

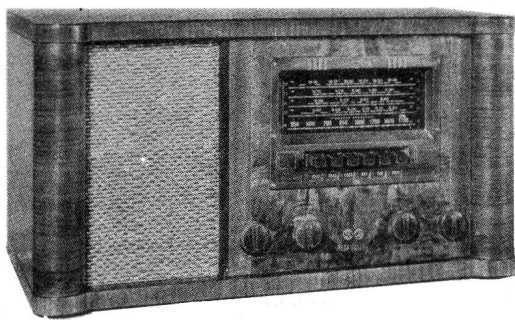


RCA Victor

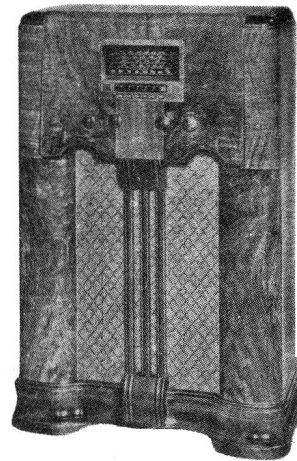
MODELS B4 & B5 Battery Operated MODELS 6B4 & 6B5 Vibrator Operated Seven-Tube, Five-Band, Superheterodyne Receivers

TECHNICAL INFORMATION AND SERVICE DATA

SERVICE DIVISION • RCA VICTOR COMPANY LIMITED • MONTREAL



Models B5 and 6B5



Models B4 and 6B4

Electrical Specifications

FREQUENCY RANGES

Standard Broadcast (A)	540-1,720 kc
"49 M" (49 Meters)	5,900-6,240 kc
"31 M" (31 Meters)	9,410-9,690 kc
"25 M" (25 Meters)	11,680-11,920 kc
"19 M" (19 Meters)	15,090-15,380 kc

Intermediate Frequency 455 kc.

RADIOTRON COMPLEMENT

- (1) Type 1D5GP R. F. Amplifier
- (2) Type 1A7G 1st Detector
- (3) Type 1E4G Oscillator
- (4) Type 1N5G I.F. Amplifier

BATTERY REQUIREMENTS (B4, B5)

- "A" one 2 volt storage battery
or
one 2 volt "Aircell" battery
- "B" Three Plug-in 45 volt batteries
(Eveready No. 385 or 386)
- "C" one 4½ volt battery
(Eveready No. 771)

Fuse Rating ½ Ampere

CURRENT CONSUMPTION

- "A" at 2 volts 0.62 Amperes
- "B" at 135 volts 17 Milliamperes

POWER OUTPUT

- Undistorted 1 watt
- Maximum 2 watts

R-F ALIGNMENT FREQUENCIES

"49 M" (49 Meters)	6,100 kc. (osc., det., ant.)
"31 M" (31 Meters)	9,550 kc. (osc.)
"25 M" (25 Meters)	11,800 kc. (osc.)
"19 M" (19 Meters)	15,200 kc. (osc.)
"Standard Broadcast"	600 kc. (osc.), 1,500 kc. (osc., Det., Ant.)

- (5) Type 1H5G 2nd Det., A.V.C. & Audio
- (6) Type 1F5G Driver
- (7) Type 1J6G Output

BATTERY REQUIREMENTS (6B4, 6B5)

- One 6 volt storage battery
- Fuse Rating 3 Amperes
- CURRENT CONSUMPTION
- "A" at 6 volts 1.35 Amperes

POWER OUTPUT

- Undistorted 1.5 watts
- Maximum 2.5 watts

LOUDSPEAKER (B5, 6B5)

- Type 8 inch, Permanent Magnet Dynamic
- Voice Coil Impedance 2.2 ohms at 400 cycles

LOUDSPEAKER (B4, 6B4)

- Type 12 inch, Permanent Magnet Dynamic
- Voice Coil Impedance 2.2 ohms at 400 cycles

Mechanical Specifications

	Models B-5, 6B-5	Models B-4, 6B-4		Models B-5, 6B-5	Models B-4, 6B-4
Height	12 $\frac{1}{8}$ "	39 $\frac{3}{16}$ "	Weight (Net)	27 lbs.	62 lbs.
Width	22 $\frac{1}{8}$ "	26 $\frac{1}{2}$ "	Weight (Shipping)	31 lbs.	70 lbs.
Depth	10 $\frac{1}{16}$ "	12 $\frac{1}{16}$ "			
Chassis Base Dimensions	2 $\frac{3}{4}$ " high, 12 $\frac{3}{8}$ " wide, 7 $\frac{1}{2}$ " deep				
Overall Height of Chassis	6 $\frac{1}{4}$ inches				
Operating Controls.....	(1) Power-volume, (2) Radio-phono tone switch, (3) Range selector, (4) Tuning				

General Description

These receivers employ a seven-tube, five band, superheterodyne chassis, the arrangement of which is shown in the Schematic Circuit Diagram. Models B4 and B5 are designed for battery operation whereas Models 6B4 and 6B5 are designed for vibrator operation using a six volt battery source. Design features include:—mechanical Push Button tuning of six favorite stations within the broadcast band, magnetite core I.F. transformers and oscillator coils, Band spread tuning of four short wave bands,

R.F. Amplifier stage with "cumulative-wound" antenna and detector "A" band coils for a high signal to noise ratio, aurally compensated volume control circuit, phono input socket, A.V.C. circuit, plunger-type air dielectric trimmer capacitors, temperature stabilized capacitors in the oscillator circuits, radio-phono tone control switch, combination of the new low-drain 1.4 volt and 2 volt tubes in an ingenious filament network, a large, easy to read dial and a dust proof, permanent magnet, dynamic loudspeaker.

**Radiotron Socket Voltages; Measured with all
batteries at Normal Voltage
Models B4, B5**

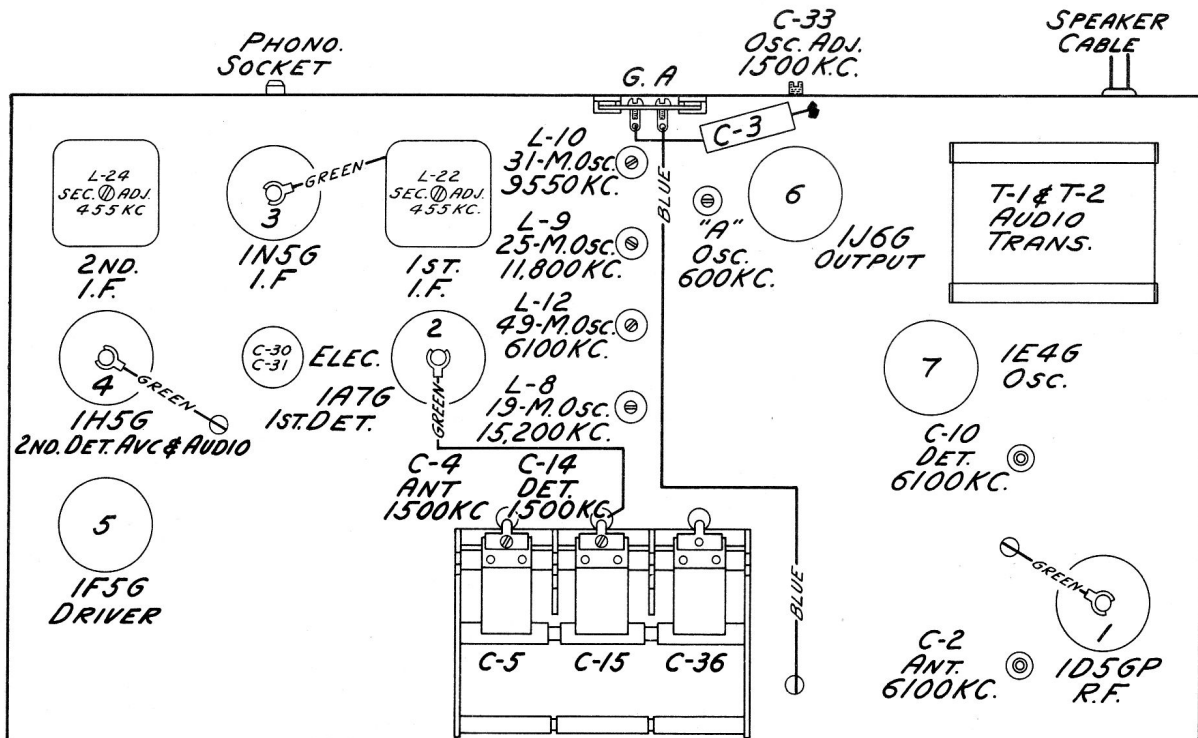
Radiotron	Plate	Screen Grid	Grid	Filament
1D5GP R.F.	90v	90v	....	2.0v
1A7G Conv.	90v	45v*	....	1.4v
1E4G Osc.	83v	....	....	1.4v
1N5G I.F.	90v	90v	....	1.4v
1H5G Audio	40v*	....	....	1.4v
1F5G Driver	90v	90v	4.5v	2.0v
1J6G Output	135v/135v	....	3.0v	2.0v

*Cannot be accurately measured with an ordinary voltmeter due to the high series resistance. All the above values hold within plus or minus 20% when measured with a 1000 ohm-per-volt meter.

**Radiotron Socket Voltages; Measured with "A"
Battery at Normal Voltage
Models 6B4, 6B5**

Radiotron	Plate	Screen Grid	Grid	Filament
1D5GP R.F.	90v	47v*	....	2.0v
1A7G Conv.	90v	45v*	....	1.4v
1E4G Osc.	80v	....	....	1.4v
1N5G I.F.	90v	90v	....	1.4v
Det. 1H5G Audio	40v*	....	....	1.4v
1F5G Driver	88v	88v	4.0v	2.0v
1J6G Output	155/155v	....	2.0v	2.0v

*Cannot be accurately measured with an ordinary voltmeter due to the high series resistance. All the above values hold within plus or minus 20% when measured with a 1000 ohm-per-volt meter.



Chassis Layout and Alignment Adjustments

Alignment Procedure

Cathode-Ray Alignment is the preferable method. Connections for the oscillograph are shown in the chassis drawing.

Output Meter Alignment.—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

Test-Oscillator.—For all alignment operations, connect the low side of the test-oscillator to the receiver chassis, and keep the output as low as possible to avoid a-v-c action.

Calibration Scale on Indicator-Drive-Cord-Drum.—The tuning dial is fastened in the cabinet and cannot be used for reference during alignment; therefore, a calibration scale is attached to the tuning drum. The setting of the gang condenser is read on this scale, which is calibrated in degrees. The correct setting of the gang in degrees, for each alignment frequency, is given in the alignment table.

As the first step in r-f alignment, check the position of the

drum. The 240° mark on the drum scale must be vertical and directly above the center of the shaft of the tuning drum when the plates are fully meshed. The drum is held to the shaft by means of two set-screws, which must be tightened securely when the drum is in the correct position.

On the inner side of the tuning drum are two projections which serve as stops to prevent extreme rotation of the gang condenser. The tuning drum should be set so that the stop limiting clockwise movement of the drum takes effect just as the gang condenser plates are becoming fully meshed, thus preventing stress on the gang due to extreme rotation.

Pointer for Calibration Scale.—Improvise a pointer for the calibration scale by fastening a piece of wire to the chassis, and bend the wire so that it points to the 240° mark on the calibration scale when the plates are fully meshed.

Order of Alignment	Test Oscillator			Range Selector	Receiver Dial Setting	Circuit to Adjust	Adjustment Symbols
	Connection to Receiver	Dummy Antenna	Frequency Setting				
1	1N5G I.F. Grid	.001 Mfd.	455 kc	"A"	No Signal 550-750 kc	2nd I.F. Trans.	L23 & L24
2	1A7G Det. Grid	.001 Mfd.	455 kc	"A"	No Signal 550-750 kc	1st I.F. Trans.	L21 & L22
3	Ant. Term	300 Ohms	6,100 kc	"49 M"	6.1 mc (95°)	"49M" Osc.	L12
4	Ant. Term	300 Ohms	6,100 kc	"49 M"	6.1 mc (95°)	"49M" Det.	C10
5	Ant. Term	300 Ohms	6,100 kc	"49 M"	6.1 mc (95°)	"49M" Ant.	C2
6	Ant. Term	300 Ohms	9,550 kc	"31 M"	9.55 mc (137°)	"31M" Osc.	L10
7	Ant. Term	300 Ohms	11,800 kc	"25 M"	11.8 mc (115°)	"25M" Osc.	L9
8	Ant. Term	300 Ohms	15,200 kc	"19 M"	15.2 mc (130°)	"19M" Osc.	L8
9	Ant. Term	200 Mmfd.	1,500 kc	"A"	1,500 kc (42°)	"A" H-F Osc.	C33
10	Ant. Term	200 Mmfd.	600 kc	"A"	600 kc (201°)	"A" L-F Osc.	L14
11	Ant. Term	200 Mmfd.	1,500 kc	"A"	1,500 kc (42°)	"A" Det.	C14
12	Ant. Term	200 Mmfd.	1,500 kc	"A"	1,500 kc (42°)	"A" Ant.	C4

NOTE:—Align the I.F. Circuits by means of the oscillograph, for a symmetrical curve. Peak R.F. stages of all bands.

Spread-Band Alignment. — The most satisfactory method of aligning or checking the spread-band ranges is on actual reception of short-wave stations of known frequency, by adjusting the magnetite-core oscillator coil for each band so that these stations come in at the correct points on the dial.

In exceptional cases, when the set is being serviced in a location where the noise level is high enough to prevent reception of short-wave stations, a test-oscillator may be used for alignment, but an extremely high degree of accuracy is required for the frequency settings of the test-oscillator, as a slight error will produce considerable inaccuracy on the spread-band dials. The frequency settings of the test-oscillator may be checked by one or both of the following methods:

1. Determine the exact dial settings of the test-oscillator (for frequencies at or close to the specified alignment frequencies) by zero-beating the test-oscillator against short-wave stations of known frequency.
2. Use harmonics of the standard-broadcast range of a test-oscillator, first checking the frequency settings on this range by means of a crystal calibrator (RCA Stock No. 9572), or by zero-beating against standard broadcast stations.

When a test oscillator is employed for spread-band alignment, a final check should be made on actual reception of short-wave stations of known frequency, and the magnetite-core oscillator coil for each band should be re-adjusted so that the stations come in at the correct points on the dial.

NOTE:—All spread band adjustments should be made with the chassis fastened in the cabinet and the pointer accurately aligned to the dial.

Push Button Adjustments

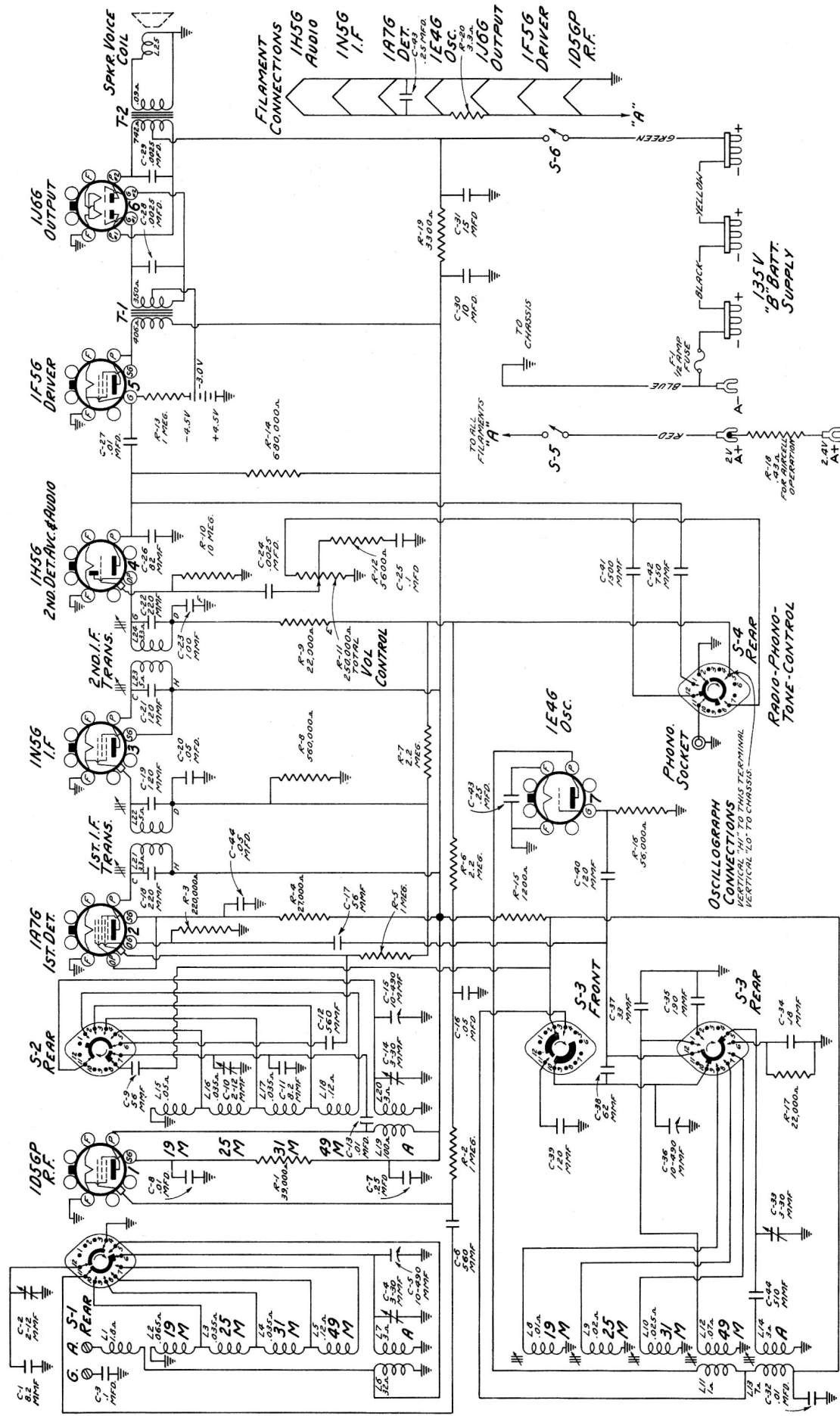
The push buttons should be adjusted for six favorite stations after the receiver has had a brief warm-up period.

Any standard broadcast stations may be chosen. The preferable arrangement is to adjust for stations in the order of frequency, from low to high.

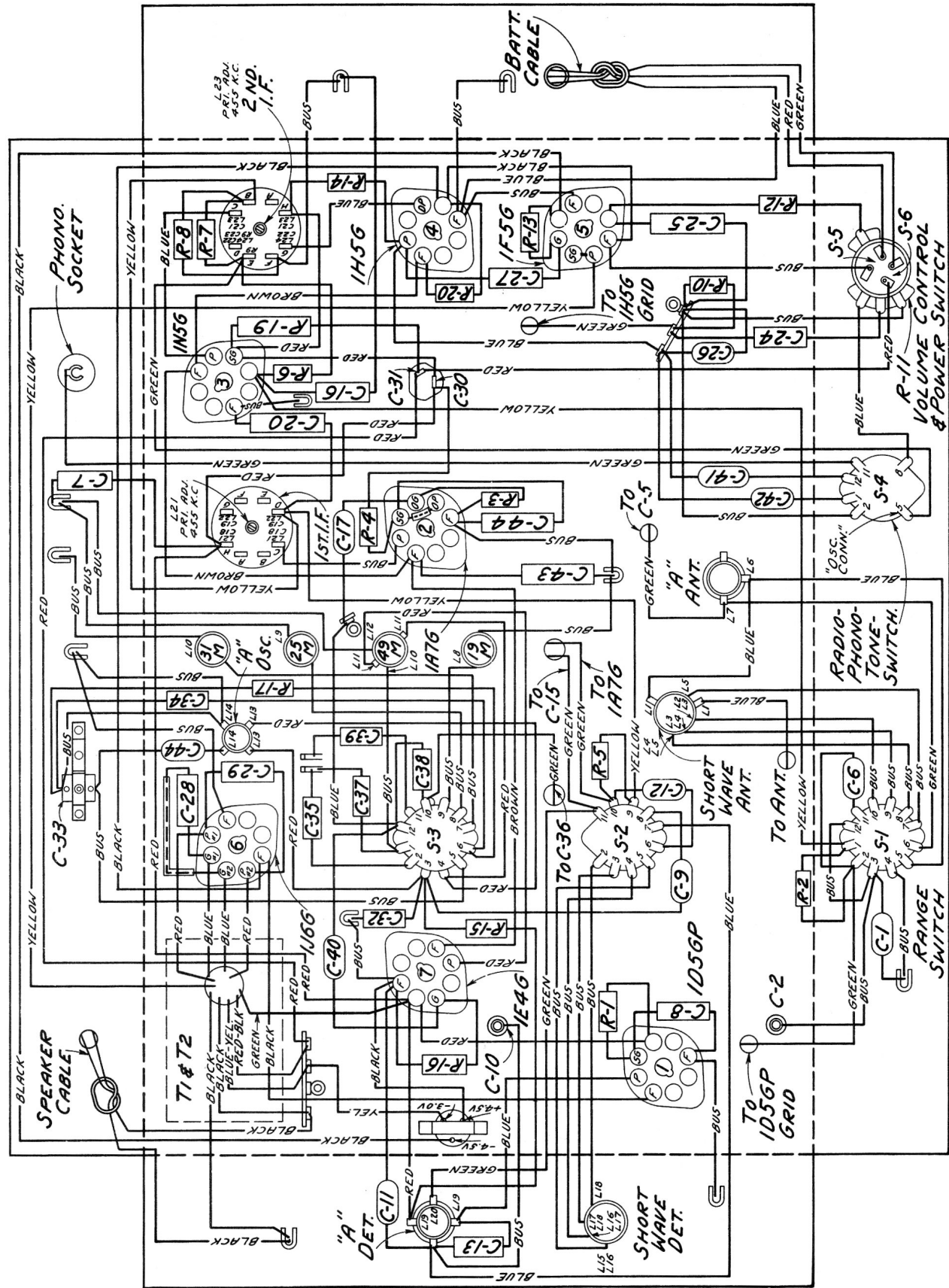
Proceed as follows:—

1. Set the accessory tone knob to "Radio" and turn the range selector to "A" band position.
2. Remove the six push buttons by inserting a small screwdriver blade in the slot provided on the under side of the button. Press the screwdriver blade upwards at the same time pull the button forward.
3. Loosen the push arm adjusting screws accessible through the push button openings.
4. Press in the tuning knob and accurately tune in the first station.
5. With station accurately tuned in, press in the first push button and tighten screw.
6. Proceed in a similar manner to adjust the remainder of the push buttons.
7. Replace push buttons by inserting in the escutcheon openings, spring side down. Press button in as far as possible to securely lock button in escutcheon.
8. Place call letter tabs in openings provided.

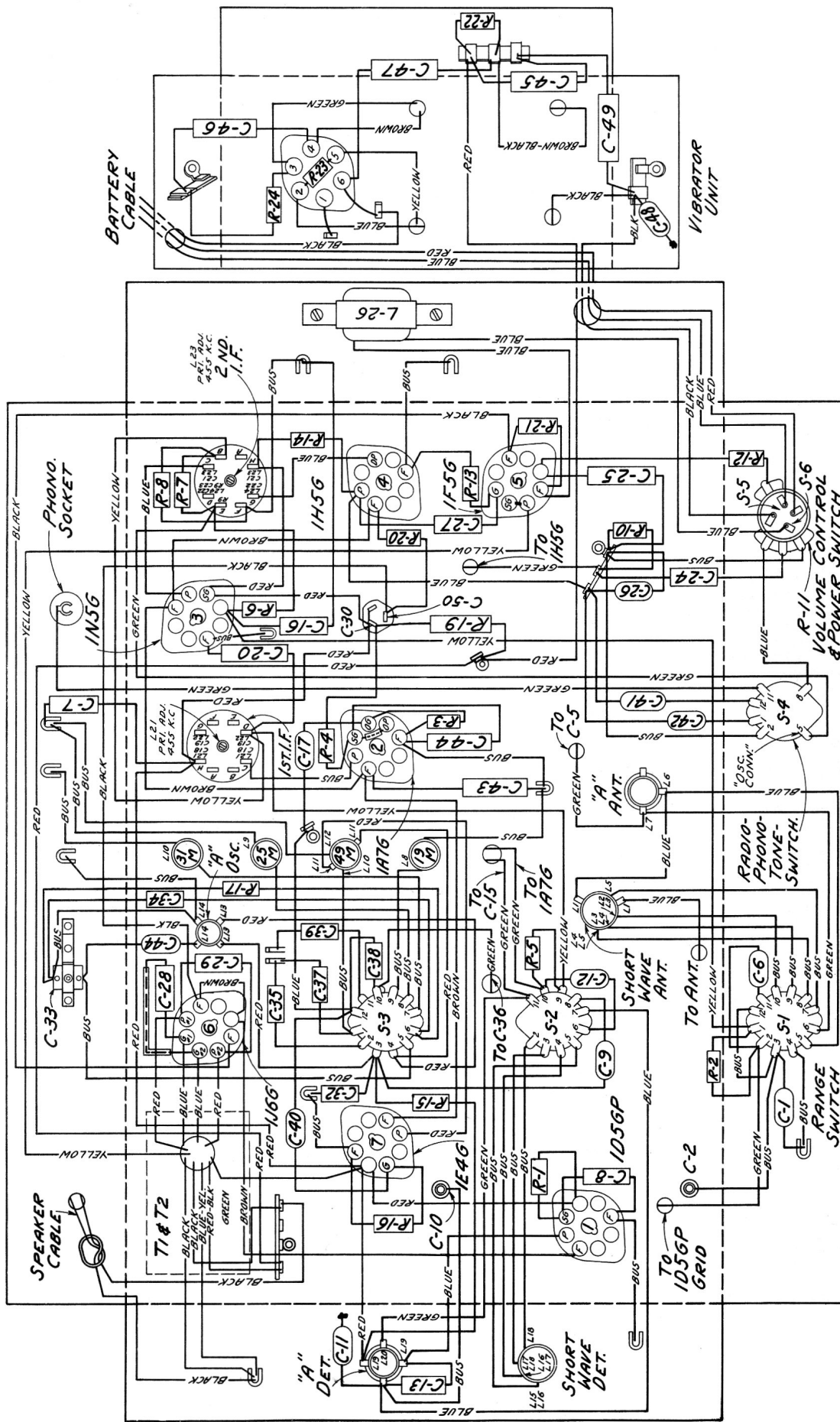
Note:—When difficulty is experienced in setting up the push buttons due to sticking cams, unscrew cam screw $\frac{1}{2}$ turn and rotate gang back and forth until the cam plate moves freely.



Schematic Circuit Diagram (B4, B5)



Chassis Wiring Diagram (B4, B5)



Chassis Wiring Diagram (6B4, 6B5)

REPLACEMENT PARTS FOR MODELS B4, 6B4, B5, 6B5

Insist on genuine factory tested parts, which are readily identified and may be purchased from authorized dealers.

STOCK NO.	DESCRIPTION	STOCK NO.	DESCRIPTION
RECEIVER ASSEMBLIES			
S-2524	Arm-Trip arm located on range switch shaft.....	12679	Resistor-2.2 meg. 1/4 Watt (R6,R7)...
31767	Board-Ant. & Ground terminal board.	13601	Resistor-10 Meg.1/4 Watt (R10).....
*S-2609	Cable-Battery cable complete with plugs and resistor (R18).....	32086	Roller-Friction roller for tuning knob shaft.....
+S-2526	Cable-Battery cable complete with clips.....	14278	Socket-Phono input socket.....
32596	Cap-Tube shield cap for stock #32595 shield (Pkg.2).....	S-2039	Shield-Tube shield for 1D5G tube...
12714	Capacitor-Adjustable air trimmer (C2,C10).....	32595	Shield-Tube shield for 1N5G or 1A7G tube.....
S-2578	Capacitor-Adjustable trimmer (mica) (C33).....	31251	Socket-Tube socket.....
13001	Capacitor-8.2 mmfd. (C1,C11).....	31418	Spring-Drive cord tension spring (Pkg.2).....
31350	Capacitor-18 mmfd. (C34).....	S-2559	Switch-Tone & Phono switch (S4)....
31354	Capacitor-33 mmfd. (Temp.Comp.) (C37)	S-2608	Switch-Range switch (S1,S2,S3)....
12723	Capacitor-56 mmfd. (C9,C17).....	S-2561	Transformer-1st I.F. transformer (L21,L22,C18,C19).....
31349	Capacitor-62 mmfd. (C38).....	S-2562	Transformer-2nd I.F. transformer (L23,L24,C21,C22,C23,R9).....
12813	Capacitor-82 mmfd. (C26).....	S-2567	Transformer-Audio transformer pack (T1,T2).....
31352	Capacitor-120 mmfd. (C39).....	REPRODUCER ASSEMBLIES (CRL509-1) (8")	
12724	Capacitor-120 mmfd. (C40).....	13866	Cap-Dust cap for cone center(Pkg.5)
31351	Capacitor-190 mmfd. (C35).....	S-2563	Cone-Reproducer cone & voice coil (L25).....
30608	Capacitor-510 mmfd. (C44).....	S-2564	Reproducer complete.....
12537	Capacitor-560 mmfd. (C6,C12).....	REPRODUCER ASSEMBLIES (CRL510-1) (12")	
14498	Capacitor-750 mmfd. (C42).....	13866	Cap-Dust cap for cone center(Pkg.5)
31033	Capacitor-1500 mmfd. (C41).....	S-2565	Cone-Reproducer cone & voice coil (L25).....
5107	Capacitor-.0025 mfd. (C24,C28,C29)...	S-2566	Reproducer complete.....
14393	Capacitor-.01 mfd. (C8,C13,C27,C32)...	VIBRATOR ASSEMBLIES Models (6B4, 6B5)	
4886	Capacitor-.05 mfd. (C16,C20).....	12764	Capacitor-390 mmfd. (C48).....
4839	Capacitor-0.1 mfd. (C3,C25).....	4858	Capacitor-.01 mfd. (C46).....
12484	Capacitor-0.25 mfd. (C7,C43).....	12484	Capacitor-.25 mfd. (C45).....
*S-2552	Capacitor-Electrolytic capacitor consisting of one 15 mfd; and one 10 mfd. sections (C30,C31).....	12741	Capacitor-.5 mfd. (C49).....
+S-2551	Capacitor-Electrolytic capacitor consisting of one 400 mfd; one 15 mfd; and one 10 mfd; sections (C30,C31).....	S-2175	Capacitor-Electrolytic 8 mfd. (C47)...
S-2585	Coil-Antenna "A" band coil (L6,L7)...	S-2575	Resistor-100 ohm, 1/4 Watt (R22)....
S-2580	Coil-Antenna Spread Band coil (L1,L2,L3,L4,L5).....	30538	Resistor-330 ohm, 1/4 Watt (R23)....
S-2586	Coil-R.F. "A" Band coil (L19,L20)...	S-1894	Resistor-5600 ohm, 1/4 Watt (R24)....
31266	Coil-R.F. "Spread Band" coil (L15,L16,L17,L18).....	14505	Socket-Vibrator socket.....
32148	Coil-Oscillator "A" band coil (L13,L14).....	32371	Transformer-Vibrator transformer (T3).....
S-2582	Coil-19M oscillator coil (L8).....	14309	Vibrator-Synchronous vibrator complete (L27).....
31254	Coil-25M oscillator coil (L9).....	MISCELLANEOUS ASSEMBLIES	
31255	Coil-31M oscillator coil (L10).....	S-2537	Button-Station selector push button.....
31256	Coil-49M oscillator coil (L11,L12)...	S-2576	Dial-Glass dial scale.....
S-2557	Control-Volume control & power switch (R11,S5,S6).....	S-2539	Escutcheon-Station selector dial escutcheon.....
S-2529	Cord-Indicator pointer drive cord..	S-2540	Knob-Volume,tone,range or tuning control knob.....
S-2540	Drive-Friction drive assembly complete.....	S-2541	Marker-Push button call letter markers (1 set).....
34267	Drum-Dial drive drum assembly.....	14270	Spring-Knob retaining spring (Pkg.10).....
+10907	Fuse-3 Ampere fuse (F1) (Pkg.2)....	S-2543	Spring-Push button retaining spring (Pkg13).....
*3748	Fuse-1/2 Ampere fuse (F1) (Pkg.2)...	S-2542	Tool-Push button adjusting tool.....
*S-2610	Plug-3 contract "C" battery plug located on chassis.....		
*12827	Plug-3 contact male battery plug...		
+S-2177	Reactor-Filter reactor (L26).....		
S-2574	Resistor-3.3 ohm 1/2 Watt flexible (R20).....		
+S-2178	Resistor-15 ohm 1/2 Watt (R21).....		
12267	Resistor-1200 ohm, 1/4 watt (R15)...		
S-2611	Resistor-3,300 ohm, 1 Watt (R19)...		
+S-2573	Resistor-5600 ohm, 1 Watt (R12,R19)...		
13998	Resistor-22,000 ohm, 1/4 watt (R9,R17)		
S-2134	Resistor-27,000 ohm, 1/4 Watt (R4)...		
12266	Resistor-39,000 ohm, 1/4 Watt (R1)...		
12286	Resistor-56,000 ohm, 1/4 Watt (R16)		
12264	Resistor-220,000 ohm, 1/4 Watt (R3)...		
12486	Resistor-560,000 ohm, 1/4 Watt (R8)...		
S-1896	Resistor-680,000 ohm, 1/4 Watt (R14)		
12013	Resistor-1 meg.1/10 Watt (R2,R5)...		
13730	Resistor-1 meg. 1/4 Watt (R13).....		

Items marked thus + used on Models 6B4, 6B5.

Items marked * used on Models B4,B5.