

Model 730A

Radio Receiver



Specifications

Frequency Range:

530 to 1720 K.C.

I.F.:

470 K.C.

Tubes:

Type	Function
6A8	1st Detector
6J5	Oscillator
6K7	I.F. Amplifier
6H6	2nd Detector
6K7	1st A.F. Amplifier
6Y6G	Output Amplifier
5Y4G	Rectifier

Power Supply:

105 to 125 volts A.C., 25-60 cycles

A.V.C.:

Applied to 6A8, 1st Detector and 6K7, I.F. Amplifier.

Controls:

Left—A.C. switch and tone control.

Right—Volume control.

Illuminated push buttons permit the automatic selection of eight stations.

Loudspeaker:

Six inch electrodynamic speaker.

Cabinet:

Table model.

MODEL 730-A RADIO RECEIVER

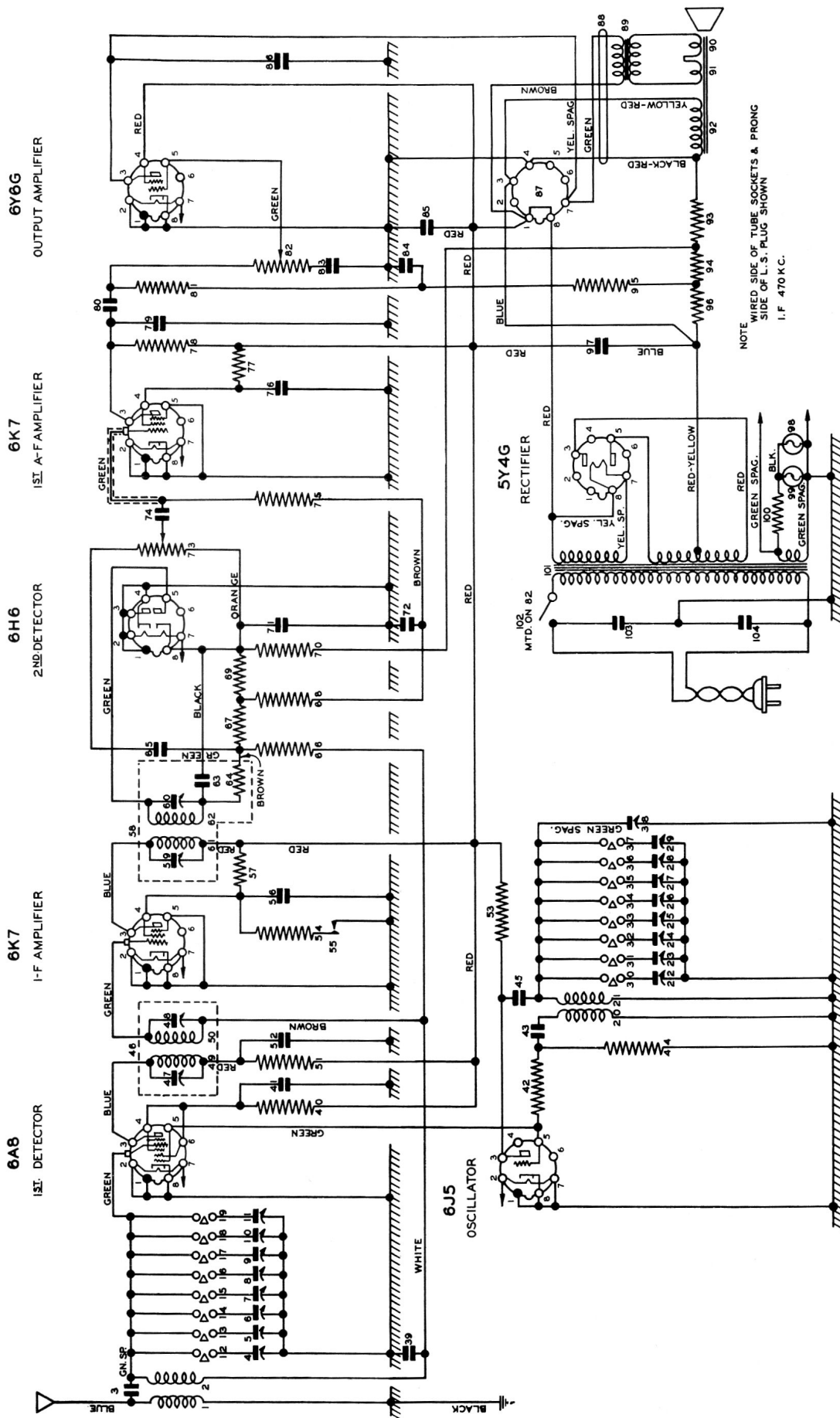


Figure 4.—Schematic Circuit Diagram—Model 730A.

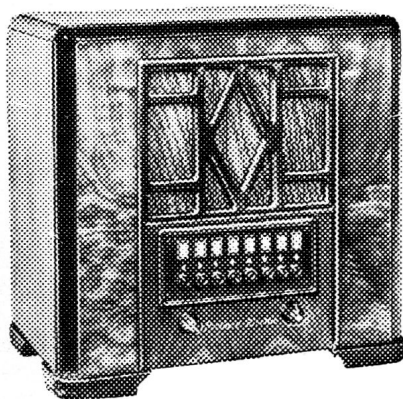
REPLACEMENT PARTS LIST

Item	Description	Part No.	Item	Description	Part No.
1	Primary R.F. Transformer ..	K-3721	61	Primary Coil, 2nd	Part of K-3720
2	Secondary R.F. Transformer		62	I.F. Transformer	
3	Coupling Capacitor		63	Capacitor, 100 mmf, mica ..	K-1611-2
4	Trimmer, R.F.	Part of K-3733	64	Resistor, 50,000 ohms	K-2226-6
5	Trimmer, R.F.		65	Capacitor, .02 mf, 175 volts	K-2227-7
6	Trimmer, R.F.		66	Resistor, 2 meg.	K-2226-1
7	Trimmer, R.F.		67	Resistor, 350,000 ohms	K-2226-53
8	Trimmer, R.F.		68	Resistor, 1 meg.	K-2226-2
9	Trimmer, R.F.		69	Resistor, 150,000 ohms	K-2226-36
10	Trimmer, R.F.		70	Resistor, 1/10 meg.	K-2226-5
11	Trimmer, R.F.	Part of K-3733	71	Capacitor, 5.0 mf (Elect.),	K-3442-1
12-19	{ Switch Contacts (push button) eight pair (R.F. Circuits)		72	25 volts.	
20	Osc. Grid Coil	K-3722	73	Capacitor, .05 mf, 185 volts	K-2227-8
21	Osc. Plate Coil		74	Volume Control, 2 meg. var.	K-3753
22	Trimmer, Osc.	Part of K-3733	75	Capacitor, .02 mf, 175 volts	K-2227-7
23	Trimmer, Osc.		76	Resistor, 2 megs.	K-2226-1
24	Trimmer, Osc.		77	Capacitor, .1 mf, 350 volts.	K-2228-9
25	Trimmer, Osc.		78	Resistor, 1/2 meg.	K-2226-3
26	Trimmer, Osc.		79	Resistor, 1/10 meg.	K-2226-5
27	Trimmer, Osc.		80	Capacitor, 100 mmf, mica ..	K-1611-2
28	Trimmer, Osc.		81	Capacitor, .02 mf, 350 volts	K-2228-7
29	Trimmer, Osc.	Part of K-3733	82	Resistor, 1/2 meg.	K-2226-3
30-37	{ Switch Contacts (push button) eight pair (Osc. Circuits)		83	Tone Control, 1/4 meg. (Var.) (With switch)	K-3754
38	Osc. Parallel Trimmer (Min. 3—Max. 9 mmf)	K-3760-1	84	Capacitor, .002 mf, 175 volts	K-2227-1
39	Capacitor, .05 mf, 175 volt.	K-2227-8	85	Capacitor, .1 mf, 175 volts.	K-2227-9
40	Resistor, 25,000 ohms	K-2226-7	86	Filter, 16 mf (Elect.), 150 volts	K-3732
41	Capacitor, .05 mf, 350 volt.	K-2228-8	87	Capacitor, .05 mf, 350 volts	K-2228-8
42	Resistor, 1000 ohms	K-2226-16	88	Loudspeaker Plug	K-2678
43	Capacitor, mica, 100 mmf ..	K-1611-2	89	Loudspeaker Cable	—
44	Resistor, 50,000 ohms	K-2226-6	90	Output Transformer	K-2718-9
45	Capacitor, 100 mmf, mica ..	K-1611-2	91	Voice Coil (& Diaphragm).	K-3674
46	1st I.F. Transformer Ass'y. (Items 47-50 incl.)	K-3719	92	Humbucking Coil ... Part of K-2861-2	Part of K-2861-2
47	Trimmer, 1st I.F. Primary ..	K-2134-1	93	Loudspeaker Field Coil	
48	Trimmer, 1st I.F. Secondary		94	Divider, 1500 ohms	K-2226-15
49	Primary Coil, 1st I.F. Trans.	Part of K-3719	95	Divider, 7500 ohms	K-2226-11
50	Secondary Coil, 1st I.F. Trans.		96	Resistor, 1/10 meg.	K-2226-5
51	Resistor, 1000 ohms	K-2226-16	97	Divider, 50,00 ohms	K-2226-6
52	Capacitor, .05 mf, 350 volt.	K-2228-8	98	Filter, 16 mf (Elect.), 250 volts	K-3731
53	Resistor, 10,000 ohms	K-2226-10	99	Dial Lamps	K-2589-3
54	Resistor, 10,000 ohms	K-2226-10	100	Heater Resistor Wire (7 1/2'')	K-2436-26
55	Sensitivity (tuning) Control (switch)	K-3725	101	Power Transformer (25-60 Cycles)	K-3700-3
56	Capacitor, .05 mf, 350 volts	K-2228-8	102	A.C. On-Off Switch	Part of K-3754
57	Resistor, 1/10 meg.	K-2226-5	103	Line Filter, .025 mf.	
58	2nd I.F. Transformer Ass'y. (Items 58-64 incl.)	K-3720	104	Line Filter, .025 mf.	K-3750
59	Trimmer, 2nd I.F. Primary ..	K-2134-4	MISCELLANEOUS:—		
60	Trimmer, 2nd I.F. Secondary		Sockets, Octal base		
	ary		Loudspeaker Ass'y. (Less O.T.) ..		
			K-1924-1		
			K-2861-2		

REPLACEMENT PARTS LIST—Continued

Item	Description	Part No.
Lamp Socket.....		K-3340
Tuner Assembly complete.....		K-3733
Tuner Springs.....		K-3804
Tuner Knob Shutter.....		K-3745
Tuner Felt Pads.....		K-3233-6
Grid Clips.....		K-3030-2
Clamp for Elec. Caps.....		K-2520-1
Knob (for Sens. Control Switch).....		K-3742
Osc. Corrector Knob (brass).....		K-3738
Knobs (Volume & A/C Switch-Tone).....		K-3711-2

Item	Description	Part No.
Felt Washers.....		K-2491-4
Station Names (strips).....		K-3492
Clear Celluloid Windows for K-3492.....		K-3881
Set Screw for Osc. Corr. Knob...		K-2502-6
Chassis Mounting Screw.....		K-1122-12
Chassis Mounting Washer.....		K-1725-2
Chassis Mounting Lockwasher...		K-1035-3
Escutcheon Ass'y., complete....		K-3739



GENERAL:—This is an a-c operated radio receiver of the superheterodyne type, with push-button tuning. It employs seven tubes and is mounted in a table model cabinet with a six-inch electrodynamic loudspeaker. Reception can be obtained from eight stations chosen within the tuning range of 530 to 1720 kc., which covers the broadcast band. These stations are selected by means of push-buttons, the station to which the set is tuned being identified by illumination of the red indicators directly under the translucent cards on which the station names are printed. The A.C. load rating at 115 volts line is 61 watts and the set will operate at any frequency from 25 to 60 cycles.

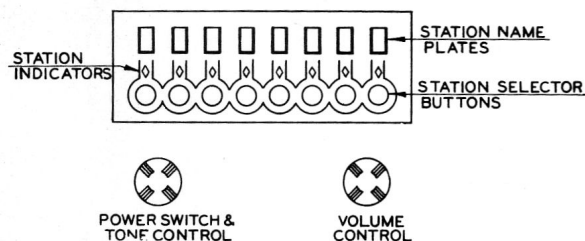


Figure 1.—Control Positions

CIRCUIT:—(Refer to Fig. 4—Schematic Circuit Diagram)—The broadcast antenna transformer uses both inductive coupling, between items 1 and 2, and capacitive coupling through item 3. There is no gang tuning capacitor since tuning is accomplished by means of the tuner assembly. This assembly includes eight push button switches each associated with a pair of trimmers. When a button is pressed its corres-

ponding pair of trimmers are connected across coils, items 2 and 21. Item 38 is a small trimmer capacitor permanently connected across the oscillator coil, which can be adjusted easily to compensate for any slight drift which might occur. A separate oscillator is used and it should be noted that the plate circuit is tuned, resulting in greater stability. Voltage is fed from the grid of the 6J5 oscillator directly to the injector grid of the 6A8 mixer tube, which is coupled to the grid of the 6K7 I.F. Amplifier by the double-tuned I.F. Transformer, item 46. This tube is in turn coupled to the 6H6 diode detector by a similar transformer, item 58. Items 67 and 69, which constitute the diode load, also provide A.V.C. voltage. Full control is applied to the type 6A8 converter and type 6K7 I.F. Amplifier through the filter, which consists of items 39 and 66, while partial control is applied to the 6K7 audio amplifier through the filter, items 68 and 72.

The volume control is coupled to the diode load by item 65 and is in turn resistance-capacitance coupled to the 6K7 pre-amplifier. The circuit of the output tube is conventional as in the rectifier circuit, apart from the fact that the speaker field is connected in the "B" circuit ground return. Bias voltages for the various tubes are obtained by means of resistors connected across the field coil.

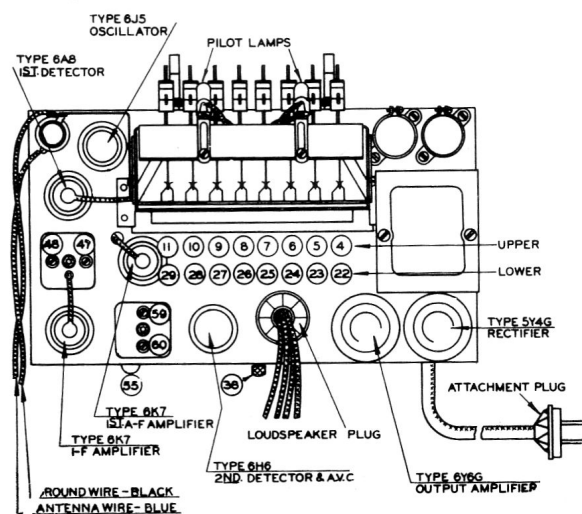


Figure 2.—Chassis Layout Showing Tube Positions

REALIGNING INSTRUCTIONS

To secure full advantage of the performance characteristics of this receiver, any realignment should be carried out carefully. A reliable test oscillator or signal generator and also an output meter should be employed.

I.F. ALIGNMENT:—Before attempting to align the I.F. stages it is most important to make sure that one of the push buttons is depressed and if possible it is preferable to choose one whose associated trimmers are tuned to about 1000 kc.

REALIGNING INSTRUCTIONS cont'd

- (a) Set the signal generator to 470 kc. and connect its output through a 0.1 mf. capacitor to the grid cap of the mixer tube (type 6A8).
- (b) Adjust trimmers, items 47, 48, 59 and 60 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.

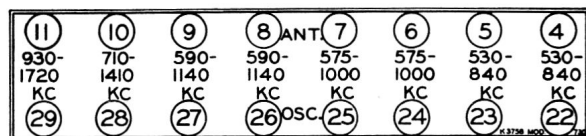


Figure 3.—Preset Trimmer Positions

R.F. ALIGNMENT:—Connect the antenna to the blue lead (antenna). Connect the black (ground) lead to ground. Note that the antenna must be the one with which the receiver is intended to operate. Set trimmer, item 38, at two turns from right.

Figure 3 shows a diagram of the preset trimmer positions similar to the label on the tuner assembly. With each pair (upper and lower) is included the range over which they will tune. Suppose one wishes to set a trimmer so that, when its button is pushed, a station on 600 kilocycles will be received. From the range values in figure 3 it will be seen that any one of buttons 1, 2, 3, 4, 5 or 6 (reading from left to right facing the set) may be used. It is advisable, however, to arrange the stations so that the lower frequencies are at the left (viewed from the front) and the higher frequencies at the right. As 600 kilocycles is near the lower end of the broadcast band, number 2 should be used.

Put the set in operation with volume control on full. Depress button number two and adjust the lower

trimmer number 23 with a screwdriver until the desired station is being received. Then press the button number 55 on the back of the chassis (see Fig. 2), retune trimmer 23 and tune trimmer number 5 for maximum sound from the loudspeaker. The effect of pressing button number 55 is to decrease the sensitivity of the receiver, thereby facilitating peaking of the trimmers. Should the signal from the station to which the receiver is being tuned be at all weak, it is possible that pressing button number 55 will eliminate the station entirely. When this is the case, however, no difficulty will be experienced in peaking the trimmers without using this button.

With the receiver is supplied a set of station identification cards. Cut off the one bearing the call-letters of the station for which the trimmers were adjusted and slip it in the frame above the particular push button.

To adjust the trimmers for the other seven buttons proceed as described above, choosing a set of trimmers for each station whose tuning range shown on the label includes the frequency of the desired station. Note that it is advisable to set the trimmer for only those stations which give reasonably strong signals, with fair regularity. It is also advisable to avoid those which are received satisfactorily during daytime but are subject to heavy interference at night.

Should it be found that the higher frequency stations are not accurately tuned when the push-buttons nearer the right hand end are pushed, the condition can be easily remedied. Push the button which tunes the highest frequency station for which the set is adjusted. Then adjust, by turning, the small knob (item 38, see fig. 2) on the rear of the chassis until the station is again in tune.

If this fails to remedy the trouble, the trimmers on the back of the set should be readjusted as described above.

D.C. RESISTANCE OF COILS — OHMS

Item	Description	Resistance	Item	Description	Resistance
1	R.F. Transformer Primary.....	22.5	101	Power Transformer Primary.....	10
2	R.F. Transformer Secondary.....	3.25		H.V. Secondary... ..	350
22	Oscillator Plate Coil.....	7.0		Rect. Fil. less than	0.5
21	Grid Winding.....	4.25		Heaters less than	0.5
49	1st I.F. Primary Coil.....	12.5	92	Loudspeakers Field Coil.....	1200
50	1st I.F. Secondary Coil.....	12.5	90	Voice Coil.....	4.7
61	2nd I.F. Primary Coil.....	9.		Humbucking Coil.....	.5
62	2nd I.F. Secondary Coil.....	9.	90	Output Transformer Primary.....	65
				Secondary.....	.6

SOCKET VOLTAGE READINGS

These readings were taken with the line voltage at 115 volts. Voltage readings can be duplicated using any good voltmeter having a resistance of 1000 ohms per volt, such as the Weston Model 663 Volt-Ohmmeter or the Weston Model 772 having a resistance of 20,000 ohms per volt. Current readings can be duplicated with the Weston Model 556 Analyzer and a Model 666-1A Socket Selector. When taking readings with the selector attachment, connect a 0.1 mf. capacitor from the grid of the tube in the selector to the chassis, to prevent oscillation.

TUBE	VOLTAGES					CURRENTS—M.A.		
	Heater (A.C.)	Plate	Screen	Cathode	Grid	Screen	PLATE	
							Normal Bias	Bias red. 4½ volts
6A8 1st Detector	6.2	130 ①	38	—	—2.4 ③	2.5	.5 ②	.75
6J5 Oscillator	6.2	80	—	—	—	—	5.8	7.2
6K7 I.F. Amplifier	6.2	128	65	—	—2.4 ③	.5	2.7	3.0
6H6 2nd Detector	6.2	—	—	0 ⑤	—	—	—	—
6K7 1st A.F. Amplifier	6.2	57	37	—	—2.4 ③	.2	.7	1.0
6Y6G Output Amplifier	6.2	125	130	—	—14.0 ④	4.2	52	61
5Y4G Rectifier	5.0	—	—	220	—	Plate 68	68	—

① Anode Grid volts = 50

③ Measured across resistor 93

⑤ Cathode No. 1—2.4 volts

② Anode Grid ma. = 1.5

④ Measured across resistors 93 & 94

measured across resistor 93.

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 (Cath- ode)
Type 6A8 1st Detector	2.5 meg.	0	0	1000*	25,000*	(Grid #1) 51,000	(Grid #2) 25,000*	less than 0.5	0
Type 6J5 Oscillator	—	0	less than 0.5	10,000*	—	51,000	—	0	0
Type 6K7 I.F. Amplifier	2.5 meg.	0	0	9*	1/10 meg.*	0	—	less than 0.5	0
Type 6H6 2nd Detector	—	0	0	0	0	(Plate) .55 meg.	—	less than 0.5	.1 meg.
Type 6K7 1st A.F. Amplifier	3.25 meg.	0	0	0.1* meg.	0.5* meg.	0	—	less than 0.5	0
Type 6Y6G Output Amplifier	—	0	0	65*	0*	.60 meg.	—	less than 0.5	0
Type 5Y4G Rectifier	—	—	—	1375	—	1375	—	less than 0.5*	0*

These readings were taken with the power off and volume control on full.

* Measured to pin No. 8 of rectifier tube socket.