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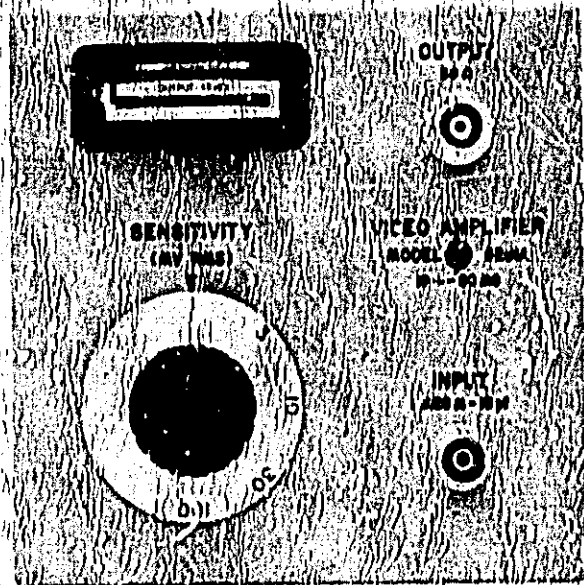
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OPERATING AND SERVICE MANUAL

VIDEO AMPLIFIER

5261A



HEWLETT  PACKARD

CERTIFICATION

The Hewlett-Packard Company certifies that this instrument was thoroughly tested and inspected and found to meet its published specifications when it was shipped from the factory. The Hewlett-Packard Company further certifies that its calibration measurements are traceable to the U.S. National Bureau of Standards to the extent allowed by the Bureau's calibration facilities, or to the calibration facilities of other International Standards Organization members.

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VIDEO AMPLIFIER

5261A

SERIAL PREFIX: 1124A

This manual applies directly to HP Model 5261A
Video Amplifiers having serial number prefix 1124A.

OLDER INSTRUMENTS

This manual with changes provided in the Appendix
also applies to models having serial prefix numbers
301, 311, 510, 960, and 1104A.

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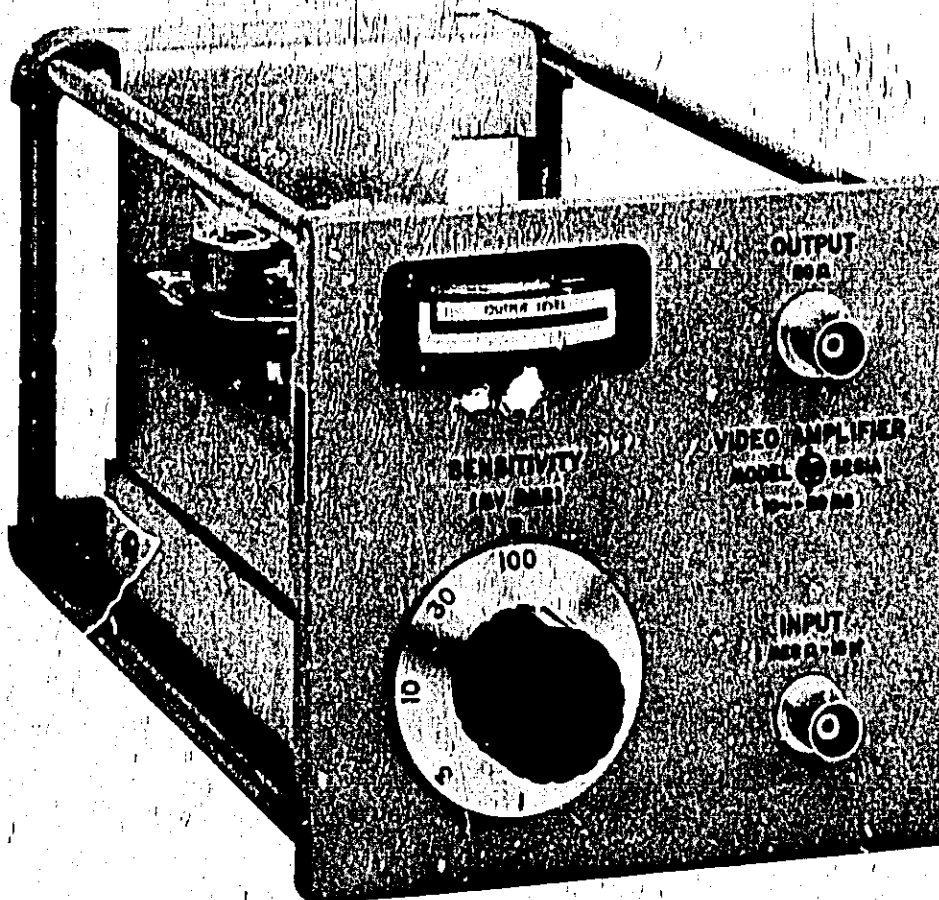
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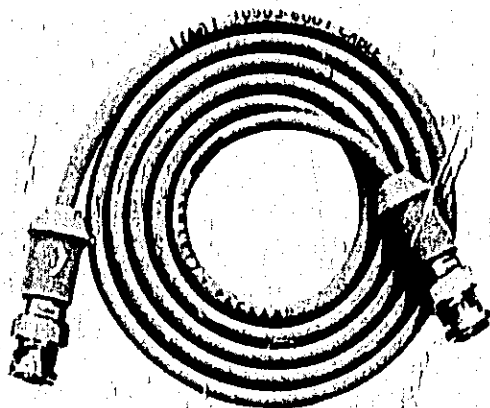
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5261A video amplifier



**BNC-BNC
cable**



SECTION I

GENERAL INFORMATION

1-1. INTRODUCTION.

1-2. DESCRIPTION.

1-3. The Hewlett-Packard Model 5261A Video Amplifier is a plug-in unit which increases the sensitivity of the Model 5243L, 5245L, and 5345A Electronic Counters. The Model 5261A provides for measurement of signals as low as 1 millivolt over the frequency range of 10 cps to 20 Mc (5243L) or 50 Mc (5245L). The input impedance is 1 megohm and may be increased to 10 megohms by using a 10:1 divider probe (HP stock no. 10003A). An output signal is available at the OUTPUT 50-ohm connector for monitoring the Video Amplifier output or for activating external instruments. This signal is identical in frequency and amplitude to the amplified signal supplied to the counter input circuit.

1-4. INSTRUMENT IDENTIFICATION.

1-5. Hewlett-Packard uses a two-section serial number mounted on the rear panel. Earlier instruments use an eight-digit serial number (000-00000). The first three digits are a serial prefix number; the last five digits refer to the specific instrument. Later instruments use a nine-digit serial number (0000A00000). The first four digits are the serial prefix and the last five digits refer to the specific

instrument. If the serial prefix on your instrument does not appear on the title page of this manual, there may be differences between the manual and your instrument. If there are differences, they will be described in a change sheet included with the manual.

1-6. ACCESSORY SUPPLIED.

1-7. A 50 ohm, low microphonic cable HP 10507-6001, with BNC connectors is supplied in the package with the Model 5261A.

1-8. ACCESSORIES AVAILABLE.

1-9. Table 1-2 lists the accessories available for the Model 5261A Video Amplifier.

Table 1-2. Accessories Available

Description	HP Stock No.
10:1 divider probe, 10 pf shunt 600V max., dc to 40 Mc	10003A
50-ohm feed-through termination	10100A
50-conductor extender cable	10506B
Plug-in adapter (for use with 5345A)	10590A

Table 1-1. Specifications*

BANDWIDTH:

10 cps to 50 Mc with 5245L; 10 cps to 20 Mc with 5243L.

INPUT SENSITIVITY:

1 mV to 300 mV rms.

INPUT IMPEDANCE:

Approximately 1 megohm, 15 pf shunt;
HP 10003A Probe increases impedance to 10 megohms, 10 pf shunt.

ATTENUATOR RANGES:

1, 3, 10, 30, and 100 mV rms.

MAXIMUM INPUT:

100 volts dc, 5 volts rms (ranges: 1, 3, 10, 30, 100 mV).

MONITOR:

Meter shows when the signal level is acceptable to the counter.

ACCURACY:

Retains accuracy of 5243L, 5245L, or 5345A Electronic Counters.

50 OHM OUTPUT:

Separate BNC front panel output for oscilloscope monitoring or for driving external equipment; 50-ohm source impedance. On amplifier's most sensitive attenuator range, 1 mV rms at input results in at least 100 mV rms at auxiliary output into 50-ohm load. Maximum undistorted output is 300 mV rms into 50-ohm load.

ACCESSORY FURNISHED:

HP 10003A 10:1 Probe, 10 pf shunt, 600 volts maximum; HP 10100A 50-ohm Feed-thru Termination, 10506B Extender Cable, 10590A Plug-In Adapter.

WEIGHT:

Net 2 lbs (0.90 kg); shipping 8 lbs (3.8 kg).

POWER:

Supplied by 5243L, 5245L, or 5345A Electronic Counters.

*When installed in the HP Model 5243L, 5245L, or 5345A Electronic Counters.

SECTION II INSTALLATION

2-1. INITIAL INSPECTION.

2-2. As soon as the Model 5261A is received, verify that the instrument is intact and as ordered. Inspect the plug-in for any physical damage such as scratched panel, broken knob, or bent connectors. If damage is found, refer to the warranty page at the rear of this manual and Paragraph 2-5 for shipping and re-packaging instructions.

2-3. STORAGE AND RESHIPMENT.

2-4. ENVIRONMENT. Conditions during storage and shipment should be limited as follows:

- a. Maximum temperature 167°F (75°C).
- b. Minimum temperature -40°F (-40°C).

2-5. PACKAGING. To protect your instrument during shipment or storage, use the best packaging methods available. Your Hewlett-Packard field office can provide materials similar to those used for original factory packaging. Contract packaging companies can provide dependable custom packaging on short notice.

- a. If possible, use the original container designed for the instrument. Otherwise, use a strong carton (350 lb/sq inch bursting strength) or wooden box to house the instrument.
- b. Wrap the instrument in heavy paper or plastic before placing it in the shipping container.
- c. Use plenty of packing material around all sides of the instrument and protect the front panel with cardboard strips.
- d. Seal the package with strong tape or metal bands. Mark with "Delicate Instrument."
- e. Refer to the warranty page at the rear of this manual and check with your Hewlett-Packard field office for shipping instructions. All correspondence

should refer to an instrument by model number and the full, eight-digit serial number.

2-6. INSTALLATION.

2-7. To install the Video Amplifier in the compartment provided at the right side of the counter front panel, proceed as follows:

- a. Remove AC power from the counter by rotating the SAMPLE RATE control full counterclockwise to POWER OFF.
- b. Loosen locking screws on either side of the plug-in compartment (or single locking screw on left side) by turning fully counterclockwise.
- c. Remove blank filler panel or plug-in unit installed.
- d. Slide the Model 5261A into the compartment. Make certain the plug-in is properly aligned and tighten the locking screws.

2-8. COOLING.

2-9. The Video Amplifier plug-in unit is cooled by the ventilation of the counter in which it is installed. Refer to the Operating and Service Manual of the Counter for cooling system maintenance instructions.

2-10. POWER REQUIREMENTS.

2-11. All voltages required to operate the Model 5261A are supplied by the circuits of the counter in which the plug-in is installed.

2-12. ELECTRICAL CONNECTIONS.

2-13. The INPUT terminal on the front panel of the plug-in (see Figure 3-2) provides the only connection for the input signal. The front-panel OUTPUT 50 Ω connector supplies the Video Amplifier output for monitoring or external equipment. All connections to the counter are completed through the 50-pin jack at the rear of the plug-in unit.

OPERATION

AND

THEORY

SECTION III OPERATION

3-1. MODEL 5261A CONTROLS.

3-2. Figure 3-2 indicates the functions of the connectors, meter, and SENSITIVITY control on the Model 5261A front panel.

3-3. OPERATING PROCEDURE.

3-4. The Video Amplifier plug-in unit is ac-coupled but does not change any functions of the counter in which it is installed. Using the plug-in, period, multi-period, frequency, totalizing, and ratio measurements can be performed with input signals as low as one millivolt. Since the measurements can be made with or without the Video Amplifier installed, only frequency measurement is illustrated in Figure 3-3. For other measurement procedures, see the Operating and Service Manual for your Electronic Counter. Table 3-1 lists the frequency resolution for all settings of the counter TIME BASE control (Figure 3-3, item 3).

Table 3-1. Frequency Resolution

INPUT FREQUENCY = 11.1223344 Mc	
TIME BASE Setting	Counter Display and Resolution
.1 μ s	no display
1 μ s	11. Mc
10 μ s	11.1 Mc
.1 ms	11.12 Mc
1 ms	11122. kc
10 ms	11122.3 kc
.1 s	11122.33 kc
1 s	11122.334 kc
10 s	11122.3344 kc

3-5. OPERATION WITH PULSE INPUT SIGNALS.

3-6. The Video Amplifier is designed to amplify sinusoidal input signals. However, pulse input signals can be amplified if the output signal is monitored to ensure a satisfactory output to the counter. Monitor the signal at the OUTPUT 50 Ω connector with an oscilloscope and set the Video Amplifier SENSITIVITY control for a level which results in satisfactory counter operation. Because the output level meter is an average-responding device, it will read low with a pulse input signal. Do not use the meter as an output level indicator when amplifying pulses.

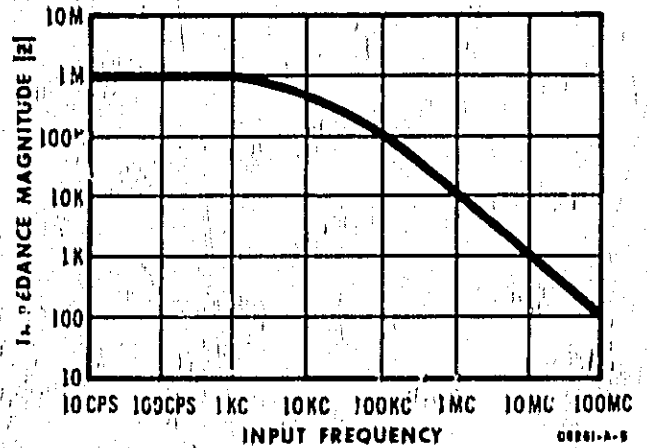


Figure 3-1. Input Impedance vs Input Frequency

3-7. OPERATION WITH HIGH IMPEDANCE PROBE.

3-8. The ψ 10003A 10:1 divider probe can be used with the Video Amplifier. The 10:1 divider probe serves to decrease the effects of resistive loading on the external circuit at low frequencies. When using the probe, Video Amplifier sensitivity is decreased by 1/10. As a result, the maximum sensitivity of the Video Amplifier is 10 mv.

3-9. VIDEO AMPLIFIER INPUT IMPEDANCE.

3-10. As illustrated in Figure 3-1, Video Amplifier input impedance decreases at higher frequencies. This decrease is due to the capacitive loading effect of the amplifier input. Thus when a signal source of fixed impedance is connected to the Video Amplifier INPUT, a meter at the signal source will not indicate the correct input level at the Video Amplifier. To avoid this error, monitor the input level at the Video Amplifier input with an RF Voltmeter such as the ψ Model 411A to ensure a satisfactory input level. The Video Amplifier input can also be terminated in the signal source characteristic impedance but at frequencies near 50 Mc capacitive loading reduces the input impedance, the signal source is no longer terminated in its characteristic impedance, and a meter at the signal source is incorrect. Thus, the simplest method of ensuring a satisfactory input to the Video Amplifier is to monitor the signal level at the Video Amplifier input.

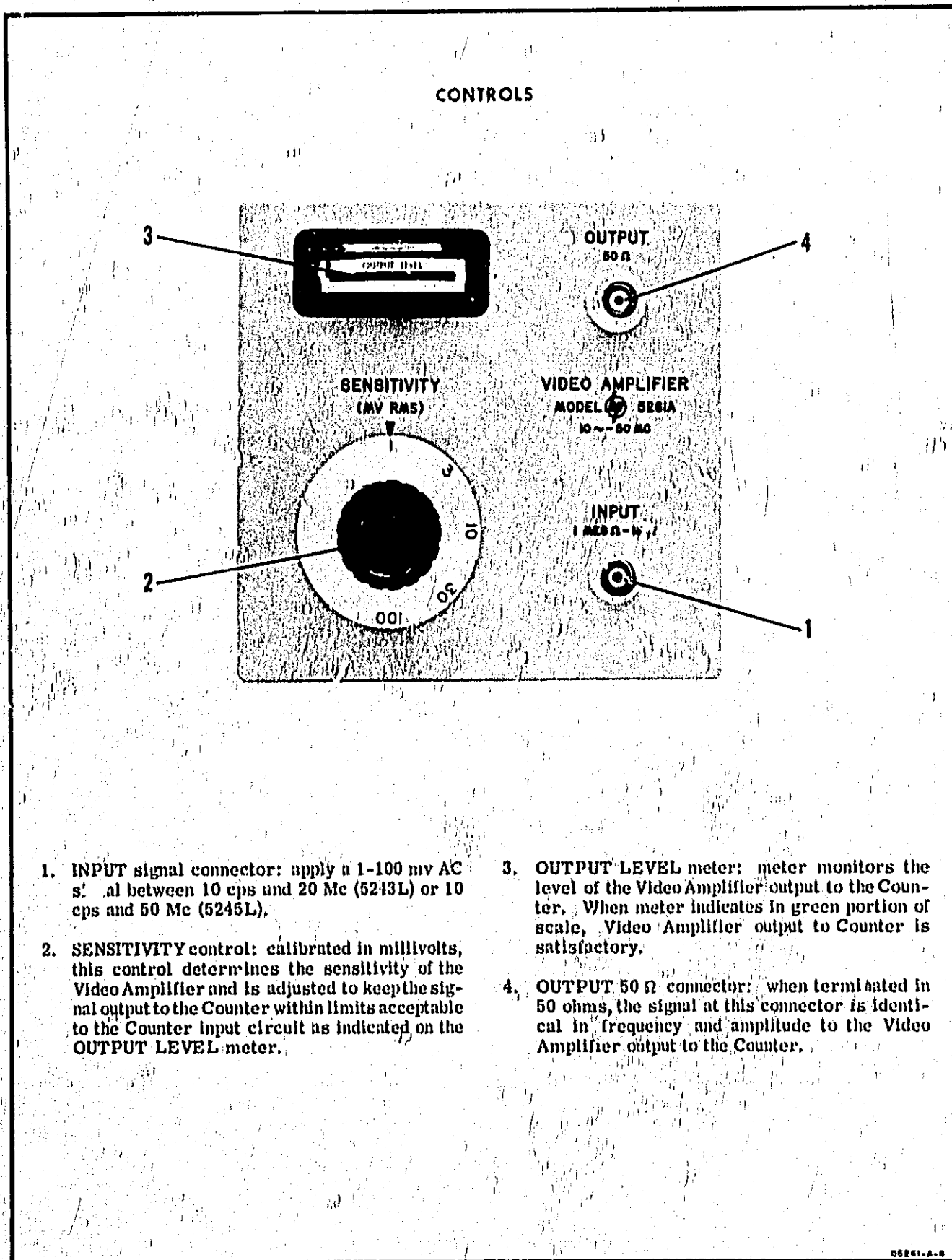


Figure 3-2. Controls

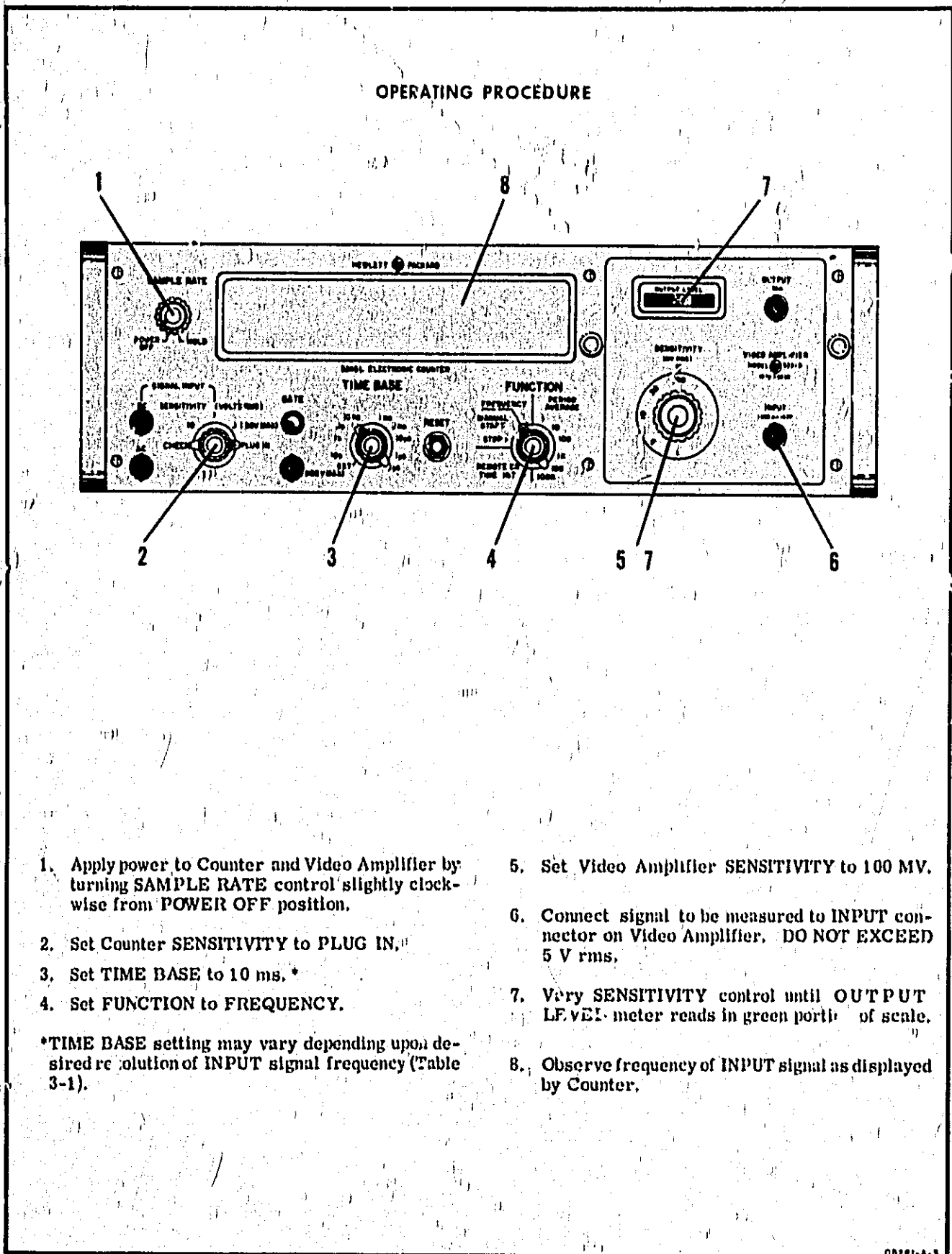


Figure 3-3. Frequency Measurement with Model 5201A

SECTION IV PRINCIPLES OF OPERATION

4-1. INTRODUCTION.

4-2. The four functional sections of the Model 5261A are illustrated in Figure 5-4. The preamplifier, attenuator, video amplifier, and output amplifier circuits are combined to amplify AC signals as small as 1 millivolt and provide a usable output level to the counter input circuit. All dc voltages to operate the Model 5261A are supplied from the counter in which the unit is installed. These dc voltages are filtered by components on Amplifier assembly A4, which includes a series regulator in the 15-volt line.

4-3. PREAMPLIFIER ASSEMBLY A1.

4-4. The preamplifier circuit consists of a muvistor cathode follower driving an emitter follower to provide a high impedance input and a low impedance output. Diodes A1CR1 and A1CR2 limit input signal peaks and prevent damage to A1Q1. Resistor A1R4 limits A1Q1 gate current during overload. Capacitors A1C2, A1C3, A1C4, and A1C5 filter variations from the dc voltage lines.

4-5. ATTENUATOR SWITCH ASSEMBLY A2.

4-6. Resistive attenuator A2 reduces the input signal and establishes the overall gain of the Video Amplifier. The amount of attenuation inserted is controlled by the Video Amplifier SENSITIVITY switch. RC networks A2C2, A2R10 and A2R9, A2C1 are selected to improve frequency response.

4-7. VIDEO AMPLIFIER ASSEMBLY A3.

4-8. The video amplifier consists of two amplifiers with three transistors each and feedback and drift compensation for gain stability. Feedback is provided by the RC combination of A3R5, A3C4, A3R13, A3C11 and transistors A3Q3, A3Q6 in the feedback loops of the two amplifiers. Drift compensation is also accomplished with the addition of A3Q3 and A3Q6. Positive feedback to amplifier No. 2 from output amplifier A4Q4 increases amplifier No. 2 gain at higher frequencies.

4-9. The addition of A3Q3 and A3Q6 in the feedback loops of the two amplifiers provides three functions: 1) act as negative feedback amplifiers to reduce the gain which reduces any drift caused by temperature changes in the two-stage amplifiers; 2) maintain the amplifier gain at low frequencies; and 3) filter ripple on the -14 volt line, in conjunction with A3C6 and A3C13.

4-10. OUTPUT AMPLIFIER ASSEMBLY A4.

4-11. Output amplifier assembly A4 consists of: 1) output amplifier circuit; 2) meter circuit; 3) plus 20-volt filter; and 4) series regulator. These four circuits are discussed in Paragraphs 4-12 through 4-15.

4-12. OUTPUT AMPLIFIER. Emitter follower A4Q4 provides the amplified input signal to the counter via rear panel plug P6, pin 1. This same signal is supplied to OUTPUT 50Ω jack J2 for monitoring with an oscilloscope or application to other equipment. Positive feedback from A4Q4 emitter to amplifier No. 2 in the video amplifier assembly increases the video amplifier gain at higher frequencies. Capacitors A4C9 and A4C10 are connected in parallel to improve the overall frequency response.

4-13. METER CIRCUIT. The signal at A4Q4 emitter is rectified by A4CR2 and A4CR3 and filtered by A4C12. This dc is supplied to OUTPUT LEVEL meter M1. Capacitors A4C11 and A4C13 are connected in parallel to improve the frequency response of the meter circuit. Meter Cal potentiometer A4R13 provides an adjustment for calibrating the OUTPUT LEVEL meter (Paragraph 5-12). Minus 15 volts is supplied to the meter circuit and establishes a bias on diodes A4CR2, 3. This prevents the meter indicating for very small output signals and permits a meter indication in the green scale for an output signal greater than 100 millivolts. Diode A4CR4 acts to protect the meter during input signals greater than 100 mv. A4CR4 anode is clamped at about -1.5 volts, which corresponds to approximately full scale. When the rectified signal output exceeds this value, A4CR4 conducts and protects the meter.

4-14. PLUS 20 VOLT FILTER. Transistors A4Q1, A4Q2, and associated components filter variations and noise from the +20-volt line. A voltage change at A4Q1 collector causes a change at A4Q2 base and A4Q2 changes conduction to oppose the variation. The emitter-collector voltage drop across A4Q2 is approximately 1 volt and the +20 volts becomes +19 volts at the drain of FET A1Q1. Resistors A4R2 and A4R3 form a dc voltage divider to establish the quiescent voltage at A4Q1 base. Capacitor A4C2 bypasses to ground ac variations at A4Q1 base.

4-15. SERIES REGULATOR. Series regulator A4Q3 provides regulated -14 volts for the Model 5261A circuits. Breakdown diode A4CR1 establishes a reference voltage at A4Q3 base. When the -15 volts changes, A4Q3 senses this change through A4R, and increases conduction to oppose the change. Inductor A4L1 reduces high-frequency transients in the -14 volt regulated output.

MAINTENANCE

Table 5-1. Recommended Test Equipment

Instrument Type	Required Characteristics	Use	Instrument Recommended
Electronic Counter		Provide power	Ⓢ Model 5243L or Ⓢ Model 5245L
DC Voltmeter	0 v to ± 25 v; 10M Ω input impedance; 1% accuracy	Troubleshooting	Ⓢ Model 412A
AC Voltmeter	1 mv to 500 mv; 10 cps to 1 Mc; 2% accuracy	Troubleshooting Circuit adjustment	Ⓢ Model 403B
RF Millivoltmeter	1 mv to 500 mv; 500 kc to 50 Mc; 3% accuracy	Troubleshooting; Circuit adjustment	Ⓢ Model 411A with Ⓢ 11025A Probe (formerly Ⓢ 411A-21E)
Oscillator	10 cps to 100 kc; 1 mv to 500 mv	Troubleshooting; Circuit adjustment	Ⓢ Model 200CD
High Frequency Signal Generator	100 kc to 50 Mc; 1 mv to 500 mv	Troubleshooting; Circuit adjustment	Ⓢ Model 606A
Oscilloscope	10 cps to 10 Mc; 5 mv/cm	Troubleshooting	Ⓢ Model 175A with Ⓢ Model 1752A
Coaxial Cable	Low Microphonics	Troubleshooting; Circuit adjustment; Operation	Ⓢ 10507A
Extender Cable	50-pin connectors; straight-through connections	Permits operation outside of counter	Ⓢ 10506B
Feed-through Termination	BNC to BNC; 50 Ω	Troubleshooting; Circuit adjustment	Ⓢ 10100A (2 required)
DC Power Supply	100 vdc	Performance Check	Ⓢ 711A

SECTION V MAINTENANCE

5-1. INTRODUCTION.

5-2. This section of the manual provides maintenance and service information for the Model 5261A Video Amplifier. Included are troubleshooting procedures, a table of recommended test equipment, repair information, and in-cabinet performance checks which may be used to verify proper operation of the instrument.

5-3. TEST EQUIPMENT.

5-4. Recommended test equipment for checking performance and troubleshooting is listed in Table 5-1. Test instruments not listed that have specifications equal to or better than the required characteristics listed may be used.

5-5. ASSEMBLY IDENTIFICATION.

5-6. Throughout this manual, printed circuit assemblies are referred to by assembly number. For example, the Video Amplifier Assembly is referred to as A3. Connections to pins of the 50-pin plug on the rear of the instrument are referred to by the plug number and pin number; for example, pin 1 is referred to as P6(1).

5-7. IN-CABINET PERFORMANCE CHECK.

5-8. The performance checks listed in Table 5-2 verify proper operation of circuits in the Video Amplifier and may be used:

- a. as part of an incoming inspection check of instrument specifications;
- b. periodically, for instruments in systems where maximum reliability is of primary importance;
- c. as part of a troubleshooting procedure to locate malfunctioning circuits, and
- d. after any repairs or adjustments, before returning instrument to regular service.

5-9. ADJUSTMENTS.

5-10. HIGH FREQUENCY RESPONSE ADJUSTMENTS A3C4, A3C11.

5-11. Trimmer capacitors A3C4 and A3C11 in video amplifier assembly A3 provide the only adjustments for frequency response. Adjust these capacitors only when the bandwidth check (Table 5-2, In-Cabinet Performance Checks) indicates the frequency response is outside the ± 3 db limits. The access hole for tuning A3C4 is on the bottom of the instrument and A3C11 access hole is on the left side. Use a plastic tuning wand for adjustments. Adjust A3C4 and A3C11 as follows:

a. Remove Video Amplifier plug-in from counter by loosening lock screws and sliding unit out of counter plug-in compartment.

b. Use $\phi 10506B$ extension cable and connect Video Amplifier rear plug to counter jack inside plug-in compartment.

c. Set counter controls as follows:
 SAMPLE RATE. slightly cw out of POWER OFF
 SENSITIVITY. PLUG-IN
 TIME BASE 1 MS
 FUNCTION FREQUENCY

d. Set Video Amplifier SENSITIVITY to 3 MV.

e. Connect Model 411A RF Millivoltmeter through $\phi 10100A$ feedthrough termination to 50 Ω OUTPUT.

f. Connect Model 606A generator through $\phi 10100A$ feedthrough termination to Video Amplifier INPUT. Set frequency to 1000 kc and adjust output level for 150 mv indication on voltmeter (use -3 db mark as reference).

g. Slowly change generator frequency from 500 kc to 60 Mc. If voltmeter indicates less than -6 db or more than 0 db, adjust A3C11 to bring the voltmeter indication within these limits.

h. Set generator frequency to 30 Mc and if voltmeter indication is less than -6 db or more than 0 db, adjust A3C1.

i. Repeat steps g and h until the voltmeter indication is within the limits for both steps.

j. Slowly change generator frequency between 500 kc and 60 Mc. Observe that voltmeter indication remains between -6 db and 0 db over this frequency range.

5-12. OUTPUT METER CALIBRATION.

5-13. Meter Cal potentiometer A4R13 is located on output amplifier assembly A4 and is accessible from the top when the Video Amplifier is outside the counter plug-in compartment. Adjust A4R13 as follows:

a. Perform operations indicated in Paragraph 5-11, steps a, b, and c.

b. Connect Model 200CD oscillator output to the Video Amplifier INPUT. Set oscillator frequency to 100 kc.

c. Connect Model 403B voltmeter to the Video Amplifier 50 Ω OUTPUT through $\phi 10100A$ feedthrough termination.

Table 5-2. In-Cabinet Performance Checks

<p>1. BANDWIDTH: 10 cps to 50 Mc</p> <ul style="list-style-type: none">n. Set counter controls as follows: SAMPLE RATE slightly clockwise out of POWER OFF SENSITIVITY to PLUG-IN TIME BASE to 1 MS FUNCTION to FREQUENCYb. Set Video Amplifier SENSITIVITY to 3 MV. Connect ϕ10100A 50-ohm feedthrough terminations to INPUT and OUTPUT.c. Connect Model 200CD Oscillator output to Video Amplifier INPUT and Model 403B Voltmeter to 50 Ω OUTPUT.d. Adjust Oscillator frequency to 100 kc and for indication of 120 mv on Voltmeter (use -4 db line as reference).e. Slowly change Oscillator frequency from 100kc to 10cps. Video Amp' output level should remain between -7 db and -1 db limits.f. Disconnect Model 200CD and connect Model 606A to Video Amplifier INPUT through the ϕ10100A feedthrough termination. Disconnect Model 403B from OUTPUT and connect Model 411A RF Voltmeter.g. Set generator to 1000 kc and adjust output level for -4 db reference as in step d. Remove Voltmeter from OUTPUT and connect to INPUT. Record input level for reference level.h. Connect Voltmeter to 50 Ω OUTPUT and slowly change generator frequency from 1000 kc to 100 kc. Repeat above 100 kc to 50 Mc. Connect Voltmeter to INPUT periodically to check reference level. Video Amplifier output should remain between -7 db and -1 db limits.
<p>2. INPUT SENSITIVITY: 1 mv to 300 mv rms.</p> <ul style="list-style-type: none">a. Set Counter controls as in 1 a.b. Set Video Amplifier SENSITIVITY to 1 MV.c. Connect ϕ10100A feedthrough terminations to Video Amplifier INPUT and 50 Ω OUTPUT.d. Connect Model 200CD to INPUT and Model 403B Voltmeter to 50 Ω OUTPUT. Adjust Oscillator frequency to 100 kc and for indication of 100 mv on Voltmeter.e. Disconnect Voltmeter from 50 Ω OUTPUT and connect Oscilloscope to 50 Ω OUTPUT. Oscilloscope display should be a sine wave with no clipping.f. Connect Voltmeter to Oscillator output. Voltmeter should indicate less than 1 mv.g. Connect Voltmeter to 50 Ω OUTPUT.h. Set Video Amplifier SENSITIVITY to 100 mv.i. Connect Oscillator to INPUT and set to 100 kc.j. Adjust Oscillator output for 300 mv indication on Voltmeter.k. Observe that Counter correctly counts input frequency.
<p>3. MAXIMUM INPUT: 5 volts rms, 100 vdc</p> <ul style="list-style-type: none">a. Set counter controls as in 1 a.b. Connect BNC tee to Video Amplifier INPUT, set Model 711A DC Power Supply for 100 volts, add 1 megohm series resistor, and connect power supply to Video Amplifier.c. Use a 0.1 μ f, 200 vdc capacitor and connect Oscillator and Voltmeter to INPUT. Set Oscillator for 100 kc and 5 volts rms as indicated on Voltmeter.d. Observe that counter correctly displays input frequency. <p style="text-align: right;">(cont'd)</p>

Table 5-2. In-Cabinet Performance Checks (cont'd)

<p>4. MONITOR: OUTPUT METER indicates acceptable signal level to Counter.</p> <p>a. Set Counter controls as in 1 a, and Video Amplifier SENSITIVITY to 3 MV.</p> <p>b. Set Oscillator to 100 kc and connect to Video Amplifier INPUT with 50-ohm termination.</p> <p>c. Connect Voltmeter to 50 Ω OUTPUT with 50-ohm feedthrough termination.</p> <p>d. Adjust Oscillator output level for 420 mv on Voltmeter.</p> <p>e. Observe that OUTPUT LEVEL meter indicates at right edge of green portion of scale and Counter correctly displays input frequency.</p> <p>f. Set Oscillator output level for 120 mv indication on Voltmeter.</p> <p>g. Observe that OUTPUT LEVEL meter indicates at left edge of green portion of scale and Counter correctly displays input frequency.</p>
<p>5. ACCURACY: retains accuracy of Model 5243L or Model 52451 Electronic Counter.</p> <p>a. Set Counter controls as in 1 a.</p> <p>b. Set Oscillator frequency to 100 kc and connect to Video Amplifier INPUT.</p> <p>c. Set Video Amplifier SENSITIVITY to 100 MV.</p> <p>d. Connect Voltmeter to Oscillator output and set signal level to 100 mv.</p> <p>e. Observe and record Counter display.</p> <p>f. Set Counter SENSITIVITY to .1V. Disconnect Oscillator output from Video Amplifier INPUT and connect to Counter AC SIGNAL INPUT.</p> <p>g. Observe that Counter display corresponds with value recorded in step e.</p>
<p>6. AUXILIARY OUTPUT:</p> <p>a. 50 Ω OUTPUT on front panel for monitoring amplified signal to Counter or for driving external equipment checked in 1 under BANDWIDTH specification check.</p> <p>b. 1 mv signal at Video Amplifier INPUT provides at least 100 mv at 50 Ω OUTPUT, checked in 2 under INPUT SENSITIVITY specification check.</p> <p>c. Maximum undistorted output is 300 mv into 50-ohm load, checked in 2 under INPUT SENSITIVITY specification check.</p>

d. Set Video Amplifier SENSITIVITY to 100 MV. Adjust Oscillator output for 420 mv on Voltmeter.

e. OUTPUT LEVEL meter should indicate at right edge of green scale. If not, adjust A4R13 for this indication.

f. Adjust Oscillator output for OUTPUT LEVEL indication at left edge of green scale. Voltmeter should indicate not less than 100 mv.

5-14. TROUBLESHOOTING AND REPAIR.

5-15. TROUBLESHOOTING.

5-16. When operation or performance checks indicate an instrument malfunction, refer to Table 5-3 (Troubleshooting) for the more common indications of trouble and checks to isolate the trouble. After the trouble has been isolated to a particular assembly or stage, voltage and resistance checks can be made to determine the defective component.

5-17. PRINTED CIRCUIT COMPONENT REPLACEMENT.

5-18. Component lead holes in the Model 5261A printed circuit boards have plated walls to ensure good electrical contact between conductors on opposite sides of the board. To prevent damage to this plating and to the replacement component, apply heat sparingly and work carefully. The following replacement procedure is recommended:

a. Remove defective component by applying heat carefully to the component connection and lifting the component from the board.

b. Melt solder in component lead holes. Use clean dry soldering iron to remove excess solder. Clean holes with toothpick or wooden splinter. Do not use metal tool for cleaning. This may damage through-hole plating.

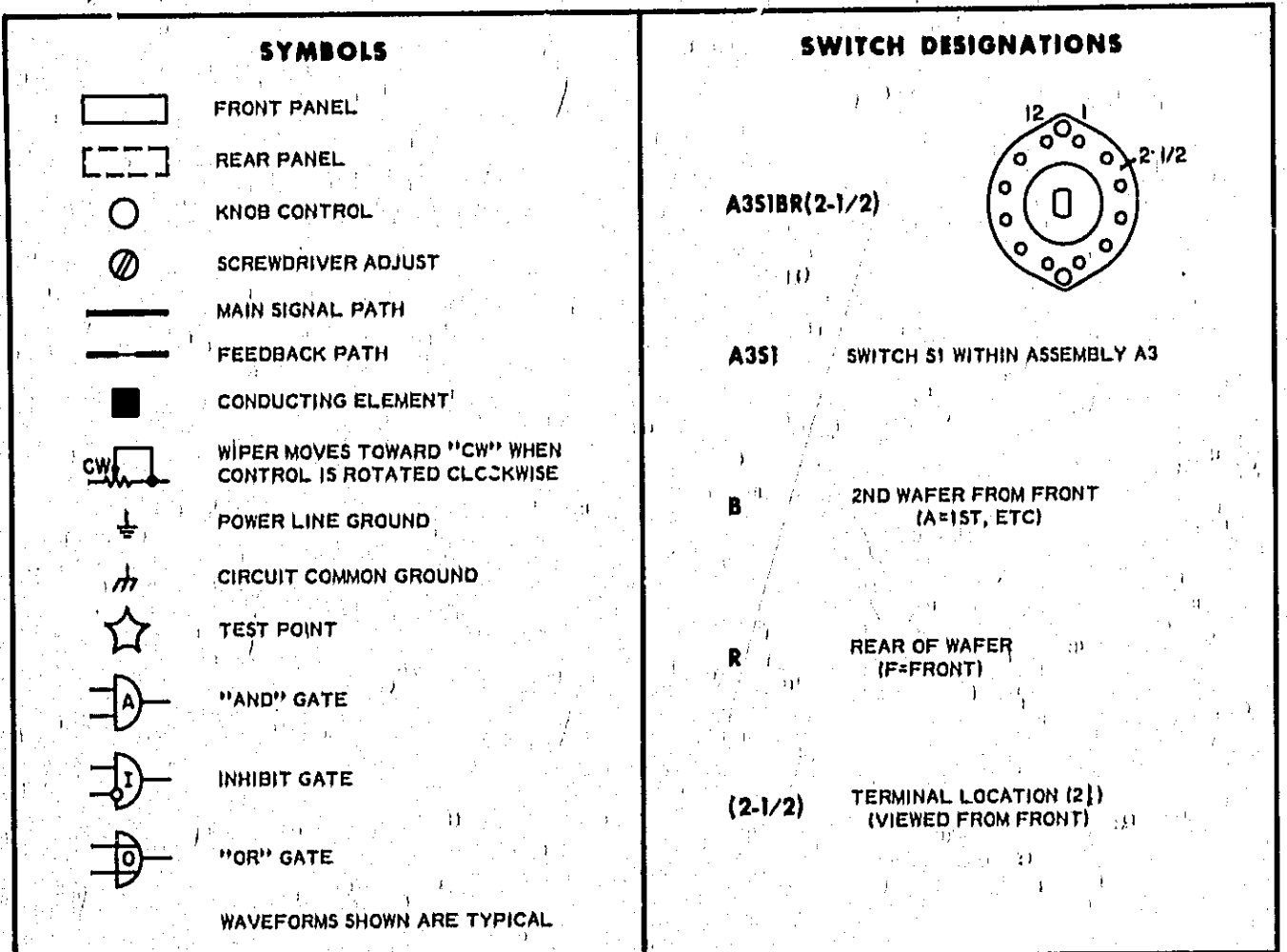
c. Bend lead of replacement component to the correct shape and insert component leads into component lead holes. Using heat and solder sparingly, solder

leads in place. Heat may be applied to either side of board. A heat sink (longnose pliers, commercial heat-sink tweezers, etc.) should be used when replacing transistors and diodes to prevent conducting excessive heat from the soldering iron to the component.

d. Through-hole plating breaks are indicated by the separation from the board of the round conductor pad. To repair breaks, press conductor pads against board and solder replacement component lead to conductor pads on both sides of the board.

Table 5-3. Troubleshooting

Trouble Symptom	Possible Cause
No output to Counter or 50Ω OUTPUT jack	DC voltages from Counter, FET A1Q1 dead, A4Q4 shorted, P6(1) or J2 shorted
Low Video Amplifier gain	A1Q1 weak, A3Q1-A3Q6 weak, A4R5 increased value
Output low at frequencies near 10 cps	A4C6 open, A1C1, A3R8 increased value
Output low at frequencies above 100 kc	A2C1 changed value, high frequency trimmers A3C4 and A3C11 not correctly adjusted
Output noisy	A1Q1 noisy, poor ground connection at P6(3), A3C5 or A3C12 changed value



REFERENCE DESIGNATIONS

REFERENCE DESIGNATIONS WITHIN ASSEMBLIES ARE ABBREVIATED. ADD ASSEMBLY NUMBER TO ABBREVIATION FOR COMPLETE DESCRIPTION.

ASSEMBLY	ABBREVIATION	COMPLETE DESCRIPTION
A25	C1	A25C1
A25A1	CR1	A25A1CR1
NO PREFIX	J3	J3

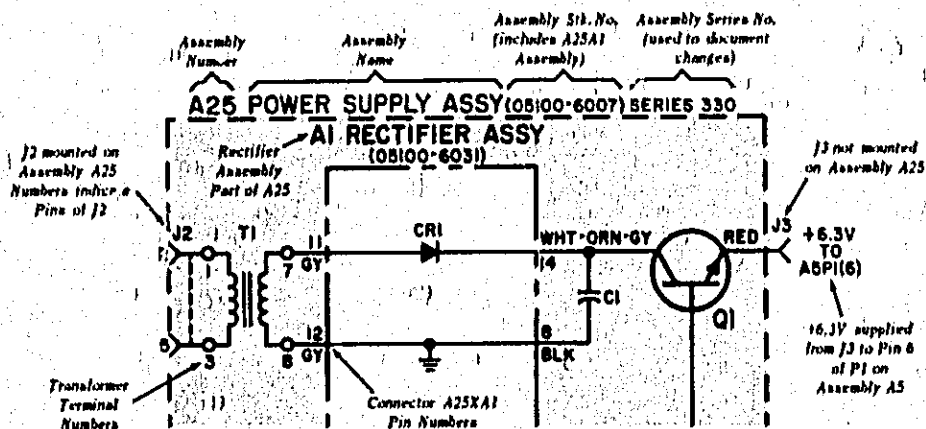


Figure 5-1. Schematic Diagram Notes

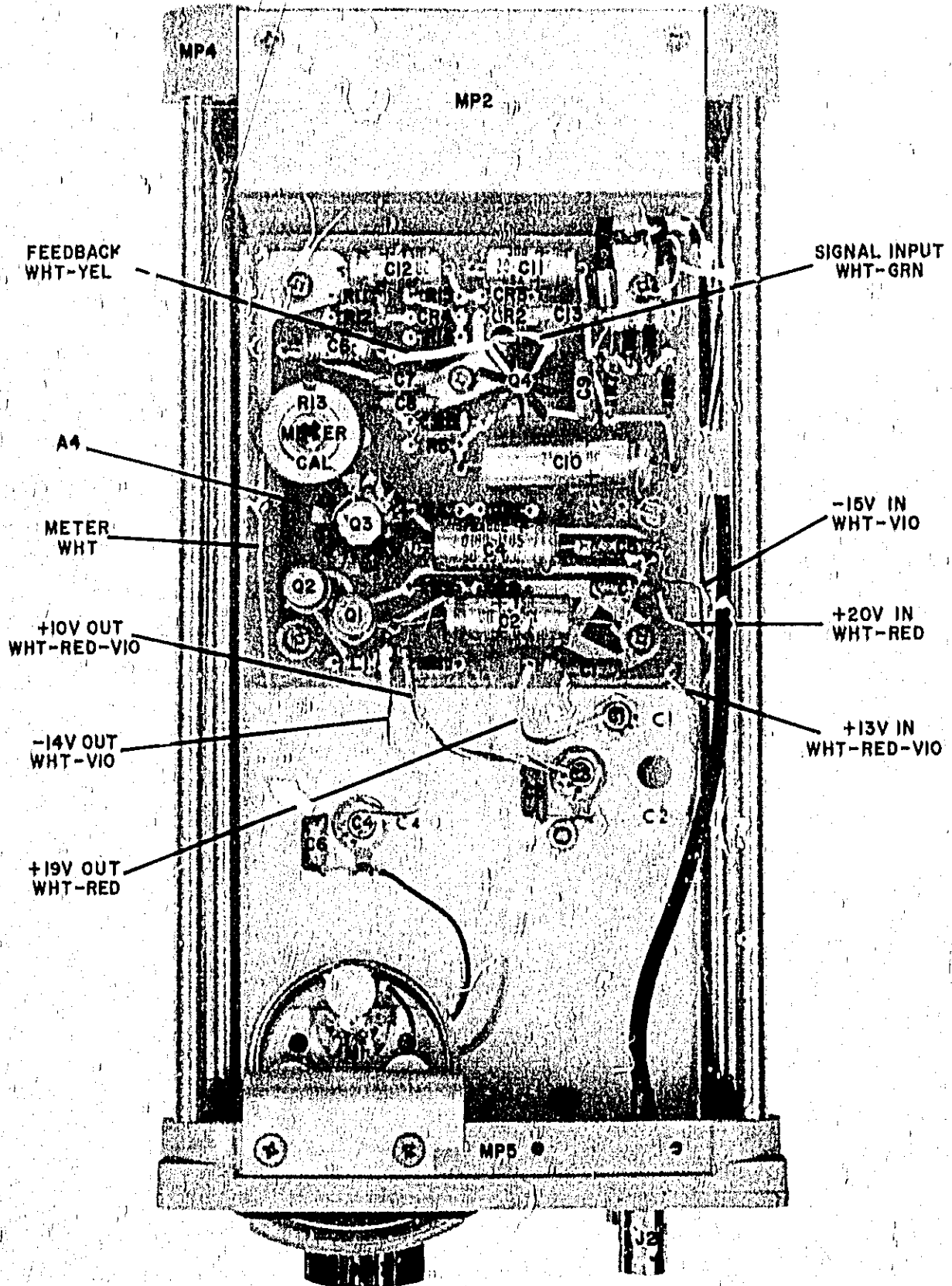


Figure 5-2. Top View, Component Location

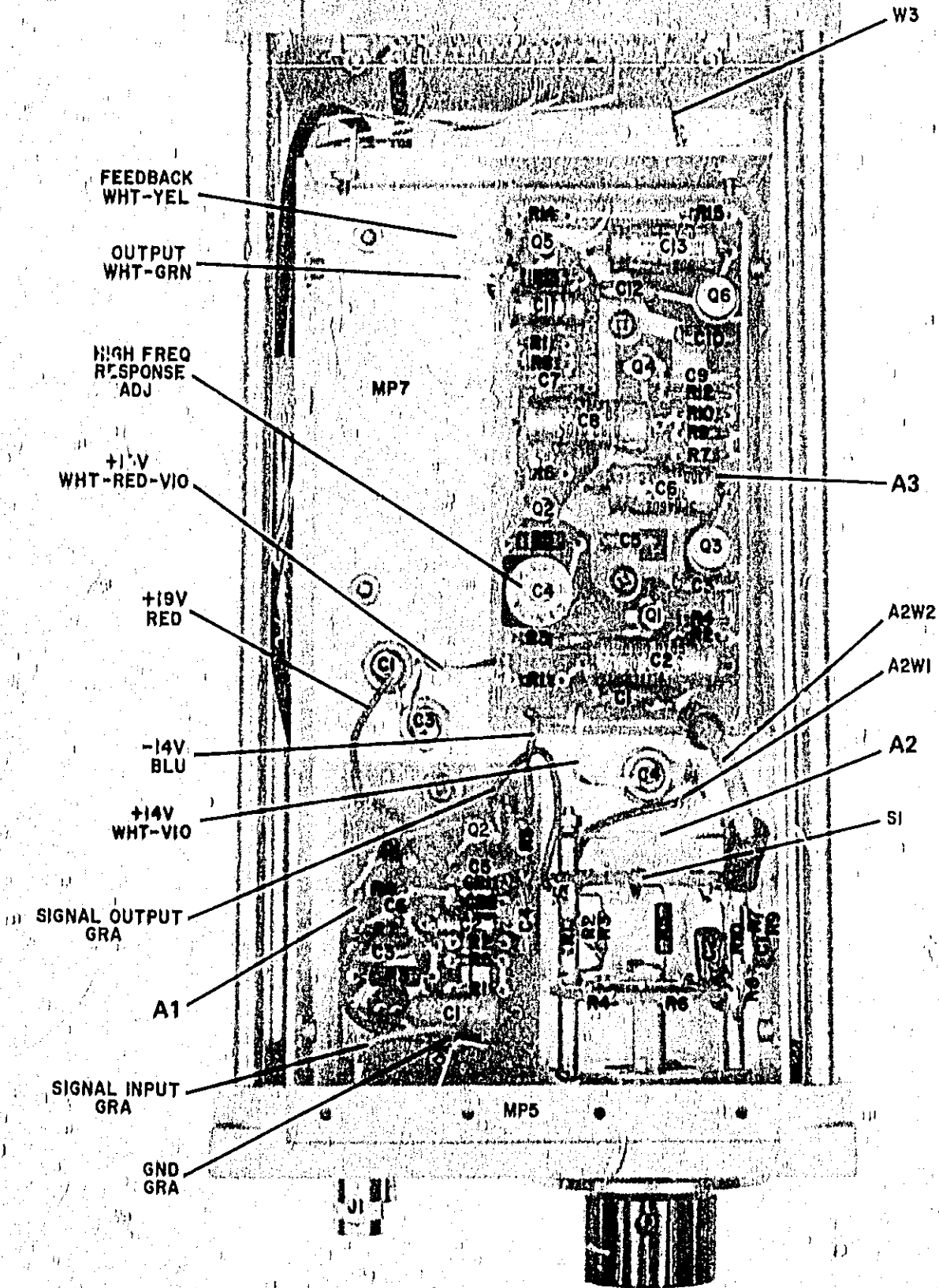


Figure 5-3. Bottom View, Component Location

NOTES

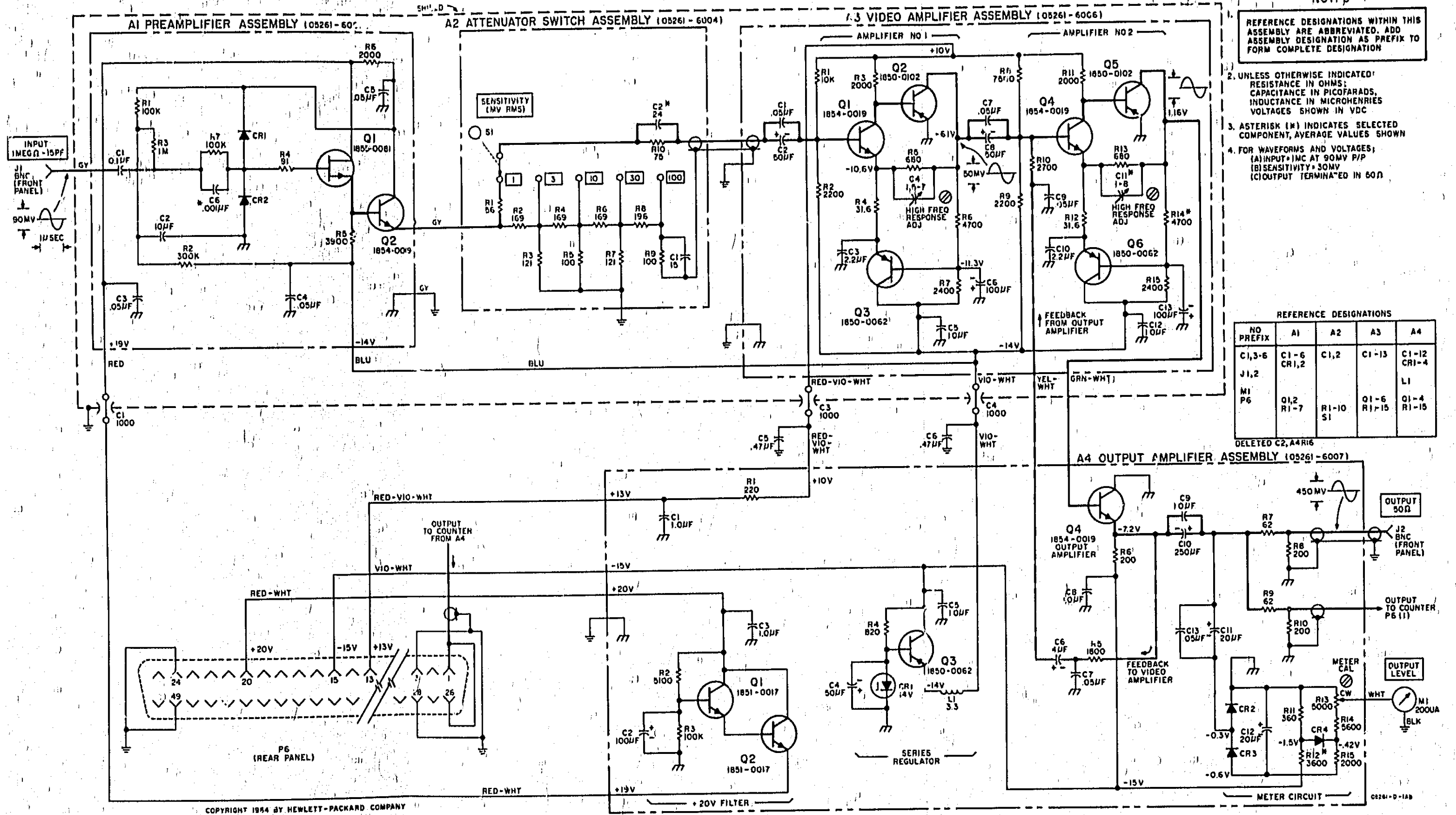
REFERENCE DESIGNATIONS WITHIN THIS ASSEMBLY ARE ABBREVIATED. ADD ASSEMBLY DESIGNATION AS PREFIX TO FORM COMPLETE DESIGNATION

- UNLESS OTHERWISE INDICATED: RESISTANCE IN OHMS; CAPACITANCE IN PICOFARADS, INDUCTANCE IN MICROHENRIES VOLTAGES SHOWN IN VDC
- ASTERISK (*) INDICATES SELECTED COMPONENT, AVERAGE VALUES SHOWN
- FOR WAVEFORMS AND VOLTAGES: (A) INPUT + INC AT 90MV P/P (B) SENSITIVITY = 30MV (C) OUTPUT TERMINATED IN 50Ω

REFERENCE DESIGNATIONS

NO PREFIX	A1	A2	A3	A4
C1,3-6	C1-6	C1,2	C1-13	C1-12
J1,2	CR1,2			CR1-4
M1				L1
P6	Q1,2	R1-10	Q1-6	Q1-4
	R1-7	S1	R1-15	R1-16

DELETED C2, A4R16



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Figure 5-4. Video Amplifier Schematic
 5-7/5-8

PARTS LIST

SECTION VI REPLACEABLE PARTS

6-1. INTRODUCTION.

6-2. This section contains information for ordering replacement parts. Table 6-1 lists parts in alpha-numerical order of their reference designators and indicates the description and stock number of each part, together with any applicable notes. Table 6-2 lists parts in alpha-numerical order of their stock number and provides the following information on each part;

- a. Description of the part (see list of abbreviations below).
- b. Typical manufacturer of the part in a five-digit code; see list of manufacturers in Table 6-3.
- c. Manufacturer's part number.
- d. Total quantity used in the instrument (TQ column).

6-3. Miscellaneous parts are listed at the end of Table 6-1.

6-4. ORDERING INFORMATION.

6-5. To obtain replacement parts, address order or inquiry to your local Hewlett-Packard Field Office (see maps at rear of this manual for addresses). Identify parts by their Hewlett-Packard stock numbers.

6-6. To obtain a part that is not listed, include:

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

REFERENCE DESIGNATORS

A = assembly
B = motor
C = capacitor
CP = coupling
CR = diode
DL = delay line
DS = device signaling (largely)

E = misc electronic part
F = fuse
FL = filter
J = jack
K = relay
L = inductor
M = meter

MP = mechanical part
P = plug
Q = transistor
R = resistor
RT = thermistor
S = switch
T = transformer

TD = terminal board
TP = test point
V = vacuum tube, neon bulb, photocell, etc.
W = cable
X = socket
Y = crystal

ABBREVIATIONS

A = amperes
A.F.C = automatic frequency control
AMPL = amplifier

B.F.O. = beat frequency oscillator
BE CU = beryllium copper
BH = blower head
BP = bandpass
BRS = brass
BWO = backward wave oscillator

CCW = counter-clockwise
CER = ceramic
CMO = cabinet mount only
COEF = coefficient
COM = common
COMP = composition
CONN = connector
CP = cadmium plate
CRT = cathode-ray tube
CW = clockwise

DEPC = deposited carbon
DR = drive

ELECT = electrolytic
ENCAP = encapsulated
EXT = external

F = farad
FH = flat head
FIL H = filament head
FXD = fixed

GE = germanium
GL = glass
GRD = ground(ed)

H = henries
HEX = hexagonal
HG = mercury
HR = hour(s)

IP = intermediate freq
IMPG = impregnated
INCD = incandescent
INCL = include(s)
INS = insulation(ect)
INT = internal

K = kilo = 1000
LIN = linear taper
LK WASH = lock washer
LOG = logarithmic taper
LPP = low pass filter

M = milli = 10⁻³
MEG = meg = 10⁻⁶
METFLM = metal film
MFR = manufacturer
MINAT = miniature
MOM = momentary
MTG = mounting
MY = mylar
N = nano (10⁻⁹)

N/C = normally closed
NE = neon
NI PL = nickel plate
N/O = normally open
NPO = negative positive zero (zero temperature coefficient)
NRFR = not recommended for field replacement
NSR = not separately replaceable

ODD = order by description
OH = oval head
OX = oxide

P = peak
PC = printed circuit
PF = picofarads = 10⁻¹² farads
PH BRZ = phosphor bronze
PHL = Phillips
PIV = peak inverse voltage
P/O = part of
POLY = polystyrene
PORC = porcelain
POS = position(s)
POT = potentiometer
PP = peak-to-peak
PT = point
RECT = rectifier
RF = radio frequency
RH = round head

HMO = rack mount only
RMS = root-mean-square

S-D = slow-blow
SCH = screw
SE = selenium
SECT = section(s)
SEMICON = semiconductor
SI = silicon
SIL = silver
SL = slide
SPL = special
SST = stainless steel
SR = split ring
STL = steel

TA = tantalum
TD = time delay
TGL = toggle
TI = titanium
TOL = tolerance
TRIM = trimmer
TWT = traveling wave tube

U = micro = 10⁻⁶
VAR = variable
VDCW = dc working volts
W/ = with
W = watts
WW = wirewound
W/O = without

Table 6-1. Reference Designation Index

Reference Designation	Stock No.	Description #	Note
A1	05261-6009 05261-2000	ASSY: PREAMPLIFIER BOARD BLANK PRINTED CIRCUIT BOARD	
A1C1	0170-0055	CIFXD MY .1UF 20% 200VDCW	
A1C2	0180-0374	CIFXD 10UF 20VDCW	
A1C3	0150-0096	CIFXD CER .05UF 100VDCW	
A1C4	0150-0096	CIFXD CER .05UF 100VDCW	
A1C5	0150-0096	CIFXD CER .05UF 100VDCW	
A1C6	0160-0975	CIFXD CER .001UF 20% 75VDCW	
A1CR1	1901-0376	DIODE-SEMICON DEVICE SIL	
A1CR2	1901-0376	DIODE-SEMICON DEVICE SIL	
A1Q1	1855-0081	TRANSISTOR 2N5245	
A1Q2	1854-0019	TRANSISTOR 2N2268	
A1R1	0683-1045	REFXD COMP 100K OHM 5% 1/4W	
A1R2	0683-3045	REFXD COMP 300K OHM 5% 1/4W	
A1R3	0757-0344	REFXD DEPC 1M OHM 1% 1/2W	
A1R4	0683-9105	REFXD COMP 91 OHMS 5% 1/4W	
A1R5	0683-3925	REFXD COMP 3.9 OHMS 5% 1/4W	
A1R6	0683-2025	REFXD COMP 2000 OHMS 5% 1/4W	
A1R7	0683-1045	REFXD COMP 100K OHMS 5% 1/4W	
A2	05261-6004	ASSY: ATTENUATOR SWITCH	
A2C1	0140-0202	CIFXD MICA 15 PF 5% 500VDC	
A2C2	0160-0196	CIFXD MICA 24PF 5% 300VDC	
A2C2	-	FACTORY SELECTED PART: TYPICAL VALUE GIVEN	
A2R1	0683-5605	REFXD COMP 56 OHM 5% 1/4W	
A2R2	0757-0176	REFXD MET FLM 169 OHM 1% 1/4W	
A2R3	0757-0069	REFXD MET FLM 121 OHM 1% 1/4W	
A2R4	0757-0176	REFXD MET FLM 169 OHM 1% 1/4W	
A2R5	0757-0176	REFXD MET FLM 169 OHM 1% 1/4W	
A2R6	0757-0176	REFXD MET FLM 169 OHM 1% 1/4W	
A2R7	0757-0069	REFXD MET FLM 121 OHM 1% 1/4W	
A2R8	0757-0174	REFXD MET FLM 176 OHM 1% 1/4W	
A2R9	0757-0178	REFXD MET FLM 160 OHM 1% 1/4W	
A2R10	0583-7505	REFXD COMP 75 OHMS 5% 1/4W	
A2S1	3100-0404	SWITCH-ROTARY 2 SECT 5 POS	
A2W1	5243A-160	CABLE: SIGNAL	
A2W2	05261-6001	CABLE: ATTENUATOR	
A3	05261-6006 05261-2004	ASSY: VIDEO AMPLIFIER BOARD BLANK PRINTED CIRCUIT BOARD	
A3C1	0150-0096	CIFXD CER 0.05UF 100VDCW	
A3C2	0180-0105	CIFXD ELECT 50UF 25VDC	
A3C3	0160-0126	CIFXD CER 2.2 UF 20% 25VDC	
A3C4	0130-0011	CIFXD CER 1.5-7 PF	
A3C5	0160-0127	CIFXD CER 1UF 20% 25VDCW	
A3C6	0180-0061	CIFXD ELECT 100UF +100% -10% 15VDC	

See list of abbreviations in Introduction to this section

Table 6-1. Reference Designation Index (Cont'd)

Reference Designation	Stock No.	Description #	Note
A3C7	0150-0090	CIFXD CLR 0.05UF 100VDC	
A3C8	0180-0105	CIFXD ELECT 50UF 25VDC	
A3C9	0150-0090	CIFXD CLR 0.05UF 100VDC	
A3C10	0160-0128	CIFXD CLR 202 UF 20V 25VDC	
A3C11	0121-0046	CIVAR GLASS 16-6.5 PF 750VDC	
A3C11	-	FACTORY SELECTED PART-TYPICAL VALUE GIVEN	
A3C12	0160-0127	CIFXD CLR 1UF 20V 25VDC	
A3C13	0180-0061	CIFXD ELECT 100UF +100X-10V 15VDC	
A3Q1	1854-0019	TRANSISTOR 12N2300	
A3Q2	1850-0102	TRANSISTOR 12N2450	
A3Q3	1850-0062	TRANSISTOR GERMANIUM	
A3Q4	1854-0019	TRANSISTOR 12N2300	
A3Q5	1850-0102	TRANSISTOR 12N2450	
A3Q6	1850-0062	TRANSISTOR GERMANIUM	
A3R1	0683-1035	RIFXD COMP 10K OHMS 5R 1/4W	
A3R2	0683-2225	RIFXD COMP 2K2K OHMS 5R 1/4W	
A3R3	0683-2025	RIFXD COMP 2000 OHMS 5R 1/4W	
A3R4	0757-0180	RIFXD MET FLM 31.6 OHM 1R 1/2W	
A3R5	0757-0126	RIFXD MET FLM 660 OHMS 2R 1/2W	
A3R6	0683-4725	RIFXD COMP 4700 OHMS 5R 1/4W	
A3R7	0683-2425	RIFXD COMP 2400 OHMS 5R 1/4W	
A3R8	0683-7525	RIFXD COMP 7.5K OHMS 5R 1/4W	
A3R9	0683-2225	RIFXD COMP 2K2K OHM 5R 1/4W	
A3R10	0683-2725	RIFXD COMP 2700 OHMS 5R 1/4W	
A3R11	0683-2025	RIFXD COMP 2000 OHMS 5R 1/4W	
A3R12	0757-0180	RIFXD MET FLM 31.6 OHM 1R 1/2W	
A3R13	0757-0126	RIFXD MET FLM 660 OHMS 2R 1/2W	
A3R14	0683-4725	RIFXD COMP 4700 OHMS 5R 1/4W	
A3R15	0683-2425	RIFXD COMP 2400 OHMS 5R 1/4W	
A4	05261-6007 05261-2005	ASSEMBLY OUTPUT AMPLIFIER BOARD BLANK PRINTED CIRCUIT BOARD	
A4C1	0160-0127	CIFXD CLR 1UF 20V 25VDC	
A4C2	0180-0094	CIFXD ELECT 100UF 25VDC	
A4C3	0160-0127	CIFXD CLR 1UF 20V 25VDC	
A4C4	0180-0105	CIFXD ELECT 50UF 25VDC	
A4C5	0160-0127	CIFXD CLR 1UF 20V 25VDC	
A4C6	0150-0114	CIFXD ELECT 4UF +100-10V 25VDC	
A4C7	0150-0090	CIFXD CLR 0.05UF 100VDC	
A4C8	0160-0127	CIFXD CLR 1UF 20V 25VDC	
A4C9	0160-0127	CIFXD CLR 1UF 20V 25VDC	
A4C10	0160-0212	CIFXD ELECT 250 MF 12VDC	
A4C11	0160-0045	CIFXD ELECT 20 UF 25VDC	
A4C12	0180-0045	CIFXD ELECT 20 UF 25VDC	
A4C13	0150-0090	CIFXD CLR 0.05 UF 100VDC	
A4CR1	1902-0040	SEMICON DEVICE DIODE SILICON JUNCTION	
A4CR2	1910-0022	SEMICON DEVICE DIODE GE 100MA 6PIV 3.5NS	
A4CR3	1910-0022	SEMICON DEVICE DIODE GE 100MA 6PIV 3.5NS	
A4CR4	1910-0016	SEMICON DEVICE DIODE GERMANIUM	
A4L1	9140-0143	COIL RIFXD RF 3.3 UH	

See list of abbreviations in introduction to this section

Table G-1. Reference Designation Index (Cont'd)

Reference Designation	Stock No.	Description #	Note
A401	1851-0017	TRANSISTOR 12N1304	
A402	1851-0017	TRANSISTOR 12N1304	
A403	1850-0062	TRANSISTOR 12N1304	
A403	1205-0011	HEAT SINK IFCR 03	
A404	1854-0019	TRANSISTOR 12N2368	
A404	1205-0012	HEAT SINK IFCR 04	
A4R1	0683-2215	RIFXD COMP 220 OHMS 5% 1/4W	
A4R2	0683-5125	RIFXD COMP 5100 OHMS 5% 1/4W	
A4R3	0683-1045	RIFXD COMP 100K OHMS 5% 1/4W	
A4R4	0683-8215	RIFXD COMP 820 OHMS 5% 1/4W	
A4R5	0683-1825	RIFXD COMP 1800 OHMS 5% 1/4W	
A4R6	0758-0062	RIFXD MET FLM 200 OHMS 5% 1/2W	
A4R7	0683-6205	RIFXD COMP 62 OHMS 5% 1/4W	
A4R8	0683-2015	RIFXD COMP 200 OHMS 5% 1/4W	
A4R9	0683-6205	RIFXD COMP 62 OHMS 5% 1/4W	
A4R10	0683-2015	RIFXD COMP 200 OHMS 5% 1/4W	
A4R11	0683-3615	RIFXD COMP 360 OHMS 5% 1/4W	
A4R12	0683-3625	RIFXD COMP 3600 OHM 5% 1/4W	
A4R12	-	FACTORY SELECTED PART TYPICAL VALUE GIVEN	
A4R13	2100-0531	RIVAR No 5000 OHM 10M LIN 1M METER CAL.	
A4R14	0683-5625	RIFXD COMP 5600 OHMS 5% 1/4W	
A4R15	0683-2025	RIFXD COMP 2K OHM 5% 1/4W	
C1	0150-0005	CIFXD CER 1000 PF 25% 500VDC	
C3	0150-0005	CIFXD CER 1000 PF 25% 500VDC	
C4	0150-0005	CIFXD CER 1000 PF 25% 500VDC	
C5	0160-0174	CIFXD CER 0.47UF 80% 25VDC	
C6	0160-0174	CIFXD CER 0.47UF 80% 25VDC	
J1	1250-0171	CONNECTOR BNC INPUT	
J2	1250-0102	CONNECTOR BNC OUTPUT 50 OHM	
M1	1120-0143	METER 200 uA EDGE VIEW	
	5040-0185	BEZEL: METER	
MP1	5261-6000	ASSY SHIELD COVER WITH BRAIL	
MP2	5261-0004	BRACKET: SHIELD MOUNTING	
MP3	05261-0001	DIAL SENSITIVITY	
MP4	5265A-83A	GUIDE: MOLDED PLASTIC 4-1/2 IN. X 4-1/2 IN	
MP5	05261-2011	PANEL: FRONT STANDARD (MINT GRAY)	
MP5	05261-2006	PANEL: FRONT (DISCONTINUED) (LIGHT GRAY)	
MP7	05261-0005	SHIELD BOX: 7 IN. X 3-1/2 IN.	
MP8	5262A-47A	SPACER: ROUND: 7-1/4 IN. LG X 1/4 IN. DIA	
MP9	05261-0007	BRACKET: METER MOUNTING	
P6	1251-0099	CONNECTOR MALE 50 PIN	
W1	05261-6002	CABLE: OUTPUT: 10 IN. LONG	
W2	05261-6003	CABLE: REAR: 4 IN. LONG	
W3	5243A-16D	CABLE: GROUND: ON P6 PIN 26 AND 49	

See list of abbreviations in introduction to this section

Table 6-2 Replaceable Parts

Stock No.	Description #	Mfr.	Mfr. Part No.	TQ	RS
0121-0048	CIVAR GLASS .8-8.5 PF 750VDC	73H99	VC96	1	1
0130-0011	CIVAR CER 1.5-7 PF	2H480	0130-0011	1	1
0140-0202	CIFXD MICA 15 PF 5% 500VDC	04062	DM15C150J 500V	1	1
0150-0005	CIFXD CER 1000 PF 25% 500VDC	04222	TYPE CFS-1	3	1
0150-0096	CIFXD CER 0.050F 100VDC	91416	-JA	8	2
0160-0127	CIFXD CER 1UF 20% 25VDC	56289	5C13	7	2
0160-0128	CIFXD CER 2.2 UF 20% 25VDC	56289	5C15	2	1
0160-0174	CIFXD CER 0.47UF 80% 25VDC	56289	5C11A	2	1
0160-0196	CIFXD MICA 24PF 5% 300VDC	04362	DM15C240J	1	1
0160-0975	CIFXD CER .001UF 20% 75VDC	12574	SSM-001-98	1	1
0170-0055	CIFXD MY 0.1UF 20% 200VDC	56289	102P10402	1	1
0180-0045	CIFXD ELECT 20 UF 25VDC	56289	D3269E	2	1
0180-0061	CIFXD ELECT 100UF +100% -10% 15VDC	56289	30U172A	2	1
0180-0094	CIFXD ELECT 100UF 25VDC	56289	30U186A1	1	1
0180-0105	CIFXD ELECT 50UF 25VDC	56289	S97441	3	1
0180-0114	CIFXD ELECT 4UF +100-10% 25VDC	56289	30U405G025BA4	1	1
0180-0212	CIFXD ELECT 250 MF 12VDC	56289	30D257G012DH4	1	1
0180-0374	CIFXD ELECT 10UF 20VDC	56289	150D106X0020H2-DYS	1	1
0683-1035	RIFXD COMP 10K OHMS 5% 1/4W	01121	CB 1035	1	1
0683-1045	RIFXD COMP 100K OHMS 5% 1/4W	01121	CB 1045	3	1
0683-1825	RIFXD COMP 1K OHMS 5% 1/4W	01121	CB 1825	1	1
0683-2015	RIFXD COMP 200 OHMS 5% 1/4W	01121	CB 2015	2	1
0683-2025	RIFXD COMP 2000 OHMS 5% 1/4W	01121	CB 2025	4	1
0683-2215	RIFXD COMP 220 OHMS 5% 1/4W	01121	CB 2215	1	1
0683-2225	RIFXD COMP 2.2K OHMS 5% 1/4W	01121	CB 2225	2	1
0683-2425	RIFXD COMP 240 OHMS 5% 1/4W	01121	CB 2425	2	1
0683-2725	RIFXD COMP 2700 OHMS 5% 1/4W	01121	CB 2715	1	1
0683-3045	RIFXD COMP 300K OHMS 5% 1/4W	01121	CB 3045	1	1
0683-3615	RIFXD COMP 360 OHMS 5% 1/4W	01121	CB 3615	1	1
0683-3625	RIFXD COMP 3600 OHMS 5% 1/4W	01121	CB 3625	1	1
0683-3925	RIFXD COMP 3900 OHMS 5% 1/4W	01121	CB 3925	2	1
0683-4725	RIFXD COMP 4700 OHMS 5% 1/4W	01121	CB 4725	1	1
0683-5125	RIFXD COMP 5100 OHMS 5% 1/4W	01121	CB 5125	1	1
0683-5605	RIFXD COMP 56 OHMS 5% 1/4W	01121	CB 5605	1	1
0683-5625	RIFXD COMP 5600 OHMS 5% 1/4W	01121	CB 5625	1	1
0683-6205	RIFXD COMP 62 OHMS 5% 1/4W	01121	CB 6205	2	1
0683-7505	RIFXD COMP 75 OHMS 5% 1/4W	01121	CB 7505	1	1
0683-7525	RIFXD COMP 1 MEGOHM 5% 1/4W	01121	CB 7525	1	1
0683-8215	RIFXD COMP 820 OHMS 5% 1/4W	01121	CB 8215	1	1
0683-9105	RIFXD COMP 91 OHMS 5% 1/4W	01121	CB 9105	1	1
0757-0069	RIFXD MET FLM 121 OHM 1% 1/4W	19701	MF6C T-0	2	1
0757-0126	RIFXD MET FLM 660 OHMS 2% 1/2W	07115	C 20	2	1
0757-0176	RIFXD MET FLM 169 OHM 1% 1/4W	75042	CEB T-0	3	1
0757-0178	RIFXD MET FLM 100 OHM 1% 1/4W	75042	CEB T-0	2	1
0757-0179	RIFXD MET FLM 196 OHM 1% 1/4W	75042	CEB T-0	1	1
0757-0180	RIFXD MET FLM 31.6 OHM 1% 1/4W	75042	CEAT-0	2	1
0757-0344	RIFXD MET FLM 1 MEGOHM 1% 1/4W	01121	CB 0344	1	1
0758-0062	RIFXD MET FLM 200 OHMS 5% 1/2W	07115	C 20	1	1
1120-0143	METER 200 UA EDGE VIEW	60741	120	1	1
1200-0086	SOCKET PROVISOR 5 PIN	71785	133-65-11-J26	1	1
1205-0011	HEAT SINK FOR C3	98970	TXBF-C32-025R	1	1

= See list of abbreviations in introduction to this section

Table 6-2. Replaceable Parts (Cont'd)

Stock No.	Description #	Mfr.	Mfr. Part No.	TQ	RS
1205-0012	HEAT SINK FOR Q4	05820	MODEL NF-201	1	1
1250-0102	CONNECTOR BNC OUTPUT 50 OHM	91737	7011	1	1
1250-0171	CONNECTOR BNC INPUT	91737	11246	1	1
1251-0099	CONNECTOR MALE 50 PIN	02660	57 10500	1	1
1850-0062	TRANSISTOR GERMANIUM	28480	1850-0062	3	3
1855-0081	TRANSISTOR PGT	01295	2N5245	1	1
1850-0102	TRANSISTOR 2N2455	28480	1850-0101	2	2
1851-0017	TRANSISTOR 2N1304	01295	2N1304	2	2
1854-0019	TRANSISTOR 2N2368	07263	5-5781	4	4
1901-0376	SEMICON DEVICE DIODE SILICON	28480	1901-0376	2	1
1902-0040	SEMICO DEVICE DIODE SILICON JUNCTION	28480	1902-0040	1	3
1910-0016	SEMICON DEVICE DIODE GERMANIUM	93332	D2361	1	1
1910-0022	SEMICON DEVICE DIODE GE 100MA 6FIV 3.5NS	28480	1910-0022	2	2
1921-0015	ELECTRON TUBE 8056 NUVISTOR TRIODE	R6684	8056	1	1
2100-0331	RIVAR 5000 OHM 10% LIN 1W METER CAL.	28480	2100-0331	1	1
3100-0404	SWITCH ROTARY 2 SECT 5 POS	28480	3100-0404	1	1
5040-0185	BEZEL METER	28480	5040-0185	1	1
5261-0004	BRACKET SHIELD MOUNTING	28480	5261-0004	1	1
5261-6008	ASSY SHIELD COVER WITH BRAID	28480	5261-6008	1	1
9140-0143	COIL FXD RF 3.3 UH	28480	9140-0143	1	1
05261-0001	DIAL SENSITIVITY	28480	05261-0001	1	1
05261-0005	SHIELD BOX 7 IN. X 3-1/2 IN.	28480	05261-0005	1	1
05261-0007	BRACKET METER MOUNTING	28480	05261-0007	1	1
05261-2004	BLANK PRINTED CIRCUIT BOARD	28480	05261-2004	1	1
05261-2005	BLANK PRINTED CIRCUIT BOARD	28480	05261-2005	1	1
05261-2009	BLANK PRINTED CIRCUIT BOARD	28480	05261-2009	1	1
05261-2011	PANEL FRONT STANDARD (MINT GRAY)	28480	05261-2011	1	1
05261-6001	CABLE ATTENUATOR	28480	05261-6001	1	1
05261-6002	CABLE OUTPUT, 10 IN. LONG	28480	05261-6002	1	1
05261-6003	CABLE REAR, 4 IN. LONG	28480	05261-6003	1	1
05261-6004	ASSY ATTENUATOR SWITCH	28480	05261-6004	1	1
05261-6006	ASSY VIDEO AMPLIFIER BOARD	28480	05261-6006	1	1
05261-6007	ASSY OUTPUT AMPLIFIER BOARD	28480	05261-6007	1	1
05261-6009	ASSY PREAMPLIFIER BOARD	28480	05261-6009	1	1
5243A-160	CABLE GROUND	28480	5243A-160	1	1
5243A-160	CABLE GROUND ON P6 PIN 26 AND 49	28480	5243A-160	1	1
5262A-47A	SPACER ROUND 7 1/4 IN. LG X 1/4 IN. DIA	28480	5262A-47A	4	4
5262A-83A	GUIDE MOLDED PLASTIC 4-1/2 IN. X 4-1/2 IN.	28480	5262A-83A	1	1

* See list of abbreviations in introduction to this section

Table 6-3. Manufacturer's Code List

Code No.	Manufacturer	Address
01121	Allen Bradley Co.	Milwaukee, Wis.
01205	Texas Instruments, Inc., Transistor Products Div.	Dallas, Texas
02680	Amphenol-Borg Electronics Corp.	Chicago, Ill.
04082	Elmenco Products Co.	New York, N.Y.
04222	HI-Q Division of Aerovox	Myrtle Beach, S.C.
05820	Wakefield Engineering Inc.	Wakefield, Mass.
07115	Corning Glass Works Electronic Components Dept.	Bradford, Pa.
07263	Fairchild Semiconductor Corp.	Mountain View, Calif.
12574	Gulton Ind., Inc., Data System Div.	Albuquerque, N.M.
19701	Electra Manufacturing Co.	Kansas City, Mo.
28480	Hewlett-Packard Co.	Palo Alto, Calif.
56289	Sprague Electric Co.	North Adams, Mass.
60741	Tripplett Electrical Inc.	Bluffton, Ohio
71785	Cinch Mfg. Corp.	Chicago, Ill.
73899	JFD Electronics Corp.	Brooklyn, N.Y.
75042	International Resistance Co.	Philadelphia, Pa.
86084	Radio Corp. of America, RCA Electron Tube Div.	Harrison, N.J.
91418	Radio Materials Co.	Chicago, Ill.
91737	Gremar Mfg. Co., Inc.	Wakefield, Mass.
93332	Sylvania Electric Prod, Inc., Semiconductor Div.	Woburn, Mass.
98978	International Electronic Research Corp.	Burbank, Calif.

**BACK DATING
MANUAL
CHANGES**

APPENDIX I

This manual applies directly to the 5261A Video Amplifier having serial number prefix 1124A. This manual with the following changes also applies to 5261A having serial number prefix 301, 311, 510, 960, and 1104.

FOR SERIAL PREFIX	PERFORM CHANGE
301, 311	1, 2, 4
510	2, 4
960	3, 4
1104	4

CHANGE 1:

Figure 1 of Appendix 1

Tables 6-1, 6-2

Change A4R16 to a chassis part and designate R1.

Change: MP5 Front Panel to IIP Part No. 05261-2003.

Change: MP9 Meter Mounting Bracket to IIP Part No. 05261-0006.

Delete: A4R16

Add: R1 IIP Part No. 0760-0012, R fxd, metal film 51 ohm 2% 1W.

CHANGE 2:

Page 6-2, Table 6-1

Delete items A1 through A1R7

Add the following

A1	05261-0005 05261-2002	ASSY: PREAMPLIFIER BOARD BLANK PRINTED CIRCUIT BOARD
A1C1	0170-0055	C:FXD MY .1UF 20% 200VDCW
A1C2	0160-0127	C:FXD CER 1UF 20% 25VDCW
A1C3	0160-0096	C:FXD CER 0.05UF 100VDCW
A1C4	0160-0096	C:FXD 0.05UF 100VDCW
A1C5	0160-0096	C:FXD CER 0.05UF 100VDCW
A1CR1	1910-0016	SEMICON DEVICE P. ODE GERMANIUM
A1CR2	1910-0016	SEMICON DEVICE N. ODE GERMANIUM
A1Q1	1854-0019	TRANSISTOR: 2N2363
A1R1	0683-8245	R:FXD COMP 820K OHMS 5% 1/4W
A1R2	0683-1545	R:FXD COMP 150K OHMS 5% 1/4W
A1R3	0777-0344	R:FXD MET FLM 1 MEGOHM 1% 1/4W
A1R4	0683-9105	R:FXD COMP 91 OHMS 5% 1/4W
A1R5	0683-3625	R:FXD COMP 3600 OHMS 5% 1/4W
A1R6	0683-9115	R:FXD COMP 910 OHMS 5% 1/4W
A1V1	1921-0015	ELECTRON TUBE: 8056 NUVISTOR TRIODE
A1XV1	1200-0086	SOCKET: NUVISTOR 5 PIN

**CHANGE 2:
(Continued)**

Page 6-4, Table 6-1

Add A4R16 0760-0012 RFXD MET FLM 51
OHM 2% 1W
Add C2 0150-0005 CFXD CER 1000 PF
500VDCW
Add MP6 05261-2001 PLT MTG FOR A1

Page 6-5, Table 6-2

Change Table 6-2 to reflect above part changes.

Page 6-6, Figure 5-2

Replace Figure 5-2 with Figure 1 of Appendix 1

Page 6-7, Figure 5-3

Replace Figure 5-3 with Figure 2 of Appendix 1

Page 6-7, Figure 5-4

Replace Figure 5-4 Video Amplifier Schematic with Figure 3 of Appendix 1

CHANGE 3

Page 6-2, Table 6-1

Delete A1C6 0160-0975 .001UF 20% 75VDCW
Delete A1R7 0683-1045 100K OHM 5% 1/4W

Page 6-5, Table 6-2

Change Table 6-2 to reflect above part changes

Page 6-7, Figure 5-3

Replace A1 portion of component locator with Figure 4 of Appendix 1

Page 6-7, Figure 5-4

Replace Figure 5-4 Video Amplifier Schematic with Figure 5 of Appendix 1

CHANGE 4

Page 6-4, Table 6-1

Delete from MP5 description "OPTION A85 (LIGHT GRAY)".

Delete "MP5 05261-2011 PANEL FRONT STANDARD (MINT GRAY)".

Figure 1. Top View, Component Location

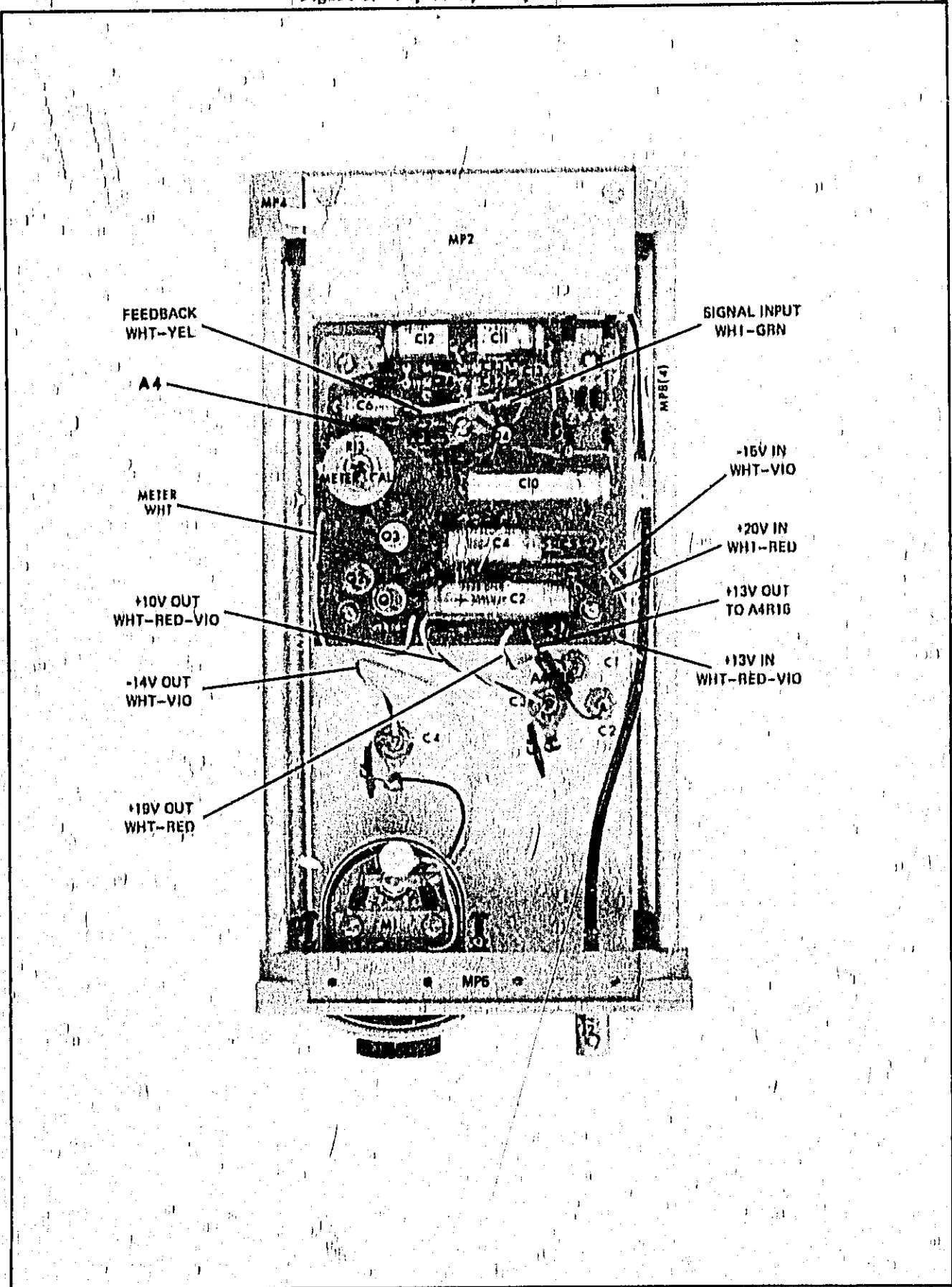
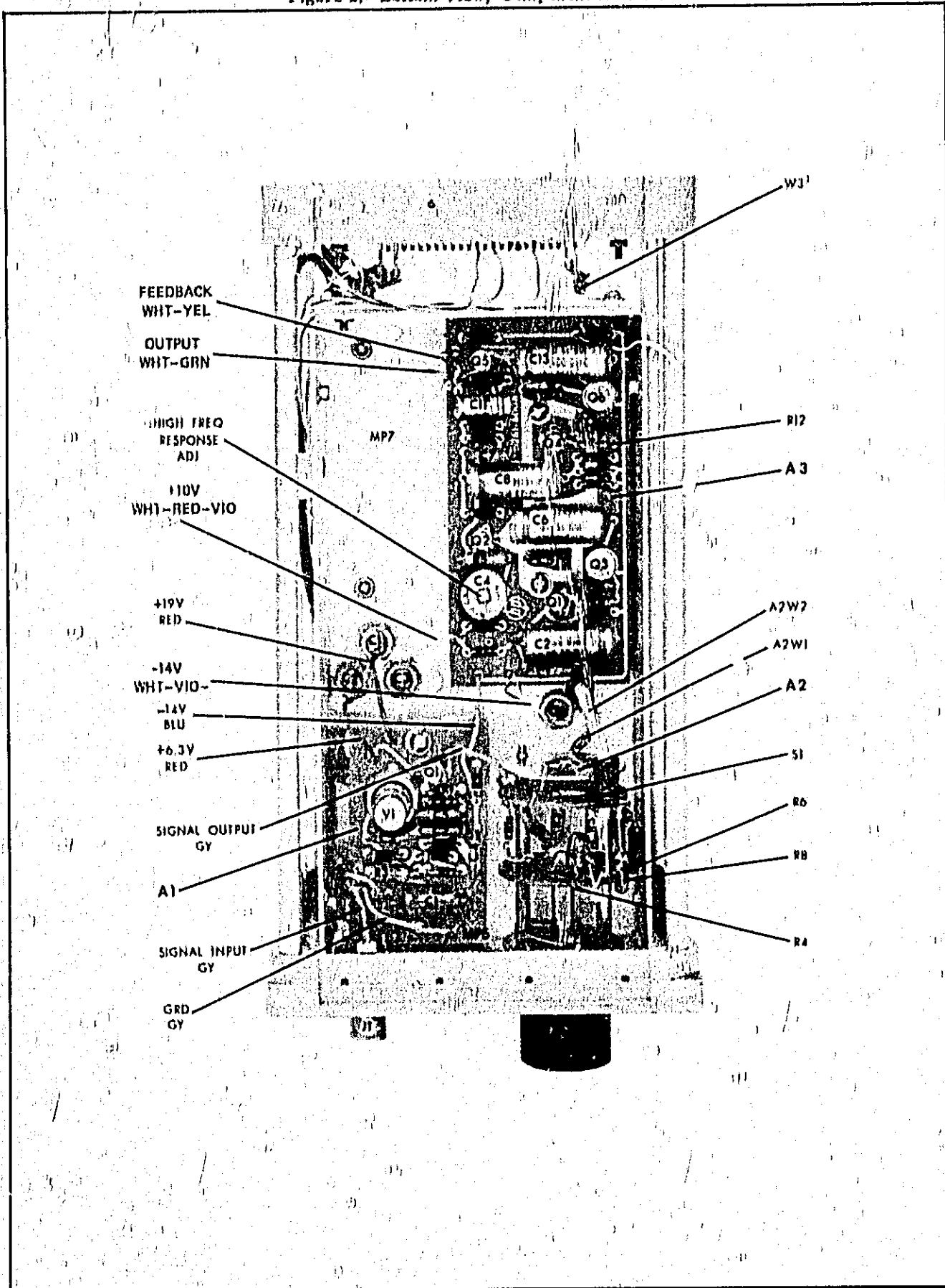
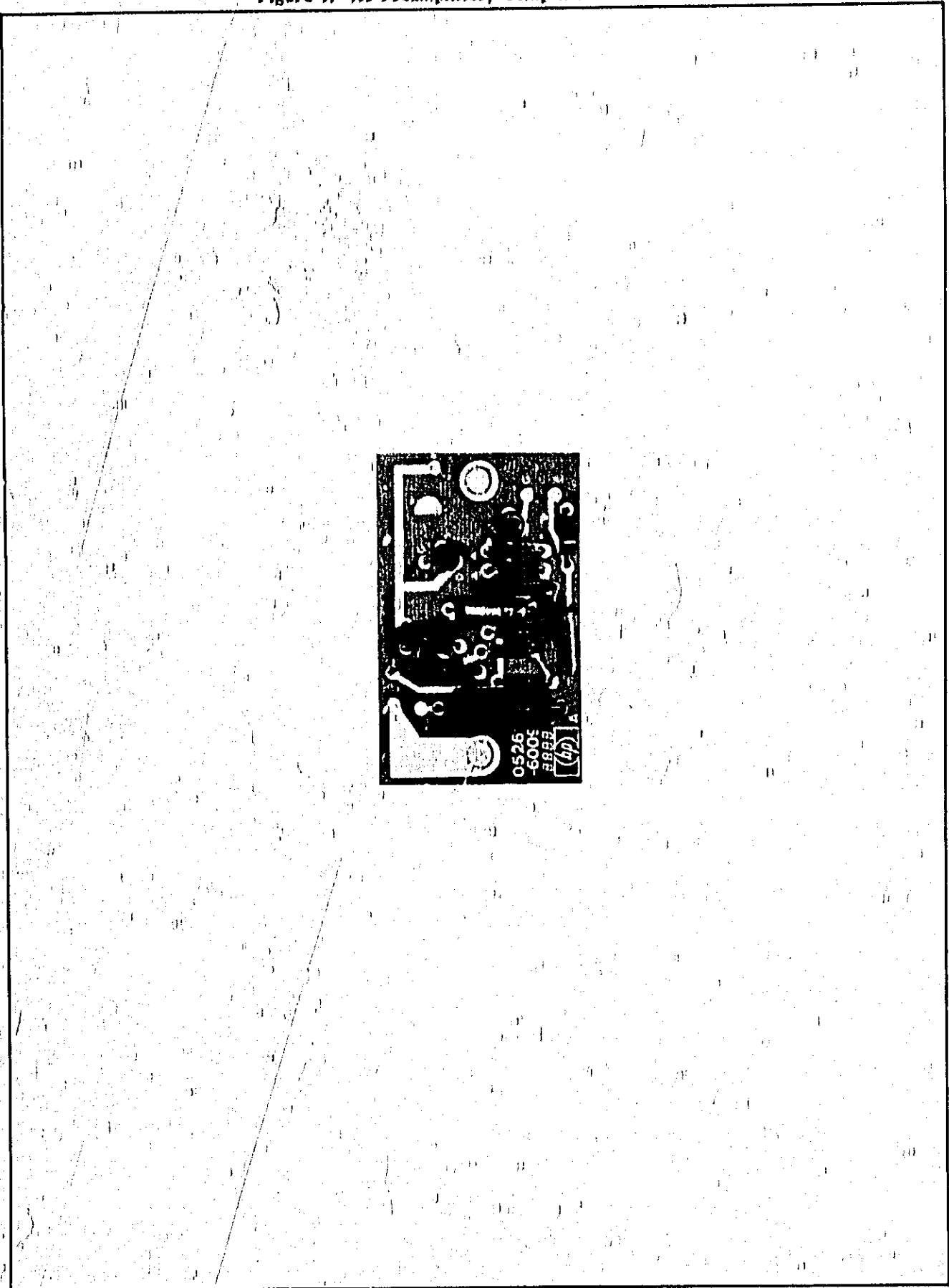


Figure 2. Bottom View, Component Location



IA-4

Figure 4. A1 Preamplifier, Component Location



MANUAL CHANGES

MANUAL DESCRIPTION	
INSTRUMENT:	5261A Video Amplifier Operating & Service Manual
SERIAL PREFIX:	1124A
DATE PRINTED:	DECEMBER 1973
HP PART NO:	05261-0012
MICROFICHE NO:	05261-0013

CHANGE DATE July 26, 1978
(This change supersedes all earlier dated changes)

- Make all changes listed as ERRATA.
- Check the following table for your instrument's serial prefix or serial number and make listed change(s) to manual.

IF YOUR INSTRUMENT HAS SERIAL PREFIX OR SERIAL NUMBER	MAKE THE FOLLOWING CHANGES TO YOUR MANUAL	IF YOUR INSTRUMENT HAS SERIAL PREFIX OR SERIAL NUMBER	MAKE THE FOLLOWING CHANGES TO YOUR MANUAL
▶ 1B24A	1		

**NEW OR REVISED ITEM
ERRATA**

Page 1-10, Figure 1-1, 5261A Video Amplifier:
Change caption for BNC-BNC cable assembly to "LOW MICROPHONIC BNC-BNC ACCESSORY CABLE 10507A".

Page 1-1/1-2, Paragraphs 1-6 through 1-9:
Change to the following:

1-6. ACCESSORIES AVAILABLE

1-7. A 50-ohm, low microphonic cable HP 10507-6001 with BNC connectors is available as an additional cost accessory for the 5261A Video Amplifier.

1-8. A HP Model 10509A Plug-In Adapter is available to adapt the 5261A Video Amplifier for use with the HP Model 5345A Electronic Counter.

1-9. Table 1-2 lists additional accessories available for the Model 5261A Video Amplifier.

Page 1-1/1-2, Table 1-1, Specifications:

Change ACCESSORY FURNISHED to ACCESSORIES AVAILABLE.

Add under BANDWIDTH: "100 Kc to 50 Mc with 5345A/10590A". (See NOTE below.)

▶ Page 3-2, Figure 3-2 Controls:

Add to Step 1: "100 Kc to 50 Mc with 5345A/10590A" (See NOTE below.)

▶ Page 4-1, Paragraph 4-4:

Change first sentence to read: "... consists of an FE⁺ source follower ..."

▶ Page 5-0, Table 5-1, Required Characteristics:

Add: ± to each "accuracy" number.

Add "± 2% accuracy" to Required Characteristics column for HP200CD Oscillator and for HP606A High Frequency Signal Generator.

▶ Page 5-2, Table 5-2, In-Cabinet Performance Checks:

Add to: "1. BANDWIDTH: 10 cps to 50 Mc": "(100 Kc to 50 Mc with 5345A/10590A)"
(See Note below)

Add to: "1. BANDWIDTH, step e": "(This step is not applicable to 5345A/10590A)"

▶ Page 5-3, Table 5-2, In-Cabinet Performance Checks:

Add to: "5. Accuracy ... Electronic Counter": "... or 5345A/10590A".

NOTE

Full performance from 10 Hz to 50 MHz can be reached with the 5345A/10590A/5162A by externally coupling the 5261A Video Output to the 5345A Channel A input (with standard BNC cable) and setting the 5345A Function switch to Frequency A.

ERRATA (Cont'd)

Page 5-7/5-B, Figure 5-4, Schematic Diagram;
Change A3R7 to 3000 ohms.

Page 6-3, Table 6-1, Reference Designation Index;

Change A3R14 from 0683-4725 (4700Ω) to 0683-3025; RESISTOR-FXD 3000 OHM 5% 1/4W;
Mfr 01121; Mfr. Part No. CB4725.

Page 6-5, Table 6-2, Replaceable Parts;

Change 0683-4725 to 0683-3005 with the Description given above.

CHANGE 1 (1824A)

Page 6-4, Table 6-1, Replaceable Parts;

Change C1, C3, and C4 from 0150-0005 to 0160-4671; CAPACITOR-FEED THRU 1000 PF
20% 500V CER; 01230; CF5-1.