

INSTRUCTIONS
for
RCA MICROPHONE PRE-AMPLIFIER
TYPE 85-B1
(MI-11207-A)

POWER SUPPLY REQUIRED

Plate: 180-250 Volts, d-c
3.5 Milliampere

Filament: 6.3 Volts, a-c or d-c
0.3 Amperes

RADIOTRONS

1 RCA-1620 (Selected RCA-6J7)

SOURCE IMPEDANCE

30 or 250 Ohms

GAIN

29 db, with 250 Ohm input and
250 Ohm output

MAXIMUM INPUT LEVEL

-30 db*

LOAD IMPEDANCE

500-600/250 Ohms, Balanced

OUTPUT IMPEDANCE

520/260 Ohms

POWER OUTPUT

0 db* with 1% total rms
Harmonic Distortion

FREQUENCY RESPONSE

\pm 1 db from 30 to 10,000 cycles
0 to - 2 db at 15,000 cycles

HUM AND NOISE LEVEL

-92 db*

MOUNTING

Shelf Mounting, using metal base plate. This unit may be Rack-Mounted by using the Type 36-A or 36-B panel and Shelf Assemblies. Avoid placing the amplifier near a source of extraneous interference.

PHYSICAL SPECIFICATIONS

Width - 12.5 Inches
Depth - 2.5 Inches
Height - 6 Inches
Weight - 4 Pounds (unpacked)

DESCRIPTION AND APPLICATION

The RCA Type 85-B1 (MI-11207-A) Pre-Amplifier is a single stage pre-amplifier designed for Speech Input use with microphones, and for other uses in which minimum noise level is required. This unit may feed into a general purpose amplifier such as the Type 84-A or 84-B.

The Type 36-A or 36-B Panel and Shelf Assemblies afford a convenient means of mounting from 1 to 6 Type 85-B1 Pre-Amplifiers. Inspection and servicing are simple in this case, since the RCA-1620 Radiotrons are accessible through the panel door, and the terminal boards are conveniently located for wiring at the rear of the Type 36-A or 36-B Assemblies.

In order to obtain the maximum signal-to-noise ratio, the amplifier should always be mounted on a metal base, such as provided by the Type 36-A or 36-B Assemblies.

*Note: 0 db = 0.001 Watts

IB-24169-2

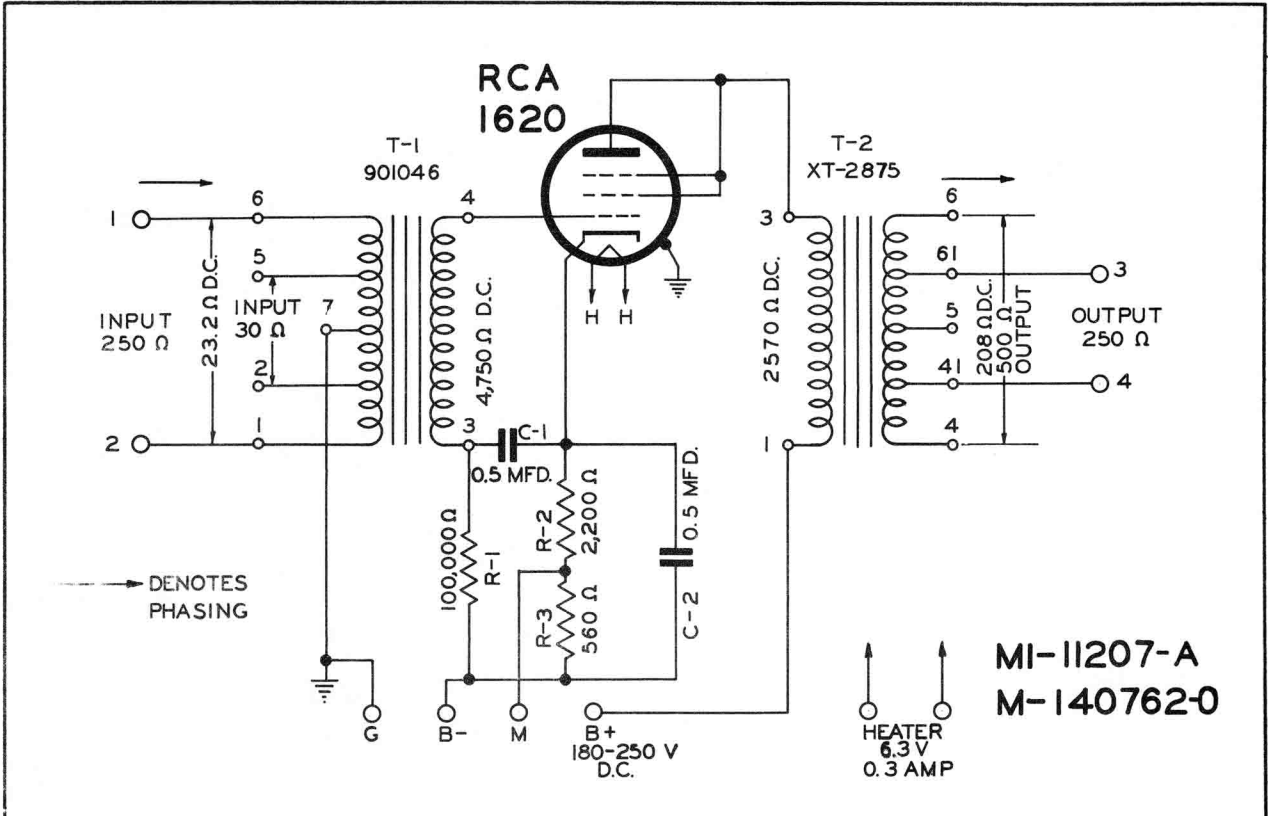


FIGURE 1 - SCHEMATIC DIAGRAM OF TYPE 85-B1 PRE-AMPLIFIER.

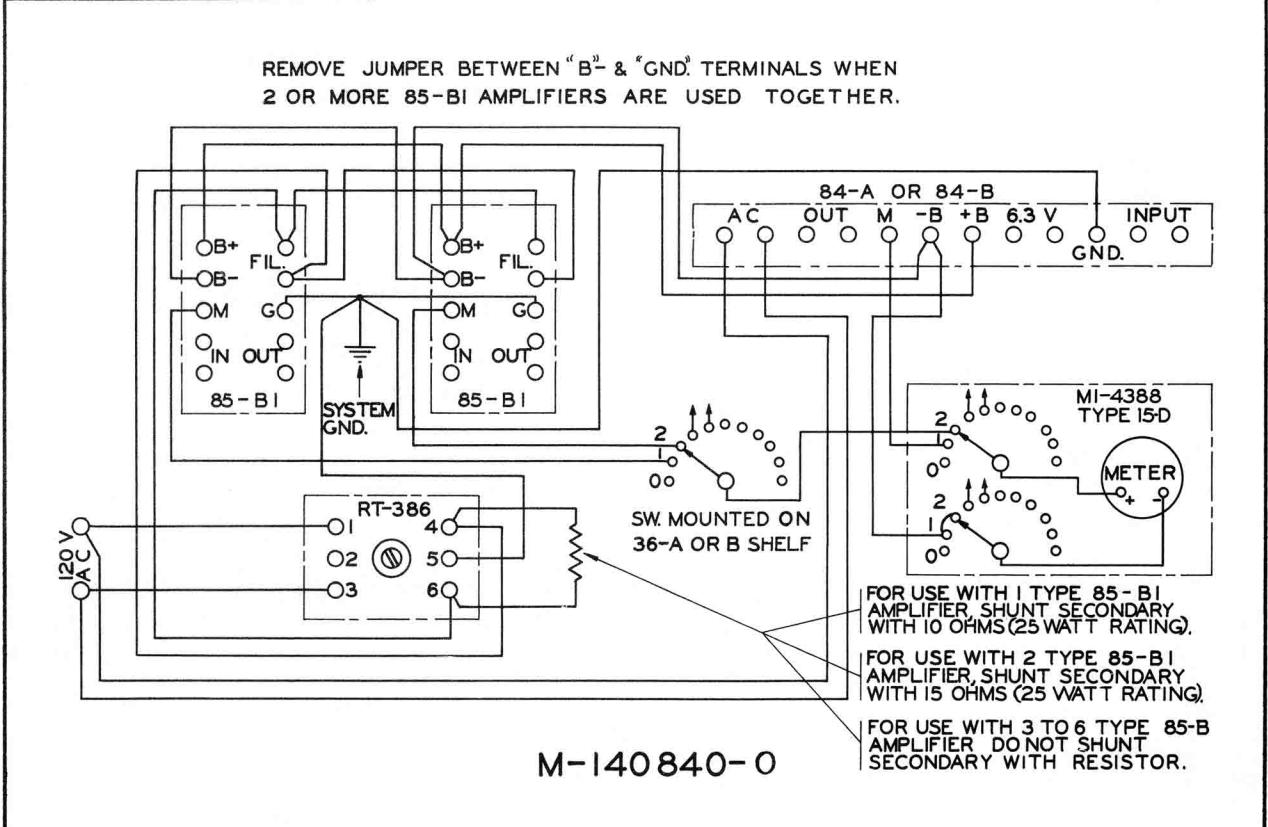


FIGURE 2 - SCHEMATIC OF TYPE 85-B1 POWER AND METERING CONNECTIONS.

AMPLIFIER CONNECTIONS

All connections to the amplifier are made to a common terminal board which is provided with 10 solder-type terminals, and all leads to these terminals should be securely soldered to insure trouble-free operation.

AUDIO INPUT CONNECTIONS

The incoming audio line is to be connected by soldering a shielded, twisted pair to the terminals marked "IN" on the terminal board. These amplifier "IN" terminals will be found connected to the 250 ohm primary of the input transformer T-1, (terminals 1 and 6), which connection is standard with this amplifier, and is correct for operation from any 250 ohm source.

If it is desired to match a 30-50 ohm source with this amplifier, the leads from the amplifier "IN" terminals must be disconnected from the 250 ohm primary of the input transformer T-1 (terminals 1 and 6) and connected to the 30-50 ohm primary, (terminals 2 and 5).

The input leads to the amplifier need not be larger than No. 19 A.W.G., should be shielded, twisted pair insulated for 200 volts, and should not be run adjacent to, or laced in with, a-c, loudspeaker field power leads, or high level audio leads.

The input transformer primary is balanced to ground and the mid-tap is grounded.

AUDIO OUTPUT CONNECTIONS

The Type 85-B1 Pre-Amplifier is designed to feed into a balanced load of 250 ohms, or 500-600 ohms. It will operate satisfactorily into an amplifier such as the Type 84-A or 84-B Program Amplifier, or the Type 40-D General Purpose Amplifier.

The output terminals are normally connected to the 250-ohm secondary of the output transformer T-2 (terminals 41 and 61), which is correct for matching any 250 ohm load.

If it is desired to match a 500-600 ohm line or load, the leads from the amplifier "OUTPUT" terminals must be disconnected from the 250 ohm secondary of the output transformer T-2, (terminals 41 and 61), and connected to the 500-600 secondary, (terminals 4 and 6).

The output transformer secondary is balanced to ground, but the mid-tap is not grounded. In certain cases, it may be found desirable to ground the mid-tap.

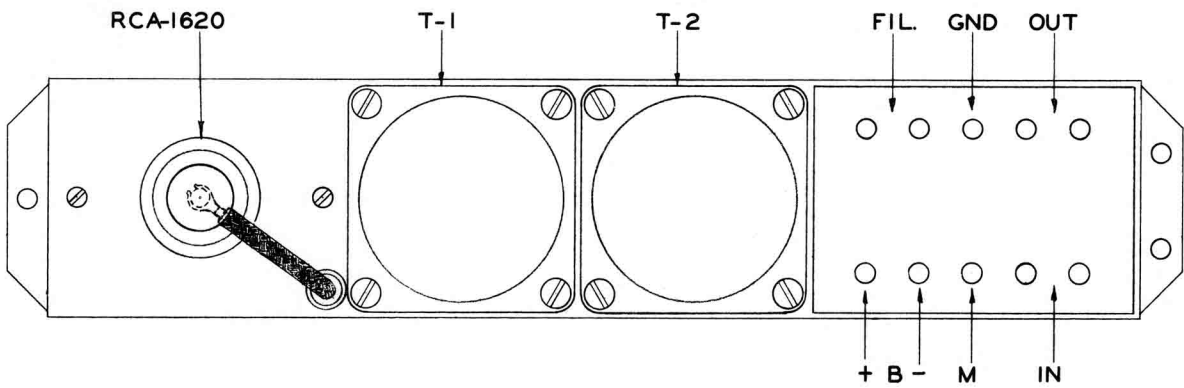
POWER CONNECTIONS

All power connections are made to the amplifier through the terminals on the terminal board. The required voltages may be obtained from any suitable power sources, the voltage and current values required being as shown on Page 1 under the heading "POWER SUPPLY".

The MI-4303 Power Supply will supply all the plate and filament power required for 1 or 2 Type 85-B1 Pre-Amplifiers, or the MI-11302 Power Supply will supply all the plate and filament power required for 10 Type 85-B1 Pre-Amplifiers. No power supply is furnished with the Type 85-B1 Pre-Amplifier and must be purchased separately, if desired.

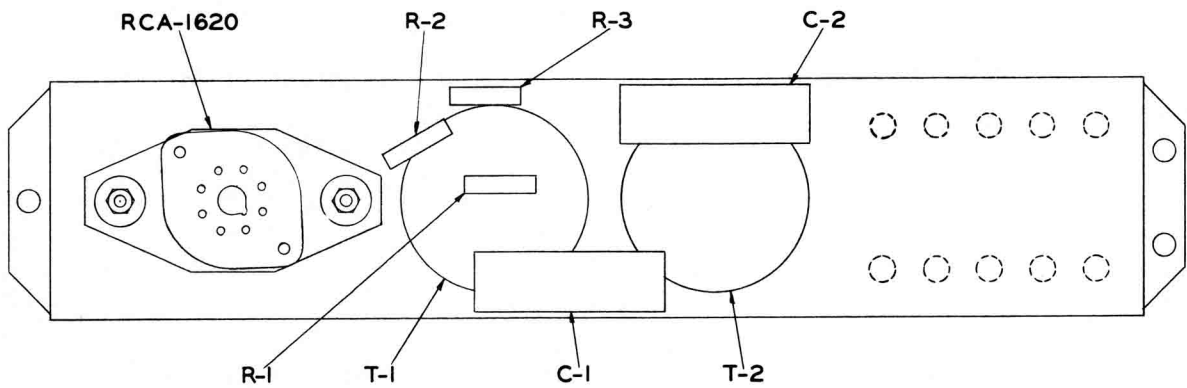
The plate power for from 1 to 6 Type 85-B1 Pre-Amplifiers may be obtained from the "-B" and "+B" terminals on the Type 84-A or -B Program Amplifier, if a Type 84-A or -B Amplifier is available. No additional filtering is required in this case.

During emergencies only, the "B" supply for from 1 to 6 Type 85-B1 Pre-Amplifiers may be obtained from the Type 82-A or 82-B Amplifiers by making use of the MI-11203 Filter.



MI-11207-A M-140480-1

FIGURE 3 - TOP VIEW OF TYPE 85-B1 PRE-AMPLIFIER.



MI-11207-A M-140481-1

FIGURE 4 - BOTTOM VIEW OF TYPE 85-B1 PRE-AMPLIFIER.

The filament supply for from 1 to 6 Type 85-B1 Pre-Amplifiers may be obtained from a Type RT-386 (MI-11606) Filament Transformer, which may be purchased separately by the customer, if desired. If the Type RT-386 Filament Transformer is used, wire according to Figure 2, using #18 A.W.G. (or larger), shielded, twisted pair insulated for 200 volts. If only 1 Type 85-B1 Pre-Amplifier is supplied from the transformer, terminals #4 and #6 of the transformer should be shunted with a 10-ohm (25-watt rating) resistor. When two Type 85-B1 Pre-Amplifiers are supplied, the resistor should be 15-ohms (25-watt rating). When from 3 to 6 Pre-Amplifiers are supplied from 1 transformer, no shunting resistor is required.

The instructions included with the Type RT-386 Filament Transformer should be carefully followed, especially those regarding "Location and Mounting" and "Hum Adjustment".

OPERATION OF 2 OR MORE TYPE 85-B1 PRE-AMPLIFIERS FROM A COMMON "B" SUPPLY

When two or more Type 85-B1 Pre-Amplifiers are operated from a common "B" supply, the jumper from terminal "B-" to "GND" on each amplifier terminal board should be removed and leads run from the "B" terminals on each amplifier to the power supply where the ground connection is made. In this way, circulating ground currents are avoided. Leads should be run from all "GND" terminals to the system ground. See Figure 2.

The "M" terminal on the amplifier is used for measuring the voltage to ground across resistor R-3 (See Figure 1) by means of an external meter. This provides an indication of the flow of plate current. When several Type 85-B1 Pre-Amplifiers are used together, their "M" terminals may all be connected to a selector switch and each voltage checked separately. The selector switch may be conveniently mounted on the Type 36-A or 36-B Panel and Shelf. See Figure 2 for connection diagram.

OPERATING VOLTAGES AND CURRENTS

The following are the actual operating voltages and currents for the RCA-1620 Radiotron when the Type 85-B1 Pre-Amplifier is receiving "B" power from a Type 84-A or -B Amplifier, and "A" power from a Type RT-386, Filament Transformer. Measured values will deviate from these figures in relation to the internal resistance of the measuring instrument. All voltages except heater voltages should be measured to ground in order to correspond with the tabulated figures. The meter resistance was 20,000 ohms per volt.

| | | |
|------------------------------------|------|-------|
| "B" Voltage | 225 | Volts |
| RCA-1620 Plate Voltage | 210 | Volts |
| RCA-1620 Cathode Voltage | 8.4 | Volts |
| RCA-1620 Plate Current | 3.11 | Ma. |
| RCA-1620 Heater Voltage | 6.3 | Volts |
| "M" Voltage | 1.7 | Volts |

BIAS MEASUREMENT

When from one to six Type 85-B1 Amplifiers are mounted on a Type 36-A or 36-B Panel and Shelf, a convenient and permanent metering arrangement is to bring shielded leads from the terminals marked "M" and "B-" (See Figures 1 and 2) to a selector switch mounted on the panel of the Type 36-A or 36-B Panel and Shelf. A d-c meter may be mounted in any convenient location. A 20,000-ohm-per-volt, 7½ volt, d-c meter is available, complete with selector switch and panel (for rack mounting), and stocked as Type 15-D meter panel (MI-4388). The bias voltage should measure approximately 1.7 volts, when using a 225 volt plate supply.

REPLACEMENT PARTS LIST

The following list is included to provide proper identification when ordering replacement parts.. When ordering, specify the item by its Symbol (whenever possible), as shown on Figures 1, 3, and 4 followed by Description and Stock Number.

| SYMBOL | DESCRIPTION | STOCK NUMBER |
|---------------|--|--------------|
| C-1 | Capacitor, 0.5 Mfd. | 30860 |
| C-2 | Capacitor, 0.5 Mfd. | 30860 |
| R-1 | Resistor, 100,000 Ohms | 3252 |
| R-2 | Resistor, 2,200 Ohms | 3526 |
| R-3 | Resistor, 560 Ohms | 5164 |
| T-1 | Transformer, Input, 901046 | 43569 |
| T-2 | Transformer, Output, XT-2875 | 18051 |
| --- | Cap, Grid Cap | 30314 |
| --- | Shield, Grid Cap Shield | 12110 |
| --- | Socket, Tube Socket | 33084 |

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