Service Manual

Tektronix

TDS 310, TDS 320 & TDS 350
Two Channel Oscilloscopes

070-8570-05

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

This document applies for TDS 310, TDS 320, and TDS 350 Oscilloscopes with serial numbers B040100 and above.

Instrument Serial Numbers

Each instrument manufactured by Tektronix has a serial number on a panel insert or tag, or stamped on the chassis. The first letter in the serial number designates the country of manufacture. The last five digits of the serial number are assigned sequentially and are unique to each instrument. Those manufactured in the United States have six unique digits. The country of manufacture is identified as follows:

B010000	Tektronix, Inc., Beaverton, Oregon, USA
E200000	Tektronix United Kingdom, Ltd., London
J300000	Sony/Tektronix, Japan
H700000	Tektronix Holland, NV, Heerenveen, The Netherlands

Instruments manufactured for Tektronix by external vendors outside the United States are assigned a two digit alpha code to identify the country of manufacture (e.g., JP for Japan, HK for Hong Kong, IL for Israel, etc.).

Tektronix, Inc., P.O. Box 500, Beaverton, OR 97077

Printed in U.S.A.

WARRANTY

Tektronix warrants that this product will be free from defects in materials and workmanship for a period of three (3) years from the date of shipment. If any such product proves defective during this warranty period, Tektronix, at its option, either will repair the defective product without charge for parts and labor, or will provide a replacement in exchange for the defective product.

In order to obtain service under this warranty, Customer must notify Tektronix of the defect before the expiration of the warranty period and make suitable arrangements for the performance of service. Customer shall be responsible for packaging and shipping the defective product to the service center designated by Tektronix, with shipping charges prepaid. Tektronix shall pay for the return of the product to Customer if the shipment is to a location within the country in which the Tektronix service center is located. Customer shall be responsible for paying all shipping charges, duties, taxes, and any other charges for products returned to any other locations.

This warranty shall not apply to any defect, failure or damage caused by improper use or improper or inadequate maintenance and care. Tektronix shall not be obligated to furnish service under this warranty a) to repair damage resulting from attempts by personnel other than Tektronix representatives to install, repair or service the product; b) to repair damage resulting from improper use or connection to incompatible equipment; or c) to service a product that has been modified or integrated with other products when the effect of such modification or integration increases the time or difficulty of servicing the product.

THIS WARRANTY IS GIVEN BY TEKTRONIX WITH RESPECT TO THIS PRODUCT IN LIEU OF ANY OTHER WARRANTIES, EXPRESSED OR IMPLIED. TEKTRONIX AND ITS VENDORS DISCLAIM ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. TEKTRONIX' RESPONSIBILITY TO REPAIR OR REPLACE DEFECTIVE PRODUCTS IS THE SOLE AND EXCLUSIVE REMEDY PROVIDED TO THE CUSTOMER FOR BREACH OF THIS WARRANTY. TEKTRONIX AND ITS VENDORS WILL NOT BE LIABLE FOR ANY INDIRECT, SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES IRRESPECTIVE OF WHETHER TEKTRONIX OR THE VENDOR HAS ADVANCE NOTICE OF THE POSSIBILITY OF SUCH DAMAGES.

Table of Contents

Performance Verification

Adjustment Procedures

Maintenance

Options

Electrical Parts List

Diagrams

Mechanical Parts List

List of Figures

List of Tables

Safety Summary

Please take a moment to review these safety precautions. We provide them for your protection and to prevent damage to the oscilloscope. This safety information applies to all operators and service personnel.

Symbols and Terms

These two terms appear in manuals:

- CAUTION statements identify conditions or practices that could result in damage to the equipment or other property.
- WARNING statements identify conditions or practices that could result in personal injury or loss of life.

These two terms appear on equipment:

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

This symbol appears in manuals:

Static-Sensitive Devices

These symbols appear on equipment:

DANGER
High Voltage

Protective
ground (earth)
terminal

ATTENTION
Refer to
manual

Specific Precautions

Observe all the following precautions to ensure your personal safety and to prevent damage to either the oscilloscope or equipment connected to it.

Do Not Perform Service While Alone

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

Use Care When Servicing With Power On

Dangerous voltages exist at several points in this product. To avoid personal injury, do not touch exposed connections or components while power is on. Disconnect power before removing protective panels, soldering, or replacing components.

Power Source

The TDS 310, TDS 320, and TDS 350 operate from a power source that does not apply more than 250 V_{RMS} between the supply conductors or between either supply conductor and ground. A protective ground connection, through the grounding conductor in the power cord, is essential for safe system operation.

Grounding the Oscilloscope

The oscilloscope is grounded through the power cord. To avoid electric shock, plug the power cord into a properly wired receptacle with an earth ground connection. Do this before making connections to the input or output terminals of the oscilloscope.

Without the protective ground connection, all parts of the oscilloscope are potential shock hazards. This includes knobs and controls that may appear to be insulators.

Use the Proper Power Cord

Use only the power cord and connector specified for your product. Use only a power cord that is in good condition.

Use the Proper Fuse

To avoid fire hazard, use only a fuse that meets all type, voltage, and current specifications on page 1-13.

Do Not Remove Covers or Panels

To avoid personal injury, do not operate the oscilloscope without the panels or covers.

Do Not Operate in Explosive Atmospheres

The oscilloscope provides no explosion protection from static discharges or arcing components. Do not operate the oscilloscope in an atmosphere of explosive gasses.

Electric Overload

Never apply a voltage to a connector on the oscilloscope that is outside the range specified for that connector.

Specifications

This section contains complete specifications for the TDS 310, TDS 320, and TDS 350. The specifications are divided into three subsections, one for each of three classes of traits: *warranted characteristics, typical characteristics,* and *nominal traits*.

Warranted Characteristics

Warranted characteristics are described in terms of quantifiable performance limits that are warranted. This subsection lists only warranted characteristics.

NOTE

In these tables, those warranted characteristics that are checked in the Performance Tests*, starting on page 4-11, appear in* ***boldface type*** *under the column* **Name**.

Performance Conditions

The electrical characteristics found in these tables of warranted characteristics apply when the oscilloscope has been adjusted at an ambient temperature between +20° C and +30° C, has had a warm-up period of at least 20 minutes, and is operating at an ambient temperature between −10° C and +55° C (unless otherwise noted).

Table 1-1: Warranted Characteristics — Signal Acquisition System

Name	Description	
Accuracy, DC Voltage Measurement, Average Acquisition Mode	**Measurement Type**	**DC Accuracy**
	Average of ≥16 waveforms	±(2.0% × |(reading − Net Offset)| + Offset Accuracy + 0.1 div)
	Delta volts between any two averages of ≥16 waveforms acquired under the same setup and ambient conditions	±(2.0% × |reading| + 0.15 div + 0.3 mV)
Accuracy, DC Gain, Sample or Average Acquisition Modes	±2%	
Pulse Response, Peak Detect and Envelope Mode	**Sec/Div Setting**	**Minimum Pulse Width**
	5 s/div − 25 µs/div	10 ns
	TDS 310: 10 µs/div − 10 ns/div TDS 320: 10 µs/div − 5 ns/div TDS 350: 10 µs/div − 2.5 ns/div	The greater of 10 ns or .02 × sec/div setting

Table 1-1: Warranted Characteristics — Signal Acquisition System (Cont.)

Name	Description	
Accuracy, Offset	**Volts/Div Setting**	**Offset Accuracy**
	2 mV/div – 99.5 mV/div	±(0.4% × |Net Offset[1]| + 3 mV + 0.1 div × V/div setting)
	100 mV/div – 995 mV/div	±(0.4% × |Net Offset[1]| + 30 mV + 0.1 div × V/div setting)
	1 V/div – 10 V/div	±(0.4% × |Net Offset[1]| + 300 mV + 0.1 div × V/div setting)
Analog Bandwidth, DC Coupled	TDS 310: DC – ≥50 MHz TDS 320: DC – ≥100 MHz TDS 350: DC – ≥200 MHz; DC – ≥180 MHz for 2 mV/div	
Cross Talk (Channel Isolation)	≥100:1 at 50 MHz with equal Volts/Div settings on each channel	
Input Impedance, DC-Coupled	1 MΩ ±1% in parallel with 20 pF ±2.0 pF	
Input Voltage, Maximum	±400 V (DC + peak AC); derate at 20 dB/decade above 100 kHz to 13 V peak AC at 3 MHz and above	
Lower Frequency Limit, AC Coupled[2]	≤10 Hz	

[1]Net Offset = Offset – (Position × Volts/Div). Net offset is the voltage level at the center of the A-D converter dynamic range. Offset Accuracy is the accuracy of this voltage level.

[2]The AC Coupled Lower Frequency Limits are reduced by a factor of 10 when 10X, passive probes are used.

Table 1-2: Warranted Characteristics — Time Base System

Name	Description
Accuracy, Long Term Sample Rate and Delay Time	±100 ppm over any ≥1 ms interval
Accuracy, Delta Time Measurements[1, 2]	For single-shot acquisitions using sample acquisition mode and a bandwidth limit setting of FULL: ±(1 WI + 100 ppm × |Reading| + 0.6 ns) For repetitive acquisitions using average acquisition mode with ≥16 averages and a bandwidth limit setting of FULL: ±(1 WI + 100 ppm × |Reading| + 0.4 ns)

[1]For input signals ≥5 divisions in amplitude and a slew rate of ≥2.0 divisions/ns at the delta time measurement points. Signal must be acquired at a volts/division setting ≥5 mV/division.
[2]The WI (waveform interval) is the time between the samples in the waveform record. Also, see the footnotes for *Sample Rate Range* and *Equivalent Time or Interpolated Waveform Rates* in Table 1-11 on page 1-12.

Table 1-3: Warranted Characteristics — Triggering System

Name	Description	
Accuracy, Trigger Level, DC Coupled	**Trigger Source**	**Sensitivity**
	CH1 or CH2	±(3% of |Setting − Net Offset[1]| + 0.2 div × volts/div setting + Offset Accuracy)
	External	±(6% of |Setting| + 20 mV)
	External/10	±(6% of |Setting| 200 mV)
Sensitivity, Edge-Type Trigger, DC Coupled	**Trigger Source**	**Sensitivity**
	CH1 or CH2	TDS 310: 0.35 division from DC to 20 MHz, increasing to 1 div at 50 MHz
		TDS 320: 0.35 division from DC to 50 MHz, increasing to 1 div at 100 MHz
		TDS 350: 0.35 division from DC to 50 MHz, increasing to 1 div at 200 MHz
	External	TDS 310: 50 mV from DC to 20 MHz, increasing to 150 mV at 50 MHz
		TDS 320: 50 mV from DC to 50 MHz, increasing to 150 mV at 100 MHz
		TDS 350: 50 mV from DC to 50 MHz, increasing to 150 mV at 200 MHz
	External/10	TDS 310: 500 mV from DC to 20 MHz, increasing to 1.5 V at 50 MHz
		TDS 320: 500 mV from DC to 50 MHz, increasing to 1.5 V at 100 MHz
		TDS 350: 500 mV from DC to 50 MHz, increasing to 1.5 V at 200 MHz
Input Impedance, External Trigger	1 MΩ ±2% in parallel with 20 pF ±2 pF	
Maximum Input Voltage, External Trigger	±400 V (DC + peak AC); derate at 20 dB/decade above 100 kHz to 13 V peak AC at 3 MHz and above	

[1]Net Offset = Offset − (Position × Volts/Div). Net Offset is the voltage level at the center of the A-D converter dynamic range. Offset Accuracy is the accuracy of this voltage level.

Table 1-4: Power Requirements

Name	Description
Source Voltage and Frequency	90 to 132 VAC_{RMS}, continuous range, for 47 Hz through 440 Hz 132 to 250 VAC_{RMS}, continuous range, for 47 Hz through 63 Hz
Power Consumption	≤65 Watts (120 VA)

Table 1-5: Warranted Characteristics — Environmental, Safety, and Reliability

Name	Description
Atmospherics	Temperature: −10° C to +55° C, operating; −51° C to +71° C, non-operating Relative humidity: to 95%, at or below +40° C; to 75%, +41° C to +55° C Altitude: To 15,000 ft (4570 m), operating; to 40,000 ft (12190 m), non-operating
Dynamics	Random vibration: 0.31 g_{RMS}, from 5 to 500 Hz, 10 minutes each axis, operating; 2.46 g_{RMS}, from 5 to 500 Hz, 10 minutes each axis, non-operating
Emissions[1]	Meets or exceeds the requirements of the following standards: EN 50081−1 European Community Requirements EN 55022 radiated emissions EN 55022 Class B conducted emissions EN 60555−2 power harmonics VFG 0243 FCC Rules and Regulations, 47 CFR, Part 15, Subpart B, Class A
Susceptibility[2]	TDS 310 and TDS 320: ≤±0.2 division waveform displacement, or ≤0.4 division increase in p-p noise. TDS 350: ≤±0.2 division waveform displacement, or ≤0.4 division increase in p-p noise below 200 MHz. ≤±0.3 division waveform displacement, or ≤±0.6 division increase in p-p noise from 200 MHz to 500 MHz. The instruments are subjected to the EMI specified in the following standards: EN 50082−1 European Community Requirements IEC 801−3 radiated susceptibility IEC 801−4 fast transients IEC 801−5 AC surge

[1]To maintain emission requirements when connecting to the I/O interface of this oscilloscope, use only a high-quality, double-shielded (braid and foil) cable. The cable shield must have low impedance connections to both connector housings. The VGA cable must also have ferrite cores at either end. Acceptable cables are listed in Table 7-6 on page 7-4.

[2]Susceptibility test run with both channel inputs terminated with grounding caps, both channels set to 2 mV/Div, DC Coupling, the trigger source set to Line, the Acquisition Mode set to Peak Detect, and the time base set to 25 µs/Div.

Typical Characteristics

Typical characteristics are described in terms of typical or average performance. Typical characteristics are not warranted.

Table 1-6: Typical Characteristics — Signal Acquisition System

Name	Description			
Accuracy, DC Gain, Envelope Acquisition Mode	±3% for sec/div settings from 5 Sec/Div to 25 µsec/div; TDS 310: ±2% for sec/div settings from 10 µs/div to 10 ns/div; TDS 320: ±2% for sec/div settings from 10 µs/div to 5 ns/div; TDS 350: ±2% for sec/div settings from 10 µs/div to 2.5 ns/div			
Accuracy, DC Voltage Measurement, Sample Acquisition Mode	**Measurement Type**	**DC Accuracy**		
	Any Sample	±(2.0% × (|reading − Net Offset[1]|) + Offset Accuracy + 0.13 div + 0.6 mV)		
	Delta Volts between any two samples[2] acquired under the same set-up and ambient conditions	±(2.0% × |reading| + 0.26 div + 1.2 mV)		
Frequency Limit, Upper, 20 MHz Bandwidth Limited	20 MHz			
Step Response Settling Error	**Volts/Div Setting**	**Step Amplitude**	**Settling Error (%)[3]**	
			100 ns	**20 ms**
	2 mV/div − 99.5 mV/div	≤2 V	≤1.0	≤0.1
	100 mV/div − 995 mV/div	≤20 V	≤1.5	≤0.2
	1 V/div − 10 V/div	≤200 V	≤2.5	≤0.2
Common Mode Rejection Ratio (CMRR)	100:1 at 60 Hz, reducing to 20:1 at 50 MHz, with equal Volts/Div and Coupling settings on each channel.			

[1]Net Offset = Offset − (Position × Volts/Div). Net Offset is the voltage level at the center of the A-D converter dynamic range. Offset Accuracy is the accuracy of this voltage level.

[2]The samples must be acquired under the same setup and ambient conditions.

[3]The values given are the maximum absolute difference between the value at the end of a specified time interval after the mid-level crossing of the step, and the value one second after the mid-level crossing of the step, expressed as a percentage of the step amplitude.

Table 1-7: Typical Characteristics — Triggering System

Name	Description	
Error, Trigger Position, Edge Triggering	**Acquire Mode**	**Trigger-Position Error[1,2]**
	Sample, Average	±(1 WI + 2 ns)
	Peak Detect, Envelope	±(2 WI + 2 ns)
Sensitivity, Video-Type Trigger	**Source**	**Typical Sensitivity**
	CH1 or CH2 External External/10	0.6 division of video sync signal 75 mV of video sync signal 750 mV of video sync signal
Lowest Frequency for Successful Operation of "Set Level to 50%" Function	50 Hz	
Sensitivity, Edge Type Trigger, Not DC Coupled[3]	**Trigger Coupling**	**Typical Signal Level for Stable Triggering**
	AC	Same as DC-coupled limits[4] for frequencies above 60 Hz. Attenuates signals below 60 Hz.
	Noise Reject	Three and one half times the DC-coupled limits.[4]
	High Frequency Reject	One and one half times times the DC-coupled limits[4] from DC to 30 kHz. Attenuates signals above 30 kHz.
	Low Frequency Reject	One and one half times the DC-coupled limits[4] for frequencies above 80 kHz. Attenuates signals below 80 kHz.

[1]The trigger position errors are typically less than the values given here. These values are for triggering signals having a slew rate at the trigger point of ±0.5 division/ns.

[2]The waveform interval (WI) is the time between the samples in the waveform record. Also, see the footnote for the characteristics *Sample Rate Range* and *Equivalent Time or Interpolated Waveform Rates* in Table 1-11 on page 1-12.

[3]The minimum sensitivity for obtaining a stable trigger. A stable trigger results in a uniform, regular display triggered on the selected slope. The trigger point must not switch between opposite slopes on the waveform, and the display must not "roll" across the screen on successive acquisitions. The TRIG'D LED stays constantly lighted when the SEC/DIV setting is 2 ms or faster but may flash when the SEC/DIV setting is 10 ms or slower.

[4]See the characteristic *Sensitivity, Edge-Type Trigger, DC Coupled* in Table 1-3, which begins on page 1-5.

Table 1-8: Typical Characteristics — Probe Compensator Output

Name	Description	
Output Voltage and Frequency, Probe Compensator	**Characteristic**	
	Voltage	5.0 V (low-high) into a 1 MΩ load
	Frequency	1 kHz

Table 1-9: Typical Characteristics — Data Handling

Name	Description
Time, Data-Retention, Nonvolatile Memory[1,2]	≥5 Years

[1]The time that reference waveforms, stored setups, and calibration constants are retained when there is no power to the oscilloscope.

[2]Data is maintained by a lithium poly-carbon monofluoride battery.

Nominal Traits

Nominal traits are described using simple statements of fact such as “Two, identical” for the trait “Input Channels, Number of,” rather than in terms of limits that are performance requirements.

Table 1-10: Nominal Traits — Signal Acquisition System

Name	Description	
Bandwidth Selections	20 MHz and FULL	
Digitizers, Number of	Two, identical, digitized simultaneously	
Digitized Bits, Number of	8 bits[1]	
Input Channels, Number of	Two, identical, called CH 1 and CH 2	
Input Coupling	DC, AC, or GND	
Ranges, Offset, All Channels	**Volts/Div Setting**	**Offset Range**
	2 mV/div – 99.5 mV/div	±1 V
	100 mV/div – 995 mV/div	±10 V
	1 V/div – 10 V/div	±100 V
Range, Position	±5 divisions	
Range, Sensitivity[2]	2 mV/div to 10 V/div	
Rise Time	TDS 310: 7 ns TDS 320: 3.5 ns TDS 350: 1.75 ns	
TekProbe Interface	Level one probe coding	

[1]Displayed vertically with 25 digitization levels (DLs) per division and 10.24 divisions dynamic range with zoom off. A DL is the smallest voltage level change that the 8-bit A-D Converter can resolve, with the input scaled to the volts/division setting of the channel used. Expressed as a voltage, a DL is equal to 1/25 of a division times the volts/division setting.

[2]The sensitivity ranges from 2 mV/div to 10 V/div in a 1–2–5 sequence of coarse settings. Between consecutive coarse settings, the sensitivity can be finely adjusted with a resolution of 1% of the more sensitive setting. For example, between 50 mV/div and 100 mV/div, the volts/division can be set with 0.5 mV resolution.

Table 1-11: Nominal Traits — Time Base System

Name	Description
Range, Sample-Rate[1,2]	TDS 310: 10 Samples/s to 200 MSamples/s in a 1−2−5 sequence TDS 320: 10 Samples/s to 500 MSamples/s in a 1−2−5 sequence TDS 350: 10 Samples/s to 1 GSamples/s in a 1−2−5 sequence
Range, Seconds/Division	TDS 310: 10 ns/div to 5 s/div in a 1−2.5−5 sequence TDS 320: 5 ns/div to 5 s/div in a 1−2.5−5 sequence TDS 350: 2.5 ns/div to 5 s/div in a 1−2.5−5 sequence
Range, Time Base Delay Time	16.5 ns to 50 seconds
Record Length	1,000 samples

[1]The range of real-time rates, expressed in samples/second, at which a digitizer samples signals at its inputs and stores the samples in memory to produce a record of time-sequential samples

[2]The Waveform Rate (WR) is the equivalent sample rate of a waveform record. For a waveform record acquired by real-time sampling of a single acquisition, the waveform rate is the same as the real-time sample rate; for a waveform created by interpolation of real-time samples from a single acquisition or by equivalent-time sampling of multiple acquisitions, the waveform rate is faster than the real time sample rate. For all three cases, the waveform rate is 1/(Waveform Interval) for the waveform record, where the waveform interval (WI) is the time between the samples in the waveform record.

Table 1-12: Nominal Traits — Triggering System

Name	Description	
Range, Hold Off	500 ns minimum to 10 seconds maximum	
Ranges, Trigger Level	**Source**	**Range**
	Any Channel	±12 divisions from center of screen
	External	±1.5 Volts
	External /10	±15 Volts
	Line	±300 Volts
Formats and Field Rates, Video Trigger	Triggers from sync-negative composite video, 525 to 625 lines, 50 Hz to 60 Hz, interlaced or noninterlaced systems with scan rates from 15 kHz to 65 kHz − such as NTSC, PAL, or SECAM	
TekProbe Interface, External Trigger	Level one probe coding	

Table 1-13: Nominal Traits — Display System

Name	Description
CRT Type	7-inch (17.95 cm) diagonal, magnetic deflection; horizontal raster-scan; P31 green phosphor
Video Display Resolution	640 pixels horizontally by 480 pixels vertically Display area is 5.04 inch (12.92 cm) horizontally by 3.78 inch (9.69 cm) vertically
Waveform Display Graticule	A single graticule 401 × 501 pixels (8 × 10 divisions, with divisions that are approximately 1 cm by 1 cm)
Intensity Levels	Dim and Bright, with adjustable Overall Intensity and Contrast

Table 1-14: Nominal Traits — I/O Interface Option

Name	Description
GPIB	Part of Option 14 I/O interface or TD3F14A I/O interface field upgrade kit; complies with IEEE Std 488−1987
RS-232	Part of Option 14 I/O interface or TD3F14A I/O interface field upgrade kit; a 9-pin male DTE RS-232 interface that complies with EIA/TIA 574−90
Centronics	Part of Option 14 I/O interface or TD3F14A I/O interface field upgrade kit; a 25-pin, IBM PC-type, parallel printer interface that complies electrically with Centronics C332−44, Rev A
Video Signal Output (Option 14 Only) (TDS310 and TDS 350, B020100 and above; TDS 320, B030100 and above)	DB-9 rear panel Video connector; non-interlaced, with levels that comply with ANSI RS343A VGA compatible at a 30.6 kHz sync rate
Power Supply, Printer (Option 14 Only) (TDS310 and TDS 350, B020100 and above; TDS 320, B030100 and above)	Power supply connector to supply power to the Option 3P Printer Pack

Table 1-15: Nominal Traits — Power Distribution System

Name	Description
Fuse Rating	5 mm × 20 mm, (UL 198 G): 3 A Slow, 250 V, (IEC 127): 3.15 A (T), 250 V

Table 1-16: Nominal Traits — Safety Characteristics

Name	Description
Safety Certification	Listed UL 1244; Category Certified CAN/CSA−C22.2 No. 231 Series-M89

Table 1-17: Nominal Traits — Mechanical Characteristics

Name	Description
Weight	
Standard Instrument	6.8 kg (15 lbs) stand-alone instrument; 8.4 kg (18.5 lbs) with front cover, accessories, and accessories pouch installed; 12.7 kg (28 lbs) when packaged for domestic shipment
Rackmount Instrument	4.5 kg (10 lbs) for the rackmount conversion kit only; 7.5 kg (17.5 lbs) when kit is packaged for domestic shipment; 6.4 kg (14 lbs), plus weight of rackmount parts, for the rackmounted instrument (Option 1R); 14.5 kg (32 lbs) when the rackmounted instrument is packaged for domestic shipment
Overall Dimensions	
Standard Instrument (Figure 1-1)	Height: 191 mm (7.5 in) with feet and accessories pouch installed 165 mm (6.5 in) without the accessories pouch installed Width: 362 mm (14.25 in) with handle Depth: 471 mm (18.55 in) stand-alone instrument 490 mm (19.28 in) with front cover installed 564 mm (22.2 in) with handle extended
Rackmount Instrument	Height: 178 mm (7 in) Width: 483 mm (19 in) Depth: 472 mm (18.6 in) without handles; 517 mm (20.35 in) including handles

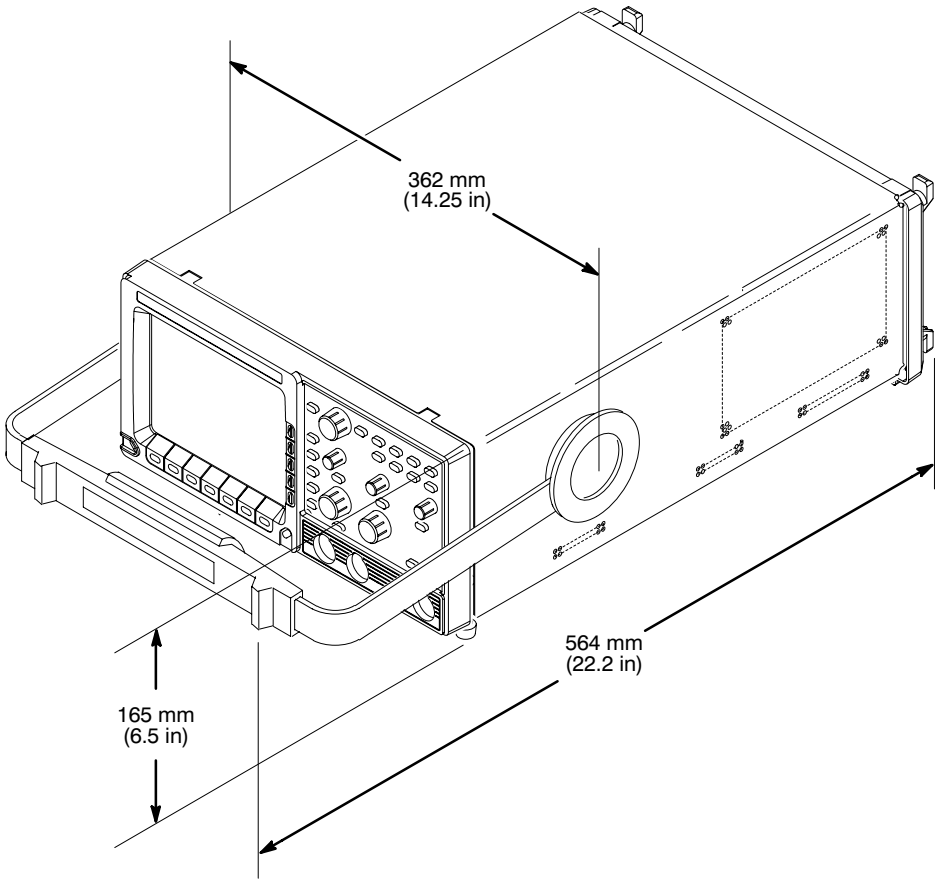


Figure 1-1: TDS 310, TDS 320, and TDS 350 Dimensions

Front Panel

TDS 300 Series oscilloscopes are simple to use. To reduce the clutter of knobs and buttons on the front panel (see Figure 2-1), many instrument control functions are menu driven. Use menus to access instrument functions that you typically set once before making measurements. Use knobs or buttons to control instrument functions that you most often adjust during measurements.

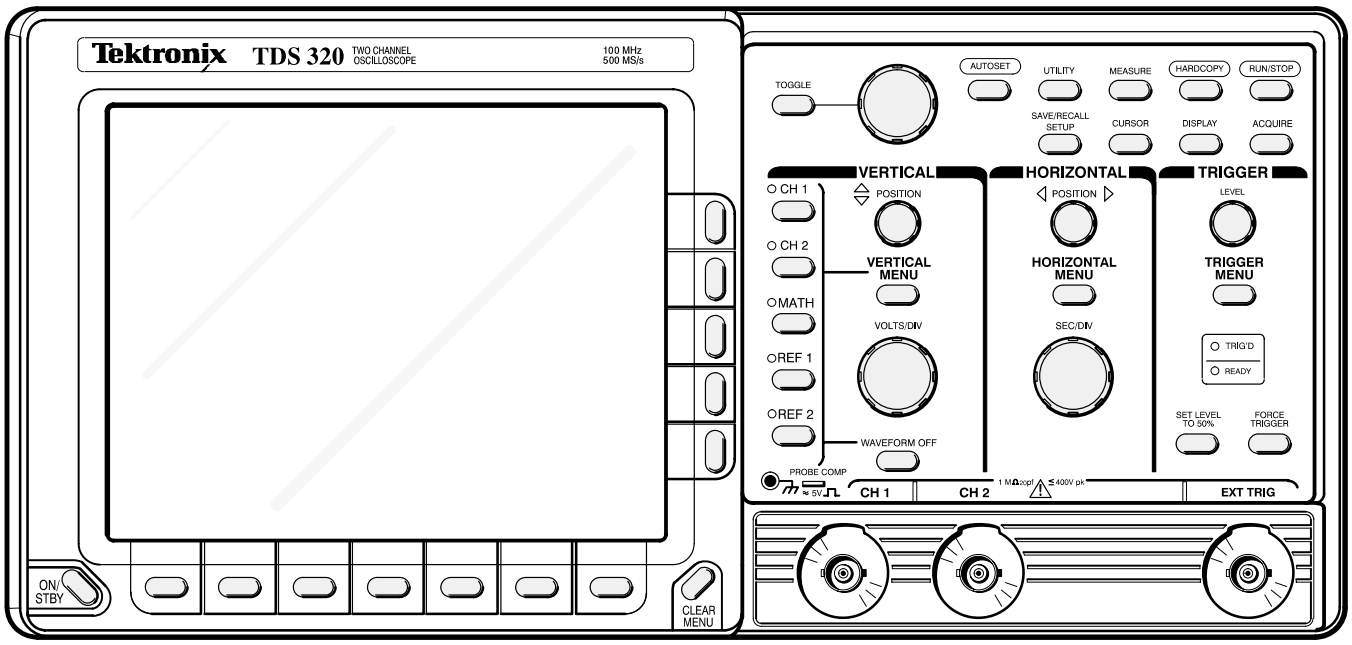
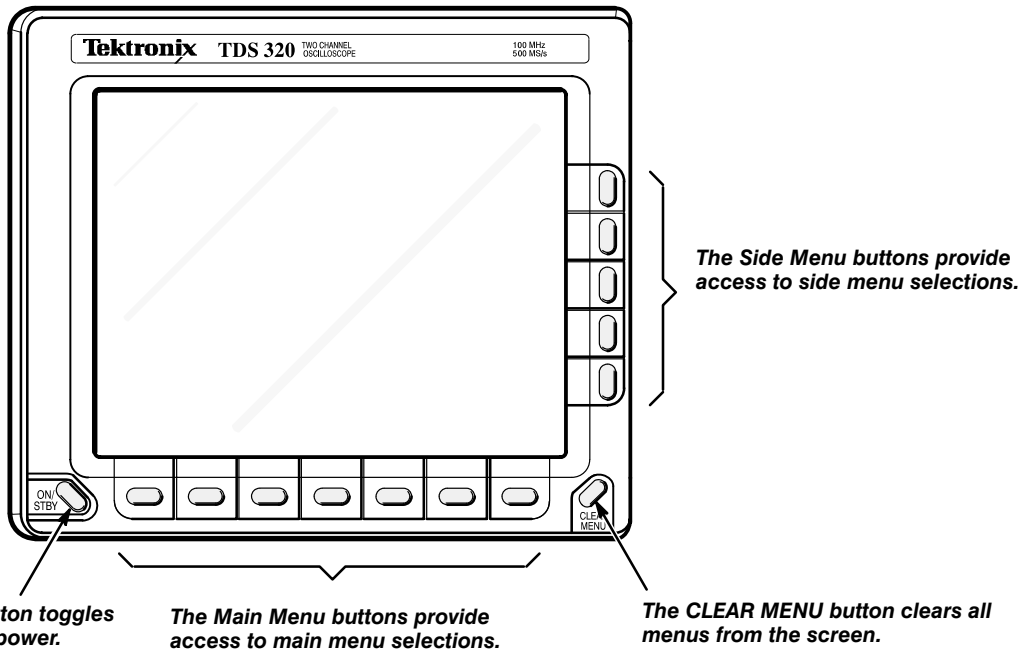


Figure 2-1: The TDS 320 Oscilloscope Front Panel

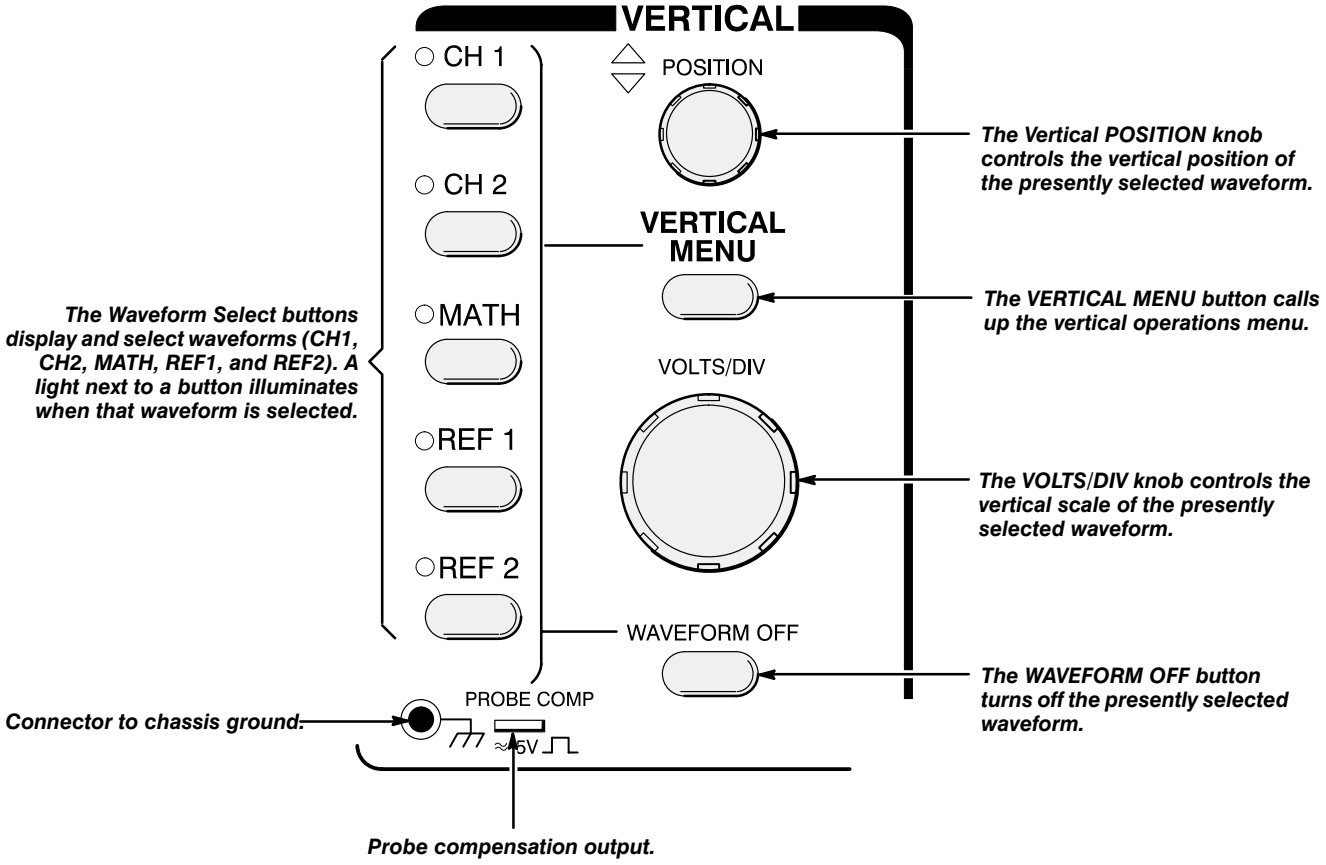
The menus are easy to use. For example, to make a change to the vertical operating system, press the **VERTICAL MENU** button to display the menu choices.

This section illustrates each control and connector and contains brief descriptions of its use or function.

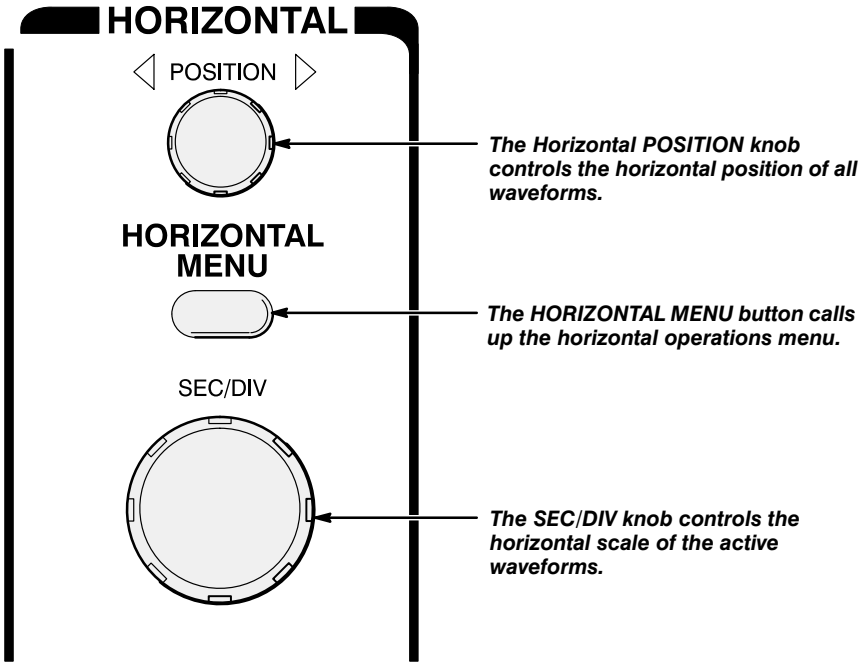
Display and Power Controls



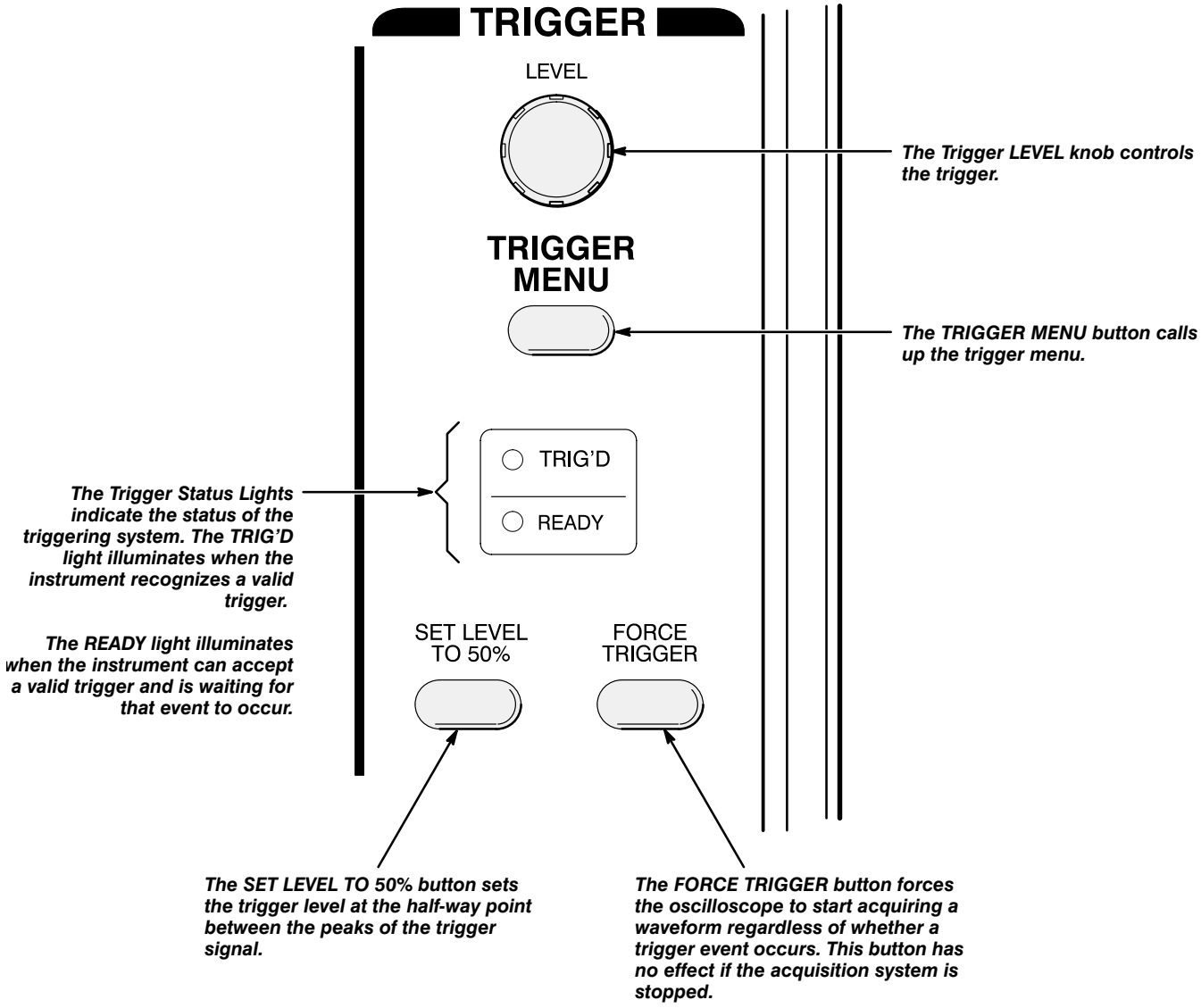
Vertical Controls



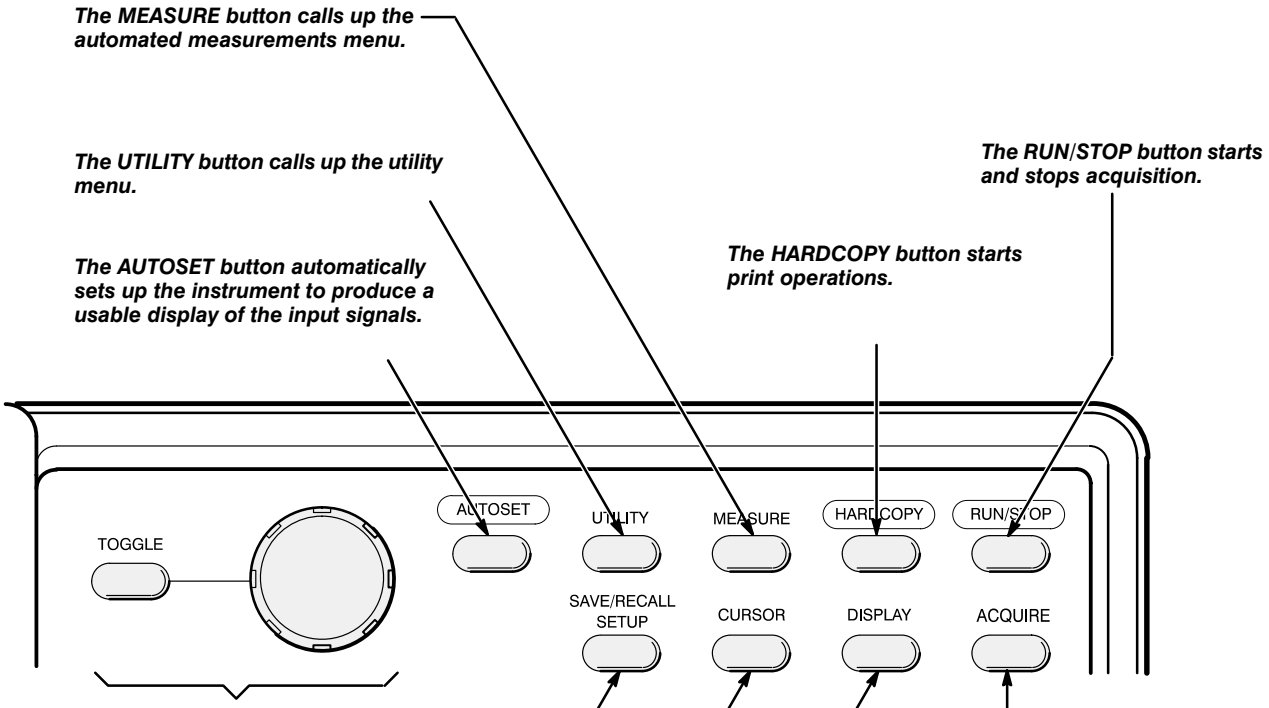
Horizontal Controls



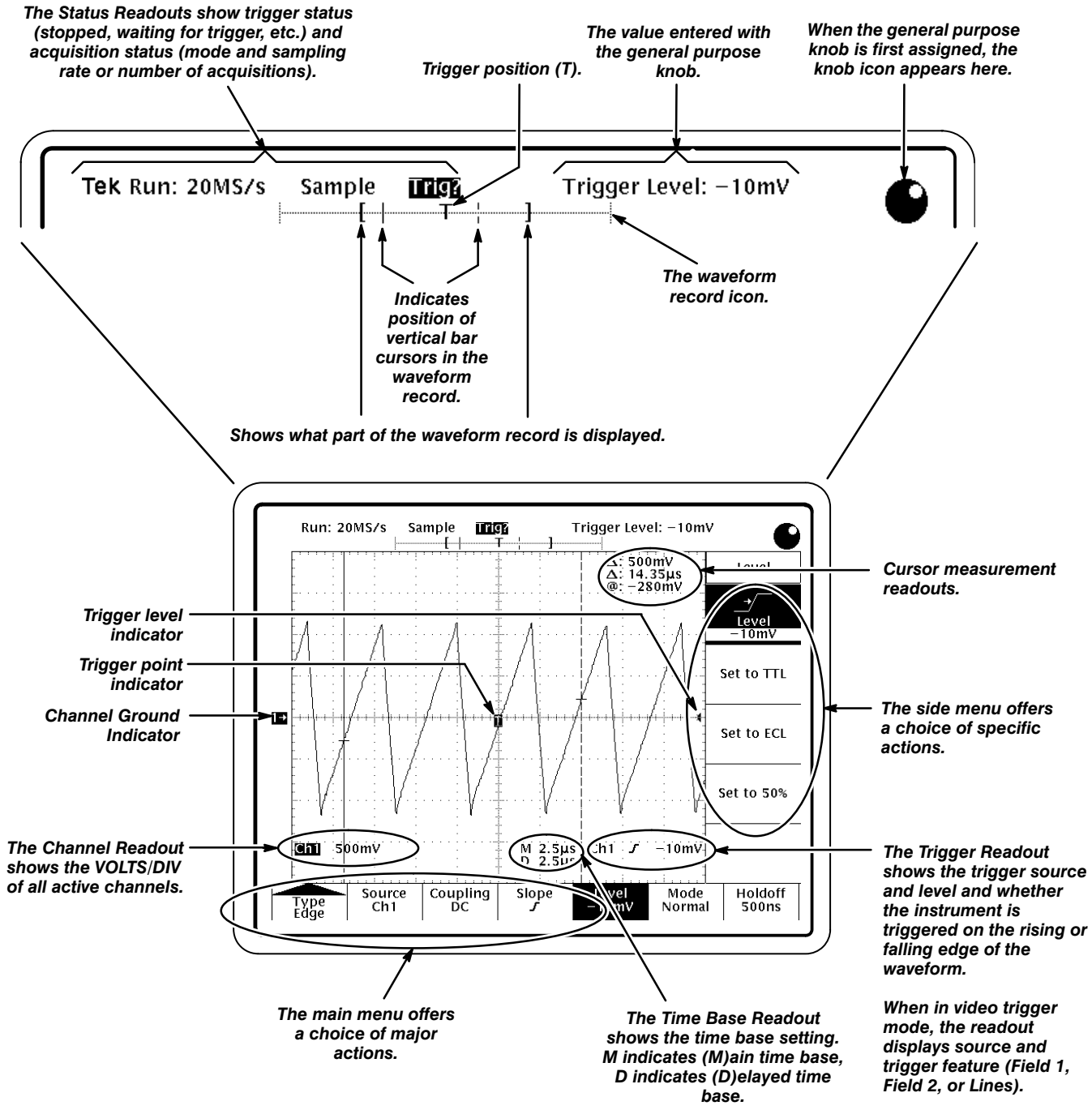
Trigger Controls



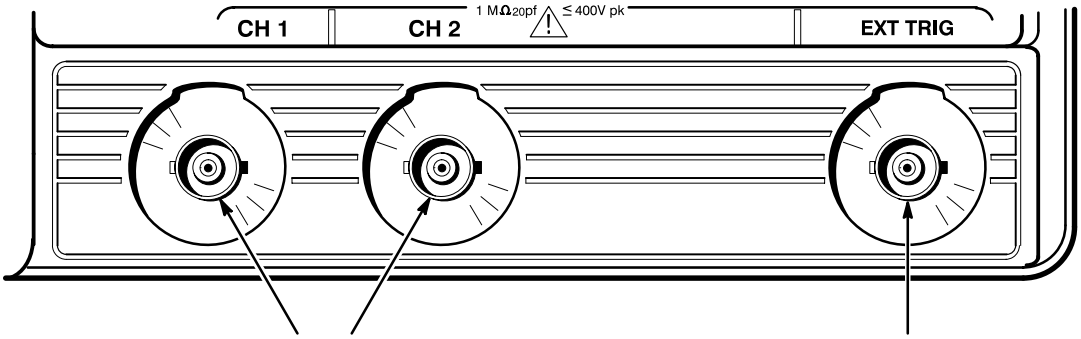
Miscellaneous Controls



Display Map



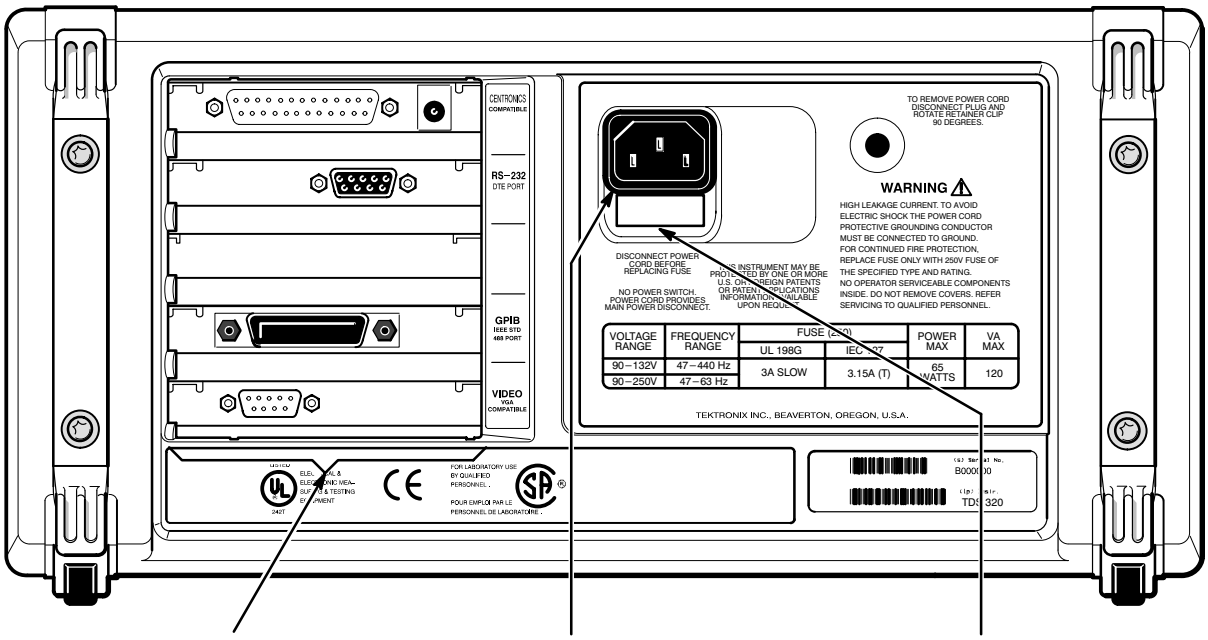
Inputs



The channel BNC inputs (CH1 and CH2) accept electrical signals for display.

The EXT TRIG input accepts external trigger signals.

Rear Panel



The Option 14 Panel (Option 14 instruments only) allows access to three communications interfaces: a Centronics parallel port, an RS-232 interface, and a GPIB interface. It also includes a VGA video compatible output port and a power connector for the Option 3P printer.

You can use the Centronics, RS-232, and GPIB interfaces to transmit hardcopy data.

You can use the GPIB and RS-232 interfaces to operate and program the oscilloscope from a GPIB controller; see the **TDS 310, 320, & 350 Programmer Manual** *for more information.*

The power connector accepts line voltage to power the instrument. See page 7-1 for a list of power cord and connector options.

The fuse drawer holds the line fuse. See page 6-9 for fuse replacement procedures.

Menu Maps

Most TDS 310, TDS 320, and TDS 350 features are menu driven. This section contains two menu maps: one of the primary functions (vertical, horizontal, and triggering functions) and one of the secondary functions (acquisition functions, utilities, and so on).

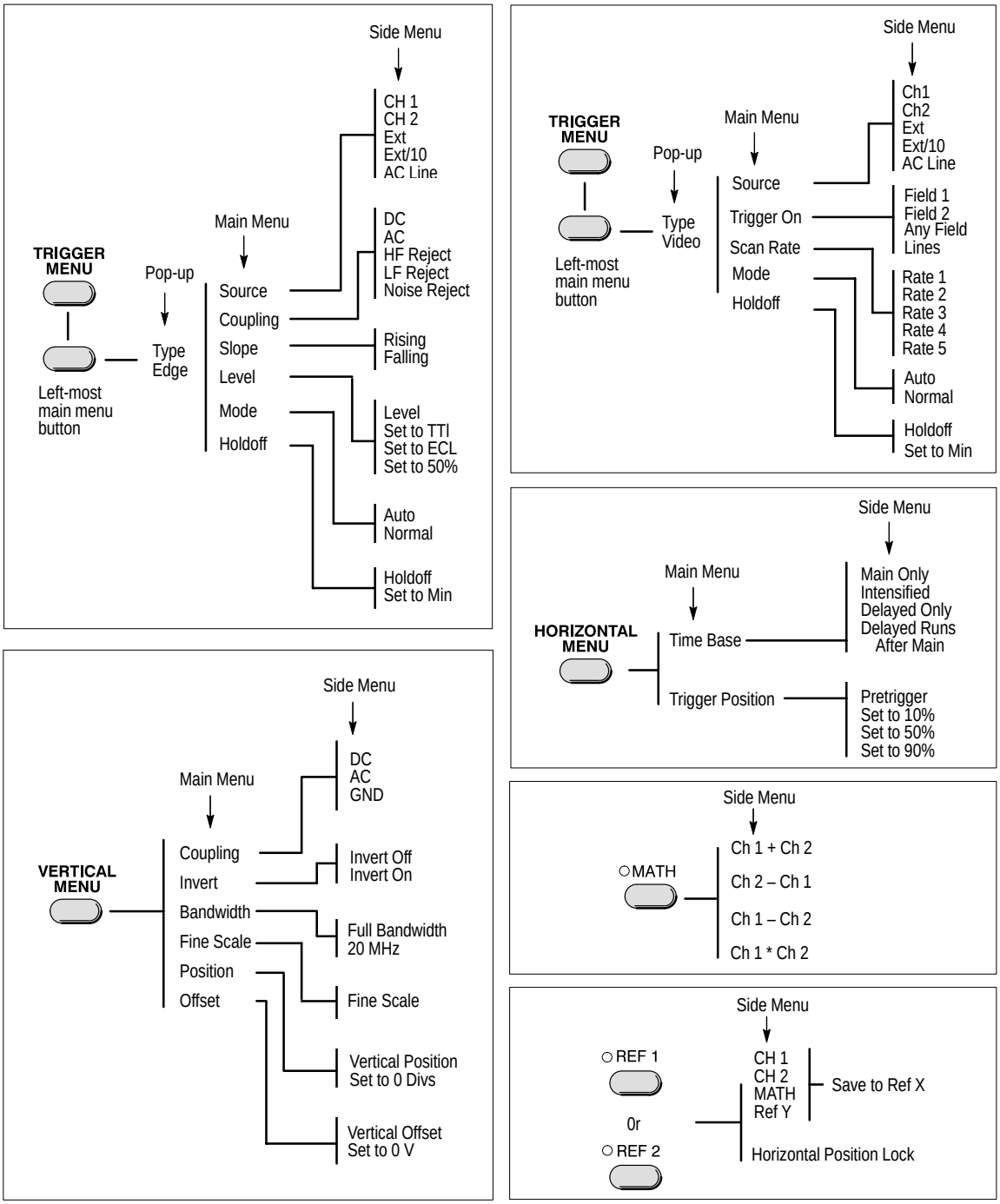


Figure 2-2: Primary Functions Menu Map

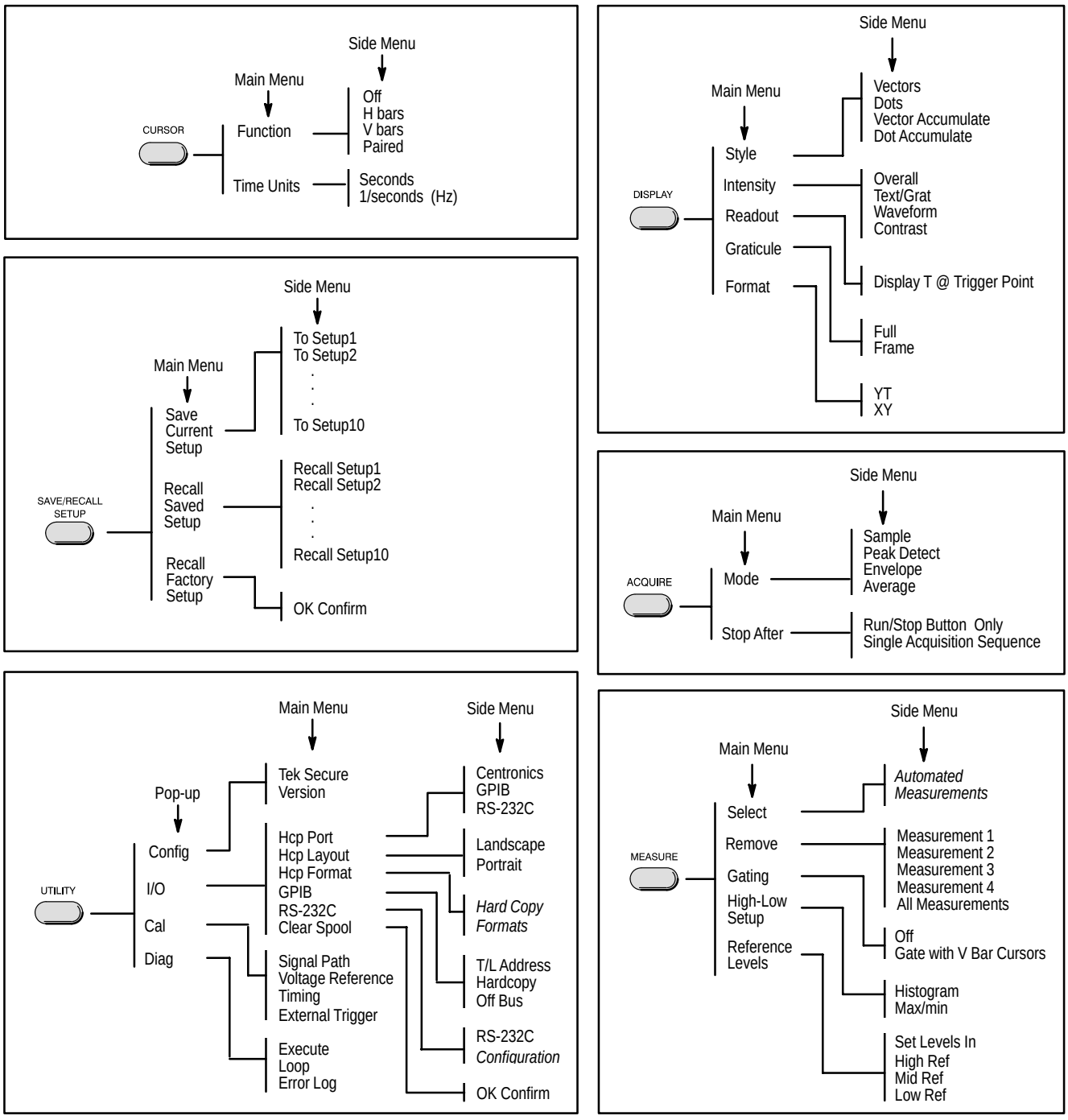


Figure 2-3: Secondary Functions Menu Map

Theory of Operation

This section describes the electrical operation of the oscilloscope. Refer to the schematics in the *Diagrams* section as necessary.

Logic Conventions

This manual refers to digital logic circuits with standard logic symbols and terms. Unless otherwise stated, all logic functions are described using the positive logic convention: the more positive of the two logic levels is the high (1) state and the more negative level is the low (0) state. Signal states may also be described as “true” meaning their active state or “false” meaning their non-active state. The specific voltages that constitute a high or low state vary among the electronic devices.

Active-low signals are indicated by a tilde (~) prefixed to the signal name (~RESET). Signal names are considered to be either active-high, active-low, or to have both active-high and active-low states.

Module Interconnection

Figures 3-1 and 3-2 show the interconnection paths between the modules of the oscilloscope.

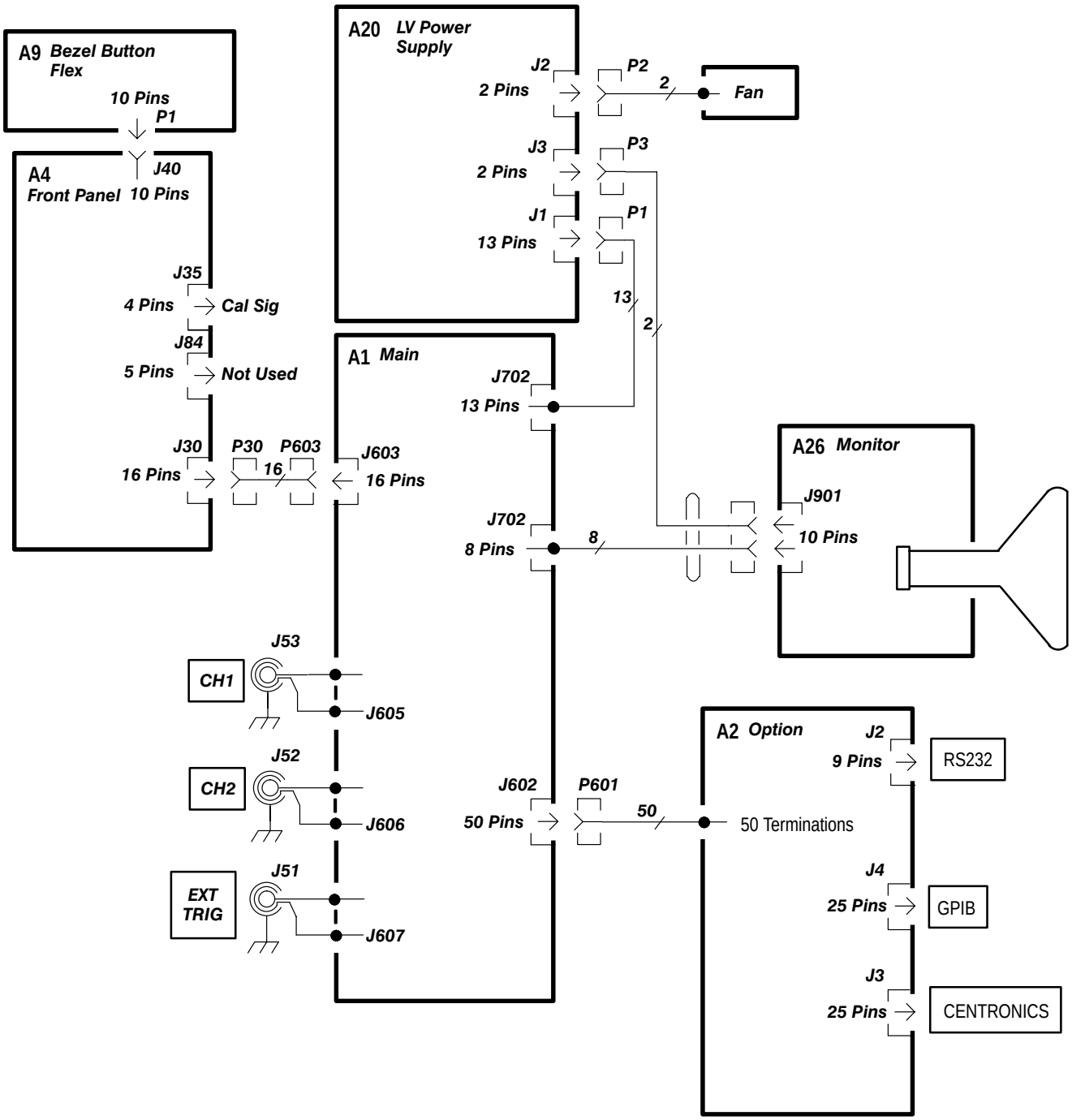


Figure 3-1: Block Diagram
(TDS 310, TDS 320, and TDS 350 SN B029999 and Below)

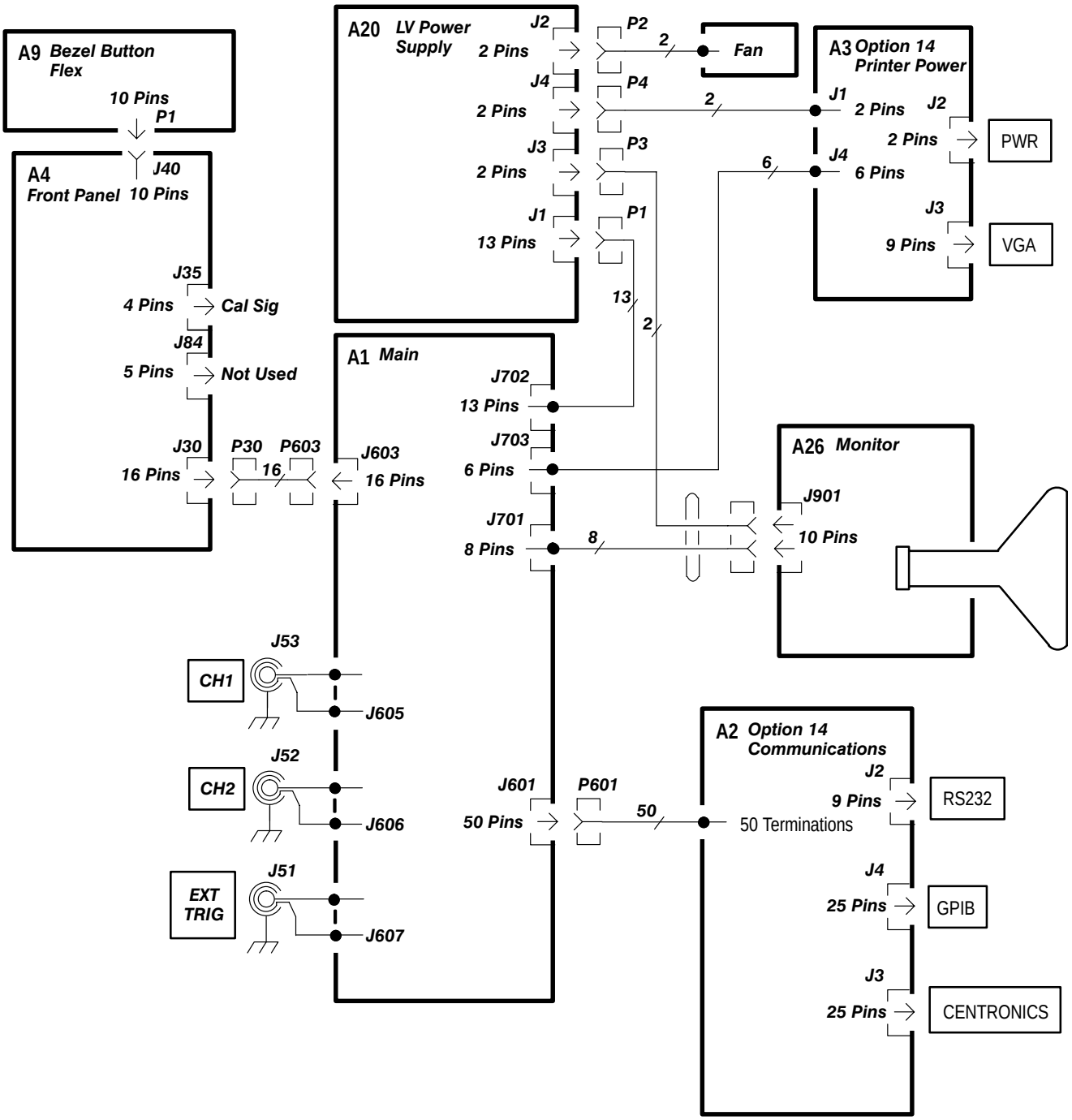


Figure 3-2: TDS 300 Block Diagram
(TDS 310, TDS 320, and TDS 350 SN B030100 and Above)

A1 Main Board

A signal enters the oscilloscope through a probe connected to a BNC on the A1 Main Board.

Attenuators A1 ◇2

Circuitry in the attenuator selects the input coupling and attenuation factor. The processor system controls the attenuators with a serial interface as well as through voltage changes with the daculator.

The Main Board assembly contains two attenuator hybrids, six relay drivers, and two probe connectors. Each attenuator hybrid contains resistive dividers, an AC coupling capacitor, relays and a preamplifier.

Probe Coding Interface

The probe coding interface signals pass through the Main Board to the A4 Front Panel, which converts the probe code voltage to a digital value.

Acquisition System

The acquisition system amplifies the input signals, samples them, converts them to digital signals, and controls the acquisition process under direction of the processor system. The acquisition system includes the trigger, acquisition timing, and acquisition control circuitry.

The sampler driver (U204) amplifies and acquires the analog signal supplied by the attenuators. The acquisition system converts the signal to digital and stores it in acquisition memory. The time base controller controls the acquisition process. The CPU monitors and controls the overall system, and transfers the acquired waveform to the display system. Figure 3-3 provides an overview of the acquisition system.

Attenuator A1 ◇2 — Each attenuator hybrid has 3 relays. The AC/DC coupling relay couples the output of the BNC to the other relays in the attenuator hybrid. For AC signals, the AC/DC coupling relay inserts a coupling capacitor into the input signal path. The second relay generates a calibration or ground signal. The third relay selects the attenuation factor (X1, X10, or X100).

Daculator A1 ◇2 — The daculator system provides DC voltage signals that set the offsets and variable gain control voltages for the attenuator hybrids and trigger levels. The CPU controls the daculator serially.

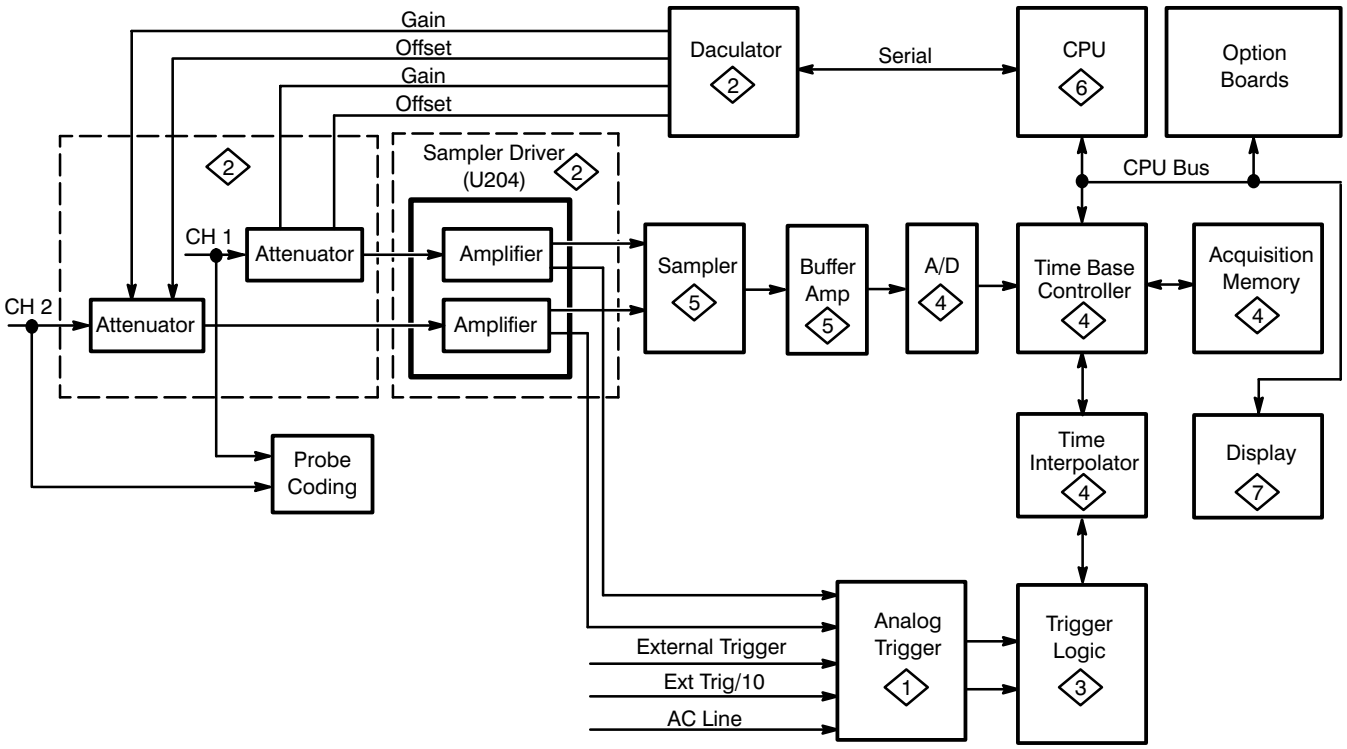


Figure 3-3: Acquisition System Block Diagram

Sampler Driver A1 ◇2 — The output of the attenuator drives the sampler driver inputs. The sampler driver provides gain amplification, bandwidth limit filters, and outputs for the sampler and trigger signal paths.

The CPU controls the sampler driver bandwidth limit.

The sampler driver is an integrated circuit containing a differential input. The sampler driver has a differential signal gain of 14X and a single-ended trigger signal gain of 2X.

Sampler A1 ◇5 — The sampler provides two acquisition channels. It contains analog acquisition memory and a heater circuit to provide temperature stabilization.

START/*STOP* tells the sampler when to start and stop acquiring data. *ACQINIT* tells the sampler to prepare for a new acquisition.

Buffer Amp — The buffer amp converts the differential output signal of the sampler to a single ended signal for use by the A/D converter.

A/D Converter A1 ◇4 — The A/D converter (U403) converts CH 1 and CH 2 analog samples from the sampler to 8 bit digital values. The A/D reference voltage is ±1.0 V.

Time Base Controller (TBC) A1 ◇4 — The time base controller (TBC) provides the horizontal acquisition control for the oscilloscope. It counts pretrigger and posttrigger samples and writes data points into acquisition memory. Programming and control of the sampler is through the TBC. CPU access to acquisition memory is also through the TBC.

The TBC operates in three basic acquisition modes.

- In *Fast* mode the sampler acquires and stores the complete record internally. When stopped, the analog data can be read out, digitized, and moved into acquisition memory. This process is based on the 60.6 MHz oscillator (Y401).
- In *Slow* mode, the sampler acts as a sample and hold device. The data points are transferred point by point to be digitized and stored in acquisition RAM as they are acquired. This process is based on the 40.0 MHz oscillator (Y402).
- In *Peak Detect* mode the sampler holds the minimum and maximum values over a sample interval. The data points are transferred point by point to be digitized and stored in the acquisition RAM as they are acquired.

The processor initiates the acquisition. Once *ACQINIT* is released and the pretrigger count is satisfied, *EPTHO* (end of pretrigger holdoff) is asserted to the trigger logic. Once the trigger logic receives the *EPTHO*, it will accept triggers. A trigger from *SYNTRIG A* will start the posttrigger counter in the TBC. Once the posttrigger count is finished, the sampler will be stopped.

Acquisition Memory A1 ◇4 — The acquisition memory consists of an 8K-by-8K SRAM. The CPU reads this memory through the time base controller.

The time interpolator counter in the TBC counts for the duration of the slow ramp and terminates the count when it receives *COUNTSTOP* from the time interpolator.

The holdoff counter holds off trigger from being accepted for a programmable period of time. It is asynchronous to the *FAST* system clock. *HOLDOFF* begins on *MAT* (main accepted trigger).

Time Interpolator — The Time Interpolator is a dual-ramp timing circuit that detects and measures the time difference between a trigger event and the sample clock. The CPU uses this time to correctly place the data points obtained on different trigger events. The TBC contains the ramp counters.

The dual ramp consists of a short-duration, positive-going ramp and a long-duration, negative-going ramp. The ramps are the result of charging or discharging integrating capacitors C307 and C305 from constant current sources. The charging and discharging currents are available at the collectors of Q304 and Q305, respectively. The ratio of these currents is about 2000 to 1.

The trigger event initiates the charging ramp. The next occurrence of the system clock disconnects the charging current, initiating the discharging ramp.

The baseline regulator circuit maintains the voltage at the collector of Q307 at 0 V while waiting for a trigger. When this node is at 0 V, the *COUNTSTOP* signal, at the output of U304A, is low.

When U308B detects a trigger event at its input it sets *~RSTM* to the "true" state, which begins the fast ramp. Q307 is turned off so that the fast ramp charging current will begin to charge the integration capacitors.

The constant current source, Q304 and associated components, determines the fast charging rate. The charging current is nominally 22 mA through R302 and Q304. This current flows through Q301 during the fast ramp charging time and through Q302 during the slow ramp discharge time.

This fast ramp charging, initiated by the trigger event, will end when the next system clock occurs. This causes the trigger logic (U309) to generate the *~RMSW* and *RMSW* signals, to switch from fast-ramp charge to slow-ramp discharge, and tells the TBC (U401) to start counting the ramp discharge time. Q301 is now turned off (and Q302 turned on) to disconnect the 22 mA current source from the integrating capacitors. Now the integrating capacitor discharges through the 11 µA current source formed by Q305 and associated components. When the ramp crosses a −100 mV threshold, the *COUNTSTOP* signal goes high, causing the TBC to stop the counting. This count represents the time from trigger event until the next system clock. The circuitry reads the time base interpolator counter, and then is reset by the next *ACQINIT*.

The signals *~RMST*, *RMST*, *~RMSW*, and *RMSW* are positive referenced ECL levels. The *COUNTSTOP* signal has TTL levels.

Analog Trigger A1 ◇1 — The analog trigger is a free running analog comparator. It has a variable input threshold determined by the TLM (trigger level).

The input has a channel switch. Control signals SR1, SR2, and SR3 select one of five input signals. The channel switch output is at TP102. Probing this can indicate whether or not the channel switch is working.

Once the source has been selected, filters can be applied to the signal. Filters include high frequency reject, low frequency reject, DC coupled, AC coupled, noise reject and AC noise reject.

Next, the signal is compared to a reference threshold (i.e., trigger level). The polarity of the comparator can be switched to change the trigger slope. A shift register controls filter selection, slope selection, and mode selection. The trigger control clock (CC) and the control data (SDATA_OUT) control this shift register. Bit 7 is clocked in first, and bit 0 is clocked in last.

The output of the analog trigger is a differential pair of +5 V referenced ECL signals. Output pins 20 and 21 swing full ECL levels, terminated at 75 Ω into the trigger logic.

Trigger Logic A1 ◇3 — Trigger logic is the digital part of the trigger system. It is composed of discrete positive referenced ECL logic. Trigger logic performs the following functions.

- It selects the trigger event. The CPU serially selects analog trigger (TRIG_GATE), field 1, field 2 (TV_FIELDS), any field (ANY_FIELD), or lines (CSYNC). The different modes are dependent on trigger related front-panel settings.
- It accepts all trigger events and decides which event will finish the acquisition. The analog holdoff qualifies the main trigger event to become the main used trigger.

CPU System A1 ◇6

The CPU system contains a 68331 microprocessor that controls the entire instrument. The processor passes waveforms and text on to the display system. The Main Board contains both the CPU and display systems, and the firmware ROMs.

The CPU coordinates all oscilloscope activities. It also directs the activities of the front-panel processor using a serial interface.

CPU Clocks — Processor clocks are derived from 60.6 MHz oscillator Y701. The TBC divides the 60.6 MHz clock by 4 for a *PROC_CLK* of 15.15 MHz.

Interrupts — The 68331 supports seven levels of auto-vectored interrupts dedicated to different interrupt levels. The TBC, display system, and option board generate interrupts.

Reset — The CPU resets both at power-on and power-off using the reset signal. Reset controller U606 controls system reset. Power-on reset asserts for a minimum of 400 ms after the +5 V supply stabilizes. Power-off reset asserts when the supply falls below a usable threshold.

Memory — The memory subsystem includes 32 K × 8 NVRAM for power-off storage and dynamic RAM for the main system RAM.

The NVRAM (U605) consists of a single nonvolatile memory IC. This RAM provides long-term power-off storage of front-panel settings, waveforms, and calibration constants.

Dynamic RAM (U704 for models TDS 310, TDS 350 and TDS 320 with SN B030100 and above; U702–U705 for model TDS 320 with SN B029999 and below) is organized as 256 K × 16 for a total of 512 kbytes. It is controlled by the ADG250 display controller (U701).

During a normal 68331 access the ADG250 multiplexes the address (on A2 to A19) onto the A0 to A8 address lines and creates control signals ~*RAS*, ~*CAS*, ~*XWL*, ~*XWU*, and ~*XOE*.

Display System A1 ◇7

A display controller IC processes text and waveforms. The display system sends the text and waveform information to the monitor assembly as a video signal. The display system also generates vertical (VSYNC) and horizontal (HSYNC) sync signals for the monitor assembly.

The display circuit's primary function is writing waveforms into waveform planes. The circuitry provides Vector, Dot, Vector Accumulate, Dot Accumulate, XY, and YT display modes.

The display system provides text, graticule, and waveform bit planes. All information displayed is first written to a plane. Planes are stored in dedicated DRAMS along with the vector lists. The information is sent at regular refresh intervals as an analog video signal.

The waveform display circuit takes a list of sample points, translates them into intensities for the bit map, writes those intensities to the bit map in the proper location, and interrupts the CPU when it is done.

Vector Lists — Four vector lists available from two DRAMs U706 and U707 (TDS 320 SN B029999 and below) or U706 (TDS 310 and TDS 350 and TDS 320 SN B030100 and above) store waveform sample data. Before starting a normal display mode, the CPU writes data to a vector list.

Rasterizers — The display controller (U701) provides two rasterizers. Their primary function is to "draw" vectors between sample points. The display controller also performs the top and bottom clip display functions on waveforms.

Video Timing — Q701–Q704 and associated circuitry convert digital video signals from the display controller into an analog video signal, with two levels controlled by *VIDEO LEVEL* and *INTENS LEVEL* from the daculator. The display controller also creates monitor timing *HSYNC* (31.25 Hz) and *VSYNC* (60 Hz). U703, U708D, and U705 generate AUX HSYNC, and AUX VSYNC and AUX VIDEO for the Option 14 VGA Video output connector (TDS 310, TDS 320, and TDS 350 SN B030100 and above).

A2/A3 Option Board (Option 14 Instruments Only)

The A2 Option Board has GPIB, RS-232, and Centronics interfaces for external control and hard copy operations. The A3 board has VGA Video output and printer power interfaces (TDS 310, TDS 320, and TDS 350 SN B030100 and above).

Refer to schematic A2 ◇1. Signals travel from the processor board through the J1 connector to the U2 address decoder. U2 uses lines A15, A16, and A18 to break incoming addresses to either the RS-232, Centronics, GPIB or option ROM.

The GPIB circuitry is composed of GPIB controller U8, with transceivers U9 and U10 buffering signals to and from the GPIB on the option board.

Refer to schematic A2 ◇2◇. The RS-232 portion of the board connects to the rear panel through port J2. Signals travel from the processor board through the J1 connector to the U4 dual asynchronous receiver/transmitter (DUART). The DUART sends data to the U5 driver/receiver. U5 converts signals from logic levels on the DUART side to RS-232 levels at the 9-pin connector. From U5, information goes out port P2.

The Centronics portion of the board connects to the rear panel through the 9-pin connector J3. Data travels from the processor board through the J1 connector to register U6 where it is sent out J3. U4 manages control signals. U12 buffers printer status information to be read through U4.

Refer to schematic A3 ◇1◇. The 9-pin VGA video connector routes auxiliary HSYNC, VSYNC, and VIDEO signals from main board connector J703 to the rear panel.

The printer power converter uses switching regulator U1 to convert +15 V from the power supply to +8 V output at rear panel connector J2. This provides power for the Option 3P thermal printer.

A4 Front Panel

The CPU system sends instructions to and receives information from the Front-Panel Processor on the Front-Panel Board. The Front-Panel Processor reads the front-panel switches and ports, and reports any change in their settings to the processor system. The Front-Panel Processor also turns the LEDs on and off.

The Front-Panel Processor reads the front-panel menu switches and sends any changes in menu selections to the CPU system. The Front Panel Processor does not read the **ON**/**STBY** button; its signal passes through the Front-Panel Board and the Main Board to the A20 Low Voltage Power Supply.

The front panel also generates the probe compensation signal.

Pots, FPP, and Calibrator A4 ◇1◇

The front-panel processor monitors the front-panel controls. It consists of a single-chip microprocessor (U101) with built-in RAM, ROM, A-to-D converter (for digitizing the potentiometer wiper voltages), a programmable timer (for generating the output of the probe compensator signal), and a serial communications interface (for data transfer to and from the CPU).

The knob scanner, working with the A-to-D converter internal to the front-panel processor, produces digital values for the wiper voltages of the front-panel knobs. Analog multiplexers U420 and U421 select one of 12 possible pot inputs to read. Although there are only six knobs on the front panel, three are continuous-rotation potentiometers made up of two wipers, separated by 180 degrees, which contact a single resistive arc.

Three control lines to multiplexers U420 and U421 select the pot input or wiper voltage to be read. The analog voltage at the wiper of the pot selected is applied to the front-panel processor. This voltage is digitized, and the amount and direction of change from the previously stored value is calculated. The change information is sent to the CPU.

The front-panel processor generates *CALSIG*. The high level is approximately 5 V and the low level is at ground.

Switches A4 ◇4

The front-panel switches and menu switches are arranged in an array of eight rows and columns. When a switch closes, one row line connects to one column line through an isolation diode. A complete scan of the front-panel switches consists of setting all eight row lines low, in sequence, and performing an eight-column scan to check for a change from the state stored in the front-panel processor. Low bits in the column-line data tell the front-panel processor that a switch is closed.

LEDs and Power Supply A4 ◇5

The LEDs are arranged in groups of eight. They are connected between the outputs of 8-bit LED latch (U202). When the CPU needs to turn a particular LED on or off, it sends a command to the front-panel processor indicating what to do to the LED, and which one to change. The front-panel processor converts the LED identification number to the LED address within the latch.

A20 Low Voltage Power Supply

The A20 Low Voltage Power Supply is a switching power converter. It supplies power to all the circuitry in the oscilloscope.

The Low Voltage Power Supply does not have a main power switch. The **ON**/**STBY** switch, located on the front panel, controls all the power to the oscilloscope except the standby circuits in the Low Voltage Power Supply.

A26 Monitor Assembly

The A26 Monitor Assembly displays all information (waveforms, text, graticules, and pictographs). It generates the high voltages necessary to drive the display tube. It also contains the video amplifier, horizontal oscillator, and the vertical and horizontal yoke driver circuitry.

The 640 by 480 pixel raster scan cathode-ray tube (CRT) display has 60 Hz frame and 31.5 kHz line rates. This CRT display circuitry is similar to a television monitor.

Inputs, Video, and Vertical Deflection A26 ◇1

The +12 V regulator is a three-terminal regulator (U130).

The Vertical Yoke Winding Driver provides the scan current (ramp) for the vertical (field) deflection coil. A vertical sync signal, a negative pulse at the deflection rate, causes the ramp to “retrace” to the top of the CRT screen.

A large pulse is generated during vertical retrace. A portion of this signal drives the G1 grid 50 V more negative than normal during the retrace period. This keeps retrace lines blanked even when the background is visible.

The Video Amplifier amplifies the input video signal, and drives the cathode of the CRT.

Horizontal Deflection, CRT, and High Voltage A26 ◇2

The Horizontal Oscillator Control generates the “switch” controlling signal and synchronizes the scan to the horizontal sync input signal. IC U370 includes a horizontal oscillator, a phase detector, and an output shaper.

The circuit is a phase-locked loop. The differentiated horizontal sync is the reference signal, and the retrace or flyback pulse (U370 pin 4) is the feedback signal to be locked to the horizontal sync (*HORIZONTAL YOKE*) signal.

Horiz Yoke Winding Driver transistor Q160, along with Q260 and T170, provides the deflection coil currents.

Transformer T210 generates the CRT high voltage from the large voltage pulse that occurs during horizontal retrace (flyback pulse). Other secondary voltages are also derived from the flyback pulse.

Fan

The fan provides forced air cooling for the oscilloscope. It connects to a 12 V connector on the Low Voltage Power Supply.

Performance Verification

These procedures verify the oscilloscope. Depending on what you want to accomplish, you may only need to perform a few of these procedures.

- To rapidly confirm that this oscilloscope functions, just do the procedures under *Self Tests*, which begin on page 4-5.

  Advantages: These procedures are quick to do, require no external equipment or signal sources, and perform extensive functional and accuracy testing to provide high confidence that the oscilloscope performs properly. You can use them as a quick check before making a series of important measurements.

- To further check functionality, do the procedures under *Functional Tests* that begin on page 4-7.

  Advantages: These procedures require minimal additional time to perform, require no additional equipment other than a standard-accessory probe, and more completely test the internal hardware of this oscilloscope. You can use them to quickly determine if the oscilloscope is suitable for putting into service, such as when it is first received.

- If you need a more extensive confirmation of performance, do the *Performance Tests*, beginning on page 4-11, after doing the *Functional* and *Self Tests* just referenced.

  Advantages: These procedures add direct checking of warranted specifications. They require more time and suitable test equipment. (See *Equipment Required* on page 4-3.)

Conventions

Throughout these procedures the following conventions apply:

- Each test procedure uses the following general format:

  Title of Test

  Equipment Required

  Time Required

  Prerequisites

  Procedure

- Refer to Figure 4-1: “Main menu” refers to the menu that labels the seven menu buttons under the display. “Side menu” refers to the menu that labels the five buttons to the right of the display. “Pop-up menu” refers to a menu that pops up when a main menu button is pressed.

- Where instructed to use a front-panel button or knob, select from a main or side menu, or verify a readout or status message, the name of the button or knob appears in boldface type.
- Instructions for menu selection follow this format: **FRONT PANEL BUTTON → Pop-Up (if necessary) → Main Menu Button → Side Menu Button**. For example, "Push **TRIGGER MENU → Type: Video → Trigger On → Any Line**."

STOP This symbol denotes information you must read to do the procedure properly.

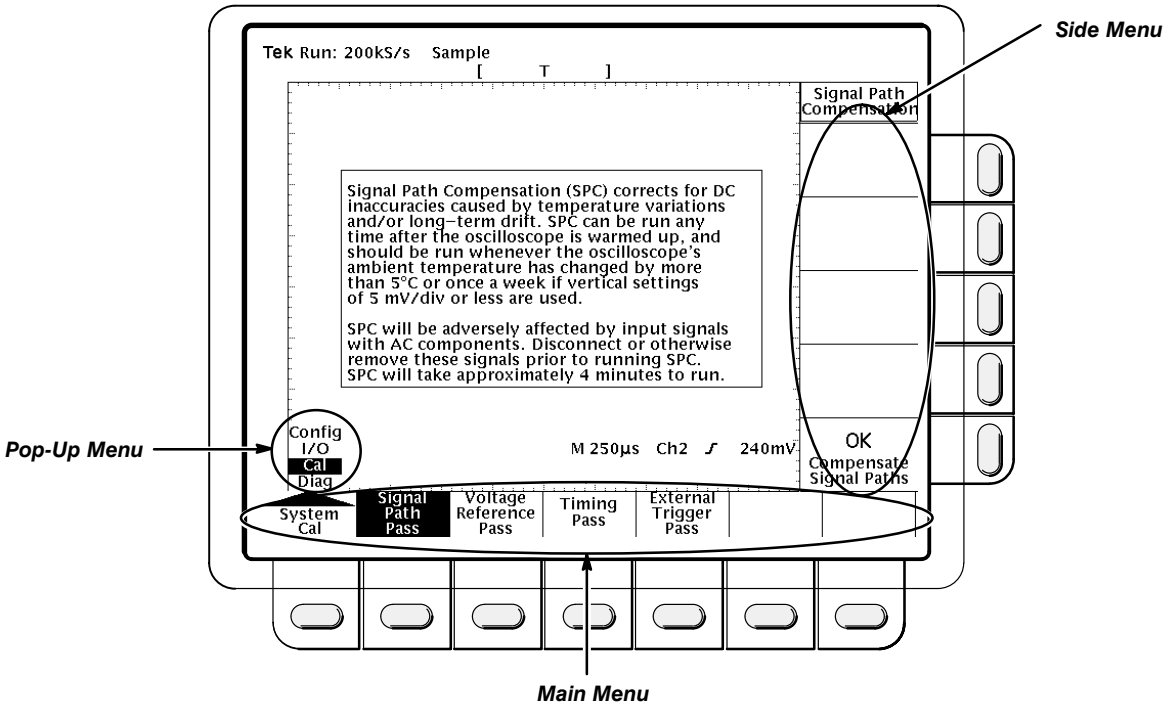


Figure 4-1: Menu Locations

Test Equipment

These procedures use external, traceable signal sources to directly check instrument performance. If your test equipment does not meet the minimum requirements listed in Table 4-1, your test results will be invalid.

Table 4-1: Test Equipment

Item Number and Description		Minimum Requirements	Example	Purpose
1	Termination 50 Ω (two required)	Impedance 50 Ω; connectors: female BNC input, male BNC output	Tektronix part number 011-0049-01	Checking delay between channels
2	Cable, Precision Coaxial (two required)	50 Ω, 91 cm (36 in), male to male BNC connectors	Tektronix part number 012-0482-00	Signal interconnection
3	Connector, Dual-Banana	Female-BNC to dual-banana	Tektronix part number 103-0090-00	Several accuracy tests
4	Connector, BNC "T"	Male-BNC to dual-female-BNC	Tektronix part number 103-0030-00	Checking trigger sensitivity
5	Coupler, Dual-Input	Female-BNC to dual-male-BNC	Tektronix part number 067-0525-02	Checking delay between channels
6	Generator, DC Calibration	Variable amplitude to ±110 V; accuracy to 0.1%	Data Precision 8200	Checking DC offset, gain, and measurement accuracy
7	Generator, Leveled Sine Wave, Medium-Frequency	200 kHz to 250 MHz; variable amplitude from 5 mV to 4 V_{p-p} into 50 Ω	TEKTRONIX SG 503 Leveled Sine Wave Generator	Checking trigger sensitivity at low frequencies
8	Generator, Time Mark	Variable marker frequency from 10 ms to 10 ns; accuracy within 2 ppm	TEKTRONIX TG 501A Time Mark Generator	Checking sample rate and delay-time accuracy
9	Probe, 10X, included with this instrument	A P6109B (TDS 310 and TDS 320) or P6111B (TDS 350) probe	Tektronix number P6109B (TDS 310 and TDS 320) or P6111B (TDS 350)	Signal interconnection

Test Record

Photocopy the next page and use it to record the performance test results for your instrument.

TDS 310, TDS 320, and TDS 350 Test Record

Instrument Serial Number: _____ Certificate Number: _____
Temperature: _____ RH %: _____
Date of Calibration: _____ Technician: _____

Performance Test		Minimum	Incoming	Outgoing	Maximum
DC Voltage Measurement Accuracy					
CH1 VOLTS/DIV	1 V	+97.1 V	_____	_____	+98.9 V
	200 mV	+8.28 V	_____	_____	+8.52 V
	50 mV[1]	−581 mV	_____	_____	−619 mV
	50 mV[2]	−881 mV	_____	_____	−919 mV
	Δ at 50 mV	+286 mV	_____	_____	+314 mV
	10 mV	+54.6 mV	_____	_____	+65.4 mV
	5 mV	−982 mV	_____	_____	−998 mV
CH2 VOLTS/DIV	1 V	+97.1 V	_____	_____	+98.9 V
	200 mV	+8.28 V	_____	_____	+8.52 V
	50 mV[1]	−581 mV	_____	_____	−619 mV
	50 mV[2]	−881 mV	_____	_____	−919 mV
	Δ at 50 mV	+286 mV	_____	_____	+314 mV
	10 mV	+54.6 mV	_____	_____	+65.4 mV
	5 mV	−982 mV	_____	_____	−998 mV
Analog Bandwidth					
CH1		42.5 mV	_____	_____	N/A
CH2		42.5 mV	_____	_____	N/A
Long Term Sample Rate and Delay Time Accuracy					
		−2.0 Div	_____	_____	+2.0 Div
Edge Trigger Sensitivity, DC Coupled					
Main Trigger		stable trigger	_____	_____	N/A
Main Trigger − Falling		stable trigger	_____	_____	N/A

[1] **Generator set at −0.6 V.**

[2] **Generator set at −0.9 V.**

Self Test

This procedure uses internal routines to verify that the oscilloscope functions and passes its internal self tests and signal path compensations. It also confirms that the oscilloscope was adjusted properly at the time it was last adjusted. No test equipment or hookups are required.

Equipment Required: None.

Time Required: Approximately 5 minutes.

Prerequisites: Power up the oscilloscope and allow a 20 minute warm-up before doing this procedure.

Procedure:

1. Press **UTILITY** → **System: Diag** → **Execute** → **OK Confirm Run Test**. The internal diagnostics verify proper oscilloscope function. This verification takes about 30 seconds. While it progresses, a variety of test patterns flash on screen. When finished, status messages appear on the screen.
2. Check that the screen reports no failures. If it reports a failure, the instrument has failed the self test. Proceed immediately to the troubleshooting procedure on page 6-36.
3. Press **CLEAR MENU**.
4. Press **UTILITY** → **System: Cal**.
5. Check that the word ***Pass*** appears in the main menu under the **Voltage Reference**, **Timing**, and **Ext Trig** menu labels. (See Figure 4-2.) If any of the labels read ***Fail***, the instrument has failed the self test. Proceed immediately to the system calibration procedure on page 5-2.

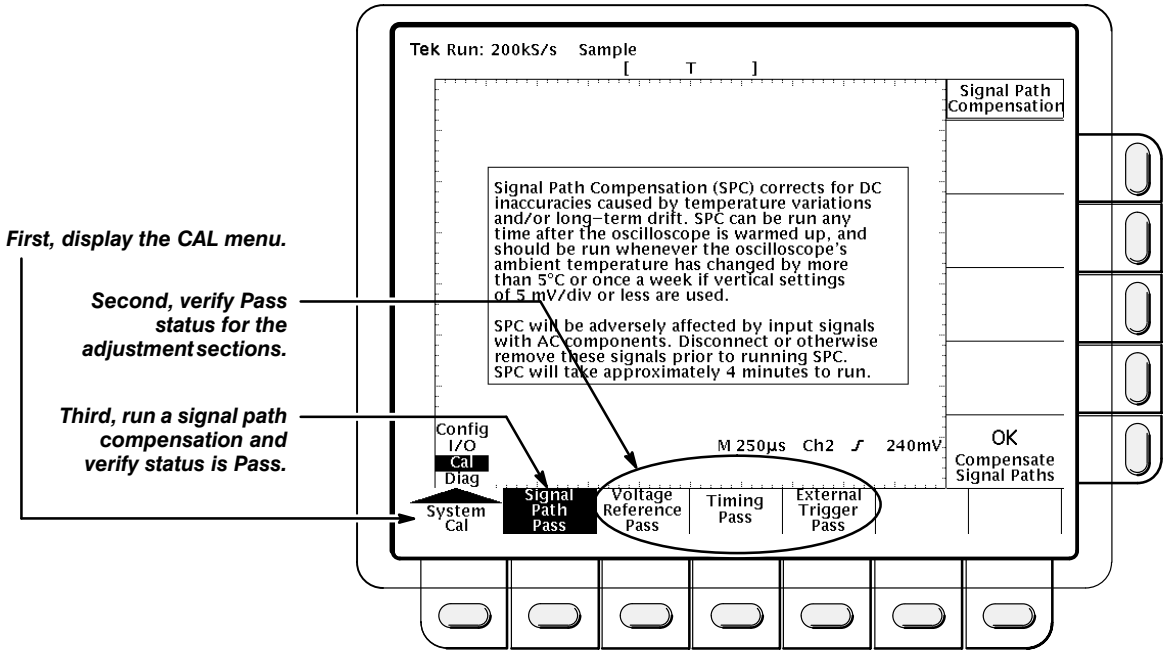


Figure 4-2: Verifying Adjustments and Signal Path Compensation

6. Press **Signal Path → OK Compensate Signal Paths**. When compensation completes, the status message updates to *Pass* or *Fail* in the main menu

7. Check that the word ***Pass*** appears under **Signal Path** in the main menu. (See Figure 4-2.) If ***Pass*** does not appear, the instrument has failed the performance verification; return it to Tektronix for servicing.

Functional Test

The purpose of this procedure is to confirm that the oscilloscope functions properly.

This procedure verifies functions; that is, it verifies that oscilloscope features *operate*. It does *not* verify that they operate within limits.

Therefore, when the instructions that follow call for you to verify that a signal appears on-screen "that is about five divisions in amplitude" or "has a period of about six horizontal divisions," etc., do *NOT* interpret the quantities given as limits. Operation within limits is checked in *Performance Tests*, which begin on page 4-11.

DO NOT make changes to the front-panel settings that are not called out in the procedure. If you make changes to these settings other than those called out in the procedure, you may obtain invalid results. In this case, just redo the procedure from step 1.

NOTE

If the oscilloscope fails any of these checks it has failed the performance verification. To diagnose the causes of a failure, proceed to the troubleshooting procedures on page 6-33.

Equipment Required: One P6109B (TDS 310 and TDS 320) or P6111B (TDS 350) probe (Item 9).

Time Required: Approximately 5 minutes.

Prerequisites: None.

Procedure:

1. Install the probe on **CH 1**. Connect the probe tip to **PROBE COMP** on the front panel; leave the probe ground unconnected. (See Figure 4-3.)

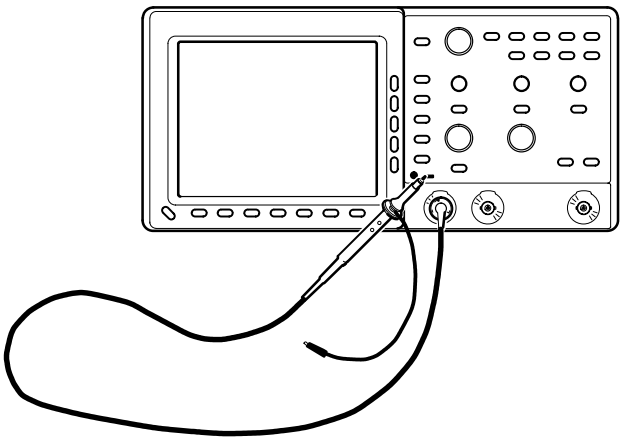


Figure 4-3: Hookup for Functional Test

2. Press **SAVE/RECALL SETUP** → **Recall Factory Setup** → **OK Confirm Factory Init**.
3. Press **AUTOSET**.
4. Set the **VOLTS/DIV** to 1 V. Use the vertical **POSITION** knob to center the waveform vertically on screen.
5. Set the **SEC/DIV** to 250 µs.
6. Check that a square-wave probe-compensation signal of about five divisions in amplitude is on screen. (See Figure 4-1 on page 4-2 to locate the readout.)
7. Check that one period of the square wave probe-compensation signal is about four horizontal divisions on screen.
8. Check that the horizontal **POSITION** knob positions the signal left and right on screen when rotated.
9. Press **TRIGGER MENU** → **Mode** → **Normal**.
10. Check that the trigger level readout for the main trigger system changes with the trigger **LEVEL** knob.
11. Check that the trigger-level knob can trigger and untrigger the square-wave signal as you rotate it. (Leave the signal *un*triggered.)
12. Check that pressing **SET LEVEL TO 50%** triggers the signal that you just left untriggered.
13. Press **ACQUIRE** → **Mode** → **Sample**.
14. Check that the instrument displays an actively acquiring waveform on-screen. (Note that there is noise present on the peaks of the square wave.)
15. Press the side menu button **Peak Detect**. Check that the instrument displays an actively acquiring waveform on screen with the noise “peak detected.”

16. Press the side menu button **Envelope**. Check that the instrument displays an actively acquiring waveform on screen with the noise displayed.
17. Press the side menu button **Average**. Check that the instrument displays an actively acquiring waveform on screen with the noise reduced.
18. Press **WAVEFORM OFF** to remove Channel 1 from the display.
19. Press **CH 2** and move the probe to the **CH 2** input.
20. Repeat steps 3 through 17 for Channel 2.
21. Disconnect the probe from the channel input and the **PROBE COMP** terminal.

Performance Tests

The procedures are in three groupings: *Signal Acquisition System Checks, Time Base System Checks,* and *Triggering System Checks*. They check all the characteristics that appear in **boldface** type under *Warranted Characteristics* on page 1-3.

Prerequisites

The tests in this subsection comprise an extensive, valid confirmation of performance and functionality when the following requirements are met:

- The cabinet must be installed.
- You must have performed and passed the procedures under *Self Tests,* on page 4-5 and those under *Functional Tests,* on page 4-7.
- The digitizing oscilloscope must have been operating for a warm-up period of at least 20 minutes, and must be operating at an ambient temperature between −10° C and +55° C.

Signal Acquisition System Checks

These procedures check signal acquisition system characteristics that are listed as checked under *Warranted Characteristics* in the *Specifications* section.

Check DC Voltage Measurement Accuracy

WARNING

Performance of this procedure requires input voltages up to 98 VDC. Contact with live circuits could cause injury or death. Be sure to set the DC calibration generator to 0 volts before connecting, disconnecting, and/or moving the test hookup during the performance of this procedure.

Equipment Required: One dual-banana connector (Item 3), one DC calibration generator (Item 6), and one precision coaxial cable (Item 2).

Time Required: Approximately 35 minutes.

Prerequisites: The oscilloscope must meet the prerequisites listed on page 4-11.

Procedure:

1. Set the output of a DC calibration generator to 0 volts.

2. Connect the output of a DC calibration generator through a dual-banana connector followed by a 50 Ω precision coaxial cable to **CH 1**, as shown in Figure 4-4.

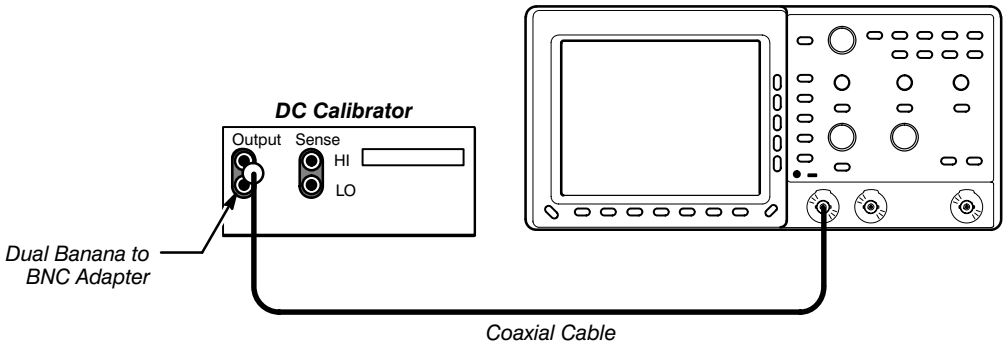


Figure 4-4: Hookup for DC Voltage Measurement Accuracy Check

3. Press **SAVE/RECALL SETUP** → **Recall Factory Setup** → **OK Confirm Factory Init**.
4. Press **ACQUIRE** → **Mode** → **Average 16**.
5. Press **MEASURE** → **Select Measurement**.
6. Press the side menu button **more** until the menu label **Mean** appears in the side menu. Press the side menu button **Mean**.
7. Set the **VOLTS/DIV** to one of the settings listed in Table 4-2 that you have not yet checked. (Start with the first setting listed.)
8. Press **VERTICAL MENU** → **Position**.

Table 4-2: DC Accuracy

Scale Setting	Position Setting (Divs)	Offset Setting	Generator Setting	Accuracy Limits
1 V	+5	+100 V	+98 V	+97.1 V to +98.9 V
200 mV	+5	+10 V	+8.4 V	+8.28 V to +8.52 V
50 mV	−5	−1 V	−0.6 V	−581 mV to −619 mV
50 mV	−5	−1 V	−0.9 V	−881 mV to −919 mV
△ at 50 mV				+286 mV to +314 mV
10 mV	−5	0 V	+60 mV	+54.6 mV to +65.4 mV
5 mV	0	−1 V	−990 mV	−982 mV to −998 mV

9. Turn the **General Purpose** to set the vertical position to the setting listed in Table 4-2. The baseline level moves off screen.
10. Press the main menu button **Offset**.
11. Use the **General Purpose** to set vertical offset to the setting listed in Table 4-2 for the present vertical scale setting. The baseline level remains off screen.
12. Set the generator to the level and polarity indicated in Table 4-2 for the vertical scale, position, and offset settings you have made. The DC test level should appear on screen. (If it does not return, the DC accuracy check has failed for the present vertical scale setting of the current channel.)
13. Check that the readout for the measurement **Mean** readout on screen is within the limits listed for the present vertical scale and position/offset/generator settings.
14. Repeat steps 7 through 13 until you have checked all the vertical scale settings listed in Table 4-2. Record the measurements for each of the 50 mV settings.
15. Subtract the second 50 mV measurement from the first and compare the result to the "Δ at 50 mV" limits in Table 4-2.
16. Press **WAVEFORM OFF**; then, press **CH 2**.
17. Set the generator output to 0 V.
18. Move the test hookup to the **CH 2** input.
19. Repeat steps 5 through 15 for channel 2.
20. Set the generator output to 0 V.
21. Disconnect the cable at the **CH 2** input connector.

DC Gain Accuracy

DC gain accuracy is verified by successful completion of the self tests and the DC voltage measurement accuracy (in the previous procedure).

Offset Accuracy

Offset accuracy is verified by successful completion of the Self Tests and the DC voltage measurement accuracy (in the previous procedure).

Check Analog Bandwidth

Equipment Required: One medium-frequency leveled sine wave generator (Item 7), one 50 Ω precision cable (Item 2), and one 50 Ω termination (Item 1).

Time Required: Approximately 20 minutes.

Prerequisites: *See page 4-11.*

Procedure:

1. Connect, through a 50 Ω precision cable and a 50 Ω termination, the sine wave output of a medium-frequency leveled sine wave generator to **CH 1** (see Figure 4-5). Set the output of the generator to a reference frequency of 50 kHz.

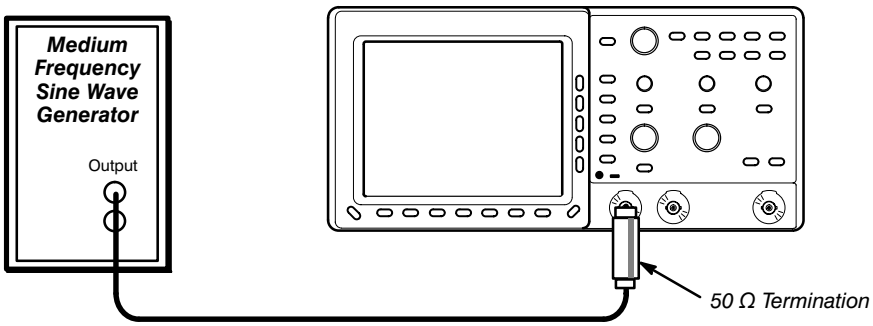


Figure 4-5: Hookup for Analog Bandwidth Check

1. Press **SAVE/RECALL SETUP** → **Recall Factory Setup** → **OK Confirm Factory Init**.
2. Set the **SEC/DIV** to 10 µs.
3. Press **TRIGGER MENU** → **Coupling** → **Noise Rej**.
4. Press **ACQUIRE** → **Mode** → **Average 16**.
5. Press **MEASURE** → **High–Low Setup** → **Min–Max**.
6. Press the main menu button **Select Measurement**. Now press the side menu button **more** until the menu label **Pk-Pk** appears in the side menu. Press the side menu button **Pk-Pk**.
7. Set the **VOLTS/DIV** to 10 mV.
8. Set the generator output so the **CHx Pk-Pk** readout equals 60 mV.
9. Press **SET LEVEL TO 50%** as necessary to trigger the display.
10. Increase the frequency of the generator output to 50 MHz (TDS 310), 100 MHz (TDS 320), or 200 MHz (TDS 350).
11. Set the **SEC/DIV** to 10 ns (TDS 310), 5 ns (TDS 320), or 2.5 ns (TDS 350).
12. Press **SET LEVEL TO 50%** as necessary to trigger the display.

13. Check that the **Pk-Pk** readout on screen (as shown in Figure 4-6) is ≥42.5 mV.

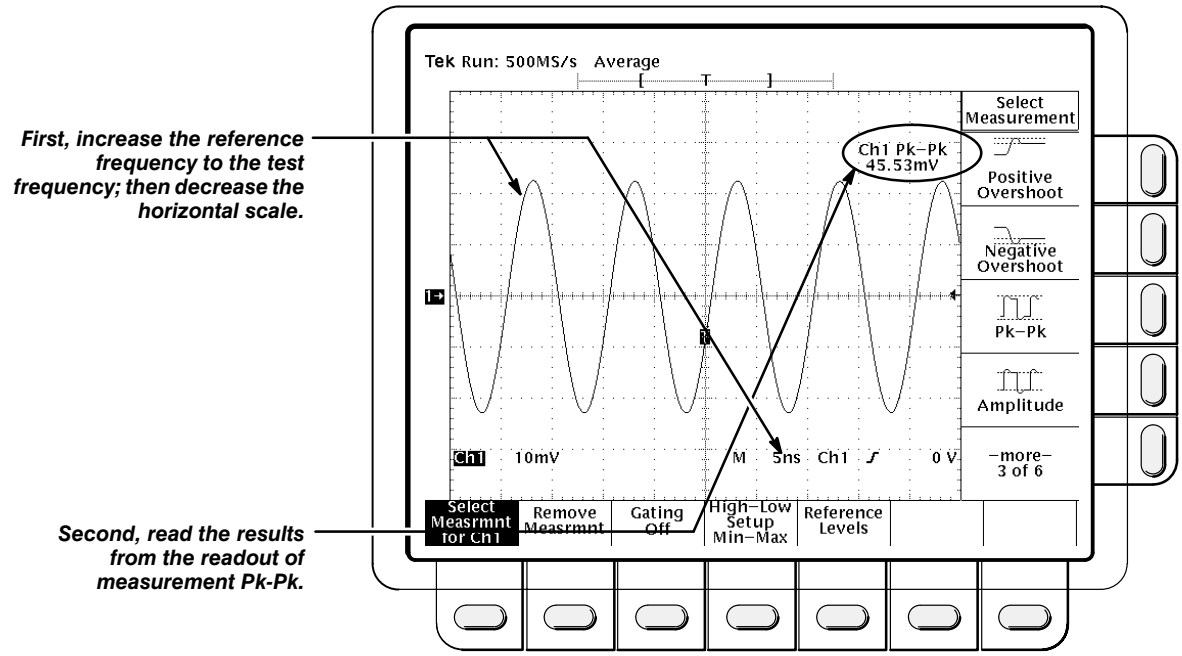


Figure 4-6: Measuring Analog Bandwidth

14. When finished checking, set the **SEC/DIV** back to the 10 µs setting, and set the generator output frequency back to 50 kHz.
15. Press **WAVEFORM OFF** to remove Channel 1 from the display.
16. Press **CH 2** and move the hookup to the **CH 2** input.
17. Press **TRIGGER MENU** → **Source** → **CH 2**.
18. Repeat steps 6 through 13 for **CH 2**.
19. Disconnect the test hook up from the **CH 2** input connector.

Time Base System Checks

This procedure checks those characteristics that relate to the Main and Delayed time base system and are listed as checked under *Warranted Characteristics* in the *Specifications* section.

Check Long-Term Sample Rate and Delay Time Accuracy

Equipment Required: One time-marker generator (Item 8), one precision coaxial cable, (Item 2) and one 50 Ω termination (Item 1).

Time Required: Approximately 5 minutes.

Prerequisites: *See page 4-11.*

Procedure:

1. Connect, through a 50 Ω precision coaxial cable and a 50 Ω termination, the time-mark output of a time-marker generator to **CH 1**, as shown in Figure 4-7. Set the output of the generator for 10 ms markers.

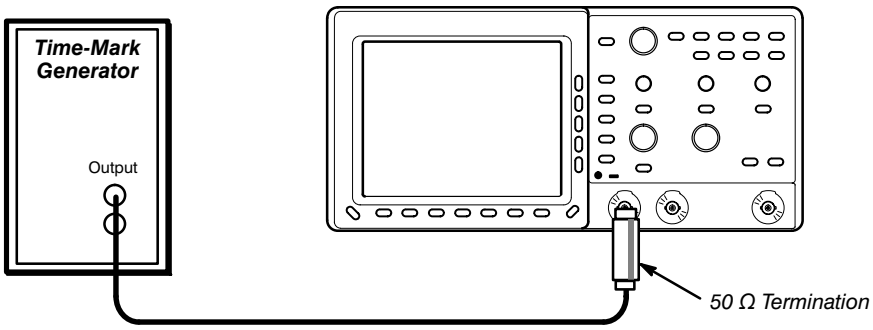


Figure 4-7: Hookup for Sample Rate Check

2. Press **SAVE/RECALL SETUP** → **Recall Factory Setup** → **OK Confirm Factory Init**.
3. Set the **VOLTS/DIV** to 500 mV.
4. Press **SET LEVEL TO 50%**; use the vertical **POSITION** knob to center the test signal on screen.
5. Set the **SEC/DIV** to 1 ms.
6. Press **HORIZONTAL MENU** → **Trigger Position** → **Set to 10%**.
7. Adjust the horizontal **POSITION** to move the trigger **T** to the right and on to the screen. Continue to position the trigger **T** to align it to the center vertical graticule line.
8. Press the main menu button **Time Base**; then press the side menu button **Delayed Only**.
9. Set the **SEC/DIV** of the **D** (delayed) time base to 1 ms. Then use the **General Purpose** knob to set delay time to 10 ms.

10. Set the **SEC**/**DIV** of the **D** (delayed) time base to 500 ns.

NOTE

*When you change the **SEC**/**DIV** in step 10, the delay time readout changes to 10.00001 or 9.99999. This is normal and has no effect on the verification*

11. Check that the rising edge of the marker crosses the center horizontal graticule line at a point within ±2.0 divisions of center graticule.
12. Disconnect the test hookup.

Delta Time Measurement Accuracy

Delta time measurement accuracy is verified by successful completion of the previous procedure.

Trigger System Checks

These procedures check those characteristics that relate to the trigger system and are listed as checked under *Warranted Characteristics* in the *Specifications* section.

Check Edge Trigger Sensitivity, DC Coupled

Equipment Required: One medium-frequency leveled sine wave generator (Item 7), two precision 50 Ω coaxial cables (Item 2), one 50 Ω termination (Item 1), and one BNC T connector (Item 4).

Time Required: Approximately 10 minutes.

Prerequisites: *See page 4-11.*

Procedure:

1. Press **SAVE/RECALL SETUP** → **Recall Factory Setup** → **OK Confirm Factory Init**.
2. Set the **VOLTS**/**DIV** to 500 mV.
3. Set the **SEC**/**DIV** to 10 ns.
4. Press **TRIGGER MENU** → **Mode** → **Normal**.
5. Press **ACQUIRE** → **Mode** → **Average 16**.
6. Connect one 50 Ω cable to the output of the sine wave generator. Attach a BNC T connector to the other end of the cable. Connect a second 50 Ω cable to the other side of the BNC T connector.
7. Connect the BNC T connector to **CH 1**; connect the cable to the **EXT TRIG** input through a 50 Ω termination as shown in Figure 4-8.

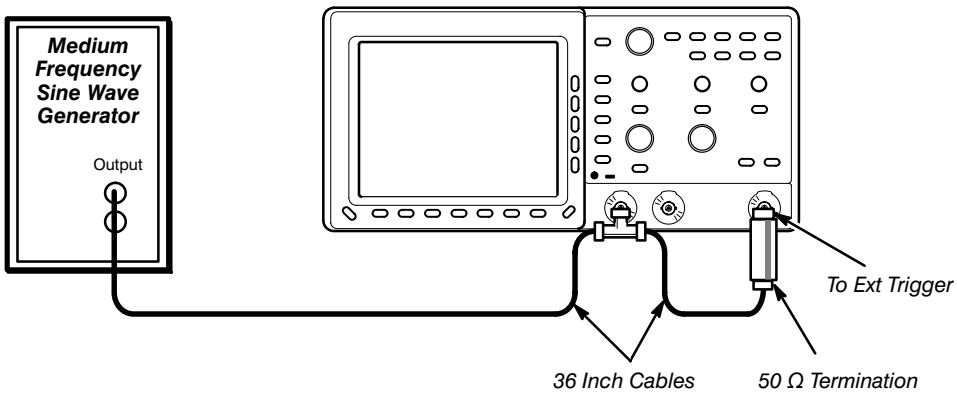


Figure 4-8: Hookup for Trigger Sensitivity Check

8. Set the generator frequency to 50 MHz (TDS 310), 100 MHz (TDS 320), or 200 MHz (TDS 350).
9. Press **MEASURE** → **High-Low Setup** → **Min-Max**.
10. Press the main menu button **Select Measurement**.
11. Press the side menu button **−more−** until **Amplitude** appears in the side menu. Press the side menu button **Amplitude**.
12. Press **SET LEVEL TO 50%**.
13. Set the test signal amplitude for about one division on screen. Fine adjust the generator output until the **CH 1 Amplitude** readout indicates the amplitude is 500 mV. (Readout may fluctuate around 500 mV.)
14. Press **TRIGGER MENU** → **Slope**.
15. Press **SET LEVEL TO 50%**. Check that a stable trigger is obtained for the test waveform on both the positive and negative slopes (see Figure 4-9). (Use the side menu to switch between trigger slopes; use the trigger **LEVEL** knob to stabilize the trigger if required.)

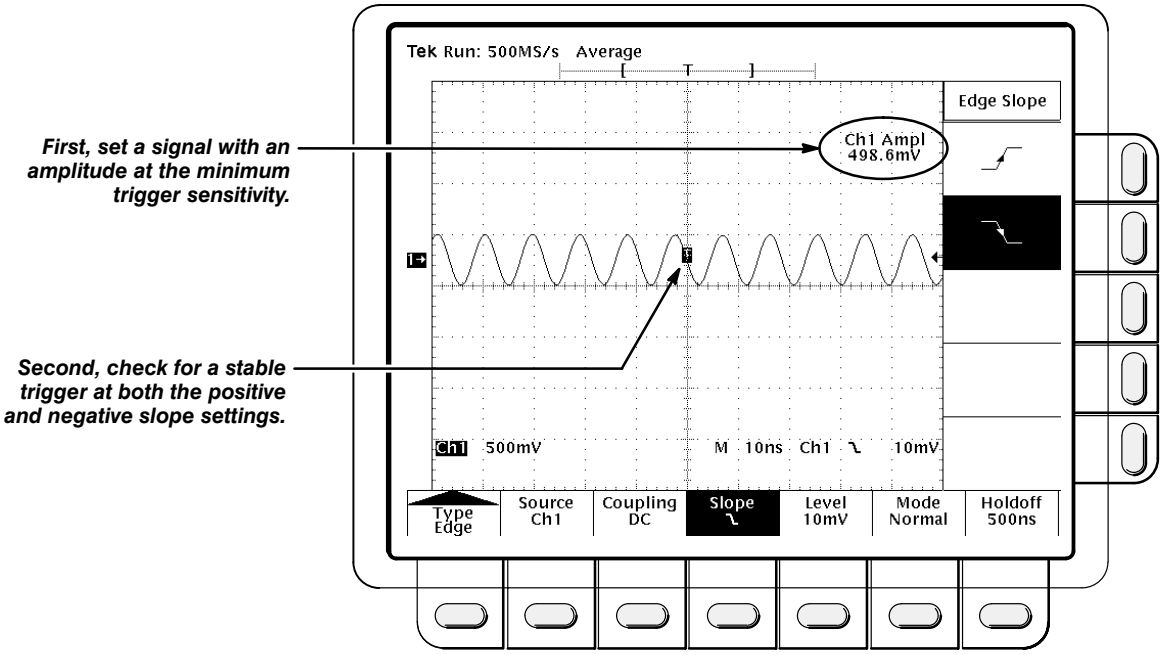


Figure 4-9: Measuring Trigger Sensitivity

16. Press **WAVEFORM OFF**.
17. Press **CH 2**.
18. Press **TRIGGER MENU** → **Source** → **Ch2**.
19. Disconnect the hookup from **CH 1** and connect it to **CH 2**.
20. Set the **VOLTS**/**DIV** to 500 mV.
21. Repeat steps 14 and 15 for Channel 2.
22. Press **TRIGGER MENU** → **Source** → **EXT**/**10**.
23. Press **MEASURE** → **Select Measrmnt** → **Amplitude**.
24. Increase the generator amplitude until the amplitude measurement reads 1.5 V.
25. Repeat steps 14 and 15 for the external trigger.
26. Disconnect the test hookup.

Trigger Level Accuracy, DC Coupled

Trigger level accuracy is verified by the successful completion of the Self Tests and the DC voltage measurement accuracy procedure on page 4-11.

Adjustment

This section contains information you need to adjust the TDS 310, TDS 320, and TDS 350. There are only three types of adjustments you can perform on the oscilloscope: the automated and semiautomated adjustments in the system calibration menu, attenuator adjustments, and monitor adjustments.

You should perform the signal path compensation adjustment after servicing your instrument or moving your instrument to a new operating environment (±5° C temperature change). The other adjustment procedures may be necessary if the instrument fails one of the *Performance Tests* in the previous section.

You should allow the instrument a 20 minute warm-up period before performing any adjustments.

Adjustment Interval — These adjustments should be done once a year.

Equipment Required

Table 5-1: Adjustment Equipment

Item Number and Description		Minimum Requirements	Example	Purpose
1	Adjustment Tool	0.075 inch slot screwdriver	Tektronix part number 003-1433-01 (standard probe adjustment tool)	Monitor and attenuator adjustments
2	Termination, 50 Ω	Impedance 50 Ω; connectors: female BNC input, male BNC output	Tektronix part number 011-0049-01	Timing calibration and attenuator adjustment
3	Cable, Precision Coaxial	50 Ω, 36 in, male to male BNC connectors	Tektronix part number 012-0482-00	Attenuator adjustments and system calibration
4	Generator, DC Calibration	Variable amplitude to ±10 V; accuracy to 0.05%	Data Precision 8200	Voltage and external trigger calibrations
5	Generator, Calibration	Variable amplitude; fast rise step	Tektronix PG506A Calibration Generator	Timing calibration and attenuator adjustment

The System Calibration Menu

The oscilloscope has four onboard calibration routines. You can access these routines through the system calibration menu. Use the following procedure.

NOTE

Except for early TDS 320 oscilloscopes, the Voltage, Timing, and External Trigger calibration routines are disabled at the factory. To enable the calibration menus, see Enabling Calibration Menus, *on page 6-35.*

1. Press **UTILITY**.
2. Press the leftmost main menu button until the pop-up menu shows the **Cal** selection. This calls up the system calibration menu, shown in Figure 5-1.

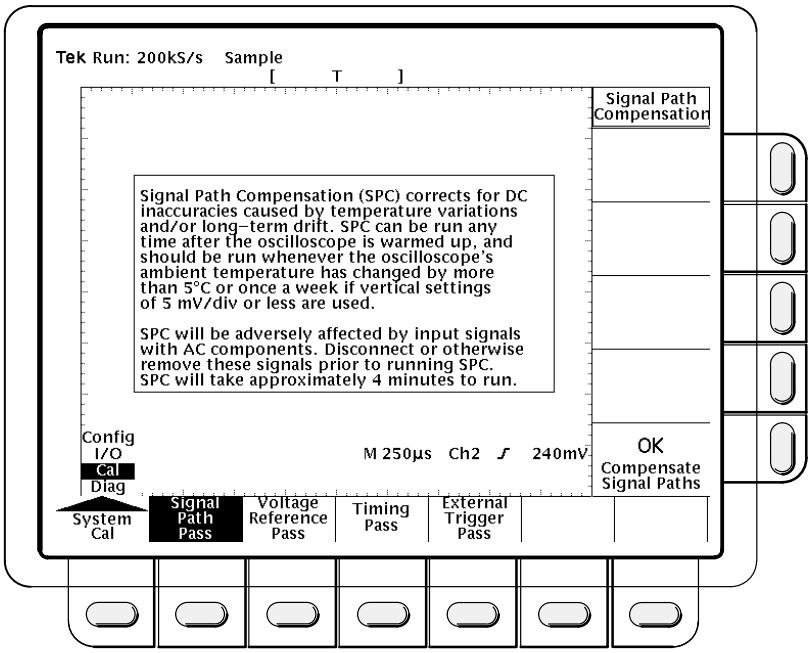


Figure 5-1: The System Calibration Menu

3. Remove all input signals from the front panel BNC connectors.
4. Press the main menu button **Voltage**. Read the on-screen text before continuing.
5. Press the side menu button **OK Calibrate Voltage Ref**. Connect a DC calibration generator (Item 4) to the **CH 1** input through a 50 Ω coaxial cable (Item 3) and follow the instructions on the screen.

6. Press **UTILITY**.
7. Press the main menu button **Signal Path**. Read the on-screen text before continuing.
8. Press the side menu button **OK Compensate Signal Paths**.
9. Wait. The signal path compensation routine takes about four minutes to run.
10. Move the hookup to the **EXT TRIG** input.
11. Press **UTILITY**.
12. Press the main menu button **Ext Trig**. Read the on-screen text before continuing.
13. Press the side menu button **OK Calibrate External Trig**. Follow the instructions on the screen.
14. Disconnect the DC calibration generator and connect the −1 V fast rise output of a calibration generator to the **CH 1** input through a 50 Ω coaxial cable and a 50 Ω termination (Item 2).
15. Set the calibration generator to output a 1 ms, fast rise signal; set the pulse amplitude to 50%.
16. Press **SAVE/RECALL SETUP**. Press the main menu button **Recall Factory Setup**; then press the side menu button **OK Confirm Factory Init**.
17. Press **AUTOSET**. Then adjust the vertical **POSITION** control to center the waveform on the screen so that the trigger arrow is at the center graticule, set the **VOLTS/DIV** to 50 mV, and set the **SEC/DIV** to 250 ns. This should result in a waveform similar to the one shown in Figure 5-2.

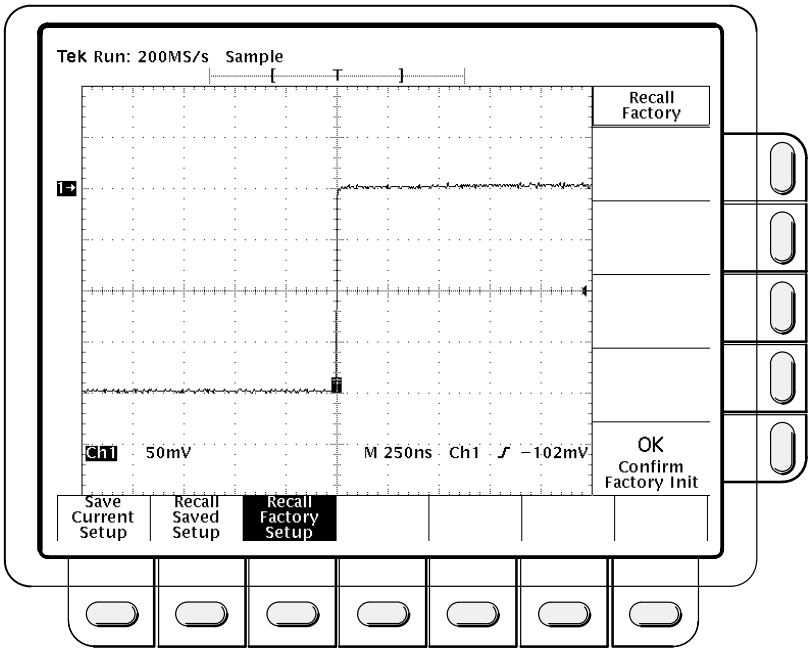


Figure 5-2: Timing Compensation Waveform

18. Press **UTILITY**.
19. Press the main menu button **Timing**. Read the on-screen text before continuing.
20. Press the side menu button **OK Compensate Timing**. Follow the instructions on the screen.

Attenuator Adjustment

Use this procedure to adjust the low-frequency compensation of the channel 1 and channel 2 attenuators. You should perform this procedure if your oscilloscope demonstrates gross rounding or overshoot of square-wave input signals or if your instrument fails one of the *Performance Tests* in the previous section.

1. Remove the instrument cabinet as described in the removal procedure on page 6-13.
2. Set the oscilloscope on its left side with its front facing toward you.
3. Power up the oscilloscope and press **SAVE/RECALL SETUP**.
4. Press the main menu button **Factory**; then press the side menu button **OK Confirm Factory Init**.
5. Press **CLEAR MENU**.
6. Connect the high output of a calibration generator (Item 5) to the **CH 1** BNC through a 50 Ω coaxial cable (Item 3) and a 50 Ω termination (Item 2). (See Figure 5-3.)

7. Set the calibration generator to output a high amplitude, 1 kHz signal. Set the pulse amplitude to 25%.
8. Set the oscilloscope **VOLTS**/**DIV** to 200 mV, the **SEC**/**DIV** to 10 µs, and adjust the pulse amplitude for a five division display.
9. Press **SET LEVEL TO 50%**.
10. Use the vertical **POSITION** control to place the top of the waveform near center screen.
11. Set the **VOLTS**/**DIV** to 100 mV.
12. Use an adjustment tool (Item 1) to adjust the CH 1 10X capacitor for the flattest response. (See Figure 5-3.)
13. Remove the 50 Ω termination from the setup.
14. Set the **VOLTS**/**DIV** to 2 V.
15. Press **SET LEVEL TO 50%**.

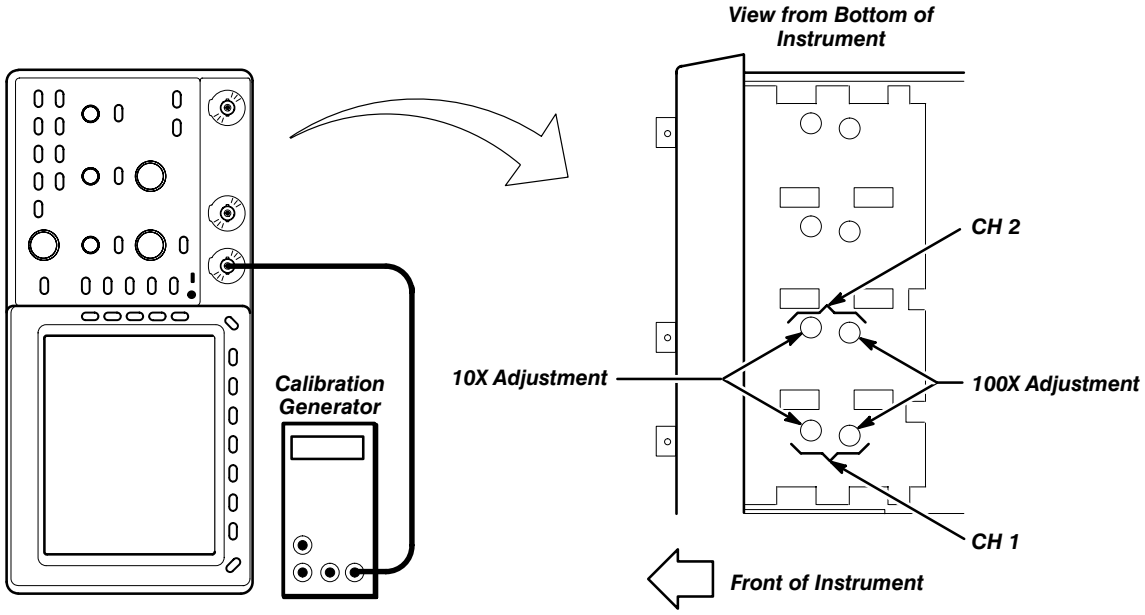


Figure 5-3: Attenuator Adjustment Setup and Locations

16. Adjust the pulse amplitude for a five-division display.
17. Set the **VOLTS**/**DIV** to 1 V.
18. Use an adjustment tool to adjust the CH 1 100X capacitor for the flattest response.
19. Press **WAVEFORM OFF**, **CH 2**, and **TRIGGER MENU**, *in that order*.
20. Press the main menu button **SOURCE**; then press the side menu button **Ch2**.

21. Move the coaxial cable to the **CH 2** BNC input, reinstalling the 50 Ω termination.
22. Repeat steps 7 through 18 for channel 2.
23. Reinstall the instrument cabinet.

Monitor Adjustments

There are no set performance requirements for the monitor. You may use this procedure to change monitor parameters whenever the brightness, contrast, horizontal position, or vertical position of the display is not to your liking.

1. Remove the instrument cabinet as described in the removal procedure on page 6-13.
2. Set the oscilloscope bottom-down with its front facing toward you.
3. Turn on the oscilloscope and allow a 20 minute warm-up period.
4. Press **DISPLAY**.
5. Press the main menu button **Intensity**. Use the side menu to set overall intensity to 100%, **Text**/**Grat** to bright, and **Waveform** to bright.
6. Locate the brightness potentiometer (see Figure 5-4). Use an adjustment tool (Item 1) to raise the brightness until the background of the screen turns green.

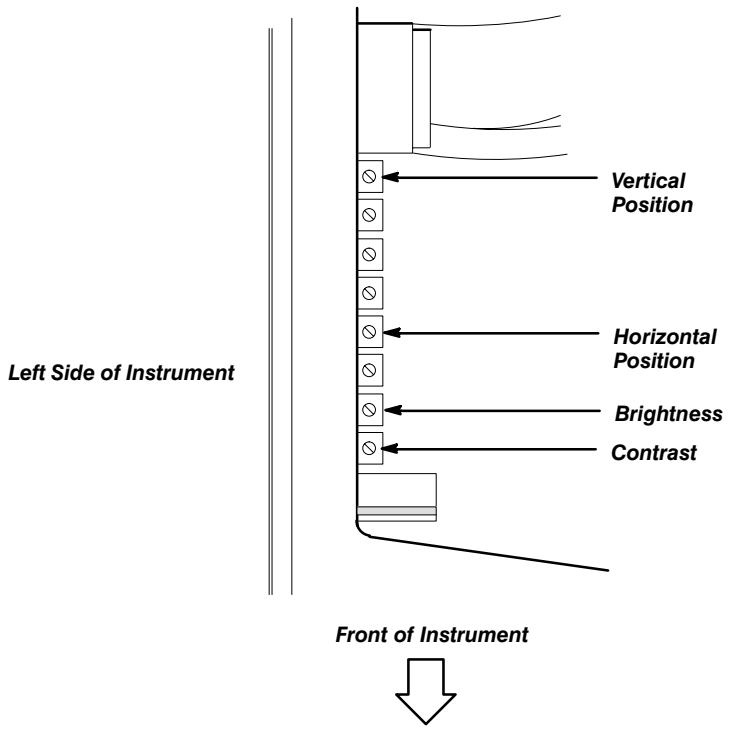


Figure 5-4: Monitor Adjustments

7. Now lower the brightness *just beyond the point* where the background fades to black.
8. Locate the contrast potentiometer. Adjust the contrast to your taste.

NOTE

The higher the contrast, the higher the likelihood that prolonged use will cause CRT burn-in.

9. Locate the vertical position potentiometer. Adjust the vertical position until the display is vertically centered on the screen.
10. Locate the horizontal position potentiometer. Adjust the horizontal position until the display is horizontally centered on the screen.

Inspection and Cleaning

Inspection and Cleaning describes how to inspect for dirt and damage on and how to clean the exterior and interior of the oscilloscope. You should perform inspection and cleaning as preventive maintenance. Preventive maintenance, when done regularly, may prevent oscilloscope malfunction and enhance its reliability.

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

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

Preventing ESD

CAUTION

Static discharge can damage any semiconductor component in this oscilloscope.

Precautions

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

1. Minimize handling of static-sensitive modules.
2. Transport and store static-sensitive modules in their static protected containers. Label any package that contains static-sensitive modules.
3. Discharge the static voltage from your body by wearing a grounded antistatic wrist strap while handling these modules. Do service of static-sensitive modules only at a static-free work station.
4. Do not remove the oscilloscope cabinet unless you have met precaution number 3, above. Consider all internal modules static-sensitive.
5. Nothing capable of generating or holding a static charge should be allowed on the work station surface.
6. Handle circuit boards by the edges when possible.
7. Do not slide the modules over any surface.

8. Avoid handling modules in areas that have a floor or work-surface covering capable of generating a static charge.
9. Do not use high-velocity compressed air when cleaning dust from modules.

General Care

The cabinet helps keep dust out of the oscilloscope and it is a major component of its cooling system. It should normally be in place when operating the oscilloscope. The optional oscilloscope front cover protects the front panel and display from dust and damage. Install it when storing or transporting the oscilloscope.

Inspection and Cleaning Procedures

Inspect and clean the oscilloscope as often as operating conditions require. The collection of dirt on components inside can cause them to overheat and breakdown. (Dirt acts as an insulating blanket, preventing efficient heat dissipation.) Dirt also provides an electrical conduction path that could cause an oscilloscope failure, especially under high-humidity conditions.

CAUTION

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

Avoid the use of high pressure compressed air when cleaning dust from the interior of this instrument. (High pressure air can cause ESD.) Instead, use low pressure compressed air (about 9 psi).

Inspection — Exterior

Using Table 6-1 as a guide, inspect the outside of the oscilloscope for damage, wear, and missing parts. You should thoroughly check oscilloscopes that appear to have been dropped or otherwise abused to verify correct operation and performance. Immediately repair defects that could cause personal injury or lead to further damage to the oscilloscope.

Table 6-1: External Inspection Check List

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

Cleaning Procedure — Exterior

WARNING

To avoid injury or death, unplug the power cord from line voltage before cleaning the oscilloscope. To avoid getting moisture inside the oscilloscope during external cleaning, use only enough liquid to dampen the cloth or applicator.

1. Remove loose dust on the outside of the oscilloscope with a lint free cloth.
2. Remove remaining dirt with a lint free cloth dampened in a general purpose detergent-and-water solution. Do not use abrasive cleaners.
3. Clean the monitor screen with a lint-free cloth dampened with either isopropyl alcohol or, preferably, a gentle, general purpose detergent-and-water solution.

Inspection — Interior

To access the inside of the oscilloscope for inspection and cleaning, refer to the *Removal and Installation Procedures* in this section.

Inspect the internal portions of the oscilloscope for damage and wear, using Table 6-2 as a guide. You should repair defects immediately.

If you replace any electrical module, perform the adjustment procedures, beginning on page 5-1.

CAUTION

To prevent damage from electrical arcing, ensure that circuit boards and components are dry before applying power to the oscilloscope.

Table 6-2: Internal Inspection Check List

Item	Inspect For	Repair Action
Circuit boards	Loose, broken, or corroded solder connections. Burned circuit boards. Burned, broken, or cracked circuit-run plating.	
Resistors	Burned, cracked, broken, or blistered condition.	
Solder connections	Cold solder or rosin joints.	Resolder joint and clean with isopropyl alcohol.
Capacitors	Damaged or leaking cases. Corroded solder on leads or terminals.	
Wiring and cables	Loose plugs or connectors. Burned, broken, or frayed wiring.	Firmly seat connectors. Repair or replace modules with defective wires or cables.
Chassis	Dents and deformations	Straighten, repair, or replace chassis.

Cleaning Procedure — Interior

STOP

If, after doing steps 1 and 2, a module is clean upon inspection, skip the remaining steps.

1. Blow off dust with dry, low-pressure, deionized air (approximately 9 psi).
2. Remove any remaining dust with a lint free cloth dampened in isopropyl alcohol (75% solution) and rinse with warm deionized water. (A cotton-tipped applicator is useful for cleaning in narrow spaces and on circuit boards.)

NOTE

If steps 1 and 2 do not remove all the dust or dirt, the oscilloscope may be spray washed using a solution of 75% isopropyl alcohol by doing steps 3 through 7.

3. Gain access to the parts to be cleaned by removing easily accessible shields and panels (see *Removal and Replacement Procedures*).

4. Spray wash dirty parts with the isopropyl alcohol and wait 60 seconds for the majority of the alcohol to evaporate.
5. Use hot (120° F to 140° F or 48.9° C to 60° C) deionized water to thoroughly rinse them.
6. Dry all parts with low-pressure, deionized air.
7. Dry all components and assemblies in an oven or drying compartment using low-temperature (125° F to 150° F or 51.7° C to 65.5° C) circulating air.

Removal and Replacement

This section contains procedures for removal and installation of all mechanical and electrical modules.

Preparation — Please Read

WARNING

To avoid injury or death, disconnect the power cord from the line voltage source before performing any procedure in this section.

General Instructions

READ THESE GENERAL INSTRUCTIONS BEFORE REMOVING A MODULE.

First locate the module you want to remove in the exploded views (Figures 10-1 through 10-3 on pages 10-5 through 10-9). Then read *Equipment Required* for a list of the tools needed to remove and install modules in this oscilloscope.

To remove an internal module, you need only remove the oscilloscope cabinet (page 6-13) and then perform the removal procedure for that module. The internal modules are independently removable.

Procedures will refer to “front,” “rear,” “top,” etc. of the oscilloscope; note from Figure 6-1 which sides are referenced.

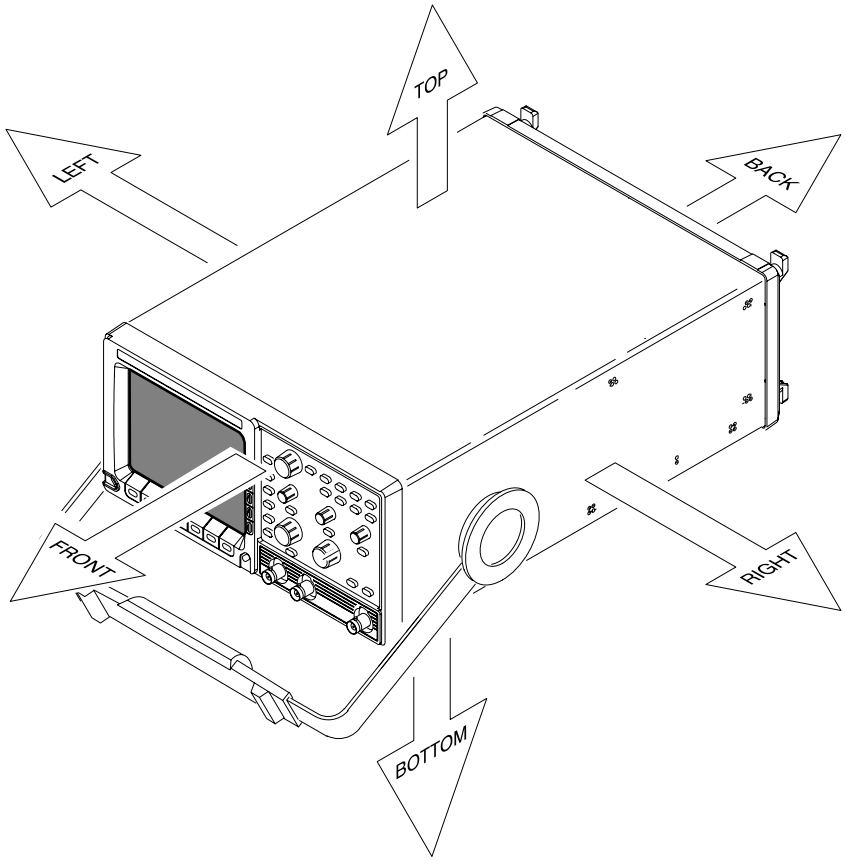


Figure 6-1: Oscilloscope Orientation

Equipment Required

The following tools are required to completely disassemble the oscilloscope into its modules. The tools required to remove an individual module are listed in the first step of its procedure.

Table 6-3: Tools Required for Module Removal

Item No.	Name	Description
1	Screwdriver handle	Accepts Torx®-driver bits.
2	T-15 Torx tip	Torx®-driver bit for T-15 size screw heads.
3	T-20 Torx tip	Torx®-driver bit for T-20 size screw heads. Used only for removal of the cabinet handle.
4	Flat-bladed screwdriver	Screwdriver for removing standard-head screws.

Table 6-3: Tools Required for Module Removal (Cont.)

Item No.	Name	Description
5	Nut driver, 5/16 inch	Used for removing earth ground cables.
6	Nut driver, 3/16 inch	Used for removing GPIB connector shell and EMI gasket.
7	Angle-tip tweezers	Used for knob and shaft removal.
8	Slip-Jaw Pliers	Used for removing the front feet from the cabinet.
9	Wooden Spudger	Used for front EMI gasket removal.
10	Front Cover	This optional accessory protects the front of the oscilloscope when positioned face down in the removal procedures.
11	Gloves, lint free, cloth	Used for removing the menu elastomer and menu button flex circuit.
12	Soldering Iron	15 watt. Used for removal of some cables.
13	Solder Wick	
14	BNC Wrench	Removing BNCs from the attenuator assembly. Tektronix 003-1463-00.
15	BNC Fixture	Installing BNCs on the attenuator assembly. Tektronix 003-1464-00.

Line Fuse and Line Cord

WARNING

To avoid injury or death, unplug the line cord from the line voltage power source before continuing.

1. Have handy a flat-bladed screwdriver (Item 4).
2. Set the oscilloscope so its bottom is down on the work surface and its rear is facing you.

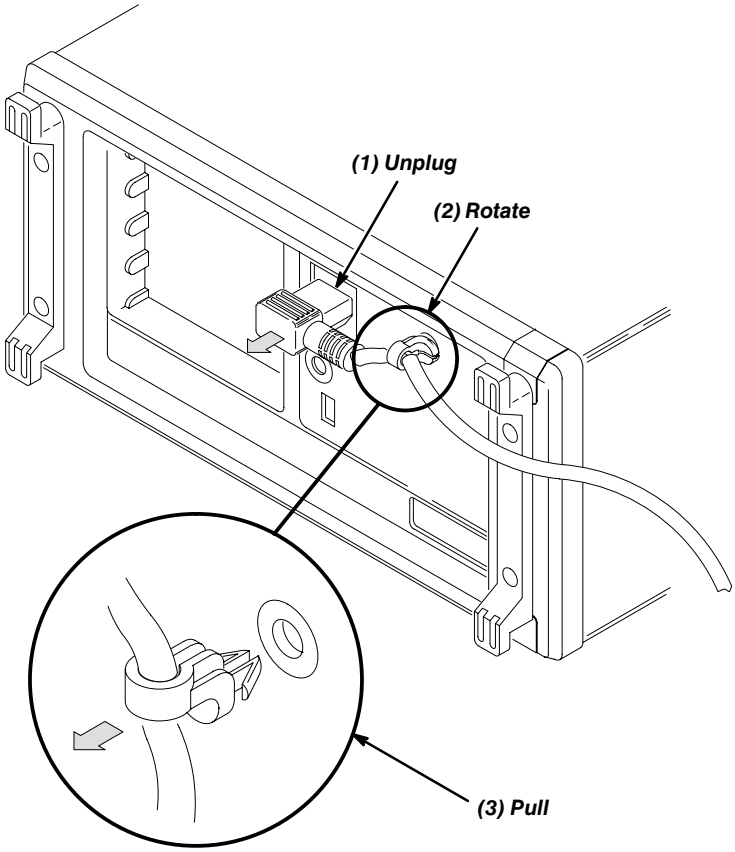


Figure 6-2: Line Cord Removal

3. Find the line cord on the rear cover. (See Figure 6-2.) Now, remove the line-cord retaining clamp by first unplugging the line cord from its receptacle.
4. Next, grasp both the line cord and the retaining clamp and rotate them 90 degrees counter-clockwise.
5. Pull the line cord and clamp away to complete the removal.
6. Find the fuse drawer beneath the line voltage plug on the rear panel. Now, pry open the drawer with a small flat-bladed screwdriver (Item 4), and remove the line fuse. (See Figure 6-3.)

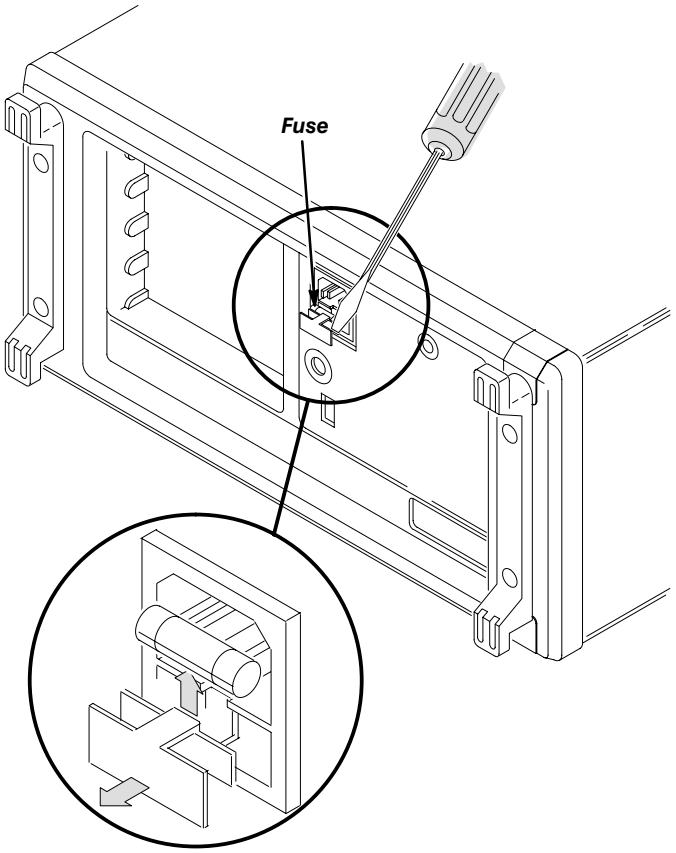


Figure 6-3: Line Fuse Removal

7. *Reinstallation:* Do in reverse steps 6 through 3 to reinstall the line fuse and then the line cord.

Front Panel Knobs and Shafts

1. Have handy a pair of angled-tip tweezers (Item 7).
2. Set the oscilloscope so its bottom is down on the work surface and its front is facing you.
3. Refer to Figure 6-4. Grasp any knob you wish to remove and pull it straight out from the front panel slightly to create some clearance between the base of the knob and the front panel.
4. Insert the tweezers between the knob and front panel and use them to remove the knob and its shaft.
5. Pull the shaft out of the knob to remove.

6. *Reinstallation:*

   a. To reinstall, align the inside of the knob to end of the shaft and push it in until it snaps.

   b. Insert the shaft of the assembled knob into its hole in the front panel assembly until it stops.

   c. Rotate the knob while lightly pushing inwards until the shaft slips into its receptacle. Push all the way in to seat the knob assembly.

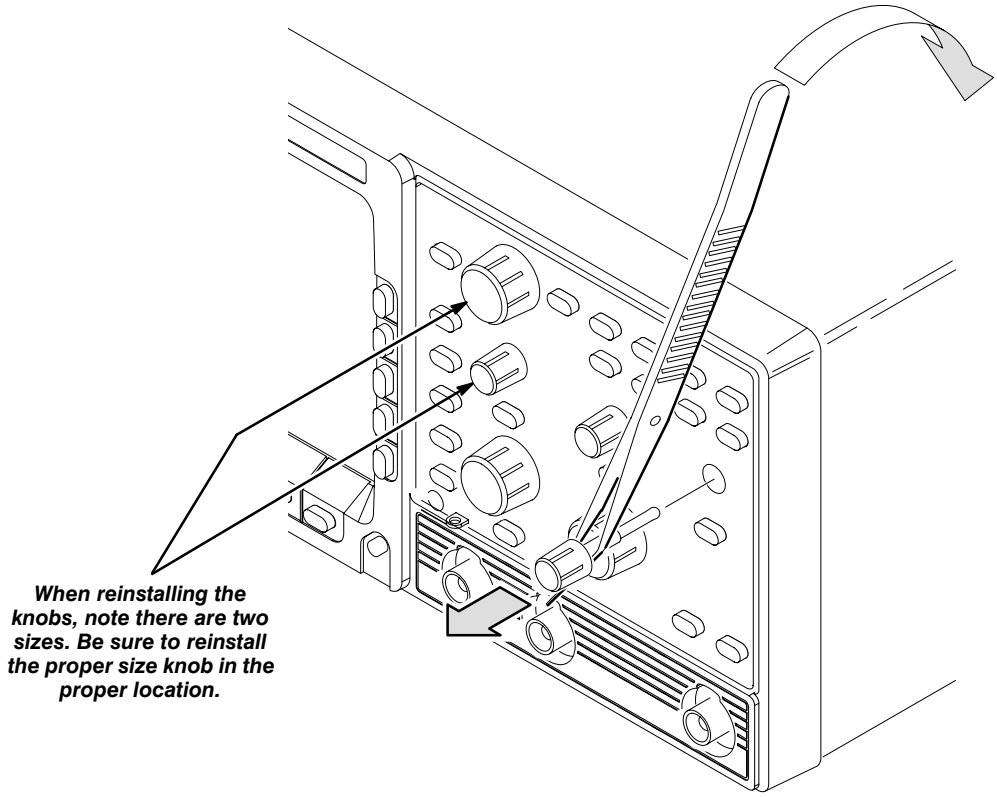


Figure 6-4: Knob and Shaft Removal

Rear Cover, Cabinet, and Cabinet Handle

1. Have handy a screwdriver with a size T-15 Torx® tip (Items 1 and 2).
2. Pull out on both of the hubs on the cabinet handle to unlock it for positioning. While holding the hubs unlocked, rotate the handle towards the bottom of the oscilloscope.
3. Set the oscilloscope so its face is down with its front cover on the work surface and its bottom facing you. Reference Figure 6-5 on page 6-14 as you do the following steps.
4. Remove the four T-15 Torx® screws securing the rear cover to the oscilloscope. Lift off the rear cover. If no other parts are being serviced, skip to the end (step 11) of this procedure.
5. Remove the single T-15 Torx® screw at the left side of the oscilloscope.
6. Lift the cabinet upwards to slide it off the oscilloscope.
7. If no other cabinet parts are being serviced, skip the rest of this procedure.
8. Working from the inside of the cabinet, remove the T-20 Torx® screw securing each handle hub to the cabinet.
9. Working from the outside of the cabinet, grasp the two handle hubs and pull them outward from the cabinet until they are out of the cabinet.
10. While holding the handle hubs pulled out, lift the handle away to remove.
11. *Reinstallation:*
    a. Do, in reverse order, steps 9 and 8 to reinstall the handle assembly.
    b. Do, in reverse order, steps 6 through 4 to reinstall the cabinet, while observing the following precautions:
        - Take care not to bind or snag the cabinet on internal cabling; redress cables as necessary.
        - When sliding the cabinet onto the oscilloscope, be sure that the front and rear ridges of the main chassis slide into the grooves at the rear of the cabinet and on the front trim.
        - Install the four screws at the rear panel before installing the single screw at the left side of the cabinet.

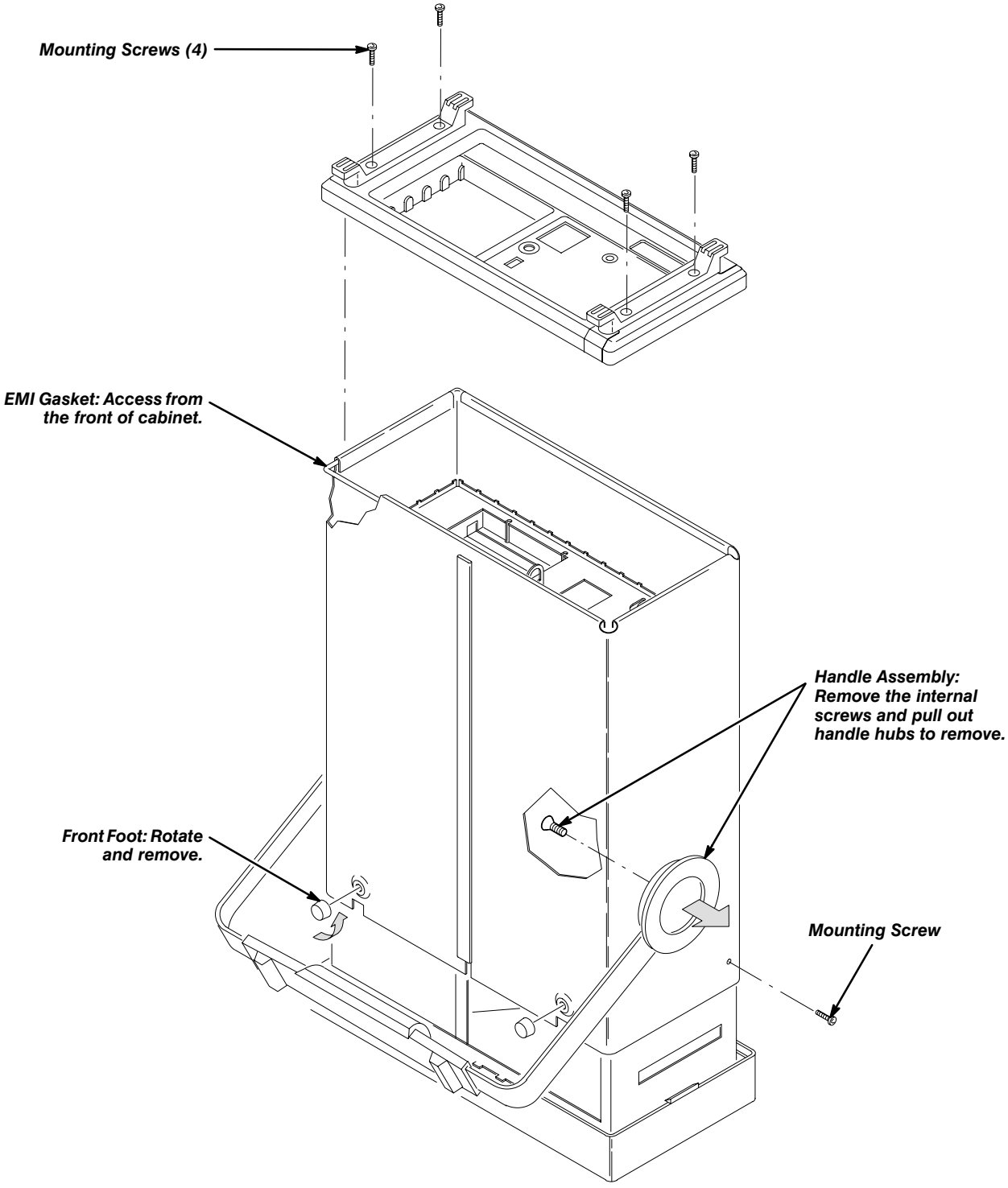


Figure 6-5: Rear Cover, Cabinet, and Cabinet Handle and Feet Removal

Trim Ring, Menu Elastomer, Menu Buttons, and Front EMI Gaskets

1. Have handy a wooden spudger (Item 9).
2. Set the oscilloscope so its rear is down on the work surface and its bottom is facing you.

STOP

DO NOT touch the carbon contact points on the menu elastomer installed in the trim ring. Also, do not touch the contacts on the menu button flex circuit exposed when you remove the trim ring. You should wear clean cloth gloves that are free of lint when handling the menu elastomer or when touching the menu button flex circuit mounted on the front chassis.

3. Grasp the trim ring by its top edge, pry it up, and lift it forward to snap it off the top front of the main chassis (see Figure 6-6).

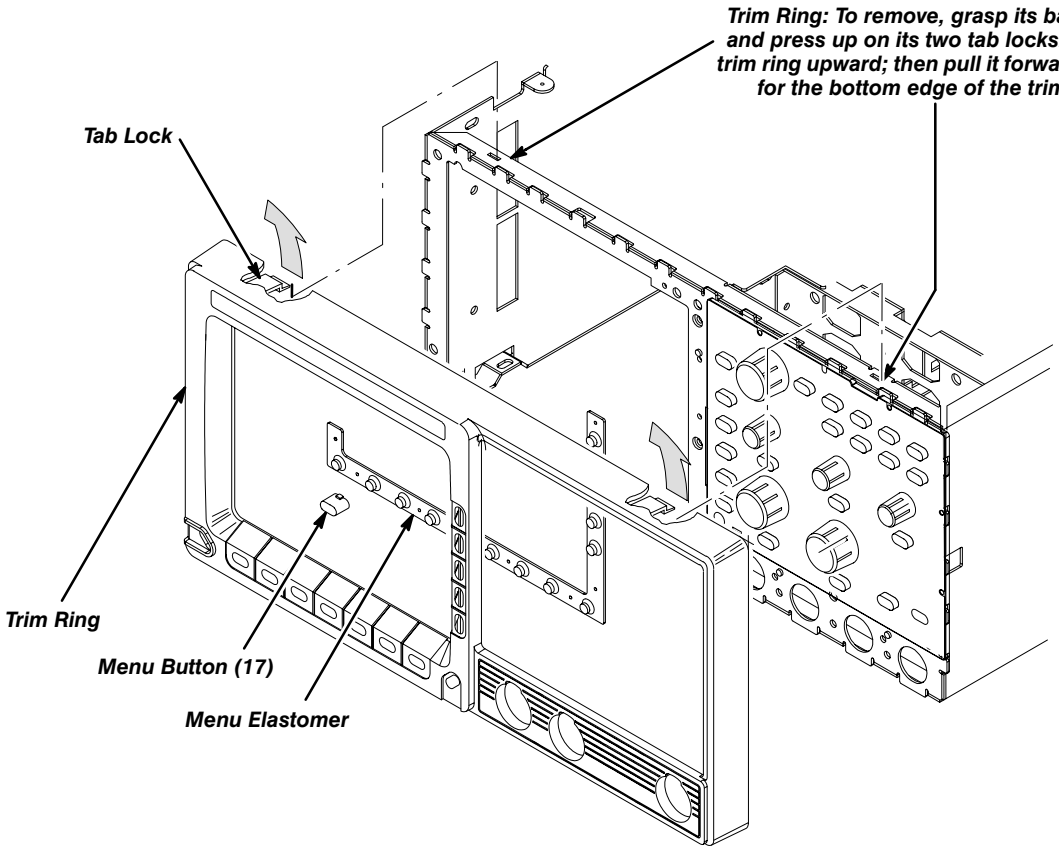


Figure 6-6: Trim Ring, Menu Elastomer, and Menu Buttons Removal

4. Repeat the process, prying on the bottom edge of the trim ring to complete its removal. Lay the trim ring on its face on the work surface.
5. If you are servicing the front EMI gaskets, discard the old ones.
6. If you are servicing the menu elastomer, lift it out of the trim ring.
7. If you are servicing the menu buttons, lift them out of the trim ring.

8. *Reinstallation:*

   a. Insert each button into its hole in the trim ring.

   b. Align the menu elastomer over the menu button holes in the trim ring and press it in to install. Avoid touching the carbon contact points on the elastomer when installing.

   c. Without installing the EMI gaskets, align the trim ring to the front of the chassis and push it on to seat. Be sure that both pairs of flex locks, one pair each at the inside top and bottom of the trim ring, snap over the edge of the chassis.

   d. Lay the oscilloscope so its front cover is on the work surface.

   e. Align an EMI gasket so it lies between any pair of adjacent flex locks along the groove between the cabinet.

   f. Using a wood spudger, push the EMI gasket until it is firmly seated at the bottom of the groove (see Figure 6-7). It should not overlap either flex lock.

   g. Repeat the process just described to install the remaining three gaskets.

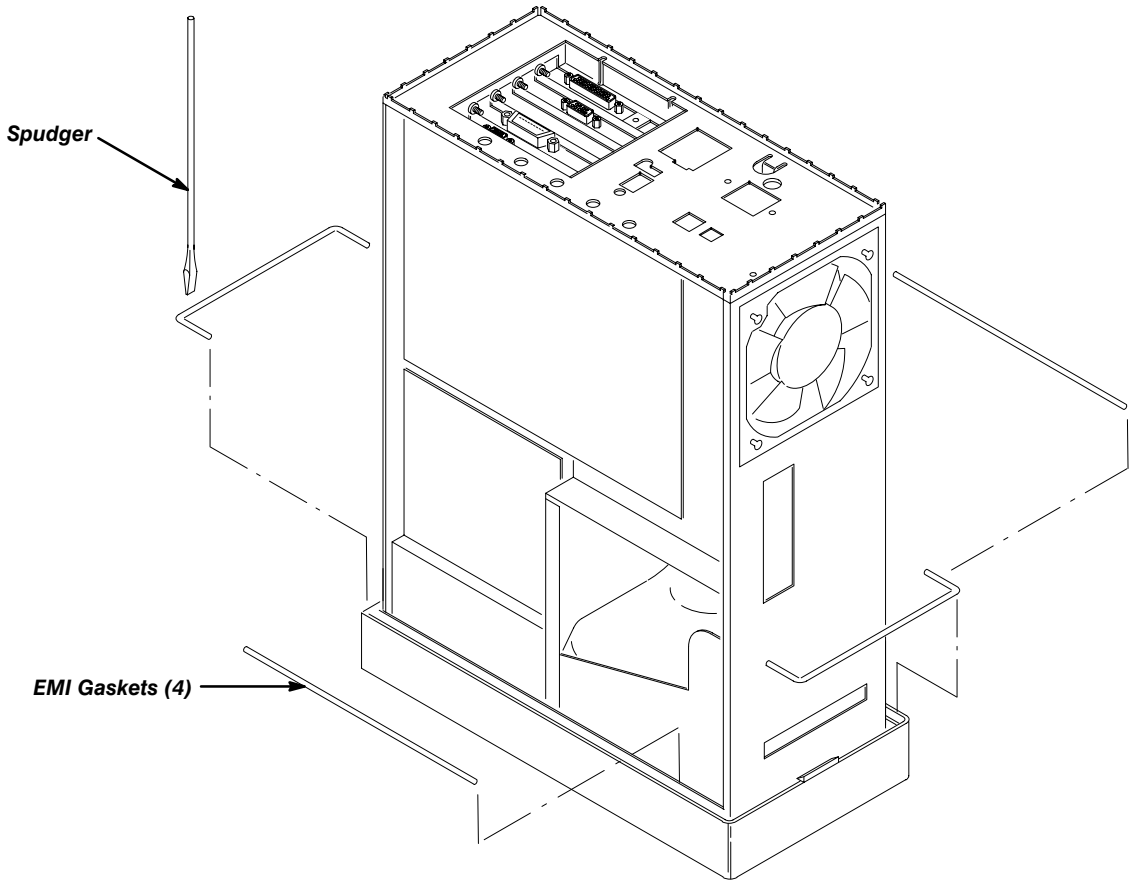


Figure 6-7: EMI Gasket Removal and Installation

Front Panel Assembly and Menu Flex Circuit

1. Perform the previous procedure to remove the trim ring.
2. Have handy a flat-bladed screwdriver (Item 4).
3. Set the oscilloscope so its bottom is down on the work surface and its front is facing you.
4. Insert a flat-bladed screwdriver into the slot at the front-right of the chassis (see Figure 6-8). Push inwards to release the snap lock at the right side.
5. Lift the front panel assembly out of the front of the main chassis until you can reach the interconnect cables connecting it to various other modules.
6. Unplug the main board and menu flex-circuit cables from their jacks on the front panel assembly.
7. Finally, lift the front panel assembly out of the front of the main chassis to complete the removal.

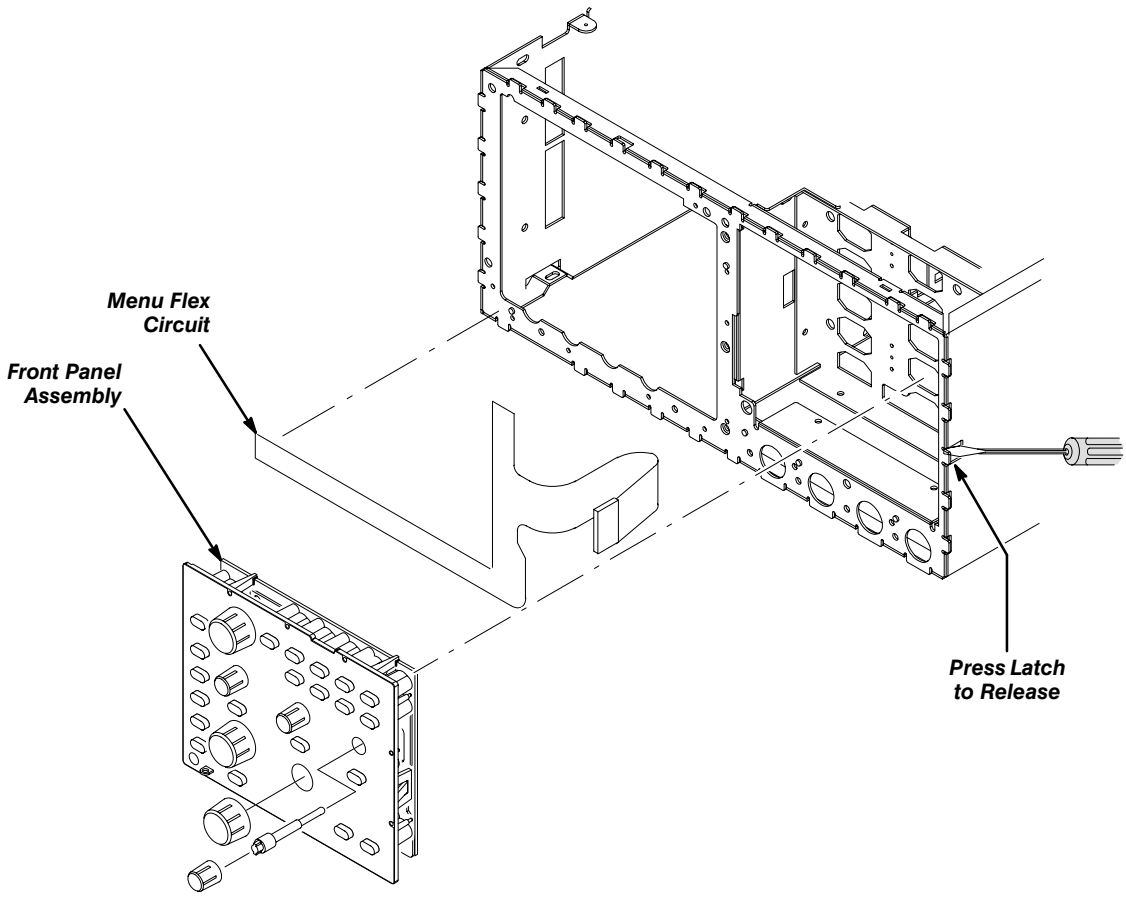


Figure 6-8: Front Panel Assembly and Menu Flex Circuit Removal

8. If you are removing the menu flex circuit, pull the circuit away from the front of the main chassis.
9. If you do not need to perform component-level service on the front-panel assembly, skip to step 16 for reinstallation instructions.
10. Remove the front-panel control knobs from the front-panel assembly using the method described in *Front-Panel Knobs and Shafts* on page 6-11.
11. Release the three snap locks at the edge of the circuit board, then tilt the board away from the assembly until it unplugs from J405. See Figure 6-9.
12. Slide the circuit board out from the retainers found at the edge opposite the snap locks and lift it away from the rest of the assembly.
13. Hand disassemble the front-panel-assembly components using Figure 6-9 as a guide. Reverse procedure to reassemble.

Perform step 14 only if replacing a damaged ground spring.

14. Using Figure 6-9 as a guide, grasp (compress) the base of the ground spring (to release the spring) with tweezers (Item 7) and pull the ground spring away from the assembly.
15. *Reassembly of the Front-Panel Assembly:* Do in reverse order substeps 14 through 10, reversing the procedure outlined in each step. Be sure to dress the main-board-to-front-panel cable so that the loop of extra cable length is in the front-panel cavity of the chassis.
16. *Reinstallation:*
    a. If you are replacing the menu flex circuit, perform the following subparts:
       - Wipe the front of the chassis using isopropyl alcohol and a clean, lint-free cloth. Let it dry.
       - Find the score line in the adhesive backing and peel the backing off the menu flex circuit.
       - Carefully align the three holes on the menu flex circuit to the locator studs on the front of the main chassis. When the alignment is correct, press the flex circuit against the chassis so it adheres to the chassis.
       - Clean the surface of the menu flex circuit using isopropyl alcohol and a clean, lint-free cloth.
    b. Reconnect the main board and menu flex-circuit cables to the back of the front panel assembly.
    c. Carefully reinsert the front-panel assembly into the main chassis *left side first*.

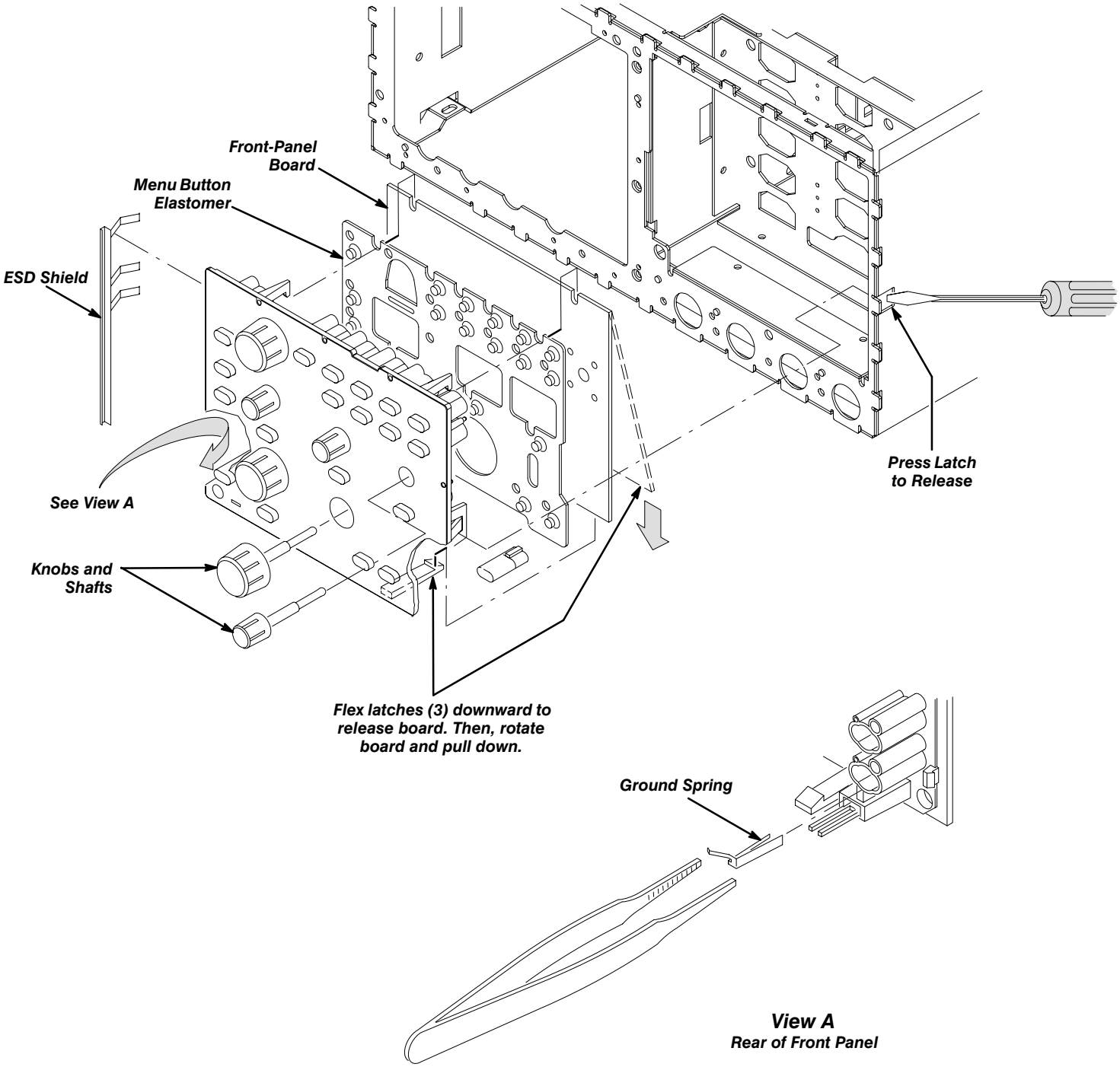


Figure 6-9: Disassembly of Front-Panel Assembly

Main Board Assembly

1. Have handy a screwdriver with a size T-15 Torx® tip (Items 1 and 2), BNC wrench (Item 14), BNC fixture (Item 15), and soldering iron (Item 12).
2. Remove the front trim ring as outlined on page 6-15.
3. Set the oscilloscope so its top side is down on the work surface and its front is facing you.
4. If present, unplug the option board cables.
5. Unplug the power supply cable *at the power supply*.
6. Unplug the monitor cable *at the monitor assembly and power supply*; carefully route the cable out through its access hole.
7. Unplug the front panel cable.
8. Using Figure 6-10 as a guide, remove the eight T-15 Torx® screws securing the main board assembly to the chassis.

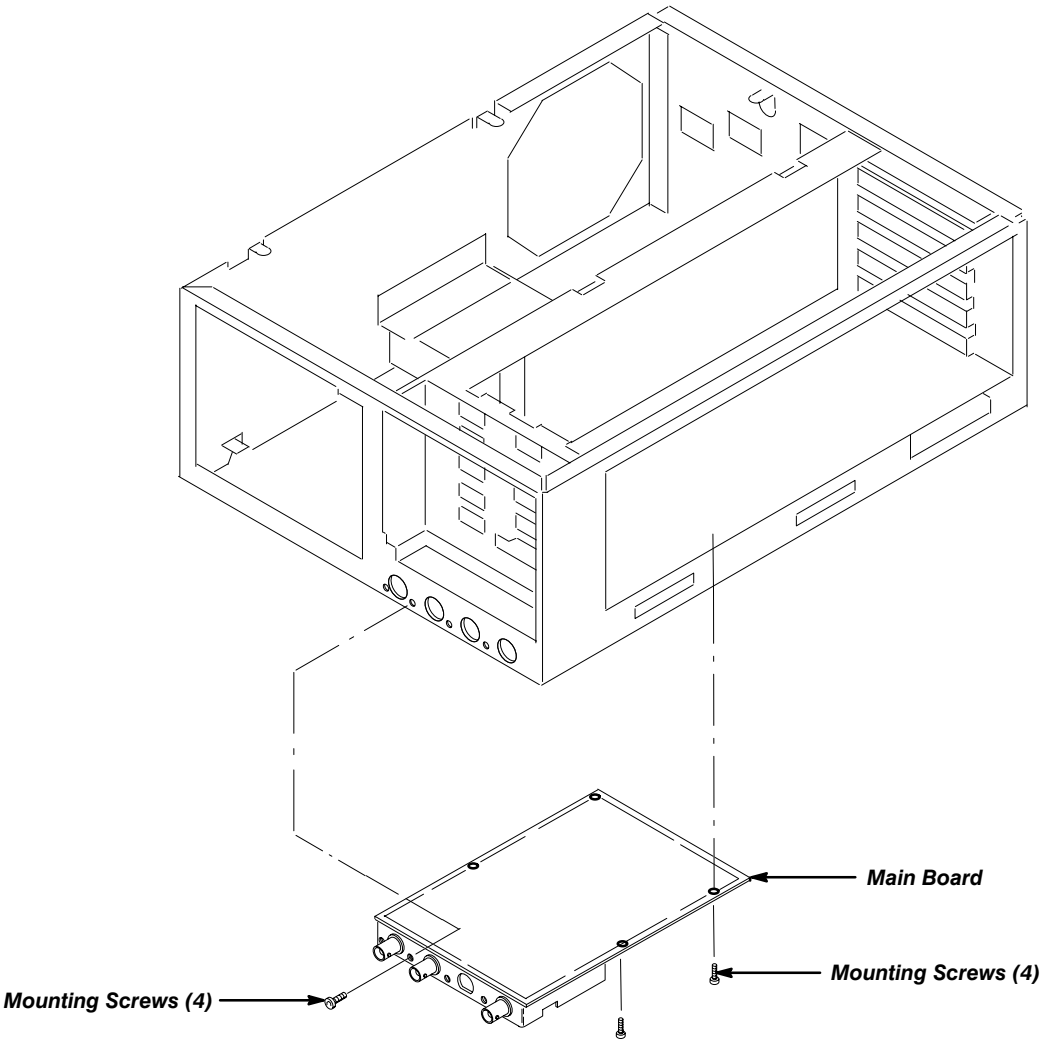


Figure 6-10: Main Board Removal

9. Lift the main board assembly away from the oscilloscope to complete its removal.

STOP

Continue with this procedure only if you need to replace a BNC, attenuator hybrid, EMI shield, or attenuator shield (see Figure 6-11). Otherwise, skip to step 15 to reinstall the assembly.

10. Straighten the two twist-lock tabs that lock the attenuator shield in place.
11. Lift the shield up and toward the back of the main board to complete the removal of the shield.
12. If you need to remove an attenuator hybrid perform the following sub-parts:
    a. Grasp the EMI shield with both hands and carefully pull it straight up to remove the shield.
    b. Unsolder all 34 leads to the attenuator hybrid.

c. Lift the hybrid away from the main board to complete its removal.

13. If you need to remove a BNC perform the following subparts:

a. Unsolder the wire to the center conductor of the BNC.

b. From the back of the board, remove the BNC nut and washer using the BNC wrench (Item 14).

c. Pull the BNC from the front of the main board.

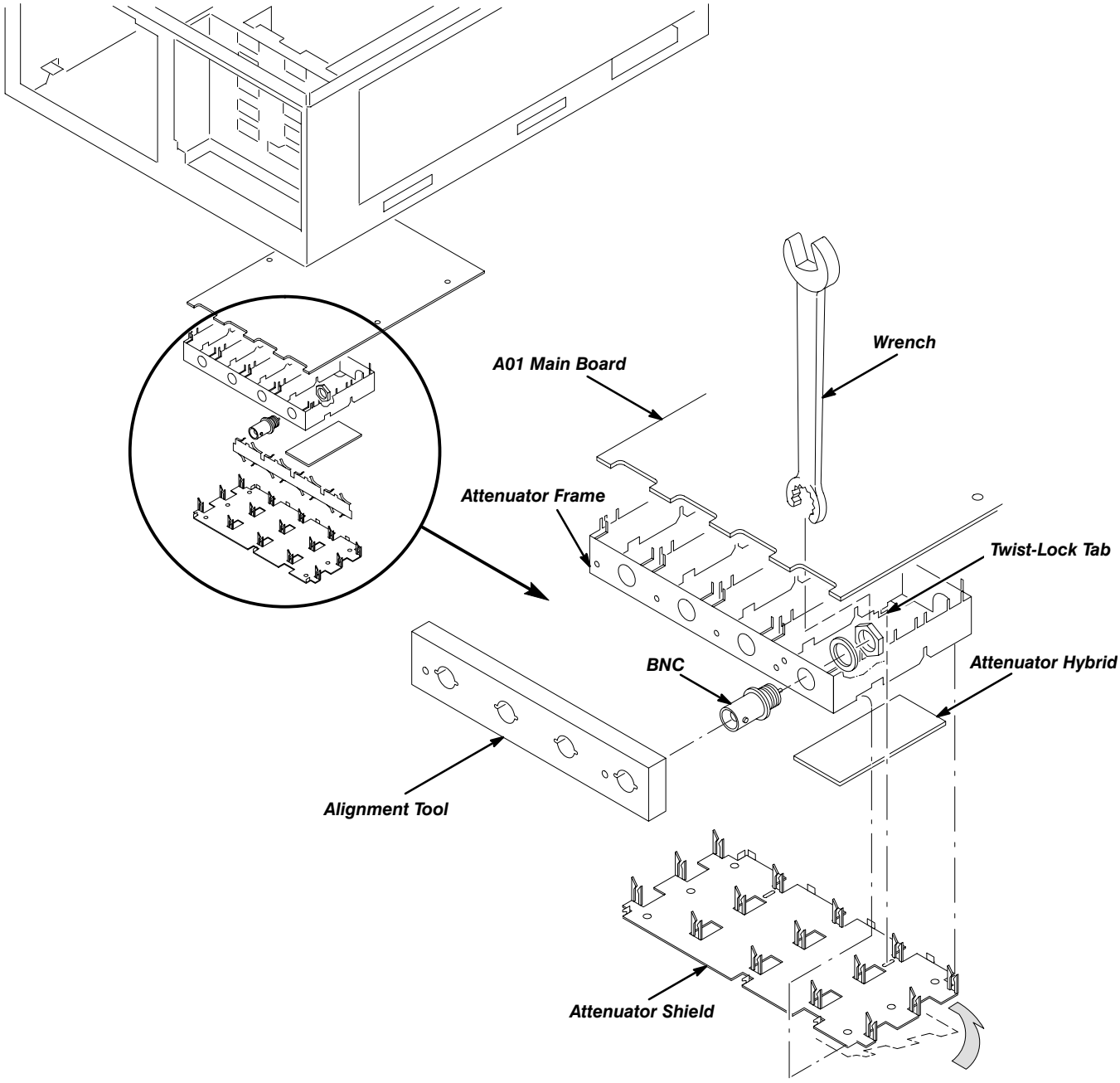


Figure 6-11: BNC and Hybrid Removal

14. *Reassembly:*

    a. Perform the following subparts if you removed a BNC:

    - From the back of the board, loosen the BNC nut of each BNC using the BNC wrench (14).
    - Loosely install the new BNC, washer, and nut.
    - Place the BNC alignment fixture (15) over all four BNCs.
    - Tighten the nuts of all four BNCs using the BNC wrench (14).
    - Remove the BNC alignment fixture.
    - Resolder the wire to the center conductor of the BNC.

    b. Perform in reverse order subparts 12 through 10, reversing the removal instructions in each subpart to reassemble the main board.

15. *Reinstallation:* Perform in reverse order steps 9 through 4, reversing the removal instructions in each substep to reinstall the assembly.

Monitor Assembly

1. Have handy a screwdriver with a size T-15 Torx® tip (Items 1 and 2).
2. Set the oscilloscope so its top is down on the work surface, with its front facing you.

WARNING

To avoid injury: *Use care when handling a monitor. If you break its display tube it may implode, scattering glass fragments with high velocity and possibly injuring you. Wear protective clothing, including safety glasses (preferably a full-face shield). Avoid striking the display tube with or against any object.*

To avoid damaging the monitor: *Store the monitor with its display tube face down in a protected location, placing it on a soft, nonabrasive surface to prevent scratching the face plate.*

3. Take the precautions outlined in the ***WARNING*** above. Refer to Figure 6-12 while doing the following steps.
4. Unplug the main board/power supply cable.
5. Remove the three T-15 Torx® screws securing the monitor assembly to the bottom of the main chassis. Rotate the oscilloscope so its bottom is down on the work surface.

WARNING

To avoid injury or death, do not unplug the anode from the monitor when removing or replacing the monitor module.

6. Remove the three T-15 Torx® screws securing the monitor assembly to the top of the chassis. (See Figure 6-12 to locate the screws.)
7. Push up on the left top tab lock on the trim ring and pull the left corner of the trim ring forward slightly.
8. Tilt the rear of the monitor assembly upward slightly. Slide the monitor assembly back in the main chassis until it stops (about 2 cm). Now lift it straight up out of the top of the main chassis to complete the removal.
9. While heeding the ***WARNING*** on monitor handling that immediately precedes step 3 of this monitor removal procedure, store the monitor assembly in a protected location. Place it face down on a soft, nonabrasive surface to prevent scratching the face plate.
10. *Reinstallation:* perform steps 8 through 5 in reverse order to reinstall the monitor assembly.

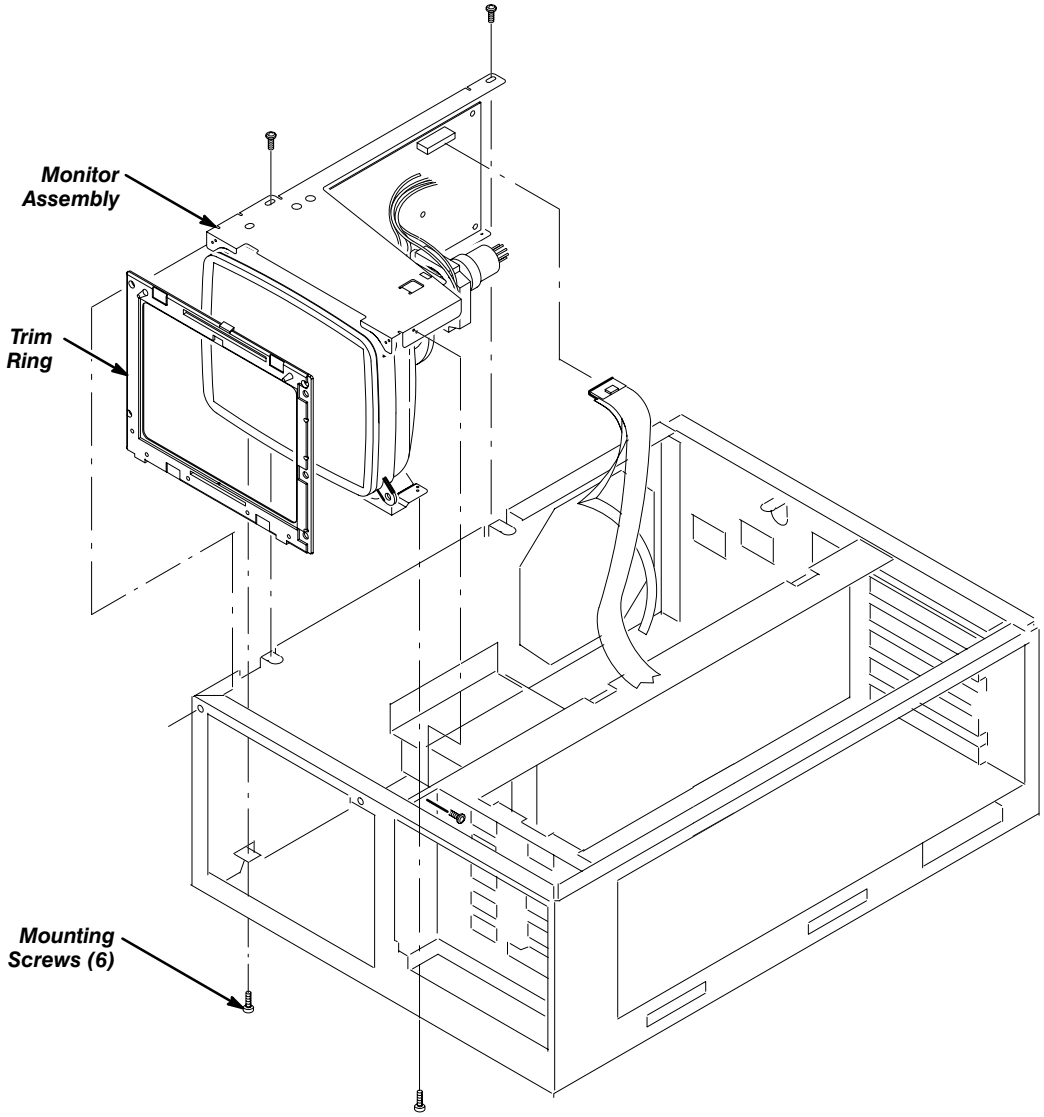


Figure 6-12: Monitor Assembly Removal

Power Supply Assembly

1. Have handy a screwdriver with a size T-15 Torx® tip (Items 1 and 2).
2. Set the oscilloscope so its right side is down on the work surface, with its bottom facing you.
3. Unplug the main board power cable.
4. Set the oscilloscope so its bottom is down on the work surface, with its front facing to the right.
5. If Option 14 is installed and its printer power cable is used on your instrument, unplug the printer power cable.
6. Unplug the monitor and fan power cables.
7. Remove the chassis ground connector by unbolting it from the main chassis.
8. Remove the two screws connecting the power supply assembly to the main chassis (see Figure 6-13).

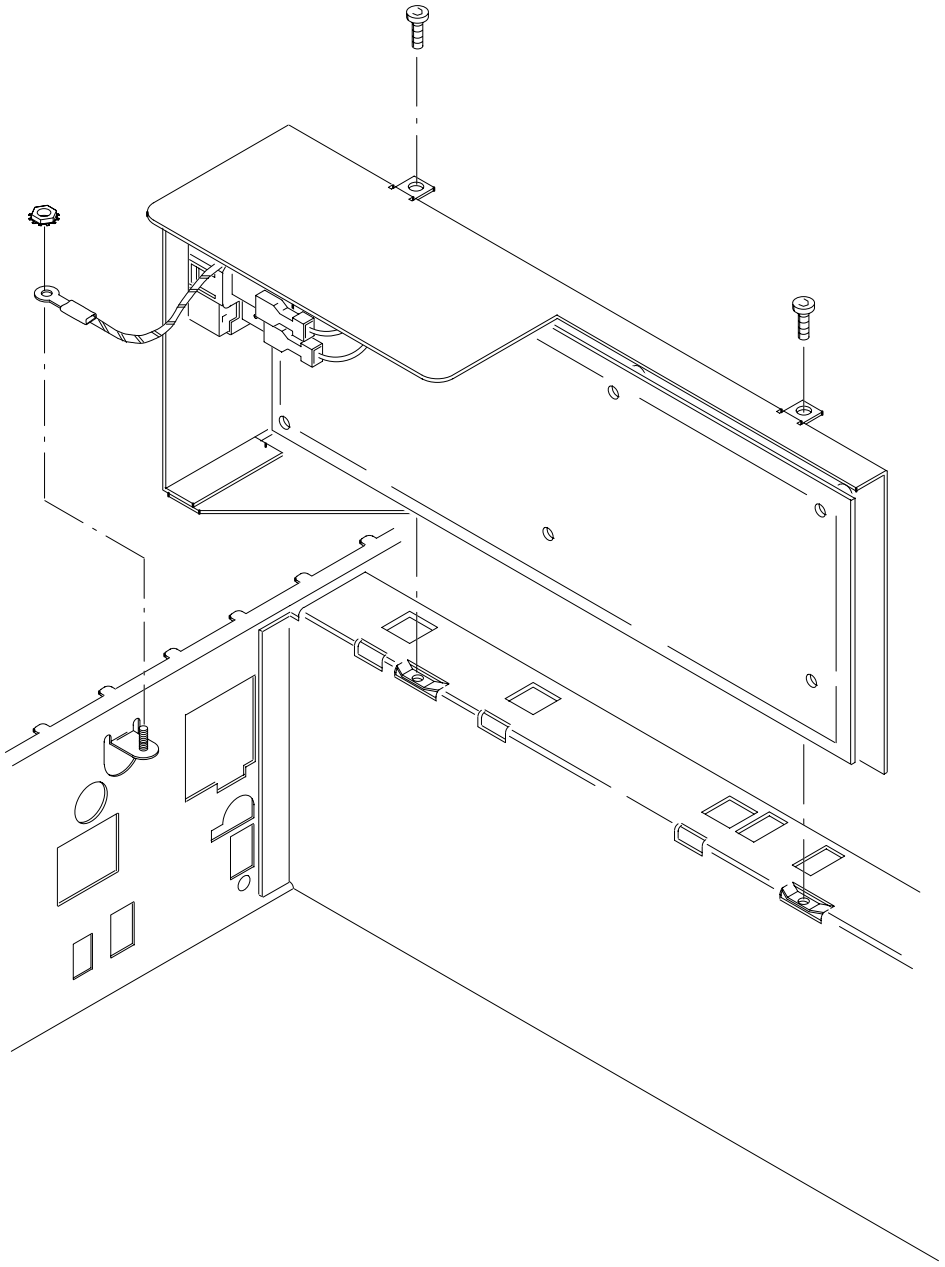


Figure 6-13: Low Voltage Power Supply Removal

9. Gently pull the power supply assembly up and out of the main chassis.
10. *Reinstallation:* Perform in reverse order steps 9 through 7, reversing the removal instructions in each substep to reinstall the assembly.

Option 14 Assembly

1. Have handy a screwdriver with a size T-15 Torx® tip (Items 1 and 2) and a 3/16 inch nut driver (Item 6).
2. Set the oscilloscope so its top is down on the work surface, with its front facing towards you.
3. Disconnect the main board communications cable (J601) *at the main board*. Remove the cable from its cable clamp (see Figure 6-15).

NOTE

Early versions of this option did not use the video cable, power cable, or the screws at the rear of the chassis. If your option does not use these parts, skip steps 4, 5, and 7.

4. If used on your option, disconnect the video cable (J703) *at the main board*.
5. If used on your option, remove the two screws connecting the assembly to the chassis (see Figure 6-15) using a screwdriver with a size T-15 Torx® tip.
6. Set the oscilloscope so its bottom is down on the work surface, with its rear facing towards you.
7. If used on your option, disconnect power cable J4 from the power supply.
8. If your option has the video cable and printer power cable but they are not used on your option, remove the cables from their cable clamp.
9. Using a screwdriver with a size T-15 Torx® tip, remove the two screws on the left side of the assembly (see Figure 6-15).
10. Now remove the two screws on the rear panel that fasten the assembly to the chassis.
11. Pull the assembly towards the front of the instrument and up and out of the chassis. Carefully route the cables through their holes in the chassis.

DO NOT perform step 12 unless you need to replace components on the Option 14 board.

12. *Disassembly*: Depending on the version of the option you have, remove the six or eight nuts that fasten the board(s) to the mounting bracket, as shown in Figure 6-14. Gently separate the board(s) and the bracket. If part of your option, unplug the printer power cable from J2, and remove the power connector from the bracket by compressing the mounting tabs and pushing the connector through the bracket.

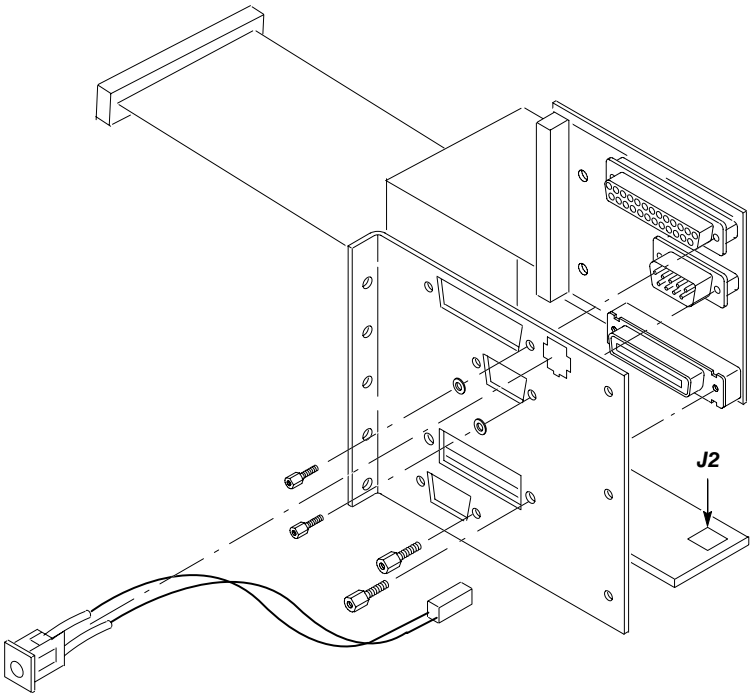


Figure 6-14: Option 14 Disassembly

13. *Reinstallation:* Perform steps 12 through 3 in reverse order.

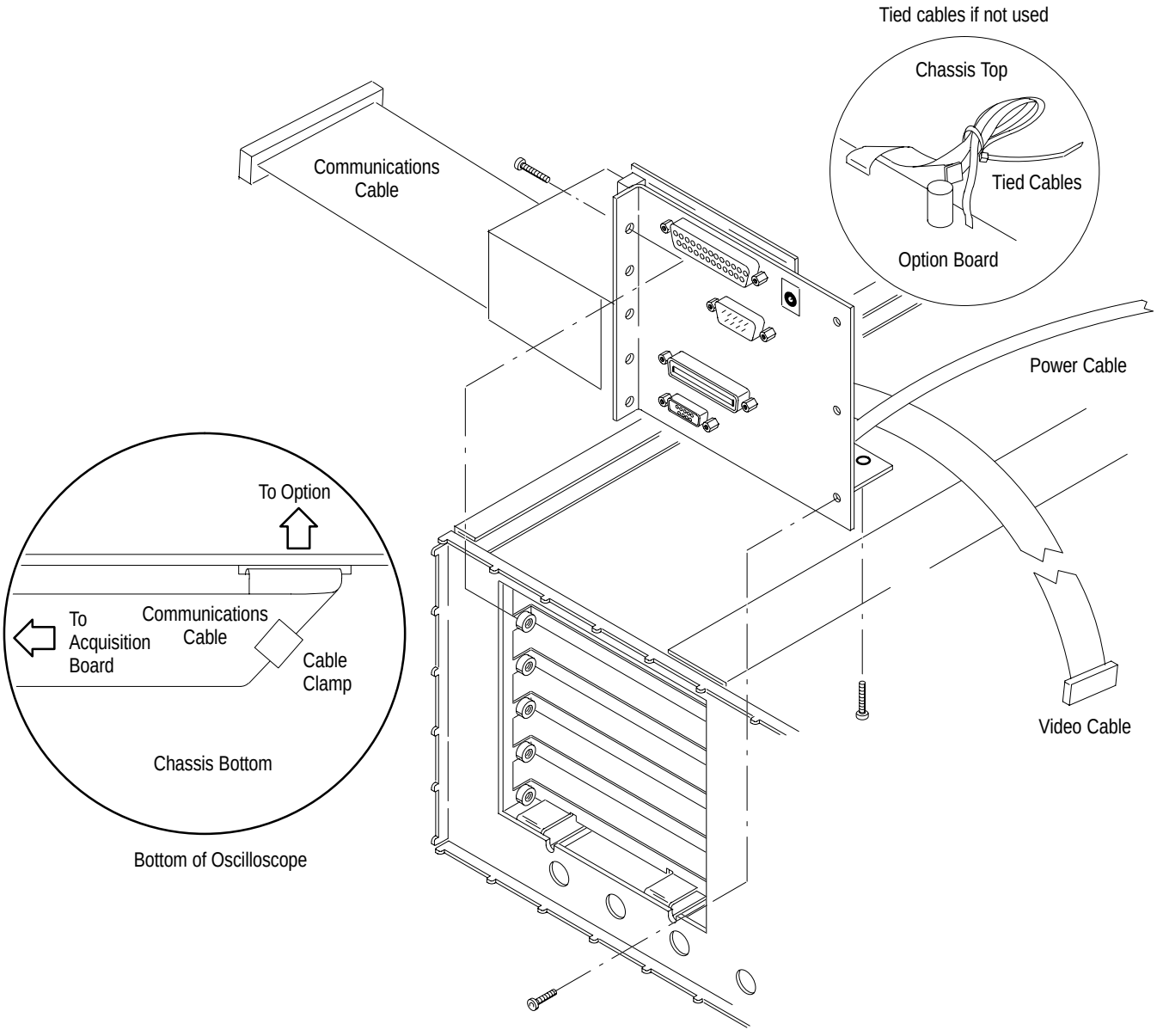


Figure 6-15: Option 14 Assembly Removal

Fan and Fan Mount

1. Set the oscilloscope so its bottom is down, with its rear facing you.
2. Unplug the *fan* power cable from J3 on the *Power Supply*.
3. Release the two flex locks securing the top of the fan to the fan mount, then lift the fan out from the top of the chassis (see Figure 6-16).

DO NOT proceed unless servicing a broken fan mount or removing that mount for cleaning.

4. Rotate the oscilloscope so the side that houses the fan *mount* is facing upwards.

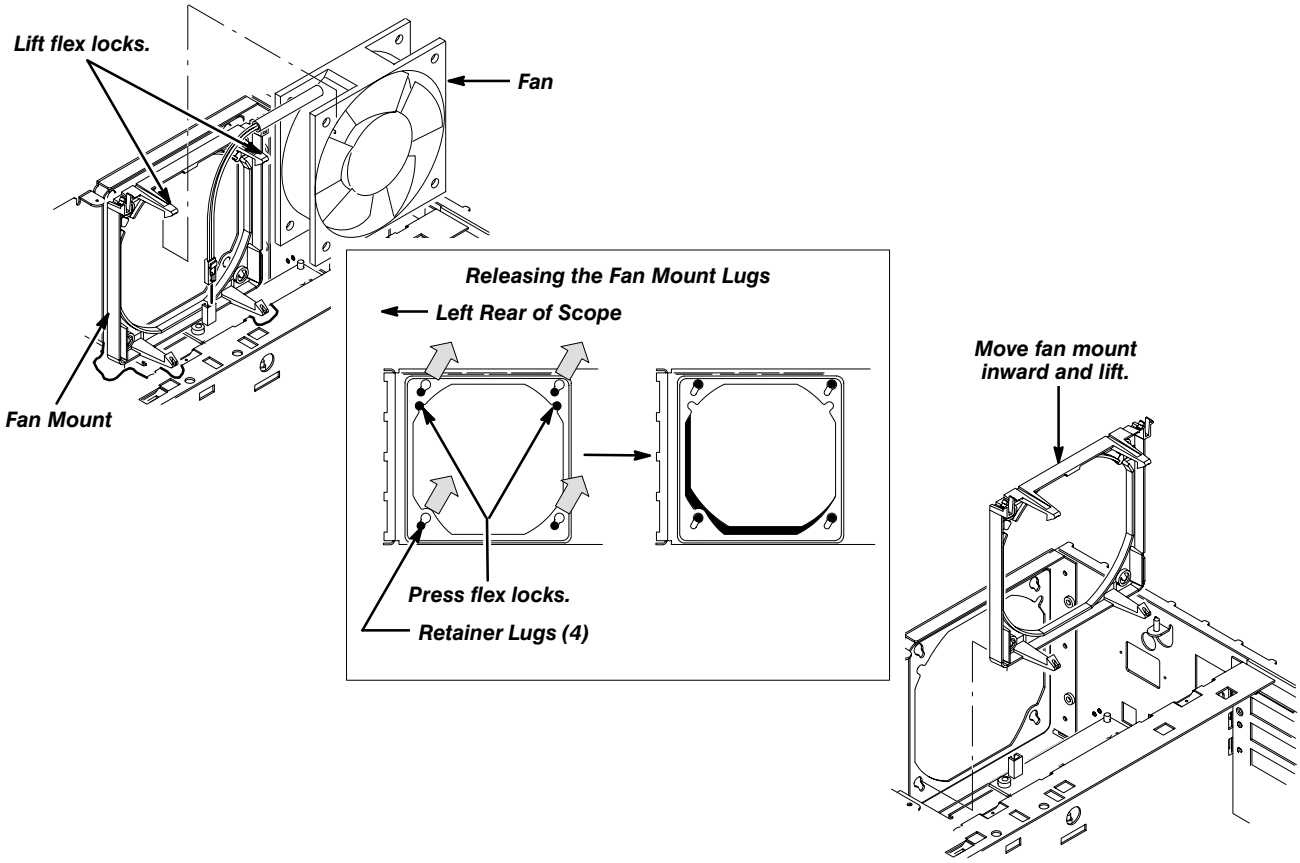


Figure 6-16: Fan and Fan Mount Removal

5. Depress the two flex locks to release them (see Figure 6-21).
6. While holding the flex locks released, slide the fan mount so its four retainer lugs slide from their small retainer holes in the chassis into their large release holes.
7. Move the fan mount inward so its retainer lugs are out of the large retainer holes and lift it out of the chassis to remove.
8. *Reinstallation:*
   a. Perform in reverse order steps 7 through 5 reversing the removal instructions in each substep to reinstall the fan mount. Be sure to seat the fan mount so its two flex locks snap to secure it on the chassis.
   b. Perform in reverse order steps 3 and 2 to reinstall the fan.

Troubleshooting

This section contains information and procedures designed to help you isolate faulty modules in the oscilloscope. If you need to replace a module, use the *Removal and Replacement* procedures immediately preceding this section.

NOTE

These procedures will isolate a fault to the module level. If you wish to isolate a faulty component, use the theory of operation, schematics, board dollies, and grid locator charts provided elsewhere in this manual.

Onboard Diagnostics

The onboard diagnostics focus on verifying, calibrating, and isolating faulty modules. Use the following procedure to activate the diagnostics.

1. Power up the oscilloscope and allow a 20 minute warm-up period.
2. Press the front panel button **UTILITY**.
3. Repeatedly press the main menu button **System** until **Diag** is highlighted in the pop-up menu. This calls up the diagnostics menu, shown in Figure 6-17.

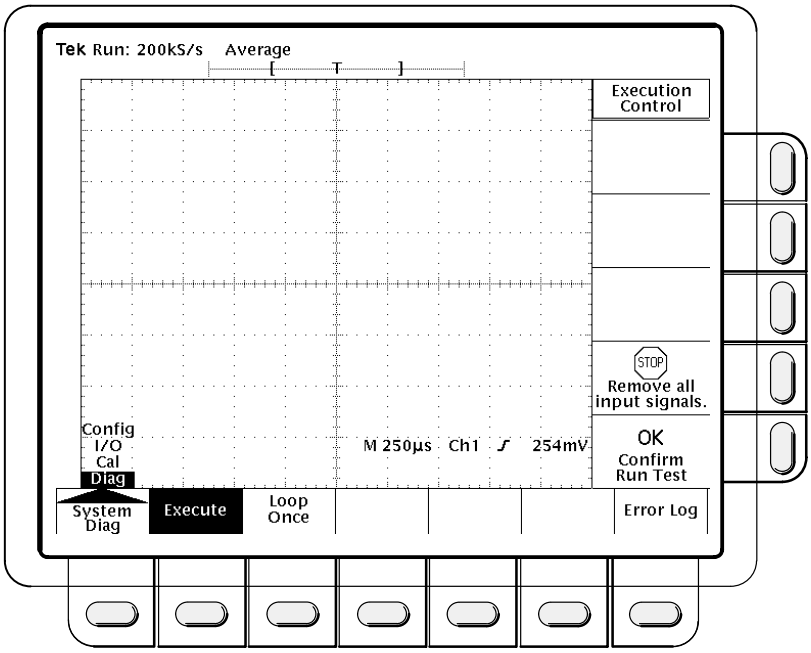


Figure 6-17: The Diagnostics Menu

4. Press the main menu button **Loop**. Select one of the following options from the side menu.
   - Press **Once** to run the tests once.
   - Press **Always** to run the tests continuously until you cycle the power.
   - Press **Until Fail** to run the tests continuously until the instrument fails a test or until you cycle the power.
5. Press the main menu button **Execute**; press the side menu button **Ok Confirm Run Test**.
6. Wait. The diagnostics will take about two minutes to complete. Then the oscilloscope displays pass/fail results for each system.
7. If the onboard diagnostics indicate a failure, reenter the diagnostics menu and press the main menu button **Error Log**.

NOTE

The RS232 Line Snapshot and RS232 Errors are reset at each power-on. For more RS-232 information, see the TDS 310, TDS 320, & TDS 350 Programmer Manual*.*

8. Press the side menu button **Display Log** to display the diagnostics error log. The error log contains summary data gathered over the life of the oscilloscope and descriptions of the last 200 errors encountered (see Figure 6-18). The last error in the list is the most recent and/or most important; record this information and continue on to the *Troubleshooting Procedure* in the next section to verify the failure and pinpoint the faulty module.

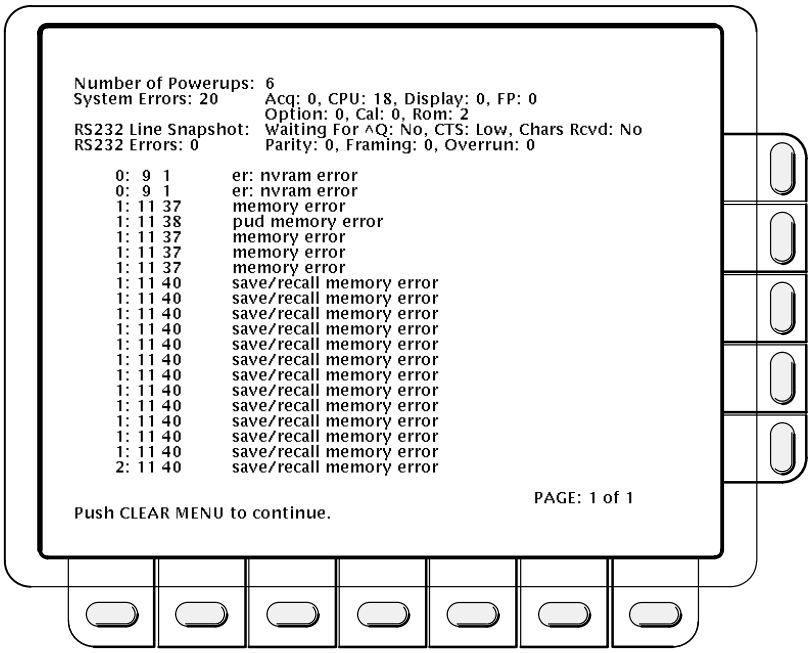


Figure 6-18: The Error Log

Enabling Calibration Menus

The Voltage, Timing, and External Trigger calibration menus are disabled at the factory. To enable the calibration menus, perform the following steps.

NOTE

Early versions of the TDS 320 did not contain a cal jumper and did not disable the calibration menus. Do not use this procedure on those instruments.

1. Remove the Line Cord as described on page 6-9.
2. Remove the Rear Cover and Cabinet as described on page 6-13.
3. Set the oscilloscope so its top side is down on the work surface and its front is facing you.

4. Remove cal jumper J609 from the main board (see Figure 6-19). Save the jumper. After calibration and to protect the calibration settings, reinstall the jumper.
5. *Reinstallation:* Perform in reverse order steps 1 and 2, reversing the removal instructions in each substep.

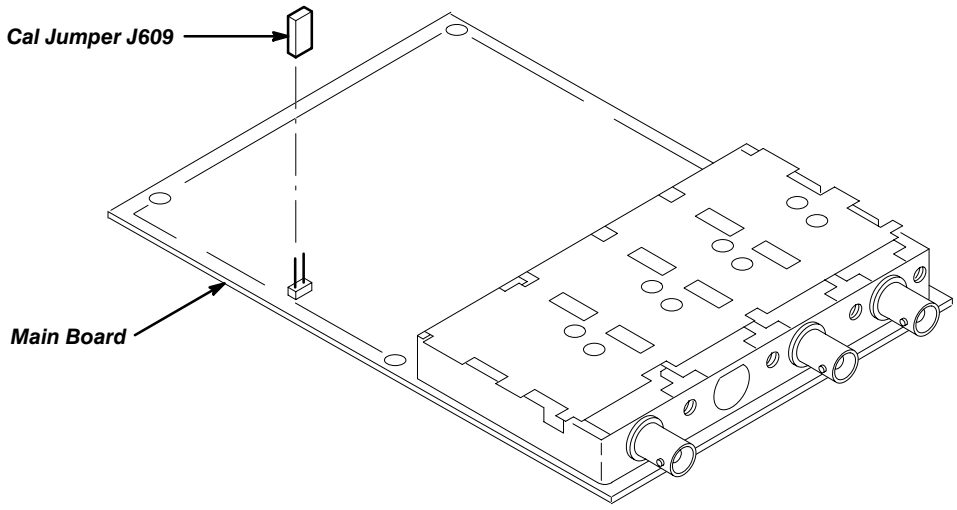


Figure 6-19: Main Board Cal Jumper

Troubleshooting Procedure

Figures 6-20 through 6-29 are flowcharts of the troubleshooting procedure. Use them to verify module failures indicated by the onboard diagnostics, or use them to troubleshoot an instrument failure not connected with the diagnostics. Begin with Figure 6-20.

NOTE

Before performing the troubleshooting procedure, remove the instrument cabinet (see page 6-13).

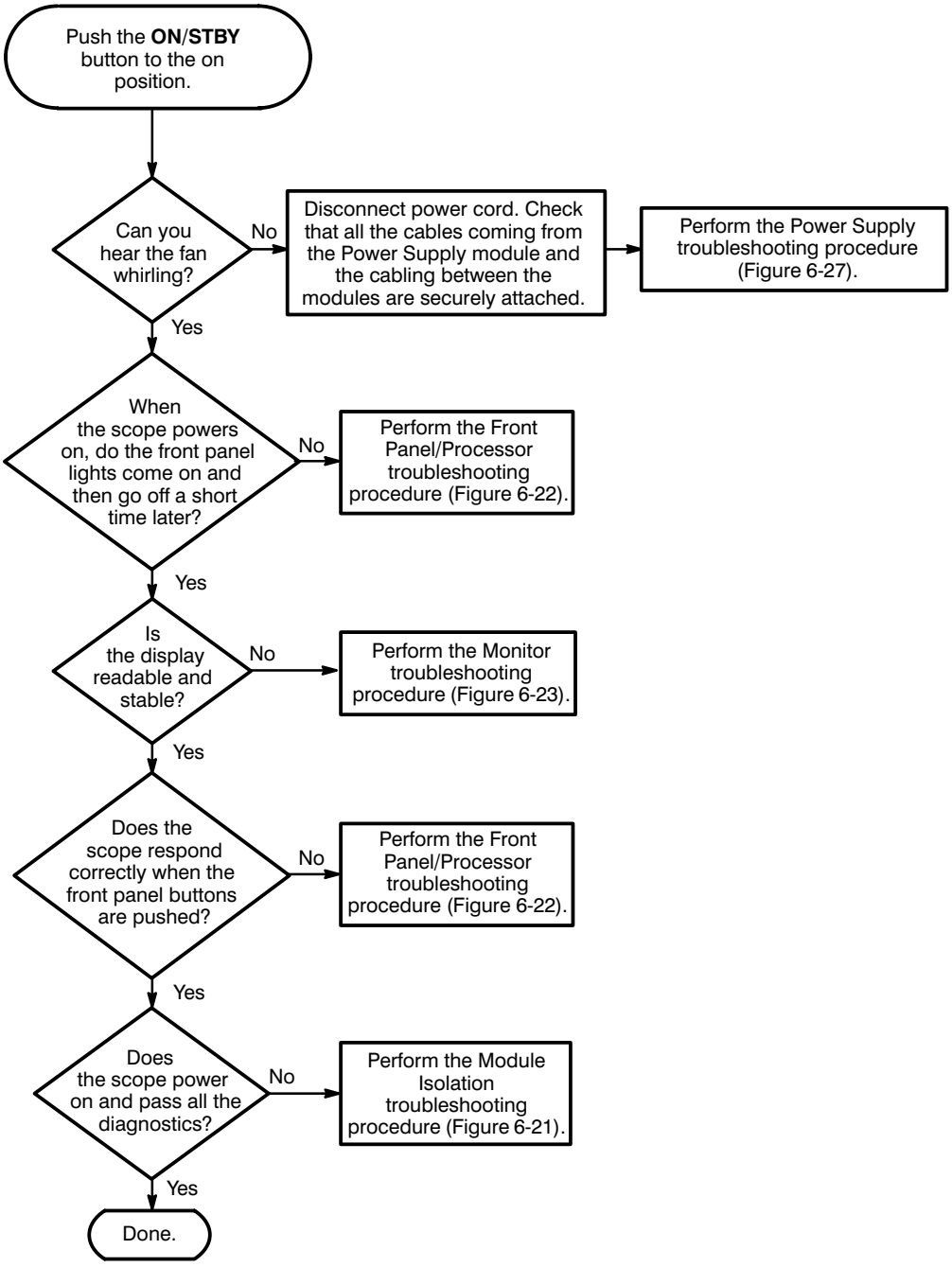


Figure 6-20: Primary Troubleshooting Procedure

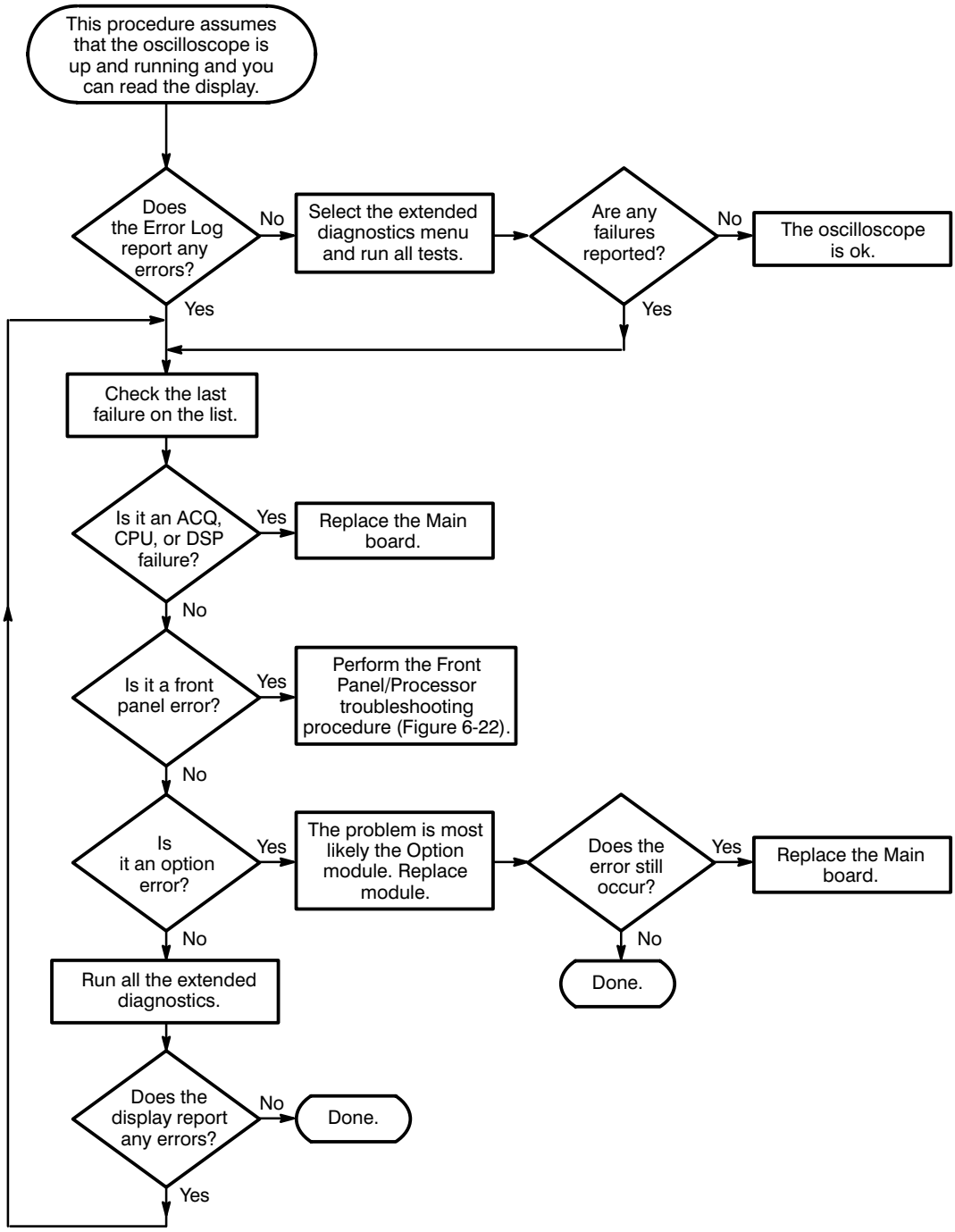


Figure 6-21: Module Isolation Troubleshooting Procedure

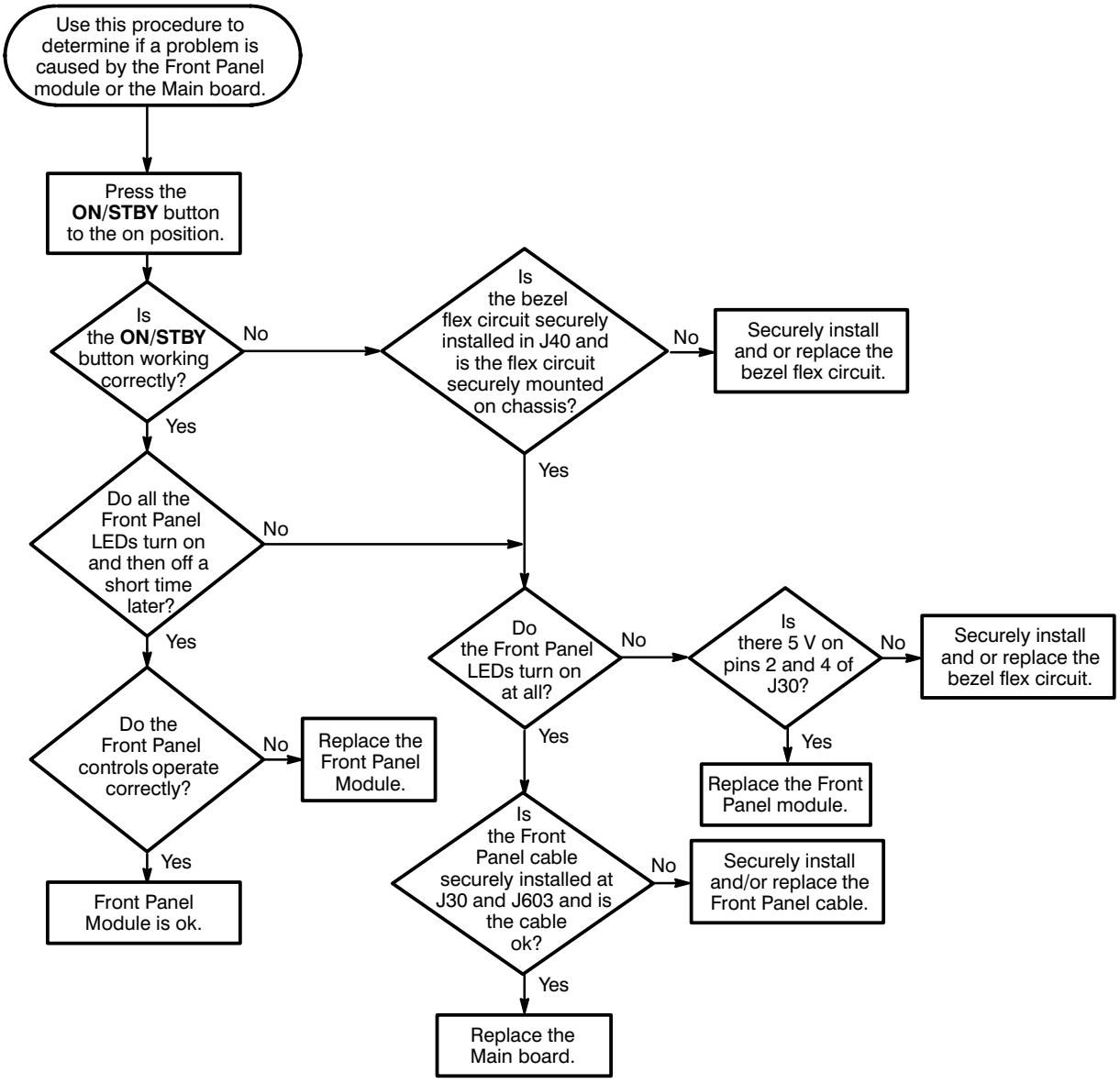


Figure 6-22: Front Panel/Processor Troubleshooting Procedure

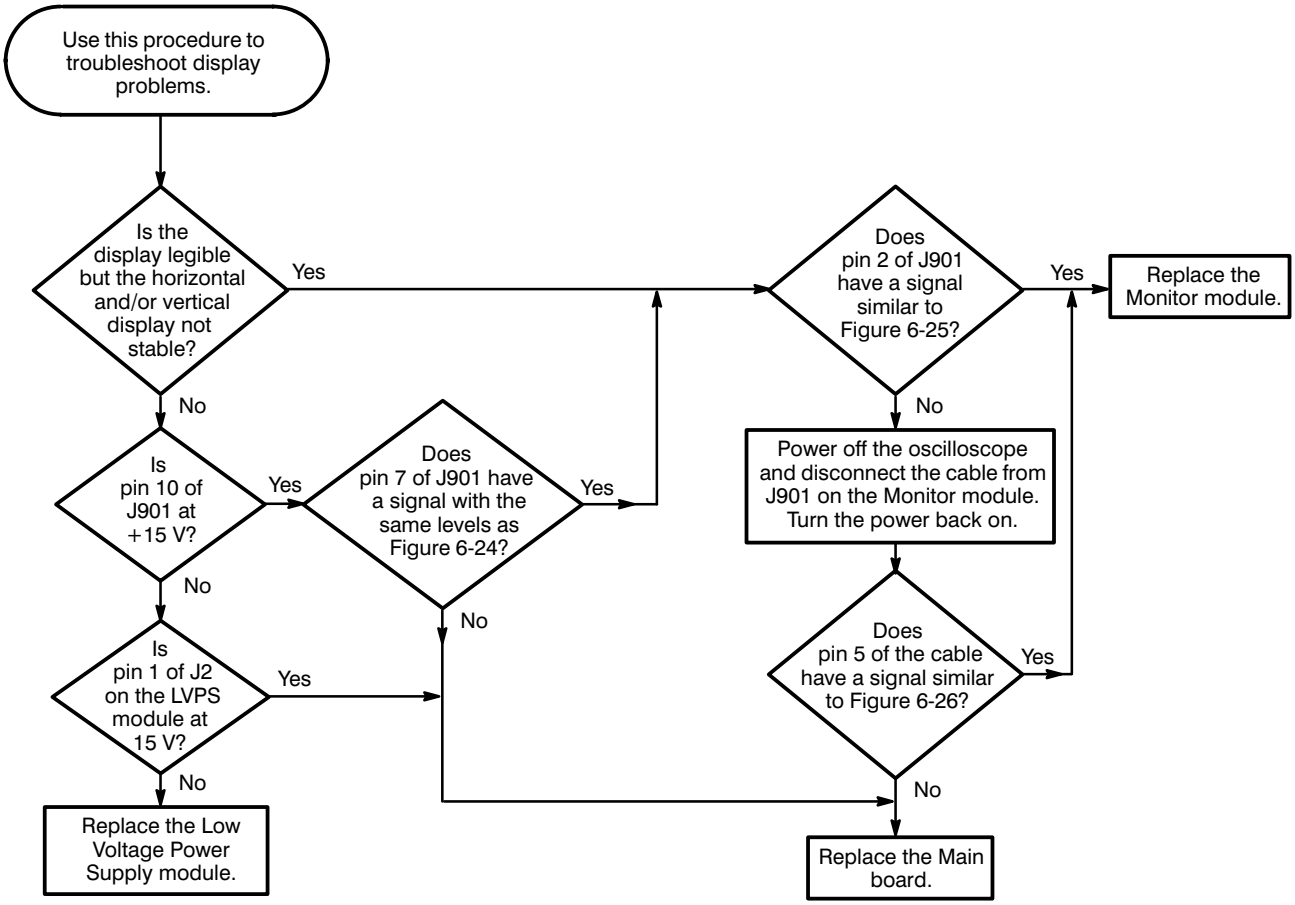


Figure 6-23: Monitor Troubleshooting Procedure

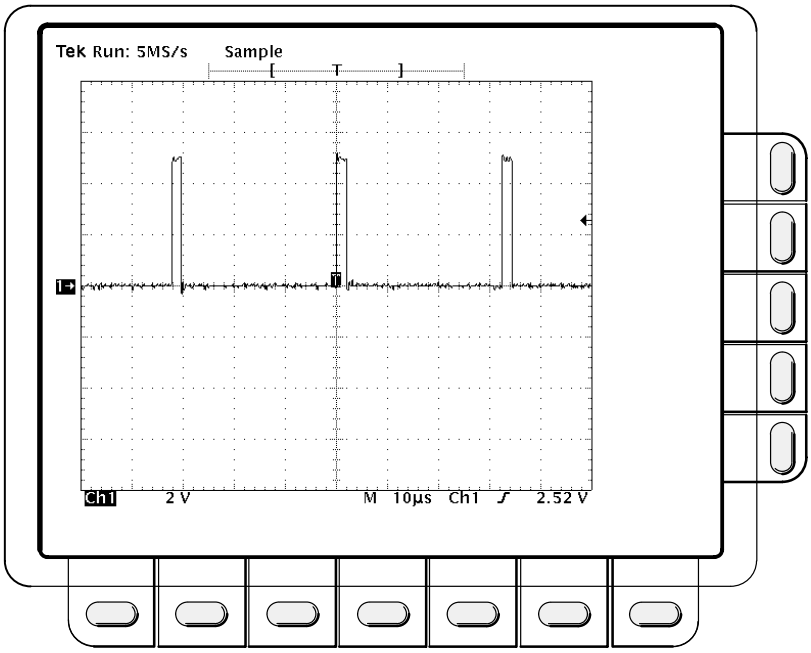


Figure 6-24: J901 Pin 7 Signal

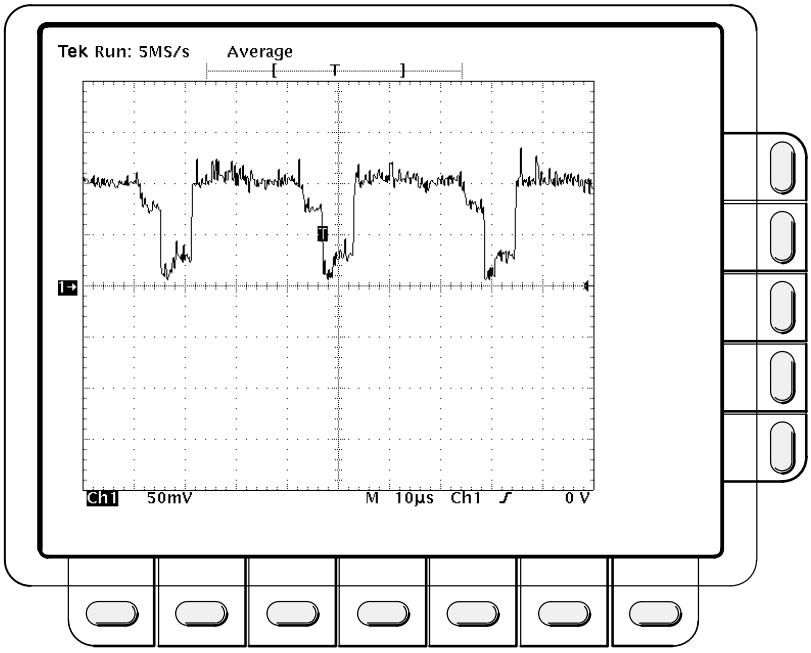


Figure 6-25: J901 Pin 2 Signal

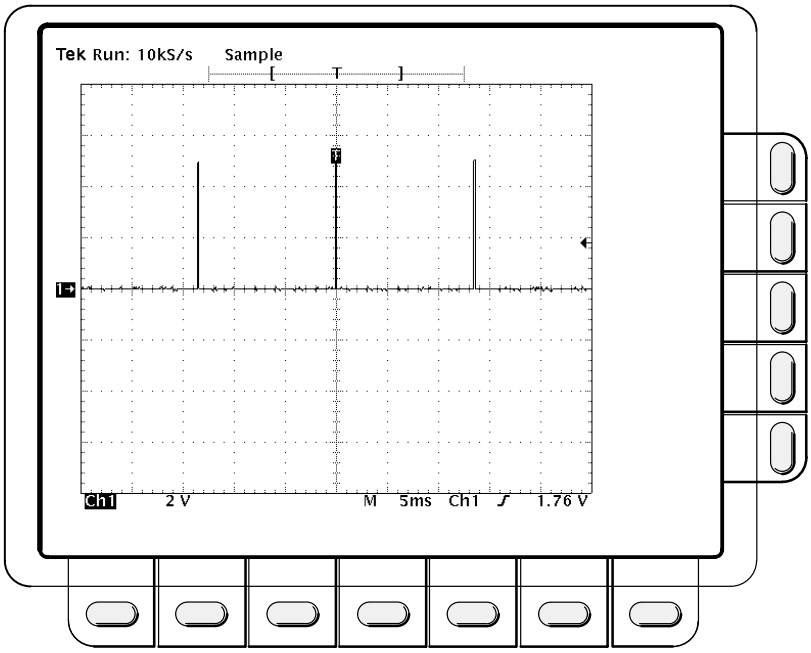


Figure 6-26: J901 Pin 5 Signal

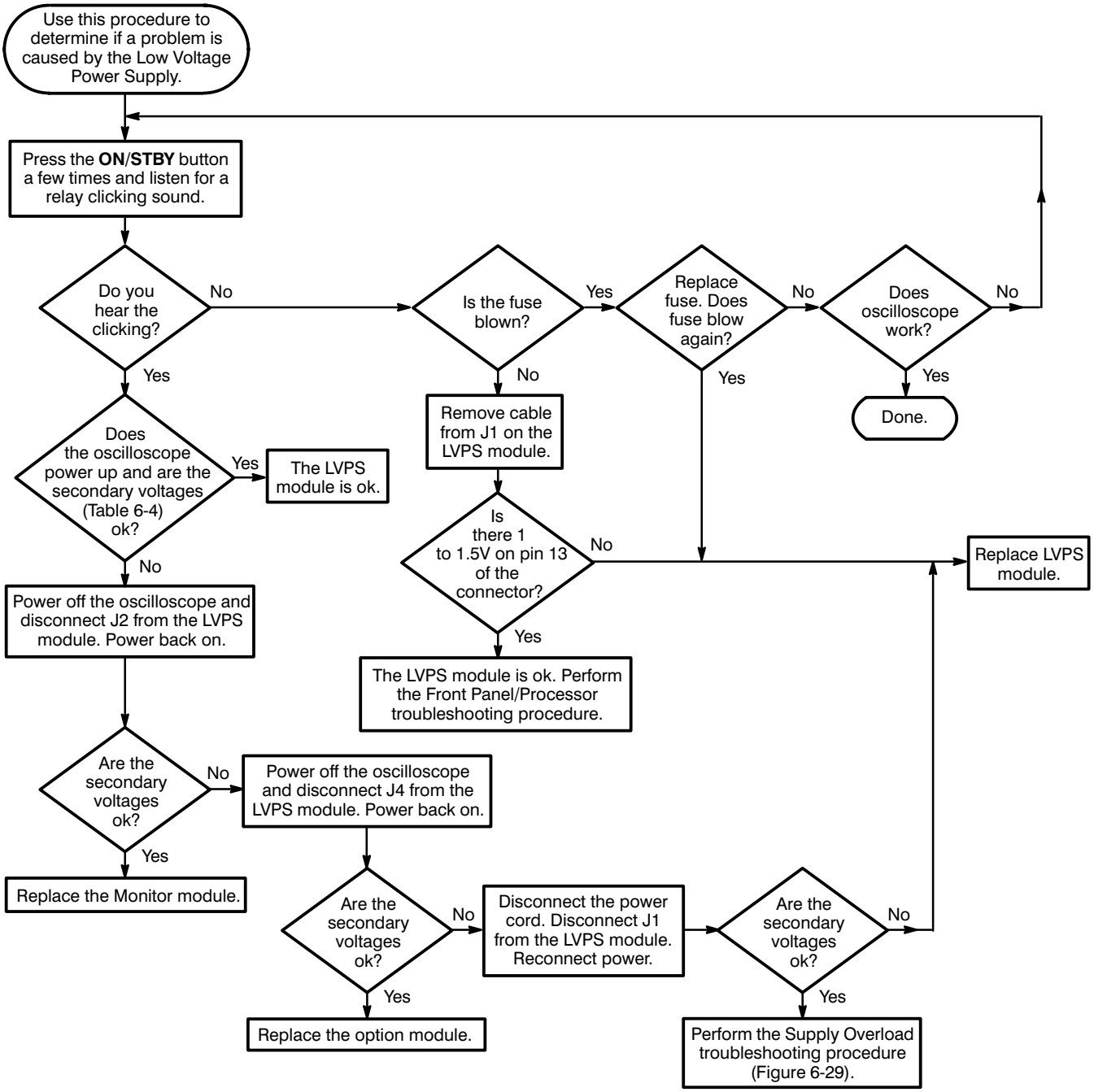


Figure 6-27: Power Supply Troubleshooting Procedure

Table 6-4: Power Supply Secondary Voltages

Location (See Figure 6-28)	Minimum	Maximum
J1 pin 2	+8.38 V	+8.82 V
J1 pins 5 and 6	+4.87 V	+5.13 V
J1 pin 8	+4.87 V	+5.13 V
J1 pin 10	−8.38 V	−8.82 V
J1 pin 11	−4.87 V	−5.13 V
J1 pin 13, ON	+0.991 V	+1.137 V
J1 pin 13, STBY	+1.272 V	+1.406 V
J2 pin 1	+13.80 V	+15.75 V
J3 pin 1, fan connected	+10.20 V	+13.80 V
J3 pin 1, fan disconnected	+13.80 V	+15.75 V
J4 pin 1	+13.80 V	+15.75 V

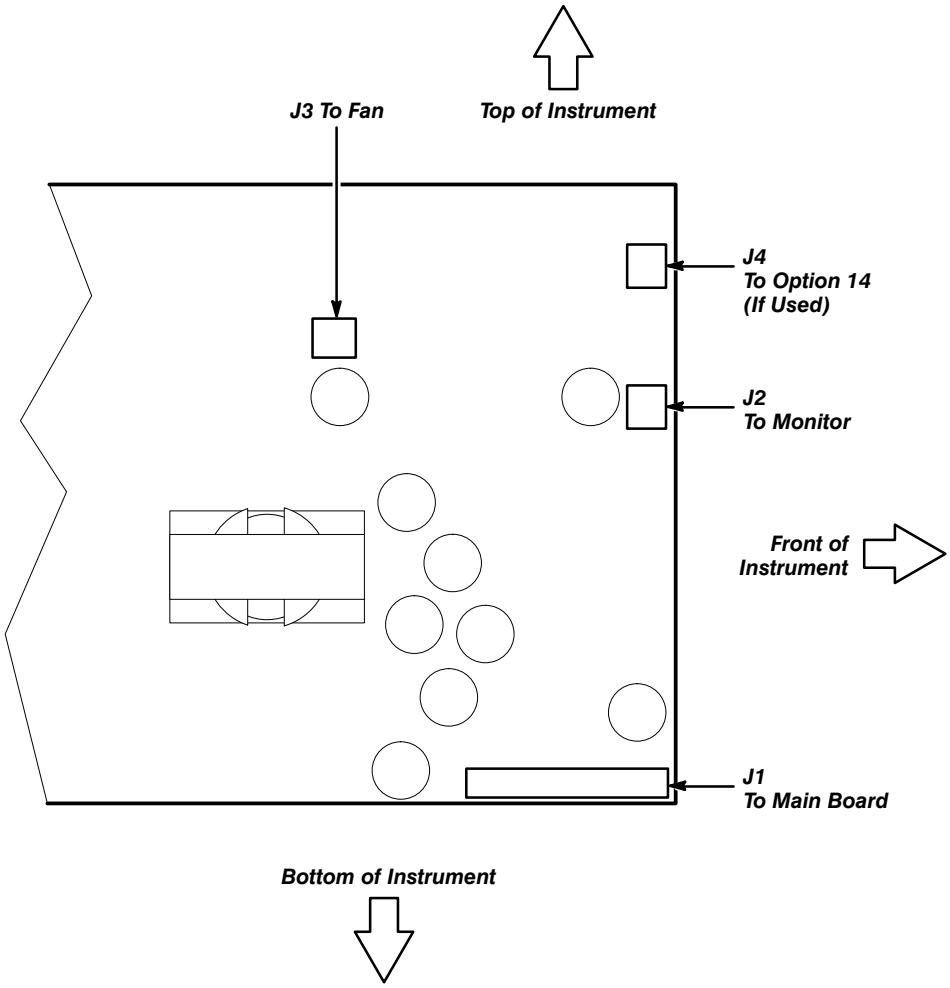


Figure 6-28: Power Supply Connector Locations

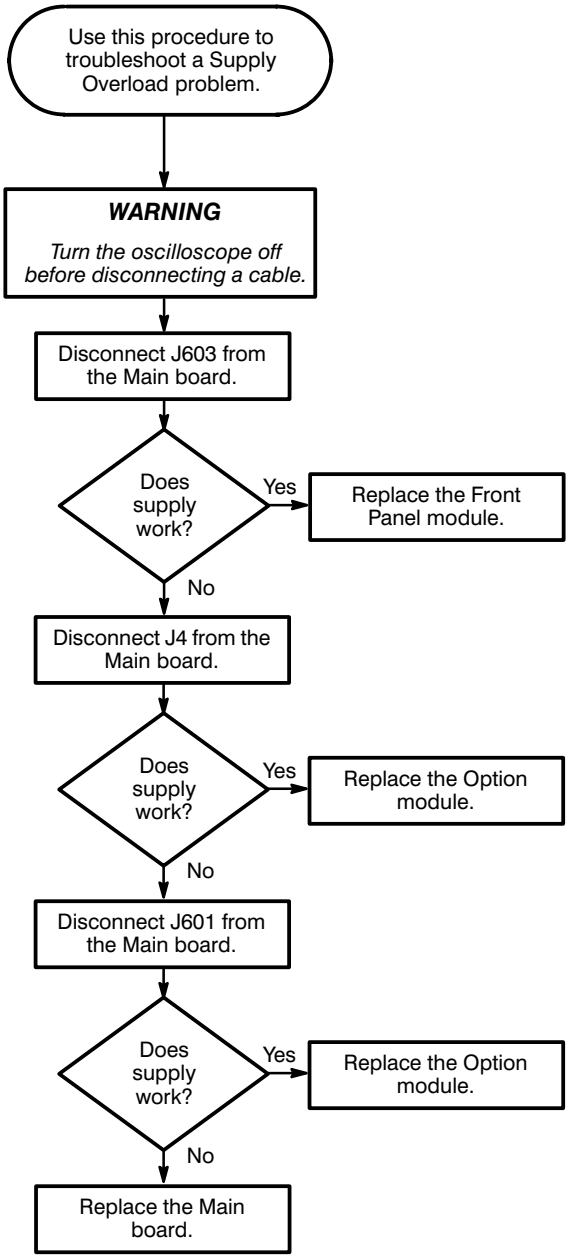


Figure 6-29: Supply Overload Troubleshooting Procedure

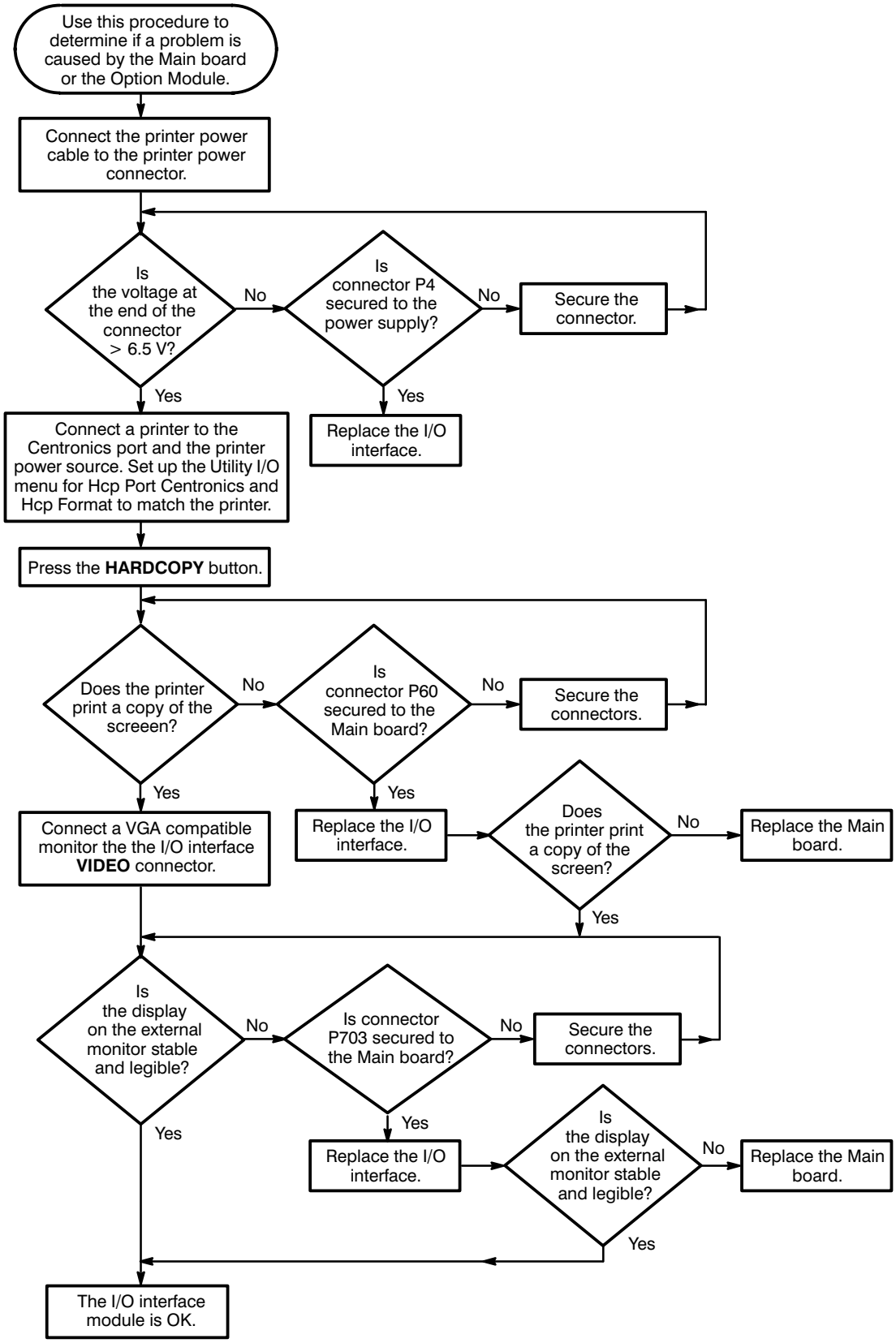


Figure 6-30: I/O Interfaces Option Troubleshooting Procedure

Repackaging Instructions

If you ship the oscilloscope, pack it in the original shipping carton and packing material. If the original packing material is not available, package the instrument as follows:

1. Obtain a corrugated cardboard shipping carton with inside dimensions at least 15 cm (6 in) taller, wider, and deeper than the oscilloscope. The shipping carton must be constructed of cardboard with 170 kg (375 pound) test strength.
2. If you are shipping the oscilloscope to a Tektronix field office for repair, attach a tag to the oscilloscope showing the instrument owner and address, the name of the person to contact about the instrument, the instrument type, and the serial number.
3. Wrap the oscilloscope with polyethylene sheeting or equivalent material to protect the finish.
4. Cushion the oscilloscope in the shipping carton by tightly packing dunnage or urethane foam on all sides between the carton and the oscilloscope. Allow 7.5 cm (3 in) on all sides, top, and bottom.
5. Seal the shipping carton with shipping tape or an industrial stapler.

Options and Accessories

This section describes the various options as well as the standard and optional accessories that are available for the TDS 310, TDS 320, and TDS 350.

Options

Options include the following.

Option 14: I/O Interfaces

This option includes GPIB, RS-232, and Centronics interfaces, VGA video output, and power for the Option 3P printer. It also includes the *TDS 310, 320 & 350 Programmer Manual*.

You can connect a remote display to the VGA 9-pin D connector on the rear panel. Table 7-6 on page 7-4 gives the part number of a properly shielded cable that is commercially available.

Because display manufacturers use different pin combinations and connectors, you may find the information in Table 7-1 helpful.

Table 7-1: VGA Output Connector Pins

Pin	Signal
2	Video (monochrome analog)
4	Horizontal sync @ 31.5 kHz (VGA rate)
5	Vertical sync
6, 7, 8	Ground

Options A1 – A5: International Power Cords

Besides the standard North American, 110 V, 60 Hz power cord, Tektronix ships any of five alternate power cord configurations with the oscilloscope when ordered by the customer (see Table 7-2).

Table 7-2: International Power Cords

Option	Power Cord
A1	Universal European — 220 V, 50 Hz
A2	UK — 240 V, 50 Hz
A3	Australian — 240 V, 50 Hz

Table 7-2: International Power Cords (Cont.)

Option	Power Cord
A4	North American — 240 V, 60 Hz
A5	Switzerland — 220 V, 50 Hz

Option 1K: K212 Scope Cart

With this option, the oscilloscope comes with a K212 Portable Instrument Cart.

Option 3P: Thermal Printer (Includes Option 14)

The instrument comes with a thermal printer connected to the Centronics port. Also included are a carrying pouch that fastens to the top of the oscilloscope and printer instructions.

Option 9C: Certificate of Calibration and Test Data Report

Tektronix ships a Certificate of Calibration that states this instrument meets or exceeds all warranted specifications and has been calibrated using standards and instruments whose accuracies are traceable to the National Institute of Standards and Technology, an accepted value of a natural physical constant or a ratio calibration technique. The calibration is in compliance with US MIL-STD-45662A. This option also includes a test data report for the instrument.

Warranty-Plus Service Options

The following options add to the services available with the standard warranty. (The standard warranty appears immediately following the title page in this manual.)

- **Option M2:** Tektronix provides three years of warranty plus two years remedial service.
- **Option M3:** Tektronix provides three years of warranty plus two years remedial service and four oscilloscope calibrations.
- **Option M8:** Tektronix provides four calibrations and four performance verifications, one of each in the second through the fifth years of service.

Standard Accessories

The standard accessories listed in Table 7-3 come with the TDS 310, TDS 320, and TDS 350.

Table 7-3: Standard Accessories

Accessory
Reference
Instruction Manual
XYZs of Analog and Digital Oscilloscopes
U.S. Power Cord
Probes (quantity two) P6109B 10X Passive (TDS 310 and TDS 320)
Probes (quantity two) P6111B 10X Passive (TDS 350)

Optional Accessories

You can order the optional accessories listed in Table 7-4.

Table 7-4: Optional Accessories

Accessory		Part Number
Scope Camera		C-9, Option 4, (includes Adapter Hood 016−1154−XX)
Oscilloscope Cart		K212
Rackmount Kit (for field conversion)		016−1166−XX
Soft-Sided Carrying Case		016−1158−XX
Carrying Case		016−0792−XX
Deluxe Transit Case		016−1157−XX
Front Cover		200−3232−XX
Accessories Pouch		016−1159−XX
I/O Interface Field Upgrade Kit		TD3F14A
Time Interval to Voltage Converter (requires TM500/5000 mainframe)		TVC501
Docuwave waveform capture utility software for the PC		S60 DWAV
Printer, bubble-jet, 360 dpi, 83 cps, plain paper		HC 220
Instruction Manual	French German Spanish	070−8070−XX 070−8071−XX 070−8819−XX

Accessory Probes

These are other types of probes you can use with the TDS 310, TDS 320, and TDS 350. You can order thefollowing probes separately:

- P6101B 1X Passive Probe
- P6129B Switchable 1X–10X Passive Probe (not recommended for the TDS 350)
- P6408 TTL Logic Probe
- P6009 High Voltage Probe
- AM503S DC/AC Current Probe System
- P6561 SMT Probe

Accessory Cables

Table 7-5 lists cables you can use with the TDS 310, TDS 320, and TDS 350. You can order them separately.

Table 7-6: Accessory Cables

Software	Part Number
GPIB,1 meter (3.3 feet)	012–0991–01
GPIB, 2 meter (6.6 feet)	012–0991–00
RS-232, 9-pin female to 9-pin female connectors, null modem, 76 inch (for AT style computers)	012–1379–XX
RS-232, 9-pin female to 25-pin female connectors, null modem, 76 inch (for PC style computers)	012–1380–XX
RS-232, 9-pin female to 25-pin male connectors, null modem, 9 feet (for serial interface printers)	012–1298–XX
RS-232, 9-pin female to 25-pin male connectors, 15 feet (for modems)	012–1241–XX
Centronics, 25-pin male to 36-pin Centronics, 2.4 meter (8 feet) (for parallel printer interfaces)	012–1214–XX
NEC® VGA video cable. (Use an appropriate adapter when other than a 9-pin monitor connection is needed.)	73893029

Replaceable Electrical Parts

Parts Ordering Information

Replacement parts are available from or through your local Tektronix, Inc. Field Office or representative.

When ordering parts, include the following information in your order: part number, instrument type or number, serial number, and modification number if applicable.

If a part you have ordered has been replaced with a new or improved part, your local Tektronix, Inc. 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.

List of Assemblies

You can find a list of assemblies at the beginning of the electrical parts list. The assemblies are in numerical order. When the complete component number of a part is known, this list will identify the assembly in which the part is located.

Cross Index-Mfr. Code Number to Manufacturer

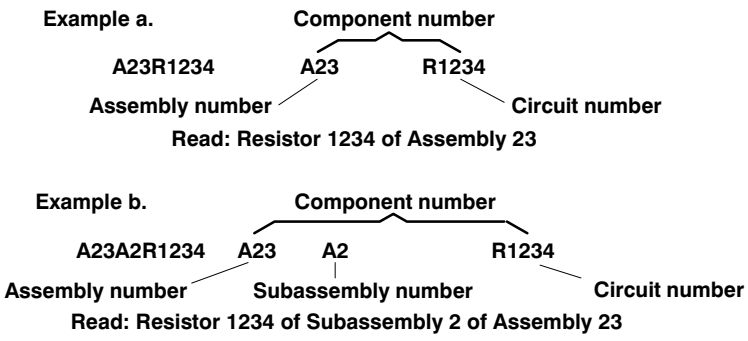
The Mfg. Code Number to Manufacturer Cross Index for the electrical parts list immediately follows this page. The cross index provides codes, names, and addresses of manufacturers of components listed in the electrical parts list.

Abbreviations

Abbreviations conform to American National Standard Y1.1.

Component Number

(column 1 of the parts list)



The circuit component's number appears on the diagrams and circuit board illustrations. Each diagram and circuit board illustration is clearly marked with the assembly number. Assembly numbers are also marked on the mechanical exploded views located in the mechanical parts list. The component number is the assembly number prefix added to the circuit number.

The electrical parts list is divided and arranged by assemblies in numerical sequence (e.g., assembly A1 with its subassemblies and parts, precedes assembly A2 with its subassemblies and parts).

Chassis-mounted parts have no assembly number prefix and are at the end of the electrical parts list.

Tektronix Part No.

(column 2 of the parts list)

This column indicates part number to use when ordering replacement part from Tektronix.

Serial No.

(columns 3 & 4 of the parts list)

Column three (3) indicates the serial number at which the part was first used. Column four (4) indicates the serial number at which the part was removed. No serial number entered indicates part is good for all serial numbers.

Name & Description

(column five of the parts list)

In the parts list, an item name is separated from the description by a colon (:). Because of space limitations, an item name may sometimes appear as incomplete. For further item name identification, use the U.S. Federal Catalog handbook H6-1.

Mfr. Code

(column 6 of the parts list)

This column indicates the code number of the actual manufacturer of the part. (Code to name and address cross reference immediately follow this page.)

Mfr. Part No.

(column 7 of the parts list)

This column indicates actual manufacturer's part number.

CROSS INDEX – MFR. CODE NUMBER TO MANUFACTURER

Mfr. Code	Manufacturer	Address	City, State, Zip Code
TK0AY	JAPAN SOLDERLESS TERMINAL MFG CO	1–4–1 HIGASH 1–MACHI SHINSENRI TOYONAKA–CITY	OSAKA JAPAN
TK0891	MICONICS	1 FAIRCHILD AVE	PLAINVIEW NY 11803
TK1727	PHILIPS NEDERLAND BV AFD ELONCO	POSTBUS 90050	5600 PB EINDHOVEN THE NETHERLANDS
TK1899	MINNESOTA MINING AND MFG CO	5400 RT B PO BOX 1228	COLUMBIA MO 65205
TK1913	WIMA THE INTER–TECHNICAL GROUP IND	2269 SAW MILL RIVER ROAD PO BOX 127	ELMSFORD NY 10523
TK2058	TDK CORPORATION OF AMERICA	2055 GATEWAY PLACE SUITE 200	SAN JOSE CA 95110
TK2073	TOKYO AMERICA INC	565 W GULF ROAD	ARLINGTON HEIGHTS IL 60005
TK2096	KELVIN ASSOCIATES	14724 VENTURA BLVD SUITE 1003	SHERMAN OAKS CA 91403–3501
TK2430	ZYTEC CORP	1425 EAST BRIDGE ST	REDWOOD FALLS MN 56283
TK2150	CALOGIC CORP	237 WHITNEY PLACE	FREMONT CA 94539
TK2469	UNITREK CORPORATION	3000 LEWIS & CLARK WAY SUITE #2	VANCOUVER WA 98601
0B0A9	DALLAS SEMICONDUCTOR CORP	4350 BELTWOOD PKWY SOUTH	DALLAS TX 75244
0H1N5	MARCON AMERICA CORP	998 FIRST EDGE DRIVE	VERNON HILLS IL 60061
0JR03	ZMAN MAGNETICS INC	7633 S 180TH	KENT WA 98032
0JR04	TOSHIBA AMERICA INC ELECTRONICS COMPONENTS DIV BUSINESS SECTOR	2692 DOW AVE	TUSTIN CA 92680
00779	AMP INC	2800 FULLING MILL PO BOX 3608	HARRISBURG PA 17105
01295	TEXAS INSTRUMENTS INC SEMICONDUCTOR GROUP	13500 N CENTRAL EXPY PO BOX 655012	DALLAS TX 75265
02113	COILCRAFT INC	1102 SILVER LAKE RD	CARY IL 60013–1658
04222	AVX CERAMICS 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
05292	ITT COMPONENTS DIV		CLIFTON NJ
05397	UNION CARBIDE CORP MATERIAL SYSTEMS DIV	11901 MADISON AVE	CLEVELAND OH 44101
09969	DALE ELECTRONICS INC	EAST HIGHWAY 50 P O BOX 180	YANKTON SD 57078
1ES66	MAXIM INTEGRATED PRODUCTS INC	120 SAN GABRIEL DRIVE	SUNNYVALE CA 94086
1W344	UNITED CHEMI–CON INC	9801 W HIGGINS SUITE 430	ROSEMONT IL 60018–4704
14552	MICROSEMI CORP	2830 S FAIRVIEW ST	SANTA ANA CA 92704–5948
18324	SIGNETICS CORP MILITARY PRODUCTS DIV	4130 S MARKET COURT	SACRAMENTO CA 95834–1222
18796	MURATA ERIE NORTH AMERICAN INC STATE COLLEGE OPERATIONS	1900 W COLLEGE AVE	STATE COLLEGE PA 16801–2723
19701	PHILIPS COMPONENTS DISCRETE PRODUCTS DIV RESISTIVE PRODUCTS FACILITY AIRPORT ROAD	PO BOX 760	MINERAL WELLS TX 76067–0760
20932	KYOCERA INTERNATIONAL INC	11620 SORRENTO VALLEY RD PO BOX 81543 PLANT NO 1	SAN DIEGO CA 92121

CROSS INDEX – MFR. CODE NUMBER TO MANUFACTURER

Mfr. Code	Manufacturer	Address	City, State, Zip Code
22526	BERG ELECTRONICS INC(DUPONT)	857 OLD TRAIL RD	ETTERS PA 17319
24355	ANALOG DEVICES INC	RT 1 INDUSTRIAL PK PO BOX 9106	NORWOOD MA 02062
24546	BRADFORD ELECTRONICS	550 HIGH ST	BRADFORD PA 16701–3737
24564	SIERRA NEVADA STEEL CORP.	1201 ARROYO AVE PO BOX 951	SAN FERNANDO CA 91340–1537
24931	SPECIALTY CONNECTOR CO INC	2100 EARLYWOOD DR PO BOX 547	FRANKLIN IN 46131
25088	SIEMENS CORP	186 WOOD AVE S	ISELIN NJ 08830–2704
25403	PHILIPS COMPONENTS DISCRETE PRODUCTS DIVISION DISCRETE SEMICONDUCTOR GROUP	GEORGE WASHINGTON HWY	SMITHFIELD RI 02917
27014	NATIONAL SEMICONDUCTOR CORP	2900 SEMICONDUCTOR DR	SANTA CLARA CA 95051–0606
27264	MOLEX INC	2222 WELLINGTON COURT	LISLE IL 60532–1613
32997	BOURNS INC TRIMPOT DIV	1200 COLUMBIA AVE	RIVERSIDE CA 92507–2114
49588	S B ELECTRONICS INC	131 S MAIN ST	BARRE VT 05641
50139	ALLEN–BRADLEY CO ELECTRONIC COMPONENTS	1414 ALLEN BRADLEY DR	EL PASO TX 79936
50434	HEWLETT–PACKARD CO OPTOELECTRONICS DIV	370 W TRIMBLE RD	SAN JOSE CA 95131
50783	PENN–TRAN CORP	ROUTE 144 NORTH PO BOX 1321	WINGATE PA 16880
53387	MINNESOTA MINING MFG CO	PO BOX 2963	AUSTIN TX 78769–2963
54583	TDK ELECTRONICS CORP	12 HARBOR PARK DR	PORT WASHINGTON NY 11550
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
57489	OHMTEK INC	2160 LIBERTY DR PO BOX 170 LA SALLE STATION	NIAGARA FALLS NY 14304–3727
57668	ROHM CORP	8 WHATNEY PO BOX 19515	IRVINE CA 92713
59660	TUSONIX INC	7741 N BUSINESS PARK DR PO BOX 37144	TUCSON AZ 85740–7144
61429	FOX ELECTRONICS FOX ENTERPRISES INC	PO BOX 1078	CAPE CORAL FL 33910–1078
62104	CALIFORNIA EASTERN LABORATORIES	3260 JAY ST	SANTA CLARA CA 95054–3309
62839	COMLINEAR CORP	4800 WHEATON DR PO BOX 20600	FT COLLINS CO 80525
64155	LINEAR TECHNOLOGY CORP	1630 MCCARTHY BLVD	MILPITAS CA 95035–7417
64762	ELANTEC	1996 TAROB COURT	MILPITAS CA 95035–6824
66958	SGS THOMSON MICROELECTRONICS	1000 E BELL RD	PHOENIX AZ 85022–2649
75569	PERFORMANCE SEMICONDUCTOR CORP	610 E WEDDELL DR	SUNNYVALE CA 94089
80009	TEKTRONIX INC	14150 SW KARL BRAUN DR PO BOX 500	BEAVERTON OR 97077–0001
84411	AMERICAN SHIZUKI CORP OGALLALA OPERATIONS	301 WEST O ST	OGALLALA NE 69153–1844
91637	DALE ELECTRONICS INC	2064 12TH AVE PO BOX 609	COLUMBUS NE 68601–3632

Component Number	Tektronix Part No.	Serial No. Effective	Serial No. Dscont	Name & Description	Mfr. Code	Mfr. Part No.
A1	671−3178−00	B010100	B020099	CIRCUIT BD ASSY:MAIN (TDS310 ONLY)	80009	671317800
A1	671−3178−01	B020100	B030133	CIRCUIT BD ASSY:MAIN (TDS310 ONLY)	80009	671317801
A1	671−3178−02	3030134	B032130	CIRCUIT BD ASSY:MAIN (TDS310 ONLY)CIRCUIT BD ASSY:MAIN	80009	671317802
A1	671−3178−03	B032131	B039999	(TDS310 ONLY) CIRCUIT BD ASSY:MAIN	80009	671317803
A1	671−3178−04	B040100		(TDS310 ONLY)	80009	671317804
A1	671−2468−00	B010100	B011094	CIRCUIT BD ASSY:MAIN (TDS320 ONLY)	80009	671246800
A1	671−2468−01	B011095	B011103	CIRCUIT BD ASSY:MAIN (TDS320 ONLY)	80009	671246801
A1	671−2468−00	B011104	B011115	CIRCUIT BD ASSY:MAIN (TDS320 ONLY)	80009	671246800
A1	671−2468−01	B011116	B011237	CIRCUIT BD ASSY:MAIN (TDS320 ONLY)	80009	671246801
A1	671−2468−00	B011238	B011310	CIRCUIT BD ASSY:MAIN (TDS320 ONLY)	80009	671246800
A1	671−2468−01	B011311	B021867	CIRCUIT BD ASSY:MAIN (TDS320 ONLY)	80009	671246801
A1	671−3183−00	B021868	B032905	CIRCUIT BD ASSY:MAIN (TDS320 ONLY)	80009	671318300
A1	671−3183−01	B032905	B034100	CIRCUIT BD ASSY:MAIN (TDS320 ONLY)	80009	671318301
A1	671−3183−02	B034101	B039999	CIRCUIT BD ASSY:MAIN (TDS320 ONLY)	80009	671318302
A1	671−3183−03	B040100	B044999	CIRCUIT BD ASSY:MAIN (TDS320 ONLY)	80009	671318303
A1	671−3183−04	B045000		CIRCUIT BD ASSY:MAIN (TDS320 ONLY)	80009	671318304
A1	671−3103−00	B010100	B010139	CIRCUIT BD ASSY:MAIN (TDS350 ONLY)	80009	671310300
A1	671−3103−01	B010140	B020099	CIRCUIT BD ASSY:MAIN (TDS350 ONLY)	80009	671310301
A1	671−3103−02	B020100	B031111	CIRCUIT BD ASSY:MAIN (TDS350 ONLY)	80009	671310302
A1	671−3103−03	B031112	B032156	CIRCUIT BD ASSY:MAIN (TDS350 ONLY)CIRCUIT BD ASSY:MAIN	80009	671310303
A1	671−3103−04	B032157	B039999	(TDS350 ONLY) CIRCUIT BD ASSY:MAIN	80009	671310304
A1	671−3103−05	B040100		(TDS350 ONLY)	80009	671310305
A2	671−2645−00	B010100	B020099	CIRCUIT BD ASSY:OPTION (TDS310/350 ONLY−OPTION 14 ONLY)	80009	671264500
A2	671−2645−01	B020100		CIRCUIT BD ASSY:OPTION (TDS310/350 ONLY−OPTION 14 ONLY)	80009	671264501
A2	671−2645−00	B010100	B030099	CIRCUIT BD ASSY:OPTION (TDS320 ONLY−OPTION 14 ONLY)	80009	671264500
A2	671−2645−01	B030100		CIRCUIT BD ASSY:OPTION (TDS320 ONLY−OPTION 14 ONLY)	80009	671264501
A3	671−3105−00	B020100		CIRCUIT BD ASSY:PRINTER POWER (TDS310/350 ONLY)	80009	671310500
A3	671−3105−00	B030100		CIRCUIT BD ASSY:PRINTER POWER (TDS320 ONLY)	80009	671310500

Component Number	Tektronix Part No.	Serial No. Effective	Serial No. Dscont	Name & Description	Mfr. Code	Mfr. Part No.
A4	671−2911−00			CIRCUIT BD ASSY:FRONT PANEL	80009	671291100
A20	119−5029−01	B010100	B020099	POWER SUPPLY:IN 90−280 VAC,45−440HZ,100W (TDS310/350 ONLY)	TK2430	119−5029−01
A20	119−5029−02	B020100		POWER SUPPLY:IN 90−280 VAC,45−440HZ,100W (TDS310/350 ONLY)	TK2430	119−5029−02
A20	119−5029−01	B010100	B030099	POWER SUPPLY:IN 90−280 VAC,45−440HZ,100W (TDS320 ONLY)	TK2430	119−5029−01
A20	119−5029−02	B030100		POWER SUPPLY:IN 90−280 VAC,45−440HZ,100W (TDS320 ONLY)	TK2430	119−5029−02
A26	671−2159−02	B010100	B046999	CIRCUIT BD ASSY:MONOCHROME DISPLAY	80009	671215902
A26	671−2159−03	B047000		CIRCUIT BD ASSY:MONOCHROME DISPLAY	80009	671215903

Component Number	Tektronix Part No.	Serial No. Effective	Serial No. Dscont	Name & Description	Mfr. Code	Mfr. Part No.
A1	671−3178−00	B010100	B020099	CIRCUIT BD ASSY:MAIN (TDS310 ONLY)	80009	671317800
A1	671−3178−01	B020100	B030133	CIRCUIT BD ASSY:MAIN (TDS310 ONLY)	80009	671317801
A1	671−3178−02	3030134	B032130	CIRCUIT BD ASSY:MAIN (TDS310 ONLY)CIRCUIT BD ASSY:MAIN	80009	671317802
A1	671−3178−03	B032131	B039999	(TDS310 ONLY) CIRCUIT BD ASSY:MAIN	80009	671317803
A1	671−3178−04	B040100		(TDS310 ONLY)	80009	671317804
A1	671−2468−00	B010100	B011094	CIRCUIT BD ASSY:MAIN (TDS320 ONLY)	80009	671246800
A1	671−2468−01	B011095	B011103	CIRCUIT BD ASSY:MAIN (TDS320 ONLY)	80009	671246801
A1	671−2468−00	B011104	B011115	CIRCUIT BD ASSY:MAIN (TDS320 ONLY)	80009	671246800
A1	671−2468−01	B011116	B011237	CIRCUIT BD ASSY:MAIN (TDS320 ONLY)	80009	671246801
A1	671−2468−00	B011238	B011310	CIRCUIT BD ASSY:MAIN (TDS320 ONLY)	80009	671246800
A1	671−2468−01	B011311	B021867	CIRCUIT BD ASSY:MAIN (TDS320 ONLY)	80009	671246801
A1	671−3183−00	B021868	B032905	CIRCUIT BD ASSY:MAIN (TDS320 ONLY)	80009	671318300
A1	671−3183−01	B032905	B034100	CIRCUIT BD ASSY:MAIN (TDS320 ONLY)	80009	671318301
A1	671−3183−02	B034101	B039999	CIRCUIT BD ASSY:MAIN (TDS320 ONLY)	80009	671318302
A1	671−3183−03	B040100	B044999	CIRCUIT BD ASSY:MAIN (TDS320 ONLY)	80009	671318303
A1	671−3183−04	B045000		CIRCUIT BD ASSY:MAIN (TDS320 ONLY)	80009	671318304
A1	671−3103−00	B010100	B010139	CIRCUIT BD ASSY:MAIN (TDS350 ONLY)	80009	671310300
A1	671−3103−01	B010140	B020099	CIRCUIT BD ASSY:MAIN (TDS350 ONLY)	80009	671310301
A1	671−3103−02	B020100	B031111	CIRCUIT BD ASSY:MAIN (TDS350 ONLY)	80009	671310302
A1	671−3103−03	B031112	B032156	CIRCUIT BD ASSY:MAIN (TDS350 ONLY)CIRCUIT BD ASSY:MAIN	80009	671310303
A1	671−3103−04	B032157	B039999	(TDS350 ONLY) CIRCUIT BD ASSY:MAIN	80009	671310304
A1	671−3103−05	B040100		(TDS350 ONLY)	80009	671310305
A1AT205	165−2500−03			MICROCKT,HYBRID:1 MEGOHM ATTEN/PREAMP (TDS310/350 ONLY)	80009	165250003
A1AT205	165−2500−00	B010100	B011094	MICROCKT,HYBRID:1 MEGOHM ATTEN/PREAMP (TDS320 ONLY)	80009	165250000
A1AT205	165−2500−01	B011095	B021867	MICROCKT,HYBRID:1 MEGOHM ATTEN/PREAMP (TDS320 ONLY)	80009	165250001
A1AT205	165−2500−03	B021868		MICROCKT,HYBRID:1 MEGOHM ATTEN/PREAMP (TDS320 ONLY)	80009	165250003

Component Number	Tektronix Part No.	Serial No. Effective	Serial No. Dscont	Name & Description	Mfr. Code	Mfr. Part No.
A1AT206	165−2500−03			MICROCKT,HYBRID:1 MEGOHM ATTEN/PREAMP (TDS310/350 ONLY)	80009	165250003
A1AT206	165−2500−00	B010100	B011094	MICROCKT,HYBRID:1 MEGOHM ATTEN/PREAMP (TDS320 ONLY)	80009	165250000
A1AT206	165−2500−01	B011095	B021867	MICROCKT,HYBRID:1 MEGOHM ATTEN/PREAMP (TDS320 ONLY)	80009	165250001
A1AT206	165−2500−03	B021868		MICROCKT,HYBRID:1 MEGOHM ATTEN/PREAMP (TDS320 ONLY)	80009	165250003
A1C100	283−5000−00	B010100	B03	CAP,FXD,CERAMIC:MLC,10PF,5%,50V,NPO (TDS310 ONLY)	04222	12065A100JATMA
A1C100	283−5342−00	B03		CAP,FXD,CERAMIC:MLC,10PF,5%,500V,NPO (TDS310 ONLY)	04222	12067A100JAT1A
A1C100	283−5195−00	B010100	B03	CAP,FXD,CER DI:10PF,5%,100V (TDS320 ONLY)	04222	12061A100JAT1A
A1C100	283−5342−00	B03		CAP,FXD,CERAMIC:MLC,10PF,5%,500V,NPO (TDS320 ONLY)	04222	12067A100JAT1A
A1C100	283−5195−00	B010100	B03	CAP,FXD,CER DI:10PF,5%,100V (TDS350 ONLY)	04222	12061A100JAT1A
A1C100	283−5342−00	B03		CAP,FXD,CERAMIC:MLC,10PF,5%,500V,NPO (TDS350 ONLY)	04222	12067A100JAT1A
A1C101	290−5024−00			CAP,FXD,ELCTLT:3.3UF,25V,TANTALUM	04222	TAJC335M025
A1C102	283−5114−00			CAP,FXD,CER DI:0.1UF,10%,50V,X7R	04222	12065C104KAT1A
A1C103	283−5003−00			CAP,FXD,CER DI:0.01UF,10%,50V	04222	12065C103KAT1A
A1C104	283−5114−00			CAP,FXD,CER DI:0.1UF,10%,50V,X7R	04222	12065C104KAT1A
A1C105	283−5195−00			CAP,FXD,CER DI:10PF,5%,100V	04222	12061A100JAT1A
A1C106	283−5203−00			CAP,FXD,CER DI:1000PF,10%,100V	04222	12061C102KAT1A
A1C107	283−5114−00			CAP,FXD,CER DI:0.1UF,10%,50V,X7R	04222	12065C104KAT1A
A1C108	283−5267−00			CAP,FXD,CERAMIC:1.0UF,25V,Y5V,+80−20%,SMD	04222	12063G105ZAT1A
A1C109	283−5195−00			CAP,FXD,CER DI:10PF,5%,100V	04222	12061A100JAT1A
A1C110	283−5106−00			CAP,FXD,CER DI:470PF,5%,100V	04222	12061A470JAT1A
A1C112	283−5267−00			CAP,FXD,CERAMIC:1.0UF,25V,Y5V,+80−20%,SMD	04222	12063G105ZAT1A
A1C113	283−5196−00			CAP,FXD,CER DI:47PF,5%,100V	04222	12061A470JAT1A
A1C114	283−5000−00	B010100	B03	CAP,FXD,CERAMIC:MLC,10PF,5%,50V,NPO (TDS310 ONLY)	04222	12065A100JATMA
A1C114	283−5342−00	B03		CAP,FXD,CERAMIC:MLC,10PF,5%,500V,NPO (TDS310 ONLY)	04222	12067A100JAT1A
A1C114	283−5195−00	B010100	B03	CAP,FXD,CER DI:10PF,5%,100V (TDS320 ONLY)	04222	12061A100JAT1A
A1C114	283−5342−00	B03		CAP,FXD,CERAMIC:MLC,10PF,5%,500V,NPO (TDS320 ONLY)	04222	12067A100JAT1A
A1C114	283−5195−00	B010100	B03	CAP,FXD,CER DI:10PF,5%,100V (TDS350 ONLY)	04222	12061A100JAT1A
A1C114	283−5342−00	B03		CAP,FXD,CERAMIC:MLC,10PF,5%,500V,NPO (TDS350 ONLY)	04222	12067A100JAT1A
A1C115	283−5267−00			CAP,FXD,CERAMIC:1.0UF,25V,Y5V,+80−20%,SMD	04222	12063G105ZAT1A
A1C116	283−5114−00			CAP,FXD,CER DI:0.1UF,10%,50V,X7R	04222	12065C104KAT1A

Component Number	Tektronix Part No.	Serial No. Effective	Serial No. Dscont	Name & Description	Mfr. Code	Mfr. Part No.
A1C117	283−5114−00			CAP,FXD,CER DI:0.1UF,10%,50V,X7R	04222	12065C104KAT1A
A1C118	283−5114−00			CAP,FXD,CER DI:0.1UF,10%,50V,X7R	04222	12065C104KAT1A
A1C119	283−5201−00			CAP,FXD,CERAMIC:MLC,33PF,5%,100V,NPO (TDS310 ONLY)	04222	12061A330JAT1A
A1C119	283−5041−00			CAP,FXD,CER DI:7PF,+/−0.5PF,50V (TDS320/350 ONLY)	54583	C3216COG1H070D
A1C120	283−5201−00			CAP,FXD,CERAMIC:MLC,33PF,5%,100V,NPO (TDS310 ONLY)	04222	12061A330JAT1A
A1C120	283−5041−00			CAP,FXD,CER DI:7PF,+/−0.5PF,50V (TDS320/350 ONLY)	54583	C3216COG1H070D
A1C121	283−5114−00			CAP,FXD,CER DI:0.1UF,10%,50V,X7R	04222	12065C104KAT1A
A1C122	283−5267−00			CAP,FXD,CERAMIC:1.0UF,25V,Y5V,+80−20%,SMD	04222	12063G105ZAT1A
A1C123	283−5267−00			CAP,FXD,CERAMIC:1.0UF,25V,Y5V,+80−20%,SMD	04222	12063G105ZAT1A
A1C125	283−5187−00			CAP,FXD,CER DI:15PF,5%,100V (TDS310/320 ONLY)	04222	12061A150JAT1A
A1C125	283−5187−00	B010100	B010139	CAP,FXD,CER DI:15PF,5%,100V (TDS350 ONLY)	04222	12061A150JAT1A
A1C130	283−5267−00			CAP,FXD,CERAMIC:1.0UF,25V,Y5V,+80−20%,SMD (TDS310/350 ONLY)	04222	12063G105ZAT1A
A1C130	283−5267−00	B021868		CAP,FXD,CERAMIC:1.0UF,25V,Y5V,+80−20%,SMD (TDS320 ONLY)	04222	12063G105ZAT1A
A1C201	283−5202−00			CAP,FXD,CER DI:0.022UF,10%,50VDC	04222	12065C223KAT1A
A1C202	283−5202−00			CAP,FXD,CER DI:0.022UF,10%,50VDC	04222	12065C223KAT1A
A1C203	283−5114−00			CAP,FXD,CER DI:0.1UF,10%,50V,X7R	04222	12065C104KAT1A
A1C204	283−5267−00			CAP,FXD,CERAMIC:1.0UF,25V,Y5V,+80−20%,SMD	04222	12063G105ZAT1A
A1C205	283−5114−00			CAP,FXD,CER DI:0.1UF,10%,50V,X7R	04222	12065C104KAT1A
A1C206	283−5267−00			CAP,FXD,CERAMIC:1.0UF,25V,Y5V,+80−20%,SMD	04222	12063G105ZAT1A
A1C207	283−5114−00			CAP,FXD,CER DI:0.1UF,10%,50V,X7R	04222	12065C104KAT1A
A1C208	283−5267−00			CAP,FXD,CERAMIC:1.0UF,25V,Y5V,+80−20%,SMD	04222	12063G105ZAT1A
A1C209	283−5267−00			CAP,FXD,CERAMIC:1.0UF,25V,Y5V,+80−20%,SMD	04222	12063G105ZAT1A
A1C210	283−5267−00			CAP,FXD,CERAMIC:1.0UF,25V,Y5V,+80−20%,SMD	04222	12063G105ZAT1A
A1C212	283−5267−00			CAP,FXD,CERAMIC:1.0UF,25V,Y5V,+80−20%,SMD	04222	12063G105ZAT1A
A1C213	283−5267−00			CAP,FXD,CERAMIC:1.0UF,25V,Y5V,+80−20%,SMD	04222	12063G105ZAT1A
A1C214	283−5267−00			CAP,FXD,CERAMIC:1.0UF,25V,Y5V,+80−20%,SMD	04222	12063G105ZAT1A
A1C215	283−5114−00			CAP,FXD,CER DI:0.1UF,10%,50V,X7R	04222	12065C104KAT1A
A1C218	290−0963−00			CAP,FXD,ELCTLT:220UF,+50−20%,25WVDC	1W344	SME35VB221M10X1
A1C219	290−0963−00			CAP,FXD,ELCTLT:220UF,+50−20%,25WVDC	1W344	SME35VB221M10X1
A1C220	290−0963−00			CAP,FXD,ELCTLT:220UF,+50−20%,25WVDC	1W344	SME35VB221M10X1
A1C221	283−5267−00			CAP,FXD,CERAMIC:1.0UF,25V,Y5V,+80−20%,SMD (TDS310/350 ONLY)	04222	12063G105ZAT1A
A1C230	283−5195−00			CAP,FXD,CER DI:10PF,5%,100V (TDS310 ONLY)	04222	12061A100JAT1A
A1C231	283−5195−00			CAP,FXD,CER DI:10PF,5%,100V (TDS310 ONLY)	04222	12061A100JAT1A

Component Number	Tektronix Part No.	Serial No. Effective	Serial No. Dscont	Name & Description	Mfr. Code	Mfr. Part No.
A1C250	283−5267−00			CAP,FXD,CERAMIC:1.0UF,25V,Y5V,+80−20%,SMD	04222	12063G105ZAT1A
A1C305	283−5196−00			CAP,FXD,CER DI:47PF,5%,100V	04222	12061A470JAT1A
A1C307	283−5196−00			CAP,FXD,CER DI:47PF,5%,100V	04222	12061A470JAT1A
A1C401	283−5114−00			CAP,FXD,CER DI:0.1UF,10%,50V,X7R	04222	12065C104KAT1A
A1C402	283−5003−00			CAP,FXD,CER DI:0.01UF,10%,50V	04222	12065C103KAT1A
A1C403	283−5114−00			CAP,FXD,CER DI:0.1UF,10%,50V,X7R	04222	12065C104KAT1A
A1C404	283−5267−00			CAP,FXD,CERAMIC:1.0UF,25V,Y5V,+80−20%,SMD	04222	12063G105ZAT1A
A1C405	283−5114−00			CAP,FXD,CER DI:0.1UF,10%,50V,X7R	04222	12065C104KAT1A
A1C406	283−5267−00			CAP,FXD,CERAMIC:1.0UF,25V,Y5V,+80−20%,SMD	04222	12063G105ZAT1A
A1C407	283−5114−00			CAP,FXD,CER DI:0.1UF,10%,50V,X7R	04222	12065C104KAT1A
A1C408	283−5267−00			CAP,FXD,CERAMIC:1.0UF,25V,Y5V,+80−20%,SMD	04222	12063G105ZAT1A
A1C409	283−5267−00			CAP,FXD,CERAMIC:1.0UF,25V,Y5V,+80−20%,SMD	04222	12063G105ZAT1A
A1C410	283−5267−00			CAP,FXD,CERAMIC:1.0UF,25V,Y5V,+80−20%,SMD	04222	12063G105ZAT1A
A1C502	283−5267−00			CAP,FXD,CERAMIC:1.0UF,25V,Y5V,+80−20%,SMD	04222	12063G105ZAT1A
A1C507	283−5114−00			CAP,FXD,CER DI:0.1UF,10%,50V,X7R	04222	12065C104KAT1A
A1C508	283−5114−00			CAP,FXD,CER DI:0.1UF,10%,50V,X7R	04222	12065C104KAT1A
A1C509	283−5267−00			CAP,FXD,CERAMIC:1.0UF,25V,Y5V,+80−20%,SMD	04222	12063G105ZAT1A
A1C511	283−5114−00			CAP,FXD,CER DI:0.1UF,10%,50V,X7R	04222	12065C104KAT1A
A1C512	283−5068−00			CAP,FXD,CER DI:2200PF,10%,50V	04222	12065C222KAT1A
A1C513	283−5068−00			CAP,FXD,CER DI:2200PF,10%,50V	04222	12065C222KAT1A
A1C515	283−5267−00			CAP,FXD,CERAMIC:1.0UF,25V,Y5V,+80−20%,SMD	04222	12063G105ZAT1A
A1C521	283−5003−00			CAP,FXD,CER DI:0.01UF,10%,50V	04222	12065C103KAT1A
A1C522	283−5202−00			CAP,FXD,CER DI:0.022UF,10%,50VDC	04222	12065C223KAT1A
A1C530	283−5202−00			CAP,FXD,CER DI:0.022UF,10%,50VDC	04222	12065C223KAT1A
A1C531	283−5202−00			CAP,FXD,CER DI:0.022UF,10%,50VDC	04222	12065C223KAT1A
A1C532	283−5114−00			CAP,FXD,CER DI:0.1UF,10%,50V,X7R	04222	12065C104KAT1A
A1C533	283−5114−00			CAP,FXD,CER DI:0.1UF,10%,50V,X7R	04222	12065C104KAT1A
A1C534	283−5114−00			CAP,FXD,CER DI:0.1UF,10%,50V,X7R	04222	12065C104KAT1A
A1C535	283−5114−00			CAP,FXD,CER DI:0.1UF,10%,50V,X7R	04222	12065C104KAT1A
A1C562	283−5114−00			CAP,FXD,CER DI:0.1UF,10%,50V,X7R	04222	12065C104KAT1A
A1C571	283−5003−00			CAP,FXD,CER DI:0.01UF,10%,50V	04222	12065C103KAT1A
A1C581	283−5003−00			CAP,FXD,CER DI:0.01UF,10%,50V	04222	12065C103KAT1A
A1C592	283−5114−00			CAP,FXD,CER DI:0.1UF,10%,50V,X7R	04222	12065C104KAT1A
A1C593	283−5114−00			CAP,FXD,CER DI:0.1UF,10%,50V,X7R	04222	12065C104KAT1A
A1C594	283−5114−00			CAP,FXD,CER DI:0.1UF,10%,50V,X7R	04222	12065C104KAT1A
A1C595	283−5114−00			CAP,FXD,CER DI:0.1UF,10%,50V,X7R	04222	12065C104KAT1A
A1C600	283−5106−00			CAP,FXD,CER DI:470PF,5%,100V	04222	12061A470JAT1A
A1C602	283−5267−00			CAP,FXD,CERAMIC:1.0UF,25V,Y5V,+80−20%,SMD	04222	12063G105ZAT1A
A1C604	283−5267−00			CAP,FXD,CERAMIC:1.0UF,25V,Y5V,+80−20%,SMD	04222	12063G105ZAT1A
A1C606	283−5267−00			CAP,FXD,CERAMIC:1.0UF,25V,Y5V,+80−20%,SMD	04222	12063G105ZAT1A

Component Number	Tektronix Part No.	Serial No. Effective	Serial No. Dscont	Name & Description	Mfr. Code	Mfr. Part No.
A1C607	283−5114−00			CAP,FXD,CER DI:0.1UF,10%,50V,X7R	04222	12065C104KAT1A
A1C608	283−5114−00			CAP,FXD,CER DI:0.1UF,10%,50V,X7R	04222	12065C104KAT1A
A1C609	283−5114−00			CAP,FXD,CER DI:0.1UF,10%,50V,X7R	04222	12065C104KAT1A
A1C610	283−5106−00			CAP,FXD,CER DI:470PF,5%,100V	04222	12061A470JAT1A
A1C701	283−5267−00			CAP,FXD,CERAMIC:1.0UF,25V,Y5V,+80−20%,SMD	04222	12063G105ZAT1A
A1C702	283−5267−00			CAP,FXD,CERAMIC:1.0UF,25V,Y5V,+80−20%,SMD	04222	12063G105ZAT1A
A1C703	283−5267−00			CAP,FXD,CERAMIC:1.0UF,25V,Y5V,+80−20%,SMD	04222	12063G105ZAT1A
A1C704	283−5267−00			CAP,FXD,CERAMIC:1.0UF,25V,Y5V,+80−20%,SMD	04222	12063G105ZAT1A
A1C705	283−5267−00			CAP,FXD,CERAMIC:1.0UF,25V,Y5V,+80−20%,SMD	04222	12063G105ZAT1A
A1C706	283−5267−00			CAP,FXD,CERAMIC:1.0UF,25V,Y5V,+80−20%,SMD	04222	12063G105ZAT1A
A1C707	283−5267−00			CAP,FXD,CERAMIC:1.0UF,25V,Y5V,+80−20%,SMD	04222	12063G105ZAT1A
A1C708	283−5267−00			CAP,FXD,CERAMIC:1.0UF,25V,Y5V,+80−20%,SMD	04222	12063G105ZAT1A
A1C709	283−5267−00			CAP,FXD,CERAMIC:1.0UF,25V,Y5V,+80−20%,SMD	04222	12063G105ZAT1A
A1C710	283−5267−00			CAP,FXD,CERAMIC:1.0UF,25V,Y5V,+80−20%,SMD	04222	12063G105ZAT1A
A1C711	283−5114−00			CAP,FXD,CER DI:0.1UF,10%,50V,X7R	04222	12065C104KAT1A
A1C712	283−5114−00			CAP,FXD,CER DI:0.1UF,10%,50V,X7R	04222	12065C104KAT1A
A1C713	283−5114−00			CAP,FXD,CER DI:0.1UF,10%,50V,X7R (TDS310/350 ONLY)	04222	12065C104KAT1A
A1C714	283−5114−00			CAP,FXD,CER DI:0.1UF,10%,50V,X7R (TDS310/350 ONLY)	04222	12065C104KAT1A
A1CR102	152−5018−00			DIODE,SIG:,ULTRA FAST;100V,0.74VF,4NS,2.0PF	27014	MMBD1203−HIGH
A1CR103	152−5018−00			DIODE,SIG:,ULTRA FAST;100V,0.74VF,4NS,2.0PF	27014	MMBD1203−HIGH
A1CR104	152−5018−00			DIODE,SIG:,ULTRA FAST;100V,0.74VF,4NS,2.0PF	27014	MMBD1203−HIGH
A1CR205	152−5047−00			DIODE,SIG:,ULTRA FAST;100V,0.74VF,4NS,2.0PF	27014	MMBD1204
A1CR206	152−5047−00			DIODE,SIG:,ULTRA FAST;100V,0.74VF,4NS,2.0PF	27014	MMBD1204
A1CR207	152−5047−00			DIODE,SIG:,ULTRA FAST;100V,0.74VF,4NS,2.0PF	27014	MMBD1204
A1CR301	152−5045−00			DIODE,SIG:SCHTKY,;20V,1.2PF,24 OHM	50434	HSMS−2810−T31
A1CR302	152−5018−00			DIODE,SIG:,ULTRA FAST;100V,0.74VF,4NS,2.0PF	27014	MMBD1203−HIGH
A1CR401	152−5018−00			DIODE,SIG:,ULTRA FAST;100V,0.74VF,4NS,2.0PF	27014	MMBD1203−HIGH
A1CR501	152−5062−00			DIODE,SIG:,ULTRA FAST;100V,0.74VF,4NS,2.0PF	27014	MMBD1205
A1CR520	152−5018−00			DIODE,SIG:,ULTRA FAST;100V,0.74VF,4NS,2.0PF	27014	MMBD1203−HIGH
A1CR525	152−5018−00			DIODE,SIG:,ULTRA FAST;100V,0.74VF,4NS,2.0PF	27014	MMBD1203−HIGH
A1CR542	152−5018−00			DIODE,SIG:,ULTRA FAST;100V,0.74VF,4NS,2.0PF	27014	MMBD1203−HIGH
A1CR543	152−5018−00			DIODE,SIG:,ULTRA FAST;100V,0.74VF,4NS,2.0PF	27014	MMBD1203−HIGH
A1CR551	152−5018−00			DIODE,SIG:,ULTRA FAST;100V,0.74VF,4NS,2.0PF	27014	MMBD1203−HIGH
A1CR553	152−5018−00			DIODE,SIG:,ULTRA FAST;100V,0.74VF,4NS,2.0PF	27014	MMBD1203−HIGH
A1CR554	152−5018−00			DIODE,SIG:,ULTRA FAST;100V,0.74VF,4NS,2.0PF	27014	MMBD1203−HIGH
A1J51	131−3731−00			CONN,RF JACK:BNC,;50 OHM,FEMALE,STR	24931	28JR377−1
A1J52	131−3731−00			CONN,RF JACK:BNC,;50 OHM,FEMALE,STR	24931	28JR377−1
A1J53	131−3731−00			CONN,RF JACK:BNC,;50 OHM,FEMALE,STR	24931	28JR377−1

Component Number	Tektronix Part No.	Serial No. Effective	Serial No. Dscont	Name & Description	Mfr. Code	Mfr. Part No.
A1J601	131−3147−00			CONN,HDR:PCB,;MALE,STR,2 X 25,0.1 CTR,0.365D	53387	2550−6002UB
A1J603	131−5344−00			CONN,HDR:PCB,;MALE,STR,1 X 16,0.1 CTR	00779	1−103670−5
A1J609	131−5203−00			CONN,HDR:PCB,;MALE,STR,1 X 2,0.1 CTR (TDS310/350 ONLY)	80009	131520300
A1J701	174−2282−00			CA ASSY,SP,ELEC:	TK2469	174−2282−00
A1J702	174−2705−00			CA ASSY,SP,ELEC:OSCILLOSCOPE,14.0 L W/CONN	80009	174270500
A1J703	131−5472−00			CONN,HDR:PCB,;MALE,STR,1 X 6,0.1 CTR (TDS310/350 ONLY)	00779	103908−5
A1L203	108−5072−00			COIL,RF:INDUCTOR,FXD,1UH,5% (TDS310 ONLY)	02113	1008CS−102−XJ2A
A1L203	108−5020−00			COIL,RF:FXD,270NH,+/− 5%,Q=28,SRF 550 MHZ (TDS320 ONLY)	02113	1008CS−271XJBA
A1L203	108−5095−00			COIL,RF:INDUCTOR,FXD,27NH,20% (TDS350 ONLY)	02113	1008CS−270XMBA
A1L204	108−5072−00			COIL,RF:INDUCTOR,FXD,1UH,5% (TDS310 ONLY)	02113	1008CS−102−XJ2A
A1L204	108−5020−00			COIL,RF:FXD,270NH,+/− 5%,Q=28,SRF 550 MHZ (TDS320 ONLY)	02113	1008CS−271XJBA
A1L204	108−5095−00			COIL,RF:INDUCTOR,FXD,27NH,20% (TDS350 ONLY)	02113	1008CS−270XMBA
A1L205	108−5072−00			COIL,RF:INDUCTOR,FXD,1UH,5% (TDS310 ONLY)	02113	1008CS−102−XJ2A
A1L205	108−5020−00			COIL,RF:FXD,270NH,+/− 5%,Q=28,SRF 550 MHZ (TDS320 ONLY)	02113	1008CS−271XJBA
A1L205	108−5095−00			COIL,RF:INDUCTOR,FXD,27NH,20% (TDS350 ONLY)	02113	1008CS−270XMBA
A1L206	108−5072−00			COIL,RF:INDUCTOR,FXD,1UH,5% (TDS310 ONLY)	02113	1008CS−102−XJ2A
A1L206	108−5020−00			COIL,RF:FXD,270NH,+/− 5%,Q=28,SRF 550 MHZ (TDS320 ONLY)	02113	1008CS−271XJBA
A1L206	108−5095−00			COIL,RF:INDUCTOR,FXD,27NH,20% (TDS350 ONLY)	02113	1008CS−270XMBA
A1L208	108−5084−00			COIL,RF:FERRITE CHIP BEAD,52 OHM	54583	HF70ACB322513T
A1L209	108−5129−00			COIL,RF:INDUCTOR,FXD,10UH,10% (TDS310/350 ONLY)	80009	108512900
A1L209	108−5018−00	B010100	B021867	COIL,RF:FXD,4.7UH,20%, Q=50, SRF 45 MHZ (TDS320 ONLY)	54583	NL453232T−4R7M
A1L209	108−5129−00	B021868		COIL,RF:INDUCTOR,FXD,10UH,10% (TDS320 ONLY)	80009	108512900
A1L210	108−5074−00			COIL,RF:INDUCTOR,FXD,3.9UH,10% (TDS310/350 ONLY)	02113	1008CS−392XKBA
A1L210	108−5018−00	B010100	B021867	COIL,RF:FXD,4.7UH,20%, Q=50, SRF 45 MHZ (TDS320 ONLY)	54583	NL453232T−4R7M
A1L210	108−5074−00	B021868		COIL,RF:INDUCTOR,FXD,3.9UH,10% (TDS320 ONLY)	02113	1008CS−392XKBA

Component Number	Tektronix Part No.	Serial No. Effective	Serial No. Dscont	Name & Description	Mfr. Code	Mfr. Part No.
A1L211	108−5074−00			COIL,RF:INDUCTOR,FXD,3.9UH,10% (TDS310/350 ONLY)	02113	1008CS−392XKBA
A1L211	108−5018−00	B010100	B021867	COIL,RF:FXD,4.7UH,20%, Q=50, SRF 45 MHZ (TDS320 ONLY)	54583	NL453232T−4R7M
A1L211	108−5074−00	B021868		COIL,RF:INDUCTOR,FXD,3.9UH,10% (TDS320 ONLY)	02113	1008CS−392XKBA
A1L212	321−5051−00			RES,FXD:THICK FILM,0 OHM,1%,0.125W (TDS310/350 ONLY)	80009	321505100
A1L213	108−5094−00			COIL,RF:INDUCTOR,FXD,10NH,20% (TDS310/350 ONLY)	TK2058	NL322522−010M
A1L213	108−5094−00	B010100	B021867	COIL,RF:INDUCTOR,FXD,10NH,20% (TDS320 ONLY)	TK2058	NL322522−010M
A1L213	321−5051−00	B021868	B044999	RES,FXD:THICK FILM,0 OHM,1%,0.125W (TDS320 ONLY)	80009	321505100
A1L213	108−5094−00	B045000		COIL,RF:INDUCTOR,FXD,10NH,20% (TDS320 ONLY)	TK2058	NL322522−010M
A1Q105	151−5001−00			TRANSISTOR,SIG:BIPOLAR,NPN;40V,200MA	04713	MMBT3904T1/T2
A1Q106	151−5001−00			TRANSISTOR,SIG:BIPOLAR,NPN;40V,200MA	04713	MMBT3904T1/T2
A1Q107	151−5018−00			TRANSISTOR,SIG:JFET,N−CH;6V,30MA,4.5MS	TK2150	SST441
A1Q108	151−5001−00			TRANSISTOR,SIG:BIPOLAR,NPN;40V,200MA	04713	MMBT3904T1/T2
A1Q201	151−5029−00			TRANSISTOR,SIG:BIPOLAR,NPN;15V,500MA	04713	MMBT2369LT1
A1Q202	151−5029−00			TRANSISTOR,SIG:BIPOLAR,NPN;15V,500MA	04713	MMBT2369LT1
A1Q203	151−5029−00			TRANSISTOR,SIG:BIPOLAR,NPN;15V,500MA	04713	MMBT2369LT1
A1Q204	151−5029−00			TRANSISTOR,SIG:BIPOLAR,NPN;15V,500MA	04713	MMBT2369LT1
A1Q205	151−5029−00			TRANSISTOR,SIG:BIPOLAR,NPN;15V,500MA	04713	MMBT2369LT1
A1Q206	151−5029−00			TRANSISTOR,SIG:BIPOLAR,NPN;15V,500MA	04713	MMBT2369LT1
A1Q301	151−5058−00			TRANSISTOR,SIG:BIPOLAR,PNP;12V,80MA	04713	MMBT3640LT1
A1Q302	151−5058−00			TRANSISTOR,SIG:BIPOLAR,PNP;12V,80MA	04713	MMBT3640LT1
A1Q304	151−5000−00			TRANSISTOR,SIG:BIPOLAR,PNP;40V,200MA	04713	MMBT3906LT1
A1Q305	151−5001−00			TRANSISTOR,SIG:BIPOLAR,NPN;40V,200MA	04713	MMBT3904T1/T2
A1Q306	151−5034−00			TRANSISTOR,SIG:BIPOLAR,NPN;14V,50MA,1.5GHZ	62104	NE73433−T1B
A1Q307	151−5034−00			TRANSISTOR,SIG:BIPOLAR,NPN;14V,50MA,1.5GHZ	62104	NE73433−T1B
A1Q501	156−6140−00			IC,LINEAR:BIPOLAR,TRANSISTOR ARRAY;QUAD	24355	MAT04FS
A1Q505	151−5001−00			TRANSISTOR,SIG:BIPOLAR,NPN;40V,200MA	04713	MMBT3904T1/T2
A1Q506	151−5001−00			TRANSISTOR,SIG:BIPOLAR,NPN;40V,200MA	04713	MMBT3904T1/T2
A1Q507	151−5001−00			TRANSISTOR,SIG:BIPOLAR,NPN;40V,200MA	04713	MMBT3904T1/T2
A1Q508	151−5001−00			TRANSISTOR,SIG:BIPOLAR,NPN;40V,200MA	04713	MMBT3904T1/T2
A1Q509	151−5058−00			TRANSISTOR,SIG:BIPOLAR,PNP;12V,80MA	04713	MMBT3640LT1
A1Q510	151−5058−00			TRANSISTOR,SIG:BIPOLAR,PNP;12V,80MA	04713	MMBT3640LT1
A1Q701	151−5000−00			TRANSISTOR,SIG:BIPOLAR,PNP;40V,200MA	04713	MMBT3906LT1
A1Q702	151−5000−00			TRANSISTOR,SIG:BIPOLAR,PNP;40V,200MA	04713	MMBT3906LT1
A1Q703	151−5000−00			TRANSISTOR,SIG:BIPOLAR,PNP;40V,200MA	04713	MMBT3906LT1

Component Number	Tektronix Part No.	Serial No. Effective	Serial No. Dscont	Name & Description	Mfr. Code	Mfr. Part No.
A1Q704	151−5000−00			TRANSISTOR,SIG:BIPOLAR,PNP;40V,200MA	04713	MMBT3906LT1
A1R50	313−1390−00			RES,FXD,FILM:39 OHM,5%,0.2W	91637	CCF50−2−39R00J
A1R101	321−5006−00			RES,FXD:METAL FILM;100 OHM,1%,0.125W	91637	CRCW12061000FT
A1R102	321−5020−00			RES,FXD:METAL FILM;1.5K OHM,1%,0.125W	91637	CRCW12061501FT
A1R103	321−5030−00			RES,FXD:METAL FILM;10.0K OHM,1%,0.125W	91637	CRCW12061002FT
A1R105	321−5051−00			RES,FXD:METAL FILM;0 OHM,1%,0.125W	09969	CRCW1206 JUMPER
A1R106	321−5032−00			RES,FXD:METAL FILM;15.0K OHM,1%,0.125W	91637	CRCW12061502FT
A1R107	321−5024−00			RES,FXD:METAL FILM;3.32K OHM,1%,0.125W	91637	CRCW12063321FT
A1R108	321−5032−00			RES,FXD:METAL FILM;15.0K OHM,1%,0.125W	91637	CRCW12061502FT
A1R113	321−5024−00			RES,FXD:METAL FILM;3.32K OHM,1%,0.125W	91637	CRCW12063321FT
A1R114	321−5022−00			RES,FXD:METAL FILM;2.21K OHM,1%,0.125W	91637	CRCW12062211FT
A1R115	321−5018−00			RES,FXD:METAL FILM;1.0K OHM,1%,0.125W	91637	CRCW12061001FT
A1R116	321−5030−00			RES,FXD:METAL FILM;10.0K OHM,1%,0.125W	91637	CRCW12061002FT
A1R117	321−5241−00			RES,FXD,FILM:34.0K,0.1%,0.125W	91637	TNPW1206−3402−B
A1R118	321−5169−00			RES,FXD:METAL FILM;475K OHM,1%,0.125W	91637	CRCW1206−47502F
A1R119	321−5169−00	B010100	B039999	RES,FXD:METAL FILM;475K OHM,1%,0.125W (TDS310/320/350)	91637	CRCW1206−47502F
A1R119	321−5064−00	B040100		RES,FXD:METAL FILM;200K OHM,1%,0.125W (TDS310/320/350)	91637	CRCW1206−2003FT
A1R120	321−5018−00			RES,FXD:METAL FILM;1.0K OHM,1%,0.125W	91637	CRCW12061001FT
A1R123	321−5005−00			RES,FXD:METAL FILM;27.4 OHM,1%,0.125W	91637	CRCW120627R4FT
A1R124	321−5016−00			RES,FXD:METAL FILM;681 OHM,1%,0.125W	91637	CRCW12066810FT
A1R125	321−5113−00			RES,FXD:METAL FILM;75 OHM,1%,0.125W	56845	CRCW120675ROFT
A1R126	321−5169−00			RES,FXD:METAL FILM;475K OHM,1%,0.125W	91637	CRCW1206−47502F
A1R127	321−5048−00			RES,FXD:METAL FILM;332K OHM,1%,0.125W	91637	CRCW1206−3323FT
A1R128	321−5016−00			RES,FXD:METAL FILM;681 OHM,1%,0.125W	91637	CRCW12066810FT
A1R129	321−5064−00			RES,FXD:METAL FILM;200K OHM,1%,0.125W	91637	CRCW1206−2003FT
A1R130	321−5014−00			RES,FXD:METAL FILM;475 OHM,1%,0.125W	91637	CRCW12064750FT
A1R131	321−5019−00			RES,FXD:METAL FILM;1.21K OHM,1%,0.125W	91637	CRCW12061211FT
A1R132	321−5113−00			RES,FXD:METAL FILM;75 OHM,1%,0.125W	56845	CRCW120675ROFT
A1R133	321−5167−00	B010100	B039999	RES,FXD:METAL FILM;221K OHM,1%,0.125W (TDS310/320/350)	91637	CRCW1206−22102F
A1R133	321−5048−00	B040100		RES,FXD:METAL FILM;332K OHM,1%,0.125W (TDS310/320/350)	91637	CRCW1206−3323FT
A1R134	321−5020−00			RES,FXD:METAL FILM;1.5K OHM,1%,0.125W (TDS310/350 ONLY)	91637	CRCW12061501FT
A1R134	321−5019−00	B010100	B021867	RES,FXD:METAL FILM;1.21K OHM,1%,0.125W (TDS320 ONLY)	91637	CRCW12061211FT
A1R134	321−5020−00	B021868		RES,FXD:METAL FILM;1.5K OHM,1%,0.125W (TDS320 ONLY)	91637	CRCW12061501FT
A1R135	321−5020−00			RES,FXD:METAL FILM;1.5K OHM,1%,0.125W (TDS310/350 ONLY)	91637	CRCW12061501FT

Component Number	Tektronix Part No.	Serial No. Effective	Serial No. Dscont	Name & Description	Mfr. Code	Mfr. Part No.
A1R135	321−5019−00	B010100	B021867	RES,FXD:METAL FILM;1.21K OHM,1%,0.125W (TDS320 ONLY)	91637	CRCW12061211FT
A1R135	321−5020−00	B021868		RES,FXD:METAL FILM;1.5K OHM,1%,0.125W (TDS320 ONLY)	91637	CRCW12061501FT
A1R136	321−5011−00			RES,FXD:METAL FILM;274 OHM,1%,0.125W (TDS310/350 ONLY)	91637	CRCW12062740FT
A1R200	321−5006−00			RES,FXD:METAL FILM;100 OHM,1%,0.125W	91637	CRCW12061000FT
A1R201	321−5049−00			RES,FXD:METAL FILM;1M OHM,1%,0.125W	57668	MCR18FXEA1M
A1R202	321−5049−00			RES,FXD:METAL FILM;1M OHM,1%,0.125W	57668	MCR18FXEA1M
A1R203	321−5018−00			RES,FXD:METAL FILM;1.0K OHM,1%,0.125W (TDS310/350 ONLY)	91637	CRCW12061001FT
A1R203	321−5018−00	B010100	B021867	RES,FXD:METAL FILM;1.0K OHM,1%,0.125W (TDS320 ONLY)	91637	CRCW12061001FT
A1R203	321−5017−00	B021868	B044999	RES,FXD:THICK FILM;825OHM,1%,0.125W (TDS320 ONLY)	80009	321501700
A1R203	321−5018−00	B045000		RES,FXD:METAL FILM;1.0K OHM,1%,0.125W (TDS320 ONLY)	91637	CRCW12061001FT
A1R204	321−5018−00			RES,FXD:METAL FILM;1.0K OHM,1%,0.125W (TDS310/350 ONLY)	91637	CRCW12061001FT
A1R204	321−5018−00	B010100	B021867	RES,FXD:METAL FILM;1.0K OHM,1%,0.125W (TDS320 ONLY)	91637	CRCW12061001FT
A1R204	321−5017−00	B021868	B044999	RES,FXD:THICK FILM;825OHM,1%,0.125W (TDS320 ONLY)	80009	321501700
A1R204	321−5018−00	B045000		RES,FXD:METAL FILM;1.0K OHM,1%,0.125W (TDS320 ONLY)	91637	CRCW12061001FT
A1R207	321−5005−00			RES,FXD:METAL FILM;27.4 OHM,1%,0.125W (TDS310/350 ONLY)	91637	CRCW120627R4FT
A1R207	321−5042−00	B010100	B021867	RES,FXD:METAL FILM;39.2 OHM,1%,0.125W (TDS320 ONLY)	91637	CRCW120639R2FT
A1R207	321−5005−00	B021868		RES,FXD:METAL FILM;27.4 OHM,1%,0.125W (TDS320 ONLY)	91637	CRCW120627R4FT
A1R208	321−5022−00			RES,FXD:METAL FILM;2.21K OHM,1%,0.125W (TDS310 ONLY)	91637	CRCW12062211FT
A1R208	321−5022−00	B010100	B030099	RES,FXD:METAL FILM;2.21K OHM,1%,0.125W (TDS320 ONLY)	91637	CRCW12062211FT
A1R208	321−5023−00	B030100	B044999	RES,FXD:THICK FILM;2.74K OHM,1%,0.125W (TDS320 ONLY)	80009	321502300
A1R208	321−5022−00	B045000		RES,FXD:METAL FILM;2.21K OHM,1%,0.125W (TDS320 ONLY)	91637	CRCW12062211FT
A1R208	321−5305−00			RES,FXD,FILM:2K OHM,0.1%,25PPM,0.125W (TDS350 ONLY)	91637	TNPW1206−20000B
A1R209	321−5113−00			RES,FXD:METAL FILM;75 OHM,1%,0.125W	56845	CRCW120675ROFT
A1R210	321−5113−00			RES,FXD:METAL FILM;75 OHM,1%,0.125W	56845	CRCW120675ROFT
A1R211	321−5113−00			RES,FXD:METAL FILM;75 OHM,1%,0.125W	56845	CRCW120675ROFT
A1R212	321−5113−00			RES,FXD:METAL FILM;75 OHM,1%,0.125W (TDS320 ONLY)	56845	CRCW120675ROFT
A1R215	321−5018−00			RES,FXD:METAL FILM;1.0K OHM,1%,0.125W	91637	CRCW12061001FT

Component Number	Tektronix Part No.	Serial No. Effective	Serial No. Dscont	Name & Description	Mfr. Code	Mfr. Part No.
A1R216	321−5038−00			RES,FXD:METAL FILM;47.5K OHM,1%,0.125W	91637	CRCW12064752FT
A1R217	321−5032−00			RES,FXD:METAL FILM;15.0K OHM,1%,0.125W	91637	CRCW12061502FT
A1R218	321−5019−00			RES,FXD:METAL FILM;1.21K OHM,1%,0.125W	91637	CRCW12061211FT
A1R219	321−5023−00			RES,FXD:METAL FILM;2.74K OHM,1%,0.125W	91637	CRCW12062741FT
A1R220	321−5018−00			RES,FXD:METAL FILM;1.0K OHM,1%,0.125W	91637	CRCW12061001FT
A1R221	321−5038−00			RES,FXD:METAL FILM;47.5K OHM,1%,0.125W	91637	CRCW12064752FT
A1R222	321−5032−00			RES,FXD:METAL FILM;15.0K OHM,1%,0.125W	91637	CRCW12061502FT
A1R223	321−5019−00			RES,FXD:METAL FILM;1.21K OHM,1%,0.125W	91637	CRCW12061211FT
A1R224	321−5023−00			RES,FXD:METAL FILM;2.74K OHM,1%,0.125W	91637	CRCW12062741FT
A1R225	321−5016−00			RES,FXD:METAL FILM;681 OHM,1%,0.125W (TDS310/350 ONLY)	91637	CRCW12066810FT
A1R225	321−5019−00			RES,FXD:METAL FILM;1.21K OHM,1%,0.125W (TDS320 ONLY)	91637	CRCW12061211FT
A1R226	321−5305−00			RES,FXD,FILM:2K OHM,0.1%,25PPM,0.125W	91637	TNPW1206−20000B
A1R227	321−5305−00			RES,FXD,FILM:2K OHM,0.1%,25PPM,0.125W	91637	TNPW1206−20000B
A1R228	321−5309−00			RES,FXD,FILM:8.25K OHM,+/−0.1%,0.125W	91637	TNPW120668251B
A1R230	321−5024−00			RES,FXD:METAL FILM;3.32K OHM,1%,0.125W	91637	CRCW12063321FT
A1R231	321−5024−00			RES,FXD:METAL FILM;3.32K OHM,1%,0.125W	91637	CRCW12063321FT
A1R232	321−5024−00			RES,FXD:METAL FILM;3.32K OHM,1%,0.125W	91637	CRCW12063321FT
A1R233	321−5024−00			RES,FXD:METAL FILM;3.32K OHM,1%,0.125W	91637	CRCW12063321FT
A1R234	321−5165−00			RES,FXD,FILM:10K OHM,0.1%,0.125W	91637	TNPW1206−1002BT
A1R236	321−5165−00			RES,FXD,FILM:10K OHM,0.1%,0.125W	91637	TNPW1206−1002BT
A1R237	321−5018−00			RES,FXD:METAL FILM;1.0K OHM,1%,0.125W	91637	CRCW12061001FT
A1R238	321−5018−00			RES,FXD:METAL FILM;1.0K OHM,1%,0.125W	91637	CRCW12061001FT
A1R239	321−5018−00			RES,FXD:METAL FILM;1.0K OHM,1%,0.125W	91637	CRCW12061001FT
A1R240	321−5030−00			RES,FXD:METAL FILM;10.0K OHM,1%,0.125W (TDS350 ONLY)	91637	CRCW12061002FT
A1R241	321−5024−00			RES,FXD:METAL FILM;3.32K OHM,1%,0.125W (TDS350 ONLY)	91637	CRCW12063321FT
A1R246	321−5013−00			RES,FXD:METAL FILM;392 OHM,1%,0.125W (TDS310 ONLY)	91637	CRCW12063920FT
A1R246	321−5010−00	B010100	B021867	RES,FXD:THICK FILM;221 OHM,1%,0.125W (TDS320 ONLY)	80009	321501000
A1R246	321−5093−00	B021868	B044999	RES,FXD,FILM:200 OHM,1%,0.125W (TDS320 ONLY)	91637	CRCW12062000FT
A1R246	321−5010−00	B045000		RES,FXD:THICK FILM;221 OHM,1%,0.125W (TDS320 ONLY)	80009	321501000
A1R246	321−5000−00			RES,FXD:METAL FILM;10 OHM,1%,0.125W (TDS350 ONLY)	91637	CRCW120610R0FT
A1R247	321−5013−00			RES,FXD:METAL FILM;392 OHM,1%,0.125W (TDS310 ONLY)	91637	CRCW12063920FT

Component Number	Tektronix Part No.	Serial No. Effective	Serial No. Dscont	Name & Description	Mfr. Code	Mfr. Part No.
A1R247	321−5010−00	B010100	B021867	RES,FXD:THICK FILM;221 OHM,1%,0.125W (TDS320 ONLY)	80009	321501000
A1R247	321−5093−00	B021868	B044999	RES,FXD,FILM:200 OHM,1%,0.125W (TDS320 ONLY)	91637	CRCW12062000FT
A1R247	321−5010−00	B045000		RES,FXD:THICK FILM;221 OHM,1%,0.125W (TDS320 ONLY)	80009	321501000
A1R247	321−5000−00			RES,FXD:METAL FILM;10 OHM,1%,0.125W (TDS350 ONLY)	91637	CRCW120610R0FT
A1R248	321−5013−00			RES,FXD:METAL FILM;392 OHM,1%,0.125W (TDS310 ONLY)	91637	CRCW12063920FT
A1R248	321−5010−00	B010100	B021867	RES,FXD:THICK FILM;221 OHM,1%,0.125W (TDS320 ONLY)	80009	321501000
A1R248	321−5093−00	B021868	B044999	RES,FXD,FILM:200 OHM,1%,0.125W (TDS320 ONLY)	91637	CRCW12062000FT
A1R248	321−5010−00	B045000		RES,FXD:THICK FILM;221 OHM,1%,0.125W (TDS320 ONLY)	80009	321501000
A1R248	321−5000−00			RES,FXD:METAL FILM;10 OHM,1%,0.125W (TDS350 ONLY)	91637	CRCW120610R0FT
A1R249	321−5013−00			RES,FXD:METAL FILM;392 OHM,1%,0.125W (TDS310 ONLY)	91637	CRCW12063920FT
A1R249	321−5010−00	B010100	B021867	RES,FXD:THICK FILM;221 OHM,1%,0.125W (TDS320 ONLY)	80009	321501000
A1R249	321−5093−00	B021868	B044999	RES,FXD,FILM:200 OHM,1%,0.125W (TDS320 ONLY)	91637	CRCW12062000FT
A1R249	321−5010−00	B045000		RES,FXD:THICK FILM;221 OHM,1%,0.125W (TDS320 ONLY)	80009	321501000
A1R249	321−5093−00			RES,FXD,FILM:200 OHM,1%,0.125W (TDS350 ONLY)	91637	CRCW12062000FT
A1R250	321−5305−00			RES,FXD,FILM:2K OHM,0.1%,25PPM,0.125W	91637	TNPW1206−20000B
A1R251	321−5241−00			RES,FXD,FILM:34.0K,0.1%,0.125W	91637	TNPW1206−3402−B
A1R252	321−5241−00			RES,FXD,FILM:34.0K,0.1%,0.125W	91637	TNPW1206−3402−B
A1R253	321−5165−00			RES,FXD,FILM:10K OHM,0.1%,0.125W	91637	TNPW1206−1002BT
A1R254	321−5309−00			RES,FXD,FILM:8.25K OHM,+/−0.1%,0.125W	91637	TNPW120668251B
A1R255	321−5242−00			RES,FXD,FILM:68.1K,0.1%,0.125W	91637	TNPW1206−6812−B
A1R256	321−5305−00			RES,FXD,FILM:2K OHM,0.1%,25PPM,0.125W	91637	TNPW1206−20000B
A1R260	321−5051−00			RES,FXD:THICK FILM,0 OHM,1%,0.125W	80009	321505100
A1R302	321−5011−00			RES,FXD:METAL FILM;274 OHM,1%,0.125W	91637	CRCW12062740FT
A1R303	321−5006−00			RES,FXD:METAL FILM;100 OHM,1%,0.125W	91637	CRCW12061000FT
A1R304	321−5016−00			RES,FXD:METAL FILM;681 OHM,1%,0.125W	91637	CRCW12066810FT
A1R305	321−5006−00			RES,FXD:METAL FILM;100 OHM,1%,0.125W	91637	CRCW12061000FT
A1R307	321−5042−00			RES,FXD:METAL FILM;39.2 OHM,1%,0.125W	91637	CRCW120639R2FT
A1R308	321−5016−00			RES,FXD:METAL FILM;681 OHM,1%,0.125W	91637	CRCW12066810FT
A1R309	321−5013−00			RES,FXD:METAL FILM;392 OHM,1%,0.125W	91637	CRCW12063920FT
A1R310	321−5014−00			RES,FXD:METAL FILM;475 OHM,1%,0.125W	91637	CRCW12064750FT
A1R314	321−5007−00			RES,FXD:METAL FILM;121 OHM,1%,0.125W	91637	CRCW12061210FT
A1R315	321−5007−00			RES,FXD:METAL FILM;121 OHM,1%,0.125W	91637	CRCW12061210FT
A1R316	321−5007−00			RES,FXD:METAL FILM;121 OHM,1%,0.125W	91637	CRCW12061210FT

Component Number	Tektronix Part No.	Serial No. Effective	Serial No. Dscont	Name & Description	Mfr. Code	Mfr. Part No.
A1R317	321−5014−00			RES,FXD:METAL FILM;475 OHM,1%,0.125W	91637	CRCW12064750FT
A1R318	321−5005−00			RES,FXD:METAL FILM;27.4 OHM,1%,0.125W	91637	CRCW120627R4FT
A1R319	321−5005−00			RES,FXD:METAL FILM;27.4 OHM,1%,0.125W	91637	CRCW120627R4FT
A1R321	321−5006−00			RES,FXD:METAL FILM;100 OHM,1%,0.125W	91637	CRCW12061000FT
A1R324	321−5020−00			RES,FXD:METAL FILM;1.5K OHM,1%,0.125W	91637	CRCW12061501FT
A1R325	321−5047−00			RES,FXD:METAL FILM;100K OHM,1%,0.125W	91637	CRCW12061003FT
A1R327	321−5030−00			RES,FXD:METAL FILM;10.0K OHM,1%,0.125W	91637	CRCW12061002FT
A1R331	321−5014−00			RES,FXD:METAL FILM;475 OHM,1%,0.125W	91637	CRCW12064750FT
A1R335	321−5030−00			RES,FXD:METAL FILM;10.0K OHM,1%,0.125W	91637	CRCW12061002FT
A1R336	321−5169−00			RES,FXD:METAL FILM;475K OHM,1%,0.125W	91637	CRCW1206−47502F
A1R350	321−5006−00			RES,FXD:METAL FILM;100 OHM,1%,0.125W	91637	CRCW12061000FT
A1R351	321−5009−00			RES,FXD:METAL FILM;182 OHM,1%,0.125W	91637	CRCW12061820FT
A1R352	321−5006−00			RES,FXD:METAL FILM;100 OHM,1%,0.125W	91637	CRCW12061000FT
A1R360	321−5013−00	B040100		RES,FXD:METAL FILM;392 OHM,1%,0.125W (TDS310/320/350)	91637	CRCW12063920FT
A1R361	321−5022−00			RES,FXD:METAL FILM;2.21K OHM,1%,0.125W (TDS310/320/350)	91637	CRCW12062211FT
A1R365	321−5018−00			RES,FXD:METAL FILM;1.0K OHM,1%,0.125W	91637	CRCW12061001FT
A1R366	321−5009−00			RES,FXD:METAL FILM;182 OHM,1%,0.125W	91637	CRCW12061820FT
A1R369	321−5009−00			RES,FXD:METAL FILM;182 OHM,1%,0.125W	91637	CRCW12061820FT
A1R370	321−5194−00			RES,FXD:METAL FILM;49.9 OHM,1%,0.125W	91637	CRCW−1206−49R9
A1R372	321−5011−00			RES,FXD:METAL FILM;274 OHM,1%,0.125W	91637	CRCW12062740FT
A1R373	321−5014−00			RES,FXD:METAL FILM;475 OHM,1%,0.125W	91637	CRCW12064750FT
A1R375	321−5022−00			RES,FXD:METAL FILM;2.21K OHM,1%,0.125W	91637	CRCW12062211FT
A1R376	321−5013−00			RES,FXD:METAL FILM;392 OHM,1%,0.125W	91637	CRCW12063920FT
A1R378	321−5013−00			RES,FXD:METAL FILM;392 OHM,1%,0.125W	91637	CRCW12063920FT
A1R379	321−5022−00			RES,FXD:METAL FILM;2.21K OHM,1%,0.125W	91637	CRCW12062211FT
A1R380	321−5013−00	B040100		RES,FXD:METAL FILM;392 OHM,1%,0.125W (TDS310/320/350)	91637	CRCW12063920FT
A1R381	321−5022−00			RES,FXD:METAL FILM;2.21K OHM,1%,0.125W (TDS310/320/350)	91637	CRCW12062211FT
A1R383	321−5013−00			RES,FXD:METAL FILM;392 OHM,1%,0.125W	91637	CRCW12063920FT
A1R384	321−5022−00			RES,FXD:METAL FILM;2.21K OHM,1%,0.125W	91637	CRCW12062211FT
A1R385	321−5013−00			RES,FXD:METAL FILM;392 OHM,1%,0.125W	91637	CRCW12063920FT
A1R386	321−5022−00			RES,FXD:METAL FILM;2.21K OHM,1%,0.125W	91637	CRCW12062211FT
A1R387	321−5022−00			RES,FXD:METAL FILM;2.21K OHM,1%,0.125W	91637	CRCW12062211FT
A1R388	321−5013−00			RES,FXD:METAL FILM;392 OHM,1%,0.125W	91637	CRCW12063920FT
A1R389	321−5022−00			RES,FXD:METAL FILM;2.21K OHM,1%,0.125W	91637	CRCW12062211FT
A1R390	321−5014−00			RES,FXD:METAL FILM;475 OHM,1%,0.125W	91637	CRCW12064750FT
A1R392	321−5013−00			RES,FXD:METAL FILM;392 OHM,1%,0.125W	91637	CRCW12063920FT
A1R393	321−5007−00			RES,FXD:METAL FILM;121 OHM,1%,0.125W	91637	CRCW12061210FT

Component Number	Tektronix Part No.	Serial No. Effective	Serial No. Dscont	Name & Description	Mfr. Code	Mfr. Part No.
A1R395	321−5013−00			RES,FXD:METAL FILM;392 OHM,1%,0.125W	91637	CRCW12063920FT
A1R396	321−5022−00			RES,FXD:METAL FILM;2.21K OHM,1%,0.125W	91637	CRCW12062211FT
A1R398	321−5013−00			RES,FXD:METAL FILM;392 OHM,1%,0.125W	91637	CRCW12063920FT
A1R399	321−5022−00			RES,FXD:METAL FILM;2.21K OHM,1%,0.125W	91637	CRCW12062211FT
A1R402	321−5023−00			RES,FXD:METAL FILM;2.74K OHM,1%,0.125W	91637	CRCW12062741FT
A1R403	321−5030−00			RES,FXD:METAL FILM;10.0K OHM,1%,0.125W	91637	CRCW12061002FT
A1R406	321−5011−00			RES,FXD:METAL FILM;274 OHM,1%,0.125W	91637	CRCW12062740FT
A1R407	321−5011−00			RES,FXD:METAL FILM;274 OHM,1%,0.125W	91637	CRCW12062740FT
A1R408	321−5020−00			RES,FXD:METAL FILM;1.5K OHM,1%,0.125W	91637	CRCW12061501FT
A1R409	321−5018−00			RES,FXD:METAL FILM;1.0K OHM,1%,0.125W	91637	CRCW12061001FT
A1R410	321−5014−00			RES,FXD:METAL FILM;475 OHM,1%,0.125W	91637	CRCW12064750FT
A1R411	321−5000−00			RES,FXD:METAL FILM;10 OHM,1%,0.125W	91637	CRCW120610R0FT
A1R412	321−5026−00			RES,FXD:METAL FILM;4.75K OHM,1%,0.125W	91637	CRCW12064751FT
A1R413	321−5030−00			RES,FXD:METAL FILM;10.0K OHM,1%,0.125W	91637	CRCW12061002FT
A1R414	321−5014−00			RES,FXD:METAL FILM;475 OHM,1%,0.125W	91637	CRCW12064750FT
A1R415	321−5000−00			RES,FXD:METAL FILM;10 OHM,1%,0.125W	91637	CRCW120610R0FT
A1R416	321−5038−00			RES,FXD:METAL FILM;47.5K OHM,1%,0.125W	91637	CRCW12064752FT
A1R417	321−5006−00			RES,FXD:METAL FILM;100 OHM,1%,0.125W	91637	CRCW12061000FT
A1R418	321−5006−00			RES,FXD:METAL FILM;100 OHM,1%,0.125W	91637	CRCW12061000FT
A1R419	321−5009−00			RES,FXD:METAL FILM;182 OHM,1%,0.125W	91637	CRCW12061820FT
A1R420	321−5006−00			RES,FXD:METAL FILM;100 OHM,1%,0.125W	91637	CRCW12061000FT
A1R421	321−5006−00			RES,FXD:METAL FILM;100 OHM,1%,0.125W	91637	CRCW12061000FT
A1R422	321−5009−00			RES,FXD:METAL FILM;182 OHM,1%,0.125W	91637	CRCW12061820FT
A1R423	321−5194−00			RES,FXD:METAL FILM;49.9 OHM,1%,0.125W	91637	CRCW−1206−49R9
A1R424	321−5194−00			RES,FXD:METAL FILM;49.9 OHM,1%,0.125W	91637	CRCW−1206−49R9
A1R425	321−5194−00			RES,FXD:METAL FILM;49.9 OHM,1%,0.125W	91637	CRCW−1206−49R9
A1R500	321−5022−00			RES,FXD:METAL FILM;2.21K OHM,1%,0.125W	91637	CRCW12062211FT
A1R502	321−5026−00			RES,FXD:METAL FILM;4.75K OHM,1%,0.125W	91637	CRCW12064751FT
A1R503	321−5016−00			RES,FXD:METAL FILM;681 OHM,1%,0.125W	91637	CRCW12066810FT
A1R504	321−5016−00			RES,FXD:METAL FILM;681 OHM,1%,0.125W	91637	CRCW12066810FT
A1R507	321−5030−00			RES,FXD:METAL FILM;10.0K OHM,1%,0.125W	91637	CRCW12061002FT
A1R508	321−5030−00			RES,FXD:METAL FILM;10.0K OHM,1%,0.125W	91637	CRCW12061002FT
A1R509	321−5030−00			RES,FXD:METAL FILM;10.0K OHM,1%,0.125W	91637	CRCW12061002FT
A1R510	321−5030−00			RES,FXD:METAL FILM;10.0K OHM,1%,0.125W	91637	CRCW12061002FT
A1R511	321−5016−00			RES,FXD:METAL FILM;681 OHM,1%,0.125W	91637	CRCW12066810FT
A1R512	321−5022−00			RES,FXD:METAL FILM;2.21K OHM,1%,0.125W	91637	CRCW12062211FT
A1R514	321−5022−00			RES,FXD:METAL FILM;2.21K OHM,1%,0.125W	91637	CRCW12062211FT
A1R516	321−5030−00			RES,FXD:METAL FILM;10.0K OHM,1%,0.125W	91637	CRCW12061002FT
A1R521	321−5018−00			RES,FXD:METAL FILM;1.0K OHM,1%,0.125W	91637	CRCW12061001FT
A1R523	321−5018−00			RES,FXD:METAL FILM;1.0K OHM,1%,0.125W	91637	CRCW12061001FT
A1R525	321−5370−00			RES,FXD,FILM:0.25 OHM,10%,0.33W	57489	L1206MR250KB

Component Number	Tektronix Part No.	Serial No. Effective	Serial No. Dscont	Name & Description	Mfr. Code	Mfr. Part No.
A1R526	321−5370−00			RES,FXD,FILM:0.25 OHM,10%,0.33W	57489	L1206MR250KB
A1R527	321−5005−00			RES,FXD:METAL FILM;27.4 OHM,1%,0.125W	91637	CRCW120627R4FT
A1R528	321−5030−00			RES,FXD:METAL FILM;10.0K OHM,1%,0.125W	91637	CRCW12061002FT
A1R529	321−5023−00			RES,FXD:METAL FILM;2.74K OHM,1%,0.125W	91637	CRCW12062741FT
A1R530	321−5030−00			RES,FXD:METAL FILM;10.0K OHM,1%,0.125W	91637	CRCW12061002FT
A1R534	321−5022−00			RES,FXD:METAL FILM;2.21K OHM,1%,0.125W	91637	CRCW12062211FT
A1R535	321−5013−00			RES,FXD:METAL FILM;392 OHM,1%,0.125W	91637	CRCW12063920FT
A1R537	321−5013−00			RES,FXD:METAL FILM;392 OHM,1%,0.125W	91637	CRCW12063920FT
A1R538	321−5018−00			RES,FXD:METAL FILM;1.0K OHM,1%,0.125W	91637	CRCW12061001FT
A1R539	321−5018−00			RES,FXD:METAL FILM;1.0K OHM,1%,0.125W	91637	CRCW12061001FT
A1R540	321−5019−00	B010100	B039999	RES,FXD:METAL FILM;1.21K OHM,1%,0.125W (TDS310/320/350)	91637	CRCW12061211FT
A1R540	321−5114−00	B040100		RES,FXD,FILM:619 OHM,1%,0.125W (TDS310/320/350)	91637	CRCW12066190FT
A1R541	321−5019−00	B010100	B039999	RES,FXD:METAL FILM;1.21K OHM,1%,0.125W (TDS310/320/350)	91637	CRCW12061211FT
A1R542	321−5038−00			RES,FXD:METAL FILM;47.5K OHM,1%,0.125W	91637	CRCW12064752FT
A1R544	321−5020−00			RES,FXD:METAL FILM;1.5K OHM,1%,0.125W	91637	CRCW12061501FT
A1R545	321−5038−00			RES,FXD:METAL FILM;47.5K OHM,1%,0.125W	91637	CRCW12064752FT
A1R552	321−5026−00			RES,FXD:METAL FILM;4.75K OHM,1%,0.125W	91637	CRCW12064751FT
A1R553	321−5026−00			RES,FXD:METAL FILM;4.75K OHM,1%,0.125W	91637	CRCW12064751FT
A1R556	321−5005−00			RES,FXD:METAL FILM;27.4 OHM,1%,0.125W	91637	CRCW120627R4FT
A1R557	321−5020−00			RES,FXD:METAL FILM;1.5K OHM,1%,0.125W	91637	CRCW12061501FT
A1R558	321−5014−00			RES,FXD:METAL FILM;475 OHM,1%,0.125W	91637	CRCW12064750FT
A1R559	321−5014−00			RES,FXD:METAL FILM;475 OHM,1%,0.125W	91637	CRCW12064750FT
A1R561	321−5025−00			RES,FXD:METAL FILM;3.92K OHM,1%,0.125W	91637	CRCW12063921FT
A1R563	321−5018−00			RES,FXD:METAL FILM;1.0K OHM,1%,0.125W	91637	CRCW12061001FT
A1R565	321−5093−00	B040100		RES,FXD,FILM:200 OHM,1%,0.125W (TDS310/320/350)	91637	CRCW12062000FT
A1R566	321−5006−00	B040100		RES,FXD:METAL FILM;100 OHM,1%,0.125W (TDS310/320/350)	91637	CRCW12061000FT
A1R567	321−5006−00	B040100		RES,FXD:METAL FILM;100 OHM,1%,0.125W (TDS310/320/350)	91637	CRCW12061000FT
A1R572	321−5018−00			RES,FXD:METAL FILM;1.0K OHM,1%,0.125W	91637	CRCW12061001FT
A1R573	321−5018−00			RES,FXD:METAL FILM;1.0K OHM,1%,0.125W	91637	CRCW12061001FT
A1R582	321−5022−00			RES,FXD:METAL FILM;2.21K OHM,1%,0.125W	91637	CRCW12062211FT
A1R583	321−5022−00	B010100	B039999	RES,FXD:METAL FILM;2.21K OHM,1%,0.125W (TDS310/320/350)	91637	CRCW12062211FT
A1R585	321−5014−00			RES,FXD:METAL FILM;475 OHM,1%,0.125W	91637	CRCW12064750FT
A1R586	321−5014−00			RES,FXD:METAL FILM;475 OHM,1%,0.125W	91637	CRCW12064750FT
A1R587	321−5024−00			RES,FXD:METAL FILM;3.32K OHM,1%,0.125W	91637	CRCW12063321FT
A1R588	321−5024−00			RES,FXD:METAL FILM;3.32K OHM,1%,0.125W	91637	CRCW12063321FT
A1R590	321−5013−00			RES,FXD:METAL FILM;392 OHM,1%,0.125W	91637	CRCW12063920FT

Component Number	Tektronix Part No.	Serial No. Effective	Serial No. Dscont	Name & Description	Mfr. Code	Mfr. Part No.
A1R600	321−5026−00			RES,FXD:METAL FILM;4.75K OHM,1%,0.125W	91637	CRCW12064751FT
A1R601	321−5006−00			RES,FXD:METAL FILM;100 OHM,1%,0.125W	91637	CRCW12061000FT
A1R602	321−5026−00			RES,FXD:METAL FILM;4.75K OHM,1%,0.125W	91637	CRCW12064751FT
A1R613	321−5018−00			RES,FXD:METAL FILM;1.0K OHM,1%,0.125W	91637	CRCW12061001FT
A1R614	321−5018−00			RES,FXD:METAL FILM;1.0K OHM,1%,0.125W	91637	CRCW12061001FT
A1R636	307−5041−01			RES,NTWK FXD:FILM;(15),4.7K OHM,2%,0.08W EA	91637	SOMC−1601−472G
A1R637	307−5041−01			RES,NTWK FXD:FILM;(15),4.7K OHM,2%,0.08W EA	91637	SOMC−1601−472G
A1R638	321−5018−00			RES,FXD:METAL FILM;1.0K OHM,1%,0.125W	91637	CRCW12061001FT
A1R639	321−5026−00	B010100	B039999	RES,FXD:METAL FILM;4.75K OHM,1%,0.125W (TDS310/320/350)	91637	CRCW12064751FT
A1R640	321−5026−00			RES,FXD:METAL FILM;4.75K OHM,1%,0.125W	91637	CRCW12064751FT
A1R641	321−5006−00			RES,FXD:METAL FILM;100 OHM,1%,0.125W	91637	CRCW12061000FT
A1R642	321−5006−00			RES,FXD:METAL FILM;100 OHM,1%,0.125W	91637	CRCW12061000FT
A1R643	321−5006−00			RES,FXD:METAL FILM;100 OHM,1%,0.125W	91637	CRCW12061000FT
A1R644	321−5194−00			RES,FXD:METAL FILM;49.9 OHM,1%,0.125W	91637	CRCW−1206−49R9
A1R645	321−5194−00			RES,FXD:METAL FILM;49.9 OHM,1%,0.125W	91637	CRCW−1206−49R9
A1R646	321−5194−00			RES,FXD:METAL FILM;49.9 OHM,1%,0.125W	91637	CRCW−1206−49R9
A1R647	321−5030−00	B040100		RES,FXD:METAL FILM;10.0K OHM,1%,0.125W (TDS310/320/350)	91637	CRCW12061002FT
A1R650	321−5026−00			RES,FXD:METAL FILM;4.75K OHM,1%,0.125W	91637	CRCW12064751FT
A1R651	321−5051−00			RES,FXD:METAL FILM;0 OHM,1%,0.125W (TDS310/350 ONLY)	09969	CRCW1206 JUMPER
A1R652	321−5026−00			RES,FXD:METAL FILM;4.75K OHM,1%,0.125W (TDS310/350 ONLY)	91637	CRCW12064751FT
A1R652	321−5026−00	B021868		RES,FXD:METAL FILM;4.75K OHM,1%,0.125W (TDS320 ONLY)	91637	CRCW12064751FT
A1R653	321−5051−00			RES,FXD:METAL FILM;0 OHM,1%,0.125W (TDS310 ONLY)	09969	CRCW1206 JUMPER
A1R700	321−5011−00			RES,FXD:METAL FILM;274 OHM,1%,0.125W	91637	CRCW12062740FT
A1R701	321−5011−00			RES,FXD:METAL FILM;274 OHM,1%,0.125W	91637	CRCW12062740FT
A1R702	321−5011−00			RES,FXD:METAL FILM;274 OHM,1%,0.125W	91637	CRCW12062740FT
A1R703	321−5026−00			RES,FXD:METAL FILM;4.75K OHM,1%,0.125W	91637	CRCW12064751FT
A1R704	321−5030−00			RES,FXD:METAL FILM;10.0K OHM,1%,0.125W	91637	CRCW12061002FT
A1R705	321−5026−00			RES,FXD:METAL FILM;4.75K OHM,1%,0.125W	91637	CRCW12064751FT
A1R706	321−5030−00			RES,FXD:METAL FILM;10.0K OHM,1%,0.125W	91637	CRCW12061002FT
A1R707	321−5194−00			RES,FXD:METAL FILM;49.9 OHM,1%,0.125W	91637	CRCW−1206−49R9
A1R708	321−5194−00			RES,FXD:METAL FILM;49.9 OHM,1%,0.125W	91637	CRCW−1206−49R9
A1R709	321−5194−00			RES,FXD:METAL FILM;49.9 OHM,1%,0.125W	91637	CRCW−1206−49R9
A1R710	321−5013−00			RES,FXD:METAL FILM;392 OHM,1%,0.125W (TDS310/350 ONLY)	91637	CRCW12063920FT
A1R711	321−5013−00			RES,FXD:METAL FILM;392 OHM,1%,0.125W (TDS310/350 ONLY)	91637	CRCW12063920FT

Component Number	Tektronix Part No.	Serial No. Effective	Serial No. Dscont	Name & Description	Mfr. Code	Mfr. Part No.
A1R712	321−5113−00			RES,FXD:METAL FILM;75 OHM,1%,0.125W (TDS310/350 ONLY)	56845	CRCW120675ROFT
A1R713	321−5194−00			RES,FXD:METAL FILM;49.9 OHM,1%,0.125W (TDS310/350 ONLY)	91637	CRCW−1206−49R9
A1R714	321−5194−00			RES,FXD:METAL FILM;49.9 OHM,1%,0.125W (TDS310/350 ONLY)	91637	CRCW−1206−49R9
A1U101	155−0325−01			IC,ASIC:BIPOLAR,LINEAR,DETECTOR	80009	155032501
A1U102	156−5198−01			IC,DIGITAL:HCTCMOS,GATE;QUAD 2−INPUT XOR	18324	74HCT86DT
A1U103	156−5694−01	B010100	B039999	IC,MISC:BIPOLAR,VIDEO SUBSYSTEM;SYNC SEP (TDS310/320/350)	80009	156569401
A1U103	156−6891−00	B040100		IC,MISC:CMOS,VIDEO SUBSYSTEM (TDS310/320/350)	64762	EL4581CS
A1U104	156−5095−01			IC,LINEAR:BIPOLAR,OP−AMP;LOW NOISE,HI OUT	01295	NE5534DR
A1U105	156−5138−01			IC,LINEAR:BIFET,OP−AMP;DUAL	01295	TL072CDR
A1U106	156−5000−01			IC,LINEAR:BIPOLAR,COMPARATOR;OPEN COLL	01295	LM311DR
A1U109	156−5135−01			IC,DIGITAL:HCTCMOS,REGISTER;8−BIT	18324	74HCT164DT
A1U201	156−5135−01			IC,DIGITAL:HCTCMOS,REGISTER;8−BIT	18324	74HCT164DT
A1U202	156−6224−01			IC,CONVERTER:CMOS,D/A;12 BIT,VOLTAGE OUT,16 (TDS310/350 ONLY)	80009	156622401
A1U202	156−6224−00			IC,CONVERTER:CMOS,D/A;12 BIT,VOLTAGE OUT,16 (TDS320 ONLY)	80009	156622400
A1U203	156−5588−01			IC,LINEAR:BIPOLAR,VOLTAGE REFERENCE	04713	MC1403D
A1U204	234−0764−20			IC,ASIC:BIPOLAR,FISO DRIVER,200MHZ (TDS310/350 ONLY)	80009	234076420
A1U204	234−0764−20	B010100	B030099	IC,ASIC:BIPOLAR,FISO DRIVER,200MHZ (TDS320 ONLY)	80009	234076420
A1U204	234−0731−20	B030100	B044999	IC,ASIC:BIPOLAR,LINEAR,CHANNEL SWITCH (TDS320 ONLY)	80009	234073120
A1U204	234−0764−20	B045000		IC,ASIC:BIPOLAR,FISO DRIVER,200MHZ (TDS320 ONLY)	80009	234076420
A1U207	156−5073−01			IC,MISC:HCMOS,ANALOG MUX;TRIPLE SPDT	18324	74HC4053DT
A1U208	156−5138−01			IC,LINEAR:BIFET,OP−AMP;DUAL	01295	TL072CDR
A1U301	156−5138−01			IC,LINEAR:BIFET,OP−AMP;DUAL	01295	TL072CDR
A1U303	156−5000−01			IC,LINEAR:BIPOLAR,COMPARATOR;OPEN COLL	01295	LM311DR
A1U304	156−5146−01			IC,DIGITAL:HCTCMOS,GATE;QUAD 2−INPUT	18324	74HCT08DT
A1U307	156−5450−00			IC,DIGITAL:ECL,GATE;4−WIDE	04713	MC10H121FN
A1U308	156−5221−01			IC,DIGITAL:ECL,FLIP FLOP;DUAL D−TYPE	04713	MC10H131FNR2
A1U309	156−5221−01			IC,DIGITAL:ECL,FLIP FLOP;DUAL D−TYPE	04713	MC10H131FNR2
A1U401	156−6428−00			IC,ASIC:CMOS,CUSTOM;SHASTA TIME BASE	27014	MM9350−VF8
A1U402	156−6240−01	B010100	B030133	IC,MEMORY:CMOS,SRAM;8K X 8,25NS (TDS310 ONLY)	75569	P4C164−20JC
A1U402	156−6795−01	B030134		IC,MEMORY:CMOS,SRAM;8K X 8,12NS (TDS310 ONLY)	80009	156679501

Component Number	Tektronix Part No.	Serial No. Effective	Serial No. Dscont	Name & Description	Mfr. Code	Mfr. Part No.
A1U402	156−6240−01	B010100	B032904	IC,MEMORY:CMOS,SRAM;8K X 8,25NS (TDS320 ONLY)	75569	P4C164−20JC
A1U402	156−6795−01	B032905		IC,MEMORY:CMOS,SRAM;8K X 8,12NS (TDS320 ONLY)	80009	156679501
A1U402	156−6240−01	B010100	B031111	IC,MEMORY:CMOS,SRAM;8K X 8,25NS (TDS350 ONLY)	75569	P4C164−20JC
A1U402	156−6795−01	B031112		IC,MEMORY:CMOS,SRAM;8K X 8,12NS (TDS350 ONLY)	80009	156679501
A1U403	156−5589−00			IC,CONVERTER:TTL,A/D;8−BIT,25MSPS,FLASH	04713	MC10319DW
A1U404	156−5138−01			IC,LINEAR:BIFET,OP−AMP;DUAL	01295	TL072CDR
A1U405	156−5297−01			IC,LINEAR:BIPOLAR,VOLTAGE REG	01295	TL431CDR
A1U510	156−5082−01			IC,LINEAR:BIPOLAR,OP−AMP;LOW OFFSET	01295	OP07CDR
A1U520	156−5138−01			IC,LINEAR:BIFET,OP−AMP;DUAL	01295	TL072CDR
A1U550	156−6073−00			IC,LINEAR:BIPOLAR,OP−AMP;CURRENT FEED	62839	CLC400AJE
A1U560	156−5000−01			IC,LINEAR:BIPOLAR,COMPARATOR;OPEN COLL	01295	LM311DR
A1U570	156−5043−01			IC,CONVERTER:BIPOLAR,D/A;8 BIT,CURRENT OUT	18324	DAC08EDT
A1U580	156−5043−01			IC,CONVERTER:BIPOLAR,D/A;8 BIT,CURRENT OUT	18324	DAC08EDT
A1U590	156−6427−00			IC,ASIC:CMOS,CUSTOM;SAMPLER IC,W/1K MEM	27014	MM9365−V2
A1U601	156−6298−00			IC,PROCESSOR:CMOS,MICROCONTROLLER	04713	XC68331CFC
A1U602	156−6461−01			IC,MEMORY:CMOS,EPROM;256K X 8,150NS FLASH	80009	156646101
A1U603	156−6461−01			IC,MEMORY:CMOS,EPROM;256K X 8,150NS FLASH	80009	156646101
A1U604	156−5088−01			IC,DIGITAL:HCTCMOS,DEMUX/DECODER;3−TO−8	18324	74HCT138DT
A1U605	156−3870−00			IC,MEMORY:CMOS,NVRAM;32K X 8,120NS,SRAM	0B0A9	DS1230AB−120
A1U606	156−6101−01			IC,MISC:BIPOLAR,PWR SUPPLY SUPERVISOR	04713	MC34164D−5R2
A1U607	156−6461−01			IC,MEMORY:CMOS,EPROM;256K X 8,150NS FLASH	80009	156646101
A1U701	156−6426−00			IC,ASIC:CMOS,CUSTOM;SHASTA RASTER DISPLAY	27014	MM9337A−VF8
A1U702	156−5118−01			IC,DIGITAL:FTTL,GATE,QUAD 2−INPUT NAND (TDS310/350 ONLY)	80009	156511801
A1U702	156−5962−01	B010100	B021867	IC,MEMORY:CMOS,DRAM;256K X 4,70NS (TDS320 ONLY)	0JR04	TC514256AJL−70
A1U702	156−5118−01	B021868		IC,DIGITAL:FTTL,GATE,QUAD 2−INPUT NAND (TDS320 ONLY)	80009	156511801
A1U703	156−5118−01			IC,DIGITAL:FTTL,GATE,QUAD 2−INPUT NAND (TDS310/350 ONLY)	80009	156511801
A1U703	156−5962−01	B010100	B021867	IC,MEMORY:CMOS,DRAM;256K X 4,70NS (TDS320 ONLY)	0JR04	TC514256AJL−70
A1U703	156−5118−01	B021868		IC,DIGITAL:FTTL,GATE,QUAD 2−INPUT NAND (TDS320 ONLY)	80009	156511801
A1U704	156−6484−01			IC,MEMORY:CMOS,DRAM,256K X 16,80NS (TDS310/350 ONLY)	0JR04	TC514260BJL−80
A1U704	156−5962−01	B010100	B021867	IC,MEMORY:CMOS,DRAM;256K X 4,70NS (TDS320 ONLY)	0JR04	TC514256AJL−70
A1U704	156−6484−01	B021868		IC,MEMORY:CMOS,DRAM,256K X 16,80NS (TDS320 ONLY)	0JR04	TC514260BJL−80

Component Number	Tektronix Part No.	Serial No. Effective	Serial No. Dscont	Name & Description	Mfr. Code	Mfr. Part No.
A1U705	156−5962−01	B010100	B021867	IC,MEMORY:CMOS,DRAM;256K X 4,70NS (TDS320 ONLY)	0JR04	TC514256AJL−70
A1U705	156−6484−01	B021868		IC,MEMORY:CMOS,DRAM,256K X 16,80NS (TDS320 ONLY)	0JR04	TC514260BJL−80
A1U706	156−6578−01			IC,MEMORY:CMOS,DRAM,512K C8,70NS (TDS310/350 ONLY)	80009	156657801
A1U706	156−5962−01	B010100	B021867	IC,MEMORY:CMOS,DRAM;256K X 4,70NS (TDS320 ONLY)	0JR04	TC514256AJL−70
A1U706	156−6578−01	B021868		IC,MEMORY:CMOS,DRAM,512K C8,70NS (TDS320 ONLY)	80009	156657801
A1U707	156−5962−01	B010100	B021867	IC,MEMORY:CMOS,DRAM;256K X 4,70NS (TDS320 ONLY)	0JR04	TC514256AJL−70
A1U707	156−5118−01	B021868		IC,DIGITAL:FTTL,GATE,QUAD 2−INPUT NAND (TDS320 ONLY)	80009	156511801
A1U708	156−5198−01			IC,DIGITAL:HCTCMOS,GATE;QUAD 2−INPUT XOR	18324	74HCT86DT
A1U709	156−5853−01			IC,LINEAR:BIPOLAR,OP−AMP,35MHZ (TDS310/350 ONLY)	80009	156585301
A1U709	156−5853−01	B021868		IC,LINEAR:BIPOLAR,OP−AMP,35MHZ (TDS320 ONLY)	80009	156585301
A1VR210	152−0688−00	B011095		DIODE,ZENER:2.4V,5%,0.4W (TDS320 ONLY)	04713	1N4370A
A1VR301	152−5023−00			DIODE,ZENER:,;5.1V,5%,225MW	04713	MMBZ5231BLT1
A1VR302	152−5023−00			DIODE,ZENER:,;5.1V,5%,225MW	04713	MMBZ5231BLT1
A1X609	131−0993−00			CONN,BOX:SHUNT,FEMALE,STR,1X2,0.1 CTR (TDS310/350 ONLY)	22526	65474−006
A1Y401	158−0418−00			OSC,XTAL CONT:MINI DIP,TRISTATE;60.606 MHZ	80009	158041800
A1Y402	158−5022−01			OSCILLATOR,RF:CRYSTAL CONTROLLED,40 MHZ	80009	158502201
A1Y701	158−5029−01			OSCILLATOR,RF:CRYSTAL CONTROLLED,50MHZ	80009	158502901
A2	671−2645−00	B010100	B020099	CIRCUIT BD ASSY:OPTION (TDS310/350 ONLY−OPTION 14 ONLY)	80009	671264500
A2	671−2645−01	B020100		CIRCUIT BD ASSY:OPTION (TDS310/350 ONLY−OPTION 14 ONLY)	80009	671264501
A2	671−2645−00	B010100	B030099	CIRCUIT BD ASSY:OPTION (TDS320 ONLY−OPTION 14 ONLY)	80009	671264500
A2	671−2645−01	B030100		CIRCUIT BD ASSY:OPTION (TDS320 ONLY−OPTION 14 ONLY)	80009	671264501

Component Number	Tektronix Part No.	Serial No. Effective	Serial No. Dscont	Name & Description	Mfr. Code	Mfr. Part No.
A2C1	283−5114−00			CAP,FXD,CER DI:0.1UF,10%,50V,X7R	04222	12065C104KAT1A
A2C4	283−5114−00			CAP,FXD,CER DI:0.1UF,10%,50V,X7R	04222	12065C104KAT1A
A2C6	283−5114−00			CAP,FXD,CER DI:0.1UF,10%,50V,X7R	04222	12065C104KAT1A
A2C8	283−5114−00			CAP,FXD,CER DI:0.1UF,10%,50V,X7R	04222	12065C104KAT1A
A2C9	283−5114−00			CAP,FXD,CER DI:0.1UF,10%,50V,X7R	04222	12065C104KAT1A
A2C10	283−5114−00			CAP,FXD,CER DI:0.1UF,10%,50V,X7R	04222	12065C104KAT1A
A2C12	283−5114−00			CAP,FXD,CER DI:0.1UF,10%,50V,X7R	04222	12065C104KAT1A
A2C20	283−5267−00			CAP,FXD,CERAMIC:1.0UF,25V,Y5V,+80−20%,SMD	04222	12063G105ZAT1A
A2C21	283−5267−00			CAP,FXD,CERAMIC:1.0UF,25V,Y5V,+80−20%,SMD	04222	12063G105ZAT1A
A2C22	283−5267−00			CAP,FXD,CERAMIC:1.0UF,25V,Y5V,+80−20%,SMD	04222	12063G105ZAT1A
A2C23	290−5024−00			CAP,FXD,ELCTLT:3.3UF,25V,TANTALUM	04222	TAJC335M025
A2C24	290−5024−00			CAP,FXD,ELCTLT:3.3UF,25V,TANTALUM	04222	TAJC335M025
A2C25	283−5068−00			CAP,FXD,CER DI:2200PF,10%,50V	04222	12065C222KAT1A
A2C26	283−5068−00			CAP,FXD,CER DI:2200PF,10%,50V	04222	12065C222KAT1A
A2C27	283−5068−00			CAP,FXD,CER DI:2200PF,10%,50V	04222	12065C222KAT1A
A2C28	283−5068−00			CAP,FXD,CER DI:2200PF,10%,50V	04222	12065C222KAT1A
A2C29	283−5068−00			CAP,FXD,CER DI:2200PF,10%,50V	04222	12065C222KAT1A
A2C30	283−5068−00			CAP,FXD,CER DI:2200PF,10%,50V	04222	12065C222KAT1A
A2C31	283−5068−00			CAP,FXD,CER DI:2200PF,10%,50V	04222	12065C222KAT1A
A2C32	283−5068−00			CAP,FXD,CER DI:2200PF,10%,50V	04222	12065C222KAT1A
A2C33	283−5195−00			CAP,FXD,CER DI:10PF,5%,100V	04222	12061A100JAT1A
A2C35	283−5267−00			CAP,FXD,CERAMIC:1.0UF,25V,Y5V,+80−20%,SMD	04222	12063G105ZAT1A
A2J1	174−2783−00			CA ASSY,SP,ELEC:50,26 AWG,14.0 L,RIB W/CONN	TK1899	174−2783−00
A2J2	131−5514−00			CONN,DSUB:PCB;MALE,STR,9 POS,0.112 CTR	00779	2−748003−0
A2J3	131−3694−00			CONN,DSUB RCPT:PCB/PNL,;FEMALE,STR,25 POS	00779	2−747708−0
A2J4	131−5515−00			CONN,RIBBON:PCB,;FEMALE,STR,24 POS,0.08CTR	00779	554857−1
A2R21	321−5026−00			RES,FXD:METAL FILM;4.75K OHM,1%,0.125W	91637	CRCW12064751FT
A2R22	321−5026−00			RES,FXD:METAL FILM;4.75K OHM,1%,0.125W	91637	CRCW12064751FT
A2R23	321−5026−00			RES,FXD:METAL FILM;4.75K OHM,1%,0.125W	91637	CRCW12064751FT
A2U1	156−5071−01			IC,DIGITAL:HCTCMOS,TRANSCEIVER;OCTAL	18324	74HCT245DT
A2U2	156−5191−01			IC,DIGITAL:FTTL,DEMUX/DECODER;DUAL 1−OF−4	04713	MC74F139DR2
A2U4	156−6031−00			IC,PROCESSOR:NMOS,PERIPHERAL;DUAL	04713	MC68681FN
A2U5	156−6423−00			IC,MISC:CMOS,INTERFACE;QUAD RS−232 LINE DR	1ES66	MAX238CWG (C703
A2U6	156−5035−01			IC,DIGITAL:LSTTL,FLIP FLOP;OCTAL D−TYPE	01295	SN74LS374DWR
A2U8	156−6223−01			IC,DIGITAL:NMOS,PERIPHERAL;GPIB CONTROL	01295	TMS9914AFNRLR
A2U9	156−5580−01			IC,DIGITAL:TTL,OCTAL GPIB TRANSCEIVER	01295	SN75160BDWR
A2U10	156−5581−01			IC,DIGITAL:TTL,BUS TRANSCEIVER,OCTAL GPIB	01295	SN75161BDWR
A2U12	156−5041−00			IC,DIGITAL:LSTTL,GATES;HEX INV BUS DRIVER	01295	SN74LS368D
A2U13	156−5075−00			IC,DIGITAL:HCMOS,GATE;QUAD 2−INPUT NAND	0JR04	TC74HC00AFN
A2W1	174−3196−00			CA ASSY,SP:DESCRETE,PWR,2,26AWG,5.0L	80009	174319600
A2Y1	158−5017−00			XTAL UNIT,QTZ:3.6864 MHZ,+/− 0.01%,PARALLEL	61429	FPX−SM 3.6864 M

Component Number	Tektronix Part No.	Serial No. Effective	Serial No. Dscont	Name & Description	Mfr. Code	Mfr. Part No.
A3	671−3105−00	B020100		CIRCUIT BD ASSY:PRINTER POWER (TDS310/350 ONLY)	80009	671310500
A3	671−3105−00	B030100		CIRCUIT BD ASSY:PRINTER POWER (TDS320 ONLY)	80009	671310500
A3C1	290−1303−00			CAP,FXD,ALUM:1000UF,20%,16WV,0.394X0.787	80009	290130300
A3C4	290−1290−00			CAP,FXD,ALUM:2200UF,20%,25V,16X31.5MM	80009	290129000
A3C5	290−0183−00			CAP,FXD,TANT:DRY,1UF,10%,35V,TANT OXIDE	05397	T3228105K035AS
A3C6	290−0183−00			CAP,FXD,TANT:DRY,1UF,10%,35V,TANT OXIDE	05397	T3228105K035AS
A3C7	290−0183−00			CAP,FXD,TANT:DRY,1UF,10%,35V,TANT OXIDE	05397	T3228105K035AS
A3CR1	152−0141−02			DIODE,SIG:ULTRA FAST,40V,150MA,4NS,2PF	27014	FDH9427
A3CR2	152−0141−02			DIODE,SIG:ULTRA FAST,40V,150MA,4NS,2PF	27014	FDH9427
A3CR3	152−0670−00			DIODE,RECT:SCHTKY,40V,3A	04713	IN5822
A3F1	307−1608−00			RES,THERMAL:CIRCUIT PROTECTOR,1.10AMP	80009	307160800
A3J1	174−3186−00			CA,ASSY,SP:FLAT FLEX,15.0 L	80009	174318600
A3J2	131−4963−00			CONN,HDR:PCB,MALE,STR,1X2,0.1 CTR	80009	131496300
A3J3	131−3925−00			CONN,RIBBON:IDC/PNL,FEMALE,STR,36 POS	TK0AY	JEY−9S−1A3F−14
A3J4	174−3187−00			CA,ASSY,SP:FLAT FLEX,14.0 L	80009	174318700
A3L1	108−0337−00			COIL,RF:INDUCTOR,FXD,25UH,20% FERRITE	OJR03	ORDER BY DESC
A3R2	303−0121−00			RES,FXD,CMPSN:120 OHM,5%,1W	91637	CMF65−42 120OHM
A3R6	313−1100−00			RES,FXD,FILM:100OHM,5%,0.2W	91637	CCF50−2−10R00J
A3R7	313−1472−00			RES,FXD,FILM:47K OHM,5%,0.2W	91637	CCF50−2−47000J
A3R8	313−1102−00			RES,FXD,FILM:1K OHM,5%,0.2W	91637	CCF50−2−10000J
A3R9	313−1472−00			RES,FXD,FILM:47K OHM,5%,0.2W	91637	CCF50−2−47000J
A3U1	156−3213−00			IC,LINEAR:BIPOLAR,SW−REGULATOR,2.5A	64155	LT1071CT

Component Number	Tektronix Part No.	Serial No. Effective	Serial No. Dscont	Name & Description	Mfr. Code	Mfr. Part No.
A4	671−2911−00			CIRCUIT BD ASSY:FRONT PANEL	80009	671291100
A4C101	283−5004−00			CAP,FXD,CER DI:0.1UF,10%,25V	04222	12063C104KAT3A
A4C121	283−5004−00			CAP,FXD,CER DI:0.1UF,10%,25V	04222	12063C104KAT3A
A4C122	283−5004−00			CAP,FXD,CER DI:0.1UF,10%,25V	04222	12063C104KAT3A
A4C131	290−5034−01			CAP,FXD,ELCTLT:33UF,10V	1W344	MVK10VC33RME60T
A4C132	290−5034−01			CAP,FXD,ELCTLT:33UF,10V	1W344	MVK10VC33RME60T
A4C140	283−5201−00			CAP,FXD,CER DI:33PF,5%,100V,NPO	04222	12061A330JAT1A
A4C141	283−5201−00			CAP,FXD,CER DI:33PF,5%,100V,NPO	04222	12061A330JAT1A
A4C202	283−5004−00			CAP,FXD,CER DI:0.1UF,10%,25V	04222	12063C104KAT3A
A4C304	283−5004−00			CAP,FXD,CER DI:0.1UF,10%,25V	04222	12063C104KAT3A
A4C305	283−5004−00			CAP,FXD,CER DI:0.1UF,10%,25V	04222	12063C104KAT3A
A4C400	283−5004−00			CAP,FXD,CER DI:0.1UF,10%,25V	04222	12063C104KAT3A
A4C401	283−5004−00			CAP,FXD,CER DI:0.1UF,10%,25V	04222	12063C104KAT3A
A4C402	283−5004−00			CAP,FXD,CER DI:0.1UF,10%,25V	04222	12063C104KAT3A
A4C403	283−5004−00			CAP,FXD,CER DI:0.1UF,10%,25V	04222	12063C104KAT3A
A4C404	283−5004−00			CAP,FXD,CER DI:0.1UF,10%,25V	04222	12063C104KAT3A
A4C405	283−5004−00			CAP,FXD,CER DI:0.1UF,10%,25V	04222	12063C104KAT3A
A4C406	283−5004−00			CAP,FXD,CER DI:0.1UF,10%,25V	04222	12063C104KAT3A
A4C407	283−5004−00			CAP,FXD,CER DI:0.1UF,10%,25V	04222	12063C104KAT3A
A4C408	283−5004−00			CAP,FXD,CER DI:0.1UF,10%,25V	04222	12063C104KAT3A
A4C409	283−5004−00			CAP,FXD,CER DI:0.1UF,10%,25V	04222	12063C104KAT3A
A4C420	283−5004−00			CAP,FXD,CER DI:0.1UF,10%,25V	04222	12063C104KAT3A
A4C421	283−5004−00			CAP,FXD,CER DI:0.1UF,10%,25V	04222	12063C104KAT3A
A4C501	283−5203−00			CAP,FXD,CER DI:1000PF,10%,100V	04222	12061C102KAT1A
A4CR331	152−5018−00			DIODE,SIG:,ULTRA FAST;100V,0.74VF,4NS,2.0PF	27014	MMBD1203−HIGH
A4CR332	152−5018−00			DIODE,SIG:,ULTRA FAST;100V,0.74VF,4NS,2.0PF	27014	MMBD1203−HIGH
A4CR333	152−5018−00			DIODE,SIG:,ULTRA FAST;100V,0.74VF,4NS,2.0PF	27014	MMBD1203−HIGH
A4CR334	152−5018−00			DIODE,SIG:,ULTRA FAST;100V,0.74VF,4NS,2.0PF	27014	MMBD1203−HIGH
A4CR335	152−5018−00			DIODE,SIG:,ULTRA FAST;100V,0.74VF,4NS,2.0PF	27014	MMBD1203−HIGH
A4CR336	152−5018−00			DIODE,SIG:,ULTRA FAST;100V,0.74VF,4NS,2.0PF	27014	MMBD1203−HIGH
A4CR337	152−5018−00			DIODE,SIG:,ULTRA FAST;100V,0.74VF,4NS,2.0PF	27014	MMBD1203−HIGH
A4CR338	152−5018−00			DIODE,SIG:,ULTRA FAST;100V,0.74VF,4NS,2.0PF	27014	MMBD1203−HIGH
A4CR339	152−5018−00			DIODE,SIG:,ULTRA FAST;100V,0.74VF,4NS,2.0PF	27014	MMBD1203−HIGH
A4CR500	152−5018−00			DIODE,SIG:,ULTRA FAST;100V,0.74VF,4NS,2.0PF	27014	MMBD1203−HIGH
A4DS201	150−5008−00			DIODE,OPTO:,LED;GRN,569NM,4.2MCD AT 10MA	50434	HLMP−6505−T21
A4DS202	150−5008−00			DIODE,OPTO:,LED;GRN,569NM,4.2MCD AT 10MA	50434	HLMP−6505−T21
A4DS203	150−5008−00			DIODE,OPTO:,LED;GRN,569NM,4.2MCD AT 10MA	50434	HLMP−6505−T21
A4DS204	150−5008−00			DIODE,OPTO:,LED;GRN,569NM,4.2MCD AT 10MA	50434	HLMP−6505−T21
A4DS205	150−5008−00			DIODE,OPTO:,LED;GRN,569NM,4.2MCD AT 10MA	50434	HLMP−6505−T21
A4DS206	150−5008−00			DIODE,OPTO:,LED;GRN,569NM,4.2MCD AT 10MA	50434	HLMP−6505−T21

Component Number	Tektronix Part No.	Serial No. Effective	Serial No. Dscont	Name & Description	Mfr. Code	Mfr. Part No.
A4DS207	150−5008−00			DIODE,OPTO:,LED;GRN,569NM,4.2MCD AT 10MA	50434	HLMP−6505−T21
A4DS208	150−5008−00			DIODE,OPTO:,LED;GRN,569NM,4.2MCD AT 10MA	50434	HLMP−6505−T21
A4J30	131−5344−00			CONN,HDR:PCB,;MALE,STR,1 X 16,0.1 CTR	00779	1−103670−5
A4J35	131−5167−00			CONN,BOX PWR:PCB,;FEMALE,STR,1 X 2	27264	09−52−3022
A4J40	131−5158−00			CONN,HDR:PCB,;MALE,STR,1 X 10,0.1 CTR	00779	103669−9
A4J84	131−5157−00			CONN,HDR:PCB,;MALE,STR,1 X 5,0.1 CTR	00779	103669−4
A4R101	321−5030−00			RES,FXD:METAL FILM;10.0K OHM,1%,0.125W	91637	CRCW12061002FT
A4R102	321−5030−00			RES,FXD:METAL FILM;10.0K OHM,1%,0.125W	91637	CRCW12061002FT
A4R103	321−5030−00			RES,FXD:METAL FILM;10.0K OHM,1%,0.125W	91637	CRCW12061002FT
A4R104	321−5030−00			RES,FXD:METAL FILM;10.0K OHM,1%,0.125W	91637	CRCW12061002FT
A4R106	321−5030−00			RES,FXD:METAL FILM;10.0K OHM,1%,0.125W	91637	CRCW12061002FT
A4R107	321−5030−00			RES,FXD:METAL FILM;10.0K OHM,1%,0.125W	91637	CRCW12061002FT
A4R108	321−5018−00			RES,FXD:METAL FILM;1.0K OHM,1%,0.125W	91637	CRCW12061001FT
A4R109	321−5030−00			RES,FXD:METAL FILM;10.0K OHM,1%,0.125W	91637	CRCW12061002FT
A4R140	321−5049−00			RES,FXD:METAL FILM;1M OHM,1%,0.125W	57668	MCR18FXEA1M
A4R201	321−5014−00			RES,FXD:METAL FILM;475 OHM,1%,0.125W	91637	CRCW12064750FT
A4R202	321−5014−00			RES,FXD:METAL FILM;475 OHM,1%,0.125W	91637	CRCW12064750FT
A4R203	321−5014−00			RES,FXD:METAL FILM;475 OHM,1%,0.125W	91637	CRCW12064750FT
A4R204	321−5014−00			RES,FXD:METAL FILM;475 OHM,1%,0.125W	91637	CRCW12064750FT
A4R205	321−5014−00			RES,FXD:METAL FILM;475 OHM,1%,0.125W	91637	CRCW12064750FT
A4R206	321−5014−00			RES,FXD:METAL FILM;475 OHM,1%,0.125W	91637	CRCW12064750FT
A4R207	321−5014−00			RES,FXD:METAL FILM;475 OHM,1%,0.125W	91637	CRCW12064750FT
A4R208	321−5014−00			RES,FXD:METAL FILM;475 OHM,1%,0.125W	91637	CRCW12064750FT
A4R300	321−5047−00			RES,FXD:METAL FILM;100K OHM,1%,0.125W	91637	CRCW12061003FT
A4R301	321−5047−00			RES,FXD:METAL FILM;100K OHM,1%,0.125W	91637	CRCW12061003FT
A4R302	321−5047−00			RES,FXD:METAL FILM;100K OHM,1%,0.125W	91637	CRCW12061003FT
A4R303	321−5047−00			RES,FXD:METAL FILM;100K OHM,1%,0.125W	91637	CRCW12061003FT
A4R304	321−5047−00			RES,FXD:METAL FILM;100K OHM,1%,0.125W	91637	CRCW12061003FT
A4R305	321−5047−00			RES,FXD:METAL FILM;100K OHM,1%,0.125W	91637	CRCW12061003FT
A4R306	321−5047−00			RES,FXD:METAL FILM;100K OHM,1%,0.125W	91637	CRCW12061003FT
A4R307	321−5047−00			RES,FXD:METAL FILM;100K OHM,1%,0.125W	91637	CRCW12061003FT
A4R330	321−5014−00			RES,FXD:METAL FILM;475 OHM,1%,0.125W	91637	CRCW12064750FT
A4R331	321−5014−00			RES,FXD:METAL FILM;475 OHM,1%,0.125W	91637	CRCW12064750FT
A4R332	321−5014−00			RES,FXD:METAL FILM;475 OHM,1%,0.125W	91637	CRCW12064750FT
A4R333	321−5014−00			RES,FXD:METAL FILM;475 OHM,1%,0.125W	91637	CRCW12064750FT
A4R334	321−5014−00			RES,FXD:METAL FILM;475 OHM,1%,0.125W	91637	CRCW12064750FT
A4R335	321−5014−00			RES,FXD:METAL FILM;475 OHM,1%,0.125W	91637	CRCW12064750FT
A4R336	321−5014−00			RES,FXD:METAL FILM;475 OHM,1%,0.125W	91637	CRCW12064750FT
A4R337	321−5014−00			RES,FXD:METAL FILM;475 OHM,1%,0.125W	91637	CRCW12064750FT
A4R411	321−5018−00			RES,FXD:METAL FILM;1.0K OHM,1%,0.125W	91637	CRCW12061001FT
A4R412	321−5018−00			RES,FXD:METAL FILM;1.0K OHM,1%,0.125W	91637	CRCW12061001FT

Component Number	Tektronix Part No.	Serial No. Effective	Serial No. Dscont	Name & Description	Mfr. Code	Mfr. Part No.
A4R413	321−5018−00			RES,FXD:METAL FILM;1.0K OHM,1%,0.125W	91637	CRCW12061001FT
A4R414	321−5018−00			RES,FXD:METAL FILM;1.0K OHM,1%,0.125W	91637	CRCW12061001FT
A4R450	311−2843−00			RES,VAR,NONWW:SHAFTLESS,SNAP IN,5KOHM	32997	11508004
A4R451	311−2843−00			RES,VAR,NONWW:SHAFTLESS,SNAP IN,5KOHM	32997	11508004
A4R452	311−2843−00			RES,VAR,NONWW:SHAFTLESS,SNAP IN,5KOHM	32997	11508004
A4R453	311−2843−00			RES,VAR,NONWW:SHAFTLESS,SNAP IN,5KOHM	32997	11508004
A4R460	321−5047−00			RES,FXD:METAL FILM;100K OHM,1%,0.125W	91637	CRCW12061003FT
A4R461	321−5047−00			RES,FXD:METAL FILM;100K OHM,1%,0.125W	91637	CRCW12061003FT
A4R462	321−5047−00			RES,FXD:METAL FILM;100K OHM,1%,0.125W	91637	CRCW12061003FT
A4R463	321−5047−00			RES,FXD:METAL FILM;100K OHM,1%,0.125W	91637	CRCW12061003FT
A4R464	321−5047−00			RES,FXD:METAL FILM;100K OHM,1%,0.125W	91637	CRCW12061003FT
A4R465	321−5047−00			RES,FXD:METAL FILM;100K OHM,1%,0.125W	91637	CRCW12061003FT
A4R466	321−5047−00			RES,FXD:METAL FILM;100K OHM,1%,0.125W	91637	CRCW12061003FT
A4R467	321−5047−00			RES,FXD:METAL FILM;100K OHM,1%,0.125W	91637	CRCW12061003FT
A4R468	321−5047−00			RES,FXD:METAL FILM;100K OHM,1%,0.125W	91637	CRCW12061003FT
A4R469	321−5047−00			RES,FXD:METAL FILM;100K OHM,1%,0.125W	91637	CRCW12061003FT
A4R501	321−5018−00			RES,FXD:METAL FILM;1.0K OHM,1%,0.125W	91637	CRCW12061001FT
A4R503	321−5030−00			RES,FXD:METAL FILM;10.0K OHM,1%,0.125W	91637	CRCW12061002FT
A4R504	321−5027−00			RES,FXD:METAL FILM;5.62K OHM,1%,0.125W	91637	CRCW12065621FT
A4R505	321−5025−00			RES,FXD:METAL FILM;3.92K OHM,1%,0.125W	91637	CRCW12063921FT
A4U101	160−7853−07			IC,PROCESSOR:CMOS,MICROPROCESSOR	80009	160785307
A4U202	156−5458−01			IC,DIGITAL:HCMOS,LATCH;8−BIT ADDRESSABLE	04713	74HC259
A4U304	156−6135−01			IC,DIGITAL:HCMOS,DEMUX/DECODER;3−TO−8	01295	SN74HC138DR
A4U305	156−6135−01			IC,DIGITAL:HCMOS,DEMUX/DECODER;3−TO−8	01295	SN74HC138DR
A4U420	156−5050−01			IC,MISC:HCMOS,ANALOG MUX;8−CHANNEL	18324	74HC4051DT
A4U421	156−5050−01			IC,MISC:HCMOS,ANALOG MUX;8−CHANNEL	18324	74HC4051DT
A4Y140	119−4061−00			RESONATOR,CERAM:2.4576MHZ,50VAC,0.5%	20932	KBR−2.45MS

Component Number	Tektronix Part No.	Serial No. Effective	Serial No. Dscont	Name & Description	Mfr. Code	Mfr. Part No.
A20	119−5029−01	B010100	B020099	POWER SUPPLY:IN 90−280 VAC,45−440HZ,100W (TDS310/350 ONLY)	TK2430	119−5029−01
A20	119−5029−02	B020100		POWER SUPPLY:IN 90−280 VAC,45−440HZ,100W (TDS310/350 ONLY)	TK2430	119−5029−02
A20	119−5029−01	B010100	B030099	POWER SUPPLY:IN 90−280 VAC,45−440HZ,100W (TDS320 ONLY)	TK2430	119−5029−01
A20	119−5029−02	B030100		POWER SUPPLY:IN 90−280 VAC,45−440HZ,100W (TDS320 ONLY)	TK2430	119−5029−02

Component Number	Tektronix Part No.	Serial No. Effective	Serial No. Dscont	Name & Description	Mfr. Code	Mfr. Part No.
A26	671−2159−02	B010100	B046999	CIRCUIT BD ASSY:MONOCHROME DISPLAY	80009	671215902
A26	671−2159−03	B047000		CIRCUIT BD ASSY:MONOCHROME DISPLAY	80009	671215903
A26C120	285−1499−00			CAP,FXD,PLASTIC:METALIZED FILM;,1.5UF,5%	84411	X363 1.5 5% 100
A26C140	290−0963−00			CAP,FXD,ALUM:;220UF,+50−20%,25WVDC	1W344	SME35VB221M10X1
A26C150	285−1497−00			CAP,FXD,PLASTIC:FILM FOIL;0.015UF,5%,400V	49588	715P15354JD3
A26C170	290−0942−00			CAP,FXD,ELCTLT:100UF,+100−10%,25V,,ALUMINUM	0H1N5	CEUFM1E101
A26C171	281−0820−00			CAP,FXD,CERAMIC:MLC;680 PF,10%,50V	04222	SA101C681KAA
A26C180	290−0768−00			CAP,FXD,ELCTLT:10UF,+50−20%,100WVDC	0H1N5	CEBSM2D100M
A26C181	290−0768−00			CAP,FXD,ELCTLT:10UF,+50−20%,100WVDC	0H1N5	CEBSM2D100M
A26C220	290−1303−00			CAP,FXD,ALUM:1000UF,20%,16WV,0.394 X 0.787	0H1N5	CEBSM1C102M
A26C231	290−1235−00			CAP,FXD,ALUM:1000UF,20%,35V	1W344	SME35VB102M12X2
A26C232	290−1235−00			CAP,FXD,ALUM:1000UF,20%,35V	1W344	SME35VB102M12X2
A26C233	290−1235−00			CAP,FXD,ALUM:1000UF,20%,35V	1W344	SME35VB102M12X2
A26C240	281−0812−00			CAP,FXD,CERAMIC:MLC;1000PF,10%,100V	04222	SA101C102KAA
A26C260	290−0920−00			CAP,FXD,ELCTLT:33UF,+50−20%,35WVDC	1W344	SME50VB33RM6X11
A26C270	281−0820−00			CAP,FXD,CERAMIC:MLC;680 PF,10%,50V	04222	SA101C681KAA
A26C280	283−0067−00			CAP,FXD,CER DI:0.001UF,10%,200V	18796	DD09B10 Y5F 102
A26C320	283−0013−00			CAP,FXD,CER DI:0.01UF,−0+100%,1000V,DISC	59660	818−602ZSUO103P
A26C330	290−0950−00			CAP,FXD,ELCTLT:100UF,+50−20%,50WVDC	0H1N5	CEUSM1H101
A26C350	290−0943−00			CAP,FXD,ALUM:;47UF,+50−20%,25V,6 X 11MM	0H1N5	CEUSM1E470−Q
A26C351	281−0765−00			CAP,FXD,CER DI:100PF,5%,100V	04222	SA102A101JAA
A26C360	283−0341−00			CAP,FXD,CER DI:0.047UF,10%,100V	04222	SR211C473KAA
A26C361	290−0766−00			CAP,FXD,ALUM:2.2UF,+50−20%,160V,8 X 11.5MM	1W344	SME250VB2R2M8X1
A26C362	290−0944−00			CAP,FXD,ELCTLT:220UF,+50−20%,10V	0H1N5	CEUSM1A221
A26C363	290−0778−01			CAP,FXD,ELCTLT:1UF,+20%,50V	55680	UVP1H010MAAITD
A26C364	290−0778−01			CAP,FXD,ELCTLT:1UF,+20%,50V	55680	UVP1H010MAAITD
A26C365	281−0812−00			CAP,FXD,CERAMIC:MLC;1000PF,10%,100V	04222	SA101C102KAA
A26C370	283−0626−00			CAP,FXD,MICA DI:1800PF,5%,500V	TK0891	RDM19FD182J03
A26C380	283−0111−00			CAP,FXD,CER DI:0.1UF,20%,50V	04222	SR215C104MAA
A26C381	281−0775−01			CAP,FXD,CERAMIC:MCL;0.1UF,20%,50V,Z5U,0.170	04222	SA105E104MAA
A26C390	281−0767−00			CAP,FXD,CERAMIC:MLC;330PF,20%,100V	04222	SA102C331MAA
A26C410	283−0013−00			CAP,FXD,CER DI:0.01UF,−0+100%,1000V,DISC	59660	818−602ZSUO103P
A26C411	283−0013−00			CAP,FXD,CER DI:0.01UF,−0+100%,1000V,DISC	59660	818−602ZSUO103P
A26C420	285−1189−00			CAP,FXD,MTLZD:0.1 UF,5%,100 V	05292	PMT 3R .1J 100
A26C421	285−1188−00			CAP,FXD,MTLZD:0.082 UF,5%,100 V	05292	PMT 3R ADVISE
A26C422	290−0766−00			CAP,FXD,ALUM:2.2UF,+50−20%,160V,8 X 11.5MM	1W344	SME250VB2R2M8X1
A26C430	285−1189−00			CAP,FXD,MTLZD:0.1 UF,5%,100 V	05292	PMT 3R .1J 100
A26C450	281−0791−00			CAP,FXD,CERAMIC:MLC;270PF,10%,100V	04222	SA102C271KAA
A26C451	281−0775−01			CAP,FXD,CERAMIC:MCL;0.1UF,20%,50V,Z5U,0.170	04222	SA105E104MAA

Component Number	Tektronix Part No.	Serial No. Effective	Dscont	Name & Description	Mfr. Code	Mfr. Part No.
A26C452	281−0772−00			CAP,FXD,CERAMIC:MLC;4700PF,10%,100V,0.100 X	04222	SA101C472KAA
A26C460	281−0812−00			CAP,FXD,CERAMIC:MLC;1000PF,10%,100V	04222	SA101C102KAA
A26C461	281−0813−00			CAP,FXD,CERAMIC:MLC;0.047UF,20%,50V	04222	SA105E473MAA
A26C462	285−1340−00			CAP,FXD,PLASTIC:METALIZED FILM;0.01UF,10%	TK1913	MKS2 .01/63/10
A26C470	281−0772−00			CAP,FXD,CERAMIC:MLC;4700PF,10%,100V	04222	SA101C472KAA
A26C490	290−0806−00			CAP,FXD,ELCTLT:3.3UF,+75−10%,350VDC	0H1N5	CE04W2V3R3B
A26CR140	152−0400−00			DIODE,RECT:,FAST RCVRY;400V,1A,200NS	14552	MB2501
A26CR141	152−0400−00			DIODE,RECT:,FAST RCVRY;400V,1A,200NS	14552	MB2501
A26CR160	152−0906−00			DIODE,RECT:,ULTRA FAST;400V,3A50NS	04713	MUR440
A26CR200	152−0906−00			DIODE,RECT:,ULTRA FAST;400V,3A,50NS	04713	MUR440
A26CR250	152−0400−00			DIODE,RECT:,FAST RCVRY;400V,1A,200NS	14552	MB2501
A26CR260	152−0400−00			DIODE,RECT:,FAST RCVRY;400V,1A,200NS	14552	MB2501
A26CR320	152−0400−00			DIODE,RECT:,FAST RCVRY;400V,1A,200NS	14552	MB2501
A26CR321	152−0897−00			DIODE,RECT:,FAST RCVRY;1000V,1.5A,300NS	25403	BYV96E
A26CR340	152−0400−00			DIODE,RECT:,FAST RCVRY;400V,1A,200NS	14552	MB2501
A26CR460	152−0141−02			DIODE,SIG:,ULTRA FAST;40V,150MA,4NS,2PF	27014	FDH9427
A26CR470	152−0141−02			DIODE,SIG:,ULTRA FAST;40V,150MA,4NS,2PF	27014	FDH9427
A26CR480	152−0242−00			DIODE,SIG:,;225V,200MA	14552	MT5129
A26CR481	152−0242−00			DIODE,SIG:,;225V,200MA	14552	MT5129
A26E150	276−0528−00			SHLD BEAD,ELEK:FERRAMIC	0JR03	276−0528−00
A26E290	119−0181−00			ARSR,ELEC SURGE:230,GAS FILLED,+/−15%	25088	B1−A230T
A26J150	131−4807−00			CONN,HDR PWR:PCB,;MALE,STR,1 X 5,0.156 CTR	00779	640444−5
A26J300	131−2427−00			TERM,QIK DISC.:PCB,;MALE TAB,0.250 X 0.032	00779	62409−1
A26J440	131−5158−00			CONN,HDR:PCB,;MALE,STR,1 X 10,0.1 CTR	00779	103669−9
A26L290	108−0231−00			COIL,RF:,INDUCTOR;FXD,4.5UH,10%,38 AWG	0JR03	108−0231−00
A26L291	108−0509−00			COIL,RF:FIXED,2.45UH +/−10%,AXIAL LEAD,CORE	0JR03	ORDER BY DESC
A26L310	114−0471−00			COIL,RF:VAR 12 − 50 UH,W/LITZ WIRE,DCR 0.1	50783	932−8897−01
A26L400	108−2000−00			COIL,LINEARITY:FXD,NOM 13.O UH,8UH−50UH	50783	933884401
A26Q160	151−0679−00			TRANSISTOR,PWR:BIPOLAR,NPN;400V,12A,SWITC	04713	MJE13009
A26Q260	151−0476−00			TRANSISTOR,PWR:BIPOLAR,NPN;100V,3.0A	04713	TIP31C
A26Q350	151−0347−02			TRANSISTOR,SIG:BIPOLAR,NPN;160V,600MA	04713	2N5551 RLRP (AM
A26Q390	151−0756−00			TRANSISTOR,SIG:BIPOLAR,NPN;100V,100MA	04713	MRF531
A26Q391	151−0411−00			TRANSISTOR,SIG:BIPOLAR,NPN;30V,400MA,1.2GHZ	04713	2N5943
A26Q480	151−0190−00			TRANSISTOR,SIG:BIPOLAR,NPN;40V,200MA	04713	2N3904
A26Q490	151−0712−00			TRANSISTOR,SIG:BIPOLAR,PNP;20V,50MA,600MHZ	04713	MPSH81
A26R150	301−0561−00			RES,FXD,FILM:560 OHM,5%,0.5W	19701	SFR−254 2322−18
A26R160	315−0470−00			RES,FXD,FILM:47 OHM,5%,0.25W	TK1727	SFR25 2322−181−
A26R161	313−1472−00			RES,FXD,FILM:4.7K OHM,5%,0.2W	91637	CCF50−2−47000J
A26R170	307−0108−00			RES,FXD,CMPSN:6.8 OHM,5%,0.25W	50139	CB68G5
A26R180	313−1100−00			RES,FXD,FILM:10 OHM,5%,0.2W	91637	CCF50−2−10R00J
A26R181	307−1602−00			RES,FXD,FILM:1K OHM,5%,3W,FLAME PROOF	24546	FP69−102J

Component Number	Tektronix Part No.	Serial No. Effective	Serial No. Dscont	Name & Description	Mfr. Code	Mfr. Part No.
A26R240	308−0459−00			RES,FXD,WW:1.1 OHM,5%,3W	TK2096	KM300 1.1 OHM 5
A26R241	313−1752−00			RES,FXD,FILM:7.5K OHM,5%,0.2W	91637	CCF50−2−75000J
A26R242	301−0823−00			RES,FXD,FILM:82K OHM,5%,0.5W	TK1727	SFR30 2322−182−
A26R243	313−1682−00			RES,FXD,FILM:6.8K OHM,5%,0.2W	91637	CCF50−2−68000J
A26R244	313−1103−00			RES,FXD,FILM:10K OHM,5%,0.2W	91637	CCF50−2−10001J
A26R260	303−0561−00			RES,FXD,CMPSN:560 OHM,5%,1W	24546	FP32 OR FP1 560
A26R261	301−0471−00			RES,FXD,FILM:470 OHM,5%,0.5W	TK1727	SFR30 2322−182−
A26R270	313−1681−00			RES,FXD,FILM:680 OHM,5%,0.2W	91637	CCF50−2−680ROJ
A26R271	313−1331−00			RES,FXD,FILM:330 OHM,5%,0.2W	91637	CCF50−2−330ROJ
A26R272	302−0471−00			RES,FXD,CMPSN:470 OHM,10%,0.5W	24564	FL 1/2 470 OHM
A26R280	315−0271−00			RES,FXD,FILM:270 OHM,5%,0.25W	TK1727	SFR25 2322−181−
A26R281	313−1124−00			RES,FXD,FILM:120K OHM,5%,0.2W	91637	CCF50−2−12002J
A26R290	313−1222−00			RES,FXD,FILM:2.2K OHM,5%,0.2W	91637	CCF50−2−22000J
A26R320	302−0473−00			RES,FXD,CMPSN:47K OHM,10%,0.5W	19701	5053CX47K00K
A26R330	313−1431−00			RES,FXD,FILM:430 OHM,5%,0.2W	91637	CCF50−2−430ROJ
A26R331	313−1051−00			RES,FXD,FILM:5.1 OHM,5%,0.2W	91637	CT3−5R100J
A26R340	322−3427−00			RES,FXD:METAL FILM;274K OHM,1%,0.2W	91637	CCF501G2743FT
A26R350	313−1161−00			RES,FXD,FILM:160 OHM,5%,0.2W	91637	CCF50−2−160R0J
A26R351	313−1272−00			RES,FXD,FILM:2.7K OHM,5%,0.2W	91637	CCF50−2−27000J
A26R352	313−1152−00			RES,FXD,FILM:1.5K OHM,5%,0.2W	91637	CCF50−2−15000J
A26R353	313−1472−00			RES,FXD,FILM:4.7K OHM,5%,0.2W	91637	CCF50−2−47000J
A26R360	313−1162−00			RES,FXD,FILM:1.6K OHM,5%,0.2W	91637	CCF50−2−16000J
A26R370	313−1242−00			RES,FXD,FILM:2.4K OHM,5%,0.2W	91637	CCF50−2−24000J
A26R371	313−1272−00			RES,FXD,FILM:2.7K OHM,5%,0.2W	91637	CCF50−2−27000J
A26R372	313−1203−00			RES,FXD,FILM:20K OHM,5%,0.2W	91637	CCF50−2−20001J
A26R373	313−1394−00			RES,FXD,FILM:390K,5%,0.2W	91637	CCF50−2−39002J
A26R380	313−1102−00			RES,FXD,FILM:1K OHM,5%,0.2W	91637	CCF50−2−10000J
A26R381	313−1222−00			RES,FXD,FILM:2.2K OHM,5%,0.2W	91637	CCF50−2−22000J
A26R382	313−1160−00			RES,FXD,FILM:16 OHM,0.5%,0.2W	91637	CCF50−2−16R00J
A26R390	313−1561−00			RES,FXD,FILM:560 OHM,5%,0.2W	91637	CCF50−2−56OROJ
A26R391	313−1470−00			RES,FXD,FILM:47 OHM,5%,0.2W	91637	CCF50−2−47R00J
A26R392	313−1100−00			RES,FXD,FILM:10 OHM,5%,0.2W	91637	CCF50−2−10R00J
A26R393	313−1332−00			RES,FXD,FILM:3.3K OHM,5%,0.2W	91637	CCF50−2−33000J
A26R410	313−1392−00			RES,FXD,FILM:3.9K OHM,5%,0.2W	91637	CCF50−2−39000J
A26R411	311−2498−00			RES,VAR,TRMR:2.5 MEG OHM,SIDE ADJUST	80009	311249800
A26R412	315−0472−00			RES,FXD,FILM:4.7K OHM,5%,0.25W	TK1727	SFR25 2322−181−
A26R420	313−1100−00			RES,FXD,FILM:10 OHM,5%,0.2W	91637	CCF50−2−10R00J
A26R421	313−1184−00			RES,FXD,FILM:180K OHM,5%,0.2W	91637	CCF50−2−18002J
A26R422	313−1624−00			RES,FXD,FILM:620K OHM,5%,0.2W	91637	CCF5062002J
A26R423	313−1244−00			RES,FXD,FILM:240K OHM,5%,0.2W	91637	CCF50−2−24002J

Component Number	Tektronix Part No.	Serial No. Effective	Serial No. Dscont	Name & Description	Mfr. Code	Mfr. Part No.
A26R430	313−1272−00			RES,FXD,FILM:2.7K OHM,5%,0.2W	91637	CCF50−2−27000J
A26R431	313−1151−00			RES,FXD,FILM:150 OHM,5%,0.2W	91637	CCF50−2−150R0J
A26R440	313−1753−00			RES,FXD,FILM:75K OHM,5%,0.2W	91637	CCF50−2−75001J
A26R441	313−1184−00			RES,FXD,FILM:180K OHM,5%,0.2W	91637	CCF50−2−18002J
A26R442	313−1393−00			RES,FXD,FILM:39K OHM,5%,0.2W	91637	CCF50−2−39001J
A26R443	311−2258−00			RES,VAR,TRMR:CERMET;1K OHM,20%,0.5W,0.197	TK2073	GF06VT2 102 M L
A26R450	322−3405−00			RES,FXD,FILM:162K OHM,1%,0.2W	91637	CCF50−2F16202F
A26R451	307−0104−00			RES,FXD,CMPSN:3.3 OHM,5%,0.25W	19701	5043CX3R300J
A26R452	311−2266−00			RES,VAR,NONWW:TRMR,100K OHM,20%,0.5W	TK2073	GF06VT2 104 M L
A26R453	311−2266−00			RES,VAR,NONWW:TRMR,100K OHM,20%,0.5W	TK2073	GF06VT2 104 M L
A26R460	313−1123−00			RES,FXD,FILM:12K OHM,5%,0.2W	91637	CCF50−2−12001J
A26R461	313−1103−00			RES,FXD,FILM:10K OHM,5%,0.2W	91637	CCF50−2−10001J
A26R462	311−2267−00			RES,VAR,NONWW:TRMR,50K OHM,20%,0.5W	TK2073	GF06VT2 503 M L
A26R463	311−2276−00			RES,VAR,NONWW:TRMR,100 OHM,20%,0.5W	TK2073	GF06VT2 101 M L
A26R470	313−1223−00			RES,FXD,FILM:22K,OHM,5%,0.2W	91637	CCF50−2−22001J
A26R471	313−1472−00			RES,FXD,FILM:4.7K OHM,5%,0.2W	91637	CCF50−2−47000J
A26R472	313−1203−00			RES,FXD,FILM:20K OHM,5%,0.2W	91637	CCF50−2−20001J
A26R473	311−2271−00			RES,VAR,TRMR:CERMET;5K OHM,20%,0.5W,0.197	TK2073	GF06VT2 502 M L
A26R480	313−1682−00			RES,FXD,FILM:6.8K OHM,5%,0.2W	91637	CCF50−2−68000J
A26R481	313−1184−00			RES,FXD,FILM:180K OHM,5%,0.2W	91637	CCF50−2−18002J
A26R482	311−2266−00			RES,VAR,NONWW:TRMR,100K OHM,20%,0.5W	TK2073	GF06VT2 104 M L
A26R483	311−2276−00			RES,VAR,NONWW:TRMR,100 OHM,20%,0.5W	TK2073	GF06VT2 101 M L
A26R490	313−1274−00			RES,FXD,FILM:270K OHM,5%,0.2W	91637	CCF 50−2−2703−J
A26R491	313−1470−00			RES,FXD,FILM:47 OHM,5%,0.2W	91637	CCF50−2−47R00J
A26T170	120−1476−00			XFMR,BASE DRIVE:L1 18MH +/−15% 2.0 OHM MAX	02113	A4369
A26T210	120−1936−00			TRANSFORMER,RF:FLYBACK,12KV	80009	120193600
A26U130	156−4327−00			IC,LINEAR:BIPOLAR,VOLT REG;POSI,12.0V,1.5A,1%	64155	LT1086CT−12
A26U340	156−1693−03	B010100	B046999	IC,MISC:BIPOLAR,VIDEO SUBSYSTEM;VERT DEF	66958	TDA1175
A26U340	156−4618−00	B047000		IC,MISC:BIPOLAR,VIDEO SUBSYSTEM;VERT DEF	66958	TDA1175
A26U370	156−1147−00			IC,MISC:BIPOLAR,VIDEO SUBSYSTEM;HORIZPROC	04713	MC1391P
A26VR390	152−0279−00			DIODE,ZENER:5.1V,5%,0.4W	04713	1N751ARL

Diagrams and Circuit Board Illustrations

This section contains circuit board illustrations, component locator tables, waveform illustrations, and schematic diagrams for this oscilloscope.

Symbols

Graphic symbols and class designation letters are based on ANSI Standard Y32.2-1975. Abbreviations are based on ANSI Y1.1-1972.

Logic symbology is based on ANSI/IEEE Std 91-1984 in terms of positive logic. Logic symbols depict the logic function performed and can differ from the manufacturer's data.

The tilde (~) preceding a signal name indicates that the signal performs its intended function when in the low state.

Other standards used in the preparation of diagrams by Tektronix. Inc are:

- Tektronix Standard 062-2476 Symbols and Practices for Schematic Drafting
- ANSI Y14.159-1971 Interconnection Diagrams
- ANSI Y32.16-1975 Reference Designations for Electronic Equipment
- MIL-HDBK-63038-1A Military Standard Technical Manual Writing Handbook

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: Values are in Ohms (Ω).

Graphic Items and Special Symbols Used in This Manual

Each assembly in the instrument has an assembly identifier (for example, MAIN or A5). The assembly identifier appears on the circuit board outline on the diagram (see Figure 9-1), in the title for the circuit board component location illustration, and in the lookup table for the schematic diagram and corresponding component locator illustration. The Replaceable Electrical Parts list is arranged by assemblies in numerical sequence; the components are listed by component number.

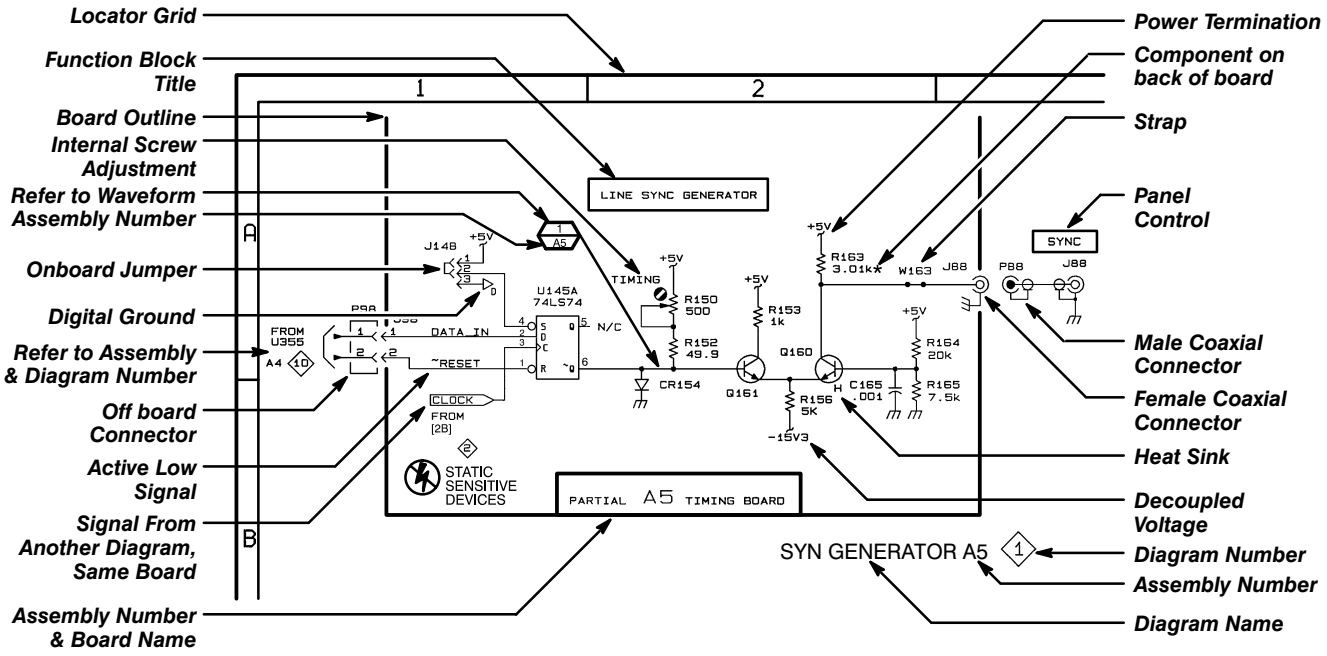


Figure 9-1: Graphic Items and Special Symbols Used in This Manual

Component Locator Diagrams

The schematic diagram and circuit board component location illustrations have grids. A lookup table is provided for ease of locating a component. The circuit board illustration only appears once; its lookup table lists the diagram number of all diagrams that the circuitry appears on.

Some of the circuit board component location illustrations are expanded and divided into several parts to make it easier for you to locate small components. To determine which part of the whole locator diagram you are looking at, refer to the small locator key positioned at the upper left of each circuit board component locator diagram, as shown in Figure 9-2. The gray block, within the larger circuit board outline, shows where that part fits in the whole locator diagram. Each part in the key has an identifying letter which appears in the figure titles under component locator diagrams.

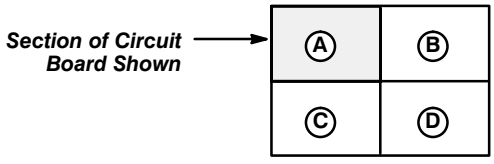


Figure 9-2: Component Locator Diagram Key

Replaceable Mechanical Parts

This section contains a list of the mechanical components that are replaceable for the TDS 300 Series. As described below, use this list to identify and order replacement parts.

Parts Ordering Information

Replacement parts are available from or through your local Tektronix, Inc., service center or representative.

Changes to Tektronix instruments are sometimes made to accommodate improved components as they become available and to give you the benefit of the latest circuit 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 a part you order has been replaced with a different or improved part, your local Tektronix service center or representative will contact you concerning any change in the part number.

Using the Replaceable Parts List

The tabular information in the Replaceable Parts List is arranged for quick retrieval. Understanding the structure and features of the list will help you find the all the information you need for ordering replacement parts.

Item Names

In the Replaceable Parts List, an Item Name is separated from the description by a colon (:). Because of space limitations, an Item Name may sometimes appear as incomplete. For further Item Name identification, use the U.S. Federal Cataloging Handbook H6-1.

Indentation System

This parts list is indented to show the relationship between items. The following illustrates the indentation system in the Description column:

1 2 3 4 5 Name & Description

Assembly and/or Component
Attaching parts for Assembly and/or Component
(END ATTACHING PARTS)

Detail Part of Assembly and/or Component
Attaching parts for Detail Part
(END ATTACHING PARTS)

Parts of Detail Part
Attaching parts for Parts of Detail Part
(END ATTACHING PARTS)

Attaching parts always appear at the same indentation as the item it mounts, while the detail parts are indented to the right. Indented items are part of, and included with, the next higher indentation. You must purchase attaching parts separately, unless otherwise specified.

Abbreviations

Abbreviations conform to American National Standards Institute (ANSI) standard Y1.1

CROSS INDEX – MFR. CODE NUMBER TO MANUFACTURER

Mfr. Code	Manufacturer	Address	City, State, Zip Code
S3109	FELLER	72 VERONICA AVE UNIT 4	SUMMERSET NJ 08873
S4246	JAPAN SERVO CO LTD	7 KANDA MITOSHIRO–CHO CHIYODA–KU	TOKYO JAPAN
TK0946	SAN–O INDUSTRIAL CORP	170 WILBUR PL	BAHEMIA LONG ISLAND NY 11716
TK0435	LEWIS SCREW CO	4300 S RACINE AVE	CHICAGO IL 60609–3320
TK1163	POLYCAST INC	9898 SW TIGARD ST	TIGARD OR 97223
TK1499	AMLAN INC	97 THORNWOOD RD	STAMFORD CT 06903–2617
TK1326	NORTHWEST FOURSLIDE INC	18224 SW 100TH CT	TUALATIN OR 97062
TK1908	PLASTIC MOLDED PRODUCTS	4336 SO ADAMS	TACOMA WA 98409
TK1918	SHIN–ETSU POLYMER AMERICA INC	1181 NORTH 4TH ST	SAN JOSE CA 95112
TK1935	ACCRA–FAB INC	11007 NE 37TH CIRCLE	VANCOUVER WA 98682
TK2045	ITW CHRONOMATIC	4126 N NASHVILLE AVE	CHIGAGO IL 60634
TK2148	LASTEC INC	18880 SW SHAW	ALOHA OR 97007
TK2193	PHOTO AND SOUND	820 NW 18TH AVENUE	PORTLAND OR 97209
TK2432	UNION ELECTRIC	15/F #1, FU–SHING N. ROAD	TAIPEI, TAIWAN ROC
TK2500	SOLECTEK ACCESSORIES CORP	6370 NANCY RIDGE DR SUITE 109	SAN DIEGO CA 92121
0JR05	TRIQUEST CORP	3000 LEWIS AND CLARK HWY	VANCOUVER WA 98661–2999
0KBZ5	MORELLIS Q & D PLASTICS	1812 16TH AVE	FOREST GROVE OR 97116
0KB01	STAUFFER SUPPLY	810 SE SHERMAN	PORTLAND OR 97214
00779	AMP INC	2800 FULLING MILL PO BOX 3608	HARRISBURG PA 17105
05469	BEARINGS INC	3634 EUCLID P O BOX 6925	CLEVELAND OH 44101
07416	NELSON NAME PLATE CO	3191 CASITAS	LOS ANGELES CA 90039–2410
18565	CHOMERICS INC	77 DRAGON COURT	WOBURN MA 01801–1039
24931	SPECIALTY CONNECTOR CO INC	2100 EARLYWOOD DR PO BOX 547	FRANKLIN IN 46131
34416	PARSONS MFG CORP	1055 OBRIAN DR	MENLO PARK CA 94025–1408
5Y400	TRIAX METAL PRODUCTS INC DIV OF BEAVERTON PARTS MFG CO	1800 216TH AVE NW	HILLSBORO OR 97124–6629
52152	MINNESOTA MINING AND MFG CO INDUSTRIAL SPECIALTIES DIV	3M CENTER	ST PAUL MN 55144–0001
6D224	TRI–TEC ENGINEERING CORP	13130 S NORMANDIE	GARDENA CA 90249–2128
70903	COOPER BELDEN ELECTRONICS WIRE AND CABLE SUB OF COOPER INDUSTRIES INC		
73743	FISCHER SPECIAL MFG CO	111 INDUSTRIAL RD	COLD SPRING KY 41076–9749
80009	TEKTRONIX INC	14150 SW KARL BRAUN DR PO BOX 500	BEAVERTON OR 97077–0001
86928	SEASTROM MFG CO INC	701 SONORA AVE	GLENDALE CA 91201–2431

Fig. & Index No.	Tektronix Part No.	Serial No. Effective	Serial No. Dscont	Qty	12345 Name & Description	Mfr. Code	Mfr. Part No.
10−1−1	334−8202−00			1	MARKER,IDENT:MKD HANDLE	80009	334820200
−2	390−1109−00			1	CABINET,SCOPE:ALUMINUM,TEK BLUE	TK1935	ORDER BY DESC
−3	367−0289−02			1	HANDLE,CARRING:13.855,DTT	80009	367028902
−4	212−0144−00			2	SCREW,TPG,TF:8−16 X 0.562 L,PLASTITE	0KB01	ORDER BY DESC
−5	348−0659−00			2	FOOT,CABINET:BLACK POLYURETHANE	0JR05	ORDER BY DESC
−6	−−−−−−−−			1	CABINET,SCOPE:ALUMINUM,TEK BLUE (P/O 390−1109−XX ASSEMBLY)		
−7	348−0764−04			1	SHLD GSKT,ELEK:0.125 X 0.188,WIRE MESH,37.0	18565	ORDER BY DESC
−8	334−8324−00			1	MARKER,IDENT:PWR SUPPLY,WARNING	80009	334832400
−9	334−8322−01	B010100	B020099	1	MARKER,IDENT:MKD OPTION (TDS310/350 ONLY−−OPTION 02 ONLY)	80009	334832201
	334−8322−00	B020100		1	MARKER,IDENT:MKD OPTION (TDS310/350 ONLY−−OPTION 02 ONLY)	80009	334832200
	334−8322−01	B010100	B030099		MARKER,IDENT:MKD OPTION (TDS320 ONLY−−OPTION 02 ONLY)	80009	334832201
	334−8322−00	B030100		1	MARKER,IDENT:MKD OPTION (TDS320 ONLY−−OPTION 02 ONLY)	80009	334832200
	334−8718−00	B020100		1	MARKER,IDENT:MKD OPTION (TDS310/350 ONLY−OPTION 14 ONLY)	80009	334871800
	334−8718−00	B030100		1	MARKER,IDENT:MKD OPTION (TDS320 ONLY−OPTION 14 ONLY)	80009	334871800
−10	161−0230−01			1	CABLE ASSY,PWR,:3,18 AWG,92 L,SVT,TAN (STANDARD ACCESSORY)	TK2432	ORDER BY DESC
−11	343−1213−00			1	CLAMP,PWR CORD:POLYMIDE	TK1163	ORDER BY DESC
−12	211−0691−00			4	SCREW,MACHINE:6−32 X 0.625,PNH,STL	0KB01	ORDER BY DESC
−13	200−3971−04	B010100	B020099	1	COVER,REAR:W/FEET AND LABELS (TDS310/350 ONLY)	80009	200397104
	200−3971−05	B020100		1	COVER,REAR:W/FEET AND LABELS (TDS310/350 ONLY)	80009	200397105
	200−3971−04	B010100	B030099	1	COVER,REAR:W/FEET AND LABELS (TDS320 ONLY)	80009	200397104
	200−3971−05	B030100		1	COVER,REAR:W/FEET AND LABELS (TDS320 ONLY)	80009	200397105
−14	211−0730−00			1	SCR,ASSEM WSHR:6−32 X 0.375,PNH,STL CD PL	0KB01	ORDER BY DESC

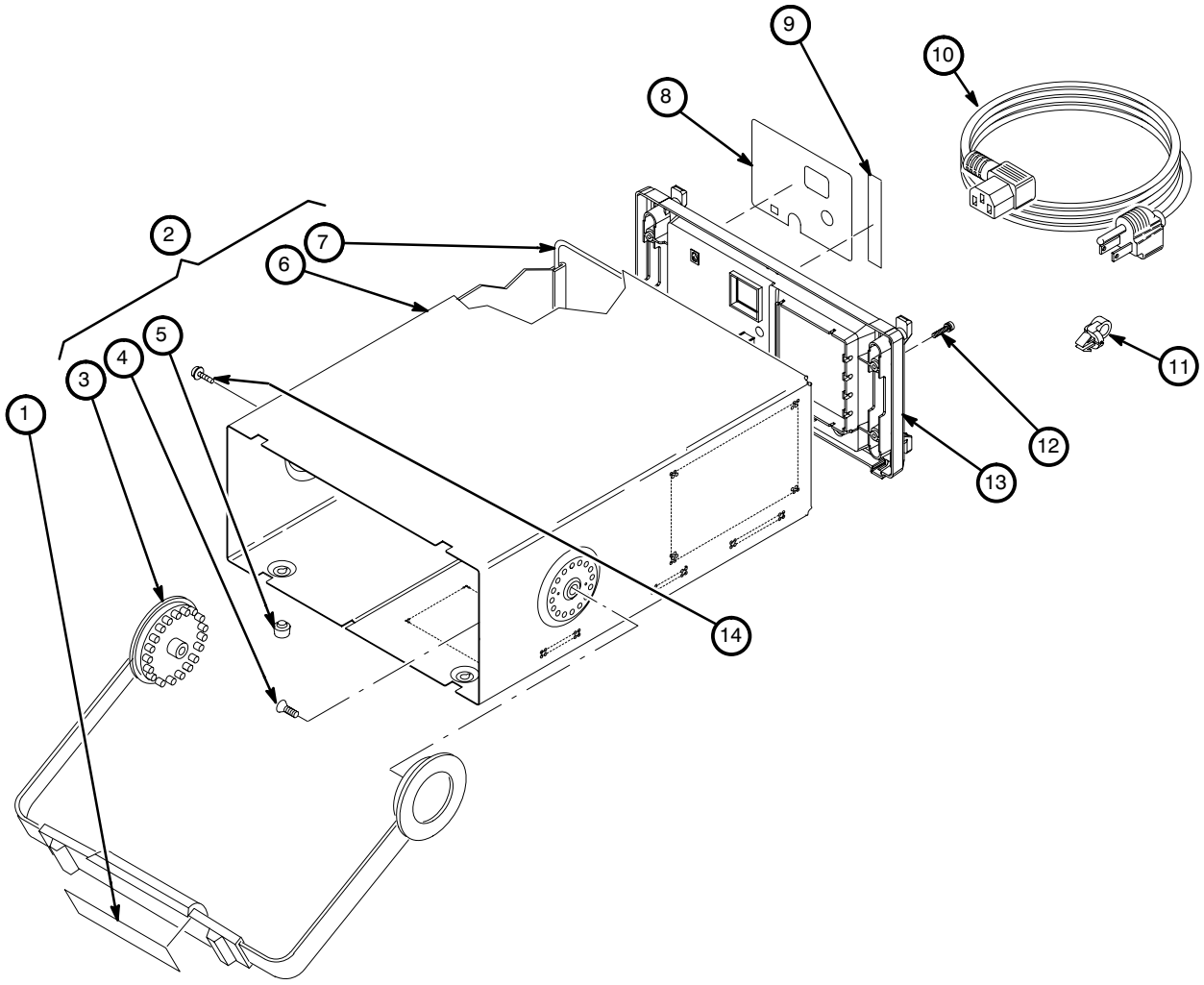


Figure 10-1: Cabinet

Fig. & Index No.	Tektronix Part No.	Serial No. Effective	Serial No. Dscont	Qty	12345	Name & Description	Mfr. Code	Mfr. Part No.
10−2−1	200−3232−00			1		COVER,FRONT:ABS (OPTIONAL ACCESSORY)	TK1908	ORDER BY DESC
−2	334−8737−00			1		MARKER,IDENT:MKD TDS310	80009	334873700
	334−8323−00			1		MARKER,IDENT:MKD TDS320	80009	334832300
	334−8719−00			1		MARKER,IDENT:MKD TDS350	80009	334871900
−3	101−0140−00			1		TRIM,DECORATIVE:FRONT	80009	101014000
−4	260−2539−00			1		SWITCH SET:BEZEL	TK1918	260−2539−00
−5	366−2113−00			3		KNOB:MEDIUM,DETENTED	TK1163	ORDER BY DESC
−6	384−1689−01			6		SHAFT EXTENDER:ACETAL	80009	384168901
−7	672−1376−00			1		CIRCUIT BD ASSY:FRONT PANEL MODULE	80009	672137600
−8	333−4025−00			1		PANEL,FRONT:	80009	333402500
−9	131−5421−00			1		CONTACT,ELEC:ESD PROTECTION,0.005 STL	80009	131542100
−10	380−0990−00			1		HOUSING,FR PNL:	80009	380099000
−11	131−5341−00			1		CONTACT,ELEC:ESD,CU−BE ALLOY	TK1326	ORDER BY DESC
−12	105−1031−00			2		ACTUATOR SW AS:12 POSITION	TK2045	ORDER BY DESC
−13	260−2538−00			1		SWITCH SET:IMPLICT	TK1918	ORDER BY DESC
−14	−−−−−−−−			1		CIRCUIT BD ASSY:FRONT PANEL (SEE A4 REPL)		
−15	259−0086−00			1		FLEX CIRCUIT:BEZEL BUTTON	07416	ORDER BY DESC
−16	174−2598−00			1		CA ASSY,SP,ELEC:FRONT PANEL	80009	174259800
−17	348−1258−00			4		SHLD,GASKET,ELE:2 LAYER,0.094 X 0.188 X 8.750	80009	348125800
−18	214−1126−01			2		SPRING,FLAT:0.7 X 0.125,CU BE GRN CLR	5Y400	214−1126−01
−19	214−0274−00			2		BALL,BEARING:0.125 DIA,SST,GRADE 100	05469	ORDER BY DESC
−20	366−2163−00			21		PUSH BUTTON:IVORY GRAY,OVAL	80009	366216300
−21	366−2111−00			3		KNOB:SMALL,FLUTED	TK1163	ORDER BY DESC
−22	131−5142−00			1		CONTACT,ELEC:PROBE ADJUST	TK1935	ORDER BY DESC
−23	366−2164−00			14		PUSH BUTTON:SMOKE TAN	80009	366216400

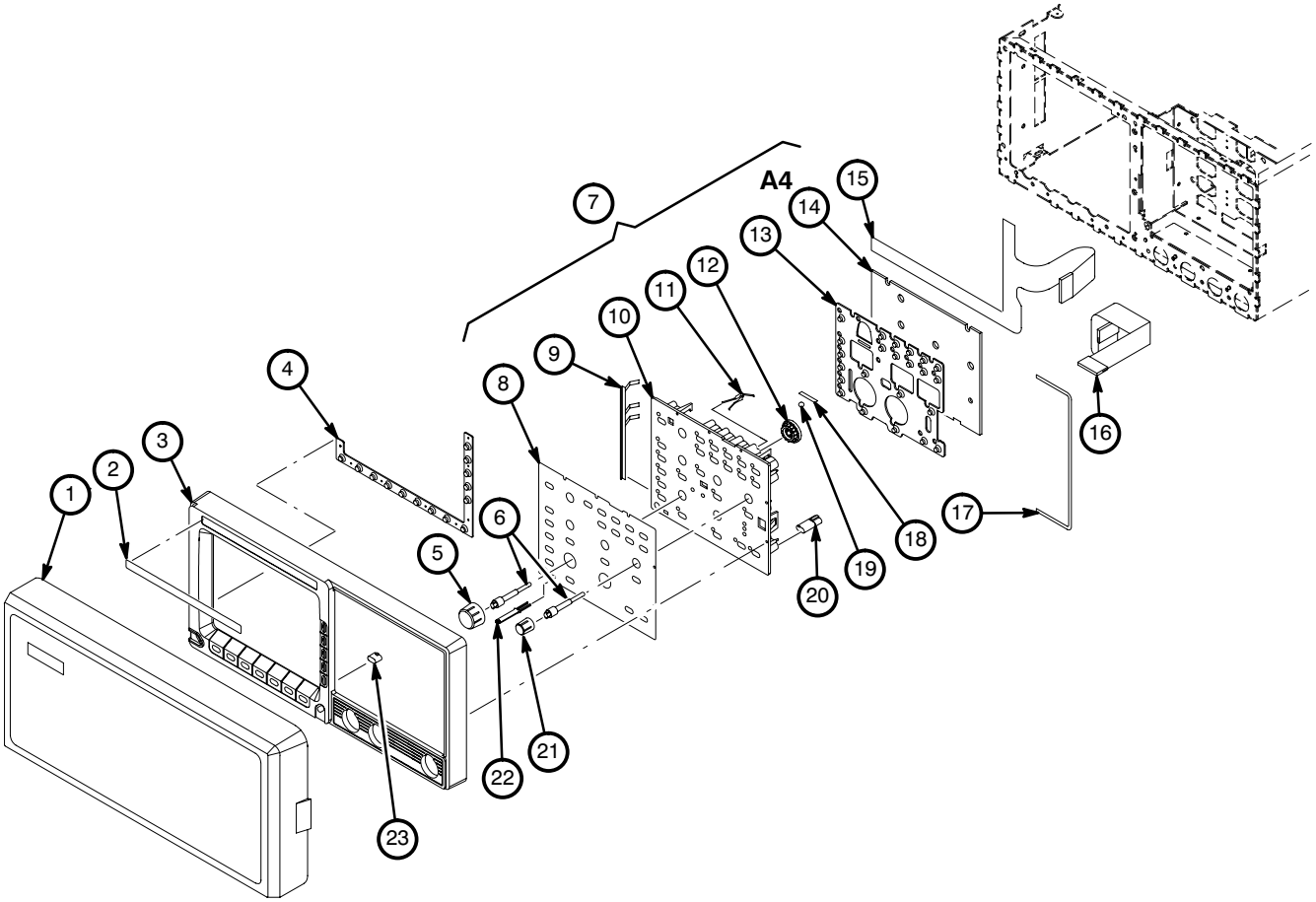


Figure 10-2: Front-Panel Assembly

Fig. & Index No.	Tektronix Part No.	Serial No. Effective	Serial No. Dscont	Qty	12345	Name & Description	Mfr. Code	Mfr. Part No.
10−3−1	426−2436−00	B010100	B020099	1		FRAME,CRT FLTR:POLYCARBONATE (TDS310/350 ONLY)	TK1163	ORDER BY DESC
	426−2436−01	B020100		1		FRAME,CRT FLTR:POLYCARBONATE (TDS310/350 ONLY)	TK1163	ORDER BY DESC
	426−2436−00	B010100	B030099	1		FRAME,CRT FLTR:POLYCARBONATE (TDS320 ONLY)	TK1163	ORDER BY DESC
	426−2436−01	B030100		1		FRAME,CRT FLTR:POLYCARBONATE (TDS320 ONLY)	TK1163	ORDER BY DESC
−2	640−0079−01	B010100	B046999	1		DISPLAY MODULE:7 INCH,480X 640 PIXEL	80009	640007901
	640−0079−02	B047000				DISPLAY MODULE:7 INCH,480X 640 PIXEL	80009	640007902
−3	154−0971−00			1		ELECTRON TUBE:7 INCH MONOCHROME,P31	80009	154097100
−4	213−0882−00			22		SCREW,TPG,TR:6−32 X 0.437 TAPTITE,PNH,STL	0KB01	ORDER BY DESC
−5	426−2473−00			1		CHASSIS ASSY:	80009	426247300
−6	−−−−−−−−			1		CIRCUIT BD ASSY:MONOCHROME (SEE A26 REPL)		
−7	426−2426−00			1		FRAME,FAN MTG:POLYCARBONATE	80009	426242600
−8	119−1770−04			1		FAN,DC:TUBEAXIAL;12V,1.72W,35CFM,W/CONN	S4246	CUDC12D4
−9	−−−−−−−−			1		POWER SUPPLY (SEE A20 REPL)		
−10	159−0190−00			1		FUSE,CARTRIDGE:5X20MM,3.5A,250V,50MS	TK0946	EQ−3.5A
	159−0277−00			1		FUSE,CARTRIDGE:5X20MM,3A,250V,5 SEC	80009	159027700
−11	210−0457−00			1		NUT,PL,ASSEM WA:6−32 X 0.312,STL CD PL	TK0435	ORDER BY DESC
−12	441−1982−00			1		CHASSIS ASSY:ALUMINUM	80009	441198200
−13	407−4196−00			1		BRACKET,STD:ALUMINUM (STANDARD)	80009	407419600
	407−4293−00	B020100		1		BRKT,OPTION:0.050 AL ALLOY (TDS310/350 ONLY−OPTION 14 ONLY)	80009	407429300
	407−4293−00	B030100		1		BRKT,OPTION:0.050 AL ALLOY (TDS320 ONLY−OPTION 14 ONLY)	80009	407429300
−14	210−0056−00			2		WASHER,LOCK:#10 SPLIT,0.047 THK,SI BRZ NP	86928	ORDER BY DESC
−15	213−1079−00			4		JACKSCREW:4−40 X 0.120 INT THD	00779	745563−2
−16	213−1061−00			2		JACKSCREW:GPIB,;MALE 6−32 THD 0.32 L	00779	554043−3
−17	672−3140−00			1		CIRCUIT BD ASSY:OPTION ASSY	80009	672314000
−18	−−−−−−−−			1		CIRCUIT BD ASSY:OPTION (SEE A2 REPL, OPTION 14 ONLY)		
−19	−−−−−−−−			1		CIRCUIT BD ASSY:OPTION (SEE A3 REPL, OPTION 14 ONLY)		
−20	343−0775−00			1		CLIP,SPR TNSN:	52152	3484−1000
−21	343−0549−00			1		STRAP,TIEDOWN,E:0.098W X 4.0L, ZYTEL	TK1499	HW−047
−22	348−0150−00			1		GROMMET,PLASTIC:DK GRAY,U−SHAPE,0.66 ID	0KBZ5	ORDER BY DESC
−23	−−−−−−−−			1		CIRCUIT BD ASSY:MAIN (SEE A1 REPL)		
−24	407−4131−00			1		BRACKET,ATTEN:BNC,BRASS	80009	407413100
−25	337−3713−01			1		SHIELD,ELEC:ATTENUATOR	80009	337371301
−26	−−−−−−−−			3		CONN, BNC, 50 OHM (SEE A1J51,52,53 REPL)		
−27	210−1039−00			3		WASHER,LOCK:0.521 ID,INT,0.025 THK,SST	0KB01	1224−02−00−0541
−28	220−0497−00			3		NUT,PLAIN,HEX:0.5−28 X 0.562 HEX,BRS CD PL	73743	ORDER BY DESC
−29	174−2598−00			1		CA ASSY,SP:FLAT FLEX,16,26 AWG,13.7L	80009	174259800
−30	407−4247−00			1		BRACKET:ALUMINUM	80009	407424700

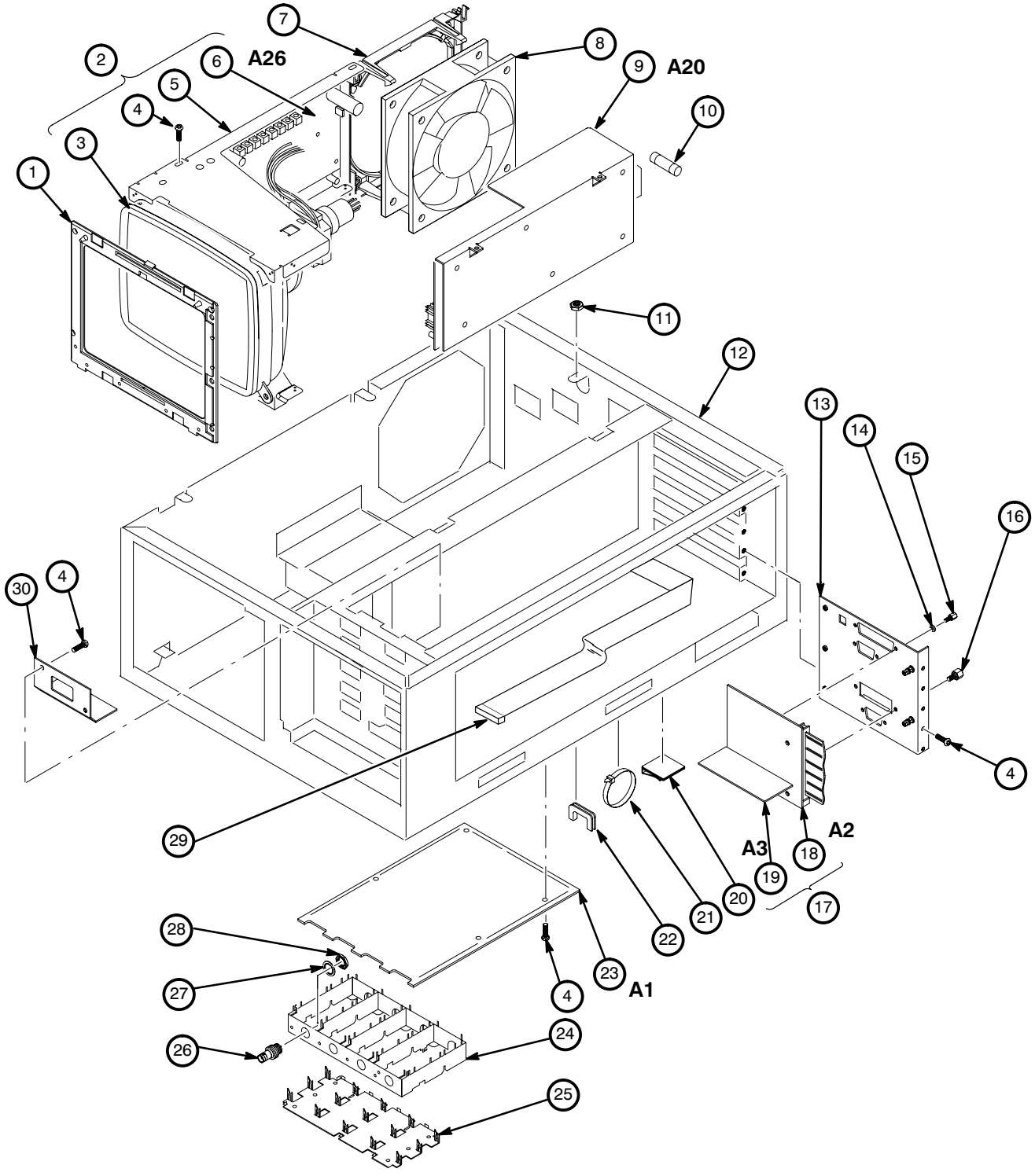


Figure 10-3: CRT, Power Supply, and Circuit Boards

Fig. & Index No.	Tektronix Part No.	Serial No. Effective	Serial No. Dscont	Qty	12345	Name & Description	Mfr. Code	Mfr. Part No.
						STANDARD ACCESSORIES		
10−4−1	161−0104−05			1		CABLE ASSY,PWR,:3,18 AWG,240V,98.0 L (OPTION A3−AUSTRALIAN)	S3109	SAA/3−OD3CCFC3X
−2	161−0104−06			1		CABLE ASSY,PWR,:3 X 0.75MM SQ,220V,98.0 L (OPTION A1−EUROPEAN)	S3109	VIIGSOPO−HO5VVF
−3	161−0104−07			1		CABLE ASSY,PWR,:3,1.0MM SQ,240 VOLT,2.5 M (OPTION A2−UNITED KINGDOM)	S3109	ORDER BY DESC
−4	161−0104−08			1		CABLE ASSY,PWR,:3,18 AWG,98 L,SVT,GREY/BLK (OPTION A4−NORTH AMERICAN)	70903	ORDER BY DESC
−5	161−0167−00			1		CABLE ASSY,PWR,:3.0 X 0.75,6A,240V,2.5M L (OPTION A5−SWITZERLAND)	S3109	ORDER BY DESC
	−−−−−−−−			1		CABLE ASSY,PWR,:3,18 AWG,92 L,SVT,TAN, (STANDARD, SEE FIGURE 10−1−10)	80009	070857100
	−−−−−−−−			1		ACCESSORY PKG:(2) P6111B PASSIVE PROBES (TDS310/350 ONLY)		
	−−−−−−−−			1		ACCESSORY PKG:(2) P6109B 2M PROBES (TDS320 ONLY)		
	070−8568−04			1		MANUAL,TECH:INSTRUCTION	80009	070856804
	070−8569−03			1		MANUAL,TECH:QUICK REF CARD	80009	070856903
	070−8690−01			1		MANUAL,TECH:USER,XYZ OF OSCILLOSCOPE	80009	070869001

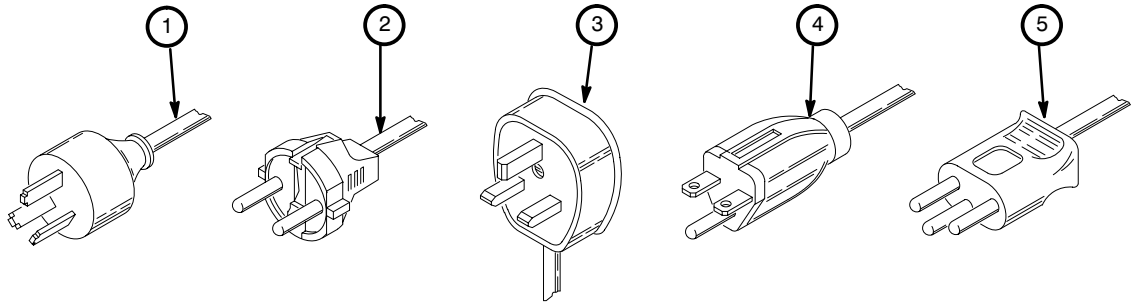


Figure 10-4: Accessories−Cable Options

Fig. & Index No.	Tektronix Part No.	Serial No. Effective	Serial No. Dscont	Qty	12345	Name & Description	Mfr. Code	Mfr. Part No.
						OPTIONAL ACCESSORIES		
	012−0991−00			1		CABLE,COMPOSITE:IDC,GPIB:2 METER,24 COND	00779	553577−3
	012−0991−01			1		CABLE,GPIB:LOW EMI,1 METER	00779	553577−2
	012−1241−00			1		CA ASSY, INTCON:SHLD CMPST,RS−232	6D224	012−1241−00
	012−1250−00			1		CABLE,INTCON:SHLD CMPST,PARALLEL	TK2193	CACC 3049
	012−1298−00			1		CABLE,INTCON:RS232C DB25M−DB9F SERIAL	TK2500	C294−9
	012−1379−00			1		CABLE ASSY:RS232,;76.0 L,9,24 AWG	80009	012137900
	012−1380−00			1		CABLE ASSY:RS232,;76.0 L,9,24 AWG	80009	012138000
	016−0792−01			1		CASE,CARRYING:24.5 X 16.5 X 11.52200/2400	34416	2416BE11
	016−1154−00			1		HOOD ASSEMBLY:2KDSO	80009	016115400
	016−1157−00			1		CASE,CARRYING:26 X 22 X 12,HARD TRANSFER	34416	ORDER BY DESC
	016−1158−00			1		CASE,CARRYING:SOFT PADDED,OPTIONS	80009	016115800
	016−1159−00			1		POUCH:POUCH & PLATE,GPS SIZE	80009	016115900
	016−1166−00			1		RACKMOUNT KIT:	80009	016116600
	−−−−−−−−			1		COVER,FRONT:ABS (SEE FIGURE 10−2−1)		
	070−8571−04			1		MANUAL,TECH:PROGRAMMER	80009	070857104
	070−8722−02			1		MANUAL,TECH:INSTRUCTION, OPT 3P	80009	070872202