

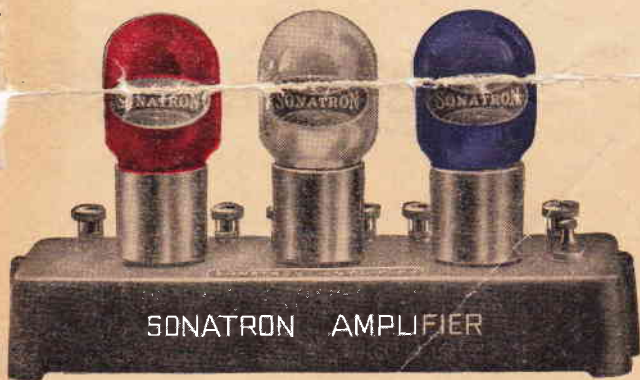
**more power  
to you** ~ *and perfect  
tone too!*

If you attach to your set the

# SONATRON AMPLIFIER

WITH

(3) **Red** White & **Blue** Matched Tubes



For use with Dry Cell & Storage Battery Sets



*Product of*

**SONATRON TUBE CO.**

CHICAGO    NEW YORK    NEWARK    DETROIT  
WINDSOR, ONT., CANADA



## “SONATRONIC RECEPTION”

Do you remember the day when you first heard a voice over the radio, or music? Wasn't it wonderful that such a thing could be—that you had lived to see this dream realized? Then as radio became a daily part of our lives, how glaring and annoying and unsatisfactory reception has been to the present! Do you want to revive that thrill you first had? Then, listen to a SONATRON RESISTANCE AMPLIFIER. Note the depth of tone, the absence of distortion, the volume and the quality. This Amplifier has no selective properties. It amplifies with equal efficiency and fidelity, both low and high notes—none of the harmonics are missing, and none are added. The violin sounds like a violin, and not like a trumpet. The resulting tone is faithfully passed on, and if a good loud speaker is used, instruments will sound clear and true as though the artist himself were alongside of you. The resulting music will satisfy not only the layman, but the most temperamental artist. This Amplifier reproduces the original tone qualities as they are broadcasted by the artist.

Can you go on with the old after listening to this Amplifier? Can you afford to miss the added enjoyment that the SONATRON RESISTANCE AMPLIFIER brings? The SONATRON AMPLIFIER is reputed by radio engineers to be the ultimate means for perfect reception, and the goal of radio fans.

The simplicity of connecting this Amplifier to any set (inasmuch as only one connection goes to the radio set) makes it possible for any layman to hook up this Amplifier to a set in about one minute, regardless of what little knowledge he has of radio.

Several of the additional features of this Amplifier are listed as follows:

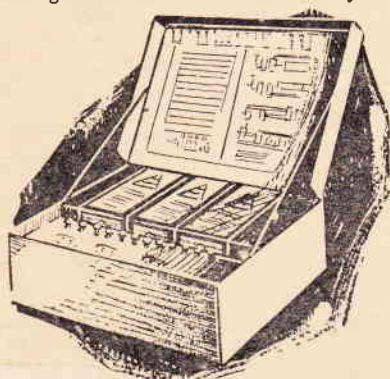
The Amplifier is equipped with three (3) tubes of distinct colors, one being red, one white and one blue, thereby giving considerable additional beauty to any set, insofar as this amplifier may be placed on top of the set and used in that manner.

The Amplifier will also make a three-tube set out of a Crystal set, thus enabling the owner of a Crystal set to secure loud-speaker reception. Also makes a five-tube set out of a two-tube set, or a four-tube set out of a one-tube set.

The SONATRON AMPLIFIER may be used as a power Amplifier where the owner of a set is desirous of securing extraordinarily great volume for dance music, or amplify weak signals on distance. It is possible by using the SONATRON AMPLIFIER in this manner to obtain such volume as all present-day speakers could possibly handle. This use of the SONATRON AMPLIFIER is also advantageous to the owner of a one, two or three-tube set, making it possible for him to convert this set into a four, five or six-tube set giving loud speaker volume.

# SONATRONIZE YOUR SET!

The most amazing of all radio improvements—the SONATRON AMPLIFIER! Any set is worth four to five times its cost with Sonatron's famous Red, White and Blue power tubes—perfectly matched—on the job. Flawless tone, clear, strong and melodious; a world of power to bring in the distant stations with real volume, and absolutely no trace of distortion! Sonatron adds three stages of amplification to any set, whether it has one tube or ten—and the results are making the greatest news in radio history.



SONATRON AMPLIFIERS are neatly packed and sold in this box—look for it. It identifies the genuine Red, White and Blue SONATRON POWER TUBE AMPLIFIER.

Individual set builders and set manufacturers may eliminate all worries about hooking up the audio frequency end of the set, by using the SONATRON AMPLIFIER as the audio end.

The SONATRON AMPLIFIER is equipped with a switch for turning filament off and on. A one-year guarantee by the Sonatron Tube Company stands behind the SONATRON AMPLIFIER.

List price of SONATRON AMPLIFIER complete with three (3) Red, White and Blue Tubes is \$20.00.

The purity of tone of a \$2,000.00 set is yours if you attach the SONATRON AMPLIFIER to your set.

Use of this Amplifier doubles the life of "B" batteries.

The Sonatron Mu-X-30-20 and 6 6-volt tubes and the Sonatron Mu-X-29-19 and 9 4-volt tubes consume less than  $\frac{1}{2}$  the "B" battery current of the 201A and 199 tubes which they replace.

# SONATRON AMPLIFIER

## DIRECTIONS

### HOW TO USE THE SONATRON RESISTANCE AMPLIFIER UNIT AND RED, WHITE AND BLUE TUBES.

#### READ CAREFULLY

The SONATRON AMPLIFIER may be connected to any type of radio set, thereby resulting in improved quality of tone and reception. If desired, the unit can be made an integral part of the set, by replacing the audio transformers with the Sonatron Resistance Amplifier. On the other hand, the Sonatron Amplifier may be connected outside the radio set, by removing the tubes from the audio transformer sockets and connecting the Amplifier as shown in the respective diagrams.

The same "A" and "B" batteries can be used to supply current to both the Receiver and Amplifier.

The Sonatron Red, White and Blue series of tubes are made to operate direct from a 6-volt "A" battery with 201a sets, and on a 4 to 4½-volt "A" battery direct with 199 sets. These tubes are especially designed for and matched to operate most efficiently in the SONATRON RESISTANCE AMPLIFIER. Instructions for the use of the Red, White and Blue series of tubes will be found enclosed with each tube.

If the reader will note in the diagram below, there are 8 posts on the SONATRON AMPLIFIER. Beginning from the left

Attractive! Adds Beauty and Distinction to Any Set



**ONE CONNECTION**—and one minute—that's all the SONATRON AMPLIFIER needs to transform your set—no matter how old and lacking in power—into a world-beater for distance and a marvel for tone.

there is post "P," this is the only connection going to the inside of set. The following 5 posts go to batteries and the last two go to loud speaker.

Therefore, the only connection that the layman could be uncertain of is where to run a wire from "P." Note on diagrams of hookups, with the exception of the regenerative set, all connections from "P" go to detector plate. To remove all possibility of a mistaken connection to detector plate, the Sonatron Tube Company have designed special tubes both of 201A type and 200A type, which have a binding post moulded on base of tube.

All that is necessary is to run connection "P" to this binding post. List price on these tubes known respectively as Special 201A is \$2.50, and Special 200A is \$5.00. The tubes have same characteristics and function the same as the 201A and 200A. (To replace detector tube in set.)



# INSTRUCTIONS FOR CONNECTING SONATRON AMPLIFIER FOR USE AS A POWER UNIT.

Follow regular instructions for hooking up SONATRON AMPLIFIER as described heretofore with three exceptions:

First: Do not disconnect Detector "B+" battery from the set, permitting the detector plate voltage to be supplied in the regular way.

Second: Disconnect in your set the wire that runs from the plate of the first stage audio frequency socket from the rest of the set.

Third: Instead of running connection "P" to plate of detector tube, connect it to the plate of the first audio frequency amplifier tube.

NOTE: As described in last paragraph connection "P" runs to the same place where connection is broken.

Approximately 90 to 135 volts should be applied to the Detector "B+" terminal on the Sonatron unit when this unit is being used as a power amplifier. This voltage is necessary to feed the first audio frequency tube.

In order to simplify using the SONATRON AMPLIFIER as a power unit, and eliminate necessity of second and third changes as stated above, the Sonatron Company have devised a tube known as the Mu-X-201A Amplifier. List price \$2.50. By using this tube in place of your first audio frequency tube, it is not necessary to open the circuit in your set. Just run your "P" wire to the binding post on this special tube, and merely connect all other connections in the regular way to your batteries and loud speaker. Only change (first above) is apply Det. "B+" battery on set. This tube is so constructed that the current running into the set which is applied to the first audio frequency tube is broken automatically.

The purpose of disconnecting plate wire is to prevent the audio frequency "B+" current from being applied on this first audio tube, which purpose this special tube serves, in addition to giving connection going to post "P."

Distortion in amplified signals usually may be traced to the loud speaker. Avoid placing the loud speaker too close to the set, since mechanical vibration of the tubes may produce a steady hum in the loud speaker.



This Amplifier, when attached to any set, will give the tone quality that is only obtainable from the highest priced sets. You can make your set, regardless of its cost, produce tone quality equivalent to that of a \$2,000.00 set.

# Why the Sonatron Amplifier Is Better

## 14 POINTS OF SUPERIORITY

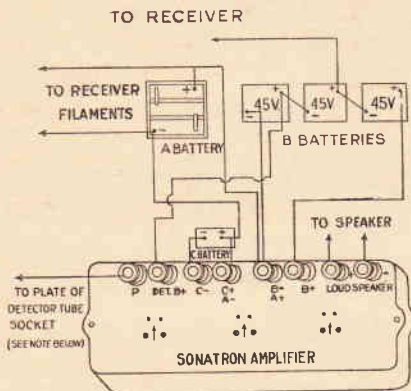
1. Genuine polished bakelite base, insuring perfect insulation, and long life.
2. All working parts concealed in the base, preventing them from damage.
3. Perfect contact between springs and tube prongs due to special double action contact design.
4. No unnecessary exposed parts, thereby preventing short circuit and tube burn-outs.
5. Permanent soldered connections, insuring long life and freedom from noises.
6. All parts heavily nickel-plated, preventing corrosion.
7. Wiring reduced to a minimum, insuring maximum volume.
8. Resistances housed in special composition tubing, insuring permanent resistance reading.
9. Condensers made of rigid indestructible construction.
10. Mounting holes permit unit to be fastened in any position.
11. Binding post tops cannot come off.
12. All terminal lettering permanently moulded in bakelite.
13. Tubes can only go in the correct way, eliminating danger of burn-out.
14. Extremely good appearance.

The Sonatron Amplifier is the **Only Resistance Coupled Amplifier** produced to-day that is equipped with a switch or a Mu 30 tube. This tube amplifies signals at a ratio of 30 to 1—A most remarkable achievement in the manufacture of radio tubes.

### "DRY CELL SETS"

The Sonatron dry cell unit is very highly recommended to owners of dry cell sets, due to the fact that much greater power results in using Hi-Mu tubes. It is a matter of common knowledge that resistance coupled amplification depends on the amplification constant, or the Mu of the tube. The amplification constant of our Mu-29 and 19 average about 20. This high amplification constant gives users of dry cell sets the opportunity of securing volume regularly obtainable on storage battery sets only. In addition to greater volume, remarkable tone quality common to this means of amplification will also result. We highly recommend the use of this unit for dry cell sets.

## FOLLOWING DIAGRAM SHOWS SONATRON AMPLIFIER CONNECTED TO BATTERIES AND SET



NOTE: The terminal marked "P" on the SONATRON AMPLIFIER is connected to the detector plate on all sets but the regenerative, in which set it is connected to the end of the tickler coil as shown in the regenerative diagram.

### ADDITIONAL INSTRUCTIONS

1. CAUTION: Connect the "B—" Battery to the Receiver "B—" terminal only, or to the Amplifier "B—" terminal only. Connecting both may cause a short circuit.

2. Use 90-volts "B" for "Det. B+" terminal and 135 volts for "B+." Ninety volts can be used for both terminals, but greater Amplification results if 135 volts are used on "B+."

3. Be certain to disconnect "Det. B+" Battery going to your set. Note the "Det. B+" Battery is furnished through the SONATRON AMPLIFIER, and if Detector "B" voltage is applied to the set, distortion will be caused.

4. It is imperative to use "C" battery as specified on circulars contained with each tube for Mu-X-6 and Mu-X-9 tubes only, for the following reasons:

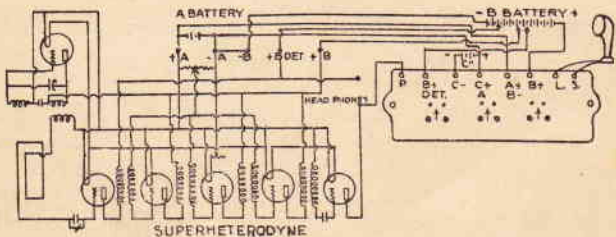
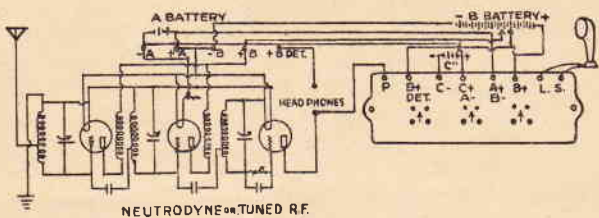
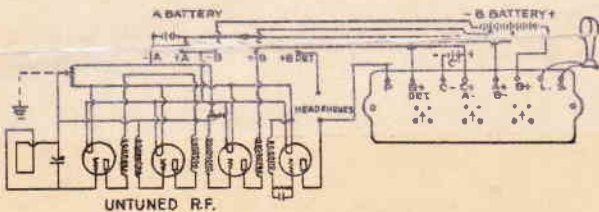
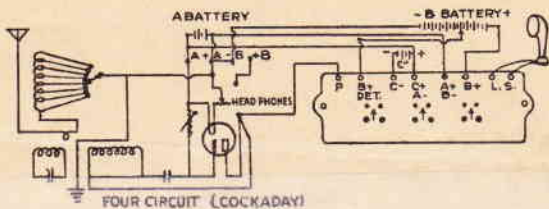
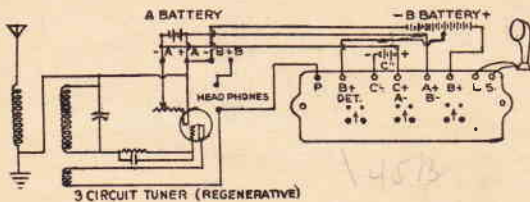
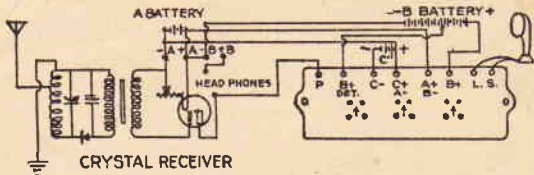
First: A reduction in "B" Battery current consumption will be effected.

Second: With "C" applied, tube functions normally and greater clarity of tone results.

Third: Using "C" Battery lengthens the life of tube because it is not being strained or overloaded.

To reduce the volume, do not turn down the detector filament, but reduce the energy input to the SONATRON AMPLIFIER by reducing the output of the tuner. This may be accomplished by reducing the number of turns in the antenna circuit, or by changing the setting of the variocoupler if the latter is used. Reducing the detector filament usually produces distortion unless the change is quite small.

# THESE DIAGRAMS SHOW HOW TO CONNECT SONATRON AMPLIFIER TO STANDARD RADIO SETS





**Instructions for Use of  
SONATRON Red, White and Blue Tubes  
as Used in Resistance Coupled Amplification**

**MU-X 30**—Amplifier Tube; a red colored tube especially designed for use in Resistance Coupled Amplification in any stage except the last. This tube has an amplification factor of 32 and will give maximum amplification when used in various combinations as appear below. In addition, this tube will give entire satisfaction in combination with any standard tubes when used in resistance coupled amplification in any stage but the last. (Characteristics of MU-X 30 are described on chart below.)

**MU-X 20**—Amplifier Tube; a silver colored tube especially designed for use in Resistance Coupled Amplification in any stage except the last. This tube has an amplification factor of 20 and will give satisfactory amplification when used in various combinations as appear below. In addition, this tube will give entire satisfaction in combination with any standard tubes when used in resistance coupled amplification in any stage but the last. (Characteristics of MU-X 20 are described on chart below.)

**MU-X 6**—Power Tube; a blue colored tube for use in Resistance Coupled Amplification in the last or output stage, only. This tube is so designed as to match all loud speakers of any design now on the market. ("C" voltages required and characteristics of MU-X 6 are described on chart below.)

Note the low amplification factor of this tube. This tube is especially noted for its Purity of Tone and Freedom from Distortion. MU-X 6 can be used in last stage only in various combinations as appear below.

**SP 60**—A Gold colored Super-Power tube designed to give increased volume where same is required for dance music and amplification of weak signals coming over a long distance. This tube can replace the last tube or the MU-X 6, only. This Special Purpose Tube is an asset in securing faint signals with minimum interference and will be welcomed by DX fans. SP 60 may also be used in various combinations with RED, WHITE & BLUE series as given below.

("C" voltage and characteristics of SP 60 are described on chart below.)

Some of the various combinations and results obtainable when using the RED, WHITE & BLUE series of tubes in 3 stages of Resistance Coupled Amplification.

| COMBINATION |                              |                      | CHARACTERISTICS  |  |  |  |  |  |  |  |
|-------------|------------------------------|----------------------|--|--|--|--|--|--|--|--|
| 1st         | 2nd                          | Output of Last Stage |  |  |  |  |  |  |  |  |
| 1.          | MU-X 30 + MU-X 20 + MU-X 6 = |                      | Amplification and Quality for Distance                 |  |  |  |  |  |  |  |
| 2.          | MU-X 20 + MU-X 20 + MU-X 6 = |                      | Tone Quality   |  |  |  |  |  |  |  |
| 3.          | MU-X 30 + MU-X 30 + SP 60 =  |                      | Fidelity of Reproduction                               |  |  |  |  |  |  |  |
| 4.          | MU-X 30 + MU-X 20 + SP 60 =  |                      | Maximum Volume   |  |  |  |  |  |  |  |
| 5.          | MU-X 20 + MU-X 20 + SP 60 =  |                      | Greatest Amplification                                 |  |  |  |  |  |  |  |
| 6.          | MU-X 30 + MU-X 30 + MU-X 6 = |                      | Same as Combination No. 1 with greater volume          |  |  |  |  |  |  |  |
| 7.          | MU-X 20 + MU-X 30 + MU-X 6 = |                      | Same as Combination No. 2 with greater volume          |  |  |  |  |  |  |  |
| 8.          | MU-X 20 + MU-X 30 + SP 60 =  |                      | Same as Combination No. 3 with clearer tonal qualities |  |  |  |  |  |  |  |
|             |                              |                      | Distance and Quality with normal volume                |  |  |  |  |  |  |  |
|             |                              |                      | Same as Combination No. 7 with greater volume          |  |  |  |  |  |  |  |

The above combinations may be varied when used in conjunction with all resistance coupled amplification sets now in use. This series of tubes is guaranteed to give most efficient results in resistance coupled units now being used to replace the old style audio transformers.

| TYPE   | Color  | Use                 | "A" Battery volts | Filament Terminal volts | "B" Battery volts | See "C" Bat. volts | Plate Current Milliamperes | Output Resistance | Mutual Conductance Micro-Mhos | Amplification Factor |
|--------|--------|---------------------|-------------------|-------------------------|-------------------|--------------------|----------------------------|-------------------|-------------------------------|----------------------|
| MU-X30 | Red    | All stages but last | 6                 | 5-6                     | 90<br>135         | —                  | 1.<br>1.7                  | 40,000<br>35,000  | 800<br>915                    | 32<br>32             |
| MU-X20 | Silver | All stages but last | 6                 | 5-6                     | 90<br>135         | —                  | 1.<br>2.5                  | 30,000<br>24,000  | 670<br>835                    | 20<br>20             |
| MU-X6  | Blue   | Last stage only     | 6                 | 5-6                     | 90<br>135         | 7.5<br>9.0         | 5<br>11                    | 5500<br>5000      | 1000<br>1200                  | 6<br>6               |
| SP-60  | Gold   | Last stage only     | 6                 | 5-6                     | 90<br>135         | 4.5<br>7.5         | 3.5<br>5.                  | 8000<br>7000      | 1000<br>1200                  | 8<br>8               |

All constants are taken on A. C. Test with "C" voltages applied.  
All tubes equipped with standard UX bases.

The RED, WHITE & BLUE Tubes will give the maximum results and also corresponding beauty in appearance when used with all resistance coupled amplification.

Use the RED, WHITE & BLUE Sonatron Tubes for  
"FIDELITY OF REPRODUCTION"

Manufactured by the  
**SONATRON TUBE COMPANY**

New York                      Chicago                      Detroit  
Newark                      Windsor, Canada

ASK YOUR DEALER FOR THIS COMBINATION

NOTE: Your dealer has complete instructions for handling replacements.