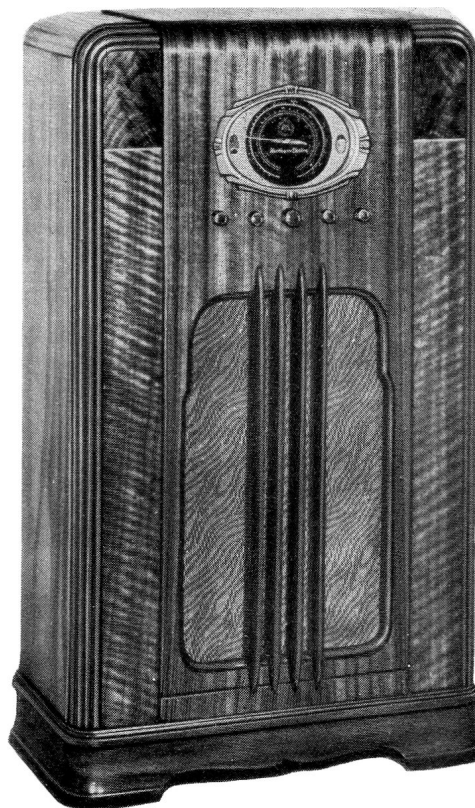


Model 821

The "Ottawa"

Radio Receiver



Specifications

Frequency Range:

Broadcast—540 to 1700 K.C.
 Shortwave—Green—5.5 to 10.5 megacycles.
 Shortwave—Red—10.5 to 15.5 megacycles.

I.F.:

470 K.C.

Tubes:

Type	Function
6A8G	Converter
6K7	I.F. Amplifier
6H6	2nd Detector, A.V.C.
6F5	1st A.F. Amplifier
6C5	2nd A.F. Amplifier

6V6G	Output Amplifier
6V6G	Output Amplifier
5Y4G	Rectifier

Power Supply:

105 to 125 volts A.C.

A.V.C.:

On 6A8G converter and 6K7, I.F. amplifier.

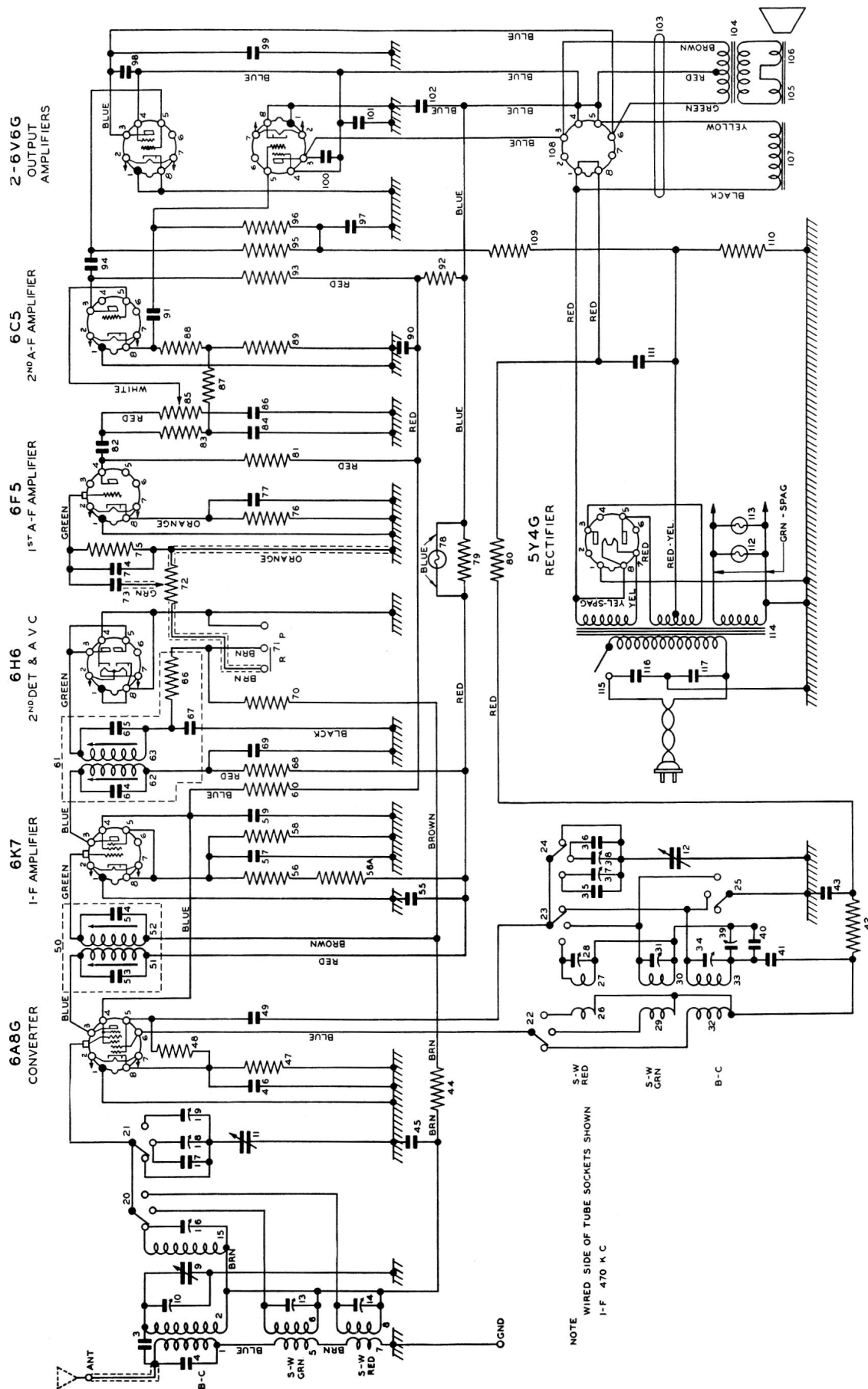
Controls:

Left to Right—Volume control; wave change switch; tuning control; tone control and A.C. switch.

Cabinet:

Console type.

MODEL 821 RADIO RECEIVER



Schematic Diagram—Model 821 Receiver

REPLACEMENT PARTS LIST

Item	Description	Part Number	Item	Description	Part Number
1	Broadcast Antenna Transformer—Primary.....	K-3020	36	Capacitor, mica, 100 mmf, plus or minus 3 %.....	K-1611-25
2	Broadcast Antenna Transformer—Secondary.....		37	Capacitor, Trimmer, 26-120 mmf.....	K-3037
3	Capacitor, Coupling, 4.0 mmf		38	Capacitor, Trimmer, 26-120 mmf.....	
4	Capacitor, mica, 100 mmf...	K-1611-2	39	Capacitor, Trimmer, 26-120 mmf.....	
5	Green Band Ant. Transformer—Primary.....	K-3001	40	Capacitor, mica, 340 mmf, plus or minus 3 %.....	K-1611-26
6	Green Band Ant. Transformer—Secondary.....		41	Capacitor, 0.001 mf, 350 volts	K-2228-1
7	Red Band Ant. Transformer—Primary.....	K-3017	42	Resistor, 10,000 ohms.....	K-2226-10
8	Red Band Ant. Transformer—Secondary.....		43	Capacitor, elec, 215 volts, 4 mf.....	Part of.. K-3139
9	Bdct. Ant. Section Tuning.....	K-3022	44	Resistor, 1/10 meg.....	K-2226-5
10	Bdct. Ant. Section Trimmer.....		45	Capacitor, 175 volts, 0.05 mf.	K-2227-8
11	Antenna Sect. Tuning max. cap.		46	Capacitor, 175 volts, 0.05 mf.	K-2227-8
12	Oscillator Section Tuning.....		47	Resistor, 300 ohms.....	K-2226-20
13	Capacitor, Trimmer, 3-25 mmf.....	K-1458-6	48	Resistor, 50,000 ohms.....	K-2226-6
14	Capacitor, Trimmer, 3-25 mmf.....	K-1458-6	49	Capacitor, mica, 100 mmf...	K-1611-2
15	Bdct. Preselector Coil.....	K-2980	50	1st I.F. Transformer Assem. (Items 51 to 54).....	K-2996
16	Capacitor, Trimmer, 1.5-10 mmf.....	K-1458-5	51	1st I.F. Transformer—Primary.....	—
17	Capacitor, mica, 100 mmf, plus or minus 3 %.....	K-1611-25	52	1st I.F. Transformer—Secondary.....	—
18	Capacitor, Trimmer, 26-120 mmf.....	K-3036	53	Capacitor, mica (not replaceable).....	—
19	Capacitor, Trimmer, 26-120 mmf.....		54	Capacitor, mica (not replaceable).....	—
20	W-C Switch, Ant. Sect.....	K-3027	55	Capacitor, 350 volts, 0.05 mf	K-2228-8
21	W-C Switch, Ant. Gang Sect.		56	Resistor, 6,200 ohms.....	K-3315-51
22	W-C Switch, Osc. Plate Sect.		56a	Resistor, 6,200 ohms.....	K-3315-51
23	W-C Switch, Osc. Grid. Sect.		57	Capacitor, 0.05 mf, 175 volts	K-2227-8
24	W-C Switch, Osc. Gang Sect.		58	Resistor, 125 ohms.....	K-2226-59
25	W-C Switch, Osc. Shorting Sect.....		59	Capacitor, 350 volts, 0.1 mf.	K-2228-9
26	Red Band Osc. Plate Winding	K-3016	60	Resistor, 15,000 ohms.....	K-2226-9
27	Red Band Osc. Grid Winding		61	2nd I.F. Transformer Assy. (Items 62 to 67).....	K-2999
28	Capacitor, Trimmer, 3-25 mmf.....	K-1458-6	62	2nd I.F. Transformer—Primary.....	—
29	Green Band Osc. Plate Winding.....	K-3002	63	2nd I.F. Transformer—Secondary.....	—
30	Green Band Osc. Grid Winding.....		64	Mica Capacitor (not replaceable).....	—
31	Capacitor, Trimmer, 1.5-10 mmf.....	K-1458-5	65	Mica Capacitor (not replaceable).....	—
32	Bdct. Band Osc. Plate Winding.....	K-3021	66	Resistor, 50,000 ohms.....	K-2226-6
33	Bdct. Band Osc. Grid Winding.....		67	Capacitor, mica, 100 mmf...	K-1611-2
34	Capacitor, Trimmer, 3-25 mmf.....	K-1458-6	68	Resistor, 1,000 ohms.....	K-2226-16
35	Capacitor, mica, 20 mmf....	K-1611-29	69	Capacitor, 350 volts, 0.05 mf.	K-2228-8
			70	Resistor, 2 meg.....	K-2226-1
			71	Phonograph Connection Strip	K-2986
			72	Volume Control, ½ meg.....	K-3140
			73	Capacitor, 175 volts, 0.02 mf.	K-2227-7
			74	Capacitor, mica, 100 mmf...	K-1611-2
			75	Resistor, 2 meg.....	K-2226-1
			76	Resistor, 4,000 ohms.....	K-2226-28

REPLACEMENT PARTS LIST—Continued

Item	Description	Part Number	Description	Part Number
77	Capacitor, elec, 1.2 v. 10 mf.		MISCELLANEOUS:	
	Part of	K-3139	Sockets, Octal Base.....	K-1924-1
78	Tuning Lamp (24 v.).....	K-2643	Tube Shield Base.....	K-2390-2
79	Resistor, 5,000 ohms.....	K-3315-17	Indicator (Wave Change).....	K-2859
80	Resistor, 40,000 ohms.....	K-2226-34	Indicator (Tuning).....	K-2654-2
81	Resistor, ¼ meg.....	K-2226-4	Drive Disc. Assy.....	K-3959
82	Capacitor, 350 volts, 0.02 mf.	K-2228-7	Washer under Tuning Indicator...	K-3165-1
83	Resistor, ½ meg.....	K-2226-3	Reduction Drive Assy.....	K-3082
84	Capacitor, 175 volts, 0.05 mf.	K-2227-8	Dial Scale (with facing).....	K-3535
85	Tone Control, ½ meg.....	K-3141	Dial Scale Clip.....	K-2436
86	Capacitor, 350 volts, 0.001 mf	K-2228-1	Drive Cord (10" long).....	K-1929
87	Resistor, ½ meg.....	K-2226-3	Spring for Cord.....	103164
88	Resistor, 1,500 ohms.....	K-2226-13	Dial Lamp Socket.....	K-2835
89	Resistor, 10,000 ohms.....	K-2226-10	Tuning Lamp Socket.....	K-3123
90	Capacitor, elec, 8 mf, 225 volts.....	K-3139	Insulating Shell for T.L. Socket..	K-3124
91	Capacitor, 175 volts, 0.05 mf.	K-2227-8	Loudspeaker Plug.....	K-2678
92	Resistor, 5,000 ohms.....	K-2226-12	A.C. Switch, Cover.....	K-3143
93	Resistor, 10,000 ohms.....	K-2226-10	Insulation Strip.....	K-2505
94	Capacitor, 350 volts, 0.05 mf.	K-2228-8	Insulation Strip (on gang).....	K-1682-1
95	Resistor, 1/10 meg.....	K-2226-5	Tube Shield.....	K-2267-2
96	Resistor, 1/10 meg.....	K-2226-5	Grid Clip (6A8G).....	K-3030
97	Capacitor, 175 volts, 0.1 mf.	K-2227-9	Grid Clip.....	K-1821
98	Capacitor, mica, 100 mmf...	K-1611-2	Chassis Mounting Screws (10/32-1-½").....	K-1122-12
99	Capacitor, 350 volts, 0.001 mf	K-2228-1	Rubber Grommet.....	K-2498-3
100	Capacitor, mica, 100 mmf...	K-1611-2	Screen Cabinet (Rear, Top).....	K-3166
101	Capacitor, 350 volts, 0.001 mf.....	K-2228-1	Knob—"Tuning".....	K-2885-2
102	Capacitor, elec, 250 volts, 8 mf.....	Part of K-3139	Knob—"Volume".....	K-2765-3
103	Loudspeaker Cable.....	—	Knob—"On-Off".....	K-2765-7
104	Output Transformer.....	K-2718-7	Knob—"Tone".....	K-2765-8
105	Humbucking Coil.....	—	Knob—"Band".....	K-2765-9
106	Voice Coil (and diaphragm assem.) Imp. 1.82.....	K-3138	Felt Washers for Knobs.....	K-2491-4
107	Field Coil.....	K-2543-5	Escutcheon Pins.....	K-3116
108	Loudspeaker Socket.....	K-1924-1	Escutcheon (complete).....	K-2072
109	Resistor, 1/10 meg.....	K-2226-5	Escutcheon only.....	K-3091-1
110	Resistor, 150 ohms.....	K-2363-28	Escutcheon Retaining Ring.....	K-3019-2
111	Capacitor, elec. 400 V, 16 mf.	K-3150	Escutcheon Cork Gaskets.....	K-3019-3
112	Dial Lamp, 6.3 volts.....	K-2589-3	Escutcheon Cover (Dial Scale)....	K-2897
113			Radio-Phono Link.....	K-3921
114a	Power Transformer (60 cyc.)	K-2385-3	No. 8 Auto Washer (Tone Chamber Cover).....	K-3353-2
114b	Power Transformer (25 cyc.)	K-2385-4	Tone Chamber Cover Screw.....	K-3354-12
115	Power Switch.....	K-3028	Tuning Wrenches (all models)....	K-836
116	Capacitor, 0.025 mf.....	K-1750		
117	Capacitor, 0.025 mf.....			

REALIGNING INSTRUCTIONS

I.F. ALIGNMENT—

- (a) Set the signal generator at 470 k.c. and connect its output through a 0.1 mf. capacitor to the grid cap of the first detector (type 6A8G) tube. Set the receiver dial to about 600 k.c. and turn the wave-change switch to the broadcast position.
- (b) Adjust screws 51, 52, 62, 63 (movable cores, as shown on the schematic) for maximum output.
- (c) Reduce the output from the generator to as low a value as will give an output reading and check the adjustments, all of which should peak properly.

R.F. ALIGNMENT—(See Underside Aligning Positions)

- (a) With the gang all in, check the position of the pointer. It should line up with the end of the scale. Put 100 mmf. dummy antenna in generator lead and set wave-change switch to broadcast position.
- (b) Set generator and receiver to 1500 k.c. Adjust 34 to tune in the signal, and adjust 10 and 16 for maximum output.
- (c) Set the generator to 600 k.c. and tune in the signal. Adjust 39 for maximum output while rocking the gang. Recheck at 1500 k.c.

GREEN BAND:

- (a) Substitute a 400 ohm carbon resistor in place of the capacitor in the lead from the signal

generator. Turn the wave-change switch to the green band position.

- (b) Set the receiver and generator to 9.5 megacycles. Adjust 31 to tune in the signal and adjust 13 for maximum output, while rocking the gang. (NOTE:—Check for image at 8.6 megacycles).
- (c) Set the receiver and generator to 6 megacycles and adjust 38 to tune in the signal. Adjust 18 for maximum output. (Check for image at 5.1 mc.) It will be necessary to repeat the above operations several times in order to obtain correct calibration at both ends of the band.

RED BAND:

- (a) Use a 400 ohm carbon resistor in the lead from the generator to the receiver. Turn the wave-change switch to the red band position.
- (b) Set the generator and receiver to 15 megacycles. Adjust 28 to tune in the signal and adjust 14 for maximum output while rocking the gang. (Check for the image at 15.9 mc.)
- (c) Set the generator and pointer to 11.6 mc. and adjust 37 to tune in the signal. Adjust 19 for maximum output while rocking the gang. (Check for image at 12.7 mc.) Recheck at 15 mc. It will be necessary to repeat the above operations several times in order to obtain correct calibration at both ends of the band.

SOCKET VOLTAGE READINGS

TUBE	VOLTAGES				CURRENTS—M.A.		
					Screen	PLATE	
	Heater a.c.	Plate	Screen	Cathode		Normal Bias	Bias red. 4.5 volts
Type 6A8G	6.3	220 ①	105	3.0	4.0	3.5 ②	7.0
Type 6K7	6.3	215	105	2.8	1.3	6.0	8.5
Type 6H6	6.3	—	—	0	—	—	—
Type 6F5	6.3	70	—	1.0	—	0.3	0.5
Type 6C5	6.3	150	—	30.0	—	3.0	4.2
Type 6V6G	6.3	225	235	0	1.9	27.	36.
Type 6V6G	6.3	225	235	0	1.9	27.	36.
Type 5Y4G	5.1	—	—	360	—	—	—

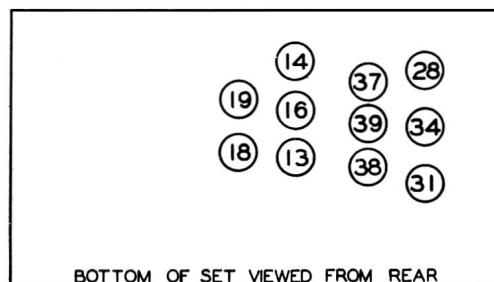
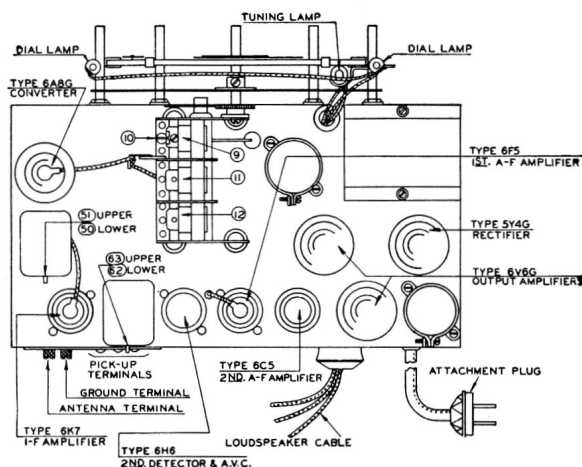
① Anode-grid Voltage = 145

② Anode-grid Current = 4.3 m.a.

SOCKET RESISTANCE READINGS TO GROUND — OHMS

TUBE	TOP CAP Cont. Grid	PIN No. 1 Shell	PIN No. 2 Heater	PIN No. 3 Plate	PIN No. 4 Screen	PIN No. 5	PIN No. 6	PIN No. 7 Heater	PIN No. 8 Cathode
Type 6A8G Converter	2.6 meg.	0	0	12,500	33,100	(No. 1 Grid) 50,300	(No. 2 Grid) —	Below .5	300
Type 6K7 I-F Amplifier	2.5 meg.	0	0	13,500	33,100	(Sup- pressor) 125	—	“	125
Type 6H6 2nd Detector & A.V.C.	—	0	0	550,000	(Cathode) 0	(Plate) 550,000	—	“	0
Type 6F5 1st A-F Amplifier	2.0 meg.	0	0	—	(Plate) 268,000	—	—	“	4000
Type 6C5 2nd A-F Amplifier	—	0	0	28,100	—	(Grid) 1.01 meg.	—	“	11,500
Type 6V6G Output Amplifier	—	0	0	13,500	13,100	(Grid) 200,000	—	“	0
Type 6V6G Output Amplifier	—	0	0	13,500	13,100	(Grid) 200,000	—	“	0
Type 5Y4G Rectifier	—	0	0	275	—	(Plate) 275	—	(Fila- ment) 14,200	14,200

All readings are taken with the power off, volume control maximum and tone control in treble position. The pin numbers correspond with those shown on the schematic circuit.



BOTTOM OF SET VIEWED FROM REAR

Underside Aligning Positions

Model 821—Chassis Layout Showing Upper Aligning Points and Tube Positions