Most - Often - Needed

1939 RADIO DIAGRAMS

and Servicing Information

Compiled by

M. N. BEITMAN

SUPREME PUBLICATIONS

CHICAGO

VOLUME 2

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Oscillators, Amplifiers
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Facsimile, Television
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Alignment, Motor Control
Radio Servicing, Gages
Electronics in Industry
Radio Circuits, Hints
Testing Radio Parts
Transmitters, Operating
Detectors, Metal Locators
Welding Controls, Beacons
High-frequency Heating
Frequency Standards, P.A.
Analyzers, Tube Testers
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Let this authoritative, easy-to-understand, practical course pave your way into Electronics — the money-making field of the future. Prepare now. Use this training in your spare time to get ahead in a good War-job. Be ready to grab the opportunities in post-war Electronic developments. Let these lessons train you, serve as your teacher and guide, and give you the needed practical time-saving hints on the job. All topics completely indexed — all subjects easy to find. An educational value that cannot be duplicated at any time.

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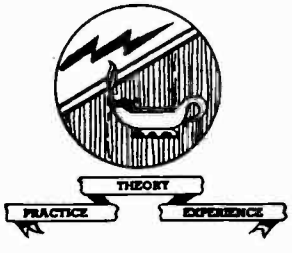
1939

RADIO DIAGRAMS

and Servicing Information

Compiled by

M. N. BEITMAN



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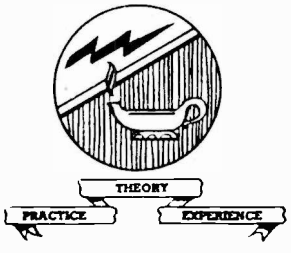
YOU Need radio diagrams to repair sets quickly and properly. In this one manual you will find all the popular 1939 diagrams you really need. All sets, which have been sold in large quantities during the 1939 radio season, are included. The most-often-needed diagrams are here in this one handy manual.

Get into the habit of referring to the index for the page numbers of the material you need. Use the circuit diagrams, parts lists, hints, and alignment information as aids in your daily radio work.

Radio sets of other periods are included in several other SUPREME PUBLICATIONS manuals. Get these service manuals of most popular diagrams at your jobber.

Our aim always has been to be of service to the radio men. We believe you will find this manual your servant and tool, ready to assist you in making radio servicing easier, faster, and much better paying work. Thank you.



PRINTED IN THE UNITED STATES

INDEX

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MANUAL OF 1939 MOST POPULAR SERVICE DIAGRAMS

ACKNOWLEDGEMENT

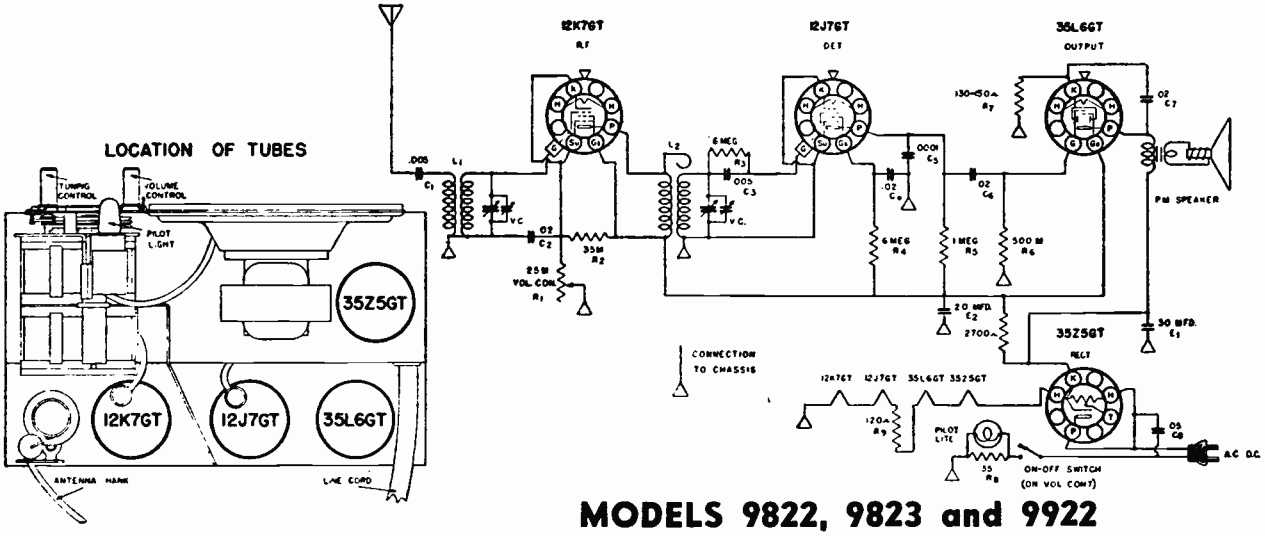
To all radio manufacturers represented in this book, due thanks and acknowledgement are given. It is only with the cooperation of these firms that the most-popular diagrams needed by you have been selected and prepared for publication.

M. N. Beitman

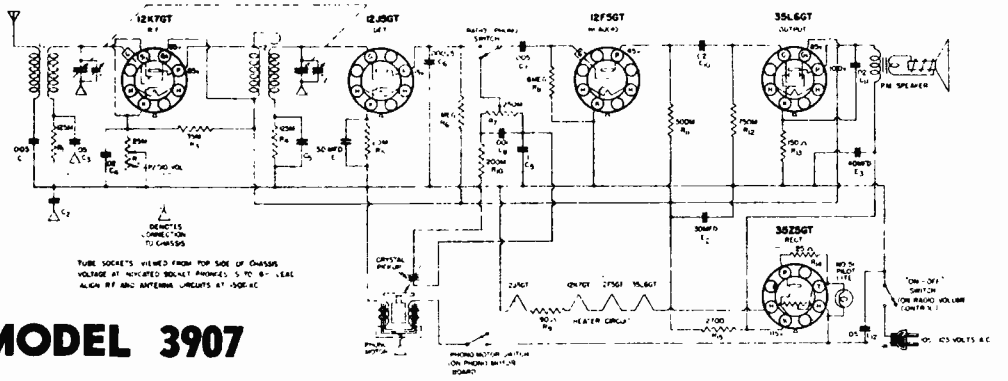
Chicago, Ill.

MANUAL OF 1939 MOST POPULAR SERVICE DIAGRAMS

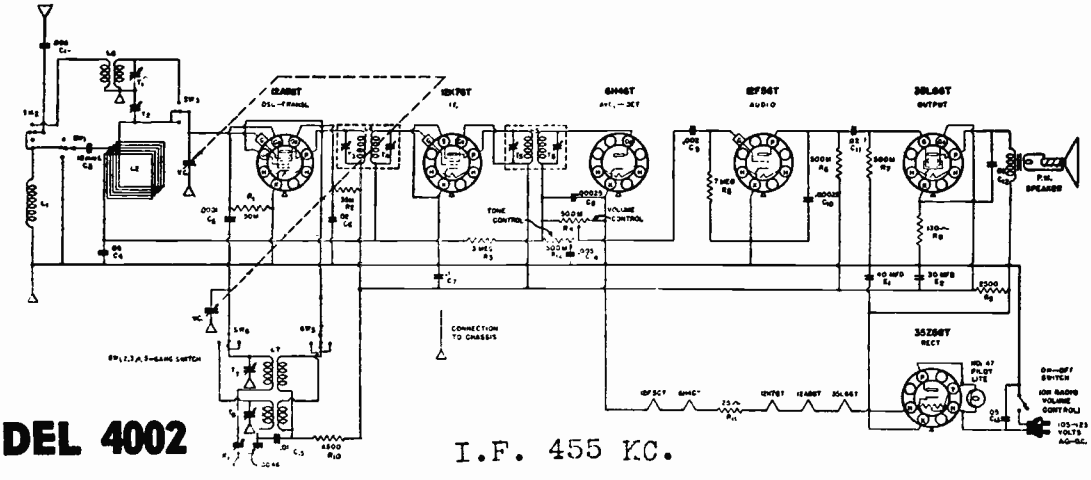
AIR-KING PRODUCTS CO., INC.—BROOKLYN, N. Y.



MODELS 9822, 9823 and 9922



MODEL 3907



MODEL 4002

I.F. 455 KC.

This receiver comprises a six-tube AC-DC two-band superheterodyne incorporating the ingenious "Noise Minimizer" system. An improved filter circuit, automatic volume control, beam power output tube and oversized dynamic speaker are utilized for improved performance. The tuning range of this instrument accommodates two bands of frequencies from 530 to 1700 kilocycles (standard American broadcast) and 5.7 to 18 megacycles (foreign broadcast).

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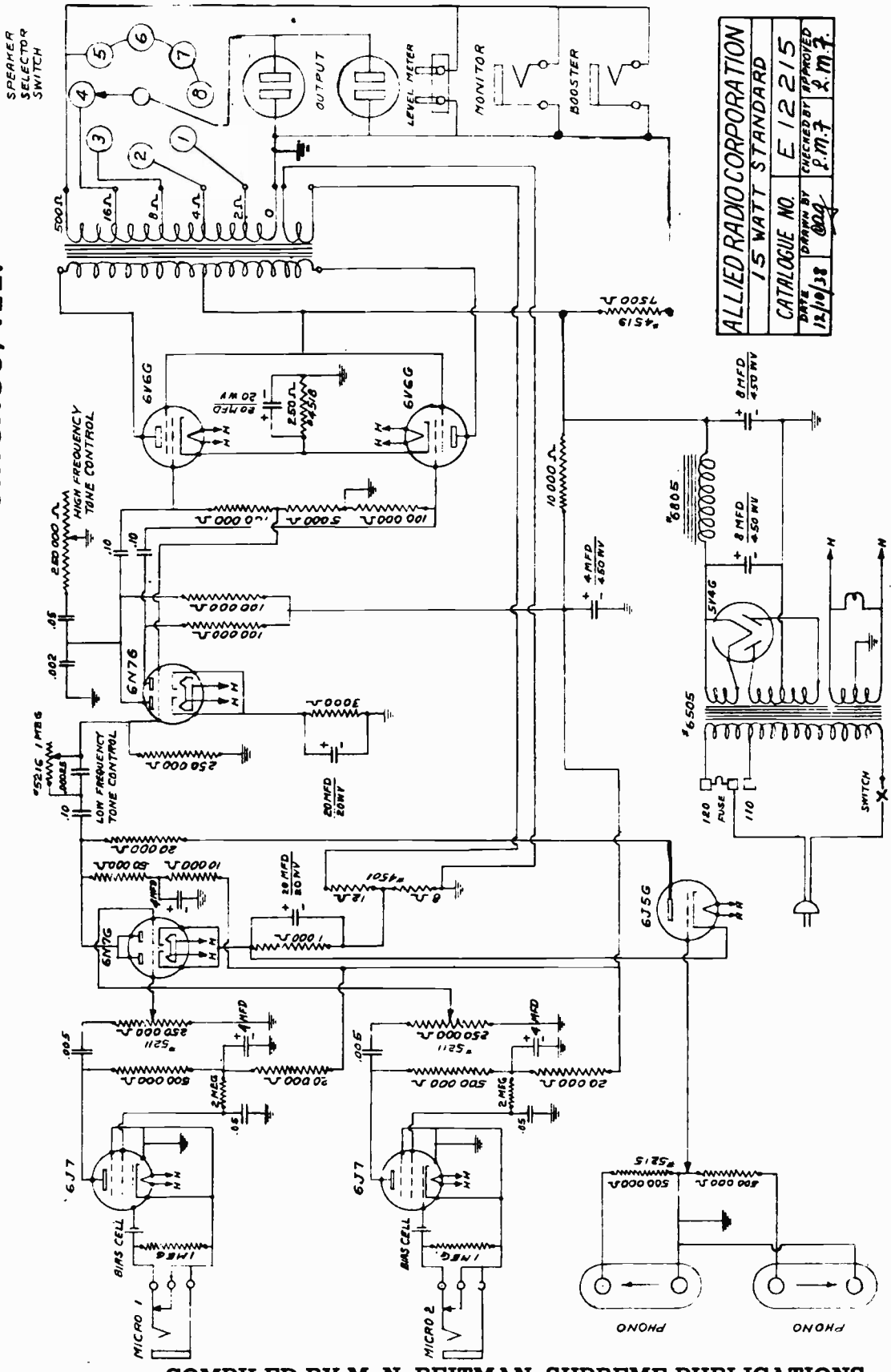
ALLIED RADIO CORP.

833 W. JACKSON BLVD. CHICAGO, ILL.



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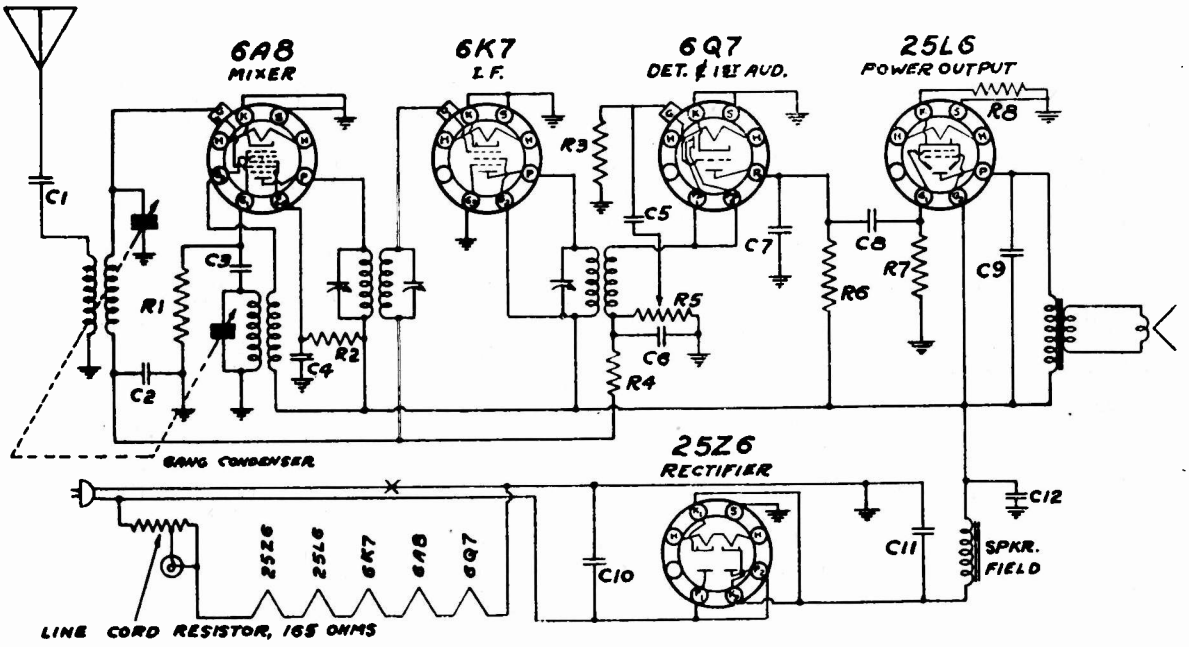
Allied Radio
CORPORATION



RESISTORS

No.	OHMS	WATTS	
R1	80,000	½	
R2	40,000	½	
R3	15 MEG	½	
R4	2 MEG	½	
R5	500,000		VOL. CONT.
R6	250,000	½	
R7	500,000	½	
R8	110	½	±10%

CONDENSERS

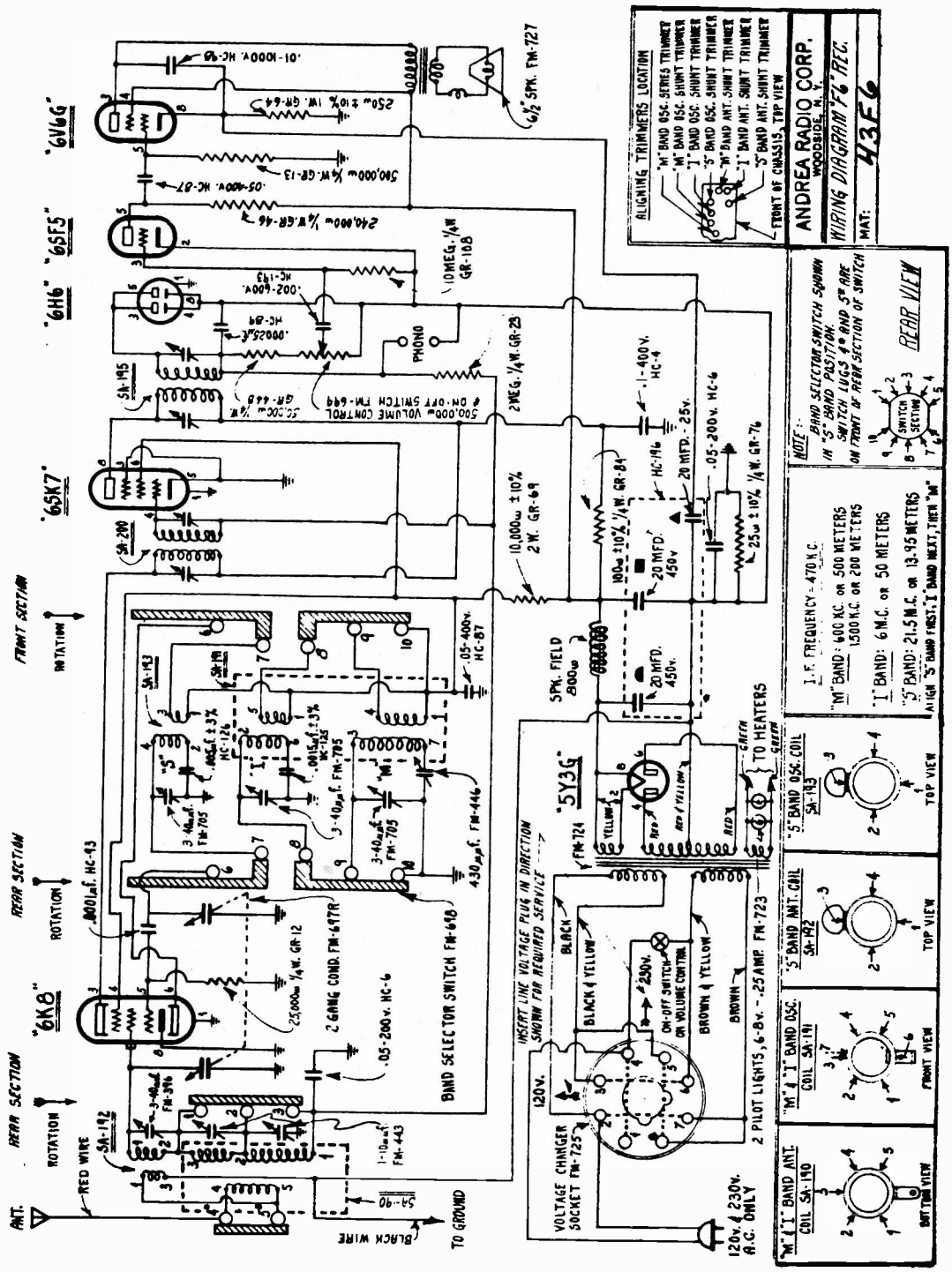
No.	MFD.	TYPE
C1	.005	600V.
C2	.02	400V.
C3	.00025	MICA
C4	.01	400V.
C5	.01	400V.
C6	.00025	MICA
C7	.00025	MICA
C8	.01	400V.
C9	.005	600V.
C10	.05	400V.
C11	25. } ELECT.	150V.
C12	10. }	150V.

I.F. – 456 K.C.

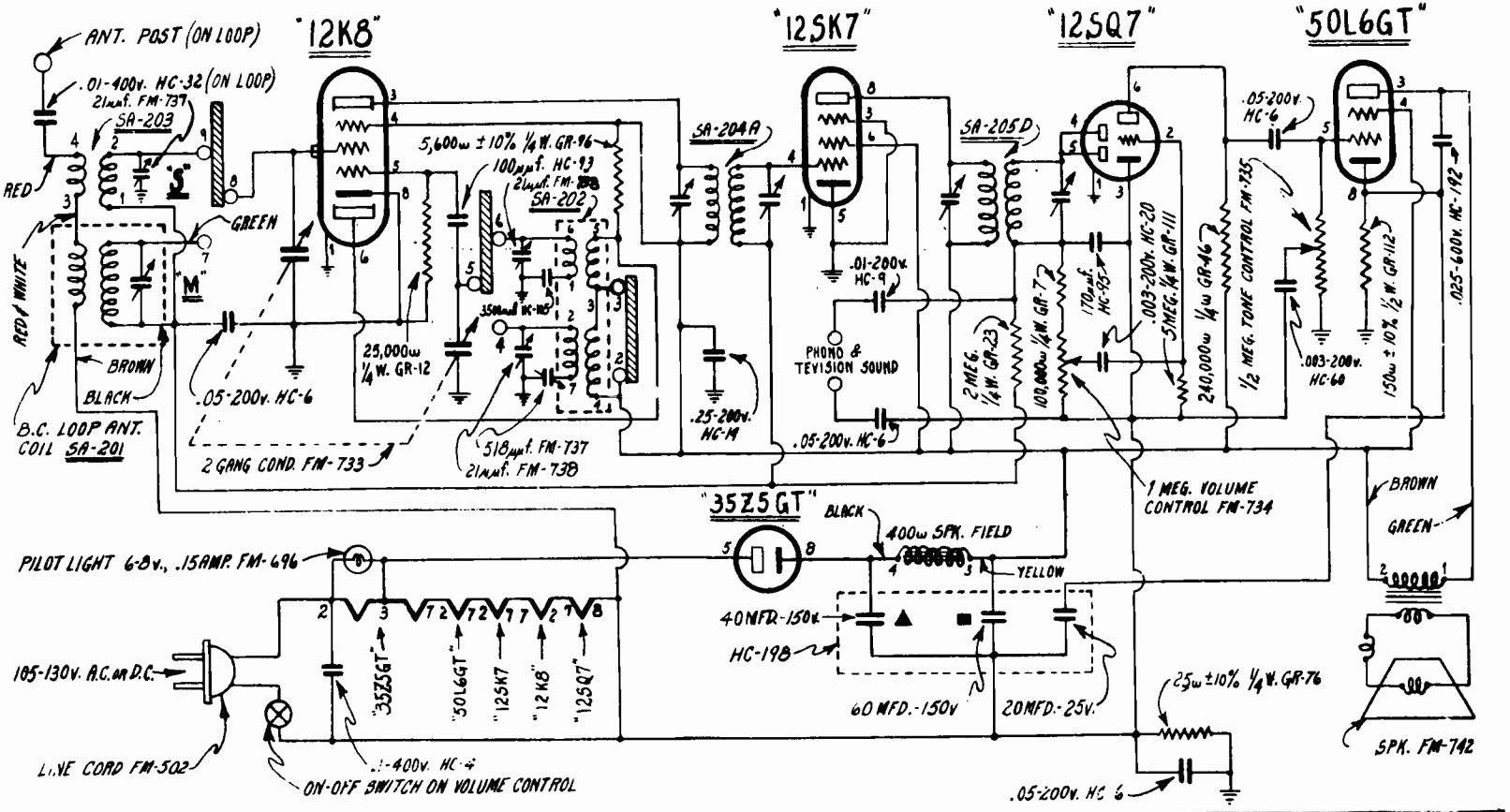
ALIGNMENT DATA

I.F. ALIGNMENT Adjust the test oscillator to 456 KC and connect the output to the grid of the first detector tube (6A8) through a .05 or .1 mfd. condenser. Connect ground or test oscillator to chassis ground through a .1 mfd. condenser. Align all three I.F. trimmers to peak or maximum reading on the output meter.

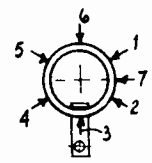
BROADCAST BAND ALIGNMENT Adjust the oscillator to 1730 KC and connect the output to the antenna lead, through a .0001 mfd. mica condenser. Set the gang condenser to minimum capacity and adjust the gang condenser trimmer (oscillator) to receive this signal. After this has been carefully done, the next step is to set the generator to 1400 KC and after tuning in the signal adjust the antenna trimmer to peak. This is all that is necessary for the alignment unless the plates of the gang condenser have been bent out of shape. In case of bent plates, set the test oscillator and the receiver to 600 KC and bend the plates into the position for maximum output.



ANDREA RADIO CORP.
48-20 48th Ave., Woodside, L. I., N. Y.

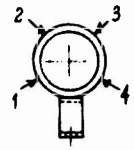


"M" & "S" BAND OSC. COIL SA-202



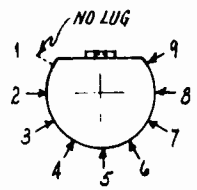
LUG VIEW

"S" BAND ANT. COIL SA-203



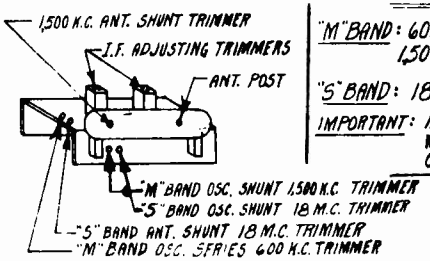
LUG VIEW

BAND SELECTOR SWITCH FM-736



REAR VIEW

ALIGNING TRIMMERS LOCATION



I.F. FREQUENCY = 455 K.C.

"M" BAND: 600 K.C. OR 500 METERS
1,500 K.C. OR 200 METERS

"S" BAND: 18 M.C. OR 16.67 METERS

IMPORTANT: RECEIVER MUST BE ALIGNED WITH LOOP CORRECTLY ASSEMBLED ON CHASSIS

NOTE: BAND SELECTOR SWITCH SHOWN ON "S" BAND POSITION, TO THE EXTREME CLOCKWISE POSITION.

ANDREA RADIO CORP.
WOODSIDE, N. Y.

WIRING DIAGRAM "UG55" REC.

MODEL: "26G5"

DR: J.R. | DATE: 2-2-40 | APP:

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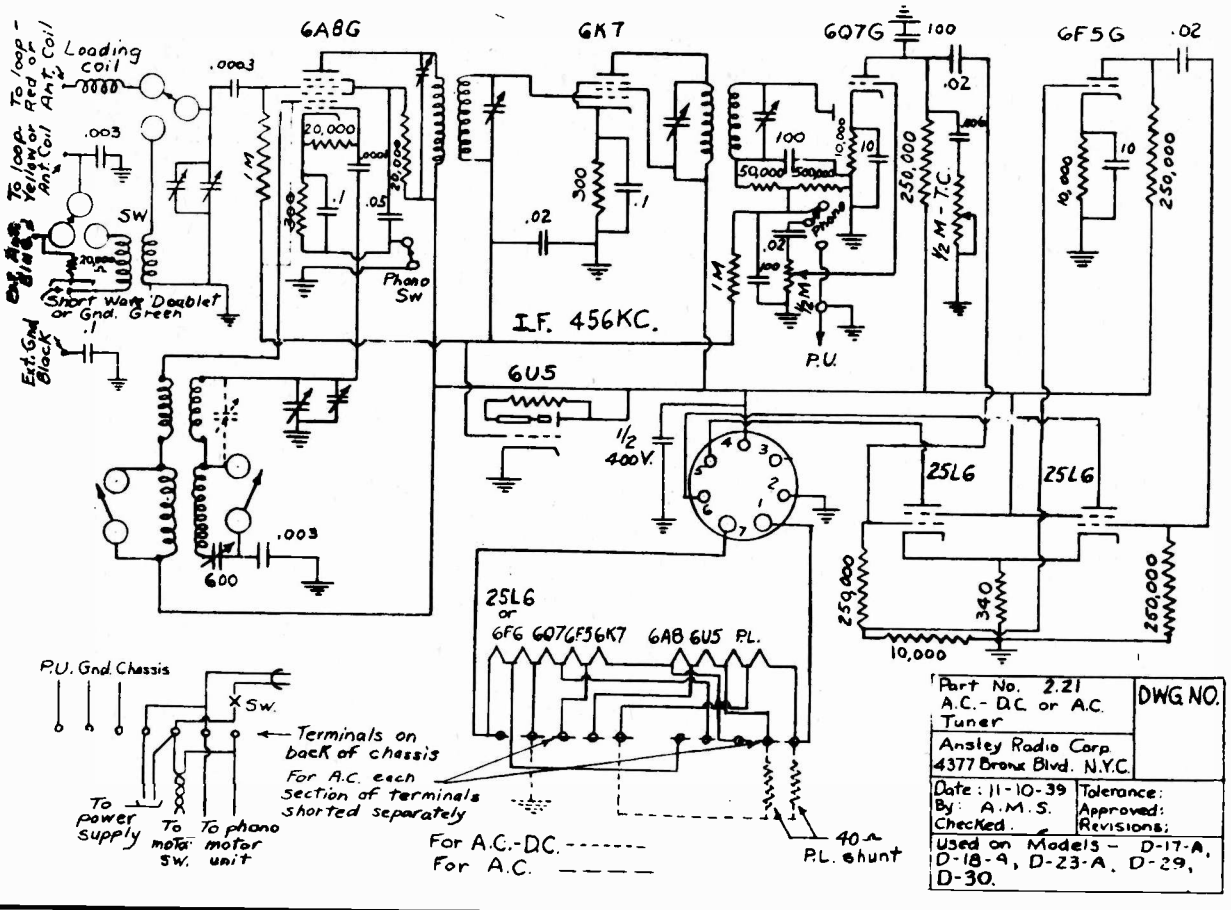
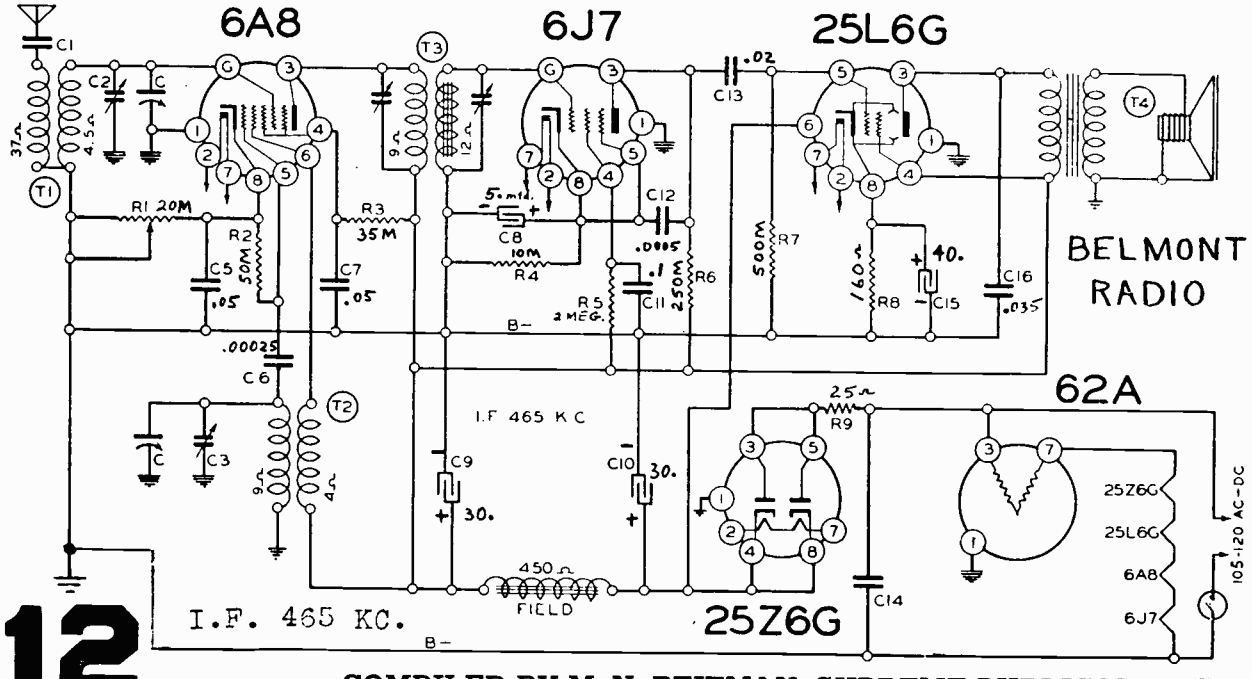


AUTOMATIC TUNER MODEL 520



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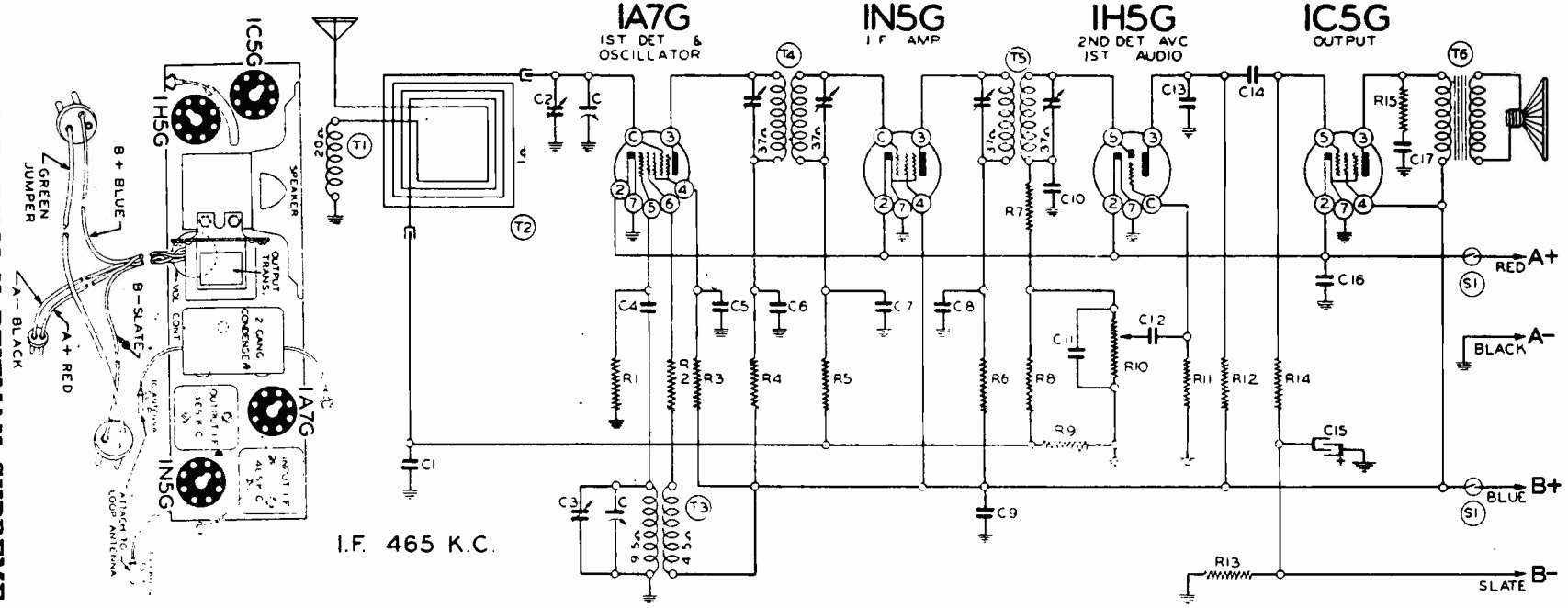
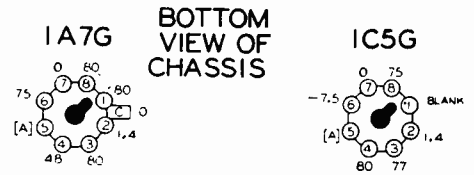


MODEL 403

Belmont Radio Corporation
Chicago, Illinois

BOTTOM VIEW OF CHASSIS



Circuit Diagram Ref. No.	Part No.	Description
		RESISTORS
R1	1309	200M ohm—⅓ w.
R2	13071	4M ohm—⅓ w.
R3	130208	40M ohm—⅓ w.
R4	13026	1000 ohm—⅓ w.
R5	13020	100M ohm—⅓ w.
R6	13026	1000 ohm—⅓ w.
R7	13040	19M ohm—⅓ w.
R8	13038	2 megohm—⅓ w.
R9	13038	2 megohm—⅓ w.
R10	101163	1 megohm volume control
R11	13019	1 megohm—⅓ w.
R12	1303	500M ohm—⅓ w.
R13	130283	750 ohm—⅓ w.
R14	13038	2 megohm—⅓ w.
R15	130218	5M ohm—⅓ w.
		CONDENSERS
C	102103	2 gang variable condenser
C1	10022	.05 x 200 v.
C2		Loop ant. trimmer on gang
C3		Oscillator trimmer on gang
C4	12912	.00025 mica
C5	10022	.05 x 200 v.
C6	10078	.01 x 200 v.
C7	10078	.01 x 200 v.
C8	10078	.01 x 200 v.
C9	10064	.25 x 200 v.
C10	1295	.0001 mica
C11	1295	.0001 mica
C12	10078	.01 x 200 v.
C13	12912	.00025 mica
C14	10078	.01 x 200 v.
C15	11935	25 mfd. 25 w. v. lytic
C16	10056	.5 x 200 v.
C17	10012	.003 x 600 v.
		PARTS
T1	1236	Antenna load coil (on loop)
T2	120257	Loop antenna coil (complete)
T3	110110	Oscillator coil
T4	108142	Input I.F. coil
T5	108143	Output I.F. coil
T6	114158	5" P.M. Speaker
S1		Off-on switch D.P.S.T. on vol. control

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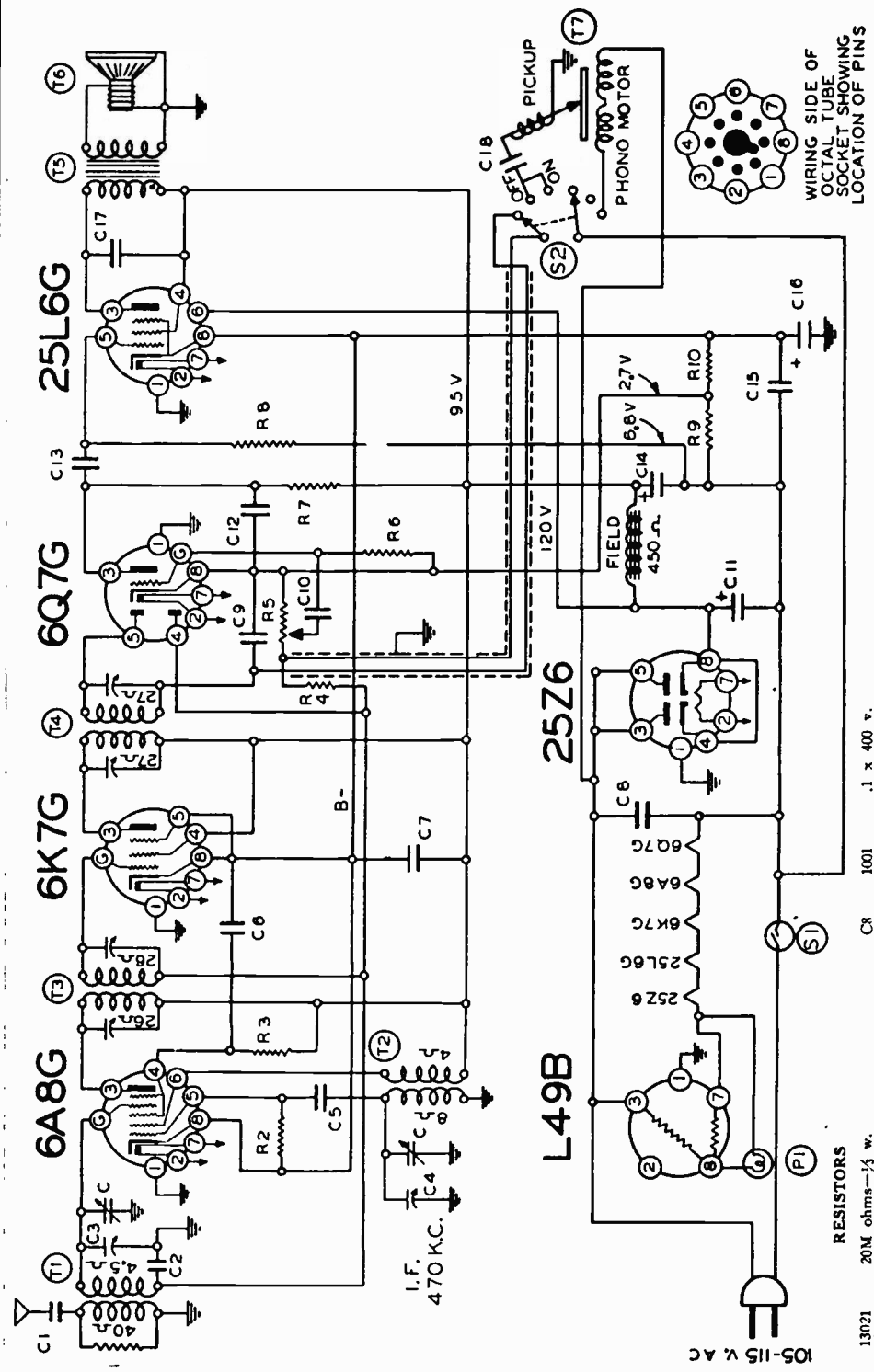
AUTOMATIC TUNER MODEL 632



Belmont Radio Corporation
Chicago, Illinois

RESISTORS

R1	13021	20M ohms—½ w.
R2	13012	50M ohms—½ w.
R3	130149	15M ohms—½ w.
R4	130170	3 megohms—½ w.
R5	101113	1 megohm volume control
R6	130225	15 megohms—½ w.
R7	130100	150M ohms—½ w.
R8	13011	250M ohms—½ w.
R9	130231	75 ohms—½ w.
R10	130174	50 ohms—½ w.

CONDENSERS

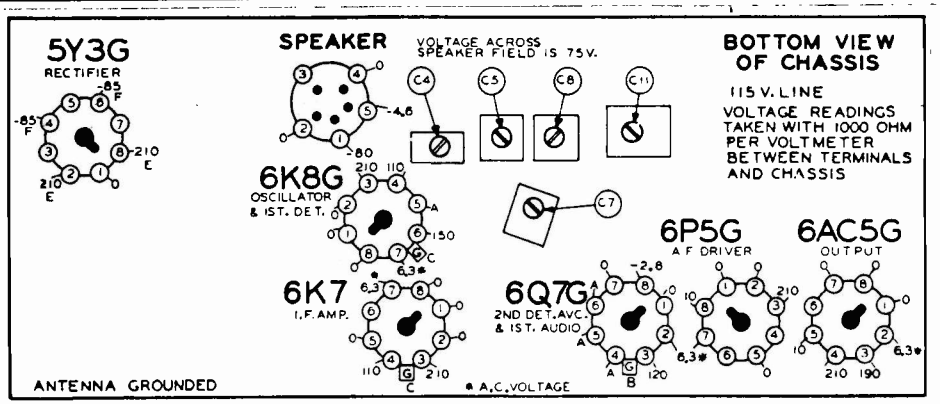
C	10278	2 gang variable condenser
C1	1292	.0005 mf. Mica
C2	10026	.02 x 400 v.
C3		Ant. Trimmer Condenser
C4		Oscillator Trimmer Condenser
C5	12912	.00025 Mica
C6	1009	.05 x 200 v.
C7	1009	.05 x 200 v.
C8	1001	.1 x 400 v.
C9	1295	.0001 mf. Mica
C10	10011	.01 x 400 v.
C11	11962B	60 mf. Lytic
C12	12912	.00025 mf. Mica
C13	10011	.01 x 400 v.
C14	11962B	60 mf. Lytic
C15	11962B	40 mf. Lytic
C16	10091	.15 x 400 v.
C17	10067	.025 x 400 v.
C18	10026	.02 x 400 v.

PARTS

T1	11192B	Antenna Coils complete
T2	11073	Oscillator Coil complete
T3	108117	Input I.F.-470 kc. complete
T4	10895D	Output I.F.-470 kc. complete
T5	10560	Output Transformer
T6	114116C	5" Dynamic Speaker
T7	10438	Phono Motor
S1		Off-On Switch on Volume Control

MODEL 665

MOST POPULAR SERVICE DIAGRAMS



RESISTORS

R1	13041	800 ohm—½ w.
R2	13017	10M ohm—½ w.
R3	13020	100M ohm—½ w.
R4	13012	50M ohm—½ w.
R5	13017	10M ohm—½ w.
R6	13031	1500 ohm—½ w.
R7	13042	20M ohm—½ w.
R8	1304	3 megohm—½ w
R9	101126	1 megohm control
R10	130233	60 ohm—½ w.
R11	1304	3 megohm—½ w.
R12	130203	40 ohm—½ w.
R13	1309	200M ohm—½ w.
R14	13019	1 megohm—½ w.
R15	130232	25M ohm—½ w.

CONDENSERS

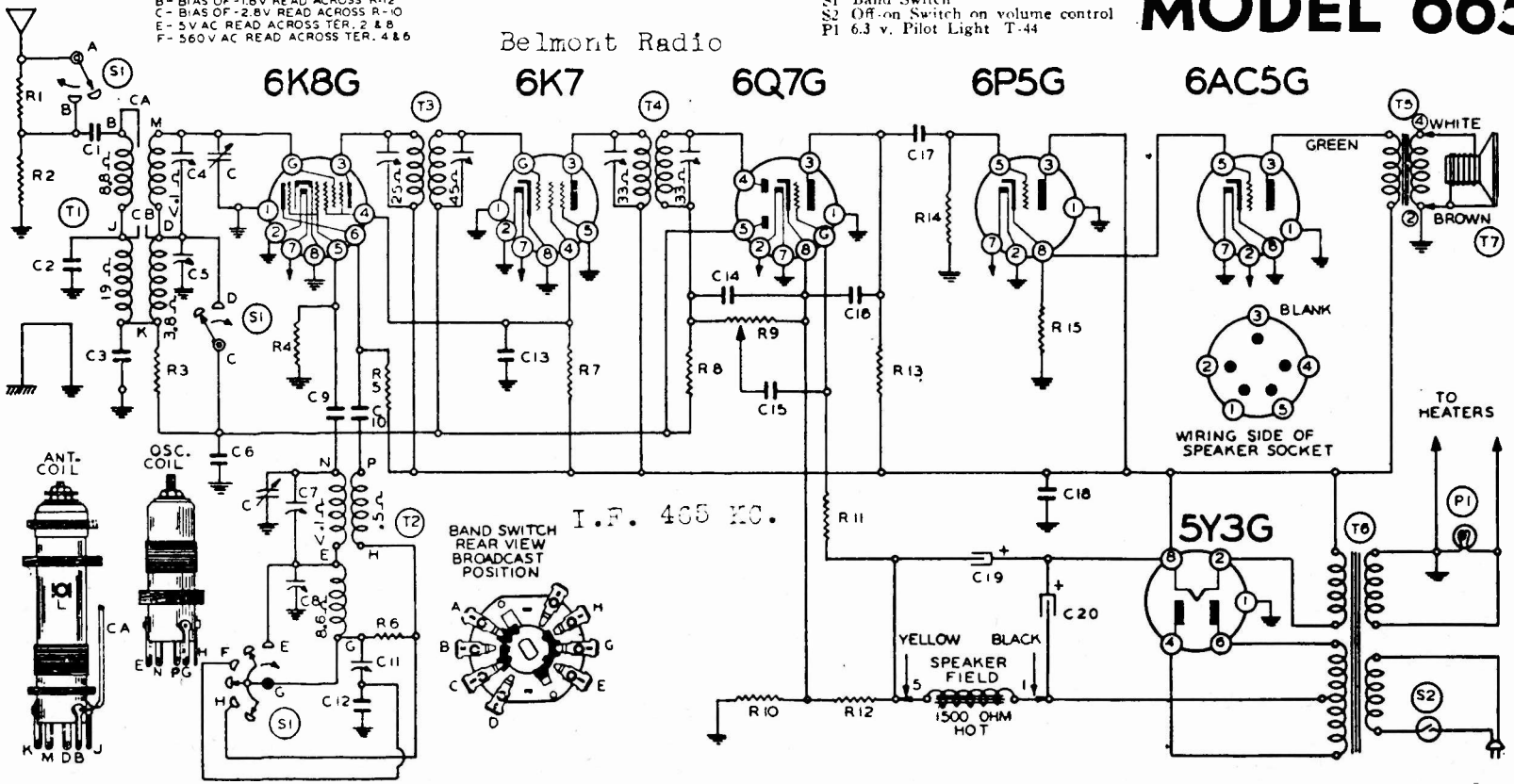
CA		Adjustable Capacitor
CB		Adjustable Capacitor
C	10274	2 gang variable condenser
C1	12987	.000105 Mica
C2	12949	.00009 Mica
C3	10037	.003 x 600 v.
C4	12439	SW. Antenna Trimmer 2-25 mmfd.
C5	12453	BC. Antenna Trimmer 1-10 mmfd.
C6	10022	.05 x 400 v.
C7	12439	SW. Oscillator Trimmer 2-25 mmfd.
C8	12453	BC. Oscillator Trimmer 2-25 mmfd.
C9	12938	.00005 Mica
C10	10025	.002 x 600 v.
C11	12451B	350 mmfd. W.C. B.C. Series Pad
C12	129112	.0041 Compression Type
C13	10053	.25 x 400 v.
C14	12939	.00005 Mica
C15	10011	.01 x 400 v.
C16	1292	.0005 Mica
C17	10011	.01 x 400 v.
C18	10013	.05 x 400 v.
C19	11963B	8 mfd.—350 w. v. lytic
C20	11963B	12 mfd.—350 w. v. lytic

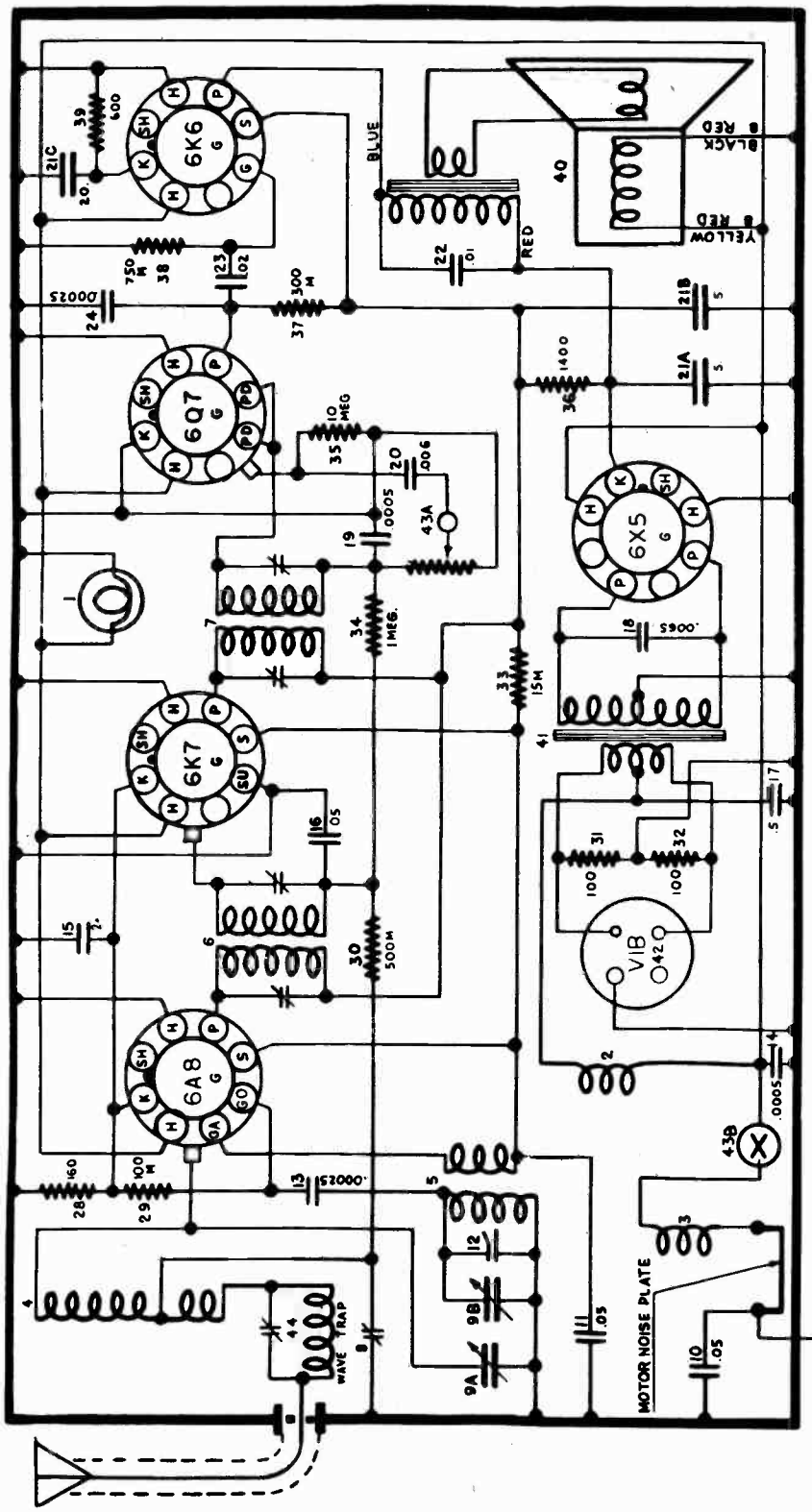
PARTS

T1 SW. B. C. Antenna Coil Complete
T2 SW. B. C. Oscillator Coil Complete
T3 Input I. F.—465 kc.
T4 Output I. F.—465 kc.
T5 Output Transformer
T6 Power Transformer
T7 6" Speaker Dynamic (1500 ohm field)
S1 Band Switch
S2 Off-on Switch on volume control
P1 6.3 v. Pilot Light T-44

A—CANNOT BE MEASURED WITH VOLTMETER.
B—BIAS OF -1.8V READ ACROSS R-12
C—BIAS OF -2.8V READ ACROSS R-10
E—5 V AC READ ACROSS TER. 2 & 8
F—560 V AC READ ACROSS TER. 4 & 6

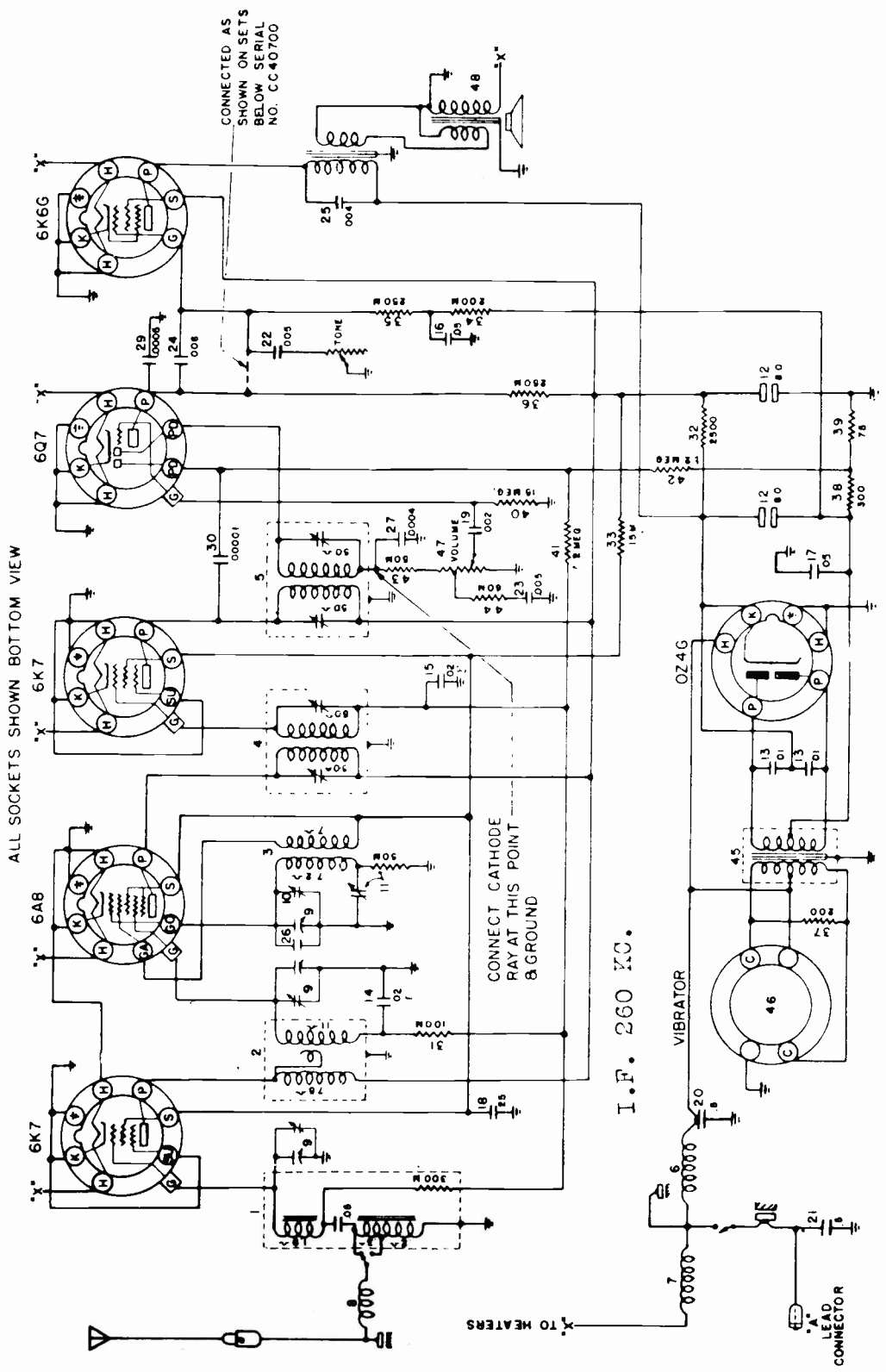
REAR OF CHASSIS





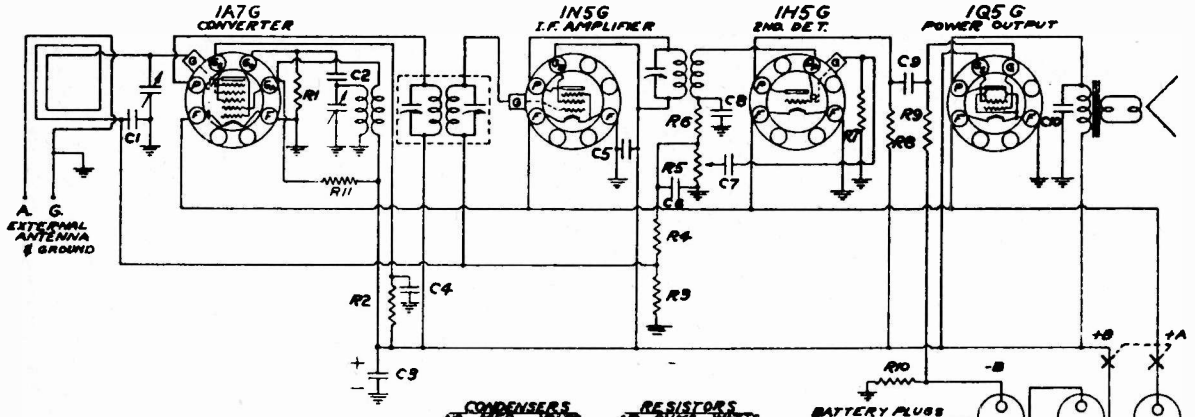
CHEVROLET
M=1,000-A
455 K.C. I.F.

985-425 WIRING DIAGRAM



985-426 WIRING DIAGRAM

CHEVROLET



CONDENSERS

No	MFD.	VOLTS
C1	.05	200
C2	.00005	MICA
C3	4.-150	ELEC.
C4	.05	200
C5	.05	200
C6	.0002	MICA
C7	.01	400
C8	.0002	MICA
C9	.01	400
C10	.001	600

RESISTORS

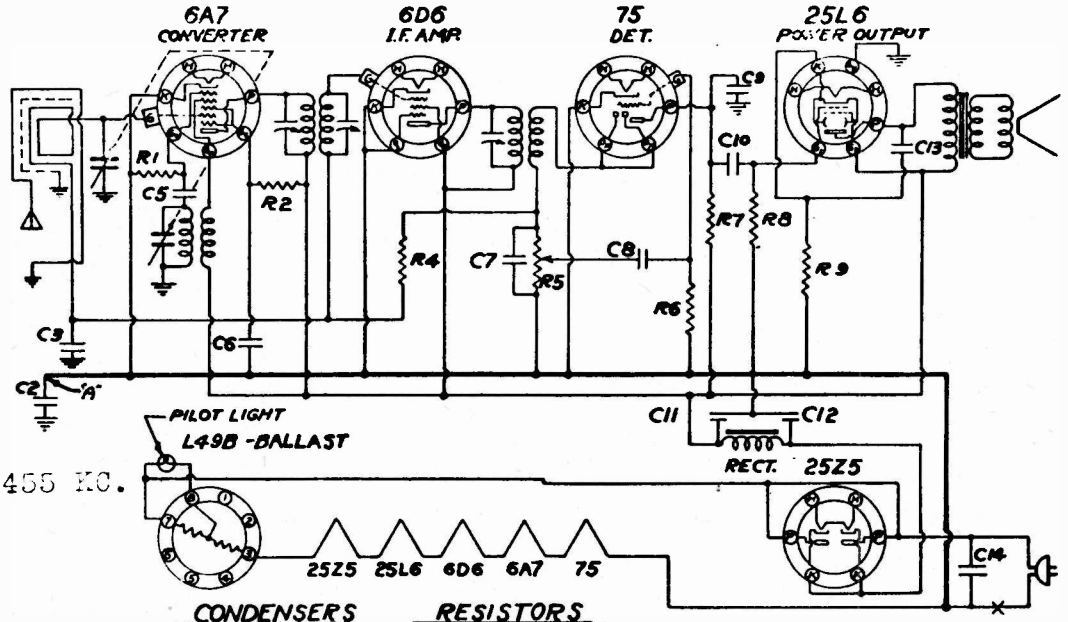
No	OHMS	WATTS
R1	250000	1/2
R2	70000	1/2
R3	2000000	1/2
R4	2000000	1/2
R5	500000	1/2 VOL.
R6	70000	1/2
R7	2000000	1/2
R8	500000	1/2
R9	1000000	1/2
R10	440	1/2
R11	15,000	1/2

Admiral

I.F. ALIGNMENT Remove the receiver chassis from the cabinet and connect a 100,000 ohm resistor to the green and yellow leads in place of the loop antenna to which they were originally connected. Adjust the signal generator to 455 KC and connect the output to the grid of the first detector tube (1A7) through a .05 or .1 mfd. condenser. The ground on the signal generator should be connected to the chassis ground. Align all I.F. trimmers to peak or maximum reading on the output meter.

Admiral Radio

Model 4D



I.F. 455 KC.

CONDENSERS

No	MFD.	VOLTS
C2	.25	200
C3	.02	400
C5	.00006	MICA
C6	.05	400
C7	.00025	MICA
C8	.01	400
C9	.00025	MICA
C10	.01	400
C11	20. }	150
C12	20. }	
C13	.005	600
C14	.05	400

RESISTORS

No	OHMS	WATTS
R1	50000	1/2
R2	30000	1/2
R4	2,000,000	1/2
R5	500,000	VOL CONT
R6	5,000,000	1/2
R7	250,000	1/2
R8	500,000	1/2
R9	150	1/2 ± 10%

IND. CHASSIS GND.

NOTE: C2 USED ON MODEL 5LL ONLY.
ON MODEL 5L POINT "A" IS CONNECTED TO CHASSIS

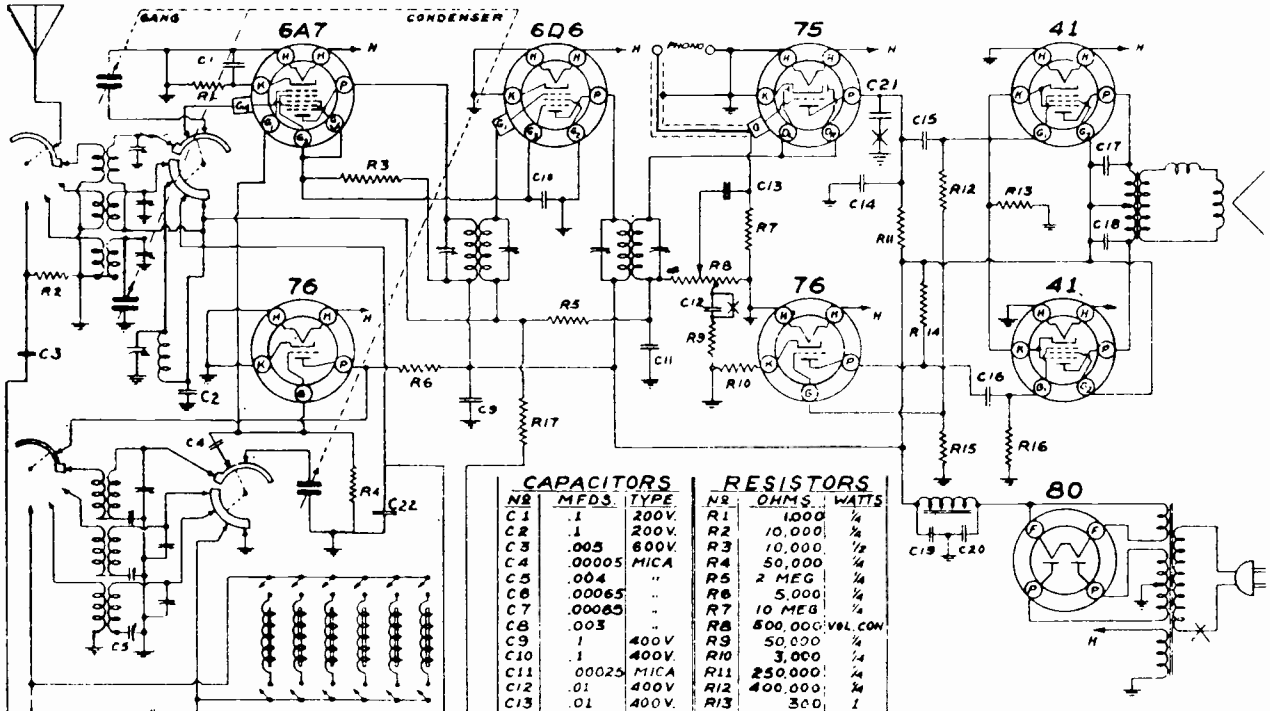
Admiral Radio

SCHEMATIC DIAGRAM

MODEL 5LL

MODEL 5L

COMPILED BY M. N. BEITMAN, SUPREME PUBLICATIONS



CAPACITORS		
NO.	MFDS.	TYPE
C1	.1	200V.
C2	.1	200V.
C3	.005	600V.
C4	.00005	MICA
C5	.004	"
C6	.00065	"
C7	.00065	"
C8	.003	"
C9	.1	400V.
C10	.1	400V.
C11	.00025	MICA
C12	.01	400V.
C13	.01	400V.
C14	.00025	MICA
C15	.01	400V.
C16	.01	400V.
C17	.005	600V.
C18	.005	600V.
C19	10.0	400V.
C20	10.0	400V.
C21	.005	600V.

RESISTORS		
NO.	OHMS	WATTS
R1	1,000	1/4
R2	10,000	1/4
R3	10,000	1/2
R4	50,000	1/4
R5	2 MEG	1/4
R6	5,000	1/4
R7	10 MEG	1/4
R8	500,000	VOL. CON
R9	50,000	1/4
R10	3,000	1/4
R11	250,000	1/4
R12	400,000	1/4
R13	300	1
R14	50,000	1/4
R15	100,000	1/4
R16	500,000	1/4
R17	10,000	1/4
C22	.00065	MICA

SCHEMATIC DIAGRAM
MODEL 8A

GENERAL DATA The alignment of this receiver requires the use of a test oscillator that will cover the frequencies of 456, 600, 1400, 1730, 1800, 4000, 5600, 6000, 16,000 and 18,100 KC and an output meter to be connected across the primary or secondary of the output transformers. If possible, all alignments should be made with the volume control on maximum and the test oscillator output as low as possible, to prevent the AVC from operating and giving false readings.

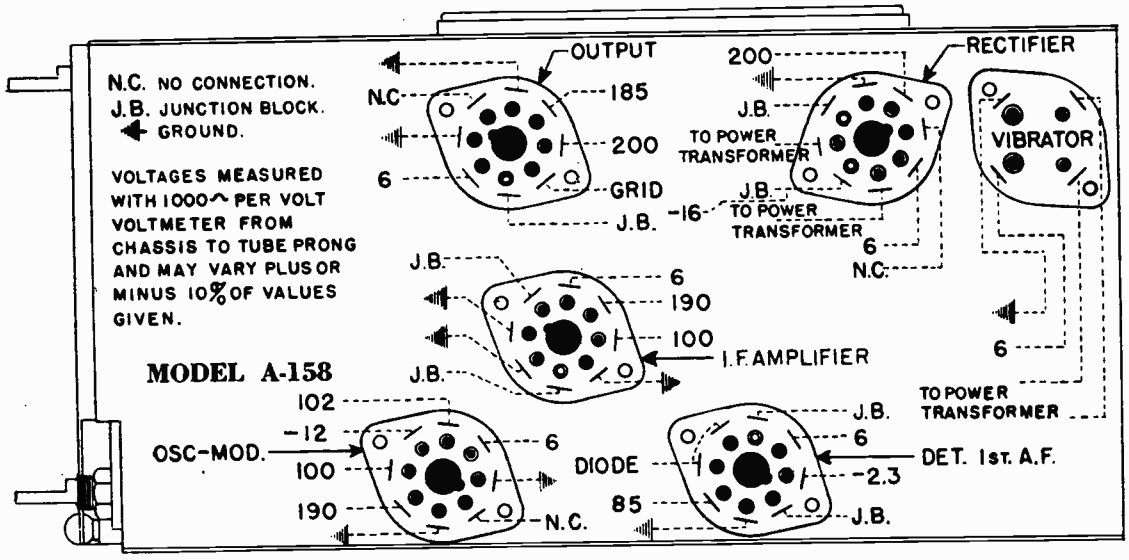
CORRECT ALIGNMENT PROCEDURE The intermediate frequency (I.F.) stage should be aligned properly as the first step. After the I.F. transformers have been properly adjusted and peaked, the Broadcast Band should always be the next procedure, after which, either or both of the Short Wave Bands may be aligned.

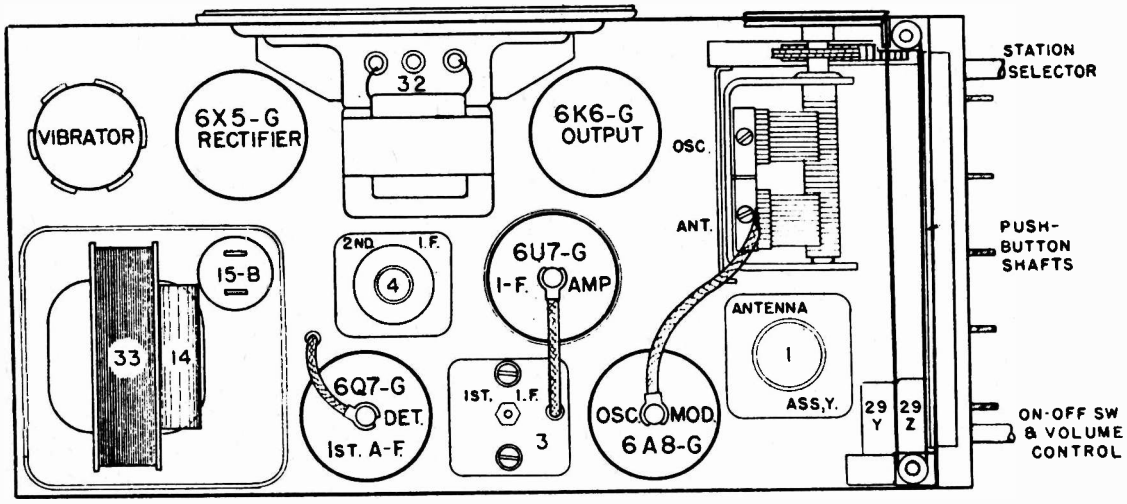
I.F. ALIGNMENT With the wave switch in the Broadcast Band and the gang condenser set at minimum, adjust the test oscillator to 456 KC and connect the output to the grid of the first detector tube (6A7) through a .05 or .1 mfd. condenser. The ground on the test oscillator can be connected to the chassis ground if the test oscillator is not grounded to one side of the power line. In case one side is connected to ground, connect a large condenser from ground on the test oscillator to ground of the chassis. Align all four I.F. trimmers to peak or maximum reading on the output meter.

BROADCAST BAND ALIGNMENT Connect the output of the signal generator to the antenna lead (blue) through at .0002 mfd. mica condenser. Set the gang condenser to minimum and the oscillator to 1730 KC and adjust the "oscillator trimmer" to receive this signal. Make no other adjustments at this frequency. Then set the generator to 1400 KC and tune in this signal by rotating the gang to 1400 on the dial. Adjust the "preselector" and "antenna" trimmer to maximum signal. Set the signal generator to 600 KC and tune in the signal on the receiver. **Note:** approximately the same sensitivity should be noted at this point as was at 1400 KC. The signal strength may sometimes be improved by padding the circuits. This is done by slowly increasing or decreasing the oscillator padding condenser and, at the same time, continuously tuning back and forth across the signal with the receiver until the maximum reading is obtained on the output meter. This adjustment may seem a little complicated but is the easiest way to adjust the oscillator to the preselector of the R.F. section. Return to 1400 KC and again go over the adjustments of this frequency to be certain that they were not put slightly out of alignment when adjustment was made at 600 KC.

POLICE BAND ALIGNMENT The police band is adjusted by first replacing the .0002 dummy with a 400 ohm resistor and setting the generator to 5600 KC. With the gang set at minimum, adjust the "police oscillator trimmer" to receive this signal, then set the signal generator to 4000 KC and adjust "police antenna trimmer" to give maximum output. Next, set the oscillator to 1800 KC and "pad" the circuit of this frequency as described in the instructions for padding the broadcast circuits.

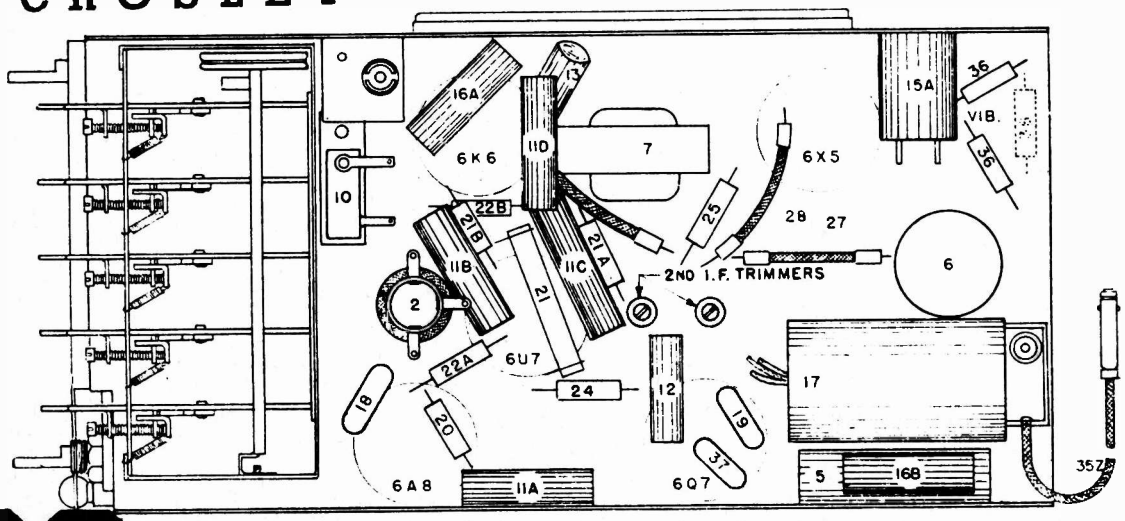
SHORT WAVE BAND ALIGNMENT The short wave band is adjusted by setting the generator to 18,100 KC and with the gang at minimum, adjust the "short wave oscillator trimmer" to receive the signal. Set the generator at 16,000 KC, tune in the signal and adjust the "short wave antenna" trimmer to give maximum output. As there is no variable low frequency padding condenser on this band, the sensitivity of the receiver should be checked at 6000 KC to determine whether the circuits are in line at this frequency. Should the receiver lack sensitivity at 6000 KC, the antenna and the oscillator coils, as well as the .004 mica padding condenser, should be tested for defects as sometimes these components become subject to mechanical or electrical injuries, despite their rugged construction and liberal ratings.



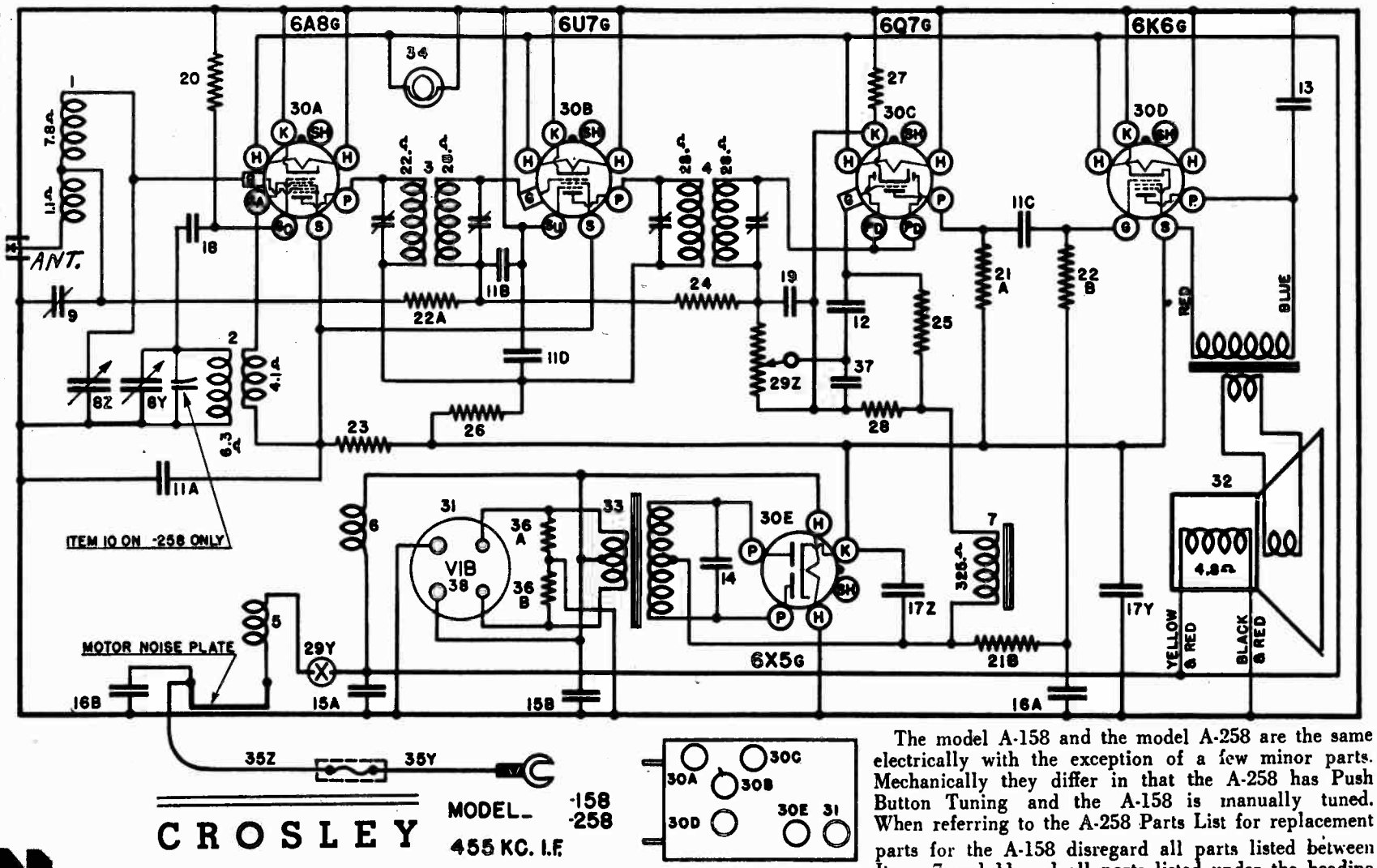


CROSLEY

Top View A-258



Bottom View A-258



The model A-158 and the model A-258 are the same electrically with the exception of a few minor parts. Mechanically they differ in that the A-258 has Push Button Tuning and the A-158 is manually tuned. When referring to the A-258 Parts List for replacement parts for the A-158 disregard all parts listed between Items 7 and 11 and all parts listed under the heading Miscellaneous Mechanical Parts.

MODEL A-158 AND A-258 (Roamio)

WIRING DIAGRAM—MODEL A-258

PARTS LIST—MODEL A-258

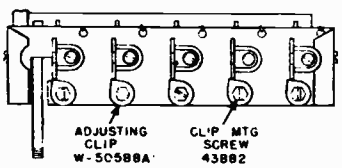
Figures in first column refer to parts in Diagrams.

Item No.	Part No.	Description
1	G167—32000	Ant. Coil
2	G167—32002	Osc. Coil
3	G185—32004	1st I-F Assy., 455 Kc.
4	G186—32004	2nd I-F Assy., 455 Kc.
5	G19 —32977	Motor Noise Check
6	G27 —28067	"A" Filter Choke
7	G16 —29535	"B" Filter Choke
8	G50 —33001	2 Section Gang Cond.
9	—50054B	Ant. Compensating Cond.
	C —50623	Glass Dial Face
	W —50545	L. H. Dial Mtg. Clip
	W —50560	R. H. Dial Mtg. Clip
	W —50517B	Dial Mask (Maroon)
	W —50518	Pointer
	B —78	Screw—Dial Clip Mtg.
	MG23—50550	Dial Mtg. Bracket Assy. (Riveted to Chassis)
	MG28—50550	Manual Drive Shaft Brkt. Assy.
	G8 —43564	Pulley and Hub Assy.
	W —23877	Set Screw—Hub
	—41582	Drive Cord—40 Inches
	W —50590	Spring—Cord Tension—Large Pulley
	W —43561	Spring—Cord Tension—Small Pulley
	W —50524B	Manual Drive Shaft
10	G3 —50369	Temp. Compensating Cond.
11A	W —32380	Condenser, .05 Mf. 200 V.
11B	W —32380	Condenser, .05 Mf. 200 V.
11C	W —32380	Condenser, .05 Mf. 200 V.
11D	W —32380	Condenser, .05 Mf. 200 V.
12	W —37226	Condenser, .02 Mf. 160 V.
13	W —23191A	Condenser, .01 Mf. 400 V.
14	W —50203	Condenser, .0065 Mf. 1,000 V.
15A	W —50161	Condenser, .5 Mf. 120 V.
15B	W —50161	Condenser, .5 Mf. 120 V.
16A	W —50105	Condenser, .1 Mf. 160 V.
16B	W —50105	Condenser, .1 Mf. 160 V.
17Z	W —50528	Condenser, 4. Mf. 350 V.
17Y		Condenser, 4. Mf. 350 V.
	W —50224	Cond. Clamp
18	G1 —34002	Condenser, .00025 Mf. Molded
19	G3 —34002	Condenser, .0005 Mf. Molded
20	—35600	Resistor, 100,000 Ohm ¼W.
21A	—35601	Resistor, 300,000 Ohm ¼W.
21B	—35601	Resistor, 300,000 Ohm ¼W.
22A	—36322	Resistor, 500,000 Ohm ¼W.
22B	—36322	Resistor, 500,000 Ohm ¼W.
23	—23616	Resistor, 15,000 Ohm 1W.
24	—35602	Resistor, 1. Megohm ¼W.
25	—35927	Resistor, 2. Megohm ¼W.
26	—50641	Resistor, 750 Ohm ½W.
27	—50643	Resistor, 60 Ohm ½W.
28	—50612	Resistor, 40 Ohm ½W.
29Z	—50526	Volume Control, 1. Meg.
29Y		On-Off Switch

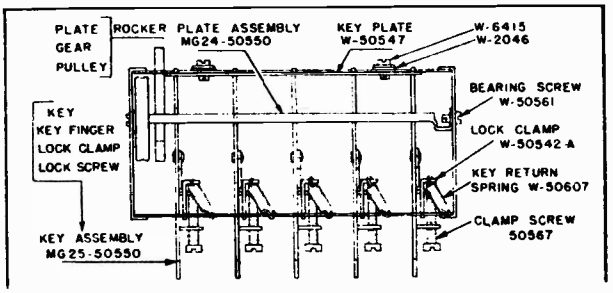
Item No.	Part No.	Description
30	G178—36400	8 Prong Socket
	W —50176	Tube Shield Half (2 Req.)
	W —31210	Tube Shield Ring
31	G105—28807	Vib. Socket
	W —50123A	Vib. Gnd. Clip
32	278-BL-7"U"	Speaker, Mfg. Spec. 5B-122
	—45889	Output Trans.
33	B —50644	Power Trans.
	W —50130	Power Trans. Can
34	G1 —50631	Dial Light Bulb—6-8 V.
35Z	G29 —32750	"A" Lead—Set to Fuse
35Y	G27 —32750	"A" Lead—Fuse to Ammeter
36A	—38915	Resistor, 100 Ohm ½W. W. W.
36B	—38915	Resistor, 100 Ohm ½W. W. W.
37	G2 —34002	Condenser, .0001 Mf. Molded
38	G10 —38000	Vibrator, Interchangeable
	G13 —38000	Vibrator
	W —32757	Fuse (12 Amp.)
	W —32776	Fuse Insulator
		Miscellaneous Mechanical Parts
	MG27—50550	Push Button Unit Assy.
	MG25—50550	Key Assy.
	W —50542A	Key Clip (Lock Clamp)
	—50567	7/8"—6x32 Screw (Clamp)
	W —50607	Spring—(Key Return)
	W —50588A	Adjusting Clip (Heart Shaped)
	—43882	¼" No. 8 P. K. Screw (Clip Mtg.)
	W —50547	Key Plate (Rear Guide)
	MG24—50550	Rocker Plate Assy.
	W —50561	1/8"—6x40—Fil. H. Screw (Rock Plate Bearing)
	W —45553B	Push Button
	W —50551A	Celluloid Cover
	—50549	Call Letter Sheet
	D —50503B	Case (Rear Half) FS49
	C —50554A	Case (Front Half) FS49
	W —50589	Felt (Dial Window)
	—50505	Knob (2 Req.)
		Mounting Parts
	W —38038D	Distributor Suppressor
	W —29754C	Generator Condenser
	—25846	3/4" No. 10 P. K. Screw (Set Mtg.)
	—6213	¼"—20 Hex. Nut (Brkt. Mtg.)
	—35065	¼"—20 Screw (Brkt. Mtg.)
	W —38205	¼" Lock Washer (Brkt. Mtg.)
	—32783	Ant. Cable (Accessory)
	W —50167	Mtg. Bracket (Set)
	W —50395	Ammeter Cond. (Accessory)
	W —38935	Case Ground Clip

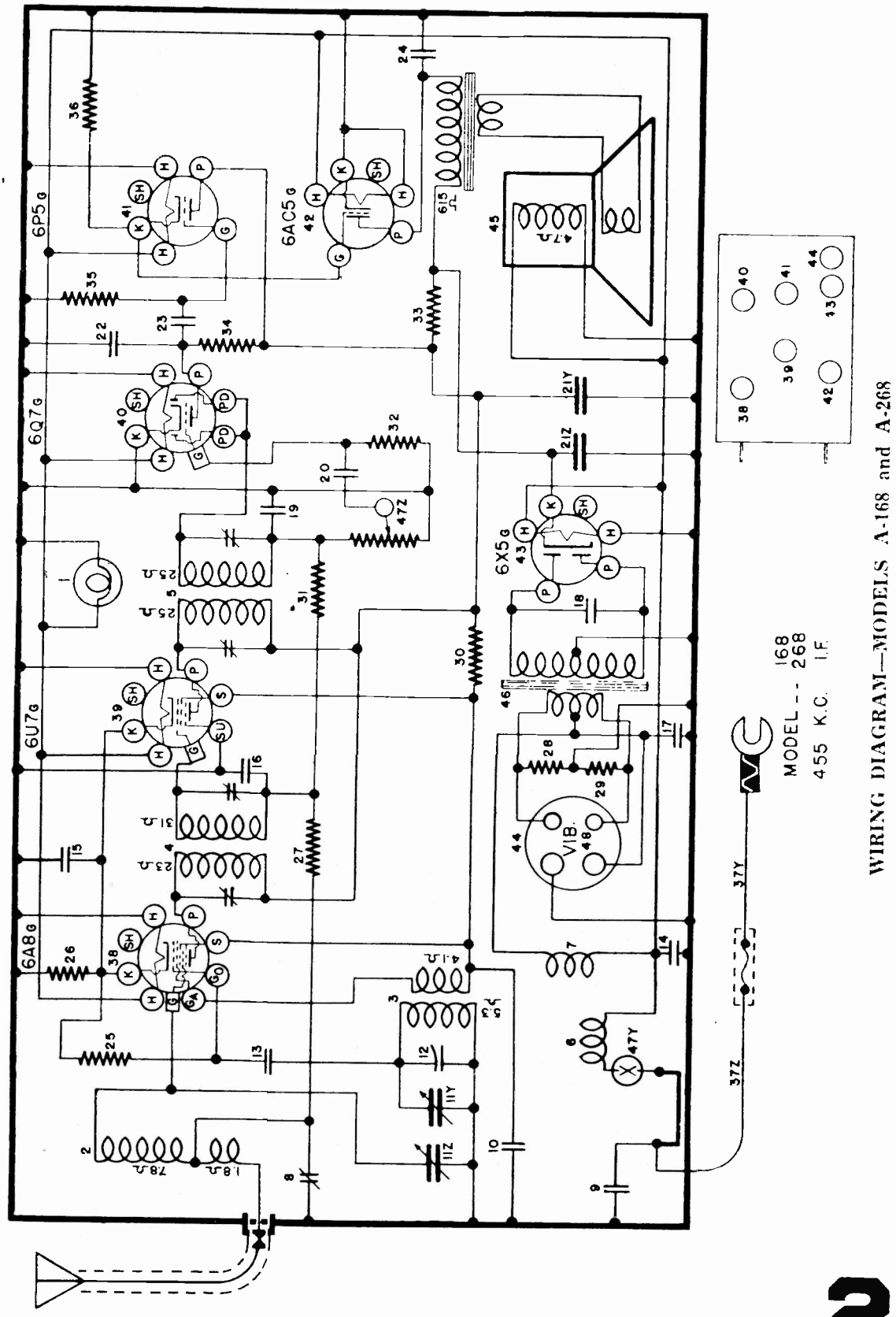
The Crosley Corporation
Cincinnati, Ohio

MG27-50550 PUSH BUTTON ASSEMBLY



Push Button Assembly





WIRING DIAGRAM—MODELS A-168 and A-268

The Crosley Corporation
Cincinnati, Ohio

PARTS LIST—MODELS A-168 and A-268

Figures in first column refer to parts in Diagrams.

Item No.	Part No.	Description
1	W —43567	Dial Light Bulb, 6-8 V.
2	G175—32000	Antenna Coil
3	G176—32002	Oscillator Coil
4	G191—32004	1st I-F. Trans., 455 Kc.
5	G196—32004	2nd I-F. Trans., 455 Kc.
6	G19 —32977	Motor Noise Choke
7	G29 —28067	"A" Filter Choke
8	—38998B	Ant. Comp. Cond.
	—50049	Nut—Comp. Cond. Mtg.
9	W —35936	Condenser, .05 Mf. 200 V.
10	W —32380	Condenser, .05 Mf. 200 V.
11	G50 —33001	2 Section Gang Condenser
	C —50688	Dial (Glass) A-168 only
	W —50517B	Dial Mask (Maroon) A-168 only
	W —50518A	Pointer—A-168 only
	W —50758	Dial (Glass) A-268 only
	W —50757	Dial Mask (Blue) A-268 only
	W —50759	Pointer—A-268 only
	W —50560	R. H. (Dial Mtg.) Clip
	W —50545	L. H. (Dial Mtg.) Clip
	B —78	Screws—Clip Mtg.
	W —2045	Washers—Clip Mtg.
	W —50524D	Drive Shaft—Manual
	W —50325A	Washer—Shaft Retaining
	MG28—50675	Shaft Brkt. Assm. (Rear Bearing)
	G8 —43564	Pulley and Hub. Assm.
	W —50590	Spring (Tension—22" Cord)
	G6 —41582	Drive Cord—22-Inch
	W —43561	Spring (Tension—18" Cord)
	G5 —41582	Drive Cord—18-Inch
	MG23—50675	Dial Brkt. Assm. Riveted to Chassis
12	G3 —50369	Temp. Comp. Cond. (Bi-metal)
13	G1 —34002	Condenser, .00025 Mf. Molded
14	G3 —34002	Condenser, .0005 Mf. Molded
15	W —50105	Condenser, .1 Mf. 160 V.
16	W —32380	Condenser, .05 Mf. 200 V.
17	W —50682A	Condenser, .5 Mf. 120 V.
18	W —50203	Condenser, .0065 Mf. 1,000 V.
19	G3 —34002	Condenser, .0005 Mf. Molded
20	W —45810B	Condenser, .006 Mf. 160 V.
21Z	W —50674	Condenser, 10. Mf. 350 V.
21Y		Condenser, 5 Mf. 350 V.
22	G1 —34002	Condenser, .00025 Mf. Molded
23	W —37226	Condenser, .02 Mf. 160 V.
24	W —35758	Condenser, .008 Mf. 400 V.
25	—35600	Resistor, 100,000 Ohms ¼W. Ins.
26	—50699	Resistor, 200 Ohms ½W. W. W.
27	—36322	Resistor, 500,000 Ohms ¼W. Ins.
28	—38915	Resistor, 100 Ohms ½ W. W. W.
29	—38915	Resistor, 100 Ohms ½ W. W. W.
30	—23616	Resistor, 15,000 Ohms 1 W. Carbon
31	—35602	Resistor, 1 Meg. ¼W. Ins.
32	—50671	Resistor, 15 Meg. ¼W. Ins.
33	—45388	Resistor, 1,400 Ohms 1½W. W. W.
34	—35601	Resistor, 300,000 Ohms ¼W. Ins.
35	—38623	Resistor, 750,000 Ohms ¼W. Ins.
36	—40643	Resistor, 25,000 Ohms ¼W. Ins.
37Z	G29 —32750	"A" Lead, Set to Fuse
37Y	G27 —32750	"A" Lead, Fuse to Ammeter

Item No.	Part No.	Description
44	G105—28807	Socket Vibrator
	W —50174	Tube Shield Base
	W —50176	Tube Shield Half
	W —31210	Tube Shield Ring
45	278BL7"U"	Speaker—Mfg. Spec. No. 5-B-122
	—45889	Output Transformer
	278BL7"B"	Speaker—Mfg. Spec. No. 55-W-1
	—45721	Output Transformer
46	B —50644A	Power Transformer
	W —50680	Shield—P. T.
47Z	—50526	Volume Control (1 Meg.)
47Y		On-Off Switch
48	G10 —38000	Vibrator \ Interchangeable
	G13 —38000	Vibrator /

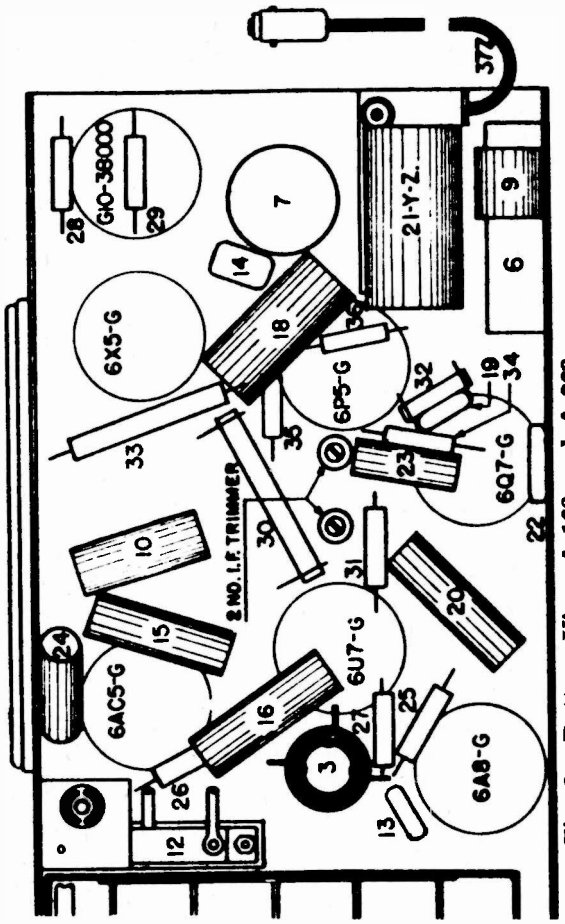
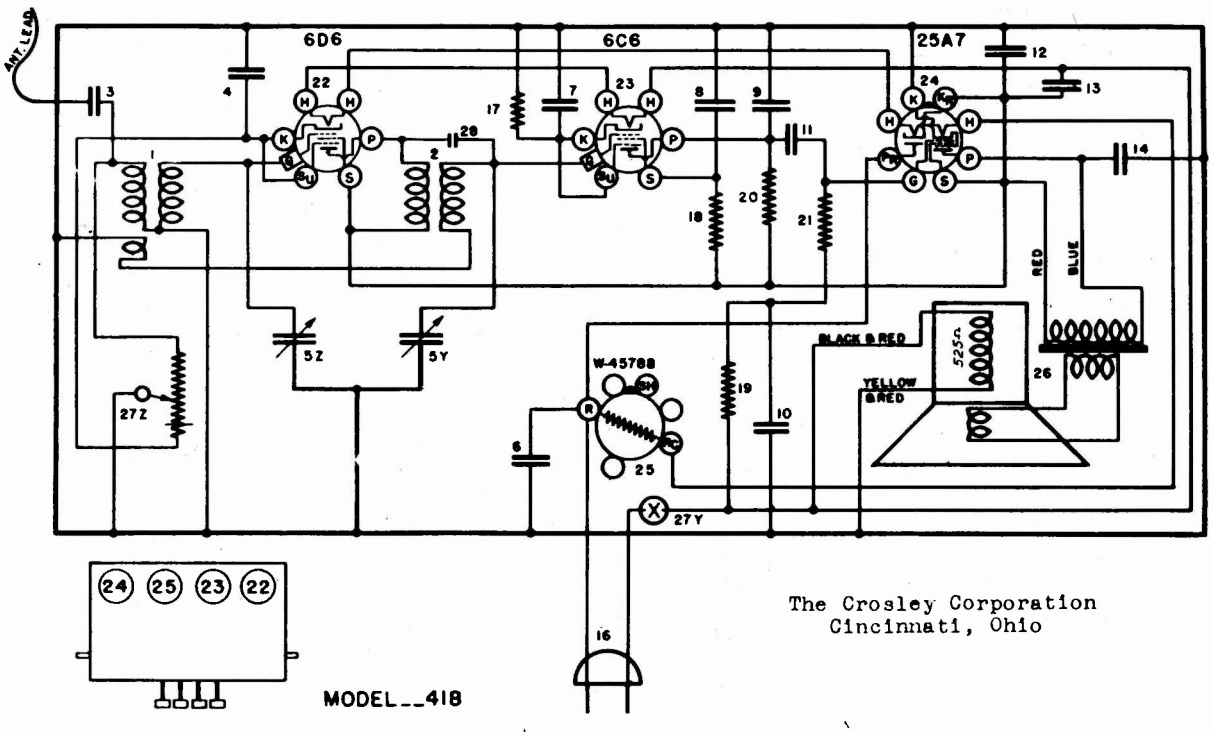


Fig. 3. Bottom View A-168 and A-268

TUBE SOCKET VOLTAGE READINGS

Tube	Function	H	P	S	Su	K	Ga	Go	G
6A8-G	Oscillator-Modulator	6.0	220	100	—	3.5	100	—	—
6U7-G	I-F. Amplifier	6.0	220	100	—	3.5	—	—	—
6Q7-G	Det., A. V. C. 1st A-F. Amplifier	6.0	60	—	—	—	—	—	—
6P5-G	2nd A-F. Amplifier	6.0	200	—	—	11	—	—	—
6AC5-G	Output	6.0	225	—	—	—	—	—	11
6X5-G	Rectifier	6.0	—	—	—	240	—	—	—

Power Output (max.) 6 Watts—approx.
Battery Drain 6.5 Amperes—approx.
It will be noted that certain terminals on the sockets are used as junction blocks.

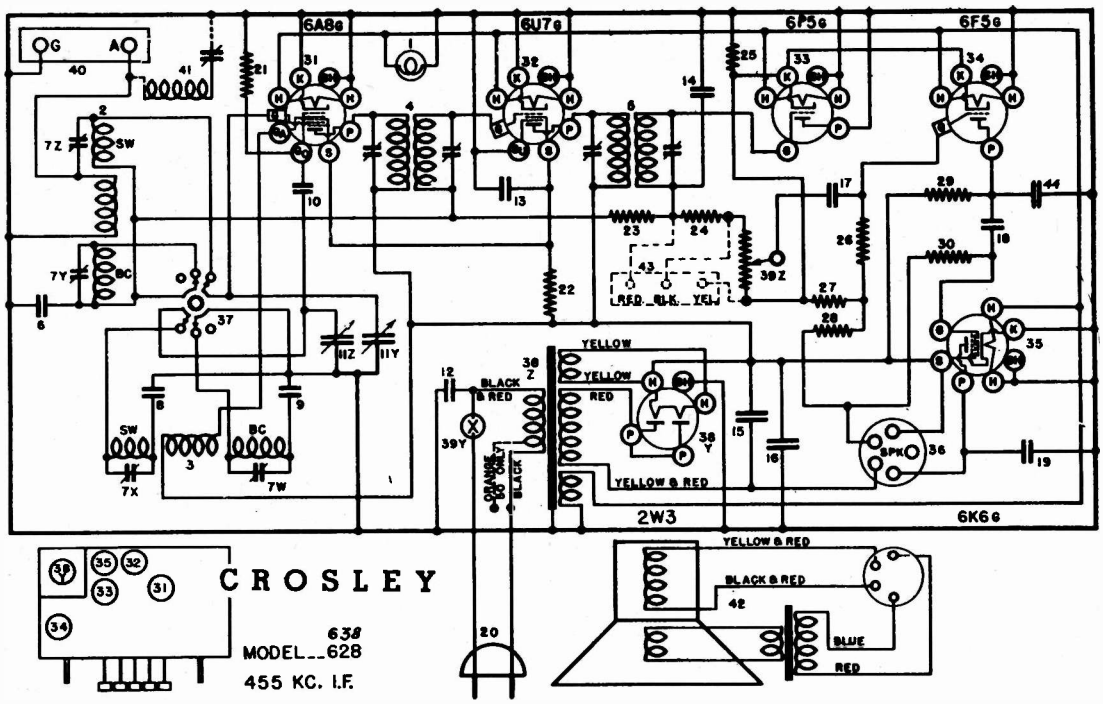


WIRING DIAGRAM—MODEL 418

Figures in first column refer to parts in Diagrams.

Item No.	Part No.	Description
1	G173—32000	Antenna Coil
2	G102—32001	Oscillator Coil
3	W —45780B	Condenser, .02 Mf. 160 Volt
4	W —45780B	Condenser, .02 Mf. 160 Volt
5Z, 5Y	G53 —33001	2 Section Gang Condenser
6	W —45782B	Condenser, .05 Mf. 400 Volt
7	W —45781B	Condenser, .25 Mf. 160 Volt
8	W —45780B	Condenser, .02 Mf. 160 Volt
9	G2 —34002	Condenser, .0001 Mf. Molded
10	W —45781B	Condenser, .25 Mf. 160 Volt
11	W —45780B	Condenser, .02 Mf. 160 Volt
12	W —45783	Condenser, 16 Mf. 150 Volt
13	W —45783	Condenser, 16 Mf. 150 Volt
14	W —45780B	Condenser, .02 Mf. 160 Volt
15	—None	
16	B —45784	Power Cord & Plug
	W —45902	Clamp—Power Cord
17	—24990	Resistor, 25,000 Ohm 1/3 W.
18	—37583	Resistor, 2.5 Megohm 1/3 W.
19	—34018	Resistor, 200,000 Ohm 1/3 W.
20	—23785	Resistor, 500,000 Ohm 1/3 W.
21	—21455	Resistor, 300,000 Ohm 1/3 W.
22	G21 —28807	Socket, 6 Prong
23	G21 —28807	Socket, 6 Prong
24	G178—36400	Socket, 8 Prong (Octal)
25	G178—36400	Socket, 8 Prong (Octal)
	W —34175	Tube Shield Half (Slotted)
	W —34174	Tube Shield Half
	W —31210	Ring—Tube Shield
26	282-BL-4	Speaker Mfg. Spec.

Item No.	Part No.	Description
	—46045	Output Transformer
	W —45900A	Speaker Mtg. Brkt.
27Z, 27Y	—45786	Volume Control (40,000 Line Switch
	W —45789A	V. C. Mtg. Brkt.
28	G3 —50640	Condenser, 7-10 Mmf.
	G6 —45683	Push Button Unit
	G27 —45683	Rocker Plate Assy.
	G26 —45683	Key Assy.
	W —50542C	Key Clip (Lock Clamp)
	—45717	Adjusting Screw
	W —50607B	Spring (Key Return)
	W —50561	Bearing Screw (Rocker
	W —50547	Key Plate (Rear Guide)
	W —45788	Ballast Tube
	W —46259	Cabinet Assy. 8BB (Brown)
	—45828B	Back Cabinet 8BB (Brown)
	W —45930C	Rubber Foot (Bottom)
	W —45931	Rubber Foot (Screw Type) (Back)
	W —45852	Baffle Board
	W —45853	Grille Cloth
	—45553B	Push Button (Brown)
	—45822	Dial Knob (Brown)
	—45825A	Vol. Cont. Knob (Brown)
	—50549	Station Call Letter List
	W —50551A	Celluloid Protector (Cover)

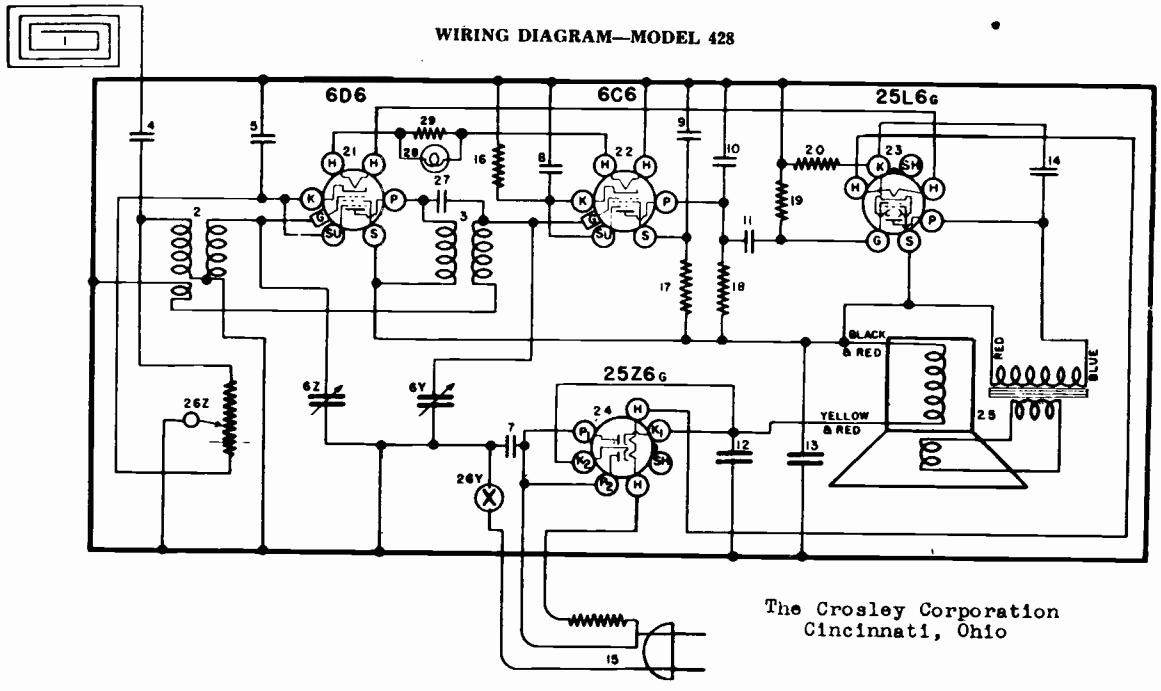


WIRING DIAGRAM—MODEL 628—638—5628

Figures in first column refer to parts in Diagrams.

Item No.	Part No.	Description
1	W —37922	Dial Light 6-8 Volt
	G12 —45398	Dial Light Socket
2	G174—32000	Antenna Coil, B-C and S-W.
3	G175—32002	Oscillator Coil, B-C and S-W.
4	G187—32004	1st I-F Assy., 455 Kc.
5	G188—32004	2nd I-F Assy., 455 Kc.
6	W —36541	Condenser, .02 Mf., 160 V.
7	W —41247A	4 Section Trimmer Assy.
8	G13 —34005	Condenser, .0014 Mf., Molded
9	G18 —34002	Condenser, .0004 Mf., Molded
10	G5 —34002	Condenser, .00005 Mf., Molded
11	G55 —33001	2 Section Gang Condenser
	C —45747	Glass Dial Face (628-638)
	W —46872	Glass Dial Face (5628)
	W —46397	Dial Hand (Pointer)
	B —45743B	Dial Support Bracket
	W —45984	L. H. Dial Mtg. Clip
	W —45985	R. H. Dial Mtg. Clip
	W —46037A	Dial Hand Guide
	W —45766C	Felt Strip
	—45865	Manual Drive Shaft (628-5628)
	—46056	Manual Drive Shaft (638)
	W —43542B	Mounting Bracket Drive Shaft
	G12 —43564	Pulley & Hub Assy.
	G2 —41682	Drive Cord
	W —50607B	Cord Tension Spring
	W —46290	Drive Cord Clamp
12	W —30805	Condenser, .01 Mf., 400 V.
13	W —28621	Condenser, .02 Mf., 200 V.
14	G1 —34002	Condenser, .00025 Mf., Molded
15	W —44012	Condenser 16 Mf., 250 V., Elec.
16	W —45968	Condenser 16 Mf., 250 V., Elec.
17	W —28619	Condenser, .006 Mf., 200 V.
18	W —28621	Condenser, .02 Mf., 200 V.
19	W —34647	Condenser, .006 Mf., 400 V.
20	B —45769	Power Cord and Plug
21	—36761	Resistor, 40,000 Ohm, ¼ W.
22	—33390	Resistor, 30,000 Ohm, 1/3 W.
23	—26577	Resistor, 3 Megohm, 1/3 W.
24	—21875	Resistor 100,000 Ohm, 1/3 W.
25	WAS—A 60 Ohm	½ W. Resistor from 6P5 Cathode to Gnd. (Deleted)
26	—37584	Resistor, 11 Megohm, 1/3 W.
27	WAS—A 40 Ohm	½ W. Resistor from 6P5 Cathode to Junction of Items 26 and 28 (Deleted)
28	W —21965	Resistor, 375 Ohm, 1 W (was 275 Ohm)
29	—21455	Resistor, 300,000 Ohm, 1/3 W.
30	—23785	Resistor, 500,000 Ohm, 1/3 W.
31	G178—36400	Socket, 8 Prong
32	G178—36400	Socket, 8 Prong
33	G178—36400	Socket, 8 Prong
34	G178—36400	Socket, 8 Prong
35	G178—36400	Socket, 8 Prong
	W —40911	Tube Shield
36	G103—28807	Socket, Speaker Plug
37	—45901	Band Switch
	—45940	Power Trans., 50 Cycle, 220 V.
39Z	—45864	Vol. Cont., 1 Meg. (628-5628)
39Y		Line Switch
39Z	—46314	Vol. Cont., 1 Meg. (638)
39Y		Line Switch
40	G1 —26719	A.-G. Terminal Assy.
41	G193—32004	455 Kc. Wave Trap
42	279-BP-12"U"	Speaker
	—46121	Output Transformer
43	G41 —26719	Phono. Terminal Assy.
44	G7 —34002	Condenser, .0004 Mf., Molded
	G3 —45683	Push Button Unit (628-5628)
	G11 —45683	Push Button Unit (638)
	G32 —45683	Riveted Key & Toggle (628-5628)
	G26 —45683	Riveted Key & Toggle (638)
	W —50542C	Key Lock Clamp
	—45717	1 7/16 6x32 Lock Clamp Screw
	W —50607B	Spring, Key Return
	G22 —45683	Rocker & Gear Segment Assy.
	W —50561	⅛ 6x40 Screw (Rocker Plate Bearing)
	W —50588B	Adjusting Clip
	—46242	Rubber Foot (628-5628)
		Model 628
	—8AA	Cabinet (Brown)
	W —43552	Clamp, Speaker Plug
	—45957	Knob, Band Switch
	—45771	Knob, V. C. & Tuning
	—50841	Station Call List
	—45553B	Push Button
	W —50551A	Celluloid Call Letter Cover
		Model 638
	—8G	Cabinet (Wood Has Inlays)
	—8K	Cabinet (Wood)
	—46399C	Escutcheon
	D—30	Screws, Escutcheon Mtg.
	—46407	Knob, Band Switch
	—46408	Knob, V. C. & Tuning
	—50841	Station Call List
	W —50551A	Celluloid Cover
	—46417	Push Button
		Model 5628
	—8AB	Cabinet (Red)
	—8AC	Cabinet (Ivory)
	—44552	Knob, V. C. & Tuning
	—44934	Knob, Band Switch
	—46887	Station Call List
	W —50551A	Call Letter Cover
	—50617	Push Button
	—45910	Instructions (628)
	—46326	Instructions (638)
	—46897	Instructions (5628)

WIRING DIAGRAM—MODEL 428



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Figures in first column refer to parts in Diagrams.

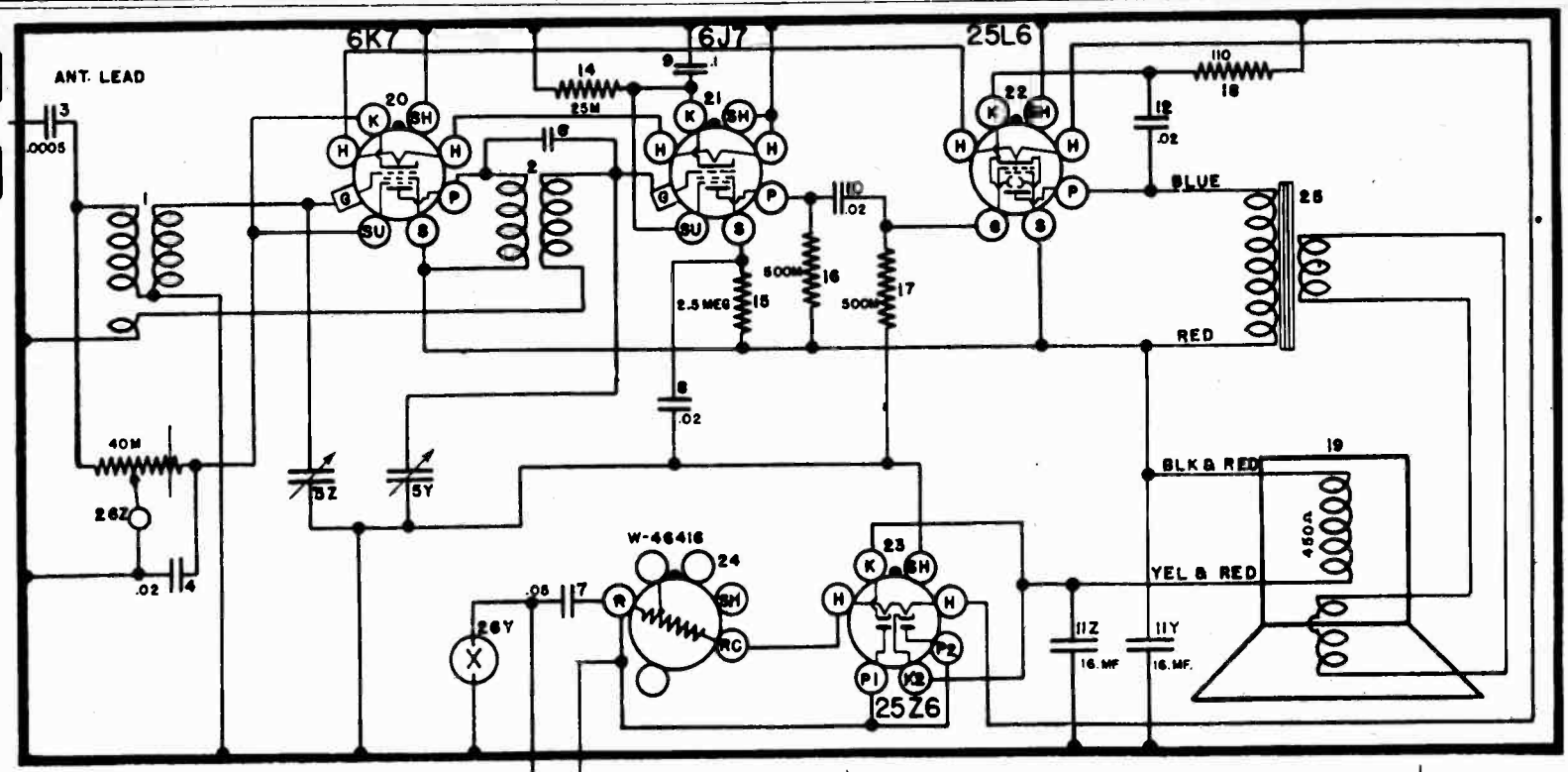
Item No.	Part No.	Description
1	W —45577	Antenna Roll
2	G180—32000	Antenna Coil
3	G104—32001	R. F. Coil
4	W —45780B	Condenser, .02 Mf. 160 V.
5		Condenser, .02 Mf. 160 V.
6Z	G53 —33001	2 Section Gang Condenser
6Y		
7	W —45782B	Condenser, .05 Mf. 400 V.
8	W —45781B	Condenser, .25 Mf. 160 V.
9	W —45780B	Condenser, .02 Mf. 160 V.
10	G2 —34002	Condenser, .0001 Molded
11	W —45780B	Condenser, .02 Mf. 160 V.
12	W —45783	Condenser, 16 Mf. 150 V. Elect.
13	W —45783	Condenser, 16 Mf. 150 V. Elect.
14	W —45817A	Condenser, .05 Mf. 160 V.
15	B —46114	Power Cord (165 Ohm 15W Lead)
	W —45902	Cord Clamp
16	—24990	Resistor, 25,000 Ohms ⅓W.
17	—37583	Resistor, 2.5 Meg Ohms ⅓W.
18	—23785	Resistor, 500,000 Ohms ⅓W.
19	—23785	Resistor, 500,000 Ohms ⅓W.
20	W —45965	Resistor, 110 Ohms ½W. Flex.
21	G21 —28807	6 Prong Socket
22	G21 —28807	6 Prong Socket
23	G178—36400	8 Prong Socket
24	G178—36400	8 Prong Socket
	W —34175	Tube Shield Half (Slotted)
	W —34174	Tube Shield Half (Plain)
	W —31210	Tube Shield Ring
25	281-BL-5-U	Speaker Spec. 5-B-130
	W —45900A	Speaker Mtg. Bracket
26Z	—45786	Volume Control, 40,000 Ohms
26Y		On-Off Switch

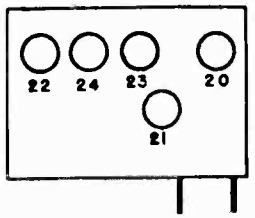
Item No.	Part No.	Description
27	G3 —50640	Condenser Assembly
28	W —44337	Dial Light, 6-8 Volt
	W —40570	Dial Light Shield
	G6 —27134	Dial Light Socket
29	W —44396	Resistor, 40 Ohms 3½W. Flex.

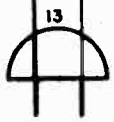
TUBE SOCKET VOLTAGE READINGS

Tube	H	P	S	K	Su
6D6	6.3*	97	98	2.5-25	as K
6C6	6.3*	20	10	7	
25L6	25*	85	98	6	
25Z6	25*	117*		126	

Readings taken with a 1000 ohm per volt meter. Volume full on. Readings between terminals indicated and chassis. Values marked with a * are A.C.





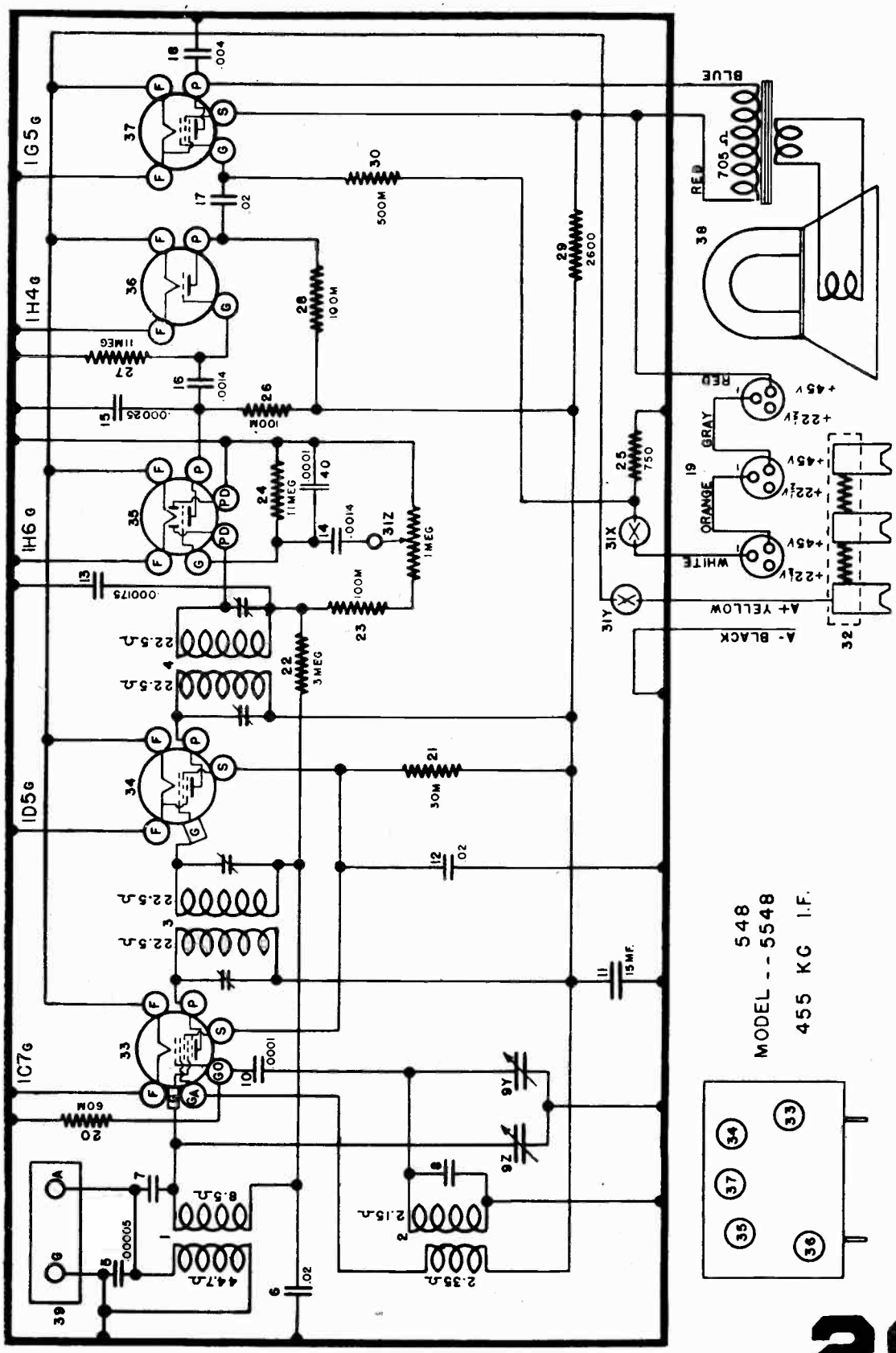


WIRING DIAGRAM—

MODEL 568

19	284-BL-4"B" —46691	Speaker—Spec. Field Coil—450 Ohm
	284-BL-4"H" —46901	Speaker—Spec. Field Coil—450 Ohm
20 to 21	G178—36400	Socket—8 Prong Octal
	W —46477	Tube Shield
25	G25 —29535	Output Transformer
26Z	—46411	Volume Control — Line Switch—
26Y		

Item No.	Part No.	Description
1	G182—32000	Antenna Coil
2	G102—32001	R-F. Coil
3	G3 —34002	Condenser, .0005 Mf. Molded
4	W —45708B	Condenser, .02 Mf. 160 V.
5	G60 —33001	2 Section Gang Condenser
6	G3 —50640	Twisted Lead—Cap. Coupling
7	W —45782B	Condenser, .05 Mf. 120 V.
8	W —45780B	Condenser, .02 Mf. 160 V.
9	W —50105	Condenser, .1 Mf. 160 V.
10	W —45708B	Condenser, .02 Mf. 160 V.
11Z	W —46398	Condenser, 16 Mf. 125 V.
11Y		Condenser, 16 Mf. 125 V.
12	W —45780B	Condenser, .02 Mf. 160 V.
13	B —45784	Power Cord and Plug
14	—24990	Resistor, 25,000 Ohm $\frac{3}{8}$W.
15	—37583	Resistor, 2.5 Megohm $\frac{3}{8}$W.
16	—23785	Resistor, 500,000 Ohm $\frac{3}{8}$W.
17	—23785	Resistor, 500,000 Ohm $\frac{3}{8}$W.
18	W —45965	Resistor, 110 Ohm $\frac{1}{2}$W.



WIRING DIAGRAM MODELS 548, 5548

548
MODEL -- 5548
455 KC I.F.

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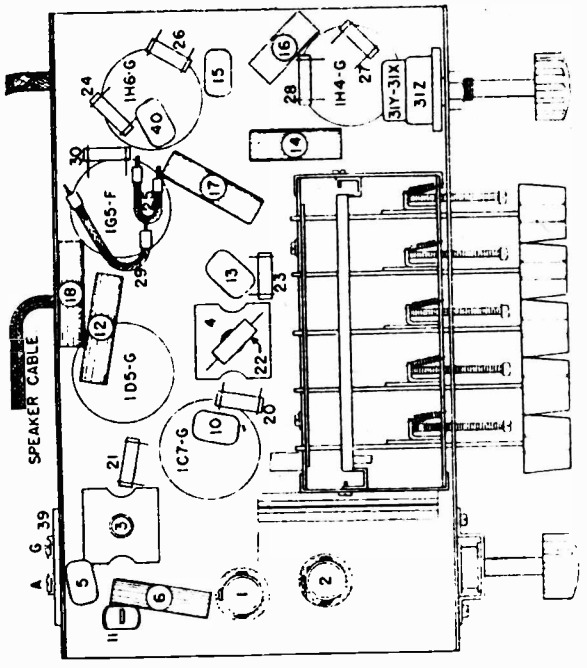
PARTS LIST—MODELS 548 & 5548

Figures in first column refer to parts in Diagrams.

Item No.	Part No.	Description
1	G176—32000	Antenna Coil
2	G177—32002	Oscillator Coil
3	G194—32004	1st I. F. Transformer
4	G195—32004	2nd I. F. Transformer
5	G5 -34002	Condenser, .00005 Mf. Molded
6	W -28621	Condenser, .02 Mf. 200 V. Paper
7	G5 -50640	Condenser (Capacity Coupling) Ant.
8	G3 -50640	Condenser (Capacity Coupling) Osc.
9Z	G52 -33001	2 Sect. Condenser {Antenna
9Y		{Oscillator
	W -23877	Set Screw (For Pulley-Hub Assembly)
	G12 -43564	Pulley and Hub Assembly
	MG14—45894	Riveted Dial Support Bracket, R. H.
	MG16—46000	Riveted Dial Support Bracket, L. H.
	C -46042	Dial Glass
	W -45984	Dial Glass Clip, L. H.
	W -45985	Dial Glass Clip, R. H.
	W -46397	Dial Pointer (White)
	W -46037	Dial Hand Guide
	W -45742B	Dial Glass Cushion
	B -45743B	Dial Support
	-46056	Drive Shaft (5548)
	-45865	Drive Shaft (548)
	W -43542B	Drive Shaft Bracket
	G2 -41582	Drive Cord (44 Inches)
	W -46290	Cord Clamp
	W -46087	Drive Cord Spring
10	G2 -34002	Condenser, .0001 Mf. Molded
11	W -45968	Condenser, 15 Mf. 250 V. Elect.
12	W -28621	Condenser, .02 Mf. 200 V. Paper
13	G11 -34002	Condenser, .000175 Mf. Molded
14	W -41461	Condenser, .0014 Mf. 200 V. Paper
15	G1 -34002	Condenser, .00025 Mf. Molded
16	W -41461	Condenser, .0014 Mf. 200 V. Paper
17	W -28621	Condenser, .02 Mf. 200 V. Paper
18	W -28904	Condenser, .004 Mf. 200 V. Paper
19	C -46014	Battery Cable, Model 548
19	C -46072A	Battery Cable, Model 5548
20	-21237A	Resistor, 60,000 Ohms $\frac{1}{3}$W. Carbon
21	-33390	Resistor, 30,000 Ohms $\frac{1}{3}$W. Carbon
22	-26577	Resistor, 3 Megohms $\frac{1}{3}$W. Carbon
23	-21875	Resistor, 100,000 Ohms $\frac{1}{3}$W. Carbon
24	-37584	Resistor, 11 Megohms $\frac{1}{3}$W. Carbon
25	W -22514	Resistor, 750 Ohms $\frac{1}{2}$W. Flex.
26	-21875	Resistor, 100,000 Ohms $\frac{1}{3}$W. Carbon
27	-37584	Resistor, 11 Megohms $\frac{1}{3}$W. Carbon
28	-21875	Resistor, 100,000 Ohms $\frac{1}{3}$W. Carbon
29	W -30960	Resistor, 2,600 Ohms 1 $\frac{1}{2}$W. Flex.
30	-23785	Resistor, 500,000 Ohms $\frac{1}{3}$W. Carbon
31Z		{Volume Control
31Y	-45996A	{Switch "A" Supply} Model 548
31X		{Switch "B" Supply}
31Z		{Volume Control
31Y	-46057A	{Switch "A" Supply} Model 5548
31X		{Switch "B" Supply}
32	W -41995A	Resistance Strip, 1.83 Ohms Tap at 1.1 Ohms
	W -40911	Tube Shield
38	274PL18"H"	Speaker, Spec. S-4501 AMD5
	-46800	Speaker Cone Assembly
	-46802	Output Transformer
	-46803	Cardboard Ring
39	G1 -26719	Terminal (A-G)
40	G2 -34002	Condenser, .0001 Mf. Molded

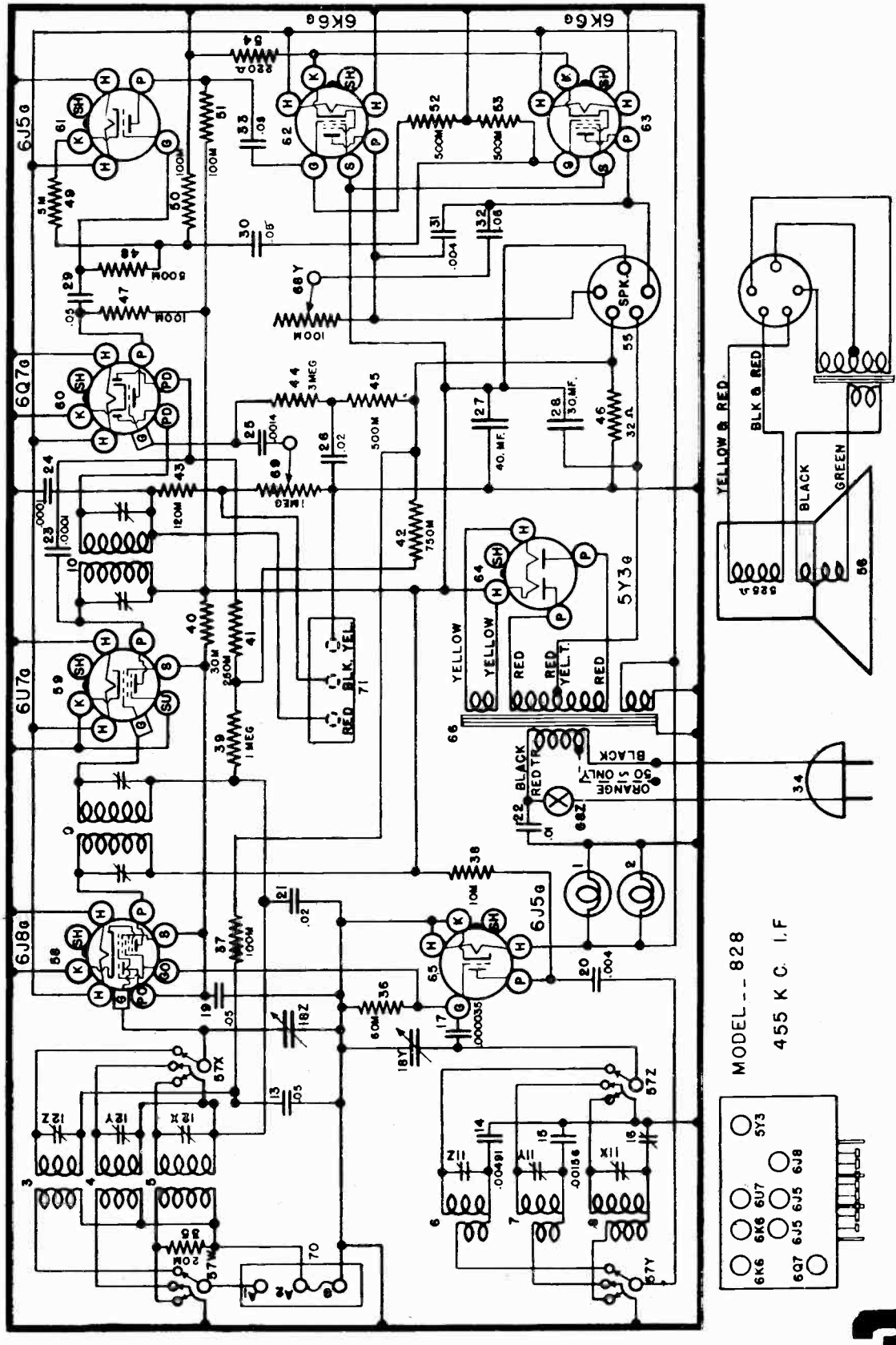


Bottom View Model 548

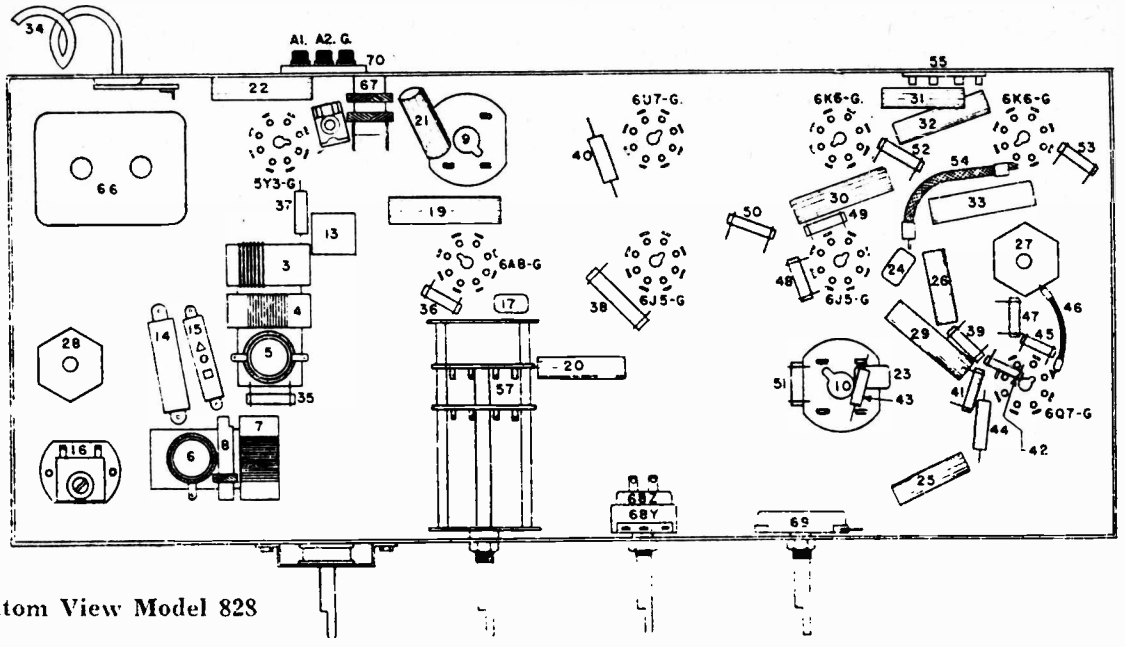
TUBE SOCKET VOLTAGE READINGS

Tube	Function	H.	P	S	G	Ga	Go
1C7-G	Oscillator-Modulator	2.0	120	90	0	120	-3
1D5-G	I-F Amplifier	2.0	120	40	0	-	-
1H6-G	Detector & 1st A-F Amp.	2.0	50		0		
1H4-G	2nd A-F Amplifier	2.0	50		0	-	
1G5-G	Output	2.0	123	129	-6		

Power Output approximately .750 Watt.
"A" Battery Drain approximately .42 Ampere at 2 Volts.
"B" Battery Drain approximately 18 Milliamperes at 135 Volts.



WIRING DIAGRAM—MODEL 828



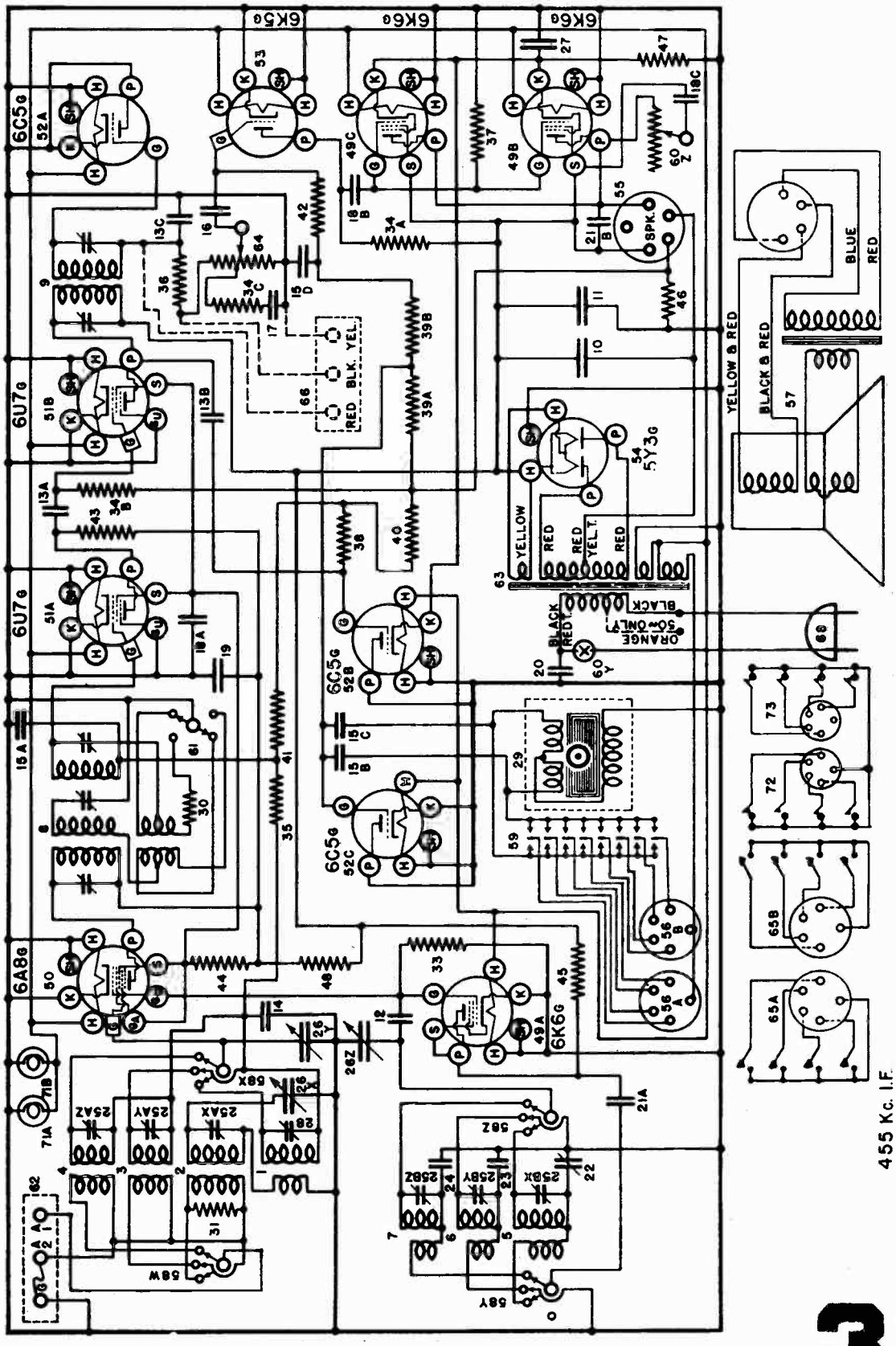
Bottom View Model 828

PARTS LIST — MODEL 828

Figures in first column refer to parts in Diagrams.

Item No.	Part No.	Description
1	W —37922	Dial Light—6-8 Volt
2	W —37922	Dial Light—6-8 Volt
	G16 —45398	Socket and Brkt. Assy., Dial Light
3	G170—32000	Antenna Coil—H-F.
4	G168—32000	Antenna Coil—Pol.
5	G169—32000	Antenna Coil—B-C.
6	G170—32002	Oscillator Coil—H-F.
7	G168—32002	Oscillator Coil—Pol.
8	G169—32002	Oscillator Coil—B-C.
9	G175—32004	1st I-F. Assy., 455 Kc.
10	G176—32004	2nd I-F. Assy., 455 Kc.
11	W —45713	3 Section Trimmer (Osc. Shunt)
12	W —35951A	3 Section Trimmer (Ant. Shunt)
13	W —35936	Condenser, .05 Mf. 200 V.
14	G20 —34000	Condenser, .004910 Mf. Mica
15	G23 —34000	Condenser, .001560 Mf. Mica
16	—40769	B-C. Osc. Series Trimmer
17	G13 —34002	Condenser, .000035 Mf. Molded
18	G59 —33001	2 Section Gang Condenser
19	W — 23615	Condenser, .05 Mf. 400 V.
20	W — 35139	Condenser, .004 Mf. 400 V.
21	W — 28621	Condenser, .02 Mf. 200 V.
22	W —30805	Condenser, .01 Mf. 400 V.
23	G2 —34002	Condenser, .0001 Mf. Molded
24	G2 —34002	Condenser, .0001 Mf. Molded
25	W —41461	Condenser, .0014 Mf. 200 V.
26	W — 28621	Condenser, .02 Mf. 200 V.
27	W —36057B	Condenser, 40 Mf. 300 V.
28	W —44054	Condenser, 30 Mf. 350 V.
29	W —23615	Condenser, .05 Mf. 400 V.
30	W —23615	Condenser, .05 Mf. 400 V.
31	W —35139	Condenser, .004 Mf. 400 V.
32	W —23615	Condenser, .05 Mf. 400 V.
33	W —23615	Condenser, .05 Mf. 400 V.
34	B —33906A	Power Cord and Plug
35	—22196	Resistor, 20,000 Ohm ½ W.
36	—21237A	Resistor, 60,000 Ohm ½ W.
37	—35600	Resistor, 100,000 Ohm ¼ W.
38	—4921C	Resistor, 10,000 Ohm 1W.
39	—21454	Resistor, 1 Megohm ½ W.
40	—36992	Resistor, 30,000 Ohm 1W.
41	—34020	Resistor, 250,000 Ohm ½ W.
42	—37990	Resistor, 750,000 Ohm ½ W.
43	—36320	Resistor, 120,000 Ohm ¼ W.
44	—36688	Resistor, 3 Megohm ½ W.
45	—23785	Resistor, 500,000 Ohm ½ W.
46	W —37631	Resistor, 32 Ohm ½ W.
47	—21875	Resistor, 100,000 Ohm ½ W.
48	—23785	Resistor, 500,000 Ohm ½ W.
49	—27121	Resistor, 5,000 Ohm ½ W.
50	—21875	Resistor, 100,000 Ohm ½ W.
51	—21875	Resistor, 100,000 Ohm ½ W.
52	—23785	Resistor, 500,000 Ohm ½ W.
53	—23785	Resistor, 500,000 Ohm ½ W.
54	W —22873	Resistor, 220 Ohm 2½ W.
55	G103—28807	Socket—(5 Prong Spkr.)
	W —43552	Spkr. Plug Clamp
56	583-CP-18"K"	Speaker, Spec. No.
		V. C. and Cone Assy.
		Field Coil—(525 Ohm)
		Output Transformer
		Cardboard Ring
	583-CP-18"H"	Speaker, Spec. No. S-1893N3
	—46786	V. C. and Cone Assy.
	—46787	Field Coil (525 Ohm)
	—46788	Output Transformer
	—46789	Cardboard Ring
	583-CP-18"Z"	Speaker, Spec. No. E10K326
	—46758	V. C. and Cone Assy.
	—46759	Field Coil (525 Ohm)
	—46760	Output Transformer
	—46761	Cardboard Ring
57	B —16276	Band Selector Switch
58 to 65	G178—36100	8 Prong Socket
66	—46318	Power Transformer, 60 Cy.—110 V.
	—46307	Power Transformer, 50 Cy.—110 V.
	—46308	Power Transformer, 50 Cy.—220 V.
	—46309	Power Transformer, 25 Cy.—110 V.
	—46310	Power Transformer, 25 Cy.—220 V.
	—46311	Power Transformer, 40-100 Cy.—95-267 V.
67	MG41—46287	Wave Trap—455 Kc.
	G188—32000	Coil—Only—Wave Trap
68Y	—44021B	Tone Control
68Z		Line Switch
69	—44773	Volume Control
70	G27 —26719	Ant. and Gnd. Terminal Assy.
71	G41 —26719	Phono Terminal Assy.
	G10 —45683	Push Button Unit Assy.
	G29 —45683	Key and Toggle Assy.
	—45717	Screw—Key Adjusting
	W —50607C	Spring—Key Return
	W —50542C	Clamp—Toggle Lock
	W —50588B	Adjusting Clip—(Heart Shaped)
	W —45646B	Adjusting Clip—(Hooked)
	W —46278	Guide Plate—Key
	G18 —45683	Rocker Plate and Gear Sector Assy.
	W —50561	Screw—Rocker Plate Bearing
	W —45976	Bronze Spring—Bearing Thrust
	W —50273	Rubber Band—Used on Keys
	8R	Cabinet
	—46360A	Knob—4 Req.
	8T	Cabinet (Lowboy Style)
	—46360A	Knob—Tuning—Volume
	—46784A	Knob—Tone Control—Band Sw.
	C —46228C	Escutcheon
	—46417	Push Button
	—50841	Station Call List
	W —50551A	Celluloid Call Letter Cover
	—46329	Instruction Booklet

The Crosley Corporation
Cincinnati, Ohio



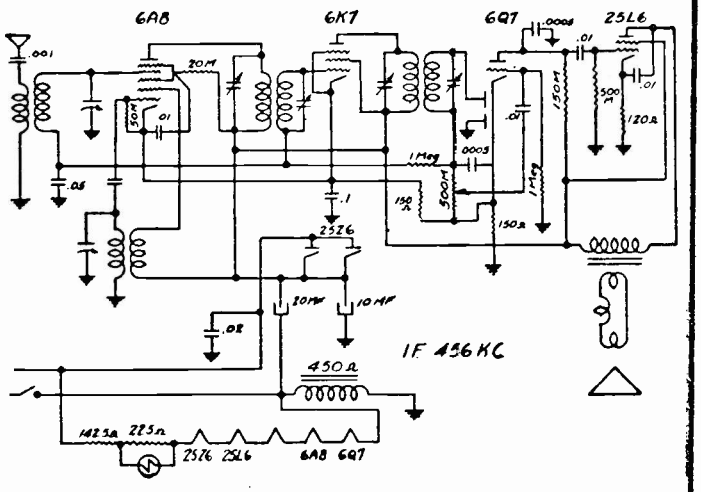
CROSLEY WIRING DIAGRAM—MODEL 1118 AND 1128

PARTS LIST — MODEL 1118

Figures in first column refer to parts in Diagrams.

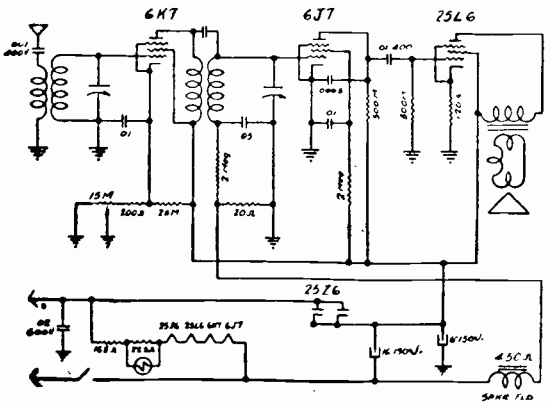
Item	Part No.	Description
1	G97 —32001	Pre-Selector Coil, B.C.
2	G138—32000	Antenna Coil, B.C.
3	G151—32000	Antenna Coil, Police
4	G150—32000	Antenna Coil, H.F.
5	G139—32002	Oscillator Coil, B.C.
6	G154—32002	Oscillator Coil, Police
7	G153—32002	Oscillator Coil, H.F.
8	G161—32004	1st I-F., 455 Kc. Assy.
9	G154—32004	2nd I-F., 455 Kc. Assy.
10	W —41054	Condenser, 30 Mf. 350 V.
11	W —36057B	Condenser, 40 Mf. 300 V.
12	G1 —41886	Condenser, Bimetal Temp. Control
13A	G2 —34002	Condenser, .0001 Mf. Molded
13B	G2 —34002	Condenser, .0001 Mf. Molded
13C	G2 —34002	Condenser, .0001 Mf. Molded
14	W —35936	Condenser, .05 Mf. 200 V.
15A	W —28621	Condenser, .02 Mf. 200 V.
15B	W —28621	Condenser, .02 Mf. 200 V.
15C	W —28621	Condenser, .02 Mf. 200 V.
15D	W —28621	Condenser, .02 Mf. 200 V.
16	W —41461	Condenser, .0014 Mf. 200 V.
17	W —28619	Condenser, .006 Mf. 200 V.
18A	W —22688	Condenser, .1 Mf. 400 V.
18B	W —22688	Condenser, .1 Mf. 400 V.
18C	W —22688	Condenser, .1 Mf. 400 V.
19	W —23615	Condenser, .05 Mf. 400 V.
20	W —30805	Condenser, .01 Mf. 400 V.
21A	W —35139	Condenser, .004 Mf. 400 V.
21B	W —35139	Condenser, .004 Mf. 400 V.
22	—40769	Condenser, B.C. Osc. Series Trimmer
23	G23 —34000	Condenser, .001560 Mf. Pol. Osc. Fixed Trimmer
24	G20 —34000	Condenser
25	W —35951A	3 Section Shunt Trimmer Assy.
26	G60 —33002	3 Section Var. Tuning Cond. (1118)
26	G62 —33002	3 Section Var. Tuning Cond. (1128)
	W —44907A	Idler Pulley (1118)
	W —44908	Idler Mtg. Stud (1118)
	D —46239	Dial Face (Glass) (1128)
	C —46094	Dial Glass Support (1128)
	W —46099	Dial Glass Clip (2) (1128)
	W —46096	Dial Glass Clip, R.H. (1128)
	W —46095	Dial Glass Clip, L.H. (1128)
	—46203	Dial Pointer (1128)
	W —46097	Dial Pointer Guide (1128)
	G —41582	Drive Cord (50-Inch) (1128)
	W —46941	Dial Glass Cushion (1128)
	G13 —43564	Pulley and Hub Assy. (1128)
	MG44—46080	Idler Pulley and Brkt. Assy. (1128)
	W —44989	Cord Tension Spring (1128)
	W —46477	Tubing—Drive Shaft (1128)
	W —45448	Drive Belt (1128)
	W —44907B	Idler Pulley (Dual) (1128)
	W —44908	Idler Stud (1128)
	D —46949	Dial Glass (Foreign Only) (1128)
	W —46290	Drive Cord Clamp (1128)
27	W —41598	Condenser, 50 Mf. 25 V.
28	—44516	Condenser, Pre-Select Shunt
29	MG105—44879	Motor Assembly (50-60 Cycle)
	—45168	Motor
	W —45165	Motor Foot
	W —45164	Motor Mounting Bracket
	W —20800	Shakeproof Washer
	—6875	W. H. Machine Screw, 3/8" Long
	—6876	W. H. Machine Screw, 1/4" Long
	—44497	Headed Bushing—Brkt. Mtg.
	W —36180	Rubber Sleeve—Brkt. Mtg.
30	—42401A	Resistor, 99 Ohm 1/4W. Ins.
31	—22196	Resistor, 20,000 Ohm 1/3W. Carb.
33	—21237A	Resistor, 60,000 Ohm 1/3W. Carb.
34A	—21875	Resistor, 100,000 Ohm 1/3W. Carb.
34B	—21875	Resistor, 100,000 Ohm 1/3W. Carb.
34C	—21875	Resistor, 100,000 Ohm 1/3W. Carb.
35	—35600	Resistor, 100,000 Ohm 1/4W. Carb.
36	—36320	Resistor, 120,000 Ohm 1/4W. Carb.
37	—34018	Resistor, 200,000 Ohm 1/3W. Carb.
38	—34020	Resistor, 250,000 Ohm 1/3W. Carb.
39A	—23785	Resistor, 500,000 Ohm 1/3W. Carb.
39B	—23785	Resistor, 500,000 Ohm 1/3W. Carb.
40	—37590	Resistor, 750,000 Ohm 1/3W. Carb.
41	—21454	Resistor, 1 Megohm 1/3W. Carb.
42	—26577	Resistor, 3 Megohm 1/3W. Carb.
43	—44165	Resistor, 5,000 Ohm 1/2W. Carb.
44	—4921C	Resistor, 10,000 Ohm 1W. Carb.
45	—44008	Resistor, 10,000 Ohm 2W. Carb.
46	W —37631	Resistor, 32 Ohm 1/2W. Flex.
47	W —45381	Resistor, 300 Ohm 2W. Flex.
48	W —23013	Resistor, 2,000 Ohm 1 1/4W. Flex.
49 to 54	G178—36400	Socket, 8 Prong Octal.
55	G103—28807	Socket, Speaker
56	G16 —28807	Socket, Push Button Cable
	W —41007	Cable Clamp, P. B. Cable
	W —40911	Tube Shield
57	671BP-18-"M"	Speaker, Spec. No. 1-D-1180
	—45184	V. C. and Cone Assembly
	—45185	Field Coil (515 Ohm)
	—44678	Output Transformer
	—43680	Cone Mounting Ring
	W —24715	Elastic Mounting Nuts
	W —22985	Rubber Washer
	W —46804	Spacer
	W —24865	Steel Washer
58	—44049	Band Selector Switch
59	G1 —44628	Switch, Discriminator, Assy.
	G2 —44628	Flexible Coupling
60	—44024B	Tone Control (300,000 Ohm) and Switch
61	—46086	Switch, Local Distance (1128)
61	—44665A	Switch, Local Distance (1118)
62	G27 —26719	Ant. and Gnd. Terminal Assy.
63	—44910	Power Transformer, 110 V. 60 C
	—44915	Power Transformer, 110 V. 50 C
	—44916	Power Transformer, 220 V. 50 C
	—45527	Power Transformer, Universal
64	—44702	Volume Control, 1 Megohm
65A	G8 —45228	Push Button—Cable and Plug (R.H.) (1118)
65B	G9 —45228	Push Button—Cable and Plug (L.H.) (1118)
	W —45478	Trip Bar and Connecting Link Switch) (1118)
66	G37 —26719	Phono Terminal Assy.
68	B —33960A	Line Cord and Plug
71	W —43567	Dial Light Bulb, 6-8 Volt (1118)
71	W —37922	Dial Light Bulb, 6-8 Volt (1128)
	G9 —44363	Dial Light Socket Assy.
72	MG45—46081	Push Button—Cable and Plug (1128)
73	7P	Cabinet (1118)
	B —45652A	Escutcheon (Dial) (1118)
	—45667	Escutcheon (Push Button) L.H.
	—45666	Escutcheon (Push Button) R.H.
	W —44380B	Knob, Vol. Cont. and Tuning (2)
	W —44426A	Knob, T. C.—L. D. Sw. and B. C. (3) (1118)
	W —44871A	Push Button (Bakelite) (1118)
	B —44876A	Switch (Push Button) Only
	8Q	Cabinet (1128)
	8QA	Cabinet (1128)
	C —46228C	Escutcheon (1128)
	—46360A	Knob, Vol. Cont. and Tuning (2)
	—46362A	Knob, T. C.—L. D. Sw. and B. C. (3) (1128)
	W —45171	Push Button (Bakelite) (1128)
	B —46221	Switch (Push Button) Only (1128)
	W —44876A	Celluloid Cover (Button)

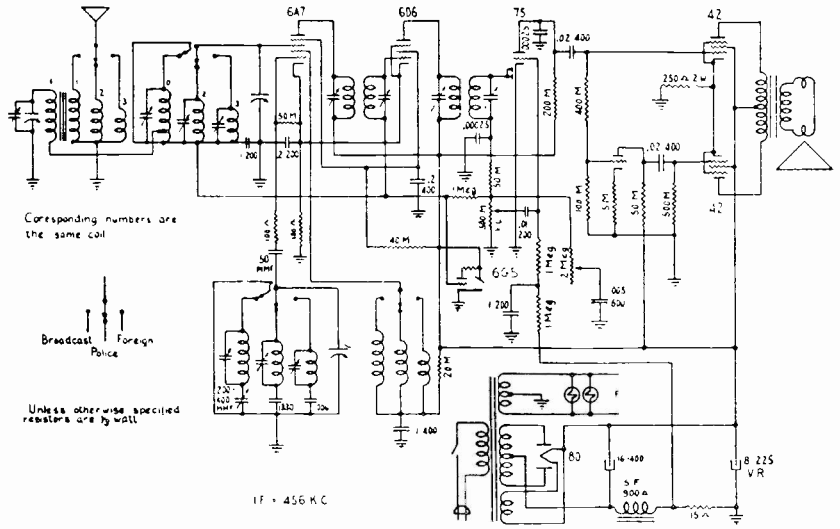
Super Pee-Wee Model



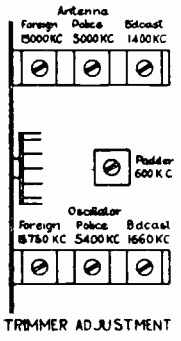
DETROLA CORPORATION

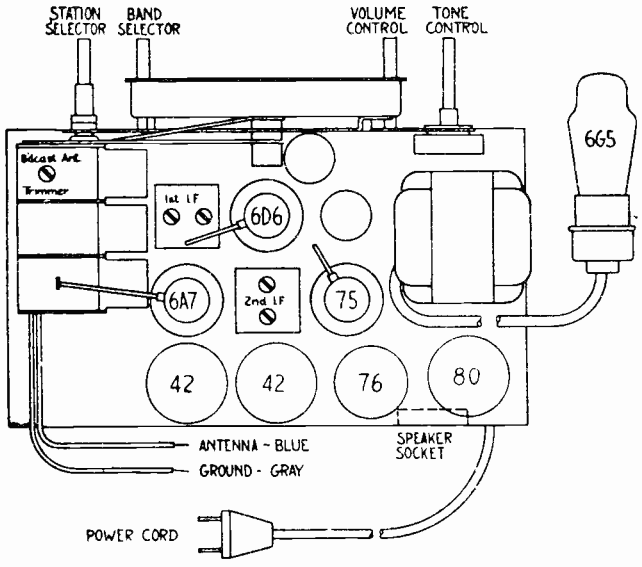
Model 197, Pee-Wee





MODEL 147E

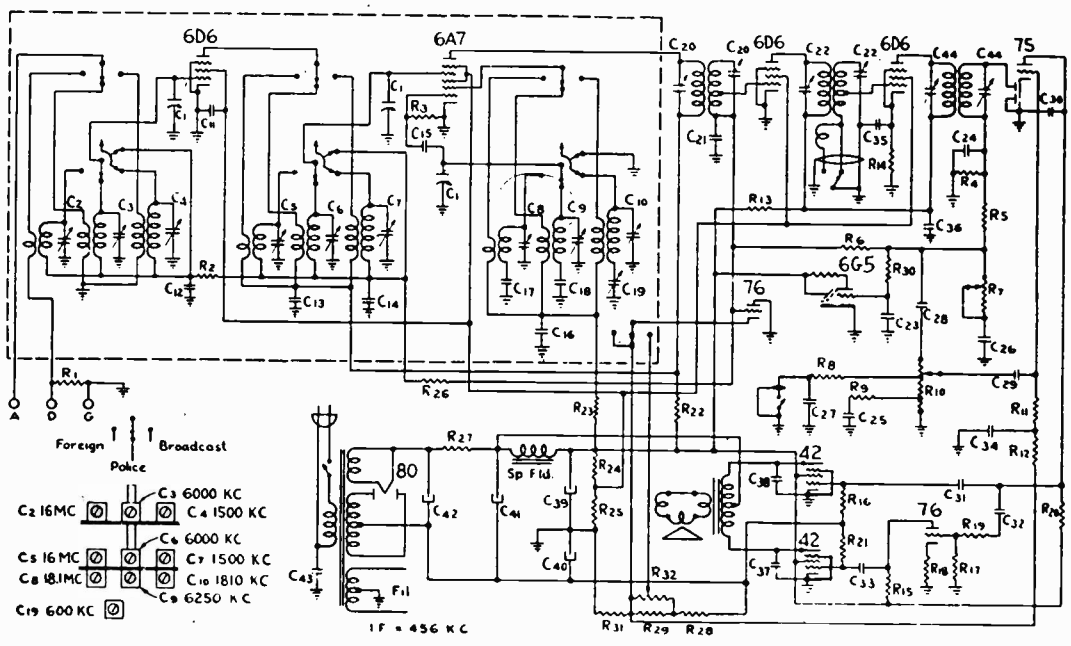




For alignment use a signal generator. Couple through .1 mfd. condenser to grid of 6A7, and chassis. Set for 456 KC. Adjust 2nd I.F. and then 1st. Recheck. For R.F. alignment, feed 1660 KC. to antenna thru a 200 mmfd. condenser. Adjust Broadcast osc. trimmer. Set for 1400 KC. and adjust the two antenna trimmers. Set for 600 KC. and adjust padder while rocking tuning condenser. For short wave alignment see next page.

DETROLA RADIO AND TELEVISION CORPORATION

DETROIT, MICHIGAN



MODEL 165

Symbol	Part No.	Description
C1	3814	9-400 mmf Variable
C2,3,4	3822	2-35 triple trimmer
C5,6,7	3822	2-35 triple trimmer
C8,9,10	3822	2-35 triple trimmer
C11,21,34	572	.1-200 V.
C12.14,23	580	.05-200 V.
C13	575	.1-400 V.
C15,24	2780	50 mmf mica
C16,35	568	.01-400 V.
C17	2694	.005 5% tolerance
C18	2741	1330 mmf 5% tolerance
C19	2560	350 mmf variable padder
C20,22,44		IF Trimmer
C25	4072	.03-200 V.
C26	2695	.003-600 V.
C27	824	.002-600 V.
C28,29	576	.02-400 V.
C30	1286	250 mmf mica
C31,33	2600	.02-600 V.
C32,36	563	.05-400 V.
C37,38	3138	.001-800 V.
C39	3113	16 MF regulating
C40	3136	20 MF 25 V.
C41	3112	16 MF 450 V.
C42	3111	16 MF 500 V.
C43	3135	.003-800 V.
R1,5,15,26	603	100 M 1/3 W.
R2,3	631	50 M 1/3 W.
R4,16,21	615	500 M 1/3 W.
R6	2693	2 meg 1/3 W.
R7	3799	2 meg tone control
R8	2568	300 M 1/3 W.
R9,23	617	20 M 1/3 W.
R10	3800	3 meg volume control
R11,12	624	1 meg 1/3 W.
R13,14,22	2421	1 M 1/3 W.
R17	2880	100 M 1/3 W. 10 %
R18	614	5 M 1/3 W.
R19	2731	500 M 1/3 W. 10%
R20	598	200 M 1/3 W.
R24	3805	7 M 3.5 W.
R25	3805	8 M 1.5 W.
R27	3809	100 ohms 2 W. 10%
R28	3806	120 ohms 1.5 W. 10%
R29	4111	85 ohms 1.0 W. 10%
R30	2106	3 meg 1/3 W.
R31	3870	15 ohms .5 W. 10%
R32	3801	2 M variable

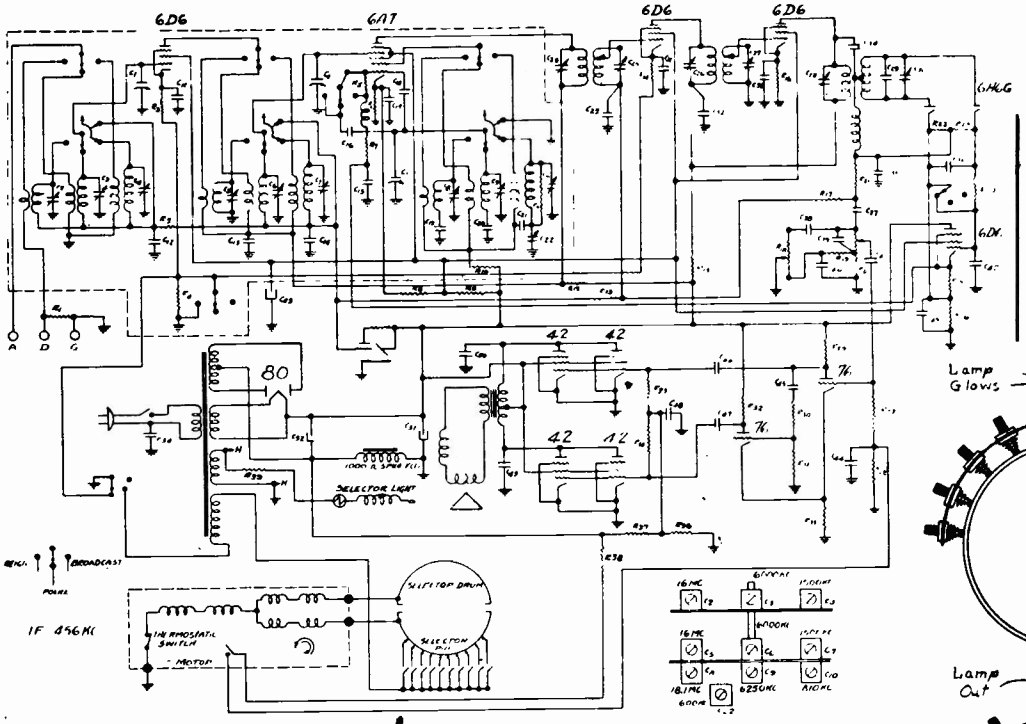
Using 400 ohm resistor in series with generator, set band selector in center position, set generator to 5400 kc and adjust oscillator trimmer for top frequency. Set generator to 5000 kc, tune receiver to signal and adjust antenna trimmer.

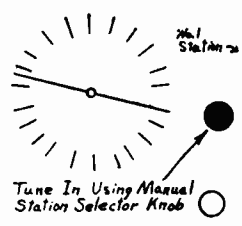
Turn band selector to extreme clockwise position. Using 400 ohm resistor in series with generator, set oscillator top frequency for 15,750 kc—screw trimmer down tight, then unscrew to *second* peak. Set generator to 15,000 kc, tune receiver to signal and adjust antenna trimmer—Screw trimmer down tight, then unscrew to *first* peak, rocking the tuning condenser back and forth through the signal while the adjustment is being made. **Above procedure for alinement at 15,000 kc must be followed exactly to insure proper tracking. A dead spot at about 12,000 kc will result if antenna and oscillator circuits are not set in proper relation to each other.**

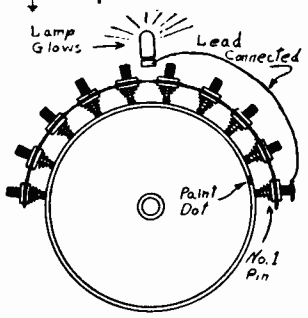
MANUAL OF 1939 MOST POPULAR SERVICE DIAGRAMS

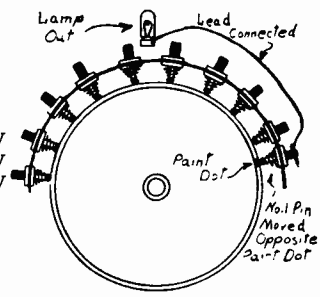
DETROLA RADIO AND TELEVISION CORPORATION

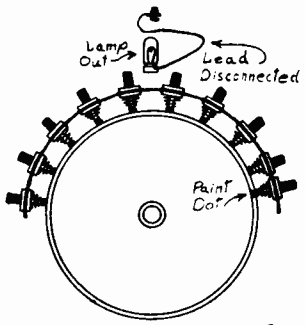
192 Series



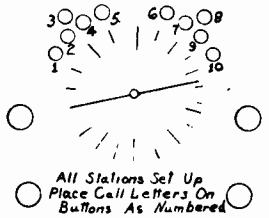








Master Selector Set Up For Station No. 1. Repeat Similar Operations For Station No. 2 Using No. 2 Pin, Etc



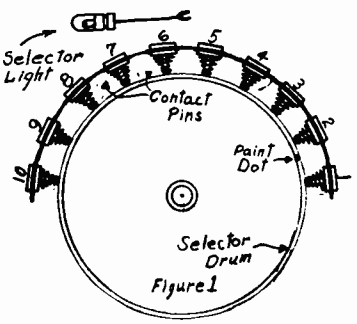
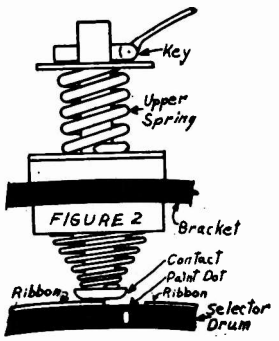
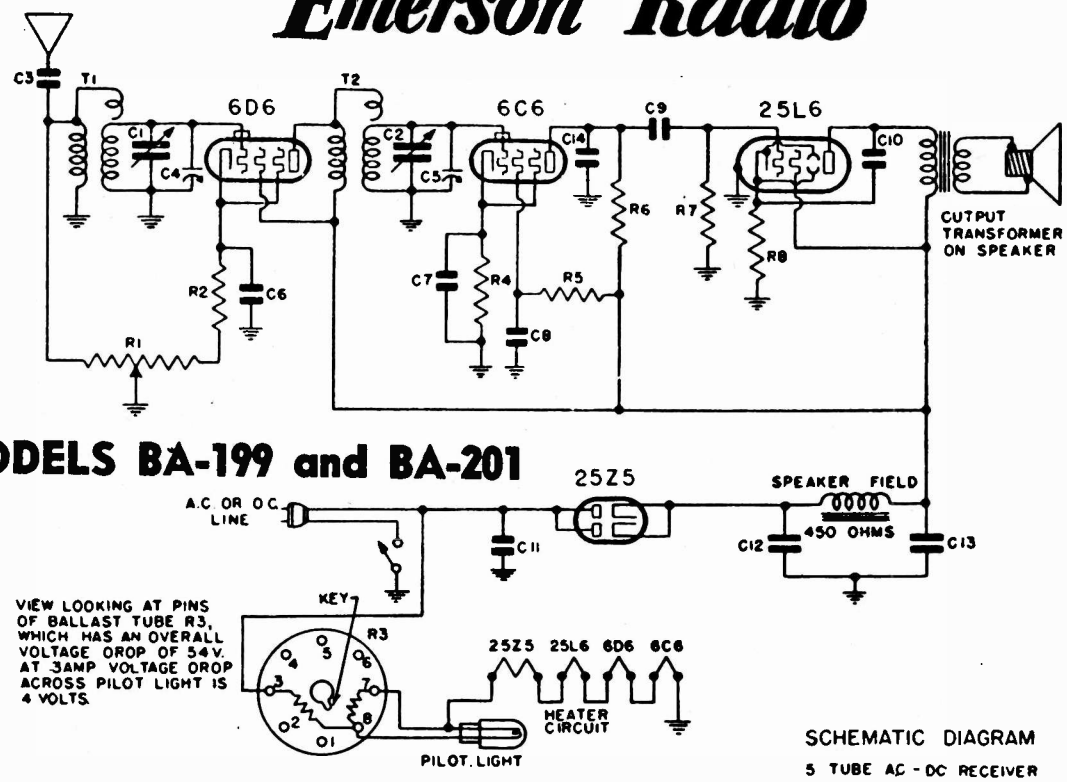


Figure 1



Symbol	Part No.	Description
R1,13,29,32	2880	100 M 1/3W 10%
R2,7,21	631	50 M 1/3W
R3,12,14,15,16	2421	1000 ohm 1/3W
R4	2421	1000 ohm 1/3W
R5	2783	2500 ohm 1/3W 10%
R6	3937	500 ohm ½ W Wire-wound ±10%
R8	3805	7000 ohm 3½ W Wirewound
R9	3805	8000 ohm 1½ W Wirewound
R10	600	10M 1/3W
R11	3581	3M 1/3W ±10%
R17,22,23,24, 28,27,30	2599	1 meg 1/3W 10%
R18	2737	2 meg tone control
R20	3800	3 meg volume control
R25	2572	400 ohm 1/3W 10%
R26	2691	500 ohm 1/3W 10%
R33,34,19	2730	200 M 1/3W 10%
R36		150 M 1/3W 10%
R38,37	2731	500 M 1/3W 10%
R39		20 ohm 1 W
C1		400 mmf variable
C2,3,4	3822	2-35 mmf triple trimmer
C5,6,7	3822	2-35 mmf triple trimmer
C8,9,10	3822	2-35 mmf triple trimmer
C11,12,14,17, 31,33	580	.05—200 V
C13,32	575	.1—400 V
C15,23,42,43,44	572	.1—200 V
C16	2925	25 mmf mica
C18	4676	8 mmf
C19	2694	.005—600 5%
C20	2741	1330 mmf 5%
C21		.01—400 V
C22	2560	350 mmf variable padder
C34,35	1285	100 mmf mica
C36,48	2792	.2—200 V
C37,41	576	.02—400 V
C38,40	824	.002—600 V
C39	2780	50 mmf. mica
C45,46,47	2600	.02—600 V
C49,50	2601	.01—600 V
C51	4062	30 MF 275 V
C52	4649	24 MF 450 V
C53	3079	8 MF 150 V
C54	3135	.003—800 V

Emerson Radio



MODELS BA-199 and BA-201

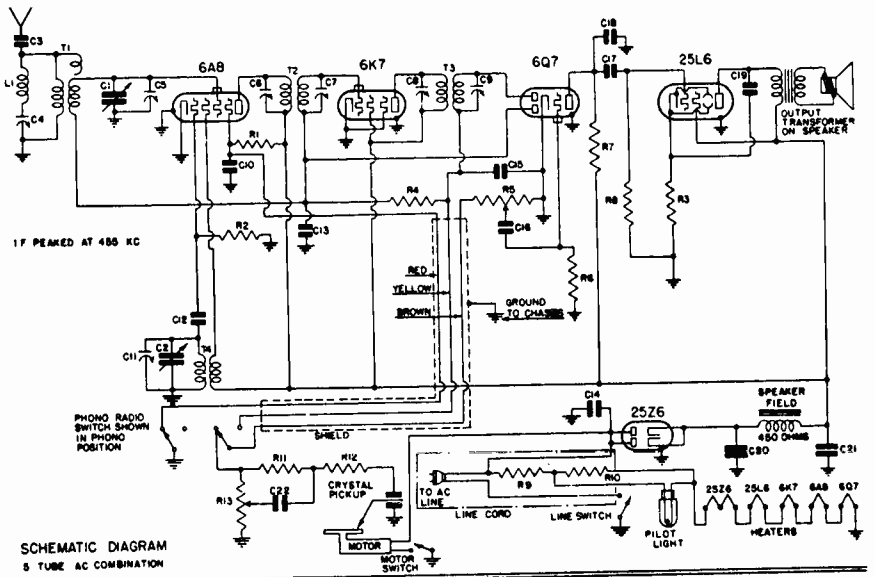
SCHEMATIC DIAGRAM
5 TUBE AC - DC RECEIVER

*Item number locates the article on the schematic diagram.
†These condensers cannot be supplied separately.
‡Note: In replacing the dual 16 mf electrolytic condenser, the green lead should be connected to the rectifier.

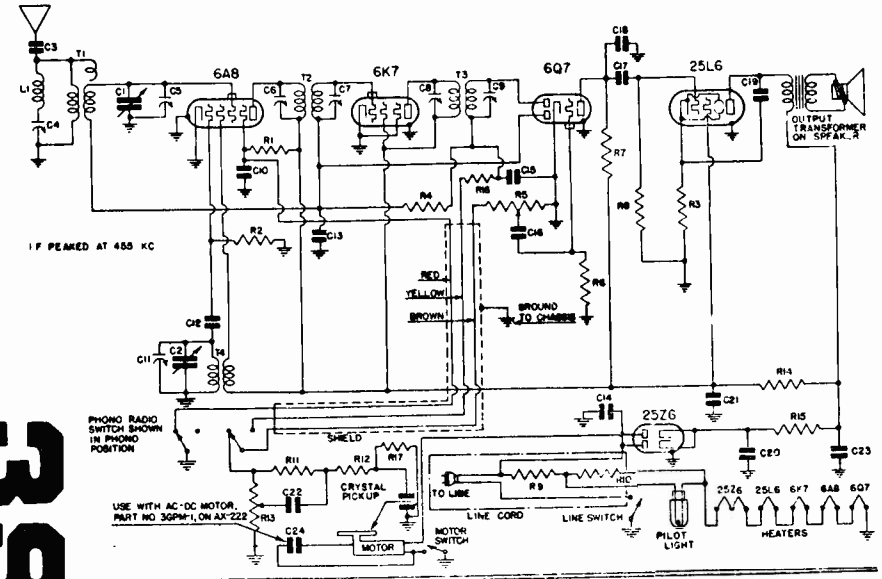
PRODUCTION CHANGES

1. Receivers bearing serial numbers below 1496300, C14 was a 0.0001 mf condenser instead of 0.0002.
2. Receivers bearing serial numbers below 1585100, C10 was a 0.03 mf condenser instead of 0.05.

*Item	Part No.	DESCRIPTION
T1	5AT-422	Broadcast antenna coil
T2	5AT-423	Broadcast detector coil
R1	2VR-219D	Volume control—75,000 ohms, with line switch
R2	3CR-294	240 ohm, ½ watt wire-wound resistor
R3	L55-BG	Plug-in ballast tube (Interchangeable with L55-B)
R4	OR-73U	25,000 ohm, ¼ watt carbon resistor
R5	HR-42U	2 megohm, ¼ watt carbon resistor
R6, R7	KR-56U	500,000 ohm, ¼ watt carbon resistor
R8	3QR-297	110 ohm, ½ watt wire-wound resistor
C1, C2	5AC-376	Two-gang variable condenser
C3	NNC-199	.001 mf, 600 volt tubular condenser
†C4, C5		Trimmers, part of variable condenser.
C6, C8	AC-6	.1 mf, 200 volt tubular condenser
C7	5AC-388	.25 mf, 100 volt tubular condenser
C9	LC-65	.02 mf, 400 volt tubular condenser
C10	LC-64	.05 mf, 400 volt tubular condenser. (See production change No. 2)
C11	EEC-132	.1 mf, 400 volt tubular condenser
‡C12, C13	4DC-345A	Dual 16 mf, 100 volt dry electrolytic condenser. (See note below.)
C14	5AC-384	.0002 mf, 600 volt tubular condenser. (See production change No. 1)
	3TS-312	5" dynamic speaker
	XL-9	Pilot light, 6.3 volt, .25 amp., Mazda No. 46
	5AZ-745	Condenser pulley
	5AZ-746	Pointer pulley
	5AZ-747	Dial pointer
	4YZ-772	Drive cord
	3RZ-519	Drive cord spring
	5AZ-792	Dial face
	5AZ-779A	Dial crystal for Model BA-199
	5AZ-794	Dial crystal for Model BA-201



MODEL AX-219



MODELS AX-221 AC, AX221 AC-DC and AX-222

Emerson Radio and Phonograph Corp.

L1, T1	Antenna coil with adjustable 455 kc wave-trap
T2	Double-tuned 455 kc first i-f transformer
T3	Double-tuned 455 kc second i-f transformer
T4	Oscillator coil
R1	30,000 ohm ½ watt carbon resistor
R2	50,000 ohm ¼ watt carbon resistor
R3	140 ohm ½ watt wire-wound resistor
R4, R17	1 megohm ¼ watt carbon resistor
R5	Volume control .25 megohm with line switch
R6	15 megohm ¼ watt carbon resistor
R7	250,000 ohm ¼ watt carbon resistor
R8	500,000 ohm ¼ watt carbon resistor
R9, R10	Resistance line cord with pilot light ballast section.
R13	Tone control .5 megohm with motor line switch
R14	2,500 ohm 1 watt carbon resistor
R15	175 ohm 1 watt metallized resistor.
R16	100,000 ohm ¼ watt carbon resistor.
R18	Tone control .5 megohm
C1, C2	Two-gang variable condenser (for 219 and 221)
C1, C2	Two-gang variable condenser (for 222 and 232)
C3	0.00055 mf mica condenser
C4	Trimmer, part of wave-trap assembly.
C5, C11	Trimmers, part of variable condenser.
C6, C7, C8, C9	Trimmers, part of i-f transformers.
C10	0.05 mf, 200 volt tubular condenser
C12	0.00006 mf mica condenser
C13	0.1 mf, 200 volt tubular condenser
C14	0.1 mf, 400 volt tubular condenser
C15, C18	0.00022 mf mica condenser
C16	0.002 mf, 600 volt tubular condenser
C17	0.02 mf, 400 volt tubular condenser
C19	0.025 mf, 400 volt tubular condenser
C20, C21	Dual 20 mf, 150 volt dry electrolytic condenser
C22	0.0005 mf mica condenser
C23	20 mf, 135 volt dry electrolytic condenser
C24	0.01 mf, 400 volt molded condenser
C25	0.006 mf, 600 volt tubular condenser
C26	0.0003 mf mica condenser
	Phono-radio switch
	Pilot light, 6.3 volt, .25 amp., Mazda No. 44
	Drive cord
	Drive cord spring
	Drive shaft
	Dial face fasteners
	Needle cup (for 219 and 221)
	Needle cup (for 222)
	Dial pointer (for 221, 222 and 232)
	Dial crystal (for 221, 222 and 232)
	Dial face (for 221, 222 and 232)
	6½" permanent magnet dynamic speaker

ADDITIONAL PARTS USED ON AX-219

R11, R12	500,000 ohm ¼ watt carbon resistor

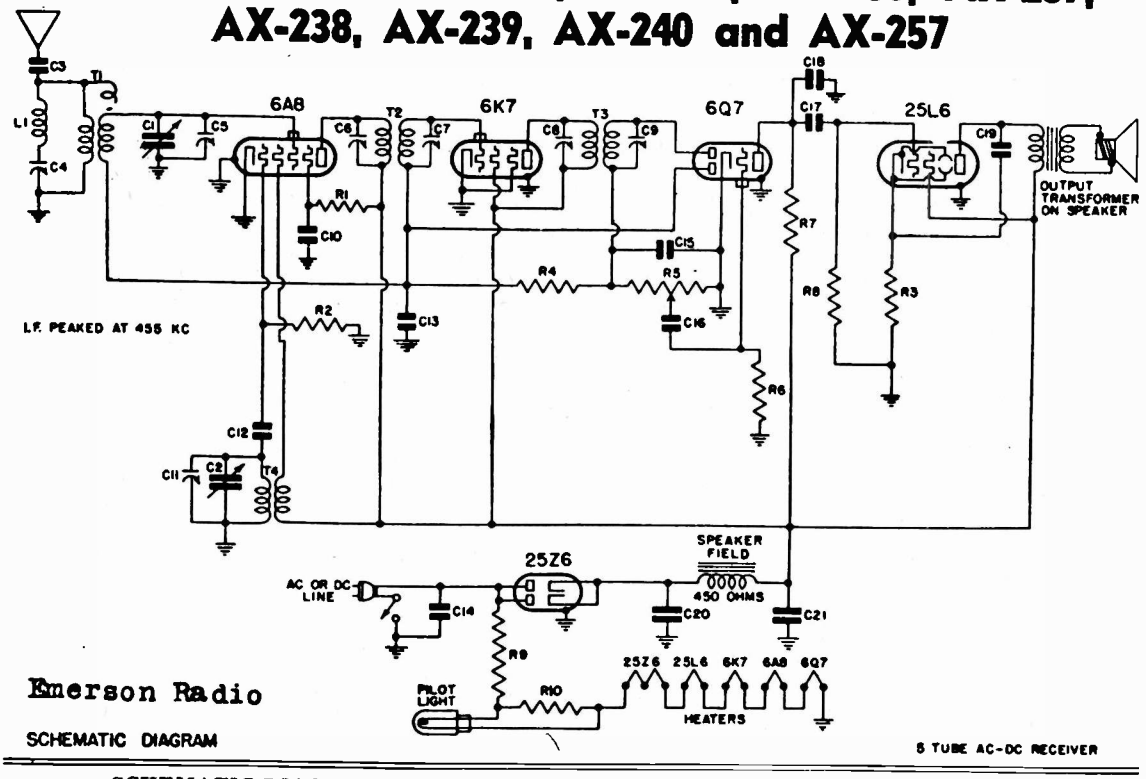
ADDITIONAL PARTS USED ON AX-221 and AX-222

R11, R12	1 megohm ¼ watt carbon resistor
	110 volt, a.c. motor (for 221-AC)
	AC-DC motor (for 221AC-DC and 222)

MANUAL OF 1939 MOST POPULAR SERVICE DIAGRAMS

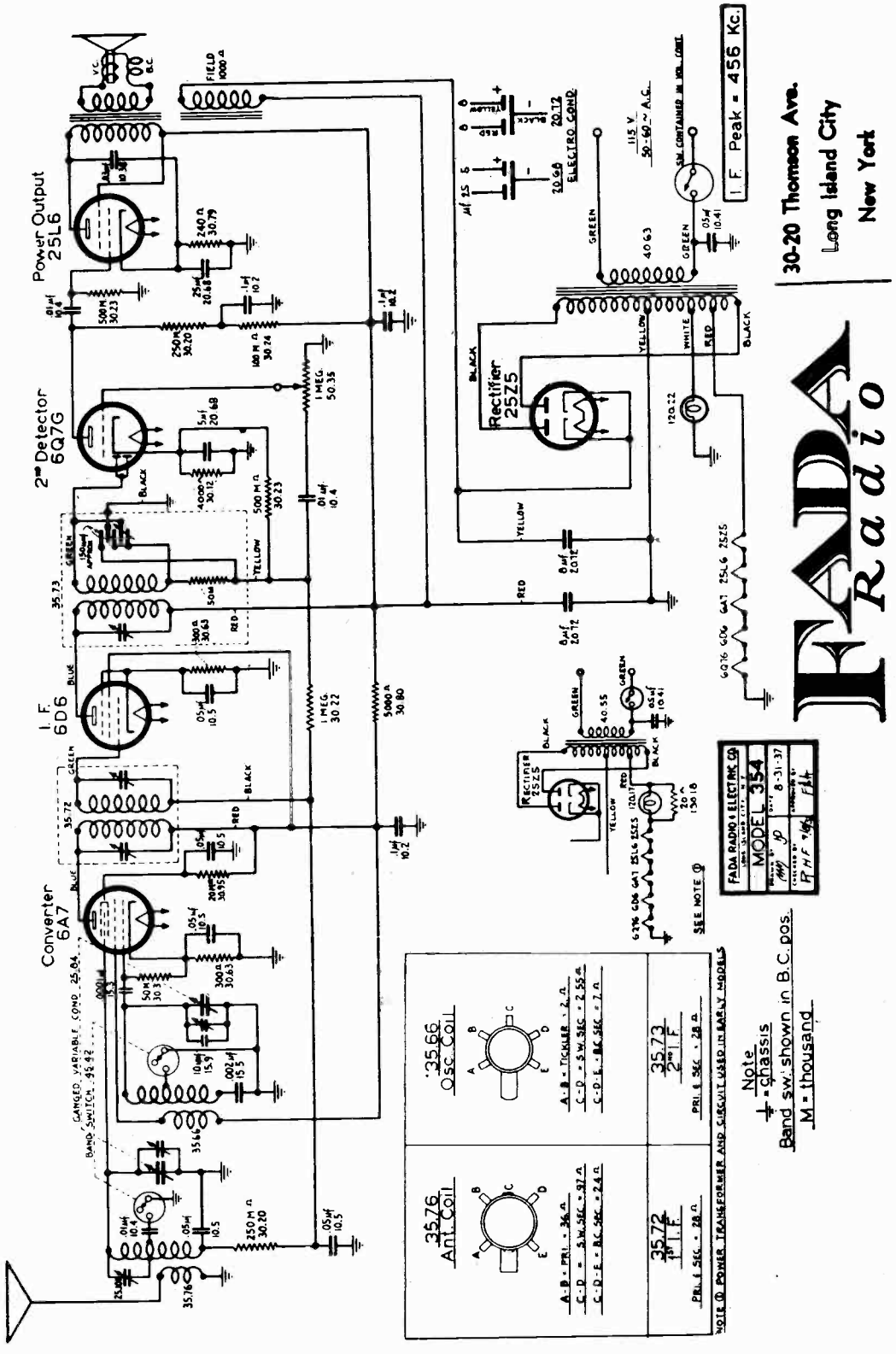
Emerson Radio and Phonograph Corp.

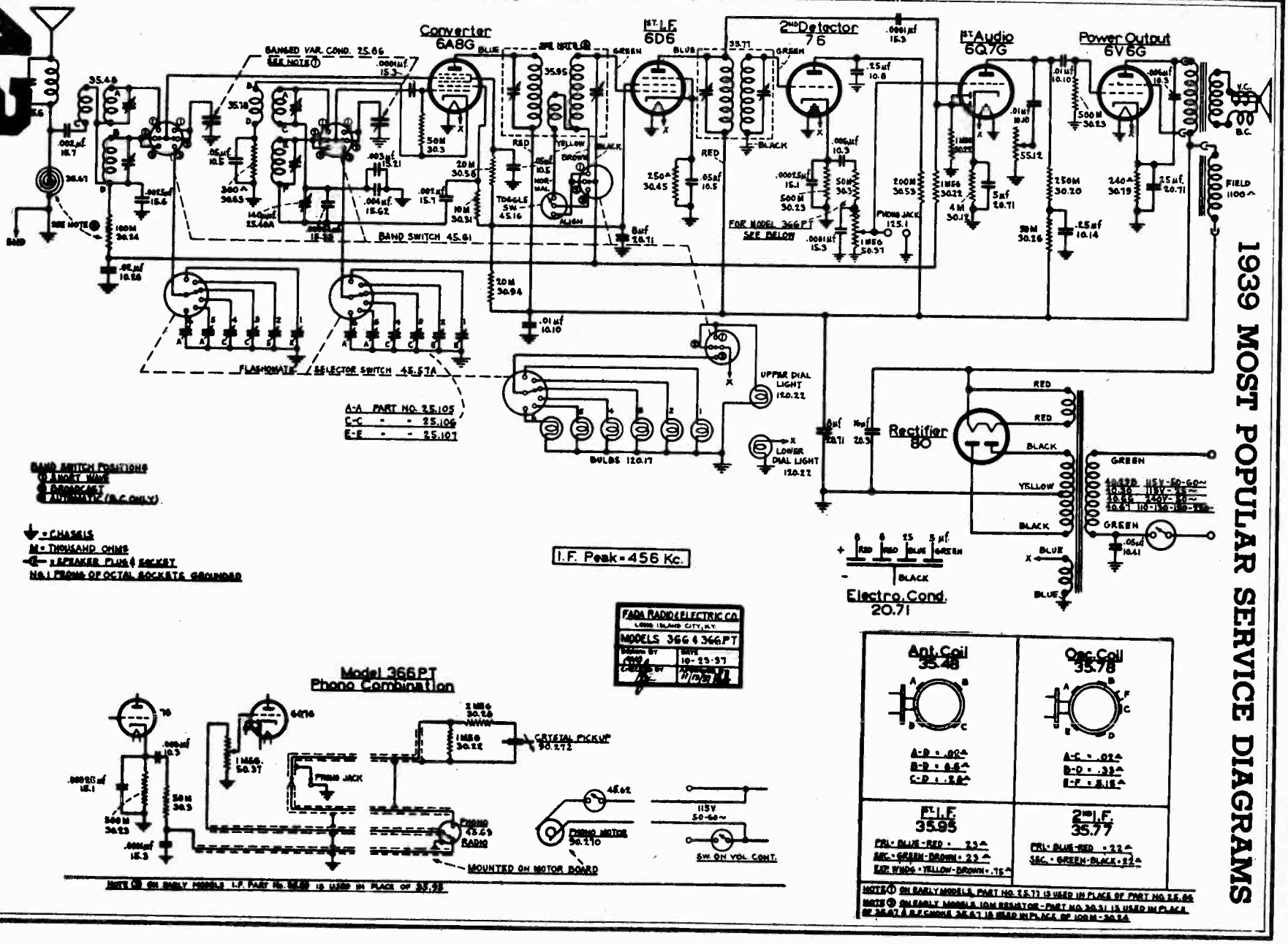
Models AX-211, AX-212, AX-217, AX-235, AX-237, AX-238, AX-239, AX-240 and AX-257

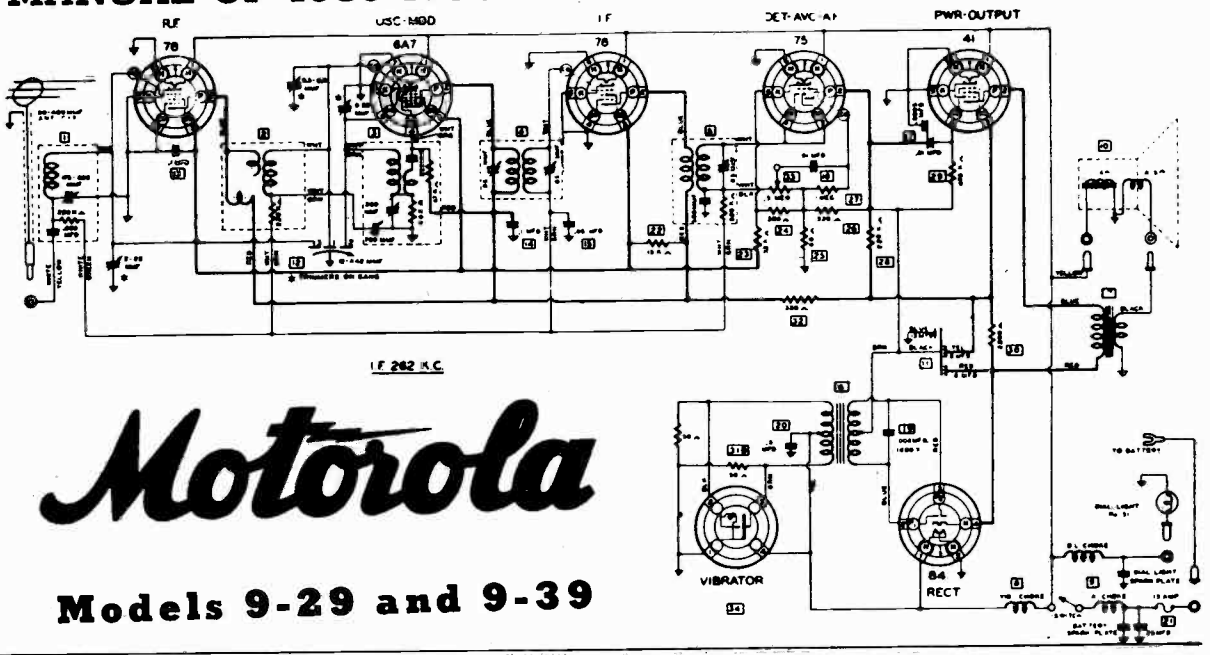


SCHEMATIC DIAGRAM FOR MODELS AX-211, 212, 217, 235, 237, 238, 239 and 257

*Item	Part No.	DESCRIPTION
L1, T1	4XT-432	Antenna coil with adjustable 455 kc wave-trap
T4	4XT-458	Oscillator coil (see production change no. 2)
T2	4XT-434	Double-tuned 455 kc first i-f transformer
T3	4XT-435	Double-tuned 455 kc second i-f transformer
R1	2CR-193	30,000 ohm ½ watt carbon resistor
R2	KR-53	50,000 ohm ¼ watt carbon resistor
R3	3FR-293	140 ohm ½ watt wire-wound resistor
R4	KR-57	1 megohm ¼ watt carbon resistor
R5	4XR-335	Volume control .25 megohm with line switch
R6	4XR-327	15 megohm ¼ watt carbon resistor
R7	KR-55	250,000 ohm ¼ watt carbon resistor
R8	KR-56	500,000 ohm ¼ watt carbon resistor
R9, R10	4XW-112	Resistance line cord with pilot light ballast section R9—150 ohms; R10—40 ohms
R14	4XR-334	2,500 ohm 1 watt carbon resistor
R15	4ZR-325	175 ohm 1 watt metallized resistor
C1, C2	4XC-391A	Two-gang variable condenser
C3	4XC-401	0.00055 mf mica condenser
†C4		Trimmer, part of wave-trap assembly.
†C5, C11		Trimmers, part of variable condenser.
†C6, C7, C8, C9		Trimmers, part of i-f transformers.
C10	BC-12	0.05 mf, 200 volt tubular condenser
C12	4XC-393A	0.00006 mf mica condenser
C13	AC-6	0.1 mf, 200 volt tubular condenser
C14	LC-64	0.05 mf, 400 volt tubular condenser
C15, C18	4XC-394A	0.00022 mf mica condenser
C16	3HC-274	0.002 mf, 600 volt tubular condenser
C17	LC-65	0.02 mf, 400 volt tubular condenser
C19	3FC-336	0.025 mf, 400 volt tubular condenser
C20, C21	4HC-348B	Dual 20 mf, 150 volt dry electrolytic condenser
C23	4XC-404	20 mf, 125 volt dry electrolytic condenser
	4XS-324	4" dynamic speaker (for 211, 212, 217, 235, 237, 238, 239 and 257)
	4PS-303A	6" permanent magnet dynamic speaker (for 240 cabinet)
	4BL-94	Pilot light, 6.3 volt, .25 amp., Mazda No. 44


FADA Radio
30-20 Thomson Ave.
Long Island City
New York
I. F. Peak = 456 Kc
Power Output 25L6
2nd Detector 6Q7G
I. F. 6D6
Converter 6A7
Rectifier 25Z5
Rectifier 25Z5
FADA RADIO & ELECTRIC CO
MODEL 354
8-31-37
35.66 Osc. Coil
35.76 Ant. Coil
35.73 2nd I.F.
35.72 1st I.F.
Note
+ = chassis
Band sw. shown in B.C. pos.
M = thousand
SEE NOTE 9
NOTE 9 POWER TRANSFORMER AND CIRCUIT USED IN EARLY MODELS

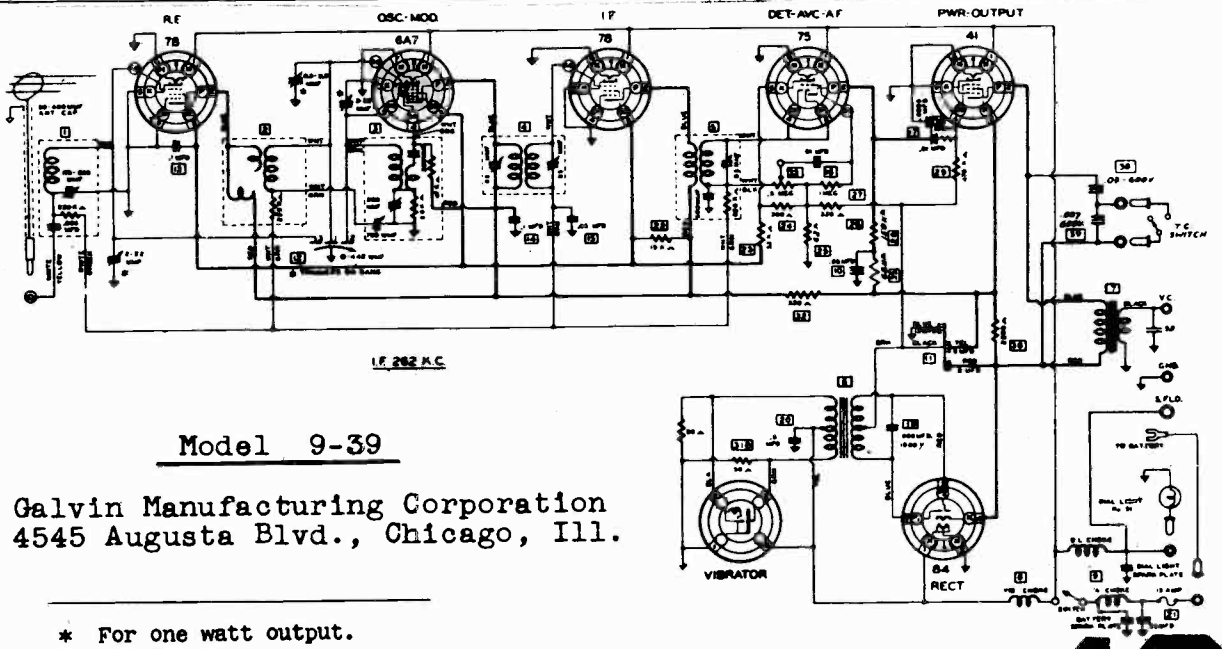

Converter 6A8G
1st I.F. 6D6
2nd Detector 76
1st Audio 6Q7G
Power Output 6V6G
Rectifier 80
BAND SWITCH 45.61
FLASHOMATIC SELECTOR SWITCH 45.57A
A-A PART NO. 25.105
C-C - - 25.106
E-E - - 25.107
BULBS 120.17
UPPER DIAL LIGHT 120.22
LOWER DIAL LIGHT 120.22
FOR MODEL 366PT SEE BELOW
PHONO JACK 125.1
TOGGLE SW. 45.16
BAND SWITCH POSITIONS
1 SHORT WAVE
2 BROADCAST
3 AUTOMATIC (A.C. ONLY)
⏚ = CHASSIS
M = THOUSAND OHMS
SPEAKER PLUG & SOCKET
NO. 1 PRONG OF OCTAL SOCKETS GROUNDED
I.F. Peak = 456 Kc.
Electro. Cond. 20.71
FADA RADIO & ELECTRIC CO.
LONG ISLAND CITY, N.Y.
MODELS 366 & 366PT
DRAWN BY
DATE 10-23-37
Model 366PT
Phono Combination
CRYSTAL PICKUP 90.272
PHONO JACK
PHONO MOTOR 90.210
PHONO 45.63 RADIO
MOUNTED ON MOTOR BOARD
115V 50-60~
SW. ON VOL. CONT.
Ant. Coil 35.48
A-B = .02Δ
B-D = 6.6Δ
C-D = .2Δ
Osc. Coil 35.78
A-C = .02Δ
B-D = .33Δ
E-F = 5.15Δ
1st I.F. 35.95
PRI. BLUE-RED = .2Δ
SEC. GREEN-BROWN = .2Δ
EXP. WDG. YELLOW-BROWN = .15Δ
2nd I.F. 35.77
PRI. BLUE-RED = .2Δ
SEC. GREEN-BLACK = .2Δ
NOTE ① ON EARLY MODELS, PART NO. 25.77 IS USED IN PLACE OF PART NO. 25.66
NOTE ② ON EARLY MODELS, 10M RESISTOR - PART NO. 30.31 IS USED IN PLACE OF 30.67 & R.F. CHOKE 35.67 IS USED IN PLACE OF 10M - 30.34



Motorola

Models 9-29 and 9-39

Average Microvolt Input *	Generator Set at	Generator Feeder Connected to	Dummy Antenna Capacity	Leak Resistance	Output Meter Reading **
.25 Volts	400 Cycles	75 Grid	.1 MF	.5 Meg	2.2 Volts
25,000	262 K.C.	78 Grid (I.F.)	.1 MF	.5 Meg	2.2 Volts
700	262 K.C.	6A7 Grid	.1 MF	.5 Meg	2.2 Volts
800	600 K.C.	6A7 Grid	.1 MF	.5 Meg	2.2 Volts
45	600 K.C.	78 Grid (R.F.)	.1 MF	.5 Meg	2.2 Volts
3	600 K.C.	Ant. Lead	40 MMF	None	2.2 Volts



Model 9-39

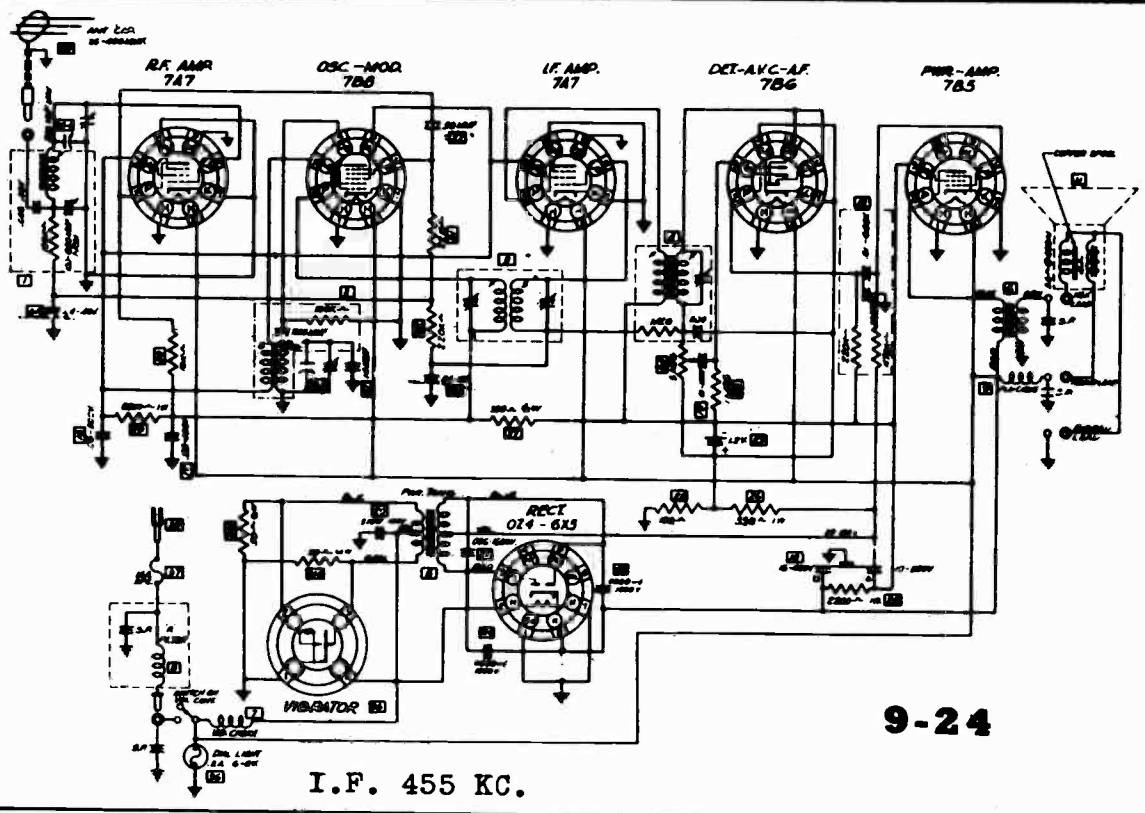
Galvin Manufacturing Corporation
4545 Augusta Blvd., Chicago, Ill.

* For one watt output.

** Meter connected across voice coil.

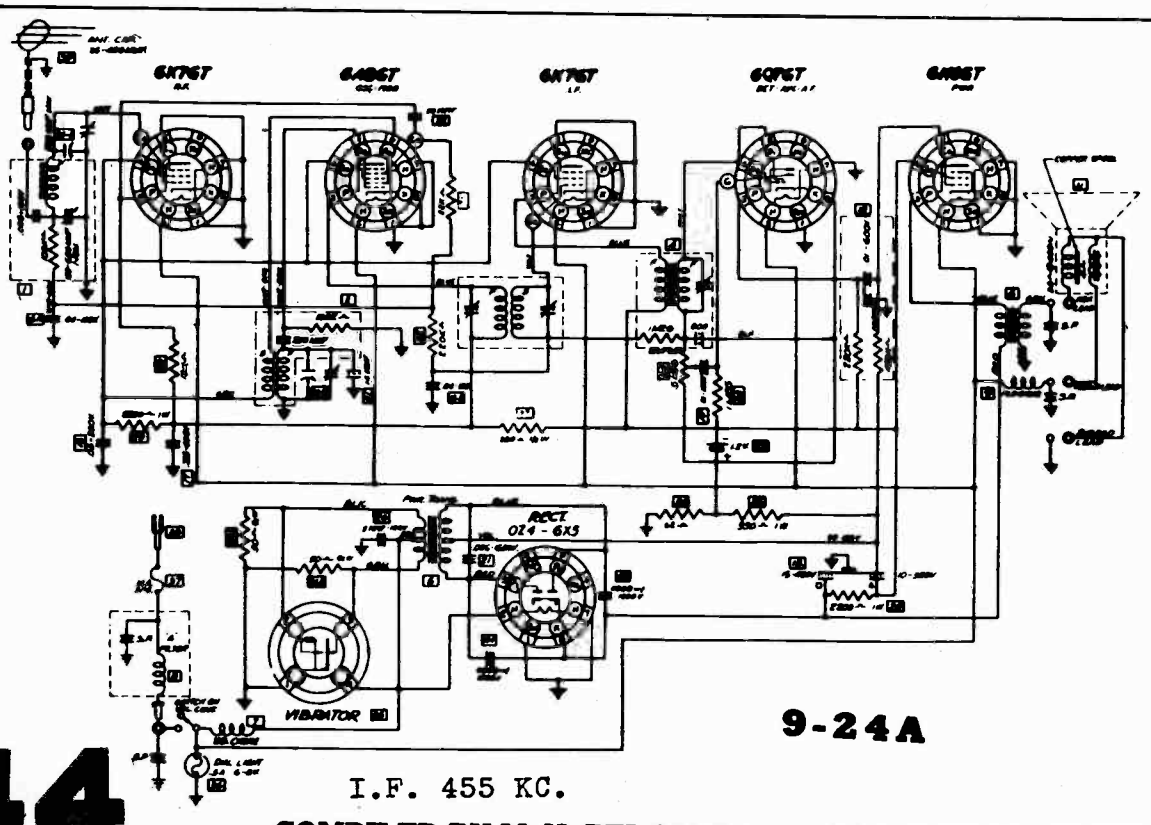
MANUAL OF 1939 MOST POPULAR SERVICE DIAGRAMS

GALVIN MANUFACTURING CORPORATION



9-24

I.F. 455 KC.



9-24A

I.F. 455 KC.

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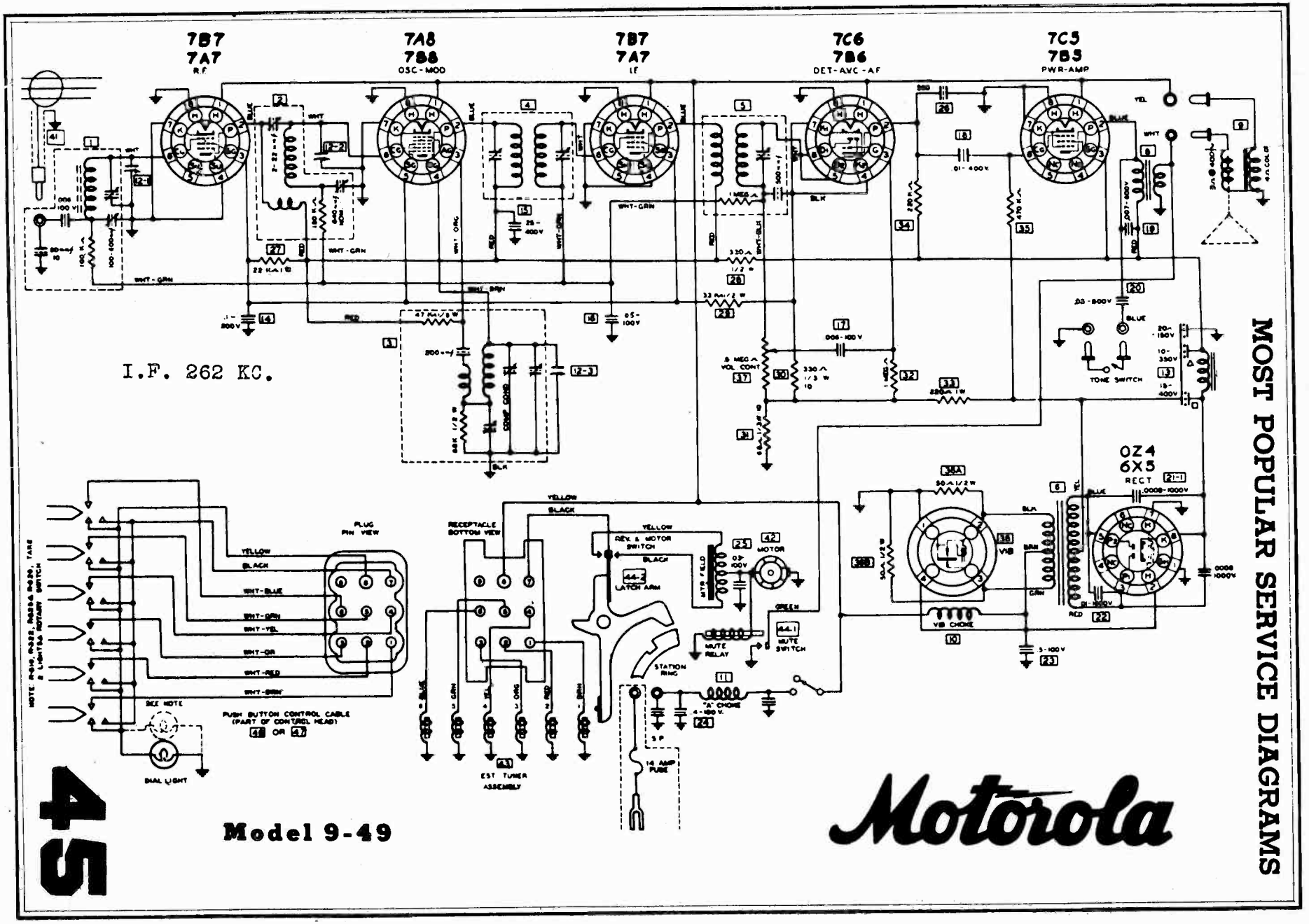


MOST POPULAR SERVICE DIAGRAMS

Model 9-49

Motorola

45

ALIGNMENT PROCEDURE

Place the radio on the service bench with the front cover removed, but with the speaker and battery connected to it.

Turn the volume control to maximum position and leave it there throughout the alignment, reducing the signal generator output if necessary.

NOTE: Do not adjust the trimmer in the R.F. coil can that is covered with Scotch Tape. The original adjustment, made in the factory, should not be tampered with. (Fig. 1 below, shows all trimmer locations.)

I.F. ALIGNMENT

1. Connect the signal generator to the control grid (Terminal No. 6) of the Osc.-Mod. tube (7B8). Turn the condenser gang completely out of mesh. Connect an output meter across speaker voice coil.

2. Set the signal generator at 262 K.C. and carefully adjust the single trimmer in the Diode coil can to the point showing the highest reading on the output meter.

3. Adjust the two trimmers in the I.F. coil can to the point showing the highest output reading.

4. Repeat the I.F. and Diode adjustment several times for maximum accuracy.

SETTING THE RANGE

1. Connect the signal generator to the control grid (Terminal No. 6) of the R.F. tube (7A7) using the same .1 MF condenser.

2. Set the signal generator at 1550 K.C. and with the condenser gang completely out of mesh, adjust the 1550 K.C. trimmer in the oscillator coil can to the point showing the highest output reading.

3. Set the signal generator at 535 K.C. Turn the condenser gang completely in mesh and adjust the 600 K.C. trimmer in the Oscillator coil can for the highest output reading.

NOTE: The adjustments above set the range so the receiver will track with the calibrations in the control head.

R.F. AND ANTENNA ALIGNMENT

1. Connect the signal generator to the antenna lead through a 40 MMF condenser and to chassis ground. Set the signal generator at 600 K.C. and turn the condenser gang until the signal is heard. Adjust the 600 K.C. trimmer on the antenna coil can for the maximum output reading.

2. Set the signal generator at 1400 K.C. Turn the condenser gang until the signal is heard. Adjust the 1400 K.C. trimmer in the antenna coil can for maximum output reading.

3. Adjust the 1400 K.C. trimmer in the R.F. coil can for maximum output reading.

4. Recheck steps 1, 2, and 3, for accuracy.

SENSITIVITY AND STAGE GAIN MEASUREMENTS

These stage gain measurements will, if properly used, enable you to localize trouble quickly. They are intended for use with a signal generator that is accurately calibrated in microvolts.

Starting with the I.F., and working back step by step to Osc.-Mod., R.F. and finally to the antenna terminal, the circuit in which the trouble exists will quickly be determined by evidence of low gain, when signal generator attenuation readings are compared to the normal values as shown in the table.

All stage-gain measurements must be made with the volume control set for full volume. The shielded lead from the signal generator is connected to the grid terminal of the tube through a .1 MF condenser, with a 500M ohm resistor connected as a leak resistance between the grid of the tube and the grid lead which has been removed.

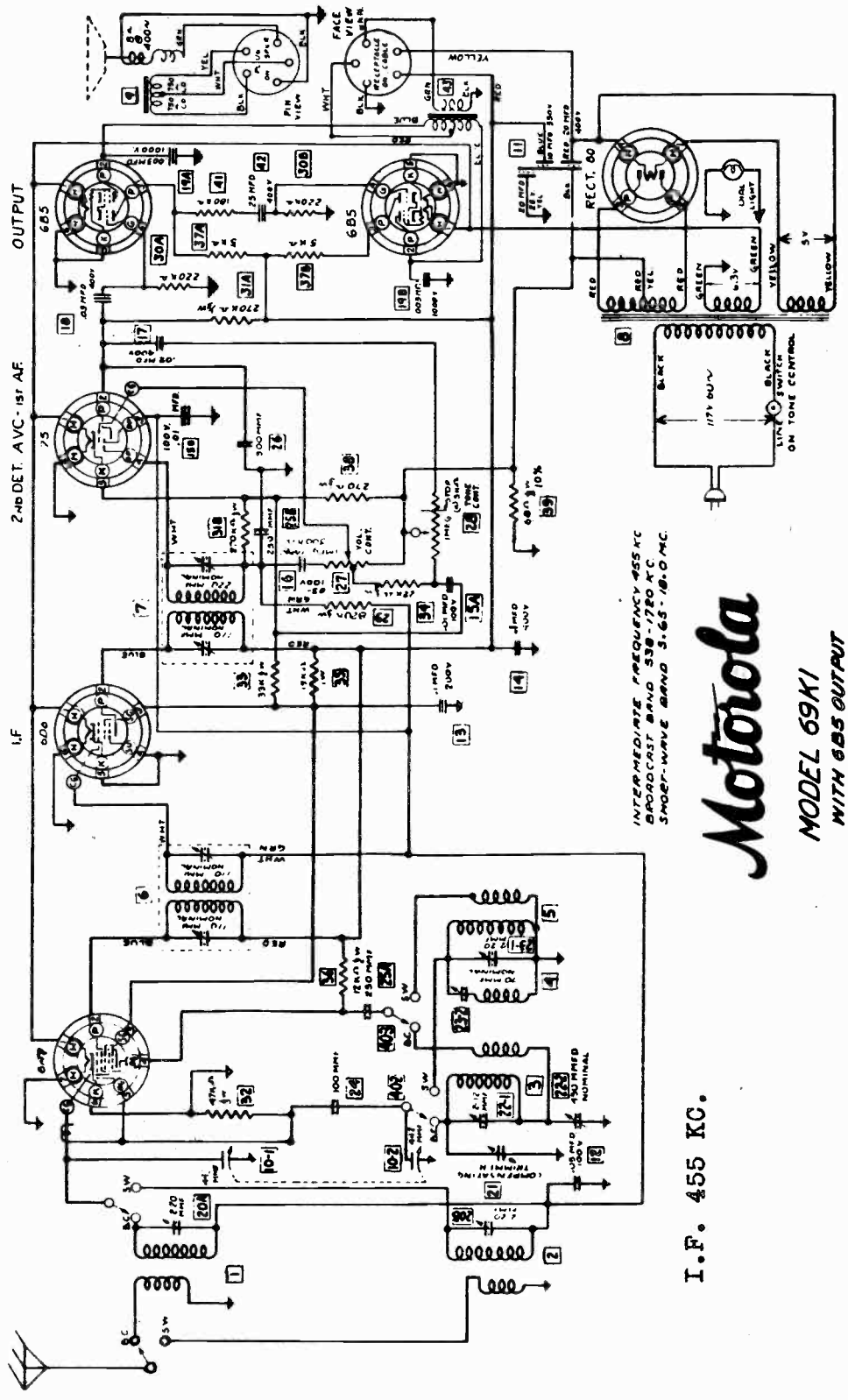
When measuring over-all sensitivity at the antenna terminal, use a 40 MMF condenser in place of the .1 MF. It must be remembered that the figures in the table are average and allowance must be made for variations between two sets of the same general type, due to difference of tube characteristics, etc.

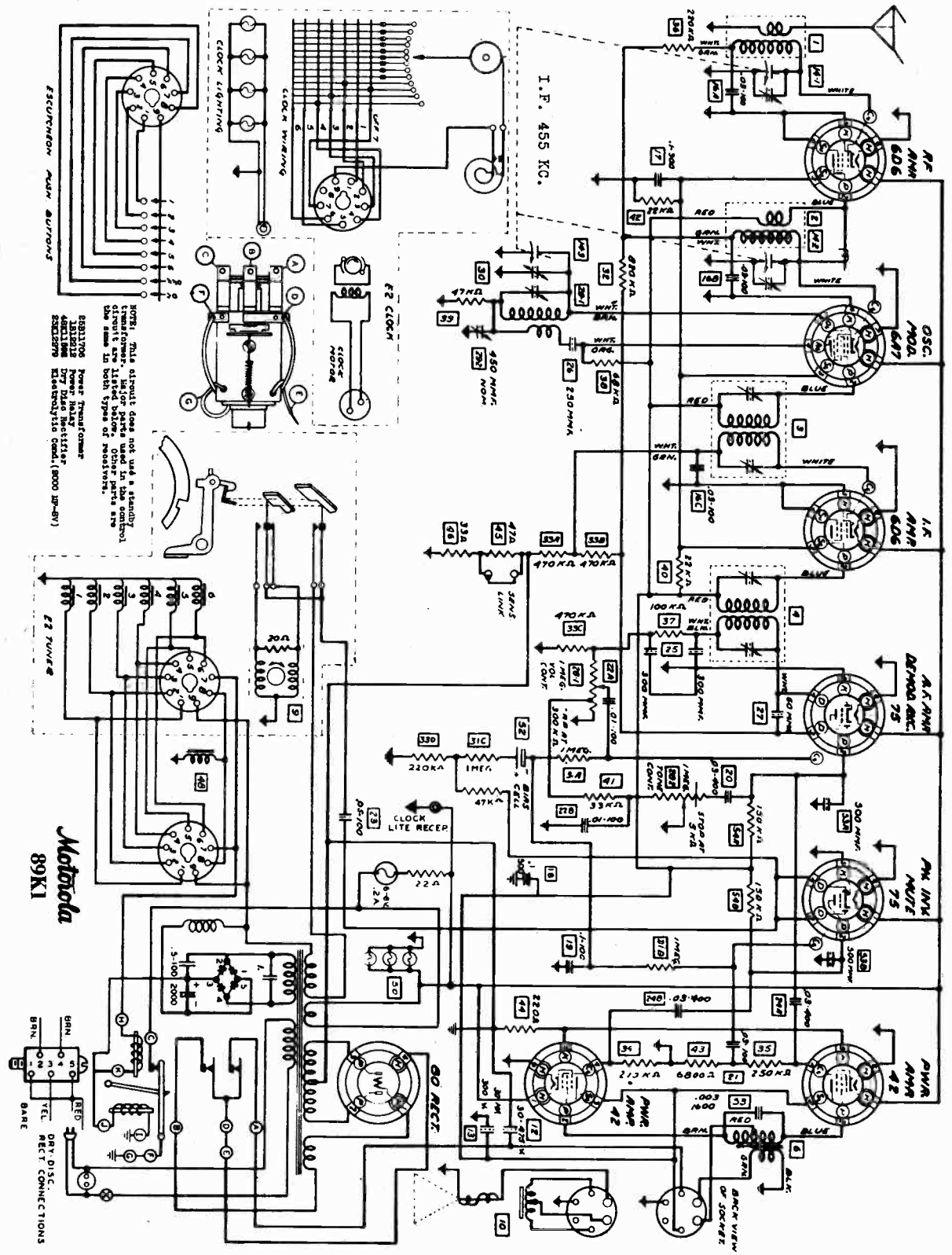
Average Microvolt Input *	Generator Set at	Generator Feeder Connected to	Dummy Antenna Capacity	Leak Resistance	Output Meter Reading **
25,000	262 K.C.	Grid(I.F.)	.1 MF	.5 Meg.	1.74 Volts
700	262 K.C.	Grid(Mod.)	.1 MF	.5 Meg	1.74 Volts
800	600 K.C.	Grid(Mod.)	.1 MF	.5 Meg	1.74 Volts
45	600 K.C.	Grid(R.F.)	.1 MF	.5 Meg	1.74 Volts
2	600 K.C.	Ant. Lead	40 MMF	None	1.74 Volts

* For one watt output.

** Meter connected across voice coil.

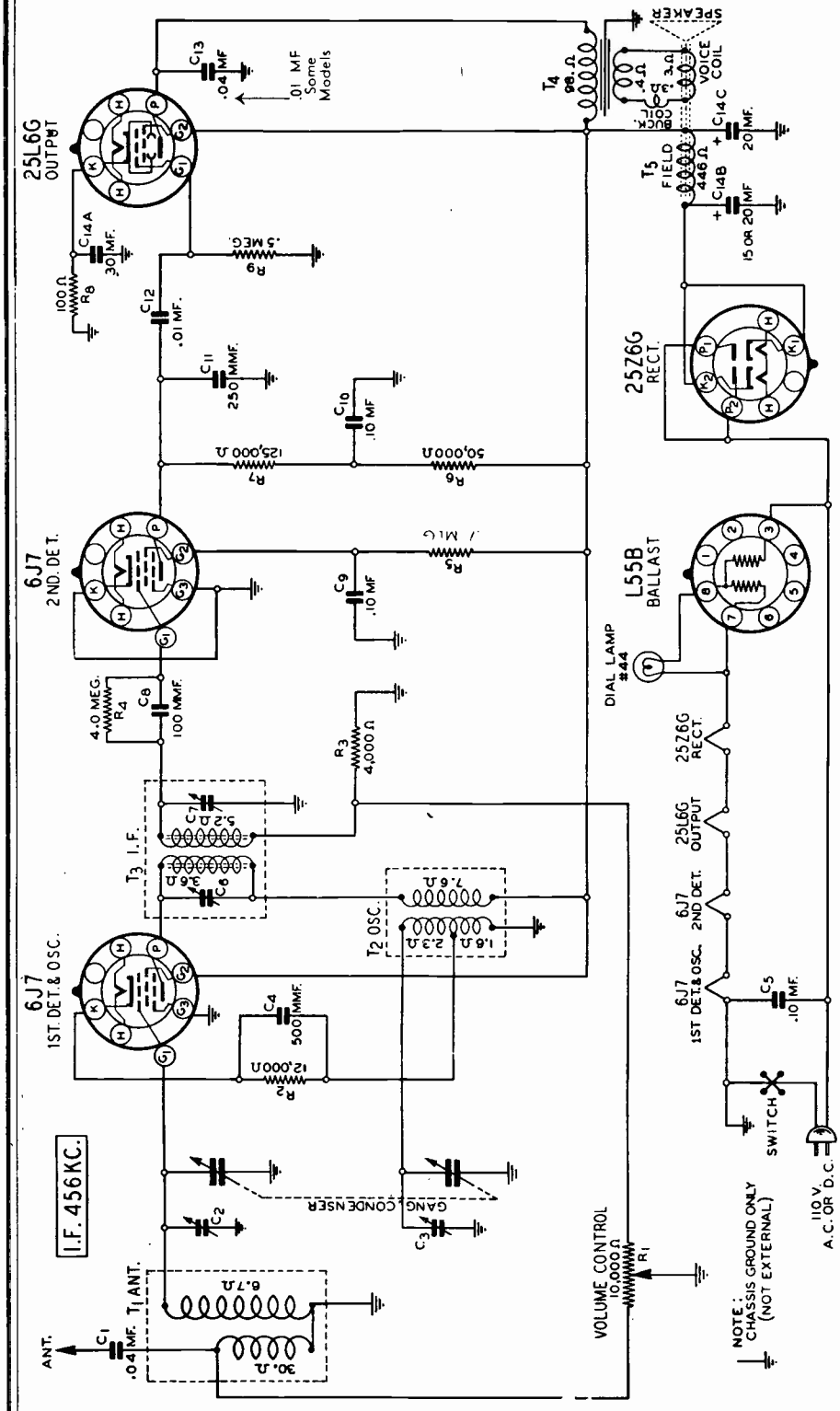
V.C. impedance - 3 ohms at 400 cycles.


OUTPUT
2ND DET. AVC - 1ST AF.
I.F.
RECT. 80
Motorola
MODEL 69K1
WITH 6B5 OUTPUT
INTERMEDIATE FREQUENCY 455 KC
BROADCAST BAND 538 - 1720 KC
SHORT-WAVE BAND 5.65 - 18.0 MC.
I.F. 455 KC.


Motorola
89K1
I.F. 455 KC.
CLOCK LIGHTING
CLOCK WIRING
ESCUTCHEON PUSH BUTTONS
F2 CLOCK
CLOCK MOTOR
F2 TUNER
CLOCK LITE RECEP.
60 RECT.
R.F. AMP 606
OSC. MOD. 6A7
I.F. AMP 606
A.F. AMP DEMOD. REC. 75
PWR. INVT. INVT. 75
PWR. AMP 42
PWR. AMP 42
BACK VIEW OF SOCKET
DRY DISC RECT. CONNECTIONS
BRN.
GRN
YEL
RED
BARE
450 MMF. NOM.
SENS. LINK
CLOCK LITE RECEP.
STOP AT 5 MEG.
BIAS CELL
.05-100
.01-100
.003 1600
2000
NOTE: This circuit does not use a standby transformer. Major parts used in the control circuit are listed below. Other parts are the same in both types of receivers.
85B11705 Power Transformer
85B11706 Power Choke
4B21188 Dry Disc Rectifier
85B12979 Electrolytic Cond.(8000 MF-8V)

Gamble-Skogmo, Inc.

SERIES A 11



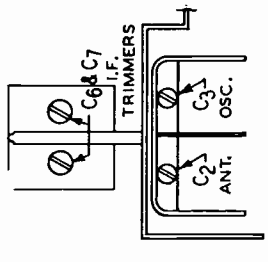
ALIGNMENT PROCEDURE

Volume Control—Maximum All Adjustments. Allow Chassis and Signal Generator to "Heat Up" for Several Minutes.

SIGNAL GENERATOR FREQUENCY SETTING	CONNECTION AT RADIO	DUMMY ANTENNA	CONDENSER SETTING	ADJUST TRIMMERS TO MAXIMUM (See Illustration)
456 KC	Grid of 1st Det.	.1 mf.	Turn rotor to full open	I.F. (C6) & (C7)
1730 KC	Antenna Lead	200 mmf.	Turn rotor to full open	Oscillator (C3)
1500 KC	Antenna Lead	200 mmf.	Turn rotor to max. output	Antenna (C2)

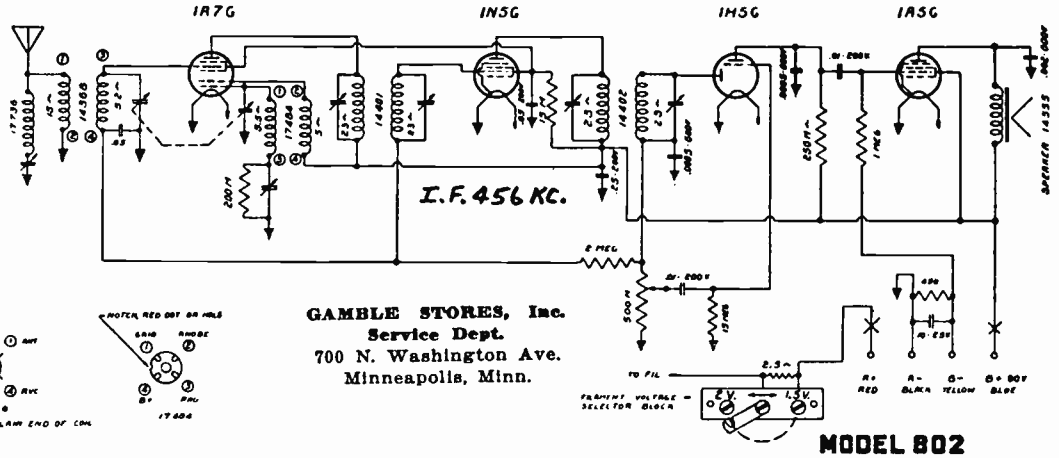
The following equipment is required for aligning:
Signal Generator which will provide an accurately calibrated signal at the test frequencies as listed.
Output Indicating Meter; Non-Metallic Screwdriver.
Dummy Antennas — .1 mf. and 200 mmf.

NOTE—To obtain dial scale calibration, tune in an 800 KC signal. The pointer should be at the 800 KC mark on the dial. If it is not, loosen the pointer screw, set the pointer at the 800 KC mark and retighten the pointer screw.



MANUAL OF 1939 MOST POPULAR SERVICE DIAGRAMS

Coronado Model 802-A

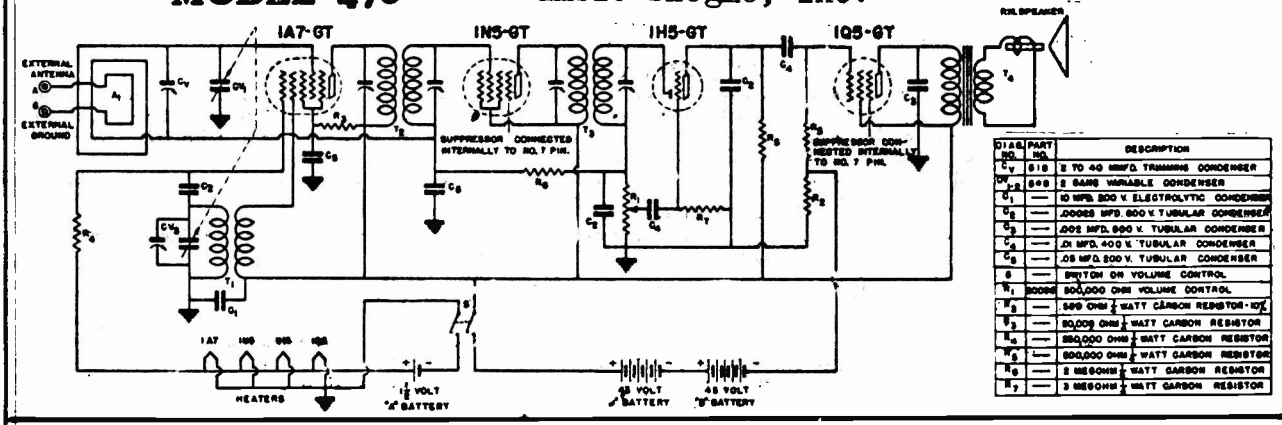


GAMBLE STORES, Inc.
Service Dept.
700 N. Washington Ave.
Minneapolis, Minn.

MODEL 802

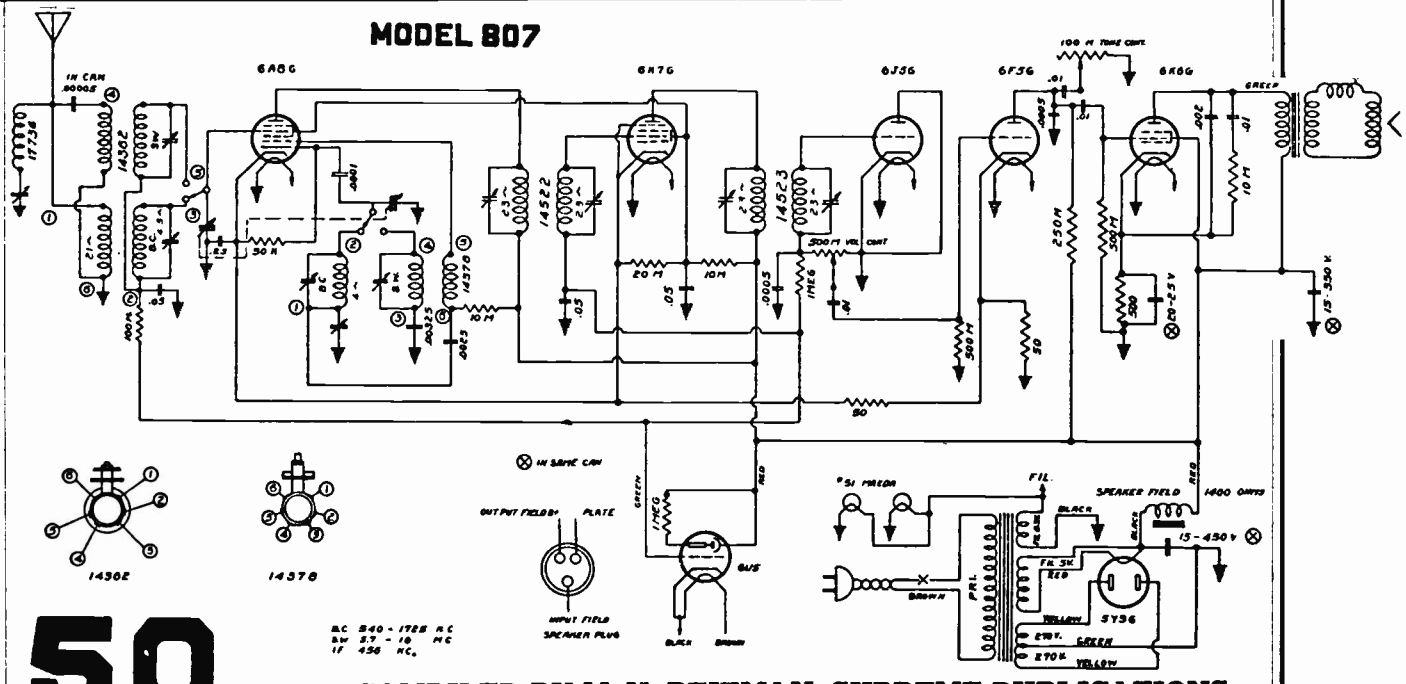
MODEL 476

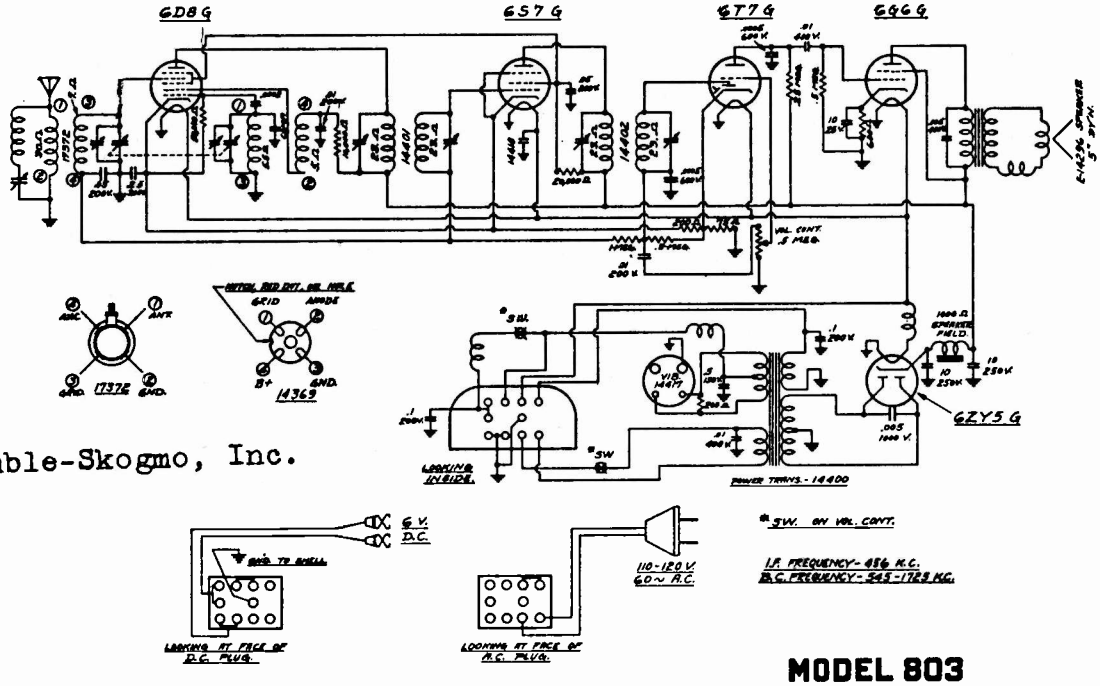
Gamble-Skogmo, Inc.



DIAG. NO.	PART NO.	DESCRIPTION
C_V	616	2 TO 40 MMFD. TRIMMING CONDENSER
C_{V-2}	609	2 GANG VARIABLE CONDENSER
C_1	—	10 MFD. 200 V. ELECTROLYTIC CONDENSER
C_2	—	.00025 MFD. 600 V. TUBULAR CONDENSER
C_3	—	.002 MFD. 600 V. TUBULAR CONDENSER
C_4	—	.01 MFD. 400 V. TUBULAR CONDENSER
C_5	—	.05 MFD. 200 V. TUBULAR CONDENSER
S	—	SWITCH ON VOLUME CONTROL
R_1	20006	500,000 OHM VOLUME CONTROL
R_2	—	500 OHM ½ WATT CARBON RESISTOR-10%
R_3	—	50,000 OHM ½ WATT CARBON RESISTOR
R_4	—	250,000 OHM ½ WATT CARBON RESISTOR
R_5	—	500,000 OHM ½ WATT CARBON RESISTOR
R_6	—	2 MEGOHM ½ WATT CARBON RESISTOR
R_7	—	3 MEGOHM ½ WATT CARBON RESISTOR

MODEL 807

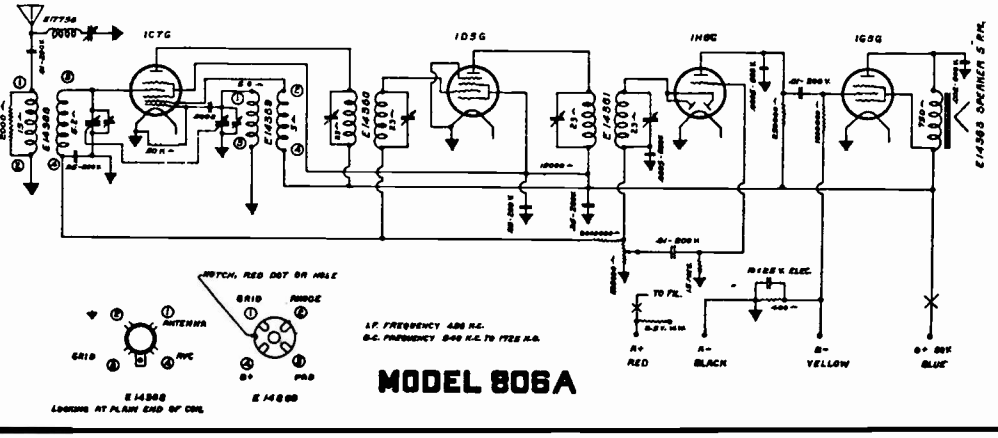




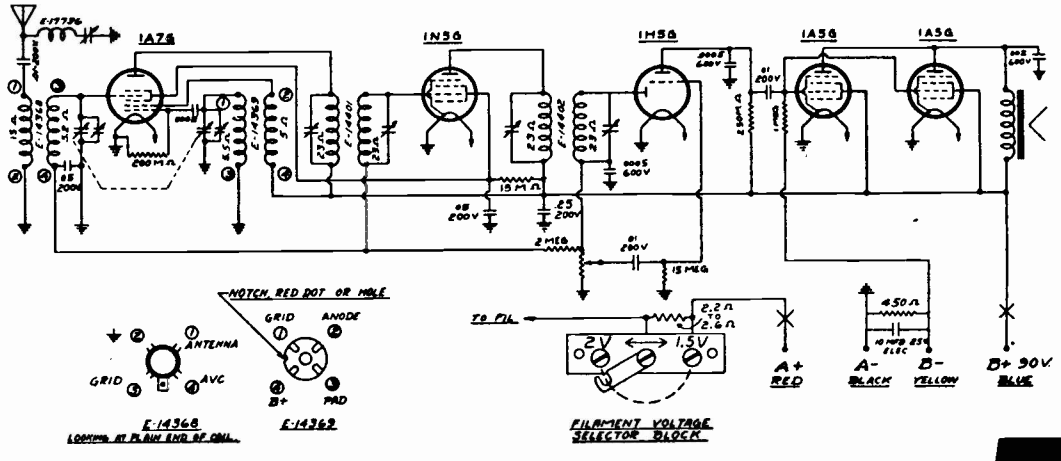
Gamble-Skogmo, Inc.

MODEL 803

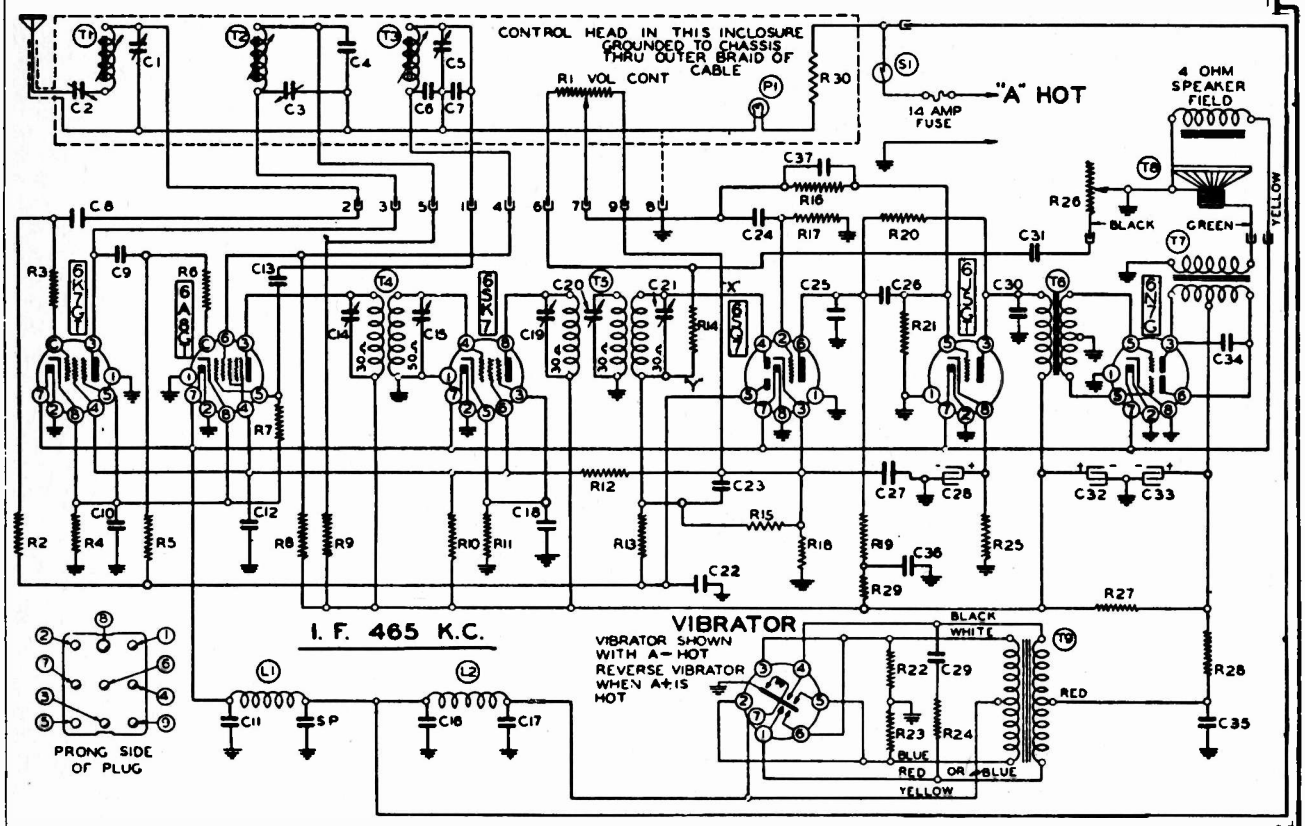
Gamble-Skogmo, Inc.



MODEL 806A



MODEL 813



MODEL 678

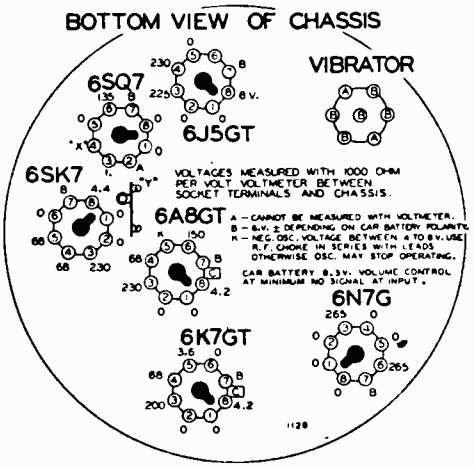
R1	101161	1.2 megohm volume
R2	13019	1 megohm—½ w.
R3	130275	500 ohm—½ w.
R4	13079	400 ohm—½ w.
R5	13019	1 megohm—½ w.
R6	130275	500 ohm—½ w.
R7	13012	50M ohm—½ w.
R8	13012	50M ohm—½ w.
R9	13021	20M ohm—½ w.
R10	130196	30M ohm—1 watt
R11	130235	1500 ohm—½ w.
R12	1307	40M ohm—½ w.
R13	13019	1 megohm—½ w.
R14	13020	100M ohm—½ w.
R15	130118	600M ohm—½ w.
R16	130257	5 megohm—½ w.
R17	13019	1 megohm—½ w.
R18	130101	600 ohm—½ w.
R19	13011	250M ohm—½ w.
R20	13038	2 megohm—½ w.
R21	1303	500M ohm—½ w.
R22	130269	100 ohm—½ w.
R23	130269	100 ohm—½ w.
R24	13071	4M ohm—½ w.
R25	13092	1M ohm—½ w.
R26	101162	1 megohm tone control
R27	130199	1500 ohm Resistor—1 w
R28	130231	75 ohm—½ w.
R29	13020	100M ohm—½ w.
R30	130299	10 ohm—½ w.

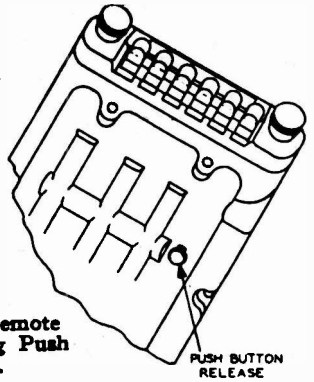
CONDENSERS

C1	12483	Antenna Shunt Trimmer
C2	12481	Antenna Series Trimmer
C3	12480	R. F. Shunt Trimmer
C4	100102	.15 x 400 v.
C5	12480	Oscillator Shunt Trimmer
C6	129137	.0005 Mica
C7	129136	.00017 Mica
C8	12997	.00005 Ceramicon—5%
C9	1292	.0005 Mica
C10	11625	.05 x 200 v.
C11	1296	.002 Mica
C12	11625	.25 x 400 v.
C13	12912	.00025 Mica
C14		Plate Trimmer on Input I.F.
C15		Grid Trimmer on Input I.F.
C16	10031	.5 x 120 v.
C17	10031	.5 x 120 v.
C18	1009	.05 x 200 v.
C19		Plate Trimmer on Output I.F.
C20		Tertiary Trimmer on Output I.F.
C21		Grid Trimmer on Output I.F.
C22	11625	.05 x 200 v.
C23	1295	.0001 Mica
C24	10011	.01 x 400 v.
C25	1295	.0001 Mica
C26	10011	.01 x 400 v.
C27	10026	.02 x 400 v.
C28	11988	20 mfd.—25 w. v. lytic
C29	100101	.0055 x 1600
C30	129114	.0003 Mica
C31	10047	.002 x 600 v.
C32	11988	15 mfd.—450 w. v. lytic
C33	11988	15 mfd.—450 w. v. lytic
C34	100103	.004 x 800 v.
C35	1001	.1 x 400 volt
C36	10013	.05 x 400 v.
C37	12967	.00004 Mica

PARTS

T1	111118	P. B. Antenna Coil Assembly
T2	10949	P. B. R. F. Coil Assembly
T3	110109	P.B. Oscillator Coil
T4	108120B	Input I.F. Coil—465 kc.
T5	108115B	Output I.F. Coil—465 kc.
T6	10584	Audio Driver Transformer
T7	10583	Output Transformer
T8	114155	8" Dynamic Speaker
T9	104158	Power Transformer
L1	10566	"A" Choke
L2	10519	"A' Choke
P1	10797	6-8 v. Pilot Light T51
S1		Off-on Switch on volume control





Bottom View of Remote Tuner Unit Showing Push Button Release Pin.

Gamble-Skogmo, Inc.

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General Electric

MODELS GD-41 AND GD-41-U

Electrical Power Output

Undistorted.....1.0 watt
Maximum.....2.0 watts

Loud-speaker—Electrodynamic

Outside Cone Diameter.....5 inches
Voice Coil Impedance.....3.5 ohms at 400 cycles
Field Coil Resistance.....420 ohms (cold)

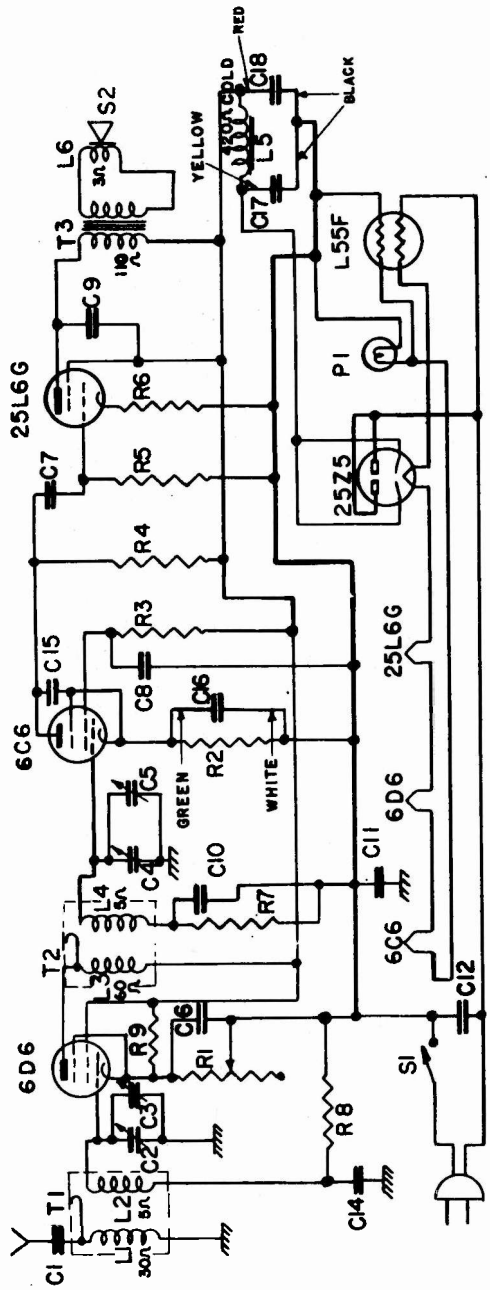
ALIGNMENT

Connect the high side of the signal generator through a 250 mmf. condenser to the antenna lead. The low side of the signal generator output should be connected to the receiver chassis through a .05 mfd. condenser. Connect a suitable output meter across the voice coil leads; then proceed as follows:

1. With gang condenser plates completely closed, the dial pointer should coincide with the horizontal dial line.

2. Tune receiver to the 1500 kc. point on the dial; then align trimmers (C-3 and C-5) on the gang condenser at 1500 kc. for a maximum output meter reading.

Precaution—One side of the power supply is connected to the chassis—Do not connect chassis to any external ground.



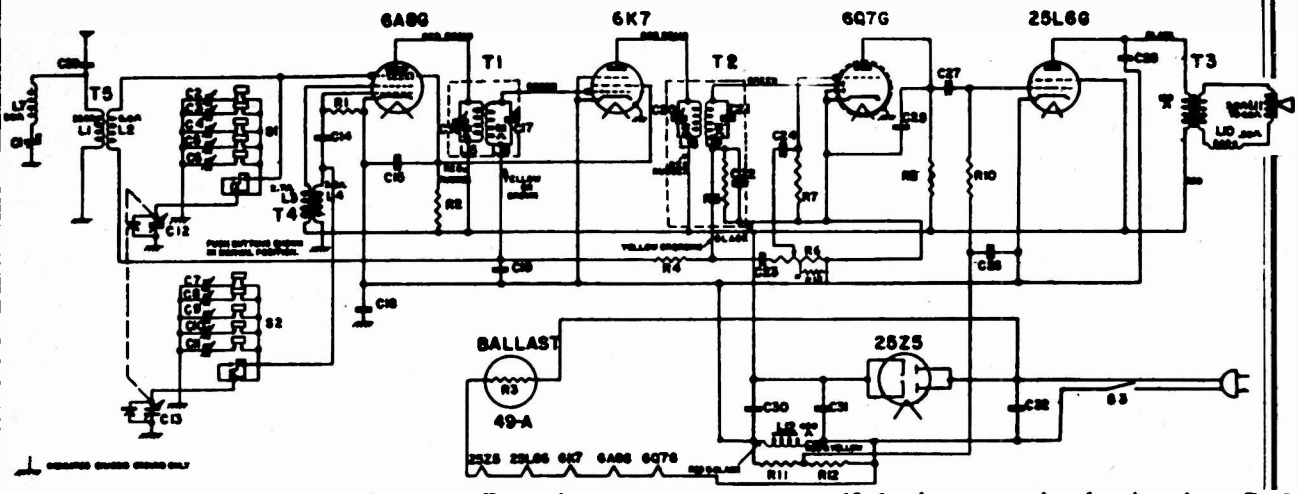
Symbol	Description
C-1	Capacitor—.01 Mfd. (GD-41)
C-1	Capacitor—Paper .001 Mfd. (GD-41-U)
C-2	Capacitor—Variable
C-3	Capacitor—Trimmer on gang
C-4	Capacitor—Variable
C-5	Capacitor—Trimmer on gang
C-6	Capacitor—Paper .05 Mfd.
C-7	Capacitor—Paper .01 Mfd.
C-8	Capacitor—Paper .01 Mfd.
C-9	Capacitor—Paper .02 Mfd.
C-10	Capacitor—Paper .01 Mfd.
C-11	Capacitor—Paper .1 Mfd.
C-12	Capacitor—Paper .05 Mfd.
C-14	Capacitor—Paper .01 Mfd.
C-15	Capacitor—Mica 100 Mmf.
C-16	Capacitor—Elect. 5 Mfd. 25 V.
C-17	Capacitor—Elect. 16 Mfd. 150 V.
C-18	Capacitor—Elect. 10 Mfd. 150 V.
R-1	Resistor—25,000 Ohms Volume Control
R-2	Resistor—35,000 Ohms
R-3	Resistor—3 Megohms
R-4	Resistor—1 Megohm
R-5	Resistor—1 Megohm
R-6	Resistor—180 Ohms
R-7	Resistor—½ Megohm
R-8	Resistor—¼ Megohm
T-1	Antenna Transformer
T-2	R.F. Transformer
T-3	Output Transformer (on speaker)
R-9	Resistor—50,000 Ohms
S-1	Power Switch (Comb. with R-1)
S-2	Loud-speaker—5-inch

Note—The schematic shown is for the Model GD-41-U. Model GD-41-A omits items C-10, C-11, C-14, R-7, R-8, R-9; also X-X bus is grounded to chassis, coils L-2 and L-4 return to chassis, C-15 to chassis ground instead of to 6C6 cathode, low end of volume control is connected between C-1 and L-1.

Tube No.	Plate to −B Volts D.C.		Screen to −B Volts D.C.		Cathode to −B Volts D.C.		Cathode Current M.A. D-C		Heater Volts	
	AC	DC	AC	DC	AC	DC	AC	DC	AC	DC
6D6	113	90	113	90	9.0	7.4	0.7	0.6	6.35	6.06
6C6	20 *	16.4 *	45	37	3.1	2.5	0.1	0.08	6.35	6.06
25L6G	108	88	113	90	7.6	6.2	40.5	33.1	25.0	23.5
25Z5	.....	.....			133	108	43.0	35.0	26.0	24.0

Line voltage 115 AC or DC—No signal input—1000 ohms per volt meter.
Dial pointer at 540 kc. Volume control at minimum.
* Measured on 250 volt scale.

General Electric Model GD-60



* Used on early production receivers only. For replacement purposes, use specified volume control and omit resistor, R-13

Symbol	Description	Symbol	Description	Symbol	Description
C-1	Wave Trap Trimmer, 45-145 Mmf.	C-20	Trimmer Capacitor, 50-135 Mmf.	R-7	Carbon Resistor, 15 Megohms
C-2	Selector Trimmer, 100-510 Mmf.	C-21	Trimmer Capacitor, 50-135 Mmf.	R-8	Carbon Resistor, 220,000 Ohms
C-3	Selector Trimmer, 75-410 Mmf.	C-22	Mica Capacitor, 470 Mmf.	R-10	Carbon Resistor, 470,000 Ohms
C-4	Selector Trimmer, 50-300 Mmf.	C-23	Paper Capacitor, .002 Mfd.	R-11	Carbon Resistor, 270,000 Ohms
C-5	Selector Trimmer, 50-300 Mmf.	C-24	Paper Capacitor, .002 Mfd.	R-12	Carbon Resistor, 68,000 Ohms
C-6	Selector Trimmer, 20-200 Mmf.	C-25	Mica Capacitor, 330 Mmf.	R-13	Carbon Resistor, 68,000 Ohms
C-7	Selector Trimmer, 50-300 Mmf.	C-26	Paper Capacitor, .15 Mfd.	S-1	Antenna Switch
C-8	Selector Trimmer, 50-300 Mmf.	C-27	Paper Capacitor, .005 Mfd.	S-2	Oscillator Switch
C-9	Selector Trimmer, 20-200 Mmf.	C-28	Paper Capacitor, .03 Mfd.	S-3	Power Switch combined with R-8
C-10	Selector Trimmer, 20-200 Mmf.	C-29	Paper Capacitor, .001 Mfd.	T-1	1st I.F. Transformer
C-11	Selector Trimmer, 10-100 Mmf.	C-30	Dry Electrolytic Cap., 12 Mfd.	T-2	2nd I.F. Transformer
C-12	Tuning Condenser Ant.	C-31	Dry Electrolytic Cap., 20 Mfd.	T-3	Output Transformer
C-13	Tuning Condenser Osc.	C-32	Paper Capacitor, .02 Mfd.	T-4	Oscillator Transformer
C-14	Mica Capacitor, 47 Mmf.	R-1	Carbon Resistor, 47,000 Ohms	T-5	Antenna Transformer
C-15	Paper Capacitor, .25 Mfd.	R-2	Carbon Resistor, 10,000 Ohms	L-10	Hum Buck Coil
C-16	Trimmer Capacitor, 50-135 Mmf.	R-3	Ballast Tube 49-A, 170 Ohms	L-11	Voice Coil
C-17	Trimmer Capacitor, 50-135 Mmf.	R-4	Carbon Resistor, 2.2 Megohms	L-12	Field Coil—450 Ohms (cold)
C-18	Paper Capacitor, .25 Mfd.	R-5	Carbon Resistor, 470,000 Ohms		
C-19	Paper Capacitor, 0.5 Mfd.	R-6	Volume Control, 2 Megohms		

Note—In some receivers a 150,000 to 390,000 ohm resistor is connected across C-18.

GENERAL INFORMATION

Model GD-60 is a compact, six-tube AC-DC superheterodyne receiver, employing six General Electric Pre-tested Tubes as described above, in a superheterodyne circuit. It incorporates a simplified trimmer tuned "Touch-Tuning" system, allowing a set up of five stations for automatic tuning. Other features of design include I.F. wave trap, automatic volume control and an improved dustproof speaker.

I.F. Alignment

Connect an output meter across the voice coil. Set the volume control for maximum.

Set test oscillator to 455 and apply signal to the control grid of the 6A8G tube through a .05 mfd. capacitor. Do not remove the grid lead from the 6A8G and keep the test oscillator output as low as possible to give a readable output. Adjust all four I.F. trimmers for maximum output.

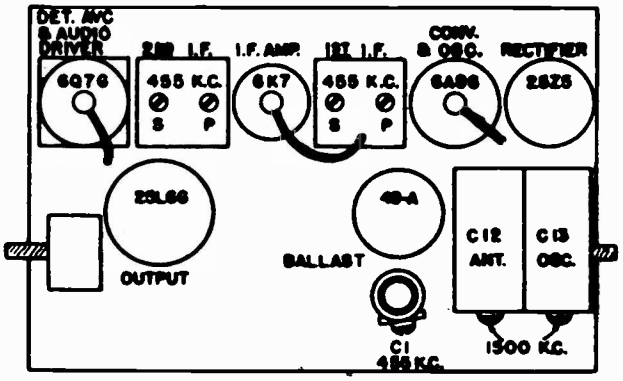
Wave Trap Alignment

Leave the test oscillator set to 455 K.C. and connect one output lead to the receiver chassis and the other through a 250 mmf. capacitor in series with 200 ohms to the receiver antenna lead. Adjust (C-1) for minimum output.

R.F. Alignment

Use the same dummy antenna (250 mmf. and 200 ohms) with 1500 K.C. input, adjust the oscillator trimmer (C-13) and antenna trimmer (C-12) for a maximum output.

Precaution—One side of the power supply is connected to the chassis through a .25 mfd. capacitor. If signal generator is AC operated, connect a .05 mfd. capacitor in the ground side before connecting it to the receiver chassis.



Tuning Frequency Range . . . . . 540-1750 K.C.

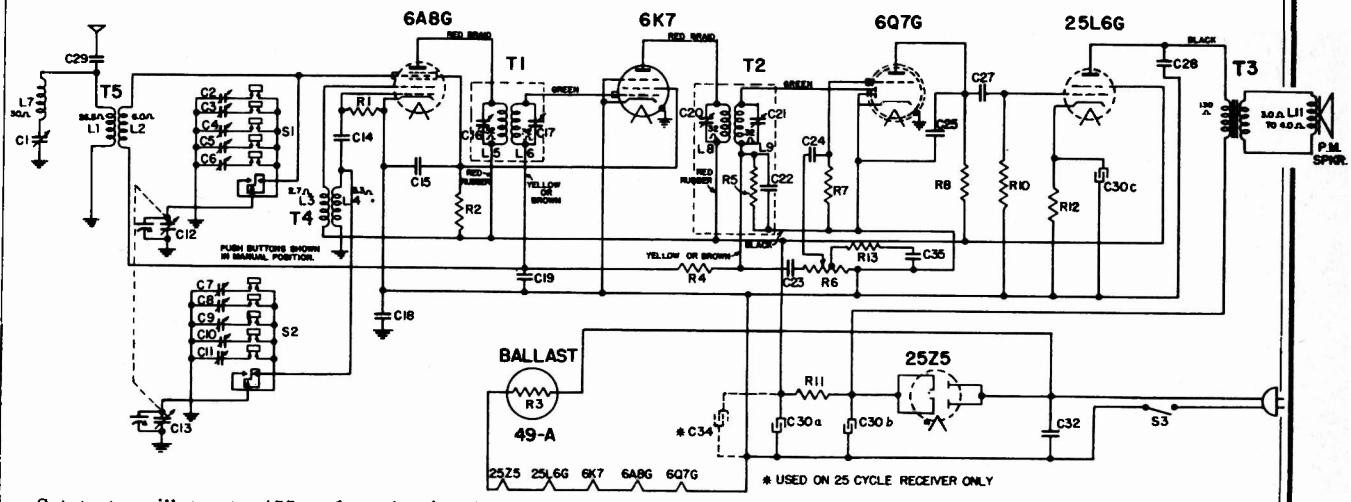
Intermediate Frequency . . . . . 455 K.C.

Electrical Power Output (*120—line volts*)

	AC	DC
Undistorted	1.2	1.0
Maximum	2.0	1.7

Loudspeaker—Electrodynamic

Outside Cone Diameter 5-inch
Voice Coil Impedance . . . . . 3.5 ohms at 400 cycles
Field Coil Resistance . . . . . 450 ohms (cold)



Set test oscillator to 455 and apply signal to the control grid of the 6A8G tube through a .05 mfd. capacitor. Do not remove the grid lead from the 6A8G. Keep the test oscillator output as low as possible to give a readable output. Adjust all four I.F. trimmers for maximum output.

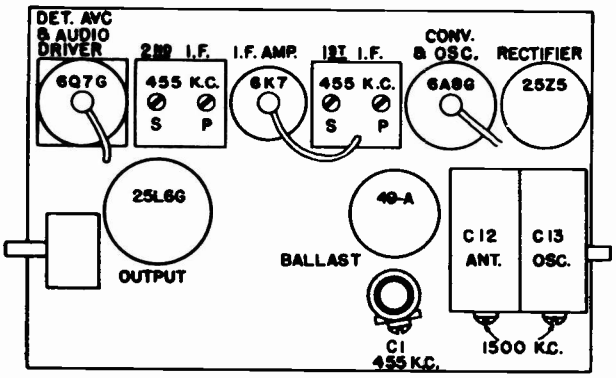
Wave Trap Alignment

Leave the test oscillator set to 455 K.C. and connect one output lead to the receiver chassis and the other through a 250 mmf. capacitor in series with 200 ohms to the receiver antenna lead. Adjust (C-1) for minimum output.

R.F. Alignment

Use the same dummy antenna (250 mmf. and 200 ohms) with 1500 K.C. input, adjust the oscillator trimmer (C-13) and antenna trimmer (C-12) for a maximum output.

Precaution—One side of the power supply is connected to the chassis through a .25 mfd. capacitor. If signal generator is AC operated, connect a .05 mfd. capacitor in the ground side before connecting it to the receiver chassis.



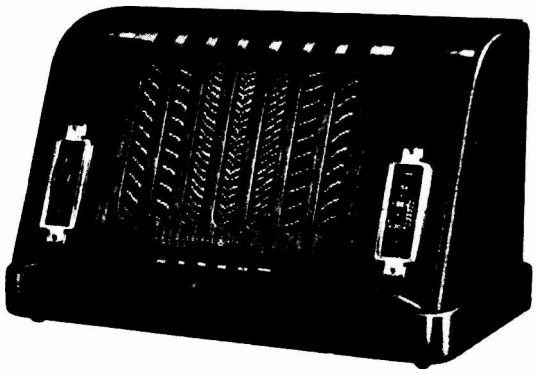
VOLTAGE CHART

Tube No.	6A8G	6K7	6Q7G	25L6G	25Z5
Plate to −B volts	112	112	55*	130	..
Screen to −B volts	75	75	..	115	..
Cathode to −B volts	0	0	0	7.5	136
Cathode Current MA	6.6	1.4	0.5	40	50
Filament Volts	6.0	6.0	6.1	24.5	24.0

Line Voltage—120 AC. No signal input
* Measured on 250-volt scale.
On DC, voltages are about 15 per cent lower.

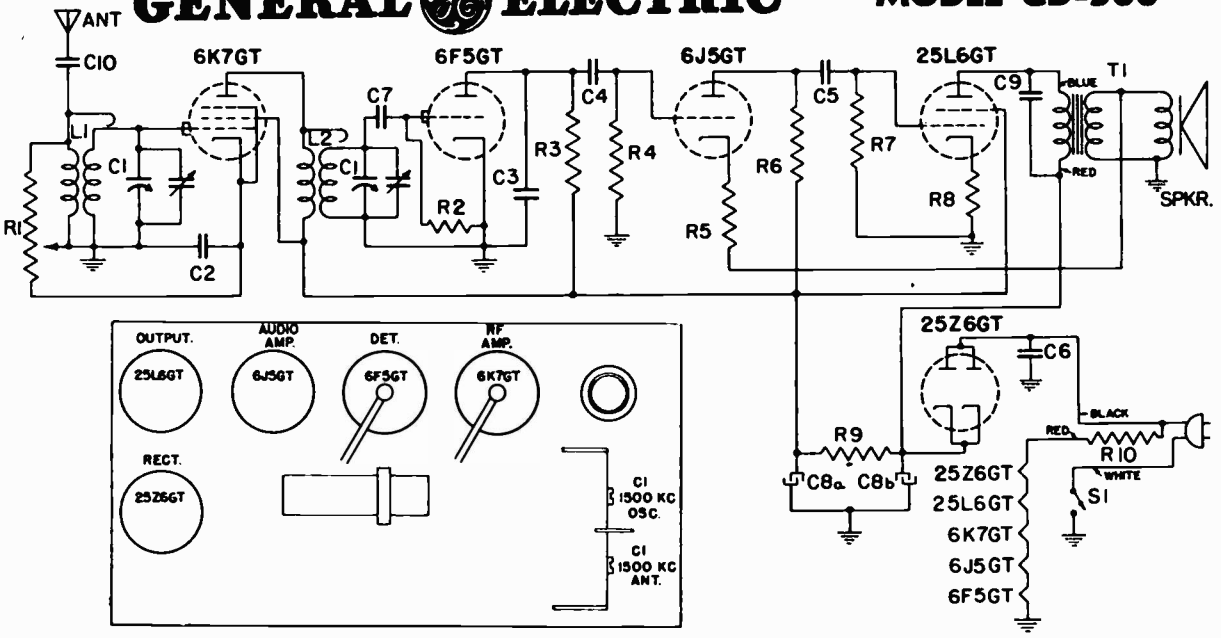
General Electric

MODEL GD-63

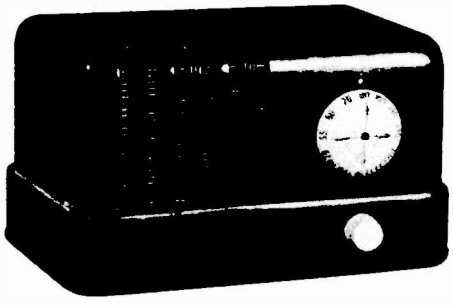


Symbol	Description
C1	Wave trap trimmer
C2–C6	Antenna trimmer strip
C7–C11	Oscillator trimmer strip
C12, C13	Tuning condenser
C14	47 mmf., mica capacitor
C15	.25 mfd., paper capacitor
C18	.25 mfd., paper capacitor
C19	.05 mfd., paper capacitor
C22	470 mmf., mica capacitor
C23, 24	.002 mfd., paper capacitor
C25	330 mmf., mica capacitor
C27	.005 mfd., paper capacitor
C28	.01 mfd., paper capacitor
C29	.001 mfd., paper capacitor
C30a	20 mfd., dry electrolytic
C30b	40 mfd., dry electrolytic
C30c	20 mfd., dry electrolytic
C32	.02 mfd., molded capacitor
C34	15 mfd., dry electrolytic
C35	.005 mfd., paper capacitor
R1	47,000 ohm, carbon resistor
R2	10,000 ohm, carbon resistor
R3	Ballast resistance, 49A
R4	2.2 megohm, carbon resistor
R5	470,000 ohm, carbon resistor
R6	2.2 megohm, volume control
R7	15.0 megohm, carbon resistor
R8	220,000 ohm, carbon resistor
R10	1.0 megohm, carbon resistor
R11	2200 ohm, carbon resistor
R12	180 ohm, carbon resistor
R13	68,000 ohm, carbon resistor
T1	1st I.F. transformer
T2	2nd I.F. transformer
T3	Output transformer*
T4	Osc. transformer
T5	Antenna transformer

GENERAL ELECTRIC — MODEL GD-500



Symbol	Description	Symbol	Description	Symbol	Description
C-1	Tuning Condenser	C-9	.02 mfd., Paper Capacitor	R-7	470,000 ohm, Carbon Resistor
C-2	.05 mfd., Paper Capacitor	C-10	.002 mfd., Paper Capacitor	R-8	150 ohm, Carbon Resistor
C-3	.001 mfd., Paper Capacitor	R-1	30,000 ohm, Volume Control	R-9	4,700 ohm, Carbon Resistor
C-4, -5	.005 mfd., Paper Capacitor	R-2	15 megohm, Carbon Resistor	R-10	162 ohm, Power Cord Resistor
C-6, -7	.01 mfd., Paper Capacitor	R-3, -4	470,000 ohm, Carbon Resistor	L-1	Antenna Coil
C-8a	15 mfd., Dry Electrolytic	R-5	3,300 ohm, Carbon Resistor	L-2	RF Coil
C-8b	30 mfd., Dry Electrolytic	R-6	100,000 ohm, Carbon Resistor	T-1	Output Transformer



VOLTAGE CHART

Tube No.	6K7GT	6J5GT	6F5GT	25L6GT	25Z6GT
Plate to −B Volts	88	30 *	35 *	132	120. AC
Screen to −B Volts	88	...	....	88	....
Cathode to −B Volts	0	1.3	0	5.5	140
Filament Volts	6.4	6.3	6.2	25.0	25.0

Voltage measured when volume control is set to maximum.
Line Voltage—120 AC. No signal input.
* Measured on 500-volt scale.
On DC, voltages should read approximately 10% lower.

Electrical Power Output

Undistorted ..... 1.4 watts
Maximum ..... 2.0 watts

Loudspeaker—Permanent Magnet

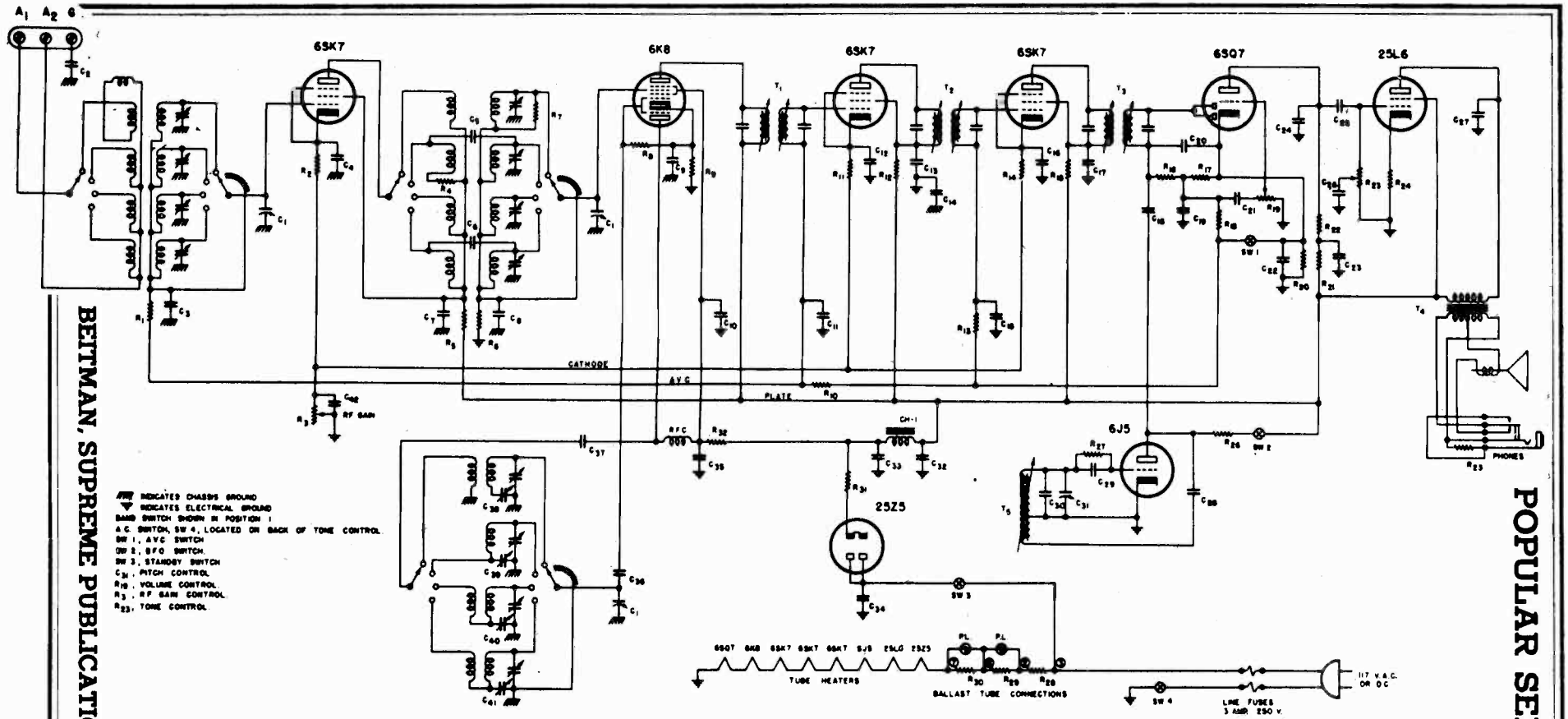
Outside Cone Diameter ..... 4½ inches
Voice Coil Impedance (400 cycles) ..... 3.5 ohms

ALIGNMENT

Connect the high side of the signal generator through a 250 mmf. condenser to the antenna lead. The low side of the signal generator output should be connected to the receiver chassis through a .05 mfd. condenser. Connect a suitable output meter across the voice coil leads; then proceed as follows:

1. With gang condenser plates completely closed, the tuning mark should be over the last mark on the dial.
2. Tune receiver to the 1500 KC point on the dial; then align trimmers on the gang condenser at 1500 KC for a maximum output meter reading.

Precaution—One side of the power supply is connected to the chassis. Do not connect chassis to any external ground.



MODEL S-22-R

Equipment needed for aligning:

1 - An all wave signal generator which will provide an accurately calibrated signal at the test frequencies indicated.
2 - Output indicating meter connected to a headphone plug, and inserted in the headphone jack.
3 - Non-metallic screw driver.
4 - Dummy antenna of .002 mfd. condenser and 400 ohm resistor.

the hallicrafters co.

SETTING OF CONTROLS PRIOR TO ALIGNMENT - IF AND RF.

1 - Tone control at maximum high frequency position.
2 - AVC switch OFF.
3 - BFO switch OFF.
4 - RF Gain at maximum.
5 - AF gain at maximum.

NO.	VALUE	VOLTAGE OR PURPOSE
C_1	Tuning Condenser	
C_2	.01 mfd	400 V.
C_3	.05 mfd	400 V.
C_4	.05 mfd	400 V.
C_5	5 mmf	
C_6	5 mmf	
C_7	.25 mfd	400 V.
C_8	.05 mfd	400 V.
C_9	.05 mfd	400 V.
C_{10}	.1 mfd	400 V
C_{11}	.02 mfd	400 V.
C_{12}	.02 mfd	400 V.
C_{13}	.01 mfd	400 V.
C_{14}	.25 mfd	400 V.
C_{15}	.02 mfd	400 V.
C_{16}	.02 mfd	400 V.
C_{17}	.01 mfd	400 V.
C_{18}	10 mmf	
C_{19}	100 mmf	
C_{20}	100 mmf	
C_{21}	.02 mfd	400 V.
C_{22}	10 mf	25 V.
C_{23}	.05 mfd	400 V.
C_{24}	250 mfd	
C_{25}	.05 mfd	400 V.

NO.	VALUE	VOLTAGE OR PURPOSE
C_{26}	.01 mfd	400 V.
C_{27}	.005 mfd	600 V.
C_{28}	.01 mfd	400 V.
C_{29}	250 mmfd	
C_{30}	200 mmfd	
C_{31}	5 mmf	BFO Pitch Con.
C_{32}	40 mfd	150 V.
C_{33}	40 mfd	150 V.
C_{34}	.05 mfd	400 V.
C_{35}	30 mfd	150 V.
C_{36}	100 mmfd	
C_{37}	2000 mmfd	
C_{38}	32 mmfd	Band 1 Pad
C_{39}	110 mmfd	Band 2 Pad
C_{40}	480 mfd	Band 3 Pad
C_{41}	1300 mfd	Band 4 Pad
C_{42}	.1 mfd	200 V.

NO.	VALUE IN OHMS
R_1	100,000
R_2	300
R_3	25,000
R_4	400
R_5	1,000
R_6	100,000
R_7	100,000
R_8	50,000
R_9	400
R_{10}	100,000
R_{11}	500
R_{12}	1,000
R_{13}	100,000
R_{14}	400
R_{15}	1,000
R_{16}	100,000
R_{17}	250,000
R_{18}	1 Meg.
R_{19}	500,000
R_{20}	7,500
R_{21}	100,000
R_{22}	250,000
R_{23}	500,000
R_{24}	140
R_{25}	100
R_{26}	5,000
R_{27}	250,000
R_{28}	Plug-in Ballast
R_{29}	Plug-in Ballast
R_{30}	Plug-in Ballast
R_{31}	25
R_{32}	4,000

SKYRIDER MARINE - MODEL S-22R

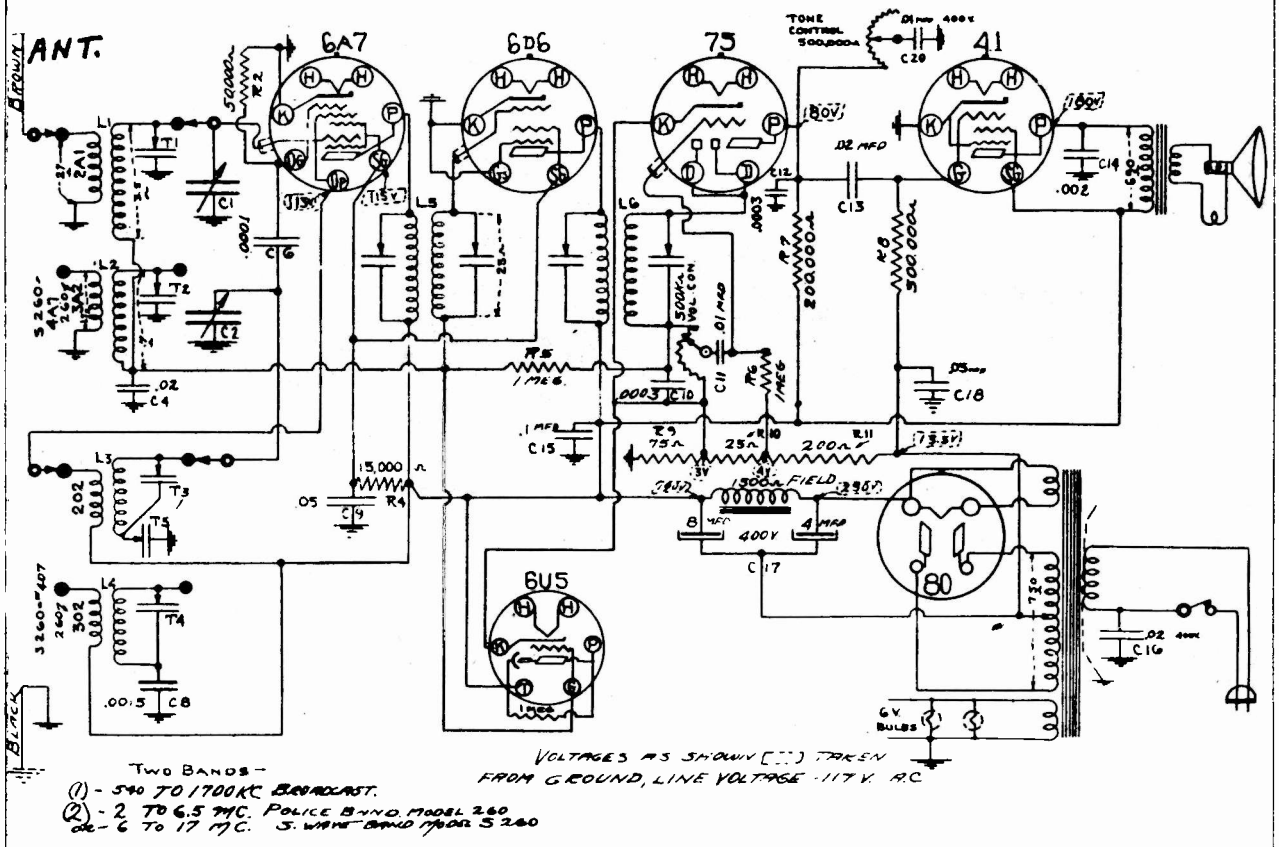
Connect hot Lead of Signal Generator to A_1 through dummy Antenna shown in Table. Leave Jumper connected between A_2 and G. Ground of Generator to Chassis.

BAND	REC. DIAL SETTING	SIG. GEN. FREQ.	DUMMY ANTENNA	HIGH FREQUENCY END		LOW FREQUENCY END
				ADJUST OSC WITH	ADJUST TRIMMERS WITH	ADJUST OSCILLATOR WITH
1	125 Kc	125 Kc	.002 mfd	--------	--------	P_1
	350 Kc	350 Kc	.002 mfd	C_C	C_A-C_B	--------
2	450 Kc	450 Kc	.002 mfd	--------	--------	P_2
	1400 Kc	1400 Kc	.002 mfd	C_F	C_E-C_D	--------
3	2 Mc	2 Mc	400 Ohm	--------	--------	P_3
	4.5 Mc	4.5 Mc	400 Ohm	C_J	C_G-C_H	--------
4	7 Mc	7 Mc	400 Ohm	--------	--------	P_4
	15 Mc	15 Mc	400 Ohm	C_M	C_L-C_K	--------

MANUAL OF 1939 MOST POPULAR SERVICE DIAGRAMS

Howard Radio Company, 1731 Belmont Avenue, Chicago, Illinois

Models: 225, S-225, 250, S-250, 260, S-260, 275, 275-C, 280.



The models 225 and 250 are electrically the same chassis; the only difference being the cabinets in which they are mounted. These models have two band circuits covering the Broadcast Band 550 to 1700 KC and the so-called Police Band from 2 to 6.5 megacycles, having separate Antenna and Oscillator coils for each band.

The models S225 and S250 cover the Broadcast Band 550 to 1700 KC and the short wave band 5.5 to 18 MC.

The models 260 and S260 have the same circuit or the 225, S225 respectively with the addition of the tuning eye tube to indicate resonance.

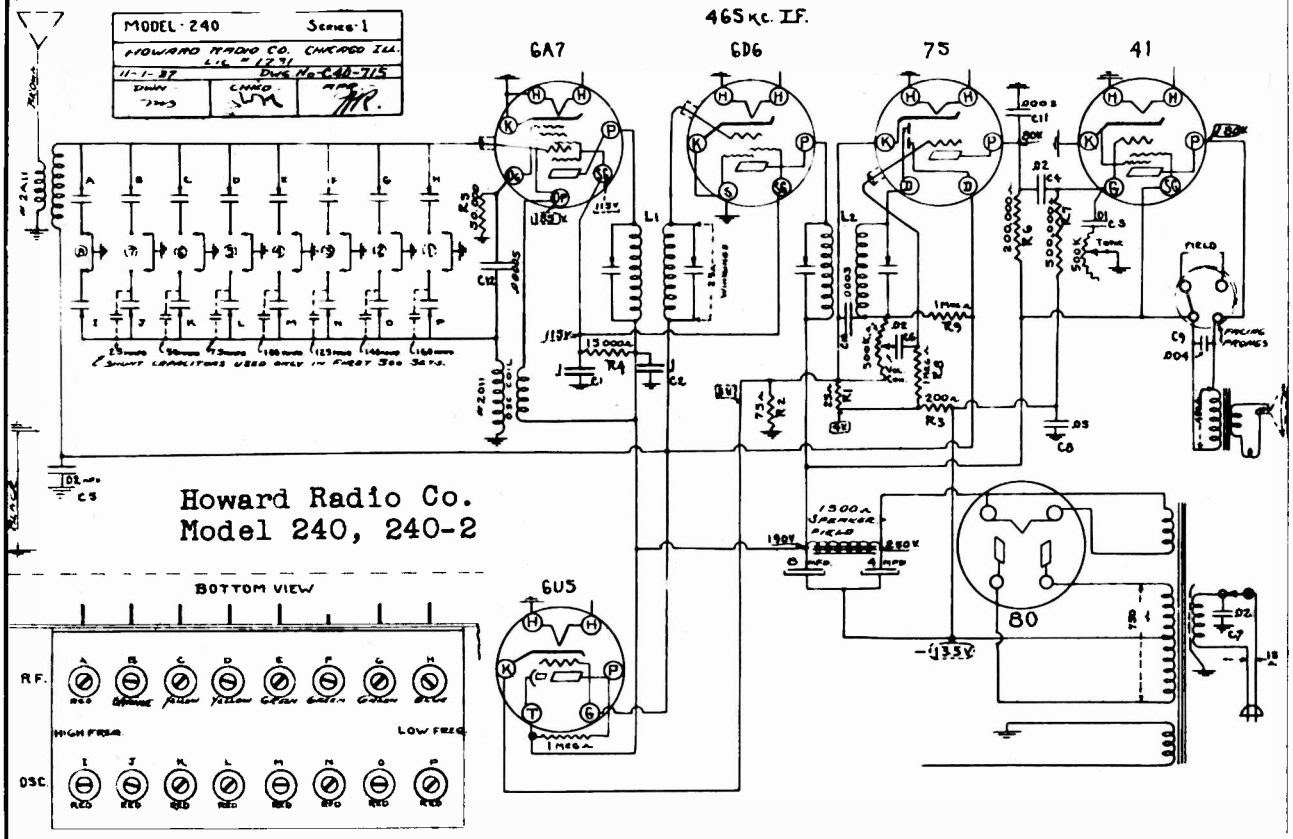
The models 275, 275C and 280 are the same electrically, covering 3 bands, 550 to 1700 KC, 1.7 to 5.5 MC, and 5.5 to 18 MC.

The I. F.'s are aligned by the usual system of feeding the intermediate frequency of 465 KC into the grid of the 6A7 tube.

The two trimmers in each of the I. F. cans should be very carefully peaked to resonance as they are very critical and will greatly affect the performance of the set. These are trimmers number T8, T9, T10, T11.

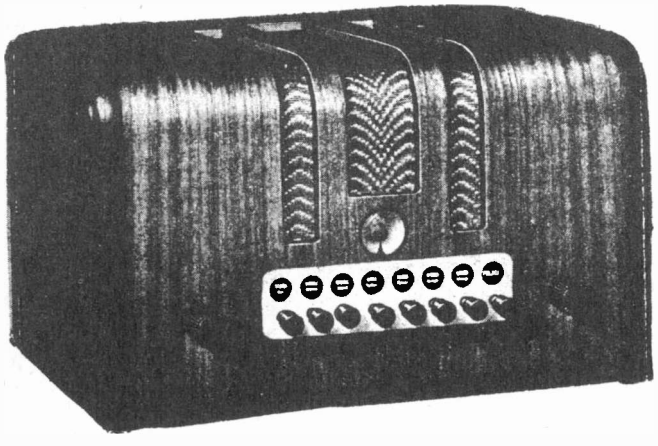
The Sensitivity of the I. F. stages will be 25 to 50 microvolts or better for a 50 milliwatt output.

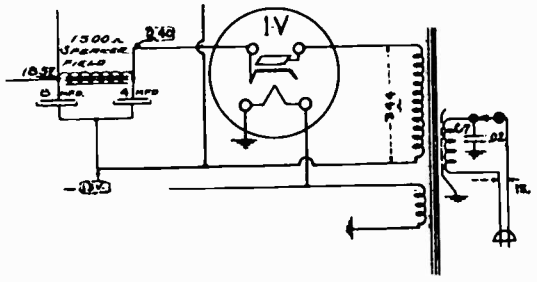
Always use as low an output as possible from the test oscillator in making the various adjustments.



THE MODEL 240 series 1 and 2 is strictly a push-button tuner having no gang condenser. The eight push-button station selectors complete the ground circuit of the oscillator and R. F. tuned condensers previously set to whatever frequency desired. The eight circuits cover the complete range of the broadcast band from 540 to 1750 KC. The instructions for the set-up are shown.

The model 240-1 used the 80 tube for a rectifier and the model 240-2 uses the 1V type tube.





These sets can be easily aligned. The I.F. is set in the regular way. Then one station is tuned-in at a time and adjusted for maximum response. No other adjustments are needed.

Howard Radio Co. — Models: 400, 400-A, 425, 425-A.

Model 400 is a 12 tube, 3 band receiver with all coils shielded. See Fig. 4, for coil location and information on trimmers and padding condensers for each band. The 6F5 is a bass boost stage. The 6J5G is a phase imverter with push-pull 6V6G's in the output. The schematic of the model 425 illustrated is the same for the RF and IF stages. A single type 80 rectifier is used.

Model 425 is a 14 tube set having 6L6G's in the output.

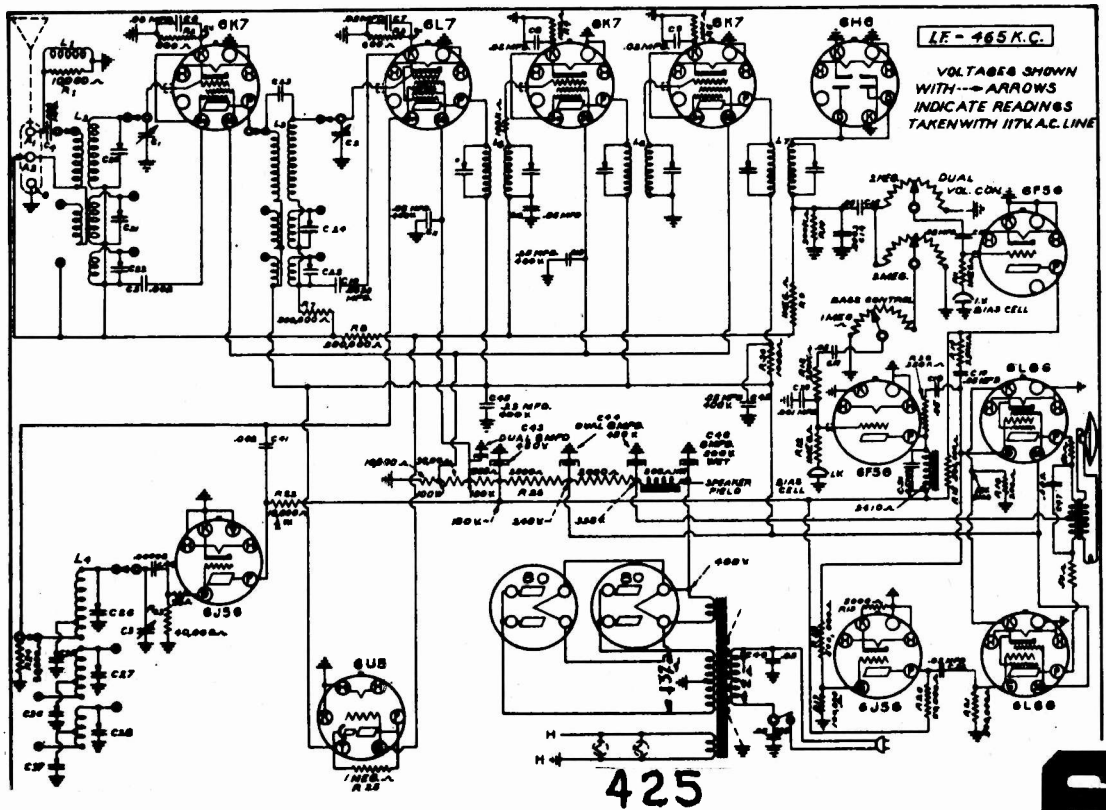
Models 400-A and 425-A have the same electrical circuits as the 400 and 425. These models employ the Howard motor automatic tuning feature by use of the reversible motor controlled by the commutator disc near the back of the set.

ADJUSTMENT OF HOWARD MOTOR AUTOMATIC

FIRST - Select and depress the push-button by number that will include the desired station according to frequency chart listing below:-

1	2	3	4	5	6	7	8
540 TO 580 KC	570 TO 620 KC	600 TO 670 KC	650 TO 720 KC	700 TO 820 KC	800 TO 990 KC	880 TO 1720 KC	1100 TO 1720 KC

See next page-



425

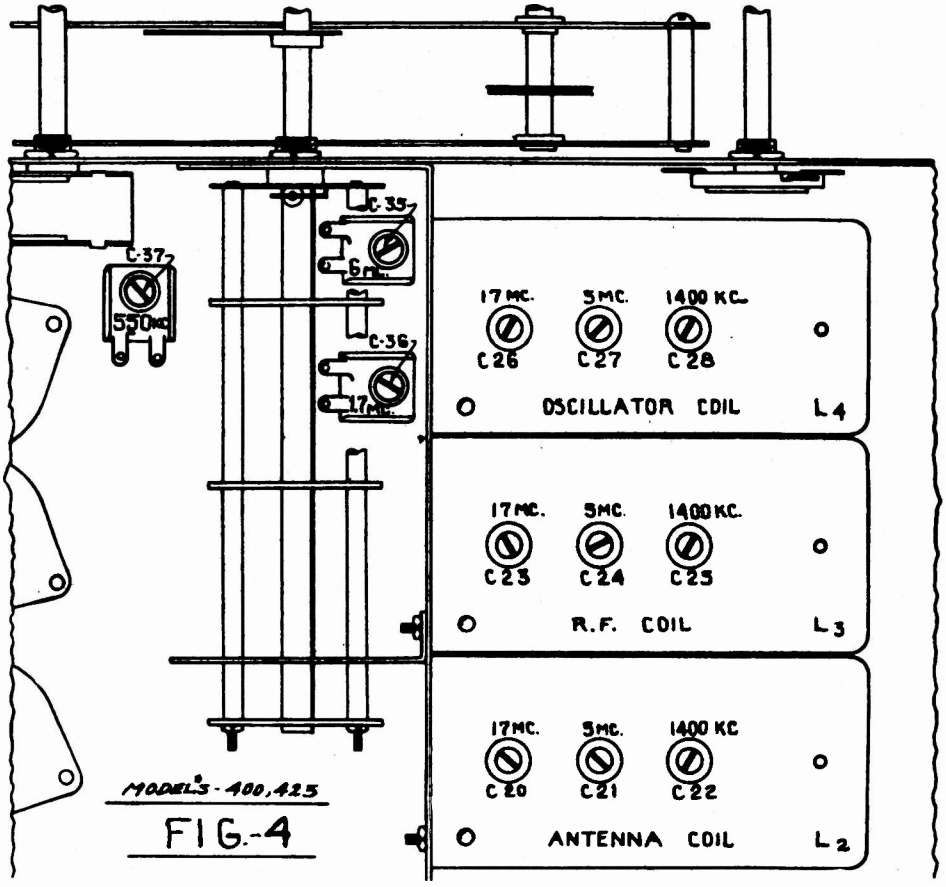


FIG.-4

SECOND - Reach to back of chassis and turn muting switch to OFF position.

LOCATE THE SAME NUMBERED STATIONS CONTACTOR ON BACK OF TUNING CONDENSER THAT CORRESPONDS TO THE BUTTON DEPRESSED IN FIRST PARAGRAPH, AND SLIDE UNTIL THE DESIRED STATION IS TUNED IN.

With the muting switch in the OFF position the stations will be heard while moving the slide contactor. For silent tuning after all adjustments are made, turn switch to ON position.

THIRD - Remove station call letter tab from tab sheet and insert in place with finger tip in front of escutcheon plate over the number that was selected. Repeat above procedure for each of remaining buttons.

NOTE - When tuning the set by hand or if a remote cable is used the selector button AUTO-OFF must be depressed.

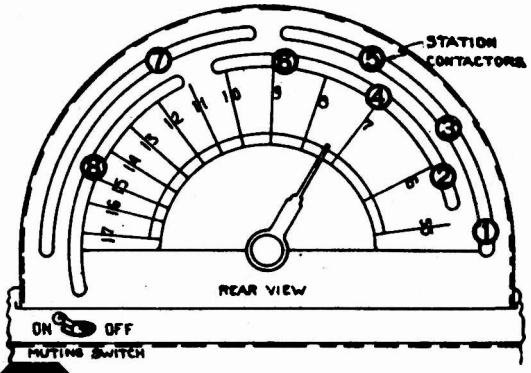
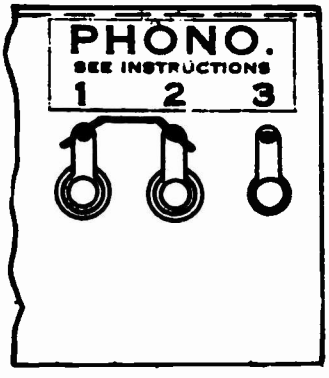
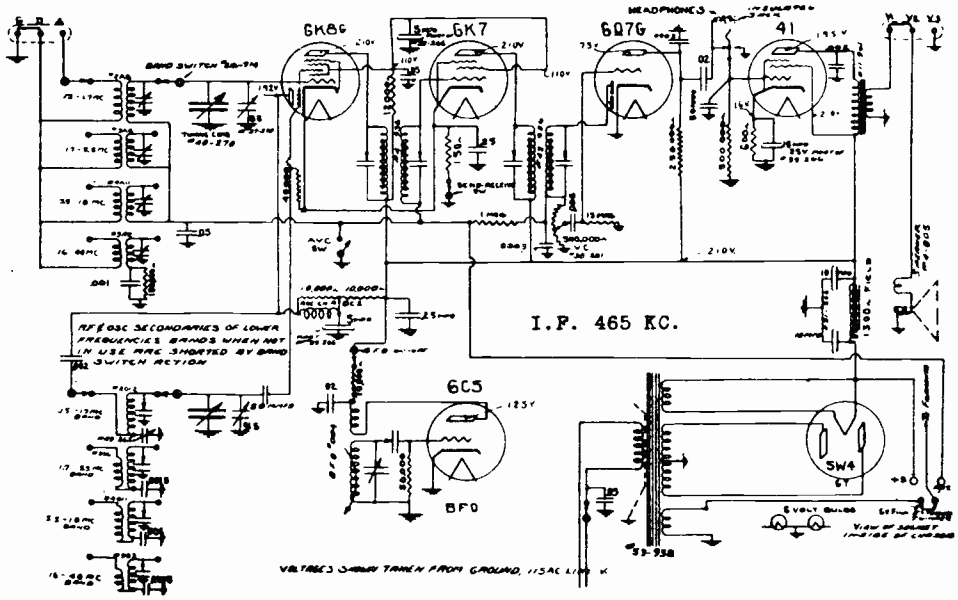
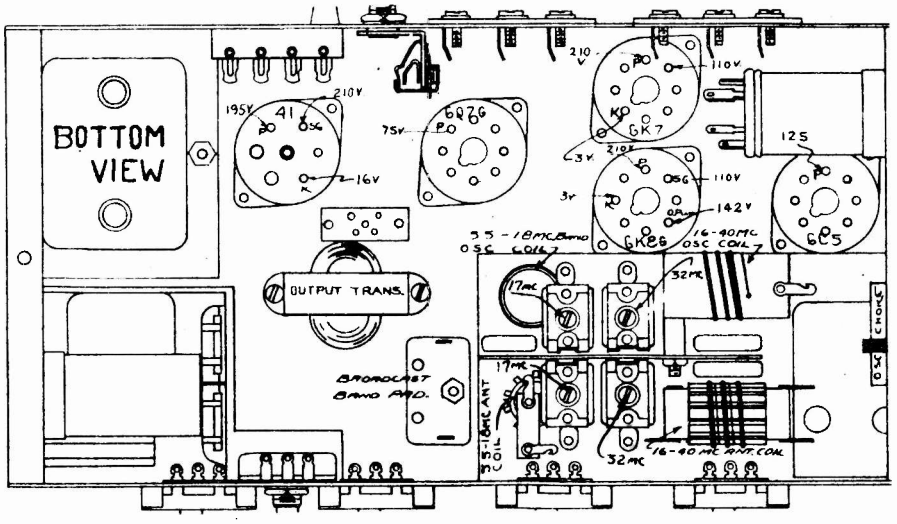
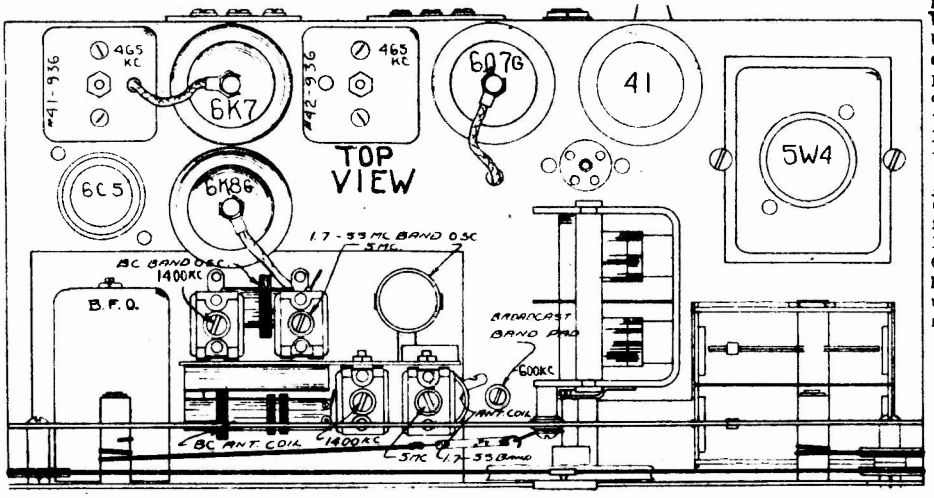


FIG. 1









HOWARD

430

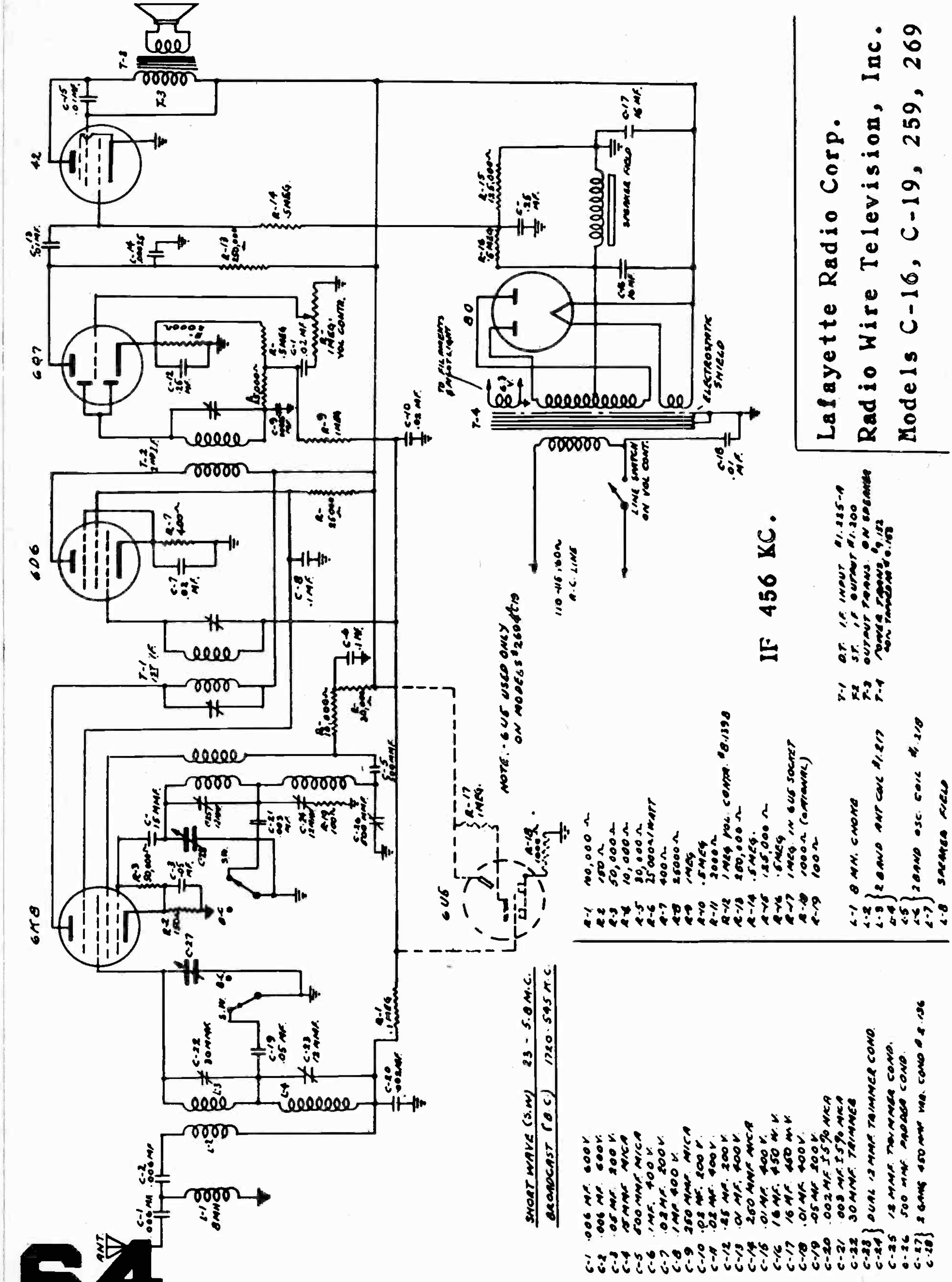
NOTE 1: When aligning the I.F. channel, a condenser of .05 MFD may be used in series with the generator lead.

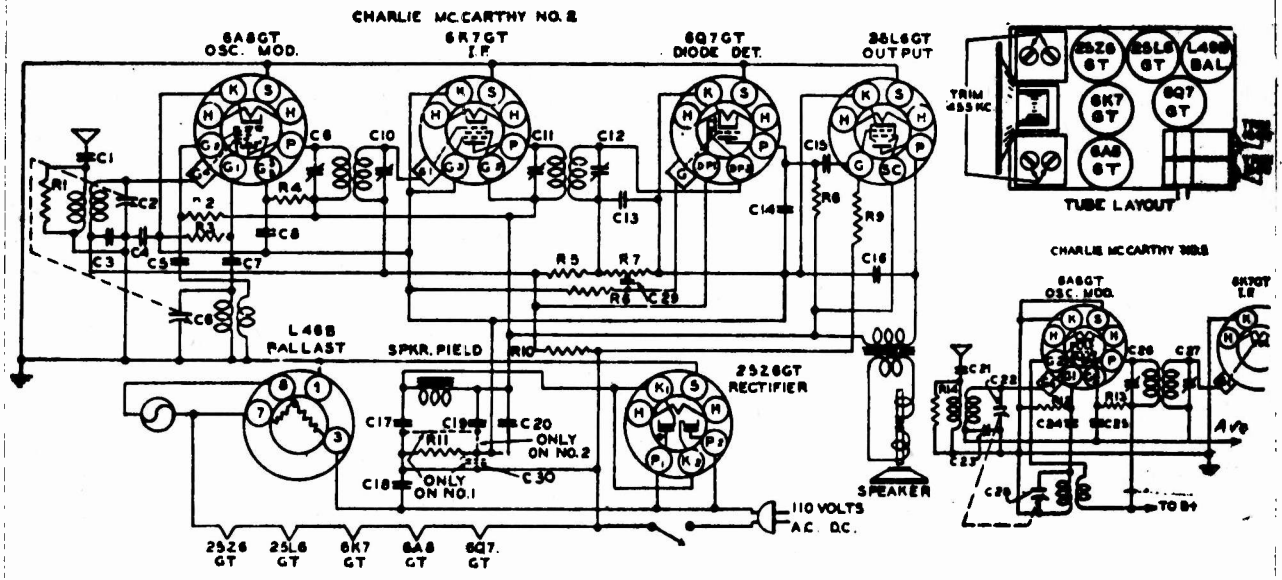
NOTE 2: When aligning the broadcast band, a 250 MMFD condenser may be used in series with the signal generator.

NOTE 3: When aligning the short wave bands, a 400 ohm resister may be used in series with the signal generator.

NOTE 4: After the chassis has been removed from the cabinet, be sure when it is again assembled that the speaker plug is in place in the socket on top of the chassis and that the speaker cable wires do not lay back near the RF circuit, thus causing howling.

NOTE 5: Check for an image signal about .9 mc. lower in frequency. For example:- If a peak has been made at 6 mc. an image should be heard at about 5.1 mc. Otherwise the original setting was not correct.


Lafayette Radio Corp.
Radio Wire Television, Inc.
Models C-16, C-19, 259, 269
IF 456 KC.



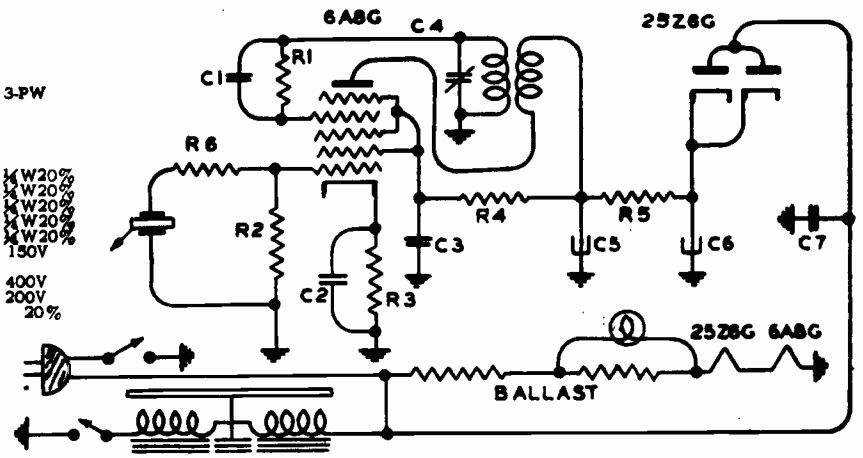
CHARLIE McCARTHY No. 2—PARTS LIST

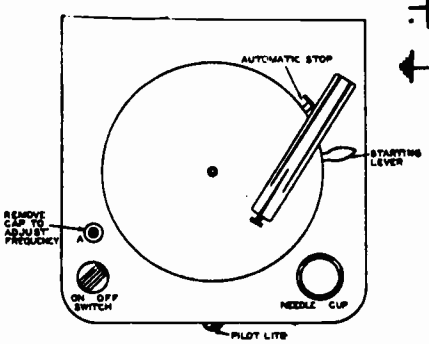
Schematic Location	Part No.	Description
C15, C29	C-15754	Tubular cond. .01 mfd. 400 V
C3	C-15752	Tubular cond. .05 mfd. 200 V
C1	C18	Tubular cond. .01 mfd. 400 V Paper mold case
C8, C20	C19	Tubular cond. .05 mfd. 400 V Paper mold case
C4	C20	Tubular cond. .25 mfd. 200 V Paper mold case
C5	C21	Tubular cond. .005 mfd. 400 V Paper mold case
C16	C22	Tubular cond. .02 mfd. 600 V Paper mold case
C18	C24	Tubular cond. .1 mfd. 300 V Paper mold case
C7	CM-15929	Mica cond. 50 mmf. 20%
C13	CM-15928	Mica cond. 250 mmf. 20%
C14	CM-15918	Mica cond. 100 mmf. 20%
C17	CE-39	Electr. cond. 40 mfd. 200 V
C19	CE-40	Electr. cond. 16 mfd. 150 V
C9, C10	Y-CT-18	Trimmer cond. 1st I. F.
C11, C12	Y-CT-18	Trimmer cond. 2nd I. F.
C2, C6	Y-CV-18	2 gang variable cond.
R11	R-67	Wire wound res. 100 ohms 1W 10%
R3	R-54	Carbon resistor 50K ½W 20%
R4	R-53	Carbon resistor 15K ½W 20%
R8	R-51	Carbon resistor 500K ½W 20%
R9	R-52	Carbon resistor 400K ½W 20%
R5	R-55	Carbon resistor 2 meg. ½W 20%
R10	R-50	Carbon resistor 5 meg. ½W 20%
R6	R-49	Carbon resistor 15 meg. ½W 20%
R1	R-65	Carbon resistor 10K ½W 20%
R2	R-68	Carbon res. 7500 ohms ½W 20%
R7	Y-VC-15	Volume control .5 meg.
C21	.01 mfd.	
C23	.05 mfd.	
C24	50 mmfd.	
C25	.05 mfd.	
R12	50K ¼W.	
R13	15K ¼W.	

Majestic Radio & Television Corp. Wireless Record Player 3-PW

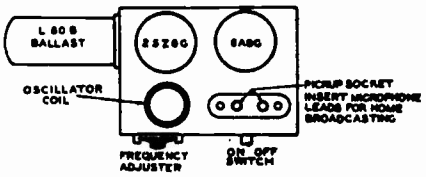
REPLACEMENT PARTS LIST FOR MODEL 3-PW

Schematic Location	Part No.	Description
R4,R5	R-2	Carbon resistor 5K ½W20%
R1	R-65	Carbon resistor 10K ½W20%
R3	R-15542	Carbon resistor 1K ½W20%
R6	R-15512	Carbon resistor 250K ½W20%
R2	R-15515	Carbon resistor 100K ½W20%
C5,C6	CE-47	Elect. cond. 8.16 mfd. 150V
C4	Y-CT-6	Adj. padder cond.
C7	C-15757	Paper cond. .1 mfd. 400V
C2,C3	C-15761	Paper cond. .1 mfd. 200V
C1	CM-15929	Mica cond. 50 mmf. 20%



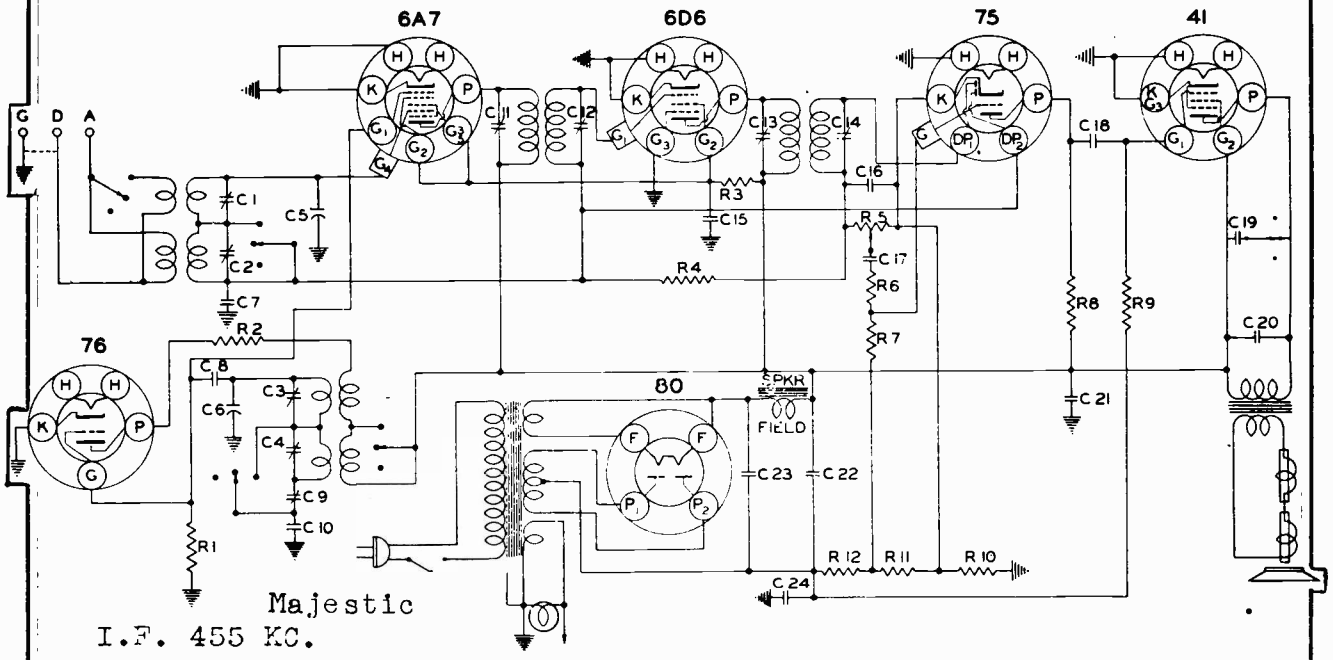


TUBE LOCATION CHART



MANUAL OF 1939 MOST POPULAR SERVICE DIAGRAMS

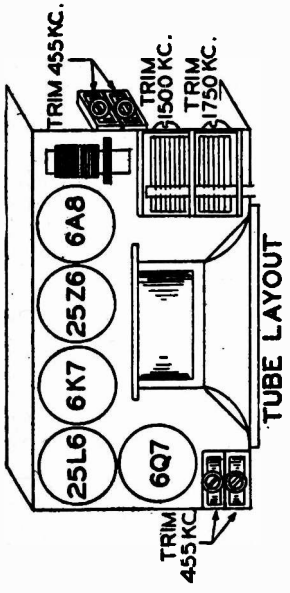
SCHEMATIC DIAGRAM MODEL 62A



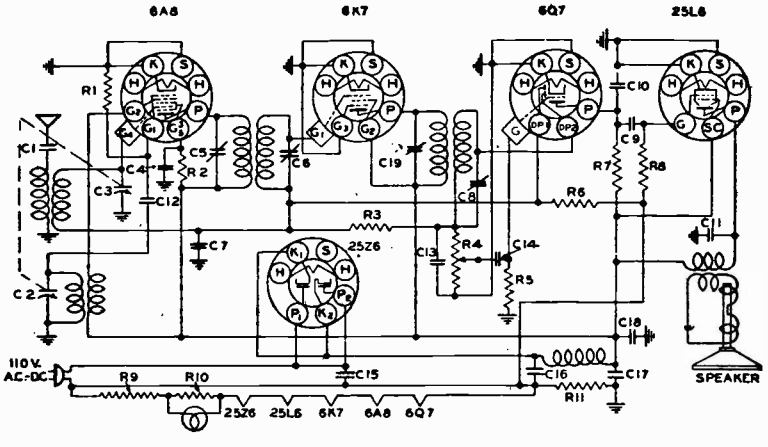
Schematic Location	Description
R1	50K ¼W 20%
R2	100K ¼W 20%
R3	7.5K 2W ¼W 20%
R4	2 Meg. ¼W 20%
R5	Volume control 1 meg.
R6, R8	250K ¼W 20%
R7	1 Meg.
R9	500K ¼W 20%

Schematic Location	Part No.	Description
R10	61 Ohms	E-C-6 Candohm
R11	33 Ohms	
R12	150 Ohms	
C1, C2	Y-CP-2	Trimmer cond.
C3, C4	Y-CV19	Variable gang condenser
C5, C6	C-15752	Tubular cond. .05 mfd. 200 V
C7	CM-15929	Mica cond 50 mmf 20%
C8	C-16472	Padder cond
C9	CM-17	Mica cond. 4330
C10		

Schematic Location	Description
C11, C12	Trimmer cond.
C13, C14	Trimmer cond.
C15, C21	Tubular cond. .05 mfd 400V
C16	Mica cond. 250 mmf. 20%
C17, C18, C19	Tubular cond. .01 mfd. 400 V
C20	Tubular cond. .006 m.f.d. 400V
C22	8,300 V
C23	12,300 V
C24	20,25 V



Majestic Radio Model 52



REPLACEMENT PARTS LIST

Schematic Location	Part No.	Description
C2,C3	Y-CV-14	Variable Gang Condenser
C7,C18	C-15761	Tubular cond. .1 mfd. 200 V
C4	C-15952	Tubular cond. .05 mfd. 200 V
C9,C1	C-15754	Tubular cond. .01 mfd. 400 V
C15	C-15757	Tubular cond. .1 mfd. 400 V
C11	C-15772	Tubular cond. .02 mfd. 400 V
C14	C-15754	Tubular cond. .01 mfd. 400 V
C16	CE-32	Tub. dry elec. cond. 40 mfd.
C17	CE-35	Tub. dry elec. cond. 16 mfd.
C5,C6	Y-CT-16	Trimmer cond. 1st I. F.
C8,C19	Y-CT-17	Trimmer cond. 2nd I. F.
C10,C13	CM-15928	Mica cond. 250 mmf. 20%
C12	CM-15919	Mica cond. 50 mmf. 20%

Schematic Location	Part No.	Description
R1	R-54	Carbon resistor 50K ¼W 20%
R2	R-53	Carbon resistor 15K ¼W 20%
R3	R-55	Carbon resistor 2meg ¼W 20%
R5	R-49	Carbon resistor 1.5meg ¼W 20%
R6	R-50	Carbon resistor 5meg ¼W 20%
R7	R-51	Carbon resistor 500K ¼W 20%
R8	R-52	Carbon resistor 300K ¼W 20%
R11	R-56	Carbon res. 100 ohm ½W 10%
R10	R-57	Wire wound flex. res. 40 ohms
R9	LC-8	141 ohms in line cord
R4	Y-VC-15	.5 meg Volume control

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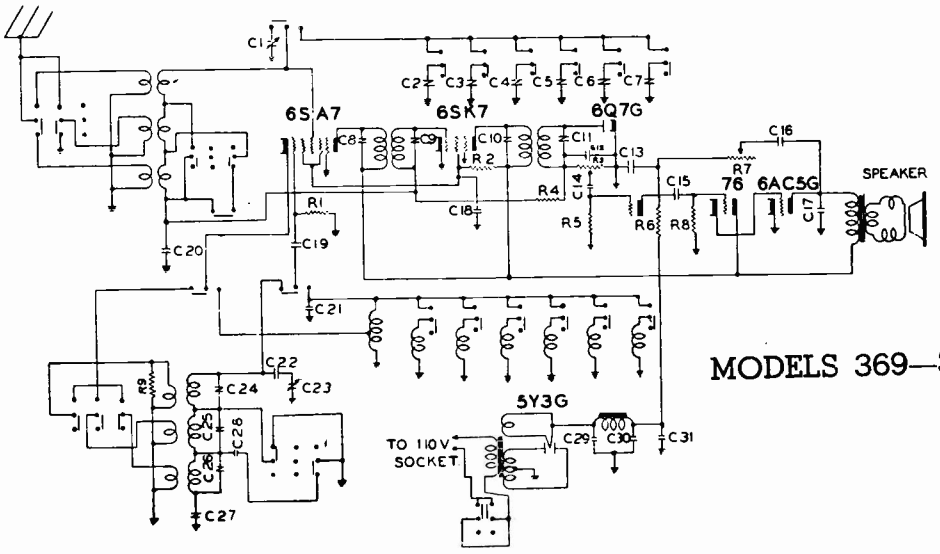
Majestic Radio & Television Corporation

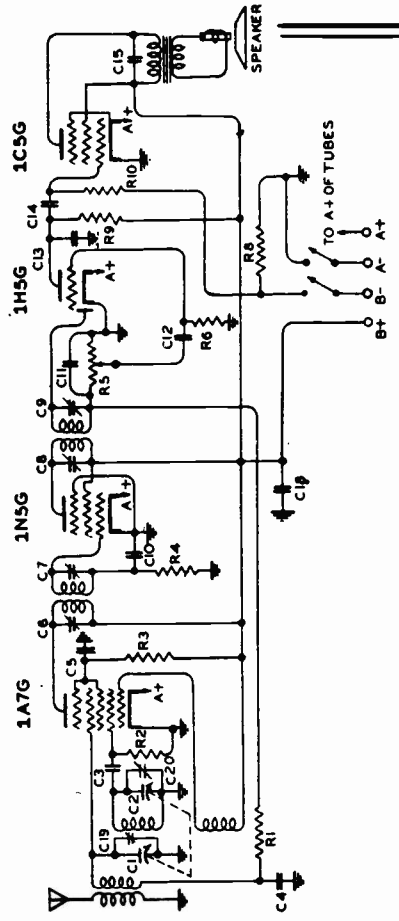


MODELS 369—3C69

Schematic Location	Description
R3	Volume and tone control
R1	Carbon res. 20K ohm ¼ W 20%
R2	Carbon res. 10K ohm ½ W 20%
R4, R8	Carbon res. 1 meg. ¼ W 20%
R5	Carbon res. 15 meg. ¼ W 20%
R6	Carbon res. 250K ohm ¼ W 20%
R9	Carbon res. 400 ohm ¼ W 20%

Schematic Location	Part No.	Description
C27	Y-CT-4	Padding Condenser
C29,C30	CE-52	Electrolytic
C20	C-15757	Tubular cond. .05 mfd. 200V
C15	C-15754	Tubular cond. .01 mfd. 400 V
C17	C-15759	Tubular cond. .006 mfd. 600V
C31	C-15757	Tubular cond. .1 mfd. 400V
C14	C-15774	Tubular cond. .002 mfd. 400V
C18	C-15756	Tubular cond. .05 mfd 400V

Schematic Location	Description
C12,C13,C19	Mica cond. 100 mmf. 30%
C16	Mica cond. 250 mmf. 30%
C22	Mica cond. 4330 mmf. 5%
C28	Mica cond 2770 mmf. 5%
C21	Mica cond. 100 mmf. 5%
C2,C3,C4, C5,C6,C7	Push-Button Switch



REPLACEMENT PARTS LIST

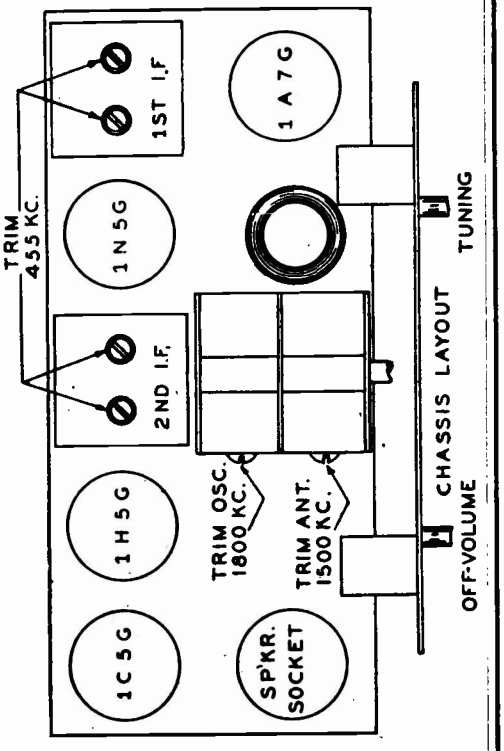
Schematic Location	Part No.	Description
C4,C5	C-15752	.05 mfd. 200V
C10,C12 C14	C-15763	.01 mfd. 200V
C15	C-25	.00b mfd. 400V
C3,C11,C13	CM-15918	100 mmf. Type "O" Mica
C1,C2	V-CV-26	Variable Condenser
C6,C7,C8,C9	Y-CT-2	I. F. Trimmer condenser
C16	CT-15	8 mfd. 150V Electrolytic

Schematic Location	Part No.	Description
R9	R-15520	500K ¼W 20%
R10	R-15517	1 meg. ¼W 20%
R8	R-72	600 ohms ¼W 20%
R2	R-15523	200K ¼W 20%
R6	R-15559	3 meg. ¼W 20%
K3	R-44	70K ¼W 10%
R1,R4	R-15500	2 meg ¼W 20%
R5	Y-VC-26	Volume Control

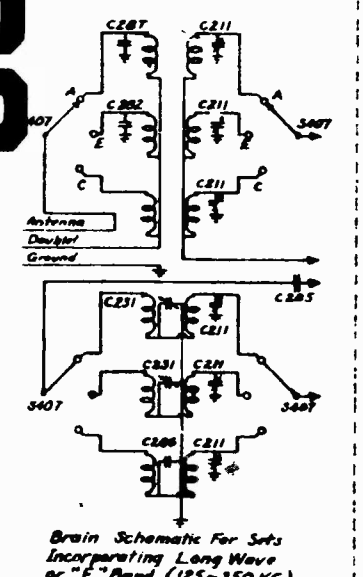
MAJESTIC RADIO

Model 419-B

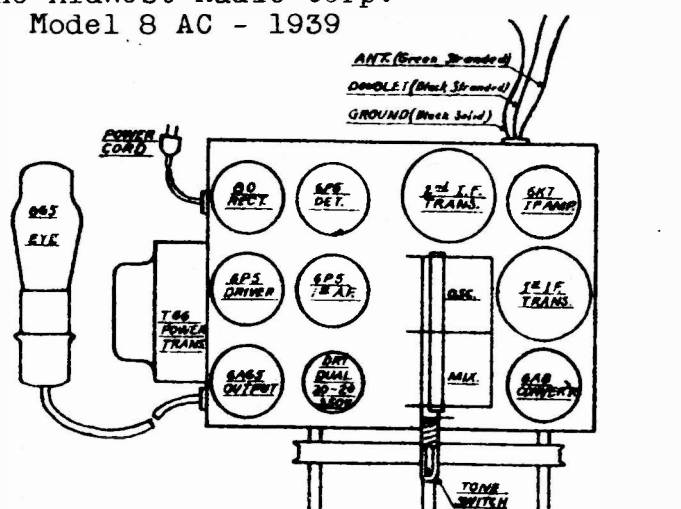
*** TUBE LOCATION CHART**



The Midwest Radio Corp.
Model 8 AC - 1939



Brain Schematic For Sets Incorporating Long Wave or "E" Band. (125-350 KC.)



C26	Power Cord
C211	3 Gang Trimmer
C226	I.F. Padder
C232	Osc. Padder
C240	Dual Dry-20-20
C280	100 mmfd mica
C285	2000 .. ..
C286	3000 .. ..
C287	200 .. ..
C289	1200 .. ..
C290	60 .. ..
C291	250 . dual
C301	.01 mfd. 200 V.
C302	.05 .. ..
C303	.25 .. ..
C311	.01 .. 400 V.
C314	.05 .. ..
C369	2 Gang Variable
C363	Vol. Cont. & Sw.
C379	Tuning Shaft
C401	Cord Belt
D5	Dial Disk
E8	Escutcheon
E16	Eye Escutcheon
E33	Eye Bracket

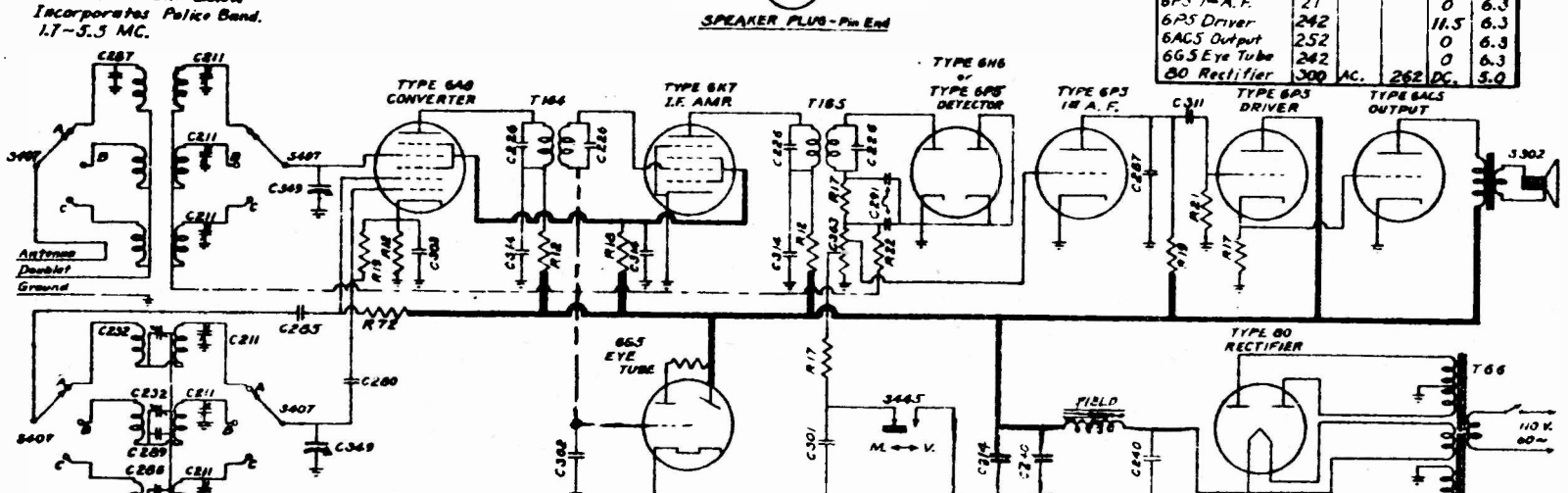
E34	Eye Clamp
E35	Eye Socket/Cable
K4	P. Button Key
K24	1 inch Knob
P46	Pilot Light 6-8
R12	500 Ohm ½ W.
R13	1000 .. ..
R17	25M. .. ..
R18	50M. .. ..
R19	100M. .. ..
R21	500M. .. ..
R22	1 Meg. .. ..
R72	.15M .. 1W.
S302	Speaker 6"
S319	Tension Spring
S333	Pointer Assembly
S407	Band Switch
S445	Tone Switch
T66	Power Transformer
T164	1st I.F. ..
T165	2nd I.F. ..
C282	500 Mmfd. Mica
C231	Osc. Padder

B+ Lines
Screen Lines
A.V.C. Lines

SPEAKER PLUG - Pin End

No Signal. Volume Control Turned Off. Line Voltage - 117 Volts, 60 Cycles. Meter Used - 20,000 Ohms per Volt.					
TUBE	PLATE	SCREEN	SUPR.	CATH.	HEATER
6A8 Converter	234	75	192	3	6.3
6K7 I.F. Ampl.	237	75	0	0	6.3
6H6 Detector	0			0	6.3
6P5 1st A.F.	21			0	6.3
6P5 Driver	242			11.5	6.3
6AC5 Output	252			0	6.3
6G5 Eye Tube	242			0	6.3
80 Rectifier	300	AC.	262	DC.	5.0

Standard Brain Below Incorporates Police Band. 1.7-5.5 MC.



I.F. 456 KC.

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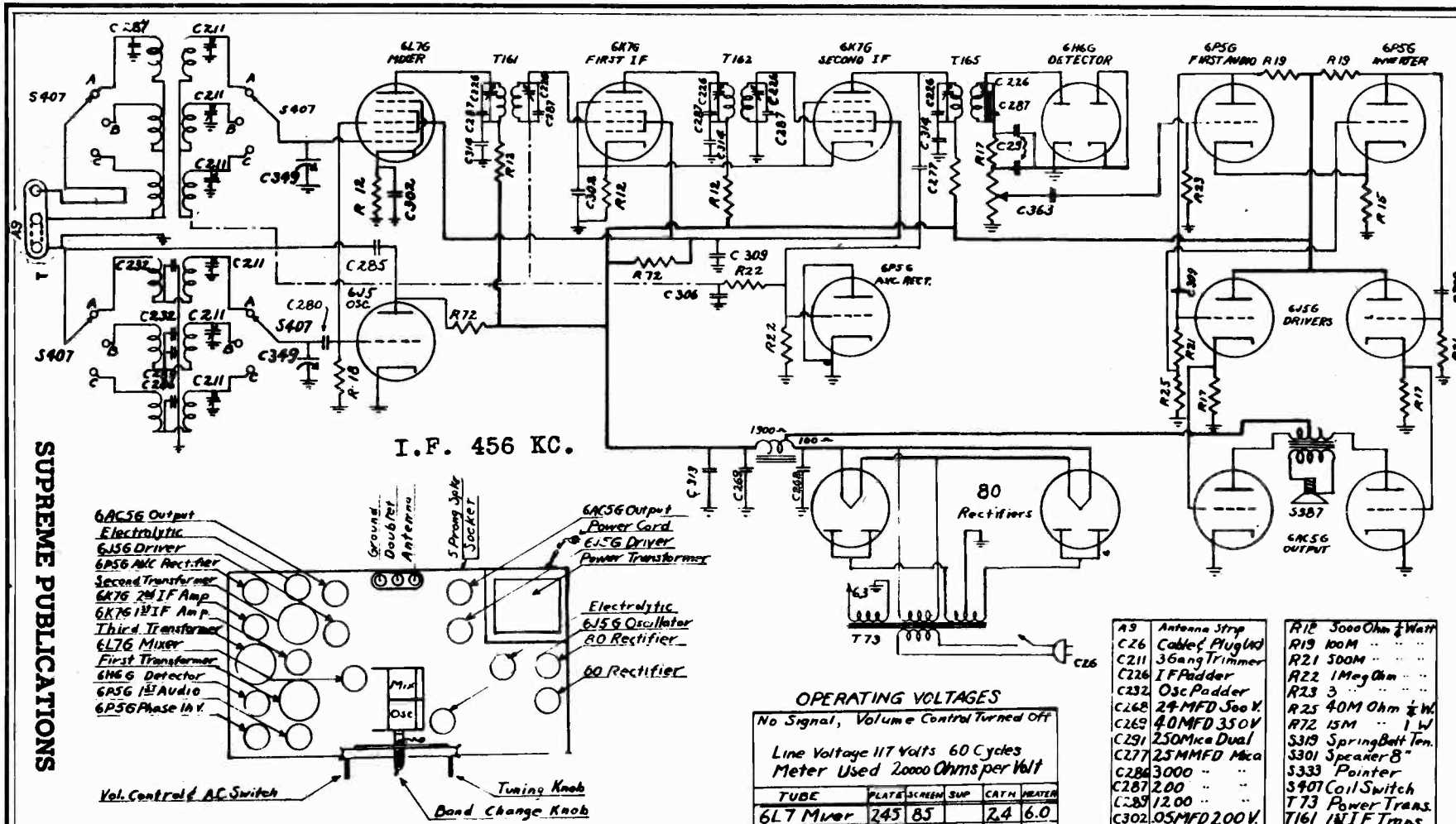

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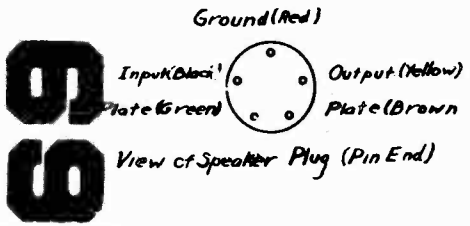


In long wave sets, the coverage of B Band is from 125 to 350 KC.

Model 14-Z-9
Midwest Radio Corp.
909 Broadway
Cincinnati, Ohio

OPERATING VOLTAGES

No Signal, Volume Control Turned Off

Line Voltage 117 Volts 60 Cycles
Meter Used 2000 Ohms per Volt

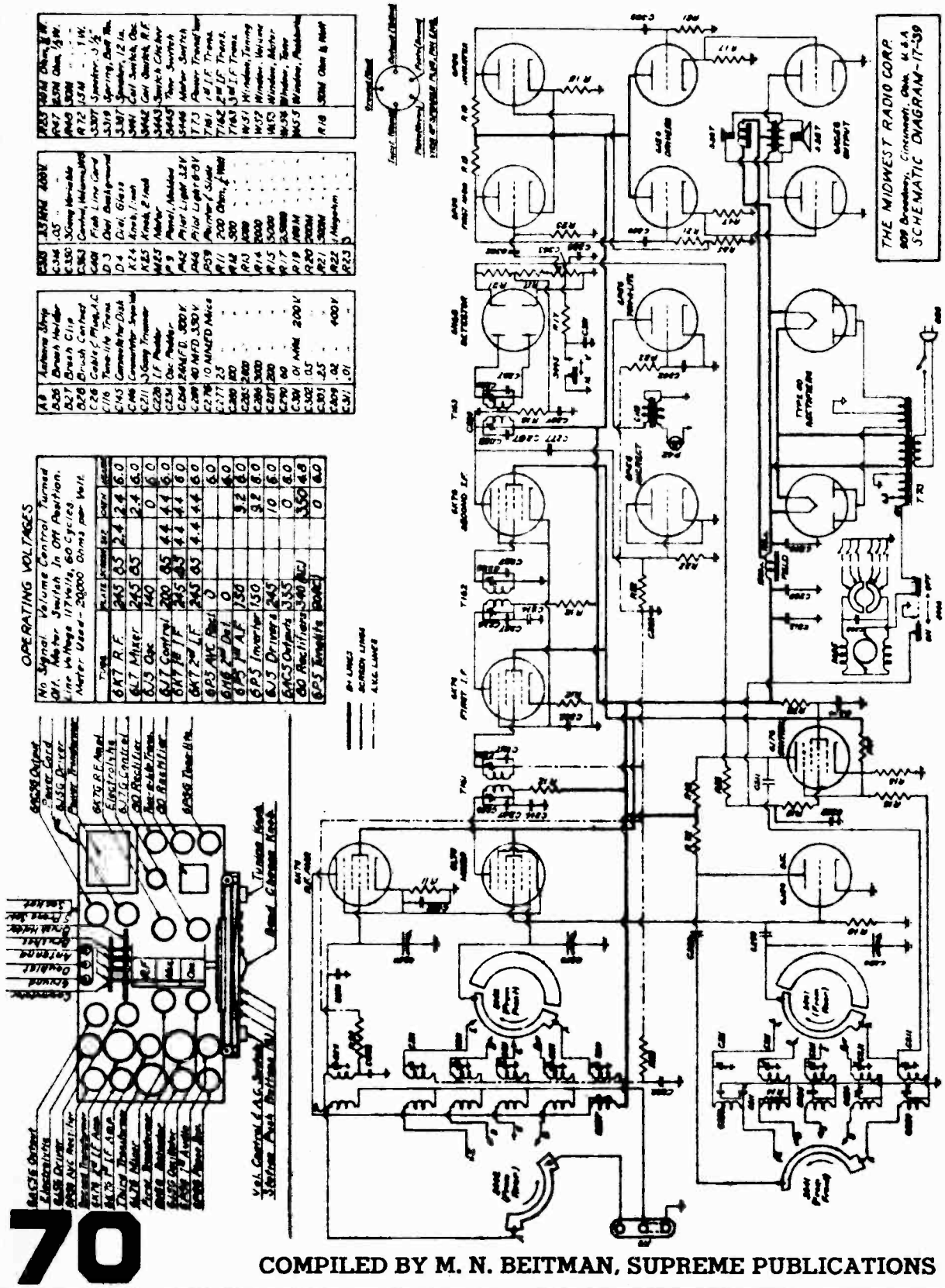
TUBE	PLATE	SCREEN	SUP	CAT'H	HEATER
6L7 Mixer	245	85		2.4	6.0
6J5 Osc.	140			0	6.0
6K7 1st IF	245	85	2.4	4.4	6.0
6K7 2nd IF	245	85	4.4	4.4	6.0
6P5 AVC Rect	0				6.0
6H6 2nd DET.	0				6.0
6P5 1st AF	150			9.2	6.0
6J5 Drivers	245			10	6.0
6P5 Inverter	150			9.2	6.0
6AC5 Drivers	335			0	6.0
80 Rectifiers	340 (AC)			350	4.8

A9	Antenna Strip
C26	Cable & Plug (Ant)
C211	3 Gang Trimmer
C226	I F Padder
C232	Osc Padder
C268	.24 MFD 500 V.
C269	4.0 MFD 350 V
C291	.250 Mica Dual
C277	25 MMFD Mica
C286	3000 " "
C287	200 " "
C288	1200 " "
C302	.05 MFD 200 V.
C309	.02 MFD 400 V.
C313	.25 " "
C314	.05 " "
C349	2 Gang Variable
C363	Control, Volume MS
C401	Fish Line Cord
K24	Knob 1 inch
P96	Pilot Lite 6.8 V.
R11	200 Ohm ½ Watt
R12	500 " " "
R15	5000 " " "
R17	25000 " " "

R18	3000 Ohm ½ Watt
R19	100 M " " "
R21	500 M " " "
R22	1 Meg Ohm " "
R23	3 " " " "
R25	40 M Ohm ½ W.
R72	15 M " 1 W
S319	Spring Batt Ten.
S301	Speaker 8"
S333	Pointer
S407	Coil Switch
T73	Power Trans.
T161	1st I F Trans.
T162	2nd " "
T165	3rd " "
C285	2000 MMfd
C280	100 "

MANUAL OF 1939 MOST POPULAR SERVICE DIAGRAMS

The Midwest Radio Corp. Model 17-'39



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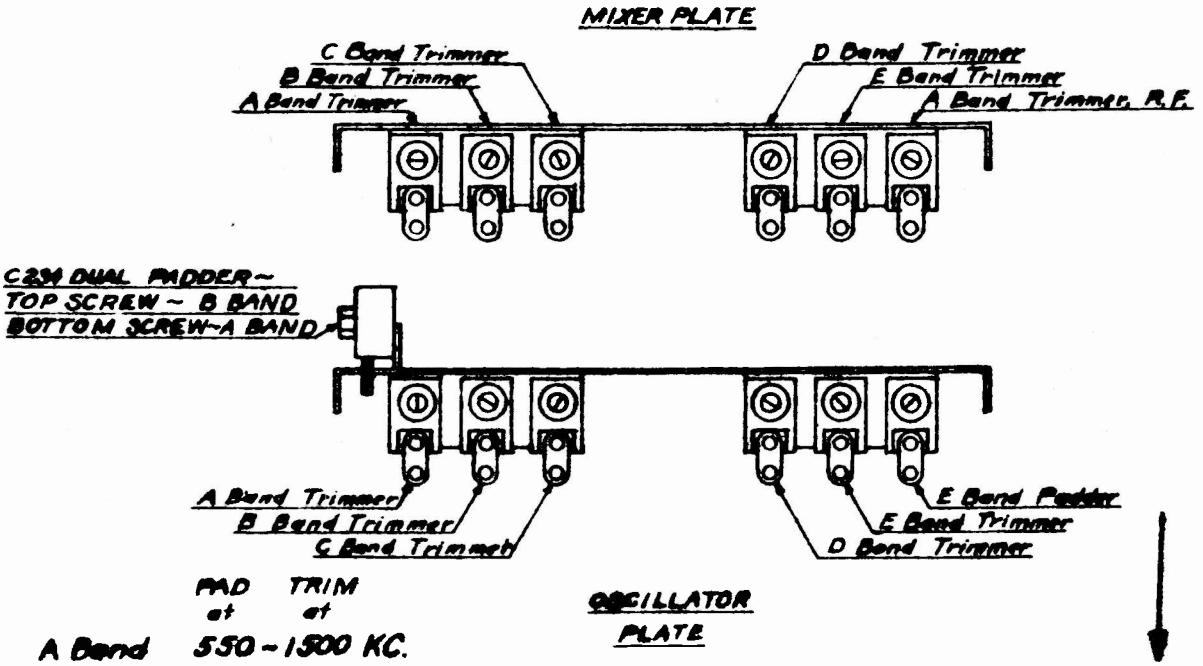
The Midwest Radio Corp. Models 12 & 17 1939 Trimmers and Padders



	PAD at	TRIM at
A Band	550 - 1500 KC.	
B Band	1.5 - 4.2 MC.	
C Band	4.2 - 12 MC.	
D Band	12 - 30 MC.	
E Band	125 - 350 KC.	

Instructions for Aligning 5 Band 1939 Midwest Sets.

Remove the oscillator tube. Peak I.F.'s at 456 KC. for maximum gain, while AFC is off. Receive a signal from generator, turn on AFC. If tuning is disturbed, realign secondary side of AFC transformer. Re-adjust trimmer across the primary of the AFC transformer until maximum AFC voltage is developed. May be measured with voltmeter from cathode of 6J7 AFC control tube to ground.

Band "A" 550 to 1500 KC. Padded at 550 KC. and trimmed at 1400 KC. R.F. and mixer trimmers should be adjusted at 1400 KC.

Band "B" 1.5 to 4.2 MC. This band should be padded at 1.7 MC., and trimmed at 4.0 MC.

Band "C" 4.2 to 12.0 MC. This band has a fixed padder and should be trimmed 11.0 MC.

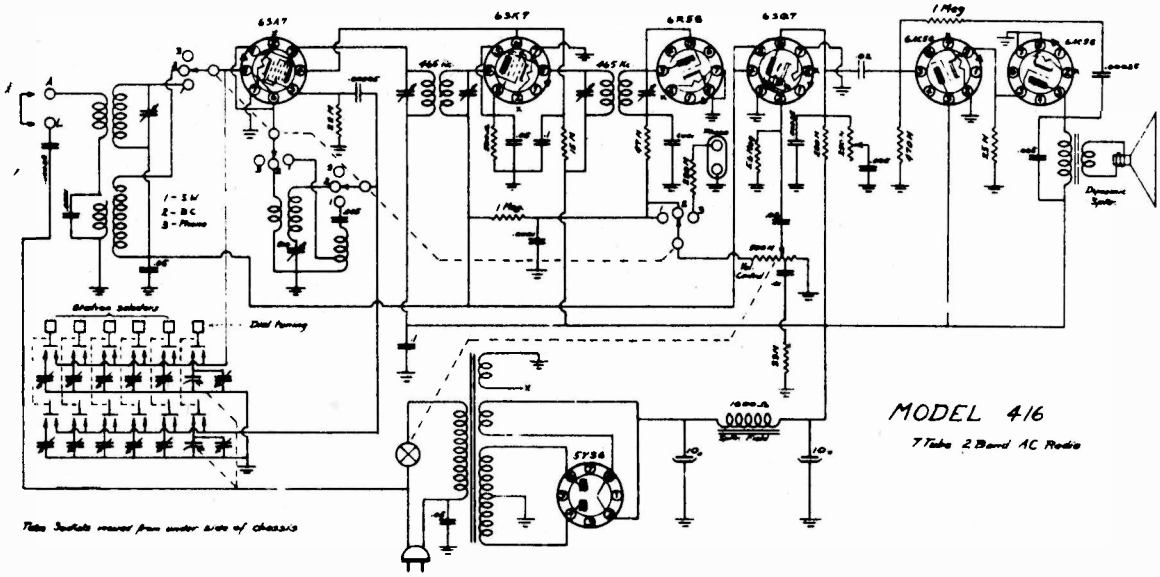
Band "D" covers from 12 MC to 30 MC. This band has a fixed padder and should be trimmed at 29 MC. Adjust R.F. and mixer trimmers for maximum gain at 29 MC.

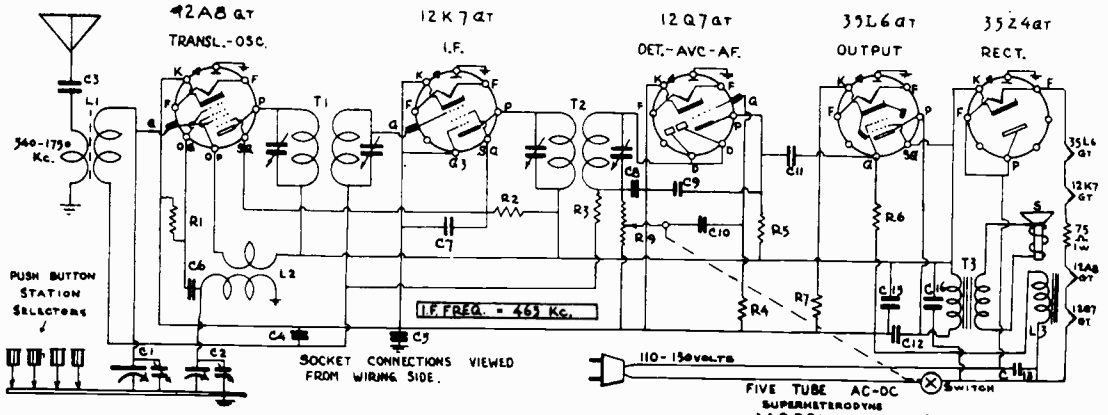
Band "E" covers from 125 to 350 KC. (long wave). This band should be padded at 135 KC. and trimmed at 340 KC.

A dummy antenna, consisting of a 200 ohm resistor and 10 mmfd. condenser in parallel, should be connected in series with output of signal generator.

MANUAL OF 1939 MOST POPULAR SERVICE DIAGRAMS

Mission Bell Radio Mfg. Co., 831 Venice Blvd., Los Angeles, Calif.



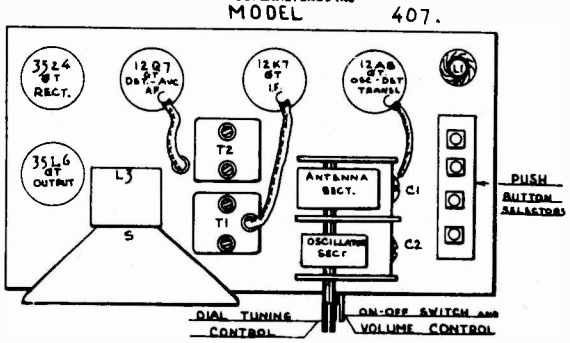


IDENTIFICATION NO. 111-407

PARTS LIST

SCHEMATIC LOCATION	PART NUMBER	DESCRIPTION	SELLING PRICE EACH
T1	1133940771	Coil-Input I.F.	1.00
T2	1133940772	Coil-Output I.F.	1.00
L1	1133840773	Coil-Antenna	.75
L2	1133840774	Coil-Oscillator	.75
R6	1133840779	Control-Volume 500K Ohm with Switch	.85
	1133840724	Speaker 5" Dynamic	3.50
T3	1133940781	Transformer	1.50
L3	1133940782	Field Coil	1.50
	1133940783	Cone & Voice Coil	2.00
	1133440725	Cord-Power	.25
	1133640749	Grid-Cap	.35
C1,C2	1133840752	Cond.-Variable	2.00
C25	1133940753	Cond.-Electrolytic 20 Mfd. 150 Volt	.60
C26	1133940754	Cond.-Electrolytic 40 Mfd. 150 Volt	.45
C4,C7		Cond.-.05 Mfd. 200V	.15
C11		" .05 " 400V	.15
C12		" .02 " 600V	.15
C10,C11		" .01 " 200V	.15

SCHEMATIC LOCATION	PART NUMBER	DESCRIPTION	SELLING PRICE EACH
C3		Cond..005 Mfd. 400V	.15
C5		" .25 " 200V	.20
C6		" .0001 " Mica	.10
C8,C9		" .0005 "	.15
R1		Resistor ½W Ohms 1/2W	.10
R2		" 2M " 1/2W	.10
R3		" 2.2 Meg 1/2W	.10
R4		" 5.6 " 1/2W	.10
R5,R6		" 220M Ohms 1/2W	.10
R7		" 150 " 1W	.10
	1131840781	Socket-6 Prong	.10
	1133840726	Push Button Selector Assembly	1.85
	1133640713	Dial Drive Assembly	.85
	1133940714	Dial-Calibrated Knob	.30
	1133440742	Escutcheon (Push Button)	.35
	1133940743	Indicator Tabs for Push Button	.15
	1133940717	Knob-Volume Control	.10



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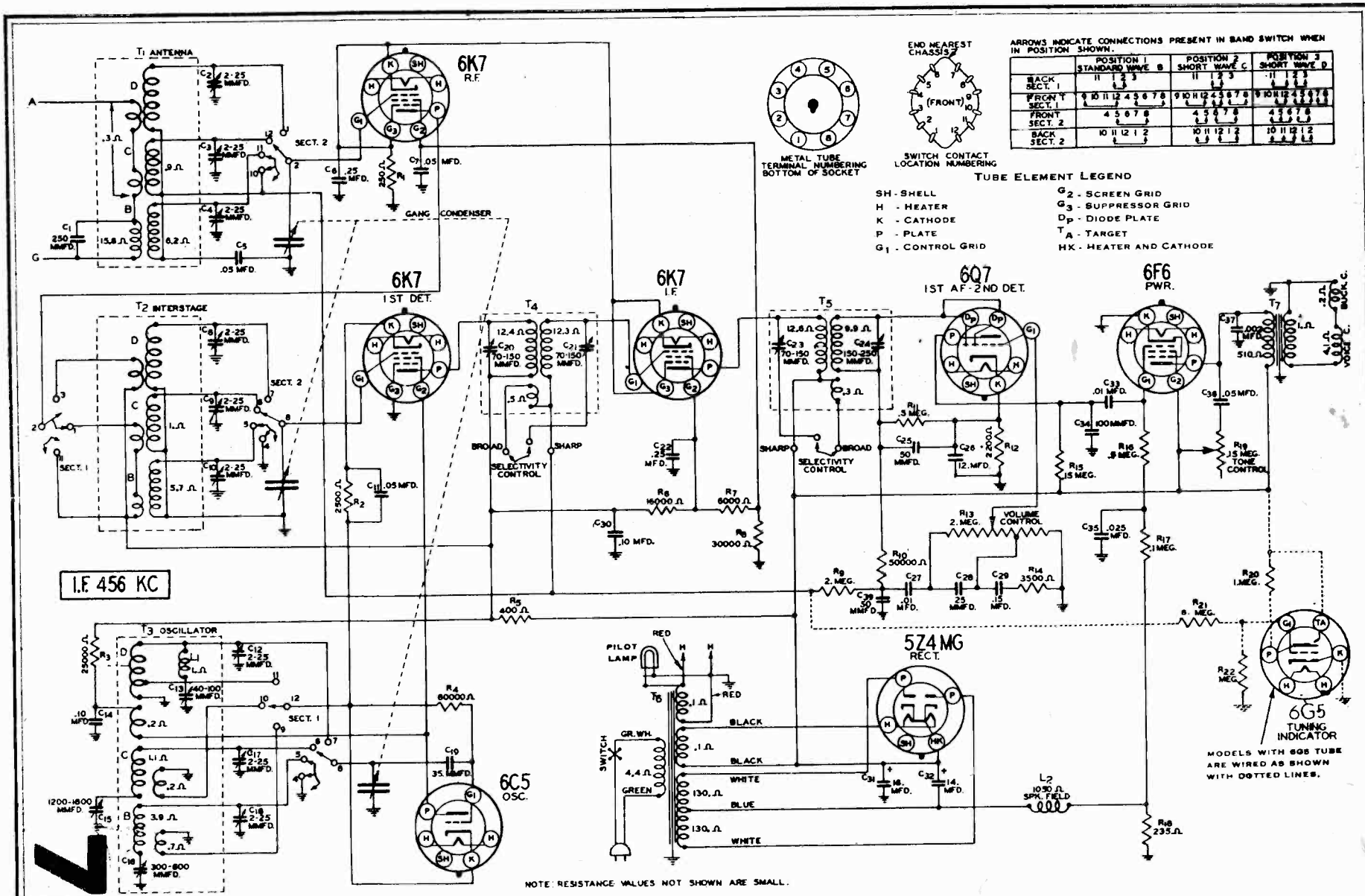
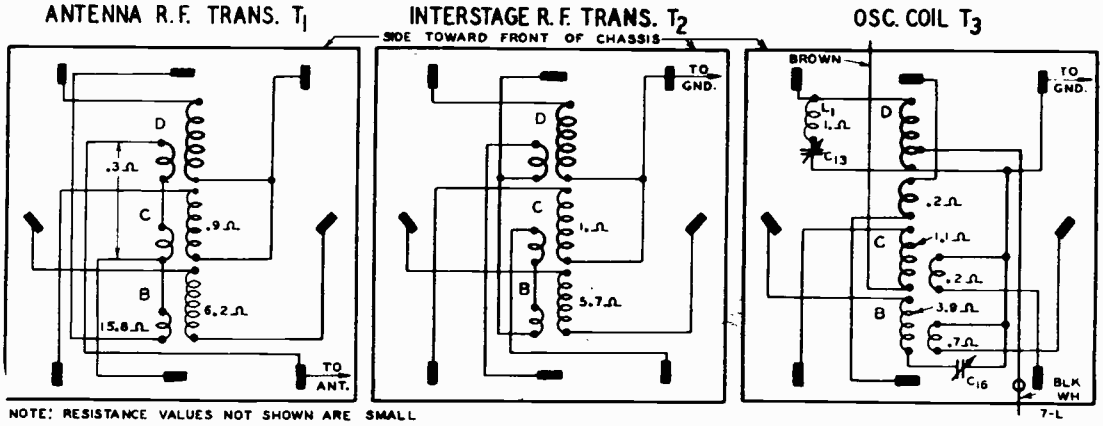


Montgomery Ward Models 62-226, 62-228, 62-259, 62-308, 62-318, 62-408, 62-418



R. F. and Oscillator Coil Base Terminal Arrangement and D. C. Resistance of Windings

Line Voltage: 115
Volume Control: Maximum

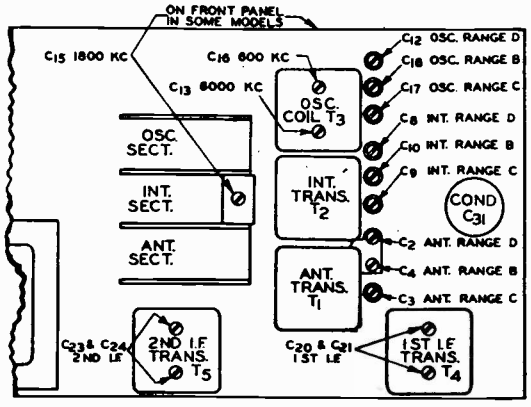
Antenna Shorted to Ground
Position of Band Switch: Standard Wave

TUBE	FUNCTION	VOLTAGE BETWEEN SOCKET PRONGS AND GROUND (Unless otherwise indicated)							
		Prong No. 1	Prong No. 2	Prong No. 3	Prong No. 4	Prong No. 5	Prong No. 6	Prong No. 7	Prong No. 8
6K7	RF	0	6.1(1)	260	100	4.0	....	6.1(1)	4.0
6K7	1st Det.	0	6.1(1)	260	118	0	....	6.1(1)	9.0
6C5	Osc.	0	6.1(1)	120	...	0	....	6.1(1)	0
6K7	I F	0	6.1(1)	260	138	4.0	....	6.1(1)	4.0
6Q7	1st A.F.—2nd Det.	0	6.1(1)	105	0	0	....	6.1(1)	1.4
6F6	Power Amp.	0	6.1(1)	238	260	18	....	6.1(1)	0
5Z4MG	Rect.	0	4.9(2)	...	680(3)	...	680(3)	....	4.9(2)
6E5	Tuning Indicator	Plate to Ground 30(4)		Target to Ground 270		Cathode to Ground 0		Across Heater 6.1 A.C.	

(1) A.C. voltage as read across heater terminals 2 and 7.
(2) A.C. voltage as read across heater terminals 2 and 8.
(3) A.C. voltage as read across terminals 4 and 6.
(4) As read with 500,000 ohm meter.

The voltage readings are taken with a voltmeter having a resistance of 1000 ohms per volt.

The standard metal tube socket terminal numbering system (bottom of socket) is shown in Fig. 5.



Location of Trimmers

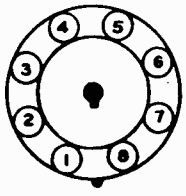
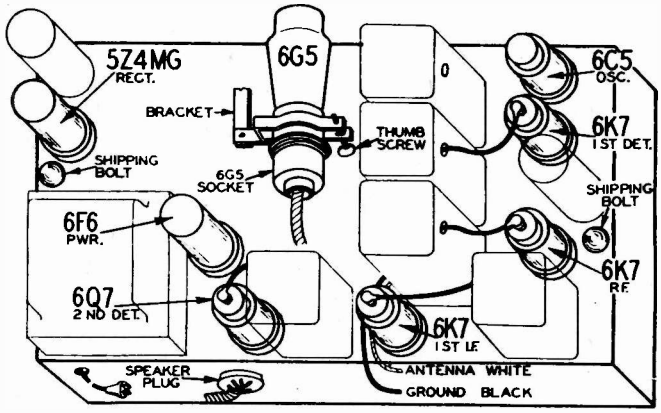


Fig. 5—Metal tube terminal numbering (bottom of socket)

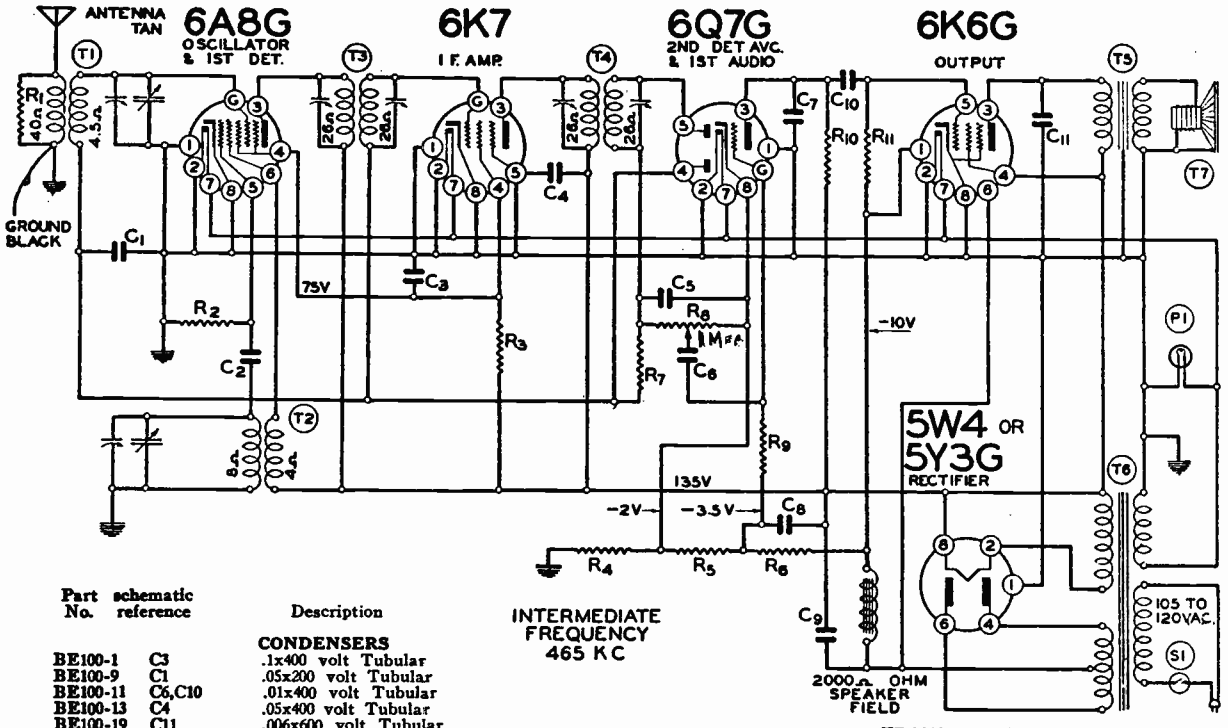
MONTGOMERY WARD

62-226, 62-228, 62-259, 62-308, 62-318, 62-408, 62-418



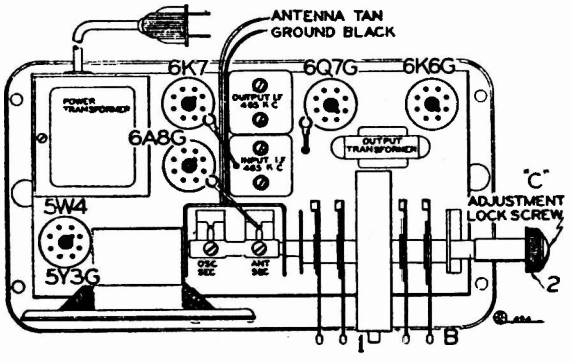
WARDS AIRLINE RADIO

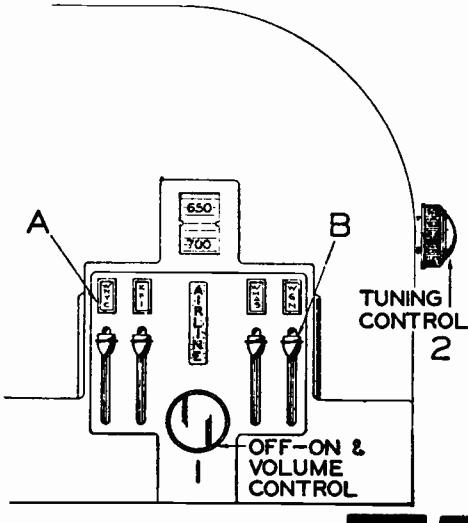
MODELS 62-350, 62-351 and 62-352

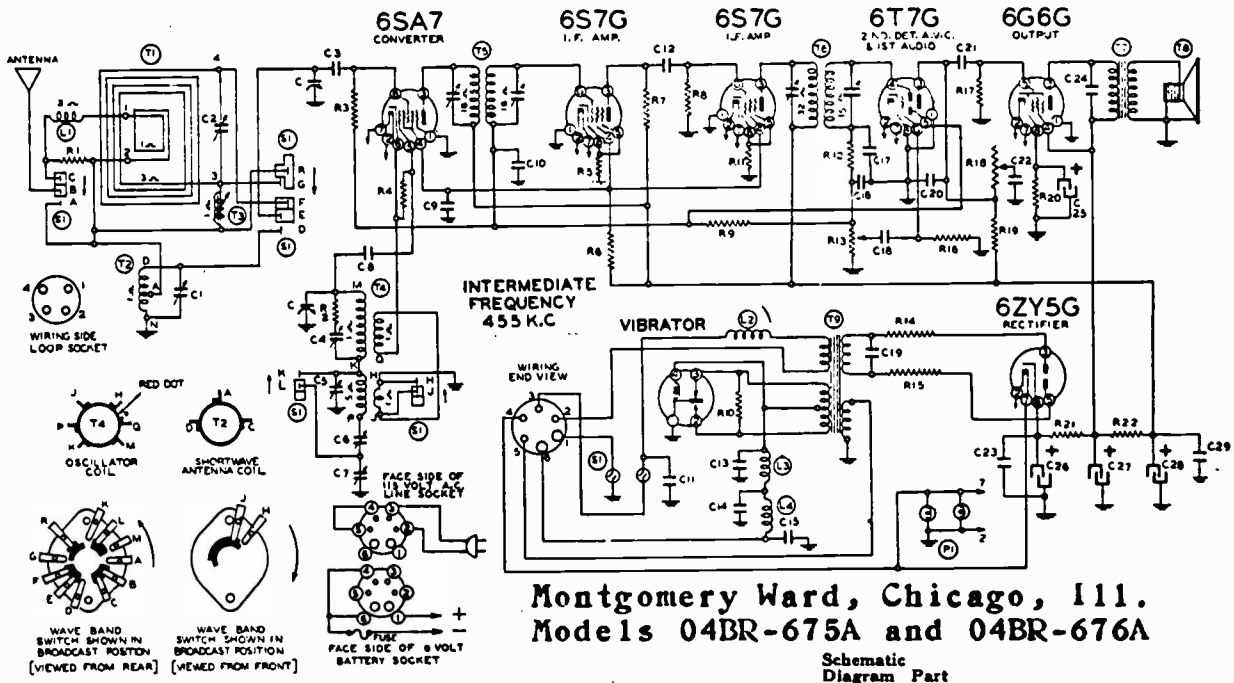


Part No.	schematic reference	Description
		CONDENSERS
BE100-1	C3	.1x400 volt Tubular
BE100-9	C1	.05x200 volt Tubular
BE100-11	C6,C10	.01x400 volt Tubular
BE100-13	C4	.05x400 volt Tubular
BE100-19	C11	.006x600 volt Tubular
BE119-47C	C8,C9	Dual 5 Mfd x 250 w. v. Filter Condenser
BE129-2	C7	.0005 Mica Type 20%
BE129-5	C5	.0001 Mica Type 20%
BE129-12	C2	.00025 Mica Type 20%
		RESISTORS
BE106-35	R4,R5,R6	65 Ohm, 45 Ohm, 220 Ohm Metal Clad Strip
BE130-9	R10	200M Ohm-1/3 watt-20% Carbon
BE130-12	R2	50M Ohm-1/3 watt-20% Carbon
BE130-21	R1	20M Ohm-1/3 watt-20% Carbon
BE130-118	R11	600M Ohm-1/3 watt-20% Carbon
BE130-149	R3	15M Ohm-1/3 watt-20% Carbon
BE130-170	R7,R9	3 Megohm-1/3 watt-20% Carbon
		COILS
BE108-82E	T3	Input I.F. Coil Assembly Complete with can
BE108-83E	T4	Output I.F. Coil Assembly Complete with can
BE110-73	T2	Oscillator Coil Assembly Complete
BE111-92	T1	Antenna Coil Assembly Complete

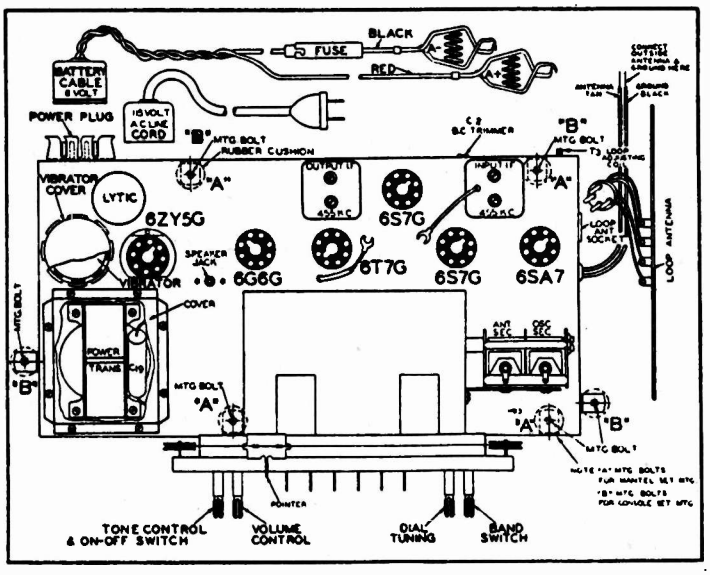
		TRANSFORMERS
BE104-100E	T6	Power Transformer 50/60 Cycle 105-120 volt
BE104-108E		Power Transformer 25 cycle 105-120 volt
BE104-104E		Universal Transformer 25 cycle primary
BE104-99E		Universal Transformer 40 cycle primary
		SPEAKER
BE114-108A & B	T7	Five inch Dynamic (2000 ohm field)
BE105-55B	T5	Output Transformer for Speaker
		MISCELLANEOUS
BE101-106	R8,S1	Volume Control and Switch (1 megohm)
BE102-67	C	Two Gang Variable Condenser







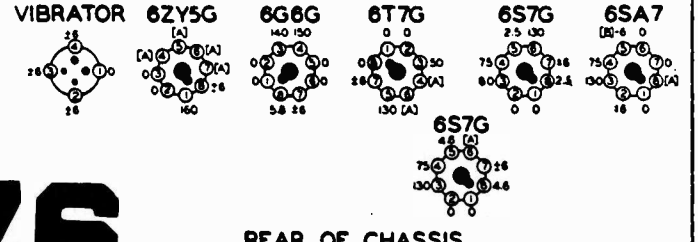
Montgomery Ward, Chicago, Ill.
Models 04BR-675A and 04BR-676A



BOTTOM VIEW OF CHASSIS

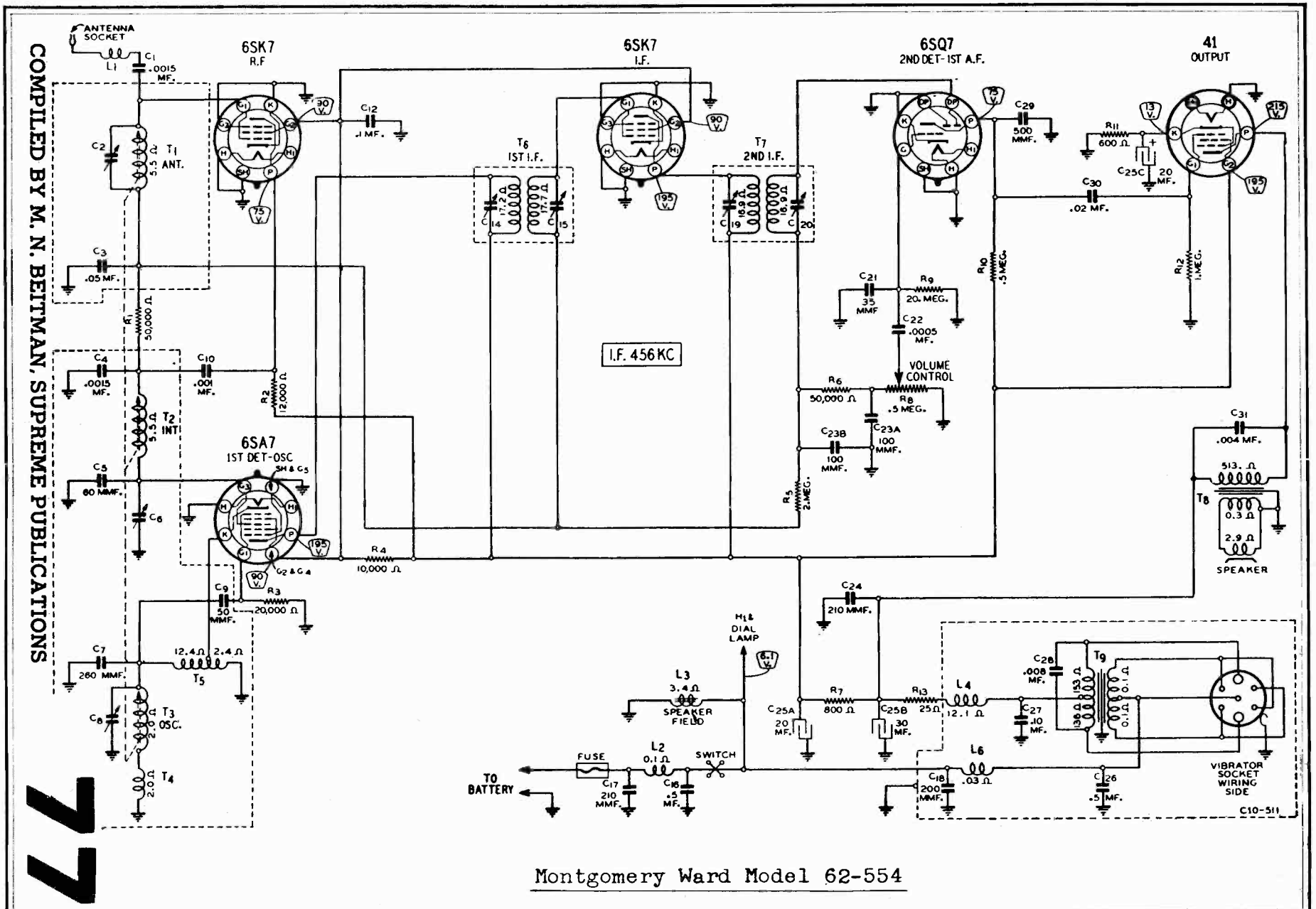
VOLTAGES MEASURED WITH 1000 OHM PER VOLT VOLTMETER BETWEEN SOCKET TERMINALS AND CHASSIS LOOP PLUGGED INTO CHASSIS AND SET TUNED OFF SIGNAL SET OPERATING ON 6.3 VOLT STORAGE BATTERY

[A] CANNOT BE MEASURED WITH VOLTMETER.
[B] OSCILLATOR VOLTAGE MEASURED WITH R.F. CHOKE IN SERIES WITH VOLTMETER LEAD



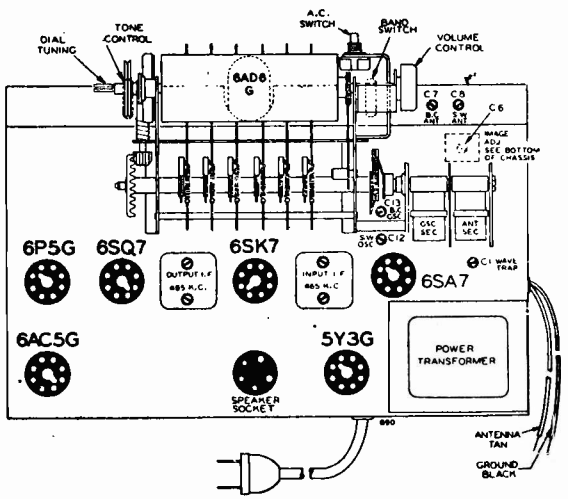
Schematic Diagram Ref. No.	Part No.	Description
		RESISTORS
R1	BE130193	3M ohm—½ w.
R2	BE130276	10 ohm—½ w.
R3	BE13019	1 megohm—½ w.
R4	BE130236	30M ohm—½ w.
R5	BE13070	500 ohm—½ w.
R6	BE13067	9M ohm—½ w.
R7	BE130157	12M ohm—½ w.
R8	BE13019	1 megohm—½ w.
R9	BE130170	3 megohm—½ w.
R10	BE13084	200 ohm—½ w.
R11	BE130192	2M ohm—½ w.
R12	BE13020	100M ohm—½ w.
R13	BE101227	Volume Control
R14	BE130233	60 ohm—½ w.
R15	BE130233	60 ohm—½ w.
R16	BE130223	10 megohm—½ w.
R17	BE1303	500M ohm—½ w.
R18	BE101228	2 megohm Tone Control
R19	BE130266	200M ohm—½ w.
R20	BE13079	400 ohm—½ w.
R21	BE130222	350 ohm—½ w.
R22	BE130235	1500 ohm—½ w.
		CONDENSERS
C	BE102133	2 Gang Variable Condenser
C1	BE124116	S.W. Antenna Trimmer
C2	BE124141	B.C. Antenna Trimmer
C3	BE12921	.0002 mica
C4	BE124142	S.W. Oscillator Trimmer
C5	BE124142	B.C. Oscillator Trimmer
C6	BE124140	B.C. Pad Trimmer
C7	BE124140	S.W. Pad Trimmer
C8	BE12938	.00005 mica
C9	BE10048	.25 x 200 v.
C10	BE1009	.05 x 200 v.
C11	BE10013	.05 x 400 v.
C12	BE1292	.0005 mica
C13	BE10031	.5 x 120 v.
C14	BE10031	.5 x 120 v.
C15	BE10031	.5 x 120 v.
C16	BE129161	.0001 mica
C17	BE129161	.0001 mica
C18	BE10025	.002 x 600 v.
C19	BE10073	.008 x 1200 v.
C20	BE1292	.0005 mica
C21	BE10026	.02 x 400 v.
C22	BE100106	.004 x 600 v.
C23	BE10020	.1 x 200 v.
C24	BE100106	.004 x 600 v.
C25	BE119111	20 Mfd. Lytic x 20 w.v.
C26	BE119111	40 Mfd. Lytic x 200 w.v.
C27	BE119111	20 Mfd. Lytic x 200 w.v.
C28	BE119111	20 Mfd. Lytic x 200 w.v.
C29	BE10020	.1 x 200 v.

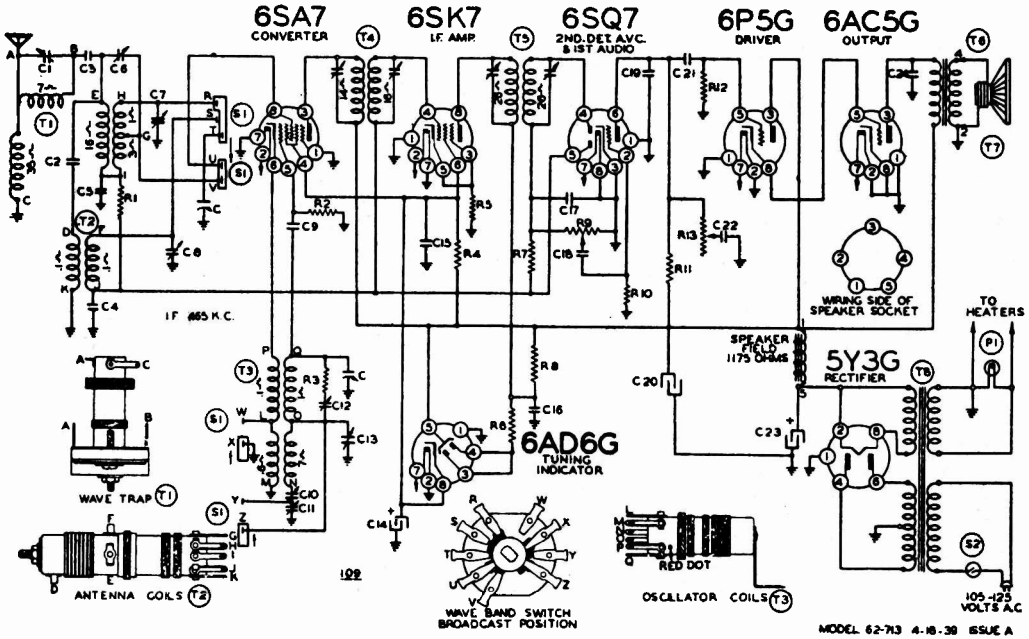
C4 and C5 in one unit.
C16 and C17 in one unit.
C6 and C7 in one unit.
C25, C26, C27 and C28 in one unit

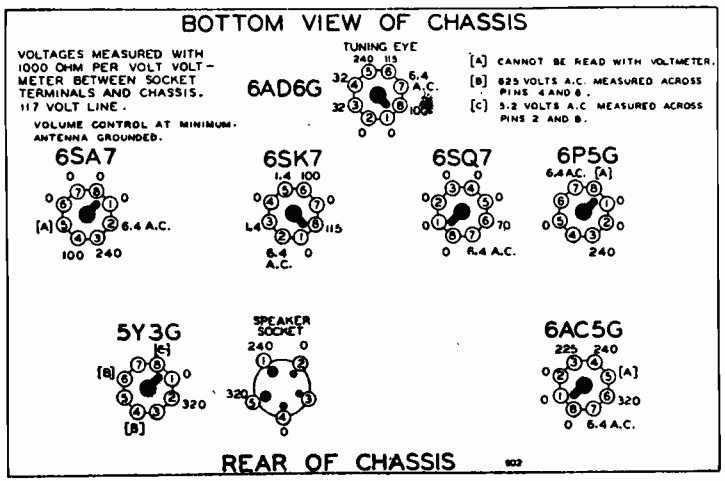


Montgomery Ward Model 62-554

Montgomery Ward Models 93BR713A and 62-713-A.



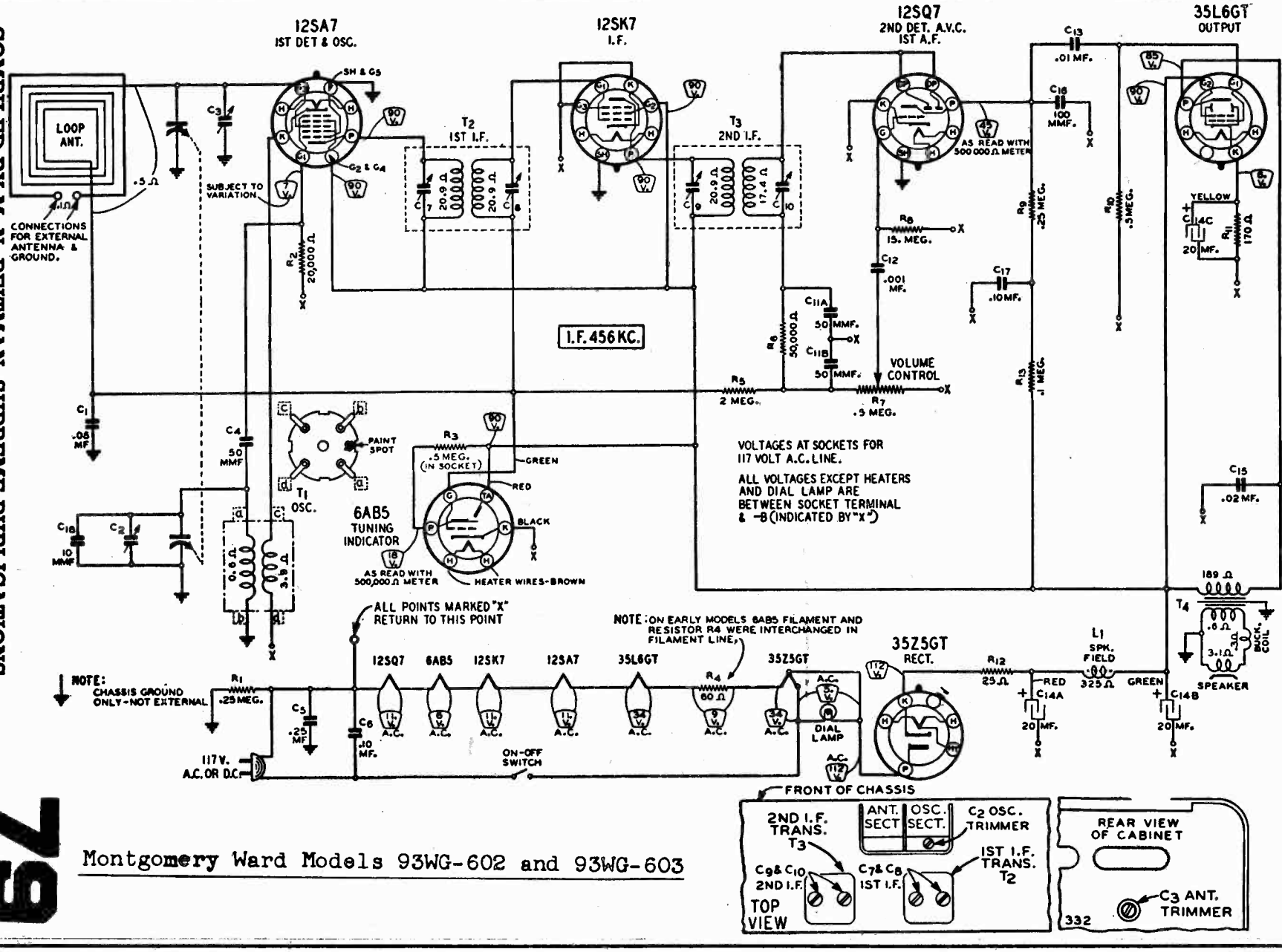




Schematic Ref. No.	Part No.	Description
		RESISTORS
R1	BE13011	250M ohm—20%—½ w.
R2	BE13021	20M ohm—20%—½ w.
R3	BE130197	20 ohm—10%—½ w.
R4	BE130144	15M ohm—20%—1 watt
R5	BE130168	100 ohm—10%—½ w.
R6	BE130110	1 megohm—10%—1/10 w.
R7	BE1304	3 megohm—20%—½ w.
R8	BE13055	12M ohm—20%—2 watt
R9	BE101166	1 megohm—volume control
R10	BE130225	15 megohm—50—30%—½ w.
R11	BE1303	500M ohm—20%—½ w.
R12	BE13019	1 megohm—20%—½ w.
R13	BE101167	1 megohm—tone control
		CONDENSERS
C	BE102106B	2 gang variable condenser
C1	BE12467	Wave Trap Trimmer
C2	BE129140	.00016 mica—5%
C3	BE10011	.01 x 400 volt—25%
C4	BE1009	.05 x 200 volt—25%
C5	BE129131	.002775 mica—3%
C6	BE12468	Image Trimmer
C7	BE12475	B. C. Antenna Trimmer
C8	BE12475	S. W. Antenna Trimmer
C9	BE12960	.00015 Mica—20%
C10	BE12487	B. C. Series Pad
C11	BE12487	S. W. Series Pad
C12	BE12476	S. W. Oscillator Trimmer
C13	BE12476	B. C. Oscillator Trimmer
C14	BE11984	5. mfd. x 300 v. lytic
C15	BE1001	.1 x 400 v. 50—10%
C16	BE1001	.1 x 400 v. 50—10%
C17	BE1295	.0001 mica—20%
C18	BE10071	.004 x 600 v.—25%
C19	BE1292	.0005 mica—20%
C20	BE11984	15 mfd. x 350 v. lytic
C21	BE10026	.02 x 400 v.—25%
C22	BE10071	.004 x 600 v.—25%
C23	BE11984	10 mfd. x 450 v. lytic
C24	BE10019	.006 x 600 v.—25%

C7 and C8 in one unit. C10 and C11 in one unit. C12 and C13 in one unit. C14, C20, and C23 in one unit.

		PARTS
T1	BE108146	Wave Trap
T2	BE111122	Antenna Coil Complete
T3	BE110115	Oscillator Coil Complete
T4	BE108111H	Input I. F. Coil—465 kc.
T5	BE108132B	Output I. F. Coil—465 kc.
T6	BE10590	Output Transformer
T7	BE114161	6" Dynamic Speaker (1175 Ohm Field)
T8	BE104139D	Power Transformer
P1	BE10794	6-8 volt pilot light T44
S1	BE12576	Band Switch
S2	BE12577	AC Switch



Montgomery Ward Models 93WG-602 and 93WG-603

Montgomery Ward Model 93WG-800

ALIGNMENT PROCEDURE

Volume Control—Maximum All Adjustments.

Connect Radio Chassis to Ground Post of Signal Generator with a Short Heavy Lead.

Allow Chassis and Signal Generator to "Heat Up" for several minutes.

The following equipment is required for aligning:

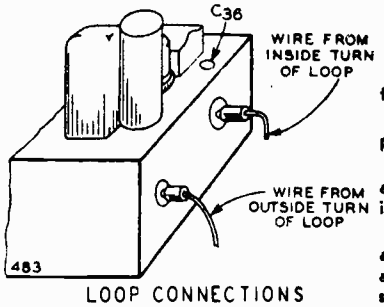
An All Wave Signal Generator which will provide an accurately calibrated signal at the test frequencies as listed.

Output Indicating Meter—Non-Metallic Screwdriver.

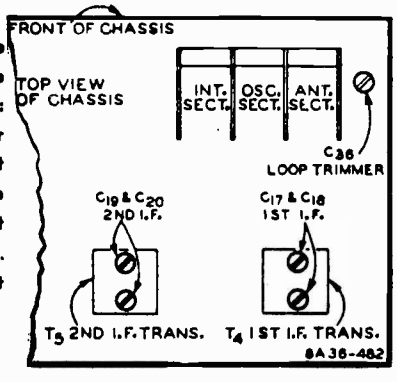
Dummy Antennas—.1 mf., 200 mmf., and 400 ohms.

SIGNAL GENERATOR FREQUENCY SETTING	SIGNAL GENERATOR CONNECTION AT RADIO	DUMMY ANTENNA	BAND SWITCH SETTING	CONDENSER SETTING	ADJUST TRIMMERS TO MAXIMUM
I. F.					
456 KC	Grid of 1st Det.	.1 mf.	B Range	Turn Rotor to Full Open	1st I.F. (C17) & (C18) 2nd I.F. (C19) & (C20)
RANGE B					
1730 KC	Antenna Lead	200 mmf.	B Range Ext. Ant.	Turn Rotor to Full Open	Oscillator Range B (C12)
1500 KC	Antenna Lead	200 mmf.	B Range Ext. Ant.	Turn Rotor to Max. Output	Ant. Range B (C3) Int. Range B (C7)
600 KC	Antenna Lead	200 mmf.	B Range Ext. Ant.	Turn Rotor to Max. Output	600 KC (C13) Rock Rotor—See Note A
RANGE D					
18,300 KC	Antenna Lead	400 Ohm	D Range	Turn Rotor to Full Open	Oscillator Range D (C10)
18,300 KC	Antenna Lead	400 Ohm	D Range	Keep Rotor at Full Open Position	Ant. Range D (C2) Int. Range D (C6) Rock Rotor—See Note A
LOOP RANGE B					
1500 KC See Note B	None See Note B		Loop	Turn Rotor to Max. Output	See Note C Loop Trimmer (C36)

CAUTION—When aligning the short wave band, be sure NOT to adjust at the image frequency. This can be checked as follows: Let us say the signal generator is set for 15,000 KC. The signal will then be heard at 15,000 on the dial of the radio. The image signal, which is much weaker, will be heard at 15,000 less 912 KC, or 14,088 KC on the dial. It may be necessary to increase the input signal to hear the image.



LOOP CONNECTIONS

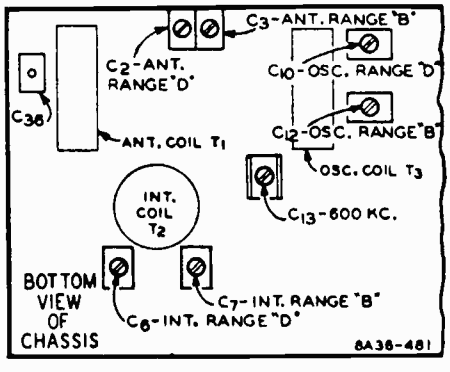


Attenuate the signal from the signal generator to prevent the leveling-off action of the AVC.

After each range is completed, repeat the procedure as a final check.

NOTE A—Turn the rotor back and forth and adjust the trimmer until the peak of greatest intensity is obtained.

NOTE B—Reinstall set in cabinet. Connect a loop approximately one foot in diameter across the antenna and ground posts of the signal generator. Place signal generator so that this loop is between 3 and 10 feet from loop in cabinet.



NOTE C (CONSOLE MODELS)—Turn knob of loop until output is maximum.

CALIBRATION—Chassis should be in cabinet. If it is necessary to recalibrate the radio, loosen the set screw on the dial hub near the volume control drum. Tune in a signal of known frequency. Hold the tuning control drum stationary and at the same time turn the dial drum the necessary amount in the required direction. If the radio detunes as the dial drum is turned, loosen the set screw a slight additional amount and recalibrate. Retighten the set screw.

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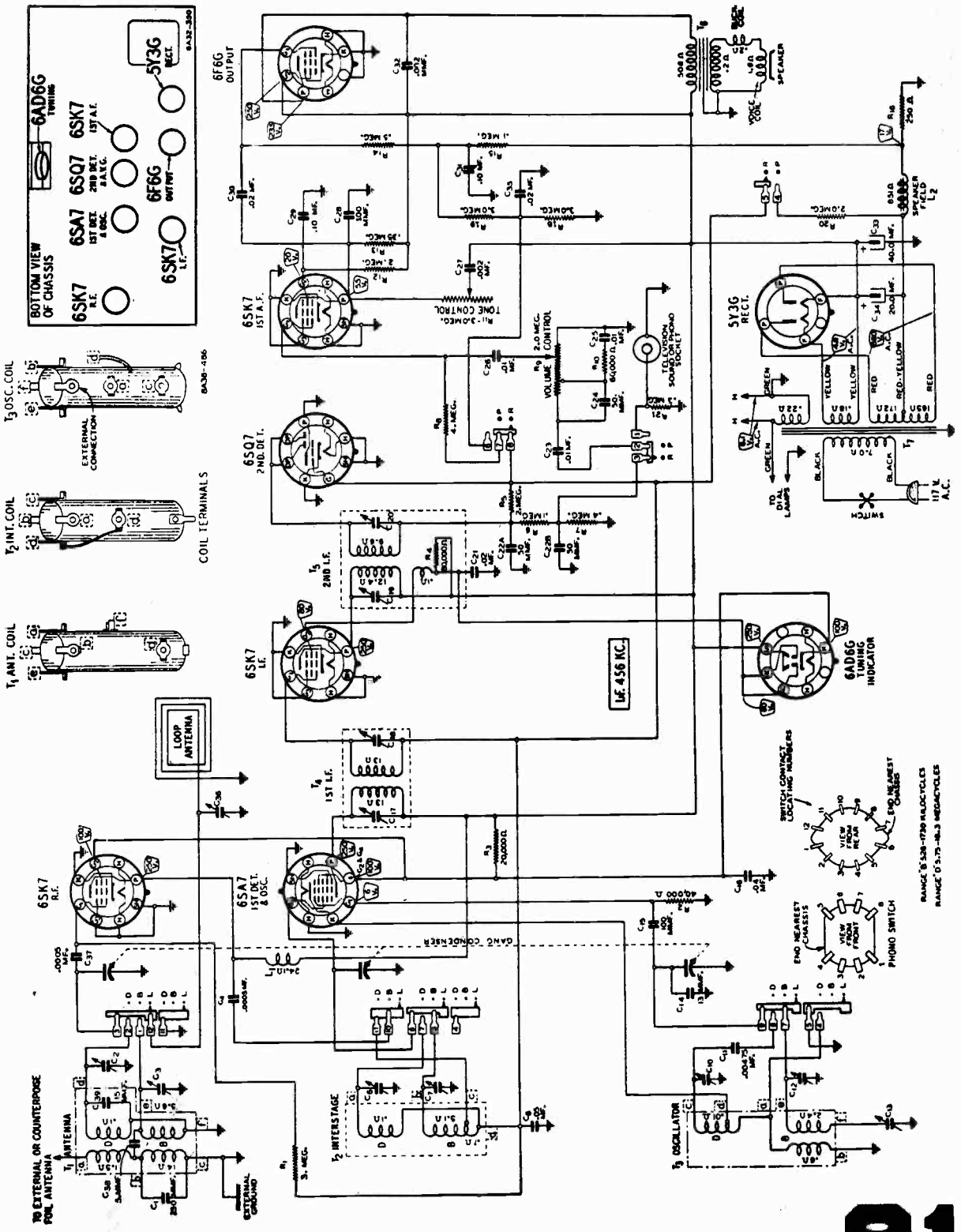
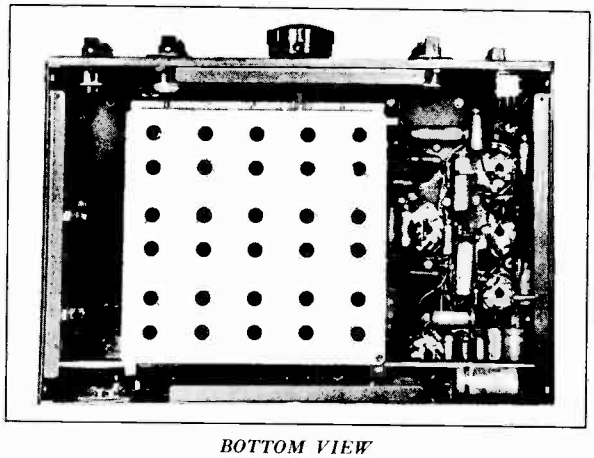
Montgomery Ward Model 93WG-800



THE NC-100A RECEIVER

NATIONAL COMPANY, INC.



BOTTOM VIEW

The coil assembly is shown midway between the 1.3-2.8 mc. and 2.7-6.4 mc. ranges.

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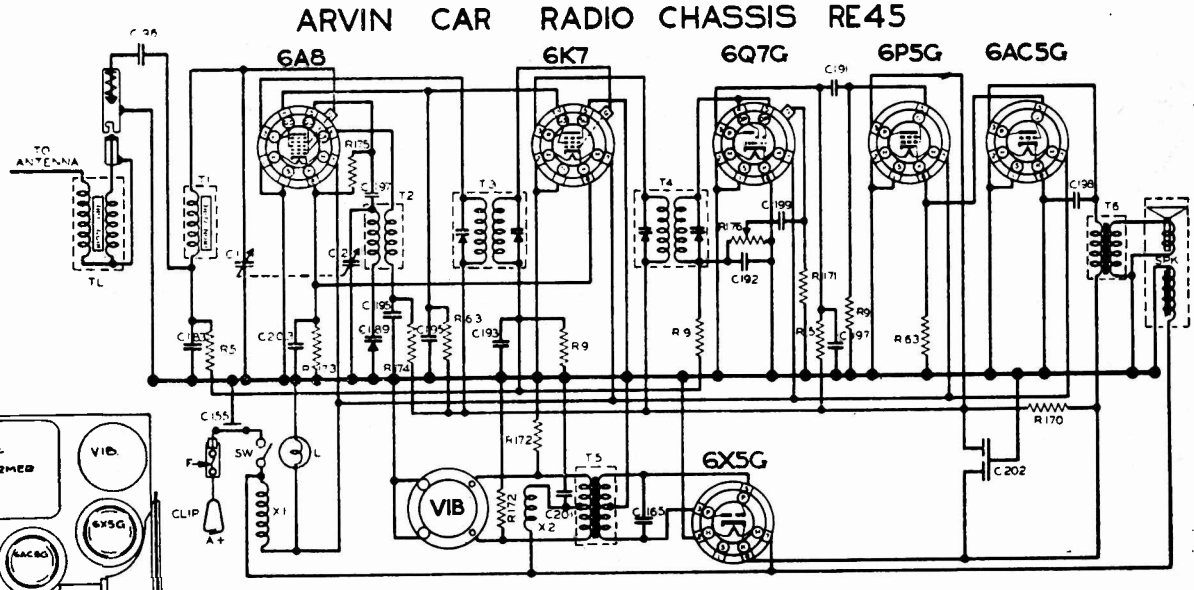
MANUAL OF 1939 MOST POPULAR SERVICE DIAGRAMS

ARVIN CAR RADIO CHASSIS RE45



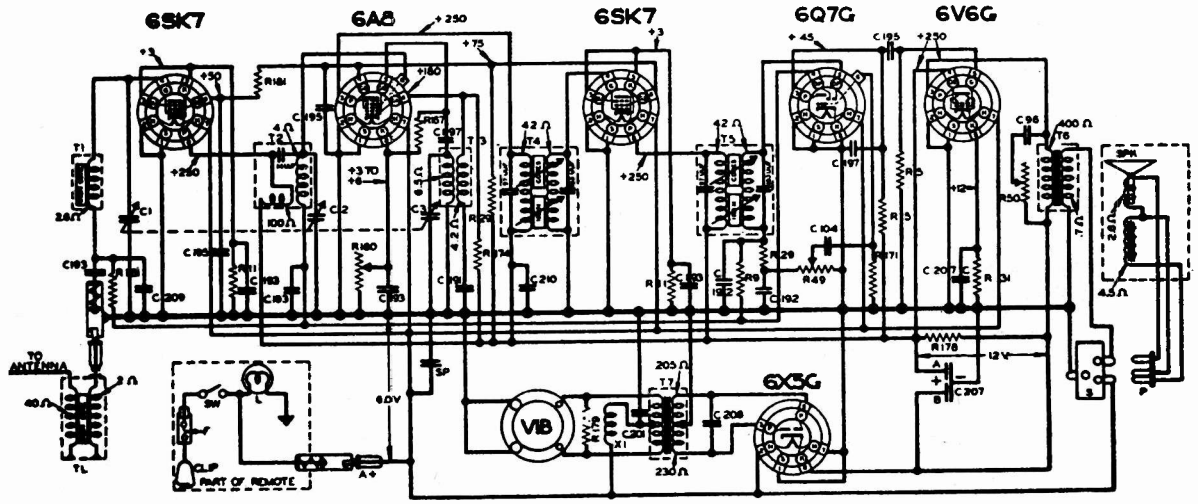
RESISTORS			CONDENSERS			CHOKES & TRANSFORMERS			MISCELLANEOUS UNITS		

LF PEAK 455 K.C.
FREQUENCY RANGE 1575 TO 540 K.C.
NOBLITT-SPARKS INDUSTRIES, INC.,
COLUMBUS, INDIANA.

Arvin Models 8-A and RE-45

Arvin Models 44-C and RE-46

ARVIN CAR RADIO CHASSIS RE46



NOTE - ALL VOLTAGES GIVEN FOR 1/4" INPUT OF 6 VOLTS. ALLOW ± 10% ON ALL VOLTAGES & RESISTANCES OF WINDING.

RESISTORS			CONDENSERS			CHOKES & TRANSFORMERS			MISCELLANEOUS UNITS		

INTERMEDIATE FREQUENCY 175 K.C.
FREQUENCY RANGE 1570 TO 540 K.C.
NOBLITT-SPARKS INDUSTRIES, INC.,
COLUMBUS, INDIANA.

RESISTORS

R	OHM	W	PART NO
81	1 M	1/4	17-2080
82	50	1/4	17-14117
108	50 R	1/4	17-14171
111	20R	1/2	17-14176
113	250R	1/4	17-14178
138	100	1	17-14219
151	.5M	VC	17-18008
152	100K	TC	17-18009
153	30R	1/2	17-14243
154	1.5M	1/4	17-14244
156	35	1/4	17-14246

CONDENSERS

C	CAPACITY	VOLT	PART NO
1	TWO-GANG		17-18005
2	VARIABLE		
5	.05	200	17-14015
6	.002	600	17-2083
7	.0001	600	17-2084
27	DOUBLE PAD.		17-13077
48	.00025	600	17-4207
59	.01	400	17-14815
96	.05	600	17-14121
104	.01	200	17-4206
122	.01	400	17-2189
33	.00005	600	17-14047

C	CAPACITY	VOLT	PART NO
175A	10 MFD	450	
175B	10 MFD	450	17-14249
175C	20 MFD	25	
171	.1	400	17-14238
173	.003	600	17-14247

TRANSFORMERS

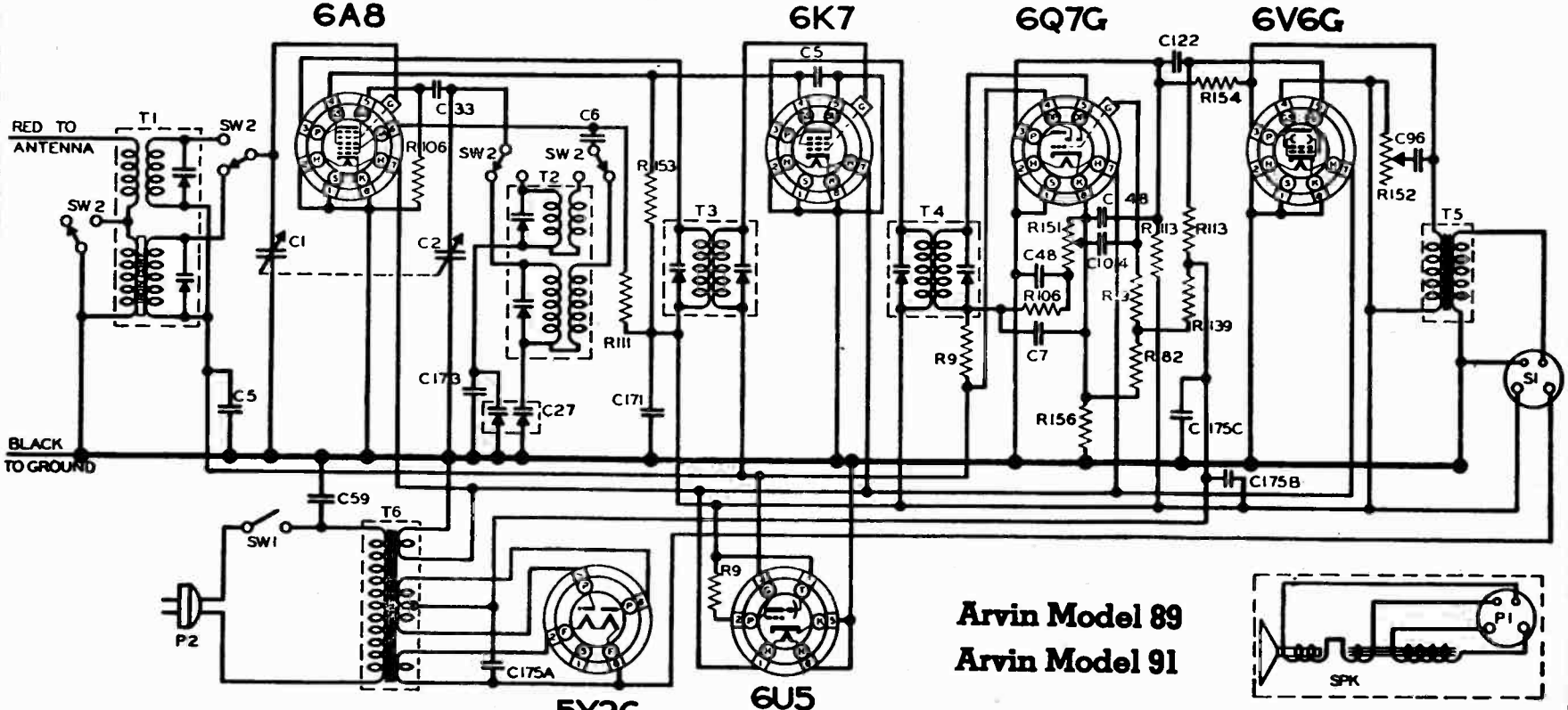
T	TYPE	PART NO
1	ANTENNA COIL	00-15987
2	OSCILLATOR COIL	
3	FIRST I.F. COIL	00-15988
4	SECOND I.F. COIL	00-15989
5	OUTPUT TRANS.	00-15986
6	POWER TRANS.	00-15995

MISCELLANEOUS UNITS

SYMBOL	DESCRIPTION	PART NO
L	DIAL LIGHT BULB	17-13004
P1	SPEAKER PLUG	
P2	AC LINE CORD & PLUG ASSEMBLY	17-15986
S1	SPEAKER SOCKET	17-13249
SPK	SPEAKER (SEE MODEL)	
SW1	AC LINE SWITCH	17-18009
SW2	BAND SWITCH	17-18007

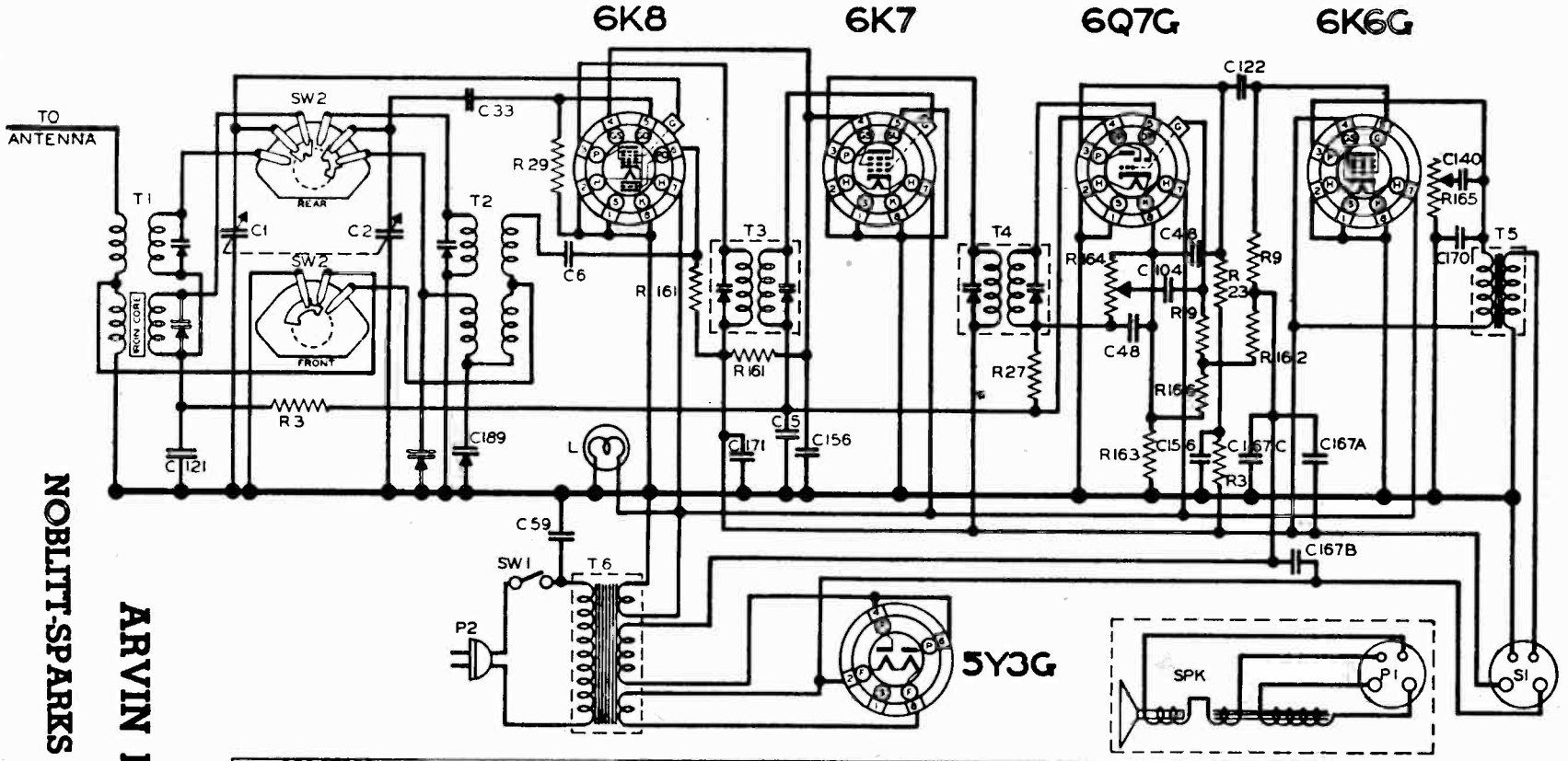
I.F. PEAK 455 K.C.
BROADCAST BALANCE AT 1500 K.C.
PAD AT 600 K.C.
SHORTWAVE BALANCE AT 15 M.C.
CHECK AT 7 M.C.
NOBLITT-SPARKS INDUSTRIES, INC.
COLUMBUS, INDIANA

ARVIN RADIO CHASSIS RE 27



Arvin Model 89
Arvin Model 91

ARVIN HOME RADIO CHASSIS RE 37.



ARVIN MODEL 78

RESISTORS			
R	OHMS	W	PART NO.
3	100K	½	17-2088
9	1M	½	17-2080
23	250K	½	17-3011
27	2M	½	17-4788
29	50K	½	17-2060
161	15K	½	17-14287
162	280	½	17-14288
163	30	½	17-14289
164	500K	VC	17-18097
165	100K	T.C	17-18098
166	40	1W	17-14270

CONDENSERS			
C	CAPACITY	VOLT	PART NO.
1	TWO-GANG		17-15990
2	VARIABLE		
5	.05	200	17-14015
6	.002	600	17-2083
33	.00005	600	17-14047
48	.00025	600	17-4207
59	.01	400	17-14213
104	.01	200	17-4206
121	.02	200	17-14257
122	.01	400	17-2189
140	.02	400	17-2214
156	.05	400	17-4307
167A	10 MFD	450	
167B	10 MFD	450	17-14233
167C	20 MFD	25	
170	.005	400	17-14237
171	.1	400	17-14238
189	.0004-.0008	PAD	17-14266

TRANSFORMERS		
T	TYPE	PART NO.
1	ANTENNA COILS	00-18094
2	OSCILLATOR COILS	
3	FIRST I.F. COIL	00-18095
4	SECOND I.F. COIL	00-18098
5	OUTPUT TRANS.	00-18093
6	POWER TRANS.	00-18099

MISCELLANEOUS UNITS		
SYMBOL	DESCRIPTION	PART NO.
L	DIAL LIGHT BULB - MAZDA 44	17-13805
P1	SPEAKER PLUG (PART OF SPEAKER)	———
P2	LINE CORD & PLUG ASSEMBLY	17-15781E
S1	SPEAKER SOCKET	17-13249
SPK	SPEAKER	17-15960
SW1	A.C. LINE SWITCH (PART OF NO 17-18098)	———
SW2	BAND SWITCH	17-18086

I.F. PEAK 455 K.C.
BROADCAST BALANCE AT 1400 K.C.
PAD AT 600 K.C.
SHORTWAVE BALANCE AT 15 M.C.
CHECK AT 7 M.C.
NOBLITT-SPARKS INDUSTRIES, INC.,
COLUMBUS, INDIANA.

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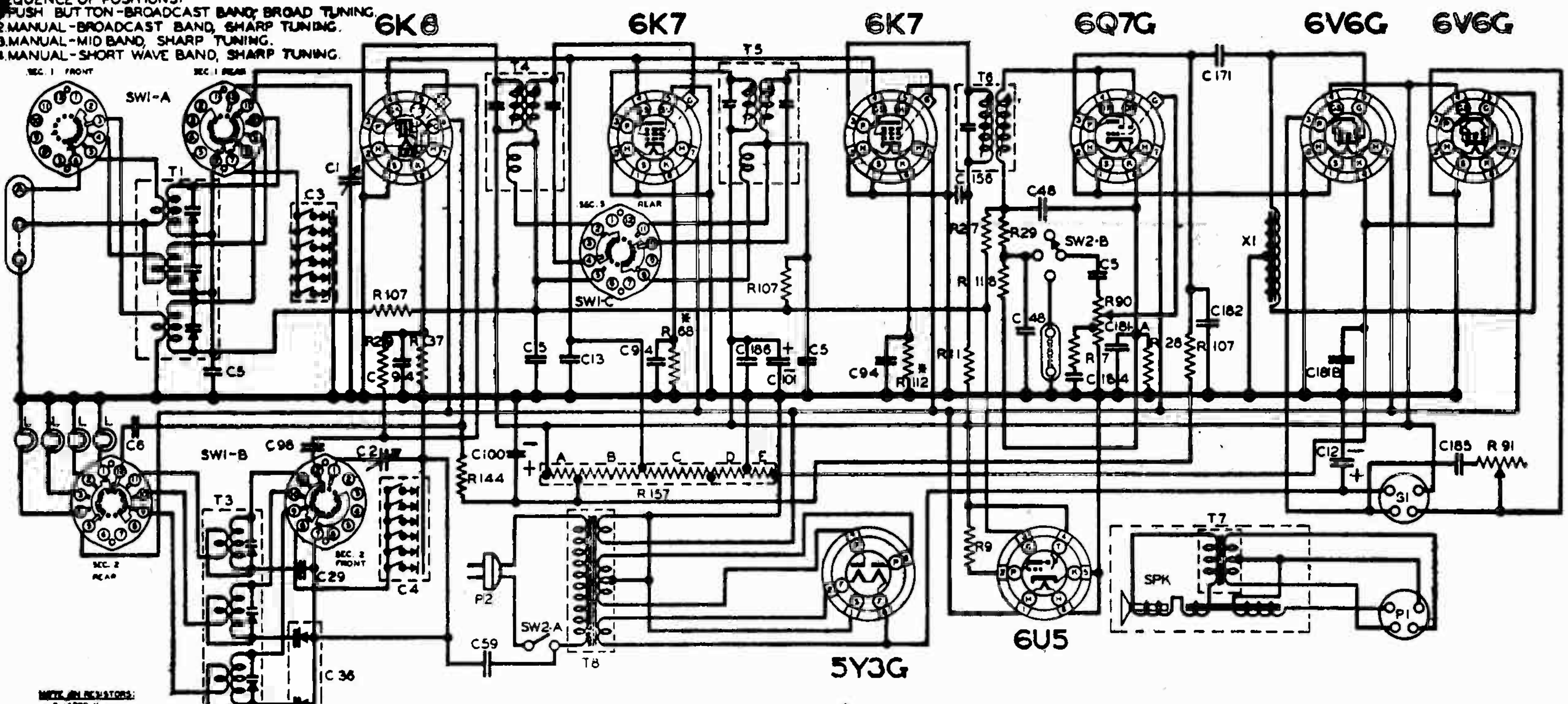
85

Arvin Model 92

Radio Chassis RE31

SWITCH SHOWN IN PUSH-BUTTON TUNING POSITION.
SEQUENCE OF POSITIONS:
1.PUSH BUTTON-BROADCAST BAND, BROAD TUNING.
2.MANUAL-BROADCAST BAND, SHARP TUNING.
3.MANUAL-MID BAND, SHARP TUNING.
4.MANUAL-SHORT WAVE BAND, SHARP TUNING.



NOTE ON RESISTORS:
K = 1,000 X
M = 1,000,000 X

Ω NOTE: MAY BE VARIED 400 TO 8,000 OHMS TO CONTROL SENSITIVITY.

NOTE
R157
A - 1680 OHMS
B - 6310 "
C - 4830 "
D - 148 "
E - 170 "

RESISTORS				
R	OHM	W	PART NO.	
7	20K	½	17-2072	
144	40K	¼	17-14231	
9	1M	¼	17-2080	
11	8K	¼	17-4202	
27	2M	¼	17-4788	
28	1500	¼	17-4205	
29	50K	¼	17-2090	
37	300	¼	17-14033	
118	300K	¼	17-14163	
112	500	¼	17-14177	
68	8K	¼	17-4290	
90	500K	VC	17-137958	
91	100K	T.C.	17-137960	
107	100K	¼	17-14173	
157	[illegible]	[illegible]	17-14251A	

CONDENSERS									
C	CAPACITY	VOLT	PART NO		C	CAPACITY	VOLT	PART NO	
1	TWO-GANG		17-15965		94	.1	200	17-4115	
2	VARIABLE				98	.000075	600	17-14122	
3	SIX-SECTION		17-15967		100	8. ELECT.	300	17-14124	
4	PUSH-BUTTON				101	16 PFG. ELECT	300	17-14126	
5	.05	200	17-14015		156	.05	400	17-4397	
6	.002	600	17-2063		181A	4.	15	17-14280	
12	8. ELECT	475	17-14001		181B	50	25		
13	.1	300	17-14048		182	.0002	600	17-14261	
29	.005	800	17-14022		184	.03	200	17-14263	
36	DOUBLE PAD	600	17-14054A		185	.03	600	17-14284	
48	.00025	600	17-4207		186	.25	400	17-14265	
59	.01	400	17-14615		171	.1	400	17-14236	

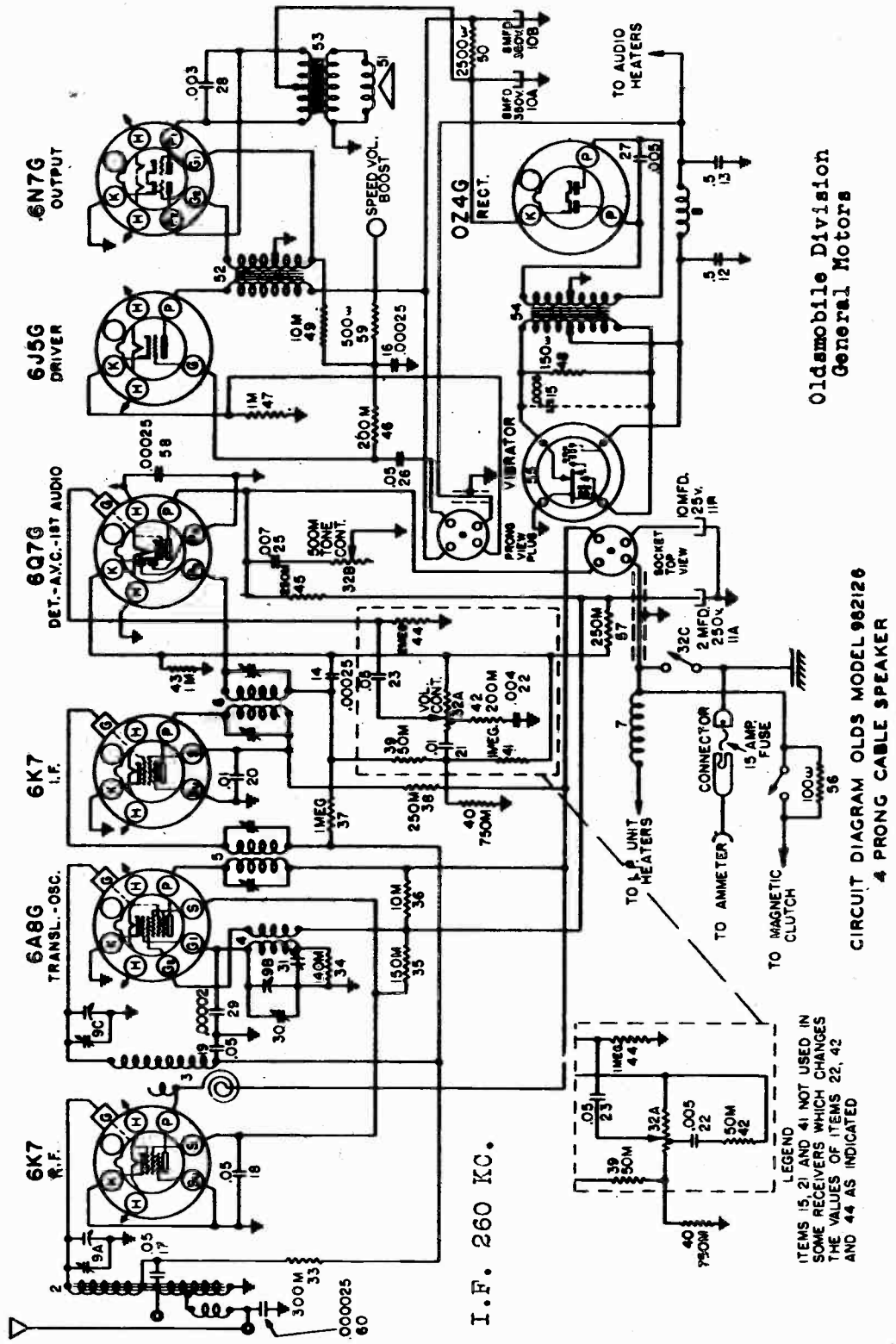
TRANSFORMERS & CHOKES			
T-X	TYPE	PART NO	
T	TRANSFORMERS		
1	ANTENNA COIL	00-16078	
3	OSCILLATOR COIL	00-16079	
4	FIRST I.F. COIL	00-16080	
5	SECOND I.F. COIL	00-16081	
6	THIRD I.F. COIL	00-16082	
7	OUTPUT TRANS.	17-16050	
	(PART OF SPK 17-16049)		
8	POWER TRANS.	00-15972	
X	CHOKES		
1	INPUT CHOKE	00-15966	

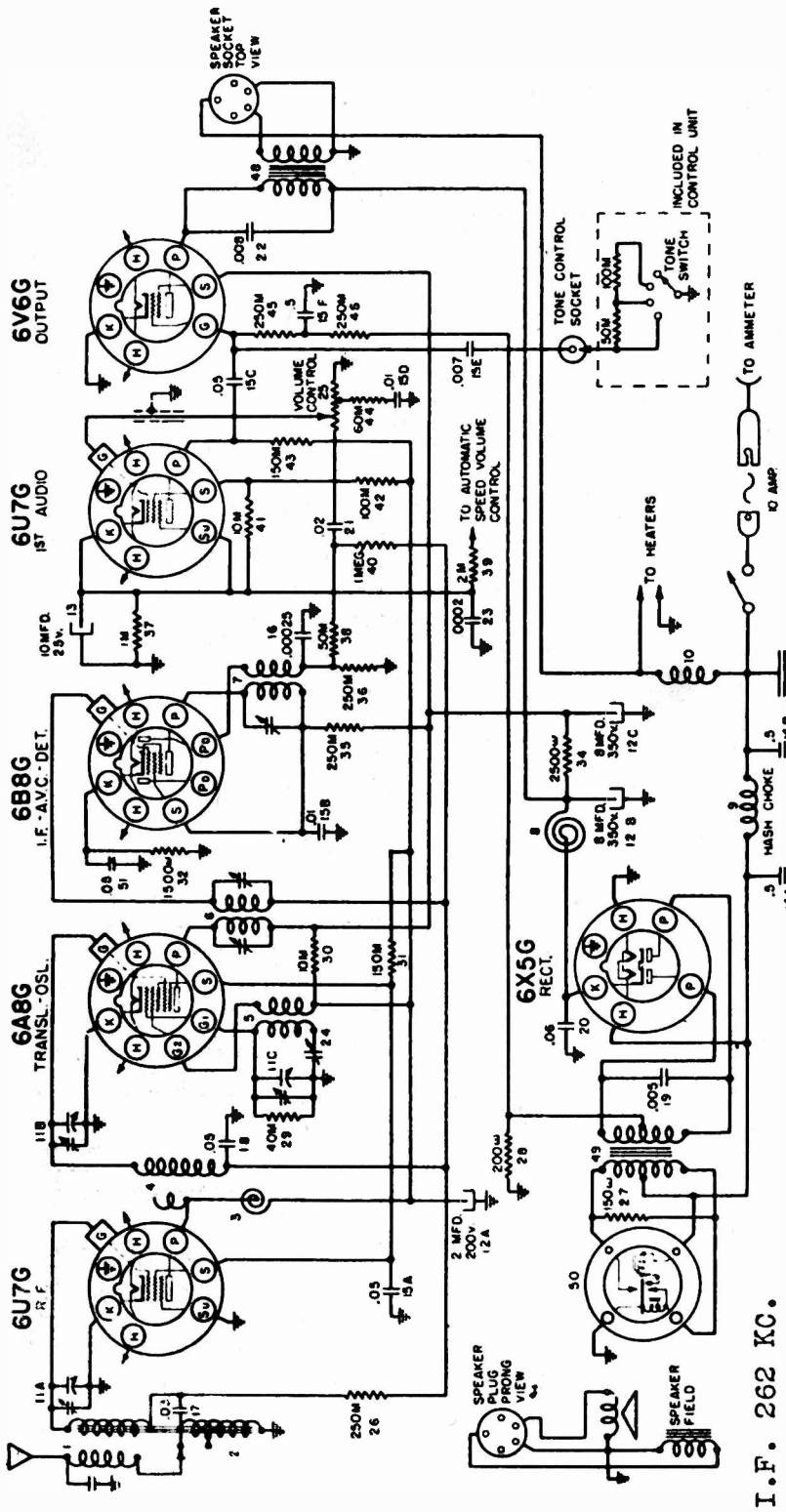
MISCELLANEOUS UNITS			
SYMBOL	DESCRIPTION	PART NO.	
L	DIAL LIGHT BULB - MAZDA 51	17-13904	
P1	SPEAKER PLUG	——	
P2	LINE CORD & PLUG ASSEMBLY	17-15791E	
S1	SPEAKER SOCKET	17-13249	
SPK	SPEAKER	17-16049	
SW1	BAND SWITCH, PUSH-BUTTON & MANUAL TUNING SWITCH	17-15952	
SW2	AC & PHONO SWITCH	17-16014	

PUSH BUTTON RANGES:
READING FROM LEFT TO RIGHT.
1. 540 TO 1000 K.C.
2. 550 TO 1050 K.C.
3. 565 TO 1050 K.C.
4. 725 TO 1360 K.C.
5. 750 TO 1440 K.C.
6. 1000 TO 1600 K.C.

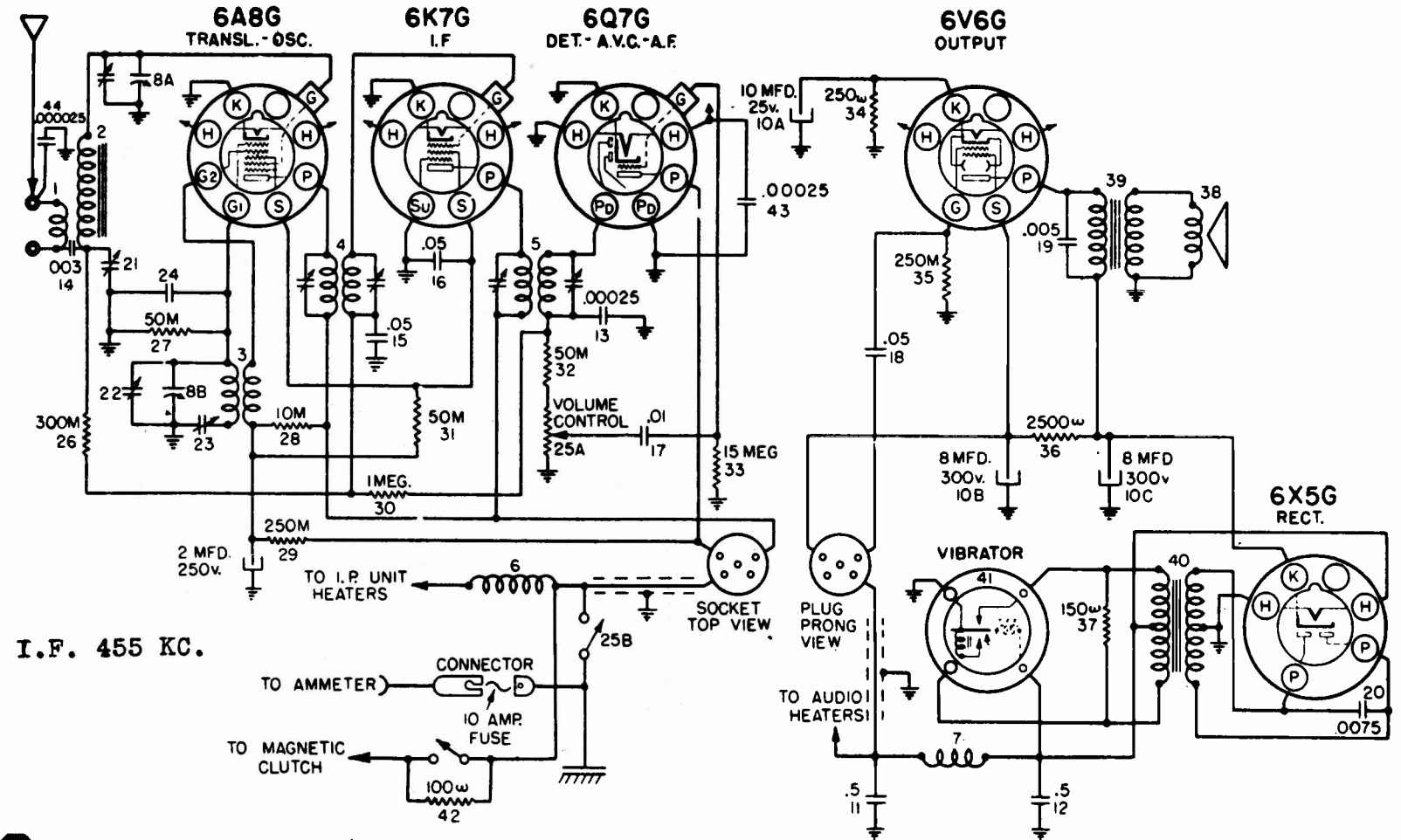
I.F. PEAK 455 K.C.
3 BANDS { BALANCE 1.4M.C. PAD .60M.C. / BALANCE 5.0M.C. CHECK 2.0 M.C. / BALANCE 15.0M.C. CHECK 6.0M.C. }

NOBLITT-SPARKS INDUSTRIES, Inc.
Columbus, Indiana


6N7G OUTPUT
6J5G DRIVER
6Q7G DET.-A.V.C.-1ST AUDIO
6K7 I.F.
6A8G TRANSL.-OSC.
6K7 R.F.
0Z4G RECT.
VIBRATOR
SPEED VOL. BOOST
TO AUDIO HEATERS
TO I.F. UNIT HEATERS
TO AMMETER
TO MAGNETIC CLUTCH
CONNECTOR
15 AMP. FUSE
I.F. 260 KC.
LEGEND
ITEMS 15, 21 AND 41 NOT USED IN SOME RECEIVERS WHICH CHANGES THE VALUES OF ITEMS 22, 42 AND 44 AS INDICATED
Oldsmobile Division General Motors
CIRCUIT DIAGRAM OLDS MODEL 982126
4 PRONG CABLE SPEAKER



Oldsmobile Division, General Motors, Model 982153

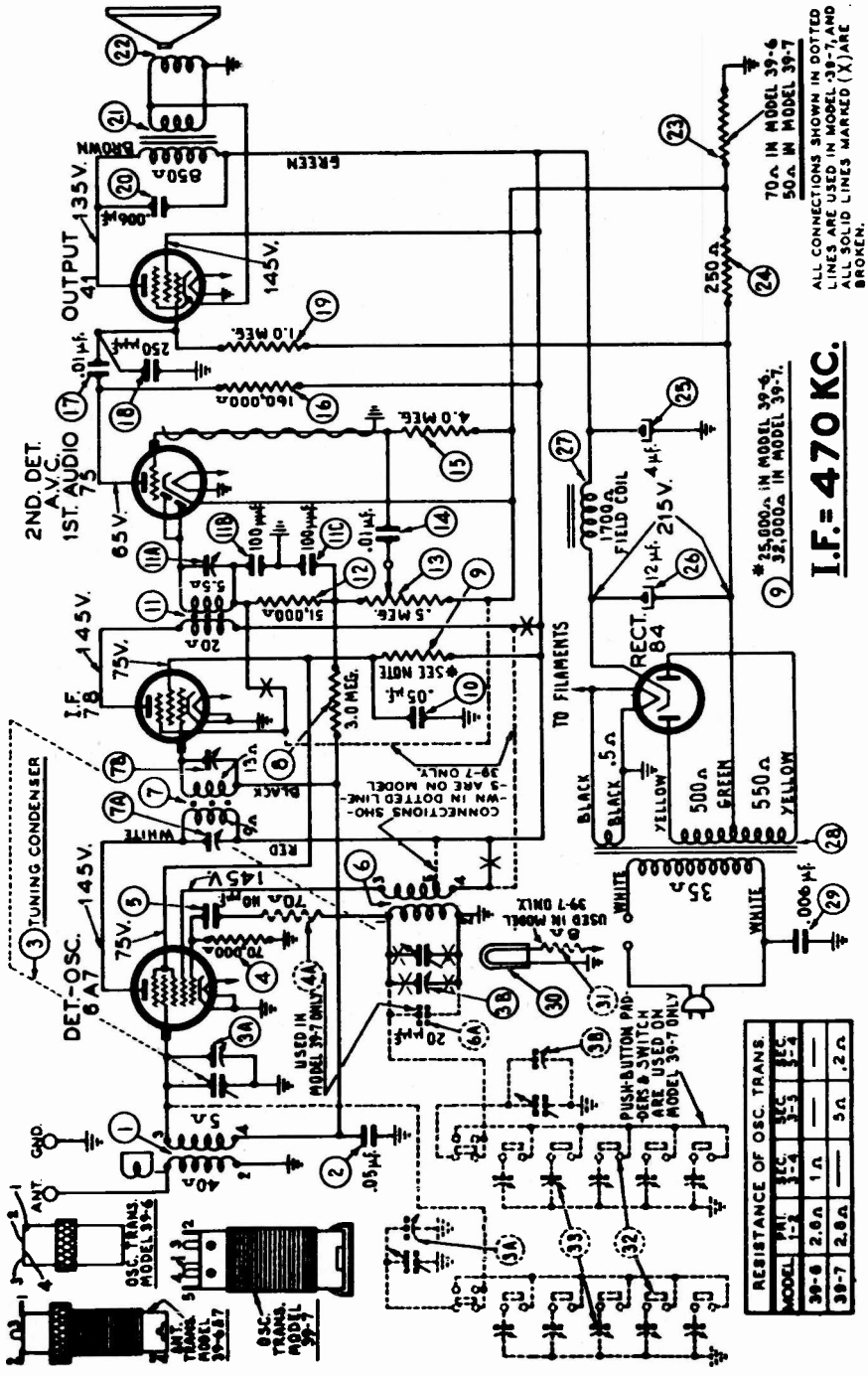


CIRCUIT DIAGRAM OLDS MODEL 982127

Oldsmobile Division
General Motors

Philco Radio & Television Corporation

Models 39-6, 39-7.



RESISTANCE OF OSC. TRANS.				
MODEL	PRI. 1-2	SEC. 3-4	SEC. 3-5	SEC. 4-5
39-6	2.0Ω	1Ω	—	—
39-7	2.0Ω	—	3Ω	.2Ω

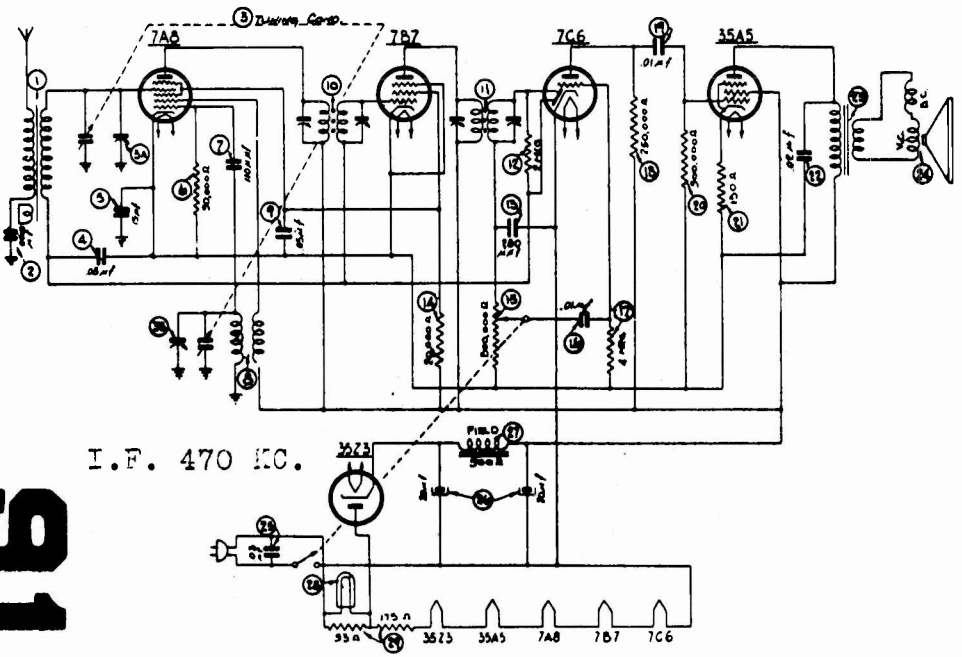
Operation in Order	SIGNAL GENERATOR			RECEIVER			Special Instructions
	Output Connections to Receiver	Dummy Antenna Note A	Dial Setting	Dial Setting	Control Setting	Adjust Compensators in Order	
1	6A7	.1 mf.	470 K.C.	580 K.C.	Vol. Cont. Max.	11A, 7B, 7A	Adjust for max. output
2	Ant. Lead	100 mf.	1550 K.C.	1550 K.C.	Vol. Cont. Max.	3B, 3A	Adjust for max. output Note A, B

NOTE A—The "Dummy Antenna" consists of a condenser connected in series with the signal generator output lead (high side). Use the capacity as specified in each step of the above procedure.

NOTE B—DIAL CALIBRATION: With the tuning condenser in "maximum capacity" position (plates fully meshed), set the dial pointer between the two horizontal lines at the low frequency end of the scale (550 K.C.).

PHILCO MODEL TH-4

1	Antenna Transformer.....	17	Resistor (4 meg., 1/3 watt).....
2	Tubular Condenser(.0015 mf.,200v.	18	Resistor (250,000 ohms, 1/3 watt
3	Tuning Condenser.....	19	Tubular Condenser (.01 mf., 400v
4	Tubular Condenser (.05 mf., 400v.	20	Resistor (500,000 ohms, 1/3 watt
5	Tubular Condenser (.15 mf., 400v.	21	Resistor (130 ohms, ½ watt).....
6	Resistor (50,000 ohms, 1/3 watt).	22	Tubular Condenser (.02 mf., 400v
7	Mica Condenser (110 mmf.).....	23	Output Transformer
8	Oscillator Transformer.....		For Speaker 36-1469-1.....
9	Tubular Condenser (.05 mf., 400v.		For Speaker 36-1469-9.....
10	1st I.F. Transformer.....	24	Speaker.....
11	2nd I.F. Transformer.....	25	Tubular Condenser (.03 mf., 400v
12	Resistor (2 meg., 1/3 watt).....	26	Electrolytic Condenser(20-20mf.
13	Mica Condenser (250 mmf.).....	27	Field Coil -- Part of Speaker
14	Resistor (20,000 ohms, 1/3 watt).	28	Pilot Lamp.....
15	Volume Control 500,000 ohms).....	29	Line Resistor.....
16	Tubular Condenser (.01 mf., 200v.		



Setting Push-Buttons on Models: -- 39-25 39-30 39-31 39-35 39-40 39-45

Circuits	Frequency Range
1 and 2	540 to 1030 kilocycles
3 and 4	670 to 1160 kilocycles
5 and 6	900 to 1470 kilocycles
7 and 8	1170 to 1600 kilocycles

(C) Turn the receiver Tuning Range Selector to position two ("Manual Tuning") and tune the receiver to the station to be set on the first button.

(D) Plug the output leads of the Station Setter into the "High" and "Gnd" jacks, and turn the output controls to maximum. Turn the modulation control to "Modulation Off." Connect the output lead of the Station Setter to the "ANT" and "GND" terminals of the receiver and tune to the frequency of the station being received. As the indicator is slowly tuned through the frequency of the station there will be two points at which a high pitched swish will be heard, one above and one below the frequency of the station. When the indicator is on the frequency of the station, minimum high pitched swish will be heard.

(E) Set the modulation control of the Station Setter for "Modulation On." The modulated signal of the Station Setter will then be heard through the receiver.

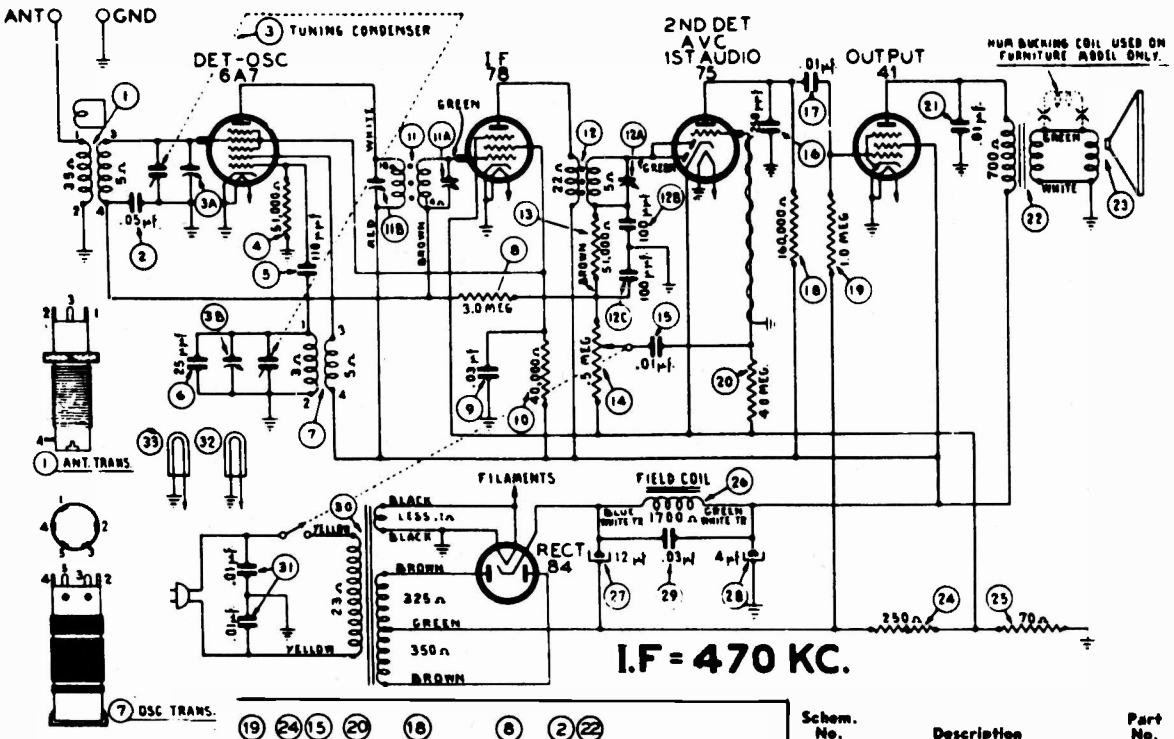
(F) Turn the receiver Tuning Range Selector to position one (Automatic Tuning) and push in the first button. Using the Part No. 45-2610 Insulated Screw Driver, turn the number 1 "OSC" screw until the modulated signal of the Station Setter is tuned in to maximum volume. Then adjust the number 1 "ANT" screw for maximum signal.

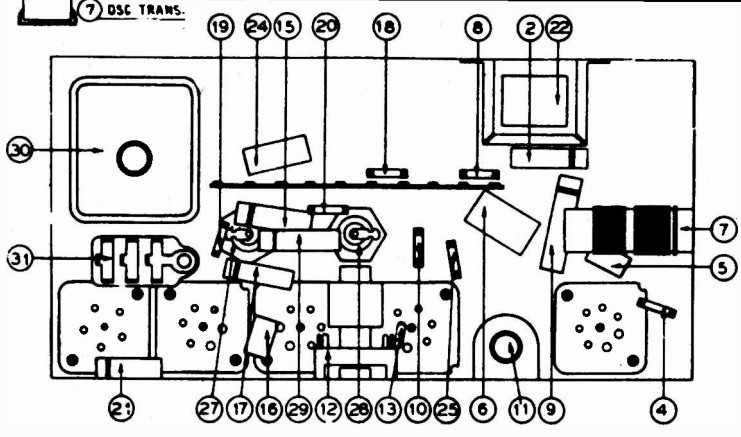
(G) Remove the output lead of the Philco Station Setter from the "ANT" terminal of the receiver and turn its indicator off the frequency of the station. The program of the desired station will then be heard on the receiver.

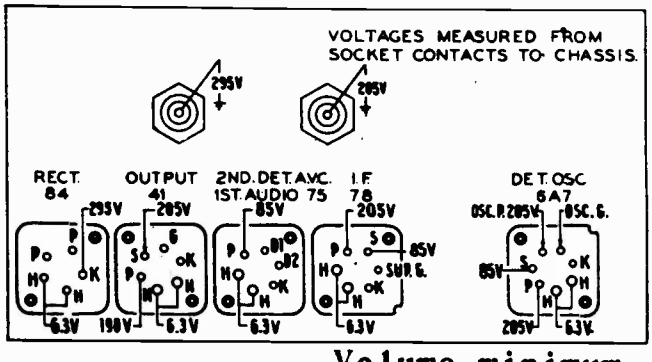
(H) With the volume of the receiver low, slowly turn the number 1 "OSC" back and forth until maximum output is received. Repeat the same procedure for the number 1 "ANT" screw.

After setting up the first station, the same procedure given under (C) to (H) is used for the other stations.

PHILCO — *Model 39-17, Codes 121-122*







Volume minimum, no signal, line voltage 115 v.

Schem. No.	Description	Part No.
1	Antenna Transformer	32-3039
2	Condenser (.05 mf. tubular)	30-4519
3	Tuning Condenser Assembly	31-2265
4	Resistor (51,000 ohms, ½ watt)	33-351339
5	Condenser (110 mmf. mica)	30-1031
6	Condenser (25 mmf., silver plated mica)	30-1112
7	Oscillator Transformer	32-3040
8	Resistor (3.0 megohm)	33-530339
9	Condenser (.03 mf. tubular)	30-4449
10	Resistor (40,000 ohms, ½ watt)	33-340339
11	1st I. F. Transformer Assembly	32-3075
12	2nd I. F. Transformer Assembly	32-2944
13	Resistor (51,000 ohms, ½ watt)	33-351339
14	Volume Control and On-Off Switch	33-5276
15	Condenser (.01 mf. tubular)	30-4479
16	Condenser (mica), 250 mmf.	30-1032
17	Condenser (.01 mf. tubular)	30-4572
18	Resistor (16,000 ohms, ½ watt)	33-316339
19	Resistor (1.0 megohm, ½ watt)	33-510339
20	Resistor (4.0 megohm, ½ watt)	33-540339
21	Condenser (.01 mf. tubular)	30-4572
22	Output Transformer	32-7980
23	Cone and Voice Coil Assembly for Speaker (Part No. 36-1426-1)	36-4083
	(Part No. 36-1426-3)	36-4085
	Cone and Voice Coil Assembly for Speaker (Part No. 36-1440)	36-4086
24	Resistor (250 ohms, wire wound)	33-125431
25	Resistor (70 ohms, ½ watt)	33-070339
26	†Field Coil for Speaker (Pt. No. 36-1426)	
	†Field Coil for Speaker (Pt. No. 36-1440)	
27	Condenser (12 mf. electrolytic)	30-2319
28	Condenser (4 mf. electrolytic)	30-2236
29	Condenser (.03 mf. tubular)	30-4449
30	Power Transformer (115 volts, 50-60 cycles)	32-7974
31	Condenser (.01 mf.—.01 mf., bakelite)	3903DG

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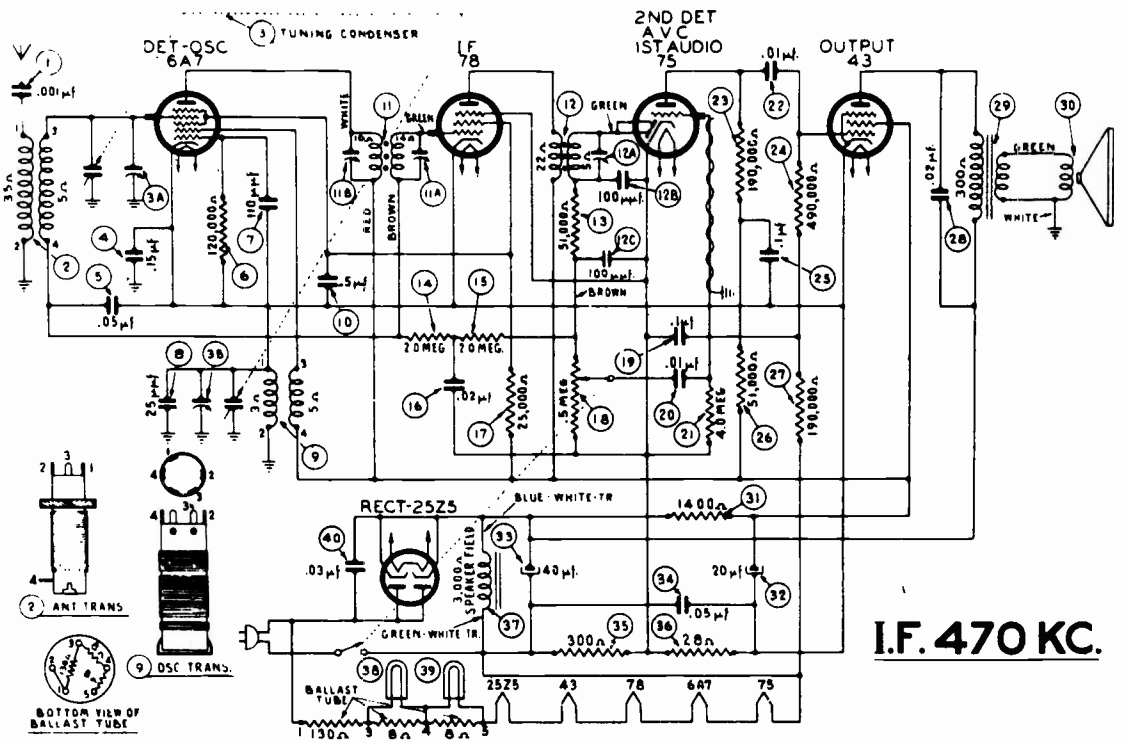
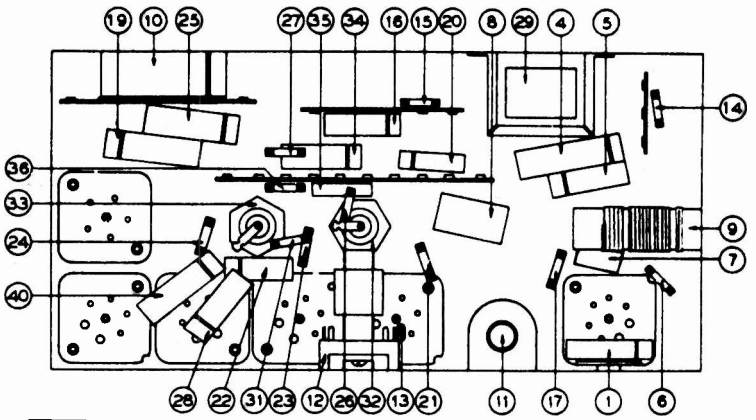
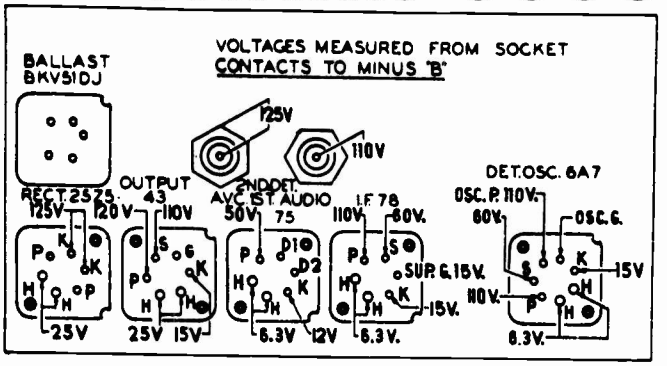
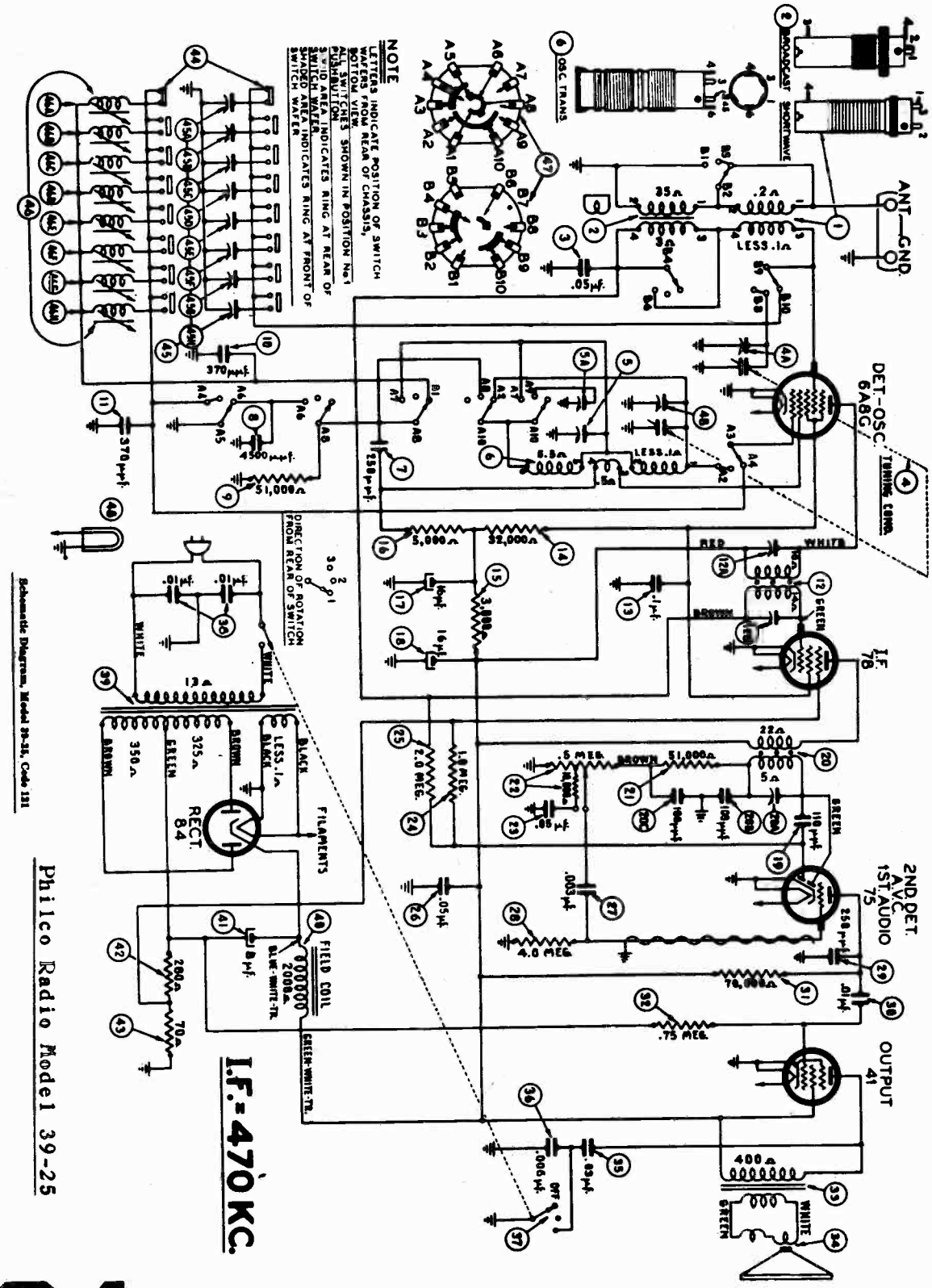
PHILCO *Model 39-18, Codes 121 & 122*



Schem. No.	Description	Part No.
1	Condenser (.001 mfd. tubular)	30-4453
2	Antenna Transformer	32-3039
3	Tuning Condenser Assembly	31-2265
4	Condenser (.15 mfd. tubular)	30-4505
5	Condenser (.05 mfd. tubular)	30-4519
6	Resistor (120,000 ohms, ½ watt)	33-412339
7	Condenser (110 mmf., mica)	30-1031
8	Condenser (25 mmf., silver plated mica)	30-1112
9	Oscillator Transformer	32-3040
10	Condenser (.5 mf., tubular)	30-4551
11	1st I. F. Transformer Assembly	32-3075
12	2nd I. F. Transformer Assembly	32-2944
13	Resistor (51,000 ohms, ½ watt)	33-351339
14	Resistor (2.0 megohms, ½ watt)	33-520339
15	Resistor (2.0 megohms, ½ watt)	33-520339
16	Condenser (.02 mf., tubular)	30-4516
17	Resistor (25,000 ohms, ½ watt)	33-325339
18	Volume Control and On-Off Switch	33-5276
19	Condenser (.1 mf., tubular)	30-4499
20	Condenser (.01 mf., tubular)	30-4572
21	Resistor (4.0 megohms, ½ watt)	33-540339
22	Condenser (.01 mf., tubular)	30-4572
23	Resistor (190,000 ohms, ½ watt)	33-419339
24	Resistor (490,000 ohms, ½ watt)	33-449339
25	Condenser (.1 mf., tubular)	30-4499
26	Resistor (51,000 ohms, ½ watt)	33-351339
27	Resistor (190,000 ohms, ½ watt)	33-419339
28	Condenser (.02 mf., tubular)	30-4215
31	Resistor (1400 ohms, ½ watt)	33-214339
32	Condenser (20 mf., electrolytic)	30-2245
33	Condenser (40 mf., electrolytic)	30-2332
34	Condenser (.05 mf., tubular)	30-4444
35	Resistor (300 ohms, wire wound)	33-130431
36	Resistor (28 ohms, ½ watt)	33-028339

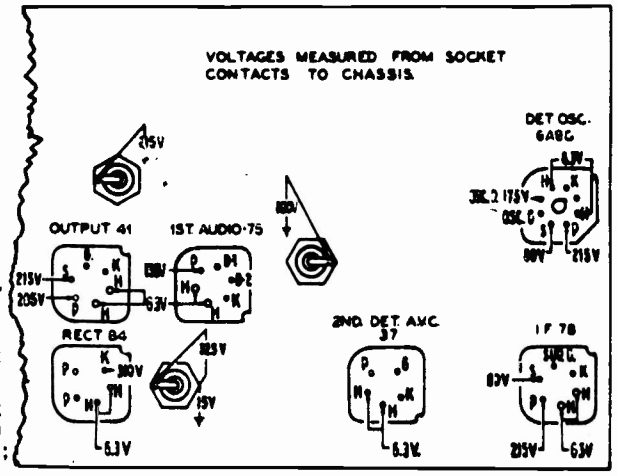





ANT—GND
BROADCAST
SHORTWAVE
OSC. TRANS
DET.-OSC. 6A8G
TUNING CONN.
I.F. 78
2ND DET. AVC. 1ST AUDIO 75
OUTPUT 41
RECT. 84
FILAMENTS
FIELD COIL 2000Ω
I.F. = 470 KC.
NOTE
LETTERS INDICATE POSITION OF SWITCH WAFERS FROM REAR OF CHASSIS, BOTTOM SWITCHES SHOWN IN POSITION No. 1 PUSHBUTTON
S.P.I.D. AREA INDICATES RING AT REAR OF SWITCH WAFER
SHADED AREA INDICATES RING AT FRONT OF SWITCH WAFER
DIRECTION OF ROTATION FROM REAR OF SWITCH
Schematic Diagram, Model 39-25, Code 121
Philco Radio Model 39-25

Models 39-30, 31 and 39-35, Code 121

PHILCO



TYPE OF CIRCUIT:

Models 39-30 and 39-35 code 121 are similar with the exception of the type of Cabinets, Speakers and Power Transformers. These differences are shown on the Replacement Parts list and circuit diagram.

Models 39-31XF and 39-31XK are identical to Model 39-35, Code 121 with the exception of cabinets.

The Model 39-35, code 121 specifications, diagram and replacement parts listed below and on the following pages apply to Models 39-31XF and XK.

A.C. operated; superheterodyne circuit with two tuning ranges, covering standard broadcast (540 K.C. to 1720 K.C.) and short-wave (4.9 M.C. to 18.0 M.C.) frequencies; Automatic Volume Control; and pentode output.

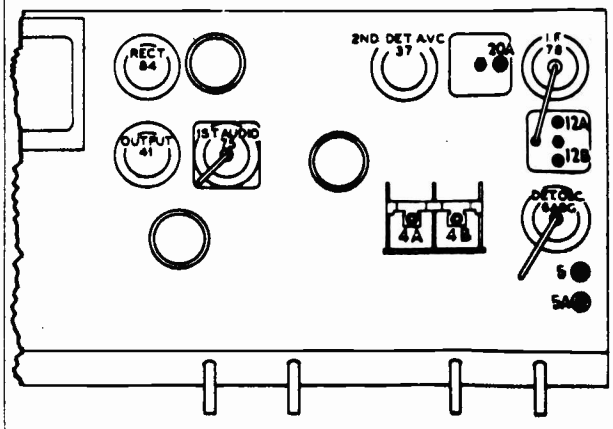
POWER SUPPLY:

Voltage, 115 volts. Frequency, 50-60 cycles. Power consumption 45 watts.

INTERMEDIATE FREQUENCY: 470 K.C.

TUNING RANGES:

540 K.C. to 1720 K.C.; 4.9 M.C. to 18.0 M.C.



Alignment of Compensators

EQUIPMENT REQUIRED:

(1) Signal Generator; Philco Model 077 Signal Generator which has a fundamental frequency range from 115 to 30,000 K.C. is the correct instrument for this purpose.

(2) Output meter, Philco Model 027 Circuit Tester, incorporates a sensitive output meter and is recommended.

(3) Philco Fiber Handle Screw Driver, Part No. 27-7059, and Fiber Wrench, Part No. 3164.

OUTPUT METER:

Two indicating devices for aligning of the receiver can be used; either an audio output meter or a vacuum tube voltmeter. The method of connecting the audio output meter is given in the next paragraph. The procedure for connecting the vacuum tube voltmeter as an aligning indicator will be found on Page 4. Where greater accuracy of the various tuned circuits is desired, the vacuum tube voltmeter is recommended as an aligning device.

The Philco 027 Output Meter is connected to the plate and cathode terminals of the type 41 tube. After connecting the Output Meter, adjust compensators in the order as given below.

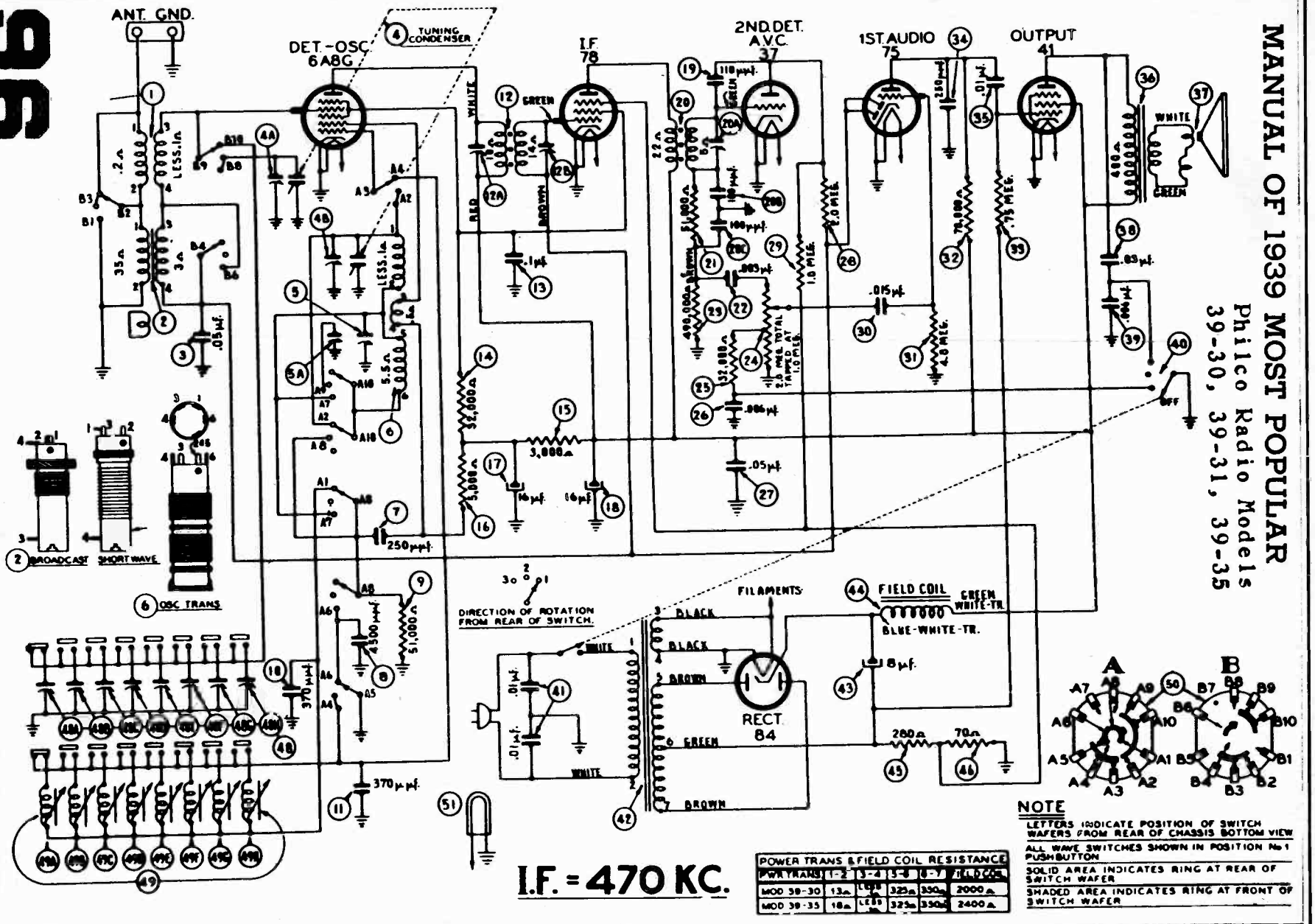
Operations	Signal Generator			Receiver		
	Output Connections To Receiver	Dummy Antenna (NoteA)	Dial Setting	Dial Setting	Control Settings	Adjust Compensators In Order
1	6A8G Grid	.1 mf.	470 K.C.	580 K.C.	Vol. Cont. Max.	(20A) (12B) (12A)
2	Ant. Ter.	100 mmf.	18.0 M.C.	18.0 M.C.	Vol. Cont. Max.	(4B)
3	Ant. Ter.	100 mmf.	1550 K.C.	1550 K.C.	Vol. Cont. Max.	(5) (4A)
4	Ant. Ter.	100 mmf.	580 K.C.	580 K.C.	Vol. Cont. Max.	(5A)
5	Ant. Ter.	100 mmf.	1550 K.C.	1550 K.C.	Vol. Cont. Max.	(5)

A--The "Dummy Antenna" consists of a condenser connected in series with the signal generator output lead (high side). Use the capacity as specified in each step of the above procedure.

B--DIAL CALIBRATION: In order to adjust the receiver correctly the dial pointer must be aligned to track properly with the tuning condenser. To adjust the dial proceed as follows: With the tuning condenser closed, set the dial pointer on the extreme left index line at the low frequency end of the scale.

MANUAL OF 1939 MOST POPULAR

Philco Radio Models
39-30, 39-31, 39-35



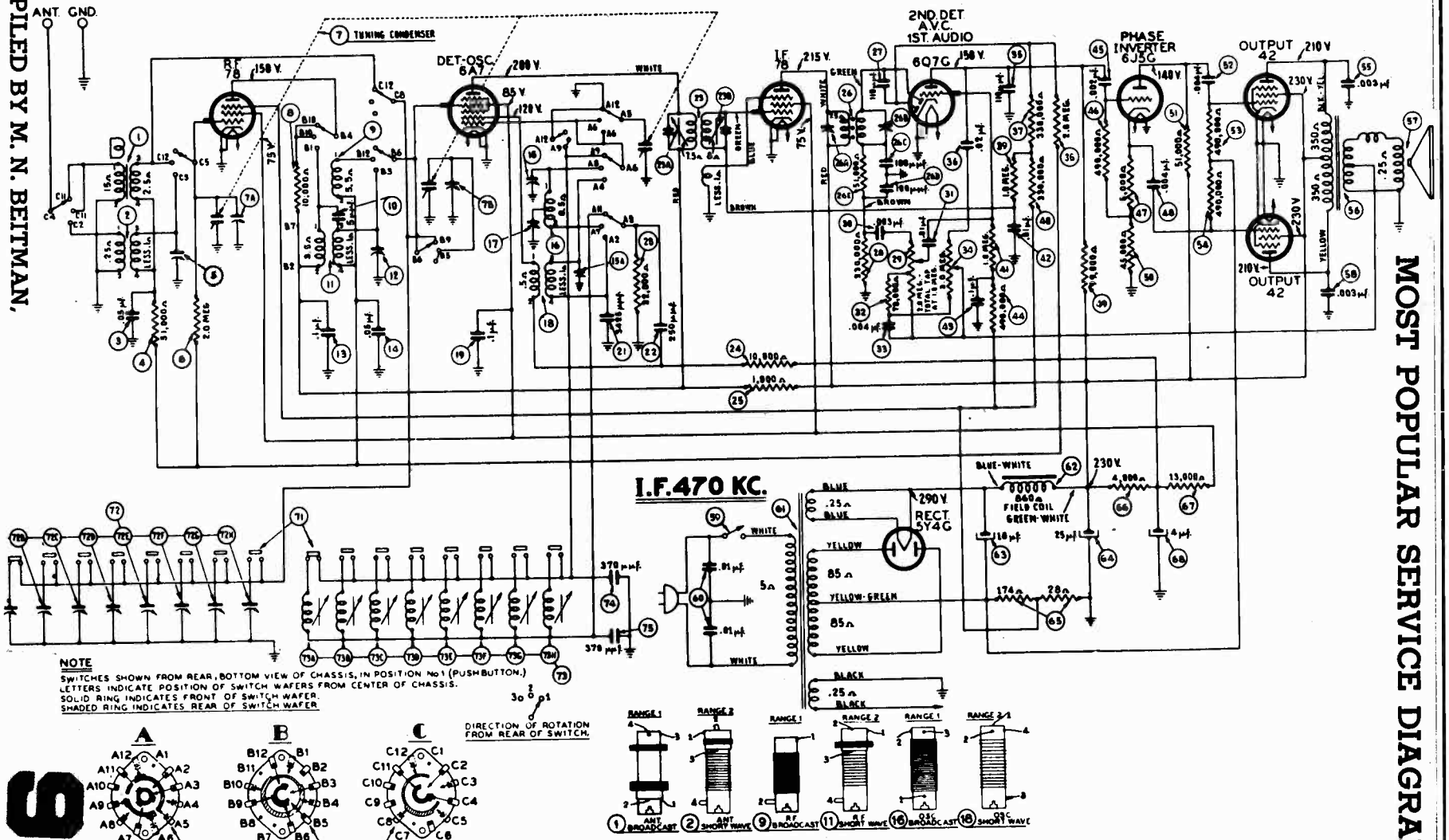
I.F. = 470 KC.

POWER TRANS & FIELD COIL RESISTANCE					
PWR TRANS	1-2	3-4	5-6	6-7	FIELD COIL
MOD 39-30	13Ω	LESS THAN 1Ω	325Ω	350Ω	2000Ω
MOD 39-35	18Ω	LESS THAN 1Ω	325Ω	350Ω	2400Ω

COMPILED BY M. N. BEITMAN, SUPREME PUBLICATIONS

COMPILED BY M. N. BEITMAN.

Model 39-40, Code 121

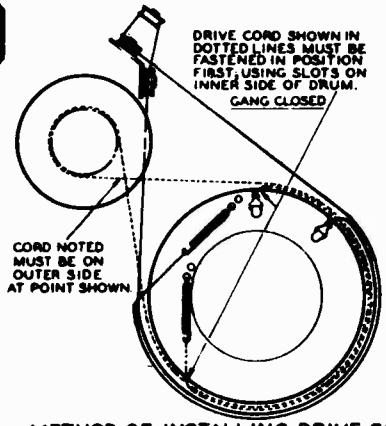


MOST POPULAR SERVICE DIAGRAMS

97

Philco Radio & Television Corp.

PHILCO Model 39-40, Code 121



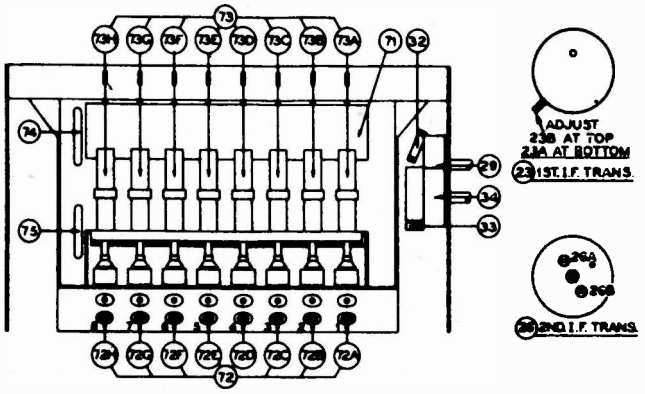
METHOD OF INSTALLING DRIVE CORDS ON TUNING CONDENSER DRUM

Operations	SIGNAL GENERATOR			RECEIVER		
	Output Connections to Receiver	Dummy Antenna (Note A)	Dial Setting	Dial Setting	Control Setting	Adjust Compensators to Max. Reading
1	6A7	.1 mf	470 KC.	580 KC.	Vol. Max. Range Switch Broadcast	26B, 26A, 23B, 23A
2	Ant. Ter.	150 mmf	1550 KC.	1550 KC.	"	15, 7B, 7A
3	Ant. Ter.	150 mmf	580 KC.	580 KC.	"	17
4	Ant. Ter.	150 mmf	1550 KC.	1550 KC.	"	15
5	Ant. Ter.	400 ohms	18.0 MC.	18.0 MC.	Range Switch S. W.	15A, 12, 5

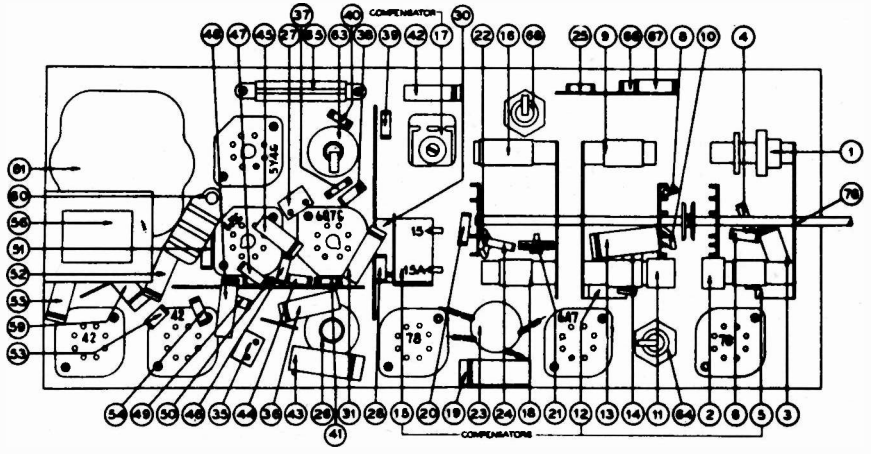
NOTE A—The "Dummy Antenna" consists of a condenser connected in series with the signal generator output lead (high side). Use the capacity as specified in each step of the above procedure.

NOTE B—Dial Calibration. In order to adjust the receiver correctly, the dial must be aligned to track properly with the tuning condenser. To adjust the dial, proceed as follows: With the tuning condenser closed (maximum capacity), set the dial pointer on the extreme left index line at the low frequency end of the broadcast scale. The arrangement of the drive cable is shown on page 3.

NOTE C—Compensators (7A) and (7B) are located on top of the tuning condenser. Compensator (7A) is the first one from the tuning drum side.

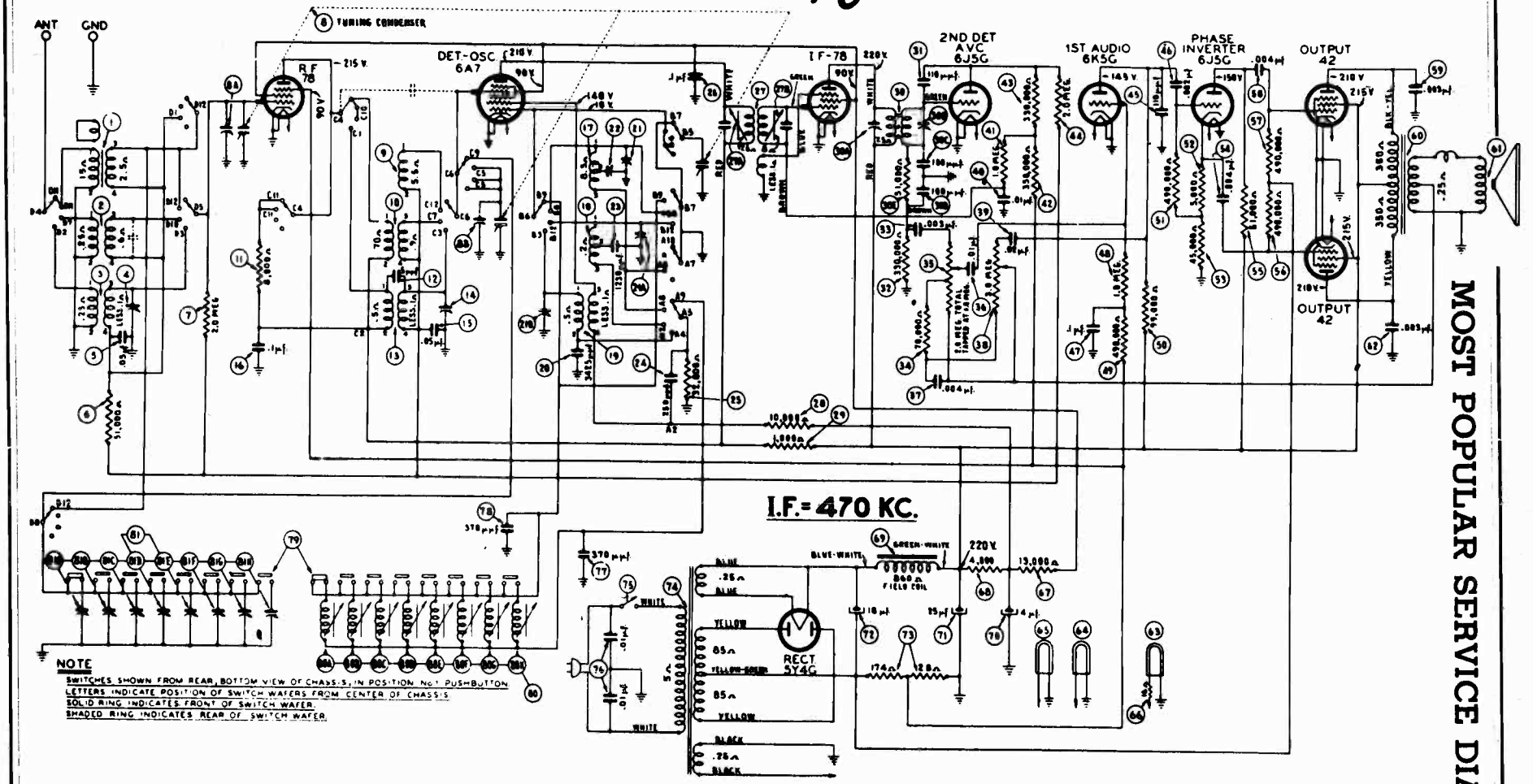


ELECTRIC AUTOMATIC PUSH BUTTON UNIT



PART LOCATIONS UNDERSIDE OF CHASSIS MODEL 39-40

Model 39-45, Code 121

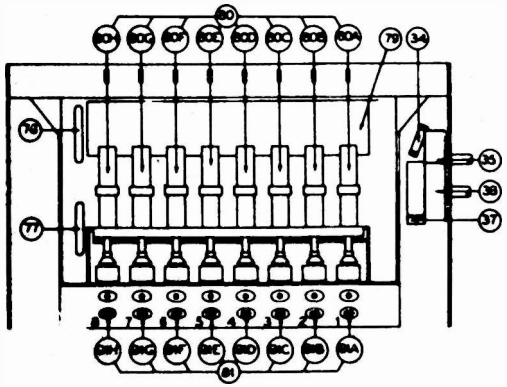


Operation	SIGNAL GENERATOR			RECEIVER			Special Instructions
	Output Connections to Receiver	Dummy Antenna (Note A)	Dial Setting	Dial Setting	Control Setting	Adjust Compensators to Max. Reading	
1	6A7	.1 mf	470 KC.	470 KC.	Vol. Max. Range Switch Broadcast	30B, 30A, 27B, 27A	
2	Antenna	150 mmf	1550 KC.	1550 KC.	"	21, 8B, 8A	See Note B and C
3	Antenna	150 mmf	580 KC.	580 KC.	"	22	Roll Tuning Condenser
4	Antenna	150 mmf	1550 KC.	1550 KC.	"	21	
5	Antenna	400 ohms	5.0 MC.	5.0 MC.	Range Switch Police	21A	
6	Antenna	400 ohms	18.0 MC.	18.0 MC.	Range Switch S. W.	21B, 14, 4	

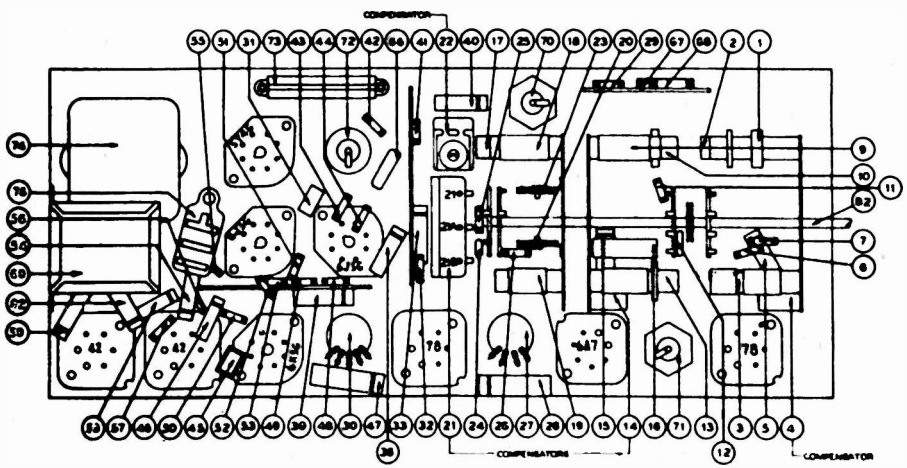
NOTE A—The "Dummy Antenna" consists of a condenser connected in series with the signal generator output lead (high side). Use the capacity as specified in each step of the above procedure.

NOTE B—Dial Calibration: In order to adjust the receiver correctly the dial must be aligned to track properly with the tuning condenser. To adjust the dial, proceed as follows: With the tuning condenser closed (maximum capacity), set the dial pointer on the extreme left index line at the low frequency end of the broadcast scale. The arrangement of the drive cable is shown on page 3.

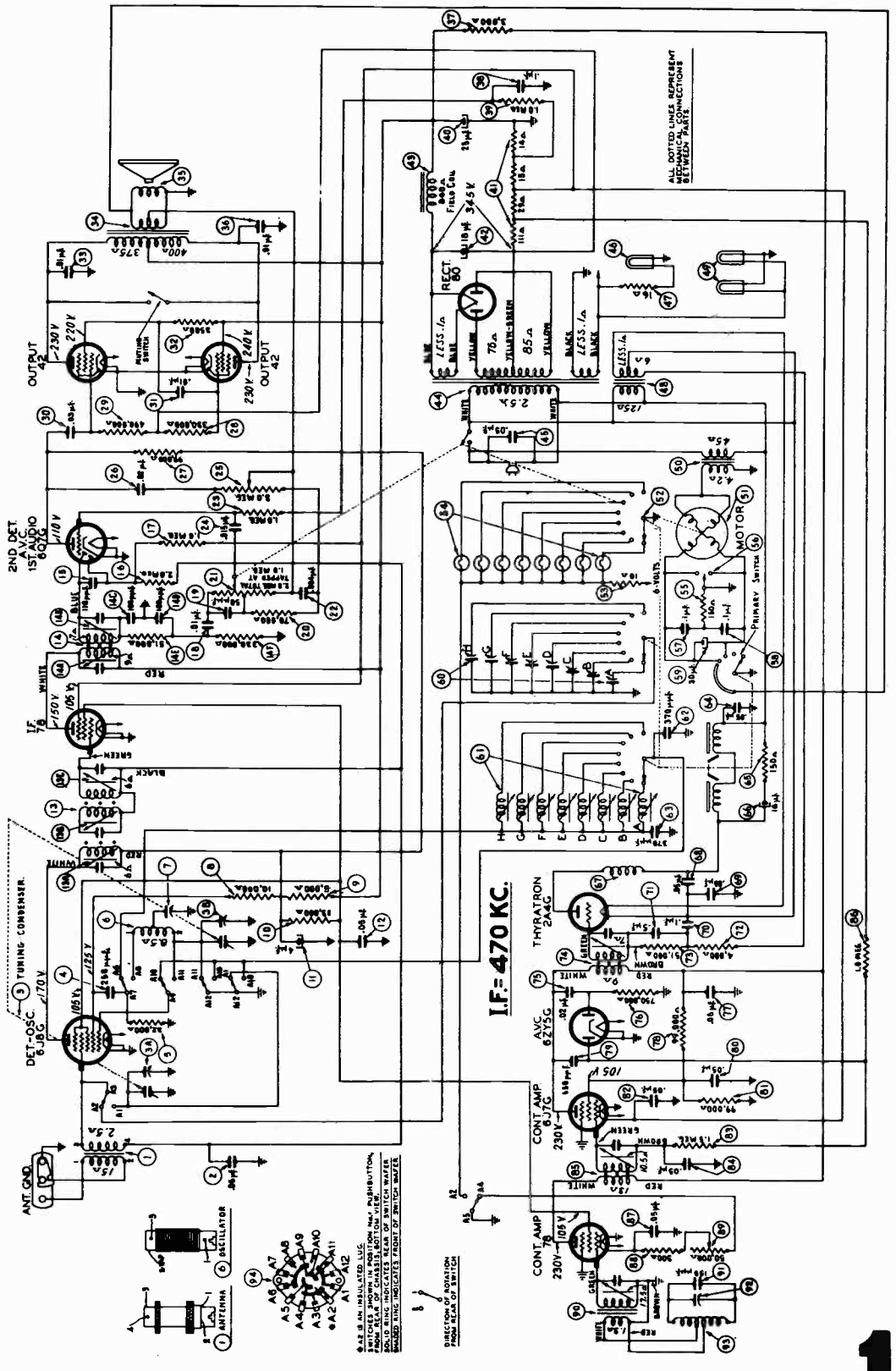
NOTE C—Compensators (8A) and (8B) are located on top of the tuning condenser. Compensator (8A) is the first one from the tuning drum side.



ELECTRIC AUTOMATIC PUSH BUTTON UNIT



PART LOCATIONS UNDERSIDE OF CHASSIS MODEL 39-45



MODEL 39-55 SCHEMATIC DIAGRAM AND SOCKET VOLTAGES.

Philco Radio & Television Corp.

Voltages measured from Socket Contacts to Chassis; Line Voltage, 115 V.A.C.; Volume Control, Minimum; Range Selector (Broadcast).

PHILCO *Models 39-55, 39-116*

ADJUSTING MYSTERY CONTROL FREQUENCY AMPLIFIER

The Mystery Control receivers are shipped with five (5) different control frequencies which range from 350 to 400 K.C. These are identified by code numbers appearing on the serial number ticket and on the rear of the chassis. These code numbers and frequencies are as follows:

Code 5—355 K.C.
Code 6—367 K.C.
Code 7—375 K.C.
Code 8—383 K.C.
Code 9—395 K.C.

The purpose of the different control frequencies is to prevent interaction between two Mystery Control receivers which are on the same floor or are exceptionally close together. When several Mystery Control receivers are to be located close together, it will be necessary to use different control frequencies to avoid interaction between the receivers. In order to prevent interaction between receivers, there should be a difference of 20 K.C. between their control frequencies.

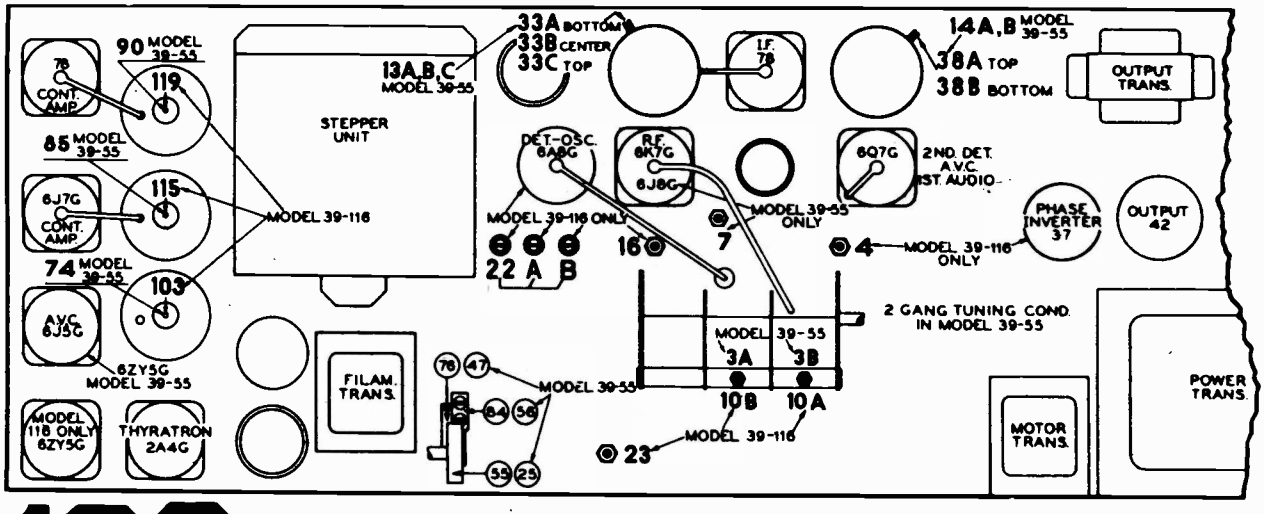
If three receivers are to be operated at the same time and are closely situated, it will be advisable to adjust the control frequency of the first set to 355 K.C., the second set to 375 K.C. and the third to 395 K.C.

When realigning or changing the control frequency of the Mystery Control circuit, a Philco Model 077 Signal Generator with a coil of wire (about 4 or 5 turns—12" in diameter) attached to the output terminals is required. The leads between the coil of wire and Signal Generator should be long enough so that the coil of wire can be placed near the large secondary inductor in the bottom of the receiver cabinet.

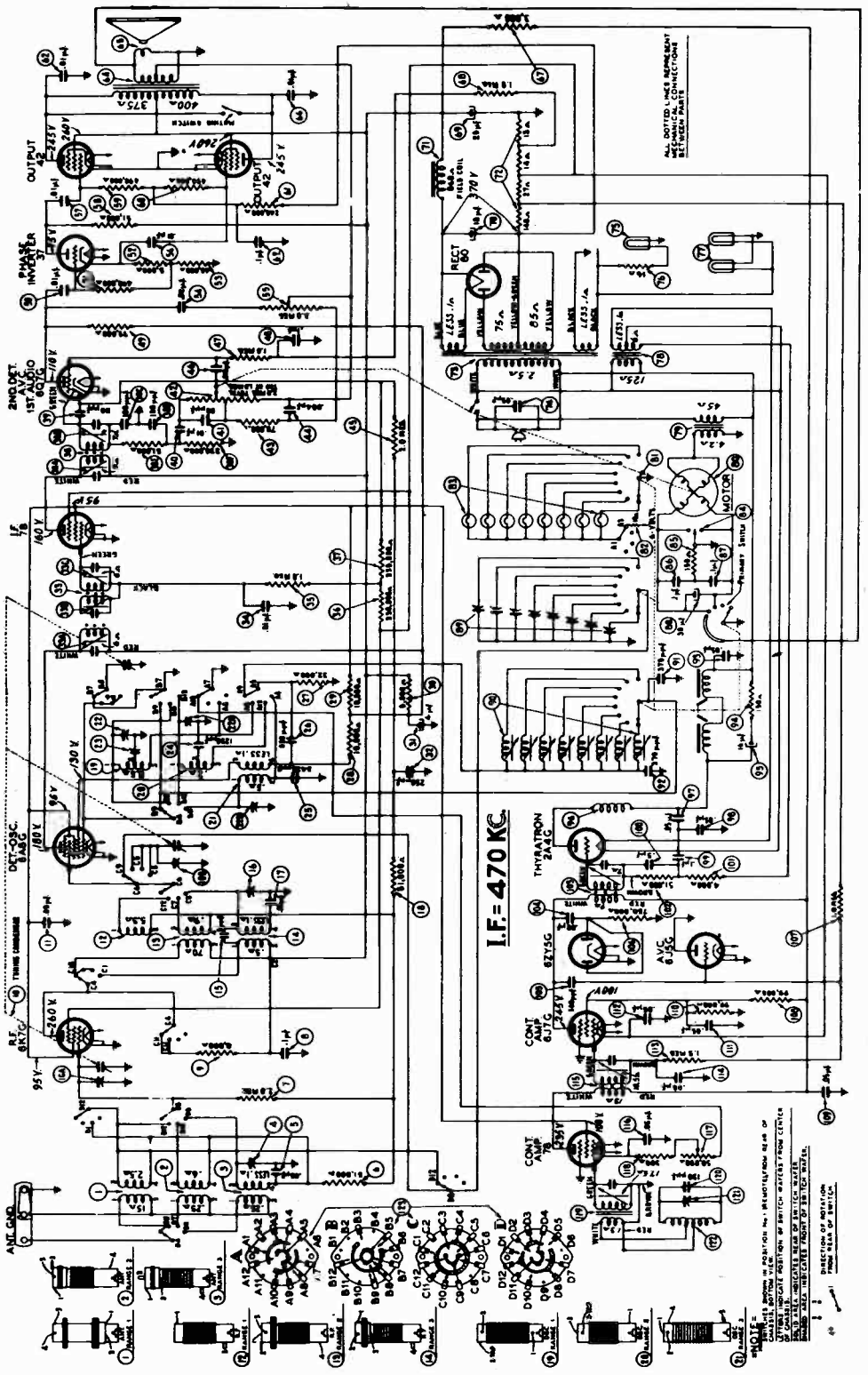
With this apparatus, the Control Frequency is adjusted as follows:

1. With the temporary coil of wire in the center of (or near) the secondary inductor, the control frequency to which the Mystery Control Amplifier is tuned can be determined by tuning the Signal Generator between 350 and 400 K.C. When the Signal Generator is tuned to the control frequency, the Thyratron (2A4G) tube will glow (blue haze). If this frequency is to be used, leave the Signal Generator indicator at this point or turn the indicator to any other frequency desired between 350 and 400 K.C.
2. When the control frequency is selected, turn the sensitivity control (117) in Model 116 and (89) Model 55 located on the left rear of the chassis—towards the position marked "extreme." Using the 2A4G Thyratron tube as a resonance indicator, adjust padders (103), (115), (119) in Model 116 and (74), (85), (90) in Model 55 for maximum signal. This will be indicated by the brilliance of the glow in the 2A4G Thyratron tube. As the padders are adjusted, gradually turn the sensitivity control to the "near" position or reduce the output from the Signal Generator. When the padders are correctly adjusted to maximum, the Thyratron will glow with the sensitivity control (117) at the "near" position and with a very weak signal from the Signal Generator.
3. Next, adjust the padding condenser (121) in Model 116 and (92) in Model 55 on the secondary inductor located in the bottom of the receiver. The padding condenser is located in one corner of the secondary inductor and is encased in a cardboard container. This padding condenser should be carefully adjusted for maximum glow in the 2A4G tube. Use the weakest signal possible from the Signal Generator that will cause the 2A4G to glow. Also, have the sensitivity control as close as possible to the "near" position. Extreme care should be used in adjusting the padder to the exact point of resonance, as the secondary inductor is a very sharply tuned circuit. After adjusting the circuit, remove the Signal Generator and loop from the receiver.
4. The Mystery Control unit is now adjusted as follows:
   - **A.** Dial any one of the stations indicated on the remote unit by pulling the selector to the "Stop" position. Then, as the dial is released at the "Stop," press the "Stop" down and hold it in this position.
   - **B.** Holding the "Stop" in this position, bring the Mystery Control unit close to the receiver. Using the padding wrench, tune the padding screw (126) located on the bottom of the unit until the 2A4G Thyratron in the receiver glows at full brilliance.

     Now, turn the sensitivity control on the receiver towards the "near" position until a point is reached where the 2A4G tube almost stops glowing. Then, readjust the padder (126) of the unit again for maximum brilliance in the 2A4G tube. The Mystery Control unit should now be adjusted to the same frequency as the control frequency in the receiver.

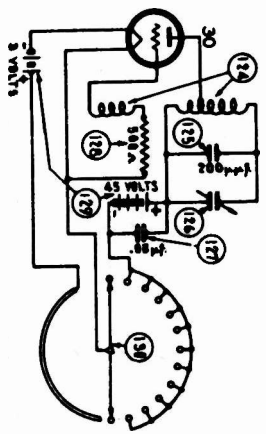


Locations of Compensators—Model 39-55 and 39-116

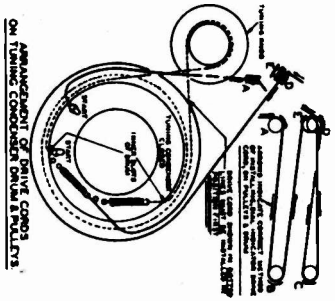


PHILCO . . . . . *Model 39-116*

Socket Voltage Measured for Socket Contacts to Chassis, Line Voltage 115 VAC, Volume Minimum, Range Selector (Broadcast)



Mystery Control Unit Diagram



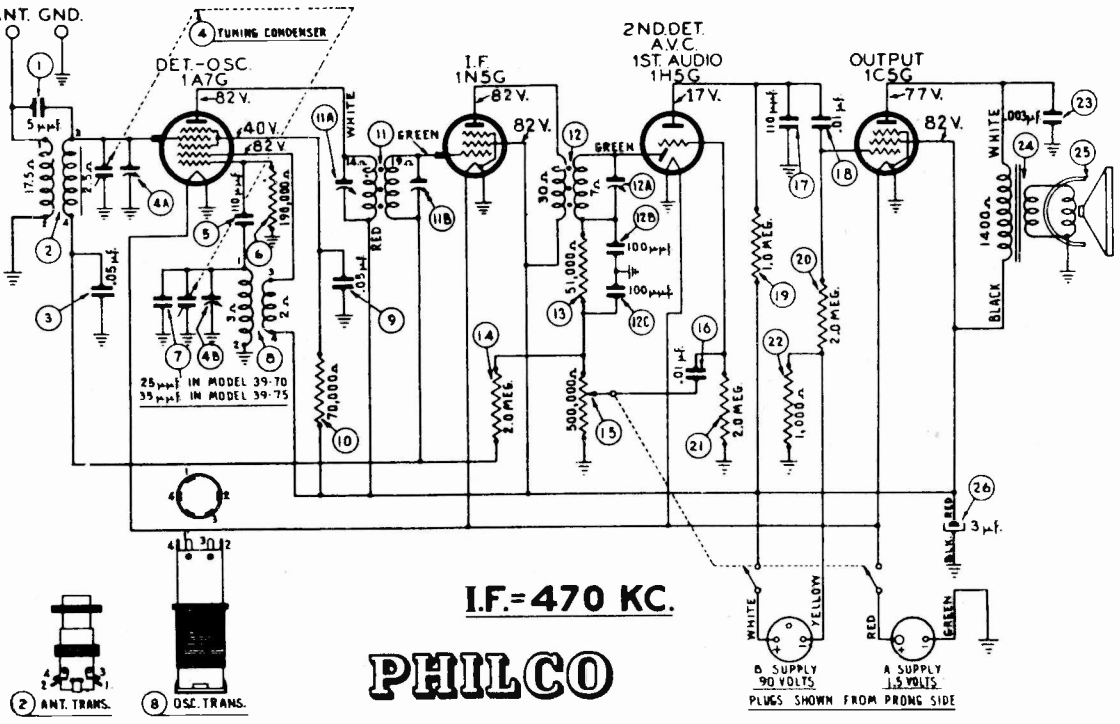
ARRANGEMENT OF DRIVE CORDS ON TUNING CONDENSER DRUM & PULLEYS

RADIO RECEIVER CIRCUIT ADJUSTMENTS Model 39-116

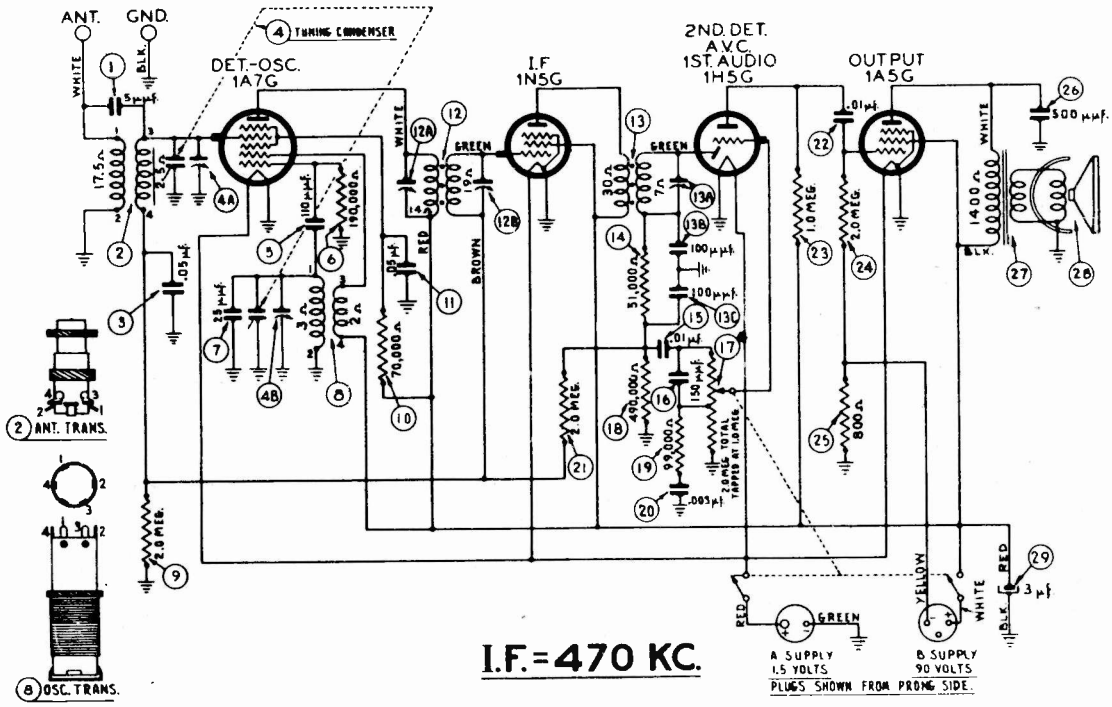
Operation	SIGNAL GENERATOR			RECEIVER			Special Instructions
	Output Connections to Receiver	Dummy Antenna (Note A)	Dial Setting	Dial Setting	Control Setting	Adjust Compensators	
1	78 Grid	.1 mfd.	470 K.C.	580 K.C.	Vol. Max. Range Switch Brdcst.	38A, 38B	Turn Out 33B Full
2	6A8 Grid	.1 mfd.	470 K.C.	580 K.C.	Vol. Max. Range Switch Brdcst.	33C, 33A, 33B, 38B	Note B
3	Antenna and Ground	150 mmfd.	1550 K.C.	1550 K.C.	Vol. Max. Range Switch Brdcst.	22, 10B, 10A	
4	Antenna and Ground	150 mmfd.	580 K.C.	580 K.C.	Vol. Max. Range Switch Brdcst.	23	Rollgang
5	Antenna and Ground	150 mmfd.	1550 K.C.	1550 K.C.	Vol. Max. Range Switch Brdcst.	22	
6	Antenna and Ground	400 ohms	5.0 M.C.	5.0 M.C.	Vol. Max. Range Switch Police	22A	
7	Antenna and Ground	400 ohms	18.0 M.C.	18.0 M.C.	Vol. Max. Range Switch Short Wave	22B, 16, 4	Note C

RADIO RECEIVER CIRCUIT ADJUSTMENTS Model 39-55

Operation	SIGNAL GENERATOR			RECEIVER			Special Instructions
	Output Connections to Receiver	Dummy Antenna (Note A)	Dial Setting	Dial Setting	Control Setting	Adjust Compensators	
1	78 Grid	.1 mfd.	470 K.C.	580 K.C.	Vol. Max. Range Switch Brdcst.	14A, 14B	Turn Out 13B Full
2	6J8G Grid	.1 mfd.	470 K.C.	580 K.C.	Vol. Max. Range Switch Brdcst.	13C, 13A 13B, 14B	Note B
3	Antenna and Ground	150 mmfd.	1550 K.C.	1550 K.C.	Vol. Max. Range Switch Brdcst.	3B, 3A	
4	Antenna and Ground	150 mmfd.	580 K.C.	580 K.C.	Vol. Max. Range Switch Brdcst.	7	Rollgang
5	Antenna and Ground	150 mmfd.	1550 K.C.	1550 K.C.	Vol. Max. Range Switch Brdcst.	3B, 3A	Note C



SCHEMATIC DIAGRAM MODEL 39-70 & 39-75



SCHEMATIC DIAGRAM MODEL 39-80

PROCEDURE FOR MODELS 39-70 AND 39-75

Operations in Order	Signal Generator			Receiver		
	Output Connections to Receiver	Dummy Antenna Note A	Dial Setting	Dial Setting	Control Setting	Adjust Compensators
1	1A7G Grid	.1 mfd.	470 K. C.	580 K. C.	Vol. Max.	12A, 11B, 11A
2	Ant. (White)	225 mfd.	1550 K. C.	1550 K. C.	Vol. Max.	4B, 4A

PROCEDURE FOR MODEL 39-80

Operations in Order	Signal Generator			Receiver		
	Output Connections to Receiver	Dummy Antenna Note A	Dial Setting	Dial Setting	Control Setting	Adjust Compensators
1	1A7G Grid	.1 mfd.	470 K. C.	580 K. C.	Vol. Max.	13A, 12B, 12A
2	Ant. (White)	225 mfd.	1550 K. C.	1550 K. C.	Vol. Max.	4B, 4A

A—The "Dummy Antenna" consists of a condenser or resistor connected in series with the signal generator output lead (high side). Use the capacity or resistance as specified in each step of the above procedure.

B—DIAL CALIBRATION: In order to adjust the receiver correctly, the dial must be aligned to track properly with the tuning condenser.

Model 39-70 and 39-80—To adjust the dial proceed as follows: Turn the tuning condenser to maximum capacity (plates fully meshed). With the tuning condenser in this position, set the pointer horizontally across the dial.

Model 39-75—With the tuning condenser in the maximum capacity position (plates fully meshed), loosen the coupling screws connecting the push-button unit to the condenser. The pointer is then set on the extreme left edge of the index line (low frequency end of the scale) with the tuning condenser fully closed. The gang is then opened until the pointer is at the right edge of the index line. The push-button shaft is then turned counter-clockwise to its "stop." With the tuning condenser and push-button shaft in these positions tighten the coupling set screws.

C—The locations of the compensators in Models 39-70, 39-75 and 39-80 are shown in Figs. (1), (2) and (3) respectively.

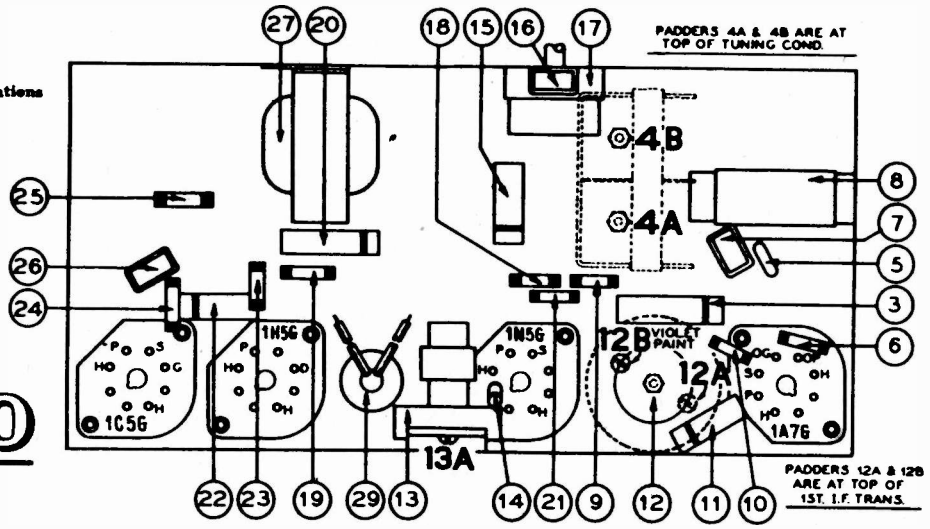


Fig. 3. Compensator and Part Locations
Model 39-80, Code 121
Underside of Chassis

PHILCO

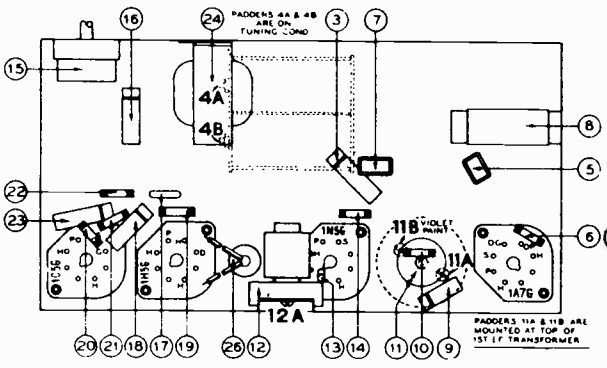


Fig. 1. Compensator and Part Locations
Model 39-70, Code 121

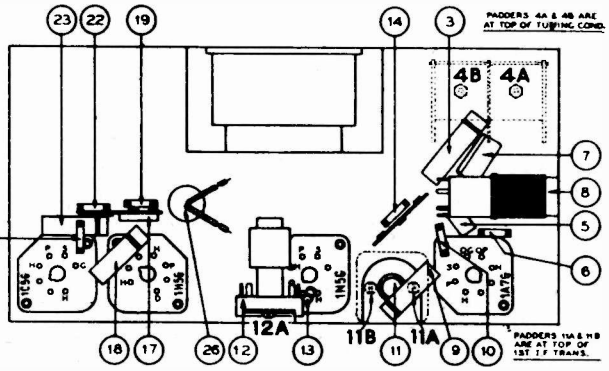
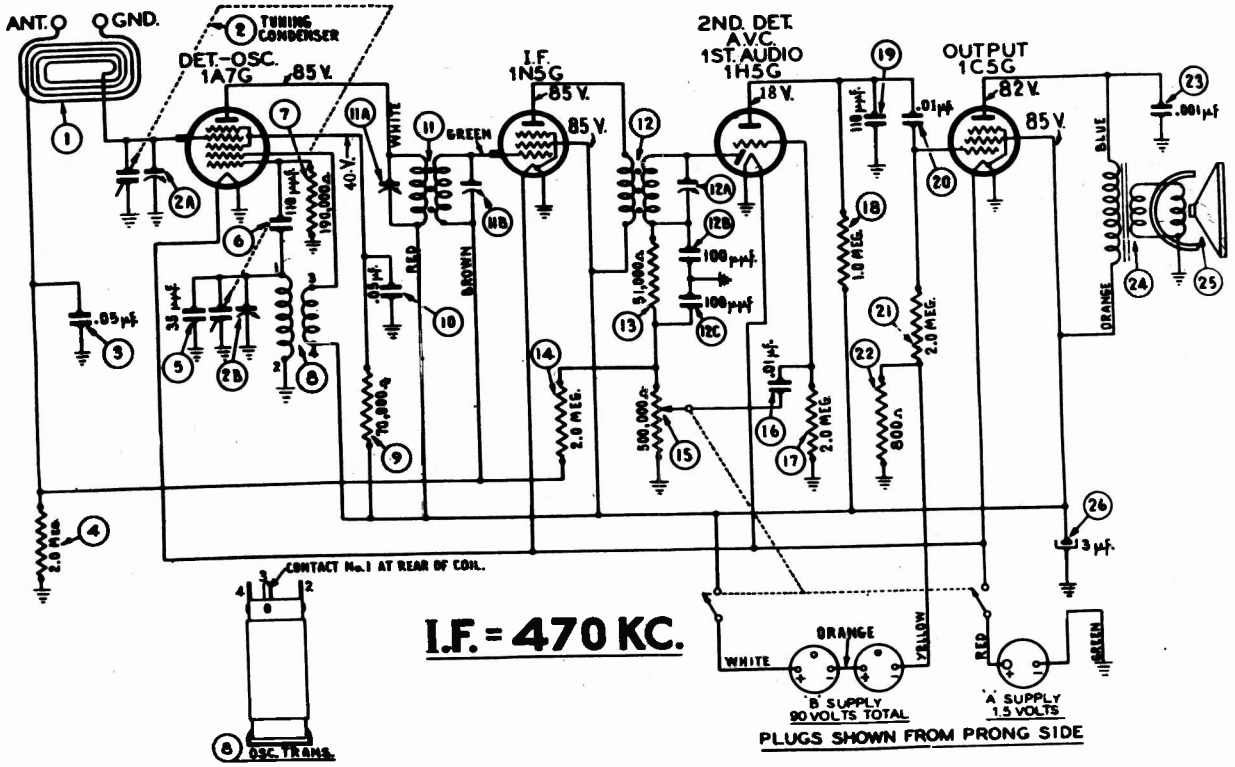


Fig. 2. Compensator and Part Locations
Model 39-75, Code 121-122
Underside of Chassis

PHILCO Model 39-71, Codes 121, 122



Operations in Order	SIGNAL GENERATOR			RECEIVER		
	Output Connections to Receiver	Dummy Antenna (Note A)	Dial Setting	Dial Setting	Control Settings	Adjust Compensators in Order
1	1A7G Grid	.1 mfd.	470 K. C.	580 K. C.	Vol. Cont. Max.	12A, 11B, 11A
2	Ant. & Grd. Terminals	400 ohms	1550 K. C.	1550 K. C.	Vol. Cont. Max.	2B, 2A

A — The "Dummy Antenna" consists of a condenser or resistor connected in series with the signal generator output lead (high side). Use the capacity or resistance as specified in each step of the above procedure.

B — DIAL CALIBRATION: In order to adjust the receiver correctly, the dial must be aligned to track properly with the tuning condenser. To adjust the dial proceed as follows: Turn the tuning condenser to maximum capacity (plates fully meshed). With tuning condenser in this position set the pointer to the small "black dot" at the low frequency end of the dial scale.

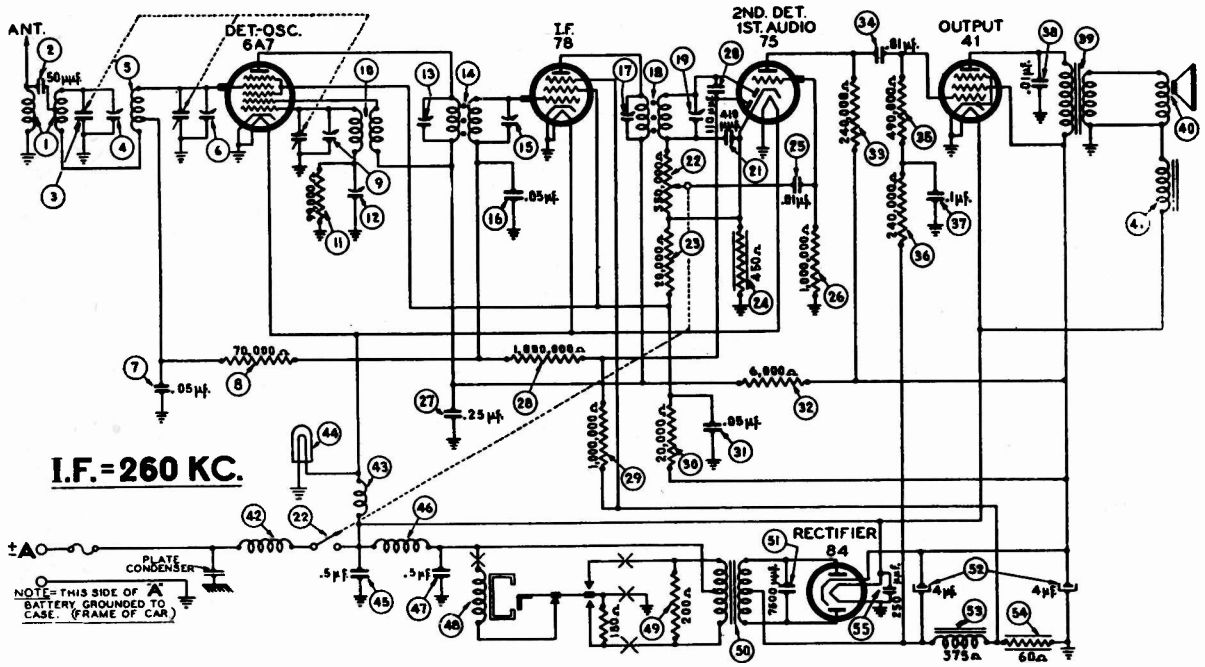
C — To adjust the I. F. compensators, remove the back from the cabinet, which is held in place by four screws. The chassis is then taken out by removing the four screws and two corks underneath the cabinet, and the Tuning and Volume knobs. The I. F. compensators are located on top of the I. F. transformers.

When adjusting the Antenna (2A) and Oscillator (2B) compensators, the chassis must be assembled in the cabinet with the batteries and loop in place. The Signal Generator output lead with the "Dummy Antenna" is then connected to the terminals marked "Ant" and "Grd" underneath the cabinet. The antenna and oscillator compensators are then adjusted through the holes in the bottom of the cabinet.

Replacement Parts

Code No.	Description	Part No.
1	Loop Assy.	40-6421
2	Tuning Cond.	31-2322
3	Tubular Cond. (.05 mf.)	30-4519
4	Resistor (2 megohm)	33-520339
5	Mica Cond. (35 mmf.)—mounted on top of tuning condenser	30-1095
6	Mica Cond. (110 mmf.)	30-1031
7	Resistor (190,000 ohms)	33-419339
8	Oscillator Trans.	32-3118
9	Resistor (70,000 ohms)	33-370339
10	Tubular Cond. (.05 mf.)	30-4444
11	1st I. F. Trans. Assy.	32-3103
12	2nd I. F. Trans. Assy.	32-3081
13	Resistor (51,000 ohms)	33-351339
14	Resistor (2 megohms)	33-520339
15	Volume Control & Switch	33-5301
16	Tubular Cond. (.01 mf.)	30-4572
17	Resistor (2 megohm)	33-520339
18	Resistor (1 megohm)	33-510339
19	Mica Cond. (110 mmf.)	30-1031
20	Tubular Cond. (.01 mf.)	30-4572
21	Resistor (2 megohm)	33-520339
22	Resistor (800 ohms)	33-180339
23	Tubular Cond. (.001 mf.)	30-4201
24	Output Trans. for Speaker No. 36-1451-3	32-8036
25	Voice Coil Assy. for Speaker No. 36-1451-3	36-4090
26	Electrolytic Cond. (3 mf.)	30-2359
	Bezel Window	27-5434
	Dial	31-2321
	Dial Pointer	28-5185
	Dial Drive Cord Assy.	31-2323
	Dial Tuning Shaft & Brkt. Assy.	31-2324
	Escutcheon (knobs)	56-1252
	Escutcheon (screws)	W-2129
	Knob (Tuning, Volume)	27-4331
	Loop Antenna	40-6421
	Pulley (Tuning Condenser)	28-6662

PHILCO AUTO RADIO Model 920



	SIGNAL GENERATOR FREQUENCY	SIGNAL GENERATOR CONNECTION	DUMMY CAPACITY	SPECIAL INSTRUCTIONS	ADJUST PADDER
1	260 K. C.	To grid of 6A7 Tube	1 Mfd. Condenser in Series with Generator Lead	No Antenna Connection	(27) (26) (25) (16) (17)
2	1550 K. C.	To Antenna Receptacle on Radio	50 Mmfd. See Note 1	Turn Tuning Condenser Plates Out of Mesh as Far as They Will Go.	(9) (6) (4)
3	580 K. C.	To Antenna Receptacle on Radio	50 Mmfd. See Note 1	Set Tuning Condenser at 580 K. C.	Note 2 (12)
4	1550 K. C.	To Antenna Receptacle on Radio	50 Mmfd. See Note 1	Turn Tuning Condenser Plates Out of Mesh as Far as They Will Go.	(9)
5	1400 K. C.	To Antenna Receptacle on Radio	50 Mmfd. See Note 1	Set Tuning Condenser at 1400 K. C.	(6) (4) Note 3

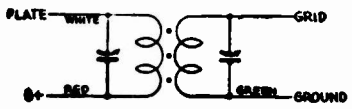
Make all adjustments for maximum reading on the output meter.

1 — Connect the antenna lead, Part No. 41-3191, to the antenna receptacle in the radio. Connect a 50 Mmfd. Condenser in series between the signal generator and the antenna lead.

2 — Rock the tuning condenser while adjusting the low frequency padder. Tune the condenser to the signal and adjust the padder for maximum output. Rotate the tuning condenser back and forth slightly for maximum output. Then re-adjust the padder for maximum output. Repeat this procedure until no further improvement is noticed.

3 — When the antenna stage adjustment is made with the Radio installed in the car, the Radio antenna lead must be connected to the car antenna in the usual manner. Connect the signal generator output lead to a wire placed near the car antenna but not connected to it.

I. F. TRANSFORMERS



COMPILED BY M. N. BEITMAN, SUPREME PUBLICATIONS

PHILCO Model "L" RECORD CHANGER

OPERATING INSTRUCTIONS

The Model "L" Record Changer plays seven 12" or eight 10" Records automatically. The last record remains on the turntable and repeats as long as the Record Changer is in operation.

Records may be repeated as often as desired by raising the record removing arm at A Fig. 1 to the upright position.

To reject a record and play the next record below it, pull the latch lever at L Fig. 1 forward.

To adjust the record removing arm to handle 10" records set the record removing arm change lever at D Fig. 1 opposite the number 10 stamped on the base plate. For 12" records set the lever opposite the number 12.

To adjust the pickup to play 10" records, push the pickup stop at K Fig. 1 back. (Away from the pickup needle). For 12" records pull the stop forward (toward the needle) as far as it will go.

Some units are equipped with two speed motors, and others with 78 RPM motors. When the two speed motor is used change from one speed to the other by simply moving lever at F Fig. 1 to position desired.

To start motor, throw switch at N Fig. 1 on the "on" position.

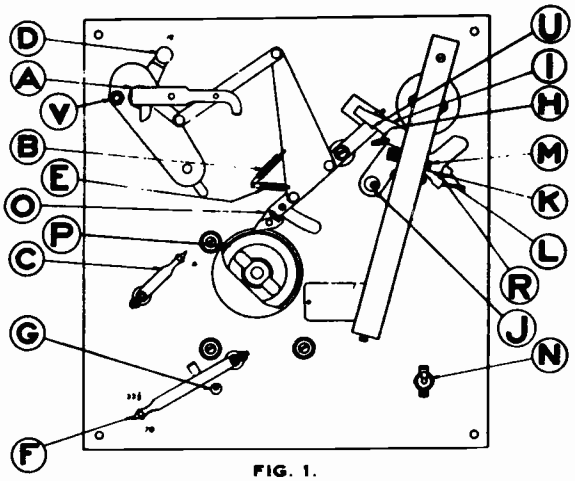


FIG. 1.

MOTOR SPEED

The motor speed is adjusted by means of a lever at C Fig. 1 which is mounted under the turntable. The direction of swing to fast or slow is indicated by the legends F and S on the base plate.

33-1/3 RPM — 78 RPM SHIFT
(Two-speed motors only)

Move the speed change lever at F Fig. 1 as far as it will go in the direction of swing indicated by the legends 33-1/3 and 78 on the base plate.

If adjustment of the speed change lever is required for any reason, proceed as follows: First loosen the screw which clamps the lever to the motor shaft. This shaft is provided with a screw-driver slot in the end. Next, using a screw driver, turn this shaft in a clockwise direction until you feel it strike the stop. The motor is now in the 33-1/3 RPM position. Now set the lever against the lug provided in the base plate and opposite the legend 33-1/3 and tighten the clamp screw. This places the lever in the correct position on the motor shaft. The final step is the adjustment of the eccentric bushing at G Fig. 1 which limits the throw of the lever. First loosen the screw which holds the eccentric bushing. Next, throw the speed changer lever to its farthest 78 RPM position, (using care that the lever does not slip on the motor shaft). Then turn the eccentric bushing around until it touches the side of the lever, and tighten it in place with the screw provided.

TRIP MECHANISM

The trip mechanism is the trigger that sets the Record Changer in motion. This is done by allowing the latch bar at O Fig. 1 to drop in front of, and be actuated by the cam at P Fig. 1. This cam is driven by the motor and is in motion as long as the motor is running. If this mechanism does not operate smoothly, the precautions outlined in succeeding paragraphs should be observed.

First of all, make sure that the square pin in the latch lever at U Fig. 1 latches properly in the notch in the lift lever at I Fig. 1. When latched, the notch should be engaged approximately one-half of its depth. The depth of engagement is adjusted by means of the eccentric washer and locking screw at J Fig. 1. Now run the Record Changer through its cycle. If the square pin fails to engage the notch in the lift lever, first check the tension of the latch spring at H Fig. 1 to insure that the notch can engage the pin. Next check the tension of the reset spring at E Fig. 1. This reset spring should not be under tension when the latch bar is latched but should have enough tension when the latch bar drops back off of the cam to cause the square pin to over travel the notch in the lift lever.

IMPORTANT — Before attempting to change the tension of any spring, be sure that the parts involved work freely without any tendency to bind, as of course any binding condition would preclude proper operation.

The Record Changer is adjusted at the factory to trip on a spiral trip groove record when the phonograph needle is 1¾" from the edge of the hole in the center of the record.

MOTOR LUBRICATION

The motor installed in the Record Changer is governor controlled, with all gearing enclosed, and leaves the factory lubricated for proper operation. For maximum satisfaction, lubricate the motor at regular intervals with SAE No. 10 oil. Please do not use any other grade of oil.

The governor disc engages with a ring of hard felt. This felt is impregnated with a lubricating solution sufficient for proper operation for approximately a year under normal conditions.

When eccentric or oscillating trip groove records are used, tripping is effected by means of the hardened steel pin in the end of tone arm lift crank at S Fig. 2 engaging the serrated block on the trip lever at T Fig. 2. There must be a minimum of 1/32" play between the end of the pin and the block, when, with a short needle, (5/8" Minimum Length) the pickup is resting on one record on the turntable. If the pressure of the pin on the block is not sufficient to insure operation, then check the pressure spring which is located up under the pickup.

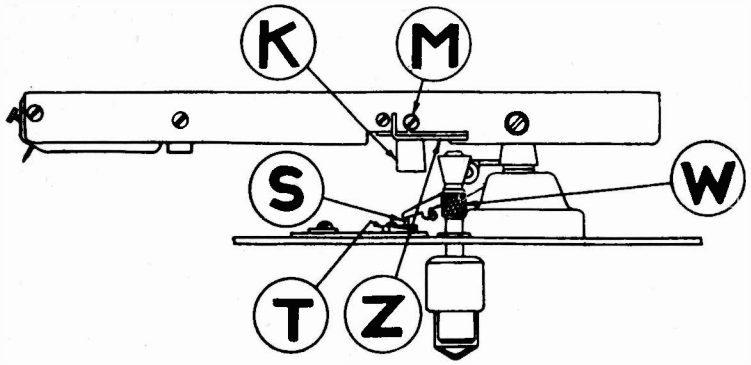


FIG. NO. 2

The oval head pivot screw at R Fig. 1 serves as a pivot for the lift lever at I Fig. 1. This screw should allow the lift lever to be raised by the latch bar to its maximum height without binding but also without any additional play.

If the Record Changer fails to trip, see if the phonograph needle is jumping out of a worn record trip groove. Next make certain that all parts of the mechanism work freely and smoothly. If it is found that the latch bar at O Fig. 1 is not dropping in far enough to engage the cam at P Fig. 1, then check the tension of the trip spring at B Fig. 1.

In case the Record Removing Mechanism fails to operate smoothly, proceed as follows: First make certain that all parts work freely with no binding in pivots or bearings, and that the record removing arm assembly rests on the stop screw at Q Fig. 3. Next stop the motor in such a position that the latch bar at O Fig. 1 can swing by and clear the cam at P Fig. 1. Place just one record on the turntable and measure from the top of this record down to the base plate. This distance should be one inch. Now by pulling the reject lever at L Fig. 1 first, it will be found possible to swing the record removing finger at Y Fig. 3 over to where it just touches the edge of the record. If the adjustment is correct, the record removing finger should just barely rise over the edge of the first record. If adjustment is required it can be made by means of the stop screw at Q Fig. 3. In the event the record removing arm raises the record from the turntable and drops it back in place without removing it, check the lift adjustment at V Fig. 1. This adjustment consists of an eccentric stud which is provided with a lock nut, and is made by loosening the lock nut and turning the eccentric stud. The lift adjustment should be set so that the hole in the center of the record just clears turntable spindle when the Record Changer is in operation.

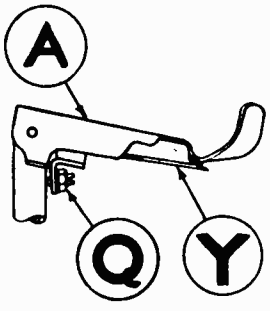


FIG. NO. 3

The pickup lowering mechanism has two functions. First, it lowers the phonograph needle gently to the surface of the record. Second, it feeds the needle toward the center of the record so that it will enter the playing groove.

If the pickup descends too fast or too slow, adjust the speed of descent by turning the knurled thumb nut on the dashpot sleeve at W Fig. 2.

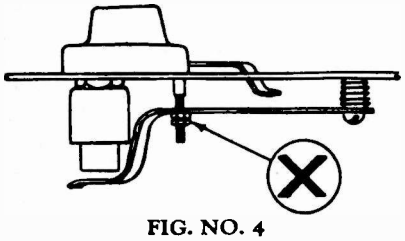
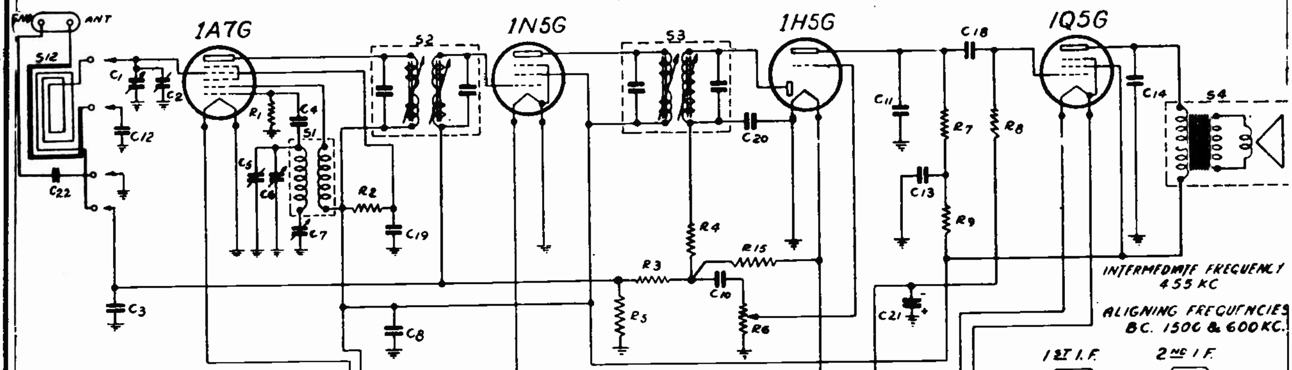
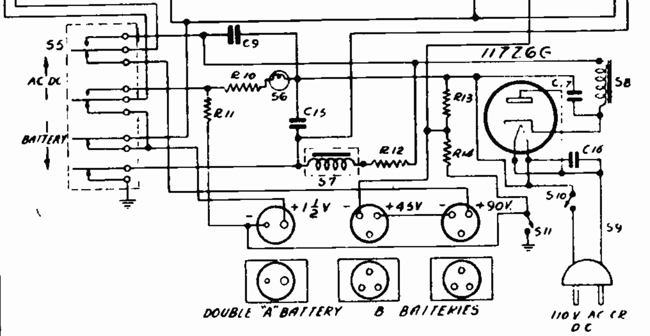
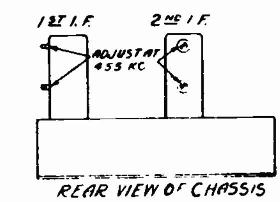


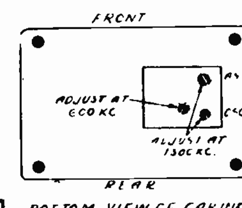
FIG. NO. 4

The unit is adjusted at the factory so that the needle will be set down approximately 3/32" in from the edge of the record. An adjusting screw is provided on the side of the pickup at M Fig. 2. If the needle is being lowered onto the playing surface of the record, and the adjusting screw at M Fig. 2 fails to correct the condition proceed as follows: First stop the record changer, with the pickup in the maximum raised position and check the clearance between the underside of the pickup shelf at Z Fig. 2 and the tip of the dashpot. This clearance should be very small as otherwise the pickup will tend to bounce as it is lowered. There must be sufficient clearance however to prevent the pickup shelf from rubbing on the tip of the dash pot, or the pickup will not swing out far enough to allow the adjustable stop at K Fig. 2 to come to rest against the dashpot. Check this clearance in both 10" and 12" record positions. If adjustment is required, the height of the dashpot may be regulated by loosening the nuts on the bottom of the lift lever stud at X Fig. 4 and changing their position on the stud. To raise the dashpot turn the nuts clockwise, to lower the dashpot turn the nuts counter-clockwise.









CONDENSERS FOR MODEL T-1451		
C1 C6	84125	2 GANG COND.
C2 C5	70969-J	ANT & OSC. TRIMMER ASSY.
C3	22055 I	.05 MFD. 200V. PAPER COND.
C4 C11	28016-O	100 MMFD. MICA COND.
C7	79431-B	385 MMFD. PADDING COND.
C16	22055-P	.05 MFD. 400V. PAPER COND
C9 C17	23500 J	40 MFD. 150V. ELEC. COND
C10	22491-E	.01 MFD. 200V. COND.
C12	22055-W	.01-MFD. 400V. PAPER COND.
C13	22055-M	.1-MFD 200V. PAPER COND.
C14	22055-K	.002 MFD 600V. PAPER COND
C15	23500-G	30-MFD. 25V. ELEC. COND
C18 C19	22055-T	.01 MFD. 200V. PAPER COND
C20	27701-O	250 MMFD. MICA COND.
C8	22055AK	1.0 MFD. 200V. PAPER COND.
C21	23500-B	10 MFD. 25V. ELEC. COND.
C22	22055-A	.01 MFD 600 V

RESISTORS FOR MODEL T-1451		
R1	13191	200,000 OHMS 1/4 W CARBON
R2	13241	60,000-OHMS 1/4 W CARBON
R3 R5 R8	13223	3.3 MEGS. 1/4 W CARBON
R4	13164	50,000 OHMS 1/4 W. CARBON
R6	84105	2-MEGS. VOL. CONT & SWITCH
R7	13001	1-MEG. 1/4 W CARBON
R9	13031	100,000-OHMS 1/4 W CARBON
R10	83656-J	50-OHMS 1 W. FLEXIBLE
R11	83656-G	25-OHMS .5 W. FLEXIBLE
R12	84116	700 OHMS 8W. W.W. IRONCLAD
R13	13019	2000-OHMS 1/4 W CARBON
R14	13048	800-OHMS 1/4 W. CARBON
R15	13007	2 MEGS. 1/4 W. CARBON

MISCELLANEOUS FOR MODEL T-1450		
S1	73271	OSC. COIL ASSY
S2	73277	1ST I.F. TRANS. ASSY
S3	73274	2ND. I.F. TRANS ASSY.
S4	40877	5¼ P.M. SPEAKER
S5 S7	84110	RELAY
S6	72151	DIAL LIGHT .15 AMPS.
S8	84115	CHOKE 5 HS 200Ω 100 MA.
S9	84048	LINE CORD

ALTERATIONS & DATE

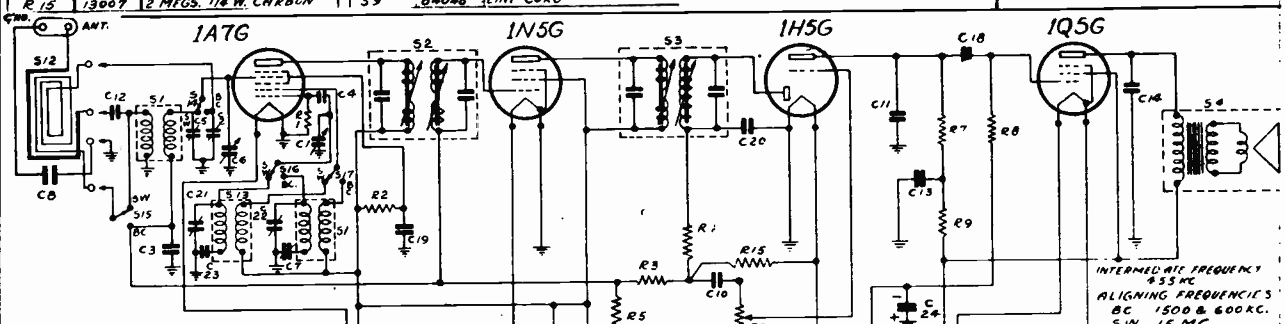
① C2 C5 WAS 70969-E ... 5/16/39

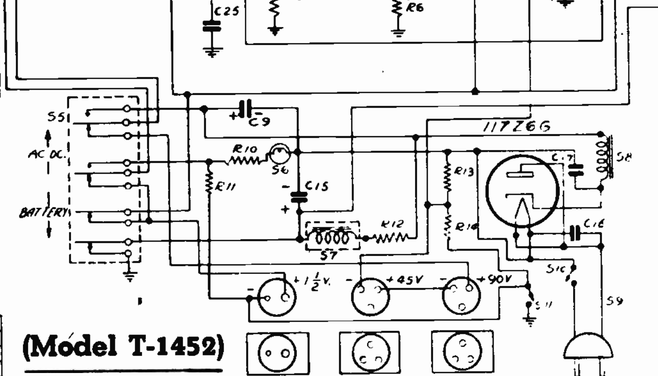
②

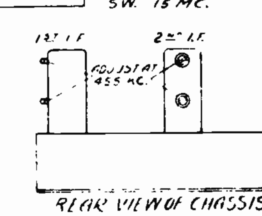
③ C22 ADDED, ... ANT GND ...

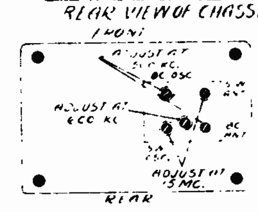
④ ... RESISTOR LINE CORD ...

(Model T-1451)









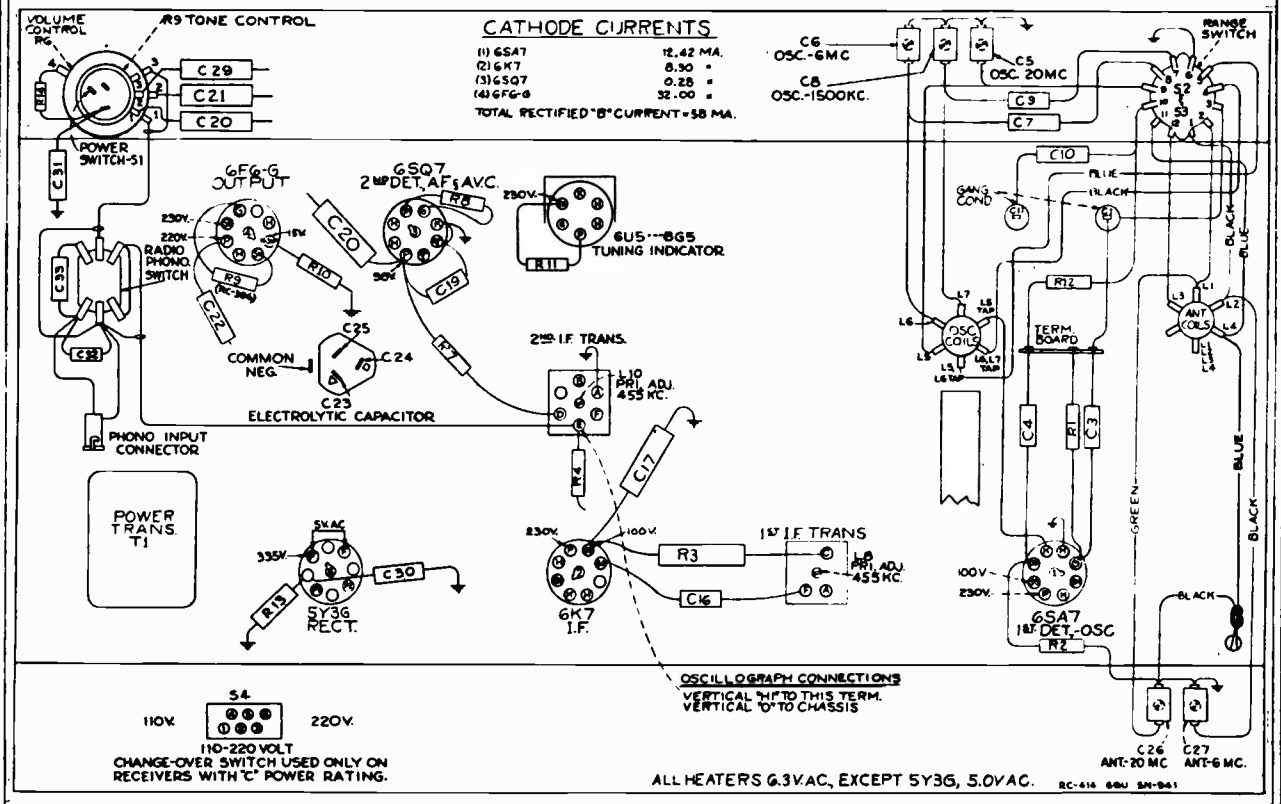
CONDENSERS FOR MODEL T-1452		
C8	22055-A	.01 MFD 600V PAPER COND
C1 C6	84125	2 GANG COND.
C2 C5	70969 J	ANT. TRIMMER ASSY
C3	22055 I	.05 MFD. 200V. PAPER COND
C4 C11	28016-O	100-MMFD MICA COND
C7	79431 B	385 MMFD PADDER COND.
C16	22055 P	.05 MFD. 400V PAPER COND.
C9 C17	23500 J	40 MFD. 150V. ELEC COND.
C10	22491 E	.01 MFD. 200V. SHIELDED PAPER COND.
C12	22055 W	.01-MFD. 400V PAPER COND.
C13	22055 M	.1-MFD. 200V. PAPER COND.
C14	22055-K	.002 MFD 600V PAPER COND
C15	23500-G	30 MFD. 25V. ELEC. COND
C18 C19	22055-T	.01 MFD. 200V PAPER COND.
C20	27701 O	250 MFD. MICA COND.
C21 C22	70969 E	OSC. TRIMMER ASSY
C23	28120 W	.005 MFD. MICA COND.
C24	23500-B	10 MFD. 25V. ELEC. COND.
C25	22055-AK	1.0 MFD. 200V. PAPER COND.
R1	13191	200,000-OHMS 1/4 W. CARBON
R2	13241	60,000 OHMS 1/4 W CARBON
R3, R5, R8	13223	3.3 MEGS 1/4 W CARBON
R4	13164	50,000 OHMS 1/4 W. CARBON
R6	84105	2-MEGS. VOL. CONT. & SWITCH
R7	13001	1 MEG 1/4 W. CARBON
R9	13031	100,000 OHMS 1/4 W. CARBON
R10	83656 J	50-OHMS 1W. FLEXIBLE
R11	83656 G	25-OHMS .5W. FLEXIBLE
R12	84116	700-OHMS 8W. W.W. IRON CLAD
R13	13019	2000 OHMS 1/4W. CARBON
R14	13048	800-OHMS 1/4W. CARBON
R15	13007	2 MEGS. 1/4 W. CARBON

(Model T-1452)

Pilot Radio Corporation
37-06 Thirty-Sixth St.
Long Island City, N. Y.

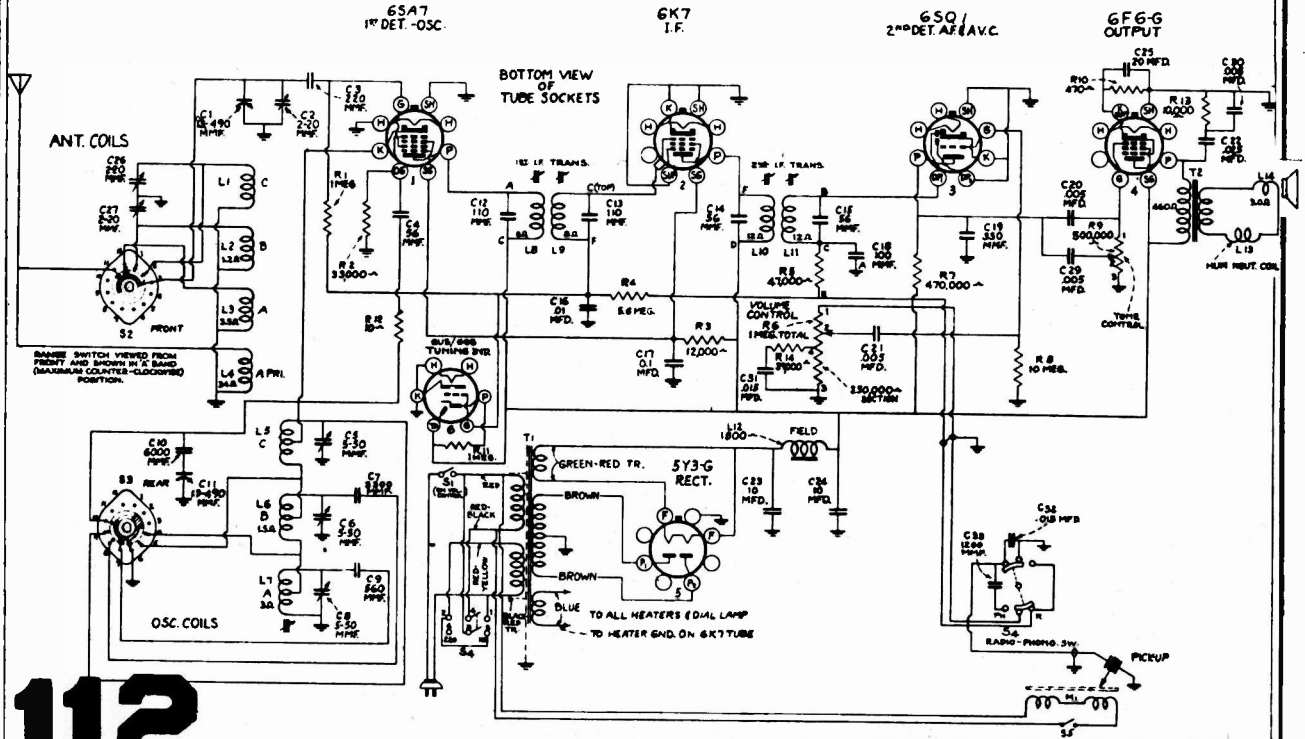
MANUAL OF 1939 MOST POPULAR SERVICE DIAGRAMS

RCA Victor MODEL 6QU



Measurements made to chassis unless otherwise indicated, with set tuned to quiet point and volume control at minimum. Values should hold within ± 20% with 117-volt a-c supply.

***NOTE:** Values with star (*) are operating voltages in circuits with high series resistance. The actual measured voltages will be lower, depending on the voltmeter loading.*



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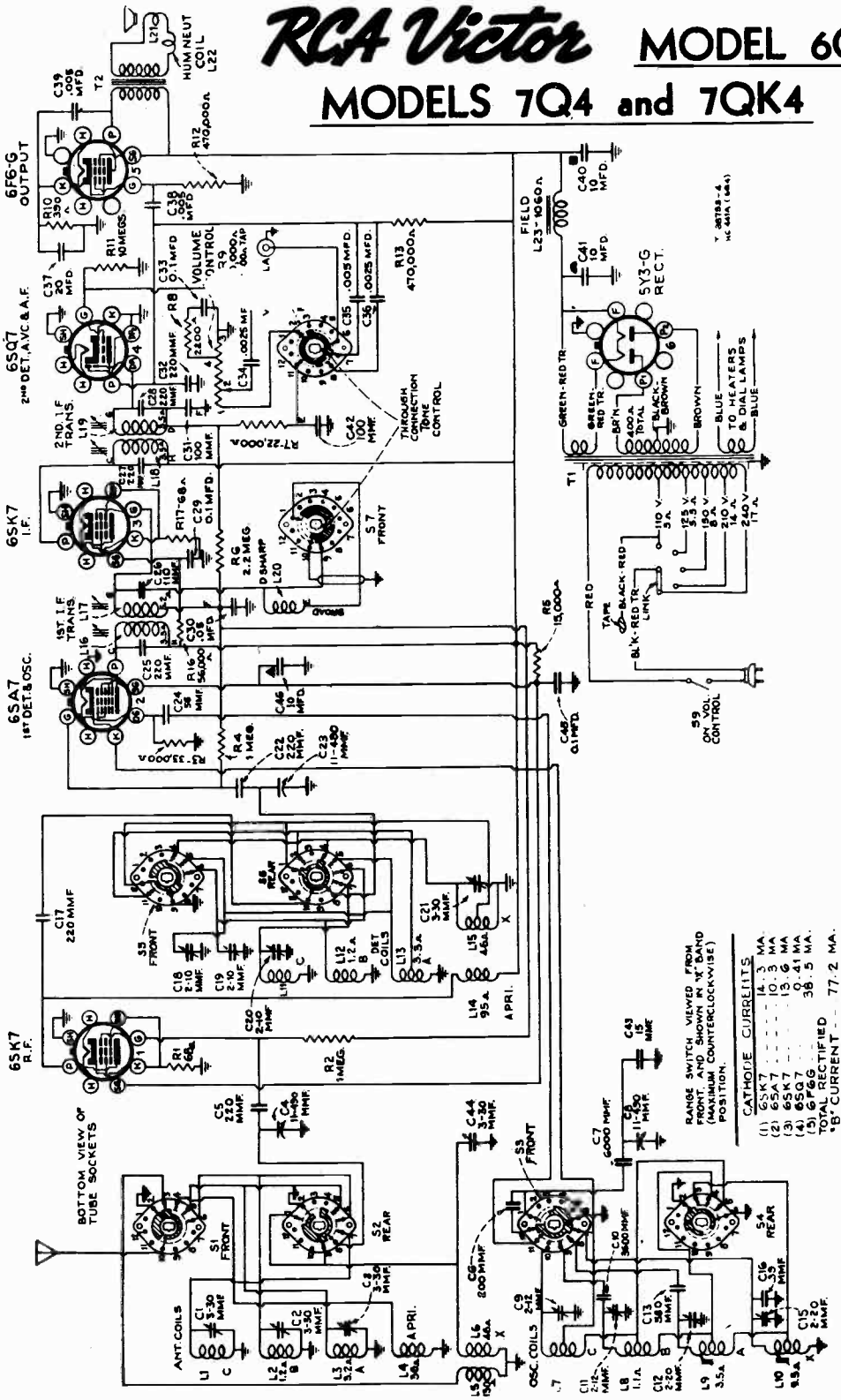
RCA Victor MODEL 6Q4

MODELS 7Q4 and 7QK4



Models 7Q4 and 7QK4 are similar to Model 6Q4 except for the addition of a tuning indicator (RCA-6U5/6G5). The 7QK4 chassis uses an RCA-6F6 output tube, whereas the 7Q4 uses an RCA-6F6-G output tube.

RCA Victor

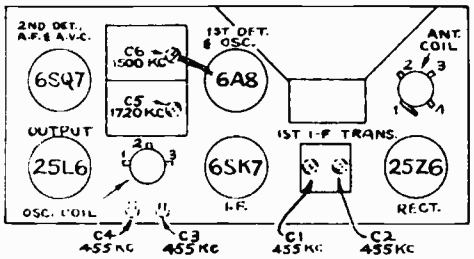
Models 9TX-21, -22, and -23

Chassis No. RC-403 RC-403 RC-403A

Five-Tube, Single-Band, AC-DC Superheterodyne Receivers

Alignment Procedure

Output Meter Alignment.—Connect the meter across the voice coil, and turn the receiver volume control to maximum.



Trimmer Locations

Test-Oscillator.—Connect the low side of the test-oscillator to the receiver chassis, through a .01 mfd. capacitor, and keep the output as low as possible. The antenna should be rolled up and kept at least one foot from chassis during alignment.

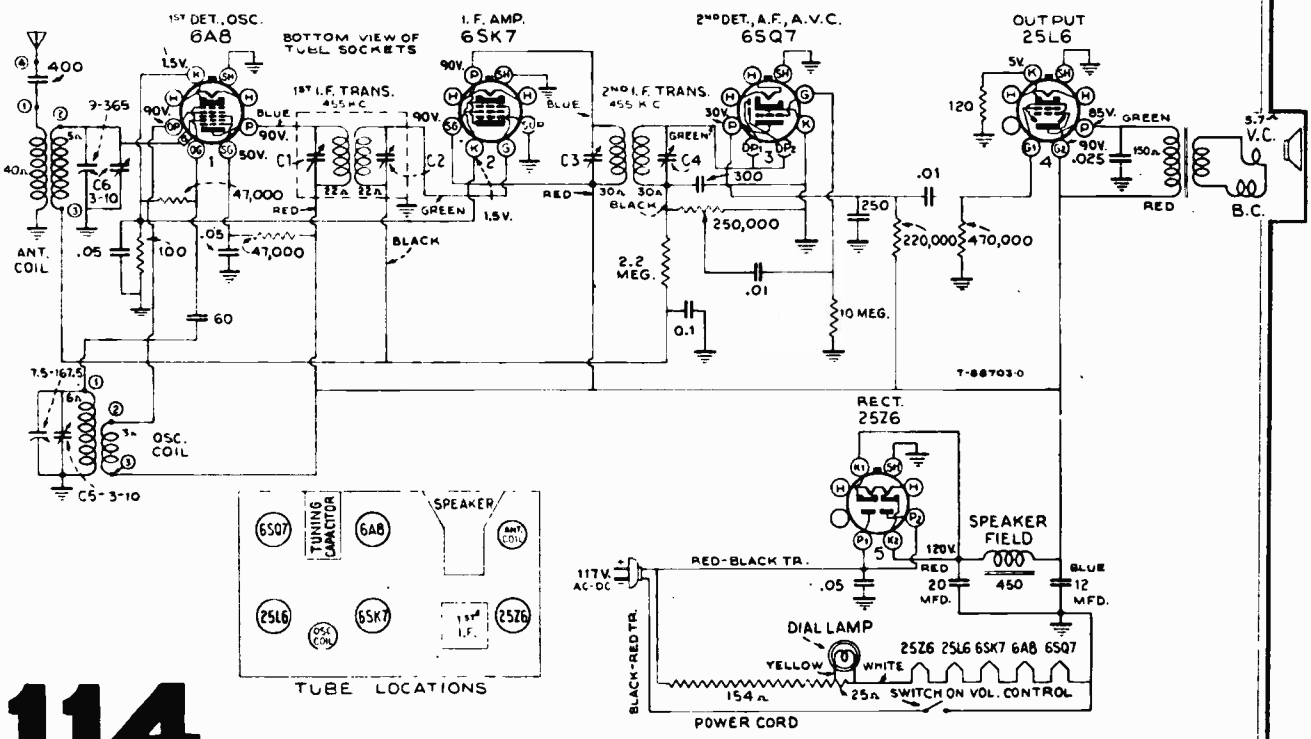
Steps	Connect the high side of test-oscillator to—	Tune test-osc. to—	Turn radio dial to—	Adjust the following for max. peak output—
1	6A8 1st-Det. grid cap, in series with .01 mfd.	455 kc	Quiet point at 1,600 kc end of dial	C1, C2, C3, C4 (1st and 2nd I-F transformers)
2	Antenna term. of ant. trans. in series with 100 mmfd.	1,720 kc	Full clockwise (out of mesh)	C5 (oscillator)
3		1,500 kc	Resonance on 1,500 kc signal.	C6 (antenna)

INTERMEDIATE FREQUENCY	455 kc
POWER OUTPUT (125 volt, 60 cycle supply)	
Undistorted	1.5 watts
Maximum	2.0 watts
LOUDSPEAKER (39105-1)	
Type	4-inch Electrodynamic

Power-Supply Polarity.—For operation on d-c, the power plug must be inserted in the outlet for correct polarity. If the set does not function, reverse the plug. On a-c, reversal of the plug may reduce hum.

Resistor in Power Cord.—The power cord contains a resistor which becomes warm during operation.

Antenna.—The set is equipped with length of antenna wire. Do not connect the antenna to ground. If an outdoor antenna is used, it should not be longer than 100 feet, including lead-in. If it is longer, connect a 100 to 200 mmf. capacitor in series with the lead-in.



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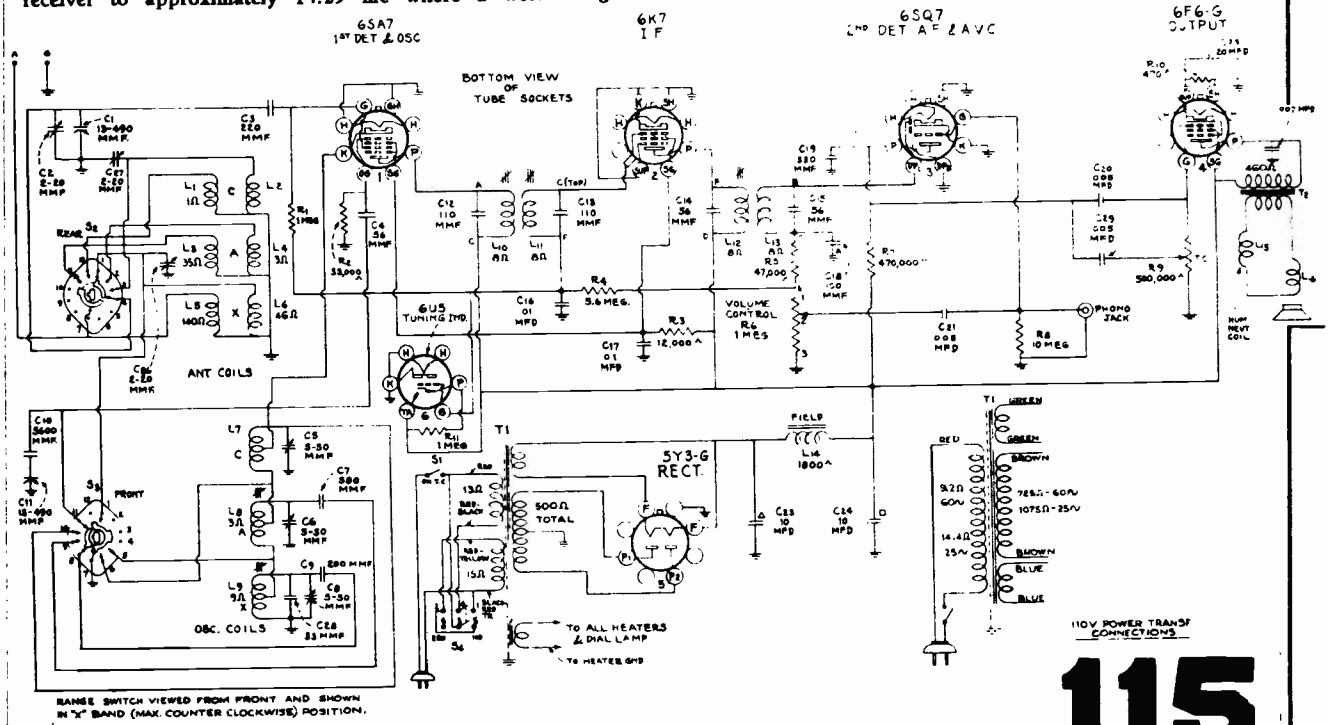
RCA Victor

MODEL 6Q8

Chassis No. RC-414B

Steps	Connect the high side of the test-osc. to—	Tune test-osc. to—	Turn radio dial to—	Adjust the following for max. peak output
1	6K7 I-F grid cap in series with .01 mfd.	455 kc	"A" Band Quiet Point between 550-750 kc	L12 and L13 (2nd I-F Trans.)
2	6SA7 det. grid in series with .01 mfd.	455 kc		L10 and L11 (1st I-F Trans.)
3	Ant. terminal in series with 200 mmf.	1,500 kc	1,500 kc (152.4°) "A" Band	C6 (osc.) C2 (ant.)
4	Ant. terminal in series with 200 mmf.	600 kc	600 kc (33°) "A" Band	L8 (osc.) Rock Gang
5	Repeat steps 3 and 4			
6	Ant. terminal in series with 200 mmf.	360 kc	360 kc (151.5°) "X" Band	C8 (osc.) C26 (ant.)
7	Ant. terminal in series with 200 mmf.	175 kc	175 kc (53.3°) "X" Band	L9 (osc.) Rock Gang
8	Repeat steps 6 and 7			
9	Ant. terminal in series with 300 ohms	15.2 mc	15.2 mc (147.2°) "C" Band	C5 (osc.)* C27 (ant.)
10	Ant. terminal in series with 200 mmf.	360 kc	360 kc (151.5°) "X" Band	C8 (osc.)
11	Ant. terminal in series with 200 mmf.	1,500 kc	1,500 kc (152.4°) "A" Band	C6 (osc.)

*Use minimum capacity peak if two can be obtained. Check to determine that C5 is adjusted to correct peak by tuning receiver to approximately 14.29 mc where a weaker signal should be received.



RCA Victor

MODELS 9TX-31, 9TX-32, 9TX-33

Chassis No. RC-405, RC-405A, RC-405B

Five-Tube, Single-Band, AC-DC Superheterodyne Receivers

Alignment Peocedure

Output Meter Alignment.—Connect the meter across the voice coil, and turn the receiver volume control to maximum.

Test-Oscillator.—Connect the low side of the test-oscillator to the receiver chassis, through a .01 mfd. capacitor, and keep the output as low as possible.

Steps	Connect the high side of test-oscillator to—	Tune test-osc. to—	Turn radio dial to—	Adjust the following for max. peak output—
1	Tuning condenser stator (osc.) in series with .01 mfd.	455 kc	Quiet point at 1,600 kc end of dial	C1, C2, C3, C4 (1st and 2nd I-F transformers)
2	Antenna term. of ant. trans. in series with 100 mmfd.	1,720 kc	Full clockwise (out of mesh)	C5 (oscillator)
3		1,500 kc	Resonance on 1,500 kc signal	C6 (antenna)

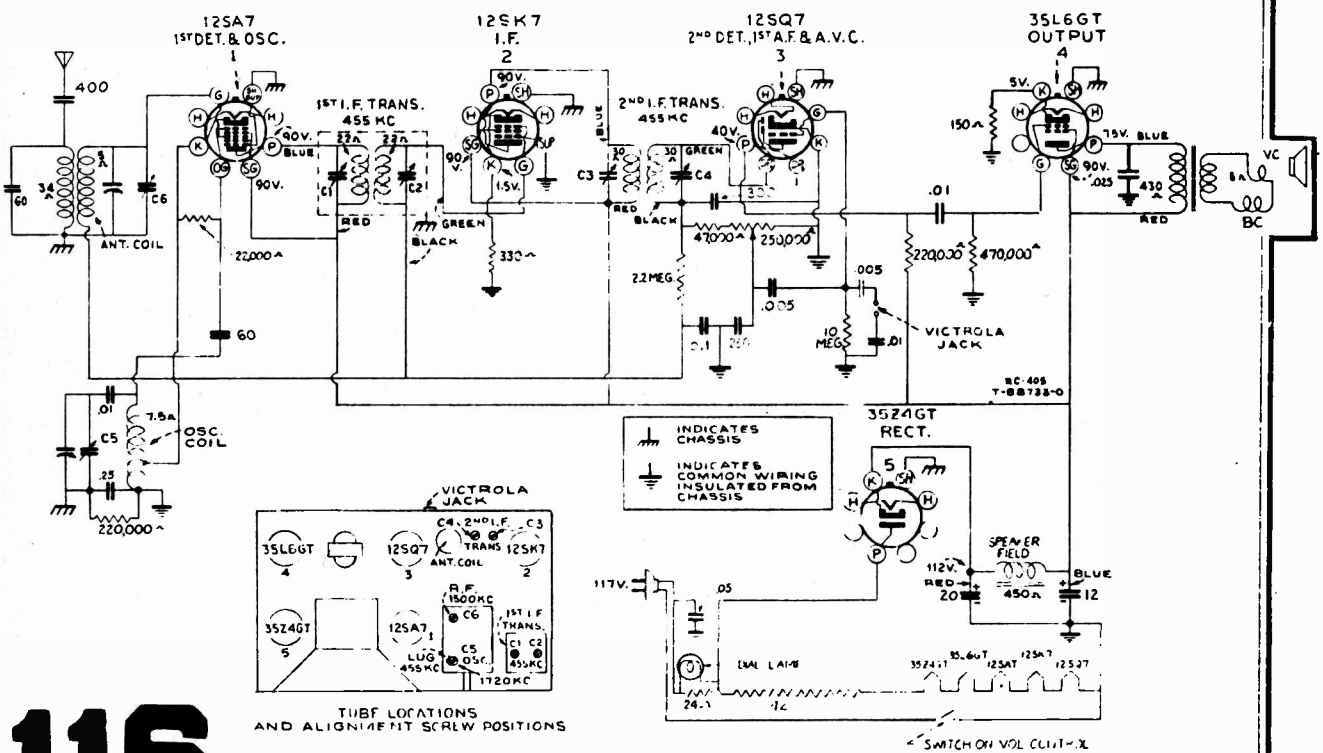
Precautionary Lead Dress

1. Dress 1st I-F plate and grid leads against chassis and away from each other. Dress plate lead from 12SK7 close to chassis.
2. Dress electrolytic capacitor against rear apron.

Power-Supply Polarity. — For operation on d-c, the power plug must be inserted in the outlet for correct polarity. If the set does not function, reverse the plug. On a-c, reversal of the plug may reduce hum.

Antenna.—The set is equipped with length of antenna wire. Do not connect the antenna to ground. If an outdoor antenna is used, it should not be longer than 100 feet, including lead-in. If it is longer, connect a 100 to 200 mmf. capacitor in series with the lead-in.

Victrola Attachment.—A jack is provided on the rear of chassis for connecting a Victrola Attachment into the audio-amplifying circuit. The cable from the Victrola Attachment should be terminated in a Stock No. 31048 plug to fit the jack.



TUBE LOCATIONS AND ALIGNMENT SCREW POSITIONS

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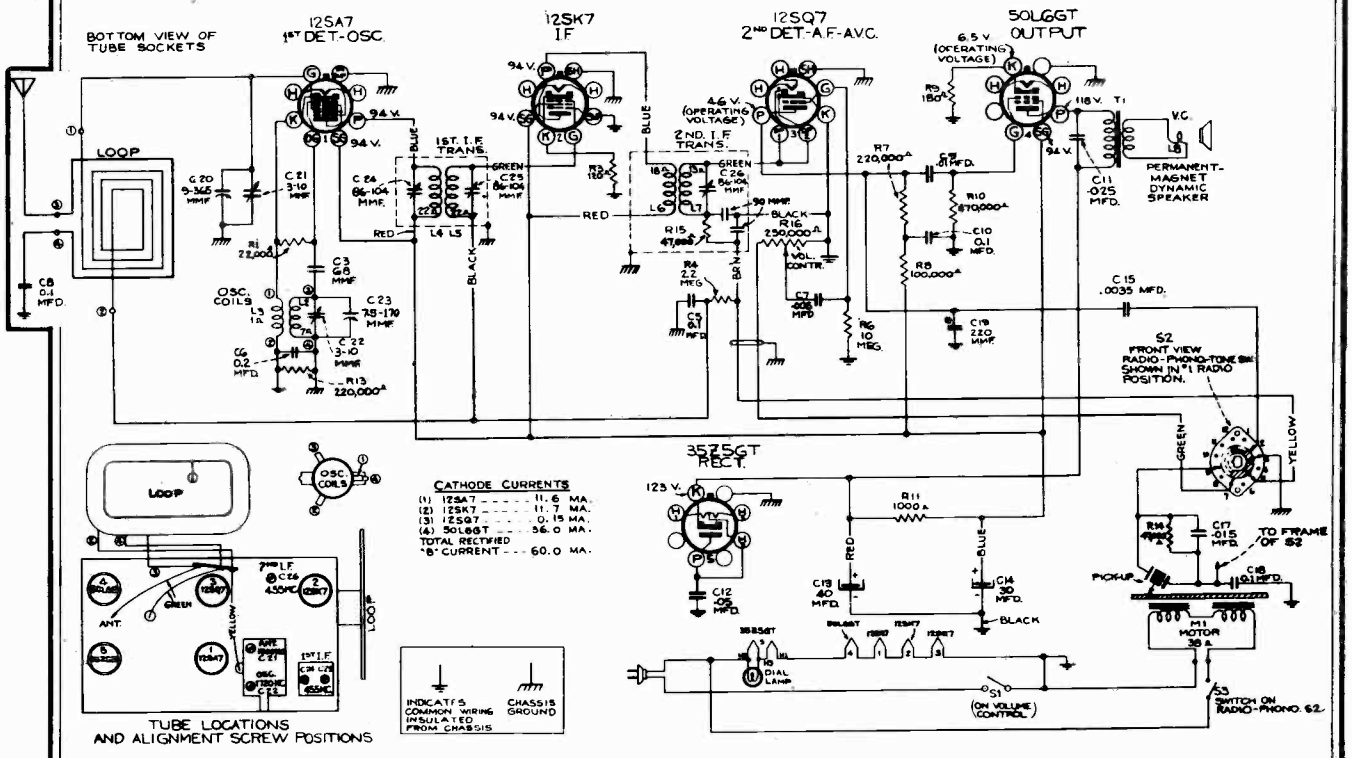
RCA VICTROLA MODEL U-9 (Chassis No. RC-482B)

Five-Tube, Single-Band, A-C, Superheterodyne



Miscellaneous Service Data

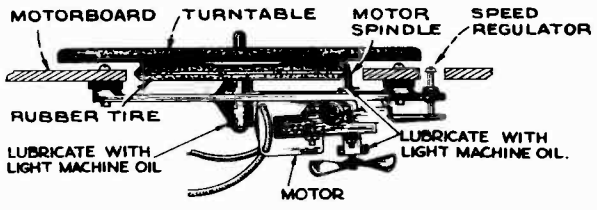
PHONOGRAPH MECHANISM.—

The phonograph motor is self-starting and operates the turntable through friction drive between the motor spindle and the rubber tire on the underside of the turntable.

The rubber driving tire on the turntable should never be removed since it is ground in to be concentric with the spindle. If replacement is required, the entire turntable should be replaced.

The speed regulator raises and lowers the motor. This changes the driving ratio between the motor and the turntable due to the motor spindle being conical in shape. It is important to adjust this regulator for a turntable speed of 78 r.p.m. WHILE PLAYING A 10-INCH RECORD WITH THE NEEDLE APPROXIMATELY ONE INCH FROM THE OUTER EDGE OF THE RECORD.

Lubrication.—The motor should be lubricated as follows: Place a few drops of S.A.E. 20 (or equivalent) on the turntable spindle and saturate the oil retaining felt pads on the motor shaft with S.A.E. 10 oil. This oiling process should be repeated once or twice a year. **CAUTION.—THE MOTOR DRIVE SPINDLE AND RUBBER DRIVING TIRE ON THE TURNTABLE MUST BE KEPT CLEAN AND ENTIRELY FREE FROM OIL AND GREASE AT ALL TIMES.**



Alignment Procedure

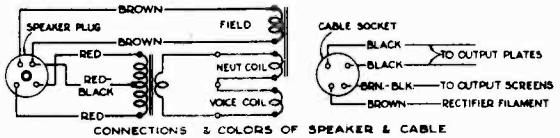
Output Meter Alignment.—Connect the meter across the voice coil, and turn the receiver volume control to maximum.

Test Oscillator.—Connect the low side of the test oscillator to the receiver chassis through a 0.01 mfd capacitor, and keep the output as low as possible.

Pre-Setting Dial.—With gang condenser in full mesh, the pointer should coincide with the left hand mark stamped in the dial backplate.

Antenna.—This set is equipped with a built-in loop antenna. If an outdoor antenna is used, it may be connected to the green antenna lead, stapled to the base of the cabinet. The antenna should not be longer than 100 feet including the lead-in. If it is longer, connect a 100 mmfd. capacitor in series with the lead-in.

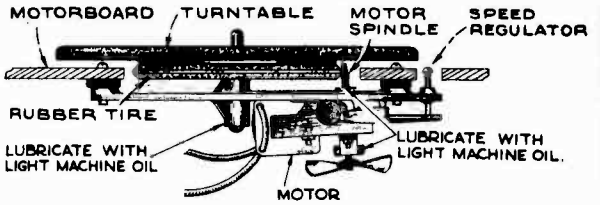
Steps	Connect the high side of test oscillator to—	Tune test osc. to—	Turn radio dial to—	Adjust the following for max. output—
1	Tuning Cond. stator (det.) in series with 0.01 mfd.	455 kc	Quiet Point at 1,600 kc end of dial	C24, C25, C26 (1st and 2nd I-F transformers)
2	Antenna lead (green) in series with 100 mmfd.	1,720 kc	Full Clockwise (out of mesh)	C22 (osc.)
3		1,500 kc	Resonance on 1,500 kc signal	C21 (ant.)

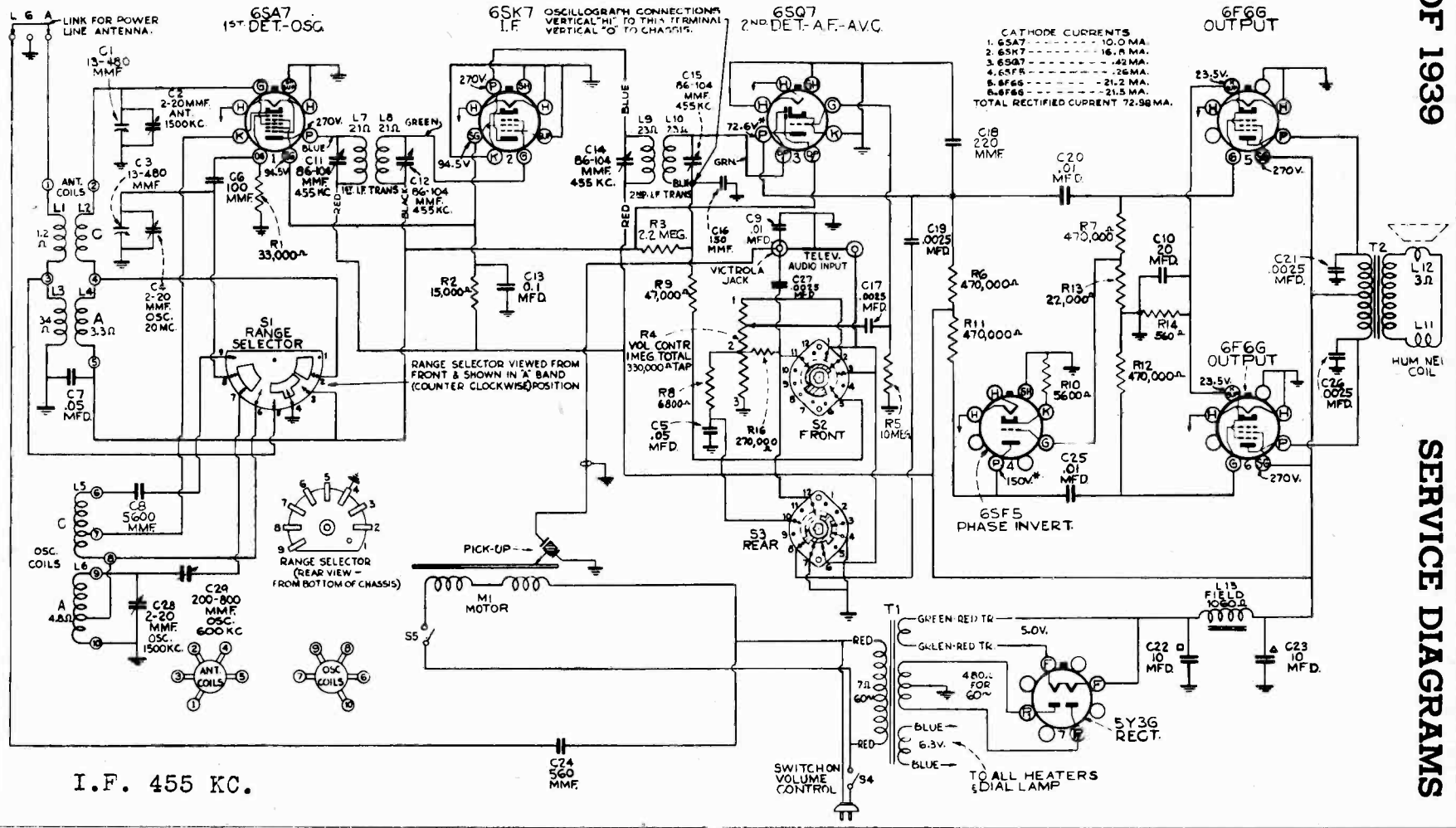


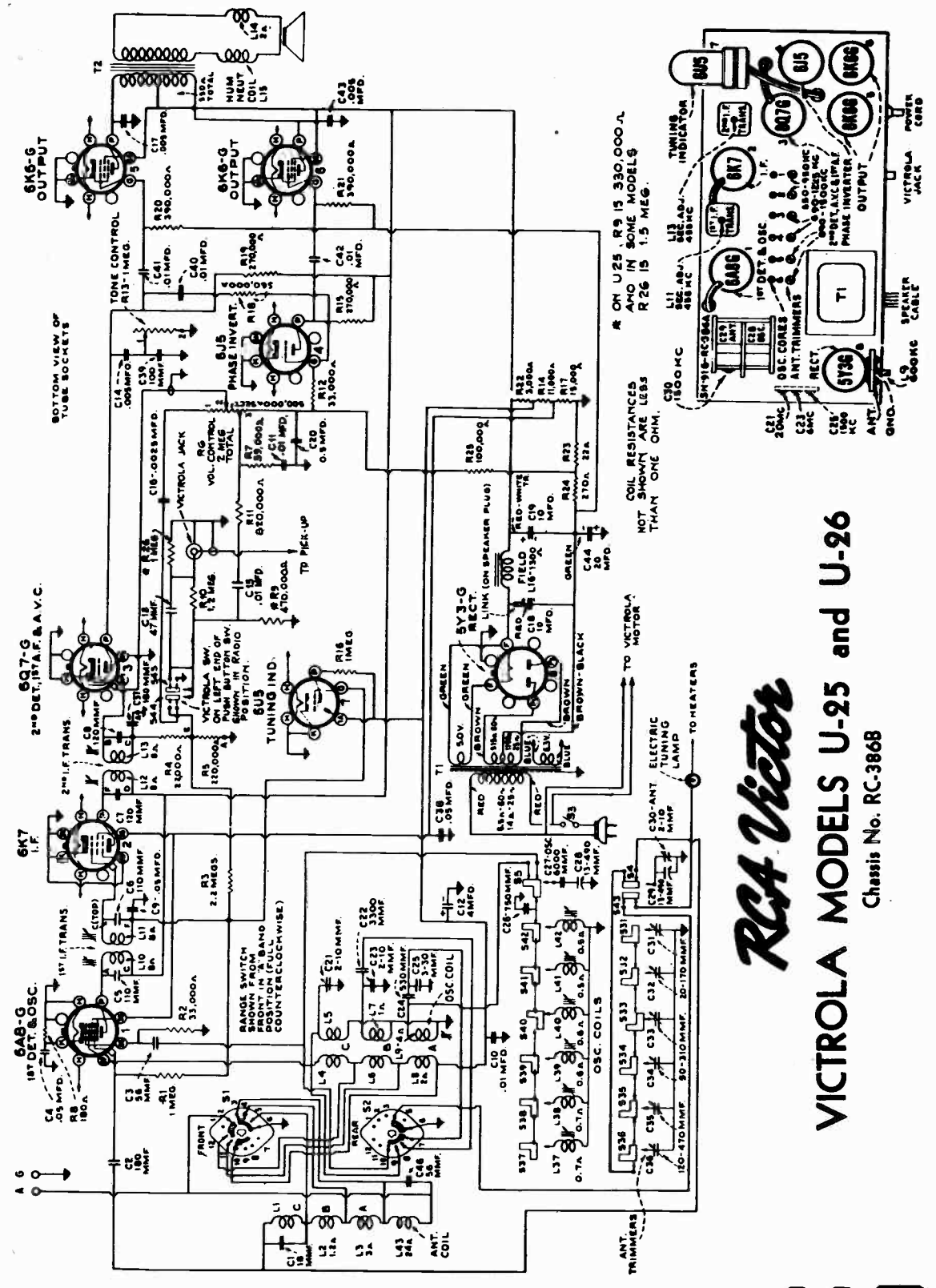
CONNECTIONS & COLORS OF SPEAKER & CABLE

RCA Victor

MODEL U-12







RCA Victor

VICTROLA MODELS U-25 and U-26

Chassis No. RC-386B

Automatic Record Changer

GENERAL INFORMATION

Before servicing the automatic record changer, inspect the assembly to see that all levers, parts, gears, springs, etc. are in good order and are correctly assembled.

A bind or jam in the mechanism can usually be relieved by rotating the turntable in the reverse direction.

The changer can be conveniently rotated through its change cycle by pushing the index lever to "Reject" and revolving the turntable by hand. Six turntable revolutions are required for one change cycle.

ADJUSTMENTS

A. Main Lever.—This lever is basically important in that it interlinks the various individual mechanisms which control needle landing, tripping, record separation, etc. One adjustment is provided for the main lever. Rotate the turntable until the changer is out-of-cycle; and adjust rubber bumper bracket (A) so that the roller clears the nose of the cam plate by 1/16 inch.

B. Friction Clutch.—The motion of the tone arm toward the center of the record is transmitted to the trip pawl "22" by the trip lever "7" through a friction clutch "5." If the motion of the pickup is abruptly accelerated or becomes irregular due to swinging in the eccentric groove, the trip finger "7" moves the trip pawl "22" into engagement with the pawl on the main gear, and the change cycle is started. Proper adjustment of the friction clutch "5" occurs when movement of the tone arm causes positive movement of the trip pawl "22" without tendency of the clutch to slip. The friction should be just enough to prevent slippage, and is adjustable by means of screw "B." If adjustment is too tight, the needle will repeat grooves; if too loose, tripping will not occur at the end of the record.

C. Pickup Lift Cable Screw.—During the record change cycle, lever "16" is actuated by the main lever "15" so as to raise the tone arm clear of the record by means of the pickup lift cable. To adjust pickup for proper elevation, stop the changer "in-cycle" at the point where pickup is raised to the maximum height above turntable plate, and has not moved outward; at this point adjust locknuts "C" to obtain 1 inch spacing between needle point and turntable top surface.

D. & E. Needle Landing on Record. — The relation of coupling between the tone arm vertical shaft and lever "20" determines the landing position of the needle on a 10 inch record. Position of eccentric stud "E" governs the landing of the needle on a 12 inch record; this, however, is dependent on the proper 10 inch adjustment.

To adjust for needle landing, place 10 inch record on turntable; push index lever to reject position and return to the 10 inch position; see that pickup locating lever "17" is tilted fully toward turntable; rotate mechanism through cycle until needle is just ready to land on the record; then see that pin "V" on lever "14" is in contact with "Step T" on lever "17." The correct point of landing is 4-11/16 inches from the nearest side of the turntable spindle; loosen the two screws "D" and adjust horizontal position of tone arm to proper dimension, being careful not to disturb levers "14" and "17". Leave approximately 1/32 inch end play between hub of lever "20" and pickup base bearing, and tighten the blunt nose screw "D"; run mechanism through several cycles as a check, then tighten cone pointed screw "D".

After adjusting for needle landing on a 10 inch record, place 12 inch record on turntable; push index lever to reject and return to 12 inch position; rotate mechanism through cycle until needle is just ready to land on the record; the correct point of landing is 5-11/16 inches from nearest side of spindle. If the landing is incorrect, turn stud "E" until the eccentric end adjusts lever "14" to give correct needle landing. The eccentric end of the stud must always be toward the rear of the motor board, otherwise incorrect landing may occur with 10 inch records.

F. & G. Record Separating Knife. — The upper plate (knife) "25" on each of the record posts serves to separate the lower record from the stack and to support the remaining records during the change cycle. It is essential that the spacing between the knife and the rotating record shelf "27" be accurately maintained. The spacing for the 10 inch record is nominally .058 inch, and for the 12 inch record is .075 inch.

To adjust, rotate the knife to the point of minimum vertical separation from the record shelf and turn screw and locknut "F" to give .055—.061 inch separation. Screw "G" must not be depressed during this adjustment. After setting screw "F" adjust screw "G" so that when its tip is depressed flush with top of record shelf, the vertical spacing between the knife, in its lowest rotational position, and the shelf, is .072—.078 inch.

H. Record Support Shelf.—The record shelf revolves during the change cycle to allow the lower record to drop onto the turntable. Both posts are rotated simultaneously by a gear and rack coupled to the main lever "15," and it is necessary that adjustments be such that the record is released from both shelves at the same instant. To adjust, place a 12 inch record on the turntable, rotate mechanism into cycle to the point where tone arm is at maximum distance outward from turntable; lift record upward until it is in contact with both separating knives, then loosen screws "H" and shift record shelves so that the curved inner edges of the shelves are uniformly spaced at least 1/16 inch from record edge. Tighten the blunt nose screw "H," run mechanism through cycle several times to check action, then tighten cone pointed screw "H".

If record shelves or knives are bent, or not perfectly horizontal, improper operation and jamming of mechanism will occur.

J. Tone Arm Rest Support (not shown).—When the changer is out-of-cycle, the front lower edge of the pickup head should be 5/16 inch above surface of motor board. This may be adjusted by bending the tone arm support bracket, which is associated with the tone arm mounting base, in the required direction.

K. Trip Pawl Stop Pin.—The position of the trip pawl stop pin "K" in relation to the main lever "15" governs the point at which the roller enters the cam. By bending the pin support either toward or away from trip pawl bearing stud, the roller can be made to enter the cam later or earlier, respectively. This adjustment should be made so that the roller definitely clears the cam outer guide as well as the nose of the cam plate.

Lubrication.—Petrolatum or petroleum jelly should be applied to cam, main gear, spindle pinion gear, and gears of record posts.

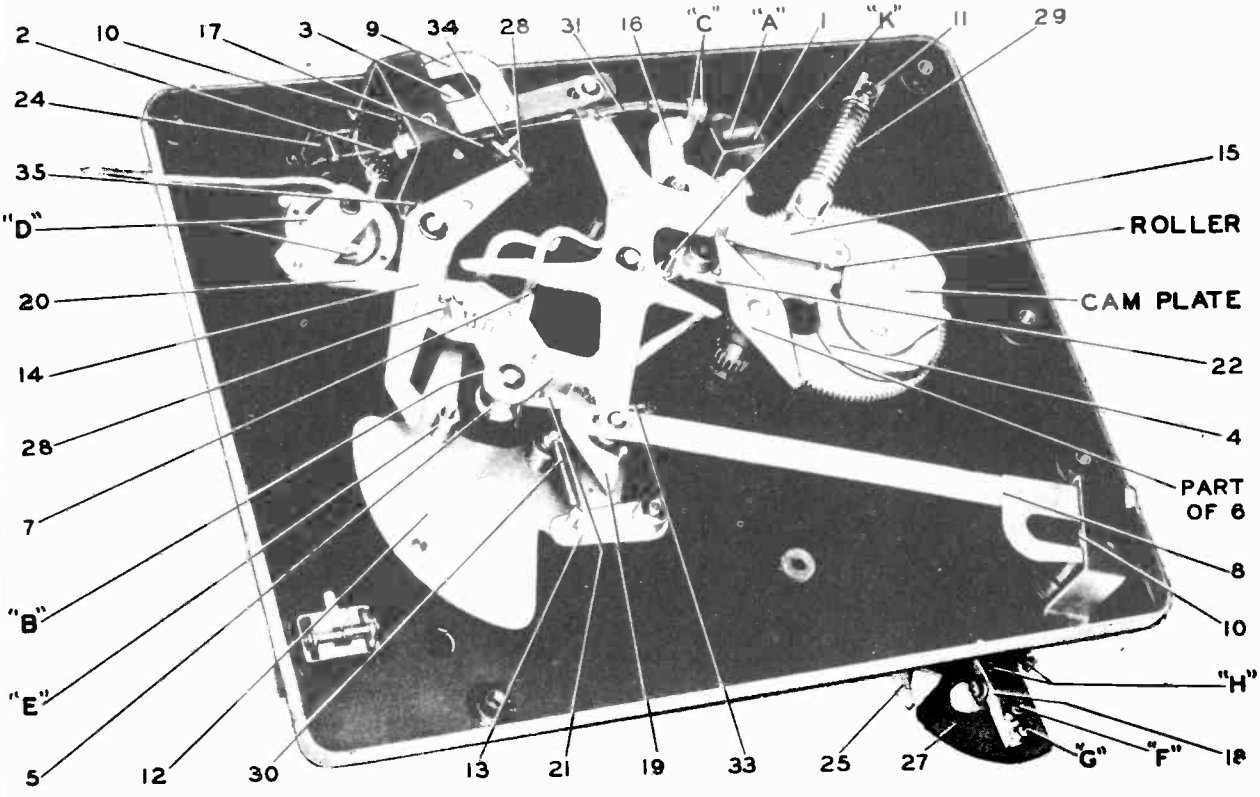
MISCELLANEOUS SERVICE HINTS

Incorrect adjustment of a particular mechanism of the changer is generally exhibited in a specific mode of improper operation. The following relations between effects on operation and the usual mis-adjustments will enable ready adjustment in most cases.

1. For any irregularity of operation, the adjustment of the main lever "15" should be checked first as in "A".
2. Needle does not land properly on both 10 and 12 inch records—Make complete adjustments "D" and "E".
3. Needle does not land properly on 12 inch record but correct on 10 inch—Effect adjustment "E".
4. Failure to trip at end of record—Increase clutch "5" friction by means of screw "B". Also, see that levers "7" and "12" are free to move without touching each other.
5. Pickup strikes lower record of stack or drags across top record on turntable—Adjust lift cable per adjustment "C".
6. Needle does not track after landing—Friction clutch "5" adjustment "B" may be too tight; bind in tone arm vertical bearing; levers "7" and "12" fouled; or pickup output cable twisted.
7. Cycle commences before record is complete—Record is defective, or adjustment "B" of friction clutch "5" is too tight.
8. Wow in record reproduction—Record is defective; flexible coupling between motor and changer mechanism not correctly assembled; or instrument is not being operated at normal room temperature (65° F).
9. Record knives strike edge of records—Records warped; record edges are rough; or knife adjustments "F" and "G" are incorrect.
10. Record not released properly—Adjust record shelf assemblies in respect to shaft by means of adjustment "H".
11. Needle lands in 10 inch position on 12 inch record or misses record when playing both types mixed—Increase tension of pickup locating lever spring "34".

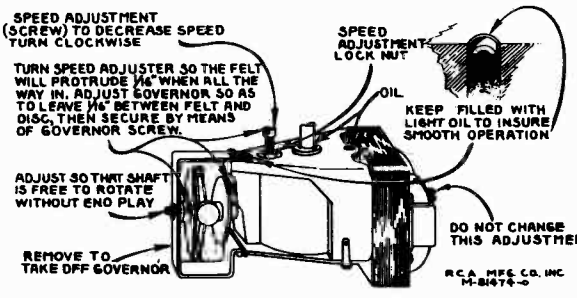
MANUAL OF 1939 MOST POPULAR SERVICE DIAGRAMS

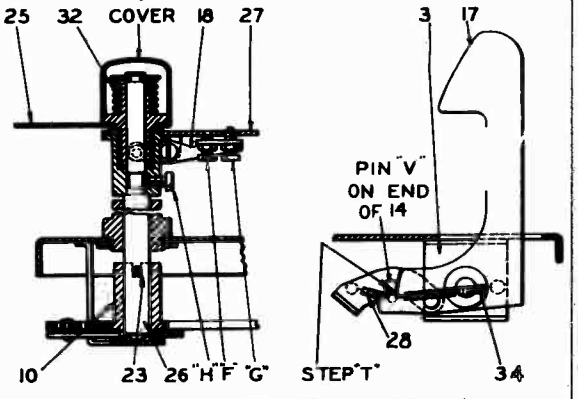
VICTROLA MODELS U-25 and U-26



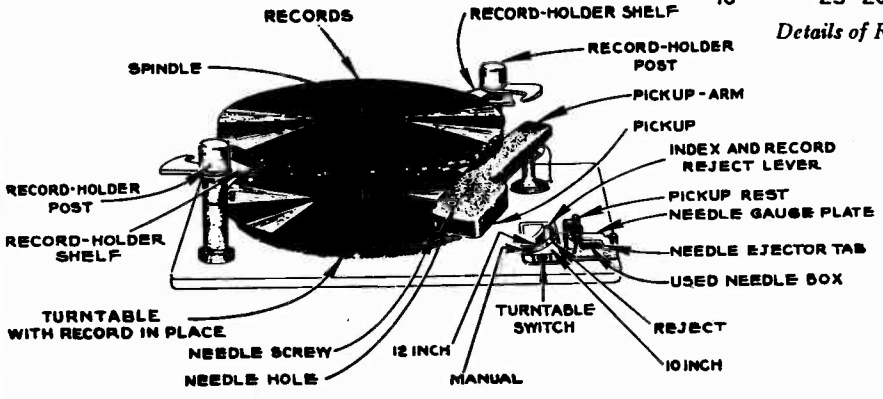
Bottom View of Automatic Record Changer

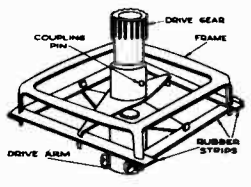
NOTE: Numbers refer to parts—letters refer to adjustments.





Details of Record Shelf Posts, and Locating Lever Assemblies





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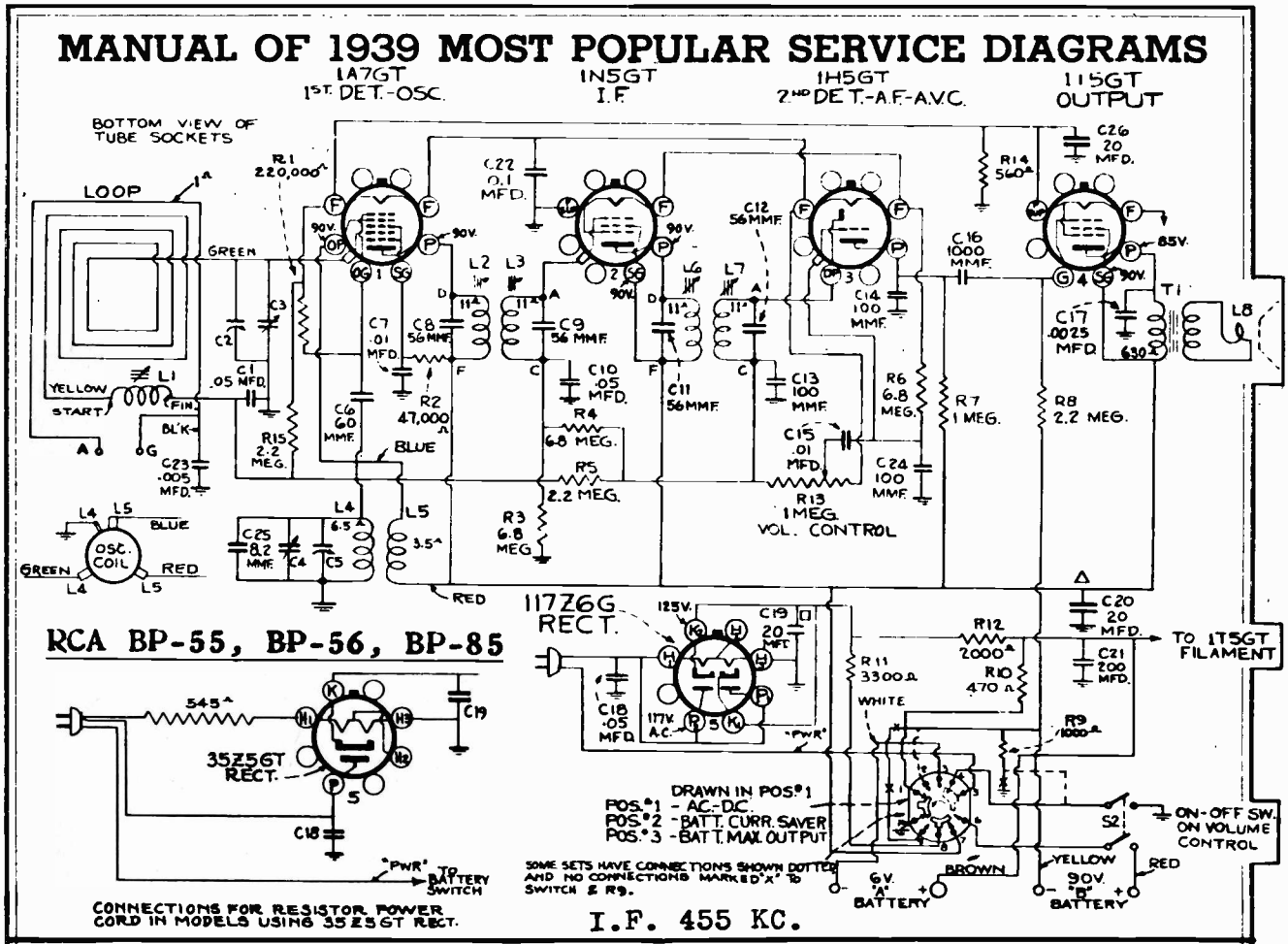
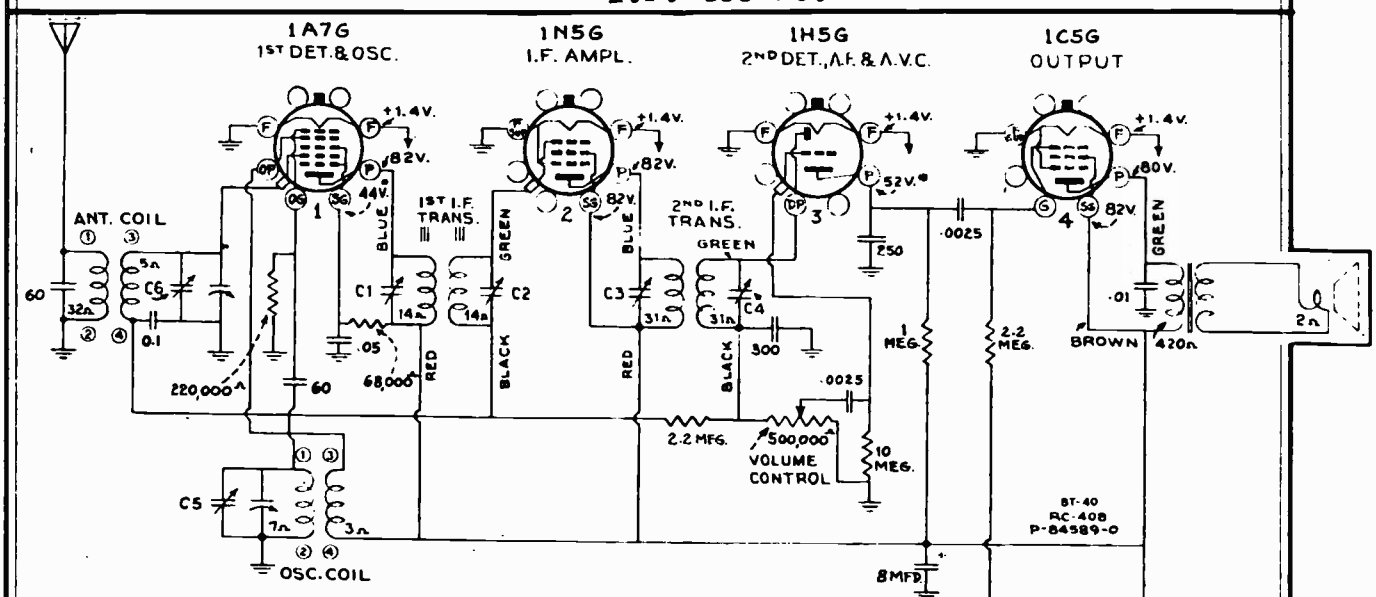


RCA BP-55, BP-56, BP-85

I.F. 455 KC.



I.F. 455 KC.

RCA Victor

MODEL BT-40

Chassis No. RC-408

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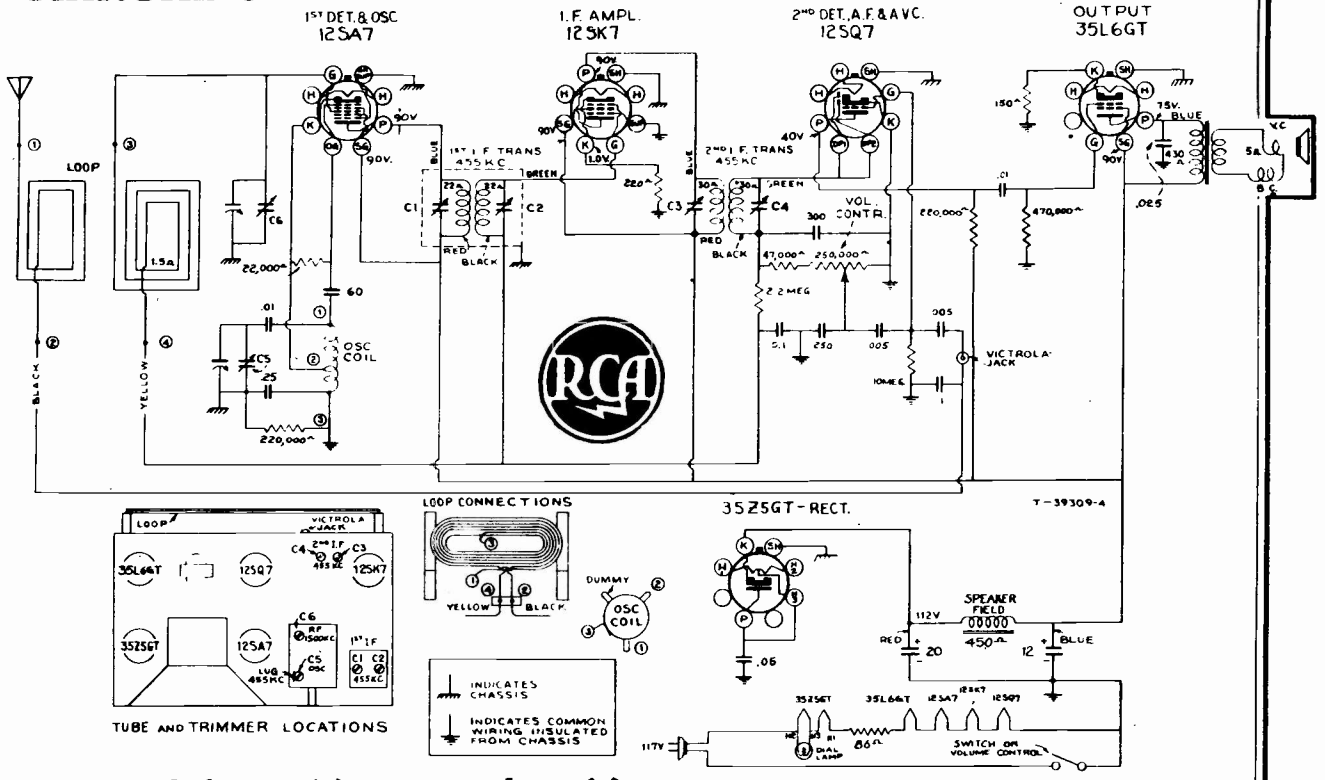
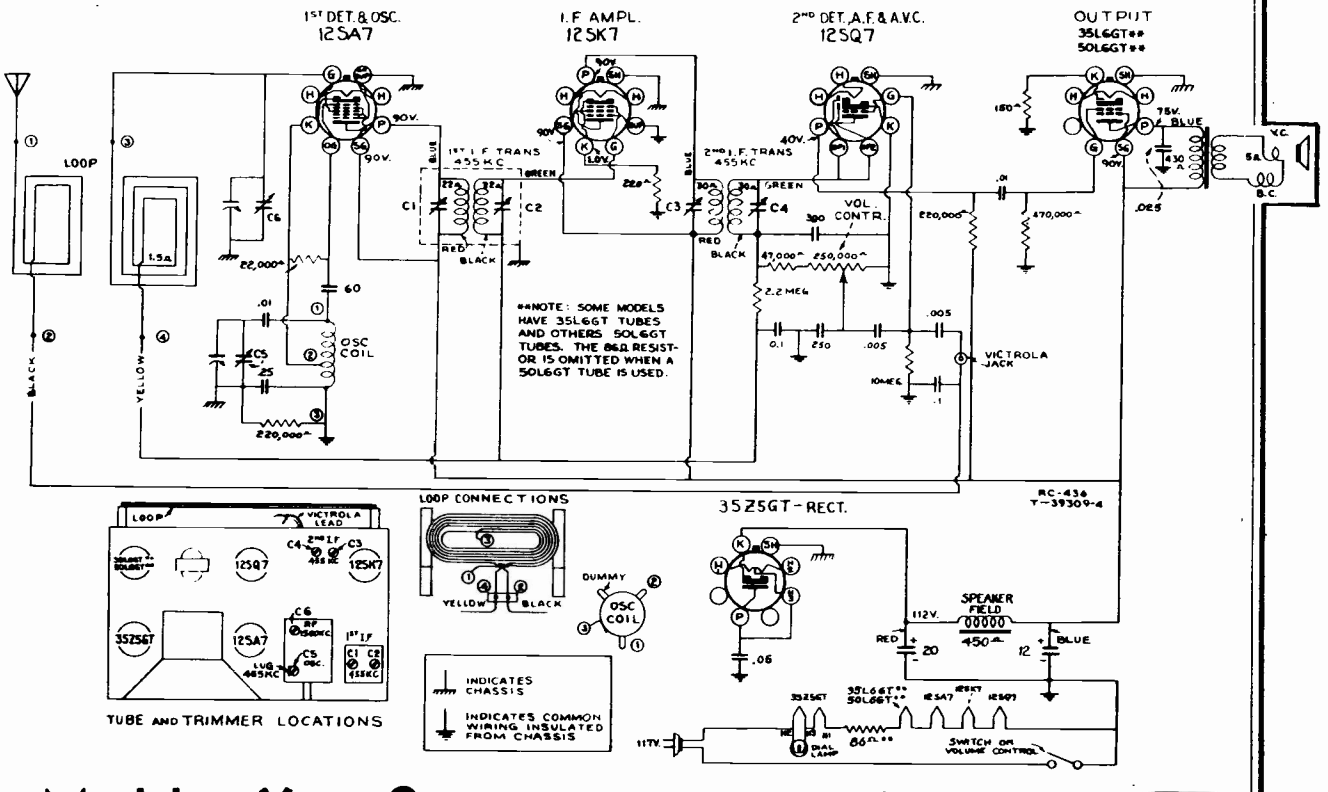


Models 40X-30 and 40X-31 (Chassis No. RC405C & D)



Model 40X-50 Series (Chassis No. RC-436)

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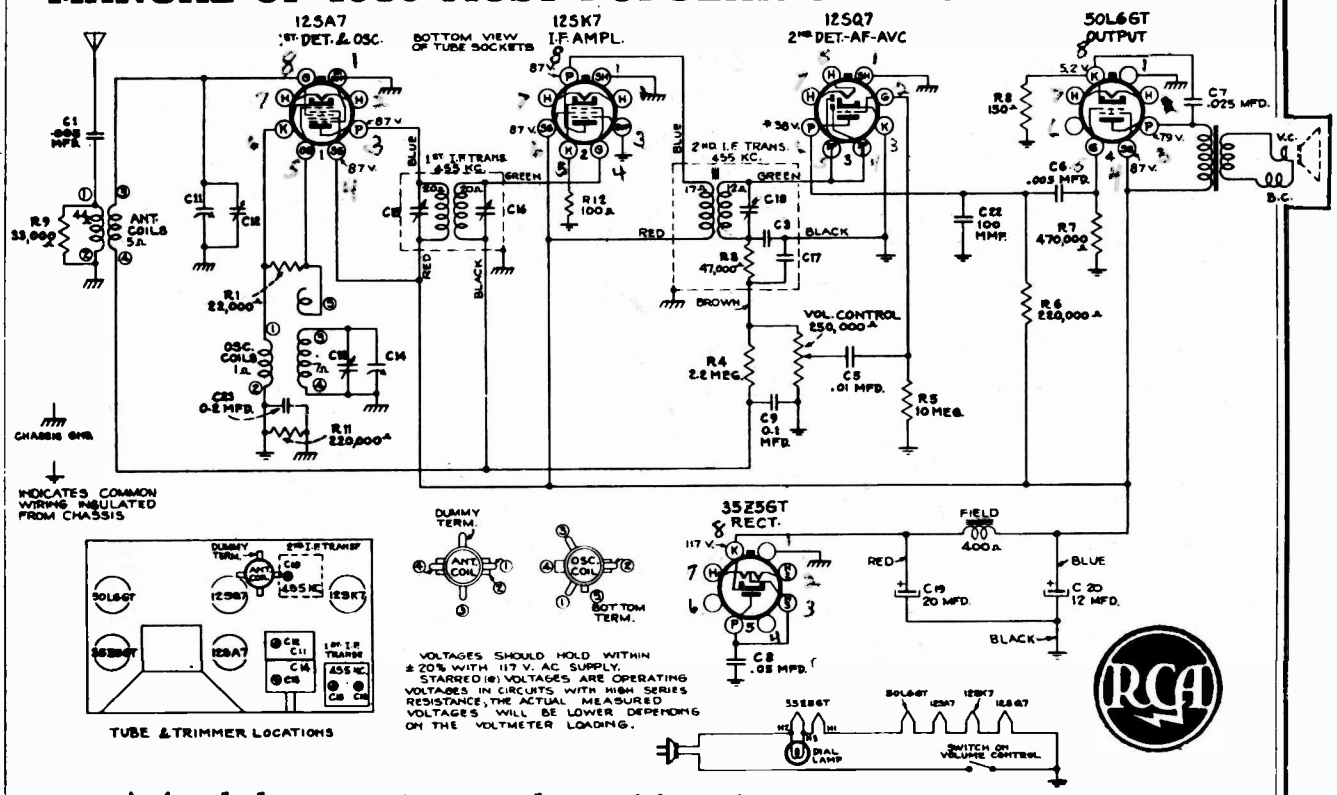
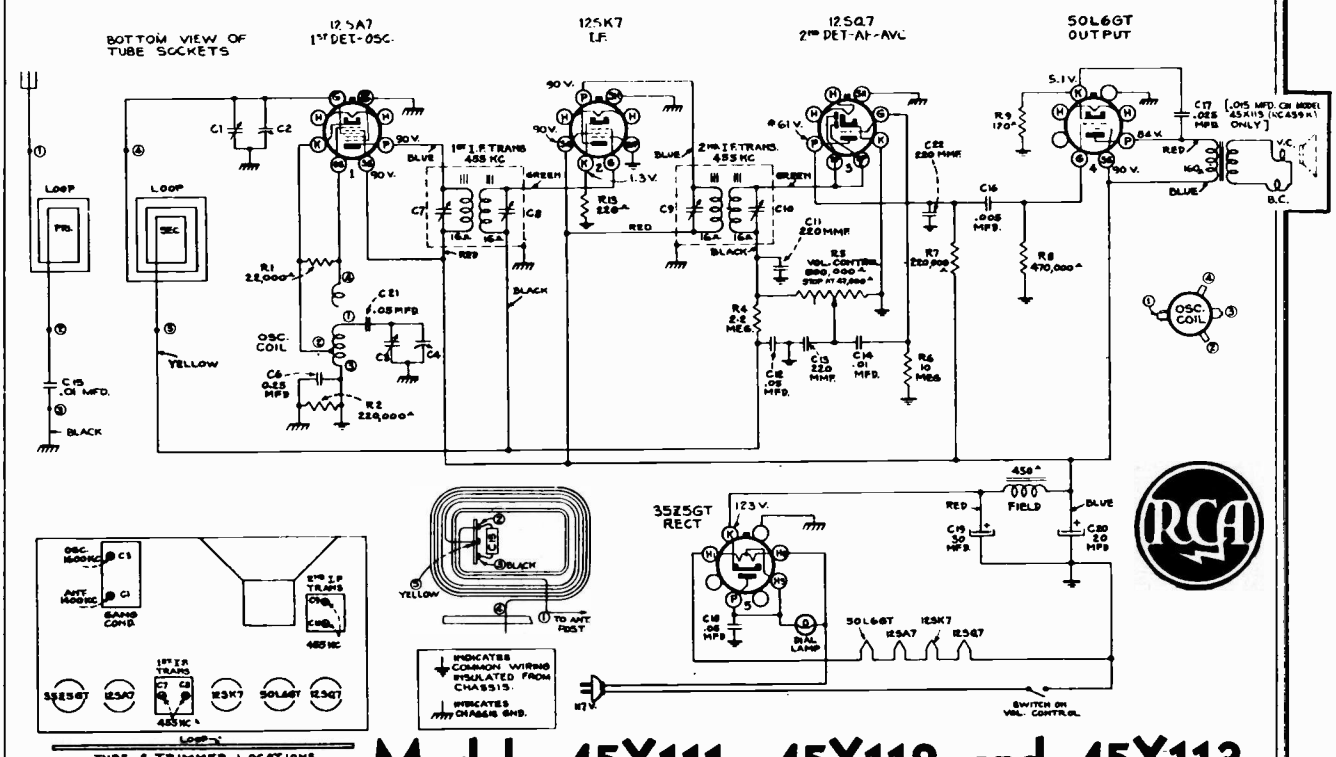


Models 45X5 and 45X6 (Chassis No. RC-457-D)



Models 45X111, 45X112 and 45X113

Chassis Nos. 459J and 459K

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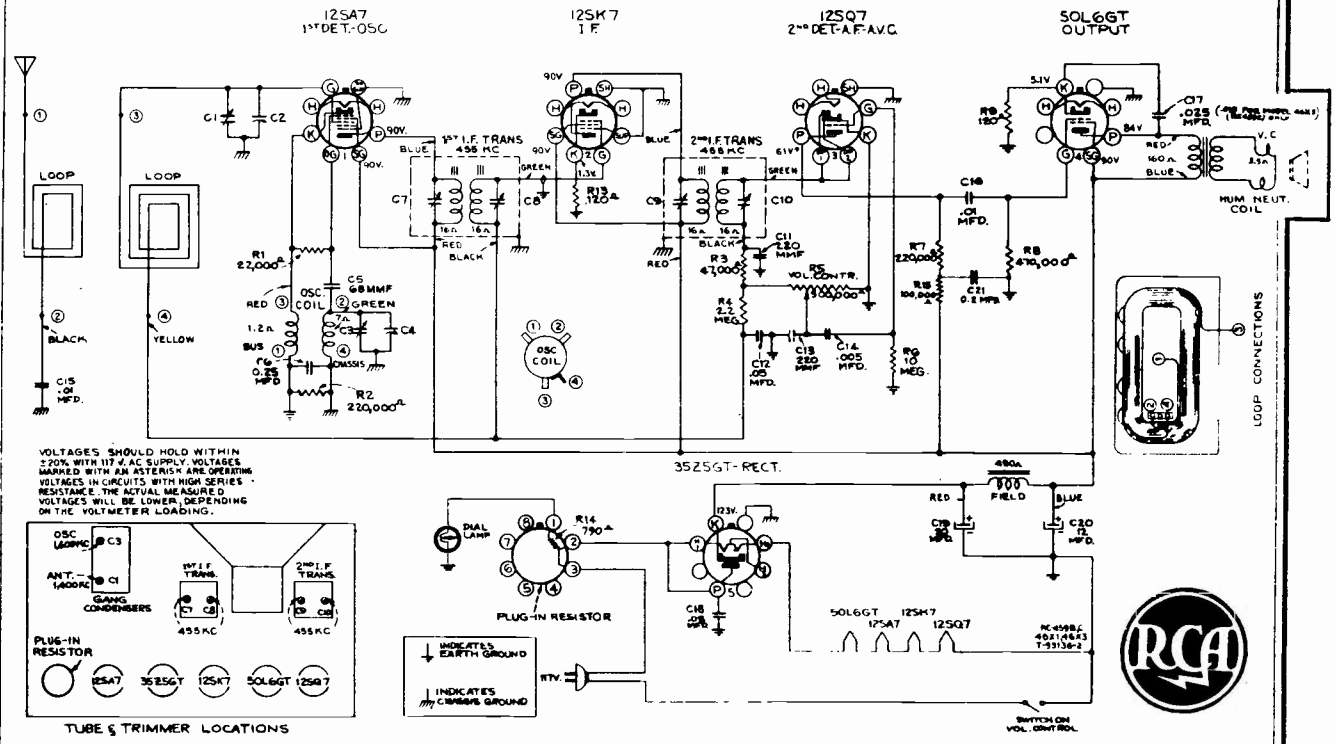
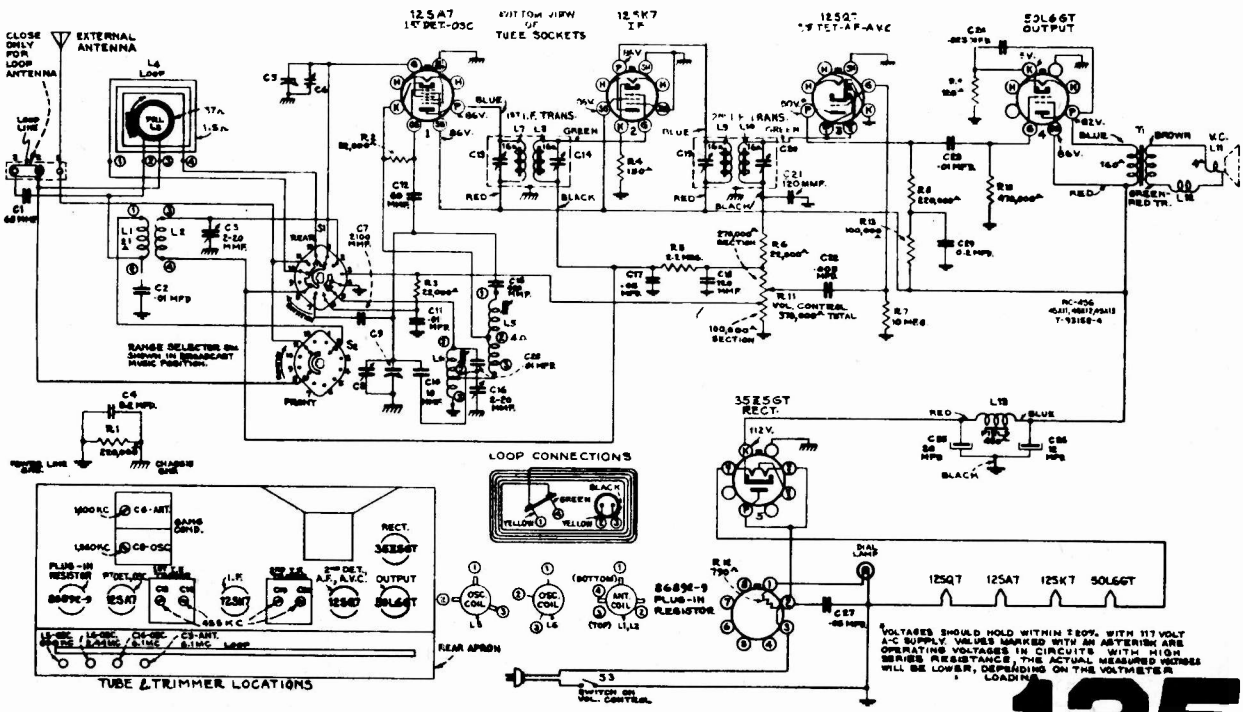


Models 46X1, 46X2 and 46X3

Chassis Nos. 459B and 459C

Models 46X11, 46X12, and 46X13

Chassis Nos. RC456 and RC456A



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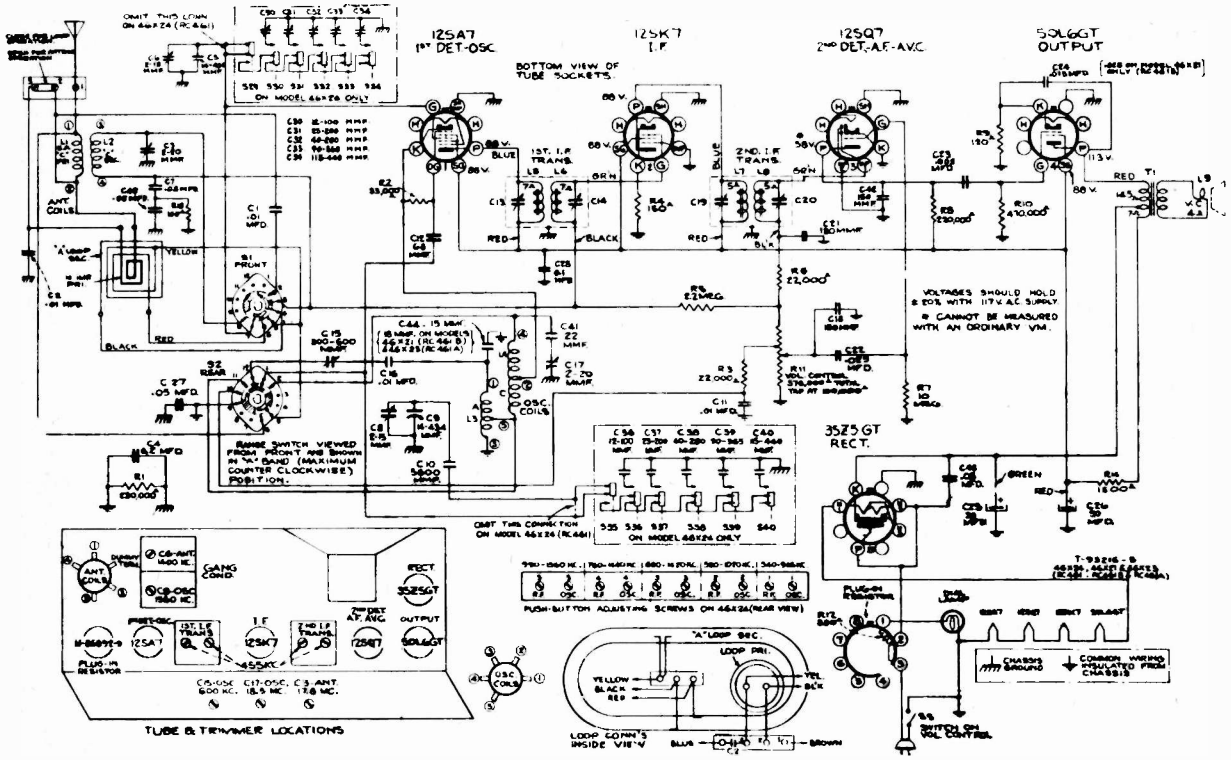
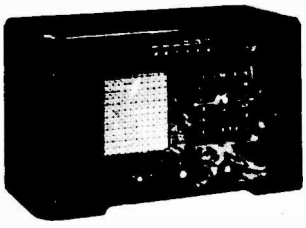
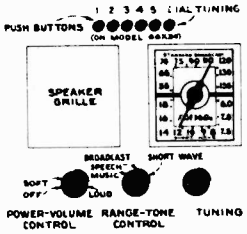
RCA Victor Models 46X21, 46X23, and 46X24







Adjustments for Electric Tuning:

The push buttons and corresponding frequency ranges are given in the schematic diagram. Allow the set to warm up for about 15 minutes and proceed as follows:

(1) List five desired stations in order of the push button ranges.

(2) Push in the dial tuning (right hand) button and manually tune in the first station on the list.

(3) Press button No. 1. Turn R-F screw half way in; next turn the oscillator screw entirely in and then gradually back out until the station is heard.

(4) Adjust the R-F trimmer for maximum output. **(Clockwise adjustment of oscillator and R-F trimmers tunes the circuits to lower frequencies.)**

(5) By turning the set to a position in which reception is weak a final more accurate adjustment may be made.

(6) Adjust for each of the remaining stations in a similar manner and place corresponding station tabs in recesses above buttons. A "Dial Tuning" tab should be above button No. 6.

Precautionary Lead Dress:

(1) Dress all leads away from oscillator and antenna coils.

(2) Dress cathode resistor (R4) and B+ lead across 12SK7 socket between plate and grid terminals.

(3) (46X24 only) Dress leads to push button switch straight up and parallel so that they do not touch each other.

(4) Dress black lead from 1st I-F transformer over green lead.

(5) Keep plate-cathode bypass (C43) of rectifier tube away from volume control.

Alignment Procedure

Output Meter Alignment.—Connect the meter across the voice coil, and turn the receiver volume control to maximum.

Test-Oscillator.—Connect the low side of the test-oscillator to the receiver chassis through a .01 mfd. capacitor, and keep the output as low as possible.

Pre-Setting Pointer.—With gang condenser in full mesh, the pointer should be adjusted to a horizontal position.

Antenna.—The set is equipped with a built-in loop antenna. If the loop antenna is used, the antenna terminal board link should be closed. This link should be open when an external antenna is used. Connect the external antenna to terminal 1.

Step	Connect high side of test oscillator to—	Tune test oscillator to—	Turn radio dial to—	Adjust following for max. output—
1	Grid 12SK7 in series with 0.01 mfd.	455 kc	"A" Band Quiet Point at 1,550 kc end of dial	C19 and C20 (2nd I-F Trans.)
2	Grid 12SA7 in series with 0.01 mfd.			C13 and C14 (1st I-F Trans.)
3	Antenna in series with 200 mmfd.	600 kc	"A" Band 600 kc	C15 (osc.)
4		1,560 kc	"A" Band Full Clockwise	C8 (osc.)
5		1,400 kc	Resonance on 1,400 kc "A" Band	C6 (ant.)
6	Repeat steps 3 (rock in), 4 and 5			
7	Antenna in series with 300 ohms	18.5 kc	"C" Band Full Clockwise	C17 (osc.)*
8		17.8 kc	"C" Band Resonance on 17.8 kc Signal	C3 (ant.)
9	Repeat steps 7 and 8			

* Use minimum capacity peak if two can be obtained.

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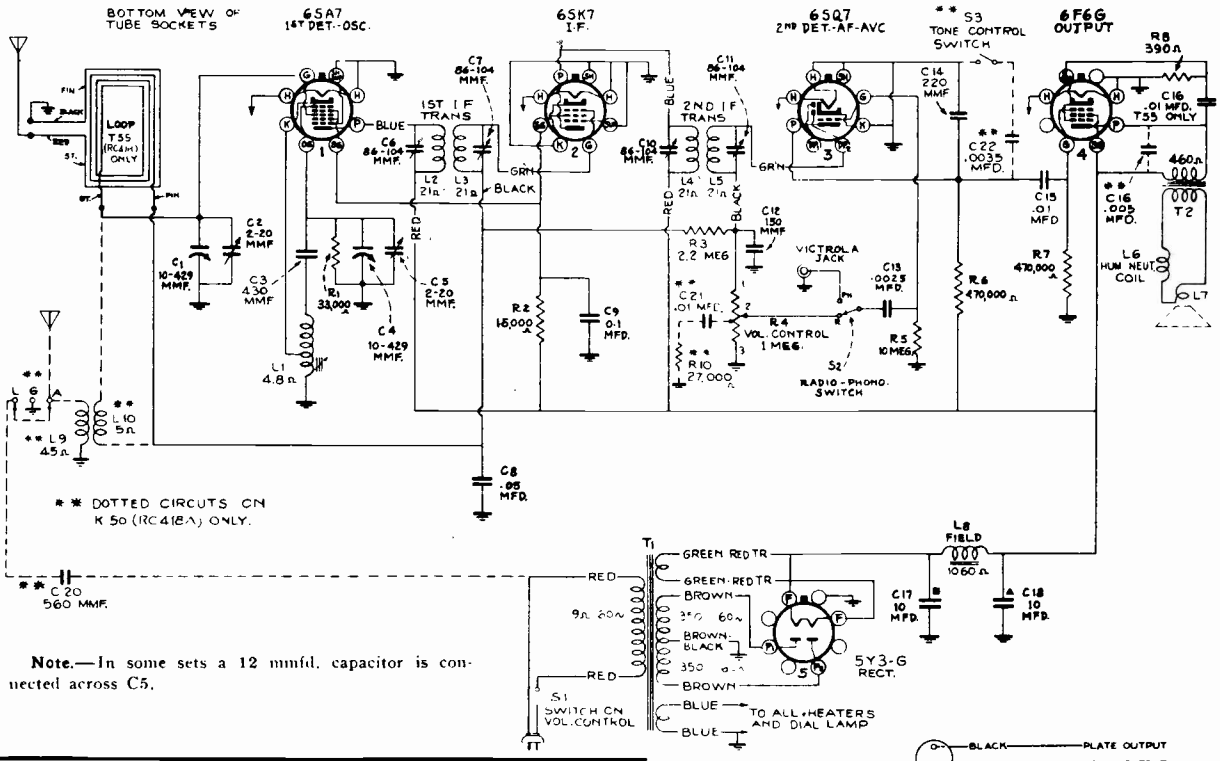
RCA Victor MODELS K-50 and T-55

Chassis Nos. RC-418A and RC-418



Note.—In some sets a 12 mmfd. capacitor is connected across C5.

Adjustments for Push-Button Tuning

1. Pull off the push-buttons and loosen the push-button rods with a small screwdriver.

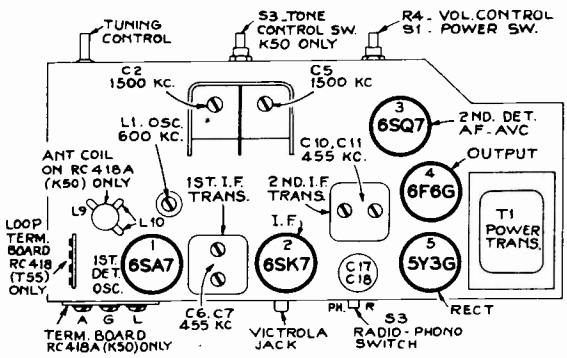
2. Set the radio-phono switch to "radio" position and accurately tune in the station for which the first button is to be set.

3. Press in push-button rod No. 1 (left) with the screwdriver, as far as it will go without undue pressure, hold in, retune station with manual control if necessary for best reception, and then carefully tighten up the rod. Do not tighten more than ¼ turn after the rod begins to grip or damage to the mechanism may result.

4. Replace the push-button on its shaft.

5. Proceed in a similar manner for the remainder of the push-buttons

6. Insert the station marker tabs in the recesses above the push-buttons.



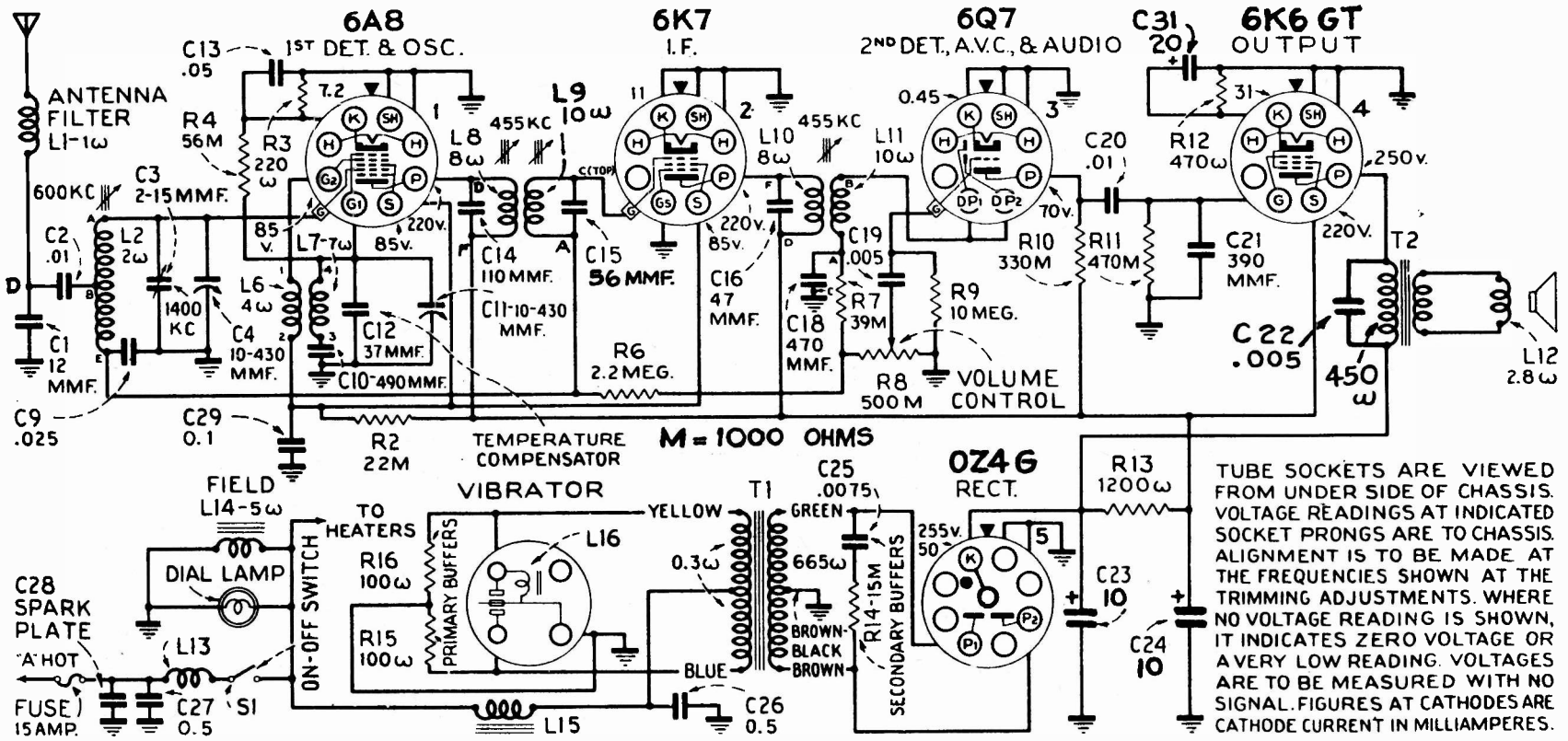
Steps	Connect the high side of the test-osc. to—	Tune test osc. to—	Turn radio dial to	Adjust the following for maximum peak output
1	Antenna terminal	455 kc	Quiet Point between 1,720-1,500 kc	C10 and C11 (2nd I-F trans.)
2	Antenna terminal			C6 and C7 (1st I-F trans.)
3	Ant. terminal in series with 200 mmfd.	1,500 kc	1,500 kc calibration mark	C5 (osc.) C2 (ant.)
4		600 kc	600 kc calibration mark	L1 (osc.) (Rock in)
5	Repeat step 3			

MODEL M50

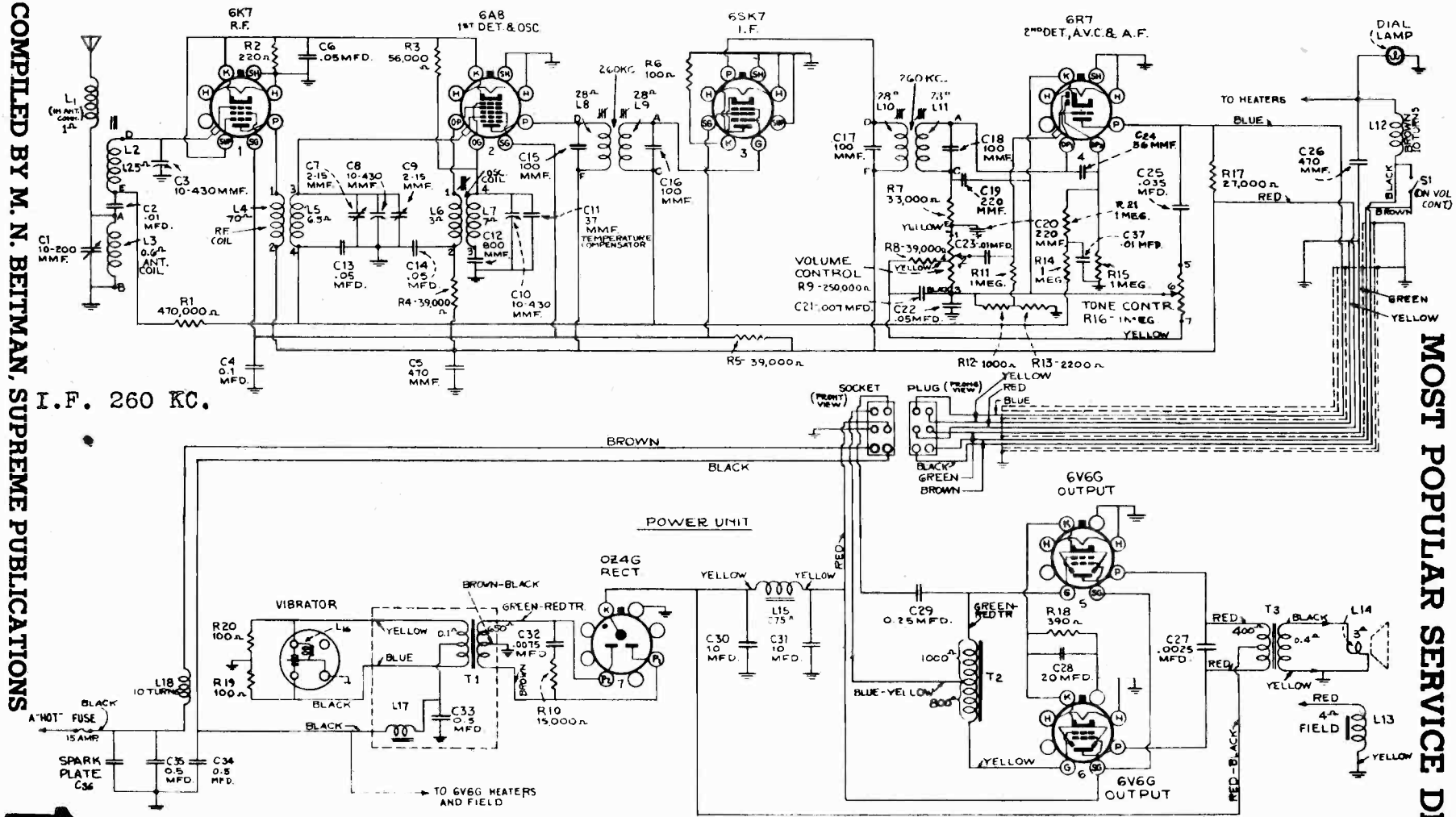
Chassis No. RC 357J

Position of Dial Pointer	Generator Frequency	Dummy Antenna	Generator Connection	Adjustment Symbol	Circuit Adjusted
No Signal 550-750 kc	455 kc	.001 mfd.	6K7 Grid	L-10	2nd I.F. Trans.
No Signal 550-750 kc	455 kc	.001 mfd.	6A8 Grid	L-8, L-9	1st I.F. Trans.
1,400 kc	1,400 kc	.0001 mfd. †	Ant. Lead	C-3	Ant.
600 kc	600 kc	.0001 mfd. †	Ant. Lead	L-2	Ant.
1,400 kc	1,400 kc	.0001 mfd. †	Ant. Lead	C-3 *	Ant.

NOTE: No oscillator alignment adjustments are required in this receiver.



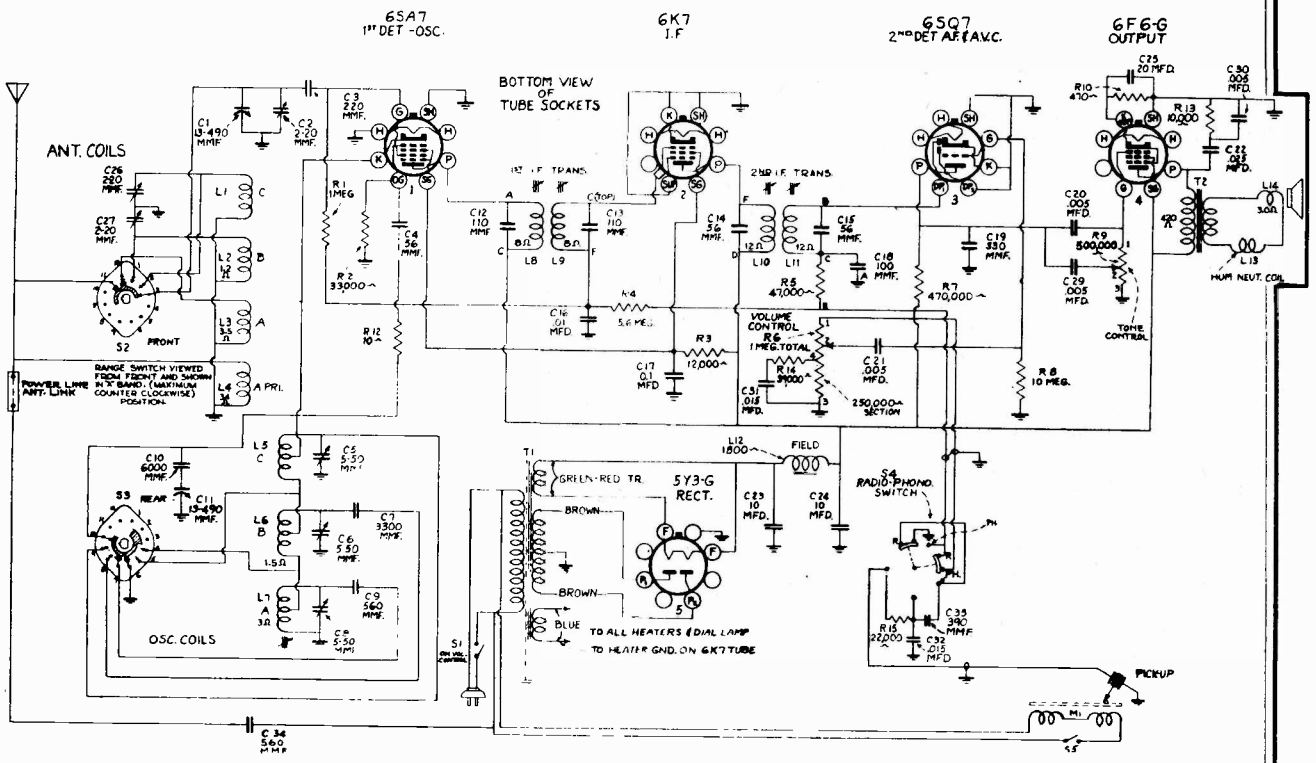
TUBE SOCKETS ARE VIEWED FROM UNDER SIDE OF CHASSIS. VOLTAGE READINGS AT INDICATED SOCKET PRONGS ARE TO CHASSIS. ALIGNMENT IS TO BE MADE AT THE FREQUENCIES SHOWN AT THE TRIMMING ADJUSTMENTS. WHERE NO VOLTAGE READING IS SHOWN, IT INDICATES ZERO VOLTAGE OR A VERY LOW READING. VOLTAGES ARE TO BE MEASURED WITH NO SIGNAL. FIGURES AT CATHODES ARE CATHODE CURRENT IN MILLIAMPERES.



RCA Victor

MODEL M-70

Chassis No. RC-394



RCA Victor

MODEL U-50

CHASSIS No. RC-414C

Steps	Connect the high side of test-osc. to—	Tune test-osc. to—	Turn radio dial to—	Adjust the following for max. peak output
1	6K7 I-F grid cap, in series with .01 mfd.	455 kc	"A" Band quiet point between 550-750 kc	L10 and L11 (2nd I.F. trans.)
2	Tuning condenser stator (osc.) in series with .01 mfd. **	455 kc		L8 and L9 (1st I.F. trans.)
3	Antenna lead in series with 200 mmfd.	600 kc	600 kc (33°) "A" Band	L7†
4		1,500 kc	1,500 kc (152.4°) "A" Band	C2 (ant.) C8 (osc.)
5	Repeat steps 3 and 4			
6	Antenna lead in series with 400 ohms	20 mc	20 mc (155.4°) "C" Band	C5 (osc.) * C26 (ant.)
7		6 mc	6 mc (149°) "B" Band	C6 (osc.) * C27 (ant.)
8	Antenna lead in series with 200 mmf.	1,500 kc	1,500 kc (152.4°) "A" Band	C8 (osc.)

* Use minimum capacity peak if two peaks can be obtained.
† Rock gang condenser slightly while adjusting L7.
** Make test-oscillator connection to lug on tuning condenser stator (oscillator section) in series with .01 mfd. condenser.
Note.—Oscillator tracks 455 kc above signal on all bands.

Cathode-Ray Alignment is the preferable method. Connections for the oscillograph are shown in the chassis drawing.

Output Meter Alignment.—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

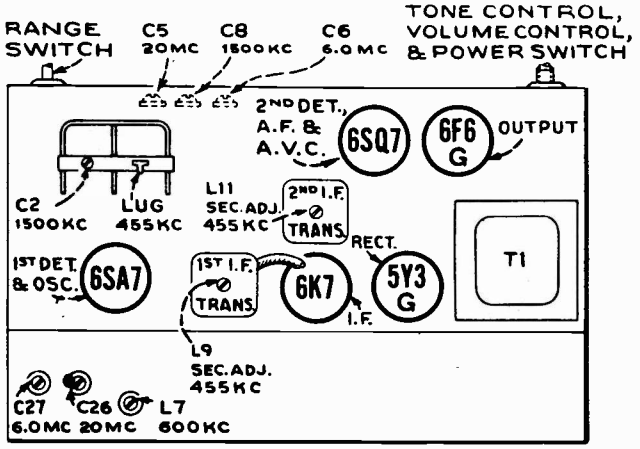
Test-Oscillator.—For all alignment operations, connect the low side of the test-oscillator to the receiver chassis, and keep the output as low as possible to avoid a-v-c action.

Calibration Scale On Indicator-Drive-Cord Drum.—In most cases it will not be necessary to remove the chassis from the dial scale for alignment, allowing the dial scale to be used for calibration. However, if alignment is made with the receiver chassis removed, the calibration scale attached to the rear of the drum which is mounted on the front shaft of the gang condenser must be used. The setting of the gang condenser is read on this scale, which is calibrated in degrees. The correct setting of the gang in degrees, for each alignment frequency, is given in the alignment table.

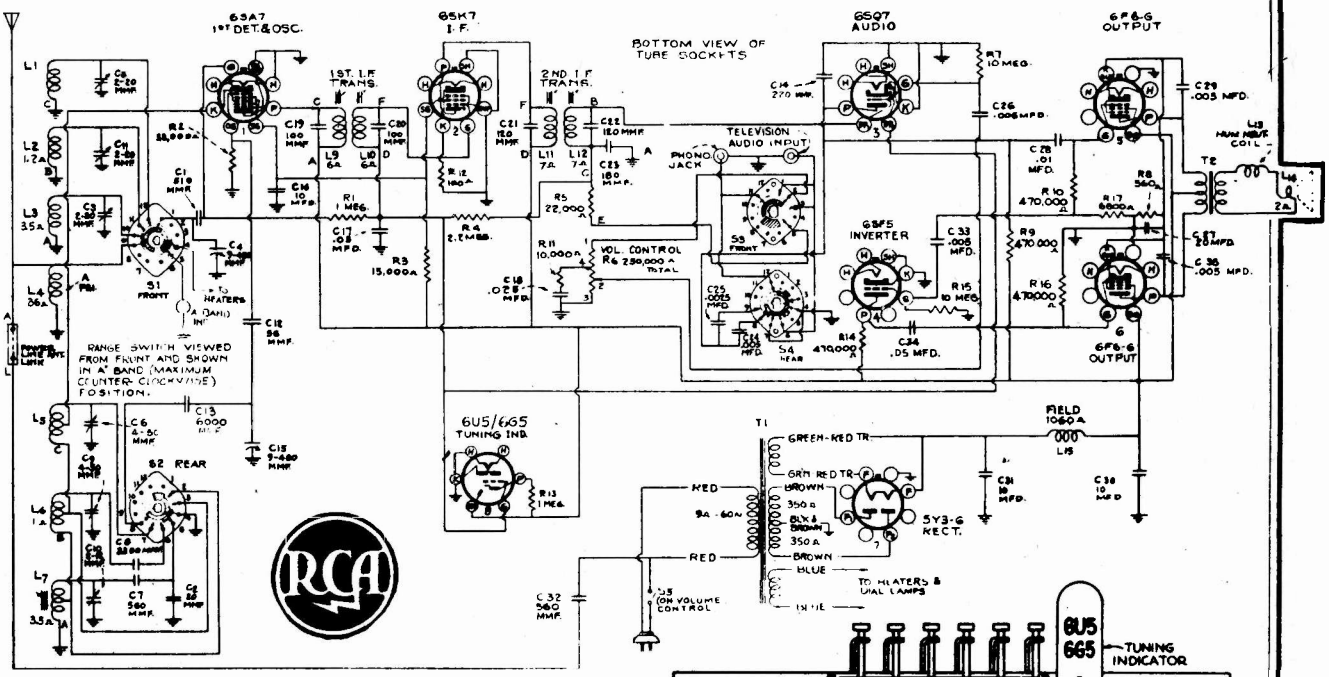
As the first step in r-f alignment, check the position of the drum. The 135° mark on the drum scale must be vertical, and directly under the center of the gang-condenser shaft when the plates are fully meshed. The drum is held in place by one set-screw, which must be securely tightened when the drum is in the correct position.

Pointer for **Calibration Scale.**—Improvise a pointer for the calibration scale by fastening a piece of wire to the gang-condenser frame, and bend the wire so that it points to the 0° mark on the calibration scale when the plates are fully meshed.

Dial-Indicator Adjustment.—After fastening the chassis in the cabinet, attach the dial indicator to the drive cable with indicator at the 530 kc mark, and gang condenser fully meshed. The indicator has a spring clip for attachment to the cable.



MODEL T-80 Eight-Tube, Three-Band, AC, Superheterodyne

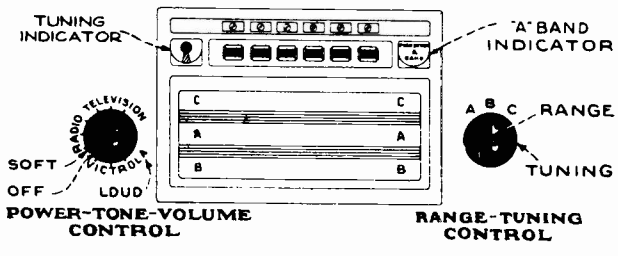


Steps	Connect the high side of the test-osc. to—	Tune test osc. to—	Turn radio dial to—	Adjust the following for maximum peak output
1	6SK7 grid in series with .01 mfd.	455 kc	"A" Band Quiet Point between 550-750 kc	L11 and L12 (2nd I-F Trans.)
2	6SA7 grid in series with .01 mfd.			L9 and L10 (1st I-F Trans.)
3	Ant. terminal in series with 300 ohms	20 mc	20 mc (40°) "C" Band	C6 (osc.)* C5 (ant.)
4		6 mc	6 mc (52.5°) "B" Band	C9 (osc.)** C11 (ant.)
5	Ant. terminal in series with 200 mmfd.	1,500 kc	1,500 kc (41.75°) "A" Band	C10 (osc.) C3 (ant.)
6		600 kc	600 kc (200.25°) "A" Band	L7 (osc.) Rock Gang
7	Repeat step 5.			

* Use minimum capacity peak if two can be obtained. Check to determine that C6 has been adjusted to correct peak by tuning receiver to approximately 19.09 mc where a weaker signal should be received.

** Use minimum capacity peak if two can be obtained. Check to determine that C9 has been adjusted to correct peak by tuning receiver to approximately 5.09 mc where a weaker signal should be received.

Note: Oscillator tracks above signal on all bands.



Cathode-Ray Alignment is the preferable method. Connections for the oscillograph are shown in the chassis drawing.

Output Meter Alignment.—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

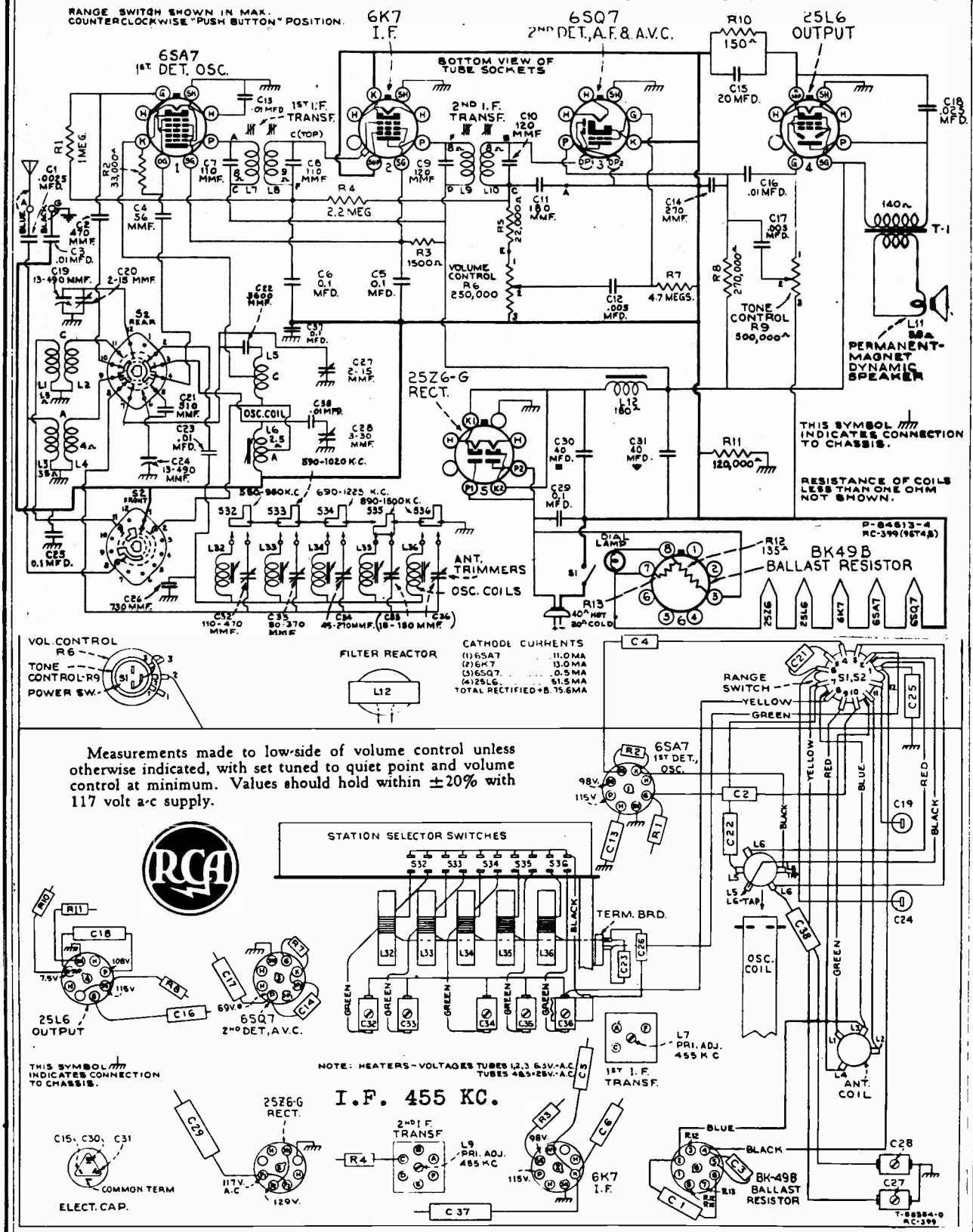
Test-Oscillator.—For all alignment operations, connect the low side of the test-oscillator to the receiver chassis, and keep the output as low as possible to avoid a-v-c action.

Calibration Scale on Indicator-Drive-Cord-Drum.—The tuning dial is fastened in the cabinet and cannot be used for reference during alignment; therefore, a calibration scale is attached to the tuning drum. The setting of the gang condenser is read on this scale, which is calibrated in degrees. The correct setting of the gang in degrees, for each alignment frequency, is given in the alignment table.

As the first step in r-f alignment, check the position of the drum. The 240° mark on the drum scale must be vertical and directly above the center of the shaft of the tuning drum when the plates are fully meshed. The drum is held to the shaft by means of two set-screws, which must be tightened securely when the drum is in the correct position.

On the inner side of the tuning drum are two projections which serve as stops to prevent extreme rotation of the gang condenser. The tuning drum should be set so that the stop limiting clockwise movement of the drum takes effect just as the gang condenser plates are becoming fully meshed, thus preventing stress on the gang due to extreme rotation.

MANUAL OF 1939 MOST POPULAR SERVICE DIAGRAMS



Measurements made to low-side of volume control unless otherwise indicated, with set tuned to quiet point and volume control at minimum. Values should hold within ±20% with 117 volt a-c supply.

RCA

132

Models 96T4, 96T5 and 96T6

COMPILED BY M. N. BEITMAN, SUPREME PUBLICATIONS

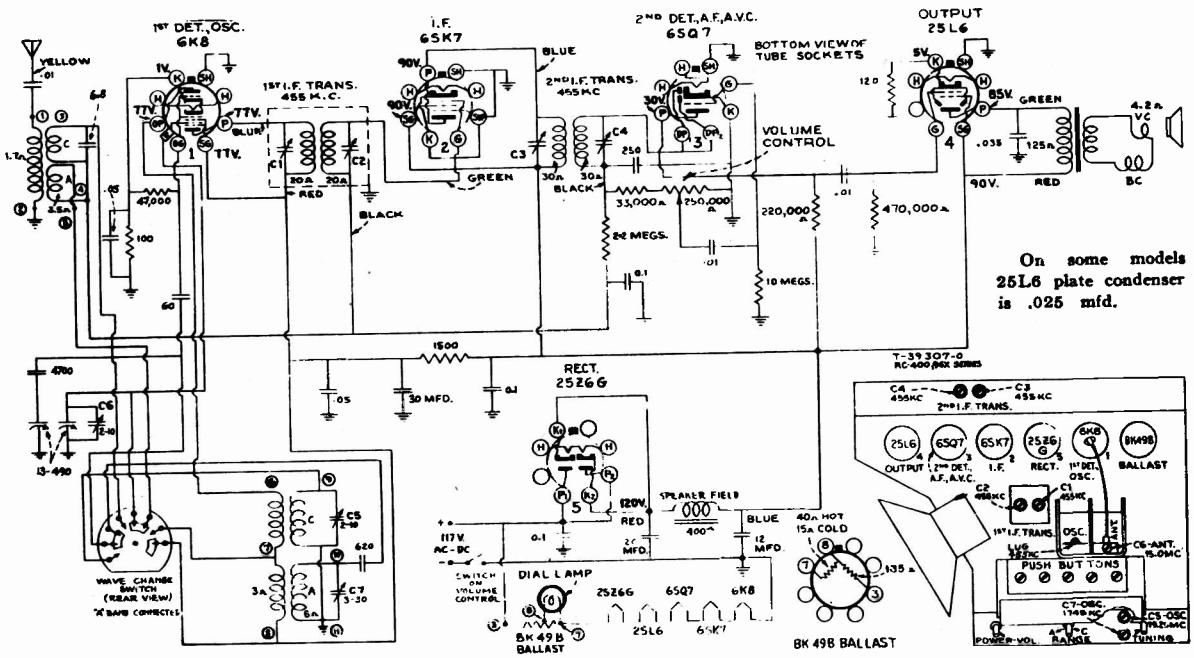
MANUAL OF 1939 MOST POPULAR SERVICE DIAGRAMS

RCA Victor

MODELS 96X-1, -2, -3, -4 and -11, -12, -13, -14

Chassis No. RC-400 and RC-400A

Six-Tube, Two-Band, A-C—D-C, Superheterodyne Receivers



On some models 25L6 plate condenser is .025 mfd.

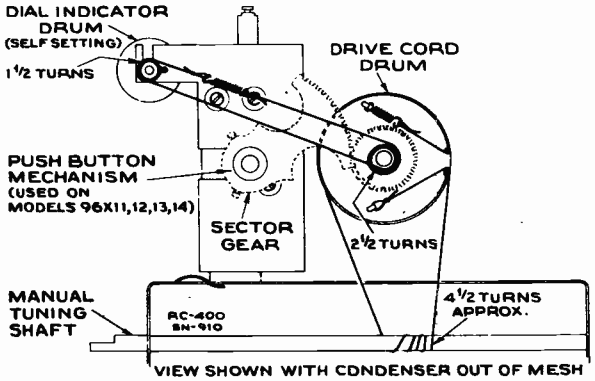
Alignment Procedure

Output Meter Alignment.—Connect the meter aeross the voice coil, and turn the receiver volume control to maximum.

Test-Oscillator.—Connect the low side of the test-oscillator to the receiver chassis, through a .01 mfd. capacitor, and keep the output as low as possible.

Dial Setting.—To set dial indicator drum, turn tuning condensers fully clockwise and then counter-clockwise.

Push-button Adjustments.—Remove bakelite button and loosen screw two turns with a screwdriver or coin. Tune in the desired station by means of the right-hand control knob. Press push lever down as far as it will go and tighten screw. Release lever and put on push-button.



DRIVE CORD HOOKUP

Steps	Connect the high side of test-oscillator to—	Tune test-osc. to—	Turn radio dial to—	Adjust the following for max. peak output—
1	Tuning condenser stator (osc.) in series with .01 mfd.†	455 kc	Quiet point between 550-750 kc	C1, C2, C3, C4 (1st and 2nd I-F transformer)
2	Antenna lead (yellow) in series with 400 ohms	19.25 mc	Full clockwise (out of mesh) "C" band	C5* (osc.)
3	Same as step 2	15.0 mc	15.0 mc Test oscillator signal	C6** (ant.) See Note No. 1
4	Antenna lead in series with 200 mmf condenser	1,745 kc	Full clockwise (out of mesh) "A" band	C7 (osc.)

* Use minimum capacity peak if two peaks can be obtained.

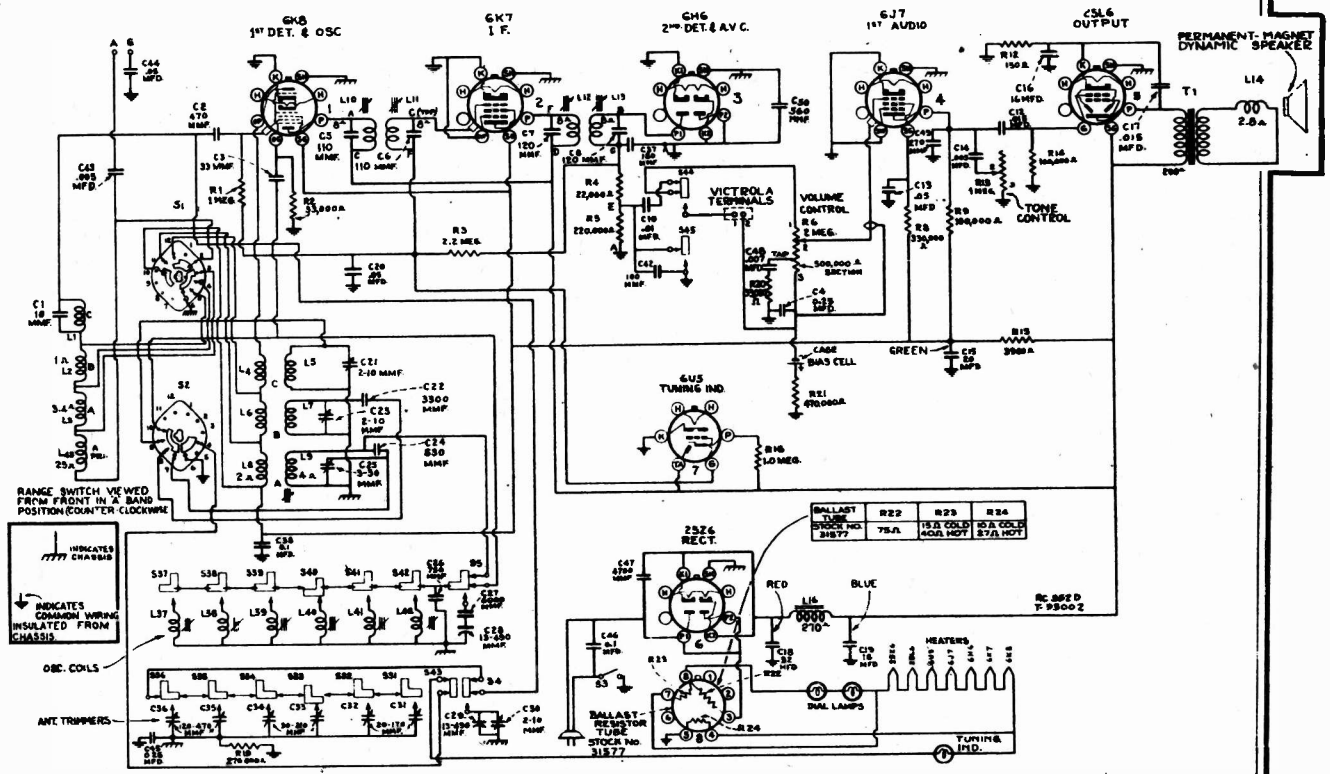
** Rock gang slightly and check to determine that C5 has been adjusted to the correct peak by tuning to approximately 14.09 mc, where a weaker signal aboild be received.

† Make test oscillator connection to lug on tuning condenser stator (oscillator section) in series with .01 mfd. condenser.

Note No. 1.—Accurately tune receiver to the 15.0 mc test oscillator signal. This signal will appear twice (14.09 and 15.0 mc) as dial is turned. Use the higher frequency setting of the tuning condensers (gang furthest out of mesh).

Note No. 2.—Oscillator tracks 455 kc above signal on all bands.

RCA Victor MODEL 98T2



Steps	Connect the high side of test-osc. to—	Tune test-osc. to—	Turn radio-dial to—	Adjust the following for max. peak output
1	6K7 I-F grid cap, in series with .01 mfd.	455 kc	"A" band, Quiet Point between 550-750 kc	L12 and L13 (2nd I-F Transformer)
2	6K8 det. grid cap, in series with .01 mfd.	455 kc		L10 and L11 (1st I-F Transformer)
3	Antenna Terminal, in series with 200 mmf.	600 kc	600 kc (150.5°) "A" band	L9
4		1,500 kc	1,500 kc (28°) "A" band	C25 (osc.) C30 (ant.)
5	Repeat steps 3 and 4.			
6	Antenna Terminal, in series with 400 ohms.	6 mc	6 mc (26.5°) "B" band	C23 (osc.)*
7		20 mc	20 mc (22°) "C" band	C21 (osc.)*
8	Follow "Adjustments for Electric Tuning."			

*Use minimum capacity peak if two peaks can be obtained, and rock gang condenser slightly while adjusting C23 and C21.
Note.—Oscillator tracks 455 kc above signal on all bands.

Dial-Indicator Adjustment.—After fastening the chassis in the cabinet, move the dial indicator on the drive cable to the left-hand end mark on dial, with gang condenser fully meshed.

Adjustments for Electric Tuning

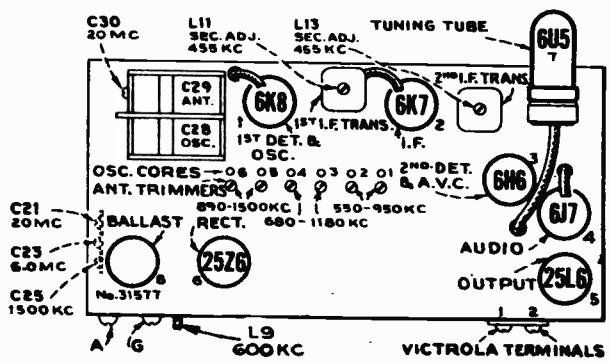
These models have eight push buttons. The left-hand button is a Victrola switch. The right-hand button connects the gang condenser for manual tuning. The other six buttons are for electric tuning of six different stations in the standard-broadcast range. The station buttons connect to separate magnetite-core oscillator coils and separate antenna trimmers which must be adjusted for the desired stations. Use an insulated screwdriver or alignment tool such as RCA Stock No. 31031. Allow at least five minutes warm-up period before making adjustments.

The procedure is as follows:

1. Make a list of the desired six stations, arranged in order from low to high frequencies.
2. Push in the dial-tuning button, and manually tune in the first station on the list.
3. Push in station button No. 1 (second from left) and adjust No. 1 oscillator core (L37) to receive this station. Screw the core all the way in, to lowest frequency, and then unscrew slowly until station is received.
4. Adjust No. 1 antenna trimmer (C36) for maximum output on this station.

Clockwise adjustment of cores and trimmers tunes the circuits to lower frequencies.

5. Adjust for each of the remaining five stations in the same manner.
6. Make a final careful adjustment of the oscillator cores and antenna trimmers.



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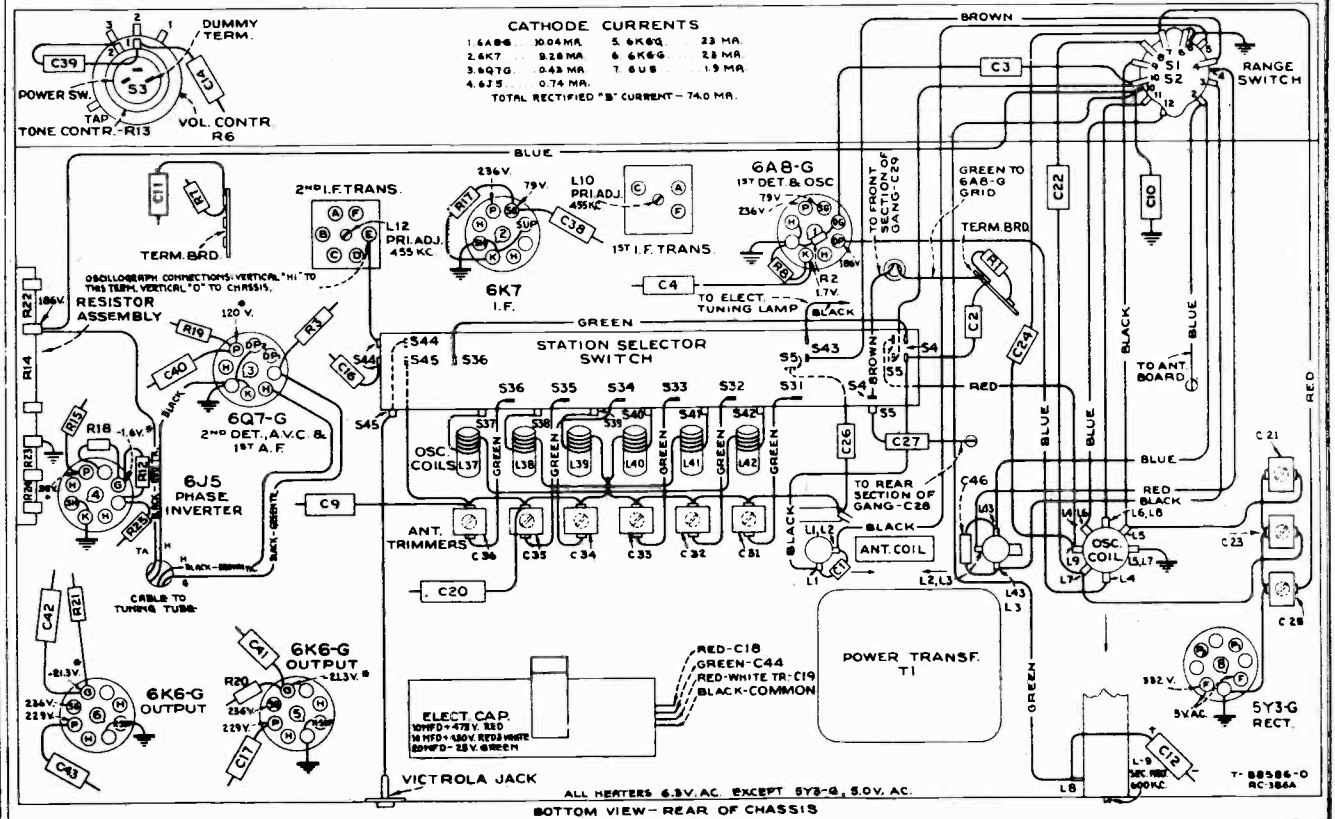
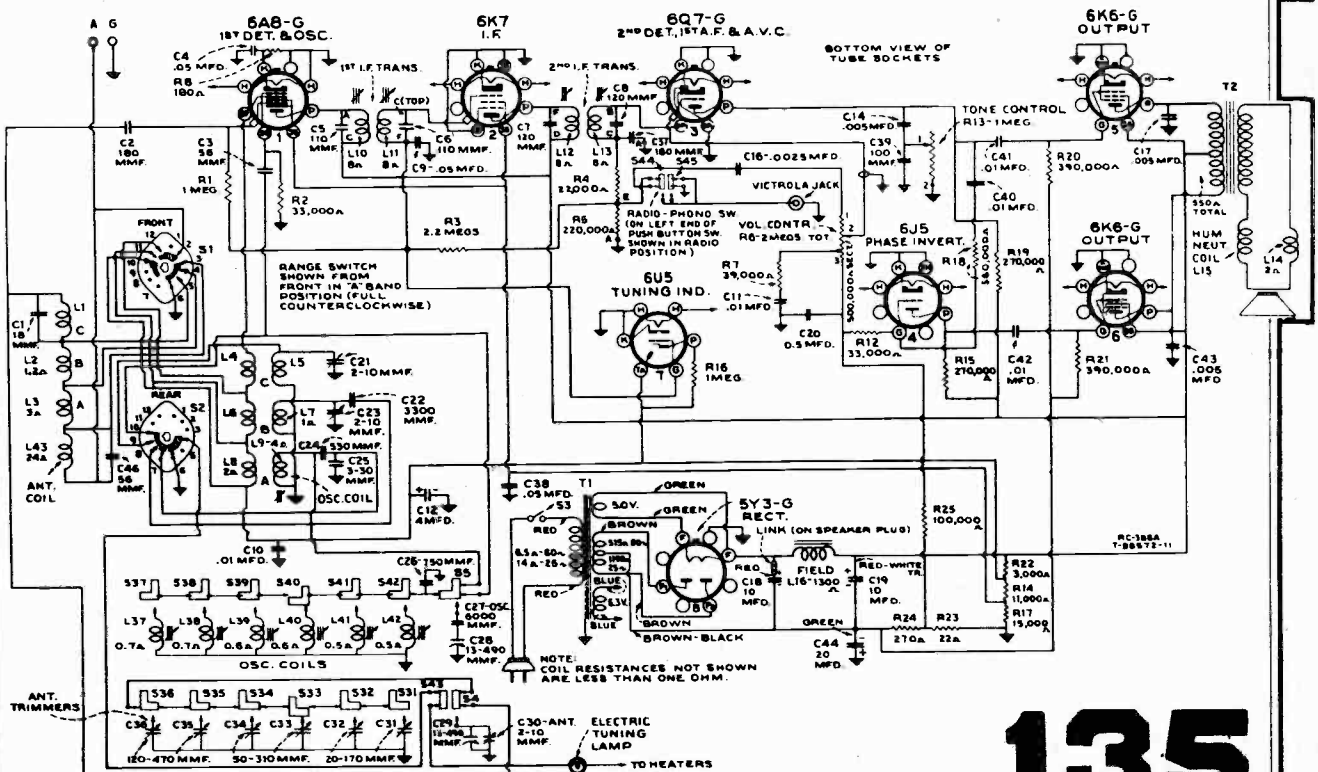
MANUAL OF 1939 MOST POPULAR SERVICE DIAGRAMS

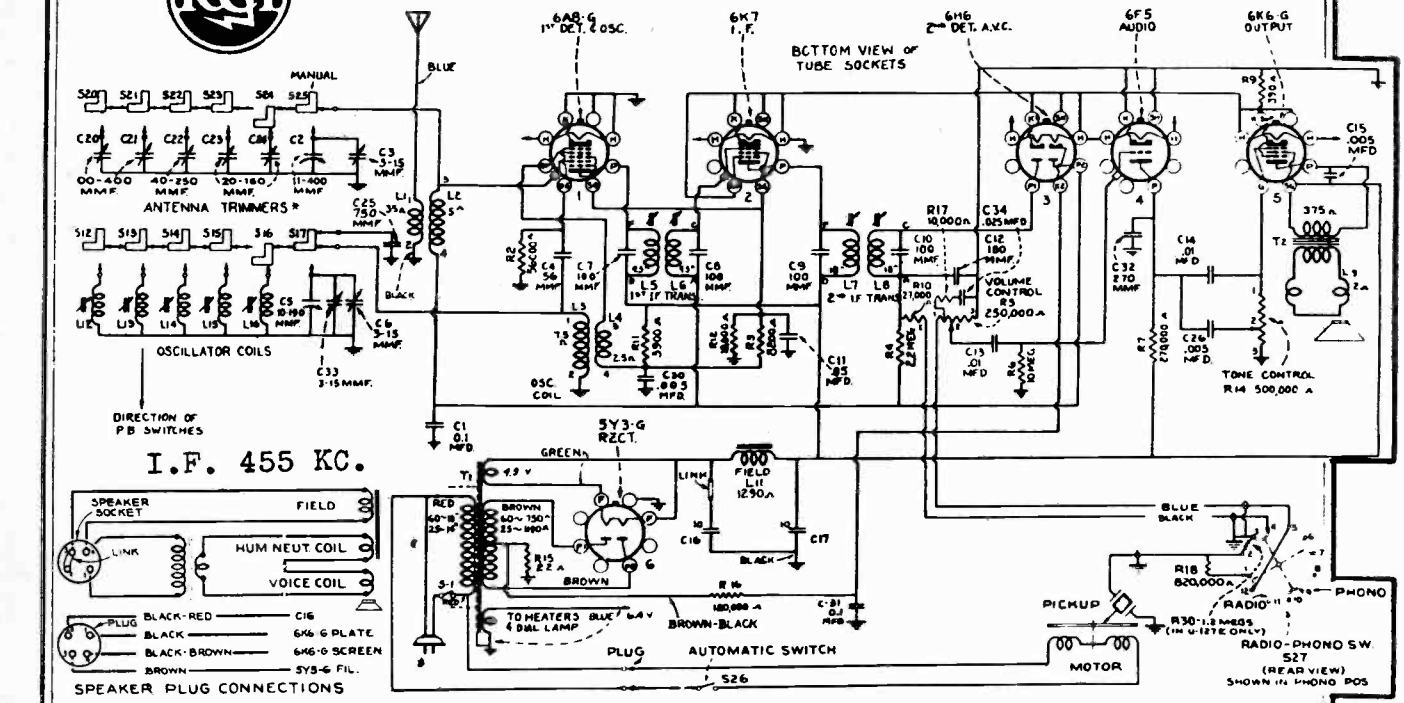
RCA Victor MODELS 98T and 98K2

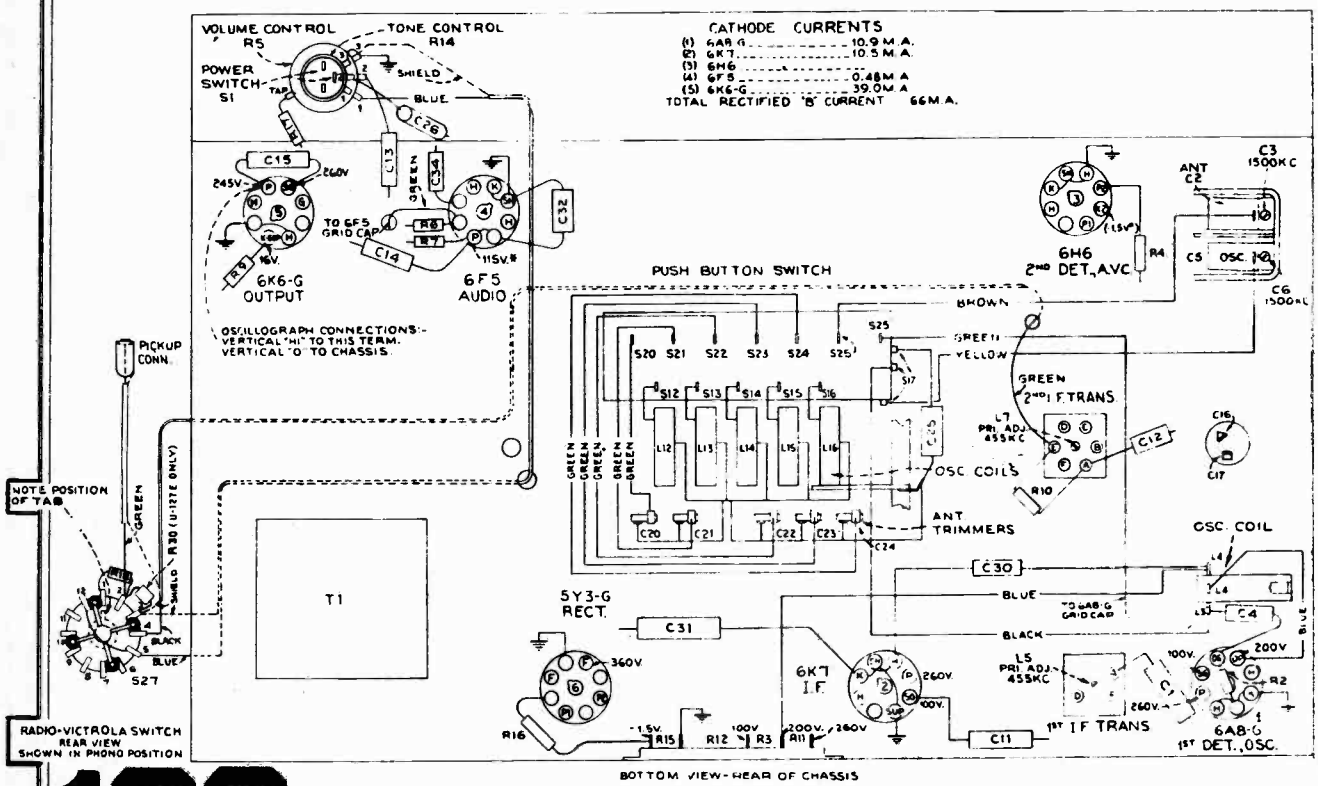
Chassis No. RC-386A and RC-386A



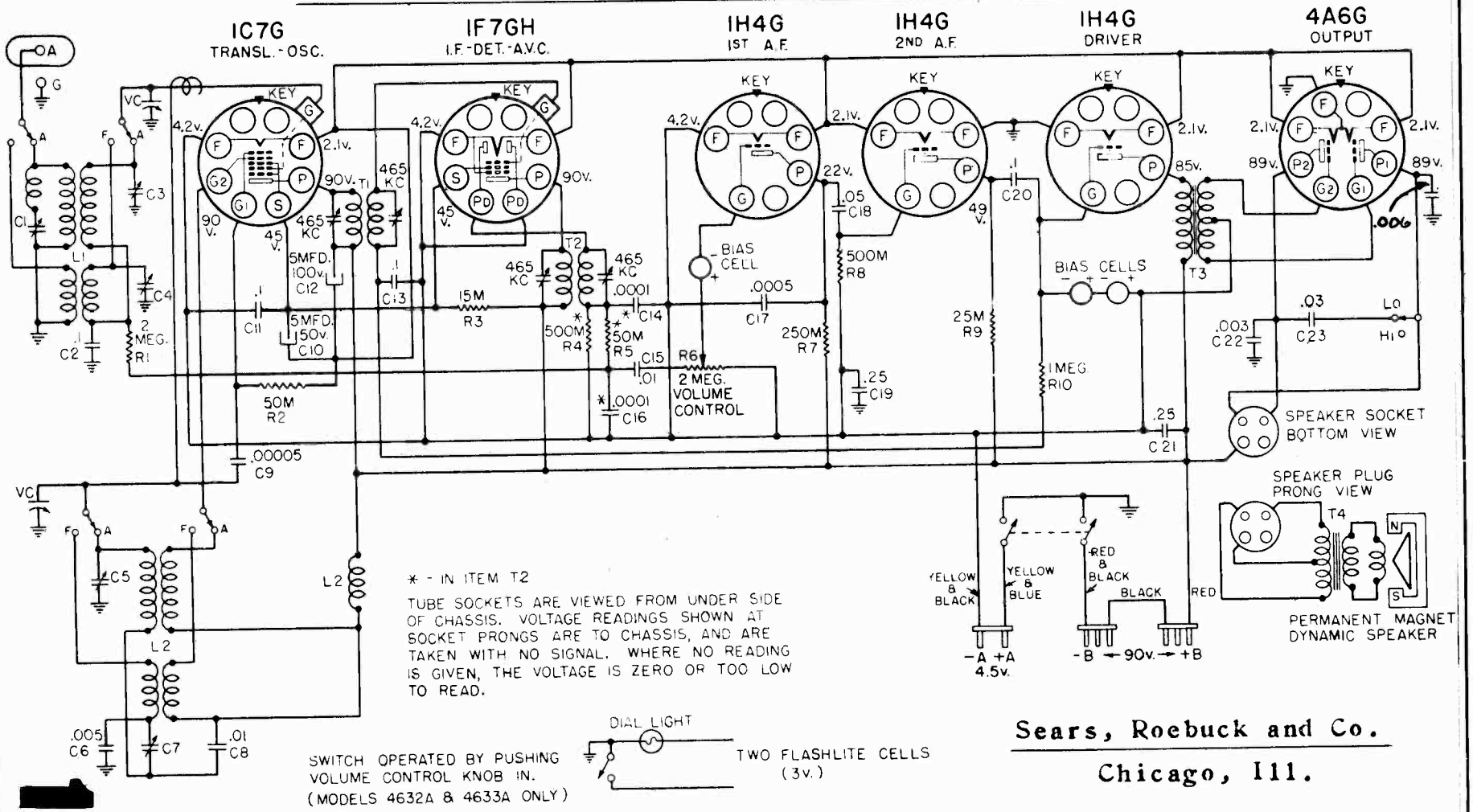


U-121, U-123 (Single-Band), and U-127E





WIRING DIAGRAM FOR SILVERTONE CHASSIS 101.505 & 101.505X



* - IN ITEM T2

TUBE SOCKETS ARE VIEWED FROM UNDER SIDE OF CHASSIS. VOLTAGE READINGS SHOWN AT SOCKET PRONGS ARE TO CHASSIS, AND ARE TAKEN WITH NO SIGNAL. WHERE NO READING IS GIVEN, THE VOLTAGE IS ZERO OR TOO LOW TO READ.

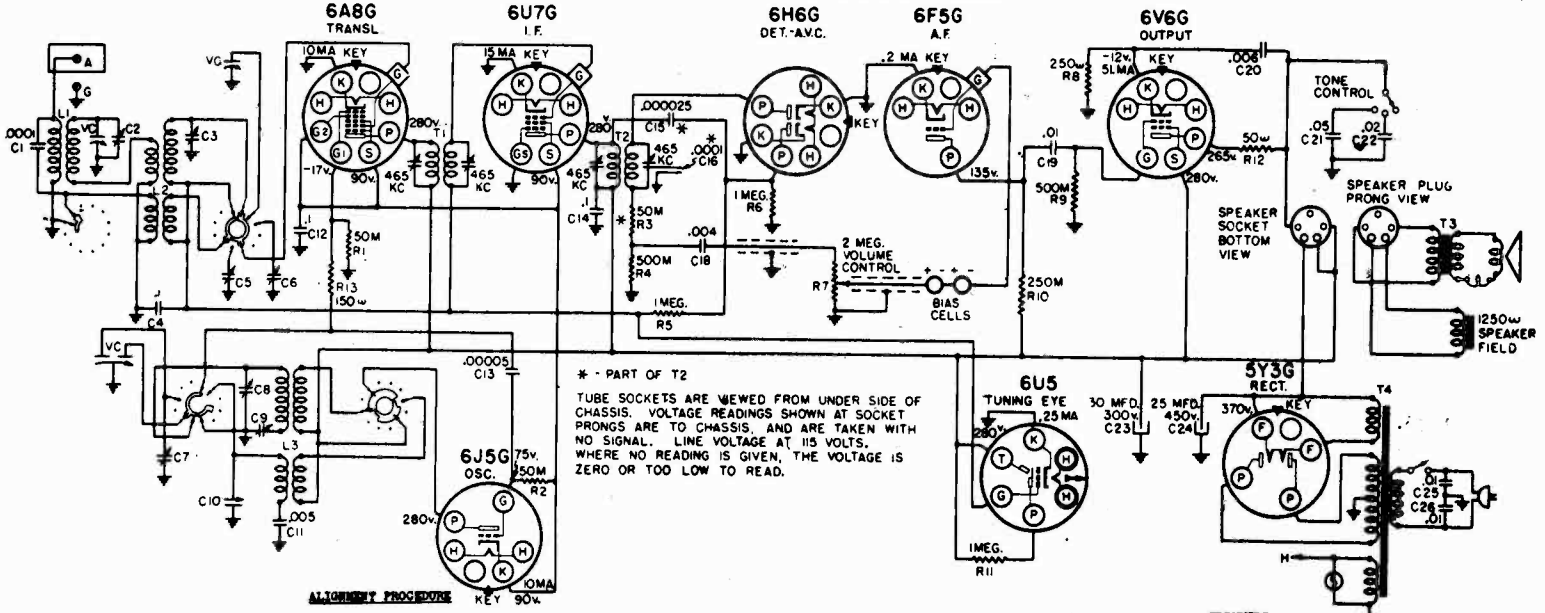
SWITCH OPERATED BY PUSHING VOLUME CONTROL KNOB IN. (MODELS 4632A & 4633A ONLY)

Sears, Roebuck and Co.

Chicago, Ill.

Models 4632A, 4633A, 6014, 6015, 6044, 6045, 6058, 6059, 6063, 6064, 6065, 6144, and 6164

WIRING DIAGRAM FOR SILVERTONE CHASSIS 101.510



ALIGNMENT PROCEDURE

PRELIMINARY:

Output meter connection	Across loud speaker voice coil
Output meter reading to indicate 500 milliwatts	0.85 volts
Average sensitivity in microvolts for 500 milliwatts output	See chart below
Generator ground lead connection	Receiver chassis
Dummy antenna value to be in series with generator output	See chart below
Connection of generator output lead	See chart below
Generator modulation	30%, 400 cycles
Position of Volume Control	Fully clockwise
Position of Tone Control	MI
Position of Dial Pointer with variable fully closed	Center of block to left of 550 kc calibration mark.

BAND SWITCH POSITION	POSITION OF VARIABLE	GENERATOR FREQUENCY	DUMMY ANTENNA	GENERATOR CONNECTION	TRIMMERS ADJUSTED (IN ORDER GIVEN)	TRIMMER FUNCTION	APPROXIMATE MICROVOLTS
"AM"	Closed	465 kc	.1 mfd.	6A8G Grid	T2,T1	IF Output IF Input	90
"SW"	18 mc (rock)	18 mc	400 ohms	Ant. Term.	C5	Translator	80
"OSCOR"	9.55 mc	9.55 mc	400 ohms	Ant. Term.	C7* C6	Oscillator Translator	80
"AM"	Fully open	1720 kc	.0002 mfd.	Ant. Term.	C8	Oscillator	90
"AM"	1400 kc	1400 kc	.0002 mfd.	Ant. Term.	C3,C8	Transl.,Ant.	75
"AM"	600 kc(rock)	600 kc	.0002 mfd.	Ant. Term.	C9	Padder	80

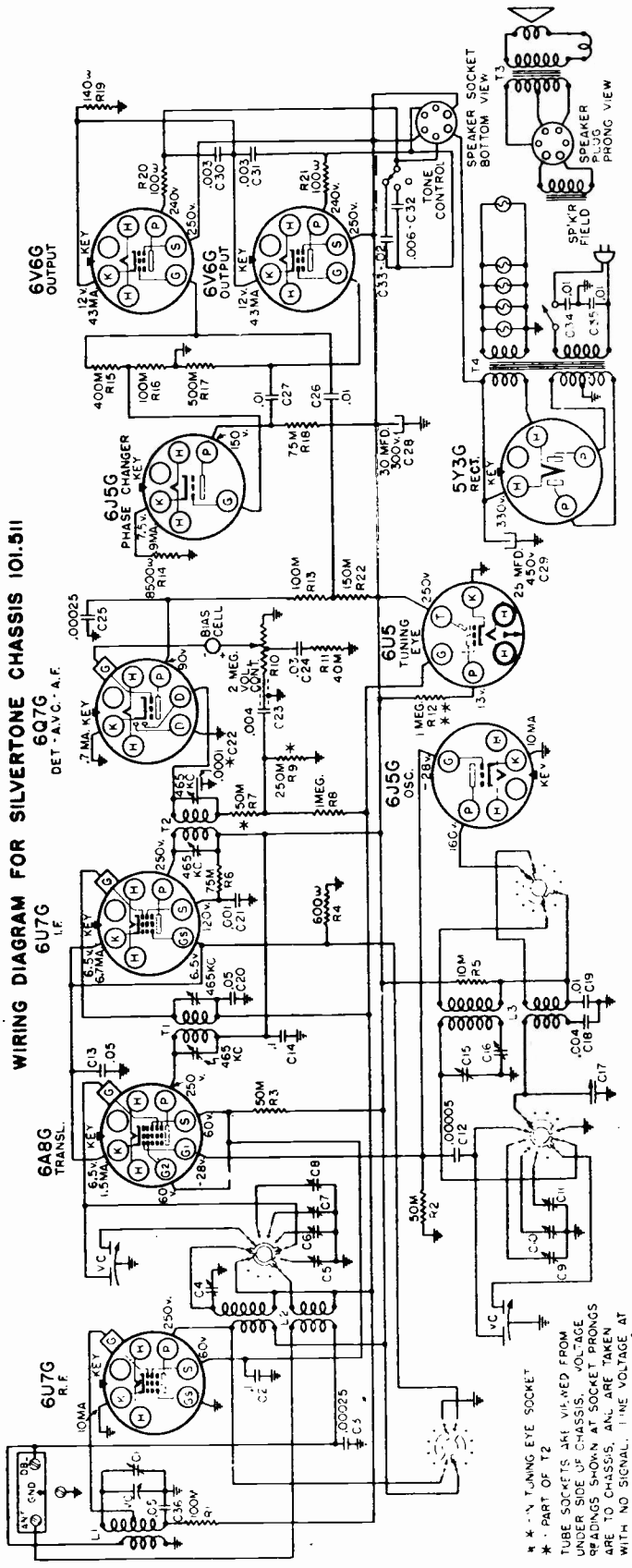
IMPORTANT ALIGNMENT NOTES

The alignment must be done in the order given.

*Two peaks can be had, one with the trimmer screwed further out than the other. The correct adjustment is with the trimmer screwed further out. The other peak is the image.

Sears, Roebuck and Co., Chicago.

Models 6003, 6004, 6024, 6034, 6124, 6134



GENERAL INFORMATION & SERVICE HINTS

THE AVC CIRCUIT:

The diode current of one of the 6Q7G diode plates, flowing through the 250M ohm resistor, R9, creates a voltage drop across it. This voltage is applied to the control grids of the RF, translator, and IF tubes, to provide AVC.

ELIMINATING WHISTLE AT 930 KC:

A whistle, due to a beat between the second harmonic (930 kc) of the 465 kc IF, and a 930 kc signal may be experienced. In localities where the 930 kc station is one that is frequently listened to, it will be desirable to shift the whistle to some other point where it will not be objectionable. This can be done by shifting the IF frequency of the receiver.

Determine at what point between 900 kc and 950 kc the whistle will be least objectionable. Dividing this frequency by two will give the new IF frequency to which the receiver should be aligned. For example, if it is determined that a whistle at 915 kc would not be objectionable, the IF should be realigned at 915/2 or 457.5 kc. Try to select the new IF frequency as near as possible to 465 kc.

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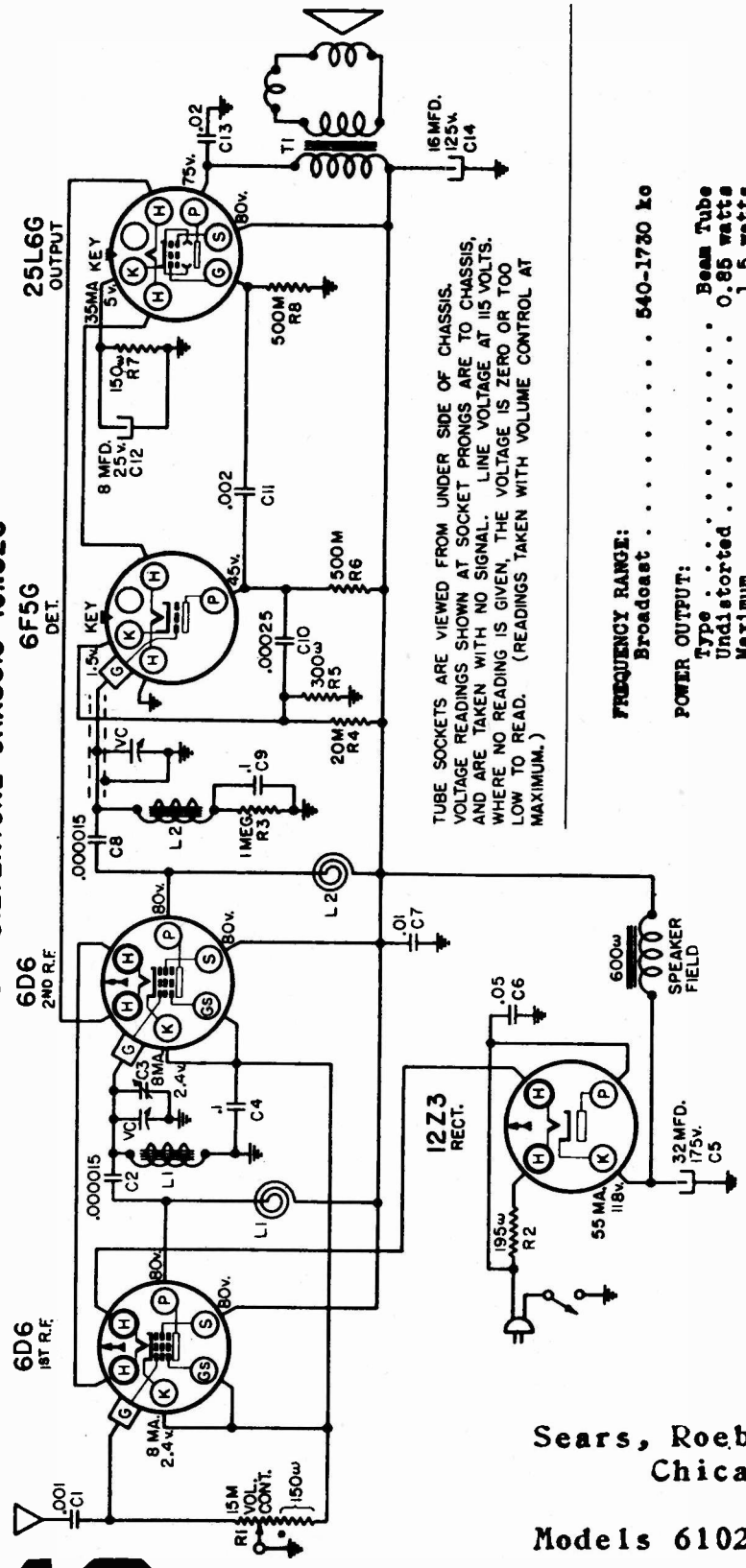
Chicago.

Models 6036, 6136.



FREQUENCY RANGE:
Broadcast . . . . . 540-1730 kc

POWER OUTPUT:
Type . . . . . Beam Tube
Undistorted . . . . . 0.85 watts
Maximum . . . . . 1.5 watts

ALIGNMENT PROCEDURE

The receiver need not be taken out of the cabinet for alignment.

Either a broadcast signal of about 1500 kc should be tuned in or else a signal generator, connected through a .0003 mfd. condenser to the set's antenna, should be used.

Tune in the signal and adjust the trimmer (accessible through the hole in the bottom of the cabinet) for maximum loud speaker response. This can be done most accurately, if the volume control setting is reduced to give low volume level. (This set has no AVC.) The variable should be rocked a degree or two during the adjustment. An insulated screw driver should be used, since the chassis may be above ground potential as explained previously.

Sears, Roebuck and Co.
Chicago.

Models 6102, 6103, 6105

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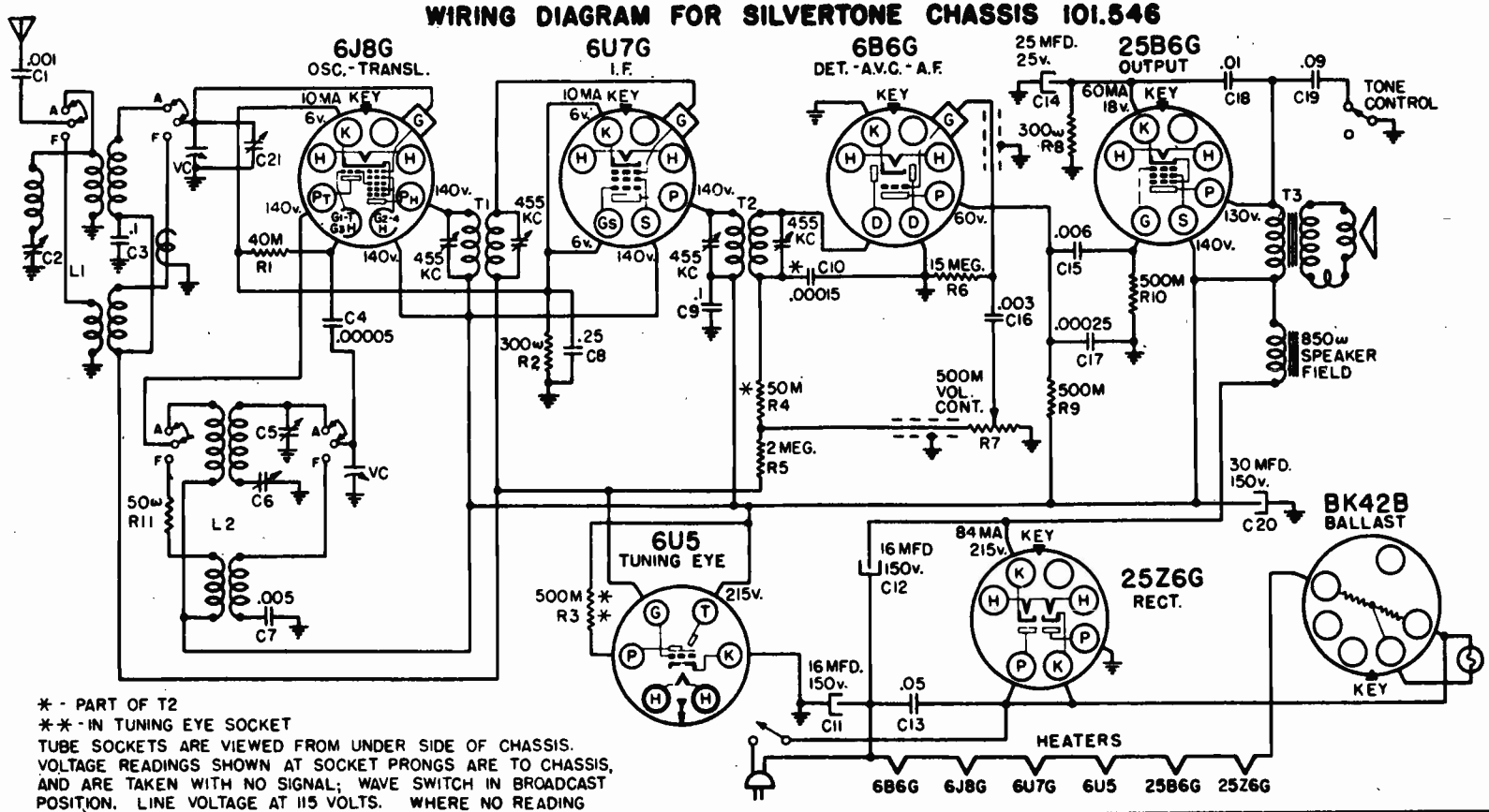
WIRING DIAGRAM FOR SILVERTONE CHASSIS 101.546



* - PART OF T2

** - IN TUNING EYE SOCKET

TUBE SOCKETS ARE VIEWED FROM UNDER SIDE OF CHASSIS. VOLTAGE READINGS SHOWN AT SOCKET PRONGS ARE TO CHASSIS, AND ARE TAKEN WITH NO SIGNAL; WAVE SWITCH IN BROADCAST POSITION. LINE VOLTAGE AT 115 VOLTS. WHERE NO READING IS GIVEN, THE VOLTAGE IS ZERO OR TOO LOW TO READ.

WAVE BAND SWITCH POSITION	POSITION OF VARIABLE	GENERATOR FREQUENCY	DUMMY ANTENNA	GENERATOR CONNECTION	TRIMMERS ADJUSTED (IN ORDER SHOWN)	TRIMMER FUNCTION
"AM"	Closed	455 kc	.1 mfd.	6J8G Grid	T2, T1	IF Output IF Input
"AM"	600 kc	455 kc*	.0002 mfd.	Ant. Lead	C2*	Wave Trap
"AM"	1400 kc	1400 kc	.0002 mfd.	Ant. Lead	C5, C21	Oscillator Translator
"AM"	600 kc (rock)	600 kc	.0002 mfd.	Ant. Lead	C6	Padder

Sears, Roebuck & Co.

Models 6200, 6120, 6126, 6127, 6119, 6250.

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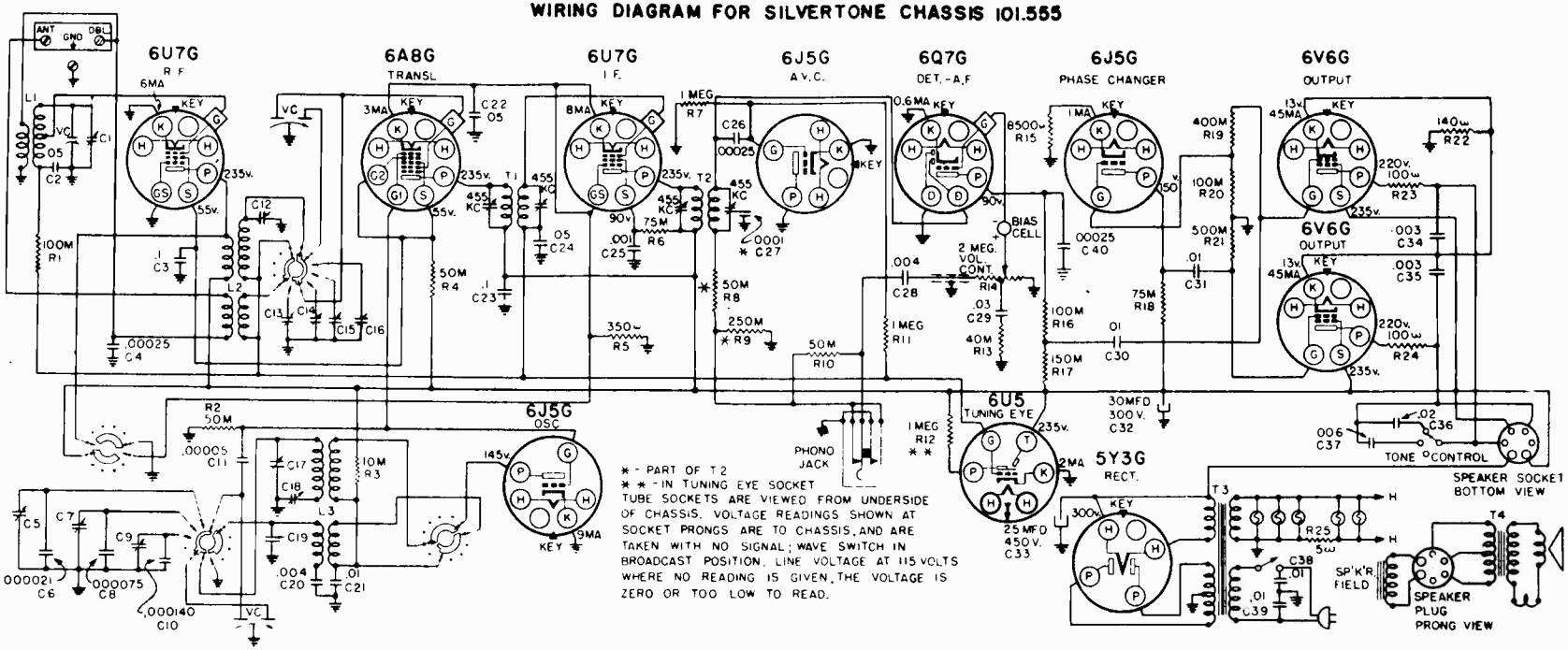
Sears, Roebuck & Co. Chicago.

Models 6158, 6159, 6192.

WAVE BAND SWITCH POSITION	POSITION OF VARIABLE	GENERATOR FREQUENCY	DUMMY ANTENNA	GENERATOR CONNECTION	TRIMMERS ADJUSTED (IN ORDER SHOWN)	TRIMMER FUNCTION	APPROXIMATE MICROVOLTS
"AM"	Closed	455 kc	.1 mfd.	6A8G Grid	T2,T1	IF Output IF Input	810
"SW"	15 mc(rock)	15 mc	400 ohms.	Ant. Term.	C13	Translator	40
"9"	9.55 mc	9.55 mc	400 ohms.	Ant. Term.	C9* C16	Oscillator Translator	60
"11"	11.71 mc	11.71 mc	400 ohms.	Ant. Term.	C7* C15	Oscillator Translator	40
"15"	14.9 mc	14.9 mc	400 ohms.	Ant. Term.	C5* C14	Oscillator Translator	40
"AM"	1400 kc	1400 kc	.0002 mfd.	Ant. Term.	C17,C12, C1	Osc.,Transl., RF	30
"AM"	600 kc(rock)	600 kc	.0002 mfd.	Ant. Term.	C18	Padder	40

WIRING DIAGRAM FOR SILVERTONE CHASSIS 101.555



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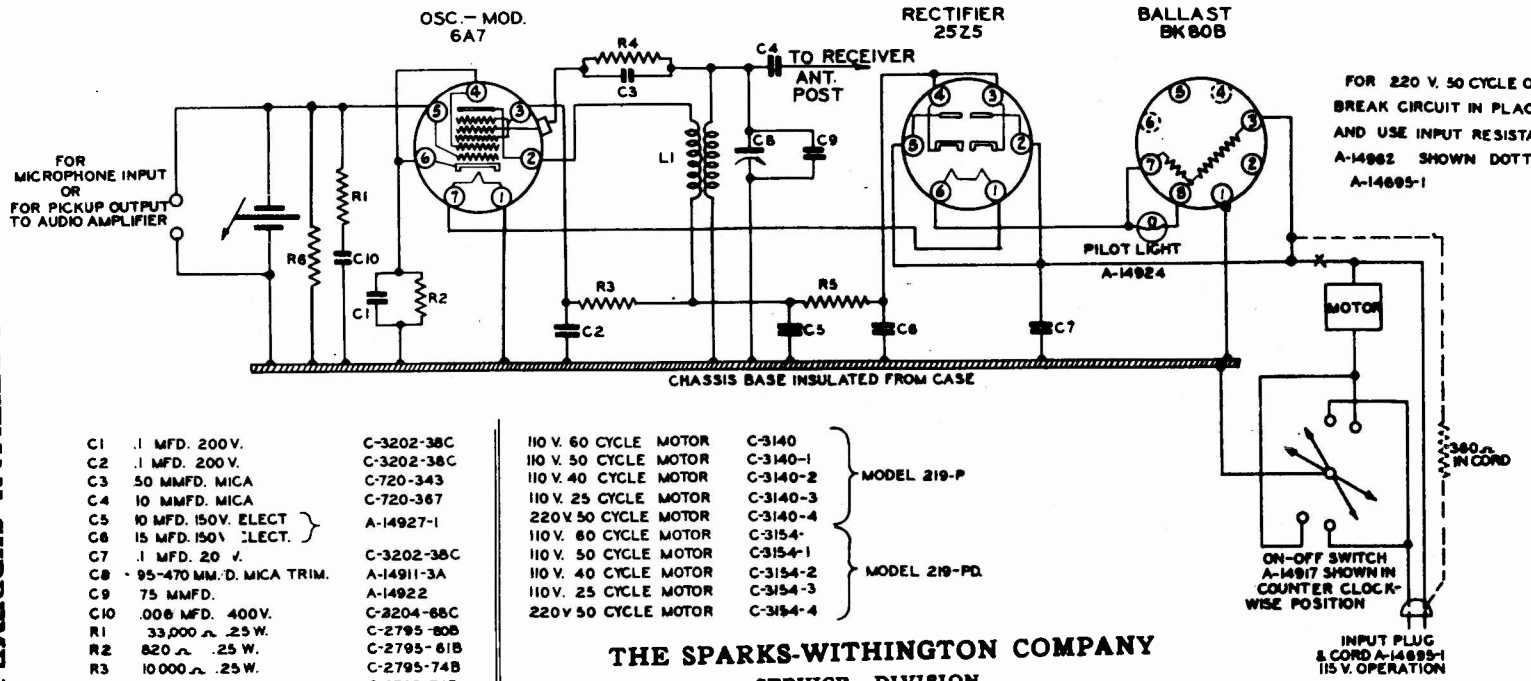
Sparton Wireless Phonograph Models 219-P 219-PD

COMPILED BY M. N. BEITMAN, SUPREME PUBLICATIONS



C1	.1 MFD. 200 V.	C-3202-38C
C2	.1 MFD. 200 V.	C-3202-38C
C3	50 MMFD. MICA	C-720-343
C4	10 MMFD. MICA	C-720-367
C5	10 MFD. 150 V. ELECT.	A-14927-1
C6	15 MFD. 150 V. ELECT.	
C7	.1 MFD. 20 V.	C-3202-38C
C8	95-470 MM. D. MICA TRIM.	A-14911-3A
C9	75 MMFD.	A-14922
C10	.006 MFD. 400 V.	C-2204-68C
R1	33,000 Ω .25 W.	C-2795-80B
R2	820 Ω .25 W.	C-2795-61B
R3	10000 Ω .25 W.	C-2795-74B
R4	10000 Ω .25 W.	C-2795-74B
R5	4700 Ω .5 W.	C-2796-70C
R6	180000 Ω .25 W.	C-2795-89B
L1	OSCILLATOR COIL	A-14926-1

110 V. 60 CYCLE MOTOR	C-3140	MODEL 219-P
110 V. 50 CYCLE MOTOR	C-3140-1	
110 V. 40 CYCLE MOTOR	C-3140-2	
110 V. 25 CYCLE MOTOR	C-3140-3	
220 V 50 CYCLE MOTOR	C-3140-4	
110 V. 60 CYCLE MOTOR	C-3154-	MODEL 219-PD
110 V. 50 CYCLE MOTOR	C-3154-1	
110 V. 40 CYCLE MOTOR	C-3154-2	
110 V. 25 CYCLE MOTOR	C-3154-3	
220 V 50 CYCLE MOTOR	C-3154-4	

THE SPARKS-WITHINGTON COMPANY
SERVICE DIVISION
Jackson, Michigan, U. S. A.

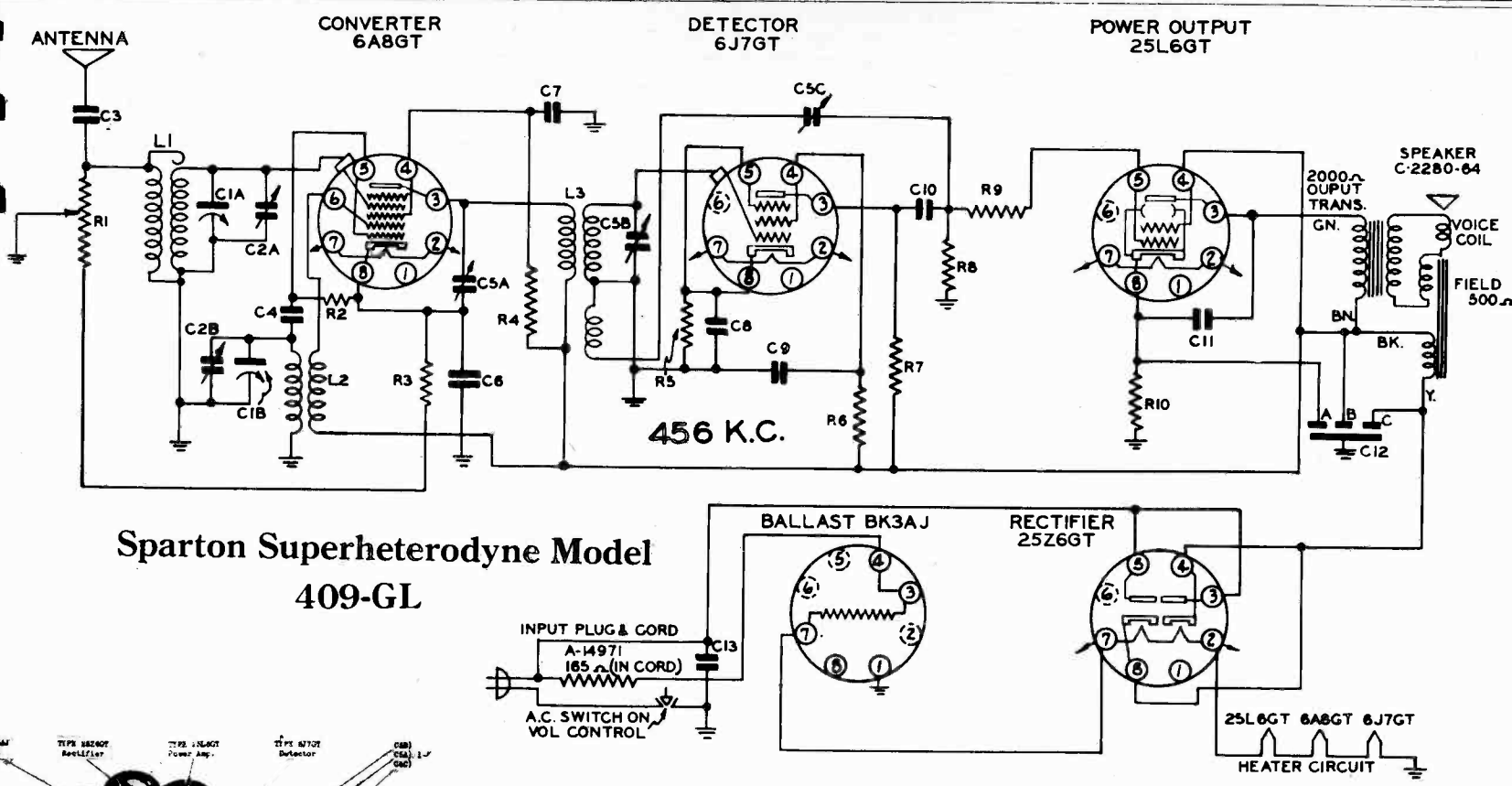
Line Voltage: 115 volts
Control Switch in Center Position

Antenna Not Connected.
Microphone Not Connected.

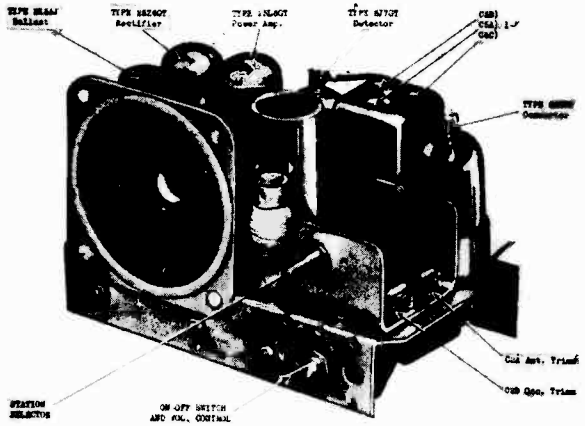
Tube	Function	Voltage of Socket Prongs to Gnd. (See Prong Nos. on Schematic Diagram)								
		No. 1	No. 2	No. 3	No. 4	No. 5	No. 6	No. 7	No. 8	Grid Cap
6A7	Oscillator-Modulator	0	120	80	4.5	0	4.5	6.3*	-	0
25Z5	Rectifier	6.3*	117*	150	150	117*	31.3*	-	-	-
BK-80B	Ballast	0	-	117*	-	-	-	31.3*	37*	-

Notes: Voltage readings are for schematic diagram on back of sheet. Allow 15% + or - on all measurements. Always use meter scale which will give greatest deflection within scale limits. All DC measurements made with 1000 ohms per volt voltmeter. All AC voltages made with rectifier type voltmeter. Unless designated otherwise, voltages in table are + DC voltages.
*AC volts.

NOTE: Original production models did not have resistor R6 and condenser C10 included in the circuit as shown above. In these first run production sets resistor R1 connected across the microphone tip jacks in the same position as shown for resistor R6. The above change can be made easily, when servicing any of the first run Models 219-P Wireless Phonographs.



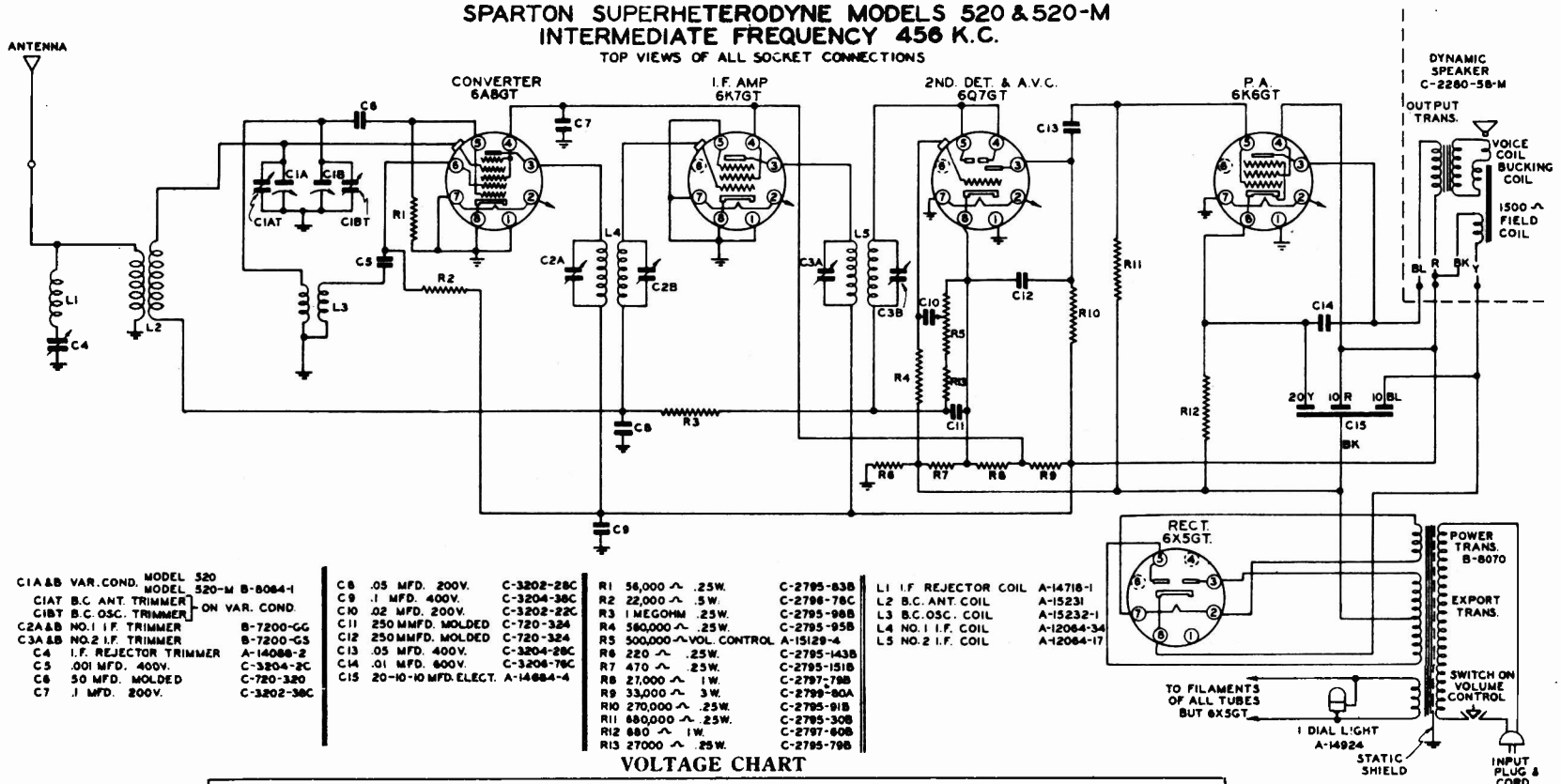
Sparton Superheterodyne Model 409-GL



C1A&B	VARIABLE CONDENSER	B-7288
C2A&B	ON VARIABLE CONDENSER	
C3	.001 MFD. 400 V.	C-3204-2C
C4	50 MMF. MICA	C-720-343
C5A&B&C	I.F. TRIMMER	A-14792
C6	.01 MFD. 200 V.	C-3202-76C
C7	.05 MFD. 200 V.	C-3202-28C
C8	10 MFD. 25 V.	A-14782-2
C9	.01 MFD 200 V.	C-3202-20C
C10	.01 MFD. 200 V.	C-3202-20C
C11	.02 MFD. 400 V.	C-3204-78C
C12A&B&C	20-25-25 MFD. ELECT.	A-14972
C13	.05 MFD. 400 V.	C-3204-28C

R1	VOL. CONTROL & SWITCH	A-12708-A1
R2	56000Ω .25W.	C-2795-83B
R3	390Ω .25 W.	C-2795-57B
R4	39000Ω .25 W.	C-2795-81B
R5	27000Ω .25 W.	C-2795-79B
R6	6.2 MEGOHM .25 W.	C-2795-250B
R7	560 000Ω .25 W.	C-2795-95B
R8	560 000Ω .25 W.	C-2795-95B
R9	100000Ω .25 W.	C-2795-86B
R10	150Ω .5 W.	C-2796-52C
L1	B.C. ANT. COIL	A-14974
L2	B.C. OSC. COIL	A-14975
L3	I.F. TRANS	A-12989-5

SCHEMATIC DIAGRAM
SPARTON SUPERHETERODYNE MODELS 520 & 520-M
INTERMEDIATE FREQUENCY 456 K.C.
TOP VIEWS OF ALL SOCKET CONNECTIONS



C1A&B	VAR. COND. MODEL 520 MODEL 520-M	B-8064-1
C1AT	B.C. ANT. TRIMMER } ON VAR. COND.	
C1BT	B.C. OSC. TRIMMER }	
C2A&B	NO.1 I.F. TRIMMER	B-7200-GG
C3A&B	NO.2 I.F. TRIMMER	B-7200-GS
C4	I.F. REJECTOR TRIMMER	A-14088-2
C5	.001 MFD. 400V.	C-3204-2C
C6	50 MFD. MOLDED	C-720-320
C7	.1 MFD. 200V.	C-3202-38C
C8	.05 MFD. 200V.	C-3202-28C
C9	.1 MFD. 400V.	C-3204-38C
C10	.02 MFD. 200V.	C-3202-22C
C11	250 MMFD. MOLDED	C-720-324
C12	250 MMFD. MOLDED	C-720-324
C13	.05 MFD. 400V.	C-3204-28C
C14	.01 MFD. 600V.	C-3206-76C
C15	20-10-10 MFD. ELECT.	A-14684-4
R1	56,000 Ω .25W.	C-2795-83B
R2	22,000 Ω .5W.	C-2796-78C
R3	1 MEGOHM .25W.	C-2795-98B
R4	560,000 Ω .25W.	C-2795-95B
R5	500,000 Ω VOL. CONTROL	A-15129-4
R6	220 Ω .25W.	C-2795-143B
R7	470 Ω .25W.	C-2795-151B
R8	27,000 Ω 1W.	C-2797-79B
R9	33,000 Ω 3W.	C-2799-80A
R10	270,000 Ω .25W.	C-2795-91B
R11	680,000 Ω .25W.	C-2795-30B
R12	680 Ω 1W.	C-2797-60B
R13	27000 Ω .25W.	C-2795-79B
L1	I.F. REJECTOR COIL	A-14716-1
L2	B.C. ANT. COIL	A-15231
L3	B.C. OSC. COIL	A-15232-1
L4	NO.1 I.F. COIL	A-12064-34
L5	NO.2 I.F. COIL	A-12064-17

VOLTAGE CHART

Line Voltage: 115 volts — Position of Volume Control: Full with Antenna Disconnected

Tube	Function	Voltage of Socket Prongs to Gnd. (See Prong Nos. on Diagram)								
		#1	#2	#3	#4	#5	#6	#7	#8	Grid Cap
6A8GT	Converter	0	0	250	67	4	175	*6.3	0	.1
6K7GT	I. F. Amp.	0	0	250	67	0	1.5	*6.3	0	.1
6Q7GT	2nd. Det. AVC-AF	0	0	65	**	**	**	*6.3	0	0
6K6GT	P. A.	0	0	225	250	0	3.5	*6.3	10	-
6X5GT	Rectifier	-	0	275*	0	275*	0	0	300	

Notes: Voltage readings are for schematic diagram on back of sheet. Allow 15% + or - on all measurements. Always use meter scale which will give greatest deflection within scale limits. All DC measurements made with 1000 ohms per volt voltmeter. All AC voltages made with rectifier type voltmeter. Unless designated otherwise, voltages in table are + DC voltages.
*AC volts.
**Cannot be measured with Weston Analyzer #665 Type 2.

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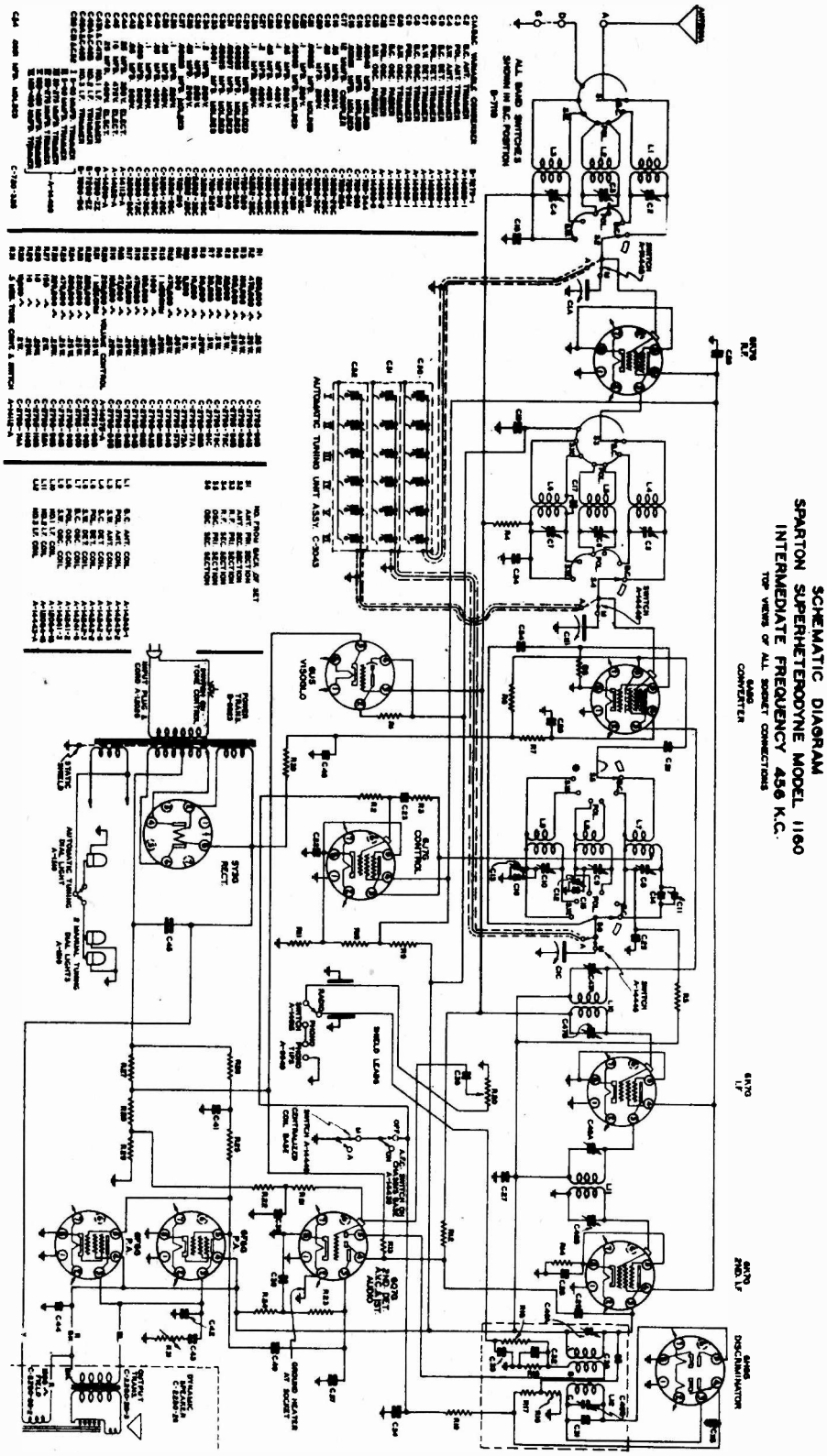
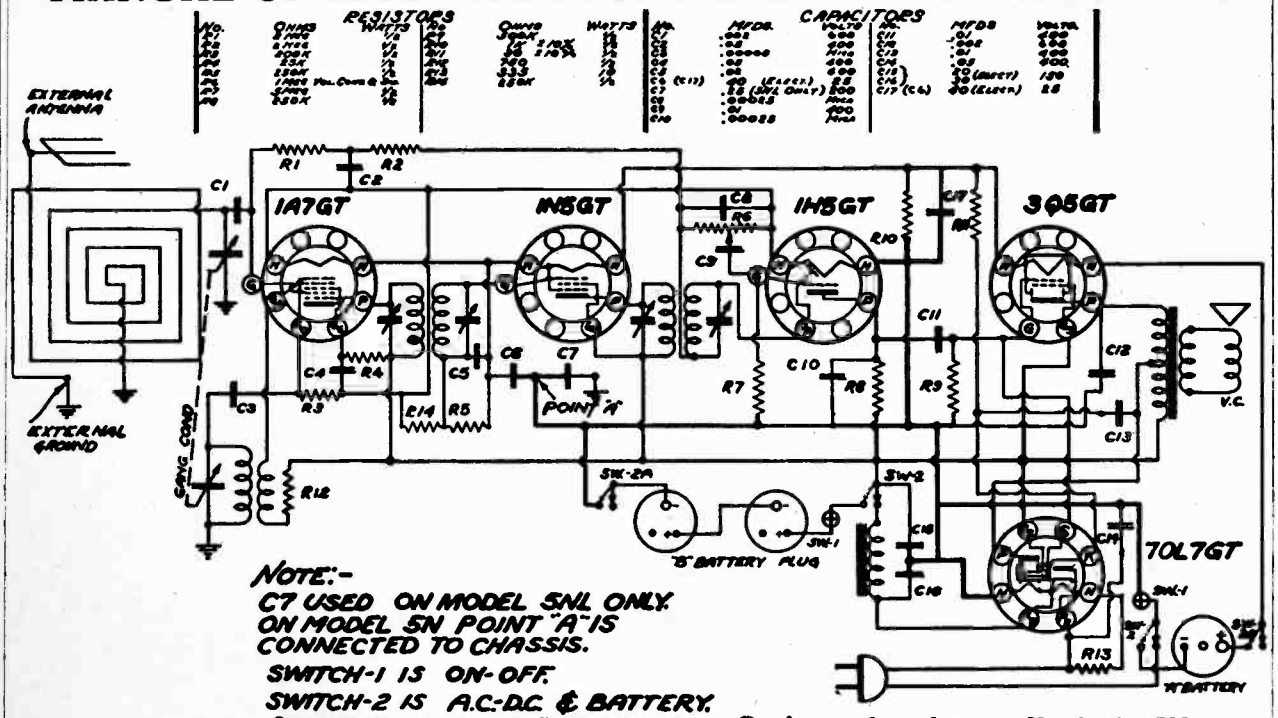


SCHEMATIC DIAGRAM
SPARTON SUPERHETERODYNE MODEL 1160
INTERMEDIATE FREQUENCY 456 K.C.

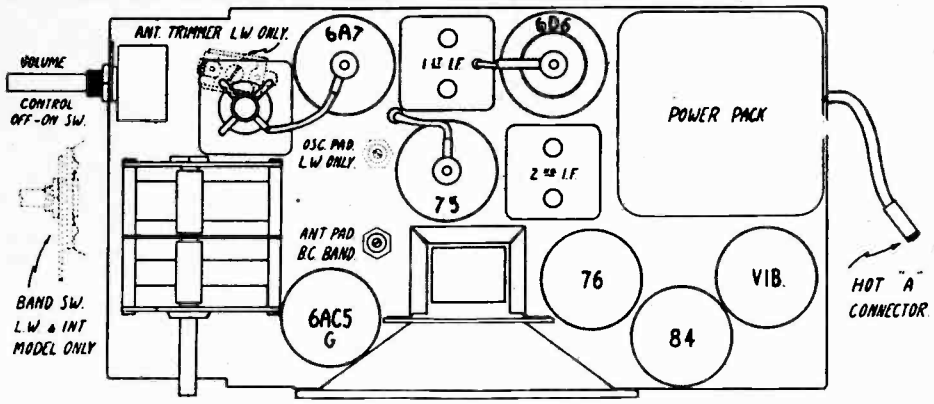
OPERATION	ALIGNMENT OF	GENERATOR CONNECTED TO	DUMMY ANTENNA	GENERATOR FREQUENCY	TUNING COND. SETTING	TRIMMER	REMARKS
1	I.F.	6A7 Grid	.1 mf.	262	Closed	2 trimmers	2nd I.F.
						2 trimmers	1st I.F.
2	Broad. Osc.	Ant.	250 mmf.	1580	Open	Osc.	Adj. to max.
3	Broad. Ant. & R.F.	Ant.	250 mmf.	1400	1400	Ant.	Adj. to max.
						R.F.	Adj. to max.
4	Check sensitivity at 1000 KC and 600 KC.						
5	Check operations 1 to 4 inclusive.						

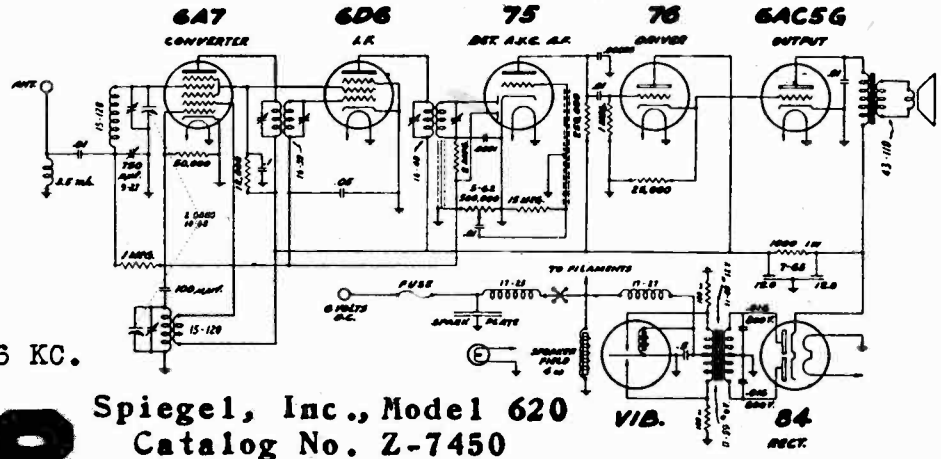
SCHEMATIC DIAGRAM
SPARTON SUPERHETERODYNE AUTOMOBILE RADIO MODEL 699
INTERMEDIATE FREQUENCY 262. K.C.



NOTE:-
C7 USED ON MODEL SNL ONLY.
ON MODEL SN POINT "A" IS CONNECTED TO CHASSIS.
SWITCH-1 IS ON-OFF.
SWITCH-2 IS A.C.-D.C. & BATTERY.
SWITCH-2 SHOWN FOR A.C.-D.C.
I.F. 455 K.C.
ON MODEL SN SWITCH, SWITCH 2A NOT USED.

Spiegel, Inc. Model 5N
Cat. No. Z-7126





I.F. 456 KC.

Spiegel, Inc., Model 620
Catalog No. Z-7450

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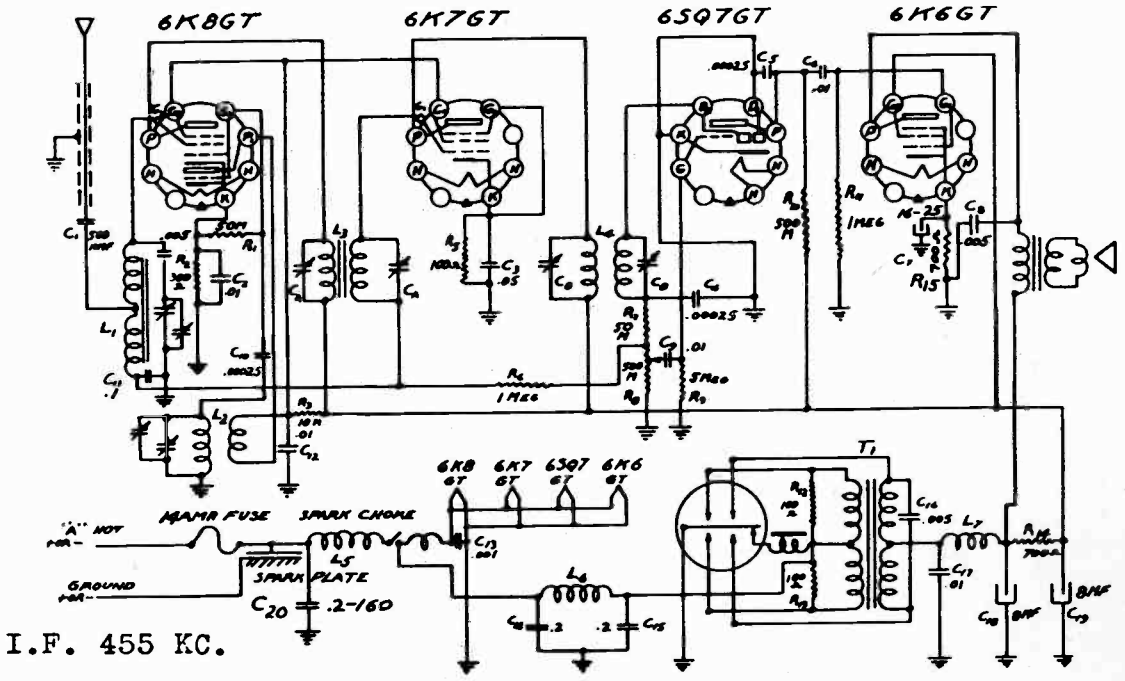
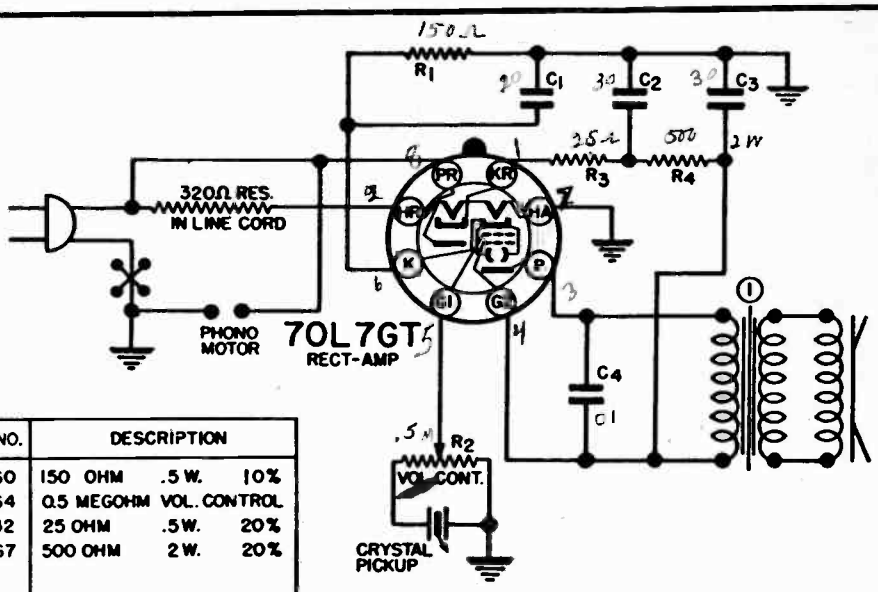


Spiegel, Inc., Chicago, Illinois

Model 297, Catalog Nos. Z-7456 and Z-7458



DIAG NO.	PART NO.	DESCRIPTION
R1	N-1360	150 OHM .5 W. 10%
R2	N-1864	0.5 MEGOHM VOL. CONTROL
R3	N-1742	25 OHM .5 W. 20%
R4	N-1867	500 OHM 2 W. 20%
C1	N-1866	20 MFD. 25V. ELECTRO.
C2	N-1866	30 MFD. 150V. ELECTRO.
C3	N-1866	30 MFD. 150V. ELECTRO.
C4	N-1344	.01 MFD. 400V.
1	N-1863	5 1/2" P.M. SPEAKER (TE-38)
	N-1865	LINE RES. CORD
1	N-1910	5 1/2" P.M. SPKR. (TE-40 & 41)

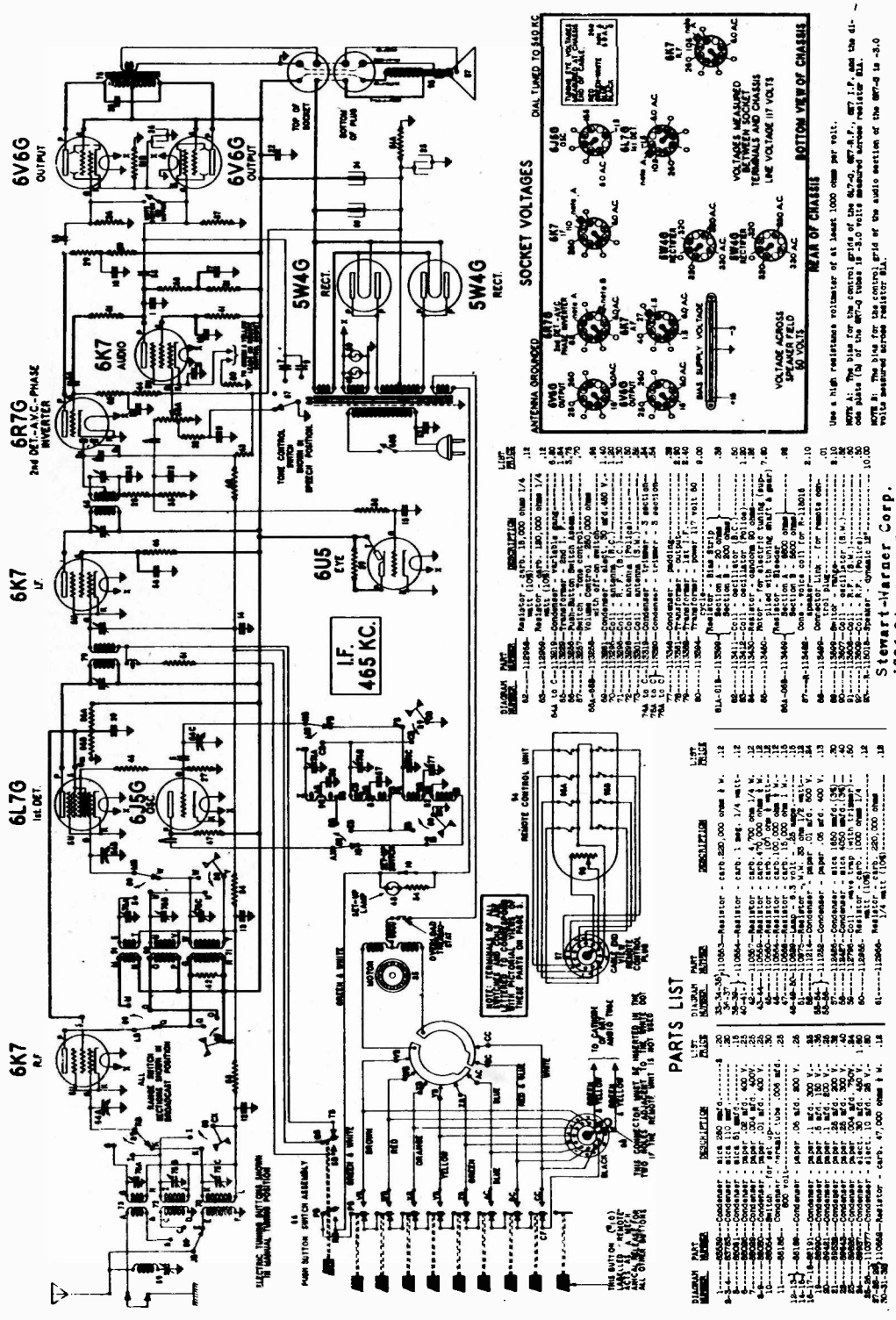
Spiegel, Inc., Chicago, Illinois

Phonograph Model "TE"

Catalog Numbers Z-7020 and Z-7021

MANUAL OF 1939 MOST POPULAR SERVICE DIAGRAMS

MODELS 91-111, 98-111 AND 910-111



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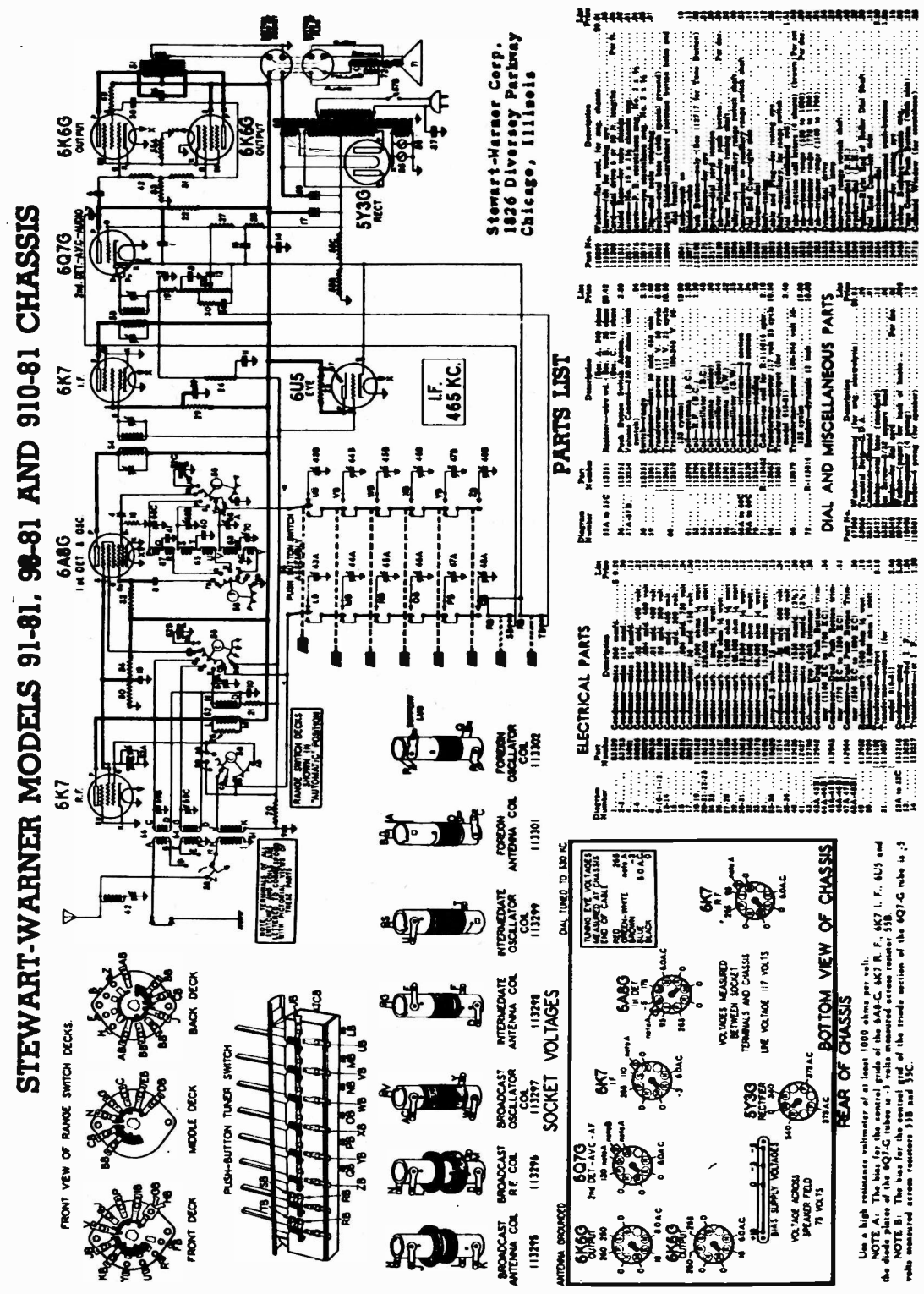

STEWART-WARNER MODELS 91-81, 98-81 AND 910-81 CHASSIS
Stewart-Warner Corp.
1826 Diversey Parkway
Chicago, Illinois
6K6G OUTPUT
6K6G OUTPUT
5Y3G RECT.
6Q7G 2nd DET.-AVC-AF
6K7 I.F.
6U5 EYE
6A8G 1st DET. & OSC.
6K7 R.F.
I.F. 465 KC.
PUSH-BUTTON TUNER SWITCH
FRONT VIEW OF RANGE SWITCH DECKS.
FRONT DECK
MIDDLE DECK
BACK DECK
BROADCAST ANTENNA COIL
BROADCAST R.F. COIL
BROADCAST OSCILLATOR COIL
INTERMEDIATE ANTENNA COIL
INTERMEDIATE OSCILLATOR COIL
FOREIGN ANTENNA COIL
FOREIGN OSCILLATOR COIL
SOCKET VOLTAGES
REAR OF CHASSIS
BOTTOM VIEW OF CHASSIS
PARTS LIST
ELECTRICAL PARTS
DIAL AND MISCELLANEOUS PARTS

STEWART-WARNER MODEL 91-648 RECEIVER

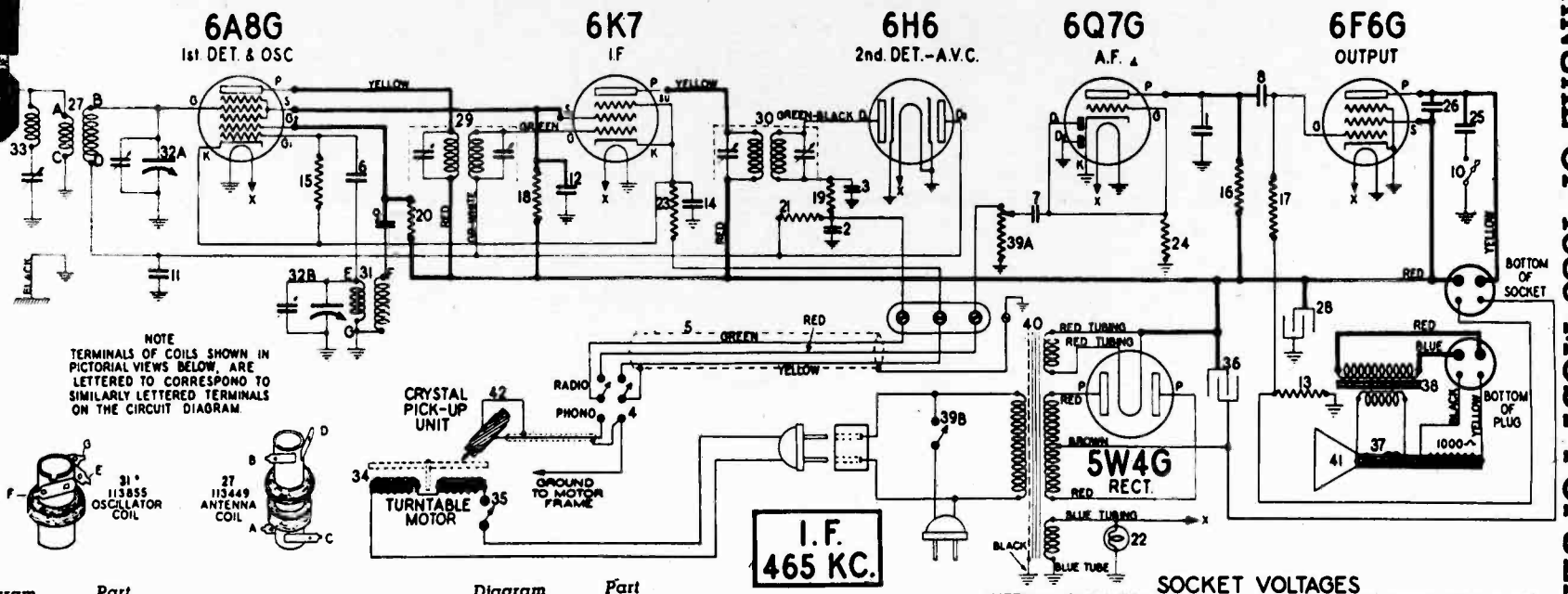


Diagram Number	Part Number	Description
1	83539	Condenser—mica 260 mmfd.
2-3	83783	Condenser—mica 110 mmf.
4	84566	Switch—"phono-radio"-D.P.D.T.
5	84572	Cable—Shielded for Phono. Pickup.
6	85061	Condenser—mica 51 mmfd.
7-8	88026	Condenser—paper .02 mfd. 400 Volt
9	88030	Condenser—paper .01 mfd. 400 Volt
10	88054	Switch for tone control.
11	88189	Condenser—paper .05 mfd. 200 Volt
12	88191	Condenser—paper .1 mfd. 300 Volt
13	88462	Resistor—W. W. 270 ohms 1 W. 10%
14	89532	Condenser—paper .25 mfd. 200 Volt
15	110552	Resistor—carbon 47,000 ohms ¼ W.
16	110553	Resistor—carbon 220,000 ohms ¼ W.
17	110559	Resistor—carbon 470,000 ohms ¼ W.
18-19	110566	Resistor—carbon 33,000 ohms ¼ W.
20	110569	Resistor—carbon 10,000 ohms ¼ W.
21	110580	Resistor—carbon 3.3 meg. ¼ watt
22	110629	Dial bulb—6.3 volt .25 amps.
23	112974	Resistor—carbon 220 ohms ¼ W. (10%)
24	112975	Resistor—carbon 10 meg. ¼ watt.
25	113034	Condenser—paper .04 mfd. 600 volt
26	113035	Condenser—paper .006 mfd. 600 V
27	113449	Antenna coil
28	113808	Condenser—electrolytic 8 mfd. 350 V.
29	113853	Transformer—1st I.F.
30	113854	Transformer—2nd I.F.
31	113855	Coil—oscillator
32A-32B	113869	Condenser—gang
33	113889	Coil—wave trap
34	114400	Phono. motor & turntable
35	114437	Toggle Switch—phono. power off-on switch
36	114972	Condenser—elect. 16 mfd. 450 V.
37	U-115048	Speaker—dynamic 6"
38	U-116212	Output transformer for U-115048 speaker
39A-39B	116274	Volume control 500,000 ohms with switch
40	116283	Transformer—power 110 V 60 C.
41	U-116298	Cone & voice coil assembly for U-115048 speaker
42	116300	Phono. pickup head

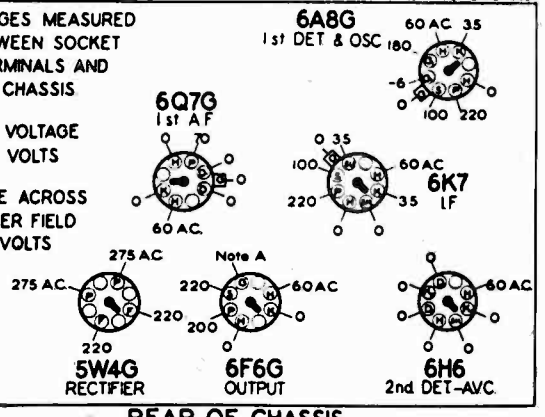
SOCKET VOLTAGES

ANTENNA GROUNDED — DIAL TUNED TO 540 KC

VOLTAGES MEASURED BETWEEN SOCKET TERMINALS AND CHASSIS

LINE VOLTAGE 117 VOLTS

VOLTAGE ACROSS SPEAKER FIELD 50 VOLTS

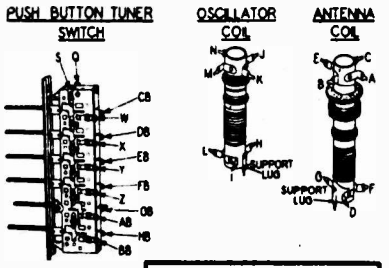


REAR OF CHASSIS

Use a high resistance voltmeter of at least 1000 ohms per volt.

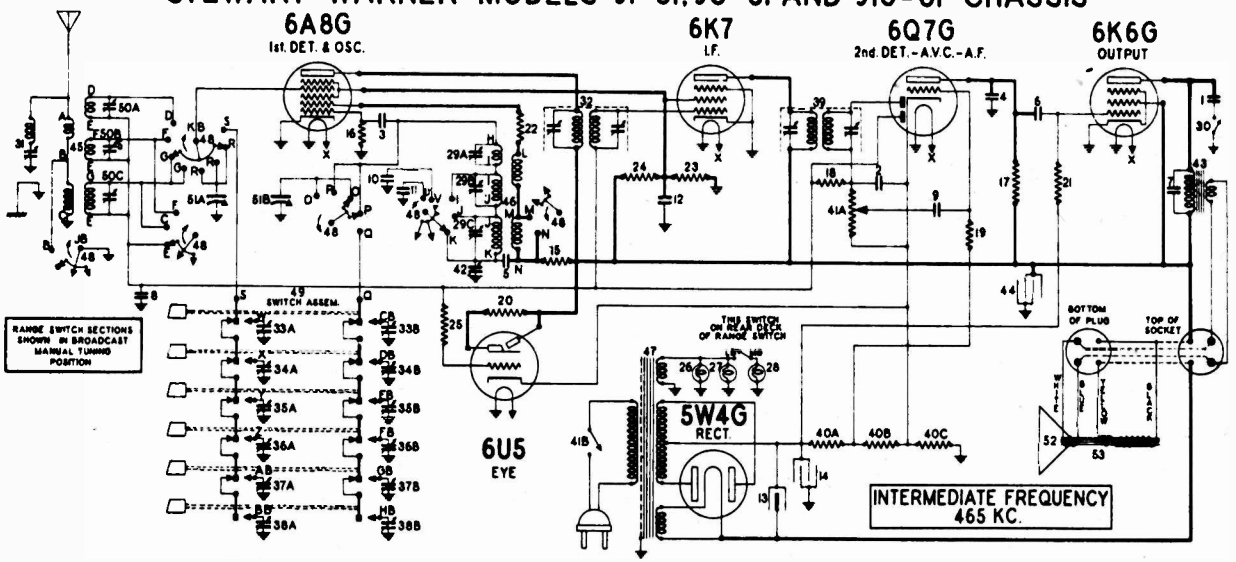
NOTE A: The bias for the control grid of the 6F6G tube is —13.5 volts measured across resistor number 13.

STEWART-WARNER MODELS 91-61, 98-61 AND 910-61 CHASSIS



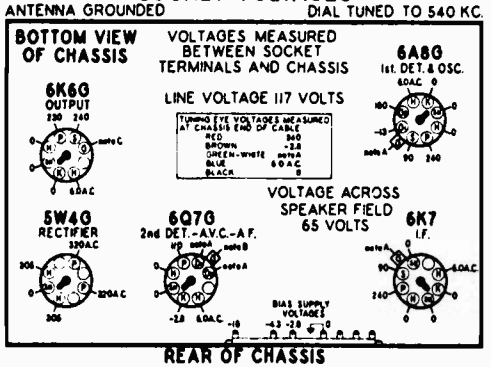
NOTE
TERMINALS OF SWITCHES AND COILS SHOWN IN THE PICTORIAL VIEWS ARE LETTERED TO CORRESPOND TO SIMILARLY LETTERED TERMINALS ON THE CIRCUIT DIAGRAM AT THE RIGHT. TERMINALS WHICH ARE CONNECTED TOGETHER CARRY THE SAME LETTER.

RANGE SWITCH



SOCKET VOLTAGES

ANTENNA GROUNDED — DIAL TUNED TO 540 KC.



Use a high resistance voltmeter of 1000 ohms per volt.

NOTE A: The bias for the control grids of the 6A8-G, 6K7, 6U5, and the diode plates of the 6Q7-G tubes is -2.6 volts measured across resistor 40C.

NOTE B: The bias for the control grid of the triode sections of the 6Q7-G is -4.3 volts measured across resistor 40B and 40C.

NOTE C: The bias for the control grid of the 6K6-G output tubes is -18 volts measured across resistor 40A, 40B and 40C.

Stewart-Warner Corp.
1826 Diversey Parkway
Chicago, Illinois

PARTS LIST

ELECTRICAL PARTS

DIAGRAM NUMBER	PART NUMBER	DESCRIPTION	LIST PRICE
1	83217	Condenser - paper .04 mfd. 600 V.	.35
2	83539	Condenser - mica 260 mmfd.	.20
3	85061	Condenser - mica 51 mmfd.	.15
4	86394	Condenser - mica 510 mmf.	.25
5-6	88070	Condenser - paper .01 mfd. 400 V.	.25
7	88185	Condenser - ceramic tube .006 mfd. 500 volt	.25
8-9	88189	Condenser - paper .06 mfd. 200 V.	.25
10	88473	Condenser - mica .00163 mfd. (3%)	.25
11	88681	Condenser - mica .00858 mfd. (3%)	.30
12	89421	Condenser - paper .02 mfd. 200 V.	.25
13	89937	Condenser - elect. 30 mfd. 450 V.	1.60
14	110377	Condenser - elect. 10 mfd. 25 V.	.80
15	110550	Resistor - carb. 10,000 ohms ½ W.	.15
16	110552	Resistor - carb. 47,000 ohms ½ W.	.12
17	110555	Resistor - carb.220,000 ohms ½ W.	.12
18-19-20	110554	Resistor - carb. 1 meg. 1/4 watt	.12
21	110556	Resistor - carb.470,000 ohms ½ W.	.12
22	110560	Resistor - carb. 100 ohm 1/4 watt	.12
23	110561	Resistor - carb. 15,000 ohm 2 W.	.30
24	110566	Resistor - carb. 15,000 ohm 1 W.	.18
25	110570	Resistor - carb. 2.2 meg.1/4 watt	.15
26-27-28	110926	Lamp - 6.3 volt - .25 amp.	.15
29A to 29C	112072	Condenser - trimmer - 3 section	.45
30	112793	Switch - tone control	.40
31	112796	Coil - wave trap (with trimmer)	.80
32	112803	Transformer - 1st I.F.	1.20
33A - 33B	112942	Condenser - dual push button trimmer (1100 KC to 1700 KC)	.36
34A - 34B			
35A - 35B	112943	Condenser - dual push button trimmer (770 KC to 1360 KC)	.45
36A - 36B			
37A - 37B	112944	Condenser - dual push button trimmer (550 KC to 1000 KC)	.80
38A - 38B			
39	113047	Transformer - 2nd I.F.	1.10
40A to 40C	113067	Resistor - Metal Clad: Section A - 160 ohms 1 watt; Section B - 25 ohms ½ watt; Section C - 40 ohms ½ watt	.48
41A - 41B	113068	Volume Control - (500,000 ohms with switch)	.92
42	113063	Condenser - padder	.36
43	113064	Transformer - output	1.70
44	113066	Condenser - elect. 8 mfd. 450 V.	.98
45	113068	Coil - antenna	.94
46	113071	Coil - oscillator	1.20
47	113078	Transformer - power 117 volt (50-60 cycle)	4.00
	113639	Transformer - power 117 volt (25 cycle)	6.00
48	113083	Switch - range	1.80
49	113084	Push Button Switch Assembly	5.00
50A to 50C	113095	Condenser - trimmer (3 section)	1.25
51A - 51B	113250	Condenser - variable gang	5.00
52	R-115348	Cone - voice coil assem. for R-115011 speaker	1.80
53	R-115011	Speaker - dynamic 8 inch	8.00

DIAL & MISCELLANEOUS PARTS

PART NUMBER	DESCRIPTION	LIST PRICE
67868	Washer - embossed (for mtg. elect.)	$ .06
81146	Retaining Ring - for drive shaft - Per C	.80
85427	Socket - octal base (standard)	.15
86765	Terminal strip - antenna - ground	.15
88810	Bushing - rubber; for chassis mtg.	.03
89746	Washer - (paper) for back of knobs	.096
110496	Plug - speaker (4 prong)	.12
110501	Socket - 4 prong (for speaker)	.16
110829	Washer - flat steel, for mtg. chassis	.01
111085	Sleeve - felt for tuning eye	.03
111302	Cord - dial scale 6 or 50 ft. light's. Per ft.	.06
111367	Spring - drive cord tension	.36
111858	Shield Base - for tube shields	.02
112073	Drum & Bushing - for dial drive	.36
112796	Clip - for mtg. wave trap coil	.01
112874	Screw #10 X 1 1/8 chassis mtg.	.01
112876	Screw - P.H. escutcheon mtg. #3 X 3/8	.01
112879	Screw - eye escutcheon mtg. #2 X 3/8	.01
113012	Clip - dial scale retaining	.01
113025	Socket - octal base (with special ground)	.18
113040	Light Shield - cardboard (between button holes and dial frame	.06
113041	Knob - push on	.12
113077	Shield - tube	.15
113080	Shaft - dial drive	.12
113086	Bracket - dial frame & light	.34
113089	Scale - dial	1.20
113095	Socket - for dial lamp	.18
113098	Escutcheon - dial	1.44
113099	Escutcheon - push button	1.44
113101	Pointer	.18
113102	Push Button - only	.18
113105	Knob - Push on	.12
113130	Cable & Plug - for tuning eye	.54
113189	Tab - celluloid - for push button - Per dz.	.36
113321	Tabs - station call letters (4 sheets) (brown) - Per set	.60
113323	Tabs - trimmer range (550 to 1000) - Per set	.06
113324	Tab - trimmer range (770 to 1360)	.01
113325	Tab - trimmer range (1100 to 1700)	.01

MODEL 97-56-S CHASSIS
RECEIVER MODELS 97-561 to 97-569

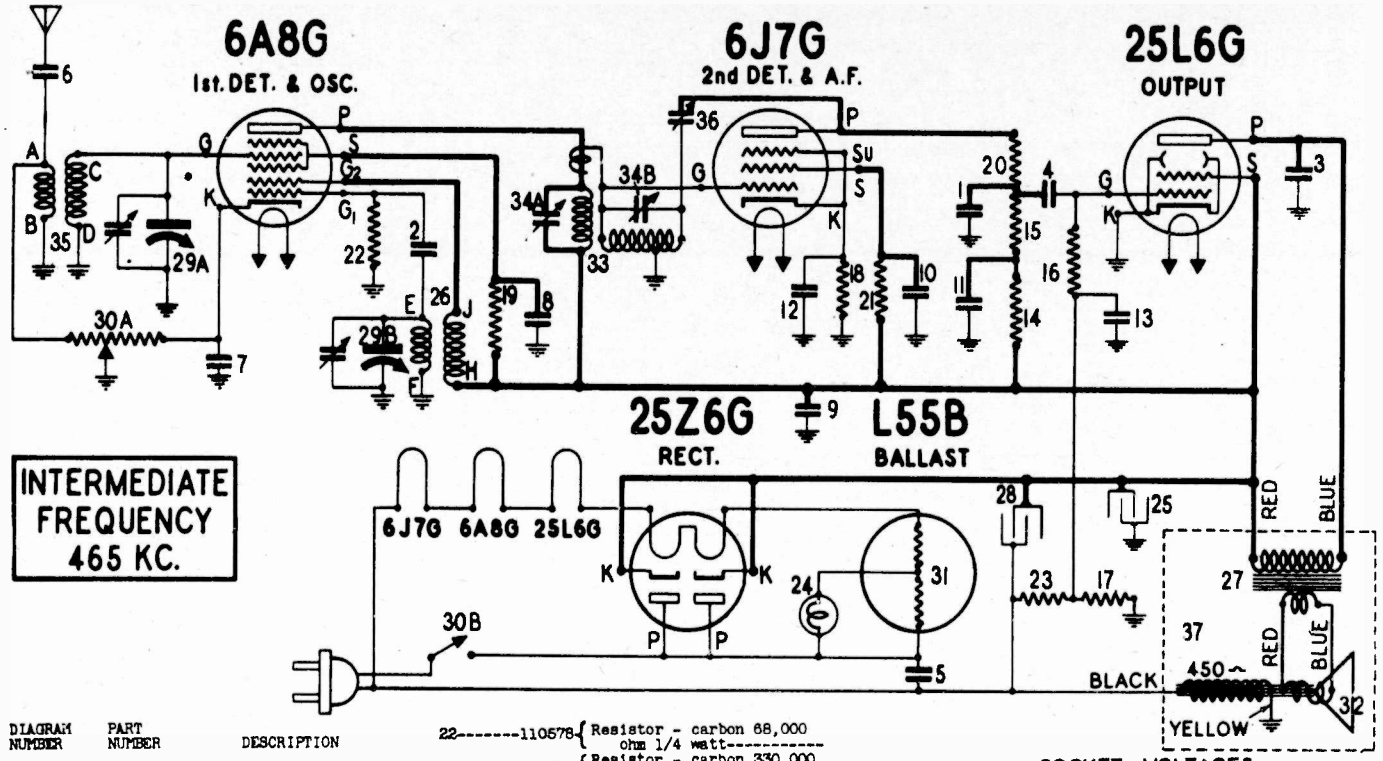
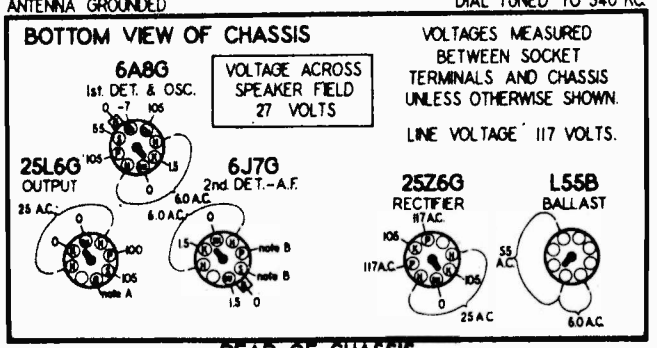


DIAGRAM NUMBER	PART NUMBER	DESCRIPTION
1	83539	Condenser - mica 280 mmfd.
2	83783	Condenser - mica 110 mmf.-
3-4-5	88026	Condenser - paper .02 mfd. 400 volt
6	88029	Condenser - paper .004 mfd. 400 volt
7-8-9-10-11	89421	Condenser - paper .1 mfd. 200 volt
12-13	89532	Condenser - paper .25 mfd. 200 volt
14	110553	Resistor - carbon 220,000 ohm 1/4 watt
15-16	110559	Resistor - carbon 470,000 ohm 1/4 watt
17	110564	Resistor - carbon 100,000 ohm 1/4 watt
18	110565	Resistor - carbon 22,000 ohm 1/4 watt
19	110566	Resistor - carbon 33,000 ohm 1/4 watt
20	110569	Resistor - carbon 10,000 ohm 1/4 watt
21	110570	Resistor - carbon 2.2 meg. 1/4 watt
22	110578	Resistor - carbon 68,000 ohm 1/4 watt
23	110584	Resistor - carbon 330,000 ohm 1/4 watt
24	110629	Lamp - 6.3 volt-.25 amps.-
25	112898	Condenser - electrolytic 16 mfd. 150 volt
26	113042	Coil - oscillator
27	R-113343	Transformer - output for R-115013 speaker
28	113472	Condenser - electrolytic 40 mfd. 150 volt
29A - 29B	113478	Condenser - variable gang-
30A - 30B	113501	Volume control-20,000 ohms with on-off switch
31	113506	Ballast Resistor - L55B-
32	R-113737	Cone - voice coil assem. for R-115025 speaker
33	113738	Transformer - I.F. (with trimmer)
34A - 34B	113743	Condenser - trimmer (2 section for I.F.)
35	113744	Coil - antenna
36	113745	Condenser - trimmer (regen control)
37	R-115025	Speaker - dynamic - 5" (sub. R-115013)

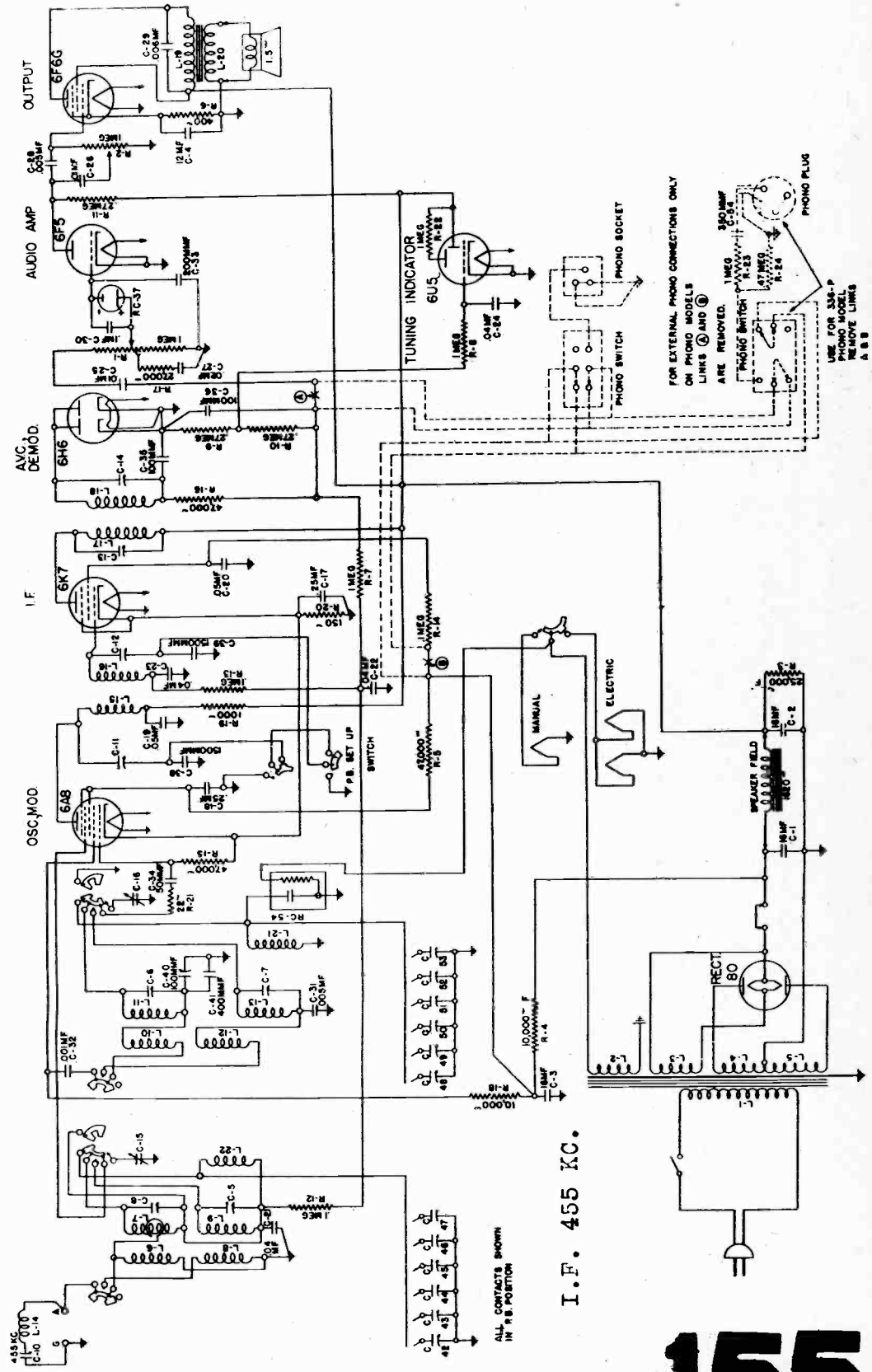
SOCKET VOLTAGES

ANTENNA GROUNDED — DIAL TUNED TO 540 KC.



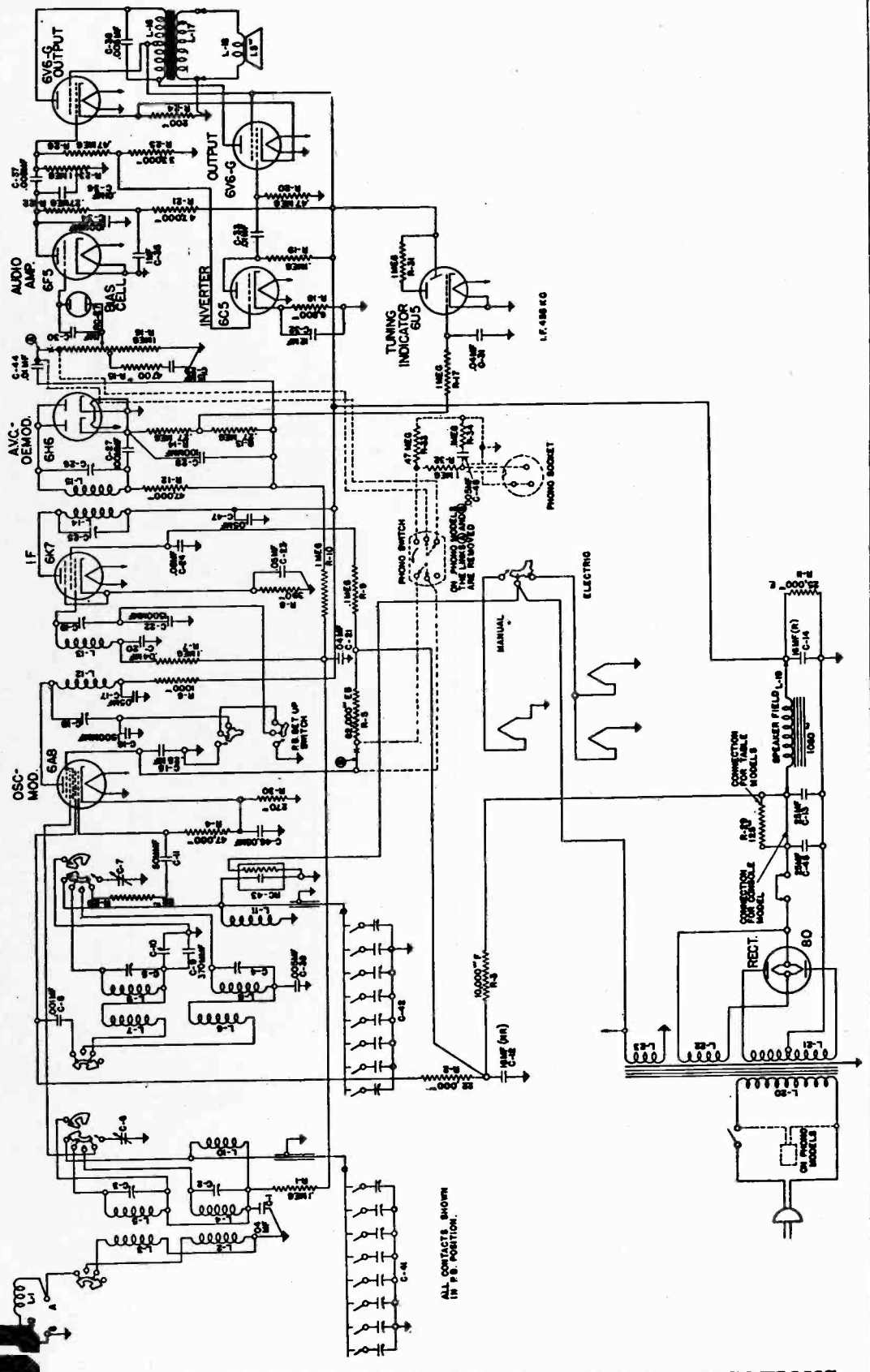
Stromberg-Carlson No. 335 and 336 Radio Receivers

STROMBERG-CARLSON TELEPHONE MANUFACTURING COMPANY
ROCHESTER, NEW YORK



Stromberg-Carlson Nos. 340 and 341 Radio Receivers

STROMBERG-CARLSON TELEPHONE MANUFACTURING COMPANY
ROCHESTER, NEW YORK

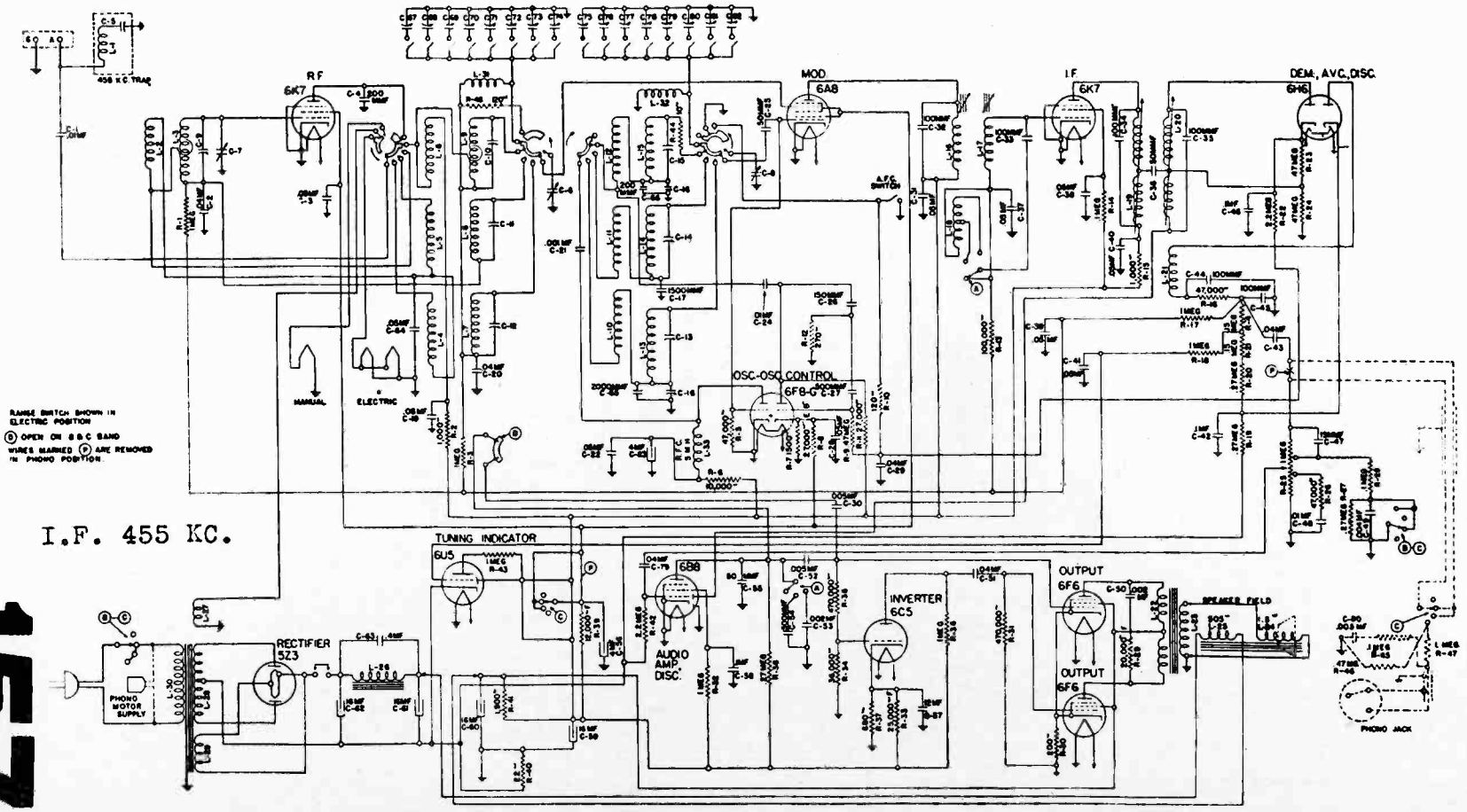


Stromberg-Carlson No. 350 Radio Receivers

STROMBERG-CARLSON TELEPHONE MANUFACTURING COMPANY
ROCHESTER, NEW YORK

ELECTRICAL SPECIFICATIONS

Type of Circuit.....Superheterodyne with A. F. C. Electric Tuning
Tuning Ranges.....A—530 to 1700 Kc.; B—1700 to 5600 Kc.; C—5600 to 18,000 Kc.



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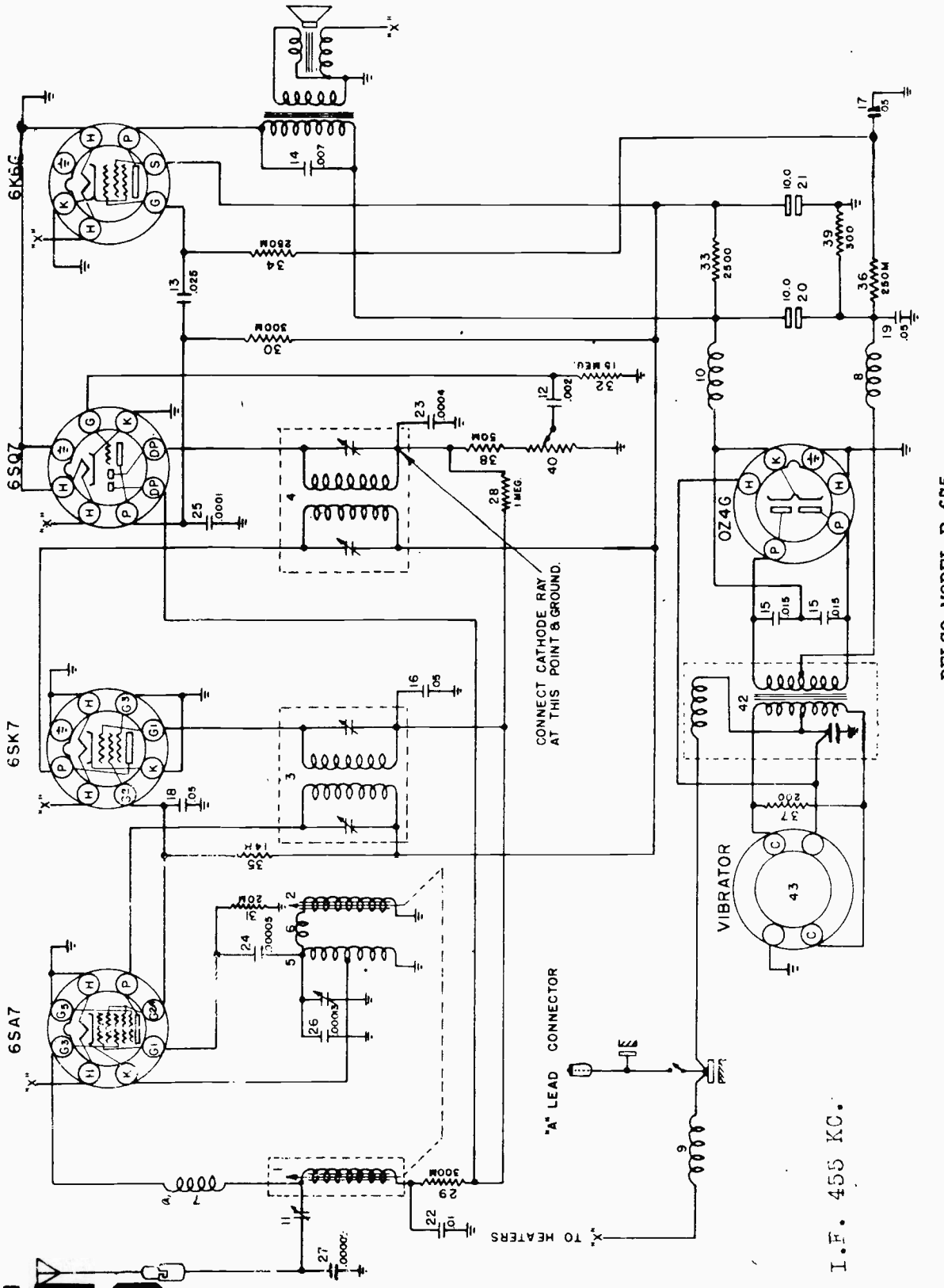
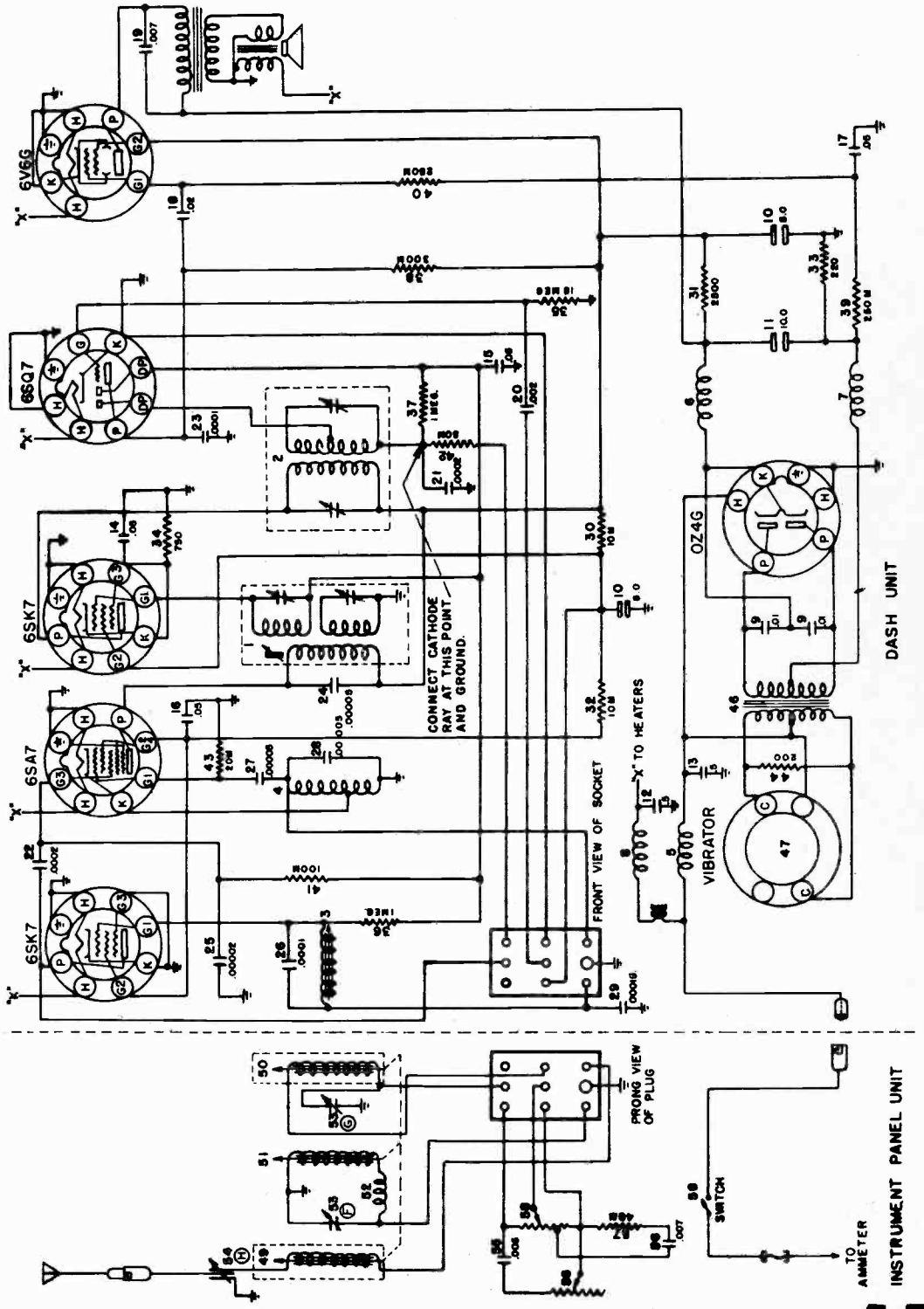

DELCO MODEL R-675
6K6G
6SQ7
6SK7
6SA7
OZ4G
VIBRATOR
CONNECT CATHODE RAY AT THIS POINT & GROUND
"A" LEAD CONNECTOR
TO HEATERS
I.F. 455 KC.



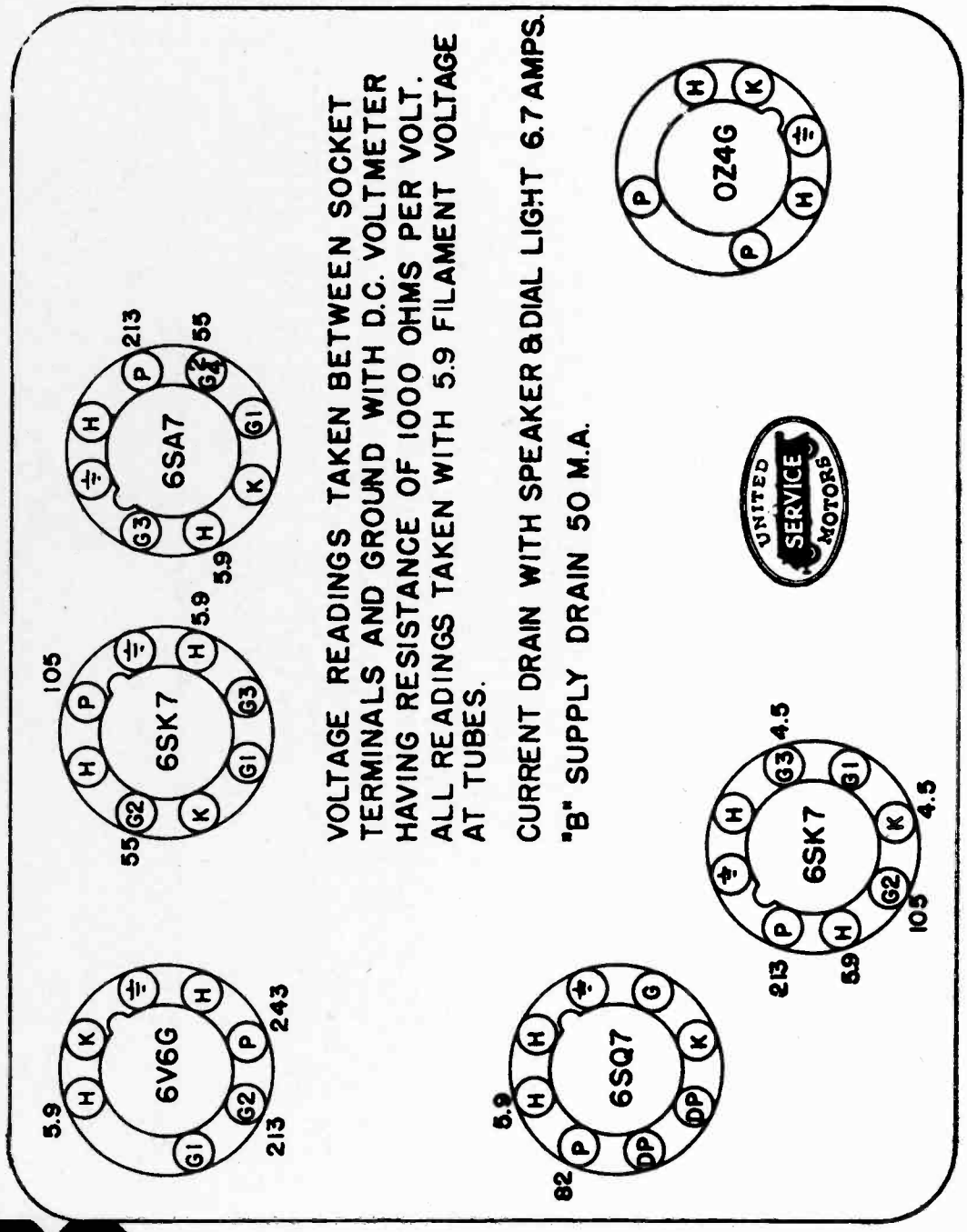
DELCO MODEL R-678 CIRCUIT DIAGRAM

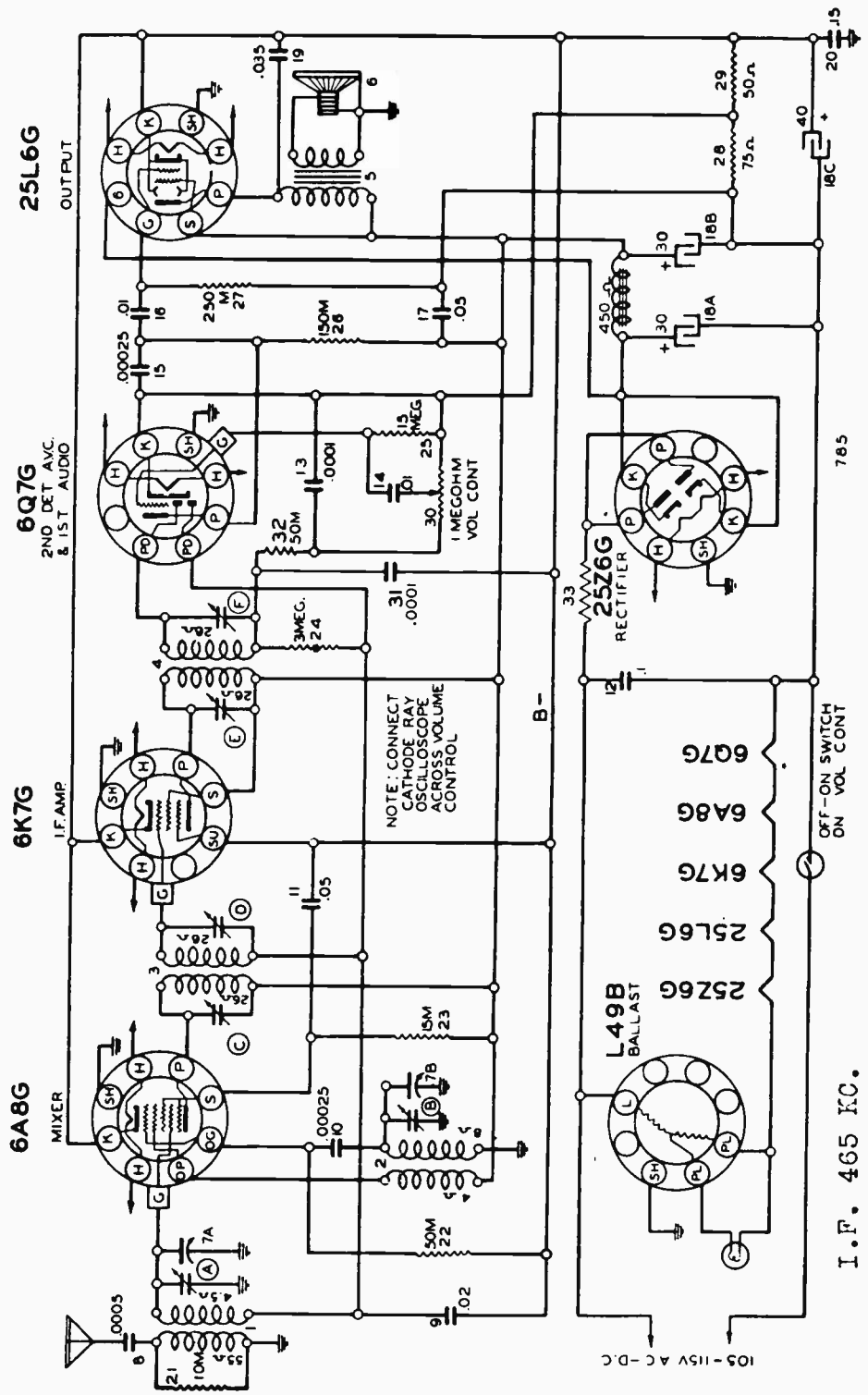
I.F. 455 KC.

SERVICE INSTRUCTIONS--DELCO MODEL R-678--Cont'd.

Tuning is accomplished by means of the conventional manual control or by means of five push-buttons which mechanically adjust the position of the iron cores in the tuning coils, tuning the radio to preselected frequencies

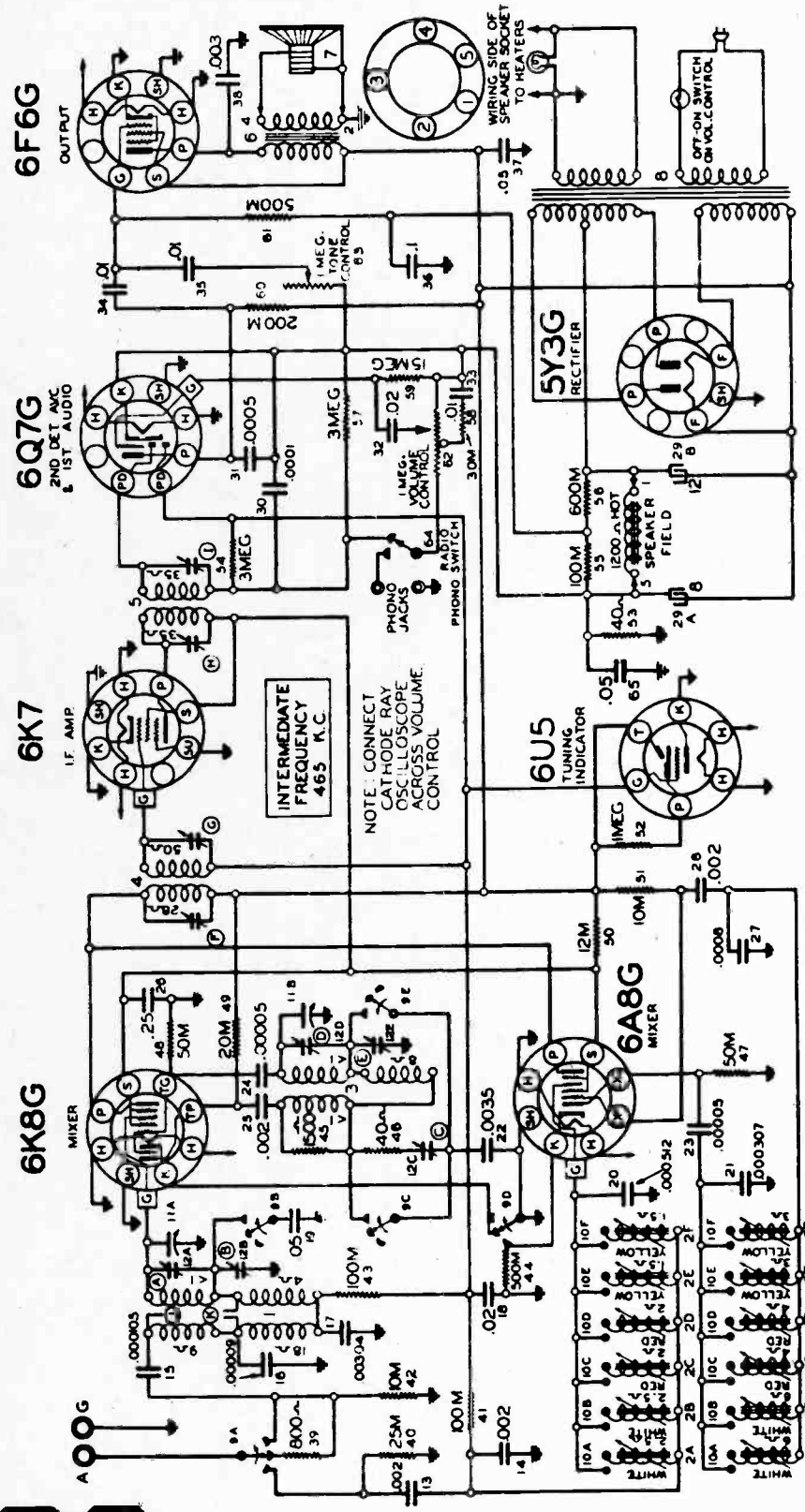
UNITED MOTORS SERVICE
INCORPORATED





DELCO MODELS R-1134-35-39 CIRCUIT DIAGRAM

United Motors Service, Inc.
3044 West Grand Blvd.
Detroit, Mich.



United Motors Service, Inc.
3044 West Grand Blvd.
Detroit, Michigan

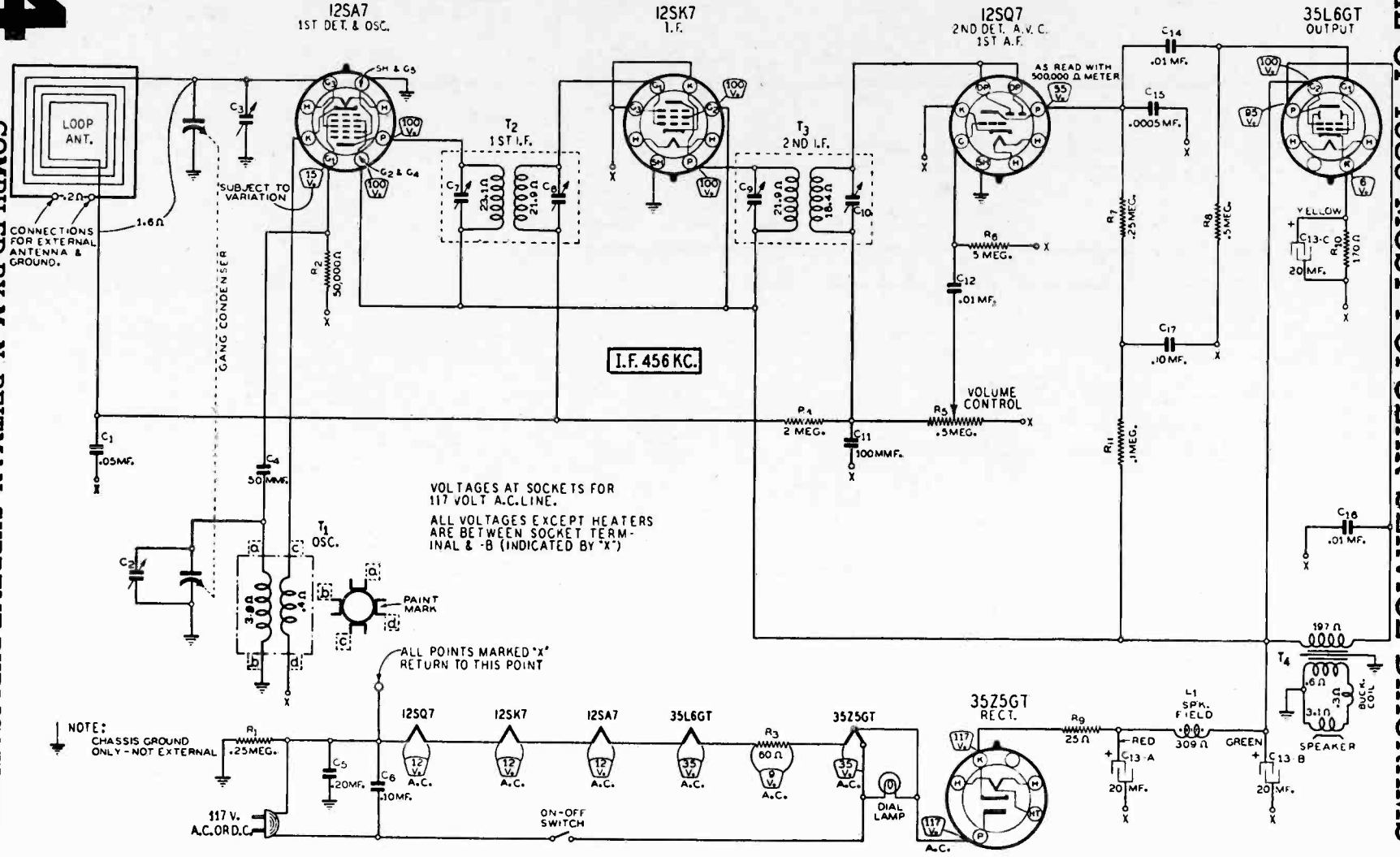
DELCO MODEL R-1142 CIRCUIT DIAGRAM

United Motors Service, Inc.
3044 West Grand Blvd.
Detroit, Mich.

Delco Model R-1144 Circuit

Wells-Gardner & Co.
2701 N. Kildare Ave.
Chicago, Illinois

Series 5D2



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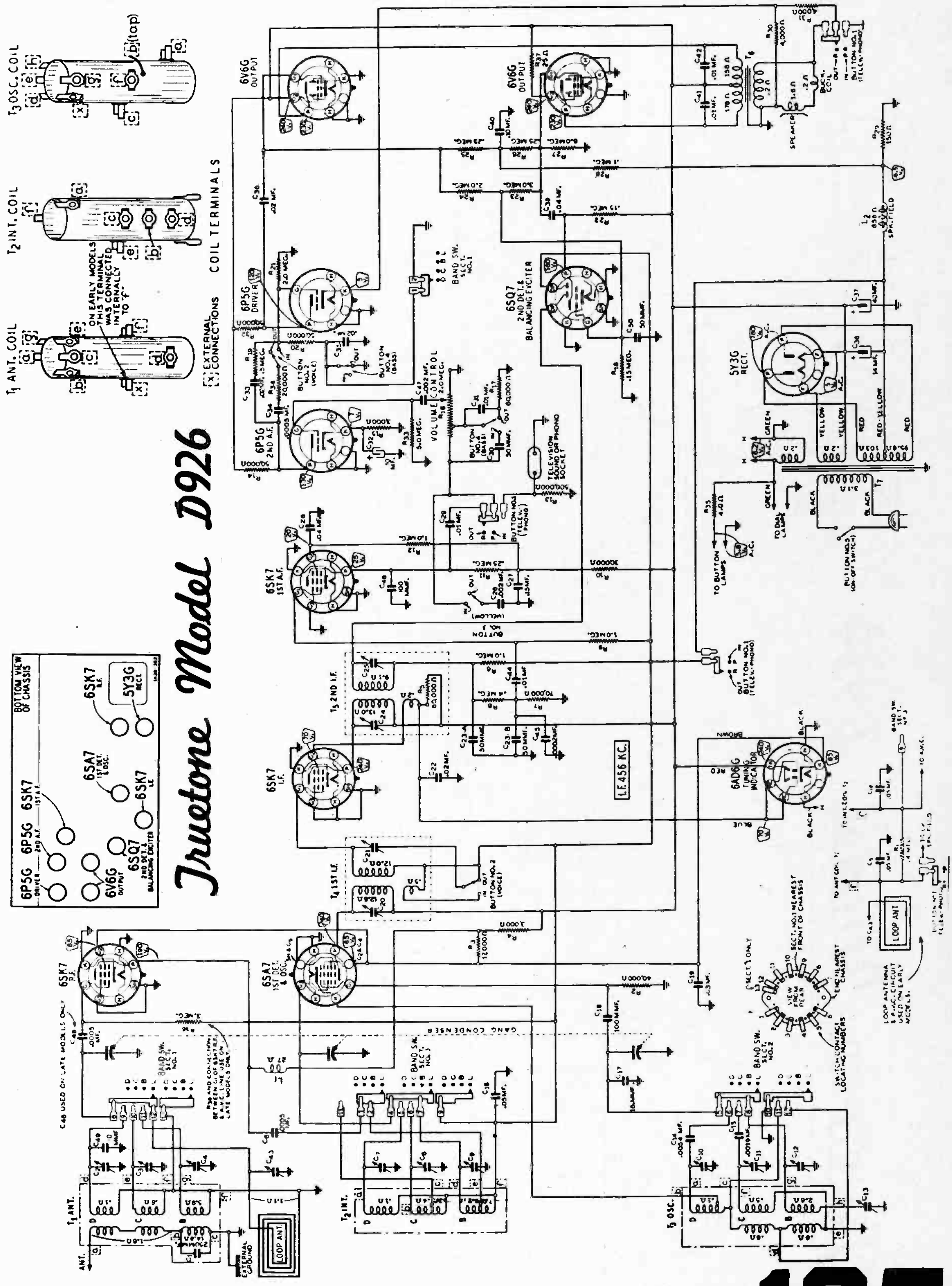
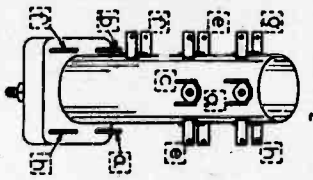
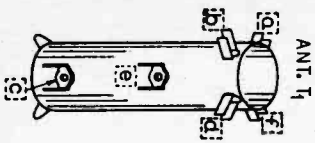
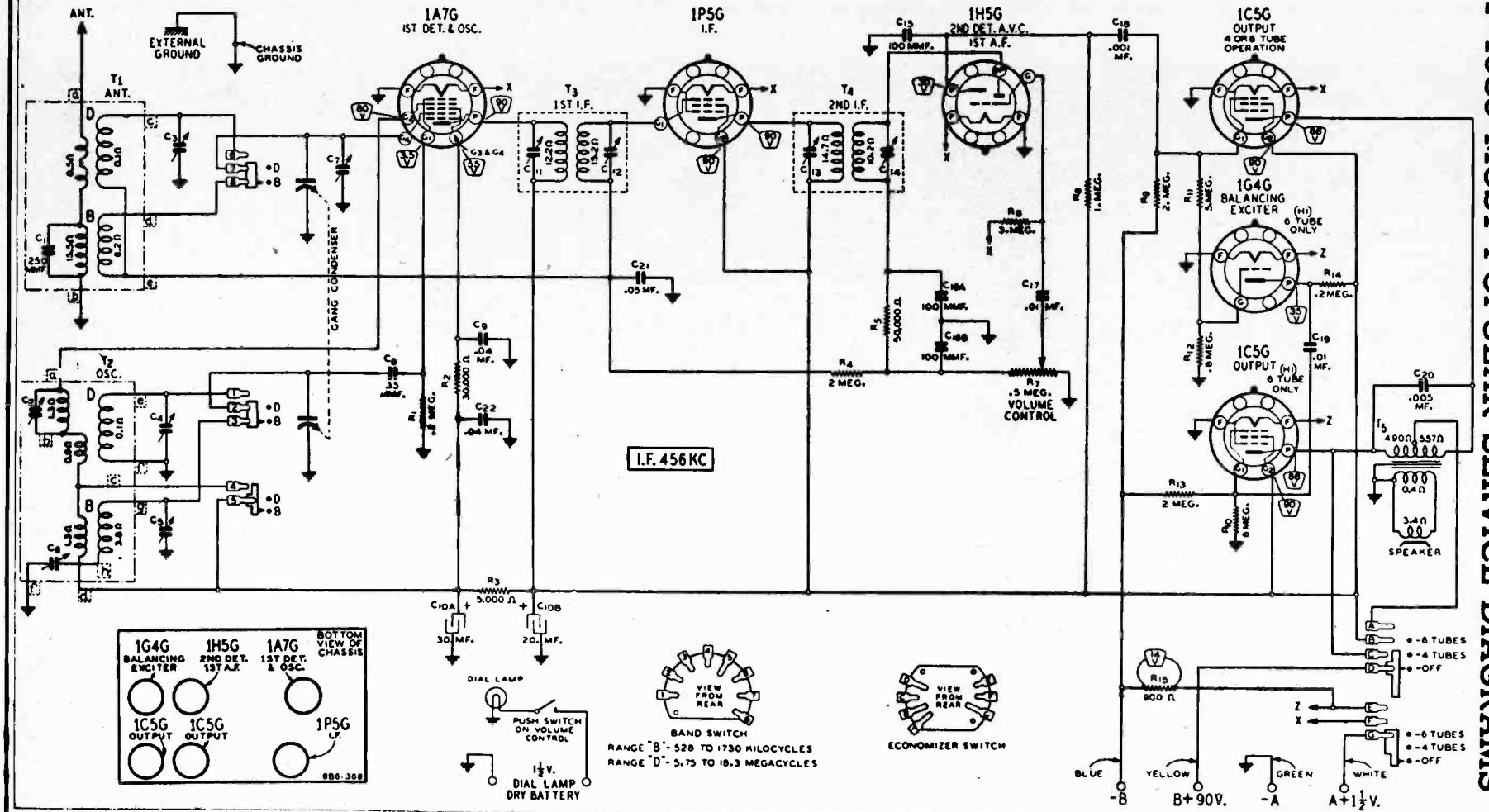
MANUAL OF 1939 MOST POPULAR SERVICE DIAGRAMS

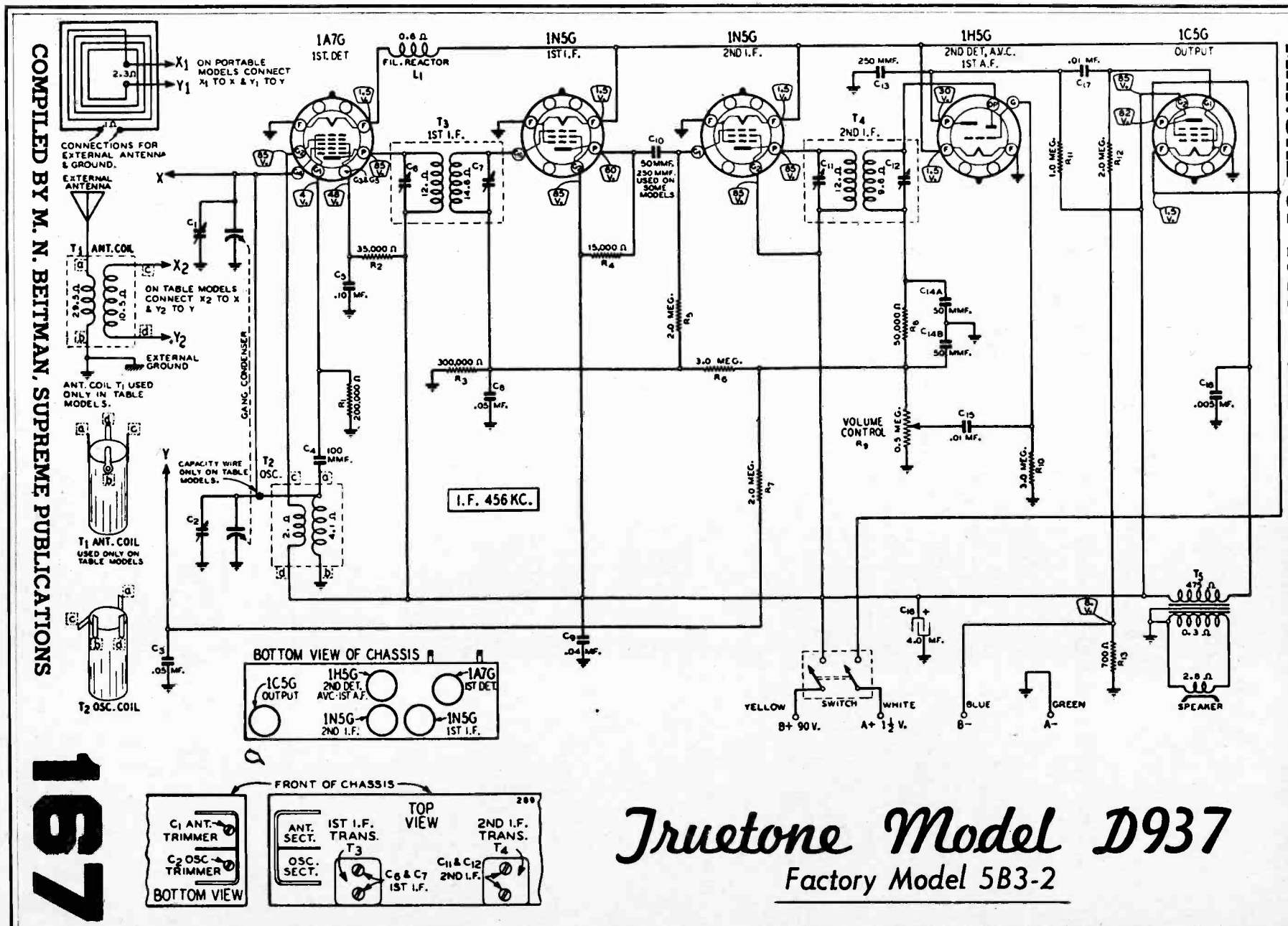

Truetone Model D926
BOTTOM VIEW OF CHASSIS
COIL TERMINALS
I.F. 456 KC.
GANG CONDENSER

1939 Truetone Model D934









Truetone Model D937

Factory Model 5B3-2

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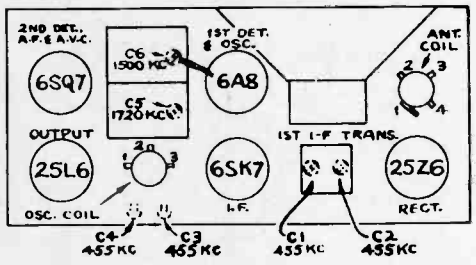
Westinghouse Radio Model WR-165

Five-Tube, Single-Band, AC-DC, Superheterodyne Receiver

Alignment Procedure

Output Meter Alignment.—Connect the meter across the voice coil, and turn the receiver volume control to maximum.



Trimmer Locations

Test-Oscillator.—Connect the low side of the test-oscillator to the receiver chassis, through a .01 mfd. capacitor, and keep the output as low as possible. The antenna should be rolled up and kept at least one foot from chassis during alignment.

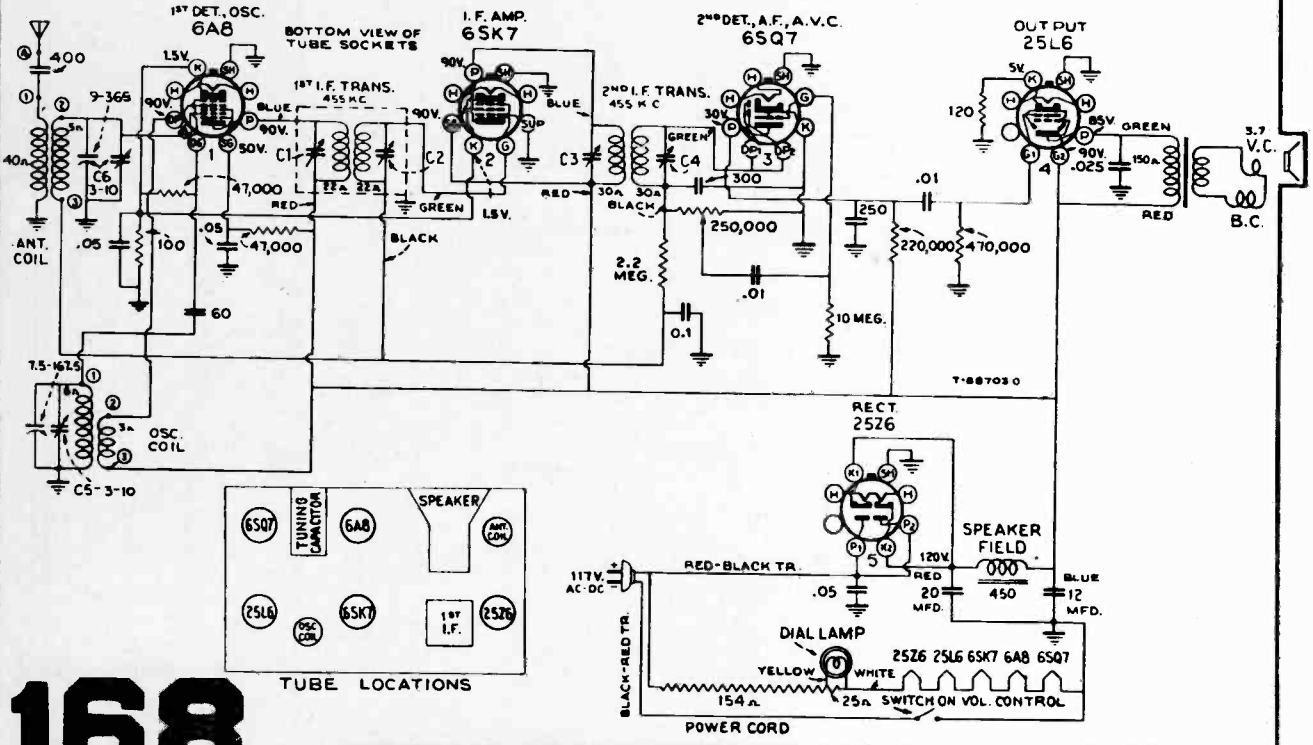
Steps	Connect the high side of test-oscillator to—	Tune test-osc. to—	Turn radio dial to—	Adjust the following for max. peak output—
1	6A8 1st-Det. grid cap, in series with .01 mfd.	455 kc	Quiet point at 1,600 kc end of dial	C1, C2, C3, C4 (1st and 2nd I-F transformers)
2	Antenna term. of ant. trans. in series with 100 mmfd.	1,720 kc	Full clockwise (out of mesh)	C5 (oscillator)
3		1,500 kc	Resonance on 1,500 kc signal.	C6 (antenna)

INTERMEDIATE FREQUENCY	455 kc
POWER OUTPUT (125 volt, 60 cycle supply)	
Undistorted	1.5 watts
Maximum	2.0 watts
LOUDSPEAKER	
Type	4-inch Electrodynamic

Power-Supply Polarity.—For operation on d-c, the power plug must be inserted in the outlet for correct polarity. If the set does not function, reverse the plug. On a-c, reversal of the plug may reduce hum.

Resistor in Power Cord.—The power cord contains a resistor which becomes warm during operation.

Antenna.—The set is equipped with length of antenna wire. Do not connect the antenna to ground. If an outdoor antenna is used, it should not be longer than 100 feet, including lead-in. If it is longer, connect a 100 to 200 mmf. capacitor in series with the lead-in.



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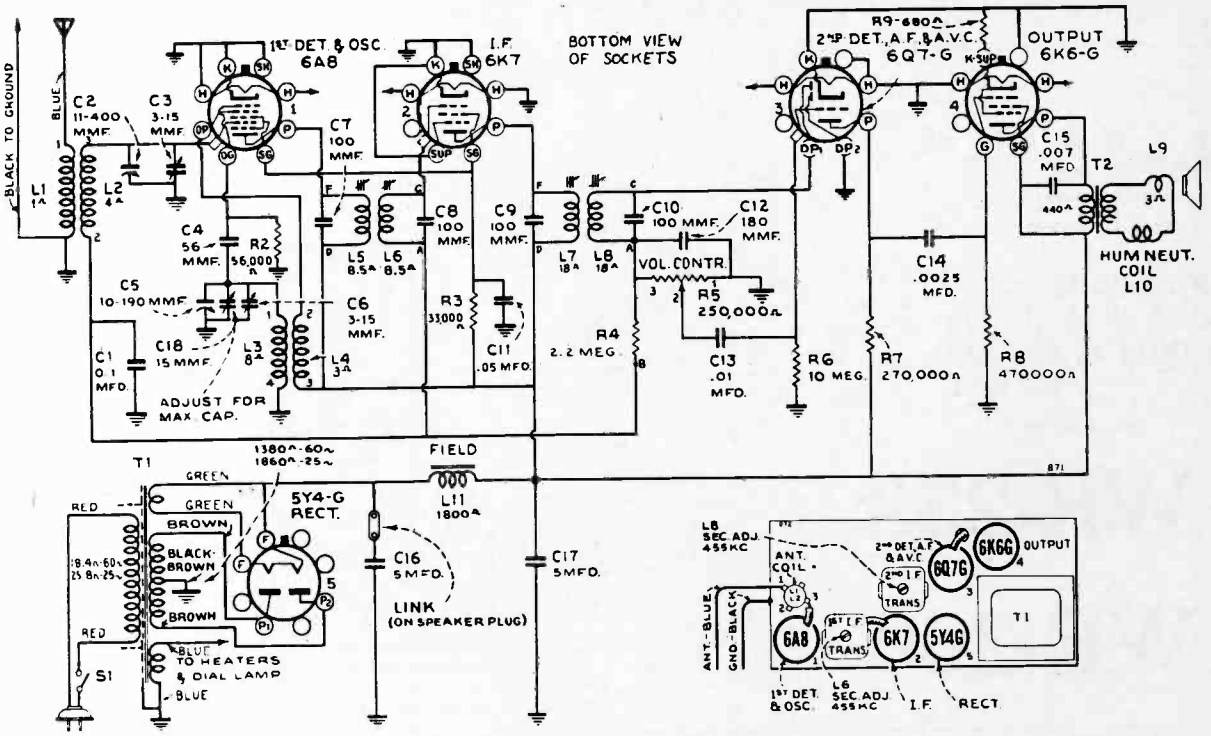
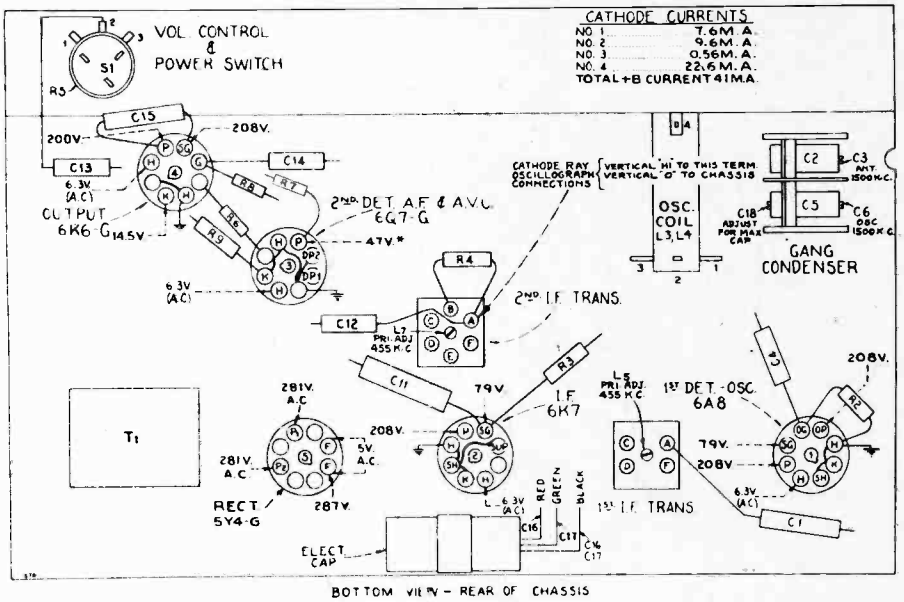


Model WR-256

Five-Tube, Single-Band, Superheterodyne Receiver



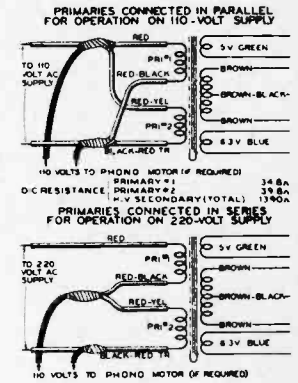
Tube Socket Voltages and Location of Parts

* Note: Values with star (*) are operating voltages.
Values not starred are actual measured voltages.

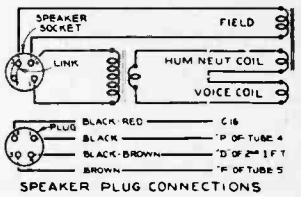
Measurements made to chassis unless otherwise indicated.

Measurements made with set tuned to quiet point, volume control at minimum, using 1,000-ohm-per-volt meter, having ranges of 10, 50, 250, and 500 volts. (Use nearest range above the specified measured voltage.)

Values should hold within approximately ± 20% for 117-volt 60-cycle supply.

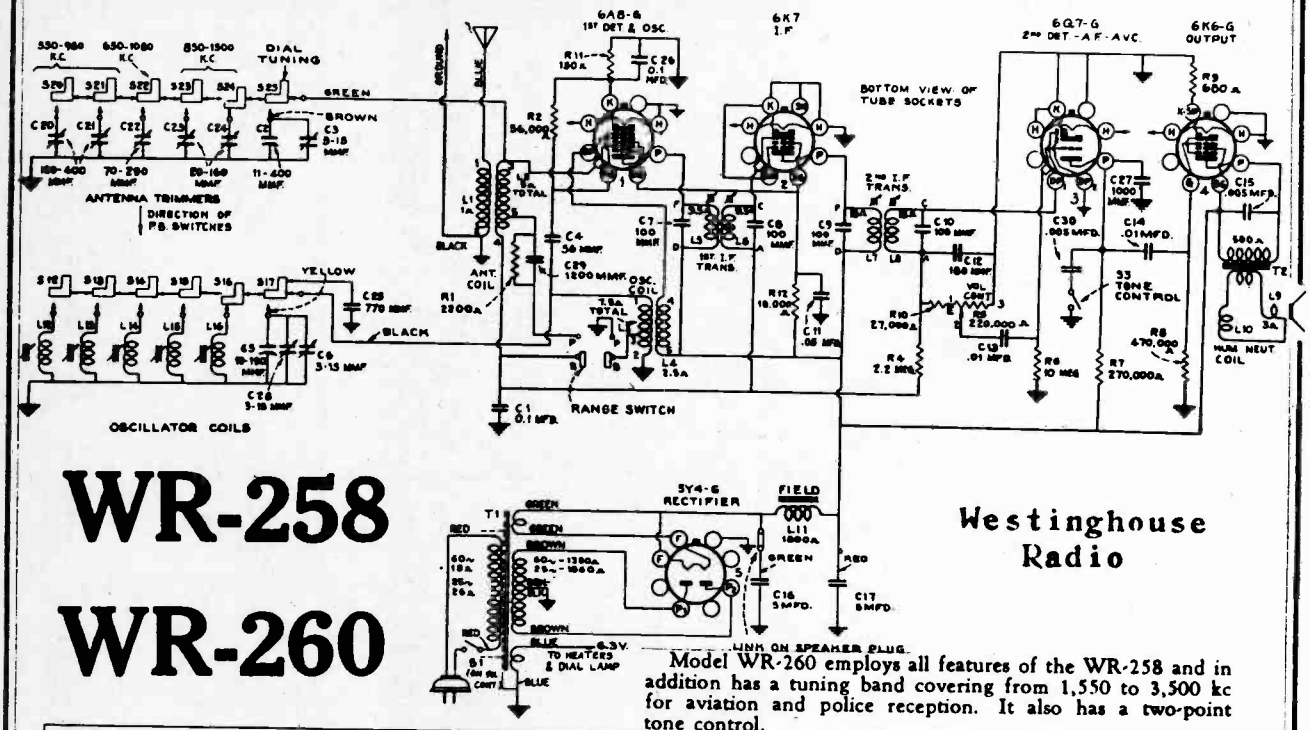


Connections for No. 30888 Transformer



SPEAKER PLUG CONNECTIONS

WESTINGHOUSE
ELECTRIC SUPPLY COMPANY

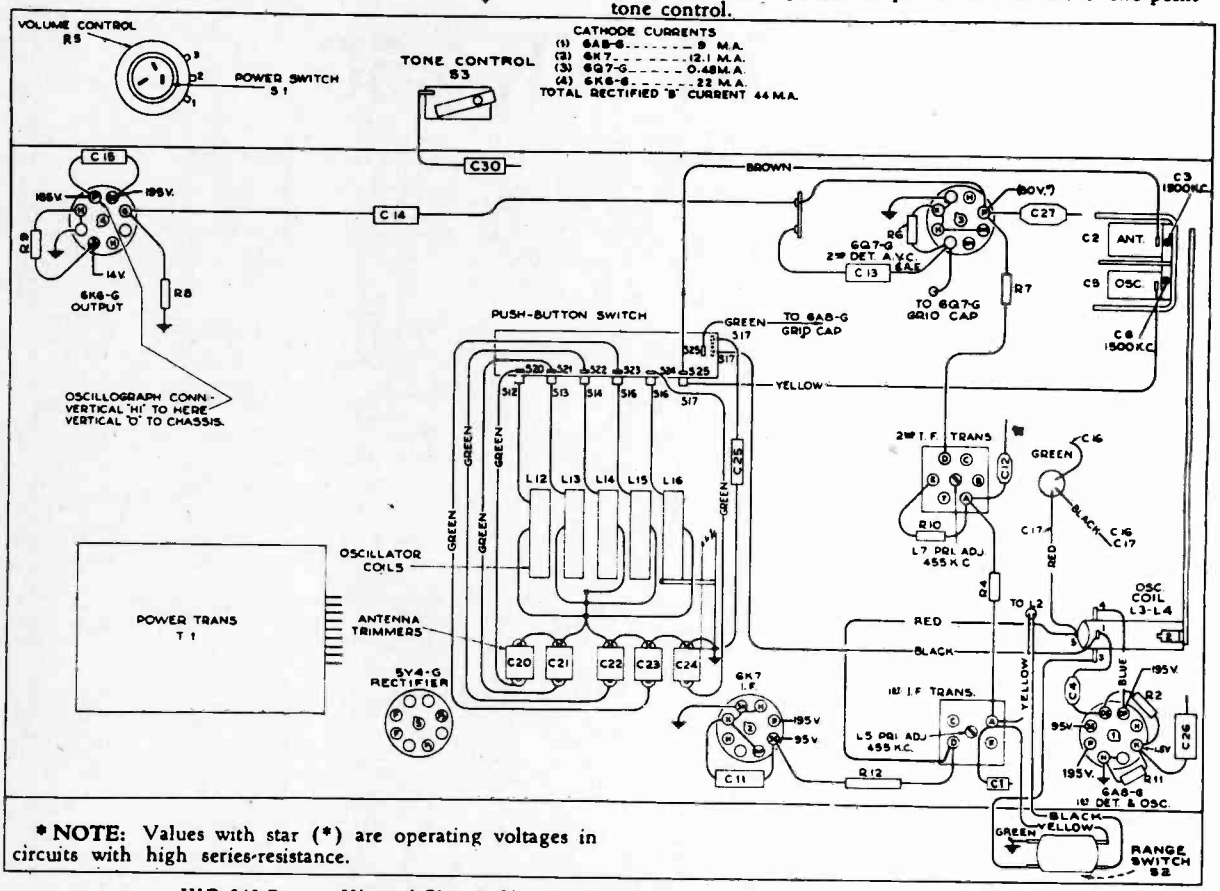


WR-258

WR-260

Westinghouse Radio

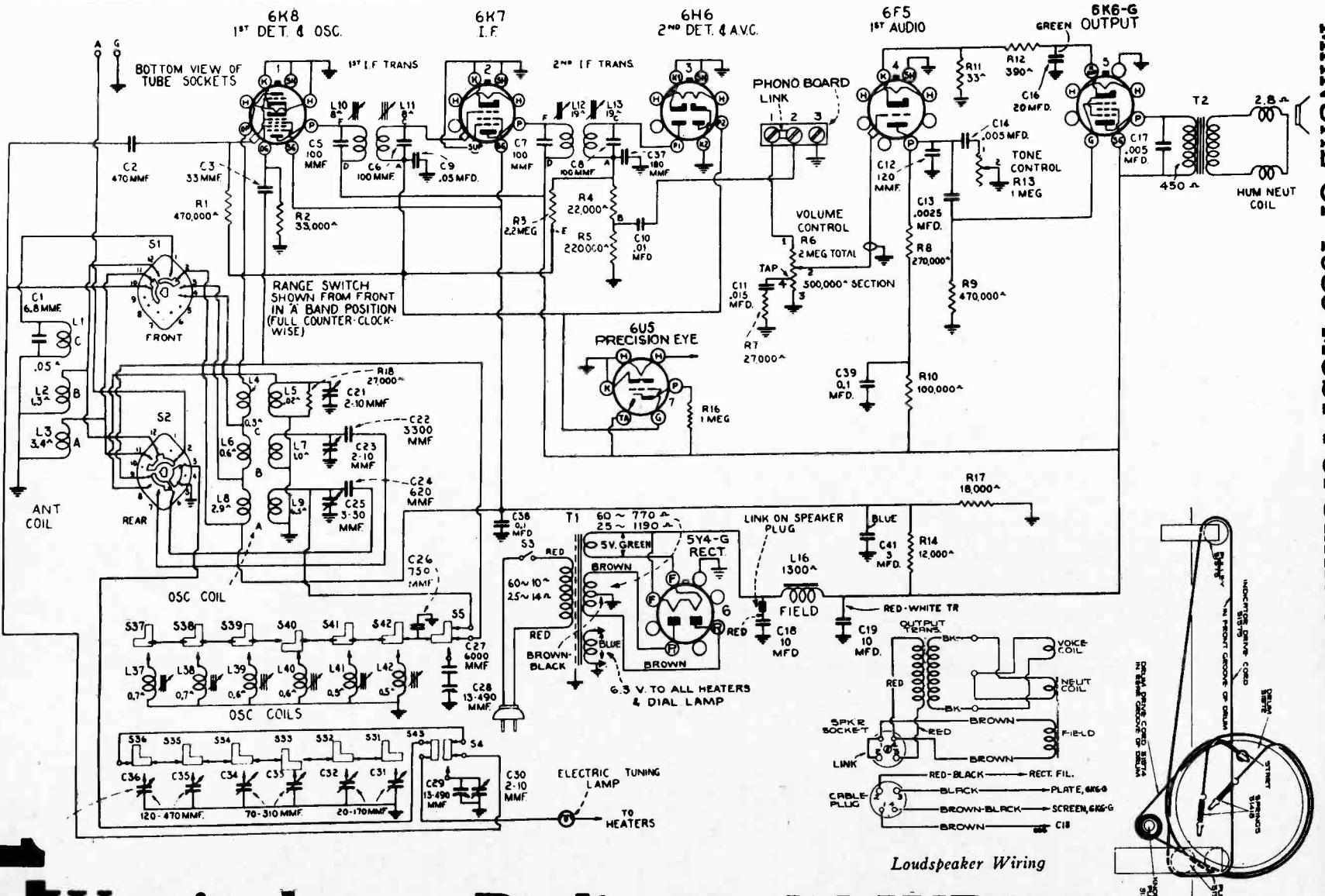
Model WR-260 employs all features of the WR-258 and in addition has a tuning band covering from 1,550 to 3,500 kc for aviation and police reception. It also has a two-point tone control.



* **NOTE:** Values with star (*) are operating voltages in circuits with high series-resistance.

WR-260 Bottom View of Chassis Showing Socket Voltages, Parts Location, and R-F Wiring

Measurements made to chassis unless otherwise indicated, with set tuned to quiet point and volume control at minimum. Values should hold within approximately ±20% with 117-volt a-c supply.



Loudspeaker Wiring

171 Westinghouse Radio Model WR-264

COMPILED BY M. N. BEITMAN, SUPREME PUBLICATIONS

Cathode-Ray Alignment is the preferable method. Connections for the oscillograph are shown in the chassis drawing.

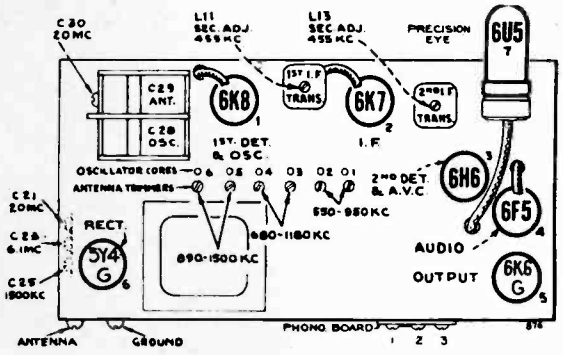
Output Meter Alignment.—If this method is used, connect the meter across the voice-coil, and turn the receiver volume control to maximum.

Test-Oscillator.—For all alignment operations, connect the low side of the test-oscillator to the receiver chassis, and keep the output as low as possible to avoid a-v-c action.

Calibration Scale on Indicator - Drive - Cord Drum. — The tuning dial is fastened in the cabinet and cannot be used for reference during alignment, therefore, a calibration scale is attached to the rear of the drum which is mounted on the front shaft of the gang condenser. The setting of the gang condenser is read on this scale, which is calibrated in degrees. The correct setting of the gang in degrees, for each alignment frequency, is given in the alignment table.

As the first step in r-f alignment, check the position of the drum. The 180° mark on the drum scale must be vertical, and directly over the center of the gang-condenser shaft when the plates are fully meshed. The distance from the front of the chassis to the drum must not exceed 3/8-inch. The drum is held to the shaft by means of two set screws, which must be tightened securely when the drum is in the correct position.

Pointer for Calibration Scale.—Improvise a pointer for the calibration scale by fastening a piece of wire to the gang-condenser frame, and bend the wire so that it points to the "180°" mark on the calibration scale when the plates are fully meshed.



Tube and Trimmer Locations

Dial-Indicator Adjustment.—After fastening the chassis in the cabinet, attach the dial indicator to the drive cable with indicator at the 530 kc mark, and gang condenser fully meshed. The indicator has a spring clip for attachment to the cable.

After completion of alignment, seal the i-f core-adjusting screws with household cement.

The dial tuning (right hand) push button must be pushed in for steps 1 to 5 inclusive.

Steps	Connect the high side of test-osc. to—	Tune test-osc. to—	Turn radio dial to—	Adjust the following for max. peak output
1	6K7 I-F grid cap, in series with .01 mfd.	455 kc	"A" band, Quie Poin between 550-750 kc	L12 and L13 (2nd I-F Trans.)
2	6K8 det. grid cap, in series with .01 mfd.	455 kc		L10 and L11 (1st I-F Trans.)
3	Antenna Terminal, in series with 400 ohms	20 mc	20 mc (23°) "C" band	C21 (osc.)* C30 (ant.)**
4	Antenna Terminal, in series with 400 ohms	6.1 mc	6.1 mc (31°) "B" band	C23 (osc.)†
5	Antenna Terminal, in series with 200 mmf.	1,500 kc	1,500 kc (28½°) "A" band	C25 (osc.)
6	Follow "Adjustments for Electric Tuning"			

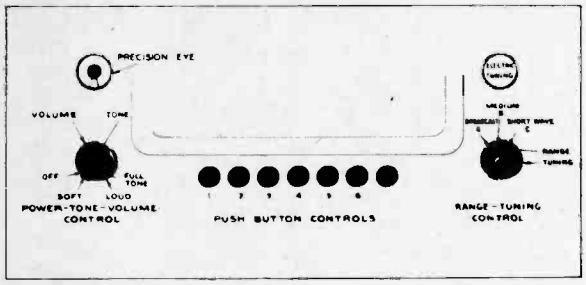
* Use **minimum** capacity peak if two peaks can be obtained.

** Rock gang slightly and use **maximum** capacity peak if two peaks can be obtained with C30. Check to determine that C21 has been adjusted to the correct peak by tuning to approximately 28° (19.09 mc), where a weaker signal should be received.

† Use **minimum** capacity peak if two peaks can be obtained. Check to determine that C23 has been adjusted to the correct peak by turning to approximately 49° (5.19 mc), at which point a weaker signal should be received.

ADJUSTMENTS FOR ELECTRIC TUNING

This receiver has seven push buttons. The right-hand button connects the gang condenser for manual tuning. The other six buttons are for electric tuning of six different stations in the standard-broadcast range. The station buttons connect to separate permeability tuned oscillator coils and separate antenna trimmers which must be adjusted for the desired stations. Use an insulated screwdriver or alignment tool for making adjustments. Allow at least five minutes warm-up period before making adjustments.



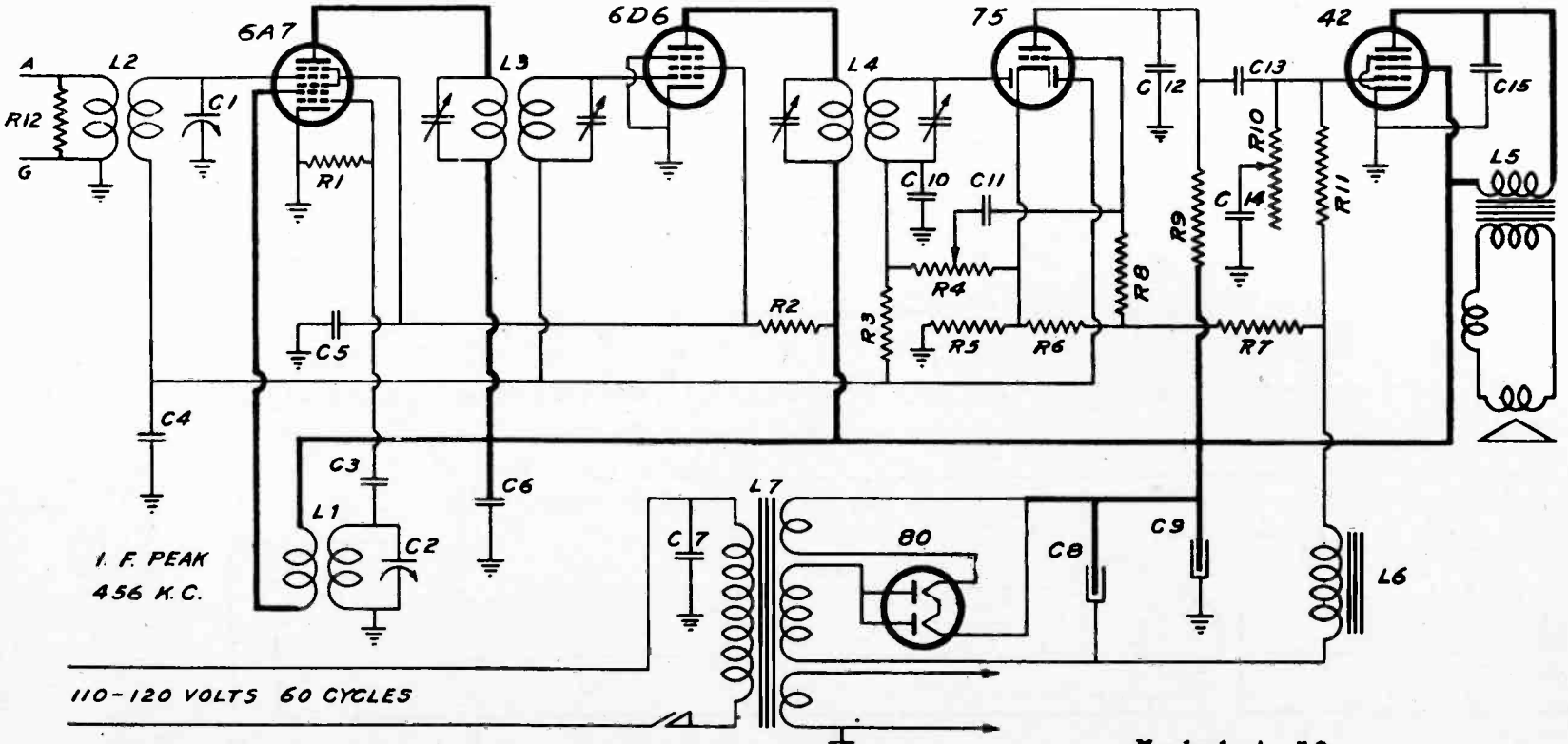
The procedure is as follows:

1. Make a list of the desired six stations, arranged in order from low to high frequencies. See "Tube and Trimmer Locations" view for frequency coverage of each button.
2. Push in the dial-tuning button, and manually tune in the first station on the list.
3. Push in station button No. 1 (left) and adjust No. 1 oscillator core (L37) to receive this station. Screw the core all the way in, to lowest frequency, and then unscrew slowly until station is received.
4. Adjust No. 1 antenna trimmer (C36) for maximum output on this station.

Clockwise adjustment of cores and trimmers tunes the circuits to lower frequencies.

5. Adjust for each of the remaining five stations in the same manner.
6. Make a final careful adjustment of the oscillator cores and antenna trimmers. Use the Precision Eye to ensure sharp peaking.

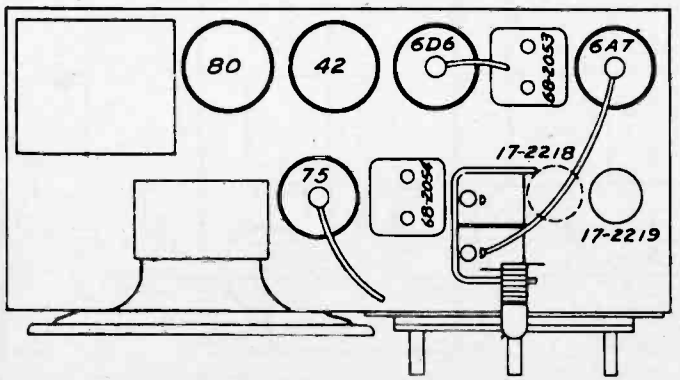
Westinghouse
Model WR-264



Wilcox-Gay Corporation, Charlotte, Mich.

Model A-52

SOCKET LAYOUT



CODE OF SCHEMATIC DIAGRAM

RESISTORS		
R1	53-898	50,000 Ohm 1/4 Watt Resistor
R2	53-941	20,000 Ohm 1/4 Watt Resistor
R3	53-926	1 Meg Ohm 1/4 Watt Resistor
R4	19-2007	500,000 Ohm Vol. Cont. & Switch
R5		60 Ohm
R6	53-2019	20 Ohm } Candohm Resistor
R7		240 Ohm
R8	53-925	500,000 Ohm 1/4 Watt Resistor
R9	53-924	250,000 Ohm 1/4 Watt Resistor
R10	19-2009	250,000 Ohm Tone Control
R11	53-925	500,000 Ohm 1/4 Watt Resistor
R12	53-923	100,000 Ohm 1/4 Watt Resistor
CONDENSERS		
C1,C2	77-2014	Two Gang Variable Condenser
C3	76-2002	50 Mmfd. Mica Condenser
C4	75-2005	.1 Mfd. 200 V. Paper Condenser
C5	75-2005	.1 Mfd. 200 V. Paper Condenser
C6	75-2005	.1 Mfd. 200 V. Paper Condenser

COND. (Cont.)		
C7	75-2003	.01 Mfd. 400 V. Paper Cond.
C8	18-2014	8 Mfd. 300 W.V. Elect. Cond.
C9	18-2013	4 Mfd. 300 W.V. Elect. Cond.
C10	76-307	.0005 Mfd. Mica Condenser
C11	75-2003	.01 Mfd. 400 V. Paper Cond.
C12	75-2014	.001 Mfd. 600 V. Paper Cond.
C13	75-2003	.01 Mfd. 400 V. Paper Cond.
C14	75-2003	.01 Mfd. 400 V. Paper Cond.
C15	75-2002	.004 Mfd. 600 V. Paper Cond.
INDUCTANCES		
L1	17-2218	Oscillator Coil Assembly
L2	17-2219	Preselector Coil Assembly
L3	68-2053	First I.F. Trans. Assembly
L4	68-2054	Second I.F. Trans. Assembly
L5	64-2057	6½" Speaker, Output Trans. for 42 Tube
L6	64-2057	1500 Ohm Speaker Field
L7	80-2009	Power Transformer

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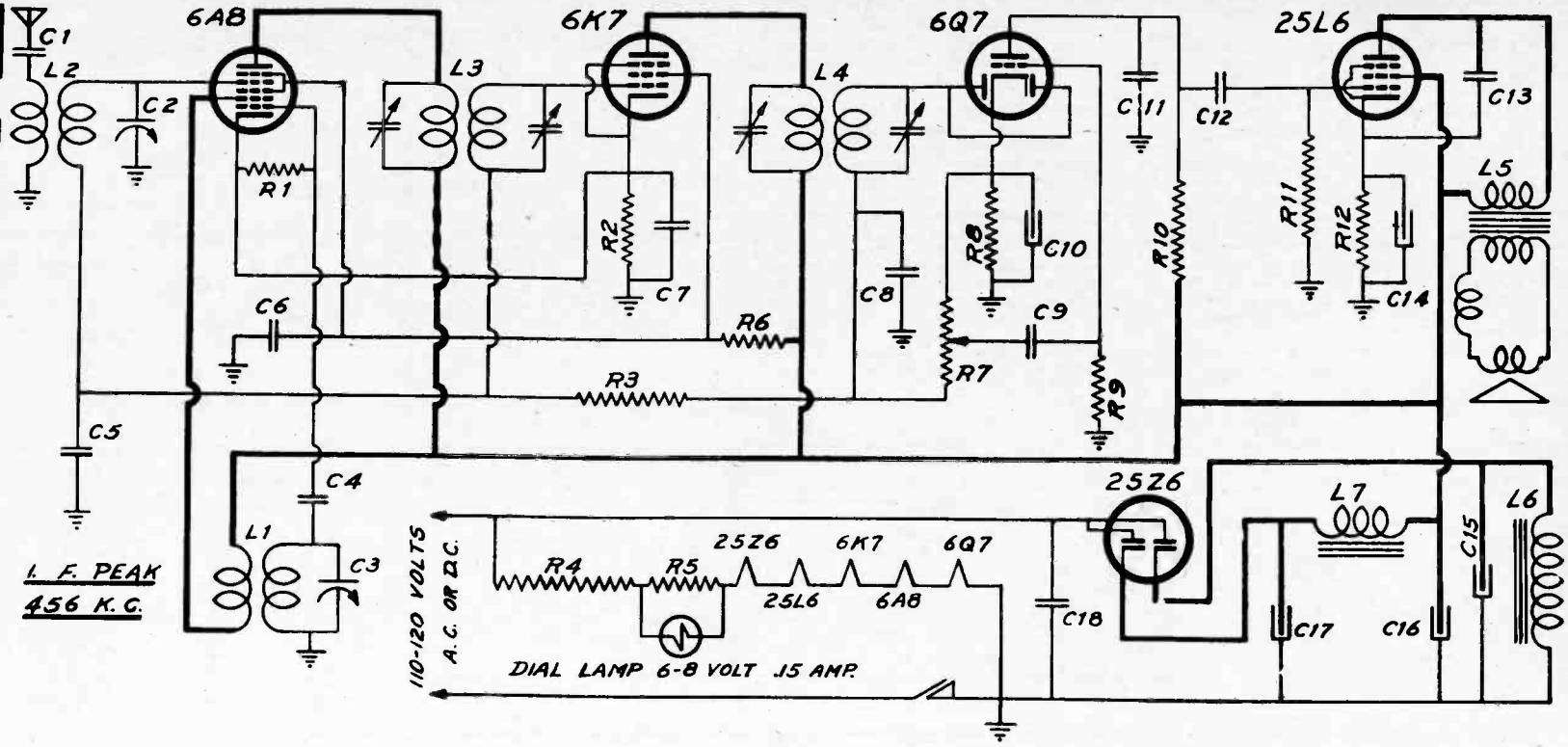


Wilcox-Gay Corporation, Charlotte, Mich. Model A-53

RESISTORS

R1	53-698	50,000 Ohm	1/4 Watt Resistor
R2	53-1062	250 Ohm	1/2 Watt Resistor
R3	53-926	1 Meg Ohm	1/4 Watt Resistor
R4	20-2011	154 Ohm	14 Watt Resistor
R5	53-2018	26 Ohm	2.34 Watt Resistor
R6	53-1042	25,000 Ohm	1/4 Watt Resistor
R7	19-2012	500,000 Ohm	Volume Cont. & Switch
R8	53-91.	5,000 Ohm	1/4 Watt Resistor
R9	53-925	500,000 Ohm	1/4 Watt Resistor
R10	53-924	250,000 Ohm	1/4 Watt Resistor
R11	53-925	500,000 Ohm	1/4 Watt Resistor
R12	53-2014	200 Ohm	1/4 Watt Resistor

CONDENSERS

C1	75-2003	.01 Mfd 400 V. Paper Cond.
C2, C3	77-2015	Two Gang Variable Condenser
C4	76-2002	.00005 Mfd Mica Condenser
C5	75-2005	.1 Mfd 200 V.Paper Cond.
C6	75-2005	.1 Mfd 200 V.Paper Cond.
C7	75-2005	.1 Mfd 200 V.Paper Cond.
C8	76-307	.0005 Mfd Mica Condenser
C9	75-2003	.01 Mfd 400 V. Paper Cond.
C10	18-2012	10 Mfd 25 W. V. Dry Elect. Cond.
C11	75-2014	.001 Mfd 600 V. Paper Cond.
C12	75-2003	.01 Mfd 400 V. Paper Cond.
C13	75-2001	.002 Mfd 600 V. Paper Cond.
C14	18-2012	10 Mfd 25 W.V. Dry Elect. Cond.

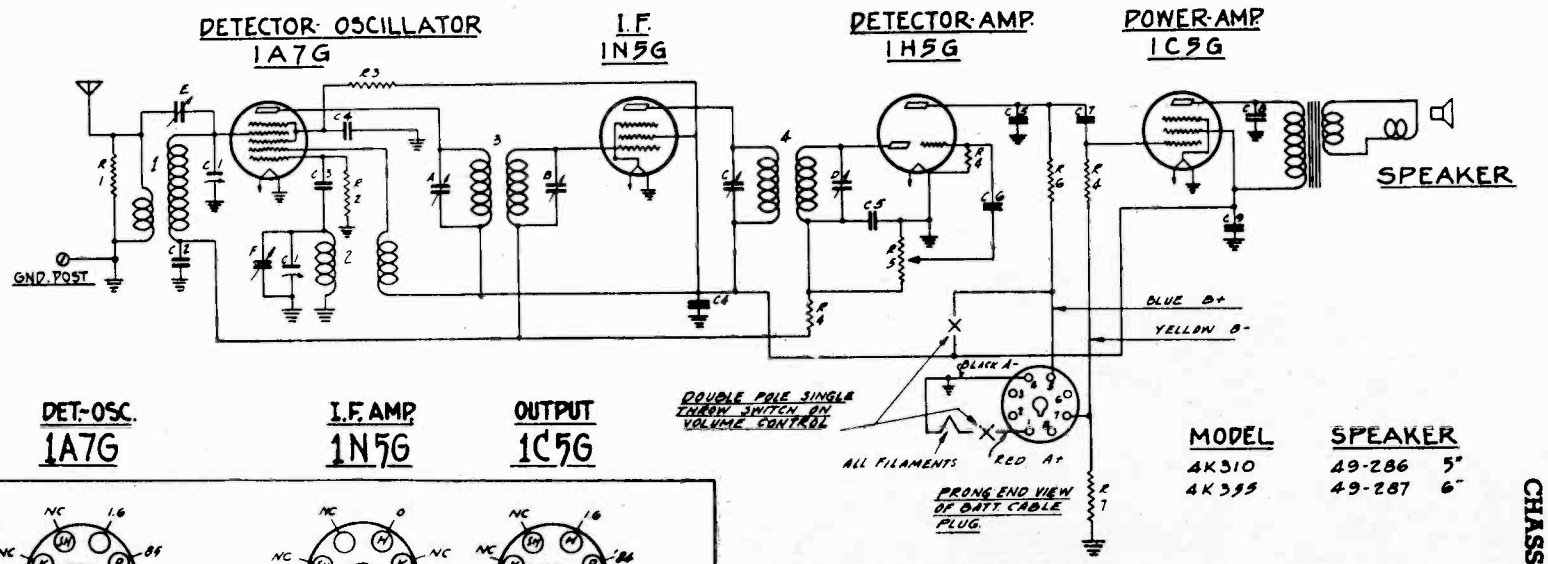
COND. (Cont.)

C15	18-2011	8 Mfd 150 W.V. Dry Elect. Cond.
C16	18-2011	8 Mfd 150 W.V. Dry Elect. Cond.
C17	18-2010	16 Mfd 150 W.V. Dry Elect. Cond.
C18	75-2006	.1 Mfd 200 V. Paper Condenser

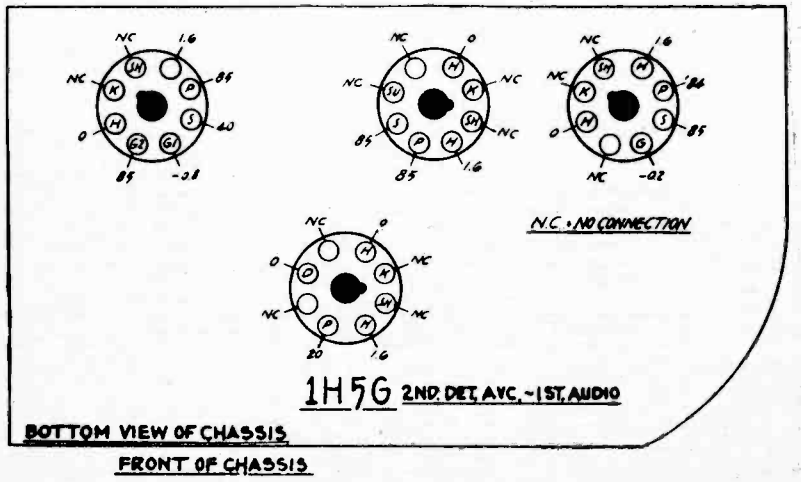
L1	17-2232	Oscillator Coil Assembly
L2	17-2230	Preselector Coil Assembly
L3	66-2055	First I.F. Trans. Assembly
L4	66-2052	Second I.F. Trans. Assembly
L5	64-2043	5" Speaker, Output Trans. for 25L6 Tube
L6	64-2043	3000 Ohm Field on L5
L7	14-2002	18 Henry Filter Choke

Models 4K310, 4K331, 4K355

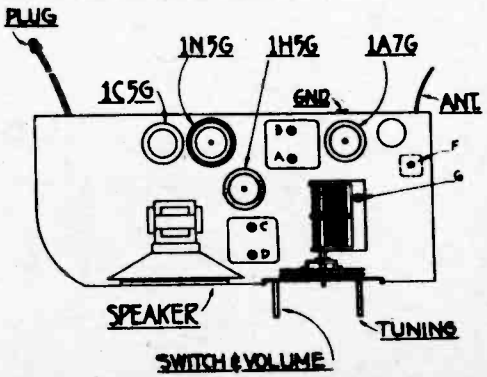
CHASSIS No. 5412



MODEL	SPEAKER	
4K310	49-286	5"
4K355	49-287	6"



DIAG. NO	PART NO	DESCRIPTION		DIAG NO	PART NO	DESCRIPTION
C-1	22-778	2 GANG VARIABLE		1	3-6706	ANTENNA COIL ASSEMBLY
C-2	22-250	.05 MFD.	200V	2	3-6381	OSCILLATOR COIL ASSEMBLY
C-3	22-182	.00025 MFD	600V	3	95-513	1ST. I.F. TRANSFORMER
C-4	22-212	.05 MFD	400V	4	95-980	2ND I.F. TRANSFORMER
C-5	22-162	.0001 MFD	600V	5		SPEAKER TRANS. (ON SPEAKER)
C-6	22-185	.01 MFD	200V			
C-7	22-243	.01 MFD	400V			
C-8	22-468	.006 MFD	400V			
C-9	22-684	8 MFD DRY ELEC.	150			
				A		1ST I.F. TRANS. PRIMARY
				B		1ST. I.F. TRANS. SECONDARY
				C		2ND. I.F. TRANS. PRIMARY
				D		2ND. I.F. TRANS. SECONDARY
R-1	63-587	4700 OHM	1/6 W	E	22-385	ANTENNA TRIMMER
R-2	63-656	180 M OHM	1/6 W	F		BROADCAST OSC. (ON GANG)
R-3	63-596	68 M OHM	1/6 W			
R-4	63-600	2.2 MEGOHM	1/6 W			
R-5	63-937	400 M OHM VOL. CONT. & SWITCH				
R-6	63-271	1 MEGOHM	1/6 W			
R-7	63-238	1000 OHM	1/6 W			



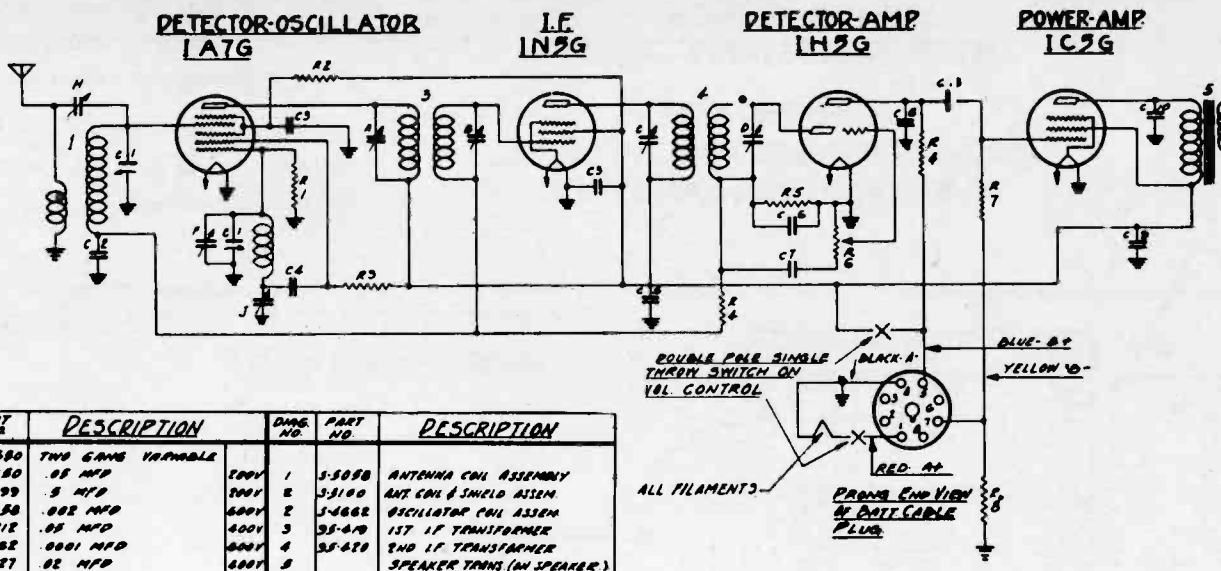
175

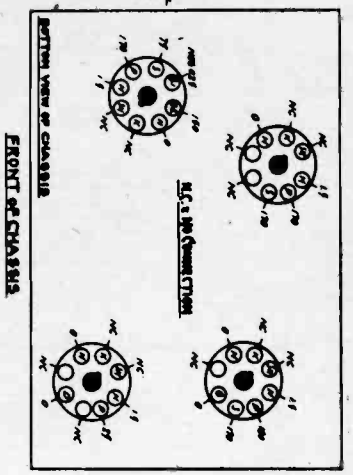
All voltages measured from point indicated to chassis using a 1000 ohm per volt meter.

Antenna disconnected — volume control at minimum and condenser plates in full mesh.

I. F. FREQUENCY 455 K.C.
4 TUBE BATTERY SUPERHETERODYNE
CHASSIS NO. 5412

ZENITH RADIO CORPORATION
CHICAGO ILLINOIS





DIAG. NO.	PART NO.	DESCRIPTION		DIAG. NO.	PART NO.	DESCRIPTION
C-1	22-680	TWO GANG VARIABLE				
C-2	22-260	.05 MFD	200V	1	5-5058	ANTENNA COIL ASSEMBLY
C-3	22-199	.5 MFD	200V	2	5-5100	ANT. COIL & SHIELD ASSEM.
C-4	22-358	.002 MFD	600V	2	5-6662	OSCILLATOR COIL ASSEM.
C-5	22-212	.05 MFD	400V	3	95-670	1ST I.F. TRANSFORMER
C-6	22-182	.0001 MFD	600V	4	95-620	2ND I.F. TRANSFORMER
C-7	22-327	.02 MFD	400V	5		SPEAKER TRANS. (IN SPEAKER)
C-8	22-188	.02 MFD	400V			
C-9	22-686	8 MFD ELECTROLYTIC	150V			
C-10	22-692	.002 MFD	600V	A		1ST I.F. TRANS. PRI.
				B		1ST I.F. TRANS. SEC.
				C		2ND I.F. TRANS. PRI.
				D		2ND I.F. TRANS. SEC.
R-1	63-328	150 M OHM	½W	F	22-365	BROADCAST OSCILLATOR
R-2	63-696	68 M OHM	½W	H		ANTENNA BROADCAST
R-3	63-698	3600 OHM	½W	J	22-519	OSCILLATOR PADDER
R-4	63-271	1 MEGOHM	½W			
R-5	63-858	390 M OHM	½W			
R-6	63-585	1 MEGOHM VOL CONTROL				
R-7	63-600	2.2 MEGOHM	½W			
R-8	63-238	1000 OHM	½W			

Model 4K329

I.F. FREQUENCY 456 K.C.

4 TUBE BATTERY SUPERHETERODYNE

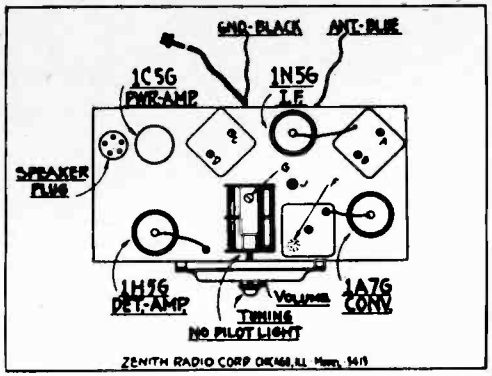
CHASSIS NO. 5413

ZENITH RADIO CORPORATION

CHICAGO, ILL.

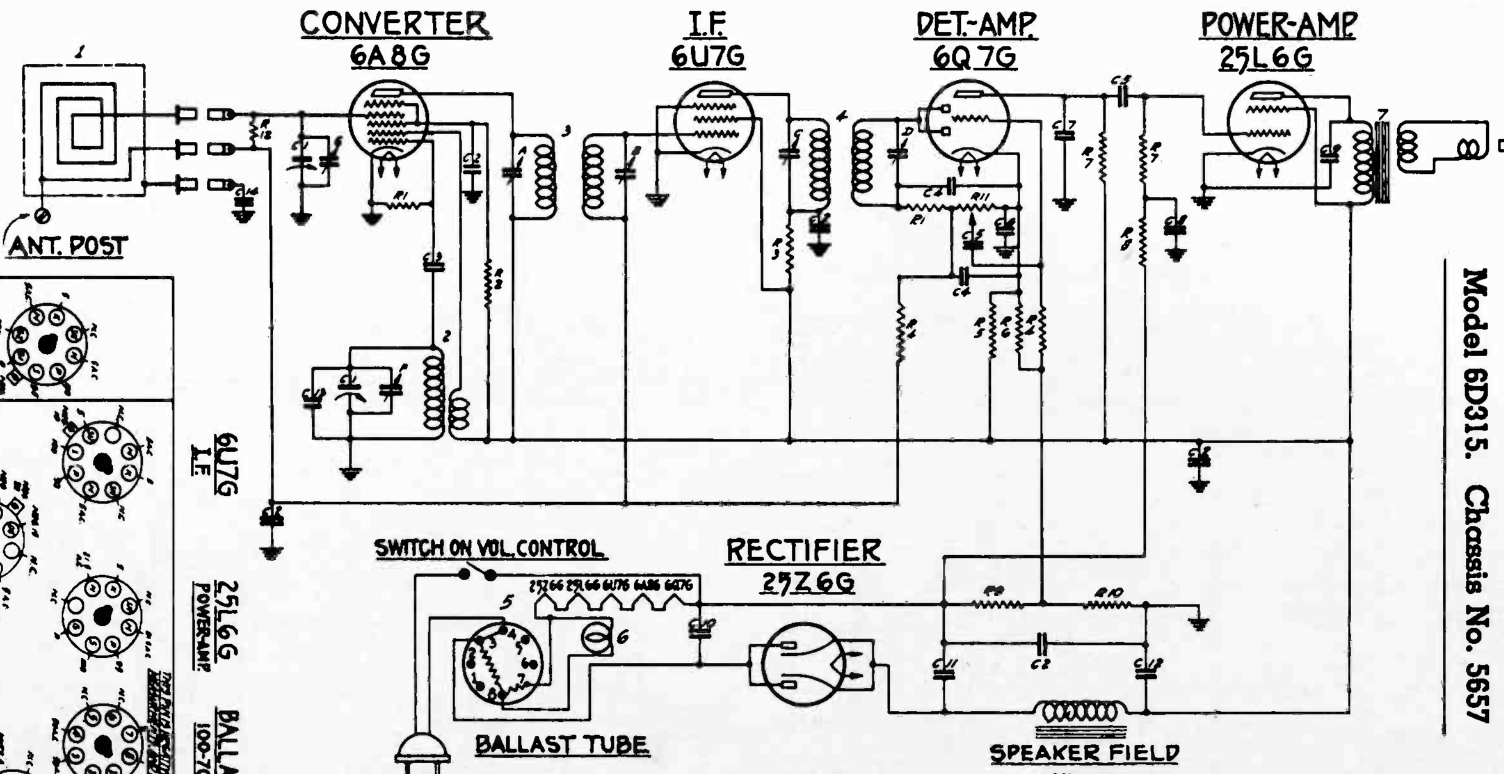
ALIGNMENT PROCEDURE

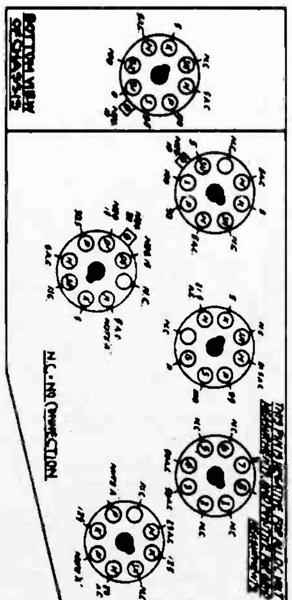
Operation	Connect Test Oscillator to—	Dummy Antenna	Set Test Osc. to	Band	Set Dial At	Adjust Trimmers	Purpose
1	1st Det. Grid	½ Mfd.	456	Br'dc't	600	ABCD	I. F. Algm't.
2	Rec. Ant. Lead	200 Mmfd.	1500	"	1500	F	Set Osc. to Scale
3	" " "	200 Mmfd.	1500	"	1500	G	Algm't of Ant.
4	" " "	200 Mmfd.	600	"	600	J	Rock gang & adj. for max. output
5	" " "	200 Mmfd.	1500	"	1500	FG	Rpt. 3 & 4



Location of tubes and trimmers

Model 6D315. Chassis No. 5657



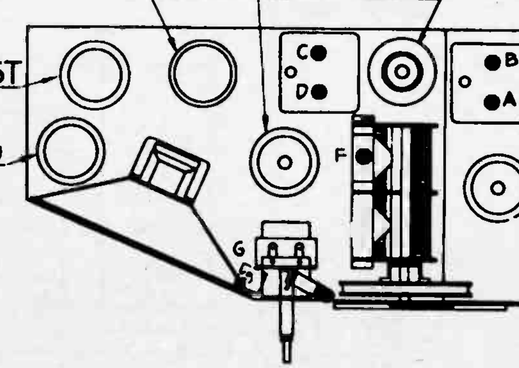


FRONT OF CHASSIS

6U7G I.F. 25L6G POWER-AMP. BALLAST 100-70 6Q7G DET-AMP.

I.F. FREQUENCY - 455 K.C.
6-TUBE SUPERHETERODYNE
CHASSIS № 5657 - A.C. D.C.

ZENITH RADIO CORPORATION

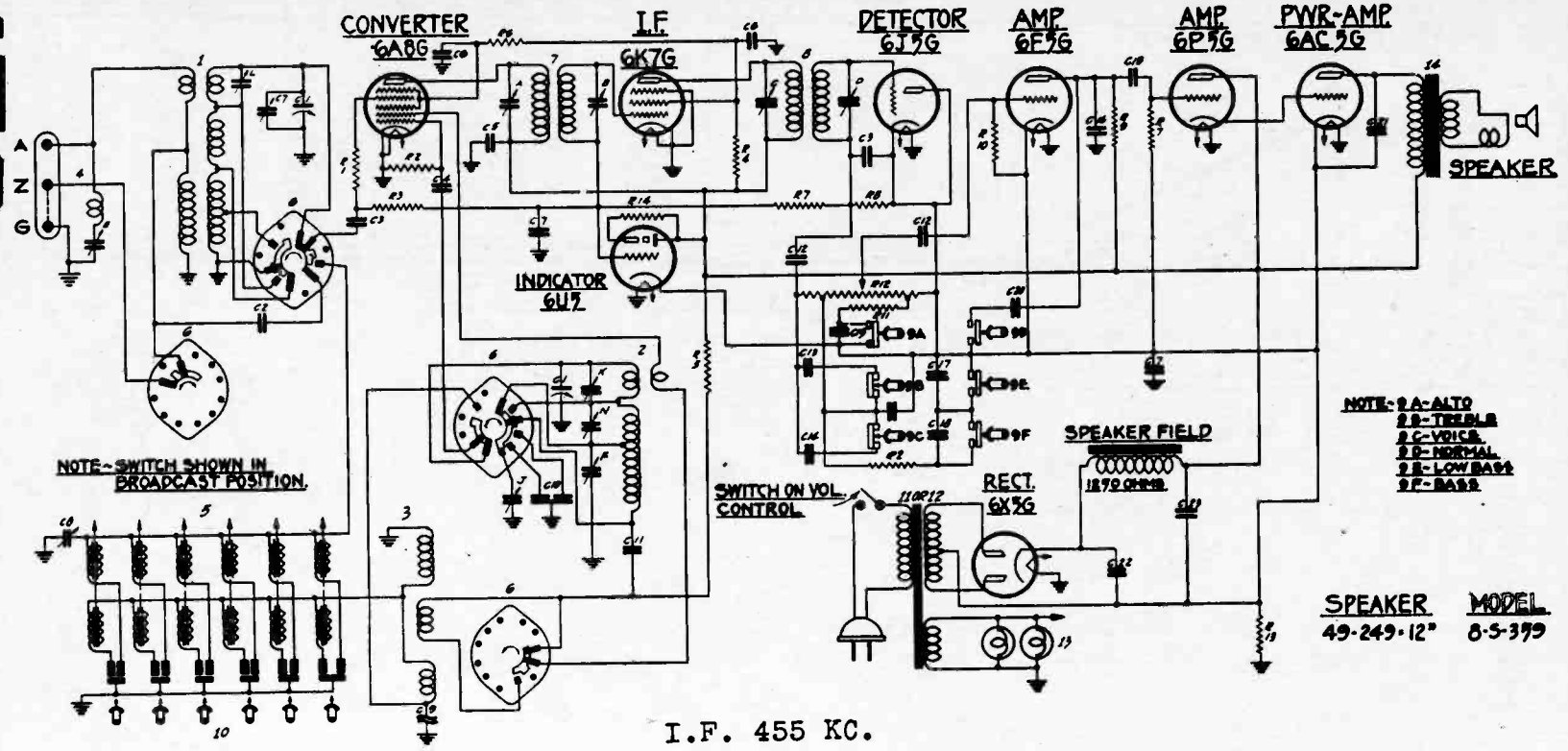


Location of tubes and trimmers

DIAG. NO.	PART NO.	DESCRIPTION		DIAG. NO.	PART NO.	DESCRIPTION		DIAG. NO.	PART NO.	DESCRIPTION
C-1	22-801	TWO GANG VARIABLE		R-1	63-598	47 MOHM	1/4 W	5	100-70	BALLAST TUBE
C-2	22-250	.05 MFD	200 V	R-2	63-648	18 MOHM	1/4 W	6	100-36	PILOT LIGHT 25A-6.3 V
C-3	22-188	.00025 MFD	600 V	R-3	63-605	1000 OHM	1/2 W	7		SPEAKER TRANS.
C-4	22-162	.0001 MFD	600 V	R-4	63-271	1 MEGOHM	1/4 W			
C-5	22-190	.01 MFD	600 V	R-5	63-681	56 MOHM	1/2 W			
C-6	22-189	.01 MFD	200 V	R-6	63-648	680 OHM	1/4 W	A		1ST I.F. TRANS. PRI
C-7	22-147	.0005 MFD	600 V	R-7	63-290	220 MOHM	1/4 W	B		1ST. I.F. " SEC.
C-8	22-327	.02 MFD	200 V	R-8	63-535	100 MOHM	1/4 W	C		2ND I.F. " PRI
C-9	22-730	.04 MFD	600 V	R-9	63-557	60 OHM WIREWOUND		D		2ND I.F. " SEC.
C-10	22-435	.02 MFD	600 V	R-10	63-956	50 OHM "		F		BROADCAST OSC. CONDENS.
C-11	22-681	40 MFD. ELECTROLYTIC	150 V	R-11	63-1006	500 MOHM VOL. CONTROL		G	22-526	ANT. BROADCAST
C-12	22-680	16 MFD "	150 V	R-12	63-466	1 MEGOHM	1/4 W			
C-13	22-802	30 MMFD	600 V							
C-14	22-319	.005 MFD	200 V	1	3-6780	LOOP ANT. ASSEM.				
				2	3-6741	OSC. COIL ASSEM.				
				3	95-588	1ST I.F. TRANS.				
				4	95-991	2ND I.F. TRANS.				

Model 6D315

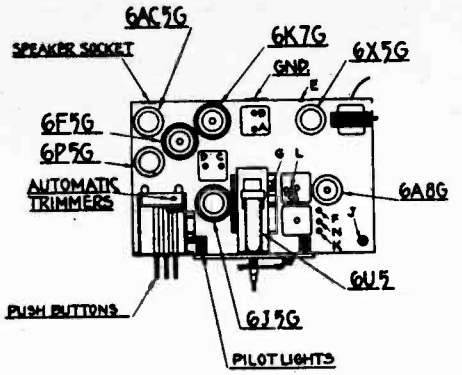
CHASSIS No. 5657



I.F. 455 KC.

DIAG NO	PART NO	DESCRIPTION		DIAG NO	PART NO	DESCRIPTION		DIAG NO	PART NO	DESCRIPTION	DIAG NO	PART NO	DESCRIPTION
C-1	22-717	TWO GANG VARIABLE		C-21	22-482	.002 MFD	600 V	1	5-9124	ANT. COIL ASSEM.	C		455 KC I.F. TRANS. - PRI.
C-2	22-289	.50 MMFD	600 V	C-22	22-716	12 MFD ELECTROLYTIC	450 V	2	5-6294	ANT. COIL & SHIELD ASSEM.	D		455 KC I.F. TRANS. - SEC.
C-3	22-102	.0001 MFD	600 V	C-23	22-719	16 MFD	350 V		5-6139	OSC. COIL ASSEM.	E		WAVE TRAP
C-4	22-127	.25 MMFD	600 V						5-6293	OSC. COIL & SHIELD ASSEM.	F		BROADCAST OSC. - SEE NOTE
C-5	22-170	.1 MFD	400 V					3	22-186	COMPENSATING COIL	G		ANT. BROADCAST - SW BAND
C-6	22-512	.01 MFD	600 V	R-1	63-621	10 MOHM	1/2 W	4	20-154	WAVE TRAP	J	22-463	BROADCAST PADDER
C-7	22-280	.05 MFD	200 V	R-2	63-592	33 MOHM	1/2 W	5	5-6289	ANTENN TUNING UNIT ASSEM.	K		SHORT WAVE OSC. - SEE NOTE
C-8	22-919	TRIMMER COND.		R-3	63-587	470 MOHM	1/2 W	6	85-191	BAND SELECTOR SW.	L	22-305	SHORT WAVE DET.
C-9	22-740	COMPENSATING COND.		R-4	63-561	47 MOHM	1 W	7	95-516	I.F. I.F. TRANS.	N		POLICE BAND OSC. - SEE NOTE
C-10	22-708	DUAL FIXED PADDER		R-5	63-684	10 MOHM	1 W	8	95-537	2ND I.F. TRANS.			
C-11	22-958	.002 MFD	600 V	R-6	63-643	1.8 MOHM	1/2 W	9	5-6224	TUNE CONT. SW. ASSEM.			
C-12	22-927	.05 MFD	200 V	R-7	63-271	1 MEGOHM	1/2 W	10	85-152	ANTENN TUNING SW.			
C-13	22-182	.00025 MFD	600 V	R-8	63-655	220 MOHM	1/2 W	11	95-526	POWER TRANS. - 117V-50-60 ~			
C-14	22-479	.0001/5 MFD	600 V	R-9	63-596	220 MOHM	1/2 W	12		" " - ALL VOLTAGES 25~			
C-15	22-184	.01 MFD	200 V	R-10	63-576	1.5 MEGOHM	1/2 W	13		PILOT LIGHT 25 A - 6.3V.			
C-16	22-467	.0005 MFD	600 V	R-11	63-581	22 MOHM	1/2 W	14		SPEAKER TRANS.			
C-17	22-458	.006 MFD	600 V	R-12	63-595	VOLUME CONTROL							NOTE - TRIMMERS "F-K-L-M-N" MOUNTED ON BAKELITE STRIP MUST BE SET
C-18	22-326	.003 MFD	400 V	R-13	63-679	82 OHM WIREWOUND	1/2 W						
C-19	22-495	.05 MFD	600 V	R-14		(REGAIN MOUNTED IN TUNING TUBE SHIELD		A		1ST I.F. TRANS. - PRI.			
C-20	22-448	.004 MFD	600 V					B		1ST I.F. TRANS. - SEC.			

Model 8S359. Chassis No. 5807



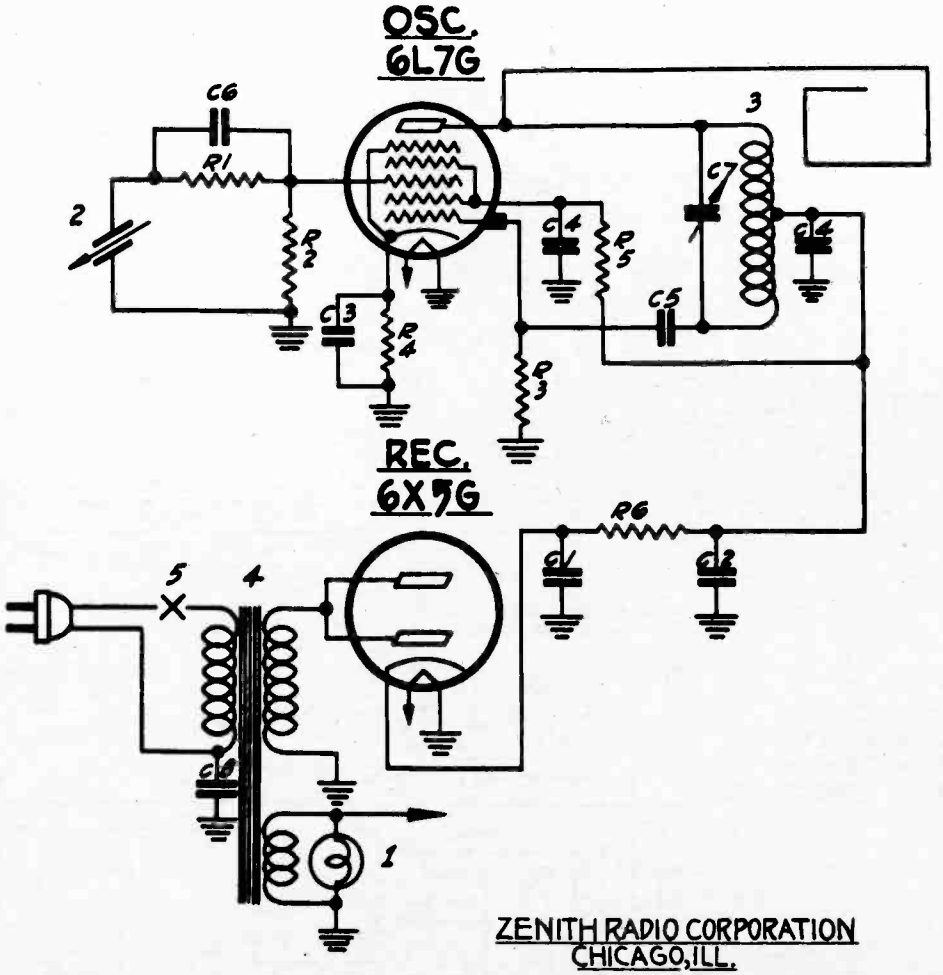
Location of tubes and trimmers

COMPILED BY M. N. BEITMAN, SUPREME PUBLICATIONS

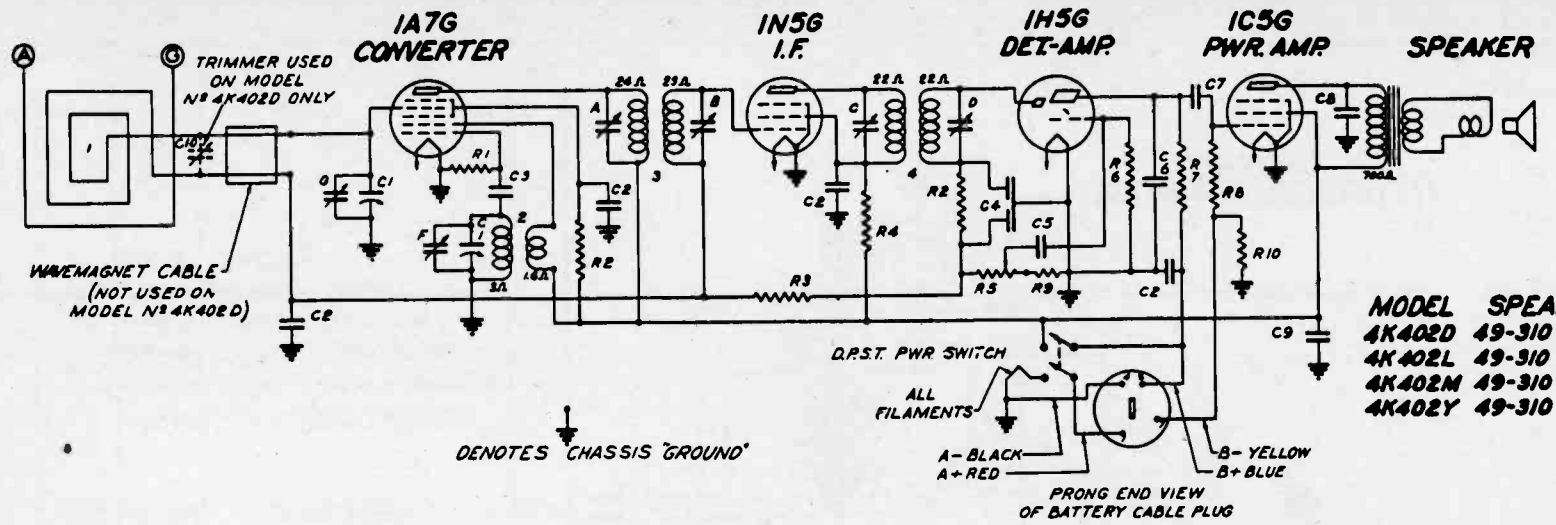
PHONOGRAPH OSCILLATOR

MODEL-S6622

DIAG. Nº	PART Nº	DESCRIPTION	
C-1 }	22-768	16 MFD. ELECTROLYTIC	200V
C-2 }		40 MFD. "	150V
C-3	22-250	.05 MFD	200V
C-4	22-196	.01 MFD	600V
C-5	22-182	.00025 MFD	600V
C-6	22-147	.0005 MFD	600V
C-7	22-463	TRIMMER	
C-8	22-525	.005 MFD	1000V
R-1	63-658	390 M OHM	½W
R-2	63-654	180 M OHM	½W
R-3	63-593	47 M OHM	½W
R-4	63-583	1000 OHM	½W
R-5	63-587	4700 OHM	½W
R-6	63-964	4700 OHM	½W
1	100-36	PILOT LIGHT-6.3V. .25A.	
2 {	142-14	PICK-UP ARM - COMPLETE	
	142-16	CRYSTAL UNIT ONLY	
3	S-6625	OSC. COIL ASSEM.	
4	95-567	POWER TRANS.	
5	85-170	SWITCH	



ZENITH RADIO CORPORATION
CHICAGO, ILL.



MODEL	SPEAKER	
4K402D	49-310	4"
4K402L	49-310	4"
4K402M	49-310	4"
4K402Y	49-310	4"

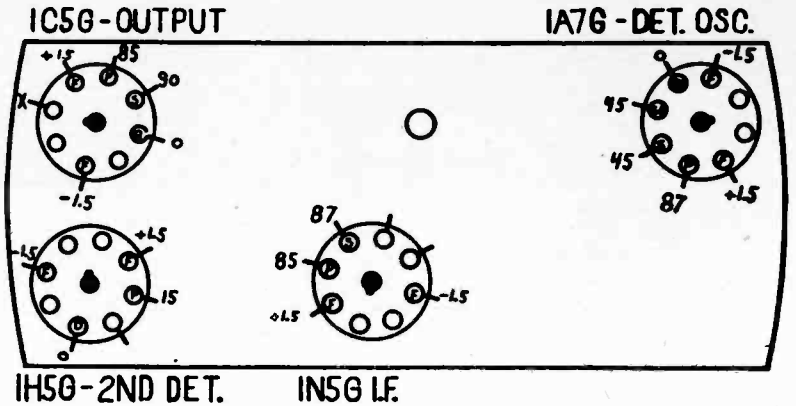
DIAG. Nº	PART Nº	DESCRIPTION		DIAG. Nº	PART Nº	DESCRIPTION		DIAG. Nº	PART Nº	DESCRIPTION
C1	22-885	TWO-GANG VARIABLE		R1	63-652	120 M OHM	½ W	1		WAVEMAGNET ASSEMBLY
C2	22-829	.05 MFD.	200V	R2	63-593	47 M OHM	½ W	2	S7029	OSCILLATOR COIL ASSEM.
C3		100 MMFD.		R3	63-669	3.9 MEGOHM	½ W	3	S7030	1ST I.F. TRANS. ASSEM.
C4		DUAL 100 MMFD		R4	63-583	1000 OHM	½ W	4	95-606	2ND I.F. TRANS.
C5	22-826	.01 MFD.	200V	R5	63-1034	VOLUME CONTROL				
C6	22-162	.0001 MFD.	600V	R6	63-604	10 MEGOHM	½ W			
C7	22-843	.01 MFD.	400V	R7	63-671	1 MEGOHM	½ W	A		1ST I.F. TRANS. PRI.
C8	22-448	.004 MFD.	600V	R8	63-600	2.2 MEGOHM	½ W	B		1ST I.F. TRANS. SEC.
C9	22-684	8 MFD. ELECTROLYTIC	150V	R9	63-587	4700 OHM	½ W	C		2ND I.F. TRANS. PRI.
C10	22-882	TRIMMER COND.		R10	63-238	1000 OHM	½ W	D		2ND I.F. TRANS. SEC.
								F		BROADCAST OSC. (ON GANG)
								G		ANTENNA BROADCAST (ON GANG)

1½V. BATTERY PORTABLE
I.F. FREQUENCY 455 KC.
4 TUBE SUPERHETERODYNE
CHASSIS Nº 5419
ZENITH RADIO CORPORATION
CHICAGO, ILL.

NOTE

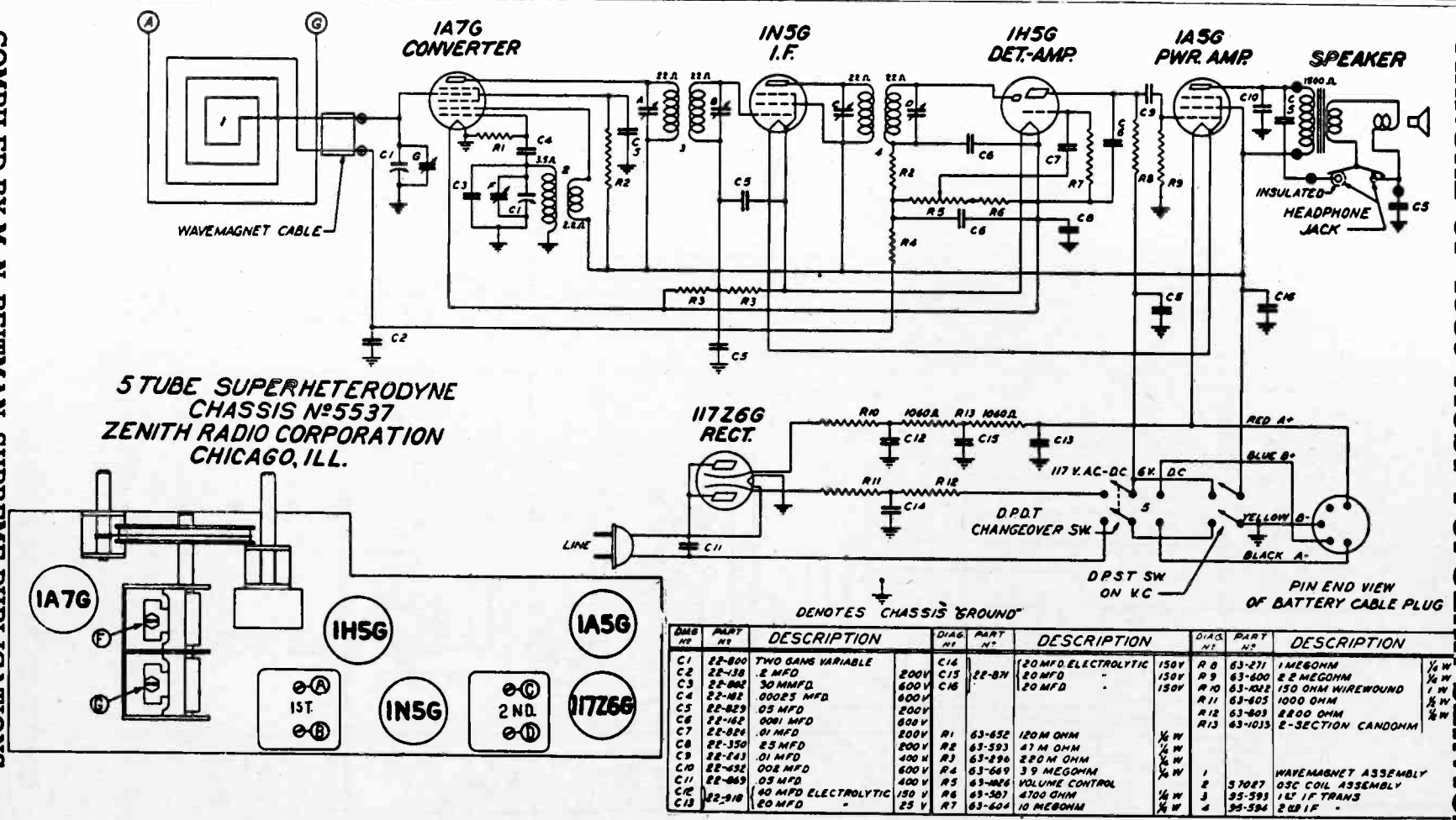
All measurements with 1000 ohms per volt meter — loop antenna not connected—volume at minimum — All readings made with fresh Zenith (part No. Z-59) battery pack with speaker in circuit.

All voltages measured from contact X on 1C56 tube socket to point indicated.



Model 4K402

CHASSIS No. 5419

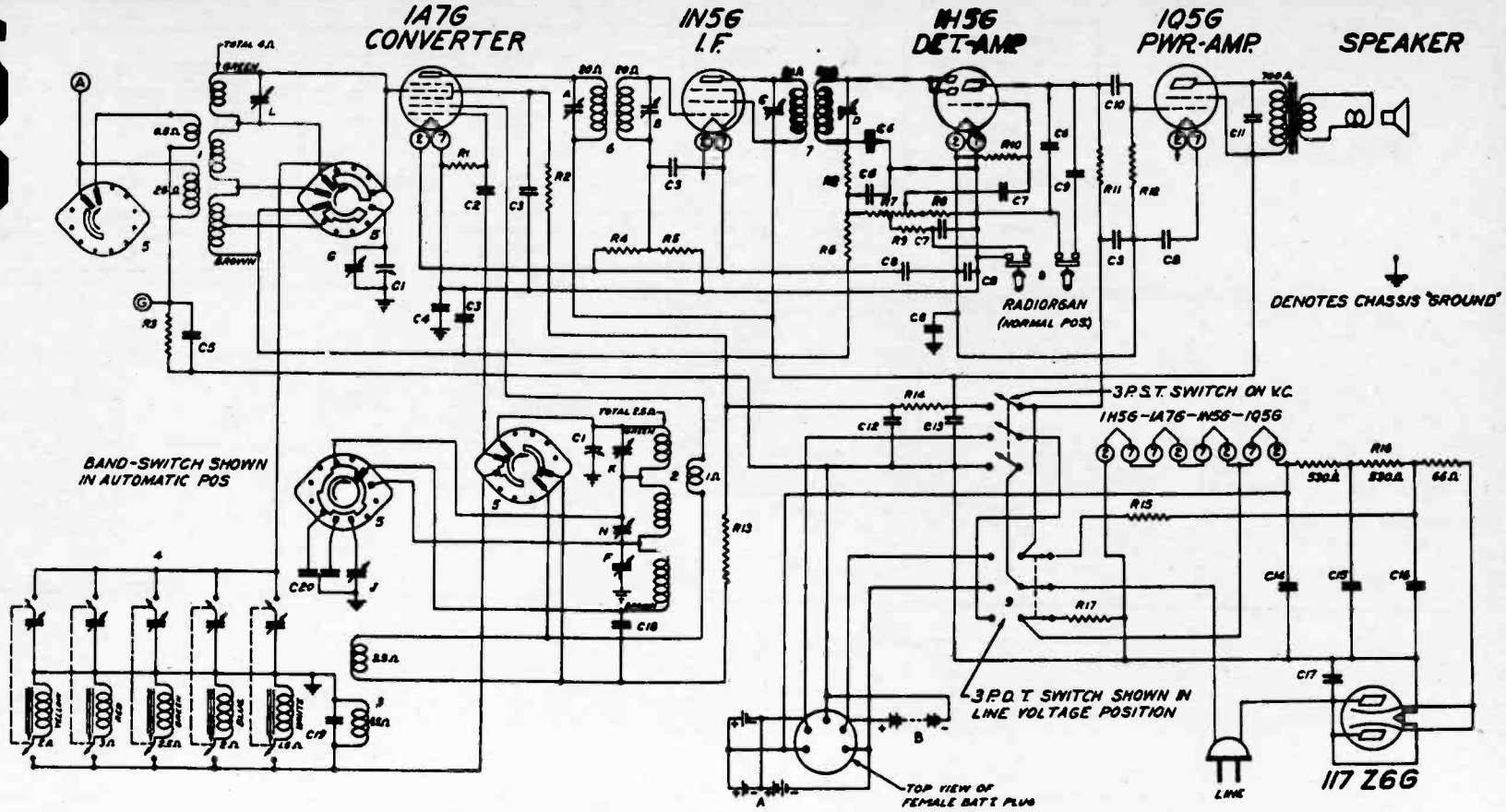


DIAG. NO.	PART NO.	DESCRIPTION		DIAG. NO.	PART NO.	DESCRIPTION		DIAG. NO.	PART NO.	DESCRIPTION	
C1	22-800	TWO GANG VARIABLE		C14	22-871	20 MFD ELECTROLYTIC	150V	R8	63-271	1 MEGOHM	1/4 W
C2	22-138	.2 MFD	200V	C15		20 MFD -	150V	R9	63-600	2.2 MEGOHM	1/4 W
C3	22-882	.30 MMFD.	600V	C16		20 MFD -	150V	R10	63-1012	150 OHM WIREWOUND	1 W
C4	22-182	.00025 MFD.	600V					R11	63-605	1000 OHM	1/2 W
C5	22-829	.05 MFD	200V					R12	63-803	2200 OHM	1/4 W
C6	22-162	.0081 MFD	600V					R13	63-1033	2-SECTION CANDOHM	
C7	22-824	.01 MFD	200V	R1	63-652	120 M OHM	1/4 W				
C8	22-350	.25 MFD	200V	R2	63-593	47 M OHM	1/4 W				
C9	22-843	.01 MFD	400 V	R3	63-296	220 M OHM	1/4 W				
C10	22-832	.002 MFD	600 V	R4	63-649	3.9 MEGOHM	1/4 W	1		WAVEMAGNET ASSEMBLY	
C11	22-869	.05 MFD	400 V	R5	63-1026	VOLUME CONTROL		2	5-7027	OSC COIL ASSEMBLY	
C12	22-918	40 MFD ELECTROLYTIC	150 V	R6	63-567	4700 OHM	1/4 W	3	35-593	1ST IF TRANS	
C13		20 MFD -	25 V	R7	63-604	10 MEGOHM	1/4 W	4	35-594	2ND IF -	

Operation	Connect Test Oscillator to	Dummy Antenna	Set Test Oscillator to	Band	Set Dial At	Adjust Trimmers	Purpose
1	1st Det. Grid	.5 mmfd.	455	—	600	A B C D	I. F. Alignment
2	Single Turn Loop Coupled Loosely to Wave Magnet	—	1400	—	1400	F	Set Osc. to Scale
3		—	1400	—	1400	G	Alignment of Antenna

Model 5G401

CHASSIS No. 5537

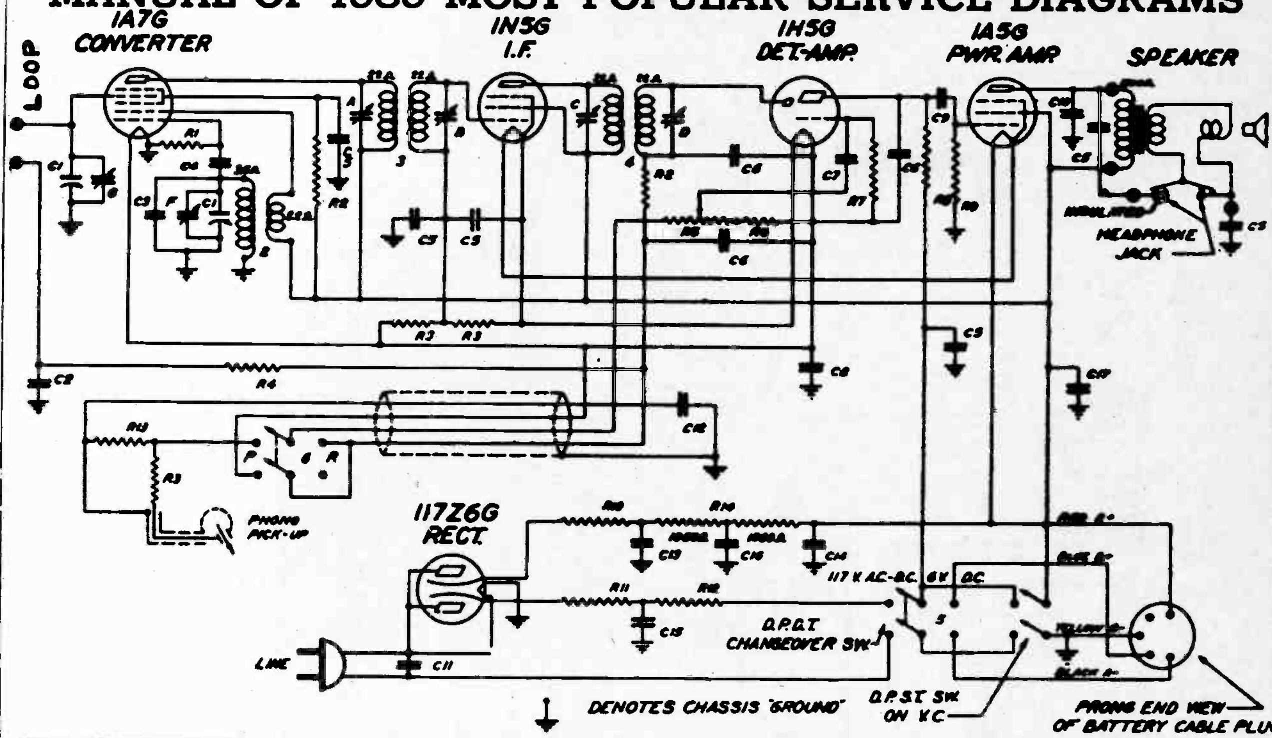


DIAG. NO.	PART NO.	DESCRIPTION		DIAG NO.	PART NO.	DESCRIPTION		DIAG NO.	PART NO.	DESCRIPTION		DIAG NO.	PART NO.	DESCRIPTION
C1	22-878	TWO-GANG VARIABLE		C19	22-868	COMPENSATING COND		R14	63-586	3300 OHM	½ W	A		1ST I.F. TRANS. PRI.
C2	22-289	50 MMFD.	600V	C20	22-708	OSC. PADDER		R15	63-603	1000 OHM	½ W	B		1ST I.F. " SEC.
C3	22-869	.05 MFD.	200V					R16	63-1036	3-SECTION CANDOHM		C		2ND I.F. " PRI.
C4	22-350	.25 MFD.	200V					R17	63-1018	30 OHM WIREWOUND	½ W	D		2ND I.F. " SEC.
C5	22-198	.01 MFD.	600V									E		B'CAST OSC. (SEE NOTE)
C6	22-168	100 MMFD.	600V	R1	63-654	150 M OHM	½ W					F		ANT. B'CAST (GANG)
C7	22-826	.01 MFD.	200V	R2	63-593	47M OHM	½ W					G		B'CAST PADDER (SEE NOTE)
C8	22-827	.1 MFD.	200V	R3	63-597	470M OHM	½ W	1	57257	ANTENNA COIL ASSEMBLY		J		S.W. OSC. (SEE NOTE)
C9	22-867	.001 MFD.	600V	R4	63-649	56 M OHM	½ W	2	57258	OSC. COIL ASSEMBLY		K		S.W. DETECTOR
C10	22-845	.01 MFD.	400V	R5	63-294	22 OM OHM	½ W	3	56998	OSC. COUPLING COIL ASSEM.		L	22-769	POL. BAND OSC. (SEE NOTE)
C11	22-668	.006	600V	R6	63-669	3.9 MEGOHM	½ W	4	57044	AUTO TUNING UNIT ASSEM.		N		
C12		20 MFD. ELECTROLYTIC	150V	R7	63-1080	VOLUME CONTROL		5	85-195	BAND SELECTOR SW.				
C13	22-880	20 " "	150V	R8	63-587	4700 OHM	½ W	6	95-607	1ST I.F. TRANSFORMER				NOTE- TRIMMERS TAKEN
C14		20 " "	25V	R9	63-591	82 M OHM	½ W	7	95-614	2ND I.F. TRANSFORMER				ARE MOUNTED ON STRIP
C15	22-879	60 MFD. "	150V	R10	63-606	10 MEGOHM	½ W	8	56994	TONE CONTROL SW.				#22-801.
C16		60 " "	150V	R11	63-271	1 MEGOHM	½ W	9	85-196	POWER SW.				
C17	22-869	.05 MFD.	400V	R12	63-600	2.2 MEGOHM	½ W							
C18	22-350	.002 MFD.	600V	R13	63-640	8200 OHM	½ W							

MODEL	SPEAKER
5G441	49-316 8"
5G442	49-317 10"
5G461	49-318 10"

I.F. FREQUENCY 455 KC
5 TUBE SUPERHETERODYNE
110 V. A.C.-BATT. PACK-UNIVERSAL
CHASSIS Nº 5539 – 3 BAND
ZENITH RADIO CORPORATION
CHICAGO, ILL.

MODELS 5G441, 5G442, 5G461 (Chassis No. 5539)



DIAG. No.	PART No.	DESCRIPTION	
C1	22-800	TWO-GANG VARIABLE	
C2	22-130	.2 MFD.	200V.
C3	22-802	30 MMFD.	600V.
C4	22-162	.00025 MFD.	600V.
C5	22-829	.05 MFD.	200V.
C6	22-162	.0001 MFD.	600V.
C7	22-826	.01 MFD.	200V.
C8	22-350	.25 MFD.	200V.
C9	22-343	.01 MFD.	400V.
C10	22-492	.002 MFD.	600V.
C11	22-809	.05 MFD.	400V.
C12	22-827	.1 MFD.	200V.
C13	22-910	40 MFD. ELECTROLYTIC	150V.
C14		20 MFD. "	25V.

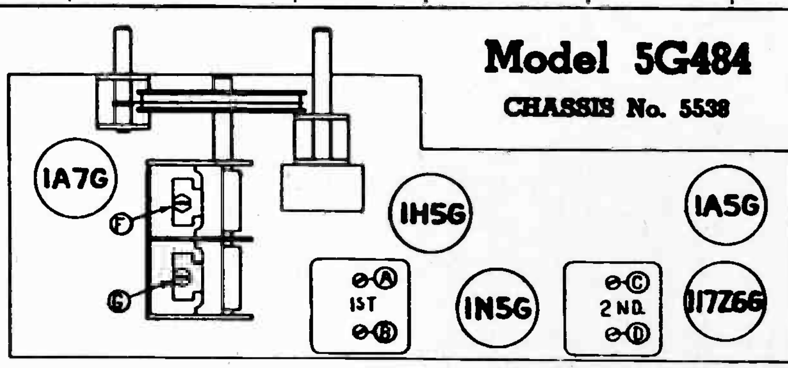
DIAG. No.	PART No.	DESCRIPTION	
C15	22-871	20 MFD. ELECTROLYTIC	150V.
C16		20 " "	150V.
C17		20 " "	150V.
R1	63-652	120 M OHM	¼ W.
R2	63-593	47 M OHM	¼ W.
R3	63-596	220 M OHM	¼ W.
R4	63-649	4.9 MEGOHM	¼ W.
R5	63-1026	VOLUME CONTROL	
R6	63-587	4700 OHM	¼ W.
R7	63-604	10 MEGOHM	¼ W.
R8	63-571	1 MEGOHM	¼ W.

DIAG. No.	PART No.	DESCRIPTION	
R9	63-600	2.2 MEGOHM	¼ W.
R10	63-1022	150 OHM WIREWOUND	1 W.
R11	63-605	1000 OHM	¼ W.
R12	63-625	2200 OHM	¼ W.
R13	63-571	22 M OHM	¼ W.
R14	63-1051	2-SECTION CANDOHM	
1		WAVEMAGNET ASSEMBLY	
2	37027	OSC. COIL ASSEMBLY	
3	95-595	1ST I.F. TRANS.	
4	95-596	2ND I.F. "	
5	85-100	POWER SWITCH	

DIAG. No.	PART No.	DESCRIPTION
6	85-197	PHONO SWITCH
A		1ST I.F. TRANS. PRI.
B		1ST I.F. " SEC.
C		2ND I.F. " PRI.
D		2ND I.F. " SEC.
F		BROADCAST OSC. (ON GANG)
G		ANTENNA BDCAST (" ")

ALIGNMENT PROCEDURE

Operation	Connect Test Oscillator to	Dummy Antenna	Set Test Oscillator to	Band	Set Dial At	Adjust Trimmers	Purpose
1	1st Det. Grid	.5 Mfd.	455	—	600	A-B-C-D	I. F. Alignment
2	Single Turn Loop coupled loosely to Wave Magnet		1400	—	1400	F	Set Osc. to Scale
3	"		1400	—	1400	G	Alignment of Antenna



Model 5G484

CHASSIS No. 5538

110 VOLT AC. BATTERY PACK
PORTABLE PHONO
I.F. FREQUENCY. 455 KC.
5 TUBE SUPERHETERODYNE
CHASSIS No. 5538
ZENITH RADIO CORPORATION
CHICAGO, ILL.

I.F. FREQUENCY 455 KC.
6 TUBE SUPERHETERODYNE
CHASSIS Nos 5659-5663 AC-DC
ZENITH RADIO CORPORATION
CHICAGO, ILL.

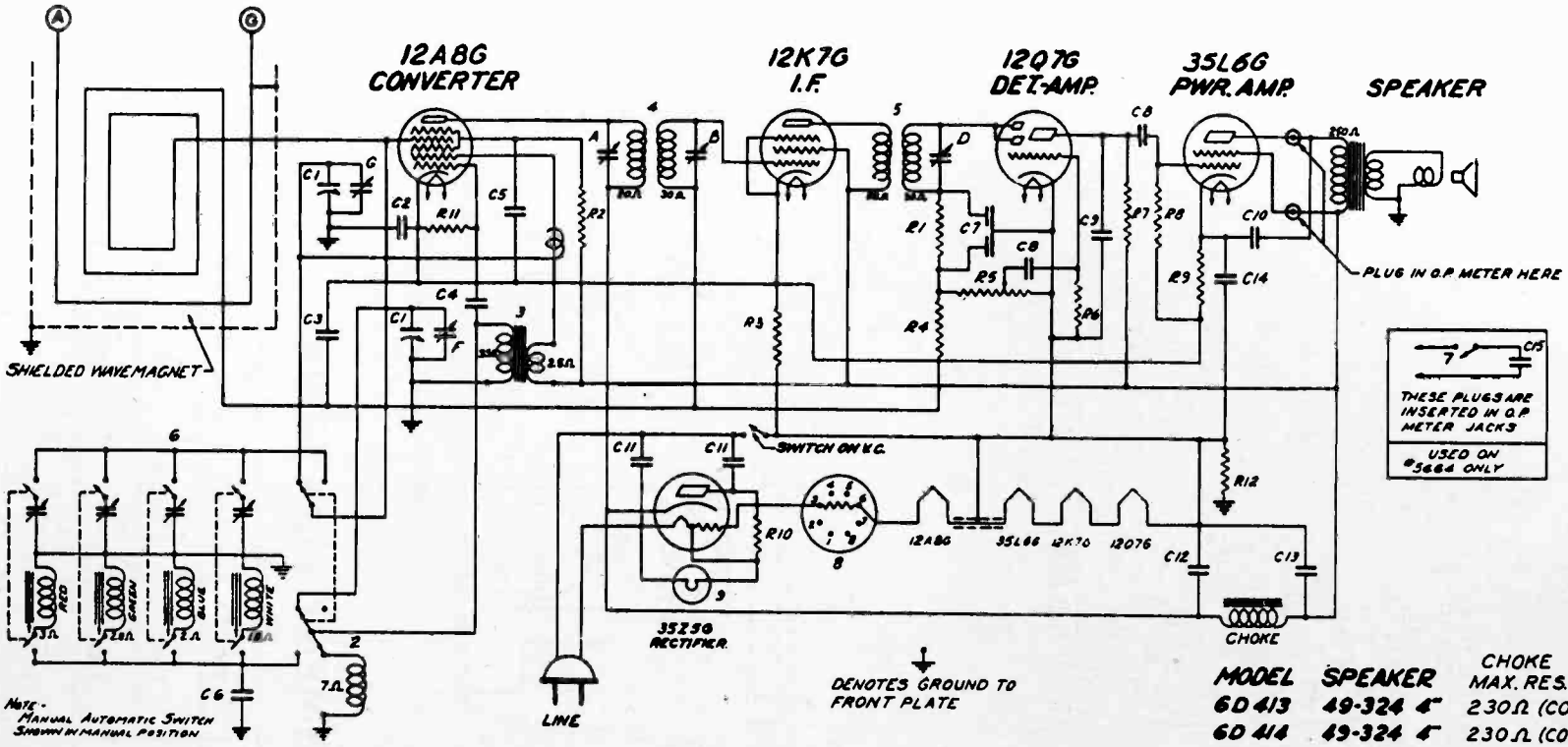
DIAG NO	PART NO	DESCRIPTION		DIAG NO	PART NO	DESCRIPTION
C1	22-885	2-GANG VARIABLE	200V	R1	63-593	47 M OHM ½ W
C2	22-850	.05 MFD	200V	R2	63-591	22 M OHM ½ W
C3	22-130	.1 MFD	200V	R3	63-572	15 OHM ½ W
C4		100 MMFD	200V	R4	63-600	2.2 MEGOHM ½ W
C5	22-841	.02 MFD	200V	R5	63-602	4.7 MEGOHM ½ W
C6		DUAL 100 MMFD	400V	R6	63-596	220 M OHM ½ W
C7	22-837	.01 MFD	400V	R7	63-591	470 M OHM ½ W
C8	22-833	.0005 MFD	400V	R8	63-606	150 OHM WIREWOUND ½ W
C9	22-836	.03 MFD	400V	R9	63-601	27 OHM ½ W
C10	22-835	.05 MFD	400V	R10	63-608	VOLUME CONTROL ½ W
C11	22-885	.40 MFD	150V	R11	63-713	47 M OHM ½ W
C12		.15 MFD	150V	R12	63-717	220 M OHM ½ W
C13		.20 MFD	25V	1	3690	WAVEMAGNET ASSEM
C14	22-844	TONE CONTROL CONS		2	3690	OSC. COIL
				3	3692	1ST I.F. TRANS

DIAG NO	PART NO	DESCRIPTION
4	35803	2ND I.F. TRANS
5	100-77	BALLAST TUBE
6	100-37	PILOT LIGHT 6.3 V. .15 A.
7	MS 317	TONE CONTROL SWITCH
A		1ST I.F. TRANS PRI
B		1ST I.F. TRANS SEC
C		2ND I.F. TRANS SEC
D		BROADCAST OSC (3W GANG) ANT (")

MODEL	SPEAKER	
6D410	49-323	4"
6D411	49-323	4"
6D425	49-323	4"

MODELS 6D410, 6D411, 6D425 (Chassis No. 5659)

Operation	Connect Test Oscillator to	Dummy Antenna	Set Test Oscillator to	Band	Set Dial At	Adjust Trimmers	Purpose
1	1st Det. Grid	.5 Mfd.	455	B'dcast	600	A B C	I. F. Alignm't
2	Single Turn Loop Loosely Coupled to Wave Magnet	—	1500	"	1500	F	Set Osc. to Scale
3		—	1500	"	"	G	Alignment of Ant.



MODEL	SPEAKER	CHOKE MAX. RES.
6D413	49-324 4"	230Ω (COLD)
6D414	49-324 4"	230Ω (COLD)
6D426	49-324 4"	230Ω (COLD)
6D427	49-324 4"	230Ω (COLD)
6D446	49-336 5"	325Ω (HOT)
6D455	49-324 4"	230Ω (COLD)

DIAG. NO.	PART NO.	DESCRIPTION	
C1	22-886	TWO GANG VARIABLE	
C2	22-939	.1 MFD.	200 V.
C3	22-250	.05 MFD.	200 V.
C4		100 MMFD.	
C5	22-841	.02 MFD.	200 V.
C6	22-868	COMPENSATING CONDENSER	
C7		DUAL 100 MMFD.	
C8	22-837	.01 MFD.	400 V.
C9	22-833	.0005 MFD.	600 V.
C10	22-836	.03 MFD.	400 V.
C11	22-839	.05 MFD.	400 V.
C12		40 MFD. ELECTROLYTIC	150 V.
C13	22-819	16 " "	150 V.
C14		20 " "	25 V.
C15	22-844	TONE CONTROL CONDENSER	

DIAG. NO.	PART NO.	DESCRIPTION	
R1	63-593	47 M OHM	1/4 W
R2	63-591	22 M OHM	1/4 W
R3	63-578	15 OHM	1/4 W
R4	63-600	2.2 MEGOHM	1/4 W.
R5	63-1028	VOLUME CONTROL	
R6	63-602	4.7 MEGOHM	1/4 W.
R7	63-296	220 M OHM	1/4 W
R8	63-597	470 M OHM	1/4 W
R9	63-686	150 OHM WIREWOUND	1/4 W
R10	63-1017	27 OHM WIREWOUND	1/4 W
R11	63-713	47 M OHM	1/4 W
R12	63-717	220 M OHM	1/4 W
1		WAVEMAGNET ASSEMBLY	
2	56927	OSCILLATOR COIL ASSEMBLY	
3	56848	OSC COUPLER COIL ASSEMBLY	
4	56902	1ST I.F. TRANS. ASSEMBLY	

DIAG. NO.	PART NO.	DESCRIPTION	
5	56905	2ND I.F. TRANS ASSEMBLY	
6	56997	AUTOMATIC TUNING UNIT ASSEM.	
7	MS 517	TONE CONTROL SWITCH	
8	100-77	BALLAST TUBE	
9	100-67	PILOT LIGHT BULB 6.3 V. - .15 AMP	
A		1ST I.F. TRANS.	PRI.
B		1ST I.F. TRANS.	SEC.
C		2ND I.F. TRANS.	SEC.
F		BROADCAST OSC.	(ON GANG)
G		ANTENNA BROADCAST	(ON GANG)

I.F. FREQUENCY 455 KC.
6 TUBE SUPERHETERODYNE
CHASSIS #5660 & #5664 A.C.-D.C.
ZENITH RADIO CORPORATION
CHICAGO, ILL.

MODELS 6D413, 6D414, 6D426, 6D427, 6D446, 6D455 (Chassis No. 5660)

COMPILED BY M. N. BEITMAN, SUPREME PUBLICATIONS

MANUAL OF 1939 MOST POPULAR SERVICE DIAGRAMS

Models 6D413, 6D414, 6D426, 6D427, 6D446, 6D455

CHASSIS No. 5660

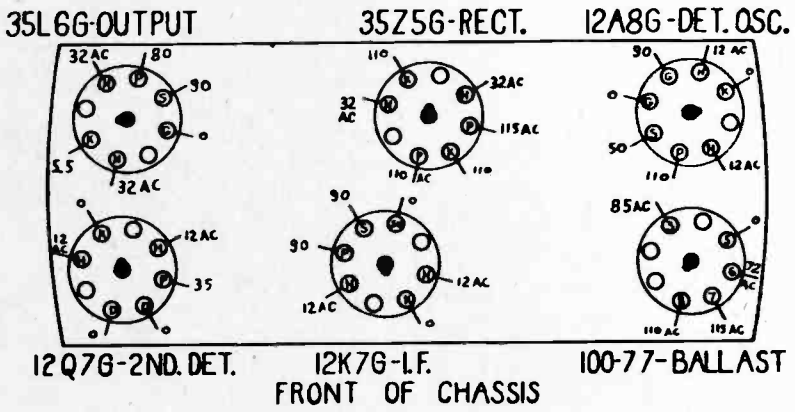
Zenith Radio Corporation

NOTE

Voltages measured from No. 7 pin on ballast tube to point indicated using a 1000 ohm per volt meter. Vol. control at minimum. Antenna disconnected.

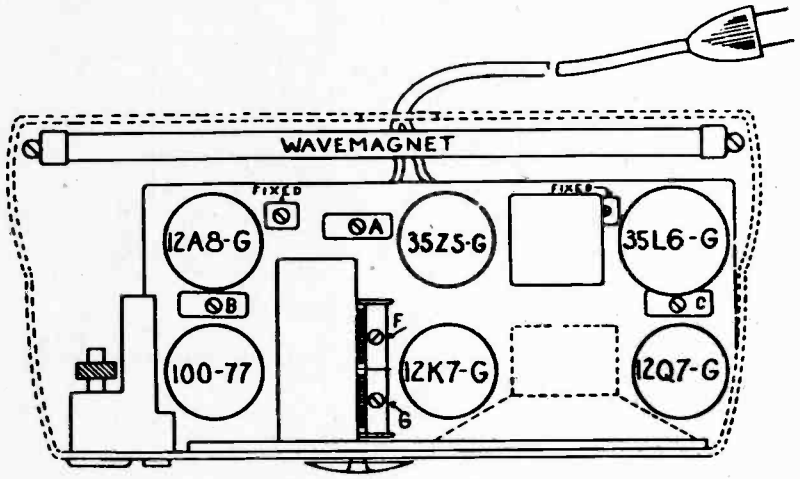
All filament voltages measured across each respective tube, using an A.C. volt-meter.

Line voltage — 110v.



LEGEND

NC—No Connection
SH—Shield
H—Heater
P—Plate
S—Screen
G—Grid
SU—Suppressor
D—Diode
F—Filament
K—Cathode



Location of tubes and trimmers

ALIGNMENT PROCEDURE

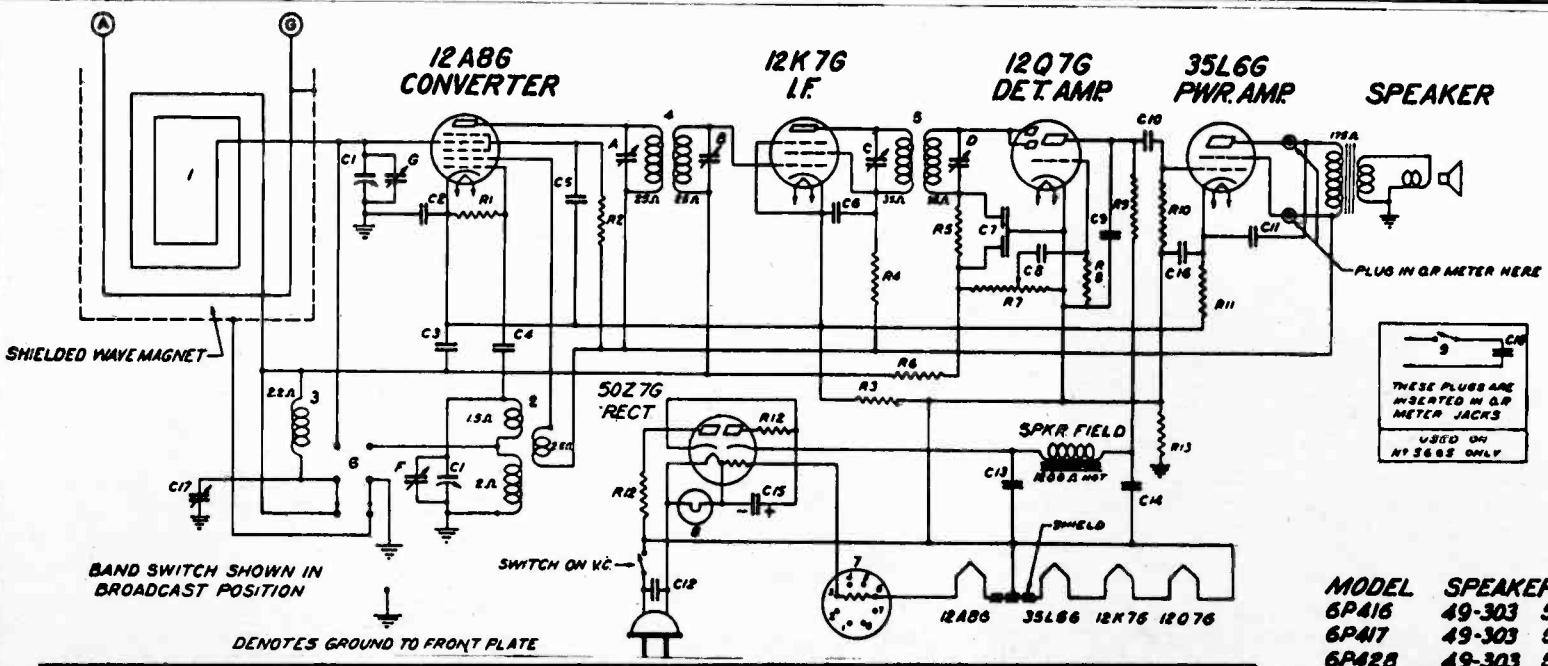
Operation	Connect Test Oscillator to	Dummy Antenna	Set Test Oscillator to	Band	Set Dial At	Adjust Trimmers	Purpose
1	1st Det. Grid	.5 Mfd.	455	B'dcast	600	A B C	I. F. Alignm't.
2	Single Turn Loop Loosely	—	1500	"	1500	F	Set Osc. to Scale
3	Coupled to Wave Magnet	—	1500	"	"	G	Alignment of Ant.

COMPILED BY M. N. BEITMAN, SUPREME PUBLICATIONS

Models 6P416, 6P417, 6P428

CHASSIS No. 5661

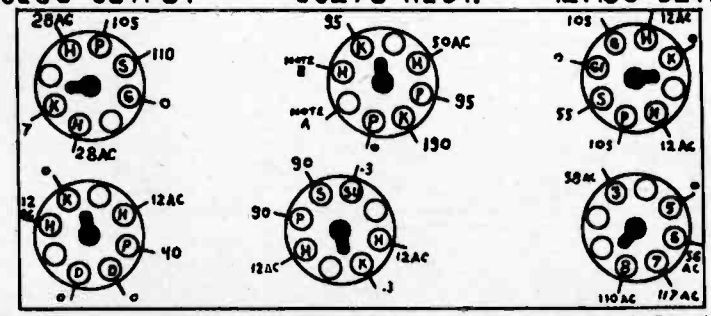
COMPILED BY M. N. BEITMAN, SUPREME PUBLICATIONS



MODEL	SPEAKER
6P416	49-303 5"
6P417	49-303 5"
6P428	49-303 5"

DIAG. No	PART No	DESCRIPTION		DIAG. No	PART No	DESCRIPTION		DIAG. No	PART No	DESCRIPTION		DIAG. No	PART No	DESCRIPTION
C1	22-845	TWO GANG VARIABLE		C13		20 MFD ELECTROLYTIC	350V	R5	63-593	47 M OHM	½ W	5	99-590	2ND I.F. TRANS
C2	22-190	.1 MFD	200V	C14	22-840	20 MFD "	250V	R6	63-726	2.2 MEGOHM	½ W	6	M3515	BAND SWITCH
C3	22-850	.05 MFD	200V	C15		20 MFD "	200V	R7	63-1028	VOLUME CONTROL		7	100-79	BALLAST TUBE
C4		100 MMFD.		C16		20 MFD	25V	R8	63-978	.5 MEGOHM	½ W	8	100-39	PILOT LIGHT 2.9V-.17A
C5	22-842	.02 MFD	400V	C17	22-788	TRIMMER CONDENSER		R9	63-896	220 M OHM	½ W	9	M3517	TONE CONTROL SWITCH
C6	22-818	.05 MFD	400V	C18	22-867	TONE CONTROL COND.		R10	63-597	470 M OHM	½ W			
C7		DUAL 100 MMFD						R11	63-484	150 OHM WIREWOUND	½ W			
C8	22-839	.005 MFD.	600V					R12	63-1023	22 OHM "	½ W	A		1ST I.F. TRANS PRI.
C9	22-833	.0005 MFD	600V					R13	63-717	2.2 OM OHM	½ W	B		1ST I.F. " SEC.
C10	22-837	.01 MFD	400V	R1	63-712	33 M OHM	½ W	1		WAVEMAGNET ASSEMBLY		C		2ND I.F. PRI.
C11	22-836	.03 MFD	400V	R2	63-591	2.2 M OHM	½ W	2	56913	OSCILLATOR COIL ASSEM.		D		2ND I.F. " SEC
C12	22-973	.15 MFD	400V	R3	63-572	15 OHM	½ W	3	56914	SHUNT ANT. "		F		BROADCAST OSC. (ON GANG)
				R4	63-589	1000 OHM	½ W	4	56913	1ST I.F. TRANS		G		ANTENNA BRCAST (")

35L6G-OUTPUT 50Z7G-RECT. 12A8G-DET.OSC.



12Q7G-2ND DET. 12K7G-I.F. 100-79 BALLAST

NOTE

Voltages measured from No. 7 pin on ballast tube to point indicated using a 1000 ohm per volt meter. Vol. control at minimum. Antenna disconnected.

All filament voltages measured across each respective tube, using a 0-50 A.C. voltmeter.

A. This lug is C.T. of fil. and is one side of pilot light supply line.
Lug No. 7 is return for pilot light.

B. This lug (No. 8) has a 50 v. A.C. potential with respect to lug No. 2 and also a 117 v. A.C. potential with respect to line switch.

MANUAL OF 1939 MOST POPULAR SERVICE DIAGRAMS

I.F. FREQUENCY 455KC
6 TUBE SUPERHETERODYNE
VOLTAGE DOUBLER A.C.
CHASSIS Nº5662 & 5666
ZENITH RADIO CORPORATION
CHICAGO, ILL.

35L6G-OUTPUT 50Z7G-RECT. 12A8G-DET.OSC.

12Q7G-2ND DET. 12K7G-I.F. 100-79 BALLAST

FRONT OF CHASSIS

DIAG. Nº	PART Nº	DESCRIPTION
C1	22-843	TWO-GANG VARIABLE
C2	22-730	.1 MFD.
C3	22-650	.05 MFD.
C4		100 MMFD.
C5	22-845	.02 MFD.
C6	22-877	TRIMMER CONDENSER
C7	22-866	COMPENSATING COND.
C8	22-282	.05 MFD.
C9		DUAL 70 MMFD.
C10	22-838	.001 MFD.
C11	22-833	.0005 MFD.
C12	22-837	.01 MFD.
C13	22-836	.03 MFD.
C14	22-875	.15 MFD.

DIAG. Nº	PART Nº	DESCRIPTION	
C15		20 MFD ELECTROLYTIC	350V
C16		20 " "	250V
C17	22-840	20 " "	200V
C18		20 " "	25V
C19	22-868	TONE CONTROL COND	400V
R1	63-712	33 M OHM	½W
R2	63-581	470 OHM	½W
R3	63-539	22 M OHM	½W
R4	63-583	1000 OHM	½W
R5	63-722	22 MEGOHM	½W
R6	63-593	47 M OHM	½W
R7	63-1019	VOLUME CONTROL	400V
R8	63-572	15 OHM	½W

DIAG. Nº	PART Nº	DESCRIPTION	
R9	63-976	15 MEGOHM	½W
R10	63-496	220 M OHM	½W
R11	63-597	470 M OHM	½W
R12	63-686	150 OHM WIREWOUND	½W
R13	63-683	22 OHM WIREWOUND	½W
R14	63-717	220 OHM	½W
1	37004	WAVEMAGNET ASSEMBLY	
2	38948	ANTENNA SHUNT COIL ASSEMBLY	
3	38948	OSC COUPLER COIL ASSEMBLY	
4	37024	AUTOMATIC TUNING UNIT ASSEM	
5	38915	1ST I.F. TRANS ASSEMBLY	
6	35-358	2ND I.F. TRANSFORMER	
7	40-551	BAND SWITCH	
8	100-79	BALLAST TUBE	

DIAG. Nº	PART Nº	DESCRIPTION
9	100-38	PILOT LIGHT 28 V. - .12A
10	40-517	TONE CONTROL SWITCH
11	3-1008	OSCILLATOR COIL ASSEMBLY
A		1ST I.F. TRANS. PRI
B		1ST I.F. " SEC
C		2ND I.F. " PRI
D		2ND I.F. " SEC
E		BROADCAST O.S.C. (ON BAND)
F		ANTENNA BROADCAST (" ")

Models 6P418, 6P419, 6P456 6P429, 6P430, 6P447, 6P448, 6P457

CHASSIS No. 5662

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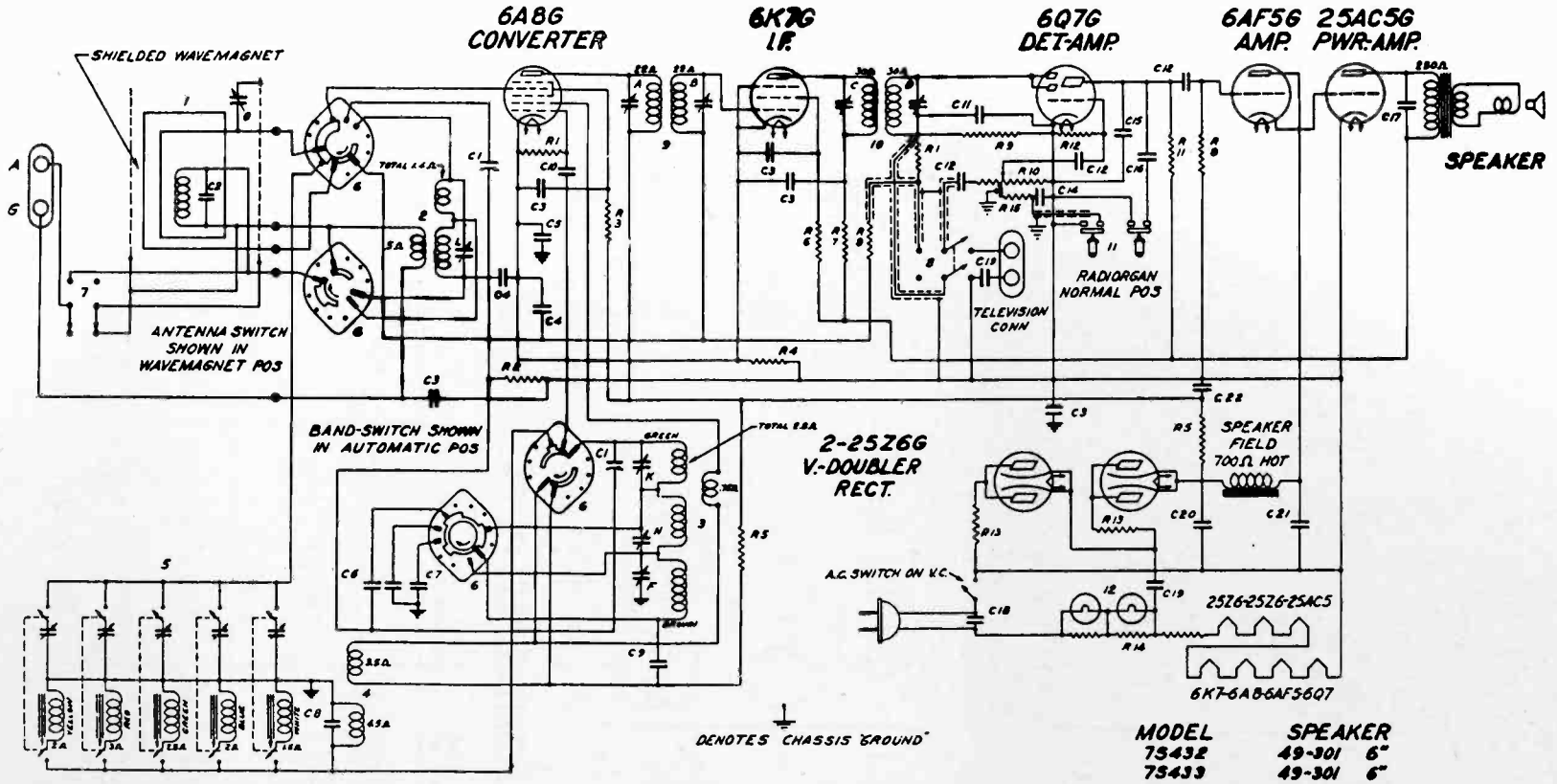


DIAG NO	PART NO	DESCRIPTION
C-1	22-849	TWO-GANG VAR
C-2	22-182	.0025 MFD
C-3	22-828	.05 MFD
C-4	22-823	.05 MFD
C-5	22-594	.15 MFD
C-6	22-843	OSC PADDER
C-7	22-866	-
C-8	22-868	COMPENSATING COND
C-9	22-358	.002 MFD
C-10	22-289	50 MMFD
C-11	22-162	.0001 MFD
C-12	22-196	.01 MFD
C-13	22-327	.02 MFD
C-14	22-229	.005 MFD
C-15	22-854	.0005 MFD
C-16	22-846	.004 MFD
C-17	22-449	.01 MFD
C-18	22-870	1 MFD
C-19	22-952	30 MFD ELECTROLYTIC
C-20		30 MFD ELECTROLYTIC
C-21	22-851	PO -
C-22		TO -
R-1	63-593	47 M OHM
R-2	63-325	150 M OHM
R-3	63-1049	68 M OHM
R-4	63-1020	68 OHM WIREWOUND
R-5	63-150	10 M OHM
R-6	63-591	22 M OHM
R-7	63-665	1000 OHM
R-8	63-271	1 MEGOHM
R-9	63-653	220 M OHM
R-10	63-1038	VOLUME CONTROL
R-11	63-286	220 M OHM
R-12	63-976	15 MEGOHMS
R-13	63-1023	22 OHM WIREWOUND
R-14	63-1039	3-SECTION CANDOHM
R-15	63-713	47 M OHM
1		WAVEMAGNET ASSEMBLY
2	S6936	ANTENNA COIL -
3	S6937	OSCILLATOR - -
4	S6992	OSC COUPLER - -
5	S7044	AUTOMATIC TUNING UNIT ASSEMBLY
6	85-185	BAND SELECTOR SWITCH
7	85-171	WAVEMAGNET "
8	85-171	TELEVISION "
9	95-600	1ST I.F. TRANSFORMER
10	95-612	2ND I.F. TRANSFORMER
11	9-6996	TONE CONTROL SWITCH
12	100-36	PILOT LIGHT 6.3V .15A.

DIAG NO	PART NO	DESCRIPTION
A		1ST I.F. TRANS PRI
B		1ST I.F. - SEC
C		2ND I.F. - PRI
D		2ND I.F. - SEC
F		BROADCAST OSC (SEE NOTE)
G	22-845	ANTENNA BROADCAST
K		SHORT WAVE OSC (SEE NOTE)
L	22-788	SHORT WAVE DETECTOR
N		POLICE BAND OSC (SEE NOTE)

NOTE
TRIMMERS F, K & N ARE MOUNTED ON STRIP #22-852

MODEL	SPEAKER	
7S432	49-301	6"
7S433	49-301	6"
7S434	49-301	6"
7S449	49-301	6"
7S450	49-314	8"
7S458	49-308	10"
7S459	49-314	8"
7S460	49-311	10"
7S461	49-309	12"
7S462	49-311	10"

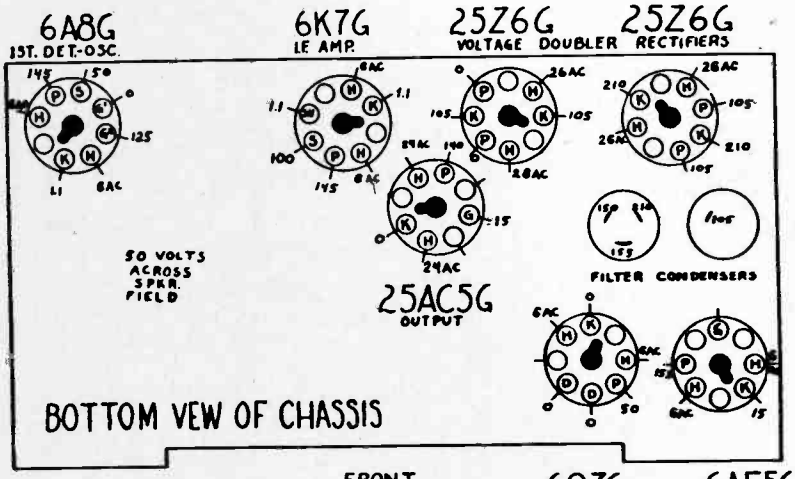
I.F. FREQUENCY 455 KC.
7 TUBE SUPERHETERODYNE
CHASSIS No. 5719 VOLTAGE DOUBLER A.C.
ZENITH RADIO CORPORATION
CHICAGO, ILL.

MODELS 7S432, 7S433, 7S434, 7S449, 7S450, 7S458, 7S459, 7S460, 7S461, 7S462 (Chassis No. 5719)

MANUAL OF 1939 MOST POPULAR SERVICE DIAGRAMS

Models 7S432, 7S433, 7S434, 7S449, 7S450, 7S458, 7S459 7S460, 7S461, 7S462

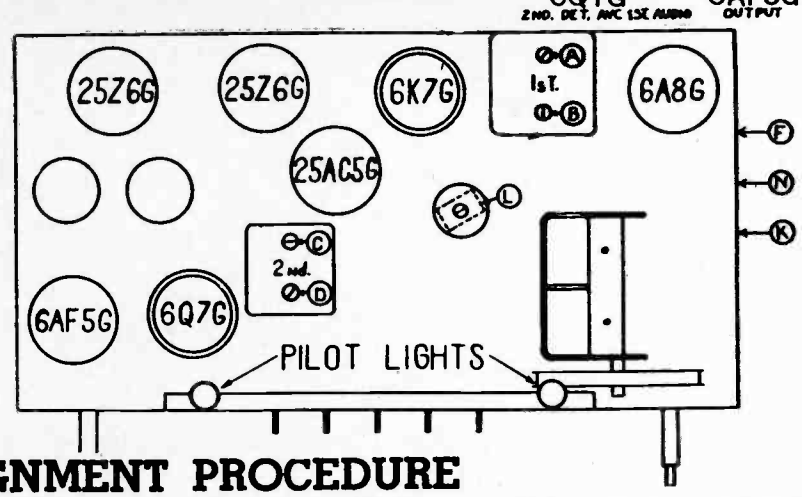
(Chassis No. 5719)



NOTE

Voltages measured from line switch to point indicated using a 1000 ohm per volt meter. Vol. control at minimum. Antenna disconnected.

All filament voltages measured across each respective tube, using an A.C. volt-meter.



LEGEND

NC—No Connection
SH—Shield
H—Heater
P—Plate
S—Screen
G—Grid
SU—Suppressor
D—Diode
F—Filament
K—Cathode

ALIGNMENT PROCEDURE

Operation	Connect Test Oscillator to	Dummy Antenna	Set Test Oscillator to	Band	Set Dial At	Adjust Trimmers	Purpose
1	1st Det. Grid	5 mfd.	455	B'dcast	600	A B C D	I. F.
2	Single *x Turn Coil	—	1500	"	1500	F	Set Osc. to Scale
3	" "	—	1500	"	1500	On Wave Magnet	Alignment of Wave Magnet
4	Rec. Ant. Post **	400 ohms	18000	S.W.#2	18000	K	Set Osc. to Scale
5	"	"	16000	"	16000	L	Rock gang & adj. for max. output
6	"	"	4.500	S.W. #1	4.500	N	"

*** Loosely coupled to Wave Magnet**
x Switch in Wave Magnet Position
**** Switch in Antenna Position**

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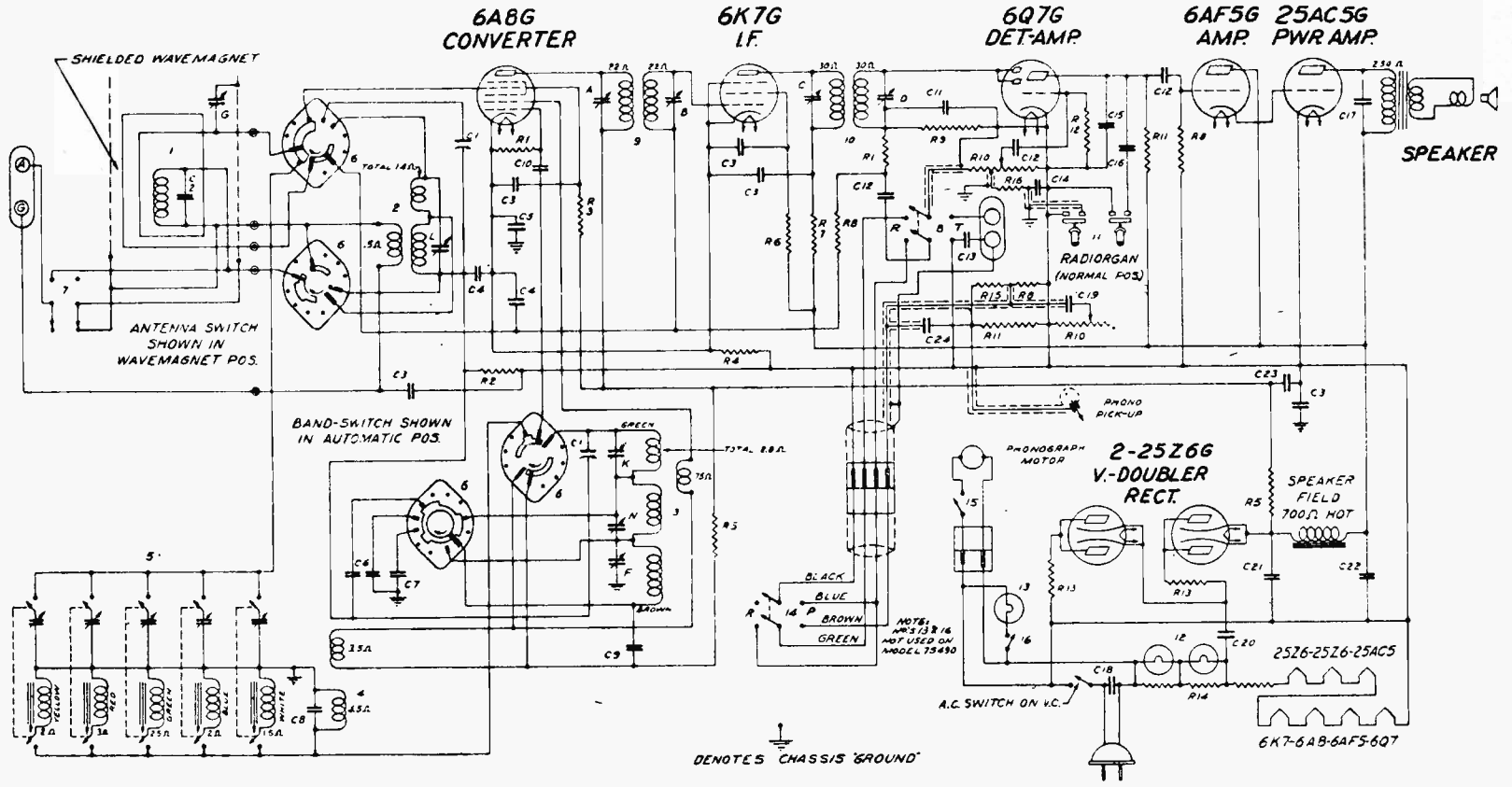
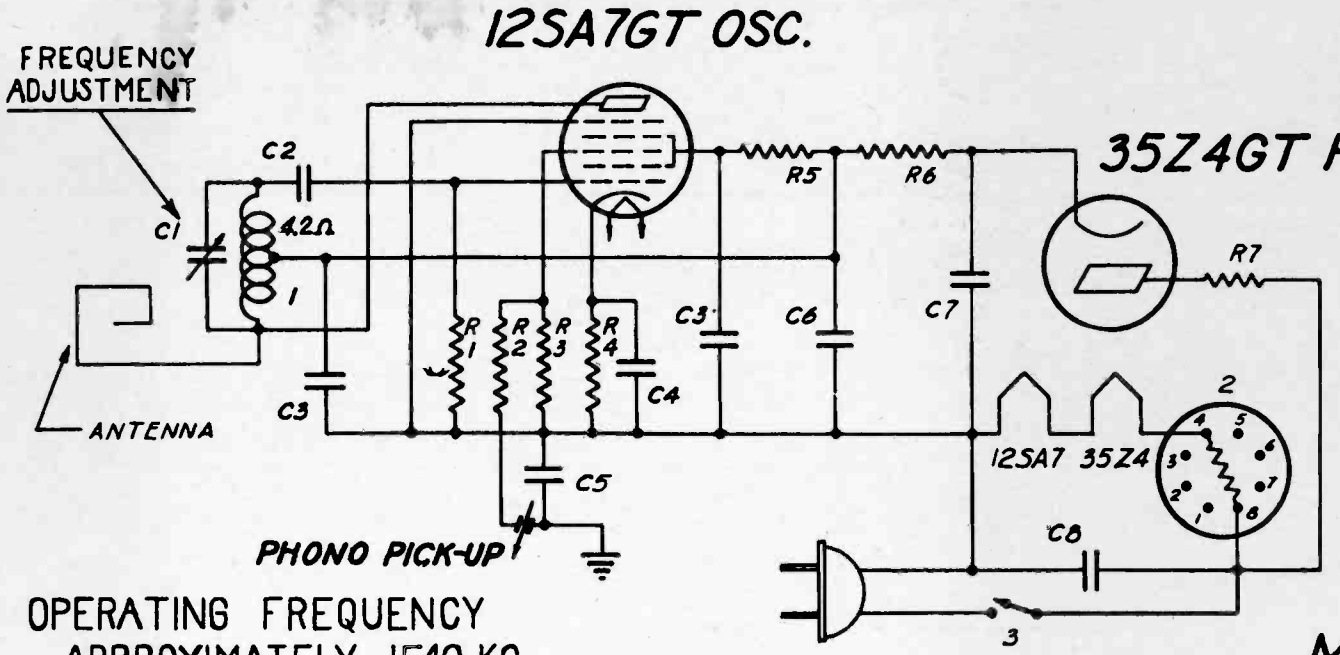


DIAG Nº	PART Nº	DESCRIPTION		DIAG Nº	PART Nº	DESCRIPTION		DIAG Nº	PART Nº	DESCRIPTION		DIAG Nº	PART Nº	DESCRIPTION	
C1	22-849	TWO GANG VARIABLE		C21		30 MFD ELECTROLYTIC	350V	R15	63-596	330M OHM	¼ W.	16	85-204	DOOR SWITCH	MODEL 7S487
C2	22-182	.00025 MFD	600V	C22	22-851	20 MFD	250V	R16	63-713	47M OHM	¼ W.		85-203		MODEL 7S488
C3	22-828	.05 MFD	400V	C23		10 MFD	250V					A		1ST I.F. TRANS PRI.	
C4	22-829	.05 MFD	200V	C24	22-470	150 MMFD	600V					B		1ST I.F. - SEC.	
C5	22-594	.15 MFD	200V									C		2ND I.F. - PRI.	
C6	22-863	OSCILLATOR PADDER						1		WAVEMAGNET ASSEMBLY		D		2ND I.F. - SEC.	
C7	22-866	OSCILLATOR PADDER		R1	63-593	47M OHM	¼ W.	2	56936	ANTENNA COIL ASSEMBLY		F		BROADCAST OSC. (SEE NOTE)	
C8	22-868	COMPENSATING COND.		R2	63-325	150M OHM	¼ W.	3	56937	OSCILLATOR COIL ASSEM.		G	22-865	ANTENNA BROADCAST	
C9	22-358	.002 MFD	600V	R3	63-1019	68M OHM	½ W.	4	56992	OSC. COUPLER COIL ASSEM.		K		SHORT WAVE OSC. (SEE NOTE)	
C10	22-289	.50 MMFD	600V	R4	63-1020	68 OHM WIREWOUND	½ W.	5	57044	AUTO. TUNING UNIT ASSEM.		L	22-788	SHORT WAVE DETECTOR	
C11	22-162	.0001 MFD	600V	R5	63-130	10M OHM	½ W.	6	83-185	BAND SELECTOR SWITCH		N		POLICE BAND OSC. (SEE NOTE)	
C12	22-196	.01 MFD	600V	R6	63-591	.22 M OHM	¼ W.	7	83-171	WAVEMAGNET SWITCH					
C13	22-827	.1 MFD	200V	R7	63-605	1000 OHM	½ W.	8	83-171	TELEVISION SWITCH					
C14	22-229	.005 MFD	400V	R8	63-271	1 MEGOHM	¼ W.	9	93-600	1ST I.F. TRANS.					
C15	22-854	.0005 MFD	400V	R9	63-455	220 M OHM	¼ W.	10	95-612	2ND I.F. TRANS.				NOTE:	
C16	22-448	.006 MFD	600V	R10	63-1035	VOLUME CONTROL		11	56994	TONE CONTROL SWITCH				TRIMMERS F, K & N	
C17	22-669	.01 MFD	600V	R11	63-296	220 M. OHM	¼ W.	12	100-36	PILOT LIGHT 6.3 V. .25A				ARE MOUNTED ON STRIP	
C18	22-670	1 MFD	400V	R12	63-976	15 MEGOHM	¼ W.	13	100-80	PILOT LIGHT 110V. 7W.				#22-850	
C19	22-326	.003 MFD	400V	R13	63-1023	22 OHM WIREWOUND	½ W.	14	85-192	PHONO SWITCH					
C20	22-852	30 MFD ELECTROLYTIC	250V	R14	63-1039	3 SECTION CANDOHM		15	85-191	MOTOR SWITCH					

MODEL	SPEAKER	
7S487	49-312	10"
7S488	49-309	12"
7S490	49-314	8"

I.F. FREQUENCY 455KC
7 TUBE SUPERHETERODYNE
CHASSIS Nº5721 3 BAND
VOLTAGE DOUBLER A.C.
ZENITH RADIO CORPORATION
CHICAGO. ILL.

MODELS 7S487, 7S488, 7S490 (Chassis No. 5721)



OPERATING FREQUENCY
APPROXIMATELY 1540 KC.

DIAG. Nº	PART Nº	DESCRIPTION		DIAG. Nº	PART Nº	DESCRIPTION	
C1	22-690	TUNING CONDENSER		R2	63-658	390M OHM	1/4 W.
C2	22-182	.00025 MFD.	600V.	R3	63-260	100M OHM	1/4 W.
C3	22-243	.01 MFD.	400V.	R4	63-583	1000 OHM	1/4 W.
C4	22-829	.05 MFD.	200V.	R5	63-964	4700 OHM	1/2 W.
C5	22-827	.1 MFD.	200V.	R6	63-803	2200 OHM	1/2 W
C6	22-876	8 MFD. ELECTROLYTIC	150V.	R7	63-575	47 OHM	1/4 W
C7		40 MFD	150V.				
C8	22-670	.1 MFD.	400V.	1	S6854	OSC. COIL ASSEM	
				2	100-76	BALLAST TUBE	
				3	85-170	AC SWITCH	
R1	63-591	22 M OHM	1/4 W.				

MODELS
S-7000
S-7001
S-7002
S-7003

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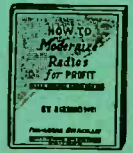

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