Radiola

Balanced Amplifier

INTRODUCTION

Radiola Balanced Amplifier is a two-tube balanced audio frequency power amplifier, especially designed for use with the Radiola III, thus providing loud speaker operation under all conditions of reception. It gives an advantage over the ordinary cascade amplifier, as the balanced system minimizes distortion of the voice or music. The apparatus is mounted on a horizontal panel and enclosed in a wood cabinet from which a flexible wire cable is provided for connection to the batteries.

EQUIPMENT

The equipment includes the following:

1. Radiola Balanced Amplifier (less batteries).
2. WD-11 Radiotrons.

BATTERIES

When the Radiola Balanced Amplifier is used with the Radiola III Receiver, a common "A" battery for both units is recommended and the connections are shown in Figure 1.

As the combined units employ four WD-11 Radiotrons, five ordinary 1½ volt dry cells, all connected in PARALLEL, are recommended.

BATTERIES REQUIRED

(A) Refers to Filament Lighting or "A" Battery
(B) Refers to Plate or "B" Battery
(C) Refers to Negative Grid Bias or "C" Battery

(A) Four or six 1½ Volt Dry Cells connected in PARALLEL, such as:

4 or 6 Eveready Dry Cell Radio "A" Batteries	(2½" x 6¼")	or,
4 or 6 Manhattan Red Seal Dry Cells	(2½" x 6½")	or,
4 or 6 Burgess No. 6 Dry Cells	(2½" x 6")	or,
4 or 6 Burgess Super Six Dry Cells	(2½" x 6")	or,
4 or 6 Ray-O-Vac No. 1211 Dry Cells	(2½" x 6¼")	or,
4 or 6 Ace No. 6 Dry Cells	(2½" x 6¼")	or,
4 or 6 Columbia Ignitor No. 6 Dry Cells	(2½" x 6¼")	

NOTE—A two volt Storage Battery may be used if desired.

OR EQUIVALENT

(B) When the Radiola III is used alone, a "B" battery voltage of 45 is recommended with a "C" battery voltage of 1.5. When the Radiola III and the Radiola Balanced Amplifier are used together, a "B" battery voltage of 90 is recommended for both. The proper "C" battery voltage is then 4.5. A total of four 22½ volt blocks of "B" battery will be needed.

(B) Four 22½ Volt Plate Batteries connected in SERIES, such as:

4 Eveready No. 766	Plate Batteries	(6¾" x 4" x 4")	or,
4 Burgess No. 2156	Plate Batteries	(6¾" x 4" x 3")	or,
4 Ray-O-Vac No. 2151	Plate Batteries	(6¾" x 4" x 3")	or,
4 Kwik-Lite No. 225	Plate Batteries	(6¾" x 4" x 3")	or,
4 Ace No. 115	Plate Batteries	(6¾" x 4" x 3")	or,
4 Yale No. 1512-V	Plate Batteries	(6¾" x 4" x 3")	or,
4 Bright Star No. 15-90	Plate Batteries	(6½" x 4" x 3")	or,
4 Novo No. 268	Plate Batteries	(6½" x 4" x 3")	or,

OR EQUIVALENT

Two 45 Volt Plate Batteries may be used instead of four 22½ Volt blocks if desired, such as:

2 Eveready No. 767	Plate Batteries (45 Volts)	(6" x 6¾" x 3"	) or,
2 Burgess No. 2306	Plate Batteries (45 Volts)	(7⅞" x 6¾" x 3"	) or,
2 Ray-O-Vac No. 2301	Plate Batteries (45 Volts)	(8⅛" x 6⅞" x 3¼"	) or,
2 Novo No. 276	Plate Batteries (45 Volts)	(8" x 6½" x 3"	) or,
2 Kwik-Lite No. 245	Plate Batteries (45 Volts)	(8¼" x 6¾" x 3"	) or,
2 Bright Star No.30-90	Plate Batteries (45 Volts)	(13" x 4" x 3"	) or,
2 Yale No. 3045-V	Plate Batteries (45 Volts)	(8" x 6½" x 3"	) or,
2 Ace No. 130	Plate Batteries (45 Volts)	(13¼" x 4" x 3"	)

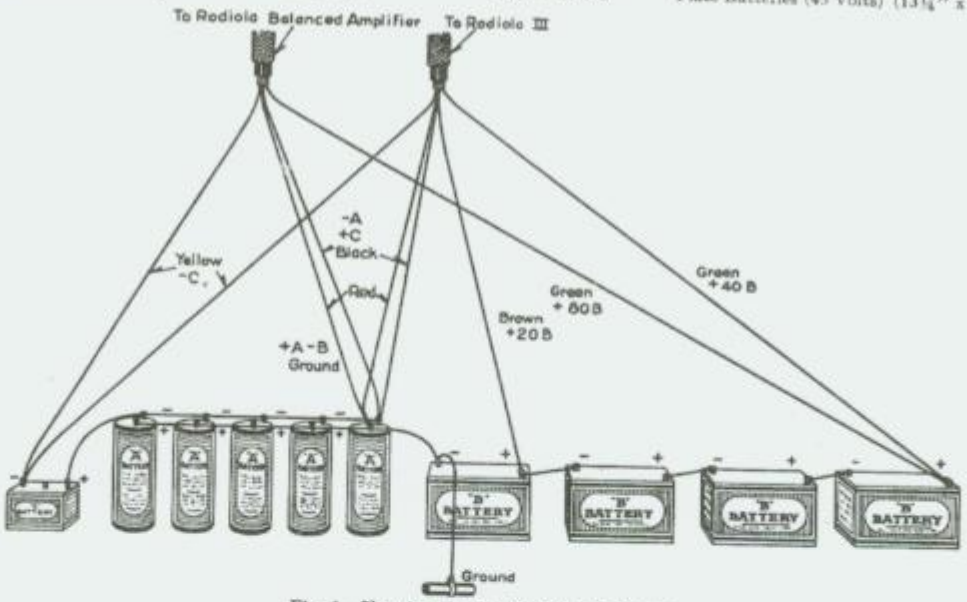

Fig. 1—Showing Connections for Batteries

OR EQUIVALENT

NOTE—The plate or "B" batteries listed are of the large sizes which are most economical. Other intermediate sizes may be used equally well.

(C) **One 4½ Volt Negative Grid Bias or "C" Battery, such as:**

1 Eveready No. 771 Negative Grid Bias Battery (4" x 3" x 1⅝") or
1 Ray-O-Lite No. 231-R Negative Grid Bias Battery (4" x 3" x 1⅝") or,
1 Burgess No. 2370 Negative Grid Bias Battery (4" x 3" x 1⅝") or,
1 Yale No. 312 Negative Grid Bias Battery (4" x 3" x 1⅝") or,
1 Bright Star No. B-34-17 Neg. Grid Bias Battery (4" x 3" x 1⅝") or,
1 Novo No. 288 Negative Grid Bias Battery (4" x 3" x 1⅝")

OR EQUIVALENT

INSTALLATION

Location:

The input jacks on the Radiola Balanced Amplifier will be in line with the output jacks of the Radiola III when the Amplifier is placed at the left. Connections may be made by the jumpers furnished with the amplifier.

Connections to Batteries:

All battery connections are made through the flexible cables. Proceed as follows:

Connect the five 1½ volt dry cells in parallel, that is, connect all the center binding posts (positive) together with one piece of wire and then connect all the outside binding posts (negative) together with another piece of wire. Under no circumstances allow these two wires to touch each other.

Find the two black cable leads which are tagged "—A+C" and connect them to one of the outside (negative) battery binding posts.

Find the two red cable leads which are tagged "+A—B Gnd" and connect them to one of the center (positive) battery binding posts.

Turn the knobs marked "Battery Setting" to the left until the pointer rests on "Off". Remove the WD-11 Radiotrons from their packages and place them in the sockets taking care to push them in firmly until the bases rest against the socket panels. The large pin is toward the front of the set. Turn the "Battery Settings" until the pointers extend to the left. Look directly into each Radiotron to see that the filament glows dimly.

Then connect one end of a short piece of wire to the positive (+) terminal of the "C" battery and the other end to an outside (negative) terminal of one of the "A" battery cells.

Find the two yellow cable leads which are tagged "—C" and connect them to the "—4—½" terminal of the "C" battery.

Connect the four "B" batteries in series as shown in the figure. Using short pieces of wire, connect the negative (—) terminal of one block to a center (positive) terminal of one of the "A" battery cells. Then connect the positive terminal of the same block to the negative terminal of the second block and similarly, the positive of the second to the negative of the third and the positive of the third to the negative of the fourth.

Find the brown lead from the Radiola III cable which is tagged "+ 20 B" and connect it to the positive terminal of the first "B" battery.

Find the two green cable leads, the one from the Radiola III being tagged "+40B" while the one from the amplifier is tagged "+80 B" and connect them to the positive terminal of the fourth "B" battery.

Connect one of the center (positive) terminals of an "A" battery cell to the ground clamp.

Connection of Loud Speaker—Push the tips on the end of the loud speaker cord into the jacks at the left side of the Amplifier panel.

OPERATION

Turn the knob marked "Battery Setting" to the right until both filaments glow with a dull red color. No other adjustments of the Amplifier can be made or need to be made. The Radiola III Receiver is to be operated according to the instructions supplied with it.

When the set is put out of use, turn the knob marked "Battery Setting" as far to the left as possible.

Difficulties—If the set fails to operate, there is always a definite reason. Carefully check all connections to see that they correspond with the directions given (See Figure 1) noting particularly the polarity of all the batteries. See that the filaments of both Radiotrons glow at a dull red heat. If there is no sound whatsoever and the Radiola III Receiver is known to be operating well, the "B" battery connections to the Amplifier are probably reversed.

MAINTENANCE

Radiotrons—The WD-11 Radiotrons may become inoperative through a broken filament or otherwise, in which case they should be replaced by new ones of the same type.

Filament or "A" Battery—When the dry cells used for this purpose become discharged to the point where they will no longer heat the filaments to the proper brilliancy, they should be replaced by new ones.

Plate or "B" Battery—If large size "B" batteries are used, they should last for several months and frequently longer. When signals become weak with the filaments at proper temperature, the "B" batteries should be replaced by new ones.

Bias or "C" Battery—If the bias battery is replaced by a new one every time the "B" battery is replaced, it should give no trouble.

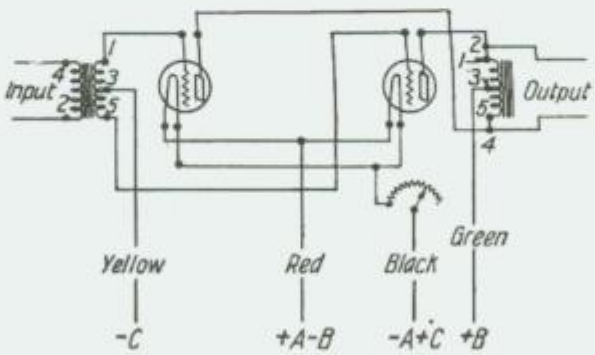

Fig. 2—Diagram of Connections