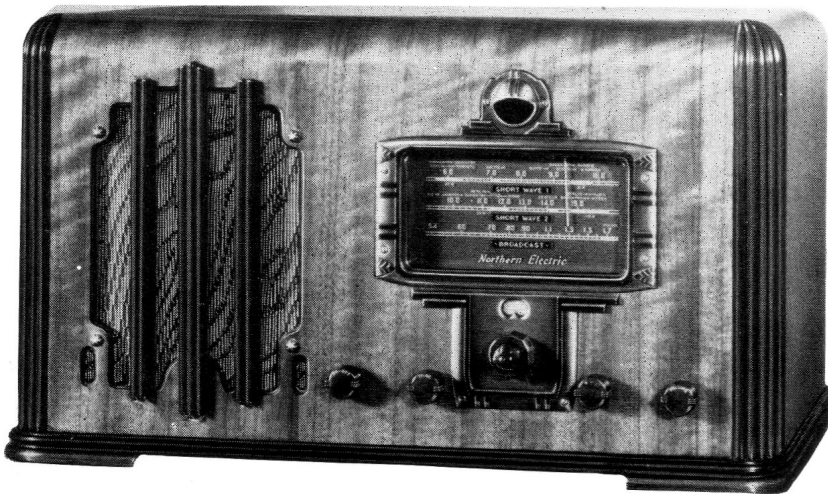


Models 830, 830A, 831, 831A

Radio Receivers



Specifications

Frequency Range:

Broadcast—535 to 1.72 megacycles.
Shortwave (1)—5.75 to 10.15 megacycles.
Shortwave (2)—9.3 to 15.5 megacycles.

I.F.:

470 K.C.

Tubes:

Type	Function
6A8	Converter
6K7	I.F. Amplifier
6H6	2nd Detector, A.V.C.
6F5	1st A.F. Amplifier
6Y6G	Output Amplifier
45	Voltage Stabilizer
6U5	Tuning Indicator
5Y4G	Rectifier

Power Supply:

Models 830, 831—105 to 125 volts A.C.,
60 cycles.

Models 830A, 831A—105 to 125 volts A.C.,
25-60 cycles.

A.V.C.:

A.V.C. delay bias is applied to the cathode of the type 6H6 from the drop across the resistor 90 in the minus 'B' return. This bias is also applied to the grid of the type 6F5, first A.F. Amplifier.

Controls:

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

Loudspeakers:

Models 830, 830A—Eight inch electro-dynamic.

Models 831, 831A—Ten inch electrodynamic enclosed in a "Mirrophonic Tone Chamber".

Cabinets:

Models 830, 830A: Table model.
Models 831, 831A: Console model.

MODELS 830-831 RADIO RECEIVERS

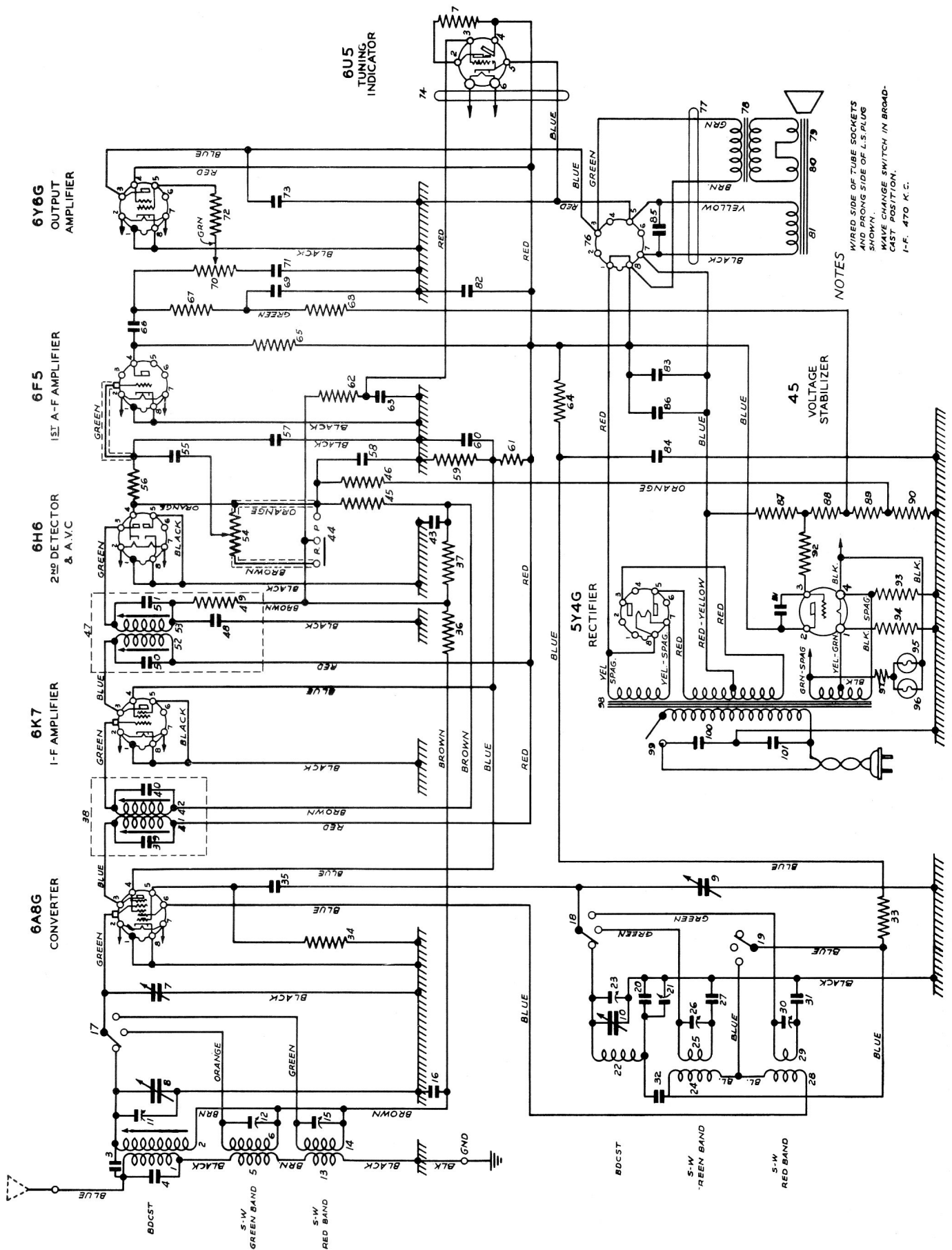


Figure 4.—Schematic Circuit Diagram Models 830-831.

D.C. RESISTANCE OF COILS — OHMS

Item	Description	Resistance	Item	Description	Resistance
1	B'dc't Ant. Trans. Primary.....	20.	77	Output Trans. Primary.....	95.
2	B'dc't Ant. Trans. Secondary.....	2.0		Output Trans. Secondary.....	.15
5	Short-Wave-1 Ant. Trans. Primary.....	.30	78	Loudspeaker Voice Coil, Imp. 1.82 ohms at 400 cycles.....	1.5
6	Short-Wave-1 Ant. Trans. Secondary....	.14	79	Loudspeaker Hum-Bucking Coil.....	.10
13	Short-Wave-2 Ant. Trans. Primary.....	.03	80	Loudspeaker Field Coil.....	1200.
14	Short-Wave-2 Ant. Trans. Secondary....	.03	94	Power Trans. Primary (60 cycle).....	5.9
22	B'dc't Oscillator Coil.....	7.0		Power Trans. Primary (25 cycle).....	9.0
24	Short-Wave-1 Osc. Coil Primary.....	.79		Power Trans. H.V.Sec. (60 cycle).....	250.
25	Short-Wave-1 Osc. Coil Secondary.....	.14		Power Trans. H.V.Sec. (25 cycle).....	380.
28	Short-Wave-2 Osc. Coil Primary.....	.47		Power Trans. Rect. (60 cycle).....	.21
29	Short-Wave-2 Osc. Coil Secondary.....	.07		Power Trans. Rect. (25 cycle).....	.27
41	1st I.F. Trans. Primary.....	6.5		Power Trans. Heaters (60 cycle).....	.14
42	1st I.F. Trans. Secondary.....	6.5		Power Trans. Heaters (25 cycle).....	.19
52	2nd I.F. Trans. Primary.....	6.5			
53	2nd I.F. Trans. Secondary.....	6.5			

REPLACEMENT PARTS LIST

Item	Description	Part No.	Item	Description	Part No.
1	Bdct. Ant. Trans. Pri.....	K-3460		(plus or minus 3%).....	K-1952-21
2	Bdct. Ant. Trans. Sec.....		32	Capacitor, .005 mf. 175V... K-2227-4	
3	6 mmf. Coupling Capacitor.....		33	Resistor, 5000 ohms..... K-2226-12	
4	Capacitor, 50 mmf. mica... K-1611-1		34	Resistor, 50,000 ohms..... K-2226-6	
5	S-W 1. Ant. Trans. Pri.....	K-3462	35	Capacitor, 100 mmf. mica.. K-1611-2	
6	S-W 1. Ant. Trans. Sec.....		36	Resistor, 2 megohms..... K-2226-1	
7	S-W Section Ant. Tuning Cap. 80.4 mmf. max.....		37	Resistor, 2 megohms..... K-2226-1	
8	Bdct. Section Ant. Tuning Cap. 402 mmf. max.....	K-3470	38	1st I.F. Transformer Assem- bly.....	K-3513
9	S-W Section Osc. Tuning Cap. 80.4 mmf. max.....		39	Capacitor, 98 mmf. mica... K-3513	
10	Bdct. Section Osc. Tuning Cap. 402 mmf. max.....		40	Capacitor, 108 mmf. mica... Use	
11	1.5-10 mmf. Trimmer Cap... K-1458-5		41	1st I.F. Transformer Primary K-3513	
12	3-25 mmf. Trimmer Cap... K-1458-6		42	1st I.F. Transformer Second- ary.....	
13	S-W 2. Ant. Trans. Pri.....	K-3464	43	Capacitor, 0.05 mf, 175V... K-2227-8	
14	S-W 2. Ant. Trans. Sec.....		44	Phono. Connecting Strip... K-2986	
15	3-25 mmf. Trimmer Cap... K-1458-6		45	Resistor, 1/2 megohm..... K-2226-3	
16	Capacitor, 0.05 mf, 175 V.. K-2227-8		46	Resistor, 1/10 megohm.... K-2226-5	
17	W-C Switch, Ant. Section..	K-3474	47	2nd I-F Transformer Assem- bly.....	K-3514
18	W-C Switch, Osc. Section..		48	Capacitor, 100 mmf. mica.. K-1611-2	
19	W-C Switch, Shorting Sec- tion.....		49	Resistor, 50,000 ohms..... K-2226-6	
20	Capacitor, 300 mmf. mica.. K-1611-4		50	Capacitor, 98 mmf. mica... Part of	
21	Capacitor, 80-250 mmf. lag. K-3083-4		51	Capacitor, 98 mmf. mica... K-3514	
22	Bdct. Osc. Coil..... K-3461		52	2nd I.F. Trans. Pri.....	
23	3-25 mmf. Trimmer Cap... K-1458-6		53	2nd I.F. Transf. Sec.....	
24	S-W 1. Osc. Trans. Pri.....	K-3463	54	1/2 meg. Volume Control (without switch).....	K-3472
25	S-W 1. Osc. Trans. Sec.....		55	Capacitor, .01 mf, 175 V... K-2227-6	
26	3-25 mmf. Trimmer Cap... K-1458-6		56	Resistor, 2 megohms..... K-2226-1	
27	Capacitor, 2040 mmf. mica (plus or minus 3%).....	K-1952-20	57	Capacitor, 100 mmf. mica.. K-1611-2	
28	S-W 2. Osc. Trans. Pri.....	K-3465	58	Elec. Capacitor, 5 mf, 5 volts K-3603	
29	S-W 2. Osc. Trans. Sec.....		59	Resistor, 4000 ohms..... K-2363-35	
30	3-25 mmf. Trimmer Cap... K-1458-6		60	Capacitor, 0.1 mf, 175 volts K-2227-9	
31	Capacitor, 1460 mmf. mica		61	Resistor, 5000 ohms..... K-3315-17	
			62	Resistor, 2 megohm..... K-2226-1	
			63	Capacitor, .05 mf, 175 volts K-2227-8	
			64	Resistor, 10,000 ohms..... K-2226-10	

REPLACEMENT PARTS LIST—continued

Item	Description	Part No.
65	Resistor, ¼ megohm.....	K-2226-4
66	Capacitor, 0.02 mf, 175 volts	K-2227-7
67	Resistor, ¼ megohm.....	K-2226-4
68	Resistor, 1/10 megohm.....	K-2226-5
69	Capacitor, 0.25 mf, 175 V..	K-2227-10
70	¼ meg. Tone Control (with- out switch).....	K-3473
71	Capacitor, .001 mf, 350 V..	K-2228-1
72	Resistor, 50,000 ohm.....	K-2226-6
73	Capacitor, .003 mf, 350 V..	K-2228-3
74	Tuning Indicator Cable.....	
75	Resistor, 1 megohm.....	K-2226-2
76	Loudspeaker Plug.....	K-2678
77	Loudspeaker Cable.....	
78	Output Transformer Assem- bly.....	K-2718-8
79	Voice Coil & Dia- phragm (Imp. of 1.82 at 400 cy.)	Part of K-3482 } K-3483
80	Humbucking Coil	Model 830 } K-3378-2
81	Field Coil.....	
79a	Voice Coil & Dia- phragm (Imp. of 1.82 at 400 cy.)	Part of K-3097-1 } K-3138
80a	Humbucking Coil	Model 831 } K-2543-5
81a	Field Coil.....	
82	Elec. Cap. 12 mf. 135V.....	
83	Elec. Cap. 8 mf. 240V.....	K-3471
84	Elec. Cap. 8 mf. 110 V.....	
85	Capacitor, .1 mf, 175V.....	K-2227-9
86	Elec. Capacitor, 16 mf. 240V.	K-3655
87	Resistor, 50,000 ohms.....	K-2226-6
88	Resistor, 6600 ohms.....	K-2226-65
89	Resistor, 6600 ohms.....	K-2226-65
90	Resistor, 500 ohms.....	K-2226-18
91	Capacitor, 0.25 mf, 350V...	K-2228-10
92	Resistor, ½ megohm.....	K-2226-3
93	Resistor, 10 ohm.....	K-2226-61
94	Resistor, 10 ohm.....	K-2226-61
95	Dial Lamp, 6.3 V.....	K-2589-3

Item	Description	Part No.
96	Dial Lamp, 6.3 V.....	K-2589-3
97	Resistance Wire 1.6 ohm, 10 ¼" long.....	K-3436-26 C.
98	Power Transformer— 60 cycle.....	K-3500-1
	25 cycle.....	K-3500-2
99	A.C. Switch.....	K-3475
100	Capacitor, 0.025 mf, 520V. A.C.....	K-1750
101	Capacitor, 0.025 mf. 520V. A.C.....	

MISCELLANEOUS:

Tube Sockets.....	K-1924-1
Ant. & Phono Term. Strip.....	K-2986
Socket (four prong).....	K-1194-1
Plan. Drive Assy.....	K-3914
Dial Frame Assy.....	K-3908
Vernier Ind. Scale Assy.....	K-3555
Slider & Spring Assy.....	K-4012-2
Band Indicator.....	K-3904
Knob ("Band").....	K-2765-9
Dial Scale.....	K-3859
Dial Backing.....	K-3895-1
Springs (for drive pulley).....	K-3923
Thumb Screws.....	K-3900
Light Shields.....	K-3907
Socket (six prong; amphenol)...	K-3906
Steel Cap (for above).....	K-3905
Escutcheon Assy.....	K-3839-1
Escutcheon Screws.....	K-3931
Insulating Strip (2 plus 1).....	K-1683-1
No. 8 Auto Washer (tone cham- ber).....	K-3353-2
Tone Chamber Cover Screw.....	K-3354-12
Chassis Mounting Bolts.....	K-3516
Knob—Large Tuning.....	K-3356-1
Knob—Small Tuning.....	K-2830-5
Knob—On-Off.....	K-2765-7
Knob—Tone.....	K-2765-8

REALIGNING INSTRUCTIONS

To secure full advantage of the performance characteristics of these receivers, any realignment necessary should be carried out carefully. A reliable test oscillator or signal generator and also an output meter should be employed. A signal generator utilizing harmonics to cover the short-wave band should not be used.

I.F. ALIGNMENT (See Figure 1):—

- (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 6A8 tube. Set the receiver dial to about 600 k.c. and turn the wave-change switch to the broadcast position.
- (b) Adjust screws 41, 42, 52, 53 (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 Figure 2—Underside Aligning Positions)—Broadcast Band:—

- (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.

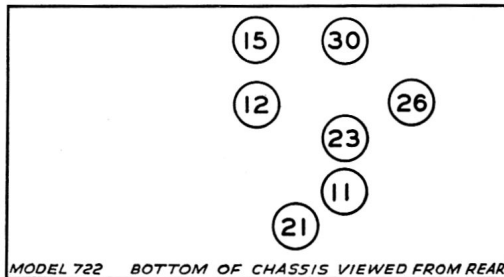


Figure 2—Underside Aligning Positions.

- (b) Set generator and receiver to 1600 k.c. Adjust item 23 to tune in the signal, and adjust item 11 for maximum output.
- (c) Set the generator and the pointer to 600 k.c. and adjust lag capacitor, item 21, for maximum output. Then adjust movable iron core in the antenna secondary, item 2, (See Fig. 1) for maximum output while rocking the gang. Recheck at 1600 k.c. and again at 600 k.c. if necessary.

SHORT WAVE—No. 1 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 10 megacycles. Adjust 26 to tune in the signal and adjust 12 for maximum output, while rocking the gang. (NOTE:—Check for image at 10.9 megacycles.)

SHORT WAVE—No. 2 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 item 30 to tune in the signal and adjust item 15 for maximum output while rocking the gang. (Check for the image at 15.9 mc.)

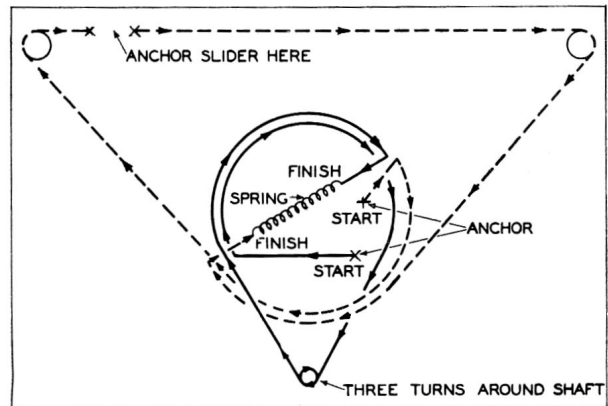


Figure 3.—Models 830-831 Indicating how the dial Drive Cord is attached to the tuning shaft and adjusted.

SOCKET VOLTAGE READINGS

These readings were taken with the gang capacitor all in, wave-change switch on the broadcast band, and line voltage of 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	Screen	Plate	Cathode	Grid	Screen	PLATE	
							Normal Bias	Bias Red. 4½ V.
Type 6A8 Converter	6.3	50	129①	0	— 1.0③	3.1	2.6②	3.8
Type 6K7 I-F Amplifier	6.3	50	129	0	— 1.0③	0.7	2.8	3.8
Type 6H6 2nd Det. & A.V.C.	6.3	—	—	0⑥	—	—	—	—
Type 6F5 1st A-F Amplifier	6.3	—	65	0	— 1.0③	—	0.2	0.35
Type 6Y6G Output Amplifier	6.3	138	132	0	—14.5④	4.0	52	63
Type 45 Voltage Stabilizer	2.45	—	138	—	—27⑤	—	11	16.5
Type 6U5 Tuning Indicator	6.3	(Target) 138	22	0	0⑥	—	(Plate) .1	(Target) 1.1
Type 5Y4G Rectifier	5.05	—	—	138	—	(Plate) 43	43	—

① Anode Grid Voltage 108.

② Anode Grid Current 2.2 ma.

③ Measured across resistor 90.

④ Measured across resistors 89 and 90.

⑤ Measured across resistors 88, 89 and 90.

⑥ Cathode No. 1, —1.0 volt, measured across resistor 90.

⑦ Voltage across No. 5 and No. 7 terminals on L.S. socket is 115 volts

SOCKET RESISTANCE READING 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 6A8	2.5 meg.	0	Approx. 5	9000	4000	Grid No. 1 50,000	Grid No. 2 24,700	Approx. 5	0
Type 6K7	0.6 meg.	0	Approx. 5	9000	4000	(Suppressor) 0	—	Approx. 5	0
Type 6H6	—	0	Approx. 5	.55 meg.	(Cathode) 100,500	(Plate) 0	—	Approx. 5	0
Type 6F5	2.1 meg.	0	Approx. 5	—	(Plate) 2.59 meg.	—	—	Approx. 5	0
Type 6Y6G	—	0	Approx. 5	9800	9700	407,000	—	Approx. 5	0
Type 45	—	(Filament) 5	(Plate) 9700	(Grid) 514,000	(Filament) 5	—	—	—	—
Type 6U5	—	(Heater) 5	(Plate) 1 meg.	(Grid) 2.6 meg.	(Target) 9000	(Cathode) 0	(Heater) 5	—	—
Type 5Y4G	—	—	—	1,300	—	(Plate) 1,300	—	9700	9700

These readings were taken with the power off and tone control in treble position. The pins are numbered to correspond with the schematic circuit diagram.