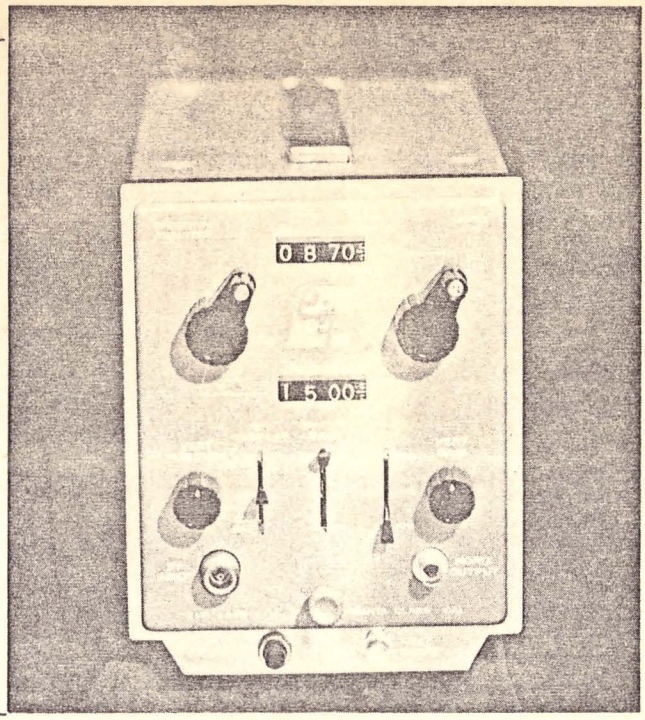


Model 101A
Spectrum Analyzer and
Model 201A Power Supply
Operating and Instruction Manual

Index

EIP LABS
2353 De La Cruz Boulevard, Santa Clara, California 95050
Telephone (Area Code 408) 244-7975 / 244-7976

MANUAL ERRATA

Model 101A Spectrum Analyzer and Model 201A Power Supply

Section III

3.2 1d. Plug-In Extension cable EIP Model 203A

Section IV

Chassis J10	Manufacturer P/N UG 1094A/U
Chassis C1	Capacitor, .0015 μf, ± 10%, 100V 1 MDF-1-152 Elemco
Chassis C2	Capacitor, .15 μf, ± 10%, 100V 1 MDF-3-154 Elemco
Sweep Generator C6	Capacitor, .02 μf, 100V, 20%
Sweep Generator C7	Capacitor, .02μ f, 100V, 20%
Sweep Generator CR7	Delete Reference
Sweep Generator CR8	Add Reference
Sweep Generator R28	Resistor 1/8 W, 1% Selected Value RN55D---F
Sweep Generator R36	1 KOhm 1/8 W 1%, RN55D-1001F, Electra
Vertical Amplifier	PC-2 Assy, PWB, Vertical Ampl & Pulse Stretcher 100131-01
Vertical Amplifier R13	Resistor 100 Ohms 1/4 W 5%
Vertical Amplifier R16	Resistor, Variable, 1 K-Ohm 79PR1K Beckman
Vertical Amplifier S1	Switch, 7101RPC K & C Company
Power Case S1	Switch, Line Voltage, 46206LF, Switchcraft
Power Case	Line Cord, 17258, Belden
Power Case F1	Fuse .6 Amp (115V Oper.), 312.600, Littel Fuse
Power Case F1	Fuse .3 Amp (230V Oper.), 312.300, Littel Fuse

Section V

Figure 5-1	Change C2 to 0.15 ufd
Figure 5-4 (note 3)	All capacitors value in microfarad R3 and R6 add 5%, 1/4 W R6 Change to 18K R36 Delete 5%, 1/4 W
Figure 5-6	R1 add 1.05K

NOTE: This is an interim copy of the instrument manual pending publication of corrected copy and diagrams.

TABLE OF CONTENTS

SECTION

SECTION I CHARACTERISTICS

1.1 Description

The EIP Labs Model 101A Spectrum Analyzer is a versatile wide frequency range precision laboratory instrument. The frequency range of the instrument from 0.7 to 15.7 GHz is covered in a single band.

The unit will plug into any Tektronix Oscilloscope which accepts the letter series plug-in or it can be plugged into the EIP Labs Model 201A Power Supply and be used with any suitable oscilloscope or analog display.

With the dispersion control set to zero the Model 101A can be used as a manually tuned receiver to make time domain measurements.

1.2 Specifications

Frequency Coverage	1-12.4 GHz (useable .7 - 15.7 GHz) *
Dial Frequency Accuracy	10 MHz +.3% **
Frequency Response	+ 2 dB typical, ±4 dB maximum
No. of Bands Required to Cover Frequency Range	1
Calibrated Dispersion	0 - 11.4 GHz (useable 0 - 15.0 GHz)
Dispersion Resettability	Typical 10 MHz
Dispersion Dial Accuracy	Typical 10 MHz or ±.5% whichever is greater
Preselection	3 Resonator YIG filter, nominal 3 dB bandwidth 15 MHz, straight thru leakage>60 dB down, tracking spurious typically >45 dB down***
Resolution	Typical 15 MHz
Image Rejection	Generates no image signals
Intermod Rejection	Intermod signals are reduced by the preselector selectivity over conventional microwave diode response
Type of Receiver	Crystal linear or log video with sweeping YIG preselector
Sensitivity (1 KHz Bandwidth)	-45 dBm minimum
Max. Input Power	+20 dBm
Limiting Level (2dB compression)	.7 - 1.0 GHz -20 dBm typical 1.0 - 1.2 GHz >+5 dBm 1.2 - 15.7 GHz >+10 dBm
Log Accuracy (<1 MW Input)	±1 dB Typical

Selectable Video Bandwidths	1 KHz, 100 KHz, 3 MHz
Variable Vertical Log Scale (dB/cm)	Variable and calibratable with internal calibrate signal over the range of 2 dB/cm to 20 dB/cm
Log Video Out Voltage	.02 Volts/dB typical
Sweep Rate	1, 10, 30 Hz
Required Assoc. Equipment	Scope or other analog display
Plug-In's available for:	Tektronix which accept letter series plug-ins

* Usable frequency coverage is limited by the center frequency dial indicator. with the unit set on a center frequency of 12 GHz and dispersion set for 15 GHz, most units will display signals as high as 18 GHz.

** If setting is always approached from 700 MHz, if not, add 5 - 15 MHz for hysteresis.

*** Tracking spurious is a second pass band response, always located a fixed number of MHz (approximately 200 MHz) above the normal preselector response.

SECTION II OPERATION

2.1 Introduction

The 101A Spectrum Analyzer, when plugged into a Tektronix oscilloscope can be used to make measurements in either the frequency or time domain.

For time domain measurements the dispersion control is set to zero and the center frequency control is set to the frequency of the signal to be measured. The oscilloscope time base is set to normal or internal.

For frequency domain measurements (Spectrum Analysis) the 101A horizontal output is connected to the oscilloscope external horizontal input and the time base set to external.

The use of a three resonator YIG Preselector in the 101A results in up to 15 GHz of calibrated spectrum width with display that is free from the spurious responses and images and harmonic products which make interpretation of spectral displays very difficult. For example, when measuring the harmonic content of signals the full dynamic range of over 60 db is usable and not limited by internally generated harmonics.

Calibrated digital frequency readouts allow rapid and accurate signal frequency measurements.

2.2 Controls, Connectors & Indicators

Front panel controls, connectors and indicators are shown in figure 2-1 and described below.

1. Dispersion Control Adjusts the frequency sweep width.
2. Dispersion Indicator Read out of total frequency sweep width expressed in GHz
3. Center Frequency Indicator Read out of the midfrequency of sweep width.
4. Center Frequency Control Adjusts the midfrequency of the sweep or central frequency for zero dispersion time domain measurements.
5. Sweep Rate Selects internal frequency sweep rate.
6. Video Bw Selects Video Bandwidth filter
7. Vert Gain When plugged into Tektronix scope, adjusts vertical display deflection factor. (This control has no effect when the plug-in is used with EIP Labs Model 201A power supply.)
8. Horiz Output Sawtooth voltage output (0 to + 10 volts) regardless of dispersion setting.
9. Video Output When plugged into 201A power supply provides video signal for display on scope or other analog display (approximately 0 to + 1.5 volts)
10. Power (on-off control) Applies primary power to instrument. Lamp indicates when primary power is applied.

11. RF Input 50 ohm Type N Connector
12. Vert. Position When unit is plugged into Tektronix scope, adjusts vertical position of trace. (This control has no effect when the plug-in is used with EIP Labs Model 201A power supply.)
13. Vert. Display Selects the transfer characteristic of the video amplifier; linear or logarithmic (dB) or a 10dB log calibrate signal.

2.3 Operating Instructions

The following procedure will help you become familiar with the Model 101A Spectrum Analyzer.

1. Insert the 101A into the oscilloscope, tighten the securing rod, and turn the oscilloscope power on.
2. Connect a cable from the horiz output connector on the 101A to the horiz connector of the oscilloscope.
3. Set the oscilloscope time/cm to maximum and the horizontal display to external.
4. Set the 101A vert display to log, the sweep rate to line sync and the video BW to 100 KHz.
5. Adjust the vert position so that the trace is near the bottom of the display area.
6. Adjust the horiz gain and position so that the trace is centered and extends exactly 10 cm.
7. Switch the vert display switch to log cal and adjust vert gain until the square wave signal is exactly 1 cm vertical. The vertical display is now calibrated at 10 dB/cm. To set any other calibration factor between approximately 2 and 20 dB/cm simply adjust the vert gain control.
8. Set center freq to 8.20 GHz and dispersion to 15.00 GHz. The display will now indicate the presence of any signals between 0.7 and 15.7 GHz.
9. To accurately measure any signal frequency, adjust center Freq until signal of interest is centered on display. Next, decrease the dispersion to about 0.20 GHz. Center the signal so that the 10 dB down points of the signal passband are equal distance from the display center line. The signal frequency is now read from the digital read out. To avoid an error due to YIG filter hysteresis, tune the center freq down to 0.70 GHz and then back up to the signal frequency. (The hysteresis error is 5-15 MHz)

In order to use the Model 101A as a manually tuned receiver make the following adjustments.

1. Center the signal to be measured on the display.
2. Set sweep rate to 1 HZ
3. Reduce the dispersion to 0.00 GHz making sure the signal is still visible on the display and at maximum amplitude.

4. Switch the oscilloscope horizontal display to normal and the time/cm to the desired rate.
5. To observe fast pulse waveforms, switch the video BW to 3 MHz. To obtain maximum sensitivity for slower waveforms, switch the video BW to 1 KHz. Switch pulse stretcher (S1) to "OFF" position.

When the Model 101A is used in the Model 201A power supply and carrying case the preceeding instructions apply, except for the following:

1. Connect a coaxial cable from the video output to the vertical input of the oscilloscope or display unit.
2. Use the display vertical gain and position controls in place of the 101A controls.

2.4 Principles of Operation

RF Signal Flow

Refer to the block diagram of figure 2-2 for signal flow. The Model 101A Spectrum Analyzer is a tuned radio frequency receiver. The frequency determining element is a three resonator YIG, electronically tuned bandpass filter, which is used as a preselector. This filter has a typical 3 dB bandwidth of 15 MHz and rejects unwanted signals over 60 dB (for signals farther than about 60 MHz from center frequency.)

The received signal amplitude is converted to video frequencies by a video detector that is designed to have a flat frequency response. The video signals are then amplified in the video amplifier. The amplifier provides both a linear amplified output and a logarithmic (dB) amplified output.

The vert display switch allows either lin or log video to be displayed. In the log cal position a square wave signal equal in amplitude to a 10 dB input power change is displayed so that the vertical scale of the oscilloscope can be calibrated.

The selected video signal passes thru a low pass filter which sets the bandwidth to approximately 3 MHz, 100 KHz or 1 KHz.

The blanking gate removes all signals during the sweep flyback time. During the blanking interval the video level is displaced negative so that it doesn't interfere with the normal video trace.

When the 101A is used as a scope plug-in, the video signal is amplified in the vertical amplifier which has gain and D. C. position controls and fed to the scope vertical amplifier.

When the 101A is used in the 201A power supply unit, the video signal is amplified in emitter followers to provide a low impedance video output.

Sweep Circuits

The center frequency of the YIG filter is a linear function of the current in its tuning coil. This current is provided by a feedback amplifier which sums the d.c. voltage from the center frequency control and the sweep voltage from the dispersion control. This is done so that the center frequency and dispersion controls are independent from each other. Negative feedback is used to give stability and independence from amplifier characteristics.

The sawtooth generator provides a stable sweep voltage which is used for the dispersion control. This same sawtooth is delayed in time , in the delay amplifier and provides the horiz output which is a 0 to +10 volt sawtooth. This delay is provided in order to compensate for the time constant of the YIG tuning coil.

Power Supply

The power supply provides + 12 volts (unreg) for the current amplifier, and ± 15 volts for the video amplifier, sweep generator and vertical amplifier. the ± 15 volts is regulated to ±12 volts on the sweep generator card and to ±6 volts in the video amplifier.

Vertical Amplifier

The video signal (either log, linear or log cal) is sent thru a pulse stretcher when switch S1 is put in the "ON" position. The pulse stretcher increases the persistence of a pulse modulated signal on an oscilloscope display. When the 101A is used for time domain measurements the pulse stretcher can be switched "OFF."

The video signal is next filtered and amplified to provide a video output and a differential vertical drive signal for the oscilloscope.

R16, the 1 GHz calibration control, is used to calibrate the frequency control at 1 GHz. It effects the frequency calibration from 1 to 2 GHz only.

Sweep Circuits

The center frequency of the YIG filter is a linear function of the current in its tuning coil. This current is provided by a feedback amplifier which sums the d.c. voltage from the center frequency control and the sweep voltage from the dispersion control. This is done so that the center frequency and dispersion controls are independent from each other. Negative feedback is used to give stability and independence from amplifier characteristics.

The sawtooth generator provides a stable sweep voltage which is used for the dispersion control. This same sawtooth is delayed in time , in the delay amplifier and provides the horiz output which is a 0 to +10 volt sawtooth. This delay is provided in order to compensate for the time constant of the YIG tuning coil.

Power Supply

The power supply provides + 12 volts (unreg) for the current amplifier, and ± 15 volts for the video amplifier, sweep generator and vertical amplifier. the ± 15 volts is regulated to ±12 volts on the sweep generator card and to ±6 volts in the video amplifier.

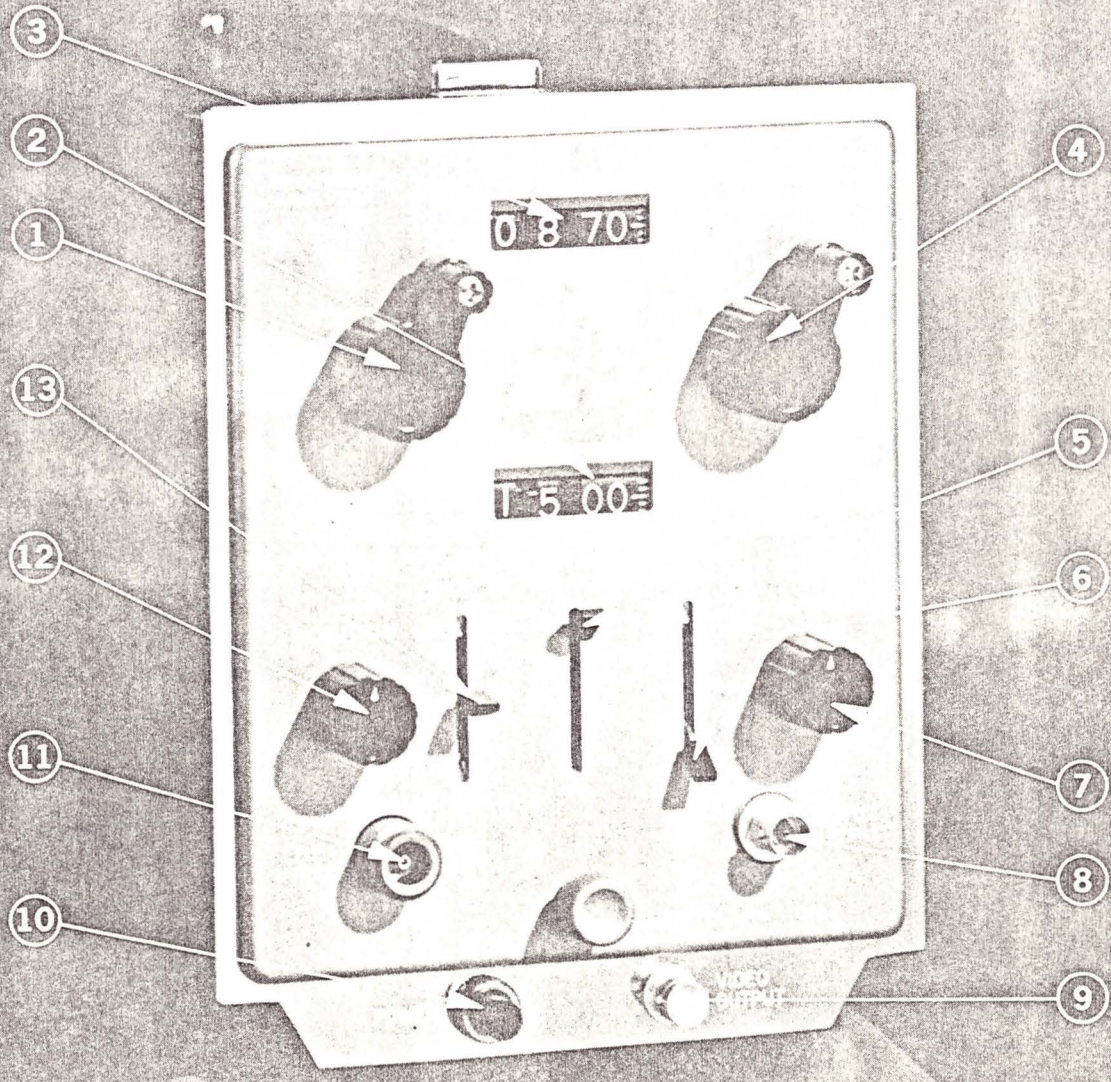
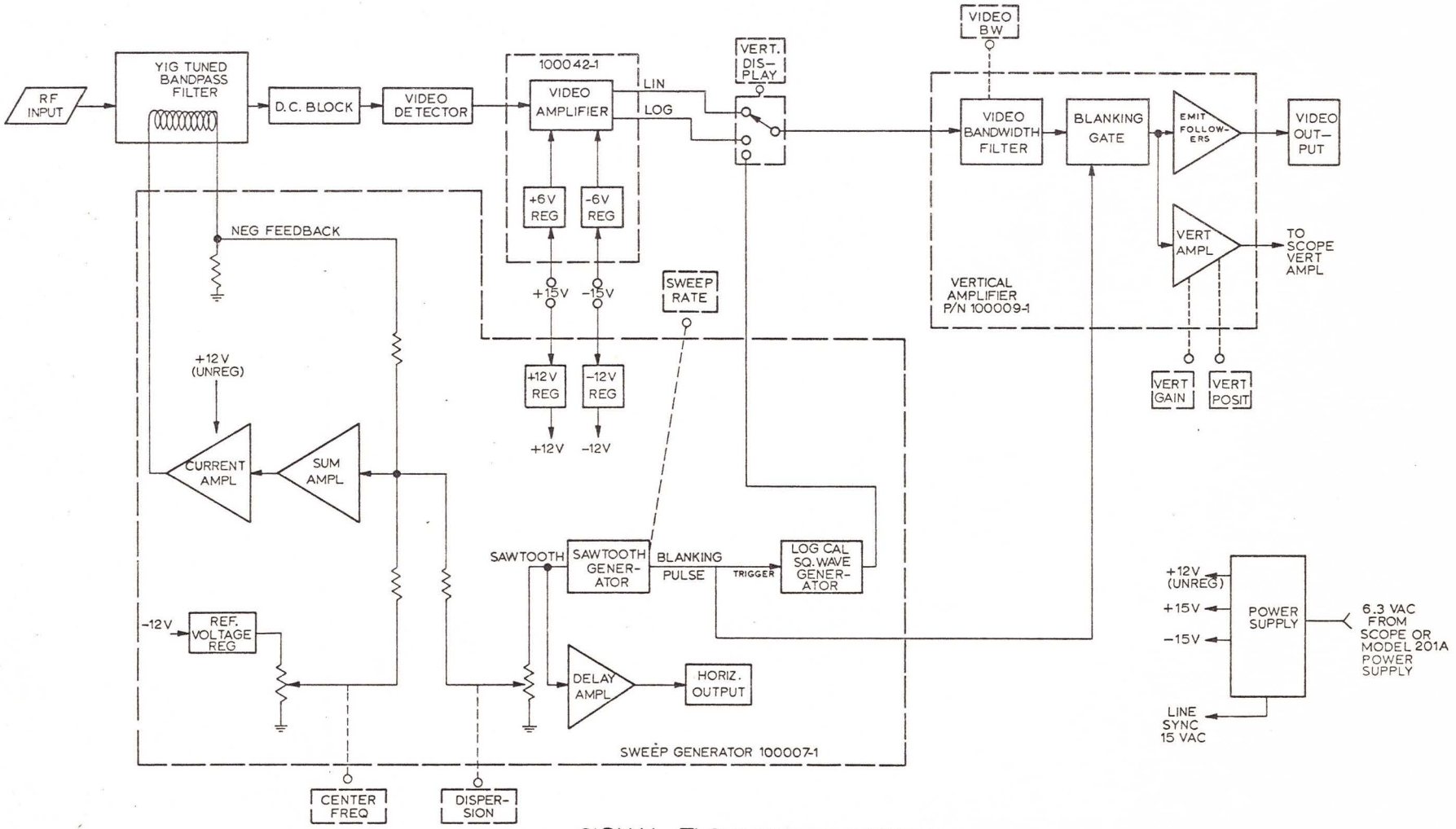


FIGURE 2-1
FRONT PANEL



SIGNAL FLOW BLOCK DIAGRAM
FIGURE 2-2

SECTION III MAINTENANCE

3.1 Introduction

The Model 101A was designed to give long trouble free operation. Silicon Semiconductors are used exclusively. All units are operated at least 50 hours before final testing to insure against early life failures. A module design technique is used to allow easy and rapid replacement of modules if needed. Circuit cards are plug in type with components on one side only.

Periodic calibration is recommended to insure maximum accuracy. The 101A requires no special preventive maintenance.

3.2 Calibration Procedures

The Model 101A should be periodically calibrated as described below. A six month maximum interval is recommended.

1. Test Equipment required - The following equipment or equivalent is required to calibrate the Model 101A

a.	Oscilloscope	Tektronix 531 A or HP 140 A
b.	UHF Signal Generator	HP 616 B
c.	1 GHz Comb Generator	EIP Model 210A
d.	Plug-In Extension Cable	EIP Model 202A
e.	Freq. Counter	HP 5245 L

2. Adjustments

   Connect equipment as shown in figure 3-1. The 101A can be calibrated in either the 201A power supply or in a Tektronix scope. Calibration should be done with 117 volt AC line voltage. It is recommended that the frequency calibration adjustments not be adjusted unless the unit is actually out of tolerance.

TABLE 3-1 CALIBRATION

a. Log Video Linearity adjust

1. Connect signal generator in CW Mode to RF input
2. Set Vert Display to log
3. Set video BW to 100 KHz
4. Set Dispersion to 1.50 GHz
5. Set center frequency equal to generator frequency
6. Adjust the vert gain until a power change from -30 dBm to -20dBm results in a 1 cm change in the display signal amplitude.
7. A similar change in power from -5 dBm to +5 dBm should also result in a 1 ± 0.1 cm change in signal amplitude. If it doesn't, adjust +5 dBm calib control located on the video amplifier until it does.
8. Recheck the log linearity by noting vertical output versus power input from -45 dBm to +5 dBm

   Note: The +5 dBm calib only effects the linearity between -10 dBm and + 5 dBm.

b. Log Cal Adjust

1. Use the same conditions as for log video linearity adjust.
2. Adjust the vert gain until each cm equals 10 dB of input power change.
3. Switch the vert display to log cal
4. Adjust R 51 on the sweep generator card until the square wave signal is exactly 1 cm peak to peak.

c. Sweep Delay Adjust

1. Set sweep rate to line sync
2. Set center frequency to 6.70 GHz
3. Set dispersion to 5.00 GHz
4. Connect 101A horiz output to vertical input on scope.
5. Using a scope probe connected to the other vertical input, monitor the waveform at Q1 emitter, located on chassis next to J11.
6. Adjust the scope vertical gain controls until both sawtooth waveforms start at the same level and have the same slope.
7. Adjust R44 on the sweep generator card until the horiz output signal is delayed from the Q1 emitter signal by 4 milliseconds.

d. Center Frequency Dial Calibration

1. Connect 1 GHz comb generator to RF input
2. Set dispersion to 0.20 GHz
3. Set vert display to log
4. Set sweep rate to line sync
5. Set video BW to 100 KHz
6. Adjust the scope horiz gain so that the trace is exactly 10 cm long
7. Check the center frequency dial accuracy by centering the 2, 8, and 12 GHz combs on the display and noting dial reading. The center of the

signal is defined as the midpoint between the 10 dB down points on the displayed waveform. When measuring frequency always approach the center frequency from 0.70 GHz in order to avoid hysteresis errors.

8. If the dial reading at 2, 8, and 12 GHz is more than 10 MHz + .3% off, make the following adjustments at the specified frequencies.

   Center 2.0 GHz with R26
   Center 8.0 GHz with R30
   Center 12.0 GHz with R33
   Repeat until all three are within tolerance.
   Center 1.0 GHz with R16
9. Check the accuracy at each comb from 1 to 12 GHz, and readjust if necessary.

e. Dispersion calibration

1. Connect 1 GHz comb generator to RF input
2. Set center freq to 6.00 GHz
3. Set dispersion to 5.00 GHz
4. Set vert display to log
5. Set video BW to 100 KHz
6. Set sweep rate to line sync
7. Set the scope horiz gain so that the trace is 10 cm long
8. Adjust R 22 on sweep generator card until there are 2 cm between signals.

f. Dispersion center adjustment

1. Set dispersion to 0.20 GHz
2. Center a signal on the display
3. Change the dispersion to 2.00 GHz
4. With sweep rate at line sync adjust R18 on sweep generator card to center signal on display
5. With sweep rate at 10 HZ adjust R19 on sweep generator card to center signal on display
6. With sweep rate at 1 HZ adjust R20 on sweep generator card to center signal on display.

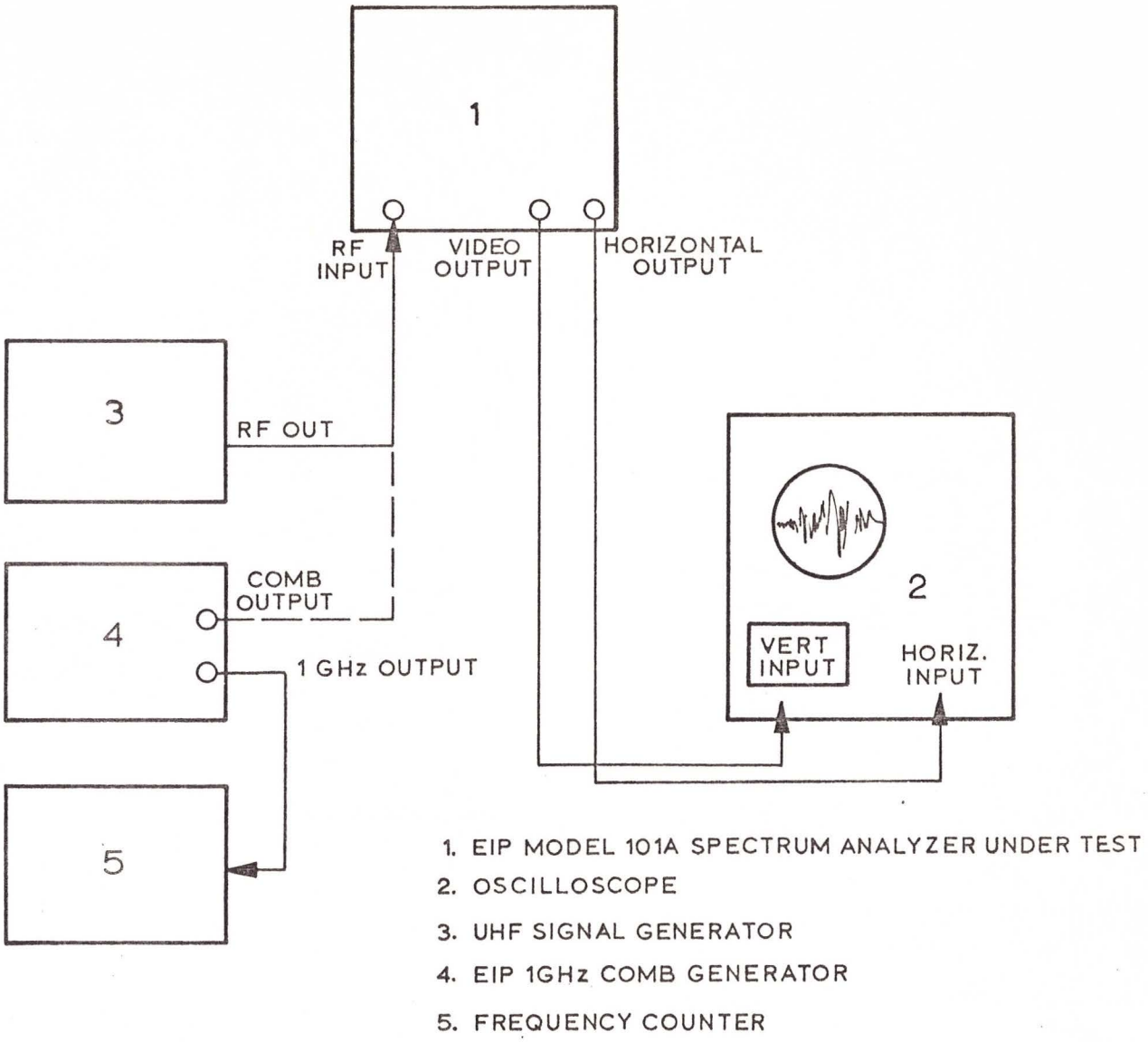


FIGURE 3-1
TEST EQUIPMENT SETUP

SECTION IV REPLACEABLE PARTS

4.1 Introduction

This section contains information for ordering replacement parts. Table 4-1 lists parts in alpha-numerical order of the component reference designators assigned within the major sub-assemblies listed. Miscellaneous parts with no reference designators are listed at the end of each major sub-group.

4.2 Ordering Information

To obtain replacement parts from the factory, address your order or inquiry to:

EIP Labs
Instrument Service Department
2353 DeLa Cruz Blvd.
Santa Clara Calif. 95050

Identify parts by their EIP stock number (if available) and their EIP part number. To obtain a part that is not listed, include:

a. Instrument model number
b. Instrument serial number
c. Description of the part
d. Function and location of the part

4.3 Reference Designators

A - Amplifier
C - Capacitor
CR - Diode
F - Fuse
FL - Filter
J - Connector
L - Inductor
Q - Transistor
R - Resistor
S - Switch
T - Transformer
TB - Terminal Board
W - Cable

Sub Ass'y Name	Circuit Ref. No.	EIP Stk. No.	Replaceable Part Description	Manufacturer P/N	Manufacturer/ Supplier
Vertical Amplifier	PC-2		Assy., PWB, Vertical Amplifier	100009-01	EIP Labs
Vertical Amplifier	CR1	920007	Diode, Zener		EIP Labs
Vertical Amplifier	CR2	920007	Diode, Zener		EIP Labs
Vertical Amplifier	CR3	920005	Diode		EIP Labs
Vertical Amplifier	CR4	920006	Diode		EIP Labs
Vertical Amplifier	Q1	950005	Transistor		EIP Labs
Vertical Amplifier	Q2	950005	Transistor		EIP Labs
Vertical Amplifier	Q3	950005	Transistor		EIP Labs
Vertical Amplifier	Q4	950006	Transistor		EIP Labs
Vertical Amplifier	Q5	950005	Transistor		EIP Labs
Vertical Amplifier	R1		Resistor, 1.05K ohm, 1/8W, 1%	RN55D-1051F	Electra
Vertical Amplifier	R2		Resistor, 10K ohm, 1/4W, 5%	RC07GF-103J	Allen-Bradley
Vertical Amplifier	R3		Resistor, 10K ohm, 1/4W, 5%	RC07GF-103J	Allen-Bradley
Vertical Amplifier	R4		Resistor, 51 ohm, 1/4W, 5%	RC07GF-510J	Allen-Bradley
Vertical Amplifier	R5		Resistor, 47K ohm, 3W, 10%	3MOL	Mallory
Vertical Amplifier	R6		Resistor, 51 ohm, 1/4W, 5%	RC07GF-51QJ	Allen-Bradley
Vertical Amplifier	R7		Resistor, 51 ohm, 1/4W, 5%	RC07GF-510J	Allen-Bradley
Vertical Amplifier	R8		Resistor, 51 ohm, 1/4W, 5%	RC07GF-510J	Allen-Bradley
Vertical Amplifier	R9		Resistor, 47K ohm, 3W, 10%	3MOL	Mallory
Vertical Amplifier	R10		Resistor, 1.2K ohm, 3W, 5%	242E-122-5	Sprague
Vertical Amplifier	R11		Resistor, 3.3K ohm, 3W, 5%	242E-332-5	Sprague
Vertical Amplifier	R12		Resistor, 10K ohm, 1/4W, 5%	RC07GF-103J	Allen-Bradley
Vertical Amplifier	R13		Resistor, 100K ohm, 1/4W, 5%	RC07GF-101J	Allen-Bradley
Vertical Amplifier	R14		Resistor, 10K ohm, 1/4W, 5%	RC07GF-103J	Allen-Bradley
Vertical Amplifier	R15		Resistor, 2.7K ohm, 1/4W, 5%	RC07GF-272J	Allen-Bradley

Sub Ass'y Name	Circuit Ref. No.	EIP Stock No.	Replaceable Part Description	Manufacturer P/N	Manufacturer/ Supplier
Sweep Generator	PC-1		Assy., PWB, Sweep Generator	100007-01	EIP Labs
Sweep Generator	A1	900001-01	Operational Amplifier		EIP Labs
Sweep Generator	A2	900001-01	Operational Amplifier		EIP Labs
Sweep Generator	A3	900001-01	Operational Amplifier		EIP Labs
Sweep Generator	A4	900001-01	Operational Amplifier		EIP Labs
Sweep Generator	C1		Capacitor, .001μf, 1000V, 20%	5GAD10	Sprague
Sweep Generator	C2		Capacitor, 4.7μf, 35V, 10%	CS13-BC475K	Sprague
Sweep Generator	C3		Capacitor, 4.7μf, 35V, 10%	CS13-BC475K	Sprague
Sweep Generator	C4		Capacitor, 15μf, 20V, 10%	CS13-BE156K	Sprague
Sweep Generator	C5		Capacitor, 180μf, 6V, 10%	CS13-BB187K	Sprague
Sweep Generator	C6		Capacitor, .02μf, 50V, 20%	TG-S20	Sprague
Sweep Generator	C7		Capacitor, .02μf, 50V, 20%	TG-S20	Sprague
Sweep Generator	C8		Capacitor, 15μf, 20V, 10%	CS13-BE156K	Sprague
Sweep Generator	C9		Capacitor, 15μf, 20V, 10%	CS13-BE156K	Sprague
Sweep Generator	C10		Capacitor, 15μf, 20V, 10%	CS13-BE156K	Sprague
Sweep Generator	C11		Capacitor, 15μf, 20V, 10%	CS13-BE156K	Sprague
Sweep Generator	C12		Capacitor, 4.7μf, 35V, 10%	CS13-BC475K	Sprague
Sweep Generator	CR1	920005	Diode		EIP Labs
Sweep Generator	CR2	920005	Diode		EIP Labs
Sweep Generator	CR3	920005	Diode		EIP Labs
Sweep Generator	CR4	920004	Diode		EIP Labs
Sweep Generator	CR5	920003	Diode, Reference		EIP Labs
Sweep Generator	CR6	920003	Diode, Reference		EIP Labs
Sweep Generator	CR7	920005	Diode, Reference		EIP Labs
Sweep Generator	CR8	920002	Diode		EIP Labs
Sweep Generator	Q1	950005	Transistor		EIP Labs
Sweep Generator	Q2	950006	Transistor		EIP Labs
Sweep Generator	Q3	950007	Transistor		EIP Labs
Sweep Generator	Q4	950005	Transistor		EIP Labs
Sweep Generator	Q5	950005	Transistor		EIP Labs
Sweep Generator	Q6	050005	Transistor		EIP Labs
Sweep Generator	Q7	950003	Transistor		EIP Labs
Sweep Generator	Q8	950003	Transistor		EIP Labs
Sweep Generator	Q9	950005	Transistor		EIP Labs
Sweep Generator	Q10	950002	Transistor		EIP Labs
Sweep Generator	Q11	950005	Transistor		EIP Labs
Sweep Generator	Q12	950005	Transistor		EIP Labs
Sweep Generator	Q13	950004	Transistor		EIP Labs
Sweep Generator	Q14	950006	Transistor		EIP Labs
Sweep Generator	Q15	950006	Transistor		EIP Labs
Sweep Generator	Q16	950005	Transistor		EIP Labs
Sweep Generator	Q17	950005	Transistor		EIP Labs
Sweep Generator	R1		Resistor, 10K ohm, ⅛W, 1%	RN55D1002F	Electra
Sweep Generator	R2		Resistor, 26.1K ohm, ⅛W, 1%	RN55D2612F	Allen-Bradley
Sweep Generator	R3		Resistor, 22K ohm, ¼W, 5%	RC07-GF223J	Allen-Bradley

Sub Ass'y Name	Circuit Ref. No.	EIP Stock No.	Replaceable Part Description	Manufacturer P/N	Manufacturer/ Supplier
Sweep Generator	R4		Resistor, 1.8K ohm, ¼W, 5%	RC07-GF182J	Allen-Bradley
Sweep Generator	R5		Resistor, 22K ohm, ¼W, 5%	RC07-GF223J	Allen-Bradley
Sweep Generator	R6		Resistor, 18K ohm, ¼W, 5%	RC07-GF183J	Allen Bradley
Sweep Generator	R7		Resistor, 10K ohm, ¼W, 5%	RC07GF-103J	Allen-Bradley
Sweep Generator	R8		Resistor, 4.7K ohm, ¼W, 5%	RC07GF-472J	Allen-Bradley
Sweep Generator	R9		Resistor, 10K ohm, ⅛W, 1%	RN55D-1002F	Electra
Sweep Generator	R10		Resistor, 10K ohm, ⅛W, 1%	RN55D-1002F	Electra
Sweep Generator	R11		Resistor, 2.7K ohm, ¼W, 5%	RC07-GF-272J	Allen-Bradley
Sweep Generator	R12		Resistor, 4.75K ohm, ⅛W, 1%	RN55D-4751F	Electra
Sweep Generator	R13		Resistor, 10K ohm, ⅛W, 1%	RN55D-1002F	Electra
Sweep Generator	R14		Resistor, 4.75K ohm, ⅛W, 1%	RN55D-4751F	Electra
Sweep Generator	R15		Resistor, 10K ohm, ⅛W, 1%	RN55D-1002F	Electra
Sweep Generator	R16		Resistor, 1.5K ohm, ⅛W, 1%	RN55D-1501F	Electra
Sweep Generator	R17		Resistor, 4.75K ohm, ⅛W, 1%	RN55D-4751F	Electra
Sweep Generator	R18		Resistor, Variable, 1K ohm	79 PR 1K	Beckman-Helipot
Sweep Generator	R19		Resistor, Variable, 1K ohm	79 PR 1K	Beckman-Helipot
Sweep Generator	R20		Resistor, Variable, 1K ohm	79 PR 1K	Beckman-Helipot
Sweep Generator	R21		Resistor, 1K ohm, ¼W, 5%	RC07GF-102J	Allen-Bradley
Sweep Generator	R22		Resistor, Variable, 1K ohm	79 PR 1K	Beckman-Helipot
Sweep Generator	R23		Resistor, 100K ohm, ⅛W, 1%	RN55D-1003F	Electra
Sweep Generator	R24		Resistor, 165 ohm, ⅛W, 1%	RN55D-1650F	Electra
Sweep Generator	R25		Resistor, 59K ohm, ⅛W, 1%	RN55D-5902F	Electra
Sweep Generator	R26		Resistor, Variable, 1K ohm	79 PR 1K	Beckman-Helipot
Sweep Generator	R27		Resistor, 100K ohm, ⅛W, 1%	RN55D-1003F	Electra
Sweep Generator	R28		Resistor, 10K ohm, ⅛W, 1%	RN55D-1002F	Electra
Sweep Generator	R29		Resistor, 13.7K ohm, ⅛W, 1%	RN55D-1372F	Electra
Sweep Generator	R30		Resistor, Variable, 5K ohm	79 PR 5K	Beckman-Helipot
Sweep Generator	R31		Resistor, 40 ohm, 5W, 1%	RS-5	Dale
Sweep Generator	R32		Resistor, 1.5 ohm, 5W,1%	RS-5	Dale
Sweep Generator	R33		Resistor, Variable, 1K ohm	79 PR 1K	Beckman-Helipot
Sweep Generator	R34		Resistor, 1K ohm, ¼W, 5%	RC07GF-102J	Allen-Bradley
Sweep Generator	R35		Resistor, 13.7K ohm, ⅛W, 1%	RN55D-1372F	Electra
Sweep Generator	R36		Resistor, 1K ohm, ¼W, 5%	RC07GF-102J	Allen-Bradley
Sweep Generator	R37		Resistor, 2.7K ohm, ¼W, 5%	RC07GF-272J	Allen-Bradley
Sweep Generator	R38		Resistor, 1K ohm, ¼W, 5%	RC07GF-102J	Allen-Bradley
Sweep Generator	R39		Resistor, 2.7K ohm, ¼W, 5%	RC07GF-272J	Allen-Bradley
Sweep Generator	R40		Resistor, 1K ohm, ¼W, 5%	RC07GF-102J	Allen-Bradley
Sweep Generator	R41		Resistor, 5.11K ohm, ⅛W, 1%	RN55D-5111F	Electra
Sweep Generator	R42		Resistor, 10K ohm, ⅛W, 1%	RN55D-1002F	Electra
Sweep Generator	R43		Resistor, 22K ohm, ¼W, 5%	RC07GF-223J	Allen-Bradley
Sweep Generator	R44		Resistor, Variable, 5K ohm	79 PR 5K	Beckman-Helipot
Sweep Generator	R45		Resistor, 10K ohm, ⅛W, 1%	RN55D-1002F	Electra
Sweep Generator	R46		Resistor, 15K ohm, ¼W, 5%	RC07GF-153J	Allen-Bradley
Sweep Generator	R47		Resistor, 1.8K ohm, ¼W, 5%	RC07GF-182J	Allen-Bradley
Sweep Generator	R48		Resistor, 330K ohm, ¼W, 5%	RC07GF-334J	Allen-Bradley
Sweep Generator	R49		Resistor, 100K ohm, ¼W, 5%	RC07GF-104J	Allen-Bradley
Sweep Generator	R50		Resistor, 100K ohm, ¼W, 5%	RC07GF-104J	Allen-Bradley
Sweep Generator	R51		Resistor, Variable, 1K ohm	79 PR 1K	Beckman-Helipot
Sweep Generator	R52		Resistor, 22K ohm, ¼W, 5%	RC07GF-223J	Allen-Bradley

Sub Ass'y Name	Circuit Ref. No.	EIP Stock No.	Replaceable Part Description	Manufacturer P/N	Manufacturer/ Supplier
Chassis			YIG Filter, 3 Stage	100043-01	EIP Labs
Chassis			DC Block, Inner & Outer	100050-01	EIP Labs
Chassis	CR1	920001	Detector		EIP Labs
Chassis	A-1		Video Amplifier	100042-01	EIP Labs
Chassis	J10		Connector, BNC	UG-1049A/U	Amphenol
Chassis	J11		Connector, P.C., 30 Pin	SAC15D/1-1	Stanford Applied Engr.
Chassis	J12		Connector, P.C., 30 Pin	SAC15D/1-1	Stanford Applied Engr.
Chassis	Q1	950001	Transistor		EIP Labs
Chassis	R1		Potentiometer, 1K ohm, 10 Turn	3507S-1-10Z	Bourns
Chassis	R2		Potentiometer, 1K ohm, 10 Turn	3507S-1-10Z	Bourns
Chassis	R3		Potentiometer, 2.5K ohm, 1 Turn	CMU2521	Ohmite
Chassis	R4		Potentiometer, 250 ohm, 1 Turn	CMU2511	Ohmite
Chassis	R5		Resistor, 500 ohm, 20W	1815	Ohmite
Chassis	S1		Switch, Lever, 3 Pos, 2 Pole	100010-01	EIP Labs
Chassis	S2		Switch, Lever, 3 Pos, 2 Pole	100010-01	EIP Labs
Chassis	S3		Switch, Lever, 3 Pos, 2 Pole	100010-01	EIP Labs
Chassis	C1		Capacitor, .15μf ± 10%, 100V	IMDS-3-3154	Elminco
Chassis	C2		Capacitor, 1.5μf ± 10%, 100V	IMDS-1-152	Elminco
Chassis	J13		Connector, Plug-in, 16 Pin	26-159-16	Amphenol
Chassis			Front Panel	100002-01	EIP Labs
Chassis			Shaft, Hold-down, #10-24	100055-01	EIP Labs
Chassis			Counter, 3 Wheel	3D40644-406-LCL	Durant
Chassis			Counter, 3 Wheel	3D40644-400-RCL	Durant
Chassis			Gear, Helical	AC3-30	PIC Design
Chassis			Gear, Helical	AC2-45	PIC Design
Chassis			Gear, Helical	AD3-30	PIC Design
Chassis			Gear, Helical	AD2-45	PIC Design
Chassis			Shaft Extension	100033-01	EIP Labs
Chassis			Polarizing Tab, P.C. Conn.	007900	Stanford Applied Engr.
Chassis			P.C. Card Guide, 2.5"	1250	Stanford Applied Engr.
Chassis			Bearing, Panel	100032-01	EIP Labs
Chassis			Knob, Hold-Down	100056-01	EIP Labs
Chassis		990001	Knob, Pointer		EIP Labs
Chassis		990002	Knob, Lever		EIP Labs
Chassis		990003	Knob, Crank		EIP Labs
Chassis			Rail, Plug-In	100057-01	EIP Labs

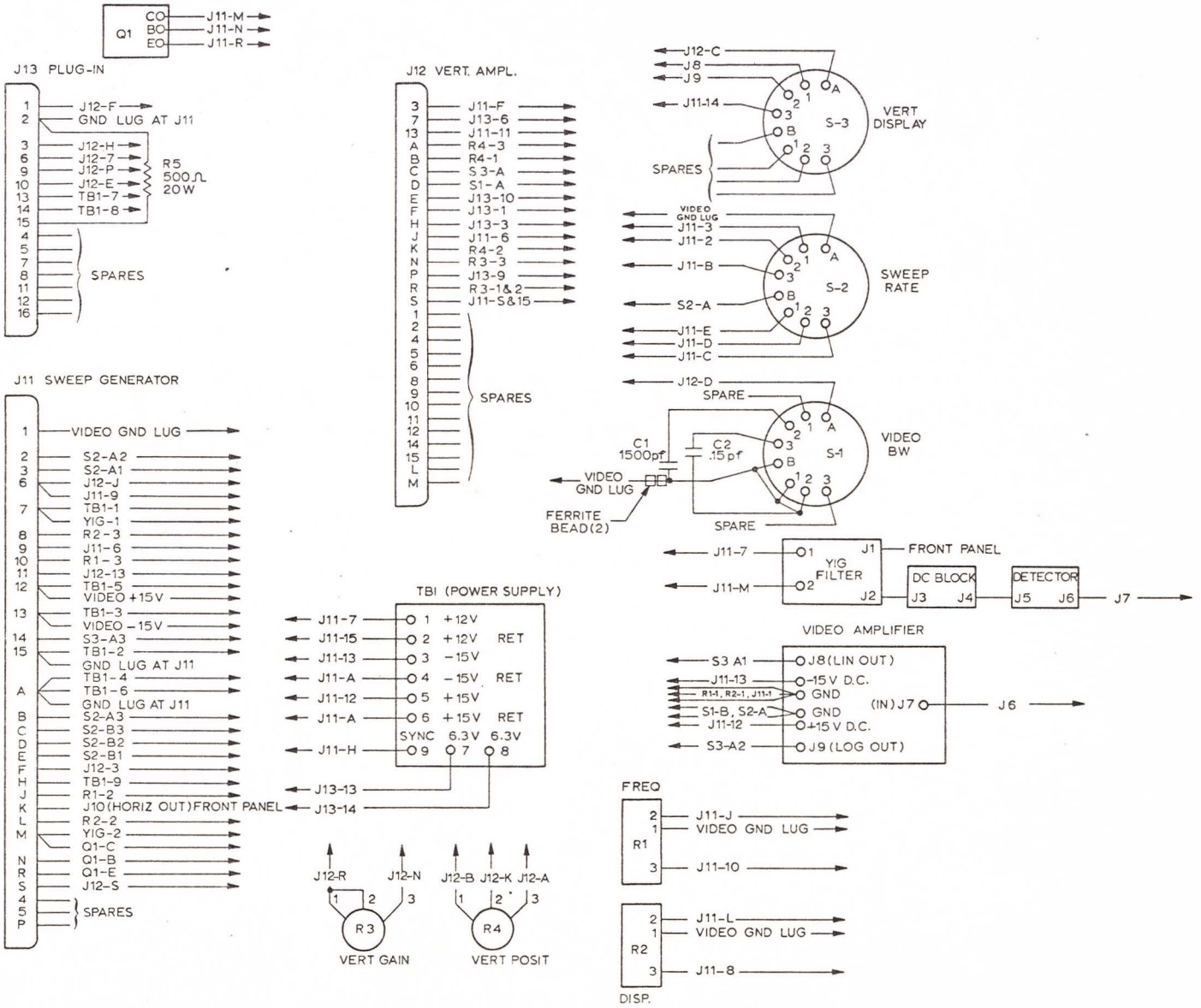
Sub Ass'y Name	Circuit Ref. No.	EIP Stk. No.	Replaceable Part Description	Manufacturer P/N	Manufacturer/ Supplier
Power Case Accessory		Model 201A	Assy., Power Case for Spectrum Analyzer	100044-01	EIP Labs
Power Case Accessory	F1		Fuse, 3/16 Amp	AGC 3/16	Bussman
			Holder, Fuse	HKP	Bussman
Power Case Accessory	J1		Connector, BNC	UG-1094A/U	Amphenol
Power Case Accessory	J2		Connector, Plug-In, 16 Pin	26-190-16	Amphenol
			Lamp, Pilot, 14V	330	Marco-Oak
Power Case Accessory	S1		Switch-Lite, 2 Pole, 2 Throw	54-61681-3-6	Marco-Oak
Power Case Accessory	TB-1		Terminal Strip, 2 Lug	1077	H. H. Smith
Power Case Accessory	T1		Transformer	F-16-X	Triad
Power Case Accessory			Housing, Carry Case	100036-01	EIP Labs
Power Case Accessory			Bezel, Carry Case	100011-01	EIP Labs
Power Case Accessory			Keeper	100034-01	EIP Labs

Sub Ass'y Name	Circuit Ref. No.	EIP Stk. No.	Replaceable Part Description		Mfrs. P/N	Manufacturer/ Supplier
Power Supply	PS-1		Power Supply		PS3/01B	Diversified Electronics
Power Supply	C-1		Capacitor, 5500	25VDC	36D552G025AB	Sprague
Power Supply	C-2		Capacitor, 5500	25VDC	36D552G025AB	Sprague
Power Supply	C-3		Capacitor, 9200	15VDC	36D-922G015AB	Sprague
Power Supply	CR1-4	920009	Diode			EIP Labs
Power Supply	CR5-8	920009	Diode			EIP Labs
Power Supply	CR9-12	920009	Diode			EIP Labs
Power Supply	CR13	920008	Diode			EIP Labs
Power Supply	CR14	920008	Diode			EIP Labs
Power Supply	TB-1		Printed Wiring Board		TB-1	Diversified Electronics
Power Supply	T-1		Transformer		T4205B	EDCO

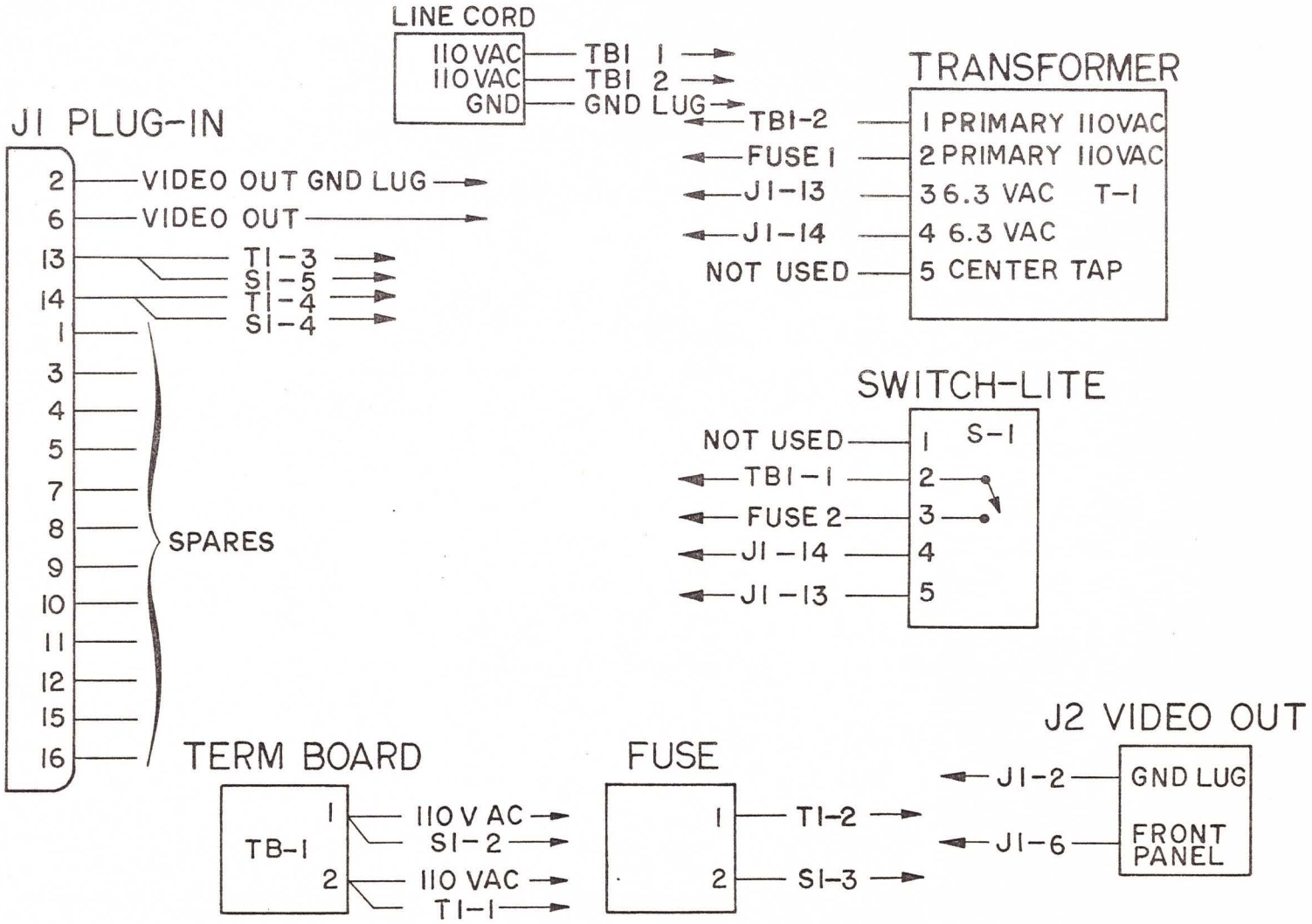
SECTION V DIAGRAMS

5.1 Introduction

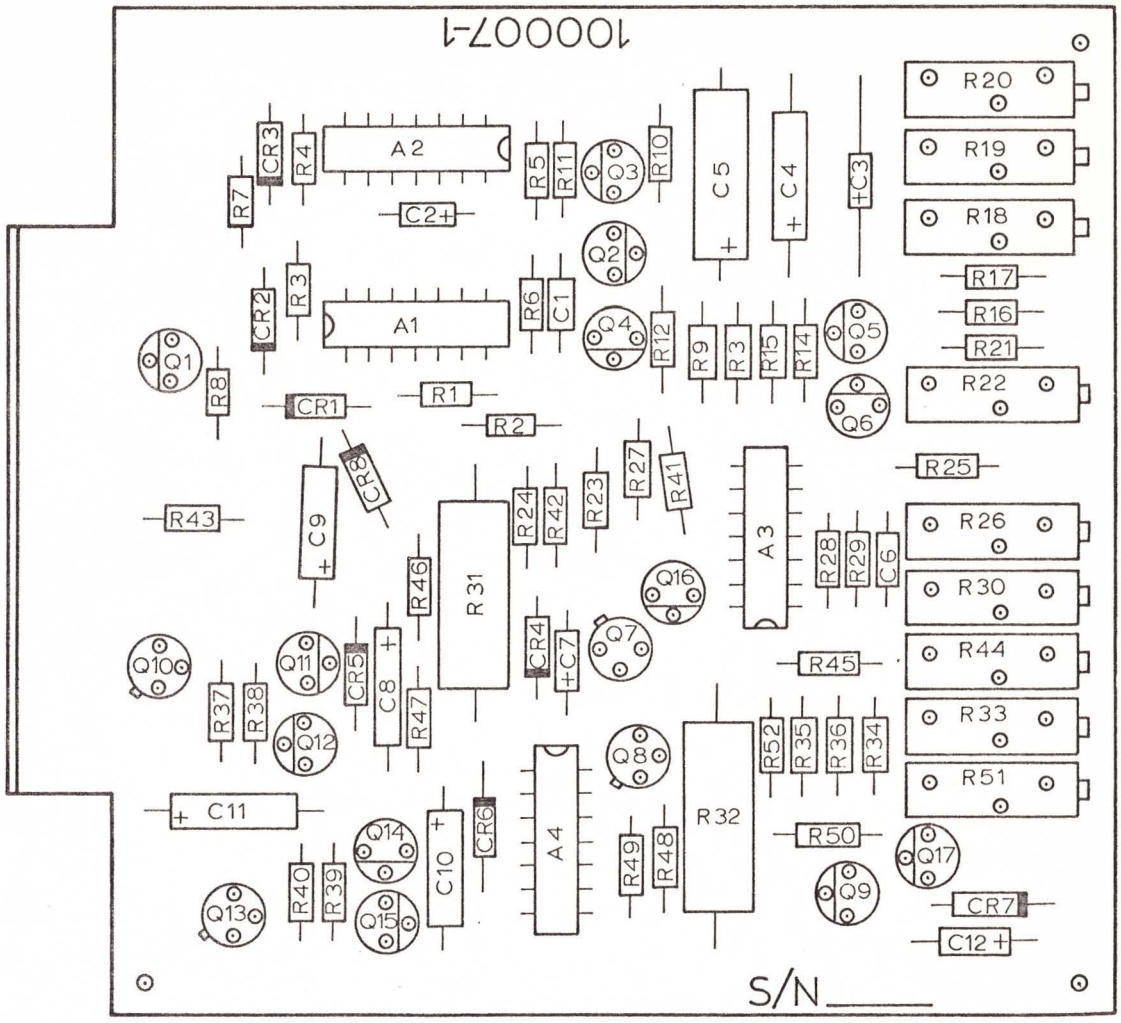
Schematic presentations in this manual are grouped by individual printed circuit board assemblies. Interconnection wiring diagrams are included to facilitate maintenance and trouble shooting. For a clearer presentation of electrical circuit functions it is suggested that the Block Diagram (Figure 2-2) of Section II be reviewed for that purpose.



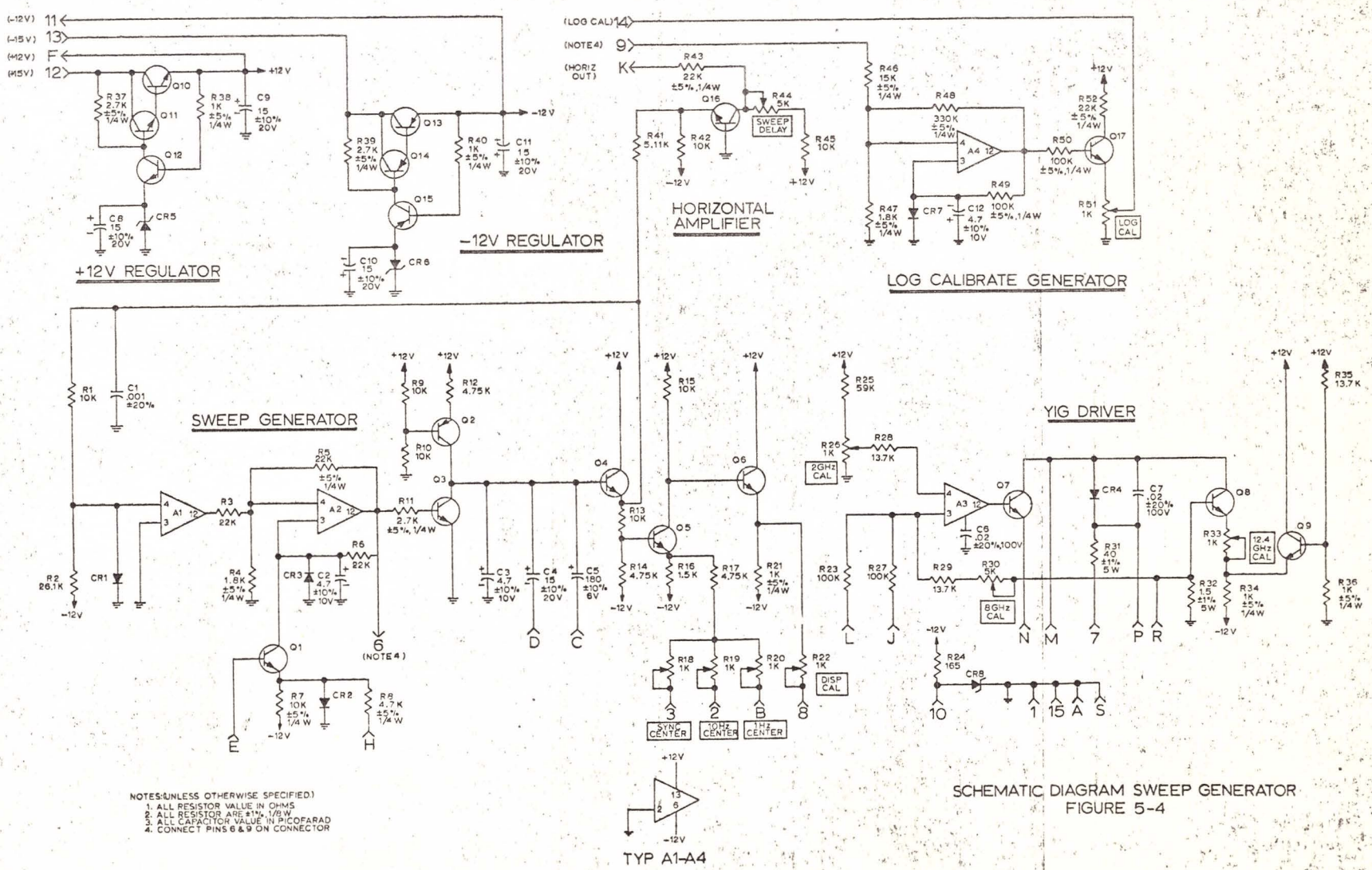
INTERCONNECTION DIAGRAM
SPECTRUM ANALYZER MODEL 101A
FIGURE 5-1



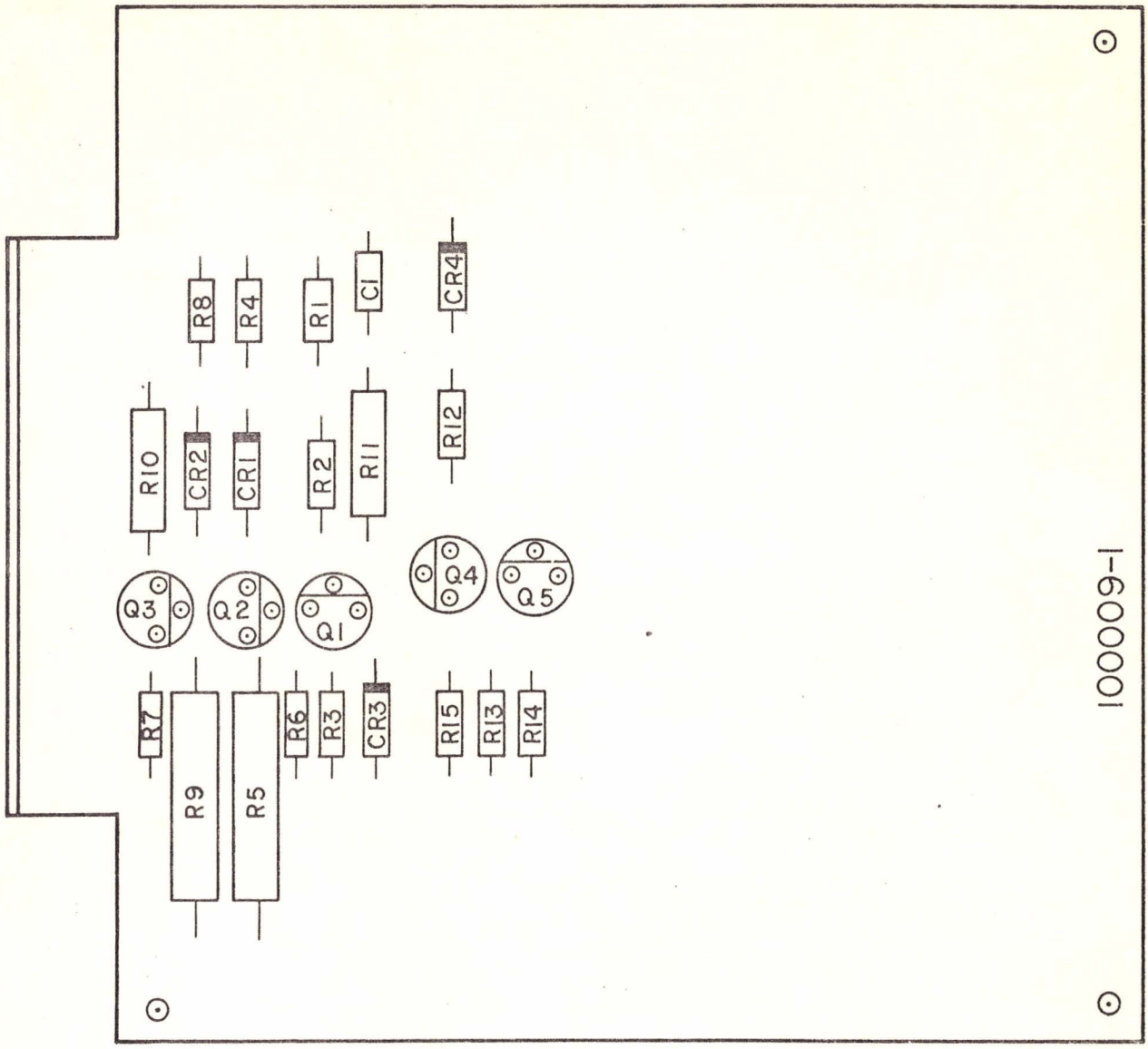
INTERCONNECTION DIAGRAM
POWER CASE MODEL -201A
FIGURE 5-2



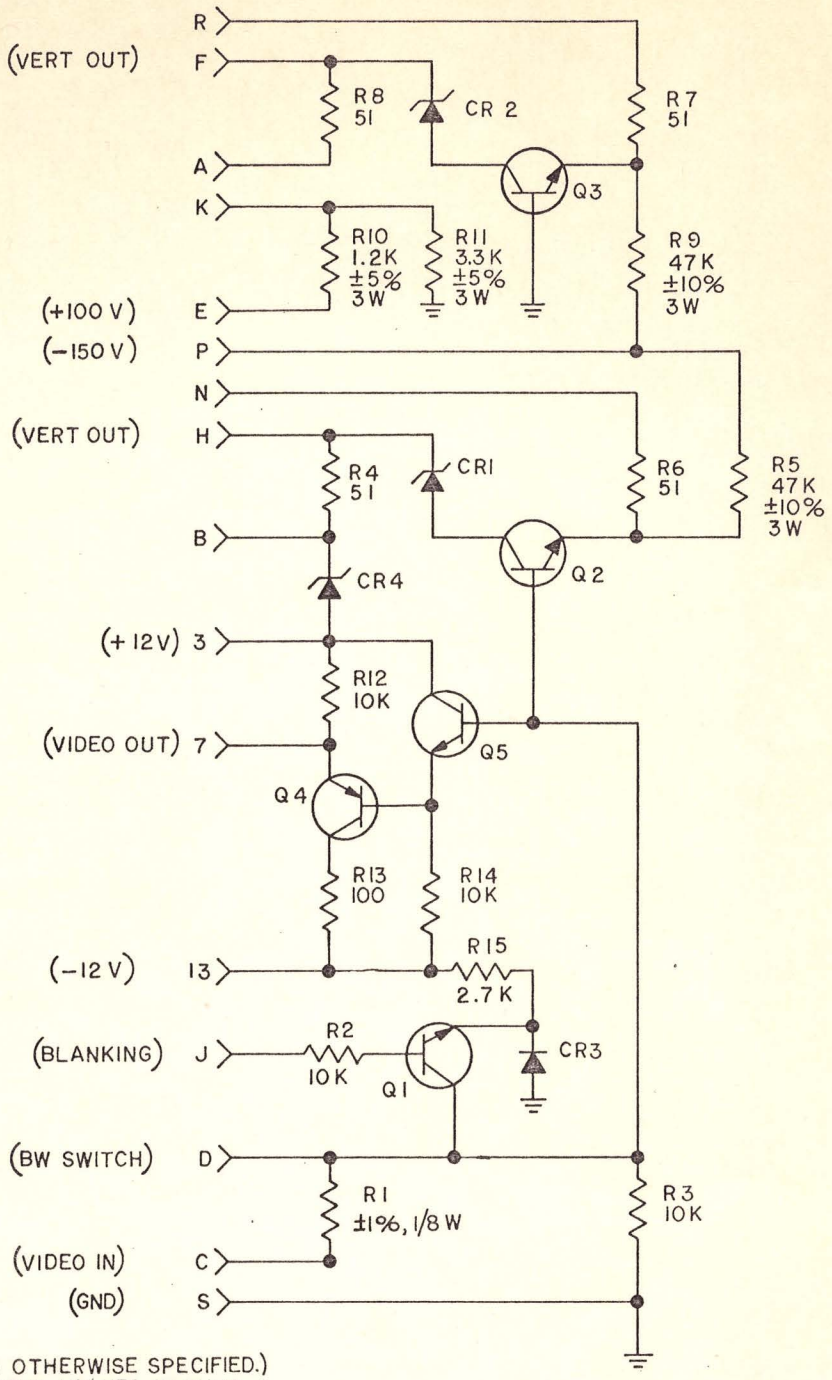
ASSY, PWB SWEEP GENERATOR
FIGURE 5-3



SCHEMATIC DIAGRAM SWEEP GENERATOR
FIGURE 5-4



ASSY-VERTICAL AMPLIFIER
FIGURE 5-5



NOTES: (UNLESS OTHERWISE SPECIFIED.)
1. ALL RESISTOR VALUES IN OHMS
2. ALL RESISTORS ARE ±5%, 1/4 W
3. * SELECTED AT TEST

VERTICAL AMPLIFIER
FIGURE 5-6