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THE FOLLOWING SERVICING INSTRUCTIONS ARE FOR USE BY QUALIFIED PERSONNEL ONLY. TO AVOID PERSONAL INJURY, DO NOT PERFORM ANY SERVICING OTHER THAN THAT CONTAINED IN OPERATING INSTRUCTIONS UNLESS YOU ARE QUALIFIED TO DO SO.

PLEASE CHECK FOR CHANGE INFORMATION AT THE REAR OF THIS MANUAL.

7844/R7844 DUAL-BEAM OSCILLOSCOPE

WITH OPTIONS

SERVICE

INSTRUCTION MANUAL

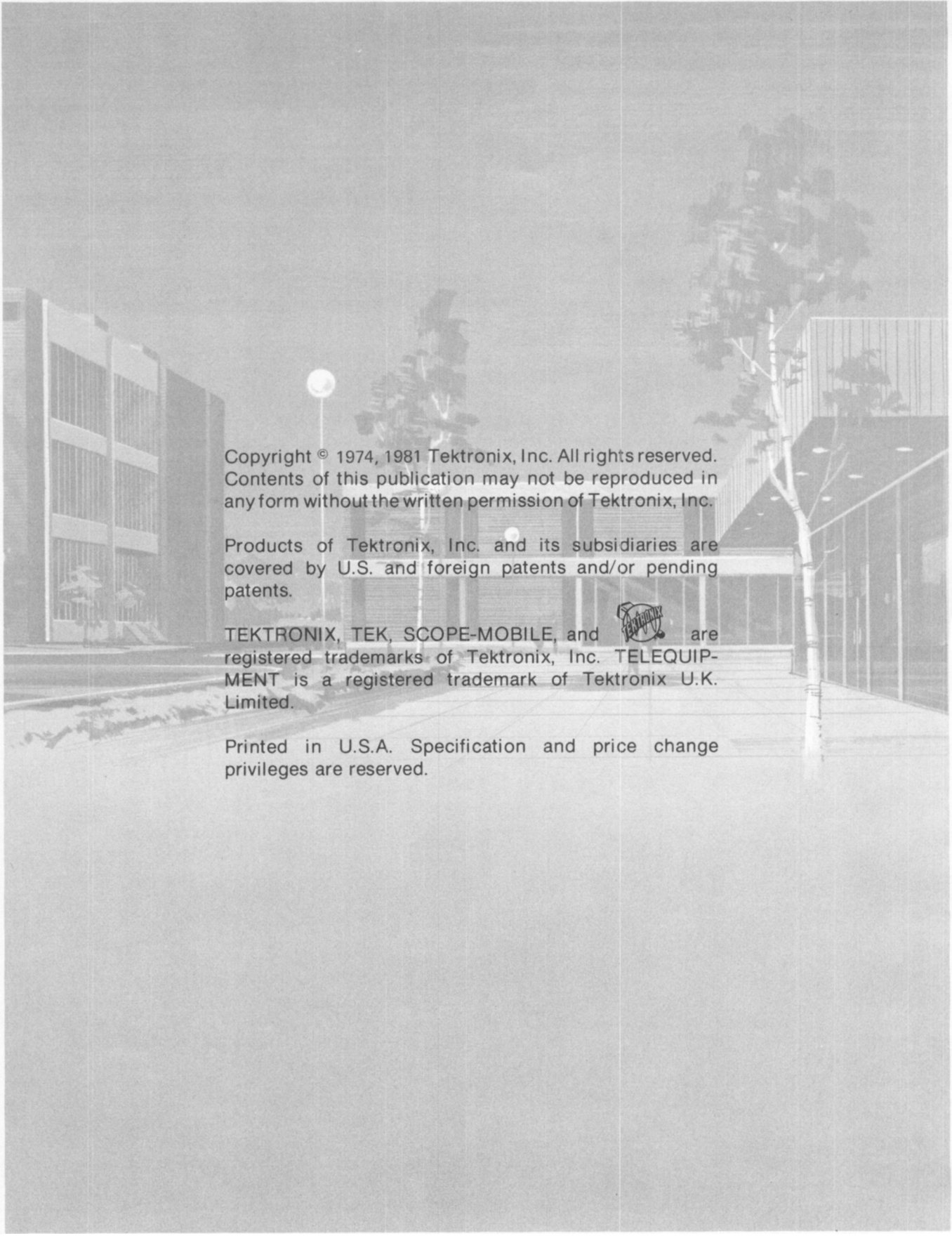
Tektronix, Inc.
P.O. Box 500
Beaverton, Oregon 97077

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OPERATORS SAFETY SUMMARY

The general safety information in this part of the summary is for both operating and servicing personnel. Specific warnings and cautions will be found throughout the manual where they apply, but may not appear in this summary.

Terms In This Manual

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

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

Terms As Marked on Equipment

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

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

Symbols In This Manual



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

Symbols As Marked on Equipment



DANGER — High voltage.



Protective ground (earth) terminal.



ATTENTION — refer to manual.

Power Source

This product is intended to operate from a power source that does not apply more than 250 volts rms between the supply conductors or between either supply conductor and ground. A protective ground connection by way of the grounding conductor in the power cord is essential for safe operation.

Grounding the Product

This product is grounded through the grounding conductor of the power cord. To avoid electrical shock, plug the power cord into a properly wired receptacle before connecting to the product input or output terminals. A protective ground connection by way of the grounding conductor in the power cord is essential for safe operation.

Danger Arising From Loss of Ground

Upon loss of the protective-ground connection, all accessible conductive parts (including knobs and controls that may appear to be insulating) can render an electric shock.

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.

For detailed information on power cords and connectors, see the Service Safety Summary.

Refer cord and connector changes to qualified service personnel.

Use the Proper Fuse

To avoid fire hazard, use only the fuse of correct type, voltage rating and current rating as specified in the parts list for your product.

Refer fuse replacement to qualified service personnel.

Do Not Operate in Explosive Atmospheres

To avoid explosion, do not operate this product in an explosive atmosphere unless it has been specifically certified for such operation.

Do Not Remove Covers or Panels

To avoid personal injury, do not remove the product covers or panels. Do not operate the product without the covers and panels properly installed.

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SERVICING SAFETY SUMMARY

FOR QUALIFIED SERVICE PERSONNEL ONLY

Refer also to the preceding Operators Safety Summary.

Do Not Service Alone

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

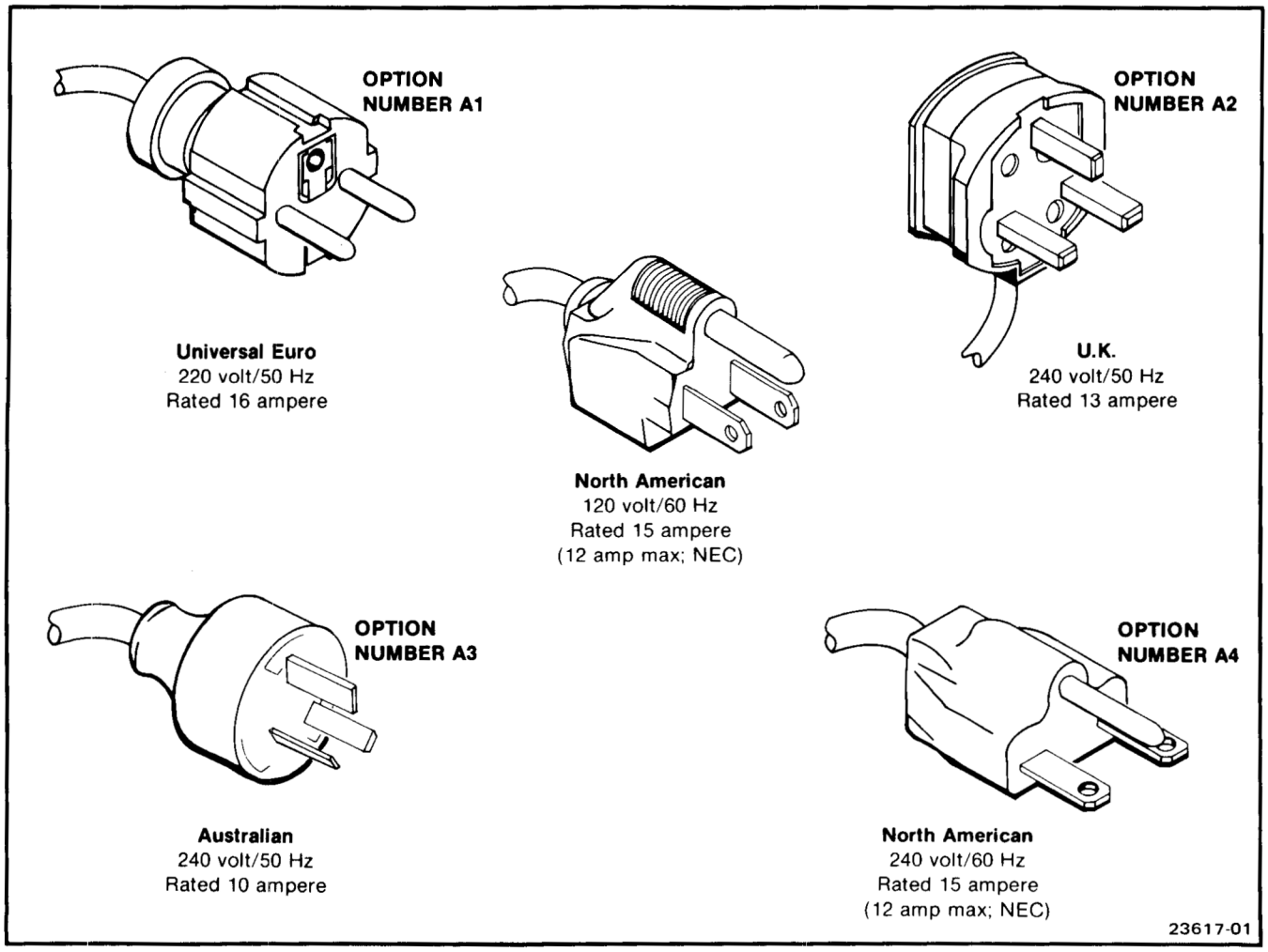
Use Care When Servicing With Power On

Dangerous voltages exist at several points in this product. To avoid personal injury, do not touch exposed connections or components while power is on.

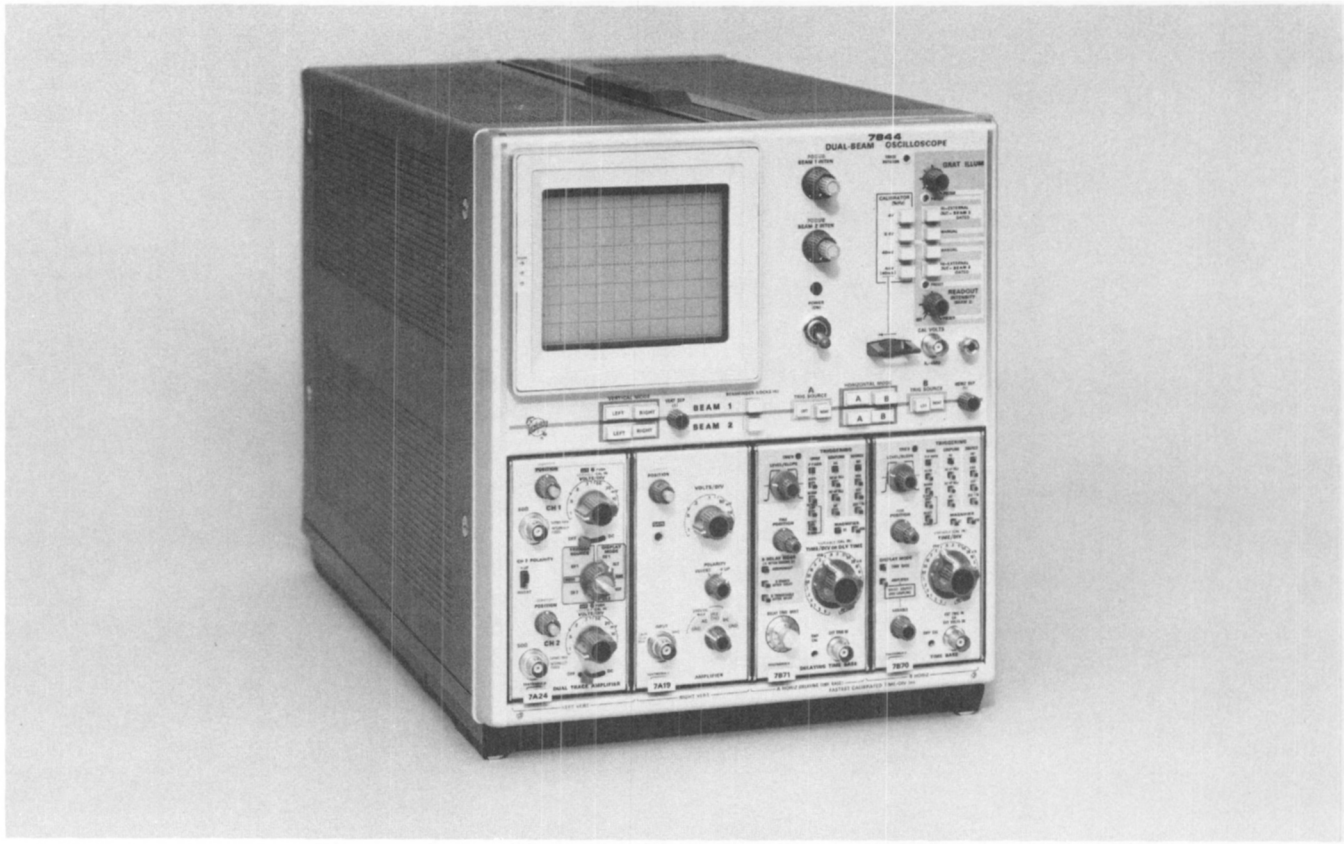
Disconnect power before removing protective panels, soldering, or replacing components.

Power Source

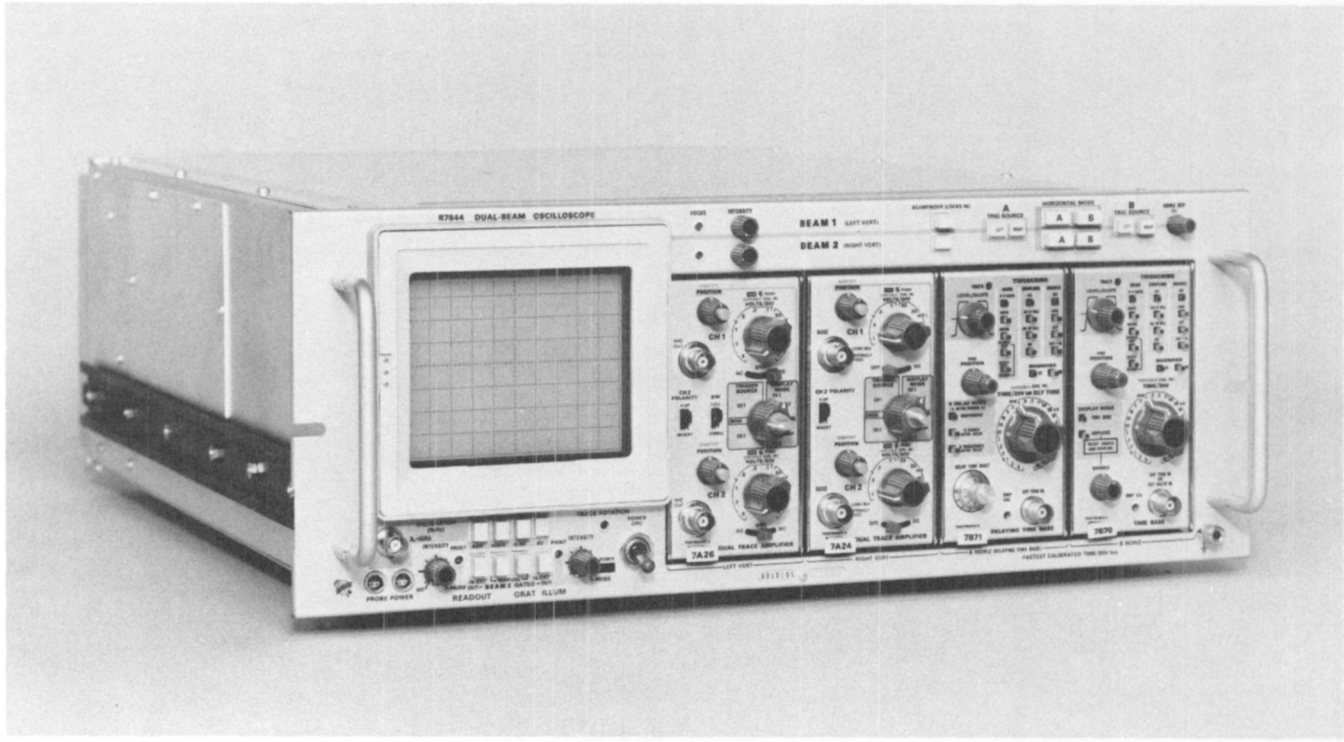
This product is intended to operate from a power source that does not apply more than 250 volts rms between the supply conductors or between either supply conductor and ground. A protective ground connection by way of the grounding conductor in the power cord is essential for safe operation.



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7844 DUAL-BEAM OSCILLOSCOPE



R7844 OPTION 21 DUAL-BEAM OSCILLOSCOPE

1675-12

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SPECIFICATION

INTRODUCTION

Information given in this section of the manual applies to both the 7844 and R7844 Dual-Beam Oscilloscopes, except as otherwise indicated. The R7844 is electrically identical to the 7844, but it is adapted for mounting in a standard 19-inch rack. Rackmounting Instructions for the R7844 are given in the 7844/R7844 Operators manual.

This instrument will meet the electrical characteristics listed in the Performance Requirement column of Table 1-1 following complete calibration as given in the Performance Check/Calibration section of this manual. The following electrical characteristics apply over an ambient temperature range of 0°C to +50°C, except as otherwise indicated. Warmup time for given accuracy is 20 minutes.

NOTE

Many of the measurement capabilities of this instrument are determined by the choice of plug-in units. The following characteristics apply to the 7844/R7844 Oscilloscope only. See the System Specification in this section (Tables 1-2 and 1-3) for specifications of the complete system.

Table 1-1
ELECTRICAL

Characteristic	Performance Requirement	Supplemental Information
	VERTICAL	
Deflection Factor	Compatible with all 7-series plug-in units	
Accuracy	1% or less difference between vertical compartments	
Low-Frequency Linearity	0.1 div or less compression or expansion of a center-screen, 2-div signal positioned anywhere vertically within the graticule area	
System Bandwidth	Varies with plug-in selected; see 7800-Series Oscilloscope Systems Specification	Refer to Table 1-2
Isolation Between Beam 1 and Beam 2		
All Vertical Modes	At least 100:1 from dc to 150 MHz and at least 30:1 from 150 MHz to 400 MHz	
Delay Line		Permits viewing the leading edge of an internally triggered signal. Delay Line not compatible with 7B50-series time-base units

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Table 1-1 (cont)

Characteristic	Performance Requirement		Supplemental Information
Vertical Display Modes	Plug-in compartment controlling vertical deflection of electron beam		
7844/R7844	BEAM 1	BEAM 2	Selected by front-panel VERTICAL MODE switch
	LEFT	LEFT	
	LEFT	RIGHT	
	RIGHT	LEFT	
	RIGHT	RIGHT	
7844/R7844 Option 21 only	LEFT	RIGHT	
Vertical Centering			Within 0.5 div of graticule center
Vertical Separation Control Range (deleted by Option 21)			Beam 1 trace can be positioned at least +4 and −4 div with respect to beam 2 trace
TRIGGERING			
Trigger Source			Selected by front-panel A TRIG SOURCE and B TRIG SOURCE switches
A HORIZ	LEFT VERT or RIGHT VERT compartment		
B HORIZ	LEFT VERT or RIGHT VERT compartment		
HORIZONTAL			
Deflection Factor	Compatible with all 7-series plug-in units		
Accuracy	1% or less difference between horizontal compartments		
Dc Linearity	.05 division or less at each graticule line after adjusting for no error at the second and tenth graticule lines		
Fastest Calibrated Sweep Rate	1 ns/div		
Horizontal Display Modes	Plug-in compartment controlling horizontal deflection of electron beam		Selected by front-panel HORIZONTAL MODE switches
	BEAM 1	BEAM 2	
	A	A	
	A	B	
	B	A	
	B	B	
Phase Shift Between Vertical and Horizontal Deflection Systems	2° or less from dc to at least 50 kHz		
Bandwidth (10 div reference)	Dc to at least 1 MHz		
Horizontal Centering			Within 0.5 div of graticule center

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Table 1-1 (cont)

Characteristic	Performance Requirement	Supplemental Information
Horizontal Separation Control Range	Beam 1 event can be positioned at least 0.25 div to the left, 0.25 div to the right, and 2 div total range with respect to Beam 2 event	
DISPLAY		
Crt Graticule		
Type	Internal	
Area	8 div vertical by 10 div horizontal Each div equals 1 cm	
PULSED modes		Selected by front-panel GRAT ILLUM controls
BEAM 2 GATED	The graticule illumination is triggered at the end of each sweep of beam 2	
EXTERNAL	The graticule is illuminated momentarily when an appropriate remote signal is applied to the rear-panel GRAT/READOUT SINGLE SHOT connector	
MANUAL	The graticule is illuminated momentarily when the MANUAL push button is pressed independently of other PULSED modes	
BEAMFINDER (BEAM 1)		Limits beam 1 display within the graticule area when actuated. The beam 1 intensity turns on independently of horizontal plug-in status
BEAMFINDER (BEAM 2)		Limits beam 2 display within the graticule area when actuated. The beam 2 intensity turns on independently of horizontal plug-in status
Crt Phosphor	P-31	P-11 available with Option 78
Minimum Photographic Writing Speed with Type 47 Polaroid Film (without film fogging)		After 5 minutes phosphor delay time
P-11 phosphor Tektronix with f1.2 Lens and 1:0.5 Object-to-Image Ratio (with 3000 ASA Polaroid Film) Film)		1.5 cm/ns
P-31 Phosphor		Writing speed for P-31 phosphor is approximately 1/2 the writing speed for P-11 phosphor in typical applications

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Table 1-1 (cont)

Characteristic	Performance Requirement	Supplemental Information
With Option 22 Writing Speed Enhancer		Writing speed of 3000 ASA Polaroid Film is approximately 3 times the specified writing speed
CALIBRATOR		
Waveshape	Square wave	
Polarity	Positive going with baseline near ground	
Source Impedance		450 Ω
Output Voltage		
Into 100 kΩ or Greater	4 mV, 40 mV, 0.4 V, 4 V	Selected by front-panel CALIBRATOR switch
Into 50 Ω	0.4 mV, 4 mV, 40 mV, 0.4 V	
Output Current		
7844	40 mA	Available through front-panel current loop when CALIBRATOR switch is set to 40 mA
R7844	40 mA	Available through CALIBRATOR output with optional bnc-to-Current Loop Adapter, Tektronix Part No. 012-0341-00. CALIBRATOR Switch must be set to the 4 V position for 40 mA output
Amplitude Accuracy (p-p voltage and current)	Within 1%	
Repetition Rate	1 kHz within 0.25%	
Duty Cycle	49.8% to 50.2%	
Risetime and Falltime	250 ns or less into 100 pF or less	
SIGNAL OUTPUTS		
A SAWTOOTH		
Source	Time-base unit in A HORIZ Compartment	
Polarity		Positive-going with base-line at 0 V within 1 V (into 1 mΩ)
Output Voltage		
Rate of Rise		
Into 50 Ω	50 mV/unit of time (selected by time-base time/div switch) within 15%—100 ns/div maximum	
Into 1 MΩ Paralled by 150 pF	1 V/unit of time (selected by time-base time/div switch) within 10%–1 μs/div maximum	
Output Resistance		Approximately 950 Ω

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Table 1-1 (cont)

Characteristic	Performance Requirement	Supplemental Information
B SAWTOOTH		
Source	Time-base unit in B HORIZ Compartment	
Polarity		Positive-going with baseline at 0 V within 1 V (into 1 MΩ)
Output Voltage		
Rate of Rise		
Into 50 Ω	50 mV/unit of time (selected by time-base time/div switch) within 15%—100 ns/div maximum	
Into 1 MΩ Paralleled by 150 pF	1 V/unit of time (selected by time-base time/div switch) within 10%–1 μs/div maximum	
Output Resistance		Approximately 950 Ω
A GATE		
Source	MAIN or DLY'D gates from time-base unit installed in the A HORIZ compartment	Selected by rear-panel switch
MAIN		Derived from the displayed sweep, gate is positive-going with baseline at 0 V within 0.1 V (into 1 MΩ)
DLY'D		Derived from the delay gate of those time-base units that furnish a delay gate (see plug-in unit specification) and is a positive level with base line at 0 V within 0.1 V (into 1 MΩ)—output is always positive when no plug-in is used or plug-in does not provide a delay gate
Output Voltage		
Input 50 Ω	0.5 V within 10%	
Into 1 MΩ	10 V within 10% (up to 1 μs/div)	
Risetime Into 50 Ω		5 ns or less
Output Resistance		Approximately 950 Ω
B GATE		
Source	MAIN or DLY'D gates from time-base unit installed in the B HORIZ compartment	Selected by rear-panel switch
MAIN		Derived from the displayed sweep, gate is positive-going with baseline at 0 V within 0.1 V (into 1 MΩ)

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Table 1-1 (cont)

Characteristic	Performance Requirement	Supplemental Information
B Gate (cont)		
DLY'D		Derived from the delay gate of those time-base units that furnish a delay gate (see plug-in unit specification) and is a positive level with baseline at 0 V within 0.1 V (into 1 MΩ)—output is always positive when no plugmin is used or plug-in does not provide a delay gate
Output Voltage		
Input 50 Ω	0.5 V within 10%	
Into 1 MΩ	10 V within 10% (up to 1 μs/div)	
Risetime Into 50 Ω		5 ns or less
Output Resistance		Approximately 950 Ω
BEAM 1 and 2 EXTERNAL Z-AXIS INPUT		
Sensitivity	2 V p-p provides trace modulation over full intensity range	Approximately 0 V input produces no intensity change
Polarity of Operation	Positive-going signal decreases trace intensity; negative-going signal increases trace intensity	
Intensity Circuit Pulse Performance (between rear-panel connector and crt)		
Low-Frequency Limit		dc
Risetime With Negative-Going Input and Falltime with Positive-Going Input		Approximately 15 ns
Propagation Delay		Approximately 30 ns
Input Resistance at DC		Approximately 500 Ω
Maximum Safe Input Voltage		15 V (dc + peak ac)
Maximum Repetition Rate		1 MHz
REMOTE CONNECTORS and SWITCHES		
CONTROL ILLUMINATION (for plug-in units only)	HIGH, LOW, OFF	The three-position switch is located on the left side-panel of the R7844 and on the rear panel of the 7844
SINGLE SWEEP RESET (rear panel)		Bnc connector; remote single-sweep reset (A and B HORIZ) with compatible time-base units

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Table 1-1 (cont)

Characteristic	Performance Requirement	Supplemental Information
SINGLE SWEEP RESET (cont)		
Signal Required		Switching from the high level (+50 V to +10 V; sink less than 40 μA) to the low level (+0.5 V to −5 V; sink less than 10 mA), in less than 1 ms, resets the sweep
Minimum Pulse Width		10 μs at 50% amplitude points
Maximum Safe Input		+50 V to −5 V
A SINGLE SWEEP READY (rear panel)		Bnc connector; remote ready indicator for A HORIZ time-base unit
Output Signal		Open when not ready; +5 V at 47 Ω source impedance when ready—output will light a No. 49 bulb
B SINGLE SWEEP READY (rear panel)		Bnc connector; remote ready indicator from B HORIZ time-base unit
Output Signal		Open when not ready; +5 V at 47 Ω source impedance when ready—output will light a No. 49 bulb
GRAT/READOUT SINGLE SHOT (rear panel)		
Signal Required		Bnc connector; switching to the low level (+1 to −5 V; sink less than 2 mA) from the high level (+10 V to +15 V; sink less than 300 μA), in less than 1 μs, initiates the Readout System to display one complete readout frame and the graticule illumination to be displayed for approximately 0.5 s
Maximum Open Circuit voltage		+15 V
Maximum Safe Input Voltage		+15 V, −5 V (dc + peak ac)
READOUT DISPLAY		
Mode (front panel)		
Free-run (not marked)	The alphanumeric readout is continuously displayed	Selected by front-panel READOUT INTENSITY control
PULSED		
BEAM, 2 GATED	The readout display is triggered at the end of each sweep of beam 2	
EXTERNAL	One readout frame is displayed when an appropriate remote signal is applied to the rear-panel GRAT/READOUT SINGLE SHOT connector	

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Table 1-1 (cont)

Characteristic	Performance Requirement	Supplemental Information
Mode (front panel) (cont)		
MANUAL	One readout frame is displayed when the MANUAL push button is pressed	
Mode (internal switch)		
Free-Run (FR)	The internal readout mode is dependent on the front-panel Readout Mode	
Beam 2 Gated	The readout display is triggered at the end of each sweep of beam 2. The internal Readout Mode Switch operates independently of the front-panel READOUT controls	
Character Height		0.25 div to 0.5 div (adjustable)
POWER SOURCE		
Line Voltage Range (ac, rms) switch		Selected by rear-panel Line Selector
115 V Nominal	90 to 132 V	
230 V Nominal	180 to 264 V	
Line Frequency		48 to 440 Hz
Maximum Power Consumption		235 W, 2.9 A at 60 Hz, 115 V line

SYSTEM ELECTRICAL SPECIFICATION

Your TEKTRONIX 7844/R7844 oscilloscope system provides exceptional flexibility in operation with a wide choice of general and special purpose plug-in units. The type number of a particular plug-in unit identifies its usage as follows:

The first digit (7) denotes the oscilloscope system for which the plug-in unit is designed (7000-series).

The second letter describes the purpose of the plug-in unit:

A—Amplifier unit
B—"Real time" time-base unit
C—Curve Tracer
D—Digital unit
L—Spectrum Analyzer
M—Miscellaneous
S—Sampling unit
T—Sampling time-base unit

The third and fourth digits of the plug-in type number are sequence numbers and do not carry any special connotation.

An "N" suffix letter added to the normal four-digit type number identifies a unit not equipped with the circuitry necessary to encode data for the 7000-series readout system.

Table 1-2 lists the vertical specifications that are system dependent. For more complete specifications on plug-in units for the 7000-Series Oscilloscope System, refer to the Tektronix Products catalog.

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Table 1-2
7844/R7844 OSCILLOSCOPE
SYSTEM VERTICAL SPECIFICATION

Amplifier Plug-In Unit	Probe	Bandwidth (MHz)	Risetime (ns)	Accuracy[a] EXT CAL 0°C to 50°C (%)	Accuracy[a] INT CAL 0°C to 50°C (%)
7A11	Integral	200	1.8	2	3
7A13	None	105	3.5	1.5	2.5
	P6053B				
	P6055	65	5.4		
7A15A	None	80	4.4	2	3
	P6053B			3	4
7A16A	None	200[b]	2.0	2	3
	P6053B			3	4
7A18	None	75	4.7	2	3
	P6053B			3	4
7A19	None	400[b]	0.9[b]	3	4
	P6056			4	5
	P6057				
	P6201	375[b]	1.0[b]	4	5
7A19 (10 mV/Div only)	None	325	1.1	3	4
	P6056				
	P6057			4	5
	P6201	300	1.2	4	5
7A22	None or Any	1 MHz (within 10%)	350 (within 9%)	2	3
7A24	None	300[b]	1.2[b]	3	4
	P6056			4	5
	P6057				
	P6201	275[b]	1.3[b]	4	5
7A26	None	180[b]	2.2	2	3
	P6053B			3	4
7A29	P6056	400[b]	0.9[b]	4	5
	P6057				

[a] Deflection Factor accuracy is checked as follows:
EXT CAL 0°C to 50°C—Plug-in gain set at a temperature within 10°C of operating temperature, using an external calibrator with accuracy within 0.25%.
INT CAL 0°C to 50°C—Plug-in gain set using the oscilloscope calibrator (within 10°C of the operating temperature) in a temperature range between 0°C and +50°C.

[b] System temperature range from 0°C to +35°C; derate 10% for 0°C to +50°C temperature range.

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Table 1-3 lists the horizontal specifications that are system dependent. For more complete specifications on plug-in units for the 7000-Series Oscilloscope System, refer to the Tektronix Products Catalog.

Table 1-3
7844/R7844 OSCILLOSCOPE
SYSTEM HORIZONTAL SPECIFICATION

Time Base Unit	Performance Feature	Maximum Calibrated Sweep Rate	Triggering Frequency Range
7B80	Ext Amplifier	1 ns/div	Dc to 400 MHz
7B85	Delaying Sweep	1 ns/div	Dc to 400 MHz
7B92A	Display Switching	.5 ns/div	Dc to 500 MHz

Table 1-4
SPECIAL PURPOSE AND SAMPLING PLUG-IN UNITS

Plug-In	Performance Feature
7CT1N	Low-Power Semiconductor Curve Tracer
7D11	Digital Delay Unit
7D12	A/D Converter; plug-in Modules provide flexible measurement capability
7D13	Measures Temperature, Voltage, Current and Resistance
7K11	CATV Preamplifier
7L12	100 kHz to 1.8 GHz Spectrum Analyzer
7L13	1 kHz to 1.8 GHz Spectrum Analyzer
7M13	Readout Access Unit
7S11	Accepts Plug-In Sampling Heads
7S12	Time Domain Reflectometer and Sampling Applications
7S14	Dual-Trace Delayed Sweep Sampler
7T11	Random or Sequential; Equivalent or Real-Time Sampling

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Table 1-5
ENVIRONMENTAL

Characteristic	Information
	NOTE *This instrument will meet the electrical characteristics given in the Performance Requirement column of Table 1-1 over the following environmental limits.*
Temperature Range Operating	0°C to +50°C
Non-Operating	−55°C to +75°C
Altitude Operating	15,000 feet
Non-Operating	Test limit 50,000 feet
Electro-magnetic Interference (emi) in accordance with MIL-STD-461A as tested in MIL-STD-462 (when equipped with Option 03)	*NOTE* *Any unused plug-in compartments must be covered with a blank plug-in panel (emi shielded) in order to meet emi specifications. See Options section for additional information.*
Radiated Interference	Interference radiated from the instrument under test within the given limits from 150 kHz to 100 MHz
Conducted Interference	Interference conducted out of the instrument under test through the power cord within the given limits from 150 kHz to 25 MHz
Transportation (packaged instrument, without plug-ins)	Qualifies under National Safe Transit Committee test procedure 1A, Category 11

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Table 1-6
PHYSICAL

Characteristic	Information	
Ventilation	Safe operating temperature maintained by dc fan. Automatic resetting thermal cutout protects instrument from overheating	
Warm-up Time	20 minutes for rated accuracy	
Finish	Anodized front panel. 7844-blue vinyl painted aluminum cabinet, R7844-lacquered aluminum cabinet	
Overall Dimensions (measured at maximum points)	7844	R7844
Height	13.6 inch	7.0 inch
	34.5 cm	17.8 cm
Width	12.0 inch	19.0 inch
	30.5 cm	48.3 cm
Length	23.8 inch	22.8 inch
	60.5 cm	57.9 cm
Net Weight (Instrument Only)	36 lbs	33 lbs
	16.3 kg	15.0 kg

NOTE

See Fig. 1-1 for 7844 dimensional drawing. Refer to Fig. 1-2 for the R7844 dimensional drawing.

STANDARD ACCESSORIES

Standard accessories supplied with the 7844 and R7844 are given in the Replaceable Mechanical Parts list in this manual. For optional accessories available for use with this instrument, see the Tektronix Products Catalog.

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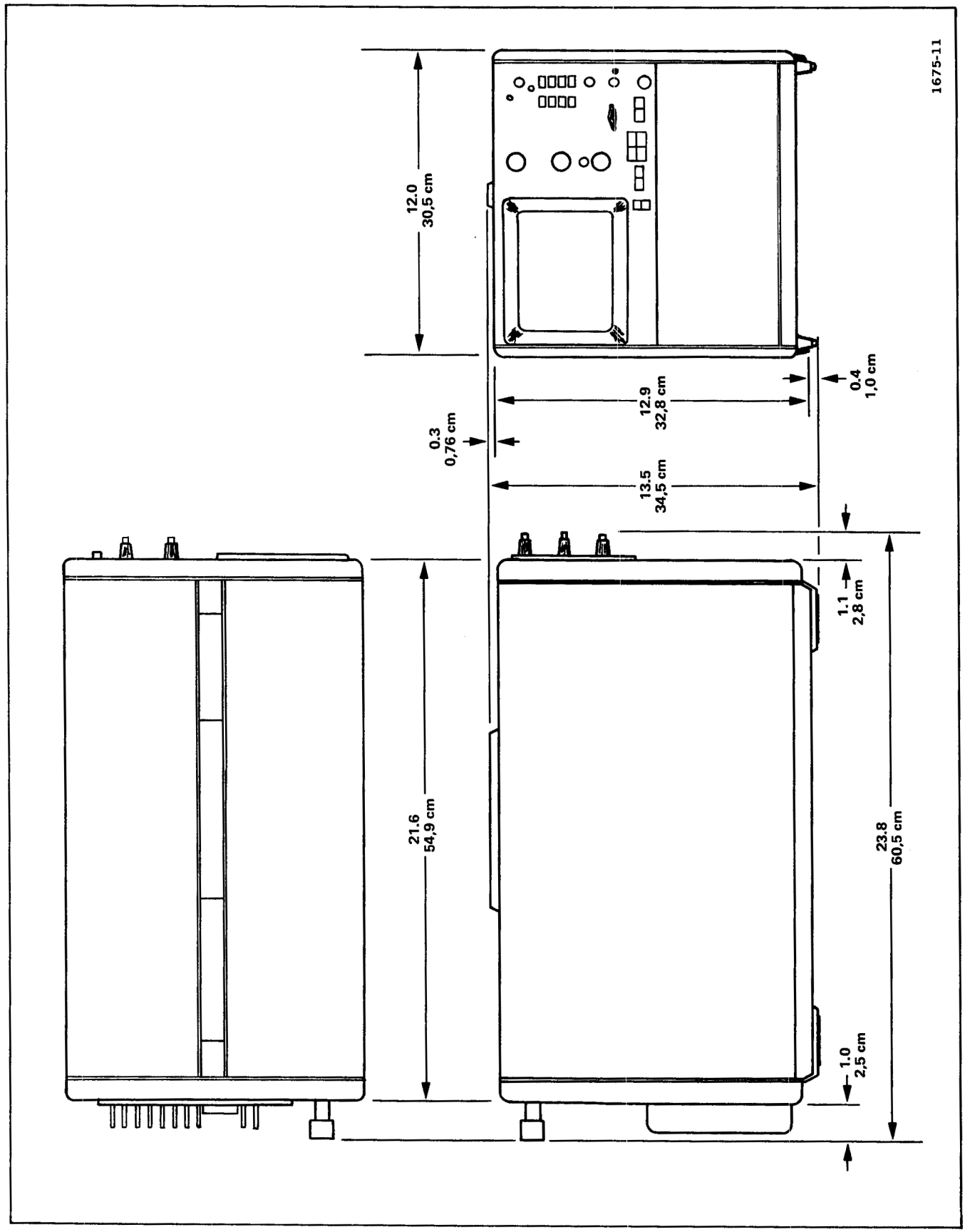


Fig. 1-1. 7844 dimensional drawing.

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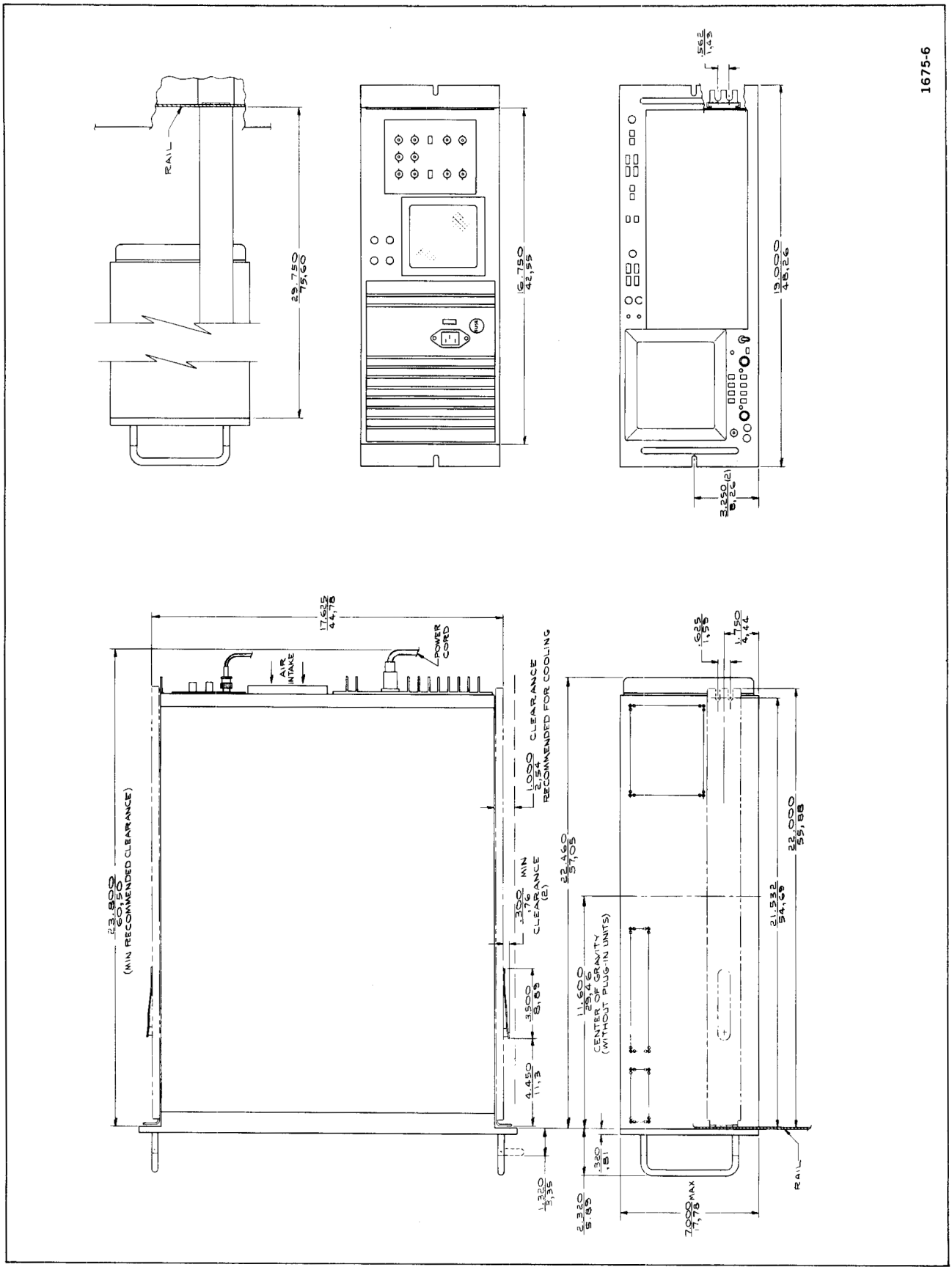


Fig. 1-2. R7844 dimensional drawing.

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OPERATING INFORMATION

FEATURES

The TEKTRONIX 7844/R7844 is a solid-state, wide bandwidth, dual-beam oscilloscope. The instrument accepts TEKTRONIX 7000-Series plug-in units to form a complete measurement system. The flexibility of the plug-in feature and variety of plug-in units available allow the system to be used for many different measurement applications.

The 7844/R7844 provides separate vertical and horizontal deflection systems in addition to FOCUS, INTENSITY, and BEAMFINDER functions for each beam. The plug-in unit in either vertical compartment can be selected to provide vertical deflection for either beam. The plug-in units in either horizontal compartment may be selected to provide horizontal deflection for either beam.

The 7844/R7844 features regulated dc power supplies to ensure that the performance is not affected by variations in line voltage and frequency, or by changes in load due to varying power requirements of the plug-in units. The 7844/R7844 operates from a 115 V or 230 V (50 Hz to 400 Hz) nominal line source.

Other features include a dual-gun full-overlap crt with a graticule area of 8 × 10 centimeters. The instrument also provides a crt display of alphanumeric information encoded by the plug-in units. The READOUT display indicates plug-in unit status such as deflection factor, sweep rate, and other plug-in dependent parameters.

The Option 21 instrument is basically the same as the standard 7844/R7844 except that the vertical deflection system is dedicated. The amplifier unit in the LEFT VERT compartment controls the vertical deflection of beam 1 and the amplifier unit in the RIGHT VERT compartment controls the vertical deflection of beam 2. The VERTICAL MODE switch and VERT SEP control have been deleted. Refer to the Options section for details.

CONTROLS AND CONNECTORS

Figures 2-1 and 2-2 show the front and rear panels. A brief description of each control and connector is given. Refer to Detailed Operating Information in the 7844/R7844 Operators manual for additional operating information.

Safety Information

This service manual contains warning and caution information, which the user must follow to ensure safe operation of the instrument. Warning information is intended to protect the operator and Caution information is intended to protect the instrument.

WARNING

This instrument is intended to be operated from a single-phase earth-referenced power source having one current-carrying conductor (the Neutral Conductor) near earth potential. Operation from power sources where both current-carrying conductors are live with respect to earth (such as phase-to-phase on a three-wire system) is not recommended, since only the Line Conductor has over-current (fuse) protection within the instrument.

This instrument has a three-wire power cord with a three-terminal polarized plug for connection to the power source and safety-earth. The safety-earth terminal of the plug is directly connected to the instrument frame. For electric-shock protection, insert this plug only in a mating outlet with a safety-earth contact or otherwise connect the frame to a safety-earth system. The color coding of the cord conductors is in accordance with recognized standards.

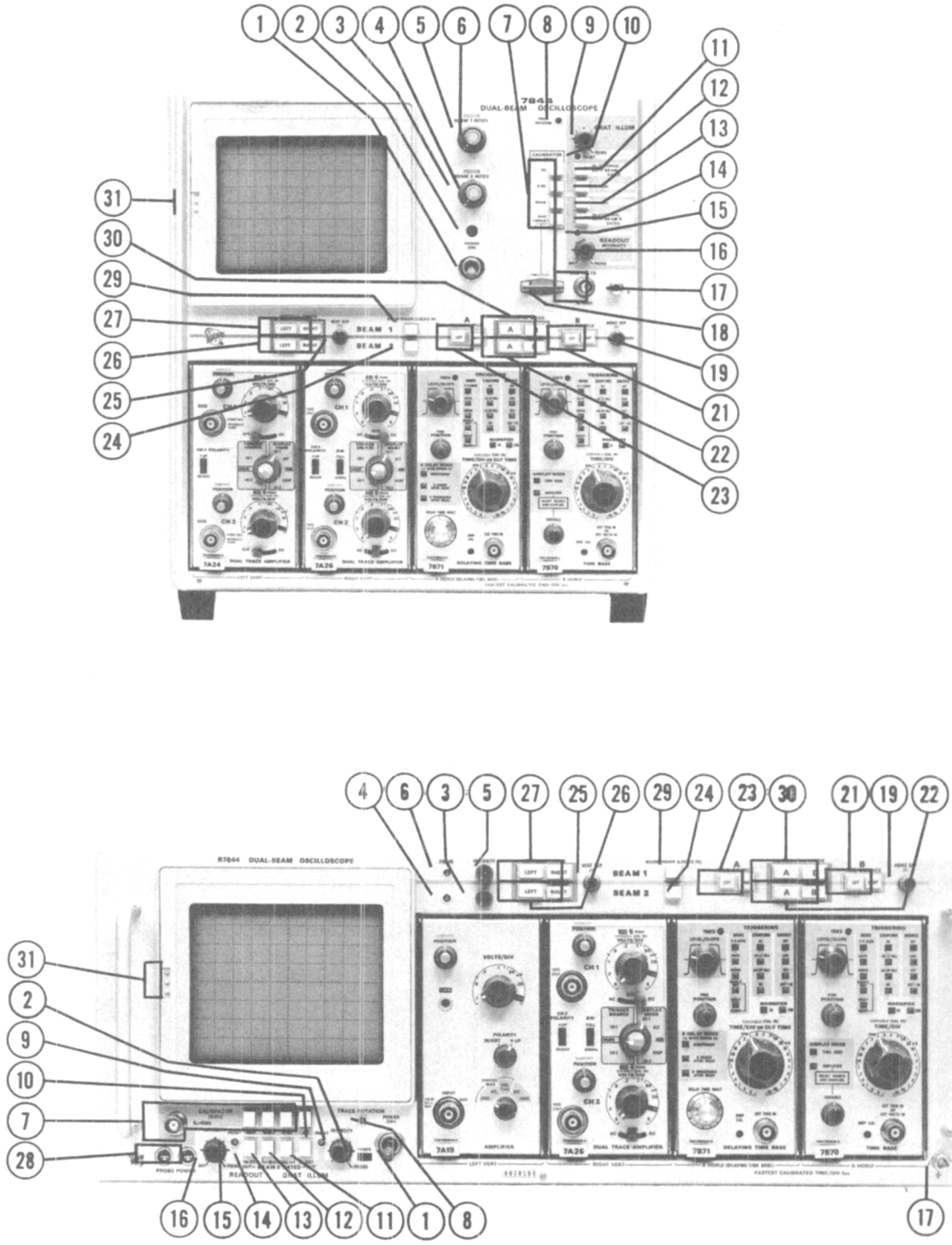
Power Cord Conductor Identification

Conductor	Color	Alternate Color
Ungrounded (Line)	Brown	Black
Grounded (Neutral)	Blue	White
Grounding (Earthing)	Green-Yellow	Green-Yellow

Operating Voltage

The 7844/R7844 has a VOLTAGE SELECTOR switch that allows selection of either a 115 V or 230 V nominal line voltage source. When changing the Voltage Selector switch position, disconnect the power cord and use a small screwdriver to move the Voltage Selector switch to the desired range.

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Fig. 2-1. Front-panel controls and connectors.

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CAUTION

Damage to this instrument may occur if the Voltage Selector switch is set to an incorrect position for the line voltage applied.

Voltage Selector Switch Position	*Regulating Range*
115 V	*90 to 132 volts*
230 V	*180 to 264 volts*

FRONT-PANEL CONTROLS, CONNECTORS, AND INDICATORS

(1) POWER (ON) Switch—Applies power to instrument.

(2) POWER Indicator—Lights when power is on.

(3) BEAM 2 INTENSITY Control—Controls brightness of beam 2 display.

(4) BEAM 2 FOCUS Control—Provides optimum definition of beam 2 display.

(5) BEAM 1 INTENSITY Control—Controls brightness of beam 1 display.

(6) BEAM 1 FOCUS Control—Provides optimum definition of beam 1 display.

(7) CALIBRATOR Connector—Provides 1 kHz calibrated square-wave voltages.

(8) TRACE ROTATION Adjustment—Aligns beam 1 and beam 2 traces with the graticule lines.

(9) GRAT ILLUM Control—Varies level of graticule illumination or activates PULSED GRAT ILLUM functions.

(10) GRAT ILLUM PRESET Adjustment (PULSED operation only)—Sets level of illumination for GRAT ILLUM PULSED operation.

(11) GRAT ILLUM EXT/BEAM 2 GATED Control (PULSED operation only)—When in EXT (push button IN) a signal to the rear-panel GRAT/READOUT SINGLE SHOT connector provides momentary graticule illumination. When in BEAM 2 GATED (push button OUT) momentary graticule illumination is provided at the end of beam 2 sweep.

(12) GRAT ILLUM MANUAL Control (PULSED operation only)—Provides momentary graticule illumination when push button is pressed.

(13) READOUT MANUAL Control[1] (PULSED operation only)—One readout frame is displayed when push button is pressed.

(14) READOUT EXT/BEAM 2 GATED[1] (PULSED operation only) Control—When in EXT (push button IN), a signal to the rear-panel GRAT/READOUT SINGLE SHOT connector provides one readout frame. When in BEAM 2 GATED (push button OUT) one readout frame is displayed at the end of beam 2 sweep.

(15) READOUT PRESET Adjustment (PULSED operation only)—Sets PULSED readout intensity.

(16) READOUT INTENSITY Control[1]—Activates and controls brightness of the alphanumeric display or activates the PULSED readout functions.

(17) Ground Connector (not marked)—Binding post to establish common ground between associated equipment.

(18) Current Loop (not marked)
7844—Provides 40 mA square-wave current (1 kHz) when the CALIBRATOR switch is set to 40 mA position.

R7844—Provides 40 mA square-wave current (1 kHz) when optional current loop adapter is connected to the CALIBRATOR connector and the CALIBRATOR switch is set to 4 V position.

(19) HORIZ SEP (1) Control—Horizontally positions beam 1 display.

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[1]**Refer to Instrument Options section for instruments equipped with the Writing Speed Enhancer (Option 22).**

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(20) ENHANCER PRESET Adjustment[1] (Option 22 only; not shown).

(21) B TRIG SOURCE Control—Selects LEFT VERT or RIGHT VERT compartment as the source of internal trigger signal for B HORIZ compartment.

(22) BEAM 2 HORIZONTAL MODE Control—A HORIZ or B HORIZ compartments can be selected to control beam 2.

(23) A TRIG SOURCE Control—Select LEFT VERT or RIGHT VERT compartment as the source of internal trigger signal for the A HORIZ compartment.

(24) BEAM 2 BEAMFINDER (LOCKS IN) Control—Intensifies and locates beam 2 display.

(25) VERT SEP (1) Control (deleted with Option 21)—Provides positioning of beam 1 when both beam 1 and beam 2 are being controlled by the same vertical compartment.

(26) BEAM 2 VERTICAL MODE Control (deleted with Option 21)—Allows beam 2 to be controlled by either the LEFT VERT or RIGHT VERT compartments.

(27) BEAM 1 VERTICAL MODE Control (deleted with Option 21)—Allows beam 1 to be controlled by either the LEFT VERT or RIGHT VERT compartments.

(28) PROBE POWER Connectors (two)—Provide power for active probe systems (located on rear panel of 7844).

(29) BEAM 1 BEAMFINDER (LOCKS IN) Control—Intensifies and locates beam 1 display.

(30) BEAM 1 HORIZONTAL MODE Control—A HORIZ or B HORIZ compartments can be selected to control beam 1.

(31) Camera Power Connector (not marked)—Three-pin connector provides power for camera operation and receives single-sweep reset signal.

[1]**Refer to Instrument Options section for instruments equipped with the Writing Speed Enhancer (Option 22).**

REAR-PANEL CONTROLS AND CONNECTORS

(1) MAIN and DLY'D (A GATE) Switch—Selects between main and delay gates from time base unit in A HORIZ compartment.

(2) SINGLE SWEEP (A READY) Connector—Output for single-sweep ready signal from time-base unit in A HORIZ compartment.

(3) Z AXIS INPUT 1 Connector—Input for intensity modulation of BEAM 1.

(4) GRAT/READOUT SINGLE SHOT Connector—Input for single shot graticule illumination and single frame readout.

(5) Z AXIS INPUT 2 Connector—Input for intensity modulation of BEAM 2.

(6) SINGLE SWEEP RESET Connector—Input to externally reset single-sweep circuits in A HORIZ and B HORIZ comparments.

(7) SINGLE SWEEP (B READY) Connector—Output for single-sweep ready signal from time-base unit in B HORIZ compartment.

(8) A GATE Connector—Positive-going output for gate signal from the time-base unit in the A HORIz compartment.

(9) MAIN and DLY'D (B GATE) Switch—Selects between main and delay gates from time base unit in B HORIZ compartment.

(10) B GATE Connector—Positive-going output for gate signal from the time-base unit in the B HORIZ compartment.

(11) B SAWTOOTH Connector—Positive-going sawtooth from B time base.

(12) A SAWTOOTH Connector—Positive-going sawtooth from A time base.

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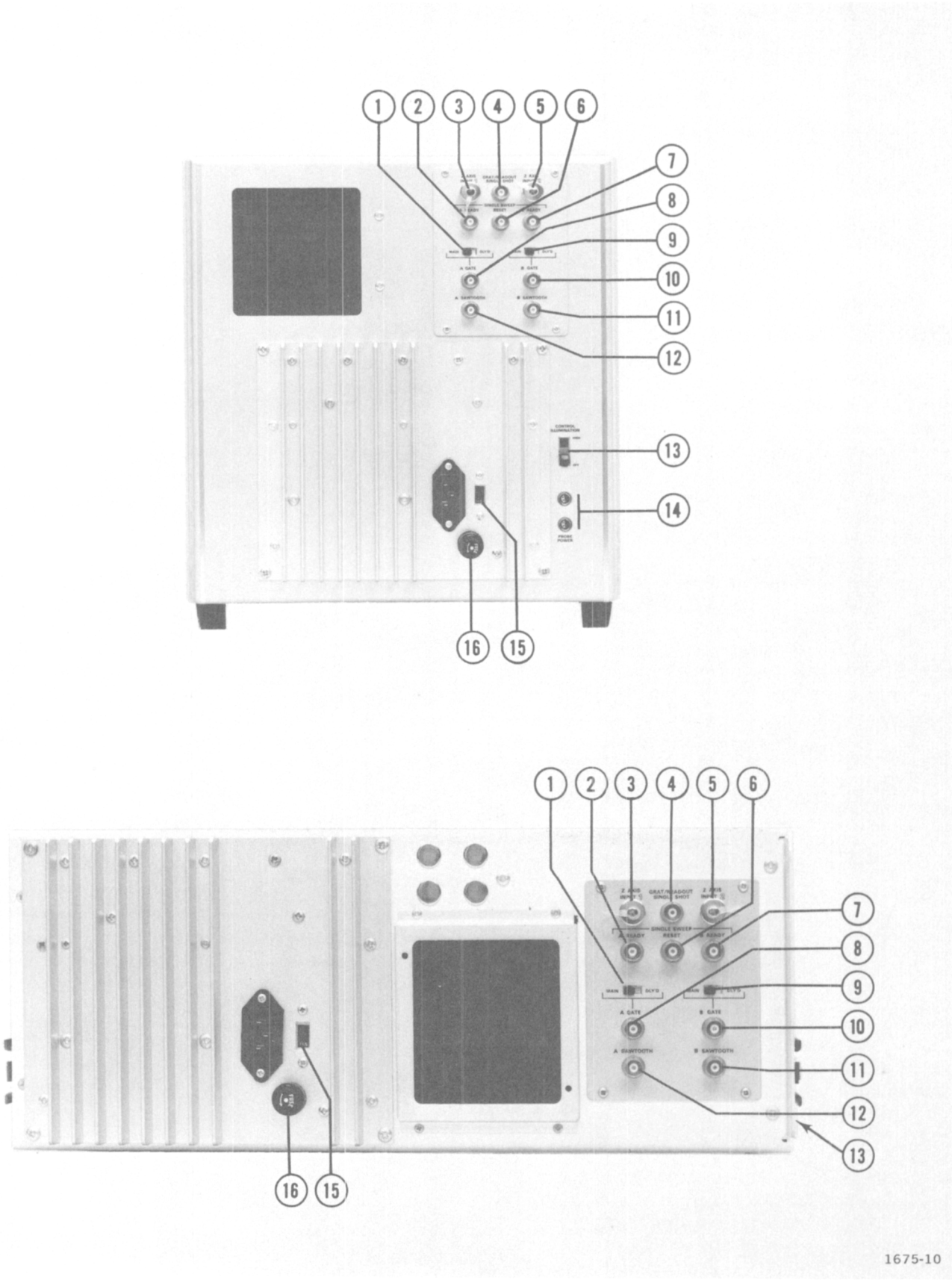


Fig. 2-2. Rear-panel controls and connectors.

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(13) CONTROL ILLUMINATION Switch—Sets illumination level of push-button switches on plug-in units (located on left side panel of R7844).

(14) PROBE POWER Connectors (two)—Provide power for active probe systems (located on front panel of R7844).

(15) Voltage Selector Switch (not labeled)—Selects from either 115-volt or 230 volt nominal line source.

(16) Line Fuse—4 A FAST BLOW.

Operating Temperature

The 7844/R7844 can be operated where the ambient air temperature is between 0° C and +50° C. After storage at temperatures beyond the operating limits, allow the chassis temperature to come within the operating limits before power is applied.

The 7844 is cooled by air drawn in through holes in the side and bottom panels and blown out through the fan exhaust. To ensure proper cooling of the 7844, maintain the clearance provided by the feet on the bottom and allow 2 inches clearance on the top, sides, and rear (more clearance, if possible). The R7844 is cooled by air drawn in through the air filter on the rear panel and blown out through holes located on the side panels. To ensure proper cooling of the R7844, refer to the dimensional drawing in Section 1 of this manual (Fig. 1-2).

A thermal cutout disconnects power from this instrument if the internal temperature exceeds a safe operating level. Power is automatically restored when the temperature returns to a safe level.

Rackmounting

Instructions and dimensional drawings for rackmounting the R7844 are given in the Operators Manual.

WARNING

During rackmount installation, interchanging the left and right slide-out track assemblies defeats the extension stop (safety latch) feature of the tracks. Equipment could, when extended, come out of the slides and fall from the rack, possibly causing personal injury and equipment damage.

When mounting the supplied slide-out tracks, inspect both assemblies to find the LH (left hand) and RH (right hand) designations to determine correct placement. Install the LH assembly to your left side as you face the front of the rack and install the RH assembly to your right side. Refer to the rackmounting instructions in this manual for complete information.

Operating Position

A bail-type stand is mounted on the bottom of the 7844. This stand permits the instrument to be tilted up approximately 10° for more convenient crt viewing.

PLUG-IN UNITS

The 7844/R7844 accepts up to four TEKTRONIX 7000-Series plug-in units. This feature allows selection of bandwidth, sensitivity, display mode, etc., and provides for future expansion of the system.

The overall capabilities of the system are determined mainly by the characteristics of the plug-ins selected. Some typical combinations are given under Applications in the 7844/R7844 Operator's manual. For information on other plug-in units, refer to the current Tektronix catalog.

Installation of Plug-In Units

Plug-in units cannot be installed or removed without turning the instrument power off. To install a plug-in unit into a compartment, align the slots in the top and bottom of the plug-in unit with the associated guide rails in the plug-in compartment. Insert the plug-in unit into the compartment until it locks into place. To remove a plug-in unit, pull the release latch on the plug-in unit to disengage it. To meet emi specifications of instruments equipped with Option 03, all unused plug-in compartments should be covered with an emi-shielded, blank plug-in panel, Tektronix Part No. 016-0155-00.

The 7844/R7844 calibration procedure given in this manual normalizes the vertical and horizontal gains. This allows plug-in units to be interchanged between plug-in compartments without recalibration. The basic calibration of the plug-in units should be checked when installed to verify their accuracy (refer to plug-in operating instructions).

REPACKAGING FOR SHIPMENT

If the Tektronix instrument is to be shipped to a Tektronix Service Center for service or repair, attach a tag showing: owner (with address) and the name of an individual at your firm that can be contacted. Include complete instrument serial number and a description of the service required.

Save and re-use the package in which your instrument was shipped. If the original packaging is unfit for use or not available, repackage the instrument as follows:

Surround the instrument with polyethylene sheeting to protect the finish of the instrument. Obtain a carton of corrugated cardboard of the correct carton strength and having inside dimensions of no less than six inches more than the instrument dimensions. Cushion the instrument by tightly packing three inches of dunnage or urethane foam between carton and instrument, on all sides. Seal carton with shipping tape or industrial stapler.

The carton test strength for your instrument is 375 pounds.

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THEORY OF OPERATION

INTRODUCTION

This section of the manual decribes the circuitry used in the 7844/R7844 Oscilloscope. The description begins with a discussion of the instrument, using the block diagram shown in the Diagrams section at the back of this manual. Next, each circuit is described in detail with supporting illustrations, when appropriate, to show the relationship between the stages in each major circuit. Detailed schematics of each circuit are located in the Diagrams section. Refer to these schematics throughout the following circuit description for specific electrical values and relationships.

BLOCK DIAGRAM

The following discussion is provided to aid in understanding the overall concept of the 7844/R7844 before the individual circuits are discussed in detail. A basic block diagram of the 7844/R7844 is shown in the Diagrams section. Only the basic interconnections between the individual blocks are shown on this diagram. Numbers on blocks refer to major circuits within the instrument. The number on each block refers to the complete circuit diagram located at the rear of the manual.

Description

Vertical signals to be displayed on the cathode ray tube (crt) are applied to the Vertical Interface circuits from both vertical plug-in compartments. The VERTICAL MODE switch determines whether the signals from the LEFT VERT or RIGHT VERT compartments are displayed by beam 1 or beam 2. The selected vertical signals are amplified by the Vertical Amplifier circuits to bring them to the level necessary to drive the vertical deflection plates of the crt. The Beam 2 Vertical Amplifier circuit also includes an input from the Readout System to produce the vertical portion of the alphanumeric readout display.

Horizontal signals for display on the crt are connected to the Horizontal Interface circuits from both horizontal plug-in compartments. The HORIZONTAL MODE switch determines whether the signals from the A HORIZ or B HORIZ units are displayed by beam 1 or beam 2. The selected horizontal signals are amplified by the Horizontal Amplifier circuits to provide horizontal deflection for the crt. The Beam 2 Horizontal Amplifier circuit also accepts an input signal from the Readout System to produce the horizontal portion of the alphanumeric readout display.

The Readout System provides alphanumeric display of information encoded by the plug-in units. The readout display is written on the crt by beam 2 on a time-shared basis with the analog waveform display. The MODE switch circuits determine which plug-in units display readout information. The Readout and Grat Illum Control circuits contain the controls necessary for the operation of the pulsed readout and pulsed graticule illumination functions.

The internal trigger signals from the vertical plug-in units are connected to the Trigger Selector circuits. The Mode Switch and Trigger Selector circuits direct trigger signals from the LEFT VERT or RIGHT VERT units to the A HORIZ or B HORIZ units.

The Logic circuit develops control signals for use in other circuits within this instrument and the plug-in units. These control signals automatically determine the correct instrument operation in relation to the plug-in units, plug-in unit control settings, and 7844/R7844 control settings.

The CRT circuit contains the control circuits necessary for operation of the crt. The Z-Axis Amplifiers for beams 1 and 2 provide the drive signal to control the intensity level of the crt display.

The Calibrator circuit produces a 1 kHz square-wave signal that can be used to check the calibration of this instrument and the compensation of probes. The calibrator signal is available as a voltage at the CALIBRATOR connector or as a current through the 40 mA current loop (optional current loop adapter necessary for the R7844).

The Signals-Out circuits process signals from the plug-in units for rear-panel output. Input signals are coupled to the Signals-Out circuits for use by the 7844/R7844 or the plug-in units.

The Converter/Rectifiers and Low-Voltage Regulator circuits provide the power necessary to operate this instru-

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ment. These voltages are connected to all circuits within the instrument. The High-Voltage Power Supply provides accelerating potential for the crt.

DETAILED CIRCUIT OPERATION

This section provides a description of the electrical operation and relationships of the circuits in the 7844/R7844. Circuits commonly used in the electronics industry are not described in detail. If more information is desired on these commonly used circuits, refer to the following textbooks:

Gordon V. Deboo, *Integrated Circuits and Semiconductor Devices*, McGraw-Hill, New York, 1971.

Jacob Millman and Herbert Taub, *Pulse Digital and Switching Waveforms*, McGraw-Hill, New York, 1965.

Albert Paul Malvino, *Transistor Circuit Approximations*, McGraw-Hill, New York, 1973.

The following circuit analysis is written with supporting illustrations that give the names of the individual stages within major circuits and show how they are connected together to form the major circuit. These illustrations also show the inputs and outputs for each circuit and the relationship of the front-panel controls to the individual stages. The detailed circuit diagrams from which the illustrations are derived are shown in the Diagrams section.

Logic Fundamentals

Digital logic techniques are used to perform many functions within this instrument. The function and operation of the logic circuits are described using logic symbology and terminology. This portion of the manual is provided to aid in the understanding of these symbols and logic concepts, not a comprehensive discussion of the subject. For further information on binary number systems and the associated Boolean algebra concepts, the derivation of logic functions, or a more detailed analysis of digital logic, refer to the following textbooks:

Robert C. Baron and Albert T. Piccirilli, *Digital Logic and Computer Operation*, McGraw-Hill, New York, 1967.

Thomas C. Bartee, *Digital Computer Fundamentals*, McGraw-Hill, New York, 1966.

Yaohan Chu, *Digital Computer Design Fundamentals*, McGraw-Hill, New York, 1962.

Joseph Millman and Herbert Taub, *Pulse, Digital, and Switching Waveforms*, McGraw-Hill, New York, Chapters 9—11, 1965.

Symbols

The operation of circuits in this instrument that use digital techniques is described using the graphic symbols set forth in military standard MIL-STD-806B. Any deviations from the standard symbology, or devices not defined by the standard are described in the circuit description for the applicable device.

NOTE

Logic symbols used on the diagrams depict the logic function as used in this instrument and may differ from the manufacturer's data.

Logic Polarity

All logic functions are described using the positive logic convention. Positive logic is a system of notation where the more positive of two levels (HI) is called the true or 1-state; the more negative level (LO) is called the false or 0-state. The HI-LO method of notation is used in this logic description. The specific voltages that constitute a HI or LO state vary between individual devices. Wherever possible, the input and output lines are named to indicate the function that they perform when at the HI (true) state.

Non-Digital Devices

Not all of the integrated circuit devices in this instrument are digital logic devices. The function of non-digital devices is described individually, using operating waveforms or other techniques to illustrate their function.

Calibrator and Pulsed Switching ◇1

The Calibrator circuit provides a 40 mA current output at the front-panel 40 mA current loop (optional current loop adapter required for R7844, 40 mA output) and voltage outputs in calibrated steps from 4 mV to 4 V at the Calibrator output connector. Readout and graticule illumination control circuits are also shown on diagram 1. However, the readout control circuitry is discussed in conjunction with the Readout System; see the Readout Control discussion in this section (diagrams 1 and 17).

Calibrator

Transistors Q902 and Q908 compose a 1 kHz, square-wave oscillator. Oscillation occurs as follows: when Q902 is conducting, Q908 is off. The current through Q902 holds the base of Q908 low while the collector is positive, which produces the positive portion of the square wave. At the same time, C902 begins to charge toward −50 V through R909. The emitter of Q908 starts to go negative as C902 charges toward −50 V. When the emitter of Q908 reaches approxi-

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mately 0.6 V more negative than the level at its base, Q908 becomes forward biased and its emitter rapidly rises positive. Since C902 cannot change its charge instantaneously, the sudden change in voltage at the emitter of Q908 reverse biases Q902 by pulling its emitter positive. The current through Q908 produces a voltage drop at its collector to produce the negative portion of the square wave.

When Q902 is off, Q908 is conducting. Since Q902 is reverse biased, C902 can begin to discharge through R902. The emitter level of Q902 follows the discharge of C902 until it reaches approximately −15.6 V. Then Q902 becomes forward biased and its collector drops negative. Consequently, Q908 is reverse biased, which interrupts the current through Q908 and its collector goes positive again to complete the square wave. Again, C902 begins to charge through R902 to start the second cycle. The signal produced at the collector of Q908 is a 1 kHz square wave. The 1 kHz adjustment, R904, sets the calibrator for a 1 kHz square-wave output.

Transistor Q910 is switched on and off by the square-wave signal produced at the collector of Q908. When Q910 is on, current flows through R912, R913, and Q910 to ground. When Q910 is off, current flows into the voltage divider network R918, R920, R924, R928, R926, and R930 to provide the 4 V, 0.4 V, 40 mV and 4 mV Calibrator output voltages (into a high-impedance load). The 0.4 V adjustment, R915, is set in the 0.4 V position of the CALIBRATOR switch to provide accurate calibrator output voltages at the output connector, J995. With R915 accurately set, 8 mA flows through R918 and the current loop when the CALIBRATOR switch is in the 40 mA position. The current loop is a five-turn current transformer, so the effective current applied to a current probe is 40 mA. The R7844 requires an optional current loop adapter and the CALIBRATOR switch (S920) must be set to the 4 V position for a 40 mA Calibrator output.

Graticule Illumination

Resistor R960 (GRAT ILLUM) determines the brightness of the graticule lights (except when in the PULSED position) by controlling the output of the graticule light supply. R958 (GRAT ILLUM PRESET) determines the brightness of the graticule lights when the GRAT ILLUM control is set to PULSED. In the PULSED mode, the graticule lights are gated on for approximately 0.5 second. A programmable unijunction transistor (Q944), in conjunction with Q954 generates the pulse that turns the graticule lights on. A negative signal (from the MANUAL push button, the Beam 2 Gate, or from an external input) will cause Q944 to conduct and start discharging C954. At this time, Q954 turns off, which allows R958 to control the output of the graticule light supply. Capacitor C954 discharges until Q944 cannot maintain conduction and finally turns off. Then, C954 begins to charge positive until the zener voltage of CR957 is reached, which turns on Q954 and its collector goes negative to turn the graticule light supply off.

Crossover Mode Switch ◇2◇

The Crossover Mode Switch circuit includes front-panel switching and provides the logic for selection of the vertical and horizontal compartments that control the deflection of beam 1 and beam 2. The Crossover Mode Switch circuits operate in conjunction with the Logic circuits (diagram 5) to develop control signals for use in other circuits within this instrument and plug-in units installed. Figure 3-1 shows a detailed block diagram of the Crossover Mode Switch. A schematic of this circuit is shown on diagram 2 at the rear of this manual.

Vertical Mode Switching and Vertical Mainframe Mode

The Vertical Mode Switching stage, consisting primarily of S3153 and S3155, determines whether the plug-in units in the LEFT VERT or RIGHT VERT compartments are to be displayed by beam 1 or beam 2. The VERTICAL MODE switches provide a HI level at P3163 pins 4 and 5 for display of the Right Vertical unit and a LO level for the display of the Left Vertical unit. Pin 5 of P3163 provides beam 1 information and P3163 pin 4 provides beam 2 information. The vertical mode signals (P3163 pins 4 and 5) are coupled to the Crossover Vertical Interface circuits (diagram 7).

The Vertical Mode switch outputs are also coupled to the Vertical Mainframe Mode stage. A HI level at CR3176 or CR3177 anodes provides a HI level at P3134 pin 5, indicating that the Left Vertical unit is being displayed. A HI level at CR3178 or CR3179 anodes provides a HI level a P3134 pin 4 indicating that the Right Vertical unit is being displayed. Pins 4 and 5 of P3134 are coupled to the Main Interface circuits (diagram 4). This information is used by the vertical plug-in units when auxiliary Z-axis is being used to ensure that only the displayed plug-in unit is modifying the Z-axis signal.

The Vertical Mode Switching signals are also used in the following stages within the Crossover Mode Switch circuits: Plug-in Alternate Switching Logic, Chop Blanking Control, Vert Sep (1) Control, and Readout Display Logic. Refer to the block diagram in Fig. 3-1.

Horizontal Mode Switching

The Horizontal Mode Switching circuits, consisting primarily of S3157 and S3159, determine whether beam 1 or beam 2 is to be displayed by the plug-in unit in the A HORIZ or B HORIZ compartments. A LO level at P3134 pins 7, 8, 9, or 10 indicates the selected mode. Only two pins will be LO at a time. The outputs (P3134 pins 7, 8, 9, and 10) are used in the Horizontal Interface circuits (diagram 11), Z-Axis Logic circuits (diagram 5), Auxiliary Z-Axis Logic circuits (diagram 5), and Auxiliary Y-Axis Switching circuits (diagram 4).

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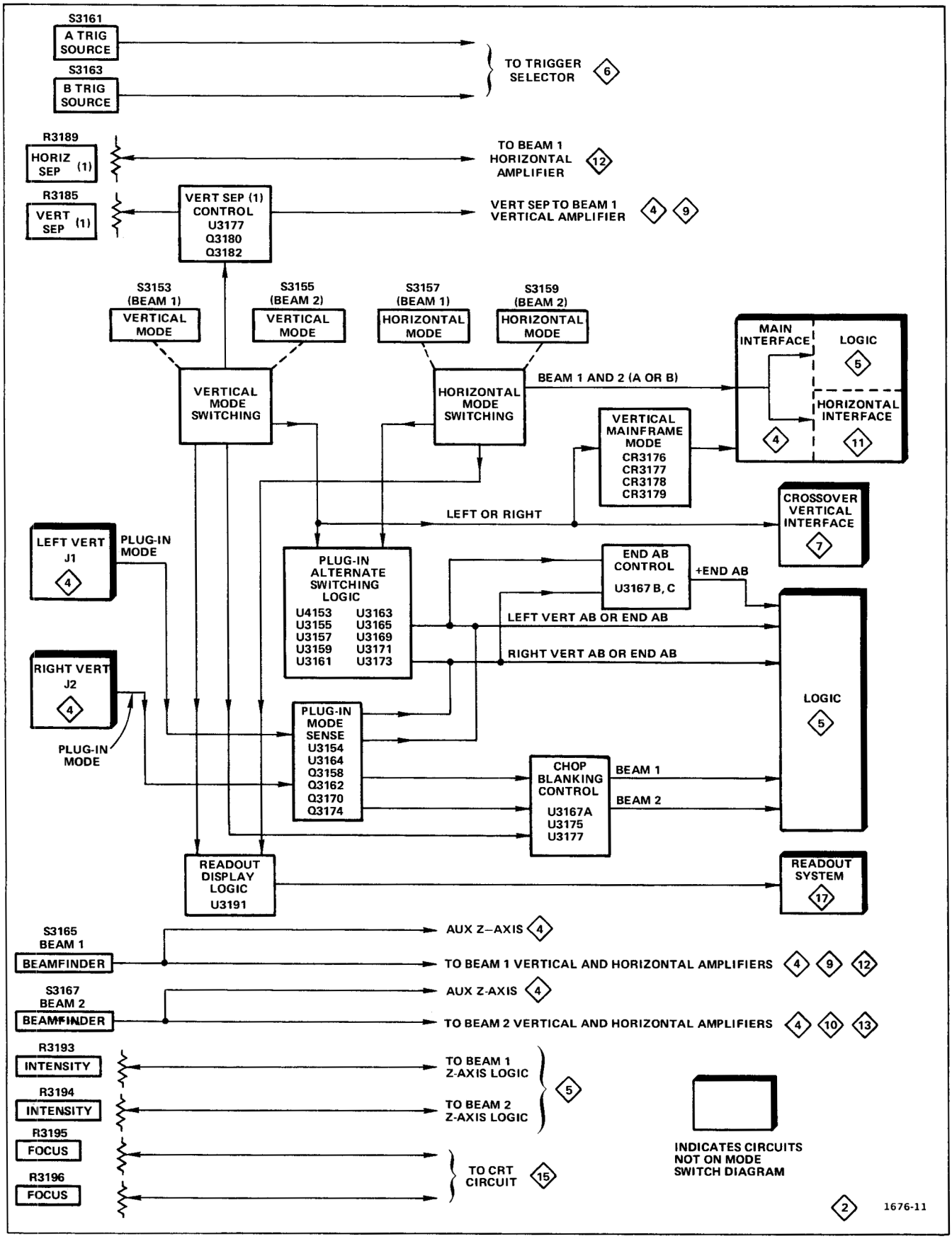


Fig. 3-1. Detailed block diagram of Crossover Mode Switch circuits.

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VERT SEP (1) Control

The front-panel VERT SEP (1) control provides vertical positioning of the beam 1 trace when one vertical plug-in compartment is selected for display of both beams.

The negative-input gate U3177D determines if the LEFT VERT compartment is selected for display of both beams and negative input gate U3177B determines if the RIGHT VERTICAL unit is selected for deflection of both beams.

When neither plug-in unit is selected for vertical deflection of both beams, the output of gate U3177A is HI. The HI level is coupled through emitter follower Q3180 to turn off Q3182, thereby blocking current to the Auxiliary Y-Axis input on the Beam 1 Vertical Amplifier (diagram 9).

However, when a plug-in compartment is selected for vertical deflection of both beams, the inputs of either the left vertical gate (U3177D) or the right vertical gate (U3177B) are both LO, which sets the output of U3177A LO. The emitter of Q3180 follows its base (LO), which turns on Q3182. VERT SEP (1) control R3185 varies the current drive (Auxiliary Y-Axis) to the Beam 1 Vertical Amplifier (diagram 9).

Plug-In Alternate Switching Logic

The Plug-In Alternate Switching Logic stage produces control signals to the Logic circuits (diagram 5) for operation of a dual-trace amplifier unit in the alternate mode. A dual-trace amplifier unit, operating in the alternate mode, switches between display of channel 1 and channel 2 signals at the end of each sweep. The Plug-In Alternate Switching Logic stage determines whether the amplifier unit in the LEFT VERT or RIGHT VERT compartments is alternated by the time-base units in the A HORIZ or B HORIZ compartments.

The Plug-In Alternate Switching Logic stage is controlled by the Vertical Mode Switching and Horizontal Mode Switching stages (refer to the block diagram in Fig. 3-1). Figure 3-2 shows input/output conditions for all combinations of the VERTICAL MODE and HORIZONTAL MODE switches. A HI level at P3129 pins 3, 4, 5, 6, 7, 8, or 9 is an enable command to the Left Vertical Alternate Switching, Right Vertical Alternate Switching, or End of AB Alternate Logic stages on the Logic circuit (diagram 5). Refer to the Diagrams section for a block diagram of the Logic circuit.

End AB Control

When one amplifier unit (set for alternate operation) is selected for the vertical deflection of both beams and different time-base units are selected for the horizontal deflection of beam 1 and beam 2, the instrument is operating in the End of AB Mode. The End of AB Control stage detects End of AB operation. A complete discussion of End of AB Logic will be given in the description of the Logic circuits (diagram 5).

The End AB Control circuit (U3167C, B) is gated from the Alternate Switching Logic stage. A HI level at the End AB Right output (P3129 pin 3) or a HI level at the End AB Left line (pin 6) enables the End AB Control circuit for a HI level at the End AB line (pin 9), providing the amplifier unit selected is set to the alternate mode. Refer to the Plug-In Mode Sense discussion for further information. Figure 3-2 shows input/output conditions for all combinations of the VERTICAL MODE and HORIZONTAL MODE switches that produce the End of AB outputs.

The End of AB signals are coupled to the following Logic circuit stages (diagram 5): End of AB Logic, Left Vertical Alternate Switching, and Right Vertical Alternate Switching. Refer to the Diagrams section for a block diagram of the Logic circuit.

Plug-In Mode Sense

The Plug-In Mode Sense circuits determine whether the amplifier units installed in the vertical compartments are operating in the alternate or chop modes.

Alternate Mode Sense. Integrated circuit U3154 and transistor Q3158 sense alternate operation from the LEFT VERT compartment and U3164 and Q3170 sense alternate operation from the RIGHT VERT compartment. Operation of the left and right sense circuits is identical. Therefore, only the left alternate sensing circuit will be described.

Assume that the VERTICAL MODE and HORIZONTAL MODE switches are selected for a HI level at End AB Left output (P3129 pin 6). Refer to Fig. 3-2. If the plug-in unit is in the alternate mode, the approximate 1 V level at pins 3 and 6 of U3154 does not provide sufficient output for Q3158 to conduct. Therefore, the collector voltage of Q3158 rises to approximately 5 V, which allows the End AB Left output to remain HI. If the plug-in unit dictates any plug-in mode except alternate, the signal to pins 3 and 6 of U3154 provides sufficient output for Q3158 to conduct to saturation, thereby dropping the collector voltage to approximately zero. The LO level at the collector of Q3158 pulls the End AB Left output LO (P3129 pin 6) setting the End AB output LO (pin 9) by way of gates U3167C and B.

Chop Mode Sense. Integrated circuit U3154 and transistor Q3162 sense chop operation from the LEFT VERT compartment and U3164 and Q3174 sense chop operation from the RIGHT VERT compartment. Operation of the left and

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BEAM DISPLAYED				OUTPUT AT P3129						
VERTICAL MODE		HORIZONTAL MODE								
BEAM 1	BEAM 2	BEAM 1	BEAM 2	* END AB (PIN 9)	B ALT LEFT (PIN 8)	A ALT LEFT (PIN 7)	END * AB LEFT (PIN 6)	B ALT RIGHT (PIN 5)	A ALT RIGHT (PIN 4)	* END AB RIGHT (PIN 3)
LEFT	LEFT	A	A	LO	LO	HI	LO	LO	LO	LO
LEFT	LEFT	A	B	HI	LO	LO	HI	LO	LO	LO
LEFT	LEFT	B	A	HI	LO	LO	HI	LO	LO	LO
LEFT	LEFT	B	B	LO	HI	LO	LO	LO	LO	LO
LEFT	RIGHT	A	A	LO	LO	HI	LO	LO	HI	LO
LEFT	RIGHT	A	B	LO	LO	HI	LO	HI	LO	LO
LEFT	RIGHT	B	A	LO	HI	LO	LO	LO	HI	LO
LEFT	RIGHT	B	B	LO	HI	LO	LO	HI	LO	LO
RIGHT	LEFT	A	A	LO	LO	HI	LO	LO	HI	LO
RIGHT	LEFT	A	B	LO	HI	LO	LO	LO	HI	LO
RIGHT	LEFT	B	A	LO	LO	HI	LO	HI	LO	LO
RIGHT	LEFT	B	B	LO	HI	LO	LO	HI	LO	LO
RIGHT	RIGHT	A	A	LO	LO	LO	LO	LO	HI	LO
RIGHT	RIGHT	A	B	HI	LO	LO	LO	LO	LO	HI
RIGHT	RIGHT	B	A	HI	LO	LO	LO	LO	LO	HI
RIGHT	RIGHT	B	B	LO	LO	LO	LO	HI	LO	LO

* Output can be HI only when the plug-in unit selected is set to the Alternate Mode

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Fig. 3-2. Input/Output conditions for plug-in unit alternate switching.

right chop sense circuits is identical. Therefore, only the left chop sensing circuit will be described.

If the selected plug-in unit is in the chop mode, the approximate zero volt level at pins 3 and 6 of U3154 is sufficient for Q3162 to conduct into saturation. The collector of Q3162 drops to approximately zero volt providing a LO level to the Chop Blanking Control circuit (see Fig. 3-2). When the plug-in unit is operating in any mode except chop, U3154 will not turn on Q3162 and its collector will rise to +5 V (HI).

Chop Blanking Control

The Chop Blanking Control circuits produce control signals to the logic circuits (diagram 5) for operation of dual-trace amplifier units in the chop mode. The Chop Blanking Control circuits determine if chop blanking pulses are required for beam 1 or beam 2 displays. Integrated circuits U3167A, U3175A, and U3177C comprise the Beam 2 Chop Blanking Control circuit and U3175C, U3175B, and U3175D comprise the Beam 1 Chop Blanking Control circuit. Operation of the beam 1 and beam 2 control circuits is identical. Therefore, only the beam 2 control circuit will be described.

Assume that the amplifier unit in the LEFT VERT compartment is selected to display beam 2. Pin 3 of negative input gate U3167A is set LO. Providing that the plug-in unit is selected for chop operation, pin 2 of U3167A is set LO by the Plug-In Mode Sense stage. Therefore, a HI level is coupled to gate U3175A to provide the LO output needed for beam 2 chop blanking.

If the amplifier unit in the RIGHT VERT compartment is selected to display beam 2, pin 9 of negative-input gate U3177C is set LO. Providing that the RIGHT VERT plug-in unit is selected for chop operation, pin 8 of U3177C is set LO by the Plug-In Mode Sense stage. Therefore, a HI level is coupled to gate U3175A to provide the LO level needed for beam 2 chop blanking.

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Readout Display Logic

The Readout Display Logic stage produces vertical and horizontal lockout pulses (positive-going) to the Readout System (diagram 17). The lockout pulses inhibit the readout display of the appropriate plug-in unit. Four negative-input AND gates (U3191A, B, C, D) provide lockout pulses for the RIGHT VERT, LEFT VERT, B HORIZ, and A HORIZ compartments, respectively. Figure 3-3 provides input/output conditions for the various lockout outputs.

BEAM DISPLAYED				LOCKOUT AT P3118			
VERTICAL MODE		HORIZ MODE					
BEAM 1	BEAM 2	BEAM 1	BEAM 2	A HORIZ (PIN 1)	B HORIZ (PIN 2)	LEFT VERT (PIN 3)	RIGHT VERT (PIN 4)
LEFT	LEFT	A	A	LO	HI	LO	HI
LEFT	LEFT	A	B	LO	LO	LO	HI
LEFT	LEFT	B	A	LO	LO	LO	HI
LEFT	LEFT	B	B	HI	LO	LO	HI
LEFT	RIGHT	A	A	LO	HI	LO	LO
LEFT	RIGHT	A	B	LO	LO	LO	LO
LEFT	RIGHT	B	A	LO	LO	LO	LO
LEFT	RIGHT	B	B	HI	LO	LO	LO
RIGHT	LEFT	A	A	LO	HI	LO	LO
RIGHT	LEFT	A	B	LO	LO	LO	LO
RIGHT	LEFT	B	A	LO	LO	LO	LO
RIGHT	LEFT	B	B	HI	LO	LO	LO
RIGHT	RIGHT	A	A	LO	HI	HI	LO
RIGHT	RIGHT	A	B	LO	LO	HI	LO
RIGHT	RIGHT	B	A	LO	LO	HI	LO
RIGHT	RIGHT	B	B	HI	LO	HI	LO

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Fig. 3-3. Input/output conditions for Readout Display Logic stage.

Dedicated Mode Switch (Option 21 Only) ◇3

The Dedicated Mode Switch circuit includes front-panel switching and provides the logic for selection of the horizontal compartments that control the horizontal deflection of beam 1 and beam 2. The LEFT VERT compartment is dedicated to the vertical deflection of beam 1 and the RIGHT VERT compartment is dedicated to the vertical deflection of beam 2. The Dedicated Mode Switch circuits operate in conjunction with the Logic circuits (diagram 5) to develop control signals for use in other circuits within this instrument and the plug-in units installed. Figure 3-4 shows a detailed block diagram of the Dedicated Mode Switch. A schematic of this circuit is shown on diagram 3 at the rear of this manual.

Horizontal Mode Switching

The Horizontal Mode Switching stage determines the horizontal display mode, provides plug-in unit alternate switching information, and provides readout display information.

The Horizontal Mode Switching circuits, consisting primarily of S157 and S159, determine whether the plug-in unit in the A HORIZ or B HORIZ compartments is to be displayed by beam 1 or beam 2. A LO level at P134 pins 7, 8, 9, or 10 indicates the selected mode. Only two pins will be LO at the same time. The outputs (P134 pins 7, 8, 9, and 10) are used in the Horizontal Interface circuits (diagram 11), Z-Axis Logic circuits (diagram 5), Auxiliary Z-Axis Logic circuits (diagram 5), and Auxiliary Y-Axis Switching circuits (diagram 4).

The Horizontal Mode Switching signals provide plug-in unit alternate switching information to the Logic circuits (diagram 5). A Hi level on P129 pins 4, 5, 7, or 8 determines which time-base unit (A Horizontal or B Horizontal) alternates the Left Vertical or Right Vertical units. Only two pins will be HI at a time. The alternate switching information is coupled to the Left Vertical Alternate Switching stage and the Right Vertical Alternate Switching stage on the Logic circuit (diagram 5).

The Horizontal Mode Switching signals are also coupled to the Readout Display Logic stage (U191).

Readout Display Logic

The Readout Display Logic stage produces horizontal mode lockout signals (positive going) to the Readout System (diagram 17). The lockout signals inhibit the readout display of the appropriate plug-in unit. Two negative-input gates (U191A, B) provide lockout signals for the A HORIZ and B HORIZ compartments, respectively. Figure 3-5 provides input/output conditions for the various lockout outputs.

Main Interface ◇4

The Main Interface block includes circuitry for plug-in interface and interconnections between the plug-in compart-

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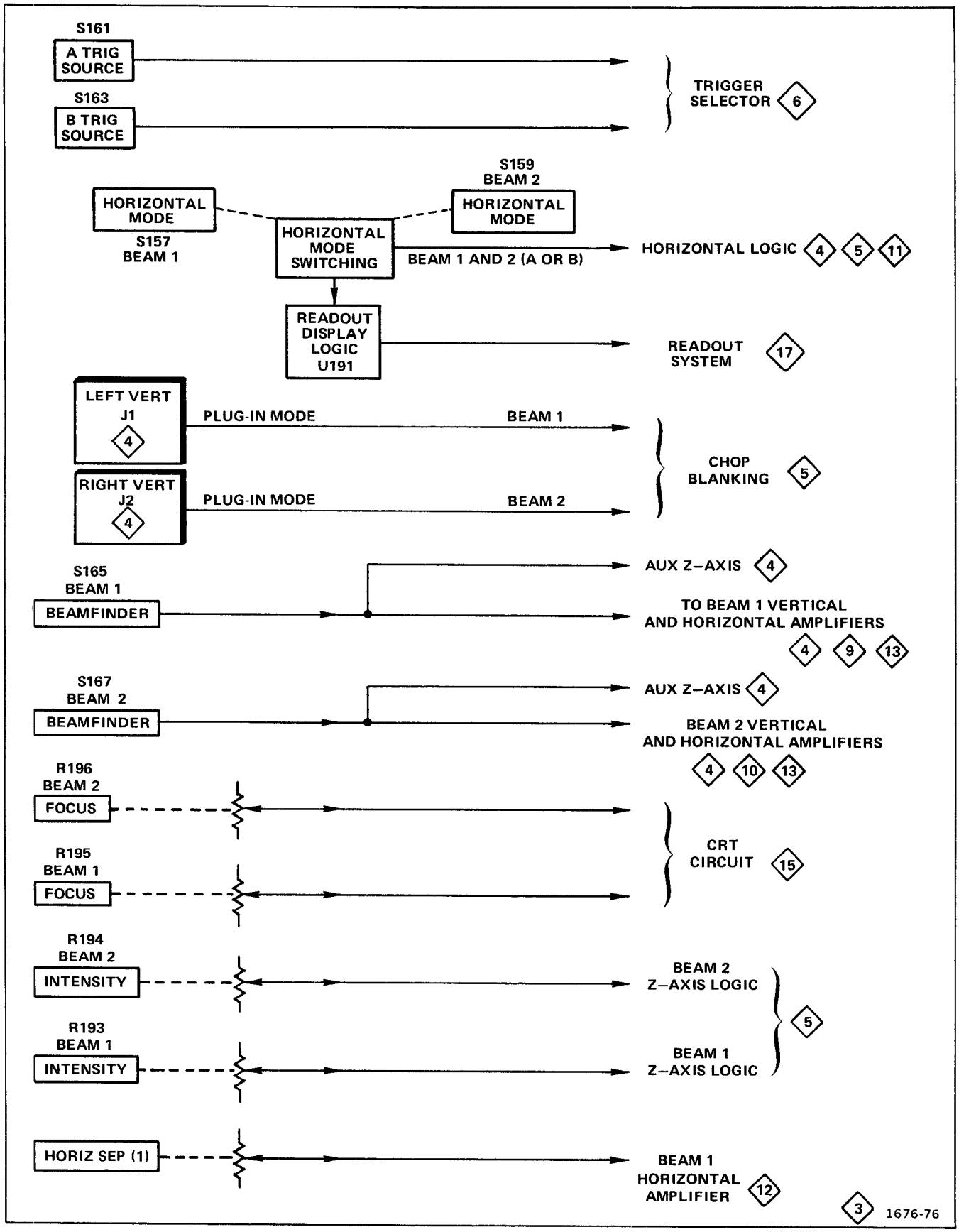


Fig. 3-4. Detailed block diagram of Dedicated Mode Switch (Option 21 only).

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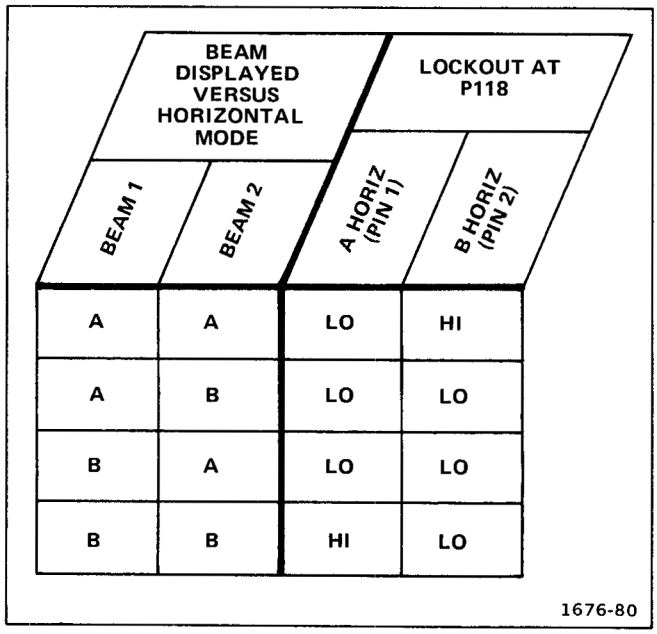


Fig. 3-5. Input/output conditions for Readout Display Logic stage.

ments, circuit boards, etc., of this instrument. The Main Interface circuits also include the Auxiliary Y-Axis switching, Vertical Separation (1) input, and Beam 2 Gated Switching stages. Schematics for the Main Interface circuits are shown on diagram 4 at the rear of this manual.

Auxiliary Y-Axis Switching

The Auxiliary Y-Axis signal originates in dual time-base units, which have an alternate sweep switching mode, and is used for vertical trace separation of the delaying sweep trace in compatible dual time-base units. The trace separation current is added to the beam 1 and beam 2 vertical amplifiers in the 7844/R7844 Oscilloscope. Separate Y-axis amplifiers are provided for four display possibilities: (1) Beam 1 display from the A HORIZ compartment (U90A, U90E, Q86), (2) Beam 1 display from B HORIZ compartment (U90B, U90C, U90D), (3) Beam 2 display from A HORIZ compartment (U50A, U50E, Q66), and (4) Beam 2 display from B HORIZ compartment (U50B, U50C, U50D). The beam 1 and beam 2 Y-axis amplifiers are nearly identical, except that the beam 2 output is inverted. Only the beam 1 circuits will be described.

Integrated circuits U90E and U90A form an emitter-coupled current amplifier for the auxiliary Y-axis signal from the A HORIZ compartment and U90B and U90D form an emitter-coupled current amplifier for the auxiliary Y-axis signal from the B HORIZ compartment. Only one amplifier will be operating at a time. When the A Horizontal time-base unit has been selected for beam 1 display, the LO level (approximately ground) at P34 pin 7 turns off Q86, which causes U90A and U90E to quiescently conduct. Simultaneously, the HI level (approximately 5 V) at P34 pin 8 pulls up the emitter of U90C, which turns off the B Horizontal circuit (U90B, U90D). The auxiliary Y-axis signal from the A Horizontal time-base unit (J3, pin B16) drives U90E and U90A to change the position of the beam 1 trace.

When the B Horizontal time-base unit has been selected for beam 1 display, the LO level (approximately ground) at P34 pin 8 turns off U90C, which causes U90D and U90B to quiescently conduct. Simultaneously, the HI level (approximately 5 V) at P34 pin 7 pulls up the emitter of Q86, which turns off the A Horizontal circuit (U90A and U90E). The auxiliary Y-axis signal from the B Horizontal time-base unit (J4, pin B16) drives U90D and U90B to change the position of the beam 1 trace.

Vertical Separation (1) Input

The VERT SEP (1) signal from the Crossover Mode Switch (diagram 2), is connected to the output of the Beam 1 Auxiliary Y-Axis Amplifiers (U90, Q86) at pin J16. The trace separation signal varies the current, added to the Beam 1 Vertical Amplifier, to position the beam 1 trace when the same vertical unit is selected for display of both beams. Refer to the Vert Sep (1) Control discussion for more information (diagram 2).

Beam 2 Gated Switching

The Beam 2 Gate Switching circuits provide a positive-going gate pulse to the Readout and Graticule Illumination pulsed circuits (diagram 1) at the end of beam 2 sweep. Integrated circuit U105 provides horizontal mode switching, and U107 is a monostable multivibrator that supplies the positive-going gate pulse.

When the A Horizontal time base is selected for beam 2 display (U105 pins 1, 2, and 13 are LO), the end of A sweep gate (LO) at U105 pin 5 initiates a positive-going beam 2 gated pulse at U107 pin 6. When the B Horizontal time base is selected for beam 2 sweep (U105 pins 1, 2, and 13 are HI) the end of B sweep gate (LO) at U105 pin 12 initiates a positive-going beam 2 gated pulse at U107 pin 6.

The time constant for monostable multivibrator U107 (approximately 100 ms) is determined primarily by R106 and C106. The feedback loop from the output (U107 pin 1) to the input (U107 pin 4) provides a holdoff function so that the monostable multivibrator can stabilize before it accepts another trigger pulse (sweep gate).

Logic 5

The Logic circuit develops control signals for use in other circuits within this instrument and any plug-in units installed

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or selected. A block diagram of the Logic circuit is shown in the Diagrams section.

This Theory of Operation for the Logic circuit is written with the approach that each of the integrated circuits and its associated discrete components compose an individual stage as shown by the block diagram. The operation of each stage is discussed, relating the input signals or levels to the output, with consideration given to the various modes of operation that may affect the stage. A logic diagram is also provided, where applicable, for each stage. These diagrams are not discussed in detail, but are provided to aid in relating the function performed by a given stage to standard logic techniques. Note that these logic diagrams are not an exact representation of the internal structure of the integrated circuit, but are only a logic diagram of the function performed by the stage. An input/output table is given, where applicable, for use along with the Theory of Operation and logic diagram. These input/output tables document the combination of input conditions that are necessary to perform the described function of an individual stage.

Clock Generator

Part of integrated circuit U205, along with the external components shown in Fig. 3-6, make up the Clock Generator stage. Resistor R1 and transistors Q1, Q2, and Q3 represent an equivalent circuit within U205. This circuit, along with discrete components C210, R206, R207, and R210, compose a 2 MHz free-running oscillator to provide a timing (Clock) signal used to synchronize the amplifier plug-in unit chopping mode. Following is a description of the operation of this stage.

Assume that Q2 is conducting and Q1 is off. The collector current of Q2 produces a voltage drop across R1 to cut off Q1. This negative level at the collector of Q2 is also connected to pin 14 through Q3 as shown in Fig. 3-6 (B) at time T_0. Since there is no current through Q1, capacitor C210 begins to charge toward −15 V through R206 and R207. The emitter of Q1 goes negative as C210 charges, until it reaches a level approximately 0.6 V more negative than the level at its base. Then, Q1 is forward biased and its emitter rapidly rises positive (see time T_1 on waveforms). Since C210 cannot change its charge instantaneously, the sudden change in voltage at the emitter of Q1 also pulls the emitter of Q2 positive. Then, Q2 is reverse biased and its collector rises positive to produce a positive output level at pin 14.

Now, conditions are reversed. Since Q2 is reverse biased, there is no current through it. Therefore, C210 can begin to discharge through R210. The emitter level of Q2 follows the discharge of C210 until it reaches a level approximately 0.6 V more negative than its base. Then, Q2 is forward biased and its collector drops negative and Q1 is reverse biased. The level at pin 14 also drops negative to complete the cycle. Once again, C210 begins to charge through R206 and R207 to start the second cycle.

Two outputs are provided from this oscillator. The Delay Ramp signal from the junction of R206 and R207 is connected to the Chopped Blanking stge. This signal has the same waveshape as shown by the waveform at pin 13; its slope is determined by the divider ratio between R206 and R207. A square-wave output is provided at pin 14. The frequency of this square wave is determined by the overall RC relationship between C210, R206, R207, and R210 with duty cycle determined by the ratio of R206 and R207 to R210.

The square wave at pin 14 is connected to pin 16 through C211. Capacitor C211, along with the internal resistance of U205, differentiates the square wave at pin 14 to produce a negative-going pulse coincident with the falling edge of the square wave (positive-going pulse coincident with rising edge has no effect on circuit operation). This negative-going pulse is connected to pin 15 through an inverter-shaper that is also part of U205. The output at pin 15 is a positive-going Clock pulse with a repetition rate of approximately 2 MHz.

Chop Blanking

The Chop Blanking stage is made up of the remainder of U205. This stage determines if beam 1 or beam 2 chop blanking pulses are required, based on the operating mode of the dual-trace amplifier plug-in units installed in the vertical compartments. A beam 1 chop blanking signal is present at pin 4 of U205 when an enable pulse (LO) is present at pin 5. A beam 2 chop blanking signal is present at pin 2 of U205 when an enable pulse (LO) is present at pin 8. The repetition rate of the negative-going chop blanking pulse output (pins 2 and 4 of U205) is approximately 2 MHz as determined by the Clock Generator stage.

The delay ramp signal from the Clock Generator stage determines the repetition rate and pulse width of the chopped blanking pulses. The delay ramp applied to pin 10 of U205 starts to go negative from a level of approximately +1.1 V coincident with the leading edge of the clock pulse (see waveforms in Fig. 3-7). This results in a HI quiescent condition for the chopped blanking pulse. The slope of the negative-going delay ramp is determined by the Clock Generator stage. As it reaches a level slightly negative from ground, the chopped blanking pulse output level changes to the LO state and remains LO until the delay ramp goes HI again.

Notice the delay between the leading edge of the clock pulse, generated by U205, and the leading edge of the

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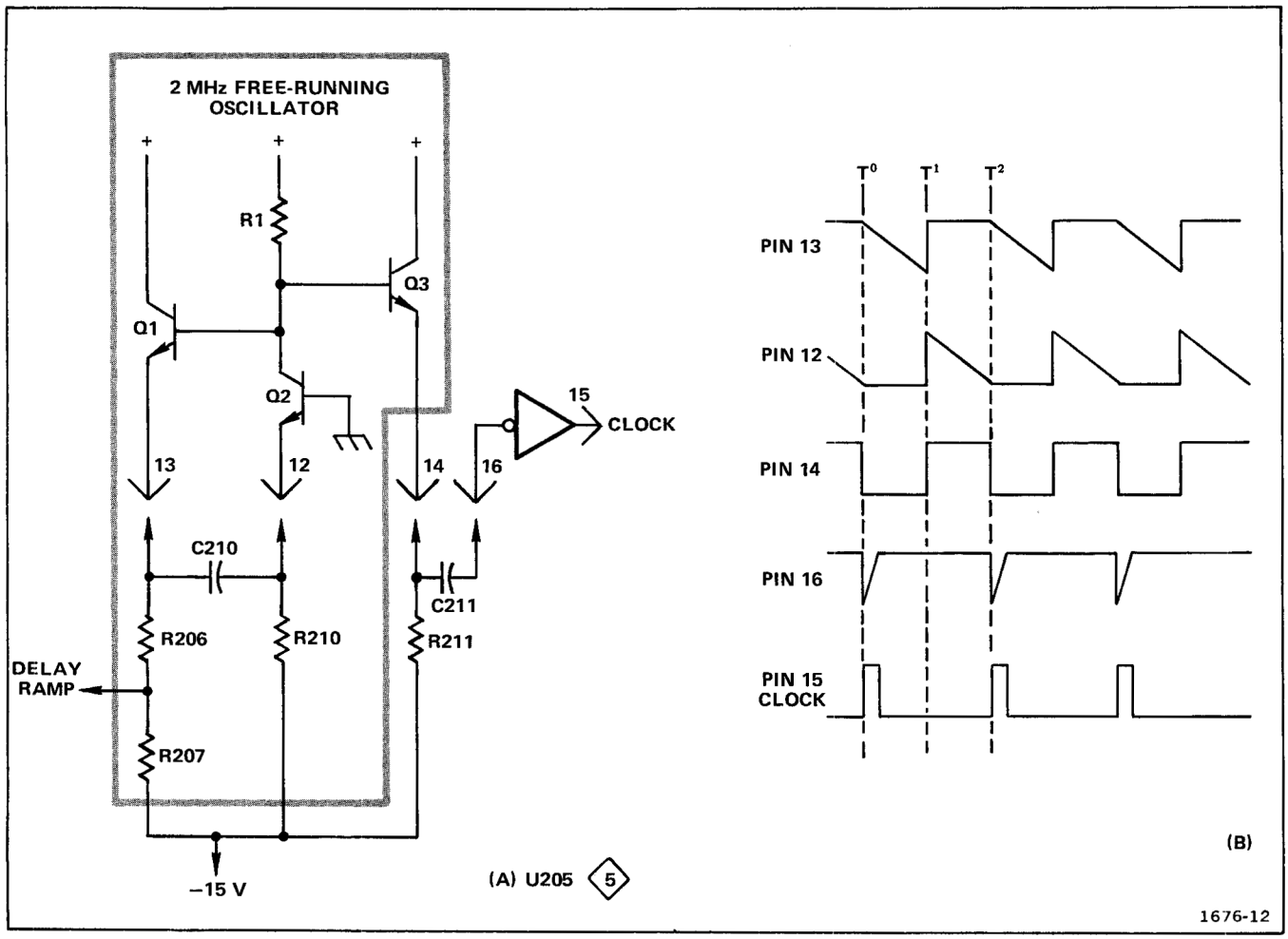


Fig. 3-6. (A) Diagram of Clock Generator stage; (B) Idealized waveforms for Clock Generator stage.

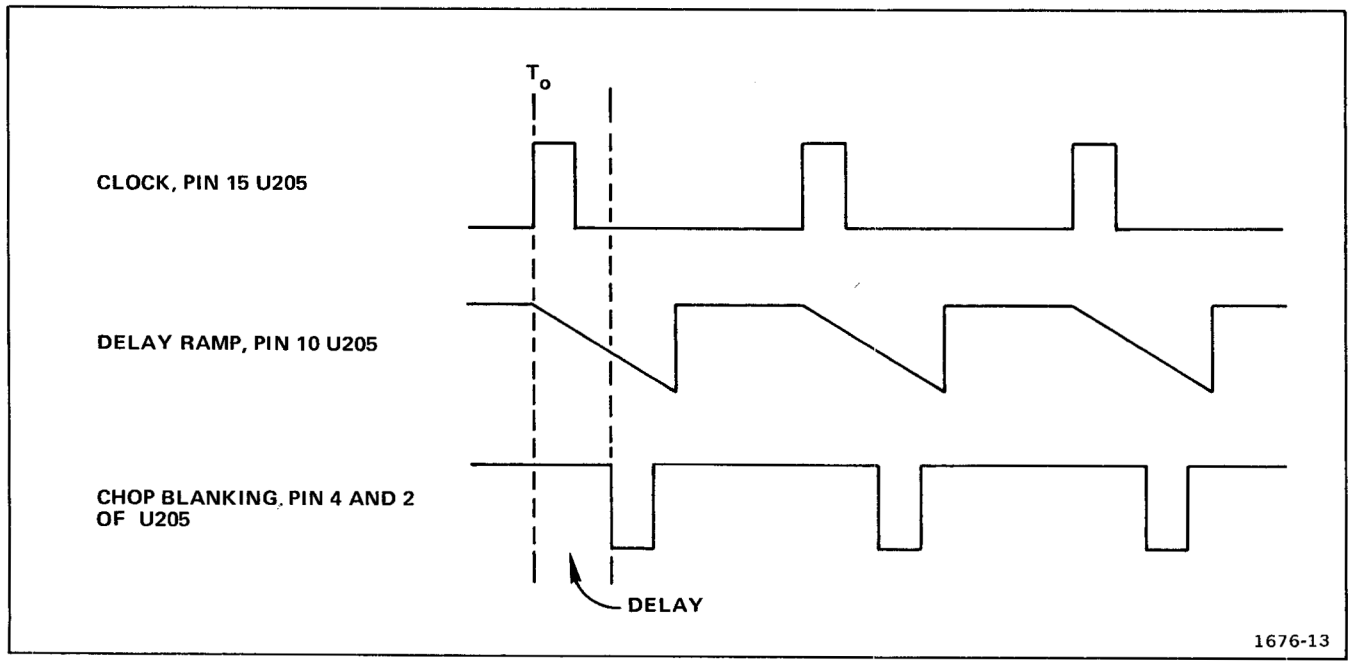


Fig. 3-7. Idealized waveforms for Chop Blanking stage.

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chopped blanking pulses. The amount of delay between the leading edges of these pulses is determined by the delay ramp applied to pin 10. This delay is necessary due to the delay line in the vertical deflection system. Otherwise, the trace blanking resulting from the chopped blanking pulse would not coincide with the switching between the displayed traces.The duty cycle of the square wave produced in the Clock Generator stage determines the pulse width of the chopped blanking pulses (see Clock Generator description for more information).

Holdoff Buffer Circuits

The A and B Horizontal Holdoff Buffer circuits provide the drive for the respective holdoff signals and develop the logic levels necessary for the alternate switching circuits. Integrated circuits U233A and U233D comprise the A Holdoff Buffer and U233B and U233C comprise the B Holdoff Buffer.

A and B Horizontal Alternate Switching

The A and B Horizontal Alternate Switching stages (U239B and U239A, respectively) provide the alternate switching signals to the Left Vertical and Right Vertical Alternate Switching stages. The Horizontal Alternate Switching circuits are driven by the respective holdoff signals from the A and B Holdoff Buffer stages. The A Horizontal and B Horizontal Alternate Switching circuits have the same basic operation; therefore, only the A Horizontal Alternate Switching stage will be described.

The A Alternate Flip-Flop, U239B, is a divide-by-2 device with a direct-clear input. The direct-set input is held inactive by the 5 V level through R240 to pin 10. The direct-clear input, at pin 13, is held inactive when the 7844/R7844 is not operating in the X-Y mode. The zero output at pin 8 is tied directly to the data input at pin 12, thereby causing the output at pin 9 to go HI with every other holdoff pulse at the clock input (pin 11). The output at pin 9 is coupled to the A Alternate Gate of the Left and Right Alternate Switching stages (U265 and U275 respectively). Refer to Fig. 3-9 for additional information.

When the 7844/R7844 is operating in the X-Y mode, (that is, an amplifier unit is operating in a horizontal compartment or a time-base unit is operating in the amplifier mode) a LO level is coupled from circuit board pin G to the clear input at U239B pin 13. The LO input clears the integrated circuit thereby disabling the circuit.

End AB Alternate Logic

The End of AB Alternate Logic circuit is used only when one amplifier unit (set for alternate operation) is selected for vertical deflection of both beams 1 and 2 and different time-base units are selected for the horizontal deflection of beams 1 and 2. The End of AB Alternate Logic circuits ensure that the amplifier unit, providing vertical deflection, does not alternate in the middle of a sweep or alternate before a sweep is completed.

When operating in the End of AB Alternate condition, the B Horizontal time-base unit completes a sweep and locks out further B Horizontal sweeps until the completion of the next A Horizontal sweep. A Horizontal sweeps that end before the end of the B Horizontal sweep have no effect on alternate operation of the amplifier unit.

The End of AB Alternate Logic stage consists primarily of integrated circuits U235, U237, and U245. A timing diagram for the End of AB Alternate Logic is given in Fig. 3-8. A detailed description is given in the discussion that follows.

The end of AB Alternate Logic stage is activated by a HI level from the End AB line (P229-9). The HI level removes the clear from U237A at pin 1. Refer to the Plug-In Alternate Logic discussion for the origin of the End AB signal (diagram 2). At the end of B Horizontal sweep, the HI holdoff level, at pin AK, is inverted by U233B and U233C (B Horizontal Holdoff Buffer) and clocks U237A at pin 3. The output at pin 5 of U237A begins to raise HI but is clamped by CR237. At the end of B Holdoff, the HI output from U233B pin 6 raises the clamp level of CR237 and allows U237A pin 5 to raise HI, thereby enabling one-half of gate U235B. The HI level at U237A pin 5 also removes the clear from U245B pin 13 and is coupled to circuit board pin AJ, which initiates B Sweep Lockout.

At the end of A Horizontal sweep, the HI holdoff level at circuit board pin M, is inverted by U233A and inverted again by U233D (A Horizontal Holdoff Buffer). The positive transition at U233D pin 11 is coupled through C238, which enables the other half of gate U235B (pin 5). Pin 6 of U235B goes LO and is inverted by U235C. The HI level at pin 11 of U237B clocks the Flip-Flop. The output at U237B pins 8 and 9 changes states. The output at pin 9 is coupled to the End of AB gate of the Left Vertical Alternate switching stage (U265) and the Right Vertical Alternate switching stage (U275). Refer to Fig. 3-9 for additional information.

The clear level at pin 13 of U237B is controlled by the X-Y Compensation signal at pin G on the circuit board. The clear (ground level) is applied only when an amplifier unit is installed in a horizontal compartment or when the time-base unit is operating in the amplifier mode.

When divide-by-2 Flip-Flop U237B switches, a negative transition is coupled through C242 or C246, depending upon the level at pins 9 and 10 of U237B. The LO transition

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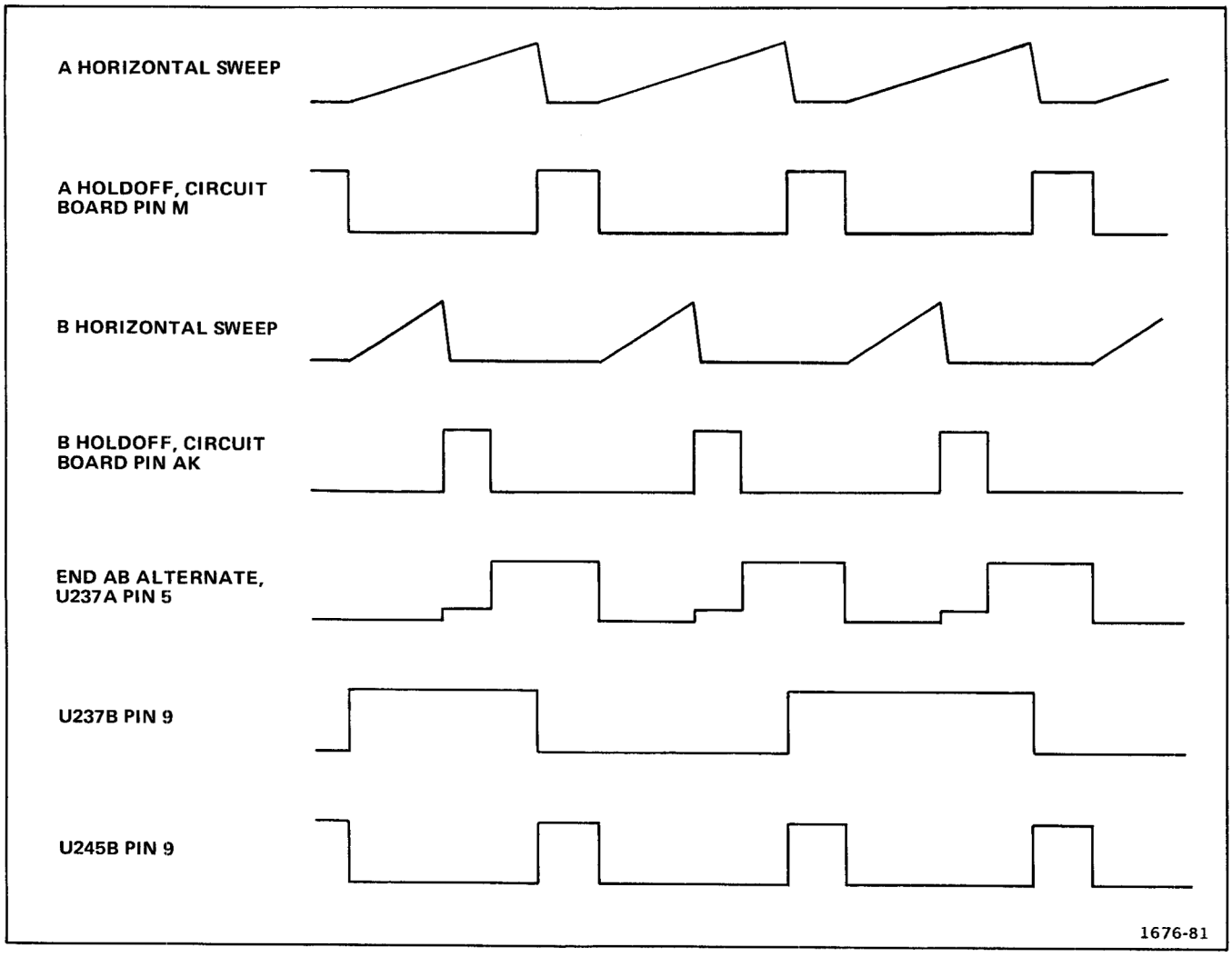


Fig. 3-8. Timing diagram for End of AB Alternate Logic.

at gate U235D sets the output at pin 11 HI. The HI level clocks pin 11 of U245B, which sets pin 9 HI and enables one-half of gate U235A. At the end of A holdoff, the negative transition at circuit board pin M is inverted by U233A and enables the other half of gate U235A. The output at U235A pin 3 goes LO and clears U237A, which sets pin 5 LO. The LO at pin 5 clears U245B at pin 13, inhibits gate U235B at pin 4, and terminates B Sweep Lockout at circuit board pin AJ.

Left Vertical and Right Vertical Alternate Switching

The Left Vertical and Right Vertical Alternate switching stages provide the alternate switching signal to the vertical and horizontal plug-in compartments. The alternate drive signal is used by dual-channel amplifier plug-in units that are operating in the alternate mode, to alternately switch between channels. Integrated circuit U265 provides alternate switching for the Left Vertical plug-in unit and U275 provides alternate switching for the Right Vertical plug-in unit. Refer to Fig. 3-9 for a functional diagram of the Left and Right Vertical Alternate Switching circuits.

The alternate switching circuits (U265 and U275) each consists of four AND gates coupled into a NOR gate (each AND gate has two inputs). Refer to the vertical alternate switching functional diagram in Fig. 3-9. Operation of the Left Vertical Alternate Switching and Right Vertical Alternate Switching circuits is identical; therefore, only the left circuit will be explained.

X-Y Mode Alternate Gate. The X-Y Mode Alternate Gate (as shown in Fig. 3-9) is controlled by the X-Y Compensation signal and the X-Y Alternate Switching signal at pins 4 and 5 of U265, respectively. When the X-Y Compensation signal at circuit board pin G is LO, the 7844/R7844 is operating in the X-Y mode. That is, either an amplifier unit is operating in a horizontal compartment or a time-base unit is

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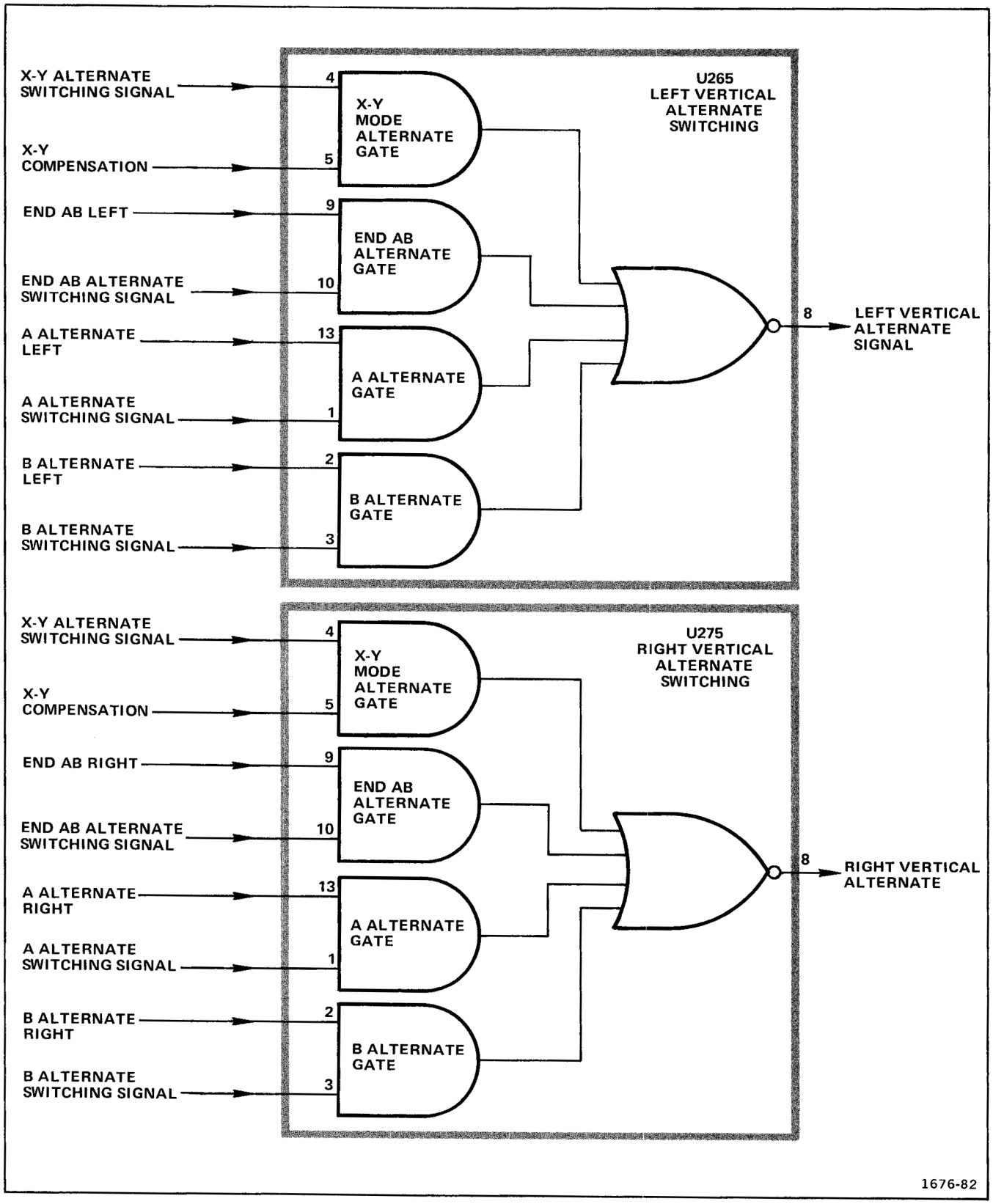


Fig. 3-9. Functional diagram of Left and Right Vertical Alternate Switching stages.

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operating in the amplifier mode. The LO level reverse biases Q255, its collector rises, and a HI level is coupled to pin 5 of U265. The HI level at pin 5 of U265 sets one half of the gate (X-Y Mode Alternate Gate as shown in Fig. 3-9) and also removes the clear from U215B at pin 13. The X-Y Alternate Switching signal, from pin 8 of Horizontal Lockout integrated circuit U285, clocks pin 11 of U215B. The output at pin 9 of divide-by-2 Flip-Flop U215B goes HI with every other clock pulse at pin 11. The HI level at pin 4 of U265 is inverted by the NOR gate and appears as a LO at U265 pin 8 (and vice-versa). The level at U265 pin 8 (non-inverted) is coupled through the Left Vertical Alternate Buffer (Q260, Q266). A HI level at circuit board pin O displays channel 2 of the plug-in unit and a LO level displays channel 1.

End AB Alternate Gate. The End AB Alternate Gate (as shown in Fig. 3-9) is controlled by the End AB Left signal (derived from diagram 2 or 3) and by the End AB Alternate Switching signal at U265 pin 10. A HI level at U265 pin 9 indicates that the Left Vertical plug-in unit is operating in the End of AB Mode by setting one-half of the gate. Refer to the End AB Logic discussion and End AB Control discussion (diagram 2) for information on the End AB Left signal. The End AB Alternate Switching signal is produced by the End AB Logic stage (output at U237B pin 9) and coupled to U265 pin 10. A HI level at U265 pin 10 is inverted by the NOR gate and appears as a LO at U265 pin 8 (and vice-versa). The level at U265 pin 8 (non-inverted) is coupled through the Left Vertical Alternate Buffer (Q260, Q266). A HI level at circuit board pin O displays channel 2 of the plug-in unit and a LO level displays channel 1.

A Alternate Gate. The A Alternate gate is controlled by the A Alternate Left signal and the A Alternate Switching signal at U265 pins 13 and 1, respectively. (Refer to Fig. 3-9.)

A HI level at U265 pin 13 indicates that the Left Vertical plug-in unit will be alternated by the time-base unit in the A HORIZ compartment by setting one-half of the gate. Refer to Horizontal Mode Switching in the Dedicated Mode Switch description (diagram 3) or Alternate Switching Logic in the Crossover Mode Switch description (diagram 2) for information on A Alternate Left signal.

The A Alternate Switching signal is produced by the A Horizontal Alternate Switching stage (output at U239B pin 9) and is coupled to U265 pin 1. The HI level at U265 pin 1 is inverted by the gate for a LO level at U265 pin 8 (and vice-versa). The level at U265 pin 8 is coupled (non-inverted) through the Left Vertical Alternate Buffer (Q260 and Q266). A HI level at circuit board pin O displays channel 2 of the plug-in unit and a LO level displays channel 1.

B Alternate Gate. The B alternate gate is controlled by the B Alternate Left signal and the B Alternate Switching signal at pins 2 and 3 of U265 (refer to Fig. 3-9).

A HI level at U265 pin 2 indicates that the Left Vertical plug-in unit will be alternated by the time-base unit in the B HORIZ compartment by setting one-half of the gate. Refer to Horizontal Mode Switching in the Dedicated Mode Switch description (diagram 3, Option 21) or Alternate Switching Logic in the Crossover Mode Switch description (diagram 2) for information on B Alternate Left signal.

The B Alternate Switching signal is produced by the B Horizontal Alternate Switching stage (output at U239A pin 5) and is coupled to U265 pin 3. The HI level at U265 pin 3 is inverted by the NOR gate for a LO level at U265 pin 8 (and vice-versa). The level at U265 pin 8 (non-inverted) is coupled through the Left Vertical Alternate Buffer Q260, Q266. A HI level at circuit board pin O displays channel 2 of the plug-in unit and a LO level displays channel 1.

Output Buffers

The output commands from the Logic circuits are provided through buffer stages Q220-Q226, Q260-Q266, and Q270-Q276. Each of these stages includes a common-base input transistor to provide a low-impedance load for the associated driving stages. The output transistor is connected as an emitter follower to proivide isolation between the Logic circuits and other circuits within the instrument or the plug-in units.

Horizontal Logic

The Horizontal Logic stage (U285) provides the alternate switching signal when the 7844/R7844 is operating in the X-Y mode. That is, either an amplifier unit is operating in a horizontal compartment or a time-base unit is operating in the amplifier mode. The horizontal compartment with the operating time-base unit provides the holdoff pulse for alternate switching (see Fig. 3-10). The alternate pulse is coupled from U285 pin 8 to divide-by-2 Flip-Flop U215B at pin 11. The output of U215B (pin 9) is coupled to the Left and Right Vertical Alternate Switching stages (U265 and U275).

The alternate pulse is produced at the end of A or B sweep, depending upon the conditions shown in Fig. 3-10. The holdoff gate, produced at the end of the respective sweep, is differentiated by either C280 or C281 to provide a positive-going pulse to pins 6 or 9 of U285. Elements, internal to the integrated circuit (U285), hold the levels at pins 6 and 9 LO unless a HI holdoff gate is received.

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HORIZONTAL COMPARTMENT CONDITIONS	INPUT			OUTPUT
	X-Y COMPENSATION	A HOLDOFF	B HOLDOFF	TIME BASE WHICH IS SOURCE OF ALTERNATE PULSE
U285	PINS 4 & 5	PIN 6	PIN 9	PIN 8
A HORIZ—TIME BASE B HORIZ—AMPLIFIER	HI	HI	LO	A
A HORIZ—AMPLIFIER B HORIZ—TIME BASE	HI	LO	HI	B
ALL OTHER COMBINATIONS				NO OUTPUT PULSE (LO AT OUTPUT)

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Fig. 3-10. Input/output conditions for Horizontal Logic Alternate Switching.

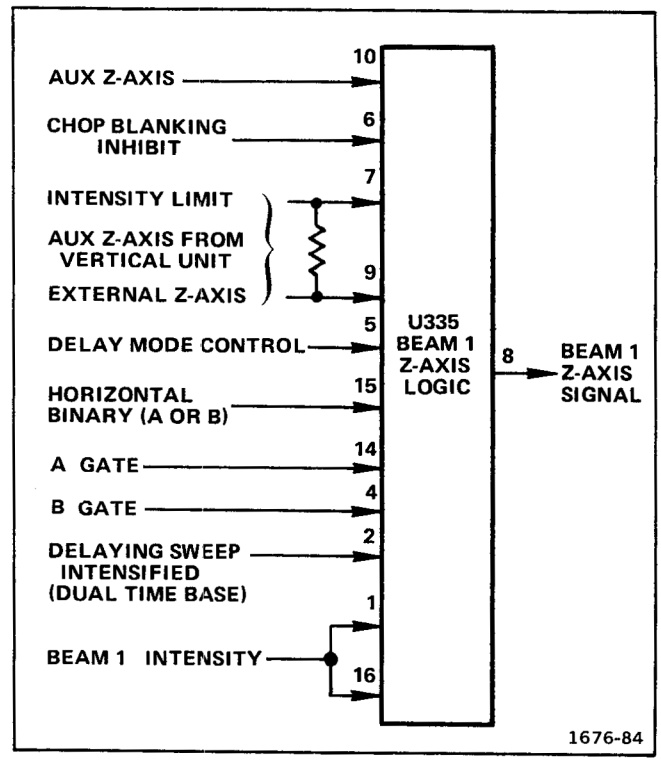


Fig. 3-11. Functional diagram of Beam 1 Z-Axis Logic (U335).

Beam 1 Z-Axis Logic

The Beam 1 Z-Axis Logic stage produces output currents that determine the intensity of the beam 1 display. The level of the beam 1 Z-axis output current is determined by the BEAM 1 INTENSITY control setting, by current added for auxiliary Z-axis functions, or by an external signal applied to the Z-AXIS INPUT 1 connector. When an amplifier unit is operating in the chop mode, the beam 1 display is blanked by the chop blanking signal. A current-limiting circuit protects the crt from excessive beam intensity. Integrated circuit U335 provides beam 1 Z-Axis Logic and U315 and Q304 provide beam 1 Auxiliary Z-Axis Logic. Refer to Fig. 3-11 for a functional diagram.

Chop Blanking Z-Axis Logic. The beam 1 vertical chop blanking signal at U335 pin 6 disables the Z-axis output current at U335 pin 8 during plug-in unit vertical chop blanking. The beam 1 chop blanking signal is coupled from U205 pin 4 directly to pin 6 of U335. Quiescently, the level at pin 6 is HI so that the intensity current through pins 1, 2, 9, 10, and 16 can pass to the output. However, during plug-in unit vertical chop blanking, the level at pin 6 is LO and the output current at pin 8 is blocked, which blanks the beam 1 crt display.

Mainframe Intensified Z-Axis Logic. When the 7844/R7844 is operating in an intensified mode, with a delaying time-base unit in the A HORIZ compartment and a delayed time-base unit in the B HORIZ compartment, current for the intensified zone is supplied from the BEAM 1 INTENSITY control to U335 pin 2. Current is added to the beam 1 intensity current during the time that the delayed (B) sweep runs. The delaying sweep time is indicated by a HI level at U335 pin 14 (A Gate) and the delayed sweep time is indicated by a HI level at U335 pin 4 (B Gate). The HI level at U335 pin 5 indicates that the time-base unit in the A HORIZ compartment is operating in the delaying mode. A LO level at pin 15 (pin 15 is LO when the A HORIZ compartment has been selected for display) routes current to pin 8 during the time that the B Gate (pin 4) is HI. With this method of supplying current for intensified sweep, the intensified current increases as the BEAM 1 INTENSITY control setting is advanced to provide a proportional intensity increase in the intensified zone as the overall beam 1 intensity increases. The A Holdoff signal (from circuit board pin M) is coupled through CR288 to U335 pin 2 to immediately terminate the intensified zone at the end of A sweep.

Dual Time-Base Intensified Z-Axis Logic. The beam 1 horizontal Z-Axis Logic circuit provides the additional current needed to intensify the delaying sweep of a dual time-base unit (selected for display of beam 1) during the time that the delayed sweep generator runs. Separate beam 1 auxiliary Z-axis amplifiers are provided for the dual time-base units installed in the A HORIZ and B HORIZ compartments.

Integrated circuits U315C and U315B form an emitter-coupled current amplifier for the auxiliary Z-axis signal from the A HORIZ compartment, and U315A and U315D form an emitter-coupled current amplifier for the auxiliary Z-axis signal from the B HORIZ compartment. Only one amplifier will

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be operating at a time. When the A Horizontal time-base unit has been selected for beam 1 display, the LO level (approximately ground) at circuit board pin H turns off U315E, which causes U315C and U315B to quiescently conduct. Simultaneously, the HI level (approximatley 5 V) at circuit board pin J pulls up the emitter of Q304, which turns off the B horizontal circuit (U315D and U315A). In this condition, quiescent current to U335 pin 10 is supplied through R314, U315B, and R315. The auxiliary Z-axis signal from the A Horizontal time-base unit (circuit board pin AB) modulates the base of U315C to intensify the time-base unit delaying sweep trace.

When the B Horizontal time-base unit has been selected for beam 1 display, the LO level (approximately ground) at circuit board pin J turns off Q304, which causes U315A and U315D to quiescently conduct. Simultaneously, the HI level (approximately 5 V) at circuit board pin H pulls up the emitter of U315E, which turns off the A Horizontal circuit (U315B and U315C). In this condition, quiescent current to U335 pin 10 is supplied through R315, U315A, and R314. The auxiliary Z-axis signal from the B Horizontal time-base unit (circuit board pin Z) modulates the base of U315D to intensify the time-base unit delaying sweep trace.

A LO level is present at circuit board pin V when the time-base unit in the A HORIZ compartment is operating in the independent mode. The LO level turns on Q286, which robs current from pin 2 of U335. This ensures that the intensifed zone will not be momentarily turned on by changes in the A Holdoff signal.

Intensity Limit Z-Axis Logic. Transistor Q328 initiates an intensity limit at U335 pin 7. Quiescently, Q328 is reverse biased and resistors R324, R325, R326, R330, and R334 establish the current at pins 7 and 9 of U335. When Q328 is turned on, current is robbed from U335 pin 7, thereby reducing the Z-axis output at U335 pin 8. Transistor Q328 can be turned on by three signals: (1) the Intensity Limit signal, which is LO at circuit board pin L when the time-base unit (selected for beam 1) is slower than 0.1 s/div; (2) the X-Y Compensation signal, which is LO at circuit board pin G when an amplifier unit is operating in a horizontal compartment or a time-base unit is operating in the amplifier mode; (3) the Beam I Sense signal, which is HI at circuit board pin E whenever the crt beam current is excessive.

External and Vertical Auxiliary Z-Axis Inputs. The current levels established by the BEAM 1 INTENSITY control can be varied by the auxiliary Z-axis signal from the LEFT VERT compartment (circuit board pin AG) or by an external signal applied to the rear-panel Z-AXIS INPUT 1 connector (J330). The auxiliary and external Z-axis signals are applied to U335 pin 9. The Z-AXIS INPUT 1 connector allows the trace to be modulated by an external signal. The auxiliary Z-axis input allows special purpose plug-in units, in the LEFT VERT compartment, to modulate the display intensity. Diodes CR331 and CR332 limit the maximum voltage change at pin 9 to approximately +0.6 and −0.6 V to protect U335 from excessive voltage input. A positive input at pin 9 decreases beam 1 trace intensity.

Beam 2 Z-Axis Logic

The Beam 2 Z-Axis Logic stage produces output currents that determine the intensity of the beam 2 display. The level of the beam 2 Z-axis output current is determined by the BEAM 2 INTENSITY control setting, by current added for auxiliary Z-axis functions, or by an external signal applied to the Z-AXIS INPUT 2 connector. When an amplifier unit is operating in the chop mode, the beam 2 display is blanked by the chop blanking signal. Beam 2 is also blanked by the Z-axis inhibit signal while readout is being displayed. A current-limiting circuit protects the crt from excessive beam intensity. Integrated circuit U375 provides beam 2 Z-Axis Logic and U355 and Q344 provide beam 2 Auxiliary Z-Axis Logic. Refer to Fig. 3-12 for a functional diagram.

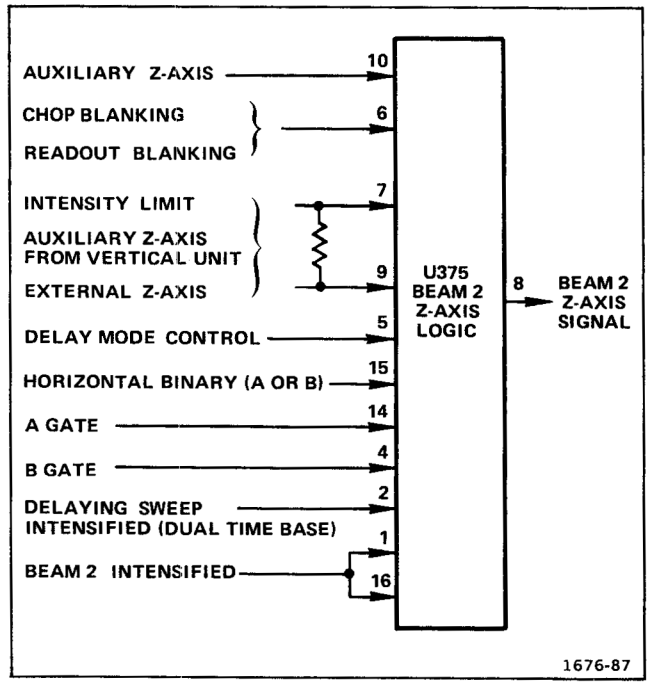


Fig. 3-12. Functional diagram of Beam 2 Z-Axis Logic (U375).

Chop Blanking Z-Axis Logic. The beam 2 vertical chop blanking signal at U375 pin 6 disables the Z-axis output current at U375 pin 8 during plug-in unit vertical chop blanking. The beam 2 chop blanking signal is coupled from U205 pin 2 directly to pin 6 of U375. Quiescently, the level at pin 6 is HI so that the intensity current through pins 1, 2, 9, 10, and 16 can pass to the output. However, during plug-in unit vertical chop blanking, the level at pin 6 is LO and the output current at pin 8 is blocked, which blanks the beam 2 crt display.

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Mainframe Intensified Z-Axis Logic. When the 7844/R7844 is operating in an intensified mode, with a delaying time-base unit in the A HORIZ compartment and a delayed time-base unit in the B HORIZ compartment, current for the intensified zone is supplied from the BEAM 2 INTENSITY control to U375 pin 2. Current is added to the beam 2 intensity current during the time that the delayed (B) sweep runs. The delaying sweep time is indicated by a HI level at U375 pin 14 (A Gate) and the delayed sweep time is indicated by a HI level at U375 pin 4 (B Gate). The HI level at U375 pin 5 indicates that the time-base unit in the A HORIZ compartment is operating in the delaying mode. A LO level at pin 15 (pin 15 is LO when the A HORIZ compartment has been selected for display) routes current to pin 8 during the time that the B Gate (pin 4) is HI. With this method of supplying current for intensified sweep, the intensified current increases as the BEAM 2 INTENSITY control setting is advanced to provide a proportional intensity increase in the intensified zone as the overall beam 2 intensity increases. The A Holdoff signal (from circuit board pin M) is coupled through CR289 to U375 pin 2 to immediately terminate the intensified zone at the end of A sweep.

Dual Time-Base Intensified Z-Axis Logic. The Beam 2 Horizontal Z-Axis Logic circuit provides the additional current needed to intensify the delaying sweep of a dual time-base unit (selected for display of beam 2) during the time that the delayed sweep generator runs. Separate beam 2 auxiliary Z-axis amplifiers are provided for the dual time-base units installed in the A HORIZ and B HORIZ compartments. Integrated circuits U355C and U355B form an emitter-coupled current amplifier for the auxiliary Z-axis signal from the A HORIZ compartment, and U355D and U355A form an emitter-coupled current amplifier for the auxiliary Z-axis signal from the B HORIZ compartment. Only one amplifier will be operating at a time. When the A Horizontal time-base unit has been selected for beam 2 display, the LO level (approximately ground) at circuit board pin F turns off U355E, which causes U355C and U355B to quiescently conduct. Simultaneously, the HI level (approximately 5 V) at circuit board pin K pulls up the emitter of Q344, which turns off the B Horizontal circuit (U355D, U355A). In this condition, quiescent current to U375 pin 10 is supplied through R355, U355, and R354. The auxiliary Z-axis signal from the A Horizontal time-base unit (circuit board pin AB) modulates the base of U355C to intensify the time-base unit delaying sweep trace.

When the B Horizontal time-base unit has been selected for beam 2 display, the LO level (approximately ground) at circuit board pin K turns off Q344, which causes U355A and U355D to quiescently conduct. Simultaneously, the HI level (approximately 5 V) at circuit board pin F pulls up the emitter of U355E, which turns off the A Horizontal circuit (U355B and U355C). In this condition, quiescent current to U375 pin 10 is supplied through U315, U315A, and R314. The auxiliary Z-axis signal from the B Horizontal time-base unit (circuit board pin Z) modulates the base of U355D to intensify the time-base unit delaying sweep trace.

A LO level is present at circuit board pin V when the time-base unit in the A HORIZ compartment is operating in the independent mode. The LO level turns on Q286, which robs current from pin 2 of U375. This ensures that the intensifed zone will not be momentarily turned on by changes in the A Holdoff signal.

External and Vertical Auxiliary Z-Axis Inputs. The current levels established by the BEAM 2 INTENSITY control can be varied by the auxiliary Z-axis signal from the LEFT VERT compartment (circuit board pin AC) or by an external signal applied to the rear-panel Z-AXIS INPUT 2 connector (J370). The auxiliary and external Z-axis signals are applied to U375 pin 9. The Z-AXIS INPUT 2 connector allows the trace to be modulated by an external signal. The auxiliary Z-axis input allows special purpose plug-in units, in the RIGHT VERT compartment, to modulate the display intensity. Diodes CR371 and CR372 limit the maximum voltage change at pin 9 to approximately +0.6 and −0.6 V to protect U375 from excessive voltage input. A positive input at pin 9 decreases beam 2 trace intensity.

Intensity Limit Z-Axis Logic. Transistor Q328 initiates intensity limit at U375 pin 7. Quiescently, Q328 is reverse biased and resistors R364, R365, R366, R370, and R374 establish the current at pins 7 and 9 of U375. When Q328 is turned on, current is robbed from R364 and R365 thereby reducing the Z-axis output at U375 pin 8. Transistor Q328 can be turned on by three signals: (1) the intensity Limit signal, which is LO at circuit board pin L when the time-base unit (selected for beam 2) is slower than 0.1 s/div; (2) the X-Y Compensation signal, which is LO at circuit board pin G when an amplifier unit is operating in a Horizontal compartment or a time-base unit is operating in the amplifier mode; (3) the Beam I Sense signal, which is HI at circuit board pin E whenever the crt beam current is excessive.

Readout Inhibit Z-Axis Logic. Transistor Q360 controls the levels at U375 pins 6 and 7 for readout displays. The Z-Axis Inhibit signal from the Readout System (J339) is connected to the base of Q360 through VR359 and R360. This level is normally HI, so Q360 operates as controlled by the plug-in unit chop blanking pulses at its emitter. When a readout display is to be presented, the Z-Axis Inhibit signal drops LO and is coupled to the base of Q360 through VR359 with little attenuation. The LO level reverse biases Q360 and its emitter goes LO. The LO level is coupled to U375 pins 6 and 7 to block the Beam 2 Z-Axis Logic output during readout display.

Trigger Selector ◇6

The Trigger Selector circuit determines the source of the internal triggering signals connected to the A and B HORIZ plug-in compartments. Figure 3-13 shows a detailed block diagram of the Trigger Selector circuit. A schematic of the

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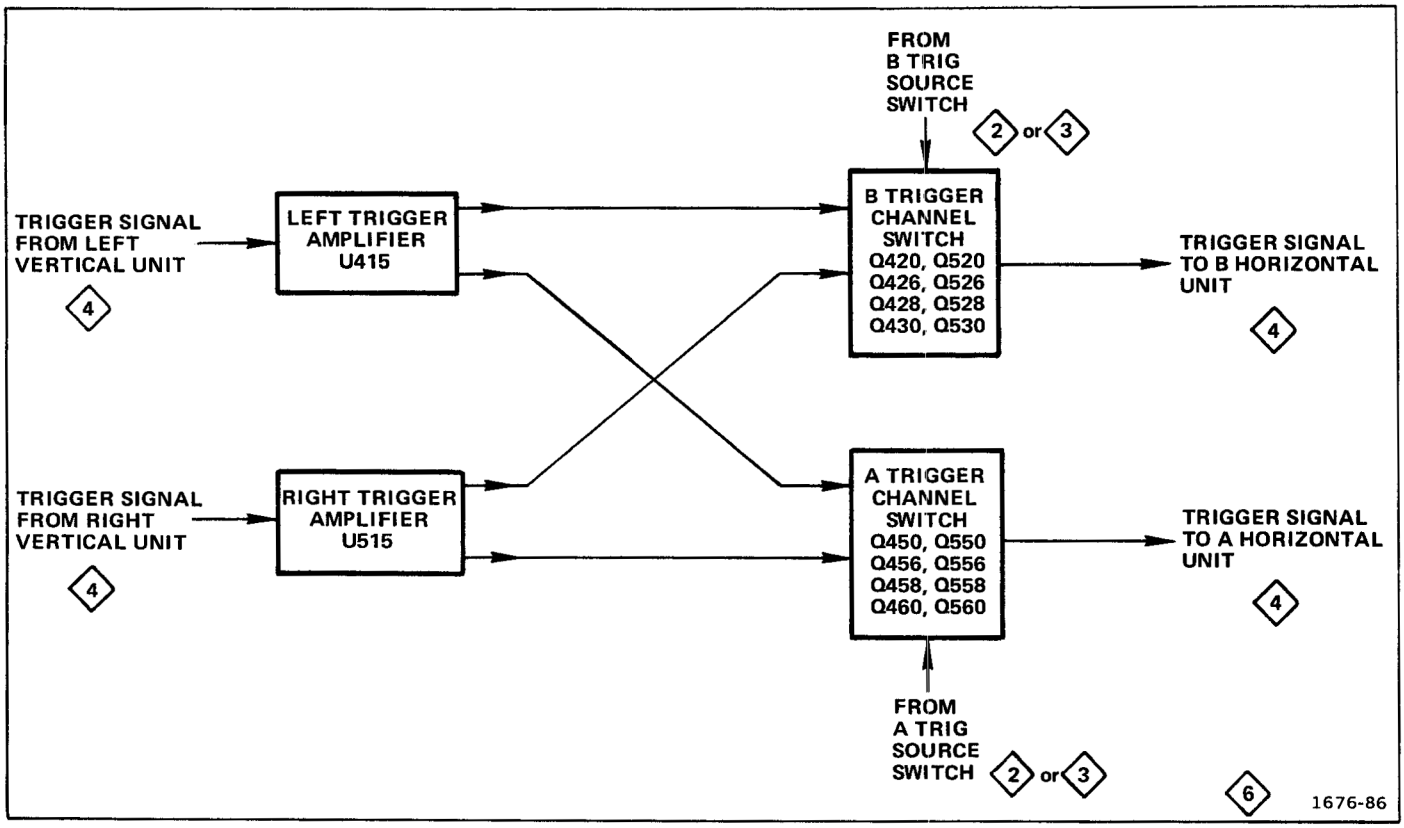


Fig. 3-13. Detailed block diagram of Trigger Selector circuit.

Trigger Selector circuit is shown on diagram 6 at the rear of this manual.

Trigger Amplifier

The trigger amplifier stages (U415 and U515) receive trigger signals from their respective vertical plug-in compartments and supply trigger signals to both channel switches.

A and B Trigger Channel Switches

The A Trigger Channel Switch circuit routes trigger signals from either the LEFT VERT or RIGHT VERT plug-in compartments to the A HORIZ plug-in compartment. The A TRIG SOURCE switch (S161) determines which trigger signal will be allowed to pass through the A Trigger Channel Switch circuit.

The A Trigger Channel Switch operates as follows: first, assume that pin 1 of P445 is grounded by the A TRIG SOURCE switch. Transistor Q556 saturates when its base goes negative. The voltage at the emitter of Q556 also goes negative and turns Q550 off. The collector of Q550 then goes positive to reverse bias CR546. Transistors Q560 and Q558 are forward biased by the emitter voltage of Q556, which provides the signal path for the trigger signals from pins 6 and 8 of U515 to J552 and J451. At the same time, Q456 turns off to reverse bias Q460 and Q458, which prevents the trigger signals from pins 6 and 8 of U415 from reaching J552 and J451. Also, Q450 turns on and forward biases CR446, which shunts the trigger signal from pins 6 and 8 of U415 to the +5 V supply through Q450.

Conversely, when pin 1 of P445 is ungrounded, Q560 and Q558 are reverse biased preventing the trigger signal at pins 6 and 8 of U515 from reaching J552 and J451. At the same time, Q458 and Q460 are forward biased providing a path for the trigger signal from pins 6 and 8 of U415 to reach J552 and J451.

The B Trigger Channel Switch stage routes trigger signals from either the LEFT VERT or RIGHT VERT plug-in compartment to the B HORIZ plug-in compartment. Otherwise, the operation of the B Trigger Channel Switch is the same as for the A Trigger Channel Switch.

Crossover Vertical Interface 7

The Crossover Vertical Interface stage determines whether the Left or Right Vertical units provide the input signal to the Beam 1 and Beam 2 Vertical Amplifiers as selected by the VERTICAL MODE switch (diagram 2). Separate preamplifiers are provided for the left and right vertical

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signals to the Beam 1 Vertical Amplifier and to the Beam 2 Vertical Amplifier (four total). The Readout Inhibit stage disables the Beam 2 Preamplifiers during the readout display. Figure 3-14 shows a block diagram of the Crossover Vertical Interface circuits and a schematic is shown on diagram 7 in the Diagrams section of this manual.

Left and Right Input Buffer Stages

Emitter follower transistors Q3602 and Q3604 form the input buffer stage for the vertical signal from the LEFT VERT compartment. Resistors R3611 and R3601, in parallel with the input impedance of Q3604 and Q3602, provide a 50 Ω termination for the differential signal. The Left Vertical Input Buffer stage drives the Left Beam 1 Preamplifier (U3615) and the Left Beam 2 Preamplifier (U3665) stages.

Emitter follower transistors Q3702 and Q3704 form the input buffer stage for the vertical signal from the RIGHT VERT compartment. Resistors R3701 and R3711, in parallel with the input impedance of Q3702 and Q3704, provide a 50 Ω termination for the differential signal. The Right Vertical Input Buffer stage drives the Right beam 1 Preamplifier (U3715) and the Right Beam 2 Preamplifier (U3765) stages.

Vertical Preamplifiers

Four preamplifiers are provided for the vertical signals from the Left and Right Vertical compartments as selected by the front-panel VERTICAL MODE switch: (1) integrated circuit U3615 preamplifies the left vertical signal to the Beam 1 Vertical Amplifier; (2) integrated circuit U3715 preamplifies the right vertical signal to the Beam 1 Vertical

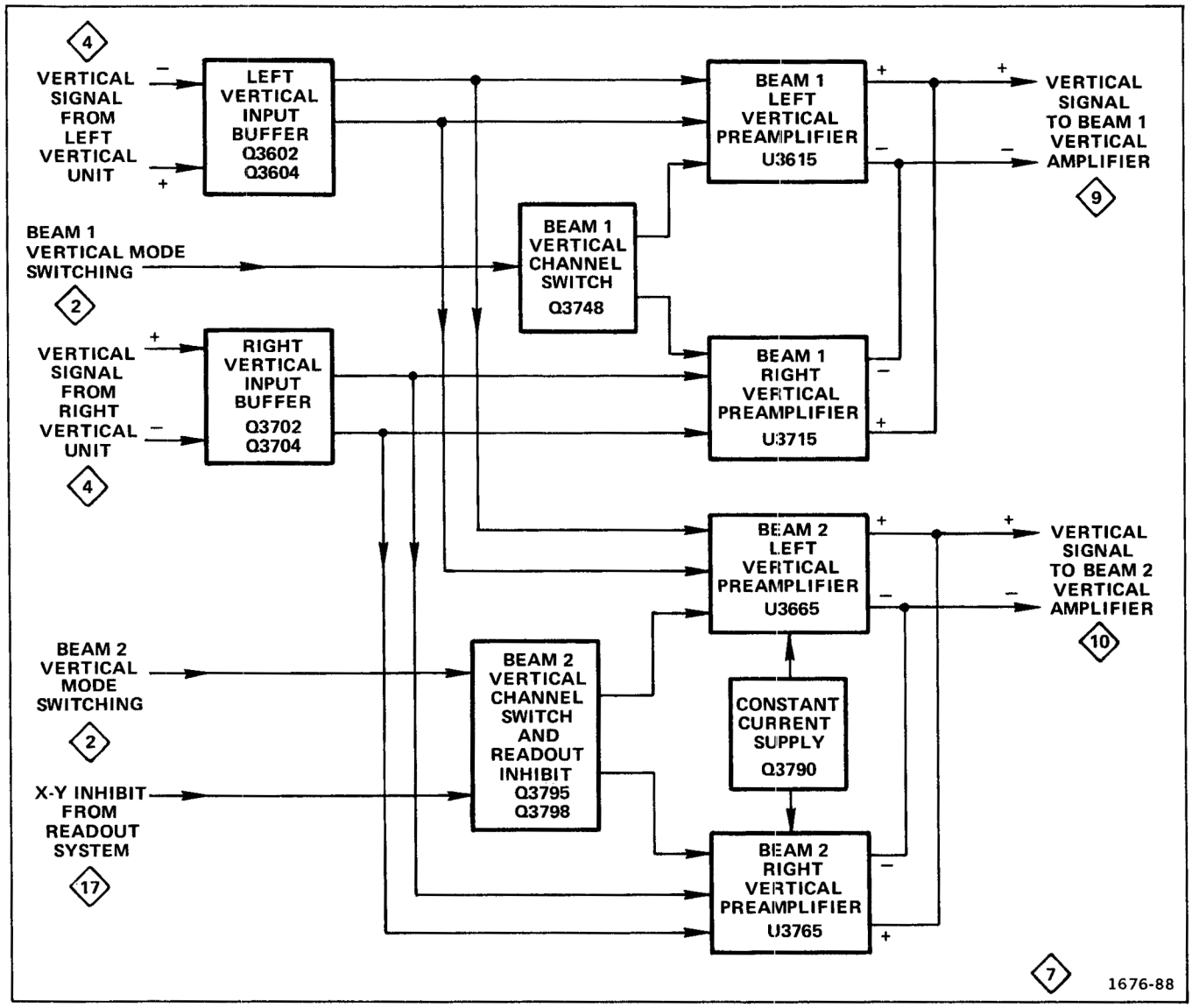


Fig. 3-14. Detailed block diagram of the Crossover Vertical Interface circuit.

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Amplifier; (3) integrated circuit U3665 preamplifies the left vertical signal to the Beam 2 Vertical Amplifier; and (4) integrated circuit U3765 preamplifies the right vertical signal to the Beam 2 Vertical Amplifier. The differential signal from the Beam 1 Preamplifiers (U3615 or U3715) is coupled to delay line DL650 on the Beam 1 Vertical Amplifier (diagram 9). The differential signal from the beam 2 preamplifiers (U3665 or U3765) is coupled to delay line DL2650 on the Beam 2 Vertical Amplifier (diagram 10).

Operation of the four preamplifier stages is nearly identical; therefore, only the Left Beam 1 Preamplifier U3615 will be described. Vertical channel switching of the preamplifier stages is described under Beam 1 and Beam 2 Vertical Channel switching. The lockout of the beam 2 preamplifiers during readout, is described under Readout Inhibit.

The negative input of the differential vertical signal is applied to preamplifier U3615 at pin 13 and the positive input is applied at U3615 pin 16. Bias inputs at U3615 pins 11, 14, 15, and 2 permit the characteristics of the preamplifier to be set by external components. For example, R3620-C3620 provide high-frequency compensation and R3630-C3630, R3621-C3621, and R3622-C3622 provide thermal compensation. The Beam 1 Left Gain adjustment (R3619) matches the gain of the left preamplifier to the right preamplifier.

The output from the preamplifier (U3615) is dependent on the level at pin 3. A HI level at pin 3 provides differential output at pins 9 and 4 to the Beam 1 Vertical Amplifier. A LO level at U3615 pin 3 internally shunts signal flow, thereby disabling the integrated circuit. Simultaneously, dc current is supplied to U3615 pin 6 from the +15 V supply. Refer to the Beam 1 and Beam 2 Vertical Channel Switching discussions for additional information.

Beam 1 Vertical Channel Switch

The Beam 1 Vertical Channel Switch stage (Q3748) determines whether the beam 1 vertical signal is derived from the plug-in unit in the LEFT VERT or RIGHT VERT compartments.

When the BEAM 1 VERTICAL MODE switch is set to RIGHT (see diagram 2) +5 V (HI) is applied to the base of Q3748. The HI level turns off Q3748, which drops the collector level to ground. The LO level at pin 3 of the Left Beam 1 Preamplifier U3615 internally shunts signal flow, thereby disabling the integrated circuit. Simultaneously, the HI level from the BEAM 1 VERTICAL MODE switch is coupled to pin 3 of the Right Beam 1 Preamplifier U3715. The HI level turns on U3715 providing differential signal output from pins 9 and 4 to the Beam 1 Vertical Amplifier (diagram 9).

When the BEAM 1 VERTICAL MODE switch is set to LEFT (see diagram 2), the LO level applied to the base of Q3748 turns on the transistor. The collector level raises HI, as does pin 3 of the Beam 1 Left Preamplifier U3615. This HI level turns on U3615, providing differential signal output from pins 9 and 4 to the Beam 1 Vertical Amplifier (diagram 9). Simultaneously, the LO level from the BEAM 1 VERTICAL MODE switch is coupled through R3744 to pin 3 of the Right Beam 1 Preamplifier U3715. The LO level internally shunts signal flow, thereby disabling U3715.

The Beam 2 Channel Switch stage (Q3798) determines whether the beam 2 vertical signal is derived from the plug-in unit in the LEFT VERT or RIGHT VERT compartments. Operation of the Beam 1 and Beam 2 Channel Switch stages is nearly identical; therefore, the Beam 1 Channel Switching discussion applies to the Beam 2 Channel Switch stage.

Readout Inhibit

The vertical signal to the Beam 2 Vertical Amplifier (diagram 10) is blocked during the time that readout is being displayed. The X-Y inhibit signal (HI), from the Readout System (diagram 17), turns on transistor Q3795. The collector of Q3795 drops LO. The LO level is coupled through CR3794 and CR3694 to pin 3 of both the Left Beam 2 Preamplifier (U3665) and the Right Beam 2 Preamplifier (U3765). Signal flow is internally shunted in both integrated circuits, thereby disabling both the Left (U3665) and Right (U3765) Beam 2 Preamplifier stages. After the readout display, the X-Y inhibit signal falls LO, which turns off Q3795 and reverse biases CR3794 and CR3795. Now, the current flow through the Beam 2 Left and Right Preamplifiers is dependent on the Beam 2 Channel Switch stage.

Dedicated Vertical Interface (Option 21 Only) ◇8

The Dedicated Vertical Interface stage provides preamplification for the left vertical signal to the Beam 1 Vertical Amplifier (diagram 9) and for the right vertical signal to the Beam 2 Vertical Amplifier (diagram 10). The Readout Inhibit stage disables the beam 2 preamplifier during the readout display. Figure 3-15 shows a block diagram of the Dedicated Vertical Interface and a schematic is shown on diagram 8 in the Diagrams section of this manual.

Vertical Preamplifiers

Integrated circuit U615 preamplifies the left vertical signal to the Beam 1 Vertical Amplifier (diagram 9) and U715 preamplifies the right vertical signal to the Beam 2 Vertical Amplifier (diagram 10).

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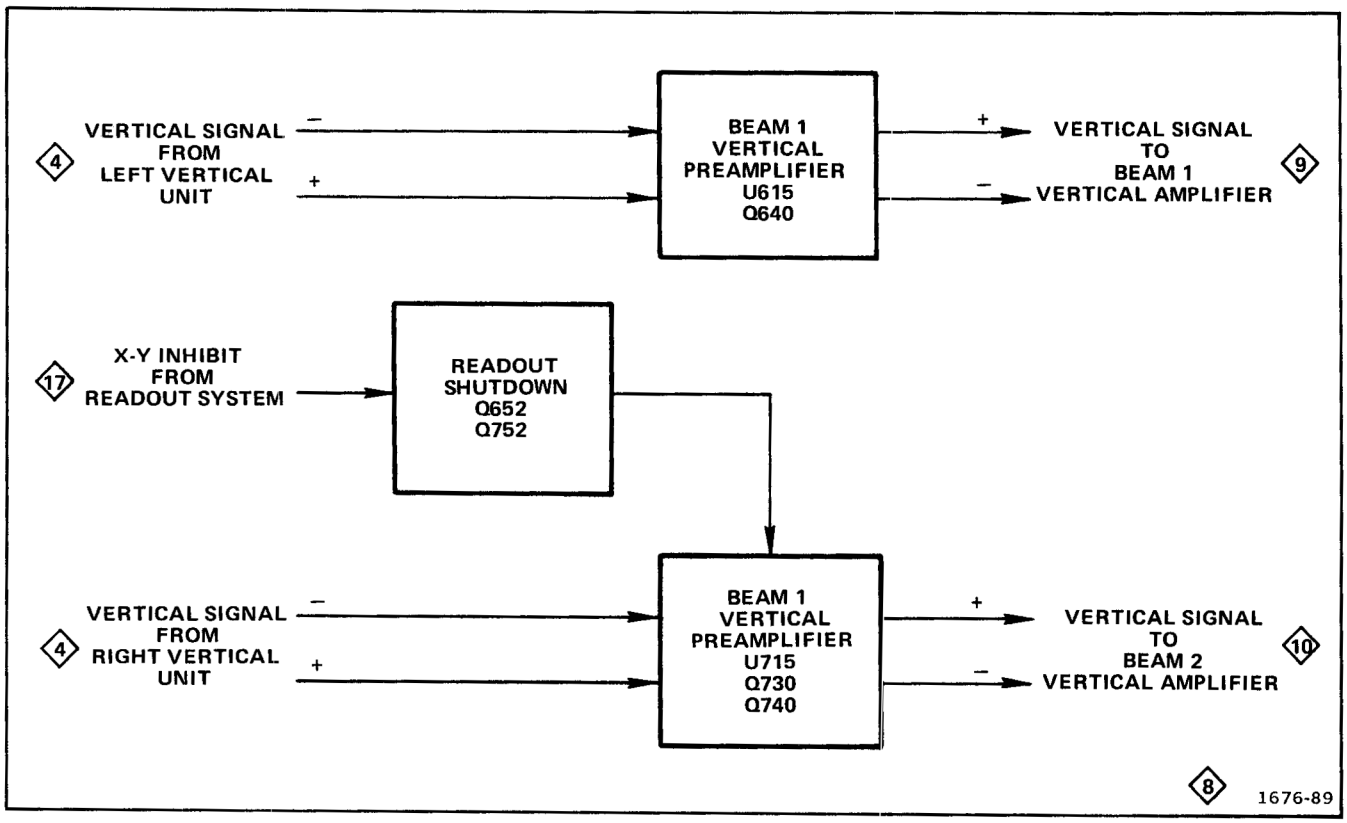


Fig. 3-15. Detailed block diagram of the Dedicated Vertical Interface circuit.

Operation of the beam 1 and beam 2 preamplifiers (U615 and U715, respectively) is nearly identical, except that the beam 2 vertical signal is locked out during the readout display (refer to the Readout Inhibit description, which follows, for further information). Therefore, only the Beam 1 Preamplifier (U615) will be described.

The negative input of the differential vertical signal is applied to preamplifier U615 at pin 13, and the positive input is applied at U615 pin 16. Bias inputs at U615 pins 11, 14, 15, and 2 permit the characteristics of the preamplifier to be set by external components. For example, C618 and R618 provide high-frequency compensation, and R606 and C606 provide thermal compensation. The differential output from U615 is at pins 9 and 4.

Readout Inhibit

The vertical signal to the Beam 2 Vertical Amplifier (diagram 10) is blocked during the time that readout is displayed. The X-Y inhibit signal (HI), from the Readout System (diagram 17), turns on Q752, which turns off Q652. The resultant HI at U715 pin 10 and LO at U715 pin 3, shunts signal flow within the integrated circuit, thereby disabling U715.

After the readout display, the X-Y inhibit signal falls LO. Q752 turns off and Q652 turns on. The resultant HI at U715 pin 3 and LO at pin 10, enables signal flow from U715 pins 9 and 4 to the Beam 2 Vertical Amplifier (diagram 10).

Beam 1 Vertical Amplifier 9

The Beam 1 Vertical Amplifier circuit provides final amplification for the vertical signal before it is applied to the beam 1 vertical deflection plates of the crt. An input is provided for the BEAM 1 BEAMFINDER switch to compress an overscanned display within the viewing area of the crt. In addition, the Beam 1 Vertical Amplifier accepts the Auxiliary Y-Axis input from the Main Interface circuit. Figure 3-16 shows a block diagram of the Beam 1 Vertical Amplifier and a schematic is shown on diagram 9 in the Diagrams section of this manual.

Delay Line

Delay Line DL650 provides approximately 65 ns of delay for the vertical signal to allow the horizontal circuits time to initiate a sweep before the vertical signal reaches the vertical deflection plates of the crt. This allows the instrument to display the leading edge of the signal originating the trigger

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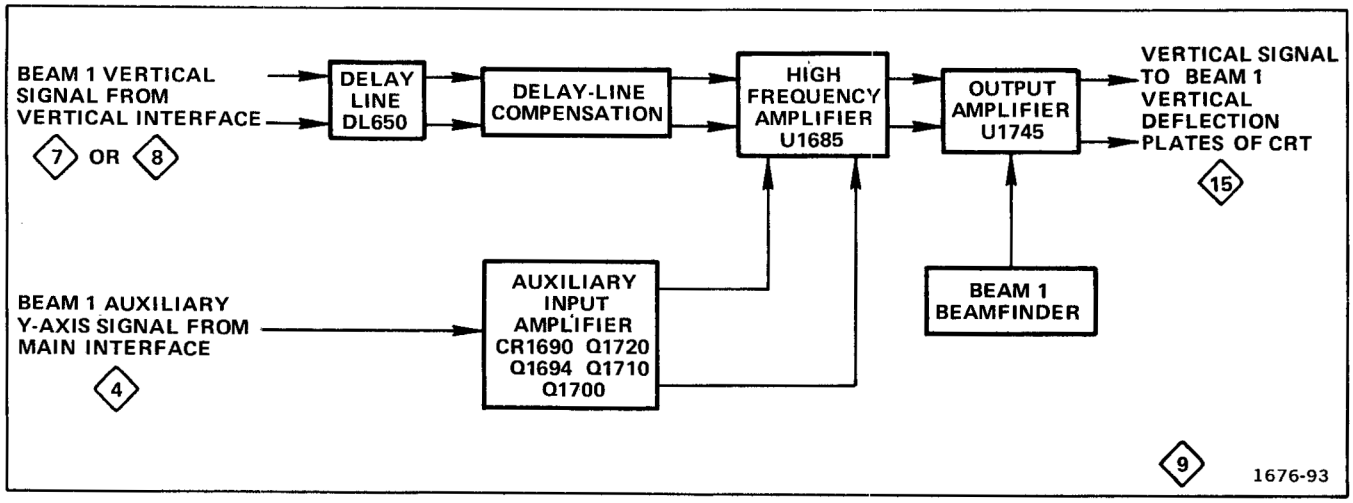


Fig. 3-16. Detailed block diagram of the Beam 1 Vertical Amplifier circuit.

pulse when using internal triggering. The delay line used in this instrument has a characteristic impedance of 100 Ω differentially. It is of the coaxial type that does not produce preshoot or phase distortion in the crt display.

High-Frequency Amplifier

The High-Frequency Amplifier stage, consisting primarily of integrated circuit U1685, provides a 50 Ω input impedance (100 Ω differentially) for the Beam 1 Vertical Amplifier circuit to permit accurate delay-line termination. The components connecting the input signal to U1685 provide forward termination and compensation for the delay line. Resistor/capacitor R1658 and C1658 provide adjustable high-frequency compensation. Terminals to the emitters of the input transistors of U1685 at pins 5, 6, 11, and 12 permit the quiescent operating conditions of the stage to be set by discrete components. Resistors R1682 and R1689 set the quiescent operating level; R1683 and R1687 are selected to accurately set the gain of the differential channels. These emitter inputs also provide a means of injecting the output of the Auxiliary Y-Axis Amplifier stage. The Vert Gain adjustment, R1730, sets the resistance between the output terminals of U1685 to control the current gain of this stage. This adjustment sets the overall gain of the Beam 1 Vertical Amplifier circuit.

Auxiliary Input Amplifier

The Beam 1 Auxiliary Input Amplifier controls the bias current to the High-Frequency Amplifier stage to provide centering for the Beam 1 Vertical Amplifier circuit. The beam 1 auxiliary Y-axis signal originates either from dual time-base units with alternate sweep switching and vertical positioning or on command of the VERT SET (1) control. Refer to the Auxiliary Y-Axis Switching portion of the Main Interface discussion (diagram 4) for further information.

The auxiliary Y-axis signal at J1690 is coupled through CR1690 to the base of Q1720. Transistors Q1720 and Q1710 form a paraphase amplifier to convert the single-ended auxiliary Y-axis input signal to a push-pull signal, which is coupled to the bias inputs of U1685 (refer to Fig. 3-16).

Transistors Q1694, Q1700, and associated circuitry form a stage that blocks auxiliary Y-axis signals during the time that readout is displayed. However, only the Beam 2 Vertical Amplifier (diagram 10) is time shared with the Readout System (diagram 17). Therefore, the beam 1 circuits (Q1694 and Q1700) are not used. Transistors Q1694 and Q1700 are quiescently off.

Output Amplifier

The Output Amplifier stage, consisting primarily of integrated circuit U1745, provides final amplification for the vertical signal to drive the crt beam 1 vertical deflection plates. Terminals to the emitters of the input transistors at pins 1, 6, 7, and 12 allow the use of discrete components to establish operating characteristics. Resistors R1741 and R1756 are selected to accurately set the gain of the differential channels. Resistors R1753, R1754, R1767, R1768, and R1770 set the operating level of this stage. The series RC networks in parallel with R1741 and R1756 provide frequency compensation for uniform gain at all frequencies within the bandwidth of the instrument.

The BEAM 1 BEAMFINDER switch, changes the emitter current source for U1745 to provide the beamfinder function. Normally, the emitter current for U1745 is supplied from ground. However, when the BEAM 1 BEAMFINDER switch is actuated, the only emitter current source for U1745 is through R1771. This limits the dynamic range of the stage by limiting its current, so the display is compressed vertically within the graticule area.

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The signal at the output collectors of U1745 is connected directly to the beam 1 vertical deflection plates of the crt. A distributed deflection plate system is used in this instrument for maximum frequency response and sensitivity. The signal at the output of U1745 is connected to the deflection-plate structure in the crt and then to termination network LR1780, R1782A, LR1784, and R1782B. As the signal passes through the deflection-plate structure in the crt, its velocity is essentially the same as the velocity of the electron beam passing between the vertical deflection plates. This synchronism of the deflection signal and the electron beam reduces the loss in high-frequency sensitivity due to electon-transit time through the deflection-plate structure.

Beam 2 Vertical Amplifier ◇10◇

The Beam 2 Vertical Amplifier circuit provides final amplification for the vertical signal before it is applied to the beam 2 vertical deflection plates of the crt. The Beam 2 Vertical Amplifier also accepts inputs from the Readout System to block the vertical signal while readout information is displayed and to produce the vertical portion of the readout display. An input is provided for the BEAM 2 BEAMFINDER switch to compress an overscanned display within the viewing area of the crt. In addition, the Beam 2 Vertical Amplifier accepts the auxiliary Y-axis input from the Main Interface circuit (diagram 4). Figure 3-17 shows a block diagram of the Beam 2 Vertical Amplifier and a schematic is shown on diagram 10 in the Diagrams section of this manual.

The Beam 2 Vertical Amplifier contains readout circuitry in the Auxiliary Input Amplifier stage (see Fig. 3-17); otherwise, operation is identical to the Beam 1 Vertical Amplifier. The Beam 2 Vertical Amplifier circuit numbers are in the 2000-series, whereas, the Beam 1 Vertical Amplifier circuit numbers are in the 1000-series. For example, U1685 on the Beam 1 Vertical Amplifier (diagram 9) corresponds to U2685 on the Beam 2 Vertical Amplifier (diagram 10). Therefore, the Beam 1 Vertical Amplifier discussion applies to the Beam 2 Vertical Amplifier, except for circuit numbers and the Auxiliary Input Amplifier discussion.

Auxiliary Input Amplifier

The Beam 2 Auxiliary Input Amplifier controls the bias current to the High-Frequency Amplifier stage to provide centering for the Beam 2 Vertical Amplifier circuit. This stage also provides readout and auxiliary inputs to the Beam 2 Vertical Amplifier.

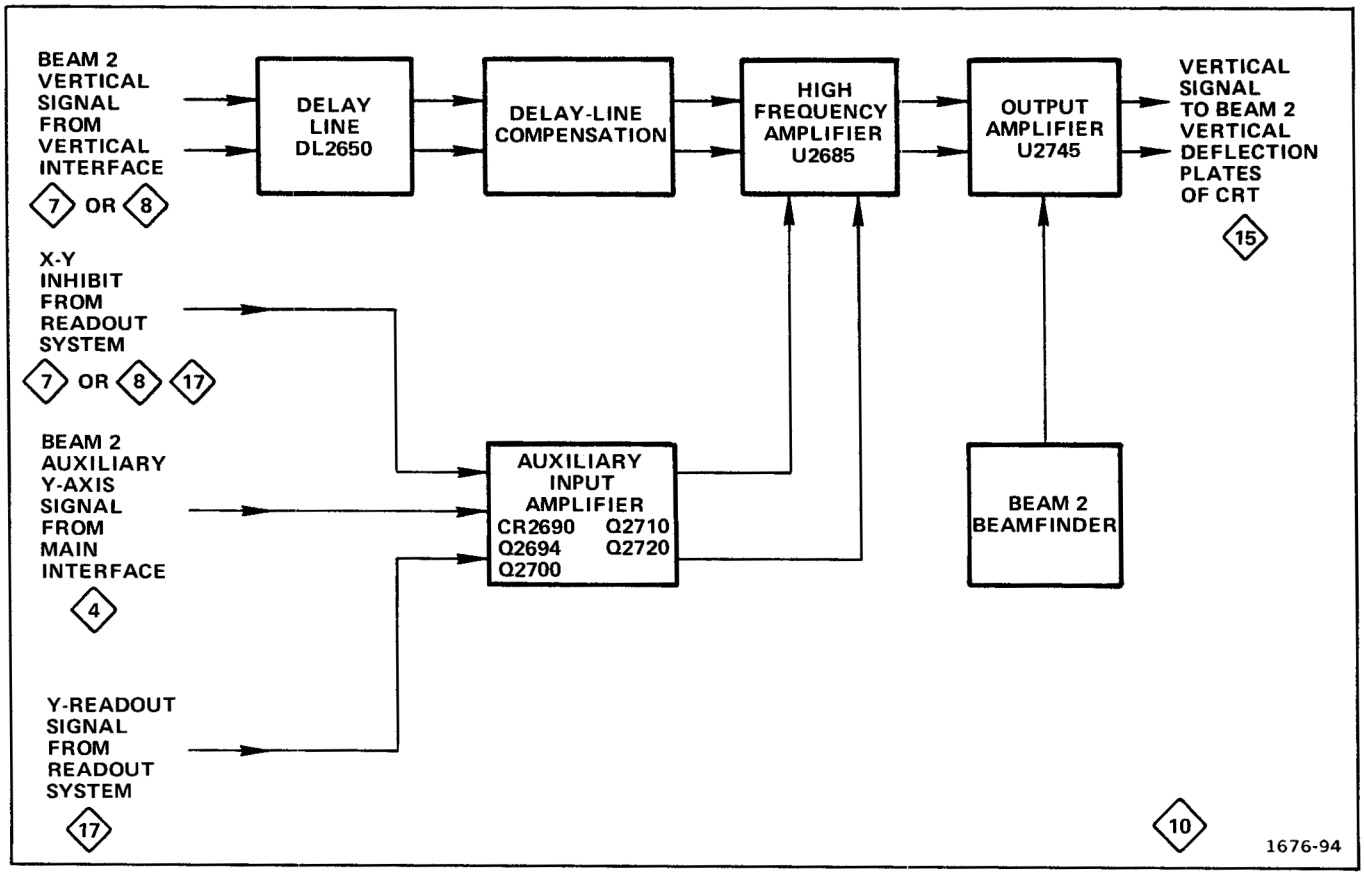


Fig. 3-17. Detailed block diagram of the Beam 2 Vertical Amplifier circuit.

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The beam 2 auxiliary Y-axis signal originates from dual time-base units with alternate sweep switching and vertical positioning. Refer to the Auxiliary Y-Axis Switching portion of the Main Interface discussion (diagram 4) for further information.

When Readout is not displayed, Q2694 and Q2700 are off. The auxiliary Y-axis signal at J2690 is coupled through CR2690 to the base of Q2720. Transistors Q2720 and Q2710 form a paraphase amplifier to convert the single-ended auxiliary Y-axis input signal to a push-pull signal, which is coupled to the bias inputs of U2685 (refer to Fig. 3-17).

When readout is displayed, the X-Y inhibit signal (HI) at J2738 turns on Q2694. The collector of Q2694 drops, which reverse biases CR2690 and turns on Q2700. The auxiliary Y-axis signal at J2690 is blocked and the Y-readout signal at J2799 is coupled to the base of Q2720. Transistors Q2720 and Q2710 form a paraphase amplifier to convert the single-ended Y-readout input signal to a push-pull signal that is coupled to the bias inputs of U2685 (refer to Fig. 3-17). When Q2700 is on, Readout Centering adjustment R2700 provides vertical centering of the readout display.

Horizontal Interface 11

The Horizontal Interface circuit determines whether the Left or Right Horizontal unit provides the input signal to the Beam 1 and Beam 2 Horizontal Amplifiers as selected by the HORIZONTAL MODE switch (diagram 2). Figure 3-18 shows a block diagram of the Horizontal Interface circuit. A schematic of the Horizontal Interface circuit is shown on diagram 11 in the Diagrams section of this manual.

Beam 1 Channel Switch

The Beam 1 Channel Switch stage (U820) determines whether the beam 1 horizontal signal is derived from the plug-in unit in the A or B HORIZ compartment.

The BEAM 1 HORIZONTAL MODE switch sets the GND A1 line HI or LO (see diagram 2). A HI at pin BA causes the Beam 1 Channel Switch to route the push-pull signal from the B Horizontal plug-in unit to J820 and J810. A LO at pin BA causes the Beam 1 Channel Switch to route the push-pull signal from the A Horizontal plug-in unit to J820 and J810.

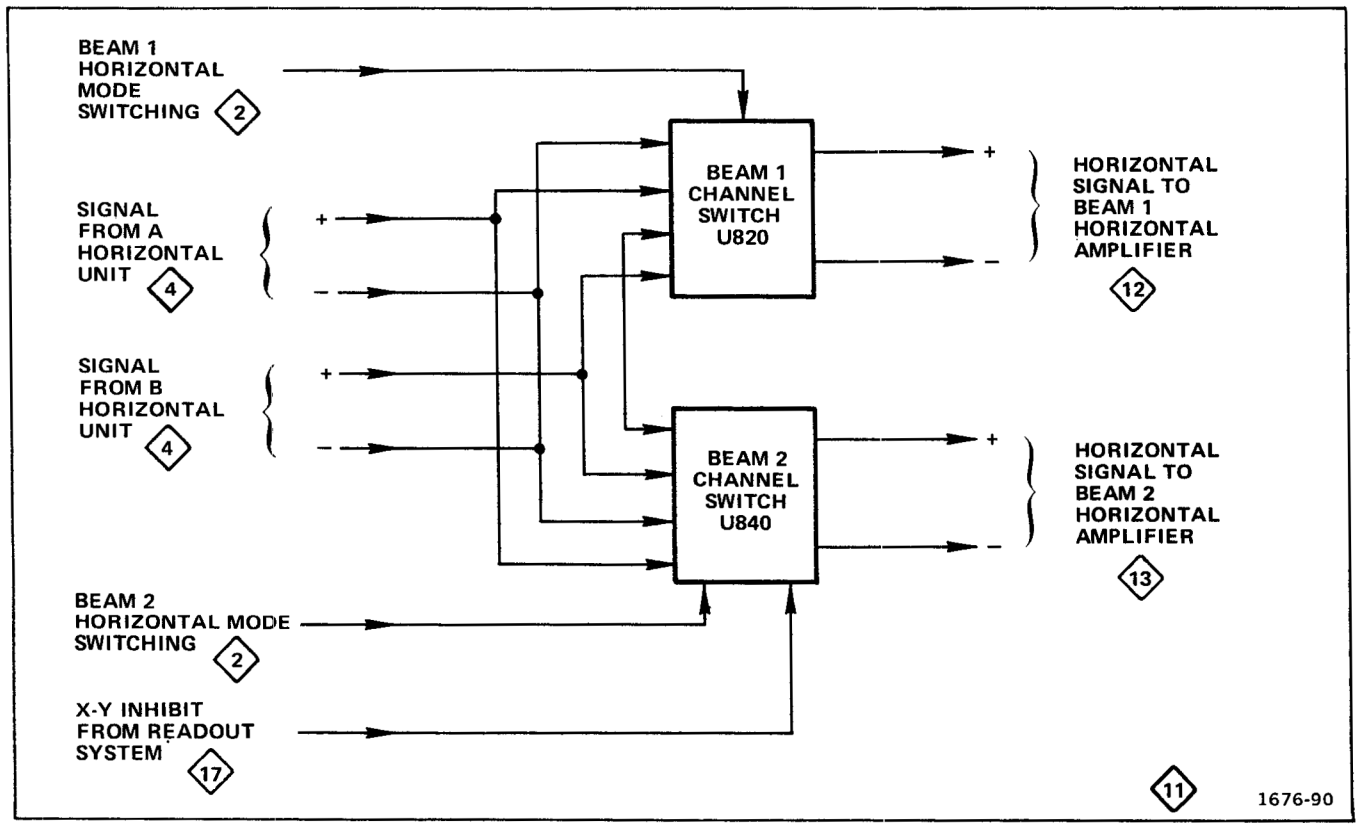


Fig. 3-18. Detailed block diagram of the Horizontal Interface circuit.

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Beam 2 Channel Switch

The Beam 2 Channel Switch stage (U840) determines whether the beam 2 horizontal signal is derived from the plug-in unit in the A or B HORIZ compartment.

The BEAM 2 HORIZONTAL MODE switch sets the GND B2 line HI or LO (see diagram 2). A HI at pin BB causes the Beam 2 Channel Switch to route the push-pull signal from the A Horizontal plug-in unit to J841 and J850. A LO at pin BB causes the Beam 2 Channel Switch to route the push-pull signal from the B Horizontal plug-in unit to J841 and J850.

The X-Y inhibit signal (HI) prevents the Beam 2 Channel Switch from coupling signals from either horizontal plug-in unit to the Beam 2 Horizontal Amplifier (diagram 13) during the readout display. A HI at J838A sets the Beam 2 Channel Switch (U840) to the lockout mode.

Beam 1 Horizontal Amplifier 12

(For instruments 7844 SN B110000-above; R7844 SN B100000-above).

The Beam 1 Horizontal Amplifier circuit amplifies the push-pull horizontal deflection signal from the plug-in unit installed in either horizontal compartment and connects it to the beam 1 horizontal deflection plates of the crt. Figure 3-19 shows a detailed block diagram of the Beam 1 Horizontal Amplifier circuit. A schematic of this circuit is shown on diagram 12 in the Diagrams section of this manual.

Input Amplifier

The Input Amplifier stage is a paraphase amplifier consisting of Q4812 and Q4814. Overall gain for the Horizontal Amplifier is determined by Horiz Gain adjustment R4820. Thermal compensation for the horizontal system is provided by thermistor network RT4824 and R4824. The Horiz Sep signal at J4868 adds offset current to the base of Q4812

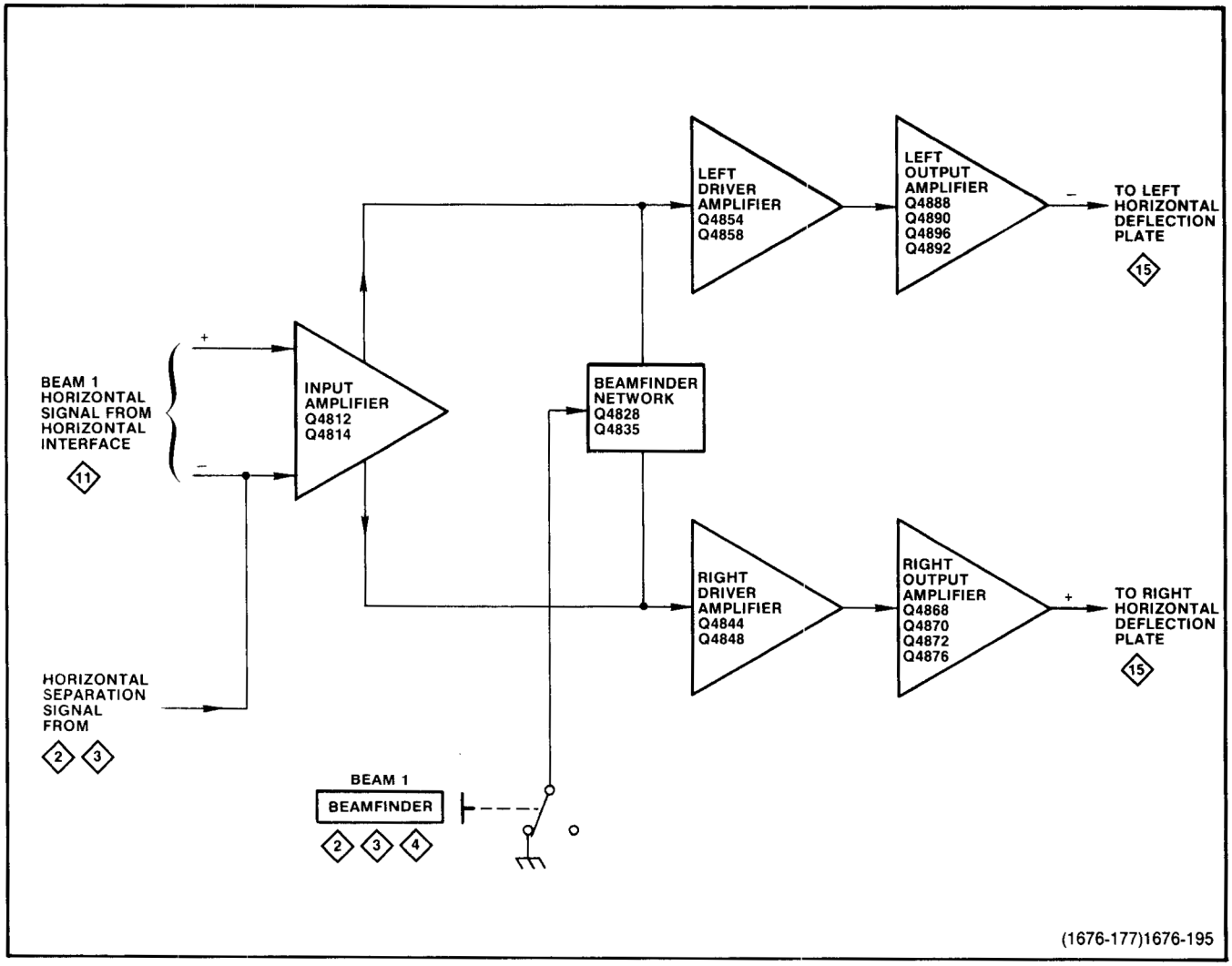


Fig. 3-19. Detailed block diagram of the Beam 1 Horizontal Amplifier circuit (for instruments 7844 SN B110000-above; R7844 SN B100000-above).

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through R4810. This occurs when the same horizontal plug-in compartment is selected by the BEAM 1 and BEAM 2 HORIZONTAL MODE switches. The Horiz Ctr adjustment, R4816, compensates for centering error in the crt, channel switch, and input amplifier circuit. Capacitor C4823 increases the gain of the input stage at high frequency, and provides adjustment for the 1 ns/div timing.

The Input Amplifier emitter current source is normally supplied from the +15 V Supply through saturated Q4828 and R4825 and R4826. Transistor Q4835 is turned off by the saturation voltage of Q4828. When the BEAMFINDER switch is actuated, Q4828 is reverse biased, and emitter current to Q4812 and Q4814 is supplied through R4827. This reduces the dynamic range of the input stage by limiting its current source. Transistor Q4835 is forward biased and supplies the required current to the Driver and Output Amplifiers. This action reduces the dynamic range of the horizontal system to keep the display within the horizontal limits of the graticule, regardless of the setting of positioning controls or signal amplitude.

Left and Right Driver Amplifiers

The Left and Right Driver Amplifiers are current-driven, shunt-feedback amplifiers, consisting of Q4844 and Q4854, and feedback resistors R4845 and R4855. Transistors Q4848 and Q4858 are emitter followers that provide the current source for the shunt-feedback amplifiers Q4844 and Q4854; they also drive the capacitive load that is presented by the output stage. The LIM CTR adjustment, R4840, provides offset current to the driver amplifiers, so when equal current exists in both amplifiers, no differential voltage will be applied to the output amplifiers; this effectively provides a centered trace presentation.

Left Output Amplifier

The Left Output Amplifier is an operational amplifier consisting of common-emitter amplifiers Q4888 and Q4890, and the common-base amplifier Q4896. The feedback network is R4898-C4898 and R4862, C4860, and C4861 (R4862 is R_i and R4898 is R_f). Variable capacitor C4860 adjusts for the 2 and 5 ns/div timing. Transistor Q4892 provides the collector current source for the output amplifier, Q4896.

Right Output Amplifier

Basic operation of the Right Output Amplifier is similar as just described for the Left Output Amplifier. However, Q4876, in addition to serving as a collector current source for the output amplifier Q4872, is also the high-frequency signal path from the collectors of Q4868 and Q4870 to the crt plates.

Beam 1 Horizontal Amplifier (12)

(For instruments 7844 SN B109999-below; R7844 SN B099999-below)

Input Amplifier

The Beam 1 Horizontal Amplifier circuit amplifies the push-pull horizontal deflection signal from the plug-in unit installed in either horizontal compartment and connects it to the beam 1 horizontal deflection plates of the crt. Figure 3-20 shows a detailed block diagram of the Beam 1 Horizontal Amplifier circuit. A schematic of this circuit is shown on diagram 12 in the Diagrams section of this manual.

The Input Amplifier stage is a paraphase amplifier consisting of Q1814 and Q1812. Overall gain for the Horizontal Amplifier is determined by Horiz Gain adjustment R1816. Thermal compensation for the horizontal amplifier is provided within this stage by thermistor RT1814. The emitter current for this stage is normally supplied from the +15 V Supply through R1828 and Q1826. However, when the BEAMFINDER switch is actuated, Q1826 is reverse biased, and emitter current to Q1814 and Q1812 is supplied only through R1826. Transistor Q1828 is then forward biased, which causes CR1834 and CR1836 to conduct. The combination of Q1826 turning off and Q1828 turning on reduces the dynamic range of the horizontal system to keep the display within the horizontal limits of the graticule, regardless of the setting of positioning controls or signal amplitude. The Horiz Sep signal at J1868 adds offset current to the base of Q1812 through R1810. This occurs when the same horizontal plug-in compartment is selected by the BEAM 1 and BEAM 2 HORIZONTAL MODE switches.

Left and Right Driver Amplifiers

The Left and Right Driver Amplifiers each consist of an operational amplifier to drive their respective output amplifier stages. Transistors Q1854 and Q1858 compose the operational amplifier for the Left Driver Amplifier. Transistors Q1844 and Q1848 compose the operational amplifier for the Right Driver Amplifier. The Symmetry adjustment, R1838, sets the quiescent operating level of the driver amplifiers and output amplifiers.

To prevent the Left Output Amplifier from being overdriven, signal limiting occurs in the Left Driver Amplifier. Signal limiting occurs when the collector of Q1858 is driven far enough in the negative direction for CR1852 to become forward biased. As CR1852 conducts, R1852 is connected in parallel with R1854; this effectively reduces the gain of the stage and in turn the signal drive to the Left Output Amplifier.

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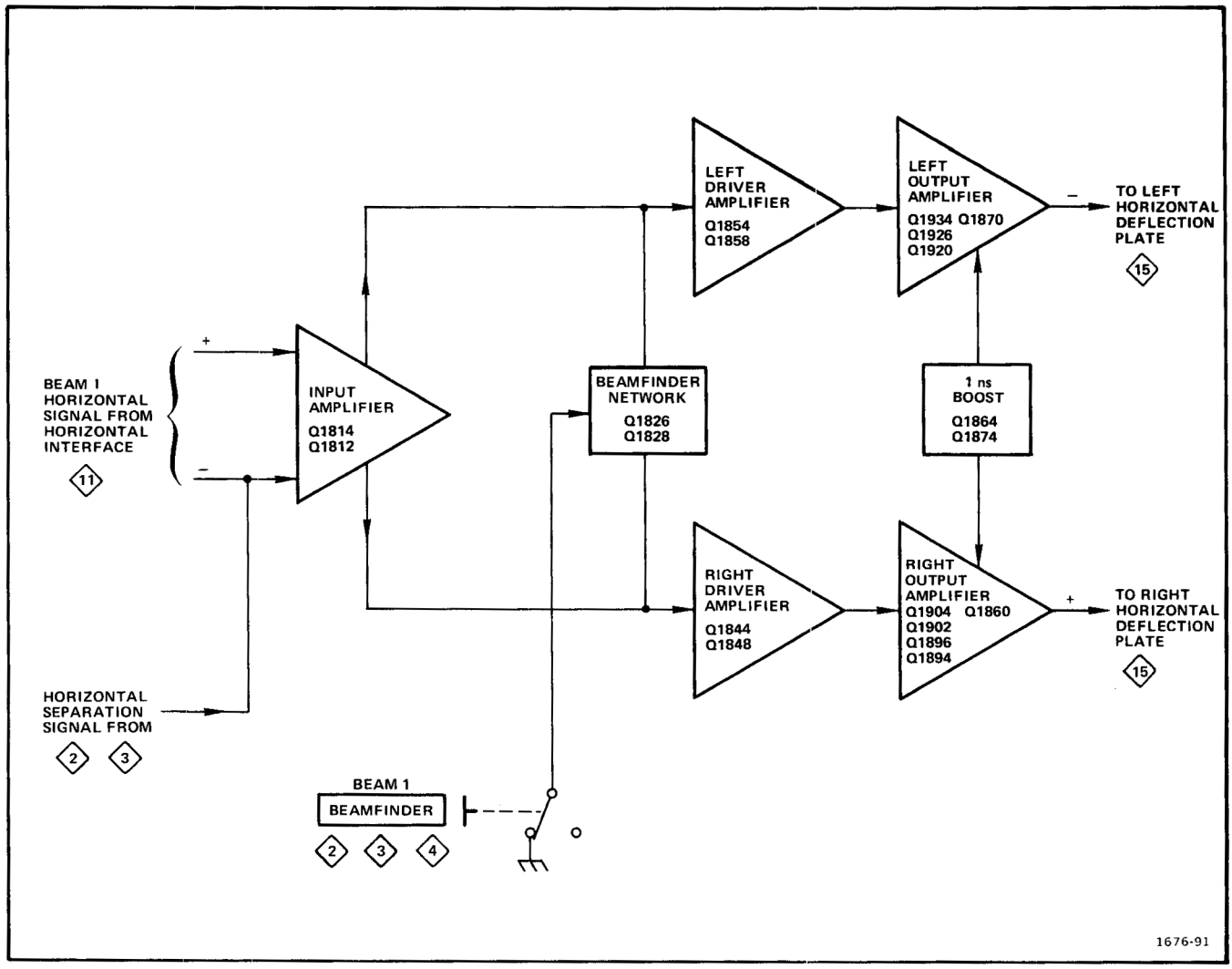


Fig. 3-20. Detailed block diagram of the Beam 1 Horizontal Amplifier circuit (for instruments 7844 SN B109999-below; R7844 SN B099999-below).

Similarly, to prevent the Right Output Amplifier from being overdriven, signal limiting occurs in the Right Driver stage. Signal limiting occurs when the collector of Q1848 is driven far enough in the positive direction for CR1842 to become forward biased. As CR1842 conducts, R1844 is connected in parallel with R1842, which effectively reduces the gain of the stage; in turn, the drive to the Right Output Amplifier.

Left Output Amplifier

The Left Output Amplifier consists of Q1870, Q1934, Q1926, and Q1920. Low-frequency signals at the emitter of Q1870 are amplified by Q1934 and Q1926. The feedback network for the low-frequency amplifier is R1928-C1928 and R1936-C1934 (R1936 is R_i and R1938 is R_f). Variable capacitor C1934 adjusts the high-frequency signal gain of the low-frequency amplifier. Transistor Q1870 operates as an emitter-follower for low-frequency signals and a common-emitter amplifier for high-frequency signals. The gain of Q1870 for high-frequency signals is determined by the setting of C1862 and R1870. High-frequency signals at the collector of Q1870 are coupled to common-base amplifier Q1926 by C1870 and to Q1920 through C1920. The output transistors Q1926 and Q1920 are connected in the complementary configuration to provide less resistive loading at the output. Horiz Ctr adjustment R1940 balances the output stages to horizontally center the beam 1 crt display.

Right Output Amplifier.

Basic operation of the Right Output Amplifier is the same as just described for the Left Output Amplifier.

1 ns Boost

The 1 ns Boost stage is activated at the fastest calibrated sweep rate of 1 ns. Components C1860 and R1864 com-

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pose a differentiator. High-frequency signals from Q1860 are coupled through C1860 to the emitter of Q1864 causing Q1864 to conduct and boost the signal at the collector of Q1870. Likewise, C1874 couples high-frequency signals to the emitter of Q1874 causing Q1874 to conduct and boost the signal at the emitter of Q1896.

Beam 2 Horizontal Amplifier 13

(For instruments 7844 SN B110000-above; R7844 SN B100000-above).

The Beam 2 Horizontal Amplifier circuit amplifies the push-pull horizontal deflection signal from the plug-in unit installed in either horizontal compartment and connects it to the beam 2 horizontal deflection plates of the crt. Figure 3-21 shows a detailed block diagram of the Beam 2 Horizontal Amplifier circuit. A schematic of this circuit is shown on diagram 13 in the Diagrams section of this manual.

The Beam 2 Horizontal Amplifier and Beam 1 Horizontal Amplifier are identical except for readout circuitry contained within the Beam 2 Horizontal Amplifier. Also, the Beam 2 Horizontal Amplifier component numbers are in the 5000-series whereas the Beam 1 Horizontal Amplifier component numbers are in the 4000-series. For example, Q4812 on diagram 12 corresponds to Q5812 on diagram 13. Therefore, the Beam 1 Horizontal Amplifier discussion applies to the Beam 2 Horizontal Amplifier with the exceptions of component numbers and readout circuitry.

Readout Positioning

When readout is displayed, the X-Axis Readout signal is applied to the Beam 2 Horizontal Amplifier through R5809 (RO Gain). The Readout Gain adjustment, R5809, determines the horizontal deflection of the readout display. At the same time, the X-Y Inhibit signal (HI) causes Q5808 to conduct, connecting the center tap of Readout Centering ad-

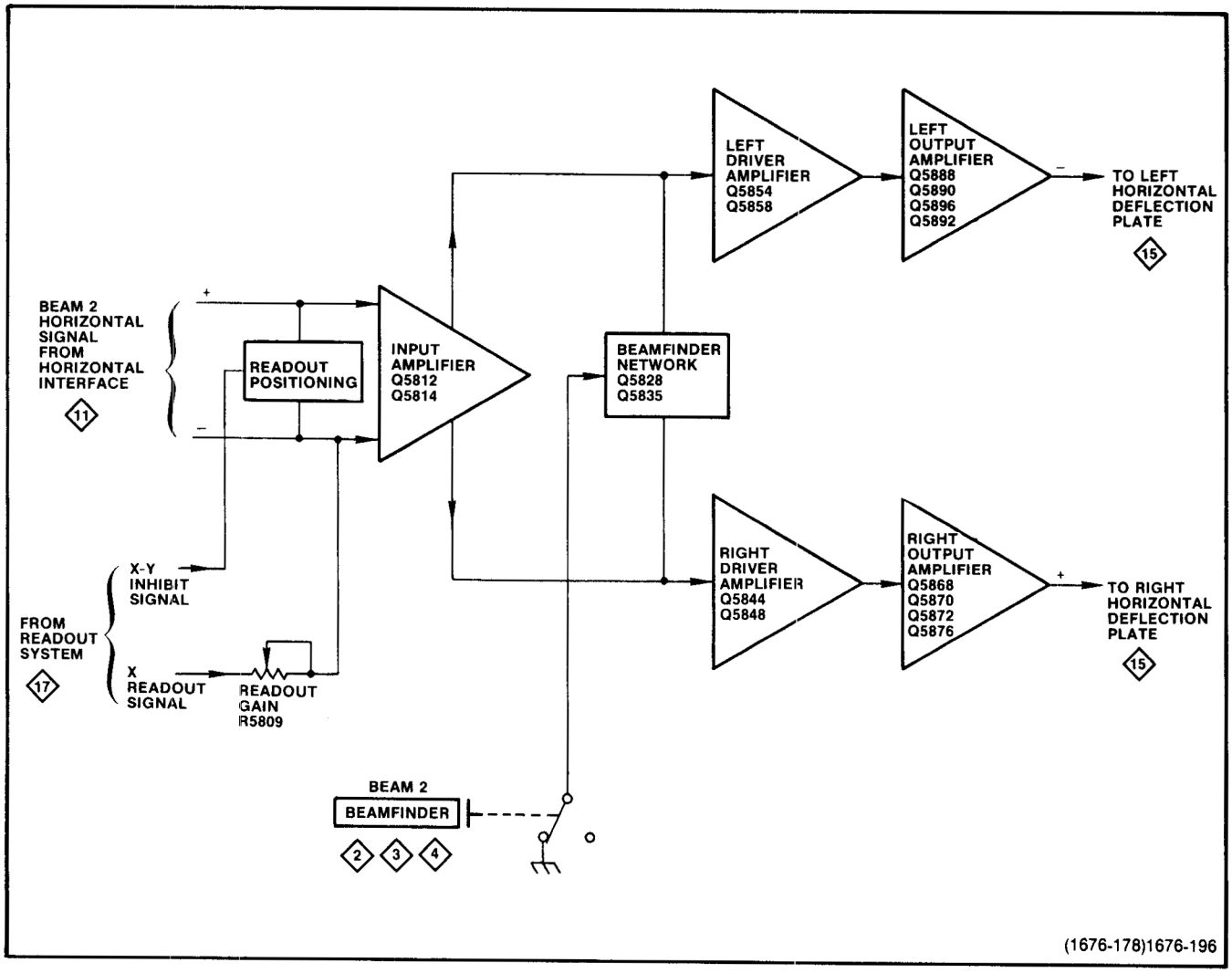


Fig. 3-21. Detailed block diagram of the Beam 2 Horizontal Amplifier circuit (for instruments 7844 SN B110000-above; R7844 SN B100000-above).

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justment R5804 to ground. Grounding the center tap of R5804 allows R5804 to horizontally position the readout display on the crt.

Beam 2 Horizontal Amplifier ◇13◇

(For instruments 7844 SN B109999-below; R7844 SN B099999-below).

The Beam 2 Horizontal Amplifier circuit amplifies the push-pull horizontal deflection signal from the plug-in unit installed in either horizontal compartment and connects it to the beam 2 horizontal deflection plates of the crt. Figure 3-22 shows a detailed block diagram of the Beam 2 Horizontal Amplifier circuit. A schematic of this circuit is shown on diagram 13 in the Diagrams section of this manual.

The Beam 2 Horizontal Amplifier and Beam 1 Horizontal Amplifier are identical except for readout circuitry contained within the Beam 2 Horizontal Amplifier. Also, the Beam 2 Horizontal Amplifier component numbers are in the 2000-series whereas the Beam 1 Horizontal Amplifier component numbers are in the 1000-series. For example, Q1814 on diagram 12 corresponds to Q2814 on diagram 13. Therefore, the Beam 1 Horizontal Amplifier discussion applies to the Beam 2 Horizontal Amplifier with the exceptions of component numbers and readout circuitry.

Readout Positioning

When readout is displayed, the X-Axis Readout signal is applied to the Beam 2 Horizontal Amplifier through R2809 (RO Gain). The Readout gain adjustment, R2809, determines the horizontal deflection of the readout display. At the same time, the X-Y Inhibit signal (HI) causes Q2808 to conduct, connecting the center tap of Readout Centering adjustment R2804 to ground. Grounding the center tap of R2804 allows R2804 to horizontally position the readout display on the crt.

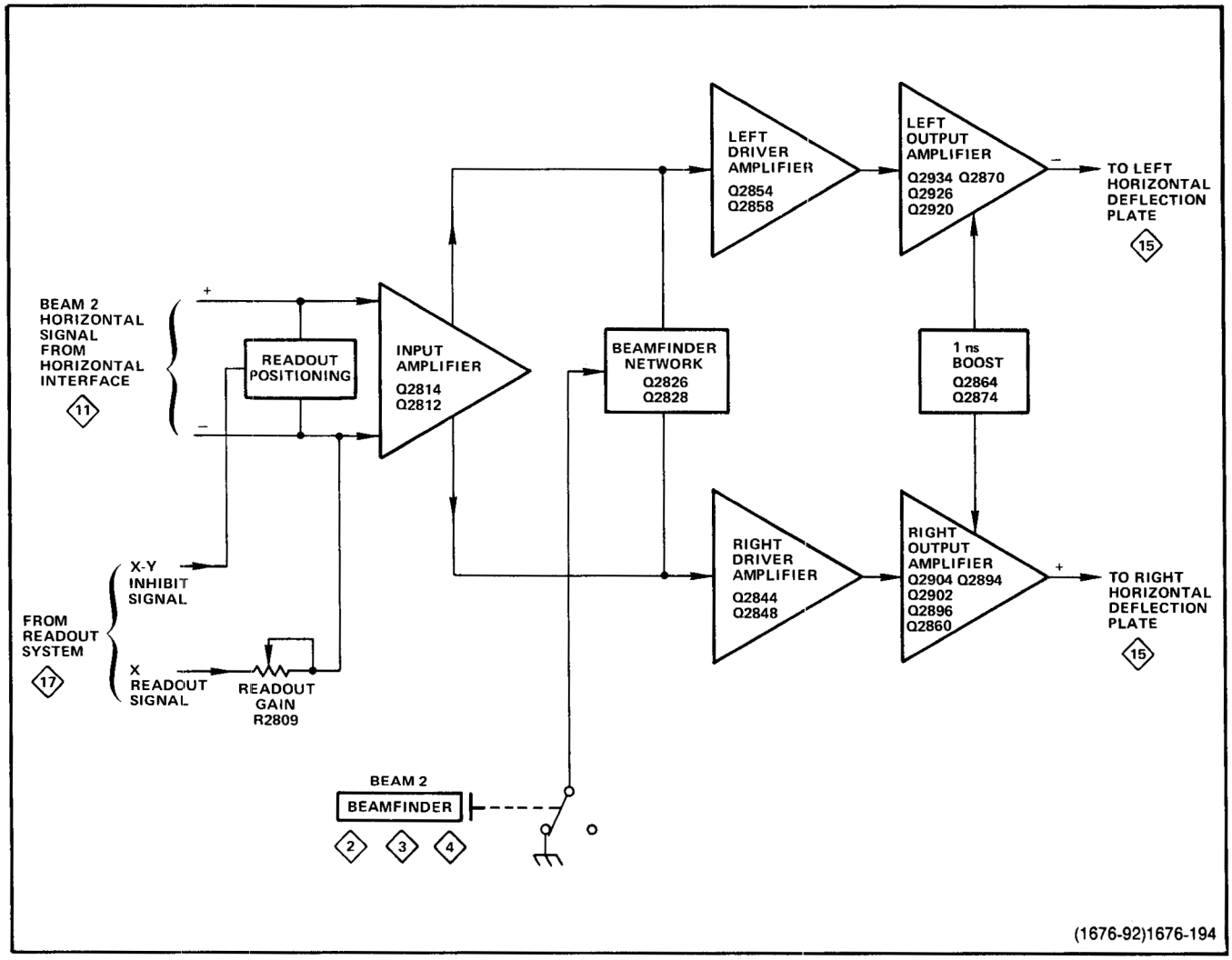


Fig. 3-22. Detailed block diagram of the Beam 2 Horizontal Amplifier circuit (for instruments 7844 SN B109999-below; R7844 SN B099999-below).

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Z-Axis Amplifiers (14)

The Beam 1 and Beam 2 Z-Axis Amplifier circuits provide the drive signals that control the crt intensity. The Beam 2 Z-Axis Amplifier is used for the readout display. Otherwise, the Beam 1 and Beam 2 Z-Axis Amplifiers are identical. Therefore, only the Beam 2 Z-Axis Amplifier will be discussed. A schematic of the Z-Axis Amplifier circuits is given on diagram 14 in the Diagrams section of this manual.

Transistors Q2008 and Q2018 are common-base amplifiers providing a low input impedance for signals from the Z-Readout (J2032) and Beam 2 Z-Axis (J2072) lines. Transistors Q2022, Q2026, Q2036, Q2032, Q2040, and Q2050 compose a current-driven inverting operational amplifier.

Quiescently, the output level at TP2086 is near 10 V; as the input signal applied to R2020 goes negative, current increases through Q2022. The base of Q2032 is pulled positive to reduce the current flow through Q2032 and Q2040. A reduction of this current causes the output voltage at TP2086 to go more positive. The Z-Axis Amplifier is compensated by C2072, C2062, C2068, and R2068 to provide a fast-rising pulse with optimum square corner. Varicap CR2064 provides high-frequency compensation for large changes in the output voltage. Transistor Q2026 couples high-frequency segments of the signal through C2028 to the emitter of Q2032 to improve square-wave response.

Power Transformer

Power Transformer T1310 provides semi-regulated voltages for both the beam 1 and beam 2 heaters and high-voltage supply. One secondary winding of T1310 provides 6.3 V for the crt heaters. The crt heaters are elevated to the cathode potential through R2318. The high-voltage winding of T1310 provides a 3 kV peak-to-peak square-wave voltage to the Anode Voltage Multiplier, Beam 1 and Beam 2 CRT Cathode supplies, Beam 1 and Beam 2 Control Grid DC Restorer circuits, and Beam 1 and Beam 2 Focus-Grid DC Restorer circuits. One end of the high-voltage winding is connected to ground through current-sensing resistor R2307.

CRT Circuit (15)

The CRT Circuit provides the high voltage and control circuits necessary for operation of the cathode-ray tube (crt). This circuit also includes the auto-focus amplifiers. Figure 3-23 shows a detailed block diagram of the CRT Circuit. A schematic of this circuit is shown on diagram 15 in the Diagrams section of this manual.

Anode Voltage Multiplier

Positive accelerating potential for the crt anode is supplied by the 14-times voltage multiplier contained within U2315. The applied voltage to the input of U2315 from the high-voltage secondary of T1310 is approximately 3 kV peak to peak. This results in an output voltage of approximately +21 kV dc at the crt anode. The Beam 1 Sense output of U2315 is fed back to the Converter/Rectifiers and Logic circuits to limit the crt beam current if it exceeds a safe level.

CRT Cathode Supply

The negative 2.96 kV accelerating potential for the crt cathode is generated by a voltage doubler consisting of CR2306, CR2312, C2302, C2311, and C2312. High-frequency filtering is accomplished by R2310, C2308, R2312, and C2306. Filter combination R2310 and C2308 also provide an ac path for error correction from the Cathode Supply Regulator.

Cathode Supply Regulator

The Cathode Supply Regulator maintains the potential on the crt cathode and reduces the ac ripple from the CRT Cathode Supply. A sample of the output of the CRT Cathode Supply is connected to the Cathode Supply Regulator stage through divider resistors R2303B and R2303A. High-frequency changes from the CRT Cathode Supply are coupled to the Cathode Supply Regulator through C2304 and R2304.

The Cathode Supply Regulator consists of a non-inverting preamplifier, U1635, and an inverting output amplifier, Q1627 and Q1631. The +50 V Supply, connected to R2303A, and the ground connected to pin 2 of U1635 through R1637 provide the reference for error amplifier U1635. Transistors Q1627 and Q1631 are connected as a collector-coupled, complementary amplifier driven by U1635 to provide error correction to the CRT Cathode Supply.

Regulation occurs as follows: If the crt cathode voltage becomes less negative, a positive-going change is coupled to the input of U1635 at pin 3 and results in a positive-going output at pin 6. This positive-going change is inverted by Q1627 and Q1631. The negative-going change at the collectors of Q1627 and Q1631 results in a voltage increase across C2302 during the positive half cycle of the high-voltage winding (T1310). (Note that the voltage across C2302 is the difference between the positive voltage on T1310 and the voltage at TP1625.) During the negative half cycle, the increased voltage across C2302 increases the output voltage of the CRT Cathode Supply to correct the original error. High-frequency correction signals from the Cathode Supply Regulator are ac coupled to the crt cathode through C2308. Short-circuit protection for the Cathode Supply Regulator is provided by CR1625, CR1631, and CR1639.

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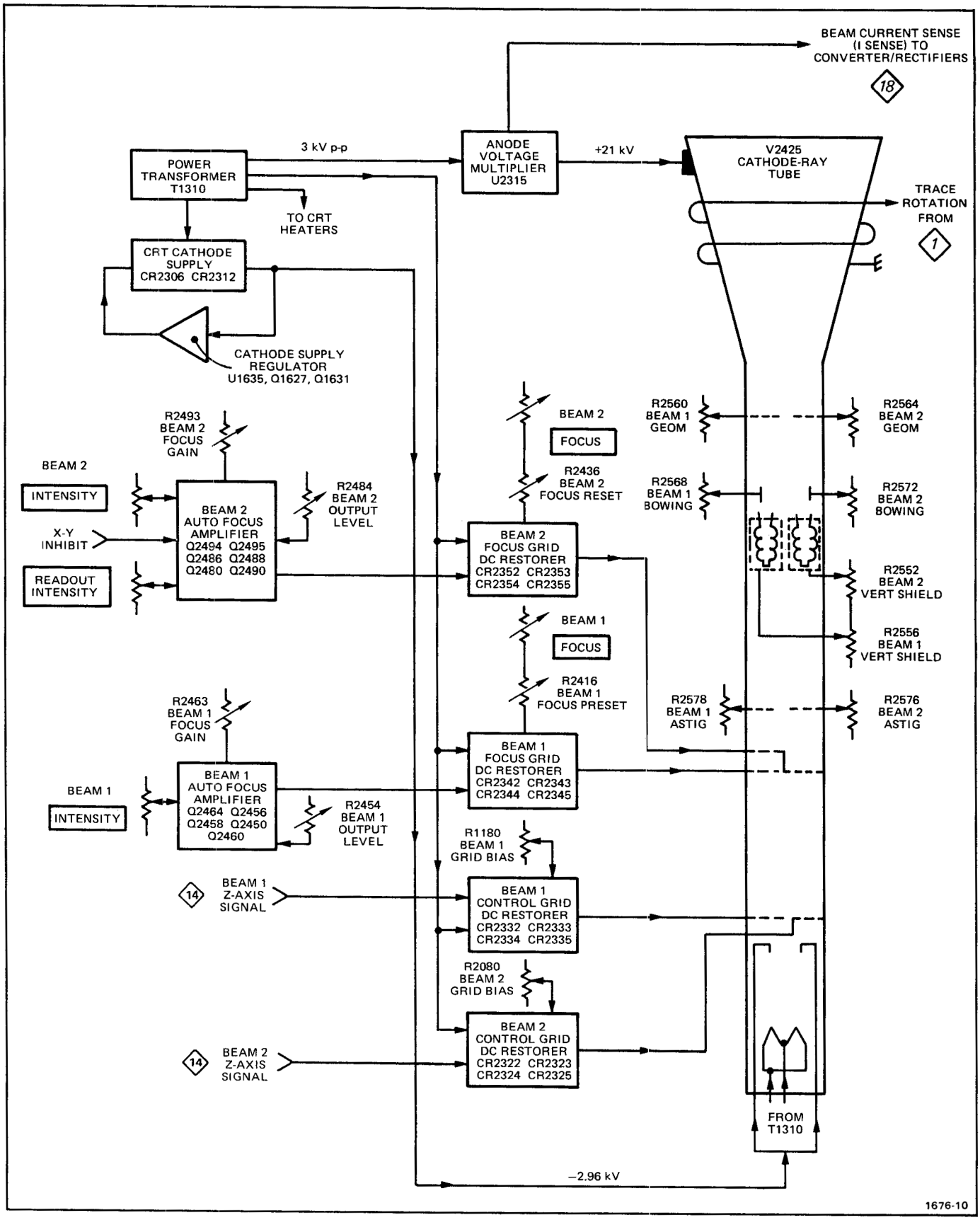


Fig. 3-23. Detailed block diagram of CRT circuit.

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Control Grid DC Restorer Circuits.

The Beam 1 and Beam 2 Control Grid DC Restorer circuits couple dc and low-frequency components of the Z-Axis Amplifier signal to the beam 1 and beam 2 crt control grids. This allows the Z-Axis Amplifier circuits to control the crt beam current (intensity). The potential difference between the Z-Axis Amplifier outputs and the control grids (approximately 3000 V) prohibits direct coupling.

The dc restorer circuits are cathode-referenced bias supplies for the beam 1 and beam 2 crt control grids. Quiescently, the dc restorer output voltage is more negative than the cathode by an amount set by the crt grid bias adjustments. The Beam 2 Control Grid DC Restorer circuit is current driven from the high-voltage winding of T1310 through R2320, R2321, R2322, and R2323. This drive signal is an approximately 25 kHz signal connected to the junction of CR2322, CR2323, and CR2324. Diodes CR2322 and CR2323 limit the peak-to-peak amplitude of the drive at their junction to the difference between their forward-bias levels. Beam 2 CRT Grid Bias adjustment R2080 and the output level of the Z-Axis Amplifier set the forward-bias levels of CR2322 and CR2323, respectively. Capacitor C2324 couples the limited-amplitude drive to the junction of CR2324, CR2325. During positive half cycles of the drive, CR2325 clamps the cathode of CR2324 to the level of the crt cathode (−2960 V). This provides the reference level for the Control Grid DC Restorer stage. During negative half cycles of the drive signal, CR2323 charges the control grid side of C2323 to a level more negative than the crt cathode. The resulting control grid voltage is more negative than the cathode by an amount equal to the difference between the CRT Grid Bias adjustment setting (R2080) and the Beam 2 Z-Axis Amplifier output level. Neon bulbs DS2327, DS2326, DS2400, and DS2401 provide protection for the dc restorer diodes.

The Beam 1 Control Grid DC Restorer circuit includes active components CR2332, CR2333, CR2334, CR2335, and Grid Bias adjustment R1180. Neon bulbs DS2336, DS2337, DS2402, and DS2403 provide protection for the dc restorer diodes. The beam 1 circuitry is essentially the same as the beam 2 circuitry. Refer to the Beam 2 Control Grid DC Restorer discussion in the previous paragraph for circuit operation.

Focus Grid DC Restorer Circuits

The Beam 1 and Beam 2 Focus Grid Restorer circuits couple dc and low-frequency components of the Auto Focus Amplifier circuits to the crt focus grids. This allows the Auto Focus Amplifiers to control the focus grid potentials. The potential difference between the Auto Focus Amplifier outputs and the focus grids (approximately 3000 V) prohibits direct coupling.

The dc restorer circuits are bias supplies for the beam 1 and beam 2 focus grids. The outputs of these stages are referenced to the levels set by the focus adjustments. Quiescently, the focus grid voltage is more negative than the reference level by 10 V.

The Beam 2 Focus Grid DC Restorer is current driven from the high-voltage winding of T1310 through R2330, R2331, R2352, and R2353. This drive signal is an approximately 25 kHz signal connected to the junction of CR2352, CR2353, and C2352. Diodes CR2352 and CR2353 limit the peak-to-peak amplitude of the drive at their junction to the difference between their forward-bias levels. The +130 V Supply and the output level of the Auto Focus Amplifier set the forward-bias levels of CR2352 and CR2353. Capacitor C2352 couples the limited-amplitude drive to the junction of CR2354 and CR2355. During positive half cycles of the drive, CR2355 clamps the cathode of CR2355 to the level set by the Beam 2 Focus adjustment, R2436. This provides the reference level for the Beam 2 Focus Grid Dc Restorer stage. During negative half cycles of the drive, CR2354 charges the focus-grid side of C2353 to a level more negative than the reference level. The resulting focus-grid voltage is more negative than the reference level by an amount equal to the difference between the +130 V Supply and the Beam 2 Auto Focus Amplifier output level.

The Beam 1 Focus Grid DC Restorer circuit includes active components CR2342, CR2343, CR2344, CR2345, and Beam 1 Focus adjustment R2416. The beam 1 circuitry is essentially the same as the beam 2 circuitry. Refer to the Beam 2 Focus Grid DC Restorer discussion in the previous paragraph for circuit operation.

Auto Focus Stages

The Beam 1 and Beam 2 Auto Focus Amplifier stages provide control voltages to maintain optimum focus of the crt display. When the focus controls are set for best definition of the crt display at low to medium settings of the intensity controls, these stages maintain optimum focus for all portions of display.

Transistors Q2494 and Q2495 select current from either the BEAM 2 INTENSITY control or the READOUT INTENSITY control to drive the Beam 2 Auto Focus Amplifier.

When the X-Y inhibit signal at the base of Q2495 is low, Q2495 is off and Q2494 conducts current (determined by the BEAM 2 INTENSITY control) to the Beam 2 Auto Focus Amplifier. When the X-Y inhibit signal at the base of Q2495 is high, Q2495 turns on and Q2494 turns off. Transistor Q2495 conducts current (determined by the setting of the READOUT INTENSITY control) to the Beam 2 Auto Focus Amplifier.

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The Beam 2 Auto Focus Amplifier includes Q2488, Q2486, Q2480, and Q2490 connected as a non-inverting operational amplifier to drive the focus-grid electrode of the crt. Resistor R2493 determines the amount of drive signal to the base of Q2488 to set the overall gain of the Beam 2 Auto Focus Amplifier. Beam 2 Output Level adjustment R2484 determines the output level of this stage.

Transistor Q2464 conducts current (determined by the setting of the BEAM 1 INTENSITY control) to the Beam 1 Auto Focus Amplifier. The Beam 1 Auto Focus Amplifier includes Q2458, Q2456, Q2450, and Q2460 connected as a non-inverting operational amplifier to the beam 1 focus grid of the crt. Resistor R2463 determines the amount of drive signal to the base of Q2458 to set the overall gain of the Beam 1 Auto Focus Amplifier. Beam 1 Output Level adjustment R2454 determines the output level of this stage.

CRT Control Circuits

Separate crt adjustments are provided for display characteristics of beam 1 and beam 2. However, TRACE ROTATION adjustment R980 controls the current through L2425, which affects both vertical and horizontal rotation of both crt beams. Y-Axis adjustment R386 controls the current through L2426, which affects only the vertical rotation of both beams.

Output Signals 

The Signals Out circuit board provides signals to the rear-panel connectors. External input signals, applied to the rear-panel connectors, are coupled through the Signals Out board to other circuits within the instrument. The schematic for these circuits is shown on diagram 16 in the Diagrams section of this manual.

A GATE Output (Main and Delayed)

The A GATE signal is derived from the time-base unit installed in the A HORIZ compartment. Gate Selector switch (S1004) selects between MAIN and DLY'D sweep gates. However, if a delay gate signal is not furnished from the A HORIZ compartment, the output from the A GATE connector, (when S1004 is set to DLY'D) will be a positive dc level.

Transistors Q1010 and Q1012 comprise a comparator circuit, with the reference voltage determined by R1004 and R1006. When Gate Selector switch S1004 is set to MAIN, the positive-going signal will turn Q1010 on and Q1012 off. The collector of Q1012 then will rise to a positive level set by the divider network R1018, CR1018, R1019 and the emitter-base junction of Q1018. The positive level at the collector of Q1012 turns Q1018 on, producing a positive level at the collector of Q1018. The current flowing through Q1018 is limited by R1013. When S1004 is set to DLY'D, the negative-going gate signal turns Q1012 off. Then Q1018 turns on and a positive level is produced at the collector of Q1018.

B GATE Output (Main and Delayed)

The B GATE circuitry operates the same as the A GATE circuitry except that the MAIN and DLY'D gate signals originate from the time-base unit installed in the B HORIZ plug-in compartment.

A SAWTOOTH Output

The A SAWTOOTH output connector provides a sawtooth signal that originates from the time-base unit installed in the A HORIZ plug-in compartment. The negative-going sawtooth signal from the A time-base unit increases the current through Q1040, which, in turn, increases the current through Q1046. The current through Q1046 flows through Q1050 causing the voltage at the collector of Q1050 to go positive. Thus, the negative-going input signal is inverted to a positive-going signal at the output connector (J1058). The gain of the negative feedback amplifier of Q1040, Q1046, and Q1050 is approximately 2, determined by the ratio of R22 (see diagram 4) to R1052.

B SAWTOOTH Output

The B SAWTOOTH circuitry operates the same as the A SAWTOOTH circuitry except that the sawtooth signal originates from the time-base unit installed in the B HORIZ plug-in compartment. The remaining Signals Out connectors are coupled through the Signals Out board to their appropriate circuits.

Readout System 

The Readout system provides alphanumeric display of information encoded by the plug-in units. This display is presented on the crt and is written by the crt beam on a time-shared basis with the analog waveform display.

The following terms are used to describe the Readout System:

Character—A single number, letter, or symbol displayed on the crt, either alone or in combination with other characters.

Word—Made up of a group of related characters. In the Readout System, a word can consist of up to 10 characters.

Frame—A display of all words for a given operating mode and plug-in combination. Up to 8 words can be displayed in one frame. Figure 3-24 shows the position of each word in a complete frame.

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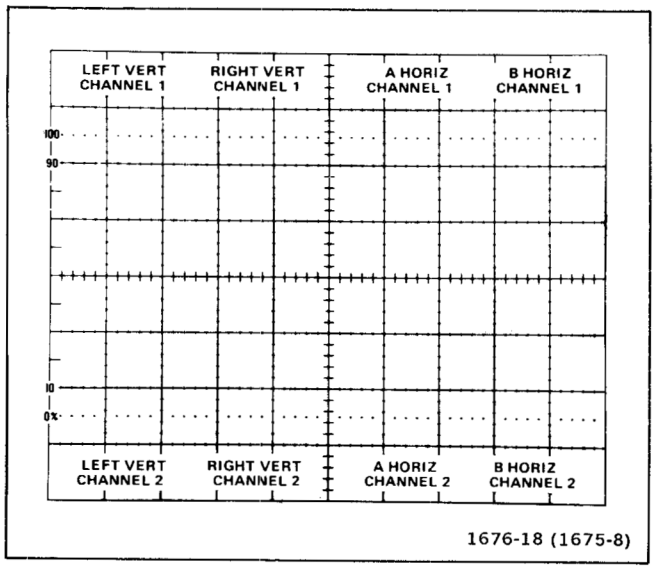


Fig. 3-24. Location of readout display on the crt identifying the originating plug-in and channel.

Column—One of the vertical lines in the Character Selection Matrix (see Fig. 3-25). Columns C-0 (column zero) to C-10 (column 10) can be addressed by the system.

Row—One of the horizontal lines in the Character Selection Matrix. Rows R-1 (row 1) through R-10 (row 10) and R-14 (row 14) can be addressed by the system.

Time-Slot—A location in a pulse train. In the Readout System, the pulse train consists of 10 negative-going pulses. Each time-slot pulse is assigned a number between 1 and 10. For example, the first time-slot is TS-1.

Time-Multiplexing—Transmission of data from two or more sources over a common path by using different time intervals for different signals.

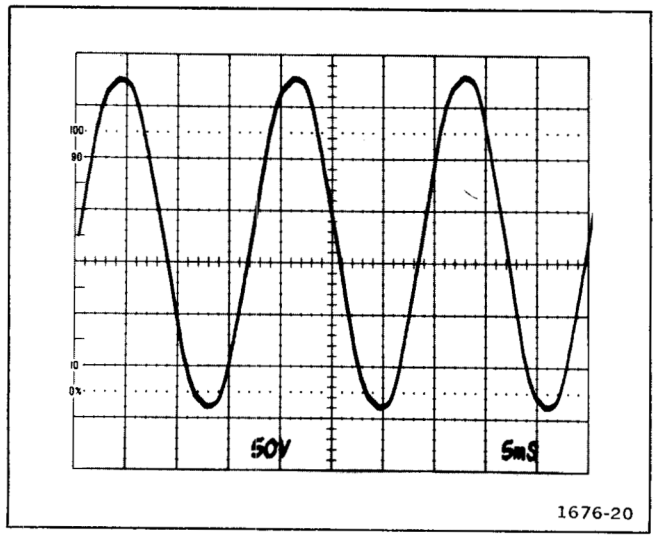


Fig. 3-25. Typical readout display where only channel 2 of the Right Vertical and B Horizontal units is displayed.

Display Format

Up to eight words of readout information can be displayed on the crt. The position of each word is fixed and is directly related to the plug-in unit from which it originated. Figure 3-24 shows the area of the graticule where the readout from each plug-in unit is displayed. Notice that Channel 1 of each plug-in unit is displayed within the top division of the crt and Channel 2 is displayed directly below within the bottom division. Figure 3-25 shows a typical display where only Channel 2 of the Right Vertical and B Horizontal units is selected for display.

Each word in the readout display can contain up to 10 characters, although the typical display will contain between 2 and 7 characters per word. The characters are selected from the Character Selection Matrix shown in Fig. 3-26. In addition, 12 operational addresses are provided for special instructions to the Readout System. The unused locations in the Matrix (shaded area) are available for future expansion of the Readout System. The method of addressing the locations in the Character Selection Matrix is described in the following discussion.

Developing the Display

The following basic description of the Readout System uses the block diagram shown in the Diagrams section. This description is intended to relate the basic function of each stage to the operation of the overall Readout System. Detailed information on circuit operation is given later.

The key block in the Readout System is the Timer stage. This stage produces the basic signals that establish the timing sequences within the Readout System. Period of the timing signal is about 250 μs (drops to approximately 210 μs when Display-Skip is received; see detailed description of Timer stage for further information). This stage also produces control signals for other stages within this circuit and interrupt signals to the Vertical Amplifier, Horizontal Amplifier, and Logic circuits, which allow a readout display to be presented. The Time-Slot Counter stage receives a trapezoidal voltage signal from the Timer stage and directs it to one of ten output lines. These output lines are labeled TS-1 through TS-10 (time-slots 1 through 10) and are connected to the vertical and horizontal plug-in compartments as well as to various stages within the Readout System. The output lines are energized sequentially, so there is a pulse on only one of the 10 lines during any 250 μs timing period. After the Time-Slot Counter stage has counted time-slot 10, it produces an End-of-Word pulse that advances the system to the next channel.

Two output lines, row and column, are connected from each channel of the plug-in unit back to the Readout System. Data is typically encoded on these output lines by con-

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ROW NUMBER \ COLUMN NUMBER →	CURRENT (MILLI-AMPERES)	C-0	C-1	C-2	C-3	C-4	C-5	C-6	C-7	C-8	C-9	C-10
		0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	⩾ 1.0
R-1	0	SKIP[a]	*0*	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*
R-2	0.1		↯	<	*I*	/	+	−	+	*C*	Δ	>
R-3	0.2		ADD[a] ONE ZERO	ADD[a] TWO ZEROS	SHIFT[a] PREFIX ←	SHIFT[a] PREFIX ← AND ADD ONE ZERO						*IDENTIFY*[a]
R-4	0.3		*m*	*μ*	*n*	*p*	*X*	*K*	*M*	*G*	*T*	*R*
R-5	0.4		*S*	*V*	*A*	*W*	*H*	*d*	*B*	*c*	Ω	*E*
R-6	0.5		*U*	*N*	*L*	*Z*	*Y*	*P*	*F*	*J*	*Q*	*D*
R-7	0.6				DECIMAL[a] POINT LOCATION NO. 3	DECIMAL[a] POINT LOCATION NO. 4	DECIMAL[a] POINT LOCATION NO. 5	DECIMAL[a] POINT LOCATION NO. 6	DECIMAL[a] POINT LOCATION NO. 7			
R-8	0.7										DECIMAL[b] POINT	
R-9	0.8											
R-10	0.9	ADD SPACE IN DISPLAY[a]										

Fig. 3-26. Character selection matrix for 7844/R7844 Readout System.

UNUSED LOCATIONS. AVAILABLE FOR FUTURE EXPANSION OF READOUT SYSTEM

[a]OPERATIONAL ADDRESS.

[b]DECIMAL POINT CHARACTER. SEE DECIMAL POINT CHARACTER DESCRIPTION IN TEXT.

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necting resistors between them and the time-slot input lines. The resultant output is a sequence of 10 analog current levels that range from 0 to 1 mA (100 μA/step) on the row and column output lines. This row and column correspond to the row and column of the Character Selection Matrix in Fig. 3-26. The standard format for encoding information onto the output lines is given in Table 3-1. (Special-purpose plug-in units may have their own format for readout; these special formats will be defined in the manuals for these units.).

The encoded column and row data from the plug-in units is selected by the Column Data Switch and Row Data Switch stages, respectively. These stages take the analog currents from the eight data lines (2 channels from each of the four plug-in compartments) and produce a time-multiplexed analog voltage output containing all of the column and row information from the plug-ins. The Column Data Switch and Row Data Switch are sequenced by the binary Channel Address Code from the Channel Counter.

The time-multiplexed output of the Column Data Switch is monitored by the Display-Skip Generator to determine if it represents valid information that should be displayed. Whenever information is not encoded in a time-slot, the Display-Skip Generator produces an output level to prevent the Timer stage from producing the control signals that normally interrupt the crt display and present a character.

Table 3-1
STANDARD READOUT FORMAT

Time-Slot Number	Description
TS-1	Determines decimal magnitude (number of zeros displayed or prefix change information) or the IDENTIFY function (no display during this time-slot)
TS-2	Indicates normal or inverted input (no display for normal)
TS-3	Indicates calibrated or uncalibrated condition of plug-in variable control (no display for calibrated condition)
TS-4	Scaling
TS-5	Not encoded by plug-in unit—left blank
TS-6	to allow addition of zeros by Readout
TS-7	System
TS-8	Defines the prefix that modifies the units of measurement
TS-9	Define the units of measurement of the
TS-10	plug-in unit—may be standard units of measurement (V, A, S, etc.) or special units selected from the Character Selection Matrix.

The analog outputs of the Column Data Switch and Row Data Switch are connected to the Column Decoder and Row Decoder stages, respectively. These stages sense the magnitude of the analog voltage input and produce an output current on one of ten lines. The outputs of the Column Decoder stage are identified as C-1 through C-10 (column 1 through 10) corresponding to the encoded column information. Likewise, the outputs of the Row Decoder stage are identified as R-1 through R-10 (row 1 through 10) corresponding to the encoded row information. The primary function of the row and column outputs is to select a character from the Character Selection Matrix to be produced by the Character Generator stage. These outputs are also used at other points within the system to indicate when certain information has been encoded. One such stage is the Zeros Logic and Memory. During time-slot 1 (TS-1), this stage checks if zero-adding or prefix-shifting information has been encoded by the plug-in unit, and stores it in the memory until time-slots 5, 6, or 8. After storing this information, it triggers the Display-Skip Generator stage so that there is no display during time-slot 1 (as defined by Standard Readout Format; see Table 3-1). When time-slots 5, 6, and 8 occur, the memory is addressed and any information stored there during time-slot 1 is transferred to the input of the Column Decoder stage to modify the analog data during the applicable time-slot.

Also, the Zeros Logic and Memory stage produces the IDENTIFY function. When time-slot 1 is encoded for IDENTIFY (column 10, row 3), this stage produces an output level, which connects the Column Data Switch and Row Data Switch to a coding network within the Readout System. Then, during time-slots 2 through 9, an analog current output is produced from the Column Data Switch and Row Data Switch, which addresses the correct points in the Character Selection Matrix to display the word "IDENTIFY" on the crt. The Zeros Logic and Memory stage is reset after each word by the Word Trigger pulse.

The Character Generator stages produce the characters that are displayed on the crt. Any of the 50 characters shown on the Character Selection Matrix of Fig. 3-26 can be addressed by proper selection of the column and row currents. Only one character is addressable in any one time-slot; a space can be added into the displayed word by the Decimal Point Logic and Character Position Counter stage when encoded by the plug-in. The latter stage counts the number of characters generated and produces an output current to step the display one character position to the right for each character. In addition, the character position is advanced once during each of time-slots 1, 2, and 3, whether a character is generated during these time-slots or not. This action fixes the starting point of the standard-format display such that the first digit of the scaling factor always starts at the same point within each word regardless of the information encoded in time-slot 1, 2, or 3 preceding this digit. Also, by encoding row 10 and column 0 during any time-slot, a blank space can be added to the display. Deci-

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mal points can be added to the display at any time by addressing the appropriate row and column. (See Character Selection Matrix for location of decimal points.) The Decimal Point Logic and Character Position Counter stage is reset after each word by the Word Trigger pulse.

The Format Generator stage provides the output signals to the vertical and horizontal deflection systems of the instrument to produce the character display. The binary Channel Address Code from the Channel Counter stage is connected to this stage, so that the display from each channel is positioned to the area of the crt associated with the plug-in and channel originating the word (see Fig. 3-24). The positioning current or decimal point location current generated by the Decimal Point Logic and Character Position Counter stage is added to the Horizontal (X) signal at the input to the Format Generator stage to provide horizontal positioning of the characters within each word. The X- and Y-Readout signals are connected to the Horizontal Amplifier and Vertical Amplifier through the X- and Y-Buffer stages.

The Word Trigger stage produces a trigger from the End-of-Word pulse generated by the Time-Slot Counter stage after the tenth time-slot. This Word Trigger pulse advances the Channel Counter to display the information from the next channel or plug-in. It also provides a reset pulse to the Zeros Logic and Memory stage and the Decimal Point Logic and Character Position Counter stage. This Word Trigger stage can also be advanced to jump a complete word or a portion of a word when a Jump command is received from the Row Data Switch stage.

Timer

Timer U2126 establishes the timing sequence for all circuits within the Readout System. This stage produces seven time-related output waveforms (see Fig. 3-27). The triangle waveform produced at pin 6 forms the basis for the remaining signals. The basic period of this triangle waveform is approximately 250 μs as controlled by RC network R2135 and C2135. The triangle waveform is clipped and amplified by U2126 to form the trapezoidal output signal at pin 10. The amplitude of this output signal is exactly 15 V as determined by U2126 (exact amplitude necessary to accurately encode data in plug-in units; see Encoding the Data). The Trigger output at pin 5 provides the switching signal for the Time-Slot Counter and Word Trigger stages.

The signals at pins 12, 13, 14, and 16 are produced only when the triangle waveform is on its negative slope and the trapezoidal waveform has reached the lower level. The timing sequence of these waveforms is important to the operation of the Readout System (see expanded waveforms in Fig. 3-28). The Z-Axis Inhibit command at pin 14 is produced first. This negative-going signal provides a blanking pulse to the Z-Axis Logic stage (see diagram 5) to blank the crt be-

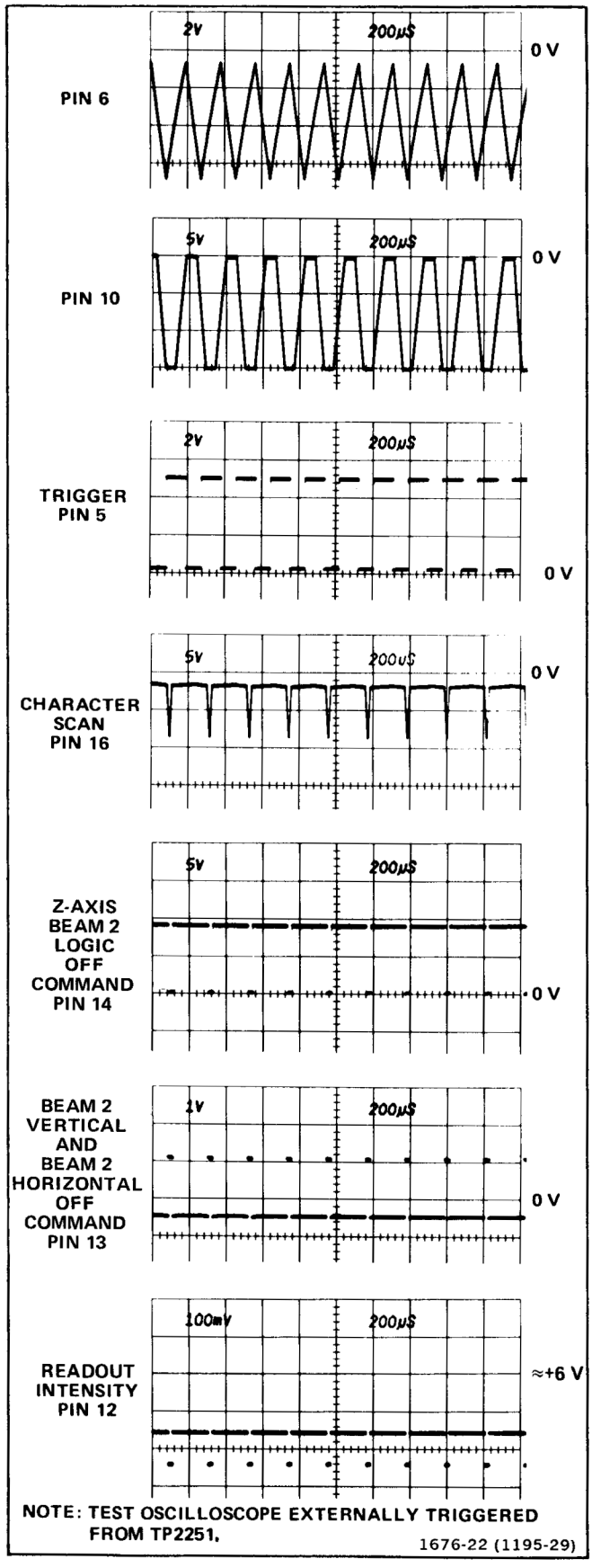


Fig. 3-27. Output waveforms of Timer stage.

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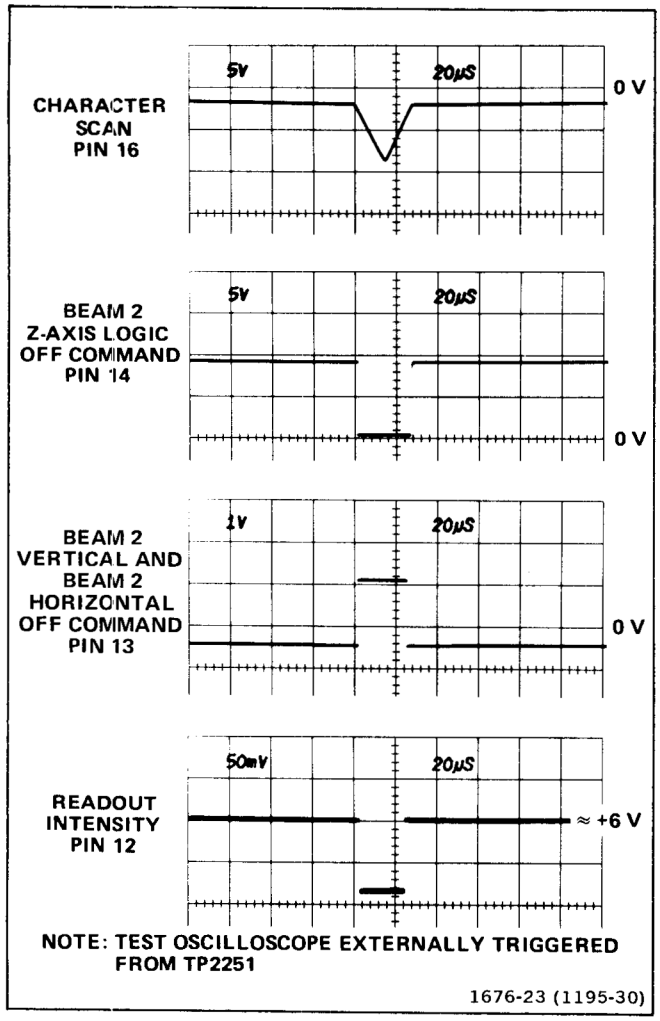


Fig. 3-28. Detail of output at pins 12, 13, 14, and 16 of U2126.

fore the display is switched to the Readout System. It also produces the Strobe pulse through Q2138 and CR2142 to signal other stages within the Readout System to begin the sequence necessary to produce a character. The collector level of Q2138 is also connected to Symbols Character Generator, U2272, through CR2140. This activates U2272 during the quiescent period of the Strobe pulse (collector of Q2138 negative) and diverts the output current of Row Decoder U2185 to row 2. The purpose of this configuration is to prevent the Zeros Logic and Memory stage U2232 from storing incorrect data during the quiescent period of the Strobe pulse. When the Strobe pulse goes positive, CR2140 is reverse-biased to disconnect Q2138 from U2272 and allow the Row Decoder to operate in the normal manner.

The next signal to be produced is the X-Y Inhibit command at pin 13. This positive-going signal disconnects the plug-in signals from the beam 2 vertical and horizontal deflection systems. The Ready signal derived from this output is connected to the Decimal Point and Character Position Center stage and the Format Generator stage.

The Z Readout output at pin 12 is produced next. This current is connected to the crt circuit to unblank the crt to the intensity level determined by the READOUT INTENSITY control. The Character Scan ramp at pin 16 started to go negative as this timing sequence began. However, character generation does not start until the readout intensity level has been established. The triangular Character Scan ramp runs from approximately −2 V to approximatley −8.5 V, then returns to the original level. This waveform provides the scanning signal for the Character Generator stage. Character Scan Adjustment R2128 sets the dc level of the Character Scan ramp for complete characters on the display.

The Timer stage operates in one of two modes as controlled by the Display-Skip level at pin 4. The basic mode just described is a condition that does not occur unless all ten characters of each word (80 characters total) are displayed on the crt. Under typical conditions, only a few characters are displayed in each word. The Display-Skip level at pin 4 determines the period of the Timer output signal. When a character is to be generated, pin 4 is LO and the circuit operates as just described. However, when a character is not to be displayed, a HI level is applied to pin 4 of U2126 through CR2125 from the Display-Skip Generator stage. This signal causes the Timer to shorten its period of operation to approximately 210 μs. The waveforms in Fig. 3-29 show the operation of the Timer stage when the Display-Skip condition occurs for all positions in a word. Notice that there is no output at pins 12, 13, 14, and 16 under this condition. This means that the crt display is not interrupted to display characters. Also notice that the triangle waveform at pin 6 does not go as far negative, and that the negative portion of the trapezoidal waveform at pin 10 is shorter. Complete details on operation of the Display-Skip Generator are given later.

The Timer operation is also controlled by the Single-Shot Lockout level at pin 2. If this level is LO, the Timer operates as just described. However, if the Single-Shot Lockout stage sets a HI level at this pin, the Timer stage is locked out and cannot produce any output signals (see Single-Shot Lockout description for further information).

READOUT INTENSITY control R978 (see diagram 1) sets the intensity of the readout display independently of the BEAM 1 or BEAM 2 INTENSITY controls. The READOUT INTENSITY control also provides a means of turning the Readout System off when a readout display is not desired. When R978 is turned fully counterclockwise, the switch in series with the Readout Intensity line opens. The current to pin 11 of U2126 is interrupted, and at the same time, a positive voltage is applied to pin 4 through CR2124. The

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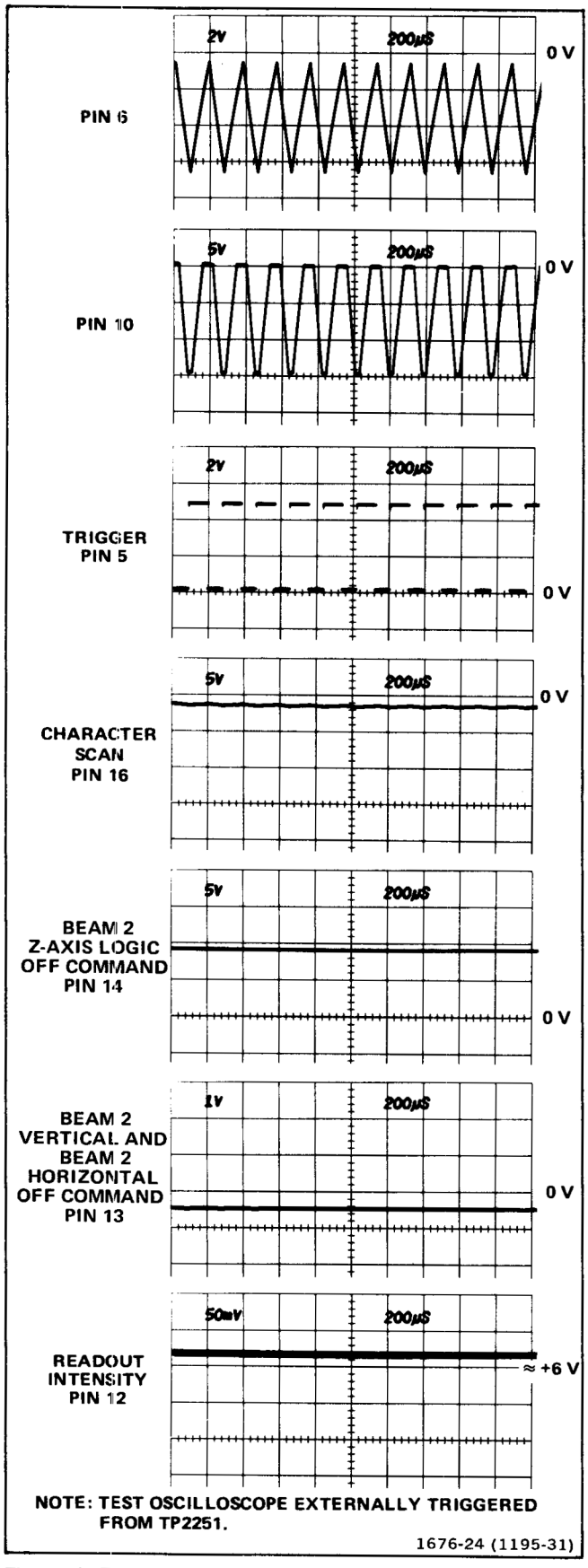


Fig. 3-29. Timer stage operation when Display-Skip condition occurs.

positive voltage switches the stage to the same conditions as were present under the Display-Skip condition. Therefore, the crt display is not interrupted to present characters. However, time-slot pulses continue to be generated.

Time-Slot Counter

Time-Slot Counter U2159 is a sequential switch that directs the trapezoidal waveform input at pin 8 to one of its 10 output lines. These time-slot pulses are used to interrogate the plug-in units to obtain data for the Readout System. The Trigger pulse at pin 15 switches the Time-Slot Counter to the next output line; the output signal is sequenced consecutively from time-slot 1 through time-slot 10. Figure 3-30 shows the time relationship of the time-slot pulses. Notice that only one line carries a time-slot pulse at any given time. When time-slot 10 is completed, a negative-going End-of-Word pulse is produced at pin 2. The End-of-Word pulse provides a drive pulse for the Word Trigger stage and also provides an enabling level to the Display-Skip Generator during time-slot 1 only.

Pin 16 is a reset input for the Time-Slot Counter. When this pin is held LO, the Time-Slot Counter resets to time-slot 1. The Time-Slot Counter can be reset in this manner only when a Jump command is received by U2155C and D (see following discussion).

Word Trigger

The Word Trigger stage is made up of U2155A and B. Quiescently, pin 3 of U2155A is LO as established by the operating conditions of U2155C and D. Therefore, the LO End-of-Word pulse produced by the Time-Slot Counter results in a HI level at pin 1 of U2155A. This level is inverted by U2155B to provide a negative-going Word Trigger pulse to the Channel Counter.

Also, a Word Trigger pulse is produced by U2155B when a Jump Command is received at pin 8 of U2155C. This condition can occur during any time-slot (see Row Decoder for further information on origin of the Jump Command). Integrated circuit U2155C and D are connected as a bistable flip-flop. The positive-going Jump Command at pin 8 of U2155C produces a LO at pin 10. This LO is inverted by U2155D to produce a HI at pin 13, which allows pin 9 to be pulled HI through CR2156. The flip-flop has now been set and remains in this condition until reset, even though the Jump Command at pin 8 returns to its LO level. The HI output level at pin 13 turns on Q2159 to pull pin 16 of the Time-Slot Counter LO. This resets the Time-Slot Counter to time-slot 1 and holds it there until the word Trigger is reset.

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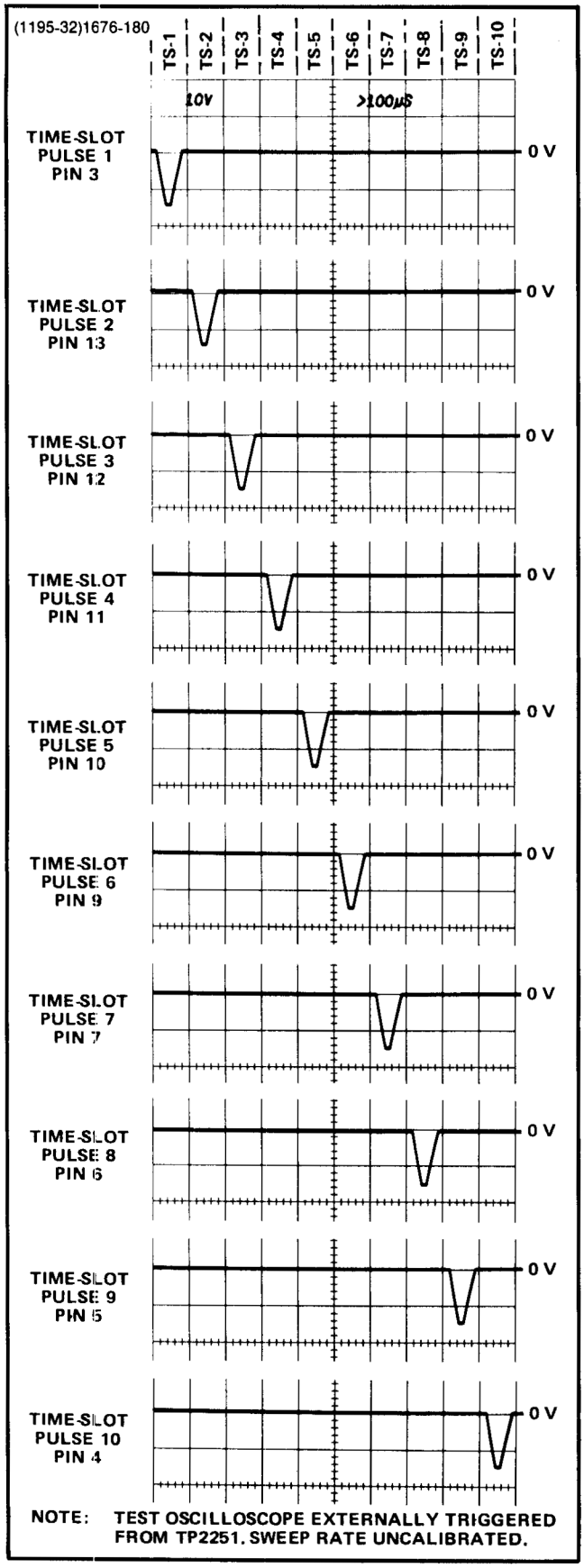


Fig. 3-30. Timer relationship of the time-slot (TS) pulses produced by U2159.

At the same time, a HI level is applied to pin 4 of the Timer through CR2157 and CR2125. This HI level causes the Timer to operate in the Display-Skip mode, so a character is not generated.

The next Trigger pulse is not recognized by the Time-Slot Counter, since U2159 is locked in time-slot 1 by U2155. However, this Trigger pulse resets the Word Trigger stage through C2155. Pin 13 of U2155D goes LO to enable the Time-Slot Counter and Timer stages for the next time-slot pulse. Simultaneously, when U2155D switches output states, the resulting negative-going edge is connected to pin 3 of U2155A. This results in a negative-going Word Trigger output at pin 4 to advance the Channel Counter to the next word. When the next Trigger pulse is received at pin 15, the Time-Slot Counter returns to the normal sequence of operation and produces an output on the time-slot 1 line.

Channel Counter.

Channel Counter U2250 is a binary that produces the Channel Address Code for the Column and Row Decoder stages and the Format Generator stage. This code instructs these stages to sequentially select and display the 8 channels of data from the plug-ins. Table 3-2 gives the eight combinations of the Channel Address Code and the resultant channel selected with each combination.

Table 3-2
CHANNEL ADDRESS CODE

Pin 11 U2250	Pin 8 U2250	Pin 9 U2250	Channel Displayed
LO	LO	LO	Channel 2 Left Vertical
LO	LO	HI	Channel 1 Left Vertical
LO	HI	LO	Channel 2 Right Vertical
LO	HI	HI	Channel 1 Right Vertical
HI	LO	LO	Channel 2 A Horizontal
HI	LO	HI	Channel 1 A Horizontal
HI	HI	LO	Channel 2 B Horizontal
HI	HI	HI	Channel 1 B Horizontal

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Readout Control

The primary readout controls, located on the front panel, are shown on the Calibrator board (diagram 1). In the following discussion, refer to both diagrams 1 and 17.

The READOUT INTENSITY control sets the readout system to one of three modes of operation. In the OFF position the Readout Intensity line (pin 3 of P910) is open. This line is connected to the Timer stage on the Readout board, through pin 5 of P2118 and R2122. The open line sets a HI at pin 11 of U2126, this HI locks out the timer stage, which in turn inhibits the entire Readout system.

When the READOUT INTENSITY control is set to PULSED, the shield of the coaxial cable, connecting J992 on the Calibrator board to J2192 on the Readout board, is grounded by S978. Grounding the shield of this cable provides a current path from the Calibrator board to the emitter of Q2108 through R2109. The current through Q2108 produces a LO lockout level to the Single-Shot Lockout stage. One frame of readout is produced each time an appropriate signal is applied to J2192. A negative-going signal at J2192 is differentiated by C2101 and R2102. The resulting spike reverse biases Q2108 to momentarily allow its collector to go HI. This enables the Single-Shot Lockout stage for a single-shot readout display.

The EXTERNAL-BEAM 2 GATED switch (S974) routes either an externally generated gate or the beam 2 gate signal to the Readout Single-Shot circuitry. The beam 2 gate initiates a frame of readout each time the beam 2 horizontal system completes a sweep. One frame of readout can also be initiated by the MANUAL push button. When the MANUAL push button is pressed, C970 discharges toward ground through R970. The negative-going pulse is then coupled to the Readout Lockout stage through C972 and J992.

When the READOUT INTENSITY control is set out of the OFF position and not set to the PULSED position, the Readout System runs continuously. The emitter of Q2108 has no ground return in this position, so its collector rises positive and sets a HI on pin 8 of U2120, which enables the Readout System to operate in the free-running mode.

Readout Mode switch (S2110), located internally on the Readout board, must be set to its F.R. (Free-Run) position for the READOUT INTENSITY control to operate properly. However, the GATE TRIG'D position of S2110 may be useful with Option 22. Refer to the Option section in this manual for information on how S2110 affects the operation of Option 22.

Single-Shot Lockout

Integrated circuit U2120 makes up the Single-Shot Lockout stage. This stage allows a single readout frame (eight complete words) to be displayed on the crt, after which the Readout System is locked out, so further readout displays are not presented until the circuit is reset. Integrated circuit U2120B and U2120C are connected to form a bistable flip-flop. For normal operation, pin 8 of U2120C is pulled HI through R2108. This activates U2120C to result in a LO output level at pin 10, enabling the Timer stage to operate in the free-running manner described previously.

The output of the Single-Shot Lockout stage remains LO to allow U2126 to operate in the free-running mode until a LO is received at pin 8 of U2120C. When this occurs, the output level at pin 10 of U2120C does not change immediately. However, the Readout System is now enabled as far as the single-shot lockout function is concerned. If the Channel Counter has not completed word 8, the Readout System continues to operate in the normal manner. However, when word 8 is completed, the negative-going End-of-Frame pulse is produced at pin 11 of U2250 as the Channel Counter shifts to the code necessary to display word one. This pulse is coupled to pin 6 of U2120B. The momentary HI at pin 6 activates U2120B and its output stage goes LO to disable U2120C (pin 8 already LO). The output of U2120C goes HI to disable the Timer, so it operates in the Display-Skip mode. The HI at pin 10 of U2120C also holds U2120B enabled, so it maintains control of the flip-flop.

The Single-Shot Lockout stage remains in this condition until a positive-going trigger pulse is applied to pin 8 of U2120C. This trigger pulse produces a LO at pin 10 of U2120C to enable U2126 and disable U2120B. Now, the Timer can operate in the normal manner for another complete frame. When word 8 is completed, the Channel Counter produces another End-of-Frame pulse to again lock out the Timer stage. (For further information on the Readout Mode, see the Readout Control description.)

Encoding the Data

Data is conveyed from the plug-in units to the Readout System in the form of an analog (current level) code. The characters that can be selected by the encoded data are shown on the Character Selection Matrix (see Fig. 3-26). Each character requires two currents to define it; these currents are identified as the column current and the row current, corresponding to the column and row of the matrix. The column and row data is encoded by programming the plug-in units. Figure 3-31 shows a typical encoding scheme using resistors for a voltage-sensing amplifier plug-inunit. Notice that the 10 time-slot (TS) pulses produced by the Time-Slot Counter stage are connected to the plug-in unit.

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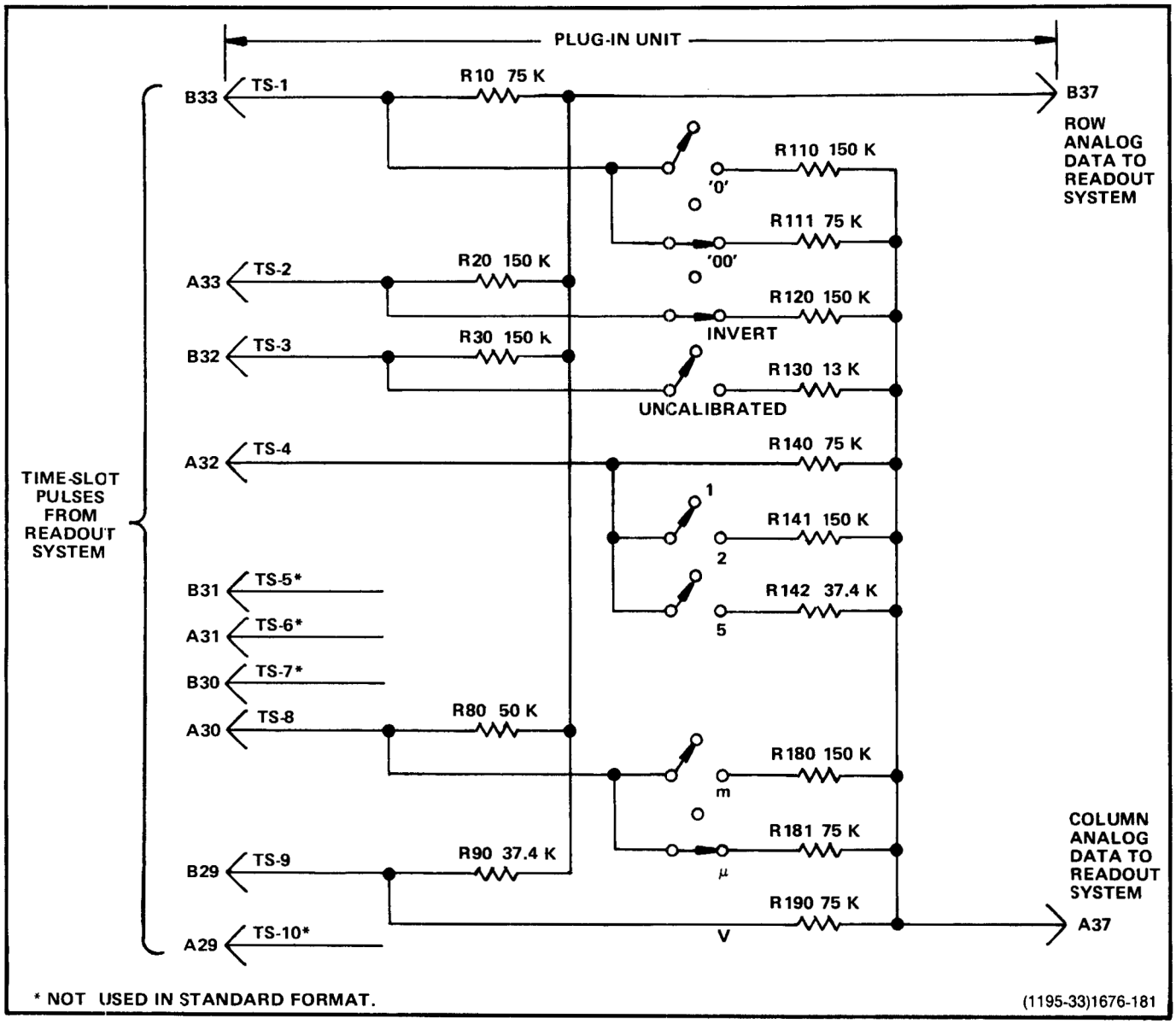


Fig. 3-31. Typical encoding scheme for voltage-sensing plug-in unit. Coding shown for deflection factor of 100 μV.

However, time-slots 5, 6, 7, and 10 are not used by the plug-in unit to encode data when using the Standard Readout Format. (See Table 3-1 for Standard Readout Format.) The amplitude of the time-slot pulse is exactly −15 V as determined by the Timer stage. Therefore, the resultant output current from the plug-in units can be accurately controlled by the programming resistors in the plug-in units.

For example, in Fig. 3-31 resistors R10 through R90 control the row analog data, which is connected back to the Readout System. Figure 3-32 shows an idealized output current waveform of row analog data, which results from the time-slot pulses. Each of the row levels of current shown in these waveforms correspond to 100 μA of current. The row numbers on the left-hand side of the waveform correspond to the rows in the Character Selection Matrix (see Fig. 3-26). The row analog data is connected back to the Readout System via terminal B37 of the plug-in interface.

The Column analog data is defined by resistors R110 through R190. The program resistors are connected to the time-slot lines by switch closures to encode the desired data. The data as encoded by the circuit shown in Fig. 3-31 indicates a 100 μV sensitivity with the crt display inverted and calibrated deflection factors. This results in the idealized output current waveforms shown in Fig. 3-32 at the column analog data output, terminal A37 of the plug-in interface.

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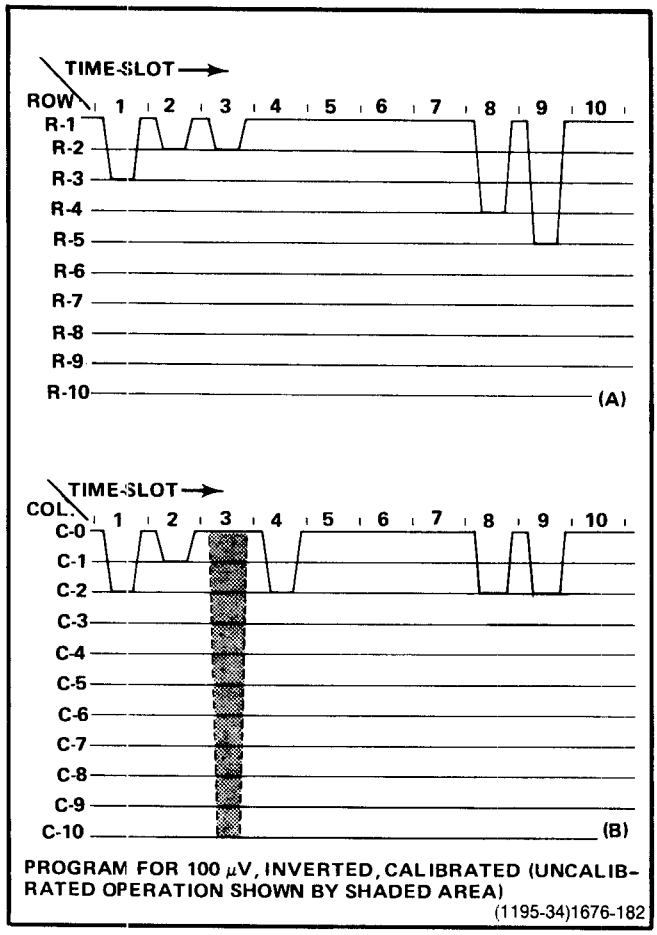


Fig. 3-32. Idealized current waveforms of (A) Row analog data and (B) Column analog data.

Resistor R111, connected between time-slot 1 and the column analong data output, encodes two units of current during time-slot 1. Referring to the Character Selection Matrix, two units of column current, along with the two units of row current encoded by resistor R10 (row 3), indicates that two zeros should be added to the display. Resistor R120 adds one unit of column current during time-slot 2, and along withthe one unit of current from the row output, the Readout system is instructed to add an invert arrow to the display. Resistor R130 is not connected to the time-slot 3 line, since the deflection factor is calibrated. Therefore, there is no display on the crt. (See Display-Skip Generator for further information.)

During time slot 4, two units of column current are encoded by R140. There is no row current encoded during this time-slot; this results in the numeral 1 being displayed on the crt. Neither row nor column analog data is encoded during time-slots 5, 6, and 7 as defined by the Standard Readout Format. During time-slot 8, two units of column current and three units of row current are encoded by resistors R181 and R180, respectively. This addresses the μ prefix in the Character Selection Matrix.

The final data output is provided from time-slot 9 by R190 connected to the column output and R90 to the row output. These resistors encode two units of column current and four units of row current to cause a V (volts) to be displayed. Time-slot 10 is not encoded, in accordance with the Standard Readout Format. The resultant crt readout will be ↓ 100 μV.

In the above example, the row analog data was programmed to define which row of the Character Selection Matrix was addressed to obtain information in ech time-slot. The column data changes to encode the applicable readout data as the operating conditions change. For example, if the variable control of the plug-in unit was activated, R130 would be connected between time-slot 3 and the column analog data output line. This encodes 10 units of column current (see shaded area in time-slot 3 of the waveform shown in Fig. 3-32). Since one unit of row current is also encoded during this time-slot by R30, a > (greater than) symbol is added to the display. The crt readout will now show ↓ > 100 μV. In a similar manner, the other switches can change the encoded data for the column output and thereby change the readout display. See the following description for decoding this information.

The column analog data encoded by most plug-in units can be modified by attenuator probes connected to the input connectors of amplifier plug-in units. A special coding ring around the input connector of the plug-in unit senses the attenuation ratio of the probe (with readout-coded probes only). The probe contains a circuit that provides additional column current. For example, if a 10X attenuator probe is connected to a plug-in unit encoded for 100 μV as shown in Fig. 3-32, an additional unit of current is added to the column analog data during time-slot 1. Since two units of current were encoded by R111 (see Fig. 3-31), this additional current results in a total of three units of column analog current during this time-slot. Referring to the Character Selection Matrix, three units of column current, along with the two units of row current encoded by R10, indicates that the prefix should be shifted one column to the left. Since this instruction occurs in the same time-slot that previously indicated that two zeros should be added to the display and only one instruction can be encoded during a time-slot, the zeros do not appear in the display. The crt readout will now be changed to 1 mV (readout program produced by plug-in same as for previous example).

Three other lines of information are connected from the plug-in compartments to the Readout System. The column and row analog data from Channel 2 of a dual-channel plug-in are connected to the Readout System through terminals A38 and B38 of the plug-in interface, respectively. Force readout information is encoded on terminal A35; the function of this input is described under Column and Row Data Switches.

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The preceding information gave a typical example of encoding data from an amplifier plug-in unit. Specific encoding data and circuitry is shown in the individual plug-in unit manuals.

Column and Row Data Switches

The encoding data from the plug-in units is connected to the Column and Row Data Switch stages. A column-data line and a row-data line convey analog data from each of the eight data sources (two channels from each of the four plug-in compartments).

The Column Data Switch U2190 and the Row Data Switch U2180 receive the Channel Address Code from the Channel Counter. This binary code directs the Column Data Switch and the Row Data Switch as to which channel should be the source of the encoding data. Table 3-2 gives the eight combinations of the Channel Address Code and the resultant channel selected with each combination. These stages have nine inputs and provide a time-multiplexed output at pin 7, which includes the information from all of the input channels. Eight of the nine inputs to each stage originate in the plug-in units; the ninth input comes from a special data-encoding network composed of resistors R2191 through R2199 and R2201 through R2209. (See Zeros Logic and Memory description for further information on ninth channel.)

In addition to the encoding data inputs from the plug-in units, inputs are provided to the Column Data Switch from the VERTICAL MODE and HORIZONTAL MODE switches to inhibit the readout for any plug-in unit(s) not selected for display. When a unit is not selected, the respective line is HI to forward bias the associated diodes: CR2162 and CR2163, CR2166 and CR2167, CR2170 and CR2171, or CR2174 and CR2175. The forward-biased diodes cause the channel switches to bypass the encoded data from the inhibited channel. However, since it may be desired to display information from special-purpose plug-in units (even though they do not produce a normal waveform display on the crt), a feature is provided to override the channel inhibit. This is done by applying a LO to the associated Force Readout input. The LO level diverts the HI channel-inhibit current and allows the data from this plug-in unit to reach the Column Data Switch, even though it has not been selected for display by the mode switch.

Row Match adjustment R2182 sets the gain of the Row Data Switch to match the gain of the Row Decoder for correct output. Column Match adjustment R2213 performs the same function for the Column Data Switch stage.

Display-Skip Generator

The Display-Skip Generator is made up of Q2215, Q2233, Q2225, and Q2229. This stage monitors the time-multiplexed column data at the output of the Column Data Switch during time-slot to determine if the information at this point is valid data that should result in a crt display. Quiescently, there is approximately 100 μA of current flowing through R2213 from Q2240 and the Zeros Logic and Memory stage. (The purpose of this quiescent current will be discussed in connection with the Zeros Logic and Memory stage.) This current biases Q2215A so that its base is approximately 0.2 V more positive than the base of Q2215B in the absence of column data. Therefore, since Q2215A and Q2215B are connected as a comparator, Q2215A will remain on unless its base is pulled more negative than the base of Q2215B.

The analog data output from the Column Data Switch produces a 0.5 V (approximately) change for each unit of column current that has been encoded by the plug-in unit. Whenever any information appears at the output of the Column Data Switch, the base of Q2215A is pulled more negative than the base of Q2215B, resulting in a negative (LO) Display-Skip output to the Timer stage through Q2225. Recall that a LO was necessary at the skip input of the Timer so it could perform the complete sequence necessary to display a character.

Transistors Q2223 and Q2229 also provide Display-Skip action. The End-of-Word level connected to their emitters is LO only during time-slot 1. This means they are enabled only during this time-slot. These transistors allow the Zeros Logic and Memory stage to generate a Display-Skip signal during time-slot 1 when information that is not to be displayed on the crt has been stored in memory (further information is given under Zeros Logic and Memory).

Column and Row Decoders

The Column Decoder, U2244, and Row Decoder, U2185, sense the magnitude of the analog voltages at their inputs (pin 10) and produce a binary output on one of ten lines corresponding to the column or row data encoded by the plug-in unit. These outputs provide the Column Digital Data and Row Digital Data, which is used by the Character Generator stages to select the desired character for display on the crt. The column and row data is also used throughout the Readout System to perform other functions.

The input current at pin 9 of the Column Decoder stage is steered to only one of the ten Column Digital Data outputs. When a Display-Skip signal is present (collector of Q2225 HI), pin 9 is pulled HI through CR2226. This ensures that no current is connected to the Character Generator stage under this condition. Notice the corresponding input on the Row Decoder. This input is connected to ground and causes only one of the ten row outputs to saturate to ground.

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The network at the input of the Row Decoder, made up of Q2153 and its associated components, is a Row-14 detector that produces the Jump Command. This row current is encoded by special-purpose plug-ins to cause all or part of a word to be jumped. Whenever row 14 (13 units of row current, or 1.3 mA) is encoded, the base of Q2153 is pulled negative enough so that this transistor is reverse biased to produce a HI Jump Command output at its collector. The Jump Command is connected to the Word Trigger stage to advance the Channel Counter to the next word and to reset the Time-Slot Counter to time-slot 1

Zeros Logic and Memory

The Zeros Logic and Memory stage, U2232, stores data encoded by the plug-in units to provide zeros-adding and prefix-shifting logic for the Readout System. The Strobe pulse at pin 15 goes positive when the data has stabilized and can be inspected. This activates the Zeros Logic and Memory stage so that it can store the encoded data. A block representation of the memory sequence is shown in Fig. 3-33.

Typical output waveforms for the five possible input conditions that can occur are shown in Fig. 3-34. When time-slot 1 occurs, a store command is given to all of the memories. If the plug-in units encoded data for column 1, 2, 3, 4, or 10 during time-slot 1, the appropriate memory (or memories) is set. Notice that row 3 information from the Row Decoder must also be present at pin 16 for data to be stored in the memory of U2232.

If data was encoded during time-slot 1, a negative-going output is produced at pin 7 while the memories are being set. This negative-going pulse is connected to the base of Q2229 in the Display-Skip Generator to produce a Display-Skip output. Since the information encoded during time-slot 1 was only provided to set the memories and not intended to be displayed on the crt at this time, the Display-Skip output prevents a readout display during this time-slot.

During time-slot 5, memory A is interrogated. If information was stored in this memory, a positive-going output is produced at pin 7. This pulse is connected to pin 10 of the Column Decoder through Q2240 to add one unit of current at the input of the Column Decoder. This produces a zero after the character displayed during time-slot 4. During time-slot 6, memory B is interrogated to see if another zero should be added. If another zero is necessary, a second

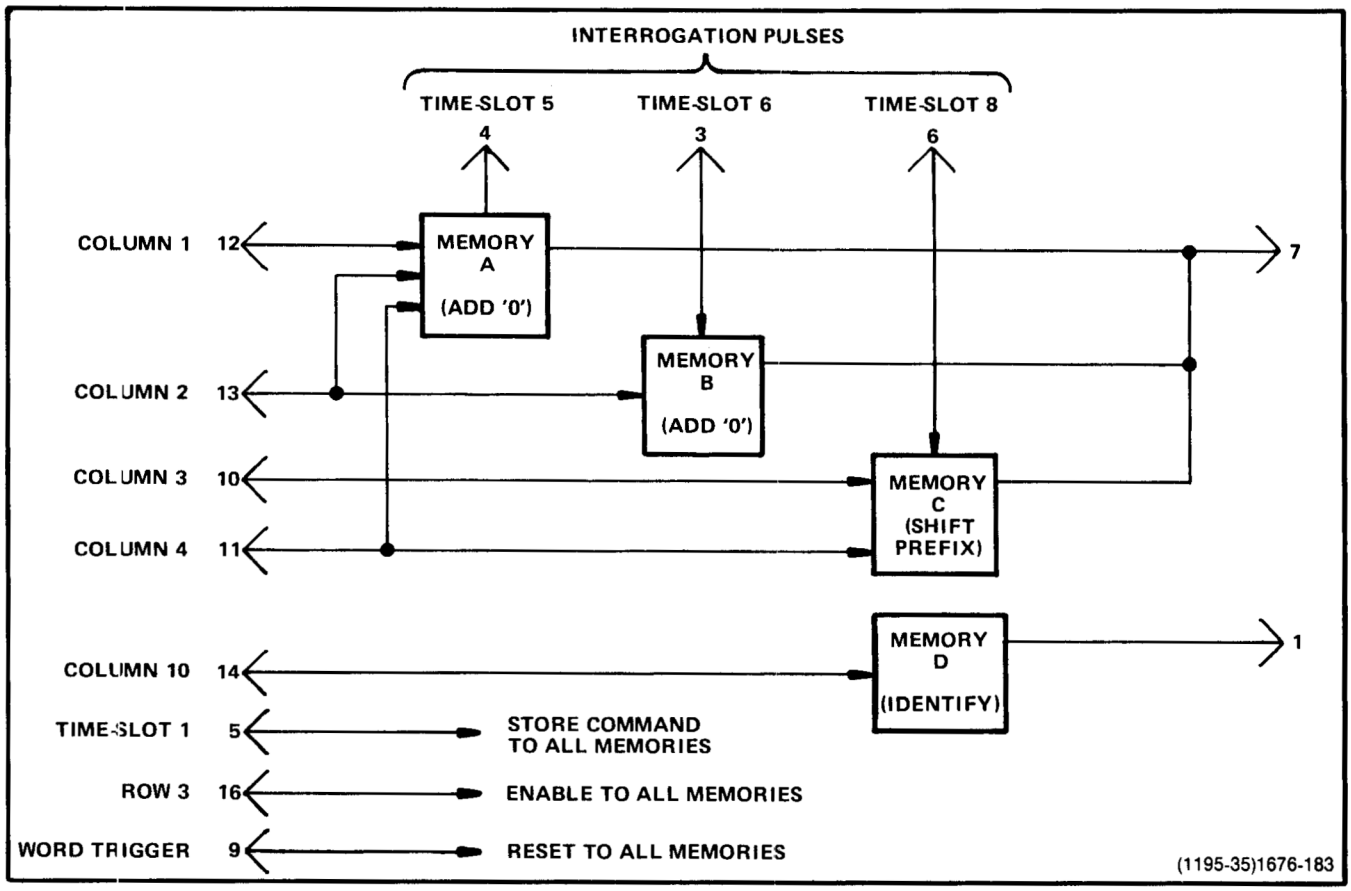


Fig. 3-33. Block representation of memory sequence in U2232.

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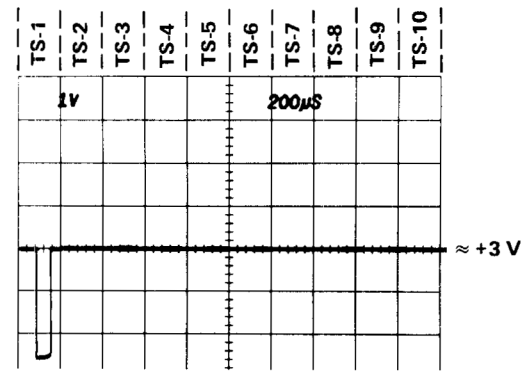
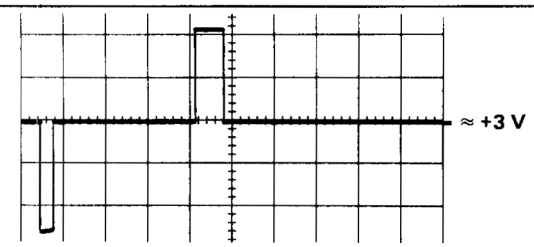
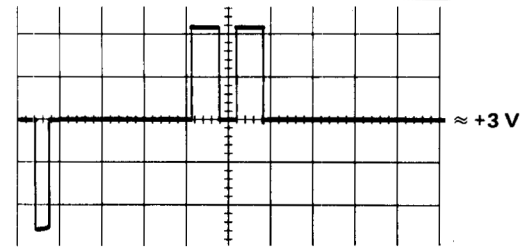
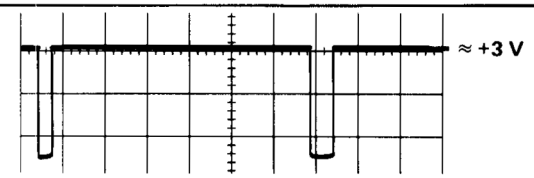
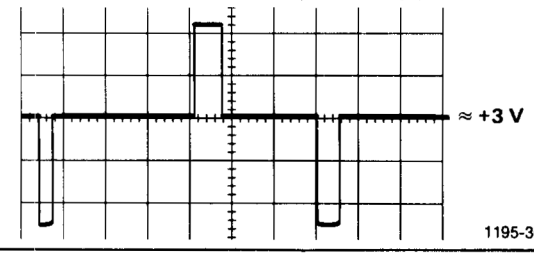
INPUT PIN OF U2232 ACTIVATED	COMMAND	TIME-SLOTS
14	IDENTIFY	
12	ADD ONE ZERO	
13	ADD TWO ZEROS	
10	DECREASE PREFIX	
11	DECREASE PREFIX AND ADD ONE ZERO	

Fig. 3-34. Typical output waveforms for Zeros Logic and Memory stage operation (at pin 7 of U2232).

positive output is produced at pin 7, which again results in a column 1 output from the Column Decoder and a second 0 in the crt display.

Finally, memory C is interrogated during time-slot 8 to obtain information on whether the prefix should be changed, or left at the value that was encoded. If data has been encoded that calls for a shift in prefix, a negative-going output level is produced at pin 7. This negative level subtracts one unit of column current from the data at the input to the Column Decoder. Notice on the Character Selection Matrix of Fig. 3-26 that when row 4 is programmed, a reduction of one column results in a one-column shift of the prefix. For example, with the 100 μV program shown in Fig. 3-31, if the data received from the plug-in called for a shift in prefix, the crt readout would be changed to 1 mV (zeros deleted by program; see Encoding the Data).

The 100 μA of quiescent current through R2213 provided by Q2240 (see Display-Skip Generator) allows the prefix to

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be shifted from m (100 μA column current, column 1) to no prefix (0 column current, column 0) so only the unit of measurement encoded during time-slot 9 is displayed. Notice that reducing the prefix program from column 1 to column 0 programs the Readout System to not display a character at this readout location.

A further feature of the Zeros Logic and Memory is the Identify function. If 10 units of column current are encoded by the plug-in unit along with row 3 during time-slot 1, the Zeros Logic and Memory produces a negative-going output pulse at pin 1 to switch the Column Data Switch and Row Data Switch to the ninth channel. Then, time-slot pulses 2 through 9 encode an output current through resistors R2191 and R2199 for column data and R2201 and R2209 for row data. This provides the currents necessary to display the word IDENTIFY in the word position allotted to the channel that originated the Identify command. After completion of this word, the Column Data Switch and Row Data Switch continue with the next word in the sequence.

The Word Trigger signal from the Word Trigger stage is connected to pin 9 of U2232 through C2242. At the end of each word of readout information, this pulse goes LO. This erases the four memories in the Zeros Logic and Memory in preparation for the data to be received from the next channel.

Character Generator

The Character Generator stage consists of five similar integrated circuits (U2270 through U2278), which generate the X (horizontal) and Y (vertical) outputs at pins 16 and 1, respectively, to produce the character display on the crt. Each integrated circuit can produce 10 individual characters. Integrated circuit U2270 (designated "Numerals") can produce the numerals 0 through 9 shown in row 1 of the Character Selection Matrix (Fig. 3-26). The symbols shown in row 2 of the Character Selection Matrix are produced by U2272 and U2274 produces the prefixes and some letters, used as prefixes, shown in row 4. Integrated circuits U2276 and U2278 produce the remaining letters shown in rows 5 and 6 of the Character Selection Matrix.

All of the Character Generator stages receive the Column Digital Data From the Column Decoder, U2244, in parallel. However, only one of the Character Generators receives row data at a particular time and only the stage receiving this row data is activated. For example, if column 2 is encoded, the five Character Generators are enabled so that either a 1, >, μ, V, or an N can be produced. If row 4 has been encoded at the same time, only the Prefix Character Generator, U2274, will produce an output to result in a "μ" being displayed. The activated Character Generator provides current output for the Format Generator to produce the selected character on the crt. In a similar manner, any of the characters shown in the Character Selection Matrix can be displayed by correct addressing of the row and column.

Decimal Point Logic and Character Position Counter

Decimal Point Logic and Character Position Counter U2260 performs two functions. The first function is to add a staircase current to the X (horizontal) signal to space the characters horizontally on the crt. After each character is generated, the negative-going edge of the Ready signal at pin 5 advances the Character Position Counter. This produces a current step output at pin 3, which, when added to the X signal, causes the next character to be displayed one character space to the right. This stage can also be advanced when a Space instruction is encoded so a space is left between the displayed characters on the crt. Row 10 information from the Row Decoder is connected to pin 4 of U2260. When row 10 and column 0 are encoded, the output of this stage advances one step to move the next character another space to the right. However, under this condition, no display is produced on the crt during this time-slot, since the Character Generators are not activated.

Time-slot pulses 1, 2, and 3 are also connected to pin 4 of U2260 through VR2262, VR2263, and VR2264, respectively, and R2262 and R2265. This configuration adds a space to the displayed word during time-slots 1, 2, and 3 even if information is not encoded for display during these time-slots. With this feature, the information displayed during time-slot 4 (scaling data) always starts in the fourth character position whether data has been displayed in the previous time-slots or not. Therefore, the resultant crt display does not shift position as normal-invert or cal-uncal information is encoded. The Word Trigger pulse connected to pin 8 resets the Character Position Counter to the first character position at the end of each word.

The Decimal Point Logic portion of this stage allows decimal points to be added to the crt display. With the Standard Readout Format, row 7, encoded coincident with columns 3 through 7, addresses a decimal at one of the five locations identified in row 7 of the Character Selection Matrix (Fig. 3-26). This instruction refers to the decimal point location in relation to the total number of characters possible in one word (see Fig. 3-35). For example, column 3 encoded with row 7 during time-slot 1 places a decimal point in location No. 3. As shown in Fig. 3-35, this displays a decimal point after the third character that can be displayed on the crt. (The first three time-slots produce a space whether data is encoded or not; see previous paragraph.)

When decimal-point data is encoded, the crt is unblanked so a readout display is presented. Since row 7 does not activate any of the five Character Generators, the crt beam is deflected vertically by the application of row-7 data to the Y input of the Format Generator through R2280. This places

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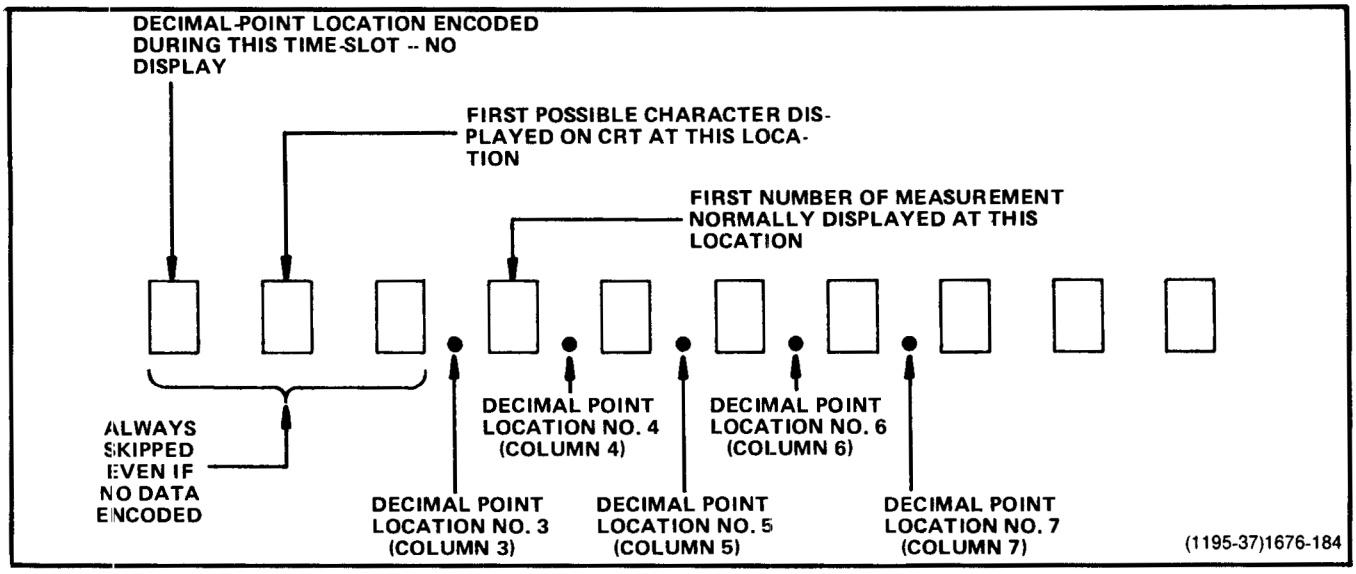


Fig. 3-35. Readout word relating 10 possible character locations to the decimal point instructions that can be encoded, and the resultant crt display.

the decimal point between the characters along the bottom line of the readout word. After the decimal point is produced in the addressed location, the crt beam returns to the location indicated by the Character Position Counter to produce the remainder of the display.

Decimal-Point Character

The Decimal-Point Character address (see Fig. 3-26) allows a decimal point to be encoded for special formats. This decimal point can be placed in any character position by encoding column 9 with row 8 during the corresponding time slot. The application of row 8 data to the X and Y input of the Format Generator through R3478 and R3479, respectively, provides horizontal and vertical positioning current for the decimal points.

Format Generator

The X- and Y-deflection signals produced by the Character Generator stage are connected to pins 2 and 7, respectively, of Format Generator U2284. The Channel Address Code from the Channel Counter is also connected to pins 1, 8, and 15 of this stage. The Channel Address Code directs the Format Generator to add current to the X and Y signals to deflect the crt beam to the area of the crt associated with the plug-in channel that originated the information (see Fig. 3-24). The Channel Address Code and the resultant word positions are shown in Table 3-2. The Ready signal at pin 13 (coincident with the Vertical and Horizontal OFF Command output) activates this stage when a character is to be displayed or the crt. Resistors R2274 and R2275 determine the horizontal and vertical size, respectively, of the displayed characters, and R2273 provides an adjustment to set the vertical size of the characters (Character Height) as desired. The character position current from the Decimal Point Logic and Character Position Counter stage is added to the X (horizontal) input signal to space the characters horizontally on the crt (see previous discussion).

Y-Output Amplifier

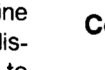
The Y-output signal at pin 6 of Format Generator U2284 is connected to the Y-Output Amplifier Q2287-Q2299. This stage provides a low-impedance load for the Format Generator while providing isolation between the Readout System and the driven circuits. Vertical Separation adjustment R2291 changes the gain of this stage to control the vertical separation between the readout words displayed at the top and bottom of the graticule area.

X-Output Amplifier

The X-Output Amplifier, Q2286-Q2296, operates like the Y-Output Amplifier, to provide the horizontal deflection from the readout signal available at pin 4 of U2284. The gain of this stage is fixed by the values of the resistors in the circuit.

Display Sequence

Figure 3-36 shows a flow chart for the Readout System. This chart illustrates the sequence of events that occurs in the Readout System each time a character is generated and displayed on the crt.

Converter/Rectifiers 

The Converter/Rectifiers circuit provides the operating power for this instrument from an ac line-voltage source.

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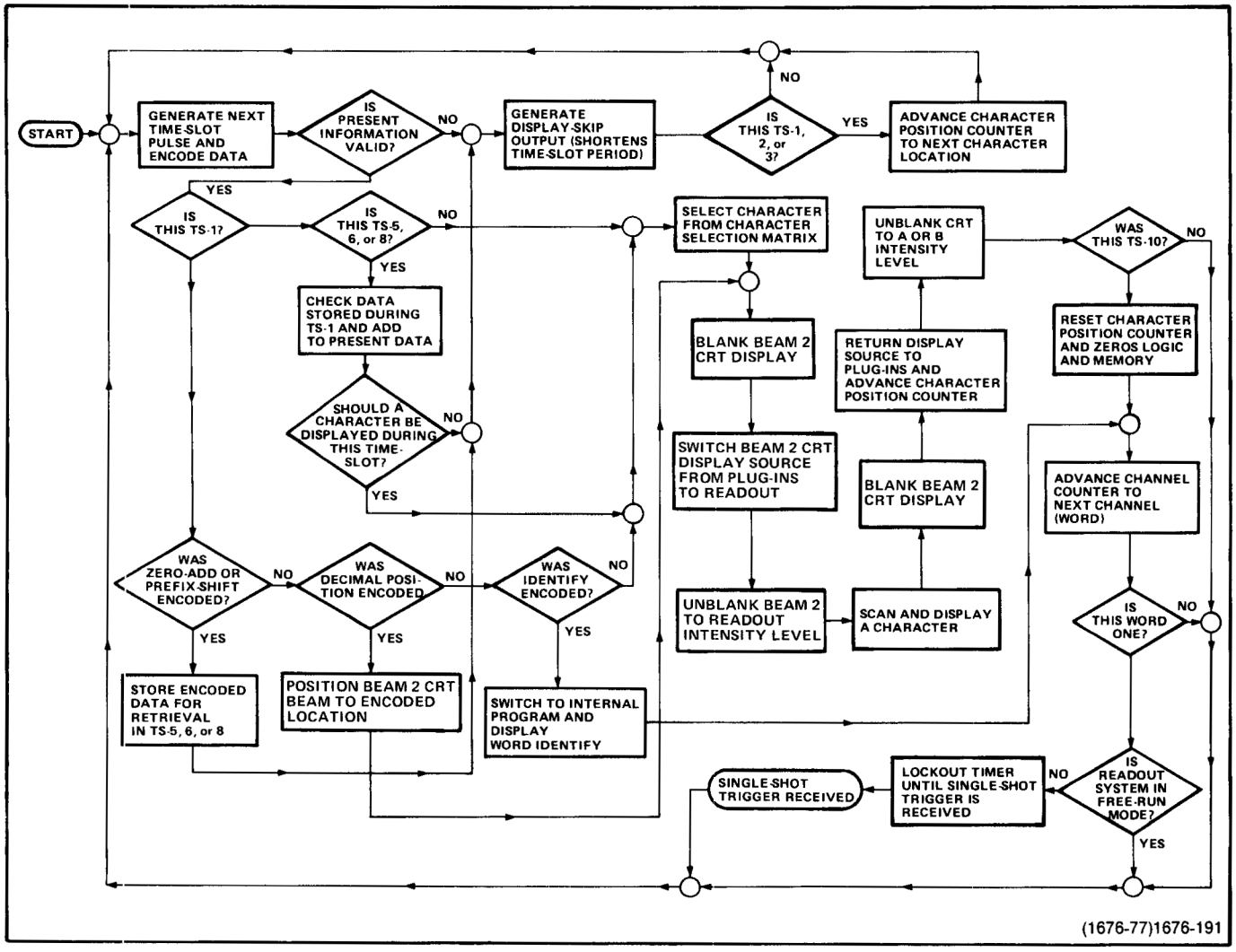


Fig. 3-36. Flow chart for character generation by the Readout System.

This circuit includes a Line Selector assembly to permit selection of the nominal operating voltage for the instrument. Figure 3-37 shows a detailed block diagram of the Converter/Rectifiers circuit. A schematic is provided on diagram 18.

Line Input

Power is applied through Line Filter FL1200, line fuse F1200, POWER switch S1200, and Line Selector switch S1212. The Line Filter is designed to keep power-line interference from entering the instrument and to keep the 25 kHz (approximately) Inverter signal from entering the power line. Resistor R1205 and capacitors C1205 and C1206 suppress reverse-recovery transients of CR1215.

Line Selector switch S1212 allows the instrument to operate from either a 115-volt nominal or a 230-volt nominal line-voltage source. In the 115-volt position, rectifier CR1215 operates as a full-wave doubler with energy-storage capacitors C1216 and C1217, so the voltage across the two capacitors in series will be the peak-to-peak value (approximately) of the line voltage. For 230-volt operation, CR1215 is connected as a bridge rectifier, and the voltage across C1216 and C1217 will be the peak value (approximately) of the line voltage. As a result, the output voltage applied to the Inverter stage is about the same for either 115-volt or 2340-volt operation.

Thermistors RT1209 and RT1213 limit the surge current demanded by the power supply when it is first turned on. After the instrument is in operation, the resistance of the thermistor drops so it has little effect on the operation of this stage. When the instrument is turned off, the Inverter is turned off by the Inverter Stop stage to prevent the sudden discharge of C1216 and C1217; C1216 and C1217 discharge slowly through R1221. The discharge time-constant of C1216, C1217, and R1221 is about equal to the

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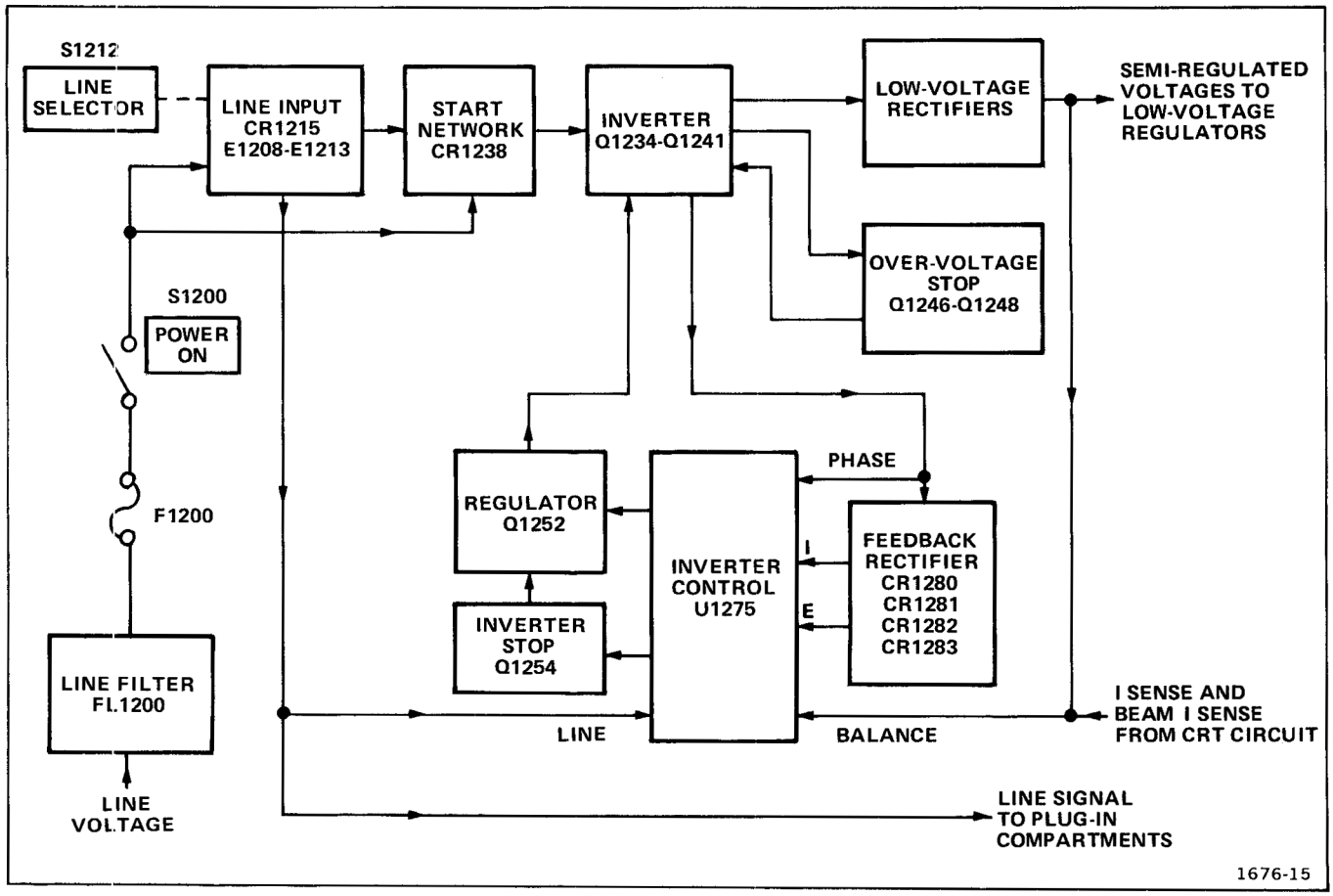


Fig. 3-37. Detailed block diagram of Converter/Rectifiers circuit.

thermistor thermal-recovery time. This ensures sufficient thermistor resistor resistance to limit the turn-on surge current to a safe level. Since C1216 and C1217 discharge slowly, dangerous potentials exist within the power supply for several minutes after the POWER switch is turned off. The presence of voltage in the circuit is indicated by the relaxation oscillator R1219, C1219, and DS1219. Neon bulb DS1219 will blink until the potential across C1216 and C1217 drops to approximately 80 V.

E1208 and E1213 are surge-voltage protectors. When the Line Selector switch is in the 115-volt position, only E1208 is connected across the line input. If a peak voltage greater than 230 V is present on the line, E1208 will break down and demand high current. This excess current will quickly open line fuse F1200 to interrupt the input power before the instrument can be damaged. In the 230-volt position, E1208 and E1213 are connected in series across the line input to provide proitection for peak voltages greater than 460 V.

Transformer T1208 provides a sample of the line voltage to the plug-in connectors in the Main Interface circuit for internal triggering at line frequencies. This line-frequency signal is also connected to the Inverter control stage to indicate when line voltage is applied and the POWER switch is on.

Start Network

Voltage divider R1210 and R1242 is connected between the input line (ac) and the negative side of C1217 (through T1225). The voltage across R1242 charges C1242 on each half cycle of the input line voltage. When the charge on C1242 reaches approximately 32 V, trigger diode CR1238 conducts and C1242 is discharged through CR1238 to provide base drive to turn on Q1241 through C1239. When Q1241 is turned on, it shock-excites series-resonant network L1237 and C1237 to generate a damped oscillation. This damped oscillation provides the drive necessary to start the Inverter switching action. After the Inverter is operating, the recurrent waveform at the collector of Q1241 keeps C1242 discharged through CR1242. This disables the Start Network while the instrument is on.

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Inverter

The Inverter stage converts the dc output of the Line Input stage to a sine-wave current to drive Power Transformer T1310. Once the Inverter has been started by the Start Network, transformer T1230 provides feedback to the bases of Q1234 and Q1241 to sustain oscillation. The polarity of the windings causes Q1234 and Q1241 to switch alternately (i.e., only one transistor on at a time). These transistors operate at a forced beta of 4 due to the turns ratio of T1230. Also, T1230 provides an input from the Inverter Control and Regulator stages for pre-regulation and fault protection. This is accomplished by effectively short-circuiting one-half of the 60-turn, center-tapped windings to either delay the turn-on of Q1234 and Q1241 or to completely stop their switching action.

The switching action of Q1234 and Q1241 generates a square-wave voltage at the emitter of Q1234 with an amplitude approximately equal to the dc voltage at the input to this stage. The square-wave voltage at the emitter of Q1234 supplies the drive necessary to maintain a sine-wave current in the series-resonant network of L1237 and C1237. Diodes CR1234 and CR1241 provide reverse-conduction paths across Q1234 and Q1241, respectively, when these transistors are held off for pre-regulation.

To aid in understanding circuit operation, Fig. 3-38 shows a representation of the Inverter stage as a switch. The three possible states of the Inverter are depicted by the three possible switch positions: Q1234 is on in position (a); Q1241 is on in position (c); or both transistors are held off for pre-regulation in position (b). In the composite current waveform of Fig. 3-38, the relative phase and amplitude of each component of I_t is shown for periods T_a, T_b, and T_c corresponding to the three switch positions or the three states of the Inverter. The idealized voltage waveforms in Fig. 3-38C and Fig. 3-38D show the relationship of their amplitude to the dc input voltage and their phase with respect to the current waveform of Fig. 3-38B.

The normal sequence of operation is as follows: Assume that I_t is passing through zero and is increasing in the direction to cause CR1234 to conduct. At zero crossing, the Regulator stage (Q1252) is turned on to hold off Q1234 and Q1241; CR1234 is forward biased to conduct I_1 as shown in Fig. 3-38B. After zero crossing, at a time determined by the Inverter Control stage, the Regulator allows Q1241 to conduct and reverse bias CR1234. Transistor Q1241 conducts as I_2 goes through its peak and back to zero. At zero crossing, with current increasing in the opposite direction, the Regulator is turned on to hold off Q1234 and Q1241. During this pre-regulation hold-off time, CR1241 conducts I_3. When the Regulator is turned off, Q1234 is turned on to conduct I_4 and reverse bias CR1241. Transistor Q1234 conducts as I_4 goes through its peak and back to zero. The cycle then repeats itself.

The Inverter operates on the low side of the resonant frequency of L1237 and C1237, which is approximately 29 kHz. Pre-regulation is achieved by varying the hold-off time of the Inverter transistors (T_b in Fig. 3-38B) and thereby varying the Inverter frequency. The power delivered to T1310 varies with the Inverter frequency, because the impedance of the series-resonant network varies with frequency. At the lowest line voltage and highest load, the Inverter will operate at a frequency close to the resonant frequency. If either the line voltage is increased or the load is reduced, the Inverter frequency will decrease.

Over-Voltage Stop

The Over-Voltage Stop stage stops the Inverter whenever the voltage across the primary of T1310 exceeds a safe level to protect Inverter components from damage. This stage is activated whenever the normal voltage regulating path through Q1252 and T1230 is inoperative.

Capacitor C1243 is charged through CR1244 to the peak of the voltage across the primary of T1310. If this voltage exceeds a safe level, VR1246 conducts to trigger SCR Q1248 into its forward-conduction state. Then, C1243 discharges through R1248, Q1248, and the base-emitter junction of Q1246. This discharge current turns on Q1246 to effectively short-circuit the base-drive winding of T1230 and stop the Inverter switching action. Since CR1249 becomes forward biased when Q1248 is triggered on, R1245 and C1243 are effectively paralleled with C1242 in the Start Network. The relatively large capacitance of C1243 prevents C1242 from charging to the breakdown voltage of CR1238, thus preventing the Start Network from turning the Inverter on. Transistors Q1248 and Q1246 continue to conduct until the discharge current of C1243 drops below the holding current of Q1248. After Q1248 returns to its forward-blocking state, CR1249 remains forward biased to inhibit the Inverter Start Network while C1243 is charged through R1247. When the charge on C1243 is sufficient to reverse bias CR1249, the Start Network can start the Inverter.

Inverter Control

The Inverter Control stage, made up of primarily U1275, provides pre-regulation and fault protection for the low- and high-voltage power supplies. For pre-regulation purposes, U1275 provides the Regulator output to the Regulator stage to vary energy delivered by the Inverter by varying the frequency. Fault protection is achieved through the Regulator output (as for pre-regulation) or by providing the Stop Trigger output to the Inverter Stop stage to turn the Inverter off.

Integrated circuit U1275 includes a variable pulse-width monostable multivibrator initially triggered by current-phase information fed back from the Inverter. The charge ramp for the multivibrator is available at pin 12 of U1275. The time

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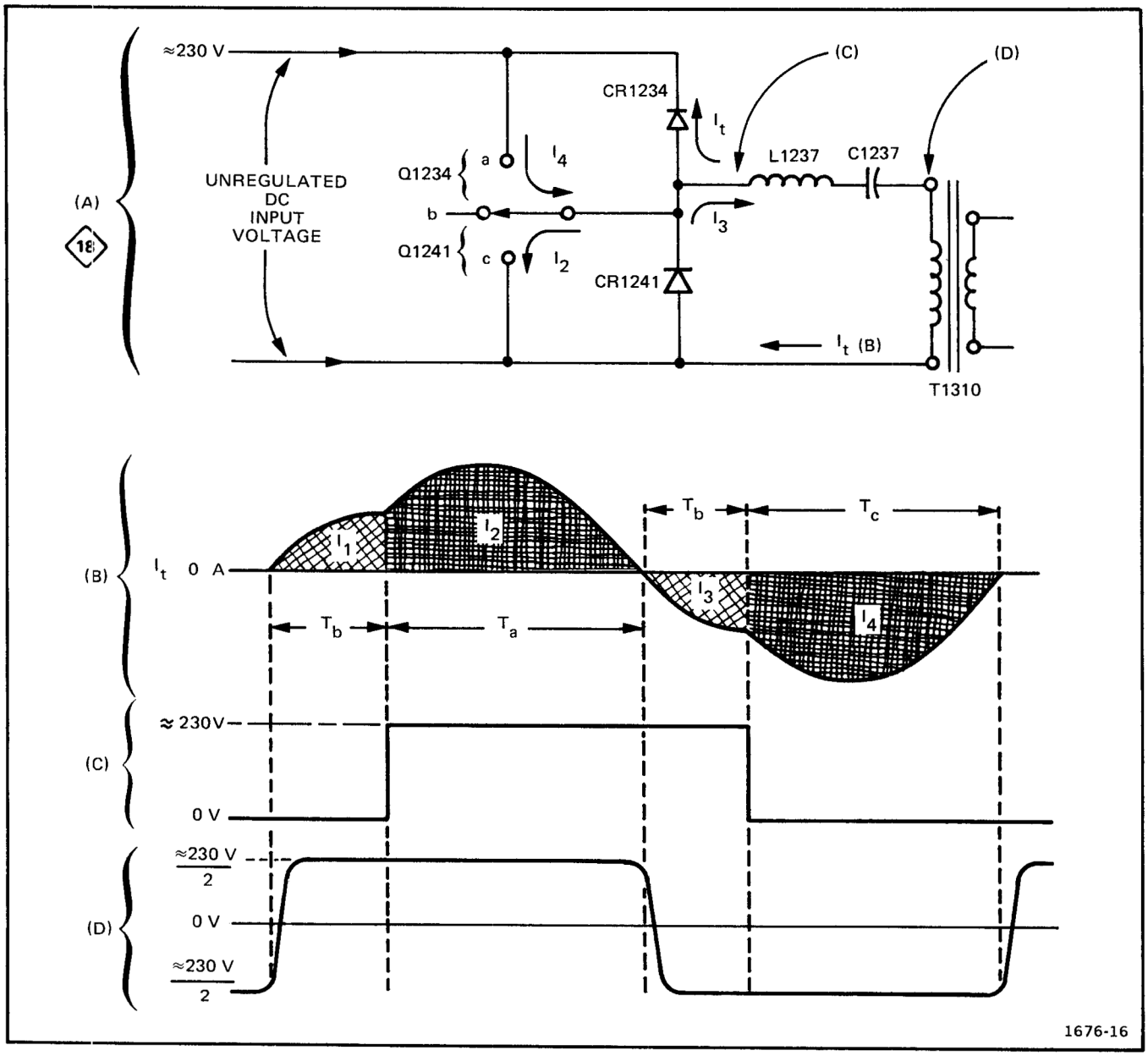


Fig. 3-38. (A) Representation of Inverter stage. Idealized waveforms of (B) Total Inverter current I_t, (C) voltage at junction of CR1234 and CR1241, and (D) voltage across primary of T1310.

constant of R1300 and C1330 determines the rate-of-rise of the charge ramp. The sensing inputs to U1275 determine the pulse width of the charge ramp (i.e., the multivibrator on time). The pulse width of the charge ramp corresponds to the Inverter hold-off time (T_b, in Fig. 3-38B). The Multivibrator Regulator output drives the Regulator stage through pin 9 of U1275. Under normal operating conditions, only the E Sense input at pin 15 has control over the output pulse width for pre-regulation. However, an error detected by any of the sensing inputs will affect the output pulse width and will also produce a Stop Trigger to the Inverter Stop stage. The operation of each individual function of the Inverter Control stage is described in the following discussion.

Pre-Regulator. The Pre-Regulator portion of U1275, in conjunction with the Regulator stage, maintains constant voltages at the outputs of the Low- and High-Voltage Rectifiers.

Transformer T1235 provides Inverter power and phase information to U1275. The phase information is connected to the trigger input of the Inverter Control Multivibrator via pins 10 and 11 through C1275 and C1276. Bridge rectifier CR1280, CR1281, CR1282, and CR1283, provides positive and negative operating voltages to U1275. A shunt regulator in U1275 regulates the +7.5 V output of the bridge rectifier connected to pin 6. The −2 V (nominal) output

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connected to pin 7 is unregulated. Zener diode VR1297 provides a stable reference voltage for the sensing-divider resistors R1292, R1293, R1294, R1296, and R1297. Resistor R1293 in this divider adjusts the voltage level at the E Sense input to the Pre-Regulator (pin 15 of U1275) to set the output voltage of the rectifiers by controlling the +130 V Supply. The output of the other supplies is set by the turns ratio of T1310.

In the stable state of the Inverter Control multivibrator, the Regulator output at pin 9 is near ground to turn off the Regulator stage. After the Inverter current passes through zero, either pin 10 or pin 11 will go positive to trigger the Inverter Control multivibrator on. While the multivibrator is on, the Regulator output voltage level is positive to turn on the Regulator stage. The duration of the on stage is determined by the voltage level at the E Sense input at pin 15. If this voltage level is low, the duration is short. As this voltage level increases, the duration increases.

Fault Protection. The fault-protection portions of U1275 provide protection for the power-supply components from damage due to short circuits, turn-on surge currents, and other malfunctions. When a fault is detected at the Balance or I (current) Sense inputs (pins 2 and 13, respectively), a current output from the Sample Period Timer output (pin 1) charges C1264. If the detected fault lasts longer than approximately 15 ms, C1264 will charge positive enough to produce a positive Stop Trigger output at pin 8 to turn the Inverter off. When the Inverter is shut off, the current charging C1264 is interrupted and C1264 will discharge. Once pin 8 goes positive, C1259 discharges through R1261 and the base-emitter junctions of Q1254 and Q1252. The discharge of C1259 keeps Q1254 and Q1252 turned on, and the Inverter turned off, for approximately 250 ms. After this period, pin 8 returns to a near zero-volt level, turning off Q1254 and Q1252 to allow the Inverter to run. This cycle repeats until the fault is corrected, with the Inverter on for approximately 15 ms, then off for approximately 250 ms.

Inverter Current Limiter. The Inverter Current Limiter provides protection for the Inverter components from damage due to excessive current. Operation of this stage is similar to the Pre-Regulator (voltage regulation). The Inverter Current Limiter takes control of the Inverter Control Regulator output pulse width during trurn-on or whenever an overload causes the Inverter current to reach the limit value.

R1287 is the current-sensing resistor. The voltage at the junction of R1287, R1286, and CR1288 is the negative rectified Inverter current. The I Sense input at pin 13 is normally held positive through R1285. If the Inverter current increases, the voltage at the I Sense input will become more negative. The Inverter Control Regulator output pulse width (i.e., Inverter hold-off time) increases until the Inverter current reaches a level that will hold pin 13 near the zero-volt level. If the voltage at pin 13 remains near zero for more than approximately 15 ms, the Stop Trigger output at pin 8 will go positive to trigger the Inverter Stop stage. The Inverter Current Limiter will limit the peak Inverter current to about 5 A under fault conditions.

Balance. The Balance portion of U1275 provides overload protection for the Low- and High-Voltage Rectifiers by sensing a malfunction in these circuits. Beam I (current) Sense and I (current) Sense inputs from the CRT Circuit and outputs from the Low-Voltage Rectifiers are applied to the Balance Sense input at pin 2 of U1275 through divider R1302, R1304, and R1305. During normal operation, this divider biases the Balance Sense input near a zero-volt level. If one of the inputs changes sufficiently to cause the voltage level at pin 2 to vary approximately 200 mV (positive or negative) for more than approximately 15 ms, a positive Stop Trigger output is produced at pin 8 of U1275.

Line Stop. The Line Stop portion of U1275 protects the Line-input components from damage due to turn-on surge current. This is achieved by triggering the Inverter Stop stage to stop the Inverter when the POWER switch is turned off. The Line Stop stage will also stop the Inverter if the ac line voltage falls below a minimum value.

The line-frequency signal from transformer T1208 is connected to the Line stop Sense input of U1275 at pin 4. During normal operation, the line-frequency signal causes the Line stop Timer terminal (pin 3) to be near a zero-volt level (ground). This zero-volt level keeps C1267 from being charged toward +7..5 V through R1267. When the line-frequency signal is interrupted or falls below a minimum value, C1267 will begin to charge to +7.5 V. When the voltage at pin 3 reaches approximately +0.7 V, the Line Stop stage will produce a positive output at pin 8 of U1275 to trigger the Inverter Stop stage.

Regulator

The Regulator stage operates in conjunction with the Inverter Control and Inverter Stop stages to regulate the Inverter switching. Transistor Q1252 acts as a switch controlled by the Regulator output of U1275 (pin 9) or by the Inverter Stop stage. When Q1252 is turned on, CR1251 or CR1252 is forward biased. This effectively short circuits onel-half of the 60-turn, center-tapped winding of T1230 to shut off the Inverter. For further information, see the discussion of the Inverter stage.

Inverter Stop

The Inverter Stop stage, Q1254, is controlled by the output of U1275 (pin 8) to shut off the Inverter through the Regulator stage (Q1252). During the start period, T1230 supplies current to charge C1256 and C1259 through

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CR1256 and CR1259. Also during this time, Q1254 is reverse biased by U1275. Once triggered on by a positive level at pin 8 (U1275), Q1254 will stay on while C1256 and C1259 discharge through the base of Q1254. If U1275 is removed from its socket oris otherwise nonfunctional, the Inverter Stop stage will stop the Inverter after about two or three Inverter cycles.

Low-Voltage Rectifiers

The rectifiers and filter components in the secondaries of T1310 provide rectified, pre-regulated voltages for re-regulation by the Low-Voltage Regulators circuit.

Low-Voltage Regulators 19

The Low-Voltage Regulators convert semi-regulated voltages from the Converter/Rectifiers circuit to stabilized, low-ripple output voltages. The regulators are series type, using the −50 Volt Supply as a reference for the remaining voltage supplies. Figure 3-39 shows a detailed block diagram of the Low-Voltage Regulators circuit. A schematic is provided on diagram 19.

−50 Volt Supply

Semi-regulated −54 V from the Converter/Rectifiers circuit provides the unregulated voltage source for this supply. Transistors Q1508, Q1522, and Q1534 operate as a feedback-stabilized amplifier to maintain a constant −50 V output level. Transistor Q1508 is connected as a differential amplifier to compare the feedback voltage at the base of Q1508B against the reference voltage at the base of Q1508A. The error output at the collector of Q1508B reflects the difference, if any, between these two inputs. The change in error output level at the collector of Q1508B is always in the opposite direction to the change in the feedback input at the base of Q1508B.

Zener diode VR1505 sets a reference level of approximately −9 V at the base of Q1508A. A sample of the output voltage from the −50 Volt Supply is connected to the base of Q1508B through divider network R1512, R1513, and R1514. Resistor R1513 in this divider is adjustable to set the output level of this supply. Notice that the feedback voltage to this divider is obtained from a line labeled −50 V Sense. If the feedback voltage were obtained at the supply, the voltage at the load would not stay constant, due to the inherent resistance of the interconnecting cable between the supply and its load (as the load current varies, the voltage drop along the cable also varies). The Sense configuration overcomes this problem by sensing the voltage at the load. Since the current in the Sense line is small and constant, the load voltage is held constant regardless of the load current.

Regulation of the supply occurs as follows: If the output level of this supply decreases (becomes less negative) due to an increase in load or a decrease in input voltage (as a result of line-voltage changes or ripple), the voltage across divider R1512, R1513, and R1514 decreases also. This results in a more positive level at the base of Q1508B than that established by the −50 V Reference stage at the base of Q1508A. Since the transistor with the more positive base controls the conduction of the differential amplifier, the output current at the collector of Q1508B increases. This increase in output from Q1508B causes an increase in current through Q1522. This allows more current to flow through Q1534, resulting in increased conduction of Q1538, the −50 V Series Regulator. The load current increases and the output voltage of this supply also increases (becomes more negative). As a result, the feedback voltage from the −50 V Sense line increases and the base of Q1508B returns to the same level as the base of Q1508A. Similarly, if the output level of this supply increases (more negative), the output current of Q1508B decreases. The feedback through Q1522 and Q1534 reduces the conduction of the −50 V Series Regulator to decrease the output voltage of this supply. The −50 V adjustment, R1513, sets the output level of this supply.

The −50 V Current Limiting stage (Q1256) protects the −50 Volt Supply if excess current is demanded from this supply. Since the load is connected to this supply through R1537, all current from the −50 Volt Supply must flow through this resistor. Transistor Q1526 senses the voltage drop across R1537. Under normal operation there is insufficient voltage drop across R1537 to forward bias Q1526.

When excess current is demanded from the −50 V Series Regulator due to a short circuit or similar malfunction at the output of this supply, the voltage drop across R1537 increases until it is sufficient to forward bias Q1526. The collector current of Q1526 results in a reduction of current through Q1522 and Q1534 to limit the conduction of Q1538. This current limiting protects Q1538 from damage due to excess power dissipation.

Several protection diodes are also included in this circuit. Diode CR1539 preventss the output of this supply from going more positive than about +0.6 V if it is shorted to a positive supply. Diodes VR1501 and CR1502 supply a turn-on voltage for Q1508 to start the −50 Volt Supply when the instrument is first turned on. As soon as the −50 Volt Supply turns on, CR1502 turns off to disconnect the turn-on voltage to Q1508.

−15 Volt Supply

Basic operation of all stages in the −15 Volt Supply is the same as for the −50 Volt Supply. Reference level for this supply is established by divider R1463 and R1464 be-

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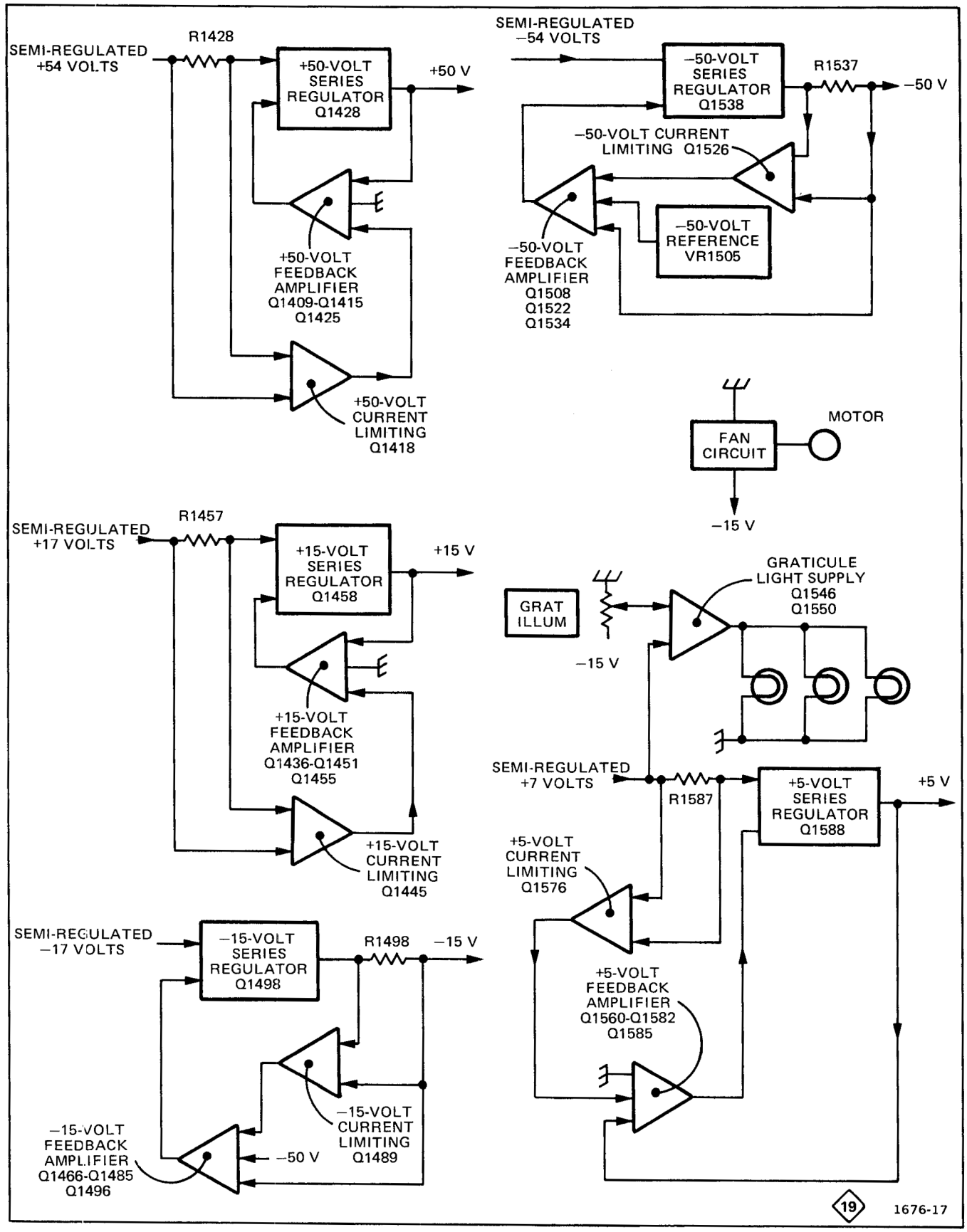


Fig. 3-39. Detailed block diagram of Low-Voltage Regulator circuit.

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tween ground and the −50 V Sense voltage. The divider ratio of R1463 and R1464 sets a level of −15 V at the base of Q1466A. The level on the −50 V Sense line is held stable by the −50 Volt Supply. Any change at the output of the −15 Volt Supply appears at the base of Q1466B as an error signal. The output voltage is regulated in the same manner as described for the −50 Volt Supply. Diode CR1499 limits the output of this supply from going more positive than approximately +0.6 V if it is shorted to one of the more positive supplies. Diodes CR1468 and CR1469 provide reverse voltage protection for transistors Q1466B and Q1466A, respectively.

+5 Volt Supply

The operation of the +5 Volt Supply is basically the same as described for previous supplies. The reference level for this supply is established by the ground connection at the base of Q1560A. Feedback voltage to the base of Q1560B is provided by divider R1564 and R1589 between the −50 V Sense line and the +5 V Sense line. The divider ratio of R1564 and R1589 is 10:1, so the base of Q1560B is at zero volt when the supply is operating normally. The level on the −50 V Sense line is held stable by the −50 Volt Supply. Therefore, any change at the output of the +5 Volt Supply appears at the base of Q1560B as an error signal. The output voltage is regulated in the manner described previously for the −50 Volt Supply. Diode CR1589 limits the output of this supply to approximately −0.6 V if it is shorted to one of the negative supplies.

The +5 V Current Limiting stage (Q1576A and B) protects this supply from damage due to a demand for excessive output current. Transistors Q1576A and Q1576B are connected as a comparator to detect excessive current through R1587. With normal supply current through R1587, the voltage drop across R1587 is such that the base of Q1576B is more positive than the base of Q1576A. Therefore, Q1576A is cut off and CR1576 is reverse biased. If the current through R1587 increases above a safe level, the base of Q1576B becomes more negative than the base of Q1576A. Now, Q1576B is cut off and Q1576A conducts. The collector current of Q1576A forward biases CR1576 and decreases the voltage on the base of Q1582. This limits the conduction of Q1588 to a safe current level.

+15 Volt Supply

The +15 Volt Supply regulates in the same manner as the −50 Volt Supply; current limiting operates in the manner described for the +5 Volt Supply. The ground connection at the base of Q1436A provides the refrence for this supply. Feedback voltage to the base of Q1436B is provided through divider R1440 and R1459 between the −50 V Sense line and the +15 V Sense line. The divider ratio of R1440 and R1459 sets the base of Q1436B at zero volt. Any change in the output level of the +15 Volt Supply appears at the base of Q1436B as an error signal. This results in an opposite change at the collector of Q1436B and at the base of Q1451. This change is connected to the +15 V Series Regulator stage through Q1455 to correct the error in the output voltage of the supply.

Diode CR1439 protects Q1436B against negative voltages if the +15 Volt Supply is shorted to ground. Diode CR1459 limits the output of this supply to approximately −0.6 V if it is shorted to one of the negative supplies.

+50 Volt Supply

Operation of the +50 Volt Supply is basically the same as described for the −50 V Supply; current limiting operates in a similar manner as described for the +5 V Supply. Reference voltage for this supply is established by the ground connection through R1406 at the base of Q1409A. Feedback voltage to the base of Q1409B is provided by divider R1412 and R1429 between the −50 V Sense line and −15 V Sense line. The divider ratio of R1412 and R1429 sets the base level of Q1409B at zero volt when the output of this supply is correct. The protection diodes in this circuit operate similar to those in the other supplies.

Fan Circuit

The fan motor used in this instrument is a brushless dc motor using Hall Effect devices. The two Hall Effect devices sequentially drive the four transistors (U2536A, B, C, and D) which, in turn, control the current flow through the four field windings. The fan motor speed is regulated by limiting the current flow through Q2512. Diodes CR2528, CR2537, CR2532, and CR2534 rectify the back emf (electromotive-force) produced by the four field windings. This voltage is applied to the base of Q2512 through divider network R2527 and R2525. The voltage developed by this circuit is proportional to the motor speed. If the motor speed starts to increase, the current drive to the base of Q2512 will decrease, reducing the current to the motor. If the motor speed starts to decrease, the current to the motor will increase, thereby maintaining a constant motor speed.

Graticule-Light Supply

The Graticule-Light Supply provides voltage to the graticule lights DS1552, DS1553, and DS1554. The front-panel GRAT ILLUM control, R1541, sets the output of this supply to set the brightness of the graticule lights. Transistors Q1546, Q1550 and diode CR1549 form a pseudo differential amplifier. the output voltage at the collector of Q1550 follows the voltage set at the base of Q1546 by the divider made up of R1544, R1545, R1543, and the GRAT ILLUM control R1541 (see diagram 1). Resistor R1551 limits the output current from this supply to protect Q1550 from damage due to a short circuit.

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Enhancer (Option 22) 20

The Enhancer circuit effectively increases the writing rate for single-shot photographs. Figure 3-40 shows a detailed block diagram of the Enhancer circuit, and a schematic is shown on diagram 20 in the Diagrams section of this manual.

Enhancer 20 ms Gate

The output of the Enhancer 20 ms Gate stage determines the length of time that the Enhancer circuit generates necessary signals to develop the raster display on the crt. A negative-going signal from the Readout Single Shot input line initiates a positive-going 20 ms gate at pin 6 of U4115 and a negative-going 20 ms gate a pin 1 of U4115.

Enhancement Level

The 20 ms gate from pin 1 of U4115 turns Q4112 off and Q4124 on. Then, Enhancer Preset adjustment R935 controls the brightness of the Enhancer raster display.

Z-Axis Inhibit

The Z-Axis Inhibit signal blanks the normal beam 2 crt display to prevent interference with the raster display and readout display. The 20 ms gate from pin 1 of U4115 causes the collector of Q4145 to go HI; Q4150 then turns on and pulls the Z-Axis-Inhibit line LO. The Z-Axis-Inhibit is also controlled by the output of the Readout 20 ms Delay circuit during the time pin 6 of U4131 is positive, Q4150 is on, and the Z-Axis Inhibit line is pulled LO. A LO level on the Z-Axis Inhibit line prevents the Beam 2 Horizontal plug-in unit from unblanking the beam 2 crt display.

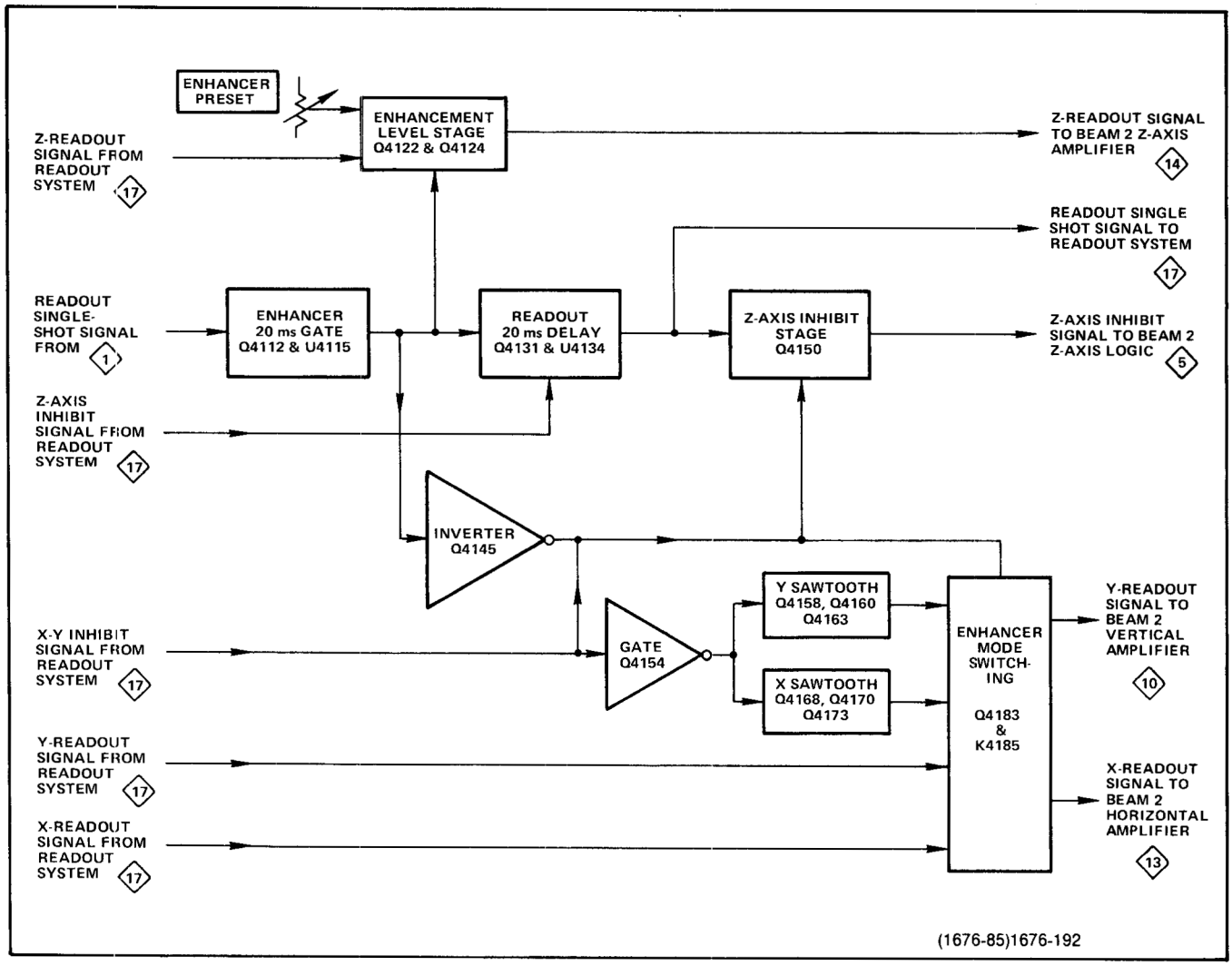


Fig. 3-40. Detailed block diagram of the Enhancer circuit (Option 22).

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X Sawtooth

The X-Sawtooth stage generates sawtooth signals to provide horizontal deflection for the Enhancer raster scan. This circuit generates sawtooth signals at a repetition rate of approximately 1 kHz during the time that pin 1 of U4115 is LO. When pin 1 of U4115 goes LO, the collector of Q4154 goes LO enabling Q4158 and Q4160 to operate as a free-running multivibrator. Transistors Q4158 and Q4160 alternately turn off and on. During the time that Q4160 is off, the voltage at the collector of Q4163 charges negative at a rate determined by the RC time constant of C4162 and R4161. When Q4160 is on, Q4163 discharges C4162, which corresponds to the retrace time of the raster scan.

Y Sawtooth

The Y-Sawtooth stage generates sawtooth signals to provide vertical deflection for the Enhancer raster scan. This circuit operates the same as the X-Sawtooth stage except that the Y-Sawtooth stage generates sawtooth signals at a repetition rate of approximatley 1 MHz.

Readout 20 ms Delay

The Readout 20 ms Delay stage delays the readout display until after the Enhancer circuit completes the enhancement raster. A negative-going signal from J4192B initiates the readout display. This signal occurs 20 ms after pin 6 of U4115 goes LO.

Enhancer Mode Switching

The X-Redout and Y-Readout signal lines are used by the ENHANCER circuit for access to the crt deflection system. The Enhancer Mode Switch connects the output signals from the X-Sawtooth and Y-Sawtooth circuits tothe X-Readout and Y-Readout signal lines during the Enhancer 20 ms Gate pulse. At the end of the Enhancer 20 ms Gate pulse the X-Readout and Y-Readout signal lines are reconnected for use by the readout system.

X-Y Inhibit

The X-Y Inhibit signal prevents the beam 2 vertical and horizontal signals from being displayed on the crt during the time that readout information is displayed or when the Enhancer circuit is operating.

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PERFORMANCE CHECK

This procedure is to be used for the 7844/R7844 as a check of instrument performance. Completion of each step in the procedure ensures that the instrument is correctly operating within all given tolerances. Refer to the following discussion for instructions on complete or partial performance checks.

PRELIMINARY INFORMATION

Performance Check Interval

To maintain instrument accuracy, check the performance of the 7844/R7844 every 1000 hours of operation, or every six months if used infrequently. Thoroughly clean and inspect this instrument as outlined in the Maintenance Section.

Tektronix Field Service

Tektronix, Inc. Field Service Centers and Factory Service Centers provide instrument repair and readjustment services. Contact your Tektronix Field Office or representative for further information.

Using This Procedure

Completion of this procedure will check the performance of the standard 7844/R7844 and instruments with options. When portions of this procedure do not apply to an instrument with an option, a note will appear at the beginning of the step (e.g. Omit with Option 21). The Set-Up Information will include control settings for the 7844/R7844 standard model and instruments with options.

Index

To aid in locating procedure steps, an index precedes the Performance Check Procedure.

Partial Procedures

The following procedure is written to completely check the 7844/R7844 to the Performance Requirements listed in Table 4-2. If the applications for which you will use the7844/R7844 do not require the full available performance from the 7844/R7844 and plug-in combinations, the procedures and the required equipment list can be shortened accordingly. For example, the basic low-frequency measurement capabilities of this instrument can be verified by just checking vertical deflection accuracy and basic horizontal timing with 7000-Series real-time plug-in units and the 7844/R7844 calibrator signal.

A partial performance check may be desirable after replacing components, or to check the adjustment of a portion of the instrument. To check only part of the instrument, refer to the Equipment Required list preceding the portion to be performed.

Performance Check Summary

Table 4-2, Performance Check summary, lists the electrical specifications that are checked in this section. Table 4-2 is intended to provide a convenient means for locating the procedures that check instruments to meet the applicable electrical specifications.

TEST EQUIPMENT REQUIRED

The test equipment listed in Table 4-1 is required for a complete performance check of this instrument. Specifications given in Table 4-1 for test equipment are the minimum required to meet those specifications (listed in the Specification section). Detailed operating instructions for test equipment are omitted in this procedure. Refer to the test equipment instruction manual if more information is needed.

Special Calibration Fixtures

Special calibration fixtures are used only where they facilitate the instrument performance check. These fixtures are available from Tektronix, Inc. Order by part number from Tektronix Field Offices or representatives.

Performance Check Equipment Alternatives

Test equipment listed in the Examples of Applicable Test Equipment column, Table 4-1, is required for this Performance Check. The Performance Check Procedure is based on the first item of equipment given as an example. If other equipment is substituted, control settings or performance check setups may need to be altered. If the exact item of equipment given as an example is not available, refer to the Minimum Specifications column to determine if other equipment may be substituted. Then check the Usage column. If you determine that your measurement requirements will not be affected, the item and corresponding step(s) can be deleted.

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Signal Connections

Detailed signal-connection information is not provided except when critical for a particular test. Rear-panel output connectors should be connected to other equipment with 50 Ω bnc cables. When simultaneously connecting a signal to two inputs, use a bnc T connector. For test equipment signal-connection and termination information, refer to the test equipment instruction manuals.

Table 4-1
TEST EQUIPMENT

Description	Minimum Specifications	Usage	Examples of Applicable Test Equipment
Precision dc voltmeter	Range, −75 to +150 V; accuracy, within 0.2%	Calibrator output accuracy check and adjustment. Power supply voltages, check and adjustment. Z-Axis and Display check and adjustment.	a. TEKTRONIX DM 501A Digital Multimeter[a] b. Fluke Model 825A Differential DV Voltmeter
Time-mark generator	Marker outputs, 2 ns to 0.1 s; marker accuracy, within 0.1%; trigger output, 1 ms.	Crt geometry check and adjustment. Horizontal timing check and adjustment. Calibrator frequency check and adjustment.	TEKTRONIX TG 501 Time-Mark Generator[a]
Medium-frequency signal generator	Frequency range from 2.5 MHz to 100 MHz with 50 Ω output; output amplitude, 1 V p-p; accuracy, within 2%.	Z-Axis input check.	a. TEKTRONIX SG 503 Leveled Sine Wave Generator[a] b. General Radio 1215-C with 1263-C Amplitude Regulating Power Supply.
High-frequency signal generator	Frequency, 220 MHz to 500 MHz; reference frequency, 10 MHz or lower; output amplitude, variable from 0.5 to 4 V; amplitude accuracy, constant within 1% of reference as output frequency changes.	Vertical bandwidth check. Vertical channel isolation check.	TEKTRONIX SG 504 Leveled Sine Wave Generator
Amplifier unit	TEKTRONIX 7A-Series (500 MHz bandwidth required for Vertical system 400 MHz Gain check) plug-in unit.	Used throughout procedure to provide vertical input to the instrument being checked.	TEKTRONIX 7A19 Amplifier unit.
Amplifier unit (dual)	Any 7A-Series dual display amplifier unit.	Used to check position and operation of READOUT display.	Any 7A-Series dual amplifier unit (may be shared with a 7000-Series test oscilloscope.

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Table 4-1 (cont)

Description	Minimum Specifications	Usage	Examples of Test Equipment
Time-base unit	TEKTRONIX 7B80-Series; delaying unit needed for checking DLY'D gate out (7B85).	Used throughout procedure to provide sweep (delaying time base).	a. TEKTRONIX 7B85 Time Base. b. TEKTRONIX 7B80 Time Base.
Sampling unit	Bandwidth, dc to 1 GHz; differential input.	Used to check trigger aberrations and trigger bandwidth.	a. TEKTRONIX 7S14 Dual-Trace Delayed Sweep Sampler. b. Sampling Heads and Sampling Sweep.
Plug-in extender calibration fixture	Provides access to trigger signal from horizontal compartment jacks.	Used to check/adjust trigger gain, aberrations, and bandwidth.	TEKTRONIX Calibration Fixture 067-0589-00.
Mainframe standardizer calibration fixture	Produces gain-check and pulse-response waveforms.	Used throughout procedure to standardize instrument so plug-in units can be interchanged without complete readjustment.	a. TEKTRONIX Calibration Fixture 067-0587-02. b. Calibrated 7000-Series plug-in units with suitable signal sources may be substituted if lower performance is acceptable.
Test oscilloscope	Bandwidth, dc to 75 MHz; minimum deflection factor 10 mV/div; accuracy, within 3%. Dual-channel with an inverting input and both added and alternate vertical modes.	Used throughout procedure.	a. TEKTRONIX 7603 Oscilloscope System with 7A18 Amplifier, 7B53A Time Base, and P6053B Probe. b. TEKTRONIX 475 Oscilloscope with P6106 Probe. c. Refer to the Tektronix Catalog for compatible oscilloscope system.
T connector	bnc-to-bnc	External Z-axis operation check.	Tektronix Part No. 103-0030-00.
Termination	Impedance, 50 Ω; accuracy, within 2%; connectors, bnc.	Output termination for signal generators, if amplifier is not 50 Ω input impedance.	Tektronix Part No. 011-0049-01.
Cable (2 required)	Impedance, 50 Ω; type, RG-58/U; length, 18 and 42 inches; connectors, bnc.	Used throughout procedure for signal interconnection.	Tektronix Part No. 012-0076-00 (18 inches). Tektronix Part No. 012-0057-01 (42 inches).

[a]Requires TM 500-Series Power Module.

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Table 4-2
PERFORMANCE CHECK SUMMARY

Characteristic	Performance Requirement	Performance Check Procedure Title
Deflection Factor	Compatible with all 7000-Series plug-in units.	F1. Check Beam 1 and Beam 2 Vertical Amplifier Gain. (Option 21 only).
Accuracy	1% or less difference between vertical compartments.	F2. Check Beam 1 and Beam 2 Vertical Crossover Gain.
Low-Frequency Linearity	0.1 div or less compression or expansion of a center-screen, 2-div signal positioned anywhere vertically within the graticule area.	F3. Check Low-Frequency Linearity.
System Bandwidth	Varies with plug-in selected. See 7800-Series Oscilloscope Systems specification.	F5. Check Beam 1 and Beam 2 Vertical Amplifier 400 MHz Gain.
Isolation Between Beam 1 and Beam 2		
All Vertical Modes	At least 100:1 from dc to 150 MHz and at least 30:1 from 150 MHz to 400 MHz.	F6. Check Vertical Channel Isolation.
Vertical Display Modes	Plug-in compartment controlling vertical deflection of electron beam.	Does not normally require customer verification; substantiated at the factory.
	BEAM 1 / BEAM 2	
7844R7844	LEFT / LEFT LEFT / RIGHT RIGHT / LEFT RIGHT / RIGHT	
7844/R7844 (Option 21 only)	LEFT / RIGHT	
Vertical Separation Control Range (deleted for Option 21)		F7. Check Vertical Trace Separation Operation.
TRIGGERING		
Trigger Source A HORIZ	LEFT VERT or RIGHT VERT compartment.	C1. Check Trigger Selector Operation
B HORIZ	LEFT VERT or RIGHT VERT compartment.	
HORIZONTAL		
Deflection Factor	Compatible with all 7000-Series plug-in units.	
Accuracy	1% or less difference between horizontal compartments.	Implicitly checked in steps D1. Check Beam 1 Horizontal Amplifier Gain, D3. Check Beam 2 Horizontal Amplifier Gain, D1. Check Beam 1 and Beam 2 Horizontal Amplifier Gain.

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Table 4-2 (cont)

Characteristic	Performance Requirement	Performance Check Procedure Title
Deflection Factor (cont)		
dc Linearity	0.05 div or less error at each graticule line after adjusting for no error at the second and tenth graticule lines.	D4. Check Beam 1 and Beam 2 Horizontal Amplifier Low Frequency Linearity. D2. Check Beam 1 and beam 2 Horizontal Amplifier Low-Frequency Linearity.
Fastest Calibrated Sweep Rate	1 ns/div.	D2. Check Beam 1 High Frequency Timing. D5. Check Beam 2 High Frequency Timing. E3. Check Beam 1 High Frequency Timing. E4. Check Beam 2 High Frequency Timing.
Horizontal Display Modes	Plug-in compartment controlling horizontal deflection of electron beam.	Does not normally require customer verification; substantiated at the factory.

BEAM 1	BEAM 2
A	A
A	B
B	A
B	B

Phase Shift Between Vertical and Horizontal Deflection Systems		Does not normally require customer verification; substantiated at the factory.
Bandwidth (10 div reference)		Does not normally require customer verification; substantiated at the factory.
Horizontal Separation Control Range		Does not normally require customer verification; substantiated at the factory.
	DISPLAY	
CRT Graticule		
Type Area	Internal 8 div vertical by 10 div horizontal. Each div equals 1 cm.	Does not normally require customer verification; substantiated at the factory.
PULSED modes		
BEAM 2 GATED	The graticule illumination is triggered at the end of each sweep of beam 2.	A1. Check Graticule Illumination Operation.
MANUAL	The graticule is illuminated momentarily when the MANUAL push button is pressed independently of other PULSED modes.	
EXTERNAL	The graticule is illuminated momentarily when an appropriate remote signal is applied to the rear-panel GRAT/READOUT SINGLE SHOT connector.	Does not normally require customer verification; substantiated at the factory.

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Table 4-2 (cont)

Characteristic	Performance Requirement	Performance Check Procedure Title
	CALIBRATOR	
Waveshape Polarity	Square wave Positive going with baseline near ground.	B3. Check CALIBRATOR Risetime, Falltime, and Duty Cycle.
Output Voltage Into 100 kΩ or greater	4 mV, 40 mV, 0.4 V, 4 V	B1. Check CALIBRATOR Output Voltage.
Into 50 Ω	0.4 mV, 4 mV, 40 mV, 0.4 V.	Substantiated at the factory.
Output Current 7844	40 mA.	Does not normally require customer verification; substantiated at the factory.
R7844	40 mA.	
Repetition Rate	1 kHz within 0.25%.	B2. Check CALIBRATOR 1 kHz Repetition Rate.
Duty Cycle	49.8% to 50.2%.	B3. Check CALIBRATOR Risetime, Falltime, and Duty Cycle.
Risetime and Falltime	250 ns or less into 100 pF or less.	
	SIGNAL OUTPUTS	
A SAWTOOTH Source	Time-base unit in A HORIZ compartment.	B4. Check A and B SAWTOOTH Output Signals.
Output Voltage Rate of Rise Into 50 Ω	50 mV/unit of time (selected by time/div switch) within 15%. 100 ns/div maximum.	Substantiated at the factory.
Into 1 MΩ Paralleled by 150 pF	1 V/unit of time (selected by time-base time/div switch) within 10%. 1 μs/div maximum.	B4. Check A and B SAWTOOTH Output Signals.
B SAWTOOTH Source	Time-base unit in B HORIZ Compartment.	B4. Check A and B SAWTOOTH Output Signals.
Output Voltage Rate of Rise Into 50 Ω	50 mV/unit of time (selected by time/div switch) within 15%. 100 ns/div maximum.	Substantiated at the factory.
Into 1 MΩ Paralleled by 150 pF	1 V/unit of time (selected by time-base time/div switch) within 10%. 1 μs/div maximum.	B4. Check A and B SAWTOOTH Output Signals.

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Table 4-2 (cont)

Characteristic	Performance Requirement	Performance Check Procedure Title
A GATE		
Source	Main of DLY'd gates from time-base unit installed in the A HORIZ compartment.	B5. Check A GATE MAIN/DLY'D Output Signals.
MAIN DLY'D		
Output Voltage		
Input 50 Ω	0.5 V within 10%.	Substantiated at the factory.
Into 1 MΩ	10 V within 10% (up to 1 μs/div).	B5. Check A GATE MAIN/DLY'D Output Signals.
B GATE		
Source	MAIN or DLY'D gates from time-base unit installed in the A HORIZ compartment.	B6. Check B GATE MAIN/DLY'D Output Signals.
MAIN DLY'D		
Output Voltage		
Input 50 Ω	0.5 V within 10%.	Substantiated at the factory.
Into 1 MΩ	10 V within 10% (up to 1 μs/div).	B6. Check B GATE MAIN/DLY'D Output Signals.
BEAM 1 and 2 EXTERNAL Z-AXIS INPUT		
Sensitivity	2 V p-p. Provides trace modulation over full intensity range.	A8. Check External Beam 2 Z-Axis Operation. A9. Check External Beam 1 Z-Axis Operation.
Polarity of Operation	Positive-going signal decreases trace intensity; negative-going signal increases trace intensity.	
REMOTE CONNECTORS AND SWITCHES		
CONTROL ILLUMINATION (for plug-in units only)	HIGH, LOW, OFF	Does not normally require customer verification; substantiated at the factory.
READOUT DISPLAY		
Mode (front panel)		
Free-run (not marked)	The alphanumeric readout is continuously displayed.	G. Check Readout Modes.
PULSED		
BEAM 2 GATED	The readout display is triggered at the end of each sweep of beam 2.	

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Table 4-2 (cont)

Characteristic	Performance Requirement	Performance Check Procedure Title
Mode (front panel) (cont)		
EXTERNAL	One readout frame is displayed when an appropriate remote signal is applied to the rear-panel GRAT/READOUT SINGLE SHOT connector.	Substantiated at the factory.
MANUAL	One readout frame is displayed when the MANUAL push button is pressed.	F4. Check Readout Modes.
Mode (internal switch)		
Free-Run (FR)	The internal readout mode is dependent on the front-panel Readout mode.	
Beam 2 Gated	The readout display is triggered at the end of each sweep of beam 2. The internal Readout Mode Switch operates independently of the front-panel READOUT controls.	Substantiated at the factory.
POWER SOURCE		
Line Voltage Range (ac, rms)		Selected by rear-panel Line Selector switch. Does not normally require customer verification; substantiated at the factory.
115 V Nominal	90 to 132 V.	
230 V Nominal	180 to 264 V.	

PERFORMANCE CHECK PROCEDURE

Introduction

The following procedure checks the 7844/R7844 to meet the performance requirements given in Table 4-2.

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Setup Procedure

1. Connect the instrument to a power source tha meets the voltage and frequency requirements marked on the instrument rear panel. Refer to the Operating Information section in this manual for operating voltage information.

NOTE

If the correct line voltage is not available, use a variable autotransformer to provide the correct input voltage.

2. Allow at least 20 minutes warmup before proceeding.

NOTE

Titles for external controls of the 7844/R7844 are capitalized in this procedure (e.g., B TRIG SOURCE).

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A. Z-AXIS AND CRT DISPLAY

Equipment Required

Time-base unit	18-inch, 50 Ω cable with bnc connectors
Amplifier unit	42-inch, 50 Ω cable with bnc connectors
Dc voltmeter	Bnc T connector
Test oscilloscope system with 10X probe	
Time-mark generator	
Medium-frequency signal generator	
Mainframe standardizer calibration fixture	

Control Settings

Set the 7844/R7844 front-panel controls as follows:

POWER switch	ON
CALIBRATOR	4 V
READOUT INTENSITY	Off (fully counterclockwise)
A TRIG SOURCE	LEFT
B TRIG SOURCE	RIGHT
BEAM 1	
INTENSITY	Off (fully counterclockwise
VERT SEP (1)	Midrange
HORIZ SEP (1)	Midrange
FOCUS	Midrange
VERTICAL MODE	LEFT
BEAMFINDER	Push button out
HORIZONTAL MODE	A
BEAM 2	
INTENSITY	Off (fully counterclockwise)
FOCUS	Midrange
VERTICAL MODE	RIGHT
BEAMFINDER	Push button out
HORIZONTAL MODE	B

1. Check Graticule Illumination Operation

a. CHECK—Rotate the GRAT ILLUM control throughout its range and notice that the illumination of the graticule varies.

b. Set the GRAT ILLUM control fully clockwise to the PULSED detent position.

c. Install a time-base unit in the B HORIZ compartment.

d. Set the time-base unit sweep rate for 0.2 s/div and triggering for a free-running sweep. Adjust the BEAM 2 INTENSITY control for a visible display.

e. CHECK—Graticule illumination occurs only after the beam 2 horizontal system has completed a sweep (adjust GRAT ILLUM PRESET, if necessary).

f. CHECK—Press the GRAT ILLUM MANUAL push button and check for one momentary illumination of the graticule.

g. Set the GRAT ILLUM control to midrange (out of the PULSED detent position).

h. Install an amplifier unit in the LEFT VERT compartment.

2. Check BEAM 2 Focus Range

a. Set the time-base unit sweep rate for 1 ms/div.

b. Connect the CALIBRATOR output to the amplifier unit.

c. Set the amplifier unit deflection factor for a 1 div centered display. Set the time-base unit triggering for a stable display and position as necessary.

d. Set front-panel BEAM 2 FOCUS control to midrange.

e. CHECK—Square wave should be well defined with sharp edges at medium intensity.

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3. Check BEAM 1 Focus Range

a. Move the time-base unit to the A HORIZ compartment.

b. Set the amplifier unit deflection factor for a 1 div centered display.

c. Set the front-panel BEAM 1 FOCUS control to midrange.

d. CHECK—Square wave should be well defined with sharp edges at medium intensity.

e. Disconnect the CALIBRATOR signal.

4. Check BEAM 1 Edge Focus

a. Replace the amplifier unit installed in the LEFT VERT compartment with the Calibration Fixture signal standardizer.

b. Set the signal standardizer Test switch to Vert or Horiz + Step Resp and the Rep Rate switch to 1 MHz. Adjust the time-base unit for 2 μs/div in the time-base mode and set the triggering for a stable display from the internal source. Set the signal standardizer Amplitude control for a 0.5 div display. Position the display to graticule center.

c. Set the BEAM 1 FOCUS control for a well-defined display.

d. CHECK—Position the 0.5 div display to the top and then to the bottom graticule divisions and check for a well-defined display.

5. Check BEAM 2 Edge Focus

a. Move the Calibration Fixture signal standardizer to the RIGHT VERT compartment and the time-base unit to the B HORIZ compartment.

b. Set the signal standardizer Test switch to Vert or Horiz + Step Resp and the Rep Rate switch to 1 MHz. Adjust the time-base unit for 2 μs/div in the time-base mode and set the triggering for a stable display from the internal source. Set the signal standardizer Amplitude control for a 0.5 div display to graticule center.

c. Set the BEAM 2 FOCUS control for a well-defined display.

d. CHECK—Position the 0.5 div display to the top and then to the bottom graticule divisions and check for a well-defined display.

e. Replace the Calibration Fixture Signal Standardizer, installed in the LEFT VERT compartment with the amplifier unit.

6. Check BEAM 1 Geometry

a. Move the time-base unit to the A HORIZ compartment.

b. Apply 1 ms time markers to the amplifier unit.

c. Apply 1 ms time marker triggers to the time-base external trigger input.

d. Set the time-base triggering for auto mode, with ac coupling from the external source at a sweep rate of 0.5 ms/div.

e. Set the amplifier unit deflection factor and position controls so that the time marks extend above and below the top and bottom of the graticule.

f. Set the time-base unit variable time/division control to obtain 1 marker for each major graticule division.

g. Set the time-mark generator for 0.1 ms markers.

h. CHECK—That the vertical bowing and tilt of the marker display is less than 0.1 div (each 0.1 ms marker represents 0.1 div).

7. Check BEAM 2 Geometry

a. Move the amplifier unit to the RIGHT VERT compartment and the time-base unit to the B HORIZ compartment.

b. Set the time-mark generator for 1 ms markers.

c. Set the amplifier unit deflection factor and position control so that the time-markers extend above and below the top and bottom of the graticule.

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d. Set the time-base unit variable time/division control to obtain 1 marker for each major graticule division.

e. Set the time-mark generator for 0.1 ms.

f. CHECK—That the vertical bowing and tilt of the marker displays is less than 0.1 div (each 0.1 ms marker represents 0.1 div).

8. Check EXTERNAL BEAM 2 Z-AXIS Operation

a. To establish a ground reference, set the amplifier unit coupling switch to ground and position the trace to the center horizontal graticule line.

b. Set the amplifier unit coupling to dc.

c. Apply a 50 kHz signal from the medium-frequency generator to the amplifier unit.

d. Set the amplifier unit deflection factor for 1 V/div.

e. Set the medium-frequency generator for 2 div of signal above the ground reference established in part a.

f. Set the time-base unit sweep rate for 20 μs/div.

g. Set the BEAM 2 INTENSITY control for the brightest trace without defocusing.

h. Connect the 50 kHz signal from the amplifier unit (with a bnc T connector), to the rear-panel BEAM 2 Z-AXIS INPUT connector.

i. CHECK—Top portion of the displayed waveform is blanked out.

9. Check EXTERNAL BEAM 1 Z-AXIS Operation

a. Move the amplifier unit to the LEFT VERT compartment and the time-base unit to the A HORIZ compartment. Remove the 50 kHz signal from the BEAM 2 Z-AXIS INPUT connector.

b. Set the BEAM 1 INTENSITY control for the brightest trace without defocusing.

c. Connect the 50 kHz signal from the amplifier unit (with a bnc T connector) to the rear-panel BEAM 1 Z-AXIS INPUT connector.

d. CHECK—Top portion of displayed waveform is blanked out.

e. Remove all test equipment.

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B. CALIBRATOR AND OUTPUT SIGNALS

Equipment Required

Precision dc voltmeter	18-inch, 50 Ω cable with bnc connectors
Amplifier plug-in unit	42-inch, 50 Ω bnc cable (two) with bnc connectors
Time-mark generator	Bnc T connector
Time-base plug-in unit with delaying mode	
Dual-trace test oscilloscope	

1. Check Calibrator Output Voltage

a. Set both the 4 V and 0.4 V CALIBRATOR push buttons to the depressed position.

b. Connect the precision dc voltmeter to the CALIBRATOR output connector.

c. CHECK—Meter reading for 0.4008 V within 0.0004 V.

d. Disconnect the precision dc voltmeter.

2. Check Calibrator 1 kHz Repetition Rate

NOTE

A frequency counter with an accuracy of at least 0.1% may be used to adjust the calibrator repetition rate.

a. Connect 1 ms time markers to the test oscilloscope external trigger input and to the non-inverting vertical channel of the test oscilloscope (use a bnc T connector). Connect the 7844/R7844 4 V CALIBRATOR signal to the other vertical channel.

b. Set the test oscilloscope triggering to auto mode with ac coupling from the external source and adjust the triggering level for a stable display. Set the sweep rate for 1 ms/div in the alternate vertical mode.

c. Set the test oscilloscope deflection factors to display 2 div of CALIBRATOR signal and 1 div of time-marker signal.

d. Set the test oscilloscope vertical mode to add and the sweep rate for 0.2 s/div.

e. CHECK—Time required for the 1 ms time marks to drift from the positive level of the CALIBRATOR signal to the negative level and back to the positive level must be at least 0.4 s (2 div). This time can be measured directly from the display by observing the number of divisions that the markers move across the display area before it returns to the positive level.

f. Disconnect all test equipment.

3. Check Calibrator Risetime, Falltime, and Duty Cycle

a. Set the CALIBRATOR to the 4 V position.

b. Connect the CALIBRATOR output to the inverting vertical input of the test oscilloscope and set the vertical mode to display the inverting channel.

c. Set the test oscilloscope vertical deflection factor to display 4 div of CALIBRATOR signal.

d. Set the test oscilloscope for a stable display, internally triggered on the rising portion of the calibrator signal at a sweep rate of 0.1 μs/div.

e. CHECK—Displayed waveform for not more than 2.5 div between the 10% and 90% points (risetime, 0.25 μs or less).

f. Set the test oscilloscope for a stable display triggered on the falling portion of the waveform.

g. CHECK—Displayed waveform for not more than 2.5 div between the 90% and 10% points (falltime, 0.25 μs or less).

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h. Set the test oscilloscope triggering for auto mode with ac coupling from the internal source at a sweep rate of 0.1 ms/div. Set the triggering control so that the display starts at the 50% point on the rising edge of the waveform.

i. Set the test oscilloscope sweep magnifier to X10. Then, position the display horizontally so the falling edge of the waveform aligns with the center vertical graticule line.

j. Set the test oscilloscope vertical to invert the display. (NOTE: The display is triggered on the opposite slope, even though the display appears the same.)

k. CHECK—50% point on the falling edge of the waveform now displayed is within 0.4 div horizontally of the center line (indicates duty cycle of 50% within 0.1%).

l. Disconnect all cables.

4. Check A and B SAWTOOTH Output Signals

a. Install a time-base unit in the A HORIZ compartment and set the sweep rate for 1 ms/div.

b. Set the test oscilloscope sweep rate for 2 ms/div and the vertical deflection factor for 2 V/div.

c. Connect the A SAWTOOTH output connector to the test oscilloscope vertical input (1 MΩ input).

d. CHECK—Test oscilloscope display for 1 V/div of sweep within 10% (10 V sawtooth display for 10 div sweep).

e. Move time-base unit into the B HORIZ compartment.

f. Connect the B SAWTOOTH output connector to the test oscilloscope vertical input (1 MΩ input).

g. CHECK—Test oscilloscope display for 1 V/div of sweep within 10% (10 V sawtooth display for 10 div sweep).

h. Disconnect all test equipment.

5. Check A GATE MAIN/DLY'D Output Signals

a. Install a delaying time-base unit in the A HORIZ compartment. Set the time-base unit for non-delayed operation at a sweep rate of 0.5 ms/div. Set triggering for auto mode.

b. Set the rear-panel A GATE MAIN/DLY'D selector switch to MAIN.

c. Connect the A GATE output connector to the test oscilloscope vertical input. Set the vertical deflection factor for 2 V/div and the sweep rate for 2 ms/div.

d. CHECK—Test oscilloscope display for a gate waveform of at least 5 div in amplitude with a duration of at least 2.5 div.

e. Set the delaying time-base unit for delaying sweep operation.

f. Set the rear-panel A GATE MAIN/DLY'D selector switch to DLY'D.

g. CHECK—Test oscilloscope display for a gate waveform of at least 5 div in amplitude with a duration of at least 2.5 div.

6. Check B GATE MAIN/DLY'D Output Signal

a. Move the delaying time-base unit into the B HORIZ compartment. Set the time-base unit for non-delayed operation at a sweep rate of 0.5 ms/div. Set triggering for auto mode.

b. Set the rear-panel B GATE MAIN/DLY'D selector switch to MAIN. Connect the B GATE output connector to the test oscilloscope vertical input. Set the vertical deflection factor for 2 V/div and sweep rate for 2 ms/div.

c. CHECK—Test oscilloscope display for a gate waveform of at least 5 div in amplitude with a duration of at least 2.5 div.

d. Set the time-base unit for delaying sweep operation.

e. Set the B GATE MAIN/DLY'D selector switch to DLY'D.

f. CHECK—Test oscilloscope display for a gate waveform of at least 5 div in amplitude with a duration of at least 2.5 div.

g. Disconnect all cables.

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C. TRIGGER SELECTION

Equipment Required

Amplifier plug-in unit	Calibration fixture plug-in extender
Time-base plug-in unit	42-inch, 50 Ω cable with bnc connectors (two required)
Sampling sweep unit	18-inch, 50 Ω cable with bnc connectors
Calibration fixture signal standardizer	

Control Settings

Set the 7844/R7844 front-panel controls as follows:

A TRIG SOURCE	LEFT
B TRIG SOURCE	RIGHT
BEAM 1	
INTENSITY	As desired
VERTICAL MODE	LEFT
BEAMFINDER	Push button out
HORIZONTAL MODE	A
BEAM 2	
INTENSITY	As desired
VERTICAL MODE	RIGHT
BEAMFINDER	Push button out
HORIZONTAL MODE	A

1. Check Trigger Selection Operation

a. Install an amplifier unit in the LEFT VERT compartment and a time-base unit in the A HORIZ compartment.

b. Set the time-base unit triggering to auto mode with ac coupling from the internal source and sweep rate for 0.5 ms.

c. Connect the CALIBRATOR output to the amplifier unit input.

d. Set the amplifier unit deflection factor and the CALIBRATOR output for a 2 div display.

e. CHECK—Square-wave display is stable when the A TRIG SOURCE is set to LEFT and not stable when set to RIGHT. Adjust the triggering level control as necessary.

f. Move the amplifier unit to the RIGHT VERT compartment.

g. CHECK—Square-wave display is stable when the A TRIG SOURCE is set to RIGHT and not stable when set to LEFT. Adjust the triggering level control as necessary.

h. Move the time-base unit to the B HORIZ compartment.

i. Set BEAM 1 and BEAM 2 HORIZONTAL MODE switches to B.

j. CHECK—Square-wave display is stable when B TRIG SOURCE is set to RIGHT and not stable when set to LEFT. Adjust the triggering level control as necessary.
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k. Move the amplifier unit to the LEFT VERT compartment.

l. CHECK—Square-wave display is stable when B TRIG SOURCE is set to LEFT and not stable when set to RIGHT. Adjust the triggering level control as necessary.

m. Remove all test equipment.

2. Check DC Centering

a. Install the dual-trace amplifier in the test oscilloscope and set the vertical sensitivity of both channels to 50 mV/div. Set the DISPLAY MODE to ADD and the CH 2 POLARITY to INVERT.

b. Install the time-base plug-in in the test oscilloscope and set it to 50 μs/div. Set the TRIGGERING SOURCE to EXT.

c. Disconnect the short cables in the plug-in extender that connect to the bnc connectors labeled A20 and B20.

d. Connect CH 1 of the dual-trace amplifier to the bnc connector labeled A20 in the plug-in extender. Connect CH 2 to the connector labeled B20.

e. Set the ground reference at the center of the graticule on the test oscilloscope.

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f. Install the plug-in extender in the A HORIZ compartment of the 7844/R7844 and set A TRIG SOURCE to LEFT.

g. CHECK—Dc level remains within 50 mV of ground reference (±1 div).

h. Set A TRIG SOURCE to RIGHT.

i. CHECK—Dc level remains within 50 mV of ground reference (±1 div).

j. Move the plug-in extender to the B HORIZ compartment and set B TRIG SOURCE to LEFT.

k. CHECK—Dc level remains within 50 mV of ground reference (±1 div).

l. Set B TRIG SOURCE to RIGHT.

m. CHECK—Dc level remains within 50 mV of ground reference (±1 div).

3. Check Trigger Gain

a. Install the signal standardizer in the RIGHT VERT compartment and set the TEST switch to TRIGGERING GAIN. Set the REP RATE to 1 MHz.

b. CHECK—Six lines in 6 vertical divisions on the test oscilloscope; ±10% (0.6 div).

c. Move the signal standardizer to the LEFT VERT compartment and set B TRIG SOURCE to LEFT.

d. CHECK—Six lines in 6 vertical divisions on the test oscilloscope; ±10% (0.6 div).

e. Move the plug-in extender to the A HORIZ compartment and set A TRIG SOURCE to LEFT.

f. CHECK—Six lines in 6 vertical divisions on the test oscilloscope: ±10% (0.6 div).

g. Move the signal standardizer to the RIGHT VERT compartment and set A TRIG SOURCE to RIGHT.

h. CHECK—Six lines in 6 vertical divisions on the test oscilloscope; ±10% (0.6 div).

4. Check Trigger Response

NOTE

The trigger step response aberrations adjustments affect the bandwidth of the trigger system. The adjustment parts of the procedure should be skipped if the aberrations are within the limits given.

a. Disconnect the cables from the test oscilloscope amplifier unit.

b. Remove the amplifier and time-base units from the test oscilloscope and install the sampling unit.

c. Connect the cable from A20 of the plug-in extender to the CH 1 input of the sampling unit. Connect the cable from B20 to the CH 2 input.

d. Set the sampling unit as follows:

CH 1	50 mV/div
	DC OFFSET to midrange
CH 2	50 mV/div
	DC OFFSET to midrange
	INVERT CH 2 (IN)
MODE	ADD
SEC/DIV	.2 μs
SWP	DELAYING (IN)
AUTO TRIG	OUT
+ SLOPE	IN
REP	IN
INT CH 1	IN
HF SYNC	OUT

e. Move the signal standardizer to the LEFT VERT compartment and set the TEST switch to TRIGGERING + STEP RESP. Set the REP RATE to 1 MHz.

f. Set the 7844/R7844 A TRIG SOURCE to LEFT.

g. Using the POSITION and AMPLITUDE controls of the signal standardizer and the TRIGGERING LEVEL and SCAN controls of the sampling unit, set up a stable, 6 div display on the test oscilloscope.

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h. On the sampling unit, set the DELAYING Sweep to 10 μs/div, the DELAYED Sweep to 1 ns, and the SWP control to DELAYED (OUT).

i. Adjust the DELAY ZERO (1st DOT) and the DELAY TIME MULT (2nd DOT) controls to display the leading edge of the waveform.

j. CHECK—Aberrations of ≤15% (0.9 div).

k. Move the signal standardizer to the RIGHT VERT compartment.

l. Set A TRIG SOURCE to RIGHT.

m. CHECK—Aberrations of ≤15% (0.9 div).

n. Move the plug-in extender to the B HORIZ compartment.

o. Set B TRIG SOURCE to RIGHT.

p. CHECK—Aberrations of ≤15% (0.9 div).

q. Move the signal standardizer to the LEFT VERT compartment.

r. Set B TRIG SOURCE to LEFT.

s. CHECK—Aberrations of ≤15% (0.9 div).

5. Check Triggering Bandwidth

a. Set the signal standardizer TEST to TRIGGERING FREQ RESP.

b. Connect the high-frequency signal generator to the signal standardizer FREQ RESP input.

c. Set the high-frequency signal generator to REF 6 MHz.

d. Set the sampling unit as follows:

SEC/DIV	Delaying Sweep 50 ns
SWP	Delaying (in)
CH 1 INT	IN
+ SLOPE	IN
REP	IN
AUTO TRIG	OUT
HF SYNC	OUT

e. Adjust the AMPLITUDE control of the high-frequency signal generator so that the CW LEVELED light is lit. See that it remains lit throughout the remaining steps of the procedure.

f. Using the POSITION and AMPLITUDE controls of the signal standardizer, establish a 6 div reference display on the test oscilloscope.

g. Switch the high-frequency signal generator to the HIGH range and set it for 525 MHz.

h. Set the sampling unit to HF SYNC (in) and SWP to Delayed (out).

i. Using the SEC/DIV DELAYED and the TRIGGERING LEVEL controls, set the sampling unit so that several cycles of the waveform are displayed.

j. CHECK—At least 4.2 div (−3 dB point) of amplitude.

k. Move the signal standardizer to the LEFT VERT compartment and set B TRIG SOURCE to LEFT.

l. CHECK—At least 4.2 div of amplitude.

m. Move the plug-in extender to the A HORIZ compartment and set A TRIG SOURCE to LEFT.

n. CHECK—At least 4.2 div of amplitude.

o. Move the signal standardizer to the RIGHT VERT compartment.

p. Set A TRIG SOURCE to LEFT.

q. CHECK—At leasts 4.2 div of amplitude.

r. Remove all test equipment.

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D. HORIZONTAL SYSTEM
(For instruments 7844 SN B110000-above; R7844 SN B100000-above)

Equipment Required

Calibration fixture signal standardizer
Amplifier plug-in
Time-base plug-in unit
Time-mark generator
Dc voltmeter
42-inch, 50 Ω cable with bnc connectors (two required)

Control Settings

Set the 7844/R7844 front-panel controls as follows:

A TRIG SOURCE	LEFT
B TRIG SOURCE	RIGHT
BEAM 1	
INTENSITY	Midrange
FOCUS	As desired
BEAMFINDER	Push button out
HORIZONTAL MODE	A
HORIZ SEP (1)	Midrange
BEAM 2	
INTENSITY	Fully counterclockwise
FOCUS	As desired
VERTICAL MODE	RIGHT
BEAMFINDER	Push button out
HORIZONTAL MODE	B

1. Check BEAM 1 Horizontal Amplifier Gain

a. Install the calibration fixture in the B HORIZ compartment. Install a time-base unit in the LEFT VERT compartment and set it for a free running 1 μs/div sweep.

b. Set the calibration fixture Test switch to Vert or Horiz Gain and Rep Rate to 10 kHz. Align the trace with the center vertical graticule line with the calibration fixture Position control.

c. CHECK—One trace per graticule division within 0.05 div over the center 8 vertical graticule divisions.

d. Move the calibration fixture to the A HORIZ compartment and set the BEAM 1 HORIZONTAL MODE switch to A.

e. CHECK—One trace per graticule division within 0.08 div over the center 8 vertical graticule divisions.

2. Check BEAM 1 High-Frequency Timing

a. Remove the calibration fixture from the A or B HORIZ compartment.

b. Move the time-base unit to the B HORIZ compartment and set the BEAM 1 HORIZONTAL MODE switch to B.

c. Install an amplifier unit in the LEFT VERT compartment.

d. Set the time-base unit triggering for auto mode, ac coupled from the internal source at a sweep rate of 1 ms/div.

e. Connect 1 ms markers from the time-mark generator to the amplifier input and adjust the amplifier unit deflection factor for a 3 div display.

f. Set B TRIG SOURCE to LEFT and the time-base unit triggering controls for a stable display.

g. Set the time-base unit sweep-calibration adjustment (front panel) for 1 marker at each major graticule division between the second and tenth graticule lines (center 8 div).

h. Connect the trigger output of the time-mark generator to the time-base unit external trigger input with a bnc cable.

i. Set the time-base unit triggering for auto mode ac coupled from the external source at a sweep rate of 5 ns/div. Set the time-mark generator for 5 ns markers.

j. Set the time-base triggering controls for a stable display.

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k. CHECK—High-frequency timing over the center 8 div within 0.32 div (4%).

l. Set the time-mark generator for 2 ns markers and the time-base unit for 1 ns/div sweep rate.

m. Set the time-base triggering controls for a stable display.

n. CHECK—High-frequency timing over the center 8 div (one cycle every two divisions) within 0.32 div (4%).

o. Disconnect all cables.

3. Check BEAM 2 Horizontal Amplifier Gain

a. Install the calibration fixture in the B HORIZ compartment and set the BEAM 2 HORIZONTAL MODE switch to B.

b. Set the calibration fixture Test switch to Vert or Horiz Gain and Rep Rate to 10 kHz. Align the trace with the center vertical graticule line with the calibration fixture Position control.

c. CHECK—One trace per graticule division within 0.05 div over the center 8 vertical graticule divisions.

d. Move the calibration fixture to the A HORIZ compartment and set the BEAM 2 HORIZONTAL MODE switch to A.

e. CHECK—One trace per graticule division within 0.08 div over the center 8 vertical graticule divisions.

4. Check BEAM 1 and BEAM 2 Horizontal Amplifier Low-Frequency Linearity

a. Set the calibration fixture Test switch to Vert or Horiz + Step Resp.

b. Set the calibration fixture Amplitude control for a 2 div centered display.

c. CHECK—Position the 2 div display to the left and to the right, check for 0.1 div or less compression or expansion of the display anywhere within the graticule area.

d. Move the time-base unit to the RIGHT VERT compartment.

e. Set BEAM 1 INTENSITY control fully counterclockwise and BEAM 2 INTENSITY control for usable display.

f. CHECK—Position the 2 div display to the left and to the right and check for 0.1 div or less compression or expansion of the display anywhere within the graticule area.

5. Check BEAM 2 High-Frequency Timing

a. Remove the calibration fixture from the A or B compartment.

b. Move the time-base unit to the B HORIZ compartment and set the BEAM 2 HORIZONTAL MODE switch to B.

c. Install an amplifier unit in the RIGHT VERT compartment.

d. Set the time-base unit triggering for auto mode, ac coupled from the internal source at a sweep rate of 1 ms/div.

e. Connect 1 ms markers from the time-mark generator to the amplifier input and adjust the amplifier unit deflection factor for a 3 div display.

f. Set the B TRIG SOURCE to RIGHT and the time-base triggering controls for a stable display.

g. Set the time-base unit sweep-calibration adjustment (front panel) for 1 marker at each major graticule division between the second and tenth graticule lines (center 8 div).

h. Connect the trigger output of the time-mark generator to the time-base unit external trigger input with a bnc cable.

i. Set the time-base unit triggering for auto mode, ac coupled from the external source at a sweep rate of 5 ns/div. Set the time-mark generator for 5 ns markers.

j. Set the time-base triggering controls for a stable display.

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k. CHECK—High-frequency timing over the center 8 div within 0.32 div (4%).

l. Set the time-mark generator for 2 ns markers and the time-base unit for 1 ns/div sweep rate.

m. Set the time-base triggering controls for a stable display.

n. CHECK—High-frequency timing over the center 8 div (one cycle every two divisions) within 0.32 div (4%).

o. Disconnect all cables.

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E. HORIZONTAL SYSTEM
(For instruments 7844 SN B109999-below; R7844 SN B099999-below)

Equipment Required

Calibration fixture signal standardizer
Amplifier plug-in unit
Time-base plug-in unit
Time-mark generator
42-inch, 50 Ω cable with bnc connectors
18-inch, 50 Ω cable with bnc connectors
18-inch cable with bsm female and bnc male connectors

Control Settings

Set the 7844/R7844 front-panel controls as follows:

A TRIG SOURCE	LEFT
B TRIG SOURCE	RIGHT
BEAM 1	
INTENSITY	Midrange
FOCUS	As desired
VERTICAL MODE	LEFT
BEAMFINDER	Push button out
HORIZONTAL MODE	A
HORIZ SEP (1)	Midrange
BEAM 2	
INTENSITY	Midrange
FOCUS	As desired
VERTICAL MODE	RIGHT
BEAMFINDER	Push button out
HORIZONTAL MODE	B

1. Check BEAM 1 and BEAM 2 Horizontal Amplifier Gain

a. Install a time-base unit in the RIGHT VERT compartment. Install the calibration fixture signal standardizer in the B HORIZ compartment.

b. Set the calibration fixture Test switch to Vert or Horiz Com Mode and the time-base unit for a free-running sweep.

c. CHECK—Vertical trace is within 0.5 div of the center verticcal graticule line.

d. Set the calibration fixture Test switch to Vert or Horiz Gain and the Rep Rate to 1 MHz. Align the bright center trace with the center vertical graticule line with the calibration fixture Position control.

e. CHECK—One trace per graticule division within 0.01 div over the center 8 vertical graticule divisions.

f. Set the BEAM 2 INTENSITY control fully counterclockwise.

g. Move the time-base unit to the LEFT VERT compartment.

h. Set the BEAM 1 HORIZONTAL MODE switch to B.

i. Set the calibration fixture Test switch to Com Mode and the BEAM 1 INTENSITY control for a usable display.

j. CHECK—Horizontal centering of the trace is within 0.5 div of the center graticule line.

k. Set the calibration fixture Test switch to Vert or Horiz Gain.

l. CHECK—One trace per graticule division within 0.01 div over the center 8 vertical graticule divisions.

2. Check BEAM 1 and BEAM 2 Horizontal Amplifier Low-Frequency Linearity

a. Set the calibration fixture Test switch to Vert or Horiz + Step Resp.

b. Set the calibration fixture Amplitude control for a 2 div centered display.

c. CHECK—Position the 2 div display to the left and to the right; check for 0.1 div or less compression or expansion of the display anywhere within the graticule area.

d. Move the time-base unit to the RIGHT VERT compartment.

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e. Set the BEAM 1 INTENSITY control fully counterclockwise and BEAM 2 INTENSITY control for a usable display.

f. CHECK—Position the 2 div display to the left and to the right and check for 0.1 div or less compression or expansion of the display anywhere within the graticule area.

3. Check BEAM 1 High-Frequency Timing

a. Remove the calibration fixture from the B HORIZ compartment.

b. Move the time-base unit to the B HORIZ compartment.

c. Install an amplifier unit in the LEFT VERT compartment.

d. Set the time-base unit triggering for auto mode ac coupled from the internal source at a sweep rate of 1 ms/div.

e. Set the BEAM 2 INTENSITY control fully counterclockwise and the BEAM 1 INTENSITY control for a usable display.

f. Connect 1 ms markers from the time-mark generator to the amplifier unit input and adjust the amplifier unit deflection factor for a 2 div display.

g. Set the B TRIG SOURCE switch to LEFT and the time-base unit triggering controls for a stable display.

h. Position the first marker to the extreme left line on the graticule.

i. Set the time-base unit sweep-calibration adjustment for 1 marker at each major graticule division between the second and tenth graticule lines (center 8 div).

j. CHECK—Refer to the time-base unit instruction manual for performance check or calibration procedures for checking high-frequency timing and linearity. Use the procedures and limits given for the three fastest sweep rates that do not exceed 1 ns/div.

4. Check BEAM 2 High-Frequency Timing

a. Install an amplifier unit in the RIGHT VERT compartment.

b. Install the time-base unit in the B HORIZ compartment.

c. Set the time-base unit sweep rate for 1 ms/div and triggering for auto mode ac coupled from the internal source.

d. Set the BEAM 1 INTENSITY control fully counterclockwise and the BEAM 2 INTENSITY control for a usable display.

e. Connect 1 ms markers from the time-mark generator to the amplifier unit.

f. Set the B TRIG SOURCE switch to RIGHT and the time-base unit triggering controls for a stable display.

g. Position the first marker to the extreme left line on the graticule.

h. Set the time-base unit sweep-calibration adjustment for 1 marker at each major graticule division, between the second and tenth graticule lines (center 8 div).

i. CHECK—Refer to the time-base unit instruction manual for performance check or calibration procedures for checking high-frequency timing and linearity. Use the procedures and limits given for the three fastest sweep rates that do not exceed 1 ns/div.

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F. VERTICAL SYSTEM

Equipment Required

Time-base plug-in unit
Amplifier plug-in unit
Calibration fixture signal standardizer
High-frequency signal generator

Control Settings

Set the 7844/R7844 front-panel controls as follows:

CALIBRATOR (1 kHz)	4 V (push button in)
A TRIG SOURCE	LEFT
B TRIG SOURCE	RIGHT
BEAM 1	
INTENSITY	Midrange
VERTICAL MODE	LEFT
BEAMFINDER	Push button out
HORIZONTAL MODE	A
VERT SEP (1)	Midrange
Beam 2	
INTENSITY	Fully counterclockwise
VERTICAL MODE	RIGHT
BEAMFINDER (LOCKS IN)	Push button out
HORIZONTAL MODE	A

NOTE

Step 1 applies only to Option 21.

1. Check BEAM 1 and BEAM 2 Vertical Amplifier Gain

a. Install the calibration fixture in the LEFT VERT compartment.

b. Install the time-base unit in the A HORIZ compartment.

c. Set the calibration fixture Test switch to Vert or Horiz Gain with the Rep Rate switch set to 1 MHz.

d. Position the display with the calibration fixture Position control to align the bright center trace with the center horizontal graticule line.

e. CHECK—One trace per graticule division within 0.01 div over the center 6 horizontal graticule divisions.

f. Move the calibration fixture to the RIGHT VERT compartment.

g. Move the time-base unit to the B HORIZ compartment.

h. Position the display with the calibration fixture Position control to align the bright center trace with the center horizontal graticule line.

i. CHECK—One trace per graticule division within 0.01 div over the center 6 horizontal graticule divisions.

NOTE

Omit step 2 for Option 21.

2. Check BEAM 1 and BEAM 2 Vertical Crossover Gain

a. Set the calibration fixture Test switch to Vert or Horiz Gain with the Rep Rate switch set to 1 MHz.

b. Set the BEAM 2 VERTICAL MODE switch to RIGHT.

c. Position the display with the calibration fixture Position control to align the bright center trace with the center horizontal graticule line.

d. CHECK—One trace per graticule division within 0.01 div over the center 6 horizontal graticule divisions.

e. Move the time-base unit to the A HORIZ compartment.

f. Set the BEAM 1 VERTICAL MODE switch to RIGHT.

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g. Position the display with the VERT SEP (1) control to align the bright center trace with the center horizontal graticule line.

h. CHECK—One trace per graticule division within 0.01 div over the center 6 horizontal graticule divisions.

i. Move the time-base unit to the B HORIZ compartment.

j. Move the calibration fixture to the LEFT VERT compartment.

k. Set the BEAM 1 and BEAM 2 VERTICAL MODE switches to LEFT.

l. Position the display with the calibration fixture Position control to align the bright center trace with the center horizontal graticule line.

m. CHECK—One trace per graticule division with 0.01 div over the center 6 horizontal graticule divisions.

n. Move the time-base unit to the A HORIZ compartment.

o. Position the display with the VERT SEP (1) control to align the bright center trace with the center horizontal graticule line.

p. CHECK—One trace per graticule division within 0.01 div over the center 6 horizontal graticule divisions (position as necessary).

3. Check Low-Frequency Linearity

a. Install the signal standardizer calibration fixture in the LEFT VERT compartment.

b. Set the calibration fixture Test switch to Vert or Horiz + Step RESP with the REP RATE switch set to 1 kHz.

c. Set the calibration fixture Amplitude control for a 2 div display near the graticule center. Set the time-base triggering for a free-running display.

d. CHECK—Vertically position the display and check for less than 0.1 div of compression or expansion within the graticule area.

e. Move the calibration fixture to the RIGHT VERT compartment and the time-base unit to the B HORIZ compartment.

f. CHECK—Vertically position the display and check for less than 0.1 div of compression or expansion within the graticule area.

NOTE

Omit step 4 for Option 21.

4. Check BEAM 1 and BEAM 2 Vertical Crossover Aberrations

a. Set the signal standardizer Test switch to Vert or Horiz + Step Resp, Rep Rate to 1 MHz, and adjust the amplitude control for a 6 div display.

b. Set the VERTICAL MODE switch to BEAM 1 RIGHT and BEAM 2 LEFT.

c. Move the time-base unit to the A HORIZ compartment and set the A TRIG SOURCE switch to RIGHT.

d. Set the time-base unit triggering for auto mode, ac coupled from the internal source and sweep rate for 10 ns/div. Adjust the trigger level and position the controls for a stable centered display.

e. CHECK—Displayed pulse aberrations are within 0.36 div (checks beam 1 crossover aberrations).

f. Move the time-base unit to the B HORIZ compartment and the calibration fixture to the LEFT VERT compartment. Set the B TRIG SOURCE to LEFT.

g. CHECK—Displayed pulse aberrations are within 0.36 div (checks beam 2 crossover aberrations).

h. Remove the calibration fixture.

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5. Check BEAM 1 and BEAM 2 Vertical Amplifier 400 MHz Gain

a. Insert the calibration fixture in the RIGHT VERT compartment and set the Test switch to Vert or Horiz Freq Resp.

b. Connect the high-frequency signal generator to the calibration fixture (Freq Resp) input.

c. Set the time-base unit sweep rate for 0.1 μs/div and set the triggering for a free-running sweep.

d. Set the VERTICAL MODE switches to BEAM 1 LEFT and BEAM 2 RIGHT (delete with Option 21). Set the A TRIG SOURCE to LEFT and the B TRIG SOURCE to RIGHT.

e. Set the high-frequency generator for 6 div of 20 MHz signal (or slower) centered on the graticule.

f. Without changing the output amplitude, increase the generator frequency until the displayed amplitude is reduced to 4.2 div.

NOTE

The calibration fixture CW Leveled light must be on and the signal generator must be properly connected for a valid check. Refer to the calibration fixture and signal generator manuals.

g. CHECK—Generator frequency is 400 MHz or higher (verifies 400 MHz Gain).

h. Move the calibration fixture to the LEFT VERT compartment (leave signal connected) and move the time-base unit to the A HORIZ compartment.

i. CHECK—Repeat parts e through g for the Beam 1 Vertical Amplifier.

j. Set the BEAM 2 VERTICAL MODE switch to LEFT (delete parts j through q with Option 21).

k. Move the time-base unit to the B HORIZ compartment.

l. CHECK—Repeat parts e through g (verifies beam 2 crossover 400 MHz Gain).

m. Move the calibration fixture to the RIGHT VERT compartment and the time-base unit to A HORIZ compartment.

n. Set the BEAM 1 VERTICAL MODE switch to RIGHT.

o. CHECK—Repeat parts e through g (verifies beam 1 crossover 400 MHz Gain).

p. Set the VERTICAL MODE switches to BEAM 1 LEFT and BEAM 2 RIGHT.

q. Set the HORIZONTAL MODE switches to BEAM 1 A and BEAM 2 B.

r. Remove signal connections and the calibration fixture plug-in unit.

6. Check Vertical Channel Isolation

a. Install the amplifier unit in the LEFT VERT compartment and the time-base unit in the A HORIZ compartment.

b. Connect the high-frequency signal generator to the amplifier unit input.

c. Set the high-frequency generator and the amplifier unit for 8 div of deflection at 400 MHz.

d. Move the time-base unit to the B HORIZ compartment.

e. CHECK—Crt display for 0.26 div or less of the 400 MHz signal (verifies beam 2 channel isolation at least 30:1 at 400 MHz).

f. Move the amplifier unit to the RIGHT VERT compartment without disturbing set-up.

g. Move the time-base unit to the A HORIZ compartment.

h. CHECK—Crt display for 0.26 div or less of the 400 MHz signal (verifies beam 1 channel isolation at least 30:1 at 400 MHz).

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i. Move the amplifier unit to the LEFT VERT compartment.

j. Set the high-frequency generator for 8 div of deflection at 150 MHz.

k. Move the time-base unit to the B HORIZ compartment.

l. CHECK—Crt display for 0.08 div or less of 150 MHz signal (verifies beam 2 channel isolation at least 100:1 from dc to 150 MHz).

m. Move the amplifier unit to the RIGHT VERT compartment without disturbing set-up.

n. Move the time-base unit to the A HORIZ compartment.

o. CHECK—Crt display for 0.08 div or less of 150 MHz signal (verifies beam 1 channel isolation at least 100:1 from dc to 150 MHz).

p. Remove signal connection.

7. Check Vertical Trace Separation Operation (delete with Option 21)

a. Set the BEAM 1 and BEAM 2 VERTICAL MODE switches to RIGHT.

b. Set BEAM 2 HORIZONTAL MODE switch to A.

c. CHECK—Rotate the VERT SEP (1) control throughout its range and check that the trace can be positioned at least 4 div above and below the BEAM 2 trace.

d. Remove all plug-in units.

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G. READOUT SYSTEM

Equipment Required

Amplifier plug-in unit
Time-base plug-in unit

Control Settings

Set the 7844/R7844 front-panel controls as follows:

READOUT	
EXTERNAL-BEAM 2 GATED	BEAM 2 GATED (push button out)
BEAM 1	
INTENSITY	Midrange
FOCUS	Midrange
VERTICAL MODE	LEFT
BEAMFINDER (LOCKS IN)	Push button out
HORIZONTAL MODE	A
BEAM 2	
INTENSITY	Midrange
VERTICAL MODE	RIGHT
BEAMFINDER (LOCKS IN)	Push button out
HORIZONTAL MODE	B

Check Readout Modes

a. Set the time-base unit for a free-running sweep.

b. Set the READOUT INTENSITY control to free run (not PULSED).

c. CHECK—Set the time-base unit for several sweep rates throughout its range. Check that the readout characters are presented independent of the sweep.

d. Set the READOUT INTENSITY control fully clockwise to the PULSED position.

e. Set the READOUT Mode switch to OUT—BEAM 2 GATED.

f. Set the time-base unit for a free-running sweep at a sweep rate of 0.2 s/div.

g. CHECK—Readout characters are blanked out while the sweep is running, and are displayed after the end of the sweep; each character encoded by the plug-in units is displayed only once for each sweep. If necessary, adjust READOUT PRESET.

h. CHECK—Pressing the MANUAL push button triggers one complete frame of Readout characters.

This completes the 7844/R7844 Performance Check Procedure.

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ADJUSTMENT PROCEDURE

PRELIMINARY INFORMATION

Completion of each step in this procedure ensures that the 7844/R7844 is correctly adjusted and operating within all given tolerances. Refer to the following discussion for instructions on complete or partial adjustment.

Adjustment Interval

To maintain instrument accuracy, check the adjustment of the 7844/R7844 every 1000 hours of operation, or every six months if used infrequently. Before complete adjustment, thoroughly clean and inspect this instrument as outlined in the Maintenance Section.

Tektronix Field Service

Tektronix, Inc. Field Service Centers and Factory Service Centers provide instrument repair and readjustment services. Contact your Tektronix field Office or representative for further information.

Using This Procedure

Completion of this procedure will check the adjustment of the standard 7844/R7844 and instruments with options. When portions of this procedure do not apply to an instrument with an option, a note will appear at the beginning of the step (e.g. Omit with Option 21). The Set-Up Information will include control settings for the 7844/R7844 standard model and instruments with options.

Index

To aid in locating procedure steps, an index precedes the Adjustment Procedure.

Adjustment Procedure

Completion of each step in the Adjustment Procedure ensures that the instrument is correctly adjusted and performing within all given tolerances. Where possible, instrument performance is checked before an adjustment is made. For best overall performance when performing a complete adjustment, make each adjustment to the exact setting indicated.

Partial Procedures

The following procedure is written to completely adjust the 7844/R7844 to the Performance Requirements listed in Table 5-2. If the applications for which you will use the 7844/R7844 do not require the full available performance from the 7844/R7844 and plug-in combinations, the procedures and the required equipment list can be shortened accordingly. For example, the basic low-frequency measurement capabilities of this instrument can be verified by just checking vertical deflection accuracy and basic horizontal timing with 7000-Series real-time plug-in units and the 7844/R7844 calibrator signal.

A partial instrument adjustment may be desirable after replacing components, or to check the adjustment of a portion of the instrument between major recalibrations. To check or adjust only part of the instrument, refer to the Equipment Required list preceding the portion to be performed. To avoid unnecessary adjustments of other parts, readjust only if the tolerance given in each CHECK is not met. If readjustment is necessary, also check any portions listed in the INTERACTION part of the step.

TEST EQUIPMENT REQUIRED

The test equipment listed in Table 5-1 is required for a complete of this instrument. Specifications given in Table 5-1 for test equipment are the minimum required to meet those specifications (listed in the Specification section). Detailed operating instructions for test equipment are omitted in this procedure. Refer to the test equipment instruction manual if more information is needed.

Special Calibration Fixtures

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

Adjustment Equipment Alternatives

Test equipment listed in the Examples of Applicable Test Equipment column, Table 5-1, is required to adjust this instrument. The Adjustment Procedure is based on the first

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item of equipment given as an example. If other equipment is substituted, control settings or adjustment setups may need to be altered. If the exact item of equipment given as an example is not available, refer to the Minimum Specifications column to determine if other equipment may be substituted. Then check the Usage column. If you determine that your measurement requirements will not be affected, the item and corresponding step(s) can be deleted.

Signal Connections

Detailed signal-connection information is not provided except when critical for a particular test. Rear-panel output connections should be connected to other equipment with 50 Ω bnc cables. When simultaneiously connecting a signal to two inputs, use a bnc T connector. For test equipment signal-connection and termination information, refer to the test equipment instruction manuals.

Table 5-1
TEST EQUIPMENT

Description	Minimum Specifications	Usage	Examples of Applicable Test Equipment
Precision dc voltmeter	Range, −75 to +150 volts; accuracy, within 0.2%.	Calibrator output accuracy check and adjustment. Power supply voltages, check and adjustment. Z-Axis and Display check and adjustment.	a. TEKTRONIX DM 501A Digital Multimeter.[a] b. Fluke Model 825A Differential DV Voltmeter.
Time-mark generator	Marker outputs, 2 ns to 0.1 s; marker accuracy, within 0.1%; trigger output, 1 ms.	Crt geometry check and adjustment. Horizontal timing check and adjustment. Calibrator frequency check and adjustment.	TEKTRONIX TG 501 Time-Mark Generator.[a]
Medium-frequency signal generator	Frequency range from 2.5 MHz to 100 MHz with 50 Ω output; output amplitude, 1 V p-p; accuracy, within 2%.	Z-Axis input check.	a. TEKTRONIX SG 503 Leveled Sine Wave Generator.[a] b. General Radio 1215-C with 1263-C Amplitude Regulating Power Supply.
High-frequency signal generator	Frequency, 220 MHz to 500 MHz; reference frequency, 10 MHz or lower; output amplitude, variable from 0.5 to 4 V; amplitude accuracy, constant within 1% of reference as output frequency changes.	Vertical bandwidth check. Vertical channel isolation check.	a. TEKTRONIX SG 504 Leveled Sine Wave Generator.
Amplifier unit	TEKTRONIX 7A-Series (500 MHZ bandwidth required for Vertical system 400 MHz Gain check) plug-in unit.	Used throughout procedure to provide vertical input to the instrument under adjustment.	TEKTRONIX 7A19 Amplifier unit.

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Table 5-1 (cont)

Description	Minimum Specifications	Usage	Examples of Applicable Test Equipment
Amplifier unit (dual)	Any 7A-Series; dual display amplifier unit.	Used to check position and operation of READOUT display.	Any 7A-Series dual amplifier unit (may be shared with a 7000-Series test oscilloscope).
Time-base unit	Tektronix 7B80 Series; delaying unit needed for checking DLY'D gate out (7B85).	Used throughout procedure to provide sweep (delaying time base).	a. TEKTRONIX 7B85 Time Base. b. TEKTRONIX 7B80 Time Base.
Sampling Unit	Bandwidth, dc to 1 GHz; differential input.	Used to check trigger aberrations and trigger bandwidth.	a. TEKTRONIX 7S14 Dual-Trace Delayed Sweep Sampler. b. Sampling Head and Sampling Sweep.
Plug-in Extender Calibration Fixture	Provides access to trigger signal from horizontal compartment jacks.	Used to check/adjust trigger gain, aberrations, and bandwidth.	TEKTRONIX Calibration Fixture 067-0589-00.
Mainframe standardizer calibration fixture	Produces gain-check and pulse-response waveforms.	Used throughout procedure to standardize instrument so plug-in units can be interchanged without complete readjustment.	a. TEKTRONIX Calibration Fixture 067-0587-02. b. Calibrated 7000 Series plug-in units with suitable signal sources may be substituted if lower performance is acceptable.
10× passive probe	Compatible with test oscilloscope to be used.	Used to check power supply ripple, signals out, calibrator and Z-axis.	TEKTRONIX P6053B or P6054A probe.
Test oscilloscope	Bandwidth, dc to 75 MHz; minimum deflection factor 10 mV/div; accuracy, within 3%. Dual-channel with an inverting input and both added and alternate vertical modes.	Used throughout procedure.	a. TEKTRONIX 7603 Oscilloscope System with 7A18 Amplifier, 7B53A Time Base, and P6053B Probe. b. TEKTRONIX 475 Oscilloscope with P6053B Probe. c. Refer to the Tektronix Catalog for compatible oscilloscope system.
T connector	bnc-to-bnc	External Z-axis operation check.	Tektronix Part No. 103-0030-00.

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Table 5-1 (cont)

Description	Minimum Specifications	Usage	Examples of Applicable Test Equipment
Termination	Impedance, 50 Ω; accuracy, within 2%; connectors, Bnc	Output termination for signal generators, if amplifier is not 50 Ω input impedance.	Tektronix Part No. 011-0049-01.
Cable (Two Required)	Impedance, 50 Ω; type, RG-58/U; length, 18 and 42 inches; connectors, Bnc	Used throughout procedure for signal interconnections.	Tektronix Part No. 012-0076-00 (18 inches). Tektronix Part No. 012-0057-01 (42 inches).
Adapter	Bnc female to EZ BALL	Used to check and adjust Aux Y-Axis Vertical amplifier.	Tektronix Part No. 013-0076-01.
Screwdriver	Three-inch shaft, 3/32-inch bit.	Used throughout adjustment procedure to adjust variable resistors.	Xcelite R-3323.
Low-capacitance screwdriver	1.5-inch shaft.	Used throughout adjustment procedure to adjust variable capacitors.	Tektronix Part No. 003-0000-00.
Nylon tuning tool	Fits 5/64-inch (ID) hex. cores.	Vertical high-frequency compensation.	Handle and insert, Tektronix Part No. 003-0307-00 and 003-0310-00.

[a] Requires Tm 500 Series Power Module.

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Table 5-2
ADJUSTMENT SUMMARY

Characteristic	Performance Requirement	Adjustment Procedure Title
	VERTICAL	
Deflection Factor	Compatible with all 7000-Series plug-in units.	G3. Adjust Beam 1 and Beam 2 Vertical Amplifier Gain. (Option 21 only.)
Accuracy	1% or less difference between vertical compartments.	G4. Check Beam 1 and Beam 2 Vertical Crossover Gain.
System Bandwidth	Varies with plug-in selected. See 7800-Series Oscilloscope Systems Specification	G6. Adjust Beam 1 Vertical High-Frequency Compensation. G7. Adjust Beam 2 Vertical High-Frequency Compensation.
Vertical Centering		G1. Adjust Beam 1 Vertical Centering. G2. Adjust Beam 2 Vertical Centering.
	HORIZONTAL	
Deflection Factor	Compatible with all 7000-Series plug-in units 1% or less difference between horizontal compartments	E2. Adjust Beam 1 Horizontal Amplifier Gain E5. Adjust Beam 2 Horizontal Amplifier Gain
Accuracy		F1. Adjust Beam 1 and Beam 2 Horizontal Amplifier Gain
Fastest Calibrated Sweep Rate	1 ns/div.	E3. Adjust Beam 1 High Frequency Timing E6. Adjust Beam 2 High Frequency Timing F2. Adjust Beam 1 High-Frequency Timing F3. Adjust Beam 2 High-Frequency Timing
Horizontal Centering		E1. Adjust Beam 1 Horizontal Centering E4. Adjust Beam 2 Horizontal Centering F1. Adjust Beam 1 and BEAM 2 Horizontal Amplifier Gain

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Table 5-2 (cont)

Characteristic	Performance Requirement	Adjustment Procedure Title
	HORIZONTAL (cont)	
Horizontal Display Modes	Plug-in compartment controlling horizontal deflection of electron beam. BEAM 1 / BEAM 2 A / A A / B B / A B / B	Does not normally require customer verification; substantiated at the factory.
Phase Shift Between Vertical and Horizontal Deflection Systems Bandwidth (10 div reference)		Does not normally require customer verification; substantiated at the factory.
Horizontal Separation Control Range		
	CALIBRATOR	
Output Voltage Into 100 kΩ or greater	4 mV, 40 mV, 0.4 mV, 4 V.	C1. Adjust CALIBRATOR Output Voltage.
Into 50 Ω	0.4 mV, 4 mV, 40 mV, 0.4 V.	Substantiated at the factory.
Output Curent 7844 R7844	 40 mA 40 mA	
Repetition Rate	1 kHz within 0.25%.	C2. Adjust CALIBRATOR 1 kHz Repetition Rate.

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ADJUSTMENT PROCEDURE

Introduction

The following procedure adjusts the 7844/R7844 to meet the performance requirements given in Table 5-2.

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Setup Procedure

1. Remove the side and bottom covers from the 7844 or the top and bottom covers and the side panel from the R7844. Refer to the Maintenance section in this manual for panel removal information.

2. Connect the instrument to a power source that meets the voltage and frequency requirements marked on the instrument rear panel. Refer to the Operating Information section in this manual for operating voltage information.

NOTE

If the correct line voltage is not available, use a variable autotransformer to provide the correct input voltage.

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3. Allow at least 20 minutes warmup before proceeding.

NOTE

Titles for external controls of the 7844/R7844 are capitalized in this procedure (e.g., B TRIG SOURCE). Internal adjustments are initial capitalized (e.g., Beam 2 Horiz Gain).

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A. POWER SUPPLY

Equipment Required

Precision dc voltmeter

Three-inch screwdriver

BEFORE YOU BEGIN, see ADJUSTMENT LOCATIONS 1 in the Diagrams section.

Control Settings

Set the 7844/R7844 controls as follows:

POWER Switch	Off
CALIBRATOR (1 kHz)	4 V push button in
READOUT INTENSITY	OFF
GRAT ILLUM	Counterclockwise
BEAM 1	
BEAMFINDER	Push button out
BEAM 2	
BEAMFINDER	Push button out

1. ADJUST −50 VOLT POWER SUPPLY (R1513)

WARNING

Extreme caution must be used when operating the 7844/R7844 with the power unit removed due to the line voltage, high voltage, and high current potentials present.

NOTE

The Power Supply voltages can be checked without removing the Power Unit by using the 7000-Series rigid extender 067-0589-00.

a. Disconnect the line cord from the power source. Remove all plug-in units from the plug-in compartments. Expose the 7844 Power Supply adjustments and test points by removing the power unit from the rear of the 7844 (interconnecting cables remain connected). See the Maintenance Section in this manual for power unit removal instructions. The R7844 Power Supply test points and adjustments are accessible without removing the power unit.

b. Connect the line cord to the power source and set the POWER switch to ON.

c. Connect the precision dc voltmeter between TP −50 Volts Sense and TP Gnd Sense on the Regulator circuit board (see Fig. 9-27).

d. Check—Meter reading for −50 volts within 0.2 volts.

e. ADJUST—50 Volts adjustment R1513 for a meter reading of −50 volts within 0.1 volts (see Fig. 9-27).

f. INTERACTION—Any change in the setting of R1513 may affect the operation of all circuits in the instrument.

2. ADJUST INVERTER CONTROL (R1293)

a. Connect the precision dc voltmeter between TP1625 and chassis ground (see Fig. 9-28).

b. Check—Meter reading for +50 volts within 5 volts. If meter reading is within the given tolerance, proceed to step A3.

c. ADJUST—Inverter Control adjustment R1293 for a meter reading of +50 volts within 5 volts (see Fig. 9-28).

d. INTERACTION—Any change in the setting of R1293 may affect the adjustment of the −50 volts supply (R1513).

3. CHECK REMAINING POWER-SUPPLY VOLTAGES

a. Check—Table 5-3 lists the low-voltage power supplies in this instrument. Check each supply with the precision dc voltmeter for output voltage within the given

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tolerance. Connect meter common lead to TP Gnd Sens (see Fig. 9-27).

b. INTERACTION—If the power supplies are not within the tolerances given in Table 5-3, repeat steps A1, Adjust −50 Volt Power Supply and A2, Adjust Inverter Control.

c. Disconnect the precision dc voltmeter.

NOTE

Regulation of the individual power supplies can be checked using the procedure given under Troubleshooting Techniques in Maintenance section.

d. Disconnect the line cord from the power source.

e. Install the power unit and connect the line cord.

Table 5-3
POWER SUPPLY TOLERANCE

Power Supply	Output Voltage Tolerance
TP −50 Volt Sense	±0.2 Volt
TP −15 Volt Sense	±0.15 Volt
TP +5 Volt Sense	±0.10 Volt
TP +15 Volt Sense	±0.15 Volt
TP +50 Volt Sense	±0.50 Volt
TP +130 Volt	±5.2 Volt
Control Illum (+5 V Lights)	+0.5 to −1.0 Volt

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B. Z-AXIS AND CRT DISPLAY

Equipment Required

Time-base unit
Amplifier unit
Delaying time-base unit
Dc voltmeter
Test oscilloscope system with 10X probe
Time-mark generator
Medium-frequency signal generator
Mainframe standardizer calilbration fixture
18-inch, 50 Ω cable with bnc connectors
42-inch, 50 Ω cable with bnc connectors
Bnc T connector
Three-inch screwdriver
Low-capacitance screwdriver

BEFORE YOU BEGIN, see ADJUSTMENT LOCATIONS 2 & 3 **in the Diagrams section.**

Control Settings

Set the 7844/R7844 front-panel controls as follows:

POWER switch	ON
CALIBRATOR	4 V
READOUT INTENSITY	Off (fully counter-clockwise)
A TRIG SOURCE	LEFT
B TRIG SOURCE	RIGHT
BEAM 1	
INTENSITY	Off (fully counter-clockwise)
VERT SEP (1)	Midrange
HORIZ SEP (1)	Midrange
FOCUS	Midrange
VERTICAL MODE	LEFT
BEAMFINDER	Push button out
HORIZONTAL MODE	A
BEAM 2	
INTENSITY	Off (fully counter-clockwise)
FOCUS	Midrange
VERTICAL MODE	RIGHT
BEAMFINDER	Push button out
HORIZONTAL MODE	B

1. ADJUST BEAM 1 Z-AXIS (R1180)

a. Install an amplifier unit in the LEFT VERT compartment. Move the time-base unit to the A HORIZ compartment.

b. Set the time-base unit sweep rate for 0.2 ms/div and triggering for a free-running sweep.

c. Connect a 10X probe to the input of the test oscilloscope and set the input coupling to ac. Check the probe compensation using the 7844 CALIBRATOR signal.

d. Set the test oscilloscope vertical deflection factor for 0.2 V/div (2 V/div at the probe tip), and sweep rate for a 1 ms/div.

e. Connect the probe tip to TP1186 and connect the probe ground to the chassis with a short grounding strap (see Fig. 9-29).

f. Set BEAM 1 INTENSITY control for a 5 V pulse (2 1/2 div) on the test oscilloscope.

g. Set the time-base unit to the amplifier mode (an amplifier unit can be substituted for the time-base unit if the time-base unit does not have an amplifier mode). Set the BEAM 1 BEAMFINDER switch to the LOCKS IN position. Using the amplifier and time base position controls, center the beam on the crt. Release the BEAM 1 BEAMFINDER switch.

h. ADJUST—Beam 1 CRT Grid Bias adjustment R1180 until the dot on the crt is just extinguished (see Fig. 9-29).

2. ADJUST BEAM 1 Z-AXIS TRANSIENT RESPONSE (C1168, R1168, C1172)

a. Set the time-base unit for a sweep rate of 0.02 μs/div and display mode to time base.

b. Set the amplifier unit position control fully clockwise.

c. Set the test oscilloscope vertical deflection factor for 1 V/div (10 V/div at the probe tip), and sweep rate for 0.1 μs/div. Set the BEAM 1 INTENSITY control fully clockwise.

d. Check—Total pulse signal amplitude (displayed on the test oscilloscope) must be at least 64 V.

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e. Using the BEAM 1 INTENSITY control, reduce the pulse signal amplitude by approximately 25%. Move the probe tip to TP1185 (see Fig. 9-29) and set the test oscilloscope vertical deflection factor to display approximately 4 div of pulse signal. Set triggering for a stable display.

f. ADJUST—HF Comp #3 adjustment C1168 for flat top, HF Comp #2 adjustment R1168 and HF Comp #1 adjustment C1172 (see Fig. 9-29) for a square corner on the displayed pulse (use low-capacitance screwdriver to adjust variable capacitors).

3. ADJUST BEAM 1 INTENSIFIED Z-AXIS

a. Move the time-base unit to the B HORIZ compartment and set the sweep rate to 1 μs/div.

b. Install the delaying time-base unit in the A HORIZ compartment and set the sweep rate to 10 μs/div.

c. Set the 7844/R7844 HORIZONTAL MODE to:

BEAM 1	A
BEAM 2	B

d. Connect the probe to TP1186.

e. Set the BEAM 1 INTENSITY control fully counterclockwise and set a base line reference on the test oscilloscope.

f. Set the BEAM 1 INTENSITY for a 20-volt pulse.

g. Set the delaying time-base unit to delayed mode.

h. Check—A 6-volt pedestal atop the 20-volt pulse.

NOTE

A 6-volt pedestal at 20-volts generally provides the correct contrast throughout the range of the Z-Axis drive signal. The contrast may, however, be adjusted to suit the user's particular needs without affecting the operation of the Z-Axis circuit.

i. ADJUST—R335 on the LOGIC circuit board for a 6-volt pedestal atop the 20-volt pulse.

j. Set the delaying time-base unit to non-delaying mode and remove. Move the time-base unit to the A HORIZ compartment.

k. Disconnect all test equipment.

4. ADJUST BEAM 2 Z-AXIS (R2080)

a. Move the amplifier unit to the RIGHT VERT compartment. Move the time-base unit to the B HORIZ compartment.

b. Set the time-base unit sweep rate for 0.2 ms/div and triggering for a free-running sweep.

c. Set the test oscilloscope vertical deflection factor for 0.2 V/div (2 V/div at the probe tip) and sweep rate for 1 ms/div.

d. Connect the probe tip to TP2086 and the probe ground to the chassis with a short grounding strap (see Fig. 9-30). For easy access to TP2086 and the Beam 2 Z-Axis adjustments, remove the power unit (on the R7844, Beam 2 adjustments and test points are accessible by removing the bottom panel). See the Maintenance section for instructions on power unit removal.

e. Set the BEAM 2 INTENSITY control for a 5 V pulse signal (2 1/2 div) on the test oscilloscope.

f. Set the time-base unit to the amplifier mode. Set the BEAM 2 BEAMFINDER switch to the LOCKS IN position. Using the time-base and amplifier position controls, center the beam on the crt. Release the BEAM 2 BEAMFINDER switch.

g. ADJUST—Beam 2 CRT Grid Bias adjustment R2080 (see Fig. 9-30) so that the dot on the crt is just extinguished.

5. ADJUST BEAM 2 Z-AXIS TRANSIENT RESPONSE (C2068, R2068, C2072)

a. Set the time-base unit sweep rate for 0.02 μs/div and the display mode to time base.

b. Set the amplifier unit position control fully clockwise.

c. Set the test-oscilloscope vertical deflection factor for 1 V/div (10 V/div at probe tip) and sweep rate for 0.1 μs/div. Set the BEAM 2 INTENSITY control fully clockwise.

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d. Check—Total pulse signal amplitude must be at least 64 V.

e. Using the BEAM 2 INTENSITY control, reduce the pulse signal amplitude by approximately 25%. Move the probe to TP2085 and set the test oscilloscope vertical deflection factor to display approximately 4 div of pulse signal.

f. ADJUST—HF Comp #3 adjustment C2068 for a flat top, HF Comp #2 adjustment R2068, and HF Comp #1 adjustment C2072 (see Fig. 9-30) for a square corner on the displayed pulse (use low-capacitance screwdriver to adjust variable capacitors).

g. Disconnect all test equipment.

NOTE

Refer to Recalibration After Repair in the Maintenance section for a geometry preset procedure to facilitate recalibration after replacement or major repair of the CRT board, Beam 1 and Beam 2 Horizontal boards, or after replacement of the cathode-ray tube.

6. ADJUST BEAM 1 AND BEAM 2 SYMMETRY (R1838 and R2838) (7844 SN B109999 & Below; R7844 SN B099999 & Below only)

a. Set the time-base unit display mode to amplifier and the triggering source to external.

b. Connect a dc voltmeter between the cases of Q2920 and Q2890 (see Fig. 9-34). Using the time-base unit position control, set the dc voltmeter reading for 0 V.

c. Connect the dc voltmeter between chassis ground and the case of Q2890.

d. ADJUST—SYMM adjustment R2838 for a meter reading of 55 V, ±3 V (see Fig. 9-34).

e. Move the time-base unit to the A HORIZ compartment.

f. Connect a dc voltmeter between the cases of Q1890 and Q1920 (see Fig. 9-33). Using the time-base unit position control, set the dc voltmeter reading for 0 V.

g. Connect the dc voltmeter between chassis ground and the case of Q1890.

h. ADJUST—SYMM adjustment R1838 for a meter reading of 55 V, ±3 V (see Fig. 9-33).

i. Move the time-base unit to the B HORIZ compartment. Set the display mode to time base and the triggering source to internal.

j. Disconnect all test equipment.

7. ADJUST BEAM 2 INTENSIFIED Z-AXIS

a. Install the delaying time-base unit in the A HORIZ compartment and set to 10 μs/div. Set the time-base unit to 1 μs/div.

b. Set the 7844/R7844 HORIZONTAL MODE to:

BEAM 1	B
BEAM 2	A

c. Connect the probe to TP2086.

d. Set the Beam 2 INTENSITY fully counterclockwise and set a base line reference on the test oscilloscope.

e. Set the BEAM 2 INTENSITY for a 20-volt pulse.

f. Set the delaying time-base unit to delayed mode.

g. Check—A 6-volt pedestal atop the 20-volt pulse. (See the note in step 4.)

h. ADJUST—R381 on the LOGIC circuit board for a 6-volt pedestal atop the 20-volt pulse.

i. Set the delaying time-base unit to non-delaying mode and remove.

j. Disconnect all test equipment.

NOTE

If it is necessary to change any of the adjustments in the following steps, complete the remainder of the Z-Axis and CRT Display procedure. Then recheck all of the steps following this note, to ensure that interaction between adjustments has not occurred.

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8. ADJUST BEAM 2 FOCUS RANGE (R2436, R2576)

a. Set the time-base unit sweep rate for 1 ms/div.

b. Connect the CALIBRATOR output to the amplifier unit.

c. Set the amplitier unit deflection factor for a 1 div centered display. Set the time-base unit triggering for a stable display and position as necessary.

d. Set the front-panel BEAM 2 FOCUS control to midrange.

e. Check—Square wave should be well defined with sharp edges at medium INTENSITY.

f. ADJUST—Foc 2 adjustment R2436 (see Fig. 9-29) and Astig 2 adjustment R2576 to obtain optimum display definition (see Fig. 9-31). The square-wave trace should be as thin as possible, but not elongated.

9. ADJUST BEAM 1 FOCUS RANGE (R2416, R2578)

a. Move the amplifier to the LEFT VERT compartment. Move the time-base unit to the A HORIZ compartment.

b. Set the amplifier unit deflection factor for a 1 div centered display.

c. Set the front-panel BEAM 1 FOCUS control to midrange.

d. Check—Square wave should be well defined with sharp edges at medium intensity.

e. ADJUST—Foc 1 adjustment R2416 (see Fig. 9-29) and Astig 1 adjustment R2578 to obtain optimum display definition (see Fig. 9-31). The square-wave trace should be as thin as possible, but not elongated.

f. Disconnect the CALIBRATOR signal.

10. ADJUST BEAM 1 EDGE FOCUS (R2578, R2556)

a. Replace the amplifier unit installed in the LEFT VERT compartment with the Calibration Fixture Signal Standardizer.

b. Set the Signal Standardizer Test switch to Vert or Horiz + Step Resp and the Rep Rate switch to 1 MHz. Adjust the time-base unit for 2 μs/div in the time-base mode and set the triggering for a stable display from the internal source. Set the Signal Standardizer Amplitude control for a 0.5 div display. Position the display to graticule center.

c. Set the BEAM 1 FOCUS control for a well-defined display.

d. Check—Position the 0.5 div display to the top and then to the bottom graticule divisions and check for a well-defined display.

NOTE

If the parameters given in part d are satisfactorily met, omit the remaining steps of the Beam 1 Edge Focus Procedure.

e. Set the time-base unit to amplifier mode and triggering source to external. Set the Calibration Fixture Signal Standardizer to Freq. Resp.

f. Set the BEAM 1 INTENSITY control for a visible dot (a dim intensity setting will be more usable than a bright intensity setting).

g. Position the dot to the bottom division of the graticule (centered horizontally).

h. ADJUST—Astig 1 adjustment R2578 (see Fig. 9-31) for the smallest symmetrical dot.

i. Position the dot to graticule center.

j. ADJUST—Vert 1 adjustment R2556 for the smallest symmetrical dot (see Fig. 9-31).

k. INTERACTION—Repeat parts f through j until no further improvement in the smallness and symmetry of the dot is observed.

l. Check—Repeat parts b through d.

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11. ADJUST BEAM 2 EDGE FOCUS (R2576, R2552)

a. Move the Calibration Fixture Signal Standardizer to the RIGHT VERT compartment and the time-base unit to the B HORIZ compartment.

b. Set the Signal Standardizer Test switch to Vert or Horiz + Step Resp and the Rep Rate switch to 1 MHz. Adjust the time-base unit for 2 μs/div in the time-base mode and set the triggering for a stable display from the internal source. Set the Signal Standardizer Amplitude control for a 0.5 div display to graticule center.

c. Set the BEAM 2 FOCUS control for a well-defined display.

d. Check—Position the 0.5 div display to the top and then to the bottom graticule divisions and check for a well-defined display.

NOTE

If the parameters given in step d are satisfactorily met, omit the remaining steps of the Beam 2 Edge Focus Procedure.

e. Set the time-base unit to the amplifier mode and the triggering source to external. Set the Calibration Fixture Signal Standardizer to Freq Resp.

f. Set the BEAM 2 INTENSITY control for a visible dot (a dim intensity setting will be more usable than a bright intensity setting).

g. Position the dot to the bottom division of the graticule (centered horizontally).

h. ADJUST—Astig 2 adjustment R2576 (see Fig. 9-31) for the smallest symmetrical dot.

i. Position the dot to graticule center.

j. ADJUST—Vert 2 adjustment R2552 for the smallest symmetrical dot (see Fig. 9-31).

k. INTERACTION—Repeat steps f through j until no further improvement in the smallness and symmetry of the dot is observed.

l. Check—Repeat parts b through d.

m. Replace the Calibration Fixture Signal Standardizer, installed in the LEFT VERT compartment with the amplifier unit.

12. ADJUST BEAM 2 AUTO-FOCUS OPERATION (R2484, R2493)

a. Set the time-base unit sweep rate for 0.02 μs/div, mode to time base, the position control to midrange, and magnifier to X10.

b. Set the BEAM 1 INTENSITY control fully counterclockwise.

c. Connect the dc voltmeter between TP2472 and chassis ground (see Fig. 9-31).

d. Check—Meter reading for +123 V within 3 V.

e. ADJUST—Beam 2 Output Level adjustment R2484 for a meter reading of +123 V within 3 V (see Fig. 9-31).

f. Disconnect the voltmeter.

g. Turn BEAM 2 INTENSITY fully clockwise.

h. Connect a 2 ns time-mark generator signal to the input of the amplifier unit. Connect 0.1 μs time mark triggers to the time-base external trigger input. Set triggering for the auto mode with ac coupling from the external source.

i. Set the front-panel BEAM 2 FOCUS control for optimum trace definition.

j. ADJUST—Beam 2 Focus Gain R2493 for best definition of the trace (see Fig. 9-31).

k. Set the front-panel BEAM 2 INTENSITY fully counterclockwise.

l. Without disturbing the settings of associated equipment, move the amplifier unit to the LEFT VERT compartment. Move the time-base unit to the A HORIZ compartment.

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13. ADJUST BEAM 1 AUTO-FOCUS OPERATION (R2454, R2463)

a. Set the front-panel BEAM 1 INTENSITY control fully counterclockwise.

b. Connect the dc voltmeter between TP2455 and chassis ground (see Fig. 9-31).

c. Check—Meter reading for +123 V within 3 V.

d. ADJUST—Beam 1 Output Level adjustment R2454 for a meter reading of +123 V within 3 V (see Fig. 9-31).

e. Disconnect the voltmeter.

f. Turn BEAM 1 INTENSITY fully clockwise.

g. ADJUST—Beam 1 Focus Gain adjustment R2463 for best definition of trace (see Fig. 9-31).

h. Disconnect associated equipment and set the time-base unit magnifier to X1.

14. ADJUST TRACE ALIGNMENT

a. Position Beam 1 trace to the center horizontal graticule line.

b. Set the time-base unit sweep rate for 0.1 ms/div.

c. ADJUST—Front-panel TRACE ROTATION adjustment so that the trace aligns with the center horizontal graticule line (optimum setting of TRACE ROTATION may need to be made with a trace on both beam 1 and beam 2).

15. ADJUST BEAM 1 GEOMETRY (R2568, R1985, R1976, R2560) (R4985, R4976 For instruments 7844 SN B110000-above; R7844 SN B100000-above)

a. Move the amplifier unit to the LEFT VERT compartment and the time-base unit to the A HORIZ compartment.

b. Apply 1 ms time markers to the amplifier unit.

c. Apply 1 ms time-marker triggers to the time-base external trigger input.

d. Set the time-base triggering for auto mode, with ac coupling from the external source at a sweep rate of 0.5 ms/div.

e. Set the amplifier unit deflection factor and position controls so that the time marks extend above and below the top and bottom of the graticule.

f. Set the time-base unit variable time/division control to obtain 1 marker for each major graticule division.

g. Set the time-mark generator for 0.1 ms.

h. Check—That the vertical bowing and tilt of the marker display is less than 0.1 div (each 0.1 ms marker represents 0.1 div).

i. ADJUST—Bowing 1 adjustment R2568 for minimum bowing of the markers near the center graticule line (see Fig. 9-31).

j. ADJUST—Geom A adjustment R1985 (R4985) and Geom B adjustment R1976 (R4976) to minimize the bowing and keystoning shape of the marker display (see Fig. 9-33). Geom A affects the right-hand side of the marker display and Geom B affects the left-hand side of the marker display.

k. ADJUST—Geom 1 adjusment R2560 (affects overall geometry) for no greater than 0.1 div bowing and tilt (see Fig. 9-31).

16. ADJUST BEAM 2 GEOMETRY (R2572, R2985, R2976, R2564) (R5976, R5985 For instruments 7844 SN B110000-above; R7844 SN B100000-above)

a. Move the amplifier unit to the RIGHT VERT compartment and the time-base unit to the B HORIZ compartment.

b. Set the time-mark generator for 1 ms markers.

c. Set the amplifier unit deflection factor and position controls so that the time-markers extend above and below the top and bottom of the graticule.

d. Set the time-base unit variable time/division control to obtain 1 marker for each major graticule division.

e. Set the time-mark generator for 0.1 ms markers.

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f. Check—That the vertical bowing and tilt of the marker display is less than 0.1 div (each 0.1 ms marker represents 0.1 div).

g. ADJUST—Bowing 2 adjustment R2572 for minimum bowing of the markers near the center graticule line (see Fig. 9-31).

h. ADJUST—Geom A adjustment R2985 (R5985) and Geom B adjustment R2976 (R5976) to minimize the bowing and keystoning shape of the marker display (see Fig. 9-34). Geom A adjustment R2985 (R5985) affects the left-hand side of the marker display and Geom B adjustment R2976 (R5976) affects the right-hand side of the marker display.

i. ADJUST—Geom 2 adjustment R2564 for not greater than 0.1 div of bowing and tilt (see Fig. 9-31).

j. Set the time-base unit variable time/division control to the calibrated position. Remove all signal connections.

17A. ADJUST BEAM 1 AND BEAM 2 CRT CENTERING (R4988, R5988) (For instruments 7844 SN B110000-above; R7844 SN B100000-above)

a. Install a time-base unit in the LEFT VERT compartment and an amplifier unit in the A HORIZ compartment.

b. Set the time-base unit sweep rate for 1 ms/div, triggering for auto mode with ac coupling from the internal source.

NOTE

Use jumper P4800 and P5800 (stored on blank pins) on the Horizontal board for the shorting procedure.

c. Short together the Beam 1 horizontal deflection plates by inserting P4800 on J4899 (see Fig. 9-33A).

NOTE

The label on the crt shield will have a recommended number (one for each beam) preceded by a − or a + sign. These signs are referenced to the center vertical graticule line (center graticule line being 0). If there is no label attached to the crt shield, the correct setting is the center vertical graticule line.

d. Check—Vertical trace must be within 0.1 div of the beam 1 recommended setting noted on the crt centering data (label attached on crt shield).

e. ADJUST—Beam 1 Crt Ctr adjustment R4988 to align the vertical trace with the recommended setting indicated on the crt centering data label (see Fig. 9-33A).

f. Remove the jumper plug.

g. Move the time-base unit to the RIGHT VERT compartment and the amplifier to the B HORIZ compartment.

h. Short together the Beam 2 horizontal deflection plates by inserting P5800 on J5899 (see Fig. 9-33A).

i. Check—Vertical trace must be within 0.1 div of the beam 2 recommended setting noted on the crt centering data label.

j. ADJUST—Beam 2 Crt Ctr adjustment R5988 to align the vertical trace with the recommended setting indicated on the crt centering data label (see Fig. 9-34A).

k. Remove the jumper plug and return it to the storage pins.

17B. ADJUST BEAM 1 AND BEAM 2 CRT CENTERING (R1988, R2988) (For instruments 7844 SN B109999-below; R7844 SN B099999-below)

a. Move the time-base unit to the LEFT VERT compartment and the amplifier unit to the A HORIZ compartment.

b. Set the time-base unit sweep rate for 1 ms/div, triggering for auto mode with ac coupling from the internal source.

c. Short together the Beam 1 horizontal deflection plates by connecting a jumper wire between the transistor cases of Q1920 and Q1890 (see Fig. 9-33).

NOTE

The label on the crt shield will have a recommended number (one for each beam) preceded by a − or a + sign. These signs are referenced to the center vertical graticule line (center graticule line being 0). If there is no label attached to the crt shield, the correct setting is the center vertical graticule line.

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d. Check—Vertical trace must be within 0.1 div of the beam 1 recommended setting noted on the crt centering data label (label located on crt shield).

e. ADJUST—Beam 1 Crt Ctr adjustment R1988 to align the vertical trace with the recommended setting indicated on the crt centering data label (see Fig. 9-33).

f. Remove the jumper wire.

g. Move the time-base unit to the RIGHT VERT compartment and the amplifier unit to the B HORIZ compartment.

h. Short together the Beam 2 horizontal deflection plates by connecting a jumper wire between the transistor cases of Q2920 and Q2890 (see Fig. 9-34).

i. Check—Vertical trace must be within 0.1 div of the beam 2 recommended setting noted on the crt centering data label.

j. ADJUST—Beam 2 Crt Ctr adjustment R2988 to align the vertical trace with the recommended setting indicated on the crt centering data label (see Fig. 9-34).

k. Remove the jumper wire.

18. ADJUST Y-AXIS ALIGNMENT (R386)

a. Center the trace horizontally and vertically with the amplifier and time-base unit position controls.

b. ADJUST—Y-Axis Alignment adjustment R386 to align the vertical trace with the center vertical graticule line (see Fig. 9-32).

c. Move the time-base unit to the LEFT VERT compartment and the amplifier unit to the A HORIZ compartment.

d. Center the trace horizontally and vertically with the amplifier and time-base unit position controls.

e. ADJUST—Y-Axis Alignment adjustment R386 to align the vertical trace with the center vertical graticule line (see Fig. 9-32).

f. INTERACTION—Steps b and e interact. Optimize the adjustment of R386 to minimize the difference in the alignment of both displays with the center vertical graticule line.

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C. CALIBRATOR AND OUTPUT SIGNALS

Equipment Required

Precision dc voltmeter	18-inch, 50 Ω cable with bnc connectors
Amplifier plug-in unit	42-inch, 50 Ω cable (two) with bnc connectors
Time-mark generator	Bnc T connector
Time-base plug-in unit with delaying mode	Three-inch screwdriver
Dual-trace test oscilloscope	Low-capacitance screwdriver

BEFORE YOU BEGIN, see ADJUSTMENT LOCATIONS 4 **in the Diagrams section.**

1. ADJUST CALIBRATOR OUTPUT VOLTAGE (R915)

a. Set both the 4 V and 0.4 V CALIBRATOR push buttons to the depressed position.

b. Connect the precision dc voltmeter to the CALIBRATOR output connector.

c. Check—Meter reading for 0.4008 V within 0.0004 V.

d. ADJUST—0.4 V adjustment R915 for a meter reading of exactly 0.4008 V (see Fig. 9-35).

e. Disconnect the precision dc voltmeter.

2. ADJUST CALIBRATOR 1 kHz REPETITION RATE (R904)

NOTE

A frequency counter with an accuracy of at least 0.1% may be used to adjust the calibrator repetition rate.

a. Connect 1 ms time markers to the test oscilloscope external trigger input and to the non-inverting vertical channel of the test oscilloscope (use a bnc T connector). Connect the 7844/R7844 4 V CALIBRATOR signal to the other vertical channel.

b. Set the test oscilloscope triggering to auto mode with ac coupling from the external source and adjust the triggering level for a stable display. Set the sweep rate for 1 ms/div in the alternate vertical mode.

c. Set the test oscilloscope deflection factors to display 2 div of CALIBRATOR signal and 1 div of time-marker signal.

d. Set the test oscilloscope vertical mode to add and the sweep rate for 0.2 s/div.

e. Check—Time required for the 1 ms time marks to drift from the positive level of the CALIBRATOR signal to the negative level and back to the positive level must be at least 0.4 s (2 div). This time can be measured directly from the display by observing the number of divisions that the markers move across the display area before it returns to the positive level.

f. ADJUST—1 kHz adjustment R904 for minimum drift (see Fig. 9-53).

g. Disconnect all test equipment.

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D. TRIGGER SELECTION

Equipment Required

Sampling sweep unit	42-inch, 50 Ω cable (two required) with bnc connectors
Calibration fixture signal standardizer	18-inch, 50 Ω cable with bnc connectors
Calibration fixture plug-in extender	

Control Settings

Set the 7844/R7844 front-panel controls as follows:

A TRIG SOURCE	LEFT
B TRIG SOURCE	RIGHT
BEAM 1	
INTENSITY	As desired
VERTICAL MODE	LEFT
BEAMFINDER	Push button out
HORIZONTAL MODE	A
BEAM 2	
INTENSITY	As desired
VERTICAL MODE	RIGHT
BEAMFINDER	Push button out
HORIZONTAL MODE	A
	INVERT CH 2 (IN)
MODE	ADD
SEC/DIV	.2 μs
SWP	DELAYING (IN)
AUTO TRIG	OUT
+ SLOPE	IN
REP	IN
INT CH 1	IN
HF SYNC	OUT

ADJUST TRIGGER RESPONSE

NOTE

The trigger step response aberrations adjustments affect the bandwidth of the trigger system. The adjustments parts of the procedure should be skipped if the aberrations are within the limits given.

a. Install the sampling unit into the test oscilloscope.

b. Install the plug-in extender in the A HORIZ compartment and set A TRIG SOURCE to LEFT.

c. Connect the cable from A20 of the plug-in extender to the CH 1 input of the sampling unit. Connect the cable from B20 to the CH 2 input.

d. Set the sampling unit as follows:

CH 1	50 mV/div
	DC OFFSET to midrange
CH 2	50 mV/div
	DC OFFSET to midrange

e. Install the signal standardizer in the LEFT VERT compartment and set the TEST switch to TRIGGERING + STEP RESP. Set the REP RATE to 1 MHz.

f. Set the 7844/R7844 A TRIG SOURCE to LEFT.

g. Using the POSITION and AMPLITUDE controls of the signal standardizer and the TRIGGERING LEVEL and SCAN controls of the sampling unit, set up a stable, 6 div display on the test oscilloscope.

h. On the sampling unit set the DELAYING Sweep to 10 μs/div, the DELAYED Sweep to 1 ns, and the SWP control to DELAYED (OUT).

i. Adjust the DELAY ZERO (1st DOT) and the DELAY TIME MULT (2nd DOT) controls to display the leading edge of the waveform.

j. Check—Aberrations of ≤15% (0.9 div).

k. ADJUST—R446 for aberrations of ≤15% (0.9 div).

l. Move the signal standardizer to the RIGHT VERT compartment.

m. Set A TRIG SOURCE to RIGHT.

n. Check—Aberrations of ≤15% (0.9 div).

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o. ADJUST—R546 for aberrations of ≤15% (0.9 div).

p. Move the plug-in extender to the B HORIZ compartment.

q. Set B TRIG SOURCE to RIGHT.

r. Check—Aberrations of ≤15% (0.9 div).

s. ADJUST—R516 for aberrations of ≤15% (0.9 div).

t. Move the signal standardizer to the LEFT VERT compartment.

u. Set B TRIG SOURCE to LEFT.

v. Check—Aberrations of ≤15% (0.9 div).

w. ADJUST—R416 for aberrations of ≤15% (0.9 div).

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E. HORIZONTAL SYSTEM
(For instruments 7844 SN B110000-above; R7844 SN B100000-above)

Equipment Required

Calibration fixture signal standardizer	Dc voltmeter
Amplifier plug-in unit	42-inch, 50 Ω cable (two required) with bnc connectors
Time-base plug-in unit	Three-inch screwdriver
Time-mark generator	

BEFORE YOU BEGIN, see ADJUSTMENT LOCATIONS 4 **in the Diagrams section.**

Control Settings

Set the 7844/R7844 front-panel controls as follows:

A TRIG SOURCE	LEFT
B TRIG SOURCE	RIGHT
BEAM 1	
INTENSITY	Midrange
FOCUS	As desired
VERTICAL MODE	LEFT
BEAMFINDER	Push button out
HORIZONTAL MODE	A
HORIZ SEP (1)	Midrange
BEAM 2	
INTENSITY	Fully counter-clockwise
FOCUS	As desired
VERTICAL MODE	RIGHT
BEAMFINDER	Push button out
HORIZONTAL MODE	B

1. ADJUST BEAM 1 HORIZONTAL CENTERING (R4816, R4840)

a. Install a time-base unit in the LEFT VERT compartment. Install the calibration fixture signal standardizer in the A HORIZ compartment.

b. Set the calibration fixture Test switch to Vert or Horiz Com Mode and the time-base unit for a free-running 1 μs/div sweep.

c. ADJUST—The BEAM 1 INTENSITY control for a usable display.

NOTE

Use jumper P4800 (stored on blank pins) on the Horizontal board for the shorting procedure.

e. Connect the dc voltmeter between the cases of Q4876 and Q4896 (see Fig. 9-36A).

f. Check—The meter reading of 0 volt.

g. ADJUST—The Lim Ctr adjustment R4840 for 0 volt.

h. Remove the jumper plug and return it to the storage pins.

i. Check—Horizontal centering of the trace is within 0.5 div of the center graticule line.

j. Disconnect the cable of J4868.

k. ADJUST—The Horiz Ctr adjustment R4816 to align the trace with the vertical graticule line (see Fig. 9-36A).

l. Move the calibration fixture to the B HORIZ compartment and change the BEAM 1 HORIZONTAL MODE switch to B.

m. Check—Horizontal centering of the trace is within 0.5 div of the center graticule line.

n. ADJUST—If necessary, compromise the setting of the Horiz Ctr adjustment R4816 for optimum centering of both A and B compartments.

o. Reconnect the cable to J4868.

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2. ADJUST BEAM 1 HORIZONTAL AMPLIFIER GAIN (R4820)

a. Install the calibration fixture in the B HORIZ compartment and set the BEAM 1 HORIZONTAL MODE switch to B.

b. Set the calibration fixture Test switch to Vert or Horiz Gain and Rep Rate to 10 kHz. Align the trace with the center vertical graticule line with the calibration fixture Position control.

c. Check—One trace per graticule division within 0.05 div over the center 8 vertical graticule divisions.

d. ADJUST—Horizontal Gain R4820 for 1 div between each of the 9 displayed traces (see Fig. 9-36A).

e. Move the calibration fixture to the A HORIZ compartment and set the BEAM 1 HORIZONTAL MODE switch to A.

f. Check—One trace per graticule division within 0.08 div over the center 8 vertical graticule divisions.

g. INTERACTION—If necessary, compromise the setting of the Horiz Gain adjustment R4820 for optimum gain of both horizontal compartments.

3. ADJUST BEAM 1 HIGH-FREQUENCY TIMING (C4823, C4850, AND C4860)

a. Remove the calibration fixture from the A or B HORIZ compartment.

b. Move the time-base unit to the B HORIZ compartment and set the BEAM 1 HORIZONTAL MODE switch to B.

c. Install an amplifier unit in the LEFT VERT compartment.

d. Set the time-base unit triggering for auto mode, ac coupled from the internal source at a sweep rate of 1 ms/div.

e. Connect 1 ms markers from the time-mark generator to the amplifier input and adjust the amplifier unit deflection factor for a 3 div display.

f. Set B TRIG SOURCE to LEFT and the time-base unit triggering controls for a stable display.

g. Set the time-base unit sweep-calibration adjustment (front panel) for 1 marker at each major graticule division between the second and tenth graticule lines (center 8 div).

h. Connect the trigger output of the time-mark generator to the time-base unit external trigger input with a 50 Ω coaxial cable.

i. Set the time-base unit triggering for auto mode ac coupled from the external source at a sweep rate of 5 ns/div. Set the time-mark generator for 5 ns markers.

j. Set the time-base triggering controls for a stable display.

k. Check—High-Frequency timing over the center 8 div within 0.32 div (4%).

l. ADJUST—High-Frequency compensation adjustments C4850 and C4860 for minimum timing error over the center 8 vertical graticule divisions.

m. Set the time-mark generator for 2 ns markers and the time-base unit for 1 ns/div sweep rate.

n. Set the time-base triggering controls for a stable display.

o. Check—High-Frequency timing over the center 8 div (one cycle every two divisions) within 0.32 div (4%).

p. ADJUST—High-Frequency compensation adjustment C4823 for minimum timing error over the center 8 vertical graticule divisions.

q. Repeat part l if necessary.

r. INTERACTION—Check 5 ns and 1 ns timing and repeat parts i through p if necessary.

s. Disconnect all cables.

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4. ADJUST BEAM 2 HORIZONTAL CENTERING (R5840, R5816)

a. Install a time-base unit in the RIGHT VERT compartment. Install the calibration fixture in the A HORIZ compartment.

b. Set the BEAM 2 HORIZONTAL MODE switch to A.

c. Check—One trace per graticule division within 0.05 div over the center 8 vertical graticule divisions.

d. ADJUST—Horizontal Gain R5820 for 1 div between each of the 9 displayed traces (see Fig. 9-37A).

e. Move the calibration fixture to the A HORIZ compartment and set the BEAM 2 HORIZONTAL MODE switch to A.

f. Check—One trace per graticule division within 0.08 div over the center 8 vertical graticule divisions.

g. INTERACTION—If necessary, compromise the setting of the Horiz Gain adjustment R5820 for optimum gain of both horizontal compartments.

5. ADJUST BEAM 2 HORIZONTAL AMPLIFIER GAIN (R5820).

a. Install the calibration fixture in the B HORIZ compartment and set the BEAM 2 HORIZONTAL MODE switch to B.

b. Set the calibration fixture Test switch to Vert or Horiz Gain and Rep Rate to 10 kHz. Align the trace with the center vertical graticule line with the calibration fixture Position control.

c. Check—One trace per graticule division within 0.05 div over the center 8 vertical graticule divisions.

d. ADJUST—Horizontal Gain R5820 for 1 div between each of the 9 displayed traces (see Fig. 9-37A).

e. Move the calibration fixture to the A HORIZ compartment and set the BEAM 2 HORIZONTAL MODE switch to A.

f. Check—One trace per graticule division within 0.08 div over the center 8 vertical graticule divisions.

g. INTERACTION—If necessary, compromise the setting of the Horiz Gain adjustment R5820 for optimum gain of both horizontal compartments.

6. ADJUST BEAM 2 HIGH-FREQUENCY TIMING (C5823, C5850 and C5860)

a. Remove the calibration fixture from the A or B compartment.

b. Move the time-base unit to the B HORIZ compartment and set the BEAM 2 HORIZONTAL MODE switch to B.

NOTE

High-frequency timing accuracy may be affected by improper adjustment of the Horizontal Plate Average voltage. Refer to step B17A for adjustment procedure.

c. Install an amplifier unit in the RIGHT VERT compartment.

d. Set the time-base unit triggering for auto mode, ac coupled from the internal source at a sweep rate of 1 ms/div.

e. Connect 1 ms markers from the time-mark generator to the amplifier input and adjust the amplifier unit deflection factor for a 3 div display.

f. Set the B TRIG SOURCE to RIGHT and the time-base triggering controls for a stable display.

g. Set the time-base unit sweep-calibration adjustment (front panel) for 1 marker at each major graticule division between the second and tenth graticule lines (center 8 div).

h. Connect the trigger output of the time-mark generator to the time-base unit external trigger input with a bnc cable.

i. Set the time-base unit triggering for auto mode, ac coupled from the external source at a sweep rate of 5 ns/div. Set the time-mark generator for 5 ns markers.

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j. Set the time-base triggering controls for a stable display.

k. Check—High-Frequency timing over the center 8 div within 0.32 div (4%).

l. ADJUST—High-frequency compensation adjustments C5850 and C5860 for minimum timing error over the center 8 vertical graticule divisions.

m. Set the time-mark generator for 2 ns markers and the time-base unit for 1 ns/div sweep rate.

n. Set the time-base triggering controls for a stable display.

o. Check—High-frequency timing over the center 8 div (one cycle every two divisions) within 0.32 div (4%).

p. ADJUST—High-Frequency compensation adjustment C5823 for minimum timing error over the center 8 vertical graticule divisions.

q. INTERACTION—Check 5 ns and 1 ns timing and repeat parts i through p if necessary.

r. Disconnect all cables.

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F. HORIZONTAL SYSTEM
(For instruments 7844 SN B109999-below; R7844 SN B099999-below)

Equipment Required

Calibration Fixture Signal Standardizer
Amplifier plug-in unit
Time-base plug-in unit
Time-mark generator
42-inch, 50 Ω cable with bnc connectors
18-inch, 50 Ω cable with bnc connectors
Three-inch screwdriver
18-inch cable with bsm female and bnc male connectors

BEFORE YOU BEGIN, see ADJUSTMENT LOCATIONS 4 **in the Diagrams section.**

Control Settings

Set the 7844/R7844 front-panel controls as follows:

A TRIG SOURCE	LEFT
B TRIG SOURCE	RIGHT
BEAM 1	
INTENSITY	Midrange
FOCUS	As desired
VERTICAL MODE	LEFT
BEAMFINDER	Push button out
HORIZONTAL MODE	A
HORIZ SEP (1)	Midrange
BEAM 2	
INTENSITY	Midrange
FOCUS	As desired
VERTICAL MODE	RIGHT
BEAMFINDER	Push button out
HORIZONTAL MODE	B

1. ADJUST BEAM 1 AND BEAM 2 HORIZONTAL AMPLIFIER GAIN (R2940, R2816, R1940 and R1816)

a. Install a time-base unit in the RIGHT VERT compartment. Install the calibration fixture signal standardizer in the B HORIZ compartment.

b. Set the calibration fixture Test switch to Vert or Horiz Com Mode and the time-base unit for a free-running sweep.

c. Check—Vertical trace is within 0.5 div of the center vertical graticule line.

d. ADJUST—Beam 2 Horiz Ctr adjustment R2940 to align the trace with the center vertical graticule line (see Fig. 9-37B).

e. Set the calibration fixture test switch to Vert or Horiz Gain and the Rep Rate to 1 MHz. align the bright center trace with the center vertical graticule line with the calibration fixture Position control.

f. Check—One trace per graticule division within 0.01 div over the center 8 vertical graticule divisions.

g. ADJUST—Beam 2 Horiz Gain adjustment R2816 for 1 div between each of the 9 displayed traces (see Fig. 9-37).

h. Set the BEAM 2 INTENSITY control fully counterclockwise.

i. Move the time-base unit to the LEFT VERT compartment.

j. Set the BEAM 1 HORIZONTAL MODE switch to B.

k. Set the calibration fixture Test switch to Com Mode and the BEAM 1 INTENSITY control for a usable display.

l. Check—Horizontal centering of the trace is within 0.5 div of the center graticule line.

m. ADJUST—Beam 1 Horiz Ctr adjustment R1940 to align the vertical trace with the center vertical graticule line (see Fig. 9-36).

n. Set the calibration fixture Test switch to Vert or Horiz Gain.

o. Check—One trace per graticule division within 0.01 div over the center 8 vertical graticule divisions.

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p. ADJUST—Beam 1 Horiz Gain R1816 for 1 div between each of the 9 displayed traces (see Fig. 9-36).

q. INTERACTION—Significant adjustment of the Beam 1 and Beam 2 Horizontal Gain and centering adjustments may affect the adjustment of the Z-Axis and Geometry adjustments in section B.

2. ADJUST BEAM 1 HIGH-FREQUENCY TIMING (C1904, C1934, C1862, R1860, R1870, R1873)

a. Remove the calibration fixture from the B HORIZ compartment.

b. Move the time-base unit to the B HORIZ compartment.

c. Install an amplifier unit in the LEFT VERT compartment.

d. Set the time-base unit triggering for auto mode ac coupled from the internal source at a sweep rate of 1 ns/div.

e. Set the BEAM 2 INTENSITY control fully counterclockwise and the BEAM 1 INTENSITY control for a usable display.

f. Connect 1 ms markers from the time-mark generator to the amplifier unit input and adjust the amplifier unit deflection factor for a 2 div display.

g. Set the B TRIG SOURCE switch to LEFT and the time-base unit triggering controls for a stable display.

h. Position the first marker to the extreme left line on the graticule.

i. Set the time-base unit sweep-calibration adjustment for 1 marker at each major graticule division between the second and tenth graticule lines (center 8 divisions).

j. Check—Refer to the time-base unit instruction manual for performance check or calibration procedures for checking high-frequency timing and linearity. Use the procedures and limits given for the three fastest sweep rates that do not exceed 1 ns/div. If the given limits are met, omit the remainder of this step.

k. Disconnect the time-mark generator and remove the amplifier unit.

l. Move the time-base unit to the LEFT VERT compartment and install the calibration fixture in the B HORIZ compartment.

m. Set the BEAM 2 INTENSITY control fully counterclockwise and the BEAM 1 INTENSITY control for a usable display.

n. Set the time-base unit triggering for auto mode ac coupled from the external source at a sweep rate of 0.2 ns/div.

o. Connect the calibration fixture Test Out to the time-base unit external trigger input with a bsm female to bnc male cable.

p. Set the calibration fixture Test switch to Vert or Horiz + Step Resp and the Amplitude control for a 3 div display. Position the display to graticule center.

q. Set the time-base unit triggering controls for a stable display.

r. ADJUST—BEAM 1 Horizontal Amplifier High-Frequency compensation adjustments (as given in Table 5-4) for optimum square-wave response (see Fig. 9-36).

s. Check—Displayed pulse aberrations not to exceed 0.15 div with total peak-to-peak aberrations not to exceed 0.2 div. Refer to Table 5-4.

t. Check—High-frequency timing. Repeat part j.

u. INTERACTION—If the high-frequency timing parameters cannot be met, repeat parts k through s.

v. Remove the time-base unit and the calibration fixture.

3. ADJUST BEAM 2 HIGH-FREQUENCY TIMING (C2904, C2934, C2862, R2860, R2870, R2873)

a. Install an amplifier unit in the RIGHT VERT compartment.

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Table 5-4
HORIZONTAL SYSTEM HIGH-FREQUENCY COMPENSATION
(For instruments 7844 SN B109999-below; R7844 SN B09999-below)

Adjustment			Sweep Rate	Area of Maximum Effect
When used with time-base units having sweep rates of 2 ns/div and slower.				
	Beam 1	Beam 2		
5 ns Cal	C1904 C1934	C2904 C2934	5 ns/div	5 ns/div timing
2 ns Cal	C1862	C2862	2 ns/div	2 ns/div timing
Lin A Lin B	R1860 R1870	R2860 R2870	2 ns/div	2 ns/div linearity
1 ns Cal	R1873	R2873	Effect of adjustment not noticeable with sweep rates below 1 ns/div.	
When used with time-base units having sweep rates to 1 ns/div and faster.				
5 ns Cal	C1904 C1934	C2904 C2934	5 ns/div	5 ns/div timing
2 ns Cal	C1862	C2862	2 ns/div	2 ns/div timing
Lin A Lin B	R1860 R1870	R2860 R2870	1 ns/div[a] 2 ns/div[a] linearity	First half of sweep 2 ns/div
1 ns Cal	R1873	R2873	1 ns/div	Last half of sweep

[a]Lin A and Lin B adjustment primarily affect 1 ns timing, but also affect 2 ns timing to a lesser degree.

b. Install the time-base unit in the B HORIZ compartment.

c. Set the time-base unit sweep rate for 1 ms/div and triggering for auto mode ac coupled from the internal source.

d. Set the BEAM 1 INTENSITY control fully counterclockwise and the BEAM 2 INTENSITY control for a usable display.

e. Connect 1 ms markers from the time-mark generator to the amplifier unit.

f. Set the B TRIG SOURCE switch to RIGHT and the time-base unit triggering controls for a stable display.

g. Position the first marker to the extreme left line on the graticule.

h. Set the time-base unit sweep-calibration adjustment for 1 marker at each major graticule division, between the second and tenth graticule lines (center 8 div).

i. Check—Refer to the time-base unit instruction manual for performance check or calibration procedures for checking high-frequency timing and linearity. Use the procedures and limits given for the three fastest sweep rates that do not exceed 1 ns/div. If the given limits are not met, omit the remainder of this step.

j. Remove the time-base unit and install the calibraton fixture in the B HORIZ compartment.

k. Remove the amplifier unit and install the time-base unit in the RIGHT VERT compartment.

l. Set the time-base unit sweep rate for 0.2 ms/div and triggering for auto mode ac coupled from the external source.

m. Connect the calibration fixture Trig Out to the time-base unit external trigger input with a bsm female to bnc male adapter.

n. Set the calibration fixture test switch to Vert or Horiz + Step Resp. Amplitude control for 3 div of display, and position the display to graticule center.

o. Set the BEAM 2 INTENSITY control and the timebase unit triggering controls for a usable display.

p. ADJUST—BEAM 2 Horizontal Amplifier High-Frequency Compensation adjustments (as given in Table 5-4) for optimum square-wave response (see Fig. 9-37).

q. Check—Displayed pulse leading edge aberrations not to exceed 0.15 div with total peak-to-peak aberrations not to exceed 0.2 div. Refer to Table 5-4.

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r. Check—High frequency timing. Repeat part i.

s. INTERACTION—If the high-frequency timing parameters cannot be met, repeat parts j through p.

t. Remove all test equipment.

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G. VERTICAL SYSTEM

Equipment Required

Time-base plug-in unit
Amplifier plug-in unit
Calibration fixture signal standardizer
High-frequency signal generator
Three-inch screwdriver
Low-capacitance screwdriver
bnc female to dual clip leads
nylon tuning tool

BEFORE YOU BEGIN, see ADJUSTMENT LOCATIONS 5 **in the Diagrams section.**

Control Settings

Set the 7844/R7844 front-panel controls as follows:

CALIBRATOR (1 kHz)	4 V (push button in)
A TRIG SOURCE	LEFT
B TRIG SOURCE	RIGHT
BEAM 1	
INTENSITY	Midrange
FOCUS	As desired
VERTICAL MODE	LEFT
BEAMFINDER	Push button out
HORIZONTAL MODE	A
VERT SEP (1)	Midrange
BEAM 2	
INTENSITY	Fully counterclockwise
VERTICAL MODE	RIGHT
BEAMFINDER (LOCKS IN)	Push button out
HORIZONTAL MODE	A

1. ADJUST BEAM 1 VERTICAL CENTERING (R1714)

a. Install a time-base unit in the A HORIZ compartment.

b. Set the time-base unit sweep rate for 10 μs/div and triggering for auto mode ac coupled from the internal source.

c. Set the BEAM 1 INTENSITY control for a visible display of the trace.

d. Install the calibration fixture signal standardizer in the LEFT VERT compartment with the Test switch set to Vert or Horiz Com Mode.

e. Check—Displayed trace is within 0.5 div of the center horizontal graticule line.

f. ADJUST—Beam 1 Vert Ctr adjustment R1714 to position the beam 1 trace to the center horizontal graticule line (see Fig. 9-39).

g. Check—(delete with Option 21) Trace remains within 0.5 div of the center horizontal graticule line while simultaneously switching the VERTICAL MODE switches to BEAM 1 RIGHT and BEAM 2 LEFT.

h. ADJUST—(delete with Option 21) Vert Ctr adjustment R1714 so that the displayed trace remains within 0.5 div of the center horizontal graticule line while simultaneously switching the VERTICAL MODE switches to BEAM 1 RIGHT and BEAM 2 LEFT (see Fig. 9-39).

2. ADJUST BEAM 2 VERTICAL CENTERING (R2714)

a. Move the time-base unit to the B HORIZ compartment.

b. Move the calibration fixture to the RIGHT VERT compartment.

c. (delete with Option 21) Set the VERTICAL MODE switch to BEAM 1 LEFT and BEAM 2 RIGHT.

d. Set the BEAM 2 HORIZONTAL MODE switch to B and the BEAM 2 INTENSITY control for a visible display.

e. Check—Displayed trace is within 0.5 div of the center horizontal graticule line.

f. ADJUST—BEAM 2 Vert Ctr adjustment R2714 to position the BEAM 2 trace to the center graticule line (see Fig. 9-40).

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g. CHECK—(delete with Option 21) Trace remains within 0.5 div of the center horizontal graticule line while switching the BEAM 2 VERTICAL MODE switch from RIGHT to LEFT.

h. ADJUST—(delete with Option 21) Beam 2 Vert Ctr adjustment R2714 so that the displayed trace remains within 0.5 div of the center horizontal graticule line while switching the BEAM 2 VERTICAL MODE SWITCH from RIGHT to LEFT. (See Fig. 9-40.)

NOTE

Step 3 applies only to Option 21.

3. ADJUST BEAM 1 AND BEAM 2 VERTICAL AMPLIFIER GAIN (R1730, R2730)

a. Move the calibration fixture to the LEFT VERT compartment.

b. Move the time-base unit to the A HORIZ compartment.

c. Set the calibration fixture Test switch to Vert or Horiz Gain with the Rep Rate switch set to 1 MHz.

d. Position the display with the calibration fixture Position control to align the bright center trace with the center horizontal graticule line.

e. Check—One trace per graticule division within 0.01 div over the center 6 horizontal graticule divisions.

f. ADJUST—Beam 1 Vert Gain adjustment R1730 for 1 div between each of the center 7 displayed traces (see Fig. 9-39).

g. Move the calibration fixture to the RIGHT VERT compartment.

h. Move the time-base unit to the B HORIZ compartment.

i. Position the display with the calibration fixture Position control to align the bright center trace with the center horizontal graticule line.

j. Check—One trace per graticule division within 0.01 div over the center 6 horizontal graticule divisions.

k. ADJUST—Beam 2 Vert Gain adjustment R2730 for 1 div between each of the center 7 displayed traces (see Fig. 9-40).

NOTE

Omit step 4 for Option 21.

4. ADJUST BEAM 1 AND BEAM 2 VERTICAL CROSSOVER GAIN (R2730, R1730, R3619, R3664)

a. Set the calibration fixture test switch to Vert or Horiz Gain with the Rep Rate switch set to 1 MHz.

b. Set the BEAM 2 VERTICAL MODE switch to RIGHT.

c. Position the display with the calibration fixture Position control to align the bright center trace with the center horizontal graticule line.

d. Check—One trace per graticule division within 0.01 div over the center 6 horizontal graticule divisions.

e. ADJUST—Beam 2 Vert Gain R2730 for 1 div between each of the center 7 displayed traces (see Fig. 9-40).

f. Move the time-base unit to the A HORIZ compartment.

g. Set the BEAM 1 VERTICAL MODE switich to RIGHT.

h. Position the display with the VERT SEP (1) control to align the bright center trace with the center horizontal graticule line.

i. Check—One trace per graticule division within 0.01 div over the center 6 horizontal graticule divisions.

j. ADJUST—Beam 1 Vert Gain adjustment R1730 for 1 div between each of the center 7 displayed traces (see Fig. 9-39).

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k. Move the time-base unit to the B HORIZ compartment.

l. Move the calibration fixture to the LEFT VERT compartment.

m. Set the BEAM 1 and BEAM 2 VERTICAL MODE switches to LEFT.

n. Position the display with the calibration fixture Position control to align the bright center trace with the center horizontal graticule line.

o. Check—One trace per graticule division with 0.01 div over the center 6 horizontal graticule divisions.

p. ADJUST—Beam 2 Left Gain adjustment R3664 for 1 div between each of the center 7 displayed traces (see Fig. 9-38).

q. Move the time-base unit to the A HORIZ compartment.

r. Position the display with the VERT SEP (1) control to align the bright center trace with the center horizontal graticule line.

s. Check—One trace per graticule division within 0.01 div over the center 6 horizontal graticule divisions (position as necessary).

t. ADJUST—Beam 1 Left Gain adjustment R3619 for 1 div between each of the center 7 displayed traces (see Fig. 9-38).

5. ADJUST BEAM 1 AND BEAM 2 AUX Y GAIN (R2716, R1716)

a. Connect the 4 V CALIBRATOR signal to both TP10 and TP13 with a 50 Ω cable and bnc to clip lead adapter (simuiltaniously fasten the signal lead to TP10 and TP13 and the shield lead to the chassis, see Fig. 9-41).

b. Set the VERTICAL MODE switches to BEAM 1 LEFT and BEAM 2 RIGHT (delete with Option 21).

c. Move the time-base unit to the B HORIZ compartment.

d. Remove the calibration fixture and install an amplifier unit in the RIGHT VERT compartment.

e. Check—Display amplitude for 4.2 div within 0.1 div (position as necessary).

f. ADJUST—BEAM 2 Vertical Aux Y Gain adjustment R2716 for a 4.2 div display within 0.1 div (see Fig. 9-40).

g. Move the amplifier unit to the LEFT VERT compartment and move the time-base unit to the A HORIZ compartment.

h. Check—Display amplitude for 4.2 div display within 0.1 div (see Fig. 9-39).

i. ADJUST—Beam 1 Vertical Aux Y Gain adjustment R1716 for a 4.2 div display within 0.1 div (see Fig. 9-39).

j. Remove the CALIBRATOR signal.

NOTE

(Effective Serial Number B050000-up; 7844) (Effective Serial Number B040000-up; R7844) Refer to Recalibration After Repair in the Maintenance section for an input compensation adjustment procedure. This procedure should be used when integrated circuits are replaced on the Crossover Vertical Interface, the Beam 1 Vertical Amplifier, or the Beam 2 Vertical Amplifier boards.

6. ADJUST BEAM 1 VERTICAL HIGH-FREQUENCY COMPENSATION (R1749, R1764, R1743, R1758, L1667, C1658, R1658, L1730, L1731).

a. Move the Calibration Fixture to the LEFT Vert compartment and the time-base unit to the A HORIZ compartment.

b. Set the calibration fixture Test switch to Vert or Horiz + Step Resp. Rep Rate switch to 1 kHz and adjust the Amplitude control for a 6 div display.

c. Set the time-base unit sweep rate for 0.5 ms/div and triggering for auto mode, ac coupled from the internal source. Adjust trigger level and position controls for a stable centered display.

d. Check—Displayed pulse for optimum flat top within 0.06 div.

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e. ADJUST—LF Comp 1 adjustment R1749 and LF Comp 2 adjustment R1764 for flat top within 0.06 div (see Fig. 9-39).

f. Set the Calibration Fixture Rep Rate switch to 1 MHz and the time-base unit for a sweep rate of 10 ns/div.

g. Check—Displayed pulse for optimum square corner and flat top with total peak-to-peak aberrations within 0.36 div.

h. ADJUST—High-frequency compensation (as given in Table 5-5) for optimum square leading corner and flat top with aberrations within 0.36 div peak-to-peak. Use the low-capacitance screwdriver to adjust variable capacitors. Repeat the complete adjustment procedure several times to obtain optimum adjustment (See Fig. 9-39).

Table 5-5
BEAM 1 HIGH-FREQUENCY COMPENSATION

Adjustment	Primary Area of Pulse Affected	Best Sweep Rate
R1743 R1758	First 100 ns	10 ns/div
L1667 C1658	First 2 ns	2 ns/div
R1658	First 5 ns	2 ns/div
Position crt vertical deflection leads to reduce aberrations. The deflection leads connect to crt pins directly in front of the Vertical Amplifier boards.	At 5 ns from front corner	10 ns/div
L1730 L1731 (Longer leads will increase the front corner spike)	First 1 ns	1 ns/div

7. ADJUST BEAM 2 VERTICAL HIGH-FREQUENCY COMPENSATION (R2764, R2749, R2743, R2758, L2667, C2658, R2658, L2730, L2731)

a. Move the calibration fixture to the RIGHT VERT compartment and the time-base unit to the B HORIZ compartment.

b. Set the calibration fixture Test switch to Vert or Horiz + Step Resp. Rep Rate switch to 1 kHz and adjust the Amplitude control for a 6 div display.

c. Set the time-base unit sweep rate for 0.5 ms/div and triggering for auto mode, ac coupled from the internal source. Adjust the trigger level and position controls for a stable centered display.

d. Check—Displayed pulse for optimum flat top within 0.06 div.

e. ADJUST—LF Comp 1 adjustment R2749 and LF Comp 2 adjustment R2764 (see Fig. 9-40) for flat top within 0.06 div.

f. Set the time-base unit triggering for auto mode, ac coupled from the internal source, and sweep rate for 10 ns/div. Adjust the trigger level and position controls for a stable centered display.

g. Set the calibration fixture Rep Rate switch to 1 MHz.

h. Check—For optimum square corner and flat top on the displayed pulse with total peak-to-peak aberrations within 0.36 div.

i. ADJUST—High-frequency compensation (as given in Table 5-6) for optimum square leading corner and flat top with aberrations not to exceed 0.36 div peak-to-peak. Use the low-capacitance screwdriver to adjust variable capacitors. Repeat the complete adjustment procedure several times to obtain optimum adjustment (see Fig. 9-40).

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Table 5-6
BEAM 2 HIGH-FREQUENCY COMPENSATION

Adjustment	Primary Area of Pulse Affected	Best Sweep Rate
R2743 R2758	First 100 ns	10 ns/div
L2667 C2658	First 2 ns	2 ns/div
R2658	First 5 ns	2 ns/div
Position crt vertical deflection leads to reduce aberrations. The deflection leads connect to crt pins directly in front of the Vertical Amplifier boards.	At 5 ns from from front corner	10 ns/div
L2730 L2731 (Longer leads will increase the front corner spike)	First 1 ns	1 ns/div

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H. READOUT SYSTEM

Equipment Required

Amplifier plug-in unit
Time-base plug-in unit
Three-inch screwdriver

BEFORE YOU BEGIN, see ADJUSTMENT LOCATIONS 6 in the Diagrams section.

Control Settings

Set the 7844/R7844 front-panel controls as follows:

READOUT	
EXTERNAL-BEAM 2 GATED	BEAM 2 GATED (push button out)
BEAM 1	
INTENSITY	Midrange
FOCUS	Midrange
VERTICAL MODE	LEFT
BEAMFINDER (LOCKS IN)	Push button out
HORIZONTAL MODE	A
BEAM 2	
INTENSITY	Midrange
VERTICAL MODE	RIGHT
BEAMFINDER (LOCKS IN)	Push button out
HORIZONTAL MODE	B

1. ADJUST VERTICAL SEPARATION (R2291, R2700, R2804, R2809)

a. Set the POWER switch to the off position and remove Q2225 (see Fig. 9-42) from its socket. Turn the POWER switch ON.

b. Set the READOUT INTENSITY control for visible characters (all zeros).

c. Check—Crt display for two rows of zeros, 40 zeros to a row with no character overlap. The two rows of zeros are located vertically in the middle of the top and bottom divisions of the graticule (see Fig. 5-1.).

NOTE

The tolerances provided in this step are guides to correct instrument operation.

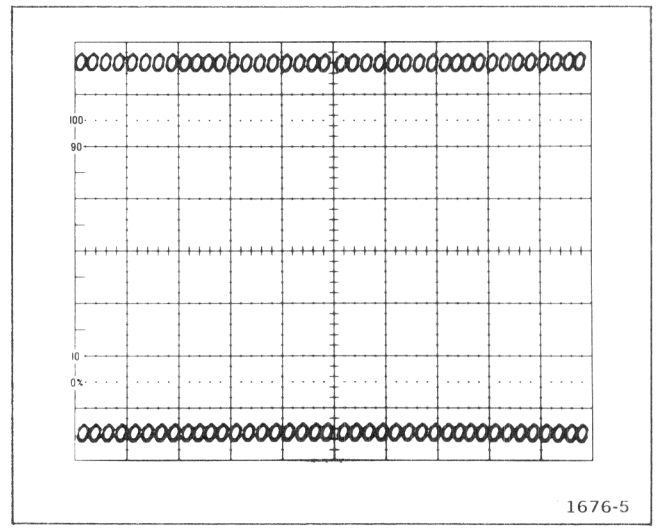


Fig. 5-1. Readout display with Q2225 removed.

d. ADJUST—Readout Vertical Separation adjustment R2291 (see Fig. 9-42) and RO Center R2700 (see Fig. 9-44) to position the two rows of readout characters to the middle of the top and bottom divisions of the graticule.

NOTE

The adjustment of Aux Y Gain (R2716; see Vertical System calibration) must be correct before adjusting R2291.

e. Check—Crt display for two rows of zeros, 40 zeros to each row with no character overlap. Total length of each row of characters is between 9.5 and 10.5 div. There is one zero or less to the right of the last graticule line, and one zero or less to the left of the first graticule line.

NOTE

The Beam 2 Horizontal Centering (R2940) and Horizontal Gain (R2816) adjustments must be correct before adjusting R2804 and R2809 (see Horizontal System calibration).

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f. ADJUST—Beam 2 Horizontal RO Ctr R2804 (Readout Center) to center the READOUT DISPLAY. Adjust RO Gain R2809 (Readout Gain) so that the length of each row of characters is between 9.5 and 10.5 div (see Fig. 9-43).

g. Turn the POWER off. Install Q2225 and turn the POWER ON.

h. Install the amplifier unit in the RIGHT VERT compartment and the time-base unit in the B HORIZ compartment.

i. CHECK—Readout display for 0.02 div or less of jitter at all sweep rates.

j. INTERACTION–Adjustment of R2764 affects readout vertical jitter. Refer to the Beam 2 Vertical High-Frequency Compensation step of the Vertical System calibration.

2. ADJUST FULL CHARACTER SCAN AND CHARACTER HEIGHT (R2128, R2273)

a. Set the amplifier unit for a deflection factor of 50 mv/div.

b. Set the time-base unit triggering for a free-running trace at 1 ms/div.

c. Check—Displayed characters for completeness without overscanning (overscanning causes a bright dot to appear where the traces overlap).

d. ADJUST—Full Character Scan adjustment R2128 for fully scanned characters without overscanning.

The m and 5 will shown the most change (see Fig. 9-42).

e. ADJUST—Character Height adjustment R2273 for readout character size as desired (see Fig. 9-42).

3. ADJUST COLUMN MATCH AND ROW MATCH (R2214, R2183)

a. Press and hold the amplifier unit trace-identify button.

b. Check—Readout display for correct indication of "IDENTIFY". If the readout display either blinks or is incorrect, adjustment is required.

c. ADJUST—Column Match adjustment R2214 and Row Match adjustment R2183 for correct readout of "IDENTIFY" (see Fig. 9-42). Set these adjustments to the center of the adjustment range that provides correct readout indication. Release the amplifier unit trace-identify button.

This completes the 7844/R7844 Adjustment procedure.

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MAINTENANCE

INTRODUCTION

This section of the manual contains information for performing preventive maintenance, corrective maintenance, or troubleshooting of the 7844/R7844.

Panel Removal

WARNING

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

This side and bottom panels provide protection to personnel from operating potentials present within the instrument. In addition, they reduce emi radiation from the instrument and emi interference from other equipment.

7844 (Bench Model). The side and bottom panels are held in place by slotted fasteners. To remove these panels, turn each fastener counterclockwise a quarter turn with a large screwdriver, coin, or similar device. Then, lift the side panel away from the instrument.

R7844 (Rackmounted Model). The top and bottom covers are held in place with ten screws on each cover. To remove the covers, remove the securing screws and lift the cover from the instrument.

A panel on the left side of the instrument, held in place with six screws, allows access to the Beam 1 Vertical amplifier board. Refer to Fig. 9-2 in the Diagrams section of this manual for location of the circuit board.

PREVENTIVE MAINTENANCE

Preventive maintenance consists of cleaning, visual inspection, lubrication, etc. Preventive maintenance performed on a regular basis may prevent instrument breakdown and will improve the reliability of this instrument. The severity of the environment to which the 7844/R7844 is subjected determines the frequency of maintenance. A convenient time to perform preventive maintenance is preceding recalibration of the instrument.

Cleaning

The 7844/R7844 should be cleaned as often as operating conditions require. Accumulation of dirt in the instrument can cause overheating and component breakdown. Dirt on components acts as an insulating blanket and prevents efficient heat dissipation. It also provides an electrical conduction path, which may result in instrument failure. The side panels reduce the amount of dust reaching the interior of the instrument. Operation without the panels in place necessitates more frequent cleaning.

CAUTION

Avoid the use of chemical cleaning agents that might damage the plastics used in this instrument. In particular, avoid chemicals that contain benzene, toluene, xylene, acetone, or similar solvents.

Air Filter (R7844 only). The air filter should be visually checked every few weeks and cleaned or replaced if dirty. More frequent inspections are required under severe operating conditions. If the filter is to be replaced, order new filters from your local Tektronix Field Office or representative; order by Tektronix Part No. 378-0810-00. The following procedure is suggested for cleaning the filter.

1. Remove the filter by pulling it out of the retaining frame on the rear panel. Be careful not to drop any of the accumulated dirt into the instrument.

2. Flush the loose dirt from the filter with a stream of hot water.

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3. Place the filter in a solution of mild detergent and hot water and let it soak for several minutes.

4. Squeeze the filter to wash out any remaining dirt.

5. Rinse the filter in clean water and let it dry.

6. Coat the dry filter with an air-filter coating (available from air conditioner suppliers or order Tektronix Part No. 006-0580-00).

7. Let the filter thoroughly dry.

8. Reinstall the filter in the retaining frame.

Exerior. Loose dust accumulated on the outside of the 7844/R7844 can be removed with a soft cloth or small brush. The brush is particularly useful for dislodging dirt on and around the front-panel controls. Dirt that remains can be removed with a soft cloth dampened in a mild detergent and water solution. Abrasive cleaners should not be used.

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

The crt mesh filter (furnished with Option 03 only) can be cleaned as follows:

1. Hold the mesh filter in a vertical position and brush lightly with a soft No. 7 water-color brush to remove light coatings of dust or lint.

2. Greasy residues or dried-on dirt can be removed with a solution of warm water and a neutral-pH liquid detergent. Use the brush to lightly scrub the filter.

3. Rinse the filter thoroughly in clean water and allow it to air dry.

4. If any lint or dirt remains, use clean low-pressure air to remove it. Do not use tweezers or other hard cleaning tools on the filter, as the special finish may be damaged.

5. When not in use, store the mesh filter in a lint-free dust-proof container, such as a plastic bag.

Interior. Dust in the interior of the instrument should be removed occasionally due to its electrical conductivity under high humidity conditions. The best way to clean the interior is to blow off the accumulated dust with dry, low-pressure air. Remove any dirt that remains with a soft brush or a cloth dampened with a mild detergent and water solution. A cotton-tipped applicator is useful for cleaning in narrow spaces.

Visual Inspection

The 7844/R7844 should be inspected occasionally for such defects as broken connections, improperly seated semiconductors, damaged or improperly installed circuit boards, and heat-damaged parts.

The corrective procedure for most visible defects is obvious; however, particular care must be taken if heat-damaged components are found. Overheating usually indicates other trouble in the instrument; therefore, it is important that the cause of overheating be corrected to prevent recurrence of the damage.

Semiconductor Checks

Periodic checks of the semiconductors in the 7844/R7844 are not recommended. The best check of semiconductor performance is actual operation in the instrument. More details on checking semiconductor operation are given under Troubleshooting.

Recalibration

To ensure accurate measurements, check the calibration of this instrument after each 1000 hours of operation or every six months if used infrequently. In addition, replacement of components may necessitate recalibration of the affected circuits. The calibration procedure can also be helpful in localizing certain troubles in the instrument. In some cases, minor troubles may be revealed or corrected by recalibration.

TROUBLESHOOTING

The following information is provided to facilitate troubleshooting of the 7844/R7844. Information contained in other sections of this manual should be used along with the following information to aid in locating the defective component. An understanding of the circuit operation is very helpful in locating troubles, particularly where integrated circuits are used.

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Troubleshooting Equipment

The following equipment is useful for troubleshooting the 7844/R7844 Oscilloscope:

Transistor Tester

Description: Dynamic-type tester.

Purpose: Test semiconductors.

Recommended type: TEKTRONIX 577/177 Curve Tracer, TEKTRONIX 576 Curve Tracer, 7CT1N Curve Tracer plug-in unit and a 7000-Series Oscilloscope system, or a 5CT1N Curve Tracer plug-in unit and a 5000-Series Oscilloscope.

Multimeter

Description: 10 MΩ input impedance and 0 to 500 volts range, ac and dc; ohmmeter, 0 to 50 MΩ, accuracy, within 0.1%. Test probes must be insulated to prevent accidental shorting.

Purpose: Check voltages and resistance.

Test Oscilloscope

Description: Frequency response dc to 100 MHz minimum; deflection factor, 5 mV to 5 V/div and 1 mA to 1 A/div. A 10 X, 10 MΩ voltage probe should be used to reduce circuit loading for voltage measurement.

Purpose: Check operating waveforms.

Recommended type: Refer to the Tektronix Products catalog for applicable oscilloscope system.

Variable Autotransformer

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

Purpose: Vary input line voltage when troubleshooting in the power supply.

Recommended type: General Radio W10MT3W Variac Autotransformer modified with three-wire power cord.

Troubleshooting Techniques

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

1. Check Control Settings

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

2. Check Associated Equipment

Before proceeding with troubleshooting of the 7844/R7844, check that the equipment used with this instrument is operating correctly. Check that the signal is properly connected and that the interconnecting cables are not defective. Also, check the power source. The associated plug-in units can be checked for proper operation by substituting other units that are known to be operating properly (preferably of the same types.) If the trouble persists after substitution, the 7844/R7844 is probably at fault.

3. Visual Check

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

4. Check Instrument Calibration

Check the calibration of this instrument, or the affected circuit if the trouble appears in one circuit. The apparent trouble may only be a result of misadjustment or may be corrected by calibration. Complete calibration instructions are given in the Calibration section.

5. Isolate Trouble to a Circuit

To isolate trouble to a particular circuit, note the trouble symptom. The symptom often identifies the circuit in which the trouble is located. For example, poor focus indicates that the crt circuit is probably at fault. When trouble symptoms appear in more than one circuit, check affected circuits by taking voltage and waveform readings. Also check for the correct output signals at the rear-panel output connectors with a test oscilloscope. If the signal is correct, the circuit is working correctly up to that point. For example, correct sawtooth output indicates that the time-base unit and sawtooth output portion of the Output Signals circuit is operating correctly. If a malfunction in the Readout System

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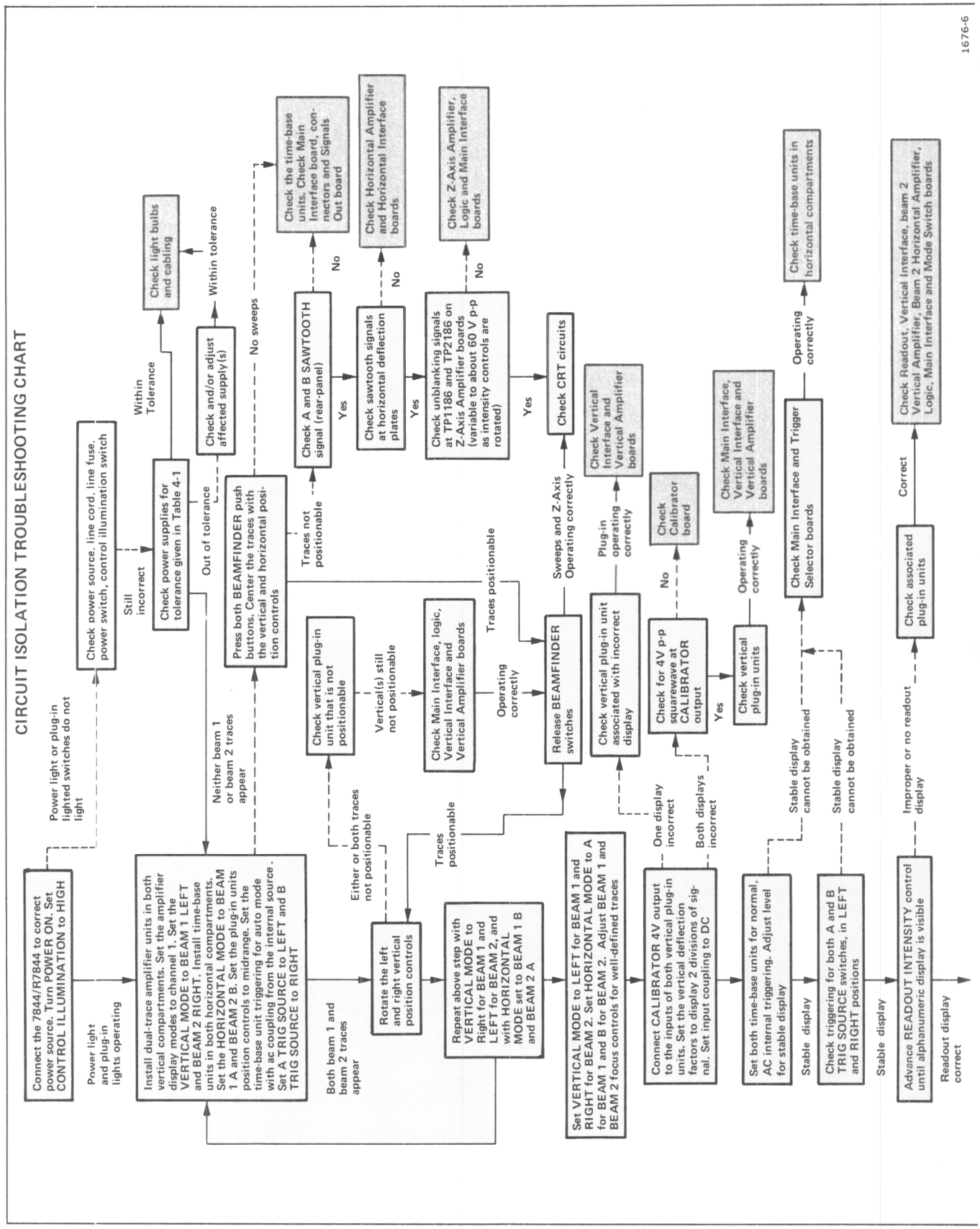


Fig. 6-1. 7844/R7844 troubleshooting chart.

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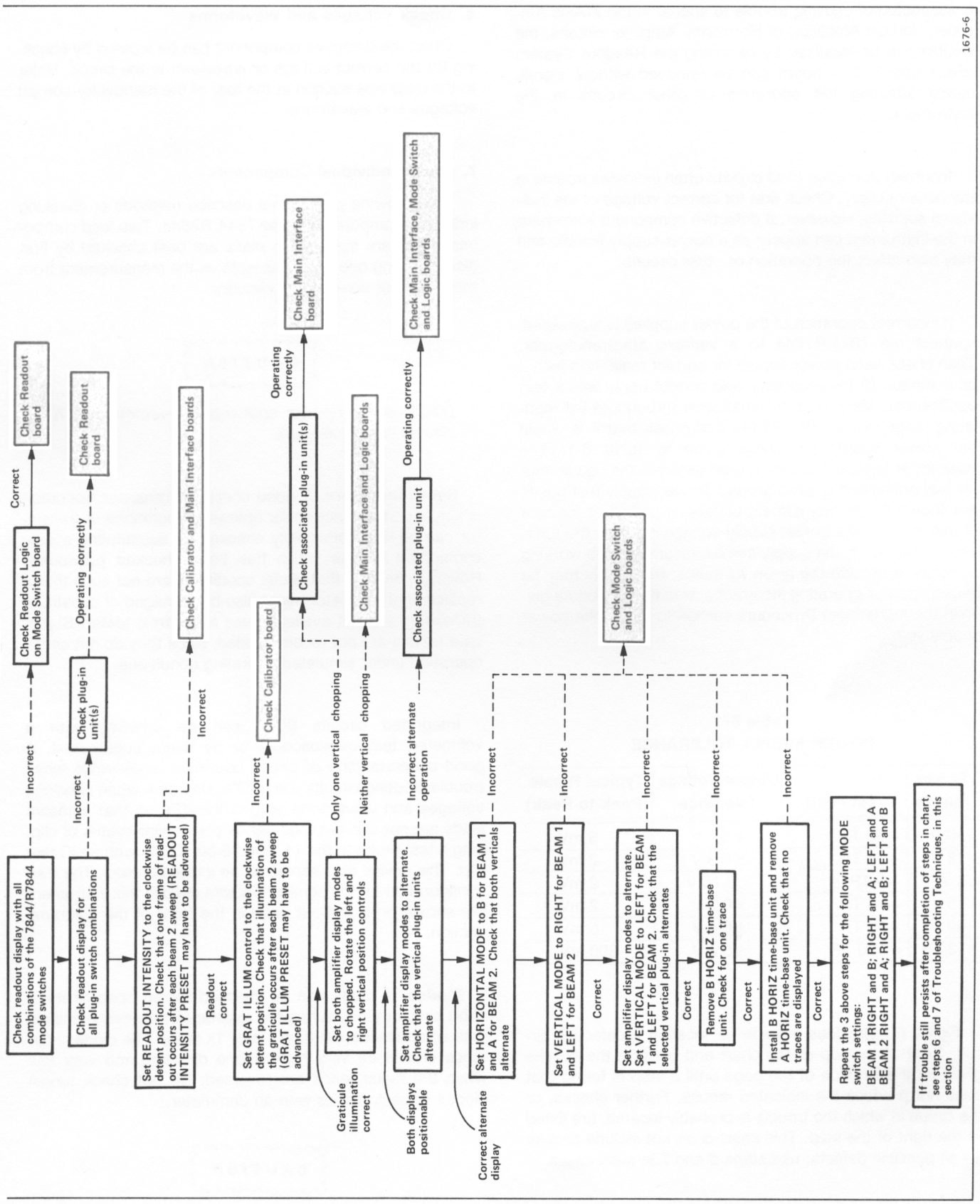


Fig. 6-1 (continued). 7844/R7844 troubleshooting chart.

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is suspected of causing trouble to appear in the Z-Axis Amplifier, Vertical Amplifier, or Horizontal Amplifier circuits, the trouble can be localized by removing the Readout System circuit board. This board can be removed without significantly affecting the operation of other circuits in the instrument.

Incorrect operation of all circuits often indicates trouble in the power supply. Check first for correct voltage of the individual supplies. However, a defective component elsewhere in the instrument can appear as a power-supply trouble and may also affect the operation of other circuits.

If incorrect operation of the power supplies is suspected, connect the 7844/R7844 to a variable autotransformer. Then check each power supply for correct regulation with a dc voltmeter (0.1% accuracy), and correct ripple with a test oscilloscope. Vary the autotransformer throughout the regulating range of the 7844/R7844 and check that it is within the power supply tolerances given in Table 6-1. The voltages in Table 6-1 are measured between the power supply test points and chassis ground. Power supply test points are shown on the Adjustment Locations pullout at the rear of this manual. If a power supply voltage is within the tolerance in Table 6-1, the supply can be assumed to be working correctly. If outside the given tolerance, the supply may be misadjusted or operating incorrectly. Use the procedure given in the Adjustment Procedure section to adjust the power supply voltage.

Table 6-1
POWER SUPPLY TOLERANCE

Power Supply	Test Point	Output Voltage Tolerance	Typical Ripple (Peak-to-Peak)
−50 V	−50 TP	±0.1 V	5 mV
−15 V	−15 TP	±0.3 V	2 mV
+5 V	+5 TP	±0.15 V	2 mV
+15 V	+15 TP	±0.3 V	2 mV
+50 V	+50 TP	±0.6 V	5 mV
+130 V	+130 TP	±5.2 V	300 mV

Figure 6-1 provides a guide for locating a defective circuit. Start at the top of the chart and perform the checks given on the left side of the page until a step is found that does not produce the indicated results. Further checks, or the circuit in which the trouble is probably located, are listed to the right of the step. This chart does not include checks for all possible defects; use steps 6 and 7 in such cases.

After the defective circuit has been located, proceed with steps 6 and 7 to locate the defective component(s).

6. Check Voltages and Waveforms

Often the defective component can be located by checking for the correct voltage or waveform in the circuit. Refer to the diagrams section at the rear of the manual for correct voltages and waveforms.

7. Check Individual Components

The following procedures describe methods of checking individual components in the 7844/R7844. Two lead components that are soldered in place are best checked by first disconnecting one end. This isolates the measurement from the effects of surrounding circuitry.

CAUTION

Disconnect the power source before removing or replacing semiconductors.

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

Integrated circuits (IC's) can be checked with a voltmeter, test oscilloscope, or by direct substitution. A good understanding of circuit operation is desirable when troubleshooting circuits using IC's. Use care when checking voltages and waveforms around the IC's so that adjacent leads are not shorted together. A convenient means of clipping a test probe to the 14- and 16-pin IC's is with an IC test clip. This device also serves as an extraction tool. The lead configuration for the semiconductors used in this instrument are shown on a pull-out page in the front of the diagrams section.

Diodes. A diode can be checked for an open or for a short circuit by measuring the resistance between terminals with an ohmmeter set to the R × 1k scale. The diode resistance should be very high in one direction and very low when the meter leads are reversed. Do not check tunnel diodes or back diodes with an ohmmeter.

CAUTION

Do not use an ohmmeter scale that has a high internal current. High currents may damage the diode.

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The cathode end of each glass-encased diode is indicated by a stripe, a series of stripes, or a dot. For most silicon or germanium diodes with a series of stripes, the color code identifies the three significant digits of the Tektronix Part Number using the resistor color-code system. The cathode and anode ends of metal-encased diodes can be identified by the diode symbol marked on the body.

Resistors. Check the resistors with an ohmmeter. See the Replaceable Electrical Parts list for the tolerance of the resistors used in this instrument. Resistors normally do not need to be replaced unless the measured value varies widely from the specified value.

Inductors. Check for open inductors by checking continuity with an ohmmeter. Shorted or partially shorted inductors can usually be found by checking the waveform response when high-frequency signals are passed through the circuit. Partial shorting often reduces high-frequency response (roll off).

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

8. Repair and Readjust the Circuit

If any defective parts are located, follow the replacement procedures given in this section. Be sure to check the performance of any circuit that has been repaired or had any electrical components replaced.

CORRECTIVE MAINTENANCE

Corrective maintenance consists of component replacement and instrument repair. Special techniques required to replace components in this instrument are given here.

Obtaining Replacement Parts

All electrical and mechanical part replacements for the 7844/R7844 can be obtained through your Tektronix Field Office or representative. However, many of the standard electronic components can be obtained locally in less time than is required to order them from Tektronix, Inc. Before purchasing or ordering replacement parts, check the parts list for value, tolerance, rating, and description.

NOTE

When selecting replacement parts, it is important to remember that the physical size and shape of a component may affect its performance in the instrument, particularly at high frequencies. All replacement parts should be direct replacements unless it is known that a different component will not adversely affect instrument performance.

Some parts are manufactured or selected by Tektronix, Inc. to satisfy particular requirements, or are manufactured for Tektronix, Inc. to our specifications. Most of the mechanical parts used in this instrument have been manufactured by Tektronix, Inc. To determine manufacturer of parts, refer to Parts List, Cross Index Mfr. Code Number to Manufacturer.

When ordering replacement parts from Tektronix, Inc., include the following information:

1. Instrument type.

2. Instrument serial number.

3. A description of the part (if electrical, include circuit number).

4. Tektronix part number

Soldering Techniques

WARNING

Disconnect the instrument from the power source before soldering.

The reliability and accuracy of this instrument can be maintained only if proper soldering techniques are used when repairing or replacing parts. General soldering techniques that apply to maintenance of any precision electronic equipment should be used when working on this instrument. Use only 60/40 rosin-core, electronic-grade solder. The choice of soldering iron is determined by the repair to be made. When soldering on circuit boards, use a 35- to 40-watt pencil-type soldering iron with a 1/8-inch wide, wedge-shaped tip. Keep the tip properly tinned for best heat transfer to the solder joint. A higher wattage soldering iron may separate the wiring from the base material. Avoid excessive heat; apply only enough heat to remove the component or to make a good solder joint. Also, apply only enough

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solder to make a firm solder joint; do not apply too much solder.

CAUTION

Several of the circuit boards in the 7844/R7844 are multi-layer type boards with a conductive path laminated between the top and bottom board layers. All soldering on these boards should be done with extreme care to prevent breaking the connections to this center conductor; only experienced maintenance personnel should attempt repair of these boards.

For metal terminals (e.g., switch terminals, potentiometers, etc.), a higher wattage-rating soldering iron may be required. Match the soldering iron to the work being done. For example, if the component is connected to the chassis or other large heat-radiating surface, it will require a 75-watt or larger soldering iron. The pencil-type soldering iron used on the circuit board can be used for soldering to switch terminals, potentiometers, or metal terminals mounted in plastic holders.

Component Removal and Replacement

WARNING

Disconnect the instrument from the power source before replacing components.

The exploded-view drawings associated with the Replaceable Mechanical Parts list (Section 10) may be helpful in the removal or disassembly of individual components or sub-assemblies. Figure 9-2 in the Diagrams section shows the location of circuit boards within the 7844/R7844.

Power Unit

The power unit can be slid out of the rear of the 7844/R7844 to gain better access to the Logic board, Beam 2 Z-Axis board (7844 only), Low-Voltage board, or for power-unit maintenance. To remove the power unit, first remove the four screws that hold the power unit to the rear frame of the instrument (see Fig. 6-2). Slide the power unit out of the rear of the instrument until it can be set down on the work surface (guide the power cables so they do not catch on other parts of the instrument). The power unit remains connected to the rest of the instrument so it can be operated in this position for troubleshooting purposes. If it is necessary to operate this instrument with the power unit removed for a period of time, it is recommended that the power unit be secured to the instrument with spacers between the rear frame and the power unit. Reverse this procedure when replacing the power unit; be careful not to pinch the power cables as the power unit is replaced. Be sure that all the securing screws are tight to hold the power unit properly in place.

WARNING

Extreme caution must be used when troubleshooting in the power supply due to the line voltage and the high voltage/high current potentials present. Refer to the discussion entitled Access to Components in Power Unit for information on how to remove the protective cover/shield from the power unit.

Access to Components in Power Unit. To reach the components located inside the power unit for maintenance or repair, use the following procedure:

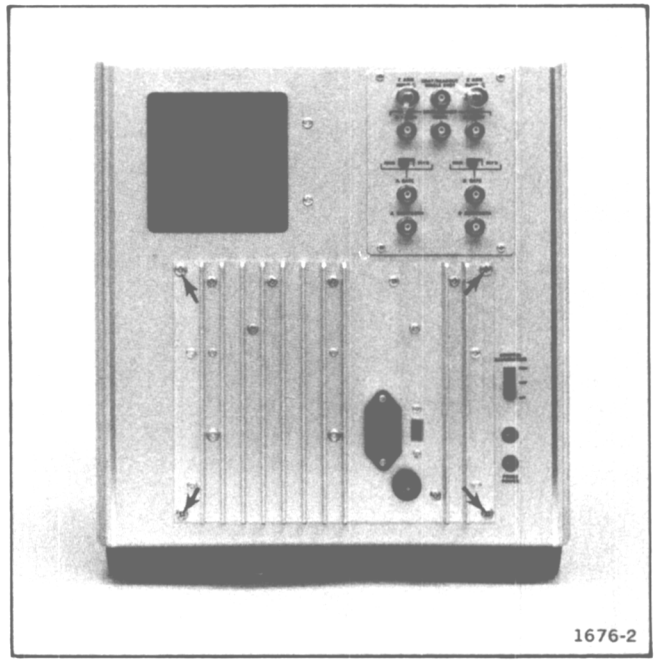


Fig. 6-2. Power unit securing screws.

WARNING

Disconnect the instrument from the power source before removing the power-unit cover. The primary storage capacitors, C1216 and C1217, remain charged with high voltage dc for several minutes after the line power is disconnected. A warning indicator (neon bulb), located on the Power Supply Inverter board, flashes when this stored voltage exceeds approximately 80 volts. Do not remove the power-unit cover while this light is flashing.

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1. Slide out the power unit as described previously.

2. Disconnect the crt anode plug from the jack located at the front of the power unit. Ground this lead to the chassis to dissipate any stored charge (do not allow the anode lead to touch components in the instrument before it is discharged).

3. Disconnect all the multi-pin connectors that connect the power unit to the rest of the instrument (remove the rear-panel Signals Out subassembly to gain access to two of the multi-pin connectors).

4. Disconnect the power-unit ground lead (green-with-yellow stripe wire terminated with spade lug) by removing the screw attaching it to the chassis.

5. Remove the screws that secure the protective cover to the front and bottom of the power unit and pull the cover off of the power unit.

6. The power unit is now open for maintenance or repair. For information on circuit board removal and replacement, see the instructions given under Circuit Board Replacement for the applicable board. To replace the transformer, see Power Transformer Replacement in this section.

7. Replace the power-unit cover in the reverse order of removal.

Circuit Boards

If a circuit board is damaged beyond repair, replace the entire board asembly. Part numbers are given in the Replaceable Electrical Parts list for completely wired boards.

The pin connectors, except for coaxial-type connectors, used for interconnection between circuit boards, are color-coded to aid in identification and circuit tracing. The color of the connector body matches the resistor color-code for the last digit of the connector circuit number; e.g., P601 is brown, P603 is orange, etc.

Most of the circuit boards in this instrument are mounted on the chassis; pin connectors are used for interconnection with other circuit boards and components mounted off the boards. Several boards plug onto the front and rear of the Main Interface board; feed-thru connectors connect the plug-on boards to the Main Interface board.

Chassis-Mounted Boards. Remove and replace chassis-mounted boards as follows.

1. Disconnect all pin connectors connected to the board, or which connect the board to other portions of the instrument.

2. Remove the securing screws.

3. Remove the board.

4. Replace chassis-mounted boards in the reverse order of removal. Match the arrows on the multi-pin connectors to the arrows on the board. Correct location of the pin connectors is shown on the circuit board illustrations in the Diagrams section.

Plug-On Boards. Remove and replace plug-on boards as follows.

1. Remove plug-in units or slide out the power unit (see Power Unit Removal) as necessary to gain access to boards mounted on the front or rear of the main Interface board.

2. Disconnect any coaxial end-lead connectors located on the front of the board, or those that pass across a portion of the board.

3. Loosen all of the securing screws on the board.

4. Pull out on the edges of the board until the board clears the feed-thru terminals. Hold the board parallel to the Main Interface board until the board is free, so as not to bend the feed-thru terminals.

5. To replace a plug-on circuit board, position it so the feed-thru pins and sockets mate properly.

6. Gently press the circuit board against the mounting surface. Be sure that all the feed-thru pins and sockets mate properly.

7. Uniformly tighten the securing screws. Recommended torque is four to six inch-pounds.

A5-Main Interface Circuit Board. Remove and replace the Main Interface circuit board as follows.

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1. Slide out the power-unit as described previously.

2. Disconnect the pin connectors from the Main Interface board. Note the order of these connectors so they can be correctly replaced.

3. Remove the screws from inside each plug-in compartment that hold the plug-in interface connectors to the chassis of this instrument. Also remove the screws that hold the ground straps to the chassis.

4. Slide the Main Interface board assembly to the rear, and remove it from the instrument.

5. Replace the Main Interface board in the reverse order of removal. Match the arrows on the pin connectors to the arrows on the board. Correct location of the pin connectors is shown in the circuit board illustration in the Diagrams section. Also see pin connector color-code under Circuit Boards in this section.

A1-Calibrator Board. Remove and replace the Calibrator circuit board as follows.

1. Remove the READOUT INTENSITY knob and securing nut.

2. Remove the GRAT ILLUM control knob and securing nut.

3. Disconnect all pin connectors from the board.

4. Remove the screws that hold the Calibrator board to the spacers.

5. Remove the Calibrator board.

6. To replace the Calibrator board, position the Calibrator board so the front-panel controls and switches align with the holes in the front panel.

7. Replace the securing screws and front-panel knobs.

8. Connect the pin connectors to the Calibrator board. Match the arrows on the connectors to the arrows on the board. Correct location of the connectors is shown in the circuit-board illustration in the Diagrams section.

A-25 Signals Out Board. The Signals Out board is part of a subassembly. Remove and replace the Signals Out board as follows.

1. Remove the screws holding the subassembly to the rear panel. Remove the subassembly.

2. Disconnect the pin connectors and coaxial cables from the board. Note the location of the cables so they can be replaced correctly.

3. To remove the board from the subassembly, use a vacuum-type desoldering tool to remove the solder attaching the board to the bnc connectors and ground lugs.

4. Replace the Signals Out board in the reverse order of removal. Match the arrows on the connectors to the arrows on the board. Correct location of the pin connectors is shown in the circuit-board illustration in the Diagrams section.

A13 and A16-Vertical Amplifier Boards. Remove and replace the Vertical Amplifier boards as follows.

1. Disconnect all pin connectors and coaxial cables from the board. Note the location of cables so they can be replaced correctly.

2. Remove the screws holding the board in place.

3. Remove the board.

4. To replace the Vertical Amplifier board, remove the vertical output IC (note orientation of tab on IC case with dot on metal plate) from the board.

5. Replace the board in the instrument, but do not tighten the screws at this time (on the R7844, the Vertical Amplifier board located on the right side of the crt has spring clips holding the bottom of the board in place).

6. Align the two holes in the Output IC socket pin pattern with the two pin sockets on the Vertical Connect board located behind the Vertical Amplifier board. (When installing the R7844 Vertical Amplifier board located to the right of the crt, use a small mirror, such as a dental mirror, to align the two holes in the Output IC socket pin pattern with the two pin sockets on the Vertical Connect board.) Then tighten the securing screws.

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7. Apply silicone grease to the base of the Output IC. Insert the IC into its socket with the pin alignment tab oriented as previously noted.

8. Reconnect multi-pin connectors. Match the arrows on the connectors to the arrows on the board. Reconnect the coaxial cables.

A29-LV Regulator Board. Remove and replace the LV Regulator circuit board as follows.

1. Slide the power unit out of the rear of the instrument as described previously.

2. Disconnect the multi-pin connectors from the board.

3. Remove the mounting hardware securing the plastic-cased power transistors to the rear heatsink. Note the orientation of the lockwashers so they can be correctly replaced.

4. Remove the screws that hold the LV Regulator board to the top chassis. Remove the board along with the plastic-cased transistors.

5. To replace the LV Regulator board, apply a thin coat of silicone grease on the back (mounting surface) of each plastic transistor case.

6. Place the LV Regulator board on the chassis. Replace the screws that hold the board to the chassis; do not yet tighten these screws.

7. Check that the plastic transistors are aligned with their mounting holes and that the insulating washers are in place between the transistor cases and the rear heatsink.

8. Secure the transistors to the heatsink with the mounting hardware. Do not over-tighten the nut. Recommended torque is 4 to 6 inch-pounds.

9. Tighten the screws holding the LV Regulator board to the chassis.

10. Connect the multi-pin connectors to the board. Match the arrows on the connectors to the arrows on the board.

11. Replace the power unit in the instrument.

A27-Power Supply Inverter Board. To remove and replace the Power Supply Inverter board, use the following procedures. An exploded-view drawing of the power unit is shown in the Replaceable Mechanical Parts list. All references to direction or location (e.g., left side) assume that the power unit is placed as shown in this drawing. Several critical parts are identified in Fig. 6-3, an exploded-view drawing of a portion of the power unit.

WARNING

The power-unit assembly has been tested at the factory to assure safe operation. Improper repair of this unit can result in hazardous voltages on the chassis of this instrument. Do not remove the plate insulator, block insulator, or transistor shield from the rear heatsink (see Fig. 6-3).

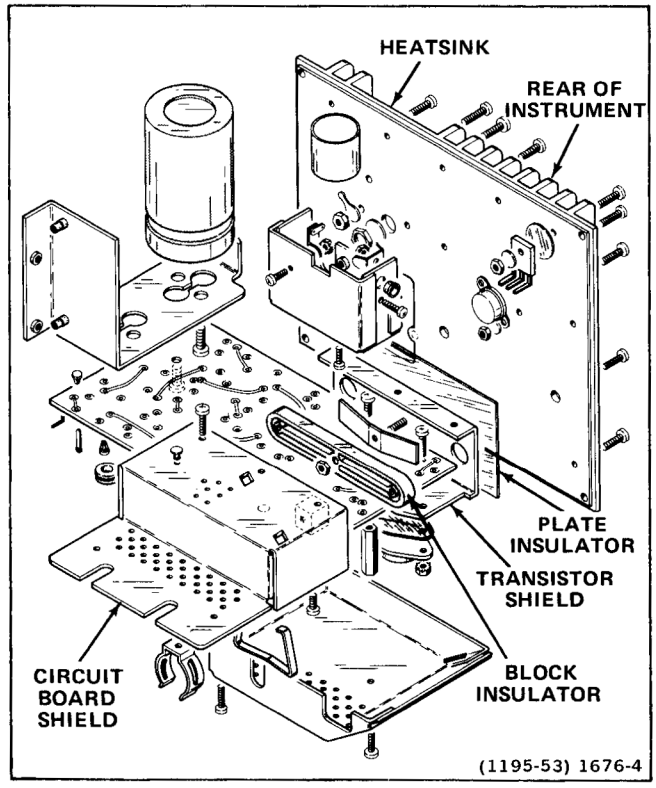


Fig. 6-3. Exploded-view drawing of a portion of the power unit identifying several critical parts.

1. Disconnect the instrument from the power source.

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2. Remove the power unit from the instrument as described under Power Unit.

3. Remove the protective cover from the power unit as described under Access to Components in Power Unit.

4. Disconnect the multi-pin connectors from A28, Cap-Rectifier board.

5. Remove the mounting hardware securing the plastic-cased power transistors to the rear heatsink. Note the orientation of the lockwashers so they can be correctly replaced.

6. Remove the Regulator chassis. This chassis is secured to the rear heatsink by two screws; access to the remaining two screws is provided by holes in A29, LV Regulator board (note length of screws so they can be correctly replaced). Remove this chassis along with the LV Regulator board and plastic-cased transistors.

7. Remove the right side cover. This cover is secured to the rear heatsink by two screws and to the side by one screw.

8. Remove the left side cover. This cover is secured to the rear heatsink by two screws and to the side by four screws.

9. Remove the transistor shield from A27, Power Supply Inverter board, by removing two plastic screws.

10. Unsolder the three power-transformer leads from A27, Power Supply Interter board. These leads pass through holes in the board.

11. The left side of A28, Cap-Rectifier board, is secured to the capacitor bracket by two screws. Remove these screws.

12. The top right corner of A28, Cap-Rectifier board, is secured to the nut block by a screw. Remove this screw.

13. The left side of A27, Power Supply Inverter board, is secured to two capacitors by four screws. Remove these screws to remove the capacitors and capacitor bracket.

14. Remove the two screws securing the high-voltage supply box to the heat sink. Move the bottom edge of A28, Cap-Rectifier board, away from A27, Power Supply Inverter board, until the interconnecting pins are cleared. Remove A28, Cap-Rectifier board, and the high-voltage supply box as a unit.

15. Unsolder the five line-input leads from A27, Power Supply Inverter board.

16. The line-filter shield is held to the rear heatsink by two screws on the power plug. Remove these screws; it is not necessary to disconnect the line-filter leads.

17. Remove the two transistors by removing the nuts and pulling the transistors from their sockets.

18. The circuit board shield is held to the transistor-shield by three screws. Remove these screws.

19. Move A27, Power Supply Inverter board, away from the transistor shield until the transistor mounting studs clear the transistor shield. Remove A27, Power Supply Inverter board, and the circuit board shield as a unit.

20. To replace the Power Supply Inverter board, set the back of the rear heatsink on the work surface and guide the transistor mounting studs through the holes in the transistor shield.

21. Secure the circuit board shield to the insulator block with three screws.

22. Apply a thin coat of silicone grease to both sides of the transistor insulating washers and place these washers over the transistor mounting studs.

23. Replace the transistors and secure with nuts.

24. Secure the line-filter power plug to the rear heat-sink with the two screws. Be sure no wires get caught between the shield and heatsink.

25. To mount A28, Cap-Rectifier board, and high-voltage supply box, guide the power-transformer leads through the appropriate holes in A27, Power Supply Inverter board. Then, align A28, Cap-Rectifier board, to properly mate the interconnecting pins and sockets.

26. Replace the screw that secures A28, Cap-Rectifier board, to the nut block. Replace the two screws to secure the high-voltage box to the heatsink.

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27. Place the power-unit ground lead and power-switch cable in the slot in the top of A28, Cap-Rectifier board.

28. Mount the capacitors with the capacitor bracket to A27, Power Supply Inverter board, with four screws.

29. Replace the two screws that secure A28 Cap-Rectifier board, to the capacitor bracket.

30. Solder the three power-transformer leads and four line-input leads to A27, Power Supply Inverter board.

31. Replace the transistor shield; secure with two plastic screws.

32. Replace the left side cover; secure with three screws.

33. Replace the right side cover; secure with six screws.

34. Before replacing the Regulator board chassis along with A29, LV Regulator board, and plastic power transistors, apply a thin coat of silicone grease to the back (mounting surface) of each transistor case. Check that the transistor insulating washers are in place on the rear heatsink. If any of these insulating washers are replaced, apply a thin coat of silicone grease to each side.

35. Place the Regulator board chassis on the power unit. Check that the plastic transistors are aligned with their mounting holes and that the insulating washers are still in place between the transistor cases and the rear heatsink.

36. Replace the screws that secure the Regulator board chassis; do not yet tighten these screws.

37. Secure the plastic transistors to the rear heatsink with the mounting hardware. Do not over-tighten these nuts. Recommended torque is 4 to 6 inch-pounds. Tighten the screws replaced in the previous step.

38. Connect the multi-pin connectors to A28, Cap-Rectifier board; match the arrows on the connectors to the arrows on the board.

39. Replace the power-unit cover and install the power unit in the mainframe.

A28-Cap-Rectifier Board. Remove and replace the Cap-Rectifier circuit board as follows.

1. Follow the first 12 steps of the removal procedure for the Power Supply Inverter board.

2. Unsolder the power-transformer leads connected to the rear side of the board. Remove the excess solder with a vacuum-type desoldering tool.

3. Remove the screws that hold the circuit board to the high-voltage supply box.

4. Replace the Cap-Rectifier board in the reverse order of removal. Place all of the power-transformer leads in the circuit board holes; then re-solder them to the board. To replace the Regulator board chassis along with the LV Regulator board and plastic power transistors, see the instructions given in the replacement procedure for the Power Supply Inverter board.

A24-High-Voltage Board. The High-Voltage circuit board is located in the high-voltage supply box and is removed as a unit. Remove and replace this board as follows.

1. Follow the first 6 steps given under Access to Components in Power Unit.

2. Disconnect the remaining multi-pin connectors from the LV Regulator board.

3. Remove the hardware that secures the plastic power transistors to the rear heatsink.

4. Remove the two screws that hold the Regulator chassis to the power unit (accessible through holes in the LV Regulator board).

5. Remove the two screws securing the lip of the Regulator chassis to the rear heatsink.

6. Remove the Regulator chassis along with the LV Regulator board and plastic transistors.

7. Remove the screw securing the High-Voltage board to the high-voltage supply box.

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8. Unsolder the five power-transformer leads connected to the High-Voltage board. Note the location of these leads so they can be correctly re-connected. Remove the excess solder from the board with a vacuum-type desoldering tool.

9. Remove the High-Voltage board from the high-voltage supply box.

10. Replace the High-Voltage board in the reverse order of removal. To replace the Regulator chassis along with the LV Regulator board and plastic transistors, see the instructions given in the replacement procedure for the Power Supply Inverter board.

A3-Crossover Mode Switch Board. Remove and replace the Crossover Mode switch board as follows.

1. Remove the VERT SEP (1) and HORIZ SEP (1) knobs.

2. Remove the five screws that hold the board to the chassis (access to the screws is through the plug-in compartments).

3. Move the board toward the rear of the instrument until it clears the chassis (front-panel push buttons remain with the board).

4. Remove the board from the instrument and disconnect the multi-pin connectors.

5. Replace the board in the reverse order of removal. Match the arrows on the multi-pin connectors to the arrows on the board. Correct location of pin connectors is shown on the circuit board illustration in the Diagrams section.

Plug-In Interface Connectors

The individual contacts of the plug-in interface connectors can be replaced. However, it is recommended that the entire Main Interface board be replaced if a large number of the contacts are damaged. An alternative solution is to refer the maintenance of the damaged Main Interface board to your local Tektronix Field Office or representative. Use the following procedure to remove and replace an individual contact of the plug-in interface connector.

NOTE

The plug-in interface contacts mounted on the Follower circuit boards cannot be replaced individually; the Follower board with contacts and interconnecting cables is replaced as a unit. See Follower Circuit Board.

1. Remove the Main Interface circuit board from the instrument as described previously.

2. Snap the connector cover (white plastic) off the side of the plug-in interface connector that needs repair.

3. Unsolder and remove the damaged contact.

4. Install the replacement contact. Carefully form it to the required shape to fit against the connector body.

5. Snap the connector cover back onto the plug-in interface connector. Check that the contact that was replaced is aligned with the other contacts.

6. Replace the Main Interface board.

Follower Circuit Board

A Follower circuit board with six interface contacts is used in each vertical (two left plug-in compartments) plug-in interface to provide optimum signal and trigger connections between the plug-in unit and the 7844/R7844. The Follower board is held in place by a follower spring so the board can move back and forth within the interface connector to compensate for length differences between plug-ins. If a contact on the Follower board is damaged, the entire board with contacts and interconnecting cables is replaced as a unit.

Remove a Follower circuit board as follows:

1. Disconnect the Follower board coaxial leads from the Vertical Interface board and Trigger Selector board.

2. Using long-nosed pliers, disengage the follower spring from the Follower board (a hole in the Main Interface board provides access to the follower spring from the rear of the board). Push the follower spring away from the Follower board toward the top of the interface connector.

3. Remove the Follower board and interconnecting cables from the rear of the interface connector through the hole in the Main Interface board.

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To replace a Follower board, a folded length of thin shim stock as wide as the Follower board is required to compress the contacts while the board is inserted into the interface connector. Proceed as follows:

1. Hold the Follower board between the ends of the shim stock with the fold directly in front of the contacts. With the shim stock held against the sides of the board, the contacts on the sides of the board should be pressed together.

2. Insert the folded end of the shim stock (with the Follower board) into the rear of the intrface connector through the hole in the Main Interface board. When the Follower board contacts are fully inserted into the connector, hold the board in place and remove the shim stock through the front of the interface connector.

3. Secure the Follower board with the follower spring.

4. Reconnect the Follower board coaxial leads to the Vertical Interface board and Trigger Selector board.

Semiconductors

Semiconductors should not be replaced unless actually defective. If removed from their sockets during routing maintenance, return them to their original sockets. Unnecessary replacement of semiconductors may affect the calibration of this instrument. When semiconductors are replaced, check the operation of the part of the instrument that may be affected.

CAUTION

The POWER switch must be turned off before removing or replacing semiconductors.

Replacement semiconductors should be of the original type or a direct replacement. Figure 9-1 shows the lead configuration of the semiconductors used in this instrument.Some plastic case transistors have lead configurations that do not agree with those shown here. If a replacement transistor is made by a different manufacturer than the original, check the manufacturer's basing diagram for correct basing. All transistor sockets in this instrument are wired for the standard basing used for metal-case transistors. Transistors with heat radiators, or that are mounted on the chassis, use silicone grease to increase heat transfer. Replace the silicone grease when replacing these transistors.

WARNING

Handle silicone grease with care. Avoid getting silicone grease in the eyes. Wash hands thoroughly after use.

An extracting tool should be used to remove the 14- and 16-pin integrated circuits to prevent damage to the pins. This tool is available from Tektronix, Inc. Order Tektronix Part No. 003-0619-00. If an extracting tool is not available when removing one of these integrated circuits, pull slowly and evenly on both ends of the device. Try to avoid having one end of the integrated circuit disengage from the socket before the other, as the pins may be damaged.

To replace one of the power transistors mounted on the heat radiator on the rear of the power unit, first remove the mounting screw. Then, unsolder and remove the defective transistor. When replacing the transistor, be sure to install the insulating washer between the transistor and the heat radiator (use silicone grease as described previously). Tighten the mounting screw just tight enough to hold the transistor in place. Then solder the replacement transistor to the Regulator board.

Interconnecting Pins

Two methods of interconnection are used in this instrument to connect the circuit boards with other boards and components. When the interconnection is made with a coaxial cable, a special end-lead connector plugs into a socket on the board. Other interconnections are made with a pin soldered into the board. Two types of mating connectors are used for these interconnecting pins. If the mating connector is mounted on a plug-on circuit board, a special socket is soldered into the board. If the mating connector is on the end of a lead, an end-lead pin connector is used which mates with the interconnecting pin. The following information provides the removal and replacement procedure for the various types of interconnecting methods.

Coaxial-Type End-Lead Connectors. Replacement of the coaxial-type end-lead connectors requires special tools and techniques; only experienced maintenance personnel should attempt to remove and replace these connectors. It is recommended that the cable or wiring harness be replaced as a unit. For cable or wiring harness part numbers, see the Replaceable Mechanical Parts list. An alternative solution is to refer the replacement of the defective connector to your local Tektronix Field Office or representative.

Circuit-Board Pins. A circuit-board pin replacement kit including necessary tools, instructions, and replacement pins is available from Tektronix, Inc. Order Tektronix Part

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No. 040-0542-01. Replacement of circuit-board pins on multi-layer boards is not recommended; refer such repairs to your local Tektronix Field Office or representative.

To replace a pin mounted on a circuit board, first disconnect any pin connectors. Then, unsolder the damaged pin and pull it out of the circuit board with a pair of pliers. Be careful not to damage the wiring on the board with too much heat. Ream out the hole in the circuit board with a 0.031-inch drill (on boards other than multi-layer). Remove the ferrule from the new interconnecting pin and press the new pin into the hole in the circuit board. Position the pin in the same manner as the old pin. Then, solder the pin on both sides of the circuit board. If the old pin was bent at an angle to mate with a connector, bend the new pin to match the associated pins.

Circuit Board Pin Sockets. The pin sockets on the circuit boards are soldered to the rear of the board. To remove and replace one of these sockets, first unsolder the pin (use a vacuum-type desoldering tool to remove excess solder). Then straighten the tabs on the socket and remove it from the hole in the board. Place the new socket in the circuit board hole and press the tabs down against the board. Solder the tabs of the socket to the circuit board; be careful not to get solder into the socket.

NOTE

The spring tension of the pin sockets ensures a good connection between the circuit board and the pin. This spring tension can be destroyed by using the pin sockets as a connecting point for spring-loaded probe tips, alligator clips, etc.

End-Lead Pin Connectors. The pin connectors used to connect the wires to the interconnecting pins are clamped to the ends of the associted leads. To remove and replace damaged end-lead pin connectors, remove the old pin connector from the end of the lead and clamp the replacement connector to the lead.

Some of the pin connectors are grouped together and mounted in a plastic holder; the overall result is that these connectors are removed and installed as a multi-pin connector. To provide correct orientation of this multipin connector when it is replaced, an arrow is stamped on the circuit board and a matching arrow is molded into the plastic housing of the multi-pin connector. Be sure these arrows are aligned as the multi-pin connector is replaced. If the individual end-lead pin connectors are removed from the plastic holder, note the color of the individual wires for replacement.

Cathode-Ray Tube. Remove and replace the cathode-ray tube as follows.

WARNING

The crt may retain a dangerous electrical charge. Before removing the crt, the anode must be fully discharged by shorting the anode lead from the crt to the chassis. Wait approximately ten minutes and again firmly short this lead to the chassis. Then remove the crt. After removal, short the anode lead to the silvered patch on the funnel poriton of the crt just prior to further handling.

Use care when handling a crt. Protective clothing and safety glasses should be worn. Avoid striking it on any object that might cause it to crack or implode. When storing a crt, place it in a protective carton or set it face down in a protected location on a smooth surface with a soft mat under the faceplace to protect it from scratches.

1. Remove the crt mask, light filter, metal light shield, and implosion shield.

2. Remove the four screws securing the crt bezel to the front panel. Disconnect the multi-pin connector from the left rear of the crt bezel.

3. Release the crt anode lead from the plastic fasteners near the top of the instrument. Disconnect the anode plug from the jack on the power unit. Ground this lead to the chassis to dissipate any stored charge.

4. Disconnect the pin connectors on the top of the crt. Be careful not to bend the pins.

5. Remove A13 and A16, Vertical Amplifier boards, as previously described.

6. Disconnect the eight vertical deflection leads from the crt (four on each side of the crt).

7. Remove the Signals Out assembly as previously described.

8. Loosen the four screws located around the crt base socket.

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9. Hold one hand on the crt faceplate and push forward on the crt base with the other. As the crt starts out of the shield, grasp it firmly. Guide the anode lead through the cutout in the crt shield as the crt is removed.

10. To replace the crt, insert it into the shield. Guide the anode lead through the hole in the crt shield. Set the crt firmly against the cushions mounted on each corner of the faceplate.

11. Clean the crt faceplate, plastic implosion shield, and the light filter with denatured alcohol.

12. Place the black crt mask over the crt faceplate.

13. Reconnect the multi-pin connector to the crt bezel (align the arrow on the connector with the arrow on the bezel). Hold the implosion shield in position and install the crt bezel. Firmly tighten the four screws.

14. Push forward on the crt base to be certain that the crt is as far forward as possible. Then tighten the screws on the crt base bracket.

15. Replace the crt base socket.

16. Replace the Signals Out subassembly as previously described.

17. Fasten the crt anode lead into the plastic fasteners. Reconnect the crt anode plug.

18. Carefully reconnect the pin connectors on top of the crt. After each connector is installed, lightly pull on its lead to be sure that it will remain in place.

19. Reconnect the eight vertical deflection leads to the crt (four on each side of the crt).

20. Replace A13 and A16, Vertical Amplifier boards, as described previously.

21. Replace the metal light shield and the tinted filter. Then snap the plastic crt mask into the crt bezel.

22. Replace the label (located on the top of the crt shield) with the label supplied with the replacement crt.

Push Button Switches

The push button switches used on the 7844/R7844 are circuit board mounted. Remove the associated circuit board and replace the switch. Use soldering techniques described previously and those techniques discussed under Circuit-Board Pins that are applicable to switch removal and replacement.

7844 Power Light

Remove and replace the 7844 power light as follows:

1. Remove the Calibrator board as previously described.

2. Remove the retaining clip on the rear of the light assembly.

3. Guide the light assembly and connecting wires out the front of the 7844 power light.

4. Unsolder the connecting wires from the light assembly, using soldering techniques described previously.

5. Solder the connecting wires to the replacement light assembly.

6. Guide the connecting wires and light assembly into the front-panel hole and hold it in place while installing the retaining clip to the rear of the light assembly.

7. Replace the Calibrator board as previously described.

R7844 Power Light

Remove and replace the R7844 power light as follows:

1. Remove the Calibrator board as previously described.

2. Unsolder the light bulb and replace it using soldering techniques described previously.

3. Replace the Calibrator board as described previously.

Graticule Bulbs

To remove and replace the graticule bulbs, first remove the plastic crt mask, light filter, and metal light shield. Pull on the white tabs to remove the graticule lamp assembly. Now, slide the lamp retaining strips to the side, off the bulb base. Pull the bulb out of the circuit board. Reverse the order of removal for replacement.

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Power Transformer

Replace the power transformer only with a direct replacement Tektronix transformer. Remove and replace the power transformer as follows:

1. Remove the Power Supply Inverter board assembly, Cap-Rectifier, and High-Voltage boards as given under Circuit Boards.

2. Remove the bracket that holds the transformer windings and core in place.

3. Replace the power transformer in the reverse order of removal.

Fuse Replacement

The fuses used in this instrument are listed in Table 6-2.

Table 6-2
FUSE INFORMATION

Circuit Number	Rating	Function	Location
F1200	4A Fast	Line Input	Rear Panel
F1700	0.25A Fast	Circuit Protection	A13–Beam 1 Vertical Amplifier Circuit Board
F2700	0.25A Fast	Circuit Protection	A16–Beam 2 Vertical Amplifier Circuit Board

Recalibration After Repair

After any electrical component has been replaced, the calibration of that particular circuit should be checked, as well as the calibration of other closely related circuits. Since the low-voltage supplies affect all circuits, calibration of the entire instrument should be checked if work has been done in the low-voltage supplies or if the power transformer has been replaced. See Section 5 for a complete calibration procedure.

Geometry Presets

The voltages for the geometry adjustments are given on the crt data label for each individual crt to facilitate recalibration after repair or replacement of the CRT board, Beam 1 and Beam 2 Horizontal boards, or the crt.

Preset the geometry adjustments to the voltages given on the crt data label (located on the top of the crt shield). Check that the serial numnber on the crt data label corresponds with the crt serial number (located near the horizontal deflection leads on the neck of the crt).

Connect a dc precision voltmeter between chassis ground and the test point associated with the adjustment to be made (see Table 6-3). For access to test points on P2493, remove the 4 screws that secure the rear-panel connector assembly to the rear panel. Without disconnecting cables, pull the assembly away from the rear panel. Replace the assembly after adjustments are made.

WARNING

Extreme caution must be used when checking geometry preset voltages due to the high voltage and high current potentials present.

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Table 6-3
CATHODE-RAY TUBE VOLTAGE PRESETS

Adjustment	Adjustment Circuit Number	Diagram Number	Test Point	Test Point Electrical Location	Test Point & Adjustment Physical Location
GEOM A (BEAM 1)	R1985 (R5985)	12	BEAM 1 GEOM A	R1983	See Fig. 9-33
GEOM A (BEAM 2)	R2985 (R4985)	13	BEAM 2 GEOM A	R2983	See Fig. 9-34
GEOM B (BEAM 1)	R1976 (R5976)	12	BEAM 1 GEOM B	R1977	See Fig. 9-33
GEOM B (BEAM 2)	R2976 (R4976)	13	BEAM 2 GEOM B	R2977	See Fig. 9-34
GEOM 1	R2560	15	GEOM 1	P2493 Pin 2	See Fig. 9-31
GEOM 2	R2564	15	GEOM 2	P2493 Pin 7	See Fig. 9-31
BOWING 1	R2568	15	BOWING 1	P2493 Pin 1	See Fig. 9-31
BOWING 2	R2572	15	BOWING 2	P2493 Pin 8	See Fig. 9-31

Note: Adjustment Circuit Numbers in parentheses are for instruments 7844 SN B110000-above; R7844 SN B100000-above.

Vertical Input Compensation Adjustments

For SN B050246-up (7844) and Sn B040139-up (R7844) only. Perform the following input compensation procedure when integrated circuits are replaced on the Crossover Vertical Interface, the Beam 1 Vertical Amplifier, or Beam 2 Vertical Amplifier boards (diagrams 7, 9, and 10, respectively).

Set the controls as follows:

POWER switch	On
B TRIG SOURCE	RIGHT
BEAM 1	
BEAMFINDER	Push button out
VERTICAL MODE	RIGHT
HORIZONTAL MODE	B
BEAM 2	
BEAMFINDER	Push button out
VERTICAL MODE	RIGHT
HORIZONTAL MODE	B

Adjust Vertical Input Compensation (R3720, C3720, R3620, R3665, C3665, R3765, and C3765)

1. Install the Calibration Fixture Signal Standardizer in the RIGHT VERT compartment and the time-base unit in the B HORIZ compartment.

2. Set the calibration fixture Test Vert or Horiz mode switch to + Step Resp and the Rep Rate switch to 1 MHz. Set the Amplitude control for a six-division display.

3. Set the time-base unit sweep rate for 5 ns/division and triggering to auto mode with ac coupling from the internal source.

4. Set the BEAM 2 INTENSITY control fully counterclockwise and the BEAM 1 INTENSITY control for a desirable display. Adjust the time-base unit triggering level for a stable display.

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5. Position the leading front corner of the displayed pulse to graticule center.

6. ADJUST—Right Beam 1 Input Comp adjustments R3720 and C3720 for minimum aberrations (disregard the first 0.1 division of the displayed pulse). Refer to Fig. 9-38 on Adjustment Locations 5 pullout page.

7. Move the Calibration Fixture Signal Standardizer to the LEFT VERT compartment.

8. Set the BEAM 1 and BEAM 2 VERTICAL MODE switches to LEFT and the B TRIG SOURCE switch to LEFT.

NOTE

It is important that the displayed pulses in parts 6 and 9 are adjusted as nearly identical as possible.

9. ADJUST—Left Beam 1 input Comp adjustments R3620 and C3620 for minimum aberrations (disregard the first 0.1 division of the displayed pulse). Refer to Fig. 9-38 on Adjustment Locations 5 pullout page.

10. Set the BEAM 1 INTENSITY control fully counterclockwise and the BEAM 2 INTENSITY control for a desirable display.

11. ADJUST—Left Beam 2 Input Comp adjustments R3665 and C3665 for minimum aberrations (disregard the first 0.1 division of the displayed pulse). Refer to Fig. 9-38 on Adjustment Locations 5 pullout page.

NOTE

It is important that the displayed pulses in parts 11 and 14 are adjusted as nearly identical as possible.

12. Move the Calibration Fixture Signal Standardizer to the RIGHT VERT compartment.

13. Set the BEAM 1 and BEAM 2 VERTICAL MODE switches to RIGHT. Set the B TRIG SOURCE switch to RIGHT.

14. ADJUST—Right Beam 2 Input Comp adjustments R3765 and C3765 for minimm aberrations (disregard the first 0.1 division of the displayed pulse). Refer to Fig. 9-38 on Adjustment Locations 5 pullout page.

15. Refer to the Peformance Check/Calibration section and complete the Vertical System procedure (section F).

Instrument Repackaging

If the Tektronix instrument is to be shipped to a Tektronix Service Center for service or repair, attach a tag showing: owner (with address) and the name of an individual at your firm that can be contacted, complete instrument serial number, and a description of the service required.

Save and re-use the package in which your instrument was shipped. If the original packaging is unfit for use or not available, repackage the instrument as follows:

1. Obtain a carton of corrugated cardboard having inside dimensions of no less than six inches more than the instrument dimensions; this will allow for cushioning. Refer to Table 6-4 for carton test strength requirements.

2. Surround the instrument with polyethylene sheeting to protect the finish of the instrument.

3. Cushion the instrument on all sides by tightly packing dunnage or urethane foam between the carton and instrument, allowing three inches on all sides.

4. Seal the carton with shipping tape or industrial stapler.

Table 6-4
SHIPPING CARTON TEST STRENGTH

Gross Weight (lb)	Carton Test Strength (lb)
0-10	200
10-30	275
30-120	375
120-140	500
140-160	600

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INSTRUMENT OPTIONS

Your instrument may be equipped with one or more instrument options. A brief description of each option is given in the following discussion. Option information is incorporated into the appropriate sections of the manual. Refer to Table 7-1 and the Table of Contents for location of option information.

Conversion kits, for most options, are available and can be installed at a later time. For further information on instrument options, see your Tektronix Catalog or contract your Tektronix Field Office.

OPTION 03

This option provides electromagnetic shielding so that the instrument will meet the emi (electromagnetic interference) parameters given in the Specification section of this manual. To meet emi specifications of instruments equipped with Option 03, all unused plug-in compartments must be covered with an emi-shielded blank plug-in panel (Tektronix Part No. 016-0155-00). One blank panel is required for each unused plug-in compartment.

OPTION 21

This option eliminates the VERTICAL MODE switch, thereby dedicating the LEFT VERT plug-in compartment to beam 1 and the RIGHT VERT plug-in compartment to beam 2. The VERT SET (1) control is also eliminated.

OPTION 22

This option provides an oscilloscope enhancer to effectively increase the writing rate for single-shot photographs. Photographic writing speed is increased by providing raster scanning of the crt at the end of beam 2 sweep. Option 22 is recommended when a camera equipped with a writing speed enhancer is not available.

OPTION 78

Option 78 allows selection of P11 cathode-ray tube phosphor. Cathode-ray tubes with P11 phosphor provide maximum photographic writing speed for the 7844/R7844.

Table 7-1
OPTION INFORMATION LOCATOR

Instrument Option	Manual Section	Location of Information
Option 03 (Provides emi shielding)	1 Specification	Environmental Table 1-5 includes electromagnetic interference characteristics.
	2 Operating Information	Installation of Plug-in units Emi information included in installation.
	7 Instrument Options	Instrument Options Introductory page includes a brief description of the emi option.
	10 Replaceable Mechanical Parts	Instrument Options (pull-out page) Provides a mechanical parts list and an exploded-view drawing unique to the emi option.

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Table 7-1 (cont)

Instrument Option	Manual Section	Location of Information
	1 Specification	Electrical Vertical specifications in Table 1-1 include characteristics unique to Option 21.
	2 Operating Information	Features Includes Option 21 features. Controls and Connectors Figure 2-1 includes controls and connectors information unique to Option 21.
	3 Theory of Operation	Dedicated Mode Switch ◇3◇ Describes operation of the Dedicated Mode Switch shown on diagram 3. Dedicated Vertical Interface ◇8◇ Describes operation of the Dedicated Vertical Interface circuits shown on diagram 8.
	4 Performance Check	Using This Procedure Includes instructions for calibrating instruments equipped with Option 21.
	5 Adjustment Procedure	F. Vertical System 1. Adjust Beam 1 Vertical Centering. Omit parts containing the notation "delete with Option 21". 2. Adjust Beam 2 Vertical Centering Omit parts containing the notation "delete with Option 21". 3. Adjust Beam 1 and Beam 2 Vertical Amplifier Gain. Step 3 applies only to instruments equipped with Option 21. 4. Adjust Beam 1 and Beam 2 Vertical Crossover Gain. Omit step 4 for instruments equipped with Option 21. 9. Check Beam 1 and Beam 2 Vertical Crossover aberrations. Omit step 9 for instruments equipped with Option 21.

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Table 7-1 (cont)

Instrument Option	Manual Section	Location of Information
Option 21 (Dedicated Vertical System)	7 Instrument Options	Instrument Options Introductory page contains a description of the Dedicated Vertical system (Option 21).
	8 Replaceable Electrical Parts	Replaceable parts unique to Option 21 contain the footnote "Option 21 only".
	9 Diagrams and Circuit Board Illustrations	Dedicated Mode Switch ◇3◇ All circuitry on diagram 3 is unique to Option 21. Dedicated Vertical Interface ◇8◇ All circuitry on diagram 8 is unique to Option 21.
	10 Replaceable Mechanical Parts	Instrument Options (pull-out page) Provides a mechanical parts list and an exploded-view drawing unique to Option 21.
Option 22 (Writing Speed Enhancer)	1 Specification	Electrical Display specifications in Table 1-1 include photographic writing speed characteristics for Option 22.
	3 Theory of Operation	Enhancer ◇20◇ Describes operation of the writing speed enhancer circuitry shown on diagram 20.
	7 Instrument Options	A description of the Writing Speed Enhancer, Operating Information, and Performance Check/Adjustment Procedure information is contained in this section.
	8 Replaceable Electrical Parts	Replaceable parts unique to Option 22 contain the footnote "Option 22 only".
	9 Diagrams and Circuit Board Illustrations	Enhancer ◇20◇ All circuitry unique to Option 22 is shown on diagram 20.
	10 Replaceable Mechanical Parts	Instrument Options (pull-out page) Provides a mechanical parts list and an exploded-view drawing unique to the writing speed enhancer.
	1 Specification	Electrical Display specifications in Table 1-1 include photographic writing speed characeristics for instruments that have cathode-ray tubes with P11 phosphor.

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Table 7-1 (cont)

Instrument Option	Manual Section	Location of Information
Option 78 (P11 cathode-ray tube phosphor)	7 Instrument Options	Instrument Options The introductory page includes a description of the cathode-ray tube phosphor option.
	8 Replaceable Electrical Parts	Provides the replacement part number for a cathode-ray tube with P11 phosphor.

OPTION 22 OPERATING INFORMATION

Introduction

This option provides an oscilloscope enhance to effectively increase the writing rate for single-shot photographs. Photographic writing speed is increased by providing raster scanning of the crt at the end of beam 2 sweep. Option 22 is recommended when a camera equipped with a writing speed enhancer is not available.

Controls and Connectors

The major controls required for the operation of the 7844/R7844 Option 22 (Writing Speed Enhancer) are located on the front panel of the instrument. However, the Readout Mode Switch is located on the Readout circuit board inside the instrument. A brief description of the controls unique to Option 22 follow.

READOUT INTENSITY/PULSED ENHANCER (PULSED Mode)

Varies the brightness of the readout display. In the counterclockwise detent (OFF), the pulsed readout and enhancer functions are inoperative. In the clockwise detent, the readout system and the enhancer system are in the PULSED mode. The READOUT PRESET, ENHANCER PRESET, EXTERNAL or BEAM 2 GATED, and MANUAL functions are actived in the PULSED mode.

READOUT INTENSITY/PULSED ENHANCER EXTERNAL or BEAM 2 GATED Switch (PULSED Mode)

In the BEAM 2 GATED mode (push button out), one raster scan display is provided for single sweep enhancement and one readout frame is displayed at the end of beam 2 sweep. When in the EXTERNAL mode (push button in), an input (ground closure) to the rear-panel GRAT/READOUT SINGLE SHOT connector provides one raster scan and one display of readout signal.

READOUT AND ENHANCER MANUAL Switch (PULSED Mode)

Displays one raster scan and one readout frame when the MANUAL push button is pressed.

READOUT PRESET Adjustment (PULSED Mode)

Controls brightness of readout portion of the crt display, when operating in the PULSED mode.

ENHANCER PRESET Adjustment (PULSED Mode)

Varies the brightness of the raster scan display for single sweep enhancement.

Readout Mode Switch (Internal)

The two-position Readout Mode switch determines whether the readout display mode is dependent on the front-panel controls (Free-Run mode) or is in the Gated mode (see Fig. 7-1). In the Free-Run mode (marked F.R. on the circuit board) the readout display is dependent on the setting of the front-panel READOUT controls. When the internal switch is set for Gated operation (not marked on the circuit board) readout is displayed at the end of beam 2 sweep, independent of front-panel READOUT control settings. The internal switch is only recommended for use with single-sweep photography when raster scanning is not desired. For further information, see the following Display Photography discussion.

DISPLAY PHOTOGRAPHY

The 7844/R7844 Option 22 increases the photographic writing speed for single-sweep photography of fast transient

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signals. To use the writing speed enhancer, set the READOUT INTENSITY/PULSED ENHANCER control to the PULSED detent. Set the ENHANCER PRESET by experimenting with the waveform photograph. When the ENHANCER PRESET level is low (counterclockwise), the photograph background will appear black and the fast-rising portions of the waveform may not develop. As the ENHANCER PRESET level is increased (in a clockwise direction), the photograph background will approach grey and the additional light supplied by raster scanning should produce a visible image on the fast-rising portions of the photograph. However, it the ENHANCER PRESET level is set too high, the background exposure approaches the trace exposure, which makes the photograph unusable.

If the photographic application does not require enhancement and pulsed readout operation is desired, the ENHANCER PRESET control can be set counterclockwise to eliminate the raster scan display. Another method to produce pulsed readout without the raster scan display, is to set the front-panel READOUT INTENSITY/PULSED ENHANCER control out of switch detent (non-pulsed operation) and set the internal Readout Mode Switch to Beam 2 Gated; however, the instrument cover must be removed to gain access to the switch. The internal Beam 2 Gated switch must be set to F.R. (Free Run) for normal operation of front-panel READOUT controls. See Fig. 7-1 for Readout Mode Switch location.

OPTION 22 PERFORMANCE CHECK/ADJUSTMENT PROCEDURE

Equipment Required

Time-base unit

Three-inch screwdriver

Control Settings

Set the 7844/R7844 front-panel controls as follows:

POWER switch	ON
READOUT INTENSITY/ PULSED ENHANCER	PULSED (fully clockwise)
EXTERNAL or BEAM 2 GATED	BEAM 2 GATED (push button OUT)
BEAM 1	
HORIZONTAL MODE	A
BEAM 2	
HORIZONTAL MODE	B
INTENSITY	Midrange
BEAMFINDER (LOCKS IN)	Push button out

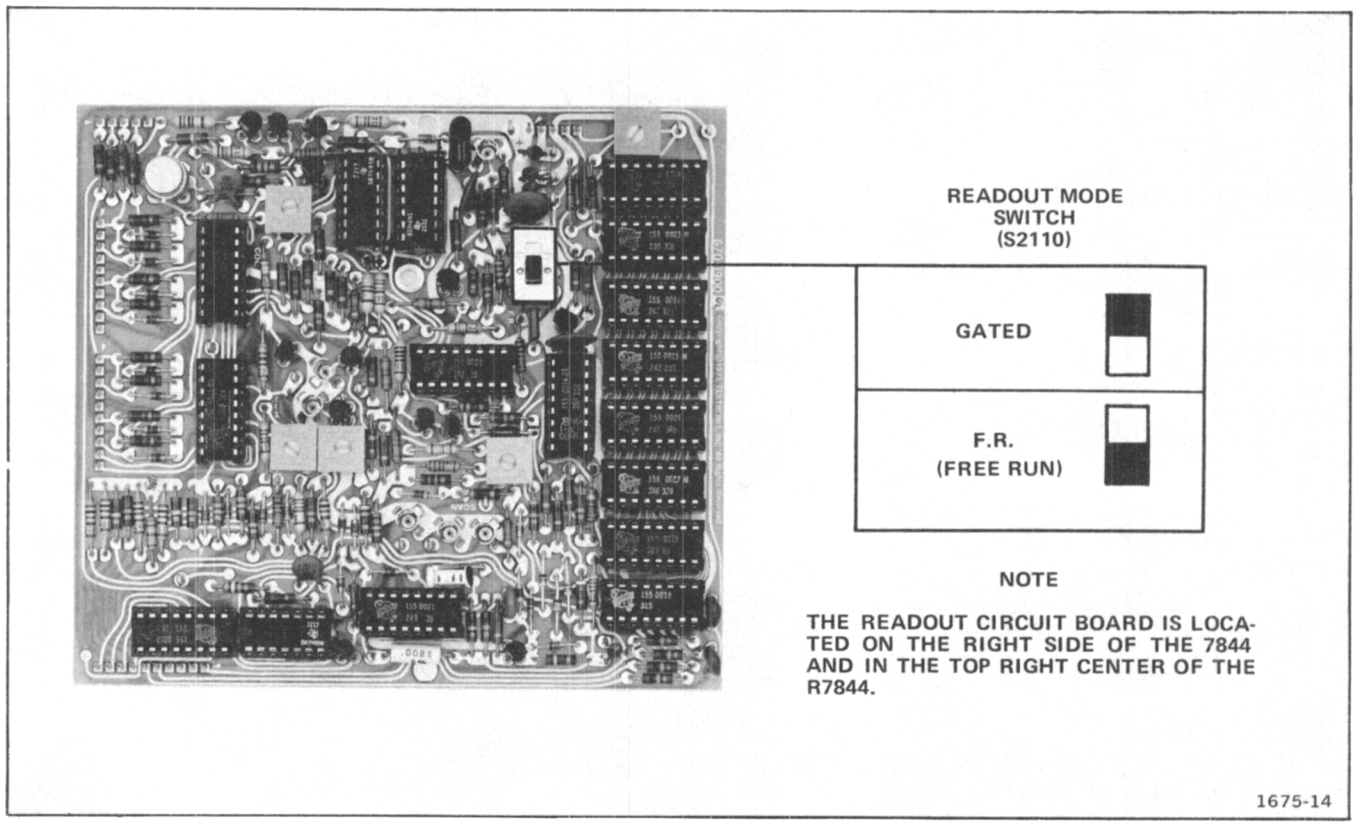


Fig. 7-1. Location of Readout Mode Switch on Readout circuit board.

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CHECK ENHANCER OPERATION

a. Install a time-base unit in the B HORIZ compartment.

b. Set the time-base unit sweep rate for 1 ms/div and triggering for auto mode with ac coupling from the internal source.

c. CHECK—Rotate the ENHANCER PRESET control throughout its range. Notice that the illumination of the crt phosphor varies and that the illumination can be extinguished.

d. Set the ENHANCER PRESET control for a visible illumination of the crt phosphor.

e. Set the time-base unit sweep rate for 0.1 s/div.

f. CHECK—The entire crt phosphor is illuminated after the sweep has ended and not illuminated during the sweep.

g. Set the READOUT INTENSITY/PULSED ENHANCER EXTERNAL or BEAM 2 GATED push button switch to EXTERNAL.

h. CHECK—Press the READOUT INTENSITY/PULSED ENHANCER MANUAL push button and notice one momentary illumination of the crt phosphor.

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REPLACEABLE ELECTRICAL PARTS

PARTS ORDERING INFORMATION

Replacement parts are available from or through your local Tektronix, Inc. Field Office 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 developed in our engineering department. It is therefore important, when ordering parts, to 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.

SPECIAL NOTES AND SYMBOLS

X000	Part first added at this serial number
00X	Part removed after this serial number

ITEM NAME

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, the U.S. Federal Cataloging Handbook H6-1 can be utilized where possible.

ABBREVIATIONS

ACTR	ACTUATOR	PLSTC	PLASTIC
ASSY	ASSEMBLY	QTZ	QUARTZ
CAP	CAPACITOR	RECP	RECEPTACLE
CER	CERAMIC	RES	RESISTOR
CKT	CIRCUIT	RF	RADIO FREQUENCY
COMP	COMPOSITION	SEL	SELECTED
CONN	CONNECTOR	SEMICOND	SEMICONDUCTOR
ELCTLT	ELECTROLYTIC	SENS	SENSITIVE
ELEC	ELECTRICAL	VAR	VARIABLE
INCAND	INCANDESCENT	WW	WIREWOUND
LED	LIGHT EMITTING DIODE	XFMR	TRANSFORMER
NONWIR	NON WIREWOUND	XTAL	CRYSTAL

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CROSS INDEX—MFR. CODE NUMBER TO MANUFACTURER

Mfr. Code	Manufacturer	Address	City, State, Zip
0000A	LEMO USA	2015 SECOND ST.	BERKELEY, CA 94710
00853	SANGAMO ELECTRIC CO., S. CAROLINA DIV.	P O BOX 128	PICKENS, SC 29671
01121	ALLEN-BRADLEY COMPANY	1201 2ND STREET SOUTH	MILWAUKEE, WI 53204
01295	TEXAS INSTRUMENTS, INC., SEMICONDUCTOR GROUP	P O BOX 5012, 13500 N CENTRAL EXPRESSWAY	DALLAS, TX 75222
02111	SPECTROL ELECTRONICS CORPORATION	17070 EAST GALE AVENUE	CITY OF INDUSTRY, CA 91745
02735	RCA CORPORATION, SOLID STATE DIVISION	ROUTE 202	SOMERVILLE, NY 08876
02777	HOPKINS ENGINEERING COMPANY	12900 FOOTHILL BLVD.	SAN FERNANDO, CA 91342
03508	GENERAL ELECTRIC COMPANY, SEMI-CONDUCTOR PRODUCTS DEPARTMENT	ELECTRONICS PARK	SYRACUSE, NY 13201
03888	KDI PYROFILM CORPORATION	60 S JEFFERSON ROAD	WHIPPANY, NJ 07981
04222	AVX CERAMICS, DIVISION OF AVX CORP.	P O BOX 867, 19TH AVE. SOUTH	MYRTLE BEACH, SC 29577
04713	MOTOROLA, INC., SEMICONDUCTOR PROD. DIV.	5005 E MCDOWELL RD,PO BOX 20923	PHOENIX, AZ 85036
05397	UNION CARBIDE CORPORATION, MATERIALS SYSTEMS DIVISION	11901 MADISON AVENUE	CLEVELAND, OH 44101
07263	FAIRCHILD SEMICONDUCTOR, A DIV. OF FAIRCHILD CAMERA AND INSTRUMENT CORP.	464 ELLIS STREET	MOUNTAIN VIEW, CA 94042
08806	GENERAL ELECTRIC CO., MINIATURE LAMP PRODUCTS DEPARTMENT	NELA PARK	CLEVELAND, OH 44112
11237	CTS KEENE, INC.	3230 RIVERSIDE AVE.	PASO ROBLES, CA 93446
12697	CLAROSTAT MFG. CO., INC.	LOWER WASHINGTON STREET	DOVER, NH 03820
12954	SIEMENS CORPORATION, COMPONENTS GROUP	8700 E THOMAS RD, P O BOX 1390	SCOTTSDALE, AZ 85252
12969	UNITRODE CORPORATION	580 PLEASANT STREET	WATERTOWN, MA 02172
13511	AMPHENOL CARDRE DIV., BUNKER RAMO CORP.		LOS GATOS, CA 95030
14298	AMERICAN COMPONENTS, INC., AN INSILCO COMPANY	8TH AVE. AT HARRY STREET	CONSHOHOCKEN, PA 19428
14433	ITT SEMICONDUCTORS	3301 ELECTRONICS WAY P O BOX 3049	WEST PALM BEACH, FL 33402
14552	MICRO SEMICONDUCTOR CORP.	2830 E FAIRVIEW ST.	SANTA ANA, CA 92704
14604	ELMWOOD SENSORS, INC.	1655 ELMWOOD AVENUE	CRANSTON, RI 02907
15238	ITT SEMICONDUCTORS, A DIVISION OF INTER NATIONAL TELEPHONE AND TELEGRAPH CORP.	P.O. BOX 168, 500 BROADWAY	LAWRENCE, MA 01841
15454	RODAN INDUSTRIES, INC.	2905 BLUE STAR ST.	ANAHEIM, CA 92806
16299	CORNING GLASS WORKS, ELECTRONIC COMPONENTS DIVISION	3900 ELECTRONICS DR.	RALEIGH, NC 27604
18324	SIGNETICS CORP.	811 E. ARQUES	SUNNYVALE, CA 94086
24546	CORNING GLASS WORKS, ELECTRONIC COMPONENTS DIVISION	550 HIGH STREET	BRADFORD, PA 16701
25088	SIEMENS CORP.	186 WOOD AVE. S	ISELIN, NJ 08830
26769	NCI INC.	5900 AUSTRALIAN AVENUE	WEST PALM BEACH, FL 33407
27014	NATIONAL SEMICONDUCTOR CORP.	2900 SEMICONDUCTOR DR.	SANTA CLARA, CA 95051
27193	CUTLER-HAMMER, INC. SPECIALTY PRODUCTS DIVISION	4201 N. 27TH ST.	MILWAUKEE, WI 53216
32997	BOURNS, INC., TRIMPOT PRODUCTS DIV.	1200 COLUMBIA AVE.	RIVERSIDE, CA 92507
50157	MIDWEST COMPONENTS INC.	P. O. BOX 787 1981 PORT CITY BLVD.	MUSKEGON, MI 49443
51642	CENTRE ENGINEERING INC.	2820 E COLLEGE AVENUE	STATE COLLEGE, PA 16801
52306	HIGH VOLTAGE DEVICES, INC.	7485 AVENUE 304	VISALIA, CA 93277
52769	SPRAGUE GOODMAN ELEC., INC.	134 FULTON AVENUE	GARDEN CITY PARK, NY 11040
53944	ELT INC., GLOW LITE DIVISION	BOX 698	PAULS VALLEY, OK 73075
55210	GETTIG ENG. AND MFG. COMPANY	PO BOX 85, OFF ROUTE 45	SPRING MILLS, PA 16875
56289	SPRAGUE ELECTRIC CO.	87 MARSHALL ST.	NORTH ADAMS, MA 01247
59660	TUSONIX INC.	2155 N FORBES BLVD	TUCSON, AZ 85705
71400	BUSSMAN MFG., DIVISION OF MCGRAW-EDISON CO.	2536 W. UNIVERSITY ST.	ST. LOUIS, MO 63107
71590	CENTRALAB ELECTRONICS, DIV. OF GLOBE-UNION, INC.	P O BOX 858	FORT DODGE, IA 50501
72982	ERIE TECHNOLOGICAL PRODUCTS, INC.	644 W. 12TH ST.	ERIE, PA 16512
73138	BECKMAN INSTRUMENTS, INC., HELIPOT DIV.	2500 HARBOR BLVD.	FULLERTON, CA 92634
73899	JFD ELECTRONICS COMPONENTS CORP.	PINETREE ROAD	OXFORD, NC 27565
74276	SIGNALITE DIV., GENERAL INSTRUMENT CORP.	1933 HECK AVE.	NEPTUNE, NJ 07753
74970	JOHNSON, E. F., CO.	299 10TH AVE. S. W.	WASECA, MN 56093
75042	TRW ELECTRONIC COMPONENTS, IRC FIXED RESISTORS, PHILADELPHIA DIVISION	401 N. BROAD ST.	PHILADELPHIA, PA 19108
76493	BELL INDUSTRIES, INC., MILLER, J. W., DIV.	19070 REYES AVE., P O BOX 5825	COMPTON, CA 90224

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Mfr. Code	Manufacturer	Address	City, State, Zip
78488	STACKPOLE CARBON CO.		ST. MARYS, PA 15857
79727	C-W INDUSTRIES	550 DAVISVILLE RD.,P O BOX 96	WARMINISTER, PA 18974
80009	TEKTRONIX, INC.	P O BOX 500	BEAVERTON, OR 97077
82389	SWITCHCRAFT, INC.	5555 N. ELSTON AVE.	CHICAGO, IL 60630
84411	TRW ELECTRONIC COMPONENTS, TRW CAPACITORS	112 W. FIRST ST.	OGALLALA, NE 69153
90201	MALLORY CAPACITOR CO., DIV. OF P. R. MALLORY AND CO., INC.	3029 E. WASHINGTON STREET P. O. BOX 372	INDIANAPOLIS, IN 46206
91418	RADIO MATERIALS COMPANY, DIV. OF P.R. MALLORY AND COMPANY, INC.	4242 W BRYN MAWR	CHICAGO, IL 60646
91637	DALE ELECTRONICS, INC.	P. O. BOX 609	COLUMBUS, NE 68601

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Ckt No.	Tektronix Part No.	Serial/Model No. Eff	Dscont	Name & Description	Mfr Code	Mfr Part Number
A1	670-2760-00			CKT BOARD ASSY:CALIBRATOR	80009	670-2760-00
A2	670-0702-03			CKT BOARD ASSY:GRATICULE LAMPS	80009	670-0702-03
A3	670-2762-00	B010100	B079999	CKT BOARD ASSY:CROSSOVER MODE SWITCH (7844 ONLY)	80009	670-2762-00
A3	670-2762-02	B080000		CKT BOARD ASSY:CROSSOVER MODE SWITCH (7844 ONLY)	80009	670-2762-02
A3	670-2762-00	B010100	B069999	CKT BOARD ASSY:CROSSOVER MODE SWITCH (R7844 ONLY)	80009	670-2762-00
A3	670-2762-02	B070000		CKT BOARD ASSY:CROSSOVER MODE SWITCH (R7844 ONLY)	80009	670-2762-02
A4	670-2761-00			CKT BOARD ASSY:DEDICATED MODE SW (OPTION 21 ONLY)	80009	670-2761-00
A5	670-2765-00	B010100	B119999	CKT BOARD ASSY:MAIN INTERFACE	80009	670-2765-00
A5	670-2765-01	B120000		CKT BOARD ASSY:MAIN INTERFACE	80009	670-2765-01
A6	670-1698-03			CKT BOARD ASSY:50 OHM FOLLOWER(LEFT VERTICAL)	80009	670-1698-03
A7	670-1698-03			CKT BOARD ASSY:50 OHM FOLLOWER(RIGHT VERTICAL)	80009	670-1698-03
A8	670-2766-00	B010100	B119999	CKT BOARD ASSY:LOGIC	80009	670-2766-00
A8	670-2766-01	B120000	B129999	CKT BOARD ASSY:LOGIC	80009	670-2766-01
A8	670-2766-02	B130000		CKT BOARD ASSY:LOGIC	80009	670-2766-02
A9	670-2706-00	B010100	B131499	CKT BOARD ASSY:TRIGGER SELECTOR (7844 ONLY)	80009	670-2706-00
A9	670-2706-02	B131500		CKT BOARD ASSY:TRIGGER SELECTOR (7844 ONLY)	80009	670-2706-02
A9	670-2706-00	B010100	B130674	CKT BOARD ASSY:TRIGGER SELECTOR (R7844 ONLY)	80009	670-2706-00
A9	670-2706-02	B130675		CKT BOARD ASSY:TRIGGER SELECTOR (R7844 ONLY)	80009	670-2706-02
A10	670-2764-00	B010100	B049999	CKT BOARD ASSY:CROSSOVER VERTICAL INTERFACE (7844 ONLY)	80009	670-2764-00
A10	670-2764-01	B050000		CKT BOARD ASSY:CROSSOVER VERTICAL INTERFACE (7844 ONLY)	80009	670-2764-01
A10	670-2764-00	B010100	B039999	CKT BOARD ASSY:CROSSOVER VERTICAL INTERFACE (R7844 ONLY)	80009	670-2764-00
A10	670-2764-01	B040000		CKT BOARD ASSY:CROSSOVER VERTICAL INTERFACE (R7844 ONLY)	80009	670-2764-01
A10	670-2764-01	XB110795		CKT BOARD ASSY:CROSSOVER VERTICAL INTERFACE (7844 OPTION 21 ONLY)	80009	670-2764-01
A10	670-2764-01	XB100400		CKT BOARD ASSY:CROSSOVER VERTICAL INTERFACE (R7844 OPTION 21 ONLY)	80009	670-2764-01
A11	670-2763-00	B010100	B110794X	CKT BOARD ASSY:DEDICATED VERT INTFC (7844 OPTION 21 ONLY)	80009	670-2763-00
A11	670-2763-00	B010100	B100399X	CKT BOARD ASSY:DEDICATED VERT INTFC (R7844 OPTION 21 ONLY)	80009	670-2763-00
A12	388-2194-00			CKT BOARD ASSY:DELAY LINE TERMINATION(BEAM 1)	80009	388-2194-00
A13	670-2768-00	B010100	B039999	CKT BOARD ASSY:VERTICAL AMPLIFIER(BEAM 1) (7844 ONLY)	80009	670-2768-00
A13	670-2768-01	B040000		CKT BOARD ASSY:VERTICAL AMPLIFIER(BEAM 1) (7844 ONLY)	80009	670-2768-01
A13	670-2768-00	B010100	B029999	CKT BOARD ASSY:VERTICAL AMPLIFIER(BEAM 1) (R7844 ONLY)	80009	670-2768-00
A13	670-2768-01	B030000		CKT BOARD ASSY:VERTICAL AMPLIFIER(BEAM 1) (R7844 ONLY)	80009	670-2768-01
A14	670-3720-00			CKT BOARD ASSY:VERTICAL CONNECT(BEAM 1)	80009	670-3720-00
A15	388-2194-00			CKT BOARD ASSY:DELAY LINE TERMINATION(BEAM 2)	80009	388-2194-00
A16	670-2768-00	B010100	B039999	CKT BOARD ASSY:VERTICAL AMPLIFIER(BEAM 2) (7844 ONLY)	80009	670-2768-00
A16	670-2768-01	B040000		CKT BOARD ASSY:VERTICAL AMPLIFIER(BEAM 2) (7844 ONLY)	80009	670-2768-01

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Ckt No.	Tektronix Part No.	Serial/Model No. Eff	Dscont	Name & Description	Mfr Code	Mfr Part Number
A16	670-2768-00	B010100	B029999	CKT BOARD ASSY:VERTICAL AMPLIFIER(BEAM 2) (R7844 ONLY)	80009	670-2768-00
A16	670-2768-01	B030000		CKT BOARD ASSY:VERTICAL AMPLIFIER(BEAM 2) (R7844 ONLY)	80009	670-2768-01
A17	670-3720-00			CKT BOARD ASSY:VERTICAL CONNECT(BEAM 2)	80009	670-3720-00
A18	670-2713-00			CKT BOARD ASSY:HORIZONTAL INTERFACE	80009	670-2713-00
A19	670-2725-00	B010100	B109999	CKT BOARD ASSY:HORIZONTAL AMPLIFIER(BEAM 1) (7844 ONLY)	80009	670-2725-00
A19	670-2725-01	B110000	B131384	CKT BOARD ASSY:HORIZONTAL AMPLIFIER(BEAM 1) (7844 ONLY)	80009	670-2725-01
A19	670-2725-02	B131385		CKT BOARD ASSY:HORIZONTAL AMPLIFIER(BEAM 1) (7844 ONLY)	80009	670-2725-02
A19	670-2725-00	B010100	B099999	CKT BOARD ASSY:HORIZONTAL AMPLIFIER(BEAM 1) (R7844 ONLY)	80009	670-2725-00
A19	670-2725-01	B100000	B130634	CKT BOARD ASSY:HORIZONTAL AMPLIFIER(BEAM 1) (R7844 ONLY)	80009	670-2725-01
A19	670-2725-02	B130635		CKT BOARD ASSY:HORIZONTAL AMPLIFIER(BEAM 1) (R7844 ONLY)	80009	670-2725-02
A20	670-2767-00	B010100	B109999	CKT BOARD ASSY:HORIZONTAL AMPLIFIER(BEAM 2) (7844 ONLY)	80009	670-2767-00
A20	670-2767-01	B110000	B131384	CKT BOARD ASSY:HORIZONTAL AMPLIFIER(BEAM 2) (7844 ONLY)	80009	670-2767-01
A20	670-2767-02	B131385		CKT BOARD ASSY:HORIZONTAL AMPLIFIER(BEAM 2) (7844 ONLY)	80009	670-2767-02
A20	670-2767-00	B010100	B099999	CKT BOARD ASSY:HORIZONTAL AMPLIFIER(BEAM 2) (R7844 ONLY)	80009	670-2767-00
A20	670-2767-01	B100000	B130634	CKT BOARD ASSY:HORIZONTAL AMPLIFIER(BEAM 2) (R7844 ONLY)	80009	670-2767-01
A20	670-2767-02	B130636		CKT BOARD ASSY:HORIZONTAL AMPLIFIER(BEAM 2) (R7844 ONLY)	80009	670-2767-02
A21	670-2748-00	B010100	B139999	CKT BOARD ASSY:Z-AXIS(BEAM 1)	80009	670-2748-00
A21	670-2748-01	B140000	B142529	CKT BOARD ASSY:Z-AXIS(BEAM 1) (7844 ONLY)	80009	670-2748-01
A21	670-2748-02	B142530		CKT BOARD ASSY:Z-AXIS(BEAM 1) (7844 ONLY)	80009	670-2748-02
A21	670-2748-01	B140000	B141209	CKT BOARD ASSY:Z-AXIS(BEAM 1) (R7844 ONLY)	80009	670-2748-01
A21	670-2748-02	B141210		CKT BOARD ASSY:Z-AXIS(BEAM 1) (R7844 ONLY)	80009	670-2748-02
A22	670-2748-00	B010100	B139999	CKT BOARD ASSY:Z-AXIS(BEAM 2)	80009	670-2748-00
A22	670-2748-01	B140000	B142529	CKT BOARD ASSY:Z-AXIS(BEAM 2) (7844 ONLY)	80009	670-2748-01
A22	670-2748-02	B142530		CKT BOARD ASSY:Z-AXIS(BEAM 2) (7844 ONLY)	80009	670-2748-02
A22	670-2748-01	B140000	B141209	CKT BOARD ASSY:Z-AXIS(BEAM 2) (R7844 ONLY)	80009	670-2748-01
A22	670-2748-02	B141210		CKT BOARD ASSY:Z-AXIS(BEAM 2) (R7844 ONLY)	80009	670-2748-02
A23	670-2746-00	B010100	B139999	CKT BOARD ASSY:CRT	80009	670-2746-00
A23	670-2746-01	B140000	B142027	CKT BOARD ASSY:CRT (7844 ONLY)	80009	670-2746-01
A23	670-2746-02	B142028		CKT BOARD ASSY:CRT (7844 ONLY)	80009	670-2746-02
A23	670-2746-01	B140000	B141003	CKT BOARD ASSY:CRT (R7844 ONLY)	80009	670-2746-01
A23	670-2746-02	B141004		CKT BOARD ASSY:CRT (R7844 ONLY)	80009	670-2746-02

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A24	670-2723-00			CKT BOARD ASSY:HIGH VOLTAGE	80009	670-2723-00
A25	670-2770-00			CKT BOARD ASSY:SIGNALS OUT	80009	670-2770-00
A26	670-1900-03	B010100	B141919	CKT BOARD ASSY:READOUT (7844 ONLY)	80009	670-1900-03
A26	670-1900-04	B141920		CKT BOARD ASSY:READOUT (7844 ONLY)	80009	670-1900-04
A26	670-1900-03	B010100	B140969	CKT BOARD ASSY:READOUT (R7844 ONLY)	80009	670-1900-03
A26	670-1900-04	B140970		CKT BOARD ASSY:READOUT (R7844 ONLY)	80009	670-1900-04
A27	670-1610-03	B010100	B100644	CKT BOARD ASSY:POWER SUPPLY INVERTER (7844 ONLY)	80009	670-1610-03
A27	670-1610-06	B100645	B141774	CKT BOARD ASSY:POWER SUPPLY INVERTER (7844 ONLY)	80009	670-1610-06
A27	670-1610-09	B141775		CKT BOARD ASSY:POWER SUPPLY INVERTER (7844 ONLY)	80009	670-1610-09
A27	670-1610-03	B010100	B090319	CKT BOARD ASSY:POWER SUPPLY INVERTER (R7844 ONLY)	80009	670-1610-03
A27	670-1610-06	B090320	B140839	CKT BOARD ASSY:POWER SUPPLY INVERTER (R7844 ONLY)	80009	670-1610-06
A27	670-1610-09	B140840		CKT BOARD ASSY:POWER SUPPLY INVERTER (R7844 ONLY)	80009	670-1610-09
A28	670-1612-02	B010100	B099999	CKT BOARD ASSY:CAP-RECTIFIER (7844 ONLY)	80009	670-1612-02
A28	670-1612-05	B100000	B100644	CKT BOARD ASSY:CAP-RECTIFIER (7844 ONLY)	80009	670-1612-05
A28	670-1612-07	B100645	B141749	CKT BOARD ASSY:CAP-RECTIFIER (7844 ONLY)	80009	670-1612-07
A28	670-1612-08	B141750	B141769	CKT BOARD ASSY:CAP-RECTIFIER (7844 ONLY)	80009	670-1612-08
A28	670-1612-10	B141770	B141854	CKT BOARD ASSY:CAP-RECTIFIER (7844 ONLY)	80009	670-1612-10
A28	670-1612-13	B141855	B142009	CKT BOARD ASSY:CAP-RECTIFIER (7844 ONLY)	80009	670-1612-13
A28	670-1612-19	B142010	B142469	CKT BOARD ASSY:CAP-RECTIFIER (7844 ONLY)	80009	670-1612-19
A28	670-1612-22	B142470		CKT BOARD ASSY:CAP-RECTIFIER (7844 ONLY)	80009	670-1612-22
A28	670-1612-02	B010100	B089999	CKT BOARD ASSY:CAP-RECTIFIER (R7844 ONLY)	80009	670-1612-02
A28	670-1612-05	B090000	B090319	CKT BOARD ASSY:CAP-RECTIFIER (R7844 ONLY)	80009	670-1612-05
A28	670-1612-07	B090320	B140819	CKT BOARD ASSY:CAP-RECTIFIER (R7844 ONLY)	80009	670-1612-07
A28	670-1612-08	B140820	B140829	CKT BOARD ASSY:CAP-RECTIFIER (R7844 ONLY)	80009	670-1612-08
A28	670-1612-10	B140830	B140874	CKT BOARD ASSY:CAP-RECTIFIER (R7844 ONLY)	80009	670-1612-10
A28	670-1612-13	B140875	B141019	CKT BOARD ASSY:CAP-RECTIFIER (R7844 ONLY)	80009	670-1612-13
A28	670-1619-19	B141020	B141189	CKT BOARD ASSY:CAP-RECTIFIER (R7844 ONLY)	80009	670-1619-19
A28	670-1612-22	B141190		CKT BOARD ASSY:CAP-RECTIFIER (R7844 ONLY)	80009	670-1612-22
A29	670-1611-01	B010100	B142099	CKT BOARD ASSY:LOW VOLTAGE REGULATOR (7844 ONLY)	80009	670-1611-01
A29	670-1611-03	B142100		CKT BOARD ASSY:LOW VOLTAGE REGULATOR **(7844 ONLY)**	80009	670-1611-03

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A29	670-1611-01	B010100	B141149	CKT BOARD ASSY:LOW VOLTAGE REGULATOR (R7844 ONLY)	80009	670-1611-01
A29	670-1611-03	B141150		CKT BOARD ASSY:LOW VOLTAGE REGULATOR (R7844 ONLY)	80009	670-1611-03
A30	670-2539-02			CKT BOARD ASSY:FAN MOTOR	80009	670-2539-02
A31	670-3872-00	B010100	B109999	CKT BOARD ASSY:ENHANCER (OPTION 22 ONLY)	80009	670-3872-00
A31	670-3872-01	B110000		CKT BOARD ASSY:ENHANCER (OPTION 22 ONLY)	80009	670-3872-01
A32	670-4346-00	XB090000		CKT BOARD ASSY:READOUT PROTECTION #1 (7844 ONLY)	80009	670-4346-00
A32	670-4346-00	XB080000		CKT BOARD ASSY:READOUT PROTECTION #1 (R7844 ONLY)	80009	670-4346-00
B2536	147-0035-00			MOTOR,DC:BRUSHLESS,10-15VDC,145MA	25088	1AD3001-0A
C2	283-0068-00			CAP.,FXD,CER DI:0.01UF,+100-0%,500V	56289	19C241
C4	283-0068-00			CAP.,FXD,CER DI:0.01UF,+100-0%,500V	56289	19C241
C12	283-0111-00			CAP.,FXD,CER DI:0.1UF,20%,50V	72982	8121-N088Z5U104M
C14	283-0111-00			CAP.,FXD,CER DI:0.1UF,20%,50V	72982	8121-N088Z5U104M
C68	283-0000-00			CAP.,FXD,CER DI:0.001UF,+100-0%,500V	59660	831-519-Z5U-102P
C69	283-0000-00			CAP.,FXD,CER DI:0.001UF,+100-0%,500V	59660	831-519-Z5U-102P
C99	283-0003-00			CAP.,FXD,CER DI:0.01UF,+80-20%,150V	91418	SP103Z151-4R9
C104	290-0308-00			CAP.,FXD,ELCTLT:1UF,20%,35V	26769	TEK1778-0308-00
C106	290-0308-00	B010100	B010140	CAP.,FXD,ELCTLT:1UF,20%,35V (7844 ONLY)	26769	TEK1778-0308-00
C106	290-0263-00	B010141		CAP.,FXD,ELCTLT:2.7UF,15V (7844 ONLY)	56289	162D275X9015CD2
C106	290-0308-00	B010100	B010112	CAP.,FXD,ELCTLT:1UF,20%,35V (R7844 ONLY)	26769	TEK1778-0308-00
C106	290-0263-00	B010113		CAP.,FXD,ELCTLT:2.7UF,15V (R7844 ONLY)	56289	162D275X9015CD2
C108	290-0535-00			CAP.,FXD,ELCTLT:33UF,20%,10V	56289	196D336X0010KA1
C145	290-0425-00			CAP.,FXD,ELCTLT:100UF,20%,20V	90201	THF107M020P1G
C146	290-0271-00			CAP.,FXD,ELCTLT:9UF,+20-15%,125V	56289	109D905C2125F2
C147	290-0271-00			CAP.,FXD,ELCTLT:9UF,+20-15%,125V	56289	109D905C2125F2
C148	290-0425-00			CAP.,FXD,ELCTLT:100UF,20%,20V	90201	THF107M020P1G
C149	290-0425-00			CAP.,FXD,ELCTLT:100UF,20%,20V	90201	THF107M020P1G
C202	283-0003-00			CAP.,FXD,CER DI:0.01UF,+80-20%,150V	91418	SP103Z151-4R9
C208	283-0003-00			CAP.,FXD,CER DI:0.01UF,+80-20%,150V	91418	SP103Z151-4R9
C210	283-0669-00			CAP.,FXD,MICA D:360PF,1%,500V	00853	D155F361F0
C211	281-0564-00			CAP.,FXD,CER DI:24PF,5%,500V	59660	301-000C0G0240J
C223	281-0547-00			CAP.,FXD,CER DI:2.7PF,10%,500V	04222	7001-1321
C224	281-0503-00			CAP.,FXD,CER DI:8PF,+/-0.5PF,500V	59660	301-000C0H0809D
C230	283-0000-00			CAP.,FXD,CER DI:0.001UF,+100-0%,500V	59660	831-519-Z5U-102P
C233	281-0523-00			CAP.,FXD,CER DI:100PF,+/-20PF,500V	72982	301-000U2M0101M
C238	281-0523-00			CAP.,FXD,CER DI:100PF,+/-20PF,500V	72982	301-000U2M0101M
C242	281-0523-00			CAP.,FXD,CER DI:100PF,+/-20PF,500V	72982	301-000U2M0101M
C246	281-0523-00			CAP.,FXD,CER DI:100PF,+/-20PF,500V	72982	301-000U2M0101M
C263	281-0547-00			CAP.,FXD,CER DI:2.7PF,10%,500V	04222	7001-1321
C264	281-0503-00			CAP.,FXD,CER DI:8PF,+/-0.5PF,500V	59660	301-000C0H0809D
C273	281-0547-00			CAP.,FXD,CER DI:2.7PF,10%,500V	04222	7001-1321
C274	281-0503-00			CAP.,FXD,CER DI:8PF,+/-0.5PF,500V	59660	301-000C0H0809D
C280	281-0575-00			CAP.,FXD,CER DI:39PF,1%,500V	59660	308-000C0G0390F

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C281	281-0575-00			CAP.,FXD,CER DI:39PF,1%,500V	59660	308-000C0G0390F
C290	281-0589-00	B010100	B030211X	CAP.,FXD,CER DI:170PF,5%,500V (7844 ONLY)	72982	301000Z5D0171J
C290	281-0589-00	B010100	B020123X	CAP.,FXD,CER DI:170PF,5%,500V (R7844 ONLY)	72982	301000Z5D0171J
C290	281-0589-00	XB120000		CAP.,FXD,CER DI:170PF,5%,500V	72982	301000Z5D0171J
C296	281-0589-00			CAP.,FXD,CER DI:170PF,5%,500V	72982	301000Z5D0171J
C334	283-0177-00			CAP.,FXD,CER DI:1UF,+80-20%,25V	56289	273C5
C336	283-0000-00			CAP.,FXD,CER DI:0.001UF,+100-0%,500V	59660	831-519-Z5U-102P
C337	283-0000-00			CAP.,FXD,CER DI:0.001UF,+100-0%,500V	59660	831-519-Z5U-102P
C374	283-0059-00			CAP.,FXD,CER DI:1UF,+80-20%,25V	72982	8131N031Z5U0105Z
C376	283-0000-00			CAP.,FXD,CER DI:0.001UF,+100-0%,500V	59660	831-519-Z5U-102P
C377	283-0000-00			CAP.,FXD,CER DI:0.001UF,+100-0%,500V	59660	831-519-Z5U-102P
C391	283-0177-00			CAP.,FXD,CER DI:1UF,+80-20%,25V	56289	273C5
C393	283-0177-00			CAP.,FXD,CER DI:1UF,+80-20%,25V	56289	273C5
C395	283-0177-00			CAP.,FXD,CER DI:1UF,+80-20%,25V	56289	273C5
C396	283-0059-00			CAP.,FXD,CER DI:1UF,+80-20%,25V	72982	8131N031Z5U0105Z
C397	283-0177-00			CAP.,FXD,CER DI:1UF,+80-20%,25V	56289	273C5
C408	283-0004-00			CAP.,FXD,CER DI:0.02UF,+80-20%,150V	91418	SP203Z151-4R9
C424	283-0004-00			CAP.,FXD,CER DI:0.02UF,+80-20%,150V	91418	SP203Z151-4R9
C454	283-0004-00			CAP.,FXD,CER DI:0.02UF,+80-20%,150V	91418	SP203Z151-4R9
C508	283-0004-00			CAP.,FXD,CER DI:0.02UF,+80-20%,150V	91418	SP203Z151-4R9
C524	283-0004-00			CAP.,FXD,CER DI:0.02UF,+80-20%,150V	91418	SP203Z151-4R9
C554	283-0004-00			CAP.,FXD,CER DI:0.02UF,+80-20%,150V	91418	SP203Z151-4R9
C591	290-0135-00	B010100	B010129	CAP.,FXD,ELCTLT:15UF,20%,20V (7844 ONLY)	56289	150D156X0020B2
C591	290-0145-00	B010130	B010135	CAP.,FXD,ELCTLT:10UF,+75-10%,50V (7844 ONLY)	56289	30D106G050CB9
C591	290-0748-00	B010136		CAP.,FXD,ELCTLT:10UF,+50-10%,20V (7844 ONLY)	56289	500D149
C591	290-0135-00	B010100	B010110	CAP.,FXD,ELCTLT:15UF,20%,20V (R7844 ONLY)	56289	150D156X0020B2
C591	290-0748-00	B010111		CAP.,FXD,ELCTLT:10UF,+50-10%,20V (R7844 ONLY)	56289	500D149
C593	290-0134-00			CAP.,FXD,ELCTLT:22UF,20%,15V	56289	150D226X0015B2
C597	290-0135-00	B010100	B010129	CAP.,FXD,ELCTLT:15UF,20%,20V (7844 ONLY)	56289	150D156X0020B2
C597	290-0145-00	B010130	B010135	CAP.,FXD,ELCTLT:10UF,+75-10%,50V (7844 ONLY)	56289	30D106G050CB9
C597	290-0748-00	B010136		CAP.,FXD,ELCTLT:10UF,+50-10%,20V (7844 ONLY)	56289	500D149
C597	290-0135-00	B010100	B010110	CAP.,FXD,ELCTLT:15UF,20%,20V (R7844 ONLY)	56289	150D156X0020B2
C597	290-0748-00	B010111		CAP.,FXD,ELCTLT:10UF,+50-10%,20V (R7844 ONLY)	56289	500D149
C602	283-0158-00	B010100	B110794X	CAP.,FXD,CER DI:1PF,10%,50V (7844 OPTION 21 ONLY)	72982	8101B057C0K0109B
C602	283-0158-00	B010100	B100399X	CAP.,FXD,CER DI:1PF,10%,50V (R7844 OPTION 21 ONLY)	72982	8101B057C0K0109B
C604	283-0158-00	B010100	B110794X	CAP.,FXD,CER DI:1PF,10%,50V (7844 OPTION 21 ONLY)	72982	8101B057C0K0109B
C604	283-0158-00	B010100	B100399X	CAP.,FXD,CER DI:1PF,10%,50V (R7844 OPTION 21 ONLY)	72982	8101B057C0K0109B
C605	283-0032-00	B010100	B110794X	CAP.,FXD,CER DI:470PF,5%,500V (7844 OPTION 21 ONLY)	72982	0831085Z5E00471J
C605	283-0032-00	B010100	B100399X	CAP.,FXD,CER DI:470PF,5%,500V (R7844 OPTION 21 ONLY)	72982	0831085Z5E00471J

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C606	283-0210-00	B010100	B110794X	CAP.,FXD,CER DI:0.0056UF,20%,50V (7844 OPTION 21 ONLY)	72982	8131N145W5R562M
C606	283-0210-00	B010100	B100399X	CAP.,FXD,CER DI:0.0056UF,20%,50V (R7844 OPTION 21 ONLY)	72982	8131N145W5R562M
C615	283-0032-00	B010100	B110794X	CAP.,FXD,CER DI:470PF,5%,500V (7844 OPTION 21 ONLY)	72982	0831085Z5E00471J
C615	283-0032-00	B010100	B100399X	CAP.,FXD,CER DI:470PF,5%,500V (R7844 OPTION 21 ONLY)	72982	0831085Z5E00471J
C616	283-0210-00	B010100	B110794X	CAP.,FXD,CER DI:0.0056UF,20%,50V (7844 OPTION 21 ONLY)	72982	8131N145W5R562M
C616	283-0210-00	B010100	B100399X	CAP.,FXD,CER DI:0.0056UF,20%,50V (R7844 OPTION 21 ONLY)	72982	8131N145W5R562M
C618	283-0260-00	B010100	B110794X	CAP.,FXD,CER DI:5.6PF,5%,200V (7844 OPTION 21 ONLY) (NOMINAL VALUE,SELECTED)	72982	8111B200C0G569C
C618	283-0260-00	B010100	B100399X	CAP.,FXD,CER DI:5.6PF,5%,200V (R7844 OPTION 21 ONLY) (NOMINAL VALUE,SELECTED)	72982	8111B200C0G569C
C620	283-0158-00	B010100	B110794X	CAP.,FXD,CER DI:1PF,10%,50V (7844 OPTION 21 ONLY)	72982	8101B057C0K0109B
C620	283-0158-00	B010100	B100399X	CAP.,FXD,CER DI:1PF,10%,50V (R7844 OPTION 21 ONLY)	72982	8101B057C0K0109B
C622	283-0158-00	B010100	B110794X	CAP.,FXD,CER DI:1PF,10%,50V (7844 OPTION 21 ONLY)	72982	8101B057C0K0109B
C622	283-0158-00	B010100	B100399X	CAP.,FXD,CER DI:1PF,10%,50V (R7844 OPTION 21 ONLY)	72982	8101B057C0K0109B
C702	283-0158-00	B010100	B110794X	CAP.,FXD,CER DI:1PF,10%,50V (7844 OPTION 21 ONLY)	72982	8101B057C0K0109B
C702	283-0158-00	B010100	B100399X	CAP.,FXD,CER DI:1PF,10%,50V (R7844 OPTION 21 ONLY)	72982	8101B057C0K0109B
C704	283-0158-00	B010100	B110794X	CAP.,FXD,CER DI:1PF,10%,50V (7844 OPTION 21 ONLY)	72982	8101B057C0K0109B
C704	283-0158-00	B010100	B100399X	CAP.,FXD,CER DI:1PF,10%,50V (R7844 OPTION 21 ONLY)	72982	8101B057C0K0109B
C705	283-0032-00	B010100	B110794X	CAP.,FXD,CER DI:470PF,5%,500V (7844 OPTION 21 ONLY)	72982	0831085Z5E00471J
C705	283-0032-00	B010100	B100399X	CAP.,FXD,CER DI:470PF,5%,500V (R7844 OPTION 21 ONLY)	72982	0831085Z5E00471J
C706	283-0210-00	B010100	B110794X	CAP.,FXD,CER DI:0.0056UF,20%,50V (7844 OPTION 21 ONLY)	72982	8131N145W5R562M
C706	283-0210-00	B010100	B100399X	CAP.,FXD,CER DI:0.0056UF,20%,50V (R7844 OPTION 21 ONLY)	72982	8131N145W5R562M
C715	283-0032-00	B010100	B110794X	CAP.,FXD,CER DI:470PF,5%,500V (7844 OPTION 21 ONLY)	72982	0831085Z5E00471J
C715	283-0032-00	B010100	B100399X	CAP.,FXD,CER DI:470PF,5%,500V (R7844 OPTION 21 ONLY)	72982	0831085Z5E00471J
C716	283-0210-00	B010100	B110794X	CAP.,FXD,CER DI:0.0056UF,20%,50V (7844 OPTION 21 ONLY)	72982	8131N145W5R562M
C716	283-0210-00	B010100	B100399X	CAP.,FXD,CER DI:0.0056UF,20%,50V (R7844 OPTION 21 ONLY)	72982	8131N145W5R562M
C718	283-0260-00	B010100	B110794X	CAP.,FXD,CER DI:5.6PF,5%,200V (7844 OPTION 21 ONLY) (NOMINAL VALUE,SELECTED)	72982	8111B200C0G569C
C718	283-0260-00	B010100	B100399X	CAP.,FXD,CER DI:5.6PF,5%,200V (R7844 OPTION 21 ONLY) (NOMINAL VALUE,SELECTED)	72982	8111B200C0G569C
C720	283-0158-00	B010100	B110794X	CAP.,FXD,CER DI:1PF,10%,50V (7844 OPTION 21 ONLY)	72982	8101B057C0K0109B

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C720	283-0158-00	B010100	B100399X	CAP.,FXD,CER DI:1PF,10%,50V (R7844 OPTION 21 ONLY)	72982	8101B057C0K0109B
C722	283-0158-00	B010100	B110794X	CAP.,FXD,CER DI:1PF,10%,50V (7844 OPTION 21 ONLY)	72982	8101B057C0K0109B
C722	283-0158-00	B010100	B100399X	CAP.,FXD,CER DI:1PF,10%,50V (R7844 OPTION 21 ONLY)	72982	8101B057C0K0109B
C791	290-0748-00	B010100	B110794X	CAP.,FXD,ELCTLT:10UF,+50-10%,20V (7844 OPTION 21 ONLY)	56289	500D149
C791	290-0748-00	B010100	B100399X	CAP.,FXD,ELCTLT:10UF,+50-10%,20V (R7844 OPTION 21 ONLY)	56289	500D149
C793	290-0134-00	B010100	B110794X	CAP.,FXD,ELCTLT:22UF,20%,15V (7844 OPTION 21 ONLY)	56289	150D226X0015B2
C793	290-0134-00	B010100	B100399X	CAP.,FXD,ELCTLT:22UF,20%,15V (R7844 OPTION 21 ONLY)	56289	150D226X0015B2
C802	281-0505-00			CAP.,FXD,CER DI:12PF,+/-1.2PF,500V	59660	301-012C0G0120K
C822	281-0505-00			CAP.,FXD,CER DI:12PF,+/-1.2PF,500V	59660	301-012C0G0120K
C842	281-0505-00			CAP.,FXD,CER DI:12PF,+/-1.2PF,500V	59660	301-012C0G0120K
C862	281-0505-00			CAP.,FXD,CER DI:12PF,+/-1.2PF,500V	59660	301-012C0G0120K
C880	290-0134-00			CAP.,FXD,ELCTLT:22UF,20%,15V	56289	150D226X0015B2
C882	290-0135-00	B010100	B010129	CAP.,FXD,ELCTLT:15UF,20%,20V (7844 ONLY)	56289	150D156X0020B2
C882	290-0145-00	B010130	B010135	CAP.,FXD,ELCTLT:10UF,+75-10%,50V (7844 ONLY)	56289	30D106G050CB9
C882	290-0748-00	B010136		CAP.,FXD,ELCTLT:10UF,+50-10%,20V (7844 ONLY)	56289	500D149
C882	290-0135-00	B010100	B010110	CAP.,FXD,ELCTLT:15UF,20%,20V (R7844 ONLY)	56289	150D156X0020B2
C882	290-0748-00	B010111		CAP.,FXD,ELCTLT:10UF,+50-10%,20V (R7844 ONLY)	56289	500D149
C902	285-1006-00			CAP.,FXD,PLSTC:0.22UF,2%,50V	80009	285-1006-00
C912	283-0115-00			CAP.,FXD,CER DI:47PF,5%,200V	59660	805-519-C0F0470J
C918	283-0115-00			CAP.,FXD,CER DI:47PF,5%,200V	59660	805-519-C0F0470J
C940	283-0003-00			CAP.,FXD,CER DI:0.01UF,+80-20%,150V	91418	SP103Z151-4R9
C942	283-0000-00			CAP.,FXD,CER DI:0.001UF,+100-0%,500V	59660	831-519-Z5U-102P
C950	283-0000-00			CAP.,FXD,CER DI:0.001UF,+100-0%,500V	59660	831-519-Z5U-102P
C954	290-0284-00			CAP.,FXD,ELCTLT:4.7UF,10%,35V	56289	150D475X9035B2
C962	283-0003-00			CAP.,FXD,CER DI:0.01UF,+80-20%,150V	91418	SP103Z151-4R9
C964	283-0003-00	B010100	B010129	CAP.,FXD,CER DI:0.01UF,+80-20%,150V (7844 ONLY)	91418	SP103Z151-4R9
C964	283-0065-00	B010130		CAP.,FXD,CER DI:0.001UF,5%,100V (7844 ONLY)	72982	805-518-Z5D0102J
C964	283-0003-00	B010100	B010112	CAP.,FXD,CER DI:0.01UF,+80-20%,150V (R7844 ONLY)	91418	SP103Z151-4R9
C964	283-0065-00	B010113		CAP.,FXD,CER DI:0.001UF,5%,100V (R7844 ONLY)	72982	805-518-Z5D0102J
C970	283-0003-00			CAP.,FXD,CER DI:0.01UF,+80-20%,150V	91418	SP103Z151-4R9
C972	283-0110-00			CAP.,FXD,CER DI:0.005UF,+80-20%,150V	56289	19C242B
C974	283-0000-00			CAP.,FXD,CER DI:0.001UF,+100-0%,500V	59660	831-519-Z5U-102P
C995	283-0081-00			CAP.,FXD,CER DI:0.1UF,+80-20%,25V	56289	36C600
C997	283-0081-00			CAP.,FXD,CER DI:0.1UF,+80-20%,25V	56289	36C600
C999	283-0081-00			CAP.,FXD,CER DI:0.1UF,+80-20%,25V	56289	36C600
C1006	283-0065-00			CAP.,FXD,CER DI:0.001UF,5%,100V	72982	805-518-Z5D0102J
C1014	281-0638-00			CAP.,FXD,CER DI:240PF,5%,500V	72982	301000Z5D241J
C1026	283-0065-00			CAP.,FXD,CER DI:0.001UF,5%,100V	72982	805-518-Z5D0102J
C1034	281-0638-00			CAP.,FXD,CER DI:240PF,5%,500V	72982	301000Z5D241J
C1052	281-0547-00			CAP.,FXD,CER DI:2.7PF,10%,500V	04222	7001-1321

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C1072	281-0547-00			CAP.,FXD,CER DI:2.7PF,10%,500V	04222	7001-1321
C1084	290-0135-00 ----- -----	B010100	B010129	CAP.,FXD,ELCTLT:15UF,20%,20V (7844 ONLY)	56289	150D156X0020B2
C1084	290-0145-00 ----- -----	B010130	B010135	CAP.,FXD,ELCTLT:10UF,+75-10%,50V (7844 ONLY)	56289	30D106G050CB9
C1084	290-0748-00 ----- -----	B010136		CAP.,FXD,ELCTLT:10UF,+50-10%,20V (7844 ONLY)	56289	500D149
C1084	290-0135-00 ----- -----	B010100	B010110	CAP.,FXD,ELCTLT:15UF,20%,20V (R7844 ONLY)	56289	150D156X0020B2
C1084	290-0748-00 ----- -----	B010111		CAP.,FXD,ELCTLT:10UF,+50-10%,20V (R7844 ONLY)	56289	500D149
C1086	290-0135-00 ----- -----	B010100	B010129	CAP.,FXD,ELCTLT:15UF,20%,20V (7844 ONLY)	56289	150D156X0020B2
C1086	290-0145-00 ----- -----	B010130	B010135	CAP.,FXD,ELCTLT:10UF,+75-10%,50V (7844 ONLY)	56289	30D106G050CB9
C1086	290-0748-00 ----- -----	B010136		CAP.,FXD,ELCTLT:10UF,+50-10%,20V (7844 ONLY)	56289	500D149
C1086	290-0135-00 ----- -----	B010100	B010110	CAP.,FXD,ELCTLT:15UF,20%,20V (R7844 ONLY)	56289	150D156X0020B2
C1086	290-0748-00 ----- -----	B010111		CAP.,FXD,ELCTLT:10UF,+50-10%,20V (R7844 ONLY)	56289	500D149
C1088	283-0111-00			CAP.,FXD,CER DI:0.1UF,20%,50V	72982	8121-N088Z5U104M
C1090	283-0000-00 ----- -----	B010100	B010112X	CAP.,FXD,CER DI:0.001UF,+100-0%,500V (7844 ONLY)	59660	831-519-Z5U-102P
C1090	283-0000-00 ----- -----	B010100	B010129X	CAP.,FXD,CER DI:0.001UF,+100-0%,500V (R7844 ONLY)	59660	831-519-Z5U-102P
C1108	283-0004-00			CAP.,FXD,CER DI:0.02UF,+80-20%,150V	91418	SP203Z151-4R9
C1118	283-0004-00			CAP.,FXD,CER DI:0.02UF,+80-20%,150V	91418	SP203Z151-4R9
C1120	281-0592-00			CAP.,FXD,CER DI:4.7PF,+/-0.5PF,500V	59660	301-023C0H0479D
C1122	283-0004-00			CAP.,FXD,CER DI:0.02UF,+80-20%,150V	91418	SP203Z151-4R9
C1124	283-0004-00			CAP.,FXD,CER DI:0.02UF,+80-20%,150V	91418	SP203Z151-4R9
C1126	283-0004-00			CAP.,FXD,CER DI:0.02UF,+80-20%,150V	91418	SP203Z151-4R9
C1128	283-0004-00			CAP.,FXD,CER DI:0.02UF,+80-20%,150V	91418	SP203Z151-4R9
C1132	283-0004-00			CAP.,FXD,CER DI:0.02UF,+80-20%,150V	91418	SP203Z151-4R9
C1140	283-0004-00			CAP.,FXD,CER DI:0.02UF,+80-20%,150V	91418	SP203Z151-4R9
C1144	283-0004-00	B010100	B139999	CAP.,FXD,CER DI:0.02UF,+80-20%,150V	91418	SP203Z151-4R9
C1144	283-0414-00	B140000		CAP.,FXD,CER DI:0.022UF,20%,500V	51642	300-500X7R223M
C1150	283-0004-00	B010100	B139999	CAP.,FXD,CER DI:0.02UF,+80-20%,150V	91418	SP203Z151-4R9
C1150	283-0414-00	B140000		CAP.,FXD,CER DI:0.022UF,20%,500V	51642	300-500X7R223M
C1162	281-0661-00			CAP.,FXD,CER DI:0.8PF,+/-0.1PF,500V	04222	7001-1268
C1164	281-0546-00			CAP.,FXD,CER DI:330PF,10%,500V	04222	7001-1380
C1168	281-0153-00			CAP.,VAR,AIR DI:1.7-10PF,250V	74970	187-0106-005
C1172	281-0168-00			CAP.,VAR,AIR DI:1.3-5.4PF,250V	74970	187-0103-035
C1186	281-0627-00			CAP.,FXD,CER DI:1PF,+/-0.25PF,500V	04222	7001-1340
C1190	283-0004-00	B010100	B139999	CAP.,FXD,CER DI:0.02UF,+80-20%,150V	91418	SP203Z151-4R9
C1190	283-0414-00	B140000		CAP.,FXD,CER DI:0.022UF,20%,500V	51642	300-500X7R223M
C1192	283-0177-00			CAP.,FXD,CER DI:1UF,+80-20%,25V	56289	273C5
C1194	283-0177-00			CAP.,FXD,CER DI:1UF,+80-20%,25V	56289	273C5
C1196	283-0177-00			CAP.,FXD,CER DI:1UF,+80-20%,25V	56289	273C5
C1198	283-0004-00			CAP.,FXD,CER DI:0.02UF,+80-20%,150V	91418	SP203Z151-4R9
C1205	283-0022-00			CAP.,FXD,CER DI:0.02UF,1400VDCAC	91418	AU203-Z142-1R0
C1206	283-0022-00			CAP.,FXD,CER DI:0.02UF,1400VDCAC	91418	AU203-Z142-1R0
C1216	290-0628-00			CAP.,FXD,ELCTLT:950UF,+50-10%,200V	56289	36D7560
C1217	290-0628-00			CAP.,FXD,ELCTLT:950UF,+50-10%,200V	56289	36D7560
C1219	283-0057-00			CAP.,FXD,CER DI:0.1UF,+80-20%,200V	56289	274C10
C1227	283-0280-00			CAP.,FXD,CER DI:2200PF,10%,2000V	56289	562CBA202EH222KA
C1228	283-0280-00			CAP.,FXD,CER DI:2200PF,10%,2000V	56289	562CBA202EH222KA

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C1229	285-0939-00			CAP.,FXD,PLSTC:3UF,5%,400V	84411	TEK111-30594
C1231	290-0395-00			CAP.,FXD,ELCTLT:4.7UF,20%,50V	56289	150D475X0050B2
C1235	283-0078-00	B010100	B141744	CAP.,FXD,CER DI:0.001UF,20%,500V (7844 ONLY)	56289	20C114A8
C1235	283-0060-00	B141745		CAP.,FXD,CER DI:100PF,5%,200V (7844 ONLY)	72982	855-535U2J101J
C1235	283-0078-00	B010100	B140834	CAP.,FXD,CER DI:0.001UF,20%,500V (R7844 ONLY)	56289	20C114A8
C1235	283-0060-00	B140835		CAP.,FXD,CER DI:100PF,5%,200V (R7844 ONLY)	72982	855-535U2J101J
C1236	283-0280-00			CAP.,FXD,CER DI:2200PF,10%,2000V	56289	562CBA202EH222KA
C1237	285-0938-00			CAP.,FXD,PLSTC:0.03UF,5%,600V	56289	AF8B1G303J004
C1238	283-0279-00			CAP.,FXD,CER DI:0.001UF,20%,3000V	56289	55C153
C1239	290-0395-00			CAP.,FXD,ELCTLT:4.7UF,20%,50V	56289	150D475X0050B2
C1242	283-0001-00			CAP.,FXD,CER DI:0.005UF,+100-0%,500V	72982	831-559E502P
C1243	290-0159-00			CAP.,FXD,ELCTLT:2UF,+50-10%,150V	56289	30D205F150BB9
C1245	283-0003-00			CAP.,FXD,CER DI:0.01UF,+80-20%,150V	91418	SP103Z151-4R9
C1249	290-0164-00			CAP.,FXD,ELCTLT:1UF,+50-10%,150V	56289	500D105F150BA7
C1253	283-0003-00			CAP.,FXD,CER DI:0.01UF,+80-20%,150V	91418	SP103Z151-4R9
C1254	283-0003-00			CAP.,FXD,CER DI:0.01UF,+80-20%,150V	91418	SP103Z151-4R9
C1256	283-0003-00			CAP.,FXD,CER DI:0.01UF,+80-20%,150V	91418	SP103Z151-4R9
C1259	290-0523-00			CAP.,FXD,ELCTLT:2.2UF,20%,20V	56289	196D225X0020HA1
C1264	290-0573-00			CAP.,FXD,ELCTLT:2.7UF,20%,50V	56289	196D275X0050JA1
C1267	290-0523-00			CAP.,FXD,ELCTLT:2.2UF,20%,20V	56289	196D225X0020HA1
C1275	283-0060-00	B010100	B141809	CAP.,FXD,CER DI:100PF,5%,200V (7844 ONLY)	72982	855-535U2J101J
C1275	283-0076-00	B141810	B141854	CAP.,FXD,CER DI:27PF,10%,500V (7844 ONLY)	56289	40C287A2
C1275	283-0060-00	B141855		CAP.,FXD,CER DI:100PF,5%,200V (7844 ONLY)	72982	855-535U2J101J
C1275	283-0060-00	B010100	B140853	CAP.,FXD,CER DI:100PF,5%,200V (R7844 ONLY)	72982	855-535U2J101J
C1275	283-0076-00	B140854	B140874	CAP.,FXD,CER DI:27PF,10%,500V (R7844 ONLY)	56289	40C287A2
C1275	283-0060-00	B140875		CAP.,FXD,CER DI:100PF,5%,200V (R7844 ONLY)	72982	855-535U2J101J
C1276	283-0060-00	B010100	B141809	CAP.,FXD,CER DI:100PF,5%,200V (7844 ONLY)	72982	855-535U2J101J
C1276	283-0076-00	B141810	B141854	CAP.,FXD,CER DI:27PF,10%,500V (7844 ONLY)	56289	40C287A2
C1276	283-0060-00	B141855		CAP.,FXD,CER DI:100PF,5%,200V (7844 ONLY)	72982	855-535U2J101J
C1276	283-0060-00	B010100	B140853	CAP.,FXD,CER DI:100PF,5%,200V (R7844 ONLY)	72982	855-535U2J101J
C1276	283-0076-00	B140854	B140874	CAP.,FXD,CER DI:27PF,10%,500V (R7844 ONLY)	56289	40C287A2
C1276	283-0060-00	B140875		CAP.,FXD,CER DI:100PF,5%,200V (R7844 ONLY)	72982	855-535U2J101J
C1277	290-0572-00	B010100	B141749	CAP.,FXD,ELCTLT:0.1UF,20%,50V (7844 ONLY)	56289	196D104X0050HA1
C1277	290-0523-00	B141750	B142009	CAP.,FXD,ELCTLT:2.2UF,20%,20V (7844 ONLY)	56289	196D225X0020HA1
C1277	290-0522-00	B142010		CAP.,FXD,ELCTLT:1UF,20%,50V (7844 ONLY)	56289	196D105X0050HA1
C1277	290-0572-00	B010100	B140819	CAP.,FXD,ELCTLT:0.1UF,20%,50V (R7844 ONLY)	56289	196D104X0050HA1
C1277	290-0523-00	B140820	B141019	CAP.,FXD,ELCTLT:2.2UF,20%,20V (R7844 ONLY)	56289	196D225X0020HA1

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C1277	290-0522-00	B141020		CAP.,FXD,ELCTLT:1UF,20%,50V (R7844 ONLY)	56289	196D105X0050HA1
C1278	290-0572-00	B010100	B141749	CAP.,FXD,ELCTLT:0.1UF,20%,50V (7844 ONLY)	56289	196D104X0050HA1
C1278	290-0523-00	B141750	B142009	CAP.,FXD,ELCTLT:2.2UF,20%,20V (7844 ONLY)	56289	196D225X0020HA1
C1278	290-0522-00	B142010		CAP.,FXD,ELCTLT:1UF,20%,50V (7844 ONLY)	56289	196D105X0050HA1
C1278	290-0572-00	B010100	B140819	CAP.,FXD,ELCTLT:0.1UF,20%,50V (R7844 ONLY)	56289	196D104X0050HA1
C1278	290-0523-00	B140820	B141019	CAP.,FXD,ELCTLT:2.2UF,20%,20V (R7844 ONLY)	56289	196D225X0020HA1
C1278	290-0522-00	B141020		CAP.,FXD,ELCTLT:1UF,20%,50V (R7844 ONLY)	56289	196D105X0050HA1
C1285	283-0092-00			CAP.,FXD,CER DI:0.03UF,+80-20%,200V	72982	845-534E303Z
C1298	283-0023-00			CAP.,FXD,CER DI:0.1UF,+80-20%,12V	91418	MX0104Z1205R5
C1300	283-0078-00			CAP.,FXD,CER DI:0.001UF,20%,500V	56289	20C114A8
C1301	283-0078-00			CAP.,FXD,CER DI:0.001UF,20%,500V	56289	20C114A8
C1302	283-0003-00			CAP.,FXD,CER DI:0.01UF,+80-20%,150V	91418	SP103Z151-4R9
C1313	290-0425-00			CAP.,FXD,ELCTLT:100UF,20%,20V	90201	THF107M020P1G
C1314	290-0529-00			CAP.,FXD,ELCTLT:47UF,20%,20V	05397	T368C476M020AZ
C1316	290-0425-00			CAP.,FXD,ELCTLT:100UF,20%,20V	90201	THF107M020P1G
C1317	290-0519-00			CAP.,FXD,ELCTLT:100UF,20%,20V	90201	TDC107M020WLD
C1318	290-0519-00			CAP.,FXD,ELCTLT:100UF,20%,20V	90201	TDC107M020WLD
C1326	283-0211-00	B010100	B142009	CAP.,FXD,CER DI:0.1UF,10%,200V (7844 ONLY)	72982	8141N210X7R0104K
C1326	283-0208-00	B142010		CAP.,FXD,CER DI:0.22UF,10%,200V (7844 ONLY)	72982	8151N230 C 224K
C1326	283-0211-00	B010100	B141019	CAP.,FXD,CER DI:0.1UF,10%,200V (R7844 ONLY)	72982	8141N210X7R0104K
C1326	283-0208-00	B141020		CAP.,FXD,CER DI:0.22UF,10%,200V (R7844 ONLY)	72982	8151N230 C 224K
C1328	290-0582-00			CAP.,FXD,ELCTLT:5UF,+75-10%,150V	90201	TT5RON150C0P3P
C1330	290-0582-00			CAP.,FXD,ELCTLT:5UF,+75-10%,150V	90201	TT5RON150C0P3P
C1331	283-0057-00			CAP.,FXD,CER DI:0.1UF,+80-20%,200V	56289	274C10
C1350	290-0425-00			CAP.,FXD,ELCTLT:100UF,20%,20V	90201	THF107M020P1G
C1351	290-0425-00			CAP.,FXD,ELCTLT:100UF,20%,20V	90201	THF107M020P1G
C1353	290-0529-00			CAP.,FXD,ELCTLT:47UF,20%,20V	05397	T368C476M020AZ
C1354	290-0529-00			CAP.,FXD,ELCTLT:47UF,20%,20V	05397	T368C476M020AZ
C1358	290-0194-00			CAP.,FXD,ELCTLT:10UF,+50-10%,100V	56289	30D106F100DC2
C1360	290-0270-00	B010100	B010129	CAP.,FXD,ELCTLT:8.2UF,20%,60V	56289	150D825X0060R2
C1360	290-0716-00	B010130		CAP.,FXD,ELCTLT:8.2UF,20%,75V	05397	T11C825M075AS
C1362	290-0194-00			CAP.,FXD,ELCTLT:10UF,+50-10%,100V	56289	30D106F100DC2
C1364	290-0270-00	B010100	B010129	CAP.,FXD,ELCTLT:8.2UF,20%,60V	56289	150D825X0060R2
C1364	290-0716-00	B010130		CAP.,FXD,ELCTLT:8.2UF,20%,75V	05397	T11C825M075AS
C1371	290-0572-00	B010100	B100644	CAP.,FXD,ELCTLT:0.1UF,20%,50V (7844 ONLY)	56289	196D104X0050HA1
C1371	290-0580-00	B100645		CAP.,FXD,ELCTLT:0.27UF,20%,50V (7844 ONLY)	56289	196D274X0050HA1
C1371	290-0572-00	B010100	B090319	CAP.,FXD,ELCTLT:0.1UF,20%,50V (R7844 ONLY)	56289	196D104X0050HA1
C1371	290-0580-00	B090320		CAP.,FXD,ELCTLT:0.27UF,20%,50V (R7844 ONLY)	56289	196D274X0050HA1
C1392	283-0057-00			CAP.,FXD,CER DI:0.1UF,+80-20%,200V	56289	274C10
C1395	283-0003-00			CAP.,FXD,CER DI:0.01UF,+80-20%,150V	91418	SP103Z151-4R9
C1397	283-0003-00			CAP.,FXD,CER DI:0.01UF,+80-20%,150V	91418	SP103Z151-4R9

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C1413	283-0078-00			CAP.,FXD,CER DI:0.001UF,20%,500V	56289	20C114A8
C1416	283-0084-00			CAP.,FXD,CER DI:270PF,5%,1000V	72982	838-533B271J
C1436	283-0078-00			CAP.,FXD,CER DI:0.001UF,20%,500V	56289	20C114A8
C1441	283-0078-00			CAP.,FXD,CER DI:0.001UF,20%,500V	56289	20C114A8
C1451	283-0078-00			CAP.,FXD,CER DI:0.001UF,20%,500V	56289	20C114A8
C1463	283-0078-00			CAP.,FXD,CER DI:0.001UF,20%,500V	56289	20C114A8
C1481	283-0078-00			CAP.,FXD,CER DI:0.001UF,20%,500V	56289	20C114A8
C1495	283-0078-00			CAP.,FXD,CER DI:0.001UF,20%,500V	56289	20C114A8
C1506	283-0068-00			CAP.,FXD,CER DI:0.01UF,+100-0%,500V	56289	19C241
C1511	290-0572-00			CAP.,FXD,ELCTLT:0.1UF,20%,50V	56289	196D104X0050HA1
C1518	283-0078-00			CAP.,FXD,CER DI:0.001UF,20%,500V	56289	20C114A8
C1524	283-0068-00	XB142100		CAP.,FXD,CER DI:0.01UF,+100-0%,500V	56289	19C241
	----- -----			(7844 ONLY)		
C1524	283-0068-00	XB141150		CAP.,FXD,CER DI:0.01UF,+100-0%,500V	56289	19C241
	----- -----			(R7844 ONLY)		
C1533	283-0078-00			CAP.,FXD,CER DI:0.001UF,20%,500V	56289	20C114A8
C1571	283-0128-00			CAP.,FXD,CER DI:100PF,5%,500V	72982	871-536T2H101J
C1629	283-0000-00			CAP.,FXD,CER DI:0.001UF,+100-0%,500V	59660	831-519-Z5U-102P
C1634	283-0003-00	B010100	B010135	CAP.,FXD,CER DI:0.01UF,+80-20%,150V	91418	SP103Z151-4R9
	----- -----			(7844 ONLY)		
C1634	283-0002-00	B010136		CAP.,FXD,CER DI:0.01UF,+80-20%,500V	91418	811-546E103Z
	----- -----			(7844 ONLY)		
C1634	283-0003-00	B010100	B010109	CAP.,FXD,CER DI:0.01UF,+80-20%,150V	91418	SP103Z151-4R9
	----- -----			(R7844 ONLY)		
C1634	283-0002-00	B010110		CAP.,FXD,CER DI:0.01UF,+80-20%,500V	91418	811-546E103Z
	----- -----			(R7844 ONLY)		
C1635	283-0003-00			CAP.,FXD,CER DI:0.01UF,+80-20%,150V	91418	SP103Z151-4R9
C1637	283-0000-00			CAP.,FXD,CER DI:0.001UF,+100-0%,500V	59660	831-519-Z5U-102P
C1657	283-0185-00			CAP.,FXD,CER DI:2.5PF,5%,50V	72982	8101B057C0K0295B
C1658	281-0151-00			CAP.,VAR,CER DI:1-3PF,100V	72982	518-600A1-3
C1659	283-0185-00			CAP.,FXD,CER DI:2.5PF,5%,50V	72982	8101B057C0K0295B
C1662	281-0603-00			CAP.,FXD,CER DI:39PF,5%,500V	59660	308-000C0G0390J
C1663	281-0603-00			CAP.,FXD,CER DI:39PF,5%,500V	59660	308-000C0G0390J
C1670	281-0543-00			CAP.,FXD,CER DI:270PF,10%,500V	72982	301055X5P271K
C1672	281-0543-00			CAP.,FXD,CER DI:270PF,10%,500V	72982	301055X5P271K
C1675	283-0160-00			CAP.,FXD,CER DI:1.5PF,10%,50V	72982	8101A058C0K159B
C1676	283-0181-00			CAP.,FXD,CER DI:1.8PF,10%,100V	72982	8101B121C0K0189B
C1680	283-0181-00			CAP.,FXD,CER DI:1.8PF,10%,100V	72982	8101B121C0K0189B
C1681	283-0160-00			CAP.,FXD,CER DI:1.5PF,10%,50V	72982	8101A058C0K159B
C1685	281-0543-00			CAP.,FXD,CER DI:270PF,10%,500V	72982	301055X5P271K
C1689	281-0543-00			CAP.,FXD,CER DI:270PF,10%,500V	72982	301055X5P271K
C1692	283-0065-00			CAP.,FXD,CER DI:0.001UF,5%,100V	72982	805-518-Z5D0102J
C1734	283-0181-00			CAP.,FXD,CER DI:1.8PF,10%,100V	72982	8101B121C0K0189B
C1736	283-0185-00	B010100	B142329	CAP.,FXD,CER DI:2.5PF,5%,50V	72982	8101B057C0K0295B
	----- -----			(NOMINAL VALUE,SELECTED 7844 ONLY)		
C1736	283-0158-00	B142330		CAP.,FXD,CER DI:1PF,10%,50V	72982	8101B057C0K0109B
	----- -----			(NOMINAL VALUE,SELECTED 7844 ONLY)		
C1736	283-0185-00	B010100	B141119	CAP.,FXD,CER DI:2.5PF,5%,50V	72982	8101B057C0K0295B
	----- -----			(NOMINAL VALUE,SELECTED R7844 ONLY)		
C1736	283-0158-00	B141120		CAP.,FXD,CER DI:1PF,10%,50V	72982	8101B057C0K0109B
	----- -----			(NOMINAL VALUE,SELECTED R7844 ONLY)		
C1738	283-0181-00			CAP.,FXD,CER DI:1.8PF,10%,100V	72982	8101B121C0K0189B
C1739	283-0160-00			CAP.,FXD,CER DI:1.5PF,10%,50V	72982	8101A058C0K159B
C1743	283-0128-00			CAP.,FXD,CER DI:100PF,5%,500V	72982	871-536T2H101J
C1745	283-0114-00			CAP.,FXD,CER DI:0.0015UF,5%,200V	72982	805-509B152J
C1747	283-0239-00			CAP.,FXD,CER DI:0.022UF,10%,50V	72982	8121N083X7R0223K
C1749	283-0203-00			CAP.,FXD,CER DI:0.47UF,20%,50V	72982	8131N075E474M

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C1753	283-0160-00			CAP.,FXD,CER DI:1.5PF,10%,50V	72982	8101A058C0K159B
C1758	283-0108-00			CAP.,FXD,CER DI:220PF,10%,200V	56289	272C13
	----- -----			(NOMINAL VALUE,SELECTED)		
C1760	283-0180-00			CAP.,FXD,CER DI:5600PF,20%,200V	72982	8121N204 E 562M
C1762	283-0211-00			CAP.,FXD,CER DI:0.1UF,10%,200V	72982	8141N210X7R0104K
C1764	283-0212-00			CAP.,FXD,CER DI:2UF,20%,50V	72982	8141N064Z5U205M
C1770	283-0001-00			CAP.,FXD,CER DI:0.005UF,+100-0%,500V	72982	831-559E502P
C1783	283-0001-00			CAP.,FXD,CER DI:0.005UF,+100-0%,500V	72982	831-559E502P
C1787	283-0001-00			CAP.,FXD,CER DI:0.005UF,+100-0%,500V	72982	831-559E502P
C1789	283-0001-00			CAP.,FXD,CER DI:0.005UF,+100-0%,500V	72982	831-559E502P
C1791	283-0001-00			CAP.,FXD,CER DI:0.005UF,+100-0%,500V	72982	831-559E502P
C1794	283-0001-00			CAP.,FXD,CER DI:0.005UF,+100-0%,500V	72982	831-559E502P
C1796	283-0001-00			CAP.,FXD,CER DI:0.005UF,+100-0%,500V	72982	831-559E502P
C1798	283-0001-00			CAP.,FXD,CER DI:0.005UF,+100-0%,500V	72982	831-559E502P
C1820	283-0000-00	B010100	B099999X	CAP.,FXD,CER DI:0.001UF,+100-0%,500V	59660	831-519-Z5U-102P
	----- -----			(R7844 ONLY)		
C1820	283-0000-00	B010100	B109999X	CAP.,FXD,CER DI:0.001UF,+100-0%,500V	59660	831-519-Z5U-102P
	----- -----			(7844 ONLY)		
C1822	283-0000-00	B010100	B099999X	CAP.,FXD,CER DI:0.001UF,+100-0%,500V	59660	831-519-Z5U-102P
	----- -----			(R7844 ONLY)		
C1822	283-0000-00	B010100	B109999X	CAP.,FXD,CER DI:0.001UF,+100-0%,500V	59660	831-519-Z5U-102P
	----- -----			(7844 ONLY)		
C1826	281-0511-00	B010100	B099999X	CAP.,FXD,CER DI:22PF,+/-2.2PF,500V	59660	301-000C0G0220K
	----- -----			(R7844 ONLY)		
C1826	281-0511-00	B010100	B109999X	CAP.,FXD,CER DI:22PF,+/-2.2PF,500V	59660	301-000C0G0220K
	----- -----			(7844 ONLY)		
C1831	281-0509-00	XB030000	B099999X	CAP.,FXD,CER DI:15PF,+/-1.5PF,500V	59660	301-000C0G0150K
	----- -----			(R7844 ONLY)		
C1831	281-0509-00	XB020000	B109999X	CAP.,FXD,CER DI:15PF,+/-1.5PF,500V	59660	301-000C0G0150K
	----- -----			(7844 ONLY)		
C1842	281-0504-00	B010100	B099999X	CAP.,FXD,CER DI:10PF,+/-1PF,500V	59660	301-055C0G0100F
	----- -----			(R7844 ONLY)		
C1842	281-0504-00	B010100	B109999X	CAP.,FXD,CER DI:10PF,+/-1PF,500V	59660	301-055C0G0100F
	----- -----			(7844 ONLY)		
C1844	281-0557-00	B010100	B099999X	CAP.,FXD,CER DI:1.8PF,10%,500V	04222	7001-1324
	----- -----			(R7844 ONLY)		
C1844	281-0557-00	B010100	B109999X	CAP.,FXD,CER DI:1.8PF,10%,500V	04222	7001-1324
	----- -----			(7844 ONLY)		
C1852	281-0504-00	B010100	B099999X	CAP.,FXD,CER DI:10PF,+/-1PF,500V	59660	301-055C0G0100F
	----- -----			(R7844 ONLY)		
C1852	281-0504-00	B010100	B109999X	CAP.,FXD,CER DI:10PF,+/-1PF,500V	59660	301-055C0G0100F
	----- -----			(7844 ONLY)		
C1854	281-0557-00	B010100	B099999X	CAP.,FXD,CER DI:1.8PF,10%,500V	04222	7001-1324
	----- -----			(R7844 ONLY)		
C1854	281-0557-00	B010100	B109999X	CAP.,FXD,CER DI:1.8PF,10%,500V	04222	7001-1324
	----- -----			(7844 ONLY)		
C1860	283-0635-00	B010100	B099999X	CAP.,FXD,MICA D:51PF,1%,100V	00853	D151E510F0
	----- -----			(R7844 ONLY)		
C1860	283-0635-00	B010100	B109999X	CAP.,FXD,MICA D:51PF,1%,100V	00853	D151E510F0
	----- -----			(7844 ONLY)		
C1862	281-0118-00	B010100	B099999X	CAP.,VAR,MICA D:8-90PF,175V	52769	GSM231
	----- -----			(R7844 ONLY)		
C1862	281-0118-00	B010100	B109999X	CAP.,VAR,MICA D:8-90PF,175V	52769	GSM231
	----- -----			(7844 ONLY)		
C1867	283-0004-00	B010100	B099999X	CAP.,FXD,CER DI:0.02UF,+80-20%,150V	91418	SP203Z151-4R9
	----- -----			(R7844 ONLY)		
C1867	283-0004-00	B010100	B109999X	CAP.,FXD,CER DI:0.02UF,+80-20%,150V	91418	SP203Z151-4R9
	----- -----			(7844 ONLY)		

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C1870	283-0003-00	B010100	B099999X	CAP.,FXD,CER DI:0.01UF,+80-20%,150V (R7844 ONLY)	91418	SP103Z151-4R9
C1870	283-0003-00	B010100	B109999X	CAP.,FXD,CER DI:0.01UF,+80-20%,150V (7844 ONLY)	91418	SP103Z151-4R9
C1874	283-0635-00	B010100	B099999X	CAP.,FXD,MICA D:51PF,1%,100V (R7844 ONLY)	00853	D151E510F0
C1874	283-0635-00	B010100	B109999X	CAP.,FXD,MICA D:51PF,1%,100V (7844 ONLY)	00853	D151E510F0
C1884	283-0003-00	B010100	B099999X	CAP.,FXD,CER DI:0.01UF,+80-20%,150V (R7844 ONLY)	91418	SP103Z151-4R9
C1884	283-0003-00	B010100	B109999X	CAP.,FXD,CER DI:0.01UF,+80-20%,150V (7844 ONLY)	91418	SP103Z151-4R9
C1890	283-0003-00	B010100	B099999X	CAP.,FXD,CER DI:0.01UF,+80-20%,150V (R7844 ONLY)	91418	SP103Z151-4R9
C1890	283-0003-00	B010100	B109999X	CAP.,FXD,CER DI:0.01UF,+80-20%,150V (7844 ONLY)	91418	SP103Z151-4R9
C1892	283-0003-00	B010100	B099999X	CAP.,FXD,CER DI:0.01UF,+80-20%,150V (R7844 ONLY)	91418	SP103Z151-4R9
C1892	283-0003-00	B010100	B109999X	CAP.,FXD,CER DI:0.01UF,+80-20%,150V (7844 ONLY)	91418	SP103Z151-4R9
C1898	281-0661-00	B010100	B099999X	CAP.,FXD,CER DI:0.8PF,+/-0.1PF,500V (R7844 ONLY)	04222	7001-1268
C1898	281-0661-00	B010100	B109999X	CAP.,FXD,CER DI:0.8PF,+/-0.1PF,500V (7844 ONLY)	04222	7001-1268
C1904	281-0153-00	B010100	B099999X	CAP.,VAR,AIR DI:1.7-10PF,250V (R7844 ONLY)	74970	187-0106-005
C1904	281-0153-00	B010100	B109999X	CAP.,VAR,AIR DI:1.7-10PF,250V (7844 ONLY)	74970	187-0106-005
C1920	283-0003-00	B010100	B099999X	CAP.,FXD,CER DI:0.01UF,+80-20%,150V (R7844 ONLY)	91418	SP103Z151-4R9
C1920	283-0003-00	B010100	B109999X	CAP.,FXD,CER DI:0.01UF,+80-20%,150V (7844 ONLY)	91418	SP103Z151-4R9
C1922	283-0003-00	B010100	B099999X	CAP.,FXD,CER DI:0.01UF,+80-20%,150V (R7844 ONLY)	91418	SP103Z151-4R9
C1922	283-0003-00	B010100	B109999X	CAP.,FXD,CER DI:0.01UF,+80-20%,150V (7844 ONLY)	91418	SP103Z151-4R9
C1926	283-0003-00	B010100	B099999X	CAP.,FXD,CER DI:0.01UF,+80-20%,150V (R7844 ONLY)	91418	SP103Z151-4R9
C1926	283-0003-00	B010100	B109999X	CAP.,FXD,CER DI:0.01UF,+80-20%,150V (7844 ONLY)	91418	SP103Z151-4R9
C1928	281-0661-00	B010100	B099999X	CAP.,FXD,CER DI:0.8PF,+/-0.1PF,500V (R7844 ONLY)	04222	7001-1268
C1928	281-0661-00	B010100	B109999X	CAP.,FXD,CER DI:0.8PF,+/-0.1PF,500V (7844 ONLY)	04222	7001-1268
C1934	281-0153-00	B010100	B099999X	CAP.,VAR,AIR DI:1.7-10PF,250V (R7844 ONLY)	74970	187-0106-005
C1934	281-0153-00	B010100	B109999X	CAP.,VAR,AIR DI:1.7-10PF,250V (7844 ONLY)	74970	187-0106-005
C1976	283-0003-00	B010100	B099999X	CAP.,FXD,CER DI:0.01UF,+80-20%,150V (R7844 ONLY)	91418	SP103Z151-4R9
C1976	283-0003-00	B010100	B109999X	CAP.,FXD,CER DI:0.01UF,+80-20%,150V (7844 ONLY)	91418	SP103Z151-4R9
C1980	283-0635-00	B010100	B099999X	CAP.,FXD,MICA D:51PF,1%,100V (R7844 ONLY)	00853	D151E510F0
C1980	283-0635-00	B010100	B109999X	CAP.,FXD,MICA D:51PF,1%,100V (7844 ONLY)	00853	D151E510F0

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C1984	283-0003-00	B010100	B099999X	CAP.,FXD,CER DI:0.01UF,+80-20%,150V (R7844 ONLY)	91418	SP103Z151-4R9
C1984	283-0003-00	B010100	B109999X	CAP.,FXD,CER DI:0.01UF,+80-20%,150V (7844 ONLY)	91418	SP103Z151-4R9
C1986	283-0003-00	B010100	B099999X	CAP.,FXD,CER DI:0.01UF,+80-20%,150V (R7844 ONLY)	91418	SP103Z151-4R9
C1986	283-0003-00	B010100	B109999X	CAP.,FXD,CER DI:0.01UF,+80-20%,150V (7844 ONLY)	91418	SP103Z151-4R9
C1988	283-0003-00	B010100	B099999X	CAP.,FXD,CER DI:0.01UF,+80-20%,150V (R7844 ONLY)	91418	SP103Z151-4R9
C1988	283-0003-00	B010100	B109999X	CAP.,FXD,CER DI:0.01UF,+80-20%,150V (7844 ONLY)	91418	SP103Z151-4R9
C1990	283-0003-00	B010100	B099999X	CAP.,FXD,CER DI:0.01UF,+80-20%,150V (R7844 ONLY)	91418	SP103Z151-4R9
C1990	283-0003-00	B010100	B109999X	CAP.,FXD,CER DI:0.01UF,+80-20%,150V (7844 ONLY)	91418	SP103Z151-4R9
C1991	290-0134-00	B010100	B099999X	CAP.,FXD,ELCTLT:22UF,20%,15V (R7844 ONLY)	56289	150D226X0015B2
C1991	290-0134-00	B010100	B109999X	CAP.,FXD,ELCTLT:22UF,20%,15V (7844 ONLY)	56289	150D226X0015B2
C1993	290-0135-00	B010100	B010129	CAP.,FXD,ELCTLT:15UF,20%,20V (7844 ONLY)	56289	150D156X0020B2
C1993	290-0145-00	B010130	B010135	CAP.,FXD,ELCTLT:10UF,+75-10%,50V (7844 ONLY)	56289	30D106G050CB9
C1993	290-0748-00	B010136	B109999X	CAP.,FXD,ELCTLT:10UF,+50-10%,20V (7844 ONLY)	56289	500D149
C1993	290-0135-00	B010100	B010110	CAP.,FXD,ELCTLT:15UF,20%,20V (R7844 ONLY)	56289	150D156X0020B2
C1993	290-0748-00	B010111	B099999X	CAP.,FXD,ELCTLT:10UF,+50-10%,20V (R7844 ONLY)	56289	500D149
C1995	283-0178-00	B010100	B099999X	CAP.,FXD,CER DI:0.1UF,+80-20%,100V (R7844 ONLY)	72982	8131N145651 104Z
C1995	283-0178-00	B010100	B109999X	CAP.,FXD,CER DI:0.1UF,+80-20%,100V (7844 ONLY)	72982	8131N145651 104Z
C1997	283-0178-00	B010100	B099999X	CAP.,FXD,CER DI:0.1UF,+80-20%,100V (R7844 ONLY)	72982	8131N145651 104Z
C1997	283-0178-00	B010100	B109999X	CAP.,FXD,CER DI:0.1UF,+80-20%,100V (7844 ONLY)	72982	8131N145651 104Z
C1999	290-0135-00	B010100	B010129	CAP.,FXD,ELCTLT:15UF,20%,20V (7844 ONLY)	56289	150D156X0020B2
C1999	290-0145-00	B010130	B010135	CAP.,FXD,ELCTLT:10UF,+75-10%,50V (7844 ONLY)	56289	30D106G050CB9
C1999	290-0748-00	B010136	B109999X	CAP.,FXD,ELCTLT:10UF,+50-10%,20V (7844 ONLY)	56289	500D149
C1999	290-0135-00	B010100	B010110	CAP.,FXD,ELCTLT:15UF,20%,20V (R7844 ONLY)	56289	150D156X0020B2
C1999	290-0748-00	B010111	B099999X	CAP.,FXD,ELCTLT:10UF,+50-10%,20V (R7844 ONLY)	56289	500D149
C2008	283-0004-00			CAP.,FXD,CER DI:0.02UF,+80-20%,150V	91418	SP203Z151-4R9
C2018	283-0004-00			CAP.,FXD,CER DI:0.02UF,+80-20%,150V	91418	SP203Z151-4R9
C2020	281-0592-00			CAP.,FXD,CER DI:4.7PF,+/-0.5PF,500V	59660	301-023C0H0479D
C2022	283-0004-00			CAP.,FXD,CER DI:0.02UF,+80-20%,150V	91418	SP203Z151-4R9
C2024	283-0004-00			CAP.,FXD,CER DI:0.02UF,+80-20%,150V	91418	SP203Z151-4R9
C2026	283-0004-00			CAP.,FXD,CER DI:0.02UF,+80-20%,150V	91418	SP203Z151-4R9
C2028	283-0004-00			CAP.,FXD,CER DI:0.02UF,+80-20%,150V	91418	SP203Z151-4R9
C2032	283-0004-00			CAP.,FXD,CER DI:0.02UF,+80-20%,150V	91418	SP203Z151-4R9
C2040	283-0004-00			CAP.,FXD,CER DI:0.02UF,+80-20%,150V	91418	SP203Z151-4R9

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C2044	283-0004-00	B010100	B139999	CAP.,FXD,CER DI:0.02UF,+80-20%,150V	91418	SP203Z151-4R9
C2044	283-0414-00	B140000		CAP.,FXD,CER DI:0.022UF,20%,500V	51642	300-500X7R223M
C2050	283-0004-00	B010100	B139999	CAP.,FXD,CER DI:0.02UF,+80-20%,150V	91418	SP203Z151-4R9
C2050	283-0414-00	B140000		CAP.,FXD,CER DI:0.022UF,20%,500V	51642	300-500X7R223M
C2062	281-0661-00			CAP.,FXD,CER DI:0.8PF,+/-0.1PF,500V	04222	7001-1268
C2064	281-0546-00			CAP.,FXD,CER DI:330PF,10%,500V	04222	7001-1380
C2068	281-0153-00			CAP.,VAR,AIR DI:1.7-10PF,250V	74970	187-0106-005
C2072	281-0168-00			CAP.,VAR,AIR DI:1.3-5.4PF,250V	74970	187-0103-035
C2086	281-0627-00			CAP.,FXD,CER DI:1PF,+/-0.25PF,500V	04222	7001-1340
C2090	283-0004-00	B010100	B139999	CAP.,FXD,CER DI:0.02UF,+80-20%,150V	91418	SP203Z151-4R9
C2090	283-0414-00	B140000		CAP.,FXD,CER DI:0.022UF,20%,500V	51642	300-500X7R223M
C2092	283-0177-00			CAP.,FXD,CER DI:1UF,+80-20%,25V	56289	273C5
C2094	283-0177-00			CAP.,FXD,CER DI:1UF,+80-20%,25V	56289	273C5
C2096	283-0177-00			CAP.,FXD,CER DI:1UF,+80-20%,25V	56289	273C5
C2098	283-0004-00			CAP.,FXD,CER DI:0.02UF,+80-20%,150V	91418	SP203Z151-4R9
C2101	283-0004-00			CAP.,FXD,CER DI:0.02UF,+80-20%,150V	91418	SP203Z151-4R9
C2109	283-0003-00			CAP.,FXD,CER DI:0.01UF,+80-20%,150V	91418	SP103Z151-4R9
C2112	283-0077-00			CAP.,FXD,CER DI:330PF,5%,500V	59660	831-500B331J
C2115	290-0534-00			CAP.,FXD,ELCTLT:1UF,20%,35V	56289	196D105X0035HA1
C2117	290-0534-00			CAP.,FXD,ELCTLT:1UF,20%,35V	56289	196D105X0035HA1
C2119	290-0534-00			CAP.,FXD,ELCTLT:1UF,20%,35V	56289	196D105X0035HA1
C2121	283-0594-00			CAP.,FXD,MICA D:0.001UF,1%,100V	00853	D151F102F0
C2135	285-0698-00			CAP.,FXD,PLSTC:0.0082UF,5%,100V	56289	410P82251
C2140	283-0103-00			CAP.,FXD,CER DI:180PF,5%,500V	59660	831-518-Z5D0181J
C2144	281-0544-00			CAP.,FXD,CER DI:5.6PF,10%,500V	59660	301-000C0H0569D
C2145	290-0534-00			CAP.,FXD,ELCTLT:1UF,20%,35V	56289	196D105X0035HA1
C2155	283-0103-00			CAP.,FXD,CER DI:180PF,5%,500V	59660	831-518-Z5D0181J
C2183	283-0032-00			CAP.,FXD,CER DI:470PF,5%,500V	72982	0831085Z5E00471J
C2185	283-0004-00			CAP.,FXD,CER DI:0.02UF,+80-20%,150V	91418	SP203Z151-4R9
C2214	283-0032-00			CAP.,FXD,CER DI:470PF,5%,500V	72982	0831085Z5E00471J
C2242	283-0000-00			CAP.,FXD,CER DI:0.001UF,+100-0%,500V	59660	831-519-Z5U-102P
C2244	283-0004-00			CAP.,FXD,CER DI:0.02UF,+80-20%,150V	91418	SP203Z151-4R9
C2255	283-0000-00			CAP.,FXD,CER DI:0.001UF,+100-0%,500V	59660	831-519-Z5U-102P
C2281	283-0054-00	XB010110		CAP.,FXD,CER DI:150PF,5%,200V	59660	855-535U2J151J
C2302	283-0011-00			CAP.,FXD,CER DI:0.01UF,2000V	72982	3902BW411Z5U103Z
C2304	283-0271-00			CAP.,FXD,CER DI:0.001UF,20%,4000V	56289	33C325
C2306	283-0272-00			CAP.,FXD,CER DI:0.0068UF,30%,4000V	72982	3888-510C 682M
C2307	283-0006-00			CAP.,FXD,CER DI:0.02UF,+80-20%,500V	72982	0841545Z5V00203Z
C2308	283-0272-00			CAP.,FXD,CER DI:0.0068UF,30%,4000V	72982	3888-510C 682M
C2311	283-0105-00			CAP.,FXD,CER DI:0.01UF,+80-20%,2000V	56289	41C316
C2312	283-0272-00			CAP.,FXD,CER DI:0.0068UF,30%,4000V	72982	3888-510C 682M
C2322	283-0092-00			CAP.,FXD,CER DI:0.03UF,+80-20%,200V	72982	845-534E303Z
C2323	283-0271-00			CAP.,FXD,CER DI:0.001UF,20%,4000V	56289	33C325
C2324	283-0271-00			CAP.,FXD,CER DI:0.001UF,20%,4000V	56289	33C325
C2332	283-0092-00			CAP.,FXD,CER DI:0.03UF,+80-20%,200V	72982	845-534E303Z
C2333	283-0271-00			CAP.,FXD,CER DI:0.001UF,20%,4000V	56289	33C325
C2334	283-0271-00			CAP.,FXD,CER DI:0.001UF,20%,4000V	56289	33C325
C2342	283-0279-00			CAP.,FXD,CER DI:0.001UF,20%,3000V	56289	55C153
C2343	283-0279-00			CAP.,FXD,CER DI:0.001UF,20%,3000V	56289	55C153
C2346	283-0279-00			CAP.,FXD,CER DI:0.001UF,20%,3000V	56289	55C153
C2351	283-0092-00			CAP.,FXD,CER DI:0.03UF,+80-20%,200V	72982	845-534E303Z
C2352	283-0279-00			CAP.,FXD,CER DI:0.001UF,20%,3000V	56289	55C153
C2353	283-0279-00			CAP.,FXD,CER DI:0.001UF,20%,3000V	56289	55C153
C2356	283-0279-00			CAP.,FXD,CER DI:0.001UF,20%,3000V	56289	55C153
C2400	283-0104-00			CAP.,FXD,CER DI:2000PF,5%,500V	72982	811-565B202J
C2402	283-0104-00			CAP.,FXD,CER DI:2000PF,5%,500V	72982	811-565B202J
C2404	283-0271-00			CAP.,FXD,CER DI:0.001UF,20%,4000V	56289	33C325

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C2407	283-0271-00			CAP.,FXD,CER DI:0.001UF,20%,4000V	56289	33C325
C2408	283-0272-00			CAP.,FXD,CER DI:0.0068UF,30%,4000V	72982	3888-510C 682M
C2409	283-0272-00			CAP.,FXD,CER DI:0.0068UF,30%,4000V	72982	3888-510C 682M
C2445	283-0279-00			CAP.,FXD,CER DI:0.001UF,20%,3000V	56289	55C153
C2449	283-0110-00			CAP.,FXD,CER DI:0.005UF,+80-20%,150V	56289	19C242B
C2452	283-0110-00			CAP.,FXD,CER DI:0.005UF,+80-20%,150V	56289	19C242B
C2461	283-0003-00			CAP.,FXD,CER DI:0.01UF,+80-20%,150V	91418	SP103Z151-4R9
C2475	283-0279-00			CAP.,FXD,CER DI:0.001UF,20%,3000V	56289	55C153
C2479	283-0110-00			CAP.,FXD,CER DI:0.005UF,+80-20%,150V	56289	19C242B
C2482	283-0110-00			CAP.,FXD,CER DI:0.005UF,+80-20%,150V	56289	19C242B
C2491	283-0003-00			CAP.,FXD,CER DI:0.01UF,+80-20%,150V	91418	SP103Z151-4R9
C2508	290-0534-00			CAP.,FXD,ELCTLT:1UF,20%,35V	56289	196D105X0035HA1
C2511	290-0536-00			CAP.,FXD,ELCTLT:10UF,20%,25V	90201	TDC106M025FL
C2552	283-0003-00			CAP.,FXD,CER DI:0.01UF,+80-20%,150V	91418	SP103Z151-4R9
C2556	283-0003-00			CAP.,FXD,CER DI:0.01UF,+80-20%,150V	91418	SP103Z151-4R9
C2560	283-0003-00			CAP.,FXD,CER DI:0.01UF,+80-20%,150V	91418	SP103Z151-4R9
C2564	283-0003-00			CAP.,FXD,CER DI:0.01UF,+80-20%,150V	91418	SP103Z151-4R9
C2568	283-0003-00			CAP.,FXD,CER DI:0.01UF,+80-20%,150V	91418	SP103Z151-4R9
C2572	283-0003-00			CAP.,FXD,CER DI:0.01UF,+80-20%,150V	91418	SP103Z151-4R9
C2576	283-0003-00			CAP.,FXD,CER DI:0.01UF,+80-20%,150V	91418	SP103Z151-4R9
C2578	283-0003-00			CAP.,FXD,CER DI:0.01UF,+80-20%,150V	91418	SP103Z151-4R9
C2582	283-0003-00	B010100	B139999	CAP.,FXD,CER DI:0.01UF,+80-20%,150V	91418	SP103Z151-4R9
C2582	283-0068-00	B140000		CAP.,FXD,CER DI:0.01UF,+100-0%,500V	56289	19C241
C2583	283-0003-00	B010100	B139999	CAP.,FXD,CER DI:0.01UF,+80-20%,150V	91418	SP103Z151-4R9
C2583	283-0068-00	B140000		CAP.,FXD,CER DI:0.01UF,+100-0%,500V	56289	19C241
C2585	283-0003-00			CAP.,FXD,CER DI:0.01UF,+80-20%,150V	91418	SP103Z151-4R9
C2586	283-0003-00			CAP.,FXD,CER DI:0.01UF,+80-20%,150V	91418	SP103Z151-4R9
C2588	283-0003-00			CAP.,FXD,CER DI:0.01UF,+80-20%,150V	91418	SP103Z151-4R9
C2589	283-0003-00			CAP.,FXD,CER DI:0.01UF,+80-20%,150V	91418	SP103Z151-4R9
C2591	283-0003-00			CAP.,FXD,CER DI:0.01UF,+80-20%,150V	91418	SP103Z151-4R9
C2592	283-0003-00			CAP.,FXD,CER DI:0.01UF,+80-20%,150V	91418	SP103Z151-4R9
C2594	283-0003-00			CAP.,FXD,CER DI:0.01UF,+80-20%,150V	91418	SP103Z151-4R9
C2595	283-0003-00			CAP.,FXD,CER DI:0.01UF,+80-20%,150V	91418	SP103Z151-4R9
C2597	283-0003-00			CAP.,FXD,CER DI:0.01UF,+80-20%,150V	91418	SP103Z151-4R9
C2657	283-0185-00			CAP.,FXD,CER DI:2.5PF,5%,50V	72982	8101B057C0K0295B
C2658	281-0151-00			CAP.,VAR,CER DI:1-3PF,100V	72982	518-600A1-3
C2659	283-0185-00			CAP.,FXD,CER DI:2.5PF,5%,50V	72982	8101B057C0K0295B
C2662	281-0603-00			CAP.,FXD,CER DI:39PF,5%,500V	59660	308-000C0G0390J
C2663	281-0603-00			CAP.,FXD,CER DI:39PF,5%,500V	59660	308-000C0G0390J
C2670	281-0543-00			CAP.,FXD,CER DI:270PF,10%,500V	72982	301055X5P271K
C2672	281-0543-00			CAP.,FXD,CER DI:270PF,10%,500V	72982	301055X5P271K
C2675	283-0160-00			CAP.,FXD,CER DI:1.5PF,10%,50V	72982	8101A058C0K159B
C2676	283-0181-00			CAP.,FXD,CER DI:1.8PF,10%,100V	72982	8101B121C0K0189B
C2680	283-0181-00			CAP.,FXD,CER DI:1.8PF,10%,100V	72982	8101B121C0K0189B
C2681	283-0160-00			CAP.,FXD,CER DI:1.5PF,10%,50V	72982	8101A058C0K159B
C2685	281-0543-00			CAP.,FXD,CER DI:270PF,10%,500V	72982	301055X5P271K
C2689	281-0543-00			CAP.,FXD,CER DI:270PF,10%,500V	72982	301055X5P271K
C2692	283-0065-00			CAP.,FXD,CER DI:0.001UF,5%,100V	72982	805-518-Z5D0102J
C2734	283-0181-00			CAP.,FXD,CER DI:1.8PF,10%,100V	72982	8101B121C0K0189B
C2736	283-0185-00			CAP.,FXD,CER DI:2.5PF,5%,50V	72982	8101B057C0K0295B
	----- -----			(NOMINAL VALUE,SELECTED)		
C2738	283-0181-00			CAP.,FXD,CER DI:1.8PF,10%,100V	72982	8101B121C0K0189B
C2739	283-0160-00			CAP.,FXD,CER DI:1.5PF,10%,50V	72982	8101A058C0K159B
C2743	283-0128-00			CAP.,FXD,CER DI:100PF,5%,500V	72982	871-536T2H101J
C2745	283-0114-00			CAP.,FXD,CER DI:0.0015UF,5%,200V	72982	805-509B152J
C2747	283-0239-00			CAP.,FXD,CER DI:0.022UF,10%,50V	72982	8121N083X7R0223K
C2749	283-0203-00			CAP.,FXD,CER DI:0.47UF,20%,50V	72982	8131N075E474M

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C2753	283-0160-00			CAP.,FXD,CER DI:1.5PF,10%,50V	72982	8101A058C0K159B
C2758	283-0108-00			CAP.,FXD,CER DI:220PF,10%,200V	56289	272C13
	----- -----			(NOMINAL VALUE,SELECTED)		
C2760	283-0180-00			CAP.,FXD,CER DI:5600PF,20%,200V	72982	8121N204 E 562M
C2762	283-0211-00			CAP.,FXD,CER DI:0.1UF,10%,200V	72982	8141N210X7R0104K
C2764	283-0212-00			CAP.,FXD,CER DI:2UF,20%,50V	72982	8141N064Z5U205M
C2770	283-0001-00			CAP.,FXD,CER DI:0.005UF,+100-0%,500V	72982	831-559E502P
C2783	283-0001-00			CAP.,FXD,CER DI:0.005UF,+100-0%,500V	72982	831-559E502P
C2787	283-0001-00			CAP.,FXD,CER DI:0.005UF,+100-0%,500V	72982	831-559E502P
C2789	283-0001-00			CAP.,FXD,CER DI:0.005UF,+100-0%,500V	72982	831-559E502P
C2791	283-0001-00			CAP.,FXD,CER DI:0.005UF,+100-0%,500V	72982	831-559E502P
C2794	283-0001-00			CAP.,FXD,CER DI:0.005UF,+100-0%,500V	72982	831-559E502P
C2796	283-0001-00			CAP.,FXD,CER DI:0.005UF,+100-0%,500V	72982	831-559E502P
C2798	283-0001-00			CAP.,FXD,CER DI:0.005UF,+100-0%,500V	72982	831-559E502P
C2820	283-0000-00	B010100	B099999X	CAP.,FXD,CER DI:0.001UF,+100-0%,500V	59660	831-519-Z5U-102P
	----- -----			(R7844 ONLY)		
C2820	283-0000-00	B010100	B109999X	CAP.,FXD,CER DI:0.001UF,+100-0%,500V	59660	831-519-Z5U-102P
	----- -----			(7844 ONLY)		
C2822	283-0000-00	B010100	B099999X	CAP.,FXD,CER DI:0.001UF,+100-0%,500V	59660	831-519-Z5U-102P
	----- -----			(R7844 ONLY)		
C2822	283-0000-00	B010100	B109999X	CAP.,FXD,CER DI:0.001UF,+100-0%,500V	59660	831-519-Z5U-102P
	----- -----			(7844 ONLY)		
C2826	281-0511-00	B010100	B099999X	CAP.,FXD,CER DI:22PF,+/-2.2PF,500V	59660	301-000C0G0220K
	----- -----			(R7844 ONLY)		
C2826	281-0511-00	B010100	B109999X	CAP.,FXD,CER DI:22PF,+/-2.2PF,500V	59660	301-000C0G0220K
	----- -----			(7844 ONLY)		
C2831	281-0509-00	XB030190	B109999X	CAP.,FXD,CER DI:15PF,+/-1.5PF,500V	59660	301-000C0G0150K
	----- -----			(7844 ONLY)		
C2831	281-0509-00	XB020123	B099999X	CAP.,FXD,CER DI:15PF,+/-1.5PF,500V	59660	301-000C0G0150K
	----- -----			(R7844 ONLY)		
C2842	281-0504-00	B010100	B099999X	CAP.,FXD,CER DI:10PF,+/-1PF,500V	59660	301-055C0G0100F
	----- -----			(R7844 ONLY)		
C2842	281-0504-00	B010100	B109999X	CAP.,FXD,CER DI:10PF,+/-1PF,500V	59660	301-055C0G0100F
	----- -----			(7844 ONLY)		
C2844	281-0557-00	B010100	B099999X	CAP.,FXD,CER DI:1.8PF,10%,500V	04222	7001-1324
	----- -----			(R7844 ONLY)		
C2844	281-0557-00	B010100	B109999X	CAP.,FXD,CER DI:1.8PF,10%,500V	04222	7001-1324
	----- -----			(7844 ONLY)		
C2852	281-0504-00	B010100	B099999X	CAP.,FXD,CER DI:10PF,+/-1PF,500V	59660	301-055C0G0100F
	----- -----			(R7844 ONLY)		
C2852	281-0504-00	B010100	B109999X	CAP.,FXD,CER DI:10PF,+/-1PF,500V	59660	301-055C0G0100F
	----- -----			(7844 ONLY)		
C2854	281-0557-00	B010100	B099999X	CAP.,FXD,CER DI:1.8PF,10%,500V	04222	7001-1324
	----- -----			(R7844 ONLY)		
C2854	281-0557-00	B010100	B109999X	CAP.,FXD,CER DI:1.8PF,10%,500V	04222	7001-1324
	----- -----			(7844 ONLY)		
C2860	283-0635-00	B010100	B099999X	CAP.,FXD,MICA D:51PF,1%,100V	00853	D151E510F0
	----- -----			(R7844 ONLY)		
C2860	283-0635-00	B010100	B109999X	CAP.,FXD,MICA D:51PF,1%,100V	00853	D151E510F0
	----- -----			(7844 ONLY)		
C2862	281-0118-00	B010100	B099999X	CAP.,VAR,MICA D:8-90PF,175V	52769	GSM231
	----- -----			(R7844 ONLY)		
C2862	281-0118-00	B010100	B109999X	CAP.,VAR,MICA D:8-90PF,175V	52769	GSM231
	----- -----			(7844 ONLY)		
C2867	283-0004-00	B010100	B099999X	CAP.,FXD,CER DI:0.02UF,+80-20%,150V	91418	SP203Z151-4R9
	----- -----			(R7844 ONLY)		
C2867	283-0004-00	B010100	B109999X	CAP.,FXD,CER DI:0.02UF,+80-20%,150V	91418	SP203Z151-4R9
	----- -----			(7844 ONLY)		

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C2870	283-0003-00	B010100	B099999X	CAP.,FXD,CER DI:0.01UF,+80-20%,150V (R7844 ONLY)	91418	SP103Z151-4R9
C2870	283-0003-00	B010100	B109999X	CAP.,FXD,CER DI:0.01UF,+80-20%,150V (7844 ONLY)	91418	SP103Z151-4R9
C2874	283-0635-00	B010100	B099999X	CAP.,FXD,MICA D:51PF,1%,100V (R7844 ONLY)	00853	D151E510F0
C2874	283-0635-00	B010100	B109999X	CAP.,FXD,MICA D:51PF,1%,100V (7844 ONLY)	00853	D151E510F0
C2884	283-0003-00	B010100	B099999X	CAP.,FXD,CER DI:0.01UF,+80-20%,150V (R7844 ONLY)	91418	SP103Z151-4R9
C2884	283-0003-00	B010100	B109999X	CAP.,FXD,CER DI:0.01UF,+80-20%,150V (7844 ONLY)	91418	SP103Z151-4R9
C2890	283-0003-00	B010100	B099999X	CAP.,FXD,CER DI:0.01UF,+80-20%,150V (R7844 ONLY)	91418	SP103Z151-4R9
C2890	283-0003-00	B010100	B109999X	CAP.,FXD,CER DI:0.01UF,+80-20%,150V (7844 ONLY)	91418	SP103Z151-4R9
C2892	283-0003-00	B010100	B099999X	CAP.,FXD,CER DI:0.01UF,+80-20%,150V (R7844 ONLY)	91418	SP103Z151-4R9
C2892	283-0003-00	B010100	B109999X	CAP.,FXD,CER DI:0.01UF,+80-20%,150V (7844 ONLY)	91418	SP103Z151-4R9
C2898	281-0661-00	B010100	B099999X	CAP.,FXD,CER DI:0.8PF,+/-0.1PF,500V (R7844 ONLY)	04222	7001-1268
C2898	281-0661-00	B010100	B109999X	CAP.,FXD,CER DI:0.8PF,+/-0.1PF,500V (7844 ONLY)	04222	7001-1268
C2904	281-0153-00	B010100	B099999X	CAP.,VAR,AIR DI:1.7-10PF,250V (R7844 ONLY)	74970	187-0106-005
C2904	281-0153-00	B010100	B109999X	CAP.,VAR,AIR DI:1.7-10PF,250V (7844 ONLY)	74970	187-0106-005
C2920	283-0003-00	B010100	B099999X	CAP.,FXD,CER DI:0.01UF,+80-20%,150V (R7844 ONLY)	91418	SP103Z151-4R9
C2920	283-0003-00	B010100	B109999X	CAP.,FXD,CER DI:0.01UF,+80-20%,150V (7844 ONLY)	91418	SP103Z151-4R9
C2922	283-0003-00	B010100	B099999X	CAP.,FXD,CER DI:0.01UF,+80-20%,150V (R7844 ONLY)	91418	SP103Z151-4R9
C2922	283-0003-00	B010100	B109999X	CAP.,FXD,CER DI:0.01UF,+80-20%,150V (7844 ONLY)	91418	SP103Z151-4R9
C2926	283-0003-00	B010100	B099999X	CAP.,FXD,CER DI:0.01UF,+80-20%,150V (R7844 ONLY)	91418	SP103Z151-4R9
C2926	283-0003-00	B010100	B109999X	CAP.,FXD,CER DI:0.01UF,+80-20%,150V (7844 ONLY)	91418	SP103Z151-4R9
C2928	281-0661-00	B010100	B099999X	CAP.,FXD,CER DI:0.8PF,+/-0.1PF,500V (R7844 ONLY)	04222	7001-1268
C2928	281-0661-00	B010100	B109999X	CAP.,FXD,CER DI:0.8PF,+/-0.1PF,500V (7844 ONLY)	04222	7001-1268
C2934	281-0153-00	B010100	B099999X	CAP.,VAR,AIR DI:1.7-10PF,250V (R7844 ONLY)	74970	187-0106-005
C2934	281-0153-00	B010100	B109999X	CAP.,VAR,AIR DI:1.7-10PF,250V (7844 ONLY)	74970	187-0106-005
C2974	283-0003-00	B010100	B099999X	CAP.,FXD,CER DI:0.01UF,+80-20%,150V (R7844 ONLY)	91418	SP103Z151-4R9
C2974	283-0003-00	B010100	B109999X	CAP.,FXD,CER DI:0.01UF,+80-20%,150V (7844 ONLY)	91418	SP103Z151-4R9
C2976	283-0003-00	B010100	B099999X	CAP.,FXD,CER DI:0.01UF,+80-20%,150V (R7844 ONLY)	91418	SP103Z151-4R9
C2976	283-0003-00	B010100	B109999X	CAP.,FXD,CER DI:0.01UF,+80-20%,150V (7844 ONLY)	91418	SP103Z151-4R9

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C2980	283-0635-00	B010100	B099999X	CAP.,FXD,MICA D:51PF,1%,100V (R7844 ONLY)	00853	D151E510F0
C2980	283-0635-00	B010100	B109999X	CAP.,FXD,MICA D:51PF,1%,100V (7844 ONLY)	00853	D151E510F0
C2984	283-0003-00	B010100	B099999X	CAP.,FXD,CER DI:0.01UF,+80-20%,150V (R7844 ONLY)	91418	SP103Z151-4R9
C2984	283-0003-00	B010100	B109999X	CAP.,FXD,CER DI:0.01UF,+80-20%,150V (7844 ONLY)	91418	SP103Z151-4R9
C2986	283-0003-00	B010100	B099999X	CAP.,FXD,CER DI:0.01UF,+80-20%,150V (R7844 ONLY)	91418	SP103Z151-4R9
C2986	283-0003-00	B010100	B109999X	CAP.,FXD,CER DI:0.01UF,+80-20%,150V (7844 ONLY)	91418	SP103Z151-4R9
C2988	283-0003-00	B010100	B099999X	CAP.,FXD,CER DI:0.01UF,+80-20%,150V (R7844 ONLY)	91418	SP103Z151-4R9
C2988	283-0003-00	B010100	B109999X	CAP.,FXD,CER DI:0.01UF,+80-20%,150V (7844 ONLY)	91418	SP103Z151-4R9
C2990	283-0003-00	B010100	B099999X	CAP.,FXD,CER DI:0.01UF,+80-20%,150V (R7844 ONLY)	91418	SP103Z151-4R9
C2990	283-0003-00	B010100	B109999X	CAP.,FXD,CER DI:0.01UF,+80-20%,150V (7844 ONLY)	91418	SP103Z151-4R9
C2991	290-0134-00	B010100	B099999X	CAP.,FXD,ELCTLT:22UF,20%,15V (R7844 ONLY)	56289	150D226X0015B2
C2991	290-0134-00	B010100	B109999X	CAP.,FXD,ELCTLT:22UF,20%,15V (7844 ONLY)	56289	150D226X0015B2
C2993	290-0135-00	B010100	B010129	CAP.,FXD,ELCTLT:15UF,20%,20V (7844 ONLY)	56289	150D156X0020B2
C2993	290-0145-00	B010130	B010135	CAP.,FXD,ELCTLT:10UF,+75-10%,50V (7844 ONLY)	56289	30D106G050CB9
C2993	290-0748-00	B010100	B109999X	CAP.,FXD,ELCTLT:10UF,+50-10%,20V (7844 ONLY)	56289	500D149
C2993	290-0135-00	B010100	B010110	CAP.,FXD,ELCTLT:15UF,20%,20V (R7844 ONLY)	56289	150D156X0020B2
C2993	290-0748-00	B010111	B099999X	CAP.,FXD,ELCTLT:10UF,+50-10%,20V (R7844 ONLY)	56289	500D149
C2995	283-0178-00	B010100	B099999X	CAP.,FXD,CER DI:0.1UF,+80-20%,100V (R7844 ONLY)	72982	8131N145651 104Z
C2995	283-0178-00	B010100	B109999X	CAP.,FXD,CER DI:0.1UF,+80-20%,100V (7844 ONLY)	72982	8131N145651 104Z
C2997	283-0178-00	B010100	B099999X	CAP.,FXD,CER DI:0.1UF,+80-20%,100V (R7844 ONLY)	72982	8131N145651 104Z
C2997	283-0178-00	B010100	B109999X	CAP.,FXD,CER DI:0.1UF,+80-20%,100V (7844 ONLY)	72982	8131N145651 104Z
C2999	290-0135-00	B010100	B010129	CAP.,FXD,ELCTLT:15UF,20%,20V (7844 ONLY)	56289	150D156X0020B2
C2999	290-0145-00	B010130	B010135	CAP.,FXD,ELCTLT:10UF,+75-10%,50V (7844 ONLY)	56289	30D106G050CB9
C2999	290-0748-00	B010136	B109999X	CAP.,FXD,ELCTLT:10UF,+50-10%,20V (7844 ONLY)	56289	500D149
C2999	290-0135-00	B010100	B010110	CAP.,FXD,ELCTLT:15UF,20%,20V (R7844 ONLY)	56289	150D156X0020B2
C2999	290-0748-00	B010111	B099999X	CAP.,FXD,ELCTLT:10UF,+50-10%,20V (R7844 ONLY)	56289	500D149
C3601	283-0158-00			CAP.,FXD,CER DI:1PF,10%,50V (C3601, 7844/R7844 ONLY)	72982	8101B057C0K0109B
C3605	283-0251-00			CAP.,FXD,CER DI:87 PF,5%,100V (C3605, 7844/R7844 ONLY)	72982	8121B145C0G0870J
C3611	283-0158-00			CAP.,FXD,CER DI:1PF,10%,50V (C3611, 7844/R7844 ONLY)	72982	8101B057C0K0109B

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C3615	283-0158-00			CAP.,FXD,CER DI:1PF,10%,50V	72982	8101B057C0K0109B
	----- -----			(C3615, 7844/R7844 ONLY)		
C3616	283-0108-00			CAP.,FXD,CER DI:220PF,10%,200V	56289	272C13
	----- -----			(C3616, 7844/R7844 ONLY)		
	----- -----			(NOMINAL VALUE,SELECTED)		
C3617	283-0158-00			CAP.,FXD,CER DI:1PF,10%,50V	72982	8101B057C0K0109B
	----- -----			(C3617, 7844/R7844 ONLY)		
C3618	283-0158-00	XB010149		CAP.,FXD,CER DI:1PF,10%,50V	72982	8101B057C0K0109B
	----- -----			(C3618, 7844/R7844 ONLY. NOMINAL VALUE,		
	----- -----			SELECTED AND ADDED IF NECESSARY)		
C3620	283-0260-00	B010100	B049999	CAP.,FXD,CER DI:5.6PF,5%,200V	72982	8111B200C0G569C
	----- -----			(7844 ONLY)		
	----- -----			(NOMINAL VALUE,SELECTED)		
C3620	281-0122-00	B050000		CAP.,VAR,CER DI:2.5-9PF,100V	72982	518-000A2.5-9
	----- -----			(7844 ONLY)		
C3620	283-0260-00	B010100	B039999	CAP.,FXD,CER DI:5.6PF,5%,200V	72982	8111B200C0G569C
	----- -----			(R7844 ONLY)		
	----- -----			(NOMINAL VALUE,SELECTED)		
C3620	281-0122-00	B040000		CAP.,VAR,CER DI:2.5-9PF,100V	72982	518-000A2.5-9
	----- -----			(R7844 ONLY)		
C3621	283-0180-00			CAP.,FXD,CER DI:5600PF,20%,200V	72982	8121N204 E 562M
	----- -----			(C3621, 7844/R7844 ONLY)		
C3622	283-0191-00	B010100	B049999	CAP.,FXD,CER DI:0.022UF,20%,50V	72982	8121N075Z5U0223M
	----- -----			(7844 ONLY)		
C3622	283-0239-00	B050000		CAP.,FXD,CER DI:0.022UF,10%,50V	72982	8121N083X7R0223K
	----- -----			(7844 ONLY)		
C3622	283-0191-00	B010100	B039999	CAP.,FXD,CER DI:0.022UF,20%,50V	72982	8121N075Z5U0223M
	----- -----			(R7844 ONLY)		
C3622	283-0239-00	B040000		CAP.,FXD,CER DI:0.022UF,10%,50V	72982	8121N083X7R0223K
	----- -----			(R7844 ONLY)		
C3630	283-0180-00			CAP.,FXD,CER DI:5600PF,20%,200V	72982	8121N204 E 562M
	----- -----			(C3630, 7844/R7844 ONLY)		
C3634	283-0204-00			CAP.,FXD,CER DI:0.01UF,20%,50V	72982	8121N061Z5U0103M
	----- -----			(C3634, 7844/R7844 ONLY)		
C3638	283-0158-00			CAP.,FXD,CER DI:1PF,10%,50V	72982	8101B057C0K0109B
	----- -----			(C3638, 7844/R7844 ONLY)		
C3639	283-0158-00			CAP.,FXD,CER DI:1PF,10%,50V	72982	8101B057C0K0109B
	----- -----			(C3639, 7844/R7844 ONLY)		
C3660	283-0158-00			CAP.,FXD,CER DI:1PF,10%,50V	72982	8101B057C0K0109B
	----- -----			(C3660, 7844/R7844 ONLY)		
C3661	283-0108-00			CAP.,FXD,CER DI:220PF,10%,200V	56289	272C13
	----- -----			(C3661, 7844/R7844 ONLY)		
C3662	283-0158-00			CAP.,FXD,CER DI:1PF,10%,50V	72982	8101B057C0K0109B
	----- -----			(C3662, 7844/R7844 ONLY)		
C3663	283-0158-00	XB010149		CAP.,FXD,CER DI:1PF,10%,50V	72982	8101B057C0K0109B
	----- -----			(C3663, 7844/R7844 ONLY. NOMINAL VALUE,		
	----- -----			SELECTED AND ADDED IF NECESSARY)		
C3665	283-0260-00	B010100	B049999	CAP.,FXD,CER DI:5.6PF,5%,200V	72982	8111B200C0G569C
	----- -----			(7844 ONLY)		
	----- -----			(NOMINAL VALUE,SELECTED)		
C3665	281-0122-00	B050000		CAP.,VAR,CER DI:2.5-9PF,100V	72982	518-000A2.5-9
	----- -----			(7844 ONLY)		
C3665	283-0260-00	B010100	B039999	CAP.,FXD,CER DI:5.6PF,5%,200V	72982	8111B200C0G569C
	----- -----			(R7844 ONLY)		
	----- -----			(NOMINAL VALUE,SELECTED)		
C3665	281-0122-00	B040000		CAP.,VAR,CER DI:2.5-9PF,100V	72982	518-000A2.5-9
	----- -----			(R7844 ONLY)		

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C3666	283-0180-00			CAP.,FXD,CER DI:5600PF,20%,200V (C3666, 7844/R7844 ONLY)	72982	8121N204 E 562M
C3667	283-0191-00	B010100	B049999	CAP.,FXD,CER DI:0.022UF,20%,50V (7844 ONLY)	72982	8121N075Z5U0223M
C3667	283-0239-00	B050000		CAP.,FXD,CER DI:0.022UF,10%,50V (7844 ONLY)	72982	8121N083X7R0223K
C3667	283-0191-00	B010100	B039999	CAP.,FXD,CER DI:0.022UF,20%,50V (R7844 ONLY)	72982	8121N075Z5U0223M
C3667	283-0239-00	B040000		CAP.,FXD,CER DI:0.022UF,10%,50V (R7844 ONLY)	72982	8121N083X7R0223K
C3676	283-0180-00			CAP.,FXD,CER DI:5600PF,20%,200V (C3676, 7844/R7844 ONLY)	72982	8121N204 E 562M
C3682	283-0204-00			CAP.,FXD,CER DI:0.01UF,20%,50V (C3682, 7844/R7844 ONLY)	72982	8121N061Z5U0103M
C3686	283-0158-00			CAP.,FXD,CER DI:1PF,10%,50V (C3686, 7844/R7844 ONLY)	72982	8101B057C0K0109B
C3688	283-0158-00			CAP.,FXD,CER DI:1PF,10%,50V (C3688, 7844/R7844 ONLY)	72982	8101B057C0K0109B
C3697	283-0204-00			CAP.,FXD,CER DI:0.01UF,20%,50V (C3697, 7844/R7844 ONLY)	72982	8121N061Z5U0103M
C3698	283-0204-00			CAP.,FXD,CER DI:0.01UF,20%,50V (C3698, 7844/R7844 ONLY)	72982	8121N061Z5U0103M
C3699	283-0204-00			CAP.,FXD,CER DI:0.01UF,20%,50V (C3699, 7844/R7844 ONLY)	72982	8121N061Z5U0103M
C3701	283-0158-00			CAP.,FXD,CER DI:1PF,10%,50V (C3701, 7844/R7844 ONLY)	72982	8101B057C0K0109B
C3705	283-0251-00			CAP.,FXD,CER DI:87 PF,5%,100V (C3705, 7844/R7844 ONLY)	72982	8121B145C0G0870J
C3711	283-0158-00			CAP.,FXD,CER DI:1PF,10%,50V (C3711, 7844/R7844 ONLY)	72982	8101B057C0K0109B
C3715	283-0158-00			CAP.,FXD,CER DI:1PF,10%,50V (C3715, 7844/R7844 ONLY)	72982	8101B057C0K0109B
C3716	283-0108-00			CAP.,FXD,CER DI:220PF,10%,200V (C3716, 7844/R7844 ONLY)	56289	272C13
C3717	283-0158-00			CAP.,FXD,CER DI:1PF,10%,50V (C3717, 7844/R7844 ONLY)	72982	8101B057C0K0109B
C3718	283-0158-00	XB010149		CAP.,FXD,CER DI:1PF,10%,50V (C3718, 7844/R7844 ONLY. NOMINAL VALUE, SELECTED AND ADDED IF NECESSARY)	72982	8101B057C0K0109B
C3720	283-0260-00	B010100	B049999	CAP.,FXD,CER DI:5.6PF,5%,200V (7844 ONLY) (NOMINAL VALUE,SELECTED)	72982	8111B200C0G569C
C3720	281-0122-00	B050000		CAP.,VAR,CER DI:2.5-9PF,100V (7844 ONLY)	72982	518-000A2.5-9
C3720	283-0260-00	B010100	B039999	CAP.,FXD,CER DI:5.6PF,5%,200V (R7844 ONLY) (NOMINAL VALUE,SELECTED)	72982	8111B200C0G569C
C3720	281-0122-00	B040000		CAP.,VAR,CER DI:2.5-9PF,100V (R7844 ONLY)	72982	518-000A2.5-9
C3721	283-0180-00			CAP.,FXD,CER DI:5600PF,20%,200V (C3721, 7844/R7844 ONLY)	72982	8121N204 E 562M
C3722	283-0191-00	B010100	B049999	CAP.,FXD,CER DI:0.022UF,20%,50V (7844 ONLY)	72982	8121N075Z5U0223M
C3722	283-0239-00	B050000		CAP.,FXD,CER DI:0.022UF,10%,50V (7844 ONLY)	72982	8121N083X7R0223K
C3722	283-0191-00	B010100	B039999	CAP.,FXD,CER DI:0.022UF,20%,50V (R7844 ONLY)	72982	8121N075Z5U0223M

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C3722	283-0239-00	B040000		CAP.,FXD,CER DI:0.022UF,10%,50V (R7844 ONLY)	72982	8121N083X7R0223K
C3730	283-0180-00			CAP.,FXD,CER DI:5600PF,20%,200V (C3730, 7844/R7844 ONLY)	72982	8121N204 E 562M
C3734	283-0204-00			CAP.,FXD,CER DI:0.01UF,20%,50V (C3734, 7844/R7844 ONLY)	72982	8121N061Z5U0103M
C3738	283-0158-00			CAP.,FXD,CER DI:1PF,10%,50V (C3738, 7844/R7844 ONLY)	72982	8101B057C0K0109B
C3739	283-0158-00			CAP.,FXD,CER DI:1PF,10%,50V (C3739, 7844/R7844 ONLY)	72982	8101B057C0K0109B
C3760	283-0158-00			CAP.,FXD,CER DI:1PF,10%,50V (C3760, 7844/R7844 ONLY)	72982	8101B057C0K0109B
C3761	283-0108-00			CAP.,FXD,CER DI:220PF,10%,200V (C3761, 7844/R7844 ONLY)	56289	272C13
C3762	283-0158-00			CAP.,FXD,CER DI:1PF,10%,50V (C3762, 7844/R7844 ONLY)	72982	8101B057C0K0109B
C3763	283-0158-00	XB010149		CAP.,FXD,CER DI:1PF,10%,50V (C3763, 7844/R7844 ONLY, NOMINAL VALUE, SELECTED AND ADDED IF NECESSARY)	72982	8101B057C0K0109B
C3765	283-0260-00	B010100	B049999	CAP.,FXD,CER DI:5.6PF,5%,200V (7844 ONLY) (NOMINAL VALUE,SELECTED)	72982	8111B200C0G569C
C3765	281-0122-00	B050000		CAP.,VAR,CER DI:2.5-9PF,100V (7844 ONLY)	72982	518-000A2.5-9
C3765	283-0260-00	B010100	B039999	CAP.,FXD,CER DI:5.6PF,5%,200V (R7844 ONLY) (NOMINAL VALUE,SELECTED)	72982	8111B200C0G569C
C3765	281-0122-00	B040000		CAP.,VAR,CER DI:2.5-9PF,100V (R7844 ONLY)	72982	518-000A2.5-9
C3766	283-0180-00			CAP.,FXD,CER DI:5600PF,20%,200V (C3766, 7844/R7844 ONLY)	72982	8121N204 E 562M
C3767	283-0191-00	B010100	B049999	CAP.,FXD,CER DI:0.022UF,20%,50V (7844 ONLY)	72982	8121N075Z5U0223M
C3767	283-0239-00	B050000		CAP.,FXD,CER DI:0.022UF,10%,50V (7844 ONLY)	72982	8121N083X7R0223K
C3767	283-0191-00	B010100	B039999	CAP.,FXD,CER DI:0.022UF,20%,50V (R7844 ONLY)	72982	8121N075Z5U0223M
C3767	283-0239-00	B040000		CAP.,FXD,CER DI:0.022UF,10%,50V (R7844 ONLY)	72982	8121N083X7R0223K
C3776	283-0180-00			CAP.,FXD,CER DI:5600PF,20%,200V (C3776, 7844/R7844 ONLY)	72982	8121N204 E 562M
C3782	283-0204-00			CAP.,FXD,CER DI:0.01UF,20%,50V (C3782, 7844/R7844 ONLY)	72982	8121N061Z5U0103M
C3786	283-0158-00			CAP.,FXD,CER DI:1PF,10%,50V (C3786, 7844/R7844 ONLY)	72982	8101B057C0K0109B
C3788	283-0158-00			CAP.,FXD,CER DI:1PF,10%,50V (C3788, 7844/R7844 ONLY)	72982	8101B057C0K0109B
C4108	283-0004-00			CAP.,FXD,CER DI:0.02UF,+80-20%,150V (C4108, OPTION 22 ONLY)	91418	SP203Z151-4R9
C4116	285-0809-00			CAP.,FXD,PLSTC:1UF,10%,50V (C4116, OPTION 22 ONLY)	56289	LP66A1A105K
C4120	283-0198-00			CAP.,FXD,CER DI:0.22UF,20%,50V (C4120, OPTION 22 ONLY)	72982	8121N083Z5U0224M
C4130	281-0523-00			CAP.,FXD,CER DI:100PF,+/-20PF,500V (C4130, OPTION 22 ONLY)	72982	301-000U2M0101M
C4135	285-0809-00			CAP.,FXD,PLSTC:1UF,10%,50V (C4135, OPTION 22 ONLY)	56289	LP66A1A105K

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C4142	290-0177-00			CAP.,FXD,ELCTLT:1UF,20%,50V (C4142, OPTION 22 ONLY)	56289	162D105X0050CD2
C4154	283-0328-00			CAP.,FXD,CER DI:0.03UF,+80-20%,200V (C4154, OPTION 22 ONLY)	72982	8131N225Z5U0303Z
C4155	283-0178-00			CAP.,FXD,CER DI:0.1UF,+80-20%,100V (C4155, OPTION 22 ONLY)	72982	8131N145651 104Z
C4159	283-0150-00			CAP.,FXD,CER DI:650PF,5%,200V (C4159, OPTION 22 ONLY)	59660	835-515B651J
C4162	281-0549-00			CAP.,FXD,CER DI:68PF,10%,500V (C4162, OPTION 22 ONLY)	59660	301-000U2J0680K
C4169	283-0179-00			CAP.,FXD,CER DI:0.68UF,10%,100V (C4169, OPTION 22 ONLY)	72982	8151N150 C684K
C4172	283-0249-00			CAP.,FXD,CER DI:0.068UF,10%,50V (C4172, OPTION 22 ONLY)	72982	8131N075 C 683K
C4807	283-0599-00	XB100000		CAP.,FXD,MICA D:98PF,5%,500V (R7844 ONLY)	00853	D105E980J0
C4807	283-0599-00	XB110000		CAP.,FXD,MICA D:98PF,5%,500V (7844 ONLY)	00853	D105E980J0
C4823	281-0219-00	XB100000	B100453	CAP.,VAR,CER DI:5-35PF,+2-2.5%,100V (R7844 ONLY)	72982	513-001 5-30
C4823	281-0158-00	B100454		CAP.,VAR,CER D1:7-45PF,50V (R7844 ONLY)	73899	DVJ-5006
C4823	281-0219-00	XB110000	B110894	CAP.,VAR,CER DI:5-35PF,+2-2.5%,100V (7844 ONLY)	72982	513-001 5-30
C4823	281-0158-00	B110895		CAP.,VAR,CER D1:7-45PF,50V (7844 ONLY)	73899	DVJ-5006
C4833	283-0618-00	XB100000		CAP.,FXD,MICA D:130PF,2%,400V (R7844 ONLY)	00853	D155E131G0
C4833	283-0618-00	XB110000		CAP.,FXD,MICA D:130PF,2%,400V (7844 ONLY)	00853	D155E131G0
C4843	283-0618-00	XB100000		CAP.,FXD,MICA D:130PF,2%,400V (R7844 ONLY)	00853	D155E131G0
C4843	283-0618-00	XB110000		CAP.,FXD,MICA D:130PF,2%,400V (7844 ONLY)	00853	D155E131G0
C4850	281-0166-00	XB100000		CAP.,VAR,AIR DI:1.9-15.7PF,250V (R7844 ONLY)	74970	187-0109-005
C4850	281-0166-00	XB110000		CAP.,VAR,AIR DI:1.9-15.7PF,250V (7844 ONLY)	74970	187-0109-005
C4851	283-0633-00	XB100000		CAP.,FXD,MICA D:77PF,1%,100V (R7844 ONLY)	00853	D151E770F0
C4851	283-0633-00	XB110000		CAP.,FXD,MICA D:77PF,1%,100V (7844 ONLY)	00853	D151E770F0
C4855	281-0526-00	XB100000	B100453X	CAP.,FXD,CER DI:1.5PF,+/-0.5PF,500V (R7844 ONLY)	04222	7001-1313
C4855	281-0526-00	XB110000	B110894X	CAP.,FXD,CER DI:1.5PF,+/-0.5PF,500V (7844 ONLY)	04222	7001-1313
C4858	281-0773-00	XB100000		CAP.,FXD,CER DI:0.01UF,10%,100V (R7844 ONLY)	04222	GC70-1C103K
C4858	281-0773-00	XB110000		CAP.,FXD,CER DI:0.01UF,10%,100V (7844 ONLY)	04222	GC70-1C103K
C4860	281-0166-00	XB100000		CAP.,VAR,AIR DI:1.9-15.7PF,250V (R7844 ONLY)	74970	187-0109-005
C4860	281-0166-00	XB110000		CAP.,VAR,AIR DI:1.9-15.7PF,250V (7844 ONLY)	74970	187-0109-005
C4861	283-0633-00	XB100000		CAP.,FXD,MICA D:77PF,1%,100V (R7844 ONLY)	00853	D151E770F0
C4861	283-0633-00	XB110000		CAP.,FXD,MICA D:77PF,1%,100V (7844 ONLY)	00853	D151E770F0

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C4873	281-0773-00	XB100000		CAP.,FXD,CER DI:0.01UF,10%,100V (R7844 ONLY)	04222	GC70-1C103K
C4873	281-0773-00	XB110000		CAP.,FXD,CER DI:0.01UF,10%,100V (7844 ONLY)	04222	GC70-1C103K
C4874	283-0002-00	XB100000		CAP.,FXD,CER DI:0.01UF,+80-20%,500V (R7844 ONLY)	91418	811-546E103Z
C4874	283-0002-00	XB110000		CAP.,FXD,CER DI:0.01UF,+80-20%,500V (7844 ONLY)	91418	811-546E103Z
C4878	281-0659-00	XB100000		CAP.,FXD,CER DI:4.3PF,+/-0.25PF,500V (R7844 ONLY)	59660	301-000C0H0439C
C4878	281-0659-00	XB110000		CAP.,FXD,CER DI:4.3PF,+/-0.25PF,500V (7844 ONLY)	59660	301-000C0H0439C
C4881	281-0773-00	XB100000		CAP.,FXD,CER DI:0.01UF,10%,100V (R7844 ONLY)	04222	GC70-1C103K
C4881	281-0773-00	XB110000		CAP.,FXD,CER DI:0.01UF,10%,100V (7844 ONLY)	04222	GC70-1C103K
C4883	283-0002-00	XB100000		CAP.,FXD,CER DI:0.01UF,+80-20%,500V (R7844 ONLY)	91418	811-546E103Z
C4883	283-0002-00	XB110000		CAP.,FXD,CER DI:0.01UF,+80-20%,500V (7844 ONLY)	91418	811-546E103Z
C4891	281-0773-00	XB100000		CAP.,FXD,CER DI:0.01UF,10%,100V (R7844 ONLY)	04222	GC70-1C103K
C4891	281-0773-00	XB110000		CAP.,FXD,CER DI:0.01UF,10%,100V (7844 ONLY)	04222	GC70-1C103K
C4894	283-0002-00	XB100000		CAP.,FXD,CER DI:0.01UF,+80-20%,500V (R7844 ONLY)	91418	811-546E103Z
C4894	283-0002-00	XB110000		CAP.,FXD,CER DI:0.01UF,+80-20%,500V (7844 ONLY)	91418	811-546E103Z
C4898	281-0659-00	XB100000		CAP.,FXD,CER DI:4.3PF,+/-0.25PF,500V (R7844 ONLY)	59660	301-000C0H0439C
C4898	281-0659-00	XB110000		CAP.,FXD,CER DI:4.3PF,+/-0.25PF,500V (7844 ONLY)	59660	301-000C0H0439C
C4976	283-0002-00	XB100000		CAP.,FXD,CER DI:0.01UF,+80-20%,500V (R7844 ONLY)	91418	811-546E103Z
C4976	283-0002-00	XB110000		CAP.,FXD,CER DI:0.01UF,+80-20%,500V (7844 ONLY)	91418	811-546E103Z
C4984	283-0002-00	XB100000		CAP.,FXD,CER DI:0.01UF,+80-20%,500V (R7844 ONLY)	91418	811-546E103Z
C4984	283-0002-00	XB110000		CAP.,FXD,CER DI:0.01UF,+80-20%,500V (7844 ONLY)	91418	811-546E103Z
C4986	281-0773-00	XB100000		CAP.,FXD,CER DI:0.01UF,10%,100V (R7844 ONLY)	04222	GC70-1C103K
C4986	281-0773-00	XB110000		CAP.,FXD,CER DI:0.01UF,10%,100V (7844 ONLY)	04222	GC70-1C103K
C4989	283-0002-00	XB100000		CAP.,FXD,CER DI:0.01UF,+80-20%,500V (R7844 ONLY)	91418	811-546E103Z
C4989	283-0002-00	XB110000		CAP.,FXD,CER DI:0.01UF,+80-20%,500V (7844 ONLY)	91418	811-546E103Z
C4991	290-0745-00	XB100000		CAP.,FXD,ELCTLT:22UF,+50-10%,25V (R7844 ONLY)	56289	502D225
C4991	290-0745-00	XB110000		CAP.,FXD,ELCTLT:22UF,+50-10%,25V (7844 ONLY)	56289	502D225
C4993	290-0745-00	XB100000		CAP.,FXD,ELCTLT:22UF,+50-10%,25V (R7844 ONLY)	56289	502D225
C4993	290-0745-00	XB110000		CAP.,FXD,ELCTLT:22UF,+50-10%,25V (7844 ONLY)	56289	502D225

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C4999	290-0745-00	XB100000		CAP.,FXD,ELCTLT:22UF,+50-10%,25V (R7844 ONLY)	56289	502D225
C4999	290-0745-00	XB110000		CAP.,FXD,ELCTLT:22UF,+50-10%,25V (7844 ONLY)	56289	502D225
C5807	283-0599-00	XB100000		CAP.,FXD,MICA D:98PF,5%,500V (R7844 ONLY)	00853	D105E980J0
C5807	283-0599-00	XB110000		CAP.,FXD,MICA D:98PF,5%,500V (7844 ONLY)	00853	D105E980J0
C5823	281-0219-00	XB100000	B100453	CAP.,VAR,CER DI:5-35PF,+2-2.5%,100V (R7844 ONLY)	72982	513-001 5-30
C5823	281-0158-00	B100454		CAP.,VAR,CER D1:7-45PF,50V (R7844 ONLY)	73899	DVJ-5006
C5823	281-0219-00	XB110000	B110894	CAP.,VAR,CER DI:5-35PF,+2-2.5%,100V (7844 ONLY)	72982	513-001 5-30
C5823	281-0158-00	B100895		CAP.,VAR,CER D1:7-45PF,50V (7844 ONLY)	73899	DVJ-5006
C5833	283-0618-00	XB100000		CAP.,FXD,MICA D:130PF,2%,400V (R7844 ONLY)	00853	D155E131G0
C5833	283-0618-00	XB110000		CAP.,FXD,MICA D:130PF,2%,400V (7844 ONLY)	00853	D155E131G0
C5843	283-0618-00	XB100000		CAP.,FXD,MICA D:130PF,2%,400V (R7844 ONLY)	00853	D155E131G0
C5843	283-0618-00	XB110000		CAP.,FXD,MICA D:130PF,2%,400V (7844 ONLY)	00853	D155E131G0
C5850	281-0166-00	XB100000		CAP.,VAR,AIR DI:1.9-15.7PF,250V (R7844 ONLY)	74970	187-0109-005
C5850	281-0166-00	XB110000		CAP.,VAR,AIR DI:1.9-15.7PF,250V (7844 ONLY)	74970	187-0109-005
C5851	283-0633-00	XB100000		CAP.,FXD,MICA D:77PF,1%,100V (R7844 ONLY)	00853	D151E770F0
C5851	283-0633-00	XB110000		CAP.,FXD,MICA D:77PF,1%,100V (7844 ONLY)	00853	D151E770F0
C5858	281-0773-00	XB100000		CAP.,FXD,CER DI:0.01UF,10%,100V (R7844 ONLY)	04222	GC70-1C103K
C5858	281-0773-00	XB110000		CAP.,FXD,CER DI:0.01UF,10%,100V (7844 ONLY)	04222	GC70-1C103K
C5860	281-0166-00	XB100000		CAP.,VAR,AIR DI:1.9-15.7PF,250V (R7844 ONLY)	74970	187-0109-005
C5860	281-0166-00	XB110000		CAP.,VAR,AIR DI:1.9-15.7PF,250V (7844 ONLY)	74970	187-0109-005
C5861	283-0633-00	XB100000		CAP.,FXD,MICA D:77PF,1%,100V (R7844 ONLY)	00853	D151E770F0
C5861	283-0633-00	XB110000		CAP.,FXD,MICA D:77PF,1%,100V (R7844 ONLY)	00853	D151E770F0
C5873	281-0773-00	XB100000		CAP.,FXD,CER DI:0.01UF,10%,100V (R7844 ONLY)	04222	GC70-1C103K
C5873	281-0773-00	XB110000		CAP.,FXD,CER DI:0.01UF,10%,100V (7844 ONLY)	04222	GC70-1C103K
C5874	283-0002-00	XB100000		CAP.,FXD,CER DI:0.01UF,+80-20%,500V (R7844 ONLY)	91418	811-546E103Z
C5874	283-0002-00	XB110000		CAP.,FXD,CER DI:0.01UF,+80-20%,500V (7844 ONLY)	91418	811-546E103Z
C5878	281-0659-00	XB100000		CAP.,FXD,CER DI:4.3PF,+/-0.25PF,500V (R7844 ONLY)	59660	301-000C0H0439C
C5878	281-0659-00	XB110000		CAP.,FXD,CER DI:4.3PF,+/-0.25PF,500V (7844 ONLY)	59660	301-000C0H0439C
C5881	281-0773-00	XB100000		CAP.,FXD,CER DI:0.01UF,10%,100V **(R7844 ONLY)**	04222	GC70-1C103K

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C5881	281-0773-00	XB110000		CAP.,FXD,CER DI:0.01UF,10%,100V (7844 ONLY)	04222	GC70-1C103K
C5883	283-0002-00	XB100000		CAP.,FXD,CER DI:0.01UF,+80-20%,500V (R7844 ONLY)	91418	811-546E103Z
C5883	283-0002-00	XB110000		CAP.,FXD,CER DI:0.01UF,+80-20%,500V (7844 ONLY)	91418	811-546E103Z
C5891	281-0773-00	XB100000		CAP.,FXD,CER DI:0.01UF,10%,100V (R7844 ONLY)	04222	GC70-1C103K
C5891	281-0773-00	XB110000		CAP.,FXD,CER DI:0.01UF,10%,100V (7844 ONLY)	04222	GC70-1C103K
C5894	283-0002-00	XB100000		CAP.,FXD,CER DI:0.01UF,+80-20%,500V (R7844 ONLY)	91418	811-546E103Z
C5894	283-0002-00	XB110000		CAP.,FXD,CER DI:0.01UF,+80-20%,500V (7844 ONLY)	91418	811-546E103Z
C5898	281-0659-00	XB100000		CAP.,FXD,CER DI:4.3PF,+/-0.25PF,500V (R7844 ONLY)	59660	301-000C0H0439C
C5898	281-0659-00	XB110000		CAP.,FXD,CER DI:4.3PF,+/-0.25PF,500V (7844 ONLY)	59660	301-000C0H0439C
C5976	283-0002-00	XB100000		CAP.,FXD,CER DI:0.01UF,+80-20%,500V (R7844 ONLY)	91418	811-546E103Z
C5976	283-0002-00	XB110000		CAP.,FXD,CER DI:0.01UF,+80-20%,500V (7844 ONLY)	91418	811-546E103Z
C5984	283-0002-00	XB100000		CAP.,FXD,CER DI:0.01UF,+80-20%,500V (R7844 ONLY)	91418	811-546E103Z
C5984	283-0002-00	XB110000		CAP.,FXD,CER DI:0.01UF,+80-20%,500V (7844 ONLY)	91418	811-546E103Z
C5986	281-0773-00	XB100000		CAP.,FXD,CER DI:0.01UF,10%,100V (R7844 ONLY)	04222	GC70-1C103K
C5986	281-0773-00	XB110000		CAP.,FXD,CER DI:0.01UF,10%,100V (7844 ONLY)	04222	GC70-1C103K
C5988	283-0002-00	XB100000		CAP.,FXD,CER DI:0.01UF,+80-20%,500V (R7844 ONLY)	91418	811-546E103Z
C5988	283-0002-00	XB110000		CAP.,FXD,CER DI:0.01UF,+80-20%,500V (7844 ONLY)	91418	811-546E103Z
C5991	290-0745-00	XB100000		CAP.,FXD,ELCTLT:22UF,+50-10%,25V (R7844 ONLY)	56289	502D225
C5991	290-0745-00	XB110000		CAP.,FXD,ELCTLT:22UF,+50-10%,25V (7844 ONLY)	56289	502D225
C5993	290-0745-00	XB100000		CAP.,FXD,ELCTLT:22UF,+50-10%,25V (R7844 ONLY)	56289	502D225
C5993	290-0745-00	XB110000		CAP.,FXD,ELCTLT:22UF,+50-10%,25V (7844 ONLY)	56289	502D225
C5999	290-0745-00	XB100000		CAP.,FXD,ELCTLT:22UF,+50-10%,25V (R7844 ONLY)	56289	502D225
C5999	290-0745-00	XB110000		CAP.,FXD,ELCTLT:22UF,+50-10%,25V (7844 ONLY)	56289	502D225
CR11	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR13	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR14	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR15	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR16	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR17	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR18	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR19	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR20	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR37	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R

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CR38	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR39	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR40	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR110	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR111	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR134	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR142	152-0423-00			SEMICOND DEVICE:SILICON,400V,3A	04713	1N5000
CR143	152-0423-00			SEMICOND DEVICE:SILICON,400V,3A	04713	1N5000
CR218	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR232	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR234	152-0075-00			SEMICOND DEVICE:GE,25V,40MA	14433	G866
CR235	152-0075-00			SEMICOND DEVICE:GE,25V,40MA	14433	G866
CR237	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR238	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR242	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR246	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR253	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR254	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR258	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR268	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR288	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR289	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR290	152-0141-02	B010100	B030211X	SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR290	----- -----			(7844 ONLY)		
CR290	152-0141-02	B010100	B020123X	SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR290	----- -----			(R7844 ONLY)		
CR290	152-0141-02	XB120000		SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR296	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR306	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR314	152-0141-02	XB120000		SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR315	152-0141-02	XB120000		SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR320	152-0153-00	B010100	B030211X	SEMICOND DEVICE:SILICON,15V,50MA	07263	FD7003
CR320	----- -----			(7844 ONLY)		
CR320	152-0153-00	B010100	B020123X	SEMICOND DEVICE:SILICON,15V,50MA	07263	FD7003
CR320	----- -----			(R7844 ONLY)		
CR324	152-0153-00	B010100	B030211X	SEMICOND DEVICE:SILICON,15V,50MA	07263	FD7003
CR324	----- -----			(7844 ONLY)		
CR324	152-0153-00	B010100	B020123X	SEMICOND DEVICE:SILICON,15V,50MA	07263	FD7003
CR324	----- -----			(R7844 ONLY)		
CR325	152-0153-00	B010100	B030211X	SEMICOND DEVICE:SILICON,15V,50MA	07263	FD7003
CR325	----- -----			(7844 ONLY)		
CR325	152-0153-00	B010100	B020123X	SEMICOND DEVICE:SILICON,15V,50MA	07263	FD7003
CR325	----- -----			(R7844 ONLY)		
CR328	152-0141-02	XB030212		SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR328	----- -----			(7844 ONLY)		
CR328	152-0141-02	XB020124		SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR328	----- -----			(R7844 ONLY)		
CR329	152-0141-02	XB030212		SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR329	----- -----			(7844 ONLY)		
CR329	152-0141-02	XB020124		SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR329	----- -----			(R7844 ONLY)		
CR331	152-0333-00			SEMICOND DEVICE:SILICON,55V,200MA	07263	FDH-6012
CR332	152-0333-00			SEMICOND DEVICE:SILICON,55V,200MA	07263	FDH-6012
CR339	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR346	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR354	152-0141-02	XB120000		SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR355	152-0141-02	XB120000		SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R

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CR360	152-0153-00			SEMICOND DEVICE:SILICON,15V,50MA	07263	FD7003
CR364	152-0153-00			SEMICOND DEVICE:SILICON,15V,50MA	07263	FD7003
CR365	152-0153-00			SEMICOND DEVICE:SILICON,15V,50MA	07263	FD7003
CR371	152-0333-00			SEMICOND DEVICE:SILICON,55V,200MA	07263	FDH-6012
CR372	152-0333-00			SEMICOND DEVICE:SILICON,55V,200MA	07263	FDH-6012
CR416	152-0307-00			SEMICOND DEVICE:SILICON,300V,0.13A	04713	SSD1150
CR446	152-0307-00			SEMICOND DEVICE:SILICON,300V,0.13A	04713	SSD1150
CR516	152-0307-00			SEMICOND DEVICE:SILICON,300V,0.13A	04713	SSD1150
CR546	152-0307-00			SEMICOND DEVICE:SILICON,300V,0.13A	04713	SSD1150
CR646	152-0141-02	B010100	B110784X	SEMICOND DEVICE:SILICON,30V,150MA (7844 OPTION 21 ONLY)	01295	1N4152R
CR646	152-0141-02	B010100	B100399X	SEMICOND DEVICE:SILICON,30V,150MA (R7844 OPTION 21 ONLY)	01295	1N4152R
CR648	152-0141-02	B010100	B100399X	SEMICOND DEVICE:SILICON,30V,150MA (7844 OPTION 21 ONLY)	01295	1N4152R
CR648	152-0141-02	B010100	B110784X	SEMICOND DEVICE:SILICON,30V,150MA (R7844 OPTION 21 ONLY)	01295	1N4152R
CR916	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR958	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR960	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR966	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR972	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR974	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR976	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR1017	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR1018	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR1037	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR1038	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR1044	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR1046	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR1064	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR1066	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR1144	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR1150	152-0061-00			SEMICOND DEVICE:SILICON,175V,100MA	07263	FDH2161
CR1164	152-0233-00			SEMICOND DEVICE:SILICON,85V,100MA	80009	152-0233-00
CR1215	152-0396-01			SEMICOND DEVICE:SILICON,400V,3A	12969	652-821
CR1232	152-0107-00			SEMICOND DEVICE:SILICON,400V,400MA	01295	G727
CR1234	152-0400-00			SEMICOND DEVICE:SILICON,400V,1A	80009	152-0400-00
CR1238	152-0401-00	B010100	B141774X	SEMICOND DEVICE:SILICON,3-LAYER,TRIGGER (7844 ONLY)	04713	SPT32K
CR1238	152-0401-00	B010100	B140839X	SEMICOND DEVICE:SILICON,3-LAYER,TRIGGER (R7844 ONLY)	04713	SPT32K
CR1240	152-0107-00			SEMICOND DEVICE:SILICON,400V,400MA	01295	G727
CR1241	152-0400-00			SEMICOND DEVICE:SILICON,400V,1A	80009	152-0400-00
CR1242	152-0107-00			SEMICOND DEVICE:SILICON,400V,400MA	01295	G727
CR1244	152-0107-00			SEMICOND DEVICE:SILICON,400V,400MA	01295	G727
CR1249	152-0061-00			SEMICOND DEVICE:SILICON,175V,100MA	07263	FDH2161
CR1251	152-0061-00			SEMICOND DEVICE:SILICON,175V,100MA	07263	FDH2161
CR1252	152-0061-00			SEMICOND DEVICE:SILICON,175V,100MA	07263	FDH2161
CR1253	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR1256	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR1259	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR1280	152-0333-00			SEMICOND DEVICE:SILICON,55V,200MA	07263	FDH-6012
CR1281	152-0333-00			SEMICOND DEVICE:SILICON,55V,200MA	07263	FDH-6012
CR1282	152-0333-00			SEMICOND DEVICE:SILICON,55V,200MA	07263	FDH-6012
CR1283	152-0333-00			SEMICOND DEVICE:SILICON,55V,200MA	07263	FDH-6012
CR1288	152-0333-00			SEMICOND DEVICE:SILICON,55V,200MA	07263	FDH-6012

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CR1289	152-0333-00			SEMICOND DEVICE:SILICON,55V,200MA	07263	FDH-6012
CR1290	152-0333-00			SEMICOND DEVICE:SILICON,55V,200MA	07263	FDH-6012
CR1294	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR1306	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR1310	152-0397-00			SEMICOND DEVICE:SILICON,50V,12A	80009	152-0397-00
CR1311	152-0502-00	B010100	B141769	SEMICOND DEVICE:SILICON,20V,5A	04713	1N5823
	----- -----			(7844 ONLY)		
CR1311	152-0686-00	B141770		SEMICOND DEVICE:RECT,SI,100V,5A	80009	152-0686-00
	----- -----			(7844 ONLY)		
CR1311	152-0502-00	B010100	B140829	SEMICOND DEVICE:SILICON,20V,5A	04713	1N5823
	----- -----			(R7844 ONLY)		
CR1311	152-0686-00	B140830		SEMICOND DEVICE:RECT,SI,100V,5A	80009	152-0686-00
	----- -----			(R7844 ONLY)		
CR1312	152-0502-00	B010100	B141769	SEMICOND DEVICE:SILICON,20V,5A	04713	1N5823
	----- -----			(7844 ONLY)		
CR1312	152-0686-00	B141770		SEMICOND DEVICE:RECT,SI,100V,5A	80009	152-0686-00
	----- -----			(7844 ONLY)		
CR1312	152-0502-00	B010100	B140829	SEMICOND DEVICE:SILICON,20V,5A	04713	1N5823
	----- -----			(R7844 ONLY)		
CR1312	152-0686-00	B140830		SEMICOND DEVICE:RECT,SI,100V,5A	80009	152-0686-00
	----- -----			(R7844 ONLY)		
CR1313	152-0397-00			SEMICOND DEVICE:SILICON,50V,12A	80009	152-0397-00
CR1320						
CR1321	153-0052-00	B010100	B099999	SEMICOND DVC SE:FOUR MATCHED DIODES	80009	153-0052-00
CR1322	----- -----			(CR1320 THRU CR1323, 7844 ONLY)		
CR1323						
CR1320	152-0400-00	B100000		SEMICOND DEVICE:SILICON,400V,1A	80009	152-0400-00
	----- -----			(7844 ONLY)		
CR1321	152-0400-00	B100000		SEMICOND DEVICE:SILICON,400V,1A	80009	152-0400-00
	----- -----			(7844 ONLY)		
CR1322	152-0400-00	B100000		SEMICOND DEVICE:SILICON,400V,1A	80009	152-0400-00
	----- -----			(7844 ONLY)		
CR1323	152-0400-00	B100000		SEMICOND DEVICE:SILICON,400V,1A	80009	152-0400-00
	----- -----			(7844 ONLY)		
CR1320						
CR1321	153-0052-00	B010100	B089999	SEMICOND DVC SE:FOUR MATCHED DIODES	80009	153-0052-00
CR1322	----- -----			(CR1320 THRU CR1323, R7844 ONLY)		
CR1323						
CR1320	152-0400-00	B090000		SEMICOND DEVICE:SILICON,400V,1A	80009	152-0400-00
	----- -----			(R7844 ONLY)		
CR1321	152-0400-00	B090000		SEMICOND DEVICE:SILICON,400V,1A	80009	152-0400-00
	----- -----			(R7844 ONLY)		
CR1322	152-0400-00	B090000		SEMICOND DEVICE:SILICON,400V,1A	80009	152-0400-00
	----- -----			(R7844 ONLY)		
CR1323	152-0400-00	B090000		SEMICOND DEVICE:SILICON,400V,1A	80009	152-0400-00
	----- -----			(R7844 ONLY)		
CR1325	152-0061-00			SEMICOND DEVICE:SILICON,175V,100MA	07263	FDH2161
CR1326	152-0061-00			SEMICOND DEVICE:SILICON,175V,100MA	07263	FDH2161
CR1340	152-0413-00			SEMICOND DEVICE:SILICON,400V,750MA	12969	UTR307
CR1341	152-0413-00			SEMICOND DEVICE:SILICON,400V,750MA	12969	UTR307
CR1342	152-0413-00			SEMICOND DEVICE:SILICON,400V,750MA	12969	UTR307
CR1343	152-0413-00			SEMICOND DEVICE:SILICON,400V,750MA	12969	UTR307
CR1345	152-0397-00			SEMICOND DEVICE:SILICON,50V,12A	80009	152-0397-00
CR1346	152-0397-00			SEMICOND DEVICE:SILICON,50V,12A	80009	152-0397-00
CR1347	152-0397-00			SEMICOND DEVICE:SILICON,50V,12A	80009	152-0397-00
CR1348	152-0397-00			SEMICOND DEVICE:SILICON,50V,12A	80009	152-0397-00
CR1376	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R

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CR1378	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR1402	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR1410	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR1429	152-0066-01			SEMICOND DEVICE:SILICON,400V,1A	15238	LG4012
CR1431	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR1439	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR1445	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR1459	152-0066-01			SEMICOND DEVICE:SILICON,400V,1A	15238	LG4012
CR1468	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR1469	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR1482	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR1483	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR1489	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR1499	152-0066-01			SEMICOND DEVICE:SILICON,400V,1A	15238	LG4012
CR1502	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR1503	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR1506	152-0233-00			SEMICOND DEVICE:SILICON,85V,100MA	80009	152-0233-00
CR1510	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR1520	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR1521	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR1523	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR1539	152-0066-01			SEMICOND DEVICE:SILICON,400V,1A	15238	LG4012
CR1543	152-0075-00			SEMICOND DEVICE:GE,25V,40MA	14433	G866
CR1549	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR1576	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR1589	152-0066-01			SEMICOND DEVICE:SILICON,400V,1A	15238	LG4012
CR1625	152-0066-01			SEMICOND DEVICE:SILICON,400V,1A	15238	LG4012
CR1631	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR1635	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR1638	152-0242-00			SEMICOND DEVICE:SILICON,225V,200MA	07263	FDH5004
CR1639	152-0242-00			SEMICOND DEVICE:SILICON,225V,200MA	07263	FDH5004
CR1690	152-0501-00			SEMICOND DEVICE:SILICON,70V,200MA	04713	SSD2405
CR1692	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR1702	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR1704	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR1787	152-0141-02 ----- -----	XB020000	B039999X	SEMICOND DEVICE:SILICON,30V,150MA (7844 ONLY)	01295	1N4152R
CR1787	152-0141-02 ----- -----	XB020000	B029999X	SEMICOND DEVICE:SILICON,30V,150MA (R7844 ONLY)	01295	1N4152R
CR1834	152-0141-02 ----- -----	B010100	B099999X	SEMICOND DEVICE:SILICON,30V,150MA (R7844 ONLY)	01295	1N4152R
CR1834	152-0141-02 ----- -----	B010100	B109999X	SEMICOND DEVICE:SILICON,30V,150MA (7844 ONLY)	01295	1N4152R
CR1836	152-0141-02 ----- -----	B010100	B099999X	SEMICOND DEVICE:SILICON,30V,150MA (R7844 ONLY)	01295	1N4152R
CR1836	152-0141-02 ----- -----	B010100	B109999X	SEMICOND DEVICE:SILICON,30V,150MA (7844 ONLY)	01295	1N4152R
CR1842	152-0153-00 ----- -----	B010100	B099999X	SEMICOND DEVICE:SILICON,15V,50MA (R7844 ONLY)	07263	FD7003
CR1842	152-0153-00 ----- -----	B010100	B109999X	SEMICOND DEVICE:SILICON,15V,50MA (7844 ONLY)	07263	FD7003
CR1852	152-0153-00 ----- -----	B010100	B099999X	SEMICOND DEVICE:SILICON,15V,50MA (R7844 ONLY)	07263	FD7003
CR1852	152-0153-00 ----- -----	B010100	B109999X	SEMICOND DEVICE:SILICON,15V,50MA (7844 ONLY)	07263	FD7003
CR1860	152-0141-02 ----- -----	B010100	B099999X	SEMICOND DEVICE:SILICON,30V,150MA (R7844 ONLY)	01295	1N4152R

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CR1860	152-0141-02	B010100	B109999X	SEMICOND DEVICE:SILICON,30V,150MA (7844 ONLY)	01295	1N4152R
CR1862	152-0269-00	B010100	B010135	SEMICOND DEVICE:SILICON,VAR VCAP.,4V,33PF (7844 ONLY)	04713	SMV1263
CR1862	152-0270-00	B010136	B109999X	SEMICOND DEVICE:SILICON,56PF AT 4V (7844 ONLY)	04713	SMV1563
CR1862	152-0269-00	B010100	B010112	SEMICOND DEVICE:SILICON,VAR VCAP.,4V,33PF (R7844 ONLY)	04713	SMV1263
CR1862	152-0270-00	B010113	B099999X	SEMICOND DEVICE:SILICON,56PF AT 4V (R7844 ONLY)	04713	SMV1563
CR1866	152-0141-02	B010100	B099999X	SEMICOND DEVICE:SILICON,30V,150MA (R7844 ONLY)	01295	1N4152R
CR1866	152-0141-02	B010100	B109999X	SEMICOND DEVICE:SILICON,30V,150MA (7844 ONLY)	01295	1N4152R
CR1870	152-0141-02	B010100	B099999X	SEMICOND DEVICE:SILICON,30V,150MA (R7844 ONLY)	01295	1N4152R
CR1870	152-0141-02	B010100	B109999X	SEMICOND DEVICE:SILICON,30V,150MA (7844 ONLY)	01295	1N4152R
CR1882	152-0141-02	B010100	B099999X	SEMICOND DEVICE:SILICON,30V,150MA (R7844 ONLY)	01295	1N4152R
CR1882	152-0141-02	B010100	B109999X	SEMICOND DEVICE:SILICON,30V,150MA (7844 ONLY)	01295	1N4152R
CR2044	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR2050	152-0061-00			SEMICOND DEVICE:SILICON,175V,100MA	07263	FDH2161
CR2064	152-0233-00			SEMICOND DEVICE:SILICON,85V,100MA	80009	152-0233-00
CR2124	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR2125	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR2127	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR2140	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR2141	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR2142	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR2145	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR2146	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR2156	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR2157	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR2162	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR2163	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR2166	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR2167	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR2170	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR2171	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR2174	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR2175	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR2192	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR2193	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR2196	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR2198	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR2226	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR2235	152-0333-00	XB080000		SEMICOND DEVICE:SILICON,55V,200MA (7844 ONLY)	07263	FDH-6012
THRU						
CR2266						
CR2235	152-0333-00	XB090000		SEMICOND DEVICE:SILICON,55V,200MA (R7844 ONLY)	07263	FDH-6012
THRU						
CR2266						

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CR2306	152-0409-00			SEMICOND DEVICE:SILICON,12,000V,5MA	80009	152-0409-00
CR2312	152-0409-00			SEMICOND DEVICE:SILICON,12,000V,5MA	80009	152-0409-00
CR2322	152-0242-00			SEMICOND DEVICE:SILICON,225V,200MA	07263	FDH5004
CR2323	152-0242-00			SEMICOND DEVICE:SILICON,225V,200MA	07263	FDH5004
CR2324	152-0242-00			SEMICOND DEVICE:SILICON,225V,200MA	07263	FDH5004
CR2325	152-0242-00			SEMICOND DEVICE:SILICON,225V,200MA	07263	FDH5004
CR2332	152-0242-00			SEMICOND DEVICE:SILICON,225V,200MA	07263	FDH5004
CR2333	152-0242-00			SEMICOND DEVICE:SILICON,225V,200MA	07263	FDH5004
CR2334	152-0242-00			SEMICOND DEVICE:SILICON,225V,200MA	07263	FDH5004
CR2335	152-0242-00			SEMICOND DEVICE:SILICON,225V,200MA	07263	FDH5004
CR2342	152-0242-00			SEMICOND DEVICE:SILICON,225V,200MA	07263	FDH5004
CR2343	152-0242-00			SEMICOND DEVICE:SILICON,225V,200MA	07263	FDH5004
CR2344	152-0242-00			SEMICOND DEVICE:SILICON,225V,200MA	07263	FDH5004
CR2345	152-0242-00			SEMICOND DEVICE:SILICON,225V,200MA	07263	FDH5004
CR2352	152-0242-00			SEMICOND DEVICE:SILICON,225V,200MA	07263	FDH5004
CR2353	152-0242-00			SEMICOND DEVICE:SILICON,225V,200MA	07263	FDH5004
CR2354	152-0242-00			SEMICOND DEVICE:SILICON,225V,200MA	07263	FDH5004
CR2355	152-0242-00			SEMICOND DEVICE:SILICON,225V,200MA	07263	FDH5004
CR2423	152-0107-00			SEMICOND DEVICE:SILICON,400V,400MA	01295	G727
CR2443	152-0107-00			SEMICOND DEVICE:SILICON,400V,400MA	01295	G727
CR2446	152-0061-00			SEMICOND DEVICE:SILICON,175V,100MA	07263	FDH2161
CR2450	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR2460	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR2466	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR2467	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR2476	152-0061-00			SEMICOND DEVICE:SILICON,175V,100MA	07263	FDH2161
CR2480	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR2489	152-0242-00	XB030000		SEMICOND DEVICE:SILICON,225V,200MA	07263	FDH5004
	----- -----			(7844 ONLY)		
CR2489	152-0242-00	XB020000		SEMICOND DEVICE:SILICON,225V,200MA	07263	FDH5004
	----- -----			(R7844 ONLY)		
CR2490	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR2492	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR2495	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR2497	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR2499	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR2528	152-0107-00			SEMICOND DEVICE:SILICON,400V,400MA	01295	G727
CR2531	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR2532	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR2534	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR2537	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR2538	152-0107-00			SEMICOND DEVICE:SILICON,400V,400MA	01295	G727
CR2690	152-0501-00			SEMICOND DEVICE:SILICON,70V,200MA	04713	SSD2405
CR2692	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR2702	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR2704	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
CR2787	152-0141-02	XB020000	B039999X	SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
	----- -----			(7844 ONLY)		
CR2787	152-0141-02	XB020000	B029999X	SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
	----- -----			(R7844 ONLY)		
CR2834	152-0141-02	B010100	B099999X	SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
	----- -----			(R7844 ONLY)		
CR2834	152-0141-02	B010100	B109999X	SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
	----- -----			(7844 ONLY)		
CR2836	152-0141-02	B010100	B099999X	SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
	----- -----			(R7844 ONLY)		

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CR2836	152-0141-02 ----- -----	B010100	B109999X	SEMICOND DEVICE:SILICON,30V,150MA (7844 ONLY)	01295	1N4152R
CR2842	152-0153-00 ----- -----	B010100	B099999X	SEMICOND DEVICE:SILICON,15V,50MA (R7844 ONLY)	07263	FD7003
CR2842	152-0153-00 ----- -----	B010100	B109999X	SEMICOND DEVICE:SILICON,15V,50MA (7844 ONLY)	07263	FD7003
CR2852	152-0153-00 ----- -----	B010100	B099999X	SEMICOND DEVICE:SILICON,15V,50MA (R7844 ONLY)	07263	FD7003
CR2852	152-0153-00 ----- -----	B010100	B109999X	SEMICOND DEVICE:SILICON,15V,50MA (7844 ONLY)	07263	FD7003
CR2860	152-0141-02 ----- -----	B010100	B099999X	SEMICOND DEVICE:SILICON,30V,150MA (R7844 ONLY)	01295	1N4152R
CR2860	152-0141-02 ----- -----	B010100	B109999X	SEMICOND DEVICE:SILICON,30V,150MA (7844 ONLY)	01295	1N4152R
CR2862	152-0269-00 ----- -----	B010100	B010134	SEMICOND DEVICE:SILICON,VAR VCAP.,4V,33PF (7844 ONLY)	04713	SMV1263
CR2862	152-0270-00 ----- -----	B010135	B109999X	SEMICOND DEVICE:SILICON,56PF AT 4V (7844 ONLY)	04713	SMV1563
CR2862	152-0269-00 ----- -----	B010100	B010112	SEMICOND DEVICE:SILICON,VAR VCAP.,4V,33PF (7844 ONLY)	04713	SMV1263
CR2862	152-0270-00 ----- -----	B010113	B099999X	SEMICOND DEVICE:SILICON,56PF AT 4V (R7844 ONLY)	04713	SMV1563
CR2866	152-0141-02 ----- -----	B010100	B099999X	SEMICOND DEVICE:SILICON,30V,150MA (R7844 ONLY)	01295	1N4152R
CR2866	152-0141-02 ----- -----	B010100	B109999X	SEMICOND DEVICE:SILICON,30V,150MA (7844 ONLY)	01295	1N4152R
CR2870	152-0141-02 ----- -----	B010100	B099999X	SEMICOND DEVICE:SILICON,30V,150MA (R7844 ONLY)	01295	1N4152R
CR2870	152-0141-02 ----- -----	B010100	B109999X	SEMICOND DEVICE:SILICON,30V,150MA (7844 ONLY)	01295	1N4152R
CR2882	152-0141-02 ----- -----	B010100	B099999X	SEMICOND DEVICE:SILICON,30V,150MA (R7844 ONLY)	01295	1N4152R
CR2882	152-0141-02 ----- -----	B010100	B109999X	SEMICOND DEVICE:SILICON,30V,150MA (7844 ONLY)	01295	1N4152R
CR3155	152-0141-02 ----- -----			SEMICOND DEVICE:SILICON,30V,150MA (CR3155, 7844/R7844 ONLY)	01295	1N4152R
CR3156	152-0141-02 ----- -----			SEMICOND DEVICE:SILICON,30V,150MA (CR3156, 7844/R7844 ONLY)	01295	1N4152R
CR3160	152-0141-02 ----- -----			SEMICOND DEVICE:SILICON,30V,150MA (CR3160, 7844/R7844 ONLY)	01295	1N4152R
CR3168	152-0141-02 ----- -----			SEMICOND DEVICE:SILICON,30V,150MA (CR3168, 7844/R7844 ONLY)	01295	1N4152R
CR3169	152-0141-02 ----- -----			SEMICOND DEVICE:SILICON,30V,150MA (CR3169, 7844/R7844 ONLY)	01295	1N4152R
CR3172	152-0141-02 ----- -----			SEMICOND DEVICE:SILICON,30V,150MA (CR3172, 7844/R7844 ONLY)	01295	1N4152R
CR3176	152-0141-02 ----- -----			SEMICOND DEVICE:SILICON,30V,150MA (CR3176, 7844/R7844 ONLY)	01295	1N4152R
CR3177	152-0141-02 ----- -----			SEMICOND DEVICE:SILICON,30V,150MA (CR3177, 7844/R7844 ONLY)	01295	1N4152R
CR3178	152-0141-02 ----- -----			SEMICOND DEVICE:SILICON,30V,150MA (CR3178, 7844/R7844 ONLY)	01295	1N4152R
CR3179	152-0141-02 ----- -----			SEMICOND DEVICE:SILICON,30V,150MA (CR3179, 7844/R7844 ONLY)	01295	1N4152R
CR3183	152-0141-02 ----- -----			SEMICOND DEVICE:SILICON,30V,150MA (CR3183, 7844/R7844 ONLY)	01295	1N4152R
CR3184	152-0141-02 ----- -----			SEMICOND DEVICE:SILICON,30V,150MA (CR3184, 7844/R7844 ONLY)	01295	1N4152R

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CR3694	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA (CR3694, 7844/R7844 ONLY)	01295	1N4152R
CR3794	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA (CR3794, 7844/R7844 ONLY)	01295	1N4152R
CR4101	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA (CR4101, OPTION 22 ONLY)	01295	1N4152R
CR4102	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA (CR4102, OPTION 22 ONLY)	01295	1N4152R
CR4119	152-0075-00			SEMICOND DEVICE:GE,25V,40MA (CR4119, OPTION 22 ONLY)	14433	G866
CR4125	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA (CR4125, OPTION 22 ONLY)	01295	1N4152R
CR4138	152-0075-00			SEMICOND DEVICE:GE,25V,40MA (CR4138, OPTION 22 ONLY)	14433	G866
CR4143	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA (CR4143, OPTION 22 ONLY)	01295	1N4152R
CR4156	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA (CR4156, OPTION 22 ONLY)	01295	1N4152R
CR4162	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA (CR4162, OPTION 22 ONLY)	01295	1N4152R
CR4172	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA (CR4172, OPTION 22 ONLY)	01295	1N4152R
CR4180	152-0075-00	B010100	B109999	SEMICOND DEVICE:GE,25V,40MA (OPTION 22 ONLY)	14433	G866
CR4180	152-0141-02	B110000		SEMICOND DEVICE:SILICON,30V,150MA (OPTION 22 ONLY)	01295	1N4152R
CR4181	152-0141-02	XB110000		SEMICOND DEVICE:SILICON,30V,150MA (CR4181, OPTION 22 ONLY)	01295	1N4152R
CR4185	152-0141-02			SEMICOND DEVICE:SILICON,30V,150MA (CR4185, OPTION 22 ONLY)	01295	1N4152R
CR4850	152-0141-02	XB100000		SEMICOND DEVICE:SILICON,30V,150MA (R7844 ONLY)	01295	1N4152R
CR4850	152-0141-02	XB110000		SEMICOND DEVICE:SILICON,30V,150MA (7844 ONLY)	01295	1N4152R
CR4860	152-0141-02	XB100000		SEMICOND DEVICE:SILICON,30V,150MA (R7844 ONLY)	01295	1N4152R
CR4860	152-0141-02	XB110000		SEMICOND DEVICE:SILICON,30V,150MA (7844 ONLY)	01295	1N4152R
CR4862	152-0141-02	XB100000		SEMICOND DEVICE:SILICON,30V,150MA (R7844 ONLY)	01295	1N4152R
CR4862	152-0141-02	XB110000		SEMICOND DEVICE:SILICON,30V,150MA (7844 ONLY)	01295	1N4152R
CR4863	152-0141-02	XB100000		SEMICOND DEVICE:SILICON,30V,150MA (R7844 ONLY)	01295	1N4152R
CR4863	152-0141-02	XB110000		SEMICOND DEVICE:SILICON,30V,150MA (7844 ONLY)	01295	1N4152R
CR5850	152-0141-02	XB100000		SEMICOND DEVICE:SILICON,30V,150MA (R7844 ONLY)	01295	1N4152R
CR5850	152-0141-02	XB110000		SEMICOND DEVICE:SILICON,30V,150MA (7844 ONLY)	01295	1N4152R
CR5860	152-0141-02	XB100000		SEMICOND DEVICE:SILICON,30V,150MA (R7844 ONLY)	01295	1N4152R
CR5860	152-0141-02	XB110000		SEMICOND DEVICE:SILICON,30V,150MA (7844 ONLY)	01295	1N4152R
CR5862	152-0141-02	XB100000		SEMICOND DEVICE:SILICON,30V,150MA (R7844 ONLY)	01295	1N4152R

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CR5862	152-0141-02	XB110000		SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
	----- -----			(7844 ONLY)		
CR5863	152-0141-02	XB100000		SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
	----- -----			(R7844 ONLY)		
CR5863	152-0141-02	XB110000		SEMICOND DEVICE:SILICON,30V,150MA	01295	1N4152R
	----- -----			(7844 ONLY)		
DL1650	119-0471-00			DELAY LINE,ELEC:65NS,100 OHM	80009	119-0471-00
	----- -----			(DL1650, R7844 ONLY)		
DL2650	119-0470-00			DELAY LINE,ELEC:	80009	119-0470-00
	----- -----			(DL2650, 7844 ONLY)		
DS87	150-0029-00			LAMP,INCAND:6.3V,0.20A	08806	349
DS88	150-0029-00			LAMP,INCAND:6.3V,0.20A	08806	349
DS89	150-0029-00			LAMP,INCAND:6.3V,0.20A	08806	349
DS980	150-0121-02			LAMP,CARTRIDGE:GREEN,5V,60MA	80009	150-0121-02
	----- -----			(7844 ONLY)		
DS990	150-0097-01			LAMP,INCAND:6.3V,0.2A,#7381,FROSTED	08806	7381F
	----- -----			(R7844 ONLY)		
DS1219	150-0035-00			LAMP,GLOW:90V,0.3MA	53944	A1B-3
DS2326	150-0035-00			LAMP,GLOW:90V,0.3MA	53944	A1B-3
DS2327	150-0035-00			LAMP,GLOW:90V,0.3MA	53944	A1B-3
DS2336	150-0035-00			LAMP,GLOW:90V,0.3MA	53944	A1B-3
DS2337	150-0035-00			LAMP,GLOW:90V,0.3MA	53944	A1B-3
DS2400	150-0030-00			LAMP,GLOW:NEON,T-2,60 TO 90 VOLTS	74276	NE2V-T
DS2401	150-0030-00			LAMP,GLOW:NEON,T-2,60 TO 90 VOLTS	74276	NE2V-T
DS2402	150-0030-00			LAMP,GLOW:NEON,T-2,60 TO 90 VOLTS	74276	NE2V-T
DS2403	150-0030-00			LAMP,GLOW:NEON,T-2,60 TO 90 VOLTS	74276	NE2V-T
E1208	119-0181-00			ARSR,ELEC SURGE:230V,GAS FILLED	80009	119-0181-00
E1213	119-0181-00			ARSR,ELEC SURGE:230V,GAS FILLED	80009	119-0181-00
F1200	159-0017-00			FUSE,CARTRIDGE:3AG,4A,250V,FAST BLOW	71400	MTH4
F1700	159-0090-00			FUSE,CARTRIDGE:0.25A,125V,FAST-BLOW	71400	GAF 1/4
F2700	159-0090-00			FUSE,CARTRIDGE:0.25A,125V,FAST-BLOW	71400	GAF 1/4
FL1200	119-0420-00			FILTER,RFI:6A,250VAC,400HZ	02777	F-11935-6
J4	131-1003-00			CONN,RCPT,ELEC:CKT BD MT,3 PRONG	80009	131-1003-00
J6	131-1003-00			CONN,RCPT,ELEC:CKT BD MT,3 PRONG	80009	131-1003-00
J16	131-1003-00			CONN,RCPT,ELEC:CKT BD MT,3 PRONG	80009	131-1003-00
J23	131-1003-00			CONN,RCPT,ELEC:CKT BD MT,3 PRONG	80009	131-1003-00
J25	131-1003-00			CONN,RCPT,ELEC:CKT BD MT,3 PRONG	80009	131-1003-00
J26	131-1003-00			CONN,RCPT,ELEC:CKT BD MT,3 PRONG	80009	131-1003-00
J48	131-1003-00			CONN,RCPT,ELEC:CKT BD MT,3 PRONG	80009	131-1003-00
J51	131-1003-00			CONN,RCPT,ELEC:CKT BD MT,3 PRONG	80009	131-1003-00
J52	131-1003-00			CONN,RCPT,ELEC:CKT BD MT,3 PRONG	80009	131-1003-00
J53	131-1003-00			CONN,RCPT,ELEC:CKT BD MT,3 PRONG	80009	131-1003-00
J54	131-1003-00			CONN,RCPT,ELEC:CKT BD MT,3 PRONG	80009	131-1003-00
J67	131-1003-00			CONN,RCPT,ELEC:CKT BD MT,3 PRONG	80009	131-1003-00
J168	131-1003-00			CONN,RCPT,ELEC:CKT BD MT,3 PRONG	80009	131-1003-00
J330	131-1003-00			CONN,RCPT,ELEC:CKT BD MT,3 PRONG	80009	131-1003-00
J331	131-1003-00			CONN,RCPT,ELEC:CKT BD MT,3 PRONG	80009	131-1003-00
J339	131-1003-00			CONN,RCPT,ELEC:CKT BD MT,3 PRONG	80009	131-1003-00
J370	131-1003-00			CONN,RCPT,ELEC:CKT BD MT,3 PRONG	80009	131-1003-00
J372	131-1003-00			CONN,RCPT,ELEC:CKT BD MT,3 PRONG	80009	131-1003-00
J410	131-1003-00			CONN,RCPT,ELEC:CKT BD MT,3 PRONG	80009	131-1003-00
J414	131-1003-00			CONN,RCPT,ELEC:CKT BD MT,3 PRONG	80009	131-1003-00
J433	131-1003-00			CONN,RCPT,ELEC:CKT BD MT,3 PRONG	80009	131-1003-00
J451	131-1003-00			CONN,RCPT,ELEC:CKT BD MT,3 PRONG	80009	131-1003-00
J510	131-1003-00			CONN,RCPT,ELEC:CKT BD MT,3 PRONG	80009	131-1003-00

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J514	131-1003-00			CONN,RCPT,ELEC:CKT BD MT,3 PRONG	80009	131-1003-00
J534	131-1003-00			CONN,RCPT,ELEC:CKT BD MT,3 PRONG	80009	131-1003-00
J552	131-1003-00			CONN,RCPT,ELEC:CKT BD MT,3 PRONG	80009	131-1003-00
J601	131-1003-00	B010100	B110794X	CONN,RCPT,ELEC:CKT BD MT,3 PRONG	80009	131-1003-00
	----- -----			(7844 OPTION 21 ONLY)		
J601	131-1003-00	B010100	B100399X	CONN,RCPT,ELEC:CKT BD MT,3 PRONG	80009	131-1003-00
	----- -----			(R7844 OPTION 21 ONLY)		
J602	131-1003-00	B010100	B110794X	CONN,RCPT,ELEC:CKT BD MT,3 PRONG	80009	131-1003-00
	----- -----			(7844 OPTION 21 ONLY)		
J602	131-1003-00	B010100	B100399X	CONN,RCPT,ELEC:CKT BD MT,3 PRONG	80009	131-1003-00
	----- -----			(R7844 OPTION 21 ONLY)		
J641	131-1003-00	B010100	B110794X	CONN,RCPT,ELEC:CKT BD MT,3 PRONG	80009	131-1003-00
	----- -----			(7844 OPTION 21 ONLY)		
J641	131-1003-00	B010100	B100399X	CONN,RCPT,ELEC:CKT BD MT,3 PRONG	80009	131-1003-00
	----- -----			(R7844 OPTION 21 ONLY)		
J642	131-1003-00	B010100	B110794X	CONN,RCPT,ELEC:CKT BD MT,3 PRONG	80009	131-1003-00
	----- -----			(7844 OPTION 21 ONLY)		
J642	131-1003-00	B010100	B100399X	CONN,RCPT,ELEC:CKT BD MT,3 PRONG	80009	131-1003-00
	----- -----			(R7844 OPTION 21 ONLY)		
J701	131-1003-00	B010100	B110794X	CONN,RCPT,ELEC:CKT BD MT,3 PRONG	80009	131-1003-00
	----- -----			(7844 OPTION 21 ONLY)		
J701	131-1003-00	B010100	B100399X	CONN,RCPT,ELEC:CKT BD MT,3 PRONG	80009	131-1003-00
	----- -----			(R7844 OPTION 21 ONLY)		
J702	131-1003-00	B010100	B110794X	CONN,RCPT,ELEC:CKT BD MT,3 PRONG	80009	131-1003-00
	----- -----			(7844 OPTION 21 ONLY)		
J702	131-1003-00	B010100	B100399X	CONN,RCPT,ELEC:CKT BD MT,3 PRONG	80009	131-1003-00
	----- -----			(R7844 OPTION 21 ONLY)		
J738A	131-1003-00	B010100	B110794X	CONN,RCPT,ELEC:CKT BD MT,3 PRONG	80009	131-1003-00
	----- -----			(7844 OPTION 21 ONLY)		
J738A	131-1003-00	B010100	B100399X	CONN,RCPT,ELEC:CKT BD MT,3 PRONG	80009	131-1003-00
	----- -----			(R7844 OPTION 21 ONLY)		
J738B	131-1003-00	B010100	B110794X	CONN,RCPT,ELEC:CKT BD MT,3 PRONG	80009	131-1003-00
	----- -----			(7844 OPTION 21 ONLY)		
J738B	131-1003-00	B010100	B100399X	CONN,RCPT,ELEC:CKT BD MT,3 PRONG	80009	131-1003-00
	----- -----			(R7844 OPTION 21 ONLY)		
J738C	131-1003-00	B010100	B110794X	CONN,RCPT,ELEC:CKT BD MT,3 PRONG	80009	131-1003-00
	----- -----			(7844 OPTION 21 ONLY)		
J738C	131-1003-00	B010100	B100399X	CONN,RCPT,ELEC:CKT BD MT,3 PRONG	80009	131-1003-00
	----- -----			(R7844 OPTION 21 ONLY)		
J738D	131-1003-00	B010100	B110794X	CONN,RCPT,ELEC:CKT BD MT,3 PRONG	80009	131-1003-00
	----- -----			(7844 OPTION 21 ONLY)		
J738D	131-1003-00	B010100	B100399X	CONN,RCPT,ELEC:CKT BD MT,3 PRONG	80009	131-1003-00
	----- -----			(R7844 OPTION 21 ONLY)		
J743	131-1003-00	B010100	B110794X	CONN,RCPT,ELEC:CKT BD MT,3 PRONG	80009	131-1003-00
	----- -----			(7844 OPTION 21 ONLY)		
J743	131-1003-00	B010100	B100399X	CONN,RCPT,ELEC:CKT BD MT,3 PRONG	80009	131-1003-00
	----- -----			(R7844 OPTION 21 ONLY)		
J744	131-1003-00	B010100	B110794X	CONN,RCPT,ELEC:CKT BD MT,3 PRONG	80009	131-1003-00
	----- -----			(7844 OPTION 21 ONLY)		
J744	131-1003-00	B010100	B100399X	CONN,RCPT,ELEC:CKT BD MT,3 PRONG	80009	131-1003-00
	----- -----			(R7844 OPTION 21 ONLY)		
J810	131-1003-00			CONN,RCPT,ELEC:CKT BD MT,3 PRONG	80009	131-1003-00
J820	131-1003-00			CONN,RCPT,ELEC:CKT BD MT,3 PRONG	80009	131-1003-00
J838A	131-1003-00			CONN,RCPT,ELEC:CKT BD MT,3 PRONG	80009	131-1003-00
J838B	131-1003-00			CONN,RCPT,ELEC:CKT BD MT,3 PRONG	80009	131-1003-00
J840	131-1003-00			CONN,RCPT,ELEC:CKT BD MT,3 PRONG	80009	131-1003-00
J850	131-1003-00			CONN,RCPT,ELEC:CKT BD MT,3 PRONG	80009	131-1003-00

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J982	131-0771-00			CONN,RCPT,ELEC:4 CONT,QUICK DISCONNECT	0000A	ROA-304NYL
J984	131-1315-00			CONN,RCPT,ELEC:BNC,FEMALE	80009	131-1315-00
J992	131-1003-00			CONN,RCPT,ELEC:CKT BD MT,3 PRONG	80009	131-1003-00
J993	131-1003-00			CONN,RCPT,ELEC:CKT BD MT,3 PRONG	80009	131-1003-00
J998	131-0771-00			CONN,RCPT,ELEC:4 CONT,QUICK DISCONNECT	0000A	ROA-304NYL
J1004	131-1003-00			CONN,RCPT,ELEC:CKT BD MT,3 PRONG	80009	131-1003-00
J1006	131-1003-00			CONN,RCPT,ELEC:CKT BD MT,3 PRONG	80009	131-1003-00
J1016	131-0955-00			CONN,RCPT,ELEC:BNC,FEMALE	13511	31-279
	----- -----			(J1016, R7844 ONLY)		
J1023	131-1003-00			CONN,RCPT,ELEC:CKT BD MT,3 PRONG	80009	131-1003-00
J1025	131-1003-00			CONN,RCPT,ELEC:CKT BD MT,3 PRONG	80009	131-1003-00
J1031	131-1003-00			CONN,RCPT,ELEC:CKT BD MT,3 PRONG	80009	131-1003-00
J1035	131-0955-00			CONN,RCPT,ELEC:BNC,FEMALE	13511	31-279
	----- -----			(J1035, R7844 ONLY)		
J1048	131-1003-00			CONN,RCPT,ELEC:CKT BD MT,3 PRONG	80009	131-1003-00
J1058	131-0955-00			CONN,RCPT,ELEC:BNC,FEMALE	13511	31-279
J1067	131-1003-00			CONN,RCPT,ELEC:CKT BD MT,3 PRONG	80009	131-1003-00
J1072	131-1003-00			CONN,RCPT,ELEC:CKT BD MT,3 PRONG	80009	131-1003-00
J1077	131-0955-00			CONN,RCPT,ELEC:BNC,FEMALE	13511	31-279
	----- -----			(J1077, R7844 ONLY)		
J1081	131-0955-00			CONN,RCPT,ELEC:BNC,FEMALE	13511	31-279
	----- -----			(J1081, R7844 ONLY)		
J1082	131-0955-00			CONN,RCPT,ELEC:BNC,FEMALE	13511	31-279
	----- -----			(J1082, R7844 ONLY)		
J1091	131-0955-00			CONN,RCPT,ELEC:BNC,FEMALE	13511	31-279
	----- -----			(J1091, R7844 ONLY)		
J1093	131-0955-00			CONN,RCPT,ELEC:BNC,FEMALE	13511	31-279
	----- -----			(J1093, R7844 ONLY)		
J1095	131-0955-00			CONN,RCPT,ELEC:BNC,FEMALE	13511	31-279
	----- -----			(J1095, R7844 ONLY)		
J1099	131-0955-00			CONN,RCPT,ELEC:BNC,FEMALE	13511	31-279
	----- -----			(J1099, R7844 ONLY)		
J1131	131-1003-00			CONN,RCPT,ELEC:CKT BD MT,3 PRONG	80009	131-1003-00
J1132	131-1003-00			CONN,RCPT,ELEC:CKT BD MT,3 PRONG	80009	131-1003-00
J1660	131-1003-00			CONN,RCPT,ELEC:CKT BD MT,3 PRONG	80009	131-1003-00
J1661	131-1003-00			CONN,RCPT,ELEC:CKT BD MT,3 PRONG	80009	131-1003-00
J1690	131-1003-00			CONN,RCPT,ELEC:CKT BD MT,3 PRONG	80009	131-1003-00
J1738	131-1003-00			CONN,RCPT,ELEC:CKT BD MT,3 PRONG	80009	131-1003-00
J1799	131-1003-00			CONN,RCPT,ELEC:CKT BD MT,3 PRONG	80009	131-1003-00
J1810	131-1003-00	B010100	B099999X	CONN,RCPT,ELEC:CKT BD MT,3 PRONG	80009	131-1003-00
J1810	131-1003-00	B010100	B109999X	CONN,RCPT,ELEC:CKT BD MT,3 PRONG	80009	131-1003-00
J1820	131-1003-00	B010100	B099999X	CONN,RCPT,ELEC:CKT BD MT,3 PRONG	80009	131-1003-00
J1820	131-1003-00	B010100	B109999X	CONN,RCPT,ELEC:CKT BD MT,3 PRONG	80009	131-1003-00
J1868	131-1003-00	B010100	B099999X	CONN,RCPT,ELEC:CKT BD MT,3 PRONG	80009	131-1003-00
J1868	131-1003-00	B010100	B109999X	CONN,RCPT,ELEC:CKT BD MT,3 PRONG	80009	131-1003-00
J2032	131-1003-00			CONN,RCPT,ELEC:CKT BD MT,3 PRONG	80009	131-1003-00
J2072	131-1003-00			CONN,RCPT,ELEC:CKT BD MT,3 PRONG	80009	131-1003-00
J2132	131-1003-00			CONN,RCPT,ELEC:CKT BD MT,3 PRONG	80009	131-1003-00
J2138	131-1003-00			CONN,RCPT,ELEC:CKT BD MT,3 PRONG	80009	131-1003-00
J2139	131-1003-00			CONN,RCPT,ELEC:CKT BD MT,3 PRONG	80009	131-1003-00
J2192	131-1003-00			CONN,RCPT,ELEC:CKT BD MT,3 PRONG	80009	131-1003-00
J2296	131-1003-00			CONN,RCPT,ELEC:CKT BD MT,3 PRONG	80009	131-1003-00
J2299	131-1003-00			CONN,RCPT,ELEC:CKT BD MT,3 PRONG	80009	131-1003-00
J2438	131-1003-00			CONN,RCPT,ELEC:CKT BD MT,3 PRONG	80009	131-1003-00
J2660	131-1003-00			CONN,RCPT,ELEC:CKT BD MT,3 PRONG	80009	131-1003-00
J2661	131-1003-00			CONN,RCPT,ELEC:CKT BD MT,3 PRONG	80009	131-1003-00
J2690	131-1003-00			CONN,RCPT,ELEC:CKT BD MT,3 PRONG	80009	131-1003-00

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J2738	131-1003-00			CONN,RCPT,ELEC:CKT BD MT,3 PRONG	80009	131-1003-00
J2799	131-1003-00			CONN,RCPT,ELEC:CKT BD MT,3 PRONG	80009	131-1003-00
J2810	131-1003-00	B010100	B099999X	CONN,RCPT,ELEC:CKT BD MT,3 PRONG	80009	131-1003-00
	----- -----			(R7844 ONLY)		
J2810	131-1003-00	B010100	B109999X	CONN,RCPT,ELEC:CKT BD MT,3 PRONG	80009	131-1003-00
	----- -----			(7844 ONLY)		
J2820	131-1003-00	B010100	B099999X	CONN,RCPT,ELEC:CKT BD MT,3 PRONG	80009	131-1003-00
	----- -----			(R7844 ONLY)		
J2820	131-1003-00	B010100	B109999X	CONN,RCPT,ELEC:CKT BD MT,3 PRONG	80009	131-1003-00
	----- -----			(7844 ONLY)		
J2838	131-1003-00	B010100	B099999X	CONN,RCPT,ELEC:CKT BD MT,3 PRONG	80009	131-1003-00
	----- -----			(R7844 ONLY)		
J2838	131-1003-00	B010100	B109999X	CONN,RCPT,ELEC:CKT BD MT,3 PRONG	80009	131-1003-00
	----- -----			(7844 ONLY)		
J2896	131-1003-00	B010100	B099999X	CONN,RCPT,ELEC:CKT BD MT,3 PRONG	80009	131-1003-00
	----- -----			(R7844 ONLY)		
J2896	131-1003-00	B010100	B109999X	CONN,RCPT,ELEC:CKT BD MT,3 PRONG	80009	131-1003-00
	----- -----			(7844 ONLY)		
J3168	131-1003-00			CONN,RCPT,ELEC:CKT BD MT,3 PRONG	80009	131-1003-00
	----- -----			(J3168, 7844/R7844 ONLY)		
J3601	131-1003-00			CONN,RCPT,ELEC:CKT BD MT,3 PRONG	80009	131-1003-00
	----- -----			(J3601, 7844/R7844 ONLY)		
J3602	131-1003-00			CONN,RCPT,ELEC:CKT BD MT,3 PRONG	80009	131-1003-00
	----- -----			(J3602, 7844/R7844 ONLY)		
J3641	131-1003-00			CONN,RCPT,ELEC:CKT BD MT,3 PRONG	80009	131-1003-00
	----- -----			(J3641, 7844/R7844 ONLY)		
J3642	131-1003-00			CONN,RCPT,ELEC:CKT BD MT,3 PRONG	80009	131-1003-00
	----- -----			(J3642, 7844/R7844 ONLY)		
J3701	131-1003-00			CONN,RCPT,ELEC:CKT BD MT,3 PRONG	80009	131-1003-00
	----- -----			(J3701, 7844/R7844 ONLY)		
J3702	131-1003-00			CONN,RCPT,ELEC:CKT BD MT,3 PRONG	80009	131-1003-00
	----- -----			(J3702, 7844/R7844 ONLY)		
J3738A	131-1003-00			CONN,RCPT,ELEC:CKT BD MT,3 PRONG	80009	131-1003-00
	----- -----			(J3738A, 7844/R7844 ONLY)		
J3738B	131-1003-00			CONN,RCPT,ELEC:CKT BD MT,3 PRONG	80009	131-1003-00
	----- -----			(J3738B, 7844/R7844 ONLY)		
J3738C	131-1003-00			CONN,RCPT,ELEC:CKT BD MT,3 PRONG	80009	131-1003-00
	----- -----			(J3738C, 7844/R7844 ONLY)		
J3738D	131-1003-00			CONN,RCPT,ELEC:CKT BD MT,3 PRONG	80009	131-1003-00
	----- -----			(J3738D, 7844/R7844 ONLY)		
J3743	131-1003-00			CONN,RCPT,ELEC:CKT BD MT,3 PRONG	80009	131-1003-00
	----- -----			(J3743, 7844/R7844 ONLY)		
J3744	131-1003-00			CONN,RCPT,ELEC:CKT BD MT,3 PRONG	80009	131-1003-00
	----- -----			(J3744, 7844/R7844 ONLY)		
J4132A	131-1003-00			CONN,RCPT,ELEC:CKT BD MT,3 PRONG	80009	131-1003-00
	----- -----			(J4132A, OPTION 22 ONLY)		
J4132B	131-1003-00			CONN,RCPT,ELEC:CKT BD MT,3 PRONG	80009	131-1003-00
	----- -----			(J4132B, OPTION 22 ONLY)		
J4138A	131-1003-00			CONN,RCPT,ELEC:CKT BD MT,3 PRONG	80009	131-1003-00
	----- -----			(J4138A, OPTION 22 ONLY)		
J4138B	131-1003-00			CONN,RCPT,ELEC:CKT BD MT,3 PRONG	80009	131-1003-00
	----- -----			(J4138B, OPTION 22 ONLY)		
J4139A	131-1003-00			CONN,RCPT,ELEC:CKT BD MT,3 PRONG	80009	131-1003-00
	----- -----			(J4139A, OPTION 22 ONLY)		
J4139B	131-1003-00			CONN,RCPT,ELEC:CKT BD MT,3 PRONG	80009	131-1003-00
	----- -----			(J4139B, OPTION 22 ONLY)		
J4192A	131-1003-00			CONN,RCPT,ELEC:CKT BD MT,3 PRONG	80009	131-1003-00
	----- -----			(J4192A, OPTION 22 ONLY)		

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J4192B	131-1003-00			CONN,RCPT,ELEC:CKT BD MT,3 PRONG (J4192B, OPTION 22 ONLY)	80009	131-1003-00
J4196A	131-1003-00			CONN,RCPT,ELEC:CKT BD MT,3 PRONG (J4196A, OPTION 22 ONLY)	80009	131-1003-00
J4196B	131-1003-00			CONN,RCPT,ELEC:CKT BD MT,3 PRONG (J4196B, OPTION 22 ONLY)	80009	131-1003-00
J4199A	131-1003-00			CONN,RCPT,ELEC:CKT BD MT,3 PRONG (J4199A, OPTION 22 ONLY)	80009	131-1003-00
J4199B	131-1003-00			CONN,RCPT,ELEC:CKT BD MT,3 PRONG (J4199B, OPTION 22 ONLY)	80009	131-1003-00
J4810	131-1003-00	XB100000		CONN,RCPT,ELEC:CKT BD MT,3 PRONG (R7844 ONLY)	80009	131-1003-00
J4810	131-1003-00	XB110000		CONN,RCPT,ELEC:CKT BD MT,3 PRONG (7844 ONLY)	80009	131-1003-00
J4820	131-1003-00	XB100000		CONN,RCPT,ELEC:CKT BD MT,3 PRONG (R7844 ONLY)	80009	131-1003-00
J4820	131-1003-00	XB110000		CONN,RCPT,ELEC:CKT BD MT,3 PRONG (7844 ONLY)	80009	131-1003-00
J4868	131-1003-00	XB100000		CONN,RCPT,ELEC:CKT BD MT,3 PRONG (R7844 ONLY)	80009	131-1003-00
J4868	131-1003-00	XB110000		CONN,RCPT,ELEC:CKT BD MT,3 PRONG (7844 ONLY)	80009	131-1003-00
J5838	131-1003-00	XB100000		CONN,RCPT,ELEC:CKT BD MT,3 PRONG (R7844 ONLY)	80009	131-1003-00
J5838	131-1003-00	XB110000		CONN,RCPT,ELEC:CKT BD MT,3 PRONG (7844 ONLY)	80009	131-1003-00
J5840	131-1003-00	XB100000		CONN,RCPT,ELEC:CKT BD MT,3 PRONG (R7844 ONLY)	80009	131-1003-00
J5840	131-1003-00	XB110000		CONN,RCPT,ELEC:CKT BD MT,3 PRONG (7844 ONLY)	80009	131-1003-00
J5850	131-1003-00	XB100000		CONN,RCPT,ELEC:CKT BD MT,3 PRONG (R7844 ONLY)	80009	131-1003-00
J5850	131-1003-00	XB110000		CONN,RCPT,ELEC:CKT BD MT,3 PRONG (7844 ONLY)	80009	131-1003-00
J5896	131-1003-00	XB100000		CONN,RCPT,ELEC:CKT BD MT,3 PRONG (R7844 ONLY)	80009	131-1003-00
J5896	131-1003-00	XB110000		CONN,RCPT,ELEC:CKT BD MT,3 PRONG (7844 ONLY)	80009	131-1003-00
K4185	148-0034-00			RELAY,ARMATURE:DPDT,15VDC,600 OHM (K4185, OPTION 22 ONLY)	80009	148-0034-00
L391	108-0245-00			COIL,RF:3.9UH	76493	B6310-1
L393	108-0245-00			COIL,RF:3.9UH	76493	B6310-1
L395	108-0245-00			COIL,RF:3.9UH	76493	B6310-1
L396	108-0245-00			COIL,RF:3.9UH	76493	B6310-1
L397	108-0245-00			COIL,RF:3.9UH	76493	B6310-1
L421	108-0736-00			COIL,RF:810NH	80009	108-0736-00
L422	108-0736-00			COIL,RF:810NH	80009	108-0736-00
L451	108-0736-00			COIL,RF:810NH	80009	108-0736-00
L452	108-0736-00			COIL,RF:810NH	80009	108-0736-00
L521	108-0736-00			COIL,RF:810NH	80009	108-0736-00
L522	108-0736-00			COIL,RF:810NH	80009	108-0736-00
L551	108-0736-00			COIL,RF:810NH	80009	108-0736-00
L552	108-0736-00			COIL,RF:810NH	80009	108-0736-00
L591	108-0245-00			COIL,RF:3.9UH	76493	B6310-1
L593	108-0245-00			COIL,RF:3.9UH	76493	B6310-1

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L597	108-0245-00			COIL,RF:3.9UH	76493	B6310-1
L791	108-0245-00	B010100	B110794X	COIL,RF:3.9UH	76493	B6310-1
	----- -----			(7844 OPTION 21 ONLY)		
L791	108-0245-00	B010100	B100399X	COIL,RF:3.9UH	76493	B6310-1
	----- -----			(R7844 OPTION 21 ONLY)		
L793	108-0245-00	B010100	B110794X	COIL,RF:3.9UH	76493	B6310-1
	----- -----			(7844 OPTION 21 ONLY)		
L793	108-0245-00	B010100	B100399X	COIL,RF:3.9UH	76493	B6310-1
	----- -----			(R7844 OPTION 21 ONLY)		
L880	108-0245-00			COIL,RF:3.9UH	76493	B6310-1
L882	108-0245-00			COIL,RF:3.9UH	76493	B6310-1
L916	108-0440-00			COIL,RF:8UH,TOROIDAL INDUCTOR	80009	108-0440-00
L1084	108-0245-00			COIL,RF:3.9UH	76493	B6310-1
L1086	108-0245-00			COIL,RF:3.9UH	76493	B6310-1
L1229	108-0681-00			COIL,RF:140UH	80009	108-0681-00
L1237	108-0761-00			COIL,RF:1MH	80009	108-0761-00
L1313	108-0679-00			COIL,RF:12UH	80009	108-0679-00
L1316	108-0679-00			COIL,RF:12UH	80009	108-0679-00
L1318	108-0554-00			COIL,RF:5UH	80009	108-0554-00
L1329	108-0646-00			COIL,RF:80UH	80009	108-0646-00
L1352	108-0680-00			COIL,RF:27UH	80009	108-0680-00
L1355	108-0680-00			COIL,RF:27UH	80009	108-0680-00
L1359	108-0646-00			COIL,RF:80UH	80009	108-0646-00
L1363	108-0646-00			COIL,RF:80UH	80009	108-0646-00
L1660	108-0369-00			COIL,RF:0.12UH	80009	108-0369-00
L1661	108-0369-00			COIL,RF:0.12UH	80009	108-0369-00
L1667	114-0220-00			COIL,RF:1-3UH,CORE 276-0568-00	80009	114-0220-00
L1730	195-0048-00			LEAD,ELECTRICAL:0.018 DIA X 0.75" MIN L	80009	195-0048-00
L1731	195-0048-00			LEAD,ELECTRICAL:0.018 DIA X 0.75" MIN L	80009	195-0048-00
L1991	108-0245-00	B010100	B099999X	COIL,RF:3.9UH	76493	B6310-1
	----- -----			(R7844 ONLY)		
L1991	108-0245-00	B010100	B109999X	COIL,RF:3.9UH	76493	B6310-1
	----- -----			(7844 ONLY)		
L1993	108-0245-00	B010100	B099999X	COIL,RF:3.9UH	76493	B6310-1
	----- -----			(R7844 ONLY)		
L1993	108-0245-00	B010100	B109999X	COIL,RF:3.9UH	76493	B6310-1
	----- -----			(7844 ONLY)		
L1999	108-0245-00	B010100	B099999X	COIL,RF:3.9UH	76493	B6310-1
	----- -----			(R7844 ONLY)		
L1999	108-0245-00	B010100	B109999X	COIL,RF:3.9UH	76493	B6310-1
	----- -----			(7844 ONLY)		
L2283	108-0331-00			COIL,RF:0.75UH	80009	108-0331-00
L2425	108-0784-00			COIL,TUBE DEFLE:TRACE ROTATOR	80009	108-0784-00
L2426	108-0810-00			COIL,TUBE DEFLE:X-Y ALIGNMENT	80009	108-0810-00
L2582	108-0245-00			COIL,RF:3.9UH	76493	B6310-1
L2583	108-0245-00			COIL,RF:3.9UH	76493	B6310-1
L2585	108-0245-00			COIL,RF:3.9UH	76493	B6310-1
L2586	108-0245-00			COIL,RF:3.9UH	76493	B6310-1
L2588	108-0245-00			COIL,RF:3.9UH	76493	B6310-1
L2589	108-0245-00			COIL,RF:3.9UH	76493	B6310-1
L2591	108-0245-00			COIL,RF:3.9UH	76493	B6310-1
L2592	108-0245-00			COIL,RF:3.9UH	76493	B6310-1
L2594	108-0245-00			COIL,RF:3.9UH	76493	B6310-1
L2595	108-0245-00			COIL,RF:3.9UH	76493	B6310-1
L2597	108-0245-00			COIL,RF:3.9UH	76493	B6310-1
L2660	108-0369-00			COIL,RF:0.12UH	80009	108-0369-00
L2661	108-0369-00			COIL,RF:0.12UH	80009	108-0369-00

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L2667	114-0220-00			COIL,RF:1-3UH,CORE 276-0568-00	80009	114-0220-00
L2730	195-0048-00			LEAD,ELECTRICAL:0.018 DIA X 0.75" MIN L	80009	195-0048-00
L2731	195-0048-00			LEAD,ELECTRICAL:0.018 DIA X 0.75" MIN L	80009	195-0048-00
L2991	108-0245-00	B010100	B099999X	COIL,RF:3.9UH (R7844 ONLY)	76493	B6310-1
L2991	108-0245-00	B010100	B109999X	COIL,RF:3.9UH (7844 ONLY)	76493	B6310-1
L2993	108-0245-00	B010100	B099999X	COIL,RF:3.9UH (R7844 ONLY)	76493	B6310-1
L2993	108-0245-00	B010100	B109999X	COIL,RF:3.9UH (7844 ONLY)	76493	B6310-1
L2999	108-0245-00	B010100	B099999X	COIL,RF:3.9UH (R7844 ONLY)	76493	B6310-1
L2999	108-0245-00	B010100	B109999X	COIL,RF:3.9UH (7844 ONLY)	76493	B6310-1
L4848	276-0507-00	XB100000	B100453X	SHIELDING BEAD,:FERRITE (R7844 ONLY)	78488	57-3443
L4848	276-0507-00	XB110000	B110894X	SHIELDING BEAD,:FERRITE (7844 ONLY)	78488	57-3443
L4991	108-0245-00	XB100000		COIL,RF:3.9UH (R7844 ONLY)	76493	B6310-1
L4991	108-0245-00	XB110000		COIL,RF:3.9UH (7844 ONLY)	76493	B6310-1
L4993	108-0245-00	XB100000		COIL,RF:3.9UH (R7844 ONLY)	76493	B6310-1
L4993	108-0245-00	XB110000		COIL,RF:3.9UH (7844 ONLY)	76493	B6310-1
L4999	108-0245-00	XB100000		COIL,RF:3.9UH (R7844 ONLY)	76493	B6310-1
L4999	108-0245-00	XB110000		COIL,RF:3.9UH (7844 ONLY)	76493	B6310-1
L5848	276-0507-00	XB100000	B100453X	SHIELDING BEAD,:FERRITE (R7844 ONLY)	78488	57-3443
L5848	276-0507-00	XB110000	B110894X	SHIELDING BEAD,:FERRITE (7844 ONLY)	78488	57-3443
L5991	108-0245-00	XB100000		COIL,RF:3.9UH (R7844 ONLY)	76493	B6310-1
L5991	108-0245-00	XB110000		COIL,RF:3.9UH (7844 ONLY)	76493	B6310-1
L5993	108-0245-00	XB100000		COIL,RF:3.9UH (R7844 ONLY)	76493	B6310-1
L5993	108-0245-00	XB110000		COIL,RF:3.9UH (7844 ONLY)	76493	B6310-1
L5999	108-0245-00	XB100000		COIL,RF:3.9UH (R7844 ONLY)	76493	B6310-1
L5999	108-0245-00	XB110000		COIL,RF:3.9UH (7844 ONLY)	76493	B6310-1
LR1780	108-0685-00			COIL,RF:80NH	80009	108-0685-00
LR1784	108-0685-00			COIL,RF:80NH	80009	108-0685-00
LR1787	108-0330-00			COIL,RF:0.4UH	80009	108-0330-00
LR1789	108-0325-00			COIL,RF:0.5UH	80009	108-0325-00
LR1791	108-0325-00			COIL,RF:0.5UH	80009	108-0325-00
LR1794	108-0325-00			COIL,RF:0.5UH	80009	108-0325-00
LR1796	108-0325-00			COIL,RF:0.5UH	80009	108-0325-00
LR1798	108-0325-00			COIL,RF:0.5UH	80009	108-0325-00
LR2780	108-0685-00			COIL,RF:80NH	80009	108-0685-00
LR2784	108-0685-00			COIL,RF:80NH	80009	108-0685-00

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LR2787	108-0330-00			COIL,RF:0.4UH	80009	108-0330-00
LR2789	108-0325-00			COIL,RF:0.5UH	80009	108-0325-00
LR2791	108-0325-00			COIL,RF:0.5UH	80009	108-0325-00
LR2794	108-0325-00			COIL,RF:0.5UH	80009	108-0325-00
LR2796	108-0325-00			COIL,RF:0.5UH	80009	108-0325-00
LR2798	108-0325-00			COIL,RF:0.5UH	80009	108-0325-00
Q66	151-0341-00			TRANSISTOR:SILICON,NPN	07263	S040065
Q86	151-0341-00			TRANSISTOR:SILICON,NPN	07263	S040065
Q114	151-0341-00			TRANSISTOR:SILICON,NPN	07263	S040065
Q116	151-0341-00			TRANSISTOR:SILICON,NPN	07263	S040065
Q220	151-0199-00			TRANSISTOR:SILICON,PNP	04713	SPS6866K
Q226	151-0223-00			TRANSISTOR:SILICON,NPN	04713	SPS8026
Q255	151-0341-00			TRANSISTOR:SILICON,NPN	07263	S040065
Q260	151-0199-00			TRANSISTOR:SILICON,PNP	04713	SPS6866K
Q266	151-0223-00			TRANSISTOR:SILICON,NPN	04713	SPS8026
Q270	151-0199-00			TRANSISTOR:SILICON,PNP	04713	SPS6866K
Q276	151-0223-00			TRANSISTOR:SILICON,NPN	04713	SPS8026
Q286	151-0188-00			TRANSISTOR:SILICON,PNP	04713	SPS6868K
Q290	151-0192-00	B010100	B030211X	TRANSISTOR:SILICON,NPN,SEL FROM MPS6521 (7844 ONLY)	04713	SPS8801
Q290	151-0192-00	B010100	B020123X	TRANSISTOR:SILICON,NPN,SEL FROM MPS6521 (R7844 ONLY)	04713	SPS8801
Q290	151-0192-00	XB120000		TRANSISTOR:SILICON,NPN,SEL FROM MPS6521	04713	SPS8801
Q296	151-0192-00			TRANSISTOR:SILICON,NPN,SEL FROM MPS6521	04713	SPS8801
Q304	151-0341-00	B010100	B119999X	TRANSISTOR:SILICON,NPN	07263	S040065
Q320	151-0198-00	B010100	B030211X	TRANSISTOR:SILICON,NPN,SEL FROM MPS918 (7844 ONLY)	04713	SPS8802-1
Q320	151-0198-00	B010100	B020123X	TRANSISTOR:SILICON,NPN,SEL FROM MPS918 (R7844 ONLY)	04713	SPS8802-1
Q328	151-0192-00			TRANSISTOR:SILICON,NPN,SEL FROM MPS6521	04713	SPS8801
Q344	151-0341-00	B010100	B119999X	TRANSISTOR:SILICON,NPN	07263	S040065
Q360	151-0198-00			TRANSISTOR:SILICON,NPN,SEL FROM MPS918	04713	SPS8802-1
Q420	151-0224-00			TRANSISTOR:SILICON,NPN	07263	SA24850
Q426	151-0224-00			TRANSISTOR:SILICON,NPN	07263	SA24850
Q428	151-0369-00			TRANSISTOR:SILICON,PNP	01295	SKA6664
Q430	151-0369-00			TRANSISTOR:SILICON,PNP	01295	SKA6664
Q450	151-0224-00			TRANSISTOR:SILICON,NPN	07263	SA24850
Q456	151-0224-00			TRANSISTOR:SILICON,NPN	07263	SA24850
Q458	151-0369-00			TRANSISTOR:SILICON,PNP	01295	SKA6664
Q460	151-0369-00			TRANSISTOR:SILICON,PNP	01295	SKA6664
Q520	151-0224-00			TRANSISTOR:SILICON,NPN	07263	SA24850
Q526	151-0220-00			TRANSISTOR:SILICON,PNP	07263	S036228
Q528	151-0369-00			TRANSISTOR:SILICON,PNP	01295	SKA6664
Q530	151-0369-00			TRANSISTOR:SILICON,PNP	01295	SKA6664
Q550	151-0224-00			TRANSISTOR:SILICON,NPN	07263	SA24850
Q556	151-0220-00			TRANSISTOR:SILICON,PNP	07263	S036228
Q558	151-0369-00			TRANSISTOR:SILICON,PNP	01295	SKA6664
Q560	151-0369-00			TRANSISTOR:SILICON,PNP	01295	SKA6664
Q640	151-0341-00	B010100	B110794X	TRANSISTOR:SILICON,NPN (7844 OPTION 21 ONLY)	07263	S040065
Q640	151-0341-00	B010100	B100399X	TRANSISTOR:SILICON,NPN (R7844 OPTION 21 ONLY)	07263	S040065
Q652	151-0341-00	B010100	B110794X	TRANSISTOR:SILICON,NPN (7844 OPTION 21 ONLY)	07263	S040065
Q652	151-0341-00	B010100	B100399X	TRANSISTOR:SILICON,NPN (R7844 OPTION 21 ONLY)	07263	S040065
Q730	151-0341-00	B010100	B110794X	TRANSISTOR:SILICON,NPN (7844 OPTION 21 ONLY)	07263	S040065

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Q730	151-0341-00	B010100	B100399X	TRANSISTOR:SILICON,NPN (R7844 OPTION 21 ONLY)	07263	S040065
Q740	151-0341-00	B010100	B110794X	TRANSISTOR:SILICON,NPN (7844 OPTION 21 ONLY)	07263	S040065
Q740	151-0341-00	B010100	B100399X	TRANSISTOR:SILICON,NPN (R7844 OPTION 21 ONLY)	07263	S040065
Q752	151-0341-00	B010100	B110794X	TRANSISTOR:SILICON,NPN (7844 OPTION 21 ONLY)	07263	S040065
Q752	151-0341-00	B010100	B100399X	TRANSISTOR:SILICON,NPN (R7844 OPTION 21 ONLY)	07263	S040065
Q902	151-0192-00			TRANSISTOR:SILICON,NPN,SEL FROM MPS6521	04713	SPS8801
Q908	151-0192-00			TRANSISTOR:SILICON,NPN,SEL FROM MPS6521	04713	SPS8801
Q910	151-0342-00			TRANSISTOR:SILICON,PNP	07263	S035928
Q944	151-0508-00			TRANSISTOR:UJT,SI,2N6027,TO-98	03508	2N6027
Q954	151-0341-00			TRANSISTOR:SILICON,NPN	07263	S040065
Q980	151-0341-00			TRANSISTOR:SILICON,NPN	07263	S040065
Q994	151-0342-00			TRANSISTOR:SILICON,PNP	07263	S035928
Q1010	151-0223-00			TRANSISTOR:SILICON,NPN	04713	SPS8026
Q1012	151-0223-00			TRANSISTOR:SILICON,NPN	04713	SPS8026
Q1018	151-0221-00			TRANSISTOR:SILICON,PNP	04713	SPS246
Q1030	151-0223-00			TRANSISTOR:SILICON,NPN	04713	SPS8026
Q1032	151-0223-00			TRANSISTOR:SILICON,NPN	04713	SPS8026
Q1038	151-0221-00			TRANSISTOR:SILICON,PNP	04713	SPS246
Q1040	151-0190-00			TRANSISTOR:SILICON,NPN	07263	S032677
Q1046	151-0220-00			TRANSISTOR:SILICON,PNP	07263	S036228
Q1050	151-0220-00			TRANSISTOR:SILICON,PNP	07263	S036228
Q1060	151-0190-00			TRANSISTOR:SILICON,NPN	07263	S032677
Q1066	151-0220-00			TRANSISTOR:SILICON,PNP	07263	S036228
Q1070	151-0220-00			TRANSISTOR:SILICON,PNP	07263	S036228
Q1108	151-0223-00			TRANSISTOR:SILICON,NPN	04713	SPS8026
Q1118	151-0223-00			TRANSISTOR:SILICON,NPN	04713	SPS8026
Q1122	151-0325-00			TRANSISTOR:SILICON,PNP,SEL FROM 2N4258	80009	151-0325-00
Q1126	151-0160-00	B010100	B142529	TRANSISTOR:SILICON,NPN (7844 ONLY)	80009	151-0160-00
Q1126	151-0451-00	B142530		TRANSISTOR:SILICON,NPN (7844 ONLY)	02735	65128
Q1126	151-0160-00	B010100	B141209	TRANSISTOR:SILICON,NPN (R7844 ONLY)	80009	151-0160-00
Q1126	151-0451-00	B141210		TRANSISTOR:SILICON,NPN (R7844 ONLY)	02735	65128
Q1132	151-0220-00			TRANSISTOR:SILICON,PNP	07263	S036228
Q1136	151-0134-00			TRANSISTOR:SILICON,PNP	80009	151-0134-00
Q1140	151-0274-00			TRANSISTOR:SILICON,NPN	80009	151-0274-00
Q1150	151-0270-00			TRANSISTOR:SILICON,PNP	04713	OBD
Q1234	151-0368-01			TRANSISTOR:SILICON,NPN	80009	151-0368-01
Q1238	151-0508-00	XB141775		TRANSISTOR:UJT,SI,2N6027,TO-98 (7844 ONLY)	03508	2N6027
Q1238	151-0508-00	XB140840		TRANSISTOR:UJT,SI,2N6027,TO-98 (R7844 ONLY)	03508	2N6027
Q1241	151-0368-01			TRANSISTOR:SILICON,NPN	80009	151-0368-01
Q1246	151-0260-00			TRANSISTOR:SILICON,NPN	80009	151-0260-00
Q1248	151-0519-00	B010100	B110974	SCR:SILICON (7844 ONLY)	04713	SCR5016K
Q1248	151-0529-00	B110975		SCR:200V,0.5A (7844 ONLY)	04713	MCR206
Q1248	151-0519-00	B010100	B110474	SCR:SILICON (R7844 ONLY)	04713	SCR5016K

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Q1248	151-0529-00	B100475		SCR:200V,0.5A (R7844 ONLY)	04713	MCR206
Q1252	151-0302-00			TRANSISTOR:SILICON,NPN	07263	S038487
Q1254	151-0302-00	B010100	B141744	TRANSISTOR:SILICON,NPN (7844 ONLY)	07263	S038487
Q1254	151-0273-00	B141745		TRANSISTOR:SILICON,NPN (7844 ONLY)	80009	151-0273-00
Q1254	151-0302-00	B010100	B141744	TRANSISTOR:SILICON,NPN (R7844 ONLY)	07263	S038487
Q1254	151-0273-00	B141745		TRANSISTOR:SILICON,NPN (R7844 ONLY)	80009	151-0273-00
Q1373	151-0216-00			TRANSISTOR:SILICON,PNP	04713	SPS8803
Q1409A,B	151-0232-00			TRANSISTOR:SILICON,NPN,DUAL	80009	151-0232-00
Q1415	151-0292-00			TRANSISTOR:SILICON,NPN	80009	151-0292-00
Q1418	151-0228-00			TRANSISTOR:SILICON,PNP,SEL FROM 2N4888	80009	151-0228-00
Q1425	151-0136-00	B010100	B131429	TRANSISTOR:SILICON,NPN (7844 ONLY)	02735	35495
Q1425	151-0136-03	B131430		TRANSISTOR:SILICON,NPN,SEL (7844 ONLY)	80009	151-0136-03
Q1425	151-0136-00	B010100	B130634	TRANSISTOR:SILICON,NPN (R7844 ONLY)	02735	35495
Q1425	151-0136-03	B130635		TRANSISTOR:SILICON,NPN,SEL (R7844 ONLY)	80009	151-0136-03
Q1428	151-0349-00			TRANSISTOR:SILICON,NPN,SEL FROM MJE2801	04713	SJE924
Q1436A,B	151-0232-00			TRANSISTOR:SILICON,NPN,DUAL	80009	151-0232-00
Q1445A,B	151-0232-00			TRANSISTOR:SILICON,NPN,DUAL	80009	151-0232-00
Q1451	151-0190-00			TRANSISTOR:SILICON,NPN	07263	S032677
Q1455	151-0260-02			TRANSISTOR:SILICON,NPN	04713	ST1149
Q1458	151-0349-00			TRANSISTOR:SILICON,NPN,SEL FROM MJE2801	04713	SJE924
Q1466A,B	151-0232-00			TRANSISTOR:SILICON,NPN,DUAL	80009	151-0232-00
Q1485	151-0216-00			TRANSISTOR:SILICON,PNP	04713	SPS8803
Q1489A,B	151-0232-00			TRANSISTOR:SILICON,NPN,DUAL	80009	151-0232-00
Q1496	151-0260-02			TRANSISTOR:SILICON,NPN	04713	ST1149
Q1498	151-0349-00			TRANSISTOR:SILICON,NPN,SEL FROM MJE2801	04713	SJE924
Q1508A,B	151-0232-00			TRANSISTOR:SILICON,NPN,DUAL	80009	151-0232-00
Q1522	151-0228-00			TRANSISTOR:SILICON,PNP,SEL FROM 2N4888	80009	151-0228-00
Q1526	151-0302-00			TRANSISTOR:SILICON,NPN	07263	S038487
Q1534	151-0136-00	B010100	B131429	TRANSISTOR:SILICON,NPN (7844 ONLY)	02735	35495
Q1534	151-0136-03	B131430		TRANSISTOR:SILICON,NPN,SEL (7844 ONLY)	80009	151-0136-03
Q1534	151-0136-00	B010100	B130634	TRANSISTOR:SILICON,NPN (R7844 ONLY)	02735	35495
Q1534	151-0136-03	B130635		TRANSISTOR:SILICON,NPN,SEL (R7844 ONLY)	80009	151-0136-03
Q1538	151-0349-00			TRANSISTOR:SILICON,NPN,SEL FROM MJE2801	04713	SJE924
Q1546	151-0192-00			TRANSISTOR:SILICON,NPN,SEL FROM MPS6521	04713	SPS8801
Q1550	151-0324-01			TRANSISTOR:SILICON,PNP	80009	151-0324-01
Q1560A,B	151-0232-00			TRANSISTOR:SILICON,NPN,DUAL	80009	151-0232-00
Q1576A,B	151-0232-00			TRANSISTOR:SILICON,NPN,DUAL	80009	151-0232-00
Q1582	151-0192-00			TRANSISTOR:SILICON,NPN,SEL FROM MPS6521	04713	SPS8801
Q1585	151-0260-00			TRANSISTOR:SILICON,NPN	80009	151-0260-00
Q1588	151-0349-00			TRANSISTOR:SILICON,NPN,SEL FROM MJE2801	04713	SJE924
Q1627	151-0228-00			TRANSISTOR:SILICON,PNP,SEL FROM 2N4888	80009	151-0228-00
Q1631	151-0279-00			TRANSISTOR:SILICON,NPN	80009	151-0279-00
Q1694	151-0302-00			TRANSISTOR:SILICON,NPN	07263	S038487

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Q1700	151-0342-00			TRANSISTOR:SILICON,PNP	07263	S035928
Q1710	151-0302-00			TRANSISTOR:SILICON,NPN	07263	S038487
Q1720	151-0302-00			TRANSISTOR:SILICON,NPN	07263	S038487
Q1785	151-0390-00	XB040000		TRANSISTOR:SILICON,NPN (7844 ONLY)	04713	SPS3414
Q1785	151-0390-00	XB030000		TRANSISTOR:SILICON,NPN (R7844 ONLY)	04713	SPS3414
Q1786	151-0126-00	XB040000		TRANSISTOR:SILICON,NPN (7844 ONLY)	04713	ST1046
Q1786	151-0126-00	XB030000		TRANSISTOR:SILICON,NPN (R7844 ONLY)	04713	ST1046
Q1812	151-0220-00	B010100	B099999X	TRANSISTOR:SILICON,PNP (R7844 ONLY)	07263	S036228
Q1812	151-0220-00	B010100	B109999X	TRANSISTOR:SILICON,PNP (7844 ONLY)	07263	S036228
Q1814	151-0220-00	B010100	B099999X	TRANSISTOR:SILICON,PNP (R7844 ONLY)	07263	S036228
Q1814	151-0220-00	B010100	B109999X	TRANSISTOR:SILICON,PNP (7844 ONLY)	07263	S036228
Q1826	151-0220-00	B010100	B099999X	TRANSISTOR:SILICON,PNP (R7844 ONLY)	07263	S036228
Q1826	151-0220-00	B010100	B109999X	TRANSISTOR:SILICON,PNP (7844 ONLY)	07263	S036228
Q1828	151-0220-00	B010100	B099999X	TRANSISTOR:SILICON,PNP (R7844 ONLY)	07263	S036228
Q1828	151-0220-00	B010100	B109999X	TRANSISTOR:SILICON,PNP (7844 ONLY)	07263	S036228
Q1844	151-0369-00	B010100	B099999X	TRANSISTOR:SILICON,PNP (R7844 ONLY)	01295	SKA6664
Q1844	151-0369-00	B010100	B109999X	TRANSISTOR:SILICON,PNP (7844 ONLY)	01295	SKA6664
Q1848	151-0223-00	B010100	B099999X	TRANSISTOR:SILICON,NPN (R7844 ONLY)	04713	SPS8026
Q1848	151-0223-00	B010100	B109999X	TRANSISTOR:SILICON,NPN (7844 ONLY)	04713	SPS8026
Q1854	151-0223-00	B010100	B099999X	TRANSISTOR:SILICON,NPN (R7844 ONLY)	04713	SPS8026
Q1854	151-0223-00	B010100	B109999X	TRANSISTOR:SILICON,NPN (7844 ONLY)	04713	SPS8026
Q1858	151-0369-00	B010100	B099999X	TRANSISTOR:SILICON,PNP (R7844 ONLY)	01295	SKA6664
Q1858	151-0369-00	B010100	B109999X	TRANSISTOR:SILICON,PNP (7844 ONLY)	01295	SKA6664
Q1860	151-0221-00	B010100	B099999X	TRANSISTOR:SILICON,PNP (R7844 ONLY)	04713	SPS246
Q1860	151-0221-00	B010100	B109999X	TRANSISTOR:SILICON,PNP (7844 ONLY)	04713	SPS246
Q1864	151-0424-00	B010100	B099999X	TRANSISTOR:SILICON,NPN (R7844 ONLY)	04713	SPS8246
Q1864	151-0424-00	B010100	B109999X	TRANSISTOR:SILICON,NPN (7844 ONLY)	04713	SPS8246
Q1870	151-0424-00	B010100	B099999X	TRANSISTOR:SILICON,NPN (R7844 ONLY)	04713	SPS8246
Q1870	151-0424-00	B010100	B109999X	TRANSISTOR:SILICON,NPN (7844 ONLY)	04713	SPS8246
Q1874	151-0221-00	B010100	B099999X	TRANSISTOR:SILICON,PNP (R7844 ONLY)	04713	SPS246

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Ckt No.	Tektronix Part No.	Serial/Model No. Eff	Dscont	Name & Description	Mfr Code	Mfr Part Number
Q1874	151-0221-00	B010100	B109999X	TRANSISTOR:SILICON,PNP (7844 ONLY)	04713	SPS246
Q1890	151-0270-00	B010100	B099999X	TRANSISTOR:SILICON,PNP (R7844 ONLY)	04713	OBD
Q1890	151-0270-00	B010100	B109999X	TRANSISTOR:SILICON,PNP (7844 ONLY)	04713	OBD
Q1896	151-0274-00	B010100	B099999X	TRANSISTOR:SILICON,NPN (R7844 ONLY)	80009	151-0274-00
Q1896	151-0274-00	B010100	B109999X	TRANSISTOR:SILICON,NPN (7844 ONLY)	80009	151-0274-00
Q1902	151-0220-00			TRANSISTOR:SILICON,PNP	07263	S036228
Q1904	151-0367-00			TRANSISTOR:SILICON,NPN,SEL FROM 3571TP	01295	SKA6516
Q1920	151-0270-00			TRANSISTOR:SILICON,PNP	04713	OBD
Q1926	151-0274-00			TRANSISTOR:SILICON,NPN	80009	151-0274-00
Q1934	151-0220-00			TRANSISTOR:SILICON,PNP	07263	S036228
Q2008	151-0223-00			TRANSISTOR:SILICON,NPN	04713	SPS8026
Q2018	151-0223-00			TRANSISTOR:SILICON,NPN	04713	SPS8026
Q2022	151-0325-00			TRANSISTOR:SILICON,PNP,SEL FROM 2N4258	80009	151-0325-00
Q2026	151-0160-00	B010100	B142529	TRANSISTOR:SILICON,NPN (7844 ONLY)	80009	151-0160-00
Q2026	151-0451-00	B142530		TRANSISTOR:SILICON,NPN (7844 ONLY)	02735	65128
Q2026	151-0160-00	B010100	B141209	TRANSISTOR:SILICON,NPN (R7844 ONLY)	80009	151-0160-00
Q2026	151-0451-00	B141210		TRANSISTOR:SILICON,NPN (R7844 ONLY)	02735	65128
Q2032	151-0220-00			TRANSISTOR:SILICON,PNP	07263	S036228
Q2036	151-0134-00			TRANSISTOR:SILICON,PNP	80009	151-0134-00
Q2040	151-0274-00			TRANSISTOR:SILICON,NPN	80009	151-0274-00
Q2050	151-0270-00			TRANSISTOR:SILICON,PNP	04713	OBD
Q2108	151-0223-00			TRANSISTOR:SILICON,NPN	04713	SPS8026
Q2112	151-0221-00			TRANSISTOR:SILICON,PNP	04713	SPS246
Q2138	151-0188-00			TRANSISTOR:SILICON,PNP	04713	SPS6868K
Q2153	151-0192-00			TRANSISTOR:SILICON,NPN,SEL FROM MPS6521	04713	SPS8801
Q2159	151-0190-00			TRANSISTOR:SILICON,NPN	07263	S032677
Q2215A,B	151-0232-00			TRANSISTOR:SILICON,NPN,DUAL	80009	151-0232-00
Q2223	151-0190-00			TRANSISTOR:SILICON,NPN	07263	S032677
Q2225	151-0188-00			TRANSISTOR:SILICON,PNP	04713	SPS6868K
Q2229	151-0190-00			TRANSISTOR:SILICON,NPN	07263	S032677
Q2240	151-0190-00			TRANSISTOR:SILICON,NPN	07263	S032677
Q2286	151-0188-00			TRANSISTOR:SILICON,PNP	04713	SPS6868K
Q2287	151-0188-00			TRANSISTOR:SILICON,PNP	04713	SPS6868K
Q2296	151-0188-00			TRANSISTOR:SILICON,PNP	04713	SPS6868K
Q2299	151-0188-00			TRANSISTOR:SILICON,PNP	04713	SPS6868K
Q2450	151-0350-00			TRANSISTOR:SILICON,PNP	04713	SPS6700
Q2456	151-0220-00			TRANSISTOR:SILICON,PNP	07263	S036228
Q2458	151-0220-00			TRANSISTOR:SILICON,PNP	07263	S036228
Q2460	151-0347-00			TRANSISTOR:SILICON,NPN	56289	2N5551
Q2464	151-0341-00			TRANSISTOR:SILICON,NPN	07263	S040065
Q2480	151-0228-00			TRANSISTOR:SILICON,PNP,SEL FROM 2N4888	80009	151-0228-00
Q2486	151-0220-00			TRANSISTOR:SILICON,PNP	07263	S036228
Q2488	151-0220-00			TRANSISTOR:SILICON,PNP	07263	S036228
Q2490	151-0292-00			TRANSISTOR:SILICON,NPN	80009	151-0292-00
Q2494	151-0341-00			TRANSISTOR:SILICON,NPN	07263	S040065
Q2495	151-0341-00			TRANSISTOR:SILICON,NPN	07263	S040065
Q2512	151-0301-00			TRANSISTOR:SILICON,PNP	27014	2N2907A
Q2694	151-0302-00			TRANSISTOR:SILICON,NPN	07263	S038487

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Q2700	151-0342-00			TRANSISTOR:SILICON,PNP	07263	S035928
Q2710	151-0302-00			TRANSISTOR:SILICON,NPN	07263	S038487
Q2720	151-0302-00			TRANSISTOR:SILICON,NPN	07263	S038487
Q2785	151-0390-00	XB040000		TRANSISTOR:SILICON,NPN (7844 ONLY)	04713	SPS3414
Q2785	151-0390-00	XB030000		TRANSISTOR:SILICON,NPN (R7844 ONLY)	04713	SPS3414
Q2786	151-0126-00	XB040000		TRANSISTOR:SILICON,NPN (7844 ONLY)	04713	ST1046
Q2786	151-0126-00	XB030000		TRANSISTOR:SILICON,NPN (R7844 ONLY)	04713	ST1046
Q2808	151-0224-00	B010100	B099999X	TRANSISTOR:SILICON,NPN (R7844 ONLY)	07263	SA24850
Q2808	151-0224-00	B010100	B109999X	TRANSISTOR:SILICON,NPN (7844 ONLY)	07263	SA24850
Q2812	151-0220-00	B010100	B099999X	TRANSISTOR:SILICON,PNP (R7844 ONLY)	07263	S036228
Q2812	151-0220-00	B010100	B109999X	TRANSISTOR:SILICON,PNP (7844 ONLY)	07263	S036228
Q2814	151-0220-00	B010100	B099999X	TRANSISTOR:SILICON,PNP (R7844 ONLY)	07263	S036228
Q2814	151-0220-00	B010100	B109999X	TRANSISTOR:SILICON,PNP (7844 ONLY)	07263	S036228
Q2826	151-0220-00	B010100	B099999X	TRANSISTOR:SILICON,PNP (R7844 ONLY)	07263	S036228
Q2826	151-0220-00	B010100	B109999X	TRANSISTOR:SILICON,PNP (7844 ONLY)	07263	S036228
Q2828	151-0220-00	B010100	B099999X	TRANSISTOR:SILICON,PNP (R7844 ONLY)	07263	S036228
Q2828	151-0220-00	B010100	B109999X	TRANSISTOR:SILICON,PNP (7844 ONLY)	07263	S036228
Q2844	151-0369-00	B010100	B099999X	TRANSISTOR:SILICON,PNP (R7844 ONLY)	01295	SKA6664
Q2844	151-0369-00	B010100	B109999X	TRANSISTOR:SILICON,PNP (7844 ONLY)	01295	SKA6664
Q2848	151-0223-00	B010100	B099999X	TRANSISTOR:SILICON,NPN (R7844 ONLY)	04713	SPS8026
Q2848	151-0223-00	B010100	B109999X	TRANSISTOR:SILICON,NPN (7844 ONLY)	04713	SPS8026
Q2854	151-0223-00	B010100	B099999X	TRANSISTOR:SILICON,NPN (R7844 ONLY)	04713	SPS8026
Q2854	151-0223-00	B010100	B109999X	TRANSISTOR:SILICON,NPN (7844 ONLY)	04713	SPS8026
Q2858	151-0369-00	B010100	B099999X	TRANSISTOR:SILICON,PNP (R7844 ONLY)	01295	SKA6664
Q2858	151-0369-00	B010100	B109999X	TRANSISTOR:SILICON,PNP (7844 ONLY)	01295	SKA6664
Q2860	151-0221-00	B010100	B099999X	TRANSISTOR:SILICON,PNP (R7844 ONLY)	04713	SPS246
Q2860	151-0221-00	B010100	B109999X	TRANSISTOR:SILICON,PNP (7844 ONLY)	04713	SPS246
Q2864	151-0424-00	B010100	B099999X	TRANSISTOR:SILICON,NPN (R7844 ONLY)	04713	SPS8246
Q2864	151-0424-00	B010100	B109999X	TRANSISTOR:SILICON,NPN (7844 ONLY)	04713	SPS8246
Q2870	151-0424-00	B010100	B099999X	TRANSISTOR:SILICON,NPN (R7844 ONLY)	04713	SPS8246

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Q2870	151-0424-00	B010100	B109999X	TRANSISTOR:SILICON,NPN (7844 ONLY)	04713	SPS8246
Q2874	151-0221-00	B010100	B099999X	TRANSISTOR:SILICON,PNP (R7844 ONLY)	04713	SPS246
Q2874	151-0221-00	B010100	B109999X	TRANSISTOR:SILICON,PNP (7844 ONLY)	04713	SPS246
Q2890	151-0270-00	B010100	B099999X	TRANSISTOR:SILICON,PNP (R7844 ONLY)	04713	OBD
Q2890	151-0270-00	B010100	B109999X	TRANSISTOR:SILICON,PNP (7844 ONLY)	04713	OBD
Q2896	151-0274-00	B010100	B099999X	TRANSISTOR:SILICON,NPN (R7844 ONLY)	80009	151-0274-00
Q2896	151-0274-00	B010100	B109999X	TRANSISTOR:SILICON,NPN (7844 ONLY)	80009	151-0274-00
Q2902	151-0220-00	B010100	B099999X	TRANSISTOR:SILICON,PNP (R7844 ONLY)	07263	S036228
Q2902	151-0220-00	B010100	B109999X	TRANSISTOR:SILICON,PNP (7844 ONLY)	07263	S036228
Q2904	151-0367-00	B010100	B099999X	TRANSISTOR:SILICON,NPN,SEL FROM 3571TP (R7844 ONLY)	01295	SKA6516
Q2904	151-0367-00	B010100	B109999X	TRANSISTOR:SILICON,NPN,SEL FROM 3571TP (7844 ONLY)	01295	SKA6516
Q2920	151-0270-00	B010100	B099999X	TRANSISTOR:SILICON,PNP (R7844 ONLY)	04713	OBD
Q2920	151-0270-00	B010100	B109999X	TRANSISTOR:SILICON,PNP (7844 ONLY)	04713	OBD
Q2926	151-0274-00	B010100	B099999X	TRANSISTOR:SILICON,NPN (R7844 ONLY)	80009	151-0274-00
Q2926	151-0274-00	B010100	B109999X	TRANSISTOR:SILICON,NPN (7844 ONLY)	80009	151-0274-00
Q2934	151-0220-00	B010100	B099999X	TRANSISTOR:SILICON,PNP (R7844 ONLY)	07263	S036228
Q2934	151-0220-00	B010100	B109999X	TRANSISTOR:SILICON,PNP (7844 ONLY)	07263	S036228
Q3158	151-0341-00			TRANSISTOR:SILICON,NPN (Q3158, 7844/R7844 ONLY)	07263	S040065
Q3162	151-0341-00			TRANSISTOR:SILICON,NPN (Q3162, 7844/R7844 ONLY)	07263	S040065
Q3170	151-0341-00			TRANSISTOR:SILICON,NPN (Q3170, 7844/R7844 ONLY)	07263	S040065
Q3174	151-0341-00			TRANSISTOR:SILICON,NPN (Q3174, 7844/R7844 ONLY)	07263	S040065
Q3180	151-0341-00			TRANSISTOR:SILICON,NPN (Q3180, 7844/R7844 ONLY)	07263	S040065
Q3182	151-0199-00			TRANSISTOR:SILICON,PNP (Q3182, 7844/R7844 ONLY)	04713	SPS6866K
Q3602	153-0625-00			TRANSISTOR:SILICON,PNP,SELECTED (Q3602, 7844/R7844 ONLY)	80009	153-0625-00
Q3604	153-0625-00			TRANSISTOR:SILICON,PNP,SELECTED (Q3604, 7844/R7844 ONLY)	80009	153-0625-00
Q3702	153-0625-00			TRANSISTOR:SILICON,PNP,SELECTED (Q3702, 7844/R7844 ONLY)	80009	153-0625-00
Q3704	153-0625-00			TRANSISTOR:SILICON,PNP,SELECTED (Q3704, 7844/R7844 ONLY)	80009	153-0625-00
Q3748	151-0188-00			TRANSISTOR:SILICON,PNP (Q3748, 7844/R7844 ONLY)	04713	SPS6868K
Q3790	151-0435-00			TRANSISTOR:SILICON,PNP (Q3790, 7844/R7844 ONLY)	04713	SPS8335

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Q3795	151-0190-00			TRANSISTOR:SILICON,NPN (Q3795, 7844/R7844 ONLY)	07263	S032677
Q3798	151-0188-00			TRANSISTOR:SILICON,PNP (Q3798, 7844/R7844 ONLY)	04713	SPS6868K
Q4112	151-0223-00			TRANSISTOR:SILICON,NPN (Q4112, OPTION 22 ONLY)	04713	SPS8026
Q4122	151-0224-00			TRANSISTOR:SILICON,NPN (Q4122, OPTION 22 ONLY)	07263	SA24850
Q4124	151-0224-00			TRANSISTOR:SILICON,NPN (Q4124, OPTION 22 ONLY)	07263	SA24850
Q4131	151-0224-00			TRANSISTOR:SILICON,NPN (Q4131, OPTION 22 ONLY)	07263	SA24850
Q4145	151-0224-00			TRANSISTOR:SILICON,NPN (Q4145, OPTION 22 ONLY)	07263	SA24850
Q4150	151-0224-00			TRANSISTOR:SILICON,NPN (Q4150, OPTION 22 ONLY)	07263	SA24850
Q4154	151-0224-00			TRANSISTOR:SILICON,NPN (Q4154, OPTION 22 ONLY)	07263	SA24850
Q4158	151-0224-00			TRANSISTOR:SILICON,NPN (Q4158, OPTION 22 ONLY)	07263	SA24850
Q4160	151-0224-00			TRANSISTOR:SILICON,NPN (Q4160, OPTION 22 ONLY)	07263	SA24850
Q4163	151-0301-00			TRANSISTOR:SILICON,PNP (Q4163, OPTION 22 ONLY)	27014	2N2907A
Q4168	151-0224-00			TRANSISTOR:SILICON,NPN (Q4168, OPTION 22 ONLY)	07263	SA24850
Q4170	151-0224-00			TRANSISTOR:SILICON,NPN (Q4170, OPTION 22 ONLY)	07263	SA24850
Q4173	151-0301-00			TRANSISTOR:SILICON,PNP (Q4173, OPTION 22 ONLY)	27014	2N2907A
Q4180	151-0219-00	XB110000		TRANSISTOR:SILICON,PNP (Q4180, OPTION 22 ONLY)	07263	S022650
Q4183	151-0224-00			TRANSISTOR:SILICON,NPN (Q4183, OPTION 22 ONLY)	07263	SA24850
Q4812	151-0325-00	XB100000		TRANSISTOR:SILICON,PNP,SEL FROM 2N4258 (Q4812, R7844 ONLY)	80009	151-0325-00
Q4812	151-0325-00	XB110000		TRANSISTOR:SILICON,PNP,SEL FROM 2N4258 (7844 ONLY)	80009	151-0325-00
Q4814	151-0325-00	XB100000		TRANSISTOR:SILICON,PNP,SEL FROM 2N4258 (R7844 ONLY)	80009	151-0325-00
Q4814	151-0325-00	XB110000		TRANSISTOR:SILICON,PNP,SEL FROM 2N4258 (7844 ONLY)	80009	151-0325-00
Q4828	151-0220-00	XB100000		TRANSISTOR:SILICON,PNP (R7844 ONLY)	07263	S036228
Q4828	151-0220-00	XB110000		TRANSISTOR:SILICON,PNP (7844 ONLY)	07263	S036228
Q4835	151-0220-00	XB100000		TRANSISTOR:SILICON,PNP (7844 ONLY)	07263	S036228
Q4835	151-0220-00	XB110000		TRANSISTOR:SILICON,PNP (R7844 ONLY)	07263	S036228
Q4844	151-0220-00	XB100000		TRANSISTOR:SILICON,PNP (7844 ONLY)	07263	S036228
Q4844	151-0220-00	XB110000		TRANSISTOR:SILICON,PNP (R7844 ONLY)	07263	S036228
Q4846	151-0195-00	XB100000		TRANSISTOR:SILICON,NPN (7844 ONLY)	80009	151-0195-00

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Q4846	151-0195-00	XB110000		TRANSISTOR:SILICON,NPN (R7844 ONLY)	80009	151-0195-00
Q4848	151-0434-00	XB100000	B100453	TRANSISTOR:SILICON,PNP (R7844 ONLY)	04713	SS7144
Q4848	151-0188-00	B100454		TRANSISTOR:SILICON,PNP (R7844 ONLY)	04713	SPS6868K
Q4848	151-0434-00	XB110000	B110894	TRANSISTOR:SILICON,PNP (7844 ONLY)	04713	SS7144
Q4848	151-0188-00	B110895		TRANSISTOR:SILICON,PNP (7844 ONLY)	04713	SPS6868K
Q4854	151-0220-00	XB100000		TRANSISTOR:SILICON,PNP (R7844 ONLY)	07263	S036228
Q4854	151-0220-00	XB110000		TRANSISTOR:SILICON,PNP (7844 ONLY)	07263	S036228
Q4856	151-0195-00	XB100000		TRANSISTOR:SILICON,NPN (R7844 ONLY)	80009	151-0195-00
Q4856	151-0195-00	XB110000		TRANSISTOR:SILICON,NPN (7844 ONLY)	80009	151-0195-00
Q4858	151-0441-00	XB100000	B100453	TRANSISTOR:SILICON,NPN (R7844 ONLY)	04713	SRF501
Q4858	151-0190-00	B100454		TRANSISTOR:SILICON,NPN (R7844 ONLY)	07263	S032677
Q4858	151-0441-00	XB110000	B110894	TRANSISTOR:SILICON,NPN (7844 ONLY)	04713	SRF501
Q4858	151-0190-00	B110895		TRANSISTOR:SILICON,NPN (7844 ONLY)	07263	S032677
Q4868	151-0220-00	XB100000		TRANSISTOR:SILICON,PNP (R7844 ONLY)	07263	S036228
Q4868	151-0220-00	XB110000		TRANSISTOR:SILICON,PNP (7844 ONLY)	07263	S036228
Q4870	151-0220-00	XB100000		TRANSISTOR:SILICON,PNP (R7844 ONLY)	07263	S036228
Q4870	151-0220-00	XB110000		TRANSISTOR:SILICON,PNP (R7844 ONLY)	07263	S036228
Q4872	151-0274-00	XB100000		TRANSISTOR:SILICON,NPN (R7844 ONLY)	80009	151-0274-00
Q4872	151-0274-00	XB110000		TRANSISTOR:SILICON,NPN (7844 ONLY)	80009	151-0274-00
Q4876	151-0270-00	XB100000		TRANSISTOR:SILICON,PNP (R7844 ONLY)	04713	OBD
Q4876	151-0270-00	XB110000		TRANSISTOR:SILICON,PNP (7844 ONLY)	04713	OBD
Q4888	151-0190-00	XB100000		TRANSISTOR:SILICON,NPN (R7844 ONLY)	07263	S032677
Q4888	151-0190-00	XB110000		TRANSISTOR:SILICON,NPN (7844 ONLY)	07263	S032677
Q4890	151-0190-00	XB100000		TRANSISTOR:SILICON,NPN (R7844 ONLY)	07263	S032677
Q4890	151-0190-00	XB110000		TRANSISTOR:SILICON,NPN (7844 ONLY)	07263	S032677
Q4892	151-0274-00	XB100000		TRANSISTOR:SILICON,NPN (R7844 ONLY)	80009	151-0274-00
Q4892	151-0274-00	XB110000		TRANSISTOR:SILICON,NPN (7844 ONLY)	80009	151-0274-00
Q4896	151-0270-00	XB100000		TRANSISTOR:SILICON,PNP (R7844 ONLY)	04713	OBD
Q4896	151-0270-00	XB110000		TRANSISTOR:SILICON,PNP (7844 ONLY)	04713	OBD

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Q5808	151-0190-00	XB100000		TRANSISTOR:SILICON,NPN (R7844 ONLY)	07263	S032677
Q5808	151-0190-00	XB110000		TRANSISTOR:SILICON,NPN (7844 ONLY)	07263	S032677
Q5812	151-0325-00	XB100000		TRANSISTOR:SILICON,PNP,SEL FROM 2N4258 (R7844 ONLY)	80009	151-0325-00
Q5812	151-0325-00	XB110000		TRANSISTOR:SILICON,PNP,SEL FROM 2N4258 (7844 ONLY)	80009	151-0325-00
Q5814	151-0325-00	XB100000		TRANSISTOR:SILICON,PNP,SEL FROM 2N4258 (R7844 ONLY)	80009	151-0325-00
Q5814	151-0325-00	XB110000		TRANSISTOR:SILICON,PNP,SEL FROM 2N4258 (7844 ONLY)	80009	151-0325-00
Q5828	151-0220-00	XB100000		TRANSISTOR:SILICON,PNP (R7844 ONLY)	07263	S036228
Q5828	151-0220-00	XB110000		TRANSISTOR:SILICON,PNP (7844 ONLY)	07263	S036228
Q5835	151-0220-00	XB100000		TRANSISTOR:SILICON,PNP (R7844 ONLY)	07263	S036228
Q5835	151-0220-00	XB110000		TRANSISTOR:SILICON,PNP (7844 ONLY)	07263	S036228
Q5844	151-0220-00	XB100000		TRANSISTOR:SILICON,PNP (R7844 ONLY)	07263	S036228
Q5844	151-0220-00	XB110000		TRANSISTOR:SILICON,PNP (7844 ONLY)	07263	S036228
Q5846	151-0195-00	XB100000		TRANSISTOR:SILICON,NPN (R7844 ONLY)	80009	151-0195-00
Q5846	151-0195-00	XB110000		TRANSISTOR:SILICON,NPN (7844 ONLY)	80009	151-0195-00
Q5848	151-0434-00	XB100000	B100453	TRANSISTOR:SILICON,PNP (R7844 ONLY)	04713	SS7144
Q5848	151-0188-00	B100454		TRANSISTOR:SILICON,PNP (R7844 ONLY)	04713	SPS6868K
Q5848	151-0434-00	XB110000	B110894	TRANSISTOR:SILICON,PNP (7844 ONLY)	04713	SS7144
Q5848	151-0188-00	B110895		TRANSISTOR:SILICON,PNP (7844 ONLY)	04713	SPS6868K
Q5854	151-0220-00	XB100000		TRANSISTOR:SILICON,PNP (R7844 ONLY)	07263	S036228
Q5854	151-0220-00	XB110000		TRANSISTOR:SILICON,PNP (7844 ONLY)	07263	S036228
Q5856	151-0195-00	XB100000		TRANSISTOR:SILICON,NPN (R7844 ONLY)	80009	151-0195-00
Q5856	151-0195-00	XB110000		TRANSISTOR:SILICON,NPN (7844 ONLY)	80009	151-0195-00
Q5858	151-0441-00	XB100000	B100453	TRANSISTOR:SILICON,NPN (R7844 ONLY)	04713	SRF501
Q5858	151-0190-00	B100454		TRANSISTOR:SILICON,NPN (R7844 ONLY)	07263	S032677
Q5858	151-0441-00	XB110000	B110894	TRANSISTOR:SILICON,NPN (R7844 ONLY)	04713	SRF501
Q5858	151-0190-00	B110895		TRANSISTOR:SILICON,NPN (7844 ONLY)	07263	S032677
Q5868	151-0220-00	XB100000		TRANSISTOR:SILICON,PNP (R7844 ONLY)	07263	S036228
Q5868	151-0220-00	XB110000		TRANSISTOR:SILICON,PNP (7844 ONLY)	07263	S036228

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Q5870	151-0220-00	XB100000		TRANSISTOR:SILICON,PNP (R7844 ONLY)	07263	S036228
Q5870	151-0220-00	XB110000		TRANSISTOR:SILICON,PNP (7844 ONLY)	07263	S036228
Q5872	151-0274-00	XB100000		TRANSISTOR:SILICON,NPN (R7844 ONLY)	80009	151-0274-00
Q5872	151-0274-00	XB110000		TRANSISTOR:SILICON,NPN (7844 ONLY)	80009	151-0274-00
Q5876	151-0270-00	XB100000		TRANSISTOR:SILICON,PNP (R7844 ONLY)	04713	OBD
Q5876	151-0270-00	XB110000		TRANSISTOR:SILICON,PNP (7844 ONLY)	04713	OBD
Q5888	151-0190-00	XB100000		TRANSISTOR:SILICON,NPN (R7844 ONLY)	07263	S032677
Q5888	151-0190-00	XB110000		TRANSISTOR:SILICON,NPN (7844 ONLY)	07263	S032677
Q5890	151-0190-00	XB100000		TRANSISTOR:SILICON,NPN (R7844 ONLY)	07263	S032677
Q5890	151-0190-00	XB110000		TRANSISTOR:SILICON,NPN (7844 ONLY)	07263	S032677
Q5892	151-0274-00	XB100000		TRANSISTOR:SILICON,NPN (R7844 ONLY)	80009	151-0274-00
Q5892	151-0274-00	XB110000		TRANSISTOR:SILICON,NPN (7844 ONLY)	80009	151-0274-00
Q5896	151-0270-00	XB100000		TRANSISTOR:SILICON,PNP (R7844 ONLY)	04713	OBD
Q5896	151-0270-00	XB110000		TRANSISTOR:SILICON,PNP (7844 ONLY)	04713	OBD
R2	315-0153-00			RES.,FXD,CMPSN:15K OHM,5%,0.25W	01121	CB1535
R4	315-0153-00			RES.,FXD,CMPSN:15K OHM,5%,0.25W	01121	CB1535
R6	315-0510-00			RES.,FXD,CMPSN:51 OHM,5%,0.25W	01121	CB5105
R7	315-0510-00			RES.,FXD,CMPSN:51 OHM,5%,0.25W	01121	CB5105
R8	315-0510-00			RES.,FXD,CMPSN:51 OHM,5%,0.25W	01121	CB5105
R9	315-0510-00			RES.,FXD,CMPSN:51 OHM,5%,0.25W	01121	CB5105
R10	315-0912-00			RES.,FXD,CMPSN:9.1K OHM,5%,0.25W	01121	CB9125
R11	315-0152-00			RES.,FXD,CMPSN:1.5K OHM,5%,0.25W	01121	CB1525
R12	315-0105-00			RES.,FXD,CMPSN:1M OHM,5%,0.25W	01121	CB1055
R13	315-0152-00			RES.,FXD,CMPSN:1.5K OHM,5%,0.25W	01121	CB1525
R14	315-0104-00			RES.,FXD,CMPSN:100K OHM,5%,0.25W	01121	CB1045
R15	315-0103-00			RES.,FXD,CMPSN:10K OHM,5%,0.25W	01121	CB1035
R16	315-0243-00			RES.,FXD,CMPSN:24K OHM,5%,0.25W	01121	CB2435
R17	315-0472-00			RES.,FXD,CMPSN:4.7K OHM,5%,0.25W	01121	CB4725
R18	315-0202-00			RES.,FXD,CMPSN:2K OHM,5%,0.25W	01121	CB2025
R19	315-0103-00			RES.,FXD,CMPSN:10K OHM,5%,0.25W	01121	CB1035
R20	315-0912-00			RES.,FXD,CMPSN:9.1K OHM,5%,0.25W	01121	CB9125
R21	321-0231-00			RES.,FXD,FILM:2.49K OHM,1%,0.125W	91637	MFF1816G24900F
R22	321-0231-00			RES.,FXD,FILM:2.49K OHM,1%,0.125W	91637	MFF1816G24900F
R23	315-0132-00			RES.,FXD,CMPSN:1.3K OHM,5%,0.25W	01121	CB1325
R24	315-0132-00			RES.,FXD,CMPSN:1.3K OHM,5%,0.25W	01121	CB1325
R25	315-0132-00			RES.,FXD,CMPSN:1.3K OHM,5%,0.25W	01121	CB1325
R26	321-0260-00			RES.,FXD,FILM:4.99K OHM,1%,0.125W	91637	MFF1816G49900F
R27	321-0260-00			RES.,FXD,FILM:4.99K OHM,1%,0.125W	91637	MFF1816G49900F
R28	321-0260-00			RES.,FXD,FILM:4.99K OHM,1%,0.125W	91637	MFF1816G49900F
R29	321-0260-00			RES.,FXD,FILM:4.99K OHM,1%,0.125W	91637	MFF1816G49900F
R30	315-0102-00			RES.,FXD,CMPSN:1K OHM,5%,0.25W	01121	CB1025
R31	315-0132-00			RES.,FXD,CMPSN:1.3K OHM,5%,0.25W	01121	CB1325
R32	315-0102-00			RES.,FXD,CMPSN:1K OHM,5%,0.25W	01121	CB1025

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R34	315-0102-00			RES.,FXD,CMPSN:1K OHM,5%,0.25W	01121	CB1025
R36	315-0102-00			RES.,FXD,CMPSN:1K OHM,5%,0.25W	01121	CB1025
R38	315-0392-00			RES.,FXD,CMPSN:3.9K OHM,5%,0.25W	01121	CB3925
R40	315-0392-00			RES.,FXD,CMPSN:3.9K OHM,5%,0.25W	01121	CB3925
R42	315-0362-00			RES.,FXD,CMPSN:3.6K OHM,5%,0.25W	01121	CB3625
R44	315-0102-00			RES.,FXD,CMPSN:1K OHM,5%,0.25W	01121	CB1025
R45	315-0102-00			RES.,FXD,CMPSN:1K OHM,5%,0.25W	01121	CB1025
R46	315-0362-00			RES.,FXD,CMPSN:3.6K OHM,5%,0.25W	01121	CB3625
R50	315-0152-00			RES.,FXD,CMPSN:1.5K OHM,5%,0.25W	01121	CB1525
R51	315-0103-00			RES.,FXD,CMPSN:10K OHM,5%,0.25W	01121	CB1035
R53	321-0243-00			RES.,FXD,FILM:3.32K OHM,1%,0.125W	91637	MFF1816G33200F
R54	321-0087-00			RES.,FXD,FILM:78.7 OHM,1%,0.125W	91637	MFF1816G78R70F
R55	321-0087-00			RES.,FXD,FILM:78.7 OHM,1%,0.125W	91637	MFF1816G78R70F
R56	321-0243-00			RES.,FXD,FILM:3.32K OHM,1%,0.125W	91637	MFF1816G33200F
R58	315-0332-00			RES.,FXD,CMPSN:3.3K OHM,5%,0.25W	01121	CB3325
R59	315-0332-00			RES.,FXD,CMPSN:3.3K OHM,5%,0.25W	01121	CB3325
R60	321-0407-00			RES.,FXD,FILM:169K OHM,1%,0.125W	91637	MFF1816G16902F
R62	321-0407-00			RES.,FXD,FILM:169K OHM,1%,0.125W	91637	MFF1816G16902F
R64	315-0152-00			RES.,FXD,CMPSN:1.5K OHM,5%,0.25W	01121	CB1525
R66	315-0103-00			RES.,FXD,CMPSN:10K OHM,5%,0.25W	01121	CB1035
R68	315-0512-00			RES.,FXD,CMPSN:5.1K OHM,5%,0.25W	01121	CB5125
R69	315-0103-00			RES.,FXD,CMPSN:10K OHM,5%,0.25W	01121	CB1035
R70	321-0068-00			RES.,FXD,FILM:49.9 OHM,1%,0.125W	91637	MFF1816G49R90F
R72	321-0407-00			RES.,FXD,FILM:169K OHM,1%,0.125W	91637	MFF1816G16902F
R74	321-0068-00			RES.,FXD,FILM:49.9 OHM,1%,0.125W	91637	MFF1816G49R90F
R76	321-0407-00			RES.,FXD,FILM:169K OHM,1%,0.125W	91637	MFF1816G16902F
R78	315-0152-00			RES.,FXD,CMPSN:1.5K OHM,5%,0.25W	01121	CB1525
R80	315-0103-00			RES.,FXD,CMPSN:10K OHM,5%,0.25W	01121	CB1035
R82	321-0243-00			RES.,FXD,FILM:3.32K OHM,1%,0.125W	91637	MFF1816G33200F
R84	321-0087-00			RES.,FXD,FILM:78.7 OHM,1%,0.125W	91637	MFF1816G78R70F
R85	321-0243-00			RES.,FXD,FILM:3.32K OHM,1%,0.125W	91637	MFF1816G33200F
R86	315-0332-00			RES.,FXD,CMPSN:3.3K OHM,5%,0.25W	01121	CB3325
R87	315-0332-00			RES.,FXD,CMPSN:3.3K OHM,5%,0.25W	01121	CB3325
R89	321-0087-00			RES.,FXD,FILM:78.7 OHM,1%,0.125W	91637	MFF1816G78R70F
R90	315-0152-00			RES.,FXD,CMPSN:1.5K OHM,5%,0.25W	01121	CB1525
R91	315-0103-00			RES.,FXD,CMPSN:10K OHM,5%,0.25W	01121	CB1035
R100	315-0103-00			RES.,FXD,CMPSN:10K OHM,5%,0.25W	01121	CB1035
R102	315-0103-00			RES.,FXD,CMPSN:10K OHM,5%,0.25W	01121	CB1035
R104	315-0100-00			RES.,FXD,CMPSN:10 OHM,5%,0.25W	01121	CB1005
R105	315-0103-00			RES.,FXD,CMPSN:10K OHM,5%,0.25W	01121	CB1035
R106	315-0393-00			RES.,FXD,CMPSN:39K OHM,5%,0.25W	01121	CB3935
R107	315-0102-00			RES.,FXD,CMPSN:1K OHM,5%,0.25W	01121	CB1025
R108	315-0391-00			RES.,FXD,CMPSN:390 OHM,5%,0.25W	01121	CB3915
R110	315-0102-00			RES.,FXD,CMPSN:1K OHM,5%,0.25W	01121	CB1025
R111	315-0102-00			RES.,FXD,CMPSN:1K OHM,5%,0.25W	01121	CB1025
R112	315-0103-00			RES.,FXD,CMPSN:10K OHM,5%,0.25W	01121	CB1035
R114	315-0102-00			RES.,FXD,CMPSN:1K OHM,5%,0.25W	01121	CB1025
R116	315-0512-00			RES.,FXD,CMPSN:5.1K OHM,5%,0.25W	01121	CB5125
R129	315-0391-00			RES.,FXD,CMPSN:390 OHM,5%,0.25W	01121	CB3915
R130	321-0193-00			RES.,FXD,FILM:1K OHM,1%,0.125W	91637	MFF1816G10000F
R131	315-0391-00			RES.,FXD,CMPSN:390 OHM,5%,0.25W	01121	CB3915
R132	321-0193-00			RES.,FXD,FILM:1K OHM,1%,0.125W	91637	MFF1816G10000F
R134	321-0239-00			RES.,FXD,FILM:3.01K OHM,1%,0.125W	91637	MFF1816G30100F
R136	321-0407-00	B010100	B119999X	RES.,FXD,FILM:169K OHM,1%,0.125W	91637	MFF1816G16902F
R138	321-0407-00	B010100	B119999X	RES.,FXD,FILM:169K OHM,1%,0.125W	91637	MFF1816G16902F
R140	321-0407-00	B010100	B119999X	RES.,FXD,FILM:169K OHM,1%,0.125W	91637	MFF1816G16902F
R142	321-0407-00	B010100	B119999X	RES.,FXD,FILM:169K OHM,1%,0.125W	91637	MFF1816G16902F

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R143	301-0101-00			RES.,FXD,CMPSN:100 OHM,5%,0.50W	01121	EB1015
R144	304-0101-00			RES.,FXD,CMPSN:100 OHM,10%,1W	01121	GB1011
R187	321-0182-00			RES.,FXD,FILM:768 OHM,1%,0.125W	91637	MFF1816G768R0F
	----- -----			(R187, OPTION 21 ONLY)		
R188	321-0274-00			RES.,FXD,FILM:6.98K OHM,1%,0.125W	91637	MFF1816G69800F
	----- -----			(R188, OPTION 21 ONLY)		
R189	311-1373-00			RES.,VAR,NONWIR:5K OHM,20%,1W	01121	73U4G040L502M
	----- -----			(R189, OPTION 21 ONLY)		
R190	315-0271-00			RES.,FXD,CMPSN:270 OHM,5%,0.25W	01121	CB2715
	----- -----			(R190, OPTION 21 ONLY)		
R191	315-0271-00			RES.,FXD,CMPSN:270 OHM,5%,0.25W	01121	CB2715
	----- -----			(R191, OPTION 21 ONLY)		
R193	311-0994-00			RES.,VAR,NONWIR:2.5K OHM,10%,0.50W	01121	WA1G048S252UA
	----- -----			(R7844 OPTION 21 ONLY)		
R193	311-1592-00			RES.,VAR,NONWIR:2.5K OHM X 1M OHM,20%,0.50W	01121	14M414
	----- -----			(7844 OPTION 21 ONLY, R193 AND R195 FURNISHED		
	----- -----			AS A UNIT)		
R194	311-0994-00			RES.,VAR,NONWIR:2.5K OHM,10%,0.50W	01121	WA1G048S252UA
	----- -----			(R7844 OPTION 21 ONLY)		
R194	311-1592-00			RES.,VAR,NONWIR:2.5K OHM X 1M OHM,20%,0.50W	01121	14M414
	----- -----			(7844 OPTION 21 ONLY, R194 AND R196 FURNISHED		
	----- -----			AS A UNIT)		
R195	311-0382-00			RES.,VAR,NONWIR:1M OHM,20%	11237	300SF-41158
	----- -----			(R7844 OPTION 21 ONLY)		
R195	311-1592-00			RES.,VAR,NONWIR:2.5K OHM X 1M OHM,20%,0.50W	01121	14M414
	----- -----			(7844 OPTION 21 ONLY, R193 AND R195 FURNISHED		
	----- -----			AS A UNIT)		
R196	311-0994-00			RES.,VAR,NONWIR:2.5K OHM,10%,0.50W	01121	WA1G048S252UA
	----- -----			(R7844 OPTION 21 ONLY)		
R196	311-1592-00			RES.,VAR,NONWIR:2.5K OHM X 1M OHM,20%,0.50W	01121	14M414
	----- -----			(7844 OPTION 21 ONLY, R194 AND R196 FURNISHED		
	----- -----			AS A UNIT)		
R197	321-0191-00			RES.,FXD,FILM:953 OHM,1%,0.125W	91637	MFF1816G953R0F
	----- -----			(R197, OPTION 21 ONLY)		
R199	321-0191-00			RES.,FXD,FILM:953 OHM,1%,0.125W	91637	MFF1816G953R0F
	----- -----			(R199, OPTION 21 ONLY)		
R202	315-0470-00			RES.,FXD,CMPSN:47 OHM,5%,0.25W	01121	CB4705
R204	315-0510-00			RES.,FXD,CMPSN:51 OHM,5%,0.25W	01121	CB5105
R205	315-0512-00			RES.,FXD,CMPSN:5.1K OHM,5%,0.25W	01121	CB5125
R206	321-0147-00			RES.,FXD,FILM:332 OHM,1%,0.125W	91637	MFF1816G332R0F
R207	321-0239-00			RES.,FXD,FILM:3.01K OHM,1%,0.125W	91637	MFF1816G30100F
R208	315-0101-00			RES.,FXD,CMPSN:100 OHM,5%,0.25W	01121	CB1015
R210	315-0153-00			RES.,FXD,CMPSN:15K OHM,5%,0.25W	01121	CB1535
R211	315-0512-00			RES.,FXD,CMPSN:5.1K OHM,5%,0.25W	01121	CB5125
R213	315-0153-00	B010100	B119999	RES.,FXD,CMPSN:15K OHM,5%,0.25W	01121	CB1535
R213	315-0103-00	B120000		RES.,FXD,CMPSN:10K OHM,5%,0.25W	01121	CB1035
R214	315-0153-00	B010100	B119999	RES.,FXD,CMPSN:15K OHM,5%,0.25W	01121	CB1535
R214	315-0103-00	B120000		RES.,FXD,CMPSN:10K OHM,5%,0.25W	01121	CB1035
R216	315-0103-00			RES.,FXD,CMPSN:10K OHM,5%,0.25W	01121	CB1035
R218	315-0391-00			RES.,FXD,CMPSN:390 OHM,5%,0.25W	01121	CB3915
R219	315-0122-00			RES.,FXD,CMPSN:1.2K OHM,5%,0.25W	01121	CB1225
R220	315-0222-00			RES.,FXD,CMPSN:2.2K OHM,5%,0.25W	01121	CB2225
R221	315-0102-00			RES.,FXD,CMPSN:1K OHM,5%,0.25W	01121	CB1025
R222	315-0123-00			RES.,FXD,CMPSN:12K OHM,5%,0.25W	01121	CB1235
R223	315-0681-00			RES.,FXD,CMPSN:680 OHM,5%,0.25W	01121	CB6815
R224	315-0821-00			RES.,FXD,CMPSN:820 OHM,5%,0.25W	01121	CB8215
R226	315-0472-00			RES.,FXD,CMPSN:4.7K OHM,5%,0.25W	01121	CB4725
R228	315-0181-00			RES.,FXD,CMPSN:180 OHM,5%,0.25W	01121	CB1815

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R230	315-0100-00			RES.,FXD,CMPSN:10 OHM,5%,0.25W	01121	CB1005
R232	315-0271-00			RES.,FXD,CMPSN:270 OHM,5%,0.25W	01121	CB2715
R234	315-0203-00			RES.,FXD,CMPSN:20K OHM,5%,0.25W	01121	CB2035
R236	315-0103-00			RES.,FXD,CMPSN:10K OHM,5%,0.25W	01121	CB1035
R238	315-0271-00			RES.,FXD,CMPSN:270 OHM,5%,0.25W	01121	CB2715
R240	315-0512-00			RES.,FXD,CMPSN:5.1K OHM,5%,0.25W	01121	CB5125
R242	315-0102-00			RES.,FXD,CMPSN:1K OHM,5%,0.25W	01121	CB1025
R243	315-0202-00			RES.,FXD,CMPSN:2K OHM,5%,0.25W	01121	CB2025
R246	315-0102-00			RES.,FXD,CMPSN:1K OHM,5%,0.25W	01121	CB1025
R247	315-0202-00			RES.,FXD,CMPSN:2K OHM,5%,0.25W	01121	CB2025
R249	315-0203-00			RES.,FXD,CMPSN:20K OHM,5%,0.25W	01121	CB2035
R252	315-0103-00			RES.,FXD,CMPSN:10K OHM,5%,0.25W	01121	CB1035
R254	315-0103-00			RES.,FXD,CMPSN:10K OHM,5%,0.25W	01121	CB1035
R255	315-0203-00			RES.,FXD,CMPSN:20K OHM,5%,0.25W	01121	CB2035
R258	315-0391-00			RES.,FXD,CMPSN:390 OHM,5%,0.25W	01121	CB3915
R259	315-0122-00			RES.,FXD,CMPSN:1.2K OHM,5%,0.25W	01121	CB1225
R260	315-0222-00			RES.,FXD,CMPSN:2.2K OHM,5%,0.25W	01121	CB2225
R261	315-0102-00			RES.,FXD,CMPSN:1K OHM,5%,0.25W	01121	CB1025
R262	315-0123-00			RES.,FXD,CMPSN:12K OHM,5%,0.25W	01121	CB1235
R263	315-0681-00			RES.,FXD,CMPSN:680 OHM,5%,0.25W	01121	CB6815
R264	315-0821-00			RES.,FXD,CMPSN:820 OHM,5%,0.25W	01121	CB8215
R266	315-0472-00			RES.,FXD,CMPSN:4.7K OHM,5%,0.25W	01121	CB4725
R268	315-0391-00			RES.,FXD,CMPSN:390 OHM,5%,0.25W	01121	CB3915
R269	315-0122-00			RES.,FXD,CMPSN:1.2K OHM,5%,0.25W	01121	CB1225
R270	315-0222-00			RES.,FXD,CMPSN:2.2K OHM,5%,0.25W	01121	CB2225
R271	315-0102-00			RES.,FXD,CMPSN:1K OHM,5%,0.25W	01121	CB1025
R272	315-0123-00			RES.,FXD,CMPSN:12K OHM,5%,0.25W	01121	CB1235
R273	315-0681-00			RES.,FXD,CMPSN:680 OHM,5%,0.25W	01121	CB6815
R274	315-0821-00			RES.,FXD,CMPSN:820 OHM,5%,0.25W	01121	CB8215
R276	315-0472-00			RES.,FXD,CMPSN:4.7K OHM,5%,0.25W	01121	CB4725
R280	315-0201-00			RES.,FXD,CMPSN:200 OHM,5%,0.25W	01121	CB2015
R281	315-0751-00			RES.,FXD,CMPSN:750 OHM,5%,0.25W	01121	CB7515
R283	315-0103-00			RES.,FXD,CMPSN:10K OHM,5%,0.25W	01121	CB1035
R284	315-0201-00			RES.,FXD,CMPSN:200 OHM,5%,0.25W	01121	CB2015
R286	315-0103-00			RES.,FXD,CMPSN:10K OHM,5%,0.25W	01121	CB1035
R288	315-0683-00			RES.,FXD,CMPSN:68K OHM,5%,0.25W	01121	CB6835
R289	315-0683-00			RES.,FXD,CMPSN:68K OHM,5%,0.25W	01121	CB6835
R290	321-0288-00 ----- -----	B010100	B030211X	RES.,FXD,FILM:9.76K OHM,1%,0.125W (7844 ONLY)	91637	MFF1816G97600F
R290	321-0288-00 ----- -----	B010100	B020123X	RES.,FXD,FILM:9.76K OHM,1%,0.125W (R7844 ONLY)	91637	MFF1816G97600F
R290	321-0288-00	XB120000		RES.,FXD,FILM:9.76K OHM,1%,0.125W	91637	MFF1816G97600F
R293	321-0246-00 ----- -----	B010100	B030211X	RES.,FXD,FILM:3.57K OHM,1%,0.125W (7844 ONLY)	91637	MFF1816G35700F
R293	321-0246-00 ----- -----	B010100	B020123X	RES.,FXD,FILM:3.57K OHM,1%,0.125W (R7844 ONLY)	91637	MFF1816G35700F
R293	321-0246-00	XB120000		RES.,FXD,FILM:3.57K OHM,1%,0.125W	91637	MFF1816G35700F
R296	321-0288-00			RES.,FXD,FILM:9.76K OHM,1%,0.125W	91637	MFF1816G97600F
R298	315-0152-00			RES.,FXD,CMPSN:1.5K OHM,5%,0.25W	01121	CB1525
R299	321-0246-00			RES.,FXD,FILM:3.57K OHM,1%,0.125W	91637	MFF1816G35700F
R301	315-0510-00			RES.,FXD,CMPSN:51 OHM,5%,0.25W	01121	CB5105
R302	315-0152-00			RES.,FXD,CMPSN:1.5K OHM,5%,0.25W	01121	CB1525
R303	315-0103-00	B010100	B119999	RES.,FXD,CMPSN:10K OHM,5%,0.25W	01121	CB1035
R303	315-0102-00	B120000		RES.,FXD,CMPSN:1K OHM,5%,0.25W	01121	CB1025
R304	315-0152-00			RES.,FXD,CMPSN:1.5K OHM,5%,0.25W	01121	CB1525
R305	315-0103-00	B010100	B119999	RES.,FXD,CMPSN:10K OHM,5%,0.25W	01121	CB1035
R305	315-0102-00	B120000		RES.,FXD,CMPSN:1K OHM,5%,0.25W	01121	CB1025

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R306	315-0510-00			RES.,FXD,CMPSN:51 OHM,5%,0.25W	01121	CB5105
R307	321-0713-00			RES.,FXD,FILM:30 OHM,1%,0.125W	91637	MFF1816G30R00F
R308	321-0265-00	B010100	B119999X	RES.,FXD,FILM:5.62K OHM,1%,0.125W	91637	MFF1816G56200F
R309	321-0265-00			RES.,FXD,FILM:5.62K OHM,1%,0.125W	91637	MFF1816G56200F
R310	321-0713-00			RES.,FXD,FILM:30 OHM,1%,0.125W	91637	MFF1816G30R00F
R311	321-0265-00			RES.,FXD,FILM:5.62K OHM,1%,0.125W	91637	MFF1816G56200F
R312	321-0265-00			RES.,FXD,FILM:5.62K OHM,1%,0.125W	91637	MFF1816G56200F
R314	321-0222-00			RES.,FXD,FILM:2K OHM,1%,0.125W	91637	MFF1816G20000F
R315	321-0222-00			RES.,FXD,FILM:2K OHM,1%,0.125W	91637	MFF1816G20000F
R316	315-0512-00			RES.,FXD,CMPSN:5.1K OHM,5%,0.25W	01121	CB5125
R317	315-0103-00			RES.,FXD,CMPSN:10K OHM,5%,0.25W	01121	CB1035
R319	315-0682-00	B010100	B030211X	RES.,FXD,CMPSN:6.8K OHM,5%,0.25W (7844 ONLY)	01121	CB6825
R319	315-0682-00	B010100	B020123X	RES.,FXD,CMPSN:6.8K OHM,5%,0.25W (R7844 ONLY)	01121	CB6825
R320	315-0512-00	B010100	B030211X	RES.,FXD,CMPSN:5.1K OHM,5%,0.25W (7844 ONLY)	01121	CB5125
R320	315-0512-00	B010100	B020123X	RES.,FXD,CMPSN:5.1K OHM,5%,0.25W (R7844 ONLY)	01121	CB5125
R321	315-0303-00	B010100	B030211X	RES.,FXD,CMPSN:30K OHM,5%,0.25W (7844 ONLY)	01121	CB3035
R321	315-0303-00	B010100	B020123X	RES.,FXD,CMPSN:30K OHM,5%,0.25W (R7844 ONLY)	01121	CB3035
R323	315-0242-00	B010100	B030211X	RES.,FXD,CMPSN:2.4K OHM,5%,0.25W (7844 ONLY)	01121	CB2425
R323	315-0242-00	B010100	B020123X	RES.,FXD,CMPSN:2.4K OHM,5%,0.25W (R7844 ONLY)	01121	CB2425
R324	321-0328-00			RES.,FXD,FILM:25.5K OHM,1%,0.125W	91637	MFF1816G25501F
R325	321-0224-00	B010100	B030211	RES.,FXD,FILM:2.1K OHM,1%,0.125W (7844 ONLY)	91637	MFF1816G21000F
R325	321-0215-00	B030212		RES.,FXD,FILM:1.69K OHM,1%,0.125W (7844 ONLY)	91637	MFF1816G16900F
R325	321-0224-00	B010100	B020123	RES.,FXD,FILM:2.1K OHM,1%,0.125W (R7844 ONLY)	91637	MFF1816G21000F
R325	321-0215-00	B020124		RES.,FXD,FILM:1.69K OHM,1%,0.125W (R7844 ONLY)	91637	MFF1816G16900F
R326	321-0226-00	B010100	B030211	RES.,FXD,FILM:2.21K OHM,1%,0.125W (7844 ONLY)	91637	MFF1816G22100F
R326	321-0218-00	B030212		RES.,FXD,FILM:1.82K OHM,1%,0.125W (7844 ONLY)	91637	MFF1816G18200F
R326	321-0226-00	B010100	B020123	RES.,FXD,FILM:2.21K OHM,1%,0.125W (R7844 ONLY)	91637	MFF1816G22100F
R326	321-0218-00	B020124		RES.,FXD,FILM:1.82K OHM,1%,0.125W (R7844 ONLY)	91637	MFF1816G18200F
R328	315-0101-00			RES.,FXD,CMPSN:100 OHM,5%,0.25W	01121	CB1015
R329	301-0182-00			RES.,FXD,CMPSN:1.8K OHM,5%,0.5W	01121	EB1825
R330	321-0222-00			RES.,FXD,FILM:2K OHM,1%,0.125W	91637	MFF1816G20000F
R331	315-0510-00			RES.,FXD,CMPSN:51 OHM,5%,0.25W	01121	CB5105
R332	315-0510-00			RES.,FXD,CMPSN:51 OHM,5%,0.25W	01121	CB5105
R334	315-0151-00			RES.,FXD,CMPSN:150 OHM,5%,0.25W	01121	CB1515
R335	311-1560-00	XB130000		RES.,VAR,NONWIR:5K OHM,20%,0.50W	73138	91-82-0
R336	315-0100-00			RES.,FXD,CMPSN:10 OHM,5%,0.25W	01121	CB1005
R337	315-0114-00			RES.,FXD,CMPSN:110K OHM,5%,0.25W	01121	CB1145
R338	321-0239-00			RES.,FXD,FILM:3.01K OHM,1%,0.125W	91637	MFF1816G30100F
R339	321-0239-00			RES.,FXD,FILM:3.01K OHM,1%,0.125W	91637	MFF1816G30100F
R340	315-0472-00	B010100	B099999	RES.,FXD,CMPSN:4.7K OHM,5%,0.25W (7844, R7844 ONLY)	01121	CB4725

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R340	315-0472-00	B100000	B100518	RES.,FXD,CMPSN:4.7K OHM,5%,0.25W (R7844 ONLY)	01121	CB4725
R340	315-0752-00	B100519	B129999	RES.,FXD,CMPSN:7.5K OHM,5%,0.25W (R7844 ONLY) (NOMINAL VALUE,SELECTED)	01121	CB7525
R340	315-0472-00	B130000		RES.,FXD,CMPSN:4.7K OHM,5%,0.25W (R7844 ONLY)	01121	CB4725
R340	315-0472-00	B100000	B111034	RES.,FXD,CMPSN:4.7K OHM,5%,0.25W (7844 ONLY)	01121	CB4725
R340	315-0752-00	B111035	B129999	RES.,FXD,CMPSN:7.5K OHM,5%,0.25W (7844 ONLY) (NOMINAL VALUE,SELECTED)	01121	CB7525
R340	315-0472-00	B130000		RES.,FXD,CMPSN:4.7K OHM,5%,0.25W (7844 ONLY)	01121	CB4725
R341	315-0510-00			RES.,FXD,CMPSN:51 OHM,5%,0.25W	01121	CB5105
R342	315-0152-00			RES.,FXD,CMPSN:1.5K OHM,5%,0.25W	01121	CB1525
R343	315-0103-00	B010100	B119999	RES.,FXD,CMPSN:10K OHM,5%,0.25W	01121	CB1035
R343	315-0102-00	B120000		RES.,FXD,CMPSN:1K OHM,5%,0.25W	01121	CB1025
R344	315-0152-00			RES.,FXD,CMPSN:1.5K OHM,5%,0.25W	01121	CB1525
R345	315-0103-00	B010100	B119999	RES.,FXD,CMPSN:10K OHM,5%,0.25W	01121	CB1035
R345	321-0102-00	B120000		RES.,FXD,FILM:113 OHM,1%,0.125W	91637	MFF1816G113R0F
R346	315-0510-00			RES.,FXD,CMPSN:51 OHM,5%,0.25W	01121	CB5105
R347	321-0713-00			RES.,FXD,FILM:30 OHM,1%,0.125W	91637	MFF1816G30R00F
R348	321-0265-00			RES.,FXD,FILM:5.62K OHM,1%,0.125W	91637	MFF1816G56200F
R349	321-0265-00			RES.,FXD,FILM:5.62K OHM,1%,0.125W	91637	MFF1816G56200F
R350	321-0713-00			RES.,FXD,FILM:30 OHM,1%,0.125W	91637	MFF1816G30R00F
R351	321-0265-00			RES.,FXD,FILM:5.62K OHM,1%,0.125W	91637	MFF1816G56200F
R352	321-0265-00	B010100	B119999X	RES.,FXD,FILM:5.62K OHM,1%,0.125W	91637	MFF1816G56200F
R354	321-0222-00			RES.,FXD,FILM:2K OHM,1%,0.125W	91637	MFF1816G20000F
R355	321-0222-00			RES.,FXD,FILM:2K OHM,1%,0.125W	91637	MFF1816G20000F
R359	315-0682-00			RES.,FXD,CMPSN:6.8K OHM,5%,0.25W	01121	CB6825
R360	315-0512-00			RES.,FXD,CMPSN:5.1K OHM,5%,0.25W	01121	CB5125
R361	315-0303-00			RES.,FXD,CMPSN:30K OHM,5%,0.25W	01121	CB3035
R363	315-0242-00			RES.,FXD,CMPSN:2.4K OHM,5%,0.25W	01121	CB2425
R364	321-0328-00			RES.,FXD,FILM:25.5K OHM,1%,0.125W	91637	MFF1816G25501F
R365	321-0224-00	B010100	B030211	RES.,FXD,FILM:2.1K OHM,1%,0.125W (R7844 ONLY)	91637	MFF1816G21000F
R365	321-0215-00	B030212		RES.,FXD,FILM:1.69K OHM,1%,0.125W (R7844 ONLY)	91637	MFF1816G16900F
R365	321-0224-00	B010100	B020123	RES.,FXD,FILM:2.1K OHM,1%,0.125W (7844 ONLY)	91637	MFF1816G21000F
R365	321-0215-00	B020124		RES.,FXD,FILM:1.69K OHM,1%,0.125W (7844 ONLY)	91637	MFF1816G16900F
R366	321-0226-00	B010100	B030211	RES.,FXD,FILM:2.21K OHM,1%,0.125W (R7844 ONLY)	91637	MFF1816G22100F
R366	321-0218-00	B030212		RES.,FXD,FILM:1.82K OHM,1%,0.125W (R7844 ONLY)	91637	MFF1816G18200F
R366	321-0226-00	B010100	B020123	RES.,FXD,FILM:2.21K OHM,1%,0.125W (7844 ONLY)	91637	MFF1816G22100F
R366	321-0218-00	B020124		RES.,FXD,FILM:1.82K OHM,1%,0.125W (7844 ONLY)	91637	MFF1816G18200F
R370	321-0222-00			RES.,FXD,FILM:2K OHM,1%,0.125W	91637	MFF1816G20000F
R371	315-0510-00			RES.,FXD,CMPSN:51 OHM,5%,0.25W	01121	CB5105
R372	315-0510-00			RES.,FXD,CMPSN:51 OHM,5%,0.25W	01121	CB5105
R373	315-0361-00			RES.,FXD,CMPSN:360 OHM,5%,0.25W	01121	CB3615
R374	315-0151-00			RES.,FXD,CMPSN:150 OHM,5%,0.25W	01121	CB1515
R376	315-0100-00			RES.,FXD,CMPSN:10 OHM,5%,0.25W	01121	CB1005

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R377	315-0114-00	B010100	B119999X	RES.,FXD,CMPSN:110K OHM,5%,0.25W	01121	CB1145
R377	315-0124-00	B120000		RES.,FXD,CMPSN:120K OHM,5%,0.25W	01121	CB1245
R378	321-0239-00			RES.,FXD,FILM:3.01K OHM,1%,0.125W	91637	MFF1816G30100F
R379	321-0239-00			RES.,FXD,FILM:3.01K OHM,1%,0.125W	91637	MFF1816G30100F
R380	315-0472-00	B010100	B099999	RES.,FXD,CMPSN:4.7K OHM,5%,0.25W	01121	CB4725
R380	315-0472-00	B100000	B100518	RES.,FXD,CMPSN:4.7K OHM,5%,0.25W	01121	CB4725
	----- -----			(NOMINAL VALUE,SELECTED)		
R380	315-0752-00	B100519	B129999	RES.,FXD,CMPSN:7.5K OHM,5%,0.25W	01121	CB7525
	----- -----			(NOMINAL VALUE,SELECTED)		
R380	315-0472-00	B130000		RES.,FXD,CMPSN:4.7K OHM,5%,0.25W	01121	CB4725
R381	311-1560-00	XB130000		RES.,VAR,NONWIR:5K OHM,20%,0.50W	73138	91-82-0
R382	315-0302-00			RES.,FXD,CMPSN:3K OHM,5%,0.25W	01121	CB3025
R383	315-0302-00			RES.,FXD,CMPSN:3K OHM,5%,0.25W	01121	CB3025
R386	311-1282-00			RES.,VAR,NONWIR:5K OHM,10%,0.50W	32997	3329W-L58-502
R402	321-0164-00			RES.,FXD,FILM:499 OHM,1%,0.125W	91637	MFF1816G499R0F
R403	321-0164-00			RES.,FXD,FILM:499 OHM,1%,0.125W	91637	MFF1816G499R0F
R407	315-0222-00			RES.,FXD,CMPSN:2.2K OHM,5%,0.25W	01121	CB2225
R408	315-0102-00			RES.,FXD,CMPSN:1K OHM,5%,0.25W	01121	CB1025
R410	321-1068-01			RES.,FXD,FILM:50.5 OHM,0.5%,0.125W	91637	MFF1816G50R50D
R411	323-0171-00			RES.,FXD,FILM:590 OHM,1%,0.50W	75042	CECT0-5900F
R412	321-0072-00			RES.,FXD,FILM:54.9 OHM,1%,0.125W	91637	MFF1816G54R90F
R413	323-0171-00			RES.,FXD,FILM:590 OHM,1%,0.50W	75042	CECT0-5900F
R414	321-1068-01			RES.,FXD,FILM:50.5 OHM,0.5%,0.125W	91637	MFF1816G50R50D
R416	317-0910-00	B010100	B059999	RES.,FXD,CMPSN:91 OHM,5%,0.125W	01121	BB9105
	----- -----			(7844 ONLY)		
R416	311-1260-00	B060000		RES.,VAR,NONWIR:250 OHM,10%,0.50W	32997	3329P-L58-251
	----- -----			(7844 ONLY)		
R416	317-0910-00	B010100	B049999	RES.,FXD,CMPSN:91 OHM,5%,0.125W	01121	BB9105
	----- -----			(R7844 ONLY)		
R416	311-1260-00	B050000		RES.,VAR,NONWIR:250 OHM,10%,0.50W	32997	3329P-L58-251
	----- -----			(R7844 ONLY)		
R417	317-0910-00	B010100	B059999	RES.,FXD,CMPSN:91 OHM,5%,0.125W	01121	BB9105
	----- -----			(7844 ONLY)		
R417	317-0101-00	B060000		RES.,FXD,CMPSN:100 OHM,5%,0.125W	01121	BB1015
	----- -----			(7844 ONLY)		
R417	317-0910-00	B010100	B049999	RES.,FXD,CMPSN:91 OHM,5%,0.125W	01121	BB9105
	----- -----			(R7844 ONLY)		
R417	317-0101-00	B050000		RES.,FXD,CMPSN:100 OHM,5%,0.125W	01121	BB1015
	----- -----			(R7844 ONLY)		
R419	315-0473-00			RES.,FXD,CMPSN:47K OHM,5%,0.25W	01121	CB4735
R420	315-0563-00			RES.,FXD,CMPSN:56K OHM,5%,0.25W	01121	CB5635
R421	323-0152-00			RES.,FXD,FILM:374 OHM,1%,0.50W	91637	MFF1226G374R0F
R422	323-0152-00			RES.,FXD,FILM:374 OHM,1%,0.50W	91637	MFF1226G374R0F
R424	315-0562-00			RES.,FXD,CMPSN:5.6K OHM,5%,0.25W	01121	CB5625
R426	315-0562-00			RES.,FXD,CMPSN:5.6K OHM,5%,0.25W	01121	CB5625
R427	315-0122-00			RES.,FXD,CMPSN:1.2K OHM,5%,0.25W	01121	CB1225
R428	315-0151-00			RES.,FXD,CMPSN:150 OHM,5%,0.25W	01121	CB1515
R433	322-0202-00			RES.,FXD,FILM:1.24K OHM,1%,0.25W	75042	CEBT0-1241F
R436	321-0070-00			RES.,FXD,FILM:52.3 OHM,1%,0.125W	16299	NA55D52R3F
R446	317-0910-00	B010100	B059999	RES.,FXD,CMPSN:91 OHM,5%,0.125W	01121	BB9105
	----- -----			(7844 ONLY)		
R446	311-1260-00	B060000		RES.,VAR,NONWIR:250 OHM,10%,0.50W	32997	3329P-L58-251
	----- -----			(7844 ONLY)		
R446	317-0910-00	B010100	B049999	RES.,FXD,CMPSN:91 OHM,5%,0.125W	01121	BB9105
	----- -----			(R7844 ONLY)		
R446	311-1260-00	B050000		RES.,VAR,NONWIR:250 OHM,10%,0.50W	32997	3329P-L58-251
	----- -----			(R7844 ONLY)		

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R447	317-0910-00	B010100	B059999	RES.,FXD,CMPSN:91 OHM,5%,0.125W (7844 ONLY)	01121	BB9105
R447	317-0101-00	B060000		RES.,FXD,CMPSN:100 OHM,5%,0.125W (7844 ONLY)	01121	BB1015
R447	317-0910-00	B010100	B049999	RES.,FXD,CMPSN:91 OHM,5%,0.125W (R7844 ONLY)	01121	BB9105
R447	317-0101-00	B050000		RES.,FXD,CMPSN:100 OHM,5%,0.125W (R7844 ONLY)	01121	BB1015
R449	315-0473-00			RES.,FXD,CMPSN:47K OHM,5%,0.25W	01121	CB4735
R450	315-0563-00			RES.,FXD,CMPSN:56K OHM,5%,0.25W	01121	CB5635
R451	323-0152-00			RES.,FXD,FILM:374 OHM,1%,0.50W	91637	MFF1226G374R0F
R452	323-0152-00			RES.,FXD,FILM:374 OHM,1%,0.50W	91637	MFF1226G374R0F
R453	322-0202-00			RES.,FXD,FILM:1.24K OHM,1%,0.25W	75042	CEBT0-1241F
R454	315-0562-00			RES.,FXD,CMPSN:5.6K OHM,5%,0.25W	01121	CB5625
R456	315-0562-00			RES.,FXD,CMPSN:5.6K OHM,5%,0.25W	01121	CB5625
R457	315-0122-00			RES.,FXD,CMPSN:1.2K OHM,5%,0.25W	01121	CB1225
R458	315-0151-00			RES.,FXD,CMPSN:150 OHM,5%,0.25W	01121	CB1515
R502	321-0164-00			RES.,FXD,FILM:499 OHM,1%,0.125W	91637	MFF1816G499R0F
R503	321-0164-00			RES.,FXD,FILM:499 OHM,1%,0.125W	91637	MFF1816G499R0F
R507	315-0222-00			RES.,FXD,CMPSN:2.2K OHM,5%,0.25W	01121	CB2225
R508	315-0102-00			RES.,FXD,CMPSN:1K OHM,5%,0.25W	01121	CB1025
R510	321-1068-01			RES.,FXD,FILM:50.5 OHM,0.5%,0.125W	91637	MFF1816G50R50D
R511	323-0171-00			RES.,FXD,FILM:590 OHM,1%,0.50W	75042	CECT0-5900F
R512	321-0072-00			RES.,FXD,FILM:54.9 OHM,1%,0.125W	91637	MFF1816G54R9OF
R513	323-0171-00			RES.,FXD,FILM:590 OHM,1%,0.50W	75042	CECT0-5900F
R514	321-1068-01			RES.,FXD,FILM:50.5 OHM,0.5%,0.125W	91637	MFF1816G50R50D
R516	317-0910-00	B010100	B059999	RES.,FXD,CMPSN:91 OHM,5%,0.125W (7844 ONLY)	01121	BB9105
R516	311-1260-00	B060000		RES.,VAR,NONWIR:250 OHM,10%,0.50W (7844 ONLY)	32997	3329P-L58-251
R516	317-0910-00	B010100	B049999	RES.,FXD,CMPSN:91 OHM,5%,0.125W (R7844 ONLY)	01121	BB9105
R516	311-1260-00	B050000		RES.,VAR,NONWIR:250 OHM,10%,0.50W (R7844 ONLY)	32997	3329P-L58-251
R517	317-0910-00	B010100	B059999	RES.,FXD,CMPSN:91 OHM,5%,0.125W (7844 ONLY)	01121	BB9105
R517	317-0101-00	B060000		RES.,FXD,CMPSN:100 OHM,5%,0.125W (7844 ONLY)	01121	BB1015
R517	317-0910-00	B010100	B049999	RES.,FXD,CMPSN:91 OHM,5%,0.125W (R7844 ONLY)	01121	BB9105
R517	317-0101-00	B050000		RES.,FXD,CMPSN:100 OHM,5%,0.125W (R7844 ONLY)	01121	BB1015
R519	315-0473-00			RES.,FXD,CMPSN:47K OHM,5%,0.25W	01121	CB4735
R520	315-0563-00			RES.,FXD,CMPSN:56K OHM,5%,0.25W	01121	CB5635
R521	323-0152-00			RES.,FXD,FILM:374 OHM,1%,0.50W	91637	MFF1226G374R0F
R522	323-0152-00			RES.,FXD,FILM:374 OHM,1%,0.50W	91637	MFF1226G374R0F
R524	315-0562-00			RES.,FXD,CMPSN:5.6K OHM,5%,0.25W	01121	CB5625
R528	315-0151-00			RES.,FXD,CMPSN:150 OHM,5%,0.25W	01121	CB1515
R533	322-0202-00			RES.,FXD,FILM:1.24K OHM,1%,0.25W	75042	CEBT0-1241F
R536	321-0070-00			RES.,FXD,FILM:52.3 OHM,1%,0.125W	16299	NA55D52R3F
R546	317-0910-00	B010100	B059999	RES.,FXD,CMPSN:91 OHM,5%,0.125W (7844 ONLY)	01121	BB9105
R546	311-1260-00	B060000		RES.,VAR,NONWIR:250 OHM,10%,0.50W (7844 ONLY)	32997	3329P-L58-251
R546	317-0910-00	B010100	B049999	RES.,FXD,CMPSN:91 OHM,5%,0.125W (R7844 ONLY)	01121	BB9105
R546	311-1260-00	B050000		RES.,VAR,NONWIR:250 OHM,10%,0.50W (R7844 ONLY)	32997	3329P-L58-251

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R547	317-0910-00	B010100	B059999	RES.,FXD,CMPSN:91 OHM,5%,0.125W (7844 ONLY)	01121	BB9105
R547	317-0101-00	B060000		RES.,FXD,CMPSN:100 OHM,5%,0.125W (7844 ONLY)	01121	BB1015
R547	317-0910-00	B010100	B049999	RES.,FXD,CMPSN:91 OHM,5%,0.125W (R7844 ONLY)	01121	BB9105
R547	317-0101-00	B050000		RES.,FXD,CMPSN:100 OHM,5%,0.125W (R7844 ONLY)	01121	BB1015
R549	315-0473-00			RES.,FXD,CMPSN:47K OHM,5%,0.25W	01121	CB4735
R550	315-0563-00			RES.,FXD,CMPSN:56K OHM,5%,0.25W	01121	CB5635
R551	323-0152-00			RES.,FXD,FILM:374 OHM,1%,0.50W	91637	MFF1226G374R0F
R552	323-0152-00			RES.,FXD,FILM:374 OHM,1%,0.50W	91637	MFF1226G374R0F
R553	322-0202-00			RES.,FXD,FILM:1.24K OHM,1%,0.25W	75042	CEBT0-1241F
R554	315-0562-00			RES.,FXD,CMPSN:5.6K OHM,5%,0.25W	01121	CB5625
R555	321-0070-00			RES.,FXD,FILM:52.3 OHM,1%,0.125W	16299	NA55D52R3F
R556	321-0070-00			RES.,FXD,FILM:52.3 OHM,1%,0.125W	16299	NA55D52R3F
R558	315-0151-00			RES.,FXD,CMPSN:150 OHM,5%,0.25W	01121	CB1515
R601	325-0108-00	B010100	B110794X	RES.,FXD,FILM:105 OHM,0.5%,0.05W (7844 OPTION 21 ONLY)	14298	AME50-C105R0D
R601	325-0108-00	B010100	B100399X	RES.,FXD,FILM:105 OHM,0.5%,0.05W (R7844 OPTION 21 ONLY)	14298	AME50-C105R0D
R602	325-0044-00	B010100	B110794X	RES.,FXD,FILM:100 OHM,0.5%,0.05W (7844 OPTION 21 ONLY)	03888	PME50-F1000R0D
R602	325-0044-00	B010100	B100399X	RES.,FXD,FILM:100 OHM,0.5%,0.05W (R7844 OPTION 21 ONLY)	03888	PME50-F1000R0D
R603	325-0108-00	B010100	B110794X	RES.,FXD,FILM:105 OHM,0.5%,0.05W (7844 OPTION 21 ONLY)	14298	AME50-C105R0D
R603	325-0108-00	B010100	B100399X	RES.,FXD,FILM:105 OHM,0.5%,0.05W (R7844 OPTION 21 ONLY)	14298	AME50-C105R0D
R604	325-0044-00	B010100	B110794X	RES.,FXD,FILM:100 OHM,0.5%,0.05W (7844 OPTION 21 ONLY)	03888	PME50-F1000R0D
R604	325-0044-00	B010100	B100399X	RES.,FXD,FILM:100 OHM,0.5%,0.05W (R7844 OPTION 21 ONLY)	03888	PME50-F1000R0D
R605	315-0112-00	B010100	B110794X	RES.,FXD,CMPSN:1.1K OHM,5%,0.25W (7844 OPTION 21 ONLY)	01121	CB1125
R605	315-0112-00	B010100	B100399X	RES.,FXD,CMPSN:1.1K OHM,5%,0.25W (R7844 OPTION 21 ONLY)	01121	CB1125
R606	315-0152-00	B010100	B110794X	RES.,FXD,CMPSN:1.5K OHM,5%,0.25W (7844 OPTION 21 ONLY)	01121	CB1525
R606	315-0152-00	B010100	B100399X	RES.,FXD,CMPSN:1.5K OHM,5%,0.25W (R7844 OPTION 21 ONLY)	01121	CB1525
R607	321-0133-00	B010100	B110794X	RES.,FXD,FILM:237 OHM,1%,0.125W (7844 OPTION 21 ONLY)	91637	MFF1816G237R0F
R607	321-0133-00	B010100	B100399X	RES.,FXD,FILM:237 OHM,1%,0.125W (R7844 OPTION 21 ONLY)	91637	MFF1816G237R0F
R608	321-0133-00	B010100	B110794X	RES.,FXD,FILM:237 OHM,1%,0.125W (7844 OPTION 21 ONLY)	91637	MFF1816G237R0F
R608	321-0133-00	B010100	B100399X	RES.,FXD,FILM:237 OHM,1%,0.125W (R7844 OPTION 21 ONLY)	91637	MFF1816G237R0F
R610	323-0131-00	B010100	B110794X	RES.,FXD,FILM:226 OHM,1%,0.50W (7844 OPTION 21 ONLY)	75042	CECT0-2260F
R610	323-0131-00	B010100	B100399X	RES.,FXD,FILM:226 OHM,1%,0.50W (R7844 OPTION 21 ONLY)	75042	CECT0-2260F
R612	323-0131-00	B010100	B110794X	RES.,FXD,FILM:226 OHM,1%,0.50W (7844 OPTION 21 ONLY)	75042	CECT0-2260F
R612	323-0131-00	B010100	B100399X	RES.,FXD,FILM:226 OHM,1%,0.50W **(R7844 OPTION 21 ONLY)**	75042	CECT0-2260F

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R613	321-0133-00	B010100	B110794X	RES.,FXD,FILM:237 OHM,1%,0.125W (7844 OPTION 21 ONLY)	91637	MFF1816G237R0F
R613	321-0133-00	B010100	B100399X	RES.,FXD,FILM:237 OHM,1%,0.125W (R7844 OPTION 21 ONLY)	91637	MFF1816G237R0F
R614	321-0133-00	B010100	B110794X	RES.,FXD,FILM:237 OHM,1%,0.125W (7844 OPTION 21 ONLY)	91637	MFF1816G237R0F
R614	321-0133-00	B010100	B100399X	RES.,FXD,FILM:237 OHM,1%,0.125W (R7844 OPTION 21 ONLY)	91637	MFF1816G237R0F
R615	315-0112-00	B010100	B110794X	RES.,FXD,CMPSN:1.1K OHM,5%,0.25W (7844 OPTION 21 ONLY)	01121	CB1125
R615	315-0112-00	B010100	B100399X	RES.,FXD,CMPSN:1.1K OHM,5%,0.25W (R7844 OPTION 21 ONLY)	01121	CB1125
R616	315-0152-00	B010100	B110794X	RES.,FXD,CMPSN:1.5K OHM,5%,0.25W (7844 OPTION 21 ONLY)	01121	CB1525
R616	315-0152-00	B010100	B100399X	RES.,FXD,CMPSN:1.5K OHM,5%,0.25W (R7844 OPTION 21 ONLY)	01121	CB1525
R618	317-0510-00	B010100	B110794X	RES.,FXD,CMPSN:51 OHM,5%,0.125W (7844 OPTION 21 ONLY)	01121	BB5105
R618	317-0510-00	B010100	B100399X	RES.,FXD,CMPSN:51 OHM,5%,0.125W (R7844 OPTION 21 ONLY)	01121	BB5105
R619	315-0102-00	B010100	B110794X	RES.,FXD,CMPSN:1K OHM,5%,0.25W (7844 OPTION 21 ONLY)	01121	CB1025
R619	315-0102-00	B010100	B100399X	RES.,FXD,CMPSN:1K OHM,5%,0.25W (R7844 OPTION 21 ONLY)	01121	CB1025
R620	325-0053-00	B010100	B110794X	RES.,FXD,FILM:50 OHM,1%,0.05W (7844 OPTION 21 ONLY)	03888	PME50C50R00F
R620	325-0053-00	B010100	B100399X	RES.,FXD,FILM:50 OHM,1%,0.05W (R7844 OPTION 21 ONLY)	03888	PME50C50R00F
R622	325-0053-00	B010100	B110794X	RES.,FXD,FILM:50 OHM,1%,0.05W (7844 OPTION 21 ONLY)	03888	PME50C50R00F
R622	325-0053-00	B010100	B100399X	RES.,FXD,FILM:50 OHM,1%,0.05W (R7844 OPTION 21 ONLY)	03888	PME50C50R00F
R630	315-0302-00	B010100	B029999	RES.,FXD,CMPSN:3K OHM,5%,0.25W (7844 OPTION 21 ONLY)	01121	CB3025
R630	315-0362-00	B030000	B110794X	RES.,FXD,CMPSN:3.6K OHM,5%,0.25W (7844 OPTION 21 ONLY)	01121	CB3625
R630	315-0302-00	B010100	B019999	RES.,FXD,CMPSN:3K OHM,5%,0.25W (R7844 OPTION 21 ONLY)	01121	CB3025
R630	315-0362-00	B020000	B100399X	RES.,FXD,CMPSN:3.6K OHM,5%,0.25W (R7844 OPTION 21 ONLY)	01121	CB3625
R631	315-0202-00	B010100	B110794X	RES.,FXD,CMPSN:2K OHM,5%,0.25W (7844 OPTION 21 ONLY)	01121	CB2025
R631	315-0202-00	B010100	B100399X	RES.,FXD,CMPSN:2K OHM,5%,0.25W (R7844 OPTION 21 ONLY)	01121	CB2025
R632	321-0150-00	B010100	B110794X	RES.,FXD,FILM:357 OHM,1%,0.125W (7844 OPTION 21 ONLY)	91637	MFF1816G357R0F
R632	321-0150-00	B010100	B100399X	RES.,FXD,FILM:357 OHM,1%,0.125W (R7844 OPTION 21 ONLY)	91637	MFF1816G357R0F
R634	321-0150-00	B010100	B110794X	RES.,FXD,FILM:357 OHM,1%,0.125W (7844 OPTION 21 ONLY)	91637	MFF1816G357R0F
R634	321-0150-00	B010100	B100399X	RES.,FXD,FILM:357 OHM,1%,0.125W (R7844 OPTION 21 ONLY)	91637	MFF1816G357R0F
R641	315-0101-00	B010100	B110794X	RES.,FXD,CMPSN:100 OHM,5%,0.25W (7844 OPTION 21 ONLY)	01121	CB1015
R641	315-0101-00	B010100	B100399X	RES.,FXD,CMPSN:100 OHM,5%,0.25W (R7844 OPTION 21 ONLY)	01121	CB1015

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R642	315-0272-00	B010100	B110794X	RES.,FXD,CMPSN:2.7K OHM,5%,0.25W (7844 OPTION 21 ONLY)	01121	CB2725
R642	315-0272-00	B010100	B100399X	RES.,FXD,CMPSN:2.7K OHM,5%,0.25W (R7844 OPTION 21 ONLY)	01121	CB2725
R644	321-0150-00	B010100	B110794X	RES.,FXD,FILM:357 OHM,1%,0.125W (7844 OPTION 21 ONLY)	91637	MFF1816G357R0F
R644	321-0150-00	B010100	B100399X	RES.,FXD,FILM:357 OHM,1%,0.125W (R7844 OPTION 21 ONLY)	91637	MFF1816G357R0F
R646	321-0150-00	B010100	B110794X	RES.,FXD,FILM:357 OHM,1%,0.125W (7844 OPTION 21 ONLY)	91637	MFF1816G357R0F
R646	321-0150-00	B010100	B100399X	RES.,FXD,FILM:357 OHM,1%,0.125W (R7844 OPTION 21 ONLY)	91637	MFF1816G357R0F
R654	315-0202-00	B010100	B110794X	RES.,FXD,CMPSN:2K OHM,5%,0.25W (7844 OPTION 21 ONLY)	01121	CB2025
R654	315-0202-00	B010100	B100399X	RES.,FXD,CMPSN:2K OHM,5%,0.25W (R7844 OPTION 21 ONLY)	01121	CB2025
R701	325-0108-00	B010100	B110794X	RES.,FXD,FILM:105 OHM,0.5%,0.05W (7844 OPTION 21 ONLY)	14298	AME50-C105R0D
R701	325-0108-00	B010100	B100399X	RES.,FXD,FILM:105 OHM,0.5%,0.05W (R7844 OPTION 21 ONLY)	14298	AME50-C105R0D
R702	325-0044-00	B010100	B110794X	RES.,FXD,FILM:100 OHM,0.5%,0.05W (7844 OPTION 21 ONLY)	03888	PME50-F1000R0D
R702	325-0044-00	B010100	B100399X	RES.,FXD,FILM:100 OHM,0.5%,0.05W (R7844 OPTION 21 ONLY)	03888	PME50-F1000R0D
R703	325-0108-00	B010100	B110794X	RES.,FXD,FILM:105 OHM,0.5%,0.05W (7844 OPTION 21 ONLY)	14298	AME50-C105R0D
R703	325-0108-00	B010100	B100399X	RES.,FXD,FILM:105 OHM,0.5%,0.05W (R7844 OPTION 21 ONLY)	14298	AME50-C105R0D
R704	325-0044-00	B010100	B110794X	RES.,FXD,FILM:100 OHM,0.5%,0.05W (7844 OPTION 21 ONLY)	03888	PME50-F1000R0D
R704	325-0044-00	B010100	B100399X	RES.,FXD,FILM:100 OHM,0.5%,0.05W (R7844 OPTION 21 ONLY)	03888	PME50-F1000R0D
R705	315-0112-00	B010100	B110794X	RES.,FXD,CMPSN:1.1K OHM,5%,0.25W (7844 OPTION 21 ONLY)	01121	CB1125
R705	315-0112-00	B010100	B100399X	RES.,FXD,CMPSN:1.1K OHM,5%,0.25W (R7844 OPTION 21 ONLY)	01121	CB1125
R706	315-0152-00	B010100	B110794X	RES.,FXD,CMPSN:1.5K OHM,5%,0.25W (7844 OPTION 21 ONLY)	01121	CB1525
R706	315-0152-00	B010100	B100399X	RES.,FXD,CMPSN:1.5K OHM,5%,0.25W (R7844 OPTION 21 ONLY)	01121	CB1525
R707	321-0133-00	B010100	B110794X	RES.,FXD,FILM:237 OHM,1%,0.125W (7844 OPTION 21 ONLY)	91637	MFF1816G237R0F
R707	321-0133-00	B010100	B100399X	RES.,FXD,FILM:237 OHM,1%,0.125W (R7844 OPTION 21 ONLY)	91637	MFF1816G237R0F
R708	321-0133-00	B010100	B110794X	RES.,FXD,FILM:237 OHM,1%,0.125W (7844 OPTION 21 ONLY)	91637	MFF1816G237R0F
R708	321-0133-00	B010100	B100399X	RES.,FXD,FILM:237 OHM,1%,0.125W (R7844 OPTION 21 ONLY)	91637	MFF1816G237R0F
R710	323-0131-00	B010100	B110794X	RES.,FXD,FILM:226 OHM,1%,0.50W (7844 OPTION 21 ONLY)	75042	CECT0-2260F
R710	323-0131-00	B010100	B100399X	RES.,FXD,FILM:226 OHM,1%,0.50W (R7844 OPTION 21 ONLY)	75042	CECT0-2260F
R712	323-0131-00	B010100	B110794X	RES.,FXD,FILM:226 OHM,1%,0.50W (7844 OPTION 21 ONLY)	75042	CECT0-2260F
R712	323-0131-00	B010100	B100399X	RES.,FXD,FILM:226 OHM,1%,0.50W (R7844 OPTION 21 ONLY)	75042	CECT0-2260F
R713	321-0133-00	B010100	B110794X	RES.,FXD,FILM:237 OHM,1%,0.125W **(7844 OPTION 21 ONLY)**	91637	MFF1816G237R0F

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R713	321-0133-00	B010100	B100399X	RES.,FXD,FILM:237 OHM,1%,0.125W (R7844 OPTION 21 ONLY)	91637	MFF1816G237R0F
R714	321-0133-00	B010100	B110794X	RES.,FXD,FILM:237 OHM,1%,0.125W (7844 OPTION 21 ONLY)	91637	MFF1816G237R0F
R714	321-0133-00	B010100	B100399X	RES.,FXD,FILM:237 OHM,1%,0.125W (R7844 OPTION 21 ONLY)	91637	MFF1816G237R0F
R715	315-0112-00	B010100	B110794X	RES.,FXD,CMPSN:1.1K OHM,5%,0.25W (7844 OPTION 21 ONLY)	01121	CB1125
R715	315-0112-00	B010100	B100399X	RES.,FXD,CMPSN:1.1K OHM,5%,0.25W (R7844 OPTION 21 ONLY)	01121	CB1125
R716	315-0152-00	B010100	B110794X	RES.,FXD,CMPSN:1.5K OHM,5%,0.25W (7844 OPTION 21 ONLY)	01121	CB1525
R716	315-0152-00	B010100	B100399X	RES.,FXD,CMPSN:1.5K OHM,5%,0.25W (R7844 OPTION 21 ONLY)	01121	CB1525
R718	317-0510-00	B010100	B110794X	RES.,FXD,CMPSN:51 OHM,5%,0.125W (7844 OPTION 21 ONLY)	01121	BB5105
R718	317-0510-00	B010100	B100399X	RES.,FXD,CMPSN:51 OHM,5%,0.125W (R7844 OPTION 21 ONLY)	01121	BB5105
R719	315-0102-00	B010100	B110794X	RES.,FXD,CMPSN:1K OHM,5%,0.25W (7844 OPTION 21 ONLY)	01121	CB1025
R719	315-0102-00	B010100	B100399X	RES.,FXD,CMPSN:1K OHM,5%,0.25W (R7844 OPTION 21 ONLY)	01121	CB1025
R720	325-0053-00	B010100	B110794X	RES.,FXD,FILM:50 OHM,1%,0.05W (7844 OPTION 21 ONLY)	03888	PME50C50R00F
R720	325-0053-00	B010100	B100399X	RES.,FXD,FILM:50 OHM,1%,0.05W (R7844 OPTION 21 ONLY)	03888	PME50C50R00F
R722	325-0053-00	B010100	B110794X	RES.,FXD,FILM:50 OHM,1%,0.05W (7844 OPTION 21 ONLY)	03888	PME50C50R00F
R722	325-0053-00	B010100	B100399X	RES.,FXD,FILM:50 OHM,1%,0.05W (R7844 OPTION 21 ONLY)	03888	PME50C50R00F
R731	315-0101-00	B010100	B110794X	RES.,FXD,CMPSN:100 OHM,5%,0.25W (7844 OPTION 21 ONLY)	01121	CB1015
R731	315-0101-00	B010100	B100399X	RES.,FXD,CMPSN:100 OHM,5%,0.25W (R7844 OPTION 21 ONLY)	01121	CB1015
R732	315-0272-00	B010100	B110794X	RES.,FXD,CMPSN:2.7K OHM,5%,0.25W (7844 OPTION 21 ONLY)	01121	CB2725
R732	315-0272-00	B010100	B100399X	RES.,FXD,CMPSN:2.7K OHM,5%,0.25W (R7844 OPTION 21 ONLY)	01121	CB2725
R741	315-0101-00	B010100	B110794X	RES.,FXD,CMPSN:100 OHM,5%,0.25W (7844 OPTION 21 ONLY)	01121	CB1015
R741	315-0101-00	B010100	B100399X	RES.,FXD,CMPSN:100 OHM,5%,0.25W (R7844 OPTION 21 ONLY)	01121	CB1015
R742	315-0272-00	B010100	B110794X	RES.,FXD,CMPSN:2.7K OHM,5%,0.25W (7844 OPTION 21 ONLY)	01121	CB2725
R742	315-0272-00	B010100	B100399X	RES.,FXD,CMPSN:2.7K OHM,5%,0.25W (R7844 OPTION 21 ONLY)	01121	CB2725
R744	321-0150-00	B010100	B110794X	RES.,FXD,FILM:357 OHM,1%,0.125W (7844 OPTION 21 ONLY)	91637	MFF1816G357R0F
R744	321-0150-00	B010100	B100399X	RES.,FXD,FILM:357 OHM,1%,0.125W (R7844 OPTION 21 ONLY)	91637	MFF1816G357R0F
R746	321-0150-00	B010100	B110794X	RES.,FXD,FILM:357 OHM,1%,0.125W (7844 OPTION 21 ONLY)	91637	MFF1816G357R0F
R746	321-0150-00	B010100	B100399X	RES.,FXD,FILM:357 OHM,1%,0.125W (R7844 OPTION 21 ONLY)	91637	MFF1816G357R0F
R752	315-0101-00	B010100	B110794X	RES.,FXD,CMPSN:100 OHM,5%,0.25W (7844 OPTION 21 ONLY)	01121	CB1015

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R752	315-0101-00	B010100	B100399X	RES.,FXD,CMPSN:100 OHM,5%,0.25W	01121	CB1015
	----- -----			(R7844 OPTION 21 ONLY)		
R802	323-0187-00			RES.,FXD,FILM:866 OHM,1%,0.50W	75042	CECT0-8660F
R805	321-0098-00			RES.,FXD,FILM:102 OHM,1%,0.125W	91637	MFF1816G102R0F
R806	321-0088-00			RES.,FXD,FILM:80.6 OHM,1%,0.125W	91637	MFF1816G80R60F
R808	321-0088-00			RES.,FXD,FILM:80.6 OHM,1%,0.125W	91637	MFF1816G80R60F
R809	321-0098-00			RES.,FXD,FILM:102 OHM,1%,0.125W	91637	MFF1816G102R0F
R812	315-0182-00			RES.,FXD,CMPSN:1.8K OHM,5%,0.25W	01121	CB1825
R814	315-0153-00			RES.,FXD,CMPSN:15K OHM,5%,0.25W	01121	CB1535
R816	321-0218-00			RES.,FXD,FILM:1.82K OHM,1%,0.125W	91637	MFF1816G18200F
R818	315-0911-00			RES.,FXD,CMPSN:910 OHM,5%,0.25W	01121	CB9115
R822	323-0187-00			RES.,FXD,FILM:866 OHM,1%,0.50W	75042	CECT0-8660F
R825	321-0098-00			RES.,FXD,FILM:102 OHM,1%,0.125W	91637	MFF1816G102R0F
R826	321-0088-00			RES.,FXD,FILM:80.6 OHM,1%,0.125W	91637	MFF1816G80R60F
R828	321-0088-00			RES.,FXD,FILM:80.6 OHM,1%,0.125W	91637	MFF1816G80R60F
R829	321-0098-00			RES.,FXD,FILM:102 OHM,1%,0.125W	91637	MFF1816G102R0F
R842	323-0187-00			RES.,FXD,FILM:866 OHM,1%,0.50W	75042	CECT0-8660F
R845	321-0098-00			RES.,FXD,FILM:102 OHM,1%,0.125W	91637	MFF1816G102R0F
R846	321-0088-00			RES.,FXD,FILM:80.6 OHM,1%,0.125W	91637	MFF1816G80R60F
R848	321-0088-00			RES.,FXD,FILM:80.6 OHM,1%,0.125W	91637	MFF1816G80R60F
R849	321-0098-00			RES.,FXD,FILM:102 OHM,1%,0.125W	91637	MFF1816G102R0F
R852	315-0182-00			RES.,FXD,CMPSN:1.8K OHM,5%,0.25W	01121	CB1825
R854	315-0153-00			RES.,FXD,CMPSN:15K OHM,5%,0.25W	01121	CB1535
R856	321-0218-00			RES.,FXD,FILM:1.82K OHM,1%,0.125W	91637	MFF1816G18200F
R858	315-0911-00			RES.,FXD,CMPSN:910 OHM,5%,0.25W	01121	CB9115
R862	323-0187-00			RES.,FXD,FILM:866 OHM,1%,0.50W	75042	CECT0-8660F
R865	321-0098-00			RES.,FXD,FILM:102 OHM,1%,0.125W	91637	MFF1816G102R0F
R866	321-0088-00			RES.,FXD,FILM:80.6 OHM,1%,0.125W	91637	MFF1816G80R60F
R868	321-0088-00			RES.,FXD,FILM:80.6 OHM,1%,0.125W	91637	MFF1816G80R60F
R869	321-0098-00			RES.,FXD,FILM:102 OHM,1%,0.125W	91637	MFF1816G102R0F
R902	321-0321-07			RES.,FXD,FILM:21.5K OHM,0.1%,0.125W	91637	MFF1816C21501B
R903	315-0823-00			RES.,FXD,CMPSN:82K OHM,5%,0.25W	01121	CB8235
R904	311-1566-00			RES.,VAR,NONWIR:200 OHM,20%,0.50W	73138	91-88-0
R905	321-0822-06			RES.,FXD,FILM:1.76K OHM,0.25%,0.125W	91637	MFF1816C17600C
R907	321-0258-00			RES.,FXD,FILM:4.75K OHM,1%,0.125W	91637	MFF1816G47500F
R908	315-0362-00			RES.,FXD,CMPSN:3.6K OHM,5%,0.25W	01121	CB3625
R909	321-0321-07			RES.,FXD,FILM:21.5K OHM,0.1%,0.125W	91637	MFF1816C21501B
R912	308-0307-00			RES.,FXD,WW:5K OHM,1%,3W	91637	RS2B-B50000F
R913	321-0166-00			RES.,FXD,FILM:523 OHM,1%,0.125W	91637	MFF1816G523R0F
R914	315-0223-00			RES.,FXD,CMPSN:22K OHM,5%,0.25W	01121	CB2235
R915	311-1225-00			RES.,VAR,NONWIR:1K OHM,20%,0.50W	32997	3386F-T04-102
R916	315-0512-00			RES.,FXD,CMPSN:5.1K OHM,5%,0.25W	01121	CB5125
R918	321-1611-07			RES.,FXD,FILM:550 OHM,0.1%,0.125W	91637	MFF1816C550R0B
R920	321-1612-07			RES.,FXD,FILM:4.455K OHM,0.1%,0.125W	91637	MFF1816C44550B
R922	321-1611-07			RES.,FXD,FILM:550 OHM,0.1%,0.125W	91637	MFF1816C550R0B
R924	321-1612-07			RES.,FXD,FILM:4.455K OHM,0.1%,0.125W	91637	MFF1816C44550B
R926	321-1612-07			RES.,FXD,FILM:4.455K OHM,0.1%,0.125W	91637	MFF1816C44550B
R928	321-1611-07			RES.,FXD,FILM:550 OHM,0.1%,0.125W	91637	MFF1816C550R0B
R930	321-0813-07			RES.,FXD,FILM:495 OHM,0.1%,0.125W	91637	MFF1816C495R0B
R935	311-1548-00			RES.,VAR,NONWIR:5K OHM,10%,0.75W	73138	89-100-1
	----- -----			(R935, OPTION 22 ONLY)		
R940	315-0101-00			RES.,FXD,CMPSN:100 OHM,5%,0.25W	01121	CB1015
R942	315-0106-00			RES.,FXD,CMPSN:10M OHM,5%,0.25W	01121	CB1065
R944	315-0103-00			RES.,FXD,CMPSN:10K OHM,5%,0.25W	01121	CB1035
R946	315-0512-00			RES.,FXD,CMPSN:5.1K OHM,5%,0.25W	01121	CB5125
R950	316-0103-00			RES.,FXD,CMPSN:10K OHM,10%,0.25W	01121	CB1031
R954	315-0244-00			RES.,FXD,CMPSN:240K OHM,5%,0.25W	01121	CB2445

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R956	316-0104-00			RES.,FXD,CMPSN:100K OHM,10%,0.25W	01121	CB1041
R958	311-1548-00			RES.,VAR,NONWIR:5K OHM,10%,0.75W	73138	89-100-1
R960	311-1587-00			RES.,VAR,NONWIR:10K OHM,20%,1W	01121	12M435
	----- -----			(R960, FURNISHED AS A UNIT WITH S960)		
R962	315-0105-00			RES.,FXD,CMPSN:1M OHM,5%,0.25W	01121	CB1055
R964	315-0106-00			RES.,FXD,CMPSN:10M OHM,5%,0.25W	01121	CB1065
R966	315-0153-00			RES.,FXD,CMPSN:15K OHM,5%,0.25W	01121	CB1535
R970	315-0101-00			RES.,FXD,CMPSN:100 OHM,5%,0.25W	01121	CB1015
R972	315-0106-00			RES.,FXD,CMPSN:10M OHM,5%,0.25W	01121	CB1065
R974	315-0104-00			RES.,FXD,CMPSN:100K OHM,5%,0.25W	01121	CB1045
R976	311-1548-00			RES.,VAR,NONWIR:5K OHM,10%,0.75W	73138	89-100-1
R978	311-1588-00			RES.,VAR,NONWIR:5K OHM,20%,1W	01121	20M718
	----- -----			(R978, FURNISHED AS A UNIT WITH S978)		
R980	311-1238-00			RES.,VAR,NONWIR:5K OHM,10%,0.50W	73138	72-27-0
R984	315-0270-00			RES.,FXD,CMPSN:27 OHM,5%,0.25W	01121	CB2705
R994	315-0102-00			RES.,FXD,CMPSN:1K OHM,5%,0.25W	01121	CB1025
R1002	315-0301-00			RES.,FXD,CMPSN:300 OHM,5%,0.25W	01121	CB3015
R1004	315-0123-00			RES.,FXD,CMPSN:12K OHM,5%,0.25W	01121	CB1235
R1006	315-0331-00			RES.,FXD,CMPSN:330 OHM,5%,0.25W	01121	CB3315
R1008	315-0301-00			RES.,FXD,CMPSN:300 OHM,5%,0.25W	01121	CB3015
R1010	315-0101-00			RES.,FXD,CMPSN:100 OHM,5%,0.25W	01121	CB1015
R1011	315-0101-00			RES.,FXD,CMPSN:100 OHM,5%,0.25W	01121	CB1015
R1012	315-0101-00			RES.,FXD,CMPSN:100 OHM,5%,0.25W	01121	CB1015
R1013	321-0153-00			RES.,FXD,FILM:383 OHM,1%,0.125W	91637	MFF1816G383R0F
R1014	315-0473-00			RES.,FXD,CMPSN:47K OHM,5%,0.25W	01121	CB4735
R1016	301-0102-00			RES.,FXD,CMPSN:1K OHM,5%,0.50W	01121	EB1025
R1017	321-0191-00			RES.,FXD,FILM:953 OHM,1%,0.125W	91637	MFF1816G953R0F
R1018	321-0187-00			RES.,FXD,FILM:866 OHM,1%,0.125W	91637	MFF1816G866R0F
R1019	315-0202-00			RES.,FXD,CMPSN:2K OHM,5%,0.25W	01121	CB2025
R1021	315-0101-00			RES.,FXD,CMPSN:100 OHM,5%,0.25W	01121	CB1015
R1022	315-0301-00			RES.,FXD,CMPSN:300 OHM,5%,0.25W	01121	CB3015
R1023	321-0153-00			RES.,FXD,FILM:383 OHM,1%,0.125W	91637	MFF1816G383R0F
R1024	315-0123-00			RES.,FXD,CMPSN:12K OHM,5%,0.25W	01121	CB1235
R1026	315-0331-00			RES.,FXD,CMPSN:330 OHM,5%,0.25W	01121	CB3315
R1028	315-0301-00			RES.,FXD,CMPSN:300 OHM,5%,0.25W	01121	CB3015
R1030	315-0101-00			RES.,FXD,CMPSN:100 OHM,5%,0.25W	01121	CB1015
R1032	315-0101-00			RES.,FXD,CMPSN:100 OHM,5%,0.25W	01121	CB1015
R1034	315-0473-00			RES.,FXD,CMPSN:47K OHM,5%,0.25W	01121	CB4735
R1036	301-0102-00			RES.,FXD,CMPSN:1K OHM,5%,0.50W	01121	EB1025
R1037	321-0191-00			RES.,FXD,FILM:953 OHM,1%,0.125W	91637	MFF1816G953R0F
R1038	321-0187-00			RES.,FXD,FILM:866 OHM,1%,0.125W	91637	MFF1816G866R0F
R1039	315-0202-00			RES.,FXD,CMPSN:2K OHM,5%,0.25W	01121	CB2025
R1040	315-0470-00			RES.,FXD,CMPSN:47 OHM,5%,0.25W	01121	CB4705
R1042	321-0272-00			RES.,FXD,FILM:6.65K OHM,1%,0.125W	91637	MFF1816G66500F
R1044	315-0153-00			RES.,FXD,CMPSN:15K OHM,5%,0.25W	01121	CB1535
R1046	323-0275-00			RES.,FXD,FILM:7.15K OHM,1%,0.50W	75042	CECT0-7151F
R1048	315-0132-00			RES.,FXD,CMPSN:1.3K OHM,5%,0.25W	01121	CB1325
R1050	315-0432-00			RES.,FXD,CMPSN:4.3K OHM,5%,0.25W	01121	CB4325
R1052	321-0262-00			RES.,FXD,FILM:5.23K OHM,1%,0.125W	91637	MFF1816G52300F
R1054	315-0302-00			RES.,FXD,CMPSN:3K OHM,5%,0.25W	01121	CB3025
R1056	321-0189-00			RES.,FXD,FILM:909 OHM,1%,0.125W	91637	MFF1816G909R0F
R1060	315-0470-00			RES.,FXD,CMPSN:47 OHM,5%,0.25W	01121	CB4705
R1062	321-0272-00			RES.,FXD,FILM:6.65K OHM,1%,0.125W	91637	MFF1816G66500F
R1064	315-0153-00			RES.,FXD,CMPSN:15K OHM,5%,0.25W	01121	CB1535
R1066	323-0275-00			RES.,FXD,FILM:7.15K OHM,1%,0.50W	75042	CECT0-7151F
R1068	315-0132-00			RES.,FXD,CMPSN:1.3K OHM,5%,0.25W	01121	CB1325
R1070	315-0432-00			RES.,FXD,CMPSN:4.3K OHM,5%,0.25W	01121	CB4325

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R1072	321-0262-00			RES.,FXD,FILM:5.23K OHM,1%,0.125W	91637	MFF1816G52300F
R1074	315-0302-00			RES.,FXD,CMPSN:3K OHM,5%,0.25W	01121	CB3025
R1076	321-0189-00			RES.,FXD,FILM:909 OHM,1%,0.125W	91637	MFF1816G909R0F
R1080	301-0431-00			RES.,FXD,CMPSN:430 OHM,5%,0.50W	01121	EB4315
R1082	301-0431-00			RES.,FXD,CMPSN:430 OHM,5%,0.50W	01121	EB4315
R1090	315-0101-00			RES.,FXD,CMPSN:100 OHM,5%,0.25W	01121	CB1015
R1102	315-0470-00			RES.,FXD,CMPSN:47 OHM,5%,0.25W	01121	CB4705
R1104	321-0345-00			RES.,FXD,FILM:38.3K OHM,1%,0.125W	91637	MFF1816G38301F
R1108	315-0101-00			RES.,FXD,CMPSN:100 OHM,5%,0.25W	01121	CB1015
R1112	315-0470-00			RES.,FXD,CMPSN:47 OHM,5%,0.25W	01121	CB4705
R1114	321-0345-00			RES.,FXD,FILM:38.3K OHM,1%,0.125W	91637	MFF1816G38301F
R1118	315-0101-00			RES.,FXD,CMPSN:100 OHM,5%,0.25W	01121	CB1015
R1120	315-0102-00			RES.,FXD,CMPSN:1K OHM,5%,0.25W	01121	CB1025
R1122	315-0110-00			RES.,FXD,CMPSN:11 OHM,5%,0.25W	01121	CB1105
R1124	301-0271-00			RES.,FXD,CMPSN:270 OHM,5%,0.50W	01121	EB2715
R1126	315-0220-00			RES.,FXD,CMPSN:22 OHM,5%,0.25W	01121	CB2205
R1128	301-0751-00			RES.,FXD,CMPSN:750 OHM,5%,0.50W	01121	EB7515
R1132	315-0220-00			RES.,FXD,CMPSN:22 OHM,5%,0.25W	01121	CB2205
R1134	321-0243-00			RES.,FXD,FILM:3.32K OHM,1%,0.125W	91637	MFF1816G33200F
R1136	321-0264-00			RES.,FXD,FILM:5.49K OHM,1%,0.125W	91637	MFF1816G54900F
R1140	315-0472-00			RES.,FXD,CMPSN:4.7K OHM,5%,0.25W	01121	CB4725
R1142	315-0202-00			RES.,FXD,CMPSN:2K OHM,5%,0.25W	01121	CB2025
R1143	315-0240-00			RES.,FXD,CMPSN:24 OHM,5%,0.25W	01121	CB2405
R1146	321-0324-00			RES.,FXD,FILM:23.2K OHM,1%,0.125W	91637	MFF1816G23201F
R1148	321-0357-00			RES.,FXD,FILM:51.1K OHM,1%,0.125W	91637	MFF1816G51101F
R1150	323-0227-00			RES.,FXD,FILM:2.26K OHM,1%,0.50W	75042	CECT0-2261F
R1152	301-0822-00			RES.,FXD,CMPSN:8.2K OHM,5%,0.50W	01121	EB8225
R1154	301-0822-00			RES.,FXD,CMPSN:8.2K OHM,5%,0.50W	01121	EB8225
R1162	323-0307-00	B010100	B010134	RES.,FXD,FILM:15.4K OHM,1%,0.50W	75042	CECT0-1542F
	----- -----			(7844 ONLY)		
R1162	323-0306-00	B010135	B109999	RES.,FXD,FILM:15K OHM,1%,0.50W	75042	CECT0-1502F
	----- -----			(7844 ONLY)		
R1162	323-0308-00	B110000		RES.,FXD,FILM:15.8K OHM,1%,0.50W	75042	CECT0-1582F
	----- -----			(7844 ONLY)		
R1162	323-0307-00	B010100	B010112	RES.,FXD,FILM:15.4K OHM,1%,0.50W	75042	CECT0-1542F
	----- -----			(R7844 ONLY)		
R1162	323-0306-00	B010113	B099999	RES.,FXD,FILM:15K OHM,1%,0.50W	75042	CECT0-1502F
	----- -----			(R7844 ONLY)		
R1162	323-0308-00	B100000		RES.,FXD,FILM:15.8K OHM,1%,0.50W	75042	CECT0-1582F
	----- -----			(R7844 ONLY)		
R1164	315-0205-00			RES.,FXD,CMPSN:2M OHM,5%,0.25W	01121	CB2055
R1168	311-1266-00			RES.,VAR,NONWIR:2.5K OHM,10%,0.50W	32997	3329P-L58-252
R1172	321-0219-00			RES.,FXD,FILM:1.87K OHM,1%,0.125W	91637	MFF1816G18700F
R1174	321-0342-00			RES.,FXD,FILM:35.7K OHM,1%,0.125W	91637	MFF1816G35701F
R1180	311-1230-00			RES.,VAR,NONWIR:20K OHM,20%,0.50W	32997	3386F-T04-203
R1182	315-0912-00			RES.,FXD,CMPSN:9.1K OHM,5%,0.25W	01121	CB9125
R1186	315-0151-00			RES.,FXD,CMPSN:150 OHM,5%,0.25W	01121	CB1515
R1192	315-0100-00			RES.,FXD,CMPSN:10 OHM,5%,0.25W	01121	CB1005
R1194	315-0100-00			RES.,FXD,CMPSN:10 OHM,5%,0.25W	01121	CB1005
R1196	315-0100-00			RES.,FXD,CMPSN:10 OHM,5%,0.25W	01121	CB1005
R1198	315-0100-00			RES.,FXD,CMPSN:10 OHM,5%,0.25W	01121	CB1005
R1205	304-0270-00			RES.,FXD,CMPSN:27 OHM,10%,1W	01121	GB2701
R1208	304-0104-00	B010100	B100644	RES.,FXD,CMPSN:100K OHM,10%,1W	01121	GB1041
	----- -----			(7844 ONLY)		
R1208	304-0473-00	B100645		RES.,FXD,CMPSN:47K OHM,10%,1W	01121	GB4731
	----- -----			(7844 ONLY)		
R1208	304-0104-00	B010100	B090319	RES.,FXD,CMPSN:100K OHM,10%,1W	01121	GB1041
	----- -----			(R7844 ONLY)		

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R1208	304-0473-00	B090320		RES.,FXD,CMPSN:47K OHM,10%,1W (R7844 ONLY)	01121	GB4731
R1210	303-0304-00			RES.,FXD,CMPSN:300K OHM,5%,1W	01121	GB3045
R1213	304-0104-00	B010100	B100644	RES.,FXD,CMPSN:100K OHM,10%,1W (7844 ONLY)	01121	GB1041
R1213	304-0473-00	B100645		RES.,FXD,CMPSN:47K OHM,10%,1W (7844 ONLY)	01121	GB4731
R1213	304-0104-00	B010100	B090319	RES.,FXD,CMPSN:100K OHM,10%,1W (R7844 ONLY)	01121	GB1041
R1213	304-0473-00	B090320		RES.,FXD,CMPSN:47K OHM,10%,1W (R7844 ONLY)	01121	GB4731
R1219	302-0565-00			RES.,FXD,CMPSN:5.6M OHM,10%,0.50W	01121	EB5651
R1221	304-0154-00			RES.,FXD,CMPSN:150K OHM,10%,1W	01121	GB1541
R1225	316-0471-00			RES.,FXD,CMPSN:470 OHM,10%,0.25W	01121	CB4711
R1231	307-0057-00			RES.,FXD,CMPSN:5.1 OHM,5%,0.50W	01121	EB51G5
R1232	316-0220-00			RES.,FXD,CMPSN:22 OHM,10%,0.25W	01121	CB2201
R1236	316-0103-00			RES.,FXD,CMPSN:10K OHM,10%,0.25W	01121	CB1031
R1238	315-0333-00	XB141775	B141859	RES.,FXD,CMPSN:33K OHM,5%,0.25W (7844 ONLY)	01121	CB3335
R1238	315-0332-00	B141860		RES.,FXD,CMPSN:3.3K OHM,5%,0.25W (7844 ONLY)	01121	CB3325
R1238	315-0333-00	XB140840	B140879	RES.,FXD,CMPSN:33K OHM,5%,0.25W (R7844 ONLY)	01121	CB3335
R1238	315-0332-00	B140880		RES.,FXD,CMPSN:3.3K OHM,5%,0.25W (R7844 ONLY)	01121	CB3325
R1239	307-0057-00			RES.,FXD,CMPSN:5.1 OHM,5%,0.50W	01121	EB51G5
R1240	316-0220-00			RES.,FXD,CMPSN:22 OHM,10%,0.25W	01121	CB2201
R1242	315-0753-00			RES.,FXD,CMPSN:75K OHM,5%,0.25W	01121	CB7535
R1243	315-0274-00			RES.,FXD,CMPSN:270K OHM,5%,0.25W	01121	CB2745
R1244	316-0270-00			RES.,FXD,CMPSN:27 OHM,10%,0.25W	01121	CB2701
R1245	316-0101-00			RES.,FXD,CMPSN:100 OHM,10%,0.25W	01121	CB1011
R1246	315-0561-00	B010100	B100644	RES.,FXD,CMPSN:560 OHM,5%,0.25W (7844 ONLY)	01121	CB5615
R1246	315-0391-00	B100645		RES.,FXD,CMPSN:390 OHM,5%,0.25W (7844 ONLY)	01121	CB3915
R1246	315-0561-00	B010100	B090919	RES.,FXD,CMPSN:560 OHM,5%,0.25W (R7844 ONLY)	01121	CB5615
R1246	315-0391-00	B090920		RES.,FXD,CMPSN:390 OHM,5%,0.25W (R7844 ONLY)	01121	CB3915
R1247	316-0684-00			RES.,FXD,CMPSN:680K OHM,10%,0.25W	01121	CB6841
R1248	302-0332-00			RES.,FXD,CMPSN:3.3K OHM,10%,0.50W	01121	EB3321
R1249	316-0101-00			RES.,FXD,CMPSN:100 OHM,10%,0.25W	01121	CB1011
R1253	316-0473-00	B010100	B142489	RES.,FXD,CMPSN:47K OHM,10%,0.25W (7844 ONLY)	01121	CB4731
R1253	315-0473-00	B142490		RES.,FXD,CMPSN:47K OHM,5%,0.25W (7844 ONLY)	01121	CB4735
R1253	316-0473-00	B010100	B141189	RES.,FXD,CMPSN:47K OHM,10%,0.25W (R7844 ONLY)	01121	CB4731
R1253	315-0473-00	B141190		RES.,FXD,CMPSN:47K OHM,5%,0.25W (R7844 ONLY)	01121	CB4735
R1256	316-0562-00	B010100	B142489	RES.,FXD,CMPSN:5.6K OHM,10%,0.25W (7844 ONLY)	01121	CB5621
R1256	315-0562-00	B142490		RES.,FXD,CMPSN:5.6K OHM,5%,0.25W (7844 ONLY)	01121	CB5625
R1256	316-0562-00	B010100	B141189	RES.,FXD,CMPSN:5.6K OHM,10%,0.25W (R7844 ONLY)	01121	CB5621

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R1256	315-0562-00	B141190		RES.,FXD,CMPSN:5.6K OHM,5%,0.25W (R7844 ONLY)	01121	CB5625
R1257	316-0223-00	B010100	B142489	RES.,FXD,CMPSN:22K OHM,10%,0.25W (7844 ONLY)	01121	CB2231
R1257	315-0223-00	B142490		RES.,FXD,CMPSN:22K OHM,5%,0.25W (7844 ONLY)	01121	CB2235
R1257	316-0223-00	B010100	B141189	RES.,FXD,CMPSN:22K OHM,10%,0.25W (R7844 ONLY)	01121	CB2231
R1257	315-0223-00	B141190		RES.,FXD,CMPSN:22K OHM,5%,0.25W (R7844 ONLY)	01121	CB2235
R1259	316-0562-00	B010100	B142489	RES.,FXD,CMPSN:5.6K OHM,10%,0.25W (7844 ONLY)	01121	CB5621
R1259	315-0562-00	B142490		RES.,FXD,CMPSN:5.6K OHM,5%,0.25W (7844 ONLY)	01121	CB5625
R1259	316-0562-00	B010100	B141189	RES.,FXD,CMPSN:5.6K OHM,10%,0.25W (R7844 ONLY)	01121	CB5621
R1259	315-0562-00	B141190		RES.,FXD,CMPSN:5.6K OHM,5%,0.25W (R7844 ONLY)	01121	CB5625
R1261	316-0104-00	B010100	B142489	RES.,FXD,CMPSN:100K OHM,10%,0.25W (7844 ONLY)	01121	CB1041
R1261	315-0104-00	B142490		RES.,FXD,CMPSN:100K OHM,5%,0.25W (7844 ONLY)	01121	CB1045
R1261	316-0104-00	B010100	B141189	RES.,FXD,CMPSN:100K OHM,10%,0.25W (R7844 ONLY)	01121	CB1041
R1261	315-0104-00	B141190		RES.,FXD,CMPSN:100K OHM,5%,0.25W (R7844 ONLY)	01121	CB1045
R1267	316-0154-00	B010100	B142489	RES.,FXD,CMPSN:150K OHM,10%,0.25W (7844 ONLY)	01121	CB1541
R1267	315-0154-00	B142490		RES.,FXD,CMPSN:150K OHM,5%,0.25W (7844 ONLY)	01121	CB1545
R1267	316-0154-00	B010100	B141189	RES.,FXD,CMPSN:150K OHM,10%,0.25W (R7844 ONLY)	01121	CB1541
R1267	315-0154-00	B141190		RES.,FXD,CMPSN:150K OHM,5%,0.25W (R7844 ONLY)	01121	CB1545
R1269	316-0224-00	B010100	B142489	RES.,FXD,CMPSN:220K OHM,10%,0.25W (7844 ONLY)	01121	CB2241
R1269	315-0224-00	B142490		RES.,FXD,CMPSN:220K OHM,5%,0.25W (7844 ONLY)	01121	CB2245
R1269	315-0224-00	B010100	B141189	RES.,FXD,CMPSN:220K OHM,5%,0.25W (R7844 ONLY)	01121	CB2245
R1269	315-0224-00	B141190		RES.,FXD,CMPSN:220K OHM,5%,0.25W (R7844 ONLY)	01121	CB2245
R1270	316-0123-00	B010100	B142489	RES.,FXD,CMPSN:12K OHM,10%,0.25W (7844 ONLY)	01121	CB1231
R1270	315-0123-00	B142490		RES.,FXD,CMPSN:12K OHM,5%,0.25W (7844 ONLY)	01121	CB1235
R1270	316-0123-00	B010100	B141189	RES.,FXD,CMPSN:12K OHM,10%,0.25W (R7844 ONLY)	01121	CB1231
R1270	315-0123-00	B141190		RES.,FXD,CMPSN:12K OHM,5%,0.25W (R7844 ONLY)	01121	CB1235
R1271	315-0431-00	B010100	B100644	RES.,FXD,CMPSN:430 OHM,5%,0.25W (7844 ONLY)	01121	CB4315
R1271	315-0301-00	B100645		RES.,FXD,CMPSN:300 OHM,5%,0.25W (7844 ONLY)	01121	CB3015
R1271	315-0431-00	B010100	B090319	RES.,FXD,CMPSN:430 OHM,5%,0.25W (R7844 ONLY)	01121	CB4315
R1271	315-0301-00	B090320		RES.,FXD,CMPSN:300 OHM,5%,0.25W (R7844 ONLY)	01121	CB3015

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R1272	316-0470-00	B010100	B142489	RES.,FXD,CMPSN:47 OHM,10%,0.25W (7844 ONLY)	01121	CB4701
R1272	315-0470-00	B142490		RES.,FXD,CMPSN:47 OHM,5%,0.25W (7844 ONLY)	01121	CB4705
R1272	316-0470-00	B010100	B141189	RES.,FXD,CMPSN:47 OHM,10%,0.25W (R7844 ONLY)	01121	CB4701
R1272	315-0470-00	B141190		RES.,FXD,CMPSN:47 OHM,5%,0.25W (R7844 ONLY)	01121	CB4705
R1277	316-0560-00	B010100	B142489	RES.,FXD,CMPSN:56 OHM,10%,0.25W (7844 ONLY)	01121	CB5601
R1277	315-0560-00	B142490		RES.,FXD,CMPSN:56 OHM,5%,0.25W (7844 ONLY)	01121	CB5605
R1277	316-0560-00	B010100	B141189	RES.,FXD,CMPSN:56 OHM,10%,0.25W (R7844 ONLY)	01121	CB5601
R1277	315-0560-00	B141190		RES.,FXD,CMPSN:56 OHM,5%,0.25W (R7844 ONLY)	01121	CB5605
R1279	316-0181-00	B010100	B141749	RES.,FXD,CMPSN:180 OHM,10%,0.25W (7844 ONLY)	01121	CB1811
R1279	315-0560-00	B141750		RES.,FXD,CMPSN:56 OHM,5%,0.25W (7844 ONLY)	01121	CB5605
R1279	316-0181-00	B010100	B140819	RES.,FXD,CMPSN:180 OHM,10%,0.25W (R7844 ONLY)	01121	CB1811
R1279	315-0560-00	B140820		RES.,FXD,CMPSN:56 OHM,5%,0.25W (R7844 ONLY)	01121	CB5605
R1284	315-0471-00			RES.,FXD,CMPSN:470 OHM,5%,0.25W	01121	CB4715
R1285	321-0313-00			RES.,FXD,FILM:17.8K OHM,1%,0.125W	91637	MFF1816G17801F
R1286	315-0102-00			RES.,FXD,CMPSN:1K OHM,5%,0.25W	01121	CB1025
R1287	321-0001-00			RES.,FXD,FILM:10 OHM,1%,0.125W	75042	CEAT0-10R00F
R1292	321-0425-00			RES.,FXD,FILM:261K OHM,1%,0.125W	91637	MFF1816G26102F
R1293	311-1239-00			RES.,VAR,NONWIR:2.5K OHM,10%,0.50W	73138	72-26-0
R1294	321-0283-00			RES.,FXD,FILM:8.66K OHM,1%,0.125W	91637	MFF1816G86600F
R1296	321-0282-00			RES.,FXD,FILM:8.45K OHM,1%,0.125W	91637	MFF1816G84500F
R1297	315-0102-00			RES.,FXD,CMPSN:1K OHM,5%,0.25W	01121	CB1025
R1300	321-0366-00			RES.,FXD,FILM:63.4K OHM,1%,0.125W	91637	MFF1816G63401F
R1301	316-0153-00	B010100	B142489	RES.,FXD,CMPSN:15K OHM,10%,0.25W (7844 ONLY)	01121	CB1531
R1301	315-0153-00	B142490		RES.,FXD,CMPSN:15K OHM,5%,0.25W (7844 ONLY)	01121	CB1535
R1301	316-0153-00	B010100	B141189	RES.,FXD,CMPSN:15K OHM,10%,0.25W (R7844 ONLY)	01121	CB1531
R1301	315-0153-00	B141190		RES.,FXD,CMPSN:15K OHM,5%,0.25W (R7844 ONLY)	01121	CB1535
R1302	315-0512-00			RES.,FXD,CMPSN:5.1K OHM,5%,0.25W	01121	CB5125
R1304	321-0286-00	B010100	B141769	RES.,FXD,FILM:9.31K OHM,1%,0.125W (7844 ONLY)	91637	MFF1816G93100F
R1304	321-0282-00	B141770		RES.,FXD,FILM:8.45K OHM,1%,0.125W (7844 ONLY)	91637	MFF1816G84500F
R1304	321-0286-00	B010100	B140829	RES.,FXD,FILM:9.31K OHM,1%,0.125W (R7844 ONLY)	91637	MFF1816G93100F
R1304	321-0282-00	B140830		RES.,FXD,FILM:8.45K OHM,1%,0.125W (R7844 ONLY)	91637	MFF1816G84500F
R1305	321-0339-00			RES.,FXD,FILM:33.2K OHM,1%,0.125W	91637	MFF1816G33201F
R1326	302-0563-00			RES.,FXD,CMPSN:56K OHM,10%,0.50W	01121	EB5631
R1371	315-0304-00			RES.,FXD,CMPSN:300K OHM,5%,0.25W	01121	CB3045
R1373	315-0113-00			RES.,FXD,CMPSN:11K OHM,5%,0.25W	01121	CB1135
R1375	315-0362-00			RES.,FXD,CMPSN:3.6K OHM,5%,0.25W	01121	CB3625

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R1529	301-0123-00			RES.,FXD,CMPSN:12K OHM,5%,0.50W	01121	EB1235
R1531	315-0101-00			RES.,FXD,CMPSN:100 OHM,5%,0.25W	01121	CB1015
R1533	316-0222-00			RES.,FXD,CMPSN:2.2K OHM,10%,0.25W	01121	CB2221
R1535	316-0331-00			RES.,FXD,CMPSN:330 OHM,10%,0.25W	01121	CB3311
R1537	308-0703-00			RES.,FXD,WW:1.8 OHM,5%,2W	75042	BWH-1R800J
R1539	316-0471-00			RES.,FXD,CMPSN:470 OHM,10%,0.25W	01121	CB4711
R1543	321-0289-00			RES.,FXD,FILM:10K OHM,1%,0.125W	91637	MFF1816G10001F
R1544	316-0103-00			RES.,FXD,CMPSN:10K OHM,10%,0.25W	01121	CB1031
R1545	315-0243-00			RES.,FXD,CMPSN:24K OHM,5%,0.25W	01121	CB2435
R1548	315-0562-00			RES.,FXD,CMPSN:5.6K OHM,5%,0.25W	01121	CB5625
R1549	316-0221-00			RES.,FXD,CMPSN:220 OHM,10%,0.25W	01121	CB2211
R1551	308-0702-00			RES.,FXD,WW:0.33 OHM,5%,2W	75042	BWH-R3300J
R1562	316-0274-00			RES.,FXD,CMPSN:270K OHM,10%,0.25W	01121	CB2741
R1564	321-0924-07			RES.,FXD,FILM:40K OHM,0.1%,0.125W	91637	MFF1816C40001B
R1565	321-0926-07			RES.,FXD,FILM:4K OHM,0.1%,0.125W	91637	MFF1816C40000B
R1566	315-0622-00			RES.,FXD,CMPSN:6.2K OHM,5%,0.25W	01121	CB6225
R1567	316-0273-00			RES.,FXD,CMPSN:27K OHM,10%,0.25W	01121	CB2731
R1568	316-0473-00			RES.,FXD,CMPSN:47K OHM,10%,0.25W	01121	CB4731
R1570	316-0334-00			RES.,FXD,CMPSN:330K OHM,10%,0.25W	01121	CB3341
R1571	316-0103-00			RES.,FXD,CMPSN:10K OHM,10%,0.25W	01121	CB1031
R1573	315-0471-00	B010100	B141744	RES.,FXD,CMPSN:470 OHM,5%,0.25W (7844 ONLY)	01121	CB4715
R1573	315-0561-00	B141745		RES.,FXD,CMPSN:560 OHM,5%,0.25W (7844 ONLY)	01121	CB5615
R1573	315-0471-00	B010100	B140834	RES.,FXD,CMPSN:470 OHM,5%,0.25W (R7844 ONLY)	01121	CB4715
R1573	315-0561-00	B140835		RES.,FXD,CMPSN:560 OHM,5%,0.25W (R7844 ONLY)	01121	CB5615
R1574	315-0562-00			RES.,FXD,CMPSN:5.6K OHM,5%,0.25W	01121	CB5625
R1577	316-0223-00			RES.,FXD,CMPSN:22K OHM,10%,0.25W	01121	CB2231
R1579	315-0152-00			RES.,FXD,CMPSN:1.5K OHM,5%,0.25W	01121	CB1525
R1580	315-0750-00			RES.,FXD,CMPSN:75 OHM,5%,0.25W	01121	CB7505
R1583	316-0103-00			RES.,FXD,CMPSN:10K OHM,10%,0.25W	01121	CB1031
R1586	316-0681-00			RES.,FXD,CMPSN:680 OHM,10%,0.25W	01121	CB6811
R1587	308-0701-00			RES.,FXD,WW:0.12 OHM,5%,2W	75042	BWH-R1200J
R1589	316-0470-00			RES.,FXD,CMPSN:47 OHM,10%,0.25W	01121	CB4701
R1591	316-0470-00			RES.,FXD,CMPSN:47 OHM,10%,0.25W	01121	CB4701
R1598	307-0036-00			RES.,FXD,CMPSN:6.8 OHM,10%,1W	01121	GB68G1
R1625	302-0563-00			RES.,FXD,CMPSN:56K OHM,10%,0.50W	01121	EB5631
R1627	316-0821-00	B010100	B142469	RES.,FXD,CMPSN:820 OHM,10%,0.25W (7844 ONLY)	01121	CB8211
R1627	315-0821-00	B142470		RES.,FXD,CMPSN:820 OHM,5%,0.25W (7844 ONLY)	01121	CB8215
R1627	316-0821-00	B010100	B141189	RES.,FXD,CMPSN:820 OHM,10%,0.25W (R7844 ONLY)	01121	CB8211
R1627	315-0821-00	B141190		RES.,FXD,CMPSN:820 OHM,5%,0.25W (R7844 ONLY)	01121	CB8215
R1629	315-0332-00	B010100	B141744	RES.,FXD,CMPSN:3.3K OHM,5%,0.25W (7844 ONLY)	01121	CB3325
R1629	315-0112-00	B141745		RES.,FXD,CMPSN:1.1K OHM,5%,0.25W (7844 ONLY)	01121	CB1125
R1629	315-0332-00	B010100	B140834	RES.,FXD,CMPSN:3.3K OHM,5%,0.25W (R7844 ONLY)	01121	CB3325
R1629	315-0112-00	B140835		RES.,FXD,CMPSN:1.1K OHM,5%,0.25W (R7844 ONLY)	01121	CB1125
R1631	316-0150-00	B010100	B142469	RES.,FXD,CMPSN:15 OHM,10%,0.25W (7844 ONLY)	01121	CB1501

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R1432	316-0104-00			RES.,FXD,CMPSN:100K OHM,10%,0.25W	01121	CB1041
R1434	316-0334-00			RES.,FXD,CMPSN:330K OHM,10%,0.25W	01121	CB3341
R1436	316-0103-00			RES.,FXD,CMPSN:10K OHM,10%,0.25W	01121	CB1031
R1437	316-0274-00			RES.,FXD,CMPSN:270K OHM,10%,0.25W	01121	CB2741
R1440	321-0924-07			RES.,FXD,FILM:40K OHM,0.1%,0.125W	91637	MFF1816C40001B
R1441	321-1296-07			RES.,FXD,FILM:12K OHM,0.1%,0.125W	91637	MFF1816C12001B
R1443	315-0511-00			RES.,FXD,CMPSN:510 OHM,5%,0.25W	01121	CB5115
R1444	315-0153-00			RES.,FXD,CMPSN:15K OHM,5%,0.25W	01121	CB1535
R1446	316-0333-00			RES.,FXD,CMPSN:33K OHM,10%,0.25W	01121	CB3331
R1448	315-0332-00			RES.,FXD,CMPSN:3.3K OHM,5%,0.25W	01121	CB3325
R1449	315-0101-00			RES.,FXD,CMPSN:100 OHM,5%,0.25W	01121	CB1015
R1451	315-0103-00	B010100	B100644	RES.,FXD,CMPSN:10K OHM,5%,0.25W (7844 ONLY)	01121	CB1035
R1451	302-0392-00	B100645		RES.,FXD,CMPSN:3.9K OHM,10%,0.50W (7844 ONLY)	01121	EB3921
R1451	315-0103-00	B010100	B090319	RES.,FXD,CMPSN:10K OHM,5%,0.25W (R7844 ONLY)	01121	CB1035
R1451	302-0392-00	B090320		RES.,FXD,CMPSN:3.9K OHM,10%,0.50W (R7844 ONLY)	01121	EB3921
R1453	316-0153-00			RES.,FXD,CMPSN:15K OHM,10%,0.25W	01121	CB1531
R1456	316-0681-00			RES.,FXD,CMPSN:680 OHM,10%,0.25W	01121	CB6811
R1457	308-0643-00			RES.,FXD,WW:0.1 OHM,3%,3W	91637	RS2B-ER1000H
R1459	316-0151-00			RES.,FXD,CMPSN:150 OHM,10%,0.25W	01121	CB1511
R1461	316-0182-00			RES.,FXD,CMPSN:1.8K OHM,10%,0.25W	01121	CB1821
R1463	321-1296-07			RES.,FXD,FILM:12K OHM,0.1%,0.125W	91637	MFF1816C12001B
R1464	321-0332-07			RES.,FXD,FILM:28K OHM,0.1%,0.125W	91637	MFF1816C28001B
R1467	316-0184-00			RES.,FXD,CMPSN:180K OHM,10%,0.25W	01121	CB1841
R1480	316-0124-00			RES.,FXD,CMPSN:120K OHM,10%,0.25W	01121	CB1241
R1481	316-0471-00			RES.,FXD,CMPSN:470 OHM,10%,0.25W	01121	CB4711
R1485	316-0272-00			RES.,FXD,CMPSN:2.7K OHM,10%,0.25W	01121	CB2721
R1487	316-0222-00			RES.,FXD,CMPSN:2.2K OHM,10%,0.25W	01121	CB2221
R1490	302-0822-00			RES.,FXD,CMPSN:8.2K OHM,10%,0.50W	01121	EB8221
R1492	316-0273-00			RES.,FXD,CMPSN:27K OHM,10%,0.25W	01121	CB2731
R1493	315-0391-00			RES.,FXD,CMPSN:390 OHM,5%,0.25W	01121	CB3915
R1495	316-0222-00			RES.,FXD,CMPSN:2.2K OHM,10%,0.25W	01121	CB2221
R1497	316-0681-00			RES.,FXD,CMPSN:680 OHM,10%,0.25W	01121	CB6811
R1498	308-0643-00			RES.,FXD,WW:0.1 OHM,3%,3W	91637	RS2B-ER1000H
R1499	316-0471-00			RES.,FXD,CMPSN:470 OHM,10%,0.25W	01121	CB4711
R1502	316-0393-00			RES.,FXD,CMPSN:39K OHM,10%,0.25W	01121	CB3931
R1504	323-0264-00			RES.,FXD,FILM:5.49K OHM,1%,0.50W	91637	MFF1226G54900F
R1506	315-0562-00			RES.,FXD,CMPSN:5.6K OHM,5%,0.25W	01121	CB5625
R1509	316-0224-00			RES.,FXD,CMPSN:220K OHM,10%,0.25W	01121	CB2241
R1512	321-0272-00			RES.,FXD,FILM:6.65K OHM,1%,0.125W	91637	MFF1816G66500F
R1513	311-0635-00			RES.,VAR,NONWIR:1K OHM,10%,0.50W	73138	82-32-0
R1514	321-0338-00			RES.,FXD,FILM:32.4K OHM,1%,0.125W	91637	MFF1816G32401F
R1517	316-0125-00			RES.,FXD,CMPSN:1.2M OHM,10%,0.25W	01121	CB1251
R1518	315-0471-00	B010100	B141744	RES.,FXD,CMPSN:470 OHM,5%,0.25W (7844 ONLY)	01121	CB4715
R1518	315-0202-00	B141745		RES.,FXD,CMPSN:2K OHM,5%,0.25W (7844 ONLY)	01121	CB2025
R1518	315-0471-00	B010100	B140834	RES.,FXD,CMPSN:470 OHM,5%,0.25W (R7844 ONLY)	01121	CB4715
R1518	315-0202-00	B140835		RES.,FXD,CMPSN:2K OHM,5%,0.25W (R7844 ONLY)	01121	CB2025
R1522	316-0472-00			RES.,FXD,CMPSN:4.7K OHM,10%,0.25W	01121	CB4721
R1524	316-0102-00			RES.,FXD,CMPSN:1K OHM,10%,0.25W	01121	CB1021
R1528	316-0123-00			RES.,FXD,CMPSN:12K OHM,10%,0.25W	01121	CB1231

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R1685	317-0910-00			RES.,FXD,CMPSN:91 OHM,5%,0.125W	01121	BB9105
R1686	317-0910-00			RES.,FXD,CMPSN:91 OHM,5%,0.125W	01121	BB9105
R1687	317-0131-00			RES.,FXD,CMPSN:130 OHM,5%,0.125W	01121	BB1315
R1689	323-0121-00			RES.,FXD,FILM:178 OHM,1%,0.50W	75042	CECT0-1780F
R1690	321-0147-00			RES.,FXD,FILM:332 OHM,1%,0.125W	91637	MFF1816G332R0F
R1692	315-0102-00			RES.,FXD,CMPSN:1K OHM,5%,0.25W	01121	CB1025
R1694	321-0155-00			RES.,FXD,FILM:402 OHM,1%,0.125W	91637	MFF1816G402R0F
R1696	321-0237-00	B010100	B010129	RES.,FXD,FILM:2.87K OHM,1%,0.125W	91637	MFF1816G28700F
	----- -----			(7844 ONLY)		
R1696	321-0232-00	B010130		RES.,FXD,FILM:2.55K OHM,1%,0.125W	91637	MFF1816G25500F
	----- -----			(7844 ONLY)		
R1696	321-0237-00	B010100	B010112	RES.,FXD,FILM:2.87K OHM,1%,0.125W	91637	MFF1816G28700F
	----- -----			(R7844 ONLY)		
R1696	321-0232-00	B010113		RES.,FXD,FILM:2.55K OHM,1%,0.125W	91637	MFF1816G25500F
	----- -----			(R7844 ONLY)		
R1700	311-1563-00			RES.,VAR,NONWIR:1K OHM,20%,0.50W	73138	91-85-0
R1702	315-0621-00			RES.,FXD,CMPSN:620 OHM,5%,0.25W	01121	CB6215
R1710	315-0182-00			RES.,FXD,CMPSN:1.8K OHM,5%,0.25W	01121	CB1825
R1712	315-0820-00			RES.,FXD,CMPSN:82 OHM,5%,0.25W	01121	CB8205
R1714	311-1567-00			RES.,VAR,NONWIR:TRMR,100 OHM,0.50W	73138	91-89-0
R1716	311-1594-00			RES.,VAR,NONWIR:10 OHM,20%,0.50W	73138	91-93-0
R1718	315-0100-00			RES.,FXD,CMPSN:10 OHM,5%,0.25W	01121	CB1005
R1720	321-0079-00			RES.,FXD,FILM:64.9 OHM,1%,0.125W	91637	MFF1816G64R90F
R1722	321-0089-00			RES.,FXD,FILM:82.5 OHM,1%,0.125W	91637	MFF1816G82R50F
R1724	321-0089-00			RES.,FXD,FILM:82.5 OHM,1%,0.125W	91637	MFF1816G82R50F
R1726	308-0736-00			RES.,FXD,WW:200 OHM,1%,3W	91637	RS2B-B200R0F
R1730	311-1260-00			RES.,VAR,NONWIR:250 OHM,10%,0.50W	32997	3329P-L58-251
R1732	317-0300-00			RES.,FXD,CMPSN:30 OHM,5%,0.125W	01121	BB3005
R1733	317-0047-00			RES.,FXD,CMPSN:4.7 OHM,5%,0.125W	01121	BB47G5
R1734	317-0101-00			RES.,FXD,CMPSN:100 OHM,5%,0.125W	01121	BB1015
R1735	323-0069-00			RES.,FXD,FILM:51.1 OHM,1%,0.50W	91637	MFF1226G51R10F
R1736	317-0101-00	B010100	B142329	RES.,FXD,CMPSN:100 OHM,5%,0.125W	01121	BB1015
	----- -----			(NOMINAL VALUE,SELECTED 7844 ONLY)		
R1736	317-0910-00	B142330		RES.,FXD,CMPSN:91 OHM,5%,0.125W	01121	BB9105
	----- -----			(NOMINAL VALUE,SELECTED 7844 ONLY)		
R1736	317-0101-00	B010100	B141119	RES.,FXD,CMPSN:100 OHM,5%,0.125W	01121	BB1015
	----- -----			(NOMINAL VALUE,SELECTED R7844 ONLY)		
R1736	317-0910-00	B141120		RES.,FXD,CMPSN:91 OHM,5%,0.125W	01121	BB9105
	----- -----			(NOMINAL VALUE,SELECTED R7844 ONLY)		
R1737	323-0069-00			RES.,FXD,FILM:51.1 OHM,1%,0.50W	91637	MFF1226G51R10F
R1738	317-0101-00			RES.,FXD,CMPSN:100 OHM,5%,0.125W	01121	BB1015
R1739	317-0047-00			RES.,FXD,CMPSN:4.7 OHM,5%,0.125W	01121	BB47G5
R1741	317-0161-00			RES.,FXD,CMPSN:160 OHM,5%,0.125W	01121	BB1615
	----- -----			(NOMINAL VALUE,SELECTED)		
R1743	311-1261-00			RES.,VAR,NONWIR:500 OHM,10%,0.50W	32997	3329P-L58-501
R1745	317-0561-00	B010100	B010140	RES.,FXD,CMPSN:560 OHM,5%,0.125W	01121	BB5615
	----- -----			(7844 ONLY)		
	----- -----			(NOMINAL VALUE,SELECTED)		
R1745	317-0431-00	B010141		RES.,FXD,CMPSN:430 OHM,5%,0.125W	01121	BB4315
	----- -----			(7844 ONLY)		
	----- -----			(NOMINAL VALUE,SELECTED)		
R1745	317-0561-00	B010100	B010112	RES.,FXD,CMPSN:560 OHM,5%,0.125W	01121	BB5615
	----- -----			(R7844 ONLY)		
	----- -----			(NOMINAL VALUE,SELECTED)		
R1745	317-0431-00	B010113		RES.,FXD,CMPSN:430 OHM,5%,0.125W	01121	BB4315
	----- -----			(R7844 ONLY)		
	----- -----			(NOMINAL VALUE,SELECTED)		

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R1631	315-0150-00	B142470		RES.,FXD,CMPSN:15 OHM,5%,0.25W (7844 ONLY)	01121	CB1505
R1631	316-0150-00	B010100	B141189	RES.,FXD,CMPSN:15 OHM,10%,0.25W (R7844 ONLY)	01121	CB1501
R1631	315-0150-00	B141190		RES.,FXD,CMPSN:15 OHM,5%,0.25W (R7844 ONLY)	01121	CB1505
R1632	316-0681-00	B010100	B142469	RES.,FXD,CMPSN:680 OHM,10%,0.25W (7844 ONLY)	01121	CB6811
R1632	315-0681-00	B142470		RES.,FXD,CMPSN:680 OHM,5%,0.25W (7844 ONLY)	01121	CB6815
R1632	316-0681-00	B010100	B141189	RES.,FXD,CMPSN:680 OHM,10%,0.25W (R7844 ONLY)	01121	CB6811
R1632	315-0681-00	B141190		RES.,FXD,CMPSN:680 OHM,5%,0.25W (R7844 ONLY)	01121	CB6815
R1633	316-0331-00	B010100	B142469	RES.,FXD,CMPSN:330 OHM,10%,0.25W (7844 ONLY)	01121	CB3311
R1633	315-0331-00	B142470		RES.,FXD,CMPSN:330 OHM,5%,0.25W (7844 ONLY)	01121	CB3315
R1633	316-0331-00	B010100	B141189	RES.,FXD,CMPSN:330 OHM,10%,0.25W (R7844 ONLY)	01121	CB3311
R1633	315-0331-00	B141190		RES.,FXD,CMPSN:330 OHM,5%,0.25W (R7844 ONLY)	01121	CB3315
R1634	316-0392-00	B010100	B142469	RES.,FXD,CMPSN:3.9K OHM,10%,0.25W (7844 ONLY)	01121	CB3921
R1634	315-0392-00	B142470		RES.,FXD,CMPSN:3.9K OHM,5%,0.25W (7844 ONLY)	01121	CB3925
R1634	316-0392-00	B010100	B141189	RES.,FXD,CMPSN:3.9K OHM,10%,0.25W (R7844 ONLY)	01121	CB3921
R1634	315-0392-00	B141190		RES.,FXD,CMPSN:3.9K OHM,5%,0.25W (R7844 ONLY)	01121	CB3925
R1635	315-0244-00			RES.,FXD,CMPSN:240K OHM,5%,0.25W	01121	CB2445
R1637	316-0474-00	B010100	B142469	RES.,FXD,CMPSN:470K OHM,10%,0.25W (7844 ONLY)	01121	CB4741
R1637	315-0474-00	B142470		RES.,FXD,CMPSN:470K OHM,5%,0.25W (7844 ONLY)	01121	CB4745
R1637	316-0474-00	B010100	B141189	RES.,FXD,CMPSN:470K OHM,10%,0.25W (R7844 ONLY)	01121	CB4741
R1637	315-0474-00	B141190		RES.,FXD,CMPSN:470K OHM,5%,0.25W (R7844 ONLY)	01121	CB4745
R1656	323-0105-00			RES.,FXD,FILM:121 OHM,1%,0.50W	75042	CECT0-1210F
R1657	317-0270-00			RES.,FXD,CMPSN:27 OHM,5%,0.125W	01121	BB2705
R1658	311-0605-00			RES.,VAR,NONWIR:TRMR,200 OHM,0.5W	73138	82-23-2
R1659	317-0270-00			RES.,FXD,CMPSN:27 OHM,5%,0.125W	01121	BB2705
R1660	321-0114-00			RES.,FXD,FILM:150 OHM,1%,0.125W	91637	MFF1816G150R0F
R1661	321-0114-00			RES.,FXD,FILM:150 OHM,1%,0.125W	91637	MFF1816G150R0F
R1662	321-0039-00			RES.,FXD,FILM:24.9 OHM,1%,0.125W	91637	MFF1816G24R90F
R1663	321-0039-00			RES.,FXD,FILM:24.9 OHM,1%,0.125W	91637	MFF1816G24R90F
R1667	315-0561-00			RES.,FXD,CMPSN:560 OHM,5%,0.25W	01121	CB5615
R1668	315-0561-00			RES.,FXD,CMPSN:560 OHM,5%,0.25W	01121	CB5615
R1670	317-0047-00			RES.,FXD,CMPSN:4.7 OHM,5%,0.125W	01121	BB47G5
R1672	317-0047-00			RES.,FXD,CMPSN:4.7 OHM,5%,0.125W	01121	BB47G5
R1676	317-0101-00			RES.,FXD,CMPSN:100 OHM,5%,0.125W	01121	BB1015
R1677	323-0069-00			RES.,FXD,FILM:51.1 OHM,1%,0.50W	91637	MFF1226G51R10F
R1679	323-0069-00			RES.,FXD,FILM:51.1 OHM,1%,0.50W	91637	MFF1226G51R10F
R1680	317-0101-00			RES.,FXD,CMPSN:100 OHM,5%,0.125W	01121	BB1015
R1682	323-0121-00			RES.,FXD,FILM:178 OHM,1%,0.50W	75042	CECT0-1780F
R1683	317-0131-00			RES.,FXD,CMPSN:130 OHM,5%,0.125W	01121	BB1315

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R1810	321-0207-00	B010100	B109999X	RES.,FXD,FILM:1.4K OHM,1%,0.125W (7844 ONLY)	91637	MFF1816G14000F
R1811	321-0253-00	B010100	B099999X	RES.,FXD,FILM:4.22K OHM,1%,0.125W (R7844 ONLY)	91637	MFF1816G42200F
R1811	321-0253-00	B010100	B109999X	RES.,FXD,FILM:4.22K OHM,1%,0.125W (7844 ONLY)	91637	MFF1816G42200F
R1812	321-0074-00	B010100	B099999X	RES.,FXD,FILM:57.6 OHM,1%,0.125W (R7844 ONLY)	91637	MFF1816G57R60F
R1812	321-0074-00	B010100	B109999X	RES.,FXD,FILM:57.6 OHM,1%,0.125W (7844 ONLY)	91637	MFF1816G57R60F
R1814	321-0071-00	B010100	B099999X	RES.,FXD,FILM:53.6 OHM,1%,0.125W (R7844 ONLY)	91637	MFF1816G53R60F
R1814	321-0071-00	B010100	B109999X	RES.,FXD,FILM:53.6 OHM,1%,0.125W (7844 ONLY)	91637	MFF1816G53R60F
R1815	321-0132-00	B010100	B099999X	RES.,FXD,FILM:232 OHM,1%,0.125W (R7844 ONLY)	91637	MFF1816G232R0F
R1815	321-0132-00	B010100	B109999X	RES.,FXD,FILM:232 OHM,1%,0.125W (7844 ONLY)	91637	MFF1816G232R0F
R1816	311-1261-00	B010100	B099999X	RES.,VAR,NONWIR:500 OHM,10%,0.50W (R7844 ONLY)	32997	3329P-L58-501
R1816	311-1261-00	B010100	B109999X	RES.,VAR,NONWIR:500 OHM,10%,0.50W (7844 ONLY)	32997	3329P-L58-501
R1817	315-0112-00	B010100	B099999X	RES.,FXD,CMPSN:1.1K OHM,5%,0.25W (R7844 ONLY)	01121	CB1125
R1817	315-0112-00	B010100	B109999X	RES.,FXD,CMPSN:1.1K OHM,5%,0.25W (7844 ONLY)	01121	CB1125
R1818	321-0081-00	B010100	B099999X	RES.,FXD,FILM:68.1 OHM,1%,0.125W (R7844 ONLY)	91637	MFF1816G68R10F
R1818	321-0081-00	B010100	B109999X	RES.,FXD,FILM:68.1 OHM,1%,0.125W (7844 ONLY)	91637	MFF1816G68R10F
R1819	321-0081-00	B010100	B099999X	RES.,FXD,FILM:68.1 OHM,1%,0.125W (R7844 ONLY)	91637	MFF1816G68R10F
R1819	321-0081-00	B010100	B109999X	RES.,FXD,FILM:68.1 OHM,1%,0.125W (7844 ONLY)	91637	MFF1816G68R10F
R1820	315-0271-00	B010100	B099999X	RES.,FXD,CMPSN:270 OHM,5%,0.25W (R7844 ONLY)	01121	CB2715
R1820	315-0271-00	B010100	B109999X	RES.,FXD,CMPSN:270 OHM,5%,0.25W (7844 ONLY)	01121	CB2715
R1822	315-0271-00	B010100	B099999X	RES.,FXD,CMPSN:270 OHM,5%,0.25W (R7844 ONLY)	01121	CB2715
R1822	315-0271-00	B010100	B109999X	RES.,FXD,CMPSN:270 OHM,5%,0.25W (7844 ONLY)	01121	CB2715
R1824	321-0228-00	B010100	B099999X	RES.,FXD,FILM:2.32K OHM,1%,0.125W (R7844 ONLY)	91637	MFF1816G23200F
R1824	321-0228-00	B010100	B109999X	RES.,FXD,FILM:2.32K OHM,1%,0.125W (7844 ONLY)	91637	MFF1816G23200F
R1825	321-0295-00	B010100	B099999X	RES.,FXD,FILM:11.5K OHM,1%,0.125W (R7844 ONLY)	91637	MFF1816G11501F
R1825	321-0295-00	B010100	B109999X	RES.,FXD,FILM:11.5K OHM,1%,0.125W (7844 ONLY)	91637	MFF1816G11501F
R1826	315-0682-00	B010100	B099999X	RES.,FXD,CMPSN:6.8K OHM,5%,0.25W (R7844 ONLY)	01121	CB6825
R1826	315-0682-00	B010100	B109999X	RES.,FXD,CMPSN:6.8K OHM,5%,0.25W (7844 ONLY)	01121	CB6825
R1828	322-0161-00	B010100	B099999X	RES.,FXD,FILM:464 OHM,1%,0.25W (R7844 ONLY)	75042	CEBT0-4640F
R1828	322-0161-00	B010100	B109999X	RES.,FXD,FILM:464 OHM,1%,0.25W (7844 ONLY)	75042	CEBT0-4640F

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R1747	317-0471-00	B010100	B142329	RES.,FXD,CMPSN:470 OHM,5%,0.125W (NOMINAL VALUE,SELECTED 7844 ONLY)	01121	BB4715
R1747	317-0391-00	B142330		RES.,FXD,CMPSN:390 OHM,5%,0.125W (NOMINAL VALUE,SELECTED 7844 ONLY)	01121	BB3915
R1747	317-0471-00	B010100	B141119	RES.,FXD,CMPSN:470 OHM,5%,0.125W (NOMINAL VALUE,SELECTED R7844 ONLY)	01121	BB4715
R1747	317-0391-00	B141120		RES.,FXD,CMPSN:390 OHM,5%,0.125W (NOMINAL VALUE,SELECTED R7844 ONLY)	01121	BB3915
R1749	311-0635-00			RES.,VAR,NONWIR:1K OHM,10%,0.50W	73138	82-32-0
R1753	323-0097-00			RES.,FXD,FILM:100 OHM,1%,0.50W	75042	CECT0-1000F
R1754	323-0097-00			RES.,FXD,FILM:100 OHM,1%,0.50W	75042	CECT0-1000F
R1756	317-0161-00			RES.,FXD,CMPSN:160 OHM,5%,0.125W	01121	BB1615
R1758	311-1564-00			RES.,VAR,NONWIR:TRMR,500 OHM,0.5W	73138	91-86-0
R1760	317-0751-00			RES.,FXD,CMPSN:750 OHM,5%,0.125W	01121	BB7515
R1762	317-0471-00			RES.,FXD,CMPSN:470 OHM,5%,0.125W	01121	BB4715
R1764	311-1562-00			RES.,VAR,NONWIR:2K OHM,20%,0.50W	73138	91-84-0
R1767	323-0097-00			RES.,FXD,FILM:100 OHM,1%,0.50W	75042	CECT0-1000F
R1768	323-0097-00			RES.,FXD,FILM:100 OHM,1%,0.50W	75042	CECT0-1000F
R1770	308-0692-00			RES.,FXD,WW:44 OHM,1%,3W	91637	RS2B44R00F
R1771	323-0122-00			RES.,FXD,FILM:182 OHM,1%,0.50W	75042	CECT0-1820F
R1782A,B	307-0292-16			RES.,FXD,FILM:182.5 OHM W/PEAKING COIL	80009	307-0292-16
R1783	321-0324-00	XB040000		RES.,FXD,FILM:23.2K OHM,1%,0.125W (7844 ONLY)	91637	MFF1816G23201F
R1783	321-0324-00	XB030000		RES.,FXD,FILM:23.2K OHM,1%,0.125W (R7844 ONLY)	91637	MFF1816G23201F
R1784	321-0289-00	XB040000		RES.,FXD,FILM:10K OHM,1%,0.125W (7844 ONLY)	91637	MFF1816G10001F
R1784	321-0289-00	XB030000		RES.,FXD,FILM:10K OHM,1%,0.125W (R7844 ONLY)	91637	MFF1816G10001F
R1785	315-0472-00	XB040000		RES.,FXD,CMPSN:4.7K OHM,5%,0.25W (7844 ONLY)	01121	CB4725
R1785	315-0472-00	XB030000		RES.,FXD,CMPSN:4.7K OHM,5%,0.25W (R7844 ONLY)	01121	CB4725
R1786	315-0362-00	XB040000		RES.,FXD,CMPSN:3.6K OHM,5%,0.25W (7844 ONLY)	01121	CB3625
R1786	315-0362-00	XB030000		RES.,FXD,CMPSN:3.6K OHM,5%,0.25W (R7844 ONLY)	01121	CB3625
R1788	315-0103-00	XB020000	B039999X	RES.,FXD,CMPSN:10K OHM,5%,0.25W (7844 ONLY)	01121	CB1035
R1788	315-0103-00	XB020200	B029999X	RES.,FXD,CMPSN:10K OHM,5%,0.25W (R7844 ONLY)	01121	CB1035
R1790	323-0064-00			RES.,FXD,FILM:45.3 OHM,1%,0.50W	91637	MFF1226G45R30F
R1792	323-0064-00			RES.,FXD,FILM:45.3 OHM,1%,0.50W	91637	MFF1226G45R30F
R1795	323-0077-00			RES.,FXD,FILM:61.9 OHM,1%,0.50W	75042	CECT0-61R90F
R1796	323-0145-00			RES.,FXD,FILM:316 OHM,1%,0.50W	91637	MFF1226G316R0F
R1797	321-0063-00			RES.,FXD,FILM:44.2 OHM,1%,0.125W	91637	MFF1816G44R20F
R1799	308-0248-00			RES.,FXD,WW:150 OHM,1%,5W	91637	RS2A-B150R0F
R1802	322-0167-00	B010100	B099999X	RES.,FXD,FILM:536 OHM,1%,0.25W (R7844 ONLY)	91637	MFF1421G536R0F
R1802	322-0167-00	B010100	B109999X	RES.,FXD,FILM:536 OHM,1%,0.25W (7844 ONLY)	91637	MFF1421G536R0F
R1806	322-0175-00	B010100	B099999X	RES.,FXD,FILM:649 OHM,1%,0.25W (R7844 ONLY)	75042	CEBT0-6490F
R1806	322-0175-00	B010100	B109999X	RES.,FXD,FILM:649 OHM,1%,0.25W (7844 ONLY)	75042	CEBT0-6490F
R1810	321-0207-00	B010100	B099999X	RES.,FXD,FILM:1.4K OHM,1%,0.125W (R7844 ONLY)	91637	MFF1816G14000F

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R1829	321-0248-00	B010100	B099999X	RES.,FXD,FILM:3.74K OHM,1%,0.125W (R7844 ONLY)	91637	MFF1816G37400F
R1829	321-0248-00	B010100	B109999X	RES.,FXD,FILM:3.74K OHM,1%,0.125W (7844 ONLY)	91637	MFF1816G37400F
R1830	321-0202-00	B010100	B099999X	RES.,FXD,FILM:1.24K OHM,1%,0.125W (R7844 ONLY)	91637	MFF1816G12400F
R1830	321-0202-00	B010100	B109999X	RES.,FXD,FILM:1.24K OHM,1%,0.125W (7844 ONLY)	91637	MFF1816G12400F
R1831	315-0470-00	XB030190	B109999X	RES.,FXD,CMPSN:47 OHM,5%,0.25W (7844 ONLY)	01121	CB4705
R1831	315-0470-00	XB020123	B099999X	RES.,FXD,CMPSN:47 OHM,5%,0.25W (R7844 ONLY)	01121	CB4705
R1832	322-0216-00	B010100	B099999X	RES.,FXD,FILM:1.74K OHM,1%,0.25W (R7844 ONLY)	75042	CEBT0-1741F
R1832	322-0216-00	B010100	B109999X	RES.,FXD,FILM:1.74K OHM,1%,0.25W (7844 ONLY)	75042	CEBT0-1741F
R1834	321-0176-00	B010100	B099999X	RES.,FXD,FILM:665 OHM,1%,0.125W (R7844 ONLY)	91637	MFF1816G665R0F
R1834	321-0176-00	B010100	B109999X	RES.,FXD,FILM:665 OHM,1%,0.125W (7844 ONLY)	91637	MFF1816G665R0F
R1836	321-0176-00	B010100	B099999X	RES.,FXD,FILM:665 OHM,1%,0.125W (R7844 ONLY)	91637	MFF1816G665R0F
R1836	321-0176-00	B010100	B109999X	RES.,FXD,FILM:665 OHM,1%,0.125W (7844 ONLY)	91637	MFF1816G665R0F
R1837	321-0235-00	B010100	B099999X	RES.,FXD,FILM:2.74K OHM,1%,0.125W (R7844 ONLY)	91637	MFF1816G27400F
R1837	321-0235-00	B010100	B109999X	RES.,FXD,FILM:2.74K OHM,1%,0.125W (7844 ONLY)	91637	MFF1816G27400F
R1838	311-1261-00	B010100	B099999X	RES.,VAR,NONWIR:500 OHM,10%,0.50W (R7844 ONLY)	32997	3329P-L58-501
R1838	311-1261-00	B010100	B109999X	RES.,VAR,NONWIR:500 OHM,10%,0.50W (7844 ONLY)	32997	3329P-L58-501
R1839	321-0235-00	B010100	B099999X	RES.,FXD,FILM:2.74K OHM,1%,0.125W (R7844 ONLY)	91637	MFF1816G27400F
R1839	321-0235-00	B010100	B109999X	RES.,FXD,FILM:2.74K OHM,1%,0.125W (7844 ONLY)	91637	MFF1816G27400F
R1840	315-0153-00	B010100	B099999X	RES.,FXD,CMPSN:15K OHM,5%,0.25W (R7844 ONLY)	01121	CB1535
R1840	315-0153-00	B010100	B109999X	RES.,FXD,CMPSN:15K OHM,5%,0.25W (7844 ONLY)	01121	CB1535
R1842	315-0751-00	B010100	B099999X	RES.,FXD,CMPSN:750 OHM,5%,0.25W (R7844 ONLY)	01121	CB7515
R1842	315-0751-00	B010100	B109999X	RES.,FXD,CMPSN:750 OHM,5%,0.25W (7844 ONLY)	01121	CB7515
R1844	321-0204-00	B010100	B099999X	RES.,FXD,FILM:1.3K OHM,1%,0.125W (R7844 ONLY)	91637	MFF1816G13000F
R1844	321-0204-00	B010100	B109999X	RES.,FXD,FILM:1.3K OHM,1%,0.125W (7844 ONLY)	91637	MFF1816G13000F
R1845	315-0362-00	B010100	B099999X	RES.,FXD,CMPSN:3.6K OHM,5%,0.25W (R7844 ONLY)	01121	CB3625
R1845	315-0362-00	B010100	B109999X	RES.,FXD,CMPSN:3.6K OHM,5%,0.25W (7844 ONLY)	01121	CB3625
R1846	308-0647-00	B010100	B099999X	RES.,FXD,WW:2.7K OHM,1%,3W (R7844 ONLY)	91637	NS2B-66-27000F
R1846	308-0647-00	B010100	B109999X	RES.,FXD,WW:2.7K OHM,1%,3W (7844 ONLY)	91637	NS2B-66-27000F

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R1829	321-0248-00	B010100	B099999X	RES.,FXD,FILM:3.74K OHM,1%,0.125W (R7844 ONLY)	91637	MFF1816G37400F
R1829	321-0248-00	B010100	B109999X	RES.,FXD,FILM:3.74K OHM,1%,0.125W (7844 ONLY)	91637	MFF1816G37400F
R1830	321-0202-00	B010100	B099999X	RES.,FXD,FILM:1.24K OHM,1%,0.125W (R7844 ONLY)	91637	MFF1816G12400F
R1830	321-0202-00	B010100	B109999X	RES.,FXD,FILM:1.24K OHM,1%,0.125W (7844 ONLY)	91637	MFF1816G12400F
R1831	315-0470-00	XB030190	B109999X	RES.,FXD,CMPSN:47 OHM,5%,0.25W (7844 ONLY)	01121	CB4705
R1831	315-0470-00	XB020123	B099999X	RES.,FXD,CMPSN:47 OHM,5%,0.25W (R7844 ONLY)	01121	CB4705
R1832	322-0216-00	B010100	B099999X	RES.,FXD,FILM:1.74K OHM,1%,0.25W (R7844 ONLY)	75042	CEBT0-1741F
R1832	322-0216-00	B010100	B109999X	RES.,FXD,FILM:1.74K OHM,1%,0.25W (7844 ONLY)	75042	CEBT0-1741F
R1834	321-0176-00	B010100	B099999X	RES.,FXD,FILM:665 OHM,1%,0.125W (R7844 ONLY)	91637	MFF1816G665R0F
R1834	321-0176-00	B010100	B109999X	RES.,FXD,FILM:665 OHM,1%,0.125W (7844 ONLY)	91637	MFF1816G665R0F
R1836	321-0176-00	B010100	B099999X	RES.,FXD,FILM:665 OHM,1%,0.125W (R7844 ONLY)	91637	MFF1816G665R0F
R1836	321-0176-00	B010100	B109999X	RES.,FXD,FILM:665 OHM,1%,0.125W (7844 ONLY)	91637	MFF1816G665R0F
R1837	321-0235-00	B010100	B099999X	RES.,FXD,FILM:2.74K OHM,1%,0.125W (R7844 ONLY)	91637	MFF1816G27400F
R1837	321-0235-00	B010100	B109999X	RES.,FXD,FILM:2.74K OHM,1%,0.125W (7844 ONLY)	91637	MFF1816G27400F
R1838	311-1261-00	B010100	B099999X	RES.,VAR,NONWIR:500 OHM,10%,0.50W (R7844 ONLY)	32997	3329P-L58-501
R1838	311-1261-00	B010100	B109999X	RES.,VAR,NONWIR:500 OHM,10%,0.50W (7844 ONLY)	32997	3329P-L58-501
R1839	321-0235-00	B010100	B099999X	RES.,FXD,FILM:2.74K OHM,1%,0.125W (R7844 ONLY)	91637	MFF1816G27400F
R1839	321-0235-00	B010100	B109999X	RES.,FXD,FILM:2.74K OHM,1%,0.125W (7844 ONLY)	91637	MFF1816G27400F
R1840	315-0153-00	B010100	B099999X	RES.,FXD,CMPSN:15K OHM,5%,0.25W (R7844 ONLY)	01121	CB1535
R1840	315-0153-00	B010100	B109999X	RES.,FXD,CMPSN:15K OHM,5%,0.25W (7844 ONLY)	01121	CB1535
R1842	315-0751-00	B010100	B099999X	RES.,FXD,CMPSN:750 OHM,5%,0.25W (R7844 ONLY)	01121	CB7515
R1842	315-0751-00	B010100	B109999X	RES.,FXD,CMPSN:750 OHM,5%,0.25W (7844 ONLY)	01121	CB7515
R1844	321-0204-00	B010100	B099999X	RES.,FXD,FILM:1.3K OHM,1%,0.125W (R7844 ONLY)	91637	MFF1816G13000F
R1844	321-0204-00	B010100	B109999X	RES.,FXD,FILM:1.3K OHM,1%,0.125W (7844 ONLY)	91637	MFF1816G13000F
R1845	315-0362-00	B010100	B099999X	RES.,FXD,CMPSN:3.6K OHM,5%,0.25W (R7844 ONLY)	01121	CB3625
R1845	315-0362-00	B010100	B109999X	RES.,FXD,CMPSN:3.6K OHM,5%,0.25W (7844 ONLY)	01121	CB3625
R1846	308-0647-00	B010100	B099999X	RES.,FXD,WW:2.7K OHM,1%,3W (R7844 ONLY)	91637	NS2B-66-27000F
R1846	308-0647-00	B010100	B109999X	RES.,FXD,WW:2.7K OHM,1%,3W (7844 ONLY)	91637	NS2B-66-27000F

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R1848	315-0470-00	B010100	B099999X	RES.,FXD,CMPSN:47 OHM,5%,0.25W (R7844 ONLY)	01121	CB4705
R1848	315-0470-00	B010100	B109999X	RES.,FXD,CMPSN:47 OHM,5%,0.25W (7844 ONLY)	01121	CB4705
R1850	315-0153-00	B010100	B099999X	RES.,FXD,CMPSN:15K OHM,5%,0.25W (R7844 ONLY)	01121	CB1535
R1850	315-0153-00	B010100	B109999X	RES.,FXD,CMPSN:15K OHM,5%,0.25W (7844 ONLY)	01121	CB1535
R1852	315-0751-00	B010100	B099999X	RES.,FXD,CMPSN:750 OHM,5%,0.25W (R7844 ONLY)	01121	CB7515
R1852	315-0751-00	B010100	B109999X	RES.,FXD,CMPSN:750 OHM,5%,0.25W (7844 ONLY)	01121	CB7515
R1854	321-0204-00	B010100	B099999X	RES.,FXD,FILM:1.3K OHM,1%,0.125W (R7844 ONLY)	91637	MFF1816G13000F
R1854	321-0204-00	B010100	B109999X	RES.,FXD,FILM:1.3K OHM,1%,0.125W (7844 ONLY)	91637	MFF1816G13000F
R1855	315-0362-00	B010100	B099999X	RES.,FXD,CMPSN:3.6K OHM,5%,0.25W (R7844 ONLY)	01121	CB3625
R1855	315-0362-00	B010100	B109999X	RES.,FXD,CMPSN:3.6K OHM,5%,0.25W (7844 ONLY)	01121	CB3625
R1856	308-0647-00	B010100	B099999X	RES.,FXD,WW:2.7K OHM,1%,3W (R7844 ONLY)	91637	NS2B-66-27000F
R1856	308-0647-00	B010100	B109999X	RES.,FXD,WW:2.7K OHM,1%,3W (7844 ONLY)	91637	NS2B-66-27000F
R1858	315-0470-00	B010100	B099999X	RES.,FXD,CMPSN:47 OHM,5%,0.25W (R7844 ONLY)	01121	CB4705
R1858	315-0470-00	B010100	B109999X	RES.,FXD,CMPSN:47 OHM,5%,0.25W (7844 ONLY)	01121	CB4705
R1860	311-1258-00	B010100	B099999X	RES.,VAR,NONWIR:50 OHM,10%,0.50W (R7844 ONLY)	32997	3329P-L58-500
R1860	311-1258-00	B010100	B109999X	RES.,VAR,NONWIR:50 OHM,10%,0.50W (7844 ONLY)	32997	3329P-L58-500
R1861	301-0822-00	B010100	B099999X	RES.,FXD,CMPSN:8.2K OHM,5%,0.50W (R7844 ONLY)	01121	EB8225
R1861	301-0822-00	B010100	B109999X	RES.,FXD,CMPSN:8.2K OHM,5%,0.50W (7844 ONLY)	01121	EB8225
R1864	317-0680-00	B010100	B099999X	RES.,FXD,CMPSN:68 OHM,5%,0.125W (R7844 ONLY)	01121	BB6805
R1864	317-0680-00	B010100	B109999X	RES.,FXD,CMPSN:68 OHM,5%,0.125W (7844 ONLY)	01121	BB6805
R1866	315-0103-00	B010100	B099999X	RES.,FXD,CMPSN:10K OHM,5%,0.25W (R7844 ONLY)	01121	CB1035
R1866	315-0103-00	B010100	B109999X	RES.,FXD,CMPSN:10K OHM,5%,0.25W (7844 ONLY)	01121	CB1035
R1867	315-0201-00	B010100	B099999X	RES.,FXD,CMPSN:200 OHM,5%,0.25W (R7844 ONLY)	01121	CB2015
R1867	315-0201-00	B010100	B109999X	RES.,FXD,CMPSN:200 OHM,5%,0.25W (7844 ONLY)	01121	CB2015
R1868	301-0821-00	B010100	B099999X	RES.,FXD,CMPSN:820 OHM,5%,0.50W (R7844 ONLY)	01121	EB8215
R1868	301-0821-00	B010100	B109999X	RES.,FXD,CMPSN:820 OHM,5%,0.50W (7844 ONLY)	01121	EB8215
R1870	311-1258-00	B010100	B099999X	RES.,VAR,NONWIR:50 OHM,10%,0.50W (R7844 ONLY)	32997	3329P-L58-500
R1870	311-1258-00	B010100	B109999X	RES.,VAR,NONWIR:50 OHM,10%,0.50W (7844 ONLY)	32997	3329P-L58-500
R1871	301-0822-00	B010100	B099999X	RES.,FXD,CMPSN:8.2K OHM,5%,0.50W **(R7844 ONLY)**	01121	EB8225

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R1871	301-0822-00	B010100	B109999X	RES.,FXD,CMPSN:8.2K OHM,5%,0.50W (7844 ONLY)	01121	EB8225
R1872	315-0751-00	B010100	B099999X	RES.,FXD,CMPSN:750 OHM,5%,0.25W (R7844 ONLY)	01121	CB7515
R1872	315-0751-00	B010100	B109999X	RES.,FXD,CMPSN:750 OHM,5%,0.25W (7844 ONLY)	01121	CB7515
R1873	311-1265-00	B010100	B099999X	RES.,VAR,NONWIR:2K OHM,10%,0.50W (R7844 ONLY)	32997	3329P-L58-202
R1873	311-1265-00	B010100	B109999X	RES.,VAR,NONWIR:2K OHM,10%,0.50W (7844 ONLY)	32997	3329P-L58-202
R1874	315-0821-00	B010100	B099999X	RES.,FXD,CMPSN:820 OHM,5%,0.25W (R7844 ONLY)	01121	CB8215
R1874	315-0821-00	B010100	B109999X	RES.,FXD,CMPSN:820 OHM,5%,0.25W (7844 ONLY)	01121	CB8215
R1878	315-0162-00	B010100	B099999X	RES.,FXD,CMPSN:1.6K OHM,5%,0.25W (R7844 ONLY)	01121	CB1625
R1878	315-0162-00	B010100	B109999X	RES.,FXD,CMPSN:1.6K OHM,5%,0.25W (7844 ONLY)	01121	CB1625
R1880	317-0680-00	B010100	B099999X	RES.,FXD,CMPSN:68 OHM,5%,0.125W (R7844 ONLY)	01121	BB6805
R1880	317-0680-00	B010100	B109999X	RES.,FXD,CMPSN:68 OHM,5%,0.125W (7844 ONLY)	01121	BB6805
R1882	315-0103-00	B010100	B099999X	RES.,FXD,CMPSN:10K OHM,5%,0.25W (R7844 ONLY)	01121	CB1035
R1882	315-0103-00	B010100	B109999X	RES.,FXD,CMPSN:10K OHM,5%,0.25W (7844 ONLY)	01121	CB1035
R1884	315-0102-00	B010100	B099999X	RES.,FXD,CMPSN:1K OHM,5%,0.25W (R7844 ONLY)	01121	CB1025
R1884	315-0102-00	B010100	B109999X	RES.,FXD,CMPSN:1K OHM,5%,0.25W (7844 ONLY)	01121	CB1025
R1886	315-0512-00	B010100	B099999X	RES.,FXD,CMPSN:5.1K OHM,5%,0.25W (R7844 ONLY)	01121	CB5125
R1886	315-0512-00	B010100	B109999X	RES.,FXD,CMPSN:5.1K OHM,5%,0.25W (7844 ONLY)	01121	CB5125
R1890	323-0321-00	B010100	B099999X	RES.,FXD,FILM:21.5K OHM,1%,0.50W (R7844 ONLY)	75042	CECT0-2152F
R1890	323-0321-00	B010100	B109999X	RES.,FXD,FILM:21.5K OHM,1%,0.50W (7844 ONLY)	75042	CECT0-2152F
R1892	321-0244-00	B010100	B099999X	RES.,FXD,FILM:3.4K OHM,1%,0.125W (R7844 ONLY)	91637	MFF1816G34000F
R1892	321-0244-00	B010100	B109999X	RES.,FXD,FILM:3.4K OHM,1%,0.125W (7844 ONLY)	91637	MFF1816G34000F
R1894	315-0182-00	B010100	B099999X	RES.,FXD,CMPSN:1.8K OHM,5%,0.25W (R7844 ONLY)	01121	CB1825
R1894	315-0182-00	B010100	B109999X	RES.,FXD,CMPSN:1.8K OHM,5%,0.25W (7844 ONLY)	01121	CB1825
R1895	301-0623-00	B010100	B099999X	RES.,FXD,CMPSN:62K OHM,5%,0.50W (R7844 ONLY)	01121	EB6235
R1895	301-0623-00	B010100	B109999X	RES.,FXD,CMPSN:62K OHM,5%,0.50W (7844 ONLY)	01121	EB6235
R1896	315-0390-00	B010100	B099999X	RES.,FXD,CMPSN:39 OHM,5%,0.25W (R7844 ONLY)	01121	CB3905
R1896	315-0390-00	B010100	B109999X	RES.,FXD,CMPSN:39 OHM,5%,0.25W (7844 ONLY)	01121	CB3905
R1898	323-0364-00	B010100	B099999X	RES.,FXD,FILM:60.4K OHM,1%,0.50W (R7844 ONLY)	91637	MFF1226G60401F

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R1898	323-0364-00	B010100	B109999X	RES.,FXD,FILM:60.4K OHM,1%,0.50W (7844 ONLY)	91637	MFF1226G60401F
R1903	301-0102-00	B010100	B099999X	RES.,FXD,CMPSN:1K OHM,5%,0.50W (R7844 ONLY)	01121	EB1025
R1903	301-0102-00	B010100	B109999X	RES.,FXD,CMPSN:1K OHM,5%,0.50W (7844 ONLY)	01121	EB1025
R1904	321-0309-00	B010100	B099999X	RES.,FXD,FILM:16.2K OHM,1%,0.125W (R7844 ONLY)	91637	MFF1816G16201F
R1904	321-0309-00	B010100	B109999X	RES.,FXD,FILM:16.2K OHM,1%,0.125W (7844 ONLY)	91637	MFF1816G16201F
R1906	321-0268-00	B010100	B099999X	RES.,FXD,FILM:6.04K OHM,1%,0.125W (R7844 ONLY)	91637	MFF1816G60400F
R1906	321-0268-00	B010100	B109999X	RES.,FXD,FILM:6.04K OHM,1%,0.125W (7844 ONLY)	91637	MFF1816G60400F
R1907	321-0307-00	B010100	B099999X	RES.,FXD,FILM:15.4K OHM,1%,0.125W (R7844 ONLY)	91637	MFF1816G15401F
R1907	321-0307-00	B010100	B109999X	RES.,FXD,FILM:15.4K OHM,1%,0.125W (7844 ONLY)	91637	MFF1816G15401F
R1920	323-0321-00	B010100	B099999X	RES.,FXD,FILM:21.5K OHM,1%,0.50W (R7844 ONLY)	75042	CECT0-2152F
R1920	323-0321-00	B010100	B109999X	RES.,FXD,FILM:21.5K OHM,1%,0.50W (7844 ONLY)	75042	CECT0-2152F
R1922	321-0244-00	B010100	B099999X	RES.,FXD,FILM:3.4K OHM,1%,0.125W (R7844 ONLY)	91637	MFF1816G34000F
R1922	321-0244-00	B010100	B109999X	RES.,FXD,FILM:3.4K OHM,1%,0.125W (7844 ONLY)	91637	MFF1816G34000F
R1924	315-0182-00	B010100	B099999X	RES.,FXD,CMPSN:1.8K OHM,5%,0.25W (R7844 ONLY)	01121	CB1825
R1924	315-0182-00	B010100	B109999X	RES.,FXD,CMPSN:1.8K OHM,5%,0.25W (7844 ONLY)	01121	CB1825
R1925	301-0623-00	B010100	B099999X	RES.,FXD,CMPSN:62K OHM,5%,0.50W (R7844 ONLY)	01121	EB6235
R1925	301-0623-00	B010100	B109999X	RES.,FXD,CMPSN:62K OHM,5%,0.50W (7844 ONLY)	01121	EB6235
R1926	315-0390-00	B010100	B099999X	RES.,FXD,CMPSN:39 OHM,5%,0.25W (R7844 ONLY)	01121	CB3905
R1926	315-0390-00	B010100	B109999X	RES.,FXD,CMPSN:39 OHM,5%,0.25W (7844 ONLY)	01121	CB3905
R1927	315-0122-00	B010100	B099999X	RES.,FXD,CMPSN:1.2K OHM,5%,0.25W (R7844 ONLY)	01121	CB1225
R1927	315-0122-00	B010100	B109999X	RES.,FXD,CMPSN:1.2K OHM,5%,0.25W (7844 ONLY)	01121	CB1225
R1928	323-0364-00	B010100	B099999X	RES.,FXD,FILM:60.4K OHM,1%,0.50W (R7844 ONLY)	91637	MFF1226G60401F
R1928	323-0364-00	B010100	B109999X	RES.,FXD,FILM:60.4K OHM,1%,0.50W (7844 ONLY)	91637	MFF1226G60401F
R1934	321-0309-00	B010100	B099999X	RES.,FXD,FILM:16.2K OHM,1%,0.125W (R7844 ONLY)	91637	MFF1816G16201F
R1934	321-0309-00	B010100	B109999X	RES.,FXD,FILM:16.2K OHM,1%,0.125W (7844 ONLY)	91637	MFF1816G16201F
R1936	321-0268-00	B010100	B099999X	RES.,FXD,FILM:6.04K OHM,1%,0.125W (R7844 ONLY)	91637	MFF1816G60400F
R1936	321-0268-00	B010100	B109999X	RES.,FXD,FILM:6.04K OHM,1%,0.125W (7844 ONLY)	91637	MFF1816G60400F
R1937	321-0331-00	B010100	B099999X	RES.,FXD,FILM:27.4K OHM,1%,0.125W (R7844 ONLY)	91637	MFF1816G27401F
R1937	321-0331-00	B010100	B109999X	RES.,FXD,FILM:27.4K OHM,1%,0.125W **(7844 ONLY)**	91637	MFF1816G27401F

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R1940	311-1268-00	B010100	B099999X	RES.,VAR,NONWIR:10K OHM,10%,0.50W (R7844 ONLY)	32997	3329P-L58-103
R1940	311-1268-00	B010100	B109999X	RES.,VAR,NONWIR:10K OHM,10%,0.50W (7844 ONLY)	32997	3329P-L58-103
R1976	311-1274-00	B010100	B099999X	RES.,VAR,NONWIR:500K OHM,10%,0.50W (R7844 ONLY)	32997	3329P-L58-504
R1976	311-1274-00	B010100	B109999X	RES.,VAR,NONWIR:500K OHM,10%,0.50W (7844 ONLY)	32997	3329P-L58-504
R1977	315-0680-00	B010100	B099999X	RES.,FXD,CMPSN:68 OHM,5%,0.25W (R7844 ONLY)	01121	CB6805
R1977	315-0680-00	B010100	B109999X	RES.,FXD,CMPSN:68 OHM,5%,0.25W (7844 ONLY)	01121	CB6805
R1980	315-0270-00	B010100	B099999X	RES.,FXD,CMPSN:27 OHM,5%,0.25W (R7844 ONLY)	01121	CB2705
R1980	315-0270-00	B010100	B109999X	RES.,FXD,CMPSN:27 OHM,5%,0.25W (7844 ONLY)	01121	CB2705
R1983	315-0680-00	B010100	B099999X	RES.,FXD,CMPSN:68 OHM,5%,0.25W (R7844 ONLY)	01121	CB6805
R1983	315-0680-00	B010100	B109999X	RES.,FXD,CMPSN:68 OHM,5%,0.25W (7844 ONLY)	01121	CB6805
R1984	315-0104-00	B010100	B099999X	RES.,FXD,CMPSN:100K OHM,5%,0.25W (R7844 ONLY)	01121	CB1045
R1984	315-0104-00	B010100	B109999X	RES.,FXD,CMPSN:100K OHM,5%,0.25W (7844 ONLY)	01121	CB1045
R1985	311-1274-00	B010100	B099999X	RES.,VAR,NONWIR:500K OHM,10%,0.50W (R7844 ONLY)	32997	3329P-L58-504
R1985	311-1274-00	B010100	B109999X	RES.,VAR,NONWIR:500K OHM,10%,0.50W (7844 ONLY)	32997	3329P-L58-504
R1986	307-0103-00	B010100	B099999X	RES.,FXD,CMPSN:2.7 OHM,5%,0.25W (R7844 ONLY)	01121	CB27G5
R1986	307-0103-00	B010100	B109999X	RES.,FXD,CMPSN:2.7 OHM,5%,0.25W (7844 ONLY)	01121	CB27G5
R1987	315-0104-00	B010100	B099999X	RES.,FXD,CMPSN:100K OHM,5%,0.25W (R7844 ONLY)	01121	CB1045
R1987	315-0104-00	B010100	B109999X	RES.,FXD,CMPSN:100K OHM,5%,0.25W (7844 ONLY)	01121	CB1045
R1988	311-1274-00	B010100	B099999X	RES.,VAR,NONWIR:500K OHM,10%,0.50W (R7844 ONLY)	32997	3329P-L58-504
R1988	311-1274-00	B010100	B109999X	RES.,VAR,NONWIR:500K OHM,10%,0.50W (7844 ONLY)	32997	3329P-L58-504
R1989	315-0390-00	B010100	B099999X	RES.,FXD,CMPSN:39 OHM,5%,0.25W (R7844 ONLY)	01121	CB3905
R1989	315-0390-00	B010100	B109999X	RES.,FXD,CMPSN:39 OHM,5%,0.25W (7844 ONLY)	01121	CB3905
R1995	315-0390-00	B010100	B099999X	RES.,FXD,CMPSN:39 OHM,5%,0.25W (R7844 ONLY)	01121	CB3905
R1995	315-0390-00	B010100	B109999X	RES.,FXD,CMPSN:39 OHM,5%,0.25W (7844 ONLY)	01121	CB3905
R1997	315-0390-00	B010100	B099999X	RES.,FXD,CMPSN:39 OHM,5%,0.25W (R7844 ONLY)	01121	CB3905
R1997	315-0390-00	B010100	B109999X	RES.,FXD,CMPSN:39 OHM,5%,0.25W (7844 ONLY)	01121	CB3905
R2002	315-0470-00			RES.,FXD,CMPSN:47 OHM,5%,0.25W	01121	CB4705
R2004	321-0345-00			RES.,FXD,FILM:38.3K OHM,1%,0.125W	91637	MFF1816G38301F
R2008	315-0101-00			RES.,FXD,CMPSN:100 OHM,5%,0.25W	01121	CB1015
R2012	315-0470-00			RES.,FXD,CMPSN:47 OHM,5%,0.25W	01121	CB4705

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R2014	321-0345-00			RES.,FXD,FILM:38.3K OHM,1%,0.125W	91637	MFF1816G38301F
R2018	315-0101-00			RES.,FXD,CMPSN:100 OHM,5%,0.25W	01121	CB1015
R2020	315-0102-00			RES.,FXD,CMPSN:1K OHM,5%,0.25W	01121	CB1025
R2022	315-0110-00			RES.,FXD,CMPSN:11 OHM,5%,0.25W	01121	CB1105
R2024	301-0271-00			RES.,FXD,CMPSN:270 OHM,5%,0.50W	01121	EB2715
R2026	315-0220-00			RES.,FXD,CMPSN:22 OHM,5%,0.25W	01121	CB2205
R2028	301-0751-00			RES.,FXD,CMPSN:750 OHM,5%,0.50W	01121	EB7515
R2032	315-0220-00			RES.,FXD,CMPSN:22 OHM,5%,0.25W	01121	CB2205
R2034	321-0243-00			RES.,FXD,FILM:3.32K OHM,1%,0.125W	91637	MFF1816G33200F
R2036	321-0264-00			RES.,FXD,FILM:5.49K OHM,1%,0.125W	91637	MFF1816G54900F
R2040	315-0472-00			RES.,FXD,CMPSN:4.7K OHM,5%,0.25W	01121	CB4725
R2042	315-0202-00			RES.,FXD,CMPSN:2K OHM,5%,0.25W	01121	CB2025
R2043	315-0240-00			RES.,FXD,CMPSN:24 OHM,5%,0.25W	01121	CB2405
R2046	321-0324-00			RES.,FXD,FILM:23.2K OHM,1%,0.125W	91637	MFF1816G23201F
R2048	321-0357-00			RES.,FXD,FILM:51.1K OHM,1%,0.125W	91637	MFF1816G51101F
R2050	323-0227-00			RES.,FXD,FILM:2.26K OHM,1%,0.50W	75042	CECT0-2261F
R2052	301-0822-00			RES.,FXD,CMPSN:8.2K OHM,5%,0.50W	01121	EB8225
R2054	301-0822-00			RES.,FXD,CMPSN:8.2K OHM,5%,0.50W	01121	EB8225
R2062	323-0307-00	B010100	B010134	RES.,FXD,FILM:15.4K OHM,1%,0.50W (7844 ONLY)	75042	CECT0-1542F
R2062	323-0306-00	B010135	B109999	RES.,FXD,FILM:15K OHM,1%,0.50W (7844 ONLY)	75042	CECT0-1502F
R2062	323-0308-00	B110000		RES.,FXD,FILM:15.8K OHM,1%,0.50W (7844 ONLY)	75042	CECT0-1582F
R2062	323-0307-00	B010100	B010112	RES.,FXD,FILM:15.4K OHM,1%,0.50W (R7844 ONLY)	75042	CECT0-1542F
R2062	323-0306-00	B010113	B099999	RES.,FXD,FILM:15K OHM,1%,0.50W (R7844 ONLY)	75042	CECT0-1502F
R2062	323-0308-00	B100000		RES.,FXD,FILM:15.8K OHM,1%,0.50W (R7844 ONLY)	75042	CECT0-1582F
R2064	315-0205-00			RES.,FXD,CMPSN:2M OHM,5%,0.25W	01121	CB2055
R2068	311-1266-00			RES.,VAR,NONWIR:2.5K OHM,10%,0.50W	32997	3329P-L58-252
R2072	321-0219-00			RES.,FXD,FILM:1.87K OHM,1%,0.125W	91637	MFF1816G18700F
R2074	321-0342-00			RES.,FXD,FILM:35.7K OHM,1%,0.125W	91637	MFF1816G35701F
R2080	311-1230-00			RES.,VAR,NONWIR:20K OHM,20%,0.50W	32997	3386F-T04-203
R2082	315-0912-00			RES.,FXD,CMPSN:9.1K OHM,5%,0.25W	01121	CB9125
R2086	315-0151-00			RES.,FXD,CMPSN:150 OHM,5%,0.25W	01121	CB1515
R2092	315-0100-00			RES.,FXD,CMPSN:10 OHM,5%,0.25W	01121	CB1005
R2094	315-0100-00			RES.,FXD,CMPSN:10 OHM,5%,0.25W	01121	CB1005
R2096	315-0100-00			RES.,FXD,CMPSN:10 OHM,5%,0.25W	01121	CB1005
R2098	315-0100-00			RES.,FXD,CMPSN:10 OHM,5%,0.25W	01121	CB1005
R2101	315-0682-00			RES.,FXD,CMPSN:6.8K OHM,5%,0.25W	01121	CB6825
R2102	315-0103-00			RES.,FXD,CMPSN:10K OHM,5%,0.25W	01121	CB1035
R2104	315-0333-00			RES.,FXD,CMPSN:33K OHM,5%,0.25W	01121	CB3335
R2105	315-0153-00			RES.,FXD,CMPSN:15K OHM,5%,0.25W	01121	CB1535
R2107	315-0510-00			RES.,FXD,CMPSN:51 OHM,5%,0.25W	01121	CB5105
R2108	315-0512-00			RES.,FXD,CMPSN:5.1K OHM,5%,0.25W	01121	CB5125
R2109	315-0221-00			RES.,FXD,CMPSN:220 OHM,5%,0.25W	01121	CB2215
R2112	315-0102-00			RES.,FXD,CMPSN:1K OHM,5%,0.25W	01121	CB1025
R2113	315-0301-00			RES.,FXD,CMPSN:300 OHM,5%,0.25W	01121	CB3015
R2122	315-0432-00			RES.,FXD,CMPSN:4.3K OHM,5%,0.25W	01121	CB4325
R2123	315-0683-00			RES.,FXD,CMPSN:68K OHM,5%,0.25W	01121	CB6835
R2127	315-0302-00			RES.,FXD,CMPSN:3K OHM,5%,0.25W	01121	CB3025
R2128	311-1263-00			RES.,VAR,NONWIR:1K OHM,10%,0.50W	32997	3329P-L58-102
R2129	315-0183-00			RES.,FXD,CMPSN:18K OHM,5%,0.25W	01121	CB1835
R2135	315-0393-00			RES.,FXD,CMPSN:39K OHM,5%,0.25W	01121	CB3935
R2137	315-0752-00			RES.,FXD,CMPSN:7.5K OHM,5%,0.25W	01121	CB7525

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R2139	315-0242-00			RES.,FXD,CMPSN:2.4K OHM,5%,0.25W	01121	CB2425
R2144	315-0104-00			RES.,FXD,CMPSN:100K OHM,5%,0.25W	01121	CB1045
R2146	315-0152-00			RES.,FXD,CMPSN:1.5K OHM,5%,0.25W	01121	CB1525
R2148	315-0103-00			RES.,FXD,CMPSN:10K OHM,5%,0.25W	01121	CB1035
R2150	321-0403-00			RES.,FXD,FILM:154K OHM,1%,0.125W	91637	MFF1816G15402F
R2151	321-0372-00			RES.,FXD,FILM:73.2K OHM,1%,0.125W	91637	MFF1816G73201F
R2153	315-0103-00			RES.,FXD,CMPSN:10K OHM,5%,0.25W	01121	CB1035
R2155	315-0512-00			RES.,FXD,CMPSN:5.1K OHM,5%,0.25W	01121	CB5125
R2158	315-0152-00			RES.,FXD,CMPSN:1.5K OHM,5%,0.25W	01121	CB1525
R2161	315-0102-00			RES.,FXD,CMPSN:1K OHM,5%,0.25W	01121	CB1025
R2162	315-0751-00			RES.,FXD,CMPSN:750 OHM,5%,0.25W	01121	CB7515
R2163	315-0751-00			RES.,FXD,CMPSN:750 OHM,5%,0.25W	01121	CB7515
R2165	315-0102-00			RES.,FXD,CMPSN:1K OHM,5%,0.25W	01121	CB1025
R2166	315-0751-00			RES.,FXD,CMPSN:750 OHM,5%,0.25W	01121	CB7515
R2167	315-0751-00			RES.,FXD,CMPSN:750 OHM,5%,0.25W	01121	CB7515
R2169	315-0102-00			RES.,FXD,CMPSN:1K OHM,5%,0.25W	01121	CB1025
R2170	315-0751-00			RES.,FXD,CMPSN:750 OHM,5%,0.25W	01121	CB7515
R2171	315-0751-00			RES.,FXD,CMPSN:750 OHM,5%,0.25W	01121	CB7515
R2173	315-0102-00			RES.,FXD,CMPSN:1K OHM,5%,0.25W	01121	CB1025
R2174	315-0751-00			RES.,FXD,CMPSN:750 OHM,5%,0.25W	01121	CB7515
R2175	315-0751-00			RES.,FXD,CMPSN:750 OHM,5%,0.25W	01121	CB7515
R2177	315-0511-00			RES.,FXD,CMPSN:510 OHM,5%,0.25W	01121	CB5115
R2178	315-0511-00			RES.,FXD,CMPSN:510 OHM,5%,0.25W	01121	CB5115
R2179	315-0511-00			RES.,FXD,CMPSN:510 OHM,5%,0.25W	01121	CB5115
R2182	321-0262-00			RES.,FXD,FILM:5.23K OHM,1%,0.125W	91637	MFF1816G52300F
R2183	311-1224-00			RES.,VAR,NONWIR:500 OHM,20%,0.50W	32997	3386F-T04-501
R2191	315-0513-00			RES.,FXD,CMPSN:51K OHM,5%,0.25W	01121	CB5135
R2192	315-0133-00			RES.,FXD,CMPSN:13K OHM,5%,0.25W	01121	CB1335
R2193	315-0133-00			RES.,FXD,CMPSN:13K OHM,5%,0.25W	01121	CB1335
R2194	315-0753-00			RES.,FXD,CMPSN:75K OHM,5%,0.25W	01121	CB7535
R2196	321-0308-00			RES.,FXD,FILM:15.8K OHM,1%,0.125W	91637	MFF1816G15801F
R2197	315-0513-00			RES.,FXD,CMPSN:51K OHM,5%,0.25W	01121	CB5135
R2198	321-0319-00			RES.,FXD,FILM:20.5K OHM,1%,0.125W	91637	MFF1816G20501F
R2199	321-0335-00			RES.,FXD,FILM:30.1K OHM,1%,0.125W	91637	MFF1816G30101F
R2201	315-0154-00			RES.,FXD,CMPSN:150K OHM,5%,0.25W	01121	CB1545
R2202	321-0335-00			RES.,FXD,FILM:30.1K OHM,1%,0.125W	91637	MFF1816G30101F
R2203	321-0344-00			RES.,FXD,FILM:37.4K OHM,1%,0.125W	91637	MFF1816G37401F
R2204	321-0335-00			RES.,FXD,FILM:30.1K OHM,1%,0.125W	91637	MFF1816G30101F
R2206	315-0513-00			RES.,FXD,CMPSN:51K OHM,5%,0.25W	01121	CB5135
R2207	315-0154-00			RES.,FXD,CMPSN:150K OHM,5%,0.25W	01121	CB1545
R2208	321-0335-00			RES.,FXD,FILM:30.1K OHM,1%,0.125W	91637	MFF1816G30101F
R2209	321-0335-00			RES.,FXD,FILM:30.1K OHM,1%,0.125W	91637	MFF1816G30101F
R2211	315-0752-00			RES.,FXD,CMPSN:7.5K OHM,5%,0.25W	01121	CB7525
R2213	321-0259-00			RES.,FXD,FILM:4.87K OHM,1%,0.125W	91637	MFF1816G48700F
R2214	311-1224-00			RES.,VAR,NONWIR:500 OHM,20%,0.50W	32997	3386F-T04-501
R2215	315-0133-00			RES.,FXD,CMPSN:13K OHM,5%,0.25W	01121	CB1335
R2217	315-0124-00			RES.,FXD,CMPSN:120K OHM,5%,0.25W	01121	CB1245
R2219	315-0751-00			RES.,FXD,CMPSN:750 OHM,5%,0.25W	01121	CB7515
R2220	321-0299-00			RES.,FXD,FILM:12.7K OHM,1%,0.125W	91637	MFF1816G12701F
R2221	321-0212-00			RES.,FXD,FILM:1.58K OHM,1%,0.125W	91637	MFF1816G15800F
R2226	315-0222-00			RES.,FXD,CMPSN:2.2K OHM,5%,0.25W	01121	CB2225
R2227	321-0268-00			RES.,FXD,FILM:6.04K OHM,1%,0.125W	91637	MFF1816G60400F
R2229	321-0210-00			RES.,FXD,FILM:1.5K OHM,1%,0.125W	91637	MFF1816G15000F
R2231	315-0303-00			RES.,FXD,CMPSN:30K OHM,5%,0.25W	01121	CB3035
R2235	315-0203-00			RES.,FXD,CMPSN:20K OHM,5%,0.25W	01121	CB2035
R2236	315-0203-00			RES.,FXD,CMPSN:20K OHM,5%,0.25W	01121	CB2035
R2237	315-0203-00			RES.,FXD,CMPSN:20K OHM,5%,0.25W	01121	CB2035

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R2238	315-0203-00			RES.,FXD,CMPSN:20K OHM,5%,0.25W	01121	CB2035
R2241	321-0326-00			RES.,FXD,FILM:24.3K OHM,1%,0.125W	91637	MFF1816G24301F
R2251	315-0102-00			RES.,FXD,CMPSN:1K OHM,5%,0.25W	01121	CB1025
R2252	315-0102-00			RES.,FXD,CMPSN:1K OHM,5%,0.25W	01121	CB1025
R2253	315-0102-00			RES.,FXD,CMPSN:1K OHM,5%,0.25W	01121	CB1025
R2254	315-0303-00			RES.,FXD,CMPSN:30K OHM,5%,0.25W	01121	CB3035
R2261	315-0272-00			RES.,FXD,CMPSN:2.7K OHM,5%,0.25W	01121	CB2725
R2262	315-0102-00			RES.,FXD,CMPSN:1K OHM,5%,0.25W	01121	CB1025
R2265	315-0512-00			RES.,FXD,CMPSN:5.1K OHM,5%,0.25W	01121	CB5125
R2266	315-0912-00			RES.,FXD,CMPSN:9.1K OHM,5%,0.25W	01121	CB9125
R2268	321-0296-00	B010100	B141919	RES.,FXD,FILM:11.8K OHM,1%,0.125W (7844 ONLY)	91637	MFF1816G11801F
R2268	321-0297-00	B141920		RES.,FXD,FILM:12.1K OHM,1%,0.125W (7844 ONLY)	91637	MFF1816G12101F
R2268	321-0296-00	B010100	B140969	RES.,FXD,FILM:11.8K OHM,1%,0.125W (R7844 ONLY)	91637	MFF1816G11801F
R2268	321-0297-00	B140970		RES.,FXD,FILM:12.1K OHM,1%,0.125W (R7844 ONLY)	91637	MFF1816G12101F
R2273	311-1226-00			RES.,VAR,NONWIR:2.5K OHM,20%,0.50W	32997	3386F-T04-252
R2274	321-0153-00			RES.,FXD,FILM:383 OHM,1%,0.125W	91637	MFF1816G383R0F
R2275	321-0170-00			RES.,FXD,FILM:576 OHM,1%,0.125W	91637	MFF1816G576R0F
R2276	315-0223-00			RES.,FXD,CMPSN:22K OHM,5%,0.25W	01121	CB2235
R2277	321-0250-00			RES.,FXD,FILM:3.92K OHM,1%,0.125W	91637	MFF1816G39200F
R2278	315-0823-00			RES.,FXD,CMPSN:82K OHM,5%,0.25W	01121	CB8235
R2279	321-0222-00			RES.,FXD,FILM:2K OHM,1%,0.125W	91637	MFF1816G20000F
R2280	315-0823-00			RES.,FXD,CMPSN:82K OHM,5%,0.25W	01121	CB8235
R2281	315-0101-00	XB010110		RES.,FXD,CMPSN:100 OHM,5%,0.25W	01121	CB1015
R2282	315-0332-00			RES.,FXD,CMPSN:3.3K OHM,5%,0.25W	01121	CB3325
R2283	315-0753-00			RES.,FXD,CMPSN:75K OHM,5%,0.25W	01121	CB7535
R2284	321-0216-00			RES.,FXD,FILM:1.74K OHM,1%,0.125W	91637	MFF1816G17400F
R2285	321-0245-00			RES.,FXD,FILM:3.48K OHM,1%,0.125W	91637	MFF1816G34800F
R2286	321-0209-00	B010100	B110889	RES.,FXD,FILM:1.47K OHM,1%,0.125W (7844 ONLY)	91637	MFF1816G14700F
R2286	321-0210-00	B110890		RES.,FXD,FILM:1.5K OHM,1%,0.125W (7844 ONLY)	91637	MFF1816G15000F
R2286	321-0209-00	B010100	B100450	RES.,FXD,FILM:1.47K OHM,1%,0.125W (R7844 ONLY)	91637	MFF1816G14700F
R2286	321-0210-00	B100451		RES.,FXD,FILM:1.5K OHM,1%,0.125W (R7844 ONLY)	91637	MFF1816G15000F
R2287	321-0199-00			RES.,FXD,FILM:1.15K OHM,1%,0.125W	91637	MFF1816G11500F
R2288	321-0273-00			RES.,FXD,FILM:6.81K OHM,1%,0.125W	91637	MFF1816G68100F
R2289	321-0193-00			RES.,FXD,FILM:1K OHM,1%,0.125W	91637	MFF1816G10000F
R2291	311-1225-00			RES.,VAR,NONWIR:1K OHM,20%,0.50W	32997	3386F-T04-102
R2292	315-0132-00			RES.,FXD,CMPSN:1.3K OHM,5%,0.25W	01121	CB1325
R2293	321-0245-00			RES.,FXD,FILM:3.48K OHM,1%,0.125W	91637	MFF1816G34800F
R2294	321-0255-00			RES.,FXD,FILM:4.42K OHM,1%,0.125W	91637	MFF1816G44200F
R2295	321-0241-00			RES.,FXD,FILM:3.16K OHM,1%,0.125W	91637	MFF1816G31600F
R2297	315-0152-00			RES.,FXD,CMPSN:1.5K OHM,5%,0.25W	01121	CB1525
R2298	315-0102-00			RES.,FXD,CMPSN:1K OHM,5%,0.25W	01121	CB1025
R2299	315-0431-00			RES.,FXD,CMPSN:430 OHM,5%,0.25W	01121	CB4315
R2302	315-0471-00			RES.,FXD,CMPSN:470 OHM,5%,0.25W	01121	CB4715
R2303A,B	307-0290-01			RES.,FXD,FILM:500K OHM/29.65M OHM	80009	307-0290-01
R2304	301-0102-00			RES.,FXD,CMPSN:1K OHM,5%,0.50W	01121	EB1025
R2306	315-0472-00			RES.,FXD,CMPSN:4.7K OHM,5%,0.25W	01121	CB4725
R2307	315-0560-00			RES.,FXD,CMPSN:56 OHM,5%,0.25W	01121	CB5605
R2308	301-0331-00			RES.,FXD,CMPSN:330 OHM,5%,0.50W	01121	EB3315
R2310	315-0472-00			RES.,FXD,CMPSN:4.7K OHM,5%,0.25W	01121	CB4725

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R2311	301-0152-00			RES.,FXD,CMPSN:1.5K OHM,5%,0.50W	01121	EB1525
R2312	315-0472-00			RES.,FXD,CMPSN:4.7K OHM,5%,0.25W	01121	CB4725
R2314	315-0130-00			RES.,FXD,CMPSN:13 OHM,5%,0.25W	01121	CB1305
R2316	307-0106-00			RES.,FXD,CMPSN:4.7 OHM,5%,0.25W	01121	CB47G5
R2318	315-0104-00			RES.,FXD,CMPSN:100K OHM,5%,0.25W	01121	CB1045
R2320	301-0624-00			RES.,FXD,CMPSN:620K OHM,5%,0.50W	01121	EB6245
R2321	301-0624-00			RES.,FXD,CMPSN:620K OHM,5%,0.50W	01121	EB6245
R2322	301-0155-00			RES.,FXD,CMPSN:1.5M OHM,5%,0.50W	01121	EB1555
R2323	301-0155-00			RES.,FXD,CMPSN:1.5M OHM,5%,0.50W	01121	EB1555
R2325	315-0183-00			RES.,FXD,CMPSN:18K OHM,5%,0.25W	01121	CB1835
R2326	315-0226-00			RES.,FXD,CMPSN:22M OHM,5%,0.25W	01121	CB2265
R2327	315-0104-00			RES.,FXD,CMPSN:100K OHM,5%,0.25W	01121	CB1045
R2330	301-0624-00			RES.,FXD,CMPSN:620K OHM,5%,0.50W	01121	EB6245
R2331	301-0624-00			RES.,FXD,CMPSN:620K OHM,5%,0.50W	01121	EB6245
R2332	301-0155-00			RES.,FXD,CMPSN:1.5M OHM,5%,0.50W	01121	EB1555
R2333	301-0155-00			RES.,FXD,CMPSN:1.5M OHM,5%,0.50W	01121	EB1555
R2335	315-0183-00			RES.,FXD,CMPSN:18K OHM,5%,0.25W	01121	CB1835
R2336	315-0226-00			RES.,FXD,CMPSN:22M OHM,5%,0.25W	01121	CB2265
R2337	315-0104-00			RES.,FXD,CMPSN:100K OHM,5%,0.25W	01121	CB1045
R2342	301-0155-00			RES.,FXD,CMPSN:1.5M OHM,5%,0.50W	01121	EB1555
R2343	301-0155-00			RES.,FXD,CMPSN:1.5M OHM,5%,0.50W	01121	EB1555
R2345	315-0183-00			RES.,FXD,CMPSN:18K OHM,5%,0.25W	01121	CB1835
R2346	315-0226-00			RES.,FXD,CMPSN:22M OHM,5%,0.25W	01121	CB2265
R2347	315-0104-00			RES.,FXD,CMPSN:100K OHM,5%,0.25W	01121	CB1045
R2352	301-0155-00			RES.,FXD,CMPSN:1.5M OHM,5%,0.50W	01121	EB1555
R2353	301-0155-00			RES.,FXD,CMPSN:1.5M OHM,5%,0.50W	01121	EB1555
R2355	315-0183-00			RES.,FXD,CMPSN:18K OHM,5%,0.25W	01121	CB1835
R2356	315-0226-00			RES.,FXD,CMPSN:22M OHM,5%,0.25W	01121	CB2265
R2357	315-0104-00			RES.,FXD,CMPSN:100K OHM,5%,0.25W	01121	CB1045
R2400	315-0103-00			RES.,FXD,CMPSN:10K OHM,5%,0.25W	01121	CB1035
R2401	315-0104-00			RES.,FXD,CMPSN:100K OHM,5%,0.25W	01121	CB1045
R2402	315-0103-00			RES.,FXD,CMPSN:10K OHM,5%,0.25W	01121	CB1035
R2403	315-0104-00			RES.,FXD,CMPSN:100K OHM,5%,0.25W	01121	CB1045
R2404	315-0105-00			RES.,FXD,CMPSN:1M OHM,5%,0.25W	01121	CB1055
R2405	315-0104-00			RES.,FXD,CMPSN:100K OHM,5%,0.25W	01121	CB1045
R2406	315-0104-00			RES.,FXD,CMPSN:100K OHM,5%,0.25W	01121	CB1045
R2407	315-0105-00			RES.,FXD,CMPSN:1M OHM,5%,0.25W	01121	CB1055
R2408	315-0101-00			RES.,FXD,CMPSN:100 OHM,5%,0.25W	01121	CB1015
R2409	315-0101-00			RES.,FXD,CMPSN:100 OHM,5%,0.25W	01121	CB1015
R2410	322-0473-00			RES.,FXD,FILM:825K OHM,1%,0.25W	75042	CEBT0-8253F
R2412	322-0621-00			RES.,FXD,FILM:900K OHM,1%,0.25W	75042	CEBT0-9003F
R2414	322-0621-00			RES.,FXD,FILM:900K OHM,1%,0.25W	75042	CEBT0-9003F
R2416	311-1753-00			RES.,VAR,NONWIR:1M OHM,10%,0.50W	12697	382-CM40419
R2418	301-0105-00			RES.,FXD,CMPSN:1M OHM,5%,0.50W	01121	EB1055
R2419	301-0105-00			RES.,FXD,CMPSN:1M OHM,5%,0.50W	01121	EB1055
R2420	301-0105-00			RES.,FXD,CMPSN:1M OHM,5%,0.50W	01121	EB1055
R2421	301-0105-00			RES.,FXD,CMPSN:1M OHM,5%,0.50W	01121	EB1055
R2422	301-0105-00			RES.,FXD,CMPSN:1M OHM,5%,0.50W	01121	EB1055
R2423	301-0105-00			RES.,FXD,CMPSN:1M OHM,5%,0.50W	01121	EB1055
R2430	322-0473-00			RES.,FXD,FILM:825K OHM,1%,0.25W	75042	CEBT0-8253F
R2432	322-0621-00			RES.,FXD,FILM:900K OHM,1%,0.25W	75042	CEBT0-9003F
R2434	322-0621-00			RES.,FXD,FILM:900K OHM,1%,0.25W	75042	CEBT0-9003F
R2436	311-1753-00			RES.,VAR,NONWIR:1M OHM,10%,0.50W	12697	382-CM40419
R2438	301-0105-00			RES.,FXD,CMPSN:1M OHM,5%,0.50W	01121	EB1055
R2439	301-0105-00			RES.,FXD,CMPSN:1M OHM,5%,0.50W	01121	EB1055
R2440	301-0105-00			RES.,FXD,CMPSN:1M OHM,5%,0.50W	01121	EB1055
R2441	301-0105-00			RES.,FXD,CMPSN:1M OHM,5%,0.50W	01121	EB1055

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R2442	301-0105-00			RES.,FXD,CMPSN:1M OHM,5%,0.50W	01121	EB1055
R2443	301-0105-00			RES.,FXD,CMPSN:1M OHM,5%,0.50W	01121	EB1055
R2444	301-0105-00			RES.,FXD,CMPSN:1M OHM,5%,0.50W	01121	EB1055
R2445	315-0202-00			RES.,FXD,CMPSN:2K OHM,5%,0.25W	01121	CB2025
R2446	315-0104-00			RES.,FXD,CMPSN:100K OHM,5%,0.25W	01121	CB1045
R2447	315-0205-00			RES.,FXD,CMPSN:2M OHM,5%,0.25W	01121	CB2055
R2449	315-0474-00			RES.,FXD,CMPSN:470K OHM,5%,0.25W	01121	CB4745
R2450	321-0285-00			RES.,FXD,FILM:9.09K OHM,1%,0.125W	91637	MFF1816G90900F
R2451	321-0368-00	B010100	B010135	RES.,FXD,FILM:66.5K OHM,1%,0.125W (7844 ONLY)	91637	MFF1816G66501F
R2451	321-0260-00	B010136		RES.,FXD,FILM:4.99K OHM,1%,0.125W (7844 ONLY)	91637	MFF1816G49900F
R2451	321-0368-00	B010100	B010112	RES.,FXD,FILM:66.5K OHM,1%,0.125W (R7844 ONLY)	91637	MFF1816G66501F
R2451	321-0260-00	B010113		RES.,FXD,FILM:4.99K OHM,1%,0.125W (R7844 ONLY)	91637	MFF1816G49900F
R2452	321-0431-00	B010100	B010135	RES.,FXD,FILM:1M OHM,1%,0.125W (7844 ONLY)	24546	NA4D1004F
R2452	321-0373-00	B010136		RES.,FXD,FILM:75K OHM, 1%,0.125W (7844 ONLY)	91637	MFF1816G75001F
R2452	321-0481-00	B010100	B010112	RES.,FXD,FILM:1M OHM,1%,0.125W (R7844 ONLY)	24546	NA4D1004F
R2452	321-0373-00	B010113		RES.,FXD,FILM:75K OHM, 1%,0.125W (R7844 ONLY)	91637	MFF1816G75001F
R2454	311-1286-00			RES.,VAR,NONWIR:50K OHM,10%,0.5W	32997	3329W-L58-503
R2455	321-0436-00			RES.,FXD,FILM:340K OHM,1%,0.125W	91637	MFF1816G34002F
R2456	321-0331-00			RES.,FXD,FILM:27.4K OHM,1%,0.125W	91637	MFF1816G27401F
R2457	315-0473-00			RES.,FXD,CMPSN:47K OHM,5%,0.25W	01121	CB4735
R2459	315-0334-00			RES.,FXD,CMPSN:330K OHM,5%,0.25W	01121	CB3345
R2460	315-0102-00			RES.,FXD,CMPSN:1K OHM,5%,0.25W	01121	CB1025
R2461	315-0102-00			RES.,FXD,CMPSN:1K OHM,5%,0.25W	01121	CB1025
R2463	311-1282-00			RES.,VAR,NONWIR:5K OHM,10%,0.50W	32997	3329W-L58-502
R2464	315-0222-00			RES.,FXD,CMPSN:2.2K OHM,5%,0.25W	01121	CB2225
R2465	315-0203-00			RES.,FXD,CMPSN:20K OHM,5%,0.25W	01121	CB2035
R2466	315-0101-00			RES.,FXD,CMPSN:100 OHM,5%,0.25W	01121	CB1015
R2467	315-0432-00			RES.,FXD,CMPSN:4.3K OHM,5%,0.25W	01121	CB4325
R2468	315-0153-00			RES.,FXD,CMPSN:15K OHM,5%,0.25W	01121	CB1535
R2474	301-0105-00			RES.,FXD,CMPSN:1M OHM,5%,0.50W	01121	EB1055
R2475	315-0202-00			RES.,FXD,CMPSN:2K OHM,5%,0.25W	01121	CB2025
R2476	315-0104-00			RES.,FXD,CMPSN:100K OHM,5%,0.25W	01121	CB1045
R2477	315-0184-00			RES.,FXD,CMPSN:180K OHM,5%,0.25W	01121	CB1845
R2479	315-0473-00			RES.,FXD,CMPSN:47K OHM,5%,0.25W	01121	CB4735
R2480	315-0132-00			RES.,FXD,CMPSN:1.3K OHM,5%,0.25W	01121	CB1325
R2481	321-0260-00			RES.,FXD,FILM:4.99K OHM,1%,0.125W	91637	MFF1816G49900F
R2482	321-0373-00			RES.,FXD,FILM:75K OHM, 1%,0.125W	91637	MFF1816G75001F
R2484	311-1282-00			RES.,VAR,NONWIR:5K OHM,10%,0.50W	32997	3329W-L58-502
R2485	321-0336-00	B010100	B141003	RES.,FXD,FILM:30.9K OHM,1%,0.125W (7844 ONLY)	91637	MFF1816G30901F
R2485	321-0335-00	B141004		RES.,FXD,FILM:30.1K OHM,1%,0.125W (7844 ONLY)	91637	MFF1816G30101F
R2485	321-0336-00	B010100	B142027	RES.,FXD,FILM:30.9K OHM,1%,0.125W (R7844 ONLY)	91637	MFF1816G30901F
R2485	321-0335-00	B142028		RES.,FXD,FILM:30.1K OHM,1%,0.125W (R7844 ONLY)	91637	MFF1816G30101F
R2486	321-0229-00			RES.,FXD,FILM:2.37K OHM,1%,0.125W	91637	MFF1816G23700F
R2487	315-0102-00			RES.,FXD,CMPSN:1K OHM,5%,0.25W	01121	CB1025
R2489	315-0103-00			RES.,FXD,CMPSN:10K OHM,5%,0.25W	01121	CB1035

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R2490	315-0391-00			RES.,FXD,CMPSN:390 OHM,5%,0.25W	01121	CB3915
R2491	315-0101-00			RES.,FXD,CMPSN:100 OHM,5%,0.25W	01121	CB1015
R2492	321-0322-00			RES.,FXD,FILM:22.1K OHM,1%,0.125W	91637	MFF1816G22101F
R2493	311-1282-00			RES.,VAR,NONWIR:5K OHM,10%,0.50W	32997	3329W-L58-502
R2494	315-0222-00			RES.,FXD,CMPSN:2.2K OHM,5%,0.25W	01121	CB2225
R2495	315-0203-00			RES.,FXD,CMPSN:20K OHM,5%,0.25W	01121	CB2035
R2496	315-0101-00			RES.,FXD,CMPSN:100 OHM,5%,0.25W	01121	CB1015
R2497	315-0432-00			RES.,FXD,CMPSN:4.3K OHM,5%,0.25W	01121	CB4325
R2498	315-0153-00			RES.,FXD,CMPSN:15K OHM,5%,0.25W	01121	CB1535
R2499	315-0201-00			RES.,FXD,CMPSN:200 OHM,5%,0.25W	01121	CB2015
R2523	315-0470-00			RES.,FXD,CMPSN:47 OHM,5%,0.25W	01121	CB4705
R2525	321-0239-00			RES.,FXD,FILM:3.01K OHM,1%,0.125W	91637	MFF1816G30100F
R2527	321-0201-00			RES.,FXD,FILM:1.21K OHM,1%,0.125W	91637	MFF1816G12100F
R2529	321-0022-00			RES.,FXD,FILM:16.5 OHM,1%,0.125W	91637	MFF1816G16R50F
R2531	307-0059-00			RES.,FXD,CMPSN:6.2 OHM,5%,0.50W	01121	EB62G5
R2533	301-0271-00			RES.,FXD,CMPSN:270 OHM,5%,0.50W	01121	EB2715
R2535	301-0271-00			RES.,FXD,CMPSN:270 OHM,5%,0.50W	01121	EB2715
R2550	321-0387-00			RES.,FXD,FILM:105K OHM,1%,0.125W	91637	MFF1816G10502F
R2552	311-1288-00			RES.,VAR,NONWIR:200K OHM,10%,0.50W	32997	3329W-L58-204
R2553	315-0151-00			RES.,FXD,CMPSN:150 OHM,5%,0.25W	01121	CB1515
R2554	321-0433-00			RES.,FXD,FILM:316K OHM,1%,0.125W	91637	MFF1816G31602F
R2556	311-1288-00			RES.,VAR,NONWIR:200K OHM,10%,0.50W	32997	3329W-L58-204
R2557	315-0151-00			RES.,FXD,CMPSN:150 OHM,5%,0.25W	01121	CB1515
R2560	311-1288-00			RES.,VAR,NONWIR:200K OHM,10%,0.50W	32997	3329W-L58-204
R2561	315-0151-00			RES.,FXD,CMPSN:150 OHM,5%,0.25W	01121	CB1515
R2564	311-1288-00			RES.,VAR,NONWIR:200K OHM,10%,0.50W	32997	3329W-L58-204
R2565	315-0151-00			RES.,FXD,CMPSN:150 OHM,5%,0.25W	01121	CB1515
R2568	311-1288-00			RES.,VAR,NONWIR:200K OHM,10%,0.50W	32997	3329W-L58-204
R2569	315-0151-00			RES.,FXD,CMPSN:150 OHM,5%,0.25W	01121	CB1515
R2572	311-1288-00			RES.,VAR,NONWIR:200K OHM,10%,0.50W	32997	3329W-L58-204
R2573	315-0151-00			RES.,FXD,CMPSN:150 OHM,5%,0.25W	01121	CB1515
R2576	311-1288-00			RES.,VAR,NONWIR:200K OHM,10%,0.50W	32997	3329W-L58-204
R2577	315-0151-00			RES.,FXD,CMPSN:150 OHM,5%,0.25W	01121	CB1515
R2578	311-1288-00			RES.,VAR,NONWIR:200K OHM,10%,0.50W	32997	3329W-L58-204
R2579	315-0151-00			RES.,FXD,CMPSN:150 OHM,5%,0.25W	01121	CB1515
R2656	323-0105-00			RES.,FXD,FILM:121 OHM,1%,0.50W	75042	CECT0-1210F
R2657	317-0270-00			RES.,FXD,CMPSN:27 OHM,5%,0.125W	01121	BB2705
	----- -----			(NOMINAL VALUE,SELECTED)		
R2658	311-0605-00			RES.,VAR,NONWIR:TRMR,200 OHM,0.5W	73138	82-23-2
R2659	317-0270-00			RES.,FXD,CMPSN:27 OHM,5%,0.125W	01121	BB2705
	----- -----			(NOMINAL VALUE,SELECTED)		
R2660	321-0114-00			RES.,FXD,FILM:150 OHM,1%,0.125W	91637	MFF1816G150R0F
R2661	321-0114-00			RES.,FXD,FILM:150 OHM,1%,0.125W	91637	MFF1816G150R0F
R2662	321-0039-00			RES.,FXD,FILM:24.9 OHM,1%,0.125W	91637	MFF1816G24R90F
R2663	321-0039-00			RES.,FXD,FILM:24.9 OHM,1%,0.125W	91637	MFF1816G24R90F
R2667	315-0561-00			RES.,FXD,CMPSN:560 OHM,5%,0.25W	01121	CB5615
R2668	315-0561-00			RES.,FXD,CMPSN:560 OHM,5%,0.25W	01121	CB5615
R2670	317-0047-00			RES.,FXD,CMPSN:4.7 OHM,5%,0.125W	01121	BB47G5
	----- -----			(NOMINAL VALUE,SELECTED)		
R2672	317-0047-00			RES.,FXD,CMPSN:4.7 OHM,5%,0.125W	01121	BB47G5
	----- -----			(NOMINAL VALUE,SELECTED)		
R2676	317-0101-00			RES.,FXD,CMPSN:100 OHM,5%,0.125W	01121	BB1015
	----- -----			(NOMINAL VALUE,SELECTED)		
R2677	323-0069-00			RES.,FXD,FILM:51.1 OHM,1%,0.50W	91637	MFF1226G51R10F
R2679	323-0069-00			RES.,FXD,FILM:51.1 OHM,1%,0.50W	91637	MFF1226G51R10F
R2680	317-0101-00			RES.,FXD,CMPSN:100 OHM,5%,0.125W	01121	BB1015
	----- -----			(NOMINAL VALUE,SELECTED)		

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R2682	323-0121-00			RES.,FXD,FILM:178 OHM,1%,0.50W	75042	CECT0-1780F
R2683	317-0131-00			RES.,FXD,CMPSN:130 OHM,5%,0.125W	01121	BB1315
	----- -----			(NOMINAL VALUE,SELECTED)		
R2685	317-0910-00			RES.,FXD,CMPSN:91 OHM,5%,0.125W	01121	BB9105
R2686	317-0910-00			RES.,FXD,CMPSN:91 OHM,5%,0.125W	01121	BB9105
R2687	317-0131-00			RES.,FXD,CMPSN:130 OHM,5%,0.125W	01121	BB1315
	----- -----			(NOMINAL VALUE,SELECTED)		
R2689	323-0121-00			RES.,FXD,FILM:178 OHM,1%,0.50W	75042	CECT0-1780F
R2690	321-0147-00			RES.,FXD,FILM:332 OHM,1%,0.125W	91637	MFF1816G332R0F
R2692	315-0102-00			RES.,FXD,CMPSN:1K OHM,5%,0.25W	01121	CB1025
R2694	321-0155-00			RES.,FXD,FILM:402 OHM,1%,0.125W	91637	MFF1816G402R0F
R2696	321-0237-00	B010100	B010129	RES.,FXD,FILM:2.87K OHM,1%,0.125W	91637	MFF1816G28700F
	----- -----			(7844 ONLY)		
R2696	321-0232-00	B010130		RES.,FXD,FILM:2.55K OHM,1%,0.125W	91637	MFF1816G25500F
	----- -----			(7844 ONLY)		
R2696	321-0237-00	B010100	B010112	RES.,FXD,FILM:2.87K OHM,1%,0.125W	91637	MFF1816G28700F
	----- -----			(R7844 ONLY)		
R2696	321-0232-00	B010113		RES.,FXD,FILM:2.55K OHM,1%,0.125W	91637	MFF1816G25500F
	----- -----			(R7844 ONLY)		
R2700	311-1563-00			RES.,VAR,NONWIR:1K OHM,20%,0.50W	73138	91-85-0
R2702	315-0621-00			RES.,FXD,CMPSN:620 OHM,5%,0.25W	01121	CB6215
R2710	315-0182-00			RES.,FXD,CMPSN:1.8K OHM,5%,0.25W	01121	CB1825
R2712	315-0820-00			RES.,FXD,CMPSN:82 OHM,5%,0.25W	01121	CB8205
R2714	311-1567-00			RES.,VAR,NONWIR:TRMR,100 OHM,0.50W	73138	91-89-0
R2716	311-1594-00			RES.,VAR,NONWIR:10 OHM,20%,0.50W	73138	91-93-0
R2718	315-0100-00			RES.,FXD,CMPSN:10 OHM,5%,0.25W	01121	CB1005
R2720	321-0079-00			RES.,FXD,FILM:64.9 OHM,1%,0.125W	91637	MFF1816G64R90F
R2722	321-0089-00			RES.,FXD,FILM:82.5 OHM,1%,0.125W	91637	MFF1816G82R50F
R2724	321-0089-00			RES.,FXD,FILM:82.5 OHM,1%,0.125W	91637	MFF1816G82R50F
R2726	308-0736-00			RES.,FXD,WW:200 OHM,1%,3W	91637	RS2B-B200R0F
R2730	311-1260-00			RES.,VAR,NONWIR:250 OHM,10%,0.50W	32997	3329P-L58-251
R2732	317-0300-00			RES.,FXD,CMPSN:30 OHM,5%,0.125W	01121	BB3005
R2733	317-0047-00			RES.,FXD,CMPSN:4.7 OHM,5%,0.125W	01121	BB47G5
R2734	317-0101-00			RES.,FXD,CMPSN:100 OHM,5%,0.125W	01121	BB1015
R2735	323-0069-00			RES.,FXD,FILM:51.1 OHM,1%,0.50W	91637	MFF1226G51R10F
R2736	317-0101-00			RES.,FXD,CMPSN:100 OHM,5%,0.125W	01121	BB1015
R2737	323-0069-00			RES.,FXD,FILM:51.1 OHM,1%,0.50W	91637	MFF1226G51R10F
R2738	317-0101-00			RES.,FXD,CMPSN:100 OHM,5%,0.125W	01121	BB1015
R2739	317-0047-00			RES.,FXD,CMPSN:4.7 OHM,5%,0.125W	01121	BB47G5
R2741	317-0161-00			RES.,FXD,CMPSN:160 OHM,5%,0.125W	01121	BB1615
R2743	311-1261-00			RES.,VAR,NONWIR:500 OHM,10%,0.50W	32997	3329P-L58-501
R2745	317-0561-00	B010100	B010140	RES.,FXD,CMPSN:560 OHM,5%,0.125W	01121	BB5615
	----- -----			(7844 ONLY)		
R2745	317-0431-00	B010141		RES.,FXD,CMPSN:430 OHM,5%,0.125W	01121	BB4315
	----- -----			(7844 ONLY)		
R2745	317-0561-00	B010100	B010112	RES.,FXD,CMPSN:560 OHM,5%,0.125W	01121	BB5615
	----- -----			(R7844 ONLY)		
R2745	317-0431-00	B010113		RES.,FXD,CMPSN:430 OHM,5%,0.125W	01121	BB4315
	----- -----			(R7844 ONLY)		
R2747	317-0471-00			RES.,FXD,CMPSN:470 OHM,5%,0.125W	01121	BB4715
R2749	311-0635-00			RES.,VAR,NONWIR:1K OHM,10%,0.50W	73138	82-32-0
R2753	323-0097-00			RES.,FXD,FILM:100 OHM,1%,0.50W	75042	CECT0-1000F
R2754	323-0097-00			RES.,FXD,FILM:100 OHM,1%,0.50W	75042	CECT0-1000F
R2756	317-0161-00			RES.,FXD,CMPSN:160 OHM,5%,0.125W	01121	BB1615
R2758	311-1564-00			RES.,VAR,NONWIR:TRMR,500 OHM,0.5W	73138	91-86-0
R2760	317-0751-00			RES.,FXD,CMPSN:750 OHM,5%,0.125W	01121	BB7515
R2762	317-0471-00			RES.,FXD,CMPSN:470 OHM,5%,0.125W	01121	BB4715

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R2764	311-1562-00			RES.,VAR,NONWIR:2K OHM,20%,0.50W	73138	91-84-0
R2767	323-0097-00			RES.,FXD,FILM:100 OHM,1%,0.50W	75042	CECT0-1000F
R2768	323-0097-00			RES.,FXD,FILM:100 OHM,1%,0.50W	75042	CECT0-1000F
R2770	308-0692-00			RES.,FXD,WW:44 OHM,1%,3W	91637	RS2B44R00F
R2771	323-0122-00			RES.,FXD,FILM:182 OHM,1%,0.50W	75042	CECT0-1820F
	----- -----			(NOMINAL VALUE,SELECTED)		
R2782A,B	307-0292-13			RES.,FXD,FILM:180 OHM W/PEAKING COIL	80009	307-0292-13
R2783	321-0324-00	XB040000		RES.,FXD,FILM:23.2K OHM,1%,0.125W	91637	MFF1816G23201F
	----- -----			(7844 ONLY)		
R2783	321-0324-00	XB030000		RES.,FXD,FILM:23.2K OHM,1%,0.125W	91637	MFF1816G23201F
	----- -----			(R7844 ONLY)		
R2784	321-0289-00	XB040000		RES.,FXD,FILM:10K OHM,1%,0.125W	91637	MFF1816G10001F
	----- -----			(7844 ONLY)		
R2784	321-0289-00	XB030000		RES.,FXD,FILM:10K OHM,1%,0.125W	91637	MFF1816G10001F
	----- -----			(R7844 ONLY)		
R2785	315-0472-00	XB040000		RES.,FXD,CMPSN:4.7K OHM,5%,0.25W	01121	CB4725
	----- -----			(7844 ONLY)		
R2785	315-0472-00	XB030000		RES.,FXD,CMPSN:4.7K OHM,5%,0.25W	01121	CB4725
	----- -----			(R7844 ONLY)		
R2786	315-0362-00	XB040000		RES.,FXD,CMPSN:3.6K OHM,5%,0.25W	01121	CB3625
	----- -----			(7844 ONLY)		
R2786	315-0362-00	XB030000		RES.,FXD,CMPSN:3.6K OHM,5%,0.25W	01121	CB3625
	----- -----			(R7844 ONLY)		
R2788	315-0103-00	XB020000	B039999X	RES.,FXD,CMPSN:10K OHM,5%,0.25W	01121	CB1035
	----- -----			(7844 ONLY)		
R2788	315-0103-00	XB020000	B029999X	RES.,FXD,CMPSN:10K OHM,5%,0.25W	01121	CB1035
	----- -----			(R7844 ONLY)		
R2790	323-0064-00			RES.,FXD,FILM:45.3 OHM,1%,0.50W	91637	MFF1226G45R30F
R2792	323-0064-00			RES.,FXD,FILM:45.3 OHM,1%,0.50W	91637	MFF1226G45R30F
R2795	323-0077-00			RES.,FXD,FILM:61.9 OHM,1%,0.50W	75042	CECT0-61R90F
R2796	323-0145-00			RES.,FXD,FILM:316 OHM,1%,0.50W	91637	MFF1226G316R0F
R2797	321-0063-00			RES.,FXD,FILM:44.2 OHM,1%,0.125W	91637	MFF1816G44R20F
R2799	308-0248-00			RES.,FXD,WW:150 OHM,1%,5W	91637	RS2A-B150R0F
R2802	322-0167-00	B010100	B099999X	RES.,FXD,FILM:536 OHM,1%,0.25W	91637	MFF1421G536R0F
	----- -----			(R7844 ONLY)		
R2802	322-0167-00	B010100	B109999X	RES.,FXD,FILM:536 OHM,1%,0.25W	91637	MFF1421G536R0F
	----- -----			(7844 ONLY)		
R2803	321-0284-00	B010100	B099999X	RES.,FXD,FILM:8.87K OHM,1%,0.125W	91637	MFF1816G88700F
	----- -----			(R7844 ONLY)		
R2803	321-0284-00	B010100	B109999X	RES.,FXD,FILM:8.87K OHM,1%,0.125W	91637	MFF1816G88700F
	----- -----			(7844 ONLY)		
R2804	311-1268-00	B010100	B099999X	RES.,VAR,NONWIR:10K OHM,10%,0.50W	32997	3329P-L58-103
	----- -----			(R7844 ONLY)		
R2804	311-1268-00	B010100	B109999X	RES.,VAR,NONWIR:10K OHM,10%,0.50W	32997	3329P-L58-103
	----- -----			(7844 ONLY)		
R2805	321-0284-00	B010100	B099999X	RES.,FXD,FILM:8.87K OHM,1%,0.125W	91637	MFF1816G88700F
	----- -----			(R7844 ONLY)		
R2805	321-0284-00	B010100	B109999X	RES.,FXD,FILM:8.87K OHM,1%,0.125W	91637	MFF1816G88700F
	----- -----			(7844 ONLY)		
R2806	322-0175-00	B010100	B099999X	RES.,FXD,FILM:649 OHM,1%,0.25W	75042	CEBT0-6490F
	----- -----			(R7844 ONLY)		
R2806	322-0175-00	B010100	B109999X	RES.,FXD,FILM:649 OHM,1%,0.25W	75042	CEBT0-6490F
	----- -----			(7844 ONLY)		
R2808	315-0222-00	B010100	B099999X	RES.,FXD,CMPSN:2.2K OHM,5%,0.25W	01121	CB2225
	----- -----			(R7844 ONLY)		
R2808	315-0222-00	B010100	B109999X	RES.,FXD,CMPSN:2.2K OHM,5%,0.25W	01121	CB2225
	----- -----			(7844 ONLY)		

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R2809	311-1260-00	B010100	B099999X	RES.,VAR,NONWIR:250 OHM,10%,0.50W (R7844 ONLY)	32997	3329P-L58-251
R2809	311-1260-00	B010100	B109999X	RES.,VAR,NONWIR:250 OHM,10%,0.50W (7844 ONLY)	32997	3329P-L58-251
R2810	321-0207-00	B010100	B099999X	RES.,FXD,FILM:1.4K OHM,1%,0.125W (R7844 ONLY)	91637	MFF1816G14000F
R2810	321-0207-00	B010100	B109999X	RES.,FXD,FILM:1.4K OHM,1%,0.125W (7844 ONLY)	91637	MFF1816G14000F
R2811	321-0253-00	B010100	B099999X	RES.,FXD,FILM:4.22K OHM,1%,0.125W (R7844 ONLY)	91637	MFF1816G42200F
R2811	321-0253-00	B010100	B109999X	RES.,FXD,FILM:4.22K OHM,1%,0.125W (7844 ONLY)	91637	MFF1816G42200F
R2812	321-0074-00	B010100	B099999X	RES.,FXD,FILM:57.6 OHM,1%,0.125W (R7844 ONLY)	91637	MFF1816G57R60F
R2812	321-0074-00	B010100	B109999X	RES.,FXD,FILM:57.6 OHM,1%,0.125W (7844 ONLY)	91637	MFF1816G57R60F
R2814	321-0071-00	B010100	B099999X	RES.,FXD,FILM:53.6 OHM,1%,0.125W (R7844 ONLY)	91637	MFF1816G53R60F
R2814	321-0071-00	B010100	B109999X	RES.,FXD,FILM:53.6 OHM,1%,0.125W (7844 ONLY)	91637	MFF1816G53R60F
R2815	321-0132-00	B010100	B099999X	RES.,FXD,FILM:232 OHM,1%,0.125W (R7844 ONLY)	91637	MFF1816G232R0F
R2815	321-0132-00	B010100	B109999X	RES.,FXD,FILM:232 OHM,1%,0.125W (7844 ONLY)	91637	MFF1816G232R0F
R2816	311-1261-00	B010100	B099999X	RES.,VAR,NONWIR:500 OHM,10%,0.50W (R7844 ONLY)	32997	3329P-L58-501
R2816	311-1261-00	B010100	B109999X	RES.,VAR,NONWIR:500 OHM,10%,0.50W (7844 ONLY)	32997	3329P-L58-501
R2817	315-0112-00	B010100	B099999X	RES.,FXD,CMPSN:1.1K OHM,5%,0.25W (R7844 ONLY)	01121	CB1125
R2817	315-0112-00	B010100	B109999X	RES.,FXD,CMPSN:1.1K OHM,5%,0.25W (7844 ONLY)	01121	CB1125
R2818	321-0081-00	B010100	B099999X	RES.,FXD,FILM:68.1 OHM,1%,0.125W (R7844 ONLY)	91637	MFF1816G68R10F
R2818	321-0081-00	B010100	B109999X	RES.,FXD,FILM:68.1 OHM,1%,0.125W (7844 ONLY)	91637	MFF1816G68R10F
R2819	321-0081-00	B010100	B099999X	RES.,FXD,FILM:68.1 OHM,1%,0.125W (R7844 ONLY)	91637	MFF1816G68R10F
R2819	321-0081-00	B010100	B109999X	RES.,FXD,FILM:68.1 OHM,1%,0.125W (7844 ONLY)	91637	MFF1816G68R10F
R2820	315-0271-00	B010100	B099999X	RES.,FXD,CMPSN:270 OHM,5%,0.25W (R7844 ONLY)	01121	CB2715
R2820	315-0271-00	B010100	B109999X	RES.,FXD,CMPSN:270 OHM,5%,0.25W (7844 ONLY)	01121	CB2715
R2822	315-0271-00	B010100	B099999X	RES.,FXD,CMPSN:270 OHM,5%,0.25W (R7844 ONLY)	01121	CB2715
R2822	315-0271-00	B010100	B109999X	RES.,FXD,CMPSN:270 OHM,5%,0.25W (7844 ONLY)	01121	CB2715
R2824	321-0228-00	B010100	B099999X	RES.,FXD,FILM:2.32K OHM,1%,0.125W (R7844 ONLY)	91637	MFF1816G23200F
R2824	321-0228-00	B010100	B109999X	RES.,FXD,FILM:2.32K OHM,1%,0.125W (7844 ONLY)	91637	MFF1816G23200F
R2825	321-0295-00	B010100	B099999X	RES.,FXD,FILM:11.5K OHM,1%,0.125W (R7844 ONLY)	91637	MFF1816G11501F
R2825	321-0295-00	B010100	B109999X	RES.,FXD,FILM:11.5K OHM,1%,0.125W (7844 ONLY)	91637	MFF1816G11501F
R2826	315-0682-00	B010100	B099999X	RES.,FXD,CMPSN:6.8K OHM,5%,0.25W **(R7844 ONLY)**	01121	CB6825

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R2826	315-0682-00	B010100	B109999X	RES.,FXD,CMPSN:6.8K OHM,5%,0.25W (7844 ONLY)	01121	CB6825
R2828	322-0161-00	B010100	B099999X	RES.,FXD,FILM:464 OHM,1%,0.25W (R7844 ONLY)	75042	CEBT0-4640F
R2828	322-0161-00	B010100	B109999X	RES.,FXD,FILM:464 OHM,1%,0.25W (7844 ONLY)	75042	CEBT0-4640F
R2829	321-0248-00	B010100	B099999X	RES.,FXD,FILM:3.74K OHM,1%,0.125W (R7844 ONLY)	91637	MFF1816G37400F
R2829	321-0248-00	B010100	B109999X	RES.,FXD,FILM:3.74K OHM,1%,0.125W (7844 ONLY)	91637	MFF1816G37400F
R2830	321-0202-00	B010100	B099999X	RES.,FXD,FILM:1.24K OHM,1%,0.125W (R7844 ONLY)	91637	MFF1816G12400F
R2830	321-0202-00	B010100	B109999X	RES.,FXD,FILM:1.24K OHM,1%,0.125W (7844 ONLY)	91637	MFF1816G12400F
R2831	315-0470-00	XB030190	B109999X	RES.,FXD,CMPSN:47 OHM,5%,0.25W (R7844 ONLY)	01121	CB4705
R2831	315-0470-00	XB020123	B099999X	RES.,FXD,CMPSN:47 OHM,5%,0.25W (7844 ONLY)	01121	CB4705
R2832	322-0216-00	B010100	B099999X	RES.,FXD,FILM:1.74K OHM,1%,0.25W (R7844 ONLY)	75042	CEBT0-1741F
R2832	322-0216-00	B010100	B109999X	RES.,FXD,FILM:1.74K OHM,1%,0.25W (7844 ONLY)	75042	CEBT0-1741F
R2834	321-0176-00	B010100	B099999X	RES.,FXD,FILM:665 OHM,1%,0.125W (R7844 ONLY)	91637	MFF1816G665R0F
R2834	321-0176-00	B010100	B109999X	RES.,FXD,FILM:665 OHM,1%,0.125W (7844 ONLY)	91637	MFF1816G665R0F
R2836	321-0176-00	B010100	B099999X	RES.,FXD,FILM:665 OHM,1%,0.125W (R7844 ONLY)	91637	MFF1816G665R0F
R2836	321-0176-00	B010100	B109999X	RES.,FXD,FILM:665 OHM,1%,0.125W (7844 ONLY)	91637	MFF1816G665R0F
R2837	321-0235-00	B010100	B099999X	RES.,FXD,FILM:2.74K OHM,1%,0.125W (R7844 ONLY)	91637	MFF1816G27400F
R2837	321-0235-00	B010100	B109999X	RES.,FXD,FILM:2.74K OHM,1%,0.125W (7844 ONLY)	91637	MFF1816G27400F
R2838	311-1261-00	B010100	B099999X	RES.,VAR,NONWIR:500 OHM,10%,0.50W (R7844 ONLY)	32997	3329P-L58-501
R2838	311-1261-00	B010100	B109999X	RES.,VAR,NONWIR:500 OHM,10%,0.50W (7844 ONLY)	32997	3329P-L58-501
R2839	321-0235-00	B010100	B099999X	RES.,FXD,FILM:2.74K OHM,1%,0.125W (R7844 ONLY)	91637	MFF1816G27400F
R2839	321-0235-00	B010100	B109999X	RES.,FXD,FILM:2.74K OHM,1%,0.125W (7844 ONLY)	91637	MFF1816G27400F
R2840	315-0153-00	B010100	B099999X	RES.,FXD,CMPSN:15K OHM,5%,0.25W (R7844 ONLY)	01121	CB1535
R2840	315-0153-00	B010100	B109999X	RES.,FXD,CMPSN:15K OHM,5%,0.25W (7844 ONLY)	01121	CB1535
R2842	315-0751-00	B010100	B099999X	RES.,FXD,CMPSN:750 OHM,5%,0.25W (7844 ONLY)	01121	CB7515
R2842	315-0751-00	B010100	B109999X	RES.,FXD,CMPSN:750 OHM,5%,0.25W (R7844 ONLY)	01121	CB7515
R2844	321-0204-00	B010100	B099999X	RES.,FXD,FILM:1.3K OHM,1%,0.125W (7844 ONLY)	91637	MFF1816G13000F
R2844	321-0204-00	B010100	B109999X	RES.,FXD,FILM:1.3K OHM,1%,0.125W (R7844 ONLY)	91637	MFF1816G13000F
R2845	315-0362-00	B010100	B099999X	RES.,FXD,CMPSN:3.6K OHM,5%,0.25W (R7844 ONLY)	01121	CB3625

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R2845	315-0362-00	B010100	B109999X	RES.,FXD,CMPSN:3.6K OHM,5%,0.25W (7844 ONLY)	01121	CB3625
R2846	308-0230-00	B010100	B099999X	RES.,FXD,WW:2.7K OHM,5%,3W (R7844 ONLY)	91637	RS2B-B27000J
R2846	308-0230-00	B010100	B109999X	RES.,FXD,WW:2.7K OHM,5%,3W (7844 ONLY)	91637	RS2B-B27000J
R2848	315-0470-00	B010100	B099999X	RES.,FXD,CMPSN:47 OHM,5%,0.25W (R7844 ONLY)	01121	CB4705
R2848	315-0470-00	B010100	B109999X	RES.,FXD,CMPSN:47 OHM,5%,0.25W (7844 ONLY)	01121	CB4705
R2850	315-0153-00	B010100	B099999X	RES.,FXD,CMPSN:15K OHM,5%,0.25W (R7844 ONLY)	01121	CB1535
R2850	315-0153-00	B010100	B109999X	RES.,FXD,CMPSN:15K OHM,5%,0.25W (7844 ONLY)	01121	CB1535
R2852	315-0751-00	B010100	B099999X	RES.,FXD,CMPSN:750 OHM,5%,0.25W (R7844 ONLY)	01121	CB7515
R2852	315-0751-00	B010100	B109999X	RES.,FXD,CMPSN:750 OHM,5%,0.25W (7844 ONLY)	01121	CB7515
R2854	321-0204-00	B010100	B099999X	RES.,FXD,FILM:1.3K OHM,1%,0.125W (R7844 ONLY)	91637	MFF1816G13000F
R2854	321-0204-00	B010100	B109999X	RES.,FXD,FILM:1.3K OHM,1%,0.125W (7844 ONLY)	91637	MFF1816G13000F
R2855	315-0362-00	B010100	B099999X	RES.,FXD,CMPSN:3.6K OHM,5%,0.25W (R7844 ONLY)	01121	CB3625
R2855	315-0362-00	B010100	B109999X	RES.,FXD,CMPSN:3.6K OHM,5%,0.25W (7844 ONLY)	01121	CB3625
R2856	308-0230-00	B010100	B099999X	RES.,FXD,WW:2.7K OHM,5%,3W (R7844 ONLY)	91637	RS2B-B27000J
R2856	308-0230-00	B010100	B109999X	RES.,FXD,WW:2.7K OHM,5%,3W (7844 ONLY)	91637	RS2B-B27000J
R2858	315-0470-00	B010100	B099999X	RES.,FXD,CMPSN:47 OHM,5%,0.25W (R7844 ONLY)	01121	CB4705
R2858	315-0470-00	B010100	B109999X	RES.,FXD,CMPSN:47 OHM,5%,0.25W (7844 ONLY)	01121	CB4705
R2860	311-1258-00	B010100	B099999X	RES.,VAR,NONWIR:50 OHM,10%,0.50W (R7844 ONLY)	32997	3329P-L58-500
R2860	311-1258-00	B010100	B109999X	RES.,VAR,NONWIR:50 OHM,10%,0.50W (7844 ONLY)	32997	3329P-L58-500
R2861	301-0822-00	B010100	B099999X	RES.,FXD,CMPSN:8.2K OHM,5%,0.50W (R7844 ONLY)	01121	EB8225
R2861	301-0822-00	B010100	B109999X	RES.,FXD,CMPSN:8.2K OHM,5%,0.50W (7844 ONLY)	01121	EB8225
R2864	317-0680-00	B010100	B099999X	RES.,FXD,CMPSN:68 OHM,5%,0.125W (R7844 ONLY) (NOMINAL VALUE,SELECTED)	01121	BB6805
R2864	317-0680-00	B010100	B109999X	RES.,FXD,CMPSN:68 OHM,5%,0.125W (7844 ONLY) (NOMINAL VALUE,SELECTED)	01121	BB6805
R2866	315-0103-00	B010100	B099999X	RES.,FXD,CMPSN:10K OHM,5%,0.25W (R7844 ONLY)	01121	CB1035
R2866	315-0103-00	B010100	B109999X	RES.,FXD,CMPSN:10K OHM,5%,0.25W (7844 ONLY)	01121	CB1035
R2867	315-0201-00	B010100	B099999X	RES.,FXD,CMPSN:200 OHM,5%,0.25W (R7844 ONLY)	01121	CB2015
R2867	315-0201-00	B010100	B109999X	RES.,FXD,CMPSN:200 OHM,5%,0.25W (7844 ONLY)	01121	CB2015
R2868	301-0821-00	B010100	B099999X	RES.,FXD,CMPSN:820 OHM,5%,0.50W **(R7844 ONLY)**	01121	EB8215

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R2868	301-0821-00	B010100	B109999X	RES.,FXD,CMPSN:820 OHM,5%,0.50W (7844 ONLY)	01121	EB8215
R2870	311-1258-00	B010100	B099999X	RES.,VAR,NONWIR:50 OHM,10%,0.50W (R7844 ONLY)	32997	3329P-L58-500
R2870	311-1258-00	B010100	B109999X	RES.,VAR,NONWIR:50 OHM,10%,0.50W (7844 ONLY)	32997	3329P-L58-500
R2871	301-0822-00	B010100	B099999X	RES.,FXD,CMPSN:8.2K OHM,5%,0.50W (R7844 ONLY)	01121	EB8225
R2871	301-0822-00	B010100	B109999X	RES.,FXD,CMPSN:8.2K OHM,5%,0.50W (7844 ONLY)	01121	EB8225
R2872	315-0751-00	B010100	B099999X	RES.,FXD,CMPSN:750 OHM,5%,0.25W (R7844 ONLY)	01121	CB7515
R2872	315-0751-00	B010100	B109999X	RES.,FXD,CMPSN:750 OHM,5%,0.25W (7844 ONLY)	01121	CB7515
R2873	311-1265-00	B010100	B099999X	RES.,VAR,NONWIR:2K OHM,10%,0.50W (R7844 ONLY)	32997	3329P-L58-202
R2873	311-1265-00	B010100	B109999X	RES.,VAR,NONWIR:2K OHM,10%,0.50W (7844 ONLY)	32997	3329P-L58-202
R2874	315-0821-00	B010100	B099999X	RES.,FXD,CMPSN:820 OHM,5%,0.25W (R7844 ONLY)	01121	CB8215
R2874	315-0821-00	B010100	B109999X	RES.,FXD,CMPSN:820 OHM,5%,0.25W (7844 ONLY)	01121	CB8215
R2878	315-0162-00	B010100	B099999X	RES.,FXD,CMPSN:1.6K OHM,5%,0.25W (R7844 ONLY)	01121	CB1625
R2878	315-0162-00	B010100	B109999X	RES.,FXD,CMPSN:1.6K OHM,5%,0.25W (7844 ONLY)	01121	CB1625
R2880	317-0680-00	B010100	B099999X	RES.,FXD,CMPSN:68 OHM,5%,0.125W (R7844 ONLY) (NOMINAL VALUE,SELECTED)	01121	BB6805
R2880	317-0680-00	B010100	B109999X	RES.,FXD,CMPSN:68 OHM,5%,0.125W (7844 ONLY) (NOMINAL VALUE,SELECTED)	01121	BB6805
R2882	315-0103-00	B010100	B099999X	RES.,FXD,CMPSN:10K OHM,5%,0.25W (R7844 ONLY)	01121	CB1035
R2882	315-0103-00	B010100	B109999X	RES.,FXD,CMPSN:10K OHM,5%,0.25W (7844 ONLY)	01121	CB1035
R2884	315-0102-00	B010100	B099999X	RES.,FXD,CMPSN:1K OHM,5%,0.25W (R7844 ONLY)	01121	CB1025
R2884	315-0102-00	B010100	B109999X	RES.,FXD,CMPSN:1K OHM,5%,0.25W (7844 ONLY)	01121	CB1025
R2886	315-0512-00	B010100	B099999X	RES.,FXD,CMPSN:5.1K OHM,5%,0.25W (R7844 ONLY)	01121	CB5125
R2886	315-0512-00	B010100	B109999X	RES.,FXD,CMPSN:5.1K OHM,5%,0.25W (7844 ONLY)	01121	CB5125
R2890	323-0321-00	B010100	B099999X	RES.,FXD,FILM:21.5K OHM,1%,0.50W (R7844 ONLY)	75042	CECT0-2152F
R2890	323-0321-00	B010100	B109999X	RES.,FXD,FILM:21.5K OHM,1%,0.50W (7844 ONLY)	75042	CECT0-2152F
R2892	321-0244-00	B010100	B099999X	RES.,FXD,FILM:3.4K OHM,1%,0.125W (R7844 ONLY)	91637	MFF1816G34000F
R2892	321-0244-00	B010100	B109999X	RES.,FXD,FILM:3.4K OHM,1%,0.125W (7844 ONLY)	91637	MFF1816G34000F
R2894	315-0182-00	B010100	B099999X	RES.,FXD,CMPSN:1.8K OHM,5%,0.25W (R7844 ONLY)	01121	CB1825
R2894	315-0182-00	B010100	B109999X	RES.,FXD,CMPSN:1.8K OHM,5%,0.25W (7844 ONLY)	01121	CB1825

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R2895	301-0623-00	B010100	B099999X	RES.,FXD,CMPSN:62K OHM,5%,0.50W (R7844 ONLY)	01121	EB6235
R2895	301-0623-00	B010100	B109999X	RES.,FXD,CMPSN:62K OHM,5%,0.50W (7844 ONLY)	01121	EB6235
R2896	315-0390-00	B010100	B099999X	RES.,FXD,CMPSN:39 OHM,5%,0.25W (R7844 ONLY)	01121	CB3905
R2896	315-0390-00	B010100	B109999X	RES.,FXD,CMPSN:39 OHM,5%,0.25W (7844 ONLY)	01121	CB3905
R2898	323-0364-00	B010100	B099999X	RES.,FXD,FILM:60.4K OHM,1%,0.50W (R7844 ONLY)	91637	MFF1226G60401F
R2898	323-0364-00	B010100	B109999X	RES.,FXD,FILM:60.4K OHM,1%,0.50W (7844 ONLY)	91637	MFF1226G60401F
R2903	301-0102-00	B010100	B099999X	RES.,FXD,CMPSN:1K OHM,5%,0.50W (R7844 ONLY)	01121	EB1025
R2903	301-0102-00	B010100	B109999X	RES.,FXD,CMPSN:1K OHM,5%,0.50W (7844 ONLY)	01121	EB1025
R2904	321-0309-00	B010100	B099999X	RES.,FXD,FILM:16.2K OHM,1%,0.125W (R7844 ONLY)	91637	MFF1816G16201F
R2904	321-0309-00	B010100	B109999X	RES.,FXD,FILM:16.2K OHM,1%,0.125W (7844 ONLY)	91637	MFF1816G16201F
R2906	321-0268-00	B010100	B099999X	RES.,FXD,FILM:6.04K OHM,1%,0.125W (R7844 ONLY)	91637	MFF1816G60400F
R2906	321-0268-00	B010100	B109999X	RES.,FXD,FILM:6.04K OHM,1%,0.125W (7844 ONLY)	91637	MFF1816G60400F
R2907	321-0307-00	B010100	B099999X	RES.,FXD,FILM:15.4K OHM,1%,0.125W (R7844 ONLY)	91637	MFF1816G15401F
R2907	321-0307-00	B010100	B109999X	RES.,FXD,FILM:15.4K OHM,1%,0.125W (7844 ONLY)	91637	MFF1816G15401F
R2920	323-0321-00	B010100	B099999X	RES.,FXD,FILM:21.5K OHM,1%,0.50W (R7844 ONLY)	75042	CECTO-2152F
R2920	323-0321-00	B010100	B109999X	RES.,FXD,FILM:21.5K OHM,1%,0.50W (7844 ONLY)	75042	CECTO-2152F
R2922	321-0244-00	B010100	B099999X	RES.,FXD,FILM:3.4K OHM,1%,0.125W (R7844 ONLY)	91637	MFF1816G34000F
R2922	321-0244-00	B010100	B109999X	RES.,FXD,FILM:3.4K OHM,1%,0.125W (7844 ONLY)	91637	MFF1816G34000F
R2924	315-0182-00	B010100	B099999X	RES.,FXD,CMPSN:1.8K OHM,5%,0.25W (R7844 ONLY)	01121	CB1825
R2924	315-0182-00	B010100	B109999X	RES.,FXD,CMPSN:1.8K OHM,5%,0.25W (7844 ONLY)	01121	CB1825
R2925	301-0623-00	B010100	B099999X	RES.,FXD,CMPSN:62K OHM,5%,0.50W (R7844 ONLY)	01121	EB6235
R2925	301-0623-00	B010100	B109999X	RES.,FXD,CMPSN:62K OHM,5%,0.50W (7844 ONLY)	01121	EB6235
R2926	315-0390-00	B010100	B099999X	RES.,FXD,CMPSN:39 OHM,5%,0.25W (R7844 ONLY)	01121	CB3905
R2926	315-0390-00	B010100	B109999X	RES.,FXD,CMPSN:39 OHM,5%,0.25W (7844 ONLY)	01121	CB3905
R2927	315-0122-00	B010100	B099999X	RES.,FXD,CMPSN:1.2K OHM,5%,0.25W (R7844 ONLY)	01121	CB1225
R2927	315-0122-00	B010100	B109999X	RES.,FXD,CMPSN:1.2K OHM,5%,0.25W (7844 ONLY)	01121	CB1225
R2928	323-0364-00	B010100	B099999X	RES.,FXD,FILM:60.4K OHM,1%,0.50W (R7844 ONLY)	91637	MFF1226G60401F
R2928	323-0364-00	B010100	B109999X	RES.,FXD,FILM:60.4K OHM,1%,0.50W (7844 ONLY)	91637	MFF1226G60401F
R2934	321-0309-00	B010100	B099999X	RES.,FXD,FILM:16.2K OHM,1%,0.125W **(R7844 ONLY)**	91637	MFF1816G16201F

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R2934	321-0309-00	B010100	B109999X	RES.,FXD,FILM:16.2K OHM,1%,0.125W (7844 ONLY)	91637	MFF1816G16201F
R2936	321-0268-00	B010100	B099999X	RES.,FXD,FILM:6.04K OHM,1%,0.125W (R7844 ONLY)	91637	MFF1816G60400F
R2936	321-0268-00	B010100	B109999X	RES.,FXD,FILM:6.04K OHM,1%,0.125W (7844 ONLY)	91637	MFF1816G60400F
R2937	321-0331-00	B010100	B099999X	RES.,FXD,FILM:27.4K OHM,1%,0.125W (R7844 ONLY)	91637	MFF1816G27401F
R2937	321-0331-00	B010100	B109999X	RES.,FXD,FILM:27.4K OHM,1%,0.125W (7844 ONLY)	91637	MFF1816G27401F
R2940	311-1268-00	B010100	B099999X	RES.,VAR,NONWIR:10K OHM,10%,0.50W (R7844 ONLY)	32997	3329P-L58-103
R2940	311-1268-00	B010100	B109999X	RES.,VAR,NONWIR:10K OHM,10%,0.50W (7844 ONLY)	32997	3329P-L58-103
R2976	311-1274-00	B010100	B099999X	RES.,VAR,NONWIR:500K OHM,10%,0.50W (R7844 ONLY)	32997	3329P-L58-504
R2976	311-1274-00	B010100	B109999X	RES.,VAR,NONWIR:500K OHM,10%,0.50W (7844 ONLY)	32997	3329P-L58-504
R2977	315-0680-00	B010100	B099999X	RES.,FXD,CMPSN:68 OHM,5%,0.25W (R7844 ONLY)	01121	CB6805
R2977	315-0680-00	B010100	B109999X	RES.,FXD,CMPSN:68 OHM,5%,0.25W (7844 ONLY)	01121	CB6805
R2980	315-0270-00	B010100	B099999X	RES.,FXD,CMPSN:27 OHM,5%,0.25W (R7844 ONLY)	01121	CB2705
R2980	315-0270-00	B010100	B109999X	RES.,FXD,CMPSN:27 OHM,5%,0.25W (7844 ONLY)	01121	CB2705
R2983	315-0680-00	B010100	B099999X	RES.,FXD,CMPSN:68 OHM,5%,0.25W (R7844 ONLY)	01121	CB6805
R2983	315-0680-00	B010100	B109999X	RES.,FXD,CMPSN:68 OHM,5%,0.25W (7844 ONLY)	01121	CB6805
R2984	315-0104-00	B010100	B099999X	RES.,FXD,CMPSN:100K OHM,5%,0.25W (R7844 ONLY)	01121	CB1045
R2984	315-0104-00	B010100	B109999X	RES.,FXD,CMPSN:100K OHM,5%,0.25W (7844 ONLY)	01121	CB1045
R2985	311-1274-00	B010100	B099999X	RES.,VAR,NONWIR:500K OHM,10%,0.50W (R7844 ONLY)	32997	3329P-L58-504
R2985	311-1274-00	B010100	B109999X	RES.,VAR,NONWIR:500K OHM,10%,0.50W (7844 ONLY)	32997	3329P-L58-504
R2986	307-0103-00	B010100	B099999X	RES.,FXD,CMPSN:2.7 OHM,5%,0.25W (R7844 ONLY)	01121	CB27G5
R2986	307-0103-00	B010100	B109999X	RES.,FXD,CMPSN:2.7 OHM,5%,0.25W (7844 ONLY)	01121	CB27G5
R2987	315-0104-00	B010100	B099999X	RES.,FXD,CMPSN:100K OHM,5%,0.25W (R7844 ONLY)	01121	CB1045
R2987	315-0104-00	B010100	B109999X	RES.,FXD,CMPSN:100K OHM,5%,0.25W (7844 ONLY)	01121	CB1045
R2988	311-1274-00	B010100	B099999X	RES.,VAR,NONWIR:500K OHM,10%,0.50W (R7844 ONLY)	32997	3329P-L58-504
R2988	311-1274-00	B010100	B109999X	RES.,VAR,NONWIR:500K OHM,10%,0.50W (7844 ONLY)	32997	3329P-L58-504
R2989	315-0390-00	B010100	B099999X	RES.,FXD,CMPSN:39 OHM,5%,0.25W (R7844 ONLY)	01121	CB3905
R2989	315-0390-00	B010100	B109999X	RES.,FXD,CMPSN:39 OHM,5%,0.25W (7844 ONLY)	01121	CB3905
R2995	315-0390-00	B010100	B099999X	RES.,FXD,CMPSN:39 OHM,5%,0.25W (R7844 ONLY)	01121	CB3905

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R2995	315-0390-00	B010100	B109999X	RES.,FXD,CMPSN:39 OHM,5%,0.25W	01121	CB3905
	----- -----			(7844 ONLY)		
R2997	315-0390-00	B010100	B099999X	RES.,FXD,CMPSN:39 OHM,5%,0.25W	01121	CB3905
	----- -----			(R7844 ONLY)		
R2997	315-0390-00	B010100	B109999X	RES.,FXD,CMPSN:39 OHM,5%,0.25W	01121	CB3905
	----- -----			(7844 ONLY)		
R3151	321-0191-00			RES.,FXD,FILM:953 OHM,1%,0.125W	91637	MFF1816G953R0F
R3152	315-0682-00			RES.,FXD,CMPSN:6.8K OHM,5%,0.25W	01121	CB6825
R3153	315-0202-00			RES.,FXD,CMPSN:2K OHM,5%,0.25W	01121	CB2025
R3154	315-0102-00			RES.,FXD,CMPSN:1K OHM,5%,0.25W	01121	CB1025
R3156	315-0103-00			RES.,FXD,CMPSN:10K OHM,5%,0.25W	01121	CB1035
R3157	315-0103-00			RES.,FXD,CMPSN:10K OHM,5%,0.25W	01121	CB1035
R3158	315-0102-00			RES.,FXD,CMPSN:1K OHM,5%,0.25W	01121	CB1025
R3160	315-0103-00			RES.,FXD,CMPSN:10K OHM,5%,0.25W	01121	CB1035
R3161	315-0472-00			RES.,FXD,CMPSN:4.7K OHM,5%,0.25W	01121	CB4725
R3162	315-0512-00			RES.,FXD,CMPSN:5.1K OHM,5%,0.25W	01121	CB5125
R3163	321-0191-00			RES.,FXD,FILM:953 OHM,1%,0.125W	91637	MFF1816G953R0F
R3164	315-0682-00			RES.,FXD,CMPSN:6.8K OHM,5%,0.25W	01121	CB6825
R3165	315-0202-00			RES.,FXD,CMPSN:2K OHM,5%,0.25W	01121	CB2025
R3166	315-0102-00			RES.,FXD,CMPSN:1K OHM,5%,0.25W	01121	CB1025
R3168	315-0103-00			RES.,FXD,CMPSN:10K OHM,5%,0.25W	01121	CB1035
R3169	315-0103-00			RES.,FXD,CMPSN:10K OHM,5%,0.25W	01121	CB1035
R3170	315-0102-00			RES.,FXD,CMPSN:1K OHM,5%,0.25W	01121	CB1025
R3172	315-0103-00			RES.,FXD,CMPSN:10K OHM,5%,0.25W	01121	CB1035
R3173	315-0472-00			RES.,FXD,CMPSN:4.7K OHM,5%,0.25W	01121	CB4725
R3174	315-0512-00			RES.,FXD,CMPSN:5.1K OHM,5%,0.25W	01121	CB5125
R3177	315-0392-00			RES.,FXD,CMPSN:3.9K OHM,5%,0.25W	01121	CB3925
R3179	315-0392-00			RES.,FXD,CMPSN:3.9K OHM,5%,0.25W	01121	CB3925
R3180	315-0511-00			RES.,FXD,CMPSN:510 OHM,5%,0.25W	01121	CB5115
R3182	315-0562-00			RES.,FXD,CMPSN:5.6K OHM,5%,0.25W	01121	CB5625
R3184	315-0302-00			RES.,FXD,CMPSN:3K OHM,5%,0.25W	01121	CB3025
R3185	311-1373-00			RES.,VAR,NONWIR:5K OHM,20%,1W	01121	73U4G040L502M
R3186	315-0302-00			RES.,FXD,CMPSN:3K OHM,5%,0.25W	01121	CB3025
R3187	321-0182-00			RES.,FXD,FILM:768 OHM,1%,0.125W	91637	MFF1816G768R0F
R3188	321-0274-00			RES.,FXD,FILM:6.98K OHM,1%,0.125W	91637	MFF1816G69800F
R3189	311-1373-00			RES.,VAR,NONWIR:5K OHM,20%,1W	01121	73U4G040L502M
R3190	315-0271-00			RES.,FXD,CMPSN:270 OHM,5%,0.25W	01121	CB2715
R3191	315-0271-00			RES.,FXD,CMPSN:270 OHM,5%,0.25W	01121	CB2715
R3193	311-1592-00			RES.,VAR,NONWIR:2.5K OHM X 1M OHM,20%,0.50W	01121	14M414
	----- -----			(7844 ONLY,FURN AS A UNIT WITH R3195)		
R3193	311-0994-00			RES.,VAR,NONWIR:2.5K OHM,10%,0.50W	01121	WA1G048S252UA
	----- -----			(R7844 ONLY)		
R3194	311-1592-00			RES.,VAR,NONWIR:2.5K OHM X 1M OHM,20%,0.50W	01121	14M414
	----- -----			(7844 ONLY,FURN AS A UNIT WITH R3196)		
R3194	311-0994-00			RES.,VAR,NONWIR:2.5K OHM,10%,0.50W	01121	WA1G048S252UA
	----- -----			(R7844 ONLY)		
R3195	311-1592-00			RES.,VAR,NONWIR:2.5K OHM X 1M OHM,20%,0.50W	01121	14M414
	----- -----			(7844 ONLY,FURN AS A UNIT WITH R3193)		
R3195	311-0382-00			RES.,VAR,NONWIR:1M OHM,20%	11237	300SF-41158
	----- -----			(R7844 ONLY)		
R3196	311-1592-00			RES.,VAR,NONWIR:2.5K OHM X 1M OHM,20%,0.50W	01121	14M414
	----- -----			(7844 ONLY,FURN AS A UNIT WITH R3194)		
R3196	311-0382-00			RES.,VAR,NONWIR:1M OHM,20%	11237	300SF-41158
	----- -----			(R7844 ONLY)		
R3198	315-0271-00			RES.,FXD,CMPSN:270 OHM,5%,0.25W	01121	CB2715
R3199	315-0271-00			RES.,FXD,CMPSN:270 OHM,5%,0.25W	01121	CB2715
R3601	321-1647-07			RES.,FXD,FILM:51.4K OHM,0.1%,0.125W	91637	MFF1816C51R40B

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R3604	321-0138-00			RES.,FXD,FILM:267 OHM,1%,0.125W	91637	MFF1816G267R0F
R3605	321-0138-00			RES.,FXD,FILM:267 OHM,1%,0.125W	91637	MFF1816G267R0F
R3611	321-1647-07			RES.,FXD,FILM:51.4K OHM,0.1%,0.125W	91637	MFF1816C51R40B
R3614	321-0140-00			RES.,FXD,FILM:280 OHM,1%,0.125W	91637	MFF1816G280R0F
R3615	325-0053-00			RES.,FXD,FILM:50 OHM,1%,0.05W	03888	PME50C50R00F
R3616	325-0053-00			RES.,FXD,FILM:50 OHM,1%,0.05W	03888	PME50C50R00F
R3617	321-0140-00			RES.,FXD,FILM:280 OHM,1%,0.125W	91637	MFF1816G280R0F
R3618	317-0161-00	B010100	B049999	RES.,FXD,CMPSN:160 OHM,5%,0.125W	01121	BB1615
	----- -----			(7844 ONLY)		
R3618	317-0131-00	B050000		RES.,FXD,CMPSN:130 OHM,5%,0.125W	01121	BB1315
	----- -----			(7844 ONLY)		
R3618	317-0161-00	B010100	B039999	RES.,FXD,CMPSN:160 OHM,5%,0.125W	01121	BB1615
	----- -----			(R7844 ONLY)		
R3618	317-0131-00	B040000		RES.,FXD,CMPSN:130 OHM,5%,0.125W	01121	BB1315
	----- -----			(R7844 ONLY)		
R3619	311-1261-00			RES.,VAR,NONWIR:500 OHM,10%,0.50W	32997	3329P-L58-501
R3620	317-0510-00	B010100	B049999	RES.,FXD,CMPSN:51 OHM,5%,0.125W	01121	BB5105
	----- -----			(7844 ONLY)		
	----- -----			(NOMINAL VALUE,SELECTED)		
R3620	311-1259-00	B050000		RES.,VAR,NONWIR:100 OHM,10%,0.50W	32997	3329P-L58-101
	----- -----			(7844 ONLY)		
R3620	317-0510-00	B010100	B039999	RES.,FXD,CMPSN:51 OHM,5%,0.125W	01121	BB5105
	----- -----			(R7844 ONLY)		
	----- -----			(NOMINAL VALUE,SELECTED)		
R3620	311-1259-00	B040000		RES.,VAR,NONWIR:100 OHM,10%,0.50W	32997	3329P-L58-101
	----- -----			(R7844 ONLY)		
R3621	315-0821-00			RES.,FXD,CMPSN:820 OHM,5%,0.25W	01121	CB8215
R3622	315-0122-00			RES.,FXD,CMPSN:1.2K OHM,5%,0.25W	01121	CB1225
R3623	321-0116-00			RES.,FXD,FILM:158 OHM,1%,0.125W	91637	MFF1816G158R0F
R3624	321-0116-00			RES.,FXD,FILM:158 OHM,1%,0.125W	91637	MFF1816G158R0F
R3625	317-0240-00	XB050000		RES.,FXD,CMPSN:24 OHM,5%,0.125W	01121	BB2405
	----- -----			(7844 ONLY)		
R3625	317-0240-00	XB040000		RES.,FXD,CMPSN:24 OHM,5%,0.125W	01121	BB2405
	----- -----			(R7844 ONLY)		
R3630	315-0821-00			RES.,FXD,CMPSN:820 OHM,5%,0.25W	01121	CB8215
R3631	321-0116-00			RES.,FXD,FILM:158 OHM,1%,0.125W	91637	MFF1816G158R0F
R3632	321-0116-00			RES.,FXD,FILM:158 OHM,1%,0.125W	91637	MFF1816G158R0F
R3634	323-0066-00			RES.,FXD,FILM:47.5 OHM,1%,0.50W	75042	CECT0-47R50F
R3637	317-0100-00			RES.,FXD,CMPSN:10 OHM,5%,0.125W	01121	BB1005
R3638	325-0037-00			RES.,FXD,FILM:100 OHM,1%,0.05W	14298	RE1/8 C-A +/-1%
R3639	325-0037-00			RES.,FXD,FILM:100 OHM,1%,0.05W	14298	RE1/8 C-A +/-1%
R3640	315-0201-00	B010100	B049999	RES.,FXD,CMPSN:200 OHM,5%,0.25W	01121	CB2015
	----- -----			(7844 ONLY)		
R3640	317-0201-00	B050000		RES.,FXD,CMPSN:200 OHM,5%,0.125W	01121	BB2015
	----- -----			(7844 ONLY)		
R3640	315-0201-00	B010100	B039999	RES.,FXD,CMPSN:200 OHM,5%,0.25W	01121	CB2015
	----- -----			(R7844 ONLY)		
R3640	317-0201-00	B040000		RES.,FXD,CMPSN:200 OHM,5%,0.125W	01121	BB2015
	----- -----			(R7844 ONLY)		
R3641	315-0102-00			RES.,FXD,CMPSN:1K OHM,5%,0.25W	01121	CB1025
R3642	315-0131-00	B010100	B010148	RES.,FXD,CMPSN:130 OHM,5%,0.25W	01121	CB1315
	----- -----			(7844 ONLY)		
R3642	315-0221-00	B010149	B049999	RES.,FXD,CMPSN:220 OHM,5%,0.25W	01121	CB2215
	----- -----			(7844 ONLY)		
R3642	317-0221-00	B050000		RES.,FXD,CMPSN:220 OHM,5%,0.125W	01121	BB2215
	----- -----			(7844 ONLY)		
R3642	315-0221-00	B010100	B039999	RES.,FXD,CMPSN:220 OHM,5%,0.25W	01121	CB2215
	----- -----			(R7844 ONLY)		

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R3642	317-0221-00	B040000		RES.,FXD,CMPSN:220 OHM,5%,0.125W	01121	BB2215
	----- -----			(R7844 ONLY)		
R3644	315-0131-00	B010100	B029999	RES.,FXD,CMPSN:130 OHM,5%,0.25W	01121	CB1315
	----- -----			(7844 ONLY)		
R3644	315-0111-00	B030000		RES.,FXD,CMPSN:110 OHM,5%,0.25W	01121	CB1115
	----- -----			(7844 ONLY)		
R3644	315-0131-00	B010100	B019999	RES.,FXD,CMPSN:130 OHM,5%,0.25W	01121	CB1315
	----- -----			(R7844 ONLY)		
R3644	315-0111-00	B020000		RES.,FXD,CMPSN:110 OHM,5%,0.25W	01121	CB1115
	----- -----			(R7844 ONLY)		
R3646	315-0201-00	B010100	B010148	RES.,FXD,CMPSN:200 OHM,5%,0.25W	01121	CB2015
R3646	315-0271-00	B010149		RES.,FXD,CMPSN:270 OHM,5%,0.25W	01121	CB2715
R3660	325-0053-00			RES.,FXD,FILM:50 OHM,1%,0.05W	03888	PME50C50R00F
R3661	317-0240-00	XB050000		RES.,FXD,CMPSN:24 OHM,5%,0.125W	01121	BB2405
	----- -----			(7844 ONLY)		
R3661	317-0240-00	XB040000		RES.,FXD,CMPSN:24 OHM,5%,0.125W	01121	BB2405
	----- -----			(R7844 ONLY)		
R3662	325-0053-00			RES.,FXD,FILM:50 OHM,1%,0.05W	03888	PME50C50R00F
R3663	317-0161-00	B010100	B049999	RES.,FXD,CMPSN:160 OHM,5%,0.125W	01121	BB1615
	----- -----			(7844 ONLY)		
R3663	317-0131-00	B050000		RES.,FXD,CMPSN:130 OHM,5%,0.125W	01121	BB1315
	----- -----			(7844 ONLY)		
R3663	317-0161-00	B010100	B039999	RES.,FXD,CMPSN:160 OHM,5%,0.125W	01121	BB1615
	----- -----			(R7844 ONLY)		
R3663	317-0131-00	B040000		RES.,FXD,CMPSN:130 OHM,5%,0.125W	01121	BB1315
	----- -----			(R7844 ONLY)		
R3664	311-1261-00			RES.,VAR,NONWIR:500 OHM,10%,0.50W	32997	3329P-L58-501
R3665	317-0510-00	B010100	B049999	RES.,FXD,CMPSN:51 OHM,5%,0.125W	01121	BB5105
	----- -----			(7844 ONLY)		
	----- -----			(NOMINAL VALUE,SELECTED)		
R3665	311-1259-00	B050000		RES.,VAR,NONWIR:100 OHM,10%,0.50W	32997	3329P-L58-101
	----- -----			(7844 ONLY)		
R3665	317-0510-00	B010100	B039999	RES.,FXD,CMPSN:51 OHM,5%,0.125W	01121	BB5105
	----- -----			(R7844 ONLY)		
	----- -----			(NOMINAL VALUE,SELECTED)		
R3665	311-1259-00	B040000		RES.,VAR,NONWIR:100 OHM,10%,0.50W	32997	3329P-L58-101
	----- -----			(R7844 ONLY)		
R3666	315-0821-00			RES.,FXD,CMPSN:820 OHM,5%,0.25W	01121	CB8215
R3667	315-0122-00			RES.,FXD,CMPSN:1.2K OHM,5%,0.25W	01121	CB1225
R3668	321-0116-00			RES.,FXD,FILM:158 OHM,1%,0.125W	91637	MFF1816G158R0F
R3670	321-0116-00			RES.,FXD,FILM:158 OHM,1%,0.125W	91637	MFF1816G158R0F
R3676	315-0821-00			RES.,FXD,CMPSN:820 OHM,5%,0.25W	01121	CB8215
R3678	321-0116-00			RES.,FXD,FILM:158 OHM,1%,0.125W	91637	MFF1816G158R0F
R3680	321-0116-00			RES.,FXD,FILM:158 OHM,1%,0.125W	91637	MFF1816G158R0F
R3682	323-0066-00			RES.,FXD,FILM:47.5 OHM,1%,0.50W	75042	CECT0-47R50F
R3686	325-0037-00			RES.,FXD,FILM:100 OHM,1%,0.05W	14298	RE1/8 C-A +/-1%
R3687	317-0100-00			RES.,FXD,CMPSN:10 OHM,5%,0.125W	01121	BB1005
	----- -----			(NOMINAL VALUE,SELECTED)		
R3688	325-0037-00			RES.,FXD,FILM:100 OHM,1%,0.05W	14298	RE1/8 C-A +/-1%
R3690	315-0201-00			RES.,FXD,CMPSN:200 OHM,5%,0.25W	01121	CB2015
R3691	315-0102-00			RES.,FXD,CMPSN:1K OHM,5%,0.25W	01121	CB1025
R3692	315-0131-00	B010100	B010148	RES.,FXD,CMPSN:130 OHM,5%,0.25W	01121	CB1315
R3692	315-0221-00	B010149		RES.,FXD,CMPSN:220 OHM,5%,0.25W	01121	CB2215
R3694	315-0131-00	B010100	B029999	RES.,FXD,CMPSN:130 OHM,5%,0.25W	01121	CB1315
	----- -----			(7844 ONLY)		
R3694	315-0111-00	B030000	B049999	RES.,FXD,CMPSN:110 OHM,5%,0.25W	01121	CB1115
	----- -----			(7844 ONLY)		

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R3694	317-0111-00	B050000		RES.,FXD,CMPSN:110 OHM,5%,0.125W	01121	BB1115
	----- -----			(7844 ONLY)		
	----- -----			(NOMINAL VALUE,SELECTED)		
R3694	315-0131-00	B010100	B019999	RES.,FXD,CMPSN:130 OHM,5%,0.25W	01121	CB1315
	----- -----			(R7844 ONLY)		
R3694	315-0111-00	B020000	B039999	RES.,FXD,CMPSN:110 OHM,5%,0.25W	01121	CB1115
	----- -----			(R7844 ONLY)		
R3694	317-0111-00	B040000		RES.,FXD,CMPSN:110 OHM,5%,0.125W	01121	BB1115
	----- -----			(R7844 ONLY)		
	----- -----			(NOMINAL VALUE,SELECTED)		
R3696	315-0201-00	B010100	B010148	RES.,FXD,CMPSN:200 OHM,5%,0.25W	01121	CB2015
	----- -----			(7844 ONLY)		
R3696	315-0271-00	B010149	B049999	RES.,FXD,CMPSN:270 OHM,5%,0.25W	01121	CB2715
	----- -----			(7844 ONLY)		
R3696	317-0271-00	B050000		RES.,FXD,CMPSN:270 OHM,5%,0.125W	01121	BB2715
	----- -----			(7844 ONLY)		
	----- -----			(NOMINAL VALUE,SELECTED)		
R3696	315-0271-00	B010100	B039999	RES.,FXD,CMPSN:270 OHM,5%,0.25W	01121	CB2715
R3696	----- -----			(R7844 ONLY)		
R3696	317-0271-00	B040000		RES.,FXD,CMPSN:270 OHM,5%,0.125W	01121	BB2715
	----- -----			(R7844 ONLY)		
	----- -----			(NOMINAL VALUE,SELECTED)		
R3697	308-0584-00			RES.,FXD,WW:20 OHM,0.5%,5W	91637	RS5-K20R00D
R3701	321-1647-07			RES.,FXD,FILM:51.4K OHM,0.1%,0.125W	91637	MFF1816C51R40B
R3704	321-0138-00			RES.,FXD,FILM:267 OHM,1%,0.125W	91637	MFF1816G267R0F
R3705	321-0138-00			RES.,FXD,FILM:267 OHM,1%,0.125W	91637	MFF1816G267R0F
R3711	321-1647-07			RES.,FXD,FILM:51.4K OHM,0.1%,0.125W	91637	MFF1816C51R40B
R3714	321-0140-00			RES.,FXD,FILM:280 OHM,1%,0.125W	91637	MFF1816G280R0F
R3715	325-0053-00			RES.,FXD,FILM:50 OHM,1%,0.05W	03888	PME50C50R00F
R3716	325-0053-00			RES.,FXD,FILM:50 OHM,1%,0.05W	03888	PME50C50R00F
R3717	321-0140-00			RES.,FXD,FILM:280 OHM,1%,0.125W	91637	MFF1816G280R0F
R3718	317-0161-00	B010100	B049999X	RES.,FXD,CMPSN:160 OHM,5%,0.125W	01121	BB1615
	----- -----			(7844 ONLY)		
R3718	317-0161-00	B010100	B039999X	RES.,FXD,CMPSN:160 OHM,5%,0.125W	01121	BB1615
	----- -----			(R7844 ONLY)		
R3719	317-0161-00	B010100	B049999	RES.,FXD,CMPSN:160 OHM,5%,0.125W	01121	BB1615
	----- -----			(7844 ONLY)		
R3719	317-0301-00	B050000		RES.,FXD,CMPSN:300 OHM,5%,0.125W	01121	BB3015
	----- -----			(7844 ONLY)		
R3719	317-0161-00	B010100	B039999	RES.,FXD,CMPSN:160 OHM,5%,0.125W	01121	BB1615
	----- -----			(R7844 ONLY)		
R3719	317-0301-00	B040000		RES.,FXD,CMPSN:300 OHM,5%,0.125W	01121	BB3015
	----- -----			(R7844 ONLY)		
R3720	317-0510-00	B010100	B049999	RES.,FXD,CMPSN:51 OHM,5%,0.125W	01121	BB5105
	----- -----			(7844 ONLY)		
R3720	311-1259-00	B050000		RES.,VAR,NONWIR:100 OHM,10%,0.50W	32997	3329P-L58-101
	----- -----			(7844 ONLY)		
R3720	317-0510-00	B010100	B039999	RES.,FXD,CMPSN:51 OHM,5%,0.125W	01121	BB5105
	----- -----			(R7844 ONLY)		
R3720	311-1259-00	B040000		RES.,VAR,NONWIR:100 OHM,10%,0.50W	32997	3329P-L58-101
	----- -----			(R7844 ONLY)		
R3721	315-0821-00			RES.,FXD,CMPSN:820 OHM,5%,0.25W	01121	CB8215
R3722	315-0122-00			RES.,FXD,CMPSN:1.2K OHM,5%,0.25W	01121	CB1225
R3723	321-0116-00			RES.,FXD,FILM:158 OHM,1%,0.125W	91637	MFF1816G158R0F
R3724	321-0116-00			RES.,FXD,FILM:158 OHM,1%,0.125W	91637	MFF1816G158R0F
R3725	317-0240-00	XB050000		RES.,FXD,CMPSN:24 OHM,5%,0.125W	01121	BB2405
	----- -----			(7844 ONLY)		
R3725	317-0240-00	XB040000		RES.,FXD,CMPSN:24 OHM,5%,0.125W	01121	BB2405
	----- -----			**(R7844 ONLY)**		

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R3730	315-0821-00			RES.,FXD,CMPSN:820 OHM,5%,0.25W	01121	CB8215
R3731	321-0116-00			RES.,FXD,FILM:158 OHM,1%,0.125W	91637	MFF1816G158R0F
R3732	321-0116-00			RES.,FXD,FILM:158 OHM,1%,0.125W	91637	MFF1816G158R0F
R3734	323-0066-00			RES.,FXD,FILM:47.5 OHM,1%,0.50W	75042	CECT0-47R50F
R3735	308-0756-00			RES.,FXD,WW:100 OHM,1%,3W	91637	RS2B-B100R0F
R3736	315-0180-00			RES.,FXD,CMPSN:18 OHM,5%,0.25W	01121	CB1805
R3737	317-0100-00			RES.,FXD,CMPSN:10 OHM,5%,0.125W	01121	BB1005
R3738	325-0037-00			RES.,FXD,FILM:100 OHM,1%,0.05W	14298	RE1/8 C-A +/-1%
R3739	325-0037-00			RES.,FXD,FILM:100 OHM,1%,0.05W	14298	RE1/8 C-A +/-1%
R3740	315-0201-00			RES.,FXD,CMPSN:200 OHM,5%,0.25W	01121	CB2015
R3741	315-0102-00			RES.,FXD,CMPSN:1K OHM,5%,0.25W	01121	CB1025
R3742	315-0131-00	B010100	B010148	RES.,FXD,CMPSN:130 OHM,5%,0.25W	01121	CB1315
R3742	315-0221-00	B010149		RES.,FXD,CMPSN:220 OHM,5%,0.25W	01121	CB2215
R3744	315-0131-00	B010100	B029999	RES.,FXD,CMPSN:130 OHM,5%,0.25W	01121	CB1315
	----- -----			(7844 ONLY)		
R3744	315-0111-00	B030000	B049999	RES.,FXD,CMPSN:110 OHM,5%,0.25W	01121	CB1115
	----- -----			(7844 ONLY)		
R3744	317-0111-00	B050000		RES.,FXD,CMPSN:110 OHM,5%,0.125W	01121	BB1115
	----- -----			(7844 ONLY)		
R3744	315-0131-00	B010100	B019999	RES.,FXD,CMPSN:130 OHM,5%,0.25W	01121	CB1315
	----- -----			(R7844 ONLY)		
R3744	315-0111-00	B020000	B039999	RES.,FXD,CMPSN:110 OHM,5%,0.25W	01121	CB1115
	----- -----			(R7844 ONLY)		
R3744	317-0111-00	B040000		RES.,FXD,CMPSN:110 OHM,5%,0.125W	01121	BB1115
	----- -----			(R7844 ONLY)		
R3746	315-0201-00	B010100	B010148	RES.,FXD,CMPSN:200 OHM,5%,0.25W	01121	CB2015
	----- -----			(7844 ONLY)		
R3746	315-0271-00	B010149	B049999	RES.,FXD,CMPSN:270 OHM,5%,0.25W	01121	CB2715
	----- -----			(7844 ONLY)		
R3746	317-0271-00	B050000		RES.,FXD,CMPSN:270 OHM,5%,0.125W	01121	BB2715
	----- -----			(7844 ONLY)		
R3746	315-0271-00	B010100	B039999	RES.,FXD,CMPSN:270 OHM,5%,0.25W	01121	CB2715
	----- -----			(R7844 ONLY)		
R3746	317-0271-00	B040000		RES.,FXD,CMPSN:270 OHM,5%,0.125W	01121	BB2715
	----- -----			(R7844 ONLY)		
R3748	315-0332-00			RES.,FXD,CMPSN:3.3K OHM,5%,0.25W	01121	CB3325
R3760	325-0053-00			RES.,FXD,FILM:50 OHM,1%,0.05W	03888	PME50C50R00F
R3761	317-0240-00	XB050000		RES.,FXD,CMPSN:24 OHM,5%,0.125W	01121	BB2405
	----- -----			(7844 ONLY)		
R3761	317-0240-00	XB040000		RES.,FXD,CMPSN:24 OHM,5%,0.125W	01121	BB2405
	----- -----			(R7844 ONLY)		
R3762	325-0053-00			RES.,FXD,FILM:50 OHM,1%,0.05W	03888	PME50C50R00F
R3763	317-0161-00	B010100	B049999X	RES.,FXD,CMPSN:160 OHM,5%,0.125W	01121	BB1615
	----- -----			(7844 ONLY)		
R3763	317-0161-00	B010100	B039999X	RES.,FXD,CMPSN:160 OHM,5%,0.125W	01121	BB1615
	----- -----			(R7844 ONLY)		
R3764	317-0161-00	B010100	B049999	RES.,FXD,CMPSN:160 OHM,5%,0.125W	01121	BB1615
	----- -----			(7844 ONLY)		
R3764	317-0301-00	B050000		RES.,FXD,CMPSN:300 OHM,5%,0.125W	01121	BB3015
	----- -----			(7844 ONLY)		
R3764	317-0161-00	B010100	B039999	RES.,FXD,CMPSN:160 OHM,5%,0.125W	01121	BB1615
	----- -----			(R7844 ONLY)		
R3764	317-0301-00	B040000		RES.,FXD,CMPSN:300 OHM,5%,0.125W	01121	BB3015
	----- -----			(R7844 ONLY)		
R3765	317-0510-00	B010100	B049999	RES.,FXD,CMPSN:51 OHM,5%,0.125W	01121	BB5105
	----- -----			(7844 ONLY)		
	----- -----			**(NOMINAL VALUE,SELECTED)**		

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R3765	311-1259-00	B050000		RES.,VAR,NONWIR:100 OHM,10%,0.50W	32997	3329P-L58-101
	----- -----			(7844 ONLY)		
R3765	317-0510-00	B010100	B039999	RES.,FXD,CMPSN:51 OHM,5%,0.125W	01121	BB5105
	----- -----			(R7844 ONLY)		
	----- -----			(NOMINAL VALUE,SELECTED)		
R3765	311-1259-00	B040000		RES.,VAR,NONWIR:100 OHM,10%,0.50W	32997	3329P-L58-101
	----- -----			(R7844 ONLY)		
R3766	315-0821-00			RES.,FXD,CMPSN:820 OHM,5%,0.25W	01121	CB8215
R3767	315-0122-00			RES.,FXD,CMPSN:1.2K OHM,5%,0.25W	01121	CB1225
R3768	321-0116-00			RES.,FXD,FILM:158 OHM,1%,0.125W	91637	MFF1816G158R0F
R3770	321-0116-00			RES.,FXD,FILM:158 OHM,1%,0.125W	91637	MFF1816G158R0F
R3776	315-0821-00			RES.,FXD,CMPSN:820 OHM,5%,0.25W	01121	CB8215
R3778	321-0116-00			RES.,FXD,FILM:158 OHM,1%,0.125W	91637	MFF1816G158R0F
R3780	321-0116-00			RES.,FXD,FILM:158 OHM,1%,0.125W	91637	MFF1816G158R0F
R3782	323-0066-00			RES.,FXD,FILM:47.5 OHM,1%,0.50W	75042	CECT0-47R50F
R3783	308-0239-00			RES.,FXD,WW:84 OHM,1%,3W	91637	RS2B-B84R00F
R3784	321-0186-00			RES.,FXD,FILM:845 OHM,1%,0.125W	91637	MFF1816G845R0F
R3785	321-0129-00			RES.,FXD,FILM:215 OHM,1%,0.125W	91637	MFF1816G215R0F
R3786	325-0037-00			RES.,FXD,FILM:100 OHM,1%,0.05W	14298	RE1/8 C-A +/-1%
R3787	317-0100-00			RES.,FXD,CMPSN:10 OHM,5%,0.125W	01121	BB1005
R3788	325-0037-00			RES.,FXD,FILM:100 OHM,1%,0.05W	14298	RE1/8 C-A +/-1%
R3789	315-0100-00			RES.,FXD,CMPSN:10 OHM,5%,0.25W	01121	CB1005
R3790	315-0201-00	B010100	B049999	RES.,FXD,CMPSN:200 OHM,5%,0.25W	01121	CB2015
	----- -----			(7844 ONLY)		
R3790	317-0201-00	B050000		RES.,FXD,CMPSN:200 OHM,5%,0.125W	01121	BB2015
	----- -----			(7844 ONLY)		
R3790	315-0201-00	B010100	B039999	RES.,FXD,CMPSN:200 OHM,5%,0.25W	01121	CB2015
	----- -----			(R7844 ONLY)		
R3790	317-0201-00	B040000		RES.,FXD,CMPSN:200 OHM,5%,0.125W	01121	BB2015
	----- -----			(R7844 ONLY)		
R3791	315-0102-00			RES.,FXD,CMPSN:1K OHM,5%,0.25W	01121	CB1025
R3792	315-0131-00	B010100	B010148	RES.,FXD,CMPSN:130 OHM,5%,0.25W	01121	CB1315
	----- -----			(7844 ONLY)		
R3792	315-0221-00	B010149	B049999	RES.,FXD,CMPSN:220 OHM,5%,0.25W	01121	CB2215
	----- -----			(7844 ONLY)		
R3792	317-0221-00	B050000		RES.,FXD,CMPSN:220 OHM,5%,0.125W	01121	BB2215
	----- -----			(7844 ONLY)		
R3792	315-0221-00	B010100	B039999	RES.,FXD,CMPSN:220 OHM,5%,0.25W	01121	CB2215
	----- -----			(R7844 ONLY)		
R3792	317-0221-00	B040000		RES.,FXD,CMPSN:220 OHM,5%,0.125W	01121	BB2215
	----- -----			(R7844 ONLY)		
R3794	315-0131-00	B010100	B029999	RES.,FXD,CMPSN:130 OHM,5%,0.25W	01121	CB1315
	----- -----			(7844 ONLY)		
R3794	315-0111-00	B030000		RES.,FXD,CMPSN:110 OHM,5%,0.25W	01121	CB1115
	----- -----			(7844 ONLY)		
R3794	315-0131-00	B010100	B019999	RES.,FXD,CMPSN:130 OHM,5%,0.25W	01121	CB1315
	----- -----			(R7844 ONLY)		
R3794	315-0111-00	B020000		RES.,FXD,CMPSN:110 OHM,5%,0.25W	01121	CB1115
	----- -----			(R7844 ONLY)		
R3795	315-0152-00			RES.,FXD,CMPSN:1.5K OHM,5%,0.25W	01121	CB1525
R3796	315-0201-00	B010100	B010148	RES.,FXD,CMPSN:200 OHM,5%,0.25W	01121	CB2015
R3796	315-0271-00	B010149		RES.,FXD,CMPSN:270 OHM,5%,0.25W	01121	CB2715
R3797	315-0222-00	XB050000		RES.,FXD,CMPSN:2.2K OHM,5%,0.25W	01121	CB2225
	----- -----			(7844 ONLY)		
R3797	315-0222-00	XB040000		RES.,FXD,CMPSN:2.2K OHM,5%,0.25W	01121	CB2225
	----- -----			(R7844 ONLY)		

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R3798	315-0332-00			RES.,FXD,CMPSN:3.3K OHM,5%,0.25W	01121	CB3325
R4102	315-0102-00			RES.,FXD,CMPSN:1K OHM,5%,0.25W	01121	CB1025
	----- -----			(R4102, OPTION 22 ONLY)		
R4103	315-0332-00			RES.,FXD,CMPSN:3.3K OHM,5%,0.25W	01121	CB3325
	----- -----			(R4103, OPTION 22 ONLY)		
R4104	315-0243-00			RES.,FXD,CMPSN:24K OHM,5%,0.25W	01121	CB2435
	----- -----			(R4104, OPTION 22 ONLY)		
R4106	315-0103-00			RES.,FXD,CMPSN:10K OHM,5%,0.25W	01121	CB1035
	----- -----			(R4106, OPTION 22 ONLY)		
R4107	315-0682-00			RES.,FXD,CMPSN:6.8K OHM,5%,0.25W	01121	CB6825
	----- -----			(R4107, OPTION 22 ONLY)		
R4109	315-0333-00			RES.,FXD,CMPSN:33K OHM,5%,0.25W	01121	CB3335
	----- -----			(R4109, OPTION 22 ONLY)		
R4110	315-0103-00			RES.,FXD,CMPSN:10K OHM,5%,0.25W	01121	CB1035
	----- -----			(R4110, OPTION 22 ONLY)		
R4112	315-0512-00			RES.,FXD,CMPSN:5.1K OHM,5%,0.25W	01121	CB5125
	----- -----			(R4112, OPTION 22 ONLY)		
R4115	315-0472-00			RES.,FXD,CMPSN:4.7K OHM,5%,0.25W	01121	CB4725
	----- -----			(R4115, OPTION 22 ONLY)		
R4116	315-0273-00			RES.,FXD,CMPSN:27K OHM,5%,0.25W	01121	CB2735
	----- -----			(R4116, OPTION 22 ONLY)		
R4119	315-0331-00			RES.,FXD,CMPSN:330 OHM,5%,0.25W	01121	CB3315
	----- -----			(R4119, OPTION 22 ONLY)		
R4120	315-0153-00			RES.,FXD,CMPSN:15K OHM,5%,0.25W	01121	CB1535
	----- -----			(R4120, OPTION 22 ONLY)		
R4123	315-0123-00			RES.,FXD,CMPSN:12K OHM,5%,0.25W	01121	CB1235
	----- -----			(R4123, OPTION 22 ONLY)		
R4125	315-0103-00			RES.,FXD,CMPSN:10K OHM,5%,0.25W	01121	CB1035
	----- -----			(R4125, OPTION 22 ONLY)		
R4130	315-0472-00			RES.,FXD,CMPSN:4.7K OHM,5%,0.25W	01121	CB4725
	----- -----			(R4130, OPTION 22 ONLY)		
R4134	315-0472-00			RES.,FXD,CMPSN:4.7K OHM,5%,0.25W	01121	CB4725
	----- -----			(R4134, OPTION 22 ONLY)		
R4135	315-0273-00			RES.,FXD,CMPSN:27K OHM,5%,0.25W	01121	CB2735
	----- -----			(R4135, OPTION 22 ONLY)		
R4140	315-0103-00			RES.,FXD,CMPSN:10K OHM,5%,0.25W	01121	CB1035
	----- -----			(R4140, OPTION 22 ONLY)		
R4142	315-0512-00			RES.,FXD,CMPSN:5.1K OHM,5%,0.25W	01121	CB5125
	----- -----			(R4142, OPTION 22 ONLY)		
R4143	315-0362-00			RES.,FXD,CMPSN:3.6K OHM,5%,0.25W	01121	CB3625
	----- -----			(R4143, OPTION 22 ONLY)		
R4145	315-0391-00	B010100	B109999	RES.,FXD,CMPSN:390 OHM,5%,0.25W	01121	CB3915
	----- -----			(OPTION 22 ONLY)		
R4145	315-0301-00	B110000		RES.,FXD,CMPSN:300 OHM,5%,0.25W	01121	CB3015
	----- -----			(OPTION 22 ONLY)		
R4147	315-0332-00			RES.,FXD,CMPSN:3.3K OHM,5%,0.25W	01121	CB3325
	----- -----			(R4147, OPTION 22 ONLY)		
R4149	315-0153-00			RES.,FXD,CMPSN:15K OHM,5%,0.25W	01121	CB1535
	----- -----			(R4149, OPTION 22 ONLY)		
R4153	315-0122-00			RES.,FXD,CMPSN:1.2K OHM,5%,0.25W	01121	CB1225
	----- -----			(R4153, OPTION 22 ONLY)		
R4154	315-0302-00			RES.,FXD,CMPSN:3K OHM,5%,0.25W	01121	CB3025
	----- -----			(R4154, OPTION 22 ONLY)		
R4155	315-0202-00			RES.,FXD,CMPSN:2K OHM,5%,0.25W	01121	CB2025
	----- -----			(R4155, OPTION 22 ONLY)		
R4157	315-0822-00			RES.,FXD,CMPSN:8.2K OHM,5%,0.25W	01121	CB8225
	----- -----			(R4157, OPTION 22 ONLY)		

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R4158	315-0681-00			RES.,FXD,CMPSN:680 OHM,5%,0.25W (R4158, OPTION 22 ONLY)	01121	CB6815
R4159	321-0285-00			RES.,FXD,FILM:9.09K OHM,1%,0.125W (R4159, OPTION 22 ONLY)	91637	MFF1816G90900F
R4161	321-0277-00			RES.,FXD,FILM:7.5K OHM,1%,0.125W (R4161, OPTION 22 ONLY)	91637	MFF1816G75000F
R4164	301-0122-00			RES.,FXD,CMPSN:1.2K OHM,5%,0.50W (R4164, OPTION 22 ONLY)	01121	EB1225
R4165	315-0123-00			RES.,FXD,CMPSN:12K OHM,5%,0.25W (R4165, OPTION 22 ONLY)	01121	CB1235
R4167	315-0822-00			RES.,FXD,CMPSN:8.2K OHM,5%,0.25W (R4167, OPTION 22 ONLY)	01121	CB8225
R4168	315-0681-00			RES.,FXD,CMPSN:680 OHM,5%,0.25W (R4168, OPTION 22 ONLY)	01121	CB6815
R4169	321-0285-00			RES.,FXD,FILM:9.09K OHM,1%,0.125W (R4169, OPTION 22 ONLY)	91637	MFF1816G90900F
R4171	321-0277-00			RES.,FXD,FILM:7.5K OHM,1%,0.125W (R4171, OPTION 22 ONLY)	91637	MFF1816G75000F
R4174	301-0122-00			RES.,FXD,CMPSN:1.2K OHM,5%,0.50W (R4174, OPTION 22 ONLY)	01121	EB1225
R4180	315-0153-00	XB110000		RES.,FXD,CMPSN:15K OHM,5%,0.25W (R4180, OPTION 22 ONLY)	01121	CB1535
R4181	315-0333-00	XB110000		RES.,FXD,CMPSN:33K OHM,5%,0.25W (R4181, OPTION 22 ONLY)	01121	CB3335
R4182	315-0122-00			RES.,FXD,CMPSN:1.2K OHM,5%,0.25W (R4182, OPTION 22 ONLY)	01121	CB1225
R4196	315-0820-00			RES.,FXD,CMPSN:82 OHM,5%,0.25W (R4196, OPTION 22 ONLY)	01121	CB8205
R4802	321-0079-00	XB100000		RES.,FXD,FILM:64.9 OHM,1%,0.125W (R7844 ONLY)	91637	MFF1816G64R90F
R4802	321-0079-00	XB110000		RES.,FXD,FILM:64.9 OHM,1%,0.125W (7844 ONLY)	91637	MFF1816G64R90F
R4806	323-0168-00	XB100000		RES.,FXD,FILM:549 OHM,1%,0.50W (R7844 ONLY)	75042	CECT0-5490F
R4806	323-0168-00	XB110000		RES.,FXD,FILM:549 OHM,1%,0.50W (7844 ONLY)	75042	CECT0-5490F
R4807	315-0223-00	XB100000		RES.,FXD,CMPSN:22K OHM,5%,0.25W (R7844 ONLY)	01121	CB2235
R4807	315-0223-00	XB110000		RES.,FXD,CMPSN:22K OHM,5%,0.25W (7844 ONLY)	01121	CB2235
R4810	321-0207-00	XB100000		RES.,FXD,FILM:1.4K OHM,1%,0.125W (R7844 ONLY)	91637	MFF1816G14000F
R4810	321-0207-00	XB110000		RES.,FXD,FILM:1.4K OHM,1%,0.125W (7844 ONLY)	91637	MFF1816G14000F
R4811	321-0253-00	XB100000		RES.,FXD,FILM:4.22K OHM,1%,0.125W (R7844 ONLY)	91637	MFF1816G42200F
R4811	321-0253-00	XB110000		RES.,FXD,FILM:4.22K OHM,1%,0.125W (7844 ONLY)	91637	MFF1816G42200F
R4812	323-0168-00	XB100000		RES.,FXD,FILM:549 OHM,1%,0.50W (R7844 ONLY)	75042	CECT0-5490F
R4812	323-0168-00	XB110000		RES.,FXD,FILM:549 OHM,1%,0.50W (7844 ONLY)	75042	CECT0-5490F
R4814	321-0079-00	XB100000		RES.,FXD,FILM:64.9 OHM,1%,0.125W (R7844 ONLY)	91637	MFF1816G64R90F
R4814	321-0079-00	XB110000		RES.,FXD,FILM:64.9 OHM,1%,0.125W (7844 ONLY)	91637	MFF1816G64R90F
R4815	321-0287-00	XB100000		RES.,FXD,FILM:9.53K OHM,1%,0.125W (R7844 ONLY)	91637	MFF1816G95300F

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R4815	321-0287-00	XB110000		RES.,FXD,FILM:9.53K OHM,1%,0.125W (7844 ONLY)	91637	MFF1816G95300F
R4816	311-1225-00	XB100000		RES.,VAR,NONWIR:1K OHM,20%,0.50W (R7844 ONLY)	32997	3386F-T04-102
R4816	311-1225-00	XB110000		RES.,VAR,NONWIR:1K OHM,20%,0.50W (7844 ONLY)	32997	3386F-T04-102
R4818	321-0205-00	XB100000		RES.,FXD,FILM:1.33K OHM,1%,0.125W (R7844 ONLY)	91637	MFF1816G13300F
R4818	321-0205-00	XB110000		RES.,FXD,FILM:1.33K OHM,1%,0.125W (7844 ONLY)	91637	MFF1816G13300F
R4819	321-0124-00	XB100000		RES.,FXD,FILM:191 OHM,1%,0.125W (R7844 ONLY)	91637	MFF1816G191R0F
R4819	321-0124-00	XB110000		RES.,FXD,FILM:191 OHM,1%,0.125W (7844 ONLY)	91637	MFF1816G191R0F
R4820	311-1222-00	XB100000		RES.,VAR,NONWIR:100 OHM,20%,0.50W (R7844 ONLY)	32997	3386F-T04-101
R4820	311-1222-00	XB110000		RES.,VAR,NONWIR:100 OHM,20%,0.50W (7844 ONLY)	32997	3386F-T04-101
R4821	321-0109-00	XB100000		RES.,FXD,FILM:133 OHM,1%,0.125W (R7844 ONLY)	91637	MFF1816G133R0F
R4821	321-0109-00	XB110000		RES.,FXD,FILM:133 OHM,1%,0.125W (7844 ONLY)	91637	MFF1816G133R0F
R4823	315-0201-00	XB100000	B100453	RES.,FXD,CMPSN:200 OHM,5%,0.25W (R7844 ONLY)	01121	CB2015
R4823	315-0101-00	B100454		RES.,FXD,CMPSN:100 OHM,5%,0.25W (R7844 ONLY)	01121	CB1015
R4823	315-0201-00	XB110000	B110894	RES.,FXD,CMPSN:200 OHM,5%,0.25W (7844 ONLY)	01121	CB2015
R4823	315-0101-00	B110895		RES.,FXD,CMPSN:100 OHM,5%,0.25W (7844 ONLY)	01121	CB1015
R4824	315-0621-00	XB100000		RES.,FXD,CMPSN:620 OHM,5%,0.25W (R7844 ONLY)	01121	CB6215
R4824	315-0621-00	XB110000		RES.,FXD,CMPSN:620 OHM,5%,0.25W (7844 ONLY)	01121	CB6215
R4825	321-0830-03	XB100000		RES.,FXD,FILM:2.41K OHM,0.25%,0.125W (R7844 ONLY)	91637	MFF1816D24100C
R4825	321-0830-03	XB110000		RES.,FXD,FILM:2.41K OHM,0.25%,0.125W (7844 ONLY)	91637	MFF1816D24100C
R4826	321-0830-03	XB100000		RES.,FXD,FILM:2.41K OHM,0.25%,0.125W (R7844 ONLY)	91637	MFF1816D24100C
R4826	321-0830-03	XB110000		RES.,FXD,FILM:2.41K OHM,0.25%,0.125W (7844 ONLY)	91637	MFF1816D24100C
R4827	321-0261-00	XB100000		RES.,FXD,FILM:5.11K OHM,1%,0.125W (R7844 ONLY)	91637	MFF1816G51100F
R4827	321-0261-00	XB110000		RES.,FXD,FILM:5.11K OHM,1%,0.125W (7844 ONLY)	91637	MFF1816G51100F
R4829	315-0152-00	XB100000		RES.,FXD,CMPSN:1.5K OHM,5%,0.25W (R7844 ONLY)	01121	CB1525
R4829	315-0152-00	XB110000		RES.,FXD,CMPSN:1.5K OHM,5%,0.25W (7844 ONLY)	01121	CB1525
R4830	315-0243-00	XB100000		RES.,FXD,CMPSN:24K OHM,5%,0.25W (R7844 ONLY)	01121	CB2435
R4830	315-0243-00	XB110000		RES.,FXD,CMPSN:24K OHM,5%,0.25W (7844 ONLY)	01121	CB2435
R4832	321-0185-00	XB100000		RES.,FXD,FILM:825 OHM,1%,0.125W (R7844 ONLY)	91637	MFF1816G825R0F

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R4832	321-0185-00	XB110000		RES.,FXD,FILM:825 OHM,1%,0.125W (7844 ONLY)	91637	MFF1816G825R0F
R4833	315-0430-00	XB100000		RES.,FXD,CMPSN:43 OHM,5%,0.25W (R7844 ONLY)	01121	CB4305
R4833	315-0430-00	XB110000		RES.,FXD,CMPSN:43 OHM,5%,0.25W (7844 ONLY)	01121	CB4305
R4835	321-0192-00	XB100000		RES.,FXD,FILM:976 OHM,1%,0.125W (R7844 ONLY)	91637	MFF1816G976R0F
R4835	321-0192-00	XB110000		RES.,FXD,FILM:976 OHM,1%,0.125W (7844 ONLY)	91637	MFF1816G976R0F
R4836	321-0241-00	XB100000		RES.,FXD,FILM:3.16K OHM,1%,0.125W (R7844 ONLY)	91637	MFF1816G31600F
R4836	321-0241-00	XB110000		RES.,FXD,FILM:3.16K OHM,1%,0.125W (7844 ONLY)	91637	MFF1816G31600F
R4837	321-0192-00	XB100000		RES.,FXD,FILM:976 OHM,1%,0.125W (R7844 ONLY)	91637	MFF1816G976R0F
R4837	321-0192-00	XB110000		RES.,FXD,FILM:976 OHM,1%,0.125W (7844 ONLY)	91637	MFF1816G976R0F
R4838	321-0192-00	XB100000		RES.,FXD,FILM:976 OHM,1%,0.125W (R7844 ONLY)	91637	MFF1816G976R0F
R4838	321-0192-00	XB110000		RES.,FXD,FILM:976 OHM,1%,0.125W (7844 ONLY)	91637	MFF1816G976R0F
R4840	311-1225-00	XB100000		RES.,VAR,NONWIR:1K OHM,20%,0.50W (R7844 ONLY)	32997	3386F-T04-102
R4840	311-1225-00	XB110000		RES.,VAR,NONWIR:1K OHM,20%,0.50W (7844 ONLY)	32997	3386F-T04-102
R4841	321-0299-00	XB100000		RES.,FXD,FILM:12.7K OHM,1%,0.125W (R7844 ONLY)	91637	MFF1816G12701F
R4841	321-0299-00	XB110000		RES.,FXD,FILM:12.7K OHM,1%,0.125W (7844 ONLY)	91637	MFF1816G12701F
R4842	321-0185-00	XB100000		RES.,FXD,FILM:825 OHM,1%,0.125W (R7844 ONLY)	91637	MFF1816G825R0F
R4842	321-0185-00	XB110000		RES.,FXD,FILM:825 OHM,1%,0.125W (7844 ONLY)	91637	MFF1816G825R0F
R4843	315-0430-00	XB100000		RES.,FXD,CMPSN:43 OHM,5%,0.25W (R7844 ONLY)	01121	CB4305
R4843	315-0430-00	XB110000		RES.,FXD,CMPSN:43 OHM,5%,0.25W (7844 ONLY)	01121	CB4305
R4845	323-0706-01	XB100000		RES.,FXD,FILM:800 OHM,0.5%,0.50W (R7844 ONLY)	91637	MFF1226G800R0D
R4845	323-0706-01	XB110000		RES.,FXD,FILM:800 OHM,0.5%,0.50W (7844 ONLY)	91637	MFF1226G800R0D
R4846	315-0100-00	XB100000		RES.,FXD,CMPSN:10 OHM,5%,0.25W (R7844 ONLY)	01121	CB1005
R4846	315-0100-00	XB110000		RES.,FXD,CMPSN:10 OHM,5%,0.25W (7844 ONLY)	01121	CB1005
R4847	321-0114-00	XB100000		RES.,FXD,FILM:150 OHM,1%,0.125W (R7844 ONLY)	91637	MFF1816G150R0F
R4847	321-0114-00	XB110000		RES.,FXD,FILM:150 OHM,1%,0.125W (7844 ONLY)	91637	MFF1816G150R0F
R4848	315-0220-00	XB100000		RES.,FXD,CMPSN:22 OHM,5%,0.25W (R7844 ONLY)	01121	CB2205
R4848	315-0220-00	XB110000		RES.,FXD,CMPSN:22 OHM,5%,0.25W (7844 ONLY)	01121	CB2205
R4850	315-0102-00	XB100000		RES.,FXD,CMPSN:1K OHM,5%,0.25W (R7844 ONLY)	01121	CB1025
R4850	315-0102-00	XB110000		RES.,FXD,CMPSN:1K OHM,5%,0.25W (7844 ONLY)	01121	CB1025

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R4851	321-0066-00	XB100000		RES.,FXD,FILM:47.5 OHM,1%,0.125W (R7844 ONLY)	91637	MFF1816G47R50F
R4851	321-0066-00	XB110000		RES.,FXD,FILM:47.5 OHM,1%,0.125W (7844 ONLY)	91637	MFF1816G47R50F
R4852	321-0205-00	XB100000		RES.,FXD,FILM:1.33K OHM,1%,0.125W (R7844 ONLY)	91637	MFF1816G13300F
R4852	321-0205-00	XB110000		RES.,FXD,FILM:1.33K OHM,1%,0.125W (7844 ONLY)	91637	MFF1816G13300F
R4853	321-0285-00	XB100000		RES.,FXD,FILM:9.09K OHM,1%,0.125W (R7844 ONLY)	91637	MFF1816G90900F
R4853	321-0285-00	XB110000		RES.,FXD,FILM:9.09K OHM,1%,0.125W (7844 ONLY)	91637	MFF1816G90900F
R4855	323-0706-01	XB100000		RES.,FXD,FILM:800 OHM,0.5%,0.50W (R7844 ONLY)	91637	MFF1226G800R0D
R4855	323-0706-01	XB110000		RES.,FXD,FILM:800 OHM,0.5%,0.50W (7844 ONLY)	91637	MFF1226G800R0D
R4856	315-0100-00	XB100000		RES.,FXD,CMPSN:10 OHM,5%,0.25W (R7844 ONLY)	01121	CB1005
R4856	315-0100-00	XB110000		RES.,FXD,CMPSN:10 OHM,5%,0.25W (7844 ONLY)	01121	CB1005
R4857	321-0114-00	XB100000		RES.,FXD,FILM:150 OHM,1%,0.125W (R7844 ONLY)	91637	MFF1816G150R0F
R4857	321-0114-00	XB110000		RES.,FXD,FILM:150 OHM,1%,0.125W (7844 ONLY)	91637	MFF1816G150R0F
R4858	315-0220-00	XB100000		RES.,FXD,CMPSN:22 OHM,5%,0.25W (R7844 ONLY)	01121	CB2205
R4858	315-0220-00	XB110000		RES.,FXD,CMPSN:22 OHM,5%,0.25W (7844 ONLY)	01121	CB2205
R4859	315-0822-00	XB100000		RES.,FXD,CMPSN:8.2K OHM,5%,0.25W (R7844 ONLY)	01121	CB8225
R4859	315-0822-00	XB110000		RES.,FXD,CMPSN:8.2K OHM,5%,0.25W (7844 ONLY)	01121	CB8225
R4860	315-0102-00	XB100000		RES.,FXD,CMPSN:1K OHM,5%,0.25W (R7844 ONLY)	01121	CB1025
R4860	315-0102-00	XB110000		RES.,FXD,CMPSN:1K OHM,5%,0.25W (7844 ONLY)	01121	CB1025
R4861	321-0066-00	XB100000		RES.,FXD,FILM:47.5 OHM,1%,0.125W (R7844 ONLY)	91637	MFF1816G47R50F
R4861	321-0066-00	XB110000		RES.,FXD,FILM:47.5 OHM,1%,0.125W (7844 ONLY)	91637	MFF1816G47R50F
R4862	321-0205-00	XB100000		RES.,FXD,FILM:1.33K OHM,1%,0.125W (R7844 ONLY)	91637	MFF1816G13300F
R4862	321-0205-00	XB110000		RES.,FXD,FILM:1.33K OHM,1%,0.125W (7844 ONLY)	91637	MFF1816G13300F
R4863	321-0278-00	XB100000		RES.,FXD,FILM:7.68K OHM,1%,0.125W (R7844 ONLY)	91637	MFF1816G76800F
R4863	321-0278-00	XB110000		RES.,FXD,FILM:7.68K OHM,1%,0.125W (7844 ONLY)	91637	MFF1816G76800F
R4865	321-0224-00	XB100000		RES.,FXD,FILM:2.1K OHM,1%,0.125W (R7844 ONLY)	91637	MFF1816G21000F
R4865	321-0224-00	XB110000		RES.,FXD,FILM:2.1K OHM,1%,0.125W (7844 ONLY)	91637	MFF1816G21000F
R4866	321-0258-00	XB100000		RES.,FXD,FILM:4.75K OHM,1%,0.125W (R7844 ONLY)	91637	MFF1816G47500F
R4866	321-0258-00	XB110000		RES.,FXD,FILM:4.75K OHM,1%,0.125W (7844 ONLY)	91637	MFF1816G47500F

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R4869	321-0163-00	XB100000		RES.,FXD,FILM:487 OHM,1%,0.125W (R7844 ONLY)	91637	MFF1816G487R0F
R4869	321-0163-00	XB110000		RES.,FXD,FILM:487 OHM,1%,0.125W (7844 ONLY)	91637	MFF1816G487R0F
R4871	315-0150-00	XB100000		RES.,FXD,CMPSN:15 OHM,5%,0.25W (R7844 ONLY)	01121	CB1505
R4871	315-0150-00	XB110000		RES.,FXD,CMPSN:15 OHM,5%,0.25W (7844 ONLY)	01121	CB1505
R4872	315-0271-00	XB100000		RES.,FXD,CMPSN:270 OHM,5%,0.25W (R7844 ONLY)	01121	CB2715
R4872	315-0271-00	XB110000		RES.,FXD,CMPSN:270 OHM,5%,0.25W (7844 ONLY)	01121	CB2715
R4873	315-0100-00	XB100000		RES.,FXD,CMPSN:10 OHM,5%,0.25W (R7844 ONLY)	01121	CB1005
R4873	315-0100-00	XB110000		RES.,FXD,CMPSN:10 OHM,5%,0.25W (7844 ONLY)	01121	CB1005
R4875	321-0209-00	XB100000		RES.,FXD,FILM:1.47K OHM,1%,0.125W (R7844 ONLY)	91637	MFF1816G14700F
R4875	321-0209-00	XB110000		RES.,FXD,FILM:1.47K OHM,1%,0.125W (7844 ONLY)	91637	MFF1816G14700F
R4876	301-0433-00	XB100000		RES.,FXD,CMPSN:43K OHM,5%,0.50W (R7844 ONLY)	01121	EB4335
R4876	301-0433-00	XB110000		RES.,FXD,CMPSN:43K OHM,5%,0.50W (7844 ONLY)	01121	EB4335
R4878	323-0327-00	XB100000		RES.,FXD,FILM:24.9K OHM,1%,0.50W (R7844 ONLY)	91637	MFF1226G24901F
R4878	323-0327-00	XB110000		RES.,FXD,FILM:24.9K OHM,1%,0.50W (7844 ONLY)	91637	MFF1226G24901F
R4879	315-0470-00	XB100000		RES.,FXD,CMPSN:47 OHM,5%,0.25W (R7844 ONLY)	01121	CB4705
R4879	315-0470-00	XB110000		RES.,FXD,CMPSN:47 OHM,5%,0.25W (7844 ONLY)	01121	CB4705
R4881	315-0561-00	XB100000		RES.,FXD,CMPSN:560 OHM,5%,0.25W (R7844 ONLY)	01121	CB5615
R4881	315-0561-00	XB110000		RES.,FXD,CMPSN:560 OHM,5%,0.25W (7844 ONLY)	01121	CB5615
R4883	315-0563-00	XB100000		RES.,FXD,CMPSN:56K OHM,5%,0.25W (R7844 ONLY)	01121	CB5635
R4883	315-0563-00	XB110000		RES.,FXD,CMPSN:56K OHM,5%,0.25W (7844 ONLY)	01121	CB5635
R4888	323-0251-00	XB100000		RES.,FXD,FILM:4.02K OHM,1%,0.50W (R7844 ONLY)	91637	MFF1226G40200F
R4888	323-0251-00	XB110000		RES.,FXD,FILM:4.02K OHM,1%,0.50W (7844 ONLY)	91637	MFF1226G40200F
R4889	321-0193-00	XB100000		RES.,FXD,FILM:1K OHM,1%,0.125W (R7844 ONLY)	91637	MFF1816G10000F
R4889	321-0193-00	XB110000		RES.,FXD,FILM:1K OHM,1%,0.125W (7844 ONLY)	91637	MFF1816G10000F
R4892	321-0160-00	XB100000		RES.,FXD,FILM:453 OHM,1%,0.125W (R7844 ONLY)	91637	MFF1816G453R0F
R4892	321-0160-00	XB110000		RES.,FXD,FILM:453 OHM,1%,0.125W (7844 ONLY)	91637	MFF1816G453R0F
R4894	315-0150-00	XB100000		RES.,FXD,CMPSN:15 OHM,5%,0.25W (R7844 ONLY)	01121	CB1505
R4894	315-0150-00	XB110000		RES.,FXD,CMPSN:15 OHM,5%,0.25W (7844 ONLY)	01121	CB1505
R4895	321-0196-00	XB100000		RES.,FXD,FILM:1.07K OHM,1%,0.125W (7844 ONLY)	91637	MFF1816G10700F

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R4895	321-0196-00	XB110000		RES.,FXD,FILM:1.07K OHM,1%,0.125W (7844 ONLY)	91637	MFF1816G10700F
R4896	303-0223-00	XB100000		RES.,FXD,CMPSN:22K OHM,5%,1W (R7844 ONLY)	01121	GB2235
R4896	303-0223-00	XB110000		RES.,FXD,CMPSN:22K OHM,5%,1W (7844 ONLY)	01121	GB2235
R4898	323-0327-00	XB100000		RES.,FXD,FILM:24.9K OHM,1%,0.50W (R7844 ONLY)	91637	MFF1226G24901F
R4898	323-0327-00	XB110000		RES.,FXD,FILM:24.9K OHM,1%,0.50W (7844 ONLY)	91637	MFF1226G24901F
R4899	315-0470-00	XB100000		RES.,FXD,CMPSN:47 OHM,5%,0.25W (R7844 ONLY)	01121	CB4705
R4899	315-0470-00	XB110000		RES.,FXD,CMPSN:47 OHM,5%,0.25W (7844 ONLY)	01121	CB4705
R4976	311-1252-00	XB100000		RES.,VAR,NONWIR:500K OHM,20%,0.50W (R7844 ONLY)	32997	3386F-T04-504
R4976	311-1252-00	XB110000		RES.,VAR,NONWIR:500K OHM,20%,0.50W (7844 ONLY)	32997	3386F-T04-504
R4977	315-0680-00	XB100000		RES.,FXD,CMPSN:68 OHM,5%,0.25W (R7844 ONLY)	01121	CB6805
R4977	315-0680-00	XB110000		RES.,FXD,CMPSN:68 OHM,5%,0.25W (7844 ONLY)	01121	CB6805
R4983	315-0680-00	XB100000		RES.,FXD,CMPSN:68 OHM,5%,0.25W (R7844 ONLY)	01121	CB6805
R4983	315-0680-00	XB110000		RES.,FXD,CMPSN:68 OHM,5%,0.25W (7844 ONLY)	01121	CB6805
R4985	311-1252-00	XB100000		RES.,VAR,NONWIR:500K OHM,20%,0.50W (R7844 ONLY)	32997	3386F-T04-504
R4985	311-1252-00	XB110000		RES.,VAR,NONWIR:500K OHM,20%,0.50W (7844 ONLY)	32997	3386F-T04-504
R4986	307-0103-00	XB100000		RES.,FXD,CMPSN:2.7 OHM,5%,0.25W (R7844 ONLY)	01121	CB27G5
R4986	307-0103-00	XB110000		RES.,FXD,CMPSN:2.7 OHM,5%,0.25W (7844 ONLY)	01121	CB27G5
R4987	315-0104-00	XB100000		RES.,FXD,CMPSN:100K OHM,5%,0.25W (R7844 ONLY)	01121	CB1045
R4987	315-0104-00	XB110000		RES.,FXD,CMPSN:100K OHM,5%,0.25W (7844 ONLY)	01121	CB1045
R4988	311-1252-00	XB100000		RES.,VAR,NONWIR:500K OHM,20%,0.50W (R7844 ONLY)	32997	3386F-T04-504
R4988	311-1252-00	XB110000		RES.,VAR,NONWIR:500K OHM,20%,0.50W (7844 ONLY)	32997	3386F-T04-504
R4989	315-0390-00	XB100000		RES.,FXD,CMPSN:39 OHM,5%,0.25W (R7844 ONLY)	01121	CB3905
R4989	315-0390-00	XB110000		RES.,FXD,CMPSN:39 OHM,5%,0.25W (7844 ONLY)	01121	CB3905
R5802	321-0079-00	XB100000		RES.,FXD,FILM:64.9 OHM,1%,0.125W (R7844 ONLY)	91637	MFF1816G64R90F
R5802	321-0079-00	XB110000		RES.,FXD,FILM:64.9 OHM,1%,0.125W (7844 ONLY)	91637	MFF1816G64R90F
R5803	315-0822-00	XB100000		RES.,FXD,CMPSN:8.2K OHM,5%,0.25W (R7844 ONLY)	01121	CB8225
R5803	315-0822-00	XB110000		RES.,FXD,CMPSN:8.2K OHM,5%,0.25W (7844 ONLY)	01121	CB8225
R5804	311-1228-00	XB100000		RES.,VAR,NONWIR:10K OHM,20%,0.50W (R7844 ONLY)	32997	3386F-T04-103

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R5804	311-1228-00	XB110000		RES.,VAR,NONWIR:10K OHM,20%,0.50W (7844 ONLY)	32997	3386F-T04-103
R5805	315-0822-00	XB100000		RES.,FXD,CMPSN:8.2K OHM,5%,0.25W (R7844 ONLY)	01121	CB8225
R5805	315-0822-00	XB110000		RES.,FXD,CMPSN:8.2K OHM,5%,0.25W (7844 ONLY)	01121	CB8225
R5806	323-0168-00	XB100000		RES.,FXD,FILM:549 OHM,1%,0.50W (R7844 ONLY)	75042	CECT0-5490F
R5806	323-0168-00	XB110000		RES.,FXD,FILM:549 OHM,1%,0.50W (7844 ONLY)	75042	CECT0-5490F
R5807	315-0223-00	XB100000		RES.,FXD,CMPSN:22K OHM,5%,0.25W (R7844 ONLY)	01121	CB2235
R5807	315-0223-00	XB110000		RES.,FXD,CMPSN:22K OHM,5%,0.25W (7844 ONLY)	01121	CB2235
R5808	315-0222-00	XB100000		RES.,FXD,CMPSN:2.2K OHM,5%,0.25W (R7844 ONLY)	01121	CB2225
R5808	315-0222-00	XB110000		RES.,FXD,CMPSN:2.2K OHM,5%,0.25W (7844 ONLY)	01121	CB2225
R5809	311-1223-00	XB100000		RES.,VAR,NONWIR:TRMR,250 OHM,0.5W (R7844 ONLY)	02111	63M251T602
R5809	311-1223-00	XB110000		RES.,VAR,NONWIR:TRMR,250 OHM,0.5W (7844 ONLY)	02111	63M251T602
R5810	321-0205-00	XB100000		RES.,FXD,FILM:1.33K OHM,1%,0.125W (R7844 ONLY)	91637	MFF1816G13300F
R5810	321-0205-00	XB110000		RES.,FXD,FILM:1.33K OHM,1%,0.125W (7844 ONLY)	91637	MFF1816G13300F
R5811	321-0253-00	XB100000		RES.,FXD,FILM:4.22K OHM,1%,0.125W (R7844 ONLY)	91637	MFF1816G42200F
R5811	321-0253-00	XB110000		RES.,FXD,FILM:4.22K OHM,1%,0.125W (7844 ONLY)	91637	MFF1816G42200F
R5812	323-0168-00	XB100000		RES.,FXD,FILM:549 OHM,1%,0.50W (R7844 ONLY)	75042	CECT0-5490F
R5812	323-0168-00	XB110000		RES.,FXD,FILM:549 OHM,1%,0.50W (7844 ONLY)	75042	CECT0-5490F
R5814	321-0079-00	XB100000		RES.,FXD,FILM:64.9 OHM,1%,0.125W (R7844 ONLY)	91637	MFF1816G64R90F
R5814	321-0079-00	XB110000		RES.,FXD,FILM:64.9 OHM,1%,0.125W (7844 ONLY)	91637	MFF1816G64R90F
R5815	321-0287-00	XB100000		RES.,FXD,FILM:9.53K OHM,1%,0.125W (R7844 ONLY)	91637	MFF1816G95300F
R5815	321-0287-00	XB110000		RES.,FXD,FILM:9.53K OHM,1%,0.125W (7844 ONLY)	91637	MFF1816G95300F
R5816	311-1225-00	XB100000		RES.,VAR,NONWIR:1K OHM,20%,0.50W (R7844 ONLY)	32997	3386F-T04-102
R5816	311-1225-00	XB110000		RES.,VAR,NONWIR:1K OHM,20%,0.50W (7844 ONLY)	32997	3386F-T04-102
R5818	321-0205-00	XB100000		RES.,FXD,FILM:1.33K OHM,1%,0.125W (R7844 ONLY)	91637	MFF1816G13300F
R5818	321-0205-00	XB110000		RES.,FXD,FILM:1.33K OHM,1%,0.125W (7844 ONLY)	91637	MFF1816G13300F
R5819	321-0124-00	XB100000		RES.,FXD,FILM:191 OHM,1%,0.125W (R7844 ONLY)	91637	MFF1816G191R0F
R5819	321-0124-00	XB110000		RES.,FXD,FILM:191 OHM,1%,0.125W (7844 ONLY)	91637	MFF1816G191R0F
R5820	311-1222-00	XB100000		RES.,VAR,NONWIR:100 OHM,20%,0.50W (R7844 ONLY)	32997	3386F-T04-101
R5820	311-1222-00	XB110000		RES.,VAR,NONWIR:100 OHM,20%,0.50W **(7844 ONLY)**	32997	3386F-T04-101

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R5821	321-0109-00	XB100000		RES.,FXD,FILM:133 OHM,1%,0.125W (R7844 ONLY)	91637	MFF1816G133R0F
R5821	321-0109-00	XB110000		RES.,FXD,FILM:133 OHM,1%,0.125W (7844 ONLY)	91637	MFF1816G133R0F
R5823	315-0101-00	XB100000		RES.,FXD,CMPSN:100 OHM,5%,0.25W (R7844 ONLY)	01121	CB1015
R5823	315-0101-00	XB110000		RES.,FXD,CMPSN:100 OHM,5%,0.25W (7844 ONLY)	01121	CB1015
R5824	315-0621-00	XB100000		RES.,FXD,CMPSN:620 OHM,5%,0.25W (R7844 ONLY)	01121	CB6215
R5824	315-0621-00	XB110000		RES.,FXD,CMPSN:620 OHM,5%,0.25W (7844 ONLY)	01121	CB6215
R5825	321-0830-03	XB100000		RES.,FXD,FILM:2.41K OHM,0.25%,0.125W (R7844 ONLY)	91637	MFF1816D24100C
R5825	321-0830-03	XB110000		RES.,FXD,FILM:2.41K OHM,0.25%,0.125W (7844 ONLY)	91637	MFF1816D24100C
R5826	321-0830-03	XB100000		RES.,FXD,FILM:2.41K OHM,0.25%,0.125W (R7844 ONLY)	91637	MFF1816D24100C
R5826	321-0830-03	XB110000		RES.,FXD,FILM:2.41K OHM,0.25%,0.125W (7844 ONLY)	91637	MFF1816D24100C
R5827	321-0261-00	XB100000		RES.,FXD,FILM:5.11K OHM,1%,0.125W (R7844 ONLY)	91637	MFF1816G51100F
R5827	321-0261-00	XB110000		RES.,FXD,FILM:5.11K OHM,1%,0.125W (7844 ONLY)	91637	MFF1816G51100F
R5829	315-0152-00	XB100000		RES.,FXD,CMPSN:1.5K OHM,5%,0.25W (R7844 ONLY)	01121	CB1525
R5829	315-0152-00	XB110000		RES.,FXD,CMPSN:1.5K OHM,5%,0.25W (7844 ONLY)	01121	CB1525
R5830	315-0243-00	XB100000		RES.,FXD,CMPSN:24K OHM,5%,0.25W (R7844 ONLY)	01121	CB2435
R5830	315-0243-00	XB110000		RES.,FXD,CMPSN:24K OHM,5%,0.25W (7844 ONLY)	01121	CB2435
R5832	321-0185-00	XB100000		RES.,FXD,FILM:825 OHM,1%,0.125W (R7844 ONLY)	91637	MFF1816G825R0F
R5832	321-0185-00	XB110000		RES.,FXD,FILM:825 OHM,1%,0.125W (7844 ONLY)	91637	MFF1816G825R0F
R5833	315-0430-00	XB100000		RES.,FXD,CMPSN:43 OHM,5%,0.25W (R7844 ONLY)	01121	CB4305
R5833	315-0430-00	XB110000		RES.,FXD,CMPSN:43 OHM,5%,0.25W (7844 ONLY)	01121	CB4305
R5835	321-0192-00	XB100000		RES.,FXD,FILM:976 OHM,1%,0.125W (R7844 ONLY)	91637	MFF1816G976R0F
R5835	321-0192-00	XB110000		RES.,FXD,FILM:976 OHM,1%,0.125W (7844 ONLY)	91637	MFF1816G976R0F
R5836	321-0241-00	XB100000		RES.,FXD,FILM:3.16K OHM,1%,0.125W (R7844 ONLY)	91637	MFF1816G31600F
R5836	321-0241-00	XB110000		RES.,FXD,FILM:3.16K OHM,1%,0.125W (7844 ONLY)	91637	MFF1816G31600F
R5837	321-0192-00	XB100000		RES.,FXD,FILM:976 OHM,1%,0.125W (R7844 ONLY)	91637	MFF1816G976R0F
R5837	321-0192-00	XB110000		RES.,FXD,FILM:976 OHM,1%,0.125W (7844 ONLY)	91637	MFF1816G976R0F
R5838	321-0192-00	XB100000		RES.,FXD,FILM:976 OHM,1%,0.125W (R7844 ONLY)	91637	MFF1816G976R0F
R5838	321-0192-00	XB110000		RES.,FXD,FILM:976 OHM,1%,0.125W (7844 ONLY)	91637	MFF1816G976R0F

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R5840	311-1225-00	XB100000		RES.,VAR,NONWIR:1K OHM,20%,0.50W (R7844 ONLY)	32997	3386F-T04-102
R5840	311-1225-00	XB110000		RES.,VAR,NONWIR:1K OHM,20%,0.50W (7844 ONLY)	32997	3386F-T04-102
R5841	321-0299-00	XB100000		RES.,FXD,FILM:12.7K OHM,1%,0.125W (R7844 ONLY)	91637	MFF1816G12701F
R5841	321-0299-00	XB110000		RES.,FXD,FILM:12.7K OHM,1%,0.125W (7844 ONLY)	91637	MFF1816G12701F
R5842	321-0185-00	XB100000		RES.,FXD,FILM:825 OHM,1%,0.125W (R7844 ONLY)	91637	MFF1816G825R0F
R5842	321-0185-00	XB110000		RES.,FXD,FILM:825 OHM,1%,0.125W (7844 ONLY)	91637	MFF1816G825R0F
R5843	315-0430-00	XB100000		RES.,FXD,CMPSN:43 OHM,5%,0.25W (R7844 ONLY)	01121	CB4305
R5843	315-0430-00	XB110000		RES.,FXD,CMPSN:43 OHM,5%,0.25W (7844 ONLY)	01121	CB4305
R5845	323-0706-01	XB100000		RES.,FXD,FILM:800 OHM,0.5%,0.50W (R7844 ONLY)	91637	MFF1226G800R0D
R5845	323-0706-01	XB110000		RES.,FXD,FILM:800 OHM,0.5%,0.50W (7844 ONLY)	91637	MFF1226G800R0D
R5846	315-0100-00	XB100000		RES.,FXD,CMPSN:10 OHM,5%,0.25W (R7844 ONLY)	01121	CB1005
R5846	315-0100-00	XB110000		RES.,FXD,CMPSN:10 OHM,5%,0.25W (7844 ONLY)	01121	CB1005
R5847	321-0114-00	XB100000		RES.,FXD,FILM:150 OHM,1%,0.125W (R7844 ONLY)	91637	MFF1816G150R0F
R5847	321-0114-00	XB110000		RES.,FXD,FILM:150 OHM,1%,0.125W (7844 ONLY)	91637	MFF1816G150R0F
R5848	315-0220-00	XB100000		RES.,FXD,CMPSN:22 OHM,5%,0.25W (R7844 ONLY)	01121	CB2205
R5848	315-0220-00	XB110000		RES.,FXD,CMPSN:22 OHM,5%,0.25W (7844 ONLY)	01121	CB2205
R5850	315-0102-00	XB100000		RES.,FXD,CMPSN:1K OHM,5%,0.25W (R7844 ONLY)	01121	CB1025
R5850	315-0102-00	XB110000		RES.,FXD,CMPSN:1K OHM,5%,0.25W (7844 ONLY)	01121	CB1025
R5851	321-0066-00	XB100000		RES.,FXD,FILM:47.5 OHM,1%,0.125W (R7844 ONLY)	91637	MFF1816G47R50F
R5851	321-0066-00	XB110000		RES.,FXD,FILM:47.5 OHM,1%,0.125W (7844 ONLY)	91637	MFF1816G47R50F
R5852	321-0205-00	XB100000		RES.,FXD,FILM:1.33K OHM,1%,0.125W (R7844 ONLY)	91637	MFF1816G13300F
R5852	321-0205-00	XB110000		RES.,FXD,FILM:1.33K OHM,1%,0.125W (7844 ONLY)	91637	MFF1816G13300F
R5853	321-0285-00	XB100000		RES.,FXD,FILM:9.09K OHM,1%,0.125W (R7844 ONLY)	91637	MFF1816G90900F
R5853	321-0285-00	XB110000		RES.,FXD,FILM:9.09K OHM,1%,0.125W (7844 ONLY)	91637	MFF1816G90900F
R5855	323-0706-01	XB100000		RES.,FXD,FILM:800 OHM,0.5%,0.50W (R7844 ONLY)	91637	MFF1226G800R0D
R5855	323-0706-01	XB110000		RES.,FXD,FILM:800 OHM,0.5%,0.50W (7844 ONLY)	91637	MFF1226G800R0D
R5856	315-0100-00	XB100000		RES.,FXD,CMPSN:10 OHM,5%,0.25W (R7844 ONLY)	01121	CB1005
R5856	315-0100-00	XB110000		RES.,FXD,CMPSN:10 OHM,5%,0.25W (7844 ONLY)	01121	CB1005
R5857	321-0114-00	XB100000		RES.,FXD,FILM:150 OHM,1%,0.125W **(R7844 ONLY)**	91637	MFF1816G150R0F

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R5857	321-0114-00	XB110000		RES.,FXD,FILM:150 OHM,1%,0.125W (7844 ONLY)	91637	MFF1816G150R0F
R5858	315-0220-00	XB100000		RES.,FXD,CMPSN:22 OHM,5%,0.25W (R7844 ONLY)	01121	CB2205
R5858	315-0220-00	XB110000		RES.,FXD,CMPSN:22 OHM,5%,0.25W (7844 ONLY)	01121	CB2205
R5859	315-0822-00	XB100000		RES.,FXD,CMPSN:8.2K OHM,5%,0.25W (R7844 ONLY)	01121	CB8225
R5859	315-0822-00	XB110000		RES.,FXD,CMPSN:8.2K OHM,5%,0.25W (7844 ONLY)	01121	CB8225
R5860	315-0102-00	XB100000		RES.,FXD,CMPSN:1K OHM,5%,0.25W (R7844 ONLY)	01121	CB1025
R5860	315-0102-00	XB110000		RES.,FXD,CMPSN:1K OHM,5%,0.25W (7844 ONLY)	01121	CB1025
R5861	321-0066-00	XB100000		RES.,FXD,FILM:47.5 OHM,1%,0.125W (R7844 ONLY)	91637	MFF1816G47R50F
R5861	321-0066-00	XB110000		RES.,FXD,FILM:47.5 OHM,1%,0.125W (7844 ONLY)	91637	MFF1816G47R50F
R5862	321-0205-00	XB100000		RES.,FXD,FILM:1.33K OHM,1%,0.125W (R7844 ONLY)	91637	MFF1816G13300F
R5862	321-0205-00	XB110000		RES.,FXD,FILM:1.33K OHM,1%,0.125W (7844 ONLY)	91637	MFF1816G13300F
R5863	321-0278-00	XB100000		RES.,FXD,FILM:7.68K OHM,1%,0.125W (R7844 ONLY)	91637	MFF1816G76800F
R5863	321-0278-00	XB110000		RES.,FXD,FILM:7.68K OHM,1%,0.125W (7844 ONLY)	91637	MFF1816G76800F
R5865	321-0224-00	XB100000		RES.,FXD,FILM:2.1K OHM,1%,0.125W (R7844 ONLY)	91637	MFF1816G21000F
R5865	321-0224-00	XB110000		RES.,FXD,FILM:2.1K OHM,1%,0.125W (7844 ONLY)	91637	MFF1816G21000F
R5866	321-0258-00	XB100000		RES.,FXD,FILM:4.75K OHM,1%,0.125W (R7844 ONLY)	91637	MFF1816G47500F
R5866	321-0258-00	XB110000		RES.,FXD,FILM:4.75K OHM,1%,0.125W (7844 ONLY)	91637	MFF1816G47500F
R5869	321-0163-00	XB100000		RES.,FXD,FILM:487 OHM,1%,0.125W (R7844 ONLY)	91637	MFF1816G487R0F
R5869	321-0163-00	XB110000		RES.,FXD,FILM:487 OHM,1%,0.125W (7844 ONLY)	91637	MFF1816G487R0F
R5871	315-0150-00	XB100000		RES.,FXD,CMPSN:15 OHM,5%,0.25W (R7844 ONLY)	01121	CB1505
R5871	315-0150-00	XB110000		RES.,FXD,CMPSN:15 OHM,5%,0.25W (7844 ONLY)	01121	CB1505
R5872	315-0271-00	XB100000		RES.,FXD,CMPSN:270 OHM,5%,0.25W (R7844 ONLY)	01121	CB2715
R5872	315-0271-00	XB110000		RES.,FXD,CMPSN:270 OHM,5%,0.25W (7844 ONLY)	01121	CB2715
R5873	315-0100-00	XB100000		RES.,FXD,CMPSN:10 OHM,5%,0.25W (R7844 ONLY)	01121	CB1005
R5873	315-0100-00	XB110000		RES.,FXD,CMPSN:10 OHM,5%,0.25W (7844 ONLY)	01121	CB1005
R5875	321-0209-00	XB100000		RES.,FXD,FILM:1.47K OHM,1%,0.125W (R7844 ONLY)	91637	MFF1816G14700F
R5875	321-0209-00	XB110000		RES.,FXD,FILM:1.47K OHM,1%,0.125W (7844 ONLY)	91637	MFF1816G14700F
R5876	301-0433-00	XB100000		RES.,FXD,CMPSN:43K OHM,5%,0.50W (R7844 ONLY)	01121	EB4335

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R5876	301-0433-00	XB110000		RES.,FXD,CMPSN:43K OHM,5%,0.50W (7844 ONLY)	01121	EB4335
R5878	323-0327-00	XB100000		RES.,FXD,FILM:24.9K OHM,1%,0.50W (R7844 ONLY)	91637	MFF1226G24901F
R5878	323-0327-00	XB110000		RES.,FXD,FILM:24.9K OHM,1%,0.50W (7844 ONLY)	91637	MFF1226G24901F
R5879	315-0470-00	XB100000		RES.,FXD,CMPSN:47 OHM,5%,0.25W (R7844 ONLY)	01121	CB4705
R5879	315-0470-00	XB110000		RES.,FXD,CMPSN:47 OHM,5%,0.25W (7844 ONLY)	01121	CB4705
R5881	315-0561-00	XB100000		RES.,FXD,CMPSN:560 OHM,5%,0.25W (R7844 ONLY)	01121	CB5615
R5881	315-0561-00	XB110000		RES.,FXD,CMPSN:560 OHM,5%,0.25W (7844 ONLY)	01121	CB5615
R5883	315-0563-00	XB100000		RES.,FXD,CMPSN:56K OHM,5%,0.25W (R7844 ONLY)	01121	CB5635
R5883	315-0563-00	XB110000		RES.,FXD,CMPSN:56K OHM,5%,0.25W (7844 ONLY)	01121	CB5635
R5888	323-0251-00	XB100000		RES.,FXD,FILM:4.02K OHM,1%,0.50W (R7844 ONLY)	91637	MFF1226G40200F
R5888	323-0251-00	XB110000		RES.,FXD,FILM:4.02K OHM,1%,0.50W (7844 ONLY)	91637	MFF1226G40200F
R5889	321-0193-00	XB100000		RES.,FXD,FILM:1K OHM,1%,0.125W (R7844 ONLY)	91637	MFF1816G10000F
R5889	321-0193-00	XB110000		RES.,FXD,FILM:1K OHM,1%,0.125W (7844 ONLY)	91637	MFF1816G10000F
R5892	321-0160-00	XB100000		RES.,FXD,FILM:453 OHM,1%,0.125W (R7844 ONLY)	91637	MFF1816G453R0F
R5892	321-0160-00	XB110000		RES.,FXD,FILM:453 OHM,1%,0.125W (7844 ONLY)	91637	MFF1816G453R0F
R5894	315-0150-00	XB100000		RES.,FXD,CMPSN:15 OHM,5%,0.25W (R7844 ONLY)	01121	CB1505
R5894	315-0150-00	XB110000		RES.,FXD,CMPSN:15 OHM,5%,0.25W (7844 ONLY)	01121	CB1505
R5895	321-0196-00	XB100000		RES.,FXD,FILM:1.07K OHM,1%,0.125W (R7844 ONLY)	91637	MFF1816G10700F
R5895	321-0196-00	XB110000		RES.,FXD,FILM:1.07K OHM,1%,0.125W (7844 ONLY)	91637	MFF1816G10700F
R5896	303-0223-00	XB100000		RES.,FXD,CMPSN:22K OHM,5%,1W (R7844 ONLY)	01121	GB2235
R5896	303-0223-00	XB110000		RES.,FXD,CMPSN:22K OHM,5%,1W (7844 ONLY)	01121	GB2235
R5898	323-0327-00	XB100000		RES.,FXD,FILM:24.9K OHM,1%,0.50W (R7844 ONLY)	91637	MFF1226G24901F
R5898	323-0327-00	XB110000		RES.,FXD,FILM:24.9K OHM,1%,0.50W (7844 ONLY)	91637	MFF1226G24901F
R5899	315-0470-00	XB100000		RES.,FXD,CMPSN:47 OHM,5%,0.25W (R7844 ONLY)	01121	CB4705
R5899	315-0470-00	XB110000		RES.,FXD,CMPSN:47 OHM,5%,0.25W (7844 ONLY)	01121	CB4705
R5976	311-1252-00	XB100000		RES.,VAR,NONWIR:500K OHM,20%,0.50W (R7844 ONLY)	32997	3386F-T04-504
R5976	311-1252-00	XB110000		RES.,VAR,NONWIR:500K OHM,20%,0.50W (7844 ONLY)	32997	3386F-T04-504
R5977	315-0680-00	XB100000		RES.,FXD,CMPSN:68 OHM,5%,0.25W (R7844 ONLY)	01121	CB6805
R5977	315-0680-00	XB110000		RES.,FXD,CMPSN:68 OHM,5%,0.25W (7844 ONLY)	01121	CB6805

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R5983	315-0680-00	XB100000		RES.,FXD,CMPSN:68 OHM,5%,0.25W (R7844 ONLY)	01121	CB6805
R5983	315-0680-00	XB110000		RES.,FXD,CMPSN:68 OHM,5%,0.25W (7844 ONLY)	01121	CB6805
R5985	311-1252-00	XB100000		RES.,VAR,NONWIR:500K OHM,20%,0.50W (R7844 ONLY)	32997	3386F-T04-504
R5985	311-1252-00	XB110000		RES.,VAR,NONWIR:500K OHM,20%,0.50W (7844 ONLY)	32997	3386F-T04-504
R5986	307-0103-00	XB100000		RES.,FXD,CMPSN:2.7 OHM,5%,0.25W (R7844 ONLY)	01121	CB27G5
R5986	307-0103-00	XB110000		RES.,FXD,CMPSN:2.7 OHM,5%,0.25W (7844 ONLY)	01121	CB27G5
R5987	315-0104-00	XB100000		RES.,FXD,CMPSN:100K OHM,5%,0.25W (R7844 ONLY)	01121	CB1045
R5987	315-0104-00	XB110000		RES.,FXD,CMPSN:100K OHM,5%,0.25W (7844 ONLY)	01121	CB1045
R5988	311-1252-00	XB100000		RES.,VAR,NONWIR:500K OHM,20%,0.50W (R7844 ONLY)	32997	3386F-T04-504
R5988	311-1252-00	XB110000		RES.,VAR,NONWIR:500K OHM,20%,0.50W (7844 ONLY)	32997	3386F-T04-504
R5989	315-0390-00	XB100000		RES.,FXD,CMPSN:39 OHM,5%,0.25W (R7844 ONLY)	01121	CB3905
R5989	315-0390-00	XB110000		RES.,FXD,CMPSN:39 OHM,5%,0.25W (7844 ONLY)	01121	CB3905
RT1209	307-0353-00			RES.,FXD,FILM:5 OHM,10%,DISC	15454	5DA5RO-K-270SS
RT1213	307-0353-00			RES.,FXD,FILM:5 OHM,10%,DISC	15454	5DA5RO-K-270SS
RT1731	307-0364-00			RES.,THERMAL:50 OHM,5%,0.125W	15454	DG125500J
RT1817	307-0125-00	B010100	B099999X	RES.,THERMAL:500 OHM,10%,25 DEG C (R7844 ONLY)	50157	2D1595
RT1817	307-0125-00	B010100	B109999X	RES.,THERMAL:500 OHM,10%,25 DEG C (7844 ONLY)	50157	2D1595
RT2731	307-0364-00			RES.,THERMAL:50 OHM,5%,0.125W	15454	DG125500J
RT2817	307-0125-00	B010100	B099999X	RES.,THERMAL:500 OHM,10%,25 DEG C (R7844 ONLY)	50157	2D1595
RT2817	307-0125-00	B010100	B109999X	RES.,THERMAL:500 OHM,10%,25 DEG C (7844 ONLY)	50157	2D1595
RT4824	307-0124-00	XB100000		RES.,THERMAL:5K OHM,10% (R7844 ONLY)	50157	1D1618
RT4824	307-0124-00	XB110000		RES.,THERMAL:5K OHM,10% (7844 ONLY)	50157	1D1618
RT5824	307-0124-00	XB100000		RES.,THERMAL:5K OHM,10% (R7844 ONLY)	50157	1D1618
RT5824	307-0124-00	XB110000		RES.,THERMAL:5K OHM,10% (7844 ONLY)	50157	1D1618
S100	260-1195-00			SWITCH,SLIDE:DP3T,0.5A,125VAC (R7844 ONLY)	82389	XW-3029
S100	260-0450-00			SWITCH,SLIDE:3 POS,DOUBLE POLE (7844 ONLY)	82389	11D-1007
S157	260-1622-00	B010100	B121324	SWITCH,PUSH:2 STA,2 POLE,INTERLOCK (7844 OPTION 21 ONLY)	71590	2KCC0200001661
S157	260-1622-01	B121325		SWITCH,PUSH:2STA,2POLE,INTERLOCK (7844 OPTION 21 ONLY)	80009	260-1622-01
S157	260-1622-00	B010100	B130634	SWITCH,PUSH:2 STA,2 POLE,INTERLOCK (R7844 OPTION 21 ONLY)	71590	2KCC0200001661
S157	260-1622-01	B130635		SWITCH,PUSH:2STA,2POLE,INTERLOCK (R7844 OPTION 21 ONLY)	80009	260-1622-01

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S159	260-1626-00			SWITCH,PUSH:2 STA,2 POLE,INTERLOCK (7844 OPTION 21 ONLY)	80009	260-1626-00
S161	260-1625-00	B010100	B121324	SWITCH,PUSH:2 STA,2 POLE,INTERLOCK (7844 OPTION 21 ONLY)	80009	260-1625-00
S161	260-1625-01	B121325		SWITCH,PUSH:2 STA,2POLE,INTERLOCK (7844 OPTION 21 ONLY)	80009	260-1625-01
S161	260-1625-00	B010100	B130634	SWITCH,PUSH:2 STA,2 POLE,INTERLOCK (R7844 OPTION 21 ONLY)	80009	260-1625-00
S161	260-1625-01	B130635		SWITCH,PUSH:2 STA,2POLE,INTERLOCK (R7844 OPTION 21 ONLY)	80009	260-1625-01
S163	260-1625-00	B010100	B121324	SWITCH,PUSH:2 STA,2 POLE,INTERLOCK (7844 OPTION 21 ONLY)	80009	260-1625-00
S163	260-1625-01	B121325		SWITCH,PUSH:2 STA,2POLE,INTERLOCK (7844 OPTION 21 ONLY)	80009	260-1625-01
S163	260-1625-00	B010100	B130634	SWITCH,PUSH:2 STA,2 POLE,INTERLOCK (R7844 OPTION 21 ONLY)	80009	260-1625-00
S163	260-1625-01	B130635		SWITCH,PUSH:2 STA,2POLE,INTERLOCK (R7844 OPTION 21 ONLY)	80009	260-1625-01
S165	260-1623-00	B010100	B121324	SWITCH,PUSH:1 STA,2 POLE,PUSH-PUSH (7844 OPTION 21 ONLY)	80009	260-1623-00
S165	260-1623-01	B121325		SWITCH,PUSH:1STA,2POLE,PUSH PUSH (7844 OPTION 21 ONLY)	80009	260-1623-01
S165	260-1623-00	B010100	B130634	SWITCH,PUSH:1 STA,2 POLE,PUSH-PUSH (R7844 OPTION 21 ONLY)	80009	260-1623-00
S165	260-1623-01	B130635		SWITCH,PUSH:1STA,2POLE,PUSH PUSH (R7844 OPTION 21 ONLY)	80009	260-1623-01
S167	260-1132-02			SWITCH,PUSH:DPDT,1A,28VDC,1 BUTTON (7844 OPTION 21 ONLY)	71590	2KAB010000-543
S920	260-1213-00			SWITCH,PUSH:DPDT,1A,28VDC	80009	260-1213-00
S940	260-1573-00	B010100	B141649	SWITCH,PUSH:1 STA,2 POLE,MOMENTARY (7844 ONLY)	80009	260-1573-00
S940	260-1573-01	B141650		SWITCH,PUSH:1 BUTTON,2 POLE,PAPER ADV (7844 ONLY)	80009	260-1573-01
S940	260-1573-00	B010100	B140779	SWITCH,PUSH:1 STA,2 POLE,MOMENTARY (R7844 ONLY)	80009	260-1573-00
S940	260-1573-01	B140780		SWITCH,PUSH:1 BUTTON,2 POLE,PAPER ADV (R7844 ONLY)	80009	260-1573-01
S950	260-1453-01	B010100	B141649	SWITCH,PUSH: (7844 ONLY)	80009	260-1453-01
S950	260-1453-02	B141650		SWITCH,PUSH:1 BUTTON,2 POLE,POWER (7844 ONLY)	80009	260-1453-02
S950	260-1453-01	B010100	B140779	SWITCH,PUSH: (R7844 ONLY)	80009	260-1453-01
S950	260-1453-02	B140780		SWITCH,PUSH:1 BUTTON,2 POLE,POWER (R7844 ONLY)	80009	260-1453-02
S960				(FURNISHED AS A UNIT WITH R960)		
S970	260-1573-00	B010100	B141649	SWITCH,PUSH:1 STA,2 POLE,MOMENTARY (7844 ONLY)	80009	260-1573-00
S970	260-1573-01	B141650		SWITCH,PUSH:1 BUTTON,2 POLE,PAPER ADV (7844 ONLY)	80009	260-1573-01
S970	260-1573-00	B010100	B140779	SWITCH,PUSH:1 STA,2 POLE,MOMENTARY (R7844 ONLY)	80009	260-1573-00
S970	260-1573-01	B140780		SWITCH,PUSH:1 BUTTON,2 POLE,PAPER ADV (R7844 ONLY)	80009	260-1573-01
S974	260-1453-01	B010100	B141649	SWITCH,PUSH: (7844 ONLY)	80009	260-1453-01
S974	260-1453-02	B141650		SWITCH,PUSH:1 BUTTON,2 POLE,POWER (7844 ONLY)	80009	260-1453-02

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S974	260-1453-01	B010100	B140779	SWITCH,PUSH: (R7844 ONLY)	80009	260-1453-01
S974	260-1453-02	B140780		SWITCH,PUSH:1 BUTTON,2 POLE,POWER (R7844 ONLY)	80009	260-1453-02
S978	----- -----			(FURNISHED AS A UNIT WITH R978)		
S1004	260-0723-00			SWITCH,SLIDE:DPDT,0.5A,125VAC	79727	GF126-0028
S1024	260-0723-00			SWITCH,SLIDE:DPDT,0.5A,125VAC	79727	GF126-0028
S1200	260-1060-01			SWITCH,TOGGLE:DPST,15A,125VAC	27193	8906K-2507
S1212	260-1300-00			SWITCH,SLIDE:DPDT,3A,125VAC	82389	46206LFE
S1305	260-1710-00			SW,THERMOSTATIC:10A,250V,OPEN 206 DEG	14604	2450-47-16
S2110	260-0723-00			SWITCH,SLIDE:DPDT,0.5A,125VAC	79727	GF126-0028
S3153	260-1622-00	B010100	B121324	SWITCH,PUSH:2 STA,2 POLE,INTERLOCK (7844 ONLY)	71590	2KCC0200001661
S3153	260-1622-01	B121325		SWITCH,PUSH:2STA,2POLE,INTERLOCK (7844 ONLY)	80009	260-1622-01
S3153	260-1622-00	B010100	B130634	SWITCH,PUSH:2 STA,2 POLE,INTERLOCK (R7844 ONLY)	71590	2KCC0200001661
S3153	260-1622-01	B130635		SWITCH,PUSH:2STA,2POLE,INTERLOCK (R7844 ONLY)	80009	260-1622-01
S3155	260-1626-00			SWITCH,PUSH:2 STA,2 POLE,INTERLOCK	80009	260-1626-00
S3157	260-1622-00	B010100	B121324	SWITCH,PUSH:2 STA,2 POLE,INTERLOCK (7844 ONLY)	71590	2KCC0200001661
S3157	260-1622-01	B121325		SWITCH,PUSH:2STA,2POLE,INTERLOCK (7844 ONLY)	80009	260-1622-01
S3157	260-1622-00	B010100	B130634	SWITCH,PUSH:2 STA,2 POLE,INTERLOCK (R7844 ONLY)	71590	2KCC0200001661
S3157	260-1622-01	B130635		SWITCH,PUSH:2STA,2POLE,INTERLOCK (R7844 ONLY)	80009	260-1622-01
S3159	260-1626-00			SWITCH,PUSH:2 STA,2 POLE,INTERLOCK	80009	260-1626-00
S3161	260-1625-00	B010100	B121324	SWITCH,PUSH:2 STA,2 POLE,INTERLOCK (7844 ONLY)	80009	260-1625-00
S3161	260-1625-01	B121325		SWITCH,PUSH:2 STA,2POLE,INTERLOCK (7844 ONLY)	80009	260-1625-01
S3161	260-1625-00	B010100	B130634	SWITCH,PUSH:2 STA,2 POLE,INTERLOCK (R7844 ONLY)	80009	260-1625-00
S3161	260-1625-01	B130635		SWITCH,PUSH:2 STA,2POLE,INTERLOCK (R7844 ONLY)	80009	260-1625-01
S3163	260-1625-00	B010100	B121324	SWITCH,PUSH:2 STA,2 POLE,INTERLOCK (7844 ONLY)	80009	260-1625-00
S3163	260-1625-01	B121325		SWITCH,PUSH:2 STA,2POLE,INTERLOCK (7844 ONLY)	80009	260-1625-01
S3163	260-1625-00	B010100	B130634	SWITCH,PUSH:2 STA,2 POLE,INTERLOCK (R7844 ONLY)	80009	260-1625-00
S3163	260-1625-01	B130635		SWITCH,PUSH:2 STA,2POLE,INTERLOCK (R7844 ONLY)	80009	260-1625-01
S3165	260-1623-00	B010100	B121324	SWITCH,PUSH:1 STA,2 POLE,PUSH-PUSH (7844 ONLY)	80009	260-1623-00
S3165	260-1623-01	B121325		SWITCH,PUSH:1STA,2POLE,PUSH PUSH (7844 ONLY)	80009	260-1623-01
S3165	260-1623-00	B010100	B130634	SWITCH,PUSH:1 STA,2 POLE,PUSH-PUSH (R7844 ONLY)	80009	260-1623-00
S3165	260-1623-01	B130635		SWITCH,PUSH:1STA,2POLE,PUSH PUSH (R7844 ONLY)	80009	260-1623-01
S3167	260-1132-02			SWITCH,PUSH:DPDT,1A,28VDC,1 BUTTON	71590	2KAB010000-543
T1208	120-0636-00			XFMR,PWR,STPDN:LINE TRIGGER	80009	120-0636-00
T1225	120-0743-00			XFMR,TOROID:13 TURNS,BIFILAR	80009	120-0743-00

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T1230	120-0744-00			XFMR,TOROID:5 WINDINGS	80009	120-0744-00
T1235	120-0747-00			XFMR,TOROID:55 TURNS,SINGLE	80009	120-0747-00
T1310	120-0918-00	B010100	B141889	XFMR,PWR,STU:HV	80009	120-0918-00
	----- -----			(R7844 ONLY)		
T1310	120-1250-00	B141890		XFMR,PWR,SDN&SU:	80009	120-1250-00
	----- -----			(R7844 ONLY)		
T1310	120-0918-00	B010100	B140929	XFMR,PWR,STU:HV	80009	120-0918-00
	----- -----			(7844 ONLY)		
T1310	120-1250-00	B140930		XFMR,PWR,SDN&SU:	80009	120-1250-00
	----- -----			(7844 ONLY)		
U50	156-0259-00			MICROCIRCUIT,LI:5 TRANSISTOR ARRAY	80009	156-0259-00
U90	156-0259-00			MICROCIRCUIT,LI:5 TRANSISTOR ARRAY	80009	156-0259-00
U105	156-0030-00			MICROCIRCUIT,DI:QUAD 2-INPUT NAND GATE	01295	SN7400(N OR J)
U107	156-0072-00			MICROCIRCUIT,DI:MONOSTABLE MV,TTL,14 DIP	01295	SN74121(N OR J)
U191	156-0043-00			MICROCIRCUIT,DI:QUAD 2-INPUT POS NOR GATE	80009	156-0043-00
	----- -----			(7844 ONLY)		
U205	155-0011-00			MICROCIRCUIT,DI:ML,CLOCK AND CHOP BLANKING	80009	155-0011-00
U215	156-0041-00			MICROCIRCUIT,DI:DUAL D-TYPE FLIP-FLOP	27014	DM7474N
U233	156-0030-00			MICROCIRCUIT,DI:QUAD 2-INPUT NAND GATE	01295	SN7400(N OR J)
U235	156-0030-00			MICROCIRCUIT,DI:QUAD 2-INPUT NAND GATE	01295	SN7400(N OR J)
U237	156-0041-00			MICROCIRCUIT,DI:DUAL D-TYPE FLIP-FLOP	27014	DM7474N
U239	156-0041-00			MICROCIRCUIT,DI:DUAL D-TYPE FLIP-FLOP	27014	DM7474N
U245	156-0041-00			MICROCIRCUIT,DI:DUAL D-TYPE FLIP-FLOP	27014	DM7474N
U265	156-0031-00			MICROCIRCUIT,DI:2-INPUT AND/OR/INVERT GATE	80009	156-0031-00
U275	156-0031-00			MICROCIRCUIT,DI:2-INPUT AND/OR/INVERT GATE	80009	156-0031-00
U285	155-0009-00			MICROCIRCUIT,DI:ML,HORIZ LOCKOUT LOGIC	80009	155-0009-00
U315	156-0259-00			MICROCIRCUIT,LI:5 TRANSISTOR ARRAY	80009	156-0259-00
U335	155-0012-00			MICROCIRCUIT,LI:ML,Z-AXIS AND AMPLIFIER	80009	155-0012-00
U355	156-0259-00			MICROCIRCUIT,LI:5 TRANSISTOR ARRAY	80009	156-0259-00
U375	155-0012-00			MICROCIRCUIT,LI:ML,Z-AXIS AND AMPLIFIER	80009	155-0012-00
U415	155-0078-03	B010100	B131499	MICROCIRCUIT,LI:ML,VERTICAL AMPL,SEL	80009	155-0078-03
	----- -----			(7844 ONLY)		
U415	155-0078-10	B131500		MICROCIRCUIT,LI:ML,VERTICAL AMPLIFIER	80009	155-0078-10
	----- -----			(7844 ONLY)		
U415	155-0078-03	B010100	B130674	MICROCIRCUIT,LI:ML,VERTICAL AMPL,SEL	80009	155-0078-03
	----- -----			(R7844 ONLY)		
U415	155-0078-10	B130675		MICROCIRCUIT,LI:ML,VERTICAL AMPLIFIER	80009	155-0078-10
	----- -----			(R7844 ONLY)		
U515	155-0078-03	B010100	B131499	MICROCIRCUIT,LI:ML,VERTICAL AMPL,SEL	80009	155-0078-03
	----- -----			(7844 ONLY)		
U515	155-0078-10	B131500		MICROCIRCUIT,LI:ML,VERTICAL AMPLIFIER	80009	155-0078-10
	----- -----			(7844 ONLY)		
U515	155-0078-03	B010100	B130674	MICROCIRCUIT,LI:ML,VERTICAL AMPL,SEL	80009	155-0078-03
	----- -----			(R7844 ONLY)		
U515	155-0078-10	B130675		MICROCIRCUIT,LI:ML,VERTICAL AMPLIFIER	80009	155-0078-10
	----- -----			(R7844 ONLY)		
U615	155-0095-00	B010100	B029999	MICROCIRCUIT,LI:HF DIFFERENTIAL AMPLIFIER	80009	155-0095-00
	----- -----			(7844 OPTION 21 ONLY)		
U615	155-0095-02	B030000	B110794X	MICROCIRCUIT,LI:HIGH FREQ DIFF AMPL	80009	155-0095-02
	----- -----			(7844 OPTION 21 ONLY)		
U615	155-0095-00	B010100	B019999	MICROCIRCUIT,LI:HF DIFFERENTIAL AMPLIFIER	80009	155-0095-00
	----- -----			(R7844 OPTION 21 ONLY)		
U615	155-0095-02	B020000	B100399X	MICROCIRCUIT,LI:HIGH FREQ DIFF AMPL	80009	155-0095-02
	----- -----			(R7844 OPTION 21 ONLY)		
U715	155-0095-00	B010100	B029999	MICROCIRCUIT,LI:HF DIFFERENTIAL AMPLIFIER	80009	155-0095-00
	----- -----			(7844 OPTION 21 ONLY)		
U715	155-0095-02	B030000	B110794X	MICROCIRCUIT,LI:HIGH FREQ DIFF AMPL	80009	155-0095-02
	----- -----			(7844 OPTION 21 ONLY)		

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U715	155-0095-00	B010100	B019999	MICROCIRCUIT,LI:HF DIFFERENTIAL AMPLIFIER (R7844 OPTION 21 ONLY)	80009	155-0095-00
U715	155-0095-02	B020000	B100399X	MICROCIRCUIT,LI:HIGH FREQ DIFF AMPL (R7844 OPTION 21 ONLY)	80009	155-0095-02
U820	155-0022-00			MICROCIRCUIT,DI:ML,CHANNEL SWITCH	80009	155-0022-00
U840	155-0022-00			MICROCIRCUIT,DI:ML,CHANNEL SWITCH	80009	155-0022-00
U1275	155-0067-02			MICROCIRCUIT,DI:ML,POWER SUPPLY REGULATOR	80009	155-0067-02
U1635	156-0067-00			MICROCIRCUIT,LI:OPERATIONAL AMPLIFIER	02735	85145
U1685	155-0059-00			MICROCIRCUIT,LI:ML,HIGH FREQUENCY AMPL	80009	155-0059-00
U1745	155-0065-00			MICROCIRCUIT,LI:ML,OUT AMPLIFIER	80009	155-0065-00
U2120	156-0043-00			MICROCIRCUIT,DI:QUAD 2-INPUT POS NOR GATE	80009	156-0043-00
U2126	155-0021-01			MICROCIRCUIT,DI:ML,TIMING GENERATOR	80009	155-0021-01
U2155	156-0043-01			MICROCIRCUIT,DI:2 INPUT NOR GATE	80009	156-0043-01
U2159	155-0017-00			MICROCIRCUIT,DI:ML,ZERO LOGIC COUNTER	80009	155-0017-00
U2180	155-0015-01			MICROCIRCUIT,DI:ML,ANALOG DATA SWITCH	80009	155-0015-01
U2185	155-0014-01			MICROCIRCUIT,DI:ML,ANALOG TO DECIMAL CONV	80009	155-0014-01
U2190	155-0015-01			MICROCIRCUIT,DI:ML,ANALOG DATA SWITCH	80009	155-0015-01
U2232	155-0018-00			MICROCIRCUIT,DI:ML,ZERO LOGIC	80009	155-0018-00
U2244	155-0014-01			MICROCIRCUIT,DI:ML,ANALOG TO DECIMAL CONV	80009	155-0014-01
U2250	156-0032-00			MICROCIRCUIT,DI:4-BIT BINARY COUNTER	80009	156-0032-00
U2260	155-0019-00			MICROCIRCUIT,DI:ML,DECIMAL POINT AND SPACE	80009	155-0019-00
U2270	155-0023-00			MICROCIRCUIT,DI:ML,CHAR GEN NUMERALS	80009	155-0023-00
U2272	155-0024-00			MICROCIRCUIT,DI:ML,CHAR GEN SPCL SYMBOLS	80009	155-0024-00
U2274	155-0025-00			MICROCIRCUIT,DI:ML,CHAR GEN PREFIXES	80009	155-0025-00
U2276	155-0026-00			MICROCIRCUIT,DI:ML,CHAR GEN LETTERS	80009	155-0026-00
U2278	155-0027-00			MICROCIRCUIT,DI:ML,CHAR GEN SPCL ALPHA	80009	155-0027-00
U2284	155-0020-00			MICROCIRCUIT,DI:ML,CHANNEL SW OUTPUT ASSY	80009	155-0020-00
U2315	152-0493-00			SEMICOND DEVICE:3KV P-P IN,+12KV OUT	52306	CMX114
U2536	156-0281-00			MICROCIRCUIT,LI:4 TRANSISTOR ARRAY	02735	CA3725
U2685	155-0059-00			MICROCIRCUIT,LI:ML,HIGH FREQUENCY AMPL	80009	155-0059-00
U2745	155-0065-00			MICROCIRCUIT,LI:ML,OUT AMPLIFIER	80009	155-0065-00
U3153	156-0030-00			MICROCIRCUIT,DI:QUAD 2-INPUT NAND GATE	01295	SN7400(N OR J)
U3154	156-0158-00			MICROCIRCUIT,LI:DUAL OPERATIONAL AMPLIFIER	18324	MC1458V
U3155	156-0030-00			MICROCIRCUIT,DI:QUAD 2-INPUT NAND GATE	01295	SN7400(N OR J)
U3157	156-0030-00			MICROCIRCUIT,DI:QUAD 2-INPUT NAND GATE	01295	SN7400(N OR J)
U3159	156-0043-00			MICROCIRCUIT,DI:QUAD 2-INPUT POS NOR GATE	80009	156-0043-00
U3161	156-0034-00			MICROCIRCUIT,DI:DUAL 4-INPUT NAND GATE	80009	156-0034-00
U3163	156-0043-00			MICROCIRCUIT,DI:QUAD 2-INPUT POS NOR GATE	80009	156-0043-00
U3164	156-0158-00			MICROCIRCUIT,LI:DUAL OPERATIONAL AMPLIFIER	18324	MC1458V
U3165	156-0030-00			MICROCIRCUIT,DI:QUAD 2-INPUT NAND GATE	01295	SN7400(N OR J)
U3167	156-0043-00			MICROCIRCUIT,DI:QUAD 2-INPUT POS NOR GATE	80009	156-0043-00
U3169	156-0030-00			MICROCIRCUIT,DI:QUAD 2-INPUT NAND GATE	01295	SN7400(N OR J)
U3171	156-0034-00			MICROCIRCUIT,DI:DUAL 4-INPUT NAND GATE	80009	156-0034-00
U3173	156-0030-00			MICROCIRCUIT,DI:QUAD 2-INPUT NAND GATE	01295	SN7400(N OR J)
U3175	156-0043-00			MICROCIRCUIT,DI:QUAD 2-INPUT POS NOR GATE	80009	156-0043-00
U3177	156-0043-00			MICROCIRCUIT,DI:QUAD 2-INPUT POS NOR GATE	80009	156-0043-00
U3191	156-0043-00			MICROCIRCUIT,DI:QUAD 2-INPUT POS NOR GATE	80009	156-0043-00
U3615	155-0095-00	B010100	B029999	MICROCIRCUIT,LI:HF DIFFERENTIAL AMPLIFIER (7844 ONLY)	80009	155-0095-00
U3615	155-0095-01	B030000	B109999	MICROCIRCUIT,LI:HF DIFFERENTIAL AMPLIFIER (7844 ONLY, FURNISHED AS A PAIR)	80009	155-0095-01
U3615	155-0095-03	B110000		MICROCIRCUIT,LI:HF DIFF AMPLIFIER,TESTED (7844 ONLY, FURNISHED AS A PAIR)	80009	155-0095-03
U3615	155-0095-00	B010100	B019999	MICROCIRCUIT,LI:HF DIFFERENTIAL AMPLIFIER (R7844 ONLY)	80009	155-0095-00
U3615	155-0095-01	B020000	B099999	MICROCIRCUIT,LI:HF DIFFERENTIAL AMPLIFIER (R7844 ONLY, FURNISHED AS A PAIR)	80009	155-0095-01

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U3615	155-0095-03	B100000		MICROCIRCUIT,LI:HF DIFF AMPLIFIER,TESTED (R7844 ONLY, FURNISHED AS A PAIR)	80009	155-0095-03
U3665	155-0095-00	B010100	B029999	MICROCIRCUIT,LI:HF DIFFERENTIAL AMPLIFIER (7844 ONLY)	80009	155-0095-00
U3665	155-0095-01	B030000	B109999	MICROCIRCUIT,LI:HF DIFFERENTIAL AMPLIFIER (7844 ONLY, FURNISHED AS A PAIR)	80009	155-0095-01
U3665	155-0095-03	B110000		MICROCIRCUIT,LI:HF DIFF AMPLIFIER,TESTED (7844 ONLY, FURNISHED AS A PAIR)	80009	155-0095-03
U3665	155-0095-00	B010100	B019999	MICROCIRCUIT,LI:HF DIFFERENTIAL AMPLIFIER (R7844 ONLY)	80009	155-0095-00
U3665	155-0095-01	B020000	B099999	MICROCIRCUIT,LI:HF DIFFERENTIAL AMPLIFIER (R7844 ONLY, FURNISHED AS A PAIR)	80009	155-0095-01
U3665	155-0095-03	B100000		MICROCIRCUIT,LI:HF DIFF AMPLIFIER,TESTED (R7844 ONLY, FURNISHED AS A PAIR)	80009	155-0095-03
U3715	155-0095-00	B010100	B029999	MICROCIRCUIT,LI:HF DIFFERENTIAL AMPLIFIER (7844 ONLY)	80009	155-0095-00
U3715	155-0095-01	B030000	B109999	MICROCIRCUIT,LI:HF DIFFERENTIAL AMPLIFIER (7844 ONLY, FURNISHED AS A PAIR)	80009	155-0095-01
U3715	155-0095-03	B110000		MICROCIRCUIT,LI:HF DIFF AMPLIFIER,TESTED (7844 ONLY, FURNISHED AS A PAIR)	80009	155-0095-03
U3715	155-0095-00	B010100	B019999	MICROCIRCUIT,LI:HF DIFFERENTIAL AMPLIFIER (R7844 ONLY)	80009	155-0095-00
U3715	155-0095-01	B020000	B099999	MICROCIRCUIT,LI:HF DIFFERENTIAL AMPLIFIER (R7844 ONLY, FURNISHED AS A PAIR)	80009	155-0095-01
U3715	155-0095-03	B100000		MICROCIRCUIT,LI:HF DIFF AMPLIFIER,TESTED (R7844 ONLY, FURNISHED AS A PAIR)	80009	155-0095-03
U3765	155-0095-00	B010100	B029999	MICROCIRCUIT,LI:HF DIFFERENTIAL AMPLIFIER (7844 ONLY)	80009	155-0095-00
U3765	155-0095-01	B030000	B109999	MICROCIRCUIT,LI:HF DIFFERENTIAL AMPLIFIER (7844 ONLY, FURNISHED AS A PAIR)	80009	155-0095-01
U3765	155-0095-03	B110000		MICROCIRCUIT,LI:HF DIFF AMPLIFIER,TESTED (7844 ONLY, FURNISHED AS A PAIR)	80009	155-0095-03
U3765	155-0095-00	B010100	B019999	MICROCIRCUIT,LI:HF DIFFERENTIAL AMPLIFIER (R7844 ONLY)	80009	155-0095-00
U3765	155-0095-01	B020000	B099999	MICROCIRCUIT,LI:HF DIFFERENTIAL AMPLIFIER (R7844 ONLY, FURNISHED AS A PAIR)	80009	155-0095-01
U3765	155-0095-03	B100000		MICROCIRCUIT,LI:HF DIFF AMPLIFIER,TESTED (R7844 ONLY, FURNISHED AS A PAIR)	80009	155-0095-03
U4115	156-0072-00			MICROCIRCUIT,DI:MONOSTABLE MV,TTL,14 DIP (U4115, OPTION 22 ONLY)	01295	SN74121(N OR J)
U4134	156-0072-00			MICROCIRCUIT,DI:MONOSTABLE MV,TTL,14 DIP (U4134, OPTION 22 ONLY)	01295	SN74121(N OR J)
V2425	154-0713-00			ELECTRON TUBE:CRT	80009	154-0713-00
V2425	154-0713-04			ELECTRON TUBE:CRT,P11,INT SCALE (OPTION 78 ONLY)	80009	154-0713-04
VR319	152-0166-00	B010100	B030211X	SEMICOND DEVICE:ZENER,0.4W,6.2V,5% (7844 ONLY)	04713	SZ11738
VR319	152-0166-00	B010100	B020123X	SEMICOND DEVICE:ZENER,0.4W,6.2V,5% (R7844 ONLY)	04713	SZ11738
VR329	152-0281-00			SEMICOND DEVICE:ZENER,0.4W,22V,5%	12954	1N969B
VR359	152-0166-00			SEMICOND DEVICE:ZENER,0.4W,6.2V,5%	04713	SZ11738
VR957	152-0280-00			SEMICOND DEVICE:ZENER,0.4W,6.2V,5%	80009	152-0280-00
VR1124	152-0280-00			SEMICOND DEVICE:ZENER,0.4W,6.2V,5%	80009	152-0280-00
VR1239	152-0241-00	XB141775		SEMICOND DEVICE:ZENER,0.4W,33V,5% (7844 ONLY)	80009	152-0241-00
VR1239	152-0241-00	XB140840		SEMICOND DEVICE:ZENER,0.4W,33V,5% (R7844 ONLY)	80009	152-0241-00

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Ckt No.	Tektronix Part No.	Serial/Model No. Eff	Dscont	Name & Description	Mfr Code	Mfr Part Number
VR1246	152-0428-00			SEMICOND DEVICE:ZENER,0.4W,120V,5%	80009	152-0428-00
VR1253	152-0149-00			SEMICOND DEVICE:ZENER,0.4W,10V,5%	04713	SZG35009K3
VR1279	152-0304-00			SEMICOND DEVICE:ZENER,0.4W,20V,5%	15238	Z5411
VR1297	152-0212-00			SEMICOND DEVICE:ZENER,0.5W,9V,5%	04713	SZ50646RL
VR1401	152-0226-00			SEMICOND DEVICE:ZENER,0.4W,5.1V,5%	14552	TD3810980
VR1461	152-0226-00			SEMICOND DEVICE:ZENER,0.4W,5.1V,5%	14552	TD3810980
VR1501	152-0127-00			SEMICOND DEVICE:ZENER,0.4W,7.5V,5%	04713	SZG35009K2
VR1505	152-0212-00			SEMICOND DEVICE:ZENER,0.5W,9V,5%	04713	SZ50646RL
VR1635	152-0255-00			SEMICOND DEVICE:ZENER,0.4W,51V,5%	80009	152-0255-00
VR1840	152-0306-00	B010100	B099999X	SEMICOND DEVICE:ZENER,0.4W,9.1V,5% (R7844 ONLY)	15238	Z5409
VR1840	152-0306-00	B010100	B109999X	SEMICOND DEVICE:ZENER,0.4W,9.1V,5% (7844 ONLY)	15238	Z5409
VR1850	152-0306-00	B010100	B099999X	SEMICOND DEVICE:ZENER,0.4W,9.1V,5% (R7844 ONLY)	15238	Z5409
VR1850	152-0306-00	B010100	B109999X	SEMICOND DEVICE:ZENER,0.4W,9.1V,5% (7844 ONLY)	15238	Z5409
VR1870	152-0175-00	B010100	B099999X	SEMICOND DEVICE:ZENER,0.4W,5.6V,5% (R7844 ONLY)	04713	SZG35008
VR1870	152-0175-00	B010100	B109999X	SEMICOND DEVICE:ZENER,0.4W,5.6V,5% (7844 ONLY)	04713	SZG35008
VR2024	152-0280-00			SEMICOND DEVICE:ZENER,0.4W,6.2V,5%	80009	152-0280-00
VR2262	152-0405-00			SEMICOND DEVICE:ZENER,1W,15V,5%	80009	152-0405-00
VR2263	152-0405-00			SEMICOND DEVICE:ZENER,1W,15V,5%	80009	152-0405-00
VR2264	152-0405-00			SEMICOND DEVICE:ZENER,1W,15V,5%	80009	152-0405-00
VR2424	152-0247-00			SEMICOND DEVICE:ZENER,0.4W,150V,5%	04713	SZG275K1RL
VR2840	152-0306-00	B010100	B099999X	SEMICOND DEVICE:ZENER,0.4W,9.1V,5% (R7844 ONLY)	15238	Z5409
VR2840	152-0306-00	B010100	B109999X	SEMICOND DEVICE:ZENER,0.4W,9.1V,5% (7844 ONLY)	15238	Z5409
VR2850	152-0306-00	B010100	B099999X	SEMICOND DEVICE:ZENER,0.4W,9.1V,5% (R7844 ONLY)	15238	Z5409
VR2850	152-0306-00	B010100	B109999X	SEMICOND DEVICE:ZENER,0.4W,9.1V,5% (7844 ONLY)	15238	Z5409
VR2870	152-0175-00	B010100	B099999X	SEMICOND DEVICE:ZENER,0.4W,5.6V,5% (R7844 ONLY)	04713	SZG35008
VR2870	152-0175-00	B010100	B109999X	SEMICOND DEVICE:ZENER,0.4W,5.6V,5% (7844 ONLY)	04713	SZG35008
VR4162	152-0306-00			SEMICOND DEVICE:ZENER,0.4W,9.1V,5% (VR4162, OPTION 22 ONLY)	15238	Z5409
VR4172	152-0306-00			SEMICOND DEVICE:ZENER,0.4W,9.1V,5% (VR4172, OPTION 22 ONLY)	15238	Z5409
VR4881	152-0306-00	XB100000		SEMICOND DEVICE:ZENER,0.4W,9.1V,5% (R7844 ONLY)	15238	Z5409
VR4881	152-0306-00	XB110000		SEMICOND DEVICE:ZENER,0.4W,9.1V,5% (7844 ONLY)	15238	Z5409
VR4883	152-0217-00	XB100000		SEMICOND DEVICE:ZENER,0.4W,8.2V,5% (R7844 ONLY)	04713	SZG20
VR4883	152-0217-00	XB110000		SEMICOND DEVICE:ZENER,0.4W,8.2V,5% (7844 ONLY)	04713	SZG20
VR4891	152-0304-00	XB100000		SEMICOND DEVICE:ZENER,0.4W,20V,5% (R7844 ONLY)	15238	Z5411
VR4891	152-0304-00	XB110000		SEMICOND DEVICE:ZENER,0.4W,20V,5% (7844 ONLY)	15238	Z5411
VR5881	152-0306-00	XB100000		SEMICOND DEVICE:ZENER,0.4W,9.1V,5% (R7844 ONLY)	15238	Z5409

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Ckt No.	Tektronix Part No.	Serial/Model No. Eff	Dscont	Name & Description	Mfr Code	Mfr Part Number
VR5881	152-0306-00	XB110000		SEMICOND DEVICE:ZENER,0.4W,9.1V,5% (7844 ONLY)	15238	Z5409
VR5883	152-0217-00	XB100000		SEMICOND DEVICE:ZENER,0.4W,8.2V,5% (R7844 ONLY)	04713	SZG20
VR5883	152-0217-00	XB110000		SEMICOND DEVICE:ZENER,0.4W,8.2V,5% (7844 ONLY)	04713	SZG20
VR5891	152-0304-00	XB100000		SEMICOND DEVICE:ZENER,0.4W,20V,5% (R7844 ONLY)	15238	Z5411
VR5891	152-0304-00	XB110000		SEMICOND DEVICE:ZENER,0.4W,20V,5% (7844 ONLY)	15238	Z5411
W4810	131-0566-00	XB100000		BUS CONDUCTOR:DUMMY RES,2.375,22 AWG (R7844 ONLY)	55210	L-2007-1
W4810	131-0566-00	XB110000		BUS CONDUCTOR:DUMMY RES,2.375,22 AWG (7844 ONLY)	55210	L-2007-1

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DIAGRAMS AND CIRCUIT BOARD ILLUSTRATIONS

Symbols and Reference Designators

Electrical components shown on the diagrams are in the following units unless noted otherwise:

Capacitors = Values one or greater are in picofarads (pF).
Values less than one are in microfarads (μF).

Resistors = Ohms (Ω).

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

Logic symbology is based on ANSI Y32.14-1973 in terms of positive logic. Logic symbols depict the logic function performed and may differ from the manufacturer's data.

The overline on a signal name indicates that the signal performs its intended function when it goes to the low state.

Abbreviations are based on ANSI Y1.1-1972.

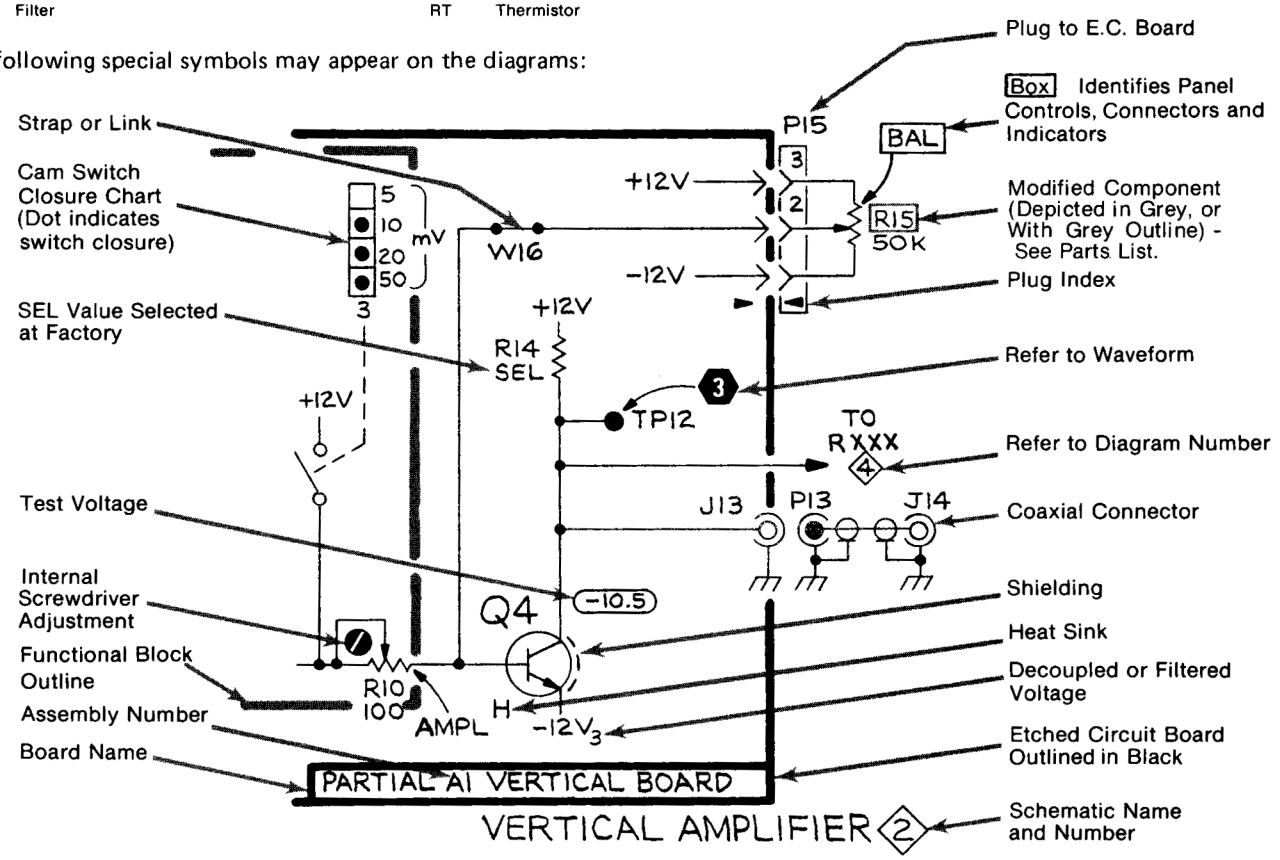
Other ANSI standards that are used in the preparation of diagrams by Tektronix, Inc. are:

Y14.15, 1966	Drafting Practices.
Y14.2, 1973	Line Conventions and Lettering.
Y10.5, 1968	Letter Symbols for Quantities Used in Electrical Science and Electrical Engineering.

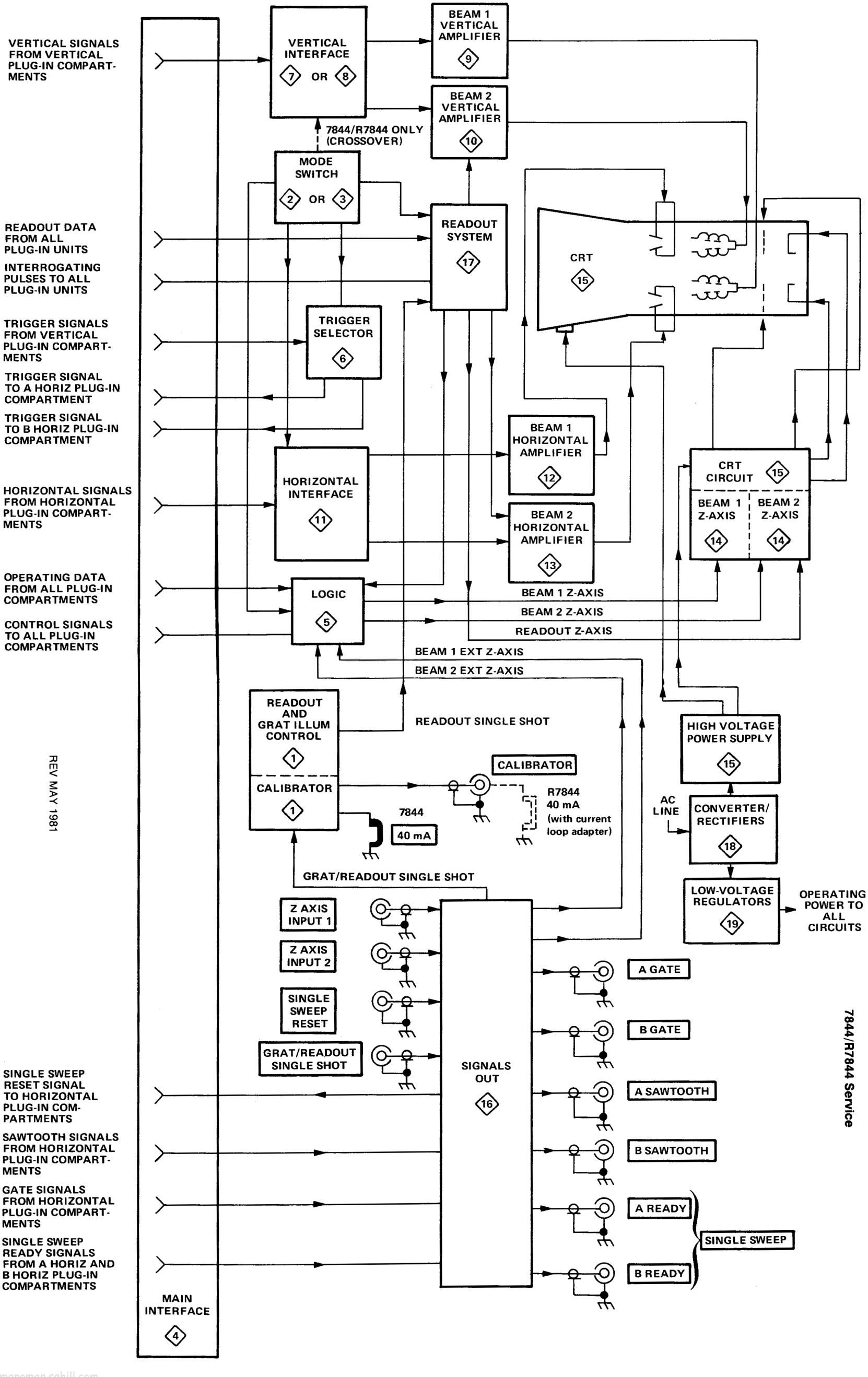
The following prefix letters are used as reference designators to identify components or assemblies on the diagrams.

A	Assembly, separable or repairable (circuit board, etc)	H	Heat dissipating device (heat sink, heat radiator, etc)	S	Switch or contactor
AT	Attenuator, fixed or variable	HR	Heater	T	Transformer
B	Motor	HY	Hybrid circuit	TC	Thermocouple
BT	Battery	J	Connector, stationary portion	TP	Test point
C	Capacitor, fixed or variable	K	Relay	U	Assembly, inseparable or non-repairable (integrated circuit, etc.)
CB	Circuit breaker	L	Inductor, fixed or variable	V	Electron tube
CR	Diode, signal or rectifier	M	Meter	VR	Voltage regulator (zener diode, etc.)
DL	Delay line	P	Connector, movable portion	W	Wirestrap or cable
DS	Indicating device (lamp)	Q	Transistor or silicon-controlled rectifier	Y	Crystal
E	Spark Gap, Ferrite bead	R	Resistor, fixed or variable	Z	Phase shifter
F	Fuse	RT	Thermistor		
FL	Filter				

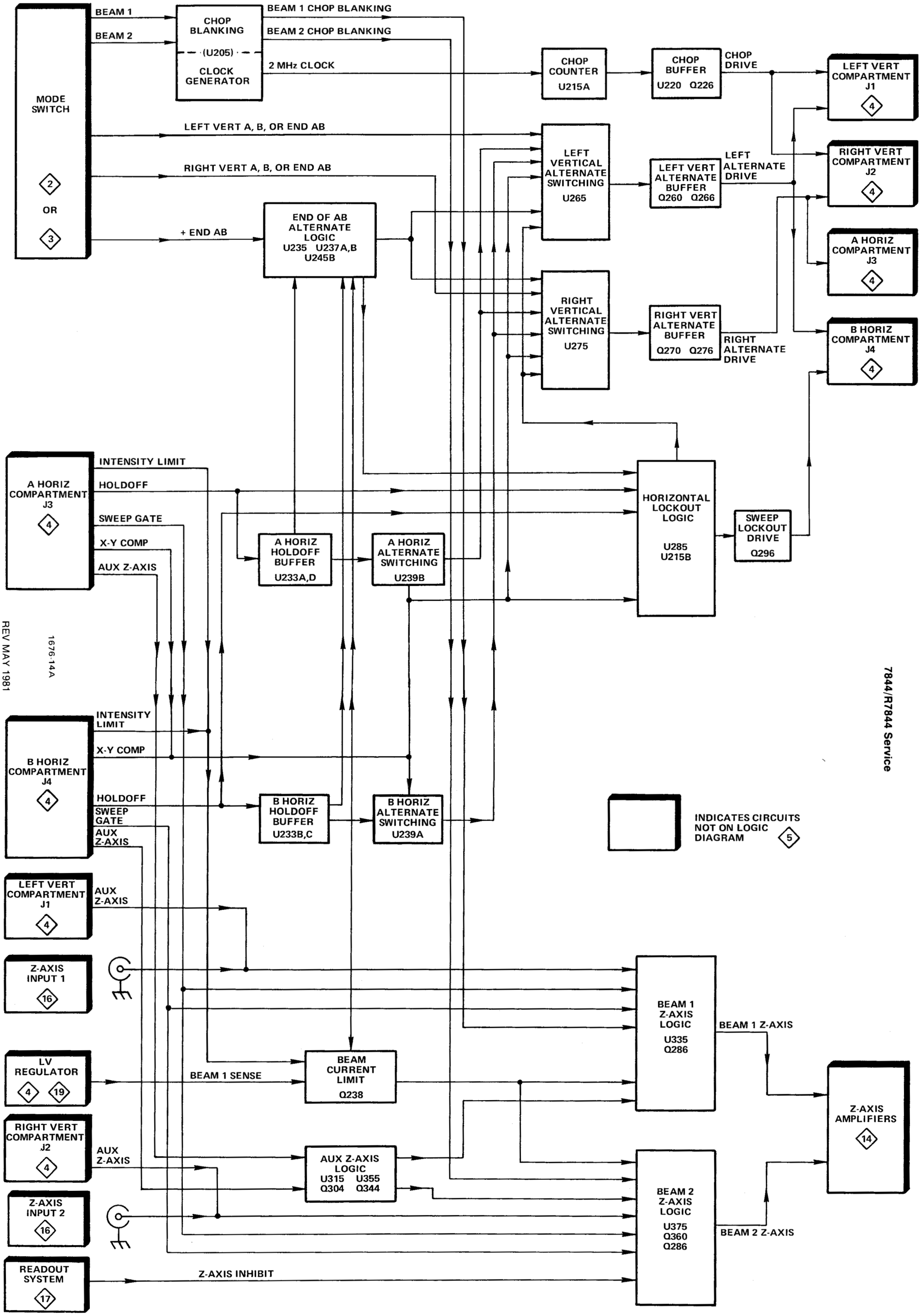
The following special symbols may appear on the diagrams:



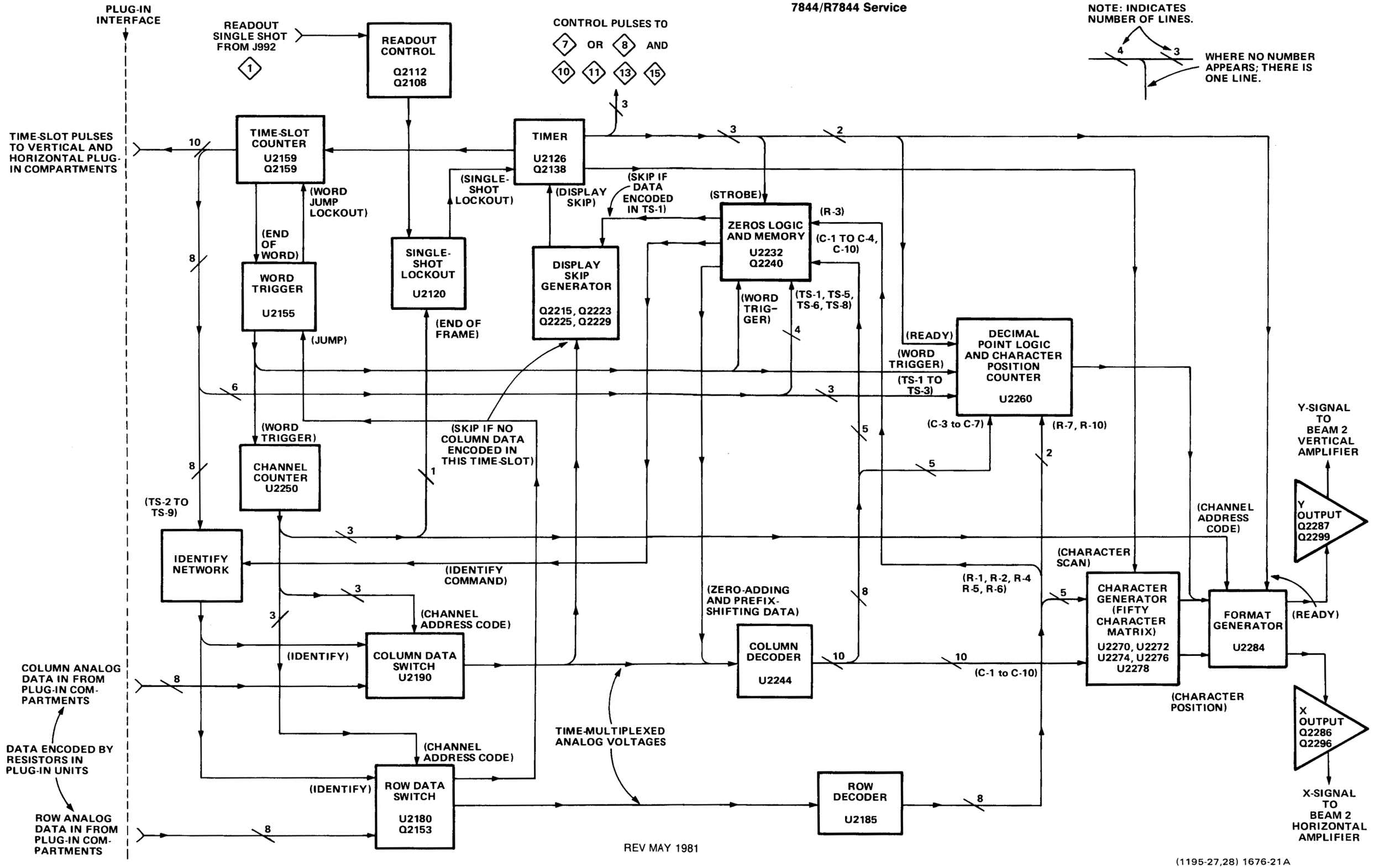
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NOTE
LEAD CONFIGURATIONS AND CASE STYLES ARE TYPICAL, BUT MAY VARY DUE TO VENDOR CHANGES OR INSTRUMENT MODIFICATIONS.

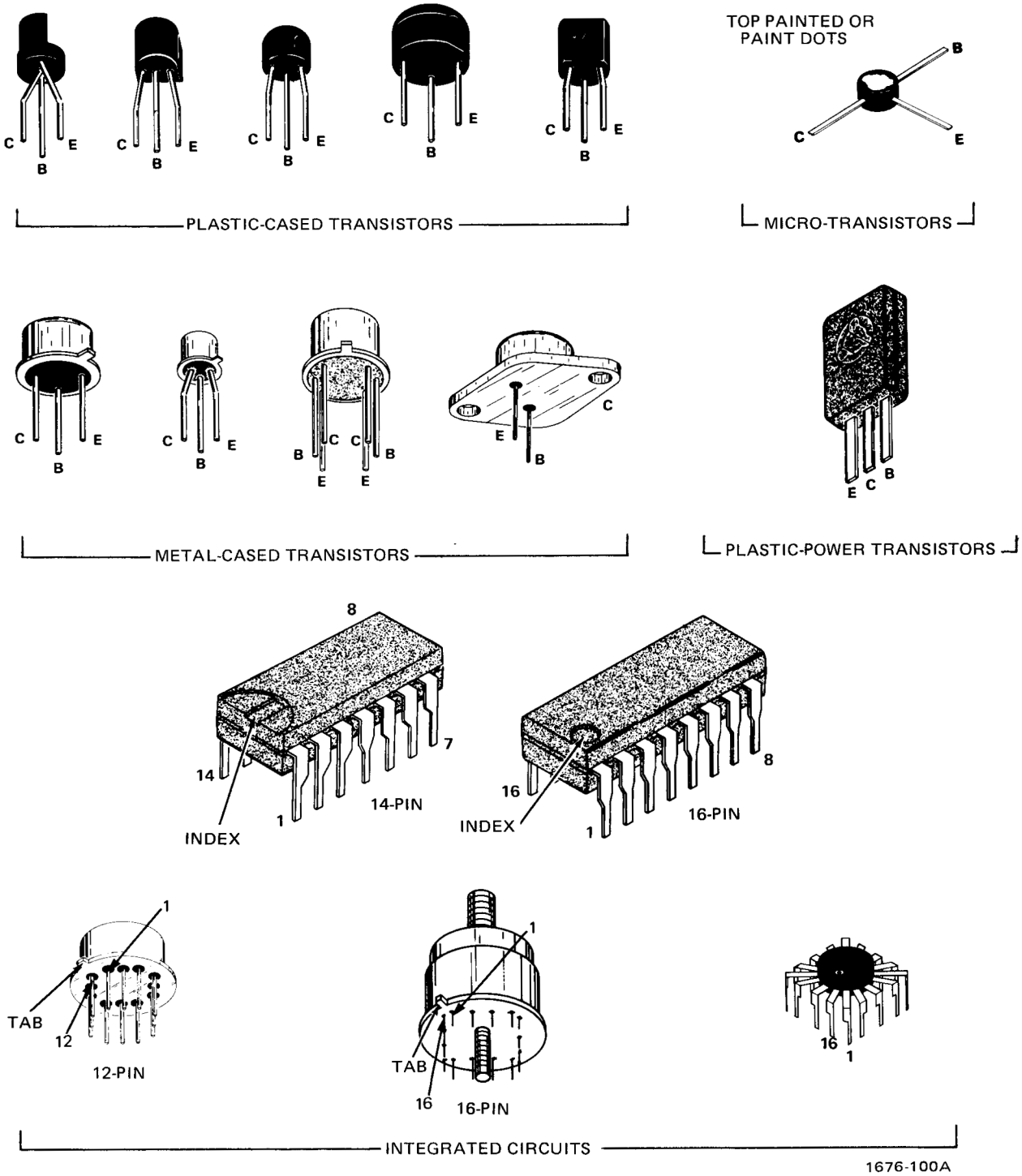


Fig. 9-1. Semiconductor lead configurations.

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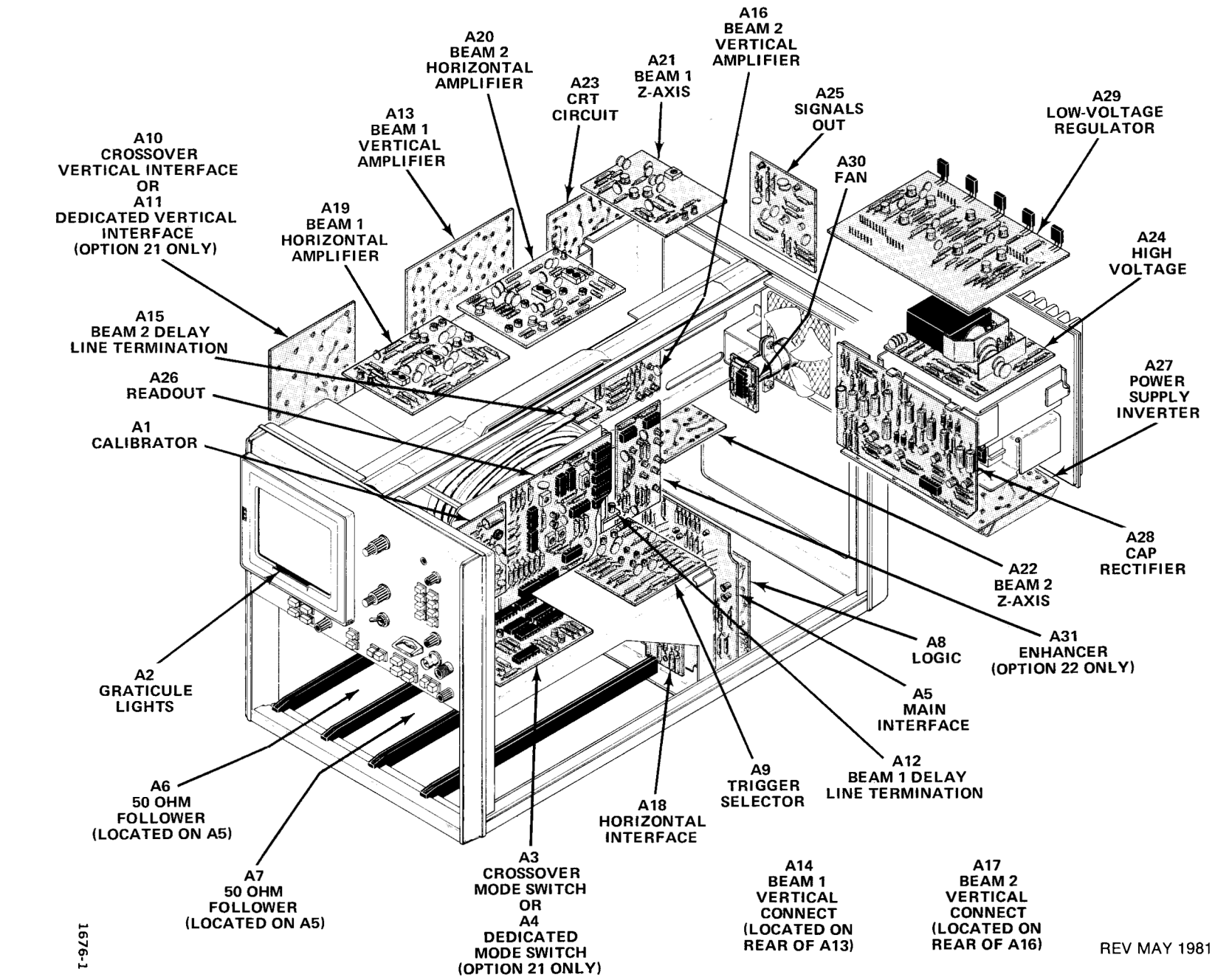


Fig. 9-2. Location of circuit boards in the 7844 and R7844.

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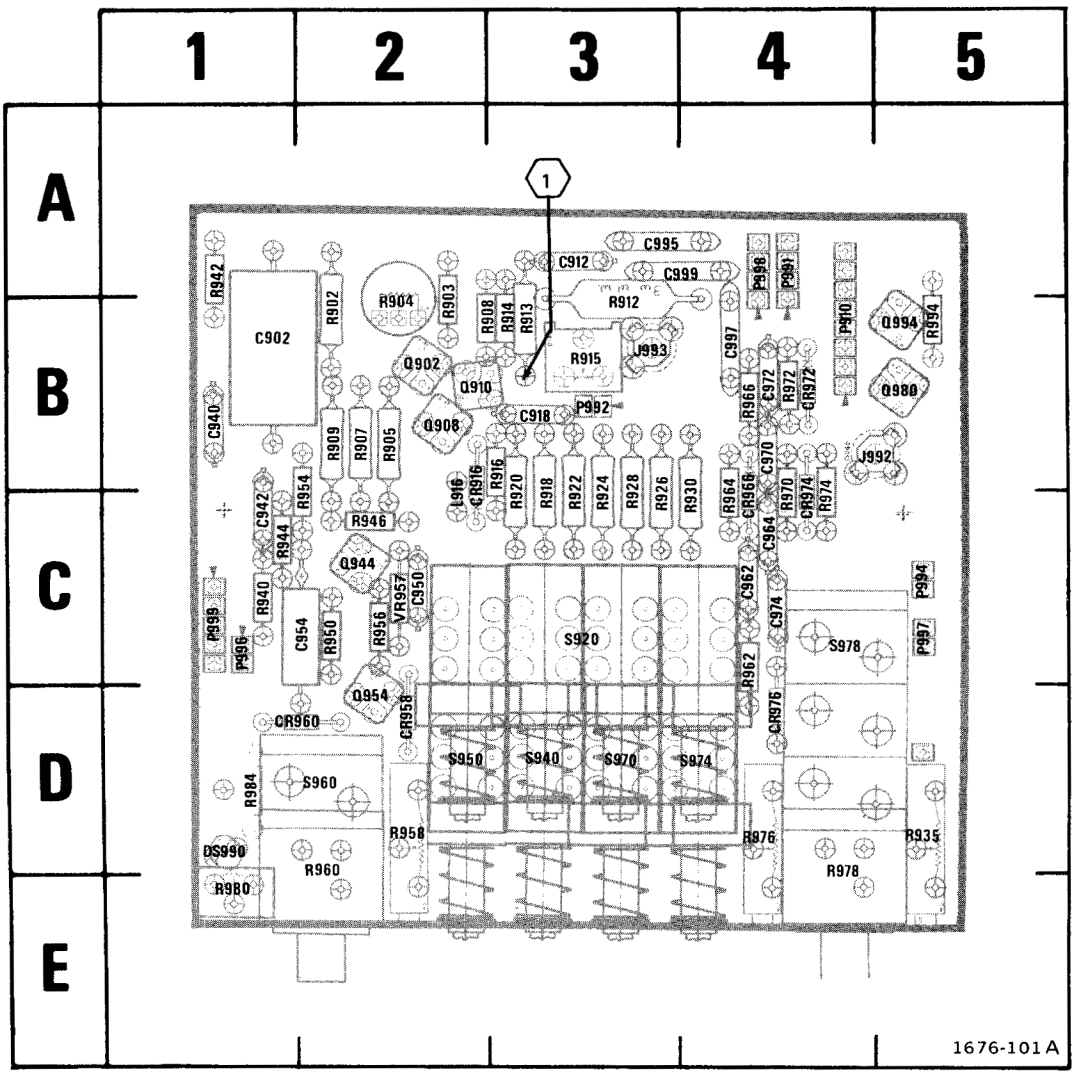


Fig. 9-3. A1—Calibrator circuit board assembly.

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CKT NO	GRID LOC	CKT NO	GRID LOC	CKT NO	GRID LOC	CKT NO	GRID LOC	CKT NO	GRID LOC
C902	1B	CR972	4B	Q902	2B	R918	3C	R970	4C
C912	3A	CR974	4C	Q908	2B	R920	3C	R972	4B
C918	3B	CR976	4D	Q910	2B	R922	3C	R974	4C
C940	1B	CR966	4C	Q944	2C	R924	3C	R976	4D
C942	1C			Q954	2D	R926	3C	R978	4D
C950	2C	DS990	1D	Q980	5B	R928	3C	R980	1E
C954	2C			Q994	5B	R930	4C	R984	1D
C962	4C	J992	5B			R935	5D	R994	5B
C964	4C	J993	3B	R902	2B	R940	1C		
C970	4B			R903	2B	R942	1A	S920	3C
C972	4B	L916	2B	R904	2B	R944	1C	S940	3D
C974	4C			R905	2B	R946	2C	S950	2D
C995	3A	P910	4B	R907	2B	R950	2C	S960	2D
C997	4B	P991	4A	R908	2B	R954	2C	S970	3D
C999	3A	P992	3B	R909	2B	R956	2C	S974	3D
		P994	5C	R912	3B	R958	2D	S978	4C
CR916	2B	P996	1C	R913	3B	R960	2D		
CR958	2D	P997	5C	R914	3B	R962	4C	VR957	2C
CR960	1D	P998	4A	R915	3B	R964	4C		
		P999	1C	R916	3B	R966	4B		

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VOLTAGE AND WAVEFORM CONDITIONS

WARNING

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

The voltages and waveforms shown on this diagram can be obtained using the recommended test equipment listed below.

RECOMMENDED TEST EQUIPMENT

Item	Specifications	Recommended Type
Oscilloscope	Frequency Response Dc to 65 MHz Deflection Factor 5 mV to 5 V/div Input Impedance 1 MΩ, 20 pF 500 ns	Tektronix 7603 equipped with 7A13 Amplifier and 7B-series time-base unit, or equivalent.
Probe	Fast rise 10x attenuation probe compatible with the vertical amplifier of the test oscilloscope.	P6053B, or equivalent.
Precision dc voltmeter	Input Impedance 10 MΩ Range 0—500 V	Tektronix 7D13 Digital Multimeter (test oscilloscope must have readout system); or DM 501A Digital Multi-Meter with TM 501 Power Module, or equivalent.

VOLTAGE MEASUREMENTS

Voltage measurements on this diagram were obtained under the following conditions:

Set the CALIBRATOR 4 V push button in.

Set GRAT ILLUM control to midrange (out of detent position).

No plug-in units are installed.

Voltmeter common is connected to chassis ground.

WAVEFORMS

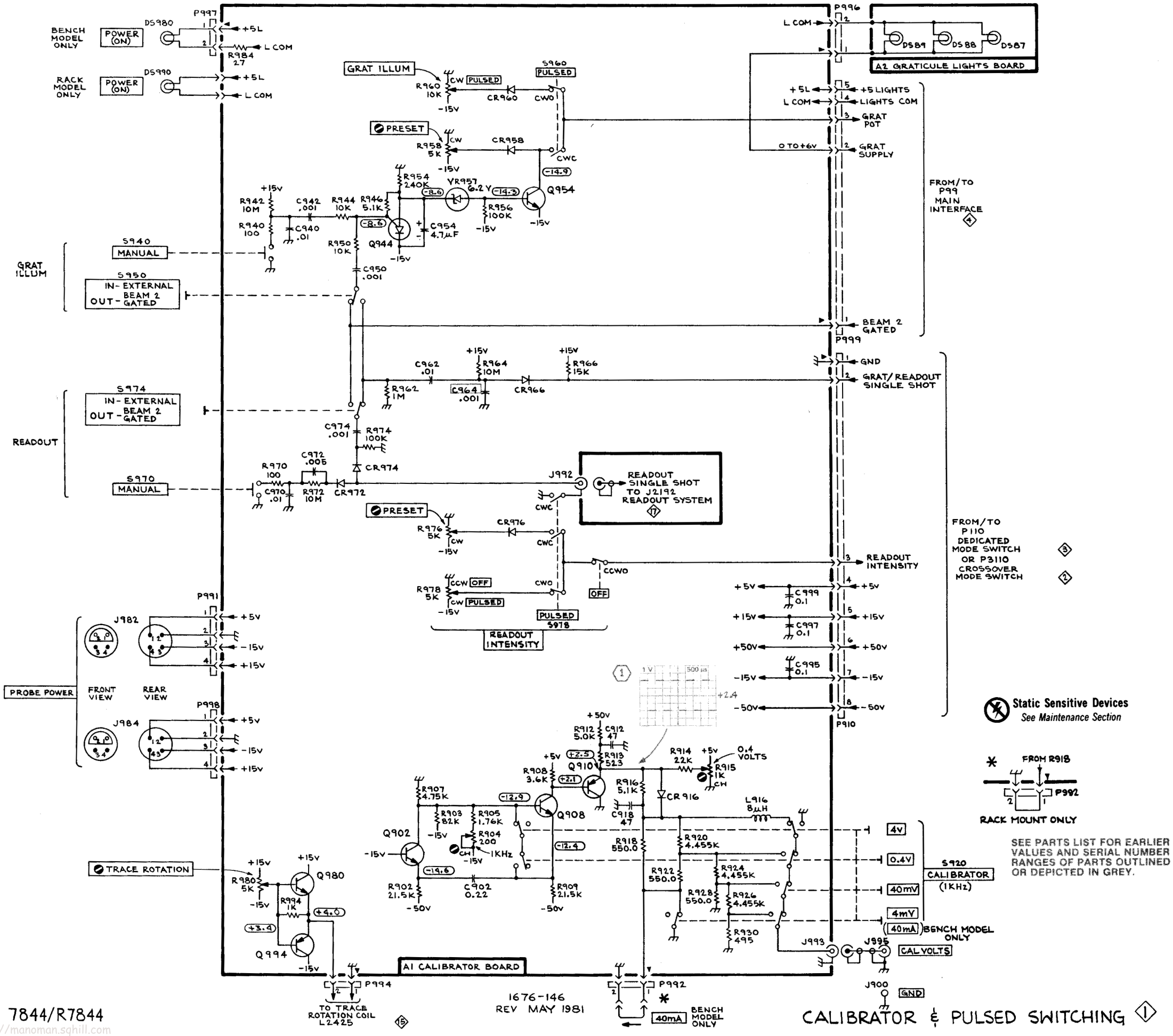
Waveforms shown on this diagram were obtained under the following conditions:

7844/R7844 OSCILLOSCOPE UNDER TEST. Front-panel controls are set the same as for voltage measurements.

TEST OSCILLOSCOPE. The test oscilloscope triggering is set to auto mode with ac coupling from the internal source. The 7A13 input coupling is set to dc.

Tolerances of voltages and waveforms shown are within 20%. Calibrated offset voltages are marked on waveforms at the center horizontal graticule line. These voltages indicate the comparison voltage of the 7A13.

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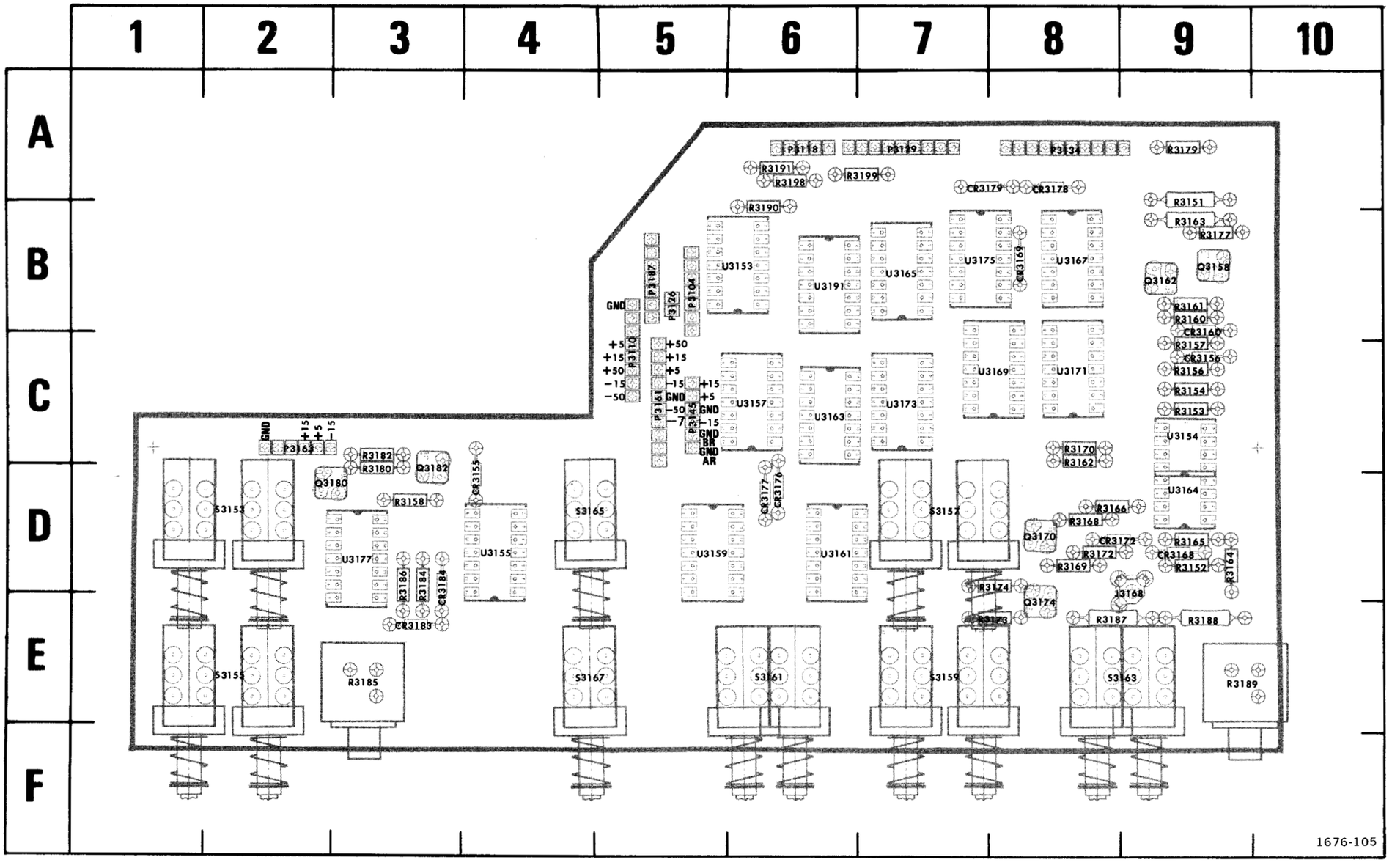


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7844/R7844

CALIBRATOR & PULSED SWITCHING 1

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1676-105

Fig. 9-4. A3—Crossover Mode Switch circuit board assembly.

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CKT NO	GRID LOC	CKT NO	GRID LOC	CKT NO	GRID LOC	CKT NO	GRID LOC	CKT NO	GRID LOC	CKT NO	GRID LOC
CR3155	4D	P3110	5C	R3129	7A	R3169	8D	R3191	6A	U3157	6C
CR3156	9C	P3118	6A	R3151	9A	R3170	8C	R3198	6A	U3159	5D
CR3160	9B	P3126	5B	R3152	9D	R3172	8D	R3199	7A	U3161	6D
CR3168	9D	P3129	7A	R3153	9C	R3173	8E			U3163	6C
CR3169	8B	P3134	8A	R3154	9C	R3174	8D	S3153	2D	U3164	9D
CR3172	8D	P3145	5C	R3156	9C	R3177	9B	S3155	2E	U3165	7B
CR3176	6D	P3161	5C	R3157	9C	R3179	9A	S3157	7D	U3167	8B
CR3177	6D	P3163	2C	R3158	3D	R3180	3D	S3159	7E	U3169	8C
CR3178	8A	P3187	5B	R3160	9B	R3182	3C	S3161	6E	U3171	8C
CR3179	7A			R3161	9B	R3184	3D	S3163	9E	U3173	7C
CR3183	3E	Q3158	9B	R3162	8C	R3185	3E	S3165	4D	U3175	7B
CR3184	3D	Q3162	9B	R3163	9B	R3186	3D	S3167	4E	U3177	3D
		Q3170	8D	R3164	9D	R3187	8E			U3191	6B
J3168	9D	Q3174	8E	R3165	9D	R3188	9E	U3153	6B		
		Q3180	2D	R3166	8D	R3189	9E	U3154	9C		
P3104	5B	Q3182	3D	R3168	8D	R3190	6B	U3155	4D		

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VOLTAGE CONDITIONS

WARNING

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

The voltages shown on this diagram can be obtained using the recommended test equipment listed below.

RECOMMENDED TEST EQUIPMENT

Item	Specifications		Recommended Type
Precision dc voltmeter	Input Impedance Range	10 MΩ 0—500 V	Tektronix 7D13 Digital Multimeter (test oscilloscope must have readout system); or DM 501A Digital Multi-Meter with TM 501 Power Module, or equivalent.

VOLTAGE MEASUREMENTS

Voltage measurements on this diagram were obtained under the following conditions:

Set the HORIZONTAL MODE switch to A for BEAM 1 and B for BEAM 2.

Set the VERTICAL MODE switch to LEFT for BEAM 1 and RIGHT for BEAM 2.

Set VERT SEP (1) control to midrange.

No plug-in units are installed.

Voltmeter common is connected to chassis ground.

Tolerances of voltages shown are within 20%.

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CROSSOVER MODE SWITCH

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S3161 A TRIG SOURCE — LEFT / RIGHT
B TRIG SOURCE S3163 — LEFT / RIGHT

VERTICAL MODE
S3153 BEAM 1 — RIGHT / LEFT
S3155 BEAM 2 — RIGHT / LEFT

HORIZONTAL MODE
S3157 BEAM 1 — A / B
S3159 BEAM 2 — A / B

+5V +5V -L1/+R1
+L1/-R1
+5V +5V -L2/+R2
+L2/-R2
+5V +5V -B1/+A1
+B1/-A1
+5V +5V -B2/+A2
+B2/-A2

P3145
1 GND A RIGHT
2 GND B RIGHT
3 -15V
4 GND
5 +5V
6 +15V
TO P445 TRIGGER SELECTOR ⑥

HORIZ SEP (1)
+15V R3189 5K CW -15V
R3188 6.98K
R3187 768
J3168 — HORIZ SEP TO J4868 BM1 HORIZ AMP ⑫

P3163
6 GND
5 +5 R1
4 +5 R2
3 +15V
2 +5V
1 -15V
TO P3763 CROSSOVER VERTICAL INTERFACE ⑦

CR3179 R3179 3.9K -15V
CR3178
CR3176 R3177 3.9K -15V
CR3177

FROM BEAMFIND SWITCHES S3165 & S3167
1 BEAMFIND 1
2 BEAMFIND 2

P3134
4 MF MODE INFO RIGHT
5 MF MODE INFO LEFT
3 LEFT
6 RIGHT
PLUG-IN MODE
TO U3154-3,6 / TO U3164-3,6
7 GND A1
8 GND B1
9 GND B2
10 GND A2
TO/FROM P34 MAIN INTERFACE ④

U3159A U3155A U3153C U3155D U3159B U3153B U3155B
U3159D U3157C U3157B U3159C U3153A U3157D U3157A
U3161B U3155C U3161A
U3163C U3173D U3173A U3165C U3173C U3173B
U3163B U3165A U3169D U3165B U3169C U3169B
U3171A U3169A U3171B
U3167C U3167B
U3177D U3177B U3177A
U3191D U3191C U3191B U3191A

P3129
+ END AB
+ B ALT LEFT
+ A ALT LEFT
+ END AB LEFT
+ B ALT RIGHT
+ A ALT RIGHT
+ END AB RIGHT
BEAM 2 CHOP
BEAM 1 CHOP
TO P229 LOGIC ⑤

U3167A U3175A U3177C U3175C U3175D U3175B

VERT SEP (1)
+15V R3185 5K CW R3186 3K R3184 3K
CR3184 CR3183
Q3180 Q3182
R3180 510
R3182 5.6K -15V

P3161
VERT SEP
+50V +15V +5V -15V GND -50V
BEAM FIND (-15V)
GRAT/READOUT SINGLE SHOT
TO/FROM P61 MAIN INTERFACE ④

BEAMFINDER
BEAM 1 S3165 / BEAM 2 S3167
BEAMFIND 1 TO P3134-1
BEAMFIND 2 TO P3134-2

P3110
GND
GRAT/READOUT SINGLE SHOT
RO INTENSITY
+5V +15V +50V -15V -50V
TO/FROM P910 CALIBRATOR ①

TO P326 LOGIC ⑤
BM 2 INTENSITY
BM 1 INTENSITY
P3126

TO/FROM P2487 CRT ⑮
GND
BM 1 INTENSITY
BM 2 INTENSITY
RO INTENSITY
BM 2 FOCUS
BM 1 FOCUS
+130V
P3187

(BEAM 1) INTENSITY R3193 2.5K CW -15V
(BEAM 2) INTENSITY R3194 2.5K CW -15V
(BEAM 1) FOCUS R3195 1M CW +130V
(BEAM 2) FOCUS R3196 1M CW +130V

P3104
P3118
RO INTEN
HORIZ MODE LOCKOUT A B
VERT MODE LOCKOUT L R
TO P2118 READOUT ⑰

R3199 270 R3198 270 R3191 270 R3190 270

Q3170 Q3174 Q3158 Q3162
R3164 6.8K R3152 6.8K
R3165 2K R3153 2K
R3163 953 R3151 953
R3166 1K R3154 1K
R3168 10K R3169 10K R3172 10K R3173 4.7K
R3170 1K R3174 5.1K R3158 1K R3156 10K R3157 10K R3160 10K R3161 4.7K R3162 5.1K
CR3168 CR3172 CR3156 CR3160
U3164A U3164B U3154A U3154B ½ 5558
RIGHT PLUG-IN MODE FROM P3134-6
LEFT PLUG-IN MODE FROM P3134-5

A3 CROSSOVER MODE SWITCH BOARD

Static Sensitive Devices
See Maintenance Section

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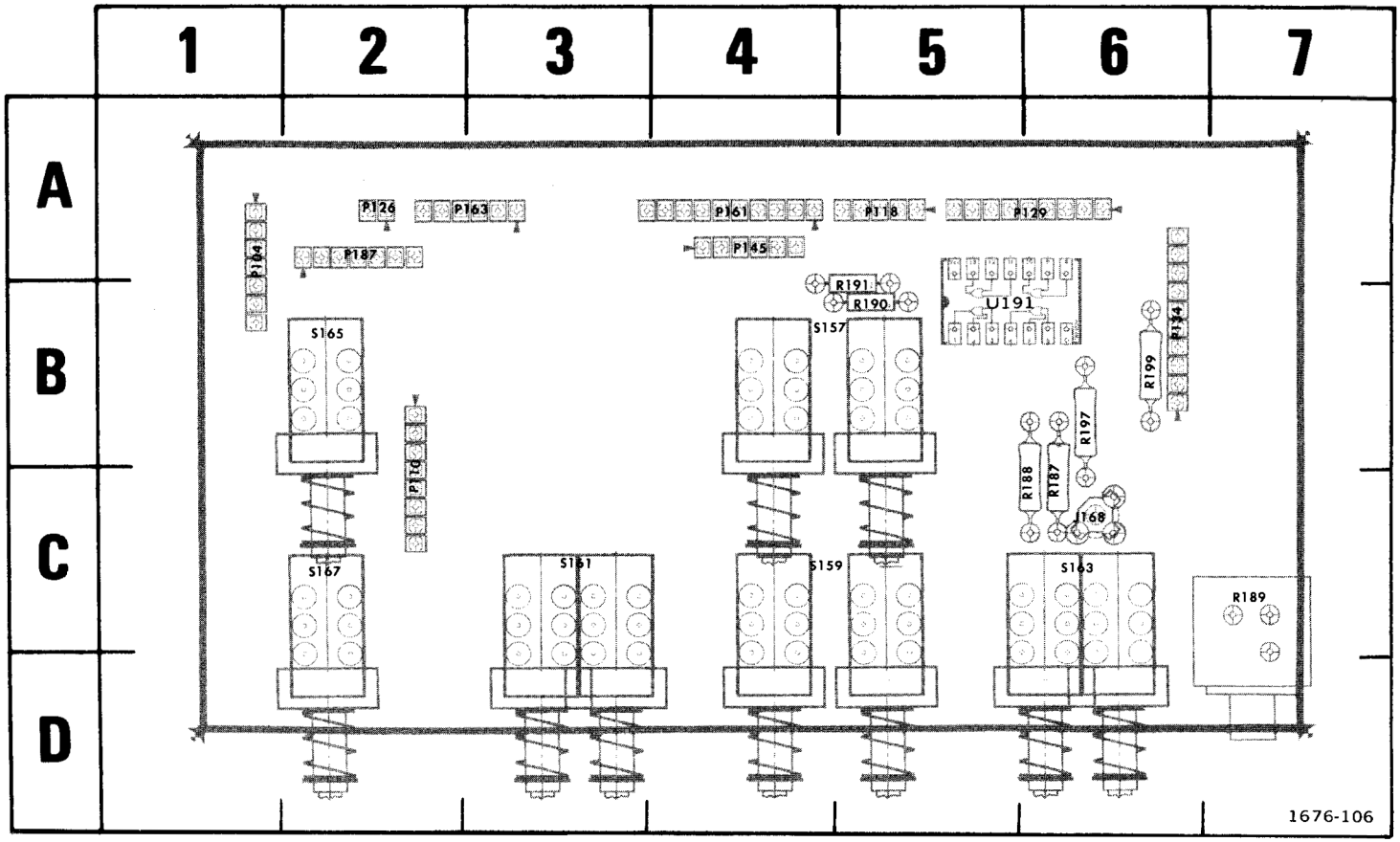


Fig. 9-5. A4—Dedicated Mode Switch circuit board assembly (Option 21 only).

CKT NO	GRID LOC	CKT NO	GRID LOC
J168	6C	R189	7C
		R190	5B
P104	1A	R191	5B
P110	2C	R197	6B
P118	5A	R199	6B
P126	2A		
P129	6A	S157	4B
P134	6B	S159	4C
P145	4A	S161	3C
P161	4A	S163	6C
P163	3A	S165	2B
P187	2A	S167	2C
R187	6C	U191	5B
R188	6C		

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VOLTAGE CONDITIONS

WARNING

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

The voltages shown on this diagram can be obtained using the recommended test equipment listed below.

RECOMMENDED TEST EQUIPMENT

Item	Specifications		Recommended Type
Precision dc voltmeter	Input Impedance Range	10 MΩ 0—500 V	Tektronix 7D13 Digital Multimeter (test oscilloscope must have readout system); or DM 501A Digital Multi-Meter with TM 501 Power Module, or equivalent.

VOLTAGE MEASUREMENTS

Voltage measurements on this diagram were obtained under the following conditions:

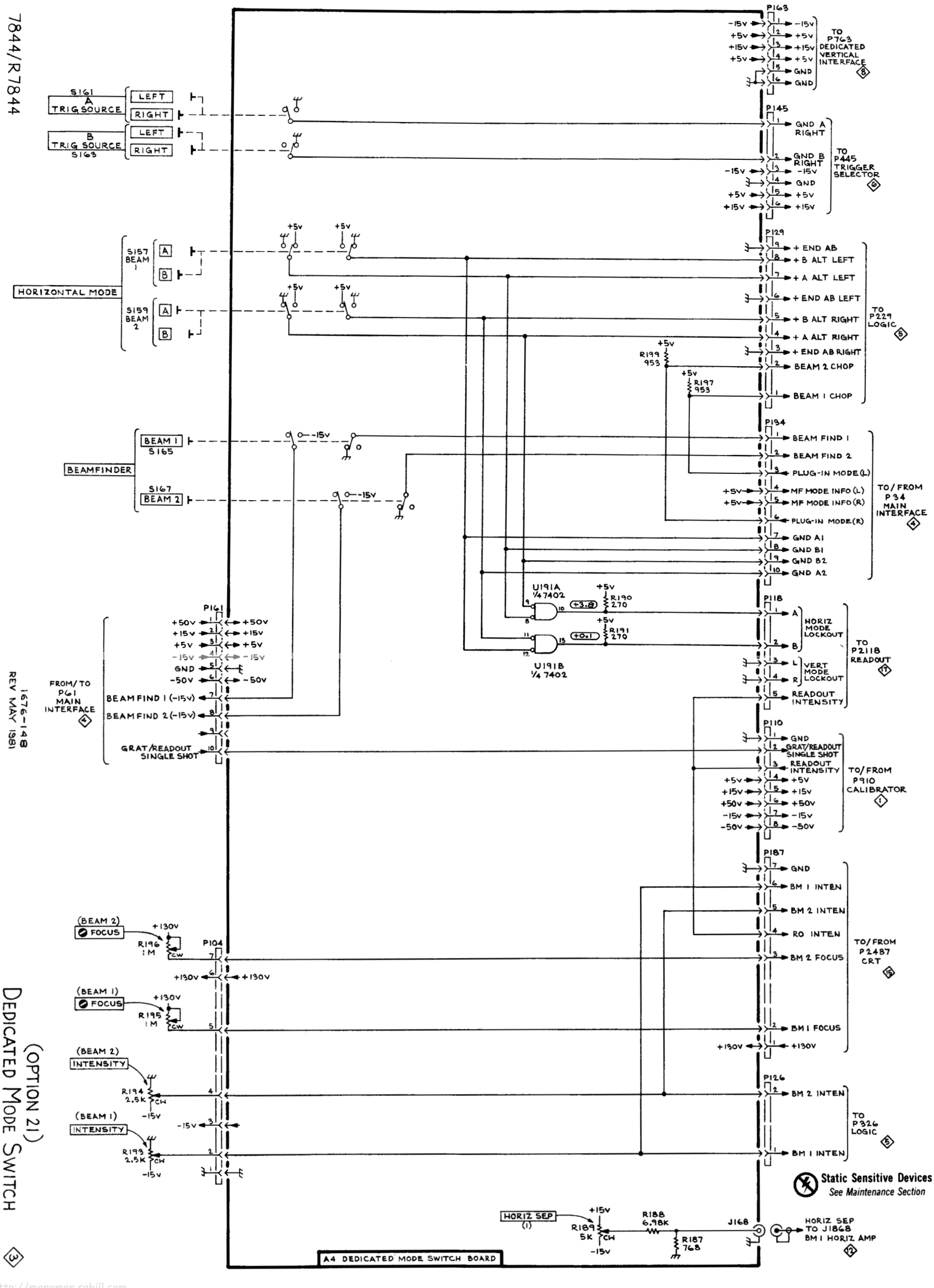
Set the HORIZONTAL MODE switch to B for BEAM 1 and B for BEAM 2.

No plug-in units are installed.

Voltmeter common is connected to chassis ground.

Tolerances of voltages shown are within 20%.

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REV MAY 1981

(OPTION 21)
DEDICATED MODE SWITCH

3

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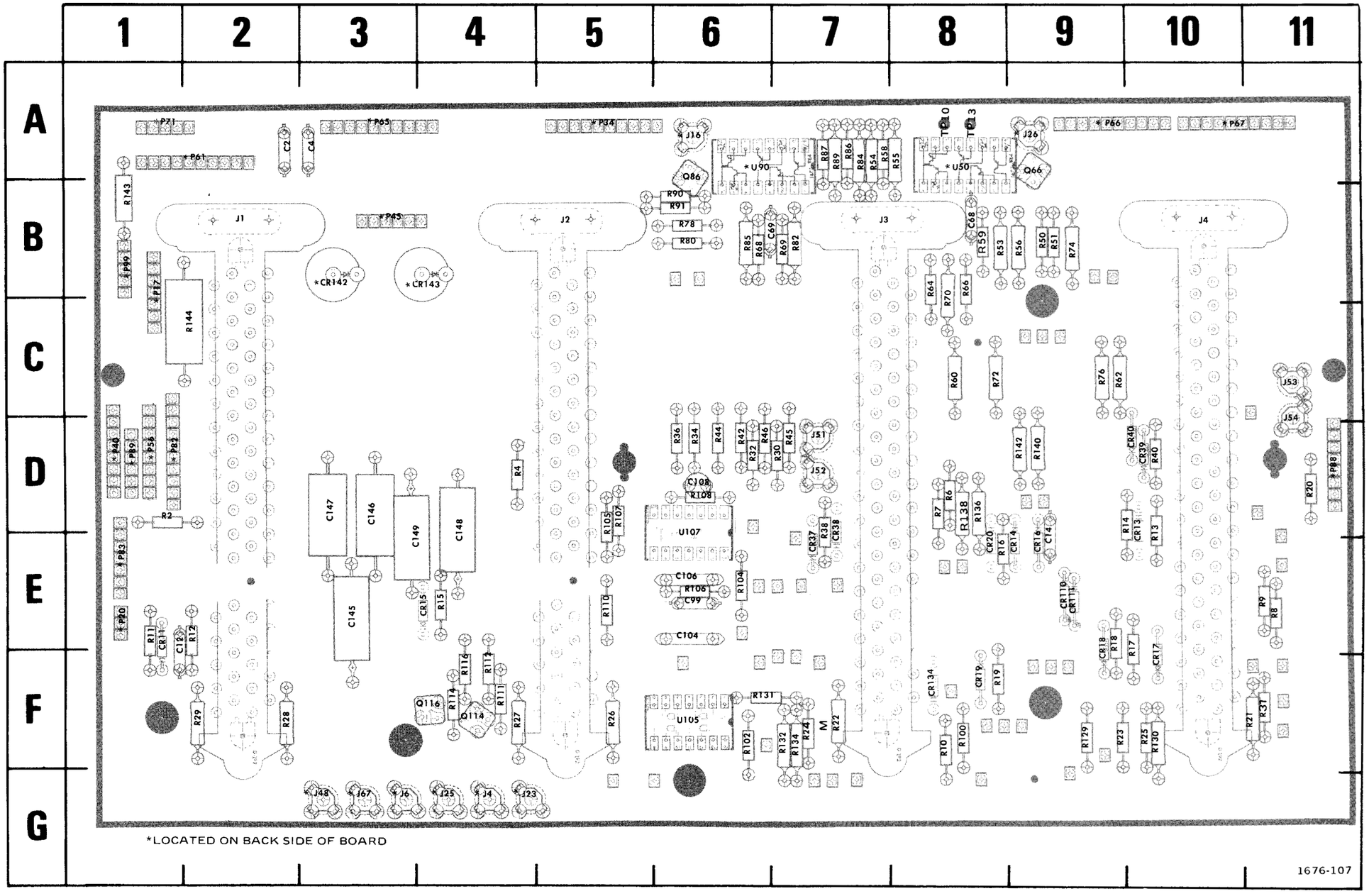


Fig. 9-6. A5—Main Interface circuit board assembly.

REV MAY 1981

CKT NO	GRID LOC	CKT NO	GRID LOC	CKT NO	GRID LOC
C2	2A	P66	9A	R60	8C
C4	3A	P67	10A	R62	9C
C12	1E	P71	1A	R64	8B
C14	9D	P82	1D	R66	8B
C68	8B	P83	1E	R68	6B
C69	6B	P88	11D	R69	7B
C99	6E	P89	1D	R70	8B
C104	6E	P99	1B	R72	8C
C106	6E			R74	9B
C108	6D	Q66	9A	R76	9C
C145	3E	Q86	6A	R78	6B
C146	3D	Q114	4F	R80	6B
C147	3D	Q116	4F	R82	7B
C148	4D			R84	7A
C149	4D	R2	1D	R85	6B
CR11	1E	R4	4D	R86	7A
CR13	10D	R6	8D	R87	7A
CR14	9E	R7	8D	R89	7A
CR15	4E	R8	11E	R90	6B
CR16	9E	R9	11E	R91	6B
CR17	9E	R10	8F	R100	8F
CR18	10E	R11	1E	R102	6F
CR19	8F	R12	2E	R104	6E
CR20	8E	R13	10D	R105	5D
CR37	7D	R14	10D	R106	6E
CR38	7D	R15	4E	R107	5D
CR39	10D	R16	8E	R108	6D
CR40	10D	R17	10E	R110	5E
CR110	9E	R18	9E	R111	4F
CR111	9E	R19	8F	R112	4F
CR134	8F	R20	11D	R114	4F
CR142	3B	R21	11F	R116	4F
CR143	3B	R22	7F	R129	9F
		R23	9F	R130	10F
J1	2B	R24	7F	R131	6F
J2	5B	R25	10F	R132	7F
J3	7B	R26	5F	R134	7F
J4	10B	R27	4F	R136	8D
J4	4G	R28	2F	R138	8D
J6	3G	R29	2F	R140	9D
J16	6A	R30	7D	R142	9D
J23	4G	R31	11F	R143	1B
J25	4G	R32	6D	R144	2C
J26	9A	R34	6D		
J48	3G	R36	6D	TP10	8A
J51	7D	R38	7D	TP13	8A
J52	7D	R40	10D		
J53	11C	R42	6D	U50	8A
J54	11C	R44	6D	U90	6A
J67	3G	R45	7D	U105	6F
		R46	6D	U107	6D
P17	1B	R50	9B		
P20	1E	R51	9B		
P34	5A	R53	8B		
P40	1D	R54	7A		
P45	3B	R55	8A		
P56	1D	R56	9B		
P61	2A	R58	7A		
P65	3A	R59	8B		

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VOLTAGE CONDITIONS

WARNING

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

The voltages shown on this diagram can be obtained using the recommended test equipment listed below.

RECOMMENDED TEST EQUIPMENT

Item	Specifications		Recommended Type
Precision dc voltmeter	Input Impedance Range	10 MΩ 0—500 V	Tektronix 7D13 Digital Multimeter (test oscilloscope must have readout system); or DM 501A Digital Multi-Meter with TM 501 Power Module, or equivalent.

VOLTAGE MEASUREMENTS

Voltage measurements on this diagram were obtained under the following conditions:

Set the HORIZONTAL MODE switch to A for BEAM 1 and B for BEAM 2.

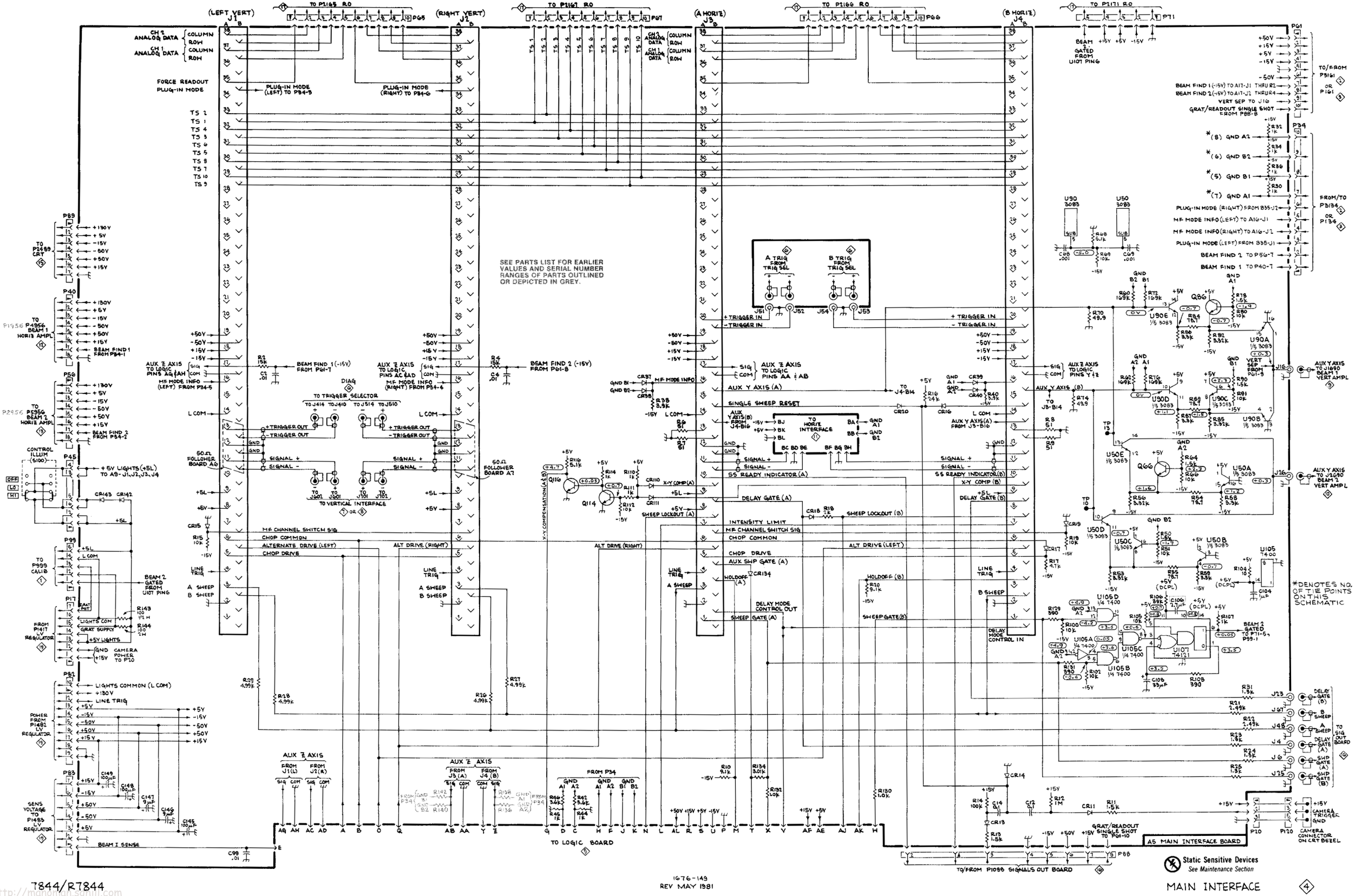
Set the VERTICAL MODE switch to LEFT for BEAM 1 and RIGHT for BEAM 2.

No plug-in units are installed.

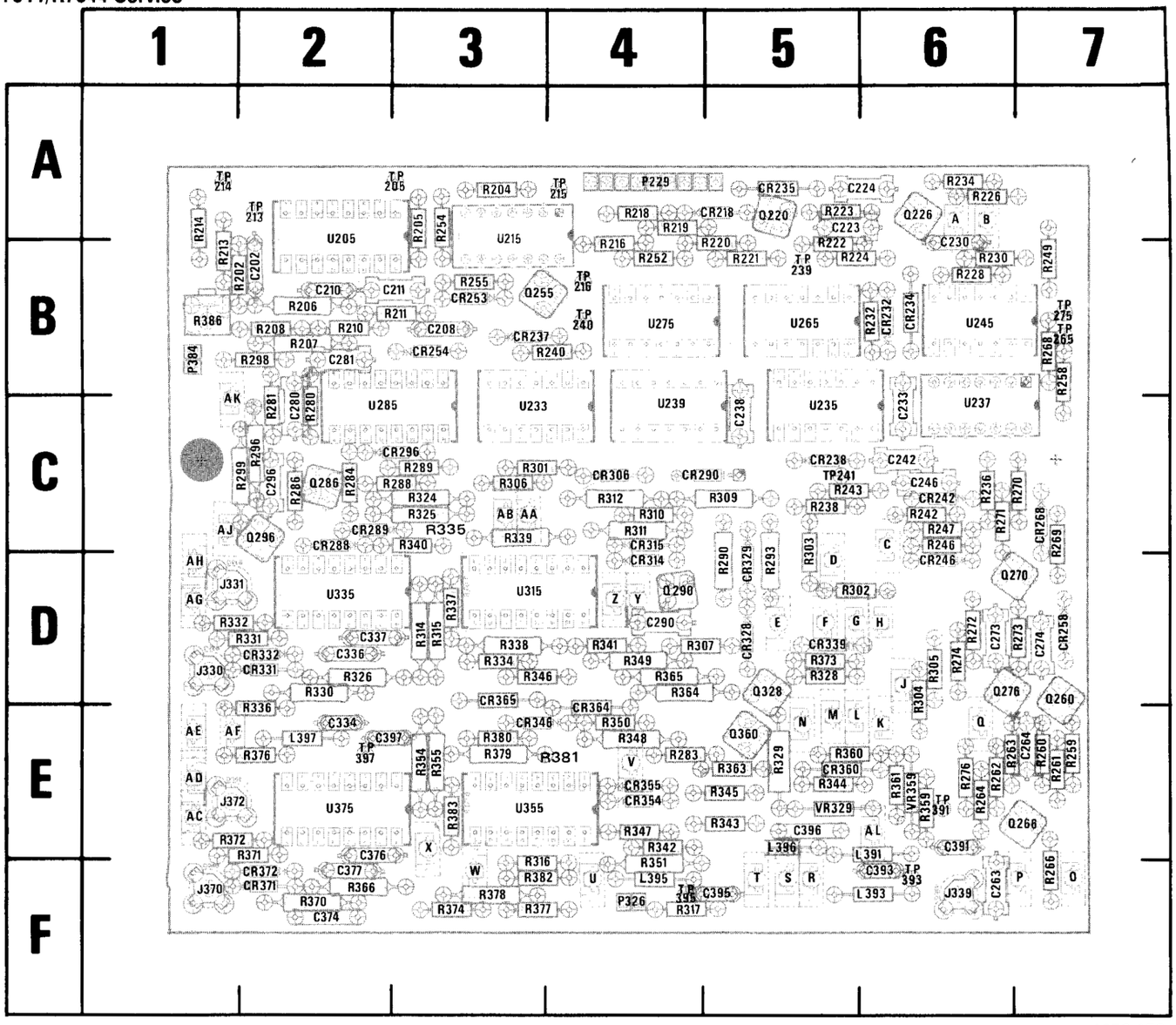
Voltmeter common is connected to chassis ground.

Tolerances of voltages shown are within 20%.

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1676-176

Fig. 9-7A. A8—Logic circuit board assembly (SN B120000 & up).

REV MAY 1981

Static Sensitive Devices
See Maintenance Section

*See Parts List for serial number ranges.

CKT NO	GRID LOC	CKT NO	GRID LOC	CKT NO	GRID LOC	CKT NO	GRID LOC
C202	2A	J330	1D	R258	7B	R346	3D
C208	3B	J331	1D	R259	7E	R347	4E
C210	2B	J339	6F	R260	7E	R348	4E
C211	2B	J370	1F	R261	7E	R349	4D
C223	5A	J372	1E	R262	6E	R350	4E
C224	5A			R263	6E	R351	4E
C230	6A	L391	6E	R264	6E	R354	3E
C233	6B	L393	6F	R266	7F	R355	3E
C238	5C			R268	7B	R359	6E
C242	6C	L395	4E	R269	7C	R360	5E
C246	6C	L396	5E	R270	6C	R361	6E
C263	6F	L397	2E	R271	6C	R363	5E
C264	7E			R272	6D	R364	4D
C273	6D	P229	4A	R273	6D	R365	4D
C274	7D	P326	4F	R274	6D	R366	2F
C280	2B	P384	1B	R276	6E	R370	2F
C281	2B			R280	2B	R371	2E
C290	4D	Q220	5A	R281	2B	R372	1E
C296	2C	Q226	6A	R283	4E	R373	5D
C334	2E	Q255	3B	R284	2C	R374	3E
C336	2D	Q260	7D	R286	2C	R376	2F
C337	2D	Q266	7E	R288	3C	R377	3F
C374	2F	Q270	6D	R289	3C	R378	3F
C376	2E	Q276	6D	R290	5C	R379	3E
C377	2E	Q286	2C	R293	5C	R380	3E
C391	6E	Q290	4D	R296	2C	R381*	4E
C393	6F	Q296	2C	R298	2B	R382	3F
C395	5F	Q328	5D	R299	1C	R383	3E
C396	5E	Q360	5E	R301	3C	R386	1B
C397	2E			R302	5D		
		R202	1B	R303	5C	TP205	2A
CR218	5A	R204	3A	R304	6D	TP213	2A
CR232	6B	R205	3A	R305	6D	TP214	1A
CR234	6B	R206	2B	R306	3C	TP215	4A
CR235	5A	R207	2B	R307	4D	TP216	4B
CR237	3B	R208	2B	R309	5C	TP239	5B
CR238	5C	R210	2B	R310	4C	TP240	4B
CR242	6C	R211	2B	R311	4C	TP241	5C
CR246	6C	R213	1A	R312	4C	TP265	7B
CR253	3B	R214	1A	R314	3D	TP275	7B
CR254	3B	R216	4A	R315	3D	TP391	6E
CR258	7D	R218	4A	R316	3E	TP393	6F
CR268	7C	R219	4A	R317	4F	TP395	4F
CR288	2C	R220	5A	R324	3C	TP397	2E
CR289	2C	R221	5B	R325	3C		
CR290	4C	R222	5A	R326	2D	U205	2A
CR296	3C	R223	5A	R328	5D	U215	3A
CR306	4C	R224	5B	R329	5E	U233	3B
CR314	4C	R226	6A	R330	2D	U235	5B
CR315	4C	R228	6B	R331	1D	U237	6B
CR328	5D	R230	6B	R332	1D	U239	4B
CR329	5D	R232	6B	R334	3D	U245	6B
CR331	2D	R234	6A	R335*	3C	U265	5B
CR332	2D	R236	6C	R336	2D	U275	4B
CR339	5D	R238	5C	R337	3D	U285	2B
CR346	3E	R240	3B	R338	3D	U315	3D
CR354	4E	R242	6C	R339	3C	U335	2D
CR355	4E	R246	6C	R340	3C	U355	3E
CR360	5E	R247	6C	R341	4D	U375	2E
CR364	4D	R249	7B	R342	4E		
CR365	3D	R252	4B	R343	5E	VR329	5E
CR371	2F	R254	3A	R343	5C	VR359	6E
CR372	2F	R255	3B	R344	5E		
				R345	5E		

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VOLTAGE CONDITIONS

WARNING

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

The voltages shown on this diagram can be obtained using the recommended equipment listed below.

RECOMMENDED TEST EQUIPMENT

Item	Specifications	Recommended Type
Precision dc voltmeter	Input Impedance 10 MΩ Range 0—500 V	Tektronix 7D13 Digital Multimeter (test oscilloscope must have readout system); or DM 501A Digital Multi-Meter with TM 501 Power Module, or equivalent.

VOLTAGE MESUREMENTS

Voltage measurements on this diagram were obtained under the following conditions:

NOTE

Remove power unit to expose the Logic board (refer to the Maintenance section for power unit removal procedure).

Set the VERTICAL MODE switch to LEFT for BEAM 1 and RIGHT for BEAM 2.

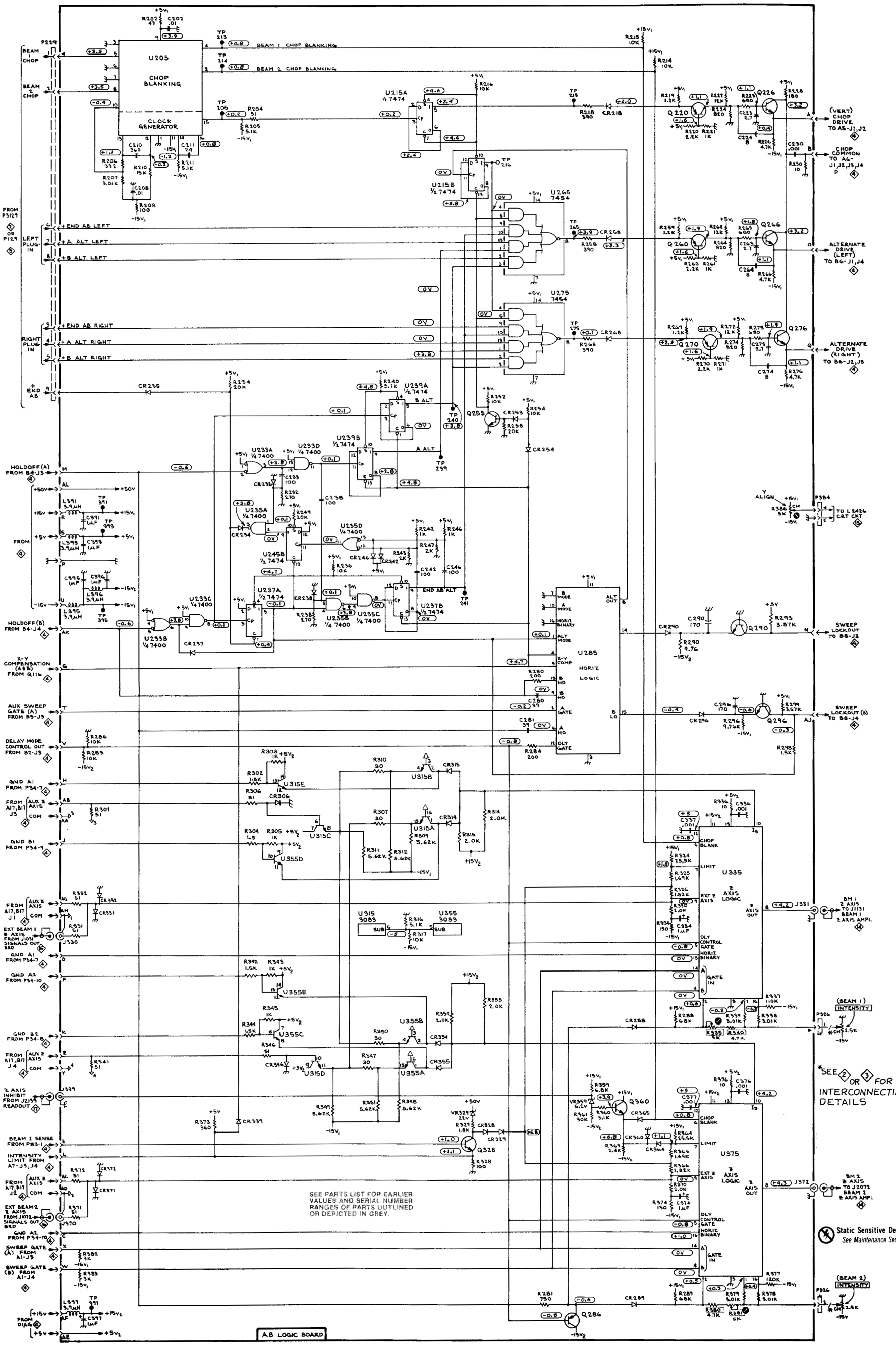
Set the HORIZONTAL MODE switch to A for BEAM 1 and B for BEAM 2.

No plug-in units are installed.

Voltmeter common is connected to chassis ground.

Tolerances of voltages shown are within 20%.

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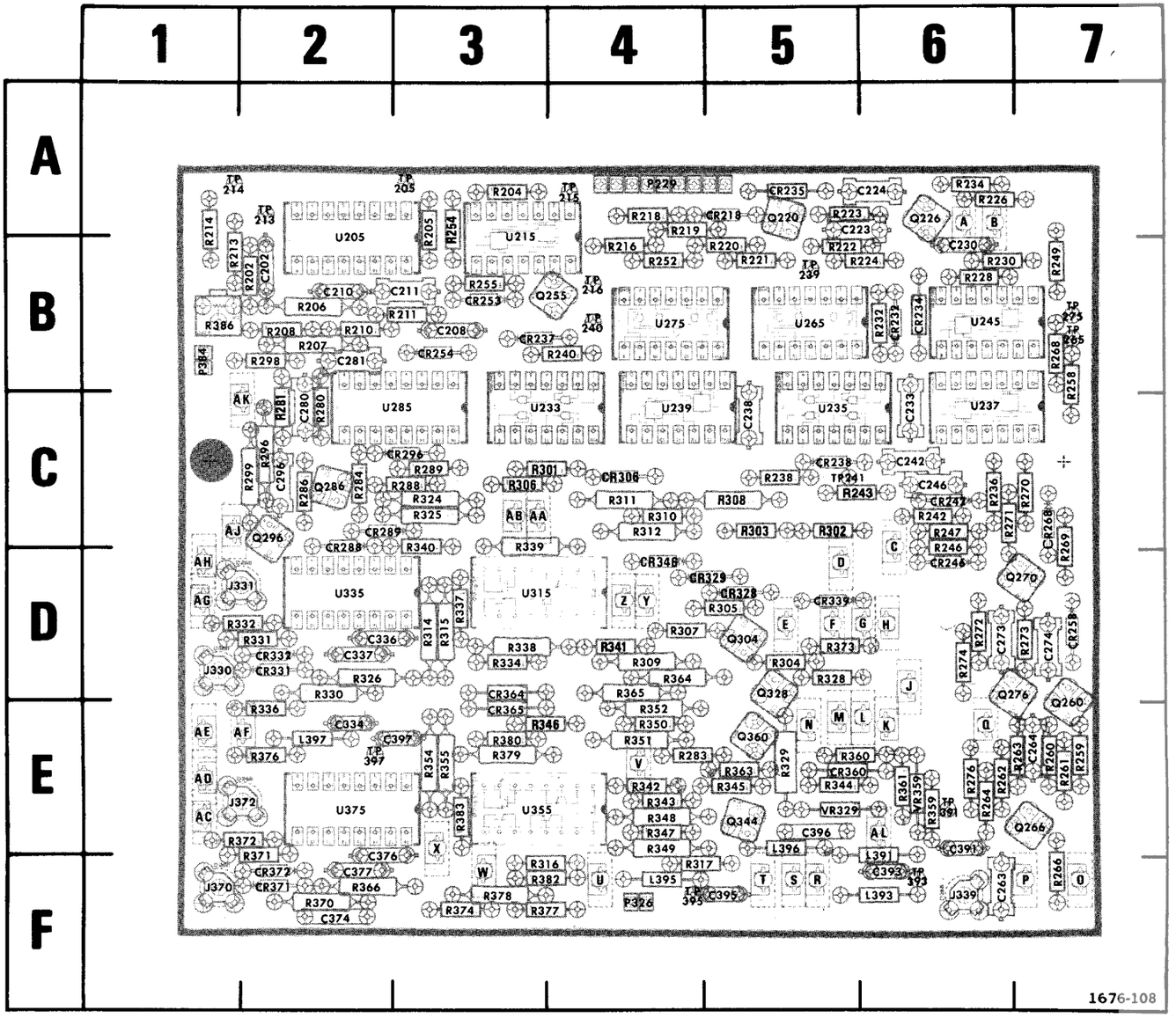


Fig. 9-7B. A8—Logic circuit board assembly (SN B119999 & below).

REV MAY 1981

Static Sensitive Devices
See Maintenance Section

CKT NO	GRID LOC	CKT NO	GRID LOC	CKT NO	GRID LOC	CKT NO	GRID LOC
C202	2A	L391	6E	R263	6E	R352	4D
C208	3B	L393	6F	R264	6E	R354	3E
C210	2B	L395	4E	R266	7F	R355	3E
C211	2B	L396	5E	R268	7B	R359	6E
C223	5A	L397	2E	R269	7C	R360	5E
C224	5A			R270	6C	R361	6E
C230	6A	P229	4A	R271	6C	R363	5E
C233	6B	P326	4F	R272	6D	R364	4D
C238	5B	P384	1B	R273	6D	R365	4D
C242	6C			R274	6D	R366	2D
C246	6C	Q220	5A	R276	6E	R370	2F
C263	6E	Q226	6A	R280	2B	R371	2E
C264	7E	Q255	3B	R281	2B	R372	1E
C273	6D	Q260	7D	R283	4E	R373	5D
C274	6D	Q266	7E	R284	2C	R376	2E
C280	2B	Q270	6C	R286	2C	R374	3F
C281	2B	Q276	6D	R288	3C	R377	3F
C296	2C	Q286	2C	R289	3C	R378	3F
C334	2D	Q296	2C	R296	2C	R379	3E
C336	2D	Q304	5D	R298	2B	R380	3E
C337	2D	Q328	5D	R299	1C	R382	3E
C374	2F	Q344	5E	R301	3C	R383	3E
C376	2E	Q360	5E	R302	5C	R386	1B
C377	2E			R303	5C		
C391	6E	R202	1B	R304	5D	TP205	2A
C393	6E	R204	3A	R305	5D	TP213	2A
C395	5F	R205	3A	R306	3C	TP214	1A
C396	5E	R206	2B	R307	4D	TP215	4A
C397	2E	R207	2B	R308	5C	TP216	4B
		R208	2B	R309	4D	TP239	5A
CR218	5A	R210	2B	R310	4C	TP240	4B
CR232	6B	R211	2B	R311	4C	TP241	5C
CR234	6B	R213	1A	R312	4C	TP265	7B
CR235	5A	R214	1A	R314	3D	TP275	7B
CR237	3B	R216	4A	R315	3D	TP391	6E
CR238	5C	R218	4A	R316	3E	TP393	6E
CR242	6C	R219	4A	R317	4E	TP395	4F
CR246	6C	R220	5A	R324	3C	TP397	2E
CR253	3B	R221	5A	R325	3C		
CR254	3B	R222	5A	R326	2D	U205	2A
CR258	7D	R223	5A	R328	5D	U215	3A
CR268	7C	R224	5A	R329	5E	U233	3B
CR288	2C	R226	6A	R330	2D	U235	5B
CR289	2C	R228	6B	R331	1D	U237	6B
CR296	3C	R230	6A	R332	2D	U239	4B
CR306	4C	R232	6B	R334	3D	U245	6B
CR328	5D	R234	6A	R336	2D	U265	5B
CR329	4C	R236	6C	R337	3D	U275	4B
CR331	2D	R238	5C	R338	3D	U285	2B
CR332	2D	R240	3B	R339	3C	U315	3D
CR339	5D	R242	6C	R340	3C	U335	2D
CR346	4C	R243	5C	R341	4D	U355	3E
CR360	5E	R246	6C	R342	4E	U375	2E
CR364	3D	R247	6C	R343	4E		
CR365	3D	R249	7A	R343	5C	VR329	5E
CR371	2E	R252	4A	R344	5E	VR359	6E
CR372	2E	R254	3A	R345	5E		
		R255	3B	R346	3D		
J330	1D	R259	7B	R347	4E		
J331	1D	R259	7E	R348	4E		
J339	6F	R260	7E	R349	4E		
J370	1E	R261	7E	R350	4D		
J372	1E	R262	6E	R351	4E		

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VOLTAGE CONDITIONS

WARNING

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

The voltages shown on this diagram can be obtained using the recommended equipment listed below.

RECOMMENDED TEST EQUIPMENT

Item	Specifications		Recommended Type
Precision dc voltmeter	Input Impedance Range	10 MΩ 0—500 V	Tektronix 7D13 Digital Multimeter (test oscilloscope must have readout system); or DM 501A Digital Multi-Meter with TM 501 Power Module, or equivalent.

VOLTAGE MESUREMENTS

Voltage measurements on this diagram were obtained under the following conditions:

NOTE

Remove power unit to expose the Logic board (refer to the Maintenance section for power unit removal procedure).

Set the VERTICAL MODE switch to LEFT for BEAM 1 and RIGHT for BEAM 2.

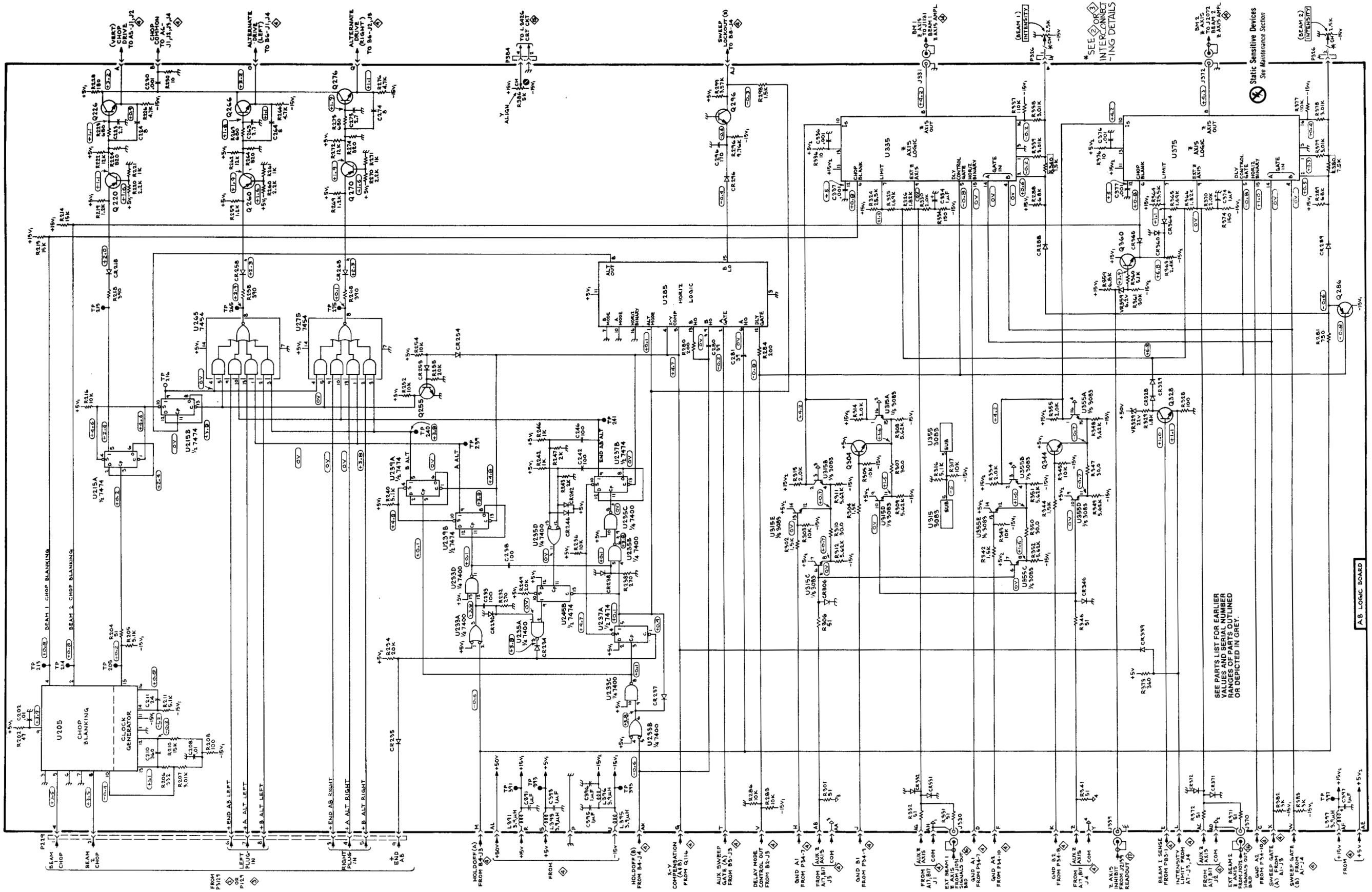
Set the HORIZONTAL MODE switch to A for BEAM 1 and B for BEAM 2.

No plug-in units are installed.

Voltmeter common is connected to chassis ground.

Tolerances of voltages shown are within 20%.

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7844/R7844

1676-150
REV MAY 1961

LOGIC 5

SN B 119999 + BELOW

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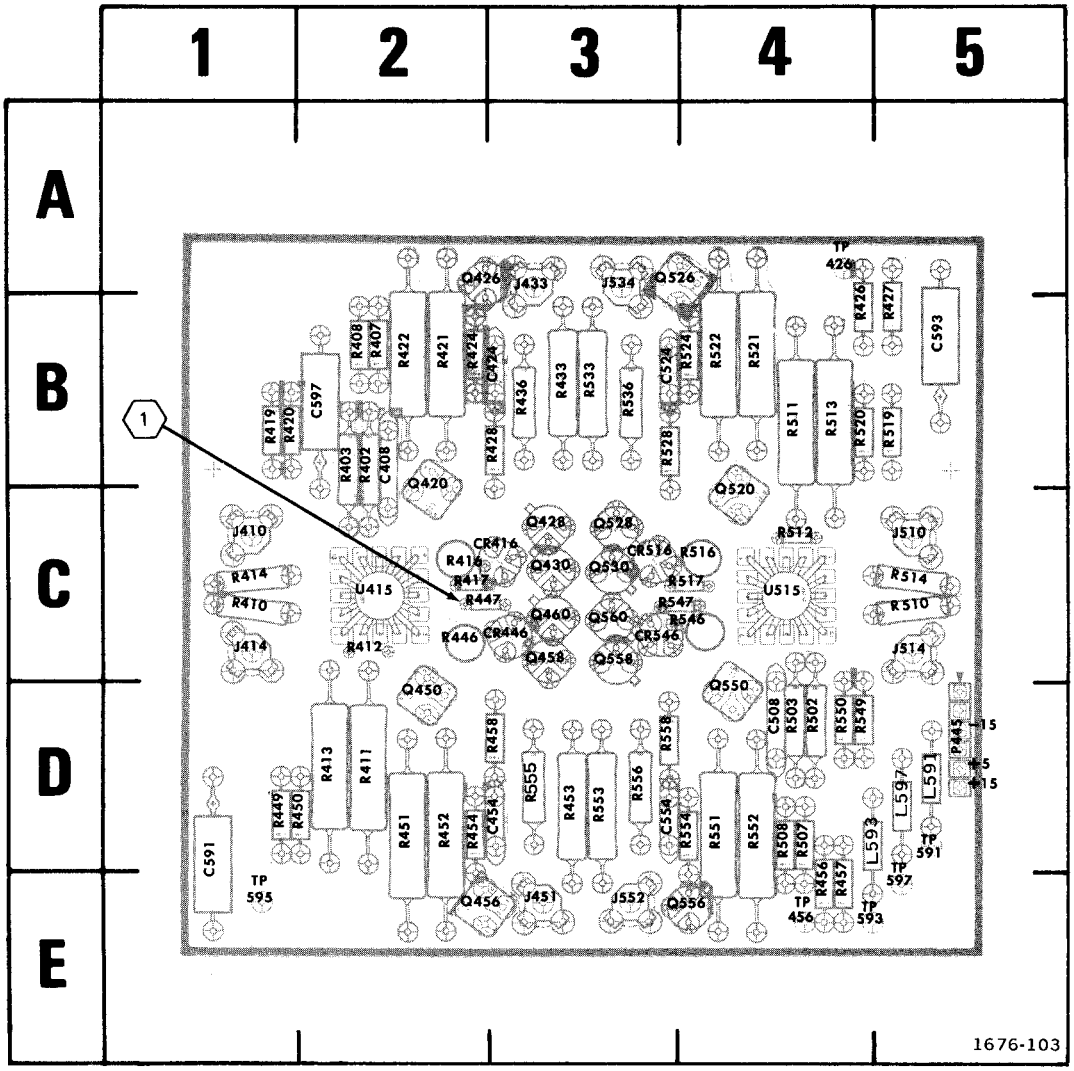


Fig. 9-8A. A9—Trigger Selector circuit board assembly (front).

CKT NO	GRID LOC	CKT NO	GRID LOC	CKT NO	GRID LOC	CKT NO	GRID LOC	CKT NO	GRID LOC
C408	2B	L591	5D	R403	2B	R451	2D	R533	3B
C424	3B	L593	4D	R407	2B	R452	2D	R536	3B
C454	3D	L597	5D	R408	2B	R453	3D	R546	4C
C508	4D			R410	1C	R454	2D	R547	3C
C524	3B	P445	5D	R411	2D	R456	4E	R549	4D
C554	3D			R412	2C	R457	4E	R550	4D
C591	1D	Q420	2B	R413	2D	R458	3D	R551	4D
C593	5B	Q426	2A	R414	1C	R502	4D	R555	3D
C597	2B	Q428	3C	R416	2C	R503	4D	R557	4D
		Q430	3C	R417	2C	R507	4D	R552	4D
CR416	3C	Q450	2D	R419	1B	R508	4D	R553	3D
CR446	3C	Q456	2E	R420	1B	R510	5C	R554	4D
CR516	3C	Q458	3C	R421	2B	R511	4B	R556	3D
CR546	3C	Q460	3C	R422	2B	R512	4C	R558	3D
		Q520	4B	R424	2B	R513	4B		
J410	1C	Q526	3A	R426	4B	R514	5C	TP426	4A
J414	1C	Q528	3C	R427	5B	R516	4C	TP456	4E
J433	3A	Q530	3C	R428	3B	R517	4C	TP591	5D
J451	3E	Q550	4D	R433	3B	R519	5B	TP593	4E
J510	5C	Q556	4E	R436	3B	R520	4B	TP595	1E
J514	5C	Q558	3C	R446	2C	R521	4B	TP597	5E
J534	3A	Q560	3C	R447	2C	R522	4B		
J552	3E			R449	1D	R524	4B	U415	2C
		R402	2B	R450	1D	R528	3B	U515	4C

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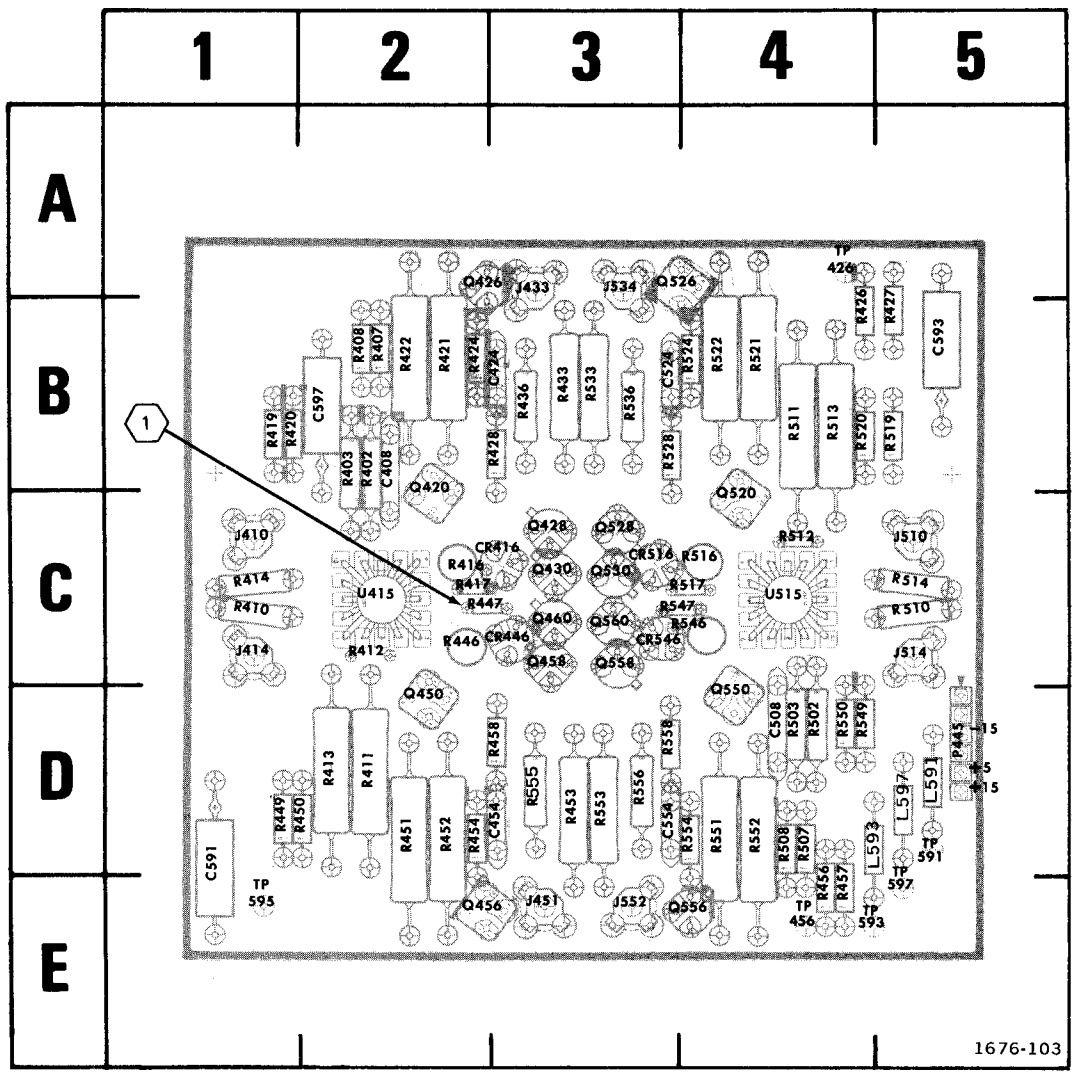


Fig. 9-8A. A9—Trigger Selector circuit board assembly (front).

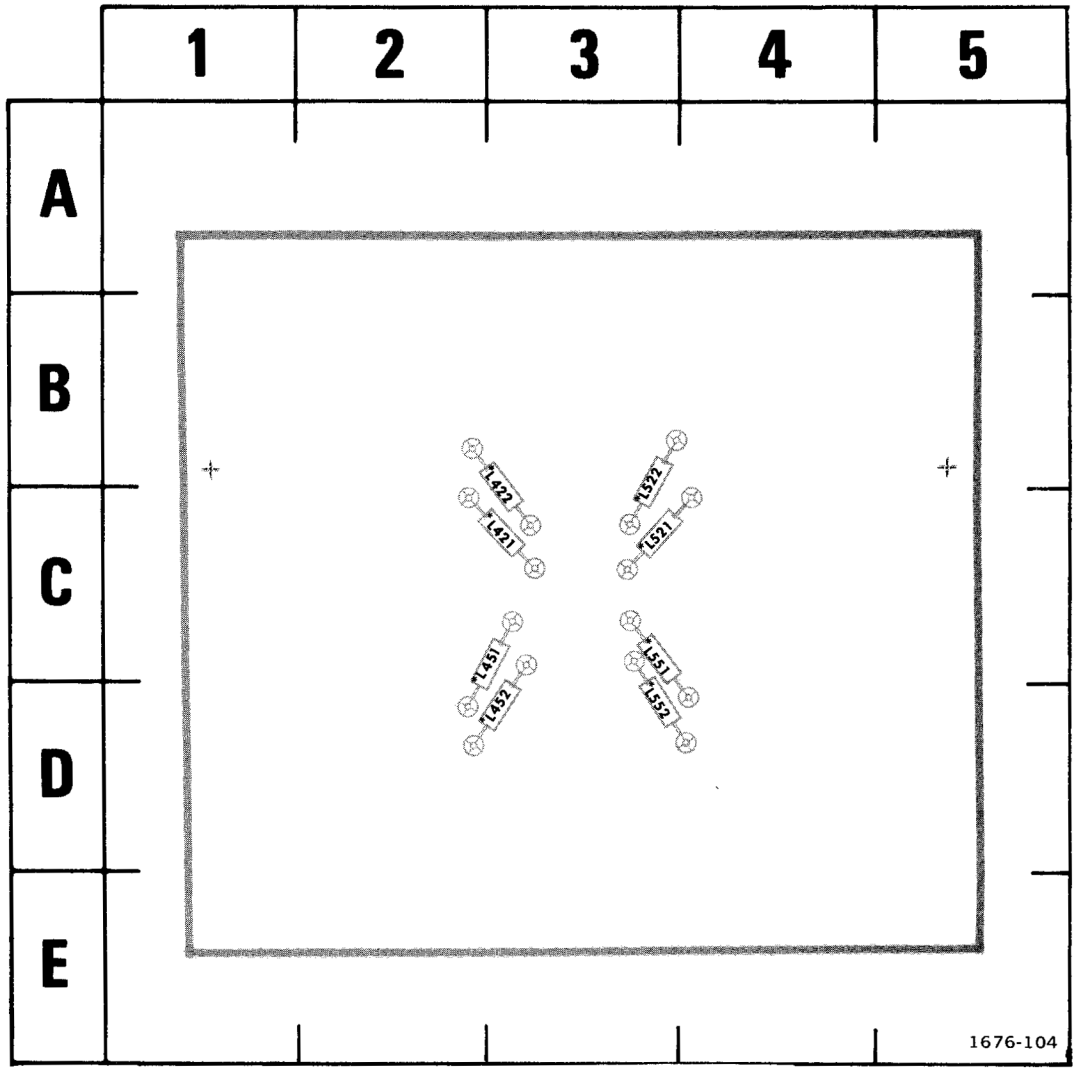


Fig. 9-8B. A9—Trigger Selector circuit board assembly (rear).

CKT NO	GRID LOC	CKT NO	GRID LOC	CKT NO	GRID LOC	CKT NO	GRID LOC	CKT NO	GRID LOC
C408	2B	L591	5D	R403	2B	R451	2D	R533	3B
C424	3B	L593	4D	R407	2B	R452	2D	R536	3B
C454	3D	L597	5D	R408	2B	R453	3D	R546	4C
C508	4D			R410	1C	R454	2D	R547	3C
C524	3B	P445	5D	R411	2D	R456	4E	R549	4D
C554	3D			R412	2C	R457	4E	R550	4D
C591	1D	Q420	2B	R413	2D	R458	3D	R551	4D
C593	5B	Q426	2A	R414	1C	R502	4D	R555	3D
C597	2B	Q428	3C	R416	2C	R503	4D	R557	4D
		Q430	3C	R417	2C	R507	4D	R552	4D
CR416	3C	Q450	2D	R419	1B	R508	4D	R553	3D
CR446	3C	Q456	2E	R420	1B	R510	5C	R554	4D
CR516	3C	Q458	3C	R421	2B	R511	4B	R556	3D
CR546	3C	Q460	3C	R422	2B	R512	4C	R558	3D
		Q520	4B	R424	2B	R513	4B		
J410	1C	Q526	3A	R426	4B	R514	5C	TP426	4A
J414	1C	Q528	3C	R427	5B	R516	4C	TP456	4E
J433	3A	Q530	3C	R428	3B	R517	4C	TP591	5D
J451	3E	Q550	4D	R433	3B	R519	5B	TP593	4E
J510	5C	Q556	4E	R436	3B	R520	4B	TP595	1E
J514	5C	Q558	3C	R446	2C	R521	4B	TP597	5E
J534	3A	Q560	3C	R447	2C	R522	4B		
J552	3E			R449	1D	R524	4B	U415	2C
		R402	2B	R450	1D	R528	3B	U515	4C

CKT NO	GRID LOC
L421	3C
L422	3B
L451	3C
L452	3D
L521	3C
L522	3C
L551	3C
L552	3D

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VOLTAGE AND WAVEFORM CONDITIONS

WARNING

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

The voltages and waveforms shown on this diagram can be obtained using the recommended test equipment listed below.

RECOMMENDED TEST EQUIPMENT

Item	Specifications	Recommended Type
Oscilloscope	Frequency Response Dc to 65 MHz Deflection Factor 5 mV to 5 V/div Input Impedance 1 MΩ, 20 pF 500 ns.	Tektronix 7603 equipped with 7A13 Amplifier and 7B-series time-base unit, or equivalent.
Probe	Fast rise 10x attenuation probe compatible with the vertical amplifier of the test oscilloscope.	P6053B, or equivalent.
Precision dc voltmeter	Input Impedance 10 MΩ Range 0—500 V	Tektronix 7D13 Digital Multimeter (test oscilloscope must have readout system); or DM 501A Digital Multi-Meter with TM 501 Power Module, or equivalent.

VOLTAGE MEASUREMENTS

Voltage measurements on this diagram were made under the following conditions:

Set the VERTICAL MODE switch to LEFT for BEAM 1 and RIGHT for BEAM 2.
No plug-in units are installed.

Voltmeter common is connected to chassis ground.

WAVEFORMS

Waveforms shown on this diagram were obtained under the following conditions:

7844/R7844 OSCILLOSCOPE UNDER TEST. Front-panel controls are set the same as for voltage measurements. Install a 7A19 amplifier unit in the LEFT VERT compartment and set the deflection factor to 0.1 volt/division. Install a 7B80 time-base unit in the A HORIZ compartment and set triggering to auto mode with ac coupling from the internal source. Center the 4 V CALIBRATOR output to the 7A19 input and center the display vertically and horizontally on the crt.

TEST OSCILLOSCOPE. The test oscilloscope triggering is set to auto mode with ac coupling from the internal source. The 7A13 input coupling is set to dc.

Tolerances of voltages and waveforms shown are within 20%. Calibrated offset voltages are marked on waveforms at the center horizontal graticule line. These voltages indicate the comparison voltage of the 7A13.

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TRIGGER FROM LEFT VERT PLUG-IN J1 ④

J410 J414

R410 50.5 R414 50.5

R413 590 R412 54.9 R411 590

R408 1K C408 .02 R407 2.2K -15V

U415 TRIG AMPL

+5V R402 499 R403 499 +2.9

SUB -4.7

+4.8 +4.8 +4.8 +4.8

P445

GND A RIGHT → GND A RIGHT

GND B RIGHT → GND B RIGHT

FROM P3145 ② OR P145 ③

C597 10μF TP597 -15V

L597 3.9μH TP595 GND

L593 3.9μH TP593 +5V

+C593 27μF

L591 3.9μH C591 10μF TP591 +15V

TRIGGER FROM RIGHT VERT PLUG-IN J2 ④

J514 J510

R514 50.5 R510 50.5

R513 590 R512 54.9 R511 590

R508 1K C508 .02 R507 2.2K -15V

U515 TRIG AMPL

+5V R502 499 R503 499 +2.4

SUB -4.7

+4.8 +4.8 +4.8 +4.8

R416 250 R417 100

R446 250 R447 100

R516 250 R517 100

R546 250 R547 100

GND B RIGHT → TP426

GND A RIGHT → TP456

+15V R422 374 L422 825nH R421 374 L421 825nH

+15V R452 374 L452 825nH R451 374 L451 825nH

L521 825nH R521 374 L522 825nH R522 374

L551 825nH R551 374 L552 825nH R552 374

CR416 CR446 CR516 CR546

Q420 Q426 Q430 Q428

Q450 Q456 Q460 Q458

Q520 Q526 Q530 Q528

Q550 Q556 Q560 Q558

R420 56K R424 5.6K R419 47K R428 150 C424 .02

R450 56K R454 5.6K R449 47K R458 150 C454 .01

R520 56K R524 5.6K R519 47K R528 150 C524 .02

R550 56K R554 5.6K R549 47K R558 150 C554 .02

R426 5.6K R427 1.2K R456 5.6K R457 1.2K

R533 1.24K R536 52.3 R433 1.24K R436 52.3

R553 1.24K R556 52.3 R453 1.24K R555 52.3

J534 J433 J552 J451

B TRIGGER TO B HORIZ PLUG-IN J4 ④

A TRIGGER TO A HORIZ PLUG-IN J4 ④

Static Sensitive Devices
See Maintenance Section

*COMPONENTS ARE INTEGRAL PART OF BOARD

SEE PARTS LIST FOR EARLIER VALUES AND SERIAL NUMBER RANGES OF PARTS OUTLINED OR DEPICTED IN GREY.

A9 TRIGGER SELECTOR BOARD

7844/R7844

REV MAY 1981 1676-151

TRIGGER SELECTOR ⑥

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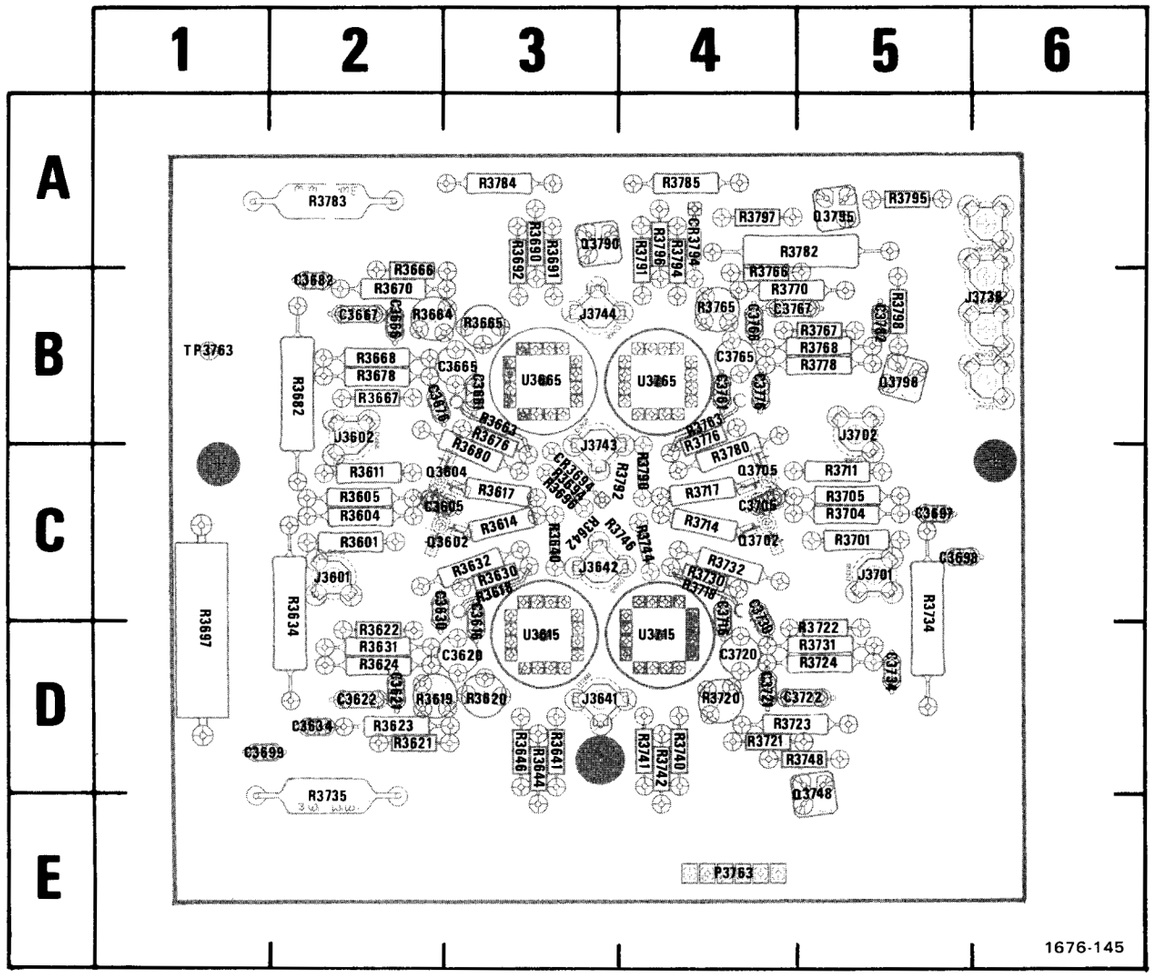


Fig. 9-9A. A10—Crossover Vertical Interface circuit board assembly (front).
(7844 SN B050246 & up and R7844 SN B040139 & up).

CKT NO	GRID LOC	CKT NO	GRID LOC	CKT NO	GRID LOC	CKT NO	GRID LOC	CKT NO	GRID LOC	CKT NO	GRID LOC	CKT NO	GRID LOC
C3602	2C	C3734	5D	Q3602	2C	R3630	3C	R3692	3A	R3741	4D	R3795	5A
C3616	3D	C3761	4B	Q3604	2C	R3631	2D	R3694	3C	R3742	4D	R3796	4A
C3621	2D	C3765	4B	Q3702	4C	R3632	3C	R3696	3C	R3744	4C	R3797	4A
C3620	3D	C3766	4B	Q3705	4C	R3634	2C	R3697	1D	R3746	4C	R3798	5B
C3622	2D	C3767	4B	Q3748	5D	R3640	3C	R3701	5C	R3748	5D		
C3630	2C	C3776	4B	Q3790	3A	R3641	2C	R3704	5C	R3763	4B	TP3763	1B
C3634	2D	C3782	5B	Q3795	5A	R3642	3C	R3705	5C	R3765	4B		
C3661	3B			Q3798	5B	R3644	3D	R3711	5C	R3766	4B	U3615	3D
C3665	3B	CR3694	3C			R3646	3D	R3714	4C	R3767	5B	U3666	3B
C3666	2B	CR3794	4A	R3601	2C	R3663	3B	R3717	4C	R3768	5B	U3715	4D
C3667	2B			R3604	2C	R3664	2B	R3718	4C	R3770	4B	U3765	4B
C3676	2B	J3601	2C	R3605	2C	R3665	3B	R3720	4D	R3776	4C		
C3682	2B	J3602	2B	R3611	2C	R3666	2B	R3721	4D	R3778	5B		
C3697	5C	J3641	3D	R3614	3C	R3667	2B	R3722	5D	R3780	4C		
C3698	5C	J3642	3C	R3617	3C	R3668	2B	R3723	4D	R3782	5A		
C3699	1D	J3701	5C	R3618	3C	R3670	2B	R3724	5D	R3783	2A		
C3705	4C	J3702	5B	R3619	2D	R3676	3B	R3730	4C	R3784	3A		
C3716	4C	J3738	6B	R3620	3D	R3678	2B	R3731	5D	R3785	4A		
C3720	4D	J3743	3C	R3621	2D	R3680	3B	R3732	4C	R3790	4C		
C3721	4D	J3744	3B	R3622	2D	R3682	2B	R3734	5C	R3791	4A		
C3722	5D			R3623	2D	R3690	3A	R3735	2E	R3792	4C		
C3730	4C	P3763	4E	R3624	2D	R3691	3A	R3740	4D	R3794	4A		

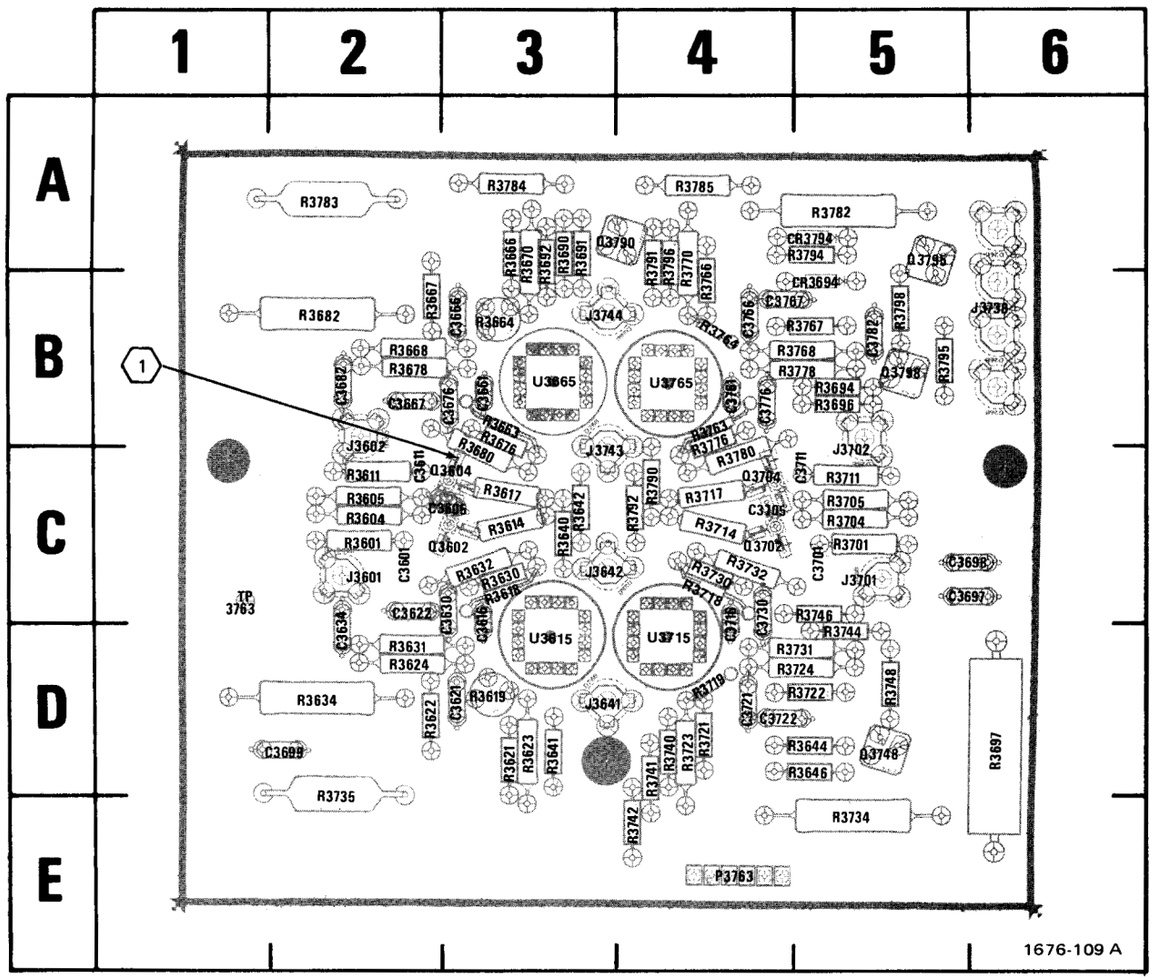


Fig. 9-9B. A10—Crossover Vertical Interface circuit board assembly (front).
(7844 SN B050245 & below and R7844 SN B040138 & below).

CKT NO	GRID LOC	CKT NO	GRID LOC	CKT NO	GRID LOC	CKT NO	GRID LOC	CKT NO	GRID LOC	CKT NO	GRID LOC	CKT NO	GRID LOC
C3601	2C	C3730	4C	Q3602	2C	R3630	3C	R3696	5B	R3744	5D	R3798	5B
C3602	2C	C3761	4B	Q3604	2C	R3632	3C	R3697	6D	R3746	5C		
C3611	2C	C3766	4B	Q3702	4C	R3634	2D	R3701	5C	R3748	5D	TP3763	1C
C3616	3D	C3767	4B	Q3704	4C	R3640	3C	R3704	5C	R3763	4B		
C3621	3D	C3776	4B	Q3748	5D	R3641	2C	R3705	5C	R3764	4B	U3615	3D
C3622	2C	C3782	5B	Q3790	3A	R3642	3C	R3711	5C	R3766	4B	U3665	3B
C3630	3D			Q3795	5A	R3644	5D	R3714	4C	R3767	5B	U3715	4D
C3634	2D	CR3694	5B	Q3798	5B	R3646	5D	R3717	4C	R3768	5B	U3765	4B
C3661	3B	CR3794	5A			R3663	3B	R3718	4C	R3770	4B		
C3666	3B			R3601	2C	R3664	3B	R3719	4D	R3776	4C		
C3667	2B	J3601	2C	R3604	2C	R3666	3A	R3721	4D	R3778	5B		
C3676	3B	J3602	2B	R3605	2C	R3667	2B	R3722	5D	R3780	4C		
C3682	2B	J3641	3D	R3611	2C	R3668	2B	R3723	4D	R3782	5A		
C3697	5C	J3642	3C	R3614	3C	R3670	3A	R3724	5D	R3783	2A		
C3698	5C	J3701	5C	R3617	3C	R3676	3B	R3730	4C	R3784	3A		
C3699	2D	J3702	5C	R3618	3C	R3678	2B	R3731	5D	R3785	4A		
C3701	5C	J3738	6B	R3619	3D	R3680	3B	R3732	4C	R3790	4C		
C3705	4C	J3743	3C	R3621	3D	R3682	2B	R3734	5E	R3791	4A		
C3711	5C	J3744	3B	R3622	2D	R3690	3A	R3735	2E	R3792	4C		
C3716	4C			R3623	3D	R3691	3A	R3740	4D	R3794	5A		
C3721	4D	P3763	4E	R3624	2D	R3692	3A	R3741	4D	R3795	5B		
C3722	4D			R3631	2D	R3694	5B	R3742	4E	R3796	4A		

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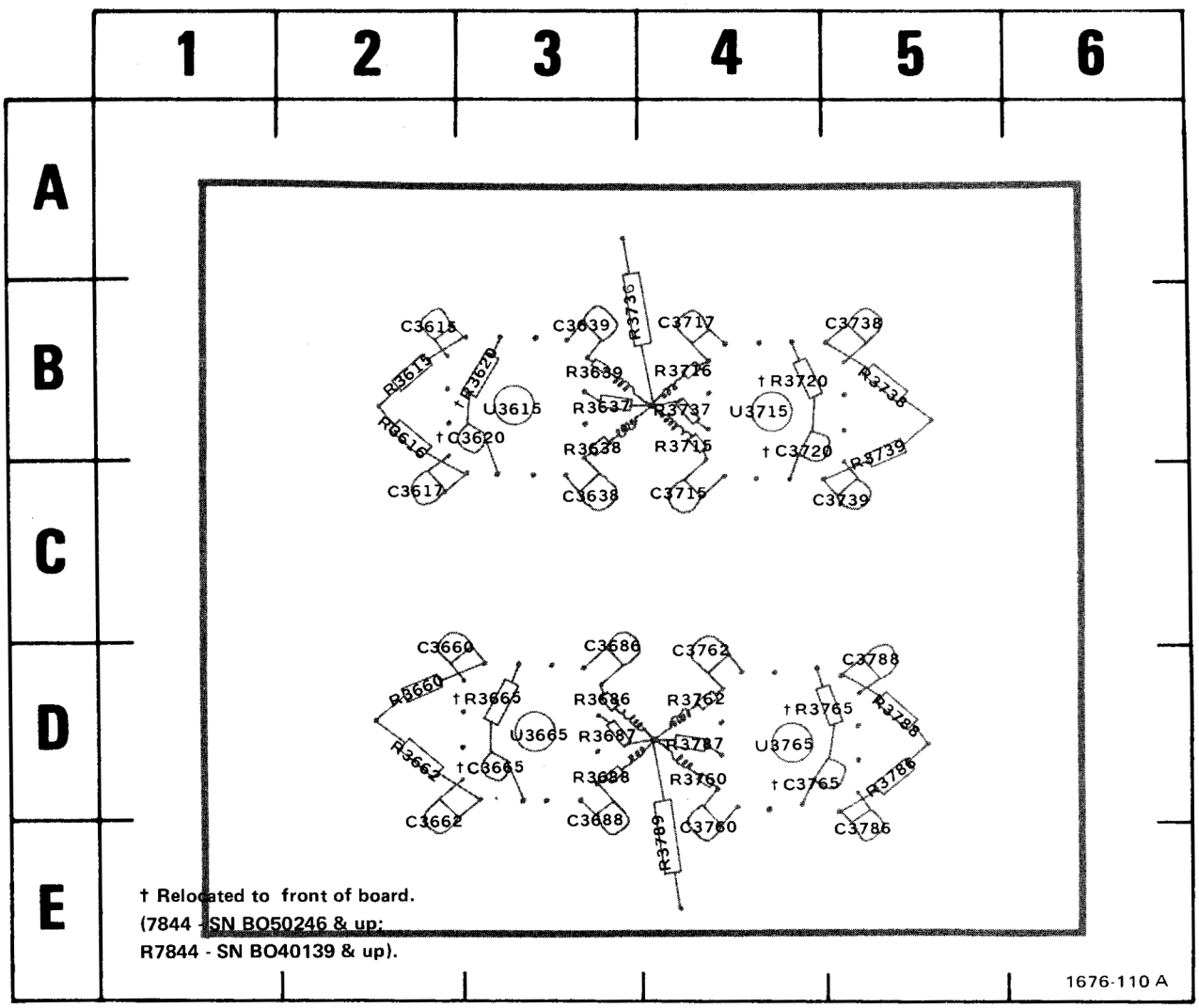
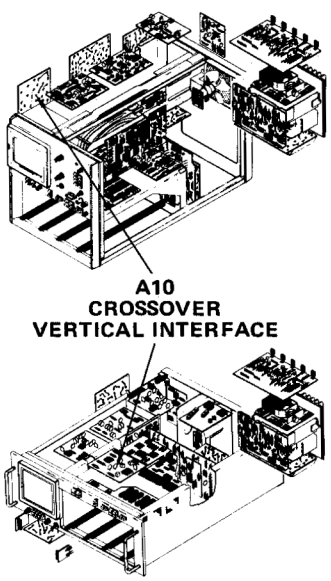


Fig. 9-9C. A10—Crossover Vertical Interface circuit board assembly (rear).



CKT NO	GRID LOC	CKT NO	GRID LOC	CKT NO	GRID LOC
C3615	2B	C3786	5E	R3737	4B
C3617	2C	C3788	5D	R3720	4B
C3620	3B			R3738	5B
C3638	3C	R3615	2B	R3739	5B
C3639	3B	R3616	2B	R3760	4D
C3660	2C	R3620	3B	R3762	4D
C3662	2E	R3637	3B	R3765	4D
C3665	3D	R3638	3B	R3786	5D
C3686	3D	R3639	3B	R3787	4D
C3688	3E	R3660	2D	R3788	5D
C3715	4C	R3662	2D	R3789	4E
C3717	4B	R3665	3D		
C3720	4B	R3686	3D	U3615	3B
C3738	5B	R3687	3D	U3665	3D
C3739	5C	R3688	3D	U3715	4B
C3760	4E	R3715	4B	U3765	4D
C3762	4D	R3716	4B		
C3765	4D	R3736	3B		

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VOLTAGE AND WAVEFORM CONDITIONS

WARNING

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

The voltages and waveforms shown on this diagram can be obtained using the recommended test equipment listed below.

RECOMMENDED TEST EQUIPMENT

Item	Specifications	Recommended Type
Oscilloscope	Frequency Response Dc to 65 MHz Deflection Factor 5 mV to 5 V/div Input Impedance 1 MΩ, 20 pF 500 ns.	Tektronix 7603 equipped with 7A13 Amplifier and 7B-series time-base unit, or equivalent.
Probe	Fast rise 10x attenuation probe compatible with the vertical amplifier of the test oscilloscope.	P6053B, or equivalent.
Precision dc voltmeter	Input Impedance 10 MΩ Range 0—500 V	Tektronix 7D13 Digital Multimeter (test oscilloscope must have readout system); or DM 501A Digital Multi-Meter with TM 501 Power Module, or equivalent.

VOLTAGE MEASUREMENTS

Voltage measurements on this diagram were made under the following conditions:

Set the VERTICAL MODE switch to LEFT for BEAM 1 and RIGHT for BEAM 2.
No plug-in units are installed.

Voltmeter common is connected to chassis ground.

WAVEFORMS

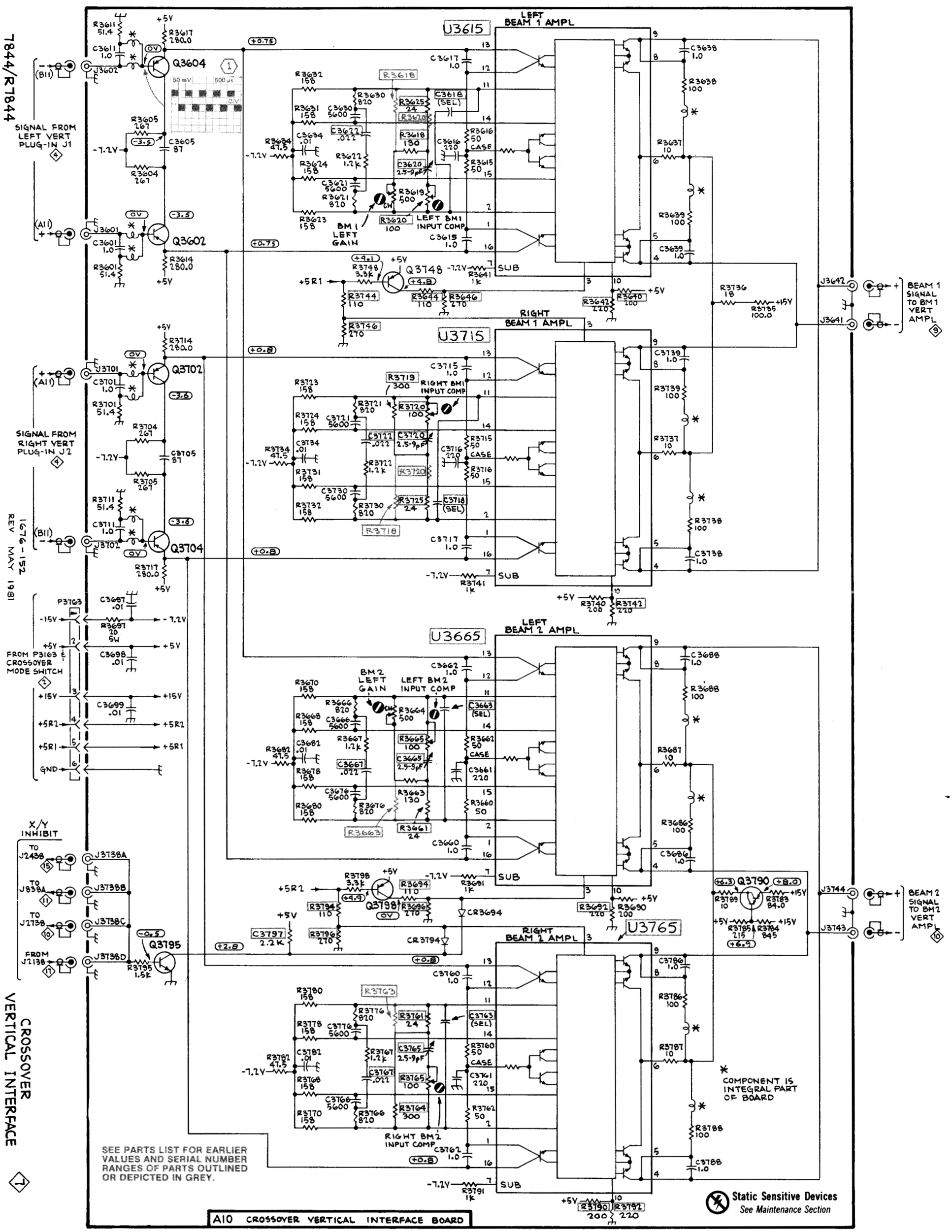
Waveforms shown on this diagram were obtained under the following conditions:

7844/R7844 OSCILLOSCOPE UNDER TEST. Front-panel controls are set the same as for voltage measurements. Install a 7A19 amplifier unit in the LEFT VERT compartment and set the deflection factor to 0.1 volt/division. Connect the 4 V CALIBRATOR output to the 7A19 input.

TEST OSCILLOSCOPE. The test oscilloscope triggering is set to auto mode with ac coupling from the internal source. The 7A13 input coupling is set to dc.

Tolerances of voltages and waveforms shown are within 20%. Calibrated offset voltages are marked on waveforms at the center graticule line. These voltages indicate the comparison voltage of the 7A13.

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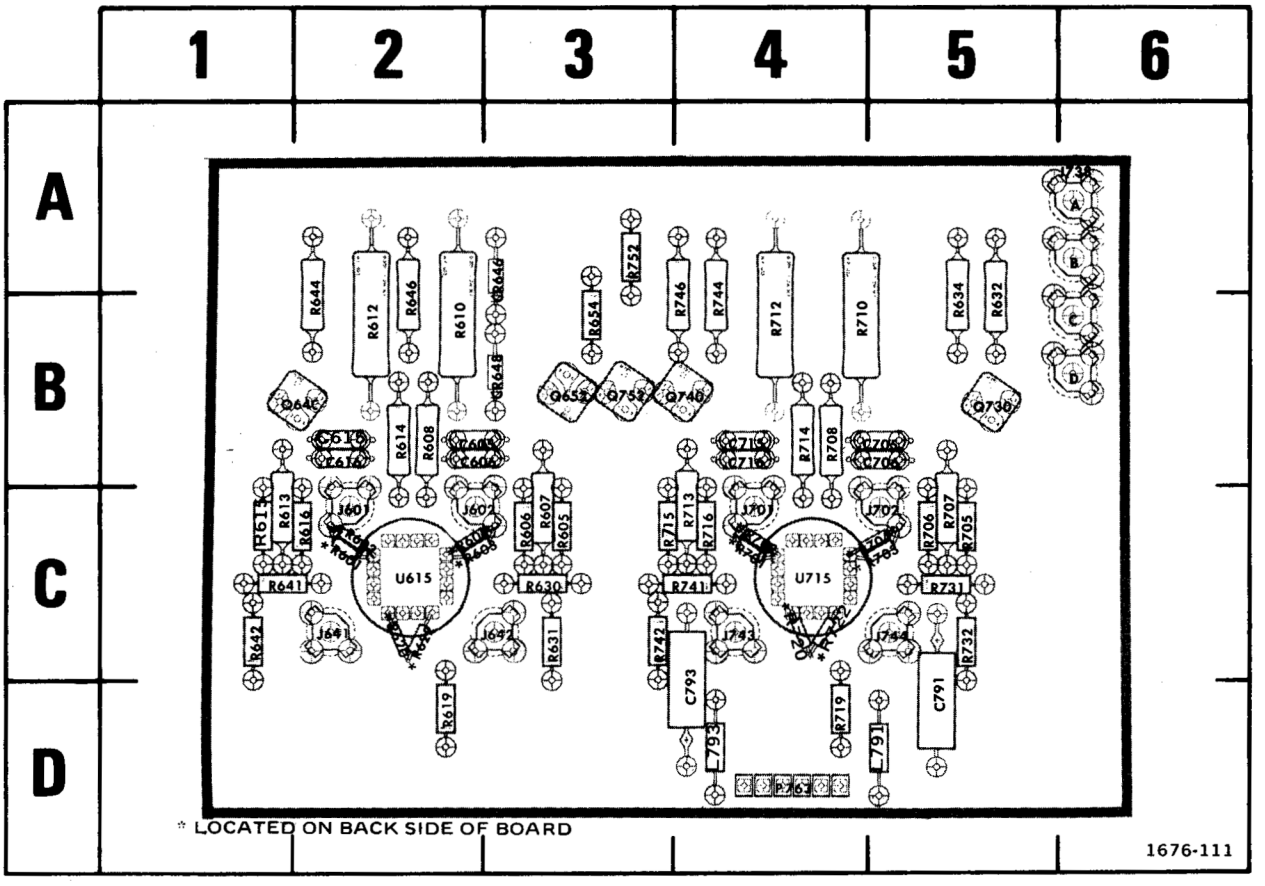


Fig. 9-10. A11—Dedicated Vertical Interface circuit board assembly (Option 21 only).
NOTE: This board assembly is replaced by the Crossover Vertical Interface board assembly 670-2674-01.

CKT NO	GRID LOC	CKT NO	GRID LOC	CKT NO	GRID LOC	CKT NO	GRID LOC
C605	2B	J744	5C	R612	2B	R706	5C
C606	2B			R613	1C	R707	5C
C615	2B	L791	5D	R614	2B	R708	4B
C616	2B	L793	4D	R615	1C	R710	4B
C705	5B			R616	2C	R712	4B
C706	5B	P763	4D	R619	2D	R713	4C
C715	4B			R620	2C	R714	4B
C716	4B	Q640	2B	R622	2C	R715	3C
C791	5D	Q652	3B	R630	3C	R716	4C
C793	4D	Q730	5B	R631	3C	R719	4D
		Q740	4B	R632	5B	R720	4C
CR646	3A	Q752	3B	R634	5B	R722	4C
CR648	3B			R641	1C	R731	5C
		R601	2C	R642	1C	R732	5C
J601	2C	R602	2C	R644	2B	R741	4C
J602	2C	R603	2C	R646	2B	R742	3C
J641	2C	R604	2C	R654	3B	R744	4B
J642	3C	R605	3C	R701	4C	R746	4B
J701	4C	R606	3C	R702	4C	R752	3A
J702	5C	R607	3C	R703	5C		
J738	6A	R608	2B	R704	5C	U615	2C
J743	4C	R610	2B	R705	5C	U715	4C

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VOLTAGE CONDITIONS

WARNING

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

The voltages shown on this diagram can be obtained using the recommended test equipment listed below.

RECOMMENDED TEST EQUIPMENT

Item	Specifications		Recommended Type
Precision dc voltmeter	Input Impedance Range	10 MΩ 0—500 V	Tektronix 7D13 Digital Multimeter (test oscilloscope must have readout system); or DM 501A Digital Multi-Meter with TM 501 Power Module, or equivalent.

VOLTAGE MEASUREMENTS

Voltage measurements on this diagram were obtained under the following conditions:

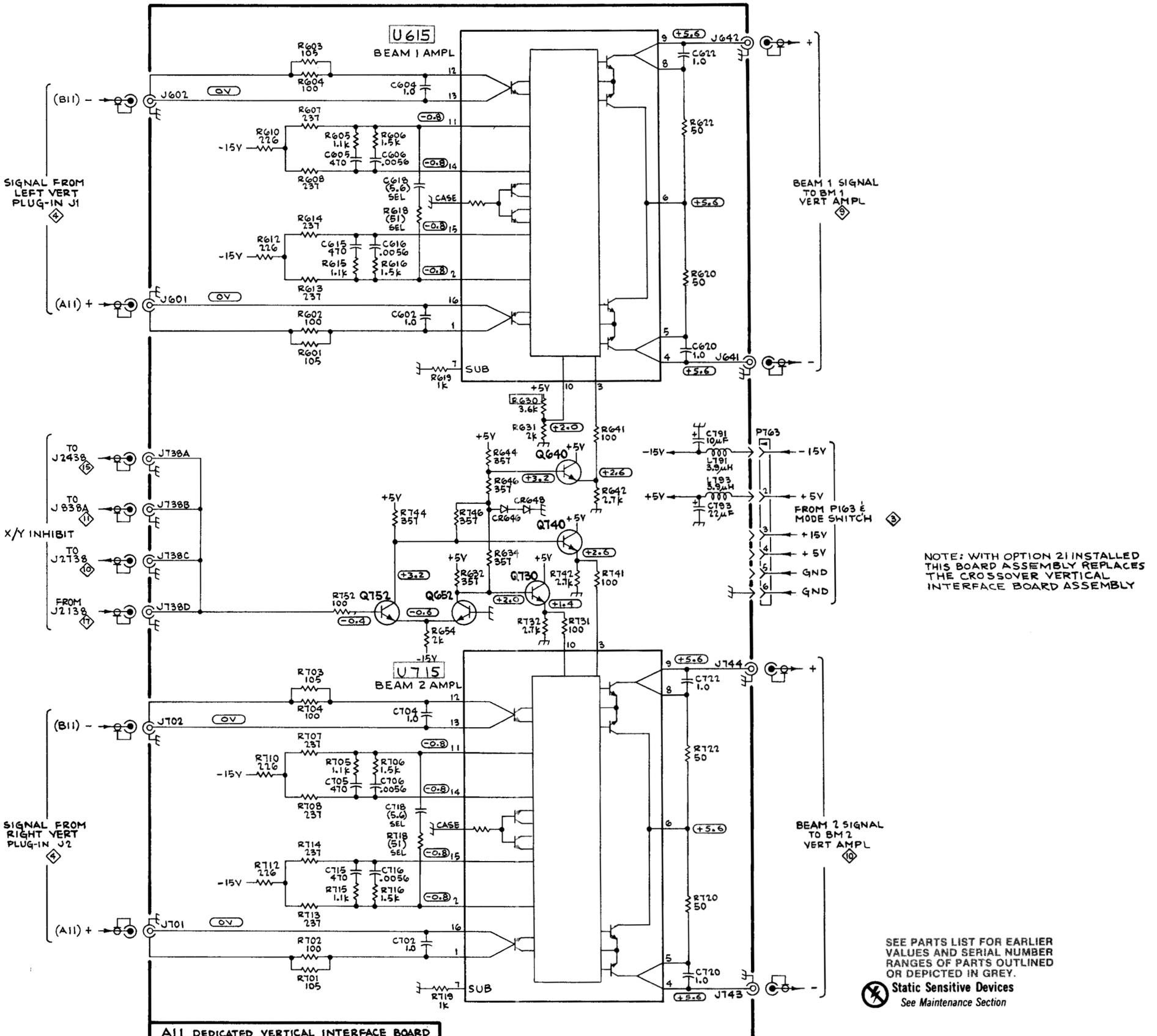
Set the HORIZONTAL MODE switch to B for BEAM 1 and B for BEAM 2.

No plug-in units are installed.

Voltmeter common is connected to chassis ground.

Tolerances of voltages shown are within 20%.

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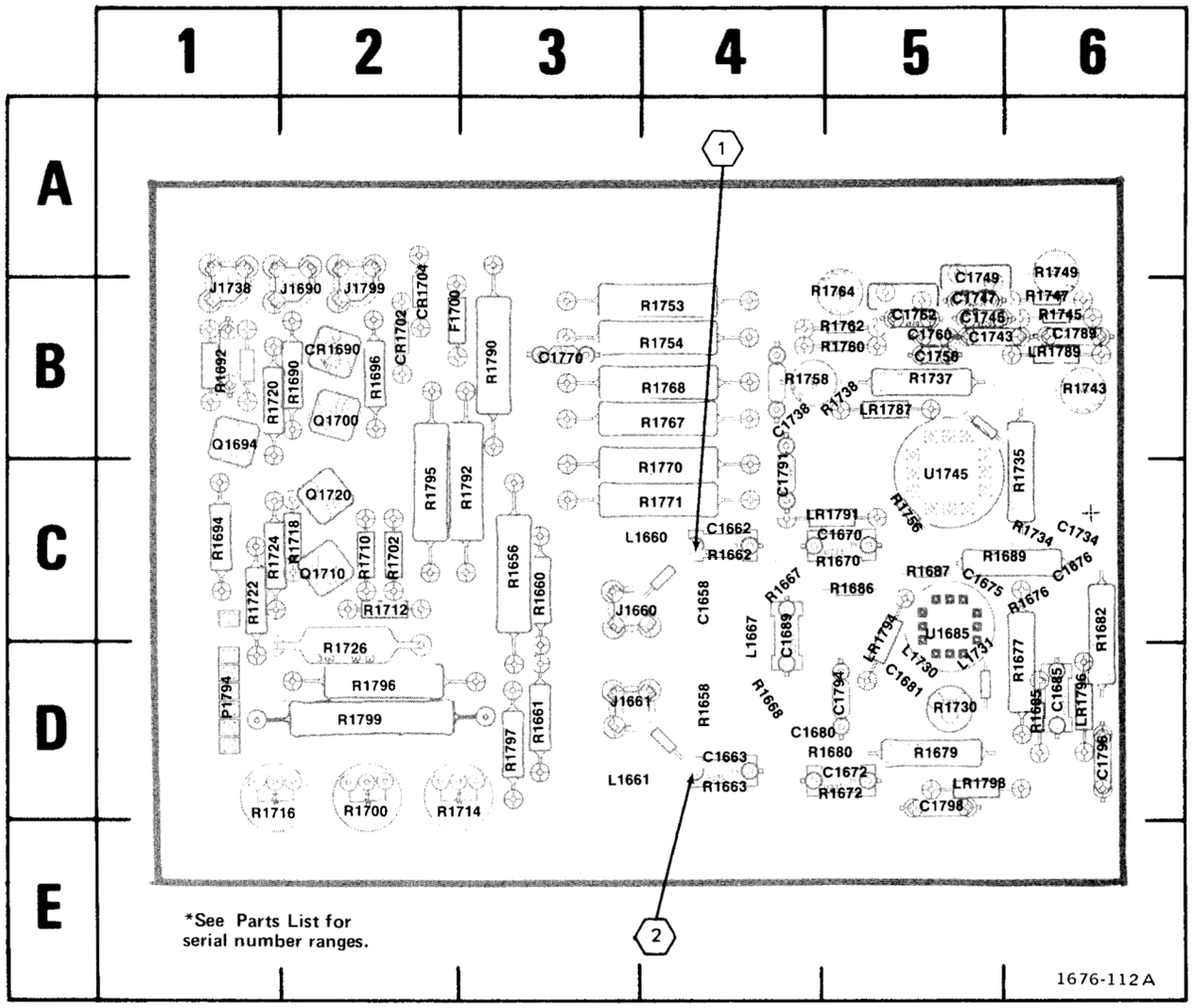


Fig. 9-11. A13—Vertical Amplifier circuit board assembly (Beam 1).

CKT NO	GRID LOC	CKT NO	GRID LOC	CKT NO	GRID LOC	CKT NO	GRID LOC	CKT NO	GRID LOC	CKT NO	GRID LOC	CKT NO	GRID LOC
		C1749	5A	J1660	4C	Q1694	1B	R1680	5D	R1726	2D	R1768	4B
C1658	4C	C1758	5B	J1661	3D	Q1700	2B	R1682	6C	R1730	5D	R1770	4C
		C1760	5B	J1690	2B	Q1710	2C	R1685	6D			R1771	4C
C1662	4C			J1738	1B	Q1720	2C	R1686	5C	R1734	6C	R1790	3B
C1663	4D	C1762	5B	J1799	2B			R1687	5C	R1735	6C	R1792	3C
C1670	5C					R1656	3C	R1689	6C	R1737	5B	R1795	2C
C1672	5D	C1766	6D	L1660	4C			R1690	2B	R1738	5B	R1796	2D
C1675	5C	C1770	3B	L1661	3D	R1658	4D	R1692	1B			R1797	3D
C1676	6C			L1667	4C			R1694	1C	R1743	6B	R1799	2D
C1680	4D	C1789	6B	L1730	5D	R1660	3C	R1696	2B	R1745	6B		
C1681	5D	C1791	4C	L1731	5D	R1661	3D	R1700	2D	R1747	6B		
C1685	6D	C1794	5D			R1662	4C	R1702	2C	R1749	6A		
C1689	4C	C1798	5D	LR1787	5B	R1663	4D	R1710	2C	R1753	4B		
				LR1789	6B	R1667	4C	R1712	2C	R1754	4B	U1685	5C
C1734	6C	CR1690	2B	LR1791	5C	R1668	4D	R1714	3D	R1756	5C	U1745	5C
C1738	4C	CR1702	2B	LR1794	5C	R1670	5C	R1716	1D	R1758	4B		
		CR1704	2B	LR1796	6D	R1672	5D	R1718	2C	R1760	5B		
C1743	5B			LR1798	5D	R1676	6C	R1720	1B	R1762	5B		
C1745	5B	F1700	2B			R1677	6D	R1722	1C				
C1747	5B			P1794	1D	R1679	5D	R1724	1C	R1767	4B		

Back of board:

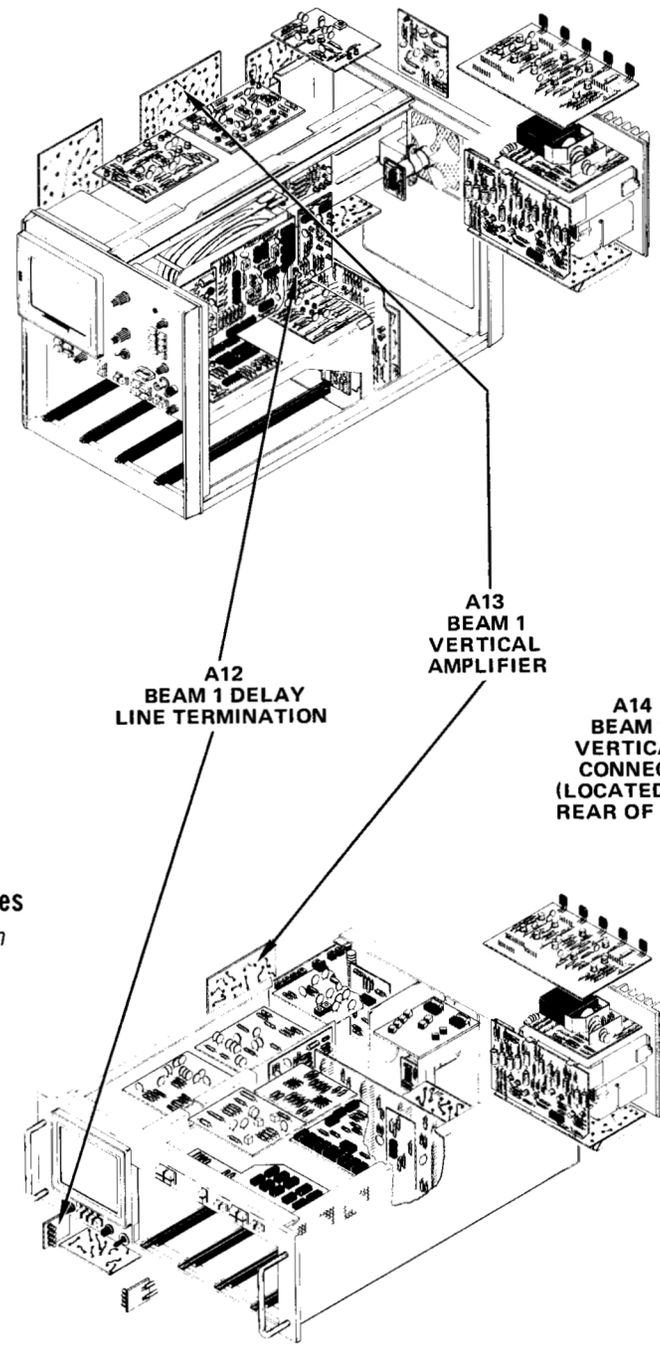
C1657
C1659
C1692
C1739
C1753
C1764
C1787

*CR1787

*Q1785
*Q1786

R1659
R1732
R1736
R1741
*R1783
*R1784
*R1785
*R1786
*R1788

RT1731



Static Sensitive Devices
See Maintenance Section

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VOLTAGE AND WAVEFORM CONDITIONS

WARNING

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

The voltages and waveforms shown on this diagram can be obtained using the recommended test equipment listed below.

RECOMMENDED TEST EQUIPMENT

Item	Specifications	Recommended Type
Oscilloscope	Frequency Response Dc to 65 MHz Deflection Factor 5 mV to 5 V/div Input Impedance 1 MΩ, 20 pF 500 ns.	Tektronix 7603 equipped with 7A13 Amplifier and 7B-series time-base unit, or equivalent.
Probe	Fast rise 10x attenuation probe compatible with the vertical amplifier of the test oscilloscope.	P6053B, or equivalent.
Precision dc voltmeter	Input Impedance 10 MΩ Range 0—500 V	Tektronix 7D13 Digital Multimeter (test oscilloscope must have readout system); or DM 501A Digital Multi-Meter with TM 501 Power Module, or equivalent.

VOLTAGE MEASUREMENTS

Voltage measurements on this diagram were made under the following conditions:

Set the VERTICAL MODE switch to LEFT for BEAM 1 and RIGHT for BEAM 2.

No plug-in units are installed.

Voltmeter common is connected to chassis ground.

WAVEFORMS

Waveforms shown on this diagram were obtained under the following conditions:

7844/R7844 OSCILLOSCOPE UNDER TEST. Front-panel controls are set the same as for voltage measurements. Install a 7A19 amplifier unit in the LEFT VERT compartment and set the deflection factor to 0.1 volt/division. Install a 7B80 time-base unit in the A HORIZ compartment and set triggering to auto mode with ac coupling from the internal source. Center the 4 V CALIBRATOR output to the 7A19 input and center the display vertically and horizontally on the crt.

TEST OSCILLOSCOPE. The test oscilloscope triggering is set to auto mode with ac coupling from the internal source. The 7A13 input coupling is set to dc.

Tolerances of voltages and waveforms shown are within 20%. Calibrated offset voltages are marked on waveforms at the center horizontal graticule line. These voltages indicate the comparison voltage of the 7A13.

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BEAM 1 SIG FROM CROSSOVER VI ⑦ OR DEDICATED VI ⑧

J1642 J1641 J1651 J1653 DELAY LINE DL 650

A12 DELAY LINE TERMINATION BOARD

J1660 J1661

R1657 27 C1657 2.5 R1659 27 C1659 2.5

C1662 39 R1662 24.9 C1663 39

C1670 270 R1670 4.7 R1672 4.7 C1672 270

L1660 0.12μH L1661 0.12μH

C1658 1-3 HF COMP 1 R1660 150.0 R1656 121 HF COMP 2 R1658 200 R1661 150.0 C1659 2.5

HF COMP 3 L1667 1-3μH

R1667 560 R1668 560

C1689 270 R1686 91

+5.4

① 50 mV 500 μs +5.4

② 50 mV 500 μs +5.4

U1685 HF AMPL

C1676 1.8 R1676 100 R1677 51.1 +6.9V C1675 1.5

R1689 178 R1687 SEL

+6V

C1685 270 R1685 91 R1683 SEL R1682 178

C1681 1.5 +6.9V R1679 51.1 R1680 100 C1680 1.8

+12V R1732 30 L1731 1/2T +9V VERT GAIN R1730 250 L1730 1/2T T1731 50 +12V

+5V R1 CENTER R1700 1k R1702 620

+5V +1.4 CR1702 CR1704 +2.3 +2.4

NOT USED J1738

AUX Y AXIS FROM J16 ④ J1690 CR1692 C1692 .001 R1692 1k 0V Q1694 R1694 402 +1.0 Q1700 +0.3 Q1720 Q1710

R1690 332 CR1690

R1718 10 CH AUX Y GAIN R1716 10 R1724 82.5 R1722 82.5 R1726 200.0 -15V

+5V R1710 1.8k R1712 82 R1714 100 CH VERT CENTER

NOT USED J1799 R1696 2.55k R1720 64.9

U1745 OUTPUT AMPL

C1734 1.8 R1734 100 R1735 51.1 +15V½ C1753 1.5 R1733 4.7 +14.8

R1753 100.0 LF COMP 1 HF COMP 4 R1745 430 (SEL) R1749 1k CH R1747 SEL R1743 500 C1745 1500 C1747 .022 C1749 0.47 R1754 100.0 C1743 100 R1741 SEL

R1763 SEL (100) C1736 SEL (2.5) +12V R1756 SEL R1768 100.0 C1764 2μF C1762 0.1 C1758 SEL C1760 5600 R1760 SEL R1762 SEL R1764 2K CH R1758 500 CH R1767 100.0 HF COMP 5 LF COMP 2

C1739 1.5 R1739 4.7 +14.8 R1737 51.1 +15V½ R1738 100 C1738 1.8

C1770 .005 R1770 44 R1771 SEL

+15V½ +15V₁

P1782 +50V

PARTIAL A14 VERT. CONN. BOARD

C1783 .005 P1783 ③ LR1780 4T 100 +36 R1782 A THICK FILM CRT ⑤ 4T +36 100 R1782 B LR1784 ④ CRT TERMINATION

PARTIAL A14 VERT. CONN. BOARD

③ 2 V 500 μs +35V

④ 2 V 500 μs +35.5

R1784 10K R1783 23.2K Q1786 +15V R1786 3.6K R1785 4.7K Q1785

R1788 +50V +15V +15V₁ +15V₂ +12V +9V +5V -15V +6V +6.9V

LR1787 0.4μH 56 LR1789 0.5μH 100 LR1791 0.5μH 100 LR1794 0.5μH 100 LR1796 0.5μH 100 LR1798 0.5μH 100

F1700 1/4A CR1787

R1790 45.3 R1792 45.3 R1795 61.9 R1796 316 R1797 44.2 R1799 150.0 +15V

C1787 .005 C1789 .005 C1791 .005 C1794 .005 C1796 .005 C1798 .005

A13 VERTICAL AMPLIFIER BOARD

P1794 1 5 2 3 4 6

+50V +15V +5V -15V GND

FROM P4994 P1994 BM 1 HORIZ AMPL ⑫

SEE ② ③ ④ OR ⑫ FOR INTERCONNECTING DETAILS

BEAMFINDER (BEAM 1)

NOTES:

1. * INDICATES COMPONENT IS INTEGRAL PART OF BOARD
2. ≠ INDICATES INDUCTANCE DUE TO LEAD LENGTH

Static Sensitive Devices
See Maintenance Section

SEE PARTS LIST FOR EARLIER VALUES AND SERIAL NUMBER RANGES OF PARTS OUTLINED OR DEPICTED IN GREY.

1676-154
REV MAY 1981

7844/R7844

BEAM 1 VERTICAL AMPLIFIER ⑨

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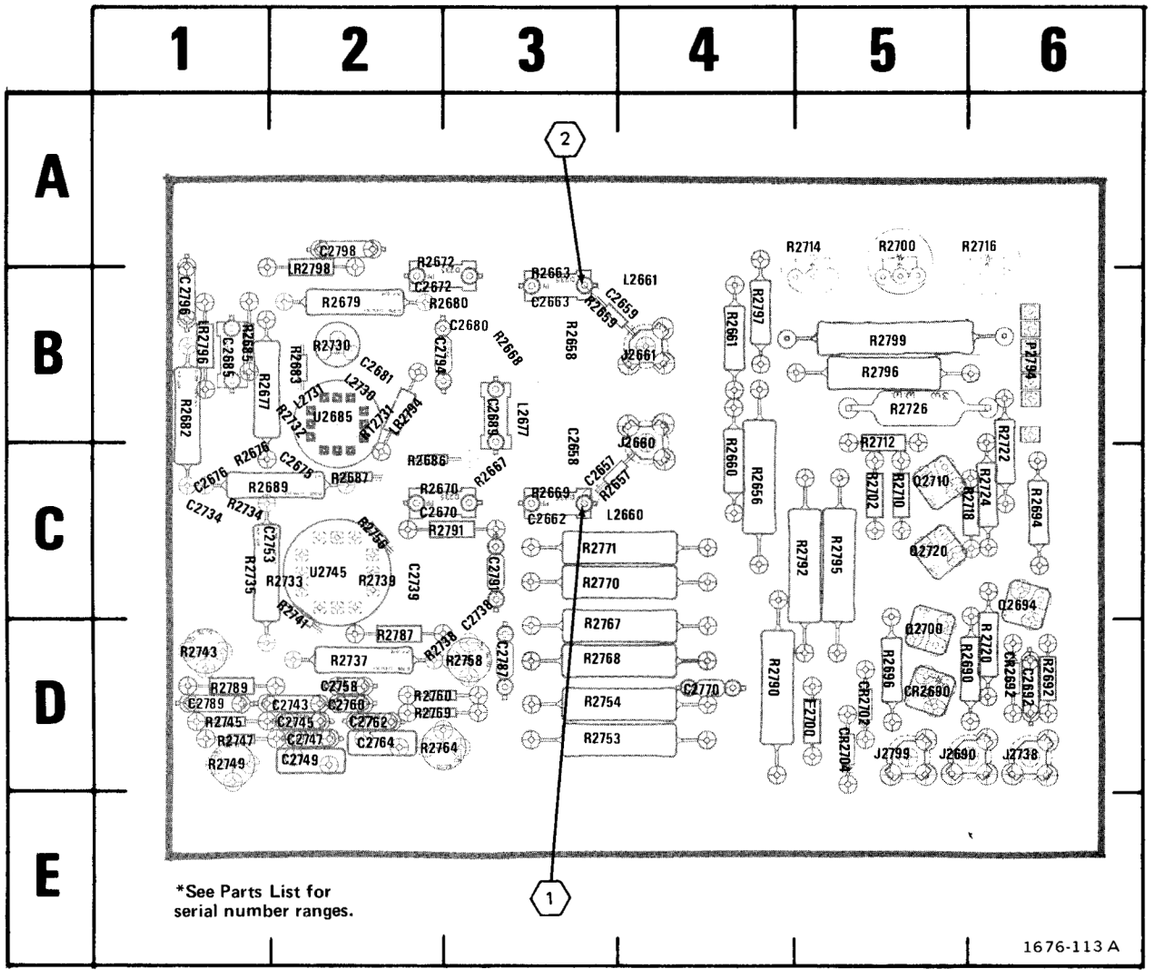
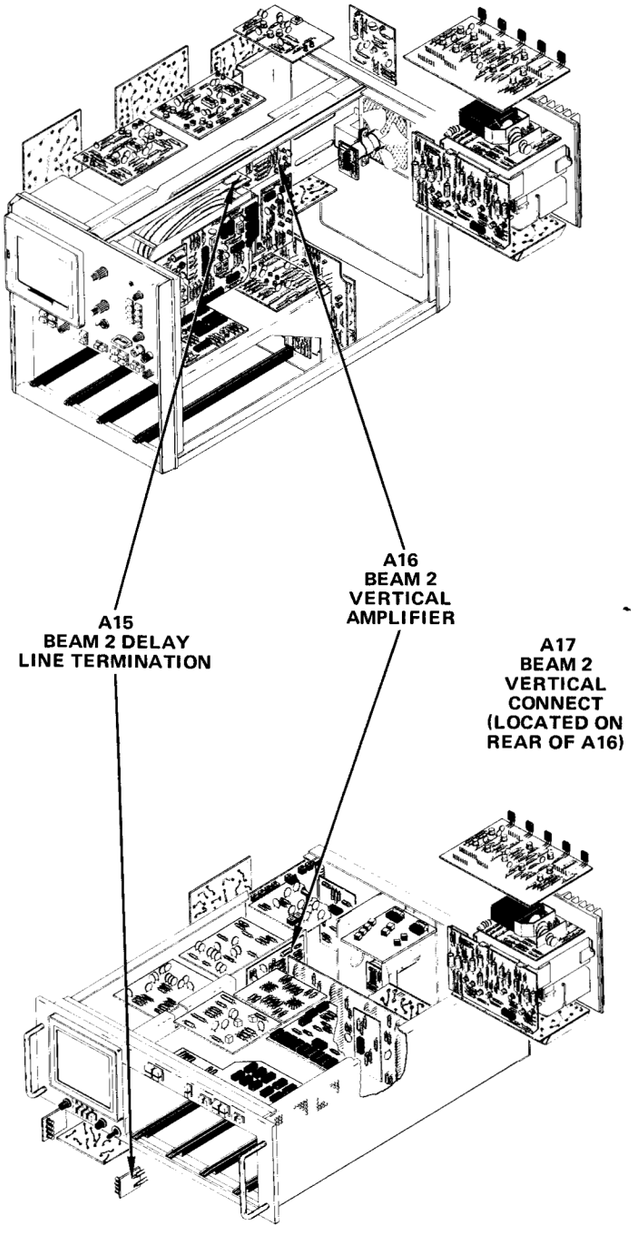


Fig. 9-12. A16—Vertical Amplifier circuit board assembly (Beam 2).

CKT NO	GRID LOC	CKT NO	GRID LOC	CKT NO	GRID LOC	CKT NO	GRID LOC	CKT NO	GRID LOC	CKT NO	GRID LOC	CKT NO	GRID LOC
C2657	3C	C2749	2D	J2660	4B	Q2710	5C	R2683	2B	R2730	2B	R2768	3D
C2658	3B	C2753	2C	J2661	4B	Q2720	5C	R2685	1B	R2732	2B	R2769	2D
C2659	4B	C2758	2D	J2690	5D			R2686	2C	R2733	2C	R2770	3C
C2662	3C	C2760	2D	J2738	6D	R2656	4C	R2687	2C	R2734	1C	R2771	3C
C2663	3B	C2762	2D	J2799	5D	R2657	3C	R2689	1C	R2735	1C	R2787	2D
C2670	2C	C2764	2D			R2658	3B	R2690	5D	R2737	2D	R2789	1D
C2672	2B	C2770	4D	L2660	4C	R2659	3B	R2692	6D	R2738	2D	R2790	4D
C2675	2C	C2791	3C	L2661	4B	R2660	4C	R2694	6C	R2739	2C	R2791	3C
C2676	1C	C2787	3D	L2677	3B	R2661	4B	R2696	5D	R2741	2C	R2792	5C
C2680	3B	C2789	1D	L2730	2B	R2663	3B	R2700	5A	R2743	1D	R2795	5C
C2681	2B	C2794	2B	L2731	2B	R2668	3B	R2702	5C	R2745	1D	R2796	5B
C2685	1B	C2796	1B			R2667	3C	R2710	5C	R2747	1D	R2797	4B
C2689	3B	C2798	2A	LR2794	2B	R2669	3C	R2712	5B	R2749	1D	R2799	5B
C2692	6D			LR2796	1B	R2670	2C	R2714	5A	R2753	3D		
C2734	1C	CR2690	5D	LR2798	2B	R2672	2A	R2716	6A	R2754	3D	RT2731	2B
C2738	3C	CR2692	6D			R2676	1C	R2718	5C	R2756	2C		
C2739	2C	CR2702	5D	P2794	6B	R2677	1B	R2720	6D	R2758	3D	U2685	2B
C2743	2D	CR2704	5D			R2679	2B	R2722	6C	R2760	2D	U2745	2C
C2745	2D			Q2694	6C	R2680	3B	R2724	6C	R2764	2D		
C2747	2D	F2700	5D	Q2700	5D	R2682	1B	R2726	5B	R2767	3D		

Back of board:

*Q2785
*Q2786
*R2783
*R2784
*R2785
*R2786



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VOLTAGE AND WAVEFORM CONDITIONS

WARNING

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

The voltages and waveforms shown on this diagram can be obtained using the recommended test equipment listed below.

RECOMMENDED TEST EQUIPMENT

Item	Specifications		Recommended Type
Oscilloscope	Frequency Response Deflection Factor Input Impedance	Dc to 65 MHz 5 mV to 5 V/div 1 MΩ, 20 pF 500 ns.	Tektronix 7603 equipped with 7A13 Amplifier and 7B-series time-base unit, or equivalent.
Probe	Fast rise 10x attenuation probe compatible with the vertical amplifier of the test oscilloscope.		P6053B, or equivalent.
Precision dc voltmeter	Input Impedance Range	10 MΩ 0—500 V	Tektronix 7D13 Digital Multimeter (test oscilloscope must have readout system); or DM 501A Digital Multi-Meter with TM 501 Power Module, or equivalent.

VOLTAGE MEASUREMENTS

Voltage measurements on this diagram were made under the following conditions:

Set the VERTICAL MODE switch to LEFT for BEAM 1 and RIGHT for BEAM 2.
No plug-in units are installed.

Voltmeter common is connected to chassis ground.

WAVEFORMS

Waveforms shown on this diagram were obtained under the following conditions:

7844/R7844 OSCILLOSCOPE UNDER TEST. Front-panel controls are set the same as for voltage measurements. Install a 7A19 amplifier unit in the LEFT VERT compartment and set the deflection factor to 0.1 volt/division. Install a 7B80 time-base unit in the A HORIZ compartment and set triggering to auto mode with ac coupling from the internal source. Center the 4 V CALIBRATOR output to the 7A19 input and center the display vertically and horizontally on the crt.

TEST OSCILLOSCOPE. The test oscilloscope triggering is set to auto mode with ac coupling from the internal source. The 7A13 input coupling is set to dc.

Tolerances of voltages and waveforms shown are within 20%. Calibrated offset voltages are marked on waveforms at the center horizontal graticule line. These voltages indicate the comparison voltage of the 7A13.

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BEAM 2 SIG FROM CROSSOVER VI ◇7 OR DEDICATED VI ◇8

J2642 J2651 J2641 J2653

DELAY LINE DL2650

A15 DELAY LINE TERMINATION BOARD

J2660 J2661

R2657 2.7 C2657 2.5 R2659 2.7 C2659 2.5

C2658 1-3 HF COMP 1 HF COMP 2 R2658 200

L2660 0.12μH L2661 0.12μH

R2660 150.0 R2661 150.0 R2656 121 +15V

C2662 39 R2662 24.9 C2663 39

C2670 270 R2670 4.7 R2667 560 R2668 560 R2672 4.7 C2672 270

C2689 270

HF COMP 3 L2667 1-3μH

+5.5 +5.5

1 50 mV 500 μs +5.4

2 50 mV 500 μs +5.4

U2685 HF AMPL

C2676 1.8 R2676 100 R2677 51.1 +6.9V C2675 1.5

R2689 178 R2687 SEL R2686 91

C2685 270 R2685 91 R2683 SEL R2682 178

C2681 1.5 R2679 51.1 R2680 100 C2680 1.8

+12 +12

R2732 30 L2731 1/2T

1 +9V VERT GAIN R2730 250 L2730 1/2T

RT 2731 t° 50

2

U2745 OUTPUT AMPL

C2734 1.8 R2734 100 R2735 51.1 +15V1

R2743 600 C2753 1.5 R2733 4.7 +15

R2753 100.0 R2745 430 (SEL) C2746 1500 C2747 .022 C2749 .047

LF COMP 1 HF COMP 4 R2749 1k CH R2747 SEL CH C2743 100 R2741 SEL

R2754 100.0 C2736 SEL (2.5) +12V

R2736 SEL (100) C2764 2MF R2756 SEL

R2768 100.0 C2762 0.1 C2758 SEL R2762 SEL

C2760 5600 R2760 SEL R2758 500 CH CH

R2767 100.0 HF COMP 5

R2764 2K C2739 1.5 R2739 4.1 +15 R2737 51.1 +15V1

C2770 .005 R2770 44 R2771 SEL R2738 100 C2738 1.8

+15V1

8 + 3 2 −

+50V

P2782

PARTIAL A17 VERT. CONN. BOARD

C2783 .005

3 P2783 1

LR2780 4T 100 +35 R2781 A

CRT ◇5

4T +35 100 R2782 B LR2784

4 CRT TERMINATION

PARTIAL A17 VERT. CONN. BOARD

X/Y INHIBIT FROM J738C ◇8 OR J3738C ◇7

AUX Y AXIS FROM J26 ◇4

Y READOUT FROM J2299 ◇11

J2738 J2680 J2799

C2692 .001 R2692 1k CR2692 0V

+5V R2694 402 +1.4 +1.0 Q2694 Q2700 +0.3 CR2702 CR2704 +2.5 +2.4

Q2720 Q2710

R2690 332 CR2680

R2718 10 CH R2716 10 AUX Y GAIN

R2724 82.5 R2722 82.5 R2726 200.0 -15V

+5V R2710 1.8k R2712 82 R2714 100 CW VERT CENTER

R2696 2.55k R2720 64.9

+5V RO CENTER CH R2700 1k R2702 620

3 2 V 500 μs +36

4 2 V 500 μs +36

NOTES:

1. * INDICATES COMPONENT IS INTEGRAL PART OF BOARD
2. ≠ INDICATES INDUCTANCE DUE TO LEAD LENGTH

Static Sensitive Devices
See Maintenance Section

R2784 10K R2783 23.2K Q2786 +15V R2786 3.6K R2785 4.7K Q2785

R2787 CR2787 F2700 1/4A

+50V +15V +15V1 +15V2 +12V +9V +5V -15V +6V +6.9V

LR2787 0.4μH 56 LR2789 0.5μH 100 LR2791 0.5μH 100 LR2794 0.5μH 100

LR2796 0.5μH 100 LR2798 0.5μH 100

R2790 45.3 R2792 45.3 R2795 61.9 R2796 316 R2797 44.2 R2799 150.0 +15V

C2787 .005 C2789 .005 C2791 .005 C2794 .005 C2796 .005 C2798 .005

A16 VERTICAL AMPLIFIER BOARD

P2794 1 5 2 3 4 6

+50V +15V +5V -15V GND

FROM P5994 P2994 BEAM 2 HORIZ AMPL ◇13

SEE ◇2 ◇3 ◇4 OR ◇13 FOR INTERCONNECTING DETAILS

BEAMFINDER (BEAM 2)

SEE PARTS LIST FOR EARLIER VALUES AND SERIAL NUMBER RANGES OF PARTS OUTLINED OR DEPICTED IN GREY.

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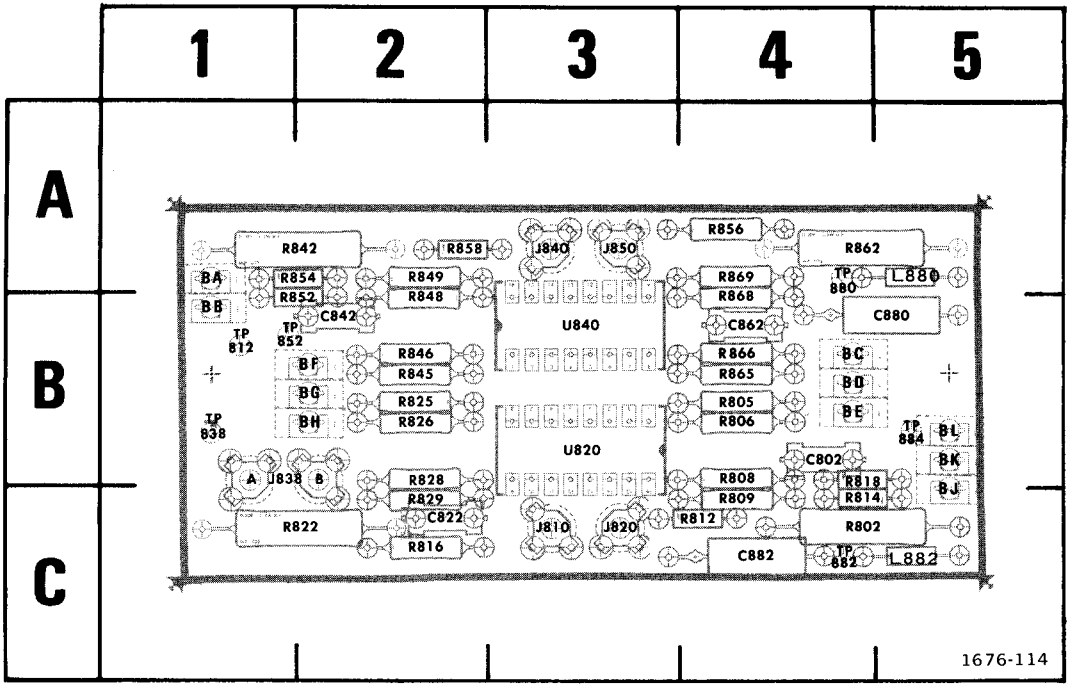


Fig. 9-13. A18—Horizontal Interface circuit board assembly. REV MAY 1981

CKT NO	GRID LOC	CKT NO	GRID LOC	CKT NO	GRID LOC
C802	4B	R806	4B	R854	2A
C822	2C	R808	4B	R856	4A
C842	2B	R809	4C	R858	2A
C862	4B	R812	4C	R862	4A
C880	5B	R814	4C	R865	4B
C882	4C	R816	2C	R866	4B
		R818	4B	R868	4B
J810	3C	R822	2C	R869	4A
J820	3C	R825	2B		
J838	1B	R826	2B	TP812	1B
J840	3A	R828	2B	TP838	1B
J850	3A	R829	2C	TP852	1B
		R842	2A	TP880	4A
L880	5A	R845	2B	TP882	4C
L882	5C	R846	2B	TP884	5B
		R848	2B		
R802	4C	R849	2A	U820	3B
R805	4B	R852	2B	U840	3B

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VOLTAGE CONDITIONS

WARNING

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

The voltages shown on this diagram can be obtained using the recommended test equipment listed below.

RECOMMENDED TEST EQUIPMENT

Item	Specifications		Recommended Type
Precision dc voltmeter	Input Impedance Range	10 MΩ 0—500 V	Tektronix 7D13 Digital Multimeter (test oscilloscope must have readout system); or DM 501A Digital Multi-Meter with TM 501 Power Module, or equivalent.

VOLTAGE MEASUREMENTS

Voltage measurements on this diagram were obtained under the following conditions:

Set the HORIZONTAL MODE switch to B for BEAM 1 and B for BEAM 2.

No plug-in units are installed.

Voltmeter common is connected to chassis ground.

Tolerances of voltages shown are within 20%.

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HORIZONTAL INTERFACE

1676-156
REV MAY 1981

U820 CHANNEL SWITCH

+5V
5
+5V

R809 102
R805 102
R808 80.6
R806 80.6
C802 12
R802 866
-15V
0V
-0.7
-0.7
0V
15
16
1
2

R825 102
R829 102
R824 80.6
R828 80.6
C822 12
R822 866
-15V
0V
-0.7
-0.7
0V
7
8
9
10

14
ADD
6
OFF
4
L/R

J820
13
+5
J810
12
+5
BEAM 1 SIGNAL TO BM 1 HORIZ AMPL
12

SUB
11
R816 1.82K
-15V
3

TP 812
R818 910
R812 1.8K
R814 15K
-15V
+5

GND A1 FROM P34-7 4
BA
SIGNAL FROM A HORIZ PLUG-IN J3 4
(A11) +
GND
(B11) -
BC
BD
BE
SIGNAL FROM B HORIZ PLUG-IN J4 4
(A11) +
GND
(B11) -
BH
BG
BF

U840 CHANNEL SWITCH

+5V
5
+5V

R849 102
R845 102
R848 80.6
R846 80.6
C842 12
R842 866
-15V
0V
-0.7
-0.7
0V
15
16
1
2

R865 102
R869 102
R866 80.6
R868 80.6
C862 12
R862 866
-15V
0V
-0.7
-0.7
0V
7
8
9
10

14
ADD
-0.4
6
OFF
4
L/R

J840
13
+5
J850
12
+5
BEAM 2 SIGNAL TO BM 2 HORIZ AMPL
13

SUB
11
R856 1.82K
-15V
3

+5V BK L880 3.9µH TP 880 +5V
C880 22µF
TP 884
GND BL
-15V BJ C882 10µF -15V
L882 3.9µH TP 882

TP 852
R858 910
GND B2 FROM P34-9 4
BB
R852 1.8K
R854 15K
-15V
-0.5

TP 838
J838A
J838B
X/Y INHIBIT FROM J7838 8
OR J3738B 7
X/Y INHIBIT TO J5838 BM 2 HORIZ AMPL 13

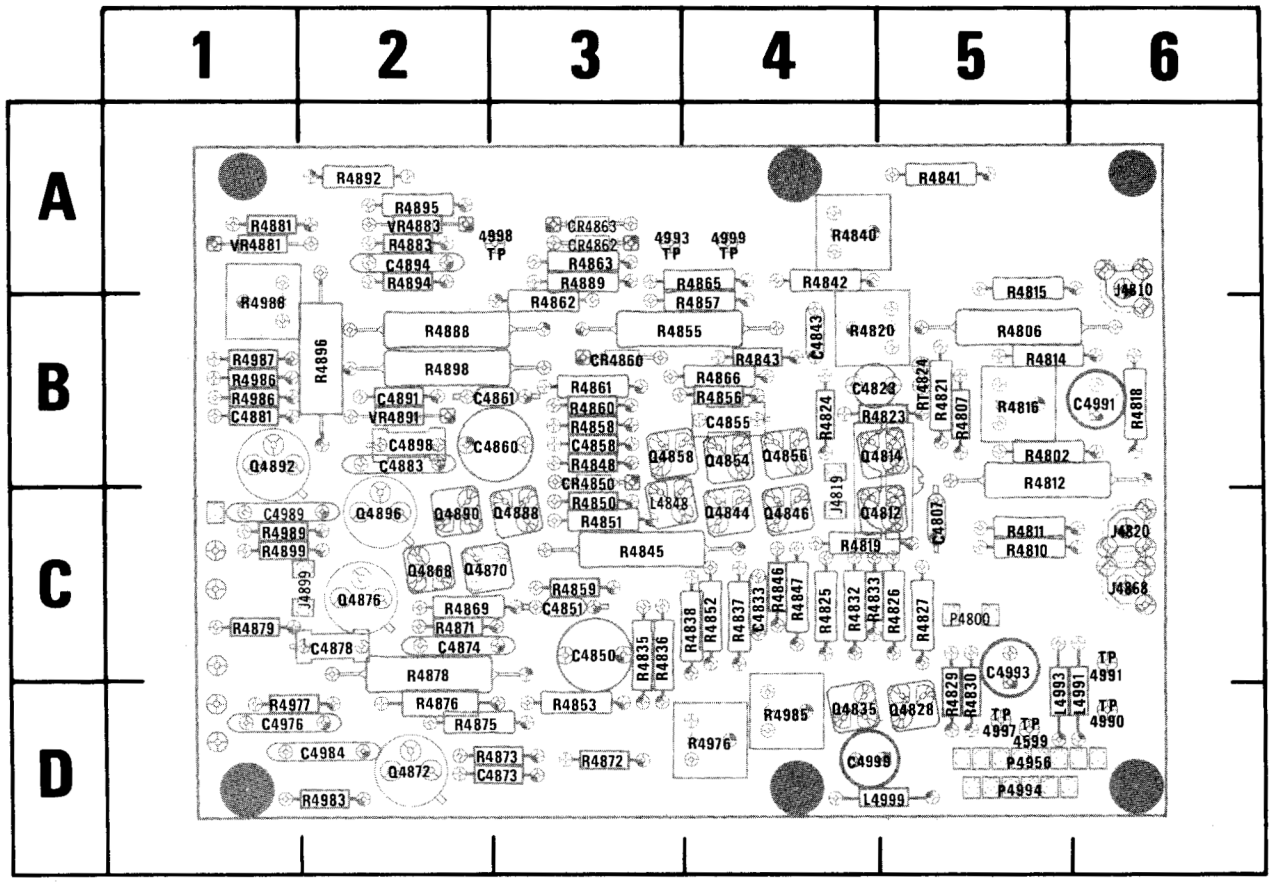
SEE PARTS LIST FOR EARLIER VALUES AND SERIAL NUMBER RANGES OF PARTS OUTLINED OR DEPICTED IN GREY.

PARTIAL A5 MAIN INTERFACE BOARD

A18 HORIZONTAL INTERFACE BOARD

Static Sensitive Devices
See Maintenance Section

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1676-166

Fig. 9-14A. A19—Horizontal Amplifier circuit board assembly, Beam 1. (For instruments 7844 SN B110000-up; R7844 SN B100000-up).

CKT NO	GRID LOC
C4807	5C
C4823	4B
C4833	4C
C4843	4C
C4850	3C
C4851	3C
*C4855	4B
C4858	3B
C4860	3B
C4861	3B
C4871	2C
C4873	3D
C4878	2C
C4881	1B
C4883	2B
C4891	2B
C4894	2A
C4898	2B
C4976	1D
C4981	1C

CKT NO	GRID LOC
R4984	2D
C4991	6B
C4993	5C
C4999	4D
J4819	4C
J4899	2C
*L4848	3C
L4991	6D
L4993	5D
L4999	5D
P4800	5C
P4956	5D
P4994	5D
Q4814	5B
Q4828	5D
Q4835	4D

CKT NO	GRID LOC
Q4844	4C
Q4846	4C
Q4854	4B
Q4856	4B
Q4858	3B
Q4868	2C
Q4870	2C
Q4872	2D
Q4876	2C
Q4888	3C
Q4890	2C
Q4892	1B
Q4896	2C
R4802	5B
R4806	5B
R4807	5B
R4810	5C
R4811	5C
R4812	5B

CKT NO	GRID LOC
R4814	5B
R4815	5B
R4816	5B
R4818	6B
R4819	4C
R4820	4B
R4821	5B
R4823	5B
R4824	4B
R4825	4C
R4826	5C
R4827	5C
R4829	5D
R4830	5D
R4832	4C
R4833	4C
R4835	3C
R4836	3C
R4837	4C
R4838	4C

CKT NO	GRID LOC
R4840	4A
R4841	5A
R4842	4A
R4843	4B
R4845	3C
R4846	4C
R4847	4C
R4848	3B
R4850	3C
R4851	3C
R4852	4C
R4853	3D
R4855	3B
R4856	4B
R4857	4B
R4858	3B
R4859	3C
R4860	3B
R4861	3B
R4862	3B

CKT NO	GRID LOC
R4863	3A
R4865	4A
R4866	4B
R4869	2C
R4871	2C
R4872	3D
R4873	3D
R4875	2D
R4876	2D
R4878	2C
R4881	1A
R4883	2A
R4888	2B
R4889	3A
R4892	2A
R4894	2A
R4895	2A
R4896	2B
R4897	1C
R4898	2B

CKT NO	GRID LOC
R4899	1C
R4975	4D
R4977	1D
R4983	2D
R4985	4D
R4986	1B
R4987	1B
R4988	1B
R4989	1C
RT4824	5B
TP4599	5D
TP4990	6D
TP4991	6C
TP4993	3A
TP4997	5D
TP4998	2A
TP4999	4A

CKT NO	GRID LOC
VR4881	1A
VR4883	2A
VR4891	2B

*See Parts List for serial number ranges.

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VOLTAGE AND WAVEFORM CONDITIONS

WARNING

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

The voltages and waveforms shown on this diagram can be obtained using the recommended test equipment listed below.

RECOMMENDED TEST EQUIPMENT

Item	Specifications	Recommended Type
Oscilloscope	Frequency Response Dc to 65 MHz Deflection Factor 5 mV to 5 V/div Input Impedance 1 MΩ, 20 pF 500 ns.	Tektronix 7603 equipped with 7A13 Amplifier and 7B-series time-base unit, or equivalent.
Probe	Fast rise 10x attenuation probe compatible with the vertical amplifier of the test oscilloscope.	P6053B, or equivalent.
Precision dc voltmeter	Input Impedance 10 MΩ Range 0—500 V	Tektronix 7D13 Digital Multimeter (test oscilloscope must have readout system); or DM 501A Digital Multi-Meter with TM 501 Power Module, or equivalent.

VOLTAGE MEASUREMENTS

Voltage measurements on this diagram were made under the following conditions:

Set the VERTICAL MODE switch to LEFT for BEAM 1 and RIGHT for BEAM 2.

No plug-in units are installed.

Voltmeter common is connected to chassis ground.

WAVEFORMS

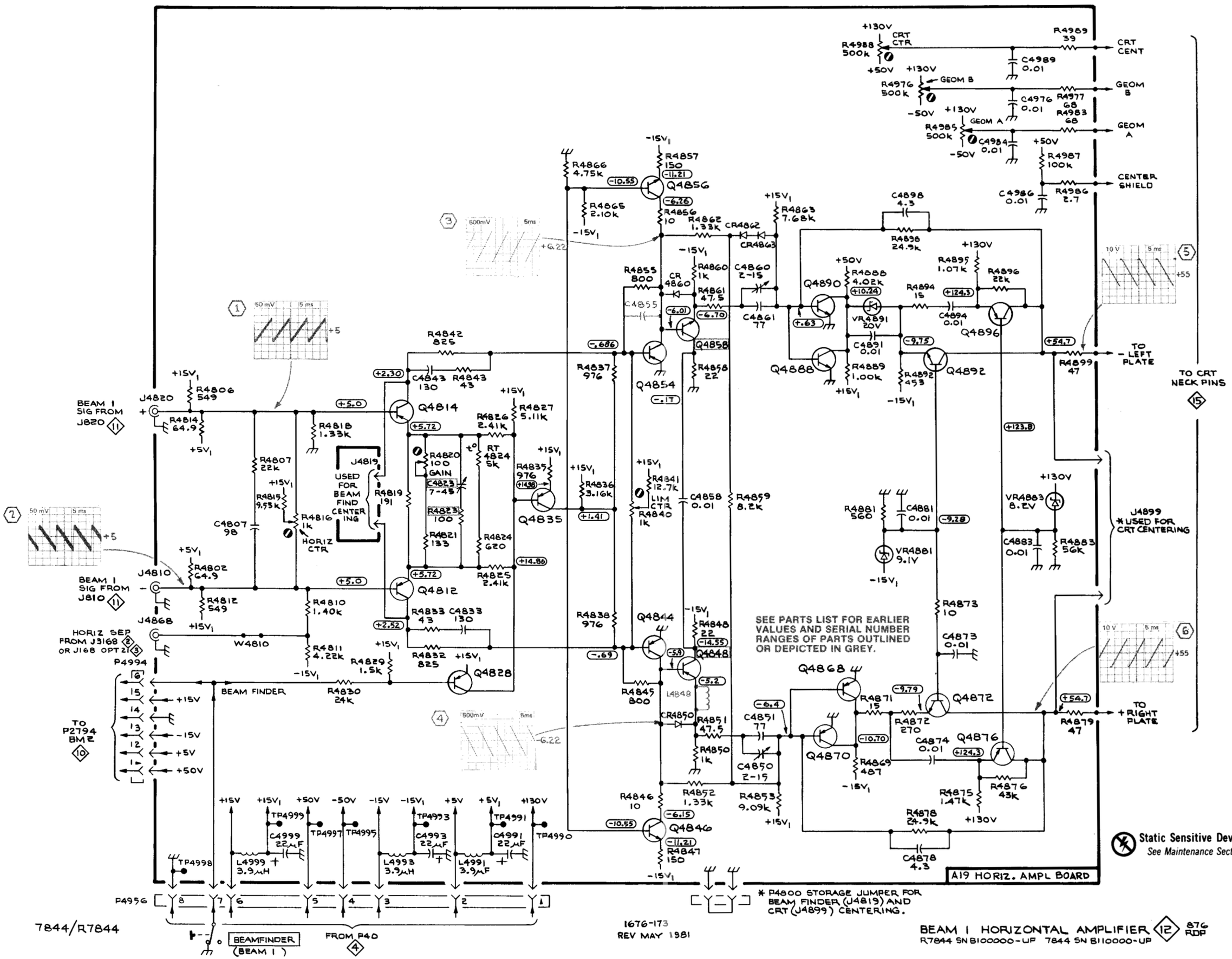
Waveforms shown on this diagram were obtained under the following conditions:

7844/R7844 OSCILLOSCOPE UNDER TEST. Front-panel controls are set the same as for voltage measurements. Install a 7A19 amplifier unit in the LEFT VERT compartment and set the deflection factor to 0.1 volt/division. Install a 7B80 time-base unit in the A HORIZ compartment and set triggering to auto mode with ac coupling from the internal source. Center the 4 V CALIBRATOR output to the 7A19 input and center the display vertically and horizontally on the crt.

TEST OSCILLOSCOPE. The test oscilloscope triggering is set to auto mode with ac coupling from the internal source. The 7A13 input coupling is set to dc.

Tolerances of voltages and waveforms shown are within 20%. Calibrated offset voltages are marked on waveforms at the center horizontal graticule line. These voltages indicate the comparison voltage of the 7A13.

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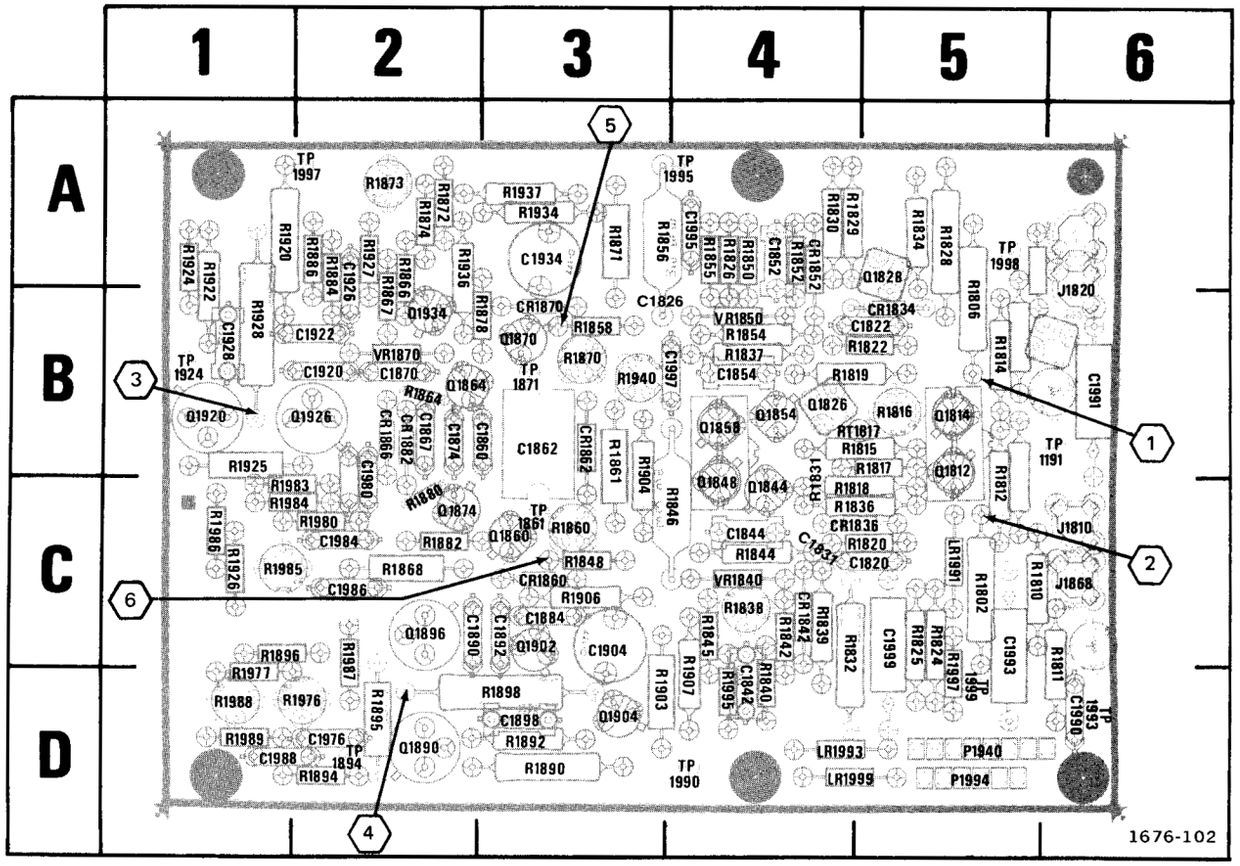
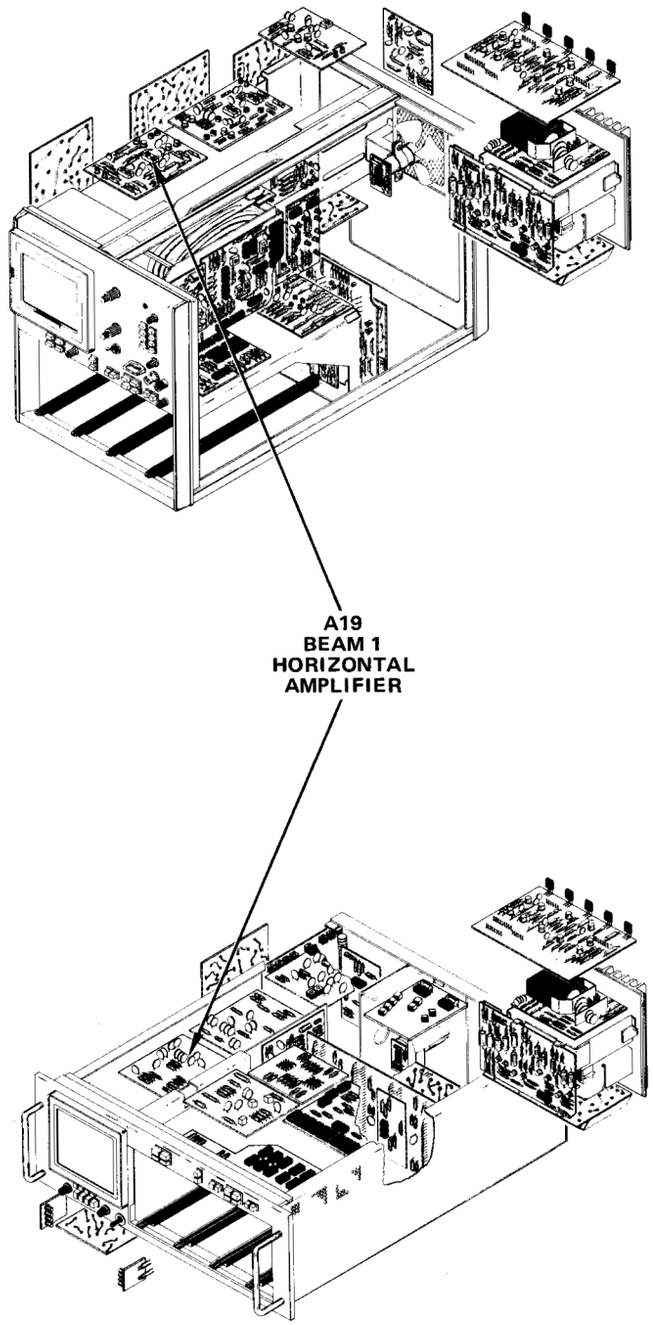


Fig. 9-14B. A19—Horizontal Amplifier circuit board assembly, Beam 1.
(For instruments 7844 SN B109999-below; R7844 SN B099999-below).



CKT NO	GRID LOC	CKT NO	GRID LOC	CKT NO	GRID LOC	CKT NO	GRID LOC	CKT NO	GRID LOC	CKT NO	GRID LOC	CKT NO	GRID LOC	CKT NO	GRID LOC
C1820	5C	C1980	2C	J1868	6C	Q1902	3C	R1831	4C	R1866	2A	R1920	1A	R1997	5D
C1822	5B	C1984	2C			Q1904	3D	R1830	4A	R1867	2B	R1922	1A		
C1831	4C	C1986	2C	L1991	5C	Q1920	1B	R1832	4C	R1868	2C	R1924	1A	RT1817	5B
C1842	4D	C1988	1D	L1993	4D	Q1926	2B	R1834	5A	R1870	3B	R1925	1B		
C1844	4C	C1990	6D	L1999	5D	Q1934	2B	R1836	4C	R1871	3A	R1926	1C	TP1191	6B
C1852	4A	C1991	6B					R1837	4B	R1872	2A	R1927	2A	TP1861	3C
C1854	4B	C1993	5C	P1940	5D	R1802	5C	R1838	4C	R1873	2A	R1928	1B	TP1871	3B
C1860	3B	C1995	4A	P1994	5D	R1806	5B	R1839	4C	R1874	2A	R1934	3A	TP1894	2D
C1862	3B	C1997	4B			R1810	5C	R1840	4D	R1878	3B	R1936	2A	TP1924	1B
C1867	2B	C1999	5C	Q1812	5B	R1811	6C	R1842	4C	R1880	2C	R1937	3A	TP1990	4D
C1870	2B			Q1814	5B	R1812	5C	R1844	4C	R1882	2C	R1940	3B	TP1993	6D
C1874	2B	CR1834	5B	Q1826	4B	R1814	5B	R1845	4C	R1884	2A			TP1995	4A
C1884	3C	CR1836	4C	Q1828	5A	R1815	5B	R1846	4C	R1886	2A	R1976	2D	TP1997	2A
C1890	2C	CR1842	4C	Q1844	4C	R1816	5B	R1848		R1890	3D	R1977	1D	TP1998	5A
C1892	3C	CR1852	4A	Q1848	4C	R1817	5B	R1850	4A	R1892	3D	R1980	2C	TP1999	5D
C1898	3D	CR1860	3C	Q1854	4B	R1818	4C	R1852	4A	R1894	2D	R1983	1C		
C1904	3C	CR1862	3B	Q1858	4B	R1819	4B	R1854	4B	R1895	2D	R1984	1C	VR1840	4C
C1920	2B	CR1866	2B	Q1860	3C	R1820	5C	R1855	4A	R1896	1C	R1985	1C	VR1850	4B
C1922	2B	CR1870	3B	Q1864	2B	R1822	5B	R1856	3A	R1898	3D	R1986	1C	VR1870	2B
C1926	2A	CR1882	2B	Q1870	3B	R1824	5C	R1858	3B	R1903	3D	R1987	2C		
C1928	1B			Q1874	2C	R1825	5C	R1860	3C	R1904	3B	R1988	1D		
C1934	3A	J1810	6C	Q1890	2D	R1826	4A	R1861	3B	R1906	3C	R1989	1D		
C1976	2D	J1820	6A	Q1896	2C	R1828	5A	R1864	2B	R1907	4D	R1995	4D		
						R1829	4A								

Static Sensitive Devices
See Maintenance Section

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VOLTAGE AND WAVEFORM CONDITIONS

WARNING

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The voltages and waveforms shown on this diagram can be obtained using the recommended test equipment listed below.

RECOMMENDED TEST EQUIPMENT

Item	Specifications	Recommended Type
Oscilloscope	Frequency Response Dc to 65 MHz Deflection Factor 5 mV to 5 V/div Input Impedance 1 MΩ, 20 pF 500 ns.	Tektronix 7603 equipped with 7A13 Amplifier and 7B-series time-base unit, or equivalent.
Probe	Fast rise 10x attenuation probe compatible with the vertical amplifier of the test oscilloscope.	P6053B, or equivalent.
Precision dc voltmeter	Input Impedance 10 MΩ Range 0—500 V	Tektronix 7D13 Digital Multimeter (test oscilloscope must have readout system); or DM 501A Digital Multi-Meter with TM 501 Power Module, or equivalent.

VOLTAGE MEASUREMENTS

Voltage measurements on this diagram were made under the following conditions:

Set the VERTICAL MODE switch to LEFT for BEAM 1 and RIGHT for BEAM 2.

No plug-in units are installed.

Voltmeter common is connected to chassis ground.

WAVEFORMS

Waveforms shown on this diagram were obtained under the following conditions:

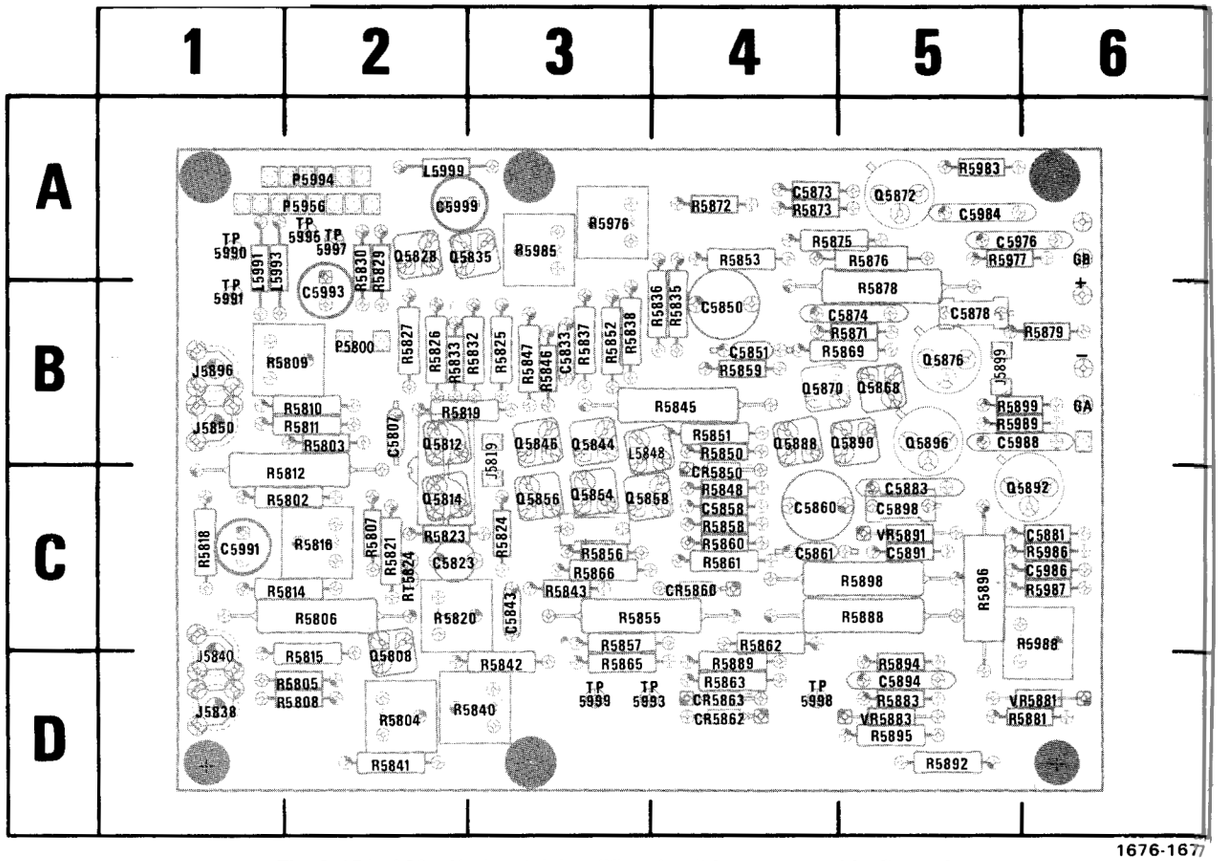
7844/R7844 OSCILLOSCOPE UNDER TEST. Front-panel controls are set the same as for voltage measurements. Install a 7A19 amplifier unit in the LEFT VERT compartment and set the deflection factor to 0.1 volt/division. Install a 7B80 time-base unit in the A HORIZ compartment and set triggering to auto mode with ac coupling from the internal source. Center the 4 V CALIBRATOR output to the 7A19 input and center the display vertically and horizontally on the crt.

TEST OSCILLOSCOPE. The test oscilloscope triggering is set to auto mode with ac coupling from the internal source. The 7A13 input coupling is set to dc.

Tolerances of voltages and waveforms shown are within 20%. Calibrated offset voltages are marked on waveforms at the center horizontal graticule line. These voltages indicate the comparison voltage of the 7A13.

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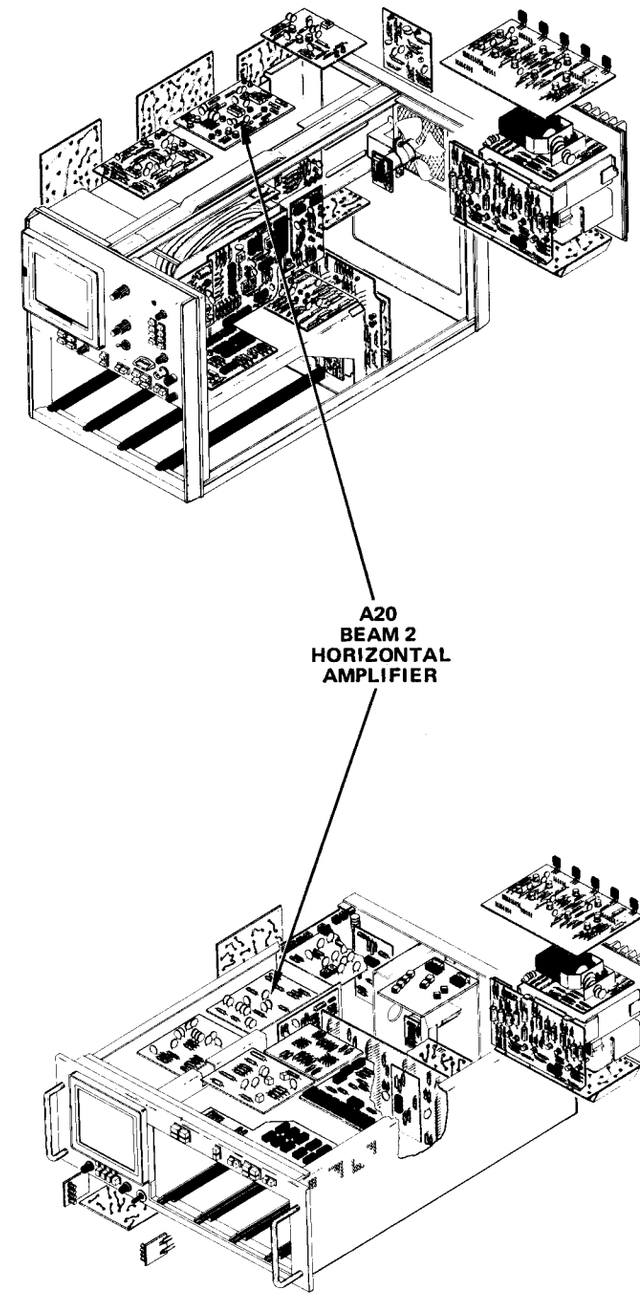
BEAM 1 SIGNAL FROM J820 (11)
J1820
R1806 649
R1814 53.6
Q1814
C1822 .001
R1822 270
+15V1
+5V1
+2.3
+4.9
+5.6
-0.1
-0.8
-6
Q1854
Q1858
R1855 3.6k
R1856 2.7k
-15V1
-50V1
C1852 10
R1852 750
CR1852
R1850 15k
VR1850 9.1V
R1854 1.30k
C1854 1.8
R1858 47
CR1834
R1834 665
R1837 2.74k
R1839 2.74k
R1836 665
CR1836
R1838 500
SYMM
CW
0V
Q1826
Q1828
R1826 6.8k
R1828 464
R1825 11.5k
R1829 3.74k
R1830 1.24k
R1824 2.32k
R1815 232
R1816 500
HORZ GAIN CW
RT1817 500
R1817 1.1k
R1818 68.1
R1819 68.1
C1826 22
+6.3
+6.4
+5.5
+7.4
+5.6
NOT USED
J1838
BEAM 1 SIGNAL FROM J810 (11)
J1810
R1802 536
R1812 57.6
Q1812
R1820 270
C1820 .001
+4.9
+2.3
HORIZ SEP FROM J3168 (2) J168 OPT21 (3)
J1868
R1810 1.40k
R1811 4.22k
C1831 15
R1831 47
R1832 1.74k
Q1844
Q1848
R1845 3.6k
R1846 2.7k
R1848 47
C1844 1.8
R1844 1.30k
CR1842
R1842 750
C1842 10
VR1840 9.1V
R1840 15k
CR1860
Q1860
R1868 820
R1848
+0.7
+4.9
+5.6
-2.9
Q1870
R1878 1.6k
C1870 .01
R1936 6.04k
VR1870 5.6V
CR1870
R1870 50
C1934 2-9.9
5ns CAL
LIN B
TP 1871
R1871 8.2k
C1862 8-90
2ns CAL
CR1862
Q1864
C1860 51
C1874 51
R1864 68
CR1866
R1861 8.2k
R1866 10k
C1867 .02
R1867 200
LIN A
R1860 50
C1904 2-9.9
5ns CAL
Q1902
Q1904
R1903 1k
R1906 6.04k
R1907 15.4k
+0.6
+0.7
+0.4
+1.0
+2.7
-6.7
-2.9
-6.3
Q1874
R1872 750
R1873 2k
R1874 820
1ns CAL
R1882 10k
R1880 68
CR1882
R1884 1.0k
R1886 5.1k
+130V
R1924 1.8k
R1922 3.40k
R1920 21.5k
Q1920
Q1926
C1920 .01
C1926 .01
C1922 .01
C1928 0.8pF
R1925 62k
R1926 39
R1928 60.4k
R1934 16.2k
+120
+120.7
+65.5
TP 1924
TO LEFT PLATE
+50V1
R1987 100k
R1986 2.7
C1986 .01
CENTER SHIELD
CRT CTR
R1988 500k CW
R1989 39
C1989 .01
CRT CENT
GEOM B
R1976 500k CW
R1977 68
C1976 .01
GEOM B
HORZ CTR
R1940 10k CW
TO CRT NECK PINS (5)
R1904 16.2k
R1898 60.4k
R1896 39
R1895 62k
C1898 0.8pF
C1892 .01
C1884 .01
Q1896
Q1890
R1890 21.5k
R1892 3.40k
C1890 .01
TP 1894
R1894 1.8k
+130V
TO + RIGHT PLATE
C1980 51
R1980 2.7
GEOM A
R1985 500k CW
R1984 100k
R1983 68
C1984 .01
GEOM A
-50V1
P1994
BEAMFINDER
TO P1794 BM1 (9)
+15V
-15V
+5V
+50V
TP 1998
TP 1999
TP 1997
TP 1995
TP 1993
TP 1991
TP 1990
L1999 3.9μH
C1999 10μF
R1997 39
C1997 0.1
R1995 39
C1995 0.1
L1993 3.9μH
C1993 10μF
L1991 3.9μH
C1991 22μF
C1990 .01
SEE (2) (3) OR (4) FOR INTERCONNECTING DETAILS
BEAMFINDER (BEAM 1)
P1956
GND +15V +50V -50V -15V +5V +130V
FROM P40 (4)
1 V 5 ms +6.3
1 V 5 ms +4.5
10 V 5 ms +67
10 V 5 ms +69
50 mV 5 ms +5
50 mV 5 ms +5
10 V 5 ms +67
A19 HORIZONTAL AMPLIFIER BOARD
Static Sensitive Devices
See Maintenance Section
SEE PARTS LIST FOR EARLIER VALUES AND SERIAL NUMBER RANGES OF PARTS OUTLINED OR DEPICTED IN GREY.
(7844 SN B109999 + BELOW) (R7844 SN B099999 + BELOW)
BEAM 1
HORIZONTAL AMPLIFIER
(12)
7844/R7844
1676-157
REV MAY 1981
http://manoman.sghill.com



1676-167

Fig. 9-15A. A20—Horizontal Amplifier circuit board assembly, Beam 2. (For instruments 7844 SN B110000-up; R7844 SN B100000-up).

REV MAY 1981



CKT NO	GRID LOC	CKT NO	GRID LOC	CKT NO	GRID LOC	CKT NO	GRID LOC	CKT NO	GRID LOC	CKT NO	GRID LOC	CKT NO	GRID LOC
C5807	2B	CR5860	4C	Q5828	2A	R5809	2B	R5840	3D	R5871	5B	VR5881	6D
C5823	2C	CR5862	4D	Q5835	3A	R5810	2B	R5841	2D	R5872	4A	VR5883	5D
C5833	3B	CR5863	4D	Q5844	3B	R5811	2B	R5842	3D	R5873	4A	VR5891	5C
C5843	3C			Q5846	3B	R5812	2C	R5843	3C	R5875	4A		
C5850	4B	J5819	3C	Q5854	3C	R5814	2C	R5845	4B	R5876	5A		
C5851	4B	J5838	1D	Q5856	3C	R5815	2D	R5846	3B	R5878	5B		
C5858	4C	J5840	1D	Q5858	3C	R5816	2C	R5847	3B	R5879	6B		
C5860	4C	J5850	1B	Q5868	5B	R5818	1C	R5848	4C	R5881	6D		
C5861	4C	J5896	1B	Q5870	4B	R5819	2B	R5850	4B	R5883	5D		
C5873	4A	J5899	5B	Q5872	5A	R5820	2C	R5851	4B	R5888	5C		
C5874	5B			Q5876	5B	R5821	2C	R5852	3B	R5889	4D		
C5881	6C	*L5848	3B	Q5888	4B	R5823	2C	R5853	4A	R5892	5D		
C5883	5C	L5991	1B	Q5890	5B	R5824	3C	R5855	3C	R5894	5D		
C5891	5C	L5993	1B	Q5892	6C	R5825	3B	R5856	3C	R5895	5D		
C5894	5D	L5999	2A	Q5896	5B	R5826	2B	R5857	3C	R5896	5D		
C5898	5C					R5827	2B	R5858	4C	R5898	5C		
C5976	5A	P5800	2B	R5802	2C	R5829	2A	R5859	4B	R5899	5B		
C5986	6C	P5956	2A	R5803	2B	R5830	2A	R5860	4C	R5986	6C		
C5988	6B	P5994	2A	R5804	2D	R5833	2B	R5861	4C	R5987	6C		
C5991	1C			R5805	2D	R5835	4B	R5862	4C	R5988	6C		
C5993	2B	Q5808	2D	R5806	2C	R5836	4B	R5863	4D	R5989	5B		
C5999	2A	Q5812	2B	R5807	2C	R5837	3B	R5865	3D				
		Q5814	2C	R5808	2D	R5838	3B	R5866	3C	RT5824	2C		

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VOLTAGE AND WAVEFORM CONDITIONS

WARNING

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

The voltages and waveforms shown on this diagram can be obtained using the recommended test equipment listed below.

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Probe	Fast rise 10x attenuation probe compatible with the vertical amplifier of the test oscilloscope.	P6053B, or equivalent.
Precision dc voltmeter	Input Impedance 10 MΩ Range 0—500 V	Tektronix 7D13 Digital Multimeter (test oscilloscope must have readout system); or DM 501A Digital Multi-Meter with TM 501 Power Module, or equivalent.

VOLTAGE MEASUREMENTS

Voltage measurements on this diagram were made under the following conditions:

Set the VERTICAL MODE switch to LEFT for BEAM 1 and RIGHT for BEAM 2.

No plug-in units are installed.

Voltmeter common is connected to chassis ground

WAVEFORMS

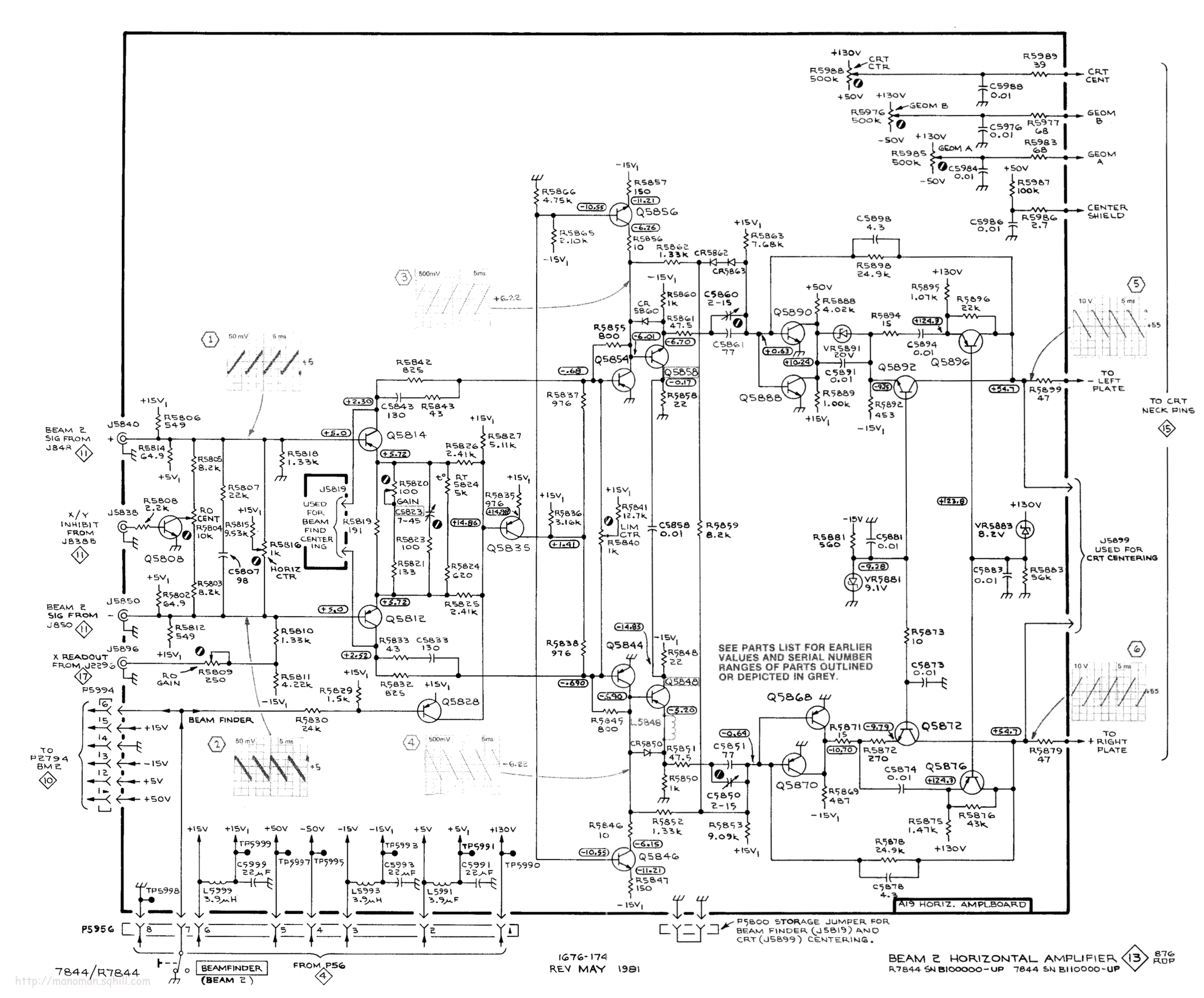
Waveforms shown on this diagram were obtained under the following conditions:

7844/R7844 OSCILLOSCOPE UNDER TEST. Front-panel controls are set the same as for voltage measurements. Install a 7A19 amplifier unit in the RIGHT VERT compartment and set the deflection factor to 0.1 volt/division. Install a 7B80 time-base unit in the B HORIZ compartment and set triggering to auto mode with ac coupling from the internal source. Center the display vertically and horizontally on the crt.

TEST OSCILLOSCOPE. The test oscilloscope triggering is set to auto mode with ac coupling from the internal source. The 7A13 input coupling is set to dc.

Tolerances of voltages and waveforms shown are within 20%. Calibrated offset voltages are marked on waveforms at the center horizontal graticule line. These voltages indicate the comparison voltage of the 7A13.

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BEAM 2 SIG FROM J848
X/Y INHIBIT FROM J838B
BEAM 2 SIG FROM J850
X READOUT FROM J2296
TO P2794 BM2
BEAM FINDER
P5956
7844/R7844
BEAMFINDER (BEAM 2)
FROM P56
P5800 STORAGE JUMPER FOR BEAM FINDER (J5819) AND CRT (J5899) CENTERING.
A19 HORIZ. AMPL BOARD
SEE PARTS LIST FOR EARLIER VALUES AND SERIAL NUMBER RANGES OF PARTS OUTLINED OR DEPICTED IN GREY.
J5899 USED FOR CRT CENTERING
TO CRT NECK PINS
TO - LEFT PLATE
TO + RIGHT PLATE
CRT CENT
GEOM B
GEOM A
CENTER SHIELD
USED FOR BEAM FIND CENTERING
1676-174
REV MAY 1981
BEAM 2 HORIZONTAL AMPLIFIER
R7844 SN B100000-UP 7844 SN B110000-UP
876 RDP

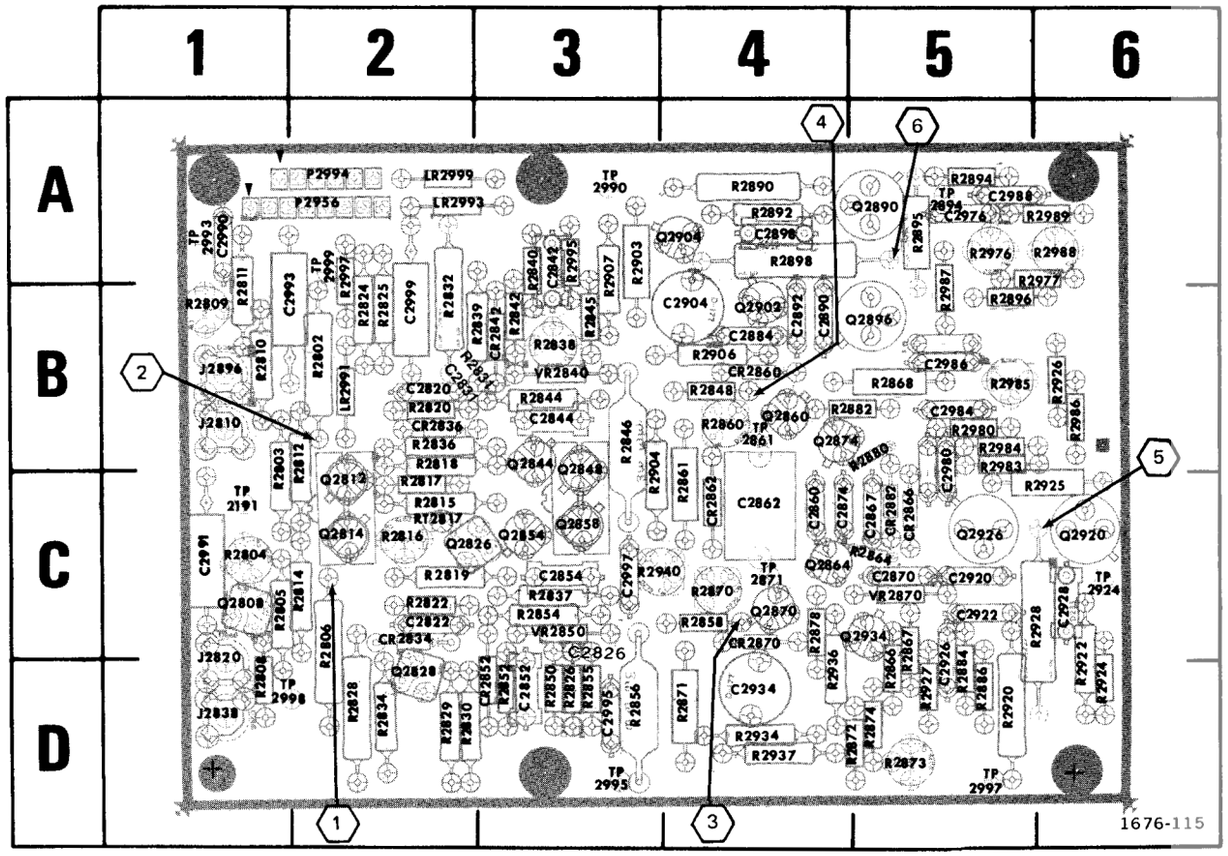
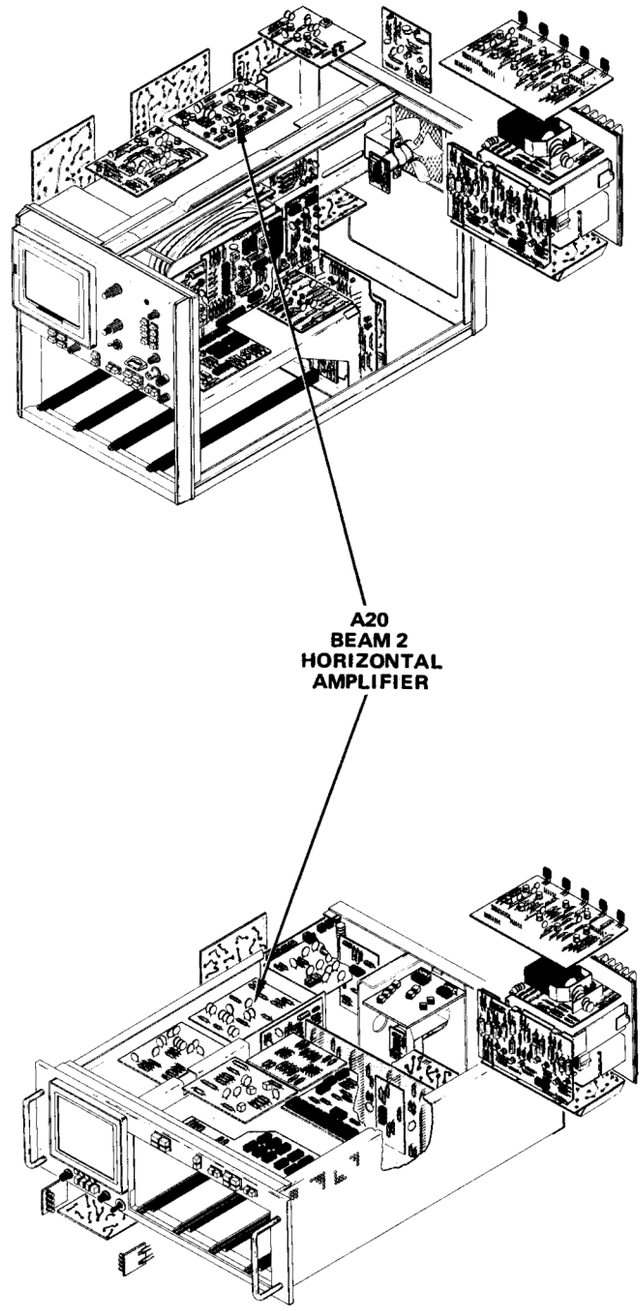


Fig. 9-15B. A20—Horizontal Amplifier circuit board assembly, Beam 2. (For instruments 7844 SN B 109999-below; R7844 SN B09999-below).

REV MAY 1981

CKT NO	GRID LOC
C2820	2B
C2822	2C
C2826	3D
C2831	2B
C2842	3A
C2844	3B
C2852	3D
C2854	3C
C2860	4C
C2862	4C
C2867	5C
C2870	5C
C2874	4C
C2884	4B
C2890	4B
C2892	4B
C2898	4A
C2904	4B
C2920	5C
C2922	5C
C2926	5D
C2928	6C
C2934	4D
C2976	5A
C2980	5C
C2984	5B
C2986	5B
C2988	5A
C2990	1A
C2991	1C
C2993	1B
C2995	3D
C2997	3C
C2999	2B
CR2834	2C
CR2836	2B
CR2842	3B
CR2852	3D
CR2860	4B
CR2862	4C
CR2866	5C
CR2870	4C
CR2882	5C
J2810	1B
J2820	1C
J2838	1D
J2896	1B
L2991	2B
L2993	2A
L9999	2A
P2956	2A
P2994	2A
Q2808	1C
Q2812	2C
Q2814	2C
Q2826	2C
Q2828	2D
Q2844	3B
Q2848	3B
Q2854	3C
Q2858	3C
Q2860	4B
Q2864	4C
Q2870	4C
Q2874	4B
Q2890	5A
Q2896	5B
Q2902	4B
Q2904	4A
Q2920	6C
Q2926	5C
Q2934	5C
R2802	2B
R2803	1B
R2804	1C
R2805	1C
R2806	2C
R2808	1D
R2809	1B
R2810	1B
R2811	1B
R2812	2B
R2814	2C
R2815	2C
R2816	2C
R2817	2C
R2818	2B
R2819	2C
R2820	2B
R2822	2C
R2824	2B
R2825	2B
R2826	3D
R2828	2D
R2829	2D
R2830	2D
R2831	2B
R2832	2B
R2834	2D
R2836	2B
R2837	3C
R2838	3B
R2839	3B
R2840	3A
R2842	3B
R2844	3B
R2845	3B
R2846	3B
R2848	4B
R2850	3D
R2852	3D
R2854	3C
R2855	3D
R2856	3D
R2858	4C
R2860	4B
R2861	4C
R2864	5C
R2866	5D
R2867	5C
R2868	5B
R2870	4C
R2871	4D
R2872	4D
R2873	5D
R2874	5D
R2878	4C
R2880	5B
R2882	5B
R2884	5D
R2886	5D
R2890	4A
R2892	4A
R2894	5A
R2895	5A
R2896	5B
R2898	4A
R2903	3A
R2904	3C
R2906	4B
R2907	3A
R2920	5D
R2922	6D
R2924	6D
R2925	6C
R2926	6B
R2927	5D
R2928	5C
R2934	4D
R2936	4D
R2937	4D
R2940	3C
R2976	5A
R2977	6A
R2980	5B
R2983	5B
R2984	5B
R2985	5B
R2986	6B
R2987	5B
R2988	6A
R2989	6A
R2995	3A
R2997	2A
RT2817	2C
TP2191	1C
TP2861	4B
TP2871	4C
TP2894	5A
TP2924	6C
TP2990	3A
TP2993	1A
TP2995	3D
TP2997	5D
TP2998	1D
TP2999	2A
VR2840	3B
VR2850	3C
VR2870	5C



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VOLTAGE AND WAVEFORM CONDITIONS

WARNING

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

The voltages and waveforms shown on this diagram can be obtained using the recommended test equipment listed below.

RECOMMENDED TEST EQUIPMENT

Item	Specifications	Recommended Type
Oscilloscope	Frequency Response Dc to 65 MHz Deflection Factor 5 mV to 5 V/div Input Impedance 1 MΩ, 20 pF 500 ns.	Tektronix 7603 equipped with 7A13 Amplifier and 7B-series time-base unit, or equivalent.
Probe	Fast rise 10x attenuation probe compatible with the vertical amplifier of the test oscilloscope.	P6053B, or equivalent.
Precision dc voltmeter	Input Impedance 10 MΩ Range 0—500 V	Tektronix 7D13 Digital Multimeter (test oscilloscope must have readout system); or DM 501A Digital Multi-Meter with TM 501 Power Module, or equivalent.

VOLTAGE MEASUREMENTS

Voltage measurements on this diagram were made under the following conditions:

Set the VERTICAL MODE switch to LEFT for BEAM 1 and RIGHT for BEAM 2.

No plug-in units are installed.

Voltmeter common is connected to chassis ground

WAVEFORMS

Waveforms shown on this diagram were obtained under the following conditions:

7844/R7844 OSCILLOSCOPE UNDER TEST. Front-panel controls are set the same as for voltage measurements. Install a 7A19 amplifier unit in the RIGHT VERT compartment and set the deflection factor to 0.1 volt/division. Install a 7B80 time-base unit in the B HORIZ compartment and set triggering to auto mode with ac coupling from the internal source. Center the display vertically and horizontally on the crt.

TEST OSCILLOSCOPE. The test oscilloscope triggering is set to auto mode with ac coupling from the internal source. The 7A13 input coupling is set to dc.

Tolerances of voltages and waveforms shown are within 20%. Calibrated offset voltages are marked on waveforms at the center horizontal graticule line. These voltages indicate the comparison voltage of the 7A13.

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BEAM 2 SIGNAL FROM J840 (11)

X/Y INHIBIT FROM J838B (11)

X READOUT FROM J2296 (11)

BEAM 2 SIGNAL FROM J850 (11)

TO P2794 BM 2 (10)

TO LEFT PLATE

TO RIGHT PLATE

TO CRT NECK PINS (15)

CENTER SHIELD

CRT CENT

GEOM B

GEOM A

HORZ GAIN

HORZ CTR

LIN B

LIN A

SYMM

BEAM FINDER

BEAM FINDER (BEAM 2)

SEE (2) (3) OR (4) FOR INTERCONNECTING DETAILS

FROM P56 (4)

P2956

P2994

TP 2924

TP 2934

TP 2894

TP 2871

TP 2861

TP 2998

TP 2999

TP 2997

TP 2995

TP 2993

TP 2991

TP 2990

A20 HORIZONTAL AMPLIFIER BOARD

Static Sensitive Devices
See Maintenance Section

SEE PARTS LIST FOR EARLIER VALUES AND SERIAL NUMBER RANGES OF PARTS OUTLINED OR DEPICTED IN GREY.

7844/R7844

1676-158
REV MAY 1981

(7844 SN B109999+ BELOW) (R7844 SN B099999+ BELOW)

BEAM 2
HORIZONTAL AMPLIFIER

(13)

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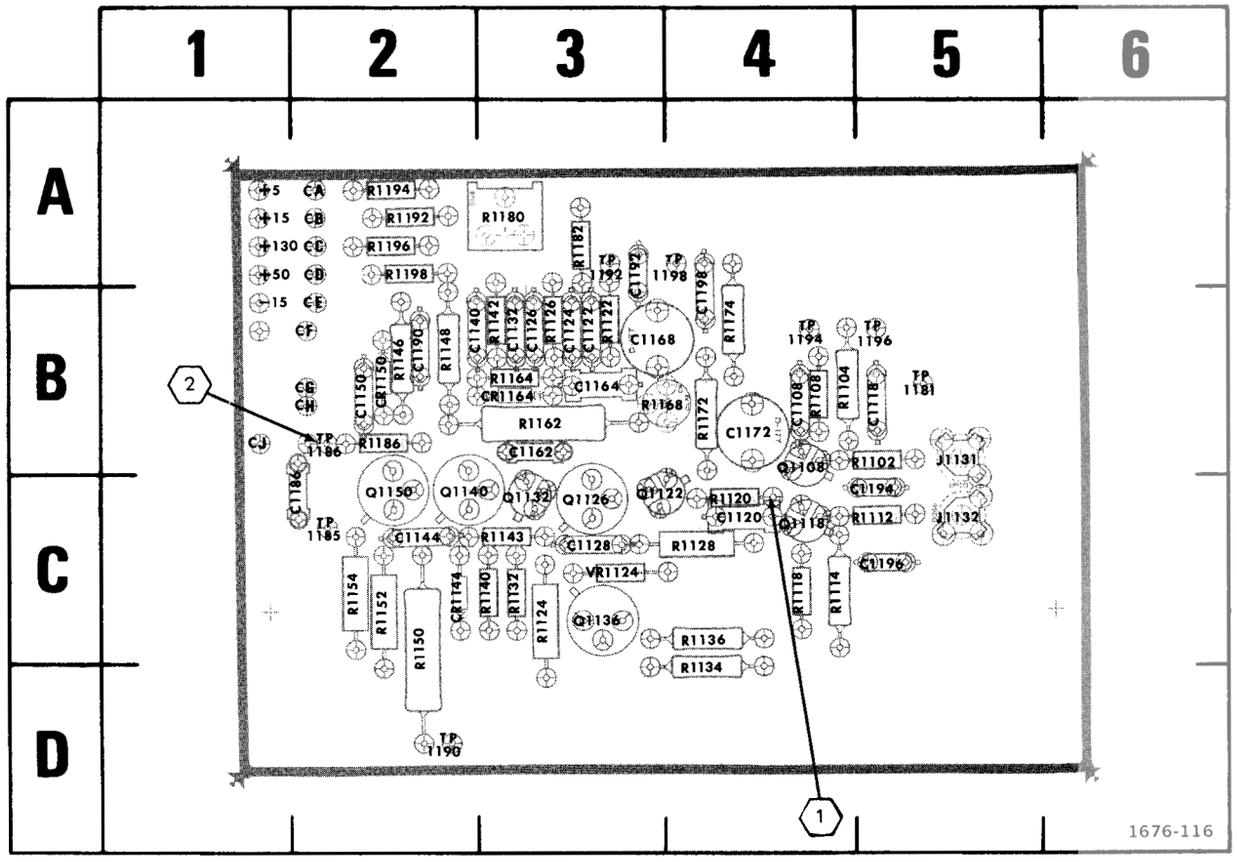


Fig. 9-16. A21—Z-Axis circuit board assembly (Beam 1).

CKT NO	GRID LOC	CKT NO	GRID LOC	CKT NO	GRID LOC	CKT NO	GRID LOC
C1108	4B	CR1144	2C	R1120	4C	R1182	3A
C1118	5B	CR1150	2B	R1122	3B	R1186	2B
C1120	4C	CR1164	3B	R1124	3C	R1192	2A
C1122	3B			R1126	3B	R1194	2A
C1124	3B	J1131	5B	R1128	4C	R1196	2A
C1126	3B	J1132	5C	R1132	3C	R1198	2A
C1128	3C			R1134	4D		
C1132	3B	Q1108	4B	R1136	4C	TP1181	5B
C1140	2B	Q1118	4C	R1140	3C	TP1185	2C
C1144	2C	Q1122	3C	R1142	3B	TP1186	2B
C1150	2B	Q1126	3C	R1143	3C	TP1190	2D
C1162	3B	Q1132	3C	R1146	2B	TP1192	3A
C1164	3B	Q1136	3C	R1148	2B	TP1194	4B
C1168	3B	Q1140	2C	R1150	2C	TP1196	5B
C1172	4B	Q1150	2C	R1152	2C	TP1198	4A
C1186	2C			R1154	2C		
C1190	2B	R1102	5B	R1162	3B	VR1124	3C
C1192	3A	R1104	4B	R1164	3B		
C1194	5C	R1108	4B	R1168	3B		
C1196	5C	R1112	5C	R1172	4B		
C1198	4B	R1114	4C	R1174	4B		
		R1118	4C	R1180	3A		

REV MAY 1981

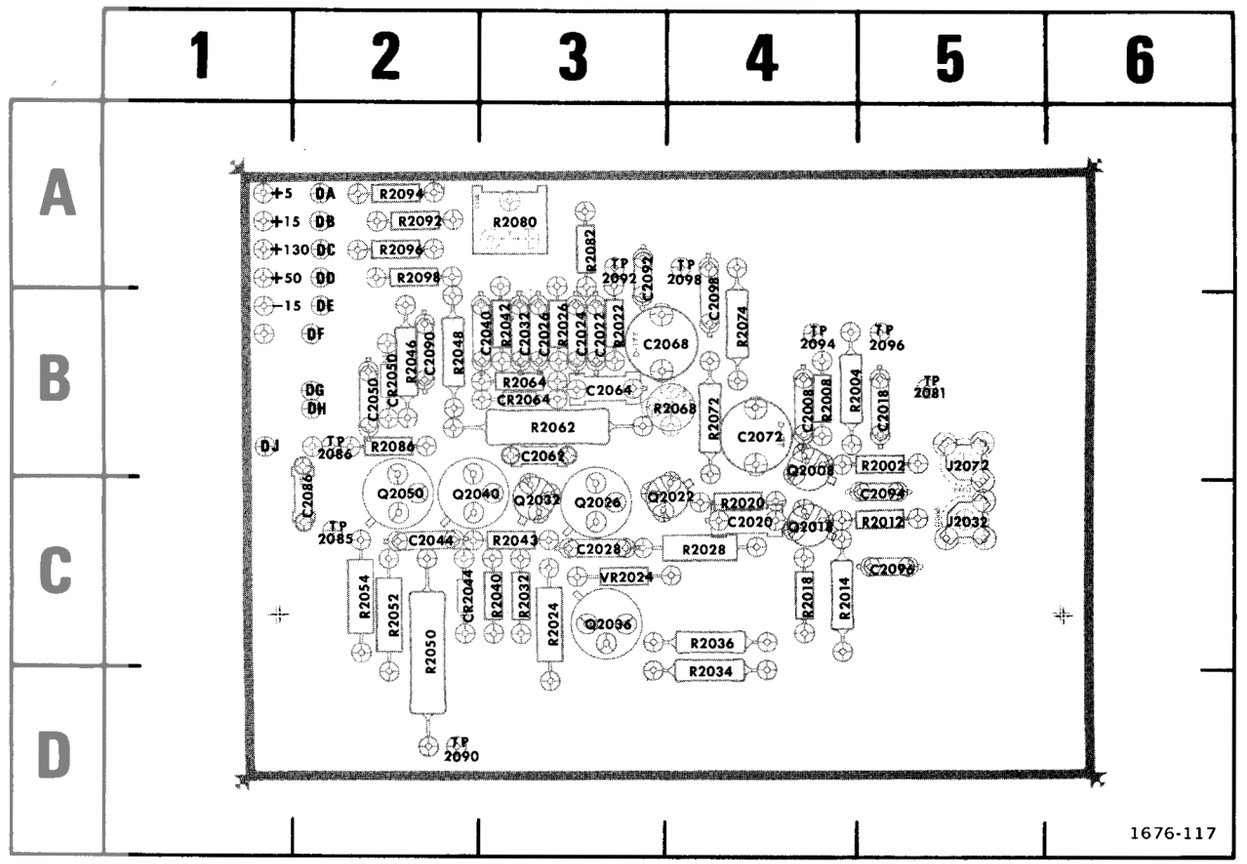


Fig. 9-17. A22—Z-Axis circuit board assembly (Beam 2).

CKT NO	GRID LOC	CKT NO	GRID LOC	CKT NO	GRID LOC	CKT NO	GRID LOC
C2008	4B	CR2044	2C	R2020	4C	R2082	3A
C2018	5B	CR2050	2B	R2022	3B	R2086	2B
C2020	4C	CR2064	3B	R2024	3C	R2092	2A
C2022	3B			R2026	3B	R2094	2A
C2024	3B	J2032	5C	R2028	4C	R2096	2A
C2026	3B	J2072	5B	R2032	3C	R2098	2A
C2028	3C			R2034	4D		
C2032	3B	Q2008	4B	R2036	4C	TP2081	5B
C2040	3B	Q2018	4C	R2040	3C	TP2085	2C
C2044	2C	Q2022	4C	R2042	3B	TP2086	2B
C2050	2B	Q2026	3C	R2043	3C	TP2090	2D
C2062	3B	Q2032	3C	R2046	2B	TP2092	3A
C2064	3B	Q2036	3C	R2048	2B	TP2094	4B
C2068	3B	Q2040	2C	R2050	2C	TP2096	5B
C2072	4B	Q2050	2C	R2052	2C	TP2098	4A
C2086	2C			R2054	2C		
C2090	2B	R2002	5B	R2062	3B	VR2024	3C
C2092	3A	R2004	4B	R2064	3B		
C2094	5C	R2008	4B	R2068	4B		
C2096	5C	R2012	5C	R2072	4B		
C2098	4B	R2014	4C	R2074	4B		
		R2018	4C	R2080	3A		

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VOLTAGE AND WAVEFORM CONDITIONS

WARNING

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

The voltages and waveforms shown on this diagram can be obtained using the recommended test equipment listed below.

RECOMMENDED TEST EQUIPMENT

Item	Specifications	Recommended Type
Oscilloscope	Frequency Response Dc to 65 MHz Deflection Factor 5 mV to 5 V/div Input Impedance 1 MΩ, 20 pF 500 ns.	Tektronix 7603 equipped with 7A13 Amplifier and 7B-series time-base unit, or equivalent.
Probe	Fast rise 10x attenuation probe compatible with the vertical amplifier of the test oscilloscope.	P6053B, or equivalent.
Precision dc voltmeter	Input Impedance 10 MΩ Range 0—500 V	Tektronix 7D13 Digital Multimeter (test oscilloscope must have readout system); or DM 501A Digital Multi-Meter with TM 501 Power Module, or equivalent.

VOLTAGE MEASUREMENTS

Voltage measurements on this diagram were made under the following conditions:

Set the VERTICAL MODE switch to LEFT for BEAM 1 and RIGHT for BEAM 2.

Set the BEAM 1 and BEAM 2 INTENSITY controls fully counterclockwise.

No plug-in units are installed.

Voltmeter common is connected to chassis ground.

WAVEFORMS

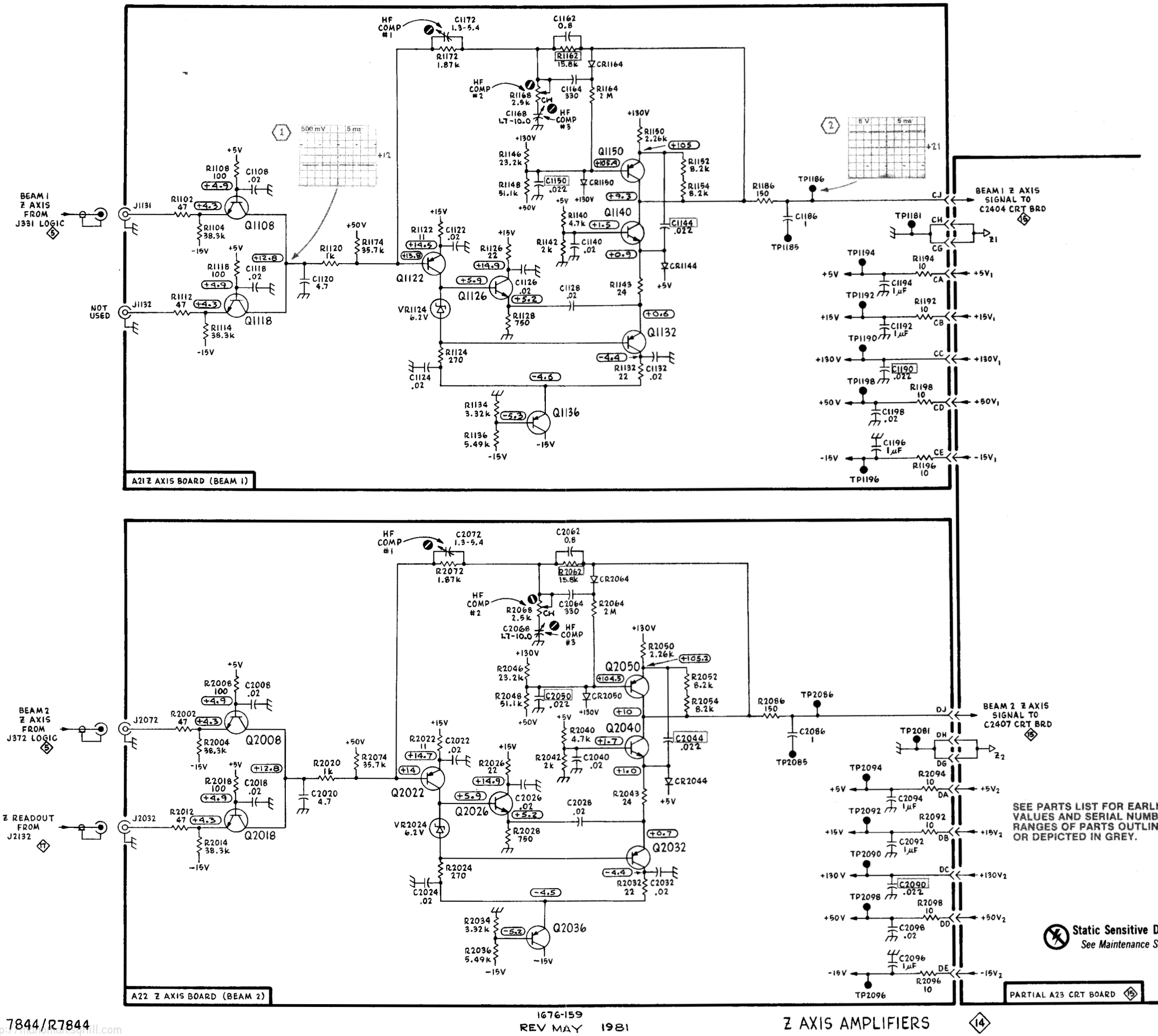
Waveforms shown on this diagram were obtained under the following conditions:

7844/R7844 OSCILLOSCOPE UNDER TEST. Front-panel controls are the same as for voltage measurements except set BEAM 1 INTENSITY control to midrange. Install a 7A19 amplifier unit in the LEFT VERT compartment. Install a 7B80 time-base unit in the A HORIZ compartment and set triggering to auto mode with ac coupling from the internal source.

TEST OSCILLOSCOPE. The test oscilloscope triggering is set to auto mode with ac coupling from the internal source. The 7A13 input coupling is set to dc.

Tolerances of voltages and waveforms shown are within 20%. Calibrated offset voltages are marked on waveforms at the center horizontal graticule line. These voltages indicate the comparison voltage of the 7A13.

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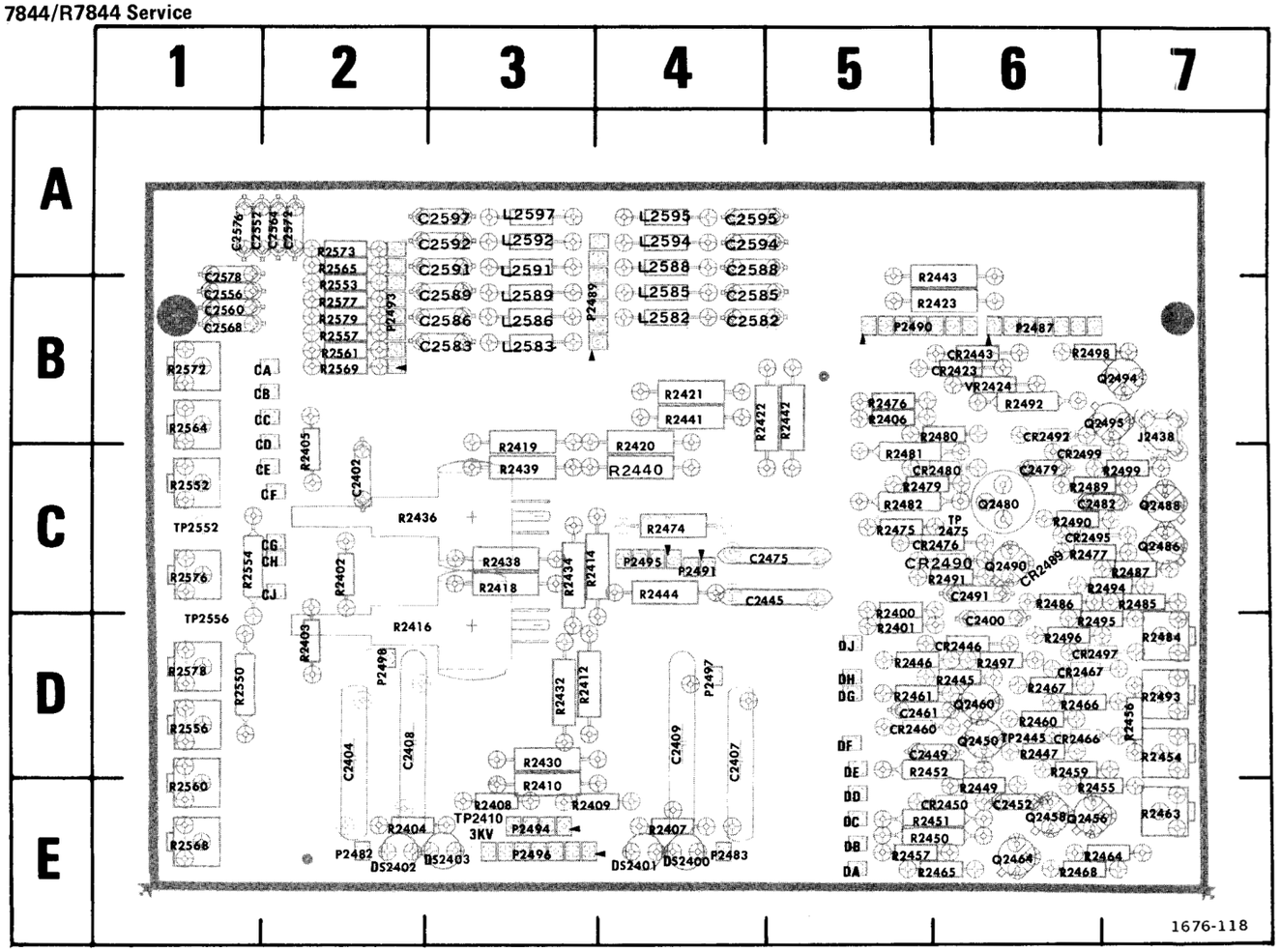


Fig. 9-18. A23—Crt circuit board assembly.

CKT NO	GRID LOC	CKT NO	GRID LOC	CKT NO	GRID LOC	CKT NO	GRID LOC	CKT NO	GRID LOC	CKT NO	GRID LOC	CKT NO	GRID LOC	CKT NO	GRID LOC
C2400	6D	C2585	4B	DS2400	4E	P2490	5B	R2403	2D	R2443	6B	R2476	5B	R2554	1C
C2402	2C	C2586	3B	DS2401	4E	P2491	4C	R2406	5B	R2444	4C	R2477	6C	R2556	1D
C2404	2D	C2588	4A	DS2402	2E	P2494	3E	R2407	4E	R2445	6D	R2479	5C	R2557	2B
C2407	4D	C2589	3B	DS2403	3E	P2495	4C	R2408	3E	R2446	5D	R2480	6B	R2560	1E
C2408	2D	C2591	3A			P2496	3E	R2409	3E	R2447	6D	R2481	5C	R2561	2B
C2409	4D	C2592	3A	J2438	7B	P2497	4D	R2410	3E	R2449	6E	R2482	5C	R2569	2B
C2445	5C	C2594	4A			P2498	2D	R2412	3D	R2450	6E	R2484	7D	R2564	1B
C2449	5D	C2595	4A	L2582	4B			R2414	3C	R2451	6E	R2485	7C	R2565	2A
C2452	6E	C2597	3A	L2583	3B	Q2450	6D	R2416	2D	R2452	5D	R2486	6C	R2568	1E
C2461	5D			L2585	4B	Q2456	6E	R2418	3C	R2454	7D	R2487	7C	R2572	1B
C2475	5C	CR2423	6B	L2586	3B	Q2458	6E	R2419	3C	R2455	6E	R2489	6C	R2573	2A
C2479	6C	CR2443	6B	L2588	4A	Q2460	6D	R2420	4B	R2456	7D	R2490	6C	R2576	1C
C2482	6C	CR2446	6D	L2589	3B	Q2464	6E	R2421	4B	R2457	5E	R2491	6C	R2577	2B
C2491	6C	CR2450	6E	L2591	3A	Q2480	6C	R2422	4B	R2459	6D	R2492	6B	R2578	1D
C2552	1A	CR2460	5D	L2592	3A	Q2486	7C	R2423	6B	R2460	6D	R2493	7D	R2579	2B
C2556	1B	CR2466	6D	L2594	4A	Q2488	7C	R2430	3D	R2461	5D	R2494	6C		
C2560	1B	CR2467	6D	L2595	4A	Q2490	6C	R2432	3D	R2463	7E	R2495	7D	TP2410*	3E
C2564	2A	CR2476	6C	L2597	3A	Q2494	7B	R2434	3C	R2464	6E	R2496	6D	TP2445	6D
C2568	1B	CR2480	5C			Q2495	7B	R2436	2C	R2465	6E	R2497	6D	TP2475	6C
C2572	2A	CR2489*	6C	P2463	2B			R2438	3C	R2466	6D	R2498	6B	TP2552	1C
C2576	1A	CR2490	6C	P2482	2E	R2045	2C	R2439	3C	R2467	6D	R2499	6C	TP2556	1D
C2578	1A	CR2492	6B	P2483	4E	R2400	5D	R2440	4C	R2468	6E	R2550	1D		
C2582	4B	CR2495	6C	P2487	6B	R2401	5D	R2441	4B	R2474	4C	R2552	1C	VR2424	6B
C2583	3B	CR2497	6D	P2489	3B	R2402	2C	R2442	5B	R2475	5C	R2553	2B		
		CR2499	6C			R2404	2E								

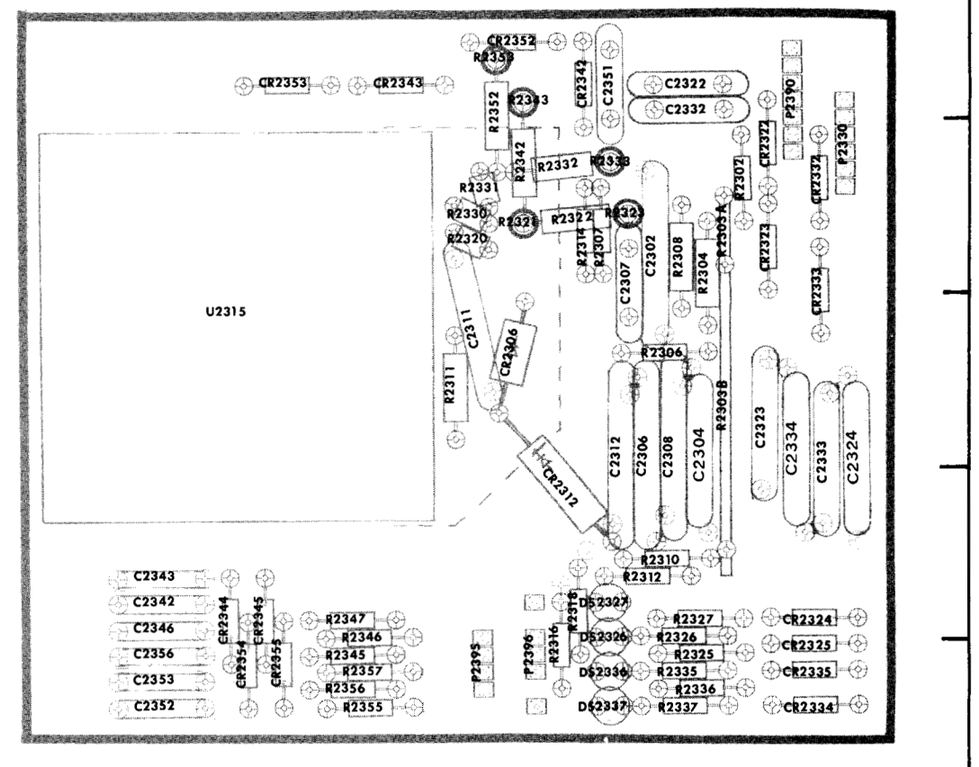


Fig. 9-19. A24—High Voltage circuit board assembly.

CKT NO	GRID LOC	CKT NO	GRID LOC	CKT NO	GRID LOC	CKT NO	GRID LOC
C2302	5B	CR2322	5B	P2390	5A	R2326	5D
C2304	5C	CR2323	5B	P2395	4E	R2327	5D
C2306	5C	CR2324	6D	P2396	4E	R2330	4B
C2307	4B	CR2325	6E			R2331	4B
C2308	5C	CR2332	6B	R2302	5B	R2332	4B
C2311	4C	CR2333	6B	R2303A	5B	R2333	4B
C2312	4C	CR2334	6E	R2303B	5C	R2335	5E
C2322	5A	CR2335	6E	R2304	5B	R2336	5E
C2323	5C	CR2342	4A	R2306	5C	R2337	5E
C2324	6C	CR2343	3A	R2307	4B	R2342	4B
C2332	5A	CR2344	2D	R2308	5B	R2343	4A
C2333	6C	CR2345	2D	R2310	5D	R2345	3E
C2334	5C	CR2352	4A	R2311	4C	R2346	3E
C2342	2D	CR2353	3A	R2312	5D	R2347	3D
C2343	2D	CR2354	2E	R2314	4B	R2352	4A
C2346	2D	CR2355	2E	R2316	4E	R2353	4A
C2351	4A			R2318	4D	R2355	3E
C2352	2E	DS2326	4D	R2320	4B	R2356	3E
C2353	2E	DS2327	4D	R2321	4B	R2357	3E
C2356	2E	DS2336	4E	R2322	4B		
		DS2337	4E	R2323	4B	U2315	2C
CR2306	4C			R2325	5E		
CR2312	4D	P2330	6B				

*See Parts List for serial number ranges.

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VOLTAGE CONDITIONS

WARNING

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

The voltages shown on this diagram can be obtained using the recommended test equipment listed below.

RECOMMENDED TEST EQUIPMENT

Item	Specifications		Recommended Type
Precision dc voltmeter	Input Impedance Range	10 MΩ 0—500 V	Tektronix 7D13 Digital Multimeter (test oscilloscope must have readout system); or DM 501A Digital Multi-Meter with TM 501 Power Module, or equivalent.

VOLTAGE MEASUREMENTS

Voltage measurements on this diagram were made under the following conditions:

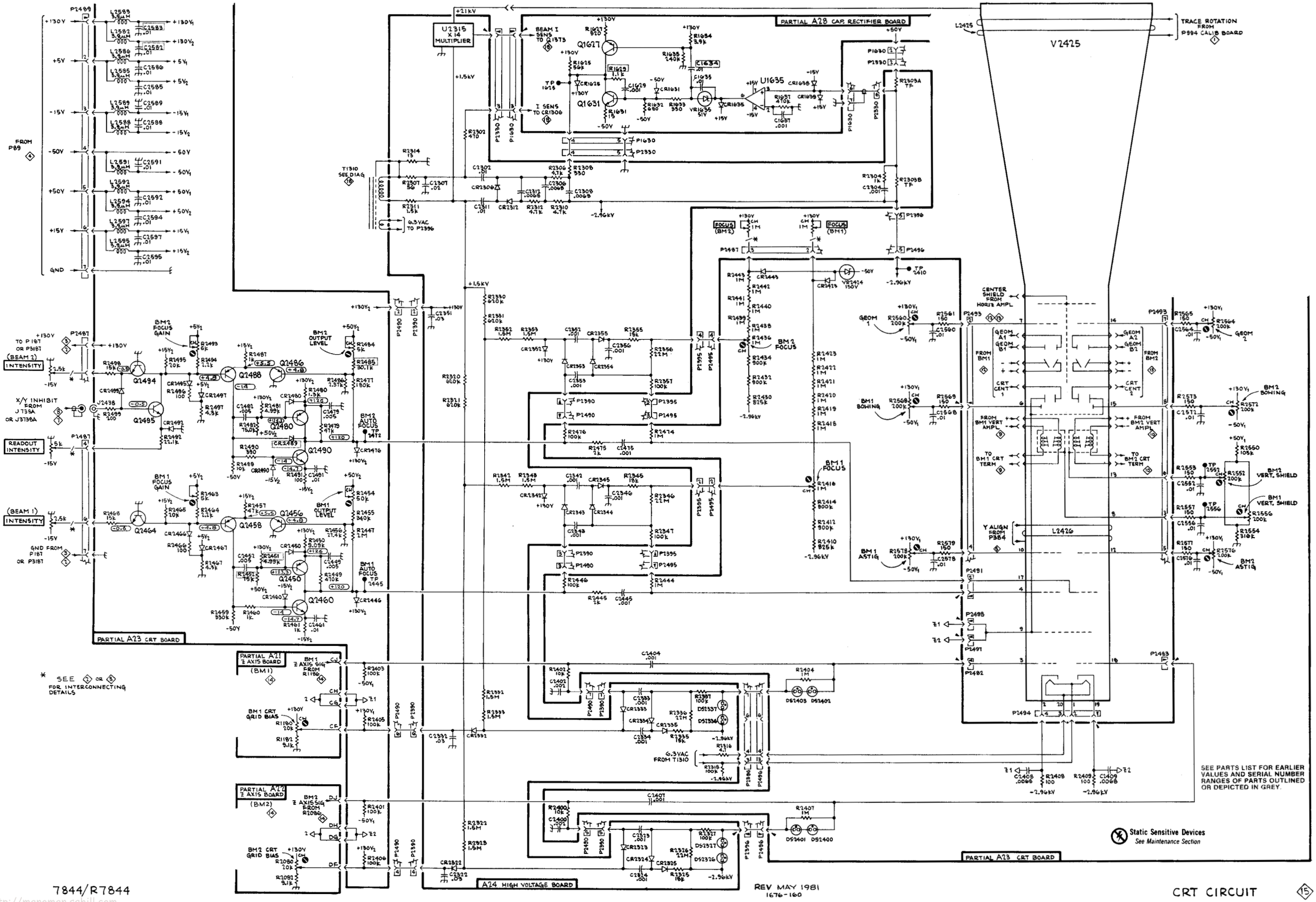
Set both BEAM 1 and BEAM 2 INTENSITY controls fully counterclockwise.

No plug-in units are installed.

Voltmeter common is connected to chassis ground.

Tolerances of voltages shown are within 20%.

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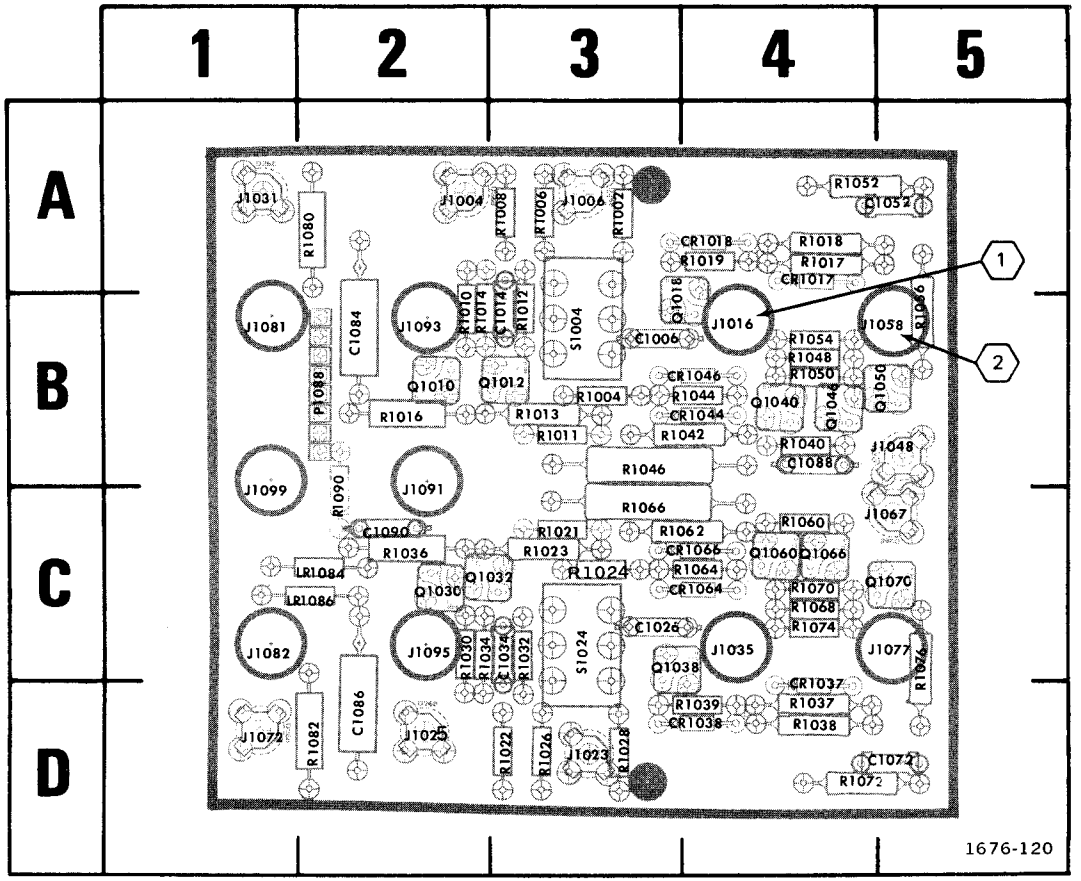
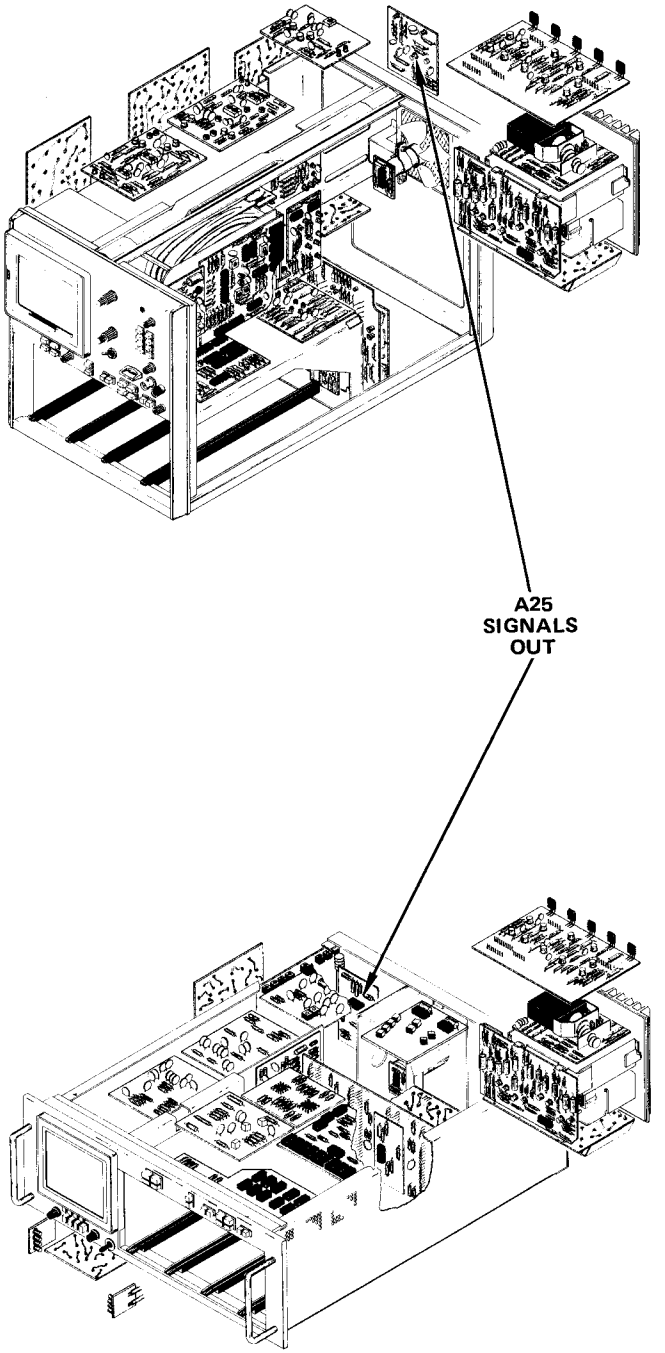


Fig. 9-20. A25—Signals Out circuit board assembly.



CKT NO	GRID LOC	CKT NO	GRID LOC	CKT NO	GRID LOC	CKT NO	GRID LOC	CKT NO	GRID LOC
C1006	3B	J1016	4B	Q1010	2B	R1014	2B	R1046	3B
C1014	3B	J1023	3D	Q1012	3B	R1016	2B	R1048	4B
C1026	3C	J1025	2D	Q1018	3B	R1017	4A	R1050	4B
C1034	3C	J1031	1A	Q1030	2C	R1018	4A	R1052	4A
C1052	5A	J1035	4C	Q1032	2C	R1019	4A	R1054	4B
C1072	5D	J1048	5B	Q1038	4C	R1021	3C	R1056	5B
C1084	2B	J1058	5B	Q1040	4B	R1022	3D	R1060	4C
C1086	2D	J1067	5C	Q1046	4B	R1023	3C	R1062	4C
C1088	4B	J1072	1D	Q1050	5B	R1024	3C	R1064	4C
C1090	2C	J1077	5C	Q1060	4C	R1026	3D	R1066	3C
CR1017	4A	J1081	1B	Q1066	4C	R1028	3D	R1068	4C
CR1018	4A	J1082	1C	Q1070	5C	R1030	2C	R1070	4C
CR1037	4D	J1091	2C			R1032	3C	R1072	4D
CR1038	4D	J1093	2B	R1002	3A	R1034	2C	R1074	4C
CR1044	4B	J1095	2C	R1004	3B	R1036	2C	R1076	5C
CR1046	4B	J1099	1C	R1006	3A	R1037	4D	R1080	2A
CR1064	4C			R1008	3A	R1038	4D	R1082	2D
CR1066	4C	LR1084	2C	R1010	2B	R1039	4D	R1090	2C
		LR1086	2C	R1011	3B	R1040	4B		
J1004	2A			R1012	3B	R1042	4B	S1004	3B
J1006	3A	P1088	2B	R1013	3B	R1044	4B	S1024	3C

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VOLTAGE AND WAVEFORM CONDITIONS

WARNING

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

The voltages and waveforms shown on this diagram can be obtained using the recommended test equipment listed below.

RECOMMENDED TEST EQUIPMENT

Item	Specifications	Recommended Type
Oscilloscope	Frequency Response Dc to 65 MHz Deflection Factor 5 mV to 5 V/div Input Impedance 1 MΩ, 20 pF 500 ns.	Tektronix 7603 equipped with a 7A13 Amplifier and 7B-series time-base unit or equivalent.
Probe	Fast rise 10x attenuation probe compatible with the vertical amplifier of the test oscilloscope.	P6053B, or equivalent.
Precision dc voltmeter	Input Impedance 10 MΩ Range 0—500 V	Tektronix 7D13 Digital Multimeter (test oscilloscope must have readout system); or DM 501A Digital Multi-Meter with TM 501 Power Module, or equivalent.

VOLTAGE MEASUREMENTS

Voltage measurements on this diagram were made under the following conditions:

Set both A GATE and B GATE selector switches to MAIN.

No plug-in units are installed.

Voltmeter common is connected to chassis ground.

WAVEFORMS

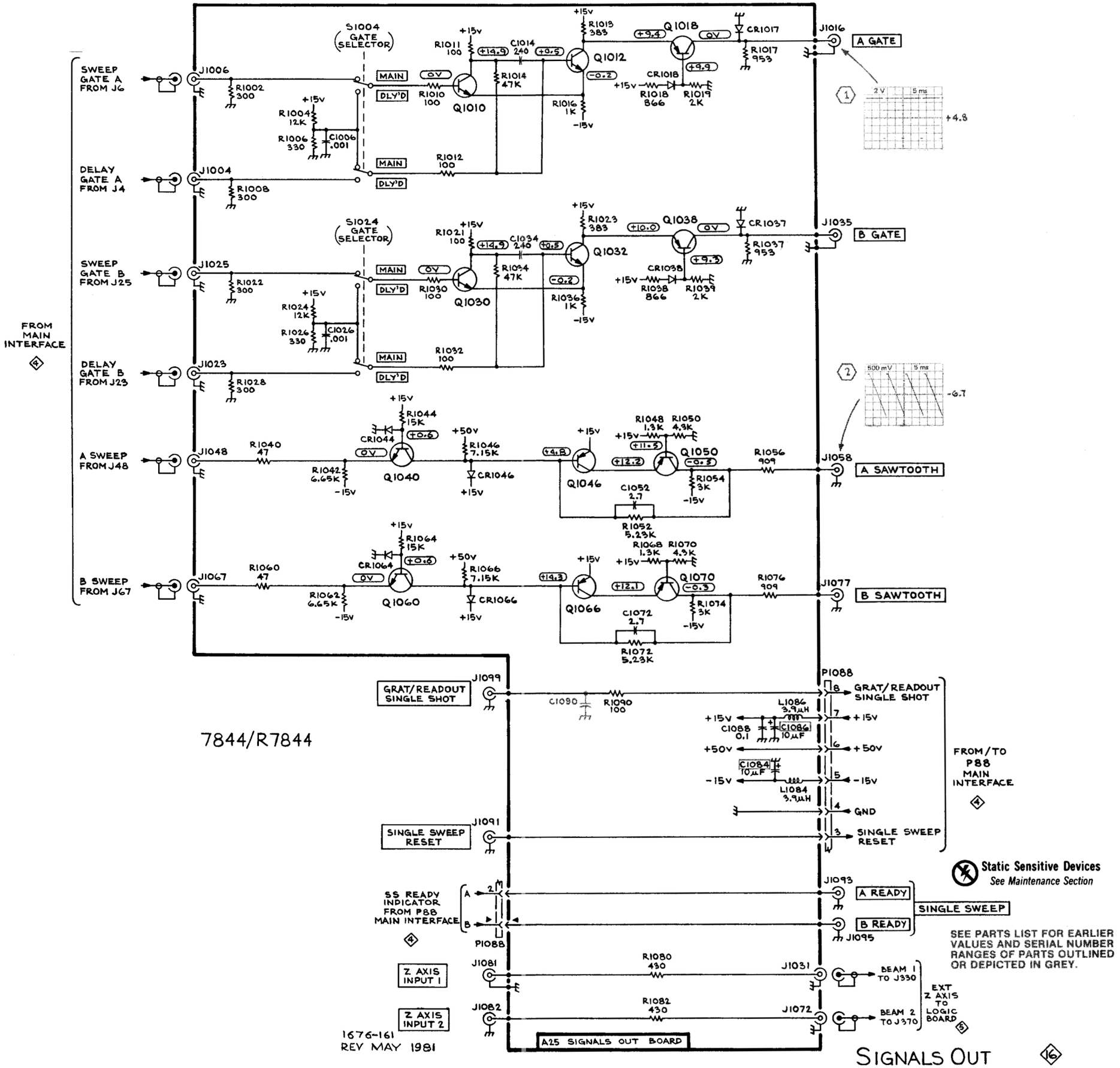
Waveforms shown on this diagram were obtained under the following conditions:

7844/R7844 OSCILLOSCOPE UNDER TEST. Front-panel controls are set the same as for voltage measurements. Install a 7B80 time-base unit in the A HORIZ compartment and set triggering to auto mode. Center the trace horizontally on the crt.

TEST OSCILLOSCOPE. The test oscilloscope triggering is set to auto mode with ac coupling from the internal source. The 7A13 input coupling is set to dc.

Tolerances of voltages and waveforms are shown within 20%. Calibrated offset voltages are marked on waveforms at the center horizontal graticule line. These voltages indicate the comparison voltage of the 7A13.

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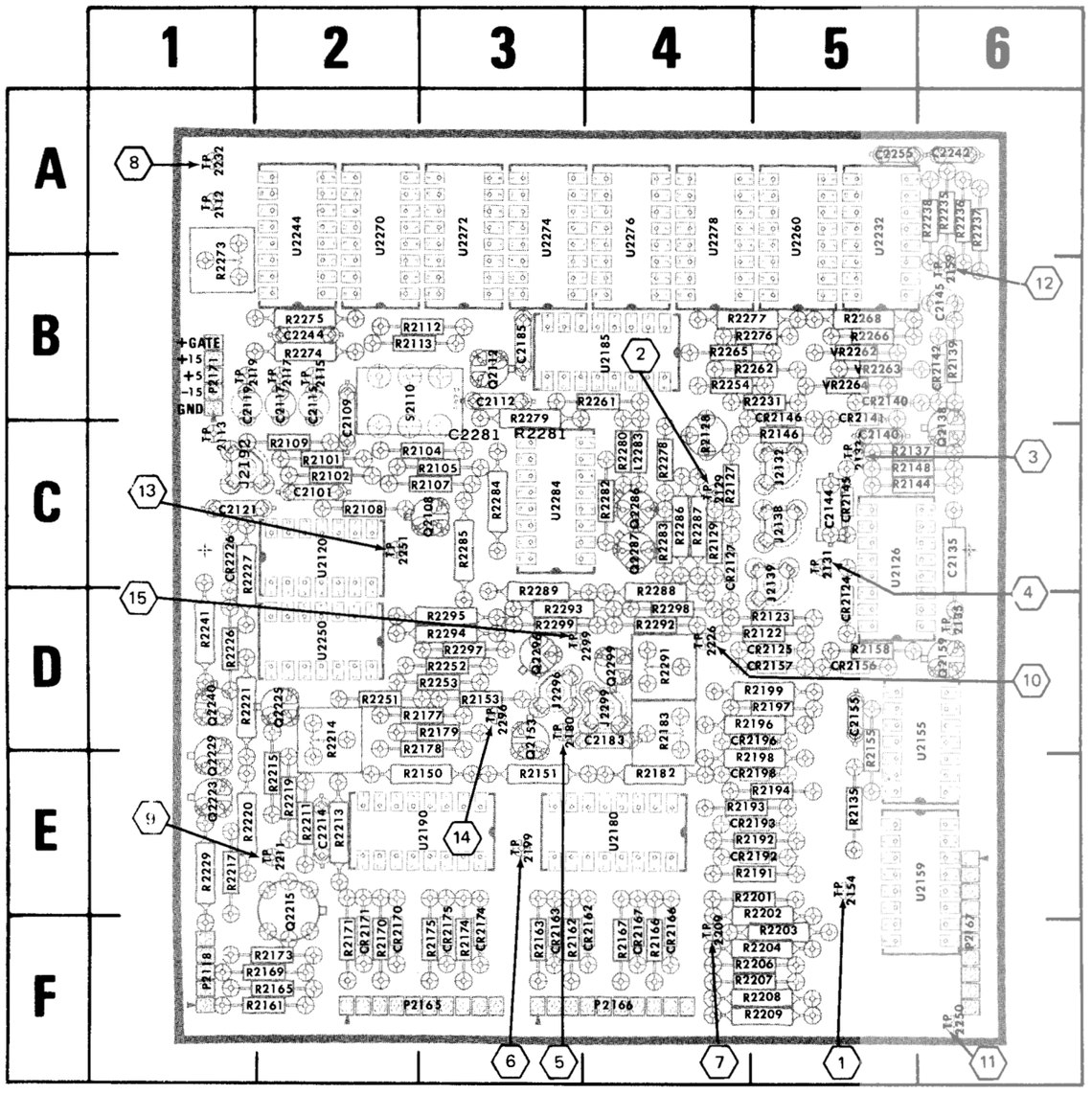


Fig. 9-21. A26—Readout circuit board assembly.

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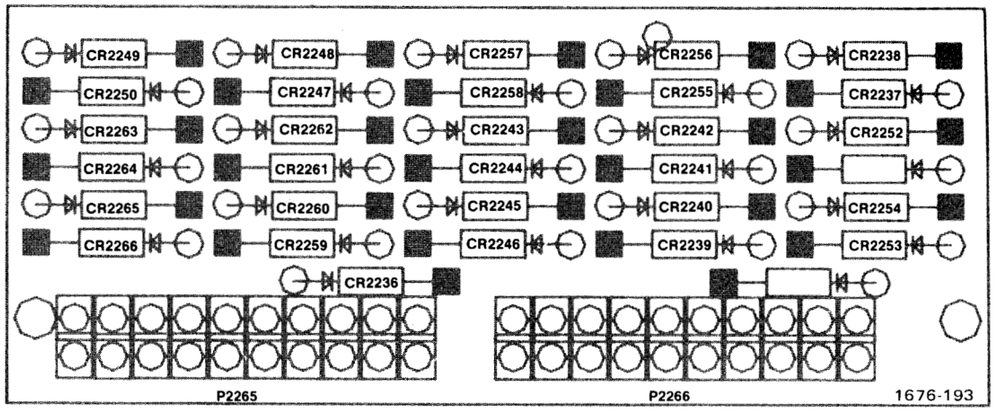


Fig. 9-22. A32—Protection circuit board (SN B080000 & up).

CKT NO	GRID LOC
C2101	2C
C2109	2B
C2112	3B
C2115	2B
C2117	2B
C2119	1B
C2121	1C
C2135	6C
C2140	5C
C2144	5C
C2145	6B
C2155	5D
C2183	4D
C2185	3B
C2214	2E
C2242	6A
C2244	2B
C2255	5A
C2281	3C
CR2124	5D
CR2125	5D
CR2127	4C
CR2140	5B
CR2141	5B
CR2142	6B
CR2145	5C
CR2146	5B
CR2156	5D
CR2157	5D
CR2162	4F
CR2163	3F
CR2166	4F
CR2167	4F
CR2170	2F
CR2171	2F
CR2174	3F
CR2175	3F
CR2192	5E
CR2193	5E
CR2196	5D
CR2198	5E
CR2226	1C
J2132	5C
J2138	5C
J2139	5C
J2192	1C
J2296	3D
J2299	4D
L2283	4C
P2118	1F
P2165	3F
P2166	4F
P2167	6F
P2171	1B
Q2108	3C
Q2112	3B
Q2138	6C
Q2153	3D
Q2159	6D
Q2215	2E
Q2223	1E
Q2225	2D
Q2229	1E
Q2240	1D
Q2286	4C
Q2287	4C
Q2296	3D
Q2299	4D
R2101	2C
R2102	2C
R2104	3C
R2105	3C
R2107	3C
R2108	2C
R2109	2C
R2112	3B
R2113	2B
R2122	5D
R2123	5D
R2127	4C
R2128	4C
R2129	4C
R2135	5E
R2137	5C
R2139	6B
R2144	5C
R2146	5C
R2148	5C
R2150	3E
R2151	3E
R2153	3D
R2155	5D
R2158	5D
R2161	2F
R2162	3F
R2163	3F
R2165	2F
R2166	4F
R2167	4F
R2169	2F
R2170	2F
R2171	2F
R2173	2F
R2174	3F
R2175	3F
R2177	3D
R2178	3D
R2179	3D
R2182	4E
R2183	4D
R2191	5E
R2192	5E
R2193	5E
R2194	5E
R2196	5D
R2197	5D
R2198	5E
R2199	5D
R2201	5E
R2202	5E
R2203	5F
R2204	5F
R2206	5F
R2207	5F
R2208	5F
R2209	5F
R2211	2E
R2213	2E
R2214	2D
R2215	2E
R2217	1E
R2219	2E
R2220	1E
R2221	1D
R2226	1D
R2227	1C
R2229	1E
R2231	5B
R2235	6A
R2236	6A
R2237	6A
R2238	6A
R2241	1D
R2251	2D
R2252	3D
R2253	3D
R2254	4B
R2261	4B
R2262	5B
R2265	4B
R2266	5B
R2268	5B
R2273	1B
R2274	2B
R2275	2B
R2276	5B
R2277	4B
R2278	4C
R2279	3B
R2280	4C
R2281	3C
R2282	4C
R2283	4C
R2284	3C
R2285	4C
R2286	4C
R2287	4C
R2288	4C
R2289	3D
R2291	4D
R2292	4D
R2293	3D
R2294	3D
R2295	3D
R2297	3D
R2298	4D
R2299	3D
S2110	2B
TP2112	1A
TP2113	1C
TP2115	2B
TP2117	2B
TP2119	1B
TP2129	4C
TP2131	5C
TP2133	5C
TP2135	6D
TP2154	5E
TP2159	6B
TP2180	3D
TP2199	3E
TP2209	4F
TP2211	2E
TP2232	1A
TP2226	4D
TP2250	6F
TP2251	2C
TP2296	3D
TP2299	3D
U2120	2C
U2126	5C
U2155	6D
U2159	6E
U2232	5A
U2244	2A
U2250	2D
U2260	5A
U2270	2A
U2272	3A
U2274	3A
U2276	4A
U2278	4A
U2180	4E
U2284	3C
U2185	4B
U2190	3E
VR2262	5B
VR2263	5B
VR2264	5B

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VOLTAGE AND WAVEFORM CONDITIONS

WARNING

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

The voltages and waveforms shown on this diagram can be obtained using the recommended test equipment listed below.

RECOMMENDED TEST EQUIPMENT

Item	Specifications	Recommended Type
Oscilloscope	Frequency Response Dc to 65 MHz Deflection Factor 5 mV to 5 V/div Input Impedance 1 MΩ, 20 pF 500 ns.	Tektronix 7603 equipped with a 7A13 Amplifier and 7B-series time-base unit or equivalent.
Probe	Fast rise 10x attenuation probe compatible with the vertical amplifier of the test oscilloscope.	P6053B, or equivalent.
Precision dc voltmeter	Input Impedance 10 MΩ Range 0—500 V	Tektronix 7D13 Digital Multimeter (test oscilloscope must have readout system); or DM 501A Digital Multi-Meter with TM 501 Power Module, or equivalent.

VOLTAGE MEASUREMENTS

Voltage measurements on this diagram were made under the following conditions:

Set the READOUT INTENSITY control to midrange.

No plug-in units are installed.

Voltmeter common is connected to chassis ground.

WAVEFORMS

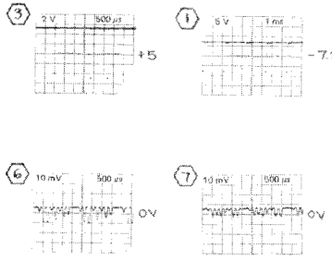
Waveforms shown on this diagram were obtained under the following conditions:

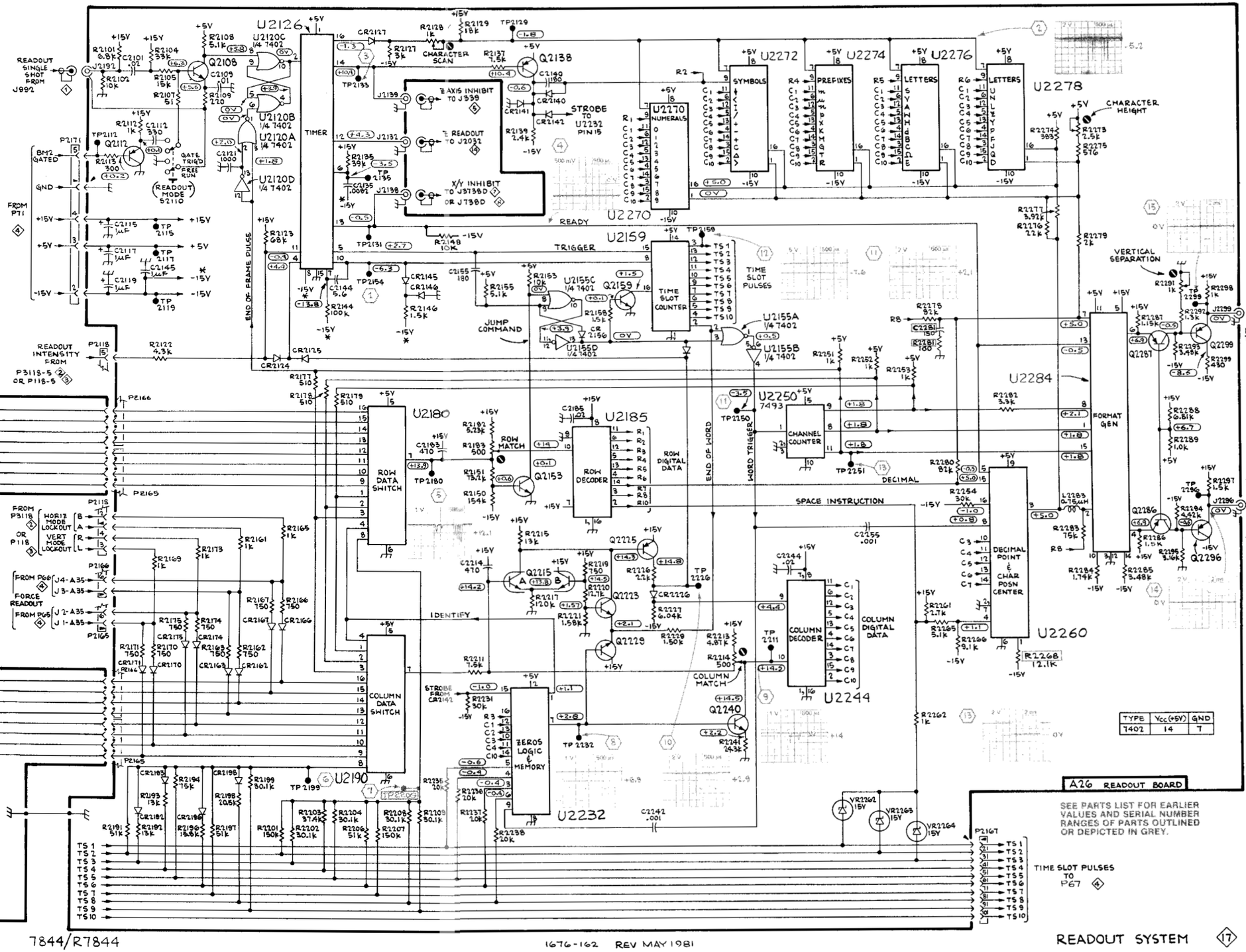
7844/R7844 OSCILLOSCOPE UNDER TEST. Front-panel controls are set the same as for voltage measurements. Install a 7A19 amplifier unit in the LEFT VERT compartment and set the deflection factor to 0.1 volt/division. Install a 7B80 time-base unit in the A HORIZ compartment.

TEST OSCILLOSCOPE. The test oscilloscope is externally triggered from TP2251 and the 7A13 BW switch is set to 5 MHz.

Tolerances of voltages and waveforms shown are within 20%. Calibrated offset voltages are marked on waveforms at center horizontal graticule line. These voltages indicate the comparison voltage of the 7A13.

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READOUT SYSTEM 17

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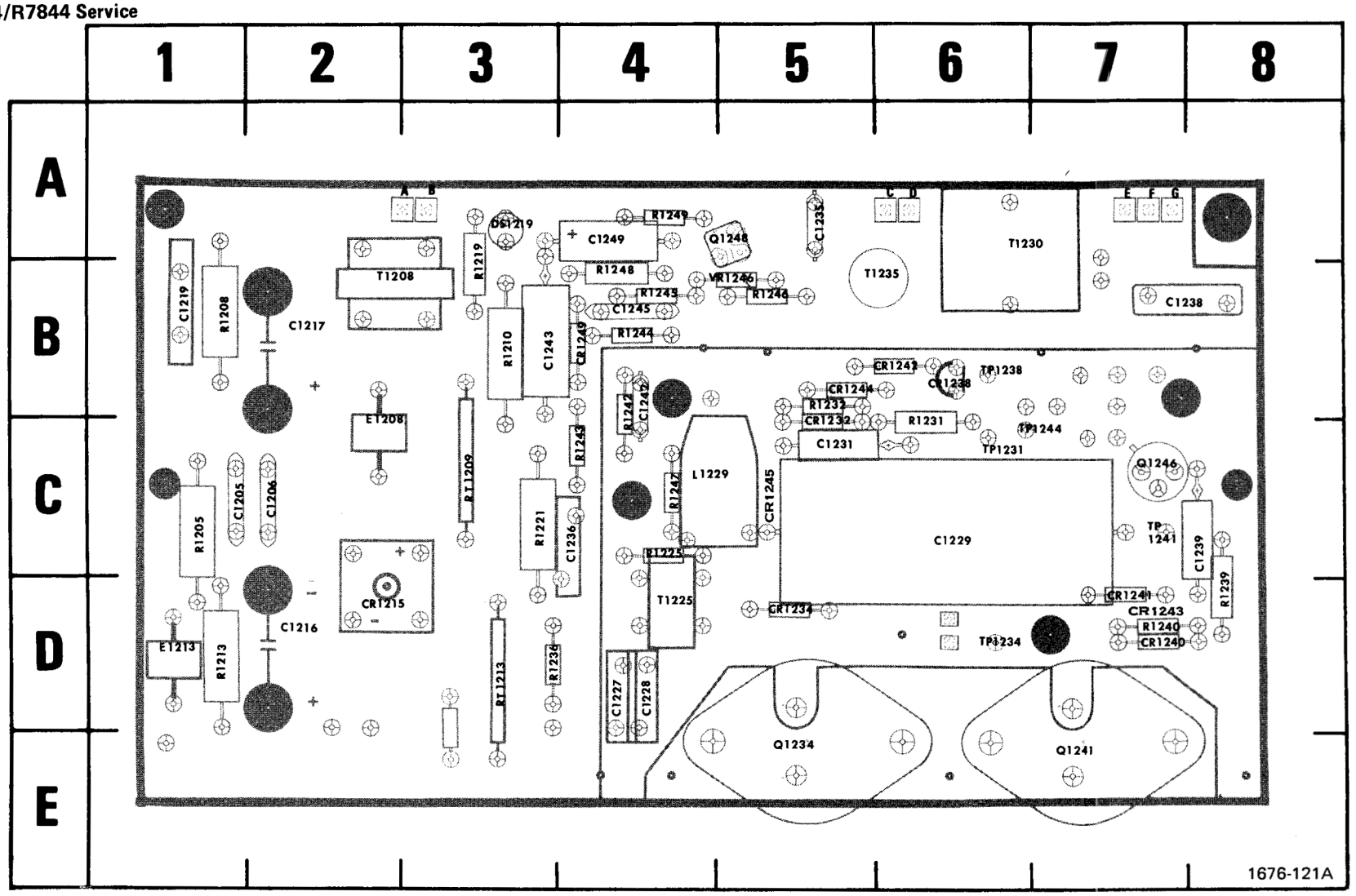


Fig. 9-23. A27—Power Supply Inverter circuit board assembly.

CKT NO	GRID LOC	CKT NO	GRID LOC	CKT NO	GRID LOC	CKT NO	GRID LOC
C1205	1C	CR1234	5D	R1205	1C	R1249	4A
C1206	1C	CR1238	6B	R1208	1B		
C1216	2D	CR1240	7D	R1210	3B	RT1209	3C
C1217	2B	CR1241	7D	R1213	2D	RT1213	3D
C1219	1B	CR1242	6B	R1219	3A		
C1227	4D	CR1243*	7D	R1221	3C		
C1228	4D	CR1244	5B	R1225	4C		
C1229	6C	CR1245*	5C	R1231	6C	T1208	2B
C1231	5C	DS1219	3A	R1232	5B	T1225	4D
C1235	5A			R1236	3D	T1230	6A
C1236	4C	E1208	2C	R1239	8D	T1235	6B
C1238	7B	E1213	1D	R1240	7D		
C1239	8C			R1242	4B	TP1231	6C
C1242	4B	L1229	4C	R1243	4C	TP1234	6D
C1243	3B			R1244	4B	TP1238	6B
C1245	4B	Q1234	5E	R1245	4B	TP1241	7C
C1249	4A	Q1241	7E	R1246	5B	TP1244	7C
CR1215	2D	Q1246	7C	R1247	4C		
CR1232	5C	Q1248	5A	R1248	4B	VR1246	5B

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Static Sensitive Devices
See Maintenance Section

*See Parts List for serial number ranges.

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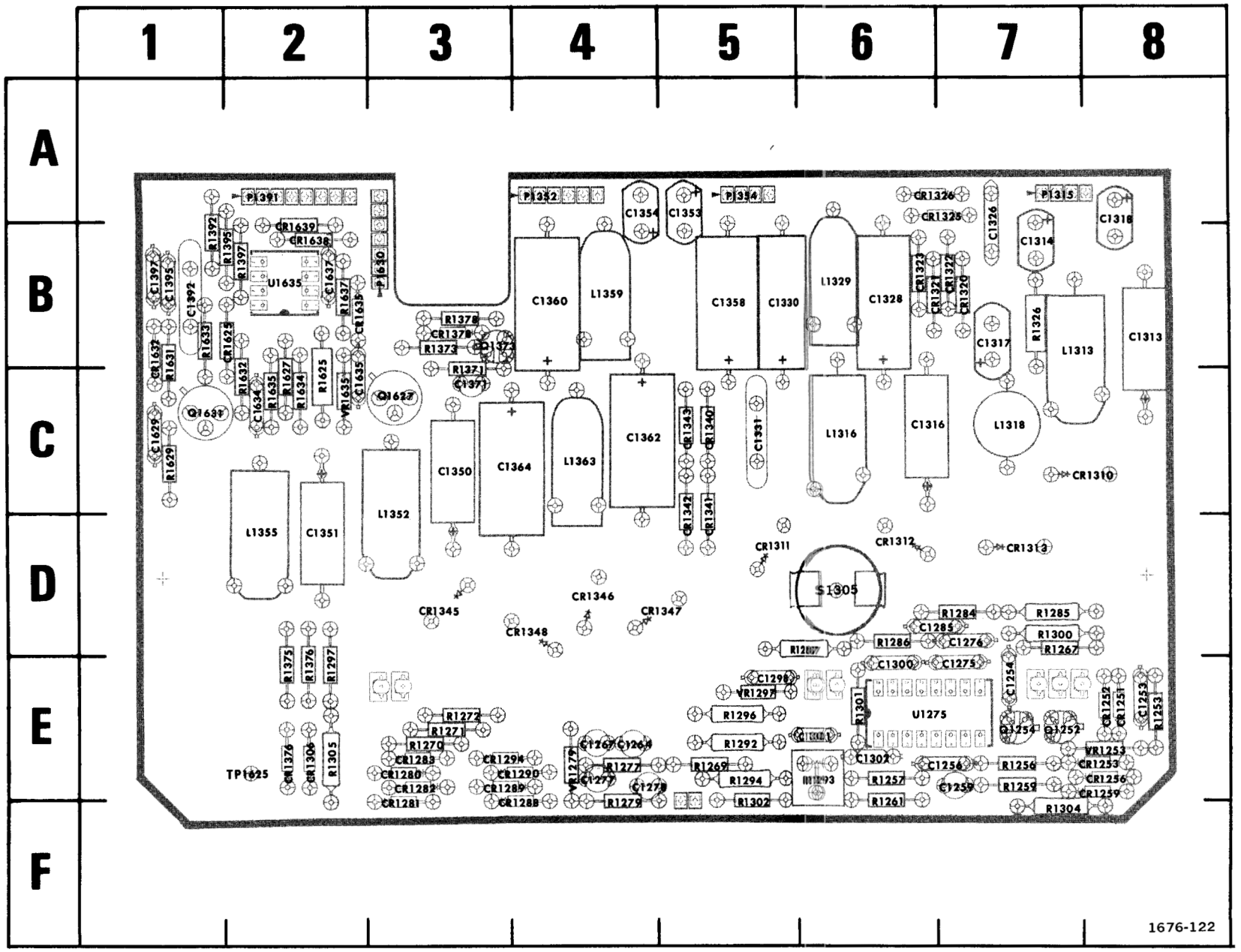


Fig. 9-24. A28—Cap-Rectifier circuit board assembly.

CKT NO	GRID LOC	CKT NO	GRID LOC	CKT NO	GRID LOC	CKT NO	GRID LOC	CKT NO	GRID LOC	CKT NO	GRID LOC	CKT NO	GRID LOC	CKT NO	GRID LOC	CKT NO	GRID LOC	CKT NO	GRID LOC
C1253	8E	C1314	7B	C1371	3C	CR1282	3E	CR1326	7A	L1313	7B	Q1254	7E	R1284	7D	R1375	2E	S1305	6D
C1254	7E	C1316	6C	C1392	1B	CR1283	3E	CR1340	5C	L1316	6C	Q1373	3B	R1285	7D	R1376	2E		
C1256	7E	C1317	7B	C1395	1B	CR1288	4E	CR1341	5C	L1318	7C	Q1627	3C	R1286	6D	R1378	3B	TP1625	2E
C1259	7E	C1318	8A	C1397	1B	CR1289	4E	CR1342	5C	L1329	6B	Q1631	1C	R1287	6D	R1392	1B		
C1264	4E	C1326	7B	C1629	1C	CR1290	4E	CR1343	5C	L1352	3C	R1253	8E	R1292	5E	R1395	2B	U1275	6E
C1267	4E	C1328	6B	C1634	2C	CR1294	4E	CR1345	3D	L1355	2D	R1256	7E	R1293	6E	R1397	2B	U1635	2B
C1275	7E	C1330	5B	C1635	2C	CR1306	2E	CR1346	4D	L1359	4B	R1257	6E	R1294	5E	R1625	2C		
C1276	7D	C1331	5C	C1637	2B	CR1310	8C	CR1347	5D	L1363	4C	R1259	7E	R1296	5E	R1627	2C	VR1253	8E
C1277	4E	C1350	3C			CR1311	5D	CR1348	4D			R1261	6E	R1300	7D	R1629	1C	VR1279	4E
C1278	4E	C1351	2D	CR1251	8E	CR1312	6D	CR1376	2E	P1315	7A	R1267	7D	R1301	6E	R1631	1B	VR1297	5E
C1285	6D	C1353	5A	CR1252	8E	CR1313	7D	CR1378	3B	P1352	4A	R1269	5E	R1302	5F	R1632	2C	VR1635	2C
C1298	5E	C1354	4A	CR1253	8E	CR1320	7B	CR1625	2B	P1354	5A	R1270	3E	R1304	7E	R1633	1B		
C1300	6E	C1358	5B	CR1256	8E	CR1321	6B	CR1632	1B	P1391	2A	R1271	3E	R1305	2E	R1634	2C		
C1301	6E	C1360	4B	CR1259	8E	CR1322	7B	CR1635	2B	P1630	3B	R1272	3E	R1326	7B	R1635	2C		
C1302	6E	C1362	4C	CR1280	3E	CR1323	6B	CR1638	2B			R1277	4E	R1371	3C	R1637	2B		
C1313	8B	C1364	4C	CR1281	3F	CR1325	7A	CR1639	2B	Q1252	7E	R1279	4F	R1373	3B				

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VOLTAGE AND WAVEFORM CONDITIONS

WARNING

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

The voltages and waveforms shown on this diagram can be obtained using the recommended test equipment listed below.

RECOMMENDED TEST EQUIPMENT

Item	Specifications		Recommended Type
Precision dc voltmeter	Input Impedance Range	10 MΩ 0—500 V	Tektronix 7D13 Digital Multimeter (test oscilloscope must have readout system); or DM 501A Digital Multi-Meter with TM 501 Power Module, or equivalent.

VOLTAGE MEASUREMENTS

Voltage measurements on this diagram were made under the following conditions:

NOTE

Remove power unit to expose the Low-Voltage Regulator board (refer to the Maintenance section for power unit removal procedure).

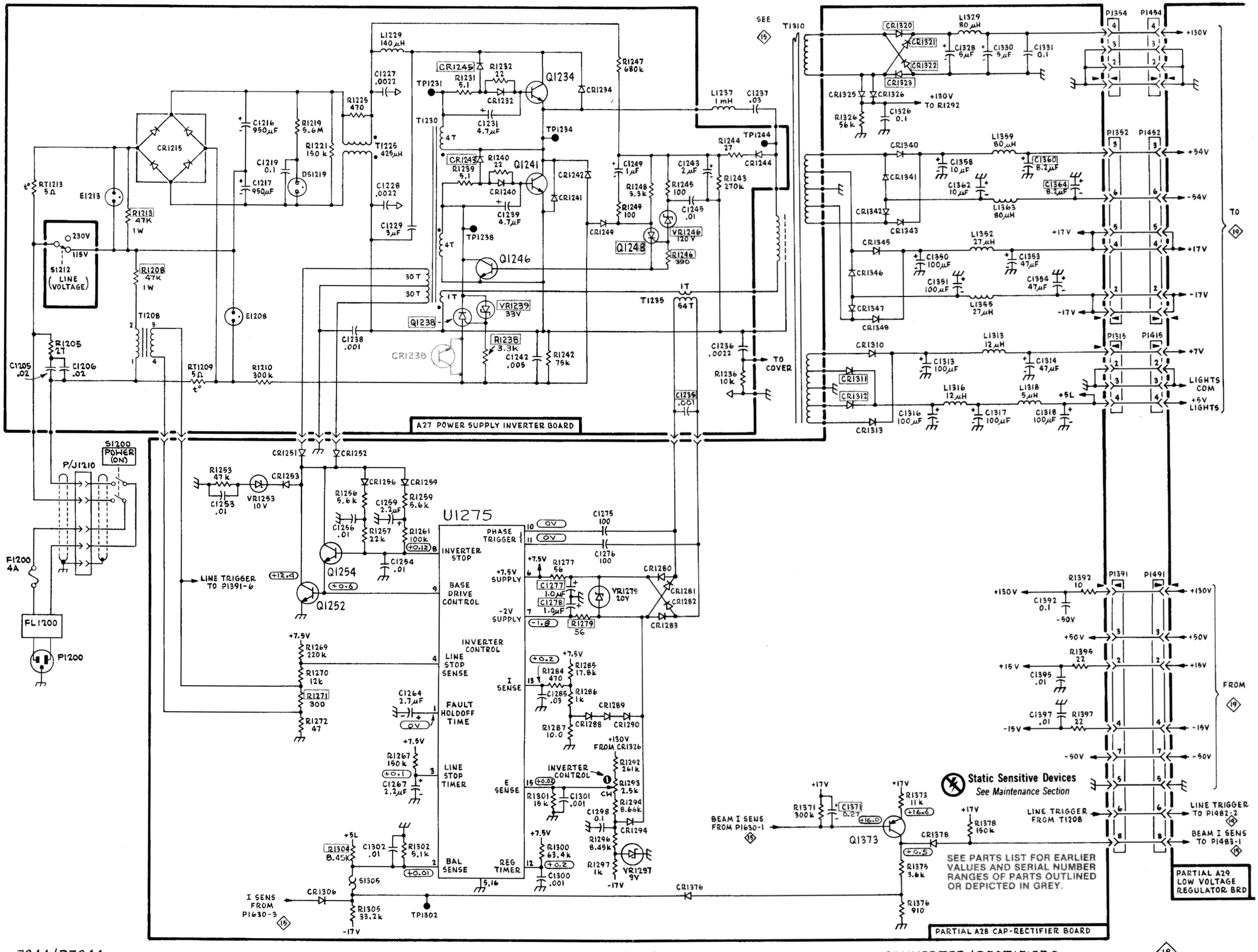
Set the GRAT ILLUM control to midrange.

No plug-in units are installed.

Voltmeter common is connected to chassis ground.

Tolerances of voltages shown are within 20%.

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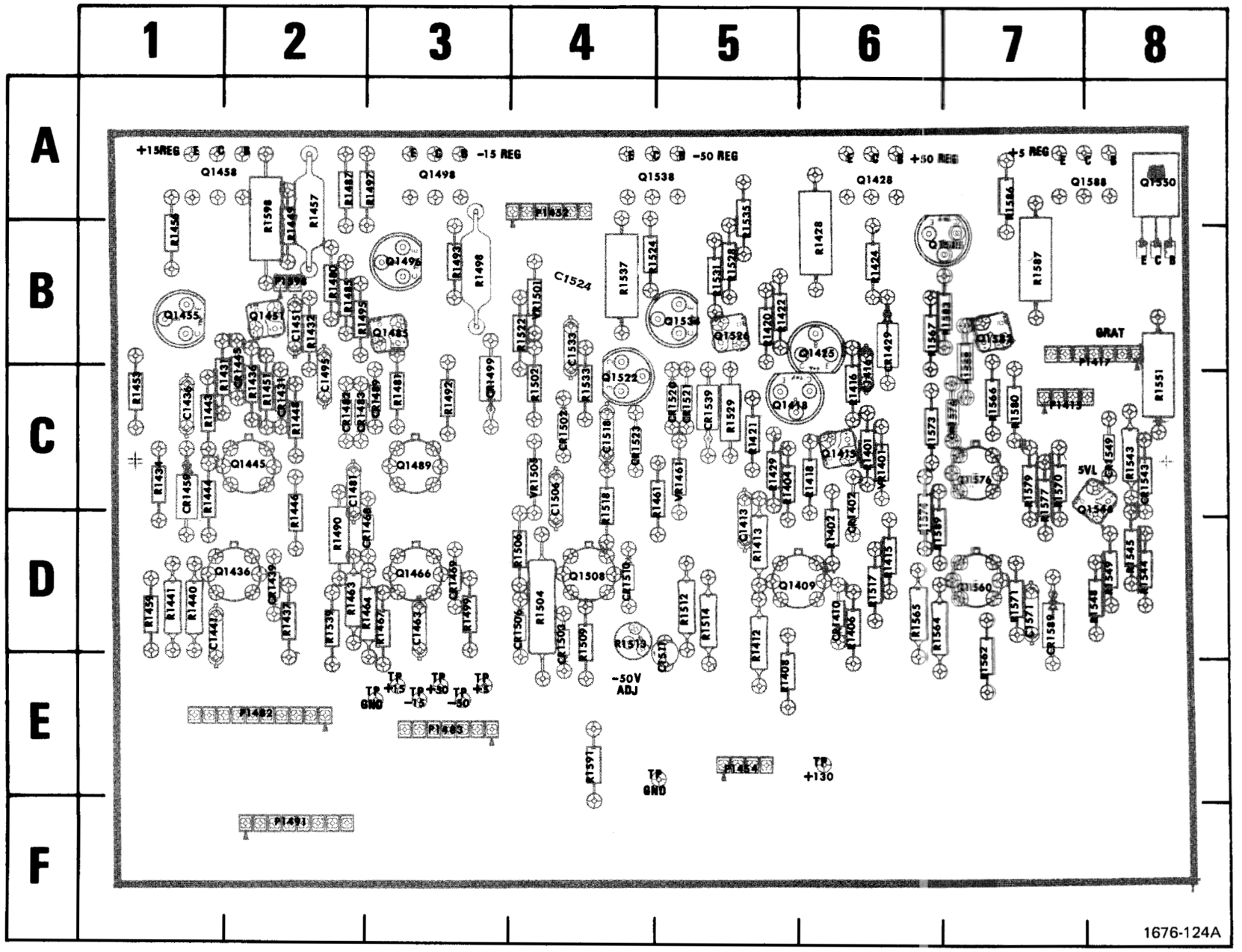


Fig. 9-25. A29—Low-Voltage Regulator circuit board assembly.

CKT NO	GRID LOC	CKT NO	GRID LOC	CKT NO	GRID LOC	CKT NO	GRID LOC	CKT NO	GRID LOC	CKT NO	GRID LOC	CKT NO	GRID LOC	CKT NO	GRID LOC	CKT NO	GRID LOC	CKT NO	GRID LOC	CKT NO	GRID LOC
C1413	5D	CR1429	6B	CR1523	4C	Q1409	5D	Q1522	4C	R1408	5E	R1437	2D	R1467	3D	R1512	6D	R1545	8D	R1580	7C	VR1401	6C
C1416	6C	CR1431	2C	CR1539	5C	Q1415	6C	Q1526	5B	R1412	5D	R1440	1D	R1480	2B	R1513	4D	R1548	8D	R1583	7B	VR1461	5C
C1436	1C	CR1439	2D	CR1543	8C	Q1418	5C	Q1534	5B	R1413	5D	R1441	1D	R1481	3C	R1514	5D	R1549	8D	R1586	7A	VR1501	4B
C1441	1D	CR1445	2C	CR1549	8C	Q1425	6B	Q1538	4A	R1415	6D	R1443	1C	R1485	2B	R1517	6D	R1551	8C	R1587	7B	VR1505	4C
C1451	2B	CR1459	1C	CR1576	7C	Q1428	6A	Q1546	8C	R1416	6C	R1444	1C	R1487	2A	R1518	4C	R1562	7D	R1589	6D		
C1463	3D	CR1469	3D	CR1589	7D	Q1436	2D	Q1550	8A	R1418	6C	R1446	2C	R1490	2D	R1522	4B	R1564	6D	R1591	4E		
C1481	2C	CR1482	2C			Q1445	2C	Q1560	7D	R1420	5B	R1448	2C	R1492	3C	R1524	4B	R1565	6D	R1598	2A		
C1495	2C	CR1483	2C			Q1451	2B	Q1576	7C	R1421	5C	R1449	2A	R1493	3B	R1528	5B	R1566	7C				
C1506	4C	CR1489	3C	P1415	7C	Q1455	1B	Q1582	7B	R1422	5B	R1451	2C	R1495	2B	R1529	5C	R1567	6B	TP GND	5E		
C1511	5D	CR1499	3C	P1417	8B	Q1458	1A	Q1585	7B	R1424	6B	R1453	1C	R1497	3A	R1531	5B	R1568	7B	TP GND	3E		
C1518	4C	CR1502	4C	P1452	4A	Q1466	3D	Q1588	8A	R1428	6B	R1456	1B	R1498	3B	R1533	4C	R1570	7C	TP +5	3E		
C1524*	4B	CR1503	4D	P1454	5E	Q1485	3B			R1429	5C	R1457	2A	R1499	3D	R1535	5A	R1571	7D	TP +15	3E		
C1533	4B	CR1506	4D	P1482	2E	Q1489	3C	R1401	6C	R1431	1C	R1459	1D	R1502	4C	R1537	4B	R1573	6C	TP +50	3E		
C1571	7D	CR1510	4D	P1483	3E	Q1496	3B	R1402	6D	R1432	2B	R1461	5C	R1504	4D	R1539	2D	R1574	6D	TP +130	6E		
CR1402	6D	CR1520	5C	P1491	2F	Q1498	3A	R1404	5C	R1434	1C	R1463	2D	R1506	4D	R1543	8C	R1577	7C	TP −15	3E		
CR1410	6D	CR1521	5C	P1598	2B	Q1508	4D	R1406	6D	R1436	2C	R1464	2D	R1509	4D	R1544	8D	R1579	7C	TP −50	3E		

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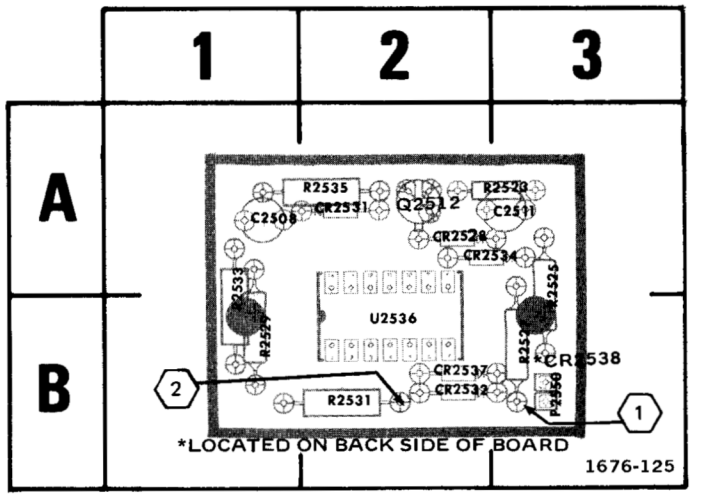


Fig. 9-26. A30—Fan circuit board assembly.

CKT NO	GRID LOC	CKT NO	GRID LOC
C2508	1A	Q2512	2A
C2511	3A		
		R2523	3A
CR2528	2A	R2525	3A
CR2531	2A	R2527	3B
CR2532	2B	R2529	1B
CR2534	3A	R2531	2B
CR2537	2B	R2533	1A
CR2538	3B	R2535	2A
P2550	3B	U2536	2B

*See Parts List for serial number ranges.

VOLTAGE AND WAVEFORM CONDITIONS

WARNING

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

The voltages and waveforms shown on this diagram can be obtained using the recommended test equipment listed below.

RECOMMENDED TEST EQUIPMENT

Item	Specifications		Recommended Type
Precision dc voltmeter	Input Impedance Range	10 MΩ 0—500 V	Tektronix 7D13 Digital Multimeter (test oscilloscope must have readout system); or DM 501A Digital Multi-Meter with TM 501 Power Module, or equivalent.

Voltage Measurements

Voltage measurements on this diagram were made under the following conditions:

NOTE

Remove power unit to expose the Cap-Rectifier board (refer to the Maintenance section for power unit removal procedure).

Set the GRAT ILLUM control to midrange.

No plug-in units are installed.

Voltmeter common is connected to chassis ground.

Tolerances of voltages shown are within 20%.

WAVEFORMS

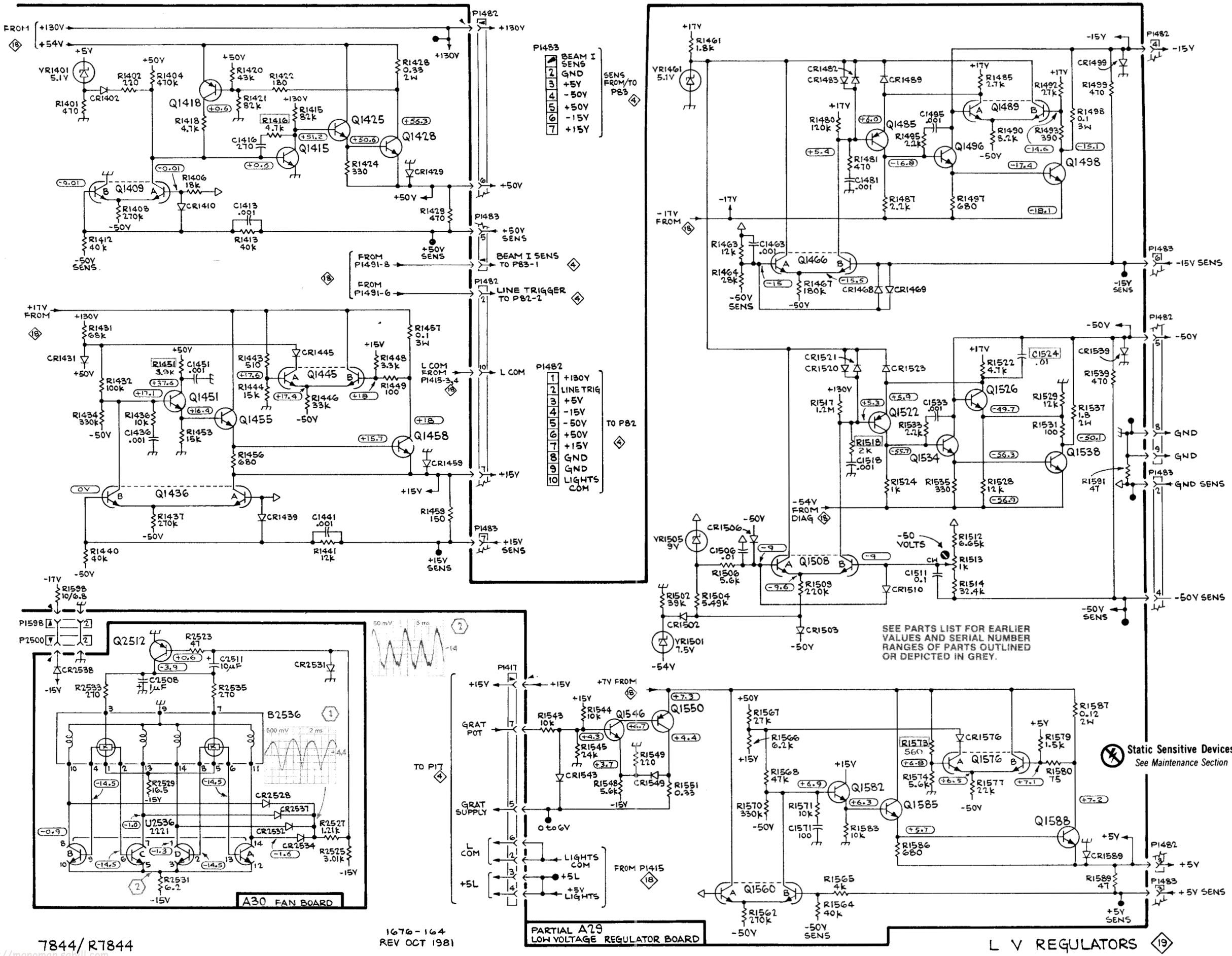
Waveforms shown on this diagram were obtained under the following conditions:

7844/R7844 OSCILLOSCOPE UNDER TEST. Front-panel controls are set the same as for voltage measurements.

TEST OSCILLOSCOPE. The test oscilloscope triggering is set to auto mode with ac coupling from the internal source. The 7A13 input coupling is set to dc.

Tolerances of voltages and waveforms are shown within 20%. Calibrated offset voltages are marked on waveforms at the horizontal graticule line. These voltages indicate the comparison voltage of the 7A13.

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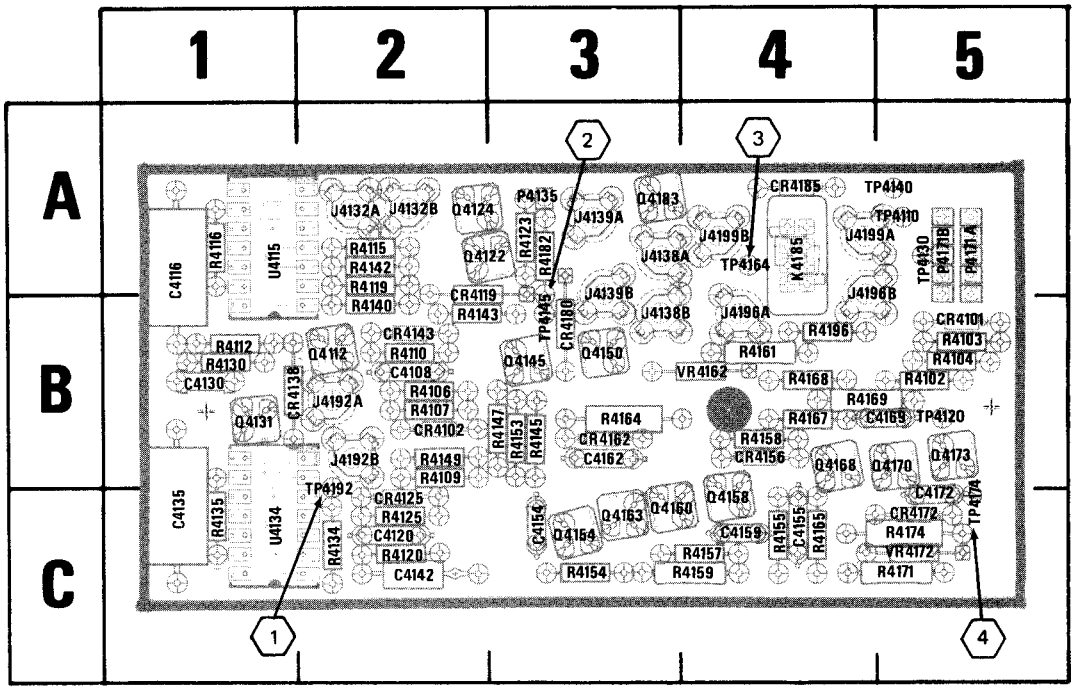
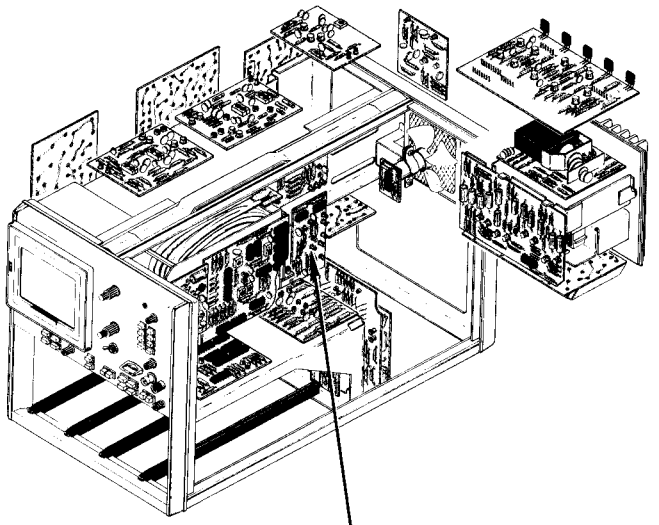
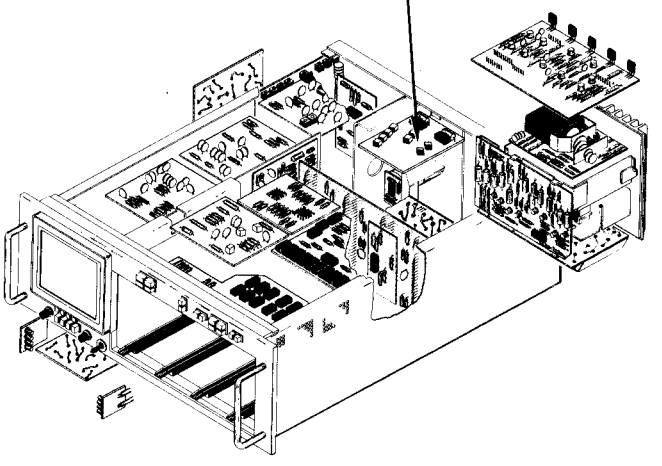


Fig. 9-27. A31—Enhancer circuit board assembly (Option 22 only).

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CKT NO	GRID LOC	CKT NO	GRID LOC	CKT NO	GRID LOC	CKT NO	GRID LOC
C4108	2B	J4138B	3B	Q4180†		R4157	4C
C4116	1A	J4139A	3A	Q4183	3A	R4158	4B
C4120	2C	J4139B	3A			R4159	4C
C4130	1B	J4192A	2B	R4102	5B	R4161	4B
C4135	1C	J4192B	2B	R4103	5B	R4164	3B
C4142	2C	J4196A	4B	R4104	5B	R4165	4C
C4154	3C	J4196B	4B	R4106	2B	R4167	4B
C4155	4C	J4199A	4A	R4107	2B	R4168	4B
C4159	4C	J4199B	4A	R4109	2B	R4169	4B
C4162	3B			R4110	2B	R4171	5C
C4169	5B	K1485	4A	R4112	1B	R4174	5C
C4172	5C			R4115	2A	R4180†	
		P4135	3A	R4116	1A	R4181†	
CR4101	5B	P4171A	5A	R4119	2A	R4182	3A
CR4102	2B	P4171B	5A	R4120	2C	R4196	4B
CR4119	2B			R4123	3A		
CR4125	2C	Q4112	2B	R4125	2C	TP4110	5A
CR4138	1B	Q4122	2A	R4130	1B	TP4120	5B
CR4143	2B	Q4124	2A	R4134	2C	TP4130	5A
CR4156	4B	Q4131	1B	R4135	1C	TP4140	5A
CR4162	3B	Q4145	3B	R4140	2B	TP4145	3B
CR4172	5C	Q4150	3B	R4142	2A	TP4147	5C
CR4180	3B	Q4154	3C	R4143	2B	TP4164	4A
CR4181†		Q4158	4C	R4145	3B	TP4192	2C
CR4185	4A	Q4160	3C	R4147	3B		
		Q4163	3C	R4149	2B	U4115	1A
J4132A	2A	Q4168	4B	R4153	3B	U4134	1C
J4132B	2A	Q4170	5B	R4154	3C		
J4138A	3A	Q4173	5B	R4155	4C	VR4162	4B
						VR4172	5C

†Located on back of board.

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VOLTAGE AND WAVEFORM CONDITIONS

WARNING

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

The voltages and waveforms shown on this diagram can be obtained using the recommended test equipment listed below.

RECOMMENDED TEST EQUIPMENT

Item	Specifications	Recommended Type
Oscilloscope	Frequency Response Dc to 65 MHz Deflection Factor 5 mV to 5 V/div Input Impedance 1 MΩ, 20 pF 500 ns	Tektronix 7603 equipped with 7A13 Amplifier and 7B-series time-base unit, or equivalent.
Probe	Fast rise 10x attenuation probe compatible with the vertical amplifier of the test oscilloscope.	P6053B, or equivalent.
Precision dc voltmeter	Input Impedance 10 MΩ Range 0—500 V	Tektronix 7D13 Digital Multimeter (test oscilloscope must have readout system); or DM 501A Digital Multi-Meter with TM 501 Power Module, or equivalent.

VOLTAGE MEASUREMENTS

Voltage measurements on this diagram were obtained under the following conditions:

Set READOUT INTENSITY control to PULSED.

Set In-EXT, OUT-BEAM 2 GATED push button to OUT-BEAM 2 GATED.

Set the ENHANCER PRESET fully clockwise.

No plug-in units are installed.

Voltmeter common is connected to chassis ground.

WAVEFORMS

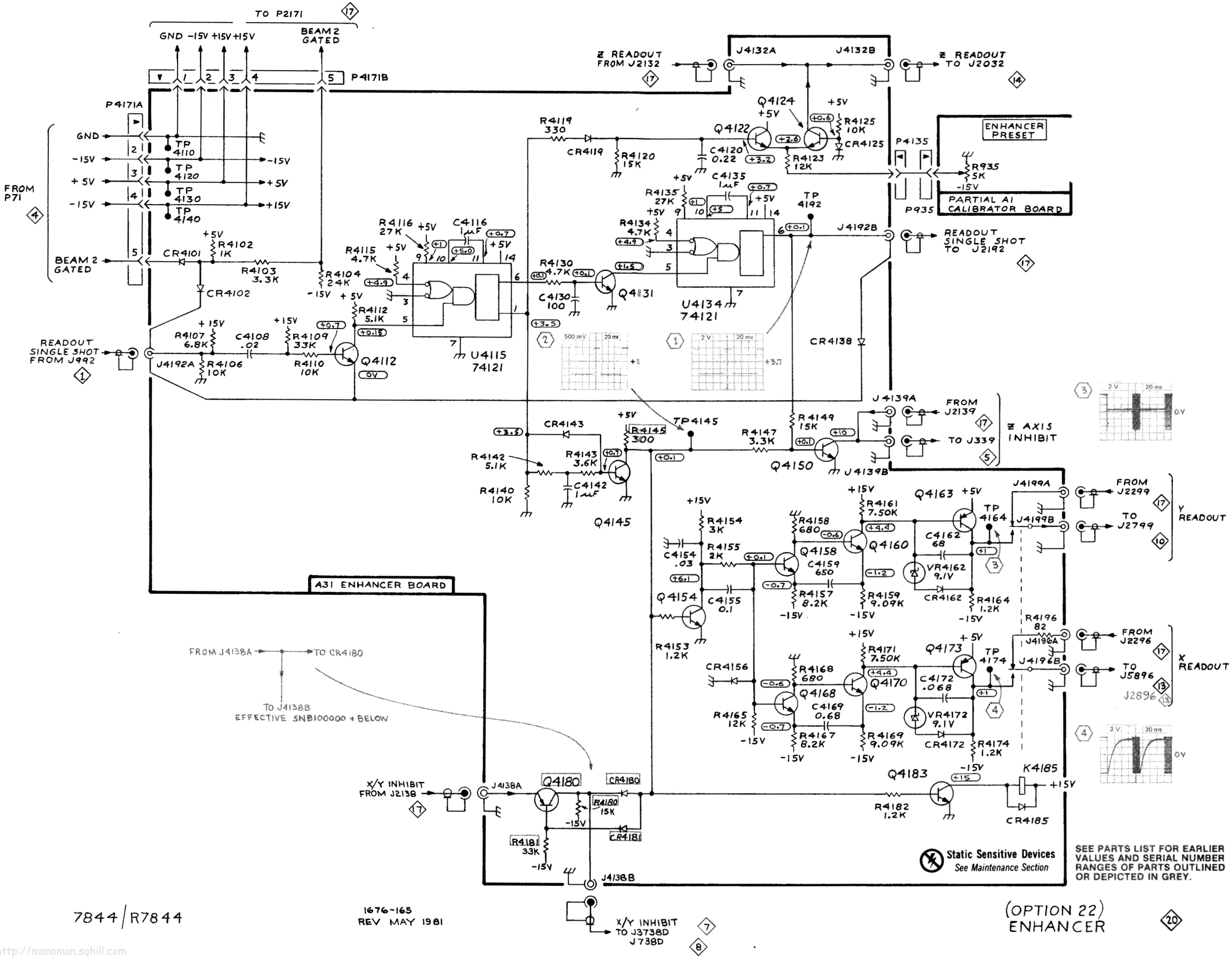
Waveforms shown on this diagram were obtained under the following conditions:

7844/R7844 OSCILLOSCOPE UNDER TEST. Front-panel controls are set the same as for voltage measurements. Install a 7B80 time-base unit in the B HORIZ compartment and set the BEAM 2 HORIZONTAL MODE switch to B.

TEST OSCILLOSCOPE. The test oscilloscope triggering is set to auto mode with ac coupling from the internal source. The 7A13 input coupling is set to dc.

Tolerances of voltages and waveforms shown are within 20%. Calibrated offset voltages are marked on waveforms at the center horizontal graticule line. These voltages indicate the comparison voltage of the 7A13.

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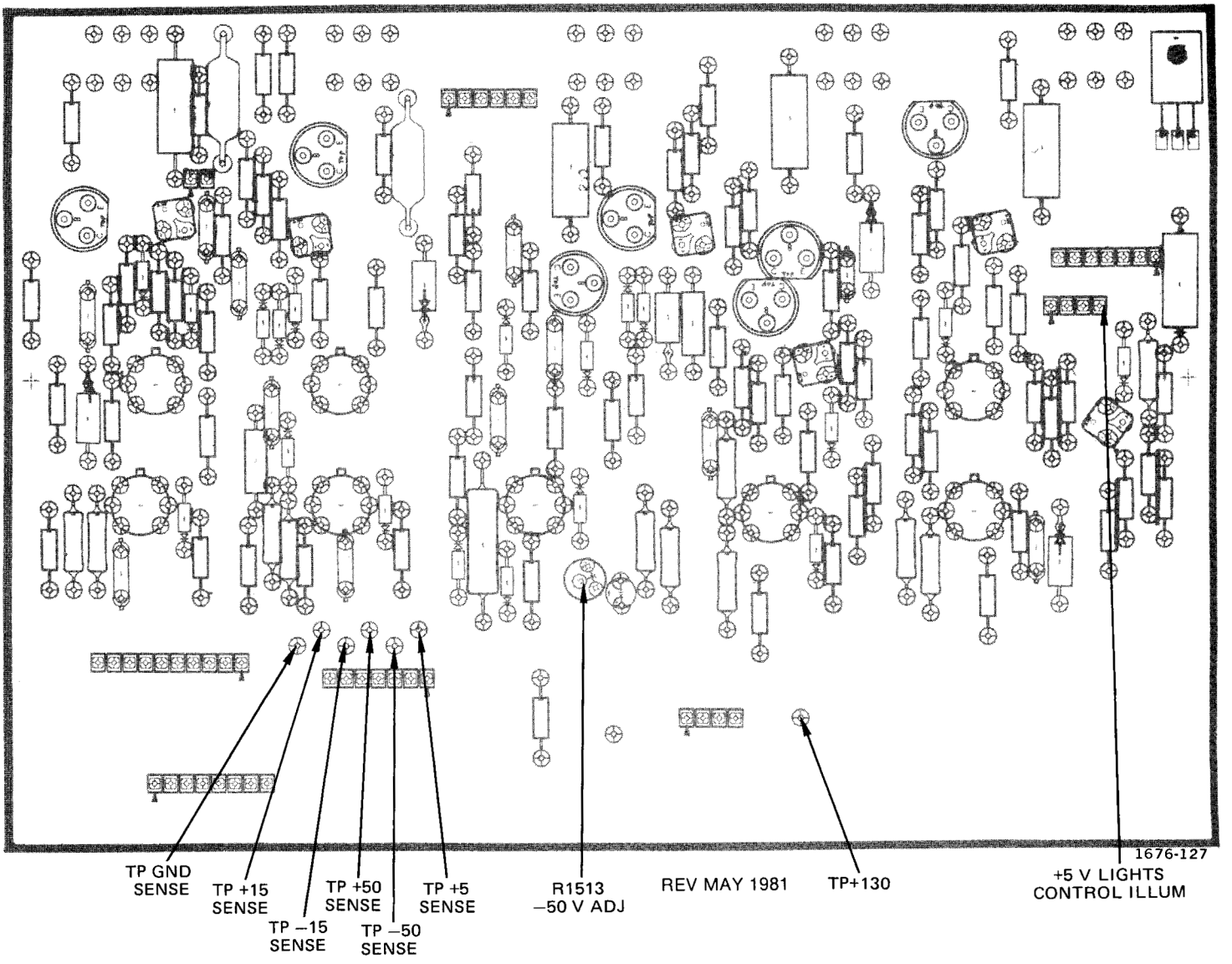


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(OPTION 22)
ENHANCER

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Fig. 9-28. A29—Location of Low-Voltage power supply test points and adjustments.

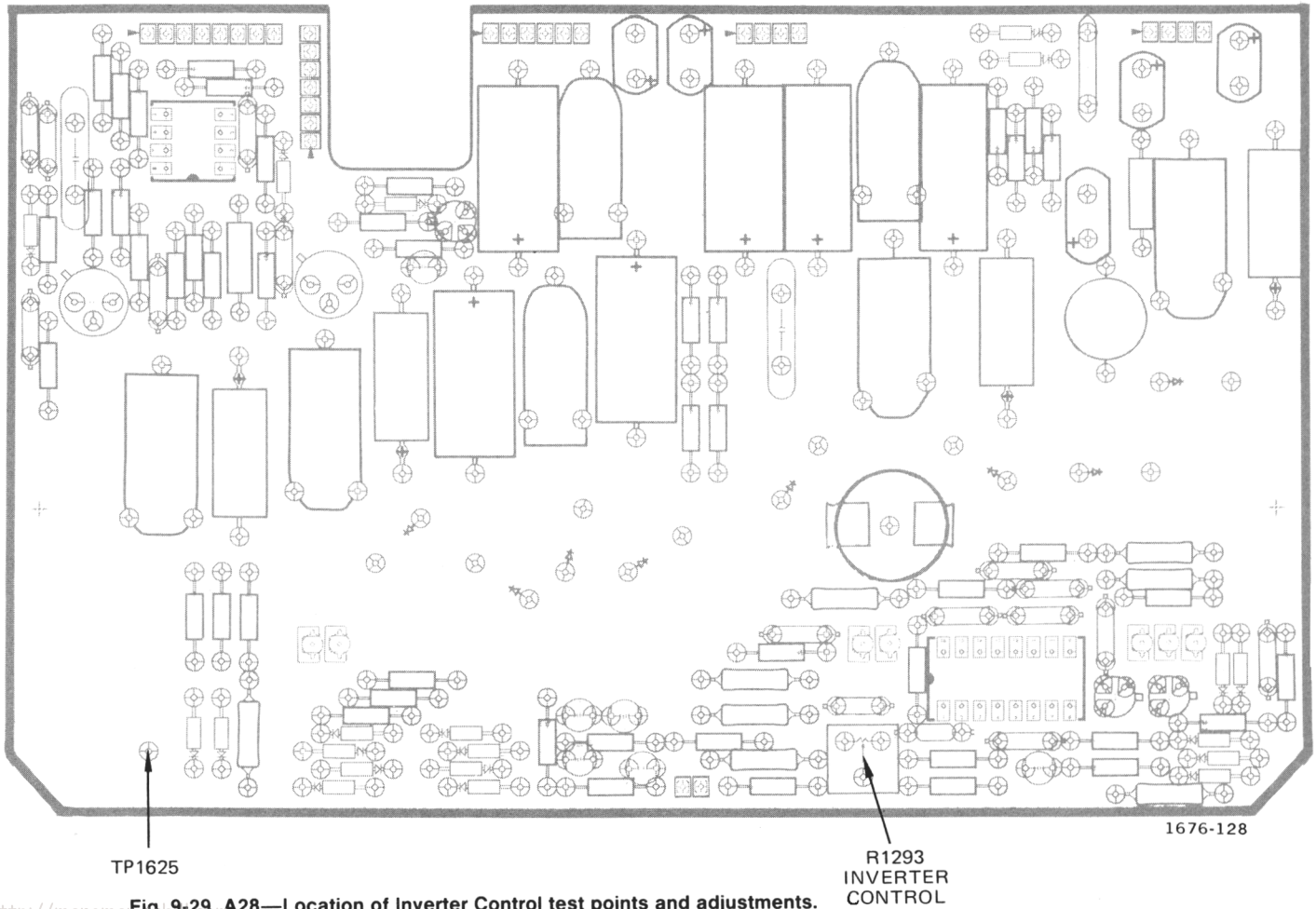
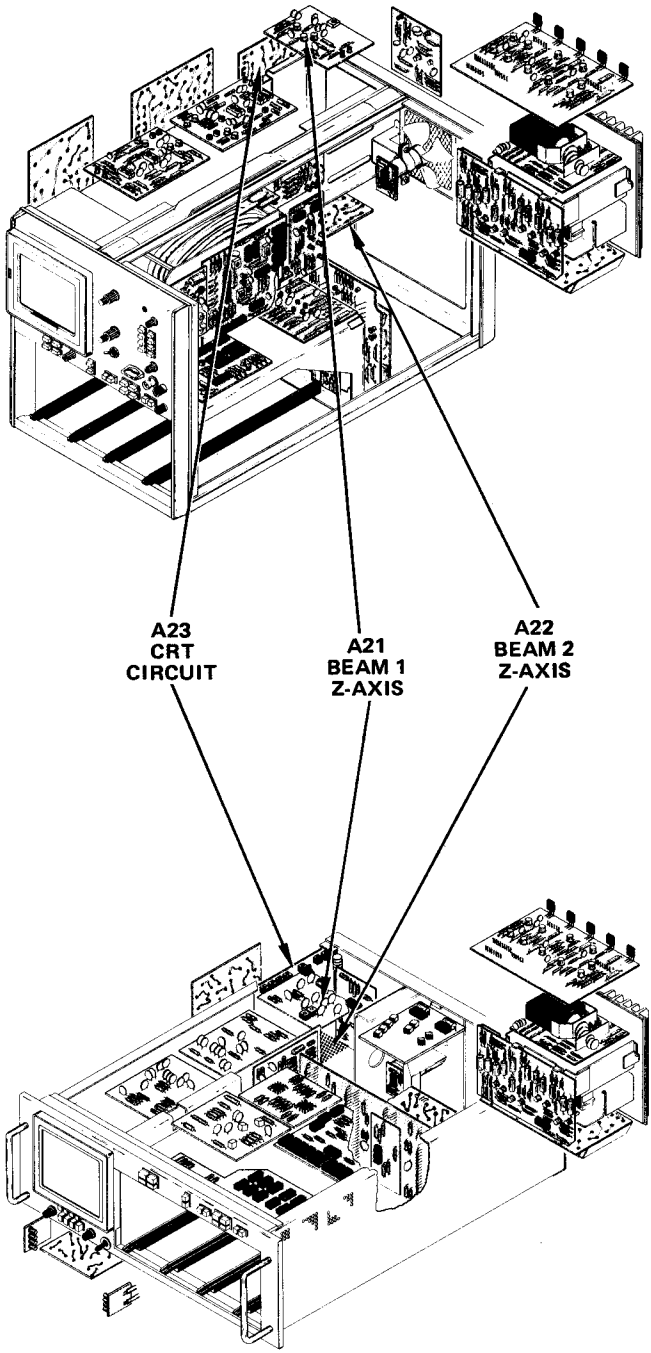


Fig. 9-29. A28—Location of Inverter Control test points and adjustments.

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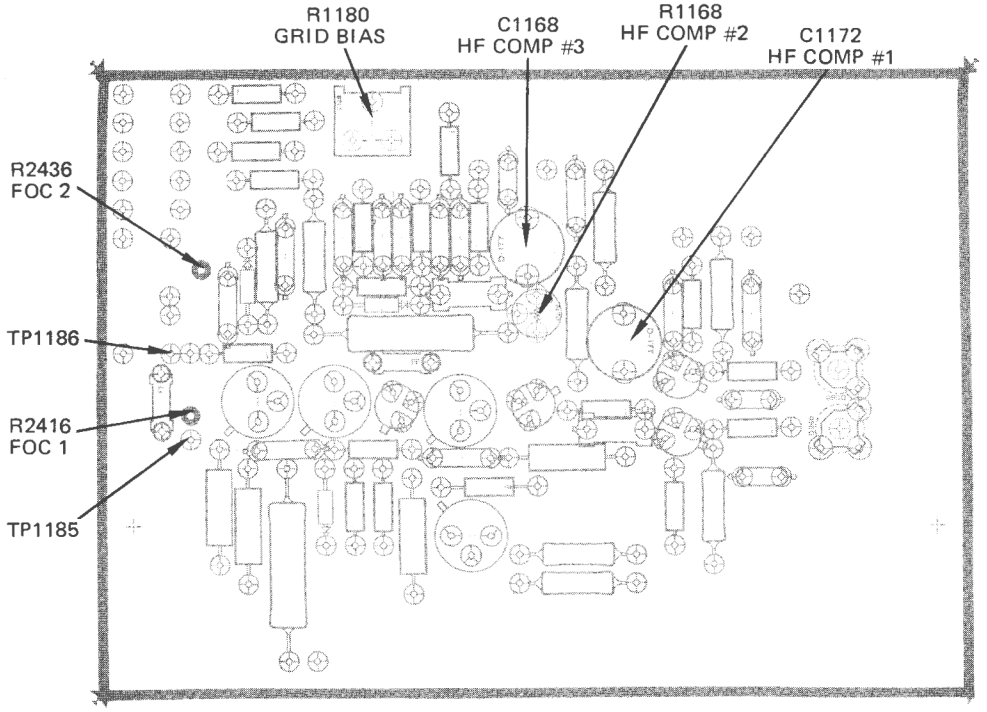


Fig. 9-30. A21—Location of Beam 1 Z-Axis test points and adjustments.

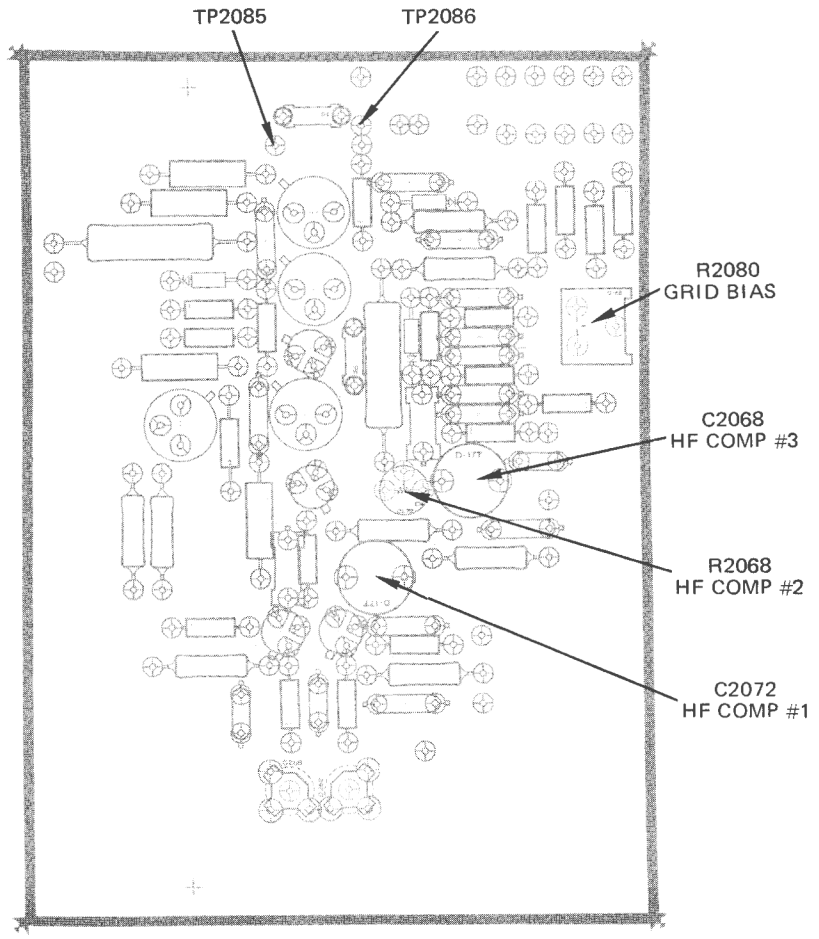


Fig. 9-31. A22—Location of Beam 2 Z-Axis test points and adjustments.

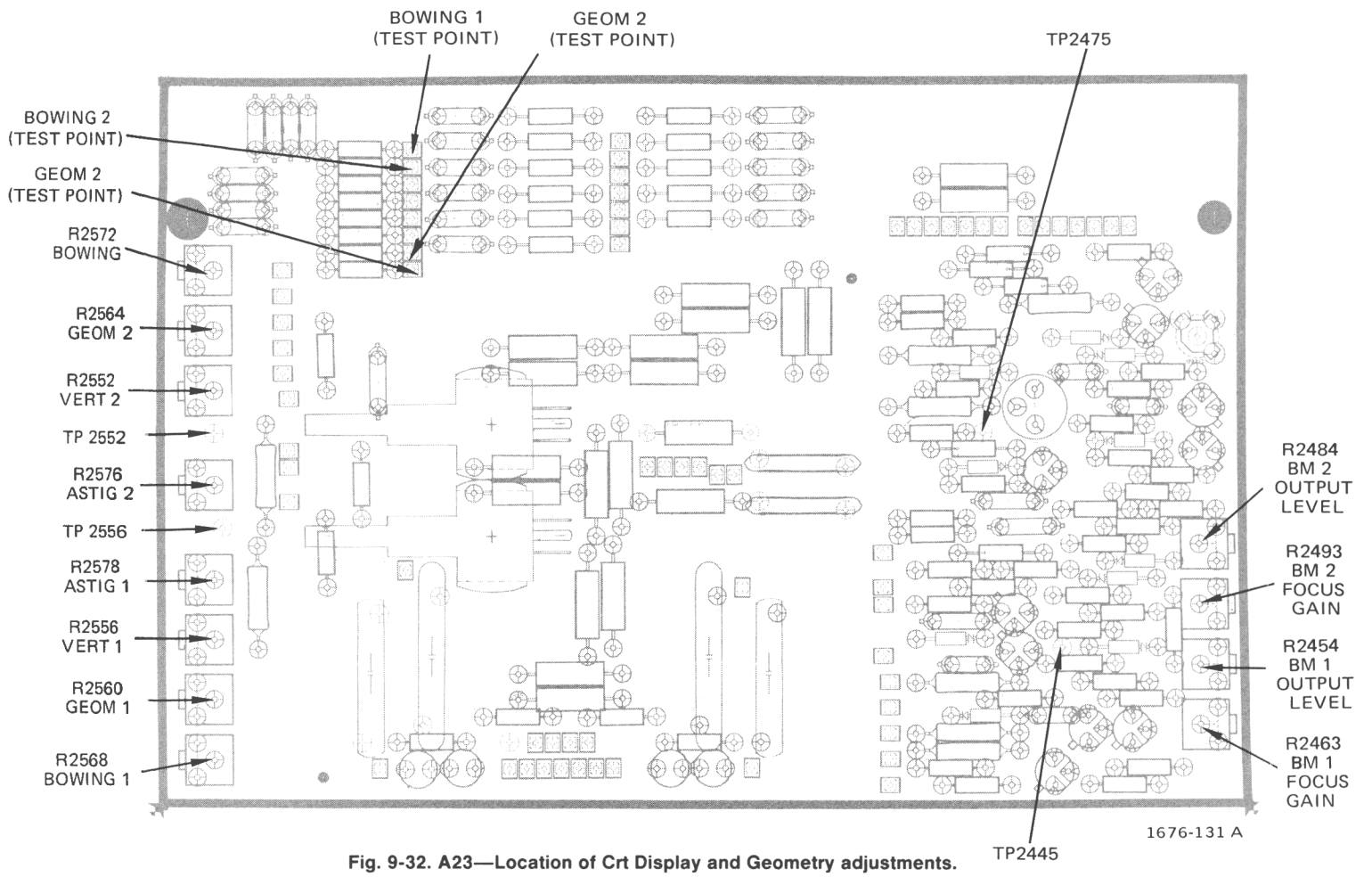


Fig. 9-32. A23—Location of Crt Display and Geometry adjustments.

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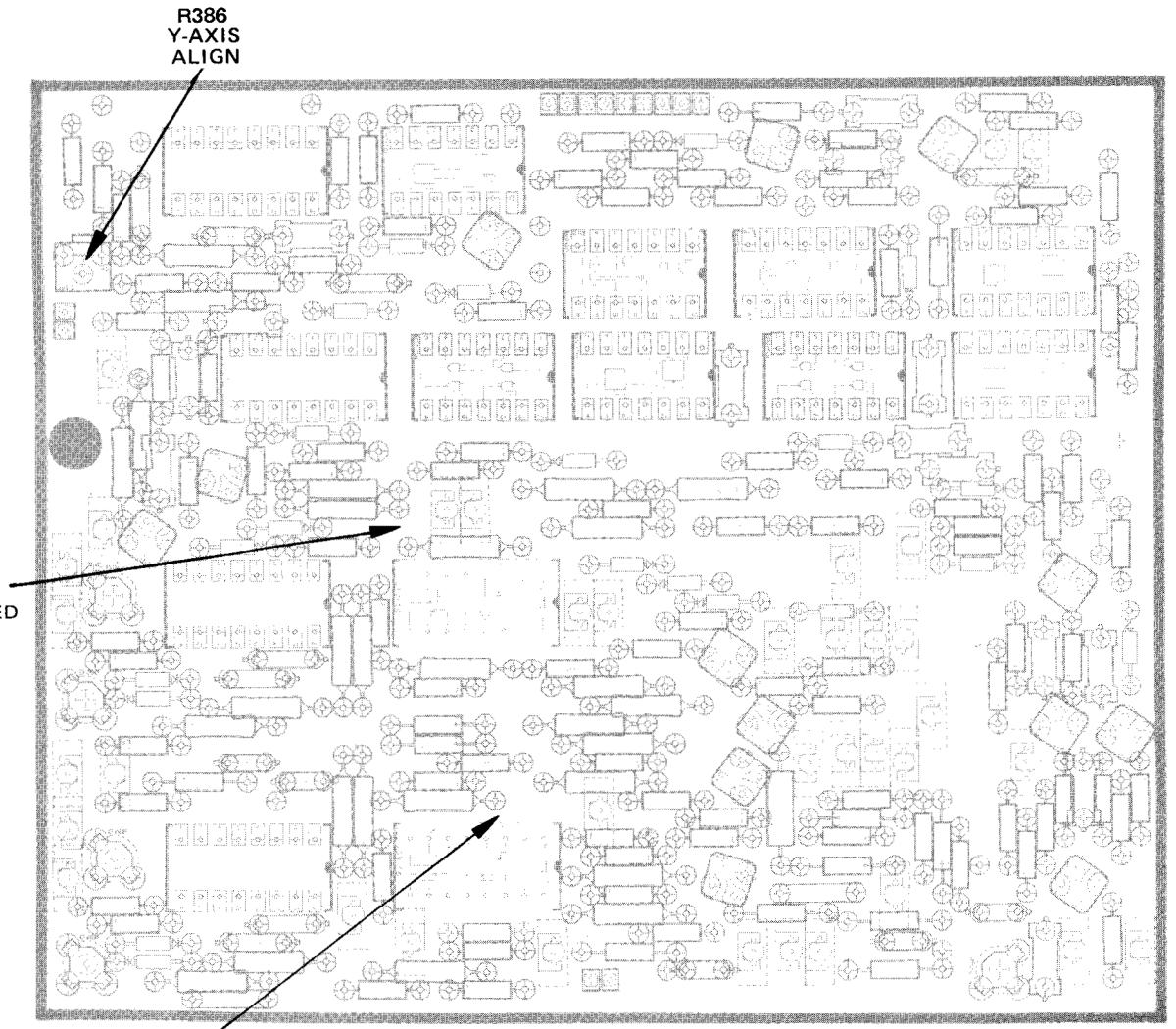
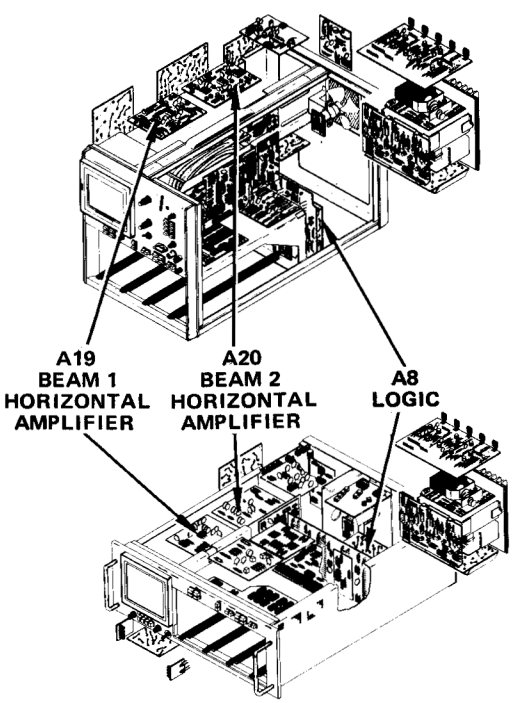


Fig. 9-33. A8—Location of Y-Axis Alignment adjustment.

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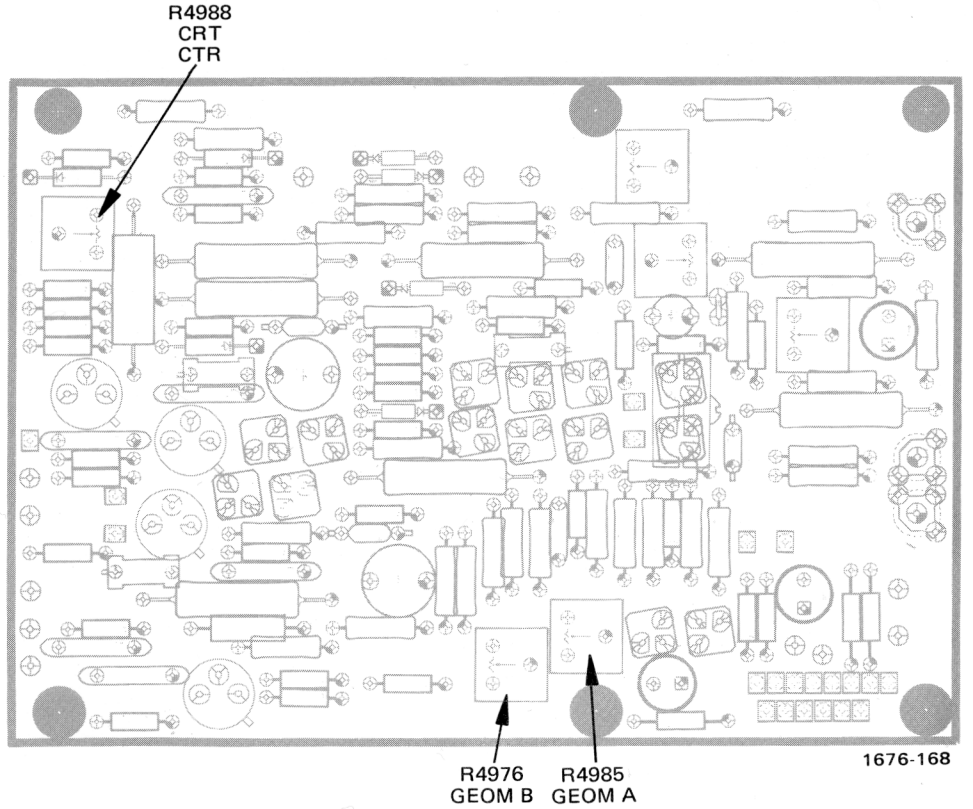


Fig. 9-34. A19—Location of Beam 1 Geometry adjustments.
(7844 SN B110000 & up) (R7844 SN B100000 & up)

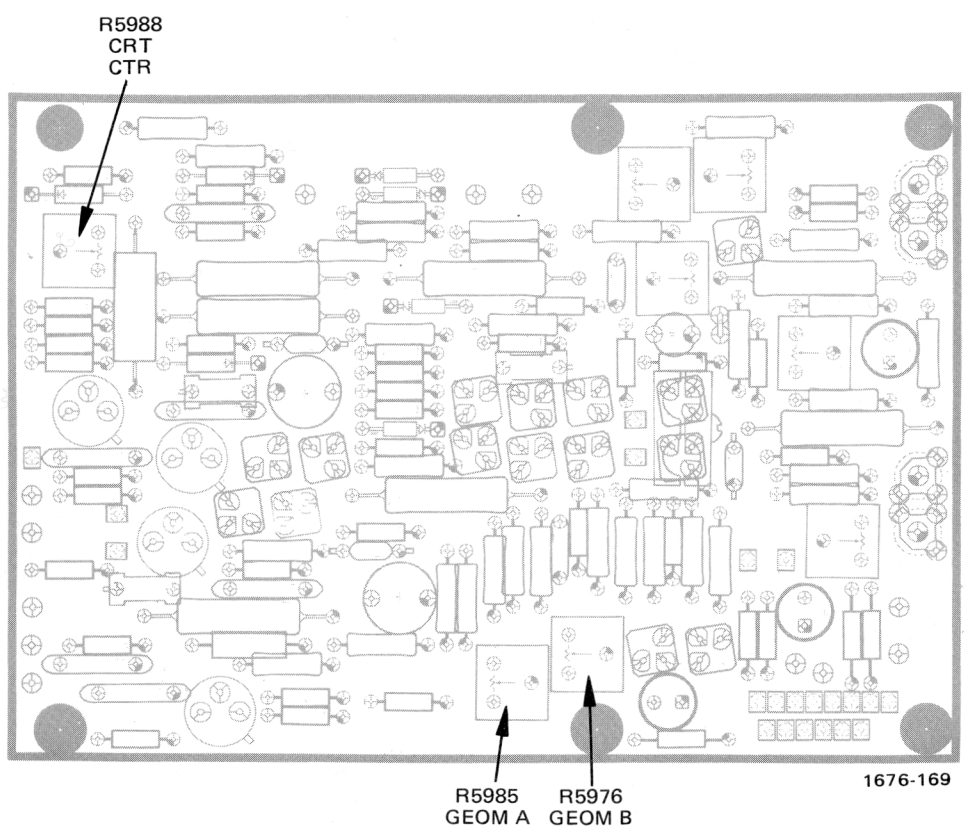


Fig. 9-35. A20—Location of Beam 2 Geometry adjustments.
(7844 SN B110000 & up) (R7844 SN B100000 & up)

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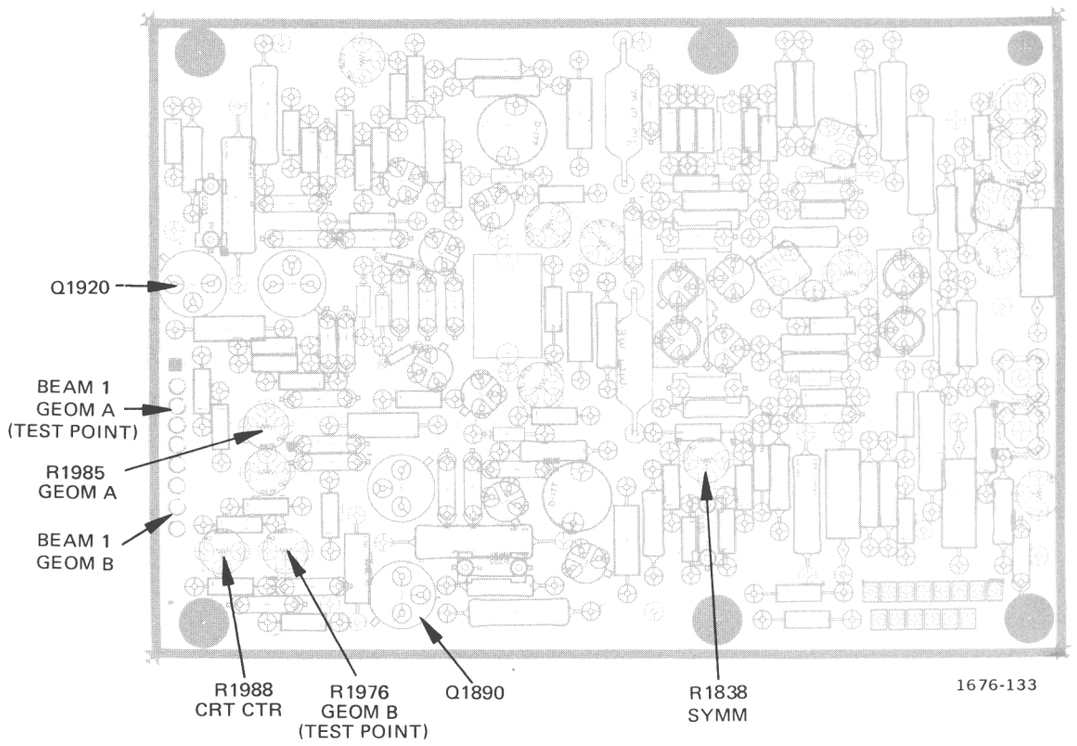


Fig. 9-36. A19—Location of Beam 1 Geometry adjustments.
(7844 SN B109999 & below) (R7844 SN B099999 & below)

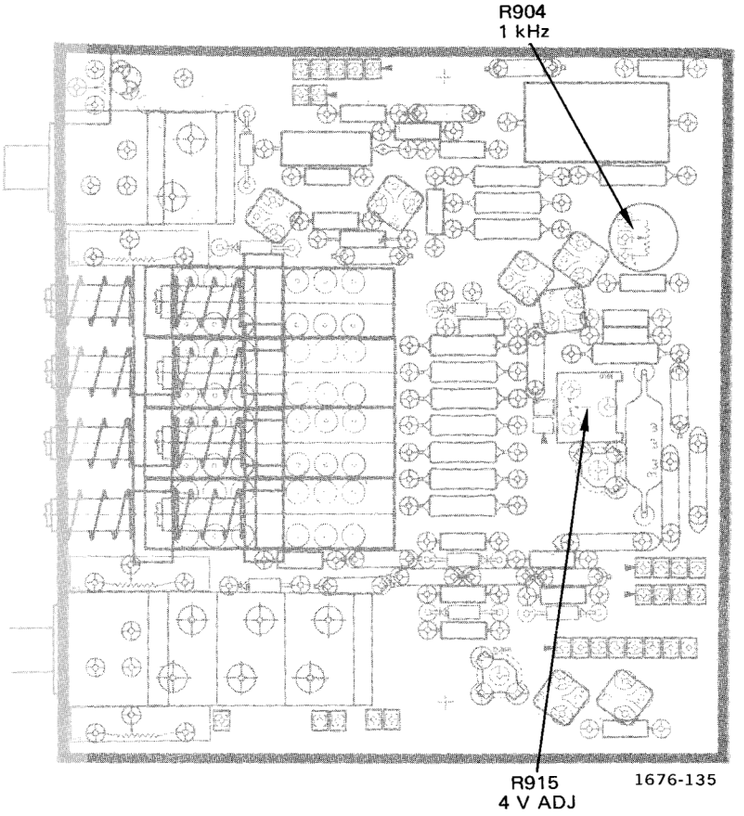


Fig. 9-38. A1—Location of Calibrator adjustments.

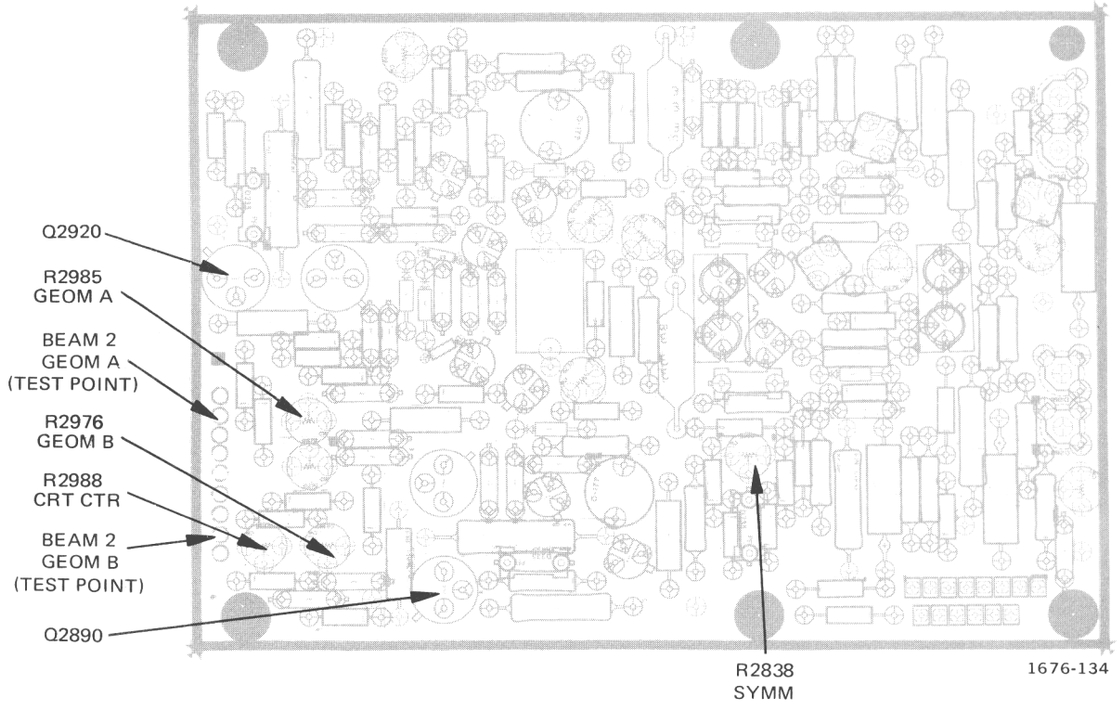
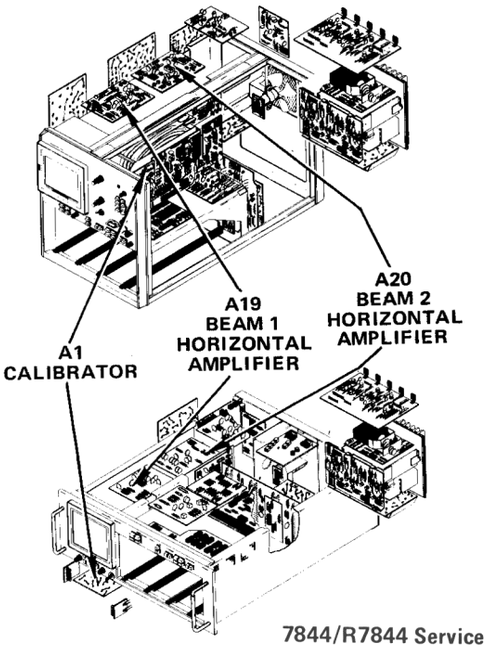


Fig. 9-37. A20—Location of Beam 2 Geometry adjustments.
(7844 SN B109999 & below) (R7844 SN B09999 & below)



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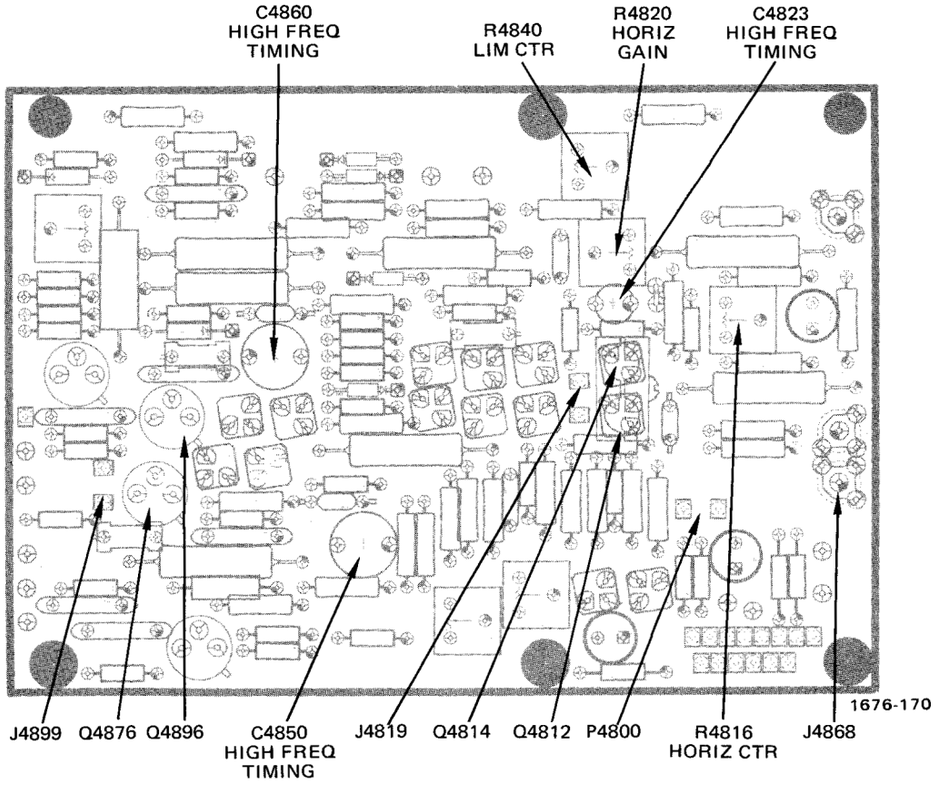


Fig. 9-39. A19—Location of Beam 1 horizontal adjustments.
(7844 SN B110000 & up) (R7844 SN B100000 & up)

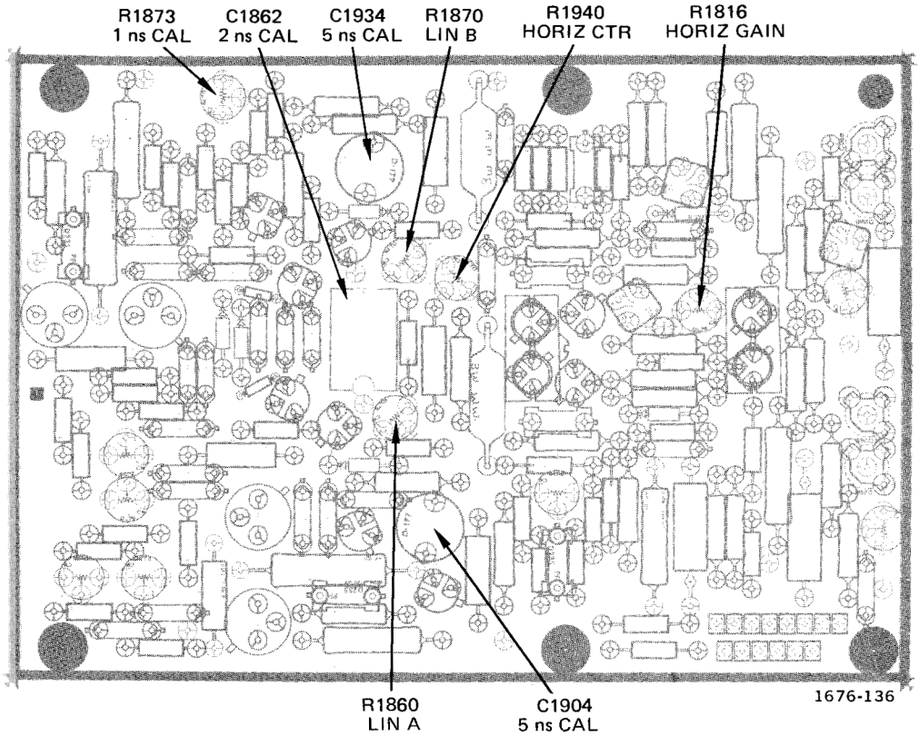


Fig. 9-41. A19—Location of Beam 1 horizontal adjustments.
(7844 SN B109999 & below) (R7844 SN B099999 & below)

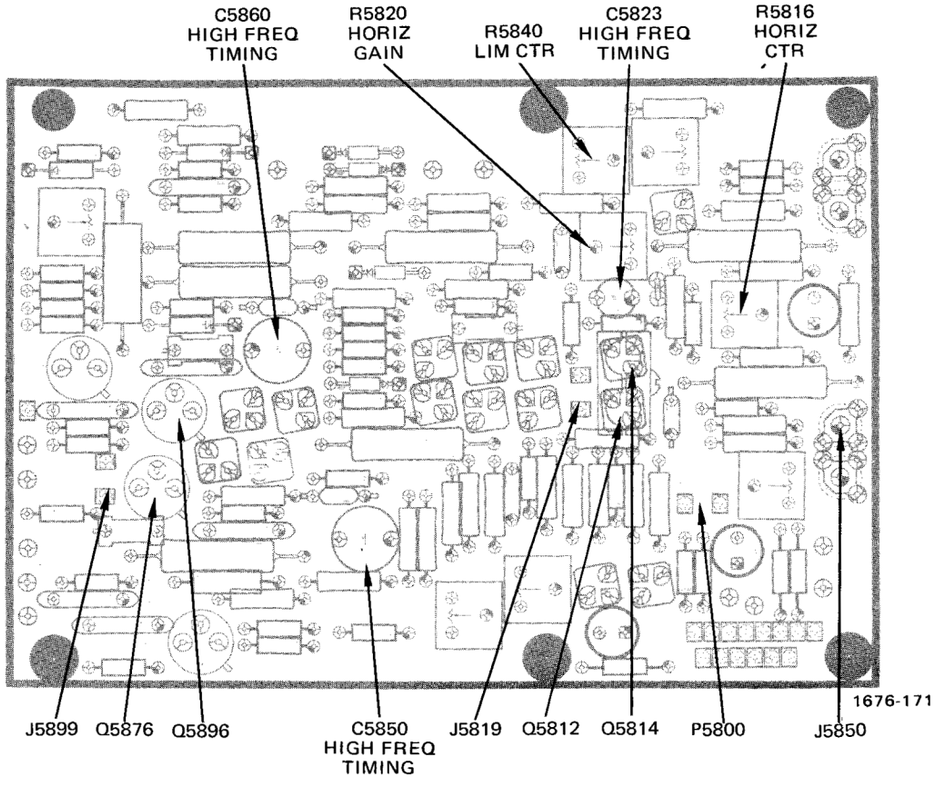


Fig. 9-40. A20—Location of Beam 2 horizontal adjustments.
(7844 SN B110000 & up) (R7844 SN B100000 & up)

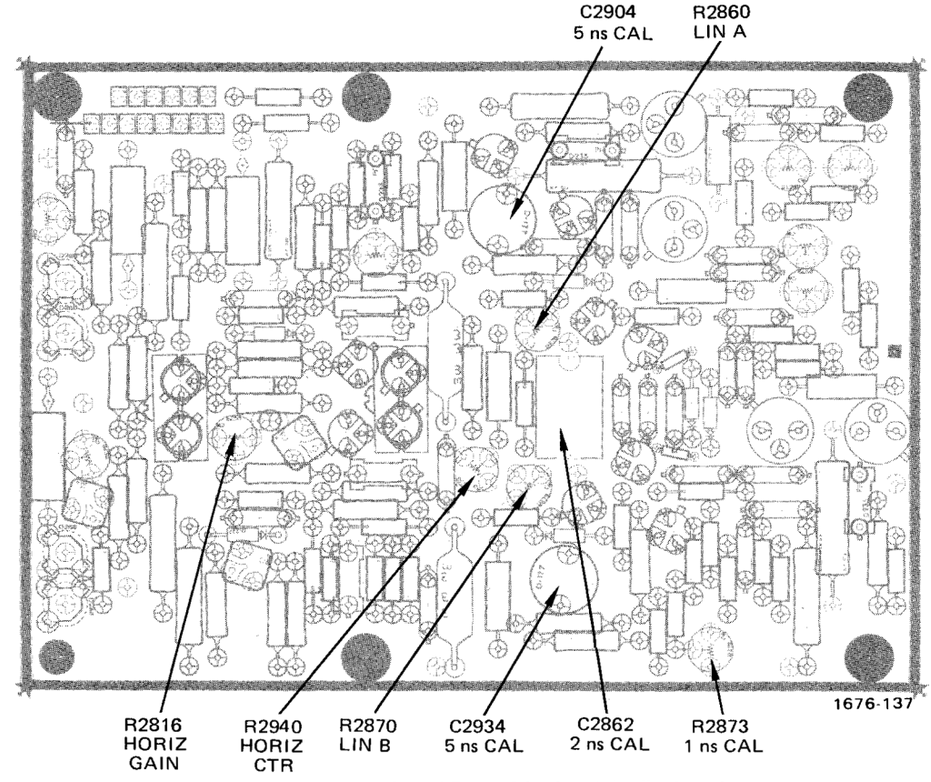


Fig. 9-42. A20—Location of Beam 2 horizontal adjustments.
(7844 SN B109999 & below) (R7844 SN B099999 & below)

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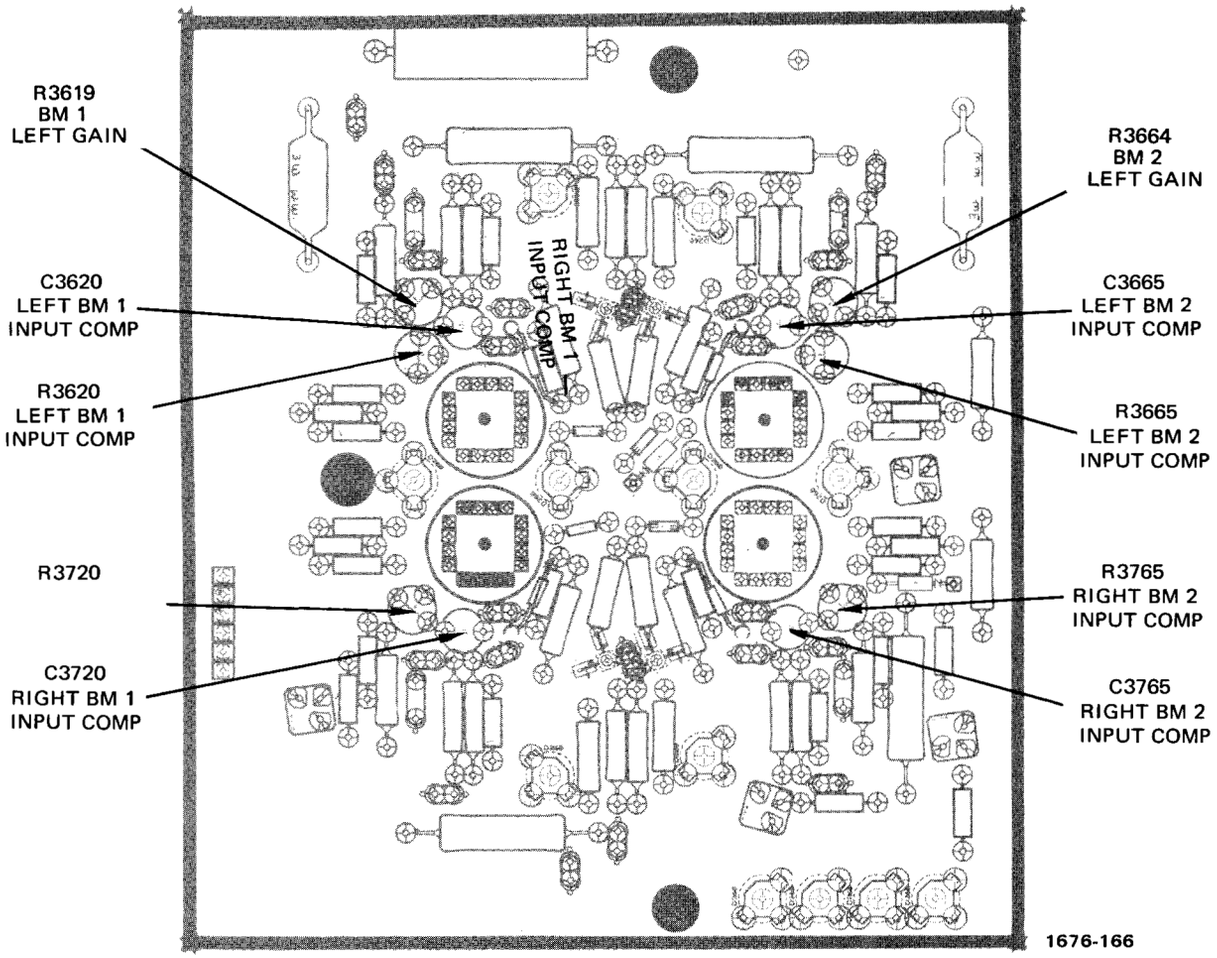
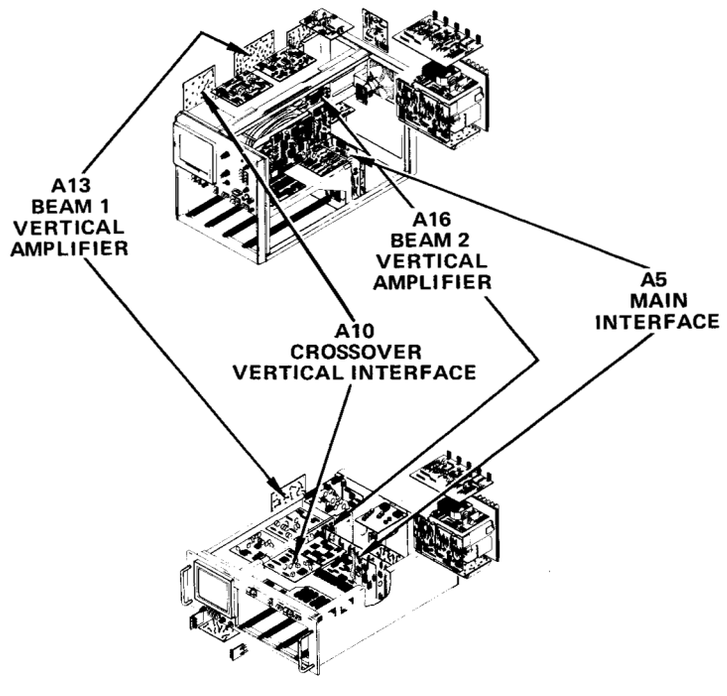


Fig. 9-43. A10—Location of Crossover Interface adjustments.
(7844 SN B050246 & up) (R7844 SN B040139 & up)



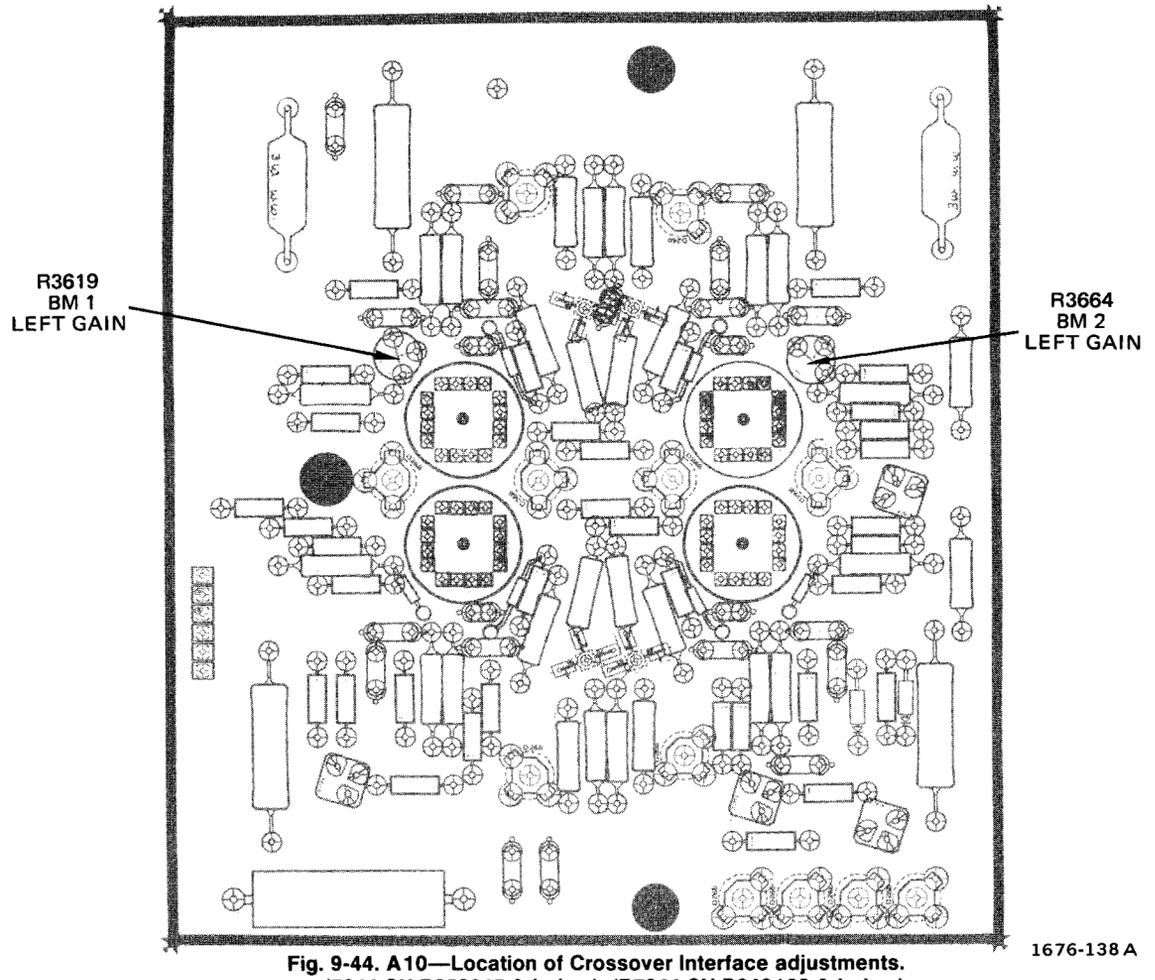


Fig. 9-44. A10—Location of Crossover Interface adjustments.
(7844 SN B050245 & below) (R7844 SN B040138 & below)

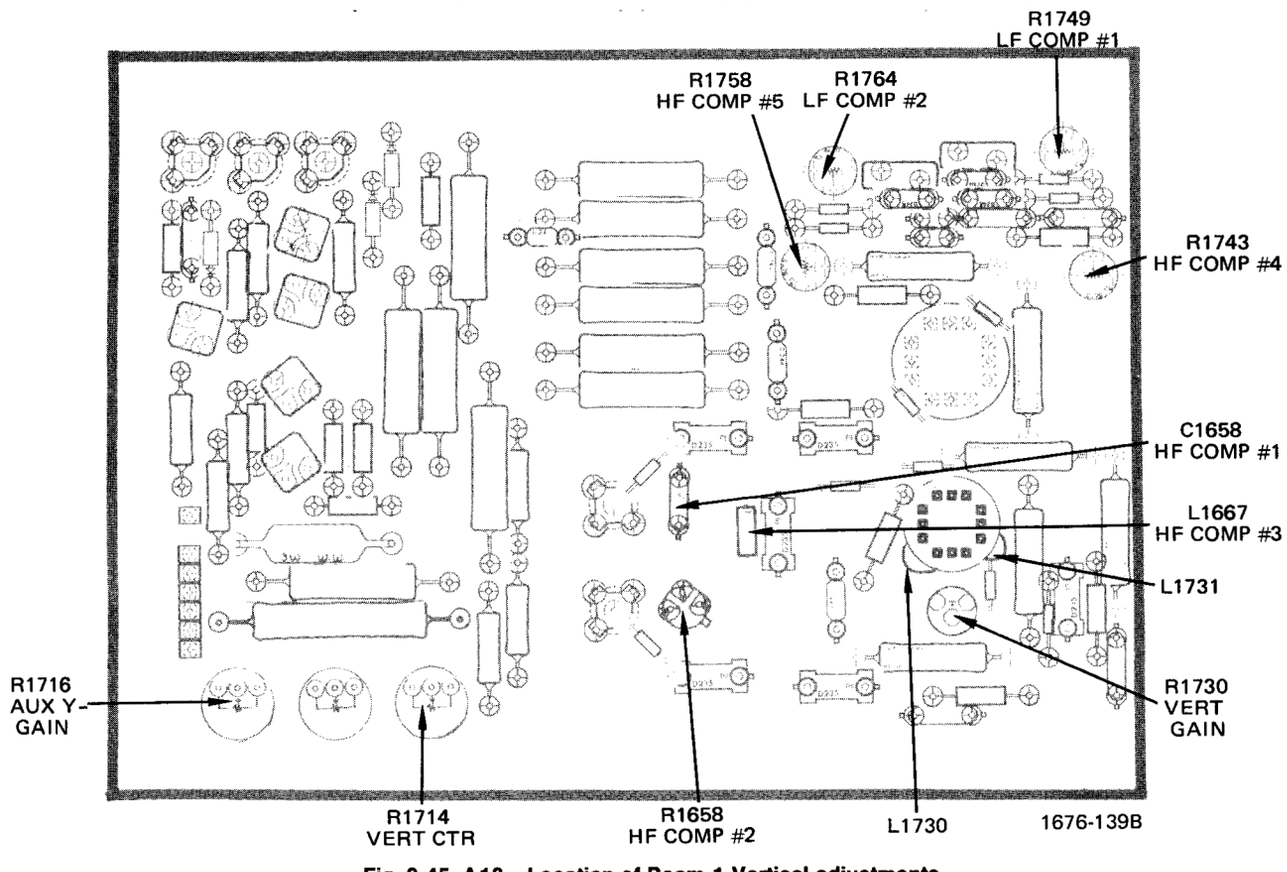


Fig. 9-45. A13—Location of Beam 1 Vertical adjustments.

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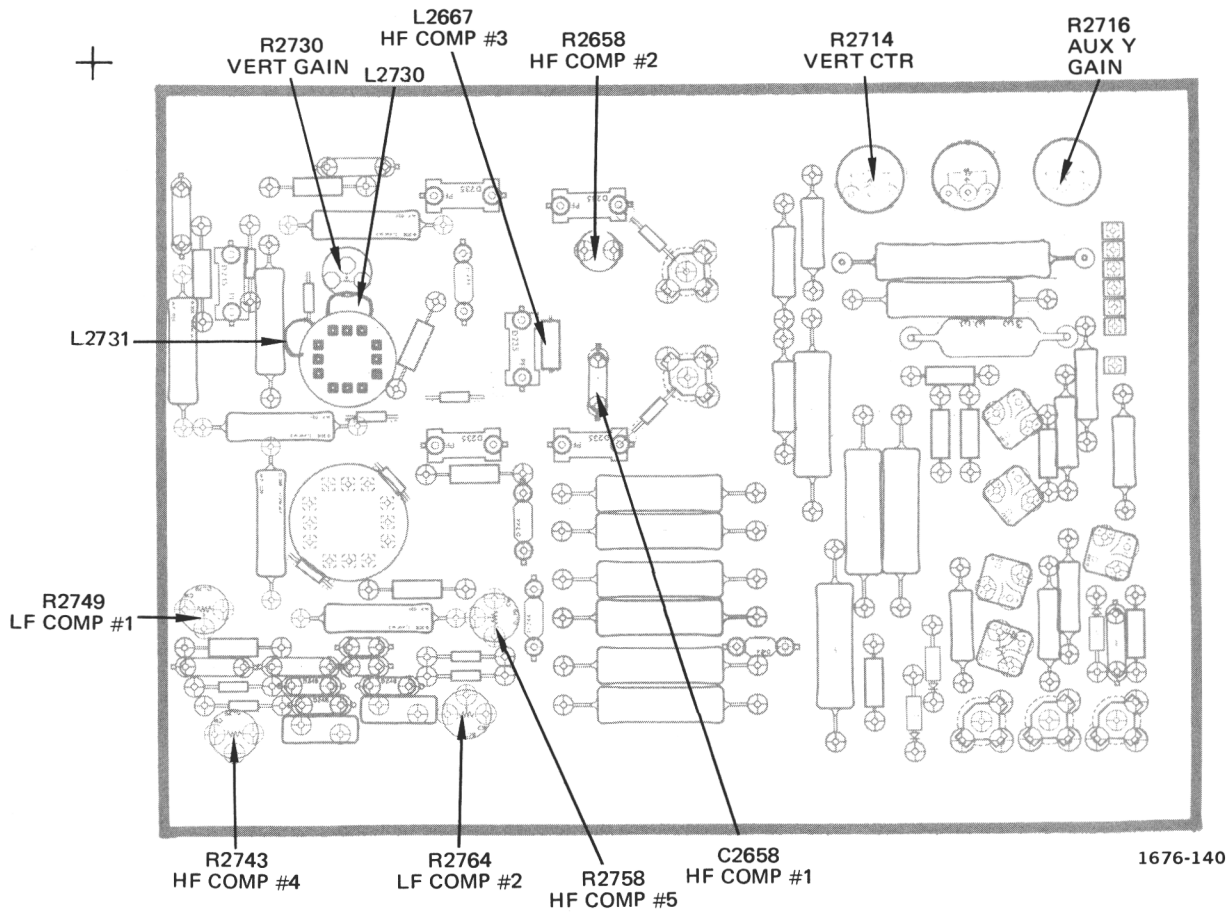


Fig. 9-46. A16—Location of Beam 2 Vertical adjustments.

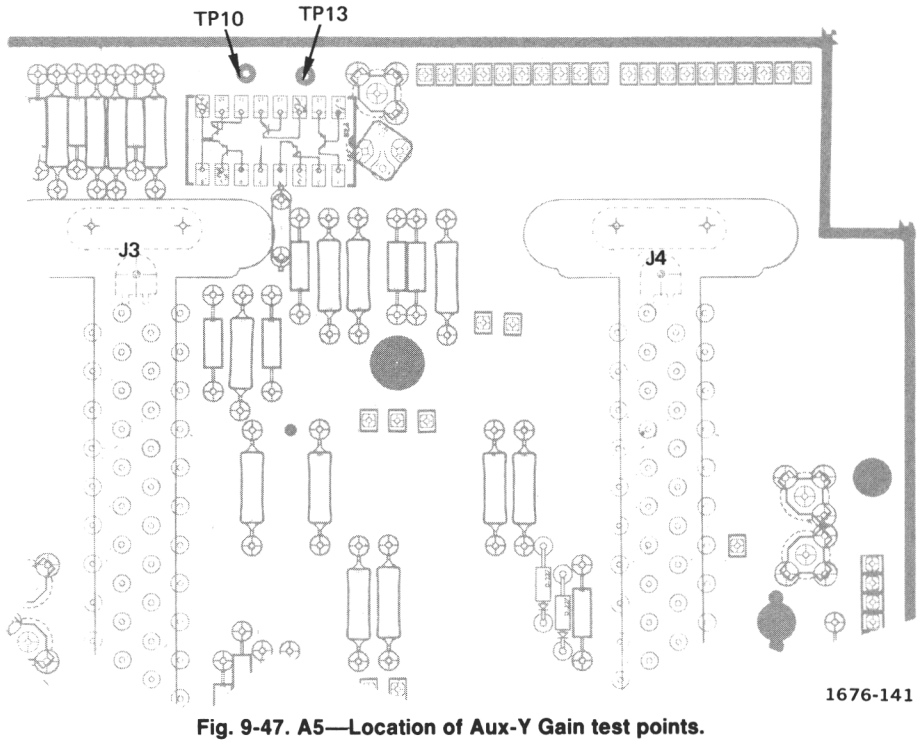


Fig. 9-47. A5—Location of Aux-Y Gain test points.

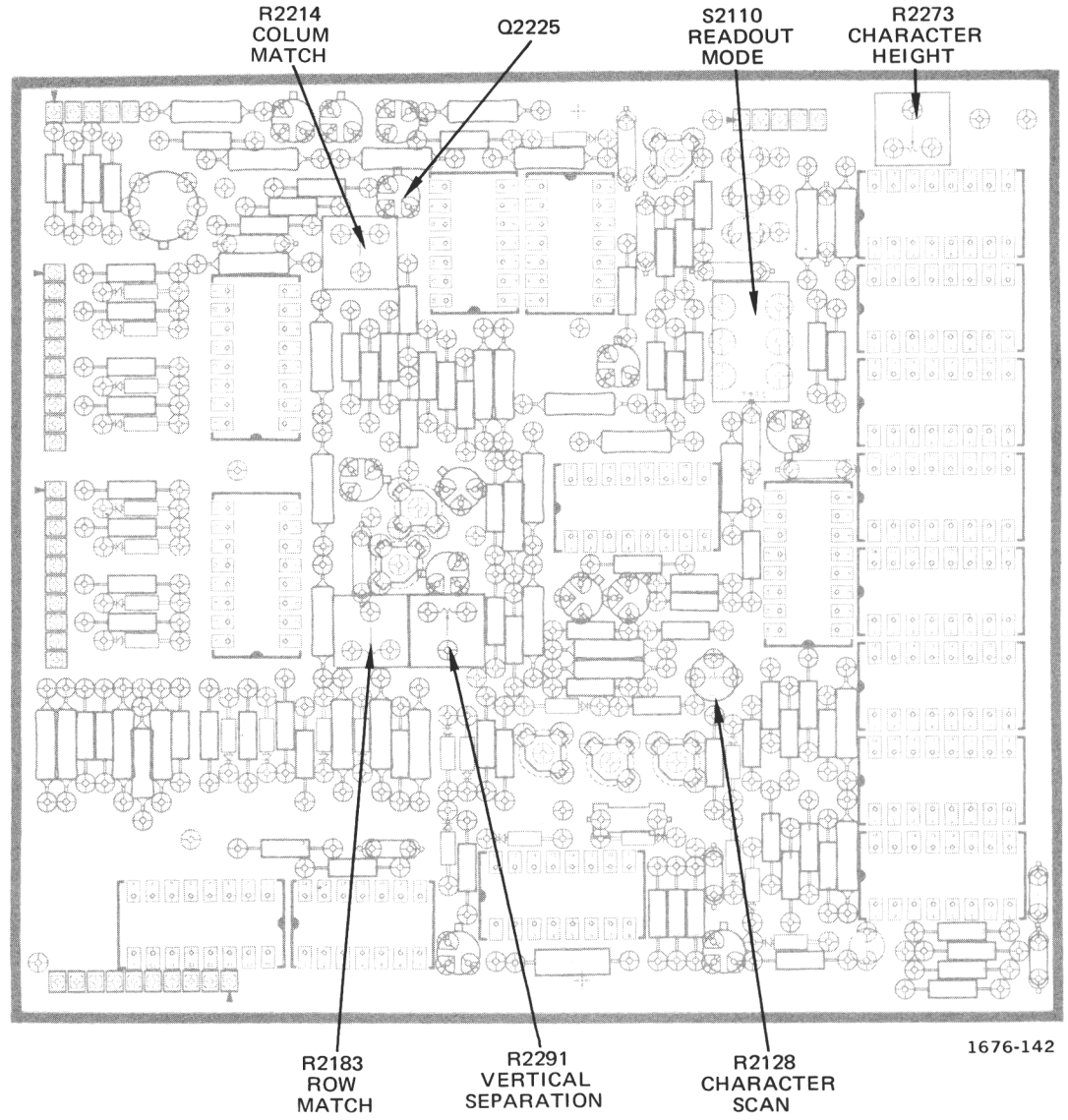
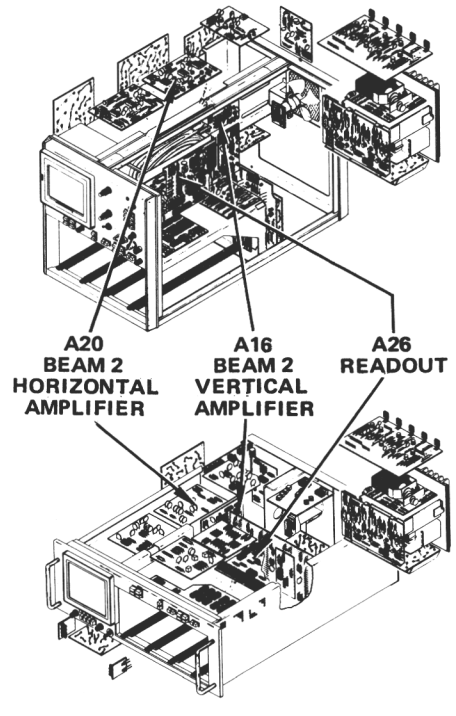


Fig. 9-48. A26—Location of Readout Mode Switch and adjustments.



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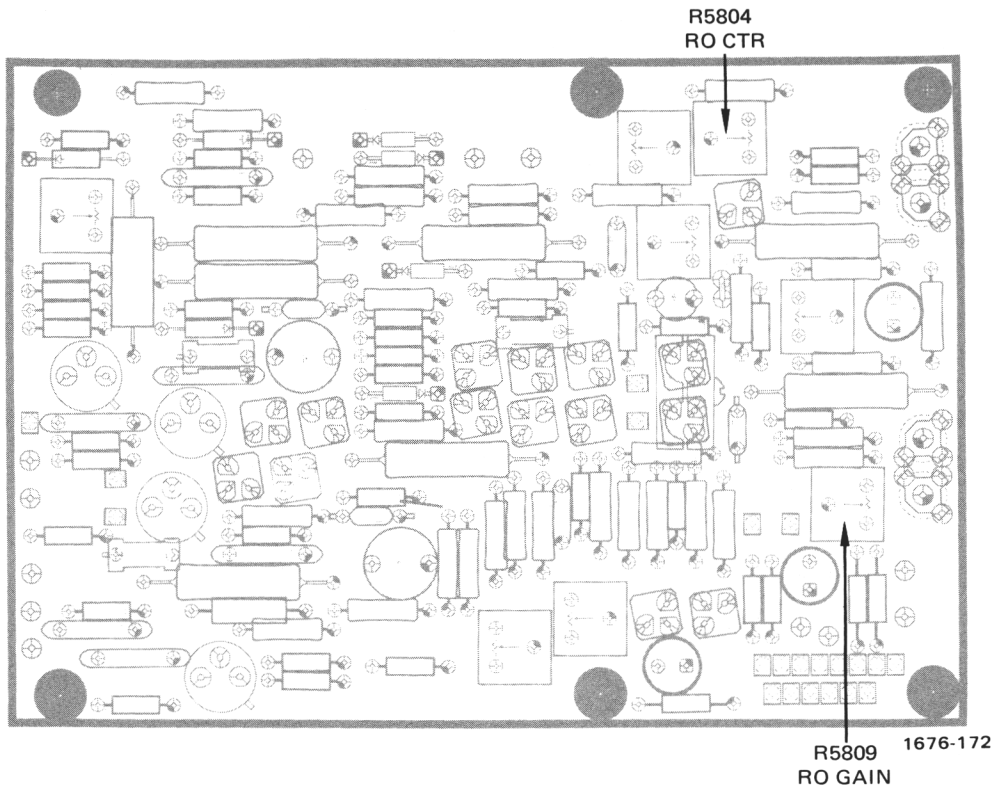


Fig. 9-49. A20—Location of Readout Horizontal Centering and Gain adjustments. (7844 SN B110000 & up) (R7844 SN B100000 & up)

Fig. 9-50. A16—Location of Readout Vertical Centering adjustments.

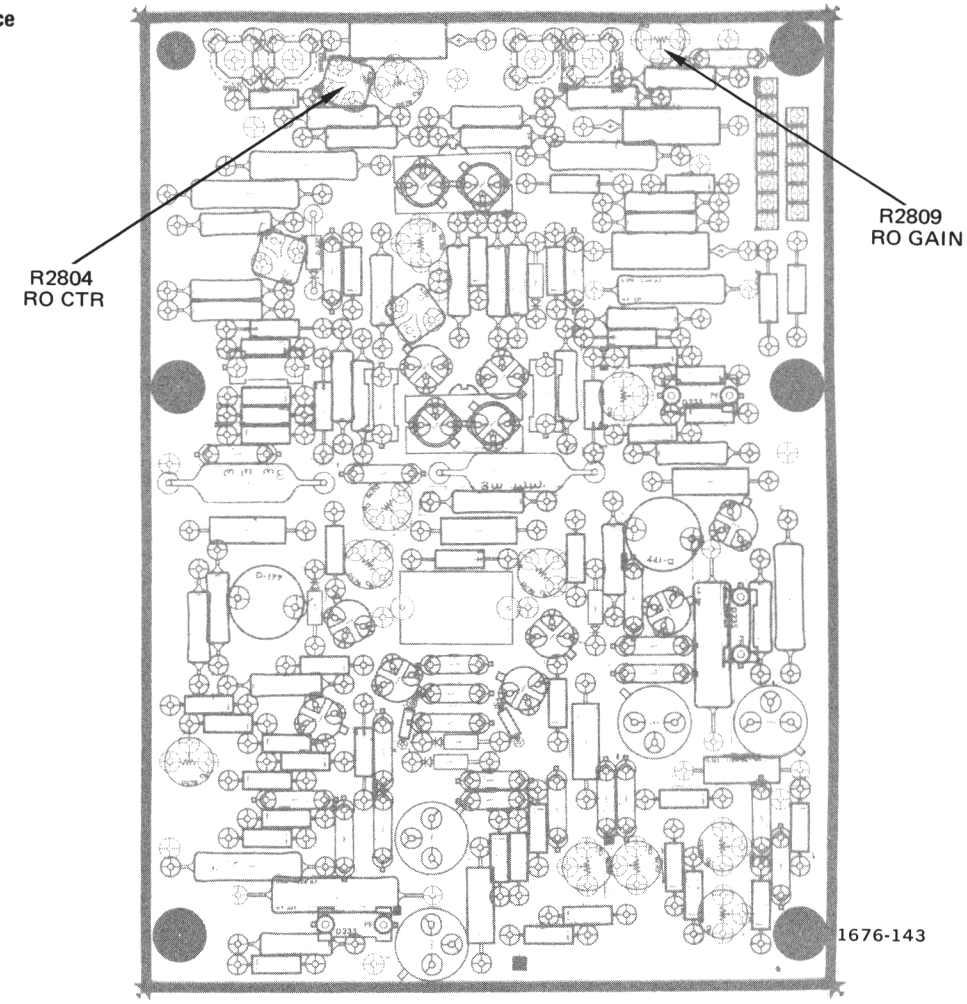


Fig. 9-51. A20—Location of Readout Horizontal Centering and Gain adjustments. (7844 SN B109999 & below) (R7844 SN B099999 & below)

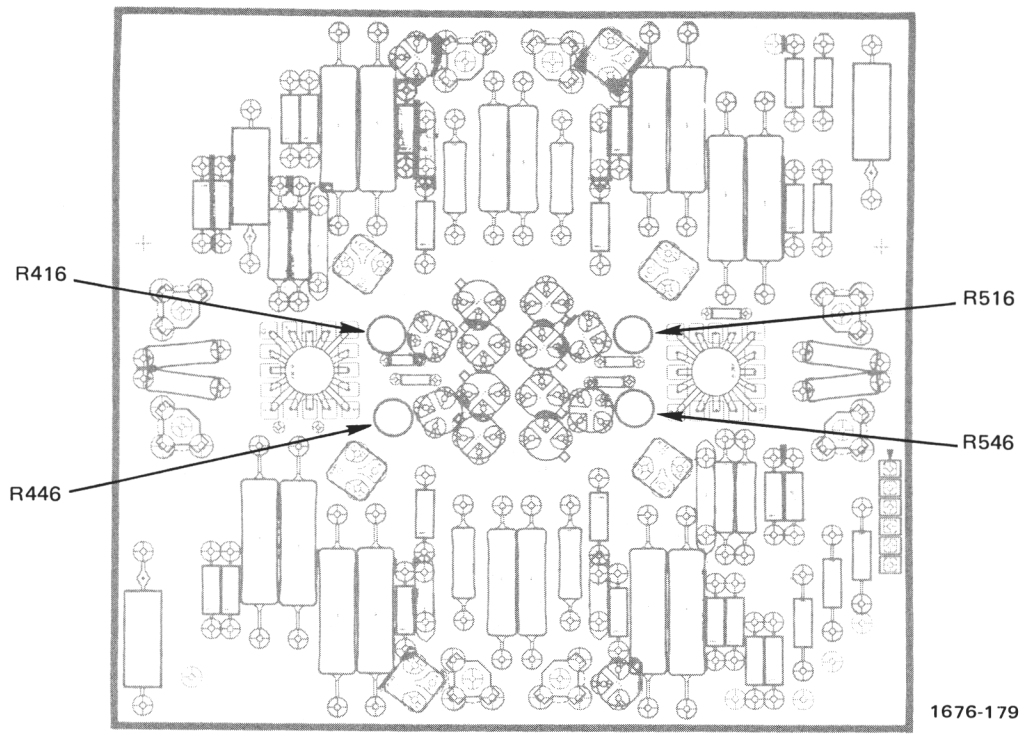


Fig. 9-52. A9—Location of Trigger Seletor abberations/risetime adjustments.

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REPLACEABLE MECHANICAL PARTS

PARTS ORDERING INFORMATION

Replacement parts are available from or through your local Tektronix, Inc. Field Office 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 developed in our engineering department. It is therefore important, when ordering parts, to 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.

SPECIAL NOTES AND SYMBOLS

X000	Part first added at this serial number
00X	Part removed after this serial number

FIGURE AND INDEX NUMBERS

Items in this section are referenced by figure and index numbers to the illustrations.

INDENTATION SYSTEM

This mechanical parts list is indented to indicate item relationships. Following is an example of the indentation system used in the description column.

1 2 3 4 5 *Name & Description*

Assembly and/or Component
Attaching parts for Assembly and/or Component
- - - * - - -
Detail Part of Assembly and/or Component
Attaching parts for Detail Part
- - - * - - -
Parts of Detail Part
Attaching parts for Parts of Detail Part
- - - * - - -

Attaching Parts always appear in 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. The separation symbol - - - * - - - indicates the end of attaching parts.

Attaching parts must be purchased separately, unless otherwise specified.

ITEM NAME

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, the U.S. Federal Cataloging Handbook H6-1 can be utilized where possible.

ABBREVIATIONS

"	INCH
#	NUMBER SIZE
ACTR	ACTUATOR
ADPTR	ADAPTER
ALIGN	ALIGNMENT
AL	ALUMINUM
ASSEM	ASSEMBLED
ASSY	ASSEMBLY
ATTEN	ATTENUATOR
AWG	AMERICAN WIRE GAGE
BD	BOARD
BRKT	BRACKET
BRS	BRASS
BRZ	BRONZE
BSHG	BUSHING
CAB	CABINET
CAP	CAPACITOR
CER	CERAMIC
CHAS	CHASSIS
CKT	CIRCUIT
COMP	COMPOSITION
CONN	CONNECTOR
COV	COVER
CPLG	COUPLING
CRT	CATHODE RAY TUBE
DEG	DEGREE
DWR	DRAWER
ELCTRN	ELECTRON
ELEC	ELECTRICAL
ELCTLT	ELECTROLYTIC
ELEM	ELEMENT
EPL	ELECTRICAL PARTS LIST
EQPT	EQUIPMENT
EXT	EXTERNAL
FIL	FILLISTER HEAD
FLEX	FLEXIBLE
FLH	FLAT HEAD
FLTR	FILTER
FR	FRAME or FRONT
FSTNR	FASTENER
FT	FOOT
FXD	FIXED
GSKT	GASKET
HDL	HANDLE
HEX	HEXAGON
HEX HD	HEXAGONAL HEAD
HEX SOC	HEXAGONAL SOCKET
HLCPS	HELICAL COMPRESSION
HLEXT	HELICAL EXTENSION
HV	HIGH VOLTAGE
IC	INTEGRATED CIRCUIT
ID	INSIDE DIAMETER
IDENT	IDENTIFICATION
IMPLR	IMPELLER
IN	INCH
INCAND	INCANDESCENT
INSUL	INSULATOR
INTL	INTERNAL
LPHLDR	LAMPHOLDER
MACH	MACHINE
MECH	MECHANICAL
MTG	MOUNTING
NIP	NIPPLE
NON WIRE	NOT WIRE WOUND
OBD	ORDER BY DESCRIPTION
OD	OUTSIDE DIAMETER
OVH	OVAL HEAD
PH BRZ	PHOSPHOR BRONZE
PL	PLAIN or PLATE
PLSTC	PLASTIC
PN	PART NUMBER
PNH	PAN HEAD
PWR	POWER
RCPT	RECEPTACLE
RES	RESISTOR
RGD	RIGID
RLF	RELIEF
RTNR	RETAINER
SCH	SOCKET HEAD
SCOPE	OSCILLOSCOPE
SCR	SCREW
SE	SINGLE END
SECT	SECTION
SEMICOND	SEMICONDUCTOR
SHLD	SHIELD
SHLDR	SHOULDERED
SKT	SOCKET
SL	SLIDE
SLFLKG	SELF-LOCKING
SLVG	SLEEVING
SPR	SPRING
SQ	SQUARE
SST	STAINLESS STEEL
STL	STEEL
SW	SWITCH
T	TUBE
TERM	TERMINAL
THD	THREAD
THK	THICK
TNSN	TENSION
TPG	TAPPING
TRH	TRUSS HEAD
V	VOLTAGE
VAR	VARIABLE
W/	WITH
WSHR	WASHER
XFMR	TRANSFORMER
XSTR	TRANSISTOR

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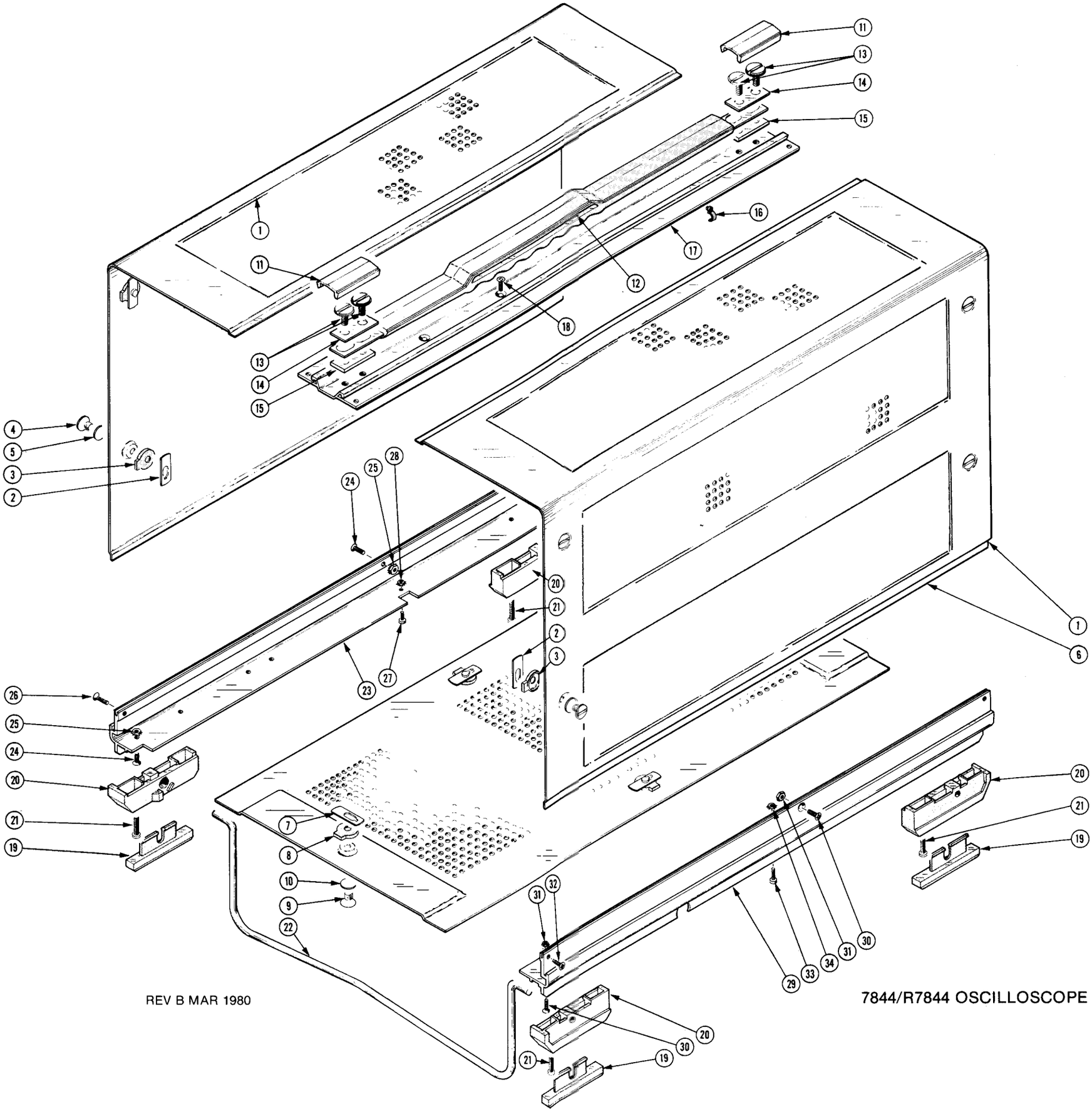
CROSS INDEX—MFR. CODE NUMBER TO MANUFACTURER

Mfr. Code	Manufacturer	Address	City, State, Zip
S3109	C/O PANEL COMPONENTS CORP.	P.O. BOX 6626	SANTA ROSA, CA 95406
000CY	NORTHWEST FASTENER SALES, INC.	7923 SW CIRRUS DRIVE	BEAVERTON, OR 97005
000FW	WESTERN SINTERING CO INC.	2620 STEVENS DRIVE	RICHLAND, WA 99352
0000A	LEMO USA	2015 SECOND ST.	BERKELEY, CA 94710
00779	AMP, INC.	P O BOX 3608	HARRISBURG, PA 17105
02768	ILLINOIS TOOL WORKS, INC., FASTEX DIV.	195 ALGONQUIN ROAD	DES PLAINES, IL 60016
02777	HOPKINS ENGINEERING COMPANY	12900 FOOTHILL BLVD.	SAN FERNANDO, CA 91342
04713	MOTOROLA, INC., SEMICONDUCTOR PROD. DIV.	5005 E MCDOWELL RD,PO BOX 20923	PHOENIX, AZ 85036
04963	MINNESOTA MINING AND MFG. CO., ADHESIVES COATINGS AND SEALERS DIVISION	3M CENTER	ST. PAUL, MN 55101
05820	WAKEFIELD ENGINEERING, INC.	AUDUBON ROAD	WAKEFIELD, MA 01880
06540	AMATOM ELECTRONIC HARDWARE, DIV. OF MITE CORP.	446 BLAKE ST.	NEW HAVEN, CT 06515
06812	TORIN CORP., WESTERN DIVISION	16300 ROSCOE BLVD.	VAN NUYS, CA 91409
07700	TECHNICAL WIRE AND PRODUCTS, INC.	129 DERMODY ST.	CRANFORD, NJ 07016
07707	USM CORP., USM FASTENER DIV.	510 RIVER RD.	SHELTON, CT 06484
08261	SPECTRA-STRIP CORP.	7100 LAMPSON AVE.	GARDEN GROVE, CA 92642
08806	GENERAL ELECTRIC CO., MINIATURE LAMP PRODUCTS DEPARTMENT	NELA PARK	CLEVELAND, OH 44112
09422	PLASTIC STAMPING CORPORATION	2216 W. ARMITAGE AVE.	CHICAGO, IL 60647
11897	PLASTIGLIDE MFG. CORPORATION	P O BOX 867, 1757 STANFORD ST.	SANTA MONICA, CA 90406
12014	CHICAGO RIVET AND MACHINE CO.	950 S. 25TH AVENUE	BELLWOOD, IL 60104
12327	FREEWAY CORPORATION	9301 ALLEN DRIVE	CLEVELAND, OH 44125
12360	ALBANY PRODUCTS CO., DIV. OF PNEUMO DYNAMICS CORPORATION	145 WOODWARD AVENUE	SOUTH NORWALK, CT 06586
12697	CLAROSTAT MFG. CO., INC.	LOWER WASHINGTON STREET	DOVER, NH 03820
13511	AMPHENOL CARDRE DIV., BUNKER RAMO CORP.		LOS GATOS, CA 95030
16428	BELDEN CORP.	P. O. BOX 1331	RICHMOND, IN 47374
18121	WILSHIRE FOAM PRODUCTS, INC.	2665 COLUMBIA ST.	TORRANCE, CA 90503
22526	BERG ELECTRONICS, INC.	YOUK EXPRESSWAY	NEW CUMBERLAND, PA 17070
24931	SPECIALITY CONNECTOR CO., INC.	2620 ENDRESS PLACE	GREENWOOD, IN 46142
25088	SIEMENS CORP.	186 WOOD AVE. S	ISELIN, NJ 08830
26365	GRIES REPRODUCER CO., DIV. OF COATS AND CLARK, INC.	125 BEECHWOOD AVE.	NEW ROCHELLE, NY 10802
27193	CUTLER-HAMMER, INC. SPECIALTY PRODUCTS DIVISION	4201 N. 27TH ST.	MILWAUKEE, WI 53216
27264	MOLEX PRODUCTS CO.	5224 KATRINE AVE.	DOWNERS GROVE, IL 60515
30817	INSTRUMENT SPECIALTIES COMPANY, INC.		LITTLE FALLS, NJ 07424
52792	THORGREN TOOL AND MOLDING CO., INC.	1100 EVANS AVENUE	VALPARAISO, IN 46383
59730	THOMAS AND BETTS COMPANY	36 BUTLER ST.	ELIZABETH, NJ 07207
70485	ATLANTIC INDIA RUBBER WORKS, INC.	571 W. POLK ST.	CHICAGO, IL 60607
71279	CAMBRIDGE THERMIONIC CORP.	445 CONCORD AVE.	CAMBRIDGE, MA 02138
71590	CENTRALAB ELECTRONICS, DIV. OF GLOBE-UNION, INC.	P O BOX 858	FORT DODGE, IA 50501
71785	TRW, CINCH CONNECTORS	1501 MORSE AVENUE	ELK GROVE VILLAGE, IL 60007
73743	FISCHER SPECIAL MFG. CO.	446 MORGAN ST.	CINCINNATI, OH 45206
73803	TEXAS INSTRUMENTS, INC., METALLURGICAL MATERIALS DIV.	34 FOREST STREET	ATTLEBORO, MA 02703
74445	HOLO-KROME CO.	31 BROOK ST. WEST	HARTFORD, CT 06110
75915	LITTELFUSE, INC.	800 E. NORTHWEST HWY	DES PLAINES, IL 60016
77250	PHEOLL MANUFACTURING CO., DIVISION OF ALLIED PRODUCTS CORP.	5700 W. ROOSEVELT RD.	CHICAGO, IL 60650
78189	ILLINOIS TOOL WORKS, INC. SHAKEPROOF DIVISION	ST. CHARLES ROAD	ELGIN, IL 60120
79727	C-W INDUSTRIES	550 DAVISVILLE RD.,P O BOX 96	WARMINISTER, PA 18974
79807	WROUGHT WASHER MFG. CO.	2100 S. O BAY ST.	MILWAUKEE, WI 53207
80009	TEKTRONIX, INC.	P O BOX 500	BEAVERTON, OR 97077
80033	PRESTOLE EVERLOCK, INC.	P. O. BOX 278,1345 MIAMI ST.	TOLEDO, OH 43605
80112	G. C. ELECTRONICS COMPANY, A DIVISION OF HYDROMETALS, INC.	3225 EXPOSITION PLACE	LOS ANGELES, CA 90018
80126	PACIFIC ELECTRICORD CO.	747 W. REDONDO BEACH,P O BOX 10	GARDENA, CA 90247
82389	SWITCHCRAFT, INC.	5555 N. ELSTON AVE.	CHICAGO, IL 60630
83385	CENTRAL SCREW CO.	2530 CRESCENT DR.	BROADVIEW, IL 60153
86445	PENN FIBRE AND SPECIALTY CO., INC.	2032 E. WESTMORELAND ST.	PHILADELPHIA, PA 19134
86928	SEASTROM MFG. COMPANY, INC.	701 SONORA AVENUE	GLENDALE, CA 91201
87308	N. L. INDUSTRIES, INC., SOUTHERN SCREW DIV.	P. O. BOX 1360	STATESVILLE, NC 28677
91836	KINGS ELECTRONICS CO., INC.	40 MARBLEDALE ROAD	TUCKAHOE, NY 10707
93907	TEXTRON INC. CAMCAR DIV	600 18TH AVE	ROCKFORD, IL 61101
95987	WECKESSER CO., INC.	4444 WEST IRVING PARK RD.	CHICAGO, IL 60641
98159	RUBBER TECK, INC.	19115 HAMILTON AVE., P O BOX 389	GARDENA, CA 90247

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Fig. & Index No.	Tektronix Part No.	Serial/Model No. Eff	Dscont	Qty	1 2 3 4 5	Name & Description	Mfr Code	Mfr Part Number
1-1	390-0086-00	B010100	B010135	2		CAB,SIDE,SCOPE:	80009	390-0086-00
	390-0463-00	B010136		2		CAB,SIDE,SCOPE:	80009	390-0463-00
-2	386-1151-00			4		. CLAMP,RIM CLENC:SPG STL CD PL	80009	386-1151-00
-3	386-0227-00			4		. STOP,CLP,RIM CL:ACETAL	80009	386-0227-00
-4	214-0603-01			4		. PIN,SECURING:0.27 INCH LONG	80009	214-0603-01
-5	214-0604-00			4		. WASH.,SPG TNSN:0.26 ID X 0.47 INCH OD	80009	214-0604-00
-6	390-0085-00	B010100	B010135	1		CAB,BOT,SCOPE:	80009	390-0085-00
	390-0462-00	B010136		1		CAB,BOT,SCOPE:	80009	390-0462-00
-7	386-1151-00			4		. CLAMP,RIM CLENC:SPG STL CD PL	80009	386-1151-00
-8	386-0227-00			4		. STOP,CLP,RIM CL:ACETAL	80009	386-0227-00
-9	214-0603-01			4		. PIN,SECURING:0.27 INCH LONG	80009	214-0603-01
-10	214-0604-00			4		. WASH.,SPG TNSN:0.26 ID X 0.47 INCH OD	80009	214-0604-00
-11	200-0973-00			2		COVER,HANDLE:1.738 X 0.888X 0.22,PLSTC	80009	200-0973-00
-12	367-0108-00			1		HANDLE,CARRYING:19.19 L,BLUE VINYL	80009	367-0108-00
						(ATTACHING PARTS)		
-13	212-0597-00			4		SCREW,MACHINE:10-32 X 0.50 INCH,STL	93907	OBD
-14	386-1624-00			2		PLATE,HDL RTNG:STAINLESS STEEL	80009	386-1624-00
-15	386-1623-00			2		SPACER,PLATE:0.062 X 1.4 X0.6,SST	80009	386-1623-00
						- - - * - - -		
-16	343-0088-00			2		CLAMP,LOOP:0.062 INCH DIA	80009	343-0088-00
-17	426-1109-00			1		FRAME,SECT:TOP,CENTER SUPPORT	80009	426-1109-00
						(ATTACHING PARTS)		
-18	211-0538-00			3		SCREW,MACHINE:6-32 X 0.312"100 DEG,FLH STL	83385	OBD
						- - - * - - -		
-19	348-0182-00			4		PAD,CAB.FOOT:BLACK POLYURETHANE	80009	348-0182-00
-20	348-0180-00			2		FOOT,CABINET:L FRONT,R REAR,BLK NYL	80009	348-0180-00
	348-0181-00			2		FOOT,CABINET:R FRONT,L REAR,BLK NYL	80009	348-0181-00
						(ATTACHING PARTS)		
-21	211-0513-00			4		SCREW,MACHINE:6-32 X 0.625 INCH,PNH STL	83385	OBD
						- - - * - - -		
-22	348-0193-00			1		FLIP-STAND,CAB.:	80009	348-0193-00
-23	426-0797-00			1		FRAME SECT.,CAB:LEFT	80009	426-0797-00
						(ATTACHING PARTS)		
-24	212-0040-00			3		SCREW,MACHINE:8-32 X 0.375 100 DEG,FLH STL	83385	OBD
-25	210-0458-00			3		NUT,PL,ASSEM WA:8-32 X 0.344 INCH,STL	83385	OBD
-26	212-0070-00			2		SCREW,MACHINE:8-32 X 0.312"100 DEG,FLH STL	83385	OBD
-27	211-0507-00			1		SCREW,MACHINE:6-32 X 0.312 INCH,PNH STL	83385	OBD
-28	210-0457-00			1		NUT,PL,ASSEM WA:6-32 X 0.312 INCH,STL	83385	OBD
						- - - * - - -		
-29	426-0810-00			1		FRAME SECT.,CAB:RIGHT	80009	426-0810-00
						(ATTACHING PARTS)		
-30	212-0040-00			2		SCREW,MACHINE:8-32 X 0.375 100 DEG,FLH STL	83385	OBD
-31	210-0458-00			3		NUT,PL,ASSEM WA:8-32 X 0.344 INCH,STL	83385	OBD
-32	212-0070-00			2		SCREW,MACHINE:8-32 X 0.312"100 DEG,FLH STL	83385	OBD
-33	211-0507-00			1		SCREW,MACHINE:6-32 X 0.312 INCH,PNH STL	83385	OBD
-34	210-0457-00			1		NUT,PL,ASSEM WA:6-32 X 0.312 INCH,STL	83385	OBD
						- - - * - - -		

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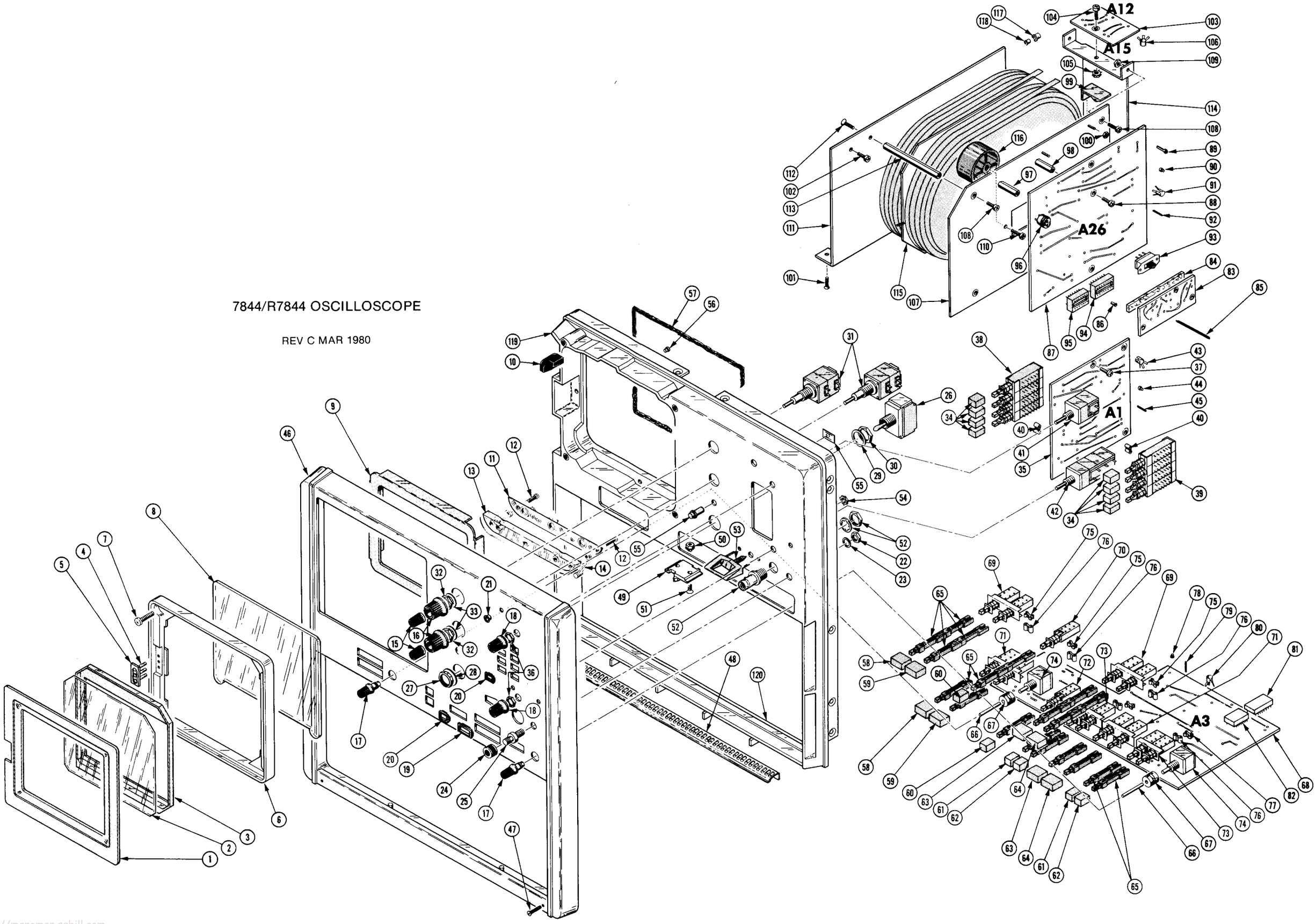
REV B MAR 1980

7844/R7844 OSCILLOSCOPE

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7844/R7844 OSCILLOSCOPE

REV C MAR 1980



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Fig. & Index No.	Tektronix Part No.	Serial/Model No. Eff	Dscont	Qty	1 2 3 4 5	Name & Description	Mfr Code	Mfr Part Number
2-1	426-0514-00			1		FRAME,MASK:PLASTIC	80009	426-0514-00
-2	378-0625-00			1		FILTER,LT,CRT:BLUE,5.15 X 4.4 X 0.03	80009	378-0625-00
-3	331-0258-03			1		MASK,CRT SCALE:	80009	331-0258-03
-4	131-0765-01			1		TERM,FEED THRU:0.584 L X 0.625 OD BRS GOLD	80009	131-0765-01
-5	204-0380-00			1		BODY,TERMINAL:	80009	204-0380-00
-6	200-0939-01			1		RTNR,CRT SCALE:5.55 X 5.068 X 0.475,AL	80009	200-0939-01
						(ATTACHING PARTS)		
-7	212-0023-00	B010100	B111045	4		SCREW,MACHINE:8-32 X 0.375 INCH,PNH STL	83385	OBD
	212-0008-00	B111046		4		SCREW,MACHINE:8-32 X 0.500 INCH,PNH STL	83385	OBD
						- - - * - - -		
-8	337-1159-00	B010100	B141654	1		SHLD,IMPLOSION:4.78 X 3.95 X0.07 PLSTC	80009	337-1159-00
	337-1159-03	B141655		1		SHLD,IMPLOSION:4.75 X 3.93 X0.7 THK,PLSTC	80009	337-1159-03
-9	331-0245-00			1		MASK,CRT SCALE:	80009	331-0245-00
-10	386-1517-00			4		SUPPORT,CRT:FRONT	80009	386-1517-00
-11	----- -----			1		CKT BOARD ASSY:GRATICULE LAMPS(SEE A2 REPL)		
						(ATTACHING PARTS)		
-12	211-0062-00			2		SCREW,MACHINE:2-56 X 0.312 INCH,RDH STL	83385	OBD
						- - - * - - -		
	----- -----			-		. CKT BOARD ASSY INCLUDES:		
-13	378-0614-00	B010100	B141759	1		. REFLECTOR,LIGHT:MOLDED PLASTIC	80009	378-0614-00
	378-0614-01	B141760		1		. REFLECTOR,LIGHT:INT SCALE ILLUMINATION	80009	378-0614-01
-14	344-0179-00			2		. CLIP,REFL RTNG:PLASTIC	80009	344-0179-00
-15	366-1146-00			2		KNOB:GRAY,IF GAIN	80009	366-1146-00
	213-0153-00			1		. SETSCREW:5-40 X 0.125,STL BK OXD,HEX SKT	000CY	OBD
-16	366-1164-00			2		KNOB:GRAY	80009	366-1164-00
	213-0153-00			1		. SETSCREW:5-40 X 0.125,STL BK OXD,HEX SKT	000CY	OBD
-17	366-1023-01			2		KNOB:GY,0.127 ID X0.392 OD X 0.531 H	80009	366-1023-01
	214-0949-00			1		. SPR,HLCL,TRSN:0.282" OD X 0.125" LONG	80009	214-0949-00
-18	366-0494-00			2		KNOB:GRAY WITH SETSCREW	80009	366-0494-00
	213-0153-00			1		. SETSCREW:5-40 X 0.125,STL BK OXD,HEX SKT	000CY	OBD
-19	426-0568-00			8		FR,PUSHBUTTON:PANEL MOUNT	80009	426-0568-00
-20	426-0681-00			14		FR,PUSH BUTTON:GRAY PLASTIC	80009	426-0681-00
-21	358-0301-02			3		BUSHING,SLEEVE:GRAY PLASTIC	80009	358-0301-02
	129-0103-00			1		POST,BDG,ELEC:ASSEMBLY	80009	129-0103-00
						(ATTACHING PARTS)		
-22	210-0583-00			1		NUT,PLAIN,HEX.:0.25-32 X 0.312 INCH,BRS	73743	2X20317-402
-23	210-0046-00			1		WASHER,LOCK:0.261 ID,INTL,0.018 THK,BRS	78189	1214-05-00-0541C
						- - - * - - -		
-24	200-0103-00			1		. NUT,PLAIN,KNURL:0.25-28 X 0.375" OD,BRASS	80009	200-0103-00
-25	129-0077-00			1		. STUD,SHOULDERED:0.938 INCH LONG,BRASS	80009	129-0077-00
-26	260-1060-01			1		SWITCH,TOGGLE:DPST,15A,125VAC	27193	8906K-2507
						(ATTACHING PARTS)		
-27	210-0473-00			1		NUT,PLAIN,DODEC:0.469-32 X 0.638 INCH,BRS	80009	210-0473-00
-28	210-0902-00			1		WASHER,FLAT:0.470 ID X 0.656 INCH OD,STL	12327	OBD
-29	354-0055-00			1		WASHER,KEY:0.469 ID X 0.688 INCH OD,STL	80009	354-0055-00
-30	210-0414-00			1		NUT,PLAIN,HEX.:0.468-32 X 0.562 INCH,BRS	73743	3167-402
						- - - * - - -		
-31	----- -----			2		RES.,VAR:(SEE R193,R194,R195,R196 REPL)		
						(ATTACHING PARTS)		
-32	210-0590-00			2		NUT,PLAIN,HEX.:0.375 X 0.438 INCH,STL	73743	2X28269-402
-33	210-0012-00			2		WASHER,LOCK:INTL,0.375 ID X 0.50" OD STL	78189	1220-02-00-0541C
						- - - * - - -		
-34	366-1257-00			8		PUSH BUTTON:GRAY PLASTIC	80009	366-1257-00
	384-1136-00			4		EXTENSION SHAFT:0.95 INCH LONG	80009	384-1136-00
-35	----- -----			1		CKT BOARD ASSY:CALIBRATOR(SEE A1 REPL)		
						(ATTACHING PARTS)		
-36	210-0583-00			2		NUT,PLAIN,HEX.:0.25-32 X 0.312 INCH,BRS	73743	2X20317-402
-37	211-0504-00			2		SCREW,MACHINE:6-32 X 0.25 INCH,PNH STL	83385	OBD
						- - - * - - -		
	----- -----			-		. CKT BOARD ASSY INCLUDES:		
-38	260-1213-00			1		. SWITCH,PUSH:DPDT,1A,28VDC	80009	260-1213-00
-39	260-1453-01	B010100	B141649	2		. SWITCH,PUSH:	80009	260-1453-01
	260-1453-02	B141650		2		. SWITCH,PUSH:1 BUTTON,2 POLE,POWER	80009	260-1453-02
	260-1573-00	B010100	B141649	2		. SWITCH,PUSH:1 STA,2 POLE,MOMENTARY	80009	260-1573-00
	260-1573-01	B141650		2		. SWITCH,PUSH:1 BUTTON,2 POLE,PAPER ADV	80009	260-1573-01

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Fig. & Index No.	Tektronix Part No.	Serial/Model No. Eff	Dscont	Qty	1 2 3 4 5	Name & Description	Mfr Code	Mfr Part Number
2-40	361-0411-00	B010100	B141649	12		. SPACER,PUSH SW:0.13 W X 0.375 INCH L,PLSTC	71590	J64285-00
	361-0411-00	B141650		4		. SPACER,PUSH SW:0.13 W X 0.375 INCH L,PLSTC	71590	J64285-00
	361-0899-00	B141650		8		. SPACER,PB SW:0.144 L,ORANGE	80009	361-0899-00
-41	----- -----			1		. RES.,VAR:(SEE R960 REPL)		
-42	----- -----			1		. RES.,VAR:(SEE R978 REPL)		
-43	131-1003-00			2		. CONN,RCPT,ELEC:CKT BD MT,3 PRONG	80009	131-1003-00
-44	136-0252-07	B010100	B142459	4		. SOCKET,PIN CONN:W/O DIMPLE	22526	75060-012
	136-0252-07	B142460		25		. SOCKET,PIN CONN:W/O DIMPLE	22526	75060-012
-45	131-0608-00			29		. TERMINAL,PIN:0.365 L X 0.025 PH BRZ GOLD	22526	47357
-46	333-1867-00			1		PANEL,FRONT:	80009	333-1867-00
						(ATTACHING PARTS)		
-47	211-0091-00			2		SCREW,MACHINE:2-56 X 0.875,0VH,SST	83385	OBD
						- - - * - - -		
-48	348-0204-00			2		SHLD GSKT,ELEK:FINGER TYPE,10.65 INCH LONG	80009	348-0204-00
-49	351-0202-00			4		GUIDE,SLIDE:UPPER	80009	351-0202-00
						(ATTACHING PARTS)		
-50	210-0586-00			8		NUT,PL,ASSEM WA:4-40 X 0.25,STL CD PL	83385	OBD
-51	211-0101-00			8		SCREW,MACHINE:4-40 X 0.25,100 DEG,FLH STL	83385	OBD
						- - - * - - -		
-52	131-1315-00			1		CONN,RCPT,ELEC:BNC,FEMALE	80009	131-1315-00
	----- -----			-		(7844 ONLY)		
	131-1315-00	B010100	B140814	1		CONN,RCPT,ELEC:BNC,FEMALE	80009	131-1315-00
	----- -----			-		(R7844 ONLY)		
	131-1315-01	B140815		1		CONN,RCPT,ELEC:BNC,FEMALE	24931	28JR 306-1
	----- -----			-		(R7844 ONLY)		
-53	119-0199-00			1		COIL,CAL:1.3UH,0.203 OHM	80009	119-0199-00
						(ATTACHING PARTS)		
-54	210-0457-00			1		NUT,PL,ASSEM WA:6-32 X 0.312 INCH,STL	83385	OBD
						- - - * - - -		
-55	150-0121-02			1		LAMP,CARTRIDGE:GREEN,5V,60MA	80009	150-0121-02
-56	134-0119-00			1		PLUG,PLASTIC:0.17 OD X 0.144 INCH LONG	80009	134-0119-00
-57	348-0216-00			1		SHLD GSKT ELEK:MESH TYPE,RING,5.25 ID	07700	30-90042
-58	366-1161-57			2		PUSH BUTTON:GRAY--LEFT	80009	366-1161-57
-59	366-1161-58			2		PUSH BUTTON:GRAY--RIGHT	80009	366-1161-58
-60	366-1257-00			2		PUSH BUTTON:GRAY PLASTIC	80009	366-1257-00
-61	366-1402-02			2		PUSH BUTTON:LEFT	80009	366-1402-02
-62	366-1402-06			2		PUSH BUTTON:RIGHT	80009	366-1402-06
-63	366-1161-55			2		PUSH BUTTON:GRAY--A	80009	366-1161-55
-64	366-1161-56			2		PUSH BUTTON:GRAY--B	80009	366-1161-56
-65	384-1099-00			19		EXTENSION SHAFT:PUSH BUTTON,1.54 INCH LONG	80009	384-1099-00
-66	384-1172-00			2		EXTENSION SHAFT:0.125 OD X 1.7 INCH LONG	80009	384-1172-00
-67	376-0051-00			2		CPLG,SHAFT,FLEX:0.127 ID X 0.375 ID DELRIN	80009	376-0051-00
	213-0022-00			4		. SETSCREW:4-40 X 0.188 INCH,HEX SOC STL	74445	OBD
-68	----- -----			1		CKT BOARD ASSY:CROSSOVER MODE SW(SEE A3 REPL)		
						(ATTACHING PARTS)		
	211-0101-00			5		SCREW,MACHINE:4-40 X 0.25,100 DEG,FLH STL	83385	OBD
						- - - * - - -		
	----- -----			-		. CKT BOARD ASSY INCLUDES:		
-69	----- -----			2		. SWITCH,PUSH:(SEE S3153 REPL)		
-70	----- -----			1		. SWITCH,PUSH:(SEE S3165 REPL)		
-71	260-1626-00			2		. SWITCH,PUSH:	80009	260-1626-00
-72	260-1132-02			1		. SWITCH,PUSH:DPDT,1A,28VDC,1 BUTTON	71590	2KAB010000-543
-73	----- -----			2		. SWITCH,PUSH:(SEE S3161 REPL)		
-74	----- -----			2		. RES.,VAR:(SEE R3185,R3189 REPL)		
-75	361-0382-00			10		. SPACER,PB SW:BROWN,0.275 INCH LONG	80009	361-0382-00
-76	361-0384-00			18		. SPACER,PB SW:0.133 INCH LONG	80009	361-0384-00
-77	361-0411-00			8		. SPACER,PUSH SW:0.13 W X 0.375 INCH L,PLSTC	71590	J64285-00
-78	136-0252-07	B010100	B142459	1		. SOCKET,PIN CONN:W/O DIMPLE	22526	75060-012
	136-0252-07	B142460		19		. SOCKET,PIN CONN:W/O DIMPLE	22526	75060-012
-79	131-0608-00			70		. TERMINAL,PIN:0.365 L X 0.025 PH BRZ GOLD	22526	47357
-80	131-1003-00			1		. CONN,RCPT,ELEC:CKT BD MT,3 PRONG	80009	131-1003-00
-81	136-0260-02			1		. SKT,PL-IN ELEK:MICROCIRCUIT,16 DIP,LOW CLE	71785	133-51-92-008
-82	136-0269-02			14		. SKT,PL-IN ELEK:MICROCIRCUIT,14 DIP,LOW CLE	73803	CS9002-14
	672-0572-00	XB090000		1		CKT BOARD ASSY:READOUT PROTECTION #1	80009	672-0572-00
-83	----- -----	XB090000		1		. . CKT BOARD ASSY:PROTECTION(SEE A32 REPL)		
-84	253-0162-00	XB090000	B131429	FT		. . TAPE,PRESS SENS:POLYURETHANE SPONGE	04963	4116 TYPE A
	253-0160-00	B131430		AR		. . TAPE,PRESS.SENS:ADHESIVE,2.124 FT LONG	04963	4116 TYPE A

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Fig. & Index No.	Tektronix Part No.	Serial/Model No. Eff	Dscont	Qty	1 2 3 4 5	Name & Description	Mfr Code	Mfr Part Number
2-85	131-0589-00	XB090000		20		. . TERMINAL,PIN:0.46 L X 0.025 SQ	80009	131-0589-00
-86	210-0702-00	XB090000		2		. EYELET,METALLIC:0.047 OD X 0.125 INCH LONG	07707	S6127
-87	----- -----			1		. CKT BOARD ASSY:READOUT(SEE A26 REPL)		
						(ATTACHING PARTS)		
-88	211-0504-00			1		. SCREW,MACHINE:6-32 X 0.25 INCH,PNH STL	83385	OBD
						- - - * - - -		
	----- -----			-		. . CKT BOARD ASSY INCLUDES:		
-89	214-0579-00	B010100	B089999	21		. . TERM,TEST POINT:BRS CD PL	80009	214-0579-00
	214-0579-00	B090000		20		. . TERM,TEST POINT:BRS CD PL	80009	214-0579-00
-90	136-0252-07			39		. . SOCKET,PIN CONN:W/O DIMPLE	22526	75060-012
	136-0252-01			6		. . CONTACT,ELEC:0.178 INCH LONG	00779	1-332095-2
-91	131-1003-00			6		. . CONN,RCPT,ELEC:CKT BD MT,3 PRONG	80009	131-1003-00
-92	131-0608-00			42		. . TERMINAL,PIN:0.365 L X 0.025 PH BRZ GOLD	22526	47357
-93	260-0723-00			1		. . SWITCH,SLIDE:DPDT,0.5A,125VAC	79727	GF126-0028
-94	136-0260-02			14		. . SKT,PL-IN ELEK:MICROCIRCUIT,16 DIP,LOW CLE	71785	133-51-92-008
-95	136-0269-02			3		. . SKT,PL-IN ELEK:MICROCIRCUIT,14 DIP,LOW CLE	73803	CS9002-14
-96	136-0235-00			1		. . SOCKET,PLUG-IN:6 CONTACT,ROUND	71785	133-96-12-062
-97	129-0499-00			2		POST,ELEC-MECH:0.188 HEX X 0.72" L,AL	80009	129-0499-00
-98	129-0097-00			1		SPACER,POST:0.560L X 0.188,W/4-40 THD	80009	129-0097-00
-99	344-0132-00			4		CLIP,ELECTRICAL:MOLDED PLSTC	80009	344-0132-00
						(ATTACHING PARTS)		
-100	210-0406-00			4		NUT,PLAIN,HEX.:4-40 X 0.188 INCH,BRS	73743	2X12161-402
						- - - * - - -		
	119-0470-00			1		DELAY LINE,ELEC:	80009	119-0470-00
						(ATTACHING PARTS)		
-101	211-0538-00			2		SCREW,MACHINE:6-32 X 0.312"100 DEG,FLH STL	83385	OBD
-102	211-0507-00			2		SCREW,MACHINE:6-32 X 0.312 INCH,PNH STL	83385	OBD
						- - - * - - -		
	----- -----			-		. DELAY LINE ASSY INCLUDES:		
-103	----- -----			2		. CKT BOARD ASSY:DELAY LINE 1,2 TERMN(SEE A12,		
	----- -----			-		. A15 REPL)		
						(ATTACHING PARTS)		
-104	211-0504-00			2		. SCREW,MACHINE:6-32 X 0.25 INCH,PNH STL	83385	OBD
-105	210-0457-00			2		. NUT,PL,ASSEM WA:6-32 X 0.312 INCH,STL	83385	OBD
						- - - * - - -		
-106	131-1003-00			8		. CONN,RCPT,ELEC:CKT BD MT,3 PRONG	80009	131-1003-00
-107	200-1651-00			1		. COV,DELAY LINE:TOP	80009	200-1651-00
						(ATTACHING PARTS)		
-108	211-0008-00			4		. SCREW,MACHINE:4-40 X 0.25 INCH,PNH STL	83385	OBD
-109	210-0586-00			2		. NUT,PL,ASSEM WA:4-40 X 0.25,STL CD PL	83385	OBD
-110	211-0510-00			2		. SCREW,MACHINE:6-32 X 0.375,PNH,STL,CD PL	83385	OBD
						- - - * - - -		
-111	200-1652-00			1		. COV,DELAY LINE:BOTTOM	80009	200-1652-00
						(ATTACHING PARTS)		
-112	211-0101-00			2		. SCREW,MACHINE:4-40 X 0.25,100 DEG,FLH STL	83385	OBD
	211-0008-00			2		. SCREW,MACHINE:4-40 X 0.25 INCH,PNH STL	83385	OBD
	210-0586-00			2		. NUT,PL,ASSEM WA:4-40 X 0.25,STL CD PL	83385	OBD
	211-0510-00			2		. SCREW,MACHINE:6-32 X 0.375,PNH,STL,CD PL	83385	OBD
						- - - * - - -		
-113	129-0498-00			2		. POST,ELEC-MECH:0.188 HEX X 2.5 INCH LONG	80009	129-0498-00
-114	386-2897-00			1		. SUPPORT,CKT BD:TERMINATION	80009	386-2897-00
-115	200-1650-00			1		. COV,DELAY LINE:CENTER	80009	200-1650-00
-116	129-0497-00			4		. POST,NONMET:1.5 OD X 1.215 INCH LONG	80009	129-0497-00
-117	210-0774-00			16		. EYELET,METALLIC:0.152 OD X 0.245 INCH L,BRS	80009	210-0774-00
-118	210-0775-00			16		. EYELET,METALLIC:0.126 OD X 0.23 INCH L,BRS	80009	210-0775-00
-119	426-0442-13			1		FRAME-PANEL,CAB:FRONT	80009	426-0442-13
-120	354-0345-00			1		RING,ORNAMENTAL:12.22 X 11.79,SST	80009	354-0345-00

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Fig. & Index No.	Tektronix Part No.	Serial/Model No. Eff	Dscont	Qty	1 2 3 4 5	Name & Description	Mfr Code	Mfr Part Number
3-1	351-0181-03	B010100	B141999	4		GUIDE,SLIDE:LWR,PLUG-IN UNIT	80009	351-0181-03
	351-0181-06	B142000		4		GUIDE,SLIDE:PLUG-IN UNIT,LWR,BLK NYLON	80009	351-0181-06
						(ATTACHING PARTS)		
-2	213-0229-00			4		SCR,TPG,THD FOR:6-20 X0.375"100 DEG,FLH STL	93907	OBD
-3	213-0146-00			4		SCR,TPG,THD FOR:6-20 X 0.313 INCH,PNH STL	83385	OBD
						- - - * - - -		
-4	131-0930-00			3		CONTACT,ELEC:PLUG-IN GROUND	80009	131-0930-00
						(ATTACHING PARTS)		
-5	211-0008-00			3		SCREW,MACHINE:4-40 X 0.25 INCH,PNH STL	83385	OBD
-6	210-0586-00			3		NUT,PL,ASSEM WA:4-40 X 0.25,STL CD PL	83385	OBD
						- - - * - - -		
-7	131-0799-00			3		CONTACT,ELEC:PLUG-IN GROUND	80009	131-0799-00
						(ATTACHING PARTS)		
-8	211-0008-00			3		SCREW,MACHINE:4-40 X 0.25 INCH,PNH STL	83385	OBD
-9	210-0586-00			3		NUT,PL,ASSEM WA:4-40 X 0.25,STL CD PL	83385	OBD
						- - - * - - -		
-10	131-0800-00			2		CONTACT,ELEC:PLUG-IN GROUND	80009	131-0800-00
						(ATTACHING PARTS)		
-11	211-0008-00			4		SCREW,MACHINE:4-40 X 0.25 INCH,PNH STL	83385	OBD
-12	210-0586-00			4		NUT,PL,ASSEM WA:4-40 X 0.25,STL CD PL	83385	OBD
						- - - * - - -		
-13	----- -----			1		CKT BOARD ASSY:TRIGGER SELECTOR(SEE A9 REPL)		
						(ATTACHING PARTS)		
-14	211-0008-00			2		SCREW,MACHINE:4-40 X 0.25 INCH,PNH STL	83385	OBD
						- - - * - - -		
	----- -----			-		. CKT BOARD ASSY INCLUDES:		
-15	214-0579-00			6		. TERM,TEST POINT:BRS CD PL	80009	214-0579-00
-16	131-0608-00			6		. TERMINAL,PIN:0.365 L X 0.025 PH BRZ GOLD	22526	47357
-17	131-1003-00			8		. CONN,RCPT,ELEC:CKT BD MT,3 PRONG	80009	131-1003-00
-18	136-0220-00	B010100	B142459X	8		. SKT,PL-IN ELEK:TRANSISTOR 3 CONTACT,PCB MT	71785	133-23-11-034
-19	136-0252-07	B010100	B142459	74		. SOCKET,PIN CONN:W/O DIMPLE	22526	75060-012
	136-0252-07	B142460		46		. SOCKET,PIN CONN:W/O DIMPLE	22526	75060-012
-20	386-1557-00			2		. SPACER,CKT BD:0.29 H,ACETAL	80009	386-1557-00
-21	----- -----			1		CKT BOARD ASSY:HORIZ INTERFACE(SEE A18 REPL)		
						(ATTACHING PARTS)		
-22	211-0008-00			2		SCREW,MACHINE:4-40 X 0.25 INCH,PNH STL	83385	OBD
						- - - * - - -		
	----- -----			-		. CKT BOARD ASSY INCLUDES:		
-23	136-0263-04			11		. SOCKET,PIN TERM:FOR 0.025 INCH SQUARE PIN	22526	75377-001
-24	214-0579-00			6		. TERM,TEST POINT:BRS CD PL	80009	214-0579-00
-25	136-0260-02			2		. SKT,PL-IN ELEK:MICROCIRCUIT,16 DIP,LOW CLE	71785	133-51-92-008
-26	131-1003-00			6		. CONN,RCPT,ELEC:CKT BD MT,3 PRONG	80009	131-1003-00
-27	136-0252-07			6		. SOCKET,PIN CONN:W/O DIMPLE	22526	75060-012
-28	----- -----			1		CKT BOARD ASSY:LOGIC(SEE A8 REPL)		
-29	214-0579-00			14		. TERM,TEST POINT:BRS CD PL	80009	214-0579-00
-30	131-0608-00			11		. TERMINAL,PIN:0.365 L X 0.025 PH BRZ GOLD	22526	47357
-31	131-1003-00			5		. CONN,RCPT,ELEC:CKT BD MT,3 PRONG	80009	131-1003-00
-32	136-0252-07	B010100	B142459	5		. SOCKET,PIN CONN:W/O DIMPLE	22526	75060-012
	136-0252-07	B142460		41		. SOCKET,PIN CONN:W/O DIMPLE	22526	75060-012
-33	136-0220-00	B010100	B119999	15		. SKT,PL-IN ELEK:TRANSISTOR 3 CONTACT,PCB MT	71785	133-23-11-034
	136-0220-00	B120000	B142459X	14		. SKT,PL-IN ELEK:TRANSISTOR 3 CONTACT,PCB MT	71785	133-23-11-034
-34	136-0260-02			6		. SKT,PL-IN ELEK:MICROCIRCUIT,16 DIP,LOW CLE	71785	133-51-92-008
-35	136-0269-02			8		. SKT,PL-IN ELEK:MICROCIRCUIT,14 DIP,LOW CLE	73803	CS9002-14
-36	136-0263-03	B010100	B080199	35		. SOCKET,PIN TERM:FOR 0.025 INCH SQUARE PIN	00779	85864-2
	136-0263-04	B080200		35		. SOCKET,PIN TERM:FOR 0.025 INCH SQUARE PIN	22526	75377-001
	672-0417-00			1		CKT BOARD ASSY:MAIN INTERFACE	80009	672-0417-00
						(ATTACHING PARTS)		
-37	213-0263-00	B010100	B140814	12		SCREW,TPG,TF:4-24 X 0.375 INCH,PNH STL	83385	OBD
	213-0119-00	B140815		12		SCR,TPG,THD FOR:4-24 X 0.375 INCH,PNH STL	83385	OBD
						- - - * - - -		
	----- -----			-		. CKT BOARD ASSY INCLUDES:		
-38	----- -----			2		. CKT BOARD ASSY:50 OHM FOL(SEE A6/A7 REPL)		
-39	131-1149-01			6		. . CONTACT,ELEC:CKT BOARD EDGE	80009	131-1149-00
-40	210-0657-01			1		. . EYELET,METALLIC:0.089 OD X 0.218 INCH LONG	80009	210-0657-01
-41	----- -----			1		. CKT BOARD ASSY:MAIN INTERFACE(SEE A5 REPL)		
	131-0767-05			2		. . CONNECTOR,RCPT,:PLUG-IN CKT BD,35/70 CONT	80009	131-0767-05

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Fig. & Index No.	Tektronix Part No.	Serial/Model No. Eff	Dscont	Qty	1 2 3 4 5 Name & Description	Mfr Code	Mfr Part Number
3-	131-0767-07			2	. . CONNECTOR,RCPT,:PLUG-IN CKT BD,70 CONTACT	80009	131-0767-07
					(ATTACHING PARTS)		
-42	213-0232-00			4	. . SCR,TPG,THD FOR:2-32 X 0.312 INCH,PNH STL	83385	OBD
					- - - * - - -		
	----- -----			-	. . . EACH CONNECTOR INCLUDES:		
-43	131-0726-00			38	. . . CONTACT,ELEC:STRAIGHT	80009	131-0726-00
-44	131-0727-00			38	. . . CONTACT,ELEC:OFFSET	80009	131-0727-00
-45	200-0950-00			2	. . . COVER,ELEC CONN:PLASTIC	80009	200-0950-00
-46	214-1665-00			1	. . . SPRING,FLAT:2.35 X 0.041 MUSIC WIRE	80009	214-1665-00
-47	204-0365-02			1	. . . BODY,CONNECTOR:PLUG-IN CIRCUIT CARD	80009	204-0365-02
	131-0591-00	XB120000		1	. . . CONTACT,ELEC:0.835 INCH LONG	22526	47352
-48	131-0805-00			2	. . LINK,TERM.CONNE:J-SHAPE,0.90X0.82 X 0.312"	80009	131-0805-00
	131-0804-00			1	. . LINK,TERM.CONNE:J-SHAPE	80009	131-0804-00
					(ATTACHING PARTS)		
-49	211-0008-00			1	. . SCREW,MACHINE:4-40 X 0.25 INCH,PNH STL	83385	OBD
-50	210-0586-00			1	. . NUT,PL,ASSEM WA:4-40 X 0.25,STL CD PL	83385	OBD
					- - - * - - -		
-51	129-0308-00			2	. . POST,ELEC-MECH:HEX.,0.25 X 0.465 INCH LONG	80009	129-0308-00
					(ATTACHING PARTS)		
-52	211-0008-00			2	. . SCREW,MACHINE:4-40 X 0.25 INCH,PNH STL	83385	OBD
					- - - * - - -		
-53	344-0147-00			2	. . CLIP,SPR,TNSN:CIRCUIT CARD MOUNTING	80009	344-0147-00
					(ATTACHING PARTS FOR EACH)		
-54	214-1568-00			1	. . PIN,GUIDE:0.119 DIA X 1.035 W/0.25 HEXCLR	80009	214-1568-00
-55	210-0406-00			1	. . NUT,PLAIN,HEX.:4-40 X 0.188 INCH,BRS	73743	2X12161-402
					- - - * - - -		
-56	136-0252-07	B010100	B142459	12	. . SOCKET,PIN CONN:W/O DIMPLE	22526	75060-012
	136-0252-07	B142460		24	. . SOCKET,PIN CONN:W/O DIMPLE	22526	75060-012
-57	131-0608-00			111	. . TERMINAL,PIN:0.365 L X 0.025 PH BRZ GOLD	22526	47357
-58	131-0591-00			35	. . CONTACT,ELEC:0.835 INCH LONG	22526	47352
	131-0592-00			11	. . CONTACT,ELEC:0.885 INCH LONG	22526	47353
-59	136-0220-00	B010100	B142459X	4	. . SKT,PL-IN ELEK:TRANSISTOR 3 CONTACT,PCB MT	71785	133-23-11-034
-60	136-0269-02			2	. . SKT,PL-IN ELEK:MICROCIRCUIT,14 DIP,LOW CLE	73803	CS9002-14
-61	131-1003-00			12	. . CONN,RCPT,ELEC:CKT BD MT,3 PRONG	80009	131-1003-00
-62	136-0260-02			2	. . SKT,PL-IN ELEK:MICROCIRCUIT,16 DIP,LOW CLE	71785	133-51-92-008
-63	386-1557-00			2	. . SPACER,CKT BD:0.29 H,ACETAL	80009	386-1557-00
-64	380-0390-00			1	HOUSING,PLUG-IN:	80009	380-0390-00
-65	343-0411-00			2	STRAP,RETAINING:2.494 X 0.8,STL TIN PL	80009	343-0411-00
					(ATTACHING PARTS)		
-66	211-0510-00			4	SCREW,MACHINE:6-32 X 0.375,PNH,STL,CD PL	83385	OBD
-67	210-0457-00			4	NUT,PL,ASSEM WA:6-32 X 0.312 INCH,STL	83385	OBD
					- - - * - - -		
-68	369-0037-00	B010100	B010135	1	IMPLR,FAN,AXIAL:3.5 DIA BL,CW0.125 ID	52792	3500-CW125N
	369-0040-00	B010136		1	IMP,FAN,AXIAL:PLASTIC	06812	3500-CW-15N
	358-0547-00	B010100	B010135X	1	BUSHING,SLEEVE:	80009	358-0547-00
-69	----- -----			1	CKT BOARD ASSY:FAN MOTOR(SEE A30 REPL)		
-70	136-0252-07			17	. SOCKET,PIN CONN:W/O DIMPLE	22526	75060-012
-71	131-0608-00			2	. TERMINAL,PIN:0.365 L X 0.025 PH BRZ GOLD	22526	47357
-72	147-0035-00			1	. MOTOR,DC:BRUSHLESS,10-15VDC,145MA	25088	1AD3001-0A
	129-0139-00	B010100	B010135X	1	SPACER,POST:4-40 THRU,2 INCHES LONG	80009	129-0139-00
-73	407-1490-00	XB010136		1	BRACKET,FAN:	80009	407-1490-00
					(ATTACHING PARTS)		
-74	211-0101-00			2	SCREW,MACHINE:4-40 X 0.25,100 DEG,FLH STL	83385	OBD
-75	210-0457-00			2	NUT,PL,ASSEM WA:6-32 X 0.312 INCH,STL	83385	OBD
					- - - * - - -		
-76	----- -----			1	CKT BOARD ASSY:SIGNALS OUT(SEE A25 REPL)		
					(ATTACHING PARTS)		
-77	211-0097-00			4	SCREW,MACHINE:4-40 X 0.312 INCH,PNH STL	83385	OBD
					- - - * - - -		
	----- -----			-	. CKT BOARD ASSY INCLUDES:		
-78	136-0220-00	B010100	B142459X	12	. SKT,PL-IN ELEK:TRANSISTOR 3 CONTACT,PCB MT	71785	133-23-11-034
-79	136-0252-07	B010100	B142459	8	. SOCKET,PIN CONN:W/O DIMPLE	22526	75060-012
	136-0252-07	B142460		42	. SOCKET,PIN CONN:W/O DIMPLE	22526	75060-012
-80	131-1003-00			8	. CONN,RCPT,ELEC:CKT BD MT,3 PRONG	80009	131-1003-00
-81	131-0608-00			8	. TERMINAL,PIN:0.365 L X 0.025 PH BRZ GOLD	22526	47357
-82	260-0723-00			2	. SWITCH,SLIDE:DPDT,0.5A,125VAC	79727	GF126-0028
-83	346-0045-00			2	STRAP,CONN COV:BNC ONE END,POLYPROPYLENE	80009	346-0045-00

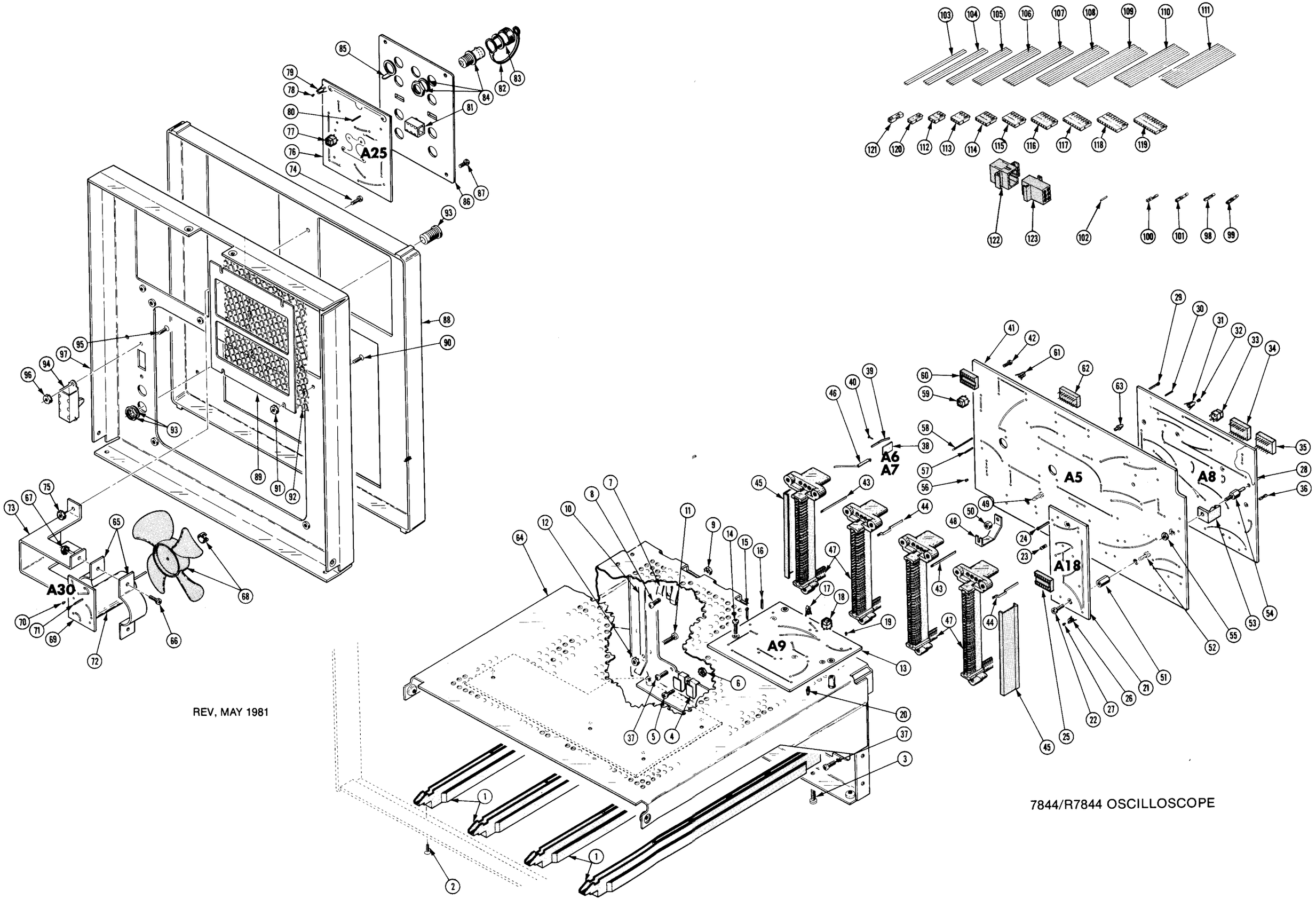
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Fig. & Index No.	Tektronix Part No.	Serial/Model No. Eff	Dscont	Qty	1 2 3 4 5	Name & Description	Mfr Code	Mfr Part Number
3-84	200-0678-00			2		COVER,ELEC CONN:BNC,SHORTING	91836	KC89-58TR5
-85	131-0955-00			10		CONN,RCPT,ELEC:BNC,FEMALE	13511	31-279
-86	210-0207-00			3		TERMINAL,LUG:0.375 INCH DIAMETER	12697	01136902
-87	386-2759-00			1		PLATE,CONN MTG:BNC CONNECTORS	80009	386-2759-00
	380-0372-00	B010100	B010135X	1		FR,AIR INL-OUT:	80009	380-0372-00
						(ATTACHING PARTS)		
	211-0008-00	B010100	B010135X	4		SCREW,MACHINE:4-40 X 0.25 INCH,PNH STL	83385	OBD
						- - - * - - -		
	378-0041-00	B010100	B010135	1		FILTER ELEM,AIR:	18121	OBD
-88	386-2846-00			1		PANEL,REAR:	80009	386-2846-00
-89	386-3238-00	XB010136		1		PL,FAN SCREEN:	80009	386-3238-00
						(ATTACHING PARTS)		
-90	211-0101-00			4		SCREW,MACHINE:4-40 X 0.25,100 DEG,FLH STL	83385	OBD
-91	210-0586-00			4		NUT,PL,ASSEM WA:4-40 X 0.25,STL CD PL	83385	OBD
						- - - * - - -		
-92	378-0822-00	B010100	B010135	1		SCREEN,FAN:	80009	378-0822-00
	378-2020-00	B010136		1		GRILL,FAN:4.2 X 4.8 X 0.032 INCH THK,AL	80009	378-2020-00
-93	131-0771-00			2		CONN,RCPT,ELEC:4 CONT,QUICK DISCONNECT	0000A	ROA-304NYL
-94	260-0450-00			1		SWITCH,SLIDE:3 POS,DOUBLE POLE	82389	11D-1007
						(ATTACHING PARTS)		
-95	211-0101-00			2		SCREW,MACHINE:4-40 X 0.25,100 DEG,FLH STL	83385	OBD
-96	210-0586-00			2		NUT,PL,ASSEM WA:4-40 X 0.25,STL CD PL	83385	OBD
						- - - * - - -		
-97	386-2890-00			1		SUBPANEL,REAR:	80009	386-2890-00
-98	131-0621-00			8		CONNECTOR,TERM:22-26 AWG,BRS& CU BE GOLD	22526	46231
	131-0707-00			241		CONNECTOR,TERM.:22-26 AWG,BRS& CU BE GOLD	22526	47439
-99	131-0512-00			2		CONTACT,ELEC:0.315 " L,22-26 AWG WIRE	00779	61507-1
-100	131-1538-00			13		CONTACT,ELEC:CRIMP-ON,22-26 AWG WIRE	22526	75369-002
-101	131-0948-00			5		CONTACT,ELEC:CONNECTOR,BRASS TIN PL	27264	02-09-1103
-102	136-0252-01			8		CONTACT,ELEC:0.178 INCH LONG	00779	1-332095-2
-103	175-0825-00			FT		WIRE,ELECTRICAL:2 WIRE RIBBON	80009	175-0825-00
-104	175-0826-00			FT		WIRE,ELECTRICAL:3 WIRE RIBBON	80009	175-0826-00
-105	175-0827-00			FT		CABLE,SP,ELEC:4,26 AWG,STRD,PVC JKT,RBN	08261	SS04267(1061)0C
-106	175-0828-00			FT		WIRE,ELECTRICAL:5 WIRE RIBBON	08261	SS-0526-710610C
-107	175-0829-00			FT		WIRE,ELECTRICAL:6 WIRE RIBBON	08261	SS-0626-710610C
-108	175-0830-00			FT		WIRE,ELECTRICAL:7 WIRE RIBBON	08261	SS-0726-710610C
-109	175-0831-00			FT		WIRE,ELECTRICAL:8 WIRE RIBBON	08261	SS-0826-710610C
-110	175-0832-00			FT		WIRE,ELECTRICAL:9 WIRE RIBBON	08261	SS-0926(1061)0C
-111	175-0833-00			FT		WIRE,ELECTRICAL:10 WIRE RIBBON	08261	SS-1026-7
	175-0855-00			FT		WIRE,ELECTRICAL:10 WIRE RIBBON	08261	SS-1022(1061)0C
	175-0857-00			FT		WIRE,ELECTRICAL:8 WIRE RIBBON	08261	SS-0822-7(1061)
	175-0858-00			FT		WIRE,ELECTRICAL:7 WIRE RIBBON	08261	SS-0722-7(1061)
	175-0859-00			FT		WIRE,ELECTRICAL:6 WIRE RIBBON	08261	SS-0622-7(1061)
	175-0861-00			FT		WIRE,ELECTRICAL:4 WIRE RIBBON	08261	SS-0422-7(1061)
-112	352-0161-00			1		HLDR,TERM CONN:3 WIRE BLACK	80009	352-0161-00
-113	352-0162-01			1		CONN BODY,PL,EL:4 WIRE BROWN	80009	352-0162-01
	352-0162-04			1		CONN BODY,PL,EL:4 WIRE YELLOW	80009	352-0162-04
	352-0162-05			1		CONN BODY,PL,EL:4 WIRE GREEN	80009	352-0162-05
	352-0162-08			1		CONN BODY,PL,EL:4 WIRE GRAY	80009	352-0162-08
-114	352-0163-00			1		CONN BODY,PL,EL:5 WIRE BLACK	80009	352-0163-00
	352-0163-01			1		CONN BODY,PL,EL:5 WIRE BROWN	80009	352-0163-01
	352-0163-08			1		CONN BODY,PL,EL:5 WIRE GRAY	80009	352-0163-08
	352-0163-09			1		CONN BODY,PL,EL:5 WIRE WHITE	80009	352-0163-09
-115	352-0164-00			1		CONN BODY,PL,EL:6 WIRE BLACK	80009	352-0164-00
	352-0164-01			1		CONN BODY,PL,EL:6 WIRE BROWN	80009	352-0164-01
	352-0164-04			1		CONN BODY,PL,EL:6 WIRE YELLOW	80009	352-0164-04
	352-0164-05			1		CONN BODY,PL,EL:6 WIRE GREEN	80009	352-0164-05
-116	352-0165-00			1		CONN BODY,PL,EL:7 WIRE BLACK	80009	352-0165-00
	352-0165-02			1		CONN BODY,PL,EL:7 WIRE RED	80009	352-0165-02
	352-0165-03			1		CONN BODY,PL,EL:7 WIRE ORANGE	80009	352-0165-03
	352-0165-04			1		CONN BODY,PL,EL:7 WIRE YELLOW	80009	352-0165-04
	352-0165-07			1		CONN BODY,PL,EL:7 WIRE VIOLET	80009	352-0165-07
	352-0165-09			1		CONN BODY,PL,EL:7 WIRE WHITE	80009	352-0165-09

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Fig. & Index No.	Tektronix Part No.	Serial/Model No. Eff	Dscont	Qty	1 2 3 4 5	Name & Description	Mfr Code	Mfr Part Number
3-117	352-0166-00			1		CONN BODY,PL,EL:8 WIRE BLACK	80009	352-0166-00
	352-0166-01			1		CONN BODY,PL,EL:8 WIRE BROWN	80009	352-0166-01
	352-0166-03			1		CONN BODY,PL,EL:8 WIRE ORANGE	80009	352-0166-03
	352-0166-06			1		CONN BODY,PL,EL:8 WIRE BLUE	80009	352-0166-06
	352-0166-08			1		CONN BODY,PL,EL:8 WIRE GRAY	80009	352-0166-08
-118	352-0167-00			1		HLDR,TERM CONN:9 WIRE BLACK	80009	352-0167-00
	352-0167-09			1		CONN BODY,PL,EL:9 WIRE WHITE	80009	352-0167-09
-119	352-0168-01			1		HLDR,TERM CONN:10 WIRE,BROWN	80009	352-0168-01
	352-0168-02			1		CONN BODY,PL,EL:10 WIRE RED	80009	352-0168-02
	352-0168-04			1		CONN BODY,PL,EL:10 WIRE YELLOW	80009	352-0168-04
	352-0168-05			1		CONN BODY,PL,EL:10 WIRE GREEN	80009	352-0168-05
	352-0168-06			1		CONN BODY,PL,EL:10 WIRE BLUE	80009	352-0168-06
-120	352-0169-00			1		HLDR,TERM CONN:2 WIRE BLACK	80009	352-0169-00
	352-0169-01			1		HLDR TERM CONN:2 WIRE,BROWN	80009	352-0169-01
	352-0169-02			1		CONN BODY,PL,EL:2 WIRE RED	80009	352-0169-00
	352-0169-06			1		CONN BODY,PL,EL:2 WIRE BLUE	80009	352-0169-06
	352-0169-07			1		CONN BODY,PL,EL:2 WIRE PURPLE	80009	352-0169-07
-121	352-0197-00			1		CONN BODY,PL,EL:1 WIRE BLACK	80009	352-0197-00
-122	131-1323-00			1		CONN BODY,PLUG:ACCOM 6 0.093OD PINS	27264	03-09-2061
-123	131-1324-00			1		CONN BODY,RCPT:ACCOM 6 0.093OD PINS	27264	03-09-1061

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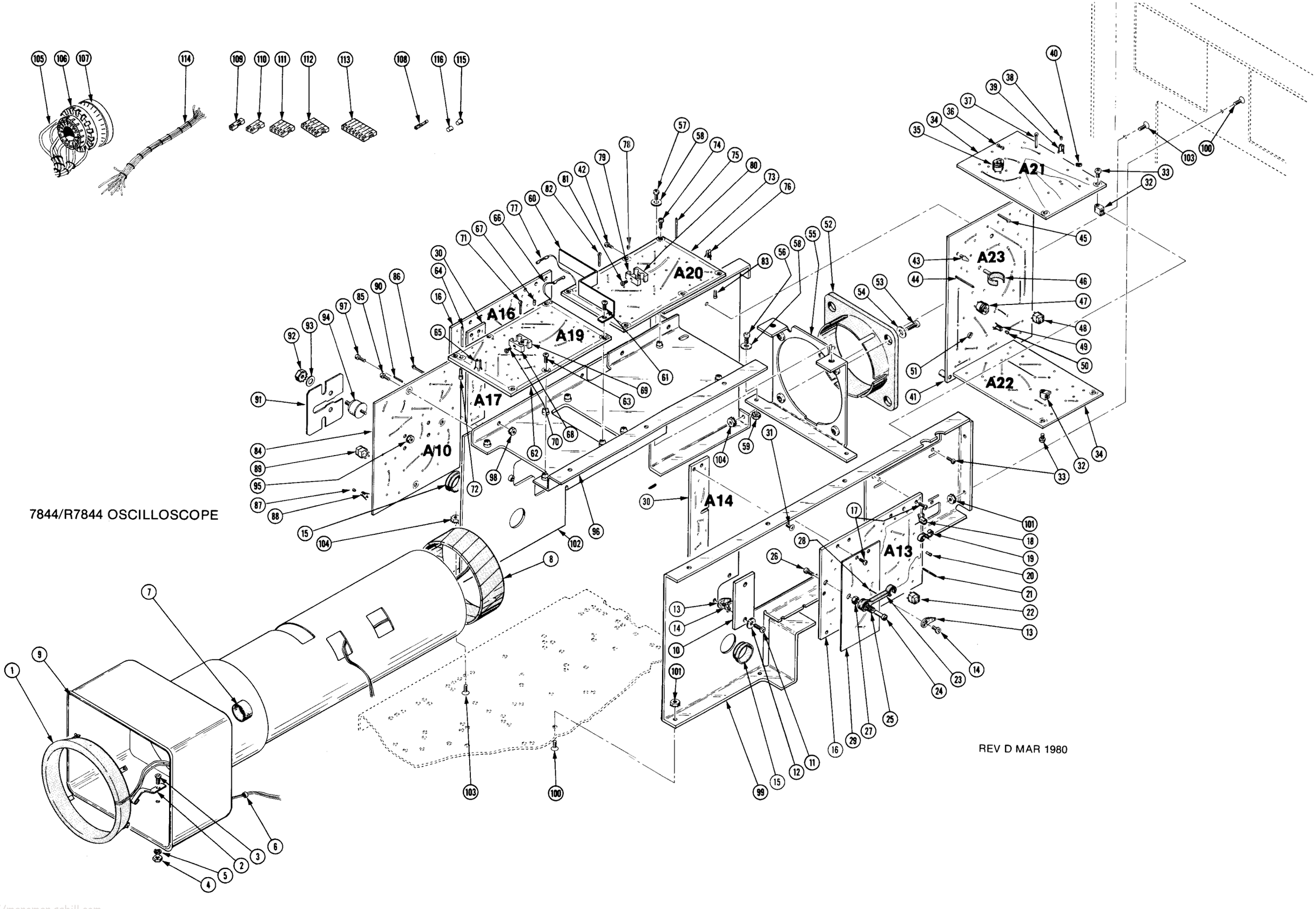


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Fig. & Index No.	Tektronix Part No.	Serial/Model No. Eff	Dscont	Qty	1 2 3 4 5	Name & Description	Mfr Code	Mfr Part Number
4-1	108-0784-00			1		COIL,TUBE DEFLE:TRACE ROTATOR	80009	108-0784-00
-2	214-0291-00			1		CONTACT,SPRING:1.188 X 0.375 X 0.25 INCH	80009	214-0291-00
						(ATTACHING PARTS)		
-3	211-0168-00			1		SCREW,MACHINE:4-40 X 0.25 INCH,PNH STL	12360	OBD
-4	210-0406-00			1		NUT,PLAIN,HEX.:4-40 X 0.188 INCH,BRS	73743	2X12161-402
-5	210-1172-00			1		WASHER,LOCK:	12360	OBD
						- - - * - - -		
-6	348-0031-00			1		GROMMET,PLASTIC:0.156 INCH DIA	80009	348-0031-00
-7	348-0064-00			1		GROMMET,PLASTIC:0.625 INCH DIA	80009	348-0064-00
-8	108-0685-00			1		COIL,RF:80NH	80009	108-0685-00
-9	337-1940-00			1		SHIELD,ELEC:LINE VOLTAGE	80009	337-1940-00
-10	----- -----			2		RES.,FXD,FILM:CHAS MTG(SEE R2782A,B REPL)		
						(ATTACHING PARTS)		
-11	211-0507-00			4		SCREW,MACHINE:6-32 X 0.312 INCH,PNH STL	83385	OBD
-12	210-0894-00			4		WASHER,NONMETAL:0.19 ID X 0.438" OD,PLSTC	09422	OBD
						- - - * - - -		
-13	210-0207-00			3		TERMINAL,LUG:0.375 INCH DIAMETER	12697	01136902
						(ATTACHING PARTS)		
-14	211-0504-00			3		SCREW,MACHINE:6-32 X 0.25 INCH,PNH STL	83385	OBD
						- - - * - - -		
-15	348-0064-00			2		GROMMET,PLASTIC:0.625 INCH DIA	80009	348-0064-00
-16	----- -----			2		CKT BOARD ASSY:VERT AMP(SEE A13/A16 REPL)		
						(ATTACHING PARTS FOR EACH ASSY)		
-17	211-0007-00			7		SCREW,MACHINE:4-40 X 0.188 INCH,PNH STL	83385	OBD
						- - - * - - -		
	----- -----			-		. EACH CKT BOARD ASSY INCLUDES:		
-18	131-1003-00			5		. CONN,RCPT,ELEC:CKT BD MT,3 PRONG	80009	131-1003-00
-19	200-1167-00			1		. COVER,XSTR:TEMP STAB FOR 2 TO-18 CS STYLE	80009	200-1167-00
-20	136-0252-07	B010100	B142459	5		. SOCKET,PIN CONN:W/O DIMPLE	22526	75060-012
	136-0252-07	B142460		20		. SOCKET,PIN CONN:W/O DIMPLE	22526	75060-012
	136-0252-00			28		. SOCKET,PIN TERM:0.145 INCH LONG	00779	2-330808-7
-21	131-0608-00			6		. TERMINAL,PIN:0.365 L X 0.025 PH BRZ GOLD	22526	47357
-22	136-0220-00	B010100	B142459X	5		. SKT,PL-IN ELEK:TRANSISTOR 3 CONTACT,PCB MT	71785	133-23-11-034
-23	343-0097-00			2		. RTNR,TRANSISTOR:HEAT SINK	80009	343-0097-00
						(ATTACHING PARTS)		
-24	210-0599-00			4		. NUT,SLEEVE:4-40 X 0.391 INCH LONG	80009	210-0599-00
-25	214-0368-00			2		. SPRING,HLCPS:0.24 DIA X 0.438 INCH LONG	80009	214-0368-00
-26	211-0097-00			4		. SCREW,MACHINE:4-40 X 0.312 INCH,PNH STL	83385	OBD
-27	210-0551-00			4		. NUT,PLAIN,HEX.:4-40 X 0.25 INCH,STL	83385	OBD
						- - - * - - -		
-28	210-0627-00			2		. RIVET,SOLID:0.042 DIA X 0.25 INCH,RDH	80009	210-0627-00
-29	214-1683-01			1		. HEAT SINK,XSTR:VERT AMPL CKTBOARD	80009	214-1683-01
	210-0698-00	XB040000		1		. EYELET,METALLIC:0.047 OD X 0.62 INCH LONG	07707	S-6123
-30	----- -----			2		CKT BOARD ASSY:VERT CONN(SEE A14/A17 REPL)		
						(ATTACHING PARTS FOR EACH ASSY)		
-31	211-0101-00			2		SCREW,MACHINE:4-40 X 0.25,100 DEG,FLH STL	83385	OBD
						- - - * - - -		
	----- -----			-		. EACH CKT BOARD ASSY INCLUDES:		
	129-0461-00			4		. POST,PRESSMOUNT:0.1632,W/4-40THRU,0.219 OD	80009	129-0461-00
	136-0252-01			4		. CONTACT,ELEC:0.178 INCH LONG	00779	1-332095-2
	136-0252-06			4		. SOCKET,PIN TERM:0.178 INCH LONG	00779	2-332095-6
-32	220-0547-01			4		NUT,BLOCK:0.38 X 0.26 XO.282 (2)4-40 THD	000FW	OBD
						(ATTACHING PARTS)		
-33	211-0007-00			4		SCREW,MACHINE:4-40 X 0.188 INCH,PNH STL	83385	OBD
						- - - * - - -		
-34	----- -----			2		CKT BOARD ASSY:Z AXIS(SEE A21/A22 REPL)		
-35	136-0183-00	B010100	B142459X	1		. SOCKET,PLUG-IN:3 PIN,ROUND	80009	136-0183-00
-36	136-0328-03			4		. SOCKET,PIN TERM:HORIZ,SQ PIN RCPT	22526	47710
-37	214-0579-00			8		. TERM,TEST POINT:BRS CD PL	80009	214-0579-00
-38	136-0252-07			23		. SOCKET,PIN CONN:W/O DIMPLE	22526	75060-012
-39	131-1003-00			2		. CONN,RCPT,ELEC:CKT BD MT,3 PRONG	80009	131-1003-00
-40	136-0461-00			1		. SKT,PL-IN ELEC:CIRCUIT BD,5 CONTACT	80009	136-0461-00
-41	----- -----			1		CKT BOARD ASSY:CRT(SEE A23 REPL)		
						(ATTACHING PARTS)		
-42	211-0008-00			5		SCREW,MACHINE:4-40 X 0.25 INCH,PNH STL	83385	OBD
						- - - * - - -		

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Fig. & Index No.	Tektronix Part No.	Serial/Model No. Eff	Dscont	Qty	1 2 3 4 5	Name & Description	Mfr Code	Mfr Part Number
4-	----- -----			-		. CKT BOARD ASSY INCLUDES:		
-43	386-1557-00			2		. SPACER,CKT BD:0.29 H,ACETAL	80009	386-1557-00
-44	131-0608-00			44		. TERMINAL,PIN:0.365 L X 0.025 PH BRZ GOLD	22526	47357
	131-0589-00			4		. TERMINAL,PIN:0.46 L X 0.025 SQ	80009	131-0589-00
	131-0787-00			18		. CONTACT,ELEC:0.64 INCH LONG	22526	47359
-45	214-0579-00			5		. TERM,TEST POINT:BRS CD PL	80009	214-0579-00
-46	352-0068-00			2		. HOLDER,TEST PRO:PLASTIC	80009	352-0068-00
-47	136-0183-00	B010100	B142459X	1		. SOCKET,PLUG-IN:3 PIN,ROUND	80009	136-0183-00
-48	136-0220-00	B010100	B142459X	6		. SKT,PL-IN ELEK:TRANSISTOR 3 CONTACT,PCB MT	71785	133-23-11-034
-49	131-1003-00			1		. CONN,RCPT,ELEC:CKT BD MT,3 PRONG	80009	131-1003-00
-50	136-0252-07	B010100	B142459	1		. SOCKET,PIN CONN:W/O DIMPLE	22526	75060-012
	136-0252-07	B142460		22		. SOCKET,PIN CONN:W/O DIMPLE	22526	75060-012
-51	136-0461-00			4		. SKT,PL-IN ELEC:CIRCUIT BD,5 CONTACT	80009	136-0461-00
-52	386-2762-00			1		SUPPORT,CRT:REAR	80009	386-2762-00
						(ATTACHING PARTS)		
-53	211-0551-00			4		SCREW,MACHINE:6-32 X 0.562 INCH,PNH STL	83385	OBD
-54	210-0949-00			4		WASHER,FLAT:0.141 ID X 0.50 INCH OD,BRS	12327	OBD
						- - - * - - -		
-55	407-1504-00			1		BRKT,CRT SPRT:	80009	407-1504-00
						(ATTACHING PARTS)		
-56	211-0504-00			2		SCREW,MACHINE:6-32 X 0.25 INCH,PNH STL	83385	OBD
-57	211-0507-00			2		SCREW,MACHINE:6-32 X 0.312 INCH,PNH STL	83385	OBD
-58	210-0803-00			4		WASHER,FLAT:0.15 ID X 0.032 THK,STL CD PL	12327	OBD
-59	210-0457-00			2		NUT,PL,ASSEM WA:6-32 X 0.312 INCH,STL	83385	OBD
						- - - * - - -		
-60	337-1938-00			1		SHL,ELECTRICAL:HORIZONTAL AMP	80009	337-1938-00
						(ATTACHING PARTS)		
-61	211-0008-00			2		SCREW,MACHINE:4-40 X 0.25 INCH,PNH STL	83385	OBD
						- - - * - - -		
-62	----- -----			1		CKT BOARD ASSY:HORIZ AMP #1(SEE A19 REPL)		
						(ATTACHING PARTS)		
-63	211-0008-00			3		SCREW,MACHINE:4-40 X 0.25 INCH,PNH STL	83385	OBD
						- - - * - - -		
	----- -----			-		. CKT BOARD ASSY INCLUDES:		
-64	131-0608-00	B010100	B109999	15		. TERMINAL,PIN:0.365 L X 0.025 PH BRZ GOLD	22526	47357
	131-0608-00	B110000		21		. TERMINAL,PIN:0.365 L X 0.025 PH BRZ GOLD	22526	47357
-65	131-1003-00			3		. CONN,RCPT,ELEC:CKT BD MT,3 PRONG	80009	131-1003-00
-66	131-1538-00			6		. CONTACT,ELEC:CRIMP-ON,22-26 AWG WIRE	22526	75369-002
-67	136-0252-04	B010100	B109999	60		. SOCKET,PIN TERM:U/W 0.016-0.018 DIA PINS	22526	75060-007
	136-0252-07	B110000		57		. SOCKET,PIN CONN:W/O DIMPLE	22526	75060-012
	136-0220-00			1		. SKT,PL-IN ELEK:TRANSISTOR 3 CONTACT,PCB MT	71785	133-23-11-034
-68	200-0945-00	B010100	B109999	2		. COVER,HALF XSTR:DUAL TO-18,ALUMINUM	80009	200-0945-00
	200-0945-00	B110000		1		. COVER,HALF XSTR:DUAL TO-18,ALUMINUM	80009	200-0945-00
-69	200-0945-01	B010100	B109999	2		. COVER,HALF XSTR:DUAL TO-18,W/2-56 THD	80009	200-0945-01
	200-0945-01	B110000		1		. COVER,HALF XSTR:DUAL TO-18,W/2-56 THD	80009	200-0945-01
						(ATTACHING PARTS)		
-70	211-0062-00	B010100	B109999	1		. SCREW,MACHINE:2-56 X 0.312 INCH,RDH STL	83385	OBD
	211-0001-00	B110000		1		. SCREW,MACHINE:2-56 X 0.25 INCH,PNH STL	87308	OBD
						- - - * - - -		
-71	214-0579-00	B010100	B109999	12		. TERM,TEST POINT:BRS CD PL	80009	214-0579-00
	214-0579-00	B110000		19		. TERM,TEST POINT:BRS CD PL	80009	214-0579-00
-72	386-2228-00			2		. SUPPORT,CKT BD:DELRIN	80009	386-2228-00
	198-3317-00	XB110000		1		. WIRE KIT,ELEC:DEFLECTION LEAD	80009	198-3317-00
	131-0707-00	XB110000		2		. . CONNECTOR,TERM.:22-26 AWG,BRS& CU BE GOLD	22526	47439
	352-0161-00	XB110000		1		. . HLDR,TERM CONN:3 WIRE BLACK	80009	352-0161-00
-73	----- -----			1		CKT BOARD ASSY:HORIZ AMP #2(SEE A20 REPL)		
						(ATTACHING PARTS)		
-74	211-0008-00			3		SCREW,MACHINE:4-40 X 0.25 INCH,PNH STL	83385	OBD
						- - - * - - -		
	----- -----			-		. CKT BOARD ASSY INCLUDES:		
-75	131-0608-00	B010100	B109999	15		. TERMINAL,PIN:0.365 L X 0.025 PH BRZ GOLD	22526	47357
	131-0608-00	B110000		21		. TERMINAL,PIN:0.365 L X 0.025 PH BRZ GOLD	22526	47357
-76	131-1003-00			4		. CONN,RCPT,ELEC:CKT BD MT,3 PRONG	80009	131-1003-00
-77	131-1538-00			4		. CONTACT,ELEC:CRIMP-ON,22-26 AWG WIRE	22526	75369-002
-78	136-0252-04	B010100	B109999	64		. SOCKET,PIN TERM:U/W 0.016-0.018 DIA PINS	22526	75060-007
	136-0252-07	B110000		62		. SOCKET,PIN CONN:W/O DIMPLE	22526	75060-012
	136-0384-00			1		. SOCKET,PIN TERM:FOR 0.04 DIAMETER PIN	00779	52120

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Fig. & Index No.	Tektronix Part No.	Serial/Model No. Eff	Dscont	Qty	1 2 3 4 5	Name & Description	Mfr Code	Mfr Part Number
4-79	200-0945-00	B010100	B109999	2		. COVER,HALF XSTR:DUAL TO-18,ALUMINUM	80009	200-0945-00
	200-0945-00	B110000		1		. COVER,HALF XSTR:DUAL TO-18,ALUMINUM	80009	200-0945-00
-80	200-0945-01	B010100	B109999	2		. COVER,HALF XSTR:DUAL TO-18,W/2-56 THD	80009	200-0945-01
	200-0945-01	B110000		1		. COVER,HALF XSTR:DUAL TO-18,W/2-56 THD	80009	200-0945-01
						(ATTACHING PARTS)		
-81	211-0062-00	B010100	B109999	1		. SCREW,MACHINE:2-56 X 0.312 INCH,RDH STL	83385	OBD
	211-0001-00	B110000		1		. SCREW,MACHINE:2-56 X 0.25 INCH,PNH STL	87308	OBD
						- - - * - - -		
-82	214-0579-00	B010100	B109999	11		. TERM,TEST POINT:BRS CD PL	80009	214-0579-00
	214-0579-00	B110000		7		. TERM,TEST POINT:BRS CD PL	80009	214-0579-00
-83	386-2228-00			1		. SUPPORT,CKT BD:DELRIN	80009	386-2228-00
	198-3318-00	XB110000		1		. WIRE KIT,ELEC:DEFLECTION LEAD	80009	198-3318-00
	131-0707-00	XB110000		2		. . CONNECTOR,TERM.:22-26 AWG,BRS& CU BE GOLD	22526	47439
	352-0161-00	XB110000		1		. . HLDR,TERM CONN:3 WIRE BLACK	80009	352-0161-00
-84	----- -----			1		CKT BOARD ASSY:CROSSOVER VERT INTFC(SEE A10 REPL)		
						(ATTACHING PARTS)		
-85	211-0007-00			3		SCREW,MACHINE:4-40 X 0.188 INCH,PNH STL	83385	OBD
						- - - * - - -		
	----- -----			-		. CKT BOARD ASSY INCLUDES:		
-86	214-0579-00			1		. TERM,TEST POINT:BRS CD PL	80009	214-0579-00
-87	136-0252-07	B010100	B142459	15		. SOCKET,PIN CONN:W/O DIMPLE	22526	75060-012
	136-0252-07	B142460		18		. SOCKET,PIN CONN:W/O DIMPLE	22526	75060-012
	136-0252-00			64		. SOCKET,PIN TERM:0.145 INCH LONG	00779	2-330808-7
-88	131-1003-00			12		. CONN,RCPT,ELEC:CKT BD MT,3 PRONG	80009	131-1003-00
-89	136-0220-00			3		. SKT,PL-IN ELEK:TRANSISTOR 3 CONTACT,PCB MT	71785	133-23-11-034
-90	131-0608-00			6		. TERMINAL,PIN:0.365 L X 0.025 PH BRZ GOLD	22526	47357
-91	214-1990-00			2		. HEAT SINK,ELEC:MICROCIRCUIT	80009	214-1990-00
						(ATTACHING PARTS)		
-92	220-0410-00			4		. NUT,EXTENDED WA:10-32 X 0.375 INCH,STL	83385	OBD
-93	210-0812-00			4		. WASHER,NONMETAL:#10,FIBER	86445	OBD
						- - - * - - -		
-94	----- -----			4		. MICROCIRCUIT:(SEE U3615,3665,3715,3765 REPL)		
						(ATTACHING PARTS)		
-95	210-0406-00			4		. NUT,PLAIN,HEX.:4-40 X 0.188 INCH,BRS	73743	2X12161-402
	210-1002-00			4		. WASHER,FLAT:0.125 ID X 0.25 INCH OD,BRS	12327	OBD
						- - - * - - -		
-96	441-1227-00			1		CHASSIS,SCOPE:HORIZONTAL AMP	80009	441-1227-00
						(ATTACHING PARTS)		
-97	211-0008-00			3		SCREW,MACHINE:4-40 X 0.25 INCH,PNH STL	83385	OBD
-98	210-0586-00			3		NUT,PL,ASSEM WA:4-40 X 0.25,STL CD PL	83385	OBD
						- - - * - - -		
-99	441-1228-00			1		CHASSIS,SCOPE:VERTICAL,RIGHT	80009	441-1228-00
						(ATTACHING PARTS)		
-100	211-0538-00			4		SCREW,MACHINE:6-32 X 0.312"100 DEG,FLH STL	83385	OBD
-101	210-0457-00			4		NUT,PL,ASSEM WA:6-32 X 0.312 INCH,STL	83385	OBD
						- - - * - - -		
-102	441-1229-00			1		CHASSIS,SCOPE:VERTICAL,LEFT	80009	441-1229-00
						(ATTACHING PARTS)		
-103	211-0538-00			2		SCREW,MACHINE:6-32 X 0.312"100 DEG,FLH STL	83385	OBD
-104	210-0457-00			2		NUT,PL,ASSEM WA:6-32 X 0.312 INCH,STL	83385	OBD
						- - - * - - -		
-105	136-0556-00			1		WIRING HARNESS:CRT SOCKET	80009	136-0556-00
-106	136-0358-00	B010100	B142199	1		. SKT,PL-IN ELEK:ELECTRON TUBE,20 CONTACT	80009	136-0358-00
	136-0358-01	B142200		1		. SKT,PL-IN ELEK:ELECTRON TUBE,20 CONTACT	80009	136-0358-01
-107	200-0869-00			1		. COVER,CRT SKT:2.444 OD X 0.401 H,PLASTIC	80009	200-0869-00
-108	131-0707-00			14		. CONNECTOR,TERM.:22-26 AWG,BRS& CU BE GOLD	22526	47439
	131-0621-00			4		. CONNECTOR,TERM:22-26 AWG,BRS& CU BE GOLD	22526	46231
-109	352-0197-00			4		. CONN BODY,PL,EL:1 WIRE BLACK	80009	352-0197-00
-110	352-0169-01			1		. HLDR TERM CONN:2 WIRE,BROWN	80009	352-0169-01
-111	352-0162-04			1		. CONN BODY,PL,EL:4 WIRE YELLOW	80009	352-0162-04
-112	352-0163-03			1		. CONN BODY,PL,EL:5 WIRE ORANGE	80009	352-0163-03
	179-2027-00			1		WIRING HARNESS:CRT SOCKET	80009	179-2027-00
	131-0707-00			18		. CONNECTOR,TERM.:22-26 AWG,BRS& CU BE GOLD	22526	47439
	352-0162-05			1		. CONN BODY,PL,EL:4 WIRE GREEN	80009	352-0162-05
-113	352-0165-06			1		. CONN BODY,PL,EL:7 WIRE BLUE	80009	352-0165-06
	343-0549-00			7		. STRAP,TIEDOWN:0.091 W X 3.62 INCH LONG	59730	TY100
-114	179-2085-00			1		WIRING HARNESS:MAIN(7844 ONLY)	80009	179-2085-00
	343-0549-00			36		. STRAP,TIEDOWN:0.091 W X 3.62 INCH LONG	59730	TY100
	179-2086-00			1		WIRING HARNESS:SIGNAL OUTPUT	80009	179-2086-00
	343-0549-00			6		. STRAP,TIEDOWN:0.091 W X 3.62 INCH LONG	59730	TY100

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Fig. & Index No.	Tektronix Part No.	Serial/Model No. Eff	Dscont	Qty	1 2 3 4 5	Name & Description	Mfr Code	Mfr Part Number
5-	620-0464-00			1		POWER SUPPLY:	80009	620-0464-00
						(ATTACHING PARTS)		
-1	212-0023-00			4		SCREW,MACHINE:8-32 X 0.375 INCH,PNH STL	83385	OBD
						- - - * - - -		
	----- -----			-		. POWER SUPPLY ASSY INCLUDES:		
-2	----- -----			5		. TRANSISTOR:(SEE Q1428,1458,1498,1538,		
	----- -----			-		. 1588 REPL)		
						(ATTACHING PARTS)		
-3	211-0578-00			5		. SCREW,MACHINE:6-32 X 0.438 INCH,PNH STL	83385	OBD
-4	210-0551-00			5		. NUT,PLAIN,HEX.:4-40 X 0.25 INCH,STL	83385	OBD
-5	210-0071-00			5		. WASHER,SPR TNSN:0.146 ID X 0.323" OD,STL	78189	4706-05-01-0531
						- - - * - - -		
-6	342-0136-00			5		. INSULATOR,WSHR:0.812 OD X 0.0025 INCH THK	04713	OBD
-7	----- -----			1		. CKT BOARD ASSY:LOW VOLTAGE RGLTR(SEE A29 REPL)		
						(ATTACHING PARTS)		
-8	211-0008-00			4		. SCREW,MACHINE:4-40 X 0.25 INCH,PNH STL	83385	OBD
						- - - * - - -		
	----- -----			-		. . CKT BOARD ASSY INCLUDES:		
-9	131-0608-00			48		. . TERMINAL,PIN:0.365 L X 0.025 PH BRZ GOLD	22526	47357
-10	214-1291-00			2		. . HEAT SINK,ELEC:XSTR,0.72 OD X 0.375"H	05820	207-AB
-11	214-0579-00			9		. . TERM,TEST POINT:BRS CD PL	80009	214-0579-00
-12	136-0220-00	B010100	B131579	6		. . SKT,PL-IN ELEK:TRANSISTOR 3 CONTACT,PCB MT	71785	133-23-11-034
	----- -----			-		. . (7844 ONLY)		
	136-0252-07	B131580		18		. . SOCKET,PIN CONN:W/O DIMPLE	22526	75060-012
	----- -----			-		. . (7844 ONLY)		
	136-0220-00	B010100	B130709	6		. . SKT,PL-IN ELEK:TRANSISTOR 3 CONTACT,PCB MT	71785	133-23-11-034
	----- -----			-		. . (R7844 ONLY)		
	136-0252-07	B130710		18		. . SOCKET,PIN CONN:W/O DIMPLE	22526	75060-012
	----- -----			-		. . (R7844 ONLY)		
-13	136-0183-00	B010100	B131579	7		. . SOCKET,PLUG-IN:3 PIN,ROUND	80009	136-0183-00
	----- -----			-		. . (7844 ONLY)		
	136-0252-07	B131580		15		. . SOCKET,PIN CONN:W/O DIMPLE	22526	75060-012
	----- -----			-		. . (7844 ONLY)		
	136-0183-00	B010100	B130709	7		. . SOCKET,PLUG-IN:3 PIN,ROUND	80009	136-0183-00
	----- -----			-		. . (R7844 ONLY)		
	136-0252-07	B130710		15		. . SOCKET,PIN CONN:W/O DIMPLE	22526	75060-012
	----- -----			-		. . (R7844 ONLY)		
	136-0235-00			8		. . SOCKET,PLUG-IN:6 CONTACT,ROUND	71785	133-96-12-062
-14	----- -----			1		. . TRANSISTOR:(SEE Q1550 REPL)		
						(ATTACHING PARTS)		
-15	211-0007-00			1		. . SCREW,MACHINE:4-40 X 0.188 INCH,PNH STL	83385	OBD
	210-1122-00			1		. . WASHER,LOCK:0.12 ID,DISHED,0.025 THK	86928	OBD
-16	210-0551-00			1		. . NUT,PLAIN,HEX.:4-40 X 0.25 INCH,STL	83385	OBD
-17	210-0071-00			1		. . WASHER,SPR TNSN:0.146 ID X 0.323" OD,STL	78189	4706-05-01-0531
						- - - * - - -		
-18	441-1019-00			1		. CHAS,ELEC EQUIP:CIRCUIT BOARD	80009	441-1019-00
						(ATTACHING PARTS)		
-19	211-0008-00			2		. SCREW,MACHINE:4-40 X 0.25 INCH,PNH STL	83385	OBD
-20	211-0503-00			2		. SCREW,MACHINE:6-32 X 0.188 INCH,PNH STL	83385	OBD
-21	211-0504-00			2		. SCREW,MACHINE:6-32 X 0.25 INCH,PNH STL	83385	OBD
						- - - * - - -		
-22	351-0279-00			2		. GUIDE,SHOE:5.18 X 0.375,NYLON	80009	351-0279-00
-23	255-0334-00			IN		. PLASTIC CHANNEL:12.75 X 0.175X 0.155,NYL	11897	122-37-2500
-24	200-1261-01			1		. COVER,PWR SPLY:TOP AND BOTTOM	80009	200-1261-01
						(ATTACHING PARTS)		
-25	211-0503-00			5		. SCREW,MACHINE:6-32 X 0.188 INCH,PNH STL	83385	OBD
						- - - * - - -		
-26	200-1263-01			1		. COVER,PWR SPLY:RIGHT SIDE	80009	200-1263-01
						(ATTACHING PARTS)		
-27	211-0504-00			3		. SCREW,MACHINE:6-32 X 0.25 INCH,PNH STL	83385	OBD
						- - - * - - -		
-28	200-1262-02			1		. COVER,PWR SPLY:LEFT SIDE	80009	200-1262-02
						(ATTACHING PARTS)		
-29	211-0504-00			2		. SCREW,MACHINE:6-32 X 0.25 INCH,PNH STL	83385	OBD
-30	211-0503-00			4		. SCREW,MACHINE:6-32 X 0.188 INCH,PNH STL	83385	OBD
						- - - * - - -		

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Fig. & Index No.	Tektronix Part No.	Serial/Model No. Eff	Dscont	Qty	1 2 3 4 5	Name & Description	Mfr Code	Mfr Part Number
5-31	214-2013-00			1		. HEAT SINK,ELEC:SEMICONDUCTOR	80009	214-2013-00
						(ATTACHING PARTS)		
-32	211-0014-00			1		. SCREW,MACHINE:4-40 X 0.50 INCH,PNH STL	83385	OBD
-33	210-0802-00			1		. WASHER,FLAT:0.15 ID X 0.312 INCH OD	12327	OBD
-34	211-0510-00			1		. SCREW,MACHINE:6-32 X 0.375,PNH,STL,CD PL	83385	OBD
-35	210-0457-00			1		. NUT,PL,ASSEM WA:6-32 X 0.312 INCH,STL	83385	OBD
						- - - * - - -		
-36	352-0362-00			1		. FUSEHOLDER: W/MOUNTING HARDWARE	75915	345001
-37	210-0873-00			1		. WASHER,NONMETAL:0.5 ID X 0.688 INCH OD,NPRN	70485	OBD
-38	119-0420-00			1		. FILTER,RFI:6A,250VAC,400HZ	02777	F-11935-6
						(ATTACHING PARTS)		
-39	211-0014-00			2		. SCREW,MACHINE:4-40 X 0.50 INCH,PNH STL	83385	OBD
-40	210-0586-00			2		. NUT,PL,ASSEM WA:4-40 X 0.25,STL CD PL	83385	OBD
						- - - * - - -		
-41	260-1300-00			1		. SWITCH,SLIDE:DPDT,3A,125VAC	82389	46206LFE
						(ATTACHING PARTS)		
-42	211-0097-00			2		. SCREW,MACHINE:4-40 X 0.312 INCH,PNH STL	83385	OBD
-43	210-0586-00			2		. NUT,PL,ASSEM WA:4-40 X 0.25,STL CD PL	83385	OBD
-44	210-0201-00			1		. TERMINAL,LUG:0.12 ID,LOCKING,BRZ TIN PL	86928	OBD
						- - - * - - -		
	211-0578-00			1		. SCREW,MACHINE:6-32 X 0.438 INCH,PNH STL	83385	OBD
						(ATTACHING PARTS)		
	210-0407-00			2		. NUT,PLAIN,HEX.:6-32 X 0.25 INCH,BRS	73743	3038-0228-402
	210-0202-00			2		. TERMINAL,LUG:0.146 ID,LOCKING,BRZ TINNED	78189	2104-06-00-2520N
						- - - * - - -		
-45	214-1958-00			1		. HEAT SINK,ELEC:POWER SUPPLY	80009	214-1958-00
						(ATTACHING PARTS)		
-46	213-0041-00			2		. SCR,TPG,THD CTG:6-32 X 0.375 INCH,TRH STL	83385	OBD
	211-0008-00			2		. SCREW,MACHINE:4-40 X 0.25 INCH,PNH STL	83385	OBD
						- - - * - - -		
-47	348-0291-00			1		. PAD,CUSHIONING:1 SQ X 0.312" THK,RUBBER	80009	348-0291-00
-48	----- -----			1		. CKT BOARD ASSY:HIGH VOLTAGE(SEE A24 REPL)		
						(ATTACHING PARTS)		
-49	211-0008-00			1		. SCREW,MACHINE:4-40 X 0.25 INCH,PNH STL	83385	OBD
						- - - * - - -		
	----- -----			-		. . CKT BOARD ASSY INCLUDES:		
-50	----- -----			1		. . SEMICOND DEVICE:(SEE U2315 REPL)		
						(ATTACHING PARTS)		
-51	210-0458-00			2		. . NUT,PL,ASSEM WA:8-32 X 0.344 INCH,STL	83385	OBD
-52	210-0804-00			2		. . WASHER,FLAT:0.17 ID X 0.375 INCH OD,STL	12327	OBD
						- - - * - - -		
-53	337-1939-00			1		. . SHLD,ELECTRICAL:	80009	337-1939-00
-54	131-0809-00			1		. . TERMINAL,STUD:PNL MT,4-40 TAP 1 END	71279	570-1510-01-0519
						(ATTACHING PARTS)		
-55	211-0007-00			1		. . SCREW,MACHINE:4-40 X 0.188 INCH,PNH STL	83385	OBD
-56	210-0801-00			1		. . WASHER,FLAT:0.14 ID X 0.025 THK,BRS NI PL	12327	OBD
						- - - * - - -		
-57	131-0608-00			22		. . TERMINAL,PIN:0.365 L X 0.025 PH BRZ GOLD	22526	47357
-58	----- -----			1		. . RES.,FXD,FILM:(SEE R2303A,B REPL)		
-59	166-0292-00			2		. . SPACER,SLEEVE:PLSTC,0.155 DIA X 0.065"L	80009	166-0292-00
-60	342-0210-00			1		. INSUL,PWR SPLY:HIGH VOLTAGE BOX,MICA	80009	342-0210-00
-61	348-0055-00			2		. GROMMET,PLASTIC:0.25 INCH DIA	80009	348-0055-00
-62	386-2041-00			2		. SUPPORT,XFMR:	80009	386-2041-00
						(ATTACHING PARTS)		
-63	211-0008-00			4		. **SCREW,MACHINE:4-40 X 0.25 INCH, PNH STL**	83385	OBD
						- - - * - - -		
-64	255-0334-00			IN		. PLASTIC CHANNEL:12.75 X 0.175X 0.155,NYL	11897	122-37-2500
-65	386-1556-00			5		. SUPPORT,CKT BD:0.215 H,ACETAL	80009	386-1556-00
-66	337-1941-00			1		. SHLD,ELECTRICAL:HIGH VOLTAGE BOX	80009	337-1941-00
-67	----- -----			1		. CKT BOARD ASSY:CAP-RECTIFIER(SEE A28 REPL)		
						(ATTACHING PARTS)		
-68	211-0504-00			1		. SCREW,MACHINE:6-32 X 0.25 INCH,PNH STL	83385	OBD
-69	211-0008-00			4		. SCREW,MACHINE:4-40 X 0.25 INCH,PNH STL	83385	OBD
						- - - * - - -		

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Fig. & Index No.	Tektronix Part No.	Serial/Model No. Eff	Dscont	Qty	1 2 3 4 5	Name & Description	Mfr Code	Mfr Part Number
5-	----- -----			-		. . CKT BOARD ASSY INCLUDES:		
-70	136-0183-00	B010100	B131579	2		. . SOCKET,PLUG-IN:3 PIN,ROUND	80009	136-0183-00
	----- -----			-		. . (7844 ONLY)		
	136-0252-07	B131580		6		. . SOCKET,PIN CONN:W/O DIMPLE	22526	75060-012
	----- -----			-		. . (7844 ONLY)		
	136-0183-00	B010100	B130709	2		. . SOCKET,PLUG-IN:3 PIN,ROUND	80009	136-0183-00
	----- -----			-		. . (R7844 ONLY)		
	136-0252-07	B130710		6		. . SOCKET,PIN CONN:W/O DIMPLE	22526	75060-012
	----- -----			-		. . (R7844 ONLY)		
-71	131-0608-00			31		. . TERMINAL,PIN:0.365 L X 0.025 PH BRZ GOLD	22526	47357
-72	136-0514-00			1		. . SKT,PL-IN ELEC:MICROCIRCUIT,8 DIP	73803	CS9002-8
-73	214-0579-00			4		. . TERM,TEST POINT:BRS CD PL	80009	214-0579-00
-74	136-0263-04			7		. . SOCKET,PIN TERM:FOR 0.025 INCH SQUARE PIN	22526	75377-001
-75	----- -----			6		. . SEMICOND DEVICE:(SEE CR1310,1313,1345,1346,		
	----- -----			-		. . 1347,1348 REPL)		
						(ATTACHING PARTS)		
-76	210-0410-00			6		. . NUT,PLAIN,HEX.:10-32 X 0.312 INCH,BRS	73743	2X20003-402
-77	210-0056-00			6		. . WASHER,LOCK:SPLIT,0.195 ID X 0.32" OD,P BRZ	83385	OBD
-78	210-1003-00			6		. . WASHER,FLAT:# 10 X 0.036 THICK,BRS	12327	OBD
						- - - * - - -		
-79	----- -----			1		. . SW,THERMOSTATIC:(SEE S1305 REPL)		
						(ATTACHING PARTS)		
-80	210-0407-00			1		. . NUT,PLAIN,HEX.:6-32 X 0.25 INCH,BRS	73743	3038-0228-402
-81	210-0803-00			1		. . WASHER,FLAT:0.15 ID X 0.032 THK,STL CD PL	12327	OBD
						- - - * - - -		
-82	136-0260-01			1		. . SOCKET,PLUG-IN:16 CONTACT,RECT SHAPE	71785	133-51-02-075
-83	136-0220-00	B010100	B131579	3		. . SKT,PL-IN ELEK:TRANSISTOR 3 CONTACT,PCB MT	71785	133-23-11-034
	----- -----			-		. . (7844 ONLY)		
	136-0252-04	B131580		9		. . SOCKET,PIN TERM:U/W 0.016-0.018 DIA PINS	22526	75060-007
	----- -----			-		. . (7844 ONLY)		
	136-0220-00	B010100	B130709	3		. . SKT,PL-IN ELEK:TRANSISTOR 3 CONTACT,PCB MT	71785	133-23-11-034
	----- -----			-		. . (R7844 ONLY)		
	136-0252-04	B130710		9		. . SOCKET,PIN TERM:U/W 0.016-0.018 DIA PINS	22526	75060-007
	----- -----			-		. . (R7844 ONLY)		
-84	----- -----			2		. CAP.,FXD,ELCTLT:(SEE C1216,1217 REPL)		
						(ATTACHING PARTS)		
-85	212-0518-00	B010100	B142359	8		. SCREW,MACHINE:10-32 X 0.312 INCH,PNH STL	83385	OBD
	----- -----			-		. (7844 ONLY)		
						- - - * - - -		
	212-0518-00	B142360		4		. SCREW,MACHINE:10-32 X 0.312 INCH,PNH STL	83385	OBD
	----- -----			-		. (7844 ONLY)		
	212-0651-00	B142360		4		. SCREW MACHINE:10-32 X 0.312INCH,PNH,NYLON	26365	OBD
	----- -----			-		. (7844 ONLY)		
	210-3057-00	XB142360		4		. WASHER,FLAT:0.170 ID X 0.375 OD	95987	NW8-3753
	----- -----			-		. (7844 ONLY)		
	212-0518-00	B010100	B144119	8		. SCREW,MACHINE:10-32 X 0.312 INCH,PNH STL	83385	OBD
	----- -----			-		. (R7844 ONLY)		
	212-0518-00	B144120		4		. SCREW,MACHINE:10-32 X 0.312 INCH,PNH STL	83385	OBD
	----- -----			-		. (R7844 ONLY)		
	212-0651-00	B144120		4		. SCREW MACHINE:10-32 X 0.312INCH,PNH,NYLON	26365	OBD
	----- -----			-		. (R7844 ONLY)		
	210-3057-00	XB142360		4		. WASHER,FLAT:0.170 ID X 0.375 OD	95987	NW8-3753
	----- -----			-		. (R7844 ONLY)		
-86	407-0964-01			1		. BRACKET,CAP.:ALUMINUM	80009	407-0964-01
-87	337-1490-00	B010100	B141774	1		. SHLD,ELECTRICAL:CIRCUIT CARD	80009	337-1490-00
	----- -----			-		. (7844 ONLY)		
	337-1490-01	B141775	B141999	1		. SHIELD,ELEC:LINE INVERTER,CKT CD BOTTOM	80009	337-1490-01
	----- -----			-		. (7844 ONLY)		
	337-1490-02	B142000		1		. SHIELD,ELEC:LINE INVERTER,CKT BD BOTTOM	80009	337-1490-02
	----- -----			-		. (7844 ONLY)		
	337-1490-00	B010100	B140839	1		. SHLD,ELECTRICAL:CIRCUIT CARD	80009	337-1490-00
	----- -----			-		. (R7844 ONLY)		
	337-1490-01	B140840	B140999	1		. SHIELD,ELEC:LINE INVERTER,CKT CD BOTTOM	80009	337-1490-01
	----- -----			-		. (R7844 ONLY)		

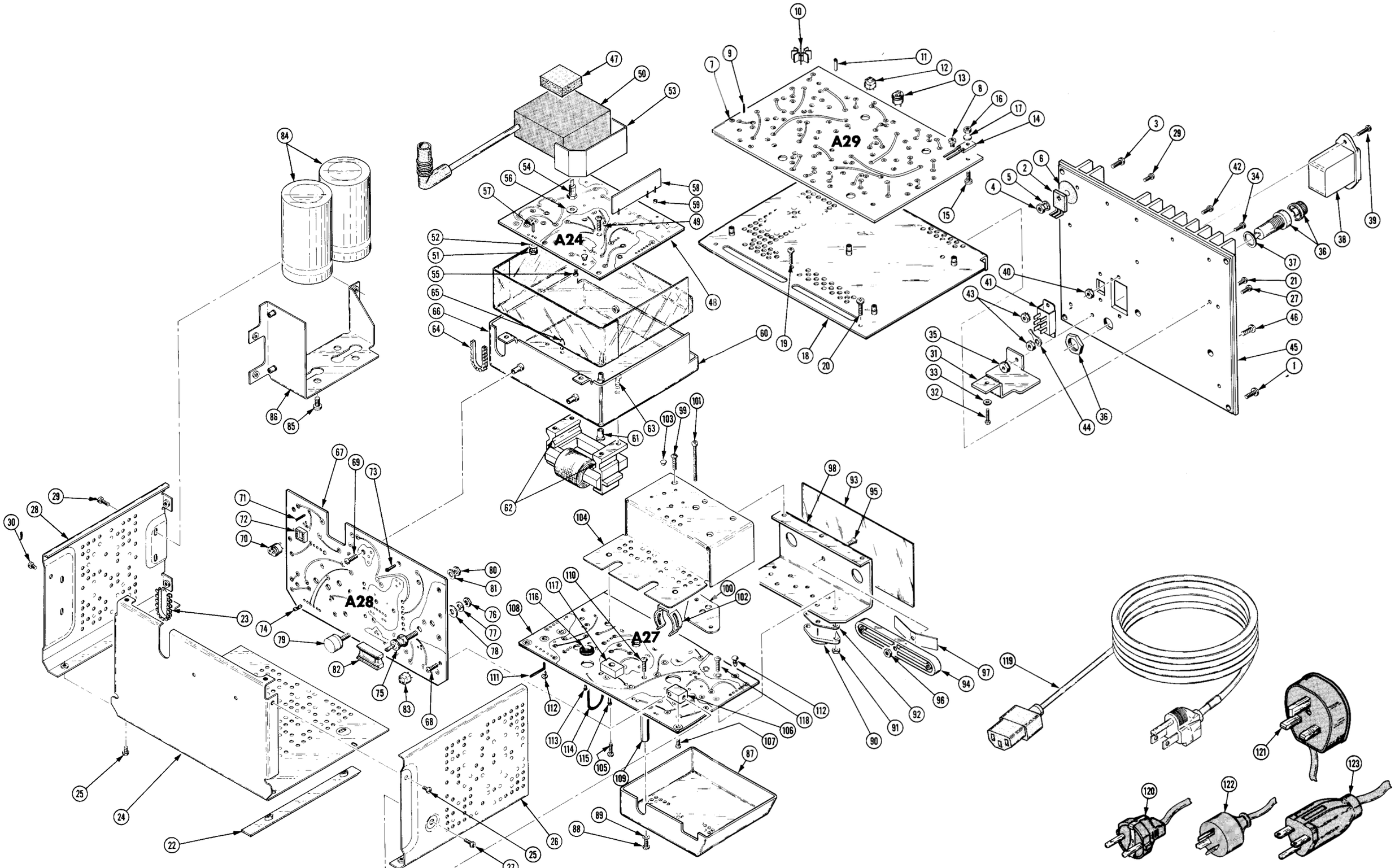
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Fig. & Index No.	Tektronix Part No.	Serial/Model No. Eff	Dscont	Qty	1 2 3 4 5	Name & Description	Mfr Code	Mfr Part Number
5-	337-1490-02	B141000		1		. SHIELD,ELEC:LINE INVERTER,CKT BD BOTTOM	80009	337-1490-02
	----- -----			-		. (R7844 ONLY)		
						(ATTACHING PARTS)		
-88	211-0040-00	B010100	B141774	2		. SCREW,MACHINE:4-40 X 0.25",BDGH PLSTC	26365	OBD
	----- -----			-		. (7844 ONLY)		
	211-0040-00	B141775		1		. SCREW,MACHINE:4-40 X 0.25",BDGH PLSTC	26365	OBD
	----- -----			-		. (7844 ONLY)		
	211-0040-00	B010100	B140839	2		. SCREW,MACHINE:4-40 X 0.25",BDGH PLSTC	26365	OBD
	----- -----			-		. (R7844 ONLY)		
	211-0040-00	B140840		1		. SCREW,MACHINE:4-40 X 0.25",BDGH PLSTC	26365	OBD
	----- -----			-		. (R7844 ONLY)		
-89	210-0054-00			2		. WASHER,LOCK:SPLIT,0.118 ID X 0.212"OD STL	83385	OBD
						- - - * - - -		
-90	----- -----			2		. TRANSISTOR:(SEE Q1234,1241 REPL)		
						(ATTACHING PARTS)		
-91	210-0586-00			4		. NUT,PL,ASSEM WA:4-40 X 0.25,STL CD PL	83385	OBD
						- - - * - - -		
-92	386-0978-00			2		. INSULATOR,PLATE:TRANSISTOR,MICA	80009	386-0978-00
-93	342-0193-00			1		. INSULATOR,PLATE:	80009	342-0193-00
-94	342-0103-00			1		. INSULATOR,BLOCK:HEAT-SINK SHIELD,NYLON	80009	342-0103-00
						(ATTACHING PARTS)		
-95	211-0512-00			1		. SCREW,MACHINE:6-32 X 0.50" 100 DEG,FLH STL	83385	OBD
-96	210-0407-00			1		. NUT,PLAIN,HEX.:6-32 X 0.25 INCH,BRS	73743	3038-0228-402
-97	214-1625-00			1		. SPRING,FLAT:2.0 INCH LONG,BOWED	80009	214-1625-00
						- - - * - - -		
-98	214-1871-00			1		. HEAT SINK,SHLD:	80009	214-1871-00
						(ATTACHING PARTS)		
-99	211-0101-00			3		. SCREW,MACHINE:4-40 X 0.25,100 DEG,FLH STL	83385	OBD
						- - - * - - -		
-100	386-2634-00			1		. PL,CHOKE MTG:	80009	386-2634-00
						(ATTACHING PARTS)		
-101	211-0619-00			2		. SCREW,MACHINE:6-32 X 1.5 INCH,FLH STL	83385	OBD
						- - - * - - -		
-102	344-0118-00			2		. CLIP,SPG TENS:CAPACITOR MTG	80033	E50008-044
						(ATTACHING PARTS FOR EACH)		
-103	210-0623-00			1		. RIVET,TUBULAR:	12014	R-3682
						- - - * - - -		
-104	337-1826-00			1		. SHIELD,ELEC:LINE-INVERT,TOP	80009	337-1826-00
						(ATTACHING PARTS)		
-105	211-0008-00			2		. SCREW,MACHINE:4-40 X 0.25 INCH,PNH STL	83385	OBD
						- - - * - - -		
-106	220-0623-00			1		. NUT,BLOCK:0.375 X 0.5 X0.448,(3)6-32	80009	220-0623-00
						(ATTACHING PARTS)		
-107	211-0504-00			1		. SCREW,MACHINE:6-32 X 0.25 INCH,PNH STL	83385	OBD
						- - - * - - -		
-108	----- -----			1		. CKT BOARD ASSY:PWR SPLY INVT(SEE A27 REPL)		
-109	129-0323-00	B010100	B141774	2		. . POST,ELEC-MECH:HEX,0.25 X 1 INCH LONG	80009	129-0323-00
	----- -----			-		. . (7844 ONLY)		
	129-0323-00	B141775		1		. . POST,ELEC-MECH:HEX,0.25 X 1 INCH LONG	80009	129-0323-00
	----- -----			-		. . (7844 ONLY)		
	129-0323-00	B010100	B140839	2		. . POST,ELEC-MECH:HEX,0.25 X 1 INCH LONG	80009	129-0323-00
	----- -----			-		. . (R7844 ONLY)		
	129-0323-00	B140840		1		. . POST,ELEC-MECH:HEX,0.25 X 1 INCH LONG	80009	129-0323-00
	----- -----			-		. . (R7844 ONLY)		
						(ATTACHING PARTS)		
-110	211-0008-00			1		. . SCREW,MACHINE:4-40 X 0.25 INCH,PNH STL	83385	OBD
						- - - * - - -		
	385-0016-00	XB141775		1		. . SPACER,POST:1.0 L W/6-32 THD THRU,NYLON	80009	385-0016-00
	----- -----			-		. . (7844 ONLY)		
						(ATTACHING PARTS)		
	211-0507-00	XB141775		1		. . SCREW,MACHINE:6-32 X 0.312 INCH,PNH STL	83385	OBD
	----- -----			-		. . (7844 ONLY)		
						- - - * - - -		
	385-0016-00	XB140840		1		. . SPACER,POST:1.0 L W/6-32 THD THRU,NYLON	80009	385-0016-00
	----- -----			-		. . (R7844 ONLY)		
						(ATTACHING PARTS)		
	211-0507-00	XB140840		1		. . SCREW,MACHINE:6-32 X 0.312 INCH,PNH STL	83385	OBD
	----- -----			-		. . (R7844 ONLY)		
						- - - * - - -		

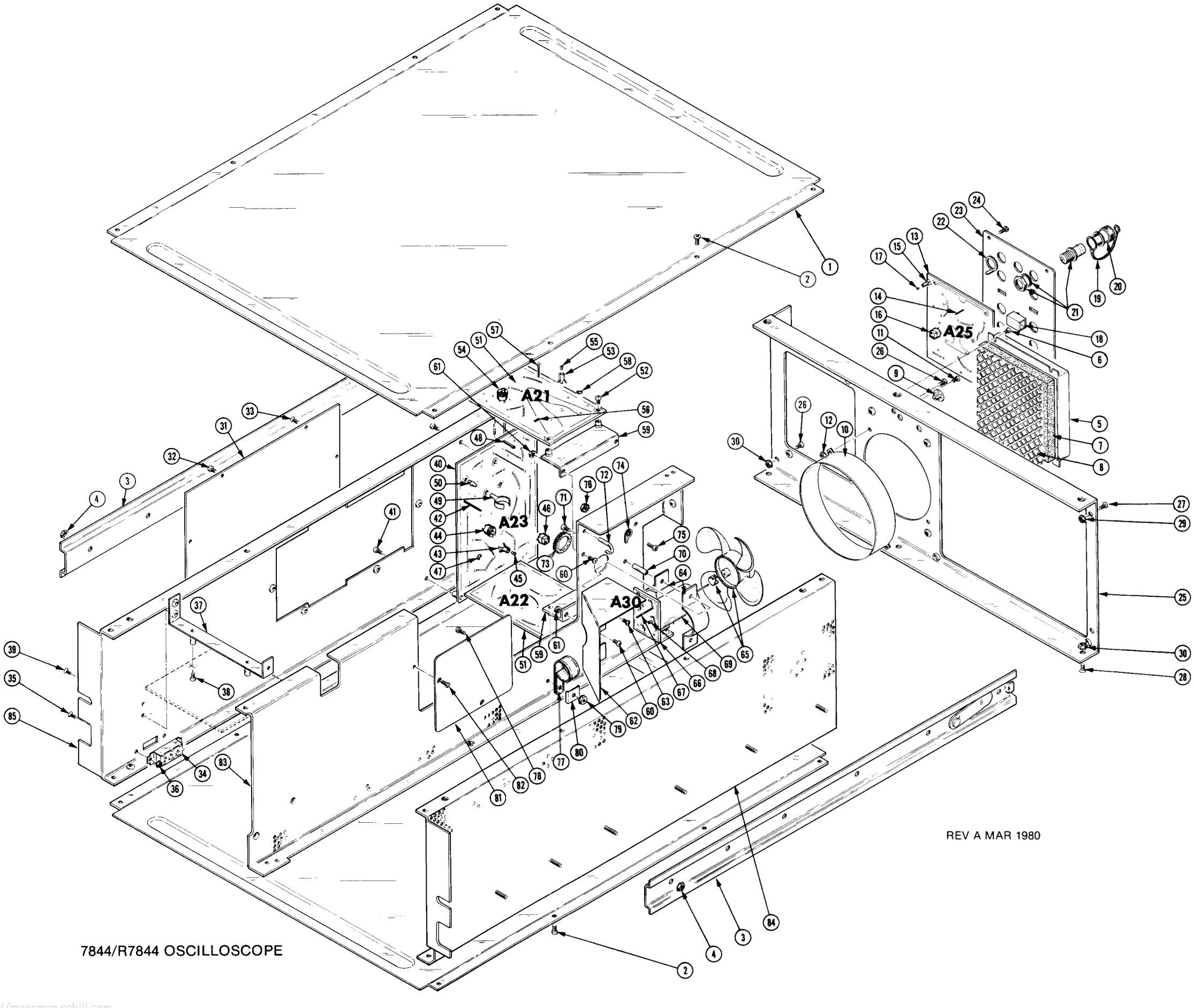
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Fig. & Index No.	Tektronix Part No.	Serial/Model No. Eff	Dscont	Qty	1 2 3 4 5	Name & Description	Mfr Code	Mfr Part Number
5-111	131-0591-00			7		. . CONTACT,ELEC:0.835 INCH LONG	22526	47352
-112	348-0023-00	B010100	B141774	6		. . PLUG,HOLE:	02768	207090201000101
	----- -----			-		. . (7844 ONLY)		
	134-0158-00	B141775		6		. . BUTTON,PLUG:0.187 DIA,NYLON	02768	207-080501-00
	----- -----			-		. . (7844 ONLY)		
	348-0023-00	B010100	B140839	6		. . PLUG,HOLE:	02768	207090201000101
	----- -----			-		. . (R7844 ONLY)		
	134-0158-00	B140840		6		. . BUTTON,PLUG:0.187 DIA,NYLON	02768	207-080501-00
	----- -----			-		. . (R7844 ONLY)		
-113	136-0254-01			4		. . SOCKET,PIN TERM:U/W 0.031 TO 0.04 DIA PINS	00779	1-331892-8
-114	346-0032-00			1		. . STRAP,RETAINING:0.075 DIA X 4.0 L,MLD RBR	98159	2859-75-4
-115	214-0579-00	B010100	B141774	3		. . TERM,TEST POINT:BRS CD PL	80009	214-0579-00
	----- -----			-		. . (7844 ONLY)		
	214-0579-00	B141775		2		. . TERM,TEST POINT:BRS CD PL	80009	214-0579-00
	----- -----			-		. . (7844 ONLY)		
	214-0579-00	B010100	B140839	3		. . TERM,TEST POINT:BRS CD PL	80009	214-0579-00
	----- -----			-		. . (R7844 ONLY)		
	214-0579-00	B140840		2		. . TERM,TEST POINT:BRS CD PL	80009	214-0579-00
	----- -----			-		. . (R7844 ONLY)		
-116	348-0005-00			1		. . GROMMET,RUBBER:0.50 INCH DIA	70485	230
-117	361-0414-00			1		. . SPACER,DIODE:	80009	361-0414-00
-118	355-0518-02			4		. . STUD,PRESSMOUNT:4-40 X 0.625 INCH,BRASS	80009	355-0518-02
-119	161-0066-00			1		CABLE ASSY,PWR,:3,18 AWG,115V,98.0 L	16428	KH8481
-120	161-0066-09			1		CABLE ASSY,PWR:3,0.75MM SQ,220V,96.0 L	80126	OBD
	----- -----			-		(EUROPEAN)		
-121	161-0066-10			1		CABLE ASSY,PWR:3,0.75MM SQ,240V,96.0 L	80126	OBD
	----- -----			-		(UNITED KINGDOM)		
-122	161-0066-11			1		CABLE ASSY,PWR:3,0.75MM,240V,96.0L	S3109	OBD
	----- -----			-		(AUSTRALIAN)		
-123	161-0066-12			1		CABLE ASSY,PWR:3,18 AWG,240V,96.0 L	80126	OBD
	----- -----			-		(NORTH AMERICAN)		

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Fig. & Index No.	Tektronix Part No.	Serial/Model No. Eff	Dscont	Qty	1 2 3 4 5	Name & Description	Mfr Code	Mfr Part Number
6-1	200-1620-00			2		COVER,SCOPE:	80009	200-1620-00
						(ATTACHING PARTS)		
-2	211-0504-00			16		SCREW,MACHINE:6-32 X 0.25 INCH,PNH STL	83385	OBD
						- - - * - - -		
-3	351-0313-00			1		GUIDE,RACKMOUNT:19.218 INCH LONG,PAIR	80009	351-0313-00
						(ATTACHING PARTS)		
-4	210-0458-00			6		NUT,PL,ASSEM WA:8-32 X 0.344 INCH,STL	83385	OBD
						- - - * - - -		
-5	380-0372-00			1		FR,AIR INL-OUT:	80009	380-0372-00
						(ATTACHING PARTS)		
-6	211-0008-00	B010100	B100471	4		SCREW,MACHINE:4-40 X 0.25 INCH,PNH STL	83385	OBD
	211-0008-00	B100472		6		SCREW,MACHINE:4-40 X 0.25 INCH,PNH STL	83385	OBD
	210-0586-00	XB100472		2		NUT,PL,ASSEM WA:4-40 X 0.25,STL CD PL	83385	OBD
						- - - * - - -		
-7	378-0041-01	B010100	B100472X	1		FILTER ELEM,AIR:	80009	378-0041-01
-8	378-0822-00			1		SCREEN,FAN:	80009	378-0822-00
-9	134-0026-00			4		BUTTON,PLUG:FOR 0.375" HOLE	80112	1711-M
-10	378-0810-00			1		SHROUD,FAN:	80009	378-0810-00
						(ATTACHING PARTS)		
-11	211-0101-00			2		SCREW,MACHINE:4-40 X 0.25,100 DEG,FLH STL	83385	OBD
-12	210-0586-00			2		NUT,PL,ASSEM WA:4-40 X 0.25,STL CD PL	83385	OBD
						- - - * - - -		
-13	----- -----			1		CKT BOARD ASSY:SIGNALS OUT(SEE A25 REPL)		
-14	131-0608-00			8		. TERMINAL,PIN:0.365 L X 0.025 PH BRZ GOLD	22526	47357
-15	131-1003-00			8		. CONN,RCPT,ELEC:CKT BD MT,3 PRONG	80009	131-1003-00
-16	136-0220-00	B010100	B141189X	12		. SKT,PL-IN ELEK:TRANSISTOR 3 CONTACT,PCB MT	71785	133-23-11-034
-17	136-0252-07	B010100	B141189	8		. SOCKET,PIN CONN:W/O DIMPLE	22526	75060-012
	136-0252-07	B141190		44		. SOCKET,PIN CONN:W/O DIMPLE	22526	75060-012
-18	260-0723-00			2		. SWITCH,SLIDE:DPDT,0.5A,125VAC	79727	GF126-0028
-19	346-0045-00			2		STRAP,CONN COV:BNC ONE END,POLYPROPYLENE	80009	346-0045-00
-20	200-0678-00			2		COVER,ELEC CONN:BNC,SHORTING	91836	KC89-58TR5
-21	131-0955-00			10		CONN,RCPT,ELEC:BNC,FEMALE	13511	31-279
-22	210-0207-00			3		TERMINAL,LUG:0.375 INCH DIAMETER	12697	01136902
-23	386-2759-00			1		PLATE,CONN MTG:	80009	386-2759-00
						(ATTACHING PARTS)		
-24	211-0097-00			4		SCREW,MACHINE:4-40 X 0.312 INCH,PNH STL	83385	OBD
						- - - * - - -		
-25	386-2763-00			1		PANEL,REAR:	80009	386-2763-00
						(ATTACHING PARTS)		
-26	212-0023-00			3		SCREW,MACHINE:8-32 X 0.375 INCH,PNH STL	83385	OBD
-27	211-0541-00			2		SCREW,MACHINE:6-32 X 0.25"100 DEG,FLH STL	83385	OBD
-28	212-0040-00			6		SCREW,MACHINE:8-32 X 0.375 100 DEG,FLH STL	83385	OBD
-29	210-0457-00			2		NUT,PL,ASSEM WA:6-32 X 0.312 INCH,STL	83385	OBD
-30	210-0458-00			7		NUT,PL,ASSEM WA:8-32 X 0.344 INCH,STL	83385	OBD
						- - - * - - -		
-31	200-1618-00			1		COVER,ACCESS:	80009	200-1618-00
						(ATTACHING PARTS)		
-32	211-0007-00			4		SCREW,MACHINE:4-40 X 0.188 INCH,PNH STL	83385	OBD
-33	211-0101-00			2		SCREW,MACHINE:4-40 X 0.25,100 DEG,FLH STL	83385	OBD
						- - - * - - -		
-34	260-1195-00			1		SWITCH,SLIDE:DP3T,0.5A,125VAC	82389	XW-3029
						(ATTACHING PARTS)		
-35	211-0101-00			2		SCREW,MACHINE:4-40 X 0.25,100 DEG,FLH STL	83385	OBD
-36	210-0586-00			2		NUT,PL,ASSEM WA:4-40 X 0.25,STL CD PL	83385	OBD
						- - - * - - -		
-37	407-1420-00			1		BRACKET,CKT BD:	80009	407-1420-00
						(ATTACHING PARTS)		
-38	211-0008-00			2		SCREW,MACHINE:4-40 X 0.25 INCH,PNH STL	83385	OBD
-39	211-0101-00			3		SCREW,MACHINE:4-40 X 0.25,100 DEG,FLH STL	83385	OBD
						- - - * - - -		
-40	----- -----			1		CKT BOARD ASSY:CRT(SEE A23 REPL)		
						(ATTACHING PARTS)		
-41	211-0008-00			2		SCREW,MACHINE:4-40 X 0.25 INCH,PNH STL	83385	OBD
						- - - * - - -		

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Fig. & Index No.	Tektronix Part No.	Serial/Model No. Eff	Dscont	Qty	1 2 3 4 5	Name & Description	Mfr Code	Mfr Part Number
6-	----- -----			-		. CKT BOARD ASSY INCLUDES:		
-42	131-0608-00			44		. TERMINAL,PIN:0.365 L X 0.025 PH BRZ GOLD	22526	47357
	131-0787-00			18		. CONTACT,ELEC:0.64 INCH LONG	22526	47359
	131-0589-00			4		. TERMINAL,PIN:0.46 L X 0.025 SQ	80009	131-0589-00
-43	131-1003-00			1		. CONN,RCPT,ELEC:CKT BD MT,3 PRONG	80009	131-1003-00
-44	136-0183-00			1		. SOCKET,PLUG-IN:3 PIN,ROUND	80009	136-0183-00
-45	136-0252-07	B010100	B141189	1		. SOCKET,PIN CONN:W/O DIMPLE	22526	75060-012
	136-0252-07	B141190		21		. SOCKET,PIN CONN:W/O DIMPLE	22526	75060-012
-46	136-0220-00	B010100	B141189X	6		. SKT,PL-IN ELEK:TRANSISTOR 3 CONTACT,PCB MT	71785	133-23-11-034
-47	136-0350-00			4		. SOCKET,PLUG-IN:3 PIN,LOW PROFILE	80009	136-0350-00
-48	214-0579-00			5		. TERM,TEST POINT:BRS CD PL	80009	214-0579-00
-49	352-0068-00			2		. HOLDER,TEST PRO:PLASTIC	80009	352-0068-00
-50	386-1557-00			2		. SPACER,CKT BD:0.29 H,ACETAL	80009	386-1557-00
-51	----- -----			2		CKT BOARD ASSY:Z-AXIS 1,2(SEE A21/A22 REPL)		
						(ATTACHING PARTS FOR EACH ASSY)		
-52	211-0007-00			2		SCREW,MACHINE:4-40 X 0.188 INCH,PNH STL	83385	OBD
						- - - * - - -		
	----- -----			-		. EACH ASSY INCLUDES:		
-53	131-1003-00			2		. CONN,RCPT,ELEC:CKT BD MT,3 PRONG	80009	131-1003-00
-54	136-0183-00	B010100	B141189X	1		. SOCKET,PLUG-IN:3 PIN,ROUND	80009	136-0183-00
-55	136-0252-07	B010100	B141189	23		. SOCKET,PIN CONN:W/O DIMPLE	22526	75060-012
	136-0252-07	B141190		26		. SOCKET,PIN CONN:W/O DIMPLE	22526	75060-012
-56	136-0328-02			4		. SOCKET,PIN TERM:HORIZONTAL	00779	86282-2
-57	214-0579-00			8		. TERM,TEST POINT:BRS CD PL	80009	214-0579-00
-58	136-0461-00			1		. SKT,PL-IN ELEC:CIRCUIT BD,5 CONTACT	80009	136-0461-00
-59	407-1419-00			2		BRACKET,CKT BD:	80009	407-1419-00
						(ATTACHING PARTS)		
-60	211-0008-00			4		SCREW,MACHINE:4-40 X 0.25 INCH,PNH STL	83385	OBD
-61	210-0586-00			4		NUT,PL,ASSEM WA:4-40 X 0.25,STL CD PL	83385	OBD
						- - - * - - -		
-62	378-2001-00			1		DEFLECTION,AIR:	80009	378-2001-00
						(ATTACHING PARTS)		
-63	211-0097-00			2		SCREW,MACHINE:4-40 X 0.312 INCH,PNH STL	83385	OBD
						- - - * - - -		
-64	343-0411-00			2		STRAP,RETAINING:2.494 X 0.8,STL TIN PL	80009	343-0411-00
-65	369-0035-00			1		IMPLR,FAN AXIAL:PLASTIC	52792	3500-CCW.080N
-66	----- -----			1		CKT BOARD ASSY:FAN MOTOR(SEE A30 REPL)		
-67	131-0608-00			2		. TERMINAL,PIN:0.365 L X 0.025 PH BRZ GOLD	22526	47357
-68	136-0252-07			17		. SOCKET,PIN CONN:W/O DIMPLE	22526	75060-012
-69	147-0035-00			1		. MOTOR,DC:BRUSHLESS,10-15VDC,145MA	25088	1AD3001-0A
-70	129-0273-00			2		POST,ELEC-MECH:0.625 X 0.188 INCH OD	80009	129-0273-00
						(ATTACHING PARTS)		
-71	211-0097-00			2		SCREW,MACHINE:4-40 X 0.312 INCH,PNH STL	83385	OBD
						- - - * - - -		
-72	343-0213-00			1		CLAMP,LOOP:0.2 ID,PLASTIC	80009	343-0213-00
-73	255-0334-00			IN		PLASTIC CHANNEL:12.75 X 0.175X 0.155,NYL	11897	122-37-2500
-74	210-0207-00			1		TERMINAL,LUG:0.375 INCH DIAMETER	12697	01136902
						(ATTACHING PARTS)		
-75	211-0008-00			1		SCREW,MACHINE:4-40 X 0.25 INCH,PNH STL	83385	OBD
-76	210-0586-00			1		NUT,PL,ASSEM WA:4-40 X 0.25,STL CD PL	83385	OBD
						- - - * - - -		
-77	343-0008-00			1		CLAMP,LOOP:0.750 INCH DIA,PLASTIC	95987	3-4-6B
						(ATTACHING PARTS)		
-78	211-0510-00			1		SCREW,MACHINE:6-32 X 0.375,PNH,STL,CD PL	83385	OBD
-79	210-0457-00			1		NUT,PL,ASSEM WA:6-32 X 0.312 INCH,STL	83385	OBD
-80	210-0863-00			1		WSHR,LOOP CLAMP:0.187 ID U/W 0.5 W CLP,STL	95987	C191
						- - - * - - -		
-81	337-1937-00			1		SHIELD,ELEC:	80009	337-1937-00
						(ATTACHING PARTS)		
-82	211-0101-00			2		SCREW,MACHINE:4-40 X 0.25,100 DEG,FLH STL	83385	OBD
						- - - * - - -		
-83	386-2761-00			1		SUPPORT,CHASSIS:	80009	386-2761-00
-84	390-0390-00			1		CABINET SIDE:RIGHT	80009	390-0390-00
-85	390-0391-00			1		CABINET SIDE:LEFT	80009	390-0391-00

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Fig. & Index No.	Tektronix Part No.	Serial/Model No. Eff	Dscont	Qty	1 2 3 4 5	Name & Description	Mfr Code	Mfr Part Number
7-1	426-0514-00			1		FRAME,MASK:PLASTIC	80009	426-0514-00
-2	378-0625-00			1		FILTER,LT,CRT:BLUE,5.15 X 4.4 X 0.03	80009	378-0625-00
-3	331-0258-03			1		MASK,CRT SCALE:	80009	331-0258-03
-4	204-0380-00			1		BODY,TERMINAL:	80009	204-0380-00
-5	131-0765-01			3		TERM,FEED THRU:0.584 L X 0.625 OD BRS GOLD	80009	131-0765-01
-6	200-0939-01			1		RTNR,CRT SCALE:5.55 X 5.068 X 0.475,AL	80009	200-0939-01
						(ATTACHING PARTS)		
-7	212-0023-00	B010100	B100525	4		SCREW,MACHINE:8-32 X 0.375 INCH,PNH STL	83385	OBD
	212-0008-00	B100526		4		SCREW,MACHINE:8-32 X 0.500 INCH,PNH STL	83385	OBD
						- - - * - - -		
-8	337-1159-00	B010100	B140769	1		SHLD,IMPLOSION:4.78 X 3.95 X0.07 PLSTC	80009	337-1159-00
	337-1159-03	B140770		1		SHLD,IMPLOSION:4.75 X 3.93 X0.7 THK,PLSTC	80009	337-1159-03
-9	331-0245-00			1		MASK,CRT SCALE:	80009	331-0245-00
-10	386-1517-00			4		SUPPORT,CRT:FRONT	80009	386-1517-00
-11	386-1884-01			1		SUPPORT,CRT:FRONT	80009	386-1884-01
						(ATTACHING PARTS)		
-12	212-0040-00			2		SCREW,MACHINE:8-32 X 0.375 100 DEG,FLH STL	83385	OBD
-13	211-0538-00			2		SCREW,MACHINE:6-32 X 0.312"100 DEG,FLH STL	83385	OBD
						- - - * - -		
-14	220-0699-00			1		NUT,BLOCK:	80009	220-0699-00
						(ATTACHING PARTS)		
-15	212-0070-00			1		SCREW,MACHINE:8-32 X 0.312"100 DEG,FLH STL	83385	OBD
						- - - * - - -		
-16	348-0216-00			1		SHLD GSKT ELEK:MESH TYPE,RING,5.25 ID	07700	30-90042
-17	134-0119-00			1		PLUG,PLASTIC:0.17 OD X 0.144 INCH LONG	80009	134-0119-00
-18	348-0031-00			1		GROMMET,PLASTIC:0.156 INCH DIA	80009	348-0031-00
-19	----- -----			1		CKT BOARD ASSY:GRATICULE LAMPS(SEE A2 REPL)		
-20	378-0614-00	B010100	B140829	1		. REFLECTOR,LIGHT:MOLDED PLASTIC	80009	378-0614-00
	378-0614-01	B140820		1		. REFLECTOR,LIGHT:INT SCALE ILLUMINATION	80009	378-0614-01
-21	344-0179-00			2		. CLIP,REFL RTNG:PLASTIC	80009	344-0179-00
						(ATTACHING PARTS)		
-22	211-0062-00			2		. SCREW,MACHINE:2-56 X 0.312 INCH,RDH STL	83385	OBD
						- - - * - - -		
-23	366-0494-00			2		KNOB:GRAY WITH SETSCREW	80009	366-0494-00
	213-0153-00			1		. SETSCREW:5-40 X 0.125,STL BK OXD,HEX SKT	000CY	OBD
-24	366-1023-01			2		KNOB:GY,0.127 ID X0.392 OD X 0.531 H	80009	366-1023-01
	213-0153-00			1		. SETSCREW:5-40 X 0.125,STL BK OXD,HEX SKT	000CY	OBD
-25	366-0392-02			2		KNOB:GY,0.125 ID X0.375 H X 0.812 H	80009	366-0392-02
	214-0949-00			1		. SPR,HLCL,TRSN:0.282" OD X 0.125" LONG	80009	214-0949-00
-26	426-0681-00			14		FR,PUSH BUTTON:GRAY PLASTIC	80009	426-0681-00
-27	426-0568-00			8		FR,PUSHBUTTON:PANEL MOUNT	80009	426-0568-00
-28	358-0301-02			5		BUSHING,SLEEVE:GRAY PLASTIC	80009	358-0301-02
-29	378-0690-00			1		LENS,LIGHT:	80009	378-0690-00
-30	200-0103-00			1		NUT,PLAIN,KNURL:0.25-28 X 0.375" OD,BRASS	80009	200-0103-00
-31	129-0103-00			1		POST,BDG,ELEC:ASSEMBLY	80009	129-0103-00
						(ATTACHING PARTS)		
-32	210-0583-00			1		NUT,PLAIN,HEX.:0.25-32 X 0.312 INCH,BRS	73743	2X20317-402
-33	210-0046-00			1		WASHER,LOCK:0.261 ID,INTL,0.018 THK,BRS	78189	1214-05-00-0541C
						- - - * - - -		
-34	260-1060-01			1		SWITCH,TOGGLE:DPST,15A,125VAC	27193	8906K-2507
						(ATTACHING PARTS)		
-35	210-0473-00			1		NUT,PLAIN,DODEC:0.469-32 X 0.638 INCH,BRS	80009	210-0473-00
-36	210-0902-00			1		WASHER,FLAT:0.470 ID X 0.656 INCH OD,STL	12327	OBD
-37	354-0055-00			1		WASHER,KEY:0.469 ID X 0.688 INCH OD,STL	80009	354-0055-00
-38	210-0414-00			1		NUT,PLAIN,HEX.:0.468-32 X 0.562 INCH,BRS	73743	3167-402
						- - - * - - -		
-39	367-0138-00			2		HANDLE,BOW:U SHAPED	06540	14053-A-1032-1B
						(ATTACHING PARTS)		
-40	212-0559-00			4		SCREW,MACHINE:10-32 X 0.625FLH,100DEG,STL	83385	OBD
						- - - * - - -		
-41	366-1257-00			8		PUSH BUTTON:GRAY PLASTIC	80009	366-1257-00
-42	384-1136-00			4		EXTENSION SHAFT:0.95 INCH LONG	80009	384-1136-00

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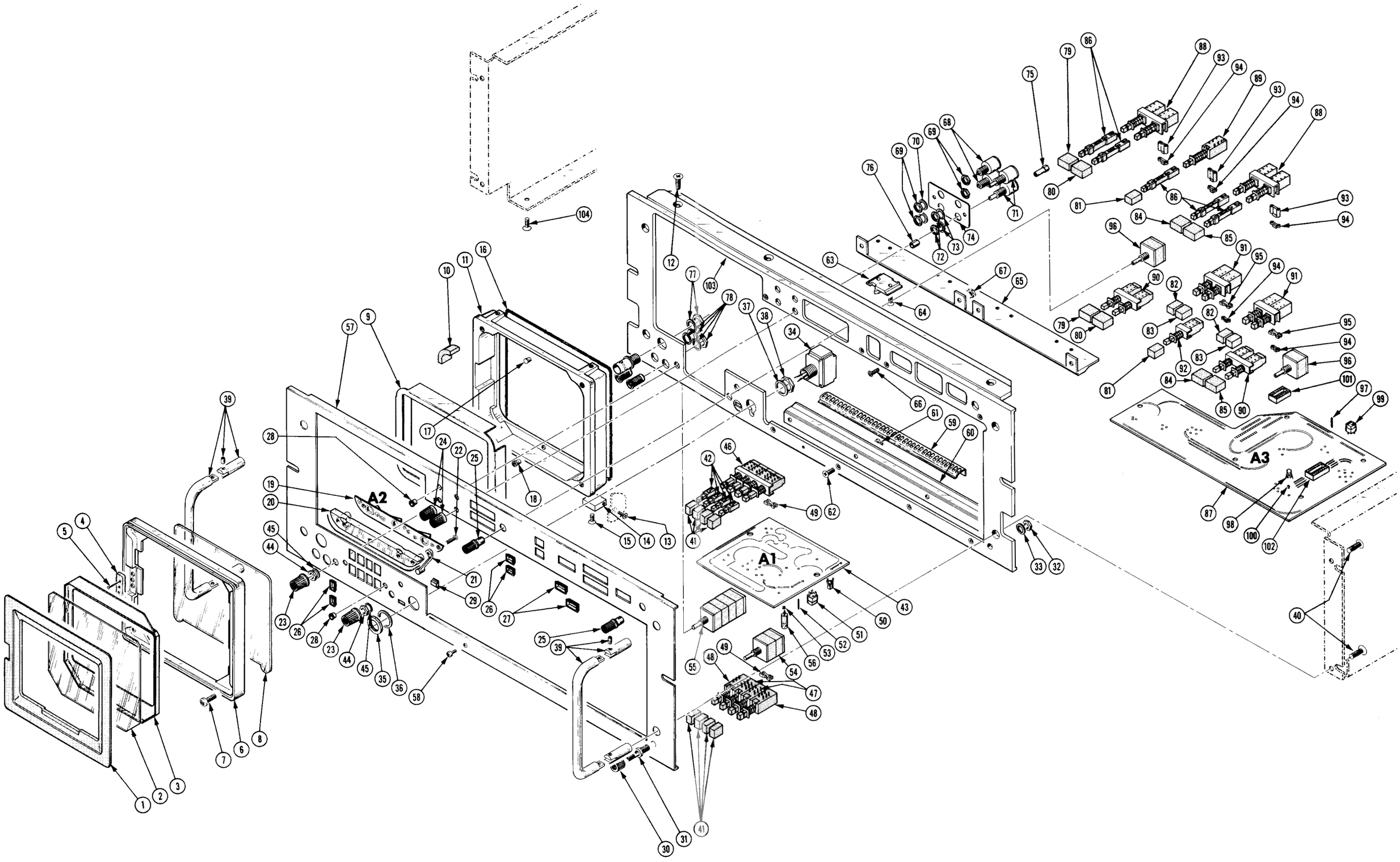
Fig. & Index No.	Tektronix Part No.	Serial/Model No. Eff	Dscont	Qty	1 2 3 4 5	Name & Description	Mfr Code	Mfr Part Number
7-43	----- -----			1		CKT BOARD ASSY:CALIBRATOR(SEE A1 REPL)		
						(ATTACHING PARTS)		
-44	210-0583-00			2		NUT,PLAIN,HEX.:0.25-32 X 0.312 INCH,BRS	73743	2X20317-402
-45	210-0940-00			2		WASHER,FLAT:0.25 ID X 0.375 INCH OD,STL	79807	OBD
						- - - * - - -		
	----- -----			-		. CKT BOARD ASSY INCLUDES:		
-46	----- -----			1		. SWITCH,PUSH:(SEE S920 REPL)		
-47	----- -----			2		. SWITCH,PUSH:(SEE S940,S970 REPL)		
-48	----- -----			2		. SWITCH,PUSH:(SEE S950,S974 REPL)		
-49	361-0411-00			12		. SPACER,PUSH SW:0.13 W X 0.375 INCH L,PLSTC	71590	J64285-00
-50	131-1003-00			2		. CONN,RCPT,ELEC:CKT BD MT,3 PRONG	80009	131-1003-00
-51	136-0220-00	B010100	B141189X	7		. SKT,PL-IN ELEK:TRANSISTOR 3 CONTACT,PCB MT	71785	133-23-11-034
-52	131-0608-00			29		. TERMINAL,PIN:0.365 L X 0.025 PH BRZ GOLD	22526	47357
-53	136-0252-07	B010100	B141189	4		. SOCKET,PIN CONN:W/O DIMPLE	22526	75060-012
	136-0252-07	B141190		25		. SOCKET,PIN CONN:W/O DIMPLE	22526	75060-012
-54	----- -----			1		. VAR,RES:(SEE R960 REPL)		
-55	----- -----			1		. VAR,RES:(SEE R978 REPL)		
	131-0993-02			1		. LINK,TERM.CONNE:2 WIRE RED	00779	530153-0
-56	150-0097-01			1		LAMP,INCAND:6.3V,0.2A,#7381,FROSTED	08806	7381F
-57	333-1771-01			1		PANEL,FRONT:	80009	333-1771-01
						(ATTACHING PARTS)		
-58	211-0022-00			1		SCREW,MACHINE:2-56 X 0.188 INCH,PNH STL	83385	OBD
						- - - * - - -		
-59	348-0204-00			2		SHLD GSKT,ELEK:FINGER TYPE,10.65 INCH LONG	80009	348-0204-00
-60	386-1894-00			1		SPRT,ELEK SHLD:BOTTOM	80009	386-1894-00
						(ATTACHING PARTS)		
-61	210-0586-00			4		NUT,PL,ASSEM WA:4-40 X 0.25,STL CD PL	83385	OBD
-62	211-0101-00			4		SCREW,MACHINE:4-40 X 0.25,100 DEG,FLH STL	83385	OBD
						- - - * - - -		
-63	351-0202-00			4		GUIDE,SLIDE:UPPER	80009	351-0202-00
						(ATTACHING PARTS)		
-64	211-0101-00			8		SCREW,MACHINE:4-40 X 0.25,100 DEG,FLH STL	83385	OBD
						- - - * - - -		
-65	386-1893-00			1		SPRT,ELEK SHLD:TOP	80009	386-1893-00
						(ATTACHING PARTS)		
-66	211-0101-00			4		SCREW,MACHINE:4-40 X 0.25,100 DEG,FLH STL	83385	OBD
-67	210-0586-00			4		NUT,PL,ASSEM WA:4-40 X 0.25,STL CD PL	83385	OBD
						- - - * - - -		
-68	----- -----			2		RES.,VAR:(SEE R3195,R3196 REPL)		
						(ATTACHING PARTS)		
-69	210-0583-00			4		NUT,PLAIN,HEX.:0.25-32 X 0.312 INCH,BRS	73743	2X20317-402
-70	210-0046-00			2		WASHER,LOCK:0.261 ID,INTL,0.018 THK,BRS	78189	1214-05-00-0541C
						- - - * - - -		
-71	----- -----			2		RES.,VAR:(SEE R3193,R3194 REPL)		
						(ATTACHING PARTS)		
-72	210-0583-00			2		NUT,PLAIN,HEX.:0.25-32 X 0.312 INCH,BRS	73743	2X20317-402
-73	210-0046-00			2		WASHER,LOCK:0.261 ID,INTL,0.018 THK,BRS	78189	1214-05-00-0541C
						- - - * - - -		
-74	386-2765-00			1		PLATE,RES MTG:	80009	386-2765-00
						(ATTACHING PARTS)		
-75	220-0413-00			2		NUT,SLEEVE:4-40 X 0.562 INCH LONG	80009	220-0413-00
						- - - * - - -		
-76	361-0126-00			2		POST,ELEC-MECH:0.116 OD X 0.25 INCH LONG	80009	361-0126-00
-77	131-1315-00			1		CONN,RCPT,ELEC:BNC,FEMALE	80009	131-1315-00
-78	131-0771-00			2		CONN,RCPT,ELEC:4 CONT,QUICK DISCONNECT	0000A	ROA-304NYL
-79	366-1161-57			2		PUSH BUTTON:GRAY--LEFT	80009	366-1161-57
-80	366-1161-58			2		PUSH BUTTON:GRAY--RIGHT	80009	366-1161-58
-81	366-1257-00			2		PUSH BUTTON:GRAY PLASTIC	80009	366-1257-00
-82	366-1402-02			2		PUSH BUTTON:LEFT	80009	366-1402-02
-83	366-1402-06			2		PUSH BUTTON:RIGHT	80009	366-1402-06
-84	366-1161-55			2		PUSH BUTTON:GRAY--A	80009	366-1161-55
-85	366-1161-56			2		PUSH BUTTON:GRAY--B	80009	366-1161-56
-86	384-1099-00			5		EXTENSION SHAFT:PUSH BUTTON,1.54 INCH LONG	80009	384-1099-00
-87	----- -----			1		CKT BOARD ASSY:MODE SWITCH(SEE A3 REPL)		
-88	----- -----			2		. SWITCH,PUSH:(SEE S3153 REPL)		
-89	----- -----			1		. SWITCH,PUSH:(SEE S3165 REPL)		

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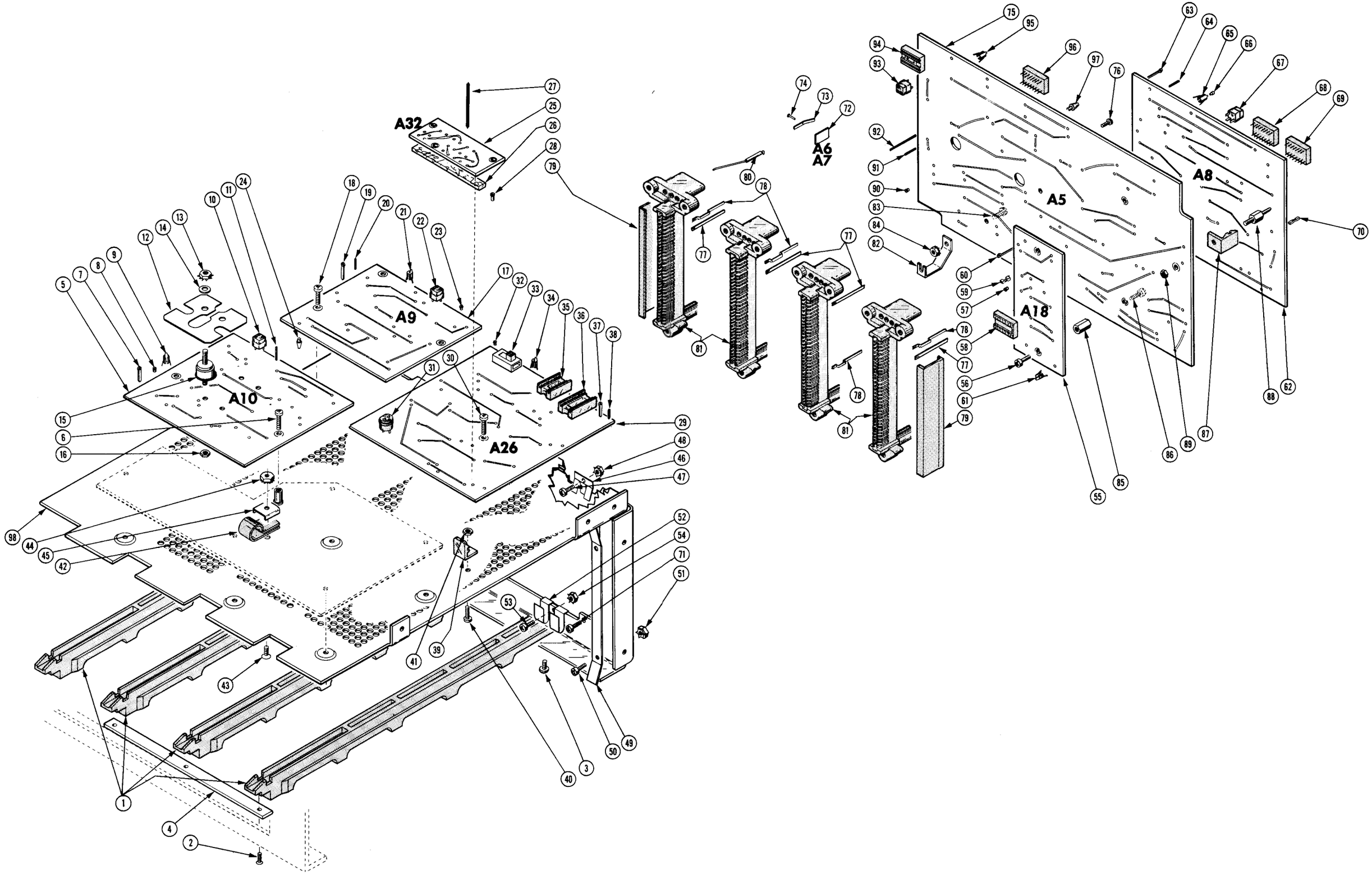
Fig. & Index No.	Tektronix Part No.	Serial/Model No. Eff	Dscont	Qty	1 2 3 4 5	Name & Description	Mfr Code	Mfr Part Number
7-90	----- -----			2		. SWITCH,PUSH:(SEE S159, S3155 REPL)		
-91	----- -----			2		. SWITCH,PUSH:(SEE S3163 REPL)		
-92	----- -----			1		. SWITCH,PUSH:(SEE S167 REPL)		
-93	361-0382-00			10		. SPACER,PB SW:BROWN,0.275 INCH LONG	80009	361-0382-00
-94	361-0384-00			18		. SPACER,PB SW:0.133 INCH LONG	80009	361-0384-00
-95	361-0411-00			8		. SPACER,PUSH SW:0.13 W X 0.375 INCH L,PLSTC	71590	J64285-00
-96	----- -----			2		. RES.,VAR:(SEE R3185,R3189 REPL)		
-97	131-0608-00			70		. TERMINAL,PIN:0.365 L X 0.025 PH BRZ GOLD	22526	47357
-98	131-1003-00			1		. CONN,RCPT,ELEC:CKT BD MT,3 PRONG	80009	131-1003-00
-99	136-0220-00	B010100	B141189X	6		. SKT,PL-IN ELEK:TRANSISTOR 3 CONTACT,PCB MT	71785	133-23-11-034
-100	136-0252-07	B010100	B141189	1		. SOCKET,PIN CONN:W/O DIMPLE	22526	75060-012
	136-0252-07	B141190		19		. SOCKET,PIN CONN:W/O DIMPLE	22526	75060-012
-101	136-0260-02			1		. SKT,PL-IN ELEK:MICROCIRCUIT,16 DIP,LOW CLE	71785	133-51-92-008
-102	136-0269-02			14		. SKT,PL-IN ELEK:MICROCIRCUIT,14 DIP,LOW CLE	73803	CS9002-14
-103	386-2760-00			1		SUBPANEL,FRONT:	80009	386-2760-00
						(ATTACHING PARTS)		
-104	212-0040-00			4		SCREW,MACHINE:8-32 X 0.375 100 DEG,FLH STL	83385	OBD
	210-0458-00			1		NUT,PL,ASSEM WA:8-32 X 0.344 INCH,STL	83385	OBD

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Fig. & Index No.	Tektronix Part No.	Serial/Model No. Eff	Dscont	Qty	1 2 3 4 5	Name & Description	Mfr Code	Mfr Part Number
8-1	351-0181-05			4		GUIDE,SLIDE:	80009	351-0181-05
						(ATTACHING PARTS)		
	213-0229-00			4		SCR,TPG,THD FOR:6-20 X0.375"100 DEG,FLH STL	93907	OBD
-3	213-0146-00			4		SCR,TPG,THD FOR:6-20 X 0.313 INCH,PNH STL	83385	OBD
						- - - * - - -		
-4	361-0585-00			1		SPCR,GUIDE RAIL:	80009	361-0585-00
-5	----- -----			1		CKT BOARD ASSY:CROSSOVER VERT INTFC(SEE A10 REPL)		
						(ATTACHING PARTS)		
-6	211-0008-00			3		SCREW,MACHINE:4-40 X 0.25 INCH,PNH STL	83385	OBD
						- - - * - - -		
	----- -----			-		. CKT BOARD ASSY INCLUDES:		
-7	214-0579-00			1		. TERM,TEST POINT:BRS CD PL	80009	214-0579-00
-8	136-0252-07	B010100	B141189	15		. SOCKET,PIN CONN:W/O DIMPLE	22526	75060-012
	136-0252-07	B141190		24		. SOCKET,PIN CONN:W/O DIMPLE	22526	75060-012
	136-0252-00			64		. SOCKET,PIN TERM:0.145 INCH LONG	00779	2-330808-7
-9	131-1003-00			12		. CONN,RCPT,ELEC:CKT BD MT,3 PRONG	80009	131-1003-00
-10	136-0220-00	B010100	B141189X	3		. SKT,PL-IN ELEK:TRANSISTOR 3 CONTACT,PCB MT	71785	133-23-11-034
-11	131-0608-00			6		. TERMINAL,PIN:0.365 L X 0.025 PH BRZ GOLD	22526	47357
-12	214-1990-00			2		. HT SK,MICROCKT:	80009	214-1990-00
						(ATTACHING PARTS)		
-13	220-0410-00			4		. NUT,EXTENDED WA:10-32 X 0.375 INCH,STL	83385	OBD
-14	210-0812-00			4		. WASHER,NONMETAL:#10,FIBER	86445	OBD
						- - - * - - -		
-15	----- -----			4		. MICROCKT,LI:(SEE U3615,3665,3715,3765 REPL)		
						(ATTACHING PARTS)		
-16	210-0406-00			4		. NUT,PLAIN,HEX.:4-40 X 0.188 INCH,BRS	73743	2X12161-402
	210-1002-00			4		. WASHER,FLAT:0.125 ID X 0.25 INCH OD,BRS	12327	OBD
						- - - * - - -		
-17	----- -----			1		CKT BOARD ASSY:TRIGGER SELECTOR(SEE A9 REPL)		
						(ATTACHING PARTS)		
-18	211-0008-00			3		SCREW,MACHINE:4-40 X 0.25 INCH,PNH STL	83385	OBD
						- - - * - - -		
	----- -----			-		. CKT BOARD ASSY INCLUDES:		
-19	214-0579-00			6		. TERM,TEST POINT:BRS CD PL	80009	214-0579-00
-20	131-0608-00			6		. TERMINAL,PIN:0.365 L X 0.025 PH BRZ GOLD	22526	47357
-21	131-1003-00			8		. CONN,RCPT,ELEC:CKT BD MT,3 PRONG	80009	131-1003-00
-22	136-0220-00	B010100	B141189X	8		. SKT,PL-IN ELEK:TRANSISTOR 3 CONTACT,PCB MT	71785	133-23-11-034
-23	136-0252-07	B010100	B141189	74		. SOCKET,PIN CONN:W/O DIMPLE	22526	75060-012
	136-0252-07	B141190		82		. SOCKET,PIN CONN:W/O DIMPLE	22526	75060-012
-24	386-1557-00			2		. SPACER,CKT BD:0.29 H,ACETAL	80009	386-1557-00
	672-0572-00	XB080000		1		CKT BOARD ASSY:READOUT PROTECTION #1	80009	672-0572-00
-25	----- -----	XB080000		1		. CKT BOARD ASSY:PROTECTION(SEE A32 REPL)		
-26	253-0162-00	XB080000	B131429	FT		. . TAPE,PRESS SENS:POLYURETHANE SPONGE	04963	4116 TYPE A
	253-0160-00	B131430		AR		. . TAPE,PRESS.SENS:ADHESIVE,2.124 FT LONG	04963	4116 TYPE A
-27	131-0589-00	XB080000		20		. . TERMINAL,PIN:0.46 L X 0.025 SQ	80009	131-0589-00
-28	210-0702-00	XB080000		2		. EYELET,METALLIC:0.047 OD X 0.125 INCH LONG	07707	S6127
-29	----- -----			1		. CKT BOARD ASSY:READOUT(SEE A26 REPL)		
						(ATTACHING PARTS)		
-30	211-0008-00			1		. SCREW,MACHINE:4-40 X 0.25 INCH,PNH STL	83385	OBD
						- - - * - - -		
	----- -----			-		. . CKT BOARD ASSY INCLUDES:		
-31	136-0235-00			1		. . SOCKET,PLUG-IN:6 CONTACT,ROUND	71785	133-96-12-062
-32	136-0252-07			39		. . SOCKET,PIN CONN:W/O DIMPLE	22526	75060-012
	136-0252-01			6		. . CONTACT,ELEC:0.178 INCH LONG	00779	1-332095-2
-33	260-0723-00			1		. . SWITCH,SLIDE:DPDT,0.5A,125VAC	79727	GF126-0028
-34	131-1003-00			6		. . CONN,RCPT,ELEC:CKT BD MT,3 PRONG	80009	131-1003-00
-35	136-0269-02			3		. . SKT,PL-IN ELEK:MICROCIRCUIT,14 DIP,LOW CLE	73803	CS9002-14
-36	136-0260-01			14		. . SOCKET,PLUG-IN:16 CONTACT,RECT SHAPE	71785	133-51-02-075
-37	214-0579-00	B010100	B079999	21		. . TERM,TEST POINT:BRS CD PL	80009	214-0579-00
	214-0579-00	B080000		20		. . TERM,TEST POINT:BRS CD PL	80009	214-0579-00
-38	131-0608-00			42		. . TERMINAL,PIN:0.365 L X 0.025 PH BRZ GOLD	22526	47357
-39	344-0132-00			4		CLIP,ELECTRICAL:MOLDED PLSTC	80009	344-0132-00
						(ATTACHING PARTS)		
-40	211-0101-00			4		SCREW,MACHINE:4-40 X 0.25,100 DEG,FLH STL	83385	OBD
-41	210-0406-00			4		NUT,PLAIN,HEX.:4-40 X 0.188 INCH,BRS	73743	2X12161-402
						- - - * - - -		

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Fig. & Index No.	Tektronix Part No.	Serial/Model No. Eff	Dscont	Qty	1 2 3 4 5	Name & Description	Mfr Code	Mfr Part Number
8-42	343-0004-00			1		CLAMP,LOOP:0.312 INCH DIAMETER,PLSTC	95987	5-16-6B
						(ATTACHING PARTS)		
-43	211-0559-00			1		SCREW,MACHINE:6-32 X 0.375"100 DEG,FLH STL	83385	OBD
-44	210-0457-00			1		NUT,PL,ASSEM WA:6-32 X 0.312 INCH,STL	83385	OBD
-45	210-0863-00			1		WSHR,LOOP CLAMP:0.187 ID U/W 0.5 W CLP,STL	95987	C191
						- - - * - - -		
-46	131-0799-00			3		CONTACT,ELEC:PLUG-IN GROUND	80009	131-0799-00
						(ATTACHING PARTS)		
-47	211-0008-00			3		SCREW,MACHINE:4-40 X 0.25 INCH,PNH STL	83385	OBD
-48	210-0586-00			3		NUT,PL,ASSEM WA:4-40 X 0.25,STL CD PL	83385	OBD
						- - - * - - -		
-49	131-0800-00			2		CONTACT,ELEC:PLUG-IN GROUND	80009	131-0800-00
						(ATTACHING PARTS)		
-50	211-0008-00			4		SCREW,MACHINE:4-40 X 0.25 INCH,PNH STL	83385	OBD
-51	210-0586-00			4		NUT,PL,ASSEM WA:4-40 X 0.25,STL CD PL	83385	OBD
						- - - * - - -		
-52	131-0930-00			3		CONTACT,ELEC:PLUG-IN GROUND	80009	131-0930-00
						(ATTACHING PARTS)		
-53	211-0008-00			3		SCREW,MACHINE:4-40 X 0.25 INCH,PNH STL	83385	OBD
-54	210-0586-00			3		NUT,PL,ASSEM WA:4-40 X 0.25,STL CD PL	83385	OBD
						- - - * - - -		
-55	----- -----			1		CKT BOARD ASSY:HORIZ INTERFACE(SEE A18 REPL)		
						(ATTACHING PARTS)		
-56	211-0008-00			2		SCREW,MACHINE:4-40 X 0.25 INCH,PNH STL	83385	OBD
						- - - * - - -		
	----- -----			-		. CKT BOARD ASSY INCLUDES:		
-57	136-0252-07			6		. SOCKET,PIN CONN:W/O DIMPLE	22526	75060-012
-58	136-0260-02			2		. SKT,PL-IN ELEK:MICROCIRCUIT,16 DIP,LOW CLE	71785	133-51-92-008
-59	136-0263-04			11		. SOCKET,PIN TERM:FOR 0.025 INCH SQUARE PIN	22526	75377-001
-60	214-0579-00			6		. TERM,TEST POINT:BRS CD PL	80009	214-0579-00
-61	131-1003-00			6		. CONN,RCPT,ELEC:CKT BD MT,3 PRONG	80009	131-1003-00
-62	----- -----			1		CKT BOARD ASSY:LOGIC(SEE A8 REPL)		
-63	214-0579-00			14		. TERM,TEST POINT:BRS CD PL	80009	214-0579-00
-64	131-0608-00			11		. TERMINAL,PIN:0.365 L X 0.025 PH BRZ GOLD	22526	47357
-65	131-1003-00			5		. CONN,RCPT,ELEC:CKT BD MT,3 PRONG	80009	131-1003-00
-66	136-0252-07	B010100	B141189	5		. SOCKET,PIN CONN:W/O DIMPLE	22526	75060-012
	136-0252-07	B141190		41		. SOCKET,PIN CONN:W/O DIMPLE	22526	75060-012
-67	136-0220-00	B010100	B141189X	15		. SKT,PL-IN ELEK:TRANSISTOR 3 CONTACT,PCB MT	71785	133-23-11-034
-68	136-0260-02			6		. SKT,PL-IN ELEK:MICROCIRCUIT,16 DIP,LOW CLE	71785	133-51-92-008
-69	136-0269-02			8		. SKT,PL-IN ELEK:MICROCIRCUIT,14 DIP,LOW CLE	73803	CS9002-14
-70	136-0263-03			35		. SOCKET,PIN TERM:FOR 0.025 INCH SQUARE PIN	00779	85864-2
	672-0417-00			1		MAIN INTERFACE ASSEMBLY:	80009	672-0417-00
						(ATTACHING PARTS)		
-71	213-0263-00			12		SCREW,TPG,TF:4-24 X 0.375 INCH,PNH STL	83385	OBD
						- - - * - - -		
-72	----- -----			2		. CKT BOARD ASSY:50 OHM FOL(SEE A6/A7 REPL)		
-73	131-1149-01			6		. . CONTACT,ELEC:CKT BOARD EDGE	80009	131-1149-01
-74	210-0657-01			1		. . EYELET,METALLIC:0.089 OD X 0.218 INCH LONG	80009	210-0657-01
-75	----- -----			1		. CKT BOARD ASSY:MAIN INTERFACE(SEE A5 REPL)		
	131-0767-05			2		. . CONNECTOR,RCPT,:PLUG-IN CKT BD,35/70 CONT	80009	131-0767-05
	131-0767-07			2		. . CONNECTOR,RCPT,:PLUG-IN CKT BD,70 CONTACT	80009	131-0767-07
						(ATTACHING PARTS)		
-76	213-0232-00	B010100	B140814	4		. . SCR,TPG,THD FOR:2-32 X 0.312 INCH,PNH STL	83385	OBD
	213-0119-00	B140815		4		. . SCR,TPG,THD FOR:4-24 X 0.375 INCH,PNH STL	83385	OBD
						- - - * - - -		
	----- -----			-		. . . EACH CONNECTOR INCLUDES:		
-77	131-0726-00			38		. . . CONTACT,ELEC:STRAIGHT	80009	131-0726-00
-78	131-0727-00			38		. . . CONTACT,ELEC:OFFSET	80009	131-0727-00
-79	200-0950-00			2		. . . COVER,ELEC CONN:PLASTIC	80009	200-0950-00
-80	214-1665-00			1		. . . SPRING,FLAT:2.35 X 0.041 MUSIC WIRE	80009	214-1665-00
-81	204-0365-02			1		. . . BODY,CONNECTOR:PLUG-IN CIRCUIT CARD	80009	204-0365-02
-82	131-0805-00			2		. . LINK,TERM.CONNE:J-SHAPE,0.90X0.82 X 0.312"	80009	131-0805-00
	131-0804-00			1		. . LINK,TERM.CONNE:J-SHAPE	80009	131-0804-00
						(ATTACHING PARTS)		
-83	211-0008-00			1		. . SCREW,MACHINE:4-40 X 0.25 INCH,PNH STL	83385	OBD
-84	210-0586-00			1		. . NUT,PL,ASSEM WA:4-40 X 0.25,STL CD PL	83385	OBD
						- - - * - - -		

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Fig. & Index No.	Tektronix Part No.	Serial/Model No. Eff	Dscont	Qty	1 2 3 4 5	Name & Description	Mfr Code	Mfr Part Number
8-85	129-0308-00			2		. . POST,ELEC-MECH:HEX.,0.25 X 0.465 INCH LONG	80009	129-0308-00
						(ATTACHING PARTS)		
-86	211-0008-00			2		. . SCREW,MACHINE:4-40 X 0.25 INCH,PNH STL	83385	OBD
						- - - * - - -		
-87	344-0147-00			2		. . CLIP,SPR,TNSN:CIRCUIT CARD MOUNTING	80009	344-0147-00
						(ATTACHING PARTS)		
-88	214-1568-00			2		. . PIN,GUIDE:0.119 DIA X 1.035 W/0.25 HEXCLR	80009	214-1568-00
-89	210-0406-00			2		. . NUT,PLAIN,HEX.:4-40 X 0.188 INCH,BRS	73743	2X12161-402
						- - - * - - -		
-90	136-0252-07	B010100	B141189	12		. . SOCKET,PIN CONN:W/O DIMPLE	22526	75060-012
	136-0252-07	B141190		24		. . SOCKET,PIN CONN:W/O DIMPLE	22526	75060-012
-91	131-0608-00			111		. . TERMINAL,PIN:0.365 L X 0.025 PH BRZ GOLD	22526	47357
-92	131-0591-00			35		. . CONTACT,ELEC:0.835 INCH LONG	22526	47352
	131-0592-00			11		. . CONTACT,ELEC:0.885 INCH LONG	22526	47353
-93	136-0220-00	B010100	B141189X	4		. . SKT,PL-IN ELEK:TRANSISTOR 3 CONTACT,PCB MT	71785	133-23-11-034
-94	136-0269-02			2		. . SKT,PL-IN ELEK:MICROCIRCUIT,14 DIP,LOW CLE	73803	CS9002-14
-95	131-1003-00			12		. . CONN,RCPT,ELEC:CKT BD MT,3 PRONG	80009	131-1003-00
-96	136-0260-02			2		. . SKT,PL-IN ELEK:MICROCIRCUIT,16 DIP,LOW CLE	71785	133-51-92-008
-97	386-1557-00			2		. . SPACER,CKT BD:0.29 H,ACETAL	80009	386-1557-00
-98	441-1197-00			1		HOUSING,PLUG-IN:	80009	441-1197-00
						(ATTACHING PARTS)		
	211-0507-00			3		SCREW,MACHINE:6-32 X 0.312 INCH,PNH STL	83385	OBD
	210-0547-00			3		RING,EXT THO:0.562-40 X 0.313,BRS ALBALO	80009	210-0547-00
	211-0503-00			2		SCREW,MACHINE:6-32 X 0.188 INCH,PNH STL	83385	OBD
	211-0541-00			2		SCREW,MACHINE:6-32 X 0.25"100 DEG,FLH STL	83385	OBD
						- - - * - - -		

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Fig. & Index No.	Tektronix Part No.	Serial/Model No. Eff	Dscont	Qty	1 2 3 4 5	Name & Description	Mfr Code	Mfr Part Number
9-1	108-0784-00			1		COIL,TUBE DEFLE:TRACE ROTATOR	80009	108-0784-00
-2	108-0685-00			1		COIL,RF:80NH	80009	108-0685-00
-3	348-0064-00			1		GROMMET,PLASTIC:0.625 INCH DIA	80009	348-0064-00
-4	348-0031-00			1		GROMMET,PLASTIC:0.156 INCH DIA	80009	348-0031-00
-5	214-0291-00			1		CONTACT,SPRING:1.188 X 0.375 X 0.25 INCH	80009	214-0291-00
						(ATTACHING PARTS)		
-6	211-0168-00			1		SCREW,MACHINE:4-40 X 0.25 INCH,PNH STL	12360	OBD
-7	210-0406-00			1		NUT,PLAIN,HEX.:4-40 X 0.188 INCH,BRS	73743	2X12161-402
-8	210-1172-00			1		WASHER,LOCK:	80009	210-1172-00
						- - - * - - -		
-9	337-1940-00			1		SHIELD,ELEC:LINE VOLTAGE	80009	337-1940-00
-10	337-1938-00			1		SHIELD,ELEC:	80009	337-1938-00
						(ATTACHING PARTS)		
-11	211-0008-00			2		SCREW,MACHINE:4-40 X 0.25 INCH,PNH STL	83385	OBD
						- - - * - - -		
-12	----- -----			1		CKT BOARD ASSY:HORIZ AMP,1(SEE A19 REPL)		
						(ATTACHING PARTS)		
-13	211-0008-00			3		SCREW,MACHINE:4-40 X 0.25 INCH,PNH STL	83385	OBD
						- - - * - - -		
	----- -----			-		. CKT BOARD ASSY INCLUDES:		
-14	131-1003-00			3		. CONN,RCPT,ELEC:CKT BD MT,3 PRONG	80009	131-1003-00
-15	386-2228-00			2		. SUPPORT,CKT BD:DELRIN	80009	386-2228-00
-16	200-0945-00	B010100	B099999	2		. COVER,HALF XSTR:DUAL TO-18,ALUMINUM	80009	200-0945-00
	200-0945-00	B100000		1		. COVER,HALF XSTR:DUAL TO-18,ALUMINUM	80009	200-0945-00
-17	200-0945-01	B010100	B099999	2		. COVER,HALF XSTR:DUAL TO-18,W/2-56 THD	80009	200-0945-01
	200-0945-01			1		. COVER,HALF XSTR:DUAL TO-18,W/2-56 THD	80009	200-0945-01
						(ATTACHING PARTS)		
-18	211-0062-00	B010100	B099999	1		. SCREW,MACHINE:2-56 X 0.312 INCH,RDH STL	83385	OBD
	211-0001-00	B100000		1		. SCREW,MACHINE:2-56 X 0.25 INCH,PNH STL	87308	OBD
						- - - * - - -		
-19	131-0608-00	B010100	B099999	15		. TERMINAL,PIN:0.365 L X 0.025 PH BRZ GOLD	22526	47357
	131-0608-00	B100000		21		. TERMINAL,PIN:0.365 L X 0.025 PH BRZ GOLD	22526	47357
-20	214-0579-00	B010100	B099999	12		. TERM,TEST POINT:BRS CD PL	80009	214-0579-00
	214-0579-00	B100000		19		. TERM,TEST POINT:BRS CD PL	80009	214-0579-00
-21	136-0252-04	B010100	B099999	60		. SOCKET,PIN TERM:U/W 0.016-0.018 DIA PINS	22526	75060-007
	136-0252-07	B010000		57		. SOCKET,PIN CONN:W/O DIMPLE	22526	75060-012
-22	131-1538-00			7		. CONTACT,ELEC:CRIMP-ON,22-26 AWG WIRE	22526	75369-002
-23	----- -----			1		CKT BOARD ASSY:HORIZ AMP,2(SEE A20 REPL)		
						(ATTACHING PARTS)		
-24	211-0008-00			3		SCREW,MACHINE:4-40 X 0.25 INCH,PNH STL	83385	OBD
						- - - * - - -		
	----- -----			-		. CKT BOARD ASSY INCLUDES:		
-25	131-0608-00	B010100	B099999	15		. TERMINAL,PIN:0.365 L X 0.025 PH BRZ GOLD	22526	47357
	131-0608-00	B100000		21		. TERMINAL,PIN:0.365 L X 0.025 PH BRZ GOLD	22526	47357
-26	131-1003-00			4		. CONN,RCPT,ELEC:CKT BD MT,3 PRONG	80009	131-1003-00
-27	131-1538-00			6		. CONTACT,ELEC:CRIMP-ON,22-26 AWG WIRE	22526	75369-002
-28	136-0252-04	B010100	B099999	64		. SOCKET,PIN TERM:U/W 0.016-0.018 DIA PINS	22526	75060-007
	136-0252-07	B100000		62		. SOCKET,PIN CONN:W/O DIMPLE	22526	75060-012
-29	200-0945-00	B010100	B099999	2		. COVER,HALF XSTR:DUAL TO-18,ALUMINUM	80009	200-0945-00
	200-0945-00	B100000		1		. COVER,HALF XSTR:DUAL TO-18,ALUMINUM	80009	200-0945-00
-30	200-0945-01	B010100	B099999	2		. COVER,HALF XSTR:DUAL TO-18,W/2-56 THD	80009	200-0945-01
	200-0945-01	B100000		1		. COVER,HALF XSTR:DUAL TO-18,W/2-56 THD	80009	200-0945-01
						(ATTACHING PARTS FOR EACH)		
-31	211-0062-00	B010100	B099999	1		. SCREW,MACHINE:2-56 X 0.312 INCH,RDH STL	83385	OBD
	211-0001-00	B100000		1		. SCREW,MACHINE:2-56 X 0.25 INCH,PNH STL	87308	OBD
						- - - * - - -		
-32	214-0579-00	B010100	B099999	11		. TERM,TEST POINT:BRS CD PL	80009	214-0579-00
	214-0579-00	B100000		7		. TERM,TEST POINT:BRS CD PL	80009	214-0579-00
-33	386-2228-00			1		. SUPPORT,CKT BD:DELRIN	80009	386-2228-00
-34	----- -----			2		CKT BOARD ASSY:VERT AMP(SEE A13/A16 REPL)		
						(ATTACHING PARTS)		
-35	211-0007-00			3		SCREW,MACHINE:4-40 X 0.188 INCH,PNH STL	83385	OBD
-36	211-0008-00			6		SCREW,MACHINE:4-40 X 0.25 INCH,PNH STL	83385	OBD
						- - - * - - -		

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Fig. & Index No.	Tektronix Part No.	Serial/Model No. Eff	Dscont	Qty	1 2 3 4 5	Name & Description	Mfr Code	Mfr Part Number
9-	----- -----			-		. EACH CKT BOARD ASSY INCLUDES:		
-37	131-1003-00			5		. CONN,RCPT,ELEC:CKT BD MT,3 PRONG	80009	131-1003-00
-38	200-1167-00			1		. COVER,XSTR:TEMP STAB FOR 2 TO-18 CS STYLE	80009	200-1167-00
-39	136-0252-07	B010100	B141189	5		. SOCKET,PIN CONN:W/O DIMPLE	22526	75060-012
	136-0252-07	B141190		20		. SOCKET,PIN CONN:W/O DIMPLE	22526	75060-012
	136-0252-00			28		. SOCKET,PIN TERM:0.145 INCH LONG	00779	2-330808-7
-40	131-0608-00			6		. TERMINAL,PIN:0.365 L X 0.025 PH BRZ GOLD	22526	47357
-41	136-0220-00	B010100	B141189X	5		. SKT,PL-IN ELEK:TRANSISTOR 3 CONTACT,PCB MT	71785	133-23-11-034
-42	210-0627-00			2		. RIVET,SOLID:0.042 DIA X 0.25 INCH,RDH	80009	210-0627-00
-43	343-0097-00			2		. RTNR,TRANSISTOR:HEAT SINK	80009	343-0097-00
						(ATTACHING PARTS)		
-44	210-0599-00			4		. NUT,SLEEVE:4-40 X 0.391 INCH LONG	80009	210-0599-00
-45	214-0368-00			2		. SPRING,HLCPS:0.24 DIA X 0.438 INCH LONG	80009	214-0368-00
-46	211-0097-00			4		. SCREW,MACHINE:4-40 X 0.312 INCH,PNH STL	83385	OBD
-47	210-0551-00			4		. NUT,PLAIN,HEX.:4-40 X 0.25 INCH,STL	83385	OBD
						- - - * - - -		
-48	214-1683-01			1		. HEAT SINK,XSTR:VERT AMPL CKTBOARD	80009	214-1683-01
-49	343-0468-00			3		RETAINER,CKT BD:	80009	343-0468-00
						(ATTACHING PARTS)		
-50	211-0088-00			3		SCREW,MACHINE:2-56 X 0.281"82 DEG,FLH STL	77250	OBD
						- - - * - - -		
-51	----- -----			2		CKT BOARD ASSY:VERT CONNECT(SEE A14/A17 REPL)		
						(ATTACHING PARTS FOR EACH ASSY)		
-52	211-0101-00			2		SCREW,MACHINE:4-40 X 0.25,100 DEG,FLH STL	83385	OBD
						- - - * - - -		
	----- -----			-		. EACH CKT BOARD ASSY INCLUDES:		
	129-0461-00			4		. POST,PRESSMOUNT:0.1632,W/4-40THRU,0.219 OD	80009	129-0461-00
	136-0252-01			4		. CONTACT,ELEC:0.178 INCH LONG	00779	1-332095-2
	136-0252-06			4		. SOCKET,PIN TERM:0.178 INCH LONG	00779	2-332095-6
-53	----- -----			2		RES.,FXD,FILM:CHAS MTG(SEE R2782A,B REPL)		
						(ATTACHING PARTS)		
-54	211-0507-00			4		SCREW,MACHINE:6-32 X 0.312 INCH,PNH STL	83385	OBD
-55	210-0894-00			4		WASHER,NONMETAL:0.19 ID X 0.438" OD,PLSTC	09422	OBD
						- - - * - - -		
-56	210-0207-00			2		TERMINAL,LUG:0.375 INCH DIAMETER	12697	01136902
						(ATTACHING PARTS)		
-57	211-0007-00			2		SCREW,MACHINE:4-40 X 0.188 INCH,PNH STL	83385	OBD
						- - - * - - -		
	119-0471-00			1		DELAY LINE,ELEC:65NS,100 OHM	80009	119-0471-00
						(ATTACHING PARTS)		
-58	211-0618-00			2		SCREW,MACHINE:6-32 X 2.250,100 DEG,FLH STL	80009	211-0618-00
						- - - * - - -		
	----- -----			-		. DELAY LINE ASSY INCLUDES:		
-59	----- -----			2		. CKT BOARD:TERMINATION(SEE A12,A15 REPL)		
						(ATTACHING PARTS)		
-60	211-0097-00			4		. SCREW,MACHINE:4-40 X 0.312 INCH,PNH STL	83385	OBD
						- - - * - - -		
-61	131-1003-00			8		. CONN,RCPT,ELEC:CKT BD MT,3 PRONG	80009	131-1003-00
-62	200-1619-00			2		. COVER,DLY LINE:	80009	200-1619-00
						(ATTACHING PARTS)		
-63	211-0538-00			12		. SCREW,MACHINE:6-32 X 0.312"100 DEG,FLH STL	83385	OBD
						- - - * - - -		
-64	407-1392-00			2		. BRKT,DELAY LINE:	80009	407-1392-00
-65	386-2764-00			1		. PL,DELAY LINE:	80009	386-2764-00
-66	361-0529-00			4		. SPACER,DLY LINE:	80009	361-0529-00
						(ATTACHING PARTS)		
	213-0068-00			4		. SCR,TPG,THD CTG:4-40 X 0.50 INCH,PNL STL	83385	OBD
						- - - * - - -		
-67	210-0774-00			16		. EYELET,METALLIC:0.152 OD X 0.245 INCH L,BRS	80009	210-0774-00
-68	210-0775-00			16		. EYELET,METALLIC:0.126 OD X 0.23 INCH L,BRS	80009	210-0775-00
-69	386-2762-00			1		SUPPORT,CRT:	80009	386-2762-00
						(ATTACHING PARTS)		
-70	211-0551-00			4		SCREW,MACHINE:6-32 X 0.562 INCH,PNH STL	83385	OBD
-71	210-0949-00			4		WASHER,FLAT:0.141 ID X 0.50 INCH OD,BRS	12327	OBD
						- - - * - - -		

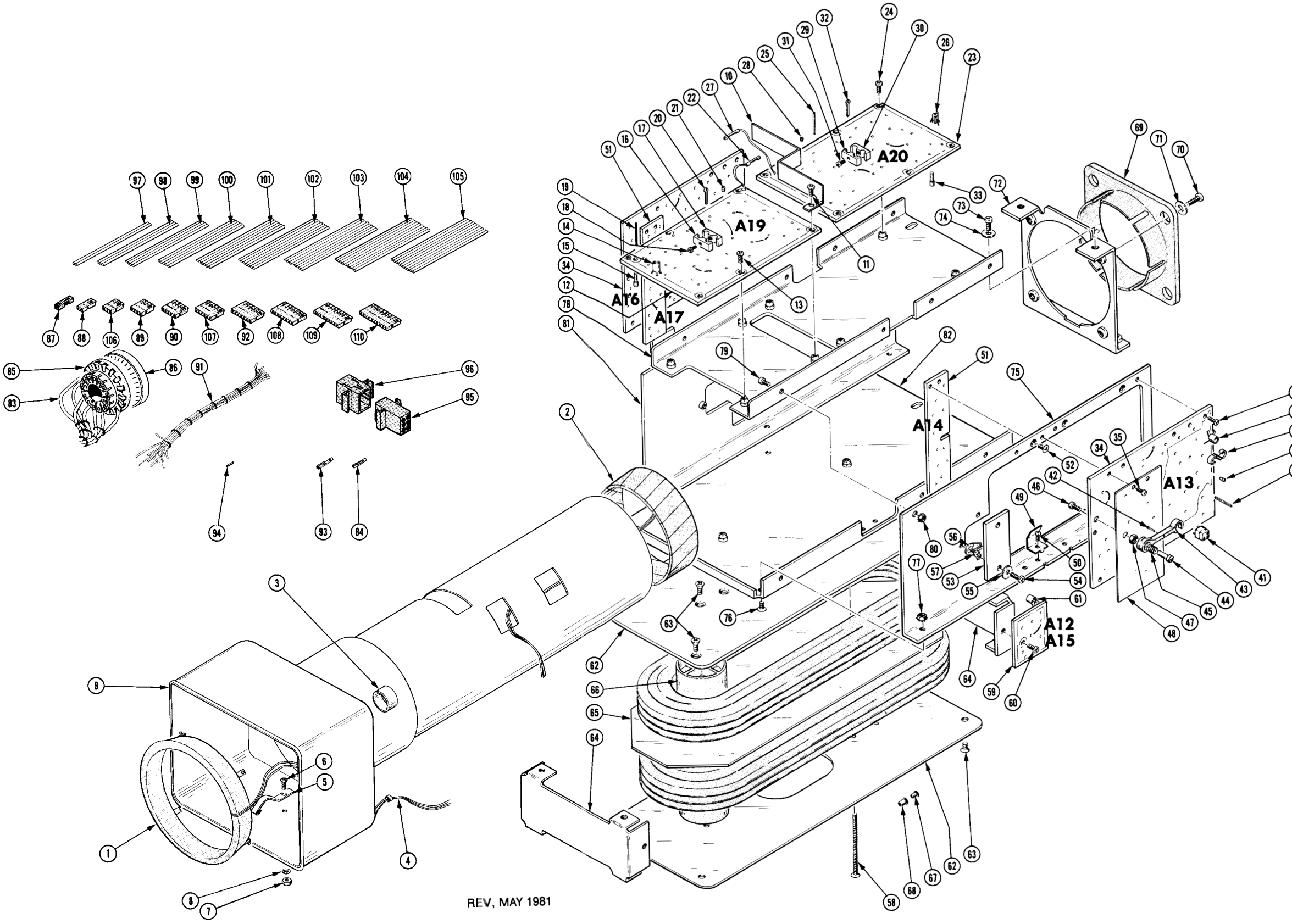
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Fig. & Index No.	Tektronix Part No.	Serial/Model No. Eff	Dscont	Qty	1 2 3 4 5	Name & Description	Mfr Code	Mfr Part Number
9-72	386-2758-00			1		SUPPORT,CRT SHIELD:	80009	386-2758-00
						(ATTACHING PARTS)		
-73	211-0507-00			4		SCREW,MACHINE:6-32 X 0.312 INCH,PNH STL	83385	OBD
-74	210-0803-00			4		WASHER,FLAT:0.15 ID X 0.032 THK,STL CD PL	12327	OBD
						- - - * - - -		
-75	441-1196-00			1		CHASSIS,SCOPE:	80009	441-1196-00
						(ATTACHING PARTS)		
-76	211-0541-00			3		SCREW,MACHINE:6-32 X 0.25"100 DEG,FLH STL	83385	OBD
-77	210-0457-00			3		NUT,PL,ASSEM WA:6-32 X 0.312 INCH,STL	83385	OBD
						- - - * - - -		
-78	441-1194-00			1		CHASSIS,SCOPE:	80009	441-1194-00
						(ATTACHING PARTS)		
-79	211-0008-00			4		SCREW,MACHINE:4-40 X 0.25 INCH,PNH STL	83385	OBD
-80	210-0586-00			4		NUT,PL,ASSEM WA:4-40 X 0.25,STL CD PL	83385	OBD
	211-0101-00			4		SCREW,MACHINE:4-40 X 0.25,100 DEG,FLH STL	83385	OBD
						- - - * - - -		
-81	441-1193-00			1		CHASSIS,SCOPE:	80009	441-1193-00
						(ATTACHING PARTS)		
	211-0541-00			3		SCREW,MACHINE:6-32 X 0.25"100 DEG,FLH STL	83385	OBD
	210-0457-00			3		NUT,PL,ASSEM WA:6-32 X 0.312 INCH,STL	83385	OBD
						- - - * - - -		
-82	441-1195-00			1		CHASSIS,SCOPE:	80009	441-1195-00
-83	136-0556-00			1		WIRING HARNESS:CRT SOCKET	80009	136-0556-00
-84	131-0621-00			6		. CONNECTOR,TERM:22-26 AWG,BRS& CU BE GOLD	22526	46231
	131-0707-00			14		. CONNECTOR,TERM.:22-26 AWG,BRS& CU BE GOLD	22526	47439
-85	136-0358-00	B010100	B141099	1		. SKT,PL-IN ELEK:ELECTRON TUBE,20 CONTACT	80009	136-0358-00
	136-0358-01	B141100		1		. SKT,PL-IN ELEK:ELECTRON TUBE,20 CONTACT	80009	136-0358-01
-86	200-0869-00			1		. COVER,CRT SKT:2.444 OD X 0.401 H,PLASTIC	80009	200-0869-00
-87	352-0197-00			1		. CONN BODY,PL,EL:1 WIRE BLACK	80009	352-0197-00
-88	352-0169-00			1		. HLDR,TERM CONN:2 WIRE BLACK	80009	352-0169-00
-89	352-0162-04			1		. CONN BODY,PL,EL:4 WIRE YELLOW	80009	352-0162-04
-90	352-0166-03			1		. CONN BODY,PL,EL:8 WIRE ORANGE	80009	352-0166-03
-91	179-2021-00			1		WIRING HARNESS:MAIN(R7844 ONLY)	80009	179-2021-00
	343-0549-00			38		. STRAP,TIEDOWN:0.091 W X 3.62 INCH LONG	59730	TY100
	179-2027-00			1		WIRING HARNESS:HIGH VOLTAGE	80009	179-2027-00
	131-0707-00			18		. CONNECTOR,TERM.:22-26 AWG,BRS& CU BE GOLD	22526	47439
	352-0162-05			1		. CONN BODY,PL,EL:4 WIRE GREEN	80009	352-0162-05
-92	352-0165-06			1		. CONN BODY,PL,EL:7 WIRE BLUE	80009	352-0165-06
	179-2086-00			1		WIRING HARNESS:SIGNAL OUTPUT	80009	179-2086-00
	131-0621-00			4		CONNECTOR,TERM:22-26 AWG,BRS& CU BE GOLD	22526	46231
	131-0707-00			411		CONNECTOR,TERM.:22-26 AWG,BRS& CU BE GOLD	22526	47439
-93	131-0948-00			5		CONTACT,ELEC:CONNECTOR,BRASS TIN PL	27264	02-09-1103
-94	136-0252-01			4		CONTACT,ELEC:0.178 INCH LONG	00779	1-332095-2
-95	131-1323-00			1		CONN BODY,PLUG:ACCOM 6 0.093OD PINS	27264	03-09-2061
-96	131-1324-00			1		CONN BODY,RCPT:ACCOM 6 0.093OD PINS	27264	03-09-1061
-97	175-0825-00			FT		WIRE,ELECTRICAL:2 WIRE RIBBON	80009	175-0825-00
-98	175-0826-00			FT		WIRE,ELECTRICAL:3 WIRE RIBBON	80009	175-0826-00
-99	175-0827-00			FT		CABLE,SP,ELEC:4,26 AWG,STRD,PVC JKT,RBN	08261	SS04267(1061)0C
-100	175-0828-00			FT		WIRE,ELECTRICAL:5 WIRE RIBBON	08261	SS-0526-710610C
-101	175-0829-00			FT		WIRE,ELECTRICAL:6 WIRE RIBBON	08261	SS-0626-710610C
-102	175-0830-00			FT		WIRE,ELECTRICAL:7 WIRE RIBBON	08261	SS-0726-710610C
-103	175-0831-00			FT		WIRE,ELECTRICAL:8 WIRE RIBBON	08261	SS-0826-710610C
-104	175-0832-00			FT		WIRE,ELECTRICAL:9 WIRE RIBBON	08261	SS-0926(1061)0C
-105	175-0833-00			FT		WIRE,ELECTRICAL:10 WIRE RIBBON	08261	SS-1026-7
	175-0855-00			FT		WIRE,ELECTRICAL:10 WIRE RIBBON	08261	SS-1022(1061)0C
	175-0858-00			FT		WIRE,ELECTRICAL:7 WIRE RIBBON	08261	SS-0722-7(1061)
-106	352-0161-01			1		CONN BODY,PL,EL:3 WIRE BROWN	80009	352-0161-01
	352-0162-04			1		CONN BODY,PL,EL:4 WIRE YELLOW	80009	352-0162-04
-107	352-0163-00			1		CONN BODY,PL,EL:5 WIRE BLACK	80009	352-0163-00
	352-0163-01			2		CONN BODY,PL,EL:5 WIRE BROWN	80009	352-0163-01
	352-0163-08			2		CONN BODY,PL,EL:5 WIRE GRAY	80009	352-0163-08
	352-0163-09			2		CONN BODY,PL,EL:5 WIRE WHITE	80009	352-0163-09

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Fig. & Index No.	Tektronix Part No.	Serial/Model No. Eff	Dscont	Qty	1 2 3 4 5	Name & Description	Mfr Code	Mfr Part Number
9-108	352-0164-04			4		CONN BODY,PL,EL:6 WIRE YELLOW	80009	352-0164-04
	352-0164-05			3		CONN BODY,PL,EL:6 WIRE GREEN	80009	352-0164-05
	352-0165-00			2		CONN BODY,PL,EL:7 WIRE BLACK	80009	352-0165-00
	352-0165-02			2		CONN BODY,PL,EL:7 WIRE RED	80009	352-0165-02
	352-0165-03			2		CONN BODY,PL,EL:7 WIRE ORANGE	80009	352-0165-03
	352-0165-07			1		CONN BODY,PL,EL:7 WIRE VIOLET	80009	352-0165-07
	352-0165-09			1		CONN BODY,PL,EL:7 WIRE WHITE	80009	352-0165-09
	352-0166-00			4		CONN BODY,PL,EL:8 WIRE BLACK	80009	352-0166-00
	352-0166-03			1		CONN BODY,PL,EL:8 WIRE ORANGE	80009	352-0166-03
	352-0166-06			4		CONN BODY,PL,EL:8 WIRE BLUE	80009	352-0166-06
	352-0166-08			2		CONN BODY,PL,EL:8 WIRE GRAY	80009	352-0166-08
-109	352-0167-03			2		CONN BODY,PL,EL:9 WIRE ORANGE	80009	352-0167-03
	352-0167-09			2		CONN BODY,PL,EL:9 WIRE WHITE	80009	352-0167-09
-110	352-0168-02			2		CONN BODY,PL,EL:10 WIRE RED	80009	352-0168-02
	352-0168-04			2		CONN BODY,PL,EL:10 WIRE YELLOW	80009	352-0168-04
	352-0168-05			2		CONN BODY,PL,EL:10 WIRE GREEN	80009	352-0168-05
	352-0168-06			4		CONN BODY,PL,EL:10 WIRE BLUE	80009	352-0168-06
	352-0168-07			2		CONN BODY,PL,EL:10 WIRE VIOLET	80009	352-0168-07
	352-0169-00			2		HLDR,TERM CONN:2 WIRE BLACK	80009	352-0169-00
	352-0169-01			1		HLDR TERM CONN:2 WIRE,BROWN	80009	352-0169-01
	352-0169-06			3		CONN BODY,PL,EL:2 WIRE BLUE	80009	352-0169-06
	352-0197-00			6		CONN BODY,PL,EL:1 WIRE BLACK	80009	352-0197-00

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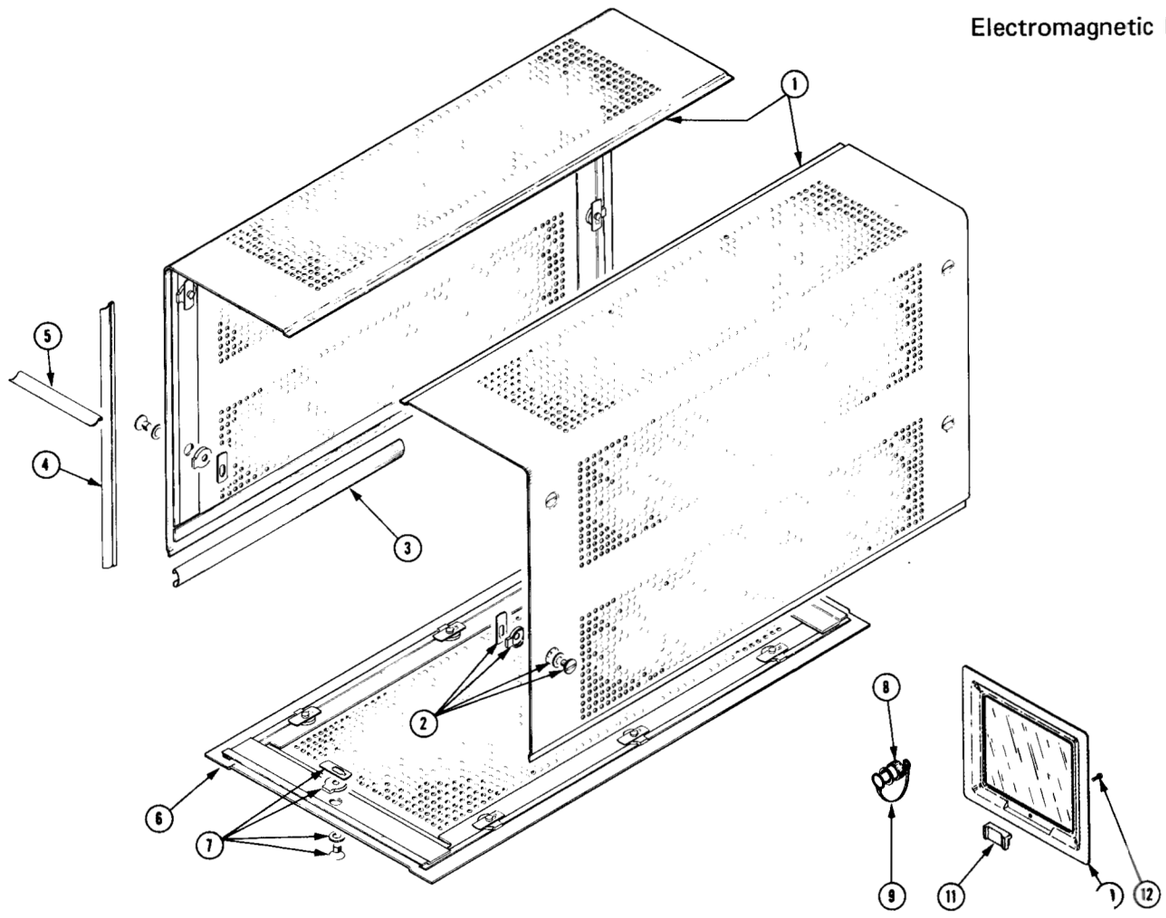
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OPTION 03

Electromagnetic Interference (EMI)



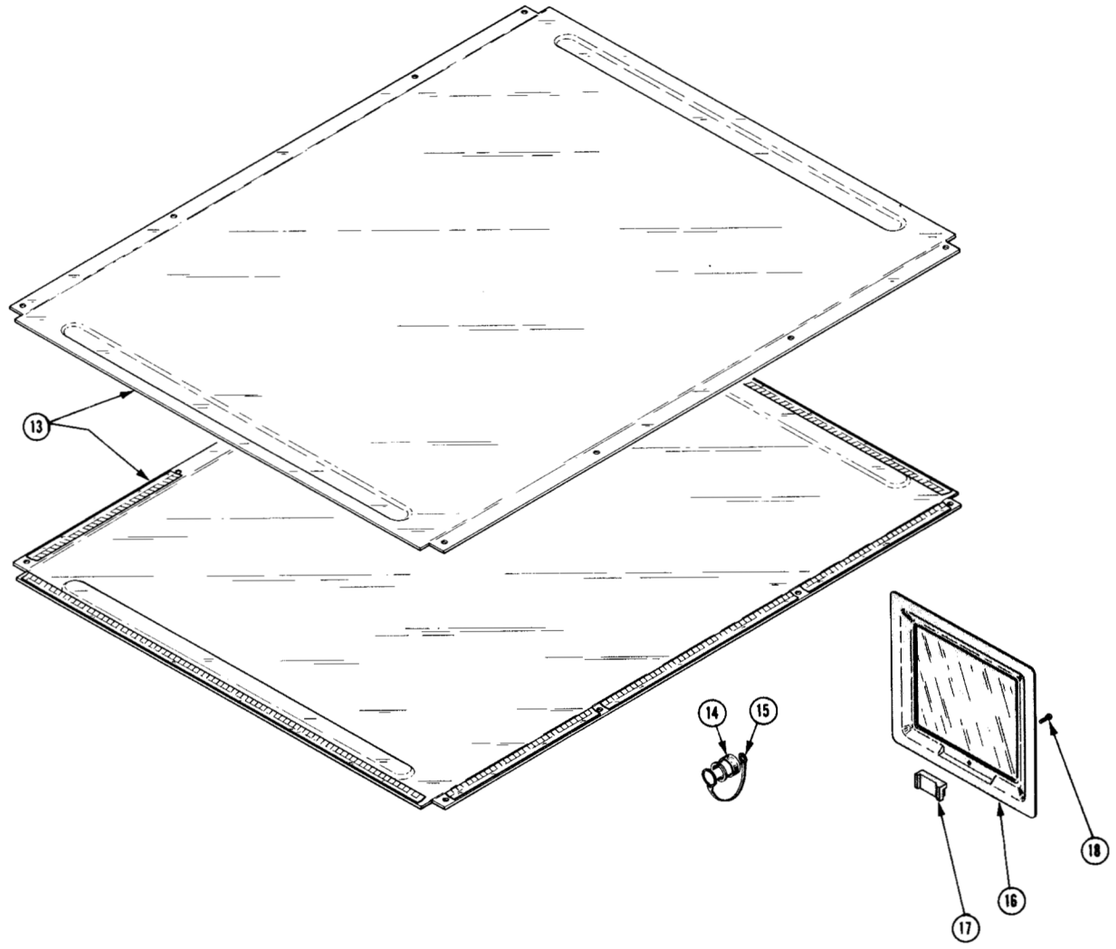


Fig. & Index No.	Tektronix Part No.	Serial/Model No. Eff	Dscont	Qty	1 2 3 4 5	Name & Description	Mfr Code	Mfr Part Number
-1	390-0123-00	B010100	B010135	1		CABINET SIDE:	80009	390-0123-00
	390-0463-01	B010136		2		CABINET SIDE:LEFT AND RIGHT	80009	390-0463-01
-2	214-0816-00			6		. FASTENER,PAWL:	80009	214-0816-00
-3	348-0274-00			4		. SHLD GSKT,ELEK:FINGER TYPE,24.0 L	30817	97-555CDC
-4	348-0210-00			2		. SHLDG GSKT,ELECT:10.844 INCH LONG	80009	348-0210-00
-5	348-0209-00			2		. SHLDG GSKT,ELECT:4.407 INCH LONG	80009	348-0209-00
-6	390-0122-00	B010100	B010135	1		COVER,SCOPE:	80009	390-0122-00
	390-0462-01	B010136		1		CABINET BOTTOM:W/SHIELDING GASKET	80009	390-0462-01
-7	214-0816-00			4		. FASTENER,PAWL:	80009	214-0816-00
-8	200-0678-00			9		COVER,ELEC CONN:BNC,SHORTING	91836	KC89-58TR5
-9	346-0045-00			9		STRAP,CONN COV:BNC ONE END,POLYPROPYLENE	80009	346-0045-00
-10	378-0603-00			1		FILTER,MESH:EMI	80009	378-0603-00
-11	367-0112-00			1		. PULL,MASK:	80009	367-0112-00
						(ATTACHING PARTS)		
-12	213-0055-00			1		. SCR,TPG,THD FOR:2-32 X 0.188 INCH,PNH STL	93907	OBD
						- - - * - -		

Fig. & Index No.	Tektronix Part No.	Serial/Model No. Eff	Dscont	Qty	1 2 3 4 5	Name & Description	Mfr Code	Mfr Part Number
-13	200-1683-00			2		COVER,OSCP:EMI,TOP AND BOTTOM	80009	200-1683-00
-14	200-0678-00			9		COVER,ELEC CONN:BNC,SHORTING	91836	KC89-58TR5
-15	346-0045-00			9		STRAP,CONN COV:BNC ONE END,POLYPROPYLENE	80009	346-0045-00
-16	378-0603-00			1		FILTER,MESH:EMI	80009	378-0603-00
-17	367-0112-00			1		. PULL,MASH:	80009	367-0112-00
						(ATTACHING PARTS)		
-18	213-0055-00			1		. SCR,TPG,THD FOR:2-32 X 0.188 INCH,PNH STL	93907	OBD
						- - - * - -		

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OPTION 21

Dedicated Vertical Systems

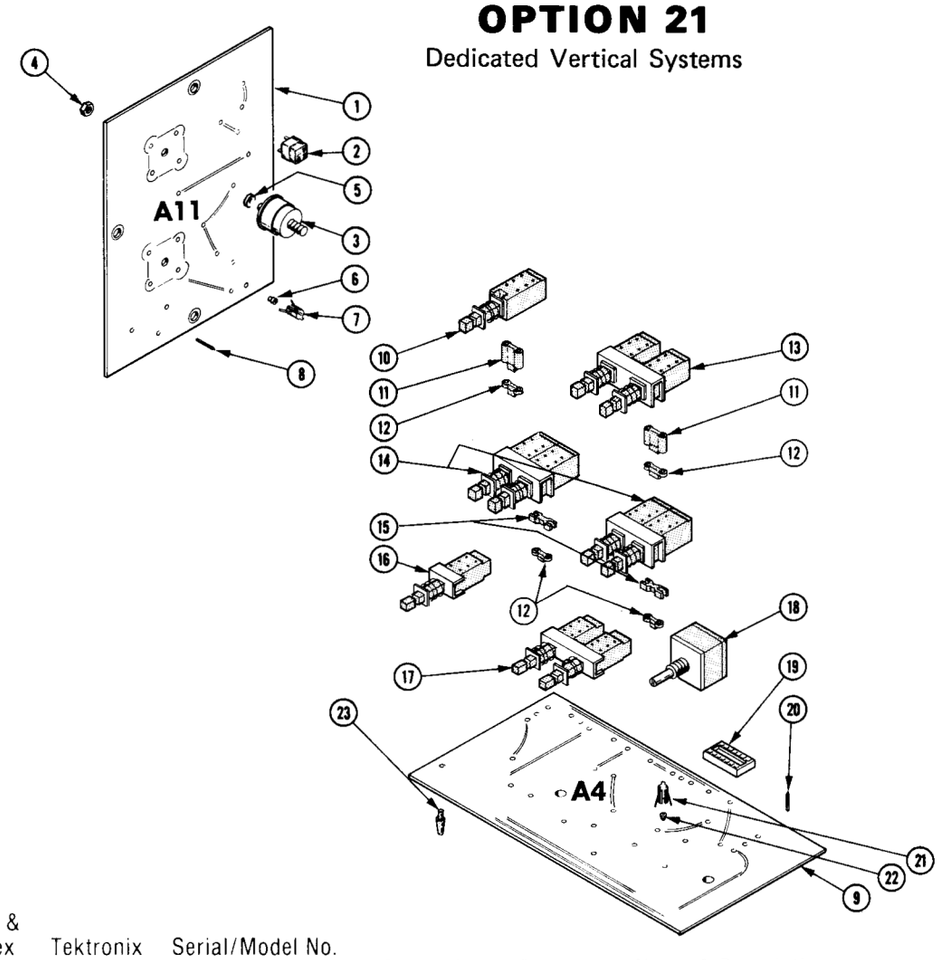
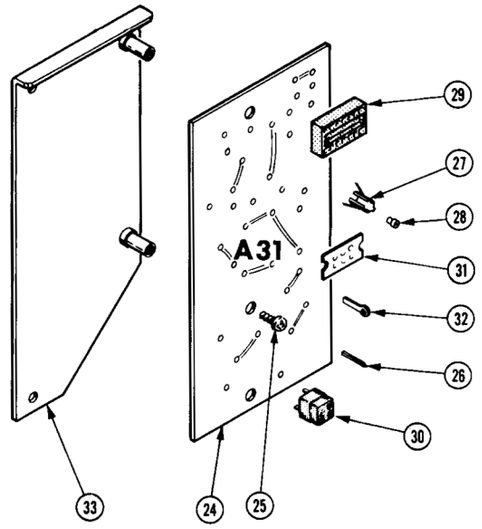


Fig. & Index No.	Tektronix Part No.	Serial/Model No. Eff	Dscont	Qty	1 2 3 4 5	Name & Description	Mfr Code	Mfr Part Number
-1	----- -----			1		CKT BOARD ASSY:VERT INTFC(SEE A11 REPL)		
-2	136-0220-00			5		. SKT,PL-IN ELEK:TRANSISTOR 3 CONTACT,PCB MT	71785	133-23-11-034
-3	----- -----			2		. TRANSISTOR:(SEE U615,U715 REPL)		
						(ATTACHING PARTS)		
-4	210-0406-00			2		. NUT,PLAIN,HEX.:4-40 X 0.188 INCH,BRS	73743	2X12161-402
-5	210-0994-00			2		. WASHER,FLAT:0.125 ID X 0.25" OD,STL	86928	5702-201-20
						- - - * - -		
-6	136-0252-04			12		. SOCKET,PIN TERM:U/W 0.016-0.018 DIA PINS	22526	75060-007
	136-0252-00			32		. SOCKET,PIN TERM:0.145 INCH LONG	00779	2-330808-7
-7	131-1003-00			12		. CONN,RCPT,ELEC:CKT BD MT,3 PRONG	80009	131-1003-00
-8	131-0608-00			6		. TERMINAL,PIN:0.365 L X 0.025 PH BRZ GOLD	22526	47357
-9	----- -----			1		CKT BOARD ASSY:MODE SWITCH(SEE A4 REPL)		
-10	----- -----			1		. SWITCH,PUSH:BEAM FINDER #1 (SEE S165 REPL)		
-11	361-0382-00			10		. SPACER,PB SW:BROWN,0.275 INCH LONG	80009	361-0382-00
-12	361-0384-00			18		. SPACER,PB SW:0.133 INCH LONG	80009	361-0384-00
-13	----- -----			1		. SWITCH,PUSH:HORIZ-VERT MODE #1 (SEE S157 REPL)		
-14	----- -----			2		. SWITCH,PUSH:TRIG SELECT (SEE S163 REPL)		
-15	361-0411-00			8		. SPACER,PUSH SW:0.13 W X 0.375 INCH L,PLSTC	71590	J64285-00
-16	----- -----			1		. SWITCH,PUSH:(SEE S167 REPL)		
-17	----- -----			1		. SWITCH,PUSH:HORIZ-VERT MODE #2 (SEE S159 REPL)		
-18	----- -----			1		. RES.,VAR,NONWIR:(SEE R189 REPL)		
-19	136-0269-02			1		. SKT,PL-IN ELEK:MICROCIRCUIT,14 DIP,LOW CLE	73803	CS9002-14
-20	131-0608-00			70		. TERMINAL,PIN:0.365 L X 0.025 PH BRZ GOLD	22526	47357
-21	131-1003-00			1		. CONN,RCPT,ELEC:CKT BD MT,3 PRONG	80009	131-1003-00
-22	136-0252-07			1		. SOCKET,PIN CONN:W/O DIMPLE	22526	75060-012
-23	386-1556-00			3		. SUPPORT,CKT BD:0.215 H,ACETAL	80009	386-1556-00
	333-1866-00			1		PANEL,FRONT:FOR 7844 ONLY	80009	333-1866-00
	333-1773-00			1		PANEL,FRONT:FOR R7844 ONLY	80009	333-1773-00

OPTION 22

Writing Speed Enhancer

7844



R7844

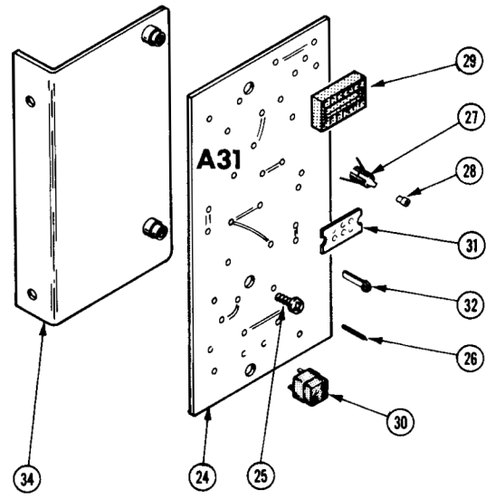


Fig. & Index No.	Tektronix Part No.	Serial/Model No. Eff	Dscont	Qty	1 2 3 4 5	Name & Description	Mfr Code	Mfr Part Number
-24	----- -----			1		CKT BOARD ASSY:ENHANCER(SEE A31 REPL)		
						(ATTACHING PARTS)		
-25	211-0008-00			2		SCREW,MACHINE:4-40 X 0.25 INCH,PNH STL	83385	OBD
						- - - * - -		
	----- -----			-		. CKT BOARD ASSY INCLUDES:		
-26	131-0608-00			11		. TERMINAL,PIN:0.365 L X 0.025 PH BRZ GOLD	22526	47357
-27	131-1003-00			12		. CONN,RCPT,ELEC:CKT BD MT,3 PRONG	80009	131-1003-00
-28	136-0252-07			12		. SOCKET,PIN CONN:W/O DIMPLE	22526	75060-012
-29	136-0269-02			2		. SKT,PL-IN ELEK:MICROCIRCUIT,14 DIP,LOW CLE	73803	CS9002-14
-30	136-0220-00			14		. SKT,PL-IN ELEK:TRANSISTOR 3 CONTACT,PCB MT	71785	133-23-11-034
-31	136-0337-00			1		. SOCKET,PLUG-IN:8 PIN RELAY	80009	136-0337-00
-32	214-0579-00			8		. TERM,TEST POINT:BRS CD PL	80009	214-0579-00
-33	407-1636-00			1		BRKT,CKT BD:FOR 7844 ONLY	80009	407-1636-00
-34	407-1650-00			1		BRKT,CKT BD:FOR R7844 ONLY	80009	407-1650-00
	333-2034-00			1		PANEL,FRONT:FOR 7844 ONLY	80009	333-2034-00
	333-2032-00			1		PANEL,FRONT:FOR R7844 ONLY	80009	333-2032-00
	175-0828-00			FT		WIRE,ELECTRICAL:5 WIRE RIBBON	08261	SS-0526-710610C
	131-0707-00			12		CONNECTOR,TERM.:22-26 AWG,BRS& CU BE GOLD	22526	47439
	352-0163-00			2		CONN BODY,PL,EL:5 WIRE BLACK	80009	352-0163-00
	352-0171-00			2		HLDR,TERM CONN:1 WIRE BLACK	80009	352-0171-00
	179-2277-00	B010100	B109999	1		WIRING HARNESS:ENHANCER(FOR R7844 ONLY)	80009	179-2277-00
	179-2277-01	B110000		1		WIRING HARNESS,:ENHANCER	80009	179-2277-01
	179-2275-00			1		WIRING HARNESS:ENHANCER(FOR 7844 ONLY)	80009	179-2275-00
	179-2566-00	XB110000		1		WIRING HARNESS,:MAIN ENHANCER	80009	179-2566-00

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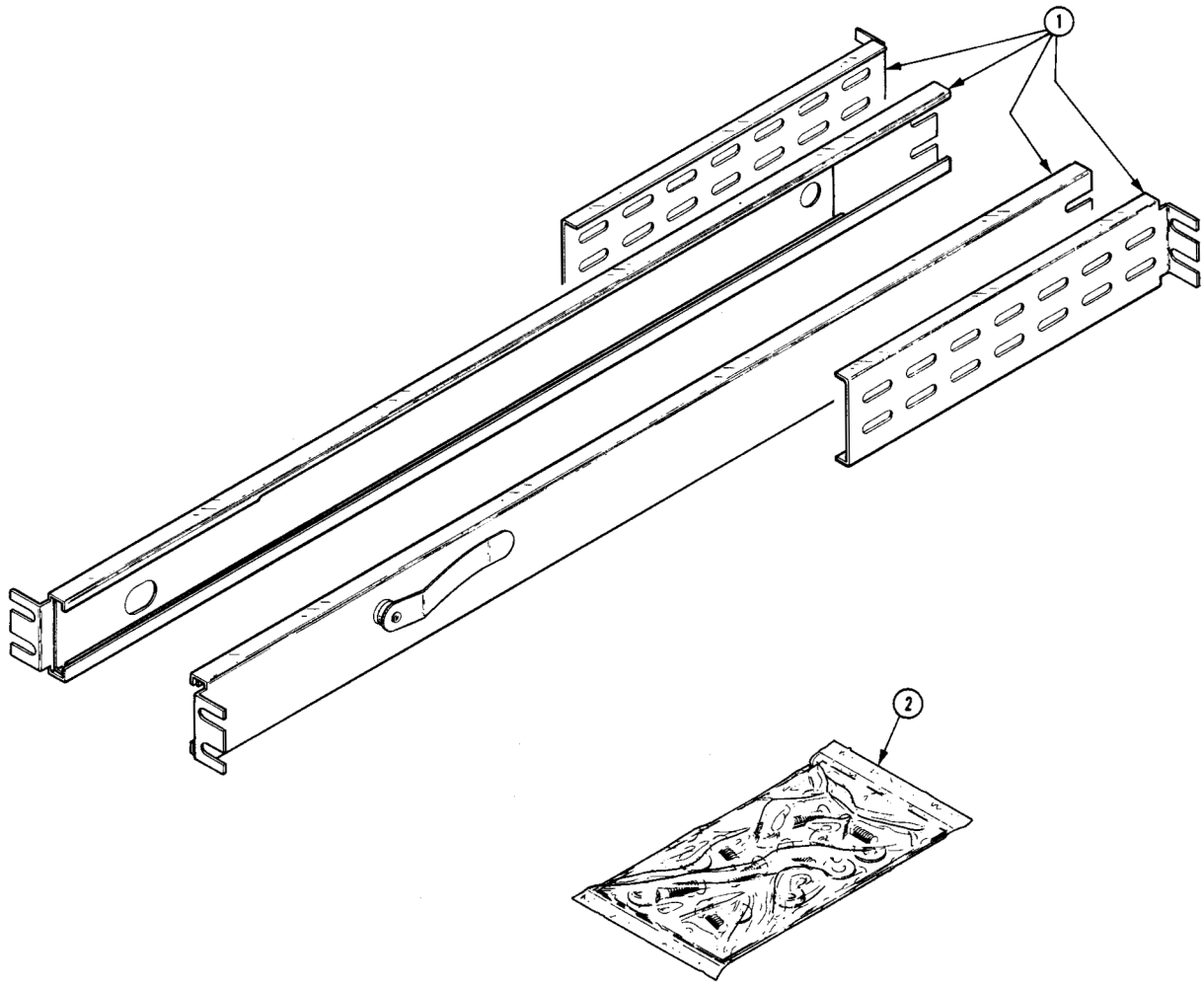


Fig. & Index No.	Tektronix Part No.	Serial/Model No. Eff	Dscont	Qty	1 2 3 4 5	Name & Description	Mfr Code	Mfr Part Number
-1	351-0314-00	B010100	B141059	1		SLIDE,DWR,EXT:22.0 X 1.69,PAIR	80009	351-0314-00
	351-0314-01	B141060		1		SLIDE,DWR,EXT:W/CLOSED MOUNTING SLOTS	80009	351-0314-01
-2	016-0099-00			1		HDW KIT,ELEK EQ:RACKMOUNT HDW	80009	016-0099-00
	070-1676-01	B010100	B142509	1		MANUAL,TECH:SERVICE	80009	070-1676-01
	----- -----			-		(7844 ONLY)		
	070-1676-02	B142510		1		MANUAL,TECH:INSTRUCTION	80009	070-1676-02
	----- -----			-		(7844 ONLY)		
	070-1676-01	B010100	B141199	1		MANUAL,TECH:SERVICE	80009	070-1676-01
	----- -----			-		(R7844 ONLY)		
	070-1676-02	B141200		1		MANUAL,TECH:INSTRUCTION	80009	070-1676-02
	----- -----			-		(R7844 ONLY)		
	070-1675-00			1		MANUAL,TECH:OPERATORS	80009	070-1675-00
						OPTIONAL ACCESSORIES		
	012-0341-00			1		LEAD TEST:	80009	012-0341-00

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MANUAL CHANGE INFORMATION

At Tektronix, we continually strive to keep up with latest electronic developments by adding circuit and component improvements to our instruments as soon as they are developed and tested.

Sometimes, due to printing and shipping requirements, we can't get these changes immediately into printed manuals. Hence, your manual may contain new change information on following pages.

A single change may affect several sections. Since the change information sheets are carried in the manual until all changes are permanently entered, some duplication may occur. If no such change pages appear following this page, your manual is correct as printed.

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MANUAL CHANGE INFORMATION

Date: 10-22-81 Change Reference: M42300

Product: 7104 and 7844/R7844 Manual Part No.: see below

DESCRIPTION

EFF SN B021281 (7104) 070-2314-00

EFF SN B142540 (7844) 070-1676-02

EFF SN B141215 (7844/R) 070-1676-02

REPLACEABLE ELECTRICAL PARTS LIST AND SCHEMATIC CHANGES

CHANGE TO:

A15	670-1900-05	CKT BOARD ASSY:READOUT (7104)
A26	670-1900-05	CKT BOARD ASSY:READOUT (7844/R)
C2115	290-0782-00	CAP.,FXD,ELCTLT:4.7UF,+75-10%,35V
C2117	290-0782-00	CAP.,FXD,ELCTLT:4.7UF,+75-10%,35V
C2119	290-0782-00	CAP.,FXD,ELCTLT:4.7UF,+75-10%,35V
C2144	281-0810-00	CAP.,FXD,CER DI:5.6PF,10%,100V
C2145	290-0782-00	CAP.,FXD,ELCTLT:4.7UF,+75-10%,35V

The above parts are located on the READOUT circuit board assembly and are shown on diagram 6 READOUT SYSTEM (7104) and diagram 17 READOUT SYSTEM (7844/R).

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MANUAL CHANGE INFORMATION

Date: 8-10-81 Change Reference: M43634

Product: 7844/R7844, R7903 & 7904 Manual Part No.: see below

DESCRIPTION

EFF SN B142490 (7844) 070-1676-02

EFF SN B141210 (R7844) 070-1676-02

EFF SN B191600 (R7903) 070-1464-00

EFF SN B281651 (7904) 070-2390-00

REPLACEABLE ELECTRICAL PARTS AND SCHEMATIC CHANGES

CHANGE TO:

A27	670-1610-11	CKT BOARD ASSY:POWER SUPPLY INVERTER (7844/R7844)
A14	670-1610-12	CKT BOARD ASSY:POWER SUPPLY INVERTER (R7903)
A11	670-1610-12	CKT BOARD ASSY:POWER SUPPLY INVERTER (7904)
C1235	283-0078-00	CAP.,FXD,CER DI:0.001UF,20%,500V

ADD:

CR1243	152-0400-00	SEMICOND DEVICE:SILICON,400V,1A
CR1245	152-0400-00	SEMICOND DEVICE:SILICON,400V,1A

DIAGRAM 18 CONVERTER/RECTIFIERS (7844/R7844)

DIAGRAM 9 INVERTER/RECTIFIERS (R7903)

DIAGRAM 9 CONVERTER/RECTIFIERS (7904)

Add CR1243 from the collector of Q1241 to the anode of CR1240 with the anode towards R1231 and the cathode towards Q1241.

Add CR1245 from the collector of Q1234 to the anode of CR1232 with the anode towards R1239 and the cathode towards Q1234.

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MANUAL CHANGE INFORMATION

Date: 2-11-82 Change Reference: M39703

Product: 7844/R7844 Manual Part No.: 070-1676-02

DESCRIPTION

EFF SN B142010 (7844)

EFF SN B141020 (R7844)

SCHEMATIC CORRECTIONS

DIAGRAM 18 CONVERTER RECTIFIERS

C1326 value should be 0.22 µF

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