MODEL F-4B

Four-Tube, Single-Band Superheterodyne, Battery-Operated Receiver

Electrical Specifications

Frequency Range .....530—1,720 kc
Alignment Frequency .....1,500 kc (osc., ant.)
Immediate Frequency ..... 460 kc

RADIOTRON COMPLEMENT
(1) Type-1A6 ..... First Detector—Oscillator
(2) Type-1A4 ..... Intermediate Amplifier
(3) Type-1F6 ...Second Det., A-F Amp., and A.V.C.
(4) Type-1F4 ..... Power Output

BATTERIES REQUIRED
"A", 2½-volt Air Cell, or one 2-volt storage battery; "B", two 45-volt, heavy-duty, plug-in type B batteries.

CURRENT CONSUMPTION
"A" at 2 volts ..... 0.42 Ampere
"B" at 90 volts ..... 10.5 ma.
Fuse Rating ..... ½ Amp.

POWER OUTPUT
Undistorted ..... 160 Milliwatts
Maximum ..... 200 Milliwatts

LOUDSPEAKER
Type: permanent-magnet dynamic Diameter: 6 inches Voice coil impedance: 2¼ ohms at 400 cycles.

Mechanical Specifications

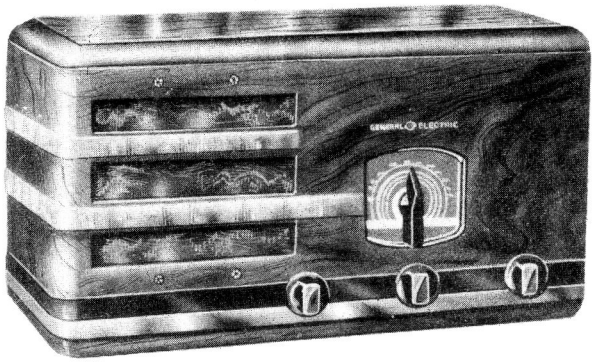
Height ..... 9 11/32 inches
Width ..... 16 1/16 inches
Depth ..... 6⅞ inches
Weight (net) ..... 10¼ pounds
Weight (shipping) ..... 13¾ pounds
Chassis Base Dimensions ..... 9⅞ inches x 5⅝ inches x 2 inches
Over-all Height of Chassis ..... 6¾ inches
Operating Controls .....(1) Tuning, (2) Operating Switch, (3) Volume, (4) Tone

General Description

This model contains a four-tube chassis, battery operated, mounted in a table type cabinet. The superheterodyne circuit is employed, incorporating such features of design as magnetite core i-f transformers; automatic volume control; diode detection; resistance coupled audio system; sensitive, six-inch, permanent-magnet, dynamic loudspeaker with dust screen; low current drain; and a big, easy-to-read, dial.

Service Data

The various diagrams of this booklet contain such information as will be needed to isolate causes for defective operation if such develops. The ratings of the resistors, capacitors, coils, etc., are indicated adjacent to the symbols signifying these parts on the diagrams. Identification titles such as R1, L1, C1, etc., provide reference between the illustrations and Replacement Parts List.



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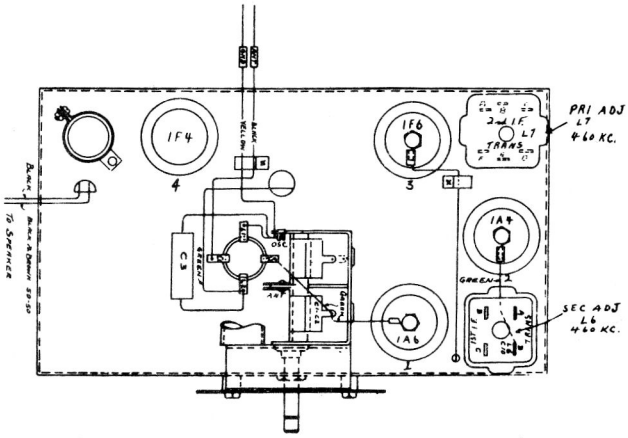

Figure 1—Radiotron and Trimmer Locations

Alignment Procedure

Calibrate the tuning dial by adjusting dial pointer to the low-frequency (end) calibration mark on dial scale with the gang tuning-condenser plates in full-mesh position. This is a friction adjustment.

Perform alignment in proper order, tabulated below, starting with No. 1 and following all operations across, then No. 2, etc. Adjustment locations are shown on figures 1, and 4.

Cathode-ray alignment is preferable, if an output indicator is used, connect it across the loudspeaker voice-coil and advance the receiver volume control to full-volume position.

Connect the "low" output terminal of the test oscillator to the receiver chassis for all alignment operations. Regulate the output of the test oscillator so that minimum signal is applied to the receiver to obtain an observable output indication. This will avoid a-v-c action.

The term "Dummy antenna" means the device which must be connected between the "high" test-oscillator output and the point of connection to the receiver in order to obtain ideal alignment. "No signal, 550-750 kc" means that the receiver should be tuned to a point between 550 and 750 kc where no signal or interference is received from a station or local (heterodyne) oscillator.

Order of Alignment	Test Oscillator			Receiver Dial Setting	Circuit to Adjust	Adjustment Symbols	Adjust to Obtain
	Connection to Receiver	Dummy Antenna	Frequency Setting				
1	I-F Amp. Grid Cap	.001 Mfd.	460 kc	No Signal 550-750 kc	2nd I-F Trans.	L7	Max. (peak)
2	1st Det.-Osc. Grid Cap	.001 Mfd.	460 kc	No Signal 550-750 kc	1st I-F Trans.	L5 and L6	Max. (peak)
3	Ant. Lead	200 Mmfd.	1,500 kc	1,500 kc	"A" Osc.	C5	Max. (peak)
4	Ant. Lead	200 Mmfd.	1,500 kc	1,500 kc	"A" Ant.	C2	Max. (peak)
5	Ant. Lead	200 Mmfd.	600 kc	Rock Thru 600 kc	"A" Osc.	C8	Max. (peak)

Loudspeaker.—Centering of the loudspeaker is made in the usual manner with three narrow paper feelers after first removing the front dust cover. This may be removed by softening its cement with a light application of acetone, using care not to allow the acetone to flow into the air gap. The dust cover should be cemented back in place with ambroid upon completion of adjustment.

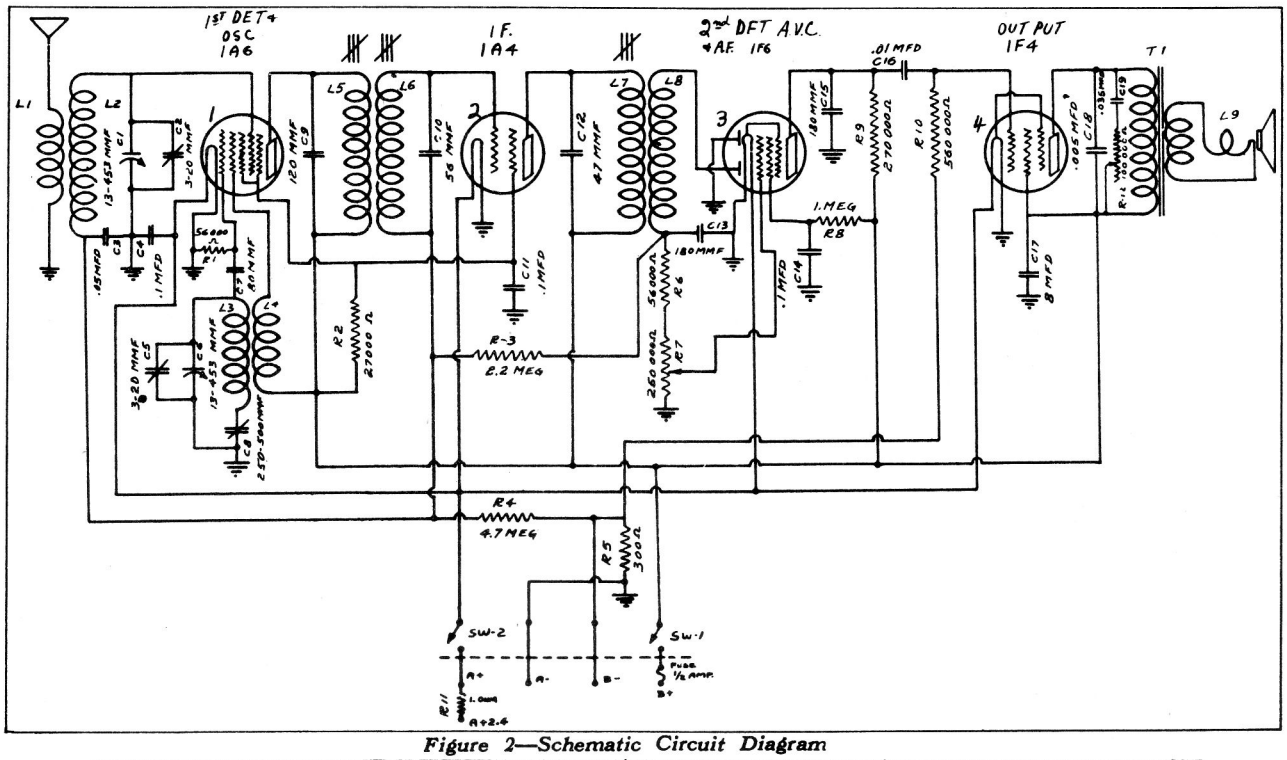

Figure 2—Schematic Circuit Diagram

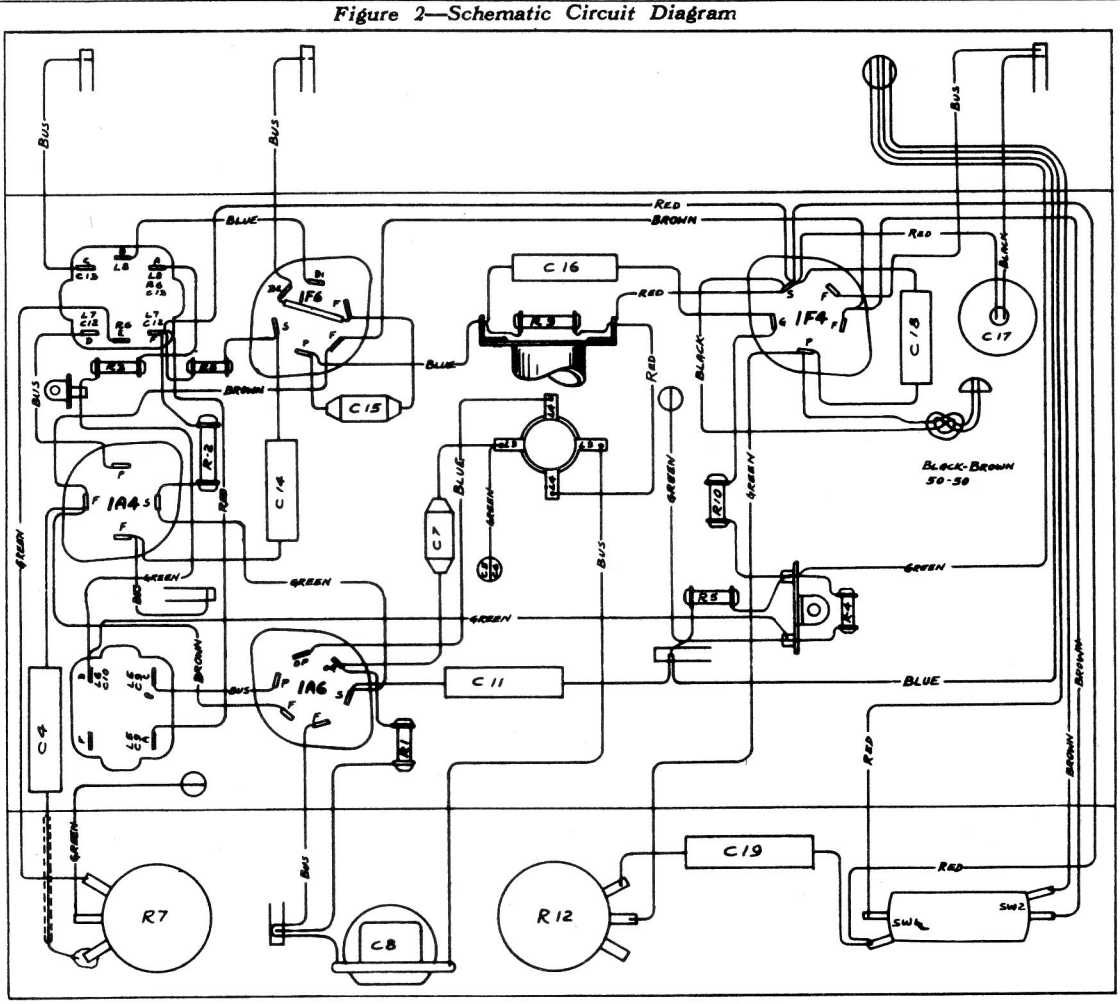

Figure 3—Chassis Wiring Diagram

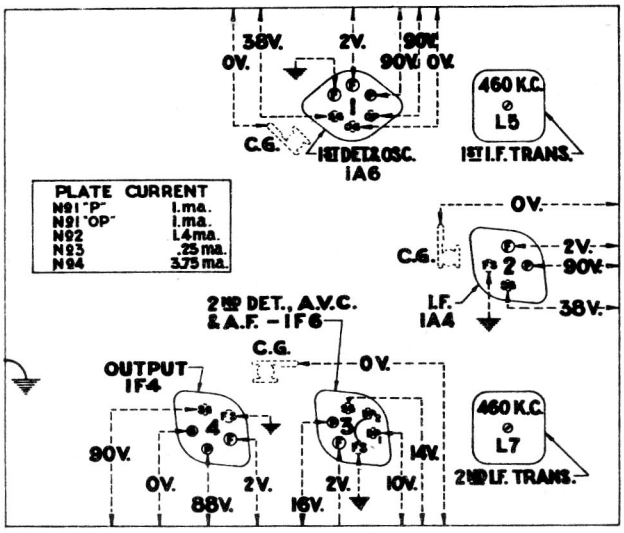

Figure 4—Radiotron Socket Voltages, Coil, and Trimmer Locations

Measured with all batteries at normal voltage—Tuned to approximately 1,000 kc—
No signal being received—Volume control optional

Radiotron Socket Voltages

The voltage values indicated from the Radiotron socket contacts, grid caps, and terminals to receiver chassis ground on figure 4 will assist in locating cause for faulty operation. Each value as specified should hold within ÷ 20% when the receiver is normally operative at its rated voltage. To duplicate the conditions under which the voltages were measured requires a 1,000-ohm-per-volt d-c meter, having ranges of 10 and 250 volts. Use the nearest range above the specified measured voltage.

REPLACEMENT PARTS

STOCK NO.	DESCRIPTION		STOCK NO.	DESCRIPTION	
	RECEIVER ASSEMBLIES		11202	Resistor-56,000 ohms,carbon type, 1/10 watt (R6).....	
S-1714	Bracket - Dial bracket - Pkg.of 2.....		5029	Resistor-56,000 ohms,carbon type, ½ watt (R1).....	
S-1713	Cable-4 Conductor battery cable approx. 57" long,complete with fuse,fuse holder and battery clips.....		11323	Resistor-270,000 ohms,carbon type, ½ watt (R9).....	
12607	Cap-I.F. transformer shield cap.....		5035	Resistor-560,000 ohms,carbon type, ½ watt (R10).....	
12118	Cap-Grid-contact cap (Pkg.of 5).....		3033	Resistor-1 Megohm ,carbon type, ½ watt (R8).....	
S-1715	Capacitor-Adjustable capacitor (C8).....		S-1536	Resistor-2.2 Megohms,carbon type, ½ watt (R3).....	
S-1734	Capacitor-47 Mmfd. (C12).....		11936	Resistor-4.7 Megohms,carbon type, ½ watt (R4).....	
13307	Capacitor-56 Mmfd. (C10).....		S-1692	Resistor-1 ohm flexible wire wound ballast resistor (R11).....	
12813	Capacitor-80 Mmfd. (C7).....		12218	Shield-1F6 or 1A4 Radiotron shield....	
12404	Capacitor-120 Mmfd.(C9).....		4794	Socket-4 Contact 1A4 Radiotron socket.	
S-1716	Capacitor-180 Mmfd. (C15).....		S-1627	Socket-5 Contact 1F4 Radiotron socket.	
12406	Capacitor-180 Mmfd. (C13).....		4786	Socket-6 Contact 1A6 or 1F6 Radiotron socket.....	
4793	Capacitor-.005 Mfd. (C18).....		S-1726	Switch-Operating switch (S1,S2).....	
4883	Capacitor-.01 Mfd. (C16).....		S-1723	Tone Control-100,000 ohms (R12).....	
5196	Capacitor-.035 Mfd. (C19).....		12801	Transformer-1st I.F.transformer (L5, L6,C9,C10).....	
4836	Capacitor-.05 Mfd. (C3).....		S-1725	Transformer-2nd I.F. transformer(L7, L8,C12,C13,R6).....	
4791	Capacitor-.1 Mfd. (C4,C11,C14).....		S-1724	Volume Control-250,000 ohms (R7).....	
S-1717	Capacitor- 8 Mfd. (C17).....				
S-1718	Coil-Antenna coil (L1,L2).....				
S-1719	Coil-Oscillator coil(L3,L4).....				
S-1720	Condenser-2 gang variable tuning condenser (C1,C2,C5,C6).....				
12006	Core-Adjustable core & stud for 1st or 2nd I.F. transformer.....				
S-1722	Dial-Station selector dial.....				
3748	Fuse-⅛ Ampere fuse - Pkg. of 2.....				
6516	Fuse-Connector complete.....				
S-1728	Knob-Station selector knobs.....				
S-1733	Knob-Operating switch,tone control and volume control knobs-Pkg. of 2.....				
12827	Plug-Battery cable plug.....				
8063	Resistor-300 ohms,carbon type, ½ watt (R5).....				
8065	Resistor-27,000 ohms,carbon type,½ watt (R2).....				
				REPRODUCER ASSEMBLIES	
			S-1731	Cone-Reproducer cone.....	
			S-1729	Reproducer-Complete with output transformer.....	
			S-1730	Transformer-Output transformer (T1)...	