Errata

Title & Document Type: **8755C Swept Amplitude Analyzer Operating and Service Manual**

Manual Part Number: **08755-90073**

Revision Date: **July 1980**

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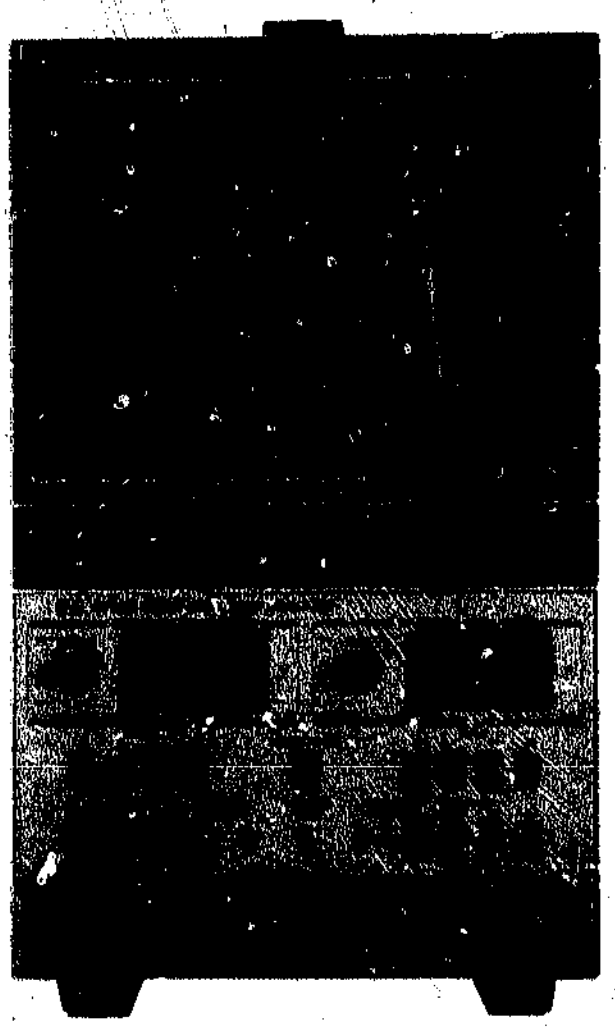
OPERATING AND SERVICE MANUAL

8755C SWEPT AMPLITUDE ANALYZER



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8755C
SWEPT AMPLITUDE ANALYZER

SERIAL NUMBERS

This manual applies directly to instruments with serial numbers prefixed 2032A.

For additional important information concerning serial numbers, see INSTRUMENTS COVERED BY MANUAL in Section I.

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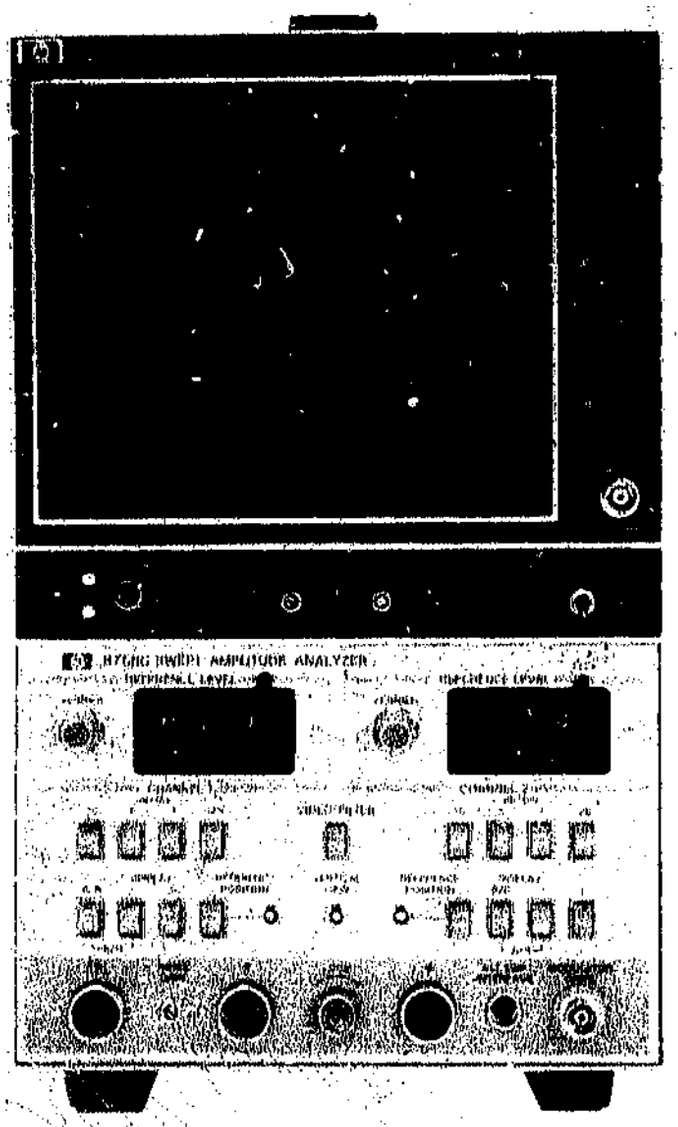
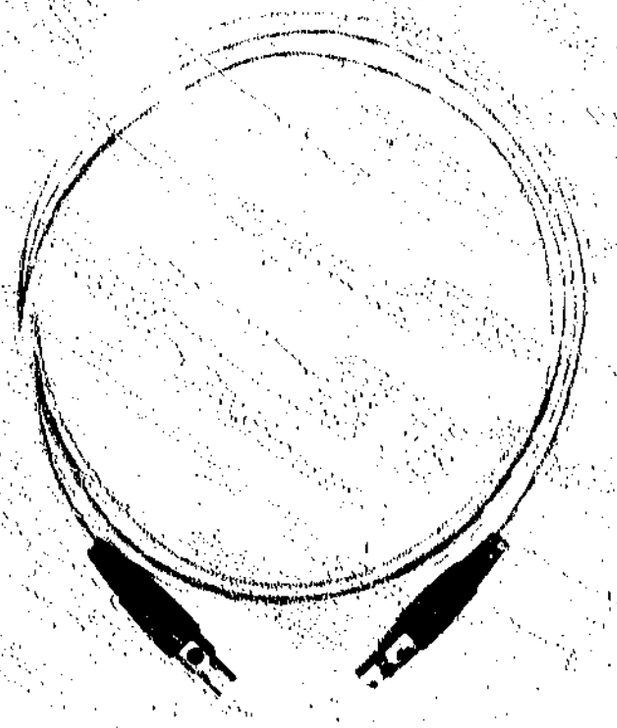


MODEL 8755C SWEPT AMPLITUDE ANALYZER



ALTERNATE SWEEP INTERFACE CABLE
(HP Part No. 8120-3174)

Figure 1-1. Model 8755C Swept Amplitude Analyzer with Accessory Alternate Sweep Interface Cable

SECTION I
GENERAL INFORMATION

1-1. INTRODUCTION

1-2. This operating and service manual applies to HP Model 8755C Swept Amplitude Analyzer and contains information necessary to install, operate, test, adjust, and service it.

1-3. Packaged with this manual is an Operating Information Supplement. This is simply a copy of the first three sections of this manual. This supplement should stay with the instrument for use by the instrument operator. Additional copies of the Operating Information Supplement may be ordered separately thorugh your nearest Hewlett-Packard Office. The part numbers are listed on the title page of the manual and on each publication.

1-4. On the front cover of this manual, below the manual part number is a "Microfiche" part number. This number may be used to order 4- by 6-inch microfilm transparencies of the manual. Each 4- by 6-inch microfiche contains up to 60 photo duplicates of the manual pages. The microfiche package also includes the latest Manual Changes supplement as well as all pertinent Service Notes.

1-5. Refer any questions regarding the manual, the Manual Changes sheet, or the instrument to the nearest HP Sales/Service Office. Always identify the instrument by model number, complete name, and complete serial number in all correspondence. Refer to the inside rear cover of this manual for a worldwide listing of HP Sales/Service Offices.

1-6. SPECIFICATIONS

1-7. Instrument specifications, listed in Table 1-1, are the performance standards or limits against which the instrument may be tested. Supplemental characteristics, listed in Table 1-2, are not specifications but are typical characteristics included for the information of the user. Frequency response of the Model 8755C is largely a function of the detectors used (along with other test equipment ambiguities). Supplemental characteristics of the Model 11664A/B Detectors and the Model 11666A Reflectometer Bridge are given in Table 1-3 as a convenience to the user in predicting measurement uncertainties when using these detectors. Refer to the Operating and Service Manual of the detector used for further specifications.

1-8. SAFETY CONSIDERATIONS

1-9. This product and related documentation must be reviewed for familiarization with safety markings and instructions before operation. This product has been designed and tested in accordance with international standards.

1-10. Safety Symbols

Refer to Operating and Service Manual: This symbol on the instrument means the user must refer to the instrument's Operating and Service Manual to protect the instrument from damage.

Protective Earth Ground: Indicates protective earth ground terminal of the ac power source or the instrument. All exposed metal surfaces on the instrument *must* connect to a protective earth ground terminal.

Frame or Chassis Terminal: This symbol identifies a termianl that is normally common to all exposed metal surfaces on the instrument.

WARNING

The WARNING sign denotes a hazard to personnel. It calls attention to a procedure, practice, or the like, which if not correctly performed or adhered to, could result in injury or loss of life. Do not proceed beyond a WARNING sign until the indicated conditions are fully understood and met.

CAUTION

The CAUTION sign denotes a hazard to the instrument. It calls attention to an operating or maintenance procedure, practice, or the like, which, if not correctly performed or adhered to, could result in damage to or destruction of part or all of the instrument. Do not proceed beyond a CAUTION sign until the indicated conditions are fully understood and met.

1-11. Safety Earth Ground

1-12. This is a Safety Class I product (provided with a protective earthing terminal). An uninterruptible safety earth ground must be provided from the main power source to the product input wiring terminals, power cord, or supplied power cord set. Whenever it is likely that the protection has been impaired, the product must be made inoperative and be secured against any unintended operation.

1-13. Servicing

WARNING

Any servicing, adjustment, maintenance, or repair of this product must be performed only by qualified personnel.

Adjustments described in this manual may be performed with power supplied to the product while protective covers are removed. Energy available at many points may, if contacted, result in personal injury.

Capacitors inside this product may still be charged even when disconnected from its power source.

1-14. INSTRUMENTS COVERED BY MANUAL

1-15. This instrument has a two-part serial number. The first four digits followed by a letter comprise the serial number prefix. The last five-digits form the sequential suffix that is unique to each instrument. The content of this manual applies directly to instruments having the same serial number prefix as those listed on the title page under SERIAL NUMBER.

1-16. An instrument manufactured after the printing of this manual may have a serial prefix that is not listed on the title page. An unlisted serial prefix indicates that the instrument is different from those documented in this manual. The manual for this instrument is supplied with a yellow Manual Changes supplement that contains change information that documents the differences.

1-17. In addition to change information, the supplement may contain information for correcting errors in the manual. To keep this manual as current and accurate as possible, Hewlett-Packard recommends that you periodically request the latest Manual Changes supplement. The supplement for this manual is keyed to this manual's print date and part number, both of which appear on the title page. Complimentary copies of the supplement are available from Hewlett-Packard.

1-18. For information concerning a serial number prefix not listed on the title page or in the Manual Changes supplement, contact your nearest Hewlett-Packard office.

1-19. DESCRIPTION

1-20. The Model 8755C Swept Amplitude Analyzer makes swept measurements of return loss, insertion loss or gain, and power at microwave frequencies. The complete measurement system includes the Model 8755C Swept Amplitude Analyzer plugged into a HP Model 180 "T"-series Display Mainframe, three detectors, and a modulated signal source. A dual-directional coupler and a microwave swept signal source are also required in a typical reflectometer test setup.

1-21. The 8755C has two independent channels and three detector inputs. The HP Model 11664-A/B Detectors designed for the Model 8755C each have a +10 dBm to −50 dBm dynamic range and are completely interchangeable. For each channel, a resolution of 10, 5, 1 or 0.25 dB per division is available. A calibrated amplitude offset of ±99 dB in 1 dB increments is provided by front panel lever switches independently for each channel. A continuously variable offset vernier (>±35 dB) is also provided. Noise filtering is available through the use of the front panel Video Filter switch.

1-22. A 27.8 kHz signal from the 8755C modulates the signal source directly (through the signal source AM modulation input), or through the use of the HP Model 11665B Modulator. This provides a modulated RF envelope to the three Model 11664A/B detectors. The audio modulation technique applied in the 8755C measurement system provides the benefit of virtually drift-free operation, compared to crystal detectors operated without modulation.

1-23. ACCESSORIES SUPPLIED

1-24. Alternate Sweep Interface Cable

1-25. A flexible 1219 mm. (48") Alternate Sweep Interface Cable (HP Part No. 8120-3174) is supplied with the Model 8755C for use with sources utilizing the alternate sweep capability, such as the Model 8350A Sweep Oscillator. This interface cable provides the necessary channel switching operation in the Model 8755C so that preprogrammed alternating sweeps of the Model 8350A will be directed to the appropriate channel in the Model 8755C. Comparative measurements can then be made by utilizing two different sweep widths and/or power

Table 1-1. Specifications for Model 8755C

SPECIFICATIONS

Function: Plug-in for 180 "T"-series display mainframe. Has three input circuits (R, A, B) which process the 11664A/B/C Detector or 11666A/B Reflectometer Bridge outputs for logarithmic display on the mainframe.

Operating Frequency: 27.8 kHz (typically ±1 kHz)

Modulator Drive: Provides open circuit ±6 V from 75-Ohm source impedance at 27.8 kHz.

Weight: Net, 2.8 kg (6 lb. 4 oz.). Shipping, 4.5 kg (10 lb.)

MODEL 8755C OPERATING WITH MODEL 11664A/B DETECTORS AND MODEL 11665B MODULATOR

Function: A complete instrument for making swept frequency response measurements of return loss, transmission gain or loss, and power.

Frequency Range: 10 MHz to 26.5 GHz.

Measurement Range: Single Detector Signal: ±10 dBm to −50 dBm (noise level).

NOTE

Damage level is +20 dBm (100 mW) RF power and ±10 Vdc.

Ratio of Two Detector Signals: 60 dB.

Frequency Response: Determined by frequency response of detectors and individual test equipment used in any specific measurement.

NOTE

The frequency response error can be eliminated with standard grid line normalization techniques or through the use of the Model 8750A Storage-Normalizer.

Ratio Measurement Accuracy: See table at right:

NOTE

Accuracy figures show overall system uncertainty for a single detector measurement using the OFFSET dB controls. It is also the accuracy of a ratio measurement when the power level to one detector does not change level. If both detectors of a ratio measurement change level, after calibration, the total measurement uncertainty is the sum of the two detector accuracy uncertainties. Figures do not include frequency response, mismatch, or coupler ambiguities.

Ratio Measurement Accuracy

dB Change From Reference	Amplitude Accuracy
10 dB	≤±0.9 dB
20 dB	≤±1.1 dB
30 dB	≤±1.1 dB
40 dB	≤±1.1 dB
50 dB	≤±1.1 dB
60 dB	≤±1.9 dB

GENERAL

Resolution: Independent for each channel in steps of 10, 5, 1, or 0.25 dB per division. With Model 182T display, resolution is 1.29 cm/division and with Model 180T/TR display, resolution is 1 cm/division.

Offset: ±99 dB in 1-dB steps. Each display channel is independent.

Recorder Outputs: 0.5 V/division with nominally 100 Ohms output impedance. (Option 807 must be installed in 180A/AR/C/D, 181A/AR, 182A/C, and 184A/B mainframes).

Marking and Blanking: 180 "T"-series mainframes and 180 series Option 807 mainframes accept both positive and negative 5 Volt marker and blanking inputs. Damage level is 20 V p-p.

Temperature Range: Operation, 0 to 55 degrees C; storage, −40 degress C to +75 degrees C.

Dimensions:

With 182 series display mainframe:
338.1 H x 201.6 W x 498.5 mm D overall (13 15/16" x 7 15/16" x 19 5/8").

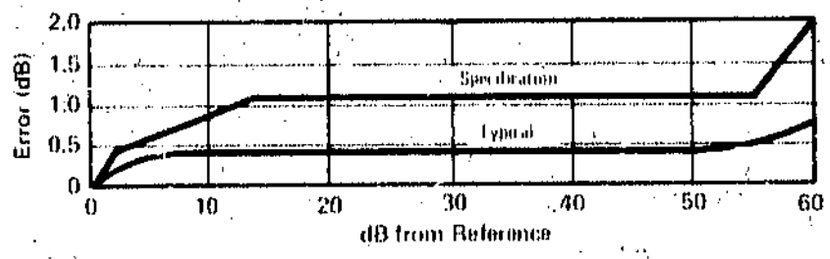
With 180AR/C/T/TR, 181AR/TR, or 184B display mainframe:
133 H x 425 W x 543 mm D overall (5 7/32" x 16 3/4" x 21 3/8"); 493 mm (18 3/8") D behind rack mount tabs.

With 180A/C, 181A/T, or 184A display mainframe:
289 H x 200 W x 540 mm D behind panel (11 3/8" x 7 7/8" x 21 1/4").

Table 1-2. Supplemental Characteristics of Model 8755C

SUPPLEMENTAL CHARACTERISTICS

Ratio Measurement Accuracy:



Accuracy curve shows overall system uncertainty for a single detector measurement using the OFFSET dB controls; it is also the accuracy of a ratio measurement when the power level to one detector does not change level. If both detectors of a ratio measurement change level, after calibration, the total measurement uncertainty is the sum of the two detector accuracy uncertainties. Curve does not include frequency response, mismatch, or coupler ambiguities. The curve requires a calibration power level at +10 dBm incident at the test detector when the 0 dB reference is set.

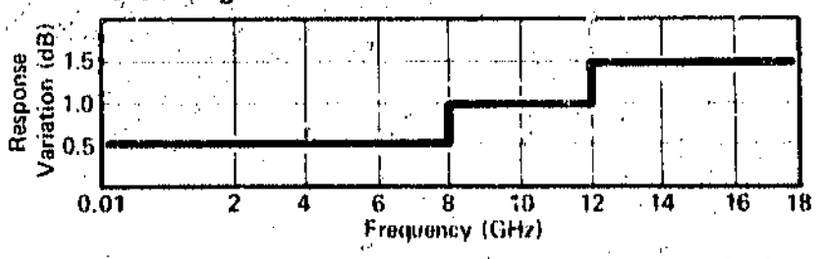
Table 1-3. Supplemental Characteristics of the Model 11664A/B Detectors and the Model 11666A Reflectometer Bridge

HP 11664A DETECTOR

Frequency Range: 10 MHz to 18 GHz.

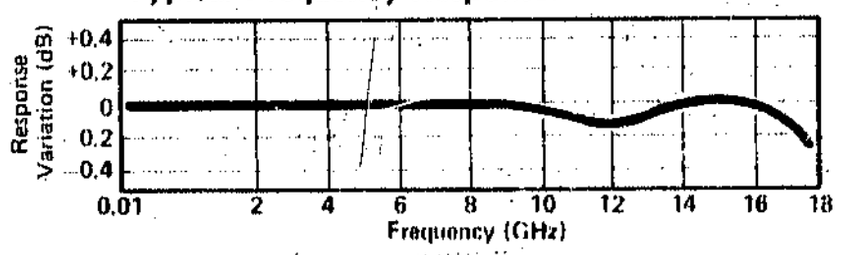
Maximum Input Power: Damage level is +20 dBm (100 mW), ±10V dc.

Tracking Between Two 11664A Detectors:



(Tracking between 2 detectors at the same relative power level. This does not include mismatch or coupler uncertainties.).

Typical Frequency Response:



HP 11664B DETECTOR

Frequency Range: 10 MHz to 26.5 GHz.

Maximum Input Power: Damage level is +20 dBm (100 mW), ±10 V dc.

Tracking Between Two 11664B Detectors: Tracking between two detectors at the same power level is typically <2 dB from 10 MHz to 26.5 GHz. For detectors 50 dB apart in power level, tracking is typically <5 dB from 18 to 26.5 GHz and <3 dB from 12 to 18 GHz.

HP 11666A REFLECTOMETER BRIDGE

Frequency Range: 40 MHz to 18 GHz.

Maximum Input Power: Damage level is +15 dBm (31.6 mW), ±10 V dc.

Frequency Tracking:

Between incident and reflected arms: ≤3.2 dB.

Between incident and test port, including 1.1 dB from HP 11664A/B detector: ≤4.2 dB.

levels with results of both displayed on alternating sweeps of the display. Refer to the Section III Operation portion of this manual for further information on test setup and measurements regarding the use of the Alternate Sweep Interface Cable.

1-26. EQUIPMENT REQUIRED BUT NOT SUPPLIED

1-27. Detectors

1-28. Up to three Model 11664A/B Detectors are needed to make a measurement with the Model 8755C. Designed specifically for use with the Model 8755C Swept Amplitude Analyzer, the Model 11664A/B detects the envelope of the 27.8 kHz modulated RF signal. Each detector uses a biased Schottky diode to achieve –50 dBm sensitivity. The frequency range of the Model 11664A Detector is 10 MHz to 18 GHz. The extended frequency range of the Model 11664B detector is 10 MHz to 26.5 GHz. Refer to Table 1-3 for supplemental characteristics regarding these detectors.

1-29. Display Mainframe

1-30. The Model 180-series display mainframe is used for the Model 8755C. It supplies all the power required to operate the Model 8755C via the plug-in rear panel interconnect plug. Model 180 "T"-series display mainframes are recommeded for use with the Model 8755C as they provide zero offset recorder outputs and both positive and negative 5 volt retrace blanking inputs. The Model 8755C is operable with any 180-series display mainframe; however, reduced capabilities within a system due to a lack of proper auxiliary input/output BNC connectors (AUX A, AUX B, AUX C, and AUX D) on the display mainframe may be realized. Model 180-series Option 807 display mainframes and Model 180 "T"-series display mainframes provide these outputs.

1-31. To be compatable with the Model 8750A Storage-Normalizer, the Model 180-series display mainframe must also include the rear panel Normalizer Interface connector. The Model 182T (Serial No. Prefixes ≥1705A) and the Model 180TR (Serial No. Prefixes ≥1704A) are directly compatable with the Model 8750A Storage-Normalizer. As shown in Table 1-4, a field installable Retrofit Kit is available for older Model 182T and Model 180TR display mainframes to install the rear panel Normalizer Interface connector. As a result of the Model 8750A compatability modifications, the Model 182T and the Model 180TR should not be used with time domain plug-ins at fast sweep times or timing problems may result. The Model 181T/TR variable persistence and storage displays are fully compatible with time domain plug-ins and are particularly useful for making swept slotted line measuremebts where storage of multiple traces when using the Model 8755C is required. Because the Model 181T/TR display mainframes offer CRT storage, they are not compatable with the Model 8750A Storage-Normalizer. Refer to Table 1-4 for Model 8750A/Display Mainframe Compatability information.

1-32. Model 11665B Modulator

1-33. The Model 11665B Modulator is required if the RF signal source used does not have the internal capability of modulating the RF output at a 27.8 kHz rate. The Model 11665B Modulator modulates test signals from 15 MHz to 18 GHz with the 27.8, Swept Amplitude Analyzer. Refer to the Section III Operation portion of this manual for further information on test setup and measurements regarding the use of the Model 11665B Modulator.

1-34. EQUIPMENT AVAILABLE

1-35. Model 11666A Reflectometer Bridge

1-36. Reflection measurements from 40 MHz to 18 GHz can be made with one coupling device using the Model 11666A Reflectometer Bridge. It is a coupling device based on the principle of the Wheatstone bridge, extended to microwave frequencies. The Model 11666A is completely dedicated to the Model 8755C. Two Schottky diode detectors are incorporated as an integral part of the bridge unit. The effective external leveling achieved by ratioing this isolates the measurement port from source/bridge input mismatch. With the addition of an external Model 11664A/B Detector, two simultaneous ratio measurements of insertion and return loss can be made. Refer to the Section III Operation portion of this manual for further information on test setup and measurements regarding the use of the 11666A Reflectometer Bridge. Refer to Table 1-3 for supplemental characteristics regarding the Model 11666A.

1-37. Model 11667A Power Splitter

1-38. The Model 11667A Power Splitter is recommended when making low loss wideband transmission measurements with the Model 8755C. This two-resistor type splitter provides excellent output SWR at the auxiliary arm when used for source leveling or ratio measurement applications. The 0.25 dB tracking between output arms over a frequency range of dc to 18 GHz allows wideband measurements to be made with a minimum of uncertainty.

1-39. Other Signal Separation Devices

1-40. Many other signal separation devices are available for specific measurement applications using the Model 8755C. Coaxial couplers from 100 MHz to 18 GHz are available with the Model 770-series, Model 790-series, and the Model 11692. Higher directivity Model 752-series waveguide couplers can also be used with the Model 8755C with the addition of appropriate Model 281-series waveguide to coax adaptors.

1-41. Model 11678A Low Pass Filter Kit

1-42. The Model 11678A Low Pass Filter Kit contains five low pass filters with the following cutoff frequencies: 11688A, 2.8 GHz, 11689A, 4.4 GHz, 11684A, 6.8 GHz, 11685A, 9.56 GHz, and 11686A, 13.0 GHz. The use of low pass filters is recommended to reduce undesirable harmonics generated by the RF source when making precise broadband measurements.

1-43. Model 11668A High Pass Filter

1-44. The Model 11668A High Pass Filter accessory is recommended when making measurements on active devices which have gain below 50 MHz. Use of the Model 11668A High Pass Filter, placed after the Model 11665B Modulator, reduces the modulator drive feedthrough from 8mV to 1mV and prevents possible amplifier saturation.

1-45. Model 11679A/B Extension Cables

1-46. The Model 11679A 7.6 m (25-foot) Extension Cable and the Model 11679B 61 m (206-foot) Extention Cable fit directly between the Model 11664A/B Detector or Model 11666A Reflectometer Bridge and Model 8755C Swept Amplitude Analyzer. Remote detector operation is thus permitted without performance degradation.

Table 1-4. Model 8750A/Display Mainframe Compatibility

DISPLAY MAINFRAME	AUX A, AUX B, AUX C, AUX D OUTPUTS	8750A COMPATIBILITY
180A/AR/C/D	Option 807 only*	not compatible
180D	Option 807 only*	with addition of Modification Kits (HP Part Nos. 08750-60025 and 00180-69503)
180TR	yes	Serial Prefixes ≥1704A are directly compatible; all others require Modification Kit (HP Part No. 08750-60025)
181A/AR	Option 807 only*	not compatible
181T/TR	yes	not compatible
182A	Option 807 only*	not compatible
182C	Option 807 only*	with addition of Modification Kits (HP Part Nos. 08750-60024 and 00181-69503)
182T	yes	Serial Prefixes ≥1705A are directly compatible; all others require Modification Kit (HP Part No. 08750-60024)
183A/B/C/D	no	not compatible
184A/B	Option 807 only*	not compatible

* A Modification Kit (HP Part No. 00180-69503) is available to add the AUX A, AUX B, AUX C, and AUX D BNC rear panel connectors which are included on "T" series and Option 807 display mainframes.

Table 1-5. Recommended Test Equipment

Instrument	Critical Specifications	Recommended Model	Use*
Display mainframe for 8755C	HP 180T/TR, 181T/TR, 182T or other 180-series with Option 807 (refer to Table 1-4)	Same as listing in Critical Specifications	P,A,T
Oscilloscope	Vertical Bandwidth: 20 MHz minimum Vertical Sensitivity: 5mV/DIV Horizontal Sweep Rate: 1μ/Div. max.	HP 180A/1801A/1820A	T
Detectors (3 required)	Model 11664A/B	HP 11664A/B	P,A,T
Sweep Oscillator	CW and swept frequency signal in a range covering 2.0 GHz	HP 8350A** mainframe with 8350A RF plug-in (0.01-8.4 GHz)	P,A,T
Extractor Tool	Removes PC boards	HP 03950-4001	T
Extender Board	Extends 30 pin connector	HP 5060-0049	T
DC Digital Voltmeter	Range: −50V to +50V Accuracy: 0.05%	HP 3455A (HP-IB) or HP 3465A/B	A,T
0-70 dB Step Attenuator (Calibrated)	Attenuation: 0 to 70 dB in 10 dB steps Input and Output Impedance: 50 Ohms Calibration Accuracy: ±0.4 dB	HP 8495B, calibrated by Standards Laboratory	P,A
0-11 dB Step Attenuator (Calibrated)	Attenuation: 0 to 11 dB in 1 dB steps Input and Outpt Impenance: 50 Ohms Calibration Accuracy: ±0.4 dB	HP 84994B, calibrated by Standards Laboratory	A
Directional Coupler	Frequency Range: 0.10 to 2.0 GHz Coupling Attenuation: 20 dB Nominal SWR: ≤1.1	HP 778D	P,A
Power Meter and Thermistor Mount	Frequency: 100 MHz to 18 GHz Range: +10 dBm to −20 dBm	HP 432A/8478B	A,T
Extender Cable Assembly	No substitute. Allows troubleshooting outside mainframe by extending power supply and signal lines to mainframe.	HP 5060-0303	A,T
Storage-Normalizer	HP 8750A with Network Analyzer Interface card	HP 8750A**	T

* A = Adjustment; P = Performance Test; T = Troubleshooting

**8350A and 8750A are required to troubleshoot storage-normalizer interface and alternate sweep interface circuits only.

1-47. Model 11664C Detector Adaptor

1-48. The Model 11664C Detector Adaptor allows the use of standard diode detectors with the Model 8755C. After initial detector calibration with the specific diode detector used, the Model 11664C is interchangeable with the Model 11664A/B detectors. Frequency range of the Model 11664C is limited on the upper end by the diode detector used, thus extending the operating range of the Model 8755C.

1-49. Model 8750A Storage-Normalizer

1-50. The Model 8750A Storage-Normalizer provides a digitally stored display and digital normalization of both channels in the Model 8755C. The Model 8750A connects directly to the rear panel of Model 180 "T"-series display mainframes via a single interface cable. Table 1-4 shows Model 8750A compatability information with the display mainframe used. For each channel of the Model 8755C, it provides a flicker-free display, independent of the measurement sweep rate. Digital normalization of the display eliminates the need for "grease pencil" techniques and allows improvements in accuracy, speed, and convenience. Refer to the Section III Operation portion of this manual for further information on test setup and measurements regarding the use of the Model 8750 Storage-Normalizer.

1-51. Sweep Oscillators

1-52. The Model 8620C and Model 8350A solid-state sweep oscillator families are recommended swept signal sources for use with the Model 8755C Swept Amplitude Analyzer. Frequency and power ranges are variable as a function of the RF plug-in used. The Model 8620C Sweep Oscillator modulates the RF output signal with the Model 8755C Modulator Drive output connected to the sweep oscillator rear panel EXT AM input. The Model 8350A Sweep Oscillator is capable of internally modulating the RF source at 27.8 kHz through front panel or HP-IB bus control. Through the single Alternate Sweep Interface Cable connection on the Model 8350A Sweep Oscillator and the Model 8755C, complete synchronization of channel switching is provided. Refer to the Model 8350A Operating and Service Manual and the Section III Operation portion of this manual for more detailed information regarding the alternate sweep capabilities.

1-53. RECOMMENDED TEST EQUIPMENT

1-54. Equipment required to maintain the Model 8755C is listed in Table 1-5. Other equipment may be substituted if it meets or exceeds the critical specifications listed in the table.

SECTION II
INSTALLATION

2-1. INTRODUCTION

2-2. This section provides installation instructions for the Model 8755C Swept Amplitude Analyzer. This section also includes information about initial inspection and damage claims, preparation for using the Swept Amplitude Analyzer, and packaging, storage and shipment.

2-3. INITIAL INSPECTION

2-4. Inspect the shipping container for damage. If the shipping container or cushioning material is damaged it should be kept until the contents of the shipment have been checked for completeness and the instrument has been checked mechanically and electrically. The contents of the shipment should be as shown in Figure 1-1. If the contents are incomplete, if these is mechanical damage or defect, or if the instrument does not pass the electrical performance test, notify the nearest Hewlett-Packard office. If the shipping container is damaged, or the cushioning material shows signs of stress, notify the carrier as well as the Hewlett-Packard office. Keep the shipping materials for carrier's inspection. The HP office will arrange for repair or replacement without waiting for claim settlement.

2-5. PREPARATION FOR USE

2-6. Blanking Polarity Switch

2-7. The POS/NEG blanking polarity switch (A11S1) on the Normalizer Interface board must be set for the polarity of blanking pulses generated by the swept signal source being used. If a positive blanking signal is used (i.e. HP Model 8620 series sweeper), set S1 to the POS position. If a negative blanking signal is used (i.e. HP 8690 series sweeper), set S1 to the NEG position. (The HP Model 8350A sweeper has both positive and negative blanking outputs). Set S1 to NEG if a 181 or 184 series mainframe is being used; if S1 is in the POS position with these mainframes, the PERSISTENCE control will be inoperative.

INT SWEEP to mainframe	1	O O	17	INT BLANKING to mainframe
no connection	2	O O	18	BLANKING to mainframe
−100 V SWITCHED from mainframe	3	O O	19	INT BLANKING GROUND to mainframe (not used)
NORMALIZE ENABLE from 8750A (L NORM)	4	O O	20	BLANKING GROUND to mainframe
NORMALIZED VERTICAL IN from 8750A (Y NORM)	5	O O	21	BEAM FINDER, −12.6 Vdc normal, open for beam finder
ALT TRIGGER from mainframe (not used)	6	O O	22	CHANNEL 1 OFF SENSE to 8750A (L OFF 1)
ALT TRIGGER GROUND from mainframe (not used)	7	O O	23	CHANNEL 2 OFF SENSE to 8750A (L OFF 2)
GROUND from mainframe	8	O O	24	GROUND from mainframe
+35 Vdc from 183A/B/C mainframes (not used)	9	O O	25	MARKER SENSE to 8750A (MARKER PULSE)
115 Vac from mainframe (not used)	10	O O	26	115 Vac from mainframe (not used)
AUX D to mainframe rear panel	11	O O	27	−100 Vdc from mainframe (not used)
AUX C to mainframe rear panel	12	O O	28	−12.6 Vdc from mainframe
AUX B, channel 2 signal to mainframe rear panel	13	O O	29	+15 Vdc from mainframe
AUX A, channel 1 signal to mainframe rear panel	14	O O	30	+100 Vdc from mainframe
AUX A/B/C GROUND from mainframe (not used)	15	O O	31	30 p-p from mainframe (not used)
115 Vac from mainframe (not used)	16	O O	32	115 Vac from mainframe (not used)

A11P1 (AS VIEWED FROM COMPONENT SIDE)

Figure 2-1. Normalizer Interface Connector A11P1 Signals and Voltages

Table 2-1. Model 8755C Mating Connectors

Connector Name	Industry Identification	HP Part No.	Alternate Source
Detector "A" Input*	Audio 5-pin Connector	1251-1865	Switchcraft 12CL5M
Detector "R" Input*	Audio 5-pin Connector	1251-1865	Switchcraft 12CL5M
Detector "B" Input*	Audio 5-pin Connector	1251-1865	Switchcraft 12CL5M
ALT SWP INTERFACE**	Audio 3-pin Connector	no HP Part No.	Switchcraft TA-3F
MODULATOR DRIVE	BNC	1250-0256	Specialty Connector 25-P118-1

* A 1219 mm (48") cable assembly including the detector input mating connector is available (HP Part Number 8120-1788).
** A 1219 mm (48") cable assembly with a Switchcraft TA-3F Audio 3-pin connector on each end is supplied with the Model 8755C as the Alternate Sweep Interface cable (HP Part Number 8120-3174).

2-8. INSTALLATION

2-9. When properly installed, the Model 8755C Plug-in obtains all necessary power from the mainframe. The rear panel connector provides the interface. Refer to Figure 2-1 for A11P1 rear panel plug signal and voltage connections.

2-10. To install the Plug-in into the mainframe:

a. Set the display mainframe line switch to off.

b. Rotate the "lock" knob on the Model 8755C front panel fully counterclockwise.

c. Slide the Model 8755C into place toward the rear of the compartment and push firmly to mate the rear interconnect.

d. Rotate the "lock" knob clockwise until the Model 8755C is held solidly in the mainframe.

2-11. To install each of the three Model 11664A/B Detectors to the front panel of the Model 8755C:

a. Mate the Model 11654A/B Detector cable connector to the Model 8755C detector inpu (A, B, or R).

b. Turn the connector locking collar clockwise to lock the detector cable to the Model 8755C.

c. Mount the matching colored plastic identification bands on each end of the detector cable to help identify the channel information.

2-12. Interconnections

2-13. All signals and supply voltages are routed through the Normalizer Interface board connector A11P1. Refer to Figure 2-1 for the pin configuration of A11P1 with signal and voltage definitions.

2-14. Mating Connectors

2-15. All of the externally mounted connectors on the Model 8755C are listed in Table 2-1. Opposite each mainframe connector is an industry identification, the part number of a mating connector, and the part number of an alternate source for the mating connector.

2-16. Operating Environment

2-17. Temperature. The instrument may be operated in temperatures from 0°C to +55°C.

2-18. Humidity. The instrument may be operated in environments with humidity up to 95 percent. However, the instrument should also be protected from temperature extremes which cause condensation within the instrument.

2-19. Altitude. The instrument may be operated at altitudes up to 25,000 feet.

2-20. STORAGE AND SHIPMENT

2-21. Environment

2-22. The instrument may be stored or shipped in environments within the following limits:

Temperature:	−40°C to +75°C
Humidity:	Up to 95 percent
Altitude:	Up to 25,000 feet

The instrument should also be protected from temperature extremes which cause condensation within the instrument.

2-23. Packaging

2-24. Original Packaging. Containers and materials identical to those used in factory packaging are available through Hewlett-Packard offices. If the instrument is being returned to Hewlett-Packard for servicing, attach a tag indicating the type of service required, return address, model number, and full serial number. Also, mark the container FRAGILE to assure careful handling. In any correspondence, refer to the instrument by model number and full serial number.

2-25. Other Packaging. The following general instructions should be used for re-packaging with commercially available materials:

a. Wrap the instrument in heavy paper or plastic. (If shipping to a Hewlett-Packard office or service center, attach a tag indicating the type of service required, return address, model number, and full serial number).

b. Use a strong shipping container. A double-wall carton made of 350-pound test material is adequate.

c. Use enough shock-absorbing material (3- to 4-inch layer) around all sides of the instrument to provide a firm cushion and prevent movement inside the container. Protect the control panel with cardboard.

d. Seal the shipping container securely.

e. Mark the shipping container FRAGILE to assure careful handling.

Table 2-2. Model 180 "T"-series and Option 807 Display Mainframe Connections

Display Mainframe Connector	Equipment To Which It Connects	Function
EXT INPUT (front panel sweep input)	Sweep Oscillator SWEEP OUTPUT	Provides horizontal sweep voltage only when 8750A is NOT used. Set display INT/EXT switch to EXT.)
AUX A	X-Y Recorder, A/D Converter	8755C Channel 1 output (500 mV/major division)
AUX B	X-Y Recorder, A/D Converter	Accepts +5V retrace blanking (500 mV/major division)
AUX C	8350A POS Z BLANK (set 8755C A11S1 to POS)	Accepts +5V retrace blanking and −5V markers from 8350A
	or 8620 series Z-AXIS output (set 8755C A11S1 to POS)	Accepts +5V retrace blanking and −5V markers from 8620 series sweep oscillator
	or 8690 series BLANKING (set 8755C A11S1 to NEG)	Accepts only −5V retrace blanking from 8690 series sweep oscillator
AUX D	Sweep Oscillator SWEEP OUTPUT	Accepts horizontal sweep voltage when 8750A is used. May be used for sweep when 8750A is not used. (Set display INT/EXT switch to INT.)
Z-AXIS INPUT	8350A POS Z BLANK	Accepts +5V retrace blanking and −5V intensity markers only when NOT using 8750A
	8620 series Z-AXIS output	Accepts +5V retrace blanking and −5V intensity markers only when NOT using 8750A
	8690 series MARKER output	Accepts −5V intensity marker only when NOT using 8750A

CAUTION

Marker and blanking signals must be <20 V p-p or damage may result.

OPERATION

SECTION III
OPERATION

3-1. INTRODUCTION

3-2. This section includes information necessary for the correct setup and operation of basic measurements with the Model 8755C. General Operating Characteristics of the swept amplitude analyzer system are given in Figure 3-1. An explanation of all front panel controls and inputs is given in Figure 3-2. An Operators' Check is described in Figure 3-3 to give a quick check of proper operation. Typical measurement setups and explanations are provided in Figure 3-4.

3-3. OPERATING CHARACTERISTICS

3-4. A typical swept measurement test setup is shown in Figure 3-1 for the purpose of explanation only. Refer to the specific test setups explained later in this Operation Section for detailed setup and measurement instructions.

3-5. A typical swept measurement system includes the Model 8755C Swept Amplitude Analyzer installed in a compatible display mainframe (refer to Table 1-4 for display mainframe compatibility information). This display/analyzer combination receives control and signal information and processes it for a logrithmic display on the CRT. A swept signal source across the desired band is square wave modulated by a 27.8 kHz modulator. The Model 11665B Modulator may be used if the sweep oscillator does not have internal modulation capability (through EXTernal AM input drive or an internal 27.8 kHz modulator). A 27.8 kHz modulator drive signal is available from the Model 8755C front panel. The pulsed RF output from the modulator is applied to a signal splitting device, such as the dual directional coupler shown. (A signal splitting device may not be required for power measurements, explained later in this Operating Section). The signal splitting device allows ratio measurements to be made by comparing the detected outputs of the splitting device. The detectors for each channel are identical in design and operation. The detectors output the 27.8 kHz signal only for processing in the Model 8755C. The amplifier circuitry within the Model 8755C is tuned to 27.8 kHz which allows rejection

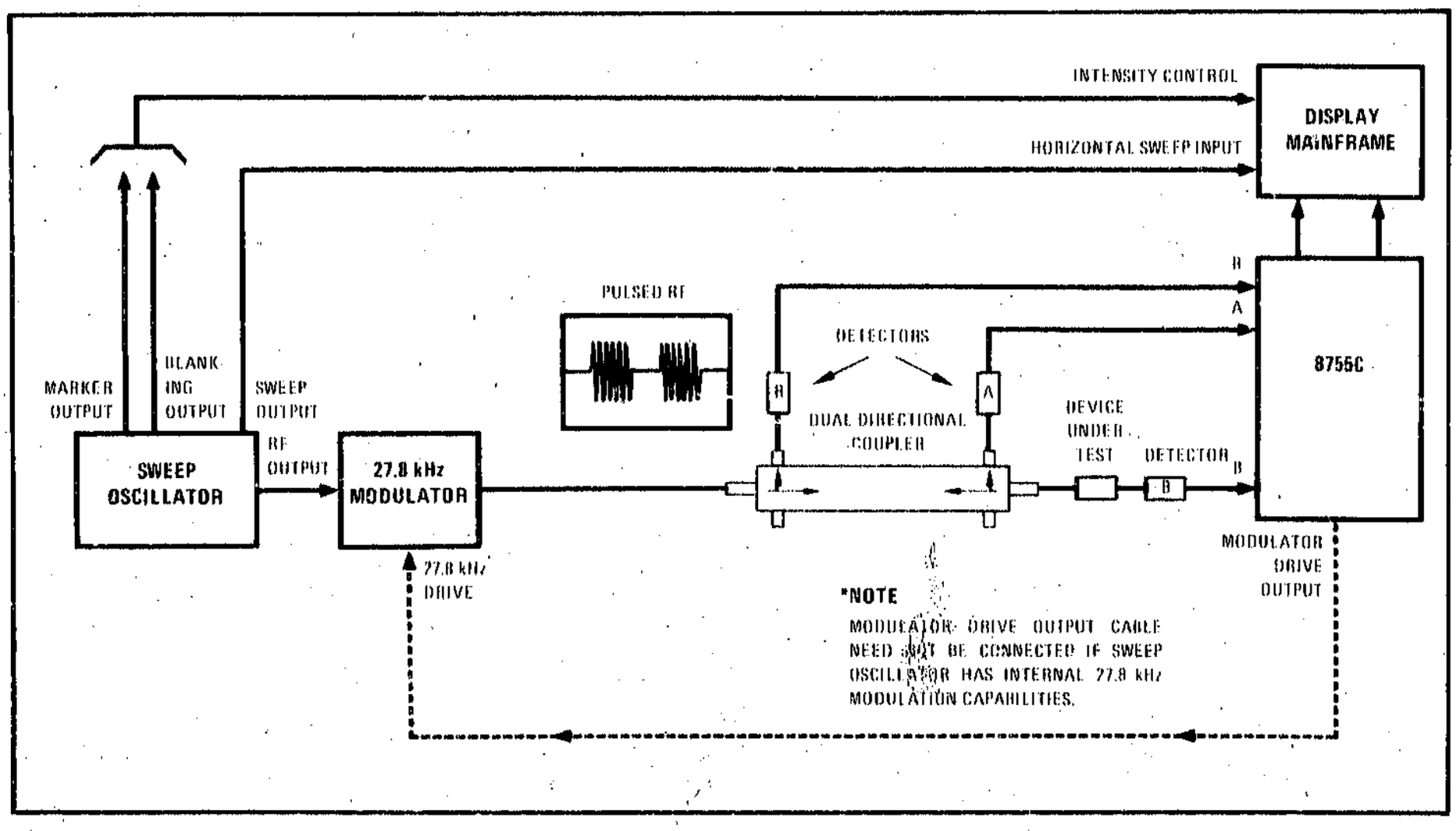


Figure 3-1. Typical Swept Frequency Measurement Test Setup

of unmodulated signals which may pass through the detectors. The device to be tested may be inserted at a point in a previously calibrated system to determine its characteristics, such as return loss and insertion loss (or gain). Control information from the sweep oscillator is also used by the swept amplitude analyzer to synchronize sweep and display operations. A voltage ramp which corresponds to the sweep oscillator sweep rate is output to the display mainframe to drive the horizontal deflection circuits for the CRT. Vertical deflection drive is supplied by the two independent channel outputs from the Model 8755C. A retrace blanking signal is output by the sweep oscillator to turn the CRT beam off during sweep retrace. High intensity marker pulses may also be sent to the display to provide frequency indicators on the displayed trace. Care must be taken in the various control signal setups to insure that the correct polarity and amplitude requirements are observed. Refer to the specific measurement system instrument Operating and Service Manuals to determine the correct input and output ports to be used. Refer to Table 2-2 for display mainframe rear panel AUXiliary rear panel input/output connections.

3-6. In Figure 3-1, three detectors are used to detect the modulated outputs of the dual directional coupler. The incident RF signal is detected by the reference channel detector R. The reflected signal is detected by the A or B detector. However, channel A is normally used for the reflected signal, as shown. The device under test is connected to the directional couplers main line output. If the device under test is a two-port device, the B detector is connected to its output port. The ratio of the A detector signal to the R (reference) detector signal is reflection coefficient and the ratio of the B detector signal to the reference channel signal is insertion loss (or gain) of the device under test. Therefore, reflecton coefficient (return loss) and insertion loss may be displayed simultaneously.

3-7. PANEL FEATURES

3-8. Front panel features are described in Figure 3-2. Description numbers identify the front panel controls and connectors and match description paragraphs given with the illustration.

3-9. OPERATOR'S CHECK

3-10. Figure 3-3 is on operator's check procedure, allowing the operator to make a quick check of the Model 8755C functions prior to use. The Operator's Check assumes that the Model 8755C is installed in a compatible, properly calibrated display mainframe. Thes test covers both the Model 8755C and the display mainframe; therefore, if the correct indications are not obtained, trouble may be in either unit. If the analyzer is suspected, use the performance test in Section IV to determine if the analyzer is working correctly. Otherwise, follow the troubleshooting in Section VIII to isolate the problem.

3-11. OPERATING INSTRUCTIONS

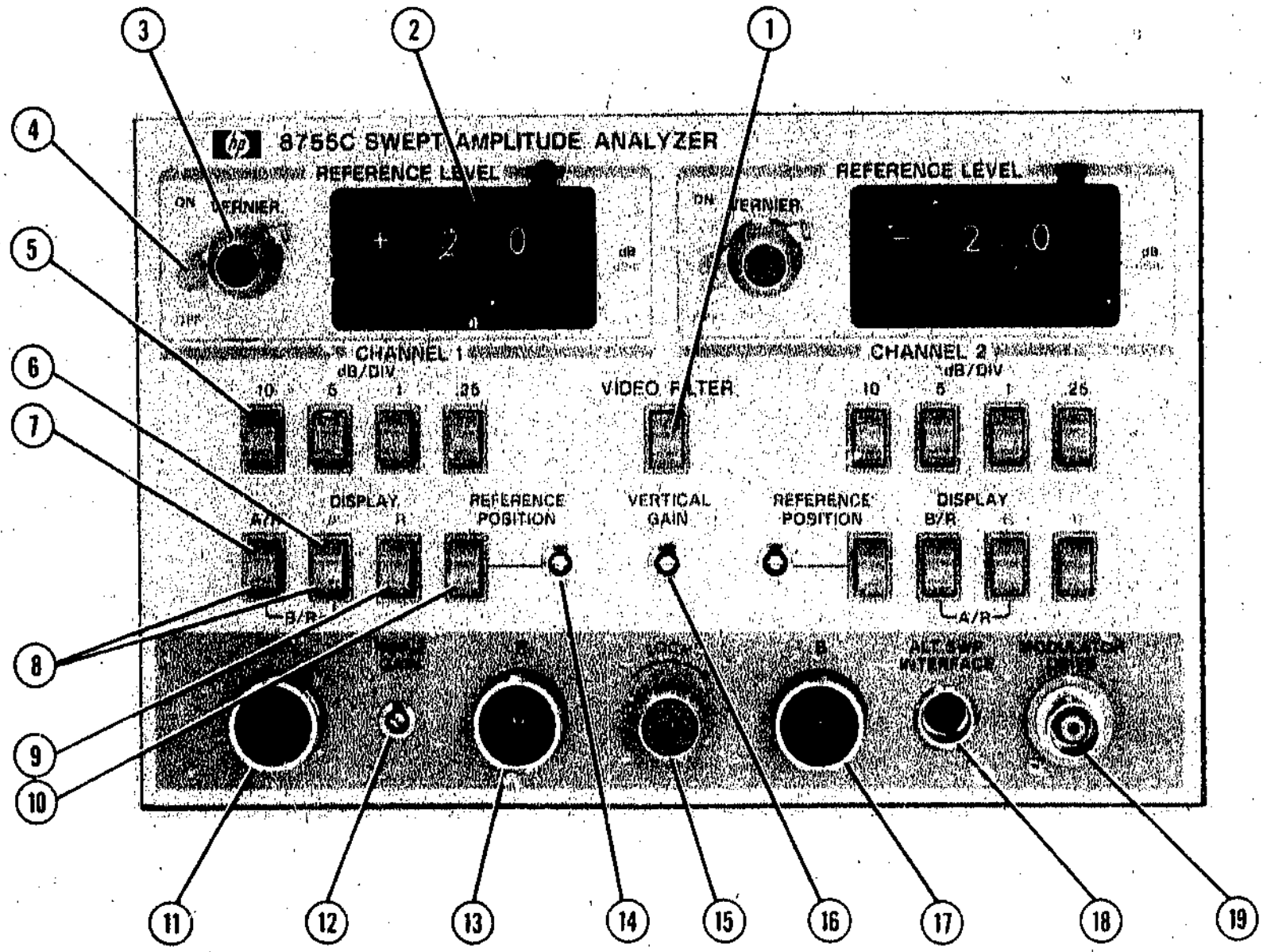
3-12. Figure 3-4 provides instructions for making transmission, reflection, and power measurements. The test setup shown in Figure 3-4 shows a typical transmission reflectometer test setup for simultaneously measuring reflection and transmission characteristics of a device under test. This test setup may vary considerably depending upon the application. Select a low-pass filter for the RF output of the sweep oscillator with a cut-off frequency just above the frequency band of interest. The low-pass filter reduces spurious signals above the band of interest which could cause measurement inccuracies. Select a dual directional coupler that is as flat as possible through the band of interest. The dual directional coupler may be replaced by two directional couplers placed back-to-back. A Model 11666A Reflectometer Bridge may also be used to make simultaneous transmission and reflection measurements as illustrated in Figure 3-5. If only a transmission measurement is to be made, the dual directional coupler may be replaced by a power splitting tee. A typical transmission test setup using the Model 11667A Power Splitter is shown in Figure 3-6.

3-13. The measurements explained in this Operating Section do not include the use of the Model 8750 Storage-Normalizer. Refer to the Model 8750A Operating and Service Manual for complete operating instructions of the Model 8750A when used with the Model 8755C.

3-14. The measurements explained in this Operating Section do not include the use of the Alternate Sweep Interface Cable, supplied with the Model 8755C. The alternate sweep operation within the Model 8755C is controlled directly by the sweep oscillator through the Alternate Sweep Interface cable connection. No operator controls involving the alternate sweep operation of the Model 8755C are necessary (other than the normal display pushbuttons and reference level offsets provided for independent channel display control). Refer to the Operation Section of the Operating and Service Manual of the specific sweep oscillator used (such as the Model 8350A Sweep Oscillator) for complete operating instructions when the alternate sweep operation is used.

3-15. Before a measurement is made, the front panel VERTICAL GAIN and HORIZontal GAIN should be adjusted as described in Figure 3-2, under the descriptions given for those controls.

FRONT PANEL FEATURES



NOTE

Channel 1 and Channel 2 are identical in Operation. Therefore, only Channel 1 controls are described.

(1) **VIDEO FILTER Pushbutton Switch.** When this switch is depressed, the noise component is filtered from the 8755C display. Pressing this control a second time releases it.

NOTE

When VIDEO FILTER control is depressed, the bandwidth of the 8755C is greatly reduced (from the normal 10 kHz to 300 Hz). This may require a corresponding adjustment to the sweep speed.

(2) **REFERENCE LEVEL Control.** This control has three miniature lever switches. The switch farthest left sets the polarity of the offset (+ or –). The center switch adjusts the offset of the display in 10 dB steps. The switch on the right adjusts offset of the display in 1 dB steps.

(3) **VERNIER Control.** Provides continuously variable offset (>±35 dB) of the display when VERNIER ON/OFF switch (4) is in the ON position.

(4) **VERNIER ON/OFF Switch.** With this switch in the ON position, the display can be offset by adjusting the VERNIER control (3). With the VERNIER ON/OFF switch in the OFF position, the VERNIER control has no effect.

(5) **dB/DIV Resolution Pushbutton Switches.** These switches select channel vertical resolution of 0.25, 1, 5, or 10 dB per division.

(6) **DISPLAY A Pushbutton Switch.** When this switch is depressed, the 8755C displays the signal level of input A (from detector A input connector (11)).

Figure 3-2. Front Panel Controls and Connectors (1 of 2)

FRONT PANEL FEATURES (Cont'd.)

(7) **DISPLAY A/R Pushbutton Switch.** When this switch is depressed, the 8755C displays the signal level of A in dB minus the signal level of R in dB ($A_{dB}-R_{dB}$ = A/R). The A/R function may also by selected on Channel 2 by simultaneously depressing the B and B/R pushbuttons.

(8) **DISPLAY B/R Pushbutton Switches.** Depressing the A/R and A pushbuttons simultaneously displays the signal level of B in dB minus the signal level of R in dB ($B_{dB}-R_{dB}$ = B/R). This performs the same function as the B/R DISPLAY pushbutton on Channel 2.

(9) **DISPLAY R Pushbutton Switch.** When this switch is depressed, the 8755C displays the reference input signal level (from detector R input connector (13)).

(10) **DISPLAY REFERENCE POSITION Pushbutton Switch.** When this switch is depressed, DISPLAY REFERENCE POSITION control (14) can be adjusted for a CRT trace positioned anywhere between the top and bottom extremes of the display screen for convenient reference. Also, when this switch is depressed it overrides the VERNIER, REFERENCE LEVEL, resolution (dB/DIV) controls.

(11) **Detector "A" Input Connector.** Provides the input connection for the "A" detector, HP Model 11664A/B. This connector receives the detector output signal as well as supplying power through the detector cable to the preamplifier located within the detector.

(12) **HORIZontal GAIN Control.** Compensates for a difference in horizontal gain in different display mainframes. When the DISPLAY REFERENCE Pushbutton on either channel is depressed, HORIZ GAIN is adjusted so the CRT trace exactly fills 10 divisions. Use the display mainframe HORIZONTAL POSITION to center the trace. Since the HORIZontal GAIN control is common to both channels, it may be adjusted by observing the Channel 1 display or the Channel 2 display.

(13) **Detector "R" (Reference) Input Connector.** Provides the input connection for the reference detector, HP Model 11664A/B. This connector receives the detector output signal as well as supplying power through the detector cable to the preamplifier located within the detector.

(14) **DISPLAY REFERENCE POSITION Control.** When REFERENCE POSITION pushbutton (10) is depressed, the DISPLAY REFERENCE POSITION screwdriver adjustment may be adjusted for a trace positioned anywhere between the top and bottom extremes of the display screen. When the resolution is increased, the CRT trace will be expanded about the reference graticule line at which the position trace is adjusted.

(15) **LOCKing Knob.** Turning this knob CW toward the dot at the end of the arc locks the 8755C in the oscilloscope mainframe. Turning this knob fully CW releases the 8755C from the mainframe.

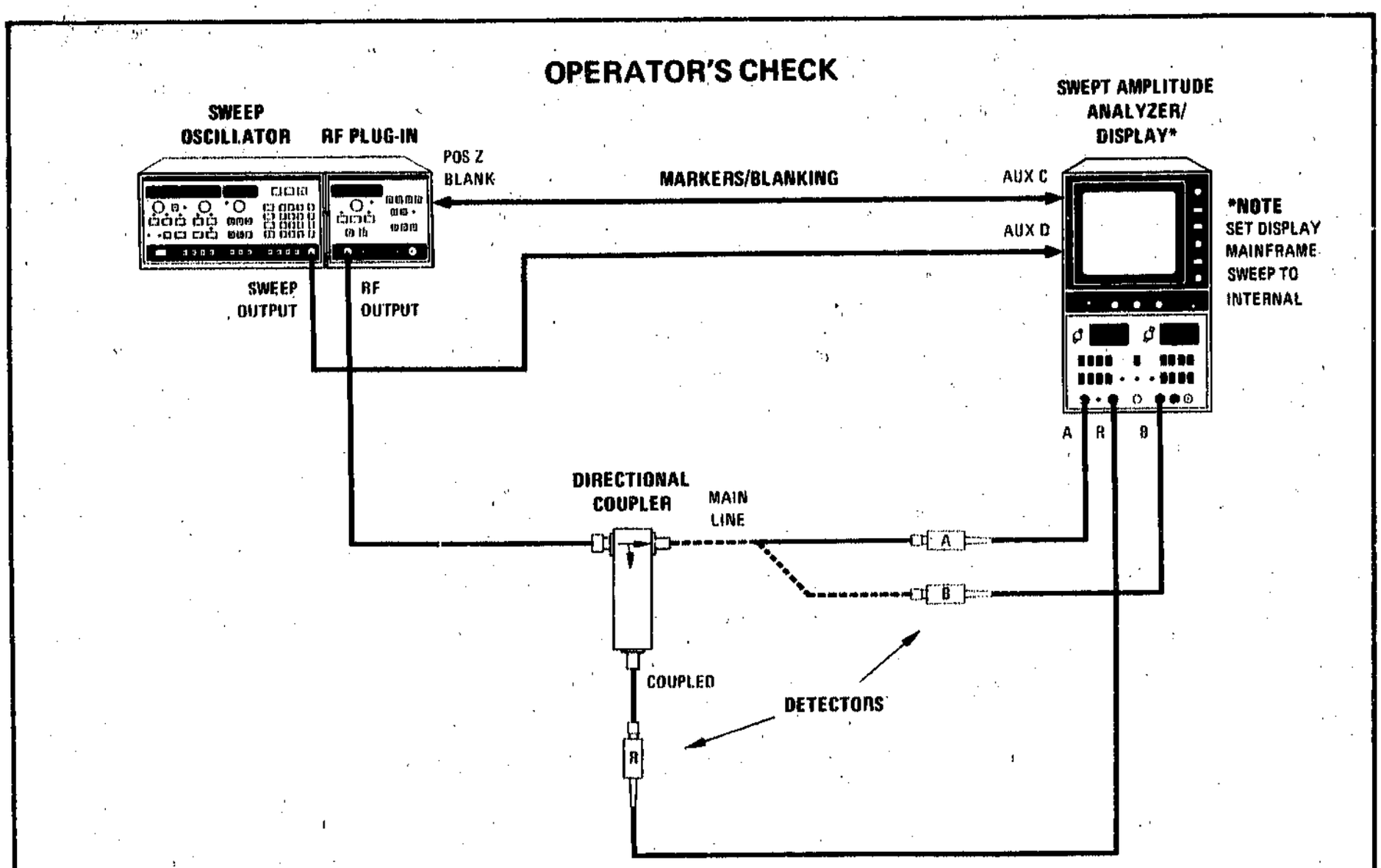
(16) **GAIN Control.** Compensates for a difference in vertical gain of different display mainframes. The VERTICAL GAIN control is adjusted so the trace on the display moves exactly four divisions from the center graticule line when the REFERENCE LEVEL changes from +00 to +01 with the 8755C set for greatest resolution (0.25 dB/DIV). When the polarity of the reference level is changed to minus (–01) set in REFERENCE LEVEL), the trace should move exactly four divisions to the opposite side of the center graticule line. This adjustment should be done with sweep oscillator set for minimum sweep width so a flat response is observed on the CRT display. Since the GAIN control is common to both channels, it may be adjusted by observing the Channel 1 display or the Channel 2 display.

(17) **Detector B Input Connector.** Provides the input connection for the "B" detector, HP Model 11664A/B. This connector receives the detector output signal as well as supplying power through the detector cable to the preamplifier located within the detector.

(18) **ALTernate SWeeP INTERFACE Connector.** Provides input connection for Alternate Sweep Interface cable from compatible sweep oscillators (such as the HP Model 8350A). Synchronizes channel control in the Model 8755C and the HP Model 8750A Storage-Normalizer.

(19) **MODULATOR DRIVE Output Connector.** This connector provides a 27.8 kHz square wave output signal, nominally ±6 volts, to drive the external HP Model 11665B Modulator, or the EXTernal AM input of the sweep oscillator.

Figure 3-2. Front Panel Controls and Connectors (2 of 2)



Operator's Check Test Setup

INITIAL ADJUSTMENT

1. Connect equipment as shown in the test setup with detector A connected to the through line of the directional coupler. Refer to Table 2-2 for connections to the display mainframe if a Model 8620 or Model 8690 series sweep oscillator is used. Set Model 8350A for 27.8 kHz internal modulation or connect MODULATION DRIVE to modulating source (sweep oscillator EXT AM input or Model 11665B Modulator DRIVE input).

CAUTION

Set sweep oscillator POWER LEVEL for minimum power. If power level exceeds +20 dBm, damage to the Model 11664A/B Detectors may result.

2. Set Model 8755C CHANNEL 1 and CHANNEL 2 controls as follows:

VERNIER	OFF
REFERENCE LEVEL	−00dB
dB/DIV	10
DISPLAY	POSITION
VIDEO FILTER	OFF (OUT)

3. Set the sweep oscillator for the selected frequency band, select the ΔF sweep mode and the narrowest sweep width.

4. Press one of the CHANNEL 2 DISPLAY pushbuttons partially in to "pop" all of the switches out to turn off the CHANNEL 2 trace.

Figure 3-3. Operator's Check (1 of 2)

OPERATOR'S CHECK (Cont'd.)

5. Press CHANNEL 1 DISPLAY REFERENCE POSITION switch. Adjust CHANNEL 1 REFERENCE POSITION screwdriver adjustment to position the CRT trace on the center graticule line.

Detector "A" Test

6. Press CHANNEL 1 DISPLAY A pushbutton. Adjust sweep oscillator POWER LEVEL control to place the CRT trace on the center graticule line. Press other CHANNEL 1 dB/DIV pushbuttons to select progressively more sensitive ranges and make fine adjustment of sweep oscillator POWER LEVEL control.

NOTE

This sweeper power setting places zero dBm at the "A" detector input. However, if this signal were measured with a power meter, the indication would be −3 dBm because of the symmetrical squarewave modulation. This modulation reduces the average power output by 3 dB (half power).

VERTICAL GAIN Adjustment

7. Depress CHANNEL 1 10 dB/DIV pushbutton. Set CHANNEL 1 REFERENCE LEVEL to −40dB. The trace should move to the top graticule line (4 divisions). Change REFERENCE LEVEL to −40. The trace should move to the bottom graticule line. If not, adjust VERTICAL GAIN screwdriver adjustment.

Detector "R" Test

8. Set CHANNEL 1 REFERENCE LEVEL to −00. Depress CHANNEL 1 10 dB/DIV and CHANNEL 1 DISPLAY R pushbuttons. The CRT trace should indicate the magnitude of the coupling factor of the directional coupler being used.

A/R Ratio Test

10. Disconnect the "A" detector from the directional coupler and connect the "R" detector in its place.

11. Press one of the CHANNEL 1 DISPLAY pushbuttons partially in to "pop" all of the switches out to turn off the CHANNEL 1 trace.

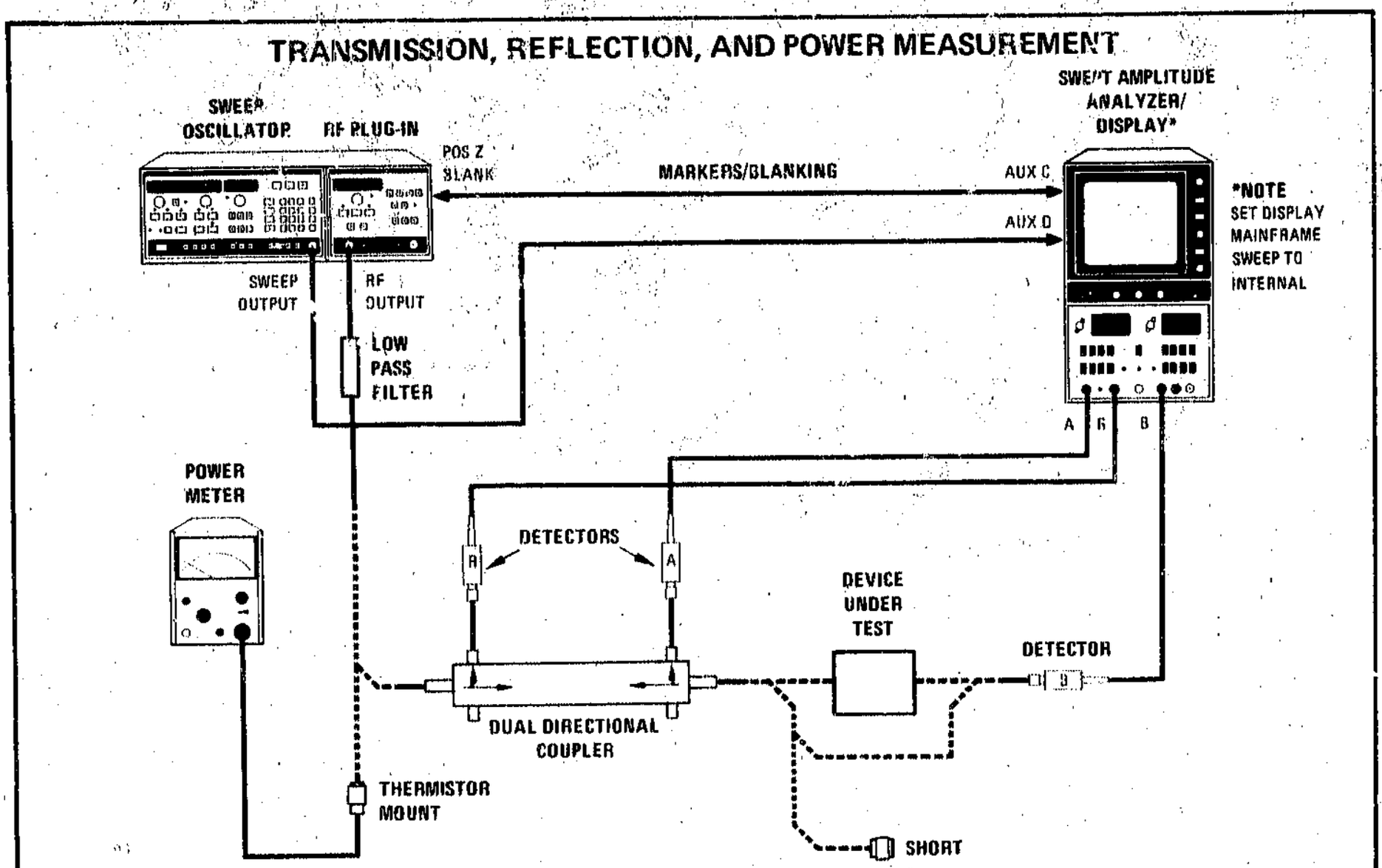
12. Press CHANNEL 2 DISPLAY REFERENCE POSITION switch. Adjust CHANNEL 2 REFERENCE POSITION screwdriver adjustment to position the CRT trace on the center graticule line.

13. Set CHANNEL 2 REFERENCE LEVEL to −00. Depress CHANNEL 2 10 dB/DIV and CHANNEL 2 DISPLAY B pushbuttons. The CRT trace should be near the center graticule line.

B/R Ratio Test

14. Depress CHANNEL 2 DISPLAY B/R pushbutton and set CHANNEL 2 REFERENCE LEVEL to equal the coupling factor of the directional coupler being used. The CRT trace should be near the center graticule line.

Figure 3-3. Operator's Check (2 of 2)



Model 8755C Typical Measurement Setup

TRANSMISSION MEASUREMENT

PROCEDURE:

1. Connect equipment as shown in the test setup above (or in Figure 3-5 if a Model 11666A Reflectometer Bridge is used, or in Figure 3-6 if a Model 11667A Power Splitter is used) with no device under test connected and the B detector connected directly to the output. Refer to Table 2-3 for connections to the display mainframe if a Model 8620 or Model 8690 series sweep oscillator is used. Set the Model 8350A for 27.8 kHz internal modulation or connect MODULATION DRIVE to modulating source (sweep oscillator EXT AM input or Model 11665B Modulator DRIVE input).

2. Press one of the CHANNEL 1 DISPLAY pushbuttons part way in to "pop" all the CHANNEL 1 DISPLAY pushbuttons out to turn off the CHANNEL 1 display.

3. On CHANNEL 2 panel, set VERNIER to OFF, REFERENCE LEVEL to −00, and press 10 dB/DIV switch. Press DISPLAY REFERENCE POSITION SWITCH and adjust REFERENCE POSITION screwdriver adjustment to place the CRT trace on any convenient graticule line for a "reference." (If the device under test has attenuation or loss, place the reference line near the top of the CRT. If the device under test has gain, place the reference near the bottom of the CRT.)

CAUTION

The following equipment setup assumes that the device under test has less than 10 dB of gain. If not, the sweep oscillator power level must be reduced to prevent >+20 dBm signal at channel B 11664A/B detectors or damage may result.

4. Press CHANNEL 2 DISPLAY B pushbutton. Increase sweep oscillator POWER LEVEL to place the CRT trace to the line one division above the reference graticule line. (This is approximately +10 dBm from the sweep oscillator.) If the sweep oscillator does not have sufficient power to obtain this level, set POWER LEVEL to maximum.

Figure 3-4. Transmission, Reflection, and Power Measurements (1 of 4)

TRANSMISSION, REFLECTION, AND POWER MEASUREMENTS (Cont'd.)

5. Press CHANNEL 2 DISPLAY B/R pushbutton. Set the VERNIER ON/OFF switch to ON and adjust VERNIER control to place one end of the CRT trace on the "reference" graticule line established in step 3. To make fine adjustment, increase resolution by depressing the 5, 1 or 0.25 dB/DIV switch. The instrument is now ready to make a transmission measurement. Do not move the VERNIER control or calibration will be destroyed.

6. Select 10 dB/DIV resolution. Connect a device under test between the output of the dual directional coupler (or the TEST port of the Model 11666A Reflectometer Bridge, or the log of the Model 11667A Power Splitter) and the channel B 11664A/B detector.

7. Adjust CHANNEL 2 REFERENCE LEVEL switches to bring the trace back to near the "reference" graticule line. If the device under test has attenuation, the REFERENCE LEVEL switch setting will have a negative sign. Gain is indicated if the switch sign is positive. When measuring attenuation, the total attenuation of the device is obtained by adding the REFERENCE LEVEL setting to the attenuation indication of the CRT trace below the "reference" graticule line. (If the trace is above the "reference" line, subtract this amount from the REFERENCE LEVEL setting to obtain the net attenuation.) When calculating gain, add the REFERENCE LEVEL switch setting to the CRT display above the "reference" graticule line or subtract the amount below the "reference" graticule line.

REFLECTION MEASUREMENT

PROCEDURE:

1. Connect equipment as shown in the test setup with no device under test connected and a type -N short connected directly to the output. Refer to Table 2-3 for connections to the display mainframe if a Model 8620 or Model 8690 series sweep oscillator is used. Set the Model 8350A for 27.8 kHz internal modulation or connect MODULATION DRIVE to modulating source (sweep oscillator EXT AM input or Model 11665B Modulator DRIVE input).
2. Press one of the CHANNEL 2 DISPLAY pushbuttons part way in to "pop" all of the CHANNEL 2 DISPLAY pushbuttons out to turn off the CHANNEL 2 display.

3. On CHANNEL 1 panel, set VERNIER to OFF, REFERENCE LEVEL to −00, and press 10 dB/switch. Press DISPLAY REFERENCE POSITION switch and adjust REFERENCE POSITION screwdriver adjustment to place the CRT trace on the center graticule line or on another convenient "reference" graticule line near the top of the CRT.

4. Press CHANNEL 1 DISPLAY A pushbutton and adjust sweep oscillator POWER LEVEL to place the CRT trace near the "reference" graticule line. If sweep oscillator does not have sufficient power to obtain this level, set POWER LEVEL to maximum. (If coupling of dual directional coupler is 20 dB, the trace should be approximately one division below the "reference" graticule line for +10 dBm output from the sweep oscillator.)

5. Press CHANNEL 1 DISPLAY A/R pushbutton. Set VERNEIR ON/OFF switch to ON. Adjust VERNIER to place the CRT trace on the "reference" graticule line. Select 5, 1 or 0.25 dB/DIV to make fine adjustment. The instrument is now ready to make a reflection measurement.

6. Select 10 dB/DIV resolution. Remove short from output port and connect device under test to coupler. Adjust CHANNEL 1 REFERENCE LEVEL switches to place the CRT trace as close to the "reference" graticule line as possible. The return loss may be read directly by adding the setting of the CHANNEL 1 REFERENCE LEVEL switches to the trace position below the "reference" graticule line. If the trace is above the "reference" line, subtract that amount from the REFERENCE LEVEL switch setting.

Figure 3-4. Transmission, Reflection, and Power Measurements (2 of 4)

TRANSMISSION, REFLECTION, AND POWER MEASUREMENT (Cont'd.)

COMBINATION TRANSMISSION AND REFLECTION MEASUREMENT

The test setups previously shown allow simultaneous measurement of transmission and reflection. The reflection measurement is performed on the CHANNEL 1 side of the front panel and transmission measurement on CHANNEL 2 side. Make the calibration and adjustment described in steps 1 through 5 of the "TRANSMISSION MEASUREMENT" procedure. Do not change the sweep oscillator power setting after this point, but make all of the adjustments described in steps 1 through 5 of the "REFLECTION MEASUREMENT" procedure. Now the device under test may be placed in the test setup. Reflection is displayed by the CHANNEL 1 CRT trace and transmission is displayed by the CHANNEL 2 trace. Both channels, however, are capable of displaying both transmission and reflection setup information.

POWER MEASUREMENT

NOTE

The three 11664A/B Detectors and the 8755C are designed so that with no offset, the display indicates the power applied to the detectors. The power to the detectors is modulated with a symmetrical square wave; the average of the modulated signal is 3 dB below the unmodulated level. The 8755C display indicates the unmodulated power level ± approximately 2 dB. Greater accuracy can be obtained by calibrating the display using a power meter as described in the DISPLAY CALIBRATION below.

NOTE

For brevity, only measurements with Detector "B" are described in the procedure. However, any one of the three detectors may be used for power measurements.

PROCEDURE:

1. Turn off the CHANNEL 1 display by pressing one of the CHANNEL 1 DISPLAY pushbuttons part way in to "pop" all of the CHANNEL 1 DISPLAY pushbuttons out.

2. Press the CHANNEL 2 DISPLAY REFERENCE POSITION pushbutton and adjust REFERenCE POSITION screwdriver adjustment to place the CRT trace on the center graticule line. (With REFERENCE LEVEL switches at 00 dB and the VERNIER switch at OFF, the center graticule line is now zero dBm reference.)

3. Set CHANNEL 2 VERNIER switch to OFF and REFERENCE LEVEL to −00. Press 10 dB/DIV and DISPLAY B pushbuttons.

4. Connect the "B" detector to the device under test or any other signal point of interest at the Low Pass Filter output as shown in the test setups. Select a power point of interest on the CRT trace for a power measurement. Offset that point to the center graticule line with the CHANNEL 2 REFERENCE LEVEL switches. If the selected point on the CRT trace is now directly on the center line, the power level in dBm may be read directly from the REFERENCE LEVEL switch. (The REFERENCE LEVEL switch setting is the power level in dBm of the center graticule line.)

Figure 3-4. Transmission, Reflection, and Power Measurements (3 of 4)

TRANSMISSION, REFLECTION, AND POWER MEASUREMENT (Cont'd.)

5. Increase the resolution of the reading by pressing the 5, 1 or 0.25 dB/DIV pushbuttons. If, for instance, 0.25 dB/DIV resolution were selected and the REFERENCE LEVEL switch were setting at −31 dBm, then the center line would be −31 dBm, one division above the center graticule line would be −30.75 dBm, and one division below the center line would be −31.25 dBm.

Display Calibration (for greater power measurement accuracy)

PROCEDURE:

1. Turn off the CHANNEL 1 display by pressing one of the CHANNEL 1 DISPLAY pushbuttons part way in to "pop" all of the CHANNEL 1 DISPLAY pushbuttons out.

2. Press the CHANNEL 2 DISPLAY REFERENCE POSITION pushbutton and adjust REFERENCE POSITION screwdriver adjustment to place the CRT trace on the center graticule line.

3. Set sweep oscillator for ΔF operation over the narrowest sweep width.

4. Connect power meter thermistor mount to the Low Pass Filter output. Adjust sweep oscillator POWER LEVEL control for a power meter indication of −3 dBm.

5. Disconnect thermistor mount form Low Pass Filter and connect "B" detector to Low Pass Filter.

6. Set CHANNEL 2 REFERENCE LEVEL switches to −00 and press 10 dB/DIV and DISPLAY B pushbuttons. Set CHANNEL 2 VERNIER switch to ON and adjust VERNIER control to place the CRT trace on the center graticule line. The center graticule line is now calibrated for zero dBm. To maintain calibration, do not adjust CHANNEL 2 VERNIER control again during test.

7. Reconnect the signal splitting device and and connect the "B" detector to the device under test or any other signal point of interest at the Low Pass Filter output as shown in the test setup. Select a power point of interest on the CRT trace for the power measurement. Offset the selected point to the center graticule line with the CHANNEL 2 VERNIER switches. If the point on the CRT trace is now directly on the center line, the power level in dBm may be read directly from the REFERENCE LEVEL switches. (The REFERENCE LEVEL switch setting is the power level in dBm of the center graticule line.)

8. Increase the resolution of the reading by pressing the 5, 1 or 0.25 dB/DIV pushbuttons. If, for instance, 0.25 dB/DIV resolution were selected and the REFERENCE LEVEL switch were setting at −31 dB, then the center line would be −31 dBM; one division above the center graticule line would be −30.75 dBm, and one division below the center line would be −31.25 dBm.

Figure 3-4. Transmission, Reflection, and Power Measurements (4 of 4)

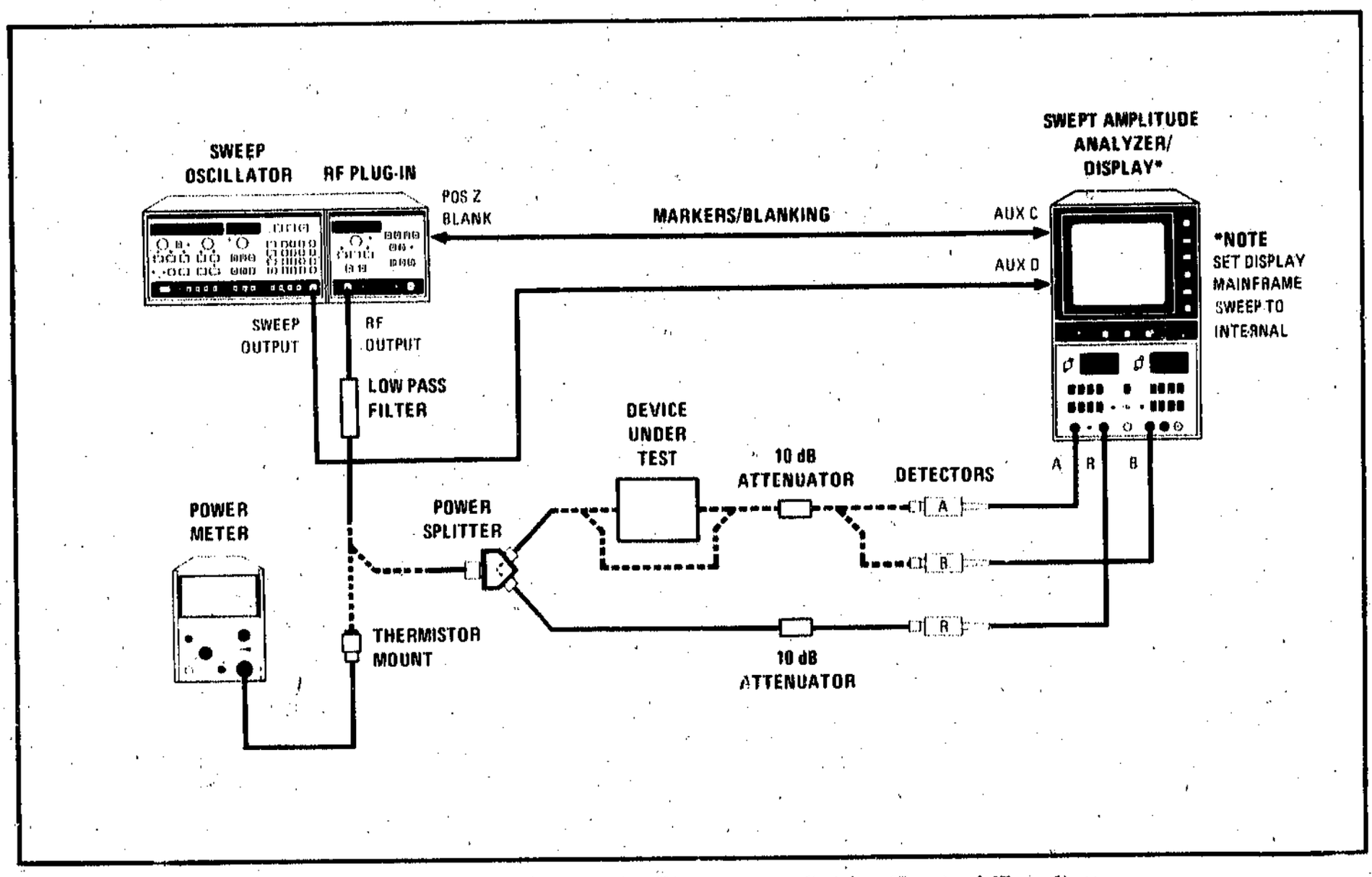


Figure 3-5. Model 11666A Reflectometer Bridge Typical Test Setup

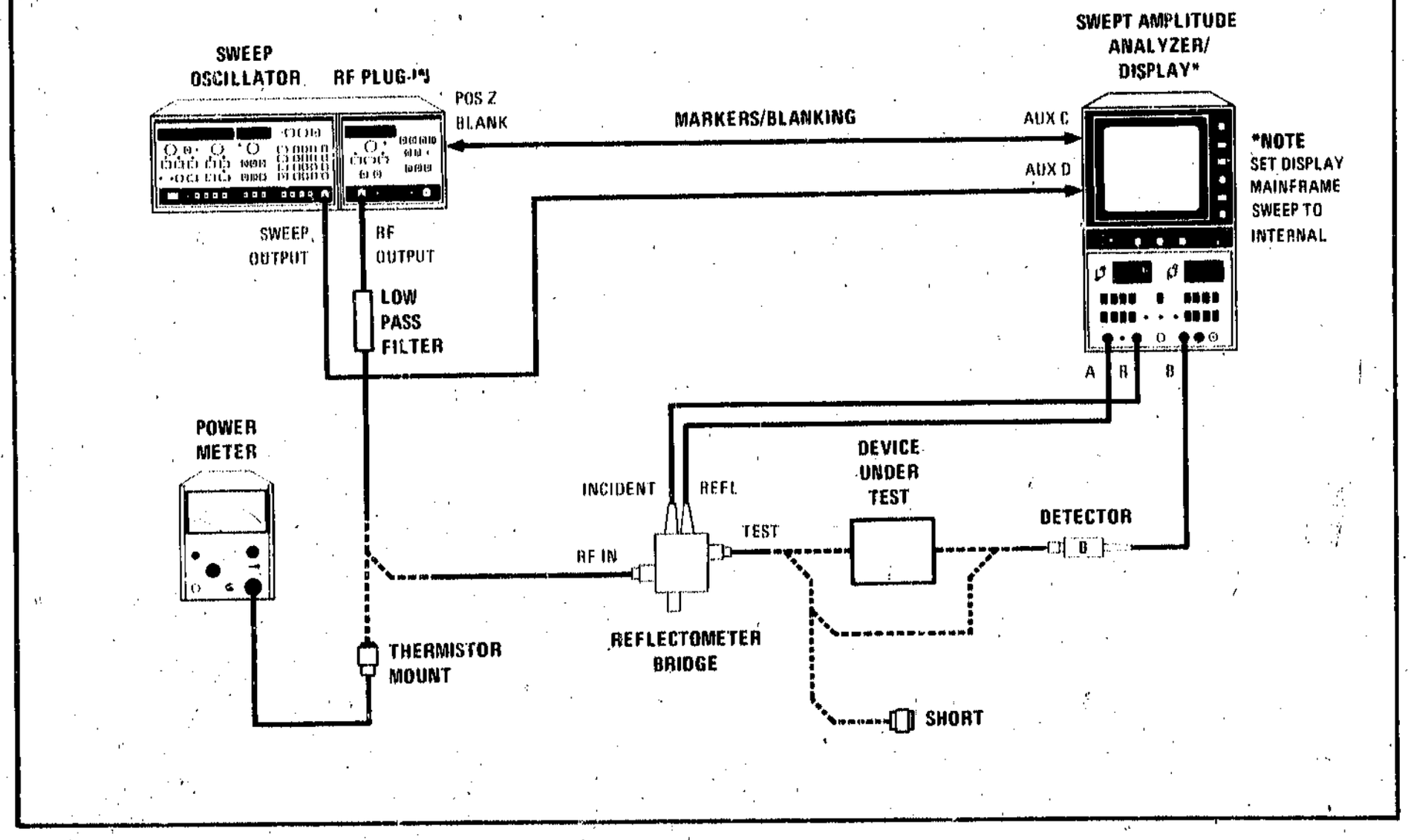


Figure 3-6. Model 11667A Power Splitter Typical Test Setup

PERFORMANCE CHECK AND ADJUSTMENTS

SECTION IV
PERFORMANCE TESTS

4-1. INTRODUCTION

4-2. The procedures in this section test the electrical performance of the instrument using the specifications of Table 1-1 as the performance standards. All tests can be performed without access to the interior of the instrument. A simpler operational test is included in Section III under Operator's Checks.

4-3. EQUIPMENT REQUIRED

4-4. Equipment required for the performance tests is listed under Recommended Test Equipment in Section I. Any equipment that satisfies the critical specifications given in the table may be substituted for the recommended equipment.

4-5. TEST RECORD

4-6. Results of the performance tests may be tabulated in the Test Record at the end of the section. The Test Record lists all of the tested specifications and their acceptable limits. Test results recorded at incoming inspection can be used for comparison in periodic maintenance and troubleshooting and after repairs or adjustments.

NOTE

These procedures assume that the 180-series display mainframe is fully calibrated to its specifications.

PERFORMANCE TESTS

4-7. AMPLITUDE ACCURACY

SPECIFICATION: Amplitude accuracy of the Model 8755C Swept Amplitude Analyzer together with three Model 11664A/B Detectors is shown in Table 4-1.

Table 4-1. Amplitude Accuracy of Model 8755C Connected with three Model 11664A/B Detectors

dB Change From Reference	Amplitude Accuracy
10 dB	≤±0.9 dB
20 dB	≤±1.1 dB
30 dB	≤±1.1 dB
40 dB	≤±1.1 dB
50 dB	≤±1.1 dB
60 dB	≤±1.9 dB

DESCRIPTION: The 8755C is connected as shown in Figure 4-1. An initial calibration of gain within the oscilloscope display is made. Then precision attenuators are used to vary the input level to the channel under test. With no attenuation, a reference level is set. Attenuators are then inserted in 10 dB steps and the resulting response is measured.

PERFORMANCE TESTS

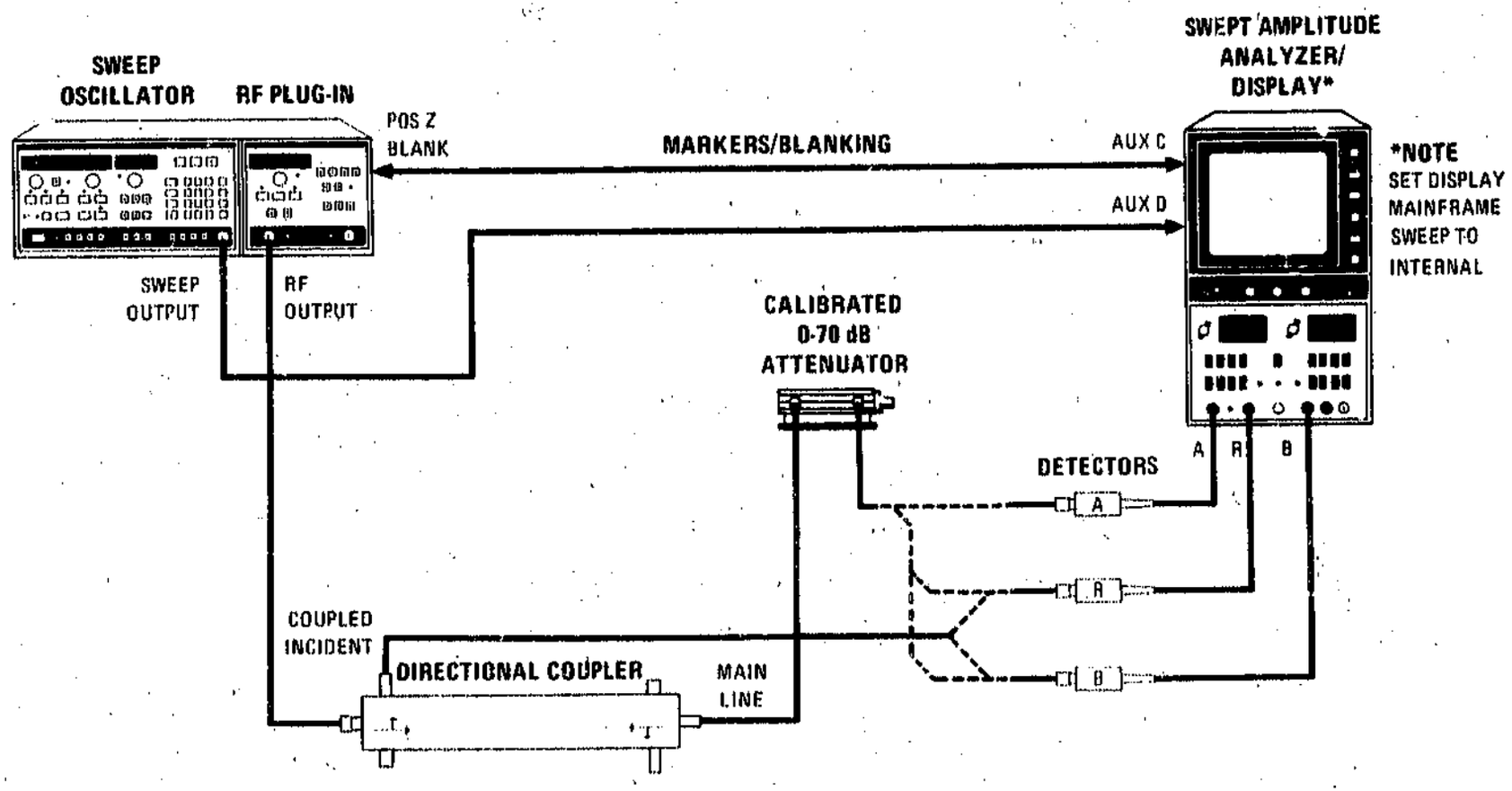


Figure 4-1. Amplitude Accuracy Test Setup

EQUIPMENT:

Swept Amplitude Analyzer/Display	HP 8755C/182T
Detectors (3 required)	HP 11664A/B
Sweep Oscillator	HP 8350A Mainframe with: HP 83525A RF plug-in (0.01 - 8.4 GHz)
0-70 dB Step Attenuator (calibrated)	HP 8495B
Directional Coupler	HP 778D

PROCEDURE:

Initial Adjustment

a. Connect equipment as shown in Figure 4-1 with detector R connected to incident coupled port of directional coupler and detector A connected to 0-70 dB Step attenuator. Set 0-70 dB Step attenuator to zero dB.

b. Set Channel 1 controls as follows:

VERNIER	OFF
REFERENCE LEVEL	+10
dB/DIV	10
DISPLAY	REFERENCE POSITION
VIDEO FILTER	OFF (OUT)

c. Set the sweep oscillator for a center frequency of 2.0 GHz. Select ΔF sweep mode and the narrowest sweep width.

PERFORMANCE TESTS

4-7. AMPLITUDE ACCURACY (cont'd)

d. With CHANNEL 1 DISPLAY set to REFERENCE POSITION, adjust CHANNEL 1 REFERENCE POSITION screwdriver adjustment to position the CRT trace on the center graticule line.

e. Press CHANNEL 1 DISPLAY A pushbutton. Adjust sweep oscillator POWER LEVEL control to place the CRT trace on the center graticule line. Press other CHANNEL 1 dB/DIV pushbuttons to select progressively more sensitive ranges and make fine adjustment of sweep oscillator POWER LEVEL control.

NOTE

This adjustment places +10 dBm at the detector input. However, if this signal were measured with a power meter, the indication would be +7 dBm because of the symmetrical square-wave modulation. This modulation reduces the average power output by 3 dB (half power).

NOTE

If the sweep oscillator does not provide +12 dBm output level, reduce the output to approximately +2 dBm. This should place the CRT trace approximately one division below the center graticule line. This does not allow testing the 0 to +10 dBm range of the 8755C. Therefore, use only up to 50 dB but not 60 dB of attenuation in steps h, j, and l of this test.

Gain Adjustment

f. Press CHANNEL 1 5 dB/DIV switch and check that CHANNEL 1 REFERENCE LEVEL is at +10. Change REFERENCE LEVEL polarity switch from + to — and CRT trace should move four divisions. If not, adjust front panel GAIN screwdriver adjustment to obtain four divisions of change between + and — position.

Detector A Amplitude Accuracy Test

g. Press CHANNEL 1 DISPLAY A/R pushbutton. Set CHANNEL 1 dB/DIV switch to 10. Set CHANNEL 1 VERNIER ON/OFF switch on ON and adjust control to place CRT trace on the line two divisions above the center line.

NOTE

If the sweep oscillator is set for +2 dBm output in step e, do not test with 60 dB of attenuation in step h.

h. Insert 10, 20, 30, 40, 50, and 60 dB of attenuation with 0-70 dB attenuator. The CRT trace should move down one division for each added 10 dB of attenuation ± the tolerance limits shown in Table 4-1 and ± the calibration correction of the attenuator.

Detector B Amplitude Accuracy Test

i. Switch output of 0-70 dB attenuator from Detector A input to Detector B input. Press CHANNEL 2 VERNIER ON/OFF switch to ON and adjust control to place CRT trace on the line two divisions above the center line.

PERFORMANCE TESTS

4-7. AMPLITUDE ACCURACY (cont'd)

NOTE

If the sweep oscillator is set for +2 dBm output in step e, do not test with 60 dB of attenuation in step j.

j. Insert 10, 20, 30, 40, 50, and 60 dB of attenuation with 0-70 dB attenuator. The CRT trace should move down one division for each added 10 dB of attenuation ± the tolerance limits shown in Table 4-1 and ± the calibration correction of the attenuator.

Detector R Amplitude Accuracy Test

k. Reverse the B and R detectors in the test setup, connecting the R detector to the 0-70 dB attenuator and the B detector to the incident coupled port of the directional coupler. Press CHANNEL 2 DISPLAY B/R pushbutton. Set CHANNEL 2 dB/DIV switch to 10. Set CHANNEL 1 VERNIER ON/OFF switch to ON and adjust control to place the CRT trace on the line two divisions below the center line.

NOTE

If the sweep oscillator is set for +2 dBm output in step e, do not test with 60 dB of attenuation in step l.

l. Insert 10, 20, 30, 40, 50, and 60 dB of attenuation with 0-70 dB attenuator. The CRT trace should move up one division for each added 10 dB of attenuation ± the tolerance limits shown in Table 4-1 and ± the calibration correction of the attenuator.

Table 4-2. Performance Test Record

Hewlett-Packard Model 8755C
Swept Amplitude Analyzer

Test Performed By: _____

Serial No. _____ Date: _____

4-7. AMPLITUDE ACCURACY

		Lower Limit	Measured Value	Upper Limit
h.	A Detector Input - 10 dB	9.1 dB	_____	10.9 dB
	20 dB	18.9 dB	_____	21.1 dB
	30 dB	28.9 dB	_____	31.1 dB
	40 dB	38.9 dB	_____	41.1 dB
	50 dB	48.9 dB	_____	51.1 dB
	60 dB	58.1 dB	_____	61.9 dB
i.	B Detector Input - 10 dB	9.1 dB	_____	10.9 dB
	20 dB	18.9 dB	_____	21.1 dB
	30 dB	28.9 dB	_____	31.1 dB
	40 dB	38.9 dB	_____	41.1 dB
	50 dB	48.9 dB	_____	51.1 dB
	60 dB	58.1 dB	_____	61.9 dB
	R Detector Input - 10 dB	9.1 dB	_____	10.9 dB
	20 dB	18.9 dB	_____	21.1 dB
	30 dB	28.9 dB	_____	31.1 dB
	40 dB	38.8 dB	_____	41.1 dB
	50 dB	48.9 dB	_____	51.1 dB
	60 dB	58.1 dB	_____	61.9 dB

SECTION V
ADJUSTMENTS

5-1. INTRODUCTION

5-2. This section provides adjustment procedures for the Model 8755C Swept Amplitude Analyzer. Adjustments should be performed whenever the Model 8755C performance is out of tolerance. Allow 30 minutes warmup time before performing the adjustments. Adjustment locations are shown in Figure 5-1. Table 5-1 lists all of the adjustments and their functions.

5-3. EQUIPMENT REQUIRED

5-4. A list of equipment required to adjust the Swept Amplitude Analyzer is given in Figure 5-2 and also in Table 1-5.

5-5. RELATED ADJUSTMENTS

5-6. The adjustments should be performed in the order listed. However, if only one parameter is slightly out of tolerance, a single adjustment may be made. After any adjustment, the performance test in Section IV should be performed.

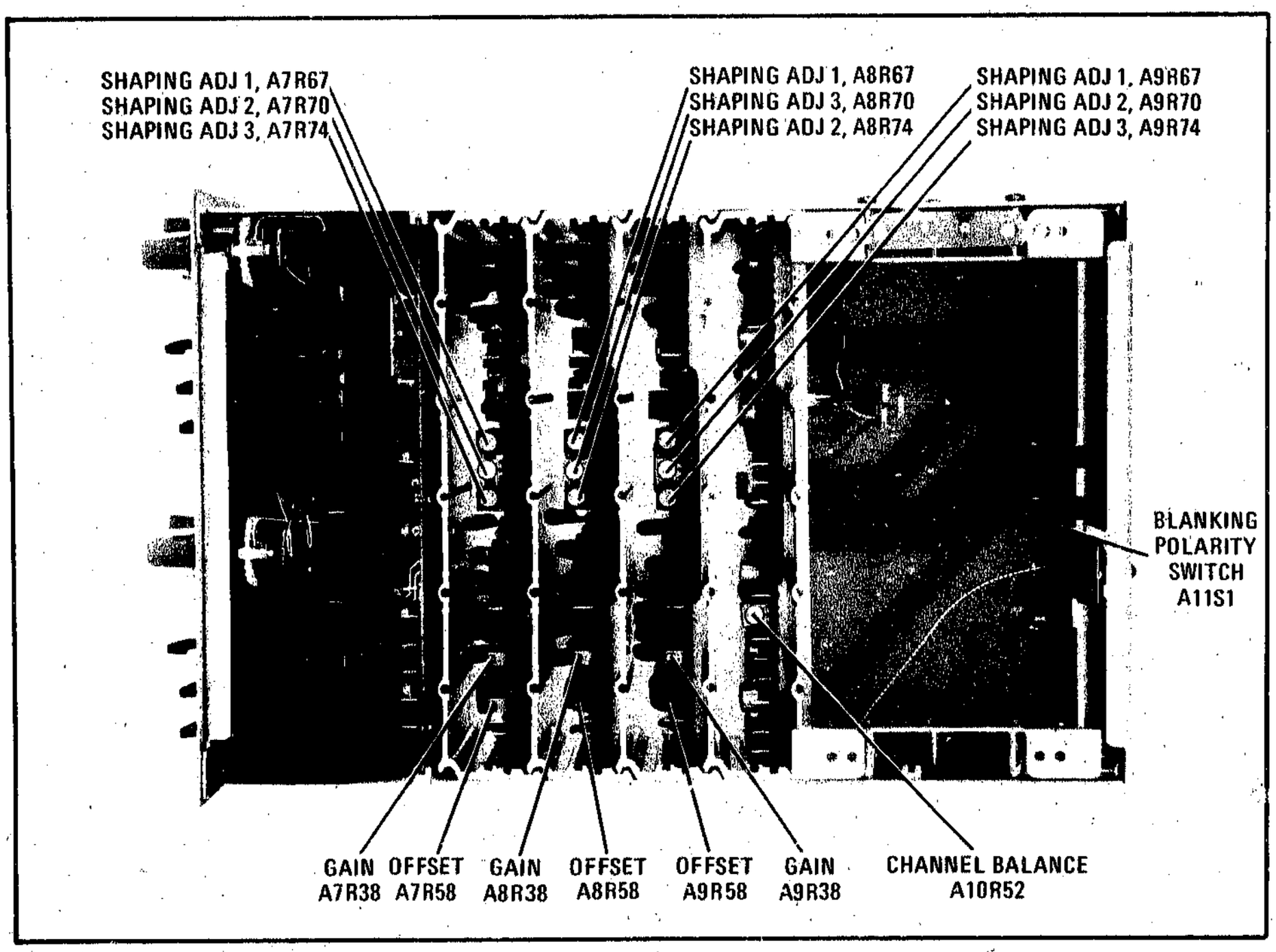
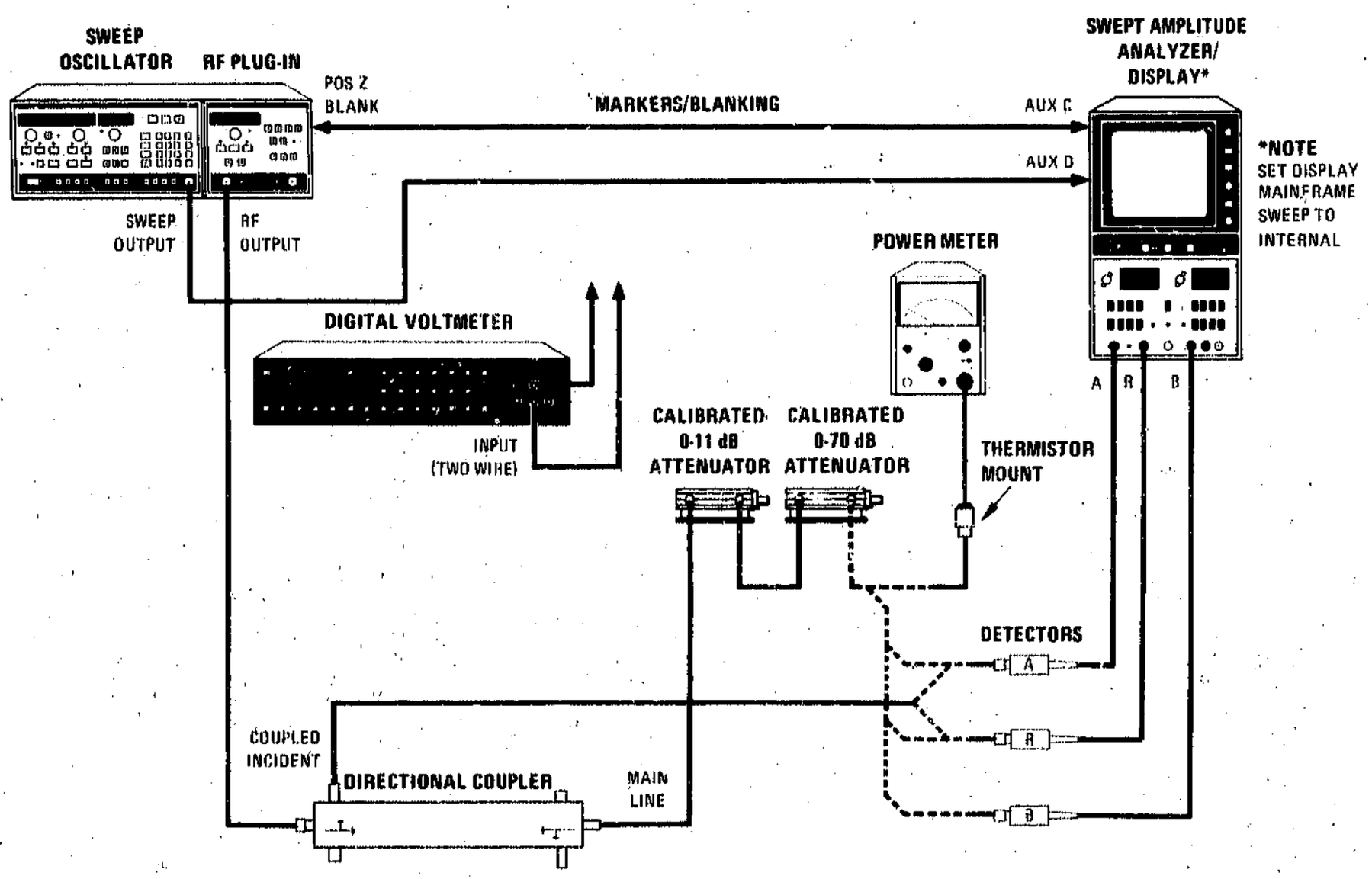


Figure 5-1. Adjustment Locations

Table 5-1. Adjustment Controls

Control Reference Designator	Name	Function
A6R11	+7.5 V ADJ	Adjust + and — 7.5V power supplies
A7R38	GAIN	Adjusts overall gain of detector "A" log amplifier
A7R58	OFFSET	Adjusts the dc offset of detector "A" log amplifier output signal
A7R67	SHAPING ADJ 1	Adjusts detector "A" log amplifier log-to-linear conversion with input range of zero dBm to +10 dBm
A7R70	SHAPING ADJ 2	Adjusts detector "A" log amplifier log-to-linear conversion with input range of —10 dBm to zero dBm
A7R74	SHAPING ADJ 3	Adjusts detector "A" log amplifier log-to-linear conversion with input range of —20 dBm to —10 dBm
A8R38	GAIN	Adjusts overall gain of detector "R" log amplifer
A8R58	OFFSET	Adjusts the dc offset of detector "R" log amplifier output signal
A8R67	SHAPING ADJ 1	Adjusts detector "R" log amplifier log-to-linear conversion with input range of zero dBm to +10 dBm
A8R70	SHAPING ADJ 2	Adjusts detector "R" log amplifier log-to-linear conversion with input range of —10 dBm to zero dBm
A8R74	SHAPING ADJ 3	Adjusts detector "R" log amplifier log-to-linear conversion with input ragne of —20 dBm to —10 dBm
A9R38	GAIN	Adjusts overall gain of detector "B" log amplifier
A9R58	OFFSET	Adjust the dc offset of detector "B" log amplifier output signal
A9R67	SHAPING ADJ 1	Adjusts detector "B" log amplifier log-to-linear conversion with input range of zero dBm to +10 dBm
A9R70	SHAPING ADJ 2	Adjusts detector "B" log amplifier log-to-linear conversion with input range of —10 dBm to zero dBm
A9R74	SHAPING ADJ 3	Adjusts detector "B" log amplifier log-to-linear conversion with input range of —20 dBm to —10 dBm
A10R52	CHANNEL BALANCE	Adjusts deflection balance between Channel 1 and Channel 2

ADJUSTMENTS



EQUIPMENT:

Swept Amplitude Analyzer/Display	HP 8755C/182T
Detectors (3 required)	HP 11664A/B
Sweep Oscillator	HP 8350A Mainframe with: HP 83525A RF plug-in (0.01 - 8.4 GHz)
Directional Coupler	HP 778D
0-70 dB Step Attenuator (calibrated)	HP 8495B
0-11 dB Step Attenuator (calibrated)	HP 8494B
Power Meter and Thermistor Mount	HP 432A/8478B
DC Digital Voltmeter	HP 3455A

WARNING

The adjustments in this section require the instrument to be removed from the display mainframe and connected through the extender cable assembly. Be very careful; the energy at some points in the instrument might, if contacted, cause personal injury. The adjustments in this section should be performed only by a skilled person who knows the hazard involved.

Figure 5-2. Log Amplifier Adjustment Test Setup

ADJUSTMENTS

5-7. ADJUSTMENT OF +7.5V SUPPLY

a. Remove 8755C from mainframe and connect through Extender Cable Assembly.

b. Check the +15V and −12.6V from the display mainframe at the appropriate test points on the A11 Normalizer Interface. If either of these voltages are greater than ±50mV from their specified voltage, refer to the oscilloscope manual and adjust the voltage.

c. Connect digital voltmeter (DVM) to A6TP1 (+7.5V) and adjust A6R11 +7.5V ADJ control for +7.5 Vdc ±5 mVdc.

d. Check the −7.5V supply at A6TP2. If the −7.5V is greater than ±100 mV, troubleshoot the −7.5 Regulator circuit on the A6 Processor assembly.

5-8. ADJUSTMENT OF A7, A8, AND A9 LOG AMPLIFIERS

Equipment Setup

a. Connect equipment as shown in Figure 5-2 with the power meter thermistor mount connected to the 0-70 dB attenuator.

b. Set the sweep oscillator for ΔF operation at a 2.0 GHz center frequency with the narrowest sweep width possible.

c. Set the 0-11 dB attenuator to 10 dB and the 0-70 dB attenuator to 0 dB. Adjust the sweep oscillator RF output level for a −3 dBm power meter indication.

d. Disconnect the power meter from the 0-70 dB attenuator and connect the detectors as follows:

1. When making the A7 (detector A logger) adjustments, connect the R detector to the coupled incident port of the directional coupler and the A detector to the 0-70 dB attenuator.

2. When making the A8 (detector R logger) adjustments, connect the A detector to the coupled incident port of the directional coupler and the R detector to the 0-70 dB attenuator.

3. When making the A9 (detector B logger) adjustments, connect the R detector to the coupled incident port of the directional coupler and the B detector to the 0-70 dB attenuator.

e. Press CHANNEL 1 DISPLAY REFERENCE POSITION pushbutton and adjust REFERENCE POSITION screwdriver adjustment to place the CRT trace on the center graticule line.

f. Press CHANNEL 2 DISPLAY REFERENCE POSITION pushbutton and adjust REFERENCE POSITION screwdriver adjustment to place the CRT trace on the center graticule line.

NOTE

All three 11664A/B detectors must be connected to the 8755C front panel even though only two detectors are being used.

g. Turn off the CHANNEL 2 display when adjusting detector A or R loggers. Turn off the CHANNEL 1 display when adjusting detector B logger. To turn off a display, push one DISPLAY pushbutton part way in to pop all of the DISPLAY pushbuttons out.

ADJUSTMENTS

5-8. ADJUSTMENT OF A7, A8, AND A9 LOG AMPLIFIERS (cont'd)

Logger Adjustment

h. Press the DISPLAY pushbuttons as follows:

1. When adjusting detector A or R logger, press the respective CHANNEL 1 DISPLAY A or R pushbutton.

2. When adjusting detector B logger, press CHANNEL 2 DISPLAY B pushbutton.

i. Set the 0-70 dB attenuator to 50 dB and set the appropriate DISPLAY OFFSET switch to −50 dB.

j. Set the VERNIER ON/OFF switch to ON and adjust the trace with the VERNIER control to the center graticule line. Press 0.25 dB/DIV pushbutton and make fine adjustment. Readjust the VERNIER control as necessary during the following adjustments to keep the amplitude response centered around the center graticule line.

NOTE

It is advisable to cover the controls of the Log Amplifier Assemblies that are not being adjusted to avoid adjusting the wrong assembly.

k. Adjust the appropriate log amplifier internal GAIN and SHAPING controls to obtain the desired amplitude response. A response curve is shown in Figure 5-3 and Table 5-2 shows the adjustments. These are included as an aid in making these adjustments. Course adjustments should be made first and then finer adjustments made until the amplitude response is within ±0.4 dB (± the tolerance of the calibrated attenuators) over the 11664A/B detector input range of +10 dBm to −50 dBm.

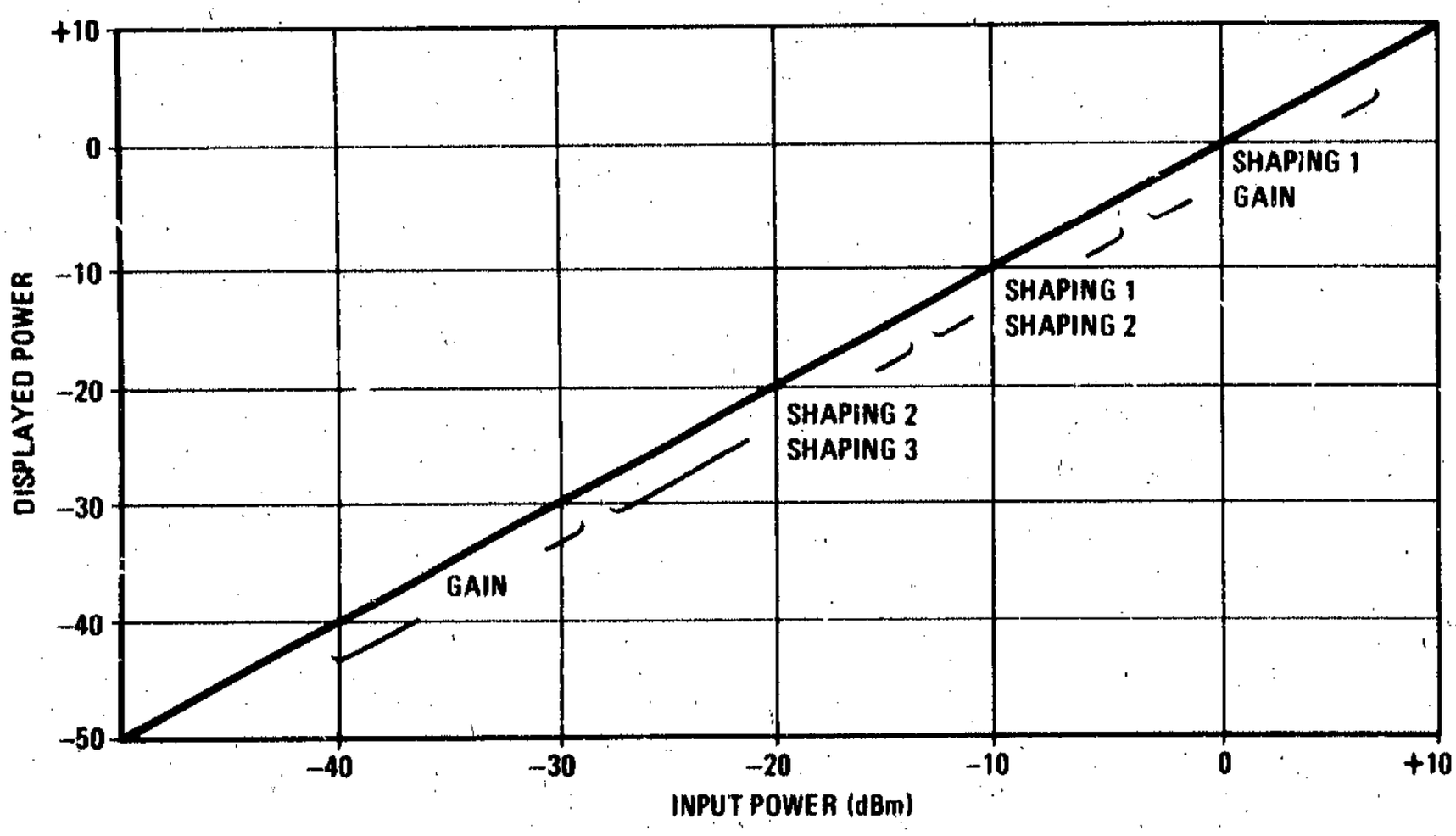


Figure 5-3. Graph for Log Amplifier Adjustment

ADJUSTMENTS

5-8. ADJUSTMENT OF A7, A8, AND A9 LOG AMPLIFIERS (cont'd)

Table 5-2. Control Settings for Log Amplifier Adjustment

Control Settings			Controls Adjusted to Bring the Trace to Within ±0.4 dB of the Center Graticule Line	
0-70 dB Attenuator	0-11 dB Attenuator	8755C REFERENCE LEVEL		
50	10	−50	VERNIER	
40	10	−40	Gain	Adjust for Compromise
30	10	−30	Gain	
20	10	−20	Shaping 3 and Shaping 2 if necessary	
10	10	−10	Shaping 2 and Shaping 1 if necessary	
0	10	00	Shaping 1 and Gain if necessary	
0	0	+10	Shaping 1 and Gain if necessary	

Absolute Power Adjustment

l. Select the 0-70 dB attenuator, 0-11 dB attenuator, and 8755C REFERENCE LEVEL switch setting combination in Table 5-2 that places the CRT trace closest to the center graticule line.

m. Set the VERNIER ON/OFF switch to OFF and adjust the log amplifier assembly OFFSET control to return the trace to the center graticule line.

n. Repeat the above procedure to adjust the remaining two log amplifier assemblies.

5-9. CHANNEL BALANCE

a. Connect equipment as shown in Figure 5-2 with R detector connected to 0-70 dB attenuator.

b. Set the sweep oscillator for ΔF operation at a 2.0 GHz center frequency with the narrowest sweep width possible.

c. Set both CHANNEL 1 and 2 VERNIER ON/OFF switches to OFF, REFERENCE LEVEL switches −20 dB, press 10 dB/DIV pushbuttons, and press DISPLAY REFERENCE POSITION pushbuttons.

d. Adjust REFERENCE POSITION screwdriver adjustments to place the CHANNEL 1 and 2 CRT traces on the center graticule line superimposed on one another.

e. Press both CHANNEL 1 and 2 DISPLAY R pushbuttons and adjust the sweep oscillator POWER LEVEL control to place the CHANNEL 2 CRT trace on the graticule line two divisions above the center line.

f. Set CHANNEL 1 VERNIER ON/OFF switch to ON and adjust CHANNEL 1 trace so that it is superimposed on CHANNEL 2 trace.

g. Change the polarity of both CHANNEL 1 and 2 REFERENCE LEVEL switches to + and the CRT traces should move down approximately four divisions (40 dB) and be superimposed on one another. If they are not superimposed, adjust A10 CHANNEL BALANCE, A10R52. If the traces did not move exactly four divisions, adjust the front panel VERTICAL GAIN screwdriver adjustment to calibrate for 10 dB/DIV.

PARTS LIST

SECTION VI
REPLACEABLE PARTS

6-1. INTRODUCTION

6-2. This section contains information for ordering parts. Table 6-1 lists names and addresses that correspond to the manufacturer code numbers in the parts list. Table 6-2 includes a list of reference designations and a list of abbreviations used in the parts list. Table 6-3 lists all replaceable parts in alpha-numerical order by reference designation.

6-3. REPLACEABLE PARTS LIST

6-4. Table 6-3, the list of replaceable parts, is organized as follows:

1. Electrical assemblies and their components in alpha-numerical order by reference designation.
2. Miscellaneous parts, at end of list for each major assembly.
3. Chassis-mounted parts, in alpha-numerical order by reference designation, at end of parts list.

6-5. The following information is listed for each part:

1. The Hewlett-Packard part number.
2. The part number check digit (CD).
3. The total quantity (Qty) in the assembly. This quantity is given only once, at the first apppearance of the part in the list.
4. The description of the part.
5. A typical manufacturer of the part in a five-digit code.
6. The manufacturer part number.

6-6. ORDERING INFORMATION

6-7. To order a part listed in the replaceable parts table, quote the Hewlett-Packard part number (with check digit), indicate the quantity required, and address the order to the nearest Hewlett-Packard office. The check digit will ensure accurate and timely processing of your order.

6-8. To order a part that is not listed in the replaceable parts table, include the instrument model number, instrument serial number, the description and function of the part, and the number of parts required. Address the order to the nearest Hewlett-Packard office.

Table 6-1. Code List of Manufacturers

MFR NO.	MANUFACTURER NAME	ADDRESS		ZIP CODE
00000	ANY SATISFACTORY SUPPLIER			
01121	ALLEN-BRADLEY CO	MILWAUKEE	WI	53204
01295	TEXAS INSTR INC SEMICOND CMPNT DIV	DALLAS	TX	75222
01928	RCA CORP SOLID STATE DIV	SOMERVILLE	NJ	08876
02111	SPECTROL ELECTRONICS CORP	CITY OF IND	CA	91745
03888	KDI PYROFILM CORP	WHIPPANY	NJ	07981
04713	MOTOROLA SEMICONDUCTOR PRODUCTS	PHOENIX	AZ	85062
19701	MEPCO/ELECTRA CORP	MINERAL WELLS	TX	76067
24546	CORNING GLASS WORKS (BRADFORD)	BRADFORD	PA	16701
27014	NATIONAL SEMICONDUCTOR CORP	SANTA CLARA	CA	95051
28480	HEWLETT-PACKARD CO CORPORATE HQ	PALO ALTO	CA	94304
30983	MEPCO/ELECTRA CORP	SAN DIEGO	CA	92121
56289	SPRAGUE ELECTRIC CO	NORTH ADAMS	MA	01247
72136	ELECTRO MOTIVE CORP SUB IEC	WILLIMANTIC	CT	06226
90201	SEALECTRO CORP	MAMARONECK	NY	10544

Table 6-2. Reference Designations and Abbreviations

REFERENCE DESIGNATIONS

A . . . . . Assembly
AT . . . . . Attenuator, Isolator, Limiter, Termination
B . . . . . Fan, Motor
BT . . . . . Battery
C . . . . . Capacitor
CP . . . . . Coupler
CR . . . . . Diode, Diode Thyristor, Step Recovery Diode (SCR), Varactor
DC . . . . . Directional Coupler
DL . . . . . Delay Line
DS . . . . . Annunciator, Lamp, Light Emitting Diode (LED), Signaling Device (Audible or Visible)

E . . . . . Miscellaneous Electrical Part
F . . . . . Fuse
FL . . . . . Filter

H . . . . . Hardware
HY . . . . . Circulator

J . . . . . Electrical Connector (Stationary Portion), Jack

K . . . . . Relay

L . . . . . Coil, Inductor

M . . . . . Meter
MP . . . . . Miscellaneous Mechanical Part
P . . . . . Electrical Connector (Movable Portion), Plug
Q . . . . . Silicon Controlled Rectifier (SCR), Transistor, Triode Thyristor
R . . . . . Resistor
RT . . . . . Thermistor
S . . . . . Switch
T . . . . . Transformer
TB . . . . . Terminal Board
TC . . . . . Thermocouple
TP . . . . . Test Point

U . . . . . Integrated Circuit, Microcircuit

V . . . . . Electron Tube
VR . . . . . Breakdown Diode (Zener), Voltage Regulator

W . . . . . Cable, Transmission Path, Wire

X . . . . . Socket

Y . . . . . Crystal Unit (Piezoelectric, Quartz)

Z . . . . . Tuned Cavity, Tuned Circuit

ABBREVIATIONS

A . . . . . Across Flats, Acrylic, Air (Dry Method), Ampere
AC . . . . . Actinium, Alternating Current, Alumina-Ceramic
ADJ . . . . . Adjust, Adjustment
AL . . . . . Aluminum
ALTNG . . . . . Alternating
AMPL . . . . . Amplifier
ANLG . . . . . Analog
ASSY . . . . . Assembly

BLK . . . . . Black, Blank, Block
BNC . . . . . Type of Connector
BSC . . . . . Basic

C . . . . . Capacitance, Capacitor, Center Tapped, Centistoke, Ceramic, Cermet, Circular Mil Foot, Closed Cup, Cold, Compression
CA . . . . . Cable, Calcium
CAL . . . . . Calibrate, Calibration
C-C . . . . . Center to Center
CCP . . . . . Carbon Composition Plastic
CER . . . . . Ceramic
CHAM . . . . . Chamfer
CIRC . . . . . Circuit, Circular
CONT . . . . . Contact, Continuous, Control, Controller

D . . . . . Deep, Depletion, Depth, Diameter, Direct Current
DB . . . . . Decibel, Double Brenk
DBL . . . . . Double
DEG . . . . . Degree
DIA . . . . . Diameter
DIP . . . . . Dual In-Line Package
DIP-SLDR . . . . . Dip Solder
DIV . . . . . Division
DO . . . . . Package Type Designation
DPDT . . . . . Double Pole Double Throw

ELEM . . . . . Element
E-R . . . . . E-Ring
EXT . . . . . Extended, Extension, External, Extinguish

F . . . . . Fahrenheit, Farad, Female, Film (Resistor), Fixed, Flange, Flint, Fluorine, Frequency
FEM . . . . . Female
FF . . . . . Flange, Female Connection; Flip Flop
FL . . . . . Flash, Flat, Fluid
FR . . . . . Folder
FT . . . . . Current Gain Bandwidth Product (Transition Frequency); Feet, Foot
FXD . . . . . Fixed
GE . . . . . Germanium
GP . . . . . General Purpose, Group
HEX . . . . . Hexadecimal, Hexagon, Hexagonal
HI . . . . . High
IC . . . . . Collector Current, Integrated Circuit
ID . . . . . Identification, Inside Diameter
IN . . . . . Inch, Indium
INP . . . . . Input
INSUL . . . . . Insulated, Insulation, Insulator
INV . . . . . Invert, Inverter
K . . . . . Kelvin, Key, Kilo, Potassium
KHZ . . . . . Kilohertz
LG . . . . . Length, Long
LIN . . . . . Linear, Linear Taper, Linearity
LS . . . . . Loudspeaker, Low Power Schottky, Series Inductance
M . . . . . Male, Maximum, Mega, Mil, Milli, Mode, Momentary, Mounting Hole Centers, Mounting Hole Diameter
MA . . . . . Milliampere
MED . . . . . Medium High
MHZ . . . . . Megahertz
MLD . . . . . Mold, Molded
MM . . . . . Magnetized Material (Restricted Articles Code); Millimeter
MTG . . . . . Mounting
MTLC . . . . . Metallic
MW . . . . . Milliwatt

NAND . . . . . Logic Not-AND
NM . . . . . Nanometer, Nonmetallic
NO . . . . . Normally Open, Number
NOM . . . . . Nominal
NPN . . . . . Negative Positive Negative (Transistor)
NYL . . . . . Nylon (Polyamide)

OD . . . . . Olive Drab, Outside Diameter
OP AMP . . . . . Operational Amplifier
OPT . . . . . Optical, Option, Optional

P . . . . . Peak, Phosphorus, Pico, Picosecond, Pitch, Plastic, Plug, Pole, Polyester, Power, Probe, Pure
PAN-HD . . . . . Pan Head
PB . . . . . Lead (Metal), Push Button
PC . . . . . Picocoulomb/Piece, Printed Circuit
PF . . . . . Picofarad; Pipe, Female Connection; Power Factor
PH . . . . . Phase Lock, Plain, Plate, Plug
PLSTC . . . . . Plastic
PNL . . . . . Panel
PNP . . . . . Positive Negative Positive (Transistor)
POS . . . . . Position, Positive
POZL . . . . . Pozidriv Recess
PREC . . . . . Precision
PWR . . . . . Power

Q . . . . . Figure of Merit
QUAD . . . . . Set of Four

REF . . . . . Reference
RF . . . . . Radio Frequency
RGLTR . . . . . Regulator
RVT . . . . . Rivet, Riveted

SCR . . . . . Screw, Scrub, Silicon Controlled Rectifier
SER . . . . . Serial, Series
SGL . . . . . Single
SI . . . . . Silicon, Square Inch
SL . . . . . Slide, Slow
SLDR . . . . . Solder
SMC . . . . . Subminiature, C Type (Threaded Connector)
SPL . . . . . Spade Lug, Special, Spiral, Spline
SQ . . . . . Square
SST . . . . . Stainless Steel
STL . . . . . Steel
SUBMIN . . . . . Subminiature
SUBMIN . . . . . Subminiature
SZ . . . . . Size

TA . . . . . Ambient Temperature, Tantalum
TC . . . . . Thermoplastic
THRD . . . . . Thread, Threaded
THK . . . . . Thick
TO . . . . . Package Type Designation, Troy Ounce
TPG . . . . . Tapping
TRIG . . . . . Trigger, Triggerable, Triggering, Trigonometry
TRMR . . . . . Trimmer
TRN . . . . . Turn, Turns
TTL . . . . . Tan Translucent, Transistor Transistor Logic

UF . . . . . Microfarad
UH . . . . . Microhenry
US . . . . . Microsecond, Microsiemen

V . . . . . Vanadium, Variable, Violet, Volt, Voltage
VAC . . . . . Vacuum; Volts, Alternating Current
VAR . . . . . Variable
VDC . . . . . Volts, Direct Current
W . . . . . Watt, Wattage, White, Wide, Width, Wire
WD . . . . . Width, Wood
WW . . . . . Wire Wound

X . . . . . By (Used With Dimensions), Reactance
XSTR . . . . . Transistor
ZNR . . . . . Zener

MULTIPLIERS

Abbreviation	Prefix	Multiple
T	tera	10^{12}
G	giga	10^{9}
M	mega	10^{6}
k	kilo	10^{3}
da	deka	10
d	deci	10^{-1}
c	centi	10^{-2}
m	milli	10^{-3}
μ	micro	10^{-6}
n	nano	10^{-9}
p	pico	10^{-12}
f	femto	10^{-15}
a	atto	10^{-18}

Table 6-3. Replaceable Parts

Reference Designation	HP Part Number	C D	Qty	Description	Mfr Code	Mfr Part Number
A1	3100-1620	9	2	SWITCH-MINIATURE LEVER	28480	3100-1620
A2	3100-1620	9		SWITCH-MINIATURE LEVER	28480	3100-1620
A3	08755-60006	6	1	BOARD ASSEMBLY-DB/DIV SWITCH	28480	08755-60006
A3C1	0180-0374	3	4	CAPACITOR-FXD 10UF+-10% 20VDC TA	56289	150D106X9020B2
A3C2	0180-0374	3		CAPACITOR-FXD 10UF+-10% 20VDC TA	56289	150D106X9020B2
A3C3	0180-0374	3		CAPACITOR-FXD 10UF+-10% 20VDC TA	56289	150D106X9020B2
A3C4	0180-0374	3		CAPACITOR-FXD 10UF+-10% 20VDC TA	56289	150D106X9020B2
A3R1	0698-7799	7	14	RESISTOR 2K .25% .125W F TC=0+-100	19701	MF4C1/8-T0-2001-C
A3R2	0698-7799	7		RESISTOR 2K .25% .125W F TC=0+-100	19701	MF4C1/8-T0-2001-C
A3R3	0698-8172	2	2	RESISTOR 4K .25% .125W F TC=0+-50	19701	MF4C1/8-T2-4001-C
A3R4	0698-8172	2		RESISTOR 4K .25% .125W F TC=0+-50	19701	MF4C1/8-T2-4001-C
A3R5	0698-3194	8	2	RESISTOR 20K .25% .125W F TC=0+-50	03888	PME55-1/8-T2-2002-C
A3R6	0698-3194	8		RESISTOR 20K .25% .125W F TC=0+-50	03888	PME55-1/8-T2-2002-C
A3R7	0698-3201	8	2	RESISTOR 80K 1% .125W F TC=0+-100	24546	C4-1/8-T0-8002-F
A3R8	0698-3201	8		RESISTOR 80K 1% .125W F TC=0+-100	24546	C4-1/8-T0-8002-F
A3S1	3101-1659	6	4	SWITCH-PB 4-STATION 12.5MM C-C SPACING	28480	3101-1659
A3S2	3101-1659	6		SWITCH-PB 4-STATION 12.5MM C-C SPACING	28480	3101-1659
A3S3	3101-1658	5	1	SWITCH-PB DPDT ALTNG 1A 300VAC	28480	3101-1658
A3TP1	1251-0600	0	15	CONNECTOR-SGL CONT PIN 1.14-MM-BSC-SZ SQ	28480	1251-0600
A3TP2	1251-0600	0		CONNECTOR-SGL CONT PIN 1.14-MM-BSC-SZ SQ	28480	1251-0600
A3TP3	1251-0600	0		CONNECTOR-SGL CONT PIN 1.14-MM-BSC-SZ SQ	28480	1251-0600
A3TP4	1251-0600	0		CONNECTOR-SGL CONT PIN 1.14-MM-BSC-SZ SQ	28480	1251-0600
A4	08755-60037	3	1	BOARD ASSEMBLY-DISPLAY	28480	08755-60037
A4R1	0698-7799	7		RESISTOR 2K .25% .125W F TC=0+-100	19701	MF4C1/8-T0-2001-C
A4R2	0698-7799	7		RESISTOR 2K .25% .125W F TC=0+-100	19701	MF4C1/8-T0-2001-C
A4R3	0698-7799	7		RESISTOR 2K .25% .125W F TC=0+-100	19701	MF4C1/8-T0-2001-C
A4R4	0757-0401	0	18	RESISTOR 100 1% .125W F TC=0+-100	24546	C4-1/8-T0-101-F
A4R5	0757-0401	0		RESISTOR 100 1% .125W F TC=0+-100	24546	C4-1/8-T0-101-F
A4R6	0698-7799	7		RESISTOR 2K .25% .125W F TC=0+-100	19701	MF4C1/8-T0-2001-C
A4R7	0698-7799	7		RESISTOR 2K .25% .125W F TC=0+-100	19701	MF4C1/8-T0-2001-C
A4R8	0698-7799	7		RESISTOR 2K .25% .125W F TC=0+-100	19701	MF4C1/8-T0-2001-C
A4R9	0698-7799	7		RESISTOR 2K .25% .125W F TC=0+-100	19701	MF4C1/8-T0-2001-C
A4R10	0698-7799	7		RESISTOR 2K .25% .125W F TC=0+-100	19701	MF4C1/8-T0-2001-C
A4S1	3101-1659	6		SWITCH-PB 4-STATION 12.5MM C-C SPACING	28480	3101-1659
A4S2	3101-1659	6		SWITCH-PB 4-STATION 12.5MM C-C SPACING	28480	3101-1659
A5	08755-60031	7	1	BOARD ASSEMBLY-INTERCONNECT	28480	08755-60031
A5C1	0180-0197	8	22	CAPACITOR-FXD 2.2UF+-10% 20VDC TA	56289	150D225X9020A2
A5C2	0180-0197	8		CAPACITOR-FXD 2.2UF+-10% 20VDC TA	56289	150D225X9020A2
A5C3	0180-0197	8		CAPACITOR-FXD 2.2UF+-10% 20VDC TA	56289	150D225X9020A2
A5C4	0180-0197	8		CAPACITOR-FXD 2.2UF+-10% 20VDC TA	56289	150D225X9020A2
A5C5	0180-0197	8		CAPACITOR-FXD 2.2UF+-10% 20VDC TA	56289	150D225X9020A2
A5C6	0180-0197	8		CAPACITOR-FXD 2.2UF+-10% 20VDC TA	56289	150D225X9020A2
A5L1	9100-1664	7	12	INDUCTORRF-CH-MLD 3MH 5% .23DX.57LG	28480	9100-1664
A5L2	9100-1664	7		INDUCTORRF-CH-MLD 3MH 5% .23DX.57LG	28480	9100-1664
A5L3	9100-1664	7		INDUCTORRF-CH-MLD 3MH 5% .23DX.57LG	28480	9100-1664
A5L4	9100-1664	7		INDUCTORRF-CH-MLD 3MH 5% .23DX.57LG	28480	9100-1664
A5L5	9100-1664	7		INDUCTORRF-CH-MLD 3MH 5% .23DX.57LG	28480	9100-1664
A5L6	9100-1664	7		INDUCTORRF-CH-MLD 3MH 5% .23DX.57LG	28480	9100-1664
A5L7	9100-1664	7		INDUCTORRF-CH-MLD 3MH 5% .23DX.57LG	28480	9100-1664
A5L8	9100-1664	7		INDUCTORRF-CH-MLD 3MH 5% .23DX.57LG	28480	9100-1664
A5L9	9100-1664	7		INDUCTORRF-CH-MLD 3MH 5% .23DX.57LG	28480	9100-1664
A5L10	9100-1664	7		INDUCTORRF-CH-MLD 3MH 5% .23DX.57LG	28480	9100-1664
A5L11	9100-1664	7		INDUCTORRF-CH-MLD 3MH 5% .23DX.57LG	28480	9100-1664
A5L12	9100-1664	7		INDUCTORRF-CH-MLD 3MH 5% .23DX.57LG	28480	9100-1664
A5R1	0757-0440	7	7	RESISTOR 7.5K 1% .125W F TC=0+-100	24546	C4-1/8-T0-7501-F
A5R2	0757-0440	7		RESISTOR 7.5K 1% .125W F TC=0+-100	24546	C4-1/8-T0-7501-F
A5R3	0698-6614	3	4	RESISTOR 7.5K .1% .125W F TC=0+-25	28480	0698-6614
A5R4	0698-6614	3		RESISTOR 7.5K .1% .125W F TC=0+-25	28480	0698-6614
A5R5	0698-3236	9	2	RESISTOR 15K .25% .125W F TC=0+-50	28480	0698-3236
A5R6	0698-3236	9		RESISTOR 15K .25% .125W F TC=0+-50	28480	0698-3236
A5R7	0698-3221	2	2	RESISTOR 30K .25% .125W F TC=0+-50	28480	0698-3221
A5R8	0698-3221	2		RESISTOR 30K .25% .125W F TC=0+-50	28480	0698-3221
A5R9	0698-8173	3	2	RESISTOR 37.5K .25% .125W F TC=0+-50	19701	MF4C1/8-T2-3752-C
A5R10	0698-8173	3		RESISTOR 37.5K .25% .125W F TC=0+-50	19701	MF4C1/8-T2-3752-C

See introduction to this section for ordering information
*Indicates factory selected value

Table 6-3. Replaceable Parts

Reference Designation	HP Part Number	C D	Qty	Description	Mfr Code	Mfr Part Number
A5R11	0698-8174	4	2	RESISTOR 75K .5% .125W F TC=0+-100	19701	MF4C1/8-T2-7502-D
A5R12	0698-8174	4		RESISTOR 75K .5% .125W F TC=0+-100	19701	MF4C1/8-T2-7502-D
A5R13	0698-3234	7	2	RESISTOR 150K .25% .125W F TC=0+-50	28480	0698-3234
A5R14	0698-3234	7		RESISTOR 150K .25% .125W F TC=0+-50	28480	0698-3234
A5R15	0698-3219	8	2	RESISTOR 300K .25% .125W F TC=0+-50	28480	0698-3219
A5R16	0698-3219	8		RESISTOR 300K .25% .125W F TC=0+-50	28480	0698-3219
A5R17	2100-3186	5	3	RESISTOR-VAR CONTROL CCP 2.5K 10% LIN	28480	2100-3186
A5R18	0757-0280	3	12	RESISTOR 1K 1% .125W F TC=0+-100	24546	C4-1/8-T0-1001-F
A5R19	0757-0420	3	6	RESISTOR 750 1% .125W F TC=0+-100	24546	C4-1/8-T0-751-F
A5R20	2100-3186	5		RESISTOR-VAR CONTROL CCP 2.5K 10% LIN	28480	2100-3186
A5R21	0757-0280	3		RESISTOR 1K 1% .125W F TC=0+-100	24546	C4-1/8-T0-1001-F
A5R22	0757-0420	3		RESISTOR 750 1% .125W F TC=0+-100	24546	C4-1/8-T0-751-F
A5R23	2100-3186	5		RESISTOR-VAR CONTROL CCP 2.5K 10% LIN	28480	2100-3186
A5R24	0698-6615	4	2	RESISTOR 3.75K .1% .125W F TC=0+-25	28480	0698-6615
A5R25	0698-6615	4		RESISTOR 3.75K .1% .125W F TC=0+-25	28480	0698-6615
A5TP1	1251-0600	0		CONNECTOR-SGL CONT PIN 1.14-MM-BSC-BZ SQ	28480	1251-0600
A5TP2	1251-0600	0		CONNECTOR-SGL CONT PIN 1.14-MM-BSC-BZ SQ	28480	1251-0600
A5W1	8159-0005	0	4	JUMPER: WIRE 22AWG W PVC 1X22 80C	28480	8159-0005
A5W2	8159-0005	0		JUMPER: WIRE 22AWG W PVC 1X22 80C	28480	8159-0005
A5W3	8159-0005	0		JUMPER: WIRE 22AWG W PVC 1X22 80C	28480	8159-0005
A5W4	8159-0005	0		JUMPER: WIRE 22AWG W PVC 1X22 80C	28480	8159-0005
A5XA1A	1251-1941	4	6	CONNECTOR-PC EDGE 6-CONT/ROW 1-ROW	28480	1251-1941
A5XA1B	1251-1941	4		CONNECTOR-PC EDGE 6-CONT/ROW 1-ROW	28480	1251-1941
A5XA1C	1251-1941	4		CONNECTOR-PC EDGE 6-CONT/ROW 1-ROW	28480	1251-1941
A5XA2A	1251-1941	4		CONNECTOR-PC EDGE 6-CONT/ROW 1-ROW	28480	1251-1941
A5XA2B	1251-1941	4		CONNECTOR-PC EDGE 6-CONT/ROW 1-ROW	28480	1251-1941
A5XA2C	1251-1941	4		CONNECTOR-PC EDGE 6-CONT/ROW 1-ROW	28480	1251-1941
A5XA3	1251-0213	1	4	CONNECTOR-PC EDGE 15-CONT/ROW 1-ROW	28480	1251-0213
A5XA4	1251-2034	8	1	CONNECTOR-PC EDGE 10-CONT/ROW 2-ROW8	28480	1251-2034
A6	08755-60002	2	1	BOARD ASSEMBLY-PROCESSOR	28480	08755-60002
A6C1	0180-0116	1	4	CAPACITOR-FXD 6.8UF+-10% 35VDC TA	56289	150D685X9035B2
A6C2	0180-0116	1		CAPACITOR-FXD 6.8UF+-10% 35VDC TA	56289	150D685X9035B2
A6C3	0180-0116	1		CAPACITOR-FXD 6.8UF+-10% 35VDC TA	56289	150D685X9035B2
A6C4	0180-0116	1		CAPACITOR-FXD 6.8UF+-10% 35VDC TA	56289	150D685X9035B2
A6C5	0160-2207	3	1	CAPACITOR-FXD 300PF +-5% 300VDC MICA	28480	0160-2207
A6C6	0160-2199	2	2	CAPACITOR-FXD 30PF +-5% 300VDC MICA	28480	0160-2199
A6CR1	1902-0048	1	8	DIODE-ZNR 6.81V 5% DO-35 PD=.4W	28480	1902-0048
A6CR2	1902-0048	1		DIODE-ZNR 6.81V 5% DO-35 PD=.4W	28480	1902-0048
A6CR3	1902-0048	1		DIODE-ZNR 6.81V 5% DO-35 PD=.4W	28480	1902-0048
A6CR4	1902-0048	1		DIODE-ZNR 6.81V 5% DO-35 PD=.4W	28480	1902-0048
A6CR5	1902-0761	5	1	DIODE-ZNR 1N821 6.2V 5% DO-7 PD=.4W	04713	1N821
A6Q1	1853-0020	4	5	TRANSISTOR PNP SI PD=300MW FT=150MHZ	28480	1853-0020
A6Q2	1854-0071	7	16	TRANSISTOR NPN SI PD=.00MW FT=200MHZ	28480	1854-0071
A6R1	0698-7799	7		RESISTOR 2K .25% .125W F TC=0+-100	19701	MF4C1/8-T0-2001-C
A6R2	0698-7799	7		RESISTOR 2K .25% .125W F TC=0+-100	19701	MF4C1/8-T0-2001-C
A6R3	0698-7799	7		RESISTOR 2K .25% .125W F TC=0+-100	19701	MF4C1/8-T0-2001-C
A6R4	0698-7799	7		RESISTOR 2K .25% .125W F TC=0+-100	19701	MF4C1/8-T0-2001-C
A6R5	0757-0401	0		RESISTOR 100 1% .125W F TC=0+-100	24546	C4-1/8-T0-101-F
A6R6	0757-0401	0		RESISTOR 100 1% .125W F TC=0+-100	24546	C4-1/8-T0-101-F
A6R7	0757-0401	0		RESISTOR 100 1% .125W F TC=0+-100	24546	C4-1/8-T0-101-F
A6R8	0757-0401	0		RESISTOR 100 1% .125W F TC=0+-100	24546	C4-1/8-T0-101-F
A6R9	0757-0280	3		RESISTOR 1K 1% .125W F TC=0+-100	24546	C4-1/8-T0-1001-F
A6R10	0757-0401	0		RESISTOR 100 1% .125W F TC=0+-100	24546	C4-1/8-T0-101-F
A6R11	2100-3095	5	1	RESISTOR-TRMR 200 10% C SIDE-ADJ 17-TRN	02111	43P201
A6R12	0698-6614	3		RESISTOR 7.5K .1% .125W F TC=0+-25	28480	0698-6614
A6R13	0698-6614	3		RESISTOR 7.5K .1% .125W F TC=0+-25	28480	0698-6614
A6R14	0757-1090	5	1	RESISTOR 261 1% .5W F TC=0+-100	28480	0757-1090
A6R15	0698-0083	8	9	RESISTOR 1.96K 1% .125W F TC=0+-100	24546	C4-1/8-T0-1961-F
A6R16	0757-0802	5	1	RESISTOR 162 1% .5W F TC=0+-100	28480	0757-0802
A6R17	0698-0083	8		RESISTOR 1.96K 1% .125W F TC=0+-100	24546	C4-1/8-T0-1961-F
A6R18	0757-0280	3		RESISTOR 1K 1% .125W F TC=0+-100	24546	C4-1/8-T0-1001-F
A6TP1	1251-0600	0		CONNECTOR-SGL CONT PIN 1.14-MM-BSC-BZ SQ	28480	1251-0600
A6TP2	1251-0600	0		CONNECTOR-SGL CONT PIN 1.14-MM-BSC-BZ SQ	28480	1251-0600
A6TP3	1251-0600	0		CONNECTOR-SGL CONT PIN 1.14-MM-BSC-BZ SQ	28480	1251-0600
A6TP4	1251-0600	0		CONNECTOR-SGL CONT PIN 1.14-MM-BSC-BZ SQ	28480	1251-0600
A6TP5	1251-0600	0		CONNECTOR-SGL CONT PIN 1.14-MM-BSC-BZ SQ	28480	1251-0600
A6TP6	1251-0600	0		CONNECTOR-SGL CONT PIN 1.14-MM-BSC-BZ SQ	28480	1251-0600
A6TP7	1251-0600	0		CONNECTOR-SGL CONT PIN 1.14-MM-BSC-BZ SQ	28480	1251-0600
A6TP8	1251-0600	0		CONNECTOR-SGL CONT PIN 1.14-MM-BSC-BZ SQ	28480	1251-0600
A6TP9	1251-0600	0		CONNECTOR-SGL CONT PIN 1.14-MM-BSC-BZ SQ	28480	1251-0600

See introduction to this section for ordering information
*Indicates factory selected value

Table 6-3. Replaceable Parts

Reference Designation	HP Part Number	C D	Qty	Description	Mfr Code	Mfr Part Number
A6U1	1820-0223	0	5	IC OP AMP GP TO-99	04713	MLM301AG
A6U2	1820-0223	0		IC OP AMP GP TO-99	04713	MLM301AG
A6U3	1826-0261	8	6	IC OP AMP LOW-NOISE TO-99	28480	1826-0261
A6U4	1826-0261	8		IC OP AMP LOW-NOISE TO-99	28480	1826-0261
A6U5	1826-0261	8		IC OP AMP LOW-NOISE TO-99	28480	1826-0261
A6U6	1826-0261	8		IC OP AMP LOW-NOISE TO-99	28480	1826-0261
A7	08755-60001	1	1	BOARD ASSEMBLY-27.8 KHZ LOG AMPL&FBER	28480	08755-60001
A7C1	0180-0197	8		CAPACITOR-FXD 2.2UF+-10% 20VDC TA	56289	150D225X9020A2
A7C2	0160-0127	2	5	CAPACITOR-FXD 1UF +-20% 25VDC CER	28480	0160-0127
A7C3	0160-0127	2		CAPACITOR-FXD 1UF +-20% 25VDC CER	28480	0160-0127
A7C4	0180-1746	5	5	CAPACITOR-FXD 15UF+-10% 20VDC TA	56289	150D156X9020B2
A7C5	0180-1746	5		CAPACITOR-FXD 15UF+-10% 20VDC TA	56289	150D156X9020B2
A7C6	0180-0197	8		CAPACITOR-FXD 2.2UF+-10% 20VDC TA	56289	150D225X9020A2
A7C7	0180-0197	8		CAPACITOR-FXD 2.2UF+-10% 20VDC TA	56289	150D225X9020A2
A7C8	0160-3292	8	2	CAPACITOR-FXD 1300PF +-1% 100VDC MICA	28480	0160-3292
A7C9	0160-3292	8		CAPACITOR-FXD 1300PF +-1% 100VDC MICA	28480	0160-3292
A7C10	0160-3047	1	2	CAPACITOR-FXD 3280PF +-1% 100VDC MICA	28480	0160-3047
A7C11	0160-3047	1		CAPACITOR-FXD 3280PF +-1% 100VDC MICA	28480	0160-3047
A7C12	0140-0221	5	2	CAPACITOR-FXD 220PF +-1% 300VDC MICA	72136	DM15F221F0300WV1C
A7C13	0140-0221	5		CAPACITOR-FXD 220PF +-1% 300VDC MICA	72136	DM15F221F0300WV1C
A7C14	0180-0197	8		CAPACITOR-FXD 2.2UF+-10% 20VDC TA	56289	150D225X9020A2
A7C15	0160-0218	2	6	CAPACITOR-FXD 2400PF +-1% 300VDC MICA	28480	0160-0218
A7C16	0160-0218	2		CAPACITOR-FXD 2400PF +-1% 300VDC MICA	28480	0160-0218
A7C17	0160-0218	2		CAPACITOR-FXD 2400PF +-1% 300VDC MICA	28480	0160-0218
A7C18	0160-0218	2		CAPACITOR-FXD 2400PF +-1% 300VDC MICA	28480	0160-0218
A7C19	0160-0218	2		CAPACITOR-FXD 2400PF +-1% 300VDC MICA	28480	0160-0218
A7C20	0160-0218	2		CAPACITOR-FXD 2400PF +-1% 300VDC MICA	28480	0160-0218
A7C21	0180-2206	4	3	CAPACITOR-FXD 60UF+-10% 6VDC TA	56289	150D606X9006B2
A7C22	0180-0197	8		CAPACITOR-FXD 2.2UF+-10% 20VDC TA	56289	150D225X9020A2
A7C23	0180-0197	8		CAPACITOR-FXD 2.2UF+-10% 20VDC TA	56289	150D225X9020A2
A7C24	0180-0197	8		CAPACITOR-FXD 2.2UF+-10% 20VDC TA	56289	150D225X9020A2
A7C25	0180-0197	8		CAPACITOR-FXD 2.2UF+-10% 20VDC TA	56289	150D225X9020A2
A7C26	0160-0127	2		CAPACITOR-FXD 1UF +-20% 25VDC CER	28480	0160-0127
A7C27	0160-2055	9	1	CAPACITOR-FXD .01UF +80-20% 100VDC CER	28480	0160-2055
A7C28	0180-0197	8		CAPACITOR-FXD 2.2UF+-10% 20VDC TA	56289	150D225X9020A2
A7C29	0160-0127	2		CAPACITOR-FXD 1UF +-20% 25VDC CER	28480	0160-0127
A7C30	0160-0127	2		CAPACITOR-FXD 1UF +-20% 25VDC CER	28480	0160-0127
A7C31	0160-2261	9	1	CAPACITOR-FXD 15PF +-5% 500VDC CER 0+-30	28480	0160-2261
A7C32	0140-0196	3	3	CAPACITOR-FXD 150PF +-5% 300VDC MICA	72136	DM15F151J0300WV1CR
A7C33	0140-0192	9	1	CAPACITOR-FXD 68PF +-5% 300VDC MICA	72136	DM15E680J0300WV1CR
A7C34	0180-0197	8		CAPACITOR-FXD 2.2UF+-10% 20VDC TA	56289	150D225X9020A2
A7C35	0180-2206	4		CAPACITOR-FXD 60UF+-10% 6VDC TA	56289	150D606X9006B2
A7C36	0180-2206	4		CAPACITOR-FXD 60UF+-10% 6VDC TA	56289	150D606X9006B2
A7C37	0180-0197	8		CAPACITOR-FXD 2.2UF+-10% 20VDC TA	56289	150D225X9020A2
A7C38	0160-3457	7	1	CAPACITOR-FXD 2000PF +-10% 250VDC CER	28480	0160-3457
A7C39	0140-0196	3		CAPACITOR-FXD 150PF +-5% 300VDC MICA	72136	DM15F151J0300WV1CR
A7C40	0180-0197	8		CAPACITOR-FXD 2.2UF+-10% 20VDC TA	56289	150D225X9020A2
A7C41	0160-4835	7	1	CAPACITOR-FXD .1UF +-10% 50VDC CER	28480	0160-4835
A7C42	0140-0235	1	3	CAPACITOR-FXD 2250PF +-1% 300VDC MICA	72136	DM20F2250RF0300WV1C
A7C43	0140-0235	1		CAPACITOR-FXD 2250PF +-1% 300VDC MICA	72136	DM20F2250RF0300WV1C
A7C44	0140-0235	1		CAPACITOR-FXD 2250PF +-1% 300VDC MICA	72136	DM20F2250RF0300WV1C
A7C45	0180-0197	8		CAPACITOR-FXD 2.2UF+-10% 20VDC TA	56289	150D225X9020A2
A7C46	0160-2199	2		CAPACITOR-FXD 30PF +-5% 300VDC MICA	28480	0160-2199
A7CR1	1901-0040	1	13	DIODE-SWITCHING 30V 50MA 2NS DO-35	28480	1901-0040
A7CR2	1901-0040	1		DIODE-SWITCHING 30V 50MA 2NS DO-35	28480	1901-0040
A7CR3	1901-0040	1		DIODE-SWITCHING 30V 50MA 2NS DO-35	28480	1901-0040
A7CR4	1901-0040	1		DIODE-SWITCHING 30V 50MA 2NS DO-35	28480	1901-0040
A7CR5	1901-0040	1		DIODE-SWITCHING 30V 50MA 2NS DO-35	28480	1901-0040
A7CR6	1901-0040	1		DIODE-SWITCHING 30V 50MA 2NS DO-35	28480	1901-0040
A7CR7	1901-0040	1		DIODE-SWITCHING 30V 50MA 2NS DO-35	28480	1901-0040
A7CR8	1901-0040	1		DIODE-SWITCHING 30V 50MA 2NS DO-35	28480	1901-0040
A7CR9	1902-0551	1	1	DIODE-ZNR 6.19V 5% DO-15 PD=1W TC=+.022%	28480	1902-0551
A7L1	9140-0210	1	2	INDUCTORRF-CH-MLD 100UH 5% .166DX.385LG	28480	9140-0210
A7L2	9140-0210	1		INDUCTORRF-CH-MLD 100UH 5% .166DX.385LG	28480	9140-0210
A7L3	9100-2578	4	1	INDUCTORRF-CH-MLD 2.7MH 10%	28480	9100-2578
A7Q1	1854-0023	9	1	TRANSISTOR NPN SI TO-18 PD=360MW	28480	1854-0023
A7Q2	1853-0451	5	1	TRANSISTOR PNP 2N3799 SI TO-18 PD=360MW	01295	2N3799
A7Q3	1854-0071	7		TRANSISTOR NPN SI PD=300MW FT=200MHZ	28480	1854-0071
A7Q4	1854-0071	7		TRANSISTOR NPN SI PD=300MW FT=200MHZ	28480	1854-0071
A7Q5	1854-0071	7		TRANSISTOR NPN SI PD=300MW FT=200MHZ	28480	1854-0071
A7Q6	1853-0020	4		TRANSISTOR PNP SI PD=300MW FT=150MHZ	28480	1853-0020
A7Q7	1854-0071	7		TRANSISTOR NPN SI PD=300MW FT=200MHZ	28480	1854-0071
A7Q8	1853-0020	4		TRANSISTOR PNP SI PD=300MW FT=150MHZ	28480	1853-0020
A7Q9	1854-0404	0	6	TRANSISTOR NPN SI TO-18 PD=360MW	28480	1854-0404
A7Q10	1853-0007	7	1	TRANSISTOR PNP 2N3251 SI TO-18 PD=360MW	04713	2N3251

See introduction to this section for ordering information
*Indicates factory selected value

Table 6-3. Replaceable Parts

Reference Designation	HP Part Number	C D	Qty	Description	Mfr Code	Mfr Part Number
A7Q11	1854-0071	7		TRANSISTOR NPN SI PD=300MW FT=200MHZ	28480	1854-0071
A7Q12	1854-0071	7		TRANSISTOR NPN SI PD=300MW FT=200MHZ	28480	1854-0071
A7Q13	1853-0020	4		TRANSISTOR PNP SI PD=300MW FT=150MHZ	28480	1853-0020
A7R1	0698-3456	5	1	RESISTOR 287K 1% .125W F TC=0+-100	24546	C4-1/8-T0-2873-F
A7R2	0698-3450	9	5	RESISTOR 42.2K 1% .125W F TC=0+-100	24546	C4-1/8-T0-4222-F
A7R3	0757-0467	8	1	RESISTOR 121K 1% .125W F TC=0+-100	24546	C4-1/8-T0-1213-F
A7R4	0698-3450	9		RESISTOR 42.2K 1% .125W F TC=0+-100	24546	C4-1/8-T0-4222-F
A7R5	0698-3441	8	2	RESISTOR 215 1% .125W F TC=0+-100	24546	C4-1/8-T0-215R-F
A7R6	0757-0200	7	2	RESISTOR 5.62K 1% .125W F TC=0+-100	24546	C4-1/8-T0-5621-F
A7R7	0698-0085	0	1	RESISTOR 2.61K 1% .125W F TC=0+-100	24546	C4-1/8-T0-2611-F
A7R8	0698-3441	8		RESISTOR 215 1% .125W F TC=0+-100	24546	C4-1/8-T0-215R-F
A7R9	0698-3437	2	2	RESISTOR 133 1% .125W F TC=0+-100	24546	C4-1/8-T0-133R-F
A7R10	0698-3151	7	5	RESISTOR 2.87K 1% .125W F TC=0+-100	24546	C4-1/8-T0-2871-F
A7R11	0698-0084	9	6	RESISTOR 2.15K 1% .125W F TC=0+-100	24546	C4-1/8-T0-2151-F
A7R12	0698-3154	0	3	RESISTOR 4.22K 1% .125W F TC=0+-100	24546	C4-1/8-T0-4221-F
A7R13	0698-3437	2		RESISTOR 133 1% .125W F TC=0+-100	24546	C4-1/8-T0-133R-F
A7R14	0698-3447	4	9	RESISTOR 422 1% .125W F TC=0+-100	24546	C4-1/8-T0-422R-F
A7R15	0698-3151	7		RESISTOR 2.87K 1% .125W F TC=0+-100	24546	C4-1/8-T0-2871-F
A7R16	0698-3151	7		RESISTOR 2.87K 1% .125W F TC=0+-100	24546	C4-1/8-T0-2871-F
A7R17	0698-3151	7		RESISTOR 2.87K 1% .125W F TC=0+-100	24546	C4-1/8-T0-2871-F
A7R18	0698-3151	7		RESISTOR 2.87K 1% .125W F TC=0+-100	24546	C4-1/8-T0-2871-F
A7R19	0757-0274	5	4	RESISTOR 1.21K 1% .125W F TC=0+-100	24546	C4-1/8-T0-1213-F
A7R21	0698-3154	0		RESISTOR 4.22K 1% .125W F TC=0+-100	24546	C4-1/8-T0-4221-F
A7R22	0698-3158	4	1	RESISTOR 23.7K 1% .125W F TC=0+-100	24546	C4-1/8-T0-2372-F
A7R23	0757-0200	7		RESISTOR 5.62K 1% .125W F TC=0+-100	24546	C4-1/8-T0-5621-F
A7R24	0698-3152	8	3	RESISTOR 3.48K 1% .125W F TC=0+-100	24546	C4-1/8-T0-3481-F
A7R25	0698-3154	0		RESISTOR 4.22K 1% .125W F TC=0+-100	24546	C4-1/8-T0-4221-F
A7R26	0757-0274	5		RESISTOR 1.21K 1% .125W F TC=0+-100	24546	C4-1/8-T0-1213-F
A7R27	0698-3152	8		RESISTOR 3.48K 1% .125W F TC=0+-100	24546	C4-1/8-T0-3481-F
A7R28	0757-0199	3	5	RESISTOR 21.5K 1% .125W F TC=0+-100	24546	C4-1/8-T0-2152-F
A7R29	0757-0274	5		RESISTOR 1.21K 1% .125W F TC=0+-100	24546	C4-1/8-T0-1213-F
A7R30	0757-0199	3		RESISTOR 21.5K 1% .125W F TC=0+-100	24546	C4-1/8-T0-2152-F
A7R31	0757-0394	0	4	RESISTOR 51.1 1% .125W F TC=0+-100	24546	C4-1/8-T0-51R1-F
A7R32	0757-0279	0	5	RESISTOR 3.16K 1% .125W F TC=0+-100	24546	C4-1/8-T0-3161-F
A7R33	0757-0394	0		RESISTOR 51.1 1% .125W F TC=0+-100	24546	C4-1/8-T0-51R1-F
A7R34	0698-0084	9		RESISTOR 2.15K 1% .125W F TC=0+-100	24546	C4-1/8-T0-2151-F
A7R35	0757-0401	0		RESISTOR 100 1% .125W F TC=0+-100	24546	C4-1/8-T0-101-F
A7R36	0757-0401	0		RESISTOR 100 1% .125W F TC=0+-100	24546	C4-1/8-T0-101-F
A7R37	0757-0420	3		RESISTOR 750 1% .125W F TC=0+-100	24546	C4-1/8-T0-751-F
A7R38	2100-3123	0	1	RESISTOR-TRMR 500 10% C SIDE-ADJ 17-TRN	02111	43P501
A7R39	0757-0420	3		RESISTOR 750 1% .125W F TC=0+-100	24546	C4-1/8-T0-751-F
A7R40	0698-0084	9		RESISTOR 2.15K 1% .125W F TC=0+-100	24546	C4-1/8-T0-2151-F
A7R41	0757-0401	0		RESISTOR 100 1% .125W F TC=0+-100	24546	C4-1/8-T0-101-F
A7R42	0757-0442	9	20	RESISTOR 10K 1% .125W F TC=0+-100	24546	C4-1/8-T0-1002-F
A7R43	0757-0199	3		RESISTOR 21.5K 1% .125W F TC=0+-100	24546	C4-1/8-T0-2152-F
A7R44	0757-0394	0		RESISTOR 51.1 1% .125W F TC=0+-100	24546	C4-1/8-T0-51R1-F
A7R45	0757-0401	0		RESISTOR 100 1% .125W F TC=0+-100	24546	C4-1/8-T0-101-F
A7R46	0757-0316	6	1	RESISTOR 42.2 1% .125W F TC=0+-100	24546	C4-1/8-T0-42R2-F
A7R47	0757-0401	0		RESISTOR 100 1% .125W F TC=0+-100	24546	C4-1/8-T0-101-F
A7R48	0757-0442	9		RESISTOR 10K 1% .125W F TC=0+-100	24546	C4-1/8-T0-1002-F
A7R49	0757-0442	9		RESISTOR 10K 1% .125W F TC=0+-100	24546	C4-1/8-T0-1002-F
A7R50	0698-0083	8		RESISTOR 1.96K 1% .125W F TC=0+-100	24546	C4-1/8-T0-1961-F
A7R51	0757-0274	5		RESISTOR 1.21K 1% .125W F TC=0+-100	24546	C4-1/8-T0-1213-F
A7R52*	0698-3155	1	1	RESISTOR 4.64K 1% .125W F TC=0+-100	24546	C4-1/8-T0-4641-F
A7R53	0757-0199	3		RESISTOR 21.5K 1% .125W F TC=0+-100	24546	C4-1/8-T0-2152-F
A7R54	0757-0442	9		RESISTOR 10K 1% .125W F TC=0+-100	24546	C4-1/8-T0-1002-F
A7R55	0757-0394	0		RESISTOR 51.1 1% .125W F TC=0+-100	24546	C4-1/8-T0-51R1-F
A7R56*	0698-3438	3	1	RESISTOR 147 1% .125W F TC=0+-100	24546	C4-1/8-T0-147R-F
A7R57	0698-3243	8	1	RESISTOR 178K 1% .125W F TC=0+-100	24546	C4-1/8-T0-1783-F
A7R58	2100-3054	6	1	RESISTOR-TRMR 50K 10% C SIDE-ADJ 17-TRN	02111	43P503
A7R59	0757-0442	9		RESISTOR 10K 1% .125W F TC=0+-100	24546	C4-1/8-T0-1002-F
A7R60	0757-0401	0		RESISTOR 100 1% .125W F TC=0+-100	24546	C4-1/8-T0-101-F
A7R61	0757-0440	7		RESISTOR 7.5K 1% .125W F TC=0+-100	24546	C4-1/8-T0-7501-F
A7R62	0757-0199	3		RESISTOR 21.5K 1% .125W F TC=0+-100	24546	C4-1/8-T0-2152-F
A7R63	0757-0346	2	1	RESISTOR 10 1% .125W F TC=0+-100	24546	C4-1/8-T0-10R0-F
A7R64	0698-0084	9		RESISTOR 2.15K 1% .125W F TC=0+-100	24546	C4-1/8-T0-2151-F
A7R65	0757-0442	9		RESISTOR 10K 1% .125W F TC=0+-100	24546	C4-1/8-T0-1002-F
A7R66	0757-0428	1	2	RESISTOR 1.62K 1% .125W F TC=0+-100	24546	C4-1/8-T0-1621-F
A7R67	2100-2521	0	1	RESISTOR-TRMR 2K 10% C SIDE-ADJ 1-TRN	30983	ET50X202
A7R68	0757-0442	9		RESISTOR 10K 1% .125W F TC=0+-100	24546	C4-1/8-T0-1002-F
A7R69	0698-3152	8		RESISTOR 3.48K 1% .125W F TC=0+-100	24546	C4-1/8-T0-3481-F
A7R70	2100-2489	9	2	RESISTOR-TRMR 5K 10% C SIDE-ADJ 1-TRN	30983	ET50X502
A7R71	0698-3450	9		RESISTOR 42.2K 1% .125W F TC=0+-100	24546	C4-1/8-T0-4222-F
A7R73	0757-0442	9		RESISTOR 10K 1% .125W F TC=0+-100	24546	C4-1/8-T0-1002-F
A7R74	2100-2514	1	1	RESISTOR-TRMR 20K 10% C SIDE-ADJ 1-TRN	30983	ET50W203
A7R75	0698-3450	9		RESISTOR 42.2K 1% .125W F TC=0+-100	24546	C4-1/8-T0-4222-F

See introduction to this section for ordering information
*Indicates factory selected value

Table 6-3. Replaceable Parts

Reference Designation	HP Part Number	C D	Qty	Description	Mfr Code	Mfr Part Number
A7TP1	1251-0600	0		CONNECTOR-SGL CONT PIN 1.14-MM-BSC-SZ SQ	28480	1251-0600
A7TP2	1251-0600	0		CONNECTOR-SGL CONT PIN 1.14-MM-BSC-SZ SQ	28480	1251-0600
A7TP3	1251-0600	0		CONNECTOR-SGL CONT PIN 1.14-MM-BSC-SZ SQ	28480	1251-0600
A7TP4	1251-0600	0		CONNECTOR-SGL CONT PIN 1.14-MM-BSC-SZ SQ	28480	1251-0600
A7TP5	1251-0600	0		CONNECTOR-SGL CONT PIN 1.14-MM-BSC-SZ SQ	28480	1251-0600
A7U1	1813-0001	7	1	IC LOG-AMPL/ELEM 24-DIP-C	28480	1813-0001
A7U2	1820-0223	0		IC OP AMP GP TO-99	04713	MLM301AG
A7U3	1820-0223	0		IC OP AMP GP TO-99	04713	MLM301AG
A7U4	1820-0223	0		IC OP AMP GP TO-99	04713	MLM301AG
A7U5	1826-0261	8		IC OP AMP LOW-NOISE TO-99	28480	1826-0261
A7U6	1826-0261	8		IC OP AMP LOW-NOISE TO-99	28480	1826-0261
A7XU1	1200-0462	5	1	SOCKET-IC 1-CONT STRIP DIP-SLDR	28480	1200-0462
A8				SAME AS A7; USE PREFIX A8		
A9				SAME AS A7; USE PREFIX A9.		
A10	08755-60003	3	1	BOARD ASSEMBLY-MODULATOR DRIVER	28480	08755-60003
A10C1	0160-2387	0	1	CAPACITOR-FXD 1000PF +-1% 500VDC MICA	28480	0160-2387
A10C2	0160-2206	2	1	CAPACITOR-FXD 160PF +-5% 300VDC MICA	28480	0160-2206
A10C3	0180-1746	5		CAPACITOR-FXD 15UF+-10% 20VDC TA	56289	150D156X9020B2
A10C4	0180-1746	5		CAPACITOR-FXD 15UF+-10% 20VDC TA	56289	150D156X9020B2
A10C5	0180-1746	5		CAPACITOR-FXD 15UF+-10% 20VDC TA	56289	150D156X9020B2
A10C6	0160-2221	1	1	CAPACITOR-FXD 1300PF +-5% 300VDC MICA	28480	0160-2221
A10C7	0180-0197	8		CAPACITOR-FXD 2.2UF+-10% 20VDC TA	56289	150D225X9020A2
A10C8	0140-0196	3		CAPACITOR-FXD 150PF +-5% 300VDC MICA	72136	DM15F151J0300WV1CR
A10C9	0180-0058	0	4	CAPACITOR-FXD 50UF+75-10% 25VDC AL	56289	30D506G025CC2
A10C10	0180-0058	0		CAPACITOR-FXD 50UF+75-10% 25VDC AL	56289	30D506G025CC2
A10C11	0180-0058	0		CAPACITOR-FXD 50UF+75-10% 25VDC AL	56289	30D506G025CC2
A10C12	0180-0058	0		CAPACITOR-FXD 50UF+75-10% 25VDC AL	56289	30D506G025CC2
A10C13	0140-0198	5	1	CAPACITOR-FXD 200PF +-5% 300VDC MICA	72136	DM15F201J0300WV1CR
A10C14	0140-2201	7	1	CAPACITOR-FXD 51PF +-5% 300VDC MICA	28480	0160-2201
A10C15	0180-0269	5	1	CAPACITOR-FXD 1UF+50-10% 150VDC AL	56289	30D105G150BA2
A10C16	0180-0197	8		CAPACITOR-FXD 2.2UF+-10% 20VDC TA	56289	150D225X9020A2
A10CR1	1902-0579	3	1	DIODE-ZNR 5.11V 5% DO-15 PD=1W TC=+.009%	28480	1902-0579
A10CR2	1901-0040	1		DIODE-SWITCHING 30V 50MA 2NS DO-35	28480	1901-0040
A10CR3	1901-0040	1		DIODE-SWITCHING 30V 50MA 2NS DO-35	28480	1901-0040
A10CR4	1901-0040	1		DIODE-SWITCHING 30V 50MA 2NS DO-35	28480	1901-0040
A10CR5	1901-0040	1		DIODE-SWITCHING 30V 50MA 2NS DO-35	28480	1901-0040
A10CR6	1901-0040	1		DIODE-SWITCHING 30V 50MA 2NS DO-35	28480	1901-0040
A10CR7	1910-0022	8	1	DIODE-GE 5V 60MA 3.5NS DO-7	28480	1910-0022
A10L1	9140-0137	1	2	INDUCTORRF-CH-MLD 1MH 5% .2DX.45LG Q=60	28480	9140-0137
A10L2	9100-1654	5	1	INDUCTORRF-CH-MLD 1.1MH 5% .23DX.57LG	28480	9100-1654
A10L3	9140-0137	1		INDUCTORRF-CH-MLD 1MH 5% .2DX.45LG Q=60	28480	9140-0137
A10L4	9100-1648	7	1	INDUCTORRF-CH-MLD 560UH 5% .2DX.45LG	28480	9100-1648
A10L5	9100-1666	9	4	INDUCTORRF-CH-MLD 3.6MH 5% .23DX.57LG	28480	9100-1666
A10L6	9100-1666	9		INDUCTORRF-CH-MLD 3.6MH 5% .23DX.57LG	28480	9100-1666
A10L7	9100-1666	9		INDUCTORRF-CH-MLD 3.6MH 5% .23DX.57LG	28480	9100-1666
A10L8	9100-1666	9		INDUCTORRF-CH-MLD 3.6MH 5% .23DX.57LG	28480	9100-1666
A10Q1	1854-0019	3	1	TRANSISTOR NPN SI TO-18 PD=360MW	28480	1854-0019
A10Q2	1854-0071	7		TRANSISTOR NPN SI PD=300MW FT=200MHZ	28480	1854-0071
A10Q3	1854-0071	7		TRANSISTOR NPN SI PD=300MW FT=200MHZ	28480	1854-0071
A10Q4	1854-0232	2	4	TRANSISTOR NPN SI TO-39 PD=1W FT=15MHZ	28480	1854-0232
A10Q5	1854-0232	2		TRANSISTOR NPN SI TO-39 PD=1W FT=15MHZ	28480	1854-0232
A10Q6	1854-0039	7	2	TRANSISTOR NPN 2N3053S SI TO-39 PD=1W	01928	2N3053S
A10Q7	1853-0001	1	1	TRANSISTOR PNP SI TO-39 PD=600MW	28480	1853-0001
A10Q8	1854-0039	7		TRANSISTOR NPN 2N3053S SI TO-39 PD=1W	01928	2N3053S
A10Q9	1853-0020	4		TRANSISTOR PNP SI PD=300MW FT=150MHZ	28480	1853-0020
A10Q10	1854-0071	7		TRANSISTOR NPN SI PD=300MW FT=200MHZ	28480	1854-0071
A10Q11	1854-0232	2		TRANSISTOR NPN SI TO-39 PD=1W FT=15MHZ	28480	1854-0232
A10Q12	1854-0232	2		TRANSISTOR NPN SI TO-39 PD=1W FT=15MHZ	28480	1854-0232
A10Q13	1854-0071	7		TRANSISTOR NPN SI PD=300MW FT=200MHZ	28480	1854-0071
A10Q14	1854-0475	5	2	TRANSISTOR-DUAL NPN PD=750MW	28480	1854-0475
A10Q15	1854-0475	5		TRANSISTOR-DUAL NPN PD=750MW	28480	1854-0475
A10Q16	1854-0071	7		TRANSISTOR NPN SI PD=300MW FT=200MHZ	28480	1854-0071
A10Q17	1854-0071	7		TRANSISTOR NPN SI PD=300MW FT=200MHZ	28480	1854-0071
A10Q18	1854-0071	7		TRANSISTOR NPN SI PD=300MW FT=200MHZ	28480	1854-0071
A10Q19	1854-0071	7		TRANSISTOR NPN SI PD=300MW FT=200MHZ	28480	1854-0071
A10Q20	1854-0071	7		TRANSISTOR NPN SI PD=300MW FT=200MHZ	28480	1854-0071
A10R1	0757-0279	0		RESISTOR 3.16K 1% .125W F TC=0+-100	24546	C4-1/8-T0-3161-F
A10R2	0698-3268	7	2	RESISTOR 11.5K 1% .125W F TC=0+-100	24546	C4-1/8-T0-1152-F
A10R3	0698-3620	5	1	RESISTOR 100 5% 2W MO TC=0+-200	28480	0698-3620
A10R4	0698-0084	9		RESISTOR 2.15K 1% .125W F TC=0+-100	24546	C4-1/8-T0-2151-F
A10R5	0698-3268	7		RESISTOR 11.5K 1% .125W F TC=0+-100	24546	C4-1/8-T0-1152-F

See introduction to this section for ordering information
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Table 6-3. Replaceable Parts

Reference Designation	HP Part Number	C D	Qty	Description	Mfr Code	Mfr Part Number
A10R6	0757-0280	3		RESISTOR 1K 1% .125W F TC=0+-100	24546	C4-1/8-T0-1001-F
A10R7	0757-0444	1	1	RESISTOR 12.1K 1% .125W F TC=0+-100	24546	C4-1/8-T0-1212-F
A10R8	0698-3157	3	2	RESISTOR 19.6K 1% .125W F TC=0+-100	24546	C4-1/8-T0-1962-F
A10R9	0757-0280	3		RESISTOR 1K 1% .125W F TC=0+-100	24546	C4-1/8-T0-1001-F
A10R10	0757-0280	3		RESISTOR 1K 1% .125W F TC=0+-100	24546	C4-1/8-T0-1001-F
A10R11	0757-0280	3		RESISTOR 1K 1% .125W F TC=0+-100	24546	C4-1/8-T0-1001-F
A10R12	0757-0440	7		RESISTOR 7.5K 1% .125W F TC=0+-100	24546	C4-1/8-T0-7501-F
A10R13	0757-0442	9		RESISTOR 10K 1% .125W F TC=0+-100	24546	C4-1/8-T0-1002-F
A10R14	0757-0280	3		RESISTOR 1K 1% .125W F TC=0+-100	24546	C4-1/8-T0-1001-F
A10R15	0757-0438	3	5	RESISTOR 5.11K 1% .125W F TC=0+-100	24546	C4-1/8-T0-5111-F
A10R16	0698-3450	9		RESISTOR 42.2K 1% .125W F TC=0+-100	24546	C4-1/8-T0-4222-F
A10R17	0757-0159	5	1	RESISTOR 1K 1% .5W F TC=0+-100	28480	0757-0159
A10R18	0757-0401	0		RESISTOR 100 1% .125W F TC=0+-100	24546	C4-1/8-T0-101-F
A10R19	0757-0401	0		RESISTOR 100 1% .125W F TC=0+-100	24546	C4-1/8-T0-101-F
A10R20	0757-0795	5	4	RESISTOR 75 1% .5W F TC=0+-100	19701	MF-1/2-T0-75R0-F
A10R21	0757-0795	5		RESISTOR 75 1% .5W F TC=0+-100	19701	MF-1/2-T0-75R0-F
A10R22	0757-0795	5		RESISTOR 75 1% .5W F TC=0+-100	19701	MF-1/2-T0-75R0-F
A10R23	0757-0795	5		RESISTOR 75 1% .5W F TC=0+-100	19701	MF-1/2-T0-75R0-F
A10R24	0757-0317	7	1	RESISTOR 1.33K 1% .125W F TC=0+-100	24546	C4-1/8-T0-1331-F
A10R25	0757-0416	7	1	RESISTOR 511 1% .125W F TC=0+-100	24546	C4-1/8-T0-511R-F
A10R26	0757-0428	1		RESISTOR 1.62K 1% .125W F TC=0+-100	24546	C4-1/8-T0-1621-F
A10R27	0698-0083	8		RESISTOR 1.96K 1% .125W F TC=0+-100	24546	C4-1/8-T0-1961-F
A10R28	0757-0422	5	1	RESISTOR 909 1% .125W F TC=0+-100	24546	C4-1/8-T0-909R-F
A10R29	0698-3447	4		RESISTOR 422 1% .125W F TC=0+-100	24546	C4-1/8-T0-422R-F
A10R30	0757-0465	6	3	RESISTOR 100K 1% .125W F TC=0+-100	24546	C4-1/8-T0-1003-F
A10R31	0757-0447	4	2	RESISTOR 16.2K 1% .125W F TC=0+-100	24546	C4-1/8-T0-1622-F
A10R32	0698-3447	4		RESISTOR 422 1% .125W F TC=0+-100	24546	C4-1/8-T0-422R-F
A10R33	0757-0420	3		RESISTOR 750 1% .125W F TC=0+-100	24546	C4-1/8-T0-751-F
A10R34	0757-1094	9	1	RESISTOR 1.47K 1% .125W F TC=0+-100	24546	C4-1/8-T0-1471-F
A10R35	0757-0438	3		RESISTOR 5.11K 1% .125W F TC=0+-100	24546	C4-1/8-T0-5111-F
A10R36	0757-0440	7		RESISTOR 7.5K 1% .125W F TC=0+-100	24546	C4-1/8-T0-7501-F
A10R37	0698-0082	7	2	RESISTOR 464 1% .125W F TC=0+-100	24546	C4-1/8-T0-4640-F
A10R38	0757-0279	0		RESISTOR 3.16K 1% .125W F TC=0+-100	24546	C4-1/8-T0-3161-F
A10R39	0757-0421	4	2	RESISTOR 825 1% .125W F TC=0+-100	24546	C4-1/8-T0-825R-F
A10R40	0698-3348	4	3	RESISTOR 4.64K 1% .5W F TC=0+-100	28480	0698-3348
A10R41	0698-3447	4		RESISTOR 422 1% .125W F TC=0+-100	24546	C4-1/8-T0-422R-F
A10R42	0698-3445	2	2	RESISTOR 348 1% .125W F TC=0+-100	24546	C4-1/8-T0-348R-F
A10R43	0757-0442	9		RESISTOR 10K 1% .125W F TC=0+-100	24546	C4-1/8-T0-1002-F
A10R44	0757-0465	6		RESISTOR 100K 1% .125W F TC=0+-100	24546	C4-1/8-T0-1003-F
A10R45	0698-3348	4		RESISTOR 4.64K 1% .5W F TC=0+-100	28480	0698-3348
A10R46	0698-3348	4		RESISTOR 4.64K 1% .5W F TC=0+-100	28480	0698-3348
A10R47	0698-3447	4		RESISTOR 422 1% .125W F TC=0+-100	24546	C4-1/8-T0-422R-F
A10R48	0698-3445	2		RESISTOR 348 1% .125W F TC=0+-100	24546	C4-1/8-T0-348R-F
A10R49	0698-3157	3		RESISTOR 19.6K 1% .125W F TC=0+-100	24546	C4-1/8-T0-1962-F
A10R50	0757-0279	0		RESISTOR 3.16K 1% .125W F TC=0+-100	24546	C4-1/8-T0-3161-F
A10R51	0757-0421	4		RESISTOR 825 1% .125W F TC=0+-100	24546	C4-1/8-T0-825R-F
A10R52	2100-2489	9		RESISTOR-TRMR 5K 10% C SIDE-ADJ 1-TRN	30983	ET50X502
A10R53	0698-0082	7		RESISTOR 464 1% .125W F TC=0+-100	24546	C4-1/8-T0-4640-F
A10R54	0757-0279	0		RESISTOR 3.16K 1% .125W F TC=0+-100	24546	C4-1/8-T0-3161-F
A10R55	0757-0401	0		RESISTOR 100 1% .125W F TC=0+-100	24546	C4-1/8-T0-101-F
A10R56	0698-3447	4		RESISTOR 422 1% .125W F TC=0+-100	24546	C4-1/8-T0-422R-F
A10R57	0698-3447	4		RESISTOR 422 1% .125W F TC=0+-100	24546	C4-1/8-T0-422R-F
A10R58	0757-0447	4		RESISTOR 16.2K 1% .125W F TC=0+-100	24546	C4-1/8-T0-1622-F
A10R59	0757-0420	3		RESISTOR 750 1% .125W F TC=0+-100	24546	C4-1/8-T0-751-F
A10R60	0757-0278	9	1	RESISTOR 1.78K 1% .125W F TC=0+-100	24546	C4-1/8-T0-1781-F
A10R61	0757-0280	3		RESISTOR 1K 1% .125W F TC=0+-100	24546	C4-1/8-T0-1001-F
A10R62	0698-3150	6	1	RESISTOR 2.37K 1% .125W F TC=0+-100	24546	C4-1/8-T0-2371-F
A10R63	0698-3161	9	1	RESISTOR 38.3K 1% .125W F TC=0+-100	24546	C4-1/8-T0-3832-F
A10R64	0698-3447	4		RESISTOR 422 1% .125W F TC=0+-100	24546	C4-1/8-T0-422R-F
A10R65	0698-3447	4		RESISTOR 422 1% .125W F TC=0+-100	24546	C4-1/8-T0-422R-F
A10TP1	1251-0600	0		CONNECTOR-SGL CONT PIN 1.14-MM-BSC-BZ SQ	28480	1251-0600
A10TP2	1251-0600	0		CONNECTOR-SGL CONT PIN 1.14-MM-BSC-BZ SQ	28480	1251-0600
A10TP3	1251-0600	0		CONNECTOR-SGL CONT PIN 1.14-MM-BSC-BZ SQ	28480	1251-0600
A10TP4	1251-0600	0		CONNECTOR-SGL CONT PIN 1.14-MM-BSC-BZ SQ	28480	1251-0600
A10TP5	1251-0600	0		CONNECTOR-SGL CONT PIN 1.14-MM-BSC-BZ SQ	28480	1251-0600
A10TP6	1251-0600	0		CONNECTOR-SGL CONT PIN 1.14-MM-BSC-BZ SQ	28480	1251-0600
A10TP7	1251-0600	0		CONNECTOR-SGL CONT PIN 1.14-MM-BSC-BZ SQ	28480	1251-0600
A10TP8	1251-0600	0		CONNECTOR-SGL CONT PIN 1.14-MM-BSC-BZ SQ	28480	1251-0600
A10TP9	1251-0600	0		CONNECTOR-SGL CONT PIN 1.14-MM-BSC-BZ SQ	28480	1251-0600
A10TP10	1251-0600	0		CONNECTOR-SGL CONT PIN 1.14-MM-BSC-BZ SQ	28480	1251-0600
A10TP11	1251-0600	0		CONNECTOR-SGL CONT PIN 1.14-MM-BSC-BZ SQ	28480	1251-0600
A10U1	1820-0077	2	1	IC FF TTL D-TYPE POS-EDGE-TRIG CLEAR	01295	SN7474N
A10U2	1820-0269	4	1	IC GATE TTL NAND QUAD 2-INP	01295	SN7403N
A10U3	1826-0081	0	1	IC OP AMP WB TO-99	27014	LM318H

See introduction to this section for ordering information
*Indicates factory selected value

Table 6-3. Replaceable Parts

Reference Designation	HP Part Number	C D	Qty	Description	Mfr Code	Mfr Part Number
A11	08755-60035	1	1	BOARD ASSEMBLY-NORMALIZER INTERFACE	28480	08755-60035
A11C1	0160-3456	6	2	CAPACITOR-FXD 1000PF +-10% 1KVDC CER	28480	0160-3456
A11C2	0160-3456	6		CAPACITOR-FXD 1000PF +-10% 1KVDC CER	28480	0160-3456
A11C4	0190-0291	3	2	CAPACITOR-FXD 1UF+-10% 35VDC TA	56289	150D105X9035A2
A11C5	0180-0291	3		CAPACITOR-FXD 1UF+-10% 35VDC TA	56289	150D105X9035A2
A11C6	0180-0197	6		CAPACITOR-FXD 2.2UF+-10% 20VDC TA	56289	150D225X9020A2
A11CR1	1901-0050	3	2	DIODE-SWITCHING 80V 200MA 2NS DO-35	28480	1901-0050
A11CR2	1901-0539	3	1	DIODE-SCHOTTKY	28480	1901-0539
A11CR3	1901-0050	3		DIODE-SWITCHING 80V 200MA 2NS DO-35	28480	1901-0050
A11HP1	1200-0173	5	1	INSULATOR-XSTR DAP-GL	28480	1200-0173
A11HP2	1205-0050	7	1	HEAT SINK TO-5/TO-39-CB	28480	1205-0050
A11P1	08755-20038	0	1	CONNECTOR 32-PIN M BLUE RIBBON	28480	08755-20038
A11Q1	1854-0404	0		TRANSISTOR NPN SI TO-18 PD=360MW	28480	1854-0404
A11Q2	1854-0404	0		TRANSISTOR NPN SI TO-18 PD=360MW	28480	1854-0404
A11Q3	1854-0404	0		TRANSISTOR NPN SI TO-18 PD=360MW	28480	1854-0404
A11Q4	1854-0404	0		TRANSISTOR NPN SI TO-18 PD=360MW	28480	1854-0404
A11Q5	1854-0404	0		TRANSISTOR NPN SI TO-18 PD=360MW	28480	1854-0404
A11R1	0698-3156	2	5	RESISTOR 14.7K 1% .125W F TC=0+-100	24546	C4-1/8-TO-1472-F
A11R2	0698-3156	2		RESISTOR 14.7K 1% .125W F TC=0+-100	24546	C4-1/8-TO-1472-F
A11R3	0698-0084	9		RESISTOR 2.15K 1% .125W F TC=0+-100	24546	C4-1/8-TO-2151-F
A11R4	0757-0280	3		RESISTOR 1K 1% .125W F TC=0+-100	24546	C4-1/8-TO-1001-F
A11R5	0757-0280	3		RESISTOR 1K 1% .125W F TC=0+-100	24546	C4-1/8-TO-1001-F
A11R6	0698-3156	2		RESISTOR 14.7K 1% .125W F TC=0+-100	24546	C4-1/8-TO-1472-F
A11R7	0757-0438	3		RESISTOR 5.11K 1% .125W F TC=0+-100	24546	C4-1/8-TO-5111-F
A11R8	0757-0458	7	1	RESISTOR 51.1K 1% .125W F TC=0+-100	24546	C4-1/8-TO-5112-F
A11R9	0757-0465	6		RESISTOR 100K 1% .125W F TC=0+-100	24546	C4-1/8-TO-1003-F
A11R10	0757-0401	0		RESISTOR 100 1% .125W F TC=0+-100	24546	C4-1/8-TO-101-F
A11R11	0757-0442	9		RESISTOR 10K 1% .125W F TC=0+-100	24546	C4-1/8-TO-1002-F
A11R12	0698-3193	7	6	RESISTOR 10K .25% .125W F TC=0+-50	28480	0698-3193
A11R13	0698-3193	7		RESISTOR 10K .25% .125W F TC=0+-50	28480	0698-3193
A11R14	0698-7793	1	2	RESISTOR 9.9K .25% .125W F TC=0+-100	19701	MF4C1/8-TO-9901-C
A11R15	0757-0442	9		RESISTOR 10K 1% .125W F TC=0+-100	24546	C4-1/8-TO-1002-F
A11R16	0757-0442	9		RESISTOR 10K 1% .125W F TC=0+-100	24546	C4-1/8-TO-1002-F
A11R17	0698-3193	7		RESISTOR 10K .25% .125W F TC=0+-50	28480	0698-3193
A11R18	0698-3193	7		RESISTOR 10K .25% .125W F TC=0+-50	28480	0698-3193
A11R19	0698-3193	7		RESISTOR 10K .25% .125W F TC=0+-50	28480	0698-3193
A11R20	0698-3193	7		RESISTOR 10K .25% .125W F TC=0+-50	28480	0698-3193
A11R21	0698-7793	1		RESISTOR 9.9K .25% .125W F TC=0+-100	19701	MF4C1/8-TO-9901-C
A11R22	0698-3156	2		RESISTOR 14.7K 1% .125W F TC=0+-100	24546	C4-1/8-TO-1472-F
A11R23	0757-0438	3		RESISTOR 5.11K 1% .125W F TC=0+-100	24546	C4-1/8-TO-5111-F
A11R24	0757-0442	9		RESISTOR 10K 1% .125W F TC=0+-100	24546	C4-1/8-TO-1002-F
A11R25	0757-0440	7		RESISTOR 7.5K 1% .125W F TC=0+-100	24546	C4-1/8-TO-7501-F
A11R26	0698-3156	2		RESISTOR 14.7K 1% .125W F TC=0+-100	24546	C4-1/8-TO-1472-F
A11R27	0757-0438	3		RESISTOR 5.11K 1% .125W F TC=0+-100	24546	C4-1/8-TO-5111-F
A11R28	0757-0442	9		RESISTOR 10K 1% .125W F TC=0+-100	24546	C4-1/8-TO-1002-F
A11R29	0757-0440	7		RESISTOR 7.5K 1% .125W F TC=0+-100	24546	C4-1/8-TO-7501-F
A11R30	0757-0401	0		RESISTOR 100 1% .125W F TC=0+-100	24546	C4-1/8-TO-101-F
A11R31	0757-0442	9		RESISTOR 10K 1% .125W F TC=0+-100	24546	C4-1/8-TO-1002-F
A11R32	0757-0442	9		RESISTOR 10K 1% .125W F TC=0+-100	24546	C4-1/8-TO-1002-F
A11R33	0698-3260	9	1	RESISTOR 464K 1% .125W F TC=0+-100	28480	0698-3260
A11R34	0757-0442	9		RESISTOR 10K 1% .125W F TC=0+-100	24546	C4-1/8-TO-1002-F
A11R35	0757-0442	9		RESISTOR 10K 1% .125W F TC=0+-100	24546	C4-1/8-TO-1002-F
A11R36	0757-0442	9		RESISTOR 10K 1% .125W F TC=0+-100	24546	C4-1/8-TO-1002-F
A11S1	3101-2419	8	1	SW-SL DPDT PC M	28480	3101-2419
A11TP1	1251-0600	0		CONNECTOR-SGL CONT PIN 1.14-MM-BSC-BZ SQ	28480	1251-0600
A11TP2	1251-0600	0		CONNECTOR-SGL CONT PIN 1.14-MM-BSC-BZ SQ	28480	1251-0600
A11TP3	1251-0600	0		CONNECTOR-SGL CONT PIN 1.14-MM-BSC-BZ SQ	28480	1251-0600
A11TP4	1251-0600	0		CONNECTOR-SGL CONT PIN 1.14-MM-BSC-BZ SQ	28480	1251-0600
A11TP5	1251-0600	0		CONNECTOR-SGL CONT PIN 1.14-MM-BSC-BZ SQ	28480	1251-0600
A11TP6	1251-0600	0		CONNECTOR-SGL CONT PIN 1.14-MM-BSC-BZ SQ	28480	1251-0600
A11TP7	1251-0600	0		CONNECTOR-SGL CONT PIN 1.14-MM-BSC-BZ SQ	28480	1251-0600
A11U1	1820-1201	6	1	IC GATE TTL LS AND QUAD 2-INP	01295	SN74LS08N
A11U2	1820-1208	3	1	IC GATE TTL LS OR QUAD 2-INP	01295	SN74LS32N
A11U3	1820-1199	1	1	IC INV TTL LS HEX 1-INP	01295	SN74LS04N
A11U4	1826-0582	6	1	IC SWITCH ANLG QUAD 16-DIP-C	27014	LF13201D
A11U5	1820-1437	0	1	IC MV TTL LS MONOSTBL DUAL	01295	SN74LS221N
A11U6	1820-1438	1	1	IC MUXR/DATA-SEL TTL LS 2-TO-1-LINE QUAD	01295	SN74LS257AN
A11U7	1826-0092	3	3	IC OP AMP GP DUAL TO-99	28480	1826-0092
A11U8	1826-0092	3		IC OP AMP GP DUAL TO-99	28480	1826-0092
A11U9	1826-0092	3		IC OP AMP GP DUAL TO-99	28480	1826-0092
A11U10	1826-0367	5	1	IC 78M05C V RGLTR TO-39	04713	MC78M05CG

See introduction to this section for ordering information
*Indicates factory selected value

Table 6-3. Replaceable Parts

Reference Designation	HP Part Number	C D	Qty	Description	Mfr Code	Mfr Part Number
A11VR1	1902-0025	4	5	DIODE-ZNR 10V 5% DO-35 PD=.4W TC=+.06%	28480	1902-0025
A11VR2	1902-3002	3	1	DIODE-ZNR 2.37V 5% DO-7 PD=.4W TC=-.07%%	28480	1902-3002
A11VR4	1902-0025	4		DIODE-ZNR 10V 5% DO-35 PD=.4W TC=+.06%	28480	1902-0025
A11VR5	1902-0025	4		DIODE-ZNR 10V 5% DO-35 PD=.4W TC=+.06%	28480	1902-0025
A11VR6	1902-0041	4	3	DIODE-ZNR 5.11V 5% DO-35 PD=.4W	28480	1902-0041
A11VR7	1902-0041	4		DIODE-ZNR 5.11V 5% DO-35 PD=.4W	28480	1902-0041
A11VR8	1902-0041	4		DIODE-ZNR 5.11V 5% DO-35 PD=.4W	28480	1902-0041
A11VR9	1902-0048	1		DIODE-ZNR 6.81V 5% DO-35 PD=.4W	28480	1902-0048
A11VR10	1902-0048	1		DIODE-ZNR 6.81V 5% DO-35 PD=.4W	28480	1902-0048
A11VR11	1902-0048	1		DIODE-ZNR 6.81V 5% DO-35 PD=.4W	28480	1902-0048
A11VR12	1902-0048	1		DIODE-ZNR 6.81V 5% DO-35 PD=.4W	28480	1902-0048
A11VR13	1902-0025	4		DIODE-ZNR 10V 5% DO-35 PD=.4W TC=+.06%	28480	1902-0025
A11VR14	1902-0025	4		DIODE-ZNR 10V 5% DO-35 PD=.4W TC=+.06%	28480	1902-0025
A11VR15	1902-0184	6	1	DIODE-ZNR 16.2V 5% DO-35 PD=.4W	28480	1902-0184
A12	08755-60036	2	1	ASSEMBLY-MOTHERBOARD	28480	08755-60036
A12J1	1250-0836	2	4	CONNECTOR-RF SMC M PC 50-OHM	28480	1250-0836
A12J2	1250-0836	2		CONNECTOR-RF SMC M PC 50-OHM	28480	1250-0836
A12J3	1250-0836	2		CONNECTOR-RF SMC M PC 50-OHM	28480	1250-0836
A12J4	1250-0836	2		CONNECTOR-RF SMC M PC 50-OHM	28480	1250-0836
A12J5	1251-5244	8	1	CONNECTOR 6-PIN M POST TYPE	28480	1251-5244
A12MP1	0380-0745	6	3	STANDOFF-RVT-ON .187-IN-LG 6-32THD	00000	ORDER BY DESCRIPTION
A12MP2	0380-0745	6		STANDOFF-RVT-ON .187-IN-LG 6-32THD	00000	ORDER BY DESCRIPTION
A12MP3	0380-0745	6		STANDOFF-RVT-ON .187-IN-LG 6-32THD	00000	ORDER BY DESCRIPTION
A12TP1	1251-0600	0		CONNECTOR-SGL CONT PIN 1.14-MM-BSC-SZ SQ	28480	1251-0600
A12TP2	1251-0600	0		CONNECTOR-SGL CONT PIN 1.14-MM-BSC-SZ SQ	28480	1251-0600
A12TP3	1251-0600	0		CONNECTOR-SGL CONT PIN 1.14-MM-BSC-SZ SQ	28480	1251-0600
A12TP4	1251-0600	0		CONNECTOR-SGL CONT PIN 1.14-MM-BSC-SZ SQ	28480	1251-0600
A12TP5	1251-0600	0		CONNECTOR-SGL CONT PIN 1.14-MM-BSC-SZ SQ	28480	1251-0600
A12TP6	1251-0600	0		CONNECTOR-SGL CONT PIN 1.14-MM-BSC-SZ SQ	28480	1251-0600
A12TP7	1251-0600	0		CONNECTOR-SGL CONT PIN 1.14-MM-BSC-SZ SQ	28480	1251-0600
A12XA5	1251-2035	9	4	CONNECTOR-PC EDGE 15-CONT/ROW 2-ROWS	28480	1251-2035
A12XA6	1251-2035	9		CONNECTOR-PC EDGE 15-CONT/ROW 2-ROWS	28480	1251-2035
A12XA7	1251-0213	1		CONNECTOR-PC EDGE 15-CONT/ROW 1-ROW	28480	1251-0213
A12XA8	1251-0213	1		CONNECTOR-PC EDGE 15-CONT/ROW 1-ROW	28480	1251-0213
A12XA9	1251-0213	1		CONNECTOR-PC EDGE 15-CONT/ROW 1-ROW	28480	1251-0213
A12XA10	1251-2035	9		CONNECTOR-PC EDGE 15-CONT/ROW 2-ROWS	28480	1251-2035
A12XA11	1251-2035	9		CONNECTOR-PC EDGE 15-CONT/ROW 2-ROWS	28480	1251-2035

See introduction to this section for ordering information
*Indicates factory selected value

Table 6-3. Replaceable Parts

Reference Designation	HP Part Number	C D	Qty	Description	Mfr Code	Mfr Part Number
				CHASSIS PARTS		
J1	1251-1864	0	3	CONNECTOR 5-PIN F CIRC AUDIO (DETECTOR CABLE A)	28480	1251-1864
J2	1251-1864	0		CONNECTOR 5-PIN F CIRC AUDIO (DETECTOR CABLE A)	28480	1251-1864
J3	1291-1864	0		CONNECTOR 5-PIN F CIRC AUDIO (DETECTOR CABLE B)	28480	1251-1864
J4	1250-0118	3	1	CONNECTOR-RF BNC FEM SGL-HOLE-FR 50-OHM (MODULATOR DRIVE)	28480	1250-0118
J5	1251-0198	1	1	CONNECTOR-PC EDGE 6-CONT/ROW 2-ROWS	28480	1251-0198
J6	1251-6781	0	1	CONN RCPT 3 M (ALT SWP INTERFACE)	25480	1251-6701
P1	08755-00007	1	1	DEFLECTION OUTPUT CONNECTOR	28480	08755-00007
R1	2100-3192	3	2	RESISTOR-VAR PREC WW 10-TRN 5K 5% (CHANNEL 1 VERNIER)	28480	2100-3192
R2	2100-3192	3		RESISTOR-VAR PREC WW 10-TRN 5K 5% (CHANNEL 2 VERNIER)	28480	2100-3192
R3	2100-3421	1	1	RESISTOR-VAR CONTROL CCP 5K 20% LIN (HORIZ GAIN ADJUST)	01121	WA4G0408502M2
S1	3100-3057	0	2	SWITCH-ROTARY 0,812 STRUT CTR 9PCG; 2 (CHANNEL 1 VERNIER, ON/OFF) ORDER REPLACEMENT KIT 08755-60019	28480	3100-3057
S2	3100-3057	0		SWITCH-ROTARY 0,812 STRUT CTR 9PCG; 2 (CHANNEL 2 VERNIER, ON/OFF) ORDER REPLACEMENT KIT 08755-60019	28480	3100-3057
W1	08755-60015	7	1	CABLE ASSEMBLY-YELLOW	28480	08755-60015
	1250-1164	1	4	CONNECTOR-RF SMC FEM UNMTD 50-OHM	28480	1250-1164
	1250-1169	6	4	NUT-RF CONN,SUB MIN,50 OHM,REAR ASSY FOR	98291	9435-94
	1250-1172	1	4	CONTACT-RF CONN SUBMIN SERIES	98291	3000-14
	1250-1173	2	4	INSUL-RF CONN,SUB MIN,50 OHM,FRONT INSUL	98291	3000-10
	1250-1175	4	4	SLEEVE-RF CONN 0,150IN OD; 0,122 IN	98291	6100-42
W2	08755-60016	8	1	CABLE ASSEMBLY-RED	28480	08755-60016
	1250-1164	1		CONNECTOR-RF SMC FEM UNMTD 50-OHM	28480	1250-1164
	1250-1169	6		NUT-RF CONN,SUB MIN,50 OHM,REAR ASSY FOR	98291	9435-94
	1250-1172	1		CONTACT-RF CONN SUBMIN SERIES	98291	3000-14
	1250-1173	2		INSUL-RF CONN,SUB MIN,50 OHM,FRONT INSUL	98291	3000-10
	1250-1175	4		SLEEVE-RF CONN 0,150IN OD; 0,122 IN	98291	6100-42
W3	08755-60017	9	1	CABLE ASSEMBLY-BLUE	28480	08755-60017
	1250-1164	1		CONNECTOR-RF SMC FEM UNMTD 50-OHM	28480	1250-1164
	1250-1169	6		NUT-RF CONN,SUB MIN,50 OHM,REAR ASSY FOR	98291	9435-94
	1250-1172	1		CONTACT-RF CONN SUBMIN SERIES	98291	3000-14
	1250-1173	2		INSUL-RF CONN,SUB MIN,50 OHM,FRONT INSUL	98291	3000-10
	1250-1175	4		SLEEVE-RF CONN 0,150IN OD; 0,122 IN	98291	6100-42
W4	08755-60018	0	1	CABLE ASSEMBLY-WHITE	28480	08755-60018
	1250-1164	1		CONNECTOR-RF SMC FEM UNMTD 50-OHM	28480	1250-1164
	1250-1169	6		NUT-RF CONN,SUB MIN,50 OHM,REAR ASSY FOR	98291	9435-94
	1250-1172	1		CONTACT-RF CONN SUBMIN SERIES	98291	3000-14
	1250-1173	2		INSUL-RF CONN,SUB MIN,50 OHM,FRONT INSUL	98291	3000-10
	1250-1175	4		SLEEVE-RF CONN 0,150IN OD; 0,122 IN	98291	6100-42
W5	08755-60038	4	1	CABLE ASSEMBLY-FRONT PANEL	28480	08755-60038
				MISCELLANEOUS PARTS		
	0360-1190	9	1	TERMINAL-SLDR LUG PL-MTG FOR-#3/8-SCR (VERNIER)	28480	0360-1190
	0370-0914	0	17	BEZEL-PB KNOB,.490LG,.330W,.165HI,JADE (VERNIER)	28480	0370-0914
	0370-0929	7	2	KNOB-LEVER SWITCH .200 X .220 X.375 IN (VERNIER)	28480	0370-0929
	0370-1001	8	2	KNOB-BASE 3/8 JGK .125-IN-ID (VERNIER)	28480	0370-1001
	0370-1125	7	1	KNOB-CONC-PTR 1/2 JGK .125-IN-ID (LOCK KNOB)	28480	0370-1125
	0370-2486	5	17	PUSHBUTTON .230X.390X.397 IN HI JADE	28480	0370-2486
	0624-0203	9	6	SCREW-TPG 4-40 .375-IN-LG 82 DEG	00000	ORDER BY DESCRIPTION
	0624-0359	6	10	SCREW-TPG 5-40 .375-IN-LG PAN-HD-POZI	00000	ORDER BY DESCRIPTION
	1400-0053	4	2	CLAMP-CABLE .172-DIA .375-WD NYL (FRONT PANEL)	28480	1400-0053
	1400-0866	7	1	CLAMP-CABLE .187-DIA .25-WD NYL (MOTHERBOARD)	28480	1400-0866
	1490-0848	4	3	BUSHING-PNL .126-ID .3-LG 1/4-32-THD (REF POSITION AND GAIN)	28480	1490-0848
	2190-0369	9	2	WASHER-FL NM 1/4 IN .253-IN-ID	28480	2190-0369
	3050-0124	9	1	WASHER-FL MTLC NO. 9 .13-IN-ID	28480	3050-0124
	3050-0762	1	1	WASHER-FL NM NO. 4 .125-IN-ID .438-IN-OD	28480	3050-0762

See introduction to this section for ordering information
*Indicates factory selected value

Table 6-3. Replaceable Parts

Reference Designation	HP Part Number	C D	Qty	Description	Mfr Code	Mfr Part Number
	5040-0345	7	2	INSULATOR:CONNECTOR (MODULATOR DRIVE)	28480	5040-0345
	7120-2359	9	1	PLATE-SERIAL .625-IN-WD 1.5-IN-LG AL	28480	7120-2359
	7120-4163	7	2	LABEL-WARNING .5-IN-WD 1-IN-LG AL	28480	7120-4163
	8120-3179	9	1	ALT SWEEP INTERFACE CABLE	28480	8120-3179
	08558-00047	0	2	CAM-LATCH	28480	08558-00047
	08558-00048	1	1	CATCH	28480	08558-00048
	08558-20041	6	1	GUIDE RAIL-BOTTOM	28480	08558-20041
	08558-40015	6	1	HOUSING-LATCH	28480	08558-40015
	08559-20006	4	1	SHAFT-LATCH	28480	08559-20006
	08755-00003	7	1	PANEL-REAR	28480	08755-00003
	08755-00004	8	2	PANEL-SIDE	28480	08755-00004
	08755-00005	9	1	GUIDE	28480	08755-00005
	08755-00006	0	1	COVER-MODULE	28480	08755-00006
	08755-00028	6	1	PANEL-FRONT	28480	08755-00028
	08755-00029	7	1	PANEL-SUB-FRONT	28480	08755-00029
	08755-00030	0	2	LEVER SWITCH (VERNIER)	28480	08755-00030
	08755-20009	5	4	MODULE SECTION	28480	08755-20009
	08755-20010	8	1	MODULE END	28480	08755-20010
	08755-20039	1	2	NUT-KNURLED (VERNIER)	28480	08755-20039

See introduction to this section for ordering information
*Indicates factory selected value

BACK DATING MANUAL CHANGES

SECTION VII
MANUAL BACKDATING CHANGES

7-1. INTRODUCTION

7-2. This manual has been written for and applies directly to instruments with serial numbers prefixed as indicated on the title page. Earlier versions of the instrument (serial number prefixes lower than the one indicated on the title page) may be slightly different in design or appearance. The purpose of this section of the manual is to document these differences. With the information provided in this section, this manual can be corrected so that it applies to any earlier version or configuration of the instrument. Later versions of the instrument (serial number prefixes higher than the one indicated on the title page) are documented in a yellow Manual Changes Supplement.

7-3. Since there are no earlier versions of the HP Model 8755C Swept Amplitude Analyzer there is no change information provided here. This manual applies directly to instruments with serial numbers prefixed as indicated on the title page. If your instrument serial number is different than the one on the title page, it will be documented in a yellow Manual Changes Supplement. Complimentary copies of this supplement can be obtained from your nearest Hewlett-Packard Office. Refer to INSTRUMENTS COVERED BY MANUAL in Section 1 for more information about serial number coverage.

SERVICE INFORMATION

SECTION VIII
SERVICE

8-1. INTRODUCTION

8-2. This section provides instruction for testing, troubleshooting, and repairing the Model 8755C Swept Amplitude Analyzer. Major assemblies are shown in Figure 8-1. Schematic diagram notes are given in Figure 8-2. Model 11664A Detector information is included in Figure 8-2 as an example to show complete signal flow and power supplies through a typical detector used.

NOTE

The Model 11664A Detector schematic is used only as an example. Refer to the specific Model 11664A/B/C Detector or Model 11666A Reflectometer Bridge Operating and Service Manual of the detector used for complete service information.

8-3. SAFETY CONSIDERATIONS

8-4. This section contains warnings and cautions that must be followed for your protection and to avoid damage to the equipment.

WARNING

Maintenance described herein is performed with power supplied to the instrument, and protective covers removed. Such maintenance should be performed only by service-trained personnel who are aware of the hazards involved (for example, fire and electrical shock). Where maintenance can be performed without power applied, the power should be removed.

Before any repair is completed, ensure that all safety features are intact and functioning, and that all necessary parts are connected to their protective grounding means.

8-5. PRINCIPLES OF OPERATION

8-6. Detailed circuit description for each individual schematic diagram is placed on the facing left-hand foldout page. This places material needed for printed-circuit level diagnosis in one location and allows easy correlation between function and specific circuit.

8-7. TROUBLESHOOTING

8-8. Troubleshooting is generally divided into two maintenance levels in this manual. The first is the assembly level, which isolates the cause of a malfunction to a circuit or assembly. A simplified troubleshooting block diagram is given in Figure 8-3 to show overall instrument operation. A detailed block diagram is given in Figure 8-4 to provide further aid in fault diagnosis.

8-9. The second maintenance level isolates the trouble to the component level. Schematic diagrams are provided of each individual assembly plus a detailed circuit description to aid in troubleshooting down to the component level within the assembly. Parts location diagrams or photos for each assembly are supplied to aid in component identification for troubleshooting and replacement purposes.

8-10. Table 8-1 is a cross-reference of the Service Sheet numbers and Assembly Reference Designator numbers. This may be used to quickly find an assembly on a particular service sheet, particularly when the assembly schematic is divided among several service sheets.

8-11. RECOMMENDED TEST EQUIPMENT

8-12. Test equipment and accessories required to maintain the Model 8755C are listed in Table 1-5. If the equipment listed is not available, equipment that meets the minimum specifications shown may be substituted.

*Table 8-1. Assembly/Service Sheet Cross-reference**

Assembly	Service Sheet 1	Service Sheet 2	Service Sheet 3	Service Sheet 4	Service Sheet 5	Service Sheet 6
A1			X			
A2			X			
A3		P/O	X			
A4		X			P/O	
A5	P/O	P/O	P/O	P/O	P/O	P/O
A6	P/O	X				
A7	X	P/O				
A8	X	P/O				
A9	X	P/O				
A10				X	P/O	
A11		P/O		P/O	P/O	P/O
A12	P/O	P/O		P/O	P/O	X
Front Panel	P/O		P/O	P/O	P/O	
Display Mainframe				P/O	P/O	P/O
8350A Sweep Oscillator					P/O	
8750A Storage-Normalizer					P/O	

* P/O denotes only part of assembly is on the Service Sheet specified; X denotes complete assembly is on the Service Sheet specified.

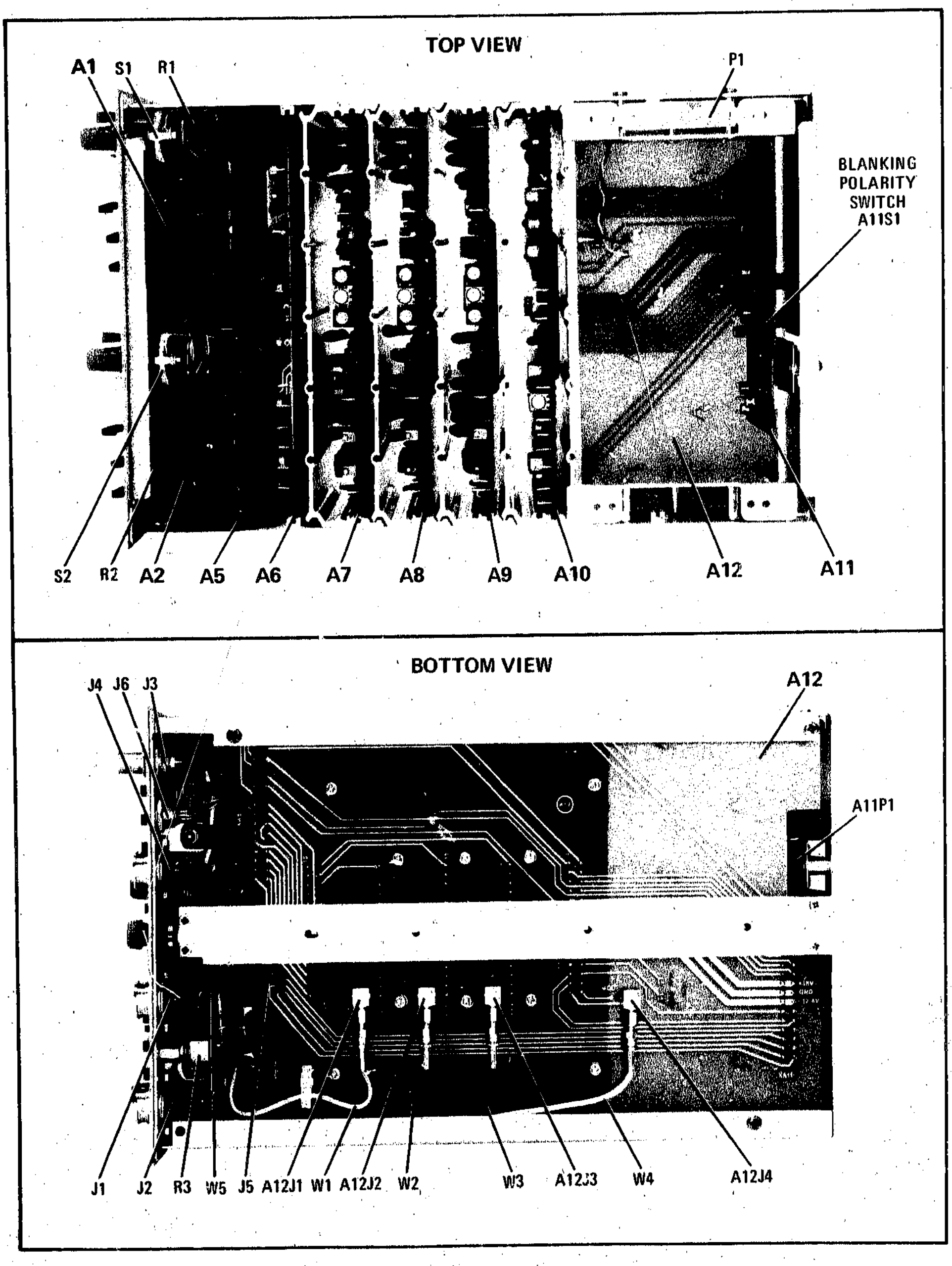


Figure 8-1. Major Assemblies Location

SCHEMATIC DIAGRAM NOTES (Cont'd.)

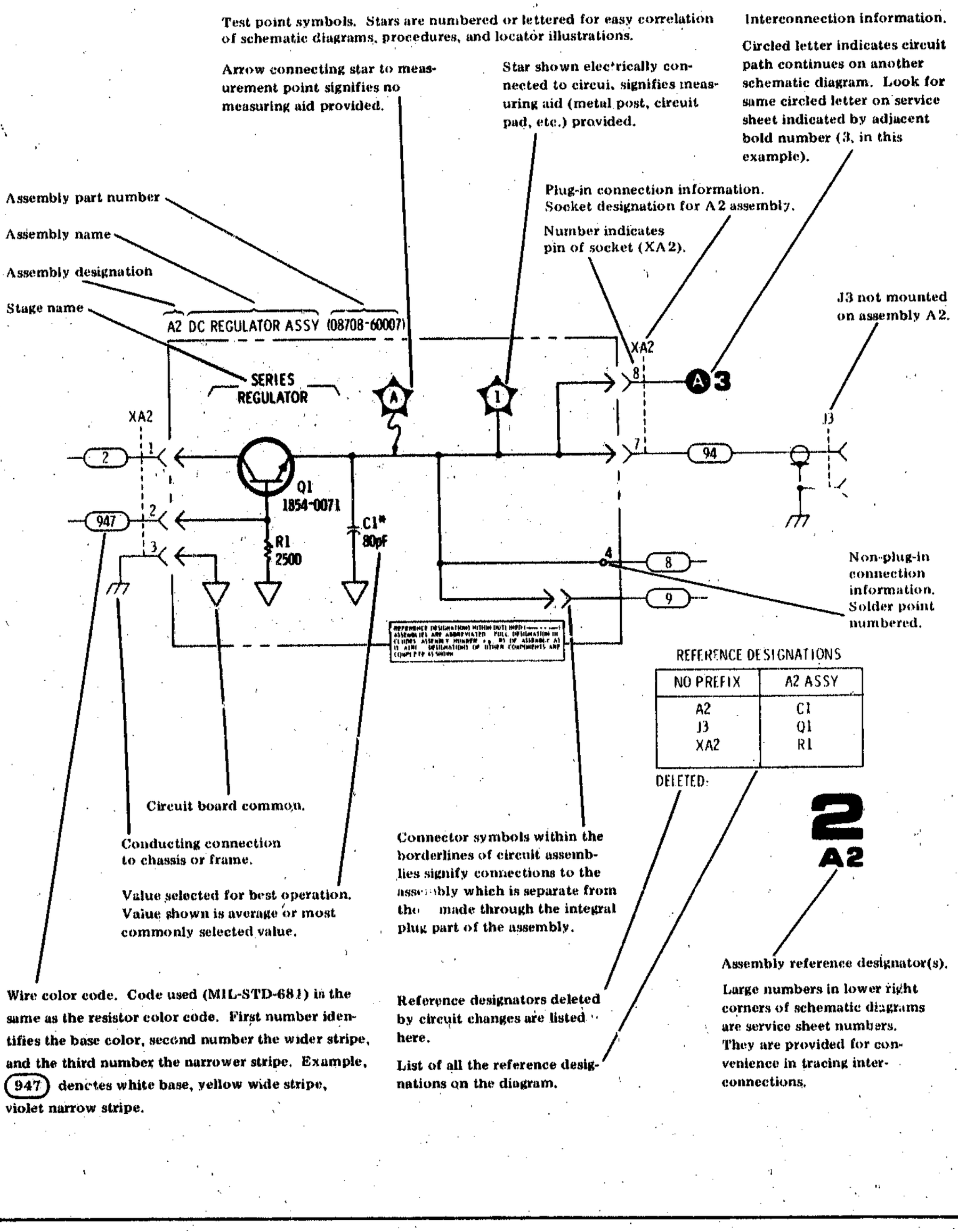


Figure 8-2. Schematic Diagram Notes (1 of 4)

SCHEMATIC DIAGRAM NOTES (Cont'd.)

For symbols not shown, refer to USA Standard Y32.2—1967 "Graphic Symbols for Electrical and Electronic Diagrams."

Logic Symbols used conform to MIL-STD-806B (Military Standard 806B) "Graphic Symbols for Logic Diagrams."

Resistance is in ohms, capacitance is in picofarads, and inductance is in microhenries unless otherwise noted.

P/O = part of.

* Asterisk denotes a factory-selected value. Value shown is typical. Capacitors may be omitted or resistors jumpered.

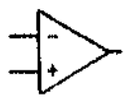
⊘	Screwdriver adjustment
○	Panel control
▭	Encloses front panel designations
⬚	Encloses rear panel designation
——— - - ———	Circuit assembly borderline
- - - - - - -	Other assembly borderline
——→	Heavy line with arrows indicates path and direction of main signal.
- - → - -	Heavy dashed line with arrows indicates path and direction of main feedback.
	Wiper moves toward CW with clockwise rotation of control as viewed from shaft or knob.
	Numbers in stars on circuit assemblies show locations of test points.
	Encloses wire color code. Code used (MIL-STD-681) is the same as the resistor color code. First number identifies the base color, second number the wider stripe, and the third number identifies the narrower strip, e.g., (947) denotes white base, yellow wide stripe, violet narrow stripe.
	Light-emitting diode.
	Voltage regulator (breakdown diode).

Figure 8-2. Schematic Diagram Notes (2 of 4)

SCHEMATIC DIAGRAM NOTES (Cont'd.)

Denotes Field Effect transistor (FET) with N-type base.

Denotes FET with P-type base.



Operational Amplifier (integrated circuit).

Voltages noted within circuits are measured with respect to chassis ground and have a ± tolerance.

■ Square pad on parts location diagrams denotes placement of:

transistor emitter, diode cathode, electrolytic capacitor anode, test points, and pin 1 of packaged components (ie. op amps, integrated circuits, and resistor arrays).

Conditions for waveforms and dc voltages on schematics are as follows:

a. Connect equipment as shown in test setup at right with thermistor mount connected to RF OUTPUT.

b. Set 8350A for Δ sweep across the band of interest. Adjust 83525A POWER LEVEL control for −3 dBm indication on power meter.

c. Disconnect thermistor mount and connect Detector R to modulator.

d. Set 8755C controls for both Channel 1 and 2 as follows:

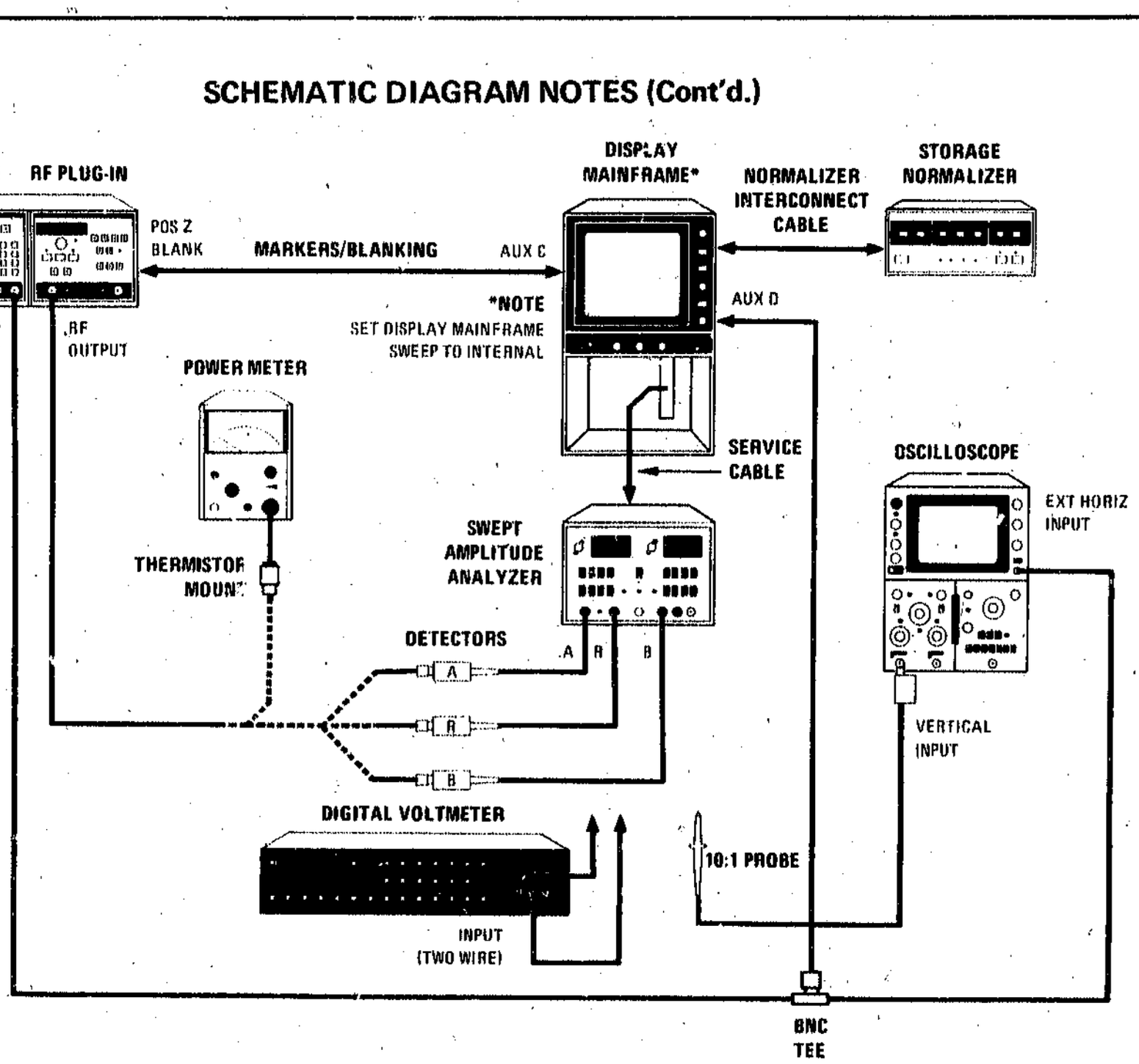
VERNIER ON-OFF SWITCH	OFF
REFERENCE LEVEL Switches	−00
dB/DIV	10
DISPLAY	POSITION
VIDEO FILTER	Out

e. Adjust CHANNEL 1 REFERENCE POSITION screwdriver adjustment to place the trace two large divisions below the center graticule line.

f. Adjust CHANNEL 2 REFERENCE POSITION screwdriver adjustment to place the trace two large divisions above the center graticule line.

g. Press both DISPLAY R pushbuttons.

Figure 8-2. Schematic Diagram Notes (3 of 4)



NOTE

When checking A7 or A9 27.8 kHz Log Amplifier, connect Detector A (for A7) or Detector B (for A9) to the modulator.

CAUTION

Do not apply more than +20 dBm RF power or ±10 volts dc to the detectors or damage may result.

EQUIPMENT:

Swept Amplitude Analyzer/Scope	HP 8755C/182T
Power Meter and Thermistor Mount	HP 432A/8478B
Detectors (3 required)	HP 11664A/B
Sweep Oscillator	HP 8350A
RF Section	HP 83525A (0.01 - 8.4 GHz)
Oscilloscope	HP 180A/1801A/1820A
DC Digital Voltmeter	HP 3455A
Service Cable	HP5060-0303
Storage-Normalizer	HP 8750A

Figure 8-2. Schematic Diagram Notes (4 of 4)

BLOCK DIAGRAM DESCRIPTION

Figure 8-3 shows a Simplified Block Diagram and Figure 8-4 shows a Detailed Block Diagram of the Model 8755C Swept Amplitude Analyzer. The Model 8755C is designed to make swept measurements of return loss, insertion loss or gain, and power at microwave frequencies. A typical Model 8755C Frequency Response Test Set consists of a Model 8755C, a 180 "T"-series display mainframe, three Model 11664A/B Detectors, and a swept signal source which is square wave modulated at a 27.8 kHz rate.

The 27.8 kHz square wave modulated RF signal is applied to the three Model 11664A/B Detectors. These three detectors are identical and may be interchanged on the channel A, R, and B inputs. The Model 11664A/B Detectors consist of a biased Schottky-barrier diode, impedance matching components, and a preamplifier. The output from the three detectors is a 27.8 kHz rectangular wave and each output is applied to a separate channel log amplifier. Each log amplifier assembly (A7, A8 and A9 board) is identical to the others. The 27.8 kHz signal from the detector is applied to a capacitor which converts the positive going rectangular wave input to a balanced rectangular wave centered at 0 volts. The signal is then amplified by a X2 input amplifier and fed to a 27.8 kHz bandpass filter where the balanced rectangular wave is converted to a 27.8 kHz sine wave containing the signal information. From the bandpass filters, the 27.8 kHz signals are coupled to identical log shaping amplifiers. The output of these amplifers is rectified and the result is a logarithmic representation of the signal applied to the Model 11664A/B Detectors. The dc signals at this point equal 50 mV/dB of input signal.

From the log shaping amplifiers, the dc signals are then applied to the A6 Processor board with offsets controlled by the front panel Reference Level lever switches and Offset Vernier (when switched on). The dB/DIV switches control the gain of these summing amplifiers. At the output of these amplifiers, the signal path may be grounded by the Reference Position Pushbutton for calibration purposes or the Video Filter switch may be used to place a capacitor across the signal path to filter the noise component of the signal. Since the bandwidth of the Model 8755C is reduced when the Video Filter is used, it may be necessary to reduce the sweep speed of the source in order to get an accurate reproduction of the signal being viewed.

The two signals are then sent to the Channel 1 and Channel 2 Summing Amplifiers on the A11 Storage-Normalizer assembly where the signals may be offset by the independent channel Reference Position adjustments. When a channel is turned off (by popping out all DISPLAY pushbuttons), the corresponding A11 summing amplifier is forced to negative saturation. This condition is used by the Model 8750A Storage-Normalizer to generate a line across the bottom of the CRT if used in the Alternate Sweep mode with one 8755C channel turned off. The Model 8750A Storage-Normalizer, when used, interfaces with the Model 8755C through the A11 Normalizer Interface board. Channel 1 and 2 information is routed to the Storage-Normalizer through a single Storage-Normalizer Interface Cable connected to the rear panel of the display mainframe. Both Channel 1 and 2 are routed to the Storage-Normalizer and the processed signals from both channels are fed back to the Channel 1 signal path. The A11 Normalizer Interface also accepts and processes the horizontal sweep and marker/blanking signals and synchronizes operation with the sweep oscillator when using the alternate sweep mode of operation.

The signals are the sent to the A10 Modulator Driver which contains a multiplex function, dual channel CRT deflection drivers, and a 27.8 kHz modulation driver assembly with a front panel output.

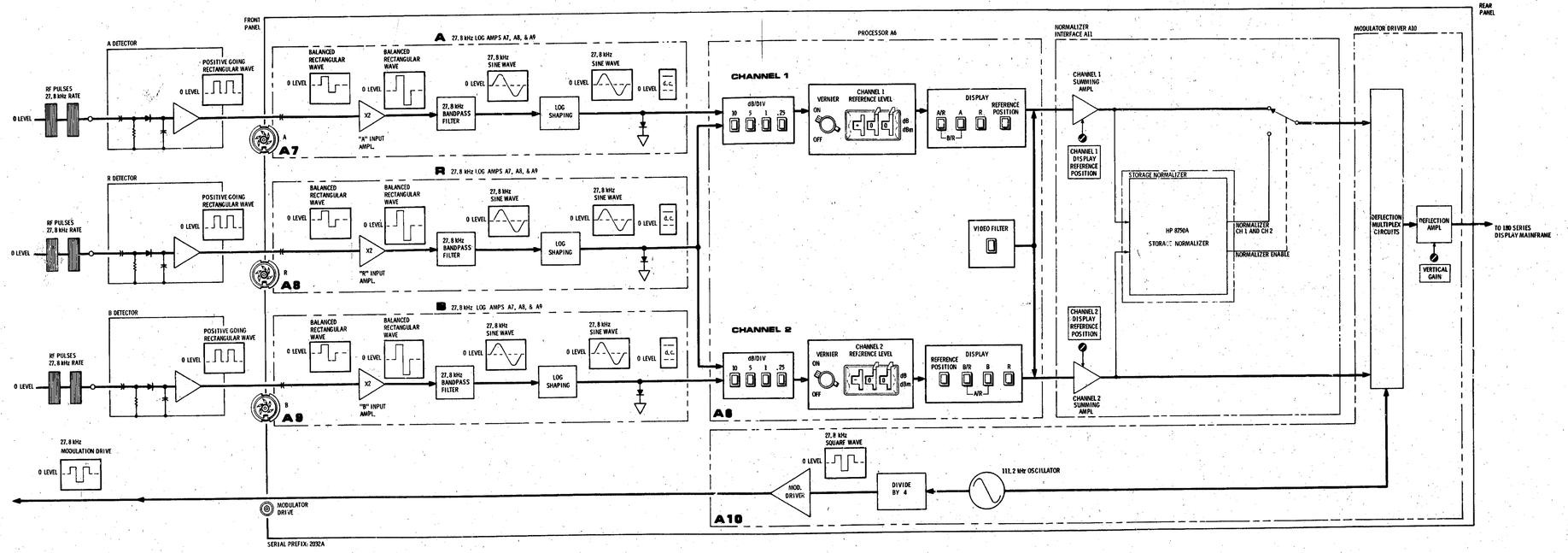
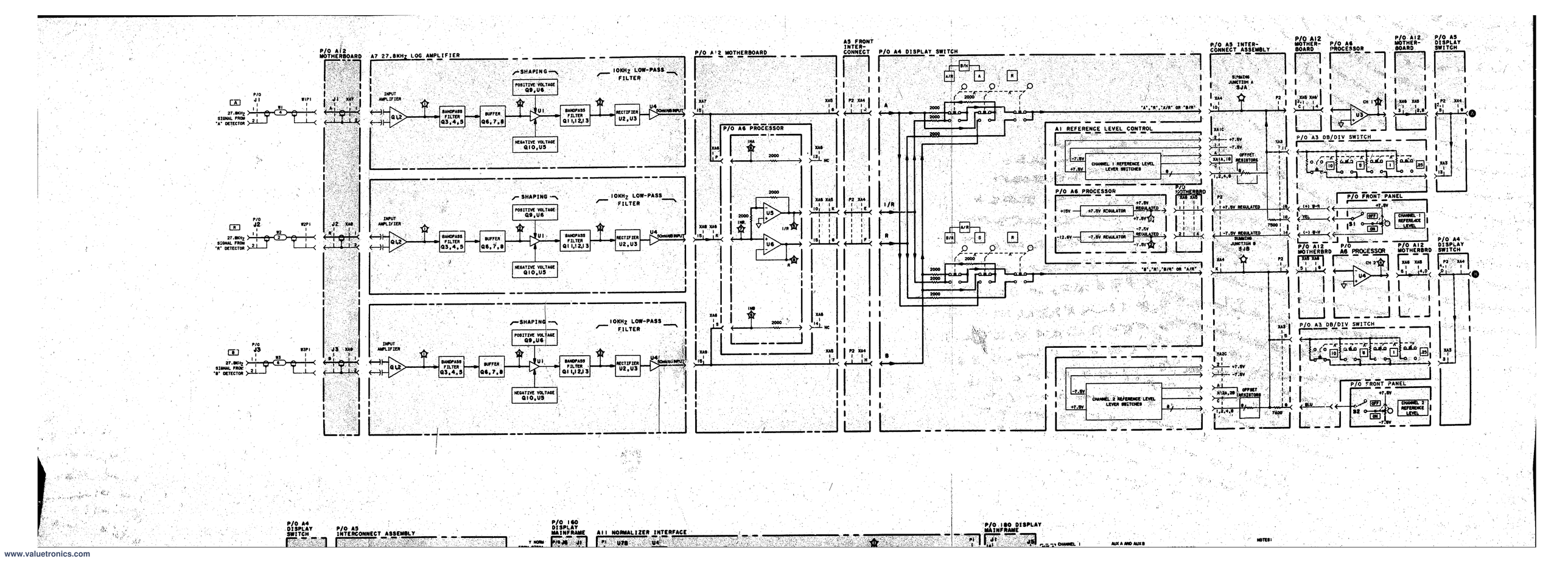


Figure 8-3. Model 8755C Simplified Block Diagram

SERVICE INFORMATION

CON'T



Model 11664A Detector Circuit Description

Figure 8-5 shows a simplified schematic of one of the 11664A Detectors. The three detectors are identical and may be interchanged. They consist of a hot carrier diode, impedance matching components, and an amplifier or preamp.

A more detailed schematic of the Model 11664A is shown in Figure 8-6.

CAUTION

Do not apply more than +20 dBm RF power or ±10 volts dc to the detectors or damage may result.

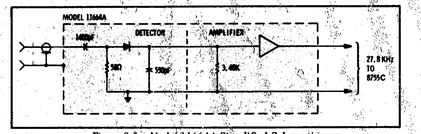


Figure 8-5 Model 11664A Simplified Schematic

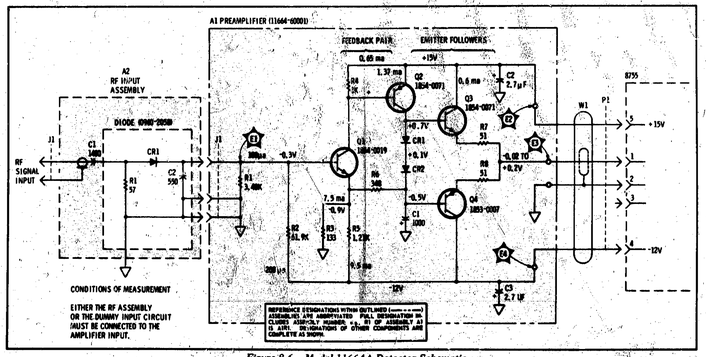


Figure 8-6. Model 11664A Detector Schematic

SERVICE SHEET 1

CIRCUIT DESCRIPTION

Input Amplifier

The 27.8 kHz signal from the 11664A/E Detector is fed to one of three identical amplifiers: A7, A8, or A9 in the 8755C. The signals are taken through front panel connectors to the amplifiers and applied to the input stage, Q1, Q2, and Q3, which has an overall gain of about 2. Q1 and Q2 form a differential amplifier which has good common mode rejection. Any signal that comes in on pins 1 and 2 in common will have no effect.

27.8 kHz Amplifier Bandpass Filter

R16 through C13 and emitter follower Q4 form an active low pass filter. C15 through R30 and Q5 and Q6 form an active high pass filter. Together they form a bandpass filter at 27.8 kHz with a passband 10 kHz wide. Q4 has a gain of about one and forms one pole of the low pass filter. Q5 and Q6 together have a gain of about one and form one pole of the high pass filter. Q7 and Q8 provide the drive to the logger U1.

Log Amplifier

U1 is a log amplifier. It provides an output signal which changes linearly with the RF power applied to the detectors. For low power levels (up to ≅−20 dBm) the output signal from the hot carrier diode detector is proportional to the RF input power. In this region, U1 acts a a true logarithmic converter. As the RF level increases, the output signal of the detector increases less than linearly, and finally approaches the region where it only changes as the square root of the RF power. For those signal levels, the amplifier (U1) has to provide a gain which is greater than the true logarithm in order to make up for signal compression in the detector. The output signal of U1 changes 50 mV per dB change in RF power applied to the detector over a range of 60 dB (which corresponds to approximately 100 dB change in detector output level).

The output level of U1 will vary from 0 to 4V peak-to-peak for a variation of 100 dB at its input.

The hybrid IC Log Amp contains 12 log amplifiers and 4 voltage amplifiers. Five log stages are fed by the input signal through a divider string. The remaining stages are fed through voltage amplifiers. As each log amplifier reaches the upper limit of its log region, the next log amplifier is turned on. R67, R70, and R74 are used to adjust the point at which some of the log amplifiers turn on and thus affect the overall shape of the input/output characteristic. The output of all the log stages are summed, amplified and appear at the IC's output. The gain of the voltage amplifier is temperature compensated by controlling the supply voltage using two temperature sensing diodes located on the IC chip. In order to reduce crosstalk between the three channels, each hybrid log amplifier is decoupled from the main supply line by its own power supply.

Rectifier

U2, U3, and the associated circuitry form a full wave rectifier. The 27.8 kHz signal is applied to U2's inverting input. The positive portion of U2's output is passed through CR8 and fed back to the input through R53. The gain of U2 for the positive going output is R53/R43 or about 1. The negative portion of U2's output is fed back through CR7. The gain for the negative output is about zero. The output of U2 (input to U3) is then a half wave rectified signal which is the opposite polarity of the negative portion of the input signal. The input signal is also fed to U3 through R49 and R54. U3 then has two input signals. The gain of U3 for the signal from U2 is R62/R59 or about 2. The gain of U3 for the signal which bypasses U2 is R62/R54 + R49 or about 1. The signal from U2 which is amplified by 2 occurs at the same time as the negative portion of the bypassed signal. The result is a full wave rectified signal at TP5 with a ripple frequency of 2 times 27.8 kHz. If the two signals at the input to U3 have the proper amplitude and phase relationship there will be no component of the original 27.8 kHz frequency. The proper amplitude relationship is maintained by designing R49, R54, and C33 for a phase shift to compensate for the delay through U2.

U2's response when the signal is passing through the zero crossover point is improved by forward coupling the input signal through C32 into the IC.

R58 provides a variable negative bias to U3's inverting input. The amount of offset is adjusted to obtain a zero dBm indication with 0 dBm peak power applied to the Model 11664A/B Detector. Detector.
(This signal would actually measure −3 dBm average power on a power meter because it is square-wave modulated in the modulator.)

10 kHz Low Pass Filter

R65 through C44 and U4 is an active low pass filter with a 3 dB cut off frequency of 10 kHz. Although attenuated, any signal at 27.8 kHz could still pass through this filter. However, the full wave rectified ripple frequency of 55.6 kHz will be greatly attenuated and should not appear at the output at TP6.

Positive and Negative Regulated Power Supplies with Temperature Compensation

Figure 8-7 shows the positive and negative power supply circuit. The −2.5V and +5V power supplies for the logger decouple the logger from the mainframe power supplies to reduce any 27.8 kHz signal on the mainframe power supplies from affecting the logger output. In addition to decoupling, the logger power supplies also compensate for temperature variations in the logger. Without compensation, any increase in temperature would cause the logger gain to increase. However, by changing the power supply voltages, inversely proportional to temperature, the logger gain will remain constant.

The negative supply output is in the emitter circuit of Q10. The emitter circuit provides the logger and the positive supply with about −2.5 Vdc. The −2.5V is also the reference voltage for Operational Amplifier U5 through a feedback path consisting of R14, R22, and the two temperature sensing diodes. U5 pin 2 is a virtual ground. Feedback current is determined primarily by +15/R23 or about 2.67 mA. Because of the high input impedance of U5, this current flows through R14 and the temperature sensing diodes. About 1.13V is dropped across R14 and about 1.32V across the diodes when the output voltage is −2.5V. The output voltage is then $E_0 = I_0 R14$ + Voltage across the diodes. The current is relatively constant and the voltage drop across the diodes changes inversely with temperature. Therefore, an increase in temperature will cause the −2.5V supply to go in a positive direction.

Figure 8-8 shows a simplified diagram of the −2.5V supply and Figure 8-9 shows the +5V supply. The −2.5V supply output voltage is the input to the +5V supply. The gain of this supply is R52/R50 or about 2.37. The output at the junction of R44 and R52 is about 6V. About 1V is dropped across R55 and R56 so the output to the logger is about 5V. As the output of the −2.5V supply goes toward zero as a result of temperature increase the +5V output also goes toward zero. The combined action of both supplies will maintain the logger gain constant.

SERVICE SHEET 1 (Cont'd.)

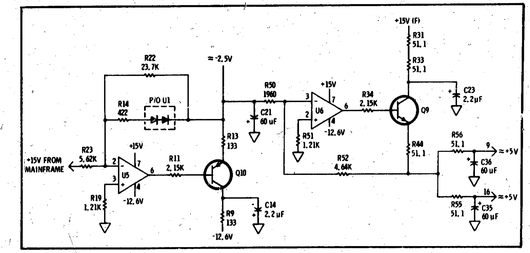


Figure 8-7. Positive and Negative Power Supplies

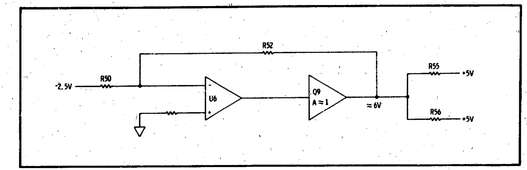


Figure 8-8. −2.5V Supply Simplified Diagram

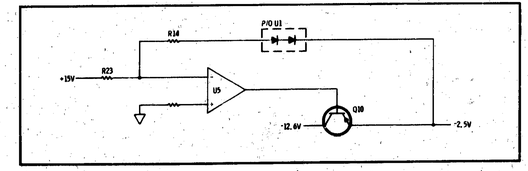


Figure 8-9. +5V Supply Simplified Diagram

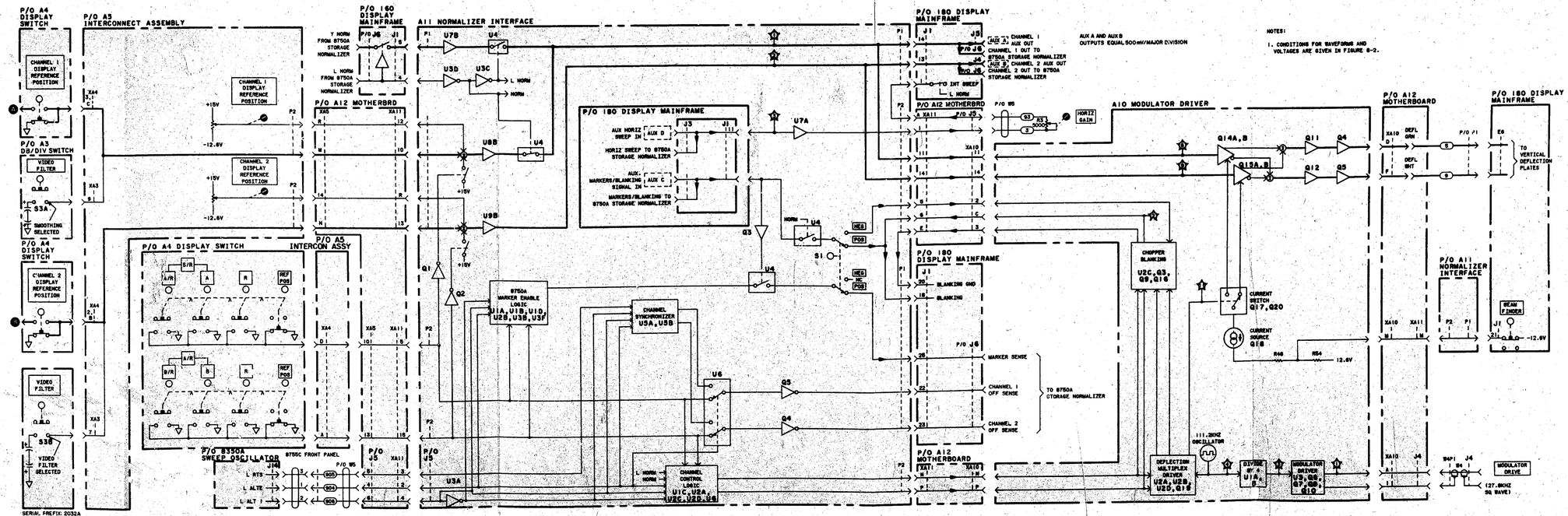


Figure 8-4. Model 8755C Detailed Block Diagram

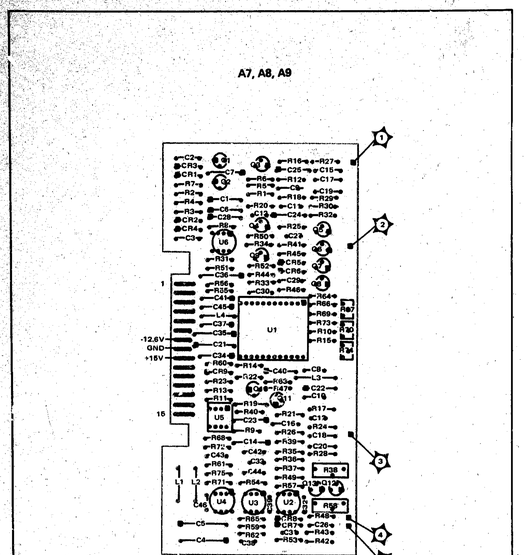
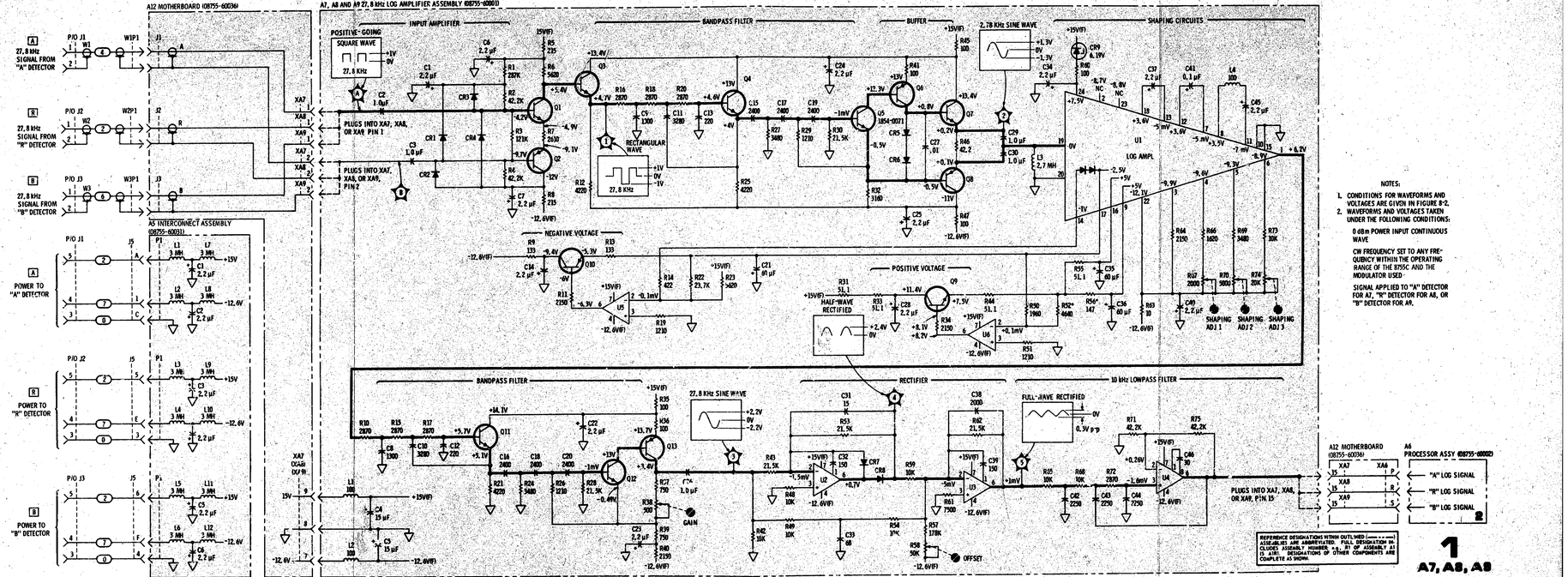


Figure 8-10. A7, A8, and A9 27.8 kHz Log Amplifier Parts Identification



NOTES:

1. CONDITIONS FOR WAVEFORMS AND VOLTAGES ARE GIVEN IN FIGURE 8-2.
2. WAVEFORMS AND VOLTAGES TAKEN UNDER THE FOLLOWING CONDITIONS:

   0 dBm POWER INPUT CONTINUOUS WAVE

   CW FREQUENCY SET TO ANY FREQUENCY WITHIN THE OPERATING RANGE OF THE 8755C AND THE MODULATOR USED

   SIGNAL APPLIED TO "A" DETECTOR FOR A7, "R" DETECTOR FOR A8, OR "B" DETECTOR FOR A9.

Figure 8-11. A7, A8, A9 27.8 kHz Log Amplifier Schematic

SERVICE SHEET 2

CIRCUIT DESCRIPTION

±7.5V Power Supplies

The Plus and Minus 7.5V Power Supplies are shown on Service Sheet 2. The input of the −7.5V supply at U2 pin is the output of the +7.5V supply. Since U2 has a gain of one (R23/R12), the output of the −7.5V supply is the input level with the opposite polarity.

The input of the +7.5V supply at U1 pin 3 is referenced to the −7.5V output through R10, R11, and CR5. The input voltage and the gain of U1 is adjusted using R11 for a +7.5V output.

If the +7.5 volts increases, the −7.5V will go more negative, decreasing the input to U1. With no polarity inversion in U1 and with a gain of about 6, the output of U1 will return to +7.5V which will return the output of U2 to −7.5V.

If U1 opens, both supplies will go to zero. If U2 opens, the −7.5V would go to zero but the +7.5V supply would go to +15V.

SERVICE SHEET 2 (Cont'd.)

Processor Assembly

The dc output of each 27.8 kHz Amplifier Assembly (A7, A8, and A9 boards) is fed to the A6 Processor Board where the "A" and "B" inputs are available at TP6 and TP9, respectively. The "R" input is applied to two operational amplifiers. Op amp U6 is non-inverting and its output is "R" at TP8. Op amp U5 is inverting and its output becomes "1/R" at TP5. These signals are all then routed through the A12 Motherboard and A5 Interconnect Board to the A4 Display Switch Assembly where they are switched and summed according to the front panel Display switch positions. Channel 1 switch path is shown in Figure 8-12 and is identical to the Channel 2 switch path.

Because these signals have a logrithmic relationship to the detected RF signal, they may be directly summed in the A4 Display Switch and resistor network. By summing signals "A" and "1/R" for instance, A + 1/R (or A − R) becomes A/R. Switch S1B, as controlled by the front panel Display A pushbutton, selects the "A" or "B" signal to be summed with the "1/R" signal. Switch S1A, as controlled by the front panel Display A/R pushbutton, selects the "A/R" or "B/R" ratio signal. Switch S1C, as controlled by the front panel Display R pushbutton, selects the output of S2A or the "R" signal. Both "A/R" and "B/R" signals are available in either Channel 1 or Channel 2 when the Display A and A/R or Display B and B/R are depressed simultaneously as illustrated on the front panel. The output from S1C is sent to the A6 Processor Board output summing amplifiers.

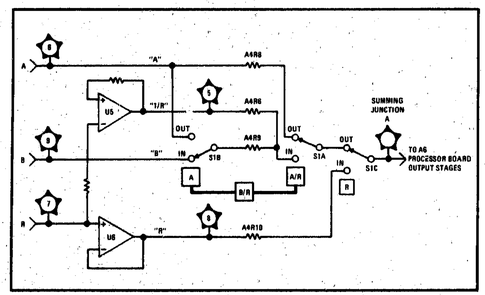


Figure 8-12. A6 Processor Board Channel 1 Input and Switching

SERVICE SHEET 2 (Cont'd.)

Channel 1 and Channel 2 Processor Board output stages are identical. The display sensitivity (dB/Div) is selected by switching in alternate feedback resistors for the op amp. Diodes A6CR1 through A6CR4 limit the maximum input to the op amp. The output signal at A6TP3 and A6TP4 can be filtered or smoothed by switching in filter capacitors with the front panel VIDEO FILTER switch. Also, the signal path is grounded when the front panel REFERENCE POSITION switch is pressed. This prevents any input signal from affecting the positioning of the display trace.

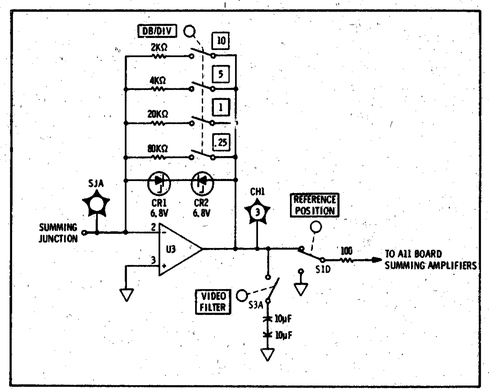


Figure 8-13. Channel 1 (or 2) Processor Board Output

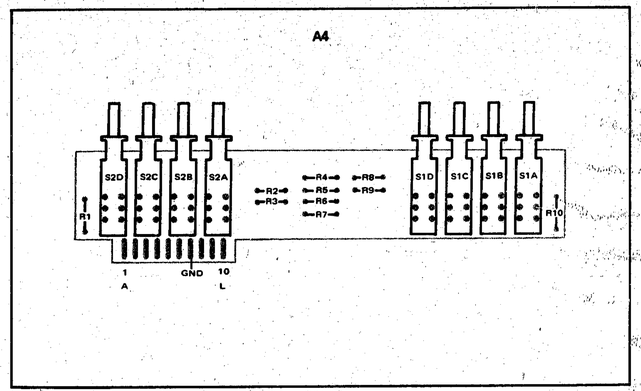


Figure 8-14. A4 Display Switch, Parts Location

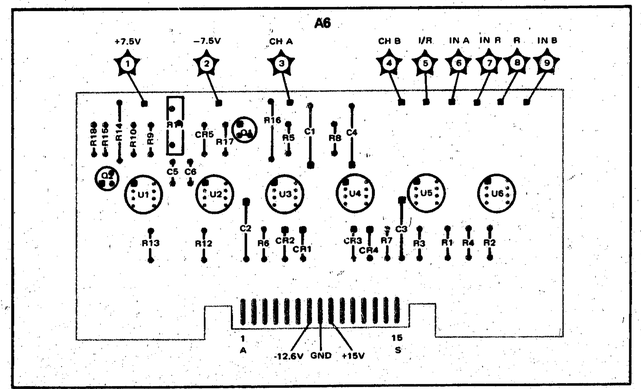


Figure 8-15. A6 Processor Assembly, Parts Location

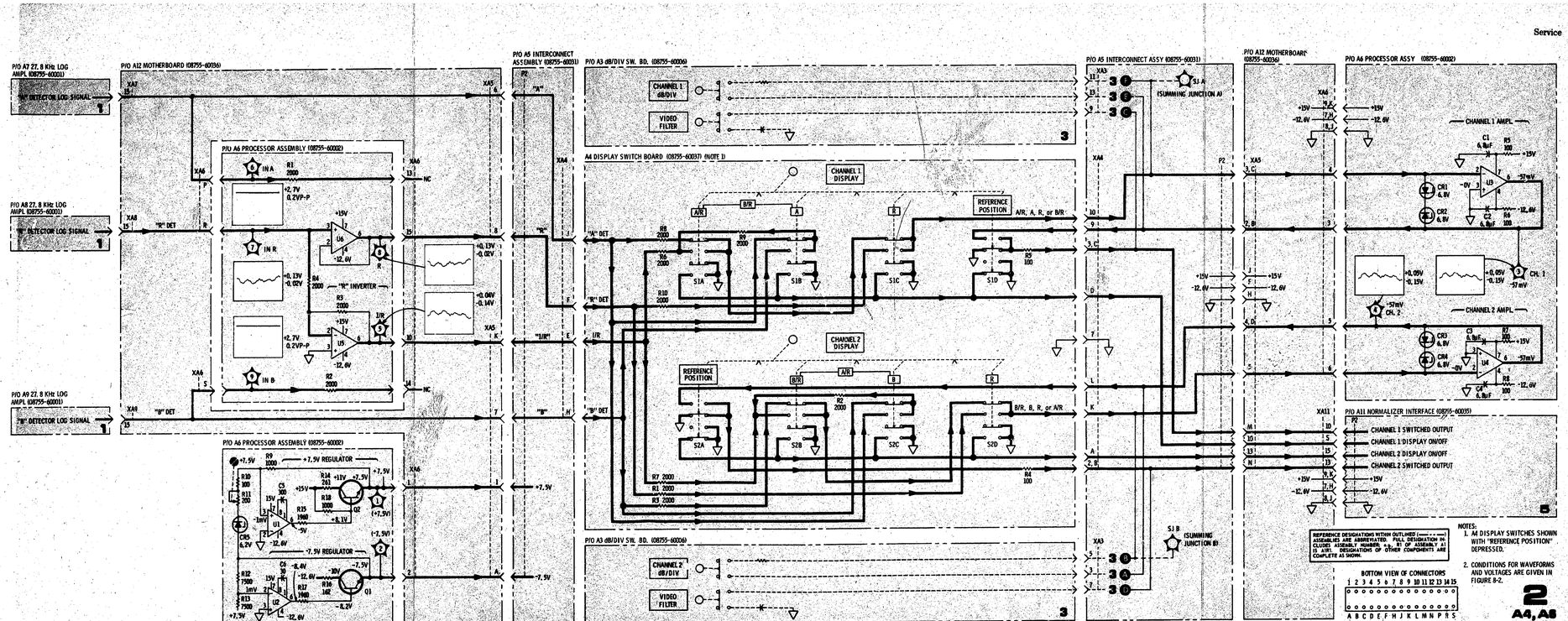


Figure 8-16. A6 Processor and A4 Display Switches Schematic

SERVICE SHEET 3

CIRCUIT DESCRIPTION

Figure 8-17 shows a simplified schematic of the offset circuit. The offset circuit feeds current to the summing junction that simulates input signals to offset the display. Fixed offsets of up to 99 dB may be obtained by selecting the appropriate front panel polarity and OFFSET switches. A variable offset of up to 40 dB may be obtained by adjusting the front panel OFFSET CAL adjust. The input signals plus the offset are applied to the summing junctions.

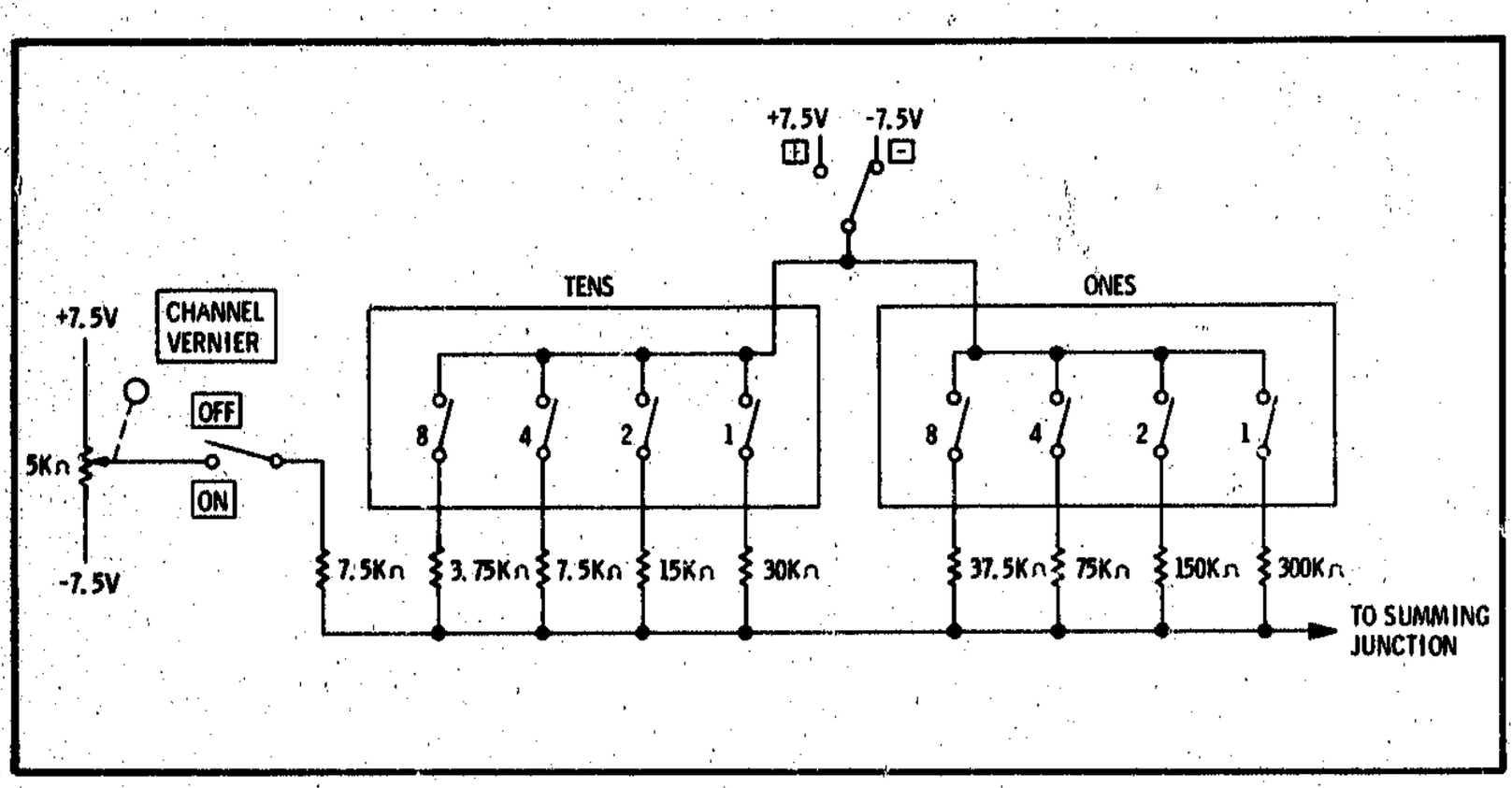


Figure 8-17. Reference Level Switch

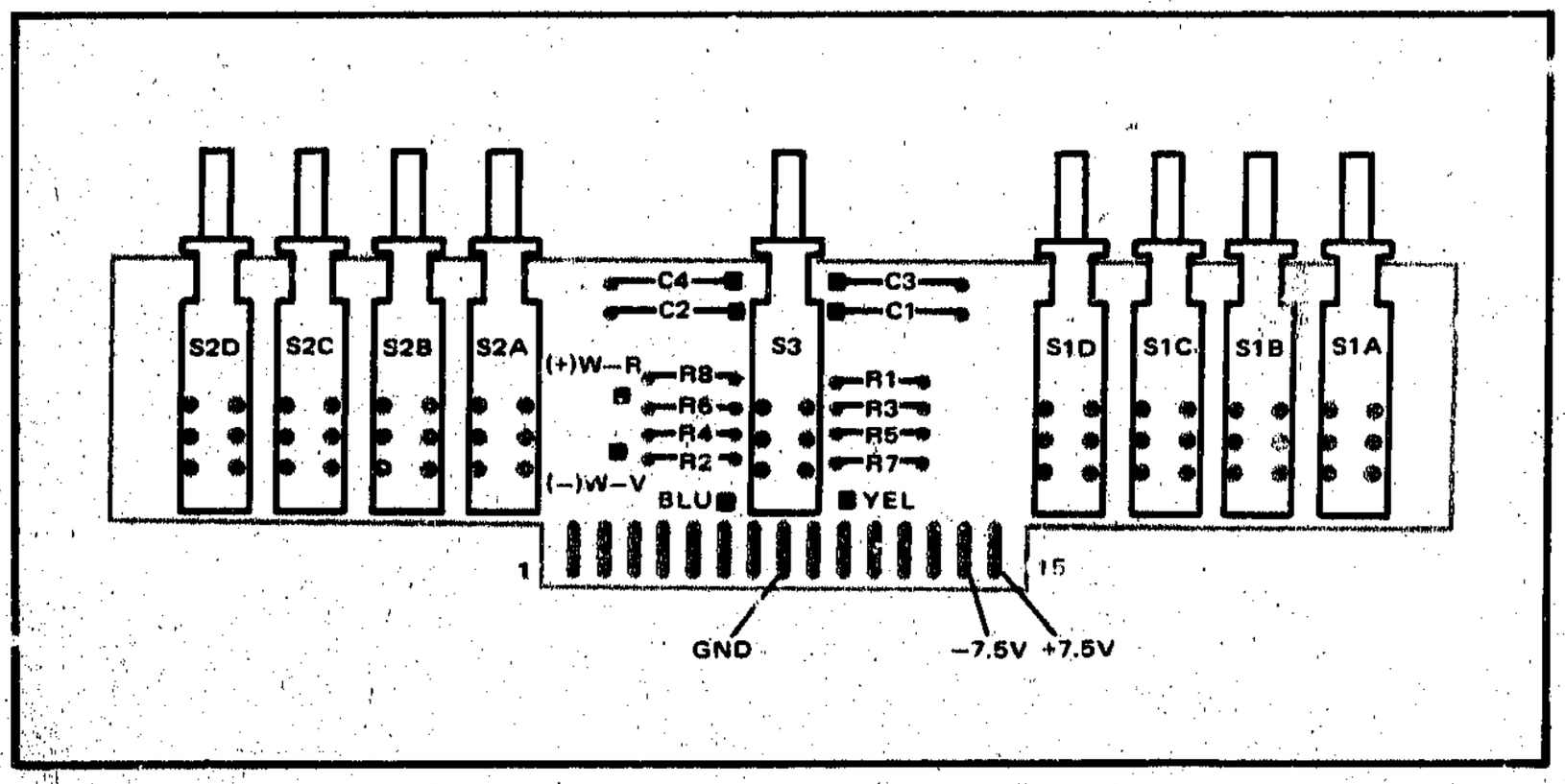
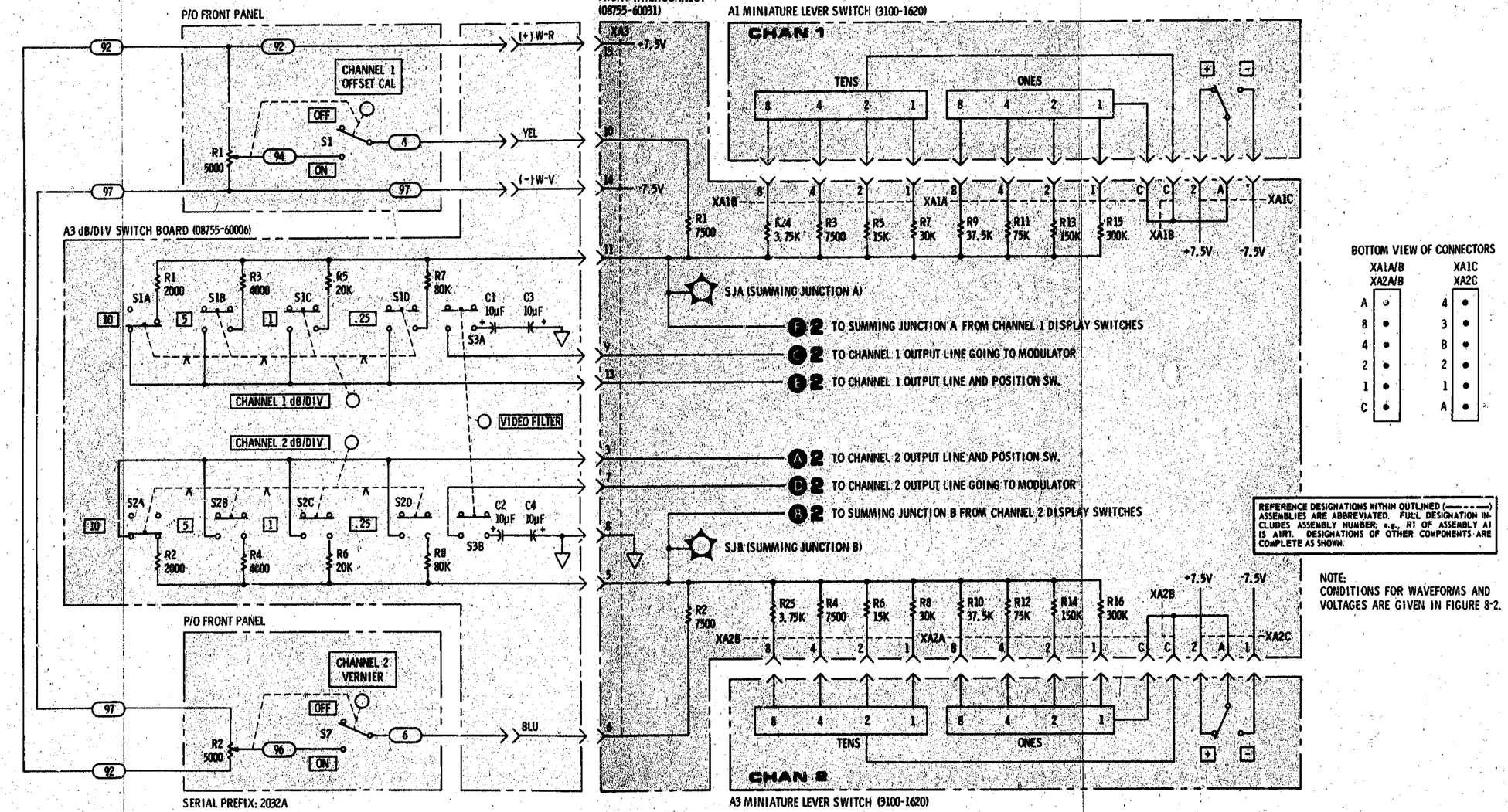


Figure 8-18. A3 dB/Division Switch, Parts Location



3
A1, A2, A3, A5

Figure 8-19. A3 dB/Division Switch and A1 and A2 Offset Switches, Schematic

SERVICE SHEET 4

CIRCUIT DESCRIPTION

111.2 kHz Oscillator

Q1 and Q2 form a 111.2 kHz ±4 kHz oscillator (4 x 27.8 kHz). The frequency is detemined by C1 and R5. Q13 is a buffer to prevent oscillator pulling. The oscillator ouput from the buffer is applied to the multiplex driver circuit which selects the display (Channel 1 only, Channel 2 only, or chopped) and to the modulator dual "D" flip-flop which is a divide by 4 circuit to provide the 27.8 kHz modulation signal.

Deflection Multiplex Driver

The Multiplex Driver turns the Deflection Multiplexer signals paths on and off as determined by the CHANNEL 1 and 2 CONTROL lines from the A11 Normalizer Interface board. The display is controlled by these lines directly as explained in the Channel Control circuit description on Service Sheet 5. Table 8-2 shows the Deflection Multiplex Driver Signals when used without the Model 8750A Storage-Normalizer and when not in the Alternate Sweep Mode.

Table 8-2. A10 Multiplex Driver Signals

Channel 1	Channel 2	U2B			U2A			U2D			TP11	CRT
(XA10-N)	(XA10-P)	5	4	6	1	2	3	13	12	11		
H	H	H	L	H	H	H	L	L	⊓	H	H	Blanked
H	L	L	L	H	H	H		L	⊓	H	H	Ch. 2 Trace Only
L	H	H	H	L	L	H	H	H	⊓	L*	L	Ch. 1 Trace Only
L	L	L	H	⊓*	L	H	H	H	⊓	⊓	⊓	Chopped Mode

⊓ = Squarewave

* = Affected by both sections B and D inputs

SERVICE SHEET 4 (Cont'd.)

Chopper Blanker

The chopper blanking circuit blanks the display during the transition time in the chopped mode. It will also accept a −5 volt negative blanking pulse from the A11 Storage Normalizer board to control the Chopper Blanker circuit.

When dual or chopped mode is selected, the chopper circuit feeds a signal from the 111.2 kHz oscillator to TP11 through Q19. One output is taken from the emitter of Q19 and at the same time a signal of opposite polarity is taken from the collector. These two signals are differentiated in the chopper blanking circuit. A negative trigger is then developed for each transition of the input waveforms. Each negative trigger turns the blanker on which supplies a current pulse to the Model 180 display mainframe to blank the display during the transition time.

Q16 acts as a switch to send a −5 volt negative blanking pulse to the Chopper Blanker. This pulse comes from a sweep oscillator which has a −5 volt blanking output (such as the HP 8690-series Sweep Oscillators). It is routed to the AID Modulator Driver assembly through the A11 Normalizer Interface assembly and the display mainframe rear panel BNC connector (labeled AUX C on Model 180 "T"-series and Option 807 display mainframes only). Switch A11S1 must be set to the NEG position to allow the negative blanking signal to pass through the A11 Normalizer Interface Assembly.

For sweep oscillators with a positive blanking pulse, retrace blanking is connected to the AUX C input (on Model 180 "T"-series or Option 807 display mainframes) and A11S1 is set to the POS position.

NOTE

On unmodified display mainframes (without the AUX C rear panel input) sweep oscillators with a positive blanking pulse may be connected to the display mainframe rear panel Z-axis input. On display mainframes with the AUX C input, use the AUX C input, NOT the Z-axis input. The Z-axis input is not routed to the Model 8750A Storage-Normalizer as the AUX C input is.

Q18 is a current source for differential amplifier Q17 and Q20. A high (or positive) at TP11 turns Q20 on and Q17 off. When turned on, Q20 is a current source for Channel 2 differential amplifier Q15A and Q15B. Ground is applied to the Channel 2 differential amplifier reference leg at TP10 and the Channel 2 input signal is applied at TP9. Each of the two outputs from the collectors in the differential amplifier are fed through common-base voltage amplifiers, Q11 and Q12, and then through emitter followers Q4 and Q5 directly to the CRT deflection plates.

A positive input at TP9 would result in a negative going voltage on the lower deflection plate. At the same time, conduction through Q15B would decrease conduction through Q12 which would result in a positive going voltage on the upper deflection plate causing the CRT electron beam to deflect up.

When Q20 is turned off and Q17 is turned on, the action of the Channel 1 circuits are the same as the corresponding circuits in Channel 2.

SERVICE SHEET 4 (Cont'd.)

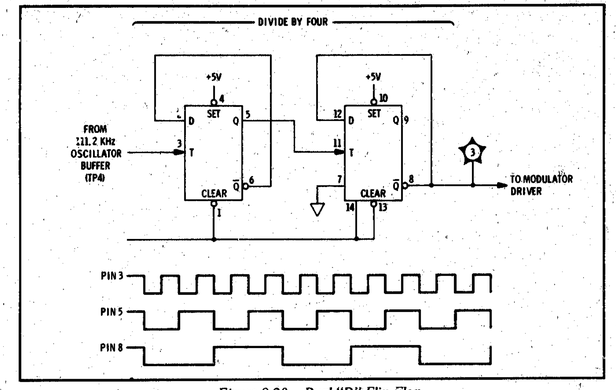


Figure 8-20. Dual "D" Flip-Flop

Divide by 4

The divide by four circuit is a dual "D" type flip-flop. In a "D" type flip-flop, a low at either the set or clear input will prevent the flip-flop from changing states. In this case these inputs are tied to +5 volts so the flip-flop is enabled at all times.

Each "D" type flip-flop will only change state when its input signal or trigger input goes negative. Therefore, each "D" type flip-flop is a divide by two circuit or the dual "D" flop-flop is a divide by four circuit.

Modulator Driver

The output of the dual "D" flip-flop is fed to a filter to increase the rise and decay time of the 27.8 kHz square wave. The signal is then applied to differential amplifier U3. The input to this IC is about 4 V p-p and the output is about 12 V p-p. The output is fed to a Darlington Pair, and the output drivers Q6 and Q7 provide current gain to drive the modulator. The driver output is fed to the modulator through a coaxial cable which is floating. The current return path is through the shield of the coaxial cable. All of the current must return through this shield and the shield must not make contact with ground or ground loops may occur and reduce the instrument's dynamic range.

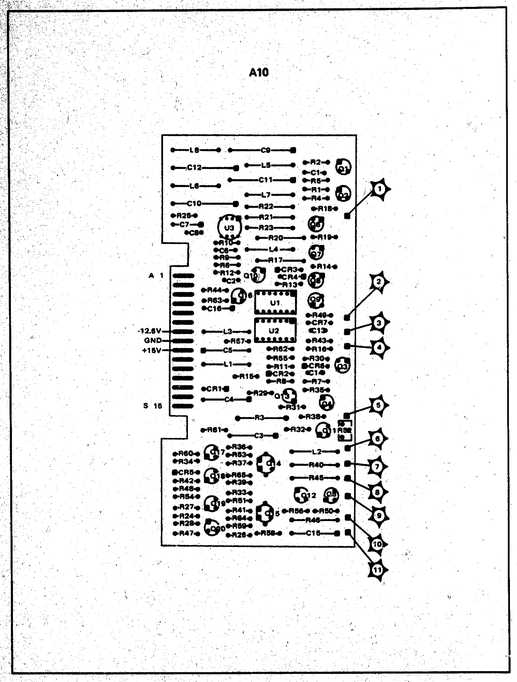


Figure 8-21. A10 Modulator Driver, Parts Location

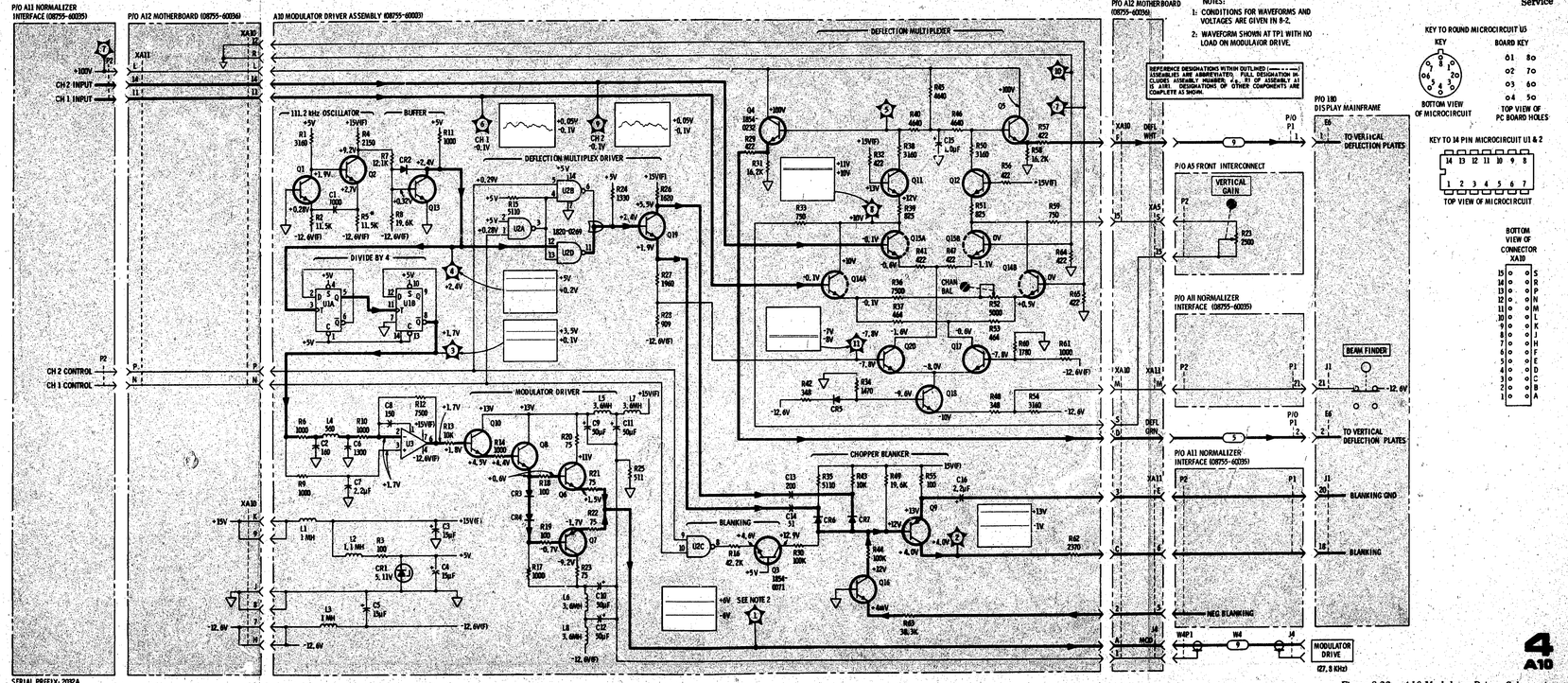


Figure 8-22. A10 Modulator Driver, Schematic

SERVICE SHEET 5

A11 NORMALIZER INTERFACE

CIRCUIT DESCRIPTION

The A11 Normalizer-Interface board provides three major functions:

- It provides the interface with the display mainframe through A11P1 which supplies all power to the Model 8755C. Signal information for the display mainframe rear panel auxiliary outputs as well as marker, blanking, and horizontal sweep information is routed through A11P1.
- Multiplexing of a remote vertical deflection signal from the Model 8750A Storage-Normalizer is provided on the A11 Normalizer Interface board.
- Alternate Sweep Interface Cable connections to the A11 board from appropriate sweep oscillators having alternate sweep capabilities (such as the Model 8350A Sweep Oscillator) control channel syncronization within the Model 8755C. Pre-programmed sweep information in two separate storage registers in the sweep oscillator will alternately be output. The Alternate Sweep Interface Cable connection insures that these alternating sweeps will be routed to the appropriate channel in the Model 8750A Storage-Normalizer for processing, controls marker processing in the Model 8750A, and controls channel and marker operation in the Model 8755C as well.

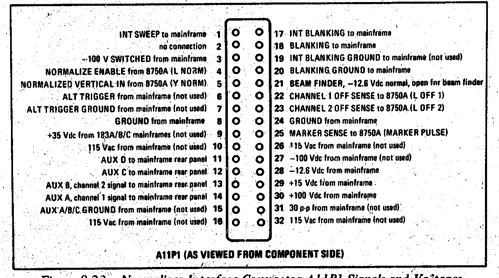


Figure 8-23. Normalizer Interface Connector A11P1 Signals and Voltages

Summing Amplifiers

Dual operational amplifier U8A and U8B sums the Channel 1 vertical deflection voltage (500mV/div) to the offset voltage from the channel 1 REFERENCE POSITION control. The output of U8B is switched by analog switch U4 to the Deflection Multiplexer on the A10 board. The Channel 2 vertical deflection signal and REFERENCE POSITION control offset voltage are summed by U9A

SERVICE SHEET 5 (Cont'd.)

and U9B and fed directly to the A10 board. Auxiliary outputs A and B on the display mainframe rear panel are taken from the output of the Channel 1 and 2 summing amplifiers to drive peripheral equipment such as a pen recorder or A/D convertor. VR9, VR10, VR11, and VR12 provide overvoltage protection on these outputs. The AUX A and AUX B outputs equal 500mV/major CRT division.

Channel 1 or 2 DISPLAY ON/OFF lines are grounded through the A4 Display Switch assembly when any channel DISPLAY pushbutton is selected for that channel. This turns off the appropriate transistor switch, Q1 or Q2, and the summing amplifier sums only the vertical deflection voltage and the offset voltage from the REFERENCE POSITION SWITCH. When a channel is turned off (all DISPLAY pushbuttons popped out), the DISPLAY ON/OFF line for that channel is pulled to +5V by R23 or R27. This turns Q1 or Q2 on which switches +15V into the appropriate summing amplifier input. The summing amplifier saturates and the output to the A10 Modulator Driver and the auxiliary output for the channel is clamped at approximately –7.5V by VR9 and VR10 or VR11 and VR12. When used with the Model 8750A, the channel which is turned off will then be deflected to the bottom edge of the CRT. A defined state at the auxiliary output thus occurs when the channel is turned off.

The remote deflection information from the Model 8750A Storage-Normalizer is fed to non-inverting amplifier U7B. Pins 2, 3, 6, and 7 of analog switch U4 form a SPDT switch to select either the output from Channel 1 Summing Amplifier U8B or the normalized vertical output from U7B. This switch is controlled by the Model 8750A via the Normalize Enable line (LNORM) which is LOW when the normalizer is enabled.

Blanking and Marker Processing

When switch S1 is in the NEG position, blanking from the Model 8690 series Sweep Oscillators (-5V blanked), applied to the AUX C input of the Model 180 "T"-series or Option 807 display mainframes, is routed through analog switch U4 and switch S1 to the blanking circuitry on the A10 board. When switch S1 is in the POS position, blanking and intensity marker pulses from the Model 8620 series Sweep Oscillators (-5V markers / +5V blanking) are routed through analog switch U4 and switch S1 and are returned to the display mainframe via the BLANKING line (P1 pin 18). Analog switch U4 is controlled by the Model 8750A Storage-Normalizer and will disable the marker and blanking signals going to the display mainframe when the Model 8755C is under Model 8750A control. (The Model 8350A Sweep Oscillator can supply either a positive or negative blanking and marker signal.) Q3 and associated components detect negative-going marker pulses on the AUX C input. When the AUX C line goes negative, Q3 turns on and switches the marker enable line (MKREN) to the MARKER SENSE line (P1 pin 25) when S1 is in the POS position. If MKREN is HIGH, as controlled by the 8750A MARKER ENABLE logic, a marker will be stored in the Model 8750A.

8750A Marker Enable

The 8750A Marker Enable logic senses the Alternate Sweep Interface Cable LALTE and ALT1 lines and the Channel 1 and Channel 2 DISPLAY ON/OFF lines to determine the state of the MKREN line. A LOW on the MKREN line will keep a marker from being stored in the Model 8750A Storage-Normalizer. Table 8-3 gives all input signal conditions with the correct MKREN output signal.

SERVICE SHEET 5 (Cont'd.)

*Table 8-3. 8750A Marker Enable Signals**

LALTE 0 = ALT. SWP. SELECTED	ALT1 0 = CHANNEL 2 SELECTED	CHANNEL 1 ON/OFF 0 = ON	CHANNEL 2 ON/OFF 0 = ON	MKREN 0 = MARKER DISABLED
0	X	0	0	1
0	1	1	X	0
0	0	X	1	0
0	1	0	X	1
0	0	X	0	1
1	X	X	X	1

*0 = LOW. 1 = HIGH. X = DON'T CARE.

When both channels are on, the MKREN line is enabled, regardless of the state of ALT1. If the Alternate Sweep mode is selected and the channel which is selected by the ALT1 line is not turned on (all DISPLAY pushbuttons for that channel popped out), the MKREN line will be low and no markers will occur. If the Alternate Sweep mode is selected and only the channel which is selected by the ALT1 line is enabled by the DISPLAY pushbuttons, the MKREN line will be HIGH and markers will occur. Markers will always be enabled when the Alternate Sweep mode is not selected (LALTE is HIGH).

Channel Control

The channel control circuits include the CHANNEL SYNCHRONIZER U5 and the DISPLAY CONTROL MULTIPLEXER U6 and associated circuitry. The channel control circuits sense the NORMALIZE ENABLE line (LNORM), the Channel 1 and 2 DISPLAY ON/OFF lines, and the Alternate Sweep Interface Cable lines to determine the channel state of the A10 board Deflection Multiplex Driver and the Model 8750A Storage-Normalizer.

When the alternate sweep operation is not being used, LALTE is HIGH which sets all U6 switches to the 1 position. Inputs at U6 pins 10 and 3 sense ONLY the CHANNEL 1 DISPLAY ON/OFF line (LOW = Channel 1 on). Inputs at U6 pins 13 and 6 sense only the CHANNEL 2 DISPLAY ON/OFF line (LOW = Channel 2 on). Outputs to the A10 board Deflection Multiplex Driver (U6 pins 9 and 12) are controlled in U1C and U2C by the NORMALIZE ENABLE line (L NORM) and its compliment (NORM). When the Model 8750A Storage-Normalizer is not used, LNORM is HIGH and NORM is LOW. This allows the CHANNEL 1 and 2 DISPLAY ON/OFF lines to control the A10 board Deflection Multiplex Driver as determined by the DISPLAY pushbuttons. If the Model 8750A Storage-Normalizer is used, LNORM is LOW and NORM is HIGH. This forces U1C pin 8 LOW and U2C pin 8 HIGH which forces the A10 board Deflection Multiplex Driver

SERVICE SHEET 5 (Cont'd.)

to turn Channel 1 trace on and the Channel 2 trace off. In this condition, the normaiized vertical input (YNORM) is always displayed on the Channel 1 trace. Stored information for both channels is fed out serially from the Model 8750A in an alternating channel fashion at approximately a 6 ms rate to provide a flicker-free display on one or both channels, regardless of sweep oscillator sweep rate.

When the alternate sweep mode is selected, LALTE is LOW which sets all U6 switches to the 0 position. LNORM and NORM still control U1C and U2C as previously explained. The inputs to U1C and U2C have been switched by U6 to look at the output of gates U2A and U2D. A10 Channel Control lines may now be controlled manually by the front panel DISPLAY switches, as previously explained, or by the ALT1 and ALT2 lines from the Alternate Sweep Interface Cable. Channel 1 may now be turned off by a HIGH on either the CHANNEL 1 DISPLAY ON/OFF line or a HIGH on the ALT2 line. Likewise, Channel 2 may be turned off by a HIGH on either the CHANNEL 2 DISPLAY ON/OFF line or a HIGH on the ALT1 line. As the channel control lines ALT1 and LALT2 alternately go HIGH and LOW, the A10 board Deflection Multiplex Driver will switch the correct channel on and off, according to which sweep is currently in operation in the sweep oscillator, and the correct trace will be displayed.

Q4 and Q5 are open collector drivers for the Model 8750A Storage-Normalizer Channel 1 and 2 sense lines. VR13 and VR14 provide over voltage protection for U6. When LALTE is HIGH, U6 switches ONLY the CHANNEL 1 and 2 DISPLAY ON/OFF lines through to control the CHANNEL SENSE lines. When CHANNEL 1 DISPLAY ON/OFF is LOW (Channel 1 on), Q5 turns off which forces the CHANNEL 1 OFF SENSE line HIGH which enables the Channel 1 display in the Model 88750A. Q4 operates in the same manner. When LALTE goes LOW during alternate sweep operation, one-shot multivibrators U5A and U5B control the CHANNEL OFF SENSE lines. They each provide a 10 μs positive pulse to force channel selection in the Model 8750A at the proper time. The Channel Synchronizer circuitry is necessary to provide channel control pulses to the Model 8750A and still allow independent channel control for the A10 Modulator Driver. A pulse is all that is necessary to control Model 8750A channel switching but the A10 Modulator Driver board circuits require a constant HIGH or LOW signal to hold the Deflection Multiplex Driver in either channel. To provide an output pulse from either U5A or U5B, the A input must be LOW, and the B and CLR inputs must be HIGH. The output pulse will occur at the positive-going transition of LRTS.

R34, R35, and R36 are resistor pullups for the Alternate Sweep Interface Cable control signals. VR6, VR7, and VR8 provide overvoltage protection.

Horizontal Amplifier

U7A is a non-inverting buffer for the horizontal sweep voltage applied at the AUX D input on Model 180 "T"-series and Option 807 display mainframes. The front panel HORIZ GAIN adjust and limiting resistor R3 set the full screen deflection sensitivity by establishing a maximum deflection current of about 3mA into P1 pin 1 (INT SWEEP) with either a +10V sweep amplitude from the Model 8650A and Model 8620 series sweep oscillators or a +15V sweep amplitude from the Model 8690 series sweep oscillators.

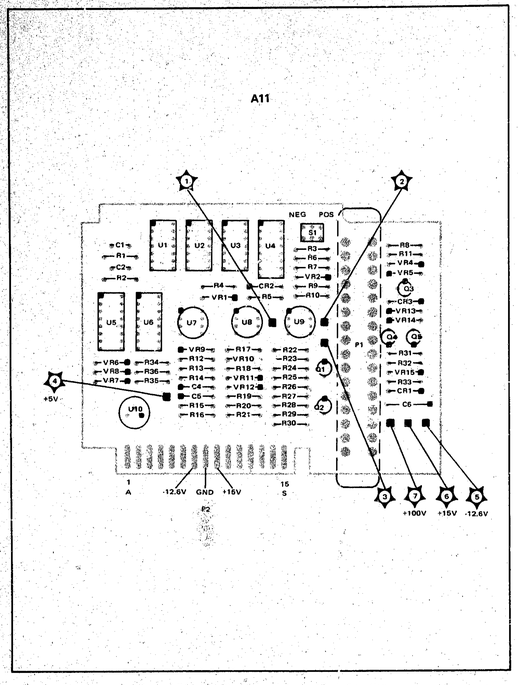


Figure 8-24. A11 Normalizer Interface Parts Location

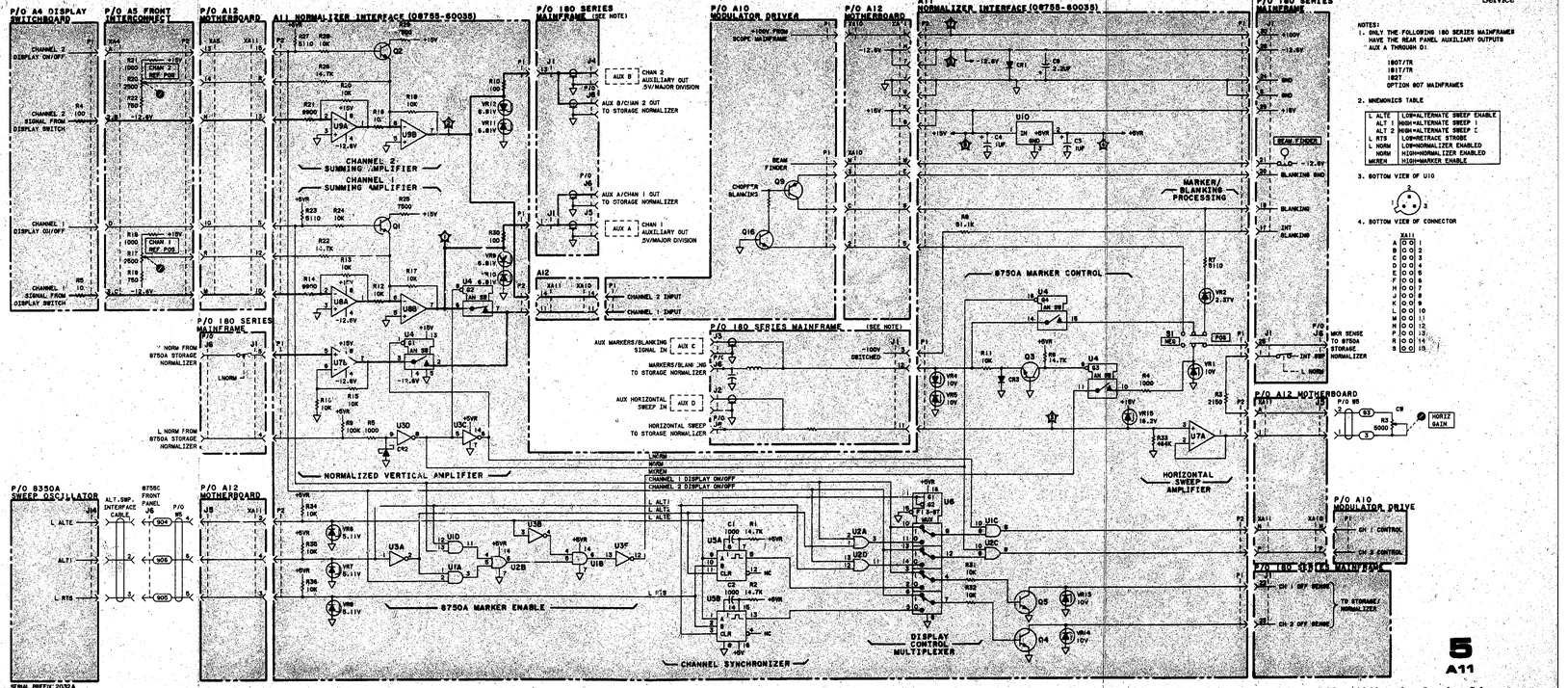


Figure 8-25. A11 Normalizer Interface, Schematic

5
A11

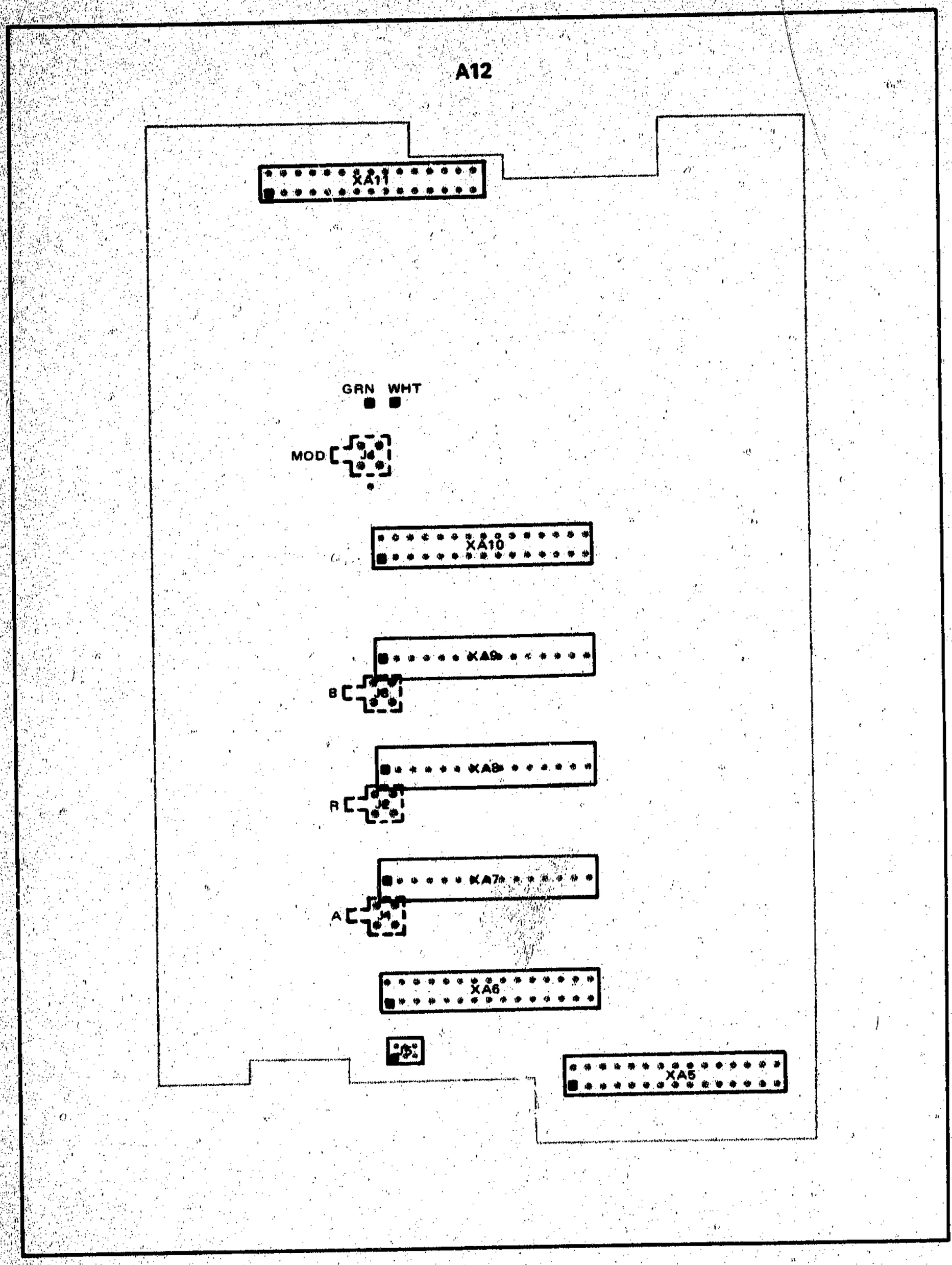


Figure 8-26. A12 Motherboard Parts Location

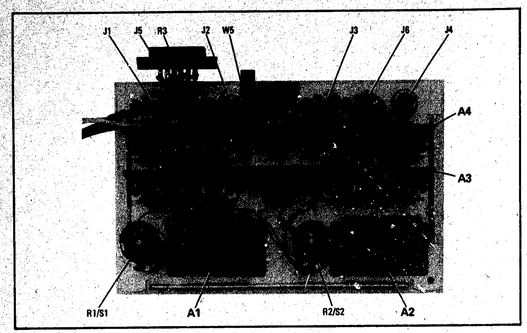


Figure 8-27. Front Panel, Parts Location

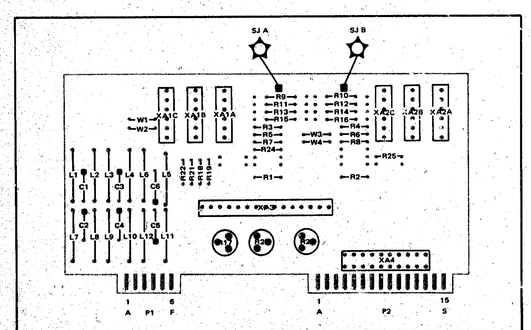
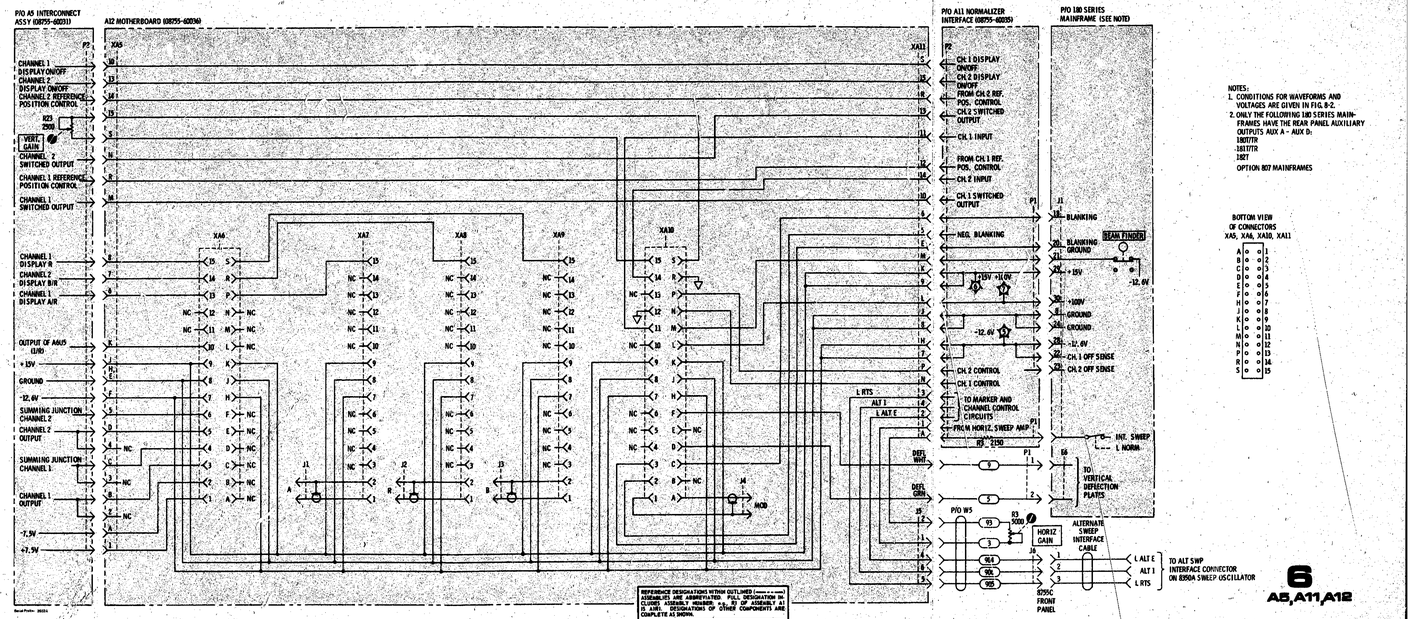


Figure 8-28. A5 Front Interconnect Parts Location



NOTES:
1. CONDITIONS FOR WAVEFORMS AND VOLTAGES ARE GIVEN IN FIG. 8-2.
2. ONLY THE FOLLOWING 180 SERIES MAINFRAMES HAVE THE REAR PANEL AUXILIARY OUTPUTS AUX A - AUX D:
180TR
181TR
182T
OPTION 807 MAINFRAMES

BOTTOM VIEW OF CONNECTORS XA5, XA6, XA8, XA11

Figure 8-29. A12 Motherboard, A5 Interconnect Assembly, A11 Normalizer Interface, and Interconnection Diagram

MANUAL CHANGES

MANUAL CHANGES

NOTE

Manual change supplements are revised as often as necessary to keep manuals as current and accurate as possible. Hewlett-Packard recommends that you periodically request the latest edition of this supplement. Free copies are available from all HP offices. When requesting copies, quote the manual identification information from your supplement, or the model number and print date from the title page of the manual.

MANUAL IDENTIFICATION

Model Number: 8755C
Date Printed: July 1980
Part Number: 08755-90073

This supplement contains important information for correcting manual errors and for adapting the manual to instruments containing improvements made after the printing of the manual.

To use this supplement, make all ERRATA corrections and all appropriate serial number related changes indicated in the tables below.

● = NEW ITEM

Serial Prefix or Number	Make Manual Changes
2046A	1
2137A	1, 2
2134A	1, 2, 3
2137A	1; 2, 3, 4
2252A	1-5

Serial Prefix or Number	Make Manual Changes
2323A	1-6
2338A	1-7
2406A	1-8
● 2520A	1-9

ERRATA

Page 1-6, Table 1-4:
In the column entitled **8758A COMPATIBILITY**, across from "180D," delete 00180-69503."
In the column entitled **8758A COMPATIBILITY**, across from "182C," delete reference to "00181-69503."

Page 1-7, Table 1-5:
Change Recommended Model number for 0 — 11 dB Step Attenuator to HP 8494B.

Page 3-5, Front Panel Features:
Change the last sentence in item 15 to read:
"Turning this knob fully CCW releases the 8755C from the mainframe."

Page 5-4, paragraph 5-8:
Above step 3, add: Press ⌐¬ **MOD** on the 8350A/B to turn the square-wave modulation on.

Page 6-2, Table 6-2:
Insert in **ABBREVIATIONS** list:
"CW . . . Clockwise, Continuous Wave"

10 MAY 1985
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ERRATA (Cont'd)

Page 6-5, Table 6-3:
Change A6U3 through A6U6 to 1826-0471, CD 2, IC OP AMP LOW-DRIFT TO-99 PKG.
Change A7C26, A7C29 and A7C30 to 0160-4535, CD 4, 50V.
Change A7L1 QTY to 3.
Add A7L4, 9140-0120, 1, INDUCTOR RF-CH-MLD 100µH 5% .066DX .384LG.

Page 6-9, Table 6-3:
Change A11MP2 to 1205-0095, CD 0.
Change A11Q3 to HP Part Number 1854-0071, CD 9 (recommended replacement).
Change A11Q4 to HP Part Number 1854-0071 CD 9 (recommended replacement).
Change A11Q5 to HP Part Number 1854-0071, CD 9 (recommended replacement).

Page 6-11, Table 6-3:
Change HP Part Number 0370-1125 to HP Part Number 0370-3039, CD 6.

Page 6-12, Table 6-3:
Change 08559-20006 to 08559-20056, CD 4.

Page 8-1, Paragraph 8-2:
Change paragraph 8-2 to read:
"This section provides instructions for testing, troubleshooting, and repairing the Model 8755C Swept Amplitude Analyzer. Major Assemblies are shown in Figure 8-1. Schematic Diagram Notes are given in Figure 8-2."
Delete the NOTE at the end of Paragraph 8-2.

Page 8-1, Paragraph 8-8:
Add the following to the end of paragraph 8-8:
"Figures 8-3 and 8-4 include Model 11664A Detectors at the front panel inputs as an example to show complete signal flow and power supplies using typical detectors. Figure 8-5 is a simplified schematic of the 11664A Detector. A more detailed schematic of the Model 11664A is shown in Figure 8-6.

NOTE

"The Model 11664A schematics are used only for example. For complete information refer to the Operating and Service Manual of the detector used (Model 11664A/B Detector or Model 11664A Reflectometer Bridge)."

Page 8-18, Channel Control description:
Change the fourth sentence in the fourch paragraph to read:
"When CHANNEL 1 DISPLAY ON/OFF is LOW (Channel 1 on), Q5 turns off which forces the CHANNEL 1 OFF SENSE line HIGH which enables the Channel 1 display in the Model 8750A."

Page 8-18, Horizontal Amplifier description:
Change the second sentence to read:
"The front HORIZ GAIN adjust and limiting resistor R3 set the full screen deflection sensitivity by establishing a maximum deflection current of about 3 mA into P1 pin 1 (INT SWEEP) with either a +10V sweep amplitude from the Model 8350A and Model 8620 series sweep oscillators or a +15 V sweep amplitude from the Model 8690 series sweep oscillators."

CHANGE 1

Serial Prefix change only.

CHANGE 2

Page 8-17, Figure 8-21:

Replace Figure 8-21 with the Parts Location drawing supplied in this Manual Changes Supplement (CHANGE 2). (Several components were relocated to provide better clearance. No schematic change).

CHANGE 3

Change 3 modifies the Standard Model 8755C to increase the vertical display resolution and the amplitude offset resolution. Vertical resolution of 0.1 dB per division is now available by simultaneously depressing the 1 dB/DIV and .25 dB/DIV pushbuttons. Amplitude offset has been increased from 99 dB to 99.9 dB with the addition of a third REFERENCE LEVEL switch to each channel. Reference levels can be incremented in steps of 10, 1, and 0.1 dB.

Title Page:

Change the prefix number in the first paragraph to 2134A.

Page 1-2, Paragraph 1-21:

Change the third and fourth sentences to read:

"For each channel, a resolution of 10, 5, 1, 0.25, or 0.1 dB per division is available. A calibrated amplitude offset of ± 99.9 dB in 0.1 dB increments is provided by front panel lever switches independently for each channel."

Page 1-3, Table 1-1, GENERAL:

Change the first sentence in the **Resolution** paragraph to read:

"**Resolution:** Independent for each channel in steps of 10, 5, 1, 0.25, or 0.1 dB division."

Change the first sentence in the **Offset** paragraph to read:

"**Offset:** ±99.9 dB in 0.1 dB steps."

Page 3-4, Figure 3-2:

Replace the photograph with the Front Panel Features photograph supplied in this Manual Changes Supplement (CHANGE 3).

Change Item 2 to read:

"**REFERENCE LEVEL Control.** This control has four miniature lever switches. The switch farthest left sets the polarity of the offset (+ or −). The next switch adjusts the offset of the display in 10 dB steps. The switch second from the right adjusts the offset of the display in 1 dB steps, and the switch on the right adjusts the display in 0.1 dB steps."

Change Item 5 to read:

"**dB/DIV Resolution Pushbutton Switches.** These switches select channel vertical resolution of 0.1, 0.25, 1, 5, or 10 dB per division. For 0.1 dB/DIV resolution, the .25 and 1 dB/DIV pushbuttons are depressed simultaneously."

Page 3-5, Figure 3-2:

Change the second sentence in Item 16 GAIN Control to read:

"The VERTICAL GAIN control is adjusted so that the trace on the display moves exactly four divisions from the center graticule line when the REFERENCE LEVEL is changed from +00.0 to +01.0 with the 8755C set for .25 dB/DIV."

Page 3-6, Figure 3-3:

Change Item 2 REFERENCE LEVEL control setting to −00.0 dB.

Page 3-7, Figure 3-3:

Change the first sentence in Item 8 to read:

"Set CHANNEL 1 REFERENCE LEVEL to −00.0."

Change the first sentence in Item 13 to read:

"Set CHANNEL 2 REFERENCE LEVEL to −00.0."

CHANGE 3 (Cont'd)

Page 3-9, Figure 3-4:

Change the third sentence in Item 5 (top of page) to read:

"For fine adjustment, increase the vertical resolution to 5, 1, .25, or .1 dB/DIV by depressing the CHANNEL 2 dB/DIV pushbuttons. For .1 dB/DIV resolution, depress the.25 and 1 dB/DIV pushbuttons simultaneously."

Change the fourth sentence in Item 5 (bottom of page) to read:

"Select 5, 1, .25, or .1 dB/DIV to make fine adjustment. For .1 dB/DIV resolution, depress the .25 and 1 dB/DIV pushbuttons simultaneously."

Page 3-11, Figure 3-4:

Change the first sentence of Item 5 (top of page) to read:

"Increase the resolution of the reading to 5, 1, .25, or .1 dB/DIV by pressing the CHANNEL 2 dB/DIV pushbuttons. For .1 dB/DIV resolution, depress the .25 and 1 dB/DIV pushbuttons simultaneously."

Change the first sentence of Item 8 to read:

"Increase the resolution of the reading to 5, 1, .25, or .1 dB/DIV by pressing the CHANNEL 2 dB/DIV pushbuttons. For .1 dB/DIV resolution, depress the .25 and 1 dB/DIV pushbuttons simultaneously."

Page 5-5, Paragraph 5-8:

Change Item (i) to read:

"Set the 0 — 70 dB attenuator to 50 dB and set the appropriate REFERENCE LEVEL switch to −50 dB."

Change the second sentence of Item (j) to read:

"Select .1 dB/DIV resolution to make fine adjustment."

Page 6-3, Table 6-3:

Change A1 and A2 to HP Part Number **3100-1671, CD 0, Switch-Minilever, Mfr. Part No. 3100-1671.

Add under A1 and A2 HP Part Number 08755-20046, CD 0, Qty. 8, Spacer-Switch.

Change A3 to HP Part Number 08755-60044, CD 2, Mfr. Part No. 08755-60044.

Add A3R9 and A3R10 HP Part Number 0698-6376, CD 4, Qty 2, Resistor 200K 0.1% 0.125W F, Mfr. Code 19701, Mfr. Part No. MF4C1/8-T9-2003-B.

Change A5 to HP Part Number 08755-60043, CD 1, Mfr. Part No. 08755-60043.

Add the following footnote:

"**If A1 or A2 is to be replaced, order HP Part Number 3100-1685, CD 6. File down the connector edge of the replacement switch board very slightly (approximately 1mm or 1/32 inch). File with extreme caution toward the board to avoid separation of the contact fingers."

Page 6-4, Table 6-3:

Add the following components to the Parts List:

Ref. Desig.	HP Part No.	CD	Qty.	Description	Mfr. Code	Mfr. Part No.
A5R26	0698-7528	0	2	Resistor 375K .1% .125W F	19701	MF4C1/8-T2-3753-B
A5R27	0698-8960	6	2	Resistor 750K 1% .125W F	28480	0698-8960
A5R28	0698-8913	9	2	Resistor 1.5M .1% .125W F	28480	0698-8913
A5R29	0698-0832	5	2	Resistor 3.0M 1% .125W F	28480	0698-0832
A5R30	0698-7528	0		Resistor 375K .1% .125W F	19701	MF4C1/8-T2-3753-B
A5R31	0698-8960	6		Resistor 750K 1% .125W F	28480	0698-8960
A5R32	0698-8913	9		Resistor 1.5M .1% .125W F	28480	0698-8913
A5R33	0699-0832	7		Resistor 3.0M 1% .125W F	28480	0699-0832
A5XA1D	1251-1941	4		Connector-PC EDGE 6-CONT	28480	1251-1941
A5XA2D	1251-1941	4		Connector-PC EDGE 6-CONT	28480	1251-1941

Change Qty for A5XA1A to 8.

CHANGE 3 (Cont'd)

Page 6-6, Table 6-3:
Change A7R52* to HP Part Number 0757-0438, CD 3, Resistor 5.11K, Mfr. Part No. C4-1/8-TO-5111-F.

Page 6-7, Table 6-3:
Change A7U5 and A7U4 to 1826-1058, CD 3.

Page 6-11, Table 6-3:
Change R1 and R2 to 2100-4113, CD 7, 10%.
Change Qty of HP Part Number 1490-0848 (fourth from bottom of page) to 4.
Add HP Part Number 2190-0007, Cd 2, Qty 3, Washer-Lk .141-IN-ID, Mfr. Code 28480, Mfr. Part No. 2190-0007.
Add HP Part Number 2360-0219, CD 9, Qty 3, Screw-Machine 6/32 1.375-IN-LG-PAN-HD-POZI, Mfr. Code 28480, Mfr. Part No. 2360-0219.

Page 6-12, Table 6-3:
Change HP Part Number 08755-00028 to 08755-00040, CD 2.
Change HP Part Number 08755-00029 to 08755-00036, CD 6.

Page 8-6, Figure 8-2:
Change Item (d) REFERENCE LEVEL Switches setting to −00.0.

Page 8-9, Figure 8-2:
Change CHANNEL 1 REFERENCE LEVEL and CHANNEL 2 REFERENCE LEVEL as shown in the partial Simplified Block Diagram, P/O Figure 8-3, supplied in this Manual Changes Supplement (CHANGE 3).

Page 8-10, Figure 8-7:
Change R52 to R52* 5.11K.

Page 8-11, Figure 8-11:
Change the value of R52* (below LOG AMPL on left of Schematic) to 5110.

Page 8-12, Figure 8-13:
Replace Figure 8-13 with Figure 8-13 from this Manual Changes Supplement (CHANGE 3).

Page 8-14, Service Sheet 3:
Replace the CIRCUIT DESCRIPTION as follows:
"Figure 8-17 shows a simplified schematic of the offset circuit. The offset circuit feeds current to the summing junction that simulates input signals to offset the display. Fixed offsets of up to 99.9 dB may be obtained by selecting the appropriate front panel polarity and REFERENCE LEVEL switches. A variable offset of up to 40 dB may be obtained by adjusting the front panel VERNIER adjust. The input signals plus the offset are applied to the summing junctions."

Page 8-14, Figure 8-17:
Replace Figure 8-17 with Figure 8-17 from this Manual Changes Supplement (CHANGE 3).

Page 8-14, Figure 8-18:
Replace Figure 8-18 with Figure 8-18 from this Manual Changes Supplement (CHANGE 3).

Page 8-15, Figure 8-19:
Replace Figure 8-19 with the Figure 8-19 foldout schematic from this Manual Changes Supplement (CHANGE 3).

Page 8-21, Figure 8-27:
Replace Figure 8-27 with Figure 8-27 from this Manual Change Supplement (CHANGE 3).

Page 8-21, Figure 8-28:
Replace Figure 8-28 with Figure 8-28 from this Manual Changes Supplement (CHANGE 3).

CHANGE 4

Page 6-3, Table 6-3:
Change A1 and A2 to HP Part Number 3100-1685, CD 6.
Delete HP Part Number 08755-20046.
Delete Footnote **from CHANGE 3.

CHANGE 5

Page 6-9, Table 6-3:
Change A11 to HP Part Number 08755-60051.
Add A11R37; HP Part Number 0757-0401; CD 0; RESISTOR 100 OHMS 1% .125W F TC= ±100.

Page 8-19, Figure 8-24:
Replace *Figure 8-24. A11 Normalizer Interface Parts Location* with *Figure 8-24. A11 Normalizer Interface Parts Location (CHANGE 5)* of this change sheet.

Page 8-19, Figure 8-25:
Change A11 Normalizer Interface to HP Part Number 08755-60051.
Add A11 R37 100 Ohm resistor between A11U7A Pin 1 and the feedback node connected to XA11P2 Pin 1 going to A11U7A Pin 2.

CHANGE 6

Page 6-5, Table 6-3:
Change A7 to 08755-60052, CD 3.
ChangeA72C2 and A7C3 to 0160-4835, CD 7, .14F.

Page 6-6, Table 6-3:
Change A7R1 to 0757-0470, CD 3, 162K.
Change A7R2 and A7R4 to 0698-3158, CD 4, 23.7K.
Change A7R3 to 0757-0459, CD 8, 56.2K.
Change A7R57 to 0698-3454, CD 3, 215K.
Change A7R58 to 2100-3094, CD 4, 100K.
Add A7R56, 0757-0470, CD 3, Resistor 162K 1% .125W F TC = 0±100.

Page 8-11, Figure 8-10:
Replace Figure 8-10 with Figure 8-10 from this change sheet (CHANGE 6).

Page 8-11, Figure 8-11:
Change A7, A8 and A9 Assembly Number to 08755-60052.
Change C2 and C3 to .19F.
Change R1 to 162K.
Change R2 to 23.7K.
Change R3 to 56.2K.
Change R57 to 215K.
Change R58 to 100K.
Add R76, 162K between the negative side of C21 and Pin 2 of U3.
Move "+" to the ground side of C1.

CHANGE 7

Page 6-10, Table 6-3:
Change A12 to 08755-60053, CD 3.
Change A12J1 through A12J4 to 1251-8532, CD 3.

CHANGE 7 (Cont'd)

Page 6-11, Table 6-3:

- Change W1 to 08755-60057.
- Change W2 to 08755-60058.
- Change W3 to 08755-60059.

Under W1, W2, and W3, replace 1250-1164 through 1250-1175 with:

8120-0097, CD 9, CABLE-SHLD 26AWG 2CONDCT J6K-JKT.
8090-0394, CD 4, SOLDER-HS O-IN-OD PVIF CLR INSUL
8150-0447, CD 6, WIRE 24AWG BK 300V PVC 7X32 80C.
0890-0012, CD 1, SLEEVING-FLEX .04ID NEMA-3. 016-WA11.
1251-5996, CD 7, CONN-POST TYPE .100-PIN-SPC6.
1251-6466, CD 8, CONTACT-CONN U/W-POST-TYPE FEM CRP.

Under W1, add 7121-4316, CD 4, WIRE MARKER SGL-LTR = A SHRK-TBG PVC.
Under W2, add 7121-4318, CD 6, WIRE MARKER SGL-LTR = R SHRK-TBG PVC.
Under W3, add 7121-4317, CD 5, WIRE MARKER SGL-LTR = B SHRK-TBG PVC.

- Page 8-11, Figure 8-11:
  Replace part of Figure 8-11 with the partial Figure 8-11 in this change sheet (CHANGE 7).

Page 8-20, Figure 8-26:
Replace Figure 8-26 with Figure 8-26 of this change sheet (CHANGE 7).

CHANGE 8

Page 6-6, Table 6-3:
Change A7R37 to 0757-0419, CD 0, 681 ohms.

Page 6-7, Table 6-3:
Change A7U1 to 1SE7-0057, CD 3.

Page 8-11, Figure 8-11:
Change R37 to 681.

CHANGE 9

Page 8-11, Figure 8-11:
Replace part of Figure 8-11 with the partial Figure 8-11 in this change sheet (CHANGE 9).

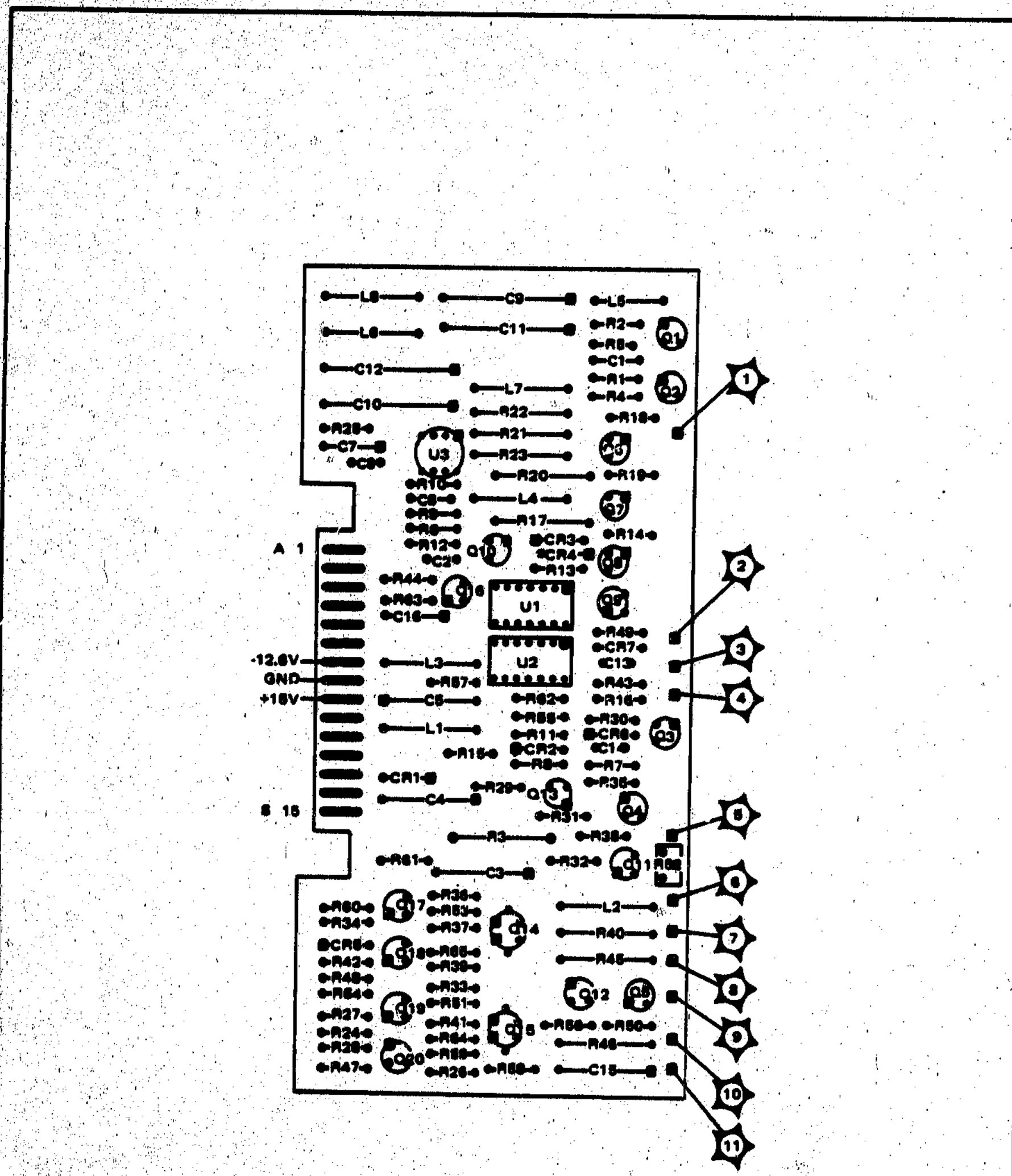


Figure 8-21. A10 Modulator Driver, Parts Location (CHANGE 2)

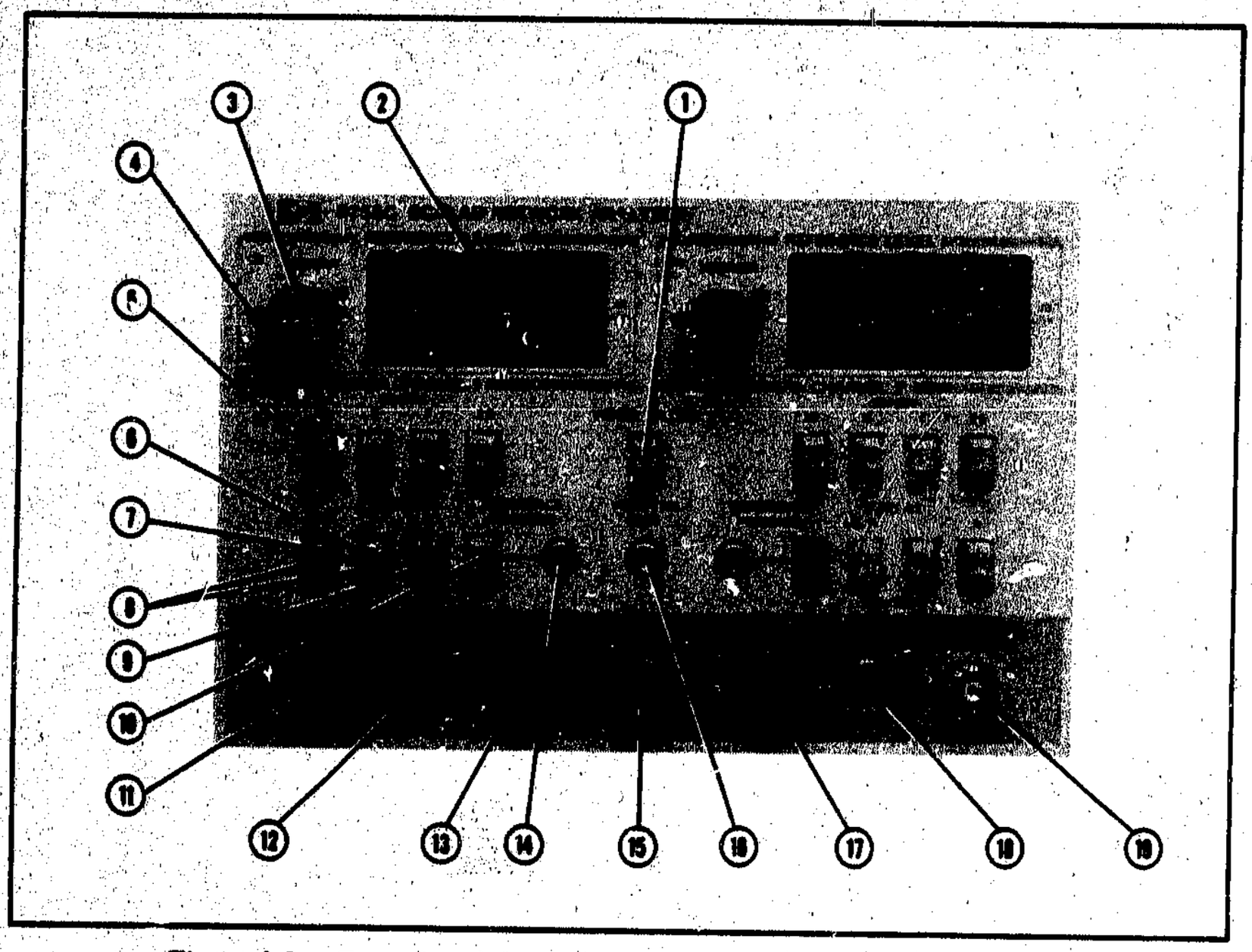
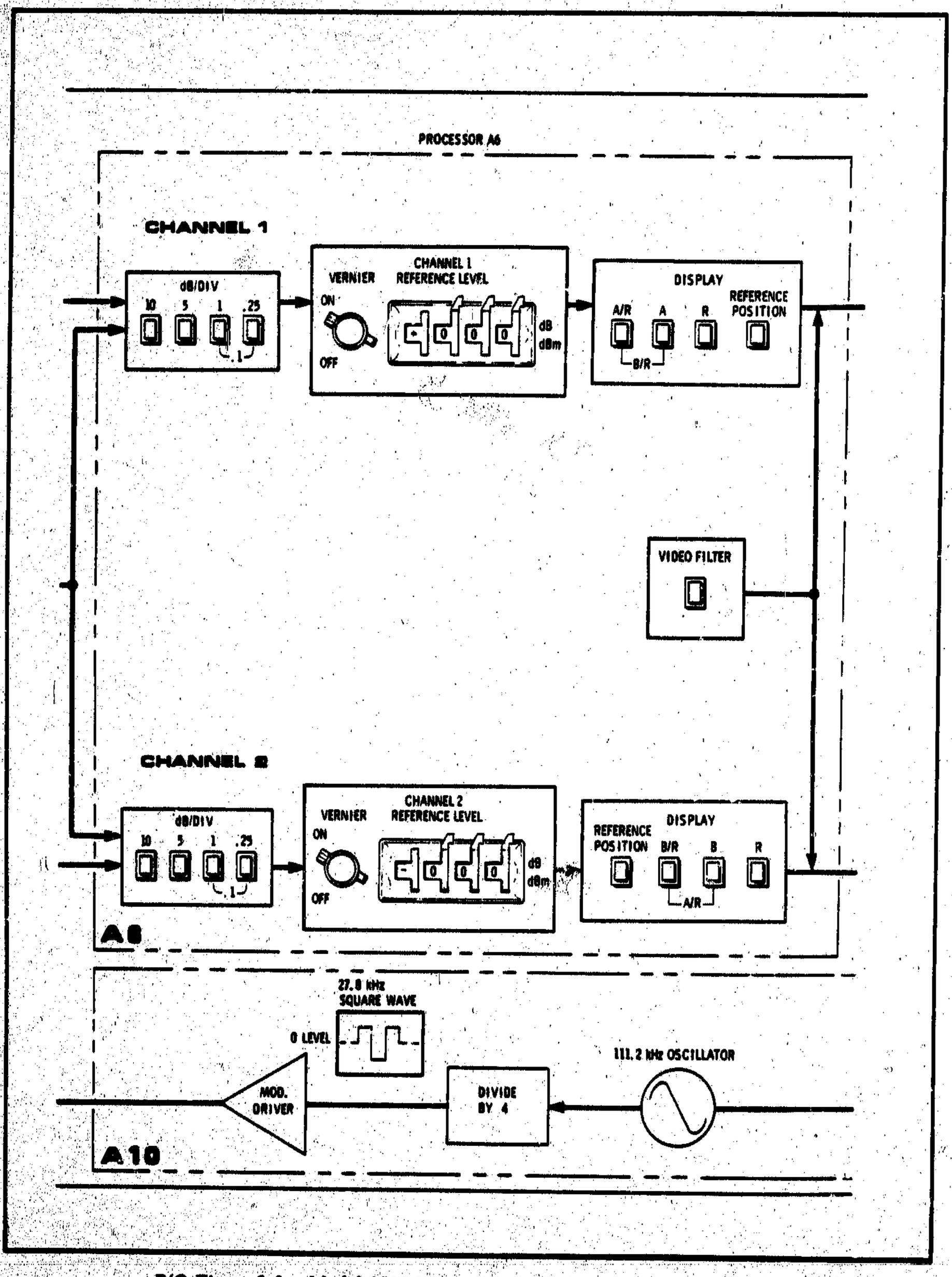


Figure 3-2. Front Panel Controls and Connectors (1 of 2) (CHANGE 3)



P/O Figure 8-3. Model 8755C Simplified Block Diagram (CHANGE 3)

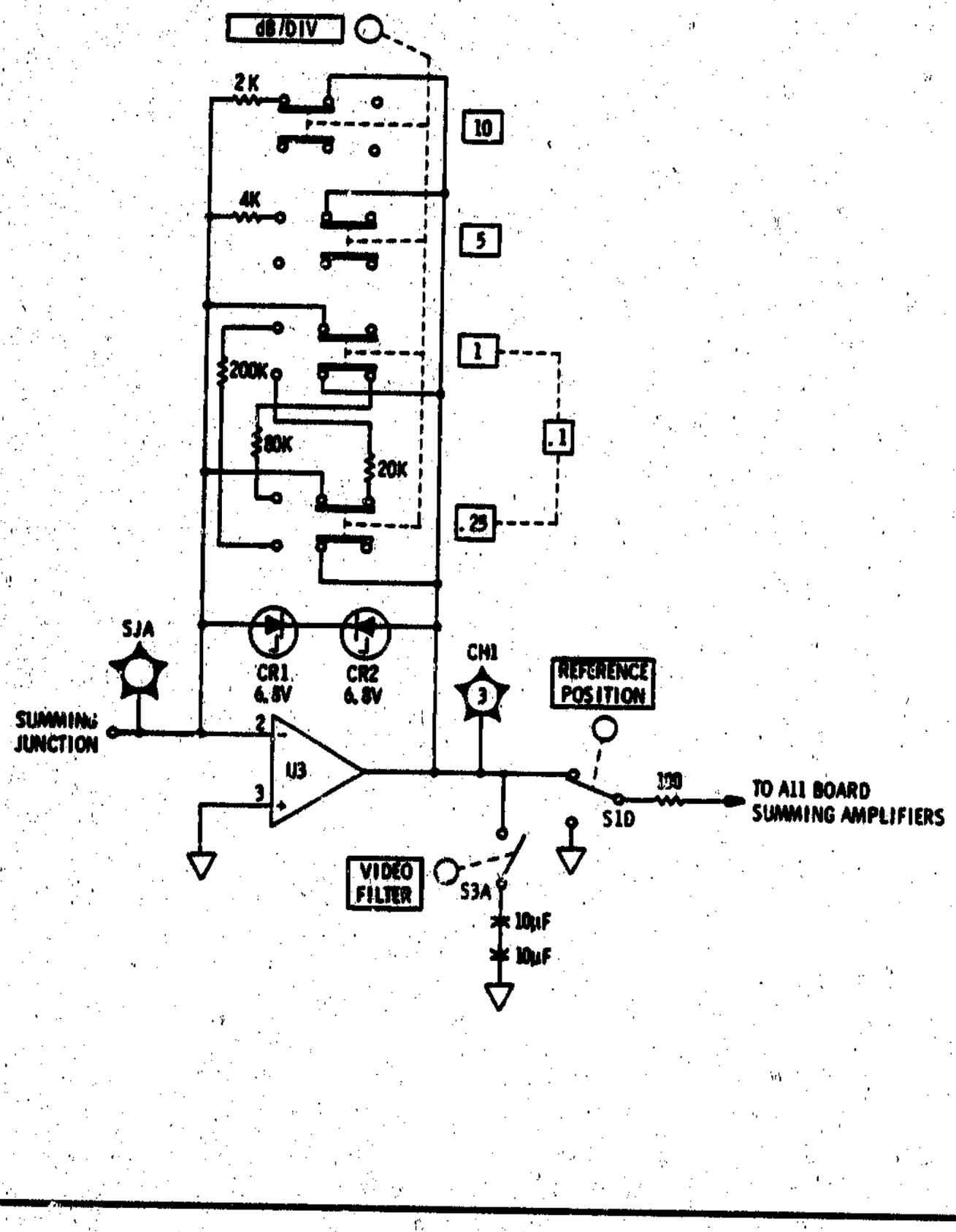


Figure 8-13. Channel 1(or 2) Processor Board Output (CHANGE 3)

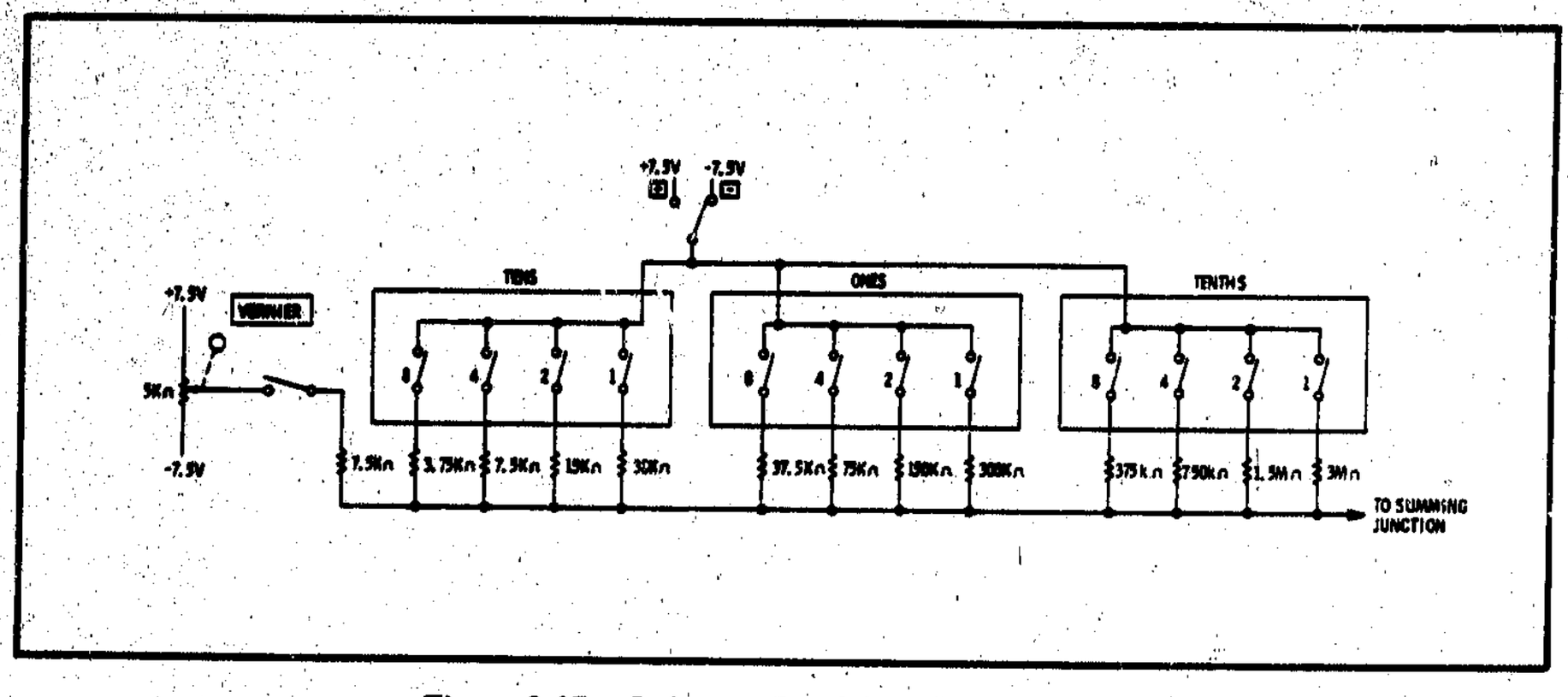


Figure 8-17. Reference Level Switch (CHANGE 3)

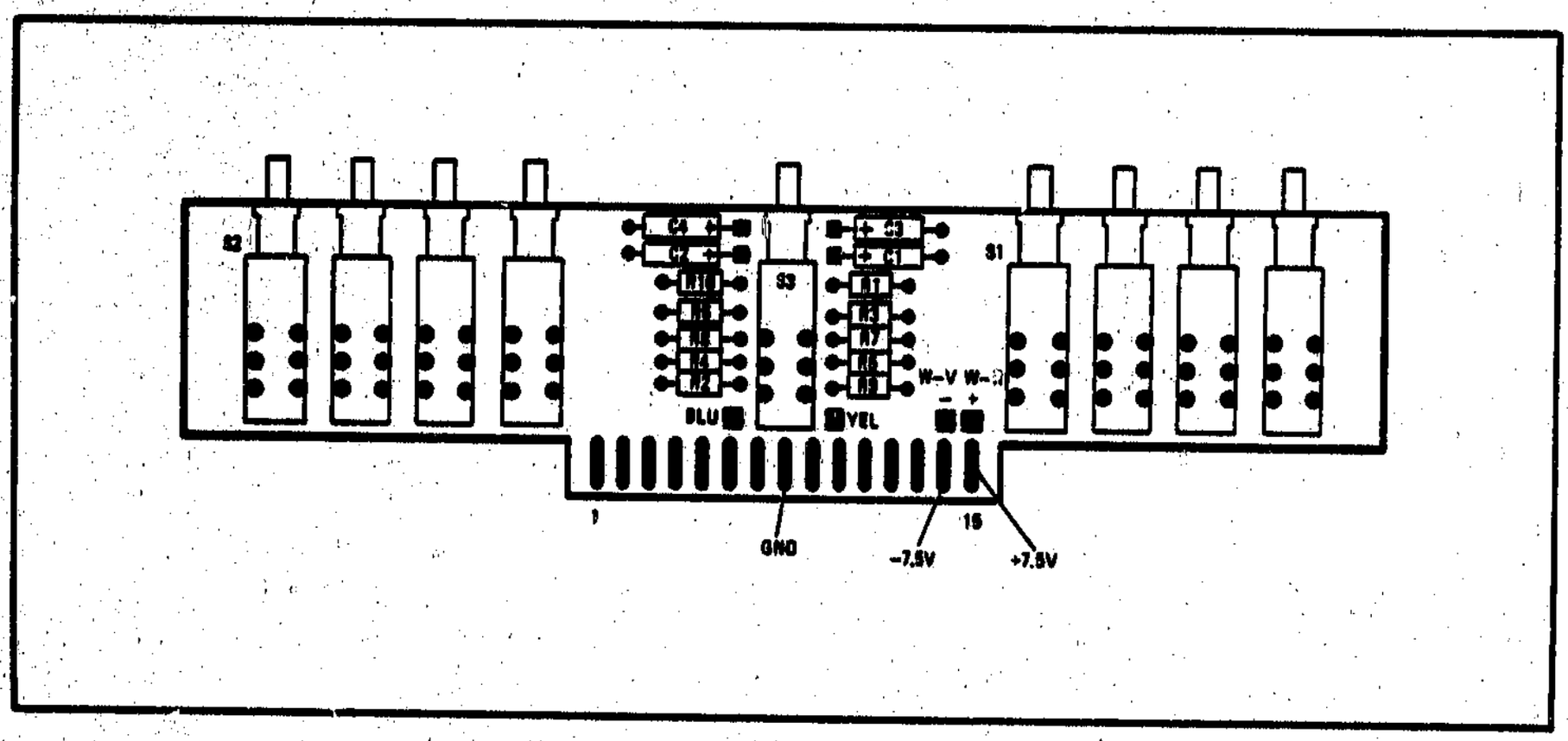


Figure 8-18. A3 dB/Division Switch, Parts Location (CHANGE 3)

CHANGE 3 (Cont'd)

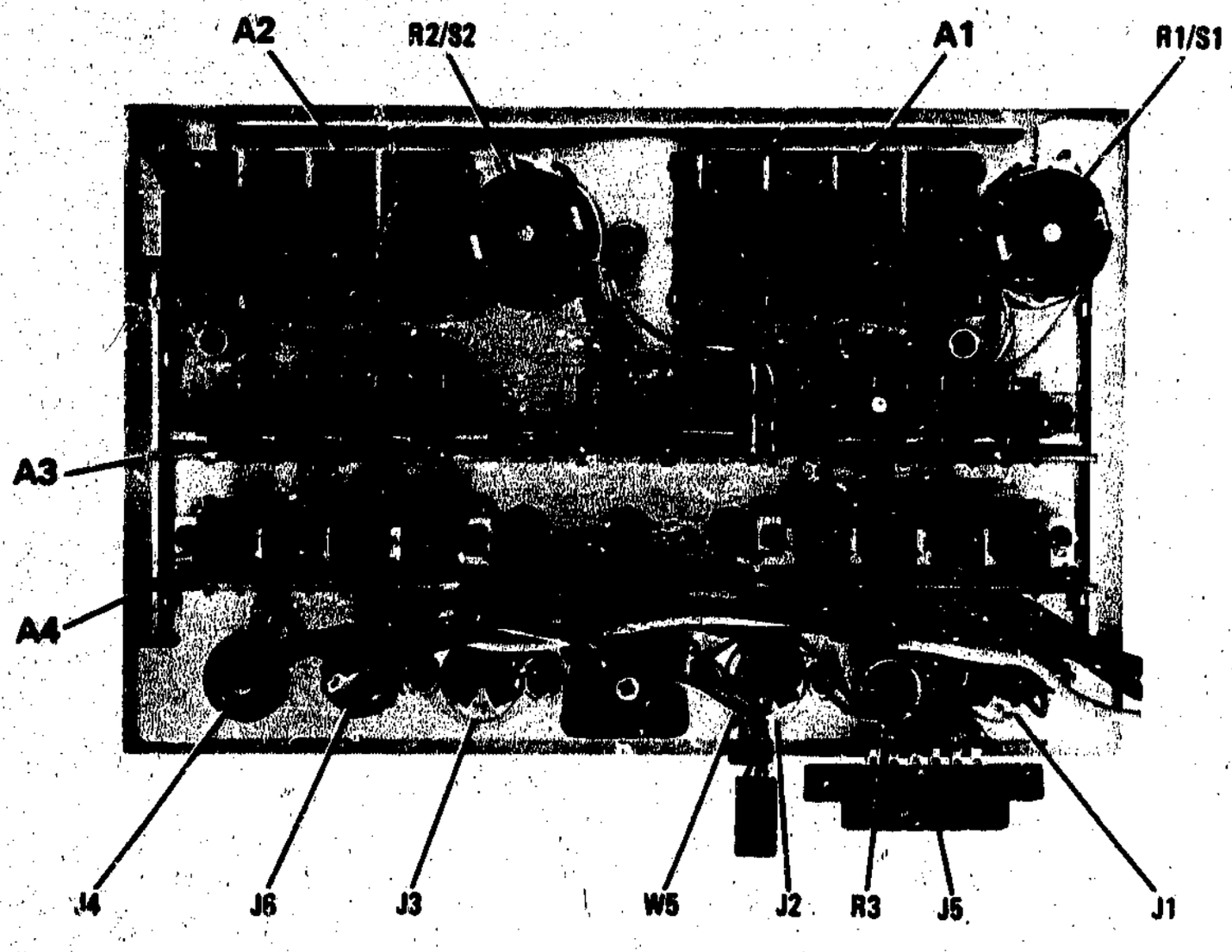


Figure 8-27. Front Panel, Parts Location (CHANGE 3)

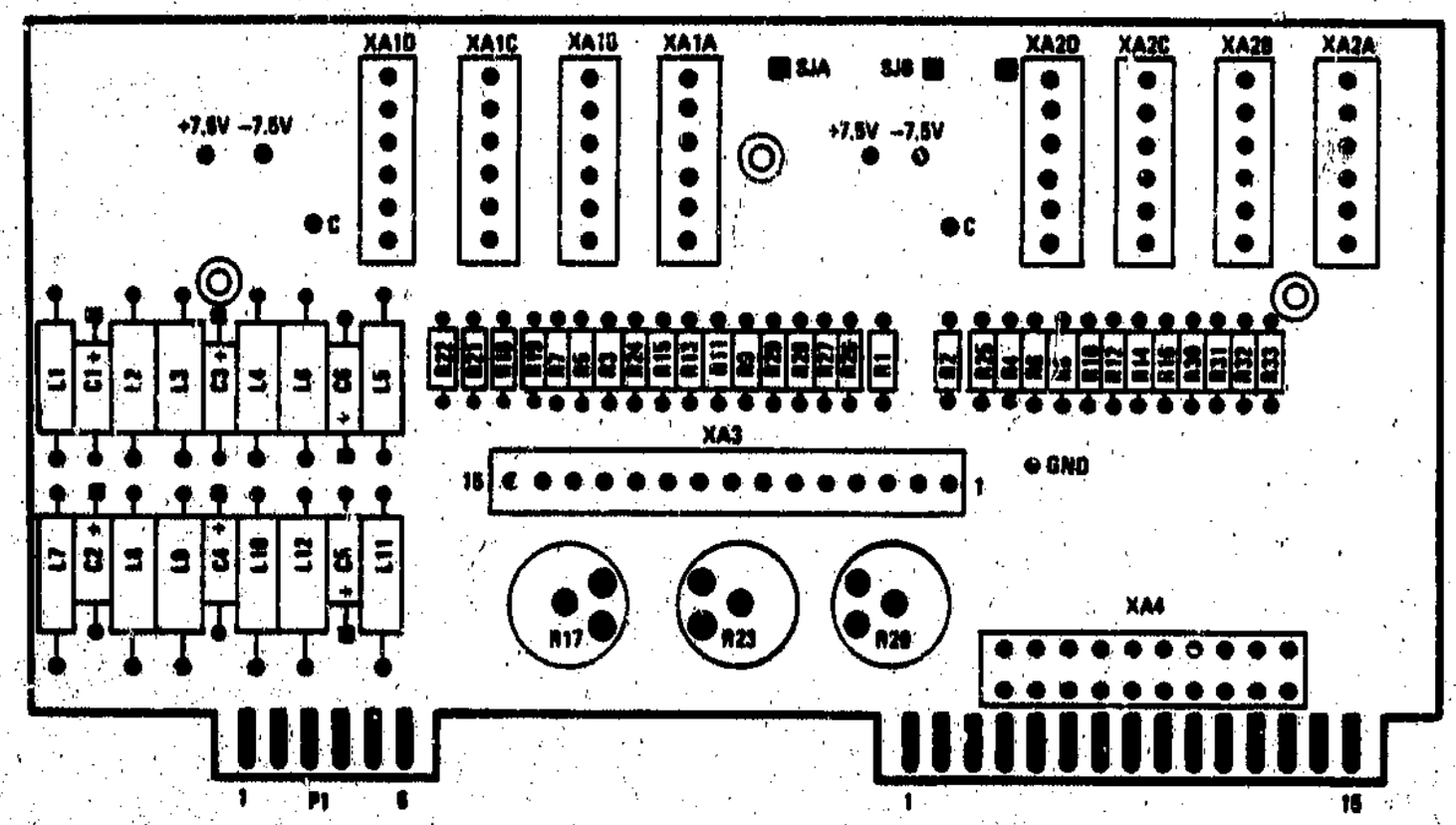


Figure 8-28. A5 Front Interconnect Parts Location (CHANGE 3)

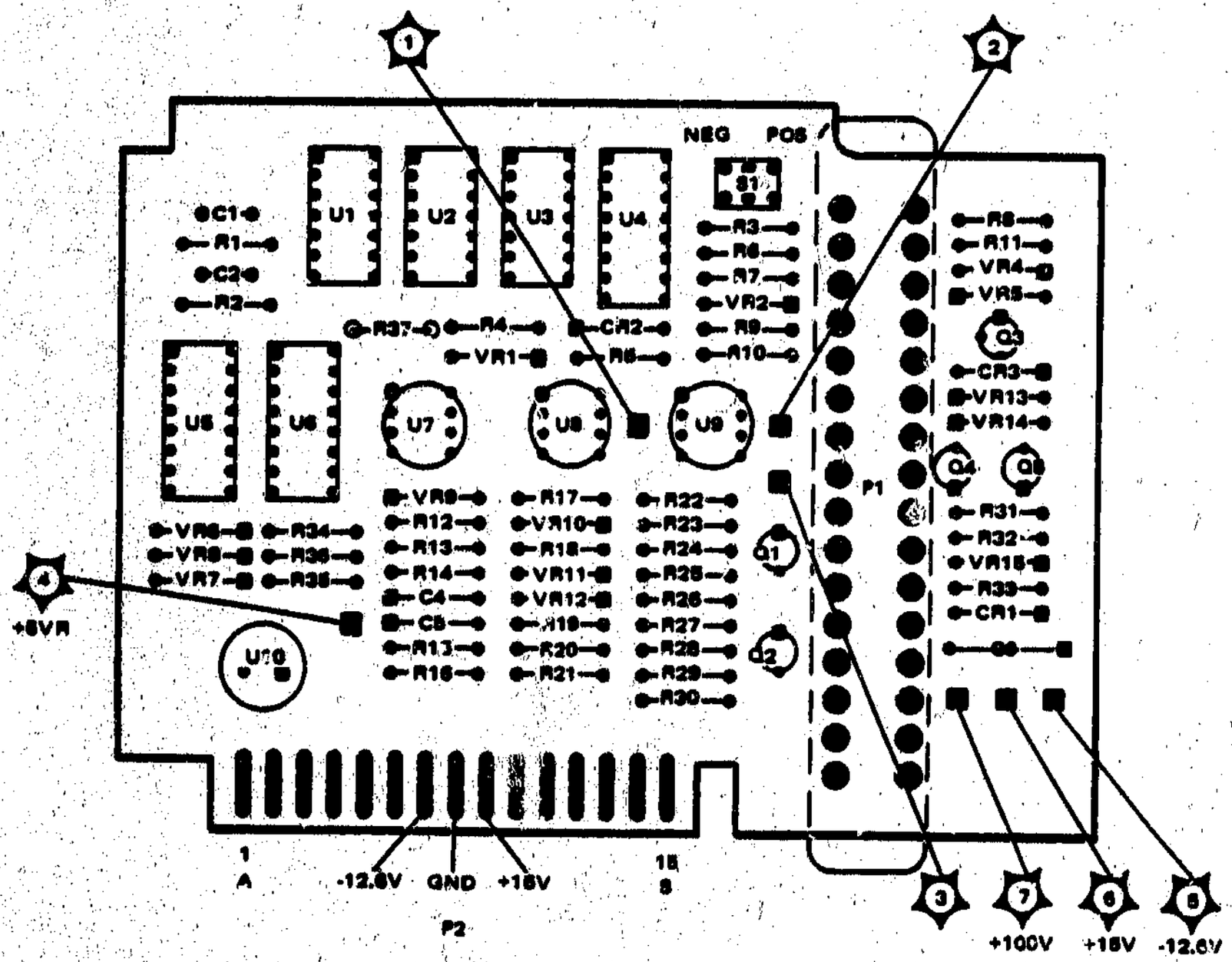


Figure 8-24. A11 Normalizer Interface Parts Location (CHANGE 5)

A7/A8/A9

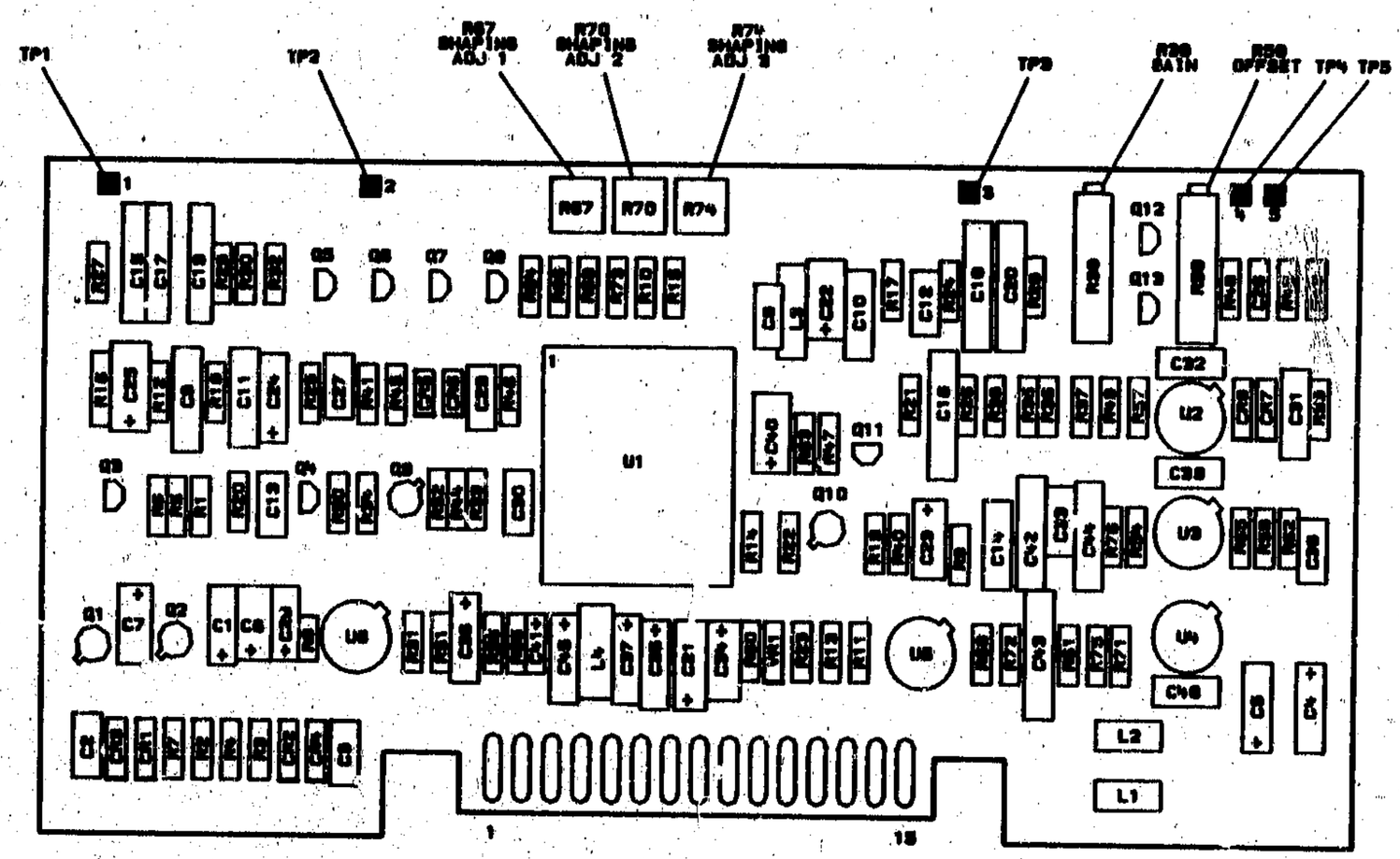


Figure 8-10. A7/KLA8/A9 Component Location Diagram (CHANGE 6)

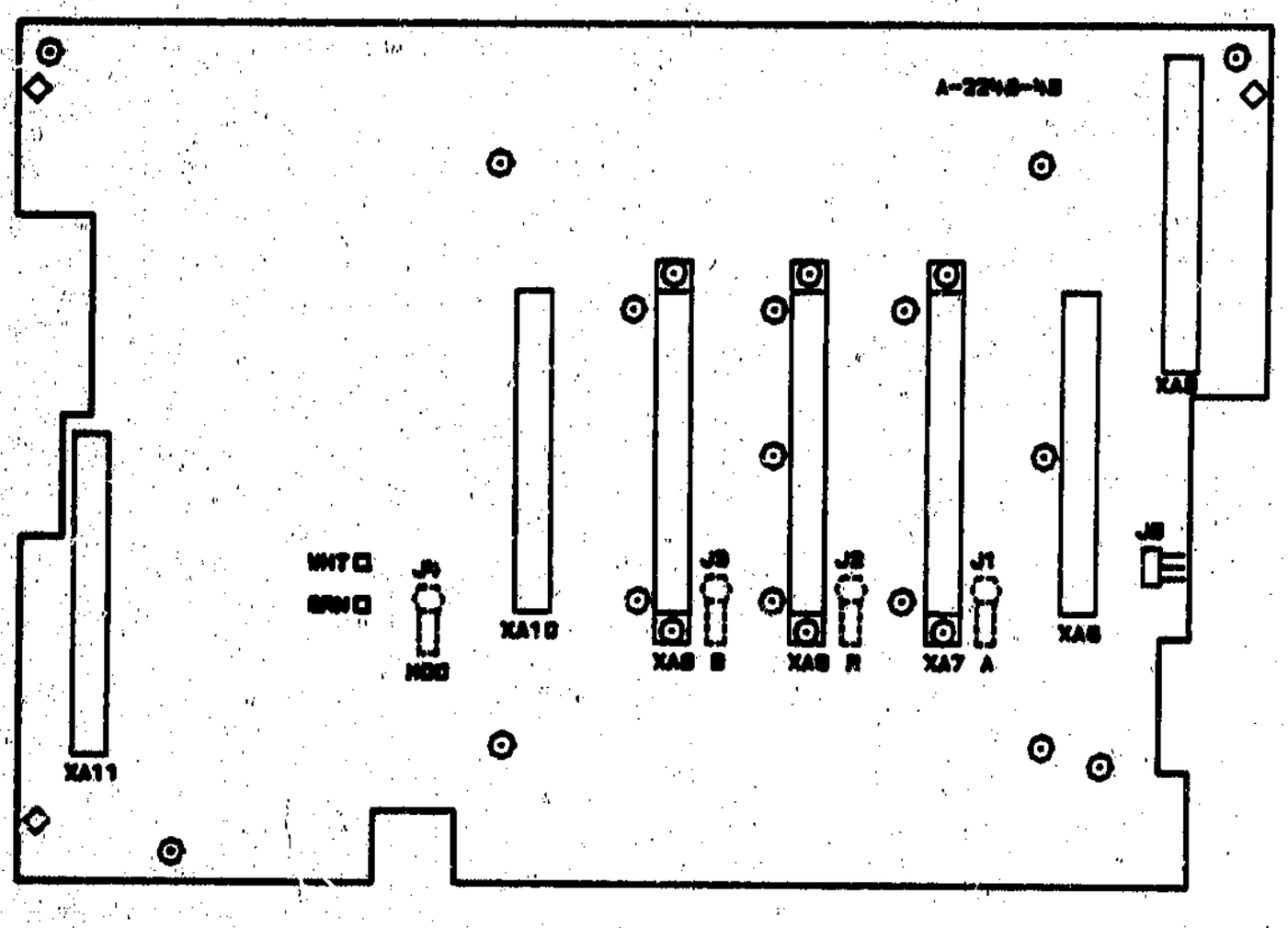
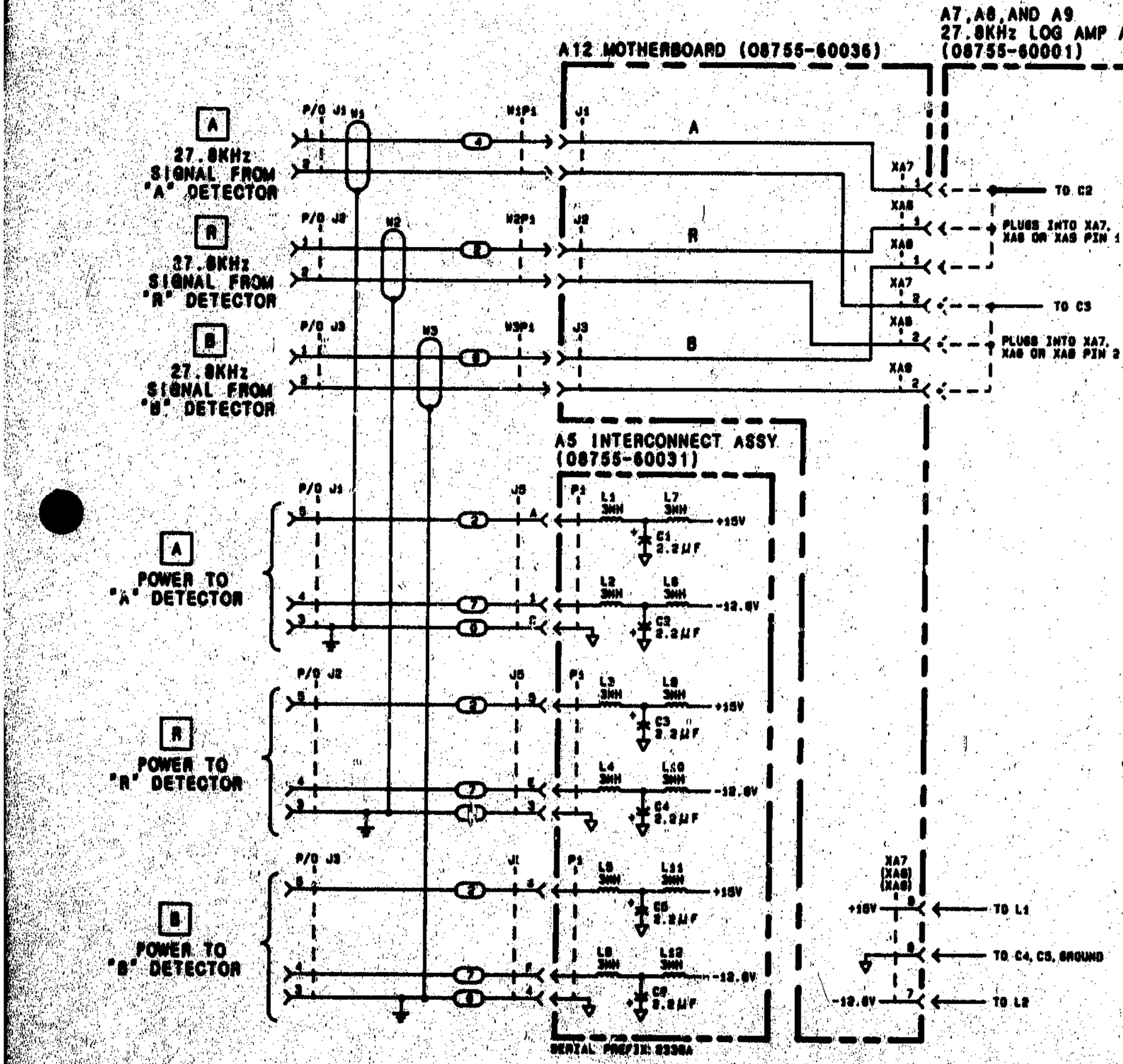
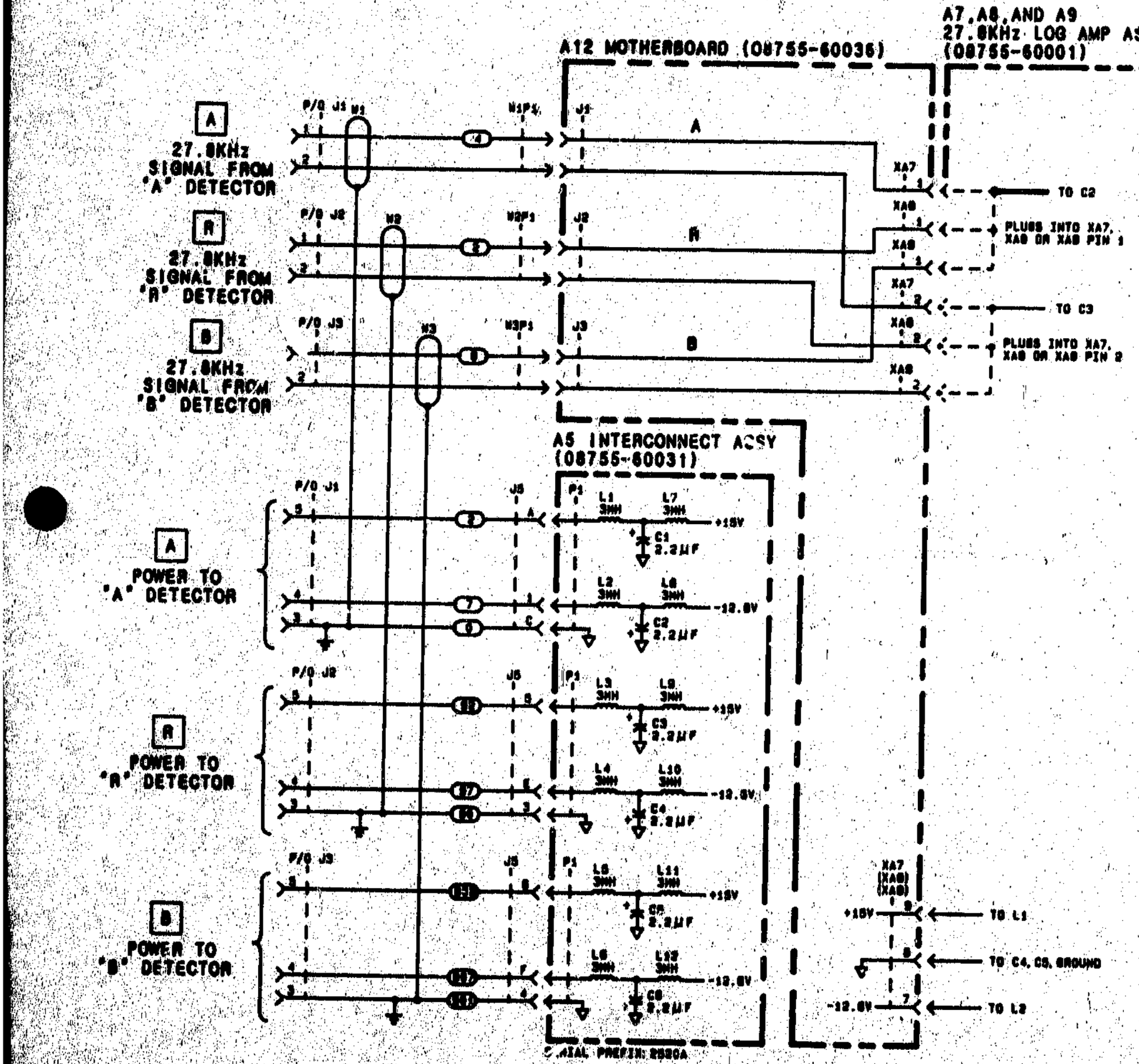


Figure 8-26. A12 Motherboard Parts Location (CHANGE 7)



P/O Figure 8-11. A7, A8, A9 27.8 kHz Log Amplifier Schematic (CHANGE 7)



P/O Figure 8-11. A7, A8, A9 27.8 kHz Log Amplifier Schematic (CHANGE 9)

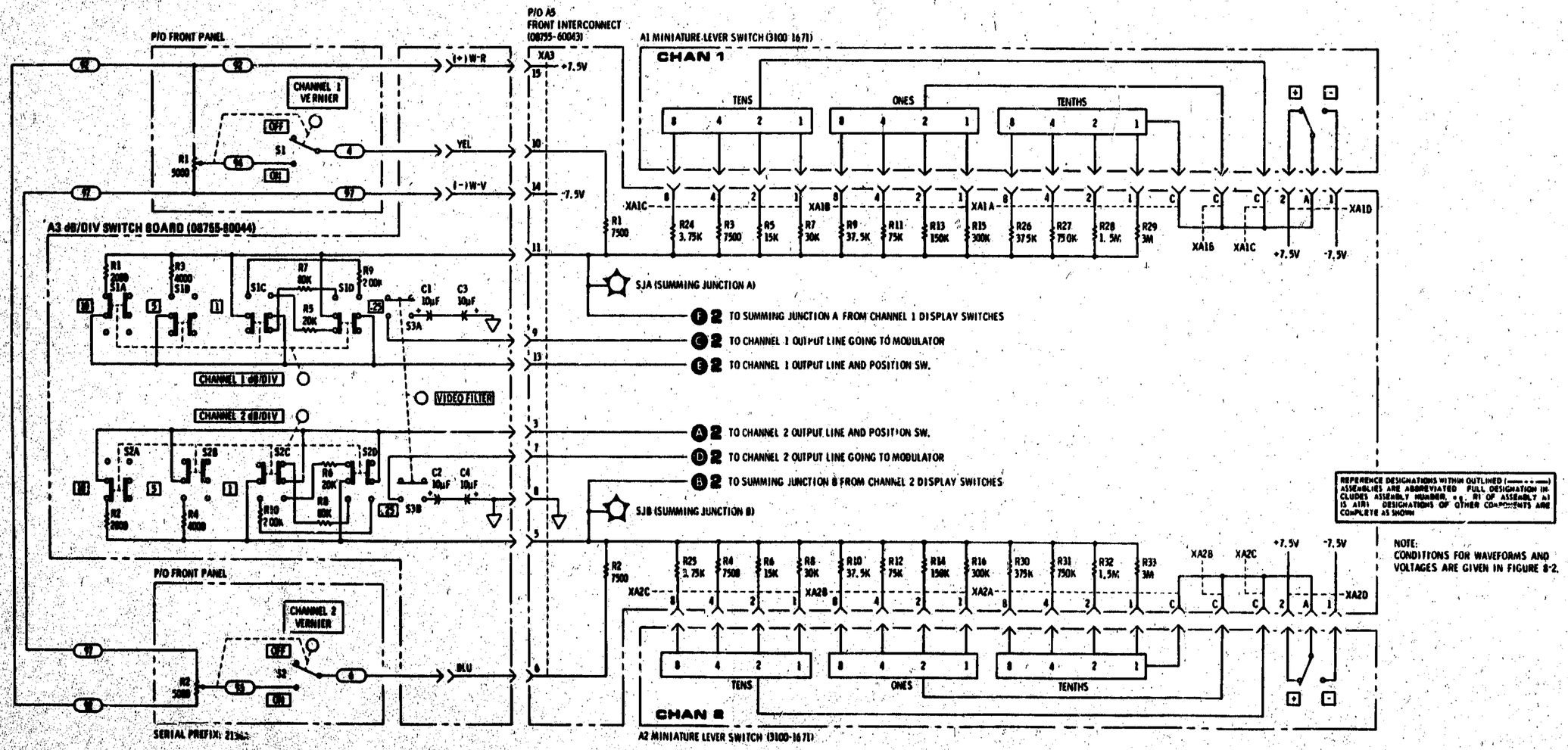


Figure 8-19. A3 dB/Division Switch and A1 and A2 Reference Level Switch, Schematic (CHANGE 3)