# Sears Roebuck & Co.

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|---|---|---|---|
| | **Model:** 1906 | **Chassis:** | **Year:** Pre October 1936 |
| | **Power:** | **Circuit:** | **IF:** |
| | **Tubes:** | | |
| | **Bands:** | | |

| Resources |
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### Wells-Gardner 7A Series Chassis

In a few receivers of this model, the tone control condenser C-9, 0.05 mf., 400 volts, has broken down. When this occurs the output plate voltage is applied across the tone control resistor and in many cases the resulting current burns the tone control. For this reason, if it is necessary to replace the condenser or the tone control resistor in this model; connect the side of the condenser which formerly went to ground to the +B end of the output transformer primary, as shown in Fig. 1.

This connects the tone control condenser and resistor across the primary of the output transformer. In this

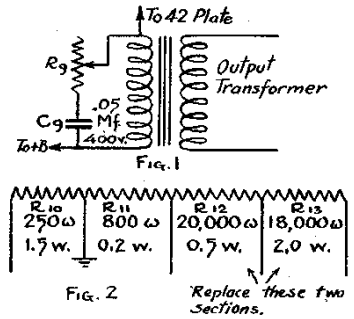
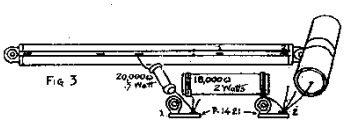



**Fig. 1. New connections for tone-control circuit of Wells-Gardner 7A chassis.**
**Fig. 2. Resistor values of four-section unit.**

method of connection, should the tone control condenser break down, no damage will be done to the resistor.

In case either the 18,000 or the 20,000-ohm section of the four section armoured wire-wound resistor becomes open, it is unnecessary to replace the entire resistor. A separate 18,000 ohms, 2 watt or 20,000 ohms, 0.5 watt carbon resistor may be used. DO NOT USE THE OLD LUGS OF THE WIRE WOUND RESISTOR TO MOUNT THE CARBON RESISTORS, AS THE OLD UNIT MAY HAVE AN INTERMITTENTLY OPEN CONNECTION. If one of these two sections, as mentioned, becomes open, it will be best to replace both of them. The values of the four sections of this unit are given in Fig. 2.

If the entire four-section unit is replaced, the old mounting holes and the old wiring connections are used. However, if the separate 18,000 and 20,000-ohm carbon resistors are used, they are mounted and connected as shown in Fig. 3. Two single terminal mounting strips can be used for the wiring connections. The leads, which connected to terminals No. 1 and No. 2 on the old unit, are connected to the separate terminals marked No. 1 and No. 2 in the illustration.




**Method of mounting and replacing resistors in Wells-Gardner 7A Series chassis. See Fig. 2.**

P-98002A. 4 Section Resistor (2 wire wound, 2 carbon)
P-D-94183. 18,000-ohm, 2 watt resistor
P-B-94203. 20,000-ohm, 0.5 watt resistor
P-1421. Single terminal Mounting strip

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### Silvertone 1904, 1906, 1908, 1911, 1914, 1938, 1954, 1964, 1984

Several changes have been made in the chassis used in the above models and they should be noted on the schematic, appearing on *Sears page 6-45 of Rider's Volume VI.*

The resistor, R1, has been changed from 30,000 ohms to 40,000 ohms. R3 has been increased from 5000 to 20,000 ohms. R5 has been decreased from 50,000 ohms, 0.5 watt, to 25,000 ohms, 1 watt. This last change was made to correct motorboating that was sometimes experienced on the s-w. band "C," due to the 6A7 tube variations.

A tone control circuit has been added. One side of a 0.02-mf. condenser is connected to the lead coming from the grid of the 6F6 to the 200,000-ohm resistor, R11, and the other side of this condenser is connected to one side of the 500,000-ohm tone control. The variable arm is grounded.

A condenser, 0.1 mf., 300 volts, has been shunted across the 8-mf. condenser, C20.

Metal glass tubes are used in the i-f., a.v.c., and output stages. These tubes are the same types as shown on the schematic in *Rider's Volume VI.*

Note the added model numbers above that should be included in your Volume VI index.

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### G.E. M-106 Changes

A change is recorded in the G.E. M-106 receiver. The type 76 tube originally used as the 2nd detector and AVC, has been replaced by a type 1-V tube. R-16 in the diagram, originally 1,000,000 ohms, now is 1,100,000 ohms. The G.E. M-106 is referred to in Rider's Manual Volume V, as the RCA 262, shown on page 5-103 in the RCA section.

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### RCA RAE-68

The RAE-68 receiver employs the model 82 Radiola 82 chassis with remote control and the automatic electric phonograph.

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### Sparton Chassis Similarities

It is possible that some Sparton models may come in for service and that you will not be able to identify the exact chassis because of some suffix letter which may appear in conjunction with the model number. Accordingly, it might be well if you added the following data to your Rider Manual Index:

Models 57-A and 57-B are basically the same as the model 57, shown on page Sparton 5-3, 5-4 and 5-5.

The model 81-A is basically the same as model 81, shown on page Sparton 4-18 in Rider's Manual.

The model 105 is basically the 104, shown on page 5-19 and 5-20 in Rider's Manual Volume V.

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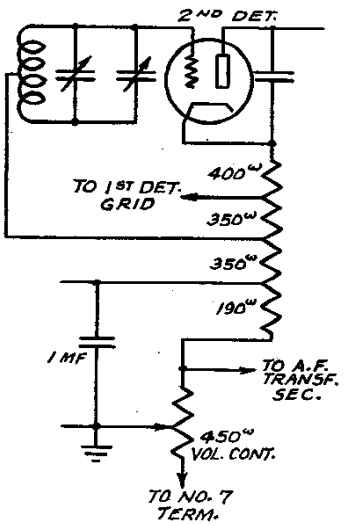
### Radiola 62

The values of the tapped resistor strip and the volume control of the Radiola 62 were omitted from the manufacturer's schematic. These values are shown in the accompanying illustration. The part




**Valves of resistor strip and volume control of Radiola 62**

number of the tapped resistor is 5810 and that of the volume control is 5811.

The schematic for this receiver will be found on *RCA page 1-40 in the revised edition; page *497 in the early edition, and on page 1878 of the Rider-Combination Manual.*

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### Philco Model 32

Starting with Run No. 6, the part number of the volume control is changed from 33-5063 to 33-5004, and the wave-band switch from 42-1017 to 42-1123. This makes the design and connection of these parts the same as in Model 89. See Rider's Manual, Volume V, page 5-17.

# MODELS 1904,1904-A,1906 1914,1954,1964,1964-A Alignment,Chassis Layout

## SEARS-ROEBUCK & CO.

In some of the sets, the 40 ohm resistor, R14, is omitted and a grounded center tap on the transformer used instead.

In earlier production, R3 was a 20M ohm, 1/2 watt resistor. In later production, this was changed to a 5M ohm, 1/3 watt resistor. In sets using a 20M ohm resistor, if trouble is experienced due to the set's not operating at the low frequency end of the C Band, which will be due to the oscillator "stalling", replace the 20M ohm resistor with a 5M ohm one.

The coupling between primary and secondary of the IF output transformer is variable and serves as the volume control.

R7 is the resistor which supplies AVC voltage. Residual bias is furnished by R13.

POWER TRANSFORMER COLOR CODE

RECTIFIER PLATE:RED. CENTER TAP, GREEN.
PRIMARY:BLUE.
HEATER:BLACK.

### ALIGNMENT PROCEDURE

General:

During all of the alignment procedure, the volume control should be turned either all the way on, or else retarded slightly from the full "on" position, if retarding it is found to sharpen adjustments. The ground lead of the test oscillator should be connected to the chassis through a .1 mfd. condenser. The other lead of the test oscillator is to be connected in the manner described in the procedure. Where connection is made to a control grid cap, it is important to leave the grid clip attached to the grid cap and to leave the tube shields in place. No attempt should be made to "kill" the oscillator section of the 6A7 during the alignment.

The output from the test oscillator always should be kept at the lowest possible value that will give a satisfactory output meter reading and the coupling between the test oscillator and the receiver should be made as loose as possible. In the case of RF alignment on any of the bands, where the test oscillator is coupled to the antenna lead of the receiver with an antenna connected, alignment will be most accurate if the coupling to the antenna lead is made very loose. (The antenna lead and the oscillator lead separated.) If the test oscillator has a variable control for its power output, it is better to turn this control to its high position and then decrease the signal input to the receiver by decreasing the amount of coupling between the test oscillator and the receiver's antenna lead. If an actual antenna is not used and is replaced by a condenser or resistor, as described in the procedure, the input to the receiver should be kept low by decreasing the power output from the test oscillator.

When peaking the antenna and translator trimmers, for all wave bands, the variable condenser should be "rocked" back and forth a degree or two while the trimmer is being adjusted. This should not be done when peaking the oscillator trimmers; in this case, the variable condenser is turned so that the plates are completely out of mesh and left in this position during the adjustment. When adjusting the oscillator trimmers, if it is found that two peaks can be obtained, use the one in which the trimmer is screwed further out (less capacity). When adjusting the antenna and translator trimmers, if two peaks are found, use the adjustment in which the trimmer is screwed in furthest. Note that this is exactly opposite to the procedure for the oscillator trimmers.

Sequence of Alignment:

1. Align IF amplifier.
2. Align short wave, Band C.
3. Align short wave, Band B.
4. Align broadcast, Band A.

IF Alignment:

1. Set the test oscillator to 175 kc and connect its output lead to the control grid cap of the 6A7 tube.

2. Peak the IF output transformer tuning condensers, C13 and C14. These are mounted under the chassis, as shown in the Location of Parts Diagram.

3. Peak the IF input transformer, mounted on top of the chassis.

4. Repeat the adjustments to secure greater accuracy.

RF Alignment; Band C:

1. Loosely couple the output of the test oscillator to the antenna lead of the receiver, leaving the antenna connected. If it is impractical to use an actual antenna, the test oscillator can be connected directly to the antenna lead of the receiver, in series with a 400 ohm resistor and with no antenna connected to the receiver.

2. Set the test oscillator to 14500 kc and tune in its signal. Then adjust C3 for maximum output.

RF Alignment; Band B:

1. Loosely couple the output of the test oscillator to the antenna lead of the receiver, leaving the antenna connected. If it is impractical to use an actual antenna, the test oscillator can be connected directly to the antenna lead of the receiver, in series with a 400 ohm resistor and with no antenna connected to the receiver.

2. Set the test oscillator to 4500 kc and tune in its signal. Then adjust C2 for maximum output.

RF Alignment; Broadcast, Band A:

1. Couple the test oscillator to the antenna lead of the receiver, with the antenna connected; or connect the oscillator directly to the receiver antenna lead, in series with a .00025 mfd. condenser and with no antenna connected.

2. Set the test oscillator to 1400 kc and tune in its signal. Then adjust C1 and the trimmer on the middle section of the variable condenser for maximum output.

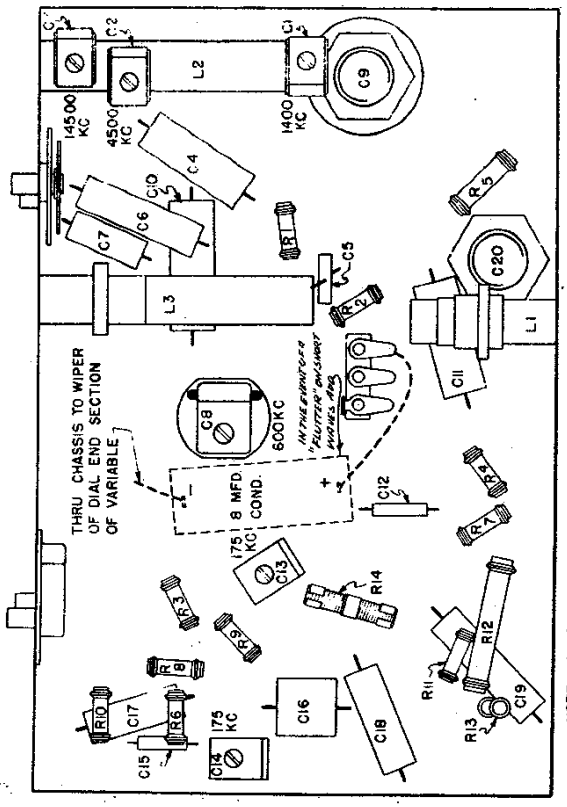
3. Set the test oscillator to 600 kc and tune in its signal. Then adjust the padding condenser, C8, for maximum output. The variable should be "rocked" back and forth a degree or two while making this adjustment.

4. Repeat the 1400 kc adjustment and then the 600 kc adjustment.

FAILURE OF THE VOLUME CONTROL TO REDUCE THE VOLUME SUFFICIENTLY

The Volume Control in these models consists of variable coupling between the primary and secondary of the IF output transformer. It sometimes happens that the movable coil slips on its shaft with the result that the volume cannot be reduced to zero, or else that it passes through zero and then begins to increase again as the Volume Control knob is turned counter clockwise. This condition can be corrected as follows:

1. Tune in a strong local station.
2. Slightly loosen the set screw that holds the movable coil bracket to the Volume Control shaft, so that the coil can be slipped around the shaft.
3. Turn the Volume Control shaft all the way counter-clockwise.
4. Leaving the shaft in this full counter-clockwise position, slip the movable coil around the shaft to the point of minimum volume.
5. Securely tighten the set screw.
6. If, with the coil turned to the point of minimum volume the volume still is too high, it can be reduced by rearranging the flexible leads. If improperly arranged, the capacity coupling of these leads may prevent a low enough minimum volume. However, it is a simple matter to shift the leads and so reduce the volume.




LOCATIONS OF PARTS - MODELS 1904-1904A-1906-1914-1954-1964-1964A

NOTE: L4, L5, L6 ARE MOUNTED ON TOP OF THE CHASSIS.

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MODELS 1904,1904-A,1906
1914,1954,1964,1964-A
Schematic