

R.C.A. Victor Co., Inc.

Model: 4T

Chassis:

Year: Pre October 1936

Power:

Circuit:

IF:

Tubes:

Bands:

Resources

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RCA MFG. CO., INC.

MODEL 4T
Schematic, Socket
Chassis Wiring, Trimmers
Loud Speaker, Transformer

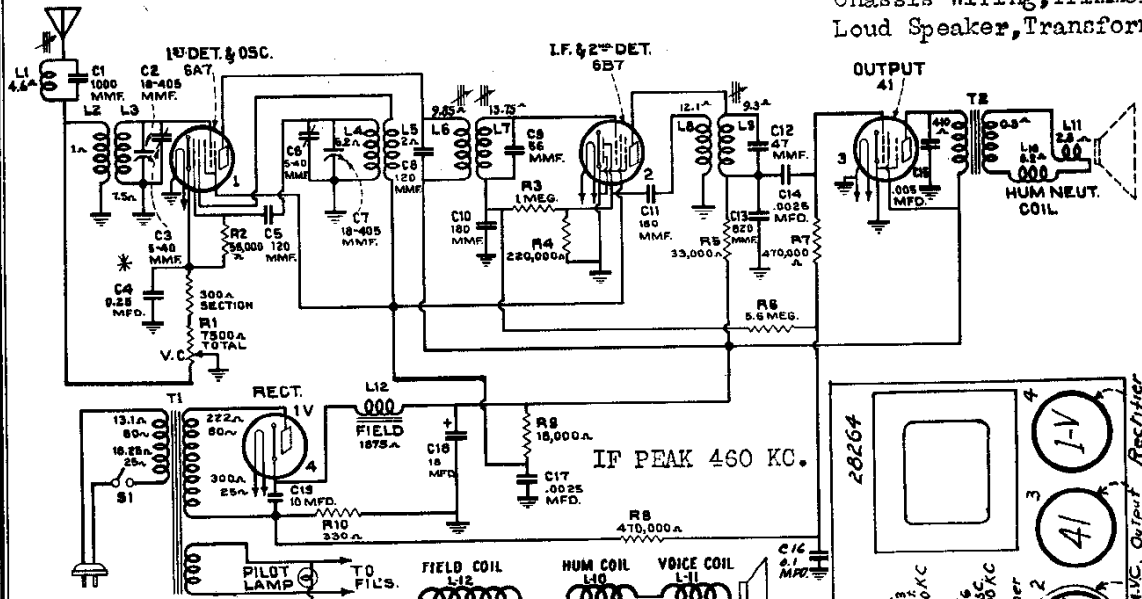


Figure 1—

Schematic Circuit Diagram

* On some instruments C-4 is .05 mfd.
Make all replacements with Stock No. 4840.

Figure 6—
Loudspeaker Wiring

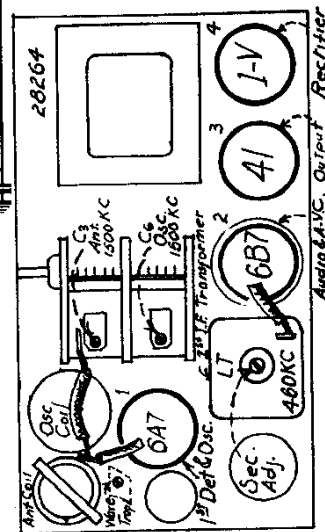
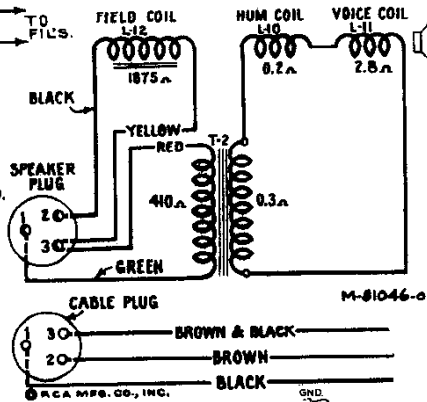


Figure 3—Radiotron, Coil, and Trimmer Locations

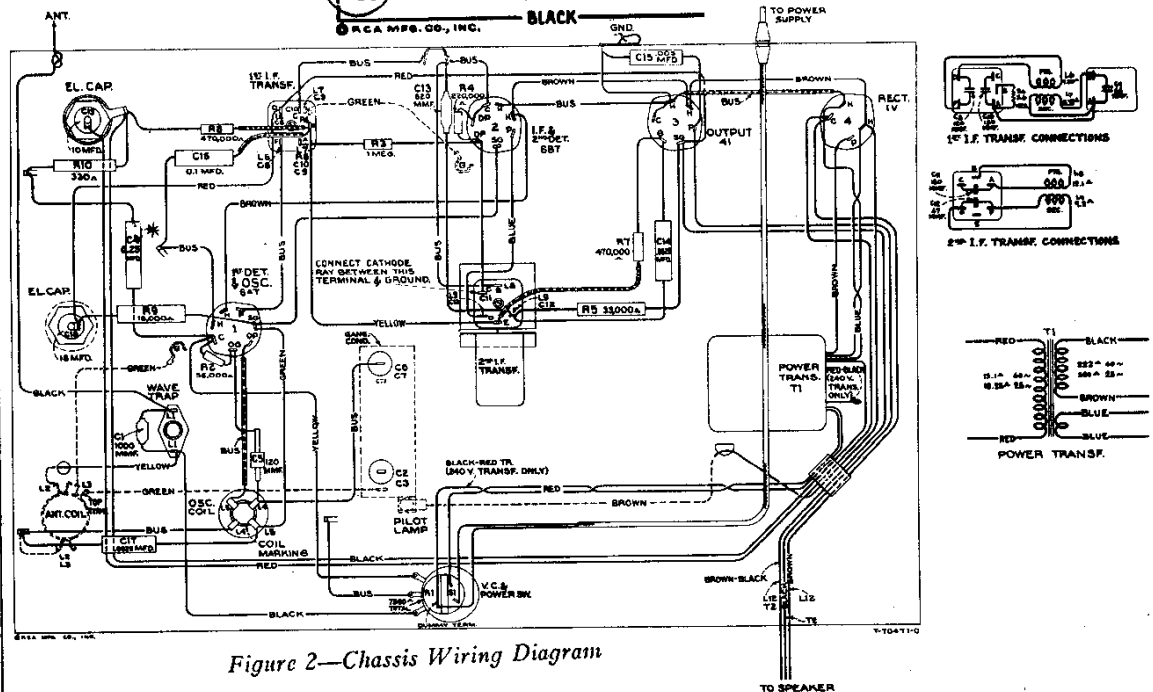


Figure 2—Chassis Wiring Diagram

MODEL 4T
Voltage, Resistance
Transformer

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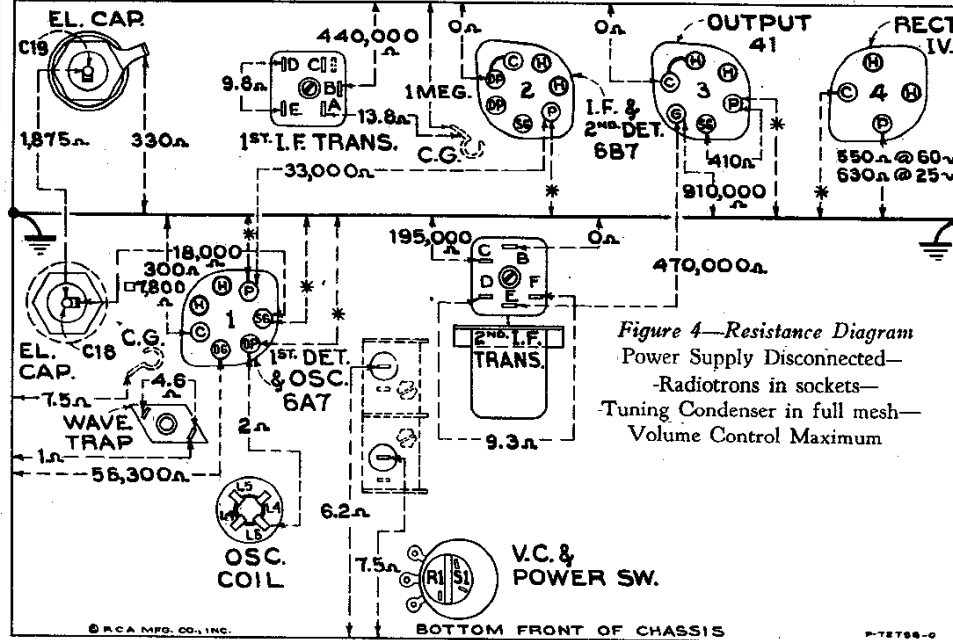


Figure 4—Resistance Diagram
Power Supply Disconnected—
Radiotrons in sockets—
Tuning Condenser in full mesh—
Volume Control Maximum

Resistance Measurement

circuit under test. Resistance values were measured with the Radiotrons in sockets; tuning condenser in full mesh, and volume control set at maximum except where otherwise noted. In all cases of measuring the resistance between points of the circuit and ground, it will be necessary to connect the negative terminal of the resistance meter to chassis-ground. If the polarity of the resistance meter is not known, it may be readily ascertained by connecting a d-c voltmeter of indicated polarity across the terminals of the device.

NOTE: □ VOLUME CONTROL AT "MIN." POSITION.
* OPEN CIRCUIT (LEAKAGE OF ELECTROLYTIC CAPACITORS ONLY).

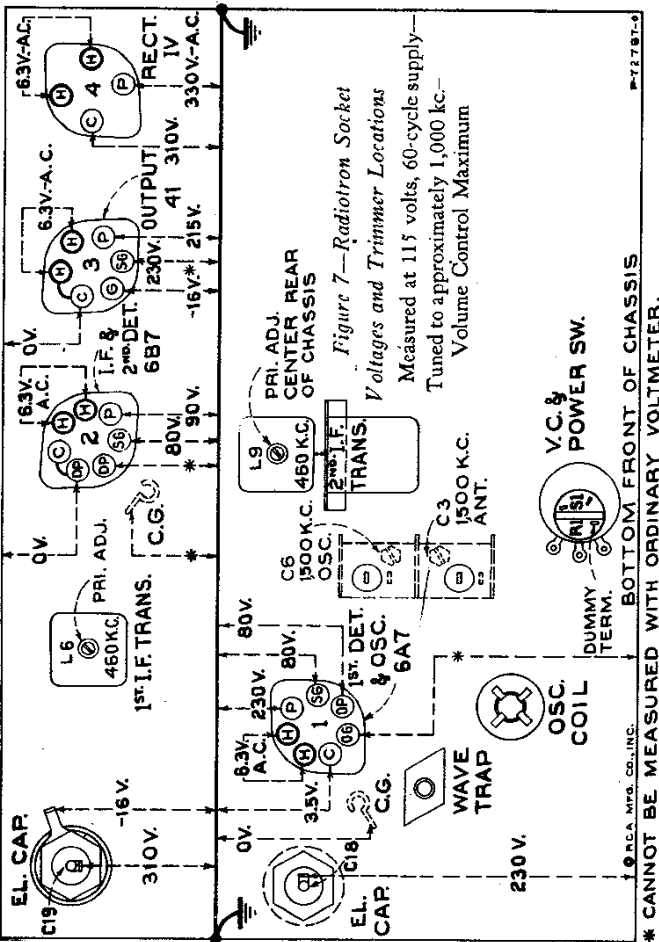


Figure 7—Radiotron Socket
Voltages and Trimmer Locations
Measured at 115 volts, 60-cycle supply—
Tuned to approximately 1,000 kc.—
Volume Control Maximum

Radiotron Socket Voltages

The voltage values indicated from the Radiotron socket contacts, grid caps, resistors, and terminals to receiver chassis ground on Figure 7 will assist in locating cause for faulty operation. Each value as specified should hold within $\pm 20\%$ when the receiver is normally operative at its rated line voltage. Variations in excess of this limit will usually be indicative of trouble in the basic circuits. These voltages were measured with receiver tuned to a corresponding a-c meter.

Primary Resistance - 23.6 ohms Total
Secondary Resistance - 180 ohms Total

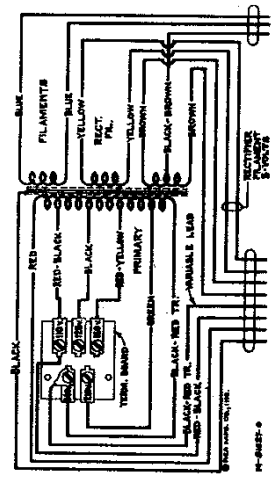


Figure 5—Universal Transformer

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MODEL 4T Circuit Data, Alignment Parts List

STOCK NO. DESCRIPTION PRICE

Table listing various electronic components such as sockets, transformers, capacitors, and coils with their respective stock numbers and prices.

REPRODUCER ASSEMBLIES
12446 Coil-Neutralizing coil
12576 Coil-Deproductor field
12574 Coil (112)...

transformer primary. Connect the output of the test oscillator to the RCA-5A7 con-
terminal. Adjust the test oscillator to 460 kc. Advance the receiver tuning con-
trol to a point within its range where no interference is encountered either from
local broadcast stations or local oscillator. Set the volume control to its maximum
position. Increase the output of the test oscillator until a signal is heard in the
speaker on the output line indicated receiver output. Then adjust the two
former of the first i-f transformer for maximum (peak) receiver output as shown by
the indicating device.

During these adjustments, regulate the test oscillator output so the indication
is always as low as possible. By doing so, broadness of tuning, due to A.V.C. ac-
tion, will be avoided. It is advisable to repeat the adjustment of all i-f screws
to assure that the interaction between them has not disturbed the original adjustment.
Wave-Trap Adjustment
Attach the output of the test oscillator to the black antenna lead through a
500-ohm resistor, the ground connection of the test oscillator remaining the same.
Leave the test oscillator adjusted to 460 kc. as before. Turn the rotor plates of
the two-gang tuning condenser completely out of mesh. Then adjust the wave-trap
transformer to the point which causes maximum suppression of the 460 kc. signal.

F-F Trimmer Adjustments
Calibrate the tuning dial by first loosening its set screw and then rotating
dial until the extreme and calibration mark beyond 60 on scale is in alignment
with the dial window-indicator while the two-gang tuning condenser plates are in
full mesh. Re-tighten set screw.
The output meter should be left connected to the output adjuster. The connec-
tions for the test oscillator remain the same as for Wave-Trap Adjustment.
Adjust the test oscillator to 1,500 kc. and set the receiver tuning control
to a dis-tuning of 100 kc. above the test oscillator. The maximum deflection of
the tuning indicator should be noted at its maximum position.
Adjust the output of the test oscillator until a slight indication is perceptible
at the receiver output. Then adjust the two trimming capacitors C-6 and C-5 of the
oscillator and antenna coils, Figure 2, so that each produces maximum (peak) re-
ceiver output.

Table listing replacement parts such as capacitors, coils, and resistors with their stock numbers, descriptions, and prices.

GENERAL FEATURES
This model contains a four-tube chassis mounted in a table-type cabinet.
The superheterodyne circuit uses, with the exception of certain features of design, an auto-
mated audio system, electrodynamic speaker, and improved antenna wave-trap. The
frequency range extends from 540 to 1,750 kc. which covers the regular broadcast
band and includes police calls in the 1,800 to 1,750 kc. portion of the range.

CIRCUIT DESCRIPTION
Four Radiotrons are associated in combination with a superheterodyne circuit.
Two of these Radiotrons are applied to obtain tuned functions. The first
stage is a tuned circuit, the second tube, an RCA-6B7, performs the functions of i-f
detector and oscillator. The second tube, an RCA-6B7, performs the functions of i-f
amplification, diode detection, audio amplification, and automatic volume control.
A power-amplifier detector, RCA-41, is used in the output stage.
Half-wave rectification is used in the power supply stage. The speaker field
winding serves as a reactor in the filter circuit.
The radio-frequency and intermediate-frequency stages are intercoupled by
means of transformer-coupled, double-tuned, fully coupled, wave-trap circuit de-
tector, having its secondary tuned by means of the two-gang tuning
condenser. A single magnetic-core trimmer is provided for adjusting the induct-
ance of the windings of the input i-f transformer (primary and secondary) and the
output transformer (primary) so as to resonate at 460 kc. with the fixed capacitors
shunting these respective coils. The i-f signal originating in the first-detector
circuit is transferred to the control grid of the RCA-6B7, amplified in the pentode
section, coupled back to the diode section of this same tube where it is rectified
before passing through resistor R-4. A fraction of the audio frequency signal is
transferred to the screen resistor R-4 appears across R-4. The amplified audio
signal, in the plate circuit of the RCA-6B7, is transferred to the control grid of the
RCA-6B7 through a wave-trap winding i-f i-7 and capacitor C-10 offer-
ing low impedance to the audio frequency signal. The amplified audio
signal, in the plate circuit of the RCA-6B7, developed across resistor R-5 is coupled
to the control grid of the power-output tube for final amplification. The output
of this stage is coupled to the loudspeaker through the output transformer T-4. The
d-c signal component, of the diode rectified current, developed across R-4, increases
the bias of the RCA-6B7, thereby reducing its gain and giving A.V.C. action.

SERVICE DATA
NOTE: Oscillation may occur in receiver if external ground connection is not
used.
The various diagrams of this booklet contain such information as will be needed
to locate causes for defective operation if such develops. The values of resistors,
capacitors, coils, etc., are indicated adjacent to the symbols simplifying these parts
on the diagrams.
Identification titles, such as R-5, L-2, C-1, etc., are provided for reference
between the illustrations and the Parts List. The coils, reactors, and
transformer windings are listed in terms of their d-c resistance only. Ratings of
less than one ohm are generally omitted.

ALIGNMENT PROCEDURE
There are two alignment transformers provided in the antenna coil and oscillator
coil tuned circuits. The i-f transformer adjustments are made by means of three
screws attached to molded magnetics cores.
All of the adjustable circuits of this receiver have been properly aligned at
the factory to give correct performance and their settings should not be changed.
Indefinitely, when the receiver is used, it may be necessary to readjust the
transformer windings and the magnetics cores. However, it is necessary
for re-adjustment only if the receiver has been subjected to extreme temperatures.
For re-adjustment, the receiver should be returned to normal operating conditions.
The following procedure should be observed in adjusting the various trimming
components and soldered magnetics cores:
1. The three adjustment screws (one on top and one on bottom of first i-f trans-
former and one on bottom of second i-f transformer) are loosened by means of the
screwdriver. The RCA Stock No. 4317 Hexon Output Indicator is especially suit-
able for this use.
The following procedure should be observed in adjusting the various trimming
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