

Models 713, 713A, 721, 721A

Radio Receivers



Specifications

Frequency Range:

Broadcast, Silver Gray: 530 to 1720 K.C.
Short Wave, Red: 5500 to 16600 K.C.

I.F.:

463 K.C.

Tubes:

Type	Function
6A8	1st Detector
6C5	Oscillator
6K7	I.F. Amplifier
6H6	2nd Detector, A.V.C.
6F5	1st A.F. Amplifier
6K6G	Output Amplifier
5Y4G	Rectifier

Power Supply:

Models 713, 721: 105 to 125 volts A.C.
60 cycles.

Models 713A, 721A: 105 to 125 volts A.C.
25-60 cycles.

A.V.C.:

On tubes type 6A8, 1st Detector, and 6K7,
I.F. Amplifier.

Controls:

Left—A.C. switch and volume control.
Centre—Tuning control, coarse or fine.
Right—Wave change switch and tone
control.
Fidelity control.

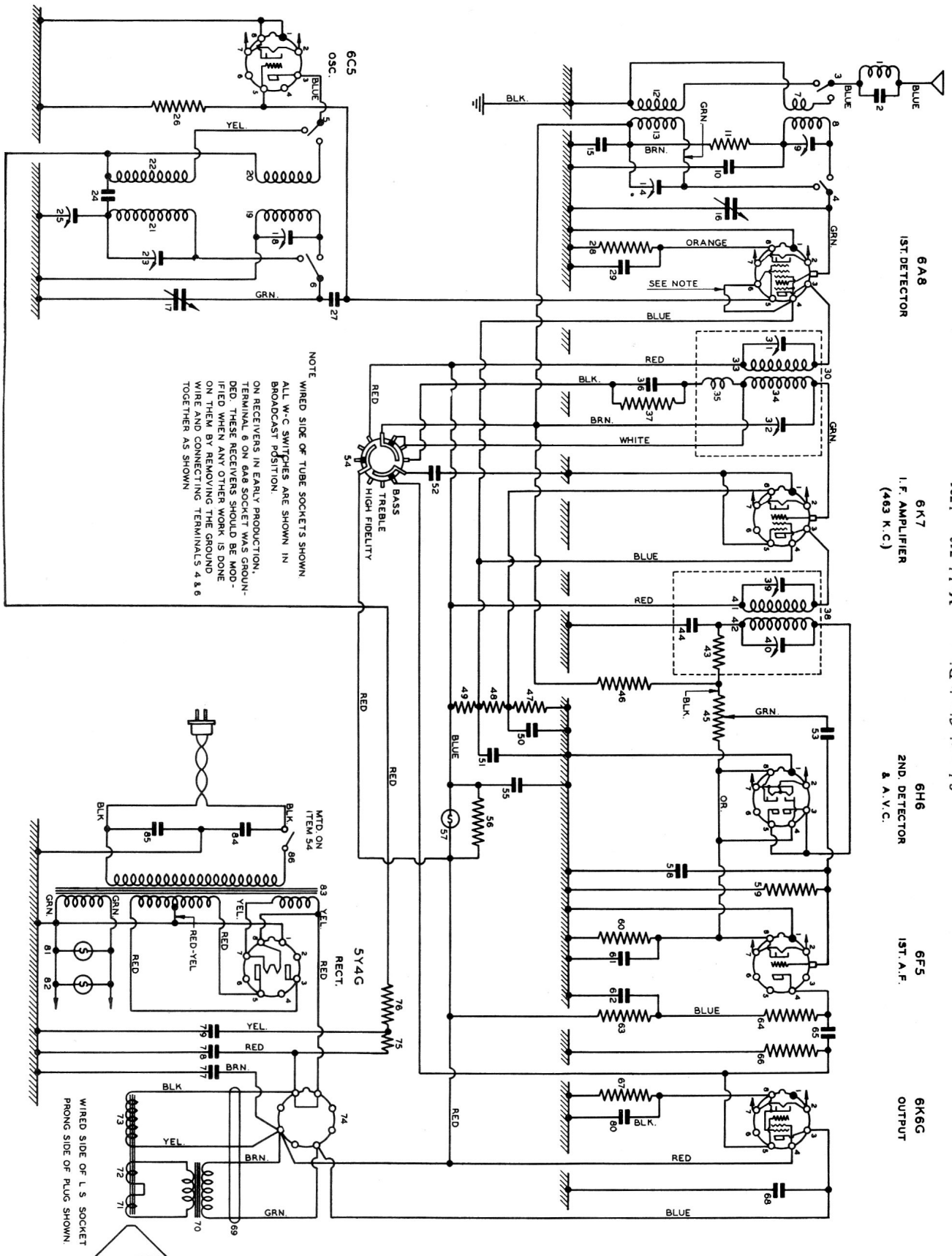
Loudspeaker:

Twelve inch electrodynamic.

Cabinets:

Models differ only in cabinet design. All are
console models.

MODELS 713-721 RADIO RECEIVERS



Schematic Circuit Diagram—Models 713 and 721

REPLACEMENT PARTS LIST

Schematic Designation	Value and Description	Part Number
1	Ant. Trap Coil.....	K-2739
2	Capacitor, 1000 mmf, mica...	
3	W.C. Switch Ant. Pri. Sect...	
4	W.C. Switch Ant. Sec. Sect...	
5	W.C. Switch Osc. Plate Sect...	K-2675
6	W.C. Switch Grid Sect.....	
7	S.W. Ant. Trans. Pri.....	
8	S.W. Ant. Trans. Sec.....	
9	Capacitor, 3-25 mmf, var. trim	K-1458-6
10	Capacitor, mica, 4,000 mmf, plus or minus 5%.....	K-1952-14
11	Resistor, 15,000 ohms, 1/4 watt	K-2226-9
12	Ant. Trans. Pri. (bdct).....	K-2719
13	Ant. Trans. Sec. (bdct).....	
14	Capacitor, 1.5-10 mmf. var. trim.....	
15	Capacitor, .1 mf, 175 volts...	
16	Ant. Sect. { Capacitor Gang	K-2637
17	Osc. Sect. { Max. Cap. 455 mmf	
18	Capacitor, var. trim, 3-25 mmf	
19	S.W. Osc. Grid Coil.....	
20	S.W. Osc. Plate Coil.....	K-2722
21	Osc. Grid Coil (bdct).....	
22	Osc. Plate Coil (bdct).....	
23	Capacitor, 3-25 mmf, var. trim	
24	Capacitor, .005 mf, 350 volts.	K-2228-5
25	Capacitor, 300-600 mmf, lag..	K-2483-1
26	Resistor, 50,000 ohms, 1/4 watt	K-2226-6
27	Capacitor, mica, 100 mmf....	K-1611-2
28	Resistor, 450 ohms, 1/4 watt..	K-2226-43
29	Capacitor, .05 mf, 175 volts..	K-2227-8
30	1st I.F. Transformer (Includes items 31-35).....	K-2737
31	Cap., 70-370 mmf, var. trim..	K-2634-1
32	Cap., 70-370 mmf, var. trim..	
33	I.F. Trans. Pri.	
34	I.F. Trans. Sec.	
35	I.F. Trans. Tertiary.....	K-2745
36	Capacitor, .02 mf, 175 volts..	
37	Resistor, 1/10 meg, 1/4 watt...	
38	2nd I.F. Transformer (Includes items 39-44).....	
39	Cap., 100-500 mmf, var. trim.	K-2634-2
40	Cap., 100-500 mmf, var. trim.	
41	I.F. Trans. Pri.....	
42	I.F. Trans. Sec.....	
43	Resistor, 50,000 ohms, 1/4 watt	K-2226-6

MISCELLANEOUS:—(Not included in item designations).

Sockets, octal base.....	K-1924-1
Sockets, loudspeaker only.....	K-2704
Reduction drive.....	K-2640
Dial scale glass.....	K-2641
Indicator pointer.....	K-2654
Wave change indicator.....	K-2642
Tuning meter scale.....	K-2644
Shutter.....	K-2652
Eccentric.....	K-2653
Clips for dial scale.....	K-2436
Tuning lamp socket.....	K-2753

Schematic Designation	Value and Description	Part Number
44	Capacitor, mica, 100 mmf....	K-1611-2
45	Volume Control, var., 1/2 meg.	K-2674
46	Resistor, 1 meg, 1/4 watt....	K-2226-2
47	Resistor, 220 ohms, 1/4 watt..	K-2226-45
48	Resistor, 8800 ohms, 2 watt..	K-1870-4
49	Resistor, 6600 ohms, 2 watts..	K-1870-5
50	Capacitor, .05 mf, 175 volts...	K-2227-8
51	Capacitor, .1 mf, 175 volts...	K-2227-9
52	Capacitor, .003 mf, 175 volts.	K-2227-2
53	Capacitor, .02 mf, 175 volts..	K-2227-7
54	Fidelity Control & Switch....	K-2673
55	Capacitor, .1 mf, 350 volts...	K-2228-9
56	Resistor, 10,000 ohms, 2 watts	K-1870-2
57	Lamp—24 volt (Tuning Indicator).....	K-2643
58	Capacitor, 100 mmf, mica....	K-1611-2
59	Resistor, 2 meg, 1/4 watt....	K-2226-1
60	Resistor, 4,000 ohms, 1/4 watt	K-2226-28
61	Capacitor, .05 mf, 175 volts..	K-2227-8
62	Capacitor, .05 mf, 350 volts..	K-2228-8
63	Resistor, 1/10 meg, 1/4 watt...	K-2226-5
64	Resistor, 1/4 meg, 1/4 watt....	K-2226-4
65	Capacitor, .02 mf, 350 volts...	K-2228-7
66	Resistor, 1/2 meg, 1/4 watt....	K-2226-3
67	Resistor, 700 ohms, 1/2 watt..	K-2363-2
68	Capacitor, .003 mf, 350 volts.	K-2228-3
69	Loudspeaker Cable.....	
70	Output Transformer.....	K-2718-2
71	Voice Coil & Diaphragm Assem. (Imp. 4.5 ohms).....	K-2575
72	Humbucking Coil.....	
73	Field Coil (1800 ohms).....	K-2543-2
74	Loudspeaker Plug.....	K-2678
75	Resistor, 30,000 ohms, 1/2 watt	K-2363-3
76	Resistor, 10,000 ohms, 1/4 watt	K-2226-10
77	Cap., dry elect., 8 mf, 225 volts	K-2735
78	Cap., dry elect., 8 mf, 330 volts	
79	Cap., dry elect., 4 mf, 225 volts	
80	Cap., dry elect., 10 mf, 20 volts	
81	Dial Lamp, 6.3 volts.....	K-2589-3
82	Dial Lamp, 6.3 volts.....	
83	Power Transformer—60 cycles	
83-A	Power Transformer—25 cycles	
84	Capacitor, .025 mf, 1100 volts.	K-1750
85	Capacitor, .025 mf, 1100 volts.	
86	A.C. Switch—Mounted on item 54.....	

Lamp socket assembly.....	K-2598-2
Loudspeaker plug.....	K-2678
Knobs.....	K-2231-1
Dial cover (fibreloid).....	K-2445
Chassis mounting screws (model 721).....	K-2787-8
Chassis mounting screws (model 713).....	K-2503-10
Washers for chassis mounting (713-721).....	K-2516-1
Tuning wrenches (all models).....	K-836
Disc. Assy.....	K-2649

SOCKET RESISTANCE READINGS TO GROUND — OHMS

TUBE	TOP CAP (Cont. Gride)	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	PIN No. 8 Cathode
Type 6A8 1st Detector	1.5 Megs.	0	0	15,600	9,020	50,000 (Grid No. 1)	0 (Grid No. 2)	0.3	450
Type 6C5 Oscillator	—	0	0	57,900	—	50,000 (Grid)	—	0.3	0
Type 6K7 I.F. Amplifier	1.5 Megs.	0	0	15,600	9,020	0 (Suppressor)	—	0.3	220
Type 6H6 2nd Det. & A.V.C.	—	0	0	554,000	4,000 (Cathode)	554,000 (Plate)	—	0.3	4000
Type 6F5 1st A.F. Amplifier	2 Megs.	0	0	—	352,000 (Plate)	—	—	0.3	4000
Type 6K6G Output Amp.	—	0	0	17,000	16,100	500,000 (Grid)	—	0.3	700
Type 5Y4G Rectifier	—	0	—	157-60 cy. 265-25 cy.	—	157-60 cy. 265-25 cy. (Plate)	—	(Fil.) 17900	(Fil.) 17900

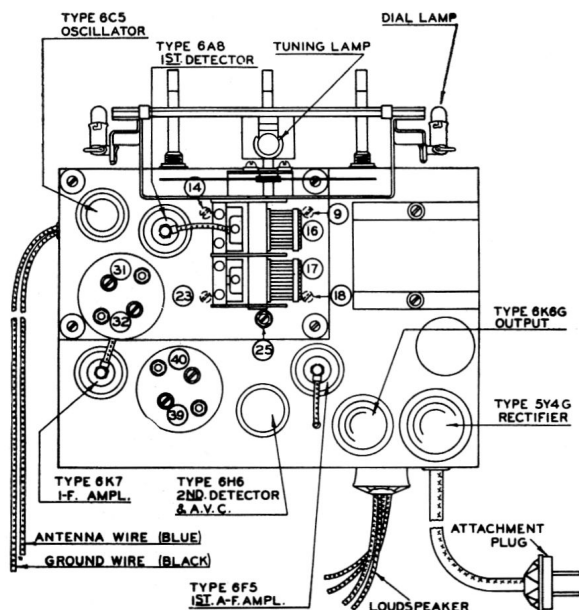
Unless otherwise stated, all readings are taken with the power off, volume control maximum, tone control in treble position, and wave-change switch in the broadcast position. The pin numbers correspond with those shown on the schematic circuit.

Some plate and screen resistances to ground may vary slightly due to variations in tuning lamp resistances.

SOCKET VOLTAGE READINGS

TUBE	VOLTAGES				CURRENTS—M.A.		
	Heater (A-C)	Plate	Screen	Cathode	Screen	PLATE	
						Normal Bias	Bias Red. 4½ Volts
Type 6A8	6.2	215	98	2.8	3.5	3.2	4.5
Type 6C5	6.2	145	—	0	—	14	14.5
Type 6K7	6.2	215	98	3.8	1.5	5.5	8.5
Type 6H6	6.2	—	—	1.0	—	—	—
Type 6F5	6.2	65	—	1.0	—	.3	.46
Type 6K6G	6.2	210	230	16	3.6	21	24
Type 5Y4G	5.1	—	—	325	—	Plate No. 1 28	Plate No. 2 28

REALIGNING INSTRUCTIONS



Chassis Layout showing Top Aligning Positions.

I-F ALIGNMENT:

- (a) Set the wave-change switch in the broadcast position, with the gang closed, and the fidelity switch in the normal (contracted-selectivity) position. Accuracy in setting the signal generator to the required intermediate frequency of 463 k.c. is essential to ensure good tracking of the i-f and r-f circuits. Couple the output of the generator through a 0.1 mf. capacitor to the grid cap of the first detector (type 6A8) tube.
- (b) The first i-f transformer has a single sharp response in the contracted selectivity position. The second, by itself, has a broader response with two peaks and a small dip in between. Re-alignment can be carried out in the usual manner, the double peaking being masked in the composite response of the two transformers. Adjust trimmers, items 31, 32, 39 and 40 for maximum response.
- (c) Reduce the output from the signal generator to as low a value as will give an output reading

and check the adjustments. All trimmers should peak properly.

- (d) Set the fidelity control in the "high-fidelity" (expanded-selectivity) position. If the adjustments previously made are correct, as the signal generator frequency is varied a few kilocycles on either side of 463 k.c. the output from the receiver should remain nearly constant, due to the flat-top band-pass characteristics, and then should drop off fairly abruptly and symmetrically for frequencies further above and below.

R.F. ALIGNMENT:

- (a) Connect the output of the signal generator through a 100 mmf. mica capacitor to the antenna lead. Ground the ground lead of the set
- (b) Check that the indicator pointer is lined up with the small mark at the end of the short-wave-bank calibration when the gang is turned all in. The pointer is of the push-on type and can be forced around as required.
- (c) Set the signal generator and set at 1600 kilocycles. Adjust trimmer, item 23, to bring in the signal. Then adjust trimmer, item 14, for maximum sensitivity.
- (d) Set the generator at 600 k.c., and tune the receiver to it. Adjust trimmer, item 25, while rocking the gang, for maximum sensitivity.
- (e) Recheck at 1600 k.c.

R.F. ALIGNMENT—SHORT-WAVE BAND:

- (a) Substitute a 400-ohm resistor in place of the capacitor in the lead from the signal generator.
- (b) Set the signal generator and the receiver at 15 megacycles. Adjust the trimmer, item 18, to bring in the signal. (Make sure that the set is not tuned to the image frequency, which should come in with the signal generator set at approximately 14.1 mc.).
- (c) Adjust trimmer, item 9, for maximum sensitivity while rocking the gang.
- (d) Since the lag capacitor, item 10, is fixed, it is unnecessary to lag at the low frequency end.