXIAL	04222	SA105E104MAA
A3C82	281-0810-00			CAP,FXD,CER:MLC;5.6PF,+/-0.5PF,100V,0.100 X 0.170;AXIAL	04222	SA101A5R6DAA
A3C84	281-0775-01			CAP,FXD,CER:MCL:0.1UF,20%,50V,Z5U,0.170 X 0.100;AXIAL	04222	SA105E104MAA
A3C85	281-0798-00			CAP,FXD,CER DI:51PF,1%,100V	80009	281-0798-00
A3C86	281-0775-01			CAP,FXD,CER:MCL:0.1UF,20%,50V,Z5U,0.170 X 0.100;AXIAL	04222	SA105E104MAA
A3C87	281-0762-00			CAP,FXD,CER DI:27PF,20%,100V	80009	281-0762-00
A3C88	281-0775-01			CAP,FXD,CER:MCL:0.1UF,20%,50V,Z5U,0.170 X 0.100;AXIAL	04222	SA105E104MAA
A3C89	281-0775-01			CAP,FXD,CER:MCL:0.1UF,20%,50V,Z5U,0.170 X 0.100;AXIAL	04222	SA105E104MAA
A3C90	281-0537-00			CAP,FXD,CER:MLC;0.68PF,20%,500V,0.170 X 0.187;AXIAL	80009	281-0537-00
A3C91	290-0943-02			CAP,FXD,ELCTLT:47UF,20%,25V	55680	UVX1E470MDA1TD
A3C93	281-0810-00			CAP,FXD,CER:MLC;5.6PF,+/-0.5PF,100V,0.100 X 0.170;AXIAL,MI	04222	SA101A5R6DAA
A3C94	281-0707-00			CAP,FXD,CER DI:15000PF,10%,200V	80009	281-0707-00
A3C95	281-0811-00			CAP,FXD,CER:MLC;10PF,10%,100V,0.100 X 0.170;AXIAL,MI	04222	SA102A100KAA
A3C96	281-0775-01			CAP,FXD,CER:MCL:0.1UF,20%,50V,Z5U,0.170 X 0.100;AXIAL	04222	SA105E104MAA
A3C97	281-0775-01			CAP,FXD,CER:MCL:0.1UF,20%,50V,Z5U,0.170 X 0.100;AXIAL	04222	SA105E104MAA
A3C98	281-0775-01			CAP,FXD,CER:MCL:0.1UF,20%,50V,Z5U,0.170 X 0.100;AXIAL	04222	SA105E104MAA
A3C99	281-0775-01			CAP,FXD,CER:MCL:0.1UF,20%,50V,Z5U,0.170 X 0.100;AXIAL	04222	SA105E104MAA
A3C100	281-0775-01			CAP,FXD,CER:MCL:0.1UF,20%,50V,Z5U,0.170 X 0.100;AXIAL	04222	SA105E104MAA
A3C101	290-0943-02			CAP,FXD,ELCTLT:47UF,20%,25V	55680	UVX1E470MDA1TD
A3C102	281-0767-00			CAP,FXD,CER:MLC;330PF,20%,100V,0.100 X 0.170;AXIAL,MI	04222	SA102C331MAA
A3C103	281-0184-00			CAP,VAR,PLSTC:2-18PF,500VDC	80009	281-0184-00
A3C104	281-0563-00			CAP,FXD,CER:MLC;0.47UF,20%,50V,0.150 X 0.290;AXIAL,MI	80009	281-0563-00
A3C105	281-0775-01			CAP,FXD,CER:MCL:0.1UF,20%,50V,Z5U,0.170 X 0.100;AXIAL	04222	SA105E104MAA
A3C106	281-0920-00			CAP,FXD,CER,MLC,1000PF,5%,50V,0.170 X 0.1;NPO,AXIAL	80009	281-0920-00
A3C107	281-0920-00			CAP,FXD,CER,MLC,1000PF,5%,50V,0.170 X 0.1;NPO,AXIAL	80009	281-0920-00
A3C108	281-0775-01			CAP,FXD,CER:MCL:0.1UF,20%,50V,Z5U,0.170 X 0.100;AXIAL	04222	SA105E104MAA

Replaceable electrical parts list (Cont.)

Component number	Tektronix part number	Serial no. effective	Serial no. discont'd	Name & description	Mfr. code	Mfr. part number
A3C109	281-0775-01			CAP,FXD,CER:MCL:0.1UF,20%,50V,Z5U,0.170 X 0.100;AXIAL	04222	SA105E104MAA
A3C110	281-0775-01			CAP,FXD,CER:MCL:0.1UF,20%,50V,Z5U,0.170 X 0.100;AXIAL	04222	SA105E104MAA
A3C111	281-0775-01			CAP,FXD,CER:MCL:0.1UF,20%,50V,Z5U,0.170 X 0.100;AXIAL	04222	SA105E104MAA
A3C112	281-0775-01			CAP,FXD,CER:MCL:0.1UF,20%,50V,Z5U,0.170 X 0.100;AXIAL	04222	SA105E104MAA
A3C113	283-0059-02			CAP,FXD,CER DI:1UF,20%,50V,X7R	04222	SR305C105MAAAP1
A3C114	281-0775-01			CAP,FXD,CER:MCL:0.1UF,20%,50V,Z5U,0.170 X 0.100;AXIAL	04222	SA105E104MAA
A3C115	281-0920-00			CAP,FXD,CER,MLC,1000PF,5%,50V,0.170 X 0.1;NPO,AXIAL	80009	281-0920-00
A3C116	281-0563-00			CAP,FXD,CER,MLC:0.47UF,20%,50V,0.150 X 0.290;AXIAL,MI	80009	281-0563-00
A3C117	281-0920-00			CAP,FXD,CER,MLC,1000PF,5%,50V,0.170 X 0.1;NPO,AXIAL	80009	281-0920-00
A3C118	281-0563-00			CAP,FXD,CER,MLC:0.47UF,20%,50V,0.150 X 0.290;AXIAL,MI	80009	281-0563-00
A3C119	281-0184-00			CAP,VAR,PLSTC:2-18PF,500VDC	80009	281-0184-00
A3C120	281-0920-00			CAP,FXD,CER,MLC,1000PF,5%,50V,0.170 X 0.1;NPO,AXIAL	80009	281-0920-00
A3C121	281-0563-00			CAP,FXD,CER,MLC:0.47UF,20%,50V,0.150 X 0.290;AXIAL,MI	80009	281-0563-00
A3C122	281-0775-01			CAP,FXD,CER:MCL:0.1UF,20%,50V,Z5U,0.170 X 0.100;AXIAL	04222	SA105E104MAA
A3C123	281-0775-01			CAP,FXD,CER:MCL:0.1UF,20%,50V,Z5U,0.170 X 0.100;AXIAL	04222	SA105E104MAA
A3C124	281-0920-00			CAP,FXD,CER,MLC,1000PF,5%,50V,0.170 X 0.1;NPO,AXIAL	80009	281-0920-00
A3C125	281-0920-00			CAP,FXD,CER,MLC,1000PF,5%,50V,0.170 X 0.1;NPO,AXIAL	80009	281-0920-00
A3C126	281-0184-00			CAP,VAR,PLSTC:2-18PF,500VDC	80009	281-0184-00
A3C127	283-0059-02			CAP,FXD,CER DI:1UF,20%,50V,X7R	04222	SR305C105MAAAP1
A3C128	281-0920-00			CAP,FXD,CER,MLC,1000PF,5%,50V,0.170 X 0.1;NPO,AXIAL	80009	281-0920-00
A3C129	283-0059-02			CAP,FXD,CER DI:1UF,20%,50V,X7R	04222	SR305C105MAAAP1
A3C130	281-0775-01			CAP,FXD,CER:MCL:0.1UF,20%,50V,Z5U,0.170 X 0.100;AXIAL	04222	SA105E104MAA
A3C131	281-0762-00			CAP,FXD,CER DI:27PF,20%,100V	80009	281-0762-00
A3C132	281-0775-01			CAP,FXD,CER:MCL:0.1UF,20%,50V,Z5U,0.170 X 0.100;AXIAL	04222	SA105E104MAA
A3C133	281-0759-00			CAP,FXD,CER,MLC:22PF,10%,100V,0.100 X 0.170;AXIAL,MI	80009	281-0759-00
A3C134	281-0928-00			CAP,FXD,CER DI:150PF,5%	04222	SA101A151JAA
A3C135	281-0184-00			CAP,VAR,PLSTC:2-18PF,500VDC	80009	281-0184-00
A3C136	283-0059-02			CAP,FXD,CER DI:1UF,20%,50V,X7R	04222	SR305C105MAAAP1
A3C137	281-0184-00			CAP,VAR,PLSTC:2-18PF,500VDC	80009	281-0184-00
A3C138	281-0563-00			CAP,FXD,CER,MLC:0.47UF,20%,50V,0.150 X 0.290;AXIAL,MI	80009	281-0563-00
A3C139	281-0184-00			CAP,VAR,PLSTC:2-18PF,500VDC	80009	281-0184-00
A3C140	281-0920-00			CAP,FXD,CER,MLC,1000PF,5%,50V,0.170 X 0.1;NPO,AXIAL	80009	281-0920-00
A3C141	281-0563-00			CAP,FXD,CER,MLC:0.47UF,20%,50V,0.150 X 0.290;AXIAL,MI	80009	281-0563-00
A3C142	281-0775-01			CAP,FXD,CER:MCL:0.1UF,20%,50V,Z5U,0.170 X 0.100;AXIAL	04222	SA105E104MAA
A3C143	281-0775-01			CAP,FXD,CER:MCL:0.1UF,20%,50V,Z5U,0.170 X 0.100;AXIAL	04222	SA105E104MAA
A3C144	281-0123-00			CAP,VAR,CER DI:5-25PF,100V	59660	518-000A5-25
A3C145	281-0775-01			CAP,FXD,CER:MCL:0.1UF,20%,50V,Z5U,0.170 X 0.100;AXIAL	04222	SA105E104MAA
A3C146	281-0920-00			CAP,FXD,CER,MLC,1000PF,5%,50V,0.170 X 0.1;NPO,AXIAL	80009	281-0920-00

Replaceable electrical parts list (Cont.)

Component number	Tektronix part number	Serial no. effective	Serial no. discount'd	Name & description	Mfr. code	Mfr. part number
A3C147	281-0920-00			CAP,FXD:CER,MLC,1000PF,5%,50V,0.170 X 0.1;NPO,AXIAL	80009	281-0920-00
A3C148	281-0773-00			CAP,FXD,CER:MLC;0.01UF,10%,100V,SAF,0.100 X 0.170;AXIAL,MI	80009	281-0773-00
A3C149	281-0775-01			CAP,FXD,CER:MCL:0.1UF,20%,50V,Z5U,0.170 X 0.100;AXIAL	04222	SA105E104MAA
A3C150	281-0920-00			CAP,FXD:CER,MLC,1000PF,5%,50V,0.170 X 0.1;NPO,AXIAL	80009	281-0920-00
A3C151	283-0059-02			CAP,FXD,CER DI:1UF,20%,50V,X7R	04222	SR305C105MAAAP1
A3C152	281-0775-01			CAP,FXD,CER:MCL:0.1UF,20%,50V,Z5U,0.170 X 0.100;AXIAL	04222	SA105E104MAA
A3C153	281-0920-00			CAP,FXD:CER,MLC,1000PF,5%,50V,0.170 X 0.1;NPO,AXIAL	80009	281-0920-00
A3C154	283-0059-02			CAP,FXD,CER DI:1UF,20%,50V,X7R	04222	SR305C105MAAAP1
A3C155	281-0775-01			CAP,FXD,CER:MCL:0.1UF,20%,50V,Z5U,0.170 X 0.100;AXIAL	04222	SA105E104MAA
A3C156	281-0775-01			CAP,FXD,CER:MCL:0.1UF,20%,50V,Z5U,0.170 X 0.100;AXIAL	04222	SA105E104MAA
A3C157	281-0759-00			CAP,FXD,CER:MLC:22PF,10%,100V,0.100 X 0.170;AXIAL,MI	80009	281-0759-00
A3C158	281-0775-01			CAP,FXD,CER:MCL:0.1UF,20%,50V,Z5U,0.170 X 0.100;AXIAL	04222	SA105E104MAA
A3C159	281-0775-01			CAP,FXD,CER:MCL:0.1UF,20%,50V,Z5U,0.170 X 0.100;AXIAL	04222	SA105E104MAA
A3C160	281-0775-01			CAP,FXD,CER:MCL:0.1UF,20%,50V,Z5U,0.170 X 0.100;AXIAL	04222	SA105E104MAA
A3C161	281-0775-01			CAP,FXD,CER:MCL:0.1UF,20%,50V,Z5U,0.170 X 0.100;AXIAL	04222	SA105E104MAA
A3C162	281-0775-01			CAP,FXD,CER:MCL:0.1UF,20%,50V,Z5U,0.170 X 0.100;AXIAL	04222	SA105E104MAA
A3C163	281-0759-00			CAP,FXD,CER:MLC:22PF,10%,100V,0.100 X 0.170;AXIAL,MI	80009	281-0759-00
A3C164	281-0775-01			CAP,FXD,CER:MCL:0.1UF,20%,50V,Z5U,0.170 X 0.100;AXIAL	04222	SA105E104MAA
A3C165	281-0928-00			CAP,FXD,CER DI:150PF,5%	04222	SA101A151JAA
A3C166	281-0775-01			CAP,FXD,CER:MCL:0.1UF,20%,50V,Z5U,0.170 X 0.100;AXIAL	04222	SA105E104MAA
A3C167	281-0928-00			CAP,FXD,CER DI:150PF,5%	04222	SA101A151JAA
A3C168	281-0775-01			CAP,FXD,CER:MCL:0.1UF,20%,50V,Z5U,0.170 X 0.100;AXIAL	04222	SA105E104MAA
A3C169	281-0775-01			CAP,FXD,CER:MCL:0.1UF,20%,50V,Z5U,0.170 X 0.100;AXIAL	04222	SA105E104MAA
A3C170	281-0775-01			CAP,FXD,CER:MCL:0.1UF,20%,50V,Z5U,0.170 X 0.100;AXIAL	04222	SA105E104MAA
A3C171	281-0775-01			CAP,FXD,CER:MCL:0.1UF,20%,50V,Z5U,0.170 X 0.100;AXIAL	04222	SA105E104MAA
A3C172	283-0059-02			CAP,FXD,CER DI:1UF,20%,50V,X7R	04222	SR305C105MAAAP1
A3C173	281-0775-01			CAP,FXD,CER:MCL:0.1UF,20%,50V,Z5U,0.170 X 0.100;AXIAL	04222	SA105E104MAA
A3C174	281-0759-00			CAP,FXD,CER:MLC:22PF,10%,100V,0.100 X 0.170;AXIAL,MI	80009	281-0759-00
A3C175	281-0928-00			CAP,FXD,CER DI:150PF,5%	04222	SA101A151JAA
A3C176	281-0775-01			CAP,FXD,CER:MCL:0.1UF,20%,50V,Z5U,0.170 X 0.100;AXIAL	04222	SA105E104MAA
A3C177	281-0759-00			CAP,FXD,CER:MLC:22PF,10%,100V,0.100 X 0.170;AXIAL,MI	80009	281-0759-00
A3C178	281-0775-01			CAP,FXD,CER:MCL:0.1UF,20%,50V,Z5U,0.170 X 0.100;AXIAL	04222	SA105E104MAA
A3C179	281-0928-00			CAP,FXD,CER DI:150PF,5%	04222	SA101A151JAA
A3C180	281-0759-00			CAP,FXD,CER:MLC:22PF,10%,100V,0.100 X 0.170;AXIAL,MI	80009	281-0759-00
A3C181	281-0775-01			CAP,FXD,CER:MCL:0.1UF,20%,50V,Z5U,0.170 X 0.100;AXIAL	04222	SA105E104MAA
A3C182	281-0928-00			CAP,FXD,CER DI:150PF,5%	04222	SA101A151JAA
A3C183	281-0775-01			CAP,FXD,CER:MCL:0.1UF,20%,50V,Z5U,0.170 X 0.100;AXIAL	04222	SA105E104MAA
A3C184	281-0920-00			CAP,FXD:CER,MLC,1000PF,5%,50V,0.170 X 0.1;NPO,AXIAL	80009	281-0920-00

Replaceable electrical parts list (Cont.)

Component number	Tektronix part number	Serial no. effective	Serial no. discont'd	Name & description	Mfr. code	Mfr. part number
A3C185	281-0773-00			CAP,FXD,CER:MLC;0.01UF,10%,100V,SAF,0.100 X 0.170;AXIAL,MI	80009	281-0773-00
A3C186	281-0775-01			CAP,FXD,CER:MCL;0.1UF,20%,50V,Z5U,0.170 X 0.100;AXIAL	04222	SA105E104MAA
A3C187	281-0920-00			CAP,FXD:CER,MLC,1000PF,5%,50V,0.170 X 0.1;NPO,AXIAL	80009	281-0920-00
A3C188	281-0773-00			CAP,FXD,CER:MLC;0.01UF,10%,100V,SAF,0.100 X 0.170;AXIAL,MI	80009	281-0773-00
A3C189	281-0775-01			CAP,FXD,CER:MCL;0.1UF,20%,50V,Z5U,0.170 X 0.100;AXIAL	04222	SA105E104MAA
A3C190	281-0775-01			CAP,FXD,CER:MCL;0.1UF,20%,50V,Z5U,0.170 X 0.100;AXIAL	04222	SA105E104MAA
A3C191	281-0920-00			CAP,FXD:CER,MLC,1000PF,5%,50V,0.170 X 0.1;NPO,AXIAL	80009	281-0920-00
A3C192	281-0773-00			CAP,FXD,CER:MLC;0.01UF,10%,100V,SAF,0.100 X 0.170;AXIAL,MI	80009	281-0773-00
A3C193	281-0920-00			CAP,FXD:CER,MLC,1000PF,5%,50V,0.170 X 0.1;NPO,AXIAL	80009	281-0920-00
A3C194	281-0920-00			CAP,FXD:CER,MLC,1000PF,5%,50V,0.170 X 0.1;NPO,AXIAL	80009	281-0920-00
A3C195	281-0773-00			CAP,FXD,CER:MLC;0.01UF,10%,100V,SAF,0.100 X 0.170;AXIAL,MI	80009	281-0773-00
A3C196	281-0775-01			CAP,FXD,CER:MCL;0.1UF,20%,50V,Z5U,0.170 X 0.100;AXIAL	04222	SA105E104MAA
A3C197	281-0773-00			CAP,FXD,CER:MLC;0.01UF,10%,100V,SAF,0.100 X 0.170;AXIAL,MI	80009	281-0773-00
A3C198	290-1296-00			CAP,FXD,ALUM:100UF,20%,25V,8 X 9MM;RDL,105 DEG	80009	290-1296-00
A3C199	281-0775-01			CAP,FXD,CER:MCL;0.1UF,20%,50V,Z5U,0.170 X 0.100;AXIAL	04222	SA105E104MAA
A3C200	281-0809-00			CAP,FXD,CER:MLC;200 PF,5%,100V,0.100 X 0.170;AXIAL,MI	04222	SA101A201JAA
A3C201	281-0809-00			CAP,FXD,CER:MLC;200 PF,5%,100V,0.100 X 0.170;AXIAL,MI	04222	SA101A201JAA
A3C202	281-0809-00			CAP,FXD,CER:MLC;200 PF,5%,100V,0.100 X 0.170;AXIAL,MI	04222	SA101A201JAA
A3C203	281-0809-00			CAP,FXD,CER:MLC;200 PF,5%,100V,0.100 X 0.170;AXIAL,MI	04222	SA101A201JAA
A3C204	281-0809-00			CAP,FXD,CER:MLC;200 PF,5%,100V,0.100 X 0.170;AXIAL,MI	04222	SA101A201JAA
A3C205	281-0910-00			CAP,FXD,CER DI:1800PF,1%,50V	04222	MA205A182FAA
A3C206	281-0767-00			CAP,FXD,CER:MLC;330PF,20%,100V,0.100 X 0.170;AXIAL,MI	04222	SA102C331MAA
A3C207	281-0809-00			CAP,FXD,CER:MLC;200 PF,5%,100V,0.100 X 0.170;AXIAL,MI	04222	SA101A201JAA
A3C208	290-1296-00			CAP,FXD,ALUM:100UF,20%,25V,8 X 9MM;RDL,105 DEG	80009	290-1296-00
A3C209	281-0910-00			CAP,FXD,CER DI:1800PF,1%,50V	04222	MA205A182FAA
A3C210	281-0767-00			CAP,FXD,CER:MLC;330PF,20%,100V,0.100 X 0.170;AXIAL,MI	04222	SA102C331MAA
A3C211	281-0910-00			CAP,FXD,CER DI:1800PF,1%,50V	04222	MA205A182FAA
A3C212	281-0767-00			CAP,FXD,CER:MLC;330PF,20%,100V,0.100 X 0.170;AXIAL,MI	04222	SA102C331MAA
A3C213	281-0767-00			CAP,FXD,CER:MLC;330PF,20%,100V,0.100 X 0.170;AXIAL,MI	04222	SA102C331MAA
A3C214	281-0910-00			CAP,FXD,CER DI:1800PF,1%,50V	04222	MA205A182FAA
A3C215	281-0767-00			CAP,FXD,CER:MLC;330PF,20%,100V,0.100 X 0.170;AXIAL,MI	04222	SA102C331MAA
A3C216	281-0910-00			CAP,FXD,CER DI:1800PF,1%,50V	04222	MA205A182FAA
A3C217	281-0767-00			CAP,FXD,CER:MLC;330PF,20%,100V,0.100 X 0.170;AXIAL,MI	04222	SA102C331MAA
A3C218	281-0910-00			CAP,FXD,CER DI:1800PF,1%,50V	04222	MA205A182FAA
A3C219	281-0775-01			CAP,FXD,CER:MCL;0.1UF,20%,50V,Z5U,0.170 X 0.100;AXIAL	04222	SA105E104MAA

Replaceable electrical parts list (Cont.)

Component number	Tektronix part number	Serial no. effective	Serial no. discount'd	Name & description	Mfr. code	Mfr. part number
A3C220	281-0775-01			CAP,FXD,CER:MCL:0.1UF,20%,50V,Z5U,0.170 X 0.100;AXIAL	04222	SA105E104MAA
A3C221	281-0775-01			CAP,FXD,CER:MCL:0.1UF,20%,50V,Z5U,0.170 X 0.100;AXIAL	04222	SA105E104MAA
A3C222	281-0775-01			CAP,FXD,CER:MCL:0.1UF,20%,50V,Z5U,0.170 X 0.100;AXIAL	04222	SA105E104MAA
A3C223	281-0775-01			CAP,FXD,CER:MCL:0.1UF,20%,50V,Z5U,0.170 X 0.100;AXIAL	04222	SA105E104MAA
A3C224	281-0775-01			CAP,FXD,CER:MCL:0.1UF,20%,50V,Z5U,0.170 X 0.100;AXIAL	04222	SA105E104MAA
A3C225	281-0775-01			CAP,FXD,CER:MCL:0.1UF,20%,50V,Z5U,0.170 X 0.100;AXIAL	04222	SA105E104MAA
A3C226	281-0910-00			CAP,FXD,CER DI:1800PF,1%,50V	04222	MA205A182FAA
A3C227	281-0775-01			CAP,FXD,CER:MCL:0.1UF,20%,50V,Z5U,0.170 X 0.100;AXIAL	04222	SA105E104MAA
A3C228	281-0910-00			CAP,FXD,CER DI:1800PF,1%,50V	04222	MA205A182FAA
A3C229	281-0775-01			CAP,FXD,CER:MCL:0.1UF,20%,50V,Z5U,0.170 X 0.100;AXIAL	04222	SA105E104MAA
A3C230	281-0910-00			CAP,FXD,CER DI:1800PF,1%,50V	04222	MA205A182FAA
A3C231	281-0775-01			CAP,FXD,CER:MCL:0.1UF,20%,50V,Z5U,0.170 X 0.100;AXIAL	04222	SA105E104MAA
A3C232	281-0910-00			CAP,FXD,CER DI:1800PF,1%,50V	04222	MA205A182FAA
A3C233	281-0775-01			CAP,FXD,CER:MCL:0.1UF,20%,50V,Z5U,0.170 X 0.100;AXIAL	04222	SA105E104MAA
A3C234	281-0910-00			CAP,FXD,CER DI:1800PF,1%,50V	04222	MA205A182FAA
A3C235	281-0775-01			CAP,FXD,CER:MCL:0.1UF,20%,50V,Z5U,0.170 X 0.100;AXIAL	04222	SA105E104MAA
A3C236	281-0910-00			CAP,FXD,CER DI:1800PF,1%,50V	04222	MA205A182FAA
A3C237	281-0910-00			CAP,FXD,CER DI:1800PF,1%,50V	04222	MA205A182FAA
A3C238	281-0910-00			CAP,FXD,CER DI:1800PF,1%,50V	04222	MA205A182FAA
A3C239	283-0059-02			CAP,FXD,CER DI:1UF,20%,50V,X7R	04222	SR305C105MAAAP1
A3C240	281-0910-00			CAP,FXD,CER DI:1800PF,1%,50V	04222	MA205A182FAA
A3C241	283-0059-02			CAP,FXD,CER DI:1UF,20%,50V,X7R	04222	SR305C105MAAAP1
A3C242	281-0910-00			CAP,FXD,CER DI:1800PF,1%,50V	04222	MA205A182FAA
A3C243	283-0059-02			CAP,FXD,CER DI:1UF,20%,50V,X7R	04222	SR305C105MAAAP1
A3C244	281-0910-00			CAP,FXD,CER DI:1800PF,1%,50V	04222	MA205A182FAA
A3C245	283-0059-02			CAP,FXD,CER DI:1UF,20%,50V,X7R	04222	SR305C105MAAAP1
A3C246	281-0910-00			CAP,FXD,CER DI:1800PF,1%,50V	04222	MA205A182FAA
A3C247	283-0059-02			CAP,FXD,CER DI:1UF,20%,50V,X7R	04222	SR305C105MAAAP1
A3C248	283-0059-02			CAP,FXD,CER DI:1UF,20%,50V,X7R	04222	SR305C105MAAAP1
A3C249	281-0903-00			CAP,FXD,CER DI:3.9PF,100V	80009	281-0903-00
A3C250	281-0903-00			CAP,FXD,CER DI:3.9PF,100V	80009	281-0903-00
A3C251	281-0903-00			CAP,FXD,CER DI:3.9PF,100V	80009	281-0903-00
A3C252	281-0903-00			CAP,FXD,CER DI:3.9PF,100V	80009	281-0903-00
A3C253	281-0903-00			CAP,FXD,CER DI:3.9PF,100V	80009	281-0903-00
A3C254	281-0903-00			CAP,FXD,CER DI:3.9PF,100V	80009	281-0903-00
A3C255	281-0759-00			CAP,FXD,CER:MLC:22PF,10%,100V,0.100 X 0.170;AXIAL,MI	80009	281-0759-00
A3C256	281-0775-01			CAP,FXD,CER:MCL:0.1UF,20%,50V,Z5U,0.170 X 0.100;AXIAL	04222	SA105E104MAA
A3C257	281-0182-00			CAP,VAR,PLSTC:1.8-10PF,300V	19701	2805D1R810BH03F0

Replaceable electrical parts list (Cont.)

Component number	Tektronix part number	Serial no. effective	Serial no. discontin'd	Name & description	Mfr. code	Mfr. part number
A3C258	281-0182-00			CAP,VAR,PLSTC:1.8-10PF,300V	19701	2805D1R810BH03F0
A3C259	281-0182-00			CAP,VAR,PLSTC:1.8-10PF,300V	19701	2805D1R810BH03F0
A3C260	281-0182-00			CAP,VAR,PLSTC:1.8-10PF,300V	19701	2805D1R810BH03F0
A3C261	281-0182-00			CAP,VAR,PLSTC:1.8-10PF,300V	19701	2805D1R810BH03F0
A3C262	281-0182-00			CAP,VAR,PLSTC:1.8-10PF,300V	19701	2805D1R810BH03F0
A3C263	281-0861-00			CAP,FXD,CER DI:270PF,5%,50V	04222	SA101A271JAA
A3C264	281-0799-00			CAP,FXD,CER DI:62PF,2%,100V	80009	281-0799-00
A3CR1	152-0400-00			DIO,RECT:FAST RCVRY:400V,1A,200NS;1N4936,DO-41,T&R	80009	152-0400-00
A3CR2	152-0400-00			DIO,RECT:FAST RCVRY:400V,1A,200NS;1N4936,DO-41,T&R	80009	152-0400-00
A3CR3	152-0141-02			DIO,SIG:ULTRA FAST:40V,150MA,4NS,2PF;1N4152,DO-35	80009	152-0141-02
A3CR4	152-0400-00			DIO,RECT:FAST RCVRY:400V,1A,200NS;1N4936,DO-41,T&R	80009	152-0400-00
A3CR5	152-0400-00			DIO,RECT:FAST RCVRY:400V,1A,200NS;1N4936,DO-41,T&R	80009	152-0400-00
A3CR6	152-0400-00			DIO,RECT:FAST RCVRY:400V,1A,200NS;1N4936,DO-41,T&R	80009	152-0400-00
A3CR7	152-0400-00			DIO,RECT:FAST RCVRY:400V,1A,200NS;1N4936,DO-41,T&R	80009	152-0400-00
A3CR8	152-0141-02			DIO,SIG:ULTRA FAST:40V,150MA,4NS,2PF;1N4152,DO-35	80009	152-0141-02
A3CR9	152-0307-00			DIO,SIG:ULTRA FAST:100V,4.0NS,1.5PF,DUAL COM-CATH-ODE;MSD6100,TO-92	04713	SSD1150
A3CR10	152-0141-02			DIO,SIG:ULTRA FAST:40V,150MA,4NS,2PF;1N4152,DO-35	80009	152-0141-02
A3CR11	152-0141-02			DIO,SIG:ULTRA FAST:40V,150MA,4NS,2PF;1N4152,DO-35	80009	152-0141-02
A3CR12	152-0322-00			DIO,SIG:SCHTKY:15V,410MV AT 1MA,1.2PF;5082-2811,T&R	80009	152-0322-00
A3CR13	152-0141-02			DIO,SIG:ULTRA FAST:40V,150MA,4NS,2PF;1N4152,DO-35	80009	152-0141-02
A3CR14	152-0141-02			DIO,SIG:ULTRA FAST:40V,150MA,4NS,2PF;1N4152,DO-35	80009	152-0141-02
A3J3	131-2951-00			CONN,DIN:PCB;FEM,STR,2 X 16,0.1 X 0.1 CTR,0.456 H X 0.147	71468	G06D32P3BDBLSPL
A3J4	131-4367-00			CONN,RF JACK:SMB;75 OHM,MALE,STR,PCB,GLD/NKL,0.325 H X 0.159 TAIL	80009	131-4367-00
A3J5	131-4530-00			CONN,HDR:PCB;MALE,STR,1 X 3,0.1 CTR,0.230 MLG X 0.120 TAIL,30 GLD,BD RETENTION	80009	131-4530-00
A3J6	131-4530-00			CONN,HDR:PCB;MALE,STR,1 X 3,0.1 CTR,0.230 MLG X 0.120 TAIL,30 GLD,BD RETENTION	80009	131-4530-00
A3J7	175-9797-00			CA ASSY,SP:FLAT FLEX;FLX,10,27 AWG,2.5 L,1X10,BOX X STR,SLDR TAB,CONN NON PLZ	00779	487729-1
A3J9	131-2951-00			CONN,DIN:PCB;FEM,STR,2 X 16,0.1 X 0.1 CTR,0.456 H X 0.147	71468	G06D32P3BDBLSPL
A3J25	131-4794-00			CONN,HDR:PCB;MALE,STR,1 X 2,0.1 CTR,0.235 MLG X 0.112 TAIL,30 GLD,0.035 DIA PCB	80009	131-4794-00
A3K1	148-0249-00			RELAY,ARM:	80009	148-0249-00
A3K2	148-0249-00			RELAY,ARM:	80009	148-0249-00
A3K3	148-0249-00			RELAY,ARM:	80009	148-0249-00
A3K4	148-0249-00			RELAY,ARM:	80009	148-0249-00
A3K5	148-0249-00			RELAY,ARM:	80009	148-0249-00

Replaceable electrical parts list (Cont.)

Component number	Tektronix part number	Serial no. effective	Serial no. discount'd	Name & description	Mfr. code	Mfr. part number
A3K6	148-0249-00			RELAY,ARM:	80009	148-0249-00
A3L1	108-1262-00			COIL,RF:FXD,100UH,10%,Q=30,SRF 8.2MHZ,DCR 0.23 OHM,I MAX 0.75ARDL LEAD	80009	108-1262-00
A3L2	114-0487-00			COIL,RF:VAR,18UH +/-10%,2.52MHZ,Q80 MIN,CUP CORE	80009	114-0487-00
A3L3	114-0486-00			COIL,RF:VAR,5.6UH +/-10%,Q 80 MIN,TEST FREQ 7.96MHZ	80009	114-0486-00
A3L4	114-0488-00			COIL,RF:15UH +/-10%,2.52MHZ,Q80 MIN,CUP CORE	80009	114-0488-00
A3L5	114-0485-00			COIL,RF:VAR,4.7UH +/-10%,Q 80 MIN,TEST FREQ 7.96MHZ	80009	114-0485-00
A3L6	108-0736-00			COIL,RF:FXD,828NH	TK2042	ORDER BY DESCR
A3L7	108-0736-00			COIL,RF:FXD,828NH	TK2042	ORDER BY DESCR
A3L8	114-0484-00			COIL,RF:VAR:T-COIL FOR 2.2-3.3 UH ,FORM 276-0231-00 WITH SLUG	80009	114-0484-00
A3L9	114-0484-00			COIL,RF:VAR:T-COIL FOR 2.2-3.3 UH ,FORM 276-0231-00 WITH SLUG	80009	114-0484-00
A3L10	108-0682-00			COIL,RF:FXD,61NH	80009	108-0682-00
A3L11	108-0682-00			COIL,RF:FXD,61NH	80009	108-0682-00
A3L12	108-1541-00			COIL,RF:	80009	108-1541-00
A3P5	131-3199-00			CONN,SHUNT:FEM,STR,1 X 2,0.1 CTR,0.2 H,LOW PROFILE,JUMPER	80009	131-3199-00
A3P6	131-3199-00			CONN,SHUNT:FEM,STR,1 X 2,0.1 CTR,0.2 H,LOW PROFILE,JUMPER	80009	131-3199-00
A3Q1	151-0188-00			XSTR,SIG:BIPOLAR,PNP;40V,200MA,250MHZ,AMPL:2N3906,TO-92 EBC	80009	151-0188-00
A3Q4	151-0710-02			XSTR,SIG:BIPOLAR,NPN;40V,1.0A,50MHZ,AMPL:2N6715/MPSW01A,TO-237/TO-226AE,T&A	80009	151-0710-02
A3Q7	151-0188-00			XSTR,SIG:BIPOLAR,PNP;40V,200MA,250MHZ,AMPL:2N3906,TO-92 EBC	80009	151-0188-00
A3Q8	151-0207-01			XSTR,SIG:BIPOLAR,NPN;45V,300MA,250MHZ,AMPL:PN100A,TO-92 EBC,T&A	80009	151-0207-01
A3Q9	151-0216-04			XSTR,SIG:BIPOLAR,PNP;25V,100MA,170MHZ,AMPL:MPS6523,TO-92 EBC,T&A	80009	151-0216-04
A3Q10	151-0190-00			XSTR,SIG:BIPOLAR,NPN;40V,200MA,300MHZ,AMPL:2N3904,TO-92 EBC	80009	151-0190-00
A3Q11	151-0207-01			XSTR,SIG:BIPOLAR,NPN;45V,300MA,250MHZ,AMPL:PN100A,TO-92 EBC,T&A	80009	151-0207-01
A3Q12	151-0188-00			XSTR,SIG:BIPOLAR,PNP;40V,200MA,250MHZ,AMPL:2N3906,TO-92 EBC	80009	151-0188-00
A3Q13	151-0190-00			XSTR,SIG:BIPOLAR,NPN;40V,200MA,300MHZ,AMPL:2N3904,TO-92 EBC	80009	151-0190-00
A3Q14	151-0216-04			XSTR,SIG:BIPOLAR,PNP;25V,100MA,170MHZ,AMPL:MPS6523,TO-92 EBC,T&A	80009	151-0216-04
A3Q15	151-0216-04			XSTR,SIG:BIPOLAR,PNP;25V,100MA,170MHZ,AMPL:MPS6523,TO-92 EBC,T&A	80009	151-0216-04
A3Q16	151-0190-00			XSTR,SIG:BIPOLAR,NPN;40V,200MA,300MHZ,AMPL:2N3904,TO-92 EBC	80009	151-0190-00

Replaceable electrical parts list (Cont.)

Component number	Tektronix part number	Serial no. effective	Serial no. discontin'd	Name & description	Mfr. code	Mfr. part number
A3Q17	151-0207-01			XSTR,SIG:BIPOLAR,NPN;45V,300MA,250MHZ,AMPL:PN100A,TO-92 EBC,T&A	80009	151-0207-01
A3Q18	151-0190-00			XSTR,SIG:BIPOLAR,NPN;40V,200MA,300MHZ,AMPL:2N3904,TO-92 EBC	80009	151-0190-00
A3Q19	151-0207-01			XSTR,SIG:BIPOLAR,NPN;45V,300MA,250MHZ,AMPL:PN100A,TO-92 EBC,T&A	80009	151-0207-01
A3Q20	151-0207-01			XSTR,SIG:BIPOLAR,NPN;45V,300MA,250MHZ,AMPL:PN100A,TO-92 EBC,T&A	80009	151-0207-01
A3Q21	151-0190-00			XSTR,SIG:BIPOLAR,NPN;40V,200MA,300MHZ,AMPL:2N3904,TO-92 EBC	80009	151-0190-00
A3Q22	151-0188-00			XSTR,SIG:BIPOLAR,PNP;40V,200MA,250MHZ,AMPL:2N3906,TO-92 EBC	80009	151-0188-00
A3Q23	151-0190-00			XSTR,SIG:BIPOLAR,NPN;40V,200MA,300MHZ,AMPL:2N3904,TO-92 EBC	80009	151-0190-00
A3Q24	151-0965-00			XSTR,SIG:BIPOLAR,NPN;10V,80MA,6.0GHZ,AMPL:MPS571,TO-92 BEC	80009	151-0965-00
A3Q25	151-0619-00			XSTR,SIG:BIPOLAR,NPN;35V,20MA,SUPERMATCHED DUAL;LM394H,TO-78	80009	151-0619-00
A3Q26	151-0659-00			TRANSISTOR,SIG:BIPOLAR,NPN,70V VCEO,120V VCBO,400MA,1.0GHZ,AMP,LT1839/MRF544,TO-39	04713	LT 1839
				ATTACHED PARTS		
	214-2593-00			HTSK,XSTR:TO-5,AL	80009	214-2593-00
				END ATTACHED PARTS		
A3Q27	151-0915-00			XSTR:NPN,PWR,300V,100MA	80009	151-0915-00
A3Q28	151-0188-00			XSTR,SIG:BIPOLAR,PNP;40V,200MA,250MHZ,AMPL:2N3906,TO-92 EBC	80009	151-0188-00
A3Q29	151-0188-00			XSTR,SIG:BIPOLAR,PNP;40V,200MA,250MHZ,AMPL:2N3906,TO-92 EBC	80009	151-0188-00
A3Q30	151-0915-00			XSTR:NPN,PWR,300V,100MA	80009	151-0915-00
A3Q31	151-0916-00			XSTR:PNP,PWR,300V,100MA	80009	151-0916-00
A3Q32	151-0916-00			XSTR:PNP,PWR,300V,100MA	80009	151-0916-00
A3Q33	151-0965-00			XSTR,SIG:BIPOLAR,NPN;10V,80MA,6.0GHZ,AMPL:MPS571,TO-92 BEC	80009	151-0965-00
A3Q34	151-0659-00			TRANSISTOR,SIG:BIPOLAR,NPN,70V VCEO,120V VCBO,400MA,1.0GHZ,AMP,LT1839/MRF544,TO-39	04713	LT 1839
				ATTACHED PARTS		
	214-2593-00			HTSK,XSTR:TO-5,AL	80009	214-2593-00
				END ATTACHED PARTS		
A3Q35	151-0188-00			XSTR,SIG:BIPOLAR,PNP;40V,200MA,250MHZ,AMPL:2N3906,TO-92 EBC	80009	151-0188-00
A3Q36	151-0188-00			XSTR,SIG:BIPOLAR,PNP;40V,200MA,250MHZ,AMPL:2N3906,TO-92 EBC	80009	151-0188-00
A3Q37	151-0188-00			XSTR,SIG:BIPOLAR,PNP;40V,200MA,250MHZ,AMPL:2N3906,TO-92 EBC	80009	151-0188-00

Replaceable electrical parts list (Cont.)

Component number	Tektronix part number	Serial no. effective	Serial no. discont'd	Name & description	Mfr. code	Mfr. part number
A3Q38	151-0188-00			XSTR,SIG:BIPOLAR,PNP;40V,200MA,250MHZ,AMPL:2N3906,TO-92 EBC	80009	151-0188-00
A3Q39	151-0188-00			XSTR,SIG:BIPOLAR,PNP;40V,200MA,250MHZ,AMPL:2N3906,TO-92 EBC	80009	151-0188-00
A3Q40	151-0188-00			XSTR,SIG:BIPOLAR,PNP;40V,200MA,250MHZ,AMPL:2N3906,TO-92 EBC	80009	151-0188-00
A3R1	311-2425-00			RES,VAR,NONWW:TRMR,20 KOHM,+/-20%,0.25 WATT,RTANG	TK2073	RV102YP15SB203K
A3R2	311-2425-00			RES,VAR,NONWW:TRMR,20 KOHM,+/-20%,0.25 WATT,RTANG	TK2073	RV102YP15SB203K
A3R3	311-2425-00			RES,VAR,NONWW:TRMR,20 KOHM,+/-20%,0.25 WATT,RTANG	TK2073	RV102YP15SB203K
A3R4	311-2425-00			RES,VAR,NONWW:TRMR,20 KOHM,+/-20%,0.25 WATT,RTANG	TK2073	RV102YP15SB203K
A3R5	311-2425-00			RES,VAR,NONWW:TRMR,20 KOHM,+/-20%,0.25 WATT,RTANG	TK2073	RV102YP15SB203K
A3R6	311-2238-00			RES,VAR,TRMR:CERMET;50K OHM,20%,0.5W,0.197 SQ,SIDE ADJUST:T&R	TK1450	GF06UT 50 K
A3R7	322-3318-00			RES,FXD:MET FILM;20K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	57668	CRB20 FXE 20K0
A3R8	322-3371-00			RES,FXD,FILM:71.5K OHM,1%,0.2W,TC=T0	80009	322-3371-00
A3R9	322-3289-00			RES,FXD:MET FILM;10K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	80009	322-3289-00
A3R10	322-3356-00			RES,FXD,FILM:49.9K OHM,1%,0.2W,TC=T0	80009	322-3356-00
A3R11	322-3318-00			RES,FXD:MET FILM;20K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	57668	CRB20 FXE 20K0
A3R12	322-3289-00			RES,FXD:MET FILM;10K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	80009	322-3289-00
A3R13	322-3289-00			RES,FXD:MET FILM;10K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	80009	322-3289-00
A3R14	322-3289-00			RES,FXD:MET FILM;10K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	80009	322-3289-00
A3R15	322-3289-00			RES,FXD:MET FILM;10K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	80009	322-3289-00
A3R16	307-0446-00			RES NTWK,FXD,FI:10K OHM,20%,(9)RES	80009	307-0446-00
A3R19	322-3243-00			RES,FXD:MET FILM;3.32K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	91637	CCF50-1-G33200F
A3R20	322-3289-00			RES,FXD:MET FILM;10K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	80009	322-3289-00
A3R21	322-3258-00			RES,FXD:MET FILM;4.75K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	80009	322-3258-00
A3R22	322-3385-00			RES,FXD:MET FILM;100K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	57668	CRB20 FXE 100K
A3R23	322-3385-00			RES,FXD:MET FILM;100K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	57668	CRB20 FXE 100K

Replaceable electrical parts list (Cont.)

Component number	Tektronix part number	Serial no. effective	Serial no. discont'd	Name & description	Mfr. code	Mfr. part number
A3R24	322-3193-00			RES,FXD,MET FILM;1K OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	57668	CRB20 FXE 1K00
A3R25	322-3260-00			RES,FXD,FILM:4.99K OHM,1%,0.2W,TC=T0	57668	CRB20 FXE 4K99
A3R27	322-3385-00			RES,FXD,MET FILM;100K OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	57668	CRB20 FXE 100K
A3R28	322-3385-00			RES,FXD,MET FILM;100K OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	57668	CRB20 FXE 100K
A3R29	322-3193-00			RES,FXD,MET FILM;1K OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	57668	CRB20 FXE 1K00
A3R30	322-3289-00			RES,FXD,MET FILM;10K OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	80009	322-3289-00
A3R31	322-3385-00			RES,FXD,MET FILM;100K OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	57668	CRB20 FXE 100K
A3R32	322-3385-00			RES,FXD,MET FILM;100K OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	57668	CRB20 FXE 100K
A3R33	322-3231-00			RES,FXD,FILM:2.49K OHM,1%,0.2W,TC=T0	80009	322-3231-00
A3R36	322-3193-00			RES,FXD,MET FILM;1K OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	57668	CRB20 FXE 1K00
A3R37	322-3452-00			RES,FXD,FILM:499K OHM,1%,0.2W,TC=T0	91637	CCF50-2-G4993FT
A3R39	322-3289-00			RES,FXD,MET FILM;10K OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	80009	322-3289-00
A3R40	322-3181-00			RES,FXD,FILM:750 OHM,1%,0.2W,TC=T0	80009	322-3181-00
A3R41	322-3289-00			RES,FXD,MET FILM;10K OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	80009	322-3289-00
A3R42	307-0594-00			RES NTWK,FXD,FI:(8)220 OHM,2%,0.125W	80009	307-0594-00
A3R47	322-3335-00			RES,FXD,FILM:30.1K OHM,1%,0.2W,TC=T0	57668	CRB20 FXE 30K1
A3R48	322-3289-00			RES,FXD,MET FILM;10K OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	80009	322-3289-00
A3R50	311-2231-00			RES,VAR,TRMR:CERMET;1K OHM,20%,0.5W,0.197 SQ,TOP ADJUST;T&R	TK1450	GF06UT 1K
A3R51	322-3135-00			RES,FXD,FILM:249 OHM,1%,0.2W,TC=T0	80009	322-3135-00
A3R52	322-3193-00			RES,FXD,MET FILM;1K OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	57668	CRB20 FXE 1K00
A3R53	322-3300-02			RES,FXD,FILM:13K OHM,0.5%,0.2W,TC=T2	57668	CRB20 DYE 13K0
A3R54	322-3068-00			RES,FXD,MET FILM;49.9 OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	80009	322-3068-00
A3R55	322-3126-00			RES,FXD,FILM:200 OHM,1%,0.2W,TC=T0	80009	322-3126-00
A3R56	322-3133-00			RES,FXD,FILM:237 OHM,1%,0.2W,TC=T0	91637	CCF50-2F237R0F
A3R59	322-3135-00			RES,FXD,FILM:249 OHM,1%,0.2W,TC=T0	80009	322-3135-00
A3R60	322-3068-00			RES,FXD,MET FILM;49.9 OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	80009	322-3068-00
A3R61	322-3193-00			RES,FXD,MET FILM;1K OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	57668	CRB20 FXE 1K00
A3R62	322-3452-00			RES,FXD,FILM:499K OHM,1%,0.2W,TC=T0	91637	CCF50-2-G4993FT

Replaceable electrical parts list (Cont.)

Component number	Tektronix part number	Serial no. effective	Serial no. discont'd	Name & description	Mfr. code	Mfr. part number
A3R63	322-3135-00			RES,FXD,FILM:249 OHM,1%,0.2W,TC=T0	80009	322-3135-00
A3R64	322-3068-00			RES,FXD:MET FILM;49.9 OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	80009	322-3068-00
A3R65	322-3135-00			RES,FXD,FILM:249 OHM,1%,0.2W,TC=T0	80009	322-3135-00
A3R66	322-3147-00			RES,FXD:MET FILM;332 OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	80009	322-3147-00
A3R67	322-3068-00			RES,FXD:MET FILM;49.9 OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	80009	322-3068-00
A3R68	322-3193-00			RES,FXD:MET FILM;1K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	57668	CRB20 FXE 1K00
A3R69	322-3260-00			RES,FXD,FILM:4.99K OHM,1%,0.2W,TC=T0	57668	CRB20 FXE 4K99
A3R70	322-3147-00			RES,FXD:MET FILM;332 OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	80009	322-3147-00
A3R71	322-3135-00			RES,FXD,FILM:249 OHM,1%,0.2W,TC=T0	80009	322-3135-00
A3R72	322-3068-00			RES,FXD:MET FILM;49.9 OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	80009	322-3068-00
A3R73	322-3261-00			RES,FXD,FILM:5.11K OHM,1%,0.2W,TC=T0	80009	322-3261-00
A3R74	322-3193-00			RES,FXD:MET FILM;1K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	57668	CRB20 FXE 1K00
A3R75	322-3147-00			RES,FXD:MET FILM;332 OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	80009	322-3147-00
A3R76	322-3135-00			RES,FXD,FILM:249 OHM,1%,0.2W,TC=T0	80009	322-3135-00
A3R77	308-0297-00			RES,FXD,VVW:24.7 OHM,1%,3W	07088	
A3R78	311-2230-00			RES,VAR,TRMR:CERMET;500 OHM,20%,0.5W,0.197 SQ,TOP ADJUST;T&R	TK1450	GF06UT 500
A3R79	322-3216-00			RES,FXD,FILM:1.74K OHM,1%,0.2W,TC=T0	57668	CRB20 FXE 1K74
A3R80	322-3295-00			RES,FXD:MET FILM;11.5K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	80009	322-3295-00
A3R81	322-3193-00			RES,FXD:MET FILM;1K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	57668	CRB20 FXE 1K00
A3R82	322-3260-00			RES,FXD,FILM:4.99K OHM,1%,0.2W,TC=T0	57668	CRB20 FXE 4K99
A3R83	322-3356-00			RES,FXD,FILM:49.9K OHM,1%,0.2W,TC=T0	80009	322-3356-00
A3R84	311-2227-00			RES,VAR,NONVWV:TRMR,100 OHM,20%,0.5W LIN	TK1450	GF06UT 100
A3R85	322-3452-00			RES,FXD,FILM:499K OHM,1%,0.2W,TC=T0	91637	CCF50-2-G4993FT
A3R86	322-3030-00			RES,FXD:MET FILM;20 OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	80009	322-3030-00
A3R87	322-3085-00			RES,FXD:MET FILM;75 OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	57668	CRB20 FXE 75E0
A3R88	322-3126-00			RES,FXD,FILM:200 OHM,1%,0.2W,TC=T0	80009	322-3126-00
A3R89	311-2234-00			RES,VAR,TRMR:CERMET;5K OHM,20%,0.5W,0.197 SQ,TOP ADJUST;T&R	TK1450	GF06UT 5K
A3R90	322-3277-00			RES,FXD,FILM:7.5K OHM,1%,0.2W,TC=T0	57668	CRB20 FXE 7K50

Replaceable electrical parts list (Cont.)

Component number	Tektronix part number	Serial no. effective	Serial no. discont'd	Name & description	Mfr. code	Mfr. part number
A3R91	322-3289-00			RES,FXD:MET FILM;10K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	80009	322-3289-00
A3R92	311-2236-00			RES,VAR,TRMR:CERMET;20K OHM,20%,0.5W,0.197 SQ,SIDE ADJUST;T&R	TK1450	GF06UT 20K
A3R93	322-3178-00			RES,FXD,FILM:698 OHM,1%,0.2W,TC=T0	91637	CCF50-2G698ROF
A3R94	322-3193-00			RES,FXD:MET FILM;1K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	57668	CRB20 FXE 1K00
A3R95	322-3335-00			RES,FXD,FILM:30.1K OHM,1%,0.2W,TC=T0	57668	CRB20 FXE 30K1
A3R96	322-3261-00			RES,FXD,FILM:5.11K OHM,1%,0.2W,TC=T0	80009	322-3261-00
A3R97	322-3431-00			RES,FXD,FILM:301K OHM,1%,0.2W,TC=T0	57668	CRB20 FXE 301K
A3R98	322-3289-00			RES,FXD:MET FILM;10K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	80009	322-3289-00
A3R99	322-3254-00			RES,FXD,FILM:4.32K OHM,1%,0.2W,TC=T0	80009	322-3254-00
A3R100	322-3260-00			RES,FXD,FILM:4.99K OHM,1%,0.2W,TC=T0	57668	CRB20 FXE 4K99
A3R101	322-3289-00			RES,FXD:MET FILM;10K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	80009	322-3289-00
A3R102	322-3318-00			RES,FXD:MET FILM;20K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	57668	CRB20 FXE 20K0
A3R103	322-3030-00			RES,FXD:MET FILM;20 OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	80009	322-3030-00
A3R104	322-3068-00			RES,FXD:MET FILM;49.9 OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	80009	322-3068-00
A3R105	322-3481-00			RES,FXD,FILM:1M OHM.1%,0.2W,TC=T0	80009	322-3481-00
A3R106	322-3335-00			RES,FXD,FILM:30.1K OHM,1%,0.2W,TC=T0	57668	CRB20 FXE 30K1
A3R107	322-3330-00			RES,FXD,FILM:26.7K OHM,1%,0.2W,TC=T0	80009	322-3330-00
A3R108	311-2229-00			RES,VAR,NONWWW:TRMR,250 OHM,20%,0.5W LIN	TK1450	GF06UT 250
A3R109	322-3289-00			RES,FXD:MET FILM;10K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	80009	322-3289-00
A3R110	322-3314-00			RES,FXD:MET FILM;18.2K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	80009	322-3314-00
A3R111	322-3222-00			RES,FXD:MET FILM;2K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	57668	CRB20 FXE 2K00
A3R112	322-3301-00			RES,FXD,FILM:13.3K OHM,1%,0.2W,TC=T0	80009	322-3301-00
A3R113	322-3314-00			RES,FXD:MET FILM;18.2K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	80009	322-3314-00
A3R114	322-3179-00			RES,FXD,FILM:715 OHM,1%,0.2W,TC=T0	80009	322-3179-00
A3R115	322-3205-00			RES,FXD,FILM:1.33K OHM,1%,0.2W,TC=T0	57668	CRB20 FXE 1K33
A3R116	322-3431-00			RES,FXD,FILM:301K OHM,1%,0.2W,TC=T0	57668	CRB20 FXE 301K
A3R117	322-3193-00			RES,FXD:MET FILM;1K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	57668	CRB20 FXE 1K00
A3R118	322-3289-00			RES,FXD:MET FILM;10K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	80009	322-3289-00

Replaceable electrical parts list (Cont.)

Component number	Tektronix part number	Serial no. effective	Serial no. discount'd	Name & description	Mfr. code	Mfr. part number
A3R119	322-3289-00			RES,FXD:MET FILM;10K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	80009	322-3289-00
A3R120	322-3356-00			RES,FXD,FILM:49.9K OHM,1%,0.2W,TC=T0	80009	322-3356-00
A3R121	322-3300-02			RES,FXD,FILM:13K OHM,0.5%,0.2W,TC=T2	57668	CRB20 DYE 13K0
A3R122	322-3289-00			RES,FXD:MET FILM;10K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	80009	322-3289-00
A3R123	322-3112-00			RES,FXD,FILM:143 OHM,1%,0.2W,TC=T0	80009	322-3112-00
A3R124	322-3075-00			RES,FXD,FILM:59 OHM,1%,0.2W,TC=T0	80009	322-3075-00
A3R125	322-3289-00			RES,FXD:MET FILM;10K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	80009	322-3289-00
A3R126	322-3318-00			RES,FXD:MET FILM;20K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	57668	CRB20 FXE 20K0
A3R127	322-3301-00			RES,FXD,FILM:13.3K OHM,1%,0.2W,TC=T0	80009	322-3301-00
A3R128	311-2238-00			RES,VAR,TRMR:CERMET;50K OHM,20%,0.5W,0.197 SQ,SIDE ADJUST;T&R	TK1450	GF06UT 50 K
A3R129	-----			(TEST SELECTED)		
A3R130	322-3452-00			RES,FXD,FILM:499K OHM,1%,0.2W,TC=T0	91637	CCF50-2-G4993FT
A3R131	-----			(TEST SELECTED)		
A3R132	-----			(TEST SELECTED)		
A3R133	322-3261-00			RES,FXD,FILM:5.11K OHM,1%,0.2W,TC=T0	80009	322-3261-00
A3R134	322-3193-00			RES,FXD:MET FILM;1K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	57668	CRB20 FXE 1K00
A3R135	322-3335-00			RES,FXD,FILM:30.1K OHM,1%,0.2W,TC=T0	57668	CRB20 FXE 30K1
A3R136	322-3306-00			RES,FXD:MET FILM;15K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	57668	CRB20 FXE 15K0
A3R137	322-3068-00			RES,FXD:MET FILM;49.9 OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	80009	322-3068-00
A3R138	322-3250-00			RES,FXD:MET FILM;3.92K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	91637	CCF50-2F39200F
A3R139	311-2238-00			RES,VAR,TRMR:CERMET;50K OHM,20%,0.5W,0.197 SQ,SIDE ADJUST;T&R	TK1450	GF06UT 50 K
A3R140	322-3130-00			RES,FXD:MET FILM;221 OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	80009	322-3130-00
A3R141	322-3097-00			RES,FXD:MET FILM;100 OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	57668	CRB20 FXE 100E
A3R142	322-3047-00			RES,FXD,FILM:30.1 OHM,1%,0.2W,TC=T0	57668	CRB20FXE16K5
A3R143	322-3077-00			RES,FXD,FILM:61.9 OHM,1%,0.2W,TC=T0	57668	CRB20 FXE 61E9
A3R144	322-3179-00			RES,FXD,FILM:715 OHM,1%,0.2W,TC=T0	80009	322-3179-00
A3R145	311-2229-00			RES,VAR,NONWWW:TRMR,250 OHM,20%,0.5W LIN	TK1450	GF06UT 250
A3R146	322-3051-00			RES,FXD:MET FILM;33.2 OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	57668	CRB20FXE301K
A3R147	322-3068-00			RES,FXD:MET FILM;49.9 OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	80009	322-3068-00

Replaceable electrical parts list (Cont.)

Component number	Tektronix part number	Serial no. effective	Serial no. discont'd	Name & description	Mfr. code	Mfr. part number
A3R148	322-3289-00			RES,FXD:MET FILM;10K OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	80009	322-3289-00
A3R149	322-3289-00			RES,FXD:MET FILM;10K OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	80009	322-3289-00
A3R150	322-3289-00			RES,FXD:MET FILM;10K OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	80009	322-3289-00
A3R151	322-3130-00			RES,FXD:MET FILM;221 OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	80009	322-3130-00
A3R152	322-3130-00			RES,FXD:MET FILM;221 OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	80009	322-3130-00
A3R153	322-3047-00			RES,FXD,FILM:30.1 OHM,1%,0.2W,TC=T0	57668	CRB20FXE16K5
A3R154	322-3200-00			RES,FXD,FILM:1.18K OHM,1%,0.2W,TC=T0	80009	322-3200-00
A3R155	322-3193-00			RES,FXD:MET FILM;1K OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	57668	CRB20 FXE 1K00
A3R156	322-3097-00			RES,FXD:MET FILM;100 OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	57668	CRB20 FXE 100E
A3R157	322-3101-00			RES,FXD,FILM:110 OHM,1%,0.2W,TC=TO	91637	CCF50-2G110R0F
A3R158	311-2232-00			RES,VAR,TRMR:CERMET,2K OHM,20%,0.5W,0.197 SQ, TOP ADJUST;T&R	TK1450	GF06UT 2K
A3R159	322-3051-00			RES,FXD:MET FILM;33.2 OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	57668	CRB20FXE301K
A3R160	322-3068-00			RES,FXD:MET FILM;49.9 OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	80009	322-3068-00
A3R161	322-3395-00			RES,FXD,FILM:127K OHM,1%,0.2W,TC=T0	80009	322-3395-00
A3R163	311-2226-00			RES,VAR,NONWW:TRMR,50 OHM,20%,0.5W LIN	TK1450	GF06UT 50 OHM
A3R164	311-2226-00			RES,VAR,NONWW:TRMR,50 OHM,20%,0.5W LIN	TK1450	GF06UT 50 OHM
A3R165	322-3260-00			RES,FXD,FILM:4.99K OHM,1%,0.2W,TC=T0	57668	CRB20 FXE 4K99
A3R166	322-3222-00			RES,FXD:MET FILM;2K OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	57668	CRB20 FXE 2K00
A3R167	322-3261-00			RES,FXD,FILM:5.11K OHM,1%,0.2W,TC=T0	80009	322-3261-00
A3R168	322-3143-00			RES,FXD,FILM:301 OHM,1%,0.2W,TC=T0	57668	CRB20 FXE 301E
A3R169	322-3068-00			RES,FXD:MET FILM;49.9 OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	80009	322-3068-00
A3R170	322-3239-00			RES,FXD,FILM:3.01K OHM,1%,0.2W,TC=T0	57668	CRB20 FXE 3K01
A3R171	322-3239-00			RES,FXD,FILM:3.01K OHM,1%,0.2W,TC=T0	57668	CRB20 FXE 3K01
A3R172	322-3239-00			RES,FXD,FILM:3.01K OHM,1%,0.2W,TC=T0	57668	CRB20 FXE 3K01
A3R173	322-3260-00			RES,FXD,FILM:4.99K OHM,1%,0.2W,TC=T0	57668	CRB20 FXE 4K99
A3R174	322-3239-00			RES,FXD,FILM:3.01K OHM,1%,0.2W,TC=T0	57668	CRB20 FXE 3K01
A3R175	322-3030-00			RES,FXD:MET FILM;20 OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	80009	322-3030-00
A3R176	322-3097-00			RES,FXD:MET FILM;100 OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	57668	CRB20 FXE 100E
A3R177	322-3251-00			RES,FXD,FILM:4.02K OHM,1%,0.2W,TC=T0	57668	CRB20 FXE 4K02

Replaceable electrical parts list (Cont.)

Component number	Tektronix part number	Serial no. effective	Serial no. discount'd	Name & description	Mfr. code	Mfr. part number
A3R178	322-3265-00			RES,FXD:MET FILM;5.62K OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	80009	322-3265-00
A3R179	322-3273-00			RES,FXD:MET FILM;6.81K OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	80009	322-3273-00
A3R180	322-3030-00			RES,FXD:MET FILM;20 OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	80009	322-3030-00
A3R181	322-3068-00			RES,FXD:MET FILM;49.9 OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	80009	322-3068-00
A3R182	322-3147-00			RES,FXD:MET FILM;332 OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	80009	322-3147-00
A3R183	322-3068-00			RES,FXD:MET FILM;49.9 OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	80009	322-3068-00
A3R184	322-3068-00			RES,FXD:MET FILM;49.9 OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	80009	322-3068-00
A3R185	322-3119-00			RES,FXD,FILM:169 OHM,1%,0.2W,TC=T0	80009	322-3119-00
A3R186	322-3119-00			RES,FXD,FILM:169 OHM,1%,0.2W,TC=T0	80009	322-3119-00
A3R187	322-3119-00			RES,FXD,FILM:169 OHM,1%,0.2W,TC=T0	80009	322-3119-00
A3R188	322-3039-00			RES,FXD,FILM:24.9 OHM,1%,0.2W,TC=T0	80009	322-3039-00
A3R189	322-3335-00			RES,FXD,FILM:30.1K OHM,1%,0.2W,TC=T0	57668	CRB20 FXE 30K1
A3R190	322-3335-00			RES,FXD,FILM:30.1K OHM,1%,0.2W,TC=T0	57668	CRB20 FXE 30K1
A3R191	322-3335-00			RES,FXD,FILM:30.1K OHM,1%,0.2W,TC=T0	57668	CRB20 FXE 30K1
A3R192	322-3260-00			RES,FXD,FILM:4.99K OHM,1%,0.2W,TC=T0	57668	CRB20 FXE 4K99
A3R193	322-3325-00			RES,FXD,FILM:23.7K OHM,1%,0.2W,TC=T0	57668	CRB20 FXE 23K7
A3R194	322-3241-00			RES,FXD,FILM:3.16K OHM,1%,0.2W,TC=T0	80009	322-3241-00
A3R195	322-3205-00			RES,FXD,FILM:1.33K OHM,1%,0.2W,TC=T0	57668	CRB20 FXE 1K33
A3R196	322-3267-00			RES,FXD,FILM:5.9K OHM,1%,0.2W,TC=T0	80009	322-3267-00
A3R197	322-3151-00			RES,FXD,FILM:365 OHM,1%,0.2W,TC=T0	57668	CRB20 FXE 365E
A3R198	322-3119-00			RES,FXD,FILM:169 OHM,1%,0.2W,TC=T0	80009	322-3119-00
A3R199	322-3119-00			RES,FXD,FILM:169 OHM,1%,0.2W,TC=T0	80009	322-3119-00
A3R200	322-3119-00			RES,FXD,FILM:169 OHM,1%,0.2W,TC=T0	80009	322-3119-00
A3R201	322-3119-00			RES,FXD,FILM:169 OHM,1%,0.2W,TC=T0	80009	322-3119-00
A3R202	322-3193-00			RES,FXD:MET FILM;1K OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	57668	CRB20 FXE 1K00
A3R203	322-3306-00			RES,FXD:MET FILM;15K OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	57668	CRB20 FXE 15K0
A3R204	322-3200-00			RES,FXD,FILM:1.18K OHM,1%,0.2W,TC=T0	80009	322-3200-00
A3R205	322-3179-00			RES,FXD,FILM:715 OHM,1%,0.2W,TC=T0	80009	322-3179-00
A3R206	322-3356-00			RES,FXD,FILM:49.9K OHM,1%,0.2W,TC=T0	80009	322-3356-00
A3R207	322-3265-00			RES,FXD:MET FILM;5.62K OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	80009	322-3265-00
A3R208	322-3356-00			RES,FXD,FILM:49.9K OHM,1%,0.2W,TC=T0	80009	322-3356-00
A3R209	322-3267-00			RES,FXD,FILM:5.9K OHM,1%,0.2W,TC=T0	80009	322-3267-00

Replaceable electrical parts list (Cont.)

Component number	Tektronix part number	Serial no. effective	Serial no. discont'd	Name & description	Mfr. code	Mfr. part number
A3R210	322-3143-00			RES,FXD,FILM:301 OHM,1%,0.2W,TC=T0	57668	CRB20 FXE 301E
A3R211	322-3143-00			RES,FXD,FILM:301 OHM,1%,0.2W,TC=T0	57668	CRB20 FXE 301E
A3R212	322-3356-00			RES,FXD,FILM:49.9K OHM,1%,0.2W,TC=T0	80009	322-3356-00
A3R213	322-3356-00			RES,FXD,FILM:49.9K OHM,1%,0.2W,TC=T0	80009	322-3356-00
A3R214	322-3193-00			RES,FXD:MET FILM;1K OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	57668	CRB20 FXE 1K00
A3R215	322-3119-00			RES,FXD,FILM:169 OHM,1%,0.2W,TC=T0	80009	322-3119-00
A3R216	322-3119-00			RES,FXD,FILM:169 OHM,1%,0.2W,TC=T0	80009	322-3119-00
A3R217	322-3119-00			RES,FXD,FILM:169 OHM,1%,0.2W,TC=T0	80009	322-3119-00
A3R218	322-3119-00			RES,FXD,FILM:169 OHM,1%,0.2W,TC=T0	80009	322-3119-00
A3R219	322-3119-00			RES,FXD,FILM:169 OHM,1%,0.2W,TC=T0	80009	322-3119-00
A3R220	322-3068-00			RES,FXD:MET FILM;49.9 OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	80009	322-3068-00
A3R221	322-3402-00			RES,FXD:MET FILM;150K OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	80009	322-3402-00
A3R222	322-3318-00			RES,FXD:MET FILM;20K OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	57668	CRB20 FXE 20K0
A3R223	322-3306-00			RES,FXD:MET FILM;15K OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	57668	CRB20 FXE 15K0
A3R224	322-3175-00			RES,FXD,FILM:649 OHM,1%,0.2W,TC=T0	80009	322-3175-00
A3R225	322-3335-00			RES,FXD,FILM:30.1K OHM,1%,0.2W,TC=T0	57668	CRB20 FXE 30K1
A3R226	322-3143-00			RES,FXD,FILM:301 OHM,1%,0.2W,TC=T0	57668	CRB20 FXE 301E
A3R227	322-3151-00			RES,FXD,FILM:365 OHM,1%,0.2W,TC=T0	57668	CRB20 FXE 365E
A3R228	322-3175-00			RES,FXD,FILM:649 OHM,1%,0.2W,TC=T0	80009	322-3175-00
A3R229	322-3143-00			RES,FXD,FILM:301 OHM,1%,0.2W,TC=T0	57668	CRB20 FXE 301E
A3R230	322-3039-00			RES,FXD,FILM:24.9 OHM,1%,0.2W,TC=T0	80009	322-3039-00
A3R231	322-3251-00			RES,FXD,FILM:4.02K OHM,1%,0.2W,TC=T0	57668	CRB20 FXE 4K02
A3R232	322-3097-00			RES,FXD:MET FILM;100 OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	57668	CRB20 FXE 100E
A3R233	322-3191-00			RES,FXD,FILM:953 OHM,1%,0.2W,TC=T0	80009	322-3191-00
A3R234	322-3146-00			RES,FXD,FILM:324 OHM,1%,0.2W,TC=T0	91637	
A3R235	322-3030-00			RES,FXD:MET FILM;20 OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	80009	322-3030-00
A3R236	322-3193-00			RES,FXD:MET FILM;1K OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	57668	CRB20 FXE 1K00
A3R237	322-3068-00			RES,FXD:MET FILM;49.9 OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	80009	322-3068-00
A3R238	322-3119-00			RES,FXD,FILM:169 OHM,1%,0.2W,TC=T0	80009	322-3119-00
A3R239	322-3119-00			RES,FXD,FILM:169 OHM,1%,0.2W,TC=T0	80009	322-3119-00
A3R240	322-3119-00			RES,FXD,FILM:169 OHM,1%,0.2W,TC=T0	80009	322-3119-00
A3R241	322-3231-00			RES,FXD,FILM:2.49K OHM,1%,0.2W,TC=T0	80009	322-3231-00

Replaceable electrical parts list (Cont.)

Component number	Tektronix part number	Serial no. effective	Serial no. discount'd	Name & description	Mfr. code	Mfr. part number
A3R242	322-3097-00			RES,FXD:MET FILM;100 OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	57668	CRB20 FXE 100E
A3R243	322-3306-00			RES,FXD:MET FILM;15K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	57668	CRB20 FXE 15K0
A3R244	322-3327-00			RES,FXD,FILM:24.9K OHM,1%,0.2W,TC=T0	80009	322-3327-00
A3R245	322-3301-00			RES,FXD,FILM:13.3K OHM,1%,0.2W,TC=T0	80009	322-3301-00
A3R246	322-3301-00			RES,FXD,FILM:13.3K OHM,1%,0.2W,TC=T0	80009	322-3301-00
A3R247	322-3146-00			RES,FXD,FILM:324 OHM,1%,0.2W,TC=T0	91637	
A3R248	322-3146-00			RES,FXD,FILM:324 OHM,1%,0.2W,TC=T0	91637	
A3R249	322-3146-00			RES,FXD,FILM:324 OHM,1%,0.2W,TC=T0	91637	
A3R250	322-3119-00			RES,FXD,FILM:169 OHM,1%,0.2W,TC=T0	80009	322-3119-00
A3R251	322-3119-00			RES,FXD,FILM:169 OHM,1%,0.2W,TC=T0	80009	322-3119-00
A3R252	322-3119-00			RES,FXD,FILM:169 OHM,1%,0.2W,TC=T0	80009	322-3119-00
A3R253	322-3119-00			RES,FXD,FILM:169 OHM,1%,0.2W,TC=T0	80009	322-3119-00
A3R254	322-3119-00			RES,FXD,FILM:169 OHM,1%,0.2W,TC=T0	80009	322-3119-00
A3R255	322-3119-00			RES,FXD,FILM:169 OHM,1%,0.2W,TC=T0	80009	322-3119-00
A3R256	322-3068-00			RES,FXD:MET FILM;49.9 OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	80009	322-3068-00
A3R257	322-3289-00			RES,FXD:MET FILM;10K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	80009	322-3289-00
A3R258	322-3289-00			RES,FXD:MET FILM;10K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	80009	322-3289-00
A3R259	322-3097-00			RES,FXD:MET FILM;100 OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	57668	CRB20 FXE 100E
A3R260	322-3097-00			RES,FXD:MET FILM;100 OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	57668	CRB20 FXE 100E
A3R261	322-3097-00			RES,FXD:MET FILM;100 OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	57668	CRB20 FXE 100E
A3R262	322-3097-00			RES,FXD:MET FILM;100 OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	57668	CRB20 FXE 100E
A3R263	322-3210-00			RES,FXD:MET FILM;1.5K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	57668	CRB20 FXE 1K50
A3R264	322-3306-00			RES,FXD:MET FILM;15K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	57668	CRB20 FXE 15K0
A3R265	322-3327-00			RES,FXD,FILM:24.9K OHM,1%,0.2W,TC=T0	80009	322-3327-00
A3R266	322-3301-00			RES,FXD,FILM:13.3K OHM,1%,0.2W,TC=T0	80009	322-3301-00
A3R267	322-3501-07			RES,FXD,FILM:4.53K OHM,0.1%,0.2W,TC=T9	91637	4.53K OHM
A3R268	322-3326-00			RES,FXD,FILM:24.3K OHM,1%,0.2W,TC=T0	91637	CCF50-2F24301F
A3R269	322-3119-00			RES,FXD,FILM:169 OHM,1%,0.2W,TC=T0	80009	322-3119-00
A3R270	322-3119-00			RES,FXD,FILM:169 OHM,1%,0.2W,TC=T0	80009	322-3119-00
A3R271	322-3119-00			RES,FXD,FILM:169 OHM,1%,0.2W,TC=T0	80009	322-3119-00

Replaceable electrical parts list (Cont.)

Component number	Tektronix part number	Serial no. effective	Serial no. discont'd	Name & description	Mfr. code	Mfr. part number
A3R272	322-3001-00			RES,FXD:MET FILM;10 OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	80009	322-3001-00
A3R273	322-3001-00			RES,FXD:MET FILM;10 OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	80009	322-3001-00
A3R274	322-3191-00			RES,FXD,FILM:953 OHM,1%,0.2W,TC=T0	80009	322-3191-00
A3R275	322-3306-00			RES,FXD:MET FILM;15K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	57668	CRB20 FXE 15K0
A3R276	322-3327-00			RES,FXD,FILM:24.9K OHM,1%,0.2W,TC=T0	80009	322-3327-00
A3R277	311-2238-00			RES,VAR,TRMR:CERMET;50K OHM,20%,0.5W,0.197 SQ,SIDE ADJUST;T&R	TK1450	GF06UT 50 K
A3R278	322-3193-00			RES,FXD:MET FILM;1K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	57668	CRB20 FXE 1K00
A3R279	322-3193-00			RES,FXD:MET FILM;1K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	57668	CRB20 FXE 1K00
A3R280	322-3193-00			RES,FXD:MET FILM;1K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	57668	CRB20 FXE 1K00
A3R281	322-3193-00			RES,FXD:MET FILM;1K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	57668	CRB20 FXE 1K00
A3R282	322-3193-00			RES,FXD:MET FILM;1K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	57668	CRB20 FXE 1K00
A3R283	322-3193-07			RES,FXD,FILM:1K OHM,0.1%,0.2W,TC=T9	80009	322-3193-07
A3R284	322-3502-07			RES,FXD,FILM:9.31K OHM,0.1%,0.2W,TC=T9	91637	9.31K OHM
A3R285	322-3469-00			RES,FXD,FILM:750K OHM,1%,0.2W,TC=T0	80009	322-3469-00
A3R286	322-3421-00			RES,FXD,FILM:237K OHM,1%,0.2W,TC=T0	91637	CCF50-2F23702F
A3R287	322-3193-00			RES,FXD:MET FILM;1K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	57668	CRB20 FXE 1K00
A3R288	322-3193-00			RES,FXD:MET FILM;1K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	57668	CRB20 FXE 1K00
A3R289	322-3193-00			RES,FXD:MET FILM;1K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	57668	CRB20 FXE 1K00
A3R290	322-3193-00			RES,FXD:MET FILM;1K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	57668	CRB20 FXE 1K00
A3R291	322-3193-00			RES,FXD:MET FILM;1K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	57668	CRB20 FXE 1K00
A3R292	322-3193-00			RES,FXD:MET FILM;1K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	57668	CRB20 FXE 1K00
A3R293	322-3193-00			RES,FXD:MET FILM;1K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	57668	CRB20 FXE 1K00
A3R294	322-3193-00			RES,FXD:MET FILM;1K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	57668	CRB20 FXE 1K00
A3R295	322-3193-00			RES,FXD:MET FILM;1K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	57668	CRB20 FXE 1K00
A3R296	322-3193-00			RES,FXD:MET FILM;1K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	57668	CRB20 FXE 1K00

Replaceable electrical parts list (Cont.)

Component number	Tektronix part number	Serial no. effective	Serial no. discount'd	Name & description	Mfr. code	Mfr. part number
A3R297	322-3193-00			RES,FXD,MET FILM;1K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	57668	CRB20 FXE 1K00
A3R298	322-3286-00			RES,FXD,FILM;9.31K OHM,1%,0.2W,TC=T0	80009	322-3286-00
A3R299	322-3210-00			RES,FXD,MET FILM;1.5K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	57668	CRB20 FXE 1K50
A3R300	322-3193-00			RES,FXD,MET FILM;1K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	57668	CRB20 FXE 1K00
A3R301	322-3193-00			RES,FXD,MET FILM;1K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	57668	CRB20 FXE 1K00
A3R302	322-3193-00			RES,FXD,MET FILM;1K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	57668	CRB20 FXE 1K00
A3R303	322-3193-00			RES,FXD,MET FILM;1K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	57668	CRB20 FXE 1K00
A3R304	311-2238-00			RES,VAR,TRMR:CERMET;50K OHM,20%,0.5W,0.197 SQ,SIDE ADJUST;T&R	TK1450	GF06UT 50 K
A3R305	322-3421-00			RES,FXD,FILM;237K OHM,1%,0.2W,TC=T0	91637	CCF50-2F23702F
A3R306	322-3193-00			RES,FXD,MET FILM;1K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	57668	CRB20 FXE 1K00
A3R307	322-3421-00			RES,FXD,FILM;237K OHM,1%,0.2W,TC=T0	91637	CCF50-2F23702F
A3R308	311-2238-00			RES,VAR,TRMR:CERMET;50K OHM,20%,0.5W,0.197 SQ,SIDE ADJUST;T&R	TK1450	GF06UT 50 K
A3R309	322-3193-00			RES,FXD,MET FILM;1K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	57668	CRB20 FXE 1K00
A3R310	322-3068-00			RES,FXD,MET FILM;49.9 OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	80009	322-3068-00
A3R311	322-3068-00			RES,FXD,MET FILM;49.9 OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	80009	322-3068-00
A3R312	322-3135-00			RES,FXD,FILM;249 OHM,1%,0.2W,TC=T0	80009	322-3135-00
A3R313	311-2238-00			RES,VAR,TRMR:CERMET;50K OHM,20%,0.5W,0.197 SQ,SIDE ADJUST;T&R	TK1450	GF06UT 50 K
A3R314	322-3289-00			RES,FXD,MET FILM;10K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	80009	322-3289-00
A3R315	311-2238-00			RES,VAR,TRMR:CERMET;50K OHM,20%,0.5W,0.197 SQ,SIDE ADJUST;T&R	TK1450	GF06UT 50 K
A3R316	322-3193-00			RES,FXD,MET FILM;1K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	57668	CRB20 FXE 1K00
A3R317	322-3193-00			RES,FXD,MET FILM;1K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	57668	CRB20 FXE 1K00
A3R318	322-3289-00			RES,FXD,MET FILM;10K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	80009	322-3289-00
A3R319	322-3289-00			RES,FXD,MET FILM;10K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	80009	322-3289-00
A3R321	322-3135-00			RES,FXD,FILM;249 OHM,1%,0.2W,TC=T0	80009	322-3135-00
A3R322	322-3421-00			RES,FXD,FILM;237K OHM,1%,0.2W,TC=T0	91637	CCF50-2F23702F

Replaceable electrical parts list (Cont.)

Component number	Tektronix part number	Serial no. effective	Serial no. discont'd	Name & description	Mfr. code	Mfr. part number
A3R323	322-3289-00			RES,FXD,MET FILM;10K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	80009	322-3289-00
A3R324	322-3421-00			RES,FXD,FILM:237K OHM,1%,0.2W,TC=T0	91637	CCF50-2F23702F
A3R325	322-3289-00			RES,FXD,MET FILM;10K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	80009	322-3289-00
A3R326	311-2238-00			RES,VAR,TRMR:CERMET;50K OHM,20%,0.5W,0.197 SQ,SIDE ADJUST;T&R	TK1450	GF06UT 50 K
A3R327	322-3193-00			RES,FXD,MET FILM;1K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	57668	CRB20 FXE 1K00
A3R328	322-3289-00			RES,FXD,MET FILM;10K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	80009	322-3289-00
A3R329	322-3421-00			RES,FXD,FILM:237K OHM,1%,0.2W,TC=T0	91637	CCF50-2F23702F
A3R330	311-2238-00			RES,VAR,TRMR:CERMET;50K OHM,20%,0.5W,0.197 SQ,SIDE ADJUST;T&R	TK1450	GF06UT 50 K
A3R331	322-3289-00			RES,FXD,MET FILM;10K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	80009	322-3289-00
A3R332	322-3210-00			RES,FXD,MET FILM;1.5K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	57668	CRB20 FXE 1K50
A3R333	322-3469-00			RES,FXD,FILM:750K OHM,1%,0.2W,TC=T0	80009	322-3469-00
A3R334	322-3193-00			RES,FXD,MET FILM;1K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	57668	CRB20 FXE 1K00
A3R335	322-3469-00			RES,FXD,FILM:750K OHM,1%,0.2W,TC=T0	80009	322-3469-00
A3R336	322-3210-00			RES,FXD,MET FILM;1.5K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	57668	CRB20 FXE 1K50
A3R337	322-3193-00			RES,FXD,MET FILM;1K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	57668	CRB20 FXE 1K00
A3R338	322-3469-00			RES,FXD,FILM:750K OHM,1%,0.2W,TC=T0	80009	322-3469-00
A3R339	322-3239-00			RES,FXD,FILM:3.01K OHM,1%,0.2W,TC=T0	57668	CRB20 FXE 3K01
A3R340	322-3210-00			RES,FXD,MET FILM;1.5K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	57668	CRB20 FXE 1K50
A3R341	322-3431-00			RES,FXD,FILM:301K OHM,1%,0.2W,TC=T0	57668	CRB20 FXE 301K
A3R342	322-3193-00			RES,FXD,MET FILM;1K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	57668	CRB20 FXE 1K00
A3R343	322-3469-00			RES,FXD,FILM:750K OHM,1%,0.2W,TC=T0	80009	322-3469-00
A3R344	322-3421-00			RES,FXD,FILM:237K OHM,1%,0.2W,TC=T0	91637	CCF50-2F23702F
A3R345	322-3469-00			RES,FXD,FILM:750K OHM,1%,0.2W,TC=T0	80009	322-3469-00
A3R346	322-3286-00			RES,FXD,FILM:9.31K OHM,1%,0.2W,TC=T0	80009	322-3286-00
A3R347	322-3193-00			RES,FXD,MET FILM;1K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	57668	CRB20 FXE 1K00
A3R348	311-2238-00			RES,VAR,TRMR:CERMET;50K OHM,20%,0.5W,0.197 SQ,SIDE ADJUST;T&R	TK1450	GF06UT 50 K
A3R349	311-2238-00			RES,VAR,TRMR:CERMET;50K OHM,20%,0.5W,0.197 SQ,SIDE ADJUST;T&R	TK1450	GF06UT 50 K

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Component number	Tektronix part number	Serial no. effective	Serial no. discont'd	Name & description	Mfr. code	Mfr. part number
A3R352	322-3193-00			RES,FXD,MET FILM;1K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	57668	CRB20 FXE 1K00
A3R353	322-3239-00			RES,FXD,FILM:3.01K OHM,1%,0.2W,TC=T0	57668	CRB20 FXE 3K01
A3R354	311-2238-00			RES,VAR,TRMR:CERMET;50K OHM,20%,0.5W,0.197 SQ,SIDE ADJUST;T&R	TK1450	GF06UT 50 K
A3R355	322-3210-00			RES,FXD,MET FILM;1.5K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	57668	CRB20 FXE 1K50
A3R356	322-3193-00			RES,FXD,MET FILM;1K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	57668	CRB20 FXE 1K00
A3R357	322-3210-00			RES,FXD,MET FILM;1.5K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	57668	CRB20 FXE 1K50
A3R358	311-2238-00			RES,VAR,TRMR:CERMET;50K OHM,20%,0.5W,0.197 SQ,SIDE ADJUST;T&R	TK1450	GF06UT 50 K
A3R359	322-3421-00			RES,FXD,FILM:237K OHM,1%,0.2W,TC=T0	91637	CCF50-2F23702F
A3R360	322-3289-00			RES,FXD,MET FILM;10K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	80009	322-3289-00
A3R361	322-3421-00			RES,FXD,FILM:237K OHM,1%,0.2W,TC=T0	91637	CCF50-2F23702F
A3R362	322-3289-00			RES,FXD,MET FILM;10K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	80009	322-3289-00
A3R363	322-3143-00			RES,FXD,FILM:301 OHM,1%,0.2W,TC=T0	57668	CRB20 FXE 301E
A3R364	322-3135-00			RES,FXD,FILM:249 OHM,1%,0.2W,TC=T0	80009	322-3135-00
A3R365	322-3068-00			RES,FXD,MET FILM;49.9 OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	80009	322-3068-00
A3R367	322-3135-00			RES,FXD,FILM:249 OHM,1%,0.2W,TC=T0	80009	322-3135-00
A3R368	322-3164-00			RES,FXD,FILM:499 OHM,1%,0.2W,TC=T0	57668	CRB20 FXE 499E
A3R369	322-3421-00			RES,FXD,FILM:237K OHM,1%,0.2W,TC=T0	91637	CCF50-2F23702F
A3R370	322-3181-00			RES,FXD,FILM:750 OHM,1%,0.2W,TC=T0	80009	322-3181-00
A3R371	322-3289-00			RES,FXD,MET FILM;10K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	80009	322-3289-00
A3R372	311-2238-00			RES,VAR,TRMR:CERMET;50K OHM,20%,0.5W,0.197 SQ,SIDE ADJUST;T&R	TK1450	GF06UT 50 K
A3R373	322-3421-00			RES,FXD,FILM:237K OHM,1%,0.2W,TC=T0	91637	CCF50-2F23702F
A3R374	322-3289-00			RES,FXD,MET FILM;10K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	80009	322-3289-00
A3R375	322-3239-00			RES,FXD,FILM:3.01K OHM,1%,0.2W,TC=T0	57668	CRB20 FXE 3K01
A3R376	322-3431-00			RES,FXD,FILM:301K OHM,1%,0.2W,TC=T0	57668	CRB20 FXE 301K
A3R377	322-3239-00			RES,FXD,FILM:3.01K OHM,1%,0.2W,TC=T0	57668	CRB20 FXE 3K01
A3R378	322-3239-00			RES,FXD,FILM:3.01K OHM,1%,0.2W,TC=T0	57668	CRB20 FXE 3K01
A3R379	322-3431-00			RES,FXD,FILM:301K OHM,1%,0.2W,TC=T0	57668	CRB20 FXE 301K
A3R380	322-3239-00			RES,FXD,FILM:3.01K OHM,1%,0.2W,TC=T0	57668	CRB20 FXE 3K01
A3R381	322-3308-00			RES,FXD,FILM:15.8K OHM,1%,0.2W,TC=T0	80009	322-3308-00
A3R382	322-3001-00			RES,FXD,MET FILM;10 OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	80009	322-3001-00

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Component number	Tektronix part number	Serial no. effective	Serial no. discont'd	Name & description	Mfr. code	Mfr. part number
A3R383	311-2229-00			RES,VAR,NONWW:TRMR,250 OHM,20%,0.5W LIN	TK1450	GF06UT 250
A3R384	322-3239-00			RES,FXD,FILM:3.01K OHM,1%,0.2W,TC=T0	57668	CRB20 FXE 3K01
A3R385	322-3421-00			RES,FXD,FILM:237K OHM,1%,0.2W,TC=T0	91637	CCF50-2F23702F
A3R386	322-3431-00			RES,FXD,FILM:301K OHM,1%,0.2W,TC=T0	57668	CRB20 FXE 301K
A3R387	322-3239-00			RES,FXD,FILM:3.01K OHM,1%,0.2W,TC=T0	57668	CRB20 FXE 3K01
A3R388	322-3289-00			RES,FXD:MET FILM;10K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	80009	322-3289-00
A3R389	322-3239-00			RES,FXD,FILM:3.01K OHM,1%,0.2W,TC=T0	57668	CRB20 FXE 3K01
A3R390	322-3239-00			RES,FXD,FILM:3.01K OHM,1%,0.2W,TC=T0	57668	CRB20 FXE 3K01
A3R391	322-3431-00			RES,FXD,FILM:301K OHM,1%,0.2W,TC=T0	57668	CRB20 FXE 301K
A3R392	322-3193-00			RES,FXD:MET FILM;1K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	57668	CRB20 FXE 1K00
A3R393	322-3193-00			RES,FXD:MET FILM;1K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	57668	CRB20 FXE 1K00
A3R395	322-3193-00			RES,FXD:MET FILM;1K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	57668	CRB20 FXE 1K00
A3R396	322-3431-00			RES,FXD,FILM:301K OHM,1%,0.2W,TC=T0	57668	CRB20 FXE 301K
A3R397	322-3239-00			RES,FXD,FILM:3.01K OHM,1%,0.2W,TC=T0	57668	CRB20 FXE 3K01
A3R398	322-3193-00			RES,FXD:MET FILM;1K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	57668	CRB20 FXE 1K00
A3R399	322-3239-00			RES,FXD,FILM:3.01K OHM,1%,0.2W,TC=T0	57668	CRB20 FXE 3K01
A3R400	322-3193-00			RES,FXD:MET FILM;1K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	57668	CRB20 FXE 1K00
A3R401	322-3161-00			RES,FXD,FILM:464 OHM,1%,0.2W,TC=T0	91637	CCF50-2G464R0F
A3R402	322-3030-00			RES,FXD:MET FILM;20 OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	80009	322-3030-00
A3R403	322-3030-00			RES,FXD:MET FILM;20 OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	80009	322-3030-00
A3R404	322-3161-00			RES,FXD,FILM:464 OHM,1%,0.2W,TC=T0	91637	CCF50-2G464R0F
A3R405	322-3030-00			RES,FXD:MET FILM;20 OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	80009	322-3030-00
A3R406	322-3030-00			RES,FXD:MET FILM;20 OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	80009	322-3030-00
A3R407	322-3161-00			RES,FXD,FILM:464 OHM,1%,0.2W,TC=T0	91637	CCF50-2G464R0F
A3R408	322-3030-00			RES,FXD:MET FILM;20 OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	80009	322-3030-00
A3R409	322-3030-00			RES,FXD:MET FILM;20 OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	80009	322-3030-00
A3R410	322-3161-00			RES,FXD,FILM:464 OHM,1%,0.2W,TC=T0	91637	CCF50-2G464R0F
A3R411	322-3135-00			RES,FXD,FILM:249 OHM,1%,0.2W,TC=T0	80009	322-3135-00
A3R412	322-3030-00			RES,FXD:MET FILM;20 OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	80009	322-3030-00

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Component number	Tektronix part number	Serial no. effective	Serial no. discount'd	Name & description	Mfr. code	Mfr. part number
A3R413	322-3030-00			RES,FXD:MET FILM;20 OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	80009	322-3030-00
A3R414	322-3161-00			RES,FXD,FILM:464 OHM,1%,0.2W,TC=T0	91637	CCF50-2G464R0F
A3R415	322-3073-00			RES,FXD:MET FILM;56.2 OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	80009	322-3073-00
A3R416	322-3030-00			RES,FXD:MET FILM;20 OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	80009	322-3030-00
A3R417	322-3030-00			RES,FXD:MET FILM;20 OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	80009	322-3030-00
A3R418	322-3030-00			RES,FXD:MET FILM;20 OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	80009	322-3030-00
A3R419	322-3193-00			RES,FXD:MET FILM;1K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	57668	CRB20 FXE 1K00
A3R420	322-3161-00			RES,FXD,FILM:464 OHM,1%,0.2W,TC=T0	91637	CCF50-2G464R0F
A3R421	322-3030-00			RES,FXD:MET FILM;20 OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	80009	322-3030-00
A3R422	322-3030-00			RES,FXD:MET FILM;20 OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	80009	322-3030-00
A3R423	322-3198-00			RES,FXD,FILM:1.13K OHM,1%,0.2W,TC=T0	80009	322-3198-00
A3R424	322-3073-00			RES,FXD:MET FILM;56.2 OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	80009	322-3073-00
A3R425	322-3030-00			RES,FXD:MET FILM;20 OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	80009	322-3030-00
A3R426	322-3193-00			RES,FXD:MET FILM;1K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	57668	CRB20 FXE 1K00
A3R427	322-3073-00			RES,FXD:MET FILM;56.2 OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	80009	322-3073-00
A3R428	322-3030-00			RES,FXD:MET FILM;20 OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	80009	322-3030-00
A3R429	322-3193-00			RES,FXD:MET FILM;1K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	57668	CRB20 FXE 1K00
A3R430	322-3193-00			RES,FXD:MET FILM;1K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	57668	CRB20 FXE 1K00
A3R431	322-3215-00			RES,FXD,FILM:1.69K OHM,1%,0.2W,TC=T0	91637	CCF50-2F16900F
A3R432	311-2238-00			RES,VAR,TRMR:CERMET;50K OHM,20%,0.5W,0.197 SQ,SIDE ADJUST;T&R	TK1450	GF06UT 50 K
A3R433	322-3073-00			RES,FXD:MET FILM;56.2 OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	80009	322-3073-00
A3R434	322-3030-00			RES,FXD:MET FILM;20 OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	80009	322-3030-00
A3R435	322-3193-00			RES,FXD:MET FILM;1K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	57668	CRB20 FXE 1K00
A3R436	322-3073-00			RES,FXD:MET FILM;56.2 OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	80009	322-3073-00
A3R437	322-3198-00			RES,FXD,FILM:1.13K OHM,1%,0.2W,TC=T0	80009	322-3198-00

Replaceable electrical parts list (Cont.)

Component number	Tektronix part number	Serial no. effective	Serial no. discont'd	Name & description	Mfr. code	Mfr. part number
A3R438	322-3030-00			RES,FXD:MET FILM;20 OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	80009	322-3030-00
A3R439	322-3193-00			RES,FXD:MET FILM;1K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	57668	CRB20 FXE 1K00
A3R440	311-2238-00			RES,VAR,TRMR:CERMET;50K OHM,20%,0.5W,0.197 SQ,SIDE ADJUST;T&R	TK1450	GF06UT 50 K
A3R441	322-3193-00			RES,FXD:MET FILM;1K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	57668	CRB20 FXE 1K00
A3R442	322-3215-00			RES,FXD,FILM:1.69K OHM,1%,0.2W,TC=T0	91637	CCF50-2F16900F
A3R443	322-3073-00			RES,FXD:MET FILM;56.2 OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	80009	322-3073-00
A3R444	322-3030-00			RES,FXD:MET FILM;20 OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	80009	322-3030-00
A3R445	322-3193-00			RES,FXD:MET FILM;1K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	57668	CRB20 FXE 1K00
A3R446	322-3193-00			RES,FXD:MET FILM;1K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	57668	CRB20 FXE 1K00
A3R448	322-3302-00			RES,FXD,FILM:13.7K OHM,1%,0.2W,TC=T0	80009	322-3302-00
A3R449	322-3193-00			RES,FXD:MET FILM;1K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	57668	CRB20 FXE 1K00
A3R450	322-3215-00			RES,FXD,FILM:1.69K OHM,1%,0.2W,TC=T0	91637	CCF50-2F16900F
A3R451	322-3072-00			RES,FXD,FILM:54.9 OHM,1%,0.2W,TC=T0	80009	322-3072-00
A3R452	322-3302-00			RES,FXD,FILM:13.7K OHM,1%,0.2W,TC=T0	80009	322-3302-00
A3R453	322-3139-00			RES,FXD:MET FILM;274 OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	80009	322-3139-00
A3R454	322-3072-00			RES,FXD,FILM:54.9 OHM,1%,0.2W,TC=T0	80009	322-3072-00
A3R455	322-3072-00			RES,FXD,FILM:54.9 OHM,1%,0.2W,TC=T0	80009	322-3072-00
A3R456	322-3193-00			RES,FXD:MET FILM;1K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	57668	CRB20 FXE 1K00
A3R457	322-3215-00			RES,FXD,FILM:1.69K OHM,1%,0.2W,TC=T0	91637	CCF50-2F16900F
A3R458	322-3072-00			RES,FXD,FILM:54.9 OHM,1%,0.2W,TC=T0	80009	322-3072-00
A3R459	311-2238-00			RES,VAR,TRMR:CERMET;50K OHM,20%,0.5W,0.197 SQ,SIDE ADJUST;T&R	TK1450	GF06UT 50 K
A3R460	322-3302-00			RES,FXD,FILM:13.7K OHM,1%,0.2W,TC=T0	80009	322-3302-00
A3R461	322-3072-00			RES,FXD,FILM:54.9 OHM,1%,0.2W,TC=T0	80009	322-3072-00
A3R462	322-3193-00			RES,FXD:MET FILM;1K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	57668	CRB20 FXE 1K00
A3R463	322-3215-00			RES,FXD,FILM:1.69K OHM,1%,0.2W,TC=T0	91637	CCF50-2F16900F
A3R464	322-3302-00			RES,FXD,FILM:13.7K OHM,1%,0.2W,TC=T0	80009	322-3302-00
A3R465	322-3302-00			RES,FXD,FILM:13.7K OHM,1%,0.2W,TC=T0	80009	322-3302-00
A3R466	311-2238-00			RES,VAR,TRMR:CERMET;50K OHM,20%,0.5W,0.197 SQ,SIDE ADJUST;T&R	TK1450	GF06UT 50 K
A3R467	322-3072-00			RES,FXD,FILM:54.9 OHM,1%,0.2W,TC=T0	80009	322-3072-00

Replaceable electrical parts list (Cont.)

Component number	Tektronix part number	Serial no. effective	Serial no. discont'd	Name & description	Mfr. code	Mfr. part number
A3R468	311-2238-00			RES,VAR,TRMR:CERMET;50K OHM,20%,0.5W,0.197 SQ,SIDE ADJUST:T&R	TK1450	GF06UT 50 K
A3R469	322-3302-00			RES,FXD,FILM:13.7K OHM,1%,0.2W,TC=T0	80009	322-3302-00
A3R470	322-3215-00			RES,FXD,FILM:1.69K OHM,1%,0.2W,TC=T0	91637	CCF50-2F16900F
A3R471	322-3139-00			RES,FXD:MET FILM;274 OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	80009	322-3139-00
A3R472	322-3072-00			RES,FXD,FILM:54.9 OHM,1%,0.2W,TC=T0	80009	322-3072-00
A3R473	322-3072-00			RES,FXD,FILM:54.9 OHM,1%,0.2W,TC=T0	80009	322-3072-00
A3R474	322-3139-00			RES,FXD:MET FILM;274 OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	80009	322-3139-00
A3R475	322-3072-00			RES,FXD,FILM:54.9 OHM,1%,0.2W,TC=T0	80009	322-3072-00
A3R476	322-3318-00			RES,FXD:MET FILM;20K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	57668	CRB20 FXE 20K0
A3R477	322-3135-00			RES,FXD,FILM:249 OHM,1%,0.2W,TC=T0	80009	322-3135-00
A3R478	322-3222-00			RES,FXD:MET FILM;2K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	57668	CRB20 FXE 2K00
A3R479	322-3318-00			RES,FXD:MET FILM;20K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	57668	CRB20 FXE 20K0
A3R480	322-3135-00			RES,FXD,FILM:249 OHM,1%,0.2W,TC=T0	80009	322-3135-00
A3R481	322-3222-00			RES,FXD:MET FILM;2K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	57668	CRB20 FXE 2K00
A3R482	322-3222-00			RES,FXD:MET FILM;2K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	57668	CRB20 FXE 2K00
A3R483	322-3072-00			RES,FXD,FILM:54.9 OHM,1%,0.2W,TC=T0	80009	322-3072-00
A3R484	322-3139-00			RES,FXD:MET FILM;274 OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	80009	322-3139-00
A3R485	322-3318-00			RES,FXD:MET FILM;20K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	57668	CRB20 FXE 20K0
A3R486	322-3135-00			RES,FXD,FILM:249 OHM,1%,0.2W,TC=T0	80009	322-3135-00
A3R487	322-3222-00			RES,FXD:MET FILM;2K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	57668	CRB20 FXE 2K00
A3R488	322-3072-00			RES,FXD,FILM:54.9 OHM,1%,0.2W,TC=T0	80009	322-3072-00
A3R489	322-3139-00			RES,FXD:MET FILM;274 OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	80009	322-3139-00
A3R490	322-3318-00			RES,FXD:MET FILM;20K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	57668	CRB20 FXE 20K0
A3R491	322-3135-00			RES,FXD,FILM:249 OHM,1%,0.2W,TC=T0	80009	322-3135-00
A3R492	322-3139-00			RES,FXD:MET FILM;274 OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	80009	322-3139-00
A3R493	322-3318-00			RES,FXD:MET FILM;20K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	57668	CRB20 FXE 20K0
A3R494	322-3135-00			RES,FXD,FILM:249 OHM,1%,0.2W,TC=T0	80009	322-3135-00
A3R495	322-3072-00			RES,FXD,FILM:54.9 OHM,1%,0.2W,TC=T0	80009	322-3072-00

Replaceable electrical parts list (Cont.)

Component number	Tektronix part number	Serial no. effective	Serial no. discont'd	Name & description	Mfr. code	Mfr. part number
A3R496	322-3222-00			RES,FXD;MET FILM;2K OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	57668	CRB20 FXE 2K00
A3R497	322-3318-00			RES,FXD;MET FILM;20K OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	57668	CRB20 FXE 20K0
A3R498	322-3135-00			RES,FXD,FILM;249 OHM,1%,0.2W,TC=T0	80009	322-3135-00
A3R499	322-3222-00			RES,FXD;MET FILM;2K OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	57668	CRB20 FXE 2K00
A3R500	322-3143-00			RES,FXD,FILM;301 OHM,1%,0.2W,TC=T0	57668	CRB20 FXE 301E
A3R501	322-3143-00			RES,FXD,FILM;301 OHM,1%,0.2W,TC=T0	57668	CRB20 FXE 301E
A3R502	322-3143-00			RES,FXD,FILM;301 OHM,1%,0.2W,TC=T0	57668	CRB20 FXE 301E
A3R503	322-3143-00			RES,FXD,FILM;301 OHM,1%,0.2W,TC=T0	57668	CRB20 FXE 301E
A3R504	322-3143-00			RES,FXD,FILM;301 OHM,1%,0.2W,TC=T0	57668	CRB20 FXE 301E
A3R505	322-3143-00			RES,FXD,FILM;301 OHM,1%,0.2W,TC=T0	57668	CRB20 FXE 301E
A3R506	322-3213-00			RES,FXD,FILM;1.62K OHM,1%,0.2W,TC=T0	57668	CRB20 FXE 1K62
A3R507	322-3135-00			RES,FXD,FILM;249 OHM,1%,0.2W,TC=T0	80009	322-3135-00
A3R508	322-3210-00			RES,FXD;MET FILM;1.5K OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	57668	CRB20 FXE 1K50
A3R509	322-3327-00			RES,FXD,FILM;24.9K OHM,1%,0.2W,TC=T0	80009	322-3327-00
A3R510	322-3213-00			RES,FXD,FILM;1.62K OHM,1%,0.2W,TC=T0	57668	CRB20 FXE 1K62
A3R511	322-3135-00			RES,FXD,FILM;249 OHM,1%,0.2W,TC=T0	80009	322-3135-00
A3R512	322-3327-00			RES,FXD,FILM;24.9K OHM,1%,0.2W,TC=T0	80009	322-3327-00
A3R513	322-3210-00			RES,FXD;MET FILM;1.5K OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	57668	CRB20 FXE 1K50
A3R514	322-3213-00			RES,FXD,FILM;1.62K OHM,1%,0.2W,TC=T0	57668	CRB20 FXE 1K62
A3R515	322-3135-00			RES,FXD,FILM;249 OHM,1%,0.2W,TC=T0	80009	322-3135-00
A3R516	322-3327-00			RES,FXD,FILM;24.9K OHM,1%,0.2W,TC=T0	80009	322-3327-00
A3R517	322-3210-00			RES,FXD;MET FILM;1.5K OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	57668	CRB20 FXE 1K50
A3R518	322-3213-00			RES,FXD,FILM;1.62K OHM,1%,0.2W,TC=T0	57668	CRB20 FXE 1K62
A3R519	322-3135-00			RES,FXD,FILM;249 OHM,1%,0.2W,TC=T0	80009	322-3135-00
A3R520	322-3327-00			RES,FXD,FILM;24.9K OHM,1%,0.2W,TC=T0	80009	322-3327-00
A3R521	322-3210-00			RES,FXD;MET FILM;1.5K OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	57668	CRB20 FXE 1K50
A3R522	322-3213-00			RES,FXD,FILM;1.62K OHM,1%,0.2W,TC=T0	57668	CRB20 FXE 1K62
A3R523	322-3327-00			RES,FXD,FILM;24.9K OHM,1%,0.2W,TC=T0	80009	322-3327-00
A3R524	322-3135-00			RES,FXD,FILM;249 OHM,1%,0.2W,TC=T0	80009	322-3135-00
A3R525	322-3210-00			RES,FXD;MET FILM;1.5K OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	57668	CRB20 FXE 1K50
A3R526	322-3213-00			RES,FXD,FILM;1.62K OHM,1%,0.2W,TC=T0	57668	CRB20 FXE 1K62
A3R527	322-3327-00			RES,FXD,FILM;24.9K OHM,1%,0.2W,TC=T0	80009	322-3327-00
A3R528	322-3135-00			RES,FXD,FILM;249 OHM,1%,0.2W,TC=T0	80009	322-3135-00

Replaceable electrical parts list (Cont.)

Component number	Tektronix part number	Serial no. effective	Serial no. discont'd	Name & description	Mfr. code	Mfr. part number
A3R529	322-3210-00			RES,FXD:MET FILM;1.5K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	57668	CRB20 FXE 1K50
A3R530	322-3056-00			RES,FXD,FILM:37.4 OHM,1%,0.2W,TC=T0	91637	CCF50-2F37R40F
A3R531	322-3318-00			RES,FXD:MET FILM;20K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	57668	CRB20 FXE 20K0
A3R532	322-3385-00			RES,FXD:MET FILM;100K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	57668	CRB20 FXE 100K
A3R533	322-3406-00			RES,FXD,FILM:165K OHM,1%,0.2W,TC=T0	91637	CCF50-2F16502F
A3R534	322-3056-00			RES,FXD,FILM:37.4 OHM,1%,0.2W,TC=T0	91637	CCF50-2F37R40F
A3R535	322-3318-00			RES,FXD:MET FILM;20K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	57668	CRB20 FXE 20K0
A3R536	322-3385-00			RES,FXD:MET FILM;100K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	57668	CRB20 FXE 100K
A3R537	322-3406-00			RES,FXD,FILM:165K OHM,1%,0.2W,TC=T0	91637	CCF50-2F16502F
A3R538	322-3056-00			RES,FXD,FILM:37.4 OHM,1%,0.2W,TC=T0	91637	CCF50-2F37R40F
A3R539	322-3318-00			RES,FXD:MET FILM;20K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	57668	CRB20 FXE 20K0
A3R540	322-3385-00			RES,FXD:MET FILM;100K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	57668	CRB20 FXE 100K
A3R541	322-3406-00			RES,FXD,FILM:165K OHM,1%,0.2W,TC=T0	91637	CCF50-2F16502F
A3R542	322-3056-00			RES,FXD,FILM:37.4 OHM,1%,0.2W,TC=T0	91637	CCF50-2F37R40F
A3R543	322-3318-00			RES,FXD:MET FILM;20K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	57668	CRB20 FXE 20K0
A3R544	322-3385-00			RES,FXD:MET FILM;100K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	57668	CRB20 FXE 100K
A3R545	322-3406-00			RES,FXD,FILM:165K OHM,1%,0.2W,TC=T0	91637	CCF50-2F16502F
A3R546	322-3056-00			RES,FXD,FILM:37.4 OHM,1%,0.2W,TC=T0	91637	CCF50-2F37R40F
A3R547	322-3318-00			RES,FXD:MET FILM;20K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	57668	CRB20 FXE 20K0
A3R548	322-3385-00			RES,FXD:MET FILM;100K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	57668	CRB20 FXE 100K
A3R549	322-3406-00			RES,FXD,FILM:165K OHM,1%,0.2W,TC=T0	91637	CCF50-2F16502F
A3R550	322-3056-00			RES,FXD,FILM:37.4 OHM,1%,0.2W,TC=T0	91637	CCF50-2F37R40F
A3R551	322-3318-00			RES,FXD:MET FILM;20K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	57668	CRB20 FXE 20K0
A3R552	322-3385-00			RES,FXD:MET FILM;100K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	57668	CRB20 FXE 100K
A3R553	322-3406-00			RES,FXD,FILM:165K OHM,1%,0.2W,TC=T0	91637	CCF50-2F16502F
A3R554	322-3315-00			RES,FXD,FILM:18.7K OHM,1%,0.2W,TC=T0	80009	322-3315-00
A3R555	322-3068-00			RES,FXD:MET FILM;49.9 OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	80009	322-3068-00
A3R556	322-3315-00			RES,FXD,FILM:18.7K OHM,1%,0.2W,TC=T0	80009	322-3315-00

Replaceable electrical parts list (Cont.)

Component number	Tektronix part number	Serial no. effective	Serial no. discont'd	Name & description	Mfr. code	Mfr. part number
A3R557	322-3068-00			RES,FXD,MET FILM;49.9 OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	80009	322-3068-00
A3R558	322-3315-00			RES,FXD,FILM:18.7K OHM,1%,0.2W,TC=T0	80009	322-3315-00
A3R559	322-3068-00			RES,FXD,MET FILM;49.9 OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	80009	322-3068-00
A3R560	322-3315-00			RES,FXD,FILM:18.7K OHM,1%,0.2W,TC=T0	80009	322-3315-00
A3R561	322-3068-00			RES,FXD,MET FILM;49.9 OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	80009	322-3068-00
A3R562	322-3068-00			RES,FXD,MET FILM;49.9 OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	80009	322-3068-00
A3R563	322-3315-00			RES,FXD,FILM:18.7K OHM,1%,0.2W,TC=T0	80009	322-3315-00
A3R564	322-3068-00			RES,FXD,MET FILM;49.9 OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	80009	322-3068-00
A3R565	322-3315-00			RES,FXD,FILM:18.7K OHM,1%,0.2W,TC=T0	80009	322-3315-00
A3R566	322-3146-00			RES,FXD,FILM:324 OHM,1%,0.2W,TC=T0	91637	
A3R567	311-2227-00			RES,VAR,NONWW:TRMR,100 OHM,20%,0.5W LIN	TK1450	GF06UT 100
A3R568	311-2234-00			RES,VAR,TRMR:CERMET;5K OHM,20%,0.5W,0.197 SQ, TOP ADJUST;T&R	TK1450	GF06UT 5K
A3R569	322-3251-00			RES,FXD,FILM:4.02K OHM,1%,0.2W,TC=T0	57668	CRB20 FXE 4K02
A3R570	322-3135-00			RES,FXD,FILM:249 OHM,1%,0.2W,TC=T0	80009	322-3135-00
A3R571	322-3135-00			RES,FXD,FILM:249 OHM,1%,0.2W,TC=T0	80009	322-3135-00
A3R572	322-3243-00			RES,FXD,MET FILM;3.32K OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	91637	CCF50-1-G33200F
A3R573	322-3256-00			RES,FXD,FILM:4.53K OHM,1%,0.2W,TC=T0	80009	322-3256-00
A3R574	322-3243-00			RES,FXD,MET FILM;3.32K OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	91637	CCF50-1-G33200F
A3R575	322-3256-00			RES,FXD,FILM:4.53K OHM,1%,0.2W,TC=T0	80009	322-3256-00
A3R576	322-3356-00			RES,FXD,FILM:49.9K OHM,1%,0.2W,TC=T0	80009	322-3356-00
A3R577	311-2238-00			RES,VAR,TRMR:CERMET;50K OHM,20%,0.5W,0.197 SQ,SIDE ADJUST;T&R	TK1450	GF06UT 50 K
A3R578	311-2231-00			RES,VAR,TRMR:CERMET;1K OHM,20%,0.5W,0.197 SQ, TOP ADJUST;T&R	TK1450	GF06UT 1K
A3R579	311-2231-00			RES,VAR,TRMR:CERMET;1K OHM,20%,0.5W,0.197 SQ, TOP ADJUST;T&R	TK1450	GF06UT 1K
A3R580	322-3164-00			RES,FXD,FILM:499 OHM,1%,0.2W,TC=T0	57668	CRB20 FXE 499E
A3TP1	214-4085-00			TERM,TEST PT:0.070 ID,0.220 H,0.063 DIA PCB,0.015 X 0.032 BRS,W/ RED NYL CLR	26364	104-01-02
A3TP2	214-4085-00			TERM,TEST PT:0.070 ID,0.220 H,0.063 DIA PCB,0.015 X 0.032 BRS,W/ RED NYL CLR	26364	104-01-02
A3TP3	214-4085-00			TERM,TEST PT:0.070 ID,0.220 H,0.063 DIA PCB,0.015 X 0.032 BRS,W/ RED NYL CLR	26364	104-01-02
A3TP4	214-4085-00			TERM,TEST PT:0.070 ID,0.220 H,0.063 DIA PCB,0.015 X 0.032 BRS,W/ RED NYL CLR	26364	104-01-02

Replaceable electrical parts list (Cont.)

Component number	Tektronix part number	Serial no. effective	Serial no. discont'd	Name & description	Mfr. code	Mfr. part number
A3TP5	214-4085-00			TERM,TEST PT:0.070 ID,0.220 H,0.063 DIA PCB,0.015 X 0.032 BRS,W/ RED NYL CLR	26364	104-01-02
A3TP6	214-4085-00			TERM,TEST PT:0.070 ID,0.220 H,0.063 DIA PCB,0.015 X 0.032 BRS,W/ RED NYL CLR	26364	104-01-02
A3TP7	214-4085-00			TERM,TEST PT:0.070 ID,0.220 H,0.063 DIA PCB,0.015 X 0.032 BRS,W/ RED NYL CLR	26364	104-01-02
A3TP8	214-4085-00			TERM,TEST PT:0.070 ID,0.220 H,0.063 DIA PCB,0.015 X 0.032 BRS,W/ RED NYL CLR	26364	104-01-02
A3U1	156-1161-00			IC,LIN:BIPOLAR,VR;POS,ADJUST,1.5A,4%;LM317T,TO-220	04713	LM317T
A3U2	156-1161-00			IC,LIN:BIPOLAR,VR;POS,ADJUST,1.5A,4%;LM317T,TO-220	04713	LM317T
A3U3	156-1225-00			IC,LIN:BIPOLAR,COMPTR;DUAL,OPEN COLL,300NS;LM393N,DIP08.3	01295	LM393P
A3U4	156-1225-00			IC,LIN:BIPOLAR,COMPTR;DUAL,OPEN COLL,300NS;LM393N,DIP08.3	01295	LM393P
A3U5	156-2873-00			IC,LIN:BIFET,OP-AMP;DUAL;MC34082P,DIP08.3	80009	156-2873-00
A3U6	156-2842-00			IC,LIN:BIPOLAR,V REF;POS,10V,0.05%,20PPM, SER;LT1021CCN8-10,DIP08.3	80009	156-2842-00
A3U7	156-2873-00			IC,LIN:BIFET,OP-AMP;DUAL;MC34082P,DIP08.3	80009	156-2873-00
A3U8	156-1225-00			IC,LIN:BIPOLAR,COMPTR;DUAL,OPEN COLL,300NS;LM393N,DIP08.3	01295	LM393P
A3U9	156-4213-00			IC,LIN:	80009	156-4213-00
A3U10	156-4213-00			IC,LIN:	80009	156-4213-00
A3U11	156-1451-00			IC,LIN:BIPOLAR,VR;NEG,ADJUST,1.5A,4%;LM337T,TO-220	80009	156-1451-00
A3U12	156-1451-00			IC,LIN:BIPOLAR,VR;NEG,ADJUST,1.5A,4%;LM337T,TO-220	80009	156-1451-00
A3U13	156-1451-00			IC,LIN:BIPOLAR,VR;NEG,ADJUST,1.5A,4%;LM337T,TO-220	80009	156-1451-00
A3U14	156-2349-00			IC,DGTL:HCMOS,RGSTR;8-BIT SIPO, LATCHED 3-STATE;74HC595,DIP16.3,TUBE	80009	156-2349-00
A3U15	156-4213-00			IC,LIN:	80009	156-4213-00
A3U16	156-4213-00			IC,LIN:	80009	156-4213-00
A3U17	156-0509-00			IC,CONV:BIPOLAR,D/A;8 BIT,400NS, MULTIPLYING,CUR OUT;MC1408,DIP16.3	80009	156-0509-00
A3U18	156-2027-00			IC,DGTL:HCMOS,GATE;HEX INV;74HC04,DIP14.3	27014	MM74HC04N
A3U19	156-2571-00			IC,MISC:HCMOS,ANALOG MUX;TPL SPDT,+/-6V;74HC4053,DIP16.3	80009	156-2571-00
A3U20	156-2873-00			IC,LIN:BIFET,OP-AMP;DUAL;MC34082P,DIP08.3	80009	156-2873-00
A3U21	156-4213-00			IC,LIN:	80009	156-4213-00
A3U22	156-2026-00			IC,DGTL:HCMOS,GATE;QUAD 2-IN NOR;74HC02,DIP14.3	80009	156-2026-00
A3U23	156-2873-00			IC,LIN:BIFET,OP-AMP;DUAL;MC34082P,DIP08.3	80009	156-2873-00
A3U24	156-2873-00			IC,LIN:BIFET,OP-AMP;DUAL;MC34082P,DIP08.3	80009	156-2873-00
A3U25	234-0739-21			IC,ASIC:BIPOLAR,VIDEO PREAMPL;QC6-40,M639B-039;PLCC44,BOX	80009	234-0739-21

MOUNTING PARTS

Replaceable Electrical Parts

Replaceable electrical parts list (Cont.)

Component number	Tektronix part number	Serial no. effective	Serial no. discont'd	Name & description	Mfr. code	Mfr. part number
	136-1047-00			SKT,PLCC:PCB;44 POS,0.05 CTR,0.360 H X 0.125 TAIL,TIN	80009	136-1047-00
				END MOUNTING PARTS		
A3U26	156-2873-00			IC,LIN:BIFET,OP-AMP;DUAL;MC34082P,DIP08.3	80009	156-2873-00
A3U27	156-2571-00			IC,MISC:HCMOS,ANALOG MUX;TPL SPDT,+/-6V;74HC4053,DIP16.3	80009	156-2571-00
A3U28	156-2873-00			IC,LIN:BIFET,OP-AMP;DUAL;MC34082P,DIP08.3	80009	156-2873-00
A3U29	156-1225-00			IC,LIN:BIPOLAR,COMPTR;DUAL,OPEN COLL,300NS;LM393N,DIP08.3	01295	LM393P
A3U30	156-2571-00			IC,MISC:HCMOS,ANALOG MUX;TPL SPDT,+/-6V;74HC4053,DIP16.3	80009	156-2571-00
A3U31	156-3972-00			IC,MISC:CMOS,ANALOG SW:QUAD SPST,100 OHM,400NS;DG444,DIP16.3	80009	156-3972-00
A3U32	156-3972-00			IC,MISC:CMOS,ANALOG SW:QUAD SPST,100 OHM,400NS;DG444,DIP16.3	80009	156-3972-00
A3U33	156-3972-00			IC,MISC:CMOS,ANALOG SW:QUAD SPST,100 OHM,400NS;DG444,DIP16.3	80009	156-3972-00
A3U34	156-3972-00			IC,MISC:CMOS,ANALOG SW:QUAD SPST,100 OHM,400NS;DG444,DIP16.3	80009	156-3972-00
A3U35	156-3972-00			IC,MISC:CMOS,ANALOG SW:QUAD SPST,100 OHM,400NS;DG444,DIP16.3	80009	156-3972-00
A3U36	156-3972-00			IC,MISC:CMOS,ANALOG SW:QUAD SPST,100 OHM,400NS;DG444,DIP16.3	80009	156-3972-00
A3U37	156-2873-00			IC,LIN:BIFET,OP-AMP;DUAL;MC34082P,DIP08.3	80009	156-2873-00
A3U38	156-4213-00			IC,LIN:	80009	156-4213-00
A3U39	156-2873-00			IC,LIN:BIFET,OP-AMP;DUAL;MC34082P,DIP08.3	80009	156-2873-00
A3U40	156-2873-00			IC,LIN:BIFET,OP-AMP;DUAL;MC34082P,DIP08.3	80009	156-2873-00
A3U41	156-2873-00			IC,LIN:BIFET,OP-AMP;DUAL;MC34082P,DIP08.3	80009	156-2873-00
A3U42	156-2873-00			IC,LIN:BIFET,OP-AMP;DUAL;MC34082P,DIP08.3	80009	156-2873-00
A3U43	156-2873-00			IC,LIN:BIFET,OP-AMP;DUAL;MC34082P,DIP08.3	80009	156-2873-00
A3U44	156-2873-00			IC,LIN:BIFET,OP-AMP;DUAL;MC34082P,DIP08.3	80009	156-2873-00
A3U45	156-2873-00			IC,LIN:BIFET,OP-AMP;DUAL;MC34082P,DIP08.3	80009	156-2873-00
A3U46	156-2873-00			IC,LIN:BIFET,OP-AMP;DUAL;MC34082P,DIP08.3	80009	156-2873-00
A3U47	156-4213-00			IC,LIN:	80009	156-4213-00
A3U48	156-2873-00			IC,LIN:BIFET,OP-AMP;DUAL;MC34082P,DIP08.3	80009	156-2873-00
A3U49	156-2873-00			IC,LIN:BIFET,OP-AMP;DUAL;MC34082P,DIP08.3	80009	156-2873-00
A3U50	234-0728-21			IC,ASIC:BIPOLAR,ANALOG MUX;QC6-40,M639-028;PLCC44	80009	234-0728-21
				MOUNTING PARTS		
	136-1047-00			SKT,PLCC:PCB;44 POS,0.05 CTR,0.360 H X 0.125 TAIL,TIN	80009	136-1047-00
				END MOUNTING PARTS		
A3U51	156-2873-00			IC,LIN:BIFET,OP-AMP;DUAL;MC34082P,DIP08.3	80009	156-2873-00
A3U52	156-4213-00			IC,LIN:	80009	156-4213-00

Replaceable electrical parts list (Cont.)

Component number	Tektronix part number	Serial no. effective	Serial no. discont'd	Name & description	Mfr. code	Mfr. part number
A3U53	156-4213-00			IC,LIN:	80009	156-4213-00
A3U54	156-4213-00			IC,LIN:	80009	156-4213-00
A3U55	156-4213-00			IC,LIN:	80009	156-4213-00
A3U56	156-4213-00			IC,LIN:	80009	156-4213-00
A3U57	156-4213-00			IC,LIN:	80009	156-4213-00
A3U58	156-3345-00			IC,DGTL:ACMOS,GATE;HEX INV;74AC04,DIP14.3,TUBE	02735	CD74AC04E
A3U59	156-2349-00			IC,DGTL:HCMOS,RGSTR;8-BIT SIPO, LATCHED 3-STATE;74HC595,DIP16.3,TUBE	80009	156-2349-00
A3VR1	152-0461-00			DIO,SIG:6.2V,5%,0.4W;1N821,DO-7	04713	1N821
A3W1	131-4566-00			BUS,CNDCT:0 OHM,300 SPACING,SM BODY	80009	131-4566-00
A3W2	131-4566-00			BUS,CNDCT:0 OHM,300 SPACING,SM BODY	80009	131-4566-00
A3W3	131-4566-00			BUS,CNDCT:0 OHM,300 SPACING,SM BODY	80009	131-4566-00
A3W13	196-3146-00			CA ASSY,SP:FLAT FLEX;FLX,27 AWG,1.0 L,PCB,TERM,STR BOTH ENDS	15912	FSN-LA
A3W14	196-3146-00			CA ASSY,SP:FLAT FLEX;FLX,27 AWG,1.0 L,PCB,TERM,STR BOTH ENDS	15912	FSN-LA
A3W15	196-3146-00			CA ASSY,SP:FLAT FLEX;FLX,27 AWG,1.0 L,PCB,TERM,STR BOTH ENDS	15912	FSN-LA
A3W16	196-3146-00			CA ASSY,SP:FLAT FLEX;FLX,27 AWG,1.0 L,PCB,TERM,STR BOTH ENDS	15912	FSN-LA
A3W17	196-3146-00			CA ASSY,SP:FLAT FLEX;FLX,27 AWG,1.0 L,PCB,TERM,STR BOTH ENDS	15912	FSN-LA
A3W18	196-3146-00			CA ASSY,SP:FLAT FLEX;FLX,27 AWG,1.0 L,PCB,TERM,STR BOTH ENDS	15912	FSN-LA
A3W19	196-3146-00			CA ASSY,SP:FLAT FLEX;FLX,27 AWG,1.0 L,PCB,TERM,STR BOTH ENDS	15912	FSN-LA
A3W20	196-3146-00			CA ASSY,SP:FLAT FLEX;FLX,27 AWG,1.0 L,PCB,TERM,STR BOTH ENDS	15912	FSN-LA
A3W21	196-3146-00			CA ASSY,SP:FLAT FLEX;FLX,27 AWG,1.0 L,PCB,TERM,STR BOTH ENDS	15912	FSN-LA
A3W22	196-3146-00			CA ASSY,SP:FLAT FLEX;FLX,27 AWG,1.0 L,PCB,TERM,STR BOTH ENDS	15912	FSN-LA
A3W23	196-3146-00			CA ASSY,SP:FLAT FLEX;FLX,27 AWG,1.0 L,PCB,TERM,STR BOTH ENDS	15912	FSN-LA
A3W24	196-3146-00			CA ASSY,SP:FLAT FLEX;FLX,27 AWG,1.0 L,PCB,TERM,STR BOTH ENDS	15912	FSN-LA
A3A1	671-1796-01			CIRCUIT BD ASSY:GRATICULE LIGHT	80009	671-1796-01
A3A1DS100	150-0168-00			LAMP,INCAND:14V,0.08A,WEDGE BASE,T1.75 FOR SKT MT *MOUNTING PARTS*	80009	150-0168-00
	136-1119-00			SKT,LPHLDR:PCB,LPHLDR:FEM,STR,SGL,0.404 H X 0.218 TAIL,TIN,T-1.75 WEDGE BASE *END MOUNTING PARTS*	80009	136-1119-00
A3A1DS200	150-0168-00			LAMP,INCAND:14V,0.08A,WEDGE BASE,T1.75 FOR SKT MT	80009	150-0168-00

Replaceable Electrical Parts

Replaceable electrical parts list (Cont.)

Component number	Tektronix part number	Serial no. effective	Serial no. discont'd	Name & description	Mfr. code	Mfr. part number
				MOUNTING PARTS		
	136-1119-00			SKT,LPHLDR:PCB,LPHLDR:FEM,STR,SGL,0.404 H X 0.218 TAIL,TIN,T-1.75 WEDGE BASE	80009	136-1119-00
				END MOUNTING PARTS		
A3A1DS300	150-0168-00			LAMP,INCAND:14V,0.08A,WEDGE BASE,T1.75 FOR SKT MT	80009	150-0168-00
				MOUNTING PARTS		
	136-1119-01			SKT,LPHLDR:PCB,LPHLDR:FEM,STR,SGL,0.404 H X 0.218 TAIL,TIN,T-1.75 WEDGE BASE	80009	136-1119-01
				END MOUNTING PARTS		
A3A1J100	131-4530-00			CONN,HDR:PCB;MALE,STR,1 X 3,0.1 CTR,0.230 MLG X 0.120 TAIL,30 GLD,BD RETENTION	80009	131-4530-00
A3A1P100	131-3199-00			CONN,SHUNT:FEM,STR,1 X 2,0.1 CTR,0.2 H,LOW PRO- FILE,JUMPER	80009	131-3199-00
A3A1P200	131-2790-00			CONN,HDR:PCB;RTANG,1 X 2,0.15 CTR,0.230 MLG X 0.120 TAIL,30 GLD	80009	131-2790-00
A3A1P800	131-2790-00			CONN,HDR:PCB;RTANG,1 X 2,0.15 CTR,0.230 MLG X 0.120 TAIL,30 GLD	80009	131-2790-00

Replaceable electrical parts list (Cont.)

Component number	Tektronix part number	Serial no. effective	Serial no. discount'd	Name & description	Mfr. code	Mfr. part number
A4	671-2480-04			CIRCUIT BD ASSY:CONTROL	80009	671-2480-04
A4C1	281-0775-01			CAP,FXD,CER:MCL:0.1UF,20%,50V,Z5U,0.170 X 0.100;AXIAL	04222	SA105E104MAA
A4C2	281-0762-00			CAP,FXD,CER DI:27PF,20%,100V	80009	281-0762-00
A4C3	290-1295-00			CAP,FXD,ALUM:10UF,20%,16V,5 X 9 MM;RDL,105 DEG,BULK	80009	290-1295-00
A4C4	290-0782-02			CAP,FXD,ELCTLT:4.7UF,+75-10%,35VDC	55680	UVX1V4R7MAA1TD
A4C5	290-1295-00			CAP,FXD,ALUM:10UF,20%,16V,5 X 9 MM;RDL,105 DEG,BULK	80009	290-1295-00
A4C6	290-1295-00			CAP,FXD,ALUM:10UF,20%,16V,5 X 9 MM;RDL,105 DEG,BULK	80009	290-1295-00
A4C7	281-0819-00			CAP,FXD,CER:MLC:33 PF,5%,50V,0.100 X 0.170;AXIAL,MI	04222	SA102A330JAA
A4C8	281-0812-00			CAP,FXD,CER:MLC:1000PF,10%,100V,0.100 X 0.170;AXIAL	04222	SA101C102KAA
A4C9	281-0762-00			CAP,FXD,CER DI:27PF,20%,100V	80009	281-0762-00
A4C10	281-0775-01			CAP,FXD,CER:MCL:0.1UF,20%,50V,Z5U,0.170 X 0.100;AXIAL	04222	SA105E104MAA
A4C11	281-0812-00			CAP,FXD,CER:MLC:1000PF,10%,100V,0.100 X 0.170;AXIAL	04222	SA101C102KAA
A4C12	281-0775-01			CAP,FXD,CER:MCL:0.1UF,20%,50V,Z5U,0.170 X 0.100;AXIAL	04222	SA105E104MAA
A4C13	281-0823-00			CAP,FXD,CER DI:470PF,10%,50V	04222	SA101A471KAA
A4C14	281-0775-01			CAP,FXD,CER:MCL:0.1UF,20%,50V,Z5U,0.170 X 0.100;AXIAL	04222	SA105E104MAA
A4C16	281-0775-01			CAP,FXD,CER:MCL:0.1UF,20%,50V,Z5U,0.170 X 0.100;AXIAL	04222	SA105E104MAA
A4C17	281-0823-00			CAP,FXD,CER DI:470PF,10%,50V	04222	SA101A471KAA
A4C18	281-0775-01			CAP,FXD,CER:MCL:0.1UF,20%,50V,Z5U,0.170 X 0.100;AXIAL	04222	SA105E104MAA
A4C19	281-0773-00			CAP,FXD,CER:MLC:0.01UF,10%,100V,SAF,0.100 X 0.170;AXIAL,MI	80009	281-0773-00
A4C20	281-0773-00			CAP,FXD,CER:MLC:0.01UF,10%,100V,SAF,0.100 X 0.170;AXIAL,MI	80009	281-0773-00
A4C21	281-0773-00			CAP,FXD,CER:MLC:0.01UF,10%,100V,SAF,0.100 X 0.170;AXIAL,MI	80009	281-0773-00
A4C22	281-0773-00			CAP,FXD,CER:MLC:0.01UF,10%,100V,SAF,0.100 X 0.170;AXIAL,MI	80009	281-0773-00
A4C23	281-0773-00			CAP,FXD,CER:MLC:0.01UF,10%,100V,SAF,0.100 X 0.170;AXIAL,MI	80009	281-0773-00
A4C24	281-0773-00			CAP,FXD,CER:MLC:0.01UF,10%,100V,SAF,0.100 X 0.170;AXIAL,MI	80009	281-0773-00
A4C25	281-0773-00			CAP,FXD,CER:MLC:0.01UF,10%,100V,SAF,0.100 X 0.170;AXIAL,MI	80009	281-0773-00
A4C26	281-0773-00			CAP,FXD,CER:MLC:0.01UF,10%,100V,SAF,0.100 X 0.170;AXIAL,MI	80009	281-0773-00
A4C27	281-0773-00			CAP,FXD,CER:MLC:0.01UF,10%,100V,SAF,0.100 X 0.170;AXIAL,MI	80009	281-0773-00
A4C28	281-0773-00			CAP,FXD,CER:MLC:0.01UF,10%,100V,SAF,0.100 X 0.170;AXIAL,MI	80009	281-0773-00
A4C29	281-0773-00			CAP,FXD,CER:MLC:0.01UF,10%,100V,SAF,0.100 X 0.170;AXIAL,MI	80009	281-0773-00
A4C30	281-0819-00			CAP,FXD,CER:MLC:33 PF,5%,50V,0.100 X 0.170;AXIAL,MI	04222	SA102A330JAA
A4C31	281-0819-00			CAP,FXD,CER:MLC:33 PF,5%,50V,0.100 X 0.170;AXIAL,MI	04222	SA102A330JAA

Replaceable electrical parts list (Cont.)

Component number	Tektronix part number	Serial no. effective	Serial no. discont'd	Name & description	Mfr. code	Mfr. part number
A4C32	281-0773-00			CAP,FXD,CER:MLC;0.01UF,10%,100V,SAF,0.100 X 0.170;AXIAL,MI	80009	281-0773-00
A4C33	281-0773-00			CAP,FXD,CER:MLC;0.01UF,10%,100V,SAF,0.100 X 0.170;AXIAL,MI	80009	281-0773-00
A4C34	281-0773-00			CAP,FXD,CER:MLC;0.01UF,10%,100V,SAF,0.100 X 0.170;AXIAL,MI	80009	281-0773-00
A4C35	281-0773-00			CAP,FXD,CER:MLC;0.01UF,10%,100V,SAF,0.100 X 0.170;AXIAL,MI	80009	281-0773-00
A4C36	281-0773-00			CAP,FXD,CER:MLC;0.01UF,10%,100V,SAF,0.100 X 0.170;AXIAL,MI	80009	281-0773-00
A4C37	281-0773-00			CAP,FXD,CER:MLC;0.01UF,10%,100V,SAF,0.100 X 0.170;AXIAL,MI	80009	281-0773-00
A4C38	281-0773-00			CAP,FXD,CER:MLC;0.01UF,10%,100V,SAF,0.100 X 0.170;AXIAL,MI	80009	281-0773-00
A4C39	281-0775-01			CAP,FXD,CER:MCL;0.1UF,20%,50V,Z5U,0.170 X 0.100;AXIAL	04222	SA105E104MAA
A4C40	290-1295-00			CAP,FXD,ALUM:10UF,20%,16V,5 X 9 MM;RDL,105 DEG,BULK	80009	290-1295-00
A4C41	281-0775-01			CAP,FXD,CER:MCL;0.1UF,20%,50V,Z5U,0.170 X 0.100;AXIAL	04222	SA105E104MAA
A4C42	281-0775-01			CAP,FXD,CER:MCL;0.1UF,20%,50V,Z5U,0.170 X 0.100;AXIAL	04222	SA105E104MAA
A4C43	281-0775-01			CAP,FXD,CER:MCL;0.1UF,20%,50V,Z5U,0.170 X 0.100;AXIAL	04222	SA105E104MAA
A4C44	281-0775-01			CAP,FXD,CER:MCL;0.1UF,20%,50V,Z5U,0.170 X 0.100;AXIAL	04222	SA105E104MAA
A4C45	281-0775-01			CAP,FXD,CER:MCL;0.1UF,20%,50V,Z5U,0.170 X 0.100;AXIAL	04222	SA105E104MAA
A4C46	281-0775-01			CAP,FXD,CER:MCL;0.1UF,20%,50V,Z5U,0.170 X 0.100;AXIAL	04222	SA105E104MAA
A4C47	281-0775-01			CAP,FXD,CER:MCL;0.1UF,20%,50V,Z5U,0.170 X 0.100;AXIAL	04222	SA105E104MAA
A4C48	290-1295-00			CAP,FXD,ALUM:10UF,20%,16V,5 X 9 MM;RDL,105 DEG,BULK	80009	290-1295-00
A4C49	281-0775-01			CAP,FXD,CER:MCL;0.1UF,20%,50V,Z5U,0.170 X 0.100;AXIAL	04222	SA105E104MAA
A4C50	281-0910-00			CAP,FXD,CER DI:1800PF,1%,50V	04222	MA205A182FAA
A4C51	281-0775-01			CAP,FXD,CER:MCL;0.1UF,20%,50V,Z5U,0.170 X 0.100;AXIAL	04222	SA105E104MAA
A4C52	281-0910-00			CAP,FXD,CER DI:1800PF,1%,50V	04222	MA205A182FAA
A4C53	281-0861-00			CAP,FXD,CER DI:270PF,5%,50V	04222	SA101A271JAA
A4C54	281-0826-00			CAP,FXD,CER:MLC;2200PF,10%,100V,0.100 X 0.170;AXIAL	04222	SA101C222KAA
A4C55	281-0775-01			CAP,FXD,CER:MCL;0.1UF,20%,50V,Z5U,0.170 X 0.100;AXIAL	04222	SA105E104MAA
A4C56	281-0775-01			CAP,FXD,CER:MCL;0.1UF,20%,50V,Z5U,0.170 X 0.100;AXIAL	04222	SA105E104MAA
A4C57	281-0826-00			CAP,FXD,CER:MLC;2200PF,10%,100V,0.100 X 0.170;AXIAL	04222	SA101C222KAA
A4C58	281-0775-01			CAP,FXD,CER:MCL;0.1UF,20%,50V,Z5U,0.170 X 0.100;AXIAL	04222	SA105E104MAA
A4C59	281-0775-01			CAP,FXD,CER:MCL;0.1UF,20%,50V,Z5U,0.170 X 0.100;AXIAL	04222	SA105E104MAA
A4C60	281-0775-01			CAP,FXD,CER:MCL;0.1UF,20%,50V,Z5U,0.170 X 0.100;AXIAL	04222	SA105E104MAA
A4C61	281-0775-01			CAP,FXD,CER:MCL;0.1UF,20%,50V,Z5U,0.170 X 0.100;AXIAL	04222	SA105E104MAA
A4C62	281-0775-01			CAP,FXD,CER:MCL;0.1UF,20%,50V,Z5U,0.170 X 0.100;AXIAL	04222	SA105E104MAA
A4C63	290-1295-00			CAP,FXD,ALUM:10UF,20%,16V,5 X 9 MM;RDL,105 DEG,BULK	80009	290-1295-00
A4C64	281-0819-00			CAP,FXD,CER:MLC;33 PF,5%,50V,0.100 X 0.170;AXIAL,MI	04222	SA102A330JAA
A4C65	281-0819-00			CAP,FXD,CER:MLC;33 PF,5%,50V,0.100 X 0.170;AXIAL,MI	04222	SA102A330JAA

Replaceable electrical parts list (Cont.)

Component number	Tektronix part number	Serial no. effective	Serial no. discont'd	Name & description	Mfr. code	Mfr. part number
A4C66	290-0944-02			CAP,FXD,ELCTLT:220UF,+50-20%,10V	55680	UVX1C221MPA1TD
A4C67	281-0759-00			CAP,FXD,CER:MLC;22PF,10%,100V,0.100 X 0.170;AXIAL,MI	80009	281-0759-00
A4C68	281-0775-01			CAP,FXD,CER:MCL:0.1UF,20%,50V,Z5U,0.170 X 0.100;AXIAL	04222	SA105E104MAA
A4C69	281-0775-01			CAP,FXD,CER:MCL:0.1UF,20%,50V,Z5U,0.170 X 0.100;AXIAL	04222	SA105E104MAA
A4C70	281-0775-01			CAP,FXD,CER:MCL:0.1UF,20%,50V,Z5U,0.170 X 0.100;AXIAL	04222	SA105E104MAA
A4C71	281-0775-01			CAP,FXD,CER:MCL:0.1UF,20%,50V,Z5U,0.170 X 0.100;AXIAL	04222	SA105E104MAA
A4C72	290-1295-00			CAP,FXD,ALUM:10UF,20%,16V,5 X 9 MM;RDL,105 DEG,BULK	80009	290-1295-00
A4C73	281-0775-01			CAP,FXD,CER:MCL:0.1UF,20%,50V,Z5U,0.170 X 0.100;AXIAL	04222	SA105E104MAA
A4C74	281-0759-00			CAP,FXD,CER:MLC;22PF,10%,100V,0.100 X 0.170;AXIAL,MI	80009	281-0759-00
A4C75	281-0775-01			CAP,FXD,CER:MCL:0.1UF,20%,50V,Z5U,0.170 X 0.100;AXIAL	04222	SA105E104MAA
A4C76	281-0775-01			CAP,FXD,CER:MCL:0.1UF,20%,50V,Z5U,0.170 X 0.100;AXIAL	04222	SA105E104MAA
A4C77	281-0775-01			CAP,FXD,CER:MCL:0.1UF,20%,50V,Z5U,0.170 X 0.100;AXIAL	04222	SA105E104MAA
A4C78	281-0775-01			CAP,FXD,CER:MCL:0.1UF,20%,50V,Z5U,0.170 X 0.100;AXIAL	04222	SA105E104MAA
A4C79	290-1296-00			CAP,FXD,ALUM:100UF,20%,25V,8 X 9MM;RDL,105 DEG	80009	290-1296-00
A4C80	281-0826-00			CAP,FXD,CER:MLC:2200PF,10%,100V,0.100 X 0.170;AXIAL	04222	SA101C222KAA
A4C81	281-0775-01			CAP,FXD,CER:MCL:0.1UF,20%,50V,Z5U,0.170 X 0.100;AXIAL	04222	SA105E104MAA
A4C82	281-0775-01			CAP,FXD,CER:MCL:0.1UF,20%,50V,Z5U,0.170 X 0.100;AXIAL	04222	SA105E104MAA
A4CR1	152-0141-02			DIO,SIG:ULTRA FAST;40V,150MA,4NS,2PF;1N4152,DO-35	80009	152-0141-02
A4CR2	152-0141-02			DIO,SIG:ULTRA FAST;40V,150MA,4NS,2PF;1N4152,DO-35	80009	152-0141-02
A4CR3	152-0141-02			DIO,SIG:ULTRA FAST;40V,150MA,4NS,2PF;1N4152,DO-35	80009	152-0141-02
A4CR4	152-0141-02			DIO,SIG:ULTRA FAST;40V,150MA,4NS,2PF;1N4152,DO-35	80009	152-0141-02
A4CR5	152-0141-02			DIO,SIG:ULTRA FAST;40V,150MA,4NS,2PF;1N4152,DO-35	80009	152-0141-02
A4CR7	152-0141-02			DIO,SIG:ULTRA FAST;40V,150MA,4NS,2PF;1N4152,DO-35	80009	152-0141-02
A4CR8	152-0141-02			DIO,SIG:ULTRA FAST;40V,150MA,4NS,2PF;1N4152,DO-35	80009	152-0141-02
A4J1	131-0391-00			CONN,RF JACK:	80009	131-0391-00
A4J2	131-4530-00			CONN,HDR:PCB;MALE,STR,1 X 3,0.1 CTR,0.230 MLG X 0.120 TAIL,30 GLD,BD RETENTION	80009	131-4530-00
A4J3	131-4299-00			CONN,HDR:	80009	131-4299-00
A4J4	131-4794-00			CONN,HDR:PCB;MALE,STR,1 X 2,0.1 CTR,0.235 MLG X 0.112 TAIL,30 GLD,0.035 DIA PCB	80009	131-4794-00
A4J5	131-3392-00			CONN,HDR:PCB;MALE,STR,1 X 10,0.1 CTR,0.230 MLG X 0.120 TAIL,30 GLD,BD RETENTION	80009	131-3392-00
A4J6	131-4299-00			CONN,HDR:	80009	131-4299-00
A4P1	131-2949-00			CONN,DIN:	80009	131-2949-00
A4P2	131-2949-00			CONN,DIN:	80009	131-2949-00
A4P3	131-3199-00			CONN,SHUNT:FEM,STR,1 X 2,0.1 CTR,0.2 H,LOW PRO-FILE,JUMPER	80009	131-3199-00
A4Q1	151-0188-00			XSTR,SIG:BIPOLAR,PNP;40V,200MA,250MHZ,AMPL;2N3906,TO-92 EBC	80009	151-0188-00

Replaceable electrical parts list (Cont.)

Component number	Tektronix part number	Serial no. effective	Serial no. discont'd	Name & description	Mfr. code	Mfr. part number
A4Q2	151-0188-00			XSTR,SIG:BIPOLAR,PNP;40V,200MA,250MHZ,AMPL;2N3906,TO-92 EBC	80009	151-0188-00
A4Q3	151-0190-00			XSTR,SIG:BIPOLAR,NPN;40V,200MA,300MHZ,AMPL;2N3904,TO-92 EBC	80009	151-0190-00
A4Q4	151-0188-00			XSTR,SIG:BIPOLAR,PNP;40V,200MA,250MHZ,AMPL;2N3906,TO-92 EBC	80009	151-0188-00
A4Q5	151-0188-00			XSTR,SIG:BIPOLAR,PNP;40V,200MA,250MHZ,AMPL;2N3906,TO-92 EBC	80009	151-0188-00
A4Q6	151-0190-00			XSTR,SIG:BIPOLAR,NPN;40V,200MA,300MHZ,AMPL;2N3904,TO-92 EBC	80009	151-0190-00
A4Q7	151-0188-00			XSTR,SIG:BIPOLAR,PNP;40V,200MA,250MHZ,AMPL;2N3906,TO-92 EBC	80009	151-0188-00
A4Q8	151-0190-00			XSTR,SIG:BIPOLAR,NPN;40V,200MA,300MHZ,AMPL;2N3904,TO-92 EBC	80009	151-0190-00
A4Q9	151-0190-00			XSTR,SIG:BIPOLAR,NPN;40V,200MA,300MHZ,AMPL;2N3904,TO-92 EBC	80009	151-0190-00
A4Q10	151-0188-00			XSTR,SIG:BIPOLAR,PNP;40V,200MA,250MHZ,AMPL;2N3906,TO-92 EBC	80009	151-0188-00
A4Q11	151-0188-00			XSTR,SIG:BIPOLAR,PNP;40V,200MA,250MHZ,AMPL;2N3906,TO-92 EBC	80009	151-0188-00
A4Q12	151-0188-00			XSTR,SIG:BIPOLAR,PNP;40V,200MA,250MHZ,AMPL;2N3906,TO-92 EBC	80009	151-0188-00
A4Q13	151-0190-00			XSTR,SIG:BIPOLAR,NPN;40V,200MA,300MHZ,AMPL;2N3904,TO-92 EBC	80009	151-0190-00
A4Q14	151-0190-00			XSTR,SIG:BIPOLAR,NPN;40V,200MA,300MHZ,AMPL;2N3904,TO-92 EBC	80009	151-0190-00
A4Q18	151-0188-00			XSTR,SIG:BIPOLAR,PNP;40V,200MA,250MHZ,AMPL;2N3906,TO-92 EBC	80009	151-0188-00
A4Q19	151-0190-00			XSTR,SIG:BIPOLAR,NPN;40V,200MA,300MHZ,AMPL;2N3904,TO-92 EBC	80009	151-0190-00
A4R1	322-3269-02			RES,FXD,FILM:6.19K OHM,0.2W,5%	80009	322-3269-02
A4R2	322-3306-00			RES,FXD:MET FILM;15K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	57668	CRB20 FXE 15K0
A4R3	322-3126-00			RES,FXD,FILM:200 OHM,1%,0.2W,TC=T0	80009	322-3126-00
A4R4	322-3126-00			RES,FXD,FILM:200 OHM,1%,0.2W,TC=T0	80009	322-3126-00
A4R5	322-3097-00			RES,FXD:MET FILM;100 OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	57668	CRB20 FXE 100E
A4R6	322-3297-00			RES,FXD:MET FILM;12.1K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	57668	CRB20 FXE 12K1
A4R7	322-3258-00			RES,FXD:MET FILM;4.75K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	80009	322-3258-00
A4R8	322-3216-00			RES,FXD,FILM:1.74K OHM,1%,0.2W,TC=T0	57668	CRB20 FXE 1K74
A4R9	322-3188-00			RES,FXD,FILM:887 OHM,1%,0.2W,TC=T0	80009	322-3188-00
A4R10	322-3269-02			RES,FXD,FILM:6.19K OHM,0.2W,5%	80009	322-3269-02
A4R11	322-3267-00			RES,FXD,FILM:5.9K OHM,1%,0.2W,TC=T0	80009	322-3267-00

Replaceable electrical parts list (Cont.)

Component number	Tektronix part number	Serial no. effective	Serial no. discount'd	Name & description	Mfr. code	Mfr. part number
A4R12	322-3193-00			RES,FXD:MET FILM;1K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	57668	CRB20 FXE 1K00
A4R13	322-3001-00			RES,FXD:MET FILM;10 OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	80009	322-3001-00
A4R14	322-3239-00			RES,FXD,FILM:3.01K OHM,1%,0.2W,TC=T0	57668	CRB20 FXE 3K01
A4R15	322-3237-00			RES,FXD,FILM:2.87K OHM,1%,0.2W,TC=T0	80009	322-3237-00
A4R16	322-3289-00			RES,FXD:MET FILM;10K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	80009	322-3289-00
A4R17	322-3473-00			RES,FXD,FILM:825K OHM,1%,0.2W,TC=100PPM,MI,SM BODY,T&R	80009	322-3473-00
A4R18	322-3001-00			RES,FXD:MET FILM;10 OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	80009	322-3001-00
A4R19	322-3289-00			RES,FXD:MET FILM;10K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	80009	322-3289-00
A4R20	322-3431-00			RES,FXD,FILM:301K OHM,1%,0.2W,TC=T0	57668	CRB20 FXE 301K
A4R21	322-3126-00			RES,FXD,FILM:200 OHM,1%,0.2W,TC=T0	80009	322-3126-00
A4R22	322-3001-00			RES,FXD:MET FILM;10 OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	80009	322-3001-00
A4R23	322-3289-00			RES,FXD:MET FILM;10K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	80009	322-3289-00
A4R24	322-3218-00			RES,FXD:MET FILM;1.82K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	80009	322-3218-00
A4R25	322-3177-02			RES,FXD,FILM:681 OHM,0.5%,0.2W,TC=T2	80009	322-3177-02
A4R26	322-3280-00			RES,FXD,FILM:8.06K OHM,1%,0.2W,TC=T0	80009	322-3280-00
A4R27	322-3289-00			RES,FXD:MET FILM;10K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	80009	322-3289-00
A4R28	322-3260-00			RES,FXD,FILM:4.99K OHM,1%,0.2W,TC=T0	57668	CRB20 FXE 4K99
A4R29	322-3381-00			RES,FXD,FILM:90.9K OHM,1%,0.2W,TC=T0	80009	322-3381-00
A4R30	322-3431-00			RES,FXD,FILM:301K OHM,1%,0.2W,TC=T0	57668	CRB20 FXE 301K
A4R31	322-3373-00			RES,FXD,FILM:75K OHM,1%,0.2W,TC=T0	80009	322-3373-00
A4R32	322-3344-00			RES,FXD,FILM:37.4K OHM,1%,0.2W,TC=T0	80009	322-3344-00
A4R33	322-3222-00			RES,FXD:MET FILM;2K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	57668	CRB20 FXE 2K00
A4R34	322-3126-00			RES,FXD,FILM:200 OHM,1%,0.2W,TC=T0	80009	322-3126-00
A4R35	322-3260-00			RES,FXD,FILM:4.99K OHM,1%,0.2W,TC=T0	57668	CRB20 FXE 4K99
A4R36	322-3289-00			RES,FXD:MET FILM;10K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	80009	322-3289-00
A4R37	322-3260-00			RES,FXD,FILM:4.99K OHM,1%,0.2W,TC=T0	57668	CRB20 FXE 4K99
A4R38	322-3289-00			RES,FXD:MET FILM;10K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	80009	322-3289-00
A4R39	311-2269-00			RES,VAR,NONWW:TRMR,20K OHM,20%,0.5W	80009	311-2269-00
A4R40	322-3344-00			RES,FXD,FILM:37.4K OHM,1%,0.2W,TC=T0	80009	322-3344-00

Replaceable electrical parts list (Cont.)

Component number	Tektronix part number	Serial no. effective	Serial no. discont'd	Name & description	Mfr. code	Mfr. part number
A4R41	322-3289-00			RES,FXD:MET FILM;10K OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	80009	322-3289-00
A4R42	322-3411-00			RES,FXD,FILM:187K OHM,1%,0.2W,TC=T0	80009	322-3411-00
A4R43	322-3396-00			RES,FXD,FILM:130K OHM,1%,0.2W,TC=T0	57668	CRB20 FXE 130K
A4R44	322-3356-00			RES,FXD,FILM:49.9K OHM,1%,0.2W,TC=T0	80009	322-3356-00
A4R45	322-3222-00			RES,FXD:MET FILM;2K OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	57668	CRB20 FXE 2K00
A4R46	322-3289-00			RES,FXD:MET FILM;10K OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	80009	322-3289-00
A4R47	322-3367-00			RES,FXD,FILM:64.9K OHM,1%,0.2W,TC=T0	80009	322-3367-00
A4R48	322-3243-00			RES,FXD:MET FILM;3.32K OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	91637	CCF50-1-G33200F
A4R49	322-3097-00			RES,FXD:MET FILM;100 OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	57668	CRB20 FXE 100E
A4R50	322-3097-00			RES,FXD:MET FILM;100 OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	57668	CRB20 FXE 100E
A4R51	322-3097-00			RES,FXD:MET FILM;100 OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	57668	CRB20 FXE 100E
A4R52	322-3289-00			RES,FXD:MET FILM;10K OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	80009	322-3289-00
A4R53	322-3097-00			RES,FXD:MET FILM;100 OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	57668	CRB20 FXE 100E
A4R54	322-3097-00			RES,FXD:MET FILM;100 OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	57668	CRB20 FXE 100E
A4R55	322-3097-00			RES,FXD:MET FILM;100 OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	57668	CRB20 FXE 100E
A4R56	322-3097-00			RES,FXD:MET FILM;100 OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	57668	CRB20 FXE 100E
A4R57	322-3097-00			RES,FXD:MET FILM;100 OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	57668	CRB20 FXE 100E
A4R58	322-3097-00			RES,FXD:MET FILM;100 OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	57668	CRB20 FXE 100E
A4R59	322-3097-00			RES,FXD:MET FILM;100 OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	57668	CRB20 FXE 100E
A4R60	322-3097-00			RES,FXD:MET FILM;100 OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	57668	CRB20 FXE 100E
A4R61	322-3097-00			RES,FXD:MET FILM;100 OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	57668	CRB20 FXE 100E
A4R62	322-3097-00			RES,FXD:MET FILM;100 OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	57668	CRB20 FXE 100E
A4R63	322-3231-00			RES,FXD,FILM:2.49K OHM,1%,0.2W,TC=T0	80009	322-3231-00
A4R64	322-3097-00			RES,FXD:MET FILM;100 OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	57668	CRB20 FXE 100E
A4R65	322-3097-00			RES,FXD:MET FILM;100 OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	57668	CRB20 FXE 100E

Replaceable electrical parts list (Cont.)

Component number	Tektronix part number	Serial no. effective	Serial no. discont'd	Name & description	Mfr. code	Mfr. part number
A4R66	322-3097-00			RES,FXD:MET FILM;100 OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	57668	CRB20 FXE 100E
A4R67	322-3097-00			RES,FXD:MET FILM;100 OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	57668	CRB20 FXE 100E
A4R68	322-3097-00			RES,FXD:MET FILM;100 OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	57668	CRB20 FXE 100E
A4R69	322-3097-00			RES,FXD:MET FILM;100 OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	57668	CRB20 FXE 100E
A4R70	322-3193-00			RES,FXD:MET FILM;1K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	57668	CRB20 FXE 1K00
A4R71	322-3145-00			RES,FXD,FILM:316 OHM,1%,0.2W,TC=T0	80009	322-3145-00
A4R72	322-3193-00			RES,FXD:MET FILM;1K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	57668	CRB20 FXE 1K00
A4R73	322-3243-00			RES,FXD:MET FILM;3.32K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	91637	CCF50-1-G33200F
A4R74	322-3243-00			RES,FXD:MET FILM;3.32K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	91637	CCF50-1-G33200F
A4R75	322-3243-00			RES,FXD:MET FILM;3.32K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	91637	CCF50-1-G33200F
A4R76	322-3243-00			RES,FXD:MET FILM;3.32K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	91637	CCF50-1-G33200F
A4R77	322-3243-00			RES,FXD:MET FILM;3.32K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	91637	CCF50-1-G33200F
A4R78	322-3193-00			RES,FXD:MET FILM;1K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	57668	CRB20 FXE 1K00
A4R79	322-3193-00			RES,FXD:MET FILM;1K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	57668	CRB20 FXE 1K00
A4R80	322-3193-00			RES,FXD:MET FILM;1K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	57668	CRB20 FXE 1K00
A4R81	322-3243-00			RES,FXD:MET FILM;3.32K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	91637	CCF50-1-G33200F
A4R82	322-3001-00			RES,FXD:MET FILM;10 OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	80009	322-3001-00
A4R83	322-3243-00			RES,FXD:MET FILM;3.32K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	91637	CCF50-1-G33200F
A4R84	322-3289-00			RES,FXD:MET FILM;10K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	80009	322-3289-00
A4R85	322-3193-00			RES,FXD:MET FILM;1K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	57668	CRB20 FXE 1K00
A4R86	322-3243-00			RES,FXD:MET FILM;3.32K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	91637	CCF50-1-G33200F
A4R87	322-3193-00			RES,FXD:MET FILM;1K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	57668	CRB20 FXE 1K00
A4R88	322-3289-00			RES,FXD:MET FILM;10K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	80009	322-3289-00

Replaceable Electrical Parts

Replaceable electrical parts list (Cont.)

Component number	Tektronix part number	Serial no. effective	Serial no. discont'd	Name & description	Mfr. code	Mfr. part number
A4R89	322-3097-00			RES,FXD:MET FILM;100 OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	57668	CRB20 FXE 100E
A4R90	322-3193-00			RES,FXD:MET FILM;1K OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	57668	CRB20 FXE 1K00
A4R91	307-0446-00			RES NTWK,FXD,FI:10K OHM,20%,(9)RES	80009	307-0446-00
A4R92	307-0446-00			RES NTWK,FXD,FI:10K OHM,20%,(9)RES	80009	307-0446-00
A4R93	311-2271-00			RES,VAR,TRMR:CERMET;5K OHM,20%,0.5W,0.197 SQ,SIDE ADJUST;T&A	80009	311-2271-00
A4R94	322-3097-00			RES,FXD:MET FILM;100 OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	57668	CRB20 FXE 100E
A4R95	322-3243-00			RES,FXD:MET FILM;3.32K OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	91637	CCF50-1-G33200F
A4R96	322-3097-00			RES,FXD:MET FILM;100 OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	57668	CRB20 FXE 100E
A4R97	322-3265-00			RES,FXD:MET FILM;5.62K OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	80009	322-3265-00
A4R99	311-2258-00			RES,VAR,TRMR:CERMET;1K OHM,20%,0.5W,0.197 SQ,SIDE ADJUST;T&A	TK1450	GF06VT 1 K OHM
A4R100	322-3330-00			RES,FXD,FILM:26.7K OHM,1%,0.2W,TC=T0 SMALL BODY	57668	CRB20 FXE 26K7
A4R101	322-3239-00			RES,FXD,FILM:3.01K OHM,1%,0.2W,TC=T0	57668	CRB20 FXE 3K01
A4R103	322-3289-00			RES,FXD:MET FILM;10K OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	80009	322-3289-00
A4R104	311-2258-00			RES,VAR,TRMR:CERMET;1K OHM,20%,0.5W,0.197 SQ,SIDE ADJUST;T&A	TK1450	GF06VT 1 K OHM
A4R105	322-3126-00			RES,FXD,FILM:200 OHM,1%,0.2W,TC=T0	80009	322-3126-00
A4R106	322-3001-00			RES,FXD:MET FILM;10 OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	80009	322-3001-00
A4R107	322-3210-00			RES,FXD:MET FILM;1.5K OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	57668	CRB20 FXE 1K50
A4R108	322-3210-00			RES,FXD:MET FILM;1.5K OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	57668	CRB20 FXE 1K50
A4R109	322-3126-00			RES,FXD,FILM:200 OHM,1%,0.2W,TC=T0	80009	322-3126-00
A4R110	322-3280-00			RES,FXD,FILM:8.06K OHM,1%,0.2W,TC=T0	80009	322-3280-00
A4R111	322-3254-00			RES,FXD,FILM:4.32K OHM,1%,0.2W,TC=T0	80009	322-3254-00
A4R112	322-3258-00			RES,FXD:MET FILM;4.75K OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	80009	322-3258-00
A4R113	322-3289-00			RES,FXD:MET FILM;10K OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	80009	322-3289-00
A4R114	307-0446-00			RES NTWK,FXD,FI:10K OHM,20%,(9)RES	80009	307-0446-00
A4R115	322-3336-00			RES,FXD,FILM:30.9K OHM,1%,0.2W,TC=T0	91637	CCF50-2F30901F
A4R116	322-3126-00			RES,FXD,FILM:200 OHM,1%,0.2W,TC=T0	80009	322-3126-00
A4R117	322-3097-00			RES,FXD:MET FILM;100 OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	57668	CRB20 FXE 100E
A4R118	322-3269-02			RES,FXD,FILM:6.19K OHM,0.2W,5%	80009	322-3269-02

Replaceable electrical parts list (Cont.)

Component number	Tektronix part number	Serial no. effective	Serial no. discount'd	Name & description	Mfr. code	Mfr. part number
A4R119	322-3320-00			RES,FXD,FILM:21K OHM,1%,0.2W,TC=T0	80009	322-3320-00
A4R120	322-3385-00			RES,FXD:MET FILM;100K OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	57668	CRB20 FXE 100K
A4R121	322-3320-00			RES,FXD,FILM:21K OHM,1%,0.2W,TC=T0	80009	322-3320-00
A4R122	322-3289-00			RES,FXD:MET FILM;10K OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	80009	322-3289-00
A4R123	322-3289-00			RES,FXD:MET FILM;10K OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	80009	322-3289-00
A4R124	322-3281-00			RES,FXD:MET FILM;8.25K OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	80009	322-3281-00
A4R125	322-3193-00			RES,FXD:MET FILM;1K OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	57668	CRB20 FXE 1K00
A4R126	322-3193-00			RES,FXD:MET FILM;1K OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	57668	CRB20 FXE 1K00
A4R127	322-3193-00			RES,FXD:MET FILM;1K OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	57668	CRB20 FXE 1K00
A4R128	322-3193-00			RES,FXD:MET FILM;1K OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	57668	CRB20 FXE 1K00
A4R129	322-3126-00			RES,FXD,FILM:200 OHM,1%,0.2W,TC=T0	80009	322-3126-00
A4R130	322-3289-00			RES,FXD:MET FILM;10K OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	80009	322-3289-00
A4R131	301-0181-00			RES,FXD,FILM:180 OHM,5%,0.5W	80009	301-0181-00
A4R132	322-3385-00			RES,FXD:MET FILM;100K OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	57668	CRB20 FXE 100K
A4R133	322-3097-00			RES,FXD:MET FILM;100 OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	57668	CRB20 FXE 100E
A4R134	322-3097-00			RES,FXD:MET FILM;100 OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	57668	CRB20 FXE 100E
A4R135	322-3289-00			RES,FXD:MET FILM;10K OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	80009	322-3289-00
A4R136	307-0446-00			RES NTWK,FXD,FI:10K OHM,20%,(9)RES	80009	307-0446-00
A4R137	322-3097-00			RES,FXD:MET FILM;100 OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	57668	CRB20 FXE 100E
A4R138	322-3097-00			RES,FXD:MET FILM;100 OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	57668	CRB20 FXE 100E
A4R139	322-3097-00			RES,FXD:MET FILM;100 OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	57668	CRB20 FXE 100E
A4R140	322-3097-00			RES,FXD:MET FILM;100 OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	57668	CRB20 FXE 100E
A4R141	322-3097-00			RES,FXD:MET FILM;100 OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	57668	CRB20 FXE 100E
A4R142	322-3097-00			RES,FXD:MET FILM;100 OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	57668	CRB20 FXE 100E
A4R143	322-3097-00			RES,FXD:MET FILM;100 OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	57668	CRB20 FXE 100E

Replaceable electrical parts list (Cont.)

Component number	Tektronix part number	Serial no. effective	Serial no. discont'd	Name & description	Mfr. code	Mfr. part number
A4R144	322-3097-00			RES,FXD:MET FILM;100 OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	57668	CRB20 FXE 100E
A4R145	311-2269-00			RES,VAR,NONWW:TRMR,20K OHM,20%,0.5W	80009	311-2269-00
A4R146	322-3251-00			RES,FXD,FILM:4.02K OHM,1%,0.2W,TC=T0	57668	CRB20 FXE 4K02
A4R147	322-3402-00			RES,FXD:MET FILM;150K OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	80009	322-3402-00
A4R148	322-3318-00			RES,FXD:MET FILM;20K OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	57668	CRB20 FXE 20K0
A4R149	322-3193-00			RES,FXD:MET FILM;1K OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	57668	CRB20 FXE 1K00
A4R150	322-3193-00			RES,FXD:MET FILM;1K OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	57668	CRB20 FXE 1K00
A4R151	322-3001-00			RES,FXD:MET FILM;10 OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	80009	322-3001-00
A4R152	322-3193-00			RES,FXD:MET FILM;1K OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	57668	CRB20 FXE 1K00
A4R153	322-3193-00			RES,FXD:MET FILM;1K OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	57668	CRB20 FXE 1K00
A4R154	322-3402-00			RES,FXD:MET FILM;150K OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	80009	322-3402-00
A4R155	322-3254-00			RES,FXD,FILM:4.32K OHM,1%,0.2W,TC=T0	80009	322-3254-00
A4R156	311-2269-00			RES,VAR,NONWW:TRMR,20K OHM,20%,0.5W	80009	311-2269-00
A4R157	322-3326-00			RES,FXD,FILM:24.3K OHM,1%,0.2W,TC=T0	91637	CCF50-2F24301F
A4R158	322-3318-00			RES,FXD:MET FILM;20K OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	57668	CRB20 FXE 20K0
A4R159	322-3001-00			RES,FXD:MET FILM;10 OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	80009	322-3001-00
A4R160	322-3097-00			RES,FXD:MET FILM;100 OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	57668	CRB20 FXE 100E
A4R161	322-3097-00			RES,FXD:MET FILM;100 OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	57668	CRB20 FXE 100E
A4R162	322-3097-00			RES,FXD:MET FILM;100 OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	57668	CRB20 FXE 100E
A4R163	322-3097-00			RES,FXD:MET FILM;100 OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	57668	CRB20 FXE 100E
A4R164	322-3097-00			RES,FXD:MET FILM;100 OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	57668	CRB20 FXE 100E
A4R165	322-3097-00			RES,FXD:MET FILM;100 OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	57668	CRB20 FXE 100E
A4R166	322-3001-00			RES,FXD:MET FILM;10 OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	80009	322-3001-00
A4R167	322-3162-00			RES,FXD:MET FILM;475 OHM,1%,0.2W,TC=100 PPM;AX-IAL,T&R,SM BODY	80009	322-3162-00
A4R168	322-3212-00			RES,FXD,FILM:1.58K OHM,1%,0.2W,TC=T0	57668	CRB20 FXE 1K58
A4R169	322-3212-00			RES,FXD,FILM:1.58K OHM,1%,0.2W,TC=T0	57668	CRB20 FXE 1K58

Replaceable electrical parts list (Cont.)

Component number	Tektronix part number	Serial no. effective	Serial no. discont'd	Name & description	Mfr. code	Mfr. part number
A4R170	322-3320-00			RES,FXD,FILM:21K OHM,1%,0.2W,TC=T0	80009	322-3320-00
A4R171	322-3385-00			RES,FXD:MET FILM:100K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	57668	CRB20 FXE 100K
A4R172	322-3320-00			RES,FXD,FILM:21K OHM,1%,0.2W,TC=T0	80009	322-3320-00
A4R173	322-3336-00			RES,FXD,FILM:30.9K OHM,1%,0.2W,TC=T0	91637	CCF50-2F30901F
A4R174	322-3385-00			RES,FXD:MET FILM:100K OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	57668	CRB20 FXE 100K
A4R175	322-3097-00			RES,FXD:MET FILM:100 OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	57668	CRB20 FXE 100E
A4R176	322-3001-00			RES,FXD:MET FILM:10 OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	80009	322-3001-00
A4R177	322-3001-00			RES,FXD:MET FILM:10 OHM,1%,0.2W,TC=100 PPM;AXIAL,T&R,SM BODY	80009	322-3001-00
A4R178	322-3342-00			RES,FXD,FILM:35.7K OHM,1%,0.2W,TC=T0	57668	CRB20 FXE 35K7
A4U1	156-2460-00			IC,MISC:BIPOLAR,MOD/DEMOD;BALANCED;MC1496P,DIP14.3	04713	MC1496P
A4U2	165-2028-00			MICROCKT,LIN:SYNC SEP	80009	165-2028-00
A4U3	156-2256-00			IC,DGTL:HCMOS,GATE;QUAD 2-IN NAND;74HC00,DIP14.3,TUBE	80009	156-2256-00
A4U4	156-1335-00			IC,DGTL:LS TTL,MULTIVIBRATOR;DUAL RETRIG MONOSTABLE;96LS02,DIP16.3	80009	156-1335-00
A4U5	160-9050-01			IC,DGTL: *MOUNTING PARTS*	80009	160-9050-01
	136-0925-00			SKT,DIP: *END MOUNTING PARTS*	91506	224-AG30D
A4U6	160-9329-00			IC,DGTL:CMOS,PLD;EEPLD,16V8,25NS,45MA;16V8-25,DIP20.3,TUBE *MOUNTING PARTS*	80009	160-9329-00
	136-0752-00			SKT,PL-IN ELEK:MICROCKT,20 DIP *END MOUNTING PARTS*	09922	DILB20P-108
A4U7	156-0411-00			IC,LIN:BIPOLAR,COMPTR;QUAD,SGL SPLY,300NS;LM339N,DIP14.3	80009	156-0411-00
A4U8	156-2707-00			IC,DGTL:HCMOS,BFR;QUAD BFR,/OE,3-STATE;74HC125,DIP14.3,TUBE	80009	156-2707-00
A4U9	156-2009-00			IC,DGTL:HCMOS,FLIP FLOP;DUAL D-TYPE;74HC74,DIP14.3	80009	156-2009-00
A4U10	156-2256-00			IC,DGTL:HCMOS,GATE;QUAD 2-IN NAND;74HC00,DIP14.3	80009	156-2256-00
A4U11	160-9051-00			IC,PROCESSOR:CMOS,MICROCOMPTR;8-BIT,24MHZ,4K X 8 EPROM,128 X 8 RAM,DIP40.6 *MOUNTING PARTS*	80009	160-9051-00
	136-0757-00			SKT,DIP: *END MOUNTING PARTS*	09922	DILB40P-108
A4U12	156-2357-00			IC,DGTL:HCTCMOS,FLIP FLOP;OCTAL D-TYPE, NONINV,3-STATE;74HCT574,DIP20.3,TUBE	80009	156-2357-00

Replaceable electrical parts list (Cont.)

Component number	Tektronix part number	Serial no. effective	Serial no. discont'd	Name & description	Mfr. code	Mfr. part number
A4U13	156-2592-00			IC,DGTL:	80009	156-2592-00
A4U14	156-2584-00			IC,DGTL:HCMOS,FLIP FLOP:OCTAL D-TYPE, CLR:74HC273,DIP20.3,TUBE	80009	156-2584-00
A4U15	156-2026-00			IC,DGTL:HCMOS,GATE:QUAD 2-IN NOR;74HC02,DIP14.3	80009	156-2026-00
A4U16	156-0411-00			IC,LIN:BIPOLAR,COMPTR:QUAD,SGL SPLY,300NS;LM339N,DIP14.3	80009	156-0411-00
A4U17	156-2369-00			IC,DGTL:HCTCMOS,BFR/DRVR:OCTAL, DRVR, NONINV, 3-STATE;74HCT541,DIP20.3,TUBE	80009	156-2369-00
A4U19	156-1367-00			IC,CONV:CMOS,D/A:8 BIT,400NS,CUR OUT,MPU COMPAT-IBLE,MULTIPLYING;AD7524JN,DIP16.3	80009	156-1367-00
A4U21	156-3058-00			IC,DGTL:HCMOS,GATE:DUAL 4-IN NAND;74HC20,DIP14.3	80009	156-3058-00
A4U22	156-2463-00			IC,DGTL:HCMOS,GATE:QUAD 2-IN OR;74HC32,DIP14.3	18324	74HC32N
A4U23	156-1191-00			IC,LIN:BIFET,OP-AMP:DUAL;TL072CN/LF353N,DIP08.3	80009	156-1191-00
A4U24	156-1191-00			IC,LIN:BIFET,OP-AMP:DUAL;TL072CN/LF353N,DIP08.3	80009	156-1191-00
A4U25	156-2369-00			IC,DGTL:HCTCMOS,BFR/DRVR:OCTAL, DRVR, NONINV, 3-STATE;74HCT541,DIP20.3,TUBE	80009	156-2369-00
A4U28	156-2493-00			IC,CONV:	80009	156-2493-00
A4U29	156-2357-00			IC,DGTL:HCTCMOS,FLIP FLOP:OCTAL D-TYPE, NONINV, 3-STATE;74HCT574,DIP20.3,TUBE	80009	156-2357-00
A4U31	156-2356-00			IC,DGTL:HCTCMOS,LATCH:OCTAL D-TYPE,3-STATE;74HCT573,DIP20.3	80009	156-2356-00
A4U32	160-9049-00			IC,MEM:CMOS,EPROM;32K X 8 W/3-STATE OUT,27C256-250,DIP28.6	80009	160-9049-00
				MOUNTING PARTS		
	136-0755-00			SKT,DIP:	09922	DILB28P-108
				END MOUNTING PARTS		
A4U33	156-5526-00			MICROCKT,DGTL:CMOS,MICROCMPTTR,8 BIT	80009	156-5526-00
				MOUNTING PARTS		
	136-0871-00			SKT,PLCC:	80009	136-0871-00
				END MOUNTING PARTS		
A4U34	156-1430-00			IC,DGTL:CMOS,MISC;4-DIGIT LED DSPL CONT;74C911,DIP28.6,TUBE	27014	MM74C911 N
A4U35	156-2029-00			IC,MEM:NMOS,NVRAM;16 X 16, SER DATA;X2443,DIP8	60395	X2444P
				MOUNTING PARTS		
	136-0727-00			SKT,PL-IN ELEK:MICROCKT,8 CONTACT	09922	DILB8P-108
				END MOUNTING PARTS		
A4U36	156-1366-00			IC,CONV:CMOS,D/A;8 BIT,150NS,CUR OUT,MULTIPLY-ING;AD7523JN,DIP16.3	24355	AD11/296
A4U37	156-0259-00			IC,LIN:	80009	156-0259-00
A4U38	156-1126-00			IC,LIN:BIPOLAR,COMPTR:OPEN COLL,200NS;LM311N,DIP08.3	80009	156-1126-00

Replaceable electrical parts list (Cont.)

Component number	Tektronix part number	Serial no. effective	Serial no. discont'd	Name & description	Mfr. code	Mfr. part number
A4U39	156-1366-00			IC, CONV: CMOS, D/A; 8 BIT, 150NS, CUR OUT, MULTIPLY-ING; AD7523JN, DIP16.3	24355	AD11/296
A4U40	156-1150-00			IC, LIN: BIPOLAR, VR; NEG, -5.0V, 100MA, 4%; MC79L05ACP, TO-92	80009	156-1150-00
A4U41	156-0991-00			IC, LIN: BIPOLAR, VR; POS, 5.0V, 100MA, 5%; MC78L05ACP, TO-92	80009	156-0991-00
A4U42	156-2029-00			IC, MEM: NMOS, NVRAM; 16 X 16, SER DATA; X2443, DIP8	60395	X2444P
	136-0727-00			*MOUNTING PARTS* SKT, PL-IN ELEK: MICROCKT, 8 CONTACT *END MOUNTING PARTS*	09922	DILB8P-108
A4U43	156-1191-00			IC, LIN: BIFET, OP-AMP; DUAL; TL072CN/LF353N, DIP08.3	80009	156-1191-00
A4U44	156-0534-00			IC, LIN:	02735	CA3102E-98
A4U45	156-0534-00			IC, LIN:	02735	CA3102E-98
A4U46	156-1191-00			IC, LIN: BIFET, OP-AMP; DUAL; TL072CN/LF353N, DIP08.3	80009	156-1191-00
A4U47	156-1191-00			IC, LIN: BIFET, OP-AMP; DUAL; TL072CN/LF353N, DIP08.3	80009	156-1191-00
A4W1	131-0566-00			BUS, CNDCT: DUM RES, 0.094 OD X 0.225 L	80009	131-0566-00
A4Y1	158-0244-00			XTAL UNIT, QTZ: 24MHZ 0.01%, SER RESONANT	80009	158-0244-00
A4Y2	158-0300-00			XTAL UNIT, QTZ: 12 MHZ, 0.05%, SER RESONANT	80009	158-0300-00

Replaceable Electrical Parts

Replaceable electrical parts list (Cont.)

Component number	Tektronix part number	Serial no. effective	Serial no. discontin'd	Name & description	Mfr. code	Mfr. part number
A5	671-2481-00			CIRCUIT BD ASSY:BNC	80009	671-2481-00
A5J141	131-1097-00			CONN,RF JACK:	80009	131-1097-00
A5J243	131-0391-00			CONN,RF JACK:	80009	131-0391-00
A5J341	131-1097-00			CONN,RF JACK:	80009	131-1097-00
A5J401	131-1097-00			CONN,RF JACK:	80009	131-1097-00
A5J411	131-1097-00			CONN,RF JACK:	80009	131-1097-00
A5J421	131-1097-00			CONN,RF JACK:	80009	131-1097-00
A5J431	131-1097-00			CONN,RF JACK:	80009	131-1097-00
A5J441	131-1097-00			CONN,RF JACK:	80009	131-1097-00
A5J451	131-1097-00			CONN,RF JACK:	80009	131-1097-00
A5J601	131-1097-00			CONN,RF JACK:	80009	131-1097-00
A5J611	131-1097-00			CONN,RF JACK:	80009	131-1097-00
A5J621	131-1097-00			CONN,RF JACK:	80009	131-1097-00
A5J631	131-1097-00			CONN,RF JACK:	80009	131-1097-00
A5J641	131-1097-00			CONN,RF JACK:	80009	131-1097-00
A5J651	131-1097-00			CONN,RF JACK:	80009	131-1097-00
A5L500	108-0682-00			COIL,RF:FXD,61NH	80009	108-0682-00
A5L501	108-0682-00			COIL,RF:FXD,61NH	80009	108-0682-00
A5L510	108-0682-00			COIL,RF:FXD,61NH	80009	108-0682-00
A5L511	108-0682-00			COIL,RF:FXD,61NH	80009	108-0682-00
A5L520	108-0682-00			COIL,RF:FXD,61NH	80009	108-0682-00
A5L521	108-0682-00			COIL,RF:FXD,61NH	80009	108-0682-00
A5L530	108-0682-00			COIL,RF:FXD,61NH	80009	108-0682-00
A5L531	108-0682-00			COIL,RF:FXD,61NH	80009	108-0682-00
A5L540	108-0682-00			COIL,RF:FXD,61NH	80009	108-0682-00
A5L541	108-0682-00			COIL,RF:FXD,61NH	80009	108-0682-00
A5L550	108-0682-00			COIL,RF:FXD,61NH	80009	108-0682-00
A5L551	108-0682-00			COIL,RF:FXD,61NH	80009	108-0682-00
A5R145	322-3239-00			RES,FXD,FILM:3.01K OHM,1%,0.2W,TC=T0	57668	CRB20 FXE 3K01
A5W241	131-0566-00			BUS,CNDCT:DUM RES,0.094 OD X 0.225 L	80009	131-0566-00
B100	119-4038-01			FAN,DC:	80009	119-4038-01
V1	154-0930-00			ELECTRON TUBE: (STANDARD ONLY)	80009	154-0930-00
V1	154-0930-16			ELECTRON TUBE:T4655-4-310 (OPTION 74 ONLY)	80009	154-0930-16



Diagrams

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).

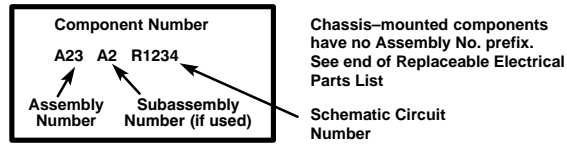
Resistors = Ohms (Ω).

The following information and special symbols may appear in this manual.

Assembly Numbers

Each assembly in the instrument is assigned an assembly number (such as A20). The assembly number appears on the diagram (in circuit board outline), circuit board illustration title, and lookup table for the schematic diagram.

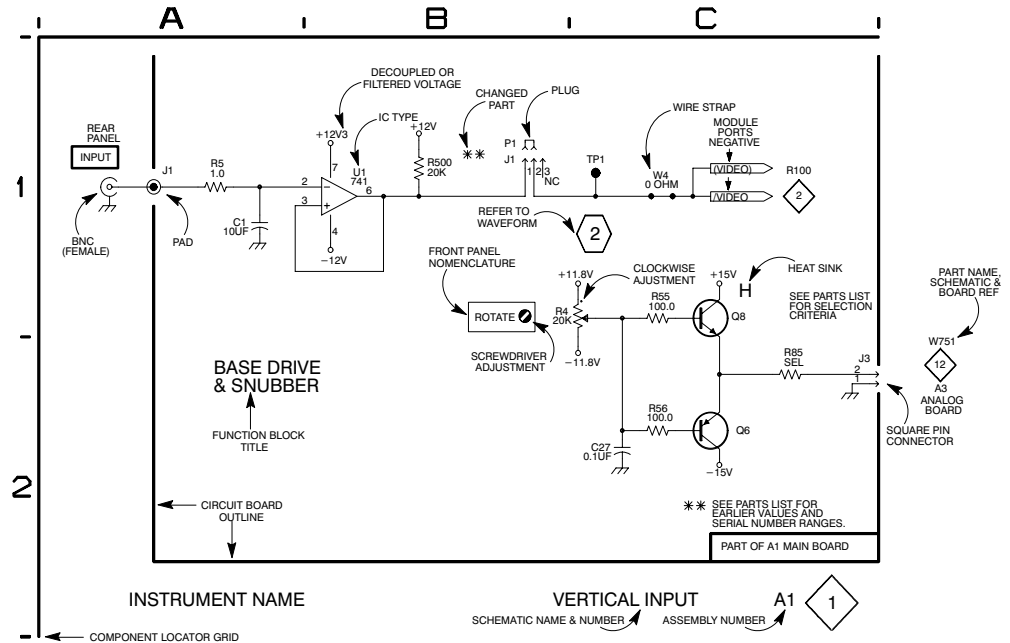
The Replaceable Electrical Parts List is arranged by assembly number in numerical sequence; the components are listed by component number. Example:



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.





Replaceable Mechanical Parts

Replaceable Mechanical Parts

This section contains a list of the replaceable mechanical components for the 1735 HD. 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.

Change information, if any, is located at the rear of this manual.

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
0KB01	STAUFFER SUPPLY	810 SE SHERMAN	PORTLAND OR 97214
06383	PANDUIT CORP	17301 RIDGELAND	TINLEY PARK IL 60477-3048
07416	NELSON NAME PLATE CO	3191 CASITAS	LOS ANGELES CA 90039-2410
12327	FREEWAY CORP	9301 ALLEN DR	CLEVELAND OH 44125-4632
18677	SCANBE MFG CO DIV OF ZERO CORP	3445 FLETCHER AVE	EL MONTE CA 91731
30817	INSTRUMENT SPECIALTIES CO INC	EXIT 53 RT 80	DELAWARE WATER GAP PA 18327
31918	ITT SCHADOW INC	8081 WALLACE RD	EDEN PRAIRIE MN 55344-2224
34785	DEK INC	3480 SWENSON AVE	ST CHARLES IL 60174-3450
70903	COOPER BELDEN ELECTRONICS WIRE AND CO SUB OF COOPER INDUSTRIES INC		
73743	FISCHER SPECIAL MFG CO	111 INDUSTRIAL RD	COLD SPRING KY 41076-9749
75915	LITTELFUSE INC SUB TRACOR 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	14150 SW KARL BRAUN DR 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
1-1	426-2102-02			1	FRAME,CRT:BEZEL *MOUNTING PARTS*	80009	426-2102-02
-2	211-0690-02			2	SCREW,MACHINE:6-32 X 0.875,PNH,SST *END MOUNTING PARTS*	TK1543	B20-70430
-3	366-0807-00			3	KNOB:GY,0.127 ID X 0.392 OD X 0.525 H	80009	366-0807-00
-4	333-3561-00			1	PANEL,FRONT:SMALL	80009	333-3561-00
-5	378-0258-00			1	FLTR,CONTRASTIN:GRAY,POLYCARBONATE	80009	378-0258-00
-6	348-0660-00			4	CUSHION,CRT:POLYURETHANE	80009	348-0660-00
-7	333-3834-00			1	PANEL,FRONT:1735HD *MOUNTING PARTS*	80009	333-3834-00
-8	211-0721-00			2	SCREW,MACHINE:6-32 X 0.375,PNH,STL *END MOUNTING PARTS*	83486	ORDER BY DESCR
-9	366-0807-00			5	KNOB:GY,0.127 ID X 0.392 OD X 0.525 H	80009	366-0807-00
-10	-----			1	CIRCUIT BD ASSY:LED (SEE A2A1 REPL)		
-11	-----			1	CIRCUIT BD ASSY:FRONT PANEL (SEE A2 REPL) *MOUNTING PARTS*		
-12	211-0721-00			4	SCREW,MACHINE:6-32 X 0.375,PNH,STL *END MOUNTING PARTS*	83486	ORDER BY DESCR
-13	366-0616-00			17	PUSH BUTTON:0.585 X 0.3 X 0.150	80009	366-0616-00
-14	426-2101-05			1	FRAME SECT,CAB:FRONT *MOUNTING PARTS*	80009	426-2101-05
-15	211-0721-00			3	SCREW,MACHINE:6-32 X 0.375,PNH,STL *END MOUNTING PARTS*	83486	ORDER BY DESCR
-16	260-2465-00			1	SWITCH,PUSH:0.4A,125VAC,W/SOLDER LUG,BUTTON W/ YELLOW INDICATOR *MOUNTING PARTS*	31918	602844
-17	210-0405-00			2	NUT,PLAIN,HEX:2-56 X 0.188,BRS CD PL	73743	12157-50
-18	211-0100-00			2	SCREW,MACHINE:2-56 X 0.750,PNH,STL *END MOUNTING PARTS*	83385	ORDER BY DESCR
-19	174-2648-00			1	CA ASSY,SP: (PWR SWITCH TO A1J3)	80009	174-2648-00
-20	-----			1	CIRCUIT BD ASSY:MAIN (SEE A3 REPL) *MOUNTING PARTS*		
-21	211-0721-00			8	SCREW,MACHINE:6-32 X 0.375,PNH,STL *END MOUNTING PARTS*	83486	ORDER BY DESCR

Replaceable mechanical parts list (Cont.)

Fig. & index number	Tektronix part number	Serial no. effective	Serial no. discontin'd	Qty	Name & description	Mfr. code	Mfr. part number
-22	-----			1	CIRCUIT BD ASSY:GRATICULE LIGHT (SEE A3A1 REPL)		
-23	337-3375-01			1	SHIELD,ELEC:CIRCUIT BD,POLYCARBONATE	80009	337-3375-01
-24	337-3802-00			1	SHIELD,ELEC:LEXAN *MOUNTING PARTS*	80009	337-3802-00
-25	211-0721-00			4	SCREW,MACHINE:6-32 X 0.375,PNH,STL *END MOUNTING PARTS*	83486	ORDER BY DESCR
-26	-----			1	CIRCUIT BD ASSY:POWER SUPPLY (SEE A1 REPL) *MOUNTING PARTS*		
-27	211-0721-00		B0020537	3	SCREW,MACHINE:6-32 X 0.375,PNH,STL	83486	ORDER BY DESCR
-27	211-0721-00	B0020538		2	SCREW,MACHINE:6-32 X 0.375,PNH,STL	83486	ORDER BY DESCR
-28	129-1410-00			4	SPACER,POST:	80009	129-1410-00
-29	210-0586-00			2	NUT,PL,ASSEM WA:4-40 X 0.25,STL CD PL	78189	211-041800-00
-30	211-0014-00			2	SCREW,MACHINE:4-40 X 0.5,PNH,STL *END MOUNTING PARTS*	93907	ORDER BY DESCR
-31	131-3573-00			1	CONN,PLUG,ELEC:MALE,W/LOCKING ADAPTER	80126	B-0779
-32	337-3821-00			1	SHIELD,ELEC:CKT BD,POLYCARBONATE SAF CONTROLLED	80009	337-3821-00
-33	175-9872-01			1	CA ASSY,SP,ELEC:2,18 AWG,2.5 L,0-N	80009	175-9872-01
-34	333-3835-00	B010100	B019999	1	PANEL,REAR:1735HD	80009	333-3835-00
	333-3835-01	B020000		1	PANEL,REAR:1735HD *MOUNTING PARTS*	80009	333-3835-01
-35	211-0721-00			2	SCREW,MACHINE:6-32 X 0.375,PNH,STL *END MOUNTING PARTS*	83486	ORDER BY DESCR
-36	361-1615-00			1	SPACER,FAN ASSY:ALUMINUM *MOUNTING PARTS*	80009	361-1615-00
-37	211-0721-00			2	SCREW,MACHINE:6-32 X 0.375,PNH,STL *END MOUNTING PARTS*	83486	ORDER BY DESCR
-38	378-0335-00			1	FILTER,AIR:1.6 X 1.6,30PPI,0.188 THK	80009	378-0335-00
-39	-----			1	FAN,DC: (SEE B100 REPL) *MOUNTING PARTS*		
-40	211-0020-00			2	SCREW,MACHINE:4-40 X 1.125,PNH,STL	TK0435	ORDER BY DESCR
-41	210-0586-00			2	NUT,PL,ASSEM WA:4-40 X 0.25,STL CD PL *END MOUNTING PARTS*	78189	211-041800-00
-42	361-1616-00			1	SPACER,FAN ASSY:ALUMINUM	80009	361-1616-00
-43	-----			1	CIRCUIT BD ASSY:BNC		

Replaceable Mechanical Parts

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
					(SEE A5 REPL)		
-44	174-1196-00			1	CA ASSY,SP,ELEC:24,28 AWG,11.0 L,RIBBON (REAR PANEL TO A4J3)	80009	174-1196-00
					MOUNTING PARTS		
-45	214-3903-01			4	SCREW,JACK:4-40 X 0.312 EXT THD,4-40 INT THD,0.188 HEX,STEEL,CAD PLATE	80009	214-3903-01
					END MOUNTING PARTS		
-46	174-1197-00			1	CABLE ASSY,RF:75 OHM COAX,15.0 L (REAR PANEL TO A3J4)	80009	174-1197-00
-47	174-1285-00			1	CABLE ASSY,RF:50 OHM COAX,4.125 L (A4J1 TO A5J243)	80009	174-1285-00
-48	200-2519-00			1	CAP,CRT SOCKET:NATURAL LEXAN	80009	200-2519-00
-49	426-2096-00			1	MOUNT,RESILIENT:CRT REAR	80009	426-2096-00
					MOUNTING PARTS		
-50	210-0457-00			2	NUT,PL,ASSEM WA:6-32 X 0.312,STL CD PL	78189	511-061800-00
					END MOUNTING PARTS		
-51	136-1187-00			1	SOCKET,CRT ASSY:1735HD	80009	136-1187-00
-52	198-5634-00			1	WIRE SET ELEC:	80009	198-5634-00
-53	346-0120-00			4	STRAP,TIEDOWN,E:5.5 L MIN,PLASTIC,WHITE	06383	SST1.5M
-54	337-3487-00			1	SHIELD,ELEC:CRT,STL	80009	337-3487-00
-55	334-1379-00			1	MARKER,IDENT:MKD HI VACUUM	07416	ORDER BY DESCR
-56	386-4443-00			1	SUPPORT,SHIELD:CRT,FRONT,PLASTIC	80009	386-4443-00
-57	-----			1	CIRCUIT BD ASSY:CONTROL (SEE A4 REPL)		
					MOUNTING PARTS		
-58	211-0721-00			3	SCREW,MACHINE:6-32 X 0.375,PNH,STL	83486	ORDER BY DESCR
					END MOUNTING PARTS		
-59	348-0171-00			1	GROMMET,PLASTIC:BLACK,U-SHAPED,0.276 ID	80009	348-0171-00
-60	351-0728-00			1	GUIDE,CKT BOARD:POLYCARBONATE,0.69 L	80009	351-0728-00
					MOUNTING PARTS		
-61	210-0586-00			1	NUT,PL,ASSEM WA:4-40 X 0.25,STL CD PL	78189	211-041800-00
					END MOUNTING PARTS		
-62	426-2452-00			1	FRAME,CHASSIS:1735HD	80009	426-2452-00
-63	211-0720-01		B0020537	2	SCREW,MACHINE:6-32 X 0.50,PNH,STL,TORX T-15 WITH SLOT	0KB01	211-0720-01
-63	211-0720-01	B0020538		3	SCREW,MACHINE:6-32 X 0.50,PNH,STL,TORX T-15 WITH SLOT	0KB01	211-0720-01
-64	129-1308-00	B0020538		1	SPACER,POST:6-32 X 0.75,HEX,STL,CAD PL		129-1308-00
-65	343-0013-00	B0020538		1	CLAMP,LOOP:0.375ID,PLASTIC SAFETY CONTROLLED		343-0013-00

Replaceable mechanical parts list (Cont.)

Fig. & index number	Tektronix part number	Serial no. effective	Serial no. discontinued	Qty	Name & description	Mfr. code	Mfr. part number
					STANDARD ACCESSORIES		
-66	161-0216-00			1	CABLE ASSY,PWR:3,18 AWG,2.5M L,BLACK (STANDARD ONLY)	80126	C7120-25M-BL
	070-8462-01			1	MANUAL,TECH:INSTR,1735HD,HDTV,MULTI-STANDARD	80009	070-8462-01
	150-0168-00			3	LAMP,INCAND:14V,0.08A,WEDGE BASE,T1.75 FOR SKT MOUNT	80009	150-0168-00
	159-0021-00			1	FUSE,CARTRIDGE:3AG,2A,250V,FAST BLOW	75915	312 002
	378-0335-00			3	FILTER,AIR:1.6 X 1.6,30PPI,0.188 THK	80009	378-0335-00
					OPTIONAL ACCESSORIES		
	161-0215-00			1	CABLE ASSY,PWR:3,0.75MU,2.5MM L,GREY (EUROPEAN OPTION A1 ONLY)	80009	161-0215-00
	161-0066-10			1	CABLE ASSY,PWR: (UNITED KINGDOM OPTION A2 ONLY)	TK1373	24230
	161-0066-11			1	CABLE ASSY,PWR:3,0.75MM,240V,96.0 L (AUSTRALIAN OPTION A3 ONLY)	80009	161-0066-11
	016-0475-00			1	VIEWING HOOD:	80009	016-0475-00
	200-3897-01			1	COVER,FRONT:1700F02,HOT STAMPED	80009	200-3897-01
	670-7981-00			1	CIRCUIT BD ASSY:EXTENDER	80009	670-7981-00
	-----			1	CAMERA,SCOPE:C9 (OPTION 20 ONLY)		
	-----			1	PLAIN,CASE:1700F00		
	-----			1	PTD CASE ASSY:1700F02		
	-----			1	RACK ADAPTER,SIDE-BY-SIDE:1700F05		
	-----			1	FILLER PANEL:1700F06		
	-----			1	DRAWER,UTILITY:1700F07		



Appendices

Appendix A: Options

This section describes instrument options and customer-installable Field Upgrade Kits for the 1735 HD.

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.

Power Cord Options

Any of the following power cord options can be ordered for the 1735 HD. If no power cord option is ordered, instruments are shipped with a North American 125 V power cord and one replacement fuse.

- | | |
|-----------|--|
| Option A1 | Universal Europe 220 V/16A Locking Power Plug
(Power cord and one replacement fuse) |
| Option A2 | United Kingdom 240 V/15A Power Plug
(Power cord and one replacement fuse) |
| Option A3 | Australian 240 V/10A Power Plug
(Power cord and one replacement fuse) |

Unless otherwise specified, 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 test house acceptable in the country to which the product is shipped. Power cord part numbers are shown on the pull-out in *Replaceable Mechanical Parts*.

Field Upgrade Kits

Cabinets All of the Safety and EMI tests used to qualify the 1735 HD were performed in a cabinet. There are two optional cabinets and a dual rack adapter available for the installation of these instruments.

For more information, refer to the cabinet installation drawings in *Installation*, or contact a Tektronix field office or distributor.

Plain Cabinet (1700F00). This plain, silver-grey cabinet is designed for permanent mounting. The ventilating holes in the top, bottom, and sides of the cabinet allow heat generated within the instrument to dissipate. When mounting, allow air to circulate freely through these holes.

Carrying Case (1700F02). This silver-grey metal cabinet, designed for portable applications, is equipped with feet, flipstand, carrying handle, and front panel cover.

Side-by-Side Rack Adapter (1700F05). This 19-inch rack-mounting adapter, which contains two 1700F00 cabinets, accepts two 1700 Series instruments side by side.

Blank Panel (1700F06). When only one side of a 1700F05 is used, this blank panel can be installed in the other half, to improve appearance and protect air flow.

Utility Drawer (1700F07). When only one side of a 1700F05 dual rack adapter is used, an alternate to the 1700F06 blank panel is the 1700F07 utility drawer. This drawer provides over 1/3 cubic foot of storage space for accessories. The drawer kit includes a tray, which is permanently mounted to the 1700F05. The drawer opens and closes readily, unless latched for transport. The drawer can also be removed from the drawer tray by lifting up and out.

Ordering

These items can be ordered with the 1735 HD, or purchased through a Tektronix field office or distributor. When ordering, include both the name and number of the Field Upgrade Kits.

