

# Radiola R T

## Antenna Coupler

### PREFACE

The RADIOLA RT is an adjustable series circuit consisting of a variometer and a variable condenser similar to those used in the Radiola RA, regenerative tuner. It is built for use with the Radiola RA to make a coupled circuit but may also be used with the Radiola AR radio frequency amplifier in ways that will be described later in this booklet.

The advantage of a coupled circuit is the greater selectivity attained over that of a single circuit. This will be appreciated most by those desiring to receive signals from a distant station when another nearby station is operating on nearly the same wave length. The coupled circuit will make it possible to selectively receive the distant station.

### EQUIPMENT

**Standard Equipment**—The standard equipment furnished under the name of RADIOLA RT antenna coupler consists of:

1. Antenna coupler, Type RT
1. Condenser, style 363386

**Additional Equipment**—The following additional equipment will be necessary to make a coupled circuit receiver:—

1. Radiola RC receiving set or its equivalent consisting of a Radiola RA tuner with a Radiola DA detector amplifier.
1. Complete set of antenna material, type AD style 319486 or its equivalent.  
Batteries, tubes and telephone receivers as required for use with Radiola RC receiver.

### DESCRIPTION

The RADIOLA RT antenna coupler consists of a tuning unit similar to that of the Radiola RA regenerative tuner. It is mounted in a polished mahogany cabinet of the same size and general appearance as the other units of this series and is intended for use with them. Three binding posts are located at the rear of the cabinet and make it possible to use either the condenser or the variometer separately or both in either parallel or series connection.

A condenser, style 363386, is furnished with the RADIOLA RT. This condenser is made to fit on the back of the Radiola RA tuner between the antenna and ground posts to complete the tuning circuit. It is of such a value that the wavelength range of the Radiola RA will be correct.

### COMBINATIONS

**Radiolas RT and RC**—This is the best combination for general use. It provides a coupled circuit to give selectivity and a regenerative circuit to give sensitivity. A front view of this combination is shown in Fig. 1, with the RADIOLA RT at the left. Fig. 2 shows a rear view to indicate the method of making connections. Fig. 3 shows a diagram of the internal connections of the two sets. Of course, the two separate units, Radiolas RA and DA, which are assembled in the same box to make the Radiola RC, may be used individually. The same applies to all other combinations including the Radiola RC.

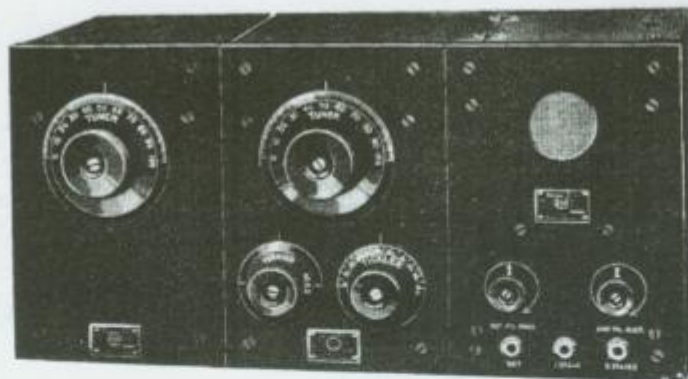


Fig. 1—Radiolas RT and RC

**Radiolas RT-RA-AR-DA**—If greater range is desired than can be obtained with the combination previously described, it is necessary to use radio frequency amplification because a signal too weak to operate a detector can be amplified at radio frequency and thus brought up to sufficient amplitude. For this purpose, the Radiola AR, a three-step, transformer-coupled radio frequency amplifier has been built. Fig. 4 is a rear view showing the proper sequence of units and the connections between them. Fig. 5 shows the same combination using a Radiola RC in place of the Radiolas RA and DA. This makes a rather poor arrangement of leads and the proximity of input and output to the Radiola AR may result in so much regeneration that the amplifier will oscillate. Therefore, we suggest that the Radiola RA be removed from its cabinet and be replaced by the Radiola AR while the Radiola RA is placed in the cabinet formerly occupied by the Radiola AR. These units are easily removed from the cabinets by taking out the four nickel plated screws at the corners of the panels. The micarta strips on the back of the cabinets will have to be interchanged also and additional holes will have to be made in the back of the cabinets. The sequence of units then becomes the same as that shown in Fig. 4.

It is necessary for best results to provide more coupling between the tuning circuits than is provided by their variometers. To do this, use is made of the tickler winding on the Radiola RA which would otherwise be idle. The antenna circuit will then consist of RADIOLA RT and part of the tickler

winding of Radiola RA as shown in the figure. Usually good results will be obtained with the tickler at two or three divisions from "Min"

**Radiolas RT-AR-DA with a Loop**—If the directive qualities of a loop at the sacrifice of range are desired, they may be obtained by using only the

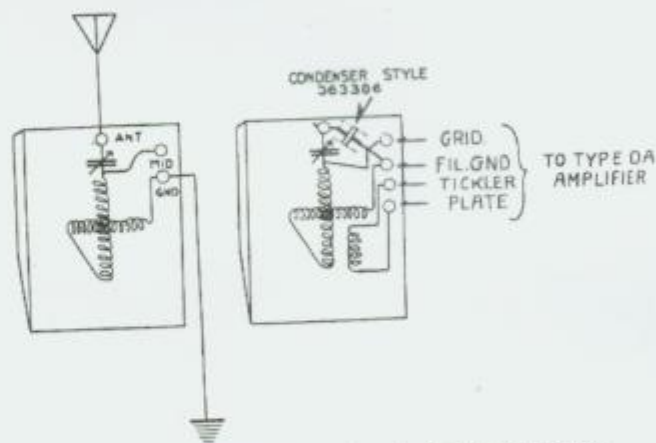


Fig. 3—Diagram of Connections for Radiolas RT and RA

condenser of the RADIOLA RT to tune the loop circuit. It is practically necessary to use radio frequency amplification with a loop. In connection with the portable loop model HG 1380 a wavelength range sufficient to take in the broadcasting stations will be obtained. Fig. 6 shows the connections.

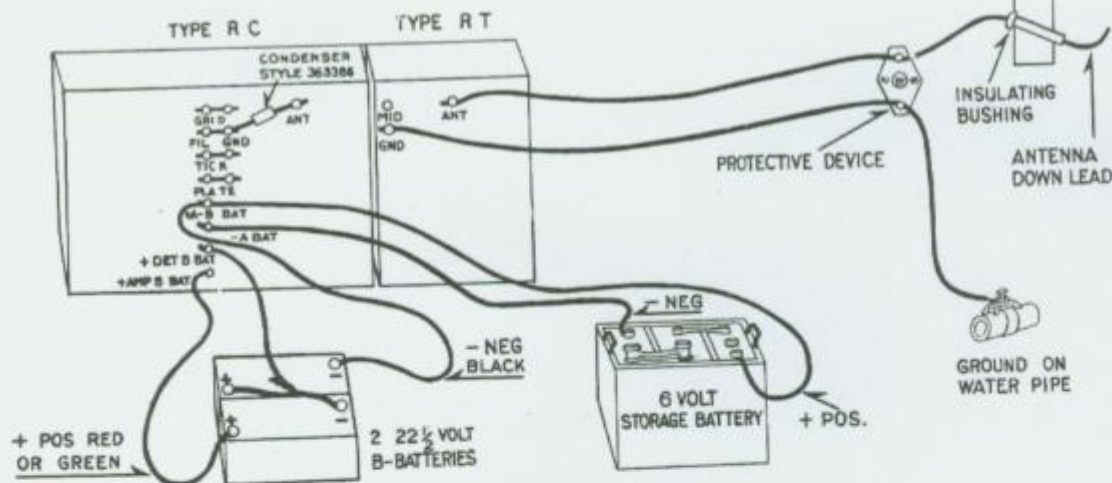


Fig. 2—Radiolas RT and RC



**Radiolas RT and DA**—It is also possible to use the RADIOLA RT as a single circuit, non-regenerative tuner with the Radiola DA detector amplifier or a crystal. Such a combination will have a very limited range.

**Miscellaneous Uses**—The experimenter will find the RADIOLA RT a very convenient unit with which to try various circuits. Its variometer can be used to tune the plate circuit if that type of regeneration is desired. It may also be used as a wave trap to eliminate interference from nearby stations. Other uses will suggest themselves.

### INSTALLATION

The RADIOLA RT is an additional piece of apparatus for use in one of the combinations previously described. The other units should be installed in accordance with the directions which accompany them.

The RADIOLA RT in a coupled circuit is placed at the left side of a Radiola RA and close up against it. The antenna is connected to the binding post in the middle near the top, and ground is connected to the lower of the two posts at the side. The condenser must be connected between the antenna and ground posts of the Radiola RA. The set is then ready to operate.

### OPERATION

The Radiola RA tuner and DA detector amplifier should be adjusted as usual. In order to receive signals, it is necessary that both tuning circuits be tuned to the same wave length and to the wave-length of the desired transmitting station. This may be done as follows: Adjust the tickler on the Radiola RA until it is just below the point of oscillation and keep it there by noting the characteris-

tic breathing noise. Rotate the dial of the Radiola RA very slowly while at the same time turning the dial of the RADIOLA RT through 10 or 15 divisions on either side of the number on the dial corresponding to the number on the Radiola RA dial, listening all the while for signals. When signals are heard, adjust both tuning circuits carefully to the point where the signal is loudest. The final adjustment of the Radiola RA is best made by the vernier. After a little practice the approximate settings for a given station will be remembered so that rough adjustments may be made immediately. It is usually possible to tell when the tuning circuits are adjusted to approximately the same wave length by means of atmospheric noises.

The selectivity of this set can be increased at a sacrifice of sensitivity by moving the RADIOLA RT further away from the Radiola RA. This may be necessary if a powerful station is in operation nearby. It is possible to operate the apparatus with the two tuning circuits several feet apart. Adjustments made before moving the RADIOLA RT will usually need to be slightly altered after the separation is made.

When the RADIOLA RT is used with the Radiola AR radio frequency amplifier, it is operated just like any single circuit receiver, there being but one knob and dial to make all the adjustment necessary. When a loop antenna is used, besides tuning the circuit to the proper wave length, the loop must be turned so that it points in the general direction of the transmitting station, but more important, so that it will be nearly at right angles to an interfering station thus reducing the strength of the interfering signals to a minimum and making the most of the directive effect of the loop.

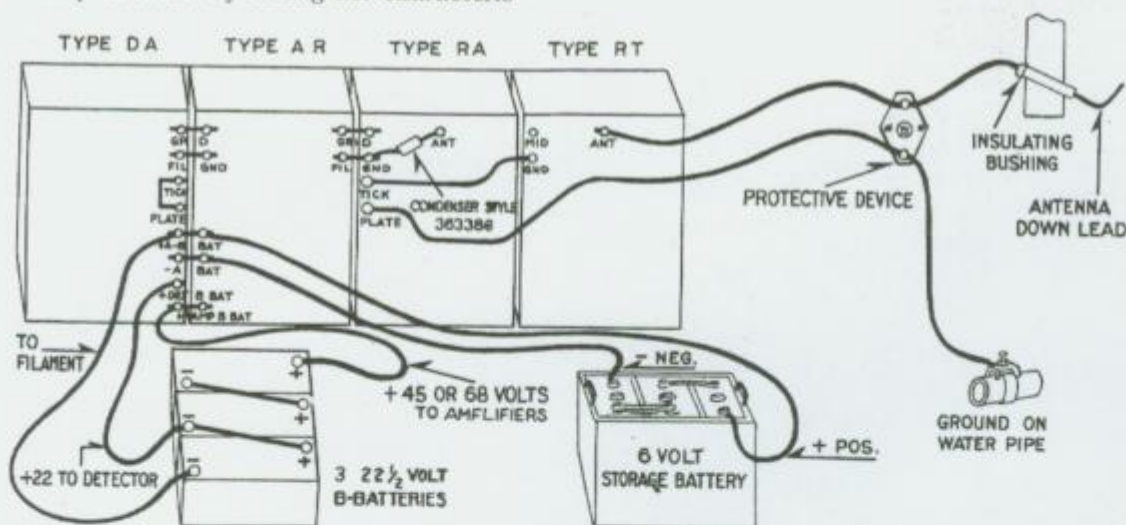


Fig. 4—Radiolas RT, RA, AR and DA

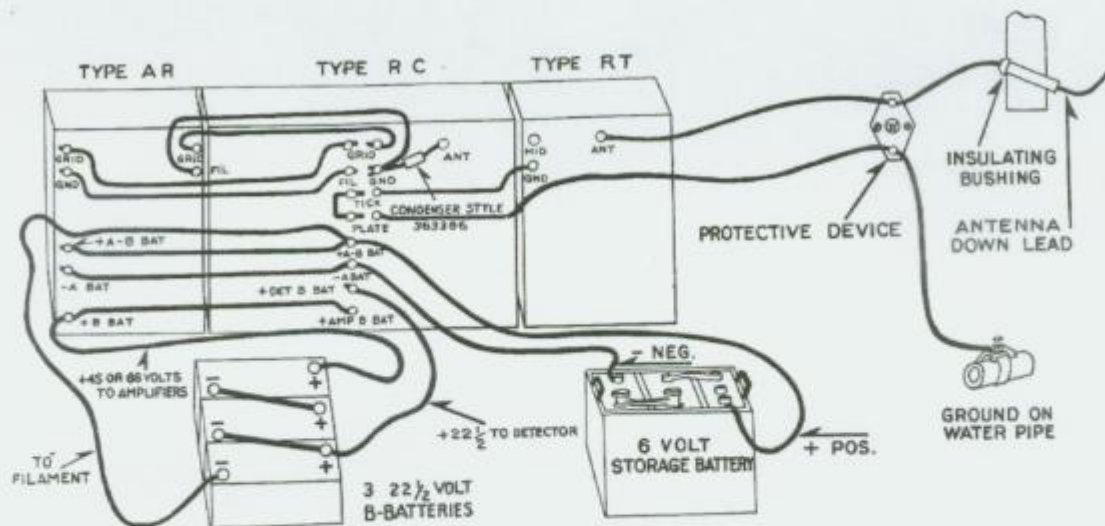


Fig 5—Radiolas RT, RC and AR

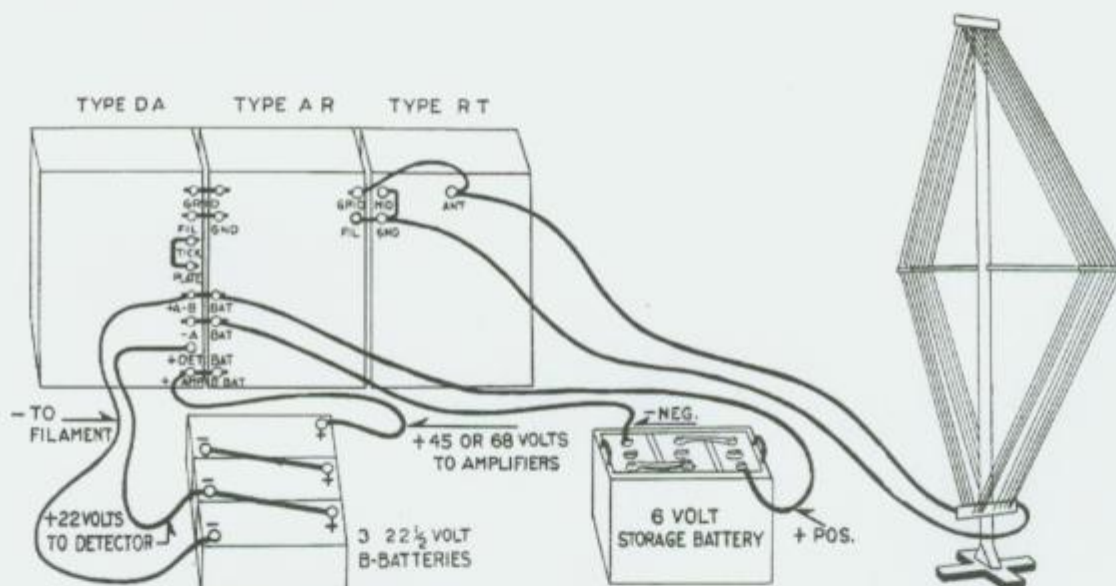


Fig. 6—Radiolas RT, AR and DA with Loop



**RADIOLA RC (DA DETECTOR AMPLIFIER UNIT) MODIFIED  
TO USE UV-200 DETECTOR AND UV-201-A AMPLIFIER RADIOTRONS  
ARRANGED FOR C. BATTERY**

