

# Instructions for Operating

# CROSLLEY

## 51-P

# Portable Receiver

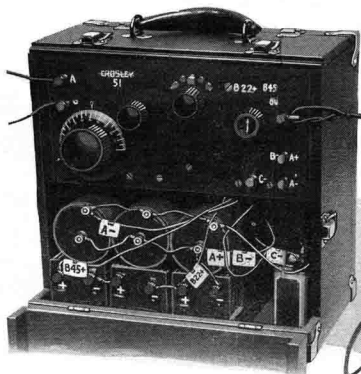
THE CROSLLEY RADIO CORPORATION

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### CAUTION

READ THESE INSTRUCTIONS CAREFULLY BEFORE HOOKING UP THE RECEIVER  
DO NOT PLACE TUBES IN SOCKETS UNTIL BATTERIES ARE CONNECTED



CROSLLEY MODEL 51-P  
FIGURE 1

BATTERY CONNECTIONS FOR  
W D-12 OR C-12 TUBES

The Crosley MODEL 51-P is a two-tube regenerative receiver. It comprises a single circuit tuner, with controls for a vacuum tube detector, which has a tickler in the plate circuit. This tickler makes the set regenerative. The Model 51-P is manufactured under Armstrong U. S. Patent No. 1,113,149. It also contains a one-stage audio frequency amplifier with transformer coupling.

The Crosley Model 51-P portable receiver makes use of the same type of set and panel arrangement as the Crosley Model 51. However, a special portable carrying case is provided with cabinet room for dry cell "A" batteries and "B" batteries. Flexible wires with tags showing their use are provided for convenience in making connection to the batteries in the cabinet.

#### ADDITIONAL EQUIPMENT REQUIRED

"A" Battery.

"B" Battery.

"C" Battery, if desired.

Grid leak, if desired.

Two vacuum tubes—three element (plate, grid and filament).

Head phones.

Antenna and ground.

#### "A" BATTERY

The battery cabinet will hold three six inch No. 6 dry cells.

#### "B" BATTERY

The battery cabinet will hold three intermediate size vertical type 22½ volt "B" batteries such as Eveready No. 764 or Burgess No. 5158, or French No. 1153.

"C" battery, if desired.

Head phones.

Antenna and ground.

#### GRID LEAK

Some manufacturers of vacuum tubes recommend the use of a grid leak. In some cases, better results are obtained with a grid leak, but its use is not essential and at times is even detrimental. Spring clips on the grid condenser are provided to hold a tubular or cartridge leak. We recommend the R C A or De Forest grid leaks. We do not make or sell grid leaks. In the following paragraphs describing hook-ups for various tube combinations, you will note statement regarding use of grid leak. We recommend that you try your set with and without grid leaks.

## "C" BATTERY

The manufacturers of vacuum tubes state that the efficiency of a tube as an amplifier may be increased by the introduction of a "C" or grid bias battery particularly when plate or "B" battery voltages of 67 or 90 volts are used. To take advantage of this an extra binding post marked "C—" is provided on the panel of the Crosley 51-P. As a "C" battery is not often necessary this binding post is connected to the "A—" binding post when the receiver is shipped from the factory. Before the "C" battery can be used this connection must be broken. The wire connecting the two binding posts will be found on the back of the panel. Connect the "C" battery, if used, with the negative terminal connected to the binding post marked "C—" and the positive terminal to the "A—" binding post. **BE SURE TO BREAK THE WIRE CONNECTING THESE TWO BINDING POSTS ON THE REAR OF THE PANEL BEFORE CONNECTING THE "C" BATTERY.** Three to seven volts of "C" battery will be sufficient for "B" battery voltages ranging from 45 to 100 volts. Always test out the "C" battery voltages for the point of best operation. In the following paragraphs describing hook-ups for various tuning combinations you will note a statement regarding the use of "C" battery.

## VACUUM TUBES

The Crosley Model 51-P is equipped with a universal rheostat, known as Multistat. This makes it possible to use any standard vacuum tubes. The following tubes may be successfully used. Both tubes should be of the same type.

- Two WD-12.
- Two C-12.
- Two UV-199.
- Two C-299.
- Two UV-201-A.
- Two C-301-A.

## "A" AND "B" BATTERIES

### Two WD-12 Tubes

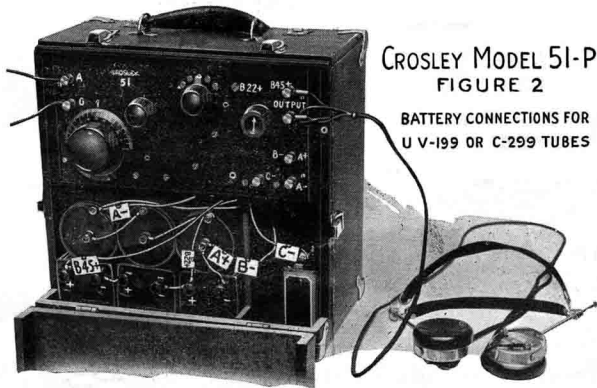
Use three six inch No. 6 dry cells connected in parallel for the "A" battery as shown in Figure 1. For a parallel circuit, all of the outside or negative terminals are connected together and all of the center or positive terminals are connected together. This gives an "A" battery of one and a half volts. Connect the flexible wire in the cabinet, marked "A—," to an outside terminal of one of the No. 6 dry cells. Connect the terminal marked with two tags, "A+" and "B—" to a center terminal of one of the No. 6 dry cells. A wire must also be run from this center terminal to the negative post of the first B battery. Connect the wire marked "B22+" to the positive terminal of the first "B" battery, also connect the positive terminal of the first "B" battery to the negative terminal of the second "B" battery. Connect the positive terminal of the second "B" battery to the negative terminal of the third "B" battery and connect the flexible wire marked "B45+" to the positive terminal of the third or last "B" battery. The set will operate with only two 22½ volt "B" batteries, but not so efficiently as with three "B" batteries. If only two "B" batteries are used, connect the terminal marked "B45+" to the positive post of the second "B" battery.

A "C" battery may be used, if desired. **BE SURE TO BREAK THE SMALL WIRE CONNECTING THE "C—" BINDING POST TO THE "A—" BINDING POST ON THE REAR OF THE PANEL BEFORE CONNECTING THE "C" BATTERY.**

A grid leak may be used if desired. A leak of about one or two Megohms value will usually give best results.

### Two C-12 Tubes

These tubes are the same as the WD-12. Follow the instructions given for WD-12 tubes.



### Two UV-199 Tubes

Use three six inch No. 6 dry cells connected in series as shown in Figure 2 for the "A" battery. A series circuit is made by connecting the outside or negative terminal of the first dry cell to the center or positive terminal of the second dry cell. The negative or outside terminal of the second dry cell should be connected to the positive or center terminal of the third dry cell. Connect the flexible wire marked "A—" to the outside terminal of the third dry cell. Connect the flexible wire marked "A+" to the center or positive terminal of the first dry cell. This positive terminal must also be connected to the negative terminal of the first "B" battery, because the wire having two tags, "A+" and "B—," makes the connection for both the posi-

tive "A" battery and the negative "B" battery. The positive terminal of the first "B" battery must be connected to the negative terminal of the second "B" battery, and the positive terminal of the second "B" battery to the negative terminal of the third "B" battery. The flexible wire marked "B22+" must be connected to the positive terminal of the first "B" battery and the flexible wire marked "B45+" must be connected to the positive terminal of the third "B" battery. Two 22½ volt "B" batteries will be enough to operate the set but its efficiency will not be as great as with the three "B" batteries as shown in Figure 2. If only two "B" batteries are used, connect the flexible wire marked "B45+" to the positive terminal of the second "B" battery.

A "C" battery may be used, if desired. **BE SURE TO BREAK THE SMALL WIRE CONNECTING THE "C—" BINDING POST TO THE "A—" BINDING POST ON THE REAR OF THE PANEL BEFORE CONNECTING THE "C" BATTERY.**

A grid leak may be used, if desired. A leak of one or two megohms value will usually give best results.

#### Two C-299 Tubes

These tubes are the same as the UV-199; follow the instructions for UV-199 tubes.

#### Two UV-201-A Tubes

For operation in the home where a storage battery may be used, two UV-201-A tubes will give splendid service. Connect the batteries as shown in Figure 3. The flexible leads in the battery cabinet may be used for this purpose, elongating them where necessary, or connections may be made directly to the binding posts on the front of the panel as shown in Figure 3. In this case, however, be sure to insulate the lugs on the ends of the flexible leads with paper or cloth or tire tape, to prevent the possibility of a short circuit. Note that the binding post marked "B45+" is connected to the positive 22½ volt terminal of the fourth "B" battery. The set will operate on only two "B" batteries, but the volume will not be as great as when four "B" batteries are used. If only two "B" batteries are used, connect the binding posts marked "B45+" to the positive terminal of the second "B" battery. Note that the "B" batteries

are connected in series, that is, the 22½ volt terminal of one is connected to the minus terminal of the next "B" battery.

A "C" battery may be used with these tubes when 90 volts of more "B" battery is used.

A grid leak may be used, if desired. A leak of about one or two megohms value will give the best results.

#### Two C-301-A Tubes

These tubes are identical to the UV-201-A. Follow the instructions for UV-201-A tubes.

#### HEAD PHONES

A pair of sensitive head phones is required. These are connected to the upper right hand binding posts on the front of the panel. On local stations, or on powerful distant stations, a loud speaker may sometimes be used. Connect the loud speaker to the "output" binding posts.

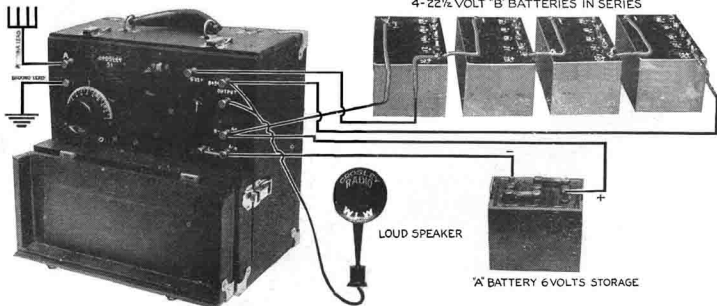
#### ANTENNA AND GROUND

Instructions for erecting an aerial and making a ground connection will be found in the accompanying booklet entitled "Simplicity of Radio."

Connect the antenna lead to the binding post marked "A" and located in the upper left hand corner of the panel. Connect the ground wire to the post just below and marked "G."

## CROSLEY MODEL 51-P BATTERY CONNECTIONS FOR 6 VOLT TUBES FIGURE #3

4-22½ VOLT "B" BATTERIES IN SERIES



The Crosley Model 51-P portable receiver is not designed for a large antenna. The better the antenna the better the results. However, good work may be done on a small antenna. In a hotel or apartment house a wire may be stretched across the room or run around the picture molding or dropped out a window, provided, however, that the wire does not come in contact with any other wires. When camping the antenna wire may be tied to a tree and the other end run directly to the receiver.

#### CONTROLS

##### Antenna Condenser

This unit is controlled by the large knob and dial on the left hand side of the panel.

##### Antenna Inductance

This is varied by the tap switch in the top center of the panel.

##### Variocoupler

The plate inductance element of the variocoupler, or the tickler, is controlled by pulling out and pushing in the small knob to the left of the tap switch, and to the right of the large condenser knob and dial.

#### Detector Tube

The detector tube is placed in the socket on the left hand side of the set as you face it from the front. The amplifier tube is placed in the right hand socket. Both of these tubes are controlled by the same rheostat, which is operated by the knob on the right hand side of the panel. Turning this knob toward the right turns on the filament current. Turning it to the extreme left shuts off the current completely. When the set is not in use the knob should be turned to the extreme left so that the battery will not be consumed unnecessarily.

#### OPERATION AND TUNING

Check all connections carefully.

Turn off rheostat by rotating the knob toward the left until the contact arm is not touching the resistance winding.

Place the tube in the socket according to above directions.

Connect head phones to the two upper right hand binding posts on the front of the panel. Set large knob on the left to zero, and push the tickler knob all the way back to the panel. Now slowly turn up the filament, stopping at the point, where upon

pulling out the tickler slightly, you get a frying or hissing noise.

It will be found that as the dial is rotated from 0 to 100 it will be necessary to pull the tickler farther out to get the hiss.

Place the tap switch on the fourth tap from the left. Rotate the dial from 0 to 100, keeping the tickler adjusted so that the tube just does not hiss. The signal will now come in if there is a station working in that range. If nothing is heard try another tap and repeat the operation. After hearing the station try moving the tickler in and out until maximum clarity and signal strength are obtained.

### RESULTS TO BE EXPECTED

This receiver should pick up signals from broadcasting stations within a radius of one thousand miles, provided an efficient antenna is used and the receiving conditions are fairly good. In the day time or when static is especially bad you cannot expect to get such satisfactory results.

### IN CASE OF FAILURE TO OPERATE

Be sure a broadcasting station is operating within the range of the receiver.

Break the "B22 $\frac{1}{2}$ " connection a few times with head phones attached to set and note whether or not a click is heard in the head phones. The click indicates that the "B" battery circuit is complete. Should there be no click, check the "B" battery connections very carefully. Also check the "B" battery for voltage if possible.

Be sure the right "A" battery is being used and that it is in good electrical condition.

Check antenna and ground connections carefully. The antenna must be carefully insulated from any grounded object.

Test head phones by using on a receiver known to be operating properly. If this is not possible, place phone tips across the terminals of the "A" battery, one on the negative and one on the positive. A decided click should be heard when this is done. Connect only momentarily.

Test vacuum tubes in a properly operating set if possible.

Remember that it requires some skill to tune a set with which you are not familiar.