

I N S T R U C T I O N S
f o r
R C A M O N I T O R I N G A M P L I F I E R
T Y P E 8 2 - A
(MI-11200, MI-11200-A)

POWER SUPPLY

105-125 Volts
50-60 Cycles
170 Watts

FUSE

AC Line 2-Amp. (Stock #3883)

RADIOTRONS

1st Stage 1 RCA-6C6
2nd Stage 2 RCA-76
(and phase inverter)
3rd Stage 2 RCA-6L6G (Push-Pull)
Rectifier 1 RCA-5Z3

INPUT IMPEDANCE

Bridging Input 20,000 Ohms
Matching Input 500 Ohms

OVERALL GAIN

Bridging with Remote Volume Control 33 db
Bridging Gain of Amplifier 49 db
Matching Gain of Amplifier 65 db

FREQUENCY RESPONSE

± 1.5 db (1,000 cycle reference) from
30 to 10,000 cycles, with matching
input and 500 ohms output.

POWER OUTPUT

(At 400 Cycles)

8.0 Watts
(+28 db*), with 3.0% Total R.M.S.
Harmonic Distortion.

OUTPUT HUM LEVEL

Maximum, -40 db*

LOAD IMPEDANCE

500/15/7.5/5 Ohms

PHYSICAL SPECIFICATIONS

(Approximate)

Width 16 Inches
Depth 10 Inches
Height 7 Inches
Weight 25 Lbs.

MOUNTING

Shelf-Mounting. The MI-11200 Amplifier may be Rack-Mounted through the use of the Type 36-A Panel and Shelf Assembly, and the MI-11200-A Amplifier may be mounted through the use of the Type 36-B Panel and Shelf Assembly. Avoid placing the amplifier near a source of extraneous interference.

L O C A T I O N A N D M O U N T I N G

The Type 82-A Monitoring Amplifier is designed so that it may be mounted on a Type 36-A or 36-B Panel and Shelf. (See "MOUNTING" above.) This amplifier may also be mounted on the MI-4437 or MI-4438 Base which is used in conjunction with the Type 64-A Loudspeaker Cabinet.

(Continued on page 3.)

*NOTE:- 0 db - 0.0125 Watts

IB-24109-1

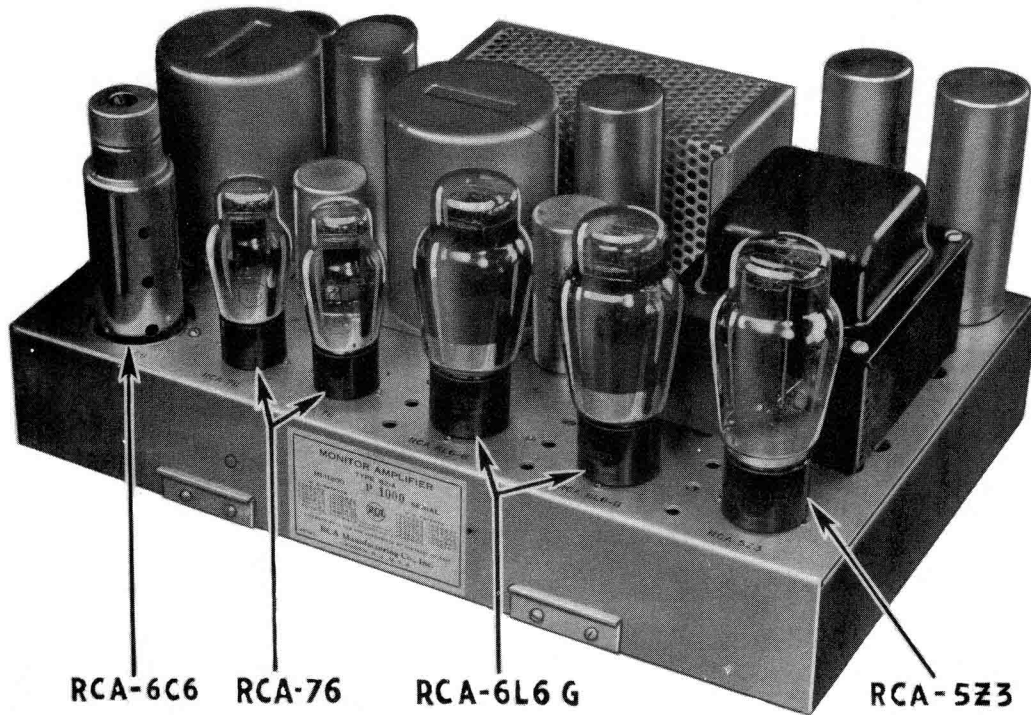


FIGURE 1 - TOP VIEW OF TYPE 82-A MONITORING AMPLIFIER

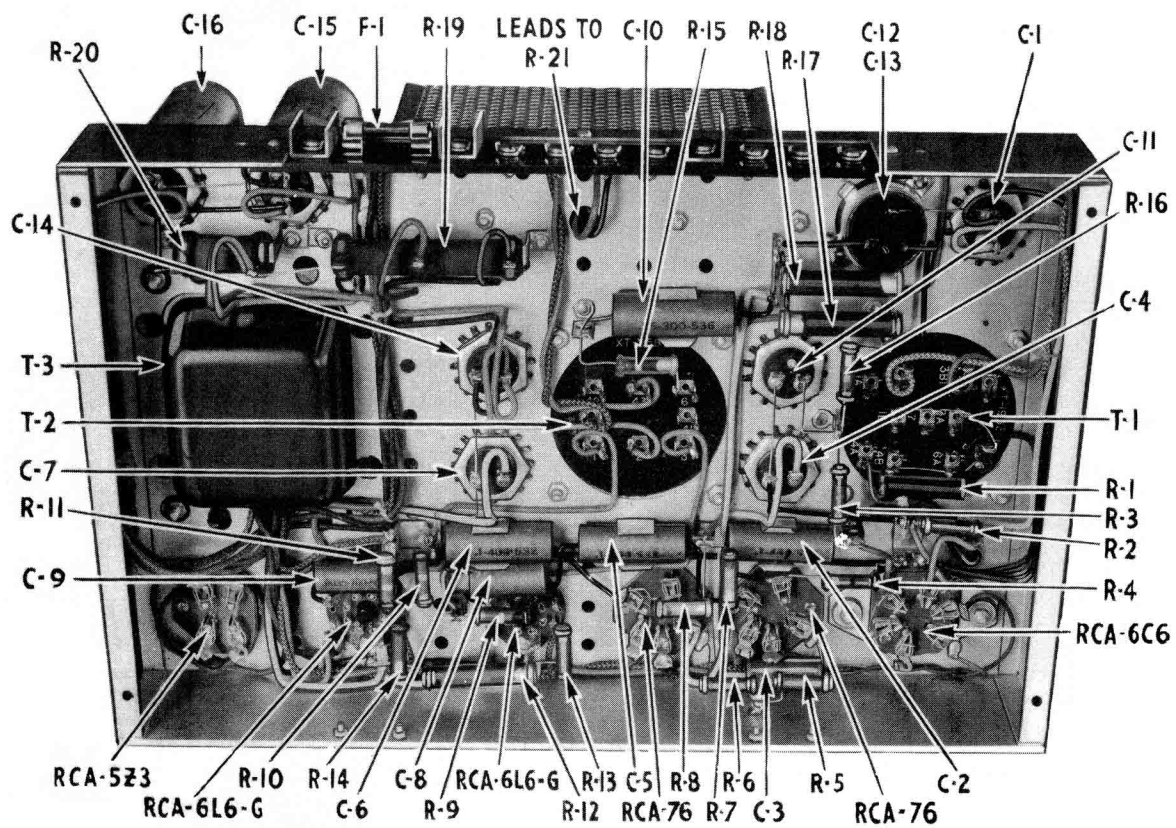


FIGURE 2 - BOTTOM VIEW OF TYPE 82-A MONITORING AMPLIFIER

When the Type 82-A Amplifier is mounted on a Type 36-A Panel and Shelf, its volume control may be mounted on the front door of the panel by removing the RCA monogram, and when mounted on the Type 36-B Panel and Shelf, the volume control may be mounted in the hole obtained by removing the "plug button" at the lower left side of the panel. When the amplifier is mounted in the base of a Type 64-A Speaker, the volume control may be mounted in the side of the Type 64-A Cabinet. In large house monitoring systems where dial selection of programs is desired, the volume control may be housed in a small desk-mounted unit, together with the dial for controlling selector relays. This arrangement permits the Type 82-A Amplifier to be located at some point remote from the control station.

VOLUME CONTROL AND AUDIO INPUT CONNECTIONS.

The volume control is comprised of a 500-ohm dual potentiometer with two 4,700-ohm resistors, connected one to each arm (moving contact) and to a pair of terminals on a terminal block attached to the potentiometer. The incoming audio line is to be connected, by means of a shielded twisted pair, to the terminals on the terminal block. The two outer terminals on the potentiometer itself are to be connected, by means of a shielded twisted pair, to the amplifier "INPUT" terminals, which will be found connected to the 500-ohm primary of the input transformer T-1 (terminals 1A1 and 3B1).

In some cases it may be found desirable to remove the ground connection to the primary center tap of the input transformer, T-1, when the volume control center tap is grounded at a remote point. This may be accomplished as follows: On input transformer, T-1, remove the jumper between terminals 1B, 7, 3A, and 6B. Solder an insulated lead between terminals 1B and 3A. Solder another insulated lead between terminals 7 and 6B.

The connections described in the paragraph above are standard for the equipment as furnished, and are correct for bridging any line up to approximately 10,000 ohms. The input and volume control leads need not be larger than No. 19 A.W.G. and should be shielded twisted pair, insulated for 200 volts, and should not be run adjacent to, or laced with AC or loudspeaker field power leads.

If it be desired to terminate a 500-ohm line with this amplifier, the two 4,700-ohm carbon resistors of the external volume control should be replaced with two 250-ohm carbon resistors.

High impedance lines (10,000 to 30,000 ohms) may be approximately matched without incurring a matching loss in the volume control supplied with the Type 82-A Amplifier by connecting directly to the 20,000-ohm input (terminals 1A and 3B) of the input transformer. A high impedance (20,000-ohm) balanced volume control should be used. This control must be purchased separately.

The input transformer primary is balanced to ground, and the mid-tap is grounded when the amplifier leaves the Factory.

AUDIO OUTPUT CONNECTIONS

The amplifier is designed to supply a nominal audio output of 8 watts to various types of load. It may operate into a 500-ohm line, or drive one or more loudspeakers. To adapt the amplifier to the type of load into which it is to operate, the amplifier "OUTPUT" terminals must be connected to the proper output transformer terminals as follows:

<u>LOAD</u>	<u>TRANSFORMER (T-2) TERMINALS</u>
500 Ohms	4 - 6
15 Ohms	4 - 43
7.5 Ohms	4 - 42
5.0 Ohms	4 - 41

The output leads to each speaker or to the line should be individual No. 19 A.W.G., shielded, twisted pair, insulated for 200 volts.

(Continued on page 5.)

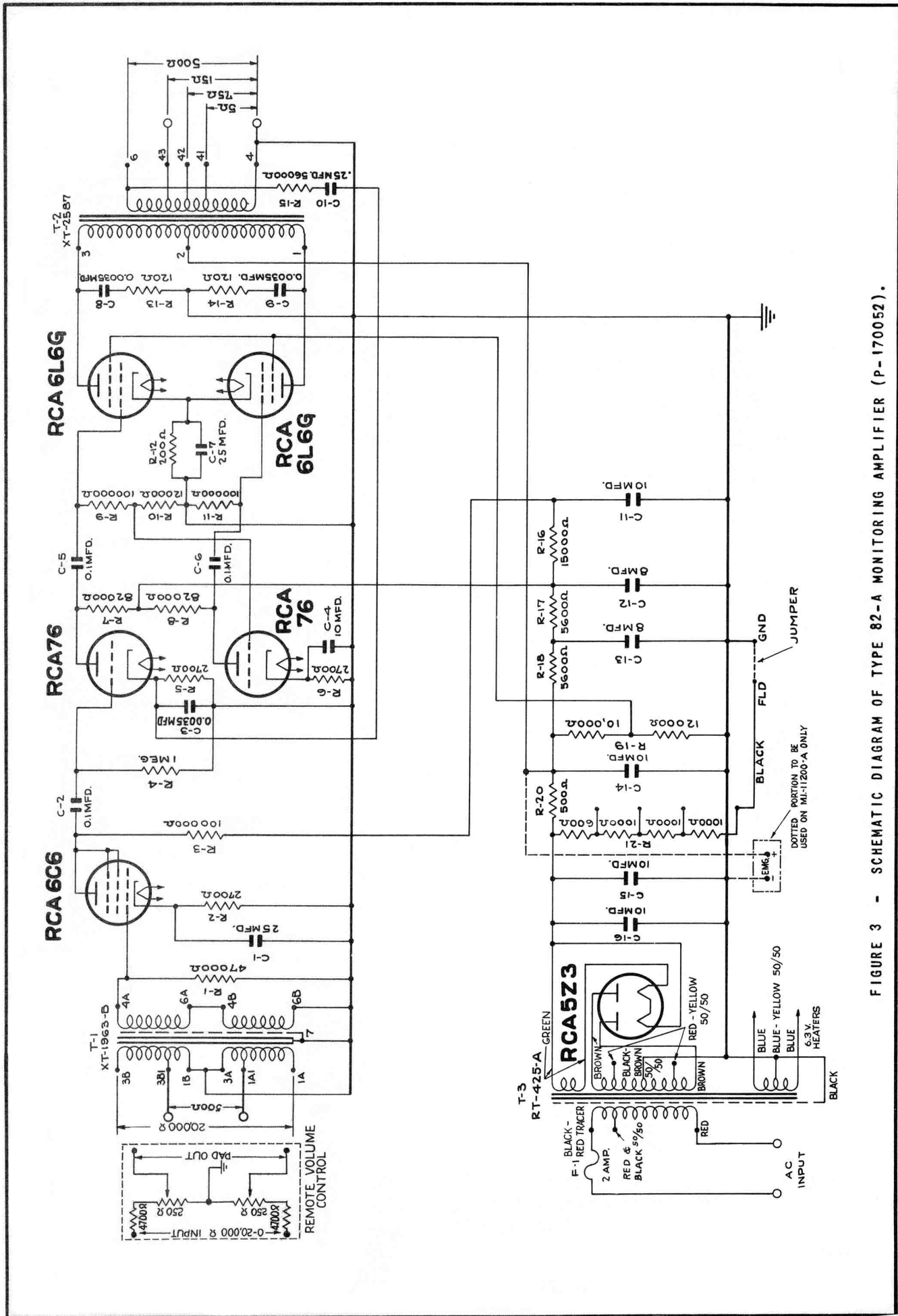


FIGURE 3 - SCHEMATIC DIAGRAM OF TYPE 82-A MONITORING AMPLIFIER (P-170052).

LOUDSPEAKER FIELD TERMINALS

The amplifier is designed to supply field power to 1, 2, or 3, 1,000-ohm, 10-watt loudspeaker fields, if desired. To connect loudspeaker fields to amplifier, proceed as follows:

1. Remove jumper between "FIELD" and "GND." terminals of amplifier terminal board.
2. Connect field between these same two terminals. If two or three fields are used, connect the fields in series.
3. Omit 1, 2, or 3, 1,000-ohm sections of R-21 corresponding to the number of loudspeaker fields used. This is accomplished by moving connections of black lead to resistor R-21. Access to this resistor is gained by removing the perforated metal cover on top of amplifier.

The external field leads should consist of a No. 19 A.W.G., shielded, twisted pair, insulated for a nominal rating of at least 500 volts.

When the amplifier is not to supply field power to any loudspeakers, as will be the case if permanent magnet dynamic speakers are used throughout or when this unit is used as a line amplifier, resistor R-21 may be removed from the circuit by disconnecting and taping up its red lead. When R-21 is removed from the circuit, the high voltage secondary (brown) leads of the power transformer must also be disconnected from the plate contacts of the Radiotron RCA-5Z3 and taped up, and the lower voltage (Red-yellow 50/50) taps of the same transformer winding be connected instead. Under this condition, the heat radiation is reduced by over 40 watts and the AC power consumption is similarly reduced. For the lower voltage connection the red and yellow 50/50 leads of the transformer should be connected to the plate contacts of the Radiotron RCA-5Z3 socket, and the brown leads should be taped up. (Obviously, the reverse should be done if, at any time, it be desired to reconnect the amplifier to supply field power.)

CAUTION: Do not operate this amplifier unless the field and/or R-21 resistor connections are properly made as described above.

P I L O T L A M P

Two terminals, marked "6.3 V. AC" are provided for the connection of a pilot lamp. The lamp lead should consist of a No. 19 A.W.G., shielded, twisted pair, and should be kept away from the audio input connections to avoid pickup.

A C P O W E R C O N N E C T I O N

The AC power connections are made to the amplifier through the two terminals marked "AC". Between these two terminals are located the fuse clips for the 2-ampere AC line fuse. This fuse is of the glass cartridge type, Stock #3883.

The power transformer T-3 is designed for nominal operation at 120 volts and contains a tap to provide for 110-volt operation. The transformer is connected at the factory for 120-volt operation and should remain so connected, unless it is definitely known that the AC line voltage does not exceed 110 volts at any time during the operating period; in which case the transformer 120-volt primary lead (black with red tracer) may be removed from the fuse clip and taped and the 110-volt primary lead (black and red, 50/50) may be connected in its place.

The AC power leads should be a No. 14 A.W.G., rubber covered shielded twisted pair, insulated for 600 volts, and should not be run adjacent to, or laced in with, the audio leads.

CAUTION: As a precautionary measure, do not connect the AC power leads until all other wiring to the amplifier is complete, particularly the loudspeaker field circuit connections as described in the paragraph "LOUDSPEAKER FIELD TERMINALS" above.

(Continued on page 6.)

PLATE SUPPLY FOR PRE-AMPLIFIERS

On the MI-11200-A Amplifier inside the resistor cover (which is at the rear of the amplifier and above the main terminal board), is located a small terminal board with two terminals marked "EMG.", "-", and "+". These terminals are for the purpose of supplying plate voltage and power to from 1 to 6 Type 85-A (MI-4207) Pre-Amplifiers through the use of a suitable filter, which is described in the Instruction Book (IB-24110) for the Type 85-A Pre-Amplifier.

LOW AND HIGH FREQUENCY COMPENSATOR

By the use of a small compensating network, which is available extra as MI-4313 and may be easily installed without drilling, the frequency response of the Type 82-A Amplifier may be altered to obtain a boost of 5.0 db at 60 cycles and 3.75 db at 10,000 cycles. The MI-4313 Compensator is not supplied with the Type 82-A Amplifier but is furnished extra. Instructions for installation are contained in the Instruction Book (IB-24123) for the MI-4313 Compensator.

OPERATING VOLTAGES AND CURRENTS

The total rectified voltage (across resistor R-21) is approximately 405. The actual operating voltages and currents for each tube are given in the following tabulation for conditions of a 120-volt line with the transformer T-3, 120-volt tap connected. Measured values will deviate from these figures in relation to the internal resistance of the measuring instruments. All voltages except heater voltages should be measured to ground in order to correspond with the tabulated figures.

	<u>RCA-6C6</u>	<u>RCA-76</u>	<u>RCA-6L6G</u>	<u>RCA-5Z3</u>
Ef (Volts)	6.2	6.2	6.2	5.0
Ep (Volts)	86	102	345	370 (per plate)
Ip (Ma.)	1.6	2.15 (per tube)	32 (per tube)	187
Ec1 (Volts)	4.3	5.8	12.5	---
Ec2 (Volts)	---	---	182	---
IC2 (Ma.)	---	---	0.75	---

REPLACEMENT PARTS LIST

The following parts list is included to provide identification when ordering replacement parts. When ordering, specify the item by its symbol (wherever possible) as shown in Schematic Diagram P-170052, followed by description and Catalog number.

<u>SYMBOL</u>	<u>DESCRIPTION</u>	<u>CATALOG NUMBER</u>
C-1	Capacitor - 25 mfd.	16727
C-2	" - 0.1 mfd.	4839
C-3	" - 0.0035 mfd.	5005
C-4	" - 10 mfd.	13222
C-5	" - 0.1 mfd.	4839
C-6	" - 0.1 mfd.	4839
C-7	" - 25 mfd.	16727
C-8	" - 0.0035 mfd.	5005
C-9	" - 0.0035 mfd.	5005
C-10	" - 0.25 mfd.	12484
C-11	" - 10 mfd.	13224
C-12/C-13	" - 8/8 mfd.	30257
C-14	" - 10 mfd.	13224
C-15	" - 10 mfd.	13224
C-16	" - 10 mfd.	13224
F-1	Fuse - 2 amp.	3883
R-1	Resistor - 47,000 ohms	12573
R-2	" - 2,700 ohms	14687
R-3	" - 100,000 ohms	3252
R-4	" - 1 megohm	13731
R-5	" - 2,700 ohms	14687
R-6	" - 2,700 ohms	14687
R-7	" - 82,000 ohms	8064
R-8	" - 82,000 ohms	8064
R-9	" - 100,000 ohms	3252
R-10	" - 12,000 ohms	30286
R-11	" - 100,000 ohms	3252
R-12	" - 200 ohms	30287
R-13	" - 120 ohms	30189
R-14	" - 120 ohms	30189
R-15	" - 56,000 ohms	8026
R-16	" - 15,000 ohms	12759
R-17	" - 5,600 ohms	8097
R-18	" - 5,600 ohms	8097
R-19	" - 22,000 ohms	17452
R-20	" - 500 ohms	17451
R-21	" - 3,600 ohms	17167
T-1	Input Transformer, XT-1963-B	17426
T-2	Output Transformer, XT-2587	17159
T-3	Power Transformer, RT-425-A	17847
---	Cushion Socket, for RCA-6C6	17450
---	Knob, for volume control	17268
---	Potentiometer - 250/250 ohms, for volume control	17155
---	Resistor - 4,700 ohms, for volume control	11987
---	Tube Shield, for RCA-6C6	3950
---	Tube Shield Top, for RCA-6C6	4629
---	Tube Socket, for RCA-76	12137
---	Tube Socket, for RCA-6L6G	11196
---	Tube Socket, for RCA-5Z3	13318

R C A V I C T O R D I V I S I O N

R C A M A N U F A C T U R I N G C O M P A N Y , I N C .

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