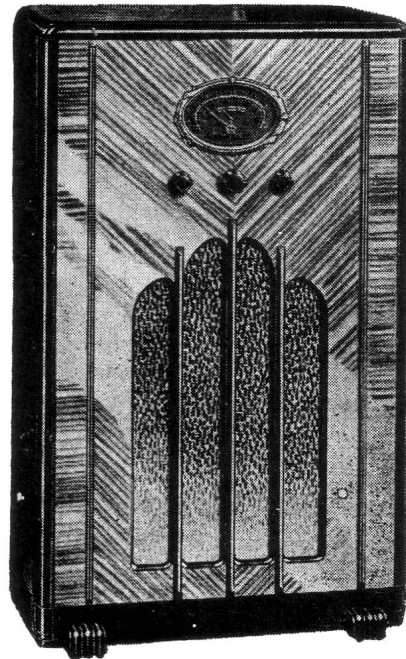
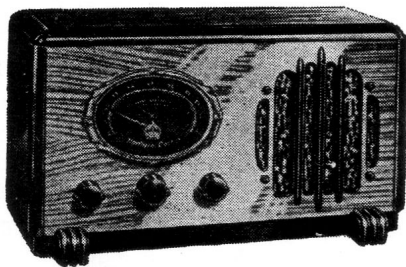


# Models 520, 520A, 521, 521A

The "St. James" and The "Windsor"

Radio Receivers



## Specifications

### Frequency Range:

Broadcast: 540 to 1720 K.C.  
Short Wave: 9 to 10 megacycles

### I.F.:

470 K.C.

### Tubes:

Type	Function
6A8G	Converter
6K7G	I.F. Amplifier
6A7G	2nd Detector, A.V.C., 1st A.F. Amplifier
6K6G	Output Amplifier
5Y4G	Rectifier

### Power Supply:

Models 520, 521—105 to 125 volts A.C.  
60 cycle  
Models 520A, 521A—105 to 125 volts A.C.  
25-60 cycles

### A.V.C.:

On 6A8G and 6K7G, 1st I.F. Amplifier

### Controls:

Left—A.C. switch and volume control  
Centre—Tuning control  
Right—Wave change switch and tone control

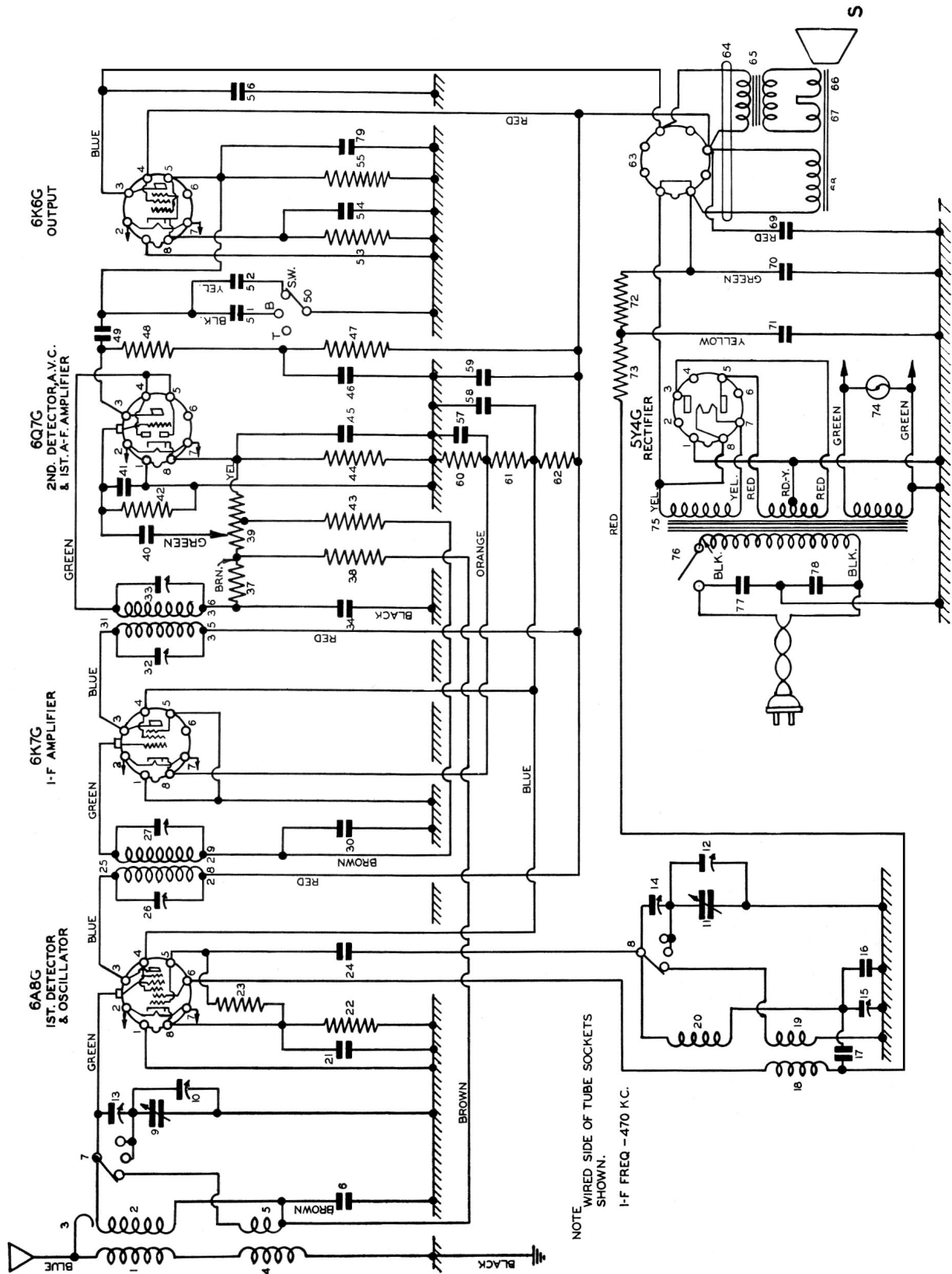
### Loudspeakers:

520, 520A—6 inch electrodynamic loud-  
speaker  
521, 521A—8 inch electrodynamic speaker

### Cabinets:

520, 520A—Table model  
521, 521A—Console model

MODELS 520-521 RADIO RECEIVERS



Schematic Circuit Diagram. Model 520-521 Receivers

## REPLACEMENT PARTS LIST

Schematic Designation	Value and Description	Part Number
1	Bdct. Ant. Trans. Pri. . . . .	K-2871
2	Bdct. Ant. Trans. Sec. . . . .	
3	Bdct. Ant. Trans. Cap. turn . . .	K-2873
4	S.W. Ant. Trans. Pri. . . . .	
5	S.W. Ant. Trans. Sec. . . . .	K-2227-9
6	Capacitor, .1 mf, 175 volts . . .	
7	Wave Change Switch (Ant.) . . .	K-2868
8	Wave Change Switch (Osc.) . . .	
9	Tuning Cap. Ant. Sect. 441-6 mmf. . . . .	K-2877
10	Trimmer Cap. Ant. Sect. 2.5-15 mmf. . . . .	
11	Tuning Cap. Osc. Sect. 441-6 mmf. . . . .	K-2869
12	Trimmer Cap. Osc. Sect. 2.5-15 mmf. . . . .	
13	20-60 mmf. Trimmer Cap. S.W. Ant. . . . .	K-2869
14	4-30 mmf. Trimmer Cap. Osc. . . . .	
15	20-60 mmf. Trimmer Cap. B.C. Lag. . . . .	K-1611-11
16	375 mmf. Mica Capacitor (plus or minus 3%) . . . . .	
17	Capacitor, .007 mf, 175 volts . . .	K-2227-5
18	S.W. Osc. Plate Winding. . . . .	K-2872
19	S.W. Osc. Grid Winding. . . . .	
20	Bdct. Osc. Coil. . . . .	K-2870
21	Capacitor, .05 mf, 175 volts . . .	K-2227-8
22	Resistor, 450 ohms, 1/2 watt . . .	K-2226-43
23	Resistor, 50,000 ohms, 1/2 watt . .	K-2226-6
24	Capacitor, 100 mmf, mica . . . . .	K-1611-2
25	1st I.F. Transformer Assembly . . .	K-2881
26	1st I.F. Trimmer Cap. 30-130. . .	K-2134-1
27	1st I.F. Trimmer Cap. 30-130. . .	
28	1st I.F. Transformer Pri. . . . .	K-2882
29	1st I.F. Transformer Sec. . . . .	
30	Capacitor, .05 mf, 175 volts . . .	K-2227-8
31	2nd I.F. Transformer Assem. . . . .	K-2883
32	2nd I.F. Trimmer Cap. 30-130 . . .	K-2932-1
33	2nd I.F. Trimmer Cap. 30-130 . . .	
34	100mmf(Part of K-2932-1)Cap. . . .	K-2884
35	2nd I.F. Transformer Pri. . . . .	
36	2nd I.F. Transformer Sec. . . . .	K-2226-6
37	Resistor, 50,000 ohms, 1/2 watt . .	
38	Resistor, 2 meg, 1/2 watt . . . . .	K-2226-1
39	Volume Control, 1/2 meg. . . . .	K-2880
40	Capacitor, .02 mf, 175 volts . . .	K-2227-7
41	Capacitor, 100 mmf, mica . . . . .	K-1611-2
42	Resistor, 1 meg, 1/2 watt . . . . .	K-2226-2
43	Resistor, 1/2 meg, 1/2 watt . . . . .	K-2226-3
44	Resistor, 4,000 ohms, 1/2 watt . . .	K-2226-28
45	Capacitor, .05 mf, 175 volts . . .	K-2227-8
46	Capacitor, .05 mf, 350 volts . . .	K-2228-8
47	Resistor, 1/10 meg, 1/2 watt. . . .	K-2226-5
48	Resistor, 1/4 meg, 1/2 watt . . . . .	K-2226-4
49	Capacitor, .02 mf, 350 volts . . .	K-2228-7
50	Tone Control Switch . . . . .	Part of K-2868

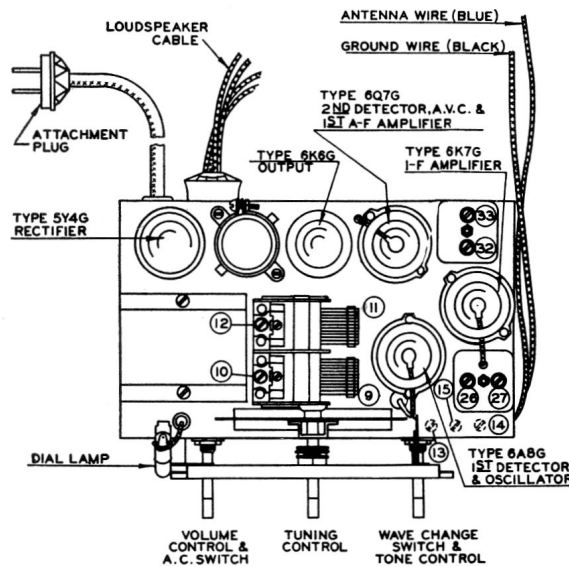
Schematic Designation	Value and Description	Part Number
51	Capacitor, .002 mf, 175 volts . . .	K-2227-1
52	Capacitor, .005 mf, 175 volts . . .	K-2227-4
53	Resistor, 700 ohms, 1 watt . . . . .	K-2363-2
54	10 mf, 20 V Electrolytic. . . . .	Part of K-2918
55	Resistor, 1 meg, 1/2 watt . . . . .	K-2226-2
56	Capacitor, .003 mf, 350 volts . . .	K-2228-3
57	Capacitor, .05 mf, 175 volts . . .	K-2227-8
58	Capacitor, .1 mf, 175 volts . . . .	K-2227-9
59	Capacitor, .1 mf, 350 volts . . . . .	K-2228-9
60	Resistor, 220 ohms, 1/2 watt . . . .	K-2226-45
61	Resistor, 8,800 ohms, 2 watts . . . .	K-1870-4
62	Resistor, 6,600 ohms, 2 watts . . . .	K-1870-5
63	Loudspeaker Plug. . . . .	K-2678
64	Loudspeaker Cable . . . . .	.....
65a	Output Transformer (Model 520) . . . . .	K-2718-4
65b	Output Transformer (Model 521) . . . . .	K-2718-1
66a	Voice-Coil—Model 521 . . . . .	K-2544
66b	Voice Coil—Model 520 . . . . .	Part of K-2861
67	Hum Bucking Coil . . . . .	.....
68a	Field Coil—Model 521 . . . . .	K-2543-2
68b	Field Coil—Model 520 . . . . .	Part of K-2861
69	8 mf. 225 V. Elec. Cap. . . . .	K-2918
70	8 mf. 350 V. Elec. Cap. . . . .	
71	4 mf. 225 V. Elec. Cap. . . . .	K-2363-3
72	Resistor, 30,000 ohms, 1 watt . . . . .	
73	Resistor, 10,000 ohms, 1/2 watt . . .	K-2226-10
74	Dial Lamp—6.3 volt. . . . .	K-2589-3
75a	Power Transformer—60 cycles . . . .	K-2179-12
75b	Power Transformer—25 cycles . . . .	K-2179-13
76	Power Switch (Mounted on 39) . . . .	.....
77	Capacitor, .025 mf. A.C. Line. . . . .	K-1750
78	Capacitor, .025 mf. A.C. Line. . . . .	
79	Capacitor, 100 mmf, mica . . . . .	K-1611-2

MISCELLANEOUS:—

Loudspeaker complete—Model 520	K-2861
Sockets, octal base . . . . .	K-1924-1
Sockets, octal base (with ground lug for Terminal No. 1) . . . . .	K-1924-2
Dial scale glass . . . . .	K-2875
Dial scale clips . . . . .	K-2436
Dial scale card (paper backing) . . .	K-2934
Small dial pointer . . . . .	K-2859
Large dial pointer . . . . .	K-2924
Large pulley (W/C shaft) . . . . .	K-2876
Small pulley (slotted) . . . . .	K-2860
Fibre drive disc. assy. . . . .	K-2915
Cord for W/C indicator (17") . . . . .	K-1929
Spring for W/C Indicator . . . . .	FP-103164
Dial Lamp Socket . . . . .	K-2835
Tube Shield, base . . . . .	K-2390
Tube Shield . . . . .	K-2267-
Terminal Strip (at rear dial) (single) . . . . .	K-2594

REPLACEMENT PARTS LIST—(Continued)

	Number		Number
Terminal Strip (large) (Res. & Cap. Mounting).....	K-2505	Set Screw (pointer).....	K-2927-6
Terminal Strip (dual).....	K-1683-1	Plug for Loudspeaker.....	K-2678
Reduction Drive Shaft (tuning)...	K-2797	Speaker Mounting Screws (flower head).....	K-2971-1
Knob for Volume Control.....	K-2765-2	Nut for Speaker Mounting Screw..	K-1031-8
Knob for W/C Switch.....	K-2765-9	Chassis Mounting Screws.....	K-2787-8
Knob for Tuning.....	K-2885-2	Washers for Chassis Screws.....	K-2516-1
Felt Washers (under knobs).....	K-2491-4	Tuning Wrench (all models).....	K-836
Set screw (cup point) (for K-2876 pulley).....	K-2648-3	Dial Card Retaining Strips (rawhide).....	K-3046



Chassis Layout Showing Aligning Positions.

SOCKET VOLTAGE READINGS

TUBE	VOLTAGES				CURRENTS—M.A.		
	Heater A.C.	Plate	Screen	Cathode	Screen	Plate	
						Normal Bias	Bias red. 4½ volts
Type 6A8G	6.2	215*	100	4.8	7.7	1.7†	4.25
Type 6K7G	6.2	215	100	4.3	1.8	7.0	9.3
Type 6Q7G	6.2	55	..	.65	..	0.35	.46
Type 6K6G	6.2	200	215	17	4.1	19	.23
Type 5Y4G	4.8	310	..	..	..	..	..

\* Anode Grid Voltage—125 volts.

† Anode Grid Current—5 ma.

SOCKET RESISTANCE READINGS TO GROUND — OHMS

TUBE	Top Cap Cont. Grid	Pin No. 1	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	2.5 meg.	0	.25	15600	9000	(No. 1 Grid) 50450	(No. 2 Grid) 47400	0	450
Type 6K7G I-F Amplifier	.625 meg.	0	.25	15600	9000	(Sup- pressor) 0	..	0	220
Type 6A7G 2nd Det., A.V.C., 1st A-F Amplifier	1 meg.	0	.25	.365 meg.	(Diode Plate) .554 meg.	(Diode Plate) .554 meg.	..	0	4000
Type 6K6G Output Amplifier	..	0	.25	16600	15600	(Cont. Grid) 1 meg.	..	0	700
Type 5Y4G Rectifier	..	0	..	(Plate) 155-60 cycle 275-25 cycle	..	(Plate) 155-60 cycle 275-25 cycle	..	17400	(Heater) 17400

All readings taken with the power off. The pin numbers correspond with those shown on the schematic circuit.

REALIGNING INSTRUCTIONS

I.F. ALIGNMENT:

- (a) Set the signal generator to 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 trimmers, items 26, 27, 32 and 33 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 trimmers should peak properly.

R.F. ALIGNMENT—BROADCAST BAND:

- (a) With the gang all in check the position of the pointer. It should line up with the end of the calibration line. Put the wave-change switch in broadcast position.
- (b) Couple the signal generator to the antenna (blue) lead through a 100 mmf. mica capacitor. Connect the ground (black) lead to ground.

- (c) Set the generator and receiver to 1600 k.c. Adjust trimmer, item 12, to bring in the signal and then adjust trimmer, item 10, for maximum sensitivity.
- (d) Set the generator to 600 k.c. and tune the receiver to it. Adjust trimmer, item 15, at the same time rocking the gang, until maximum sensitivity is obtained.
- (e) Recheck at 1600 k.c.

R.F. ALIGNMENT—SHORT-WAVE 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 short-wave position.
- (b) Set the receiver and generator to 9.0 megacycles and adjust trimmer, item 14, to bring in the signal.
- (c) Set generator and receiver to 9.4 megacycles and adjust trimmer, item 13, at the same time rocking the gang until maximum sensitivity is obtained.
- (d) Recheck at 9.0 megacycles.