

**A High Output  
STRIP AMPLIFIER** That is **POSITIVE MATCHED**  
**For Exceptional System Performance**  
**... Channels 2-13 and FM**

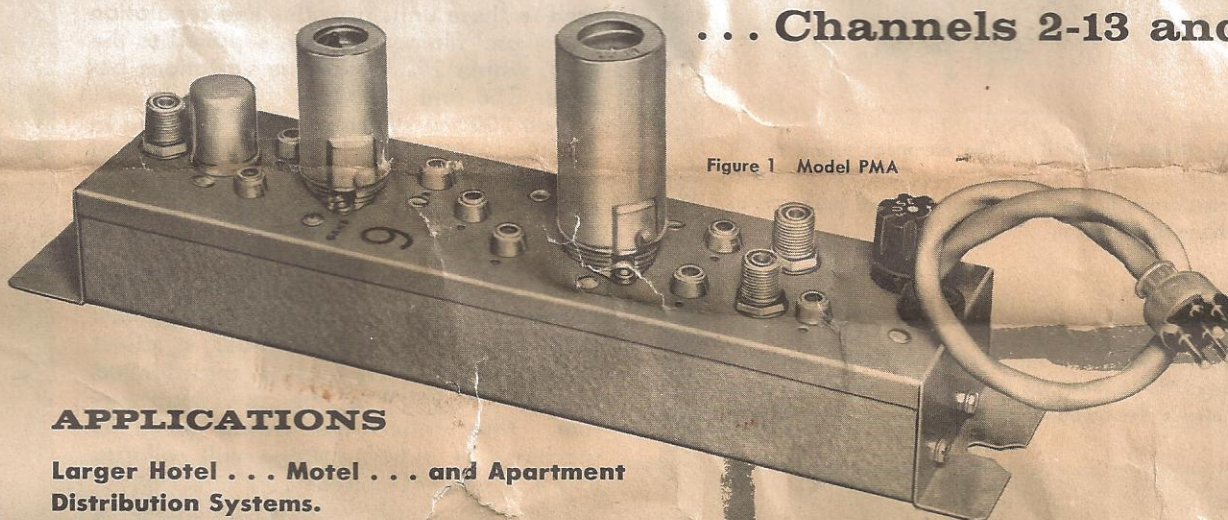


Figure 1 Model PMA

### APPLICATIONS

Larger Hotel . . . Motel . . . and Apartment  
Distribution Systems.

Closed Circuit Distribution Systems . . . for  
Industry . . . and Schools.

### DESCRIPTION

**BAND COVERAGE**—The Jerrold Positive Matched Amplifier consists of single-channel strips, Models PMA-2 through PMA-13 inclusive, and an FM strip Model PMA-FM, to provide full coverage of the VHF and FM broadcast bands. The amplifier strips may be used in any desired combination of (generally) non-adjacent channels.

**CIRCUITRY**—The Positive Matched Amplifier employs the latest technical concepts and exhibits an extremely high overload level, excellent stability, negligible distortion and an excellent output match. These features have been achieved through the use of only two tubes.

**"STABILIFE"**—The Jerrold "Stabilife" circuit is an exaggerated self-biasing technique which maintains the overall gain of the amplifier relatively independent of tube variations, both from tube-to-tube and due to aging of a given tube. "Stabilife" is an improvement over conventional self-biasing regulation of about six to one.

### FEATURES

- High Output Capabilities
- Exclusive Jerrold "Stabilife"
- Positive Matched Dual Outputs
- Feedback Compensation
- Line Regulated Power Supply
- Flat Response For Color
- Compact . . . Only Two Tubes
- Rack Mounting Facilities

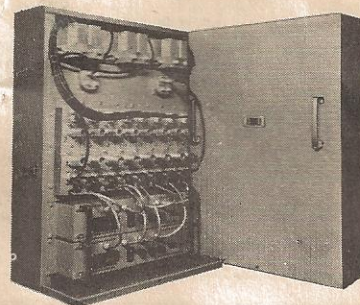


FIGURE 2. 8 Strip PMA System  
mounted in an EH-40.

## DESCRIPTION (Continued)

**REGENERATIVE FEEDBACK**—To increase the output capabilities of the PMA amplifier, Jerrold employs a method of frequency selective, regenerative feedback. When overload commences and sync information is compressed, sync is sent back to the input stage in order to increase the gain of the stage during sync-time. This provides "sync-stretching" and effectively extends the linear range of the output stage. Sync restoration is only employed in the high-channel strips (PMA-7 thru PMA-13) since the undistorted output of the low-channel and FM strips is uniform with the high-channel strips without resort to sync restoring.

**SELF-MATCHING, DUAL OUTPUTS**—The excellent output match of the amplifier is achieved by a "Bridged-T" network. The "Bridged-T" uses a bifilar transformer to feed two loads such that each acts as the proper termination of the other.

**GAIN CONTROL**—An important feature of the Positive Matched Amplifier is the use of Plug-In-Pads for gain control, rather than a potentiometer. This allows the amplifier to be designed for maximum efficiency.

The pads are available in 3 db steps from 0 to 21 db of attenuation. This provides sufficient flexibility for any normal signal input. The amplifier is shipped with a PIP-0.

## SPECIFICATIONS

### AMPLIFIER

DESCRIPTION	LO CHANNELS 2-6	HI CHANNELS 7-13	FM
Average Gain (each of 2 outputs)	35 db	30 db	20 db
Maximum Undistorted Output	1.5V each of 2 outputs		
Band Width	6 mc	6 mc	20 mc
Flatness	± 1/2 db	± 1/2 db	± 1 db
Skirt Sharpness	22 db down at next adjacent band edge	18 db down at next adjacent band edge	20 db down at 10 mc from each band edge
Recommended Operating Input Level	1500 uv		
Input Impedance	75 ohms (VSWR = 1.4)*		
Output Impedance	75 ohms (VSWR = 1.2)		
Gain Control	Plug-in Pads		
Output Mixing	Non-critical jumper cables		
Tube Complement	(1) 6CB6 (1) 6BQ7A	(1) 6AK5 (1) 6BQ7A	(1) 6CB6 (1) 6BQ7A
B -- Voltage	150 V.D.C.		
B -- Drain	32 ma	38 ma	38 ma
Recommended System Operating Level	1.0V (60 dbj)	1.0V (60 dbj)	1.0V (60 dbj)
Power Supply	RPS-150B (up to 4 strips) RPS-300B (up to 8 strips)		
Mounting (with specially designed Accessories)	See Technical Data Sheet # 525		
Dimensions:	Length Width Height	10" (including Mounting Flanges) 2 1/4" 3 1/2" (including tubes)	

## POWER SUPPLY



FIGURE 3.  
RPS-300B

RPS-150B and RPS-300B are rack-mounted, line-regulated power supplies designed to provide 150 volts B+ (at 150 ma and 300 ma respectively) and 6.3 volts ac to the PMA strip amplifiers. The RPS-150B will energize four PMA strips and the RPS-300B will energize eight PMA strips.

A sola regulating transformer incorporated in these units provides line regulation of B+ and filament power, supplied to the load, within 2% for ac line variations between 100 and 130 volts.

Two 200 ma silicon rectifiers are used in the RPS-150B to supply a 150 ma load and two 350 ma silicon rectifiers are used in the RPS-300B to supply a 300 ma load. This provides a generous safety factor in each supply.

In each of these supplies, the regulating transformer provides protection against short circuit overloads. Under a direct short circuit, the total load current is limited by 150% to 200% of the rated load current. Thus, when the critical point is reached, the output voltage will collapse until the load is reduced.

A ruggedized convenience outlet which affords a source of 117 volts, 60 cycle ac power is provided on each model.

These UL-approved power supplies will operate from any 100 to 130 volt, 60 cycle ac source. The ON-OFF switch on these power supplies is a central control for all strips.

### POWER SUPPLY

#### Model RPS-150B

**B+:**  
150 V d-c @ 150 MA

**FIL:**  
6.3 V a-c @ 4.0 Amp.

**LINE VOLTAGE:**  
100 to 130 V a-c (117 V a-c nominal) 60 cps

**OUTPUT:**  
4 Cinch-Jones 2675 sockets

**LINE FUSE:**  
3AG—1.5 Amp.

**FIL FUSE:**  
3AG—5 Amp.

**B+ FUSE:**  
3AG—0.2 Amp. Slo-Blo

**DIMENSIONS:**  
19" x 3 1/2" x 9 1/2"

**CARD HOLDER:**  
Supplied

**SHIPPING WEIGHT:**  
14 lbs.

#### Model RPS-300B

**B+:**  
150 V d-c @ 300 MA

**FIL:**  
6.3 V a-c @ 8.0 Amp.

**LINE VOLTAGE:**  
100 to 130 V a-c (117 V a-c nominal) 60 cps

**OUTPUT:**  
8 Cinch-Jones 2675 sockets

**LINE FUSE:**  
3AG—3.0 Amp.

**FIL FUSE:**  
3AG—10 Amp.

**B+ FUSE:**  
3AG—0.3 Amp. Slo-Blo

**DIMENSIONS:**  
19" x 5 1/2" x 9 1/2"

**CARD HOLDER:**  
Supplied

**SHIPPING WEIGHT:**  
19 lbs.

# ALIGNMENT PROCEDURES

## General

This complete alignment procedure should be attempted only by those who have the proper test equipment and a thorough knowledge of high frequency circuit alignment techniques. In performing this alignment, tune iron cores close to the chassis, i. e., tune brass screw head away from the chassis.

If proper test equipment is not available or any difficulty is experienced during alignment, return the equipment to the factory for service.

## Equipment Required for Alignment

- A. Jerrold Model 601 Sweep Generator (or equivalent).
- B. Marker Generator — Frequency Range 20-220 mc, capable of calibration to within 100kc.
- C. Jerrold D-86 Detector (or equivalent).
- D. Jerrold A-72 Variable Attenuator (or equivalent).
- E. Oscilloscope — 5", 0.025 volts (rms) per inch sensitivity and capable of a good 60 cycle square wave response.
- F. Alignment tools — General Cement Mfg. Co. #8606-D and ICA #6161 (or equivalent).
- G. Jerrold TR-72F terminating unit.
- H. Jerrold PD6 (or equivalent).

## Alignment—(Refer to figures 4 through 7)

Allow a 30 minute warm-up period for all equipment before attempting alignment. Calibrate the marker generator at all frequencies to be used in alignment (lower, mid, and upper band edges). Insert 0db pad, included with all PMA amplifiers, into each unit to be aligned.

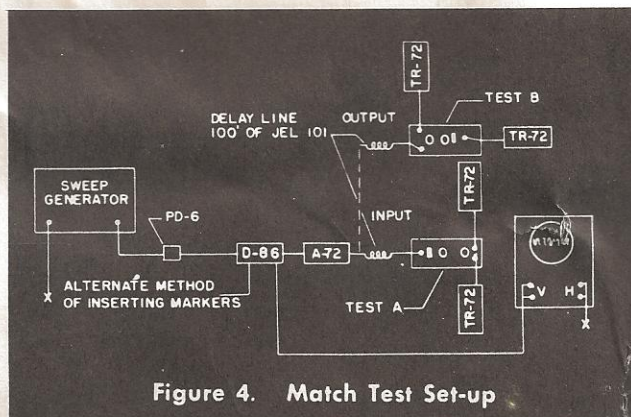


Figure 4. Match Test Set-up

## Steps

1. Set up test equipment for test A (Figure 4).
2. Align L-1 and L-2 (Figure 5) for best input match across a 6 mc band at the channel to which the amplifier is to be aligned. The input match should be 16 db or better. Note: Refer to Jerrold Technical Bulletin #142 for this method of determining match.



Figure 5. Pole Diagram

3. Set up test equipment as shown in Figure 6.

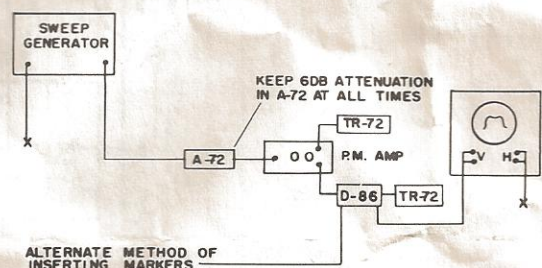


Figure 6. Alignment Test Set-up

4. Align L-3 and L-4 (Figure 5) to control frequency and tilt of the double tuned interstage until the observed output is similar to curve B (Figure 7). Curve A (Figure 7) shows the combined effect of both the double tuned interstage and the single tuned output stage in determining the flat overall response of the amplifier.
5. Adjust BANDWIDTH control (Figure 5) for the desired bandwidth of the interstage, band edge to band edge.
6. Align L-6 (Figure 5) essentially to mid to restore any tilt in observed output curve B (Figure 7) caused by adjustment of BANDWIDTH control in step 5.

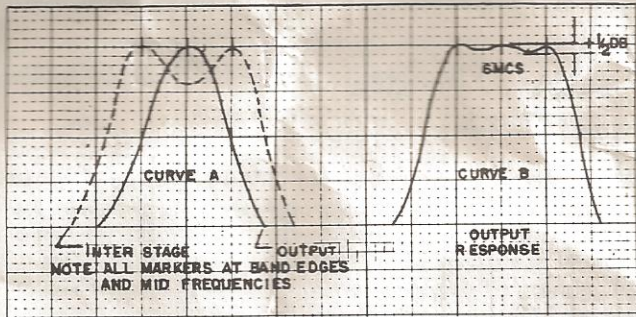


Figure 7. Response Data

Steps (Continued)

7. Align L-7 (Figure 5) to correct either a hump or a valley in the observed output curve B (Figure 7).
8. Remove TR72F from strip being aligned and tune L-9 (Figure 5) for maximum attenuation (trapping effect) at the mid of channel (FM-98MC) being aligned. Replace TR-72F and check rough alignment.
9. Set up test equipment for Test B (Figure 4).
10. Check the output match of the amplifier (refer to Jerrold Technical Bulletin #142 for method). The match over the entire band should be close to 20db or better (10db in the A-72) except at the channel of the unit under alignment. If match is not close to 20db, readjust L-9 (Figure 5) as follows:
  - A. All channels except 4, 5 and FM.  
Match is to be 30db or better across 54 to 216 MC except in the band  $\pm 9$ MC of center of channel under test.
  - B. Channel 4.  
Match is to be 20db or better across 54 to 216 MC except in the band  $-9$  to  $+7$  MC of center of channel under test.
  - C. Channel 5.  
Match is to be 20db or better across 54 to 216 MC except in the band  $-7$  to  $+9$  MC of center of channel under test.
  - D. FM  
Match is to be 20db or better across 54 to 88 MC and 174 to 216 MC. These strips can be aligned as individual units and mixed together with other alternate channels (channels 4 and 5 or 6 and FM are considered alternate channels) with possible changes of  $1\frac{1}{2}$  db over a channel without any re-alignment. For precise systems, these unit should be aligned mixed.
11. Set up test equipment as in Figure 6 to check gain of the amplifier.
12. Set A-72 for 6db attenuation.
13. Connect A-72 directly to D-86 (by-passing the amplifier) and establish a convenient reference level on the scope.
14. Reconnect the amplifier between A-72 and D-86.
15. Adjust attenuation of A-72 until the preset reference is again established on the scope. The total attenuation minus the original 6 db in the A-72 represents the gain of the amplifier.

## INSTALLATION

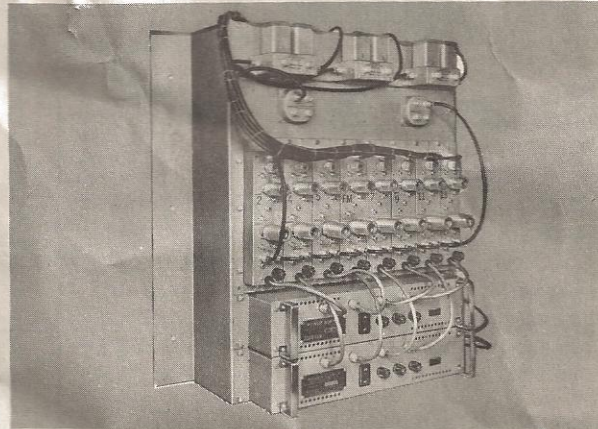


FIGURE 8.

NOTE: Jerrold Mounting Plates, Models MP-1 and MP-2; Mounting Rails, Model MR-4; and Equipment Housing (Cabinet) Model EH-40 are purchased individually as required.

### MOUNTING

The Positive Matched Amplifier Strips are designed to mount simply, with two screws, on the Jerrold Model MP-1 Mounting Plate. This Mounting Plate will accommodate eight (8) strips and will fit standard 19" relay-rack panels; Jerrold Model MR-4 Mounting Rails; or the Jerrold Model EH-40 deluxe Equipment Housing (cabinet).

The use of the MP-1 Mounting Plates provides simplicity and flexibility in the mounting of strips and accessories, such as pads, traps, etc. Jerrold Model MP-2, Accessory Panel, is available to provide neat mounting of additional accessories even in complex "head-ends."

Refer to Technical Data Sheet #592 for all mounting accessories for the Positive Matched System.

### SETTING AMPLIFIER LEVELS

Choice of the proper pad is very simple. Measure the input level to the amplifier with a Jerrold Model 704 Field Strength Meter (or equivalent). If this level in dbj (0 dbj equals 1000 microvolts) plus the gain of the strip (see specifications) exceeds the recommended output level (62 dbj) install the pad which will satisfy this condition. In case maximum recommended output is not desired, the pads may be used in a similar manner to obtain the desired output.



FIGURE 9.  
Plug-In Pads.

### MAINTENANCE

All tube replacements should be made by the direct substitution method while observing the response of the amplifier. Some retouching of alignment may be necessary when tubes are replaced unless the new tube gives at least 3 db more gain than the old.

Refer to schematics (attached) for circuit data. In the event that service is necessary, return the equipment to the factory.

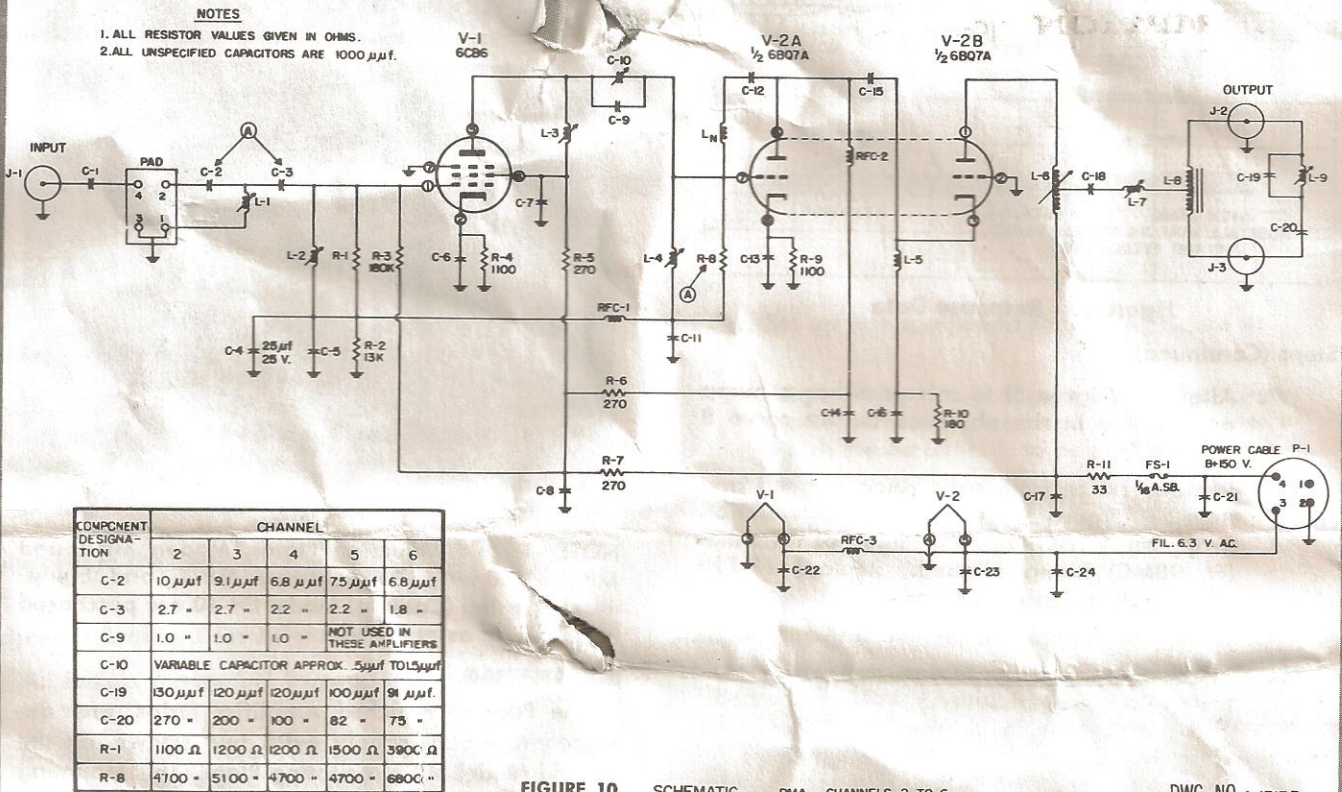


FIGURE 10. SCHEMATIC PMA CHANNELS 2 TO 6

DWG. NO. A-1313B

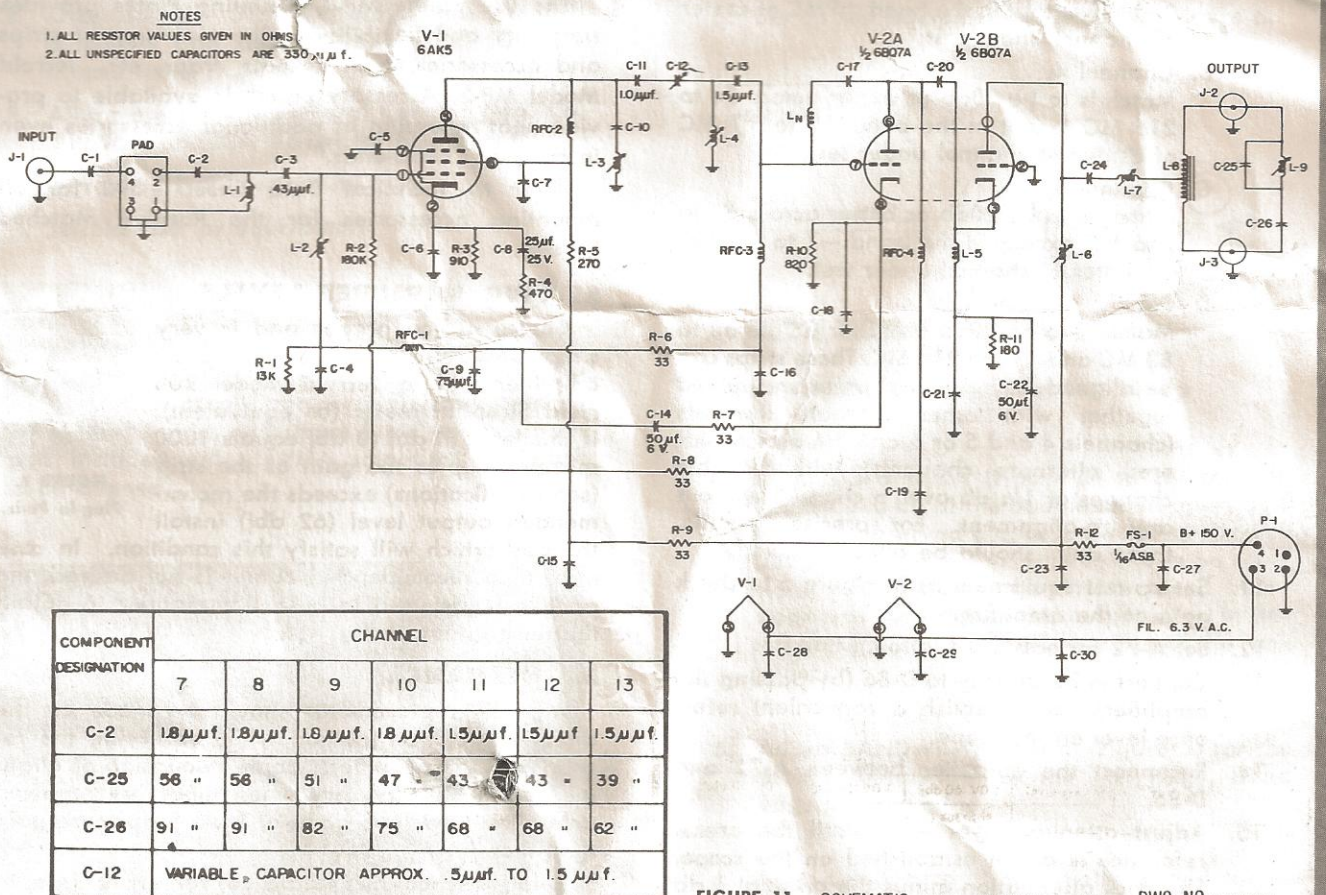
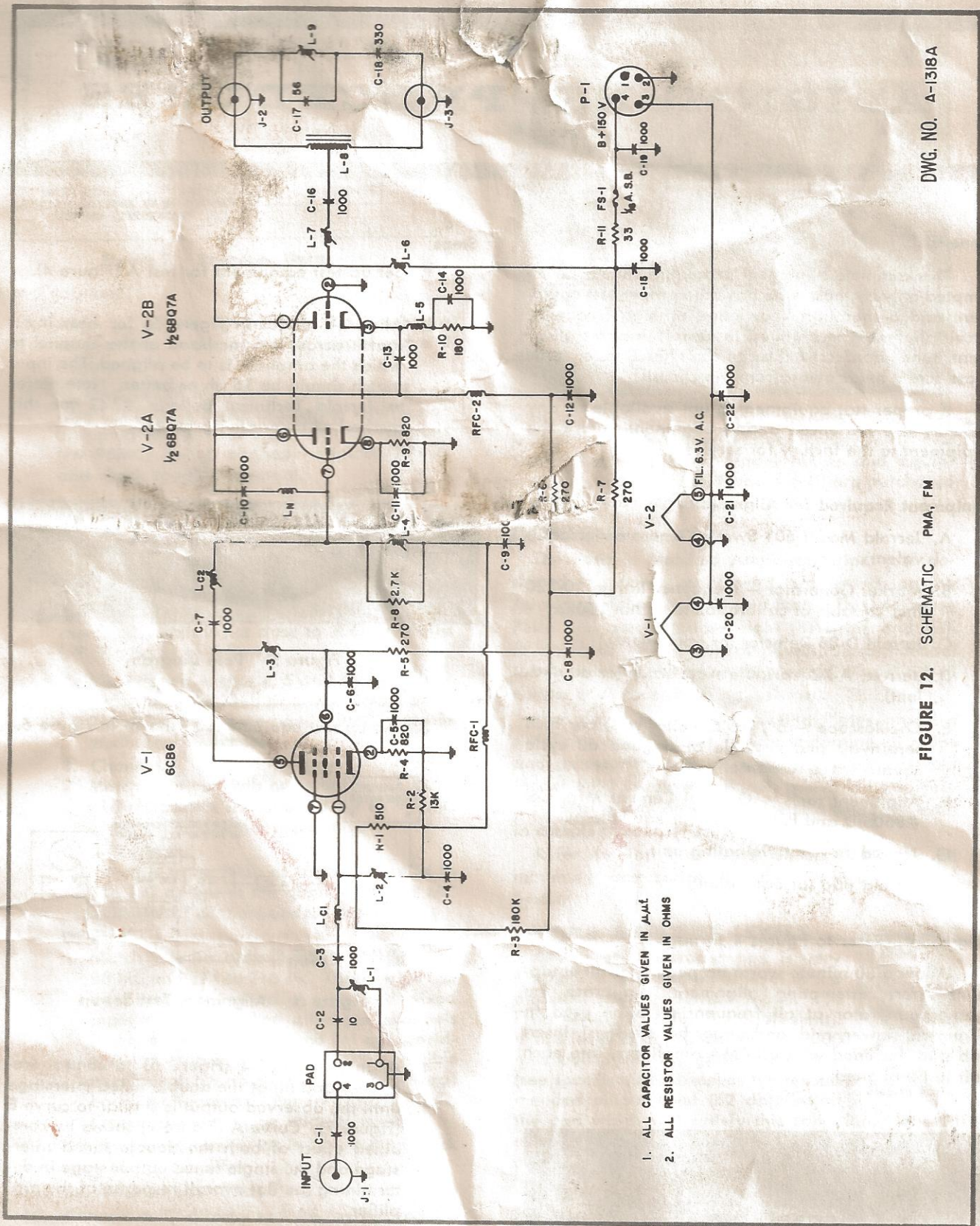


FIGURE 11. SCHEMATIC PMA, CHANNELS 7 TO 13

DWG. NO. A-1269A



DWG. NO. A-1318A

FIGURE 12. SCHEMATIC PMA, FM

1. ALL CAPACITOR VALUES GIVEN IN  $\mu\text{MFD}$
2. ALL RESISTOR VALUES GIVEN IN OHMS

Data subject to change without notice.

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