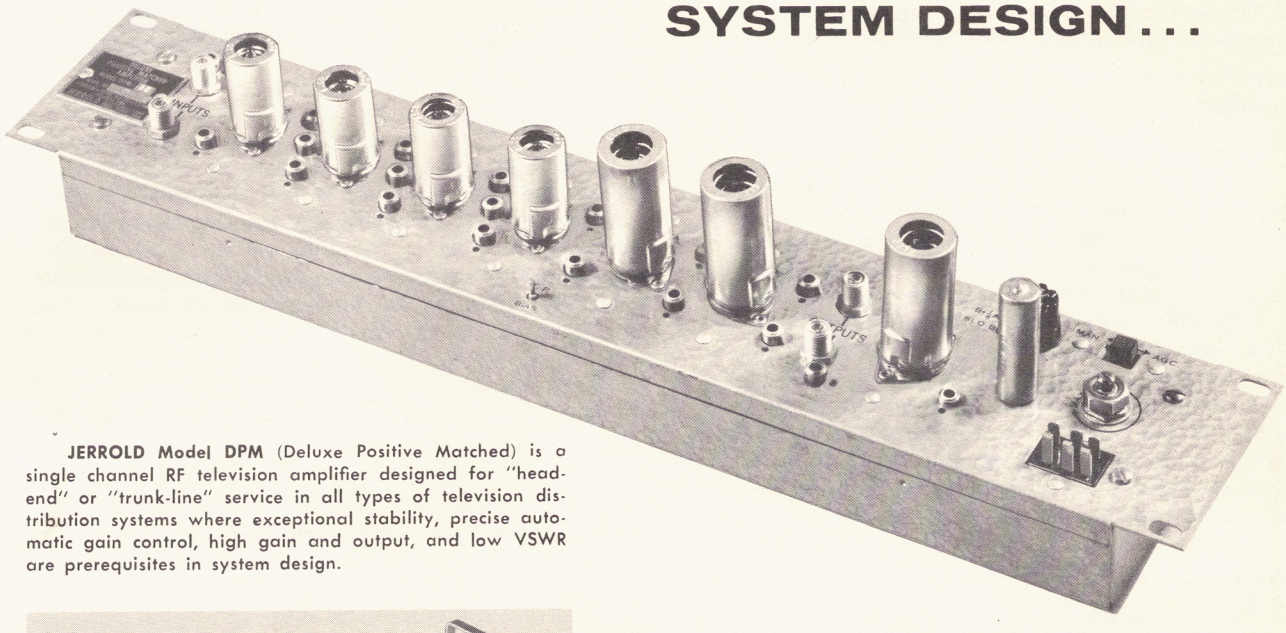
JERROLD

INSTRUCTION SHEET

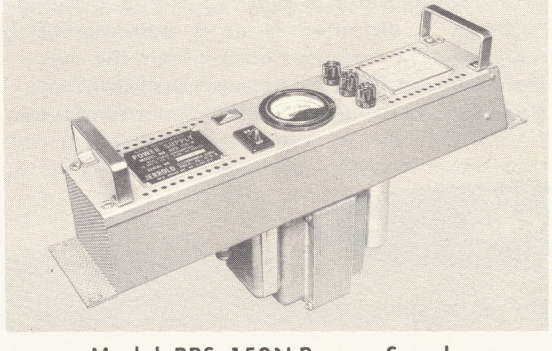
POSITIVE MATCHED AMPLIFIER MODEL DPM — *

Reference TD 547 **435-235**

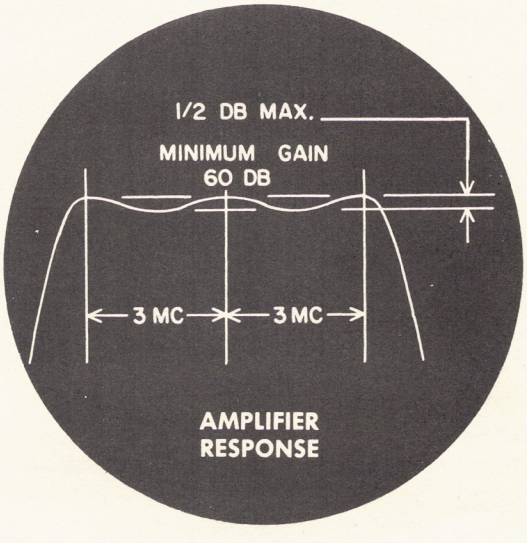
DELUXE POSITIVE MATCHED AMPLIFIER A PREREQUISITE IN SYSTEM DESIGN...



JERROLD Model DPM (Deluxe Positive Matched) is a single channel RF television amplifier designed for "head-end" or "trunk-line" service in all types of television distribution systems where exceptional stability, precise automatic gain control, high gain and output, and low VSWR are prerequisites in system design.



Model RPS 150N Power Supply



FEATURES

- Output — 1.5 Volts RMS.
- Gain — 60 DB.
- Dual Matched Inputs and Outputs.
- Flat 6MC Response.
- Highly Effective "AGC".
- Advanced Stability Techniques.
- Regulated Supply Voltages.
- Non-Critical Mixing.

APPLICATIONS

- "Head-End" Control-Community Systems.
- Line Amplifier-Community Systems.
- Line Amplifier-Closed Circuit TV.
- R.F. Data Transmission.

* Specify Channel Number.

GENERAL DESCRIPTION

Model DPM is available for any channel in the VHF television band, Channel 2 through Channel 13. Utilizing seven tubes; six tubes for amplification and one tube for automatic gain control, the amplifier exhibits a minimum gain of 60 db and a maximum undistorted output of 1.5 volts RMS (63.5 dbj) into two 75 ohm loads. The output response of the amplifier is flat, ± 0.25 db, across a 6 MC bandwidth and is completely adjustable. Designed for use with power supply RPS-150N or RPS-300N.

CIRCUITRY —

High Channel

The input circuit is single-tuned to mid-frequency incorporates variable loading, and is designed to work from two 75 ohm sources. The next three stages are identical; double-tuned, variable bandwidth control, and fixed grid loading. The following interstage is single-tuned, incorporates variable loading, and is tuned to the high end of the band. The last interstage also incorporates variable loading and is single-tuned to the low end of the band. The output stage is single-tuned, has variable loading, and is tuned to mid-frequency. The plate circuit is designed to work into two 75 ohm loads.

Low Channel

The input is single-tuned to mid-frequency, has variable loading, and is designed to work from two 75 ohm sources. The following interstage incorporates variable loading and is single-tuned to the low end of the band. The next interstage also incorporates variable loading and is single-tuned to the high end of the band. The middle interstage is double-tuned, has resistive loading and variable bandwidth control. The following interstage is single tuned with variable loading control to the high end of the band. The final interstage also incorporates variable loading and is single tuned to the low end of the band. The output stage is single-tuned to mid-frequency, incorporates variable loading, and is designed to work into two 75 ohm loads.

GAIN CONTROL —

1. Manual

When the slide switch is in "MANUAL" position, the gain is controlled by varying the bias on the first four tubes. The bias on the grids of the high strips, which have grounded cathodes on the first four tubes, varies from —3 to —9 volts. The grid bias on the low strips, which use cathode resistor bias on these tubes, varies from 0 to —6 volts.

2. AGC — When the slide switch is in "AGC" position, B+ voltage is supplied to V-7 the 6AM8 pentode diode which develops the AGC bias. A capacitor lightly couples the plate of the output tube to the grid of a pentode buffer amplifier whose plate is tuned to video carrier frequency with L-15. The amplifier video carrier frequency is fed to the cathode of a diode detector whose variable positive delay voltage is obtained from a potentiometer voltage divider. The negative output from the detector is filtered by an RC filter network,and this negative bias is fed to the grids of the first four tubes.

SPECIFICATIONS

Gain:
60 db minimum

Bandwidth:
6 MC; Ch. 2 thru Ch. 13

Flatness:
± 0.25 db

Recommended Operating Input Level:
3 millivolts (10 dbj)

Maximum Output Level:
1.5 volts RMS (63.5 dbj)

Recommended Operating Output Level:
1.0 volts RMS (60 dbj)

Input Impedance:
75 Ohms, VSWR less than 1.2

Output Impedance:
75 Ohms, VSWR less than 1.2

Gain Control:
Manual: —30 db minimum control
AGC: ± 10 db input variation — ± 1 db output variation.

Mixing — Input and Output:
Non-critical jumper cables

Tube Complement:
Lo Channel (4) 6CB6, (2) 6BQ7-A and (1) 6AM8
Hi Channel (4) 5654, (2) 6BQ7-A and (1) 6AM8

B+ Requirement:
150 volts @ 95 MA

B— Requirement:
—150 volts @ 3 MA

Dimensions:
H 3½" — W 19" — D 3⅞"

Mounting Centers:
Standard RETMA, for standard relay racks and cabinets

Filament Requirements:
6.3 volts @ 2.5 Amps

Power Rating:
63 watts maximum with RPS-150N Power Supply

Power Supply:
RPS-150N (1 DPM) or RPS-300N (3 DPM)

INSTALLATION

The amplifier may be mounted in either the vertical or horizontal position, features standard RETMA drilling of its mounting centers, and occupies 3 1/2" of a standard 19" relay rack cabinet. For custom interior mounting, three DPM amplifiers and one RPS-300N power supply or five DPM amplifiers and two RPS-300N power supplies mount in the JERROLD Deluxe Equipment Housing, Model EH-40. Where an equipment cabinet is not necessary, or desired, the amplifiers and power supply may be mounted on the JERROLD Mounting Rails, Model MR-4. Refer to Technical Data Sheet # 592 on JERROLD Mounting Accessories.

No special precautions, other than sufficient ventilation and protection from the elements, need be considered in outdoor mounting of the amplifiers.

One DPM amplifier requires the power from one JERROLD Power Supply, Model RPS-150N. A JERROLD Model RPS-300 Power Supply is required for either two or three DPM amplifiers. It is recommended that the 3AG-10 amp. filament fuse in the Model RPS-300N Power Supply be changed to a 3AG-10 amp. Slo-Blo type fuse when using the power supply to furnish power for three DPM amplifiers. The DPM amplifiers are simply connected to their associated power supplies using the power cables supplied. Refer to Technical Data Sheet #512 for the installations on the power supplies.

Input and output mixing of the amplifiers is accomplished easily with non-critical jumpers supplied. It is important that all unused input or output connectors be terminated in a JERROLD Terminating Unit, Model TR-72F. It is recommended that the input and output levels be set, as per specifications, with an accurate Field Strength Meter, such as the JERROLD Model FSM-704B.

MAINTENANCE

Alignment Procedure

General

The following alignment procedure is complete and can be accomplished by those who have a knowledge of high frequency circuit alignment techniques and the proper test equipment. If the proper test equipment is not available, or if any difficulty is experienced during the alignment, the equipment may be returned to the factory for service.

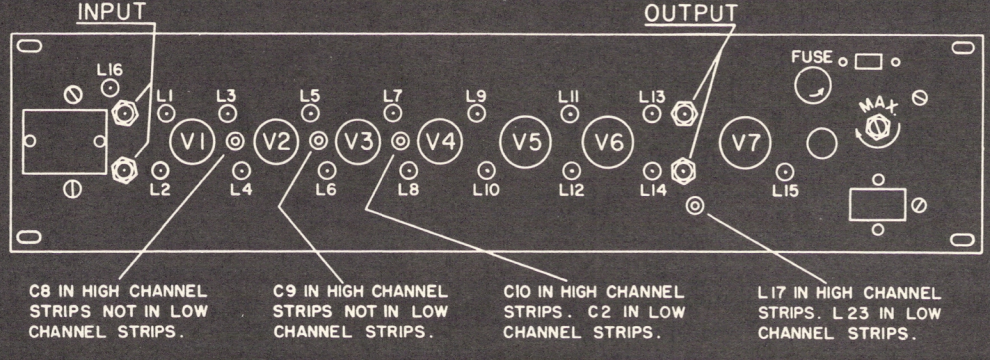
Equipment Required for Alignment:

1. Jerrold Model 601 Sweep Generator - sweep range 54 to 216 MC (or equivalent).
2. Jerrold D-86 Detector (or equivalent).
3. Jerrold A-72 Variable Attenuator (or equivalent).
4. Jerrold AJ-106 Alignment Jig (or equivalent).
5. Oscilloscope - 5", 0.25 volts (rms) per inch sensitivity and capable of good 60 cycle square wave response.
6. Marker Generator - frequency range of 54 to 216 MC and capable of calibration to within 100 KC.
7. Alignment Tools - General Cement Mfg. Co., #8606-D and ICA #6161 (or equivalent).
8. Jerrold TR-72F Terminating Units (or equivalent).

Alignment (Refer to Pole Diagram and Test Set-ups)

Allow a 30 minute warm-up period for all equipment before attempting alignment. Calibrate the Marker Generator at all frequencies to be used in the alignment.

It is recommended that the amplifier strips be aligned connected together as they will normally be used in the system. The strips should be aligned at approximately 50 db gain.



POLE DIAGRAM, FIGURE 3

Preliminary Alignment

Set-up equipment as shown in Figure 4. The 20 db pad should be connected directly to an output connector to eliminate feedback from the output to the input cables. Terminate the other output with a TR-72F. The amplifier switch should be in the "Manual" position, and the gain control turned to maximum position. All slugs tune away from chassis. Keep bottom of chassis covered.

DPM High Channel Strips

Jig tube into V-4 and adjust the three single-tuned stages which form an output triple whose response is 3 db down at ∠ 3 MC. See Figure 6.

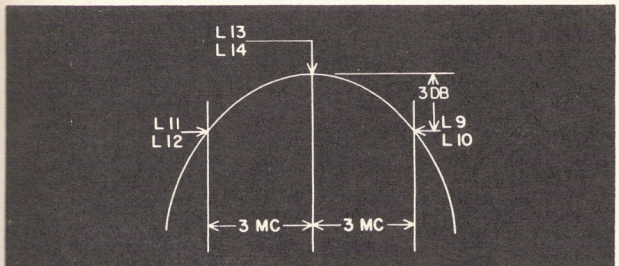


FIGURE 6

Coil L9 peaks at the high band edge with L10 as its variable loading coil; L11 peaks at the low band edge with L12 as its variable loading coil; and L13 tunes at center frequency with L14 as its loading coil.

Jig tube into V-1. Set side band markers to ∠ 3.4 MC and retune L9 and L11 to peak at these markers. Tune the three identical double-tuned interstages for the response shown in Figure 7.

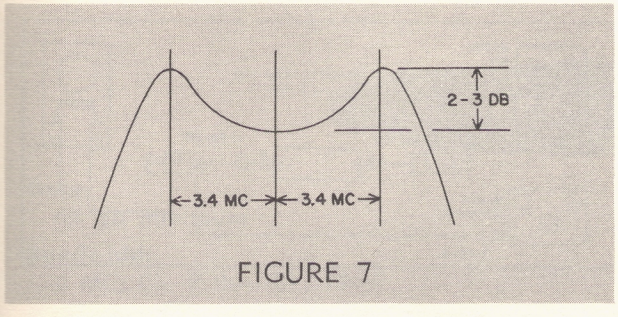


FIGURE 7

L-3, L-5 and L-7 are the primary (plate) coils, and L-4, L-6 and L-8 are the corresponding secondary (grid) coils. The proper band width for each double-tuned interstage is obtained by variable capacity coupling using slug-tuned coil ring capacitors C-8, C-9 and C-10.

Remove TR-72F from output and tune L-17 so that a trap occurs at center frequency. Replace output termination.

Terminate one input and connect sweep to other input. Set side band markers to ∠ 3 MC. Tune input stage to center frequency to fill response curve. L-1 is the variable loading coil for L-2 which tunes to center frequency. Re-adjust the tuning of the interstages, if necessary, to obtain an overall response that is flat within 1/2 db as shown in Figure 8.

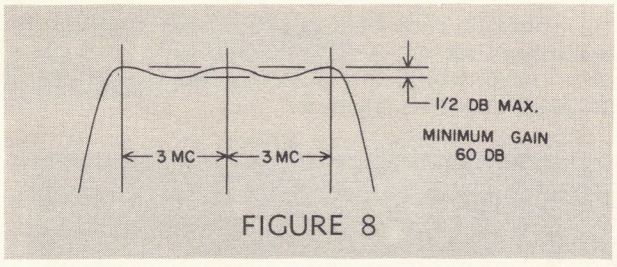


FIGURE 8

Remove TR-72F from input and tune L-16 so that a trap occurs at center frequency. Replace input termination and retune input for desired overall response.

NOTE: It may be necessary to change the lead length or physical position of capacitor C-13 on the output compensator network, and of C-12 in the input compensator network in order to get L-17 and L-18 to tune to center frequency.

DPM Low Channel Strips

Jig tube into V-4 and adjust the last three stages to form a three-peaked output triple, flat within 1/2 db and 6.4 MC wide as shown in Figure 9.

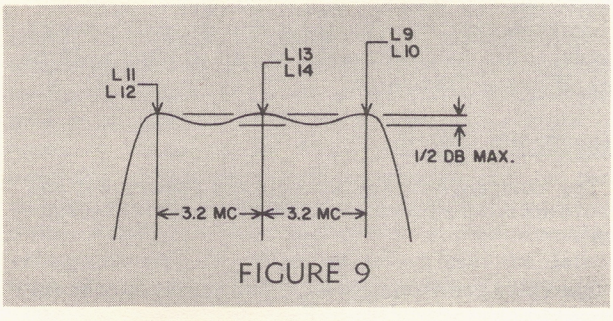


FIGURE 9

Coil L-9 tunes to ±3.2 MC with L-10 as its variable loading coil; L-11 tunes to -3.2 MC with L-12 as its variable loading coil; and L-13 tunes to center frequency with L-14 as its loading coil.

Jig tune into V-3 and tune the double-tuned interstage for an overall two-peaked response 6.4 MC wide with a valley 1 to 1 1/2 db as shown in Figure 10.

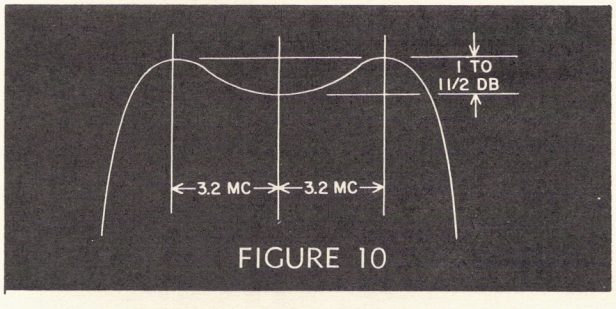
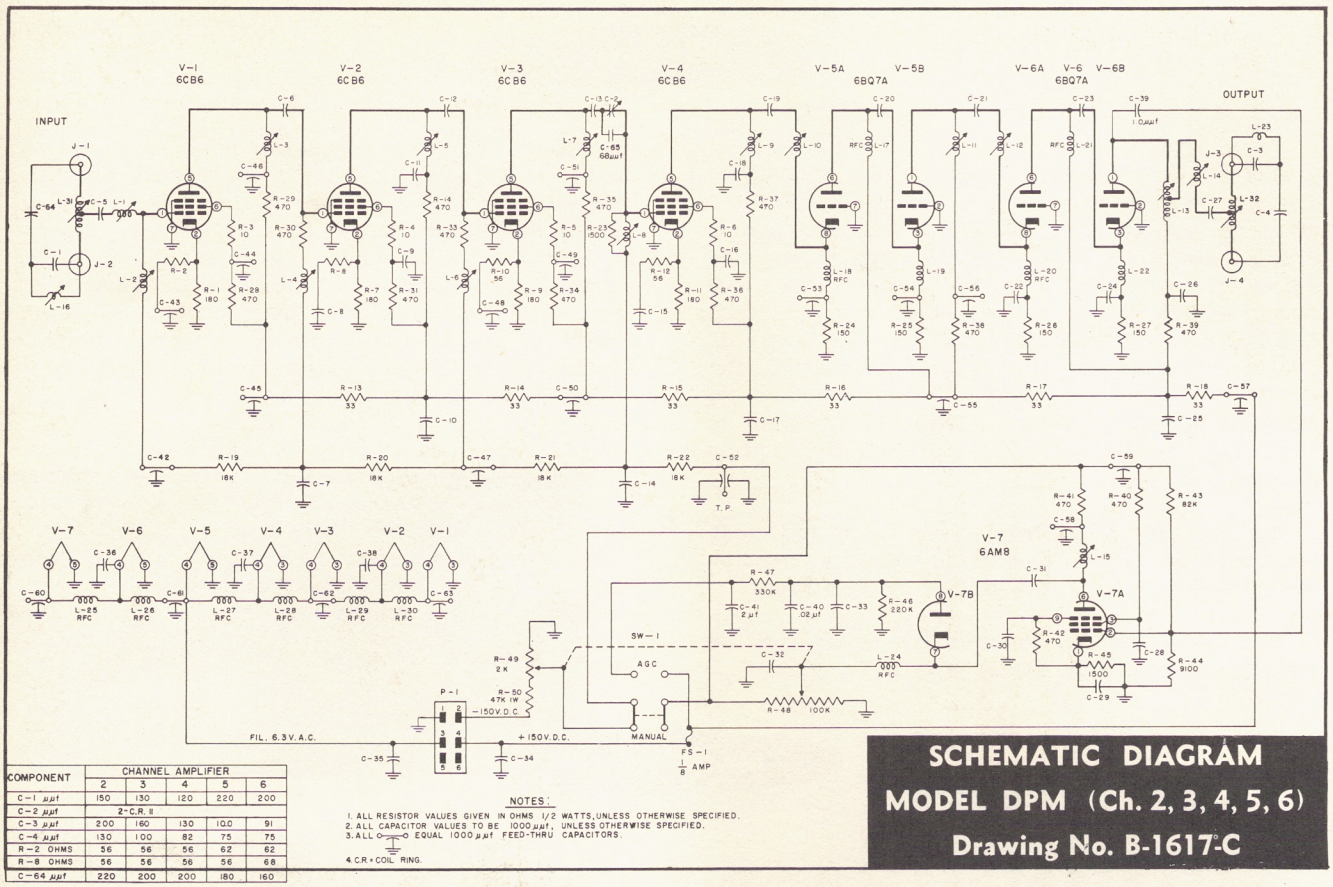


FIGURE 10

L-7 is the primary (plate) coil and L-8 is the secondary (grid) coil. The proper band width of the stage is obtained by variable capacitive coupling, using a slug-tuned coil ring capacitor C-2.

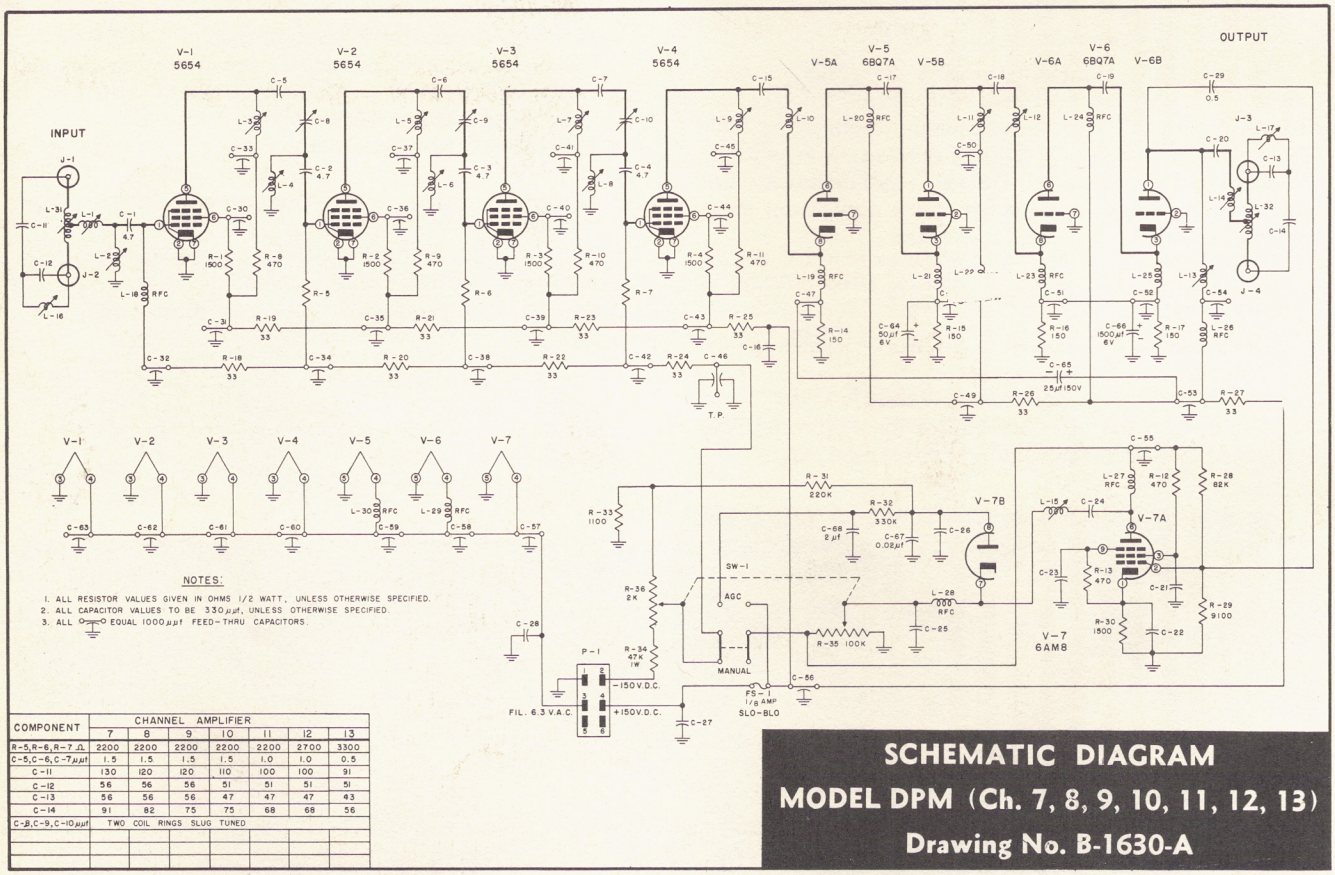
Remove TR-72F from output and tune L-23 so that a trap occurs at center frequency. Replace output termination.



COMPONENT	CHANNEL AMPLIFIER				
	2	3	4	5	6
C-1 μμf	150	130	120	220	200
C-2 μμf	2-C.R. II				
C-3 μμf	200	160	130	100	91
C-4 μμf	130	100	82	75	75
R-2 OHMS	56	56	56	62	62
R-8 OHMS	56	56	56	56	68
C-64 μμf	220	200	200	180	160

NOTES:
1. ALL RESISTOR VALUES GIVEN IN OHMS 1/2 WATTS, UNLESS OTHERWISE SPECIFIED.
2. ALL CAPACITOR VALUES TO BE 1000 μμf, UNLESS OTHERWISE SPECIFIED.
3. ALL ○—○ EQUAL 1000 μμf FEED-THRU CAPACITORS.
4. C.R. = COIL RING.

SCHEMATIC DIAGRAM
MODEL DPM (Ch. 2, 3, 4, 5, 6)
Drawing No. B-1617-C



NOTES:
1. ALL RESISTOR VALUES GIVEN IN OHMS 1/2 WATT, UNLESS OTHERWISE SPECIFIED.
2. ALL CAPACITOR VALUES TO BE 330 μμf, UNLESS OTHERWISE SPECIFIED.
3. ALL ○—○ EQUAL 1000 μμf FEED-THRU CAPACITORS.

COMPONENT	CHANNEL AMPLIFIER						
	7	8	9	10	11	12	13
R-5, R-6, R-7 Ω	2200	2200	2200	2200	2200	2700	3300
C-5, C-6, C-7 μμf	1.5	1.5	1.5	1.5	1.0	1.0	0.5
C-11	130	120	120	110	100	100	91
C-12	56	56	56	51	51	51	51
C-13	56	56	56	47	47	47	43
C-14	91	82	75	75	68	68	56
C-8, C-9, C-10 μμf	TWO COIL RINGS SLUG TUNED						

SCHEMATIC DIAGRAM
MODEL DPM (Ch. 7, 8, 9, 10, 11, 12, 13)
Drawing No. B-1630-A

Data Subject to Change Without Notice

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