PERPETUAL

TROUBLE SHOOTER'S MANUAL

by

JOHN F. RIDER

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JOHN F. RIDER

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The Perpetual Trouble Shooter's Manuals listed above are the "standard" of the radio service industry.

Their absolute supremacy as sources of accurate—complete and detailed radio service data is established by their use by the world-famous tube manufacturing organizations, such as E. T. Cunningham, Inc., National Union Radio Corp., RCA Radiotron, Inc.—the most famous service instrument manufacturers, like Weston, Hickok, Readrite and Supreme and their use and recommendation by the world's leading radio receiver manufacturers.

AUTHOR'S FOREWORD

This issue of Volume I is slightly different than earlier printings. One of the changes is to be found in the method of indexing. You will note that it is the same as used in Volumes II and III as recently issued.

The reason for this change is that the method of indexing as originally introduced in Volume III proved so much more popular than that previously employed in Volumes I and II, that it was deemed most advantageous to establish a uniform index which would serve best over the years to come.

Present owners of Volumes II and III, that is, owners of these manuals purchased prior to November 15, may find that index which accompanies Volume III and the index in Volume II does not conform with the pages in Volume I. We regret the slight inconvenience caused, but feel that it is all for the better.

The complete index mentioned above and the Volume II index mentioned above can be used to determine if the service information desired is to be found in Volume I. Reference to the individual index in Volume I will then indicate the correct page.

Another change in this revised issue is that the text matter contained in the front of the earlier printings has been removed. This is the result of requests from service men who found very little occasion at this date to refer to text originally prepared years ago.

In every other respect this Volume I is fully the equal of the earlier issues and in very many cases, has additional information not contained in earlier issues.

The pages in this revised issue have been printed from engravings and we trust that the increased legibility of type, the increased number of cases where electrical values are included, the increased number of socket layouts—in general more data—will be received with favor and will perhaps offset the slight inconvenience with respect to the indexing.

JOHN F. RIDER.

INDEX

GENERAL MOTORS RADIO CORP.

GENERAL RADIO CO.

GILFILLAN BROS.

GRAYBAR ELECTRIC CO.

A. H. GREBE & CO.

GRIGSBY-GRUNOW CO.

GULBRANSEN CO.

HAMMARLUND-ROBERTS, INC.

HAMMARLUND MFG. CO.

HATRY & YOUNG

HIGH FREQUENCY LABORATORIES

HOWARD RADIO CO.

J. E. JENKINS & S. E. ADAIR

KELLOGG SWITCHBOARD & SUPPLY CO.

COLIN B. KENNEDY CORP.

KING MFG. CO.

KOLSTER RADIO, INC.

R. E. LACAULT

LANG RADIO CO.

C. R. LEUTZ, INC.

LINCOLN RADIO CORP.

MADISON-MOORE

THE MAGNAVOX CO.

MAJOR LABORATORIES

McMILLAN RADIO CO.

MONTGOMERY-WARD & CO.

WILLIAM J. MURDOCK CO.

NATIONAL CARBON CO.

THE NATIONAL COMPANY

NORDEN-HAUCK, INC.

OPERADIO CORP.

OZARKA, INC.

PHILCO RADIO & TELEVISION CORP.

PILOT RADIO & TUBE CORP.

RCA-VICTOR CO., INC.

RADIART LABORATORIES

RADIO PRODUCTS CO.

RADIOTROPE

REES-MACE

REMLER COMPANY, LTD.

SAMSON ELECTRIC CO.

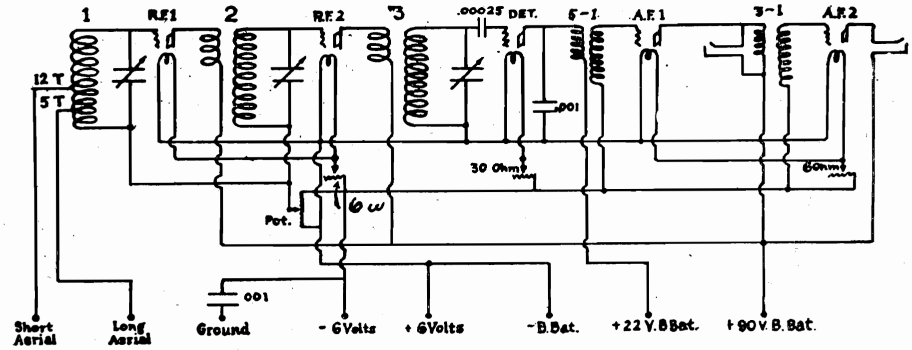
SCOTT TRANSFORMER CO.

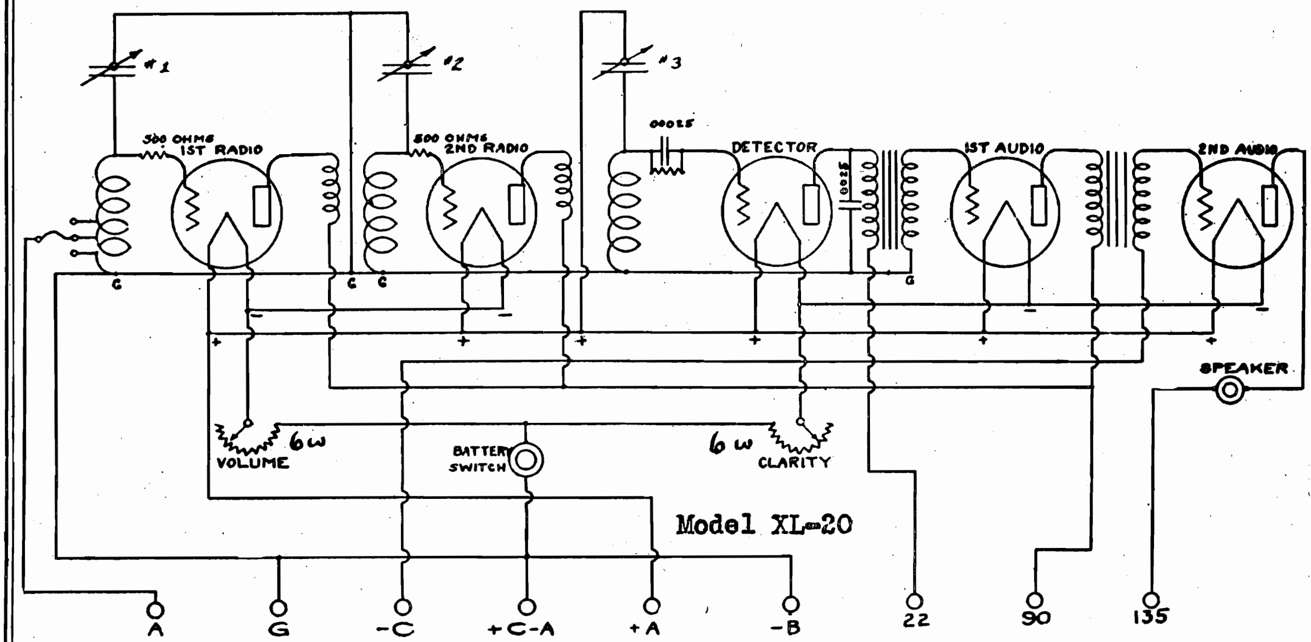
SENTINEL RADIO CORP.

SILVER-MARSHALL, INC.

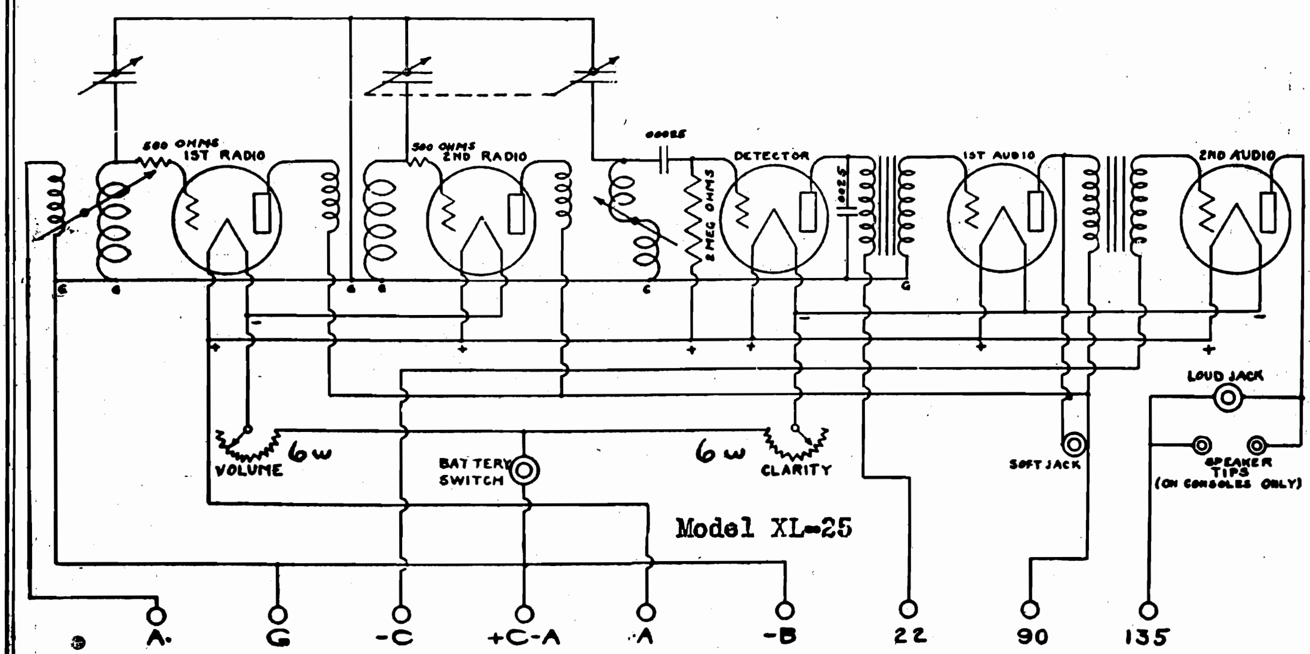
THE A-C DAYTON CO.

MODEL XL-5
XL-20
XL-25





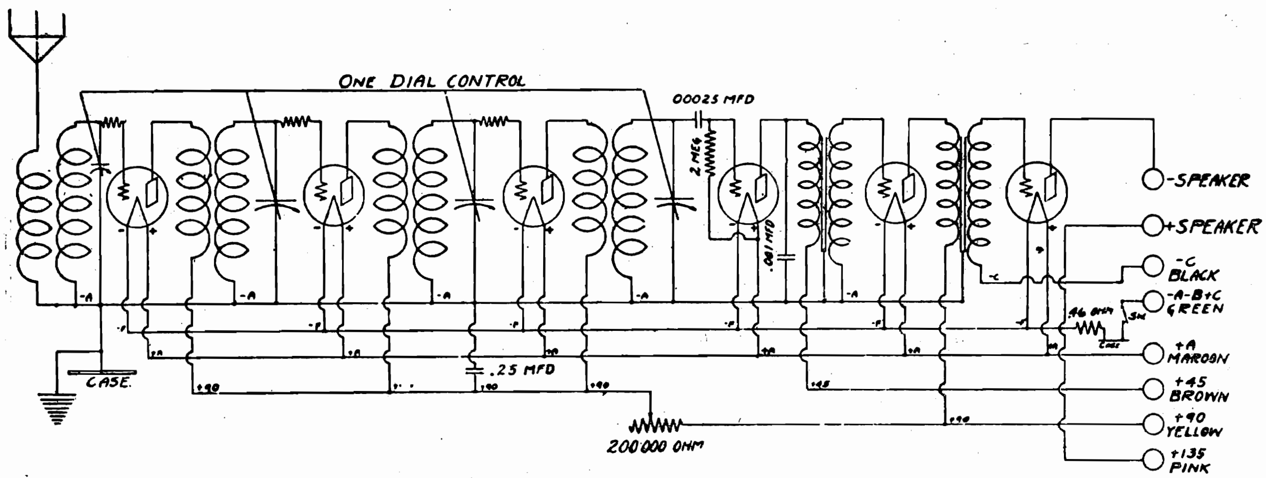
Model XL-20



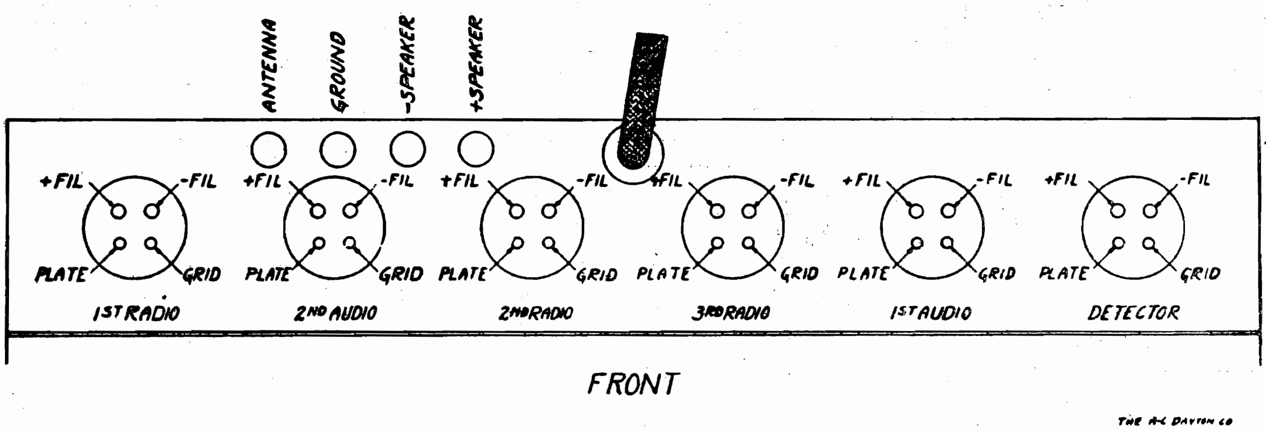
Model XL-25

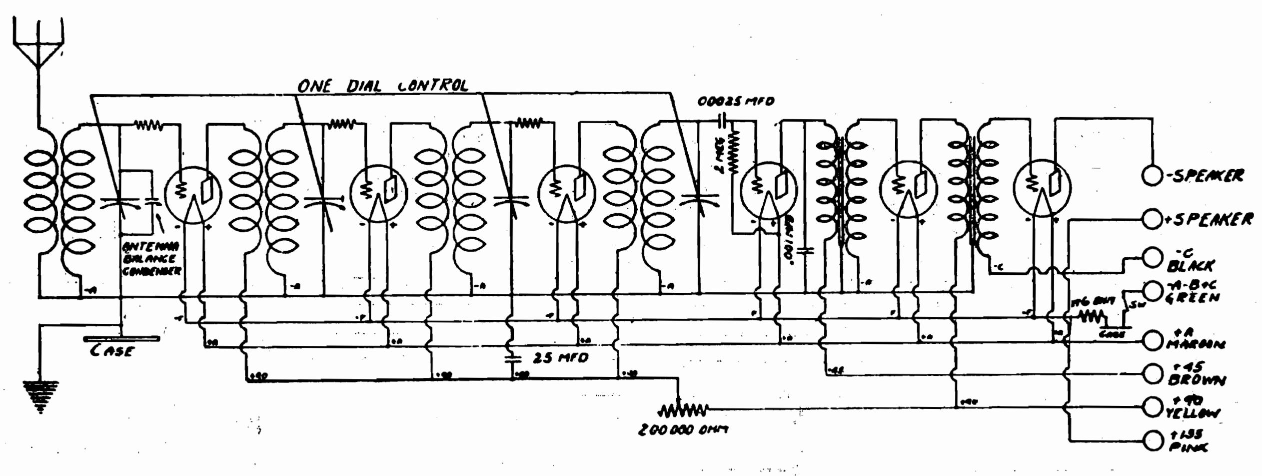
MODEL XL - 50
XL - 60

THE A-C DAYTON CO.

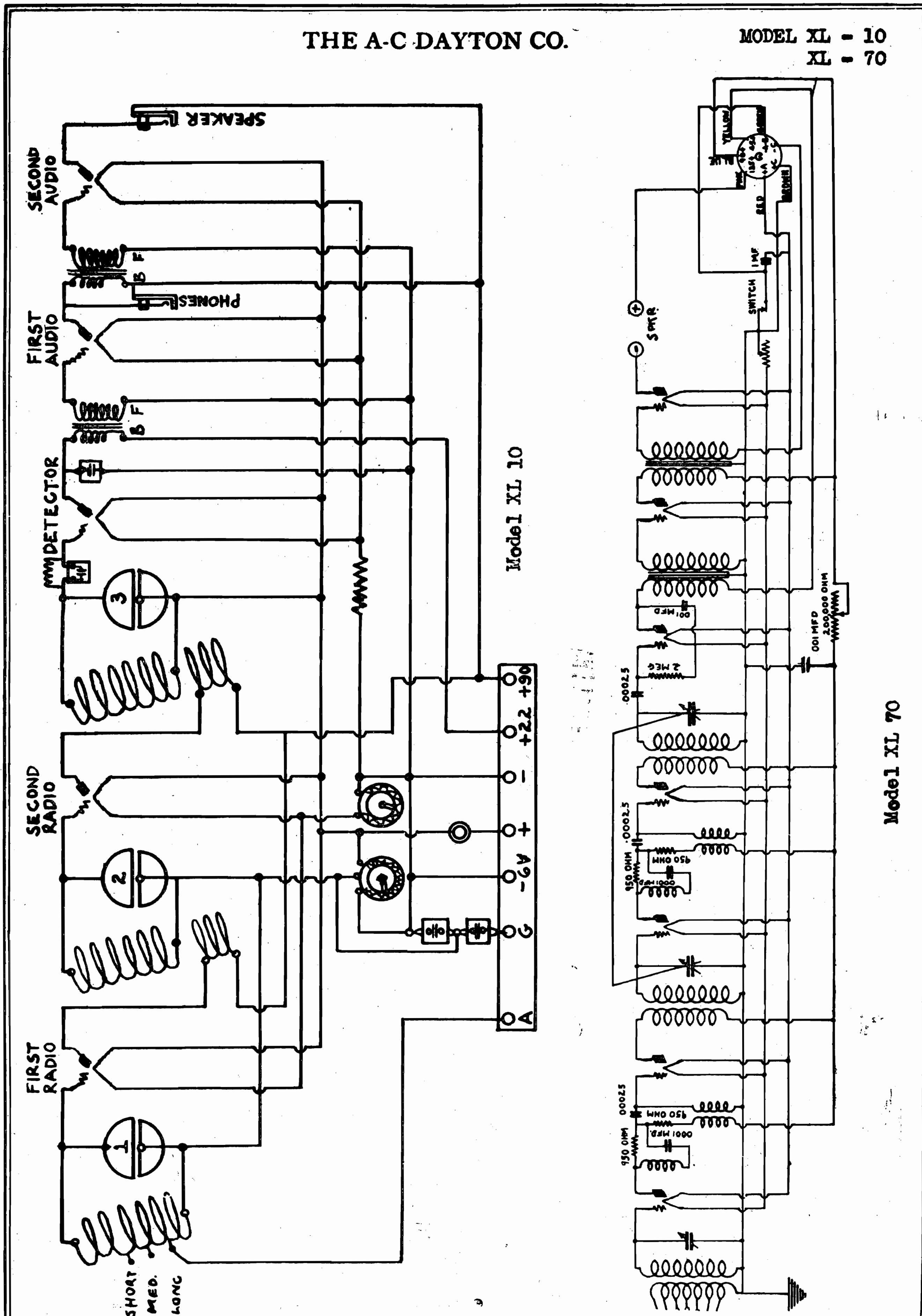


Model XL - 50





Model XL - 60


THE A-C DAYTON CO.
MODEL XL - 10
XL - 70
SPEAKER
SECOND AUDIO
PHONES
FIRST AUDIO
B F
DETECTOR
SECOND RADIO
FIRST RADIO
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MED.
LONG
+90
+22
−
+
−6V
G
A
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Model XL 70
SPKR
SWITCH
IMP
YELLOW
BLUE
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BROWN
.00025
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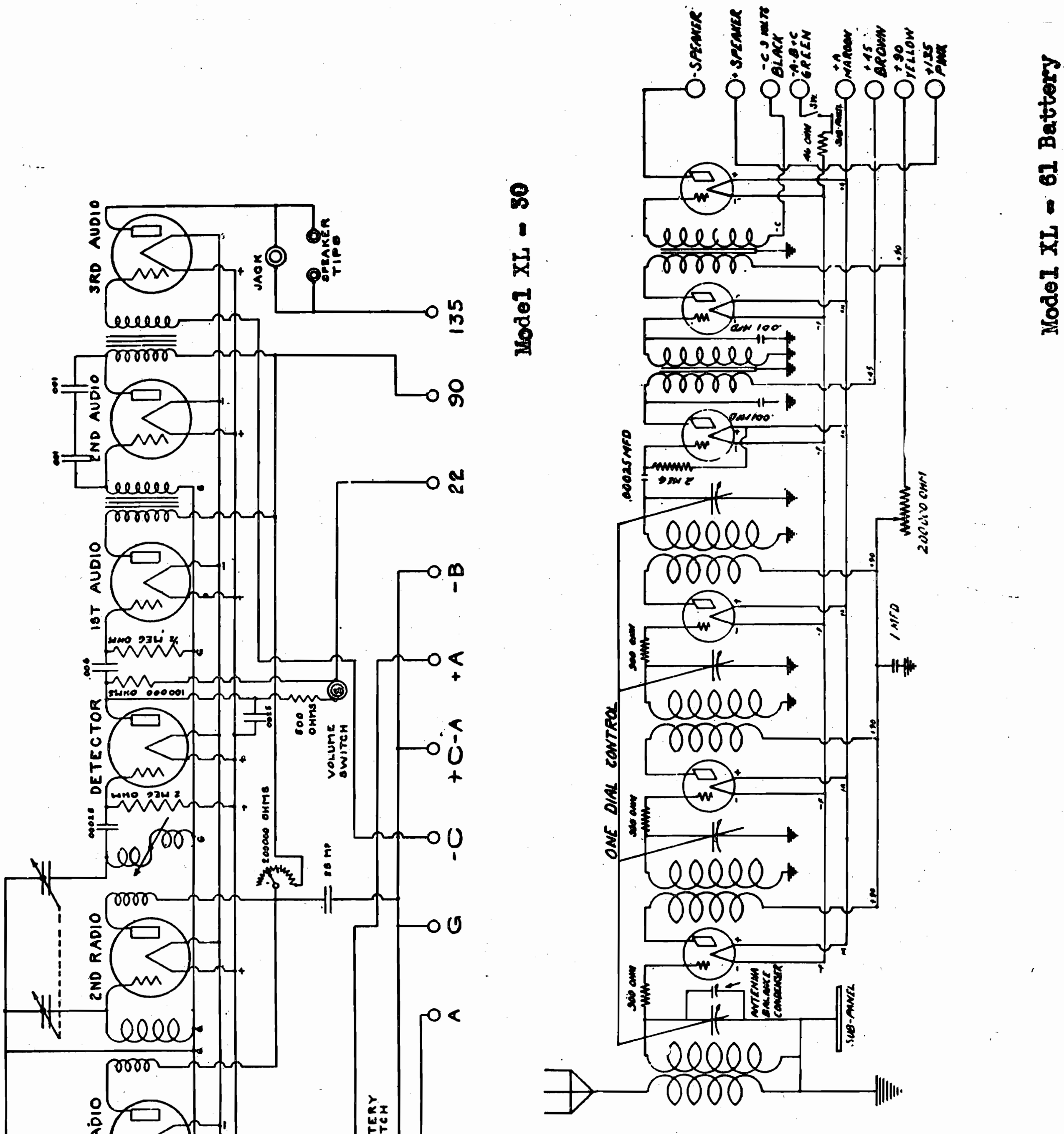
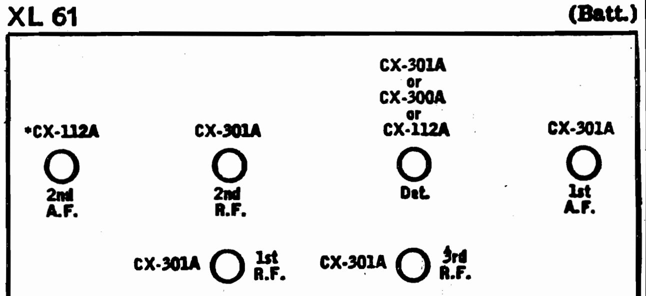
.001 MFD
200,000 OHM
950 OHM
450 OHM
.0001 MFD

MODEL XL - 30
XL - 61

THE A-C DAYTON CO

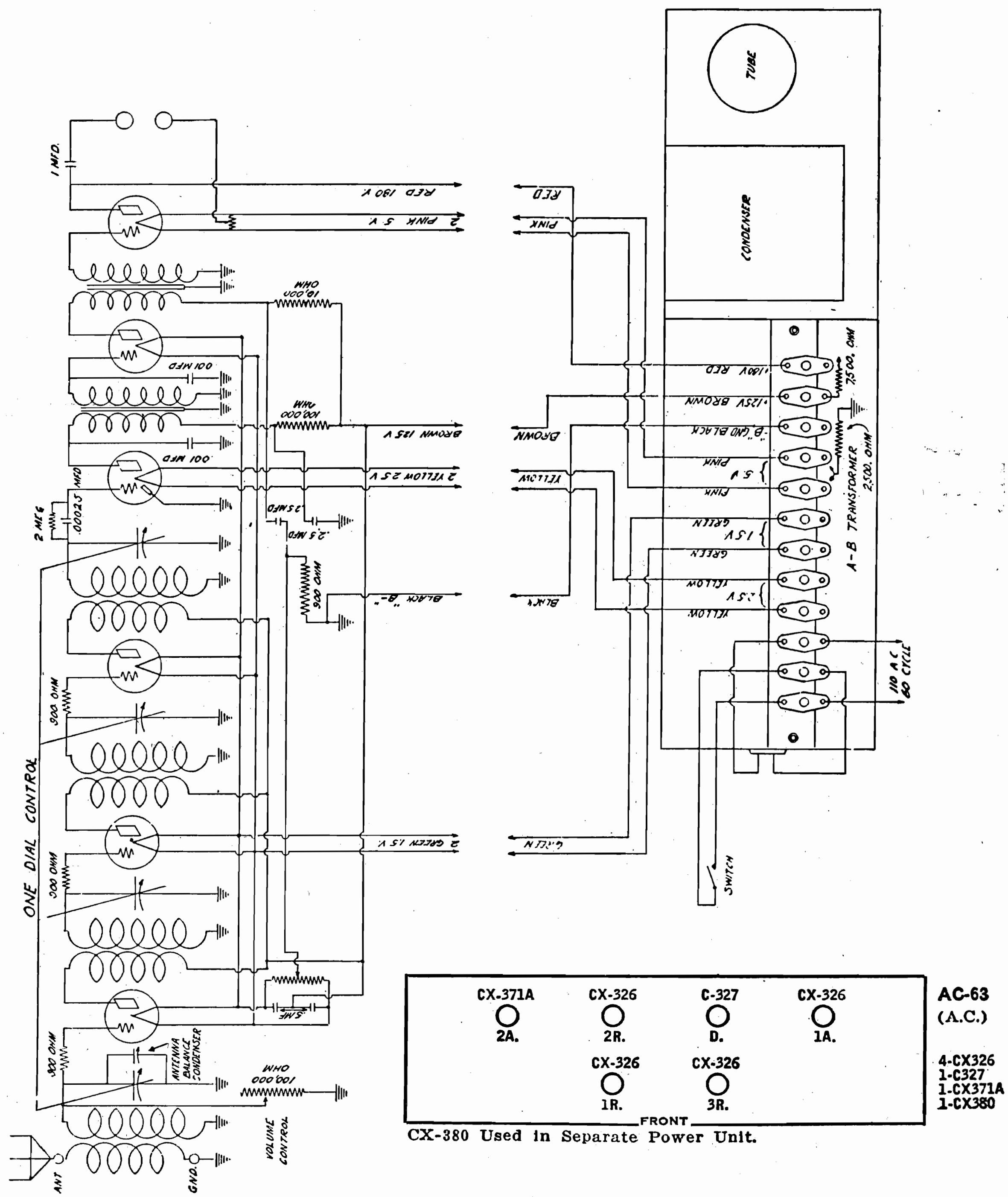


XL 61 (Batt.)



MODEL AC - 63

THE A-C DAYTON CO



CX-380 Used in Separate Power Unit.

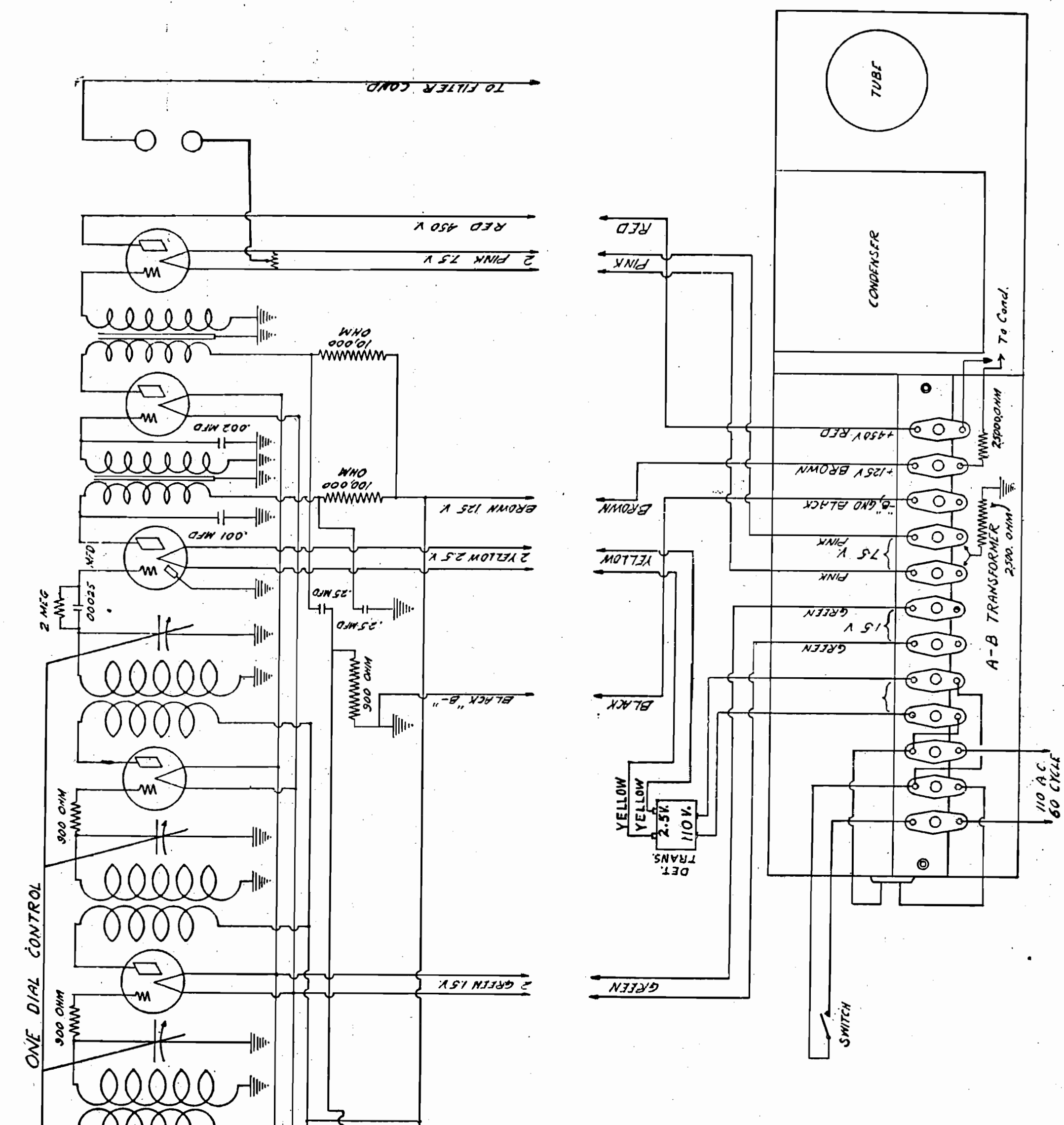
VOLTAGES OF VARIOUS CIRCUITS

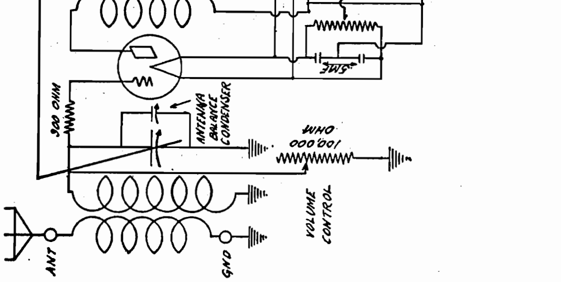
Tube Socket	Plate Volts	Plate Current	Filament Volts	"C" Bias
1st R. F.	150 V.	4 mils	1.5 V.	11 V.
2nd R. F.	150 V.	4 mils	1.5 V.	11 V.
3rd R. F.	150 V.	4 mils	1.5 V.	11 V.
Detector	25 V.	1.5 mils	2.5 V.	0 V.
1st A. F.	120 V.	2 mils	1.5 V.	11 V.
2nd A. F.	160 V.	16 mils	5.00 V.	40 V.

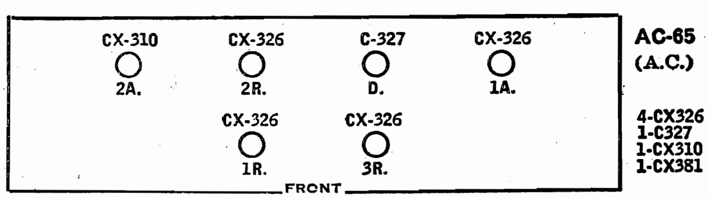
The above readings are taken at 120 Volt line voltage. These readings may vary 5% plus or minus.

MODEL AC - 65

THE A-C DAYTON CO.







CX-381 Used in Separate Power Unit.

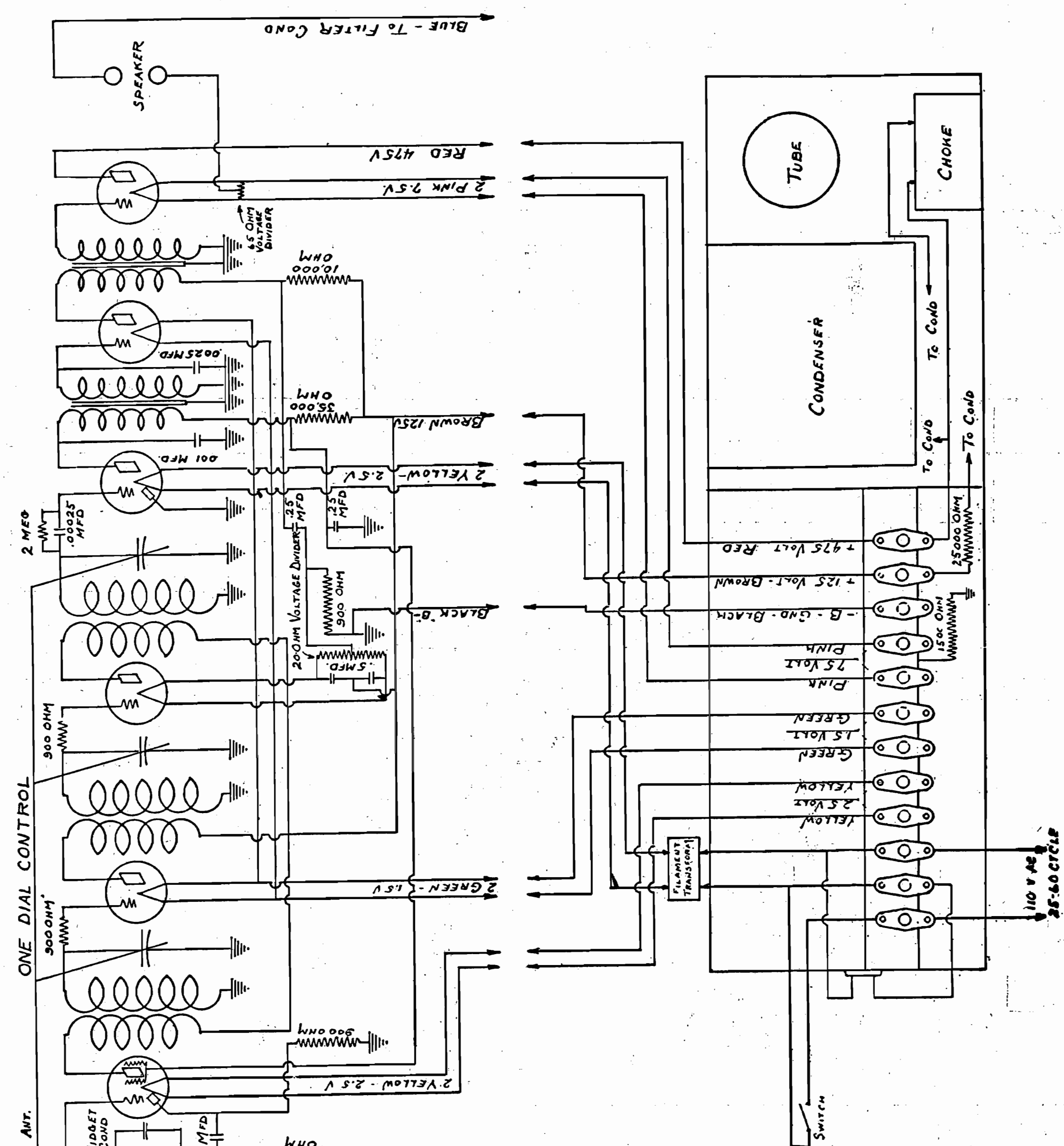
VOLTAGES OF VARIOUS CIRCUITS

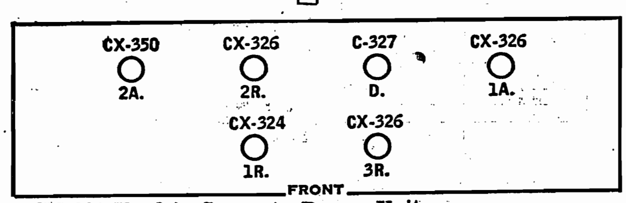
Tube Socket	Plate Volts	Plate Current	Filament Volts	"C" Bias
1st R. F.	145 V.	4 mils	1.5 V.	11 V.
2nd R. F.	145 V.	4 mils	1.5 V.	11 V.
3rd R. F.	145 V.	4 mils	1.5 V.	11 V.
Detector	25 V.	1.3 mils	2.45 V.	0 V.
1st A. F.	120 V.	2 mils	1.5 V.	11 V.
2nd A. F.	430 V.	18 mils	6.75 V.	42 V.

The above readings are taken at 120 Volt line voltage. Readings may vary 5% plus or minus.

MODEL AC - 66

THE A-C DAYTON CO.





AC-66
(A.C.)
1-C324
3-CX326
1-C327
1-CX350
1-CX381

*CX-381 Used in Separate Power Unit.

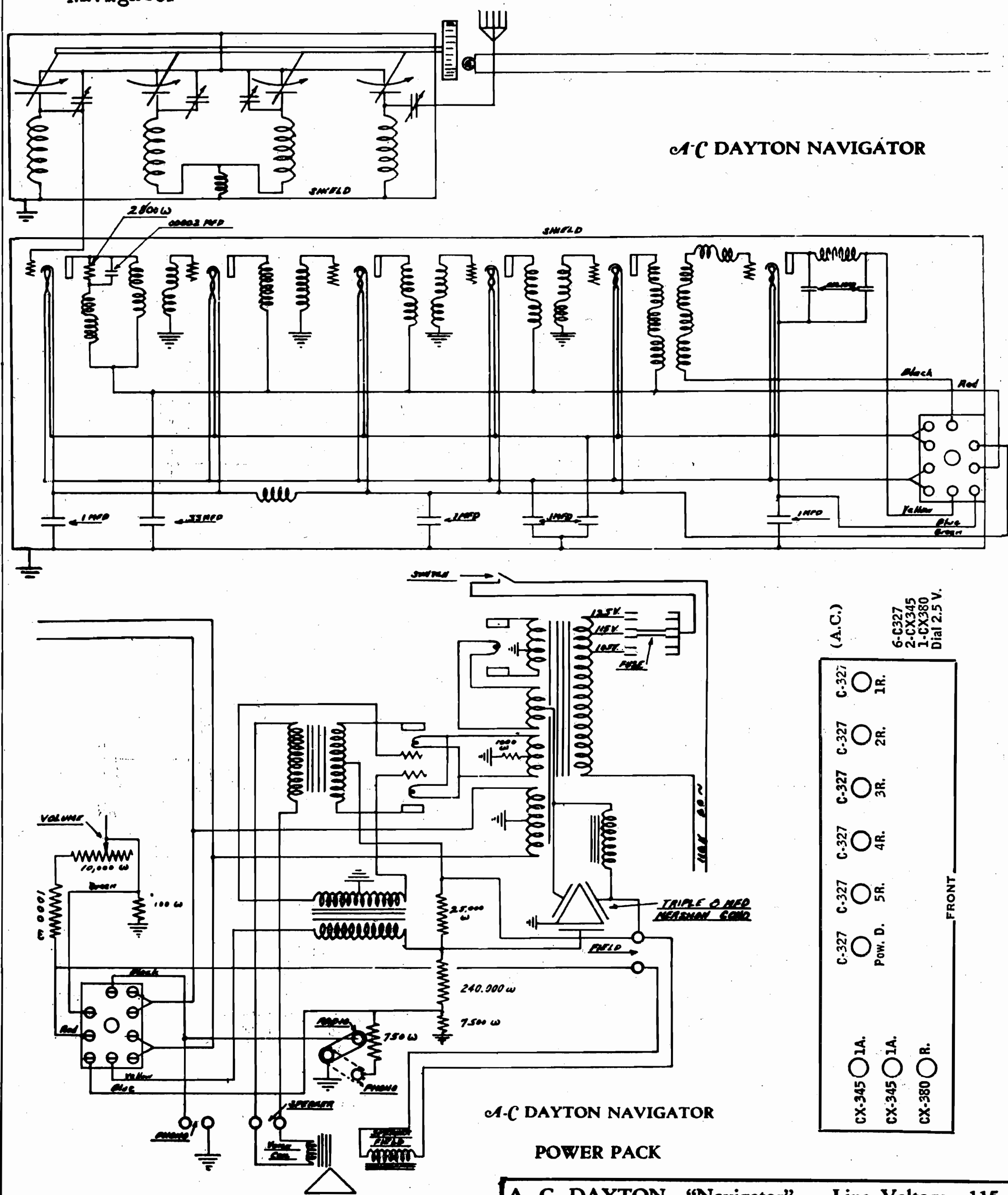
VOLTAGES AT THE VARIOUS SOCKETS

Tube Socket	Plate Volts	Plate Current	Filament Volt	C Bias
1st R. F.	130 V.	1 mil.	2.4 V.	1.5 V.
2nd R. F.	130 V.	4 mils.	1.4 V.	9 V.
3rd R. F.	130 V.	4 mils.	1.4 V.	9 V.
Detector	38 V.	2 mils.	2.4 V.	0 V.
1st A. F.	110 V.	2 mils.	1.4 V.	9 V.
2nd A. F.	350 V.	40 mils.	6.75 V.	63 V.

The above readings can only be taken on a Set Analyzer. They may vary 5% depending on tubes and line voltage.

MODEL "Navigator"

THE A-C DAYTON CO.

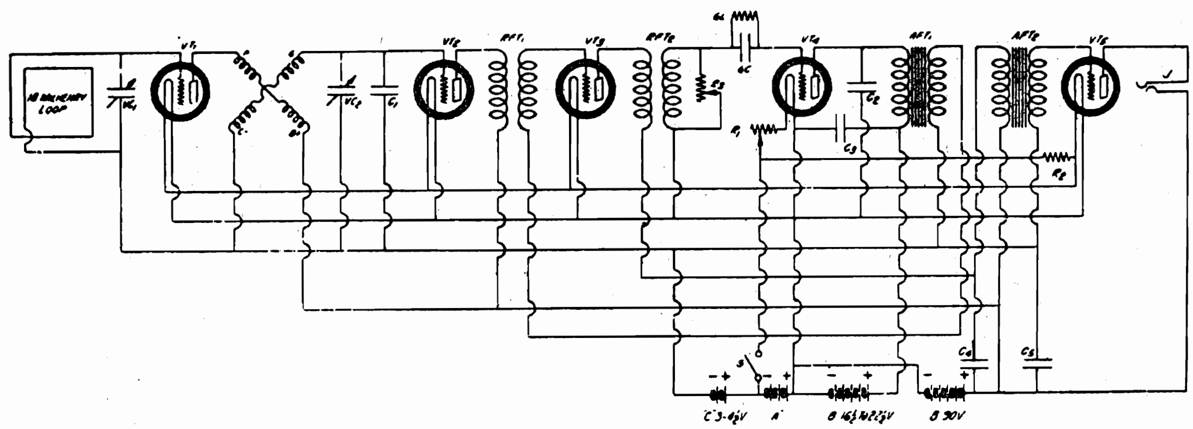


A. C. DAYTON—"Navigator" Line Voltage—115

Tube No in Order (1)	Type of Tube (2)	Position of Tube 1st R.F Det., Etc (3)	Readings, Plug in Socket of Set: Tube Out: A Volts (4)	B Volts (5)	Tube in Tester: A Volts (6)	B Volts (7)	C Volts (Control Grid) (8)	Cathode-Heater Volts (9)	Normal Plate M.A. (10)	Plate M.A. Grid Test (11)	Plate Change M A (12)	Screen Grid Volts (13)
1	227	1st RF	2.5	111	2.4	110	3.5	3.5	5	9	4	-
2	227	2nd RF	2.5	111	2.4	110	3.5	3.5	5	9	4	-
3	227	3rd RF	2.5	111	2.4	110	3.5	3.5	5	9	4	-
4	227	4th RF	2.5	111	2.4	110	3.5	3.5	5	9	4	-
5	227	5th RF	2.5	111	2.4	110	3.5	3.5	5	9	4	-
6	227	Det.	2.5	185	2.4	185	15.0	0	1'	-	-	-
7	245	Audio	2.5	235	2.4	230	50	-	22	26	4	-
8	245	Audio	2.5	235	2.4	230	50	-	28	26	4	-
9	280	Rect.	4.9	-	4.75	-	-	-	85	-	-	-

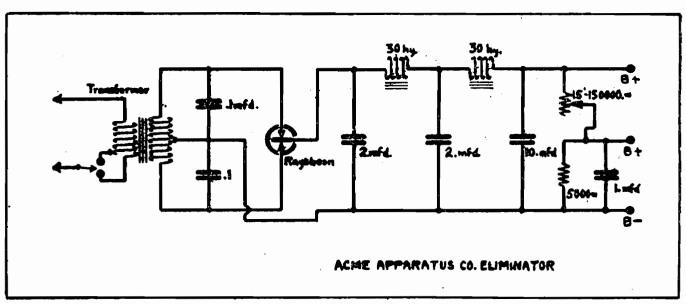
ACME APPARATUS CO.

MODEL 5 Tube Reflex "B" Unit



CONSTANTS FOR ACME 5 TUBE REFLEX (1926)

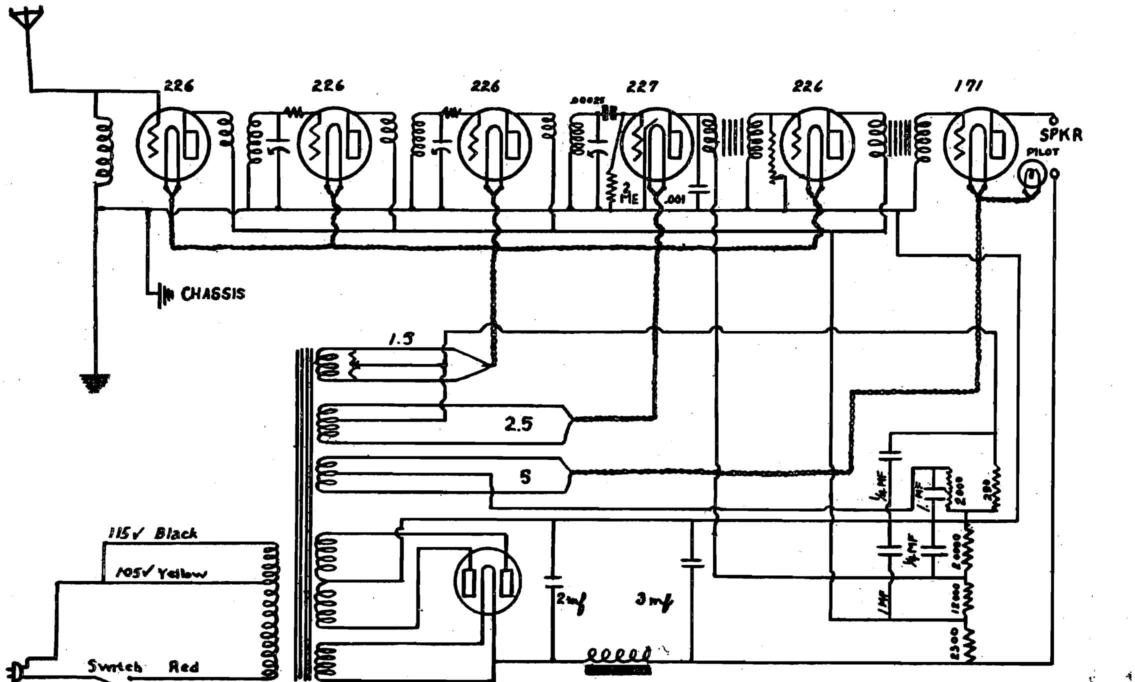
C1	.0004 mfd.	GC	.00025 mfd.
C2	.002 mfd.	GL	.5 to 2 meg
C4	.002 mfd.	R1	6 ohms
C5	1. mfd.	R2	1 ohm
C3	2. mfd.	R3	2000 ohms



ACME APPARATUS CO. "B" ELIMINATOR (1926)

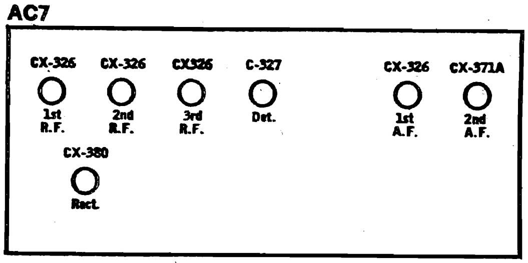
ACME ELECTRIC & MFG. CO.

MODEL AC-7
SG-88

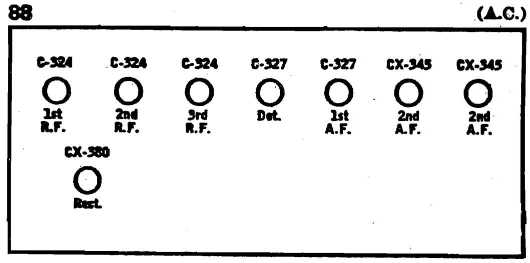


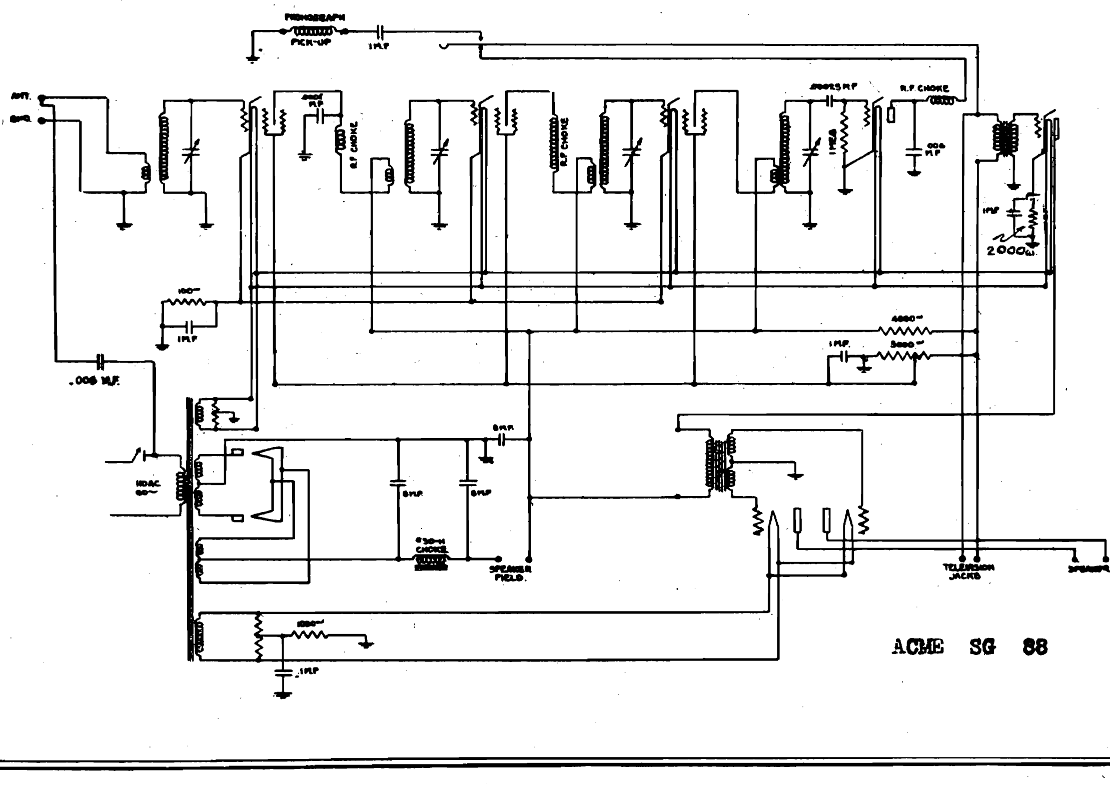
ACME A.C. 7

AC7



88 (A.C.)

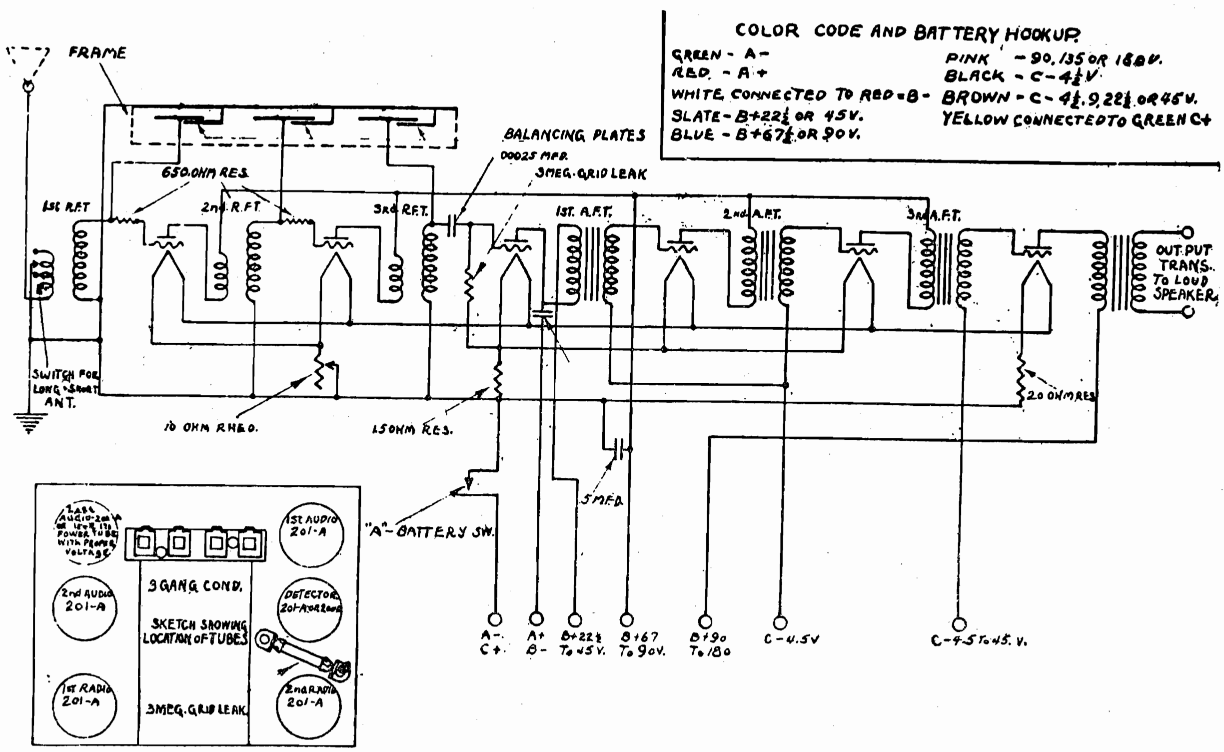




ACME SG 88

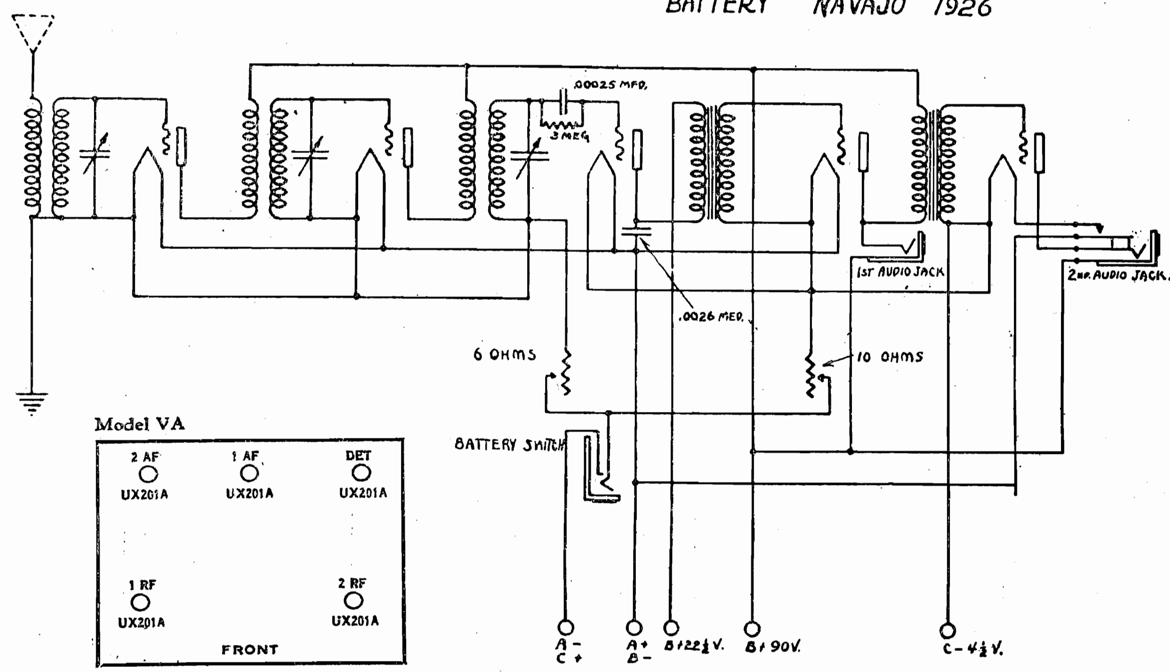
ALL-AMERICAN MOHAWK CORP.

MODEL Navajo
VA
Battery Operated



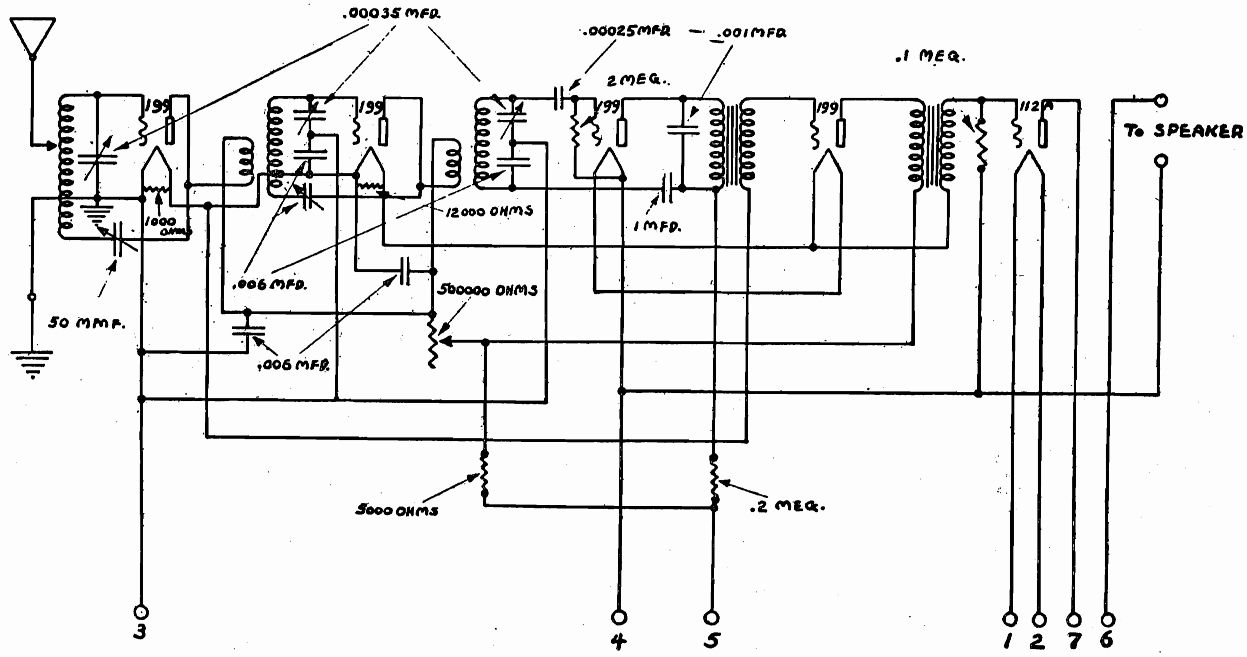
NOTE: R.F. TRANSFORMERS ARE ENCLOSED IN A COPPER SHIELD AND SHIELED TO EACH OTHER

SCHEMATIC CIRCUIT of MOHAWK RECEIVER.
BATTERY NAVAJO 1926



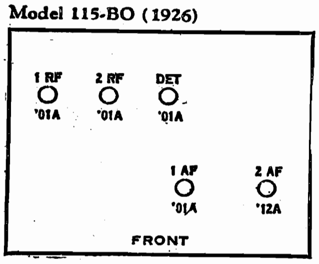
5 TUBE VA CIRCUIT -1925-26.-

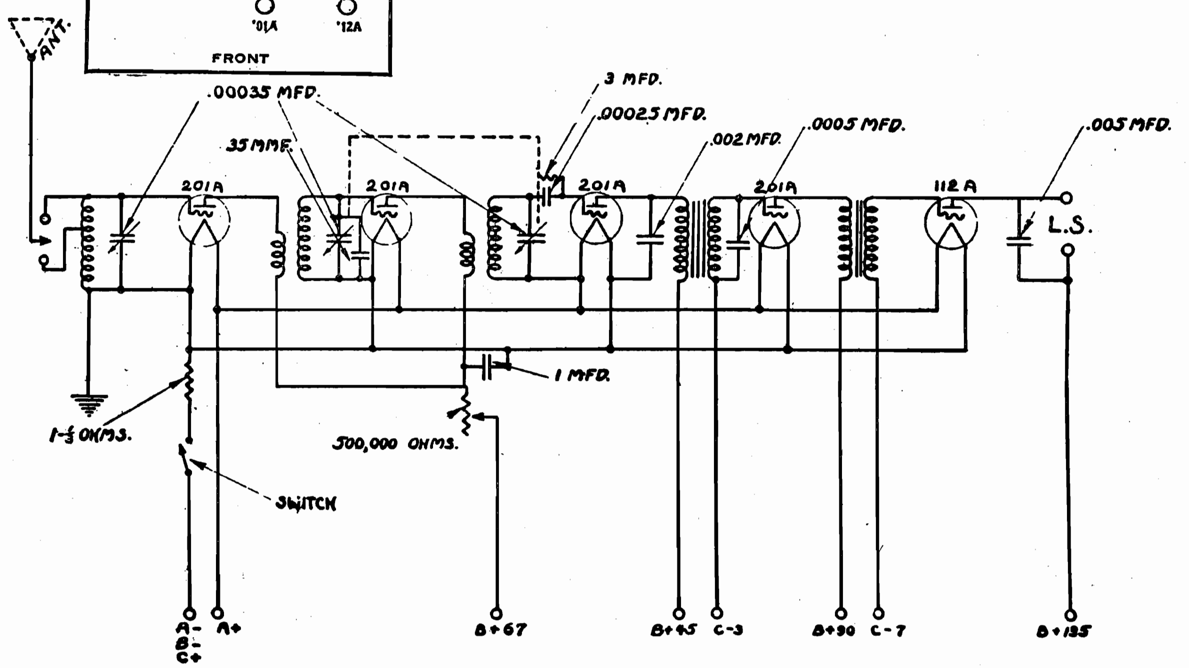
MODEL 115 -1926 **ALL-AMERICAN MOHAWK CORP.**
5 Tube All-Electric
MODEL 115- 1926
5 Tube All-Battery



5 TUBE ALL ELECTRIC - 1926.
MODEL -115

Model 115-BO (1926)

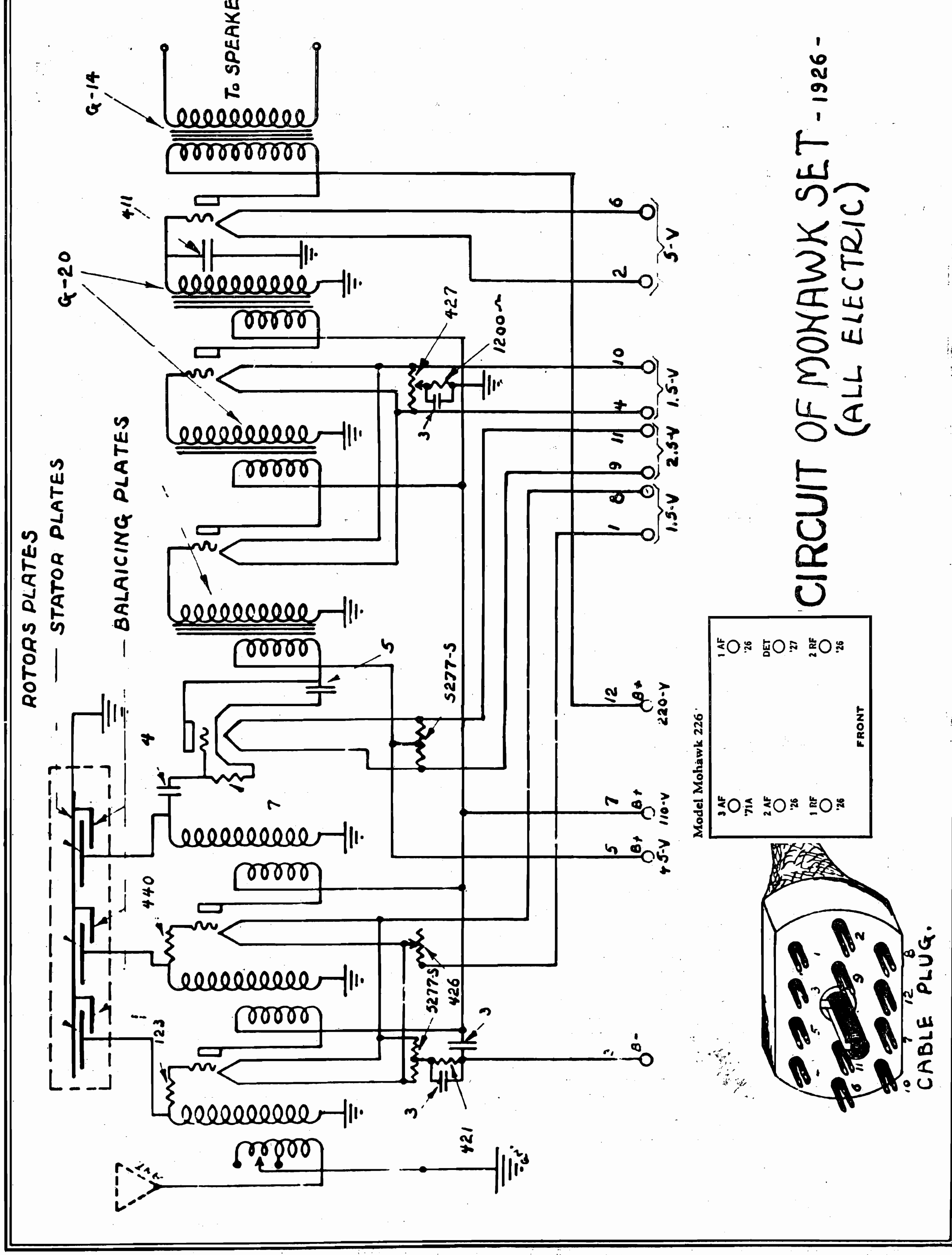




5 TUBE ALL AMERICAN BATTERY SET.
MODEL 115 - 1926-27.

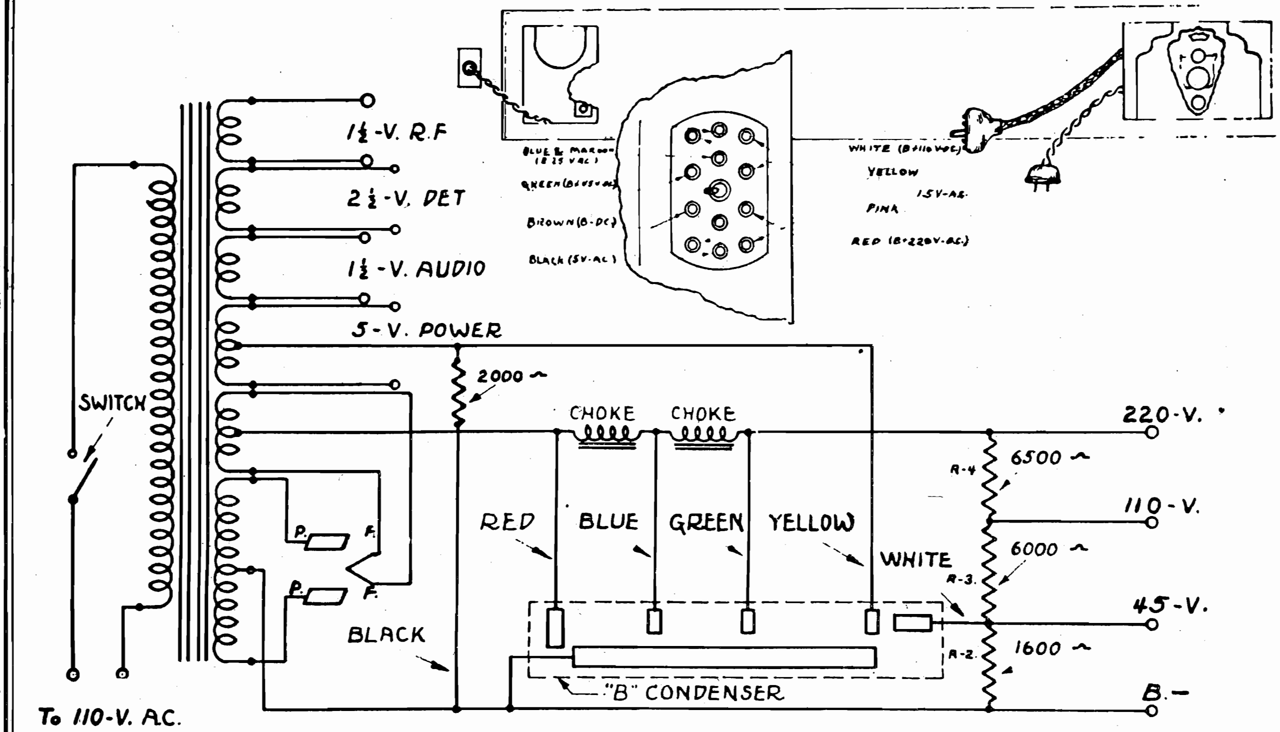
ALL-AMERICAN MOHAWK CORP.

MODEL Mohawk 1926
All-Electric
226 Type
Receiver Chassis

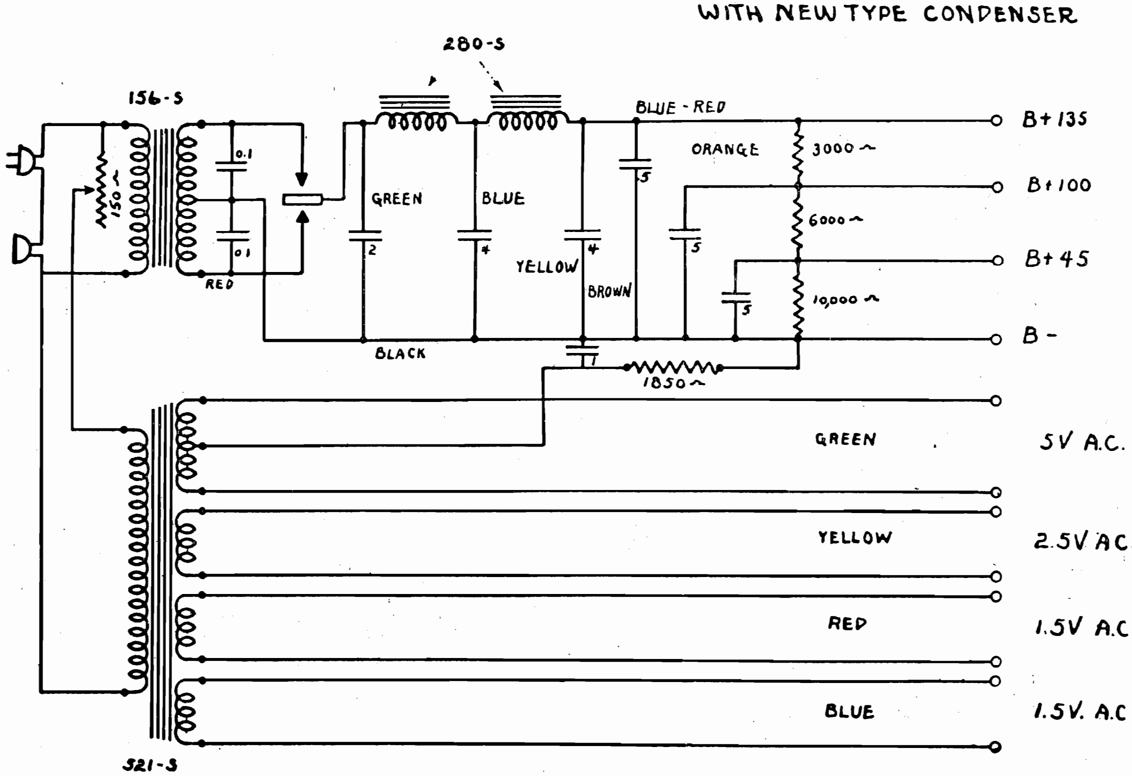


MODEL Mohawk 226
12 Contact
Power Pack
A-10 Eliminator

ALL-AMERICAN MOHAWK CORP.



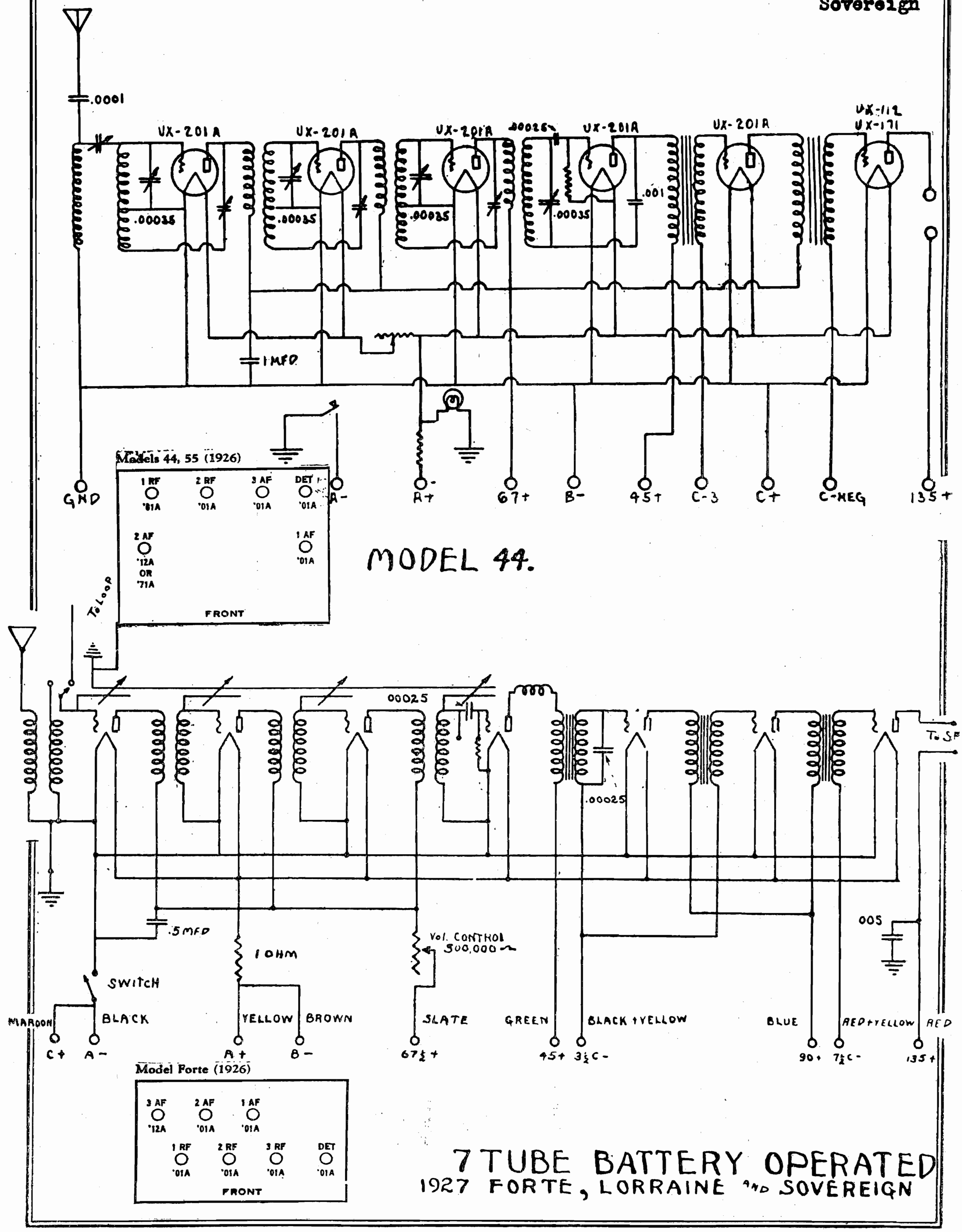
12 CONTACT POWER PACK for Mohawk 226
WITH NEW TYPE CONDENSER



A-10 MOHAWK ELIMINATOR

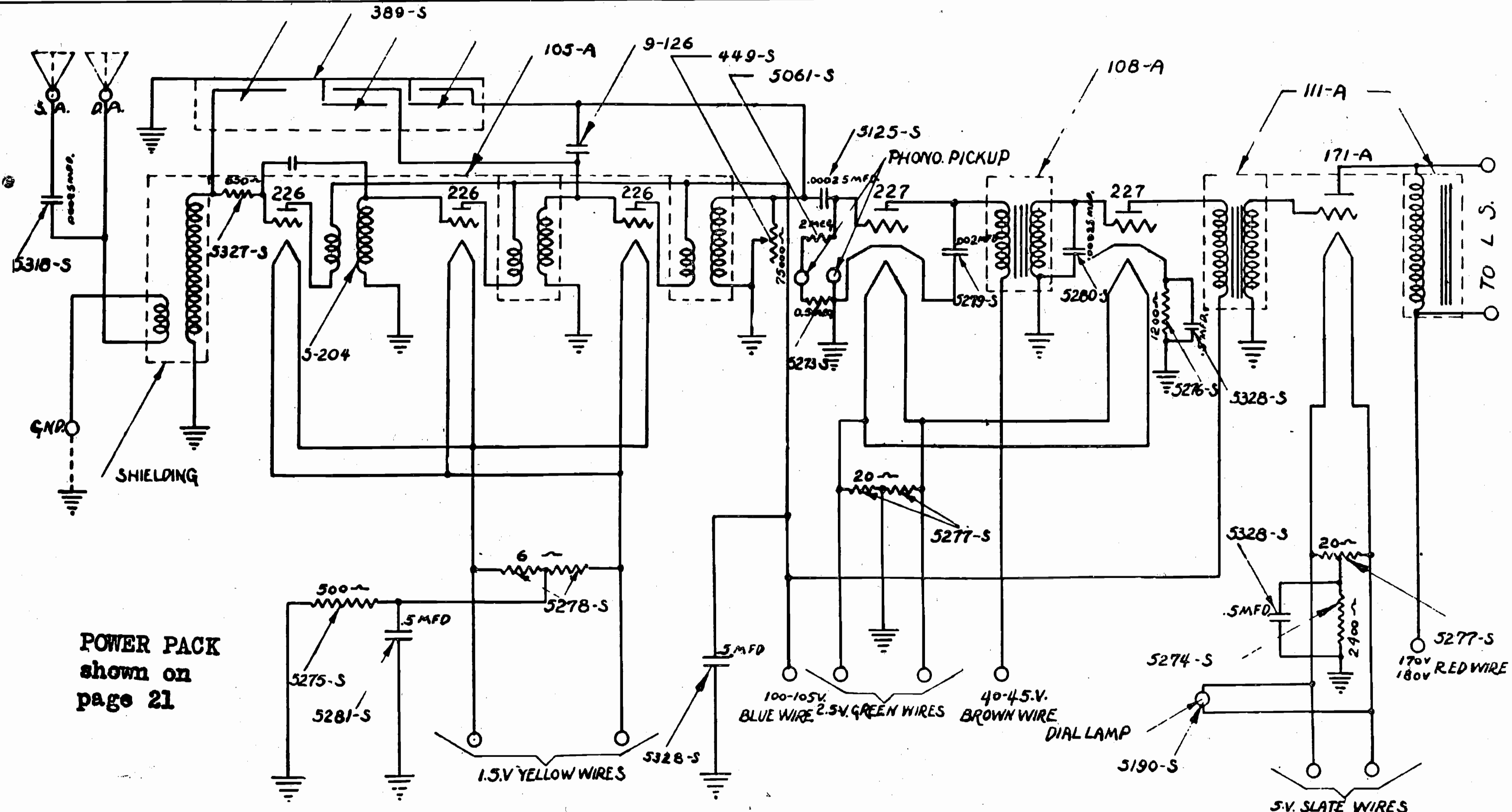
ALL-AMERICAN MOHAWK CORP.

MODEL 44
7 Tube Forte
Lorraine
Sovereign



MODEL 60,61,62,
65,66
Receiver Chassis

ALL-AMERICAN MOHAWK CORP.

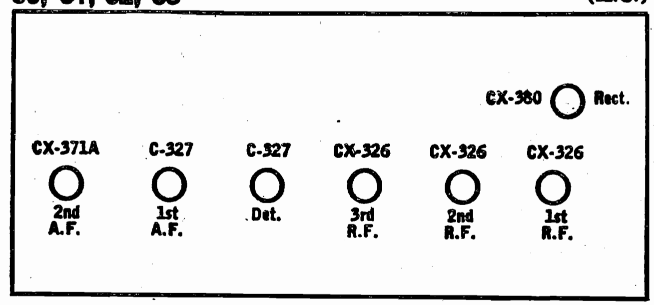


POWER PACK shown on page 21

ALL AMERICAN—Models 60-61-62-65-66
Line Voltage 110:—95-115 Volt Tap:—Volume Control Full

TUBE NO. IN ORDER	TYPE OF TUBE	POSITION OF TUBE 1ST. R.F. DET. ETC.	READINGS, PLUG IN SOCKET OF SET								
			TUBE OUT		TUBE IN TESTER						
			A VOLTS	B VOLTS	A VOLTS	B VOLTS	C VOLTS	CATHODE VOLTS	NORMAL PLATE M.A.	PLATE M.A. GRID TEST	PLATE M.A. CHANGE
1	226	1st.R.F.	1.4	120	1.25	112	8	-	3.2	6.6	3.4
2	226	2nd.R.F.	1.4	120	1.25	112	8	-	3.2	6.6	3.4
3	226	3rd.R.F.	1.4	120	1.25	112	8	-	3.2	6.6	3.4
4	227	Detector	2.4	110	2.20	40	0	0	2.2	2.2	0.0
5	227	1st.A.F.	2.4	120	2.20	112	8	6	3.0	6.4	3.4
6	171A	2nd.A.F.	4.7	180	4.50	155	40	-	15.0	16.5	1.5
7	280	Rectifier	-	-	4.70	-	-	-	19.0	-	-
8											
9											
10											

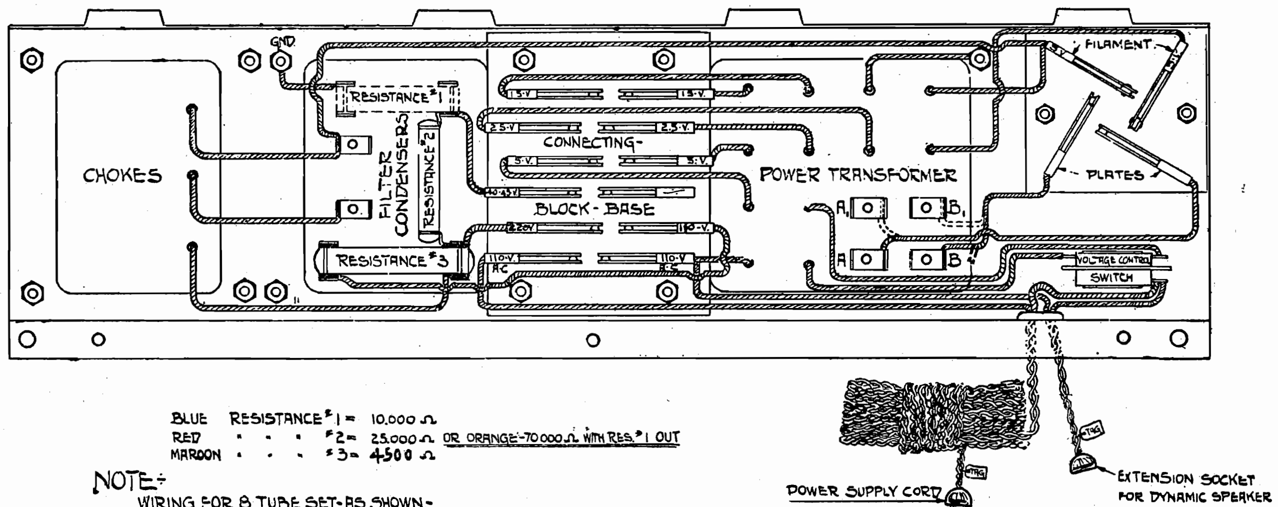
60, 61, 62, 65 **(A.C.)**



3-CX326
2-C327
1-CX371A
1-CX380

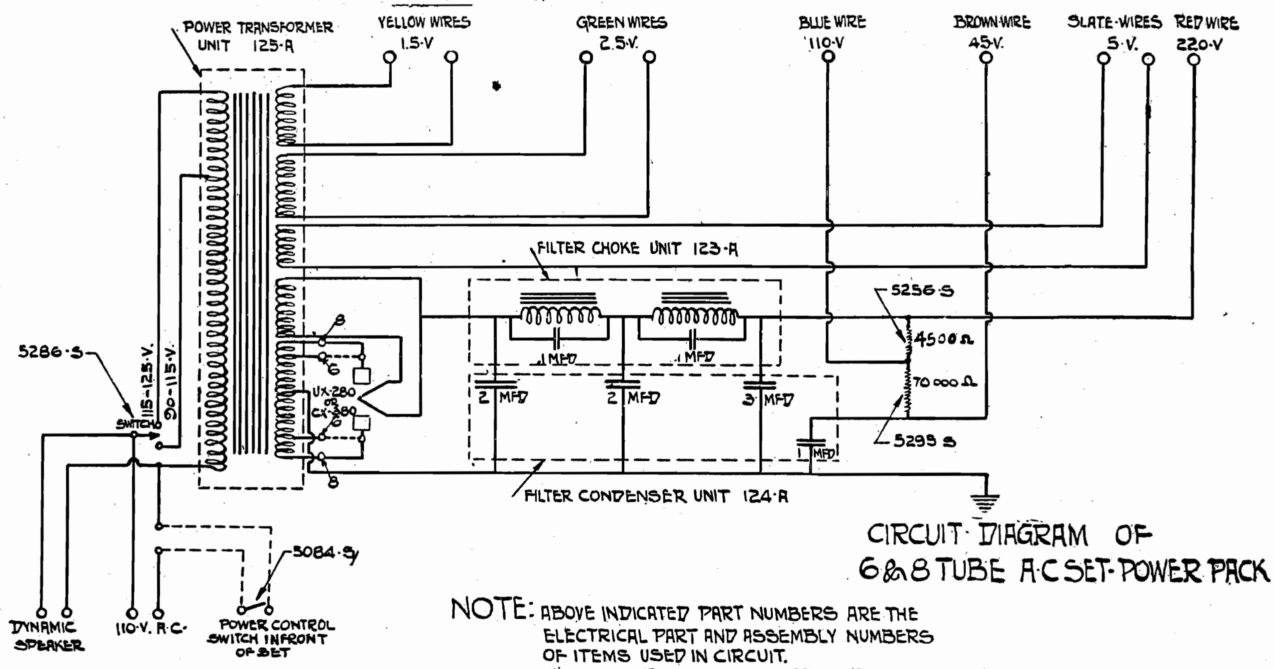
ALL-AMERICAN MOHAWK CORP.

MODEL 60, 61, 62, 65, 66
Power Pack



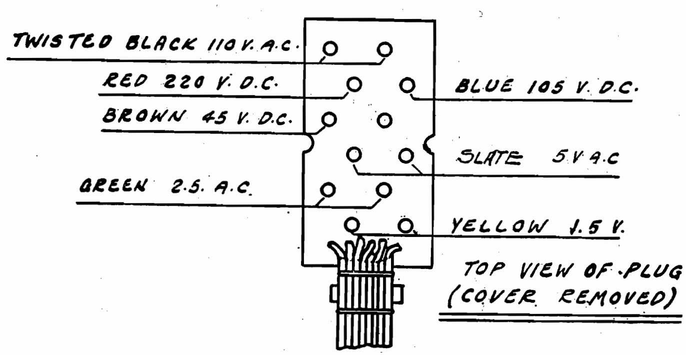
BLUE RESISTANCE #1 = 10.000 Ω
RED " " #2 = 25.000 Ω OR ORANGE-70 000 Ω WITH RES. #1 OUT
MAROON " " #3 = 4500 Ω

NOTE:
WIRING FOR 8 TUBE SET-AS SHOWN-
WIRING FOR 6 TUBE SET- PLATE-WIRE 'A' LEAD TO 'A,'
AND PLATE WIRE 'B' LEAD TO 'B,'



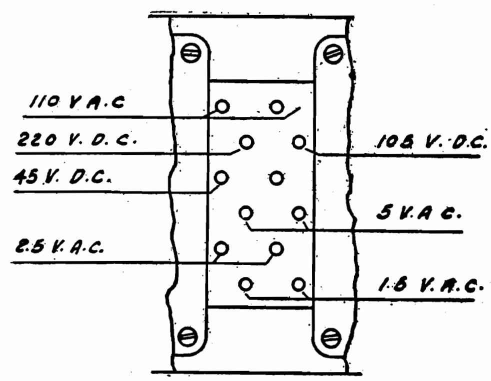
CIRCUIT DIAGRAM OF
6 & 8 TUBE A-C SET-POWER PACK

NOTE: ABOVE INDICATED PART NUMBERS ARE THE ELECTRICAL PART AND ASSEMBLY NUMBERS OF ITEMS USED IN CIRCUIT. WHEN ORDERING PARTS OR ASSEMBLIES SPECIFY THIS NUMBER AS WELL AS NAME OF ITEM



TOP VIEW OF PLUG (COVER REMOVED)

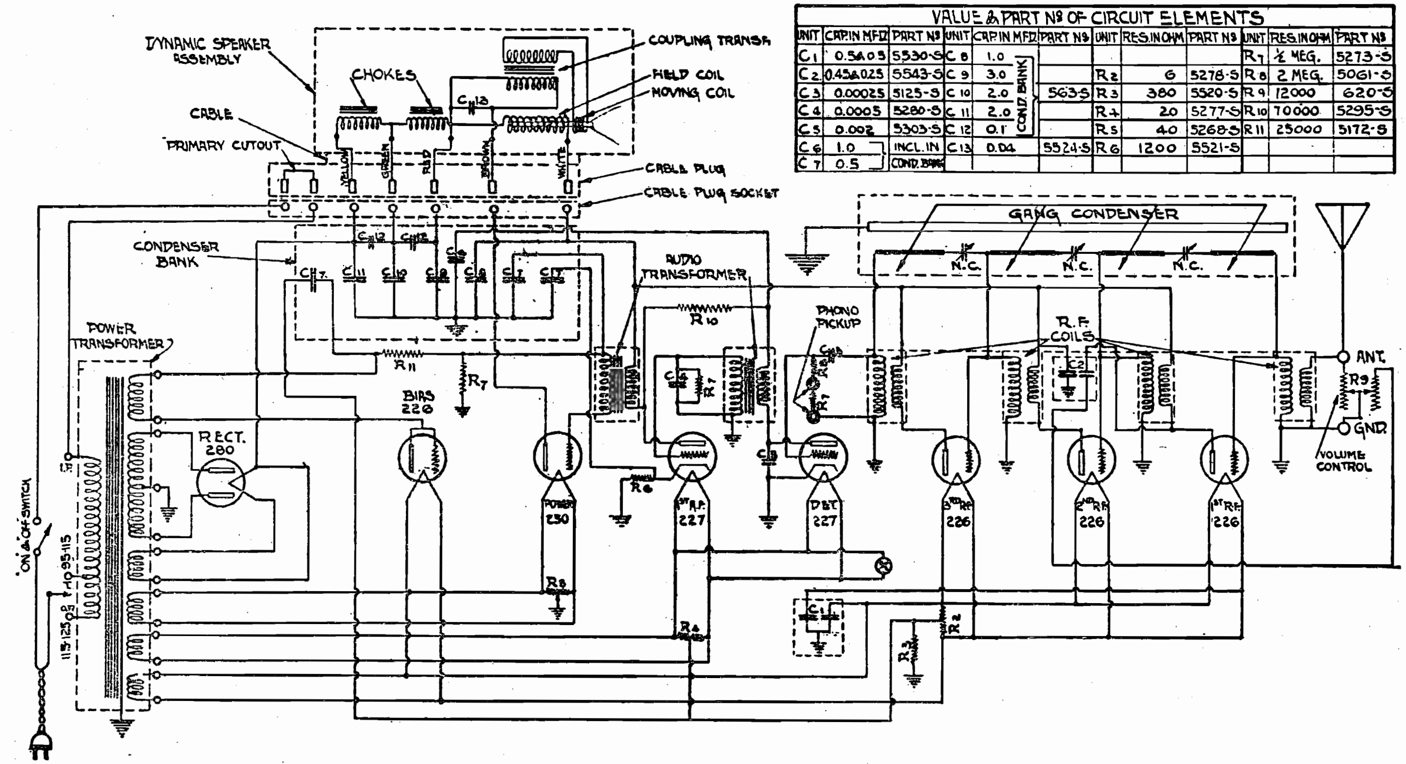
TOP VIEW OF PLUG (COVER REMOVED)



TOP VIEW OF CONNECTING PLUG SOCKET IN POWER PACK

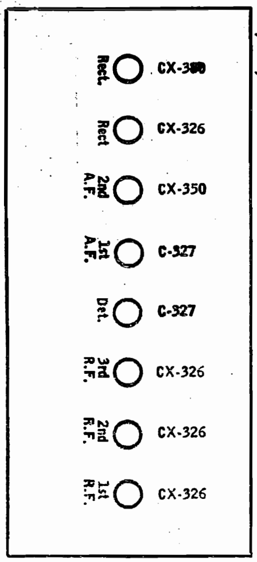
ALL-AMERICAN MOHAWK CORP.

MODEL 70,73,75



VALUE & PART No OF CIRCUIT ELEMENTS											
UNIT	CAP. IN MFD.	PART No	UNIT	CAP. IN MFD.	PART No	UNIT	RES. IN OHM	PART No	UNIT	RES. IN OHM	PART No
C1	0.5 & 0.5	5530-S	C8	1.0 (COND. BANK)					R7	½ MEG.	5273-S
C2	0.45 & 0.25	5543-S	C9	3.0 (COND. BANK)		R2	6	5278-S	R8	2 MEG.	5061-S
C3	0.00025	5125-S	C10	2.0 (COND. BANK)	563-S	R3	380	5520-S	R9	12000	620-S
C4	0.0005	5280-S	C11	2.0 (COND. BANK)		R4	20	5277-S	R10	70000	5295-S
C5	0.002	5303-S	C12	0.1 (COND. BANK)		R5	40	5268-S	R11	25000	5172-S
C6	1.0	INCL. IN COND. BANK	C13	0.04	5524-S	R6	1200	5521-S			
C7	0.5										

70, 73, 75 (A.C.)



4-CX326
2-C327
1-CX350
1-CX380

HUM— If an undue amount of hum is experienced it may be caused by any of the following:—Defective tube in either the detector or first a.f. stage. Center tapped resistors open on one side of filament or heater connection or one-half of center tapped resistor shorted out. Center tap of 20 ohm resistor across 227 heater terminals open. A grounded 226 filament or short circuited grid bias resistor.

The hum will also be increased by a defective 226 bias tube for the 250 power tube, filter or load resistor, or by-pass condensers short circuited or open. The adjustable center tapped resistor on the 250 tubes filament being out of adjustment will likewise cause an increase in the hum level. As the filter circuit is a part of the loud speaker assembly it may be checked for hum trouble by substituting another speaker assembly. The condenser bank and power transformer may be substituted in checking for defects in these units which may cause hum. Generally most causes of hum are defective 227 tubes and improper adjustment of the 250 tube filament center tapped resistor.

Possible causes of hum in the power supply and their remedy will be taken up in the paragraph "Power Unit Servicing". It is important that a good ground connection be employed with this receiver as sometimes the hum level will increase where a poor ground connection is used.

TUBE VOLTAGE READINGS— The following gives the values of the various tube readings which should be obtained: When line voltage is = 110 V. A.C., and the line voltage control switch on power pack is in the 95-115 position: (Note these values will vary slightly.)

R. F. tubes 226-326 type
Filament voltage—1.45 to 1.50, "B" voltage—100 to 120, "C" voltage—7 to 9.

Detector 227-327 type
Heater voltage—2.40 to 2.50, "B" voltage—35 to 50, Cathode Bias, 0., Heater Bias 6-9 plus.

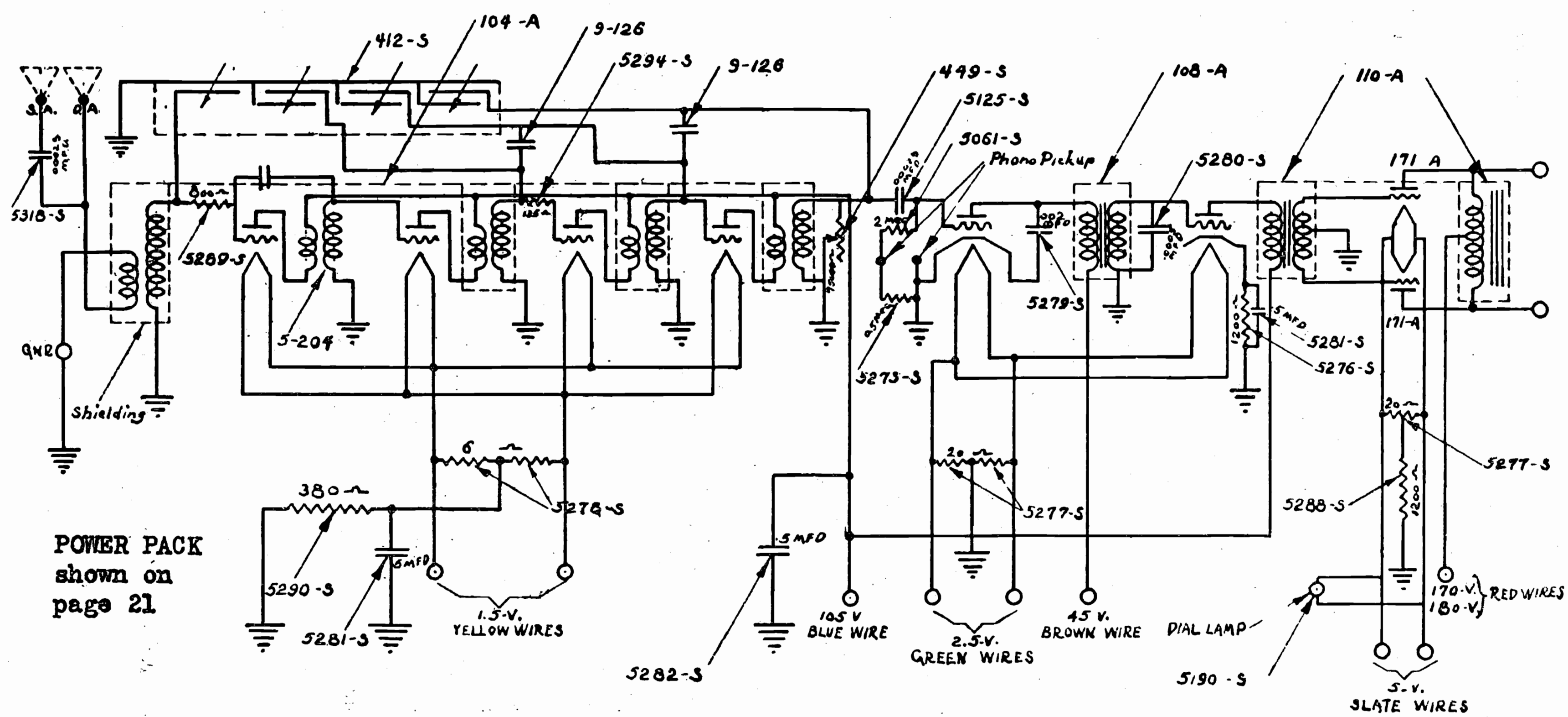
First A.F. Amplifier 227-327 type
Heater voltage—2.40 to 2.50, "B" voltage—100 to 120, Cathode bias—6 to 9, Heater Bias 6-9 plus.

Power Amplfier 250-350
Filament voltage—7.30 to 7.40, "B" voltage—300 to 325 "C" voltage—52 to 56.

Bias Tube
Filament voltage 1.4 to 1.50.

ALL-AMERICAN MOHAWK CORP.

MODEL 80, 83, 84, 85, 86, 88
Receiver Chassis

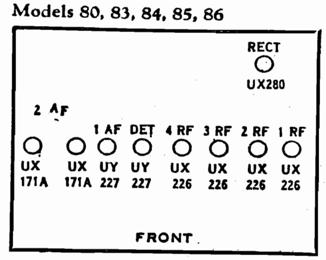


POWER PACK shown on page 21

ALL AMERICAN—Models 80-83-84-85-86-88
Line Voltage 110:—95-115 Volt Tap:—Volume Control Full—2nd A. F. Stage—2 Tubes Push Pull

Tube No. in Order	Type of Tube	Position of Tube 1st. R.F., Det., Etc.	Tube Out: A Volts	Tube Out: B Volts	Tube in Tester: A Volts	Tube in Tester: B Volts	Tube in Tester: C Volts	Cathode Volts	Normal Plate M.A.	Plate M.A. Grid Test	Plate M.A. Change
1	226	1st.R.F.	1.4	120	1.25	112	9	-	3.5	7.3	3.8
2	226	2nd.R.F.	1.4	120	1.25	112	9	-	3.5	7.3	3.8
3	226	3rd.R.F.	1.4	120	1.25	112	9	-	3.5	7.3	3.8
4	226	4th.R.F.	1.4	120	1.25	112	9	-	3.5	7.3	3.8
5	227	Detector	2.4	110	2.20	40	0	-	2.2	2.2	0
6	227	1st A.F.	2.4	120	2.20	112	0	7	4.4	6.4	2.0
7	171A	2nd.A.F.	4.7	180	4.50	162	42	-	16.0	18.0	2.0
8	171A	2nd.A.F.	4.7	180	4.50	162	42	-	16.0	18.0	2.0
9	280	Rectifier	-	-	4.70	-	-	-	20.0	-	-
10											

Models 80, 83, 84, 85, 86

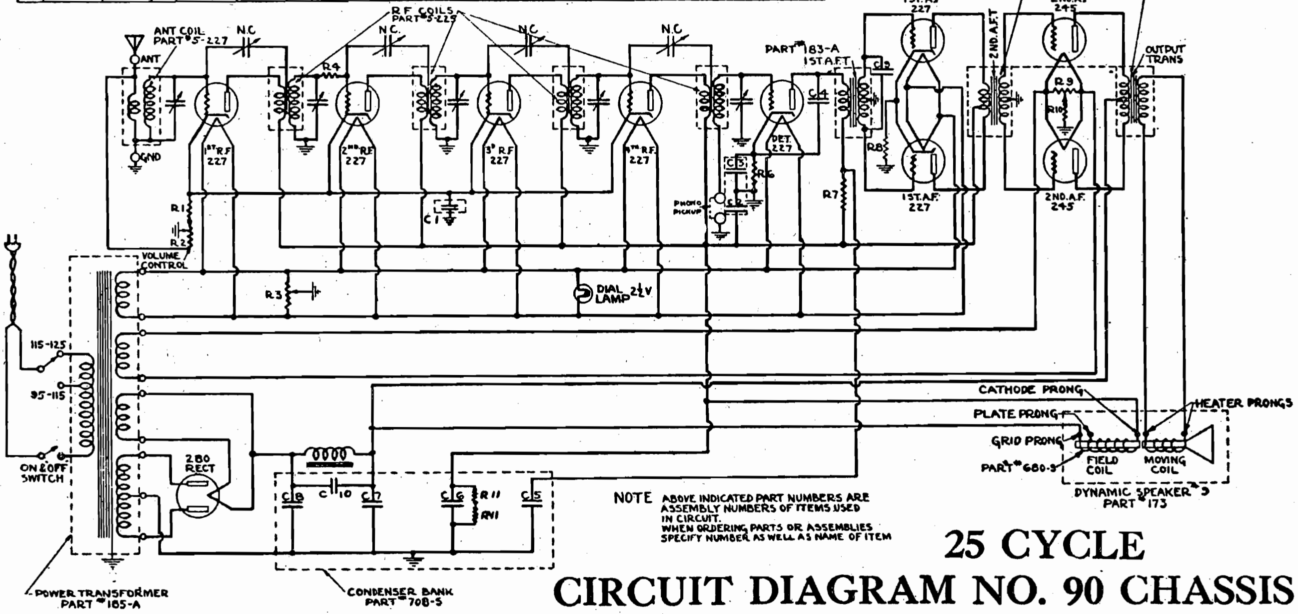


MODEL 90
25 Cycle

ALL-AMERICAN MOHAWK CORP.

182-W

VALUE AND PART Nº OF CIRCUIT ELEMENTS																	
UNIT	CAP IN MFD	PART Nº	UNIT	CAP IN MFD	PART Nº	UNIT	CAP IN MFD	PART Nº	UNIT	RES IN OHMS	PART Nº	UNIT	RES IN OHMS	PART Nº	UNIT	RES IN OHMS	PART Nº
C1	0.1	5593-5	C5	1.0 COND BANK		C9	0.00025	5125-5	R1	380	5520-5	R5	100	5594-5	R9	20	5277-5
C2	0.5 ONE	5592-5	C6	1.0	708-5	C10	0.5	5612-5	R2	10000	731-5	R6	10000	5170-5	R10	1000	5559-5
C3	0.5 UNIT	5592-5	C7	1.0					R3	20	5277-5	R7	70000	5295-5	R11	6000	5568-5
C4	0.002	5596-5	C8	2.0					R4	1500	6004-5	R8	1000	6005-5			



25 CYCLE
CIRCUIT DIAGRAM NO. 90 CHASSIS

VOLTAGE READINGS.

Type of Tube	Position of Tube	Tube in Tester A Volts	B Volts	C Volts	Cathode-Heater Volts	Normal Plate M. A.
227	1 R. F.	2.3	100	6.25	6.0	3.5
227	2 R. F.	2.4	100	5.50	5.5	3.5
227	3 R. F.	2.3	95	6.25	5.5	3.5
227	4 R. F.	2.4	100	6.25	5.5	3.5
227	DET.	2.3	56	5.00	5.0	0.5
227	1 P. P.	2.4	90	5.00	5.0	3.5
227	1 P. P.	2.4	90	5.00	6.0	3.5
245	2 P. P.	2.2	210	42.00		24.0
245	2 P. P.	2.2	210	42.00		24.0
280	RECT.	4.5				38 x 2

SOCKET LAYOUT SAME AS NO. MODEL 90 - 60 CYCLE

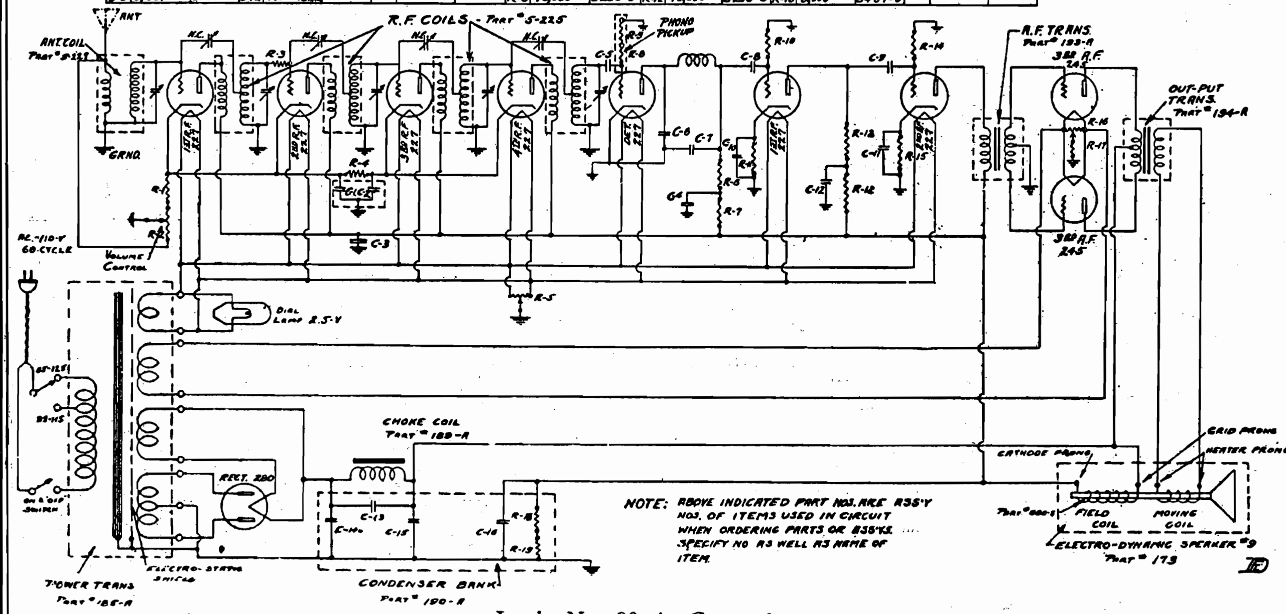
ALL-AMERICAN MOHAWK CORP.

MODEL 90
60 Cycle

180-W

VALUE AND PART NUMBER OF CIRCUIT ELEMENTS

UNIT	CAP IN MFD	PART No	UNIT	CAP IN MFD	PART No	UNIT	CAP MFD	PART No	UNIT	RES IN OHMS	PART No	UNIT	RES IN OHMS	PART No	UNIT	RES IN OHMS	PART No	UNIT	RES IN OHMS	PART No
C-1	0.1 } ONE UNIT	5593-S	C-7	0.001	5124-S	C-13	0.1 } COND. BANK	190-A	R-1	380	5520-S	R-7	70,000	5295-S	R-13	25,000	5172-S	R-19	6,000	5407-S
C-2	0.1	5593-S	C-8	0.01	5603-S	C-14	2.0		R-2	10,000	731-S	R-8	2 Megohms	5061-S	R-14	0.5 Megohm	5221-S			
C-3	0.5 } ONE UNIT	5592-S	C-9	0.01	5603-S	C-15	2.0		R-3	1,500	6004-S	R-9	0.5 "	5221-S	R-15	2,400	5274-S			
C-4	0.5	5592-S	C-10	0.5 }		C-16	2.0		R-4	100	5594-S	R-10	0.5 "	5221-S	R-16	20	5277-S			
C-5	0.00025	5125-S	C-11	0.5					R-5	20	5277-S	R-11	2400	5274-S	R-17	1,000	5559-S			
C-6	0.001	5124-S	C-12	1.0 } COND. BANK					R-6	70,000	5295-S	R-12	70,000	5295-S	R-18	6,000	5407-S			

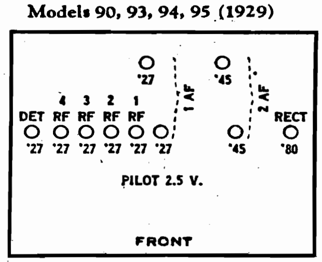


Lyric No. 90 A. C. receiver
—60 CYCLE

TUBE VOLTAGE AND CURRENT READINGS.
Below is given a standard set of readings for the tubes of the Lyric A. C. No. 90 receiver, which will serve as a reference in tube voltage and plate current readings:

Type of Tube	Position of Tube	Tube Out A Volts	Tube Out B Volts	Tube in Tester A Volts	Tube in Tester B Volts	Tube in Tester C Volts	Cathode-Heater Volts	Normal Plate
227	1 R. F.	2.45	120	2.40	114	6.5	6.5	5.3
227	2 R. F.	2.45	120	2.40	115	6.5	6.5	4.6
227	3 R. F.	2.45	120	2.40	113	7.5	7.5	5.8
227	4 R. F.	2.45	120	2.40	113	7.5	7.5	5.9
227	DET.	2.45	84	2.40	16	.5	.0	.7
227	1 A. F.	2 45	94	2.40	30	.5	2.5	1.0
227	2 A. F.	2.45	128	2.40	106	1.5	7.0	3.6
245	P. P.	2.55	256	2.45	232	45.0		23.0
245	P. P.	2.55	256	2.45	232	45.0		23.0
280	RECT.	5.30		4.90				78.0

Models 90, 93, 94, 95 (1929)

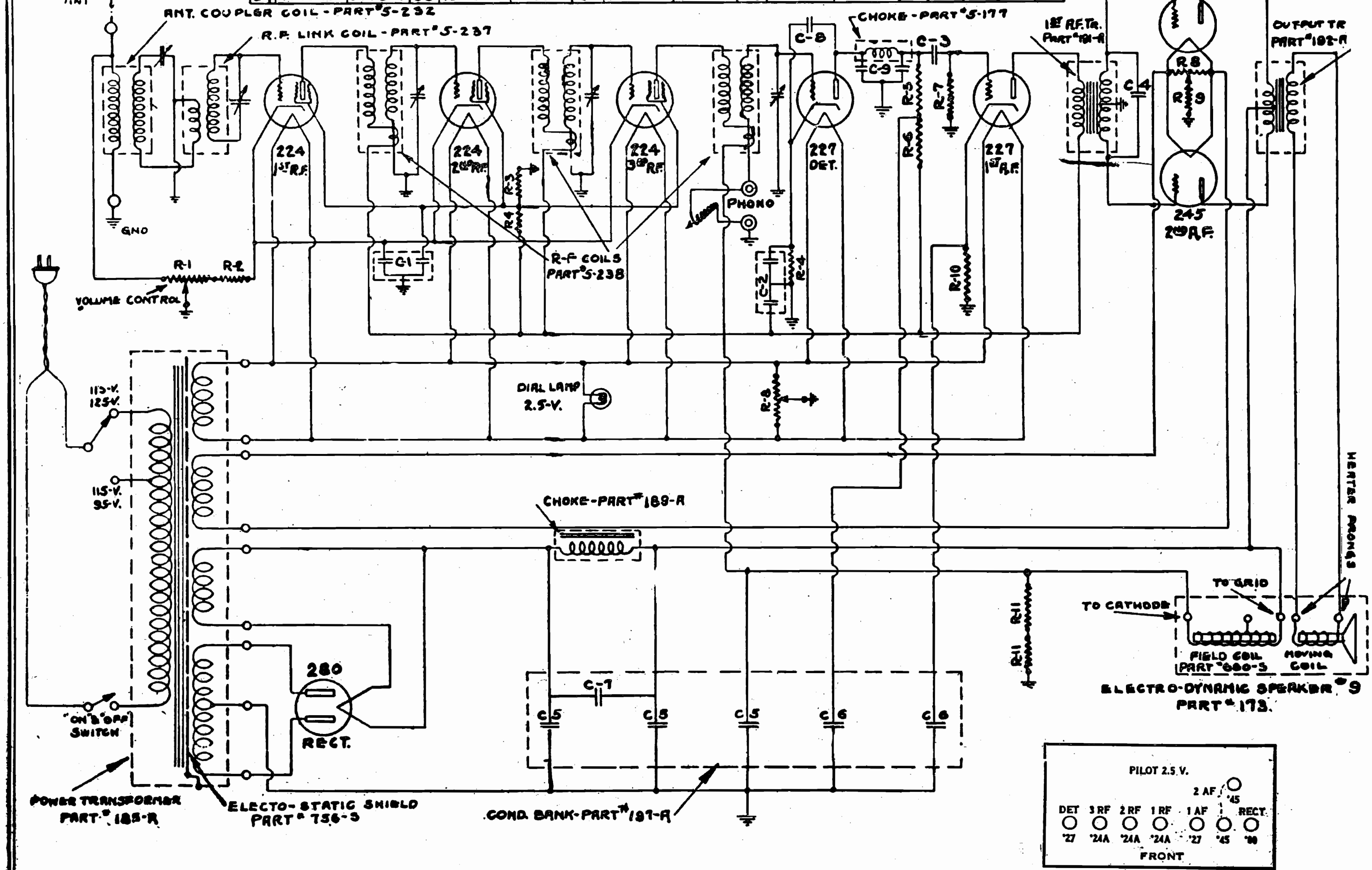


MODEL 96
60 Cycle

ALL-AMERICAN MOHAWK CORP.

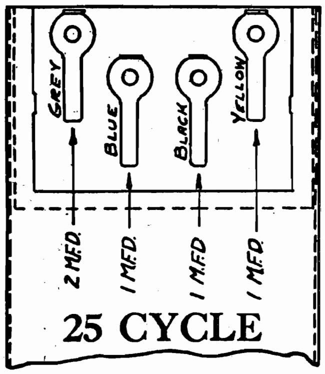
VALUE AND PART No OF CIRCUIT ELEMENTS

UNIT	CAP. IN MFD	PART No	UNIT	CAP. IN MFD.	PART No	UNIT	RES. IN OHM	PART No	UNIT	RES. IN OHM	PART No	UNIT	RES. IN OHM	PART No
C1	Two-.5	5328-S	C5	2 } Cond.		R1	10000	731-S	R5	70000	5295-S	R9	1000	5559-S
C2	Two-.5	5392-S	C6	1 } Bank	187-A	R2	500	5362-S	R6	25000	5172-S	R10	2000	5595-S
C3	.01	5603-S	C7	.1 }		R3	25000	5172-S	R7	5 MEG.	5273-S	R11	6000	5568-S
C4	.00025	5125-S	C8	.002	5596-S	R4	10000	5170-S	R8	20	5277-S	C-9	.001	5124-S

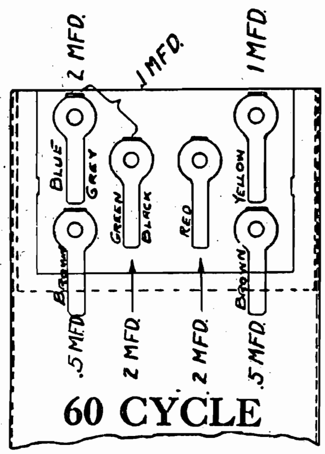


ALL-AMERICAN MOHAWK CORP.

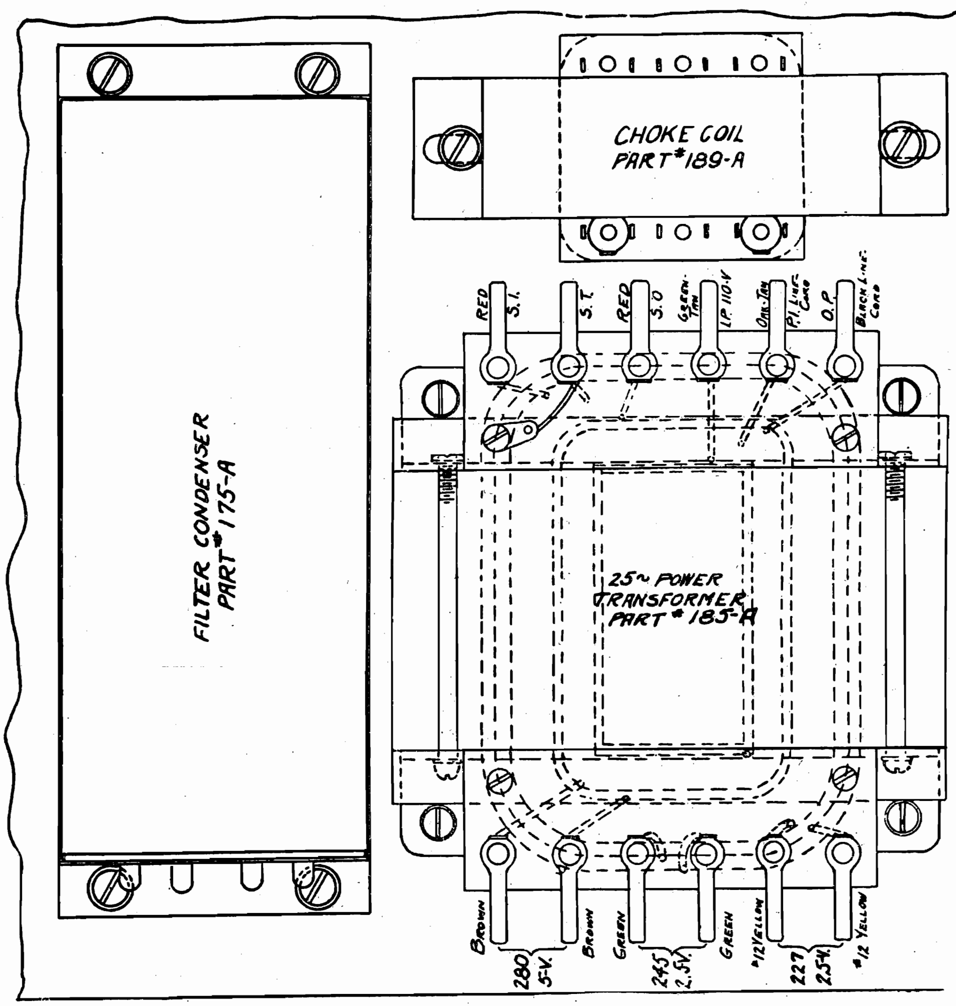
MODEL 90
Data



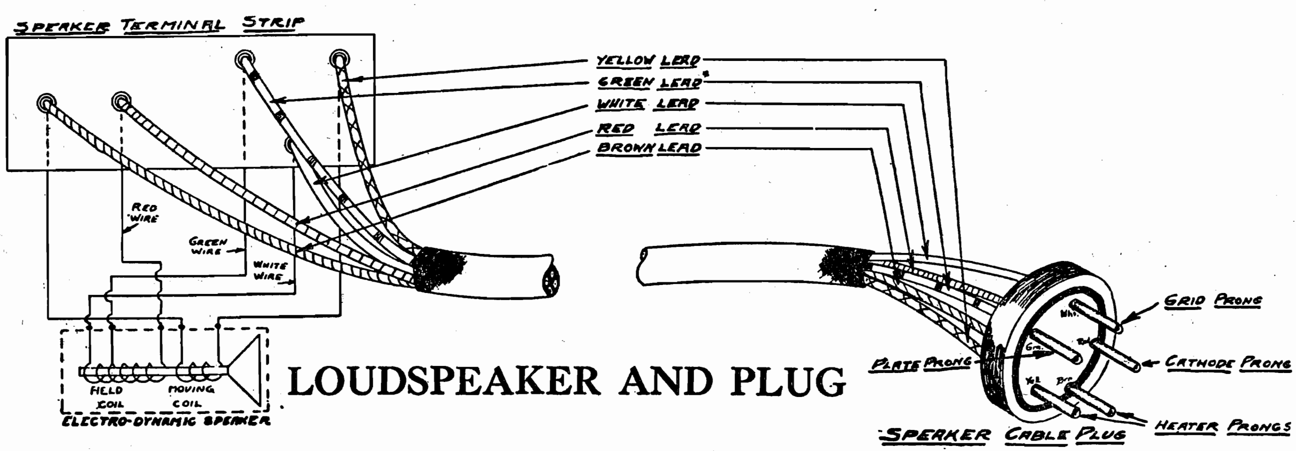
FRONT VIEW OF CONDENSER TERMINALS



FRONT VIEW OF CONDENSER TERMINALS

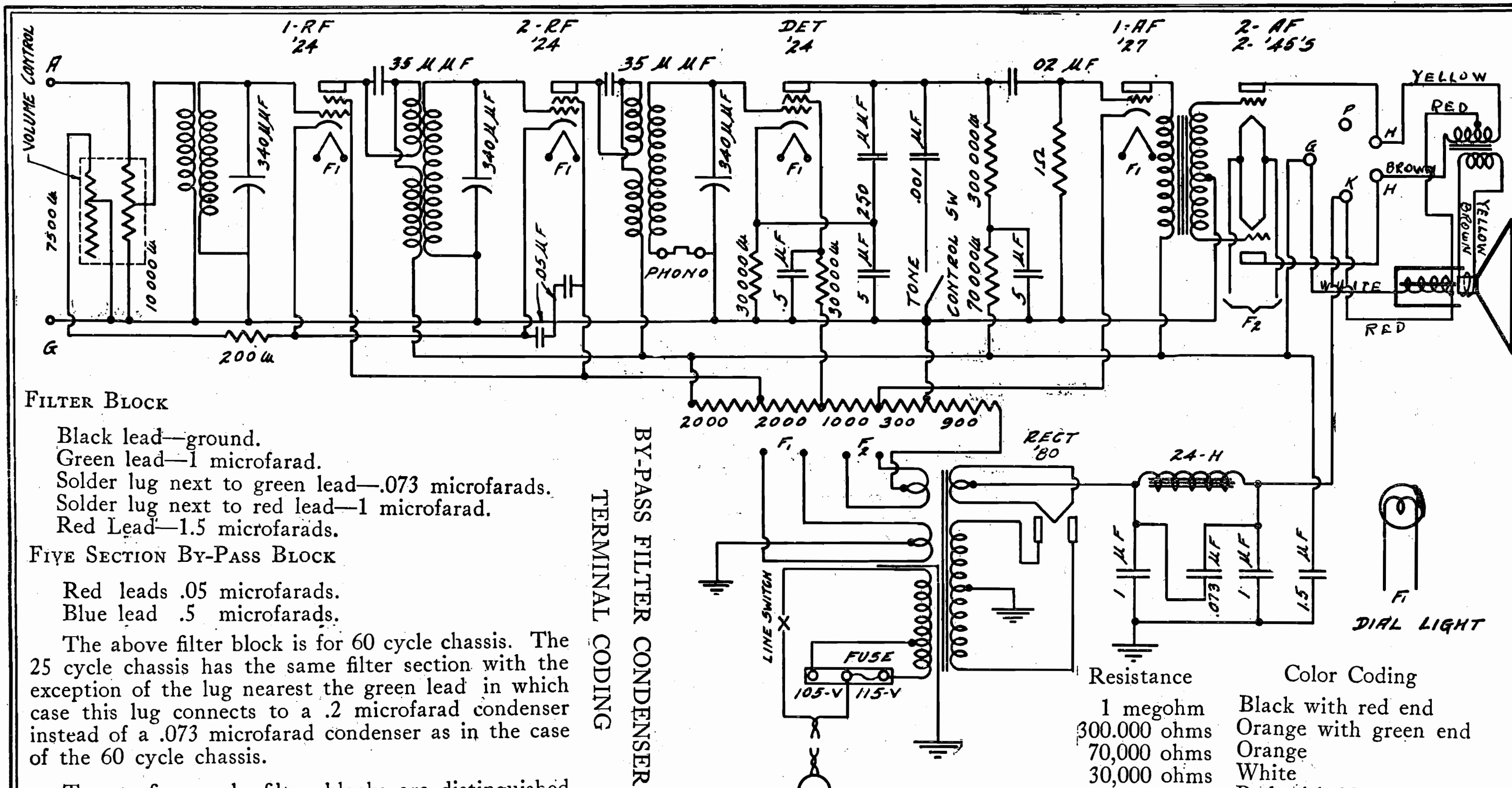


POWER PACK TERMINALS NO. 90 CHASSIS



LOUDSPEAKER AND PLUG

MODEL LYRIC D **ALL-AMERICAN MOHAWK CORP.**



Resistance	Color Coding
1 megohm	Black with red end
300.000 ohms	Orange with green end
70,000 ohms	Orange
30,000 ohms	White
200 ohms	Red with black end

BY-PASS FILTER CONDENSER TERMINAL CODING

Filter Block

Black lead—ground.
Green lead—1 microfarad.
Solder lug next to green lead—.073 microfarads.
Solder lug next to red lead—1 microfarad.
Red Lead—1.5 microfarads.

Five Section By-Pass Block

Red leads .05 microfarads.
Blue lead .5 microfarads.

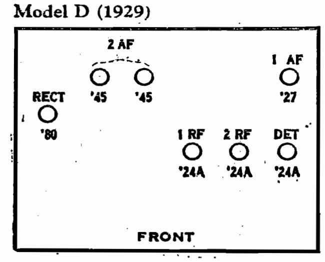
The above filter block is for 60 cycle chassis. The 25 cycle chassis has the same filter section with the exception of the lug nearest the green lead in which case this lug connects to a .2 microfarad condenser instead of a .073 microfarad condenser as in the case of the 60 cycle chassis.

Twenty-five cycle filter blocks are distinguished from sixty cycle blocks by the green dot on the terminal strip at the bottom.

Below is a standard list of voltage readings for the tubes of the LYRIC AC Model D receiver:

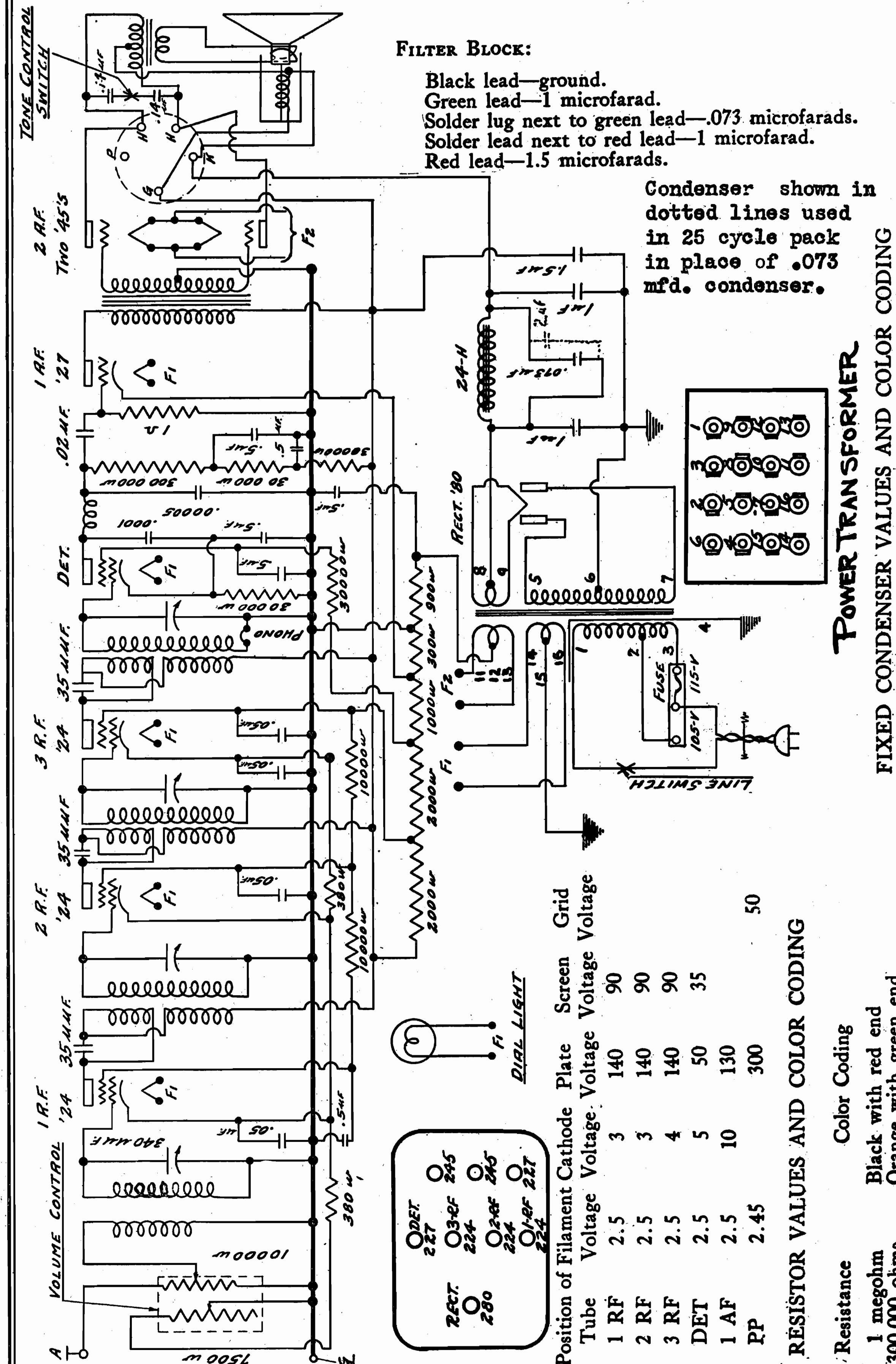
Type of Tube	Position of Tube	Filament Voltage	Cathode Voltage	Plate Voltage	Screen Voltage	Grid Voltage
224	1 RF	2.5	1.6	140	90	
224	2 RF	2.5	1.6	140	90	
224	DET	2.5	5	50	35	
227	1 AF	2.5	10	130		
245	PP	2.45		300		50
245	PP	2.45		300		50

Model D (1929)



ALL-AMERICAN MOHAWK CORP.

MODEL H



FILTER BLOCK:

Black lead—ground.
Green lead—1 microfarad.
Solder lug next to green lead—.073 microfarads.
Solder lead next to red lead—1 microfarad.
Red lead—1.5 microfarads.

Condenser shown in dotted lines used in 25 cycle pack in place of .073 mfd. condenser.

Position of Tube	Filament Voltage	Cathode Voltage	Plate Voltage	Screen Voltage	Grid Voltage
1 RF	2.5	3	140	90	
2 RF	2.5	3	140	90	
3 RF	2.5	4	140	90	
DET	2.5	5	50	35	
1 AF	2.5	10	130		
PP	2.45		300		50

RESISTOR VALUES AND COLOR CODING

Resistance	Color Coding
1 megohm	Black with red end
300,000 ohms	Orange with green end
30,000 ohms	White
10,000 ohms	Blue
380 ohms	Blue with black end

FIXED CONDENSER VALUES AND COLOR CODING

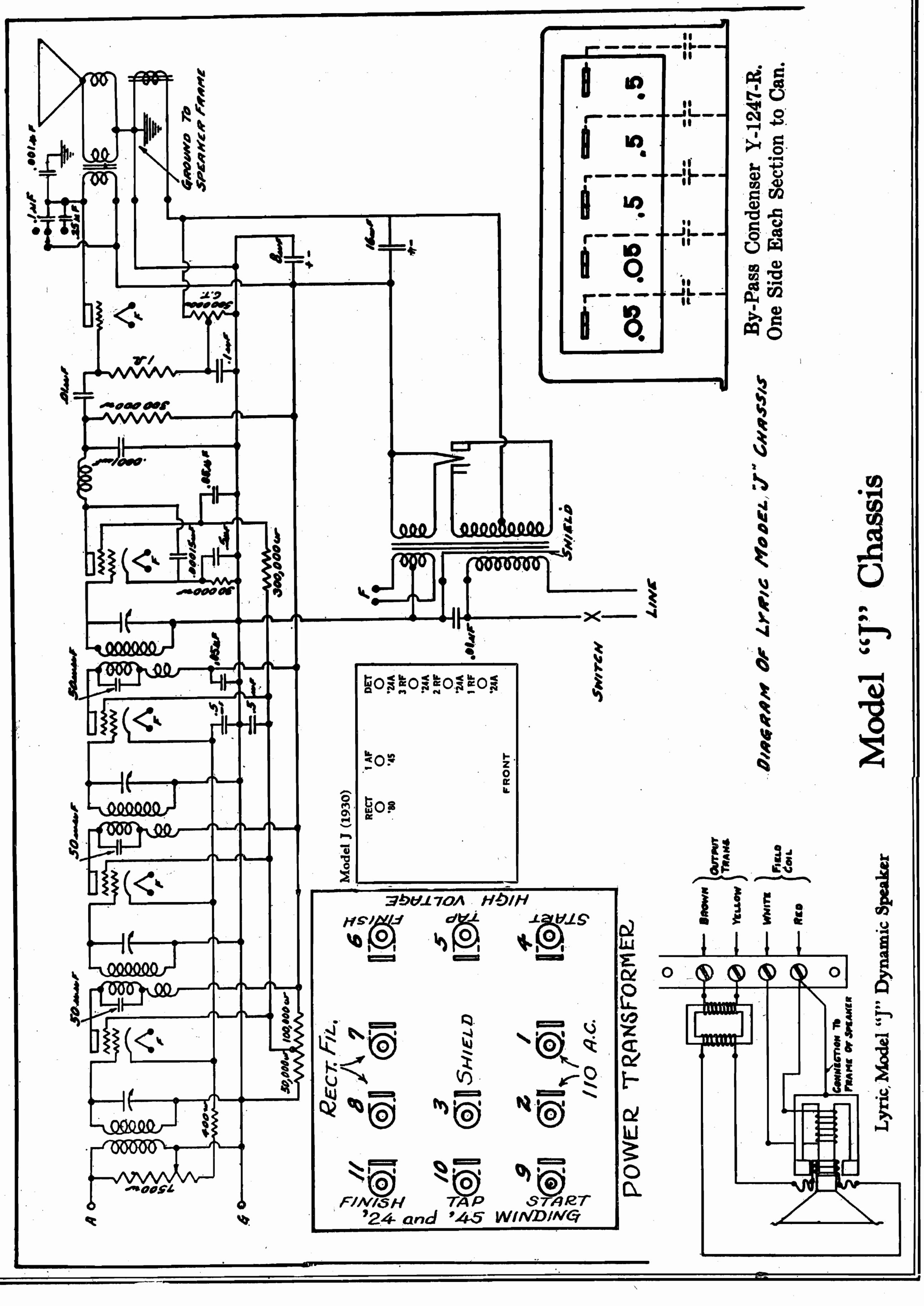
Capacity	Color Coding
35 micro-microfarads	Grey dot
50 micro-microfarads	Blue dot and white dot
100 micro-microfarads	Orchid dot

FIVE SECTION BY-PASS BLOCK, LEAD TYPE:

Red leads .05 microfarads.
Blue lead .5 microfarads.

MODEL "J"
Schematic

ALL-AMERICAN MOHAWK CORP.



ALL-AMERICAN MOHAWK CORP.

MODEL "J"
Data

Model "J" Chassis

TECHNICAL DATA

The following table shows normal voltages to be found on the LYRIC A. C. Model "J" receiver:

Type of Tube	Position of Tube	Filament Voltage	Cathode Voltage	Plate Voltage	Screen Voltage	Grid Voltage
'24	1 RF	2.25	2.5	250	70	
'24	2 RF	2.25	2.5	250	70	
'24	3 RF	2.25	2.5	250	70	
'24	DET	2.25	3.0	180*	60*	
'45	AUD	2.25		250		—50*
'80	RECT	4.8		360 A.C.		

*Due to the high resistance of the circuit, these voltages can only be accurately measured with an electrostatic voltmeter.

The voltages tabulated above are standard under the following conditions:—

1. Line voltage 114.
2. Volume control in full on position.
3. Antenna disconnected so that no signal is received.
4. Measurements made with a 1000 ohm per volt voltmeter.
5. Except where a minus sign precedes the value, the negative side of the instrument is to be connected to the chassis pan.
6. Tested tubes are used.

Slight variation in voltages will be experienced due to manufacturing tolerance on both the parts of the set and the tubes.

RESISTOR VALUES AND COLOR CODING

Each resistance unit in this set has a distinguishing color code to designate its resistance and current handling capacity. It is recommended that when ordering resistors for replacement purposes, they be specified by colors, resistance and their position in the circuit. This will prevent any possibility of errors.

Resistance	Limits		Watts	Color Code
400 ohms (Wire Wound)	390-	410	1	None
30,000 ohms	27,000–	33,000	1	White or Orange-black-orange
150,000 ohms	135,000–	165,000	1	Violet-green-orange or Brown-green-yellow
300,000 ohms	270,000–	330,000	1	Orange-green end or Orange-black-yellow
500,000 ohms	450,000–	550,000	1	Red-green-yellow or Green-black-yellow
1,000,000 ohms	750,000–	1,250,000	1	Black-red end or Brown-black-green

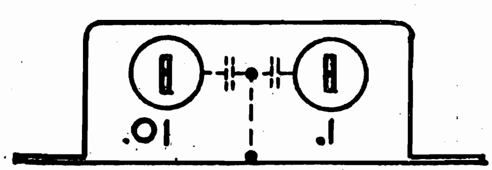
The color coding listed above is in accordance with R. M. A. standards wherever possible. The first color indicates the body, the second the end and the third the band or dot.

FIXED CONDENSER VALUES AND COLOR CODING

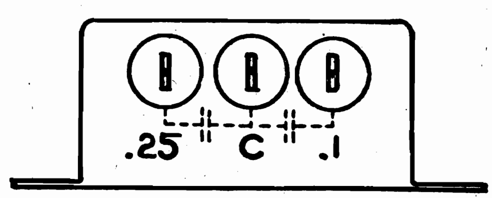
The small condensers in this chassis are color coded and should be ordered the same way as resistors.

Capacitance	Limits	Color Code
.00005 mfd.	.000045-.000055	Grey Dot
.0001	.00009 -.00011	Purple Dot
.00015	.000135-.000165	Yellow Dot
.001	.0009 -.0011	Blue Dot
.01	.009 -.011	None

Diagrams show the connections of the various tone control and by-pass condenser blocks. The electrolytic condensers may be distinguished by the diameters of their cans. The 16 mfd. unit is in a 2½" container while the 8 mfd. unit is in a 1⅜" container.

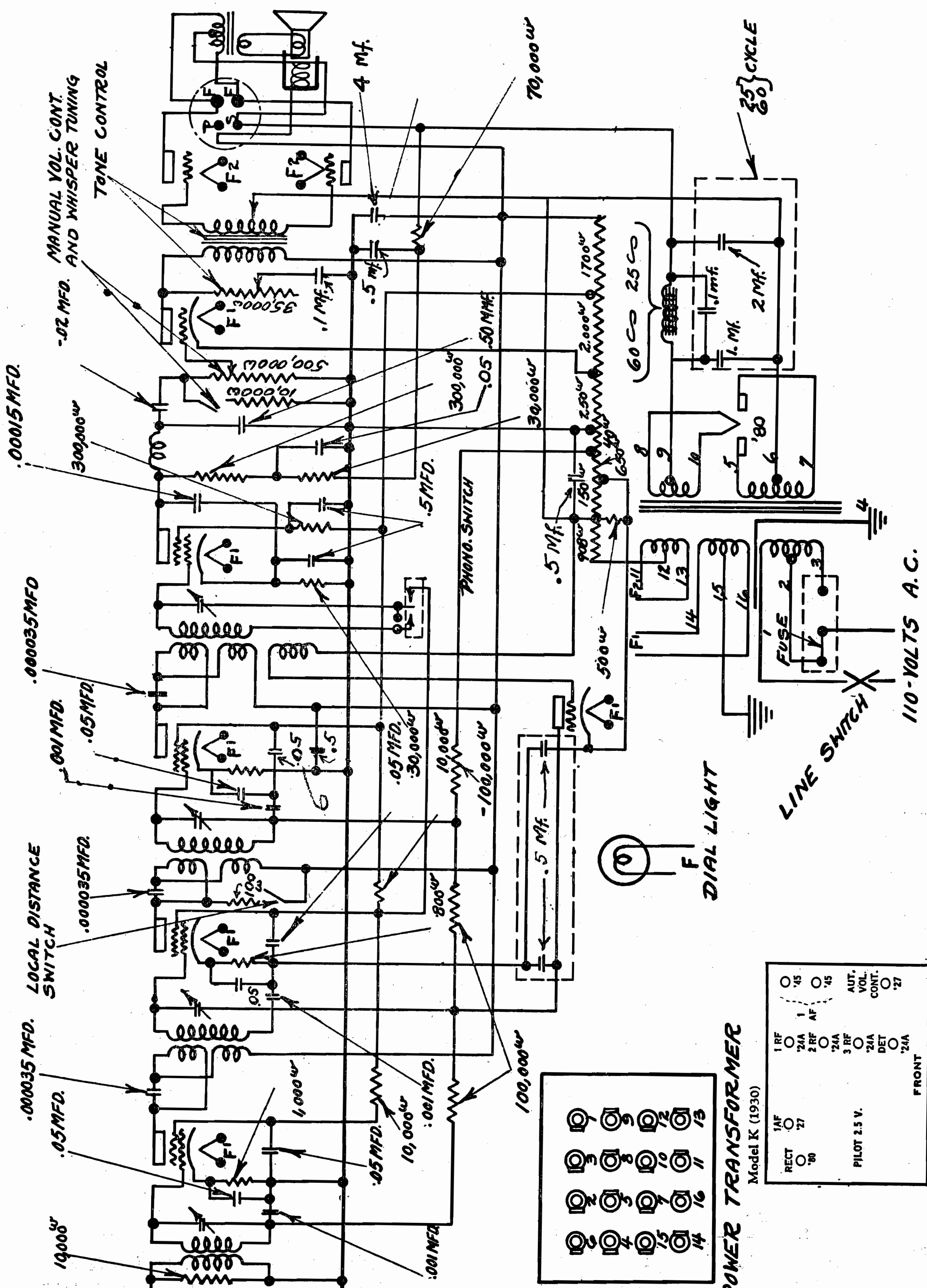


Aux. By-Pass Condenser Y-1276-R.
One Side Each Section to Can.



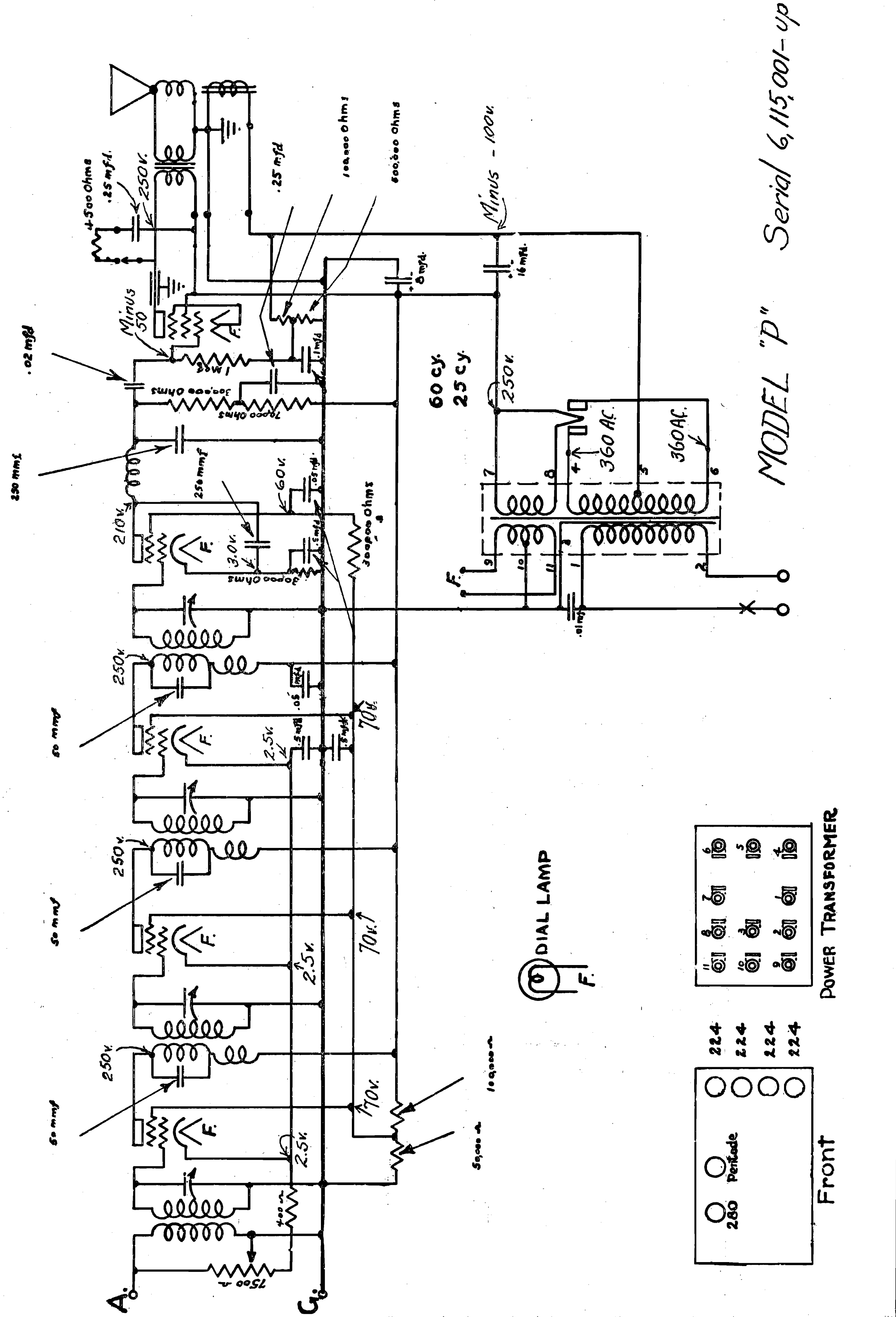
Tone Control Condenser Y-1279-R.
One Side Each Section to Central Lug.

MODEL "K" ALL-AMERICAN MOHAWK CORP.



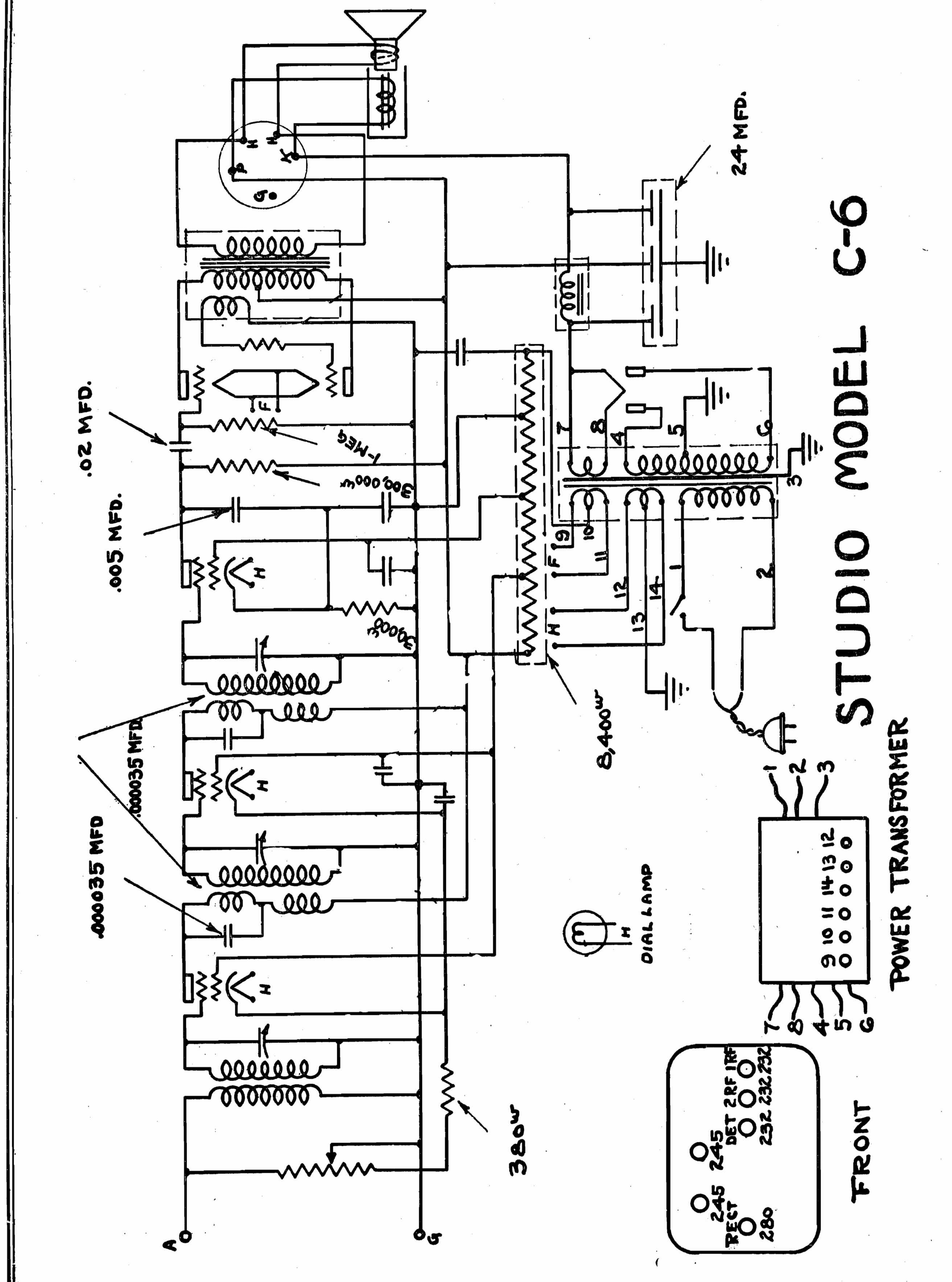
MODEL "P"

ALL-AMERICAN MOHAWK CORP.



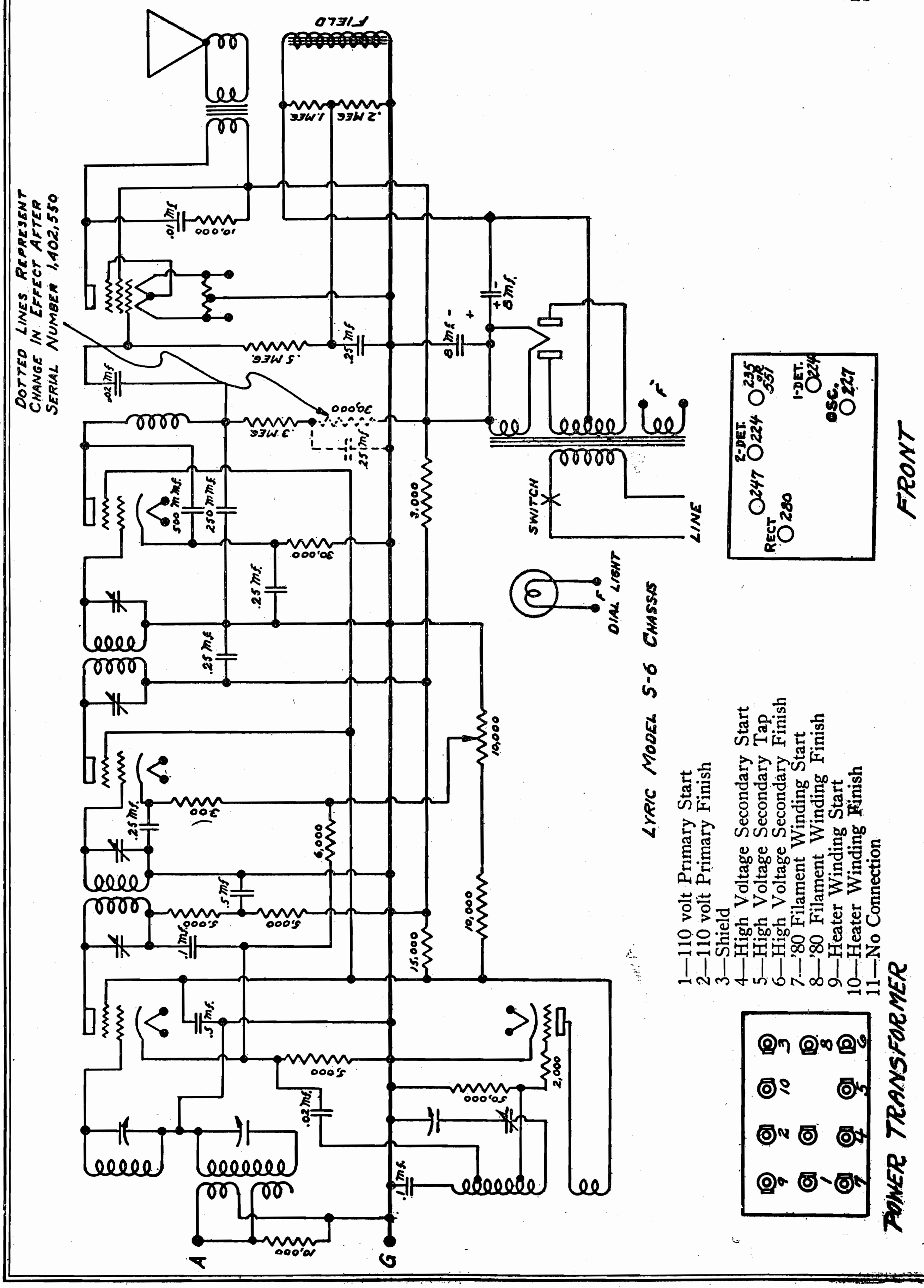
MODEL
Schematic C-6

ALL-AMERICAN MOHAWK CORP.



ALL-AMERICAN MOHAWK CORP.

MODEL S-6
Chassis



MODEL S-6
Data

ALL-AMERICAN MOHAWK CORP.

Model S-6

TECHNICAL DATA

Resistors:

All carbon resistors used in these chassis are color coded in accordance with the R.M.A. code.

Resistance	*Color*	*Capacity*	*Tolerance*	*Part No.*
300 ohms	Orange-black-brown	1/3 watt	10%	14-1773
2,000 ohms	Red-black-red	1/3 watt	10%	14-1806
3,000 ohms	Orange-black-red	1 watt	10%	14-1498
5,000 ohms	Green-black-red	1/3 watt	10%	14-1600
6,000 ohms	Blue-black-red	1/3 watt	10%	14-1502
10,000 ohms	Brown-black-orange	1/3 watt	10%	14-1599
15,000 ohms	Brown-green-orange	3 watt	10%	14-1745
30,000 ohms	Orange-black-orange	1/3 watt	10%	14-1555
50,000 ohms	Green-black-orange	1/3 watt	10%	14-1544
100,000 ohms	Brown-black-yellow	1/3 watt	10%	14-1541
200,000 ohms	Red-black-yellow	1/3 watt	10%	14-1730
300,000 ohms	Orange-black-yellow	1/3 watt	10%	14-1556
500,000 ohms	Green-black-yellow	1/3 watt	10%	14-1531

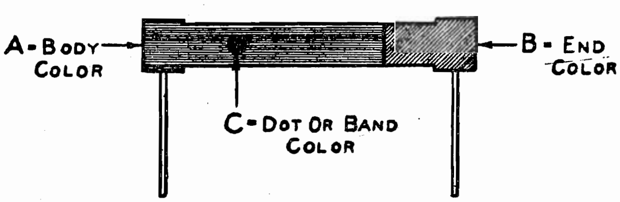
One-third watt resistors are approximately ¾" long x ¼" diameter.

One watt resistors are approximately 1¾" long x ¼" diameter.

Three watt resistors are approximately 1¾" long x ⅜" diameter.

RESISTOR COLOR CODE

All resistors on LYRIC Model "S" receivers have their resistance value indicated by the RMA Color Code which is described below.



A—Body color denotes first significant figure.

B—End color denotes second significant figure.

C—Dot or band color denotes number of zeros following second significant figure.

0—Black	5—Green
1—Brown	6—Blue
2—Red	7—Violet
3—Orange	8—Grey
4—Yellow	9—White

A few samples of this code are given below.

Body Color	*End Color*	*Dot Color*	*Resistance*
Orange	Black	Yellow	300,000 ohms
Brown	Green	Orange	15,000 ohms
Violet	Green	Red	7,500 ohms
Orange	Black	Brown	300 ohms

Condensers:

Fixed mica condensers used in these receivers are color coded to indicate capacity.

Capacity	*Color*	*Tolerance*	*Part Number*
.0005 Mfd.	Green, Black, Brown	10%	14-1186

Paper bypass condensers used in these receivers are of the cub type and are plainly marked to show capacity. In addition each unit carries a distinguishing color dot indicating the voltage rating as listed below:

Voltage	*Color*
200	Green dot or label
400	Red dot or label
600	Yellow dot or label

Normal Working Voltages:

1. Line voltage 115 volts.
2. Volume control in full "ON" position.
3. Antenna disconnected so that no signal is received.
4. Measurements made with 1000 ohm per volt meter.
5. Except where a minus sign preceeds the reading the NEGATIVE SIDE OF THE INSTRUMENT IS TO BE CONNECTED TO THE CHASSIS PAN.
6. Tested tubes are used.

In a normal receiver all voltages will be within 5% of the values listed below:—

Position of tube	*Type of tube*	*Filament Voltage*	*Cathode Voltage*	*Plate Voltage*	*Screen Voltage*	*Grid Voltage*
1st Det.	-24	2.5	4.2	185	70	0
Oscillator	-27	2.5	0	70		0
I.F. Amp.	-51 or -35	2.5	1.8	195	70	0
2nd Det.	-24	2.5	4.5	195**	70	0
Output	-47	2.5		225	245 (note)	-17**

Speaker Field Current—49 M.A.

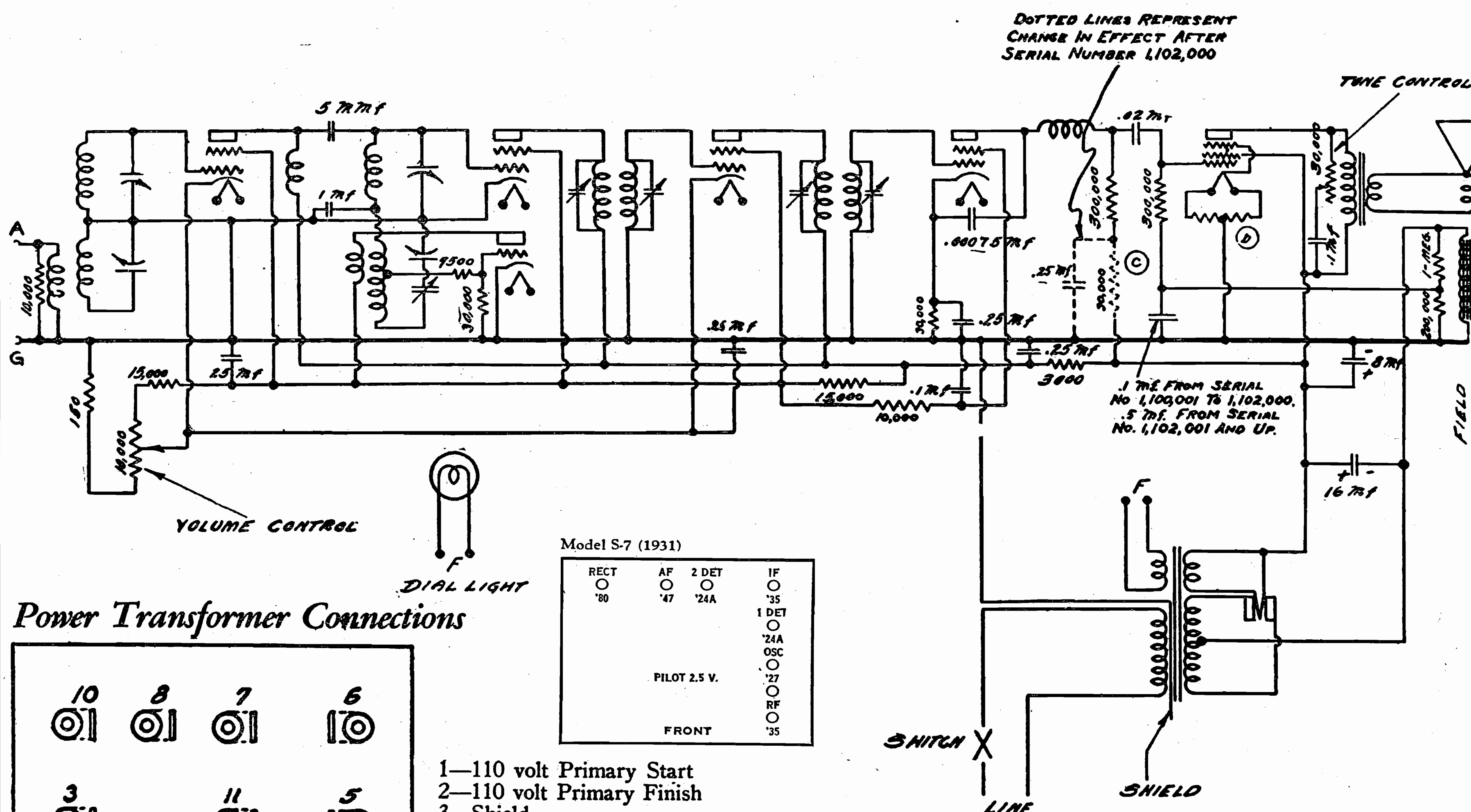
Note—Screen of pentode is connected to cathode pin on socket.

** Owing to the high resistance of the circuit these voltages can be measured accurately only with an electrostatic voltmeter.

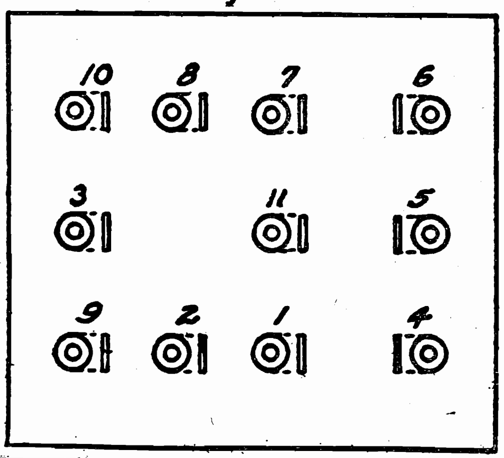
MODEL S-7

ALL-AMERICAN MOHAWK CORP.

PEAK FREQUENCY = 175 KC.



Power Transformer Connections



1—110 volt Primary Start
2—110 volt Primary Finish
3—Shield
4—High Voltage Secondary Start
5—High Voltage Secondary Tap
6—High Voltage Secondary Finish
7—'80 Filament Winding Start
8—'80 Filament Winding Finish
9—Heater and '47 Filament Winding Start
10—Heater and '47 Filament Winding Finish
11—No Connection

Model S-7 Receiver

MODEL S-7
Data

ALL-AMERICAN MOHAWK CORP.

Model S-7

TECHNICAL DATA

Resistors:

All carbon resistors used in these chassis are color coded in accordance with the R.M.A. code. In the following table the nominal resistance, power capacity, test limits, color marks and part numbers are listed.

Resistance	*Color*	*Capacity*	*Tolerance*	*Part No.*
150 ohms	Brown-green-brown	1/3 watt	10%	11-1760 or 11-1603
3,000 ohms	Orange-black-red	2 watt	10%	11-1759
4,500 ohms	Yellow-green-red	1/3 watt	10%	11-1542
7,500 ohms	Violet-green-red	1/3 watt	10%	11-1642
10,000 ohms	Brown-black-orange	1/3 watt	10%	11-1599
15,000 ohms	Brown-green-orange	1/3 watt	10%	11-1601
15,000 ohms	Brown-green-orange	2 watt	10%	11-1745
30,000 ohms	Orange-black-orange	1/3 watt	10%	11-1555
200,000 ohms	Red-black-yellow	1/3 watt	10%	11-1730
300,000 ohms	Orange-black-yellow	1/3 watt	10%	11-1556
500,000 ohms	Green-black-yellow	1/3 watt	10%	11-1531

One third watt resistors are approximately ¾" long by ¼" in diameter.

One watt resistors are approximately 1¾" long by ¼" in diameter.

Two watt resistors are approximately 1¾" long by ⅜" in diameter.

Condensers:

Fixed mica condensers used in these receivers are color coded to indicate capacity. In the following table nominal capacity, test limits, color code and part number are listed.

Capacity	*Color*	*Tolerance*	*Part Number*
.00075 Mfd.	Violet, Green, Brown	10%	11-1801
5 m. mfd.	Black, Green, Black	10%	11-1595

Paper bypass condensers used in these receivers are of the cub type and are plainly marked to show capacity. In addition each unit carries a distinguishing color dot indicating the voltage rating as listed below.

Voltage	*Color*
200	Green dot or label
400	Red dot or label
600	Yellow dot or label

Normal Working Voltages:

1. Line voltage 115 volts.
2. Volume control in full "ON" position.
3. Antenna disconnected so that no signal is received.
4. Measurements made with 1000 ohm per volt meter.
5. Except where a minus sign preceeds the reading the NEGATIVE SIDE OF THE INSTRUMENT IS TO BE CONNECTED TO THE CHASSIS PAN.
6. Tested tubes are used.

In a normal receiver all voltages will be within 5% of the values listed below:

Position of tube	*Type of tube*	*Filament Voltage*	*Cathode Voltage*	*Plate Voltage*	*Screen Voltage*	*Grid Voltage*
R.F. Amp.	-51 or 35	2.50 A. C.	2.00	195.0	70.0	0
1st Det.	-24	2.50 A. C.		195.0	70.0	0
Oscillator	-27	2.50 A. C.	0	70.0		0
I.F. Amp.	-51 or 35	2.50 A. C.	2.00	195.0	70.0	0.
2nd. Det.	-24	2.50 A. C.	4.50	168.0 **	70.0	0
Output	-47	2.50 A. C.		230.0	250.0 (note)	-17.0**
Rectifier	-80	5.00 A. C.		350.0 A. C.		

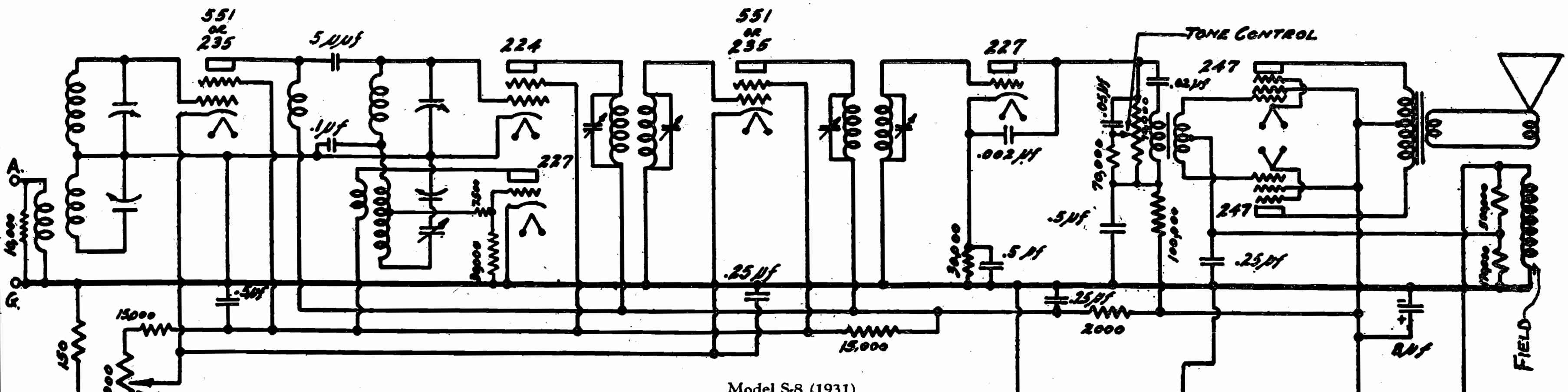
Speaker field current—57 M. A.

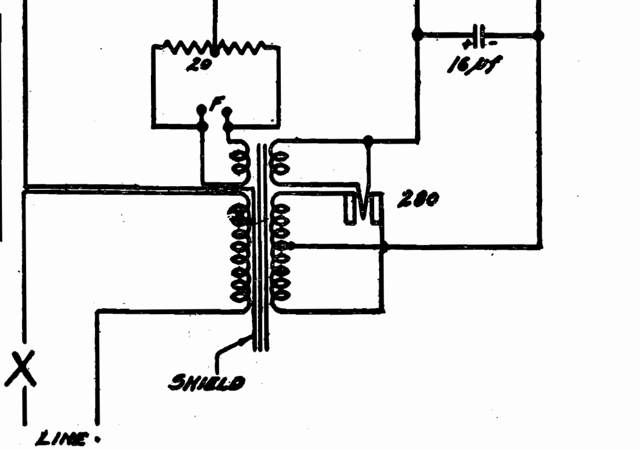
** Owing to the high resistance of the circuit these voltages can be measured accurately only with an electrostatic voltmeter.
Note—Screen of pentode is connected to cathode pin on socket.

MODEL S-8

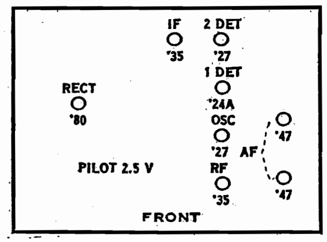
ALL-AMERICAN MOHAWK CORP.

PEAK FREQUENCY = 175 KC.

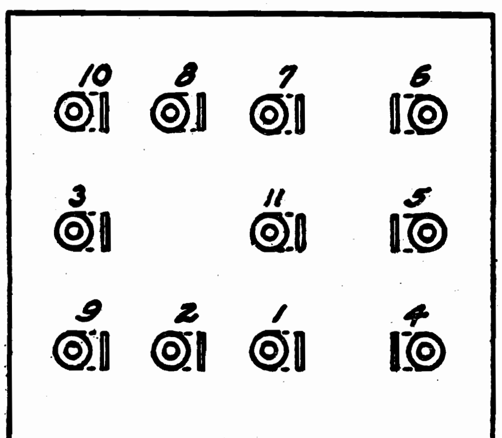




Model S-8 (1931)



Power Transformer Connections



1—110 volt Primary Start
2—110 volt Primary Finish
3—Shield
4—High Voltage Secondary Start
5—High Voltage Secondary Tap
6—High Voltage Secondary Finish
7—'80 Filament Winding Start
8—'80 Filament Winding Finish
9—Heater and '47 Filament Winding Start
10—Heater and '47 Filament Winding Finish
11—No Connection

Model S-8 Receiver

MODEL S-8
Data

ALL-AMERICAN MOHAWK CORP

Model S-8

TECHNICAL DATA

Resistors:

All carbon resistors used in these chassis are color coded in accordance with the R.M.A. code. In the following table the nominal resistance, power capacity, test limits, color marks and part numbers are listed.

Resistance	*Color*	*Capacity*	*Tolerance*	*Part No.*
150 ohms	Brown-green-brown	1/3 watt	10%	12-1603 or 12-1760
2,000 ohms	Red-black-red	3 watt	10%	12-1777
7,500 ohms	Violet-black-red	1/3 watt	10%	12-1642
10,000 ohms	Brown-black-orange	1/3 watt	10%	12-1599
15,000 ohms	Brown-green-orange	1/3 watt	10%	12-1601
15,000 ohms	Brown-green-orange	3 watt	10%	12-1745
30,000 ohms	Orange-black-orange	1/3 watt	10%	12-1555
70,000 ohms	Violet-black-orange	1/3 watt	10%	12-1558
100,000 ohms	Brown-black-yellow	1/3 watt	10%	12-1614
170,000 ohms	Brown-violet-yellow	1/3 watt	10%	12-1734
500,000 ohms	Green-black-yellow	1/3 watt	10%	12-1531

One-third watt resistors are approximately ¾" long by ¼" in diameter.

One watt resistors are approximately 1¾" long by ¼" diameter.

Three watt resistors are approximately 1¾" long by ⅜" in diameter.

Condensers:

Fixed mica condensers used in these receivers are color coded to indicate capacity. In the following table nominal capacity, test limits, color code and part numbers are listed.

Capacity	*Color*	*Tolerance*	*Part Number*
5 m. mfd.	Black, Green, Black	10%	12-1595
.002	Red, Black, Red	10%	12-1625

Paper bypass condensers used in these receivers are of the cub type and are plainly marked to show capacity. In addition each unit carries a distinguishing color dot indicating the voltage rating as listed below.

Voltage	*Color*
200	Green dot or label
400	Red dot or label
600	Yellow dot or label

Part numbers for these units are given on the schematic diagram at the end of the manual.

Normal Working Voltages:

1. Line voltage 115 volts.
2. Volume control in full "On" position.
3. Antenna disconnected so that no signal is received.
4. Measurements made with 1000 ohm per volt meter.
5. Except where a minus sign preceeds the reading the NEGATIVE SIDE OF THE INSTRUMENT IS TO BE CONNECTED TO THE CHASSIS PAN.
6. Tested tubes are used.

In a normal receiver all voltages will be within 5% of the values listed below:—

Position of tube	*Type of tube*	*Filament Voltage*	*Cathode Voltage*	*Plate Voltage*	*Screen Voltage*	*Grid Voltage*
R.F. Amp.	-51 or -35	2.5 A. C.	2.1	200	70	0
1st Det.	-24	2.5 A. C.		205	70	0
Oscillator	-27	2.5 A. C.	0	70		0
I.F. Amp.	-51 or -35	2.5 A. C.	2.1	200	70	0
2nd Det.	-24	2.5 A. C.	10	125		0
Output	-47	2.5 A. C.		235	250 (note)	-17.0**

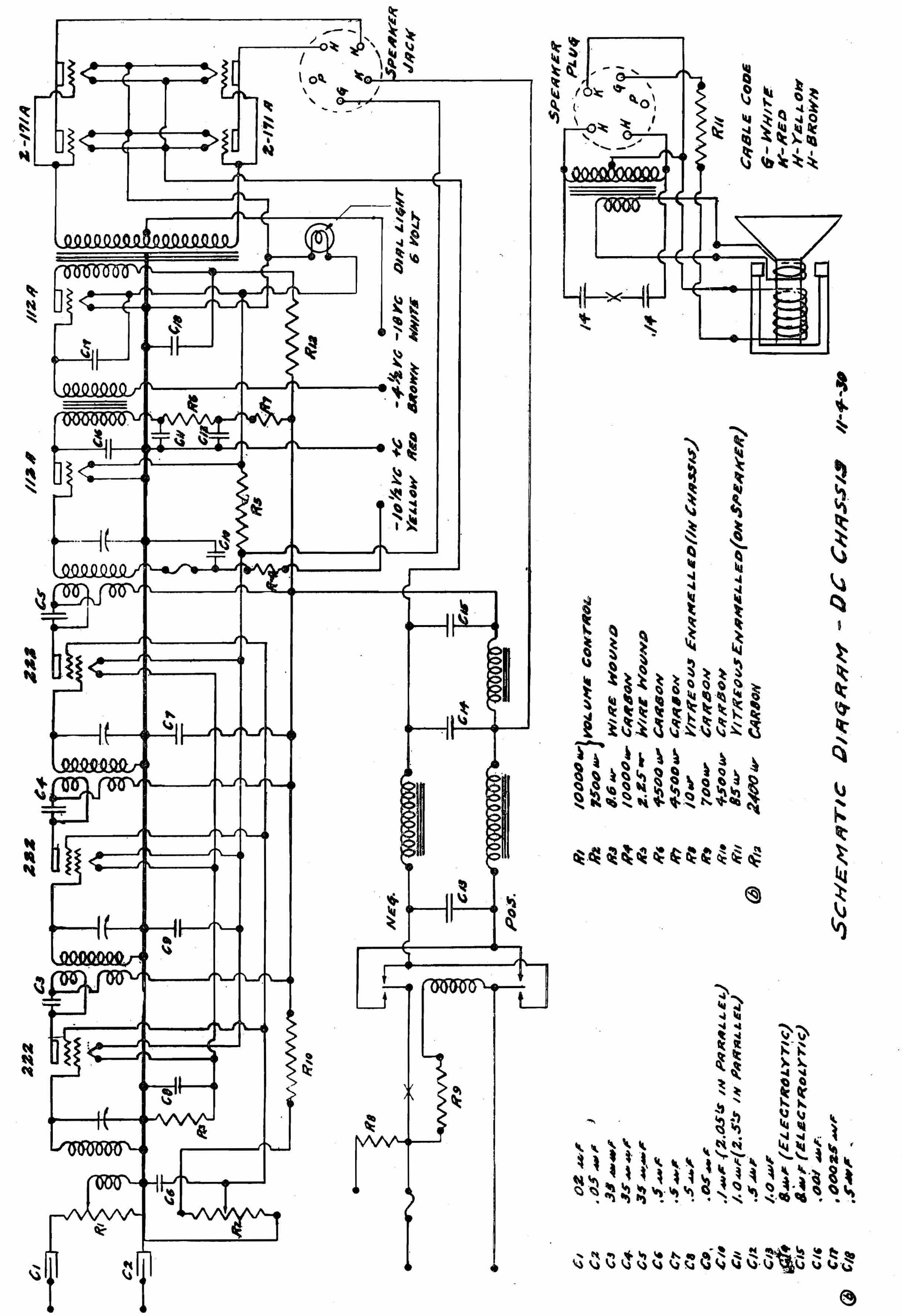
Speaker field current—91 M.A.

Note—Screen of pentode is connected to cathode pin on socket.

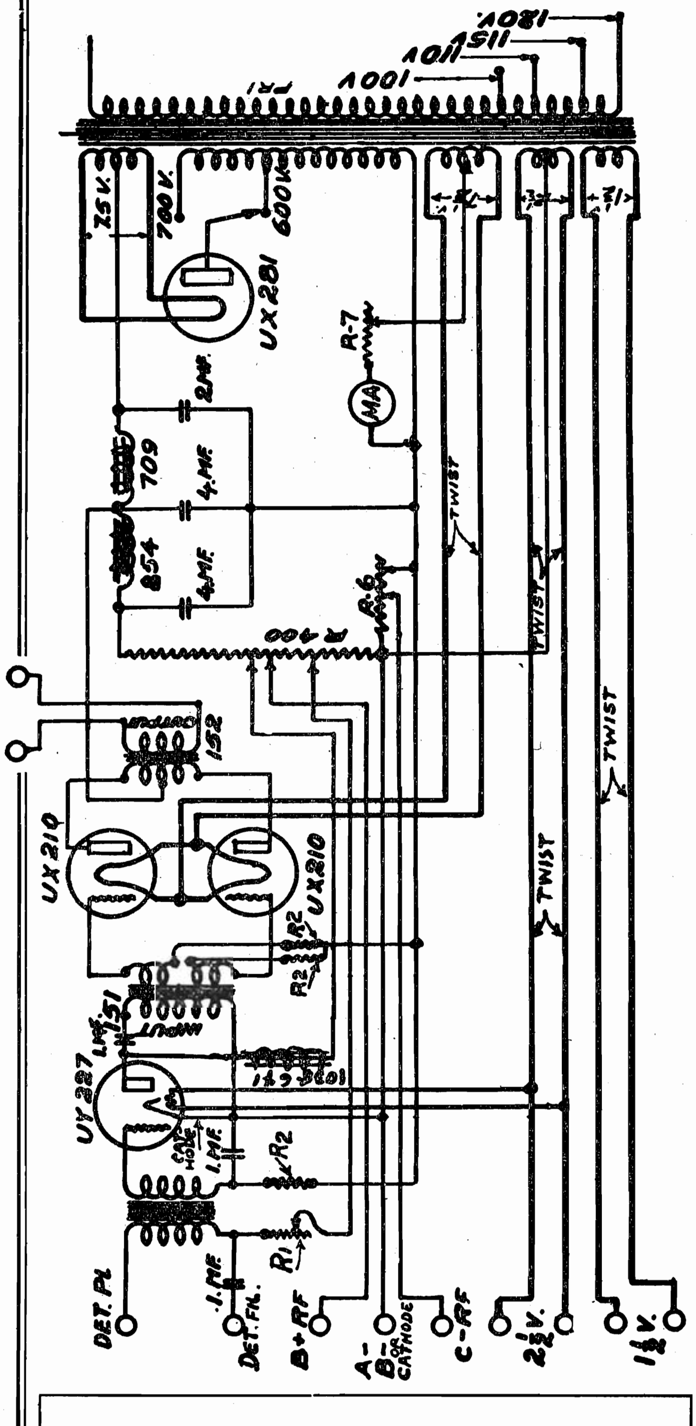
**Owing to the high resistance of the circuit these voltages can be measured accurately only with an electrostatic voltmeter.

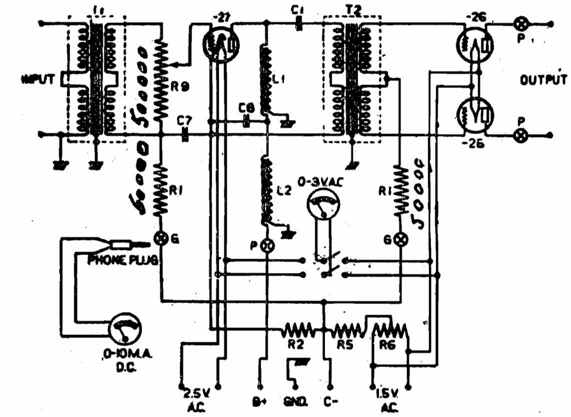
MODEL - DC

ALL-AMERICAN MOHAWK CORP

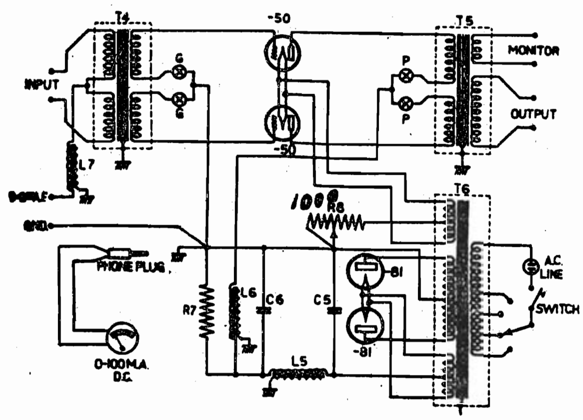


AMERICAN TRANSFORMER CO. MODEL 25-A Amp'ier

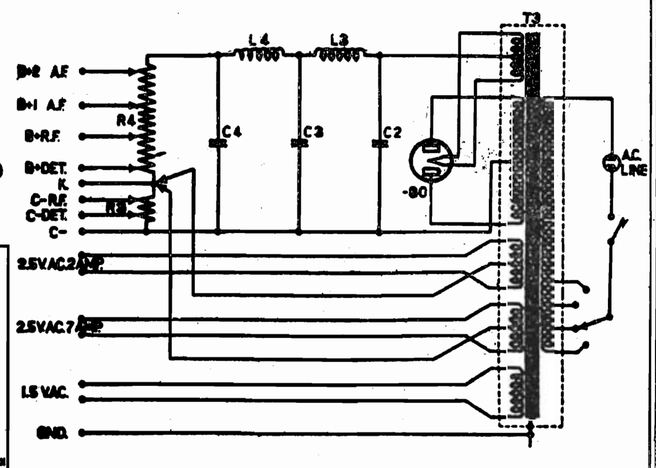




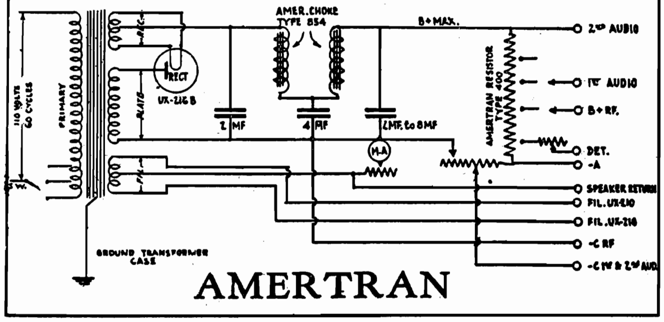
25-A Power Amplifier
(A Unit)



25-A Power Amplifier
(PA Unit)

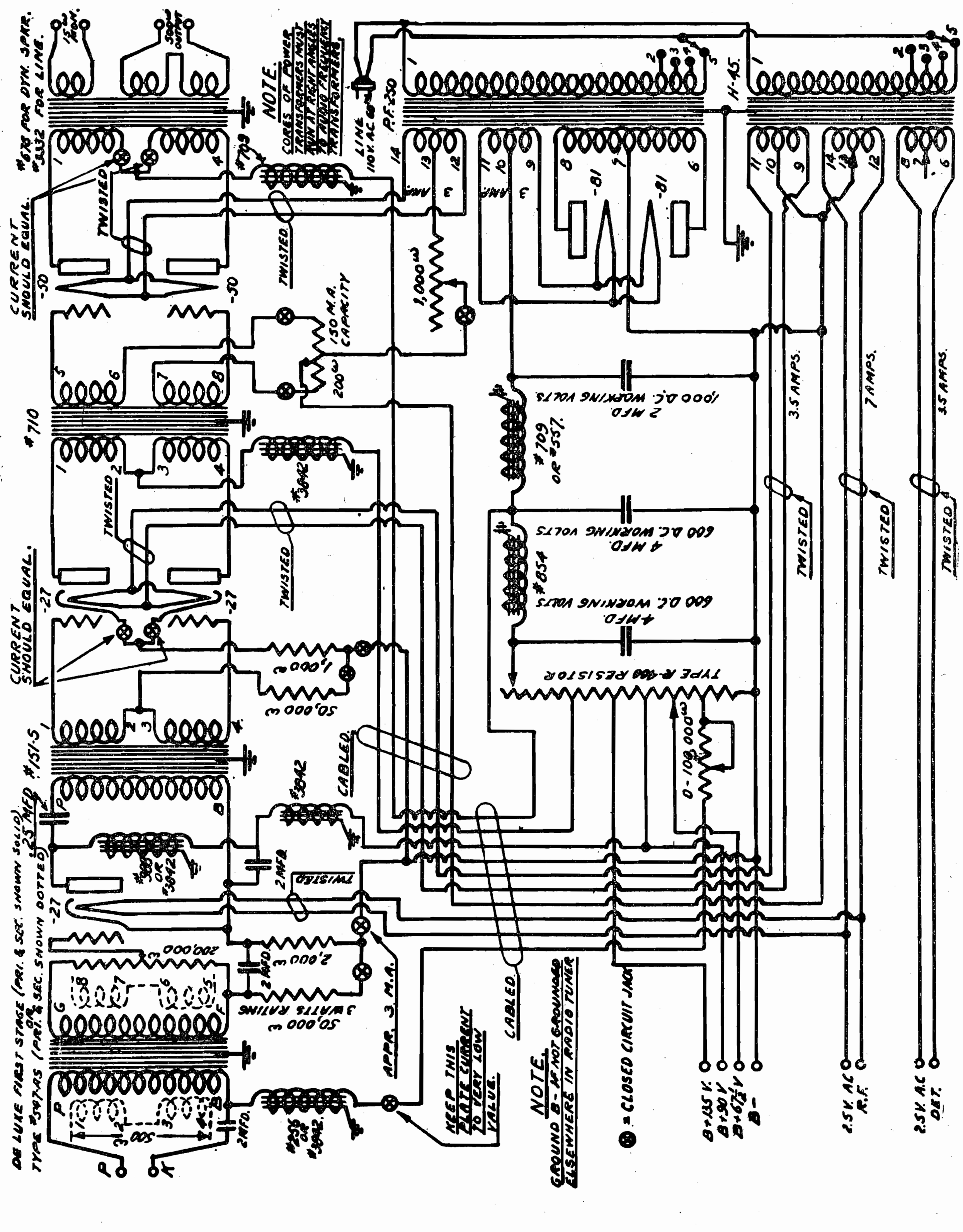


25-A Power Amplifier
(P Unit)



MODEL 250 Amertran Power Amplifier

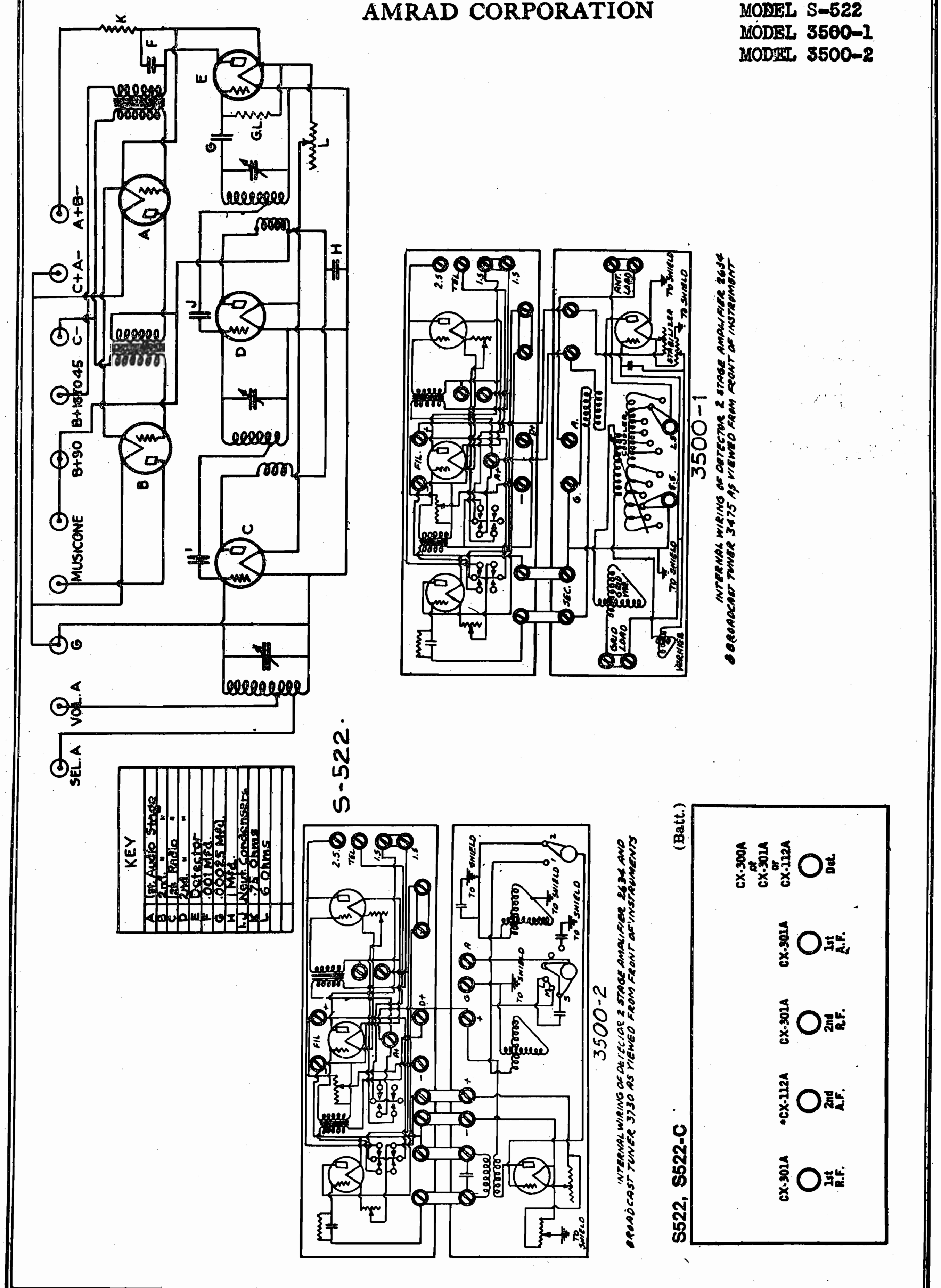
AMERICAN TRANSFORMER CO.



250 POWER AMPLIFIER

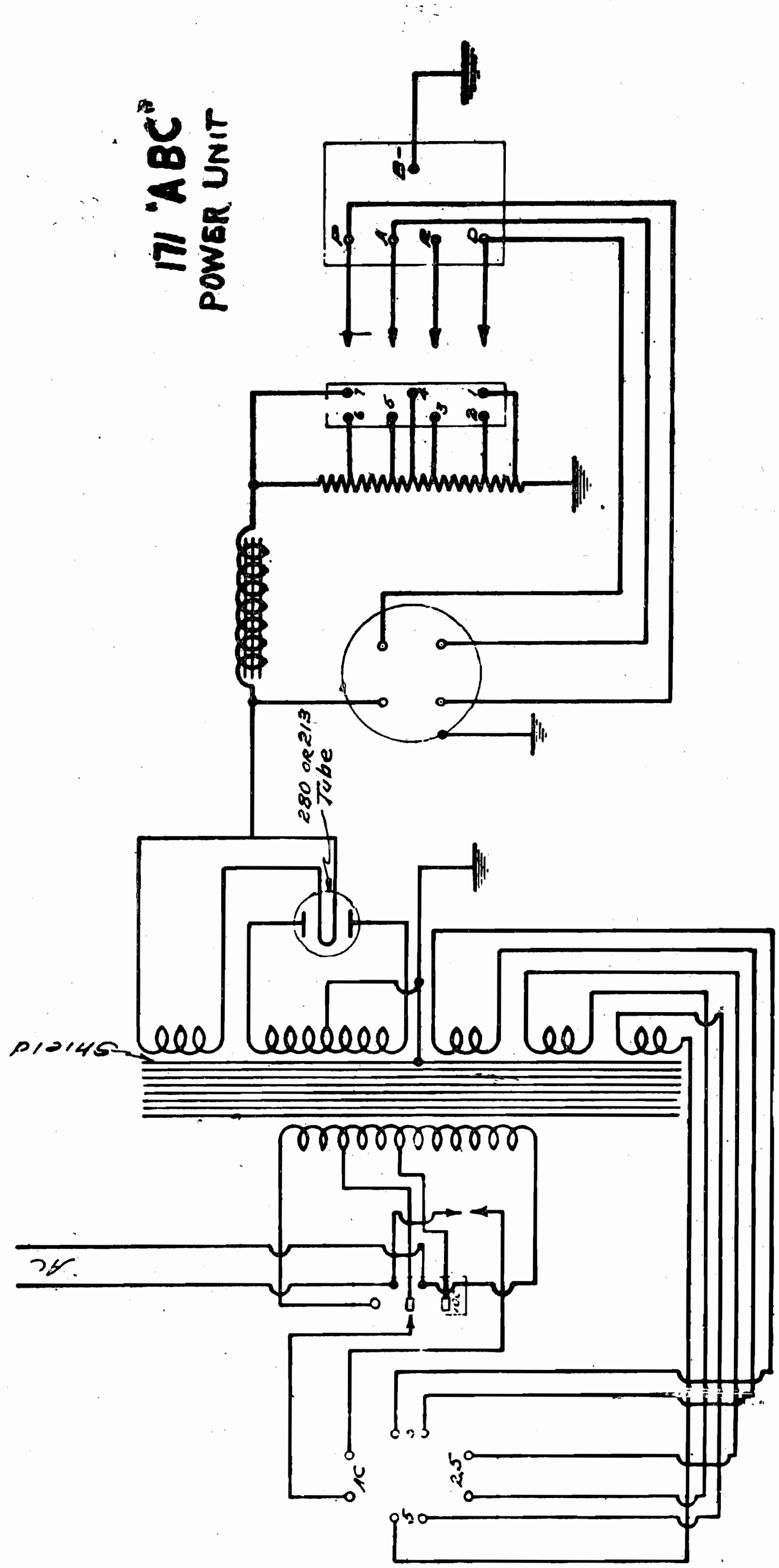
AMRAD CORPORATION

MODEL S-522
MODEL 3500-1
MODEL 3500-2



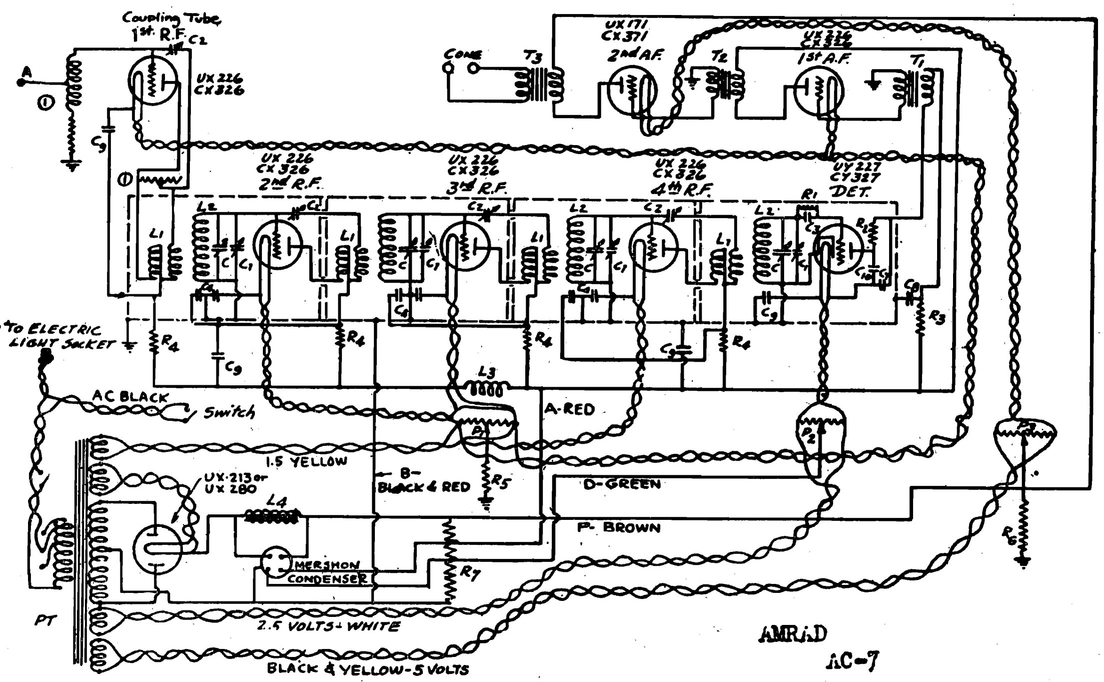
MODEL 171 ABC
Power Pack

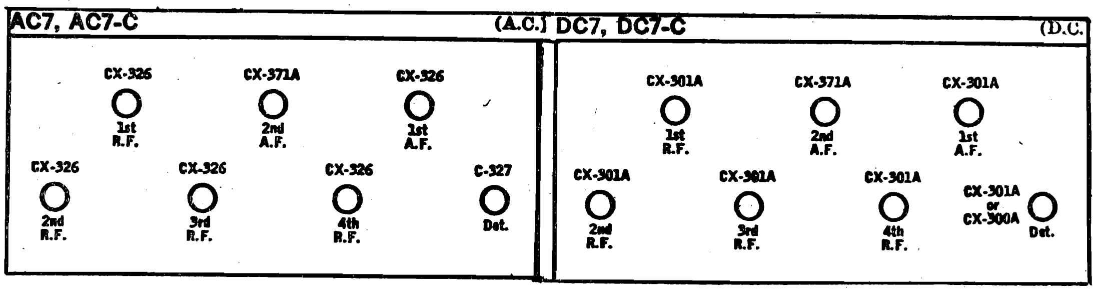
AMRAD CORPORATION

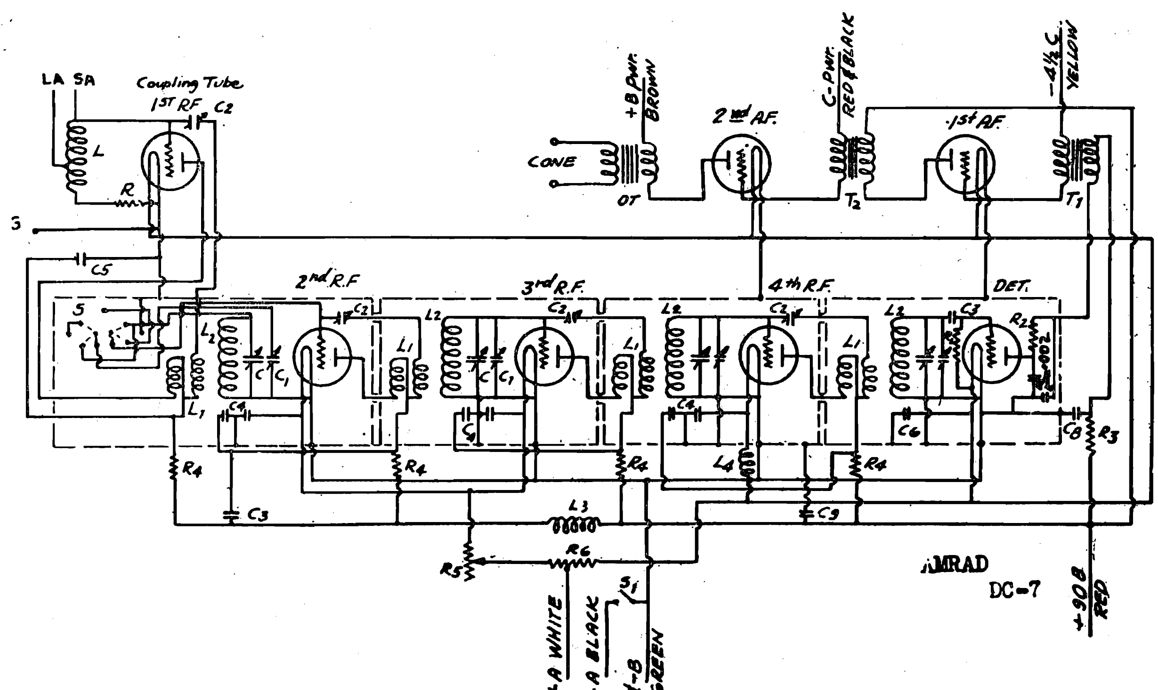


AMRAD CORPORATION

MODEL AC-7
MODEL DC-7

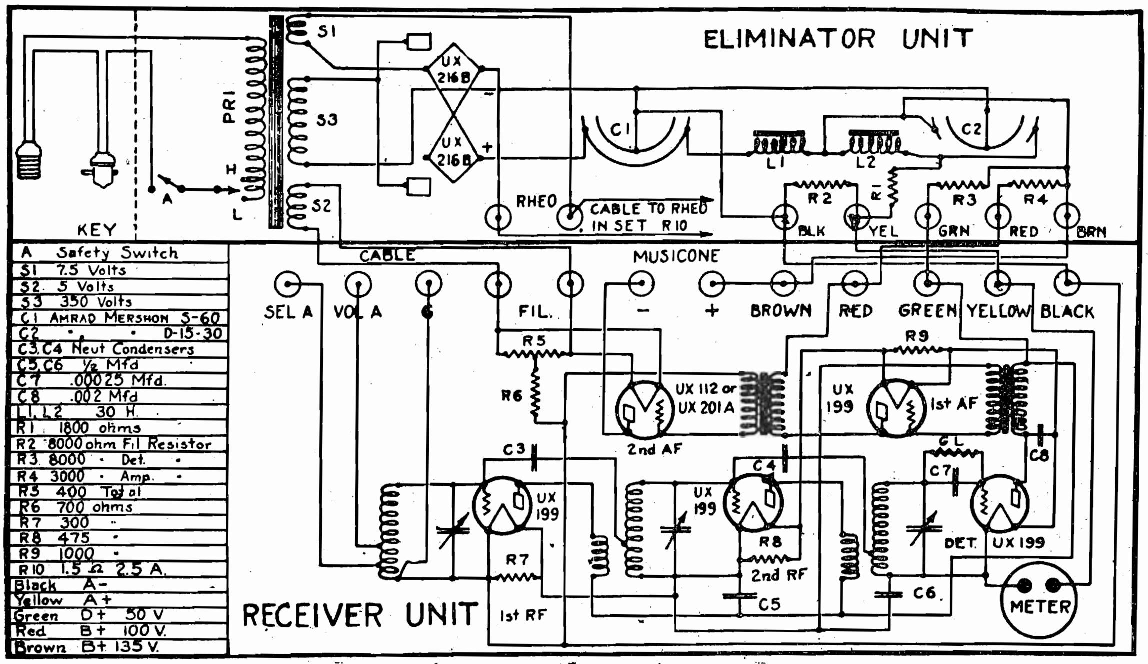




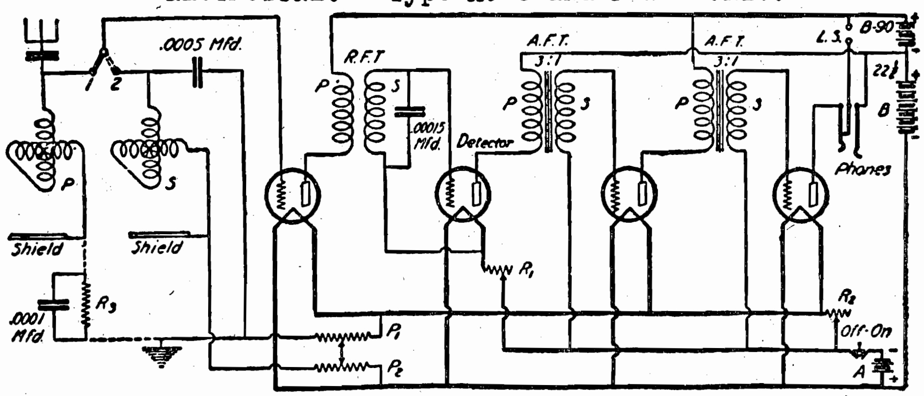


MODEL AC-5
MODEL 80,82,83
MODEL Inductrol

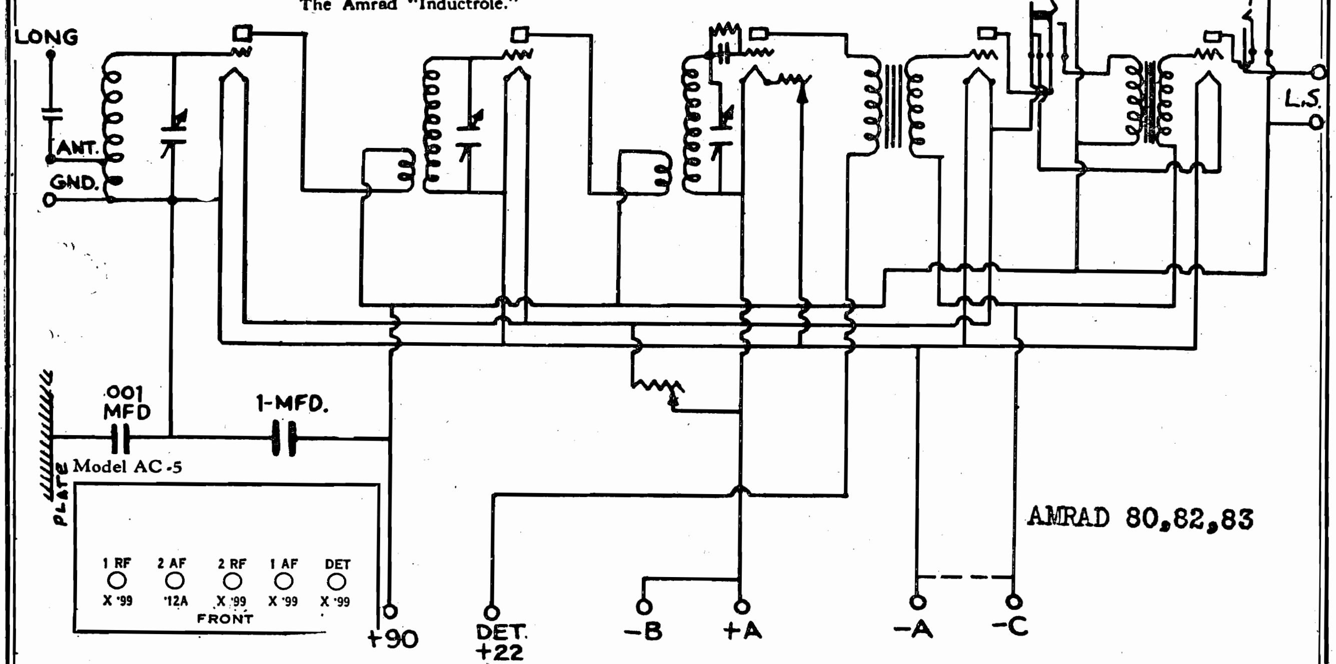
AMRAD CORPORATION



NEUTRODYNE. Type AC-5 and Power Unit.

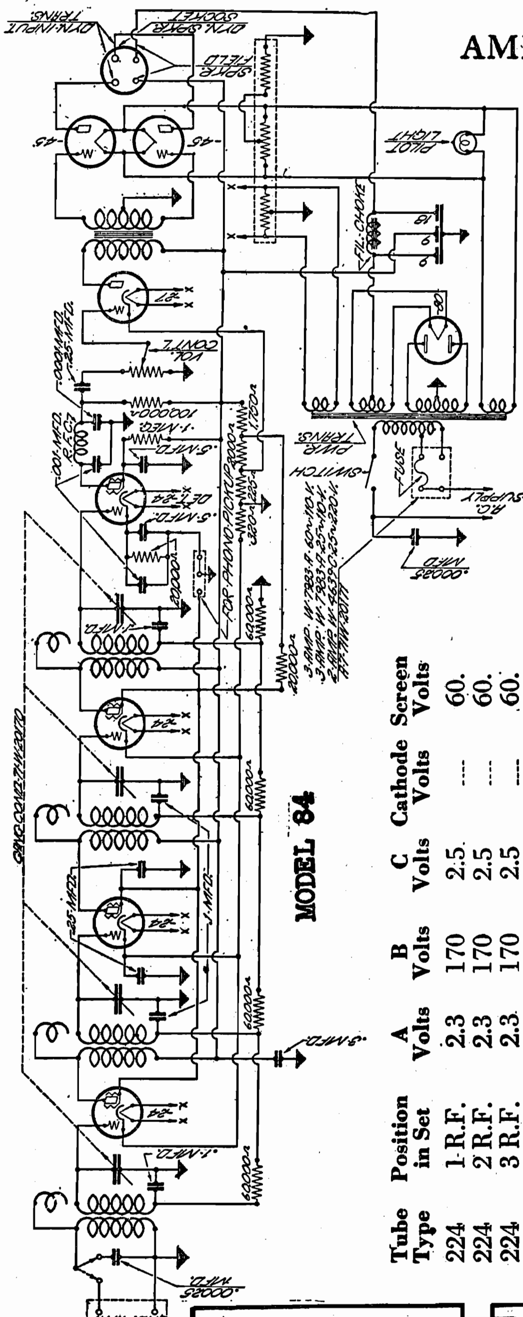


The Amrad "Inductrole."



AMRAD CORPORATION

MODEL 84
MODEL S-733
MODEL 3950

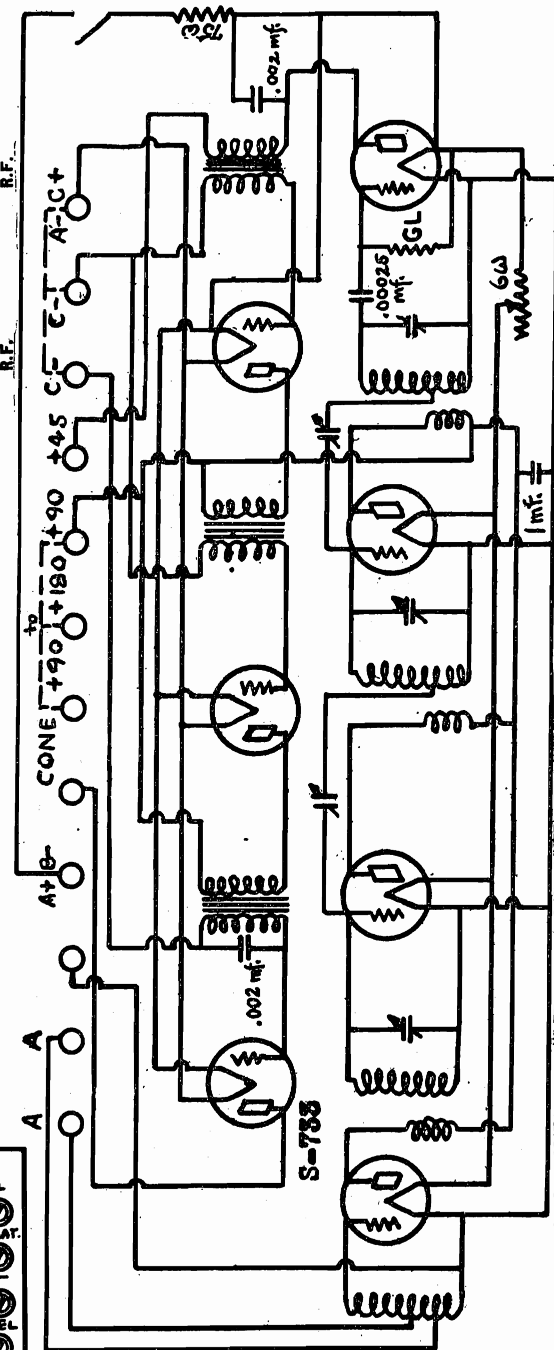


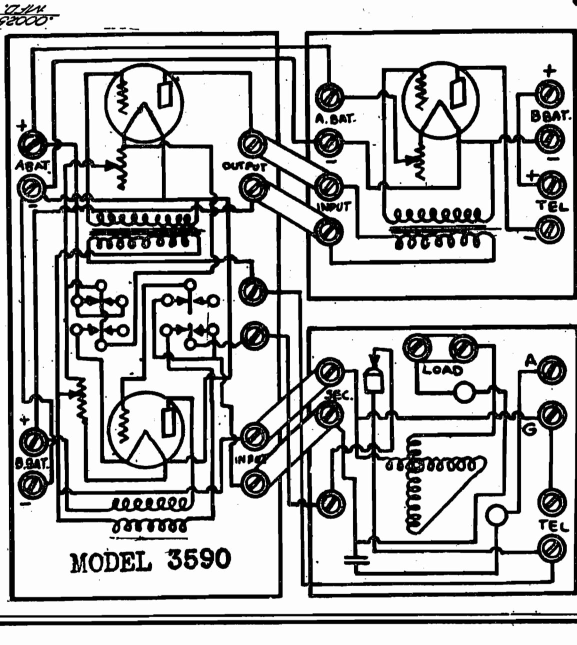
Tube Type	Position in Set	A Volts	B Volts	C Volts	Cathode Volts	Screen Volts
224	1 R.F.	2.3	170	2.5	----	60.
224	2 R.F.	2.3	170	2.5	----	60.
224	3 R.F.	2.3	170	2.5	----	60.
224	Det.	2.3	95	4.0	----	35.
227	1 A.F.	2.3	130	8.0	----	----
245	P.P.	2.3	220	40.	----	----
245	P.P.	2.3	220	40.	----	----
280	Rect.	4.6	250		----	----

Line voltage 117. Volume control maximum.

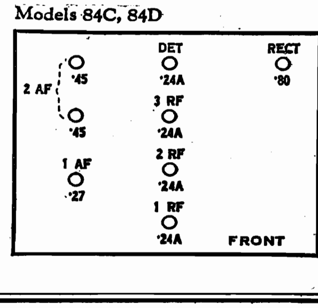
CX-301A 1st R.F. — *CX-112A 3rd A.F. — CX-301A 2nd A.F. — CX-301A 1st A.F. — CX-300A or CX-301A or CX-112A Det.

CX-301A- 2nd R.F. — S733 — CX-301A 3rd R.F.



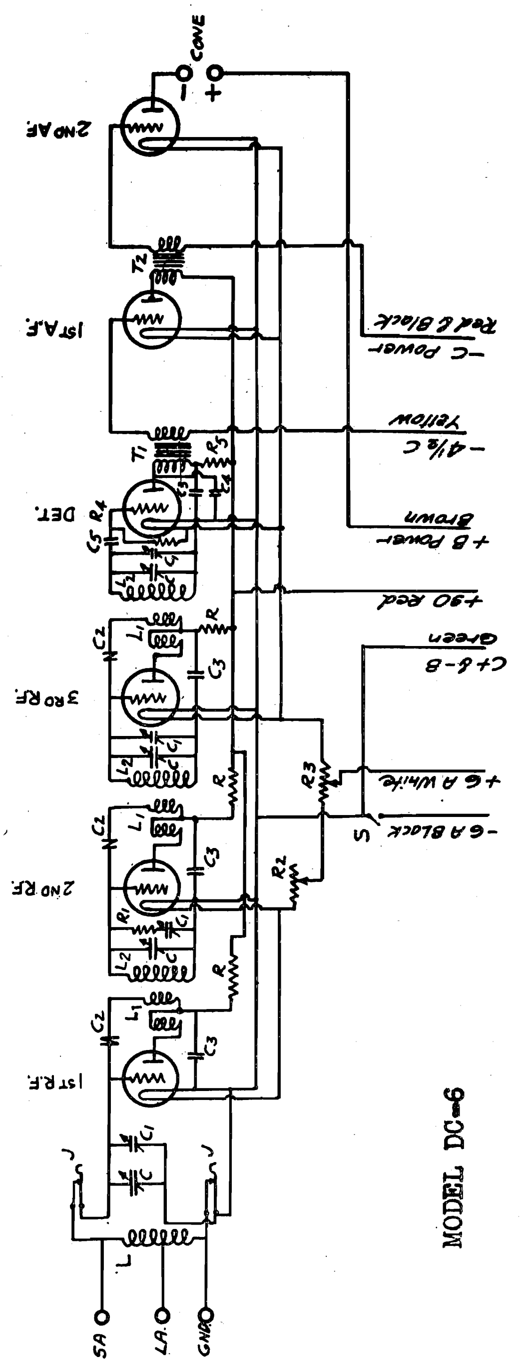


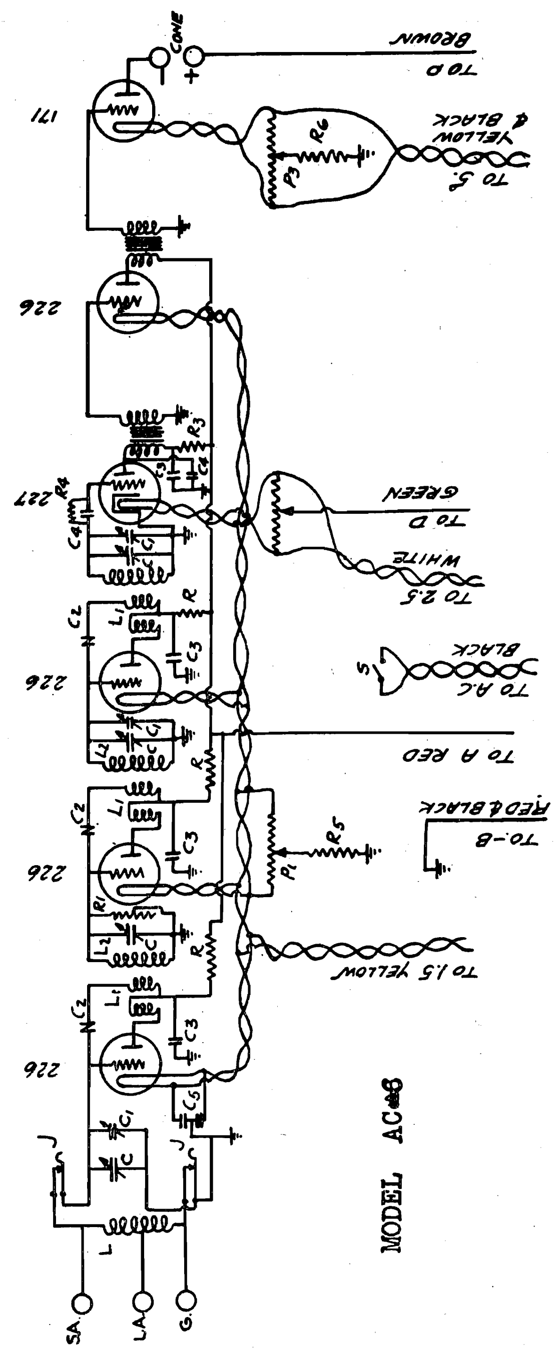
Models 84C, 84D



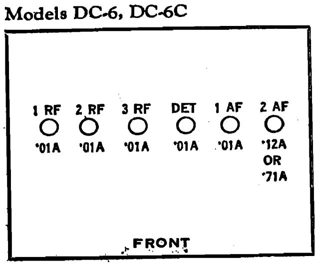
MODEL AC-6
MODEL DC-6

AMRAD CORPORATION

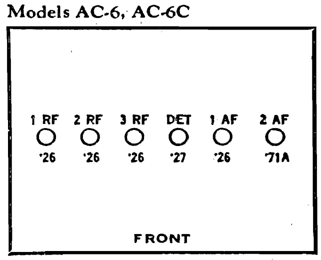




Models DC-6, DC-6C

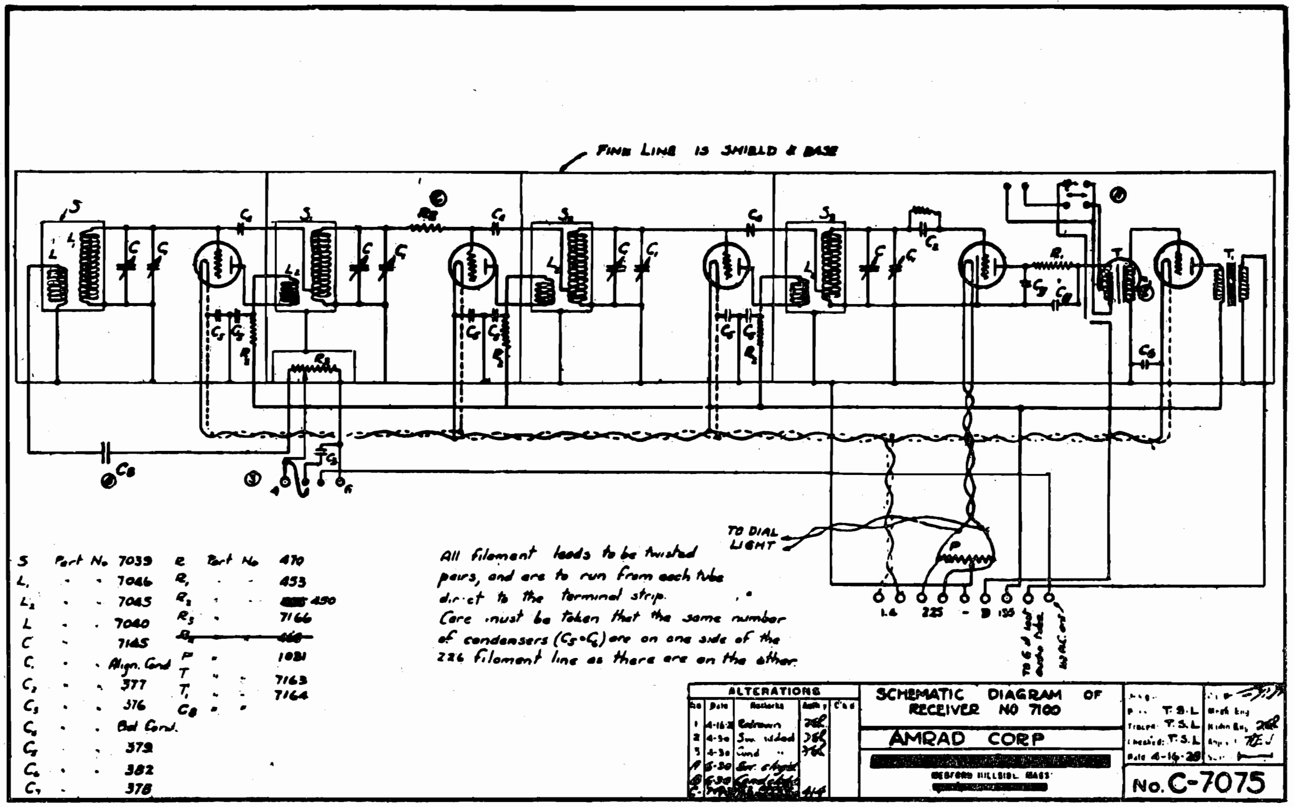


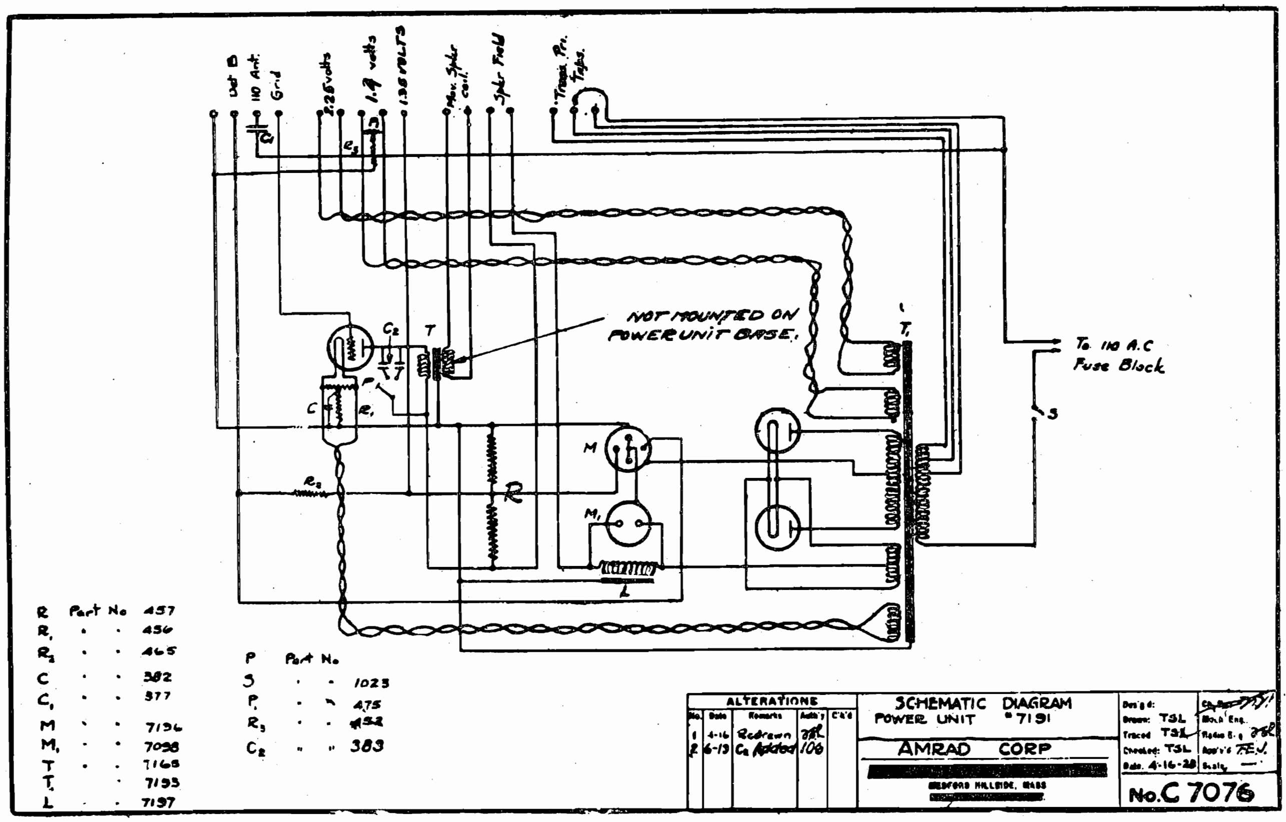
Models AC-6, AC-6C



AMRAD CORPORATION

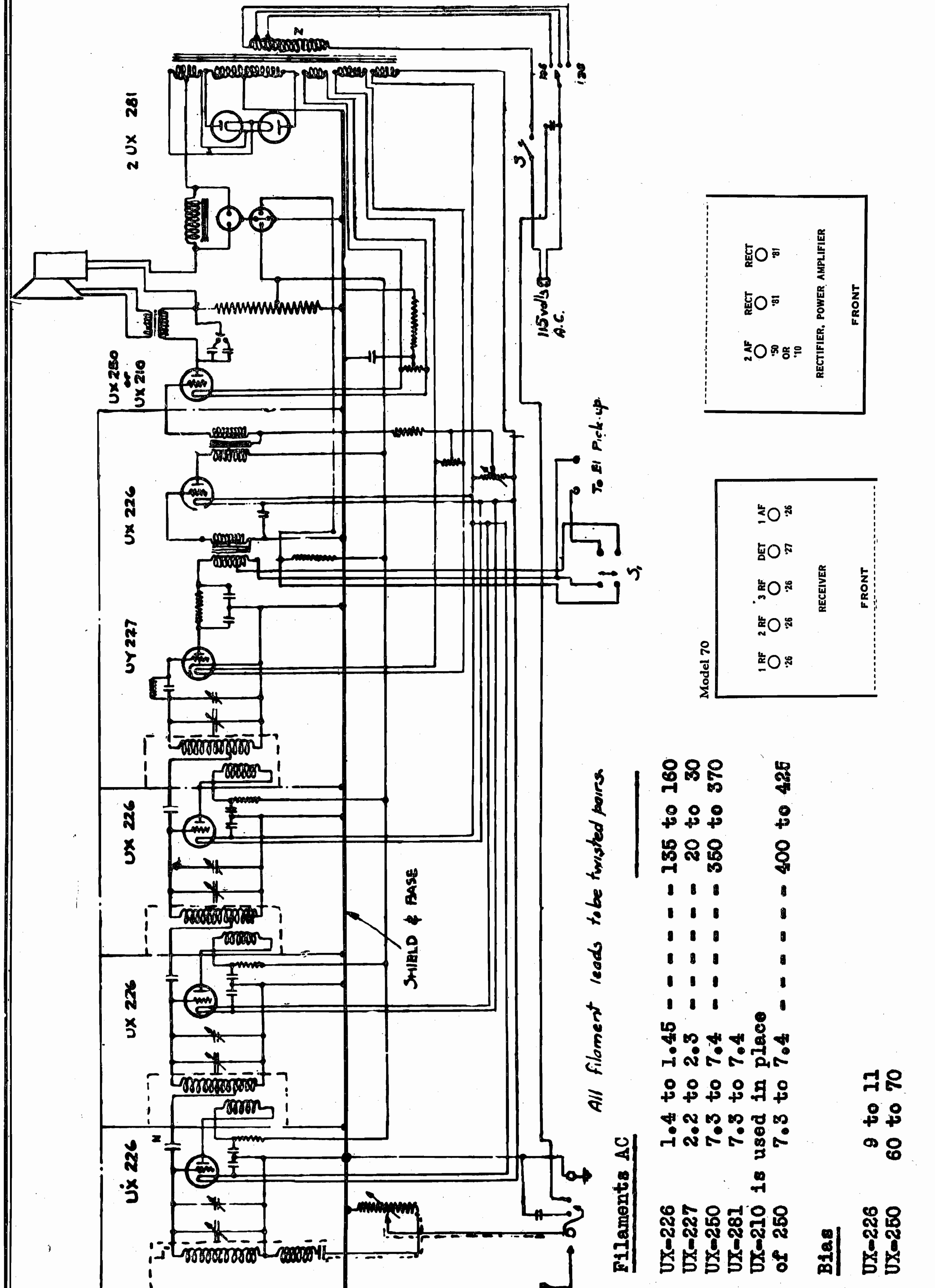
MODEL 7100 Receiver
MODEL 7191 Power Unit





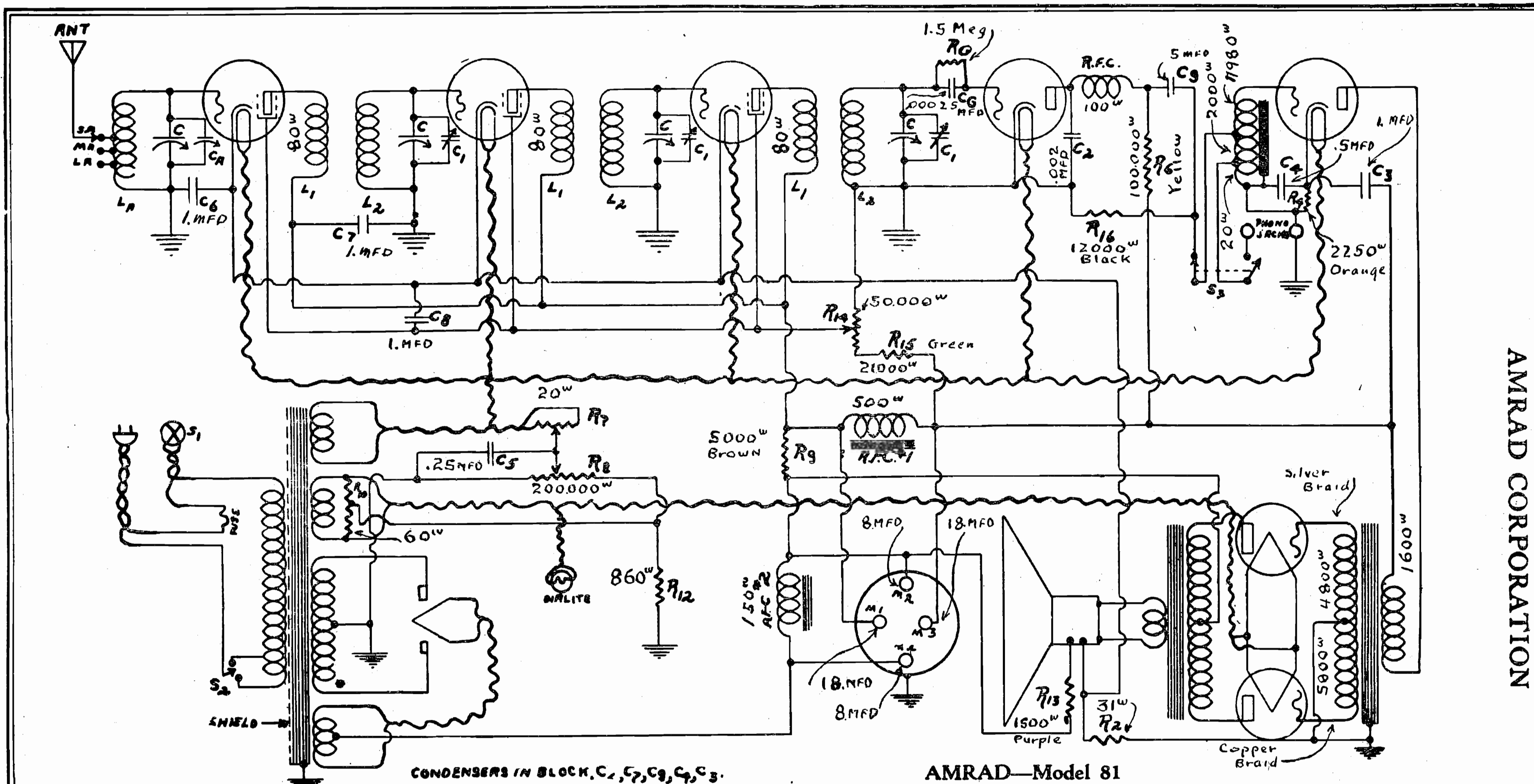
MODEL 70

AMRAD CORPORATION



AMRAD CORPORATION

MODEL Bel-Canto 81.



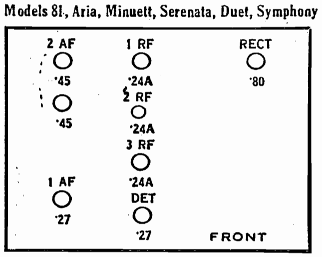
AMRAD—Model 81

Line Voltage 120—Set on 120 Volt Tap—Volume Control Position Full On

Note: To get the 10.5 V. reading (4-8) the hum control potentiometer must be turned to ground side.

Tube No in Order (1)	Type of Tube (2)	Position of Tube 1st RF Det. etc (3)	Readings, Plug in Socket of Set: Tube Out: A Volts (4)	B Volts (5)	Tube in Tester: A Volts (6)	B Volts (7)	C Volts (Control Grid) (8)	Cathode-Heater Volts (9)	Normal Plate M.A. (10)	Plate M.A. Grid Test (11)	Plate Change M.A. (12)	Screen Grid Volts (13)
1	224	1st RF	2.32	190	2.25	180	1.5	-	4	7.5	3.5	80
2	224	2nd RF	2.32	190	2.25	180	1.5	-	4	7.5	3.5	.80
3	224	3rd RF	2.32	190	2.25	180	1.5	-	4	7.5	3.5	80
4	227	Det.	2.32	140	2.25	30	0	-	1.5	1.6	.1	-
5	227	1st AF	2.32	190	2.25	160	10.5	-	4.1	5.2	1.1	-
6	245	2nd AF	2.32	300	2.25	250	50	-	28	32	.4	-
7	245	2nd AF	2.32	300	2.25	250	50	-	28	32	.4	-
8	280	Rect.		-	4.65	-	-	-	110	-	-	-
9												
10												

Models 81, Aria, Minuett, Serenata, Duet, Symphony



BEL - CANTO SERIES

Aria, Minuett
Serenata, Duet
Symphony

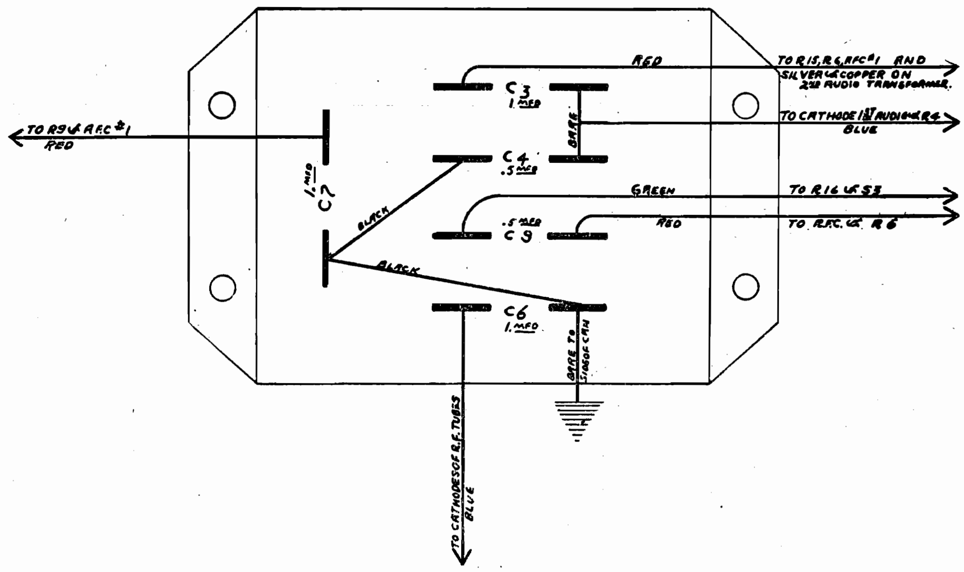
RCA Speaker
0.8 Ohm
Secondary
410 Ohm Primary
7000 Ohm Field

Peerless Speaker
Single turn
Secondary
550 Ohm Primary

Condenser Data on next page.

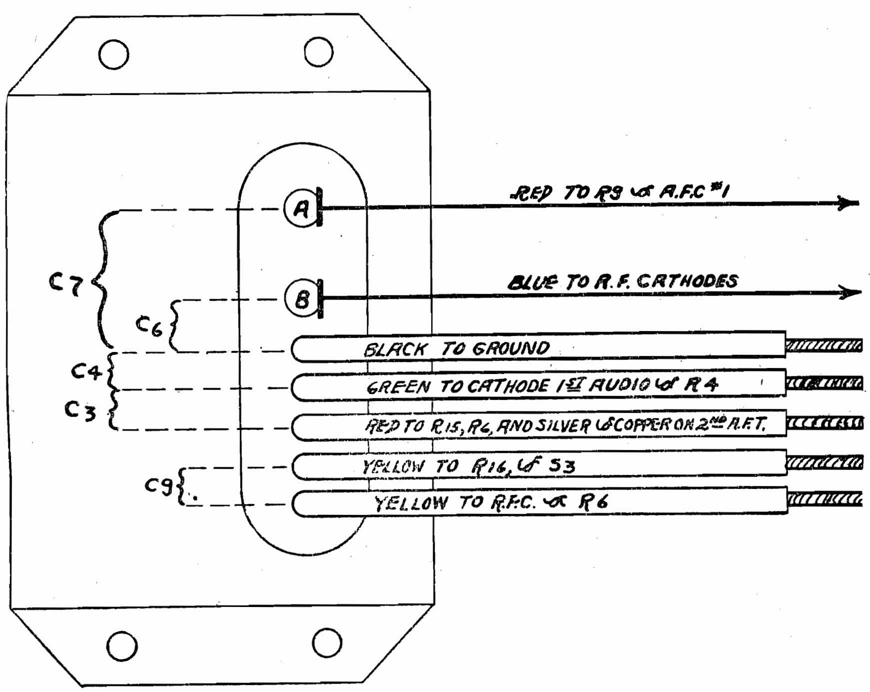
MODEL Bel-Canto 81
Condenser Data

AMRAD CORPORATION



BY-PASS BLOCK CONDENSER, NO. 8113

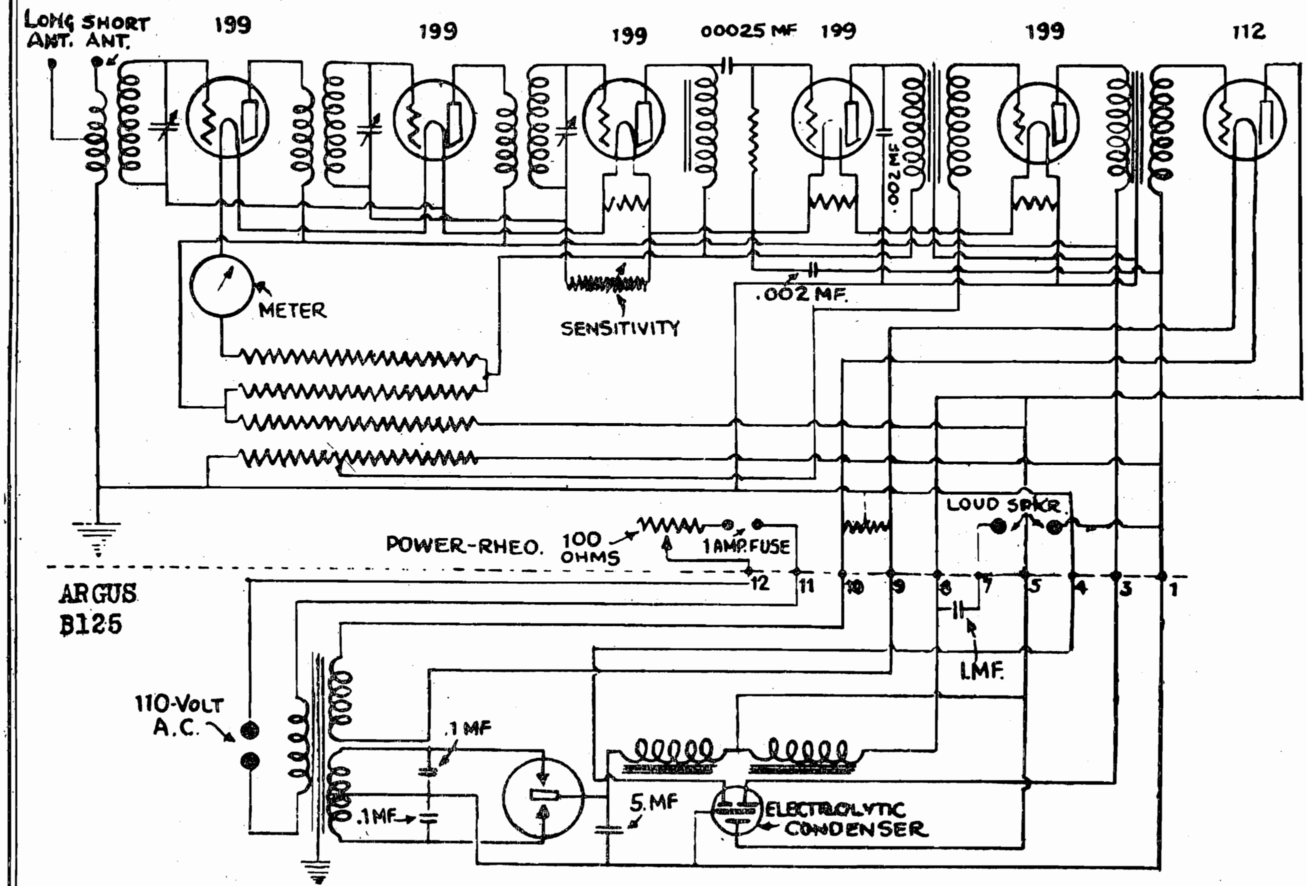
"Lug Terminal" Style. This block contains Fixed Condensers, C3, C4, C6, C7, C9. The different units are indicated, with their connections to their respective circuits.

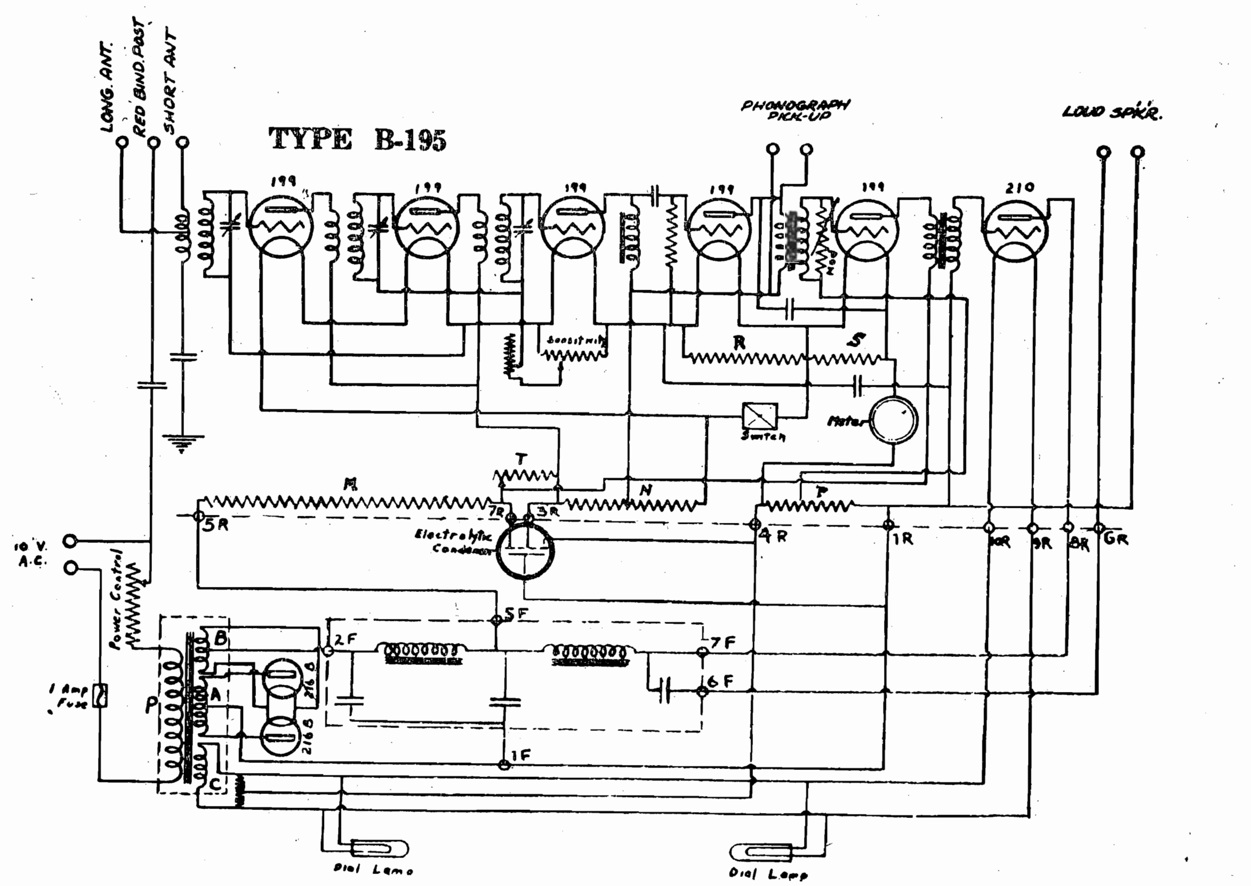


BY-PASS BLOCK CONDENSER, NO. 8113

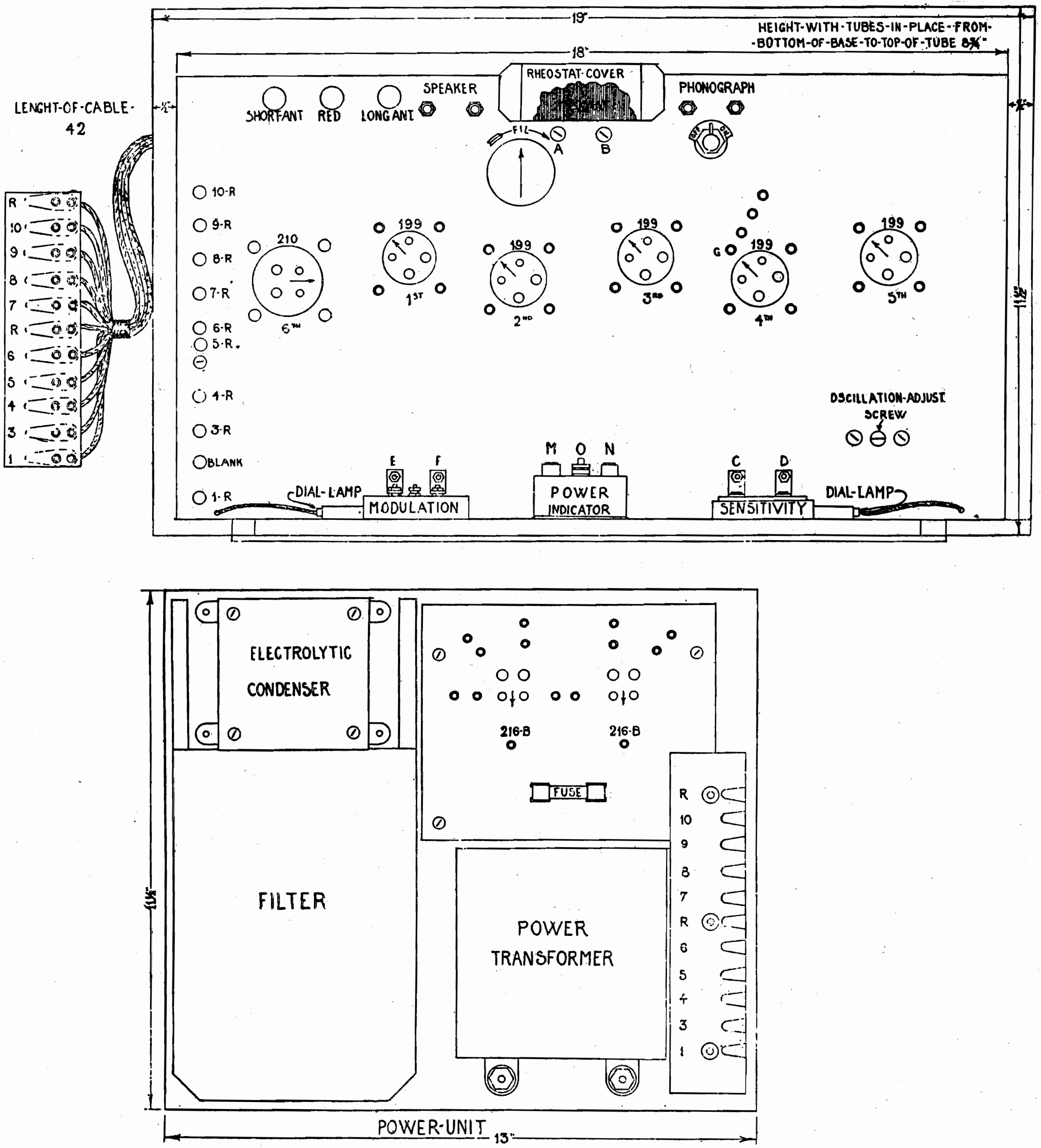
"Wire Terminal" Style. This block contains the same units as does the No. 8113 "Lug Terminal" Style. To test for capacity, opens or shorts, it is necessary to disconnect at least one terminal of the unit from the circuit.

ARGUS RADIO CORP.





ARGUS RADIO CORP.

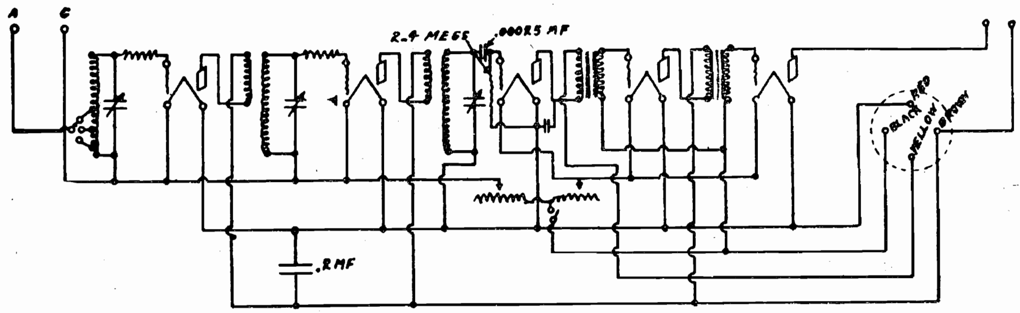


Inside view of ARGUS ELECTRIC RADIO RECEIVER, Model B195,

TWO-PIECE CHASSIS. Diagram shows location of connecting cables.

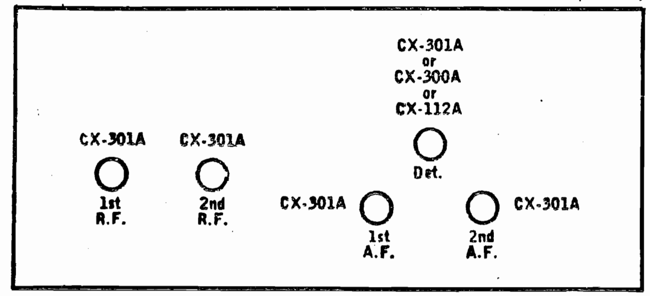
ATWATER KENT MFG. CO.

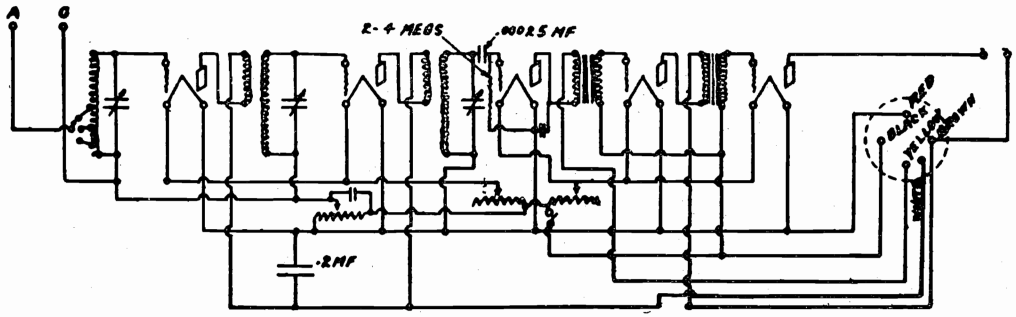
MODEL 10
MODEL 10-B
MODEL 12



MODEL 10 No. 4700

10 (Batt.)

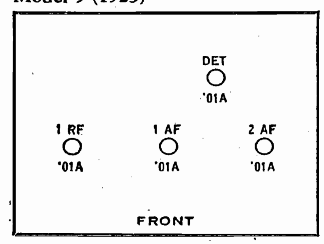


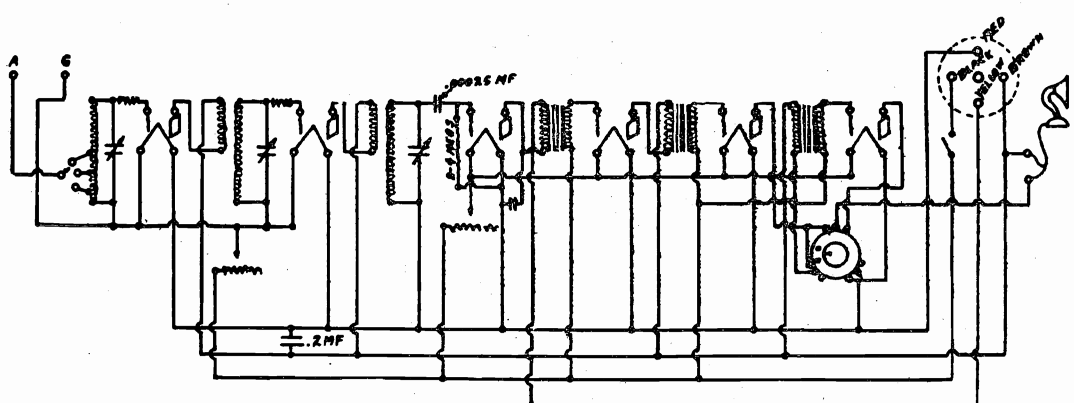


MODEL 10-B

Note.—This set has two R.F. rheostats (one for each R.F. tube). —F1R connects to the slider lead of the 1st R.F. rheostat instead of to —F2R.

Model 9 (1923)

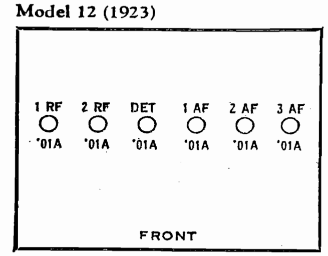




MODEL 12

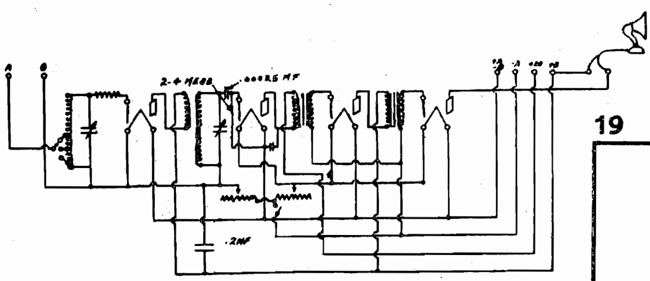
(Diagram shows one rheostat controlling detector and all three A.F. tubes. In actual set, rheostat controls detector and 1st audio only, 2nd and 3rd audio tubes being on separate fixed resistances.)

Model 12 (1923)



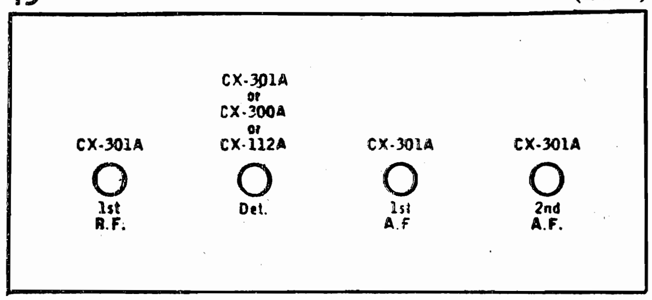
MODEL 19
MODEL 20 # 7570
MODEL 20 # 4640

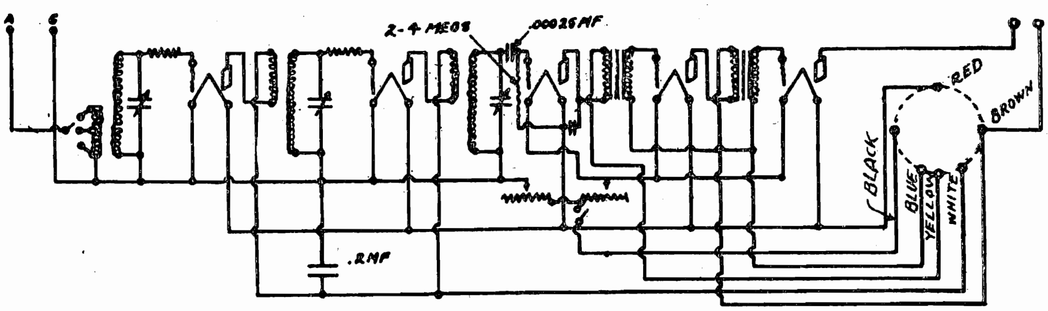
ATWATER KENT MFG. CO.



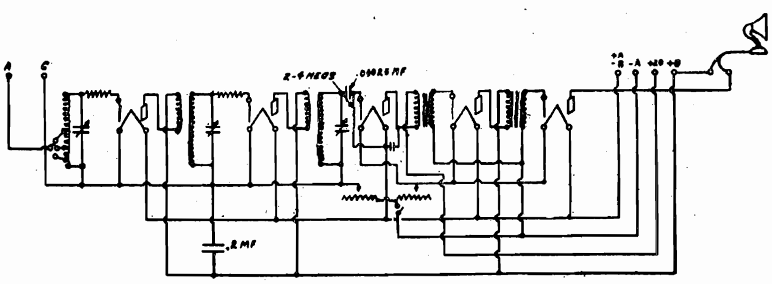
MODEL 19 SET No. 4880.

19 (Batt.)



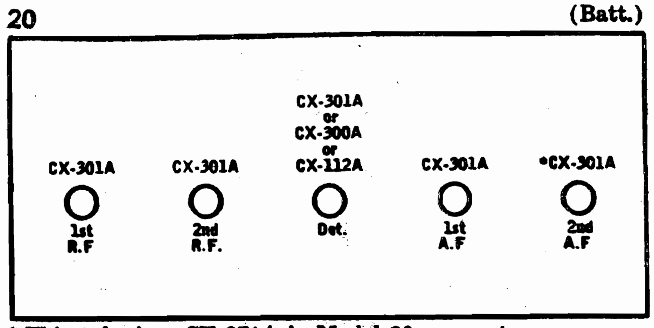


Model 20 Compact Set No. 7570. Wiring Diagram.



MODEL 20 SET No. 4640.

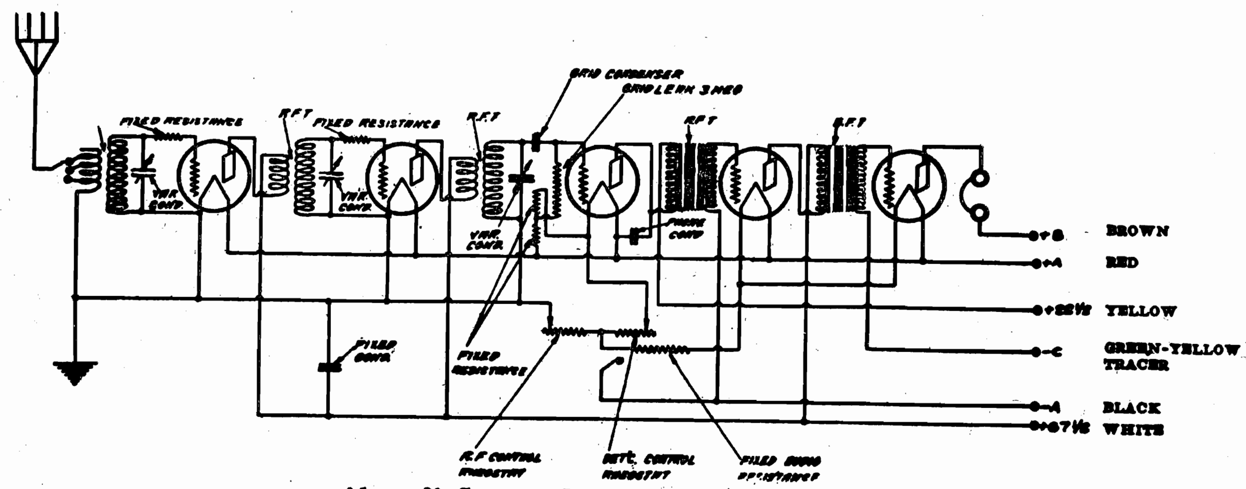
20 (Batt.)



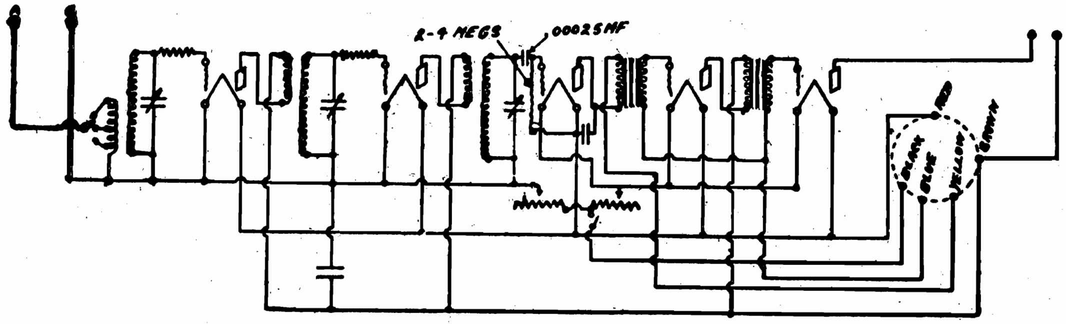
* This tube is a CX-371A in Model 20 compact.

MODRL 20 # 7960
MODEL 21 # 7780

ATWATER KENT MFG. CO.

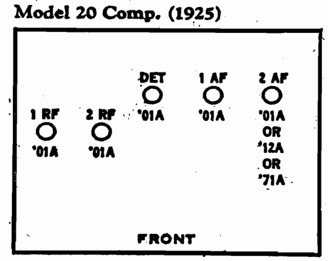


Model 20 Compact Set No. 7960. Wiring Diagram.

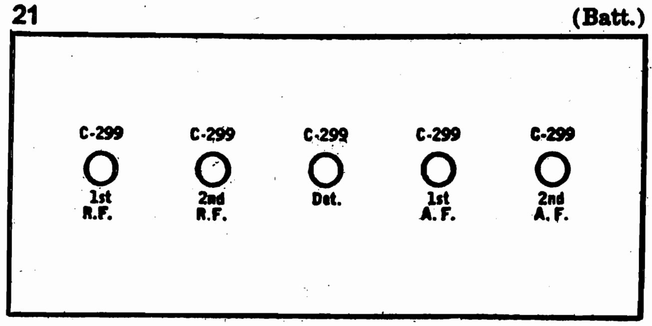


MODEL 21 DRY CELL SET No. 7780.

Model 20 Comp. (1925)

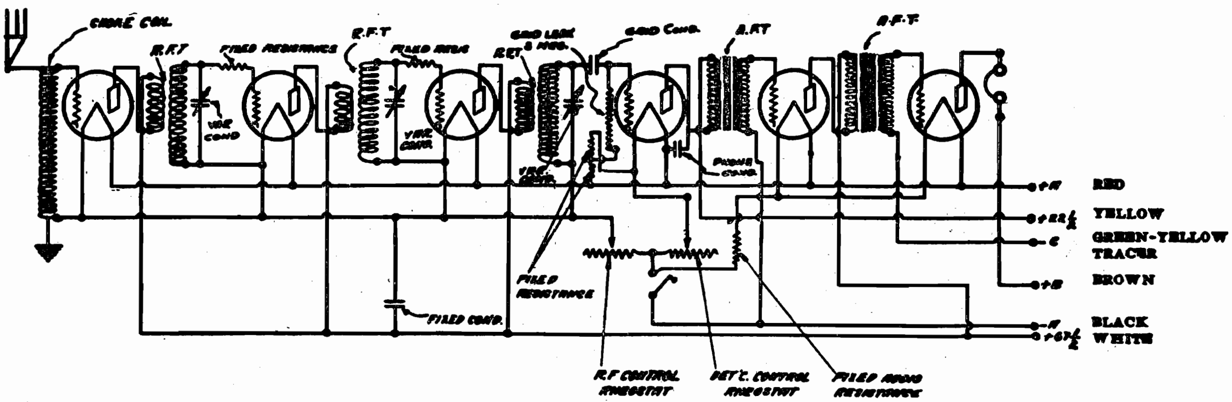


21 (Batt.)

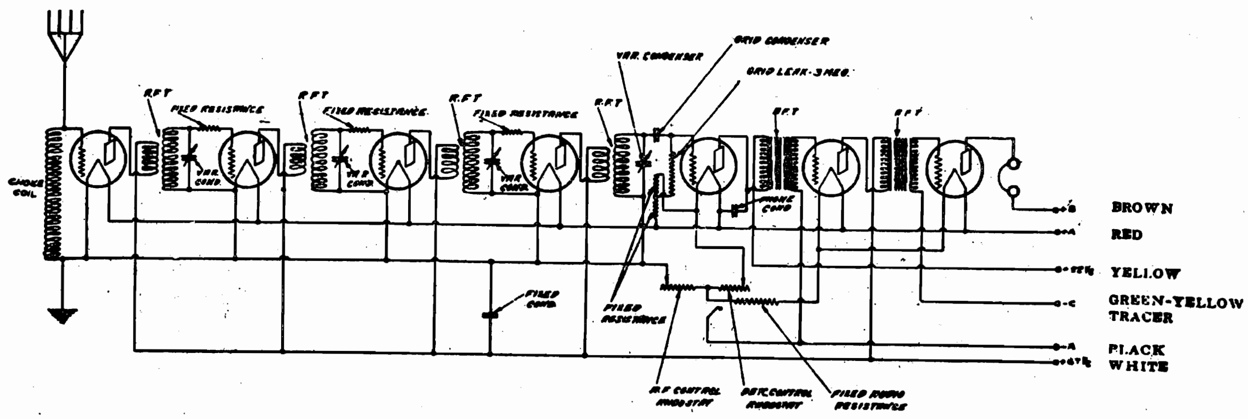


MODEL 30
MODEL 32
MODEL 35
MODEL 48

ATWATER KENT MFG. CO.

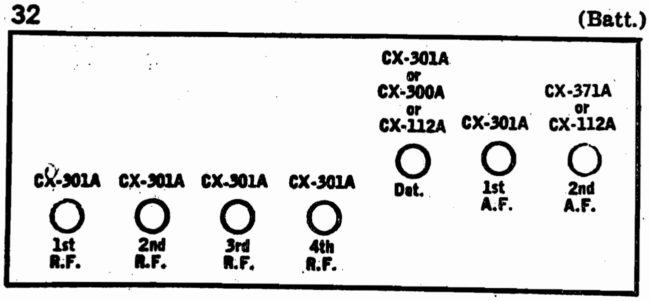


WIRING DIAGRAM OF MODELS 30, 35 AND 48. (In Model 35, one rheostat controls the three R.F. filaments and a fixed resistance is connected in series with the detector and two A.F. filaments.)

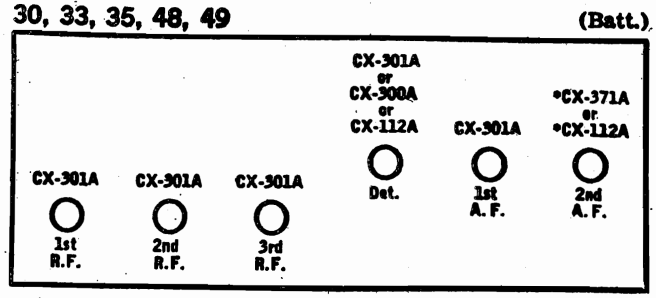


WIRING DIAGRAM OF MODEL 32.

32 (Batt.)



30, 33, 35, 48, 49 (Batt.)



ATWATER KENT MFG. CO.

MODEL 33
MODEL 36 Early
MODEL 36 Late
MODEL 49

MODEL 36 ABOVE SERIAL No. 2,610,000

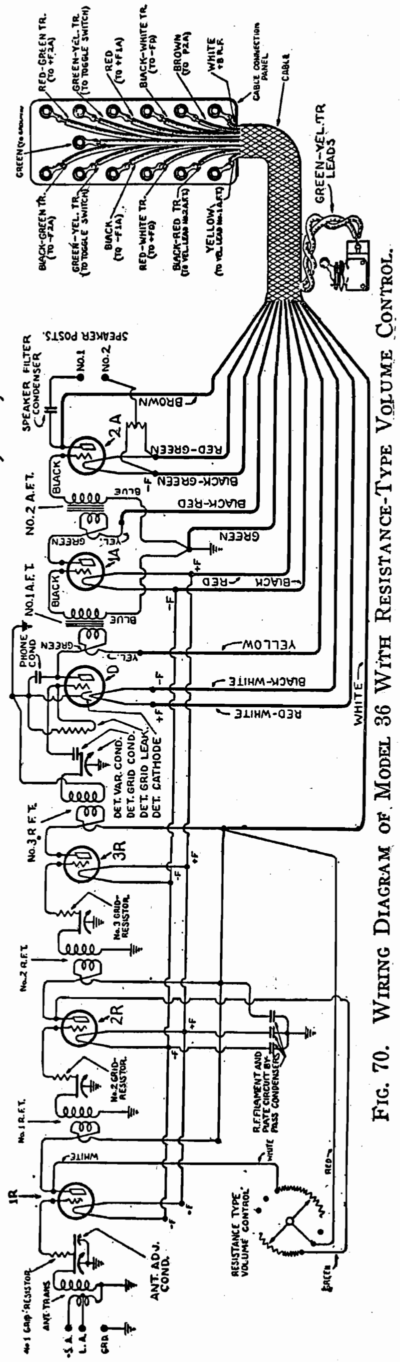
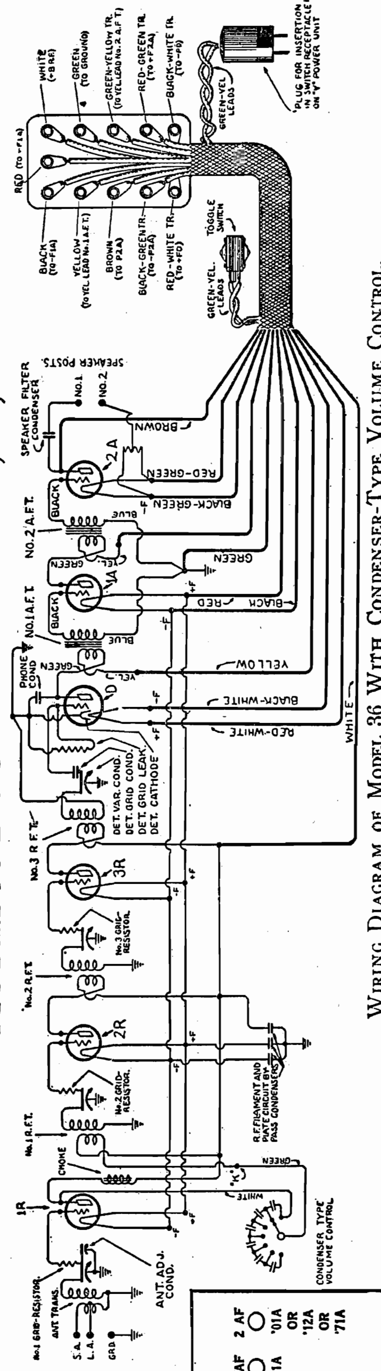
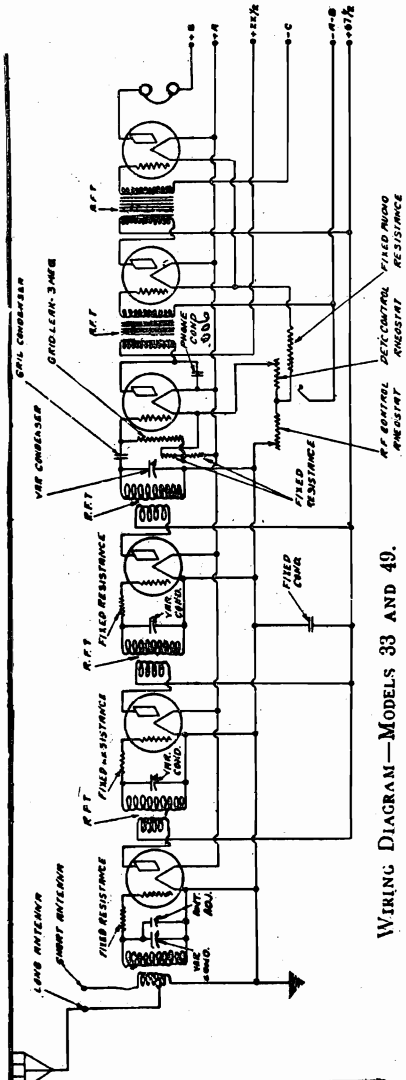


FIG. 70. WIRING DIAGRAM OF MODEL 36 WITH RESISTANCE-TYPE VOLUME CONTROL.

MODEL 36 BELOW SERIAL No. 2,610,000



WIRING DIAGRAM OF MODEL 36 WITH CONDENSER-TYPE VOLUME CONTROL.



WIRING DIAGRAM—MODELS 33 AND 49.

Model 33 (1927)

- 1 RF '01A
- 2 RF '01A
- 3 RF '01A
- DET '01A
- 1 AF '01A
- 2 AF '01A OR '12A OR '71A

FRONT

36 (A.C.)

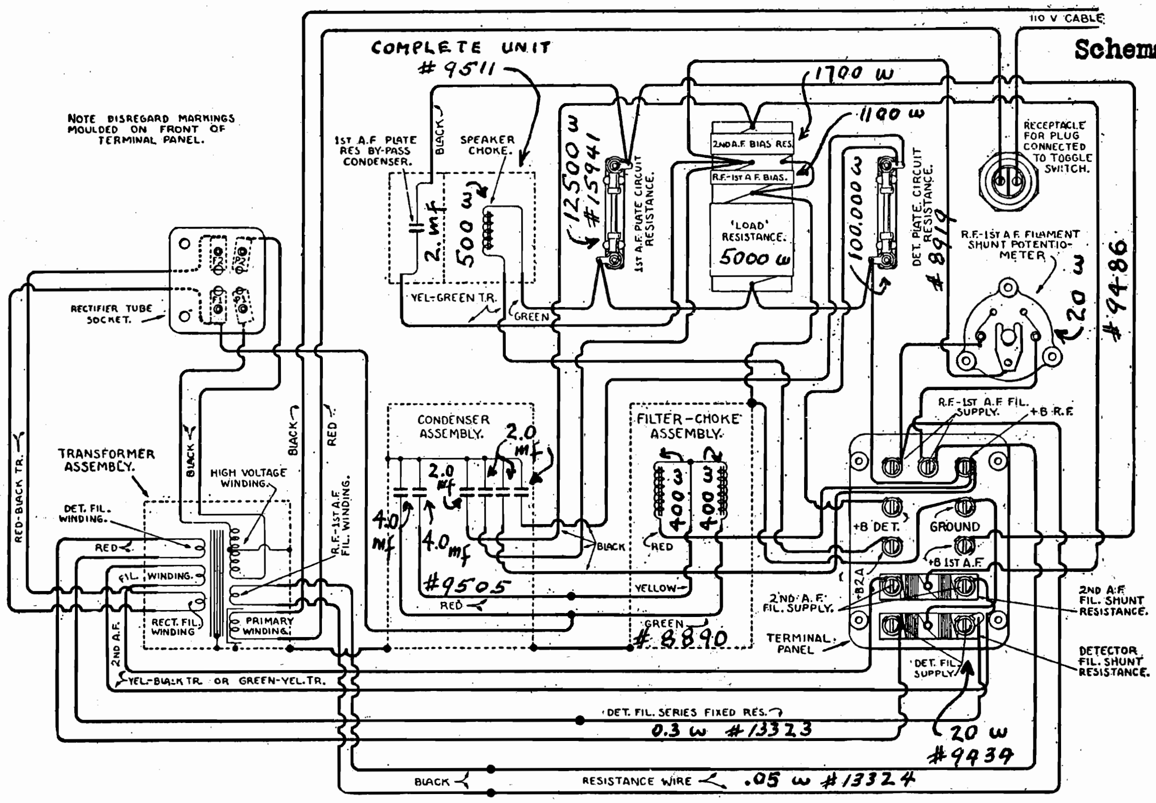
- CX-326 1st R.F.
- CX-326 2nd R.F.
- CX-326 3rd R.F.
- C-327 Det.
- CX-326 1st A.F.
- CX-371A 2nd A.F.

CX-380 used in separate power unit.

ATWATER KENT MFG. CO.

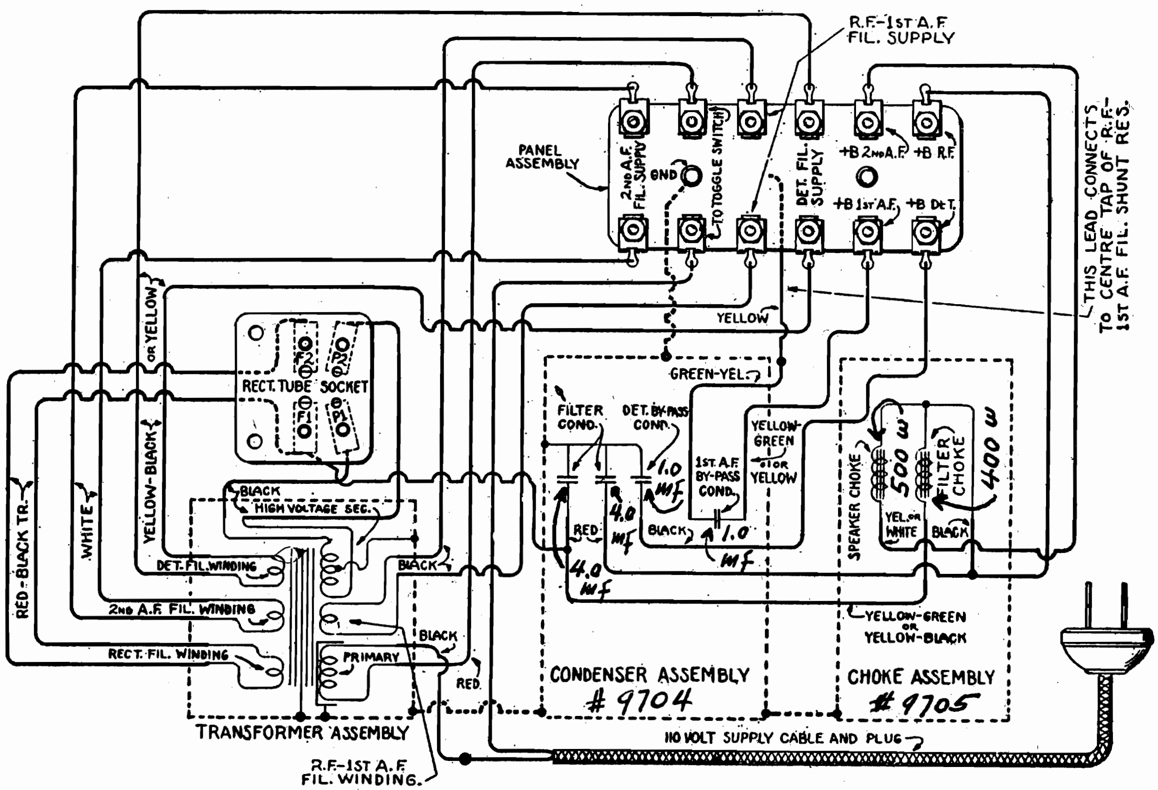
MODEL 36
Power Pack

Schematic



Model "Y" Power Units below Serial No. 260,000

(Used with Model 36 Sets below Serial No. 2,610,000)

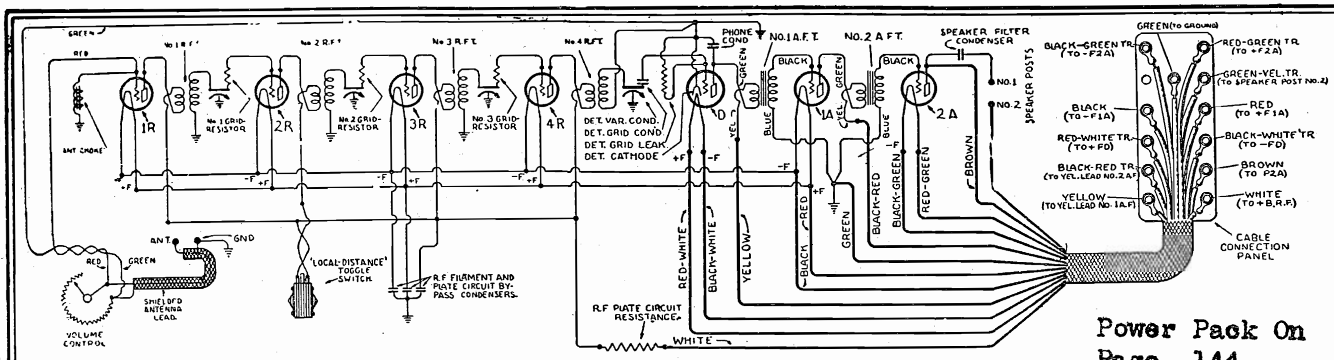


Model "Y" Power Units Above Serial No. 260,000

(Used with Model 36 Sets above Serial No. 2,610,000)

ATWATER KENT MFG. CO.

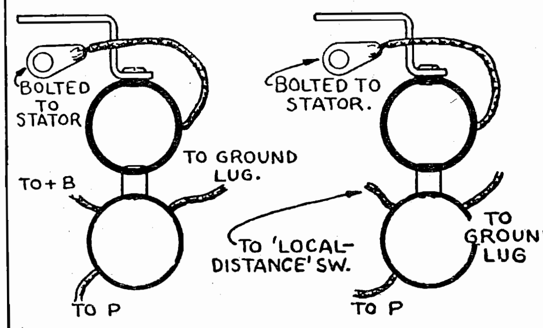
MODEL 37
MODEL 38
(A.C.)



Power Pack On Page 144

WIRING DIAGRAM OF MODEL 38.

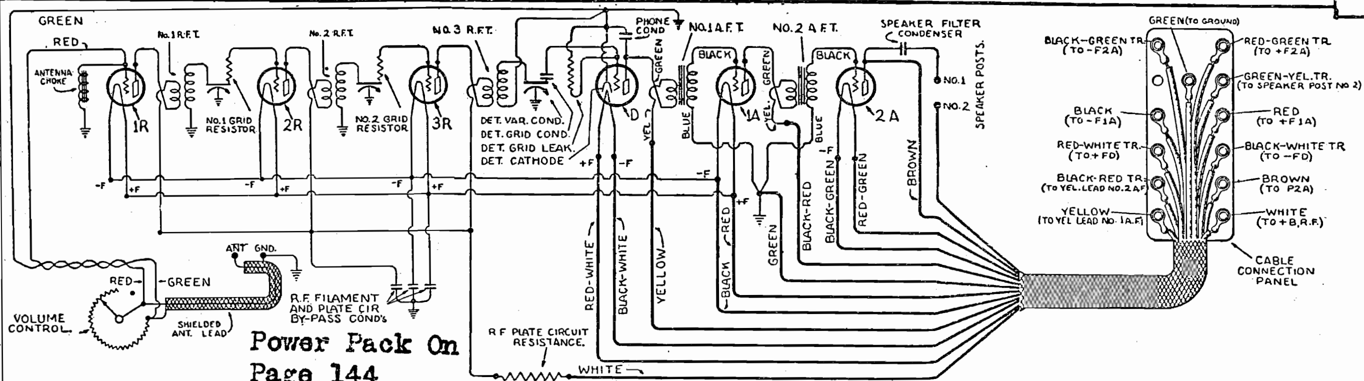
A 2nd-A. F. filament-shunt resistor is used before Serial No. 1,752,000 and the green-yellow tracer cable lead is not used. Connections for this resistor are shown in dotted lines in the diagram on page 61. A schematic diagram of the volume control is shown in Fig. 78.



NO. 1,3,4 R.F.T.

NO. 2 R.F.T.

SKETCH SHOWING CONNECTIONS FROM R. F. TRANSFORMERS



Power Pack On Page 144

WIRING DIAGRAM OF MODEL 37, 37-F, 37-C.

A 2nd-A F. filament-shunt resistor is used before Serial No. 1,385,000, in which case speaker post No. 2 connects to the centre-tap of this resistor, and the green-yellow tracer lead is not used. The R. F. plate circuit resistor is used after Serial No. 1,385,000.

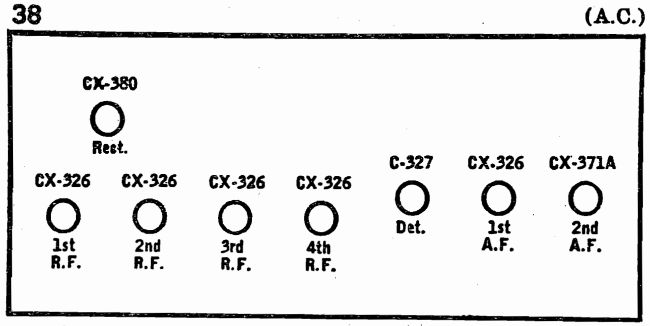
In Model 37-C the on-off switch is connected to the two terminals on either side of the ground eyelet. A 2nd-A. F. filament shunt resistor is used in the chassis of all Model 37-C receivers.

ATWATER-KENT—Models 37-38
Line Voltage 115—On Early Models "B" and "C" Voltages Are Lower Than Shown

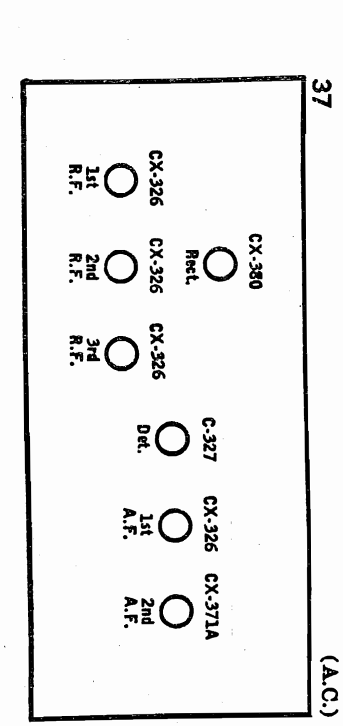
TUBE NO. IN ORDER	TYPE OF TUBE	POSITION OF TUBE 1ST. R.F., DET., ETC.	READINGS, PLUG IN SOCKET OF SET — TUBE OUT: A VOLTS	TUBE OUT: B VOLTS	TUBE IN TESTER: A VOLTS	TUBE IN TESTER: B VOLTS	TUBE IN TESTER: C VOLTS	CATHODE VOLTS	NORMAL PLATE M.A.	PLATE M.A. GRID TEST	PLATE M.A. CHANGE
1	226	1st.R.F.	1.3	173	1.25	165	10	-	4.8	8.4	3.6
2	226	2nd.R.F.	1.3	173	1.25	165	10	-	4.8	8.4	3.6
3	226	3rd.R.F.	1.3	173	1.25	165	10	-	4.8	8.4	3.6
4	227	Detector	2.25	80	2.0	22.5	-	-	2.2	2.2	0.0
5	226	1st.A.F.	1.3	173	1.25	165	10	-	4.8	8.4	3.6
6	171	2nd.A.F.	4.6	192	4.3	180	36	-	18.0	19.5	1.5
7	280	Rectifier	-	-	4.3	-	-	-	20.0	-	-
8											
9											
10											

38

(A.C.)



37



Power pack reference on page 1-8.

MODEL 37
Power Pack
Early and Late
Data

Schematic

ATWATER KENT MFG. CO.

RESISTORS	Early	Late
Detector plate	100000 ohms #8919 Green paint	65000 ohms # 15592 1 watt black or bl. and gr.
1st a-f plate	12500 ohms #15941 red See late.	12500 ohms # 15941 red or purple and yellow or red.
R-f and 1st a-f bias	1100 ohms # 9691 eliptical	625 ohms # 13128 eliptical
2nd a-f bias	1750 ohms # 9692 eliptical	2200 ohms # 13289 eliptical
Filament shunt	20 ohms # 9434	20 ohms # 9434 flat, wire
Speaker choke	500 ohms	500 ohms
Filter chokes	1600 ohms total	1600 ohms total
CONDENSERS	See schematic	See Schematic. Condenser unit is # 13315. Also houses transformer.

Special Note.

A 1. mfd condenser is also contained in the transformer-condenser housing but this condenser is not connected in the model 37 power pack.

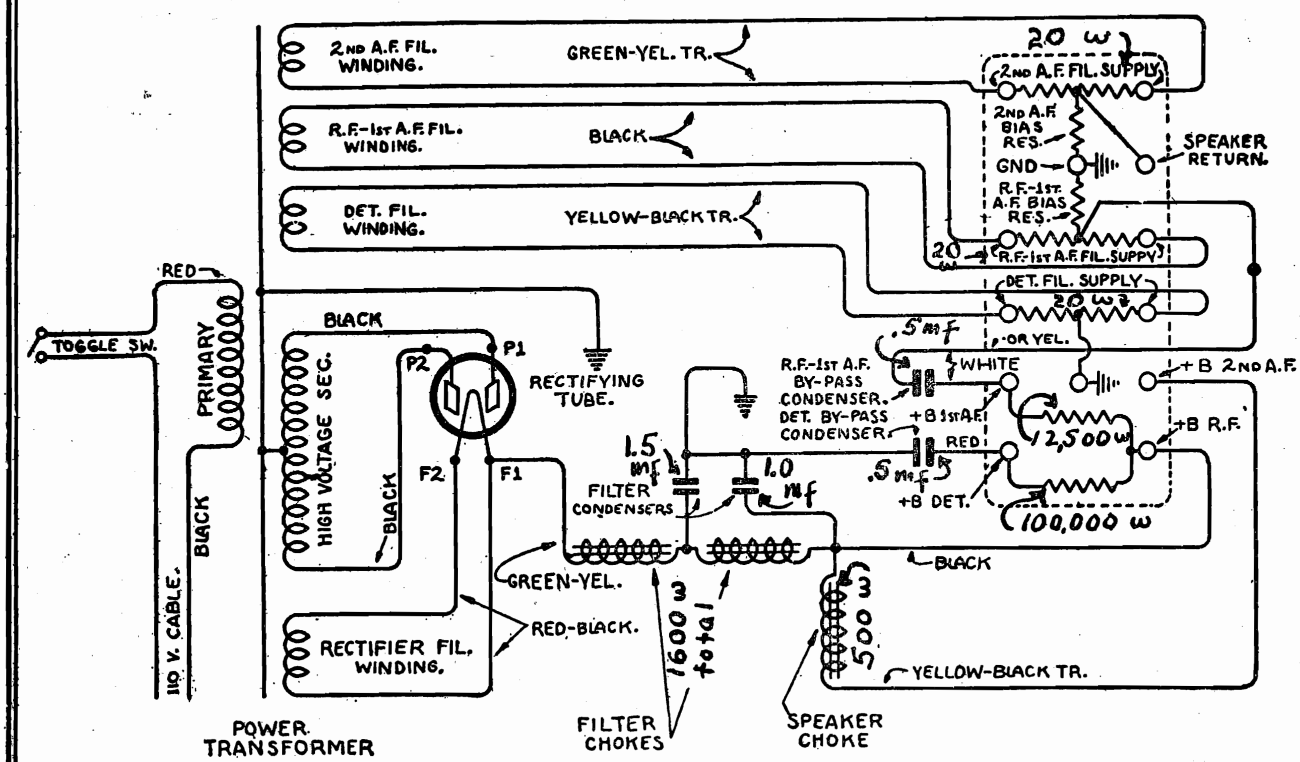
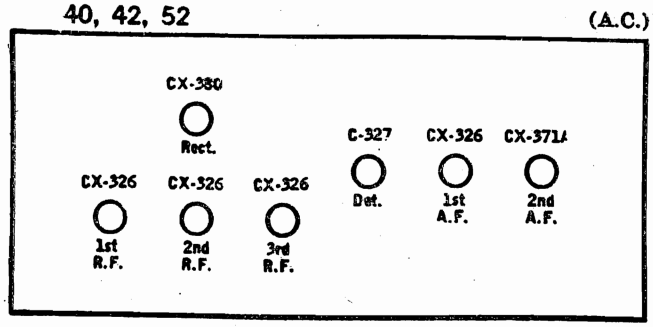
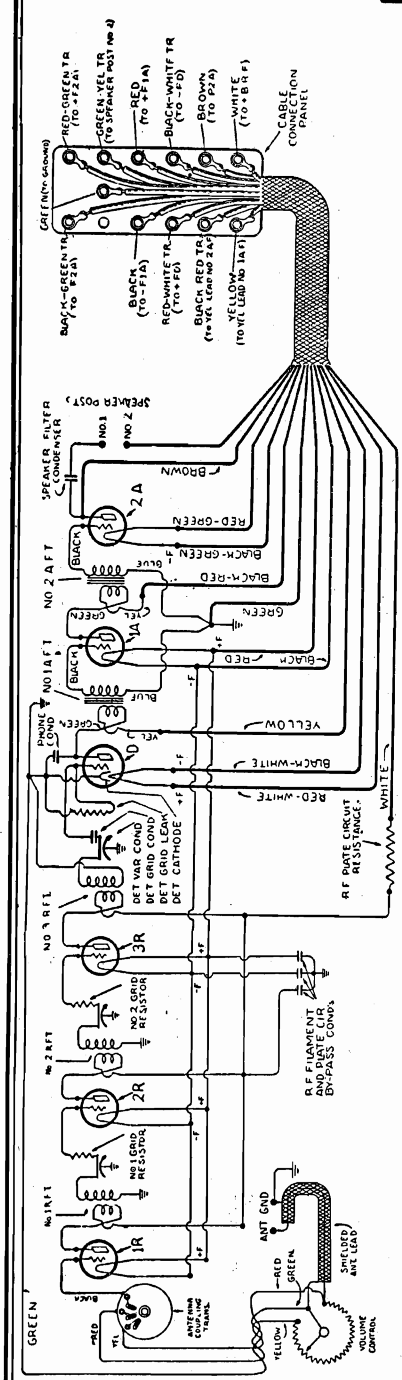


DIAGRAM OF POWER UNIT IN MODELS 37 AND 38

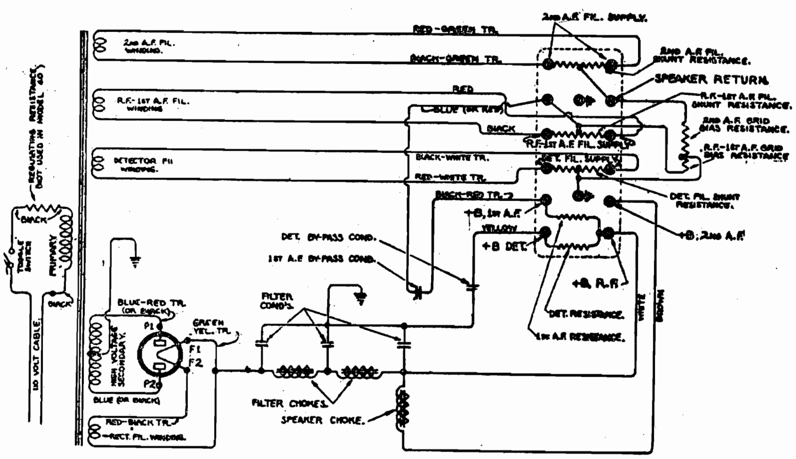
ATWATER KENT MFG. CO.

MODEL 40
MODEL 42
MODEL 52





WIRING DIAGRAM OF MODEL 40, 40-F, 42, 42-F, 52, 56 AND 57.
Model 52 does not have the shielded antenna lead, but is provided with two twenty-foot leads which are connected to the volume control, black for antenna and black-green tracer for ground. Model 56 and 57 have antenna and ground posts at the bottom of the cabinet.



SCHEMATIC DIAGRAM OF POWER UNIT IN MODELS 40, 42, 44, AND 52. SOME EARLY UNITS OF THIS TYPE HAVE COLOR SCHEME SIMILAR TO UNIT IN MODEL 38 SET. NOTE THAT COLORS AS NOW STANDARDIZED CORRESPOND WITH THE COLORS OF SET-CABLE LEADS.

ATWATER-KENT—Model 40
Line Voltage 115

Tube No. in Order	Type of Tube	Position of Tube 1st R.F. Det., etc.	Readings, Plug in Socket of Set: Tube Out: A Volts	Tube Out: B Volts	Tube in Tester: A Volts	B Volts	C Volts	Cathode Volts	Normal Plate M.A.	Plate M.A. Grid Test	Plate M.A. Change
1	226	1st.R.F.	1.3	145	1.25	138	10	-	4.8	8.4	3.6
2	226	2nd.R.F.	1.3	145	1.25	138	10	-	4.8	8.4	3.6
3	226	3rd.R.F.	1.3	145	1.25	138	10	-	4.2	8.0	3.8
4	227	Detector	2.25	157	2.0	40	-	-	2.2	2.2	0.0
5	226	1st.A.F.	1.3	172	1.25	130	8	-	3.8	7.6	3.8
6	171A	2nd.A.F.	4.2	210	4.1	148	32	-	14.4	15.4	1.0
7	280	Rectifier	-	-	4.5	-	-	-	16.5	-	-

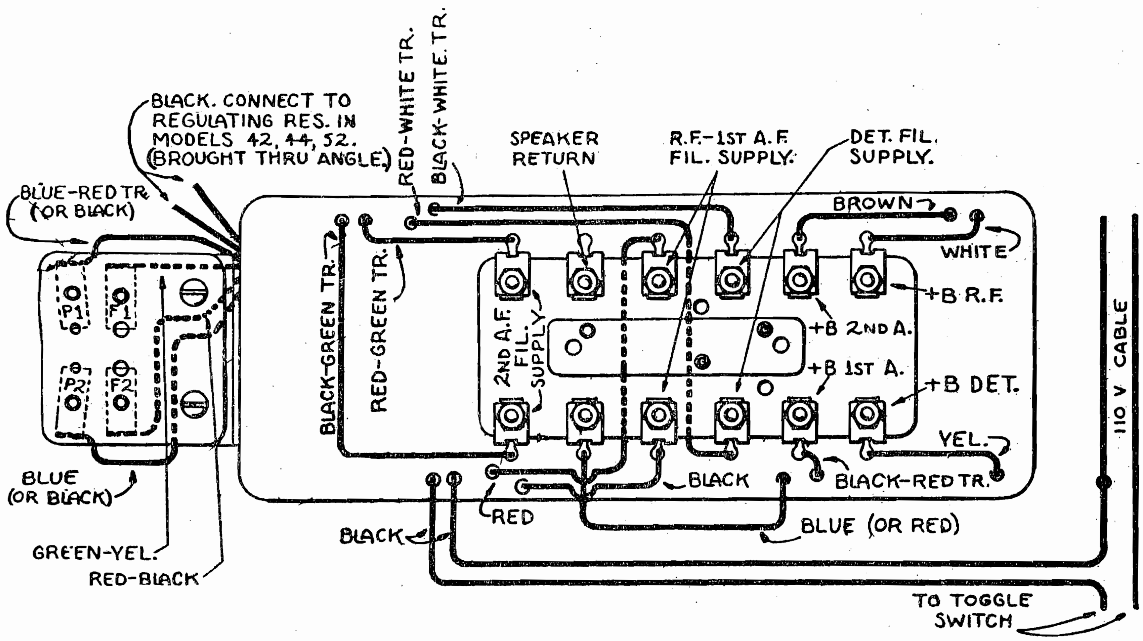
ATWATER-KENT—Models 42-44-52-56
Line Voltage 115—4th R. F.—Tube in Model 44 Only

Tube No. in Order	Type of Tube	Position of Tube 1st R.F. Det., etc.	Readings, Plug in Socket of Set: Tube Out: A Volts	Tube Out: B Volts	Tube in Tester: A Volts	B Volts	C Volts	Cathode Volts	Normal Plate M.A.	Plate M.A. Grid Test	Plate M.A. Change
1	226	1st.R.F.	1.55	164	1.4	152	12	-	5.4	9.1	3.7
2	226	2nd.R.F.	1.55	164	1.4	152	12	-	5.7	9.2	3.5
3	226	3rd.R.F.	1.5	156	1.4	152	11.5	-	5.4	9.1	3.7
4	227	Det.	2.25	174	2.15	38	0	-	2.2	2.2	0.0
5	226	1st.A.F.	1.5	192	1.4	150	10.5	-	5.0	8.7	3.7
6	171A	2nd.A.F.	4.7	232	4.5	162	35	-	15.0	16.0	1.0
7	280	Rectifier	-	-	4.8	-	-	-	18.0	-	-
8											
9											

MODEL 40,42,44,52
Power Unit Layout
MODEL 40,45
2nd Type Power Unit

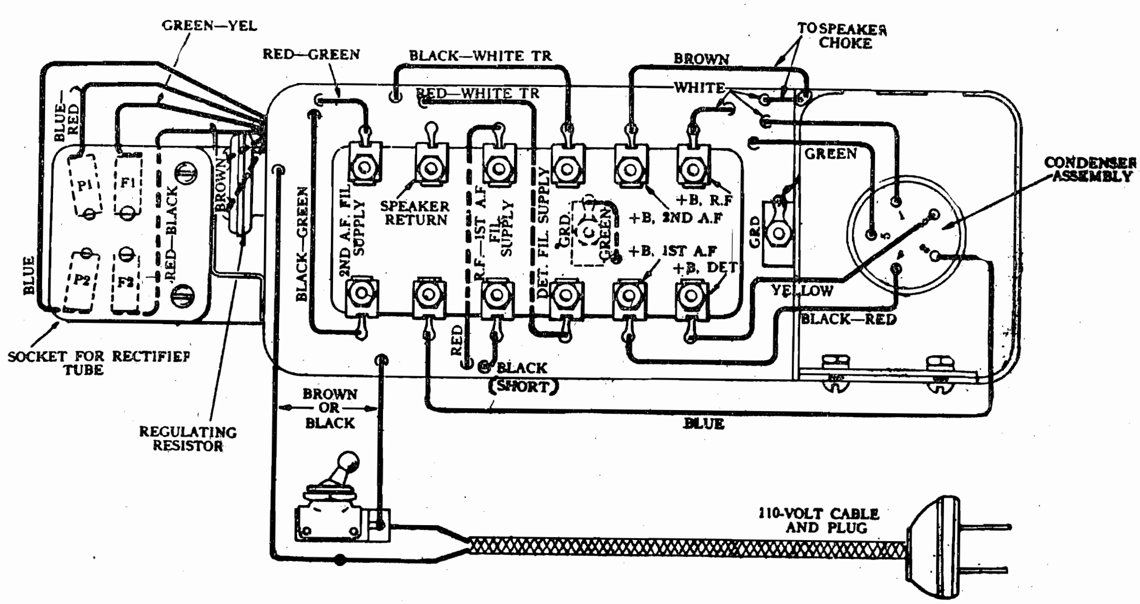
ATWATER KENT MFG. CO.

Schematic



Power Unit in Models 40, 42, 44 and 52, Showing Connections from Sealed Container to Panel Assembly, Rectifier Socket and Regulating Resistance

This view shows the approximate position of leads from sealed container. In Models 42, 44 and 52, a hole is cut in the rectifier-socket mounting angle and the two black leads are brought up through the hole and connect to the regulating resistance, which is mounted upright at the left-hand end of the sealed container.



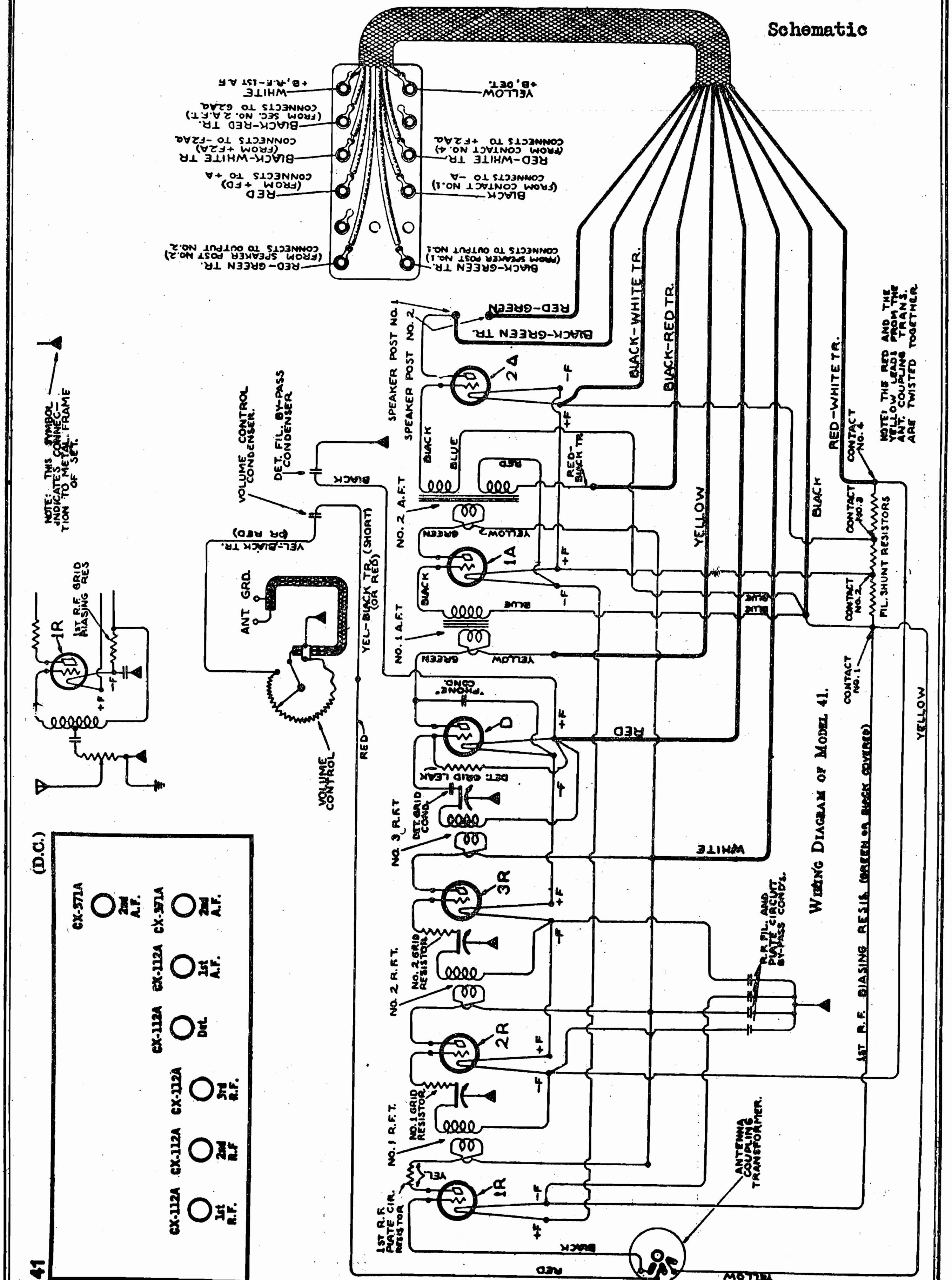
View Showing Connections in 2nd Type of Power Unit for Models 40 and 45.

This view shows the panel assembly moved to left of normal position.
The regulating resistor is not used in these models.

ATWATER KENT MFG. CO.

MODEL 41 DC

Schematic

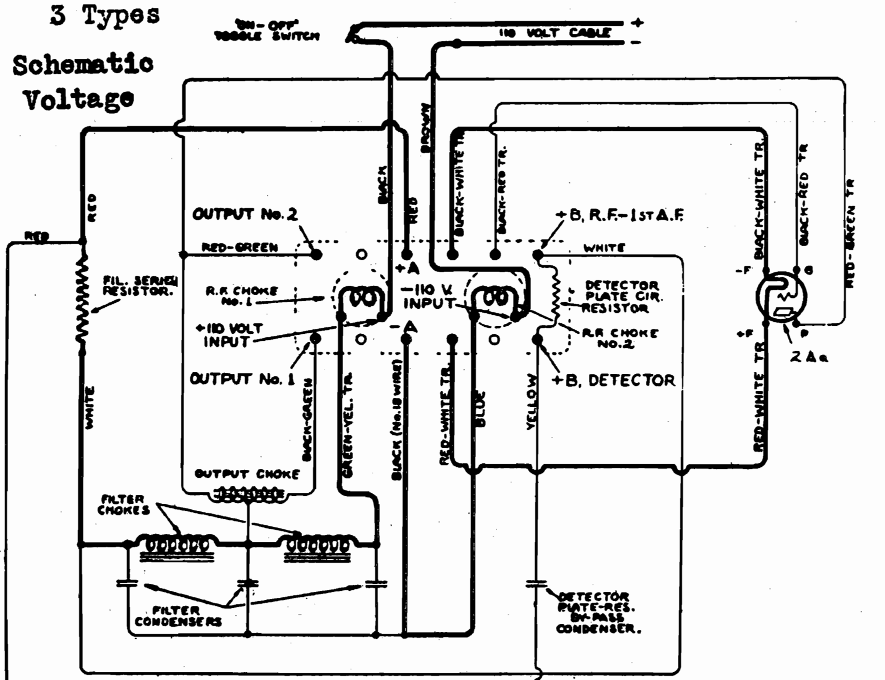


Power pack reference on page 1-12.

MODEL 41
Power Pack
3 Types

ATWATER KENT MFG. CO.

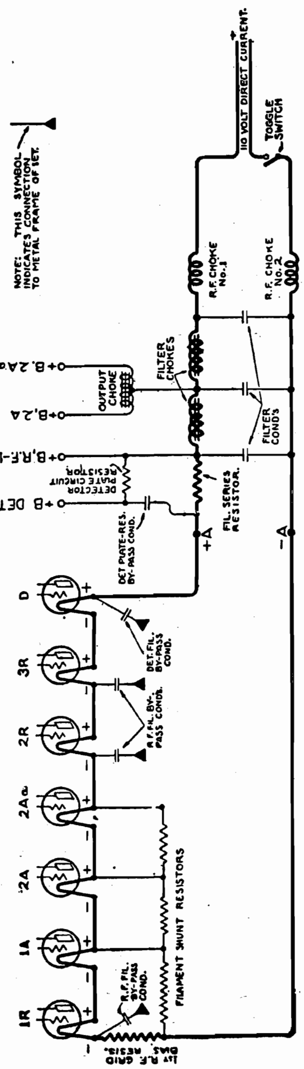
Schematic
Voltage



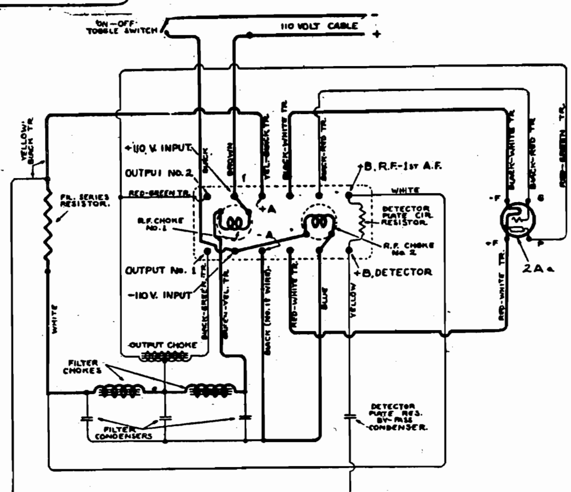
Wiring Diagram of 1st Type of Power Unit for Model 41.

Plate Voltage	
1st R.F.	60 V.
2nd R.F.	65 V.
3rd R.F.	65 V.
Detector	24 V.
1st A.F.	81 V.
2nd A.F.	81 V.

Filament Voltage	
1st R.F.	4.8 V.
2nd R.F.	4.9 V.
3rd R.F.	4.6 V.
Detector	4.6 V.
1st A.F.	4.9 V.
2nd A.F.	4.8 V.



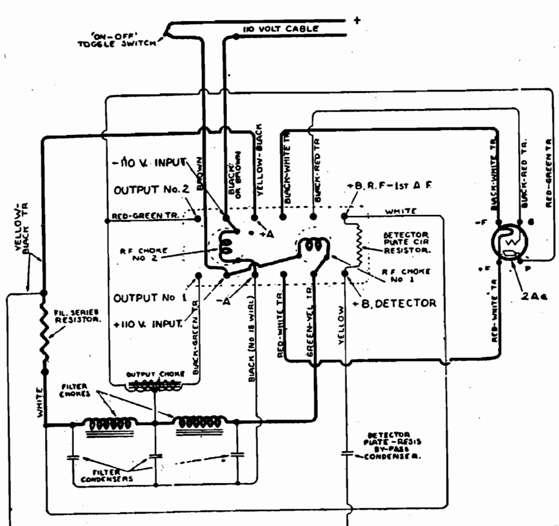
Simplified Diagram of Power Unit and Filament Circuit in Model 41 Receiver. Tubes of the 112-A type are used in all sockets except 2A and 2Aa.



Wiring Diagram of 2nd Type of Power Unit for Model 41.

Voltage at 2nd A.F. Tube on Power Unit

Filament Voltage	4.8 V.
Grid Bias Voltage	9.7 V.
Plate Voltage	85 V.

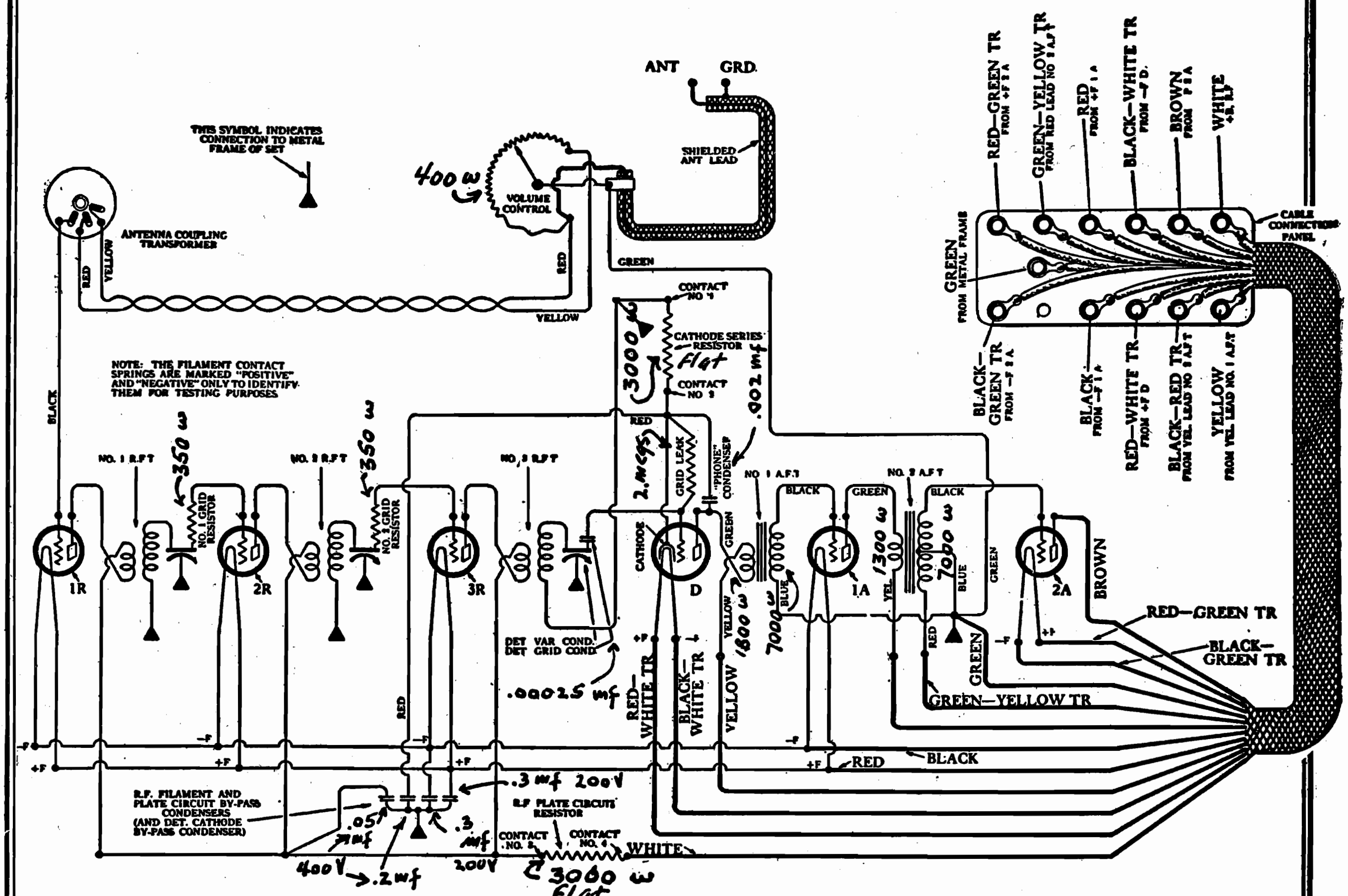


Wiring Diagram of 3rd Type of Power Unit for Model 41

Grid Bias	
1st R.F.	2 V.
1st A.F.	4.8 V.
2nd A.F.	9.7 V.

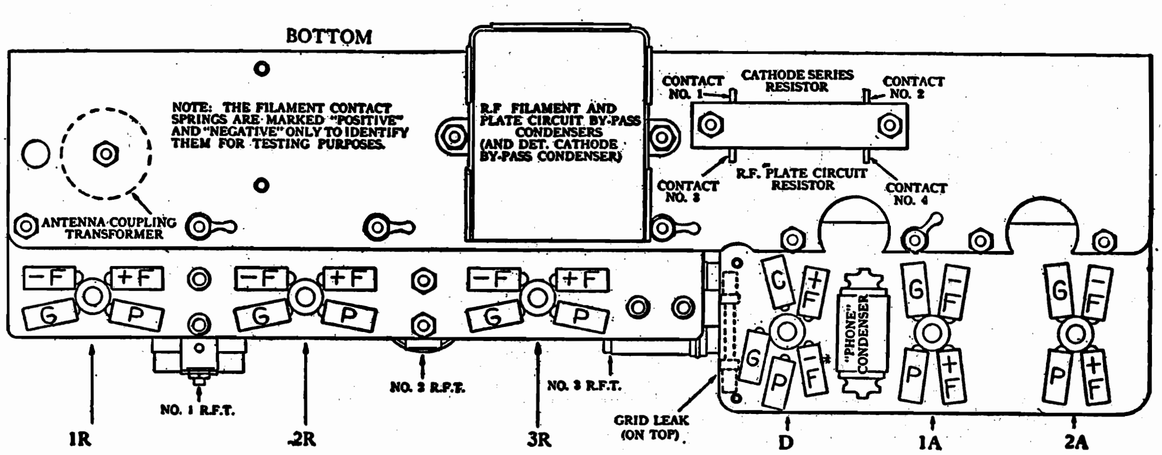
ATWATER KENT MFG. CO. MODEL 43 Receiver

Schematic



WIRING DIAGRAM OF MODEL 43 SET.
The +B, 1st A.F. cable lead is black with a red tracer.

Wiring diagram of Model 43 power pack is shown on 152

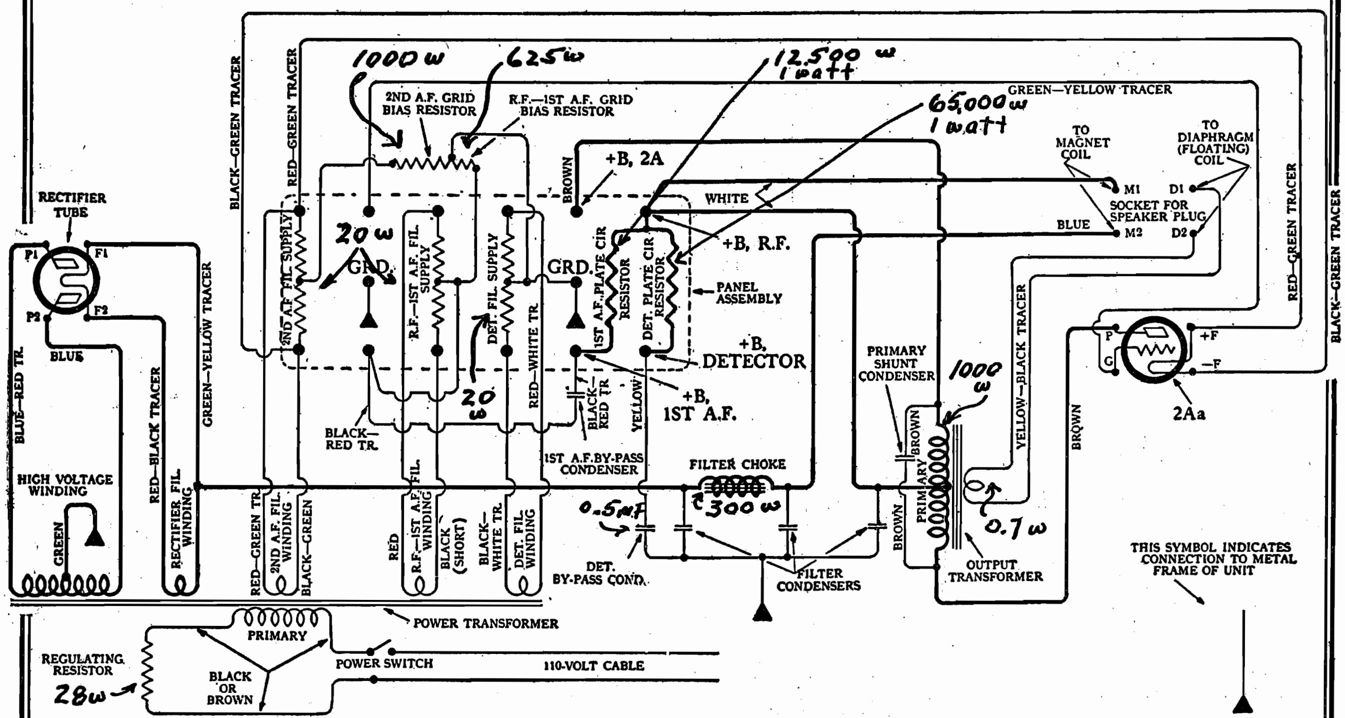


TEST CHART FOR MODEL 43.

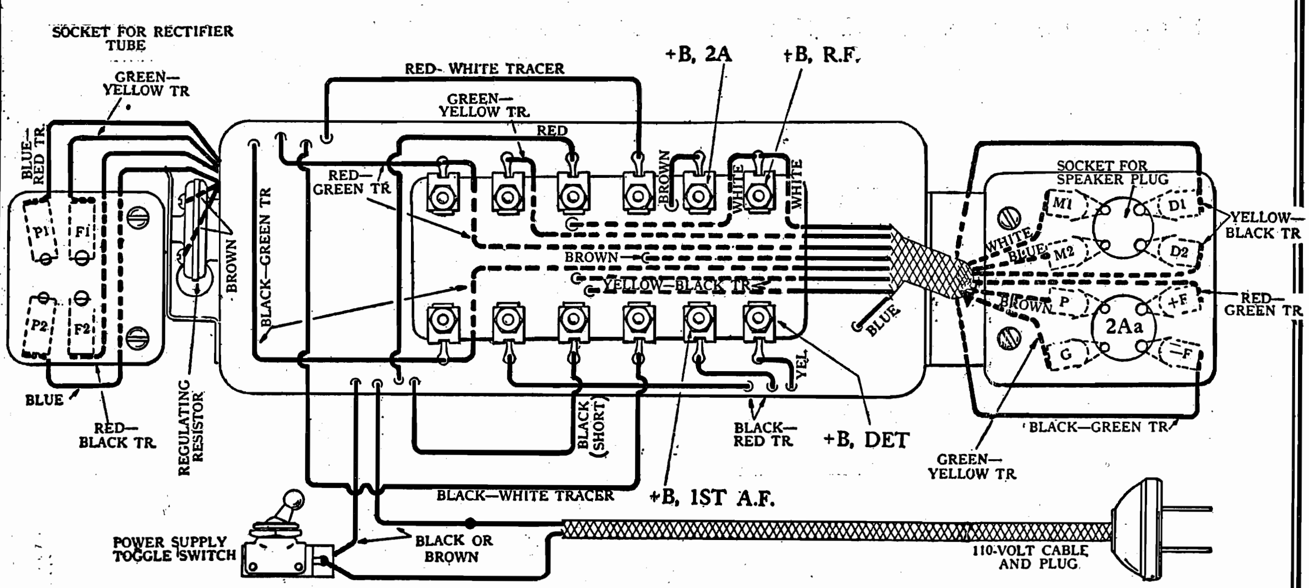
Power pack reference on page 1-14.

MODEL 43
Power Pack
Schematic

ATWATER KENT MFG. CO.



Wiring Diagram of Power Unit in Model 43.



Showing Connections and Approximate Position of Leads from Sealed Container in Model 43 Power Unit.

early type of power unit for Model 43, two brown leads from the primary-shunt condenser connect to the +B, 2A terminal and to the brown P2Aa lead respectively. In later models these connections are made internally.

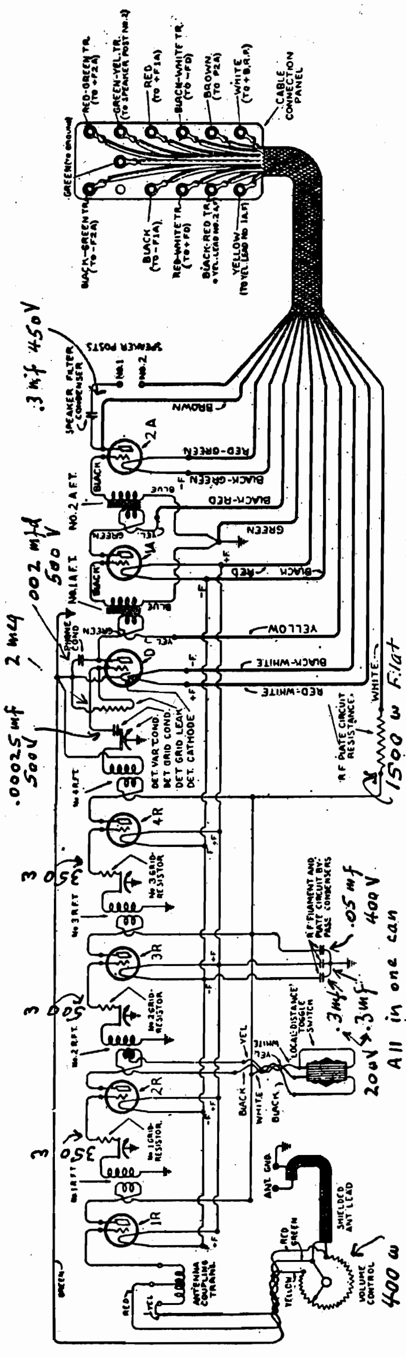
MODEL 44 and 45 ATWATER KENT MFG. CO.

SPECIAL NOTE.

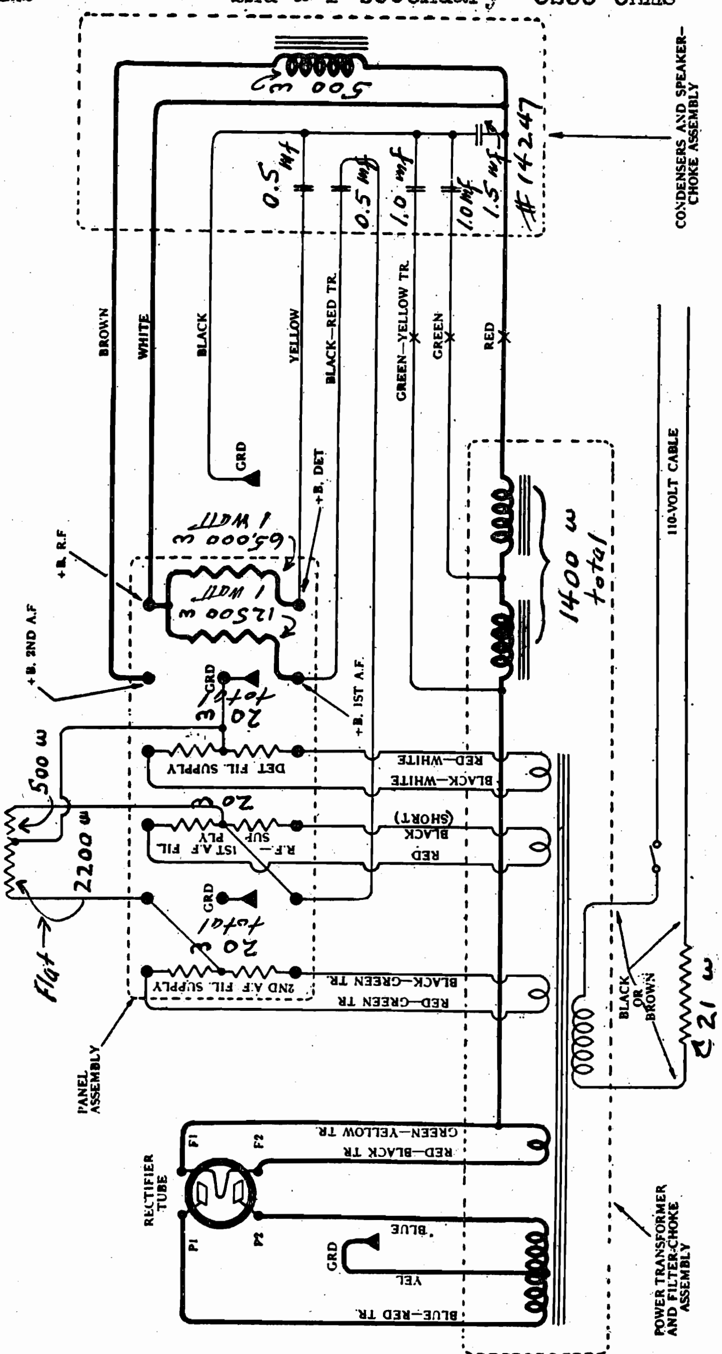
1st type power unit for Model 44 is shown on page 145. Second type power unit for Model 45 is shown on page 148.

TRANSFORMERS IN MODELS 44 and 45

1st a-f primary	1000 ohms # 8060		2nd a-f primary	1700 ohms # 7661	
1st a-f secondary	7000 ohms		2nd a-f secondary	3250 ohms	



WIRING DIAGRAM OF MODEL 44



WIRING DIAGRAM OF 2ND TYPE OF POWER UNIT FOR MODEL 44

Model 50

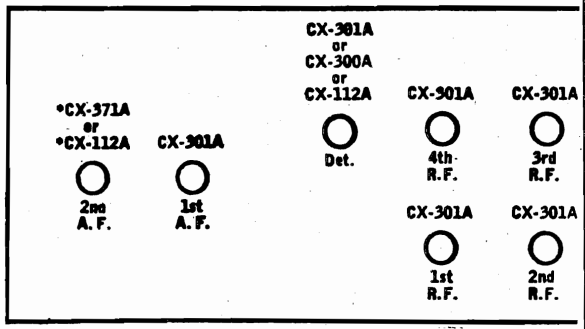
CONDENSERS

Detector grid	.00025 mfd	# 8593		500 volts
Detector phone	.002 mfd	# 8590		500 volts
Plate bypass	.3 mfd	# 14902		450 volts

RESISTORS

Detector grid leak	2.0 megs	# 15892	(8195)	1 watt
1st r-f plate	12500 ohms	# 8796		yellow glass
A-f filament	1.5 ohms	# 8627		black covered, flexible
Detector rheostat	20 ohms	# 8310		
R-f rheostat	5 ohms	# 8599		
R-f grid leak	2.0 megs	# 15892	(8195)	1 watt

50

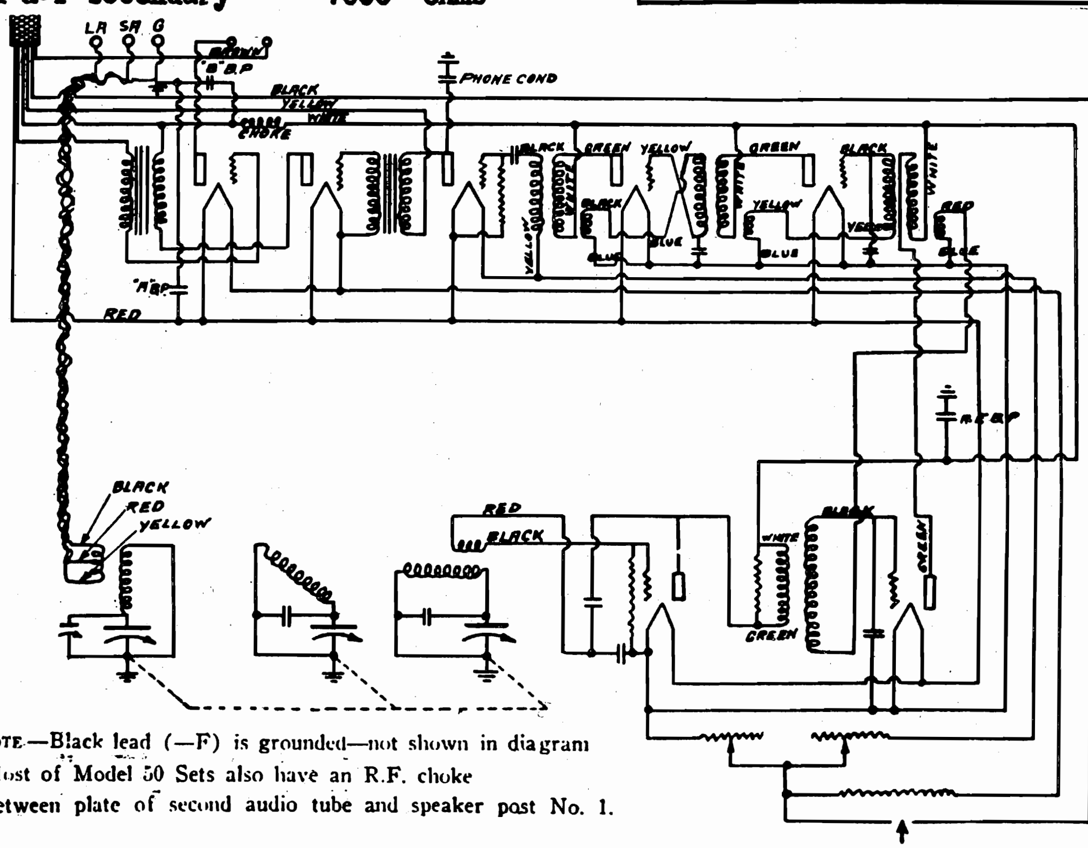


CHOKES

A-f plate	35 ohms	# 8232

TRANSFORMERS

1st a-f primary	1000 ohms	# 8650
1st a-f secondary	7000 ohms	
2nd a-f primary	1400 ohms	# 8940
2nd a-f secondary	7000 ohms	



NOTE—Black lead (—F) is grounded—not shown in diagram
Most of Model 50 Sets also have an R.F. choke between plate of second audio tube and speaker post No. 1.

WIRING DIAGRAM OF MODEL 50.

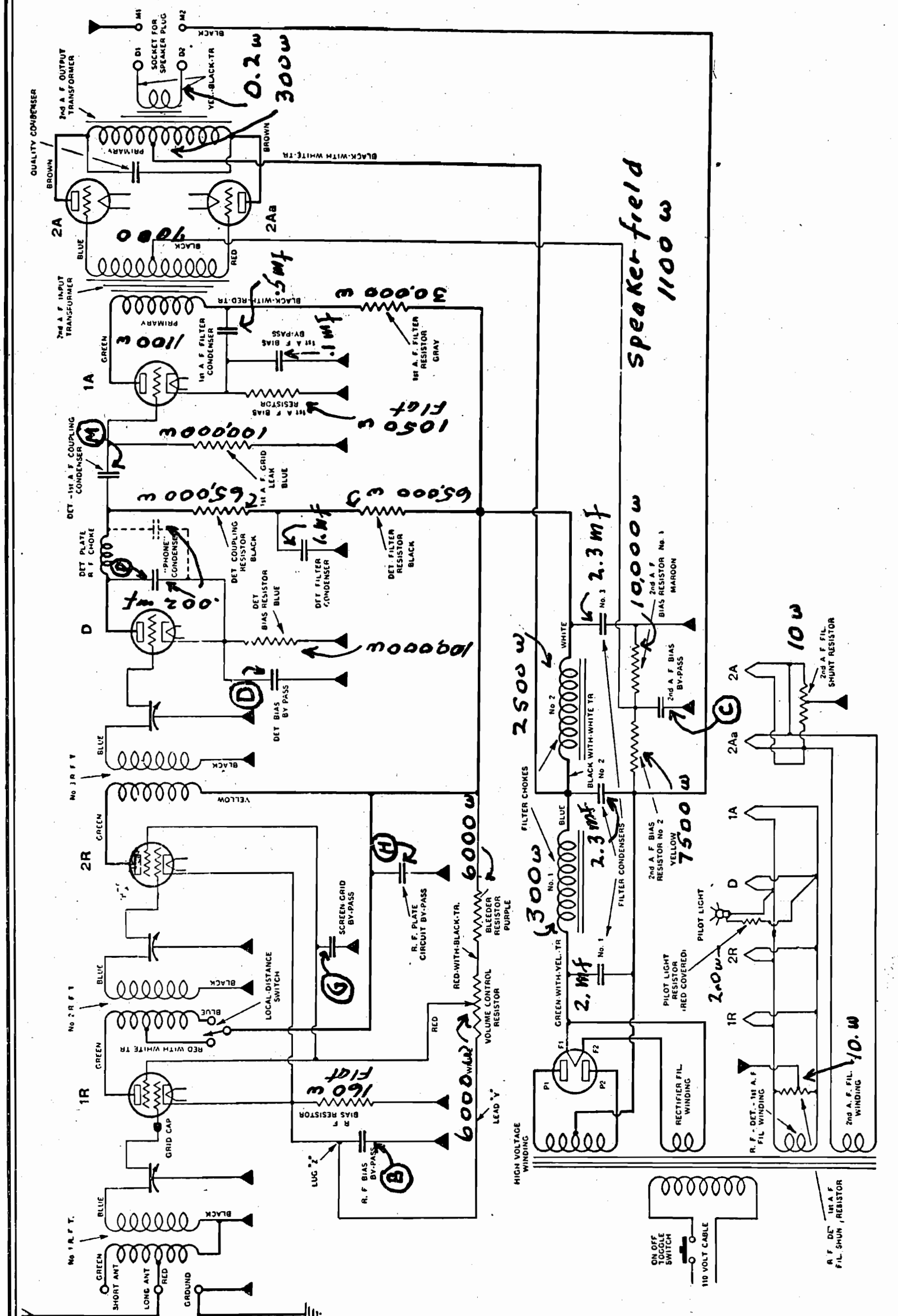
ATWATER KENT MFG. CO.

MODEL 55, 55-C
Early

VOLTAGE TABLE

Tube	Filament Early	Filament Late	Plate Early	Plate Late	Grid Early	Grid Late	Screen Early	Screen Late
R-F	2.2	2.2	160	160	2.8	3.7	78	96
Det	2.2	2.2	101	101	11.	11.		
1st A-F	2.2	2.2	64	69	1.8*	2.8*		
2nd A-F	2.2	2.2	213	230	39.	46		
Rec	4.5	4.5						

* Measured voltage, not operating voltage. Line voltage 110 V.



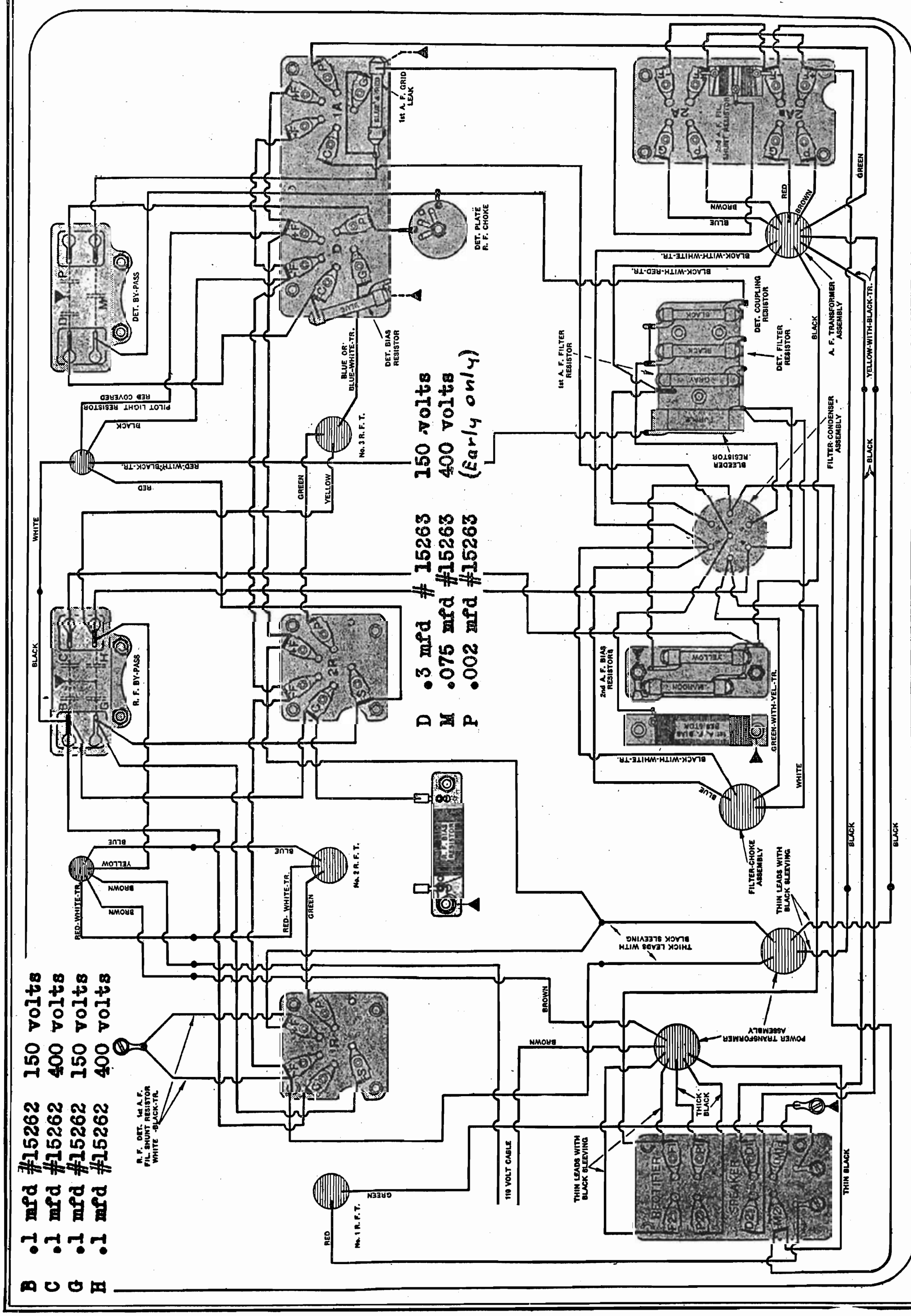
FILTER CONDENSER CONNECTIONS. See chassis

These numbers refer to the figures shown within the circle representing the filter condenser can.

1st a-f filter	.5 mfd	connected between centre stud and terminal (3)
Detector filter	1. mfd	connected between terminal (4) and can
1st a-f bias	.5 mfd	connected between centre stud and can
Filter #1	2.0 mfd	connected between terminals (1) and (4)
Filter #2	2.3 mfd	connected between terminals (2) and (4)
Filter #3	2.3 mfd	connected between terminals (6) and can.

MODEL 55, 55-C
Early

ATWATER KENT MFG. CO.



BOTTOM WIRING OF EARLY-TYPE MODEL 55 AND 55-C.

This drawing shows the new-style R. F. bias resistor. In some early sets, a separate double-type phone condenser is used.

ATWATER KENT MFG. CO.

MODEL 55 and 55-C
Late

Schematic

Chassis

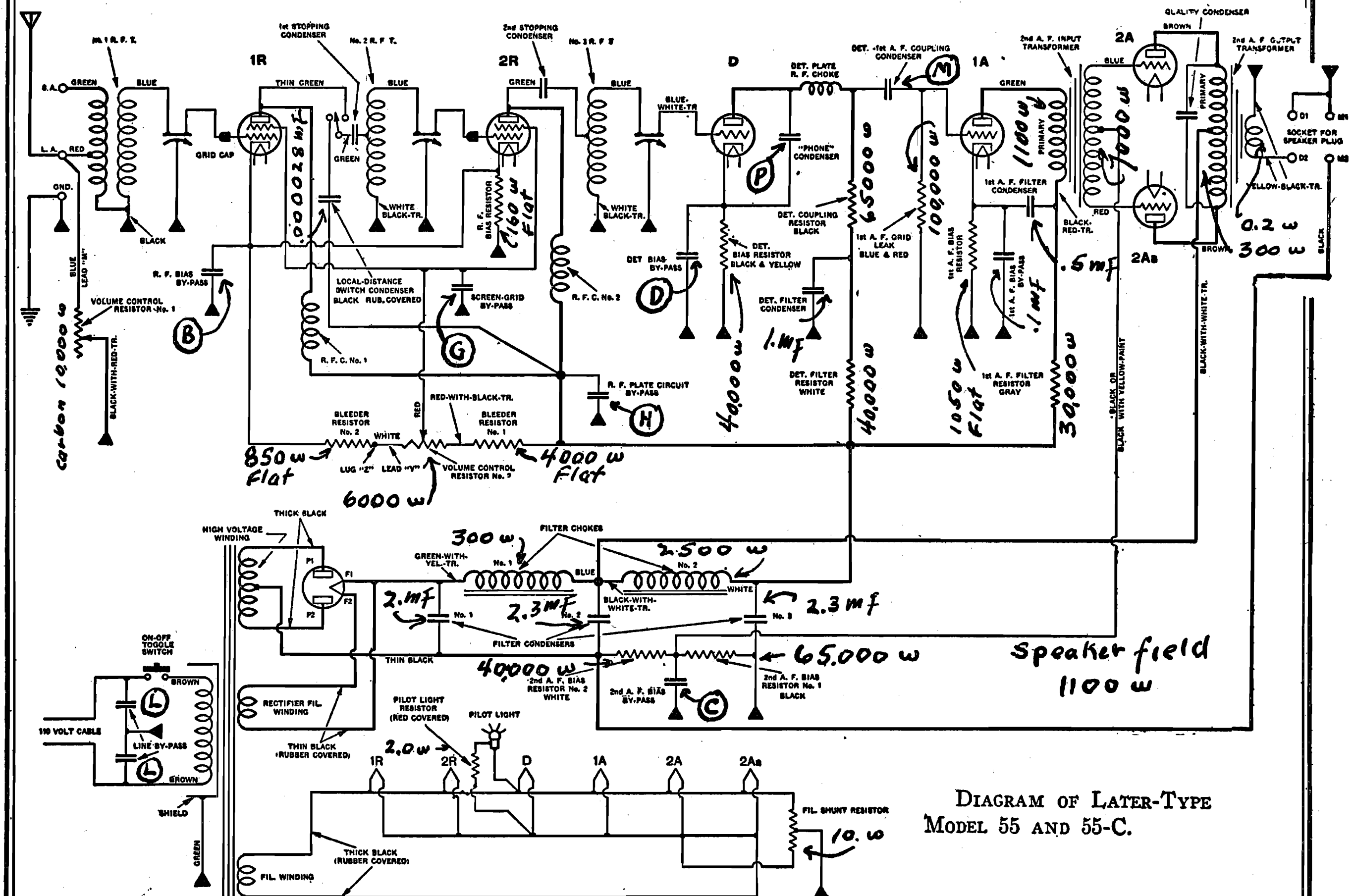
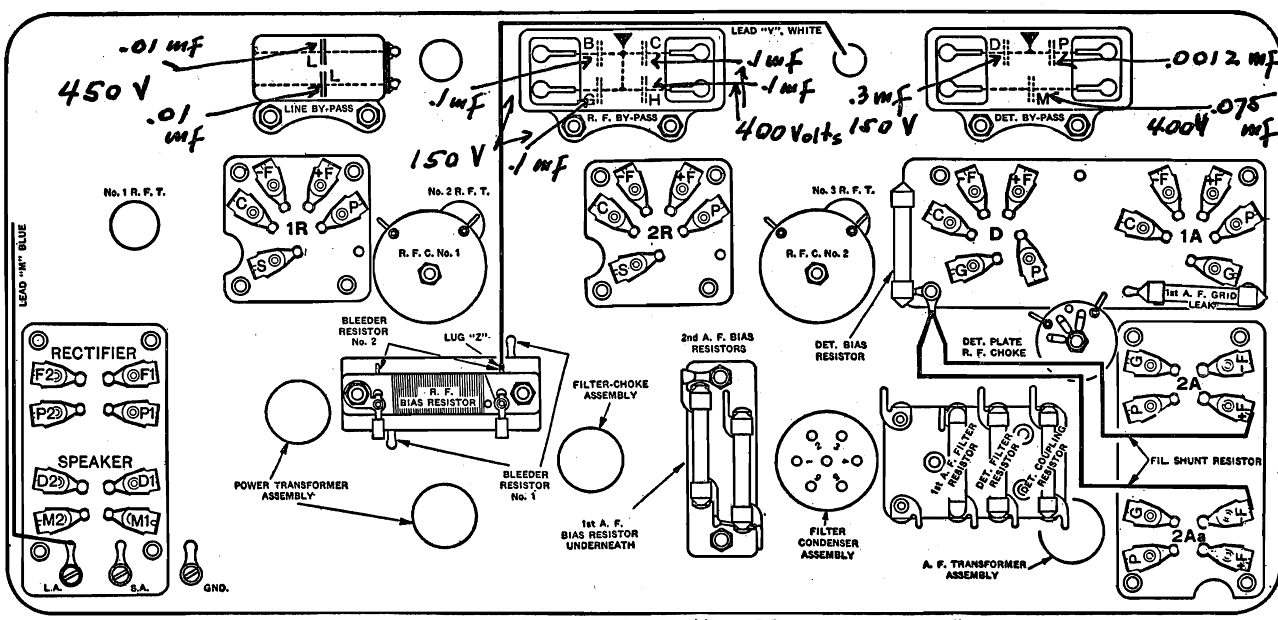


DIAGRAM OF LATER-TYPE MODEL 55 AND 55-C.



BOTTOM CHART OF LATER-TYPE MODEL 55 AND 55-C.

Condenser references on pages 1-17 and 1-18.

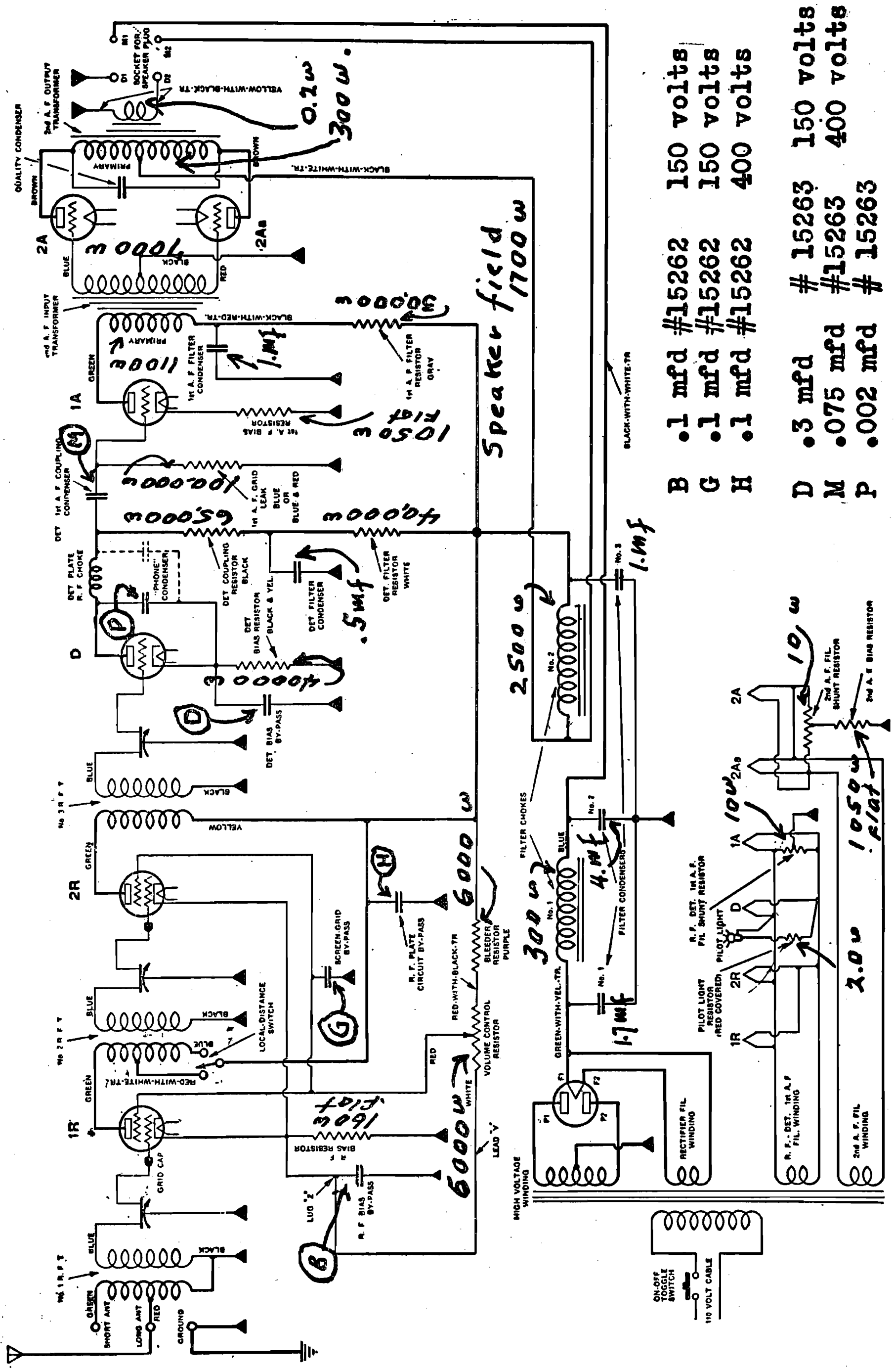
MODEL 55-F and 55-FC Early

ATWATER KENT MFG. CO.

VOLTAGE TABLE

Tube	Filament	Plate	Grid	Screen
R-F	2.2	160	3.7	96
Det	2.2	101	11.	
1st A-F	2.2	69	2.8*	
2nd A-F	4.5	174	41.	
Rect.	4.5			

* Measured voltage, not operating voltage. Line voltage 110 V.



B	.1 mfd	#15262	150 volts
G	.1 mfd	#15262	150 volts
H	.1 mfd	#15262	400 volts
D	.3 mfd	# 15263	150 volts
M	.075 mfd	#15263	400 volts
P	.002 mfd	# 15263	

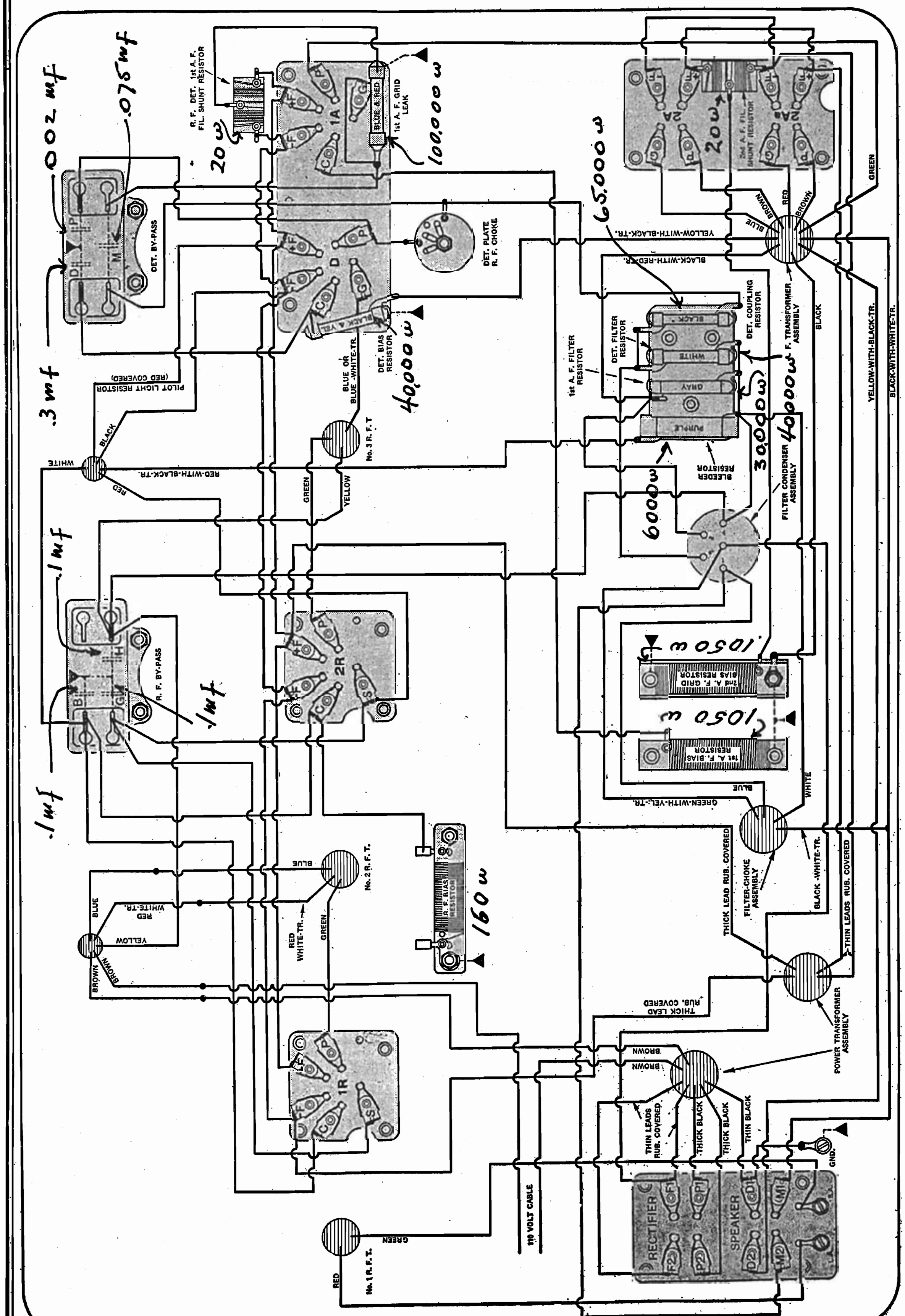
FILTER CONDENSER CONNECTIONS. (See chassis layout)
The numbers and connections stated are marked upon the filter unit can and are also shown on the chassis layout within the cirle designating the filter condenser can.

Filter #1	1.7 mfd	connected between the center stud and can
Filter #2	4.0 mfd	connected between terminal (1) and can
Filter #3	1.0 mfd	connected between terminal (4) and can
Detector filter	.5 mfd	connected between terminal (2) and can
A-f filter	1.0 mfd	connected between terminal (3) and can

IAGRAM OF EARLY-TYPE MODEL 55-F AND 55-F-C.

ATWATER KENT MFG. CO.

MODEL 55-F and 55-FC
Chassis Early



BOTTOM WIRING OF EARLY-TYPE MODEL 55-F AND 55-F-C.

Some of these sets had a combination resistor, No. 15274, which is superseded by two separate resistors, No. 16988 being used as R. F. bias resistor, and No. 17077 as filament shunt resistor.

MODEL 55-F and 55-FC
Late
Chassis

ATWATER KENT MFG. CO.

FILTER CONDENSER CONNECTIONS. See data pertaining thereto on page 162
Bypass condenser specifications are shown below.

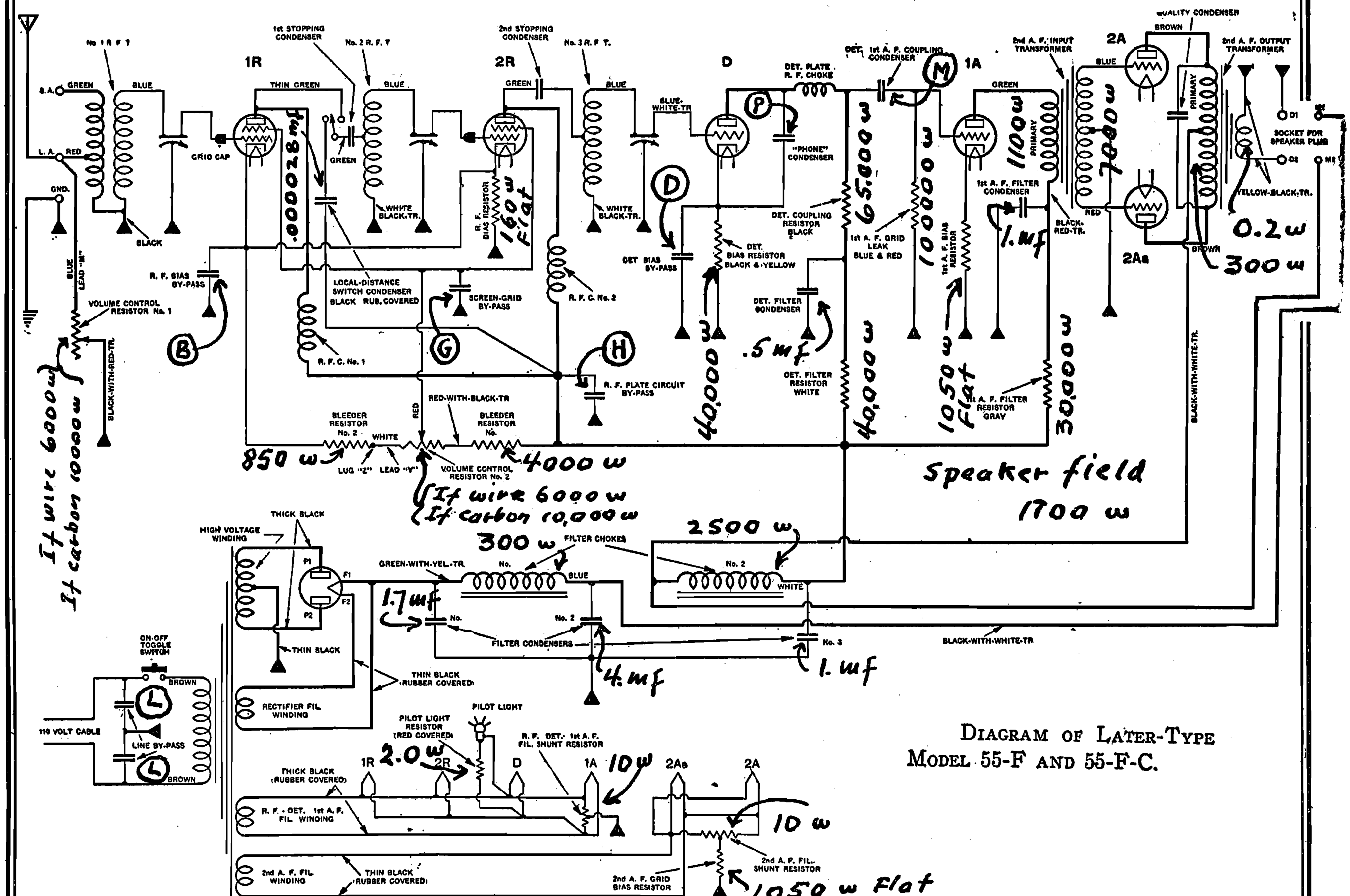
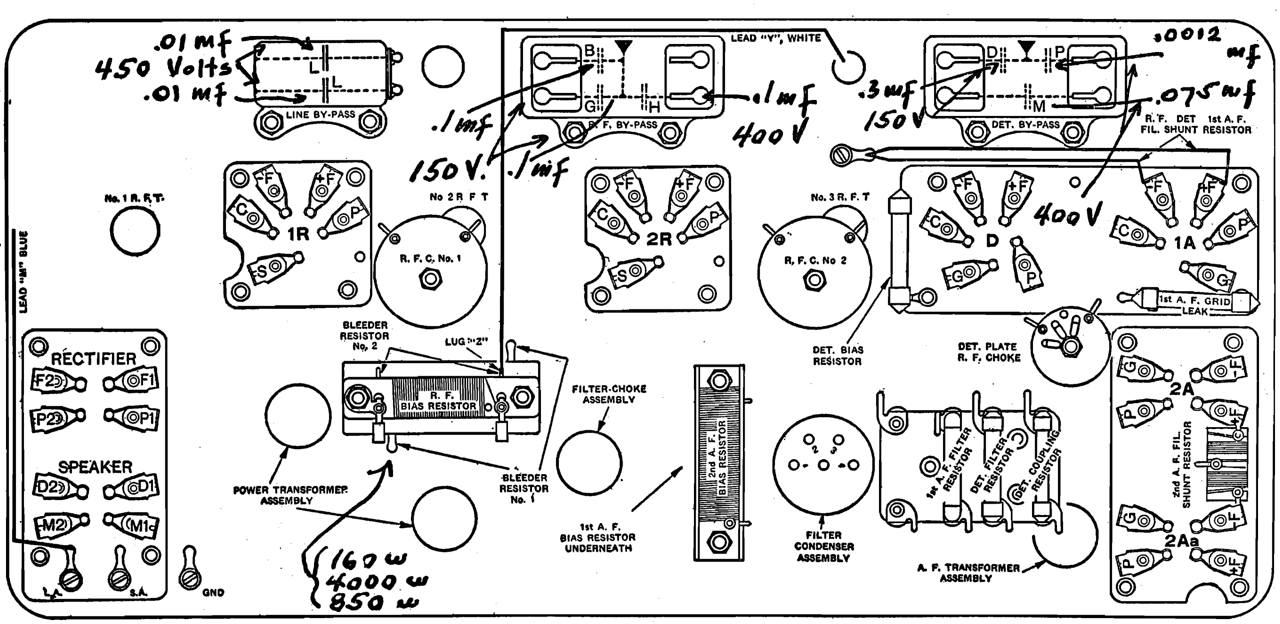


DIAGRAM OF LATER-TYPE MODEL 55-F AND 55-F-C.

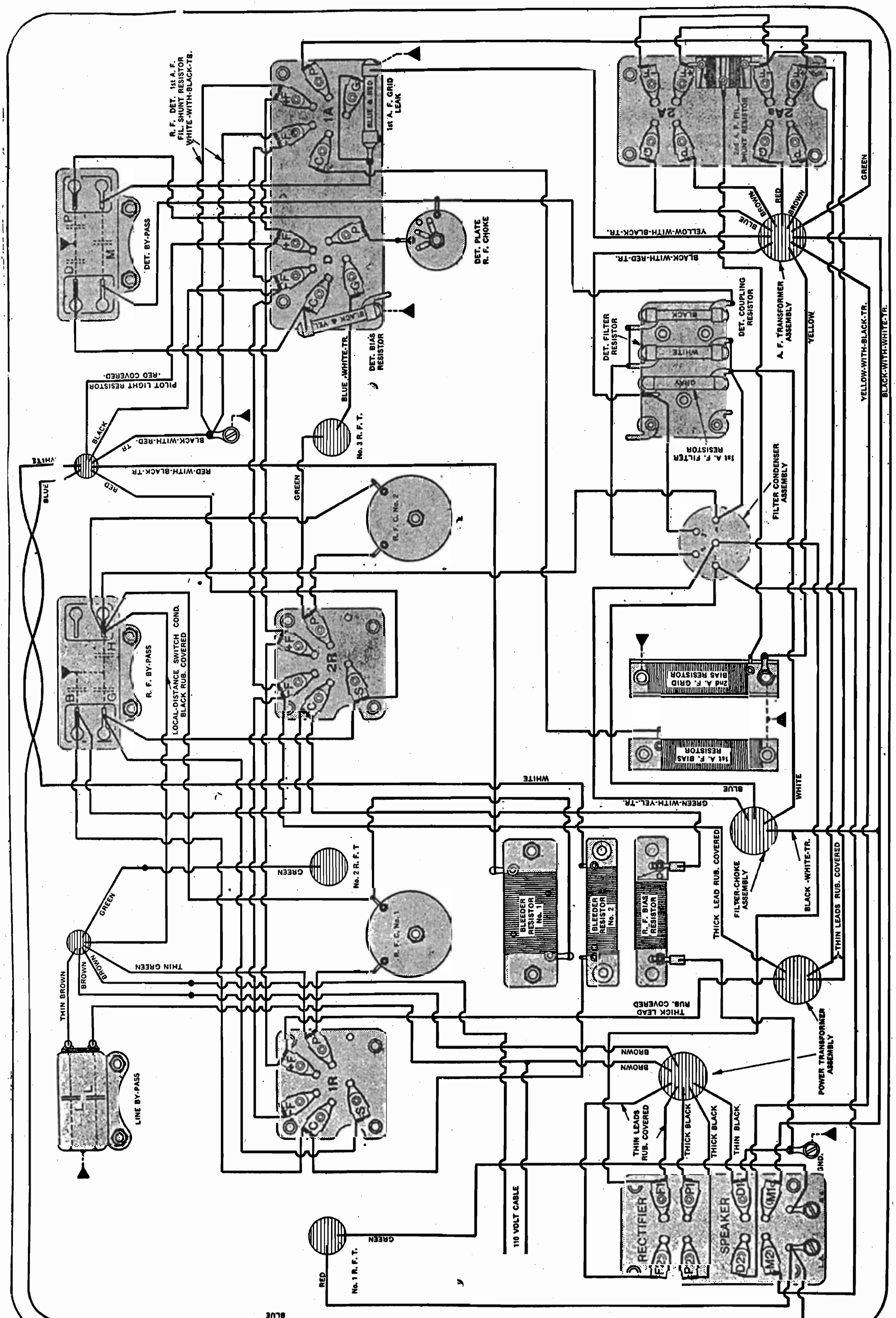


BOTTOM CHART OF LATER-TYPE MODEL 55-F AND 55-F-C.

Condenser reference on page 1-20.

ATWATER KENT MFG. CO.

MODEL 55-F and 55-FC Late Chassis



BOTTOM WIRING OF LATER-TYPE MODEL 55-F AND 55-F-C.

The 1st-A. F. bias resistor is mounted under the 2nd-A. F. bias resistor. The three other wire-wound resistors are mounted together, being insulated from each other by sheets of fibre.

Some of these sets had a combination resistor, No. 16868, which is superseded by two separate resistors, No. 16988 being used as R. F. bias, and No. 16989 as bleeder No. 2.

ATWATER KENT MFG. CO.

VOLTAGE DATA FOR MODELS 60 and 60-C (1st and 2nd Types)

Line voltage 110. 120 volt line is 10 percent higher.

Tube	Filament	Plate	Grid	Screen	
R-F (1st)	2.2	160	7.3	119	119
R-F (2nd-3rd)	2.2	160	3.7	83	
Det.	2.2	101	11.		
A-F (1st)	2.2	69	1.8*		
A-F (2nd)	2.2	230	44.		
Rect.	4.5				

* Measured, not actual operating voltage.

VOLTAGE DATA FOR MODEL 60 and 60-C (3rd Type)

Line voltage 110. Volume control at minimum.

Tube	Filament	Plate	Grid	Screen
R-F	2.3	170	16.5*	142
Det.	2.3	119	1.5	
A-F (1st)	2.3	73	1.9**	
A-B (2nd)	2.3	224	36. ***	

* local distance switch at distance

** Measured, not actual operating voltage.

*** If 2nd A-F bias resistor #1 is open, bias will be about 85 v.

Checking Sensitivity of Set

When checking the sensitivity of the set, it is necessary to use an oscillator, and a meter to indicate maximum output volume.

A local oscillator is necessary to ensure constancy of signal strength; signals from broadcast stations are not sufficiently constant for this work.

An output meter is necessary to ensure a reliable indication of output volume; the ear is not reliable enough for this purpose.

The oscillator feeds a weak signal into the receiver. The signal is amplified in the receiver and produces a reading on a meter which is connected to the output of the set. This meter indicates the strength of output volume. The reading on the output meter is greatest when all the tuned circuits in the set are adjusted to the same frequency as the oscillator signal.

1. *Oscillator.*

The oscillator must provide modulated R. F. signals at four different frequencies in the broadcast range. *These four frequencies should correspond to dial settings of 5, 45, 65 and 95 on the dial of a 3rd type Model 60-C* ***which has the original factory synchronism.***

Each of the four R. F. oscillators should have an adjustable pick-up so that the strength of each oscillator may be controlled independently of the other three.

2. *Output Measuring Circuit.*

The output measuring circuit is shown and described

Adjusting Trimmer Condensers

1. Connect the common pick-up lead from the four R. F. oscillators to one end of a No. 8112 condenser. Connect the other end of this condenser to the Long-Antenna post. Connect the oscillator container to the Ground post.
2. Put plug "A" of the output measuring circuit in the speaker-plug socket on the set. Plug an F-4 type speaker in socket "B." Throw switch "D" to the right.
3. Put all tubes in the set; power switch on; volume control at maximum; local-distance switch at distance. Break away the sealing wax on the trimmer-condenser screws
4. *Tune set exactly to 5 on dial.* Reduce or increase the amount of pick-up from the 1st oscillator to secure a reading of about 20 on the output meter.
5. With a screw-driver, turn the pressure screw of the 4th trimmer condenser one way or the other, as necessary, to the point where the reading on the output meter is greatest. Repeat this process on the 3rd trimmer, then on the 2nd, and finally on the 1st. Reduce the pick-up from the 1st oscillator if necessary in order to keep the needle of the galvanometer near the centre of its scale.

This adjustment of the trimmer-condenser screws is termed the CORRECT POSITION.

ATWATER KENT MFG. CO.

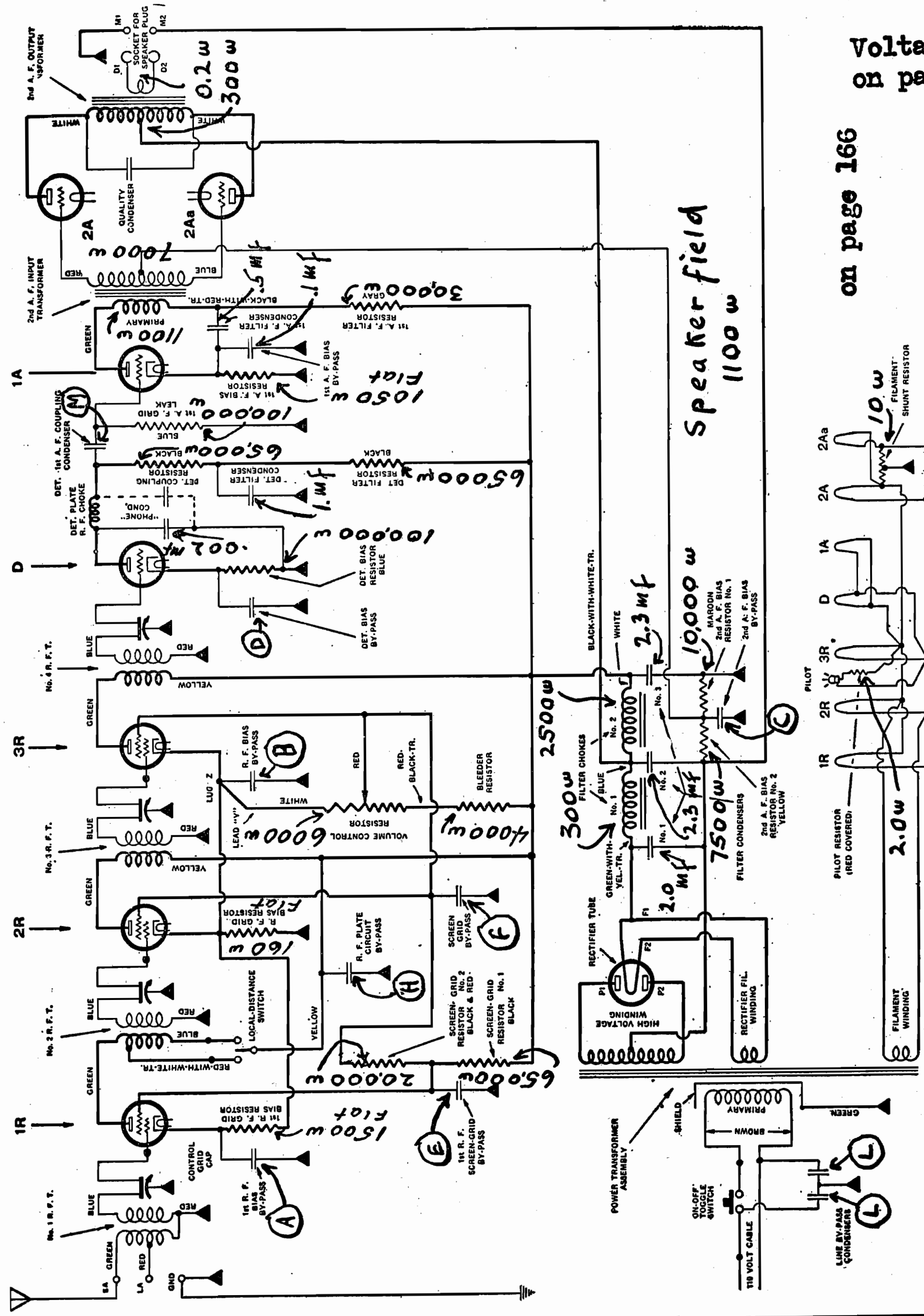
MODEL 60 and 60-C
Early
Schematic
Data

FILTER CONDENSER CONNECTIONS. See chassis layout on page 166

The numbers listed as connections are marked upon the filter condenser unit and shown within the circle designating the condenser unit on the chassis layout.

1st a-f filter	.5 mfd	connected between center stud and terminal (3)
Detector filter	1. mfd	connected between terminal (4) and can
1st a-f bias	.5 mfd	connected between center stud and can
Filter #1	2.0 mfd	connected between terminals (1) and (4)
Filter #2	2.3 mfd	connected between terminals (2) and (4)
Filter #3	2.3 mfd	connected between terminals (6) and can

Voltage data on page 173



BYPASS CONDENSER VALUES. The bypass condensers are designated by letters, exclusive of those within the filter condenser can. For bypass condensers, see schematic above and chassis layout

RF Bypass # 1	A	.1 mfd	150 volts	E	.1 mfd	150 volts
	F	.1 mfd	400 volts	H	.1 mfd	400 volts
RF Bypass #2	B	.1 mfd	150 volts	C	.1 mfd	150 volts
	L	.01 mfd	400 volts	L	.01 mfd	400 volts
Detector Bypass	D	.3 mfd	150 volts	M	.075 mfd	400 volts

EARLY-TYPE MODEL
60 AND 60-C.

Voltage reference on page 1-24.

MODEL 61,61-C DC
Early
Schematic

ATWATER KENT MFG. CO.

FILTER CONDENSER DATA. The filter condenser unit in the Model 61 and 61-C, (Direct Current) Early, contains two of the filter condensers and two other bypass condensers. The numbers to bd quoted in connection with the connections are marked upon the condenser can and are shown upon the chassis layout

1st a-f filter	.5 mfd	connected between terminals(1)and (3)
Detector filter	1.0 mfd	connected between terminals (2) and (6)
Filter # 2	4.0 mfd	connected between terminal (4) and center stud
Filter # 3	2.0 mfd	connected between terminal (5) and center stud

Filter #1 is a part of one of the bypass units as stated elsewhere on this page.

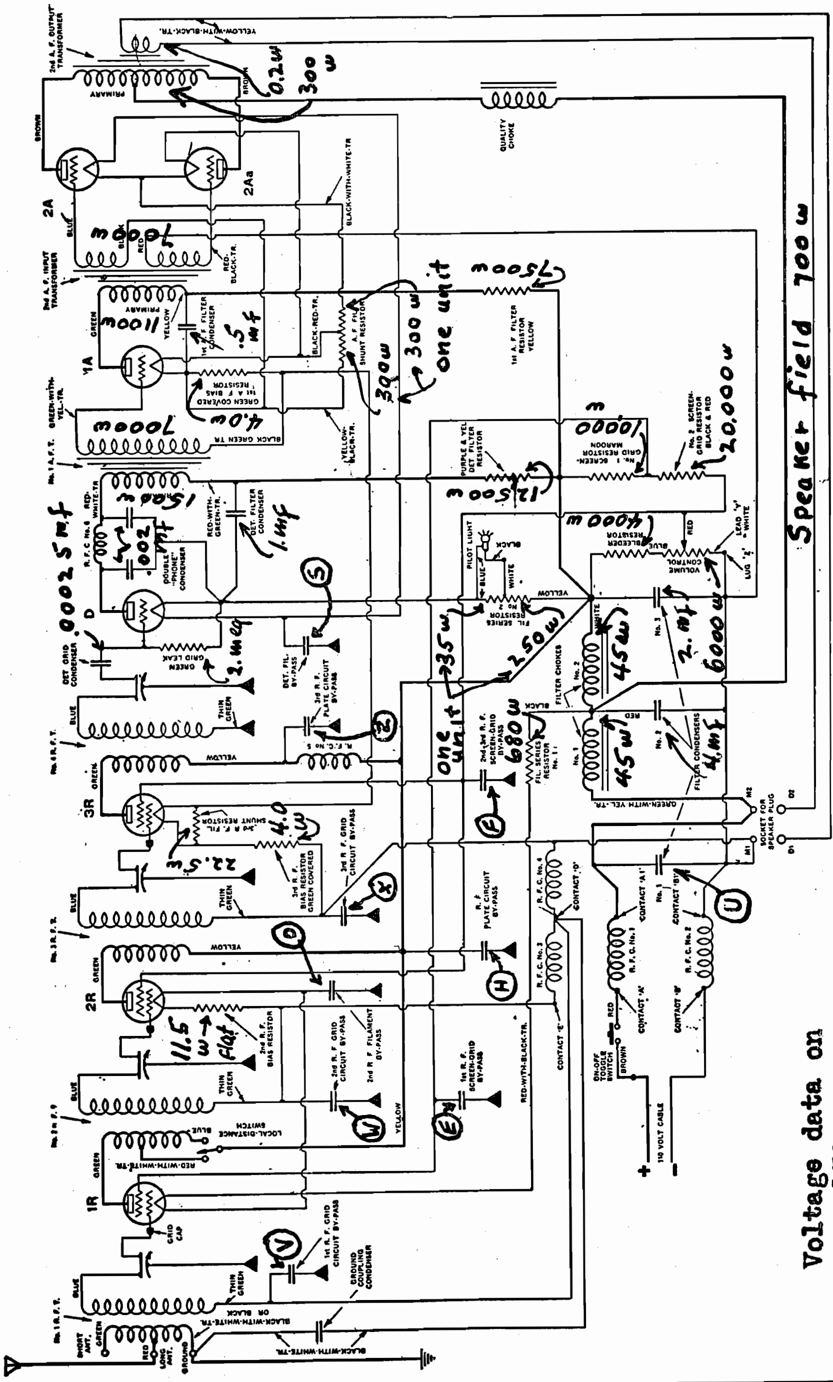


DIAGRAM OF EARLY MODEL 61 AND 61-C (DIRECT CURRENT).

Voltage data on page 176

BYPASS CONDENSERS. The following designating letters are shown upon the schematic wiring diagram and also upon the chassis layout

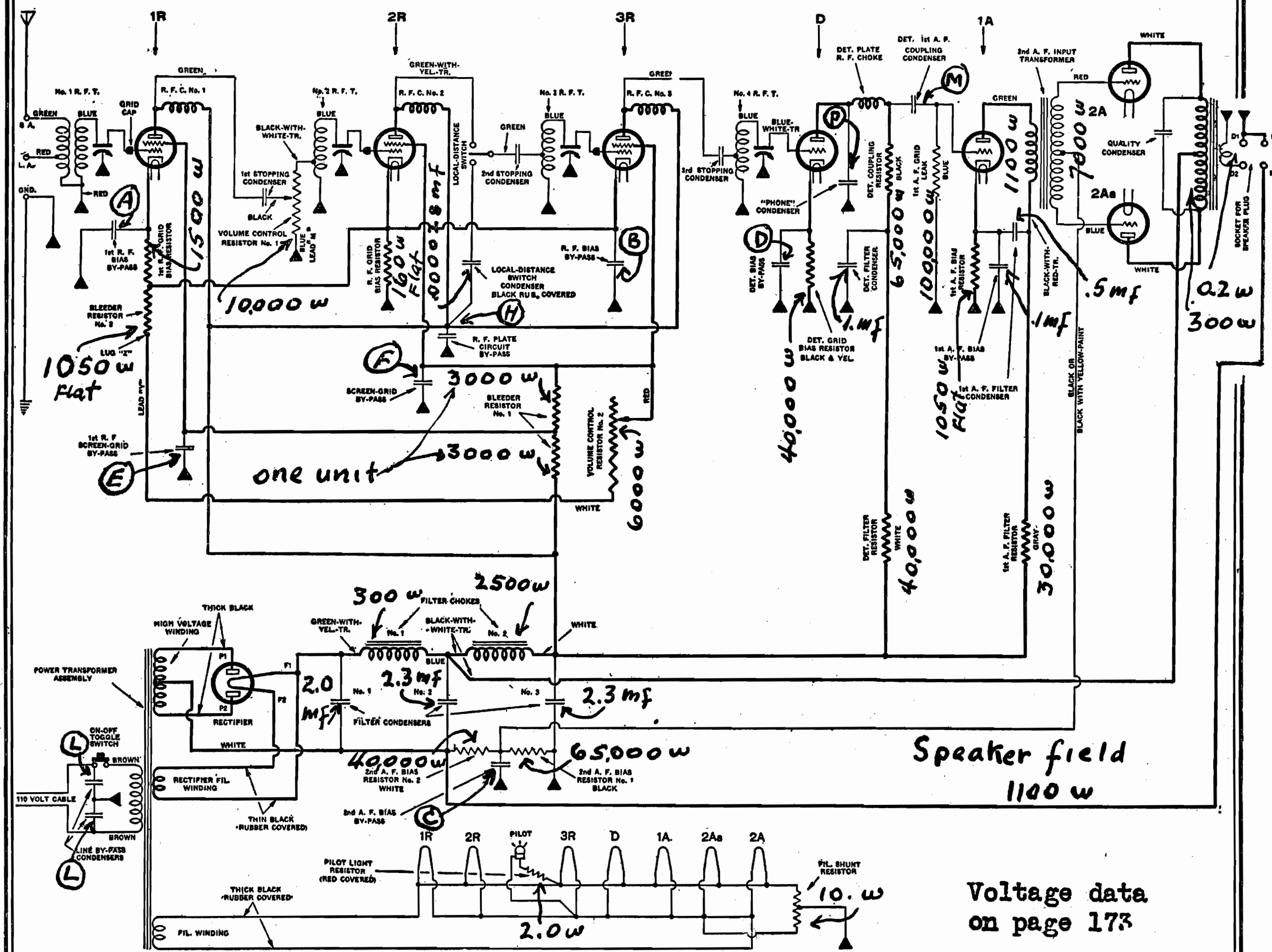
RF Bypass #1	E	.1 mfd	150 volts	O	.1 mfd	400 volts
	V	.1 mfd	150 volts	W	.1 mfd	400 volts
RF Bypass #2	F	.1 mfd	400 volts	H	.1 mfd	400 volts
	X	.1 mfd	150 volts	Z	.1 mfd	150 volts
Detector Bypass	S	.3 mfd	150 volts	U*	.075 mfd	400 volts

* Condenser U is Filter #1

Voltage reference on page 1-28.

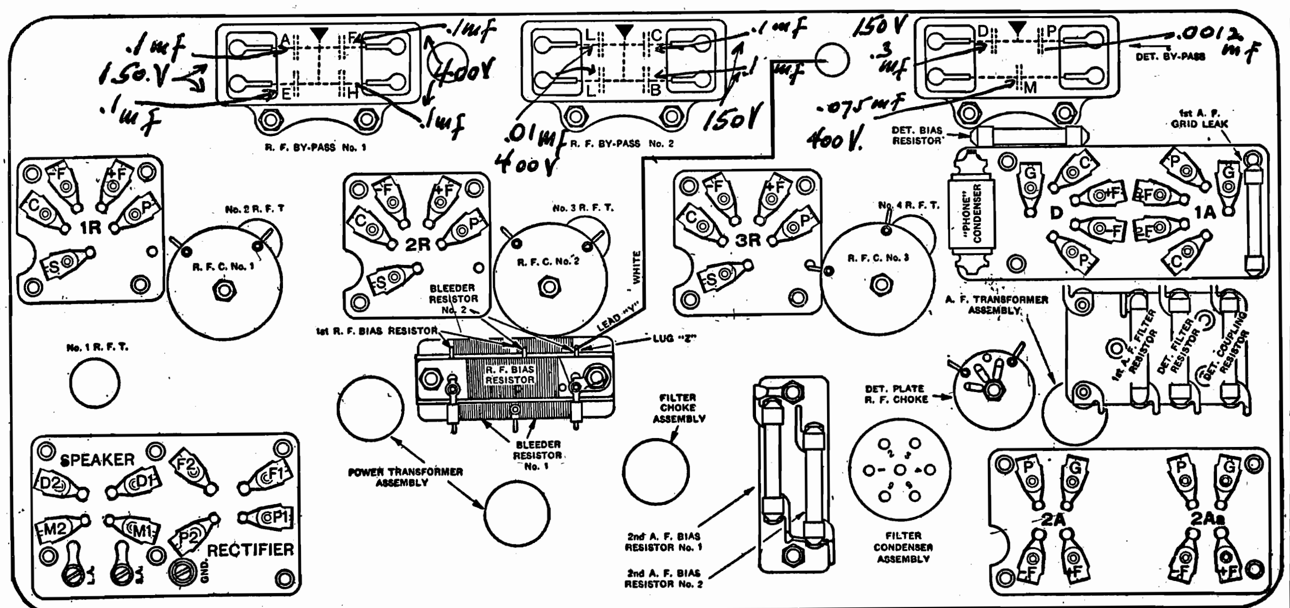
ATWATER KENT MFG. CO.

MODEL 60 and 60-C
Late
Schematic



Voltage data on page 173

CIRCUIT OF LATER MODEL 60 AND 60-C.

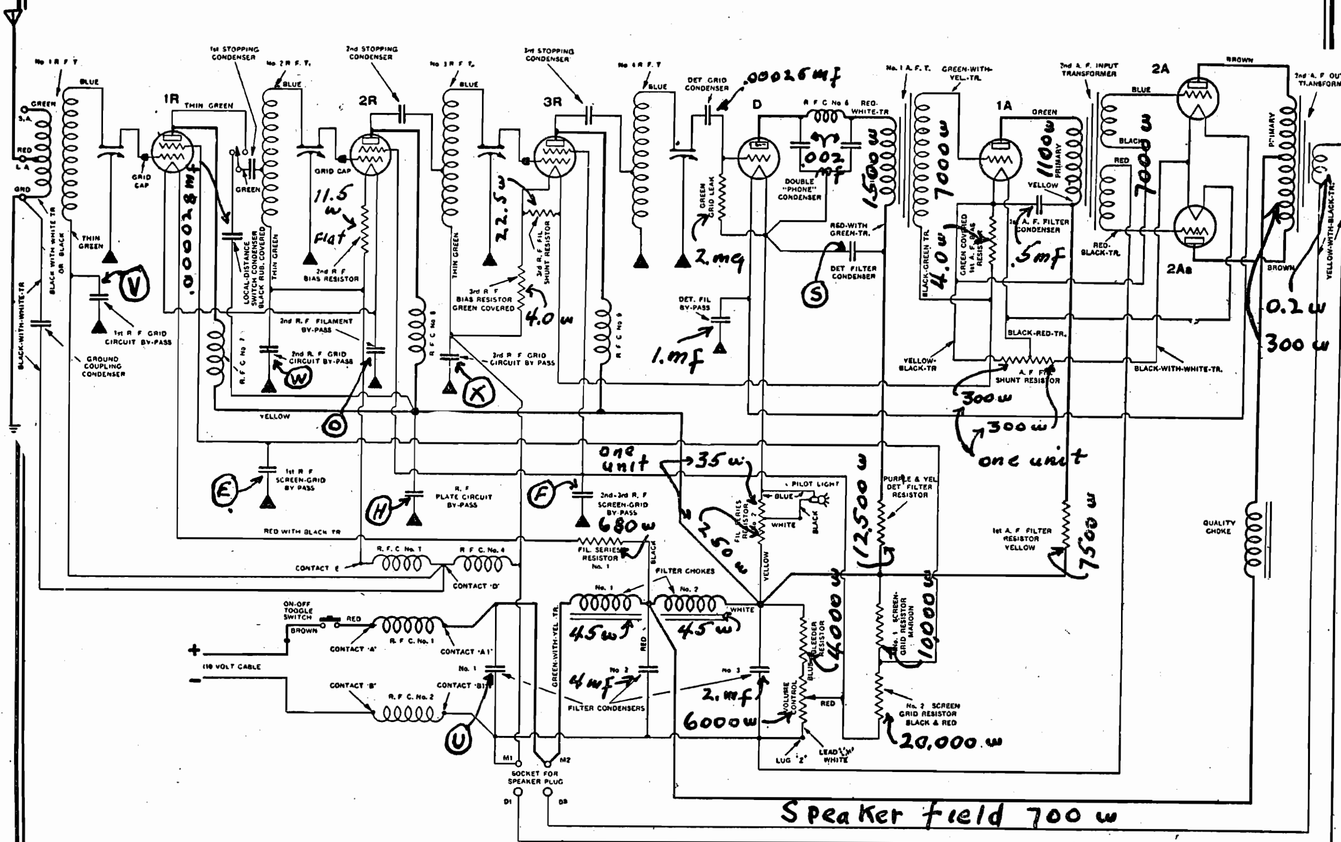


BOTTOM CHART OF LATER-TYPE MODEL 60 AND 60-C.

Voltage reference on page 1-24.

MODEL 61-61-C
Late Schematic

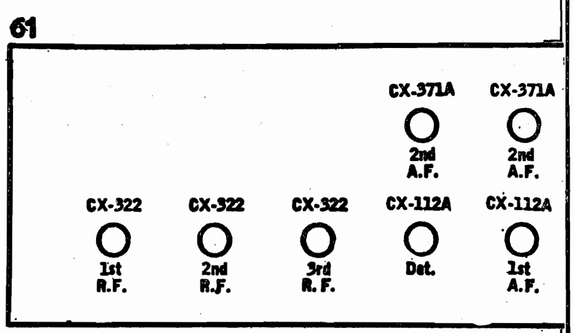
ATWATER KENT MFG. CO



SCHEMATIC DIAGRAM OF LATER MODEL 61 AND 61-C (DIRECT CURRENT).

FILTER CONDENSER SPECIFICATIONS are shown on page 174. BYPASS CONDENSER designations shown upon wiring diagram also appear upon chassis layout on page177. For BYPASS CONDENSER data refer only to page 177 and not to page174.

	R-F	Det.	1st A-F	2nd A-F
Fil.	2.9	4.6	4.6	4.6
Plate	78	32	50	80
Grid	4.6*		1.4	9
Screen	60**			



* This voltage applies only to the 1st R-F stage. The 2nd R-F bias voltage is 1.4 voltas and the 3rd R-F bias voltage is 0.9 volts.

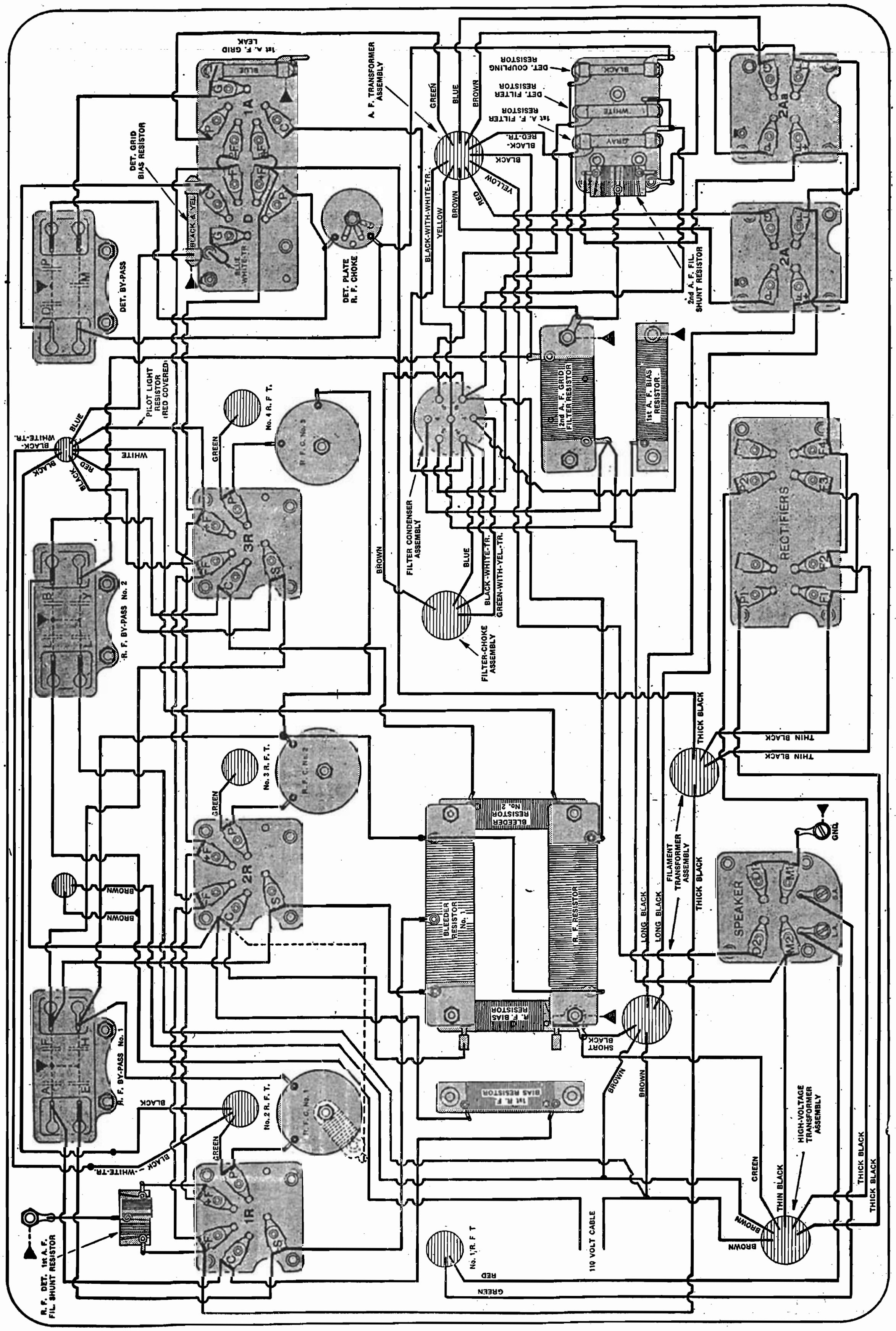
**The screen voltage quoted applies only to the third R-F tube. he other R-F tubes secure different values of screen voltage. R-F tube number 1 or rather the first R-F stage has 46 volts applied to its screen. Likewise the 2nd R-F stagehas 46 volts applied to its screen.

The forementioned voltage measurements are made with the volume control adjusted to minimum.

Condenser reference on page 1-26.

ATWATER KENT MFG. CO.

MODEL 66 Chassis



BOTTOM WIRING OF LATER-TYPE MODEL 66.

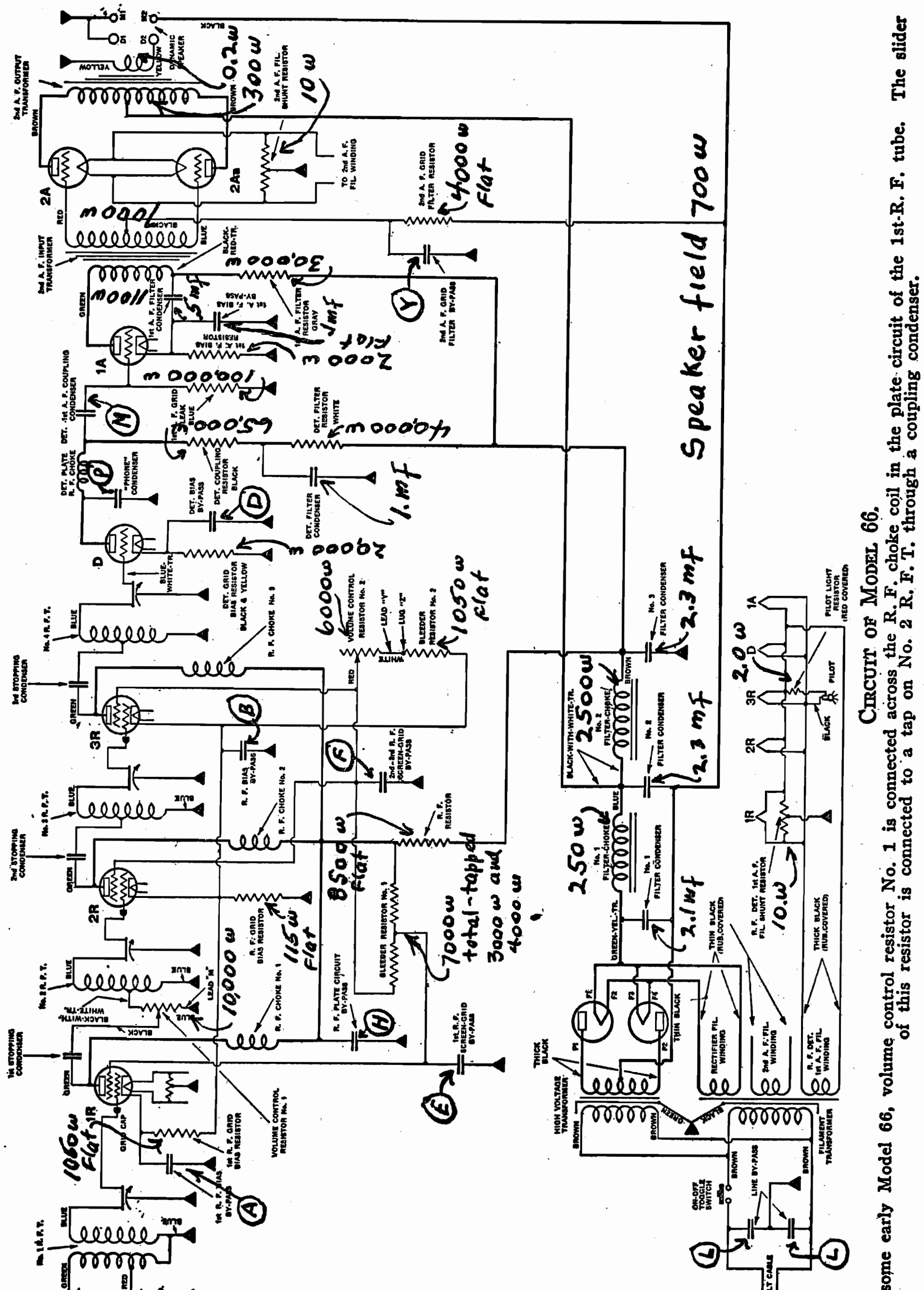
The resistor shown in dotted lines is the old-style R. F. bias resistor. This is shown merely to indicate how the old-style R. F. bias resistor was connected. The 1st-R. F. bias resistor is mounted on top of the new-style R. F. bias resistor. The 1st-A. F. bias resistor is mounted under the 2nd-A. F. grid-filter resistor.

MODEL 66
Schematic
Data

ATWATER KENT MFG. CO

FILTER CONDENSER CONNECTIONS. The following specifications should be used in conjunction with the schematic shown below and the chassis layout shown on The numerals refer to the numbers marked upon the condenser can

Filter #1	2.1 mfd connected between terminals (1) and (4)
Filter #2	2.3 mfd connected between terminals (2) and (4)
Filter #3	2.3 mfd connected between terminal (6) and can
Detector filter	1.0 mfd connected between terminal (5) and can
1st a-f filter	0.5 mfd connected between center stud and can
1st a-f bias	0.1 mfd connected between center stud and (3)



CIRCUIT OF MODEL 66.

In some early Model 66, volume control resistor No. 1 is connected across the R. F. choke coil in the plate circuit of the 1st R. F. tube. The slider of this resistor is connected to a tap on No. 2 R. F. T. through a coupling condenser.

BYPASS CONDENSER VALUES. The letter designations given should be used in conjunction with the schematic diagram above and the chassis layout

RF Bypass #1	A	.1 mfd	150 volts	F	.1 mfd	400 volts
	E	.1 mfd	150 volts	H	.1 mfd	400 volts
RF Bypass #2	B	.1 mfd	150 volts	L	.01 mfd	400 volts
	Y	.1 mfd	150 volts	L	.01 mfd	400 volts
Detector Bypass	D	.3 mfd	150 volts	M	.075 mfd	400 volts
				P	.0012 mfd	400 volts

ATWATER KENT MFG. CO.

MODEL 67,67-C Early and Late Schematic

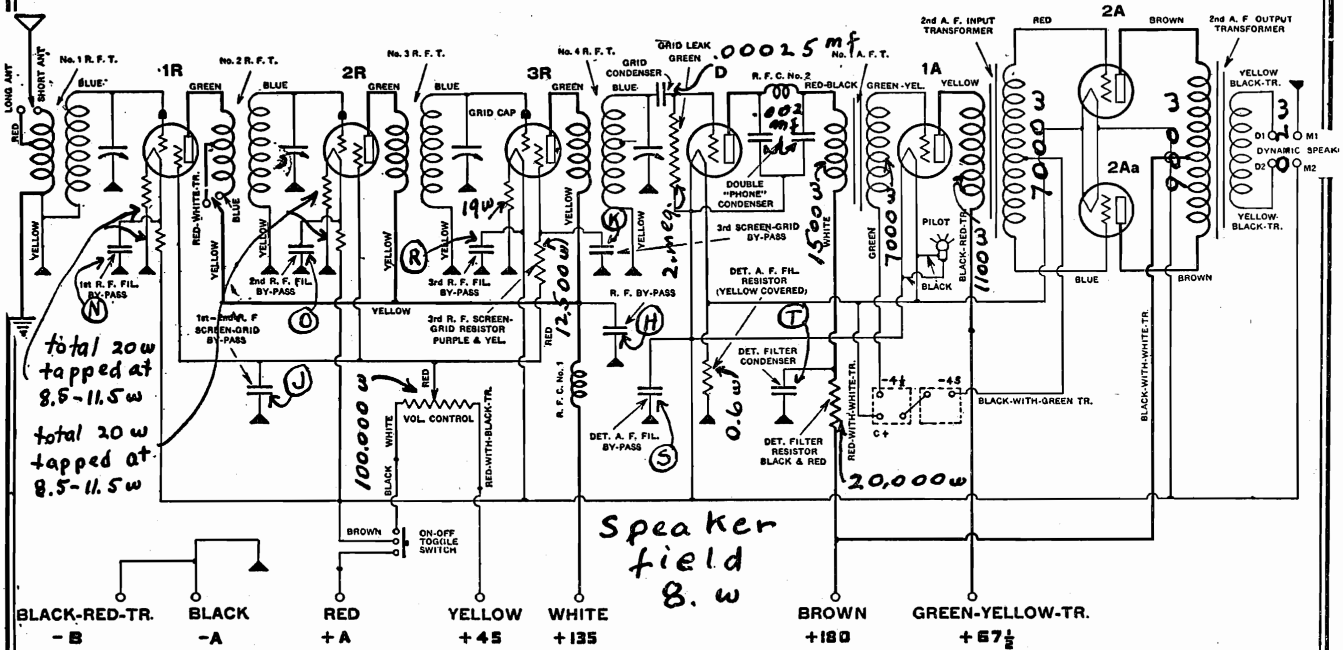


Diagram of Early Model 67 and 67-C (Battery Operated).

Voltage data on page 180

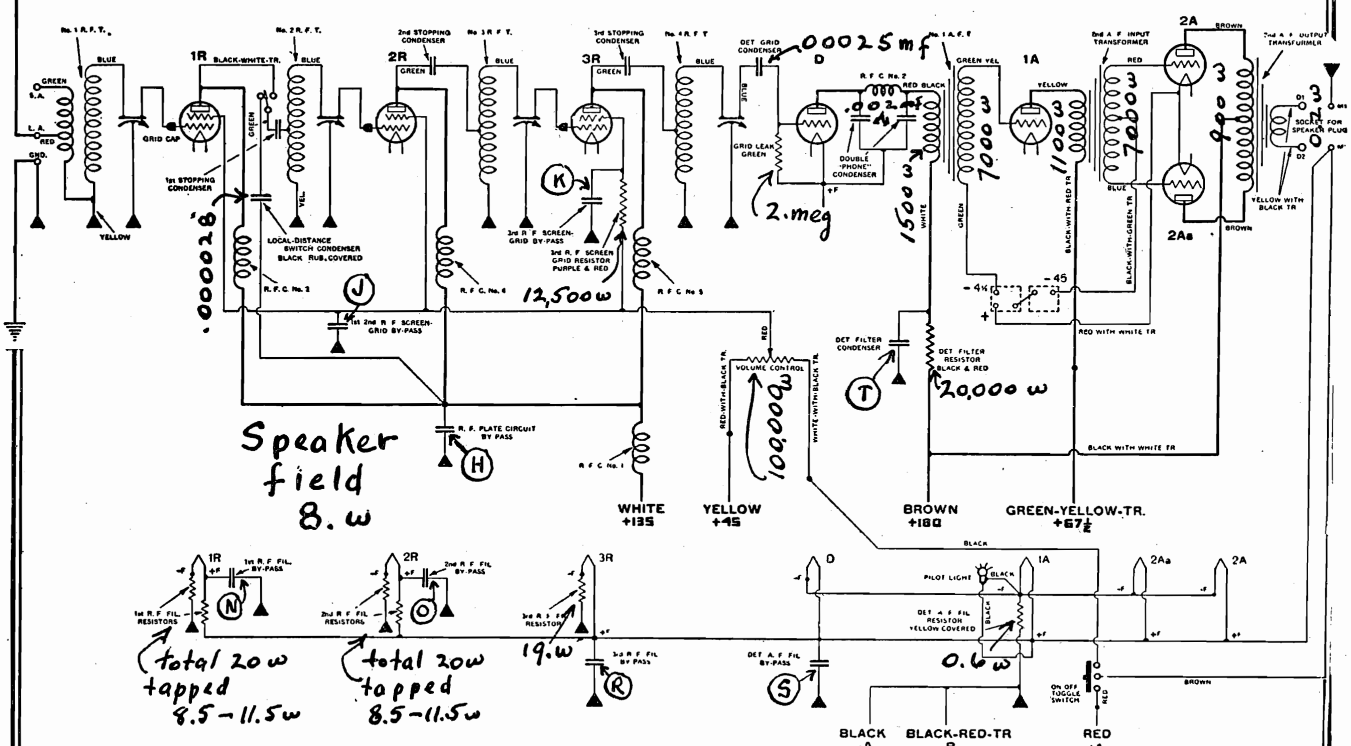


Diagram of Later Model 67 and 67-C (Battery Operated).

Voltage reference on page 1-32.

MODEL 66 Voltage
MODEL 67 and 67-C
Voltage

ATWATER KENT MFG. CO.

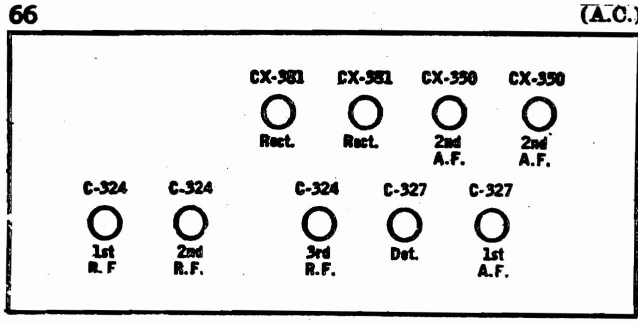
VOLTAGE DATA FOR MODEL 66

Line voltage 110. Line voltage of 120 volts increases voltage 10%.

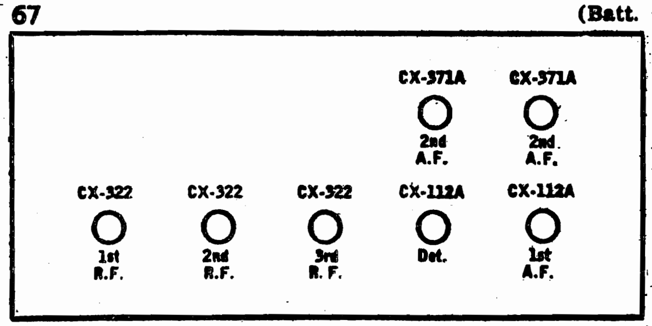
Tube	Filament	Plate	Grid	Screen
R-F (1st)	2.2	158	5.5	110
R-F (2nd-3rd)	2.2	160	2.8	78
Detector	2.2	206	23.	
A-F (1st)	2.2	137	2.8*	
A-F (2nd)	6.9	412	78.	

* This is the measured voltage, not the actual operating voltage.

66 (A.C.)



67 (Batt.



VOLTAGE DATA FOR MODELS 67 and 67-C

These values apply when the total "B" voltage is 150 volts.

Tube	Filament	Plate	Grid	Screen
RF (1st-2nd)	3.3	110	1.5	30
R-F (3rd)	3.3	110	2.5	25
Det.	5.0	50	--	
A-F (1st)	5.0	55	4.5	
A-F (2nd)	5.0	150	45.	

These values apply when the total "B" voltage is 180 volts.

Tube	Filament	Plate	Grid	Screen
R-F (1st-2nd)	3.3	135	1.5	45
R-F (3rd)	3.3	135	2.5	40
Det.	5.0	60	--	
A-F (1st)	5.0	65	4.5	
A-F (2nd)	5.0	180	45.	

ATWATER KENT MFG. CO.

MODEL 70, 74, 76
Chassis D

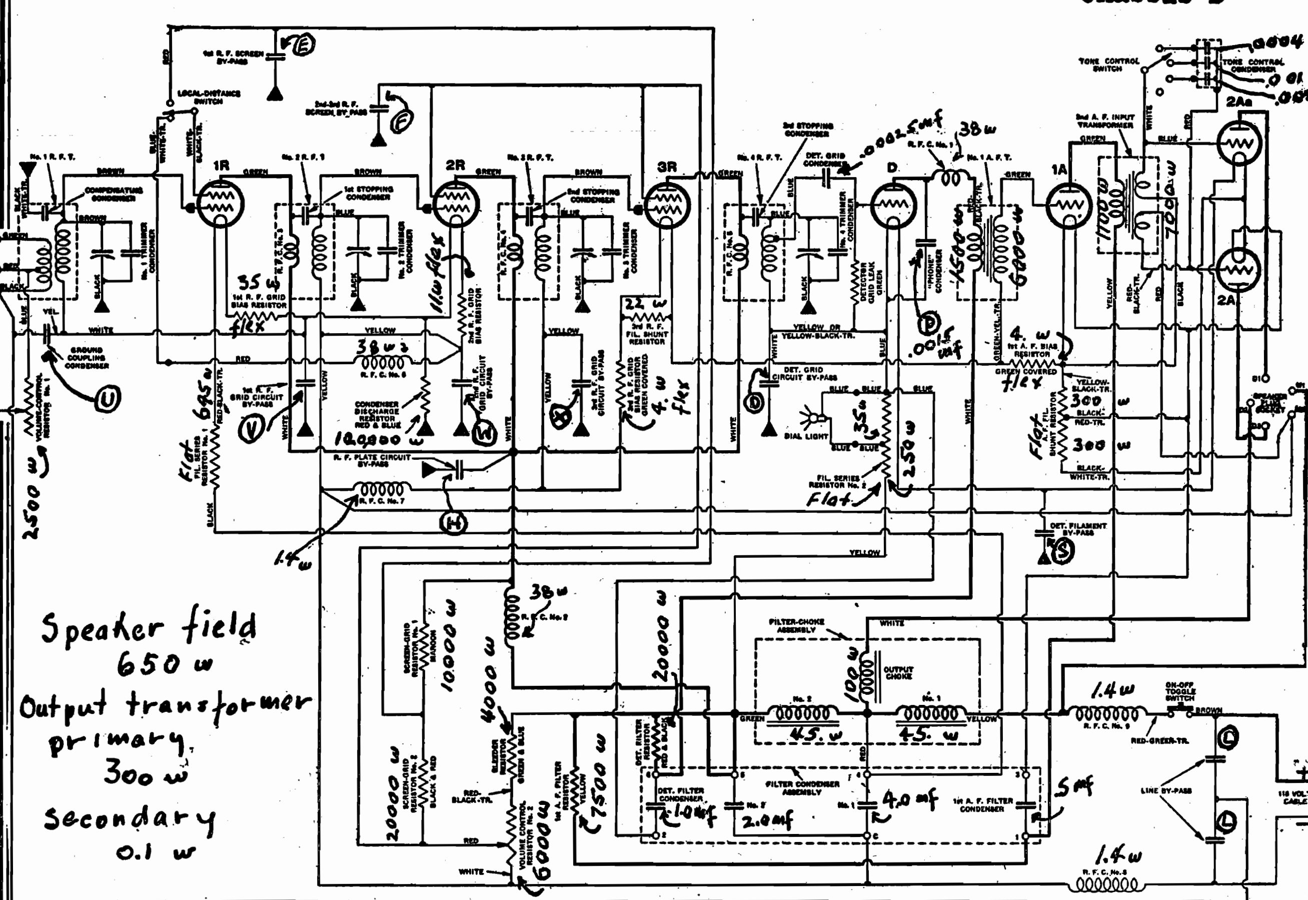


DIAGRAM OF D-1 CHASSIS.

BYPASS CONDENSERS. The letters within the circles adjacent to the various bypass condensers correspond with the letters shown within the respective bypass units on chassis layout
Note exception stated beneath the following tabulation.

RF Bypass #1	L	.1 mfd	400 volts	L	.1 mfd	400 volts	# 14710
	U	.02 mfd	400 volts				
RF Bypass #2	E	.1 mfd	400 volts	F	.1 mfd	400 volts	# 15262
	V1*	.1 mfd	400 volts	W1*	.1 mfd	400 volts	
RF Bypass #3	H	.1 mfd	400 volts	S	.1 mfd	400 volts	# 16680
	P	.0015mfd	400 volts				
RF Bypass #4	D	.1 mfd	400 volts	V	.1 mfd	400 volts	# 15262
	X	.1 mfd	400 volts	W	.1 mfd	400 volts	

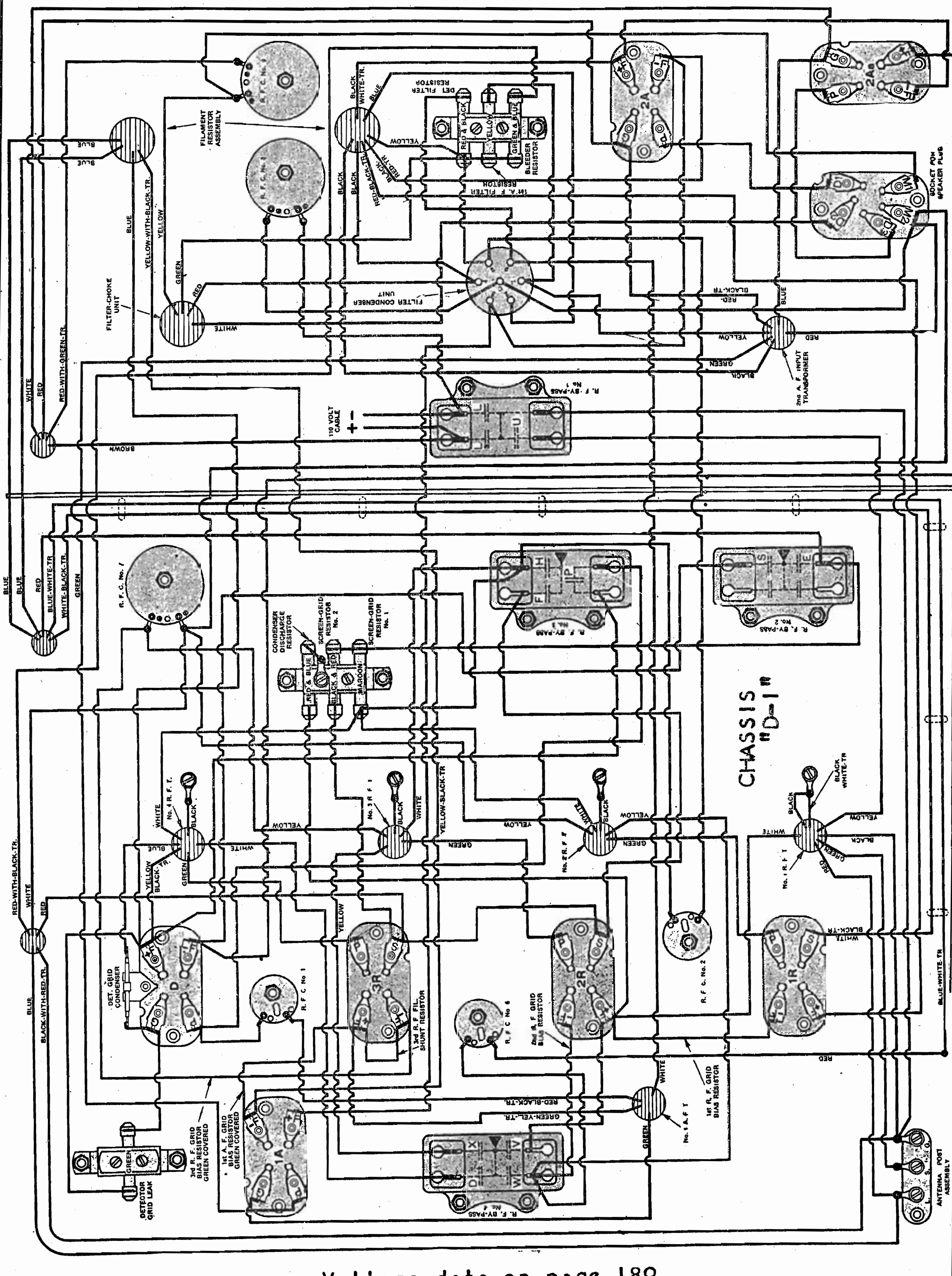
* Used only in D-2 chassis as shown in wiring diagram of D-2 receiver
These two condensers are not used in D-1 chassis, but are shown in their proper position in the chassis layout

Tone control All condensers are rated at 100 volts

SPECIAL NOTE.
Chassis D-1 and D-2 are identical except for the minor changes noted above in connection with bypass condensers W1 and V1 and also as noted on the D-2 schematic

MODEL 70, 74, 76
Chassis "D-1"

ATWATER KENT MFG. CO.

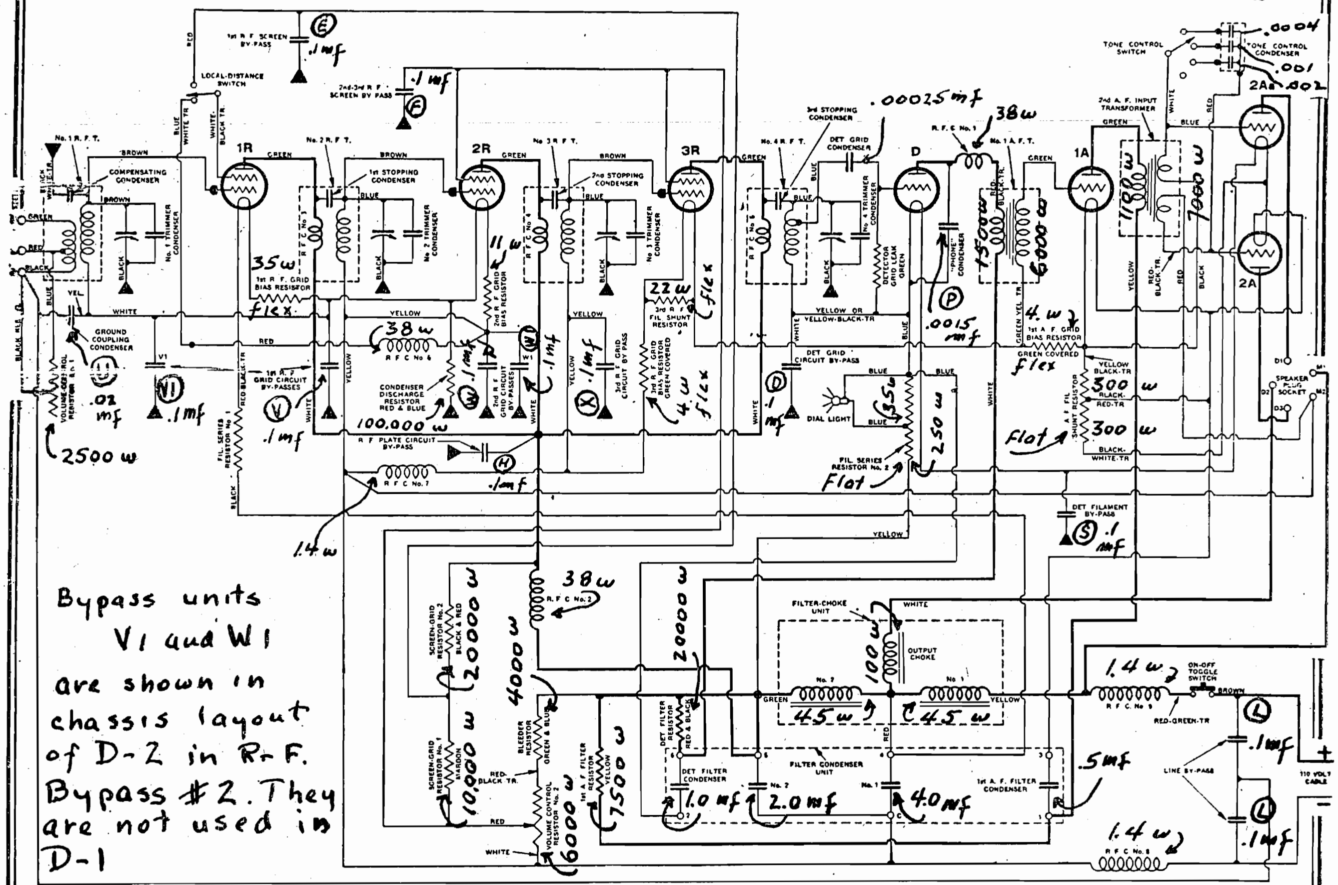


Voltage data on page 189

Voltage reference on page 1-35.

ATWATER KENT MFG. CO.

MODEL 70, 74, 76
Chassis "D-2"



SCHEMATIC DIAGRAM OF TYPE D-2 CHASSIS.

Note the addition of by-pass condensers V-1 and W-1 and the reversal of screen-grid resistors No. 1 and No. 2.

VOLTAGE TABLE FOR TYPE D CHASSIS

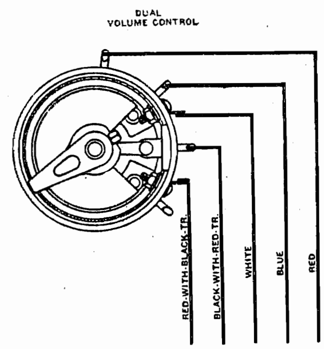
Set in operation. Volume control at maximum. L-D switch at distance.

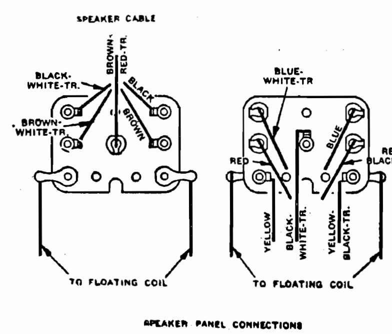
Use High Resistance D. C. Voltmeter (about 0-50-250) to Measure Plate and Grid Voltages.
Use A. C. Voltmeter to Measure Filament Voltages.

APPROX. VOLTAGES, USING 120 V. LINE

TUBE	FILAMENT VOLTAGE	PLATE VOLTAGE	CONTROL-GRID VOLTAGE	SCREEN VOLTAGE
1st-R.F.	3.3	75	4.2	60*
2nd-R.F.	3.3	75	1.3	50
3rd-R.F.	3.3	75	1	50
Detector	5	20	—	—
1st-A.F.	5	45	6	—
2A	5	75	10	—
2Aa	5	80	10	—

All readings made from cathode in heater-type tubes, and from —F in plain-filament-type tubes.
Use 250-volt scale to measure 2nd A. F. grid voltage.
*This is 50 volts in D-2 chassis.

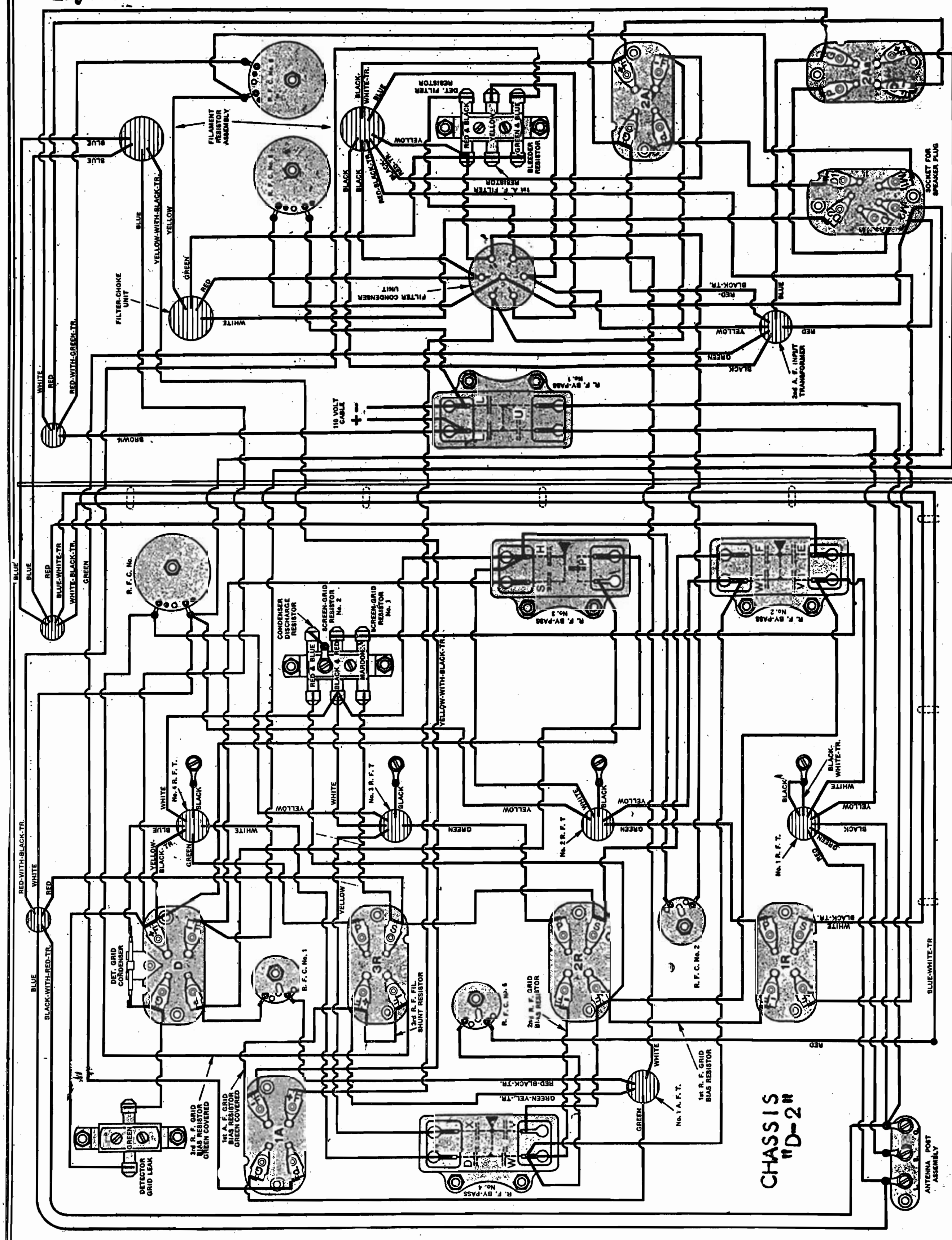




SPEAKER PANEL CONNECTIONS

MODEL 70, 74, 76
Chassis "D-2"
Layout

ATWATER KENT MFG. CO.



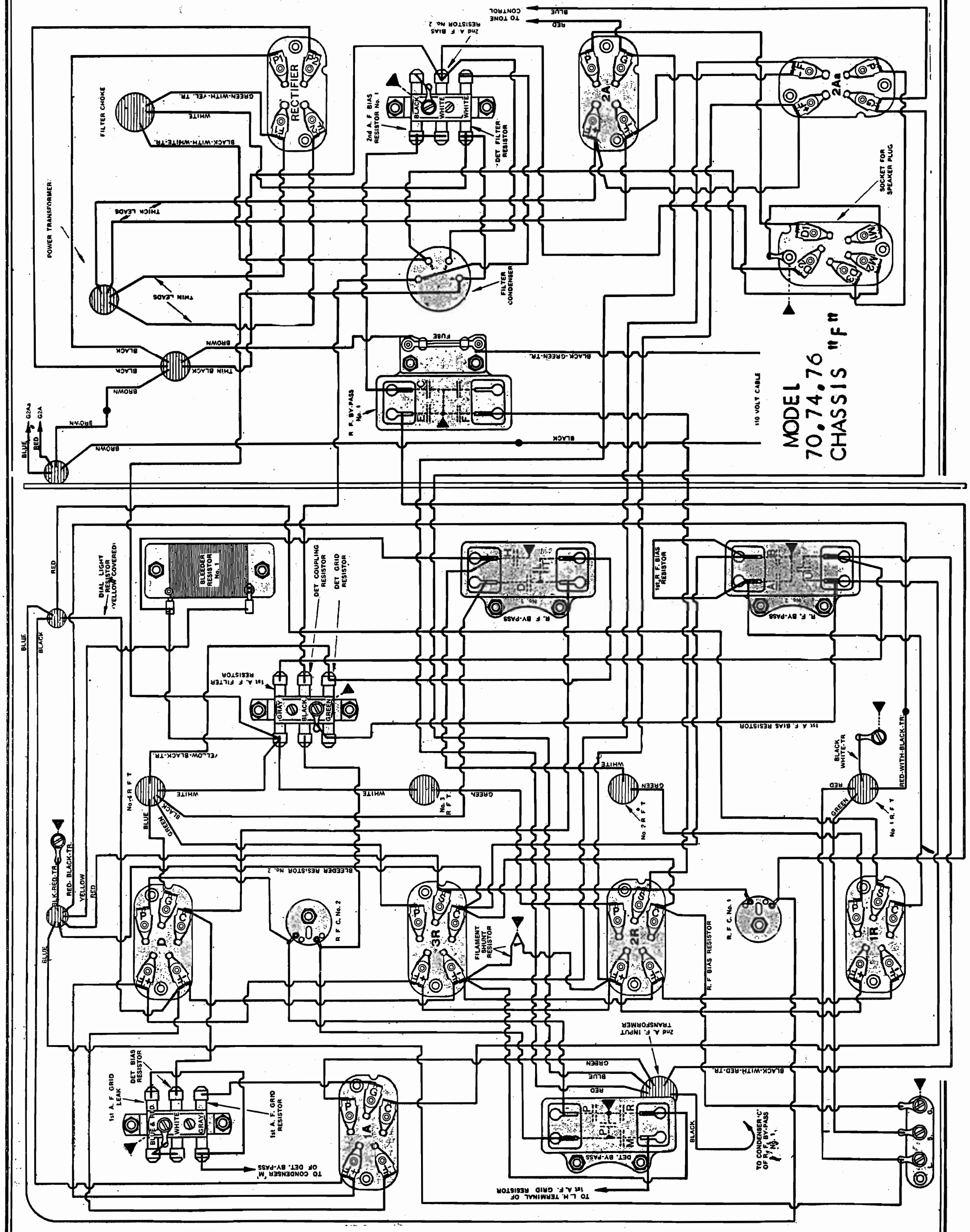
Voltage data on page 189

Voltage reference on page 1-35.

ATWATER KENT MFG. CO.

MODEL 70, 74 and 76
Chassis "F"

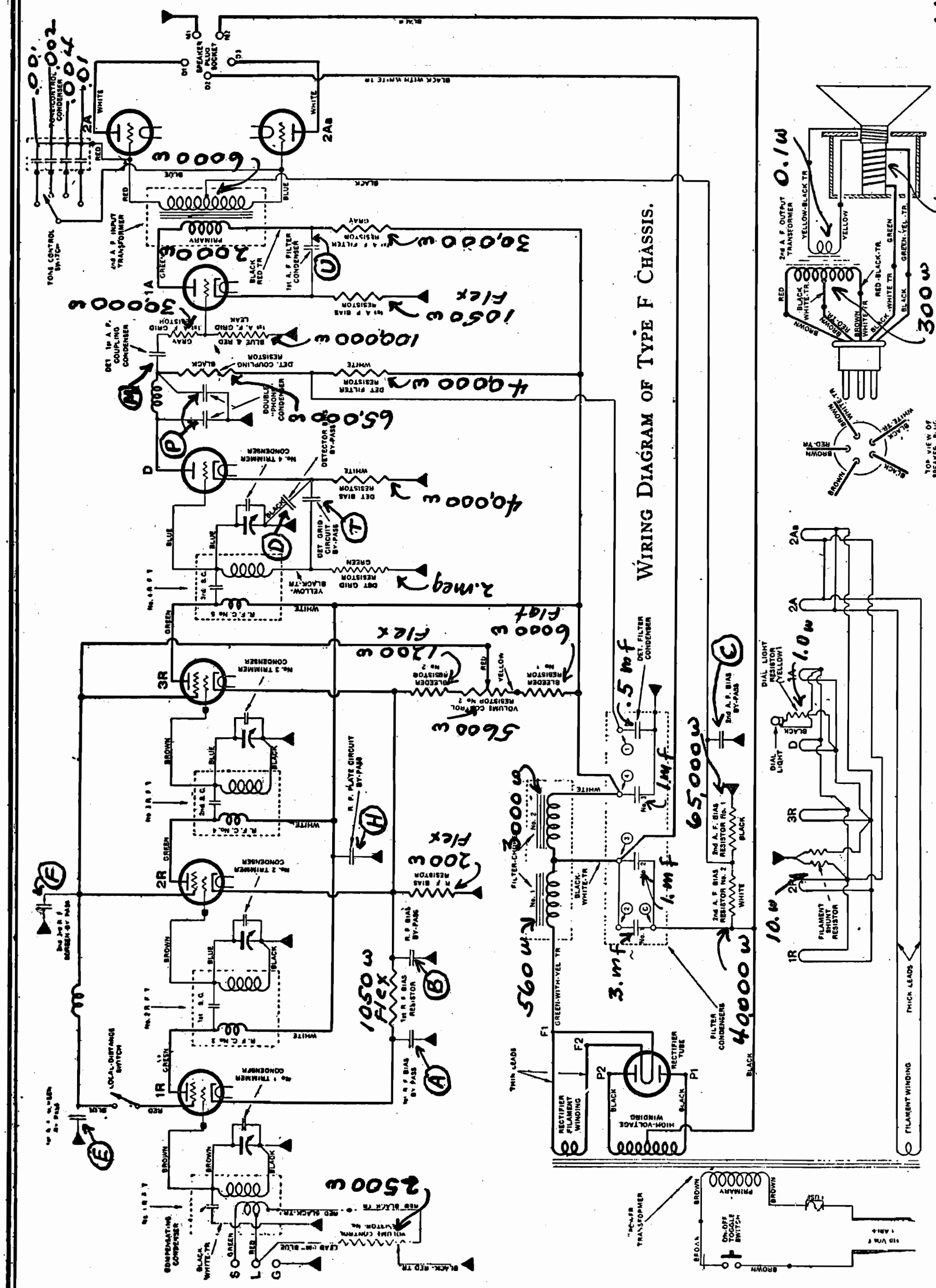
In some early Type F Chassis, a line by-pass condenser is used, and the 1st-A. F. grid resistor (gray) is omitted.



MODEL 70, 74, 76
Chassis F

ATWATER KENT MFG. CO.

Voltage data on page 186



In some early-type F chassis, a line by-pass condenser is used and the 1st-A. F. grid resistor (gray) is omitted. In later-type F chassis, the filter condenser has only four contacts, and the top of the 1st-A.F. grid leak is connected to the opposite end of the 1st-A.F. grid resistor.

FILTER CONDENSER. In early models, the filter condenser has five contacts as indicated by the numbers within circles in the diagram. For those shown there

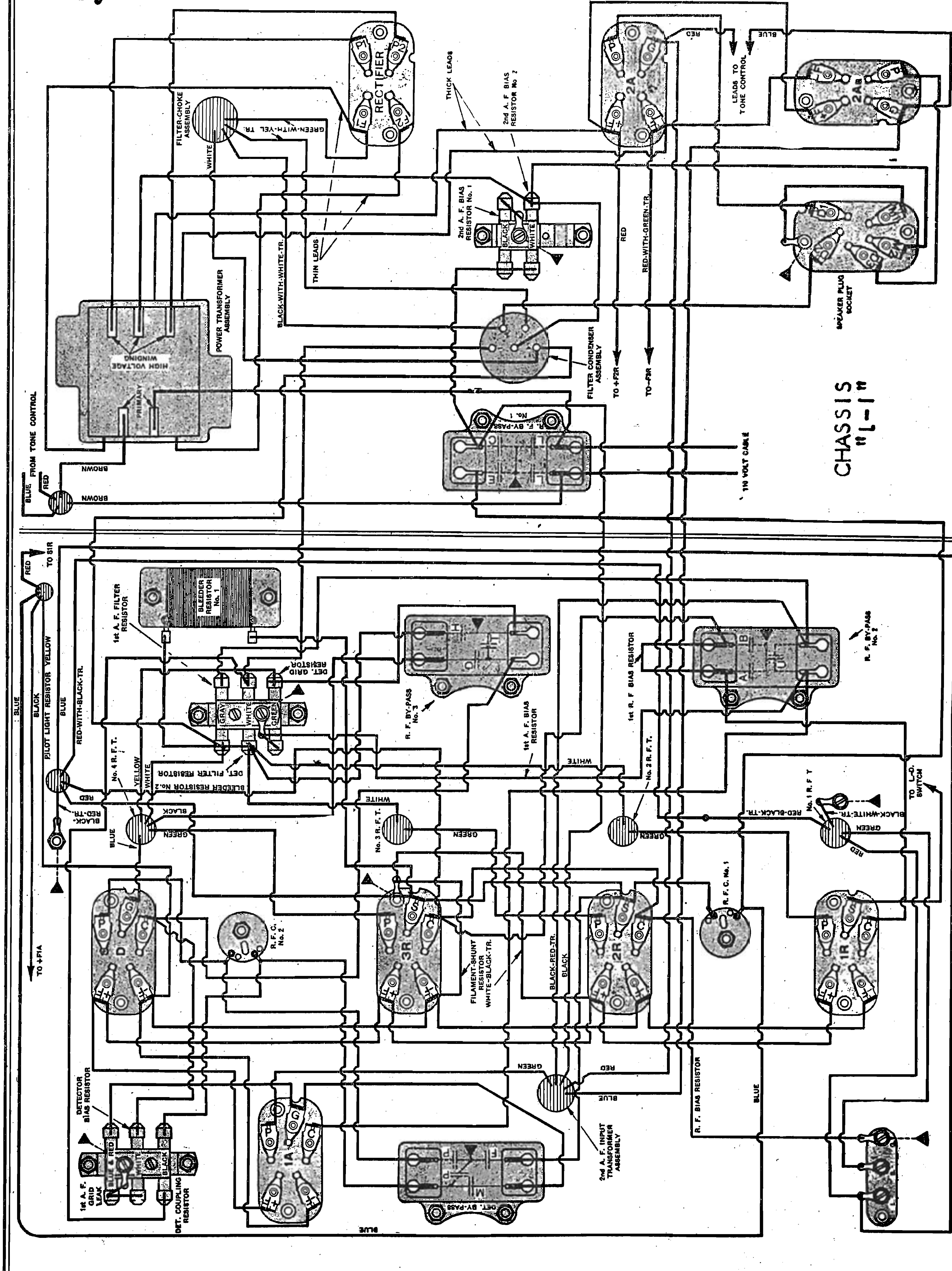
Detector filter	.5 mfd connected between terminal	(1) and can	
Filter #1	3.0 mfd connected between terminal	(2) and center stud	
Filter #2	1.0 mfd connected between terminal	(3) and center stud	
Filter #3	1.0 mfd connected between terminal	(4) and can	

BYPASS CONDENSERS. The letters within the circles correspond with the designations within the bypass units shown in the chassis layout

RF Bypass #1	C	.1 mfd	400 volts	E	.1 mfd	400 volts	# 15790
	F	.01mfd	400 volts	(In very early F "F" is .1 mfd.)			
RF Bypass #2	A	.1 mfd	150 volts	U	.12 mfd	400 volts	# 15770
	B	.1 mfd	150 volts				
RF Bypass #3	D	.1 mfd	400 volts	H	.2 mfd	400 volts	# 15780
	T	.04 mfd	400 volts				
Detector Bypass	R	.1 mfd	400 volts	M	.075 mfd	400 volts	# 15640
	P	.0012 mfd	400 volts	P	.00025 mfd	400 volts	
Tone Control	All condensers are rated at 100 volts						

MODEL 70, 74, 76
Chassis "L-1"
Layout

ATWATER KENT MFG. CO.



MODEL 70, 74, 76
Chassis L-1

ATWATER KENT MFG. CO.

BYPASS CONDENSERS. The letters within the circles designate the condensers within the multiple units shown on the chassis layout

RF Bypass #1	L	.01 mfd	400 volts	L	.01 mfd	400 volts	# 15790
	C	.1 mfd	400 volts	E	.1 mfd	400 volts	
RF Bypass #2	A	.1 mfd	150 volts	U	.12 mfd	400 volts	#15770
	B	.1 mfd	150 volts				
RF Bypass #3	D	.1 mfd	400 volts	H	.2 mfd	400 volts	# 15780
	T	.04 mfd	400 volts				
Detector Bypass	F	.1 mfd	400 volts	M	.075 mfd	400 volts	# 15640
	P	.0012 mfd	400 volts	P	.00025 mfd	400 volts	
Tone Control	All condensers rated at 100 volts						

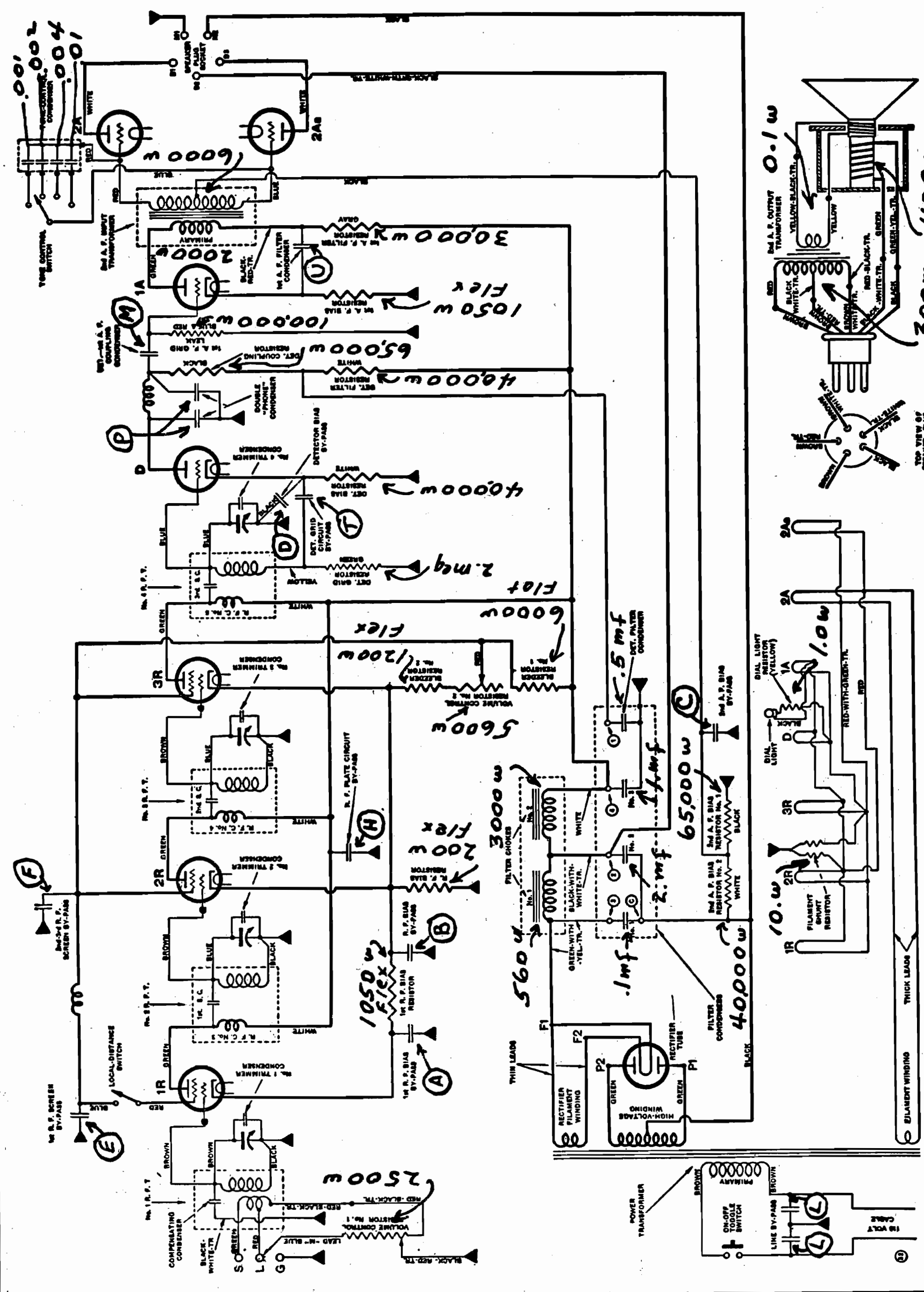


DIAGRAM OF L-1 CHASSIS.

FILTER CONDENSERS

Numerals within circles adjacent to filter condensers designate connections upon condenser can terminal block. These numbers are also shown upon the chassis layout

Detector filter	.5 mfd	connected between terminal (1)	and can
Filter #1	.1 mfd	connected between terminal (3)	and center stud
Filter #2	2.0 mfd	connected between terminal (2)	and center stud
Filter #3	1.0 mfd	connected between terminal (4)	and can

ATWATER KENT MFG. CO.

MODEL 70, 74, 76
Chassis L-2

BYPASS CONDENSERS. The letters within circles designate the condensers within the multiple units shown on the chassis layout

RF Bypass #1	L	.01 mfd	400 volts	L	.01 mfd	400 volts	# 15790
	C	.1 mfd	400 volts	E	.1 mfd	400 volts	
RF Bypass #2	A	.1 mfd	150 volts	U	.12 mfd	400 volts	# 15770
	B	.1 mfd	150 volts				
RF Bypass #3	D	.1 mfd	400 volts	H	.2 mfd	400 volts	# 15780
	T	.04 mfd	400 volts				
Detector Bypass	F	.1 mfd	400 volts	M	.075 mfd	400 volts	# 15640
	P	.0012 mfd	400 volts	P	.00025 mfd	400 volts	
Tone Control	All condensers are rated at 100 volts						

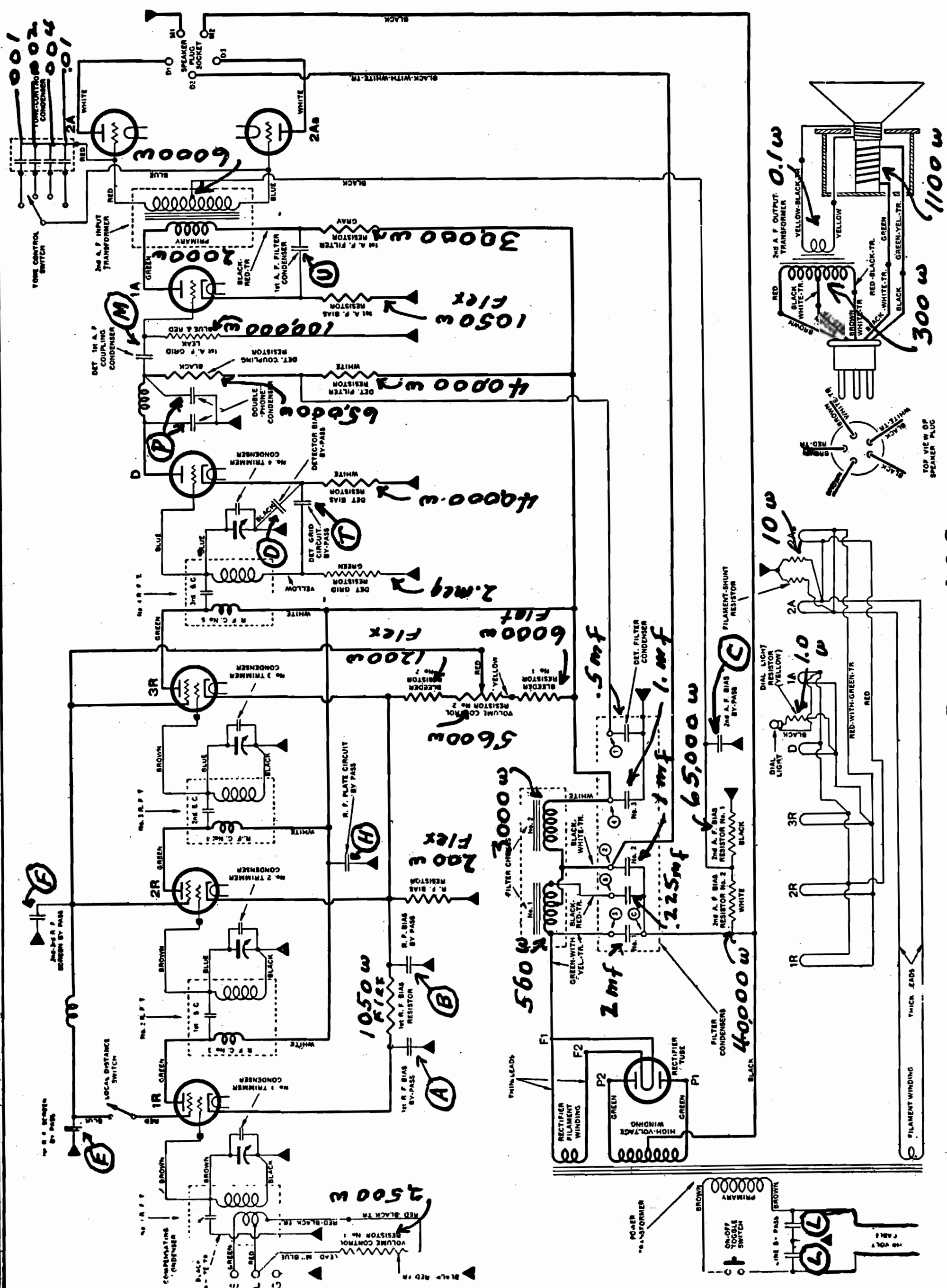


DIAGRAM OF L-2 CHASSIS.

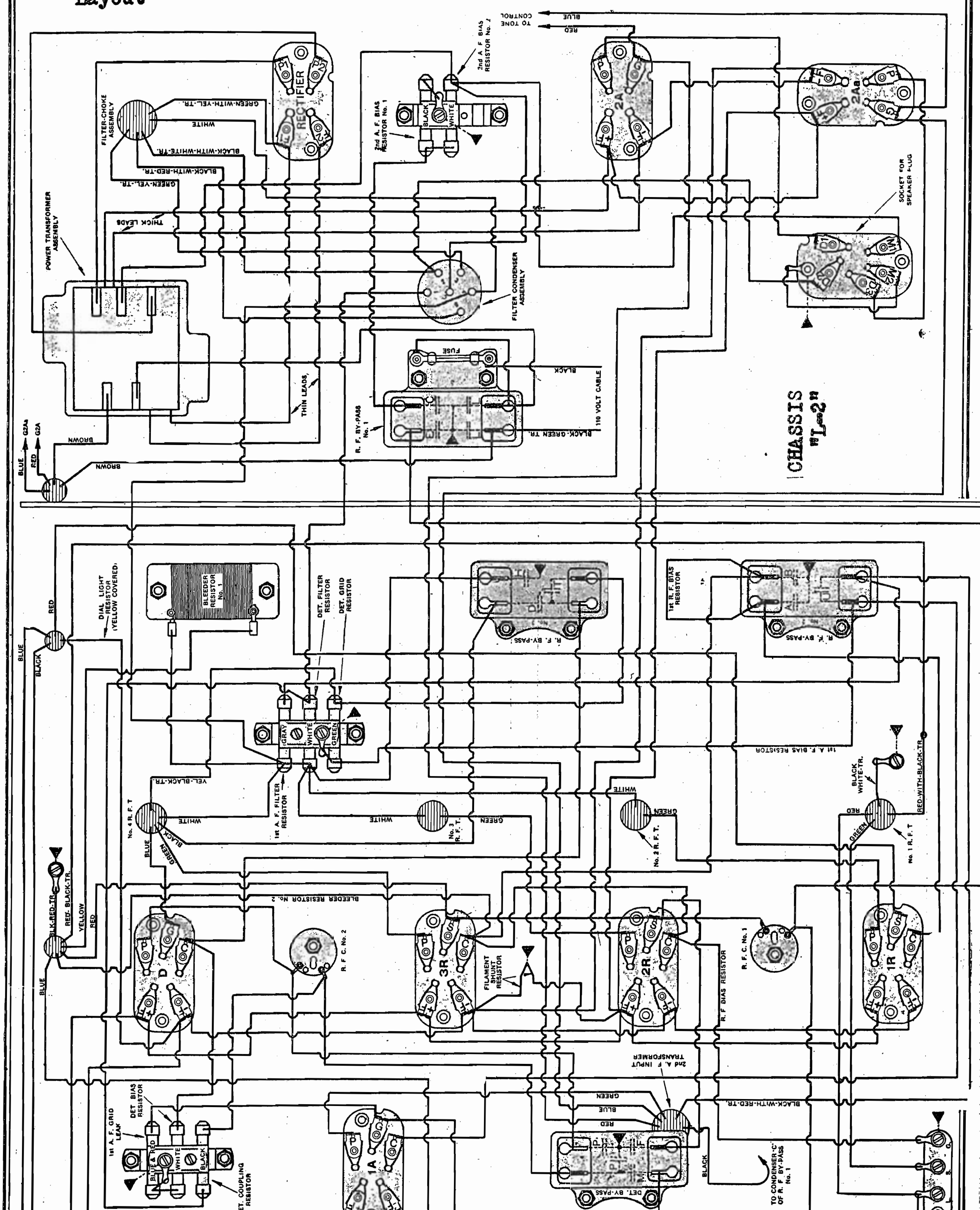
In the majority of L-2 sets, the filament shunt resistor is connected across the R.F. filaments
Also, a 2-ampere fuse is connected in one side of the 110-volt line.

FILTER CONDENSERS. Numerals in circles designate connections upon filter condenser terminal block.

Detector filter	.1 mfd	connected between terminal (1) and can	
Filter #1	2.0 mfd	connected between terminal (2) and center stud	
Filter #2	1.0 mfd	connected between terminal (3) and center stud	
Filter #3	1.0 mfd	connected between terminal (4) and can	
Resonant condenser	.225 mfd	connected between terminal (5) and center stud	

MODEL 70, 74, 76
Chassis "L-2"
Layout

ATWATER KENT MFG. CO.



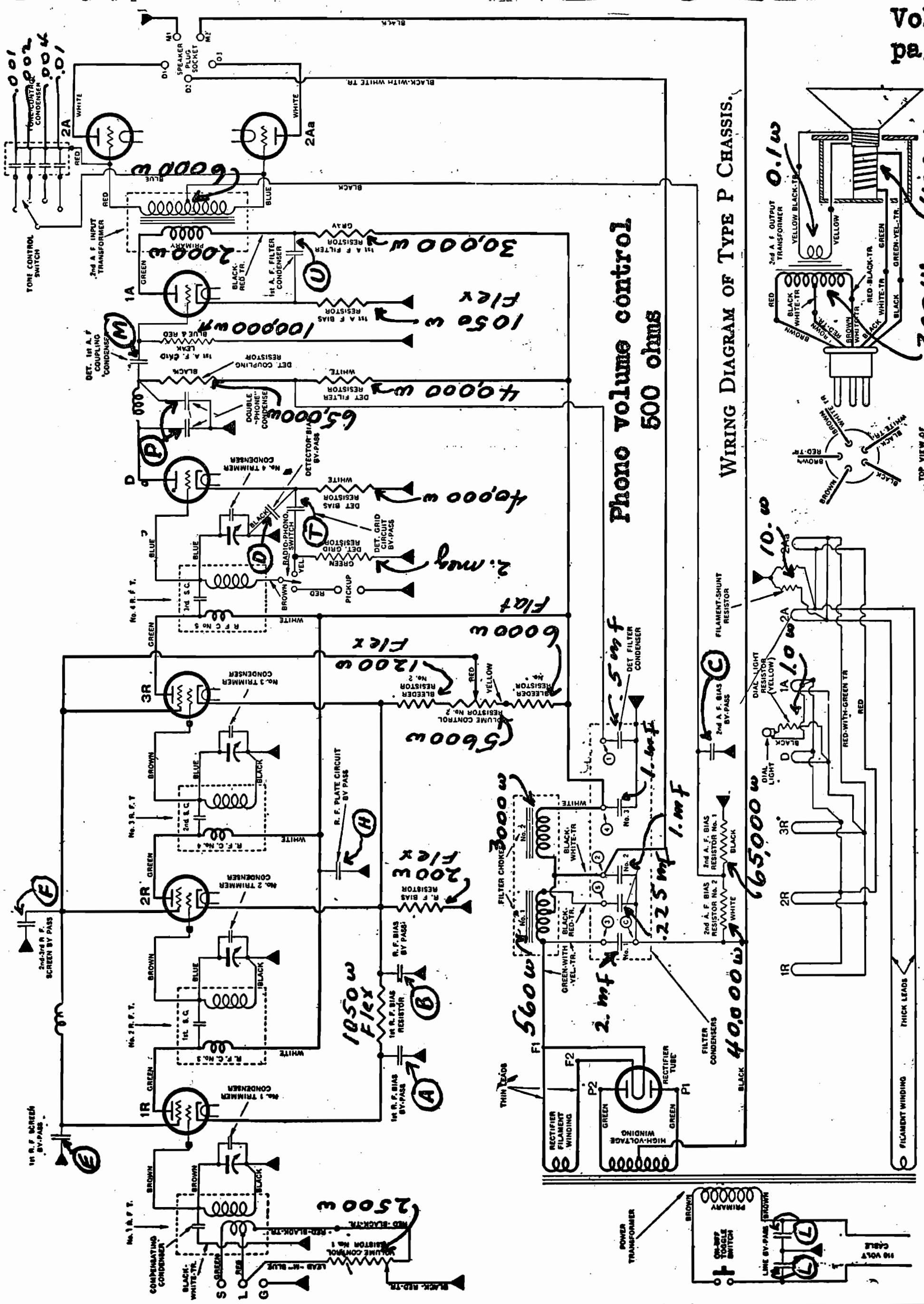
MODEL 76
Chassis P

ATWATER KENT MFG. CO.

BYPASS CONDENSERS. The letters within circles designate the condensers within the multiple units shown on the chassis layout

RF Bypass #1	L	.01 mfd	400 volts	L	.01 mfd	400 volts	# 15790
	C	.1 mfd	400 volts	E	.1 mfd	400 volts	
RF Bypass #2	A	.1 mfd	150 volts	U	.12 mfd	400 volts	# 15770
	B	.1 mfd	150 volts				
RF Bypass #3	D	.1 mfd	400 volts	H	.2 mfd	400 volts	# 15780
	T	.04 mfd	400 volts				
Detector Bypass	F	.1 mfd	400 volts	M	.075 mfd	400 volts	# 15640
	P	.0012 mfd	400 volts	P	.00025 mfd	400 volts	
Tone Control	All condensers are rated at 100 volts						

Voltage data on page 194



FILTER CONDENSERS. Numerals in circles designate connections upon filter condenser terminal block.

Detector filter	.1 mfd	connected between terminal (1) and can
Filter #1	2.0 mfd	connected between terminal (2) and center stud
Filter #2	1.0 mfd	connected between terminal (3) and center stud
Filter #3	1.0 mfd	connected between terminal (4) and can
Resonant condenser	.225 mfd	connected between terminal (5) and center stud

Voltage reference on page 1-44.

MODEL 70,74,76
Chassis "L-2"- "p"
Voltage Data
Notes

ATWATER KENT MFG. CO.

VOLTAGE TABLE FOR TYPE L-2 AND P CHASSIS

Set in operation. Volume control at maximum.
L-D (or 'phono) switch up.

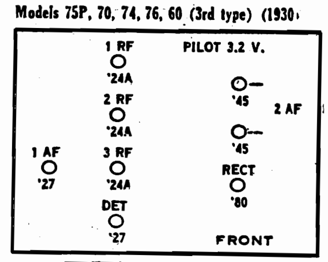
Use High Resistance D. C. Voltmeter (about 0-50-250) to Measure Plate and Grid Voltages.
Use A. C. Voltmeter to Measure Filament Voltages.

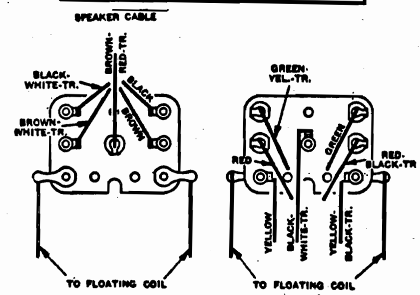
APPROX. VOLTAGES, USING 120 V. LINE

TUBE	FILAMENT VOLTAGE	PLATE VOLTAGE	CONTROL-GRID VOLTAGE	SCREEN VOLTAGE
1st-R.F.	2.4	180	5	85
2nd-R.F.	2.35	180	4.5	86
3rd-R.F.	2.35	180	4.5	86
Detector	2.35	110	14**	—
1st-A.F.	2.35	70	2	—
2A	2.45	250	55*	—
2Aa	2.45	250	55*	—
Rectifier	5.	—	—	—

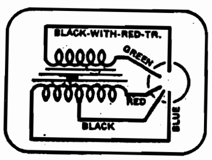
* Use 250-volt scale.
** This is the voltage across the detector bias resistor; when measuring from grid to cathode, the voltage reading is only 2.
All readings made from cathode in heater-type tubes, and from —F in plain-filament-type tubes.

Models 75P, 70, 74, 76, 60 (3rd type) (1930)

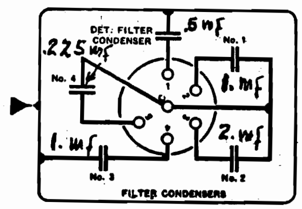




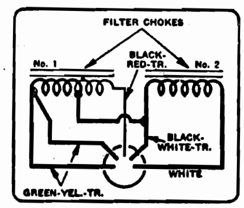
SPEAKER PANEL CONNECTIONS



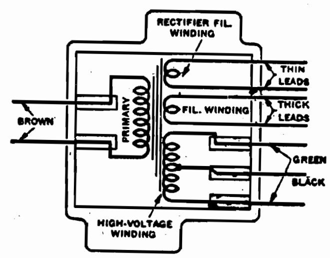
INPUT
A. F. TRANSFORMER
ASSEMBLY



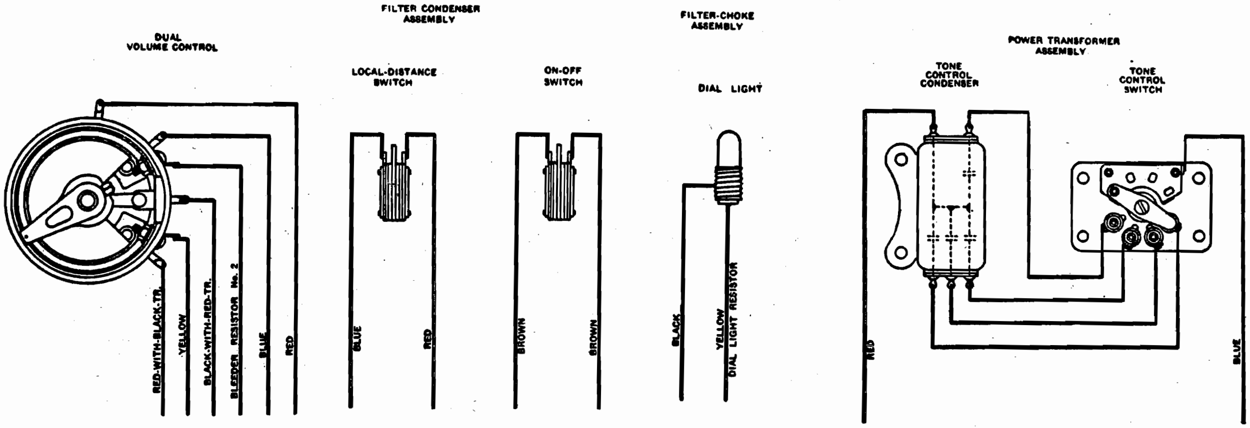
FILTER CONDENSER
ASSEMBLY



FILTER-CHOKE
ASSEMBLY



POWER TRANSFORMER
ASSEMBLY



Condensers in R.F. By-Pass No. 1

L—Line by-pass.
L—Line by-pass.
C—2nd-A.F. bias by-pass.
E—1st-R.F. screen by-pass.

Condensers in Detector By-Pass

F—2nd-3rd R.F. screen by-pass.
M—Detector-1st A.F. coupling condenser.
P—Phone condenser.
P—Phone condenser.

Condensers in R.F. By-Pass No. 2

A—1st-R.F. bias by-pass.
B—R.F. bias by-pass.
U—1st-A.F. filter condenser.

Condensers in R.F. By-Pass No. 3

D—Detector bias by-pass.
H—R.F. plate-circuit by-pass.
T—Detector grid-circuit by-pass.

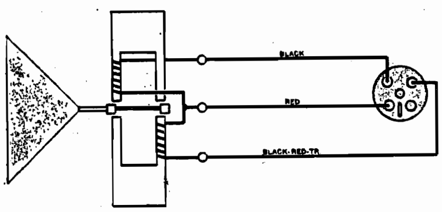
CONNECTION OF UNITS IN TYPE L-2 CHASSIS, AND, AT RIGHT, CONNECTIONS TO TERMINAL PANEL OF TYPE N SPEAKER.

MODEL 70, 76
Chassis "Q"
Voltage

ATWATER KENT MFG. CO.

Type Q Chassis (battery operated) has three stages of screen-grid R. F. amplification, grid detection, one stage of transformer-coupled audio, and a double-audio output stage.

An output filter choke and condenser are used in the Q-2 (above Serial No. 5704025), as shown in the diagram below. The Q-1 Chassis does not have these two parts.



Connections of Inductor Type J Speaker.

VOLTAGE TABLE FOR TYPE Q CHASSIS

Set in operation. Volume control at maximum.
L-D switch at distance.

Use High Resistance D. C. Voltmeter (about 0-50-250) to Measure Plate and Grid Voltages.
Use A. C. Voltmeter to Measure Filament Voltages.

	180 VOLTS "B" BATTERY			
TUBE	FILAMENT VOLTAGE	PLATE VOLTAGE	CONTROL-GRID VOLTAGE	SCREEN VOLTAGE
1st-R.F.	3.3	135	1.5	45
2nd-R.F.	3.3	135	1.5	45
3rd-R.F.	3.3	135	2.5	45
Detector	5.0	70	—	—
1st-A.F.	5.0	67	45	—
2A	5.0	180	45	—
2Aa	5.0	180	45	—

R.F. By-Pass No. 1

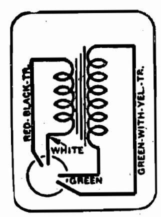
G—R.F. screen by-pass.
V—1st-R.F. grid-circuit by-pass.
Y—Output filter condenser.
N—1st-R.F. filament by-pass.

R.F. By-Pass No. 2*

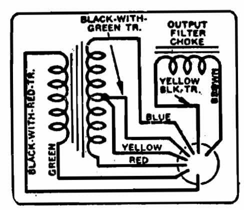
H—R.F. plate-circuit by-pass.
T—Detector filter condenser.
P—"Phone" condenser.
P—"Phone" condenser.

R.F. By-Pass No. 3

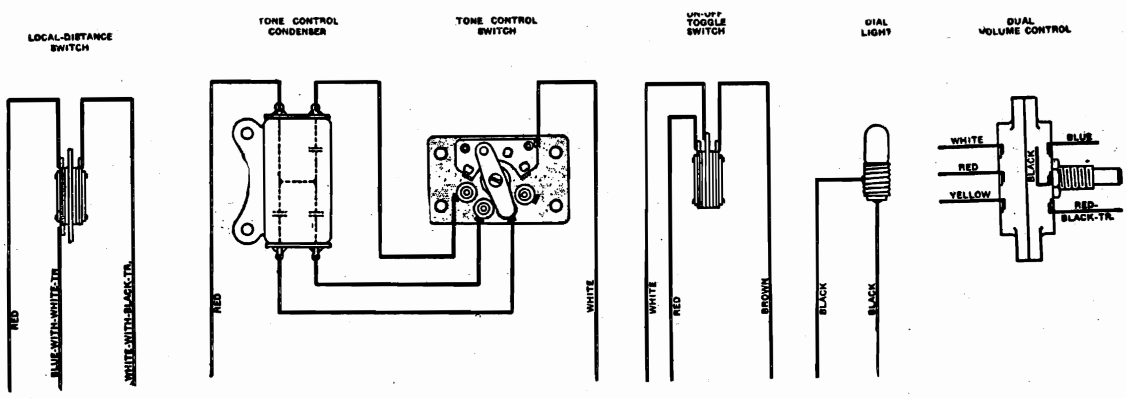
S—Detector filament by-pass.
R—3rd-R.F. filament by-pass.
R—3rd-R.F. filament by-pass.
O—2nd-R.F. filament by-pass.



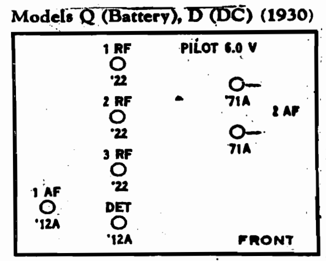
No. 1 A. F. T.



2nd A. F. INPUT TRANSFORMER



Models Q (Battery), D (DC) (1930)



The output filter choke is not used in the Q-1 chassis.

*The connections shown for R. F by-pass No. 2 are correct when this part is No. 16060. However, if a No. 18350 (H-28) is used, "P" and "P" are at top and "H" and "T" are at bottom; therefore, the connections to this condenser are correspondingly changed.

MODEL 70,76
Chassis Q

ATWATER KENT MFG. CO.

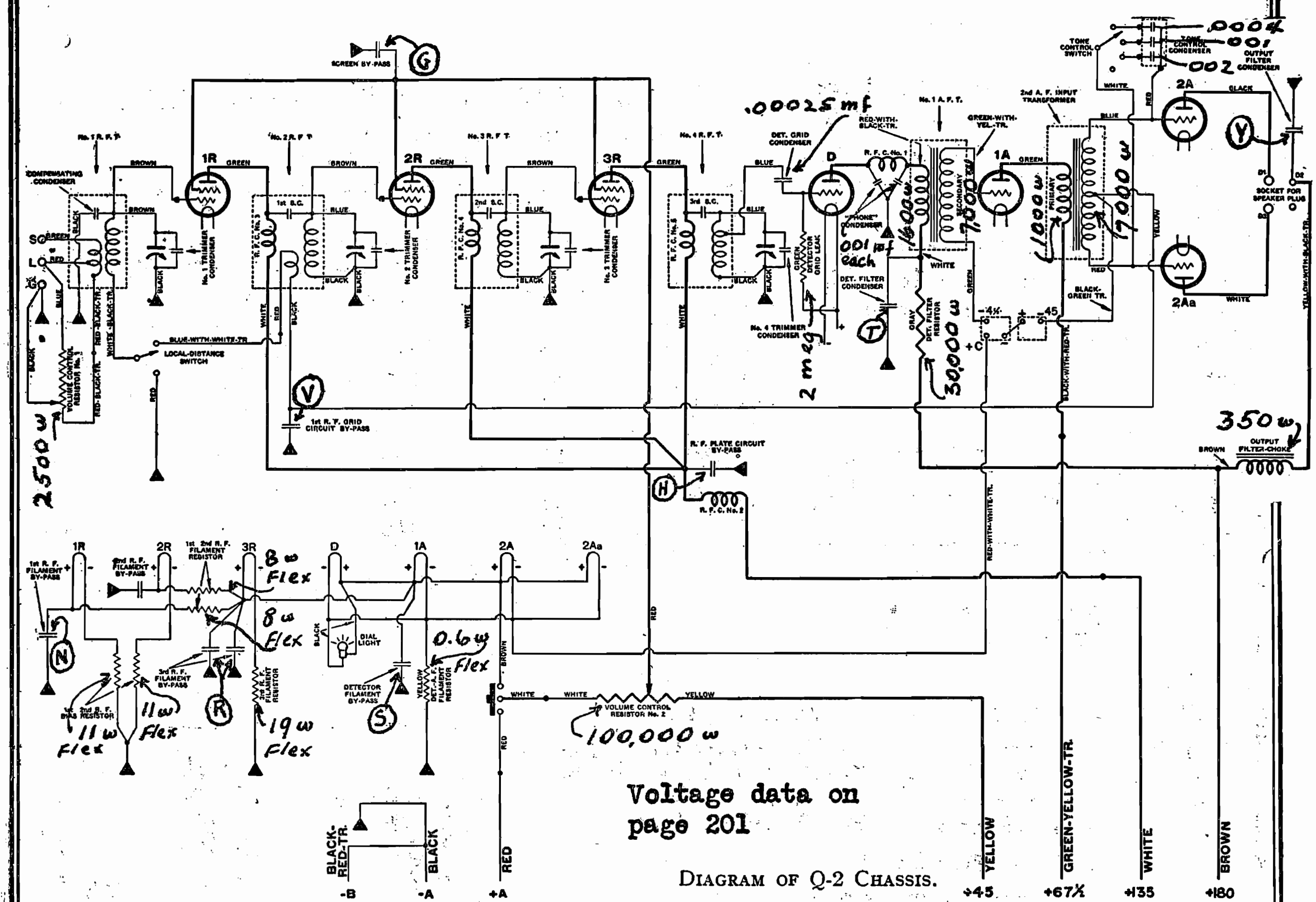
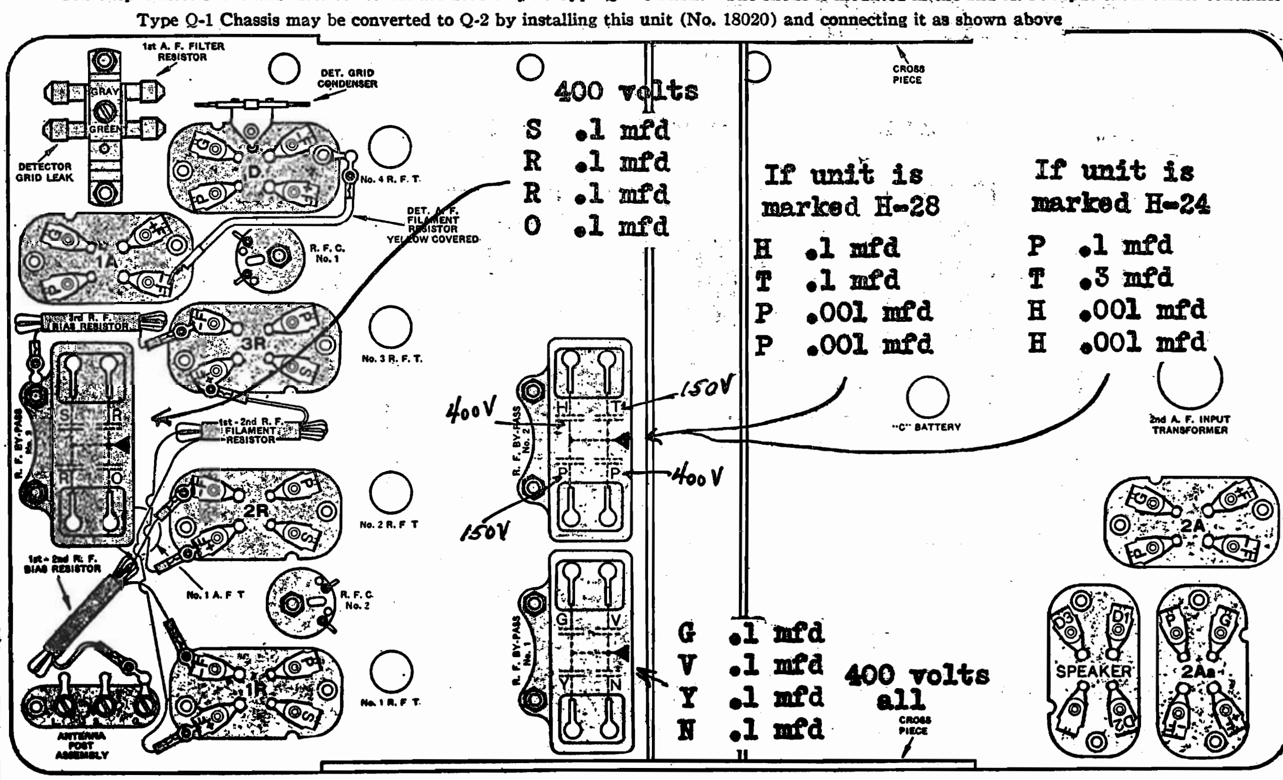


DIAGRAM OF Q-2 CHASSIS.

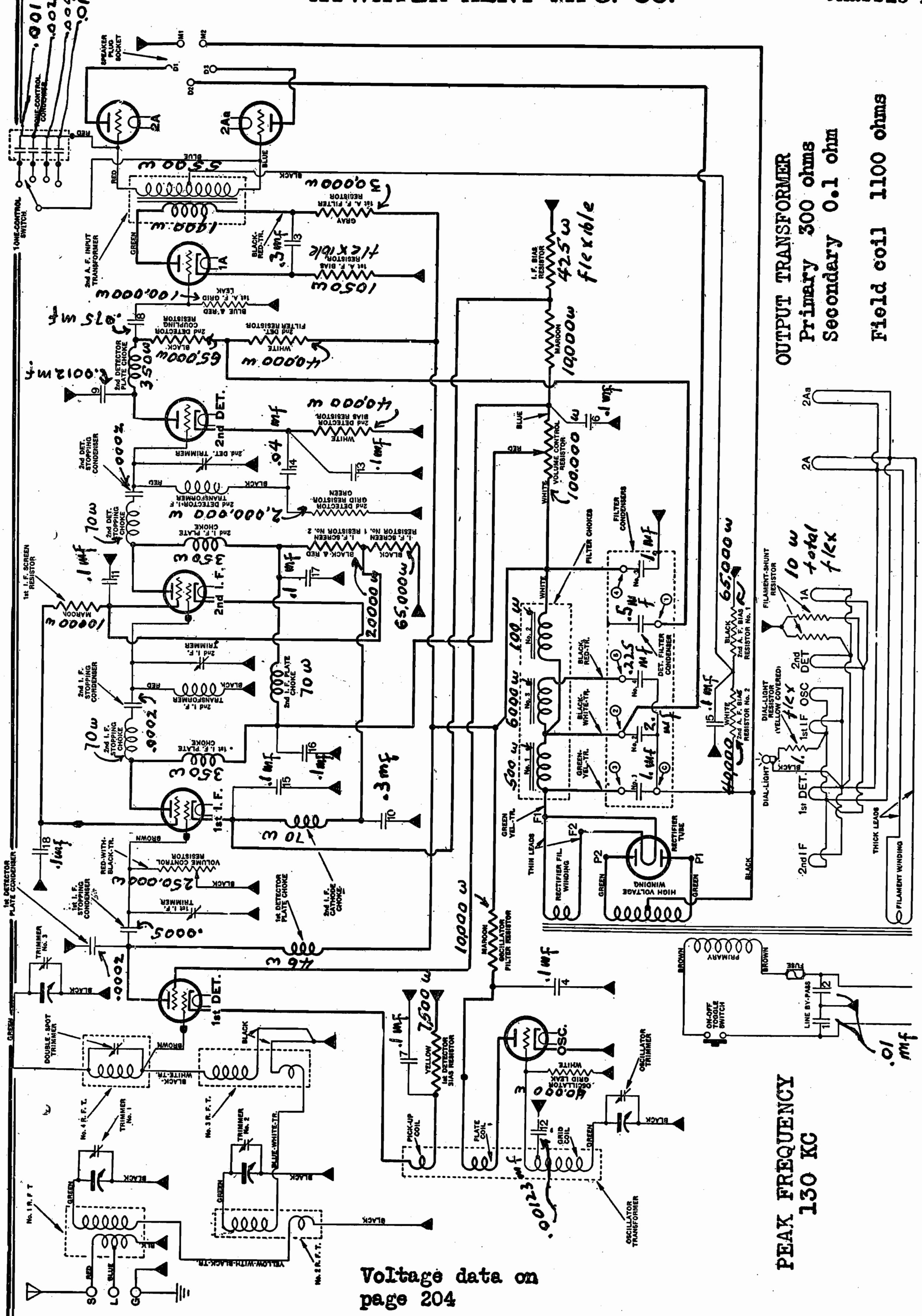
The output filter choke and filter condenser are used only in Type Q-2 Chassis. The choke is mounted in the 2nd-A. F. input transformer container. Type Q-1 Chassis may be converted to Q-2 by installing this unit (No. 18020) and connecting it as shown above



Voltage reference on page 1-45.

ATWATER KENT MFG. CO.

MODEL 72
Chassis H-1



OUTPUT TRANSFORMER
Primary 300 ohms
Secondary 0.1 ohm

Field coil 1100 ohms

SCHEMATIC DIAGRAM OF TYPE H-1 CHASSIS

In some Type H-1 sets the +B lead to the I.F. screens is connected to the 1st-I.F. side of the 1st-I.F. screen resistor.

PEAK FREQUENCY
130 KC

Voltage data on
page 204

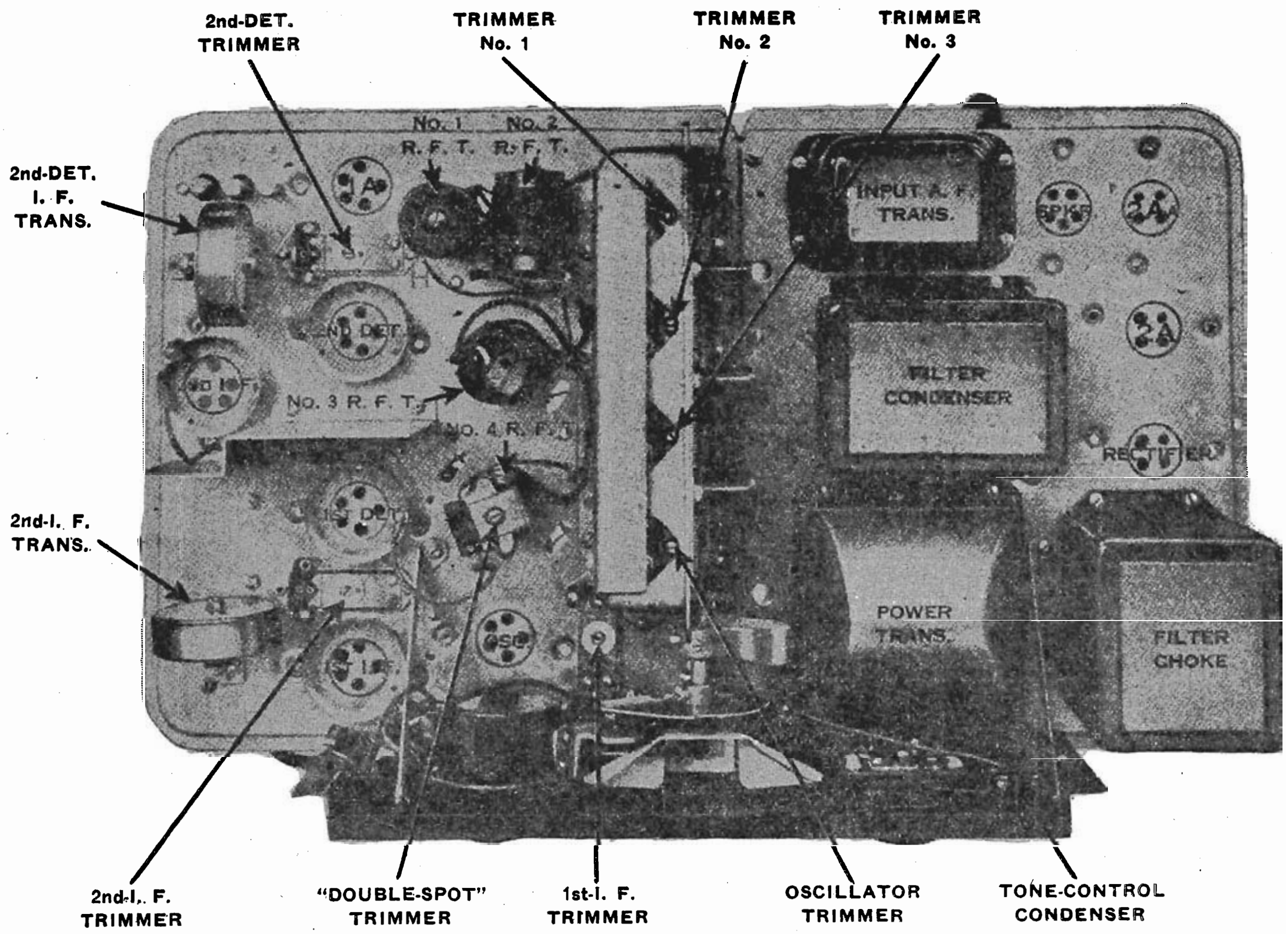
Voltage reference on page 1-48.

MODEL 72
Chassis "H-1"
Voltage

ATWATER KENT MFG. CO.

TYPE H-1, No. 16500, SUPER-HETERODYNE CHASSIS

(Below Serial No. 5,855,201)



Top View of Atwater Kent Type H-1 Super-Heterodyne Chassis

Tube	"A" Volts	"B" Volts	Control Grid	Screen
1st Det	2.4	150	3.	12.
Osc.	2.3	100	10.*	
1st IF	2.3	150	3.	75.
2nd IF	2.3	145	3.	85.
2nd Det	2.3	100	13.**	
1st AF	2.3	65	2.	
2nd AF PP	2.5	250	55.*	
2nd AF PP	2.5	250	55.*	
Rect.	4.7			

With volume control at minimum, the IF plate voltage is reduced to about 150 volts and screen voltage is reduced to about 10 volts. * Use 250 volts scale of high resistance voltmeter. ** This is the voltage across the detector bias resistor.

ATWATER KENT MFG. CO.

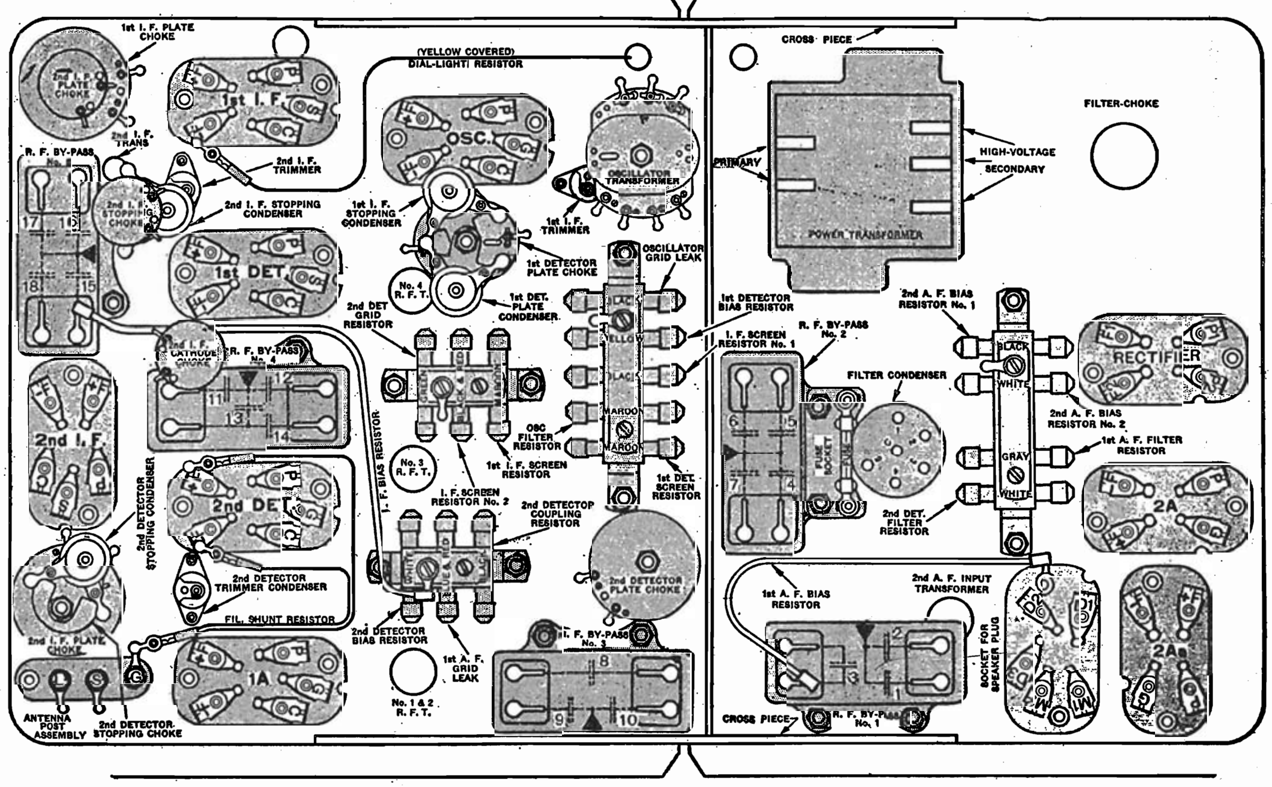
MODEL 72
Chassis H-1
Below serial
5,855,201

FILTER CONDENSERS. Numerals in circles indicate connections upon filter condenser terminal block. These numbers are shown upon the parts layout below and also upon the chassis layout

Detector filter	.1 mfd	connected between terminal (1) and can
Filter #1	2.0 mfd	connected between terminal (2) and center stud
Filter #2	1.0 mfd	connected between terminal (3) and center stud
Filter #3	1.0 mfd	connected between terminal (4) and can
Resonant condenser	.225 mfd	connected between terminal (5) and center stud

BYPASS CONDENSERS. The small numerals adjacent to the bypass condensers corresponds with the designating numerals upon the chassis layout

RF Bypass #1	1	.01	mfd	400 volts	2	.01	mfd	400 volts	# 17360
	3	.3	mfd	400 volts					
RF Bypass #2	4	.1	mfd	400 volts	5	.1	mfd	400 volts	# 15262
	6	.1	mfd	400 volts	7	.1	mfd	400 volts	
RF Bypass #3	8	.075	mfd	400 volts	9	.0012	mfd	400 volts	# 16745
	10	.3	mfd	150 volts					
RF Bypass #4	11	.1	mfd	400 volts	12	.00123	mfd	400 volts	# 17370
	13	.1	mfd	400 volts	14	.04	mfd	400 volts	
RF Bypass #5	15	.1	mfd	400 volts	16	.1	mfd	400 volts	# 15262
	17	.1	mfd	400 volts	18	.1	mfd	400 volts	



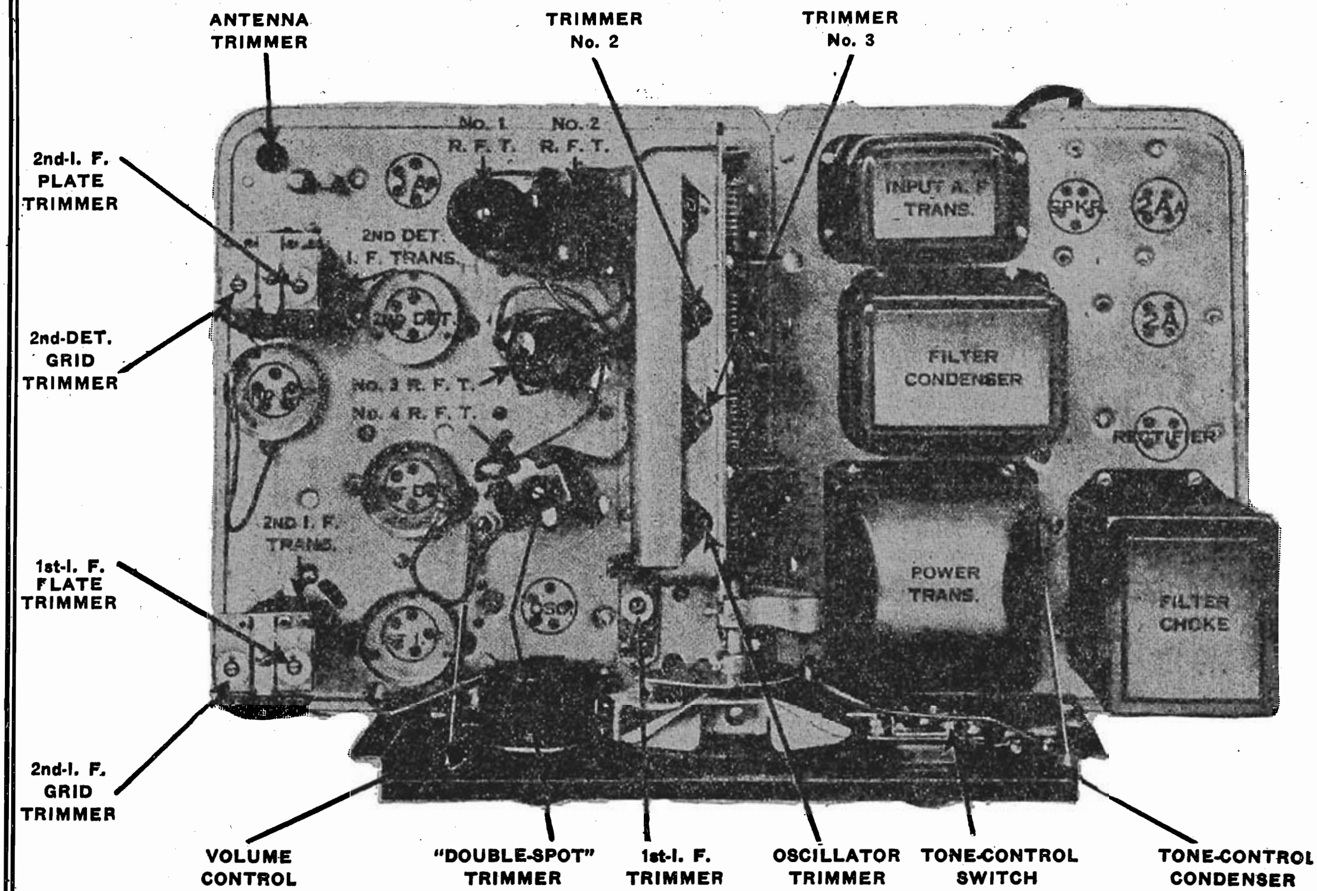
BOTTOM CHART OF TYPE H-1 CHASSIS

MODEL 72
Chassis "H-2"
Voltage

ATWATER KENT MFG. CO.

TYPE H-2, No. 16500, SUPER-HETERODYNE CHASSIS

(Above Serial No. 5,855,201)



TOP VIEW OF ATWATER KENT TYPE H-2 SUPER-HETERODYNE CHASSIS
Note that trimmer No. 1 is omitted. The antenna trimmer serves the same purpose

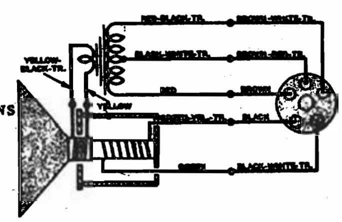
VOLTAGE TABLE FOR TYPE H-2 CHASSIS

Set in operation. Volume control at maximum

Tube	"A" Volts	"B" Volts	Control Grid	Screen
1st Det	2.3	150	4.	15.
Osc	2.5	130	10.*	
1st IF	2.3	150	3.5	100.
2nd IF	2.3	150	3.5	85.
2nd Det	2.3	100	14.**	
1st AF	2.3	70	2.	
2nd AF PP	2.5	250	55.*	
2nd AF PP	2.5	250	55.*	
Rect.	4.7			

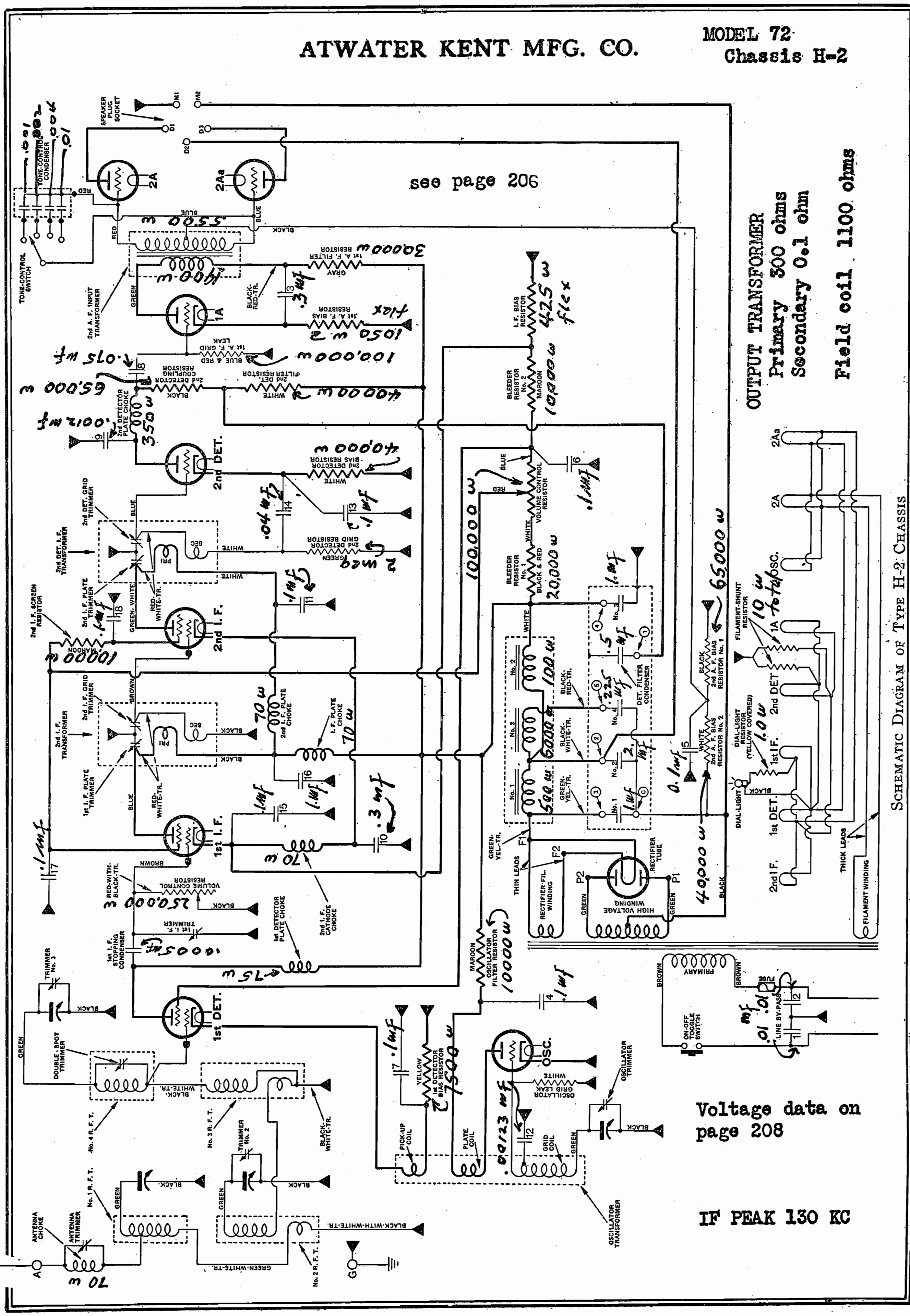
With the volume control at minimum, the IF voltage is reduced to 15 volts. * Use 250 volt scale of high resistance voltmeter. ** This is the voltage across the detector bias resistor; when measuring from grid to cathode, the voltage reading is only 2. All readings made from cathode in heater type tubes and -F in filament type tubes.

CONNECTIONS OF N SPEAKER



THE DOUBLE SPOT CIRCUIT

The double spot circuit is simultaneously tuned to two different frequencies. The complete circuit consists of #3 and #4 RF transformers and #3 variable condenser. A part of this circuit, #4 RFT, the double spot trimmer and #3 variable condenser is automatically tuned to 260 KC more than the desired frequency.



Voltage reference on page 1-50.

MODEL 72
Chassis H-2
Above serial
5,855,201

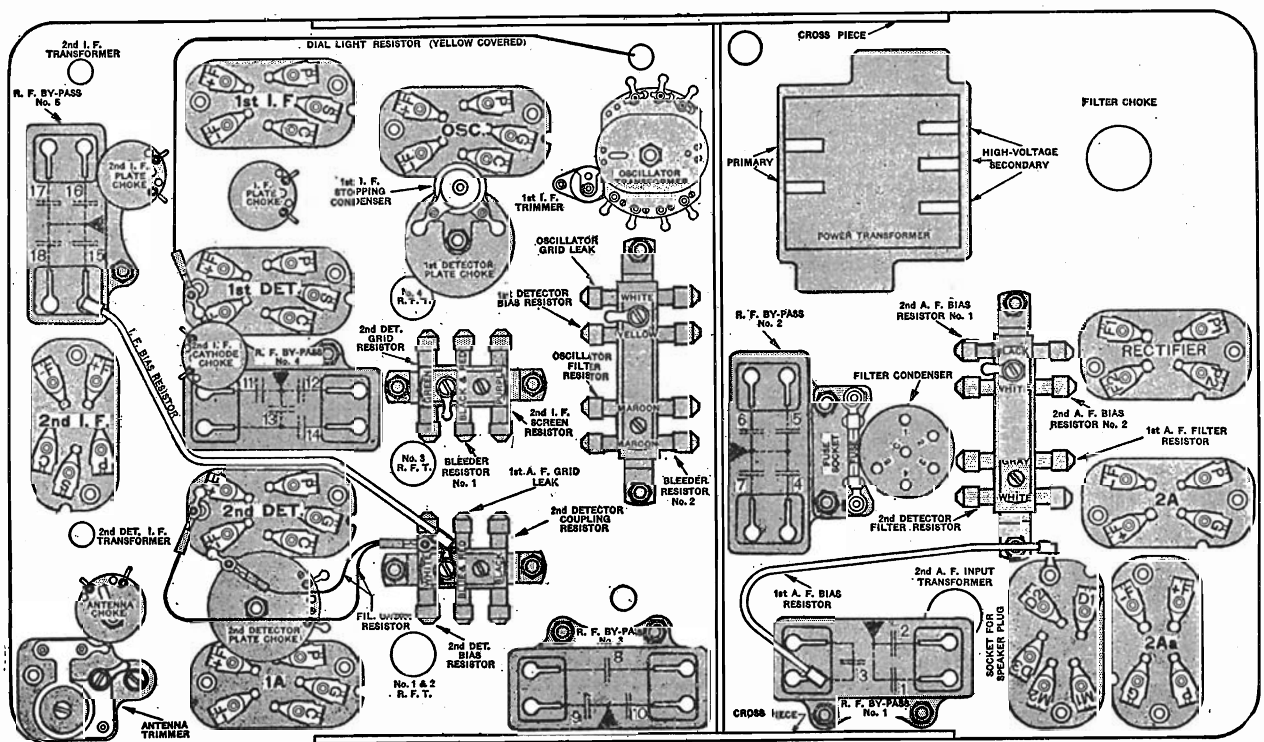
ATWATER KENT MFG. CO.

FILTER CONDENSERS. Numerals in circles shown on wiring diagram indicate connections upon filter condenser terminal block. These numbers are also shown upon the parts layout below. Also upon the chassis wiring diagram

Detector filter	.1 mfd	connected between terminal (1) and can
Filter #1	2.0 mfd	connected between terminal (2) and center stud
Filter #2	1.0 mfd	connected between terminal (3) and center stud
Filter #3	1.0 mfd	connected between terminal (4) and can
Resonant condenser	.225 mfd	connected between terminal (5) and center stud

BYPASS CONDENSERS. The small numerals adjacent to the various bypass condensers shown on the wiring diagram correspond with the designating numerals upon the parts layout below and the chassis

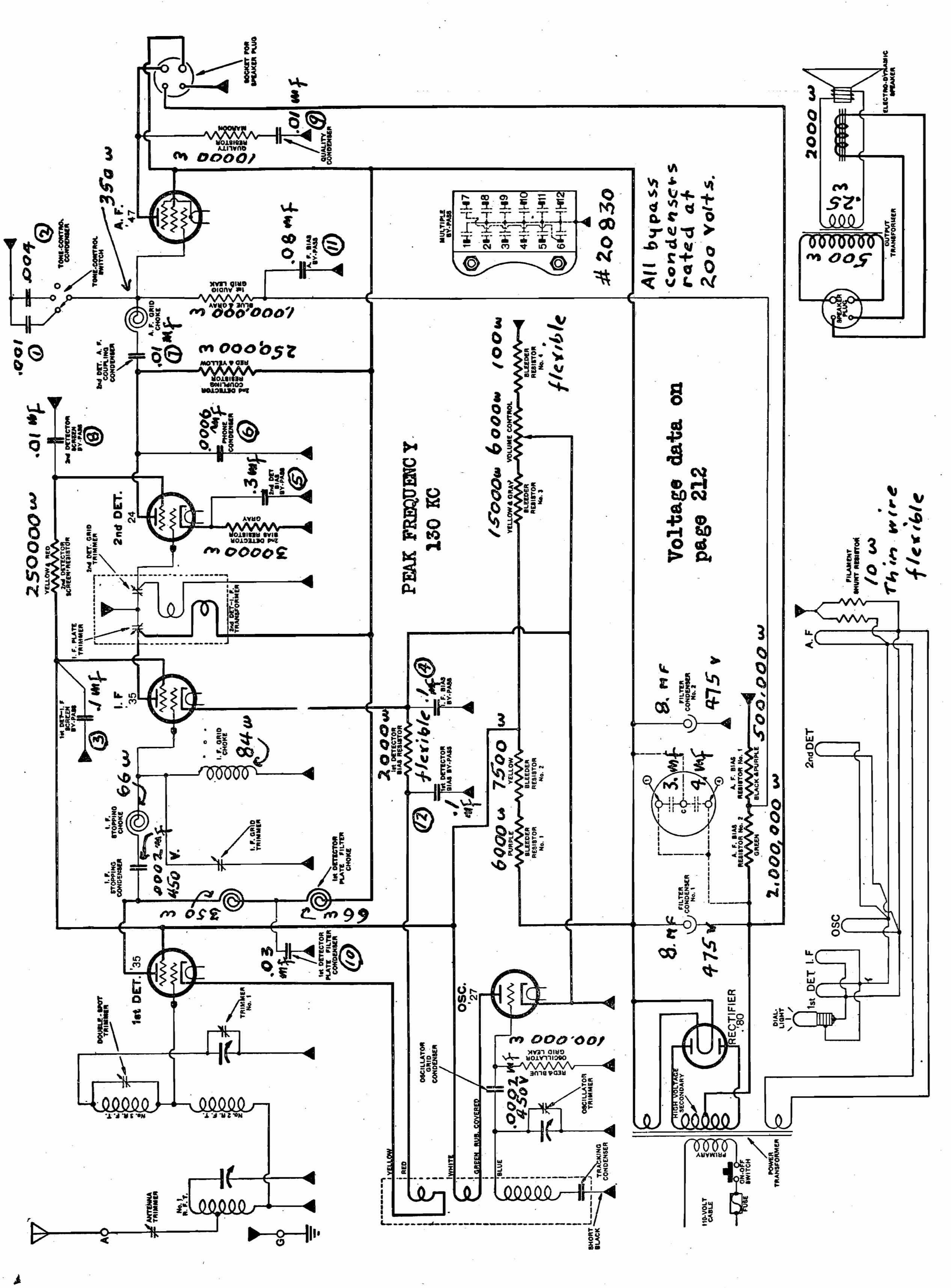
RF Bypass #1	1	.01	mfd	400 volts	2	.01	mfd	400 volts	# 17360
	3	.3	mfd	400 volts					
RF Bypass #2	4	.1	mfd	400 volts	5	.1	mfd	400 volts	# 15262
	6	.1	mfd	400 volts	7	.1	mfd	400 volts	
RF Bypass #3	8	.075	mfd	400 volts	9	.0012	mfd	400 volts	# 16745
	10	.3	mfd	150 volts					
RF Bypass #4	11	.1	mfd	400 volts	12	.00123	mfd	400 volts	# 17370
	13	.1	mfd	400 volts	14	.04	mfd	400 volts	
RF Bypass #5	15	.1	mfd	400 volts	16	.1	mfd	400 volts	# 15262
	17	.1	mfd	400 volts	18	.1	mfd	400 volts	



BOTTOM VIEW OF TYPE H-2 CHASSIS
In this chart, the 2nd-I. F. screen resistor should be maroon instead of purple.

MODEL 80, 80-F
83, 83-F

ATWATER KENT MFG. CO.

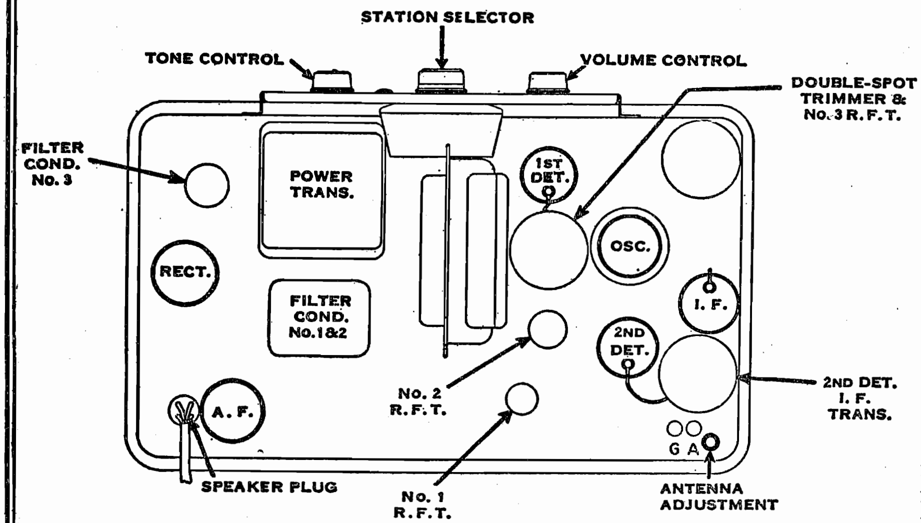


In Model 83 and 83-F, a filter-condenser unit is used and it is connected as shown in dotted lines. This unit is NOT used in Model 80 and 80-F. In Model 83, 83-F, the electrolytic filter condenser No. 1 is not used, and the filament circuit is slightly different.

Voltage reference on page 1-56.

**MODEL 80, 80-F
83, 83-F**

ATWATER KENT MFG. CO.



TOP VIEW OF MODEL 83, 83-F.

The circle in the upper right-hand corner is the shield that covers the coupling unit between the 1st-detector and the I. F. tubes.

Condensers in Multiple By-pass Model 80, 80-F, 83, 83-F

1—Tone-control condenser.
2—Tone-control condenser.
3—1st-detector—I. F. screen by-pass.
4—I. F. bias by-pass.
5—2nd-detector bias by-pass.
6—Phone condenser.
7—2nd-detector—A. F. coupling condenser.
8—2nd-detector screen by-pass.
9—Quality condenser.
10—1st-detector plate filter condenser.
11—A. F. bias by-pass.
12—1st-detector bias by-pass.

The numbers given above correspond with the numbers marked upon the multiple condenser unit.

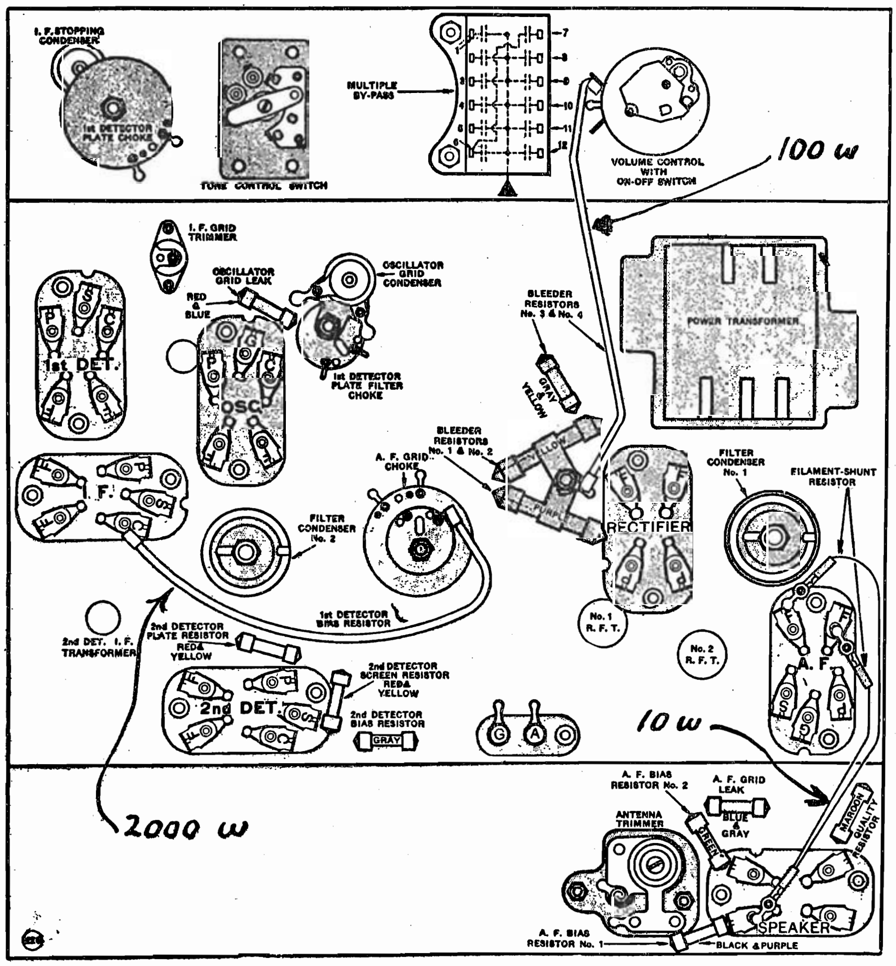


CHART OF MODEL 80, 80-F.

The parts on Model 83, 83-F are similar except that Model 83, 83-F has a filter condenser unit and only one electrolytic condenser.

VOLTAGE TABLE

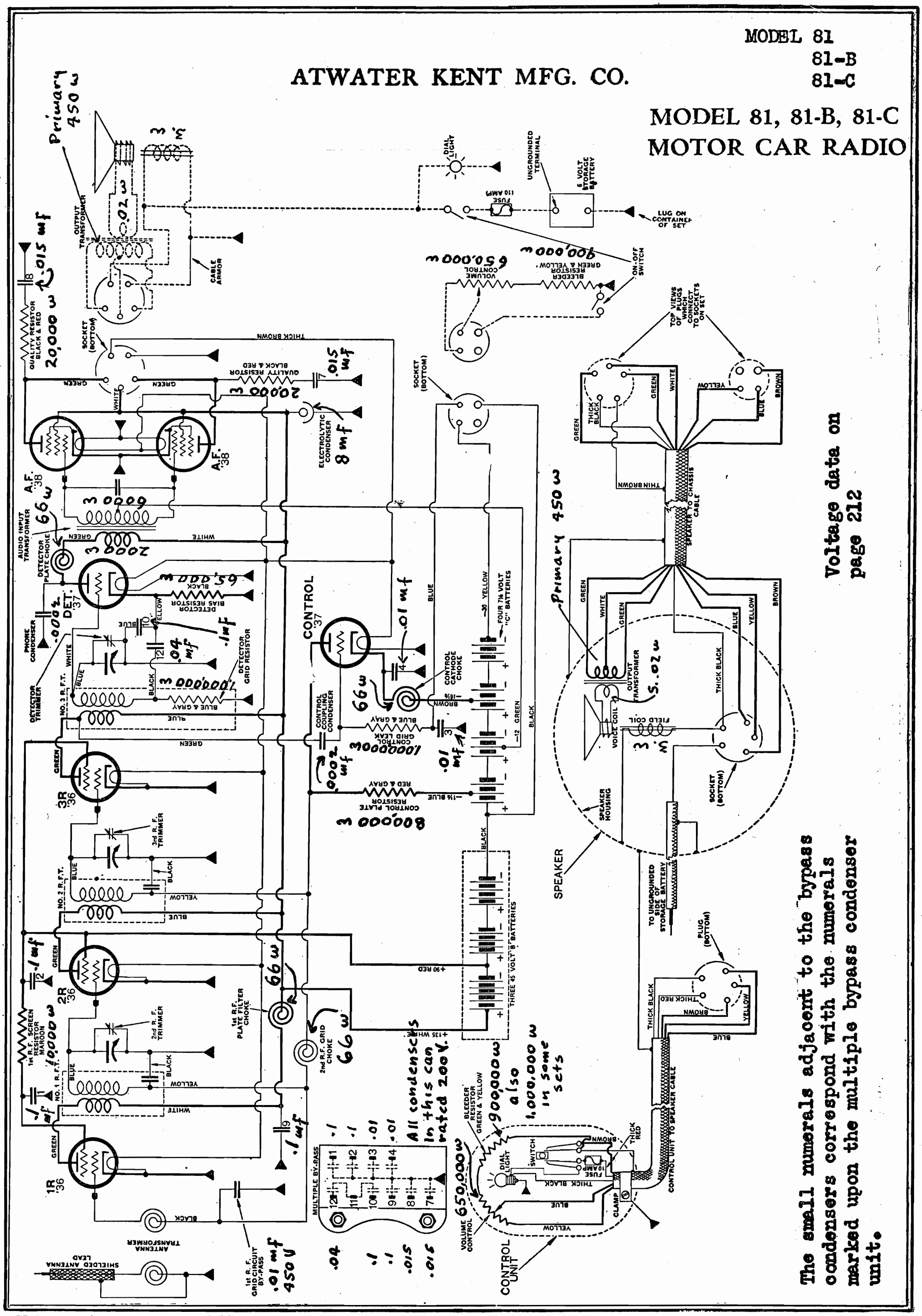
	Fil.	Plate	Screen	Control
1st Det.	2.4	225	90	5.
I-F	2.4	230	95	2.
2nd Det	2.4	110	45	5.
1st A-F	2.4	230	240	4.
2nd A-F				
Osc	2.4	100		*

* A variable depending upon several factors. Capacity of voltmeter leads may cause oscillator tube to cease functioning.

MODEL 81
81-B
81-C

ATWATER KENT MFG. CO.

MODEL 81, 81-B, 81-C MOTOR CAR RADIO



VOLTAGE DATA

ATWATER KENT MFG. CO.

VOLTAGE TABLE

FOR MODEL 80, 81, 82, 82-D, 82-Q, 83, 84, 84-D, 84-Q, 85, 85-Q, 86, 87 and 89

The voltages listed in this table are only approximate, and are measured values, not actual operating values. Turn volume control to maximum.

Use 250-volt scale of a 1000-ohm-per-volt D. C. voltmeter.

All plate, screen and grid measurements are made from cathode in heater-type tube, and from —F in plain-filament-type tube.

When replacing a tubular resistor, use a resistor of the same identifying color. In a few cases, owing to engineering changes, the color of a resistor in a chassis may not agree with the color specified in the diagram. In such a case, disregard the diagram and use a replacement resistor having the same color as the defective unit. However, if a resistor has been removed, or its identification destroyed, replace it with a resistor having the color that is specified in the diagram for that set.

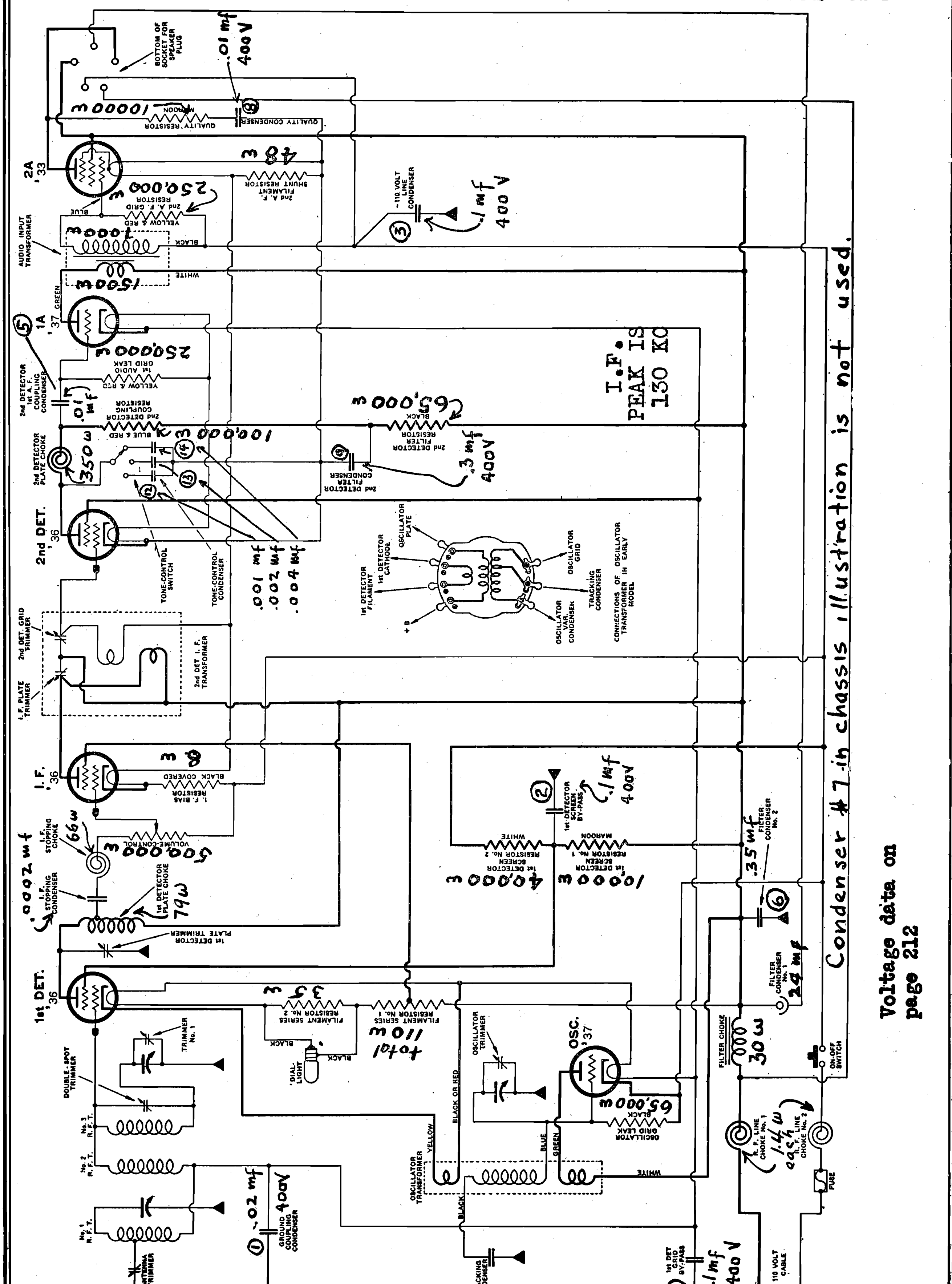
		MODEL 80	MODEL 81	MODEL 82	MODEL 82-D	MODEL 82 Q	MODEL 83	MODEL 84	MODEL 84 D	MODEL 84 Q	MODEL 85	MODEL 85-Q	MODEL 86	MODEL 87	MODEL 89
	LINE VOLTAGE	110	—	110	112	—	110	110	120	—	110	—	115	110	110
	TOTAL "B" VOLTAGE	—	125	—	—	125	—	—	—	125	—	125	—	—	—
R. F. TUBE**	FILAMENT	—	5.5	—	—	2	—	—	—	2	—	—	2.4	2.4	2.4
	PLATE	—	125	—	—	125	—	—	—	125	—	—	125	170	125
	SCREEN	—	75	—	—	60	—	—	—	65	—	—	40	80	50
	GRID	—	SMALL	—	—	3	—	—	—	3	—	—	2	2	2
1ST DET. TUBE†	FILAMENT	2.4	5.5	2.4	5.5	2	2.4	2.4	5.7	2	2.4	2	2.4	2.4	2.4
	PLATE	225	95	135	70	125	225	205	80	125	135	125	125	160	120
	SCREEN	90	—	50	50	40	90	65	50	25	50	40	35	70	45
	GRID	5	7	4	5	3	5	6	5	3	3	3	4	11	4
I. F. TUBE	FILAMENT	2.4	—	2.4	6	2	2.4	2.4	6.5	2	2.4	2	2.4	2.4	2.4
	PLATE	230	—	140	95	125	230	215	105	125	135	125	125	170	125
	SCREEN	95	—	50	50	60	95	65	55	65	50	65	40	80	50
	GRID	2	—	SMALL	SMALL	3	2	3	SMALL	SMALL	2	3	2	2	2
2ND DET. TUBE	FILAMENT	2.4	—	2.4	5.5	2	2.4	2.4	5	2	2.4	2	2.4	2.4	2.4
	PLATE	110	—	105	55	45	110	90	55	60	100	40	95	90	120
	SCREEN	45	—	65	10	25	45	45	10	25	65	25	60	—	—
	GRID	5	—	8	2	3	5	6	1	3	7	3	8	SMALL	15
1ST A. F. TUBE	FILAMENT	2.4	5.5	2.4	5.5	2	2.4	2.4	6	2	2.4	2	2.4	2.4	2.4
	PLATE	230	120	230	75	55	230	205	80	55	215	55	210	90	120
	SCREEN	240	123	240	—	—	240	215	—	—	225	—	220	—	—
	GRID	4	11	5	3	3	4	5	2.5	3	5	3	5	3	4
2ND A. F. TUBE	FILAMENT	—	—	—	2	2	—	—	2	2	—	2	—	2.4	2.4
	PLATE	—	—	—	85	120	—	—	90	120	—	120	—	200	225
	SCREEN	—	—	—	90	125	—	—	95	125	—	125	—	210	235
	GRID	—	—	—	7	15	—	—	7	5	—	15	—	14	14
OSC. TUBE	FILAMENT	2.4	—	2.4	5	2	2.4	2.4	6	2	2.4	2	2.4	2.4	2.4
	PLATE	95	—	95	100	60	100	70	110	60	100	40	95	85	100
	GRID	*	—	*	*	*	*	*	*	*	*	*	*	*	*
CONTROL TUBE	FILAMENT	—	5.5	2.4	—	—	—	—	—	—	2.4	—	2.4	—	2.4
	PLATE	—	3	15	—	—	—	—	—	—	15	—	30	—	25
	SCREEN	—	—	8	—	—	—	—	—	—	7	—	7	—	5
	GRID	—	2	4	—	—	—	—	—	—	5	—	4	—	3

* The measured oscillator grid voltage will vary dependent on the capacity of the voltmeter leads. In some cases, the presence of the leads will stop oscillation and no reading will be secured for grid bias. In other cases, the reading will be only slight, or it may be as high as 10 volts.

**This includes the 1st, 2rd and 3rd R. F. tubes in Model 81. †This is the detector tube in Model 81.

ATWATER KENT MFG. CO.

MODEL 82-D

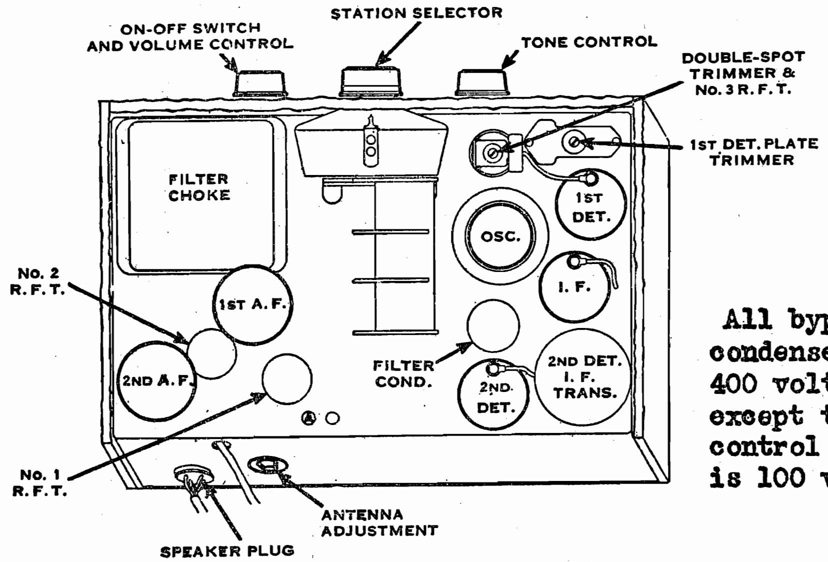


Voltage reference on page 1-56.

MODEL 82-D

ATWATER KENT MFG. CO.

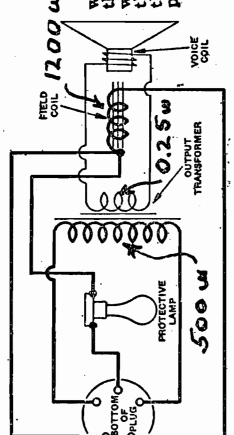
MODEL 82-D TOP VIEW AND CHART



Top View of Model 82-D.

All bypass condensers 400 volts except tone control which is 100 volts

The protective lamp (75 watts) is connected in series with the electrolytic filter condenser in the chassis. If the 110-volt D. C. supply plug is reversed, the lamp will light. When the 110-volt plug is properly inserted, the lamp does not light. This action is due to the fact that the electrolytic condenser passes current if the polarity of the applied D. C. voltage is not correct.



Circuit of Speaker Used in Model 82-D, 84-D.

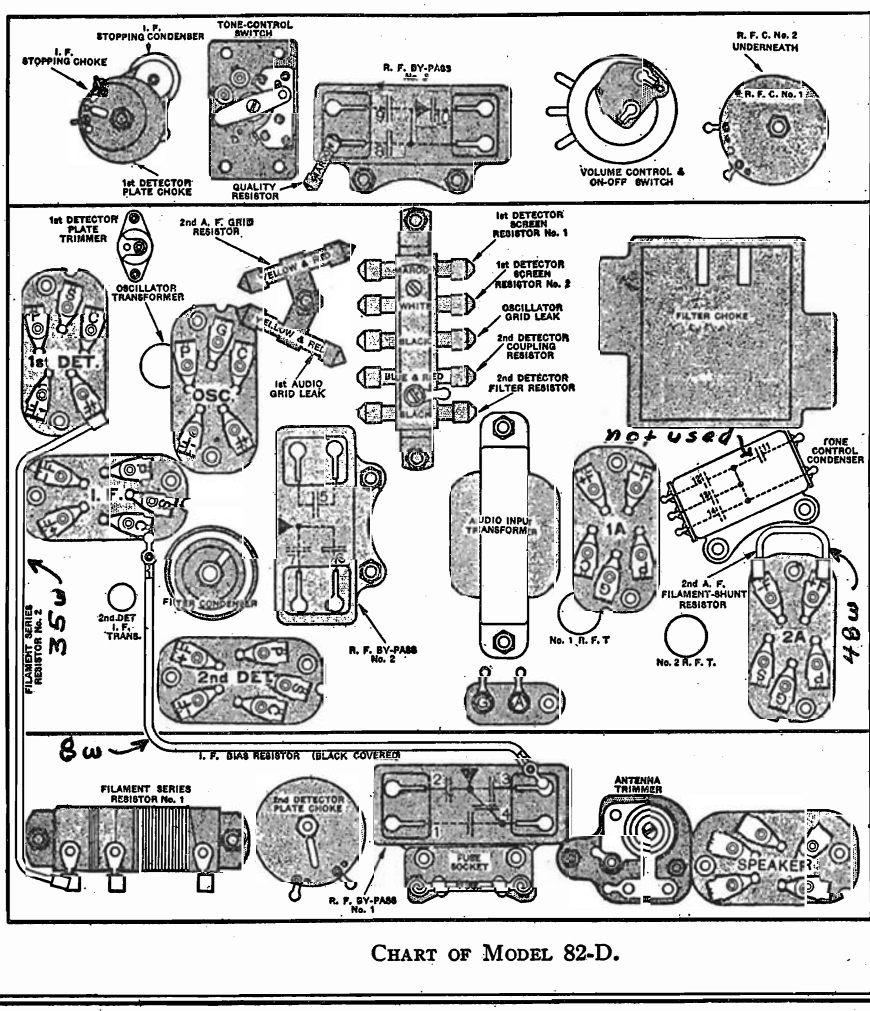


Chart of Model 82-D.

By-pass Condensers in Model 82-D

R. F. By-pass No. 1

1—Ground coupling condenser.
2—1st-detector screen by-pass.
3—110-volt line condenser.
4—1st-detector grid by-pass.

R. F. By-pass No. 2

5—2nd-detector—1st-A.F. coupling condenser
6—Filter condenser No. 2.
7—Not used.

R. F. By-pass No. 3

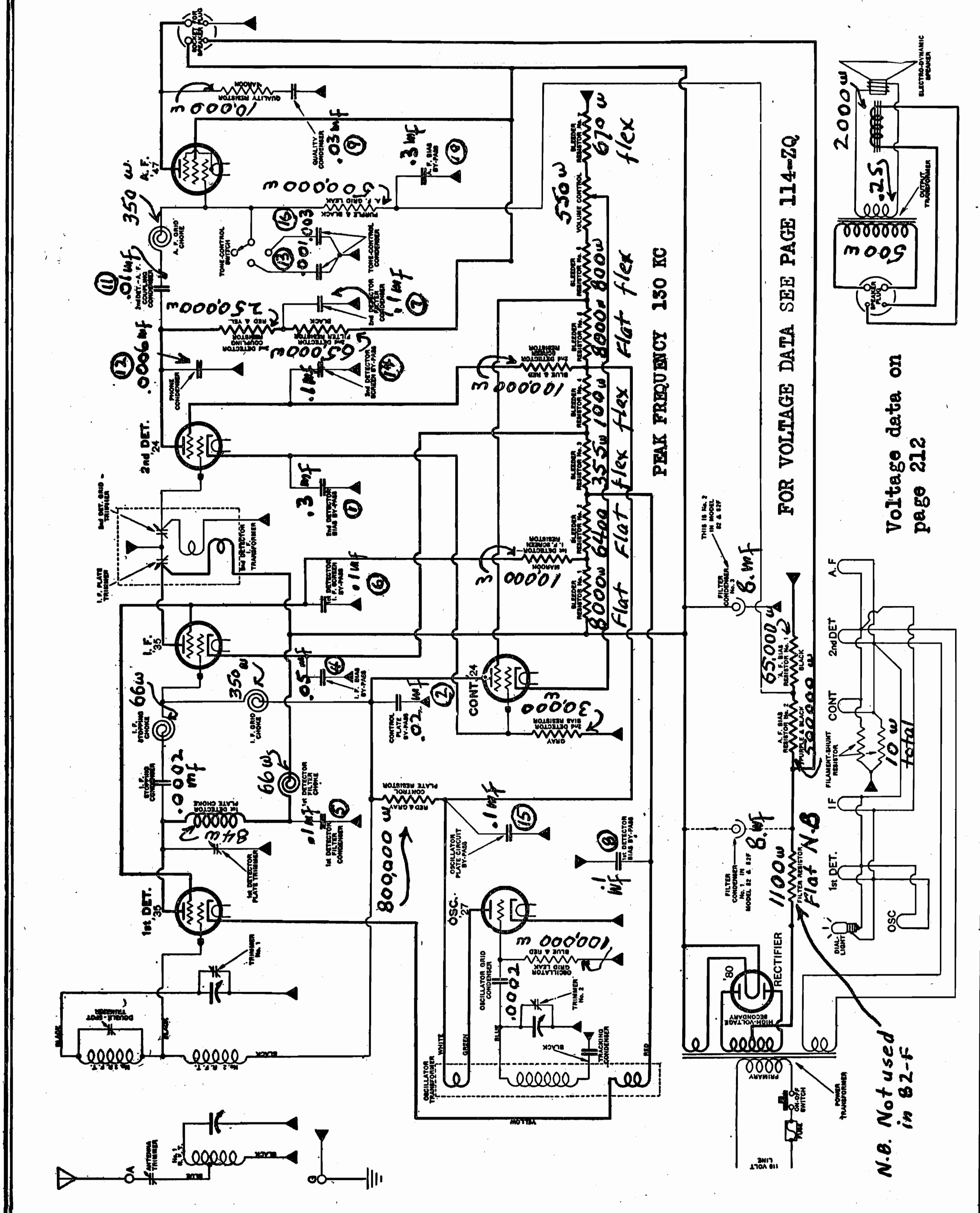
8—Quality condenser.
9—2nd-detector filter condenser.
10—110-volt line by-pass.

Tone-control Condenser

11—Not used.
12—Tone condenser.
13—Tone condenser.
14—Tone condenser.

MODEL 82, 82-F

ATWATER KENT MFG. CO.

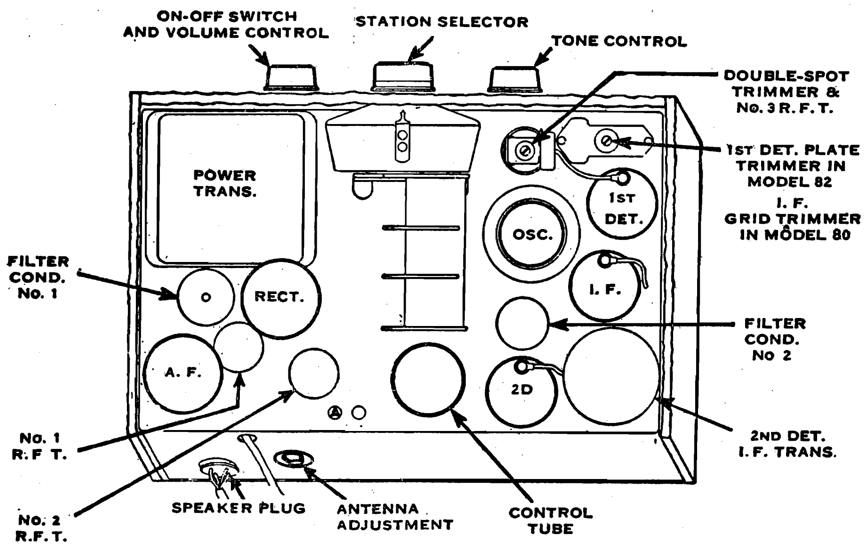


Numerals adjacent to bypass condensers designate units shown upon parts layout on next page within multiple condensers. Condenser voltage ratings are shown upon next page.

Voltage reference on page 1-56.

MODEL 82, 82-F

ATWATER KENT MFG. CO.



TOP VIEW OF MODEL 82, 82-F.

The top view of Model 80, 80-F is similar except that it has no control tube and the position of No.1 and No. 2 R. F. T. is interchanged.

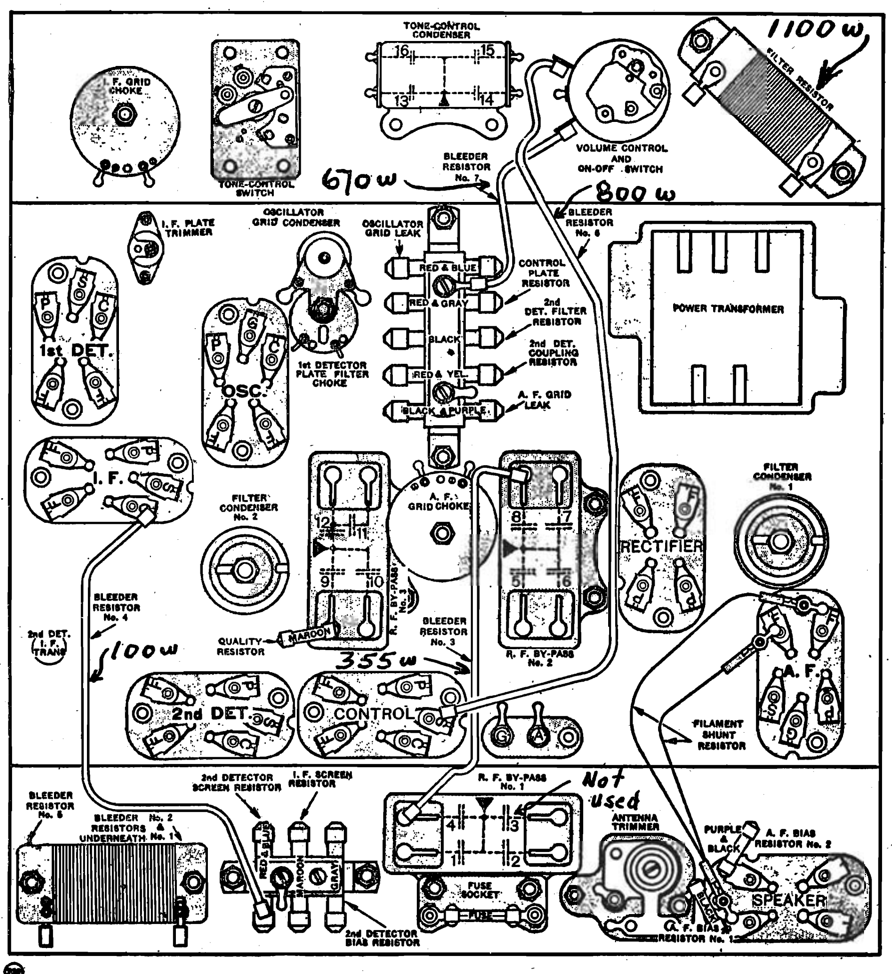


CHART OF MODEL 82, 82-F.

The filter resistor is not used in Model 82-F.

CONDENSERS

RF Bypass # 1
21180
All 400 Volts

RF Bypass # 2
15262
5-6 150 volts
7-8 400 volts

RF Bypass # 3
21170
All 400 volts

Tone Control
20010
All 100 volts

By-pass Condensers in Model 82, 82-F

R. F. By-pass No. 1

1—2nd-detector bias by-pass.
2—Control plate by-pass.
3—Not used.
4—I. F. bias by-pass.

R. F. By-pass No. 2

5—1st-detector filter condenser.
6—1st-detector—I. F. screen by-pass.
7—2nd-detector filter condenser.
8—1st-detector bias by-pass.

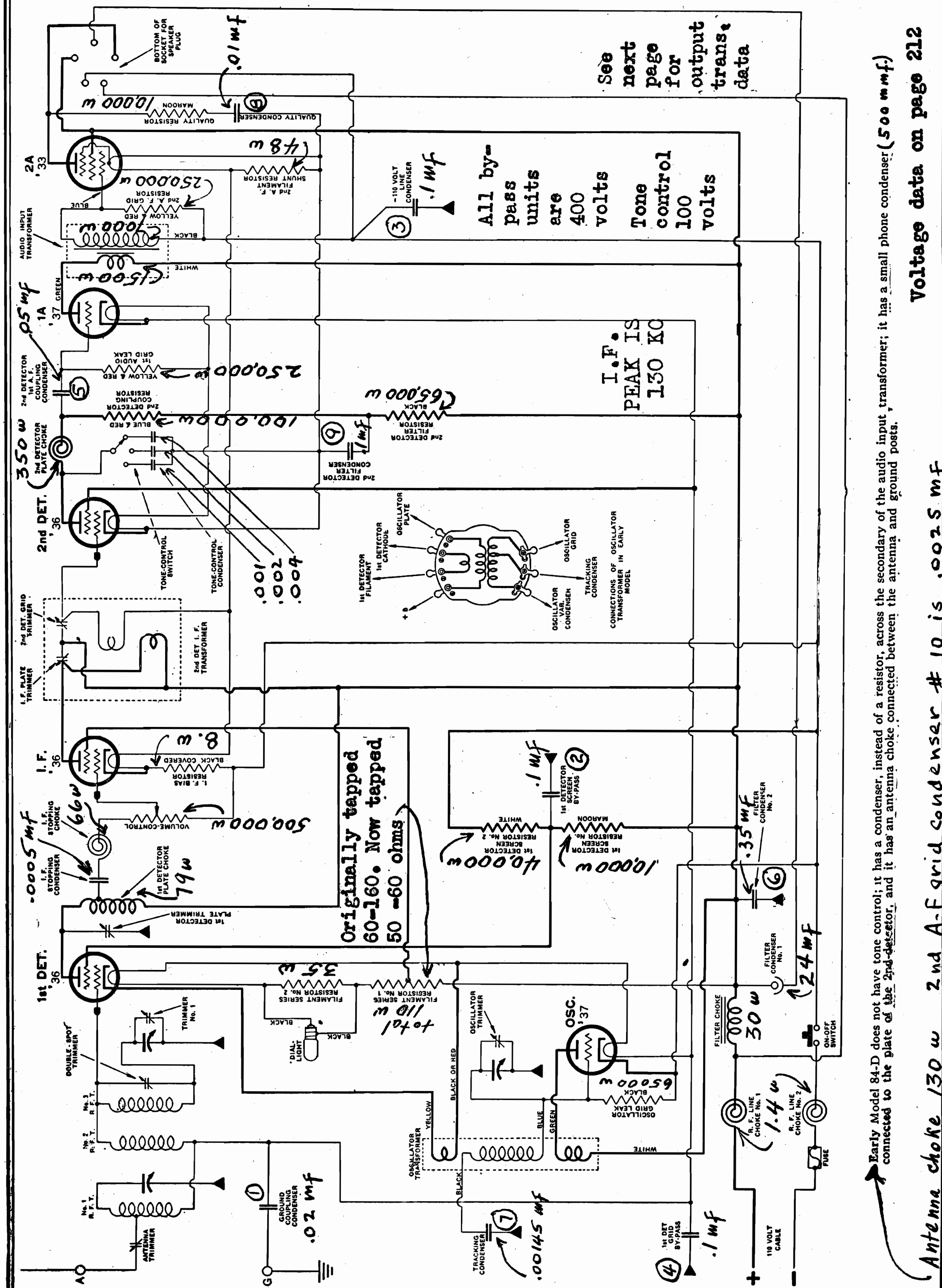
R. F. By-pass No. 3

9—Quality condenser.
10—A. F. bias by-pass.
11—2nd-detector—A. F. coupling condenser.
12—Phone condenser.

Tone-control Condenser

13—Tone condenser.
14—2nd-detector screen by-pass.
15—Oscillator plate-circuit by-pass.
16—Tone condenser.

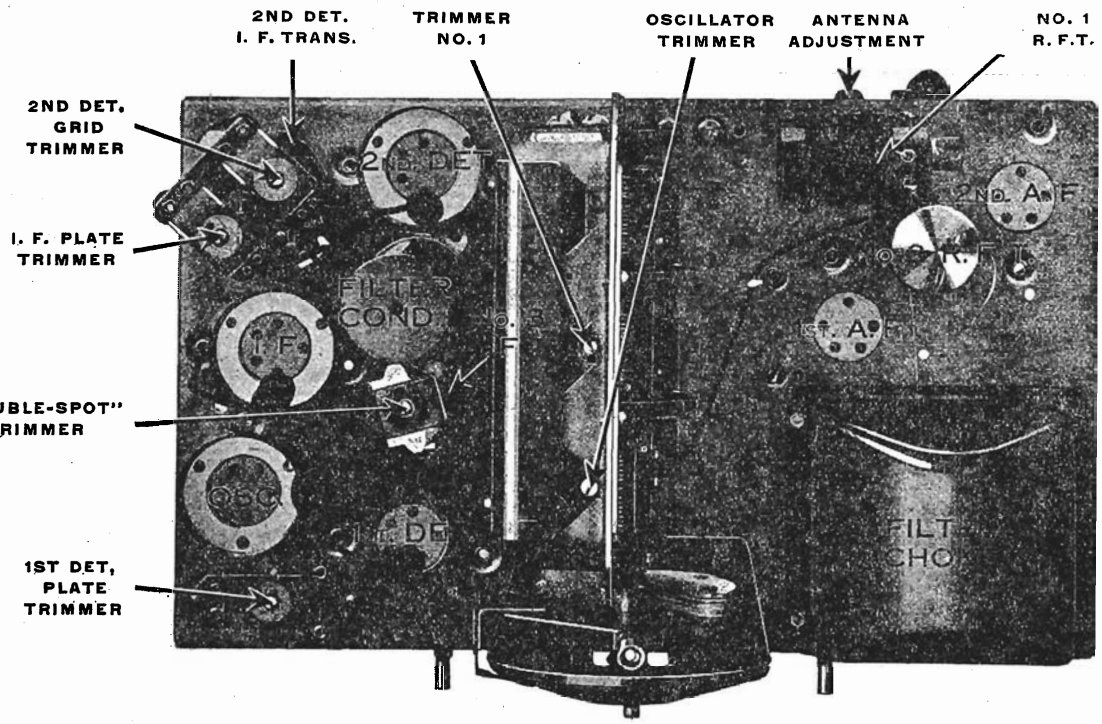
ATWATER KENT MFG. CO. MODEL 84-D



Voltage reference on page 1-56.

MODEL 84-D

ATWATER KENT MFG. CO.



Top View of Model 84-D.

OUTPUT TRANSFORMER

Primary 500 ohms
Secondary 0.25 ohm

Field coil 1200 ohms

By-pass Condensers in Model 84-D

Condensers in R. F. By-pass No. 1

1—Ground coupling condenser.
2—1st-detector screen by-pass.
3—110-volt line condenser.
4—1st-detector grid by-pass.

R. F. By-pass No. 2

5—2nd-detector—1st-A. F. coupling condenser.
6—Filter condenser No. 2.
7—Tracking condenser.

R. F. By-pass No. 3

8—Quality condenser.
9—2nd-detector filter condenser.
10—2nd-A. F. grid condenser in early-type sets, 2nd-detector phone condenser in later-type sets.

Tone-control Condenser (Late-type sets only)

11—Not used.
12—Tone condenser.
13—Tone condenser.
14—Tone condenser.

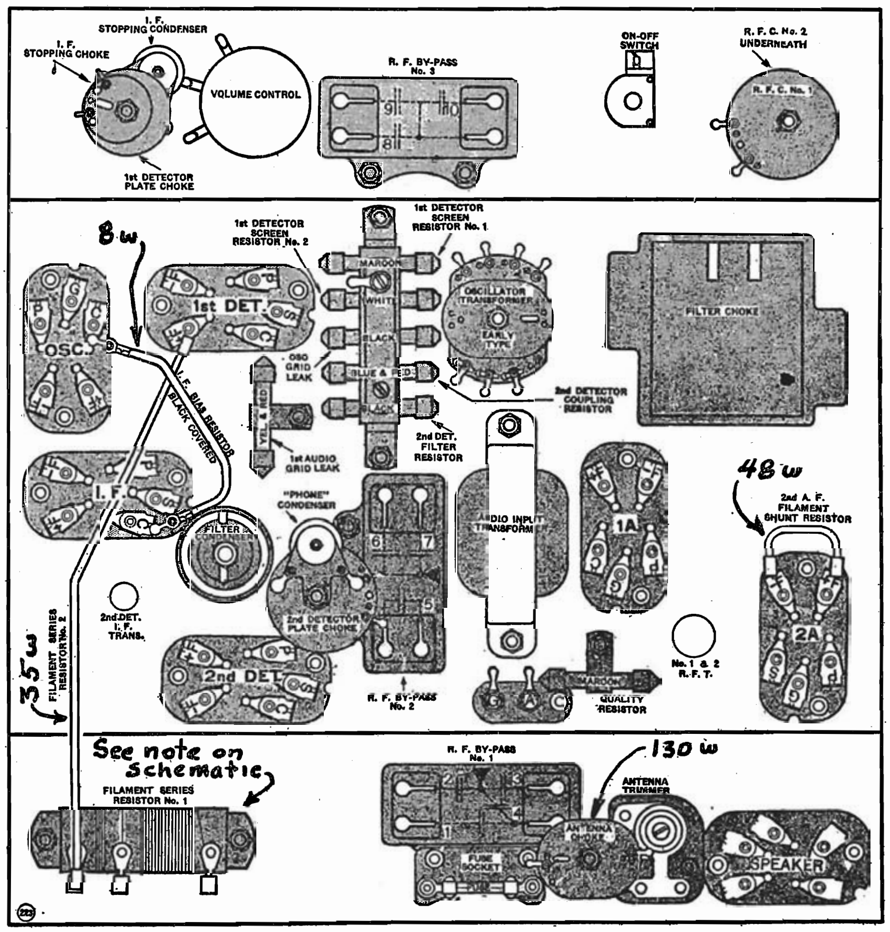
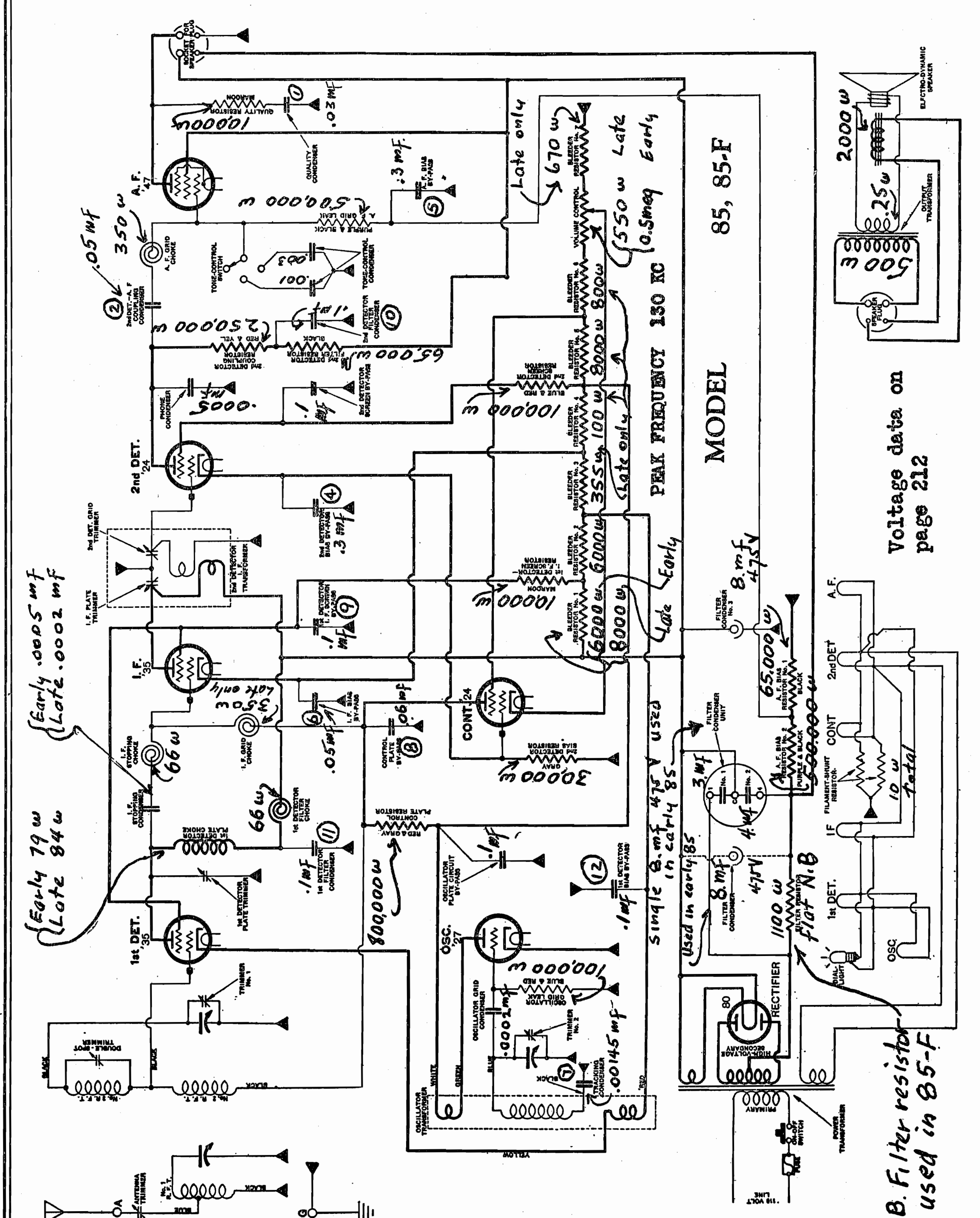


Chart of Model 84-D. (Early Type Without Tone Control.)

MODEL 85, 85-F

ATWATER KENT MFG. CO.



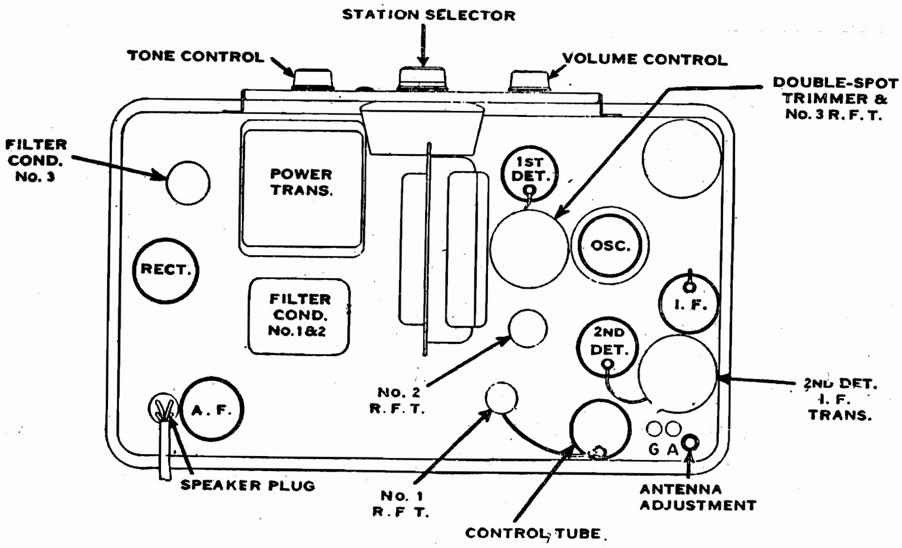
Antenna choke used in early 85 has d-c. resistance of 130 w

A few early-type Model 85 do not have automatic volume control; they have three electrolytic filter condensers; the circuit of these early Model 85 sets is similar to Model 80. The tracking condenser is mounted on the oscillator transformer in Model 82 and some 85 sets. The filament circuit of Model 82 is somewhat different from that shown above.

Voltage reference on page 1-56.

MODEL 85, 85-F

ATWATER KENT MFG. CO.



Top View of Model 85, 85-F.

The circle in the top right corner represents the shield for the coupling unit between the 1st-detector and I. F. tubes.

CONDENSERS

RF Bypass # 1
19160 Early
19980 Late
All 400 volts

RF Bypass # 2
19150 Early
19990 Late
All 400 volts

RF Bypass # 3
15262
All 400 volts

Tone Control
16490 Early
20010 Late
All 100 volts

See schematic

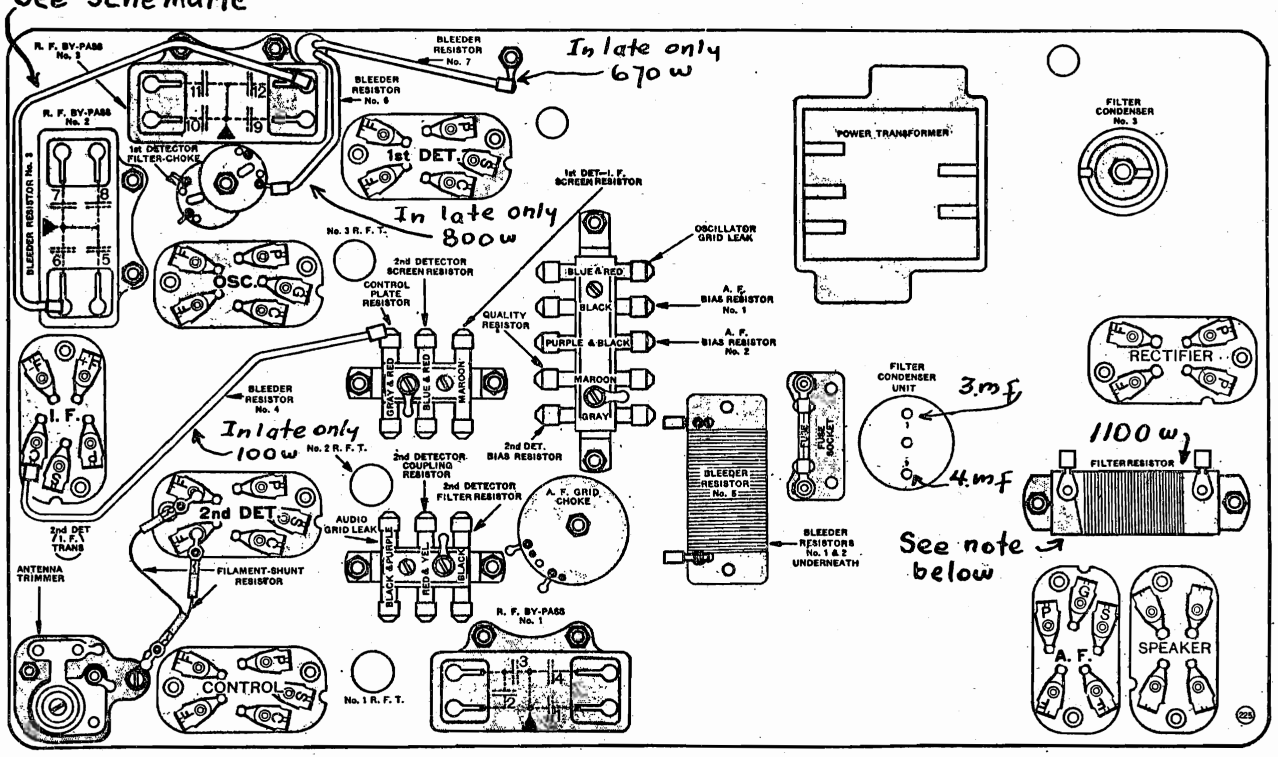


Chart of Model 85, 85-F.

The filter resistor is not used in Model 85-F.

By-pass Condensers in Model 85, 85-F

R. F. By-pass No. 1

1—Quality condenser.
2—2nd-detector—A. F. coupling condenser.
3—Phone condenser.
4—2nd-detector bias by-pass.

R. F. By-pass No. 2

5—A. F. bias by-pass.
6—I. F. bias by-pass.
7—Tracking condenser.
8—Control-plate by-pass.

R. F. By-pass No. 3

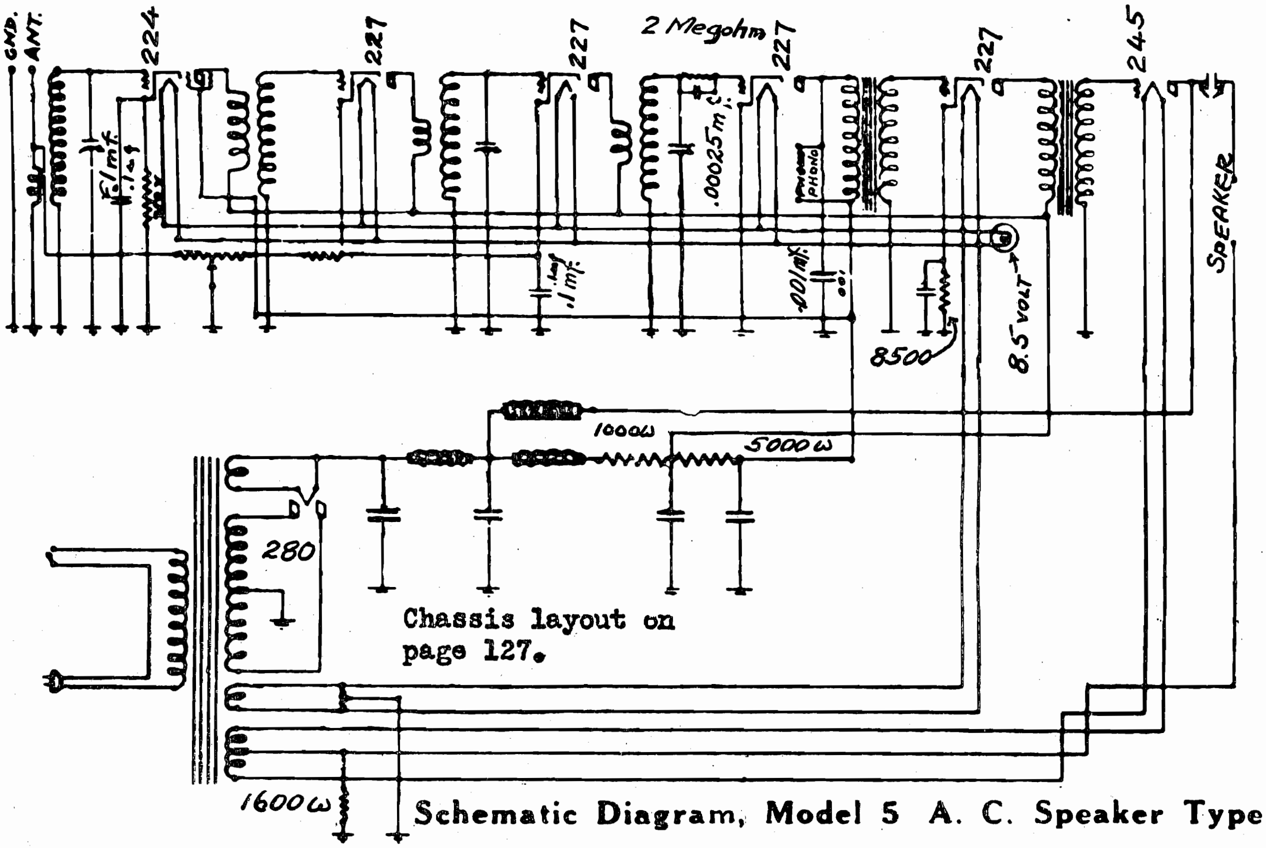
9—1st-detector—I. F. screen by-pass.
10—2nd-detector filter condenser.
11—1st-detector filter condenser
12—1st-detector bias by-pass.

Tone-control Condenser (on front panel)

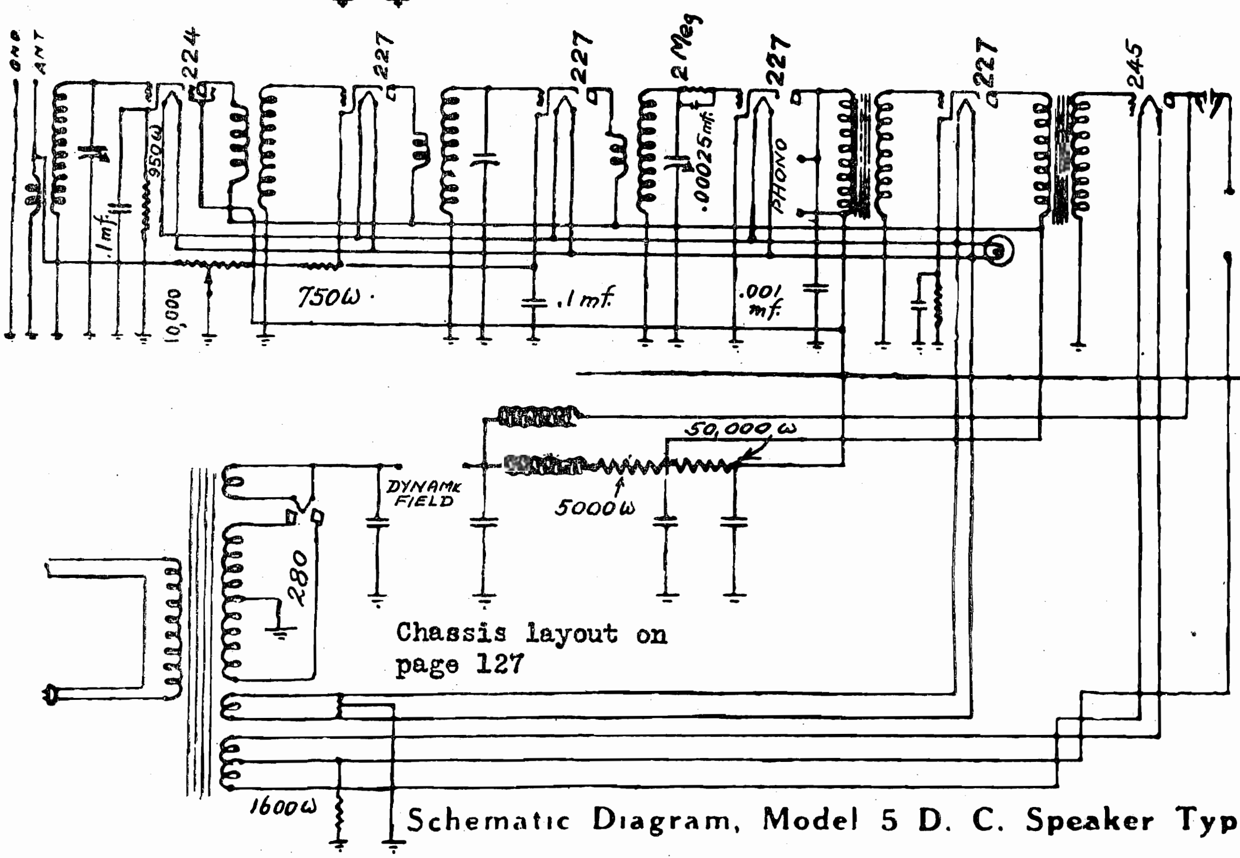
Two top contacts—2nd-detector screen by-pass and oscillator plate-circuit by-pass.
Two bottom contacts—tone-control condensers.

ATCHISON RADIO MFG. CO.

MODEL 5 AC
MODEL 5 DC



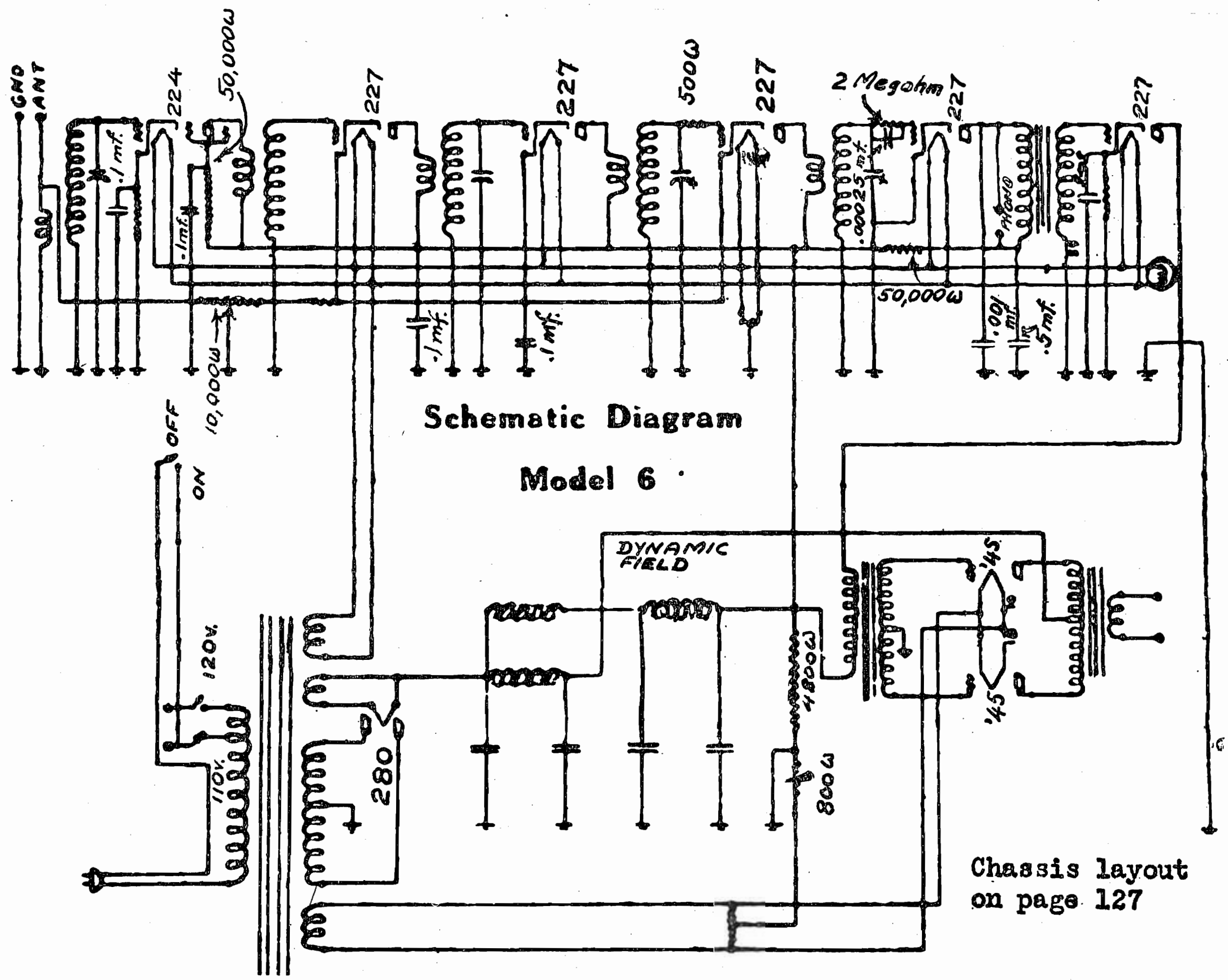
Schematic Diagram, Model 5 A. C. Speaker Type



Schematic Diagram, Model 5 D. C. Speaker Type

MODEL 6 AC

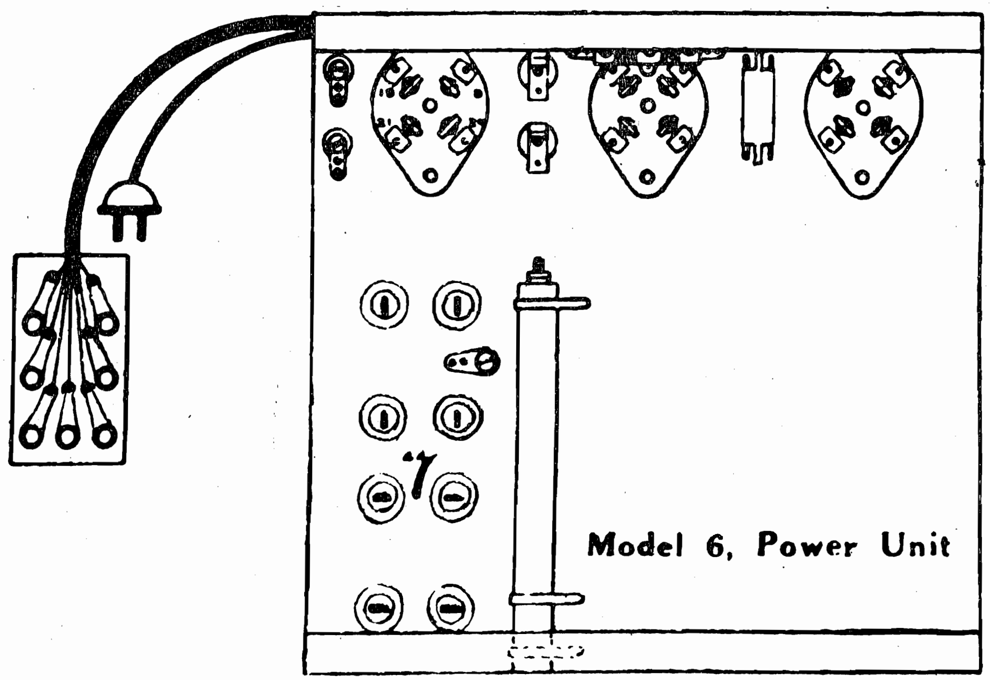
ATCHISON RADIO MFG. CO.



Schematic Diagram

Model 6

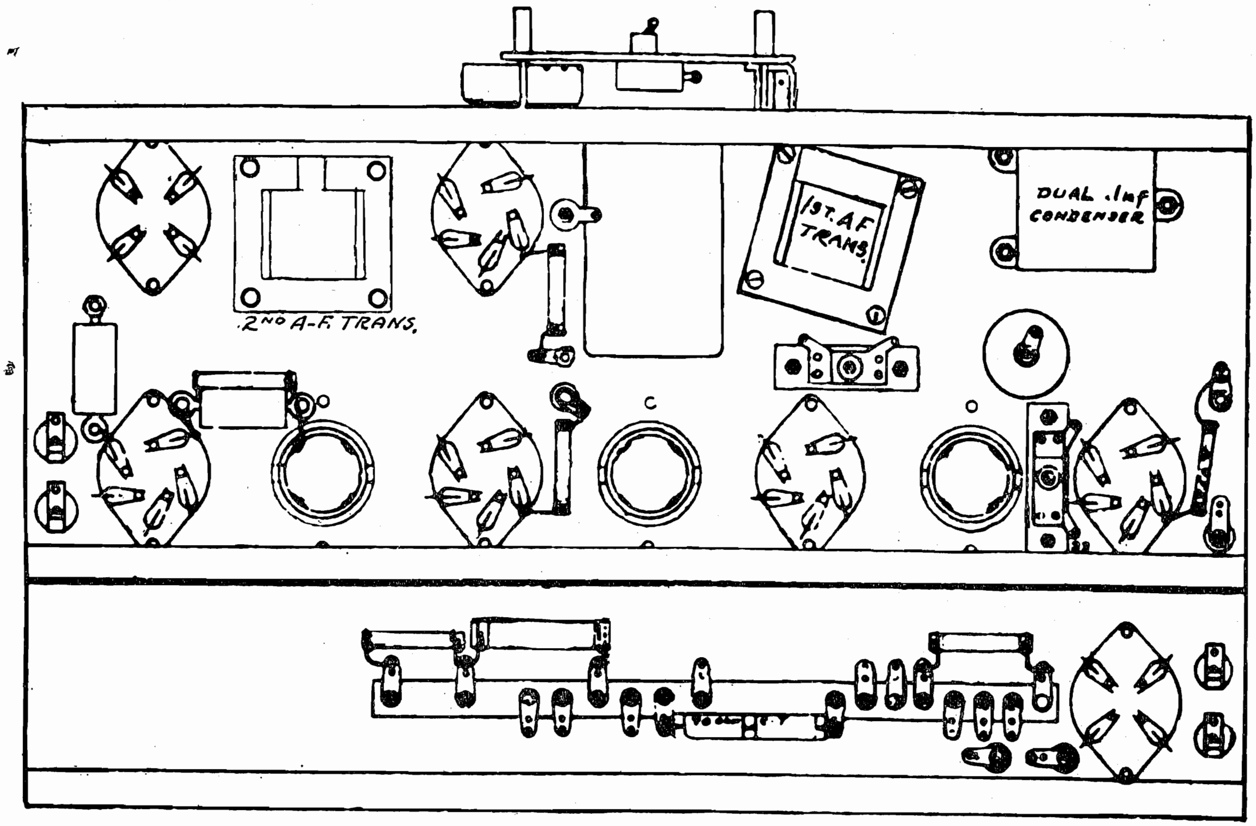
Chassis layout on page 127



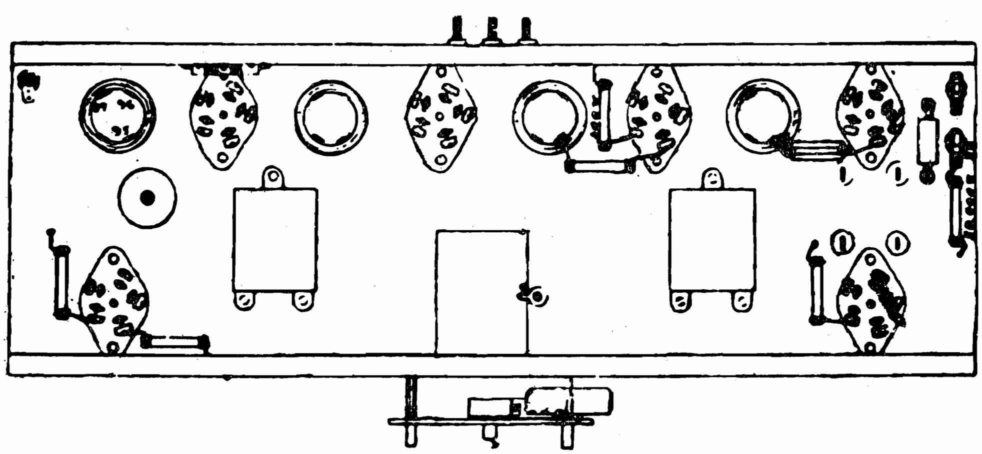
Model 6, Power Unit

ATCHISON RADIO MFG. CO.

MODEL 5 Chassis
MODEL 6 Chassis



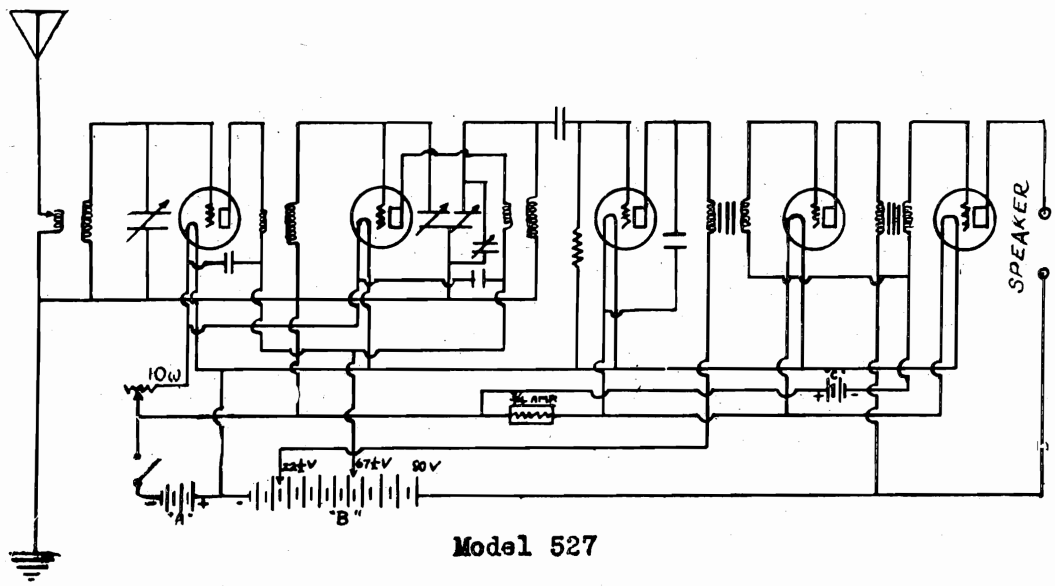
Model 5, Chassis Arrangement



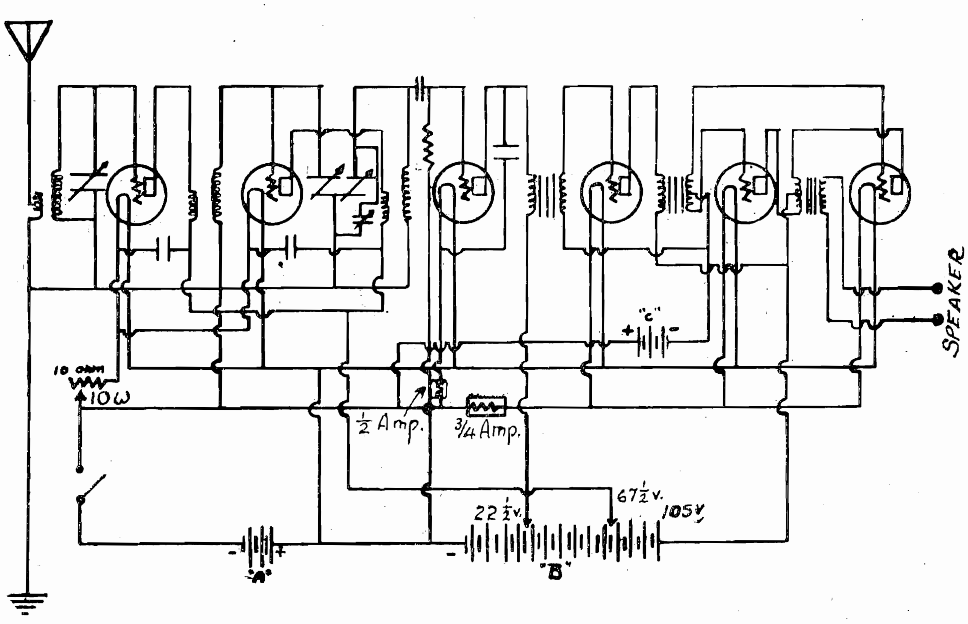
Model 6. Chassis Arrangement

AUDIOLA RADIO CO.

MODEL 527
MODEL 627



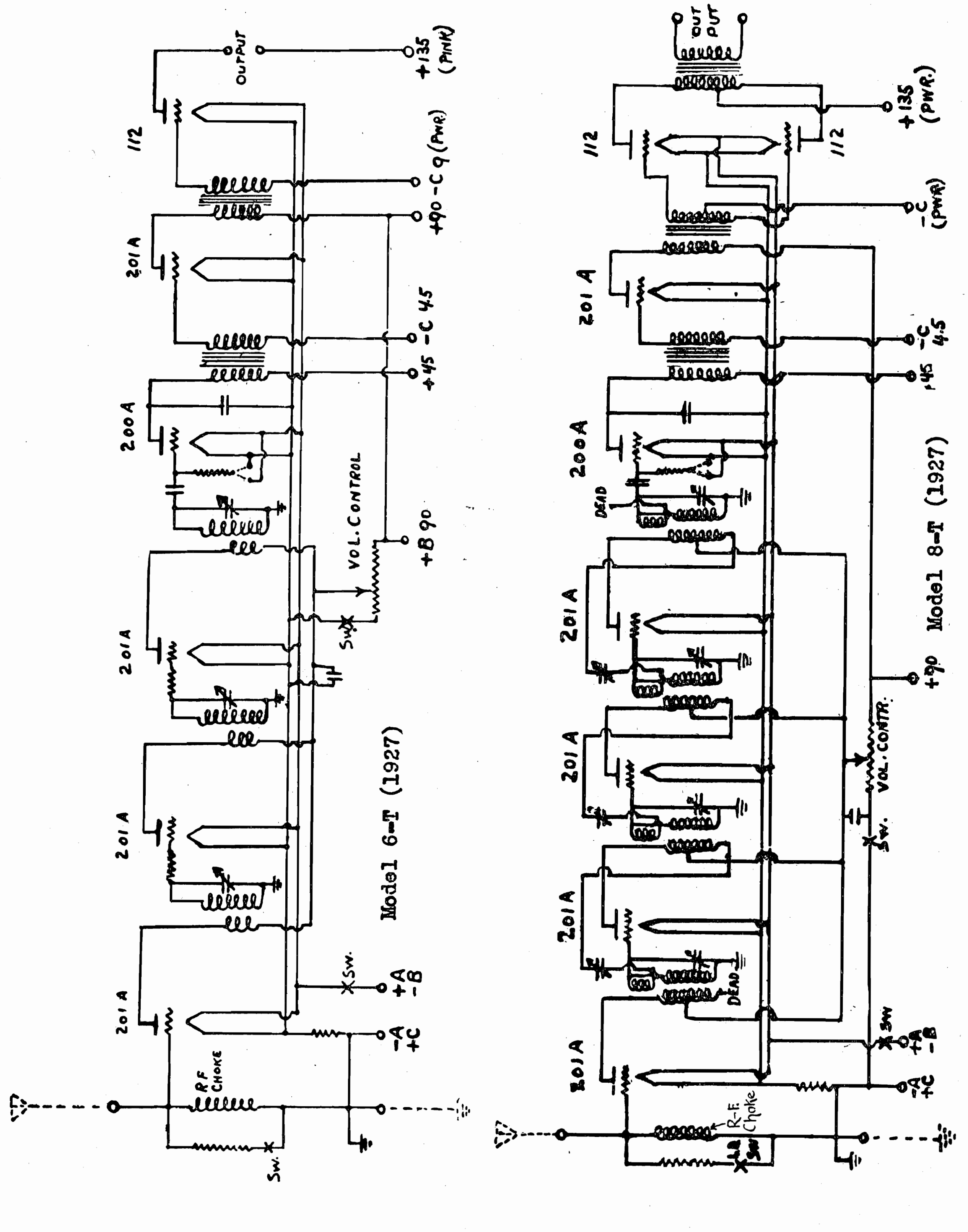
Model 527



Model 627

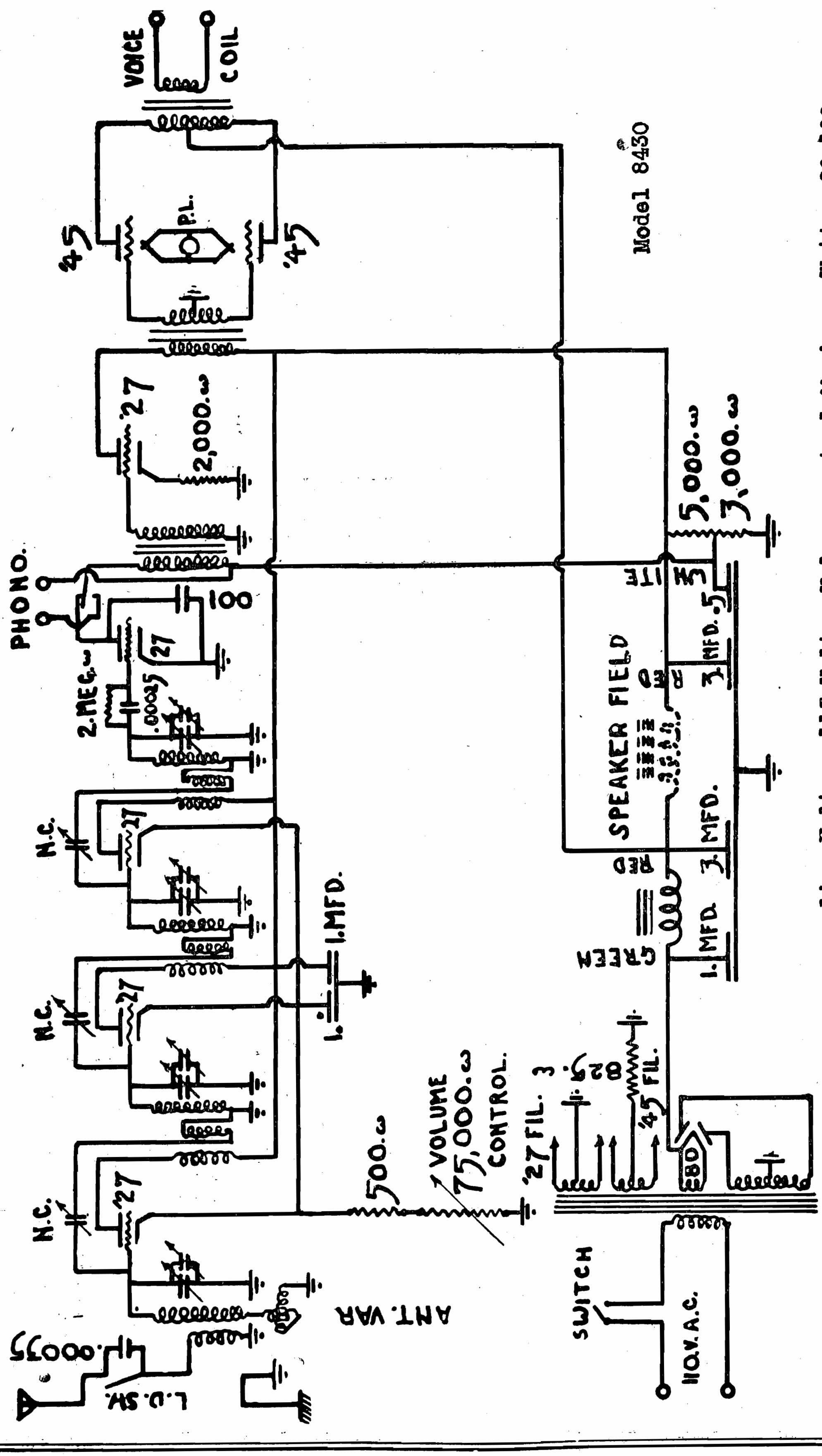
MODEL 6-T (1927)
MODEL 8-T (1927)

AUDIOLA RADIO CO.



AUDIOLA RADIO CO.

MODEL 8430

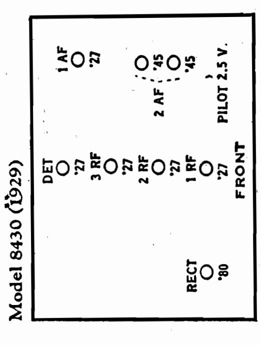


Model 8430

Line Voltage 115 Volts. Volume control Maximum. Watts. 90-100.

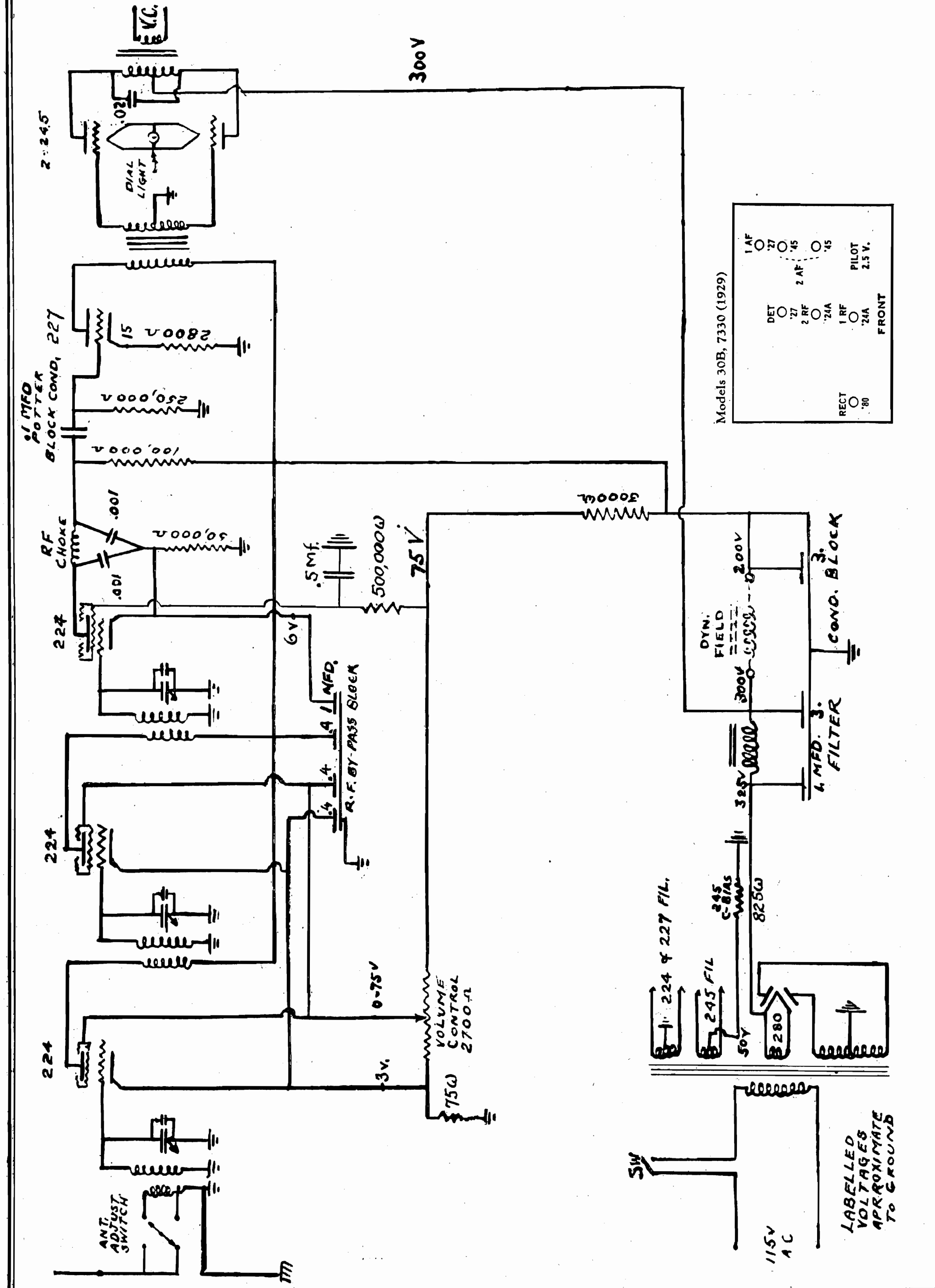
	Fil.	Plate	Grid	Plt. Crnt.
R-F	2.4	135-150	8-10	5. - 8. ma
Det.	2.4	50-60*		2. - 4.
A-F (1st)	2.4	135-150	10-14	4. - 6.
A-F (2nd)	2.4	210-250	40-50	22.-32.
Rect.	4.7-5.2			95.-105.

Voltage across field 90 - 100. Field current 40-50 ma.



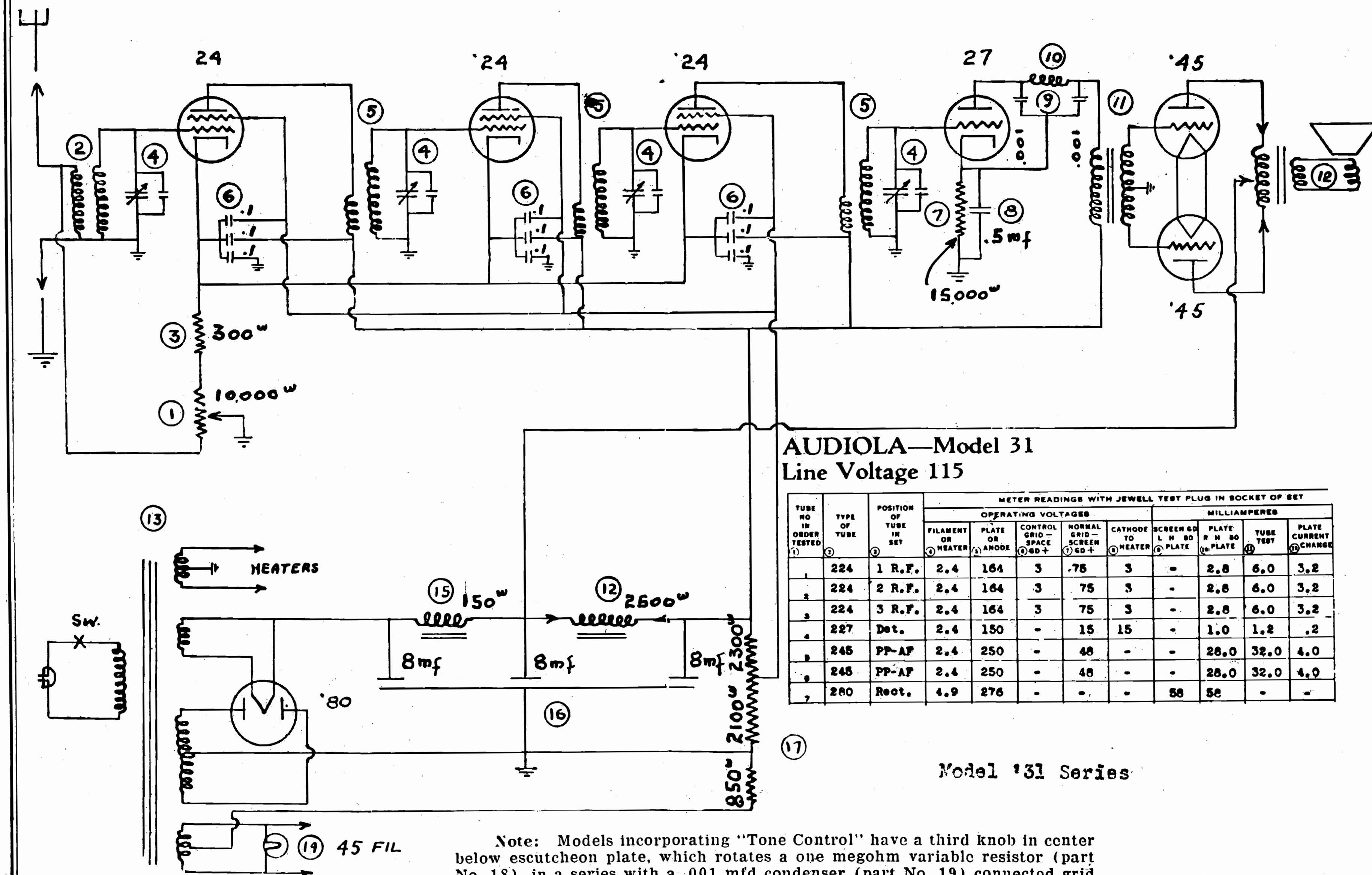
MODEL 30-B
MODEL 7330

AUDIOLA RADIO CO.



AUDIOLA RADIO CO.

MODEL '31 Series



AUDIOLA—Model 31
Line Voltage 115

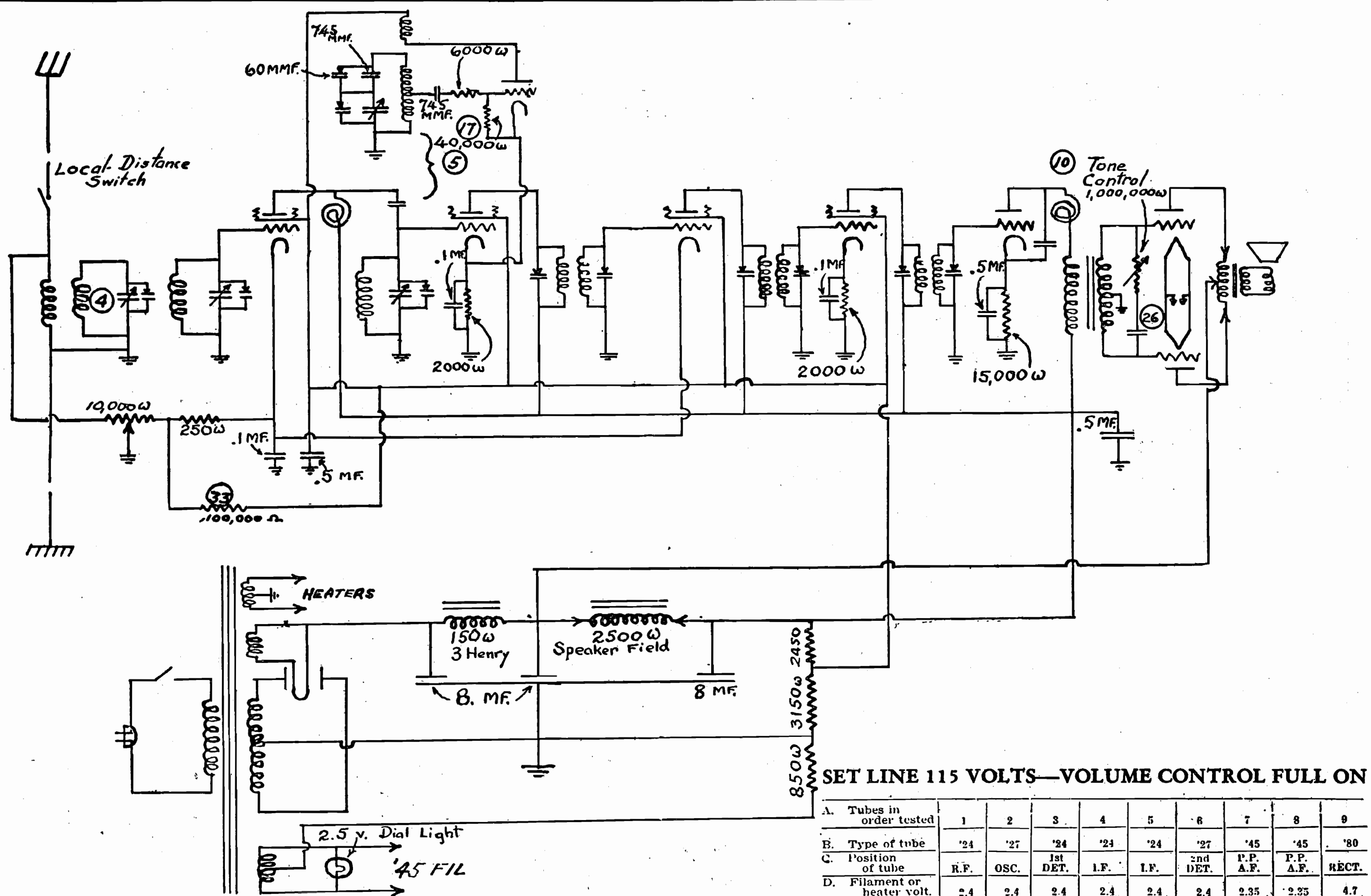
TUBE NO IN ORDER TESTED (1)	TYPE OF TUBE (2)	POSITION OF TUBE IN SET (3)	METER READINGS WITH JEWELL TEST PLUG IN SOCKET OF SET — OPERATING VOLTAGES: FILAMENT OR HEATER (4)	PLATE OR ANODE (5)	CONTROL GRID—SPACE (6) GD +	NORMAL GRID—SCREEN (7) GD +	CATHODE TO HEATER (8)	MILLIAMPERES: SCREEN GD L H 80 PLATE (9)	PLATE R H 80 PLATE (10)	TUBE TEST (11)	PLATE CURRENT CHANGE (12)
1	224	1 R.F.	2.4	164	3	.75	3	-	2.8	6.0	3.2
2	224	2 R.F.	2.4	164	3	75	3	-	2.8	6.0	3.2
3	224	3 R.F.	2.4	164	3	75	3	-	2.8	6.0	3.2
4	227	Det.	2.4	150	-	15	15	-	1.0	1.2	.2
5	245	PP-AF	2.4	250	-	48	-	-	28.0	32.0	4.0
6	245	PP-AF	2.4	250	-	48	-	-	28.0	32.0	4.0
7	280	Rect.	4.9	276	-	-	-	58	58	-	-

Model '31 Series

Note: Models incorporating "Tone Control" have a third knob in center below escutcheon plate, which rotates a one megohm variable resistor (part No 18), in a series with a .001 mfd condenser (part No. 19) connected grid to grid in the push-pull stage

MODEL '31 Super

AUDIOLA RADIO CO.



Model '31 Super

IF PEAK 175 KC

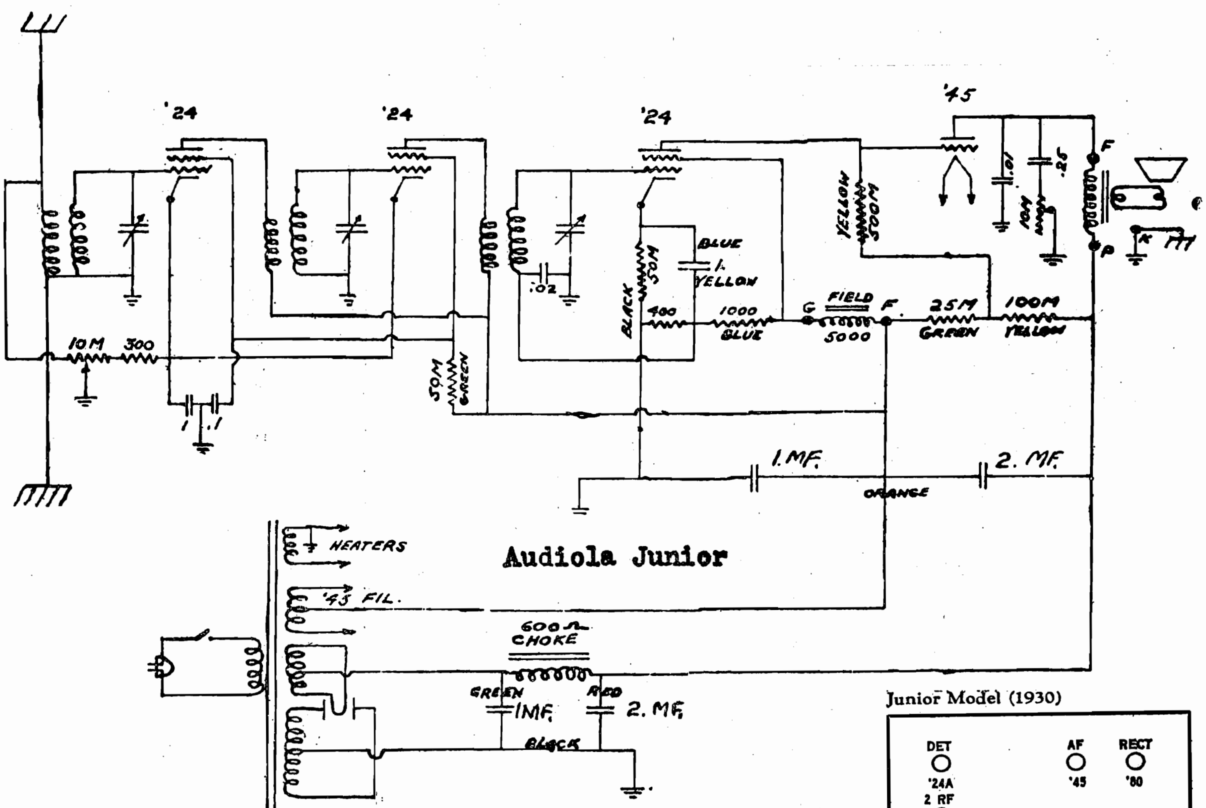
SET LINE 115 VOLTS—VOLUME CONTROL FULL ON

A. Tubes in order tested	1	2	3	4	5	6	7	8	9
B. Type of tube	'24	'27	'24	'24	'24	'27	'45	'45	'80
C. Position of tube	R.F.	OSC.	1st DET.	I.F.	I.F.	2nd DET.	P.P. A.F.	P.P. A.F.	RECT.
D. Filament or heater volt.	2.4	2.4	2.4	2.4	2.4	2.4	2.35	2.35	4.7
E. Plate voltage	160	80	160	160	160	150	245	245	260
F. Control grid voltage	2.5	..	8.0	2.5	4.0	18	48	48	..
G. Screen grid voltage	80	..	80	80	80	..	..	..	..
H. Cathode to heater	2.5	*12.0	8.0	2.5	4.0	18	..	..	..
I. Plate current	4.0	*7.0	.2	3.0	2.0	1.0	28	28	58

*Non-Oscillating.

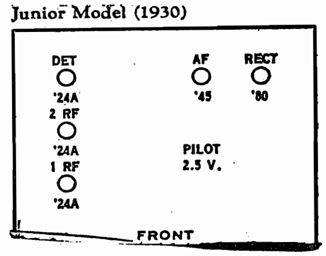
MODEL Audiola Jr.
MODEL 6 Tube Pentode '31

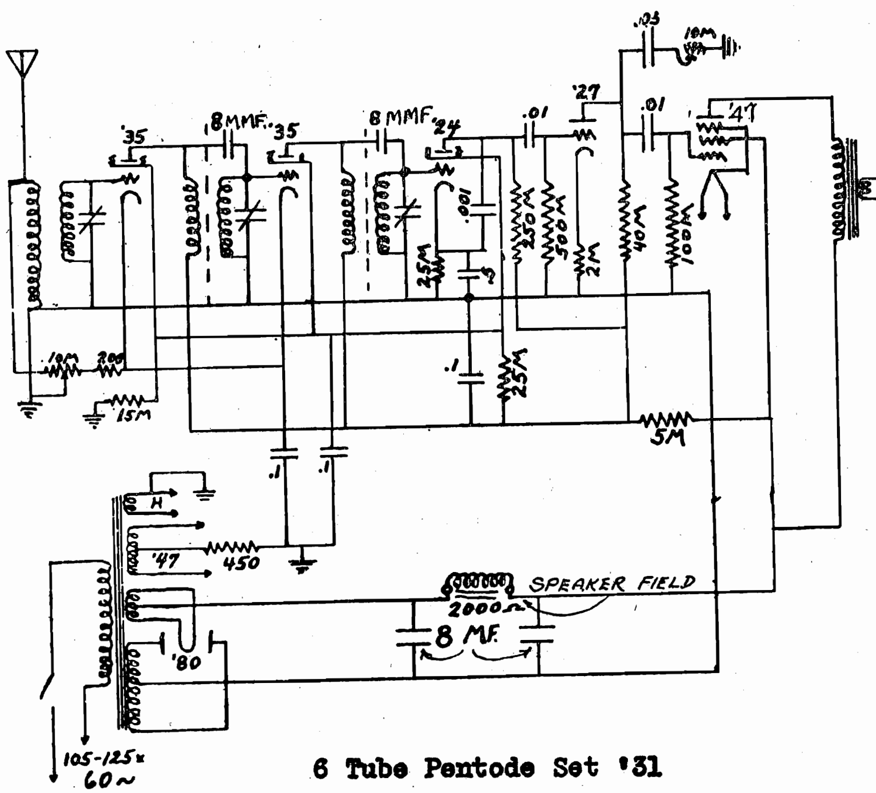
AUDIOLA RADIO CO.



Audiola Junior

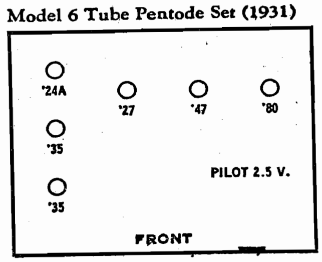
Junior Model (1930)





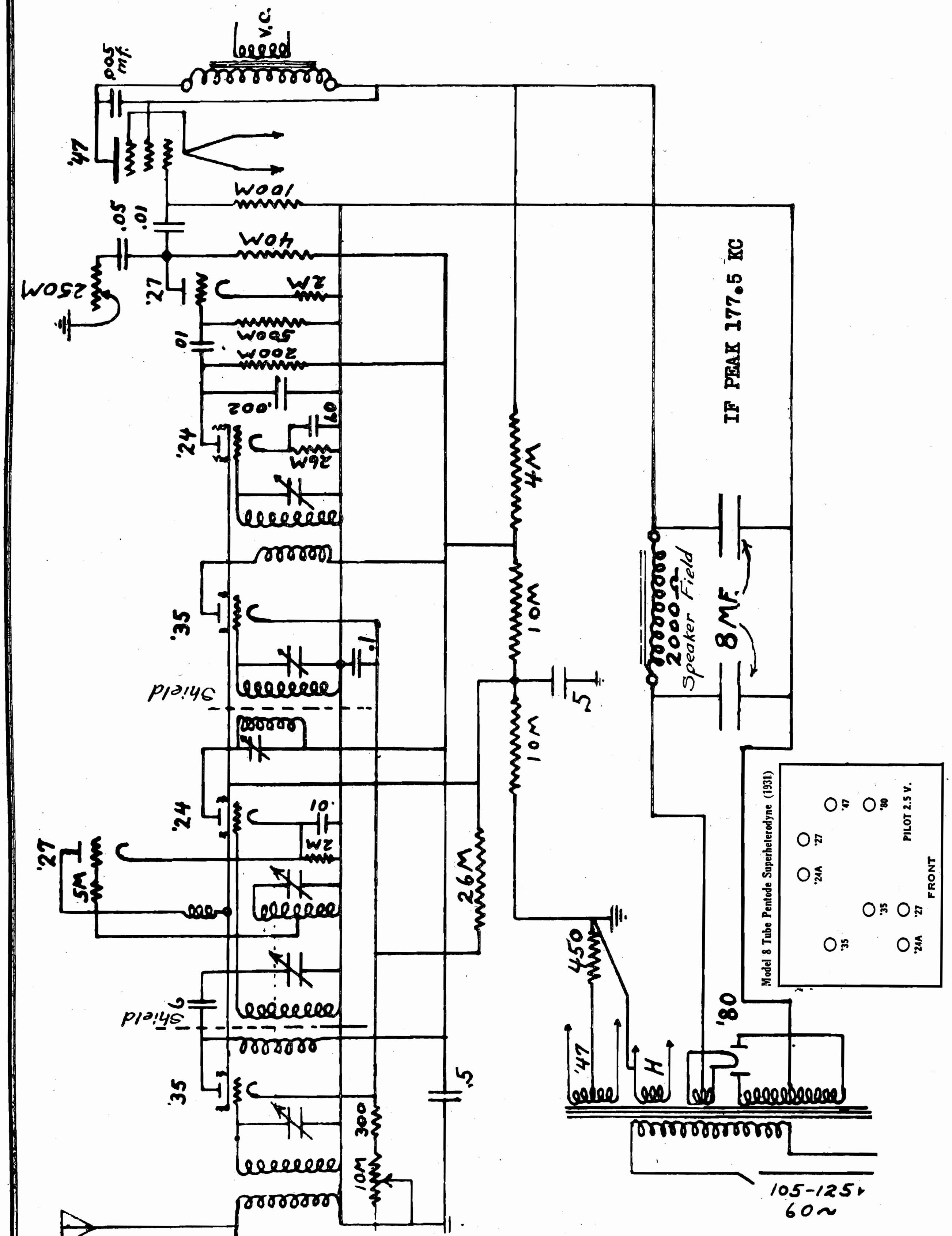
6 Tube Pentode Set '31

Model 6 Tube Pentode Set (1931)



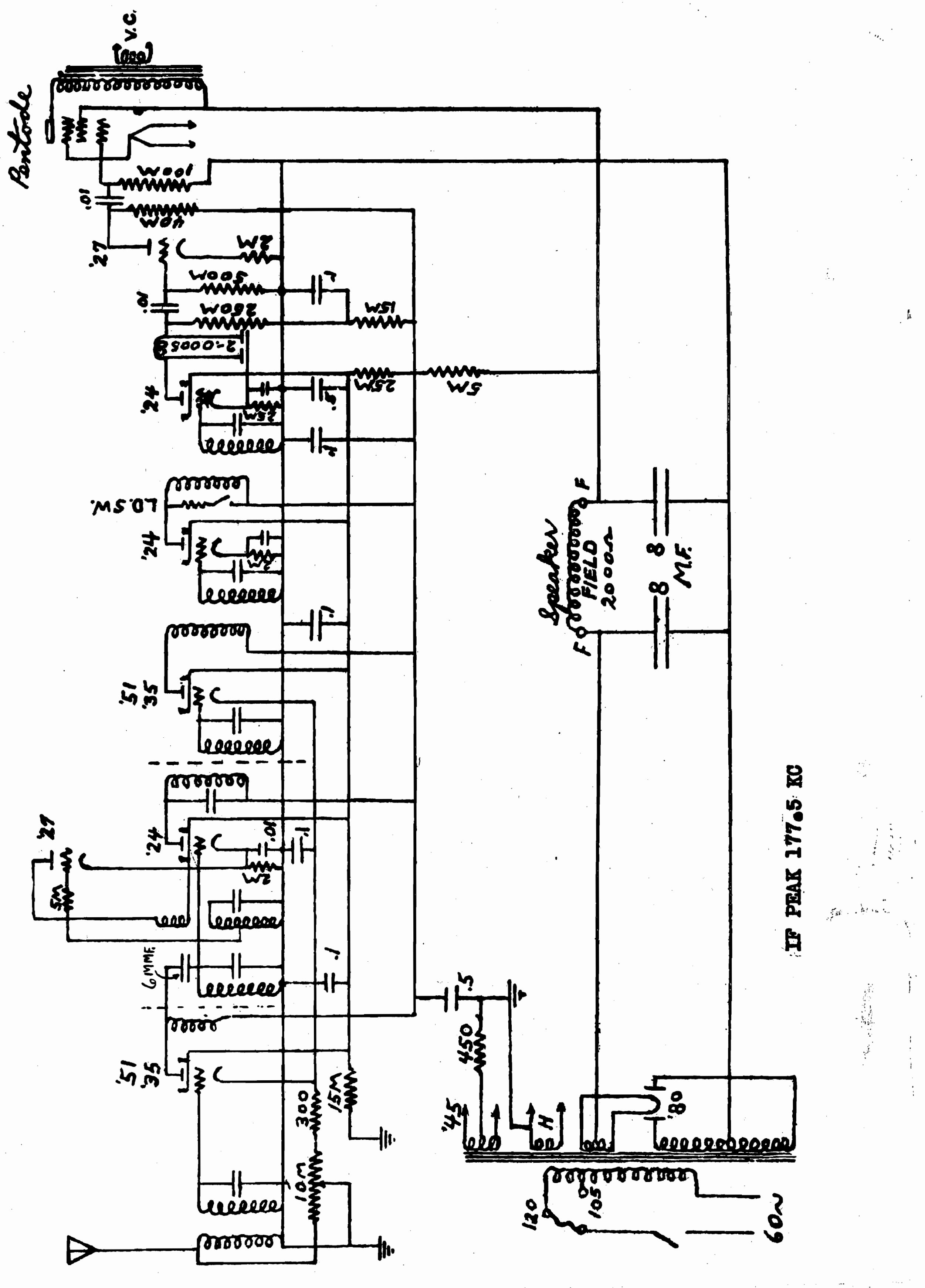
MODEL 8 Tube Super Pentode '31

AUDIOLA RADIO CO.



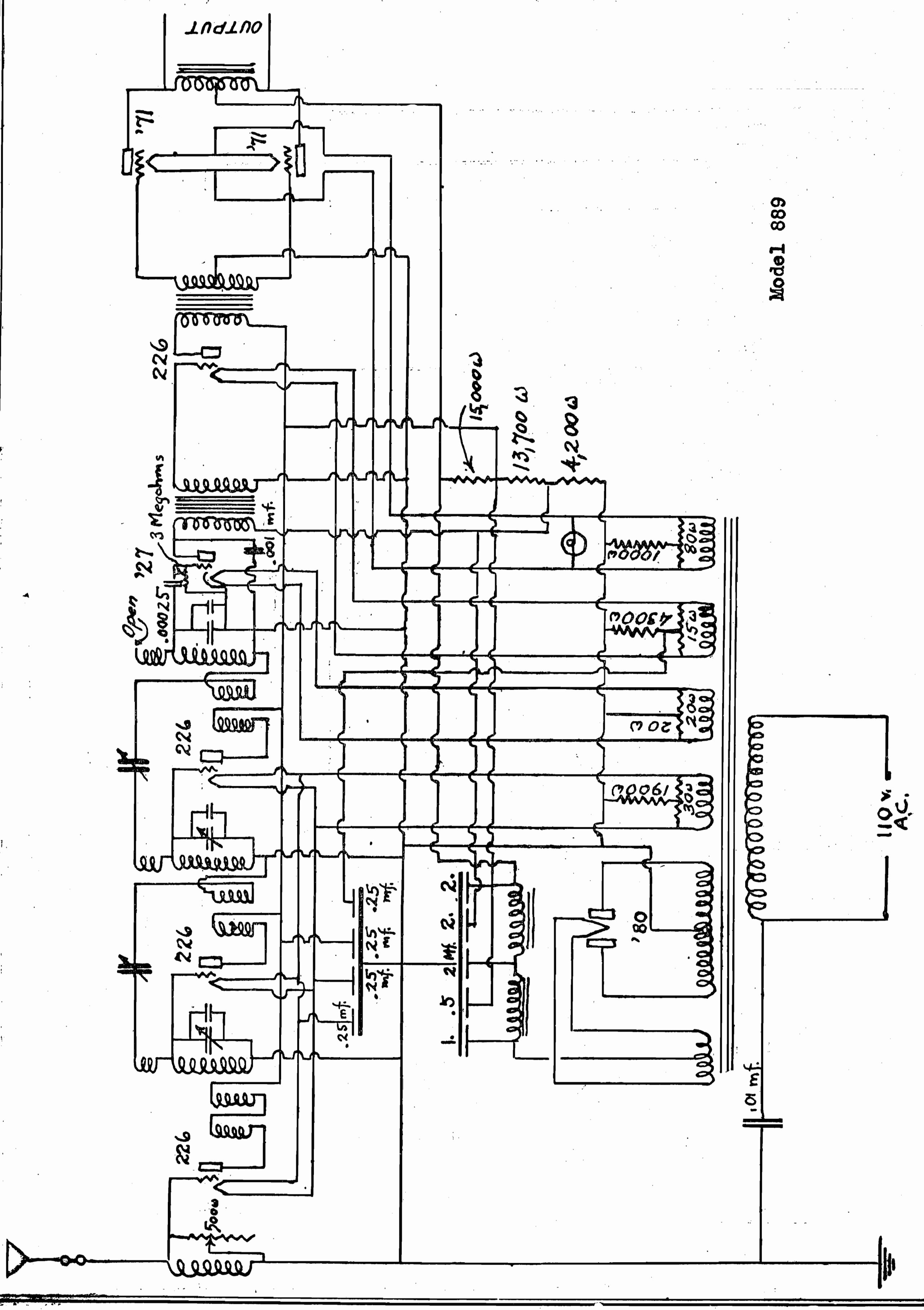
AUDIOLA RADIO CO.

MODEL 9 Tube Super
(1) Pentode '31



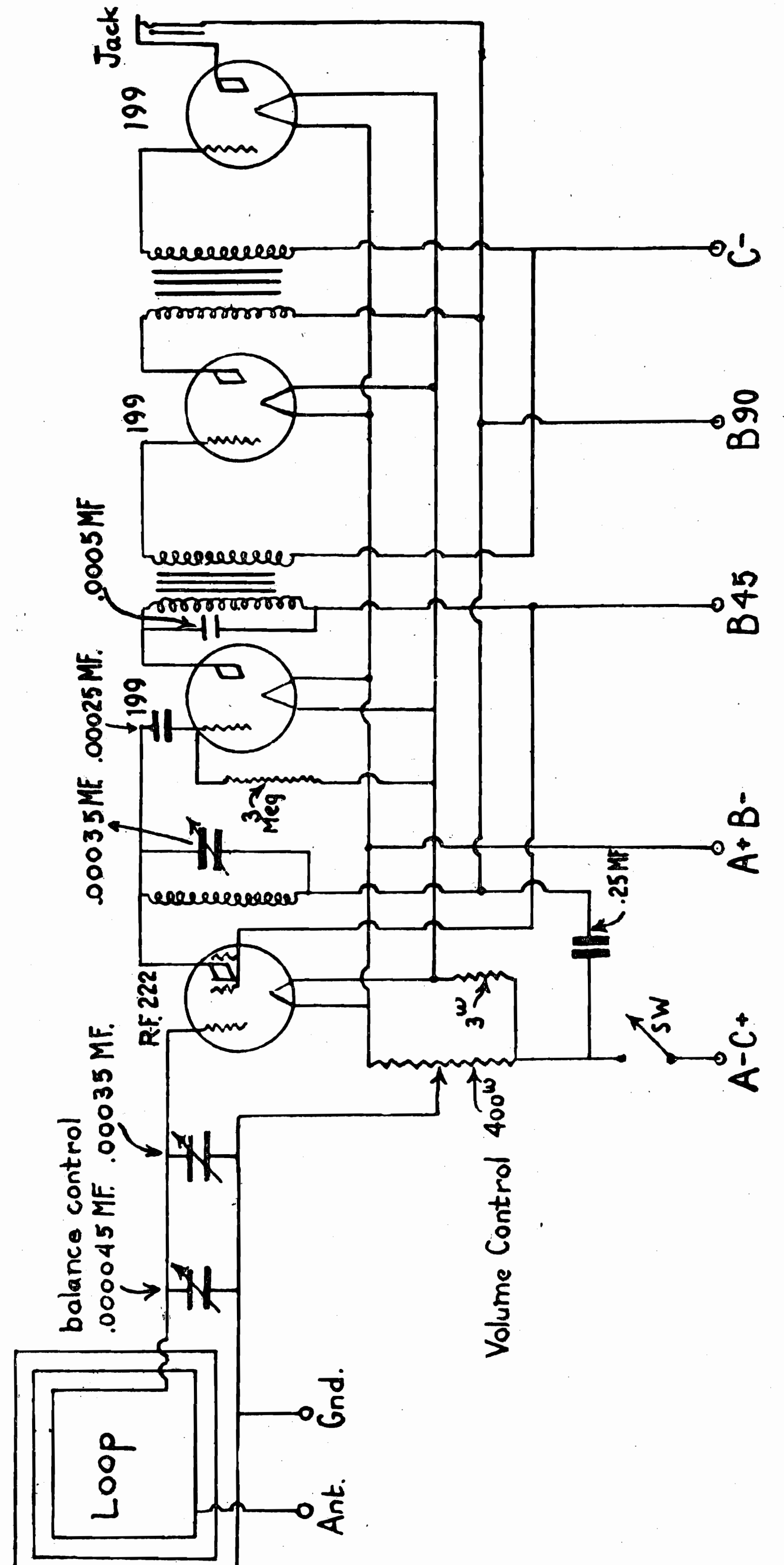
MODEL 889

AUDIOLA RADIO CO.



AUTOMATIC RADIO MFG. CO.

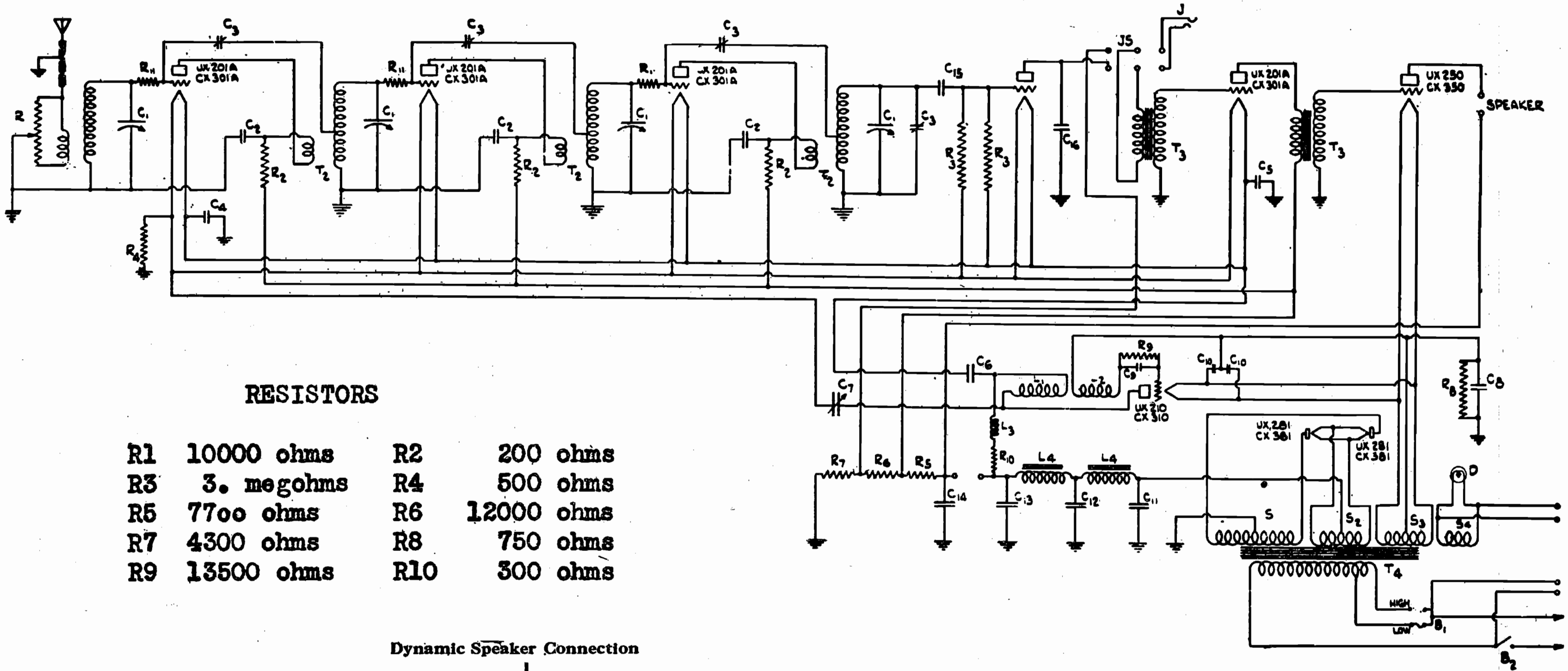
MODEL "TOM THUMB"
Screen Grid Four
Battery



Schematic diagram of "Tom Thumb" screen grid four (battery)

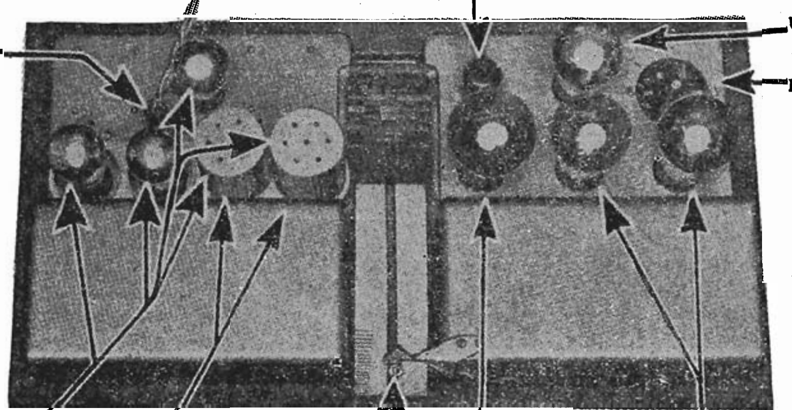
BALKEIT RADIO CO.

MODEL B-7 and B-9



RESISTORS

R1	10000 ohms	R2	200 ohms
R3	3. megohms	R4	500 ohms
R5	7700 ohms	R6	12000 ohms
R7	4300 ohms	R8	750 ohms
R9	13500 ohms	R10	300 ohms

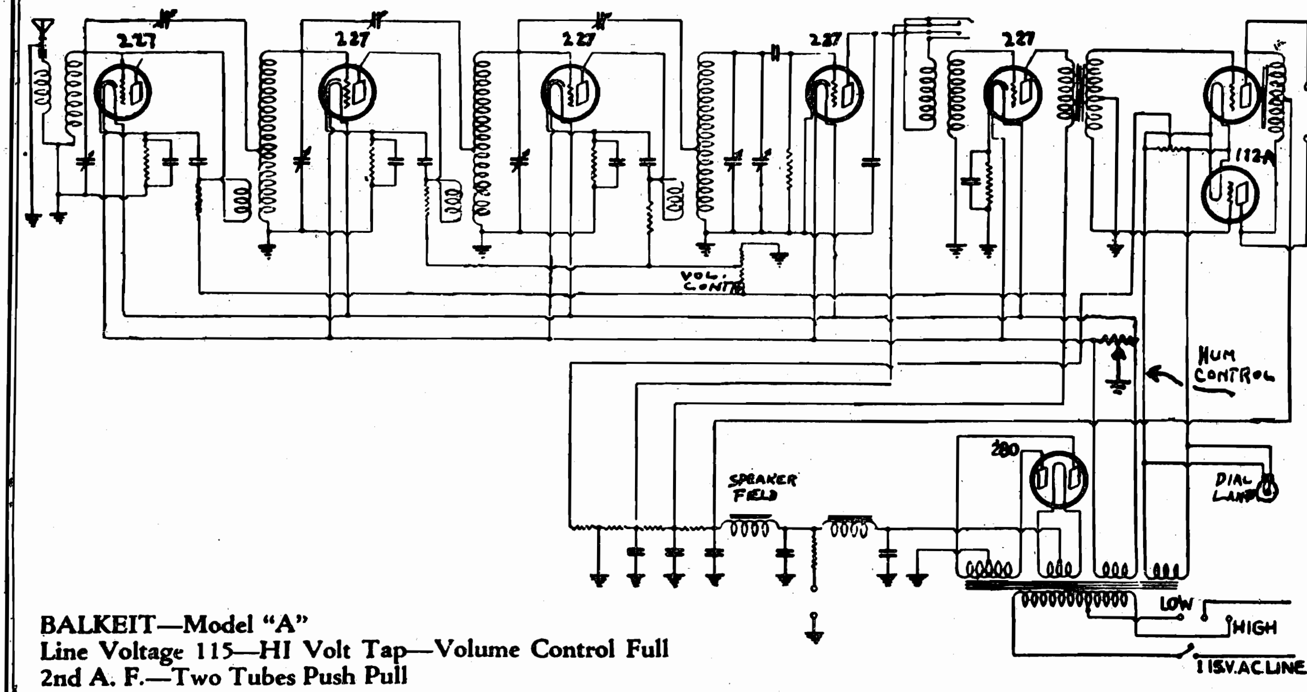


CONDENSERS

C1	.00037 mfd	C2	.1 mfd
C3	.00002 mfd	C4	.5 mfd
C5	1. mfd	C6	.006 mfd
C7	.00025 mfd	C8	2. mfd
C9	.0025 mfd	C10	.002 mfd
C11	2. mfd	C12	3. mfd
C13	4. mfd	C14	4. mfd
C15	.00015 mfd		

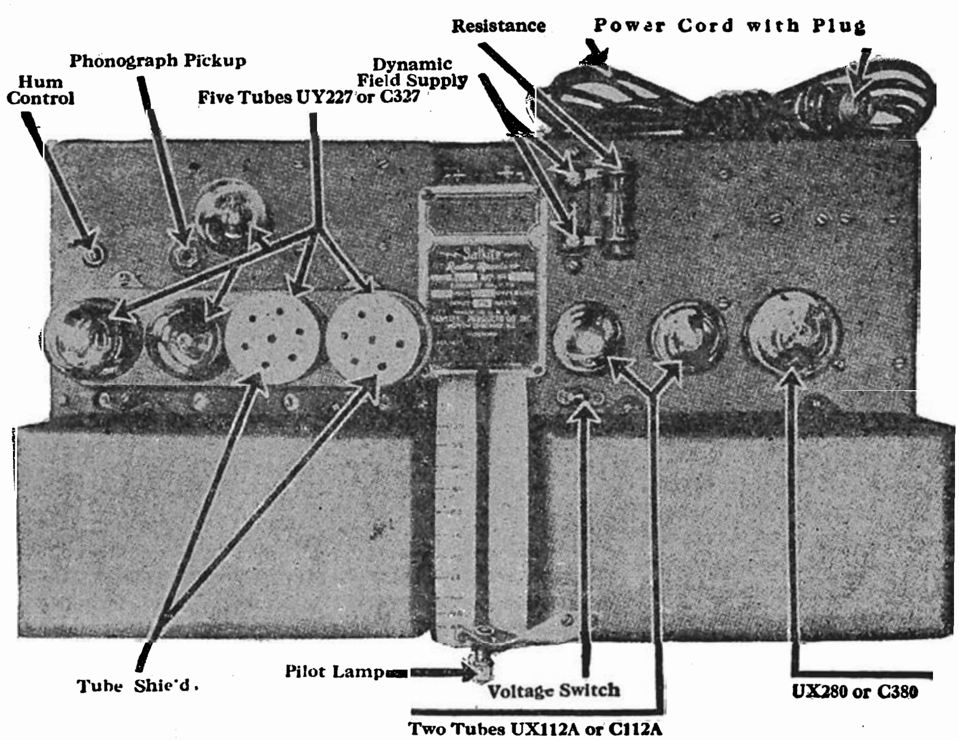
MODEL A-3, A-5, A-7

BALKEIT RADIO CO.



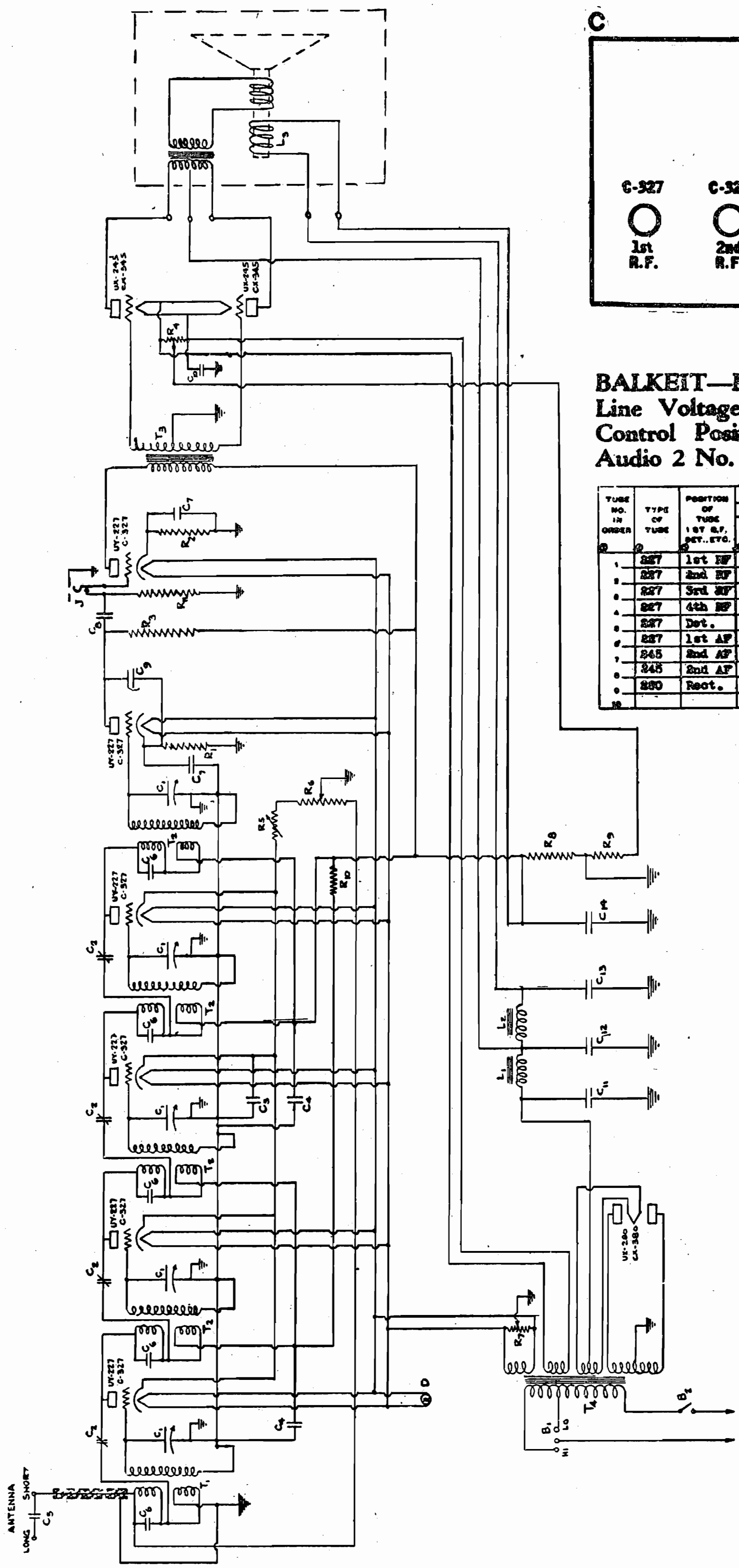
BALKEIT—Model "A"
Line Voltage 115—HI Volt Tap—Volume Control Full
2nd A. F.—Two Tubes Push Pull

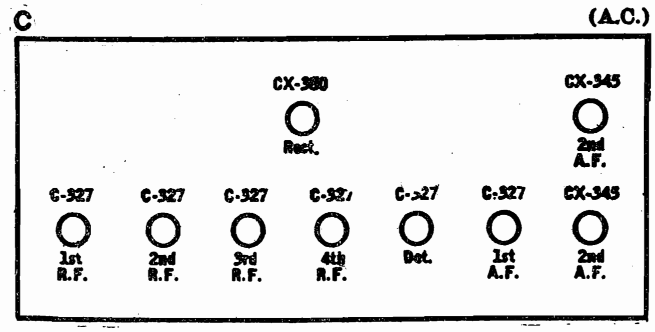
TUBE NO IN ORDER	TYPE OF TUBE	POSITION OF TUBE 1ST R.F. DET..ETC.	READINGS, PLUG IN SOCKET OF SET								
			TUBE OUT		TUBE IN TESTER						
			A VOLTS	B VOLTS	A VOLTS	B VOLTS	C VOLTS	CATHODE VOLTS	NORMAL PLATE M.A.	PLATE M.A. GRID TEST	PLATE M.A CHANGE
1	227	1st.R.F.	2.3	98	2.1	84	5	-	3.1	4.5	1.4
2	227	2nd.R.F.	2.3	98	2.1	84	5	-	3.1	4.5	1.4
3	227	3rd.R.F.	2.3	98	2.1	84	5	-	3.1	4.5	1.4
4	227	Detector	2.3	46	2.1	30	0	-	2.2	2.4	0.2
5	227	1st.A.F.	2.3	98	2.1	84	5	-	3.1	4.5	1.4
6	112A	2nd.A.F.	4.7	142	4.5	132	9.5	-	9.0	13.8	4.8
7	112A	2nd.A.F.	4.7	142	4.5	132	9.5	-	9.0	13.8	4.8
8	280	Rectifier	-	-	4.5	-	-	-	32.0	-	-
9											
10											



MODEL "C"

BALKEIT RADIO CO.





BALKEIT—Model "C"

Line Voltage 115—Set on High Volt Tap—Volume Control Position Full On—Use 120 V. Scale—2nd Audio 2 No. 245 in Parallel

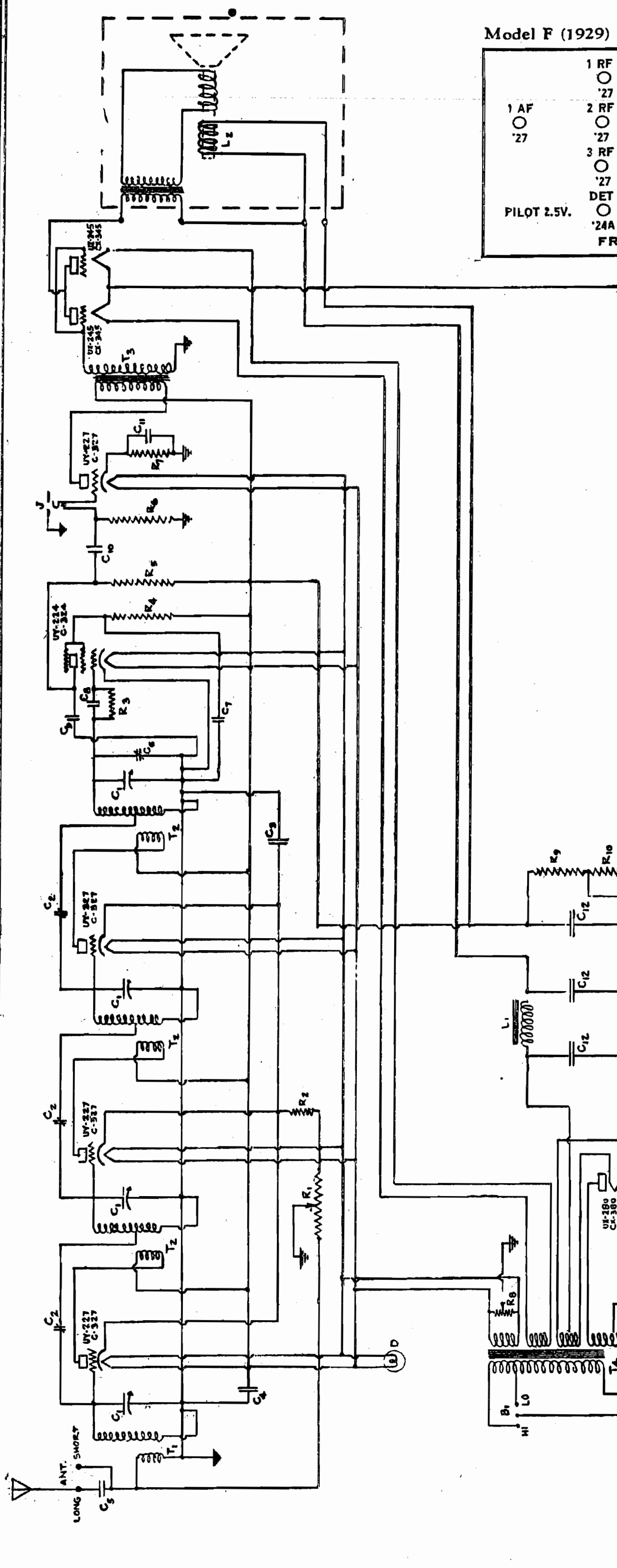
Tube No. in Order (1)	Type of Tube (2)	Position of Tube 1st R.F., Det., Etc. (3)	Readings, Plug in Socket of Set — Tube Out: A Volts (4)	Tube Out: B Volts (5)	Tube in Tester: A Volts (6)	B Volts (7)	C Volts (Control Grid) (8)	Cathode-Heater Volts (9)	Normal Plate M.A. (10)	Plate M.A. Grid Test (11)	Plate Change M.A. (12)	Screen Grid Volts (13)
1	227	1st RF	2.35	118	2.4	117	10	10	3.8	4.6	.8	-
2	227	2nd RF	2.35	118	2.4	117	10	10	3.8	4.6	.8	-
3	227	3rd RF	2.35	118	2.4	117	10	10	3.8	4.6	.8	-
4	227	4th RF	2.35	118	2.4	117	10	10	3.8	4.6	.8	-
5	227	Det.	2.35	68	2.4	62	6.5	6.5	0.3	0.4	.1	-
6	227	1st AF	2.35	118	2.4	117	2	7.5	4.6	6.1	1.5	-
7	245	2nd AF	2.4	-	2.3	225	41	-	24	28	4.	-
8	245	2nd AF	2.4	-	2.3	225	41	-	24	28	4.	-
9	280	Rect.	-	-	4.75	-	-	-	94	-	-	-
10												

C-1	Tuning Condenser	
C-2	Neutralizing Condenser	
C-3	R. F. Grid Bias Condenser	.25 MF
C-4	R. F. Plate By-Pass Condenser	.25 MF
C-5	Antenna Condenser	.00025 MF
C-6	Primary By-Pass Condenser	.00025 MF
C-7	Grid Bias Condenser	1.0 MF
C-8	1st Audio Coupling Condenser	0.1 MF
C-9	Detector Plate Condenser	.002 MF
C-10	By-Pass Condenser	.25 MF
C-11	Filter Condenser	2 MF
C-12	Filter Condenser	2 MF
C-13	Filter Condenser	2 MF
C-14	Filter Condenser	1 MF
J	Phonograph Jack	
L-1	Filter Choke	
L-2	Filter Choke	
L-3	Speaker Field	
R-1	Detector Grid Bias Resistance	25,000 Ohms
R-2	1st Audio Grid Bias Resistance	1,750 Ohms
R-3	1st Audio Coupling Resistance	.1 Megohn
R-4	Mid-Tap Resistance	20 Ohms
R-5	R. F. Grid Bias Resistance	2,000 Ohms
R-6	Volume Control	15,000 Ohms
R-7	Hum Control	20 Ohms
R-8	Loss Current Resistance	3,600 Ohms
R-9	245 Grid Bias Resistance	770 Ohms
R-10	R. F. Plate Rsistance	
R-11	1st Audio Grid Resistance	.5 Megohn
T-1	Antenna Transformer	
T-2	R. F. Interstage Transformer	
T-3	Input Push-Pull Transformer	
T-4	Power Transformer	
B-1	HI-LO S.P.D.T. Toggle Switch	
B-2	S.P.S.T. Toggle Switch	
D	Dial Lamp	

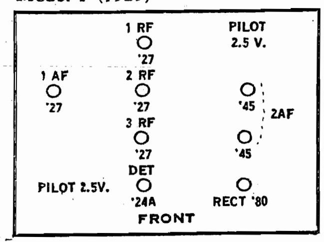
Chassis layout on next page.

MODEL "F"

BALKEIT RADIO CO.



Model F (1929)



BALKEIT—Model "F"
Line Voltage 115—Set on High Volt Tap—Volume Control Position Full On *Last Stage Is 2 No. 245 in Parallel

Tube No. in Order	Type of Tube	Position of Tube 1st R.F. Det. etc.	Tube Out: A Volts	Tube Out: B Volts	Readings Plug in Socket of Set, Tube in Tester: A Volts	B Volts	C Volts (Control Grid)	Cathode-Heater Volts	Normal Plate M.A.	Plate M.A. Grid Test	Plate Change M.A.	Screen Grid Volts
1	227	1st RF	2.4	119	2.3	115	7	7	3.8	4.6	.8	-
2	227	2nd RF	2.4	119	2.3	115	7	7	3.8	4.6	.8	-
3	227	3rd RF	2.4	119	2.3	115	7	7	3.8	4.6	.8	-
4	224	Det.	2.4	50	2.3	50	0.8	-	0.7	0.7	-	5.
5	227	1st A	2.4	188	2.3	100	8.5	8.5	6.2	7.5	1.3	-
6	245	2nd A*	5.2	260	2.4	175	31	-	34.	38	4.	-
7	245	2nd A*	5.2	290	2.4	175	31	-	34.	38	4	-
8	280	Rect.	-	-	4.75	-	-	-	90.	-	-	-
9												
10												

C_1 Tuning Condenser.
C_2 Neutralizing Condenser.
C_3 R.F. Grid Bias Condenser .25 MF.
C_4 R.F. Plate By-Pass Condenser .25 MF.
C_5 Antenna Condenser .00025 MF.
C_6 Det. Padding Condenser.
C_7 Det. Screen Grid Bias Condenser .25 MF.
C_8 Det. Control Grid Condenser .0001 MF.
C_9 Det. Plate Condenser .0005 MF.
C_{10} 1st Audio Coupling Condenser 0.1 MF.
C_{11} 1st Audio Grid Condenser 0.5 MF.
C_{12} Filter Condensers 8.0 MF Each.
L_1 Filter Choke.
L_2 Speaker Field 2500 Ohms.
J Phonograph Jack.
D Dial Lamp.
R_1 Volume Control 15,000 Ohms.
R_2 R.F. Grid Bias Resistance 620 Ohms.
R_3 Det. Control Grid Resistance .5 Megohm
R_4 Det. Screen Grid Resistance .5 Megohm
R_5 1st Audio Coupling Resistance .1 Megohm.
R_6 1st Audio Grid Resistance .5 Megohm.
R_7 1st Audio Grid Bias Resistance 1750 Ohms.
R_8 Hum Control 20 Ohms.
R_9 Loss Current Resistance 4500 Ohms
R_{10} 245 Grid Bias Resistance 650 Ohms
T_1 Antenna Transformer.
T_2 R.F. Inter stage Transformer.
T_3 Input Audio Transformer
T_4 Power Transformer.
B_1 Hi-Lo S.P.D.T. Toggle Switch.
B_2 S.P.S.T. Toggle Switch.

Chassis layout on next page

SPECIFICATIONS

BALKITE PRODUCTS CO.

Balkite Models and Specifications

Current Models

Balkite AB 6-180, "A" and "B" Current Supply

	Max. Output	
"A"	6 volts	2 amperes
"B"	180	55 m.a.

B Voltages, 180, 135, 90, 67½, 45 or 22½

Consumption: watts 127
Dimensions: 10¼" x 18½" x 7¾"

Balkite AB 6-135, "A" and "B" Current Supply.

	Max. Output	
"A"	6 volts	2 amperes
"B"	135	40 m.a.

B Voltages, 135, 90, 67½, 45 or 22½

Consumption: watts 117
Dimensions: 10¼" x 18½" x 7¾"

Balkite A-6, "A" Current Supply.

Output
6 volts — 2 amperes

Consumption: watts 100
Dimensions: 6" x 10¾" x 8⅜"

Balkite B-180, "B" Current Supply.

Output
180 volts — 55 m.a.

Voltages, 180, 135, 90, 67½ and 45 or 22½

Consumption: watts 27
Dimensions 4½" x 12¾" x 8¾"

Balkite B-135, "B" Current Supply.

Output
135 volts — 40 m.a.

Voltages, 135, 90, 67½ and 45 or 22½
Consumption: watts 17
Dimensions: 4½" x 8¼" x 8$\frac{5}{16}$"

Balkite BW, "B" Current Supply..

Output
90 volts — 18 m.a.

Voltage, 90 and 45 or 22½
Consumption: watts 6
Dimensions: 3$\frac{5}{16}$" x 7⅝" x 8¾"

Balkite Model J Charger, Full Rate and Trickle Charger

Charging Rates

High Rate, 2½ amperes
Low Rate, ½ ampere

Consumption: watts 60
Dimensions: 5⅜" x 8½" x 7⅝"

Balkite Model N Trickle Charger, Trickle Charger

Charging Rates
High Rate, .8 ampere
Low Rate, .5 ampere

Consumption: watts 20
Dimensions: 4⅛" x 7½" x 6¼"

Balkite Model K Trickle Charger, Trickle Charger

Charging Rate, .5 ampere
Consumption: watts 15
Dimensions: 2¾" x 5½" x 5¼"

Previous Models

Balkite BY, "B" Current Supply.

Output
150 volts — 40 milliamperes

Voltages, 150, 135, 90, 67½ and 45 or 22½
Consumption: watts 17
Dimensions: 4½" x 12¾" x 8¾"

Balkite BX, "B" Current Supply.

Output
135 volts — 30 milliamperes

Voltages, 135, 90, 67½ and 45 or 22½
Consumption: watts 12
Dimensions: 4½" x 8¼" x 8⅝"

Balkite Combination, Model "KX", "B" Current Supply and Trickle Charger.

"B" Output
135 volts — 30 milliamperes

"B" Voltages, 135, 90, 67½ and 45 or 22½
"A" Charging Rate, 0.5 ampere
Consumption: watts 17
Dimensions: 13¼" x 4½" x 8⅞"

Balkite "B", Model D, "B" Current Supply.

Output
90 volts — 20 milliamperes

Voltages, 90, 45 or 22½
Consumption: watts 7
Dimensions: 3⅝" x 7⅝" x 8¾"

Balkite BII, "B Current Supply.

Output
90 volts — 40 milliamperes

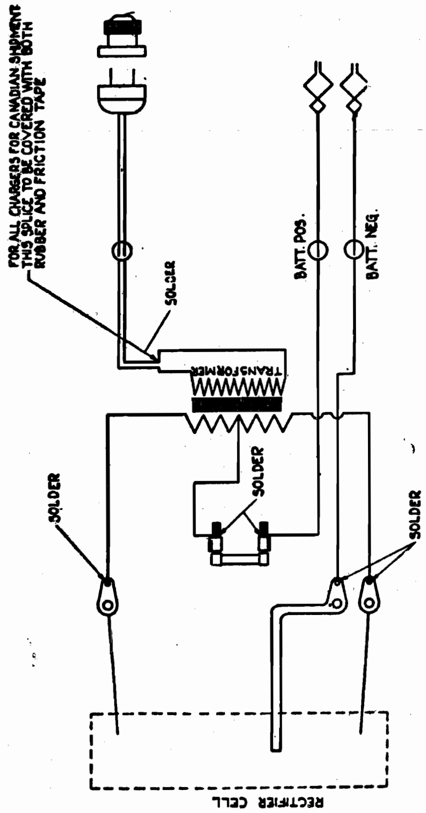
Voltages, 90, 45, 22½
Consumption: watts 10

Balkite Model H Charger, High Rate Charger.
Charging Rate, 2½ amperes
Consumption: watts 60

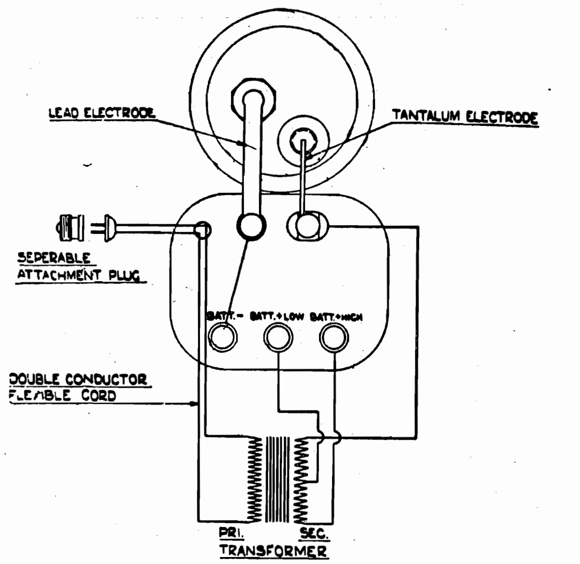
Balkite Model A Charger, High Rate Charger.
Charging Rate, 3 amperes
Consumption: watts 80

MODEL H - J Chargers
MODEL K - N Chargers

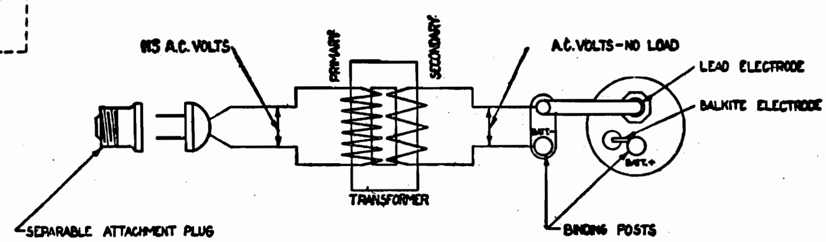
BALKITE PRODUCTS CO.



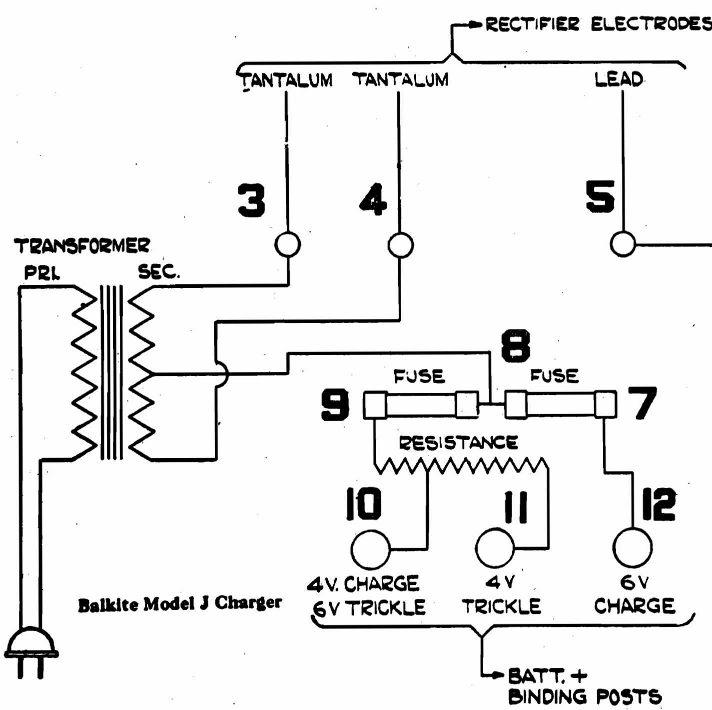
Wiring Diagram, Balkite Model H Charger



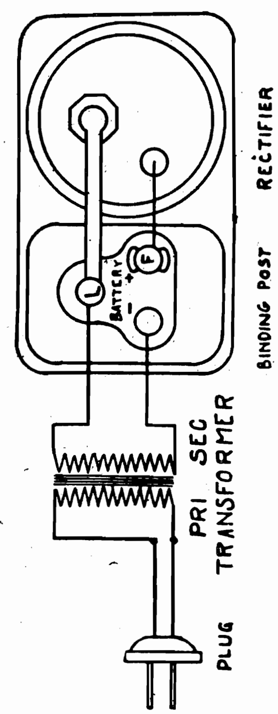
Wiring Diagram, Balkite Model N Charger



Wiring Diagram, Balkite Model K, Trickle Charger



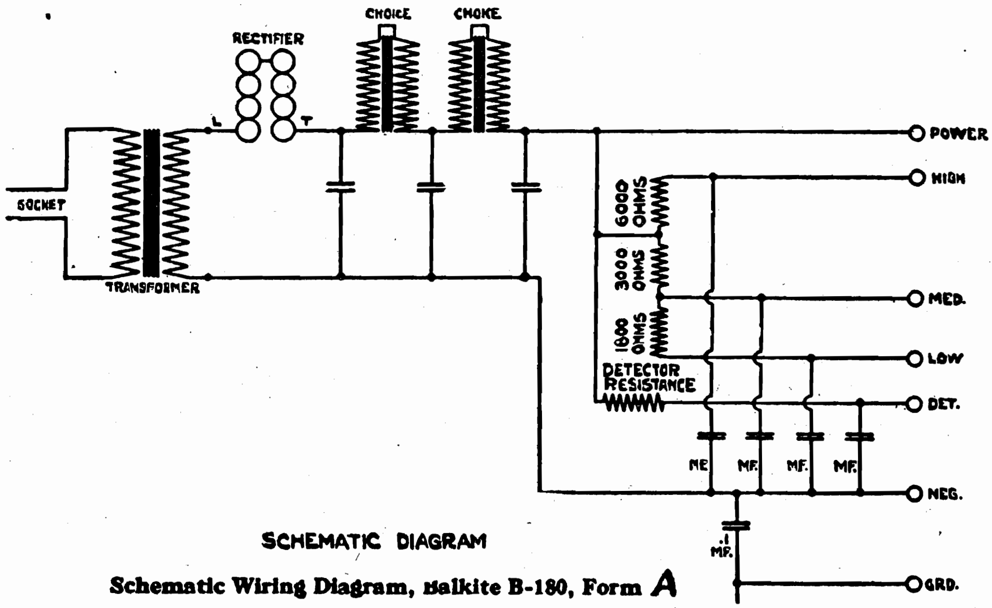
Balkite Model J Charger



Wiring Diagram, Balkite Model K, Trickle Charger

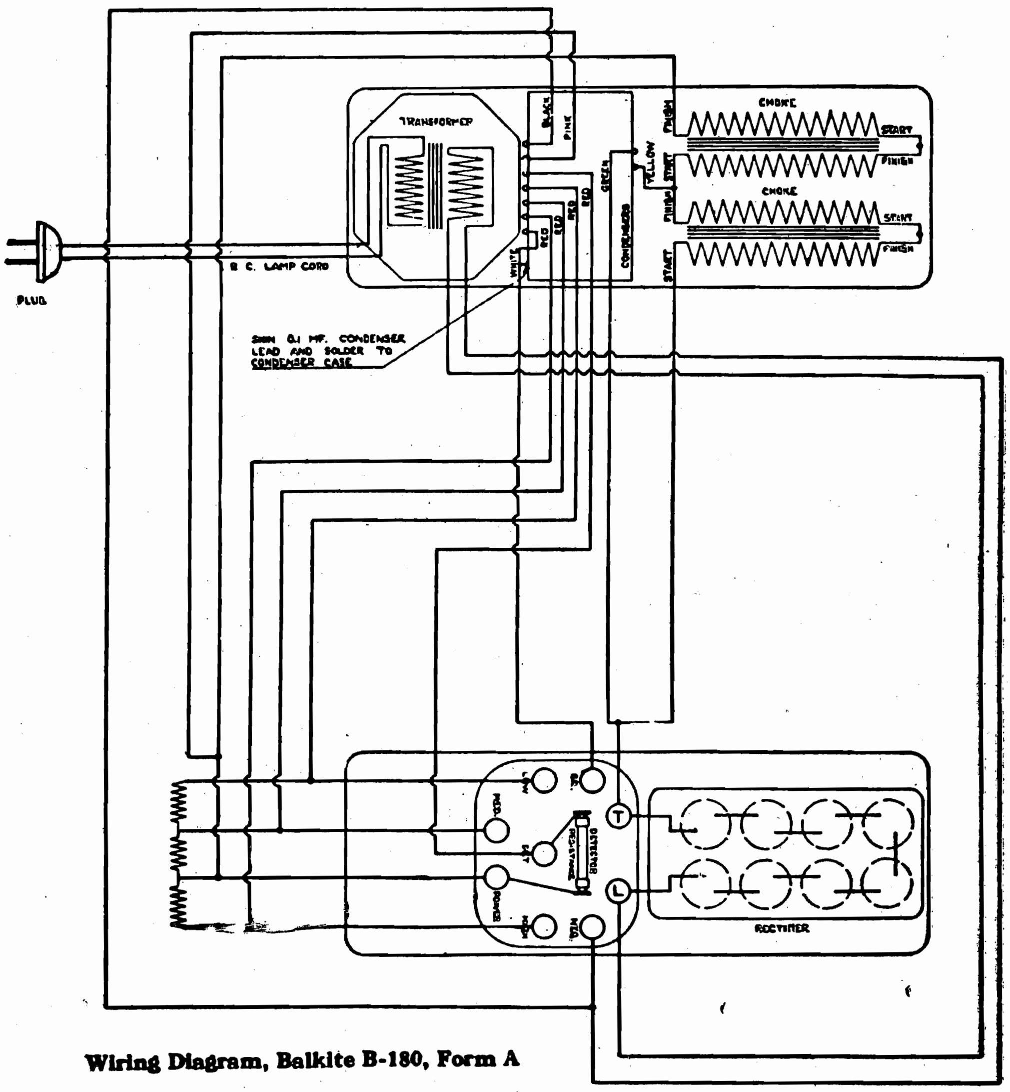
MODEL B-180 Form A

BALKITE PRODUCTS CO.



SCHEMATIC DIAGRAM

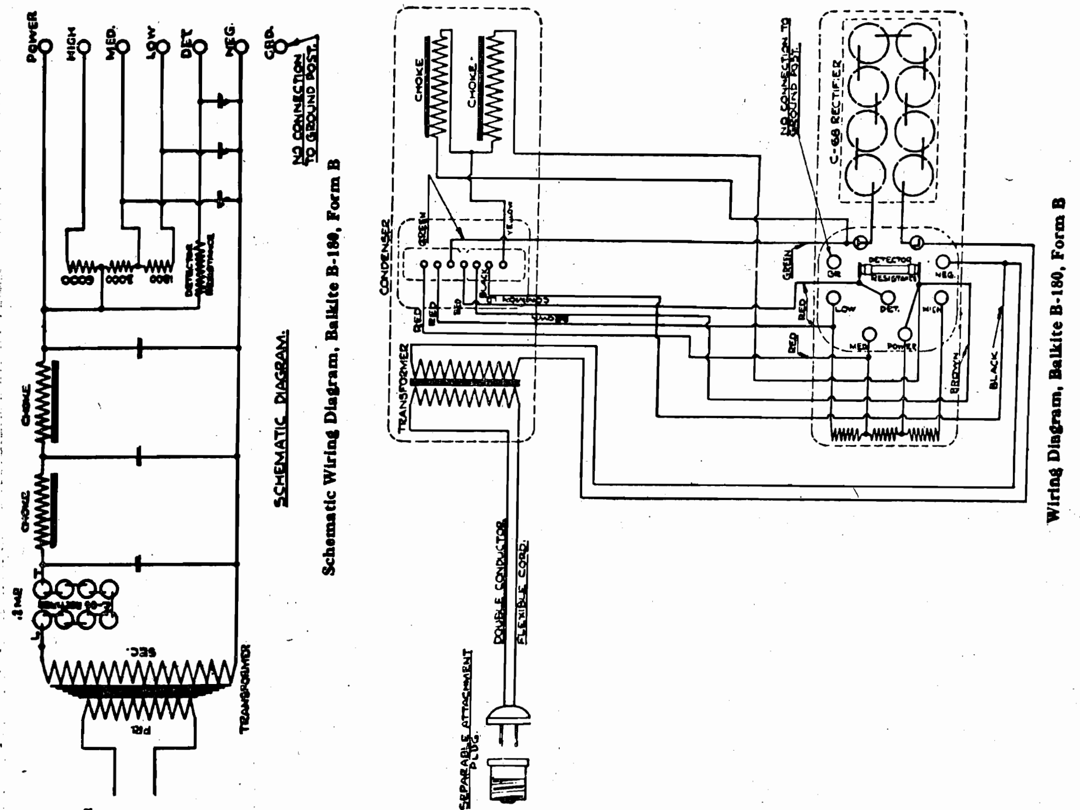
Schematic Wiring Diagram, Balkite B-180, Form A



Wiring Diagram, Balkite B-180, Form A

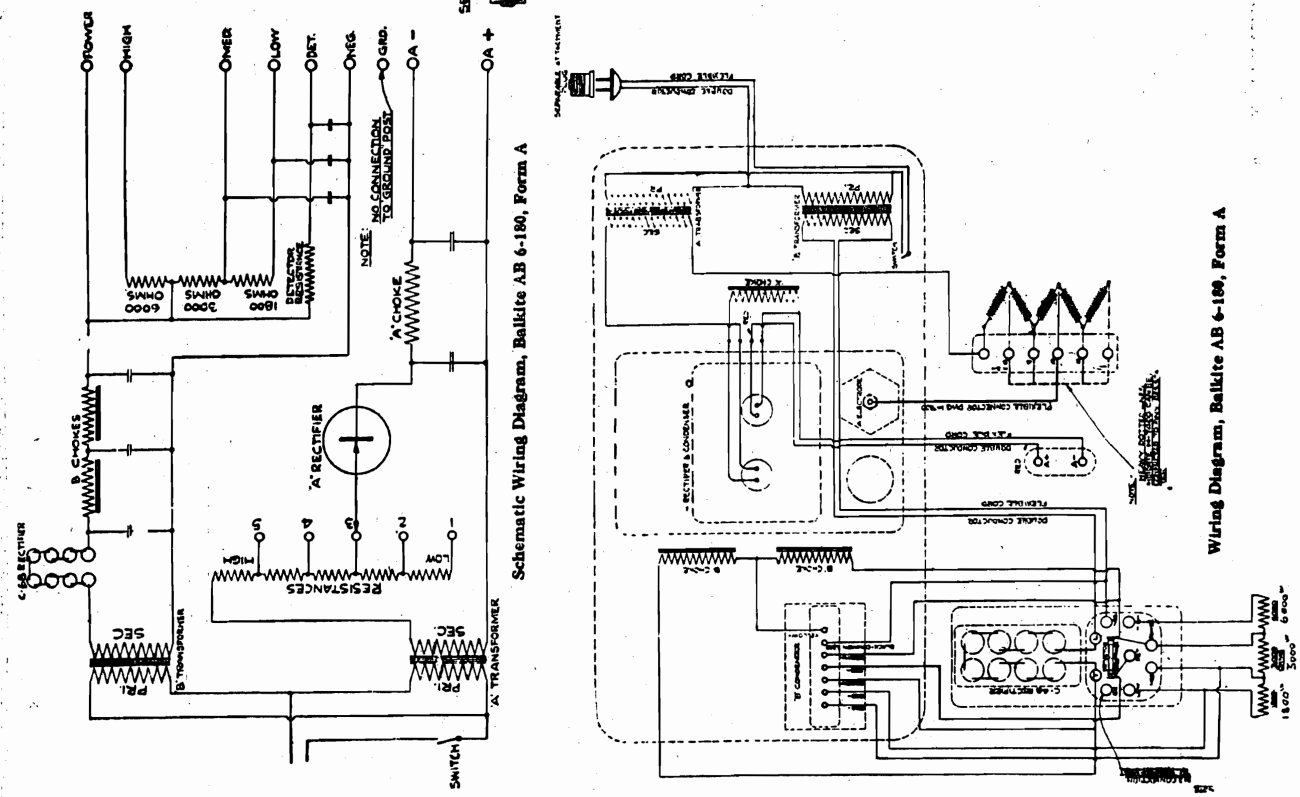
MODEL AB-6-180 Form A
MODEL B-180 Form B

BALKITE PRODUCTS CO.



Schematic Wiring Diagram, Balkite B-180, Form B

Wiring Diagram, Balkite B-180, Form B

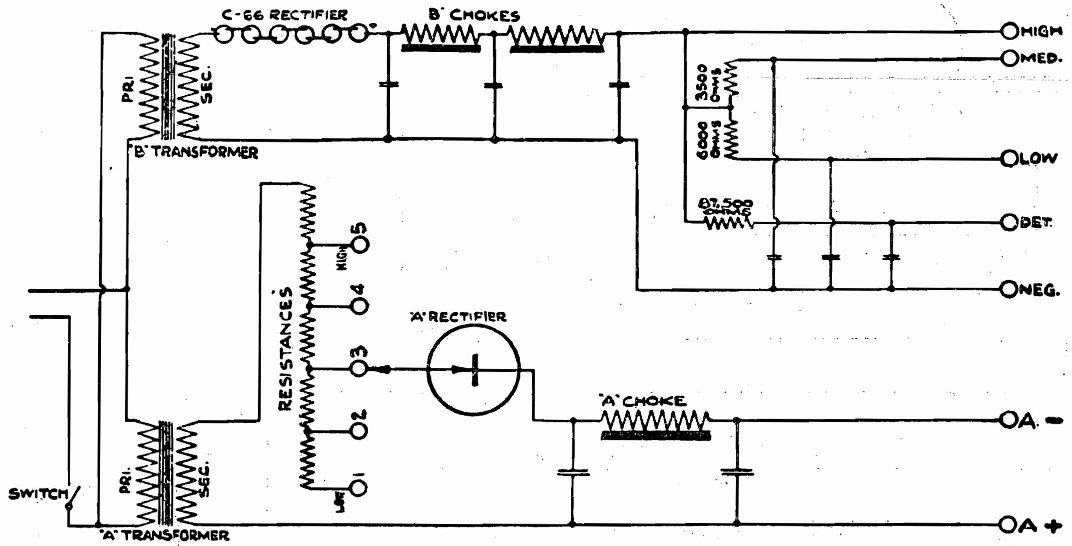


Schematic Wiring Diagram, Balkite AB 6-180, Form A

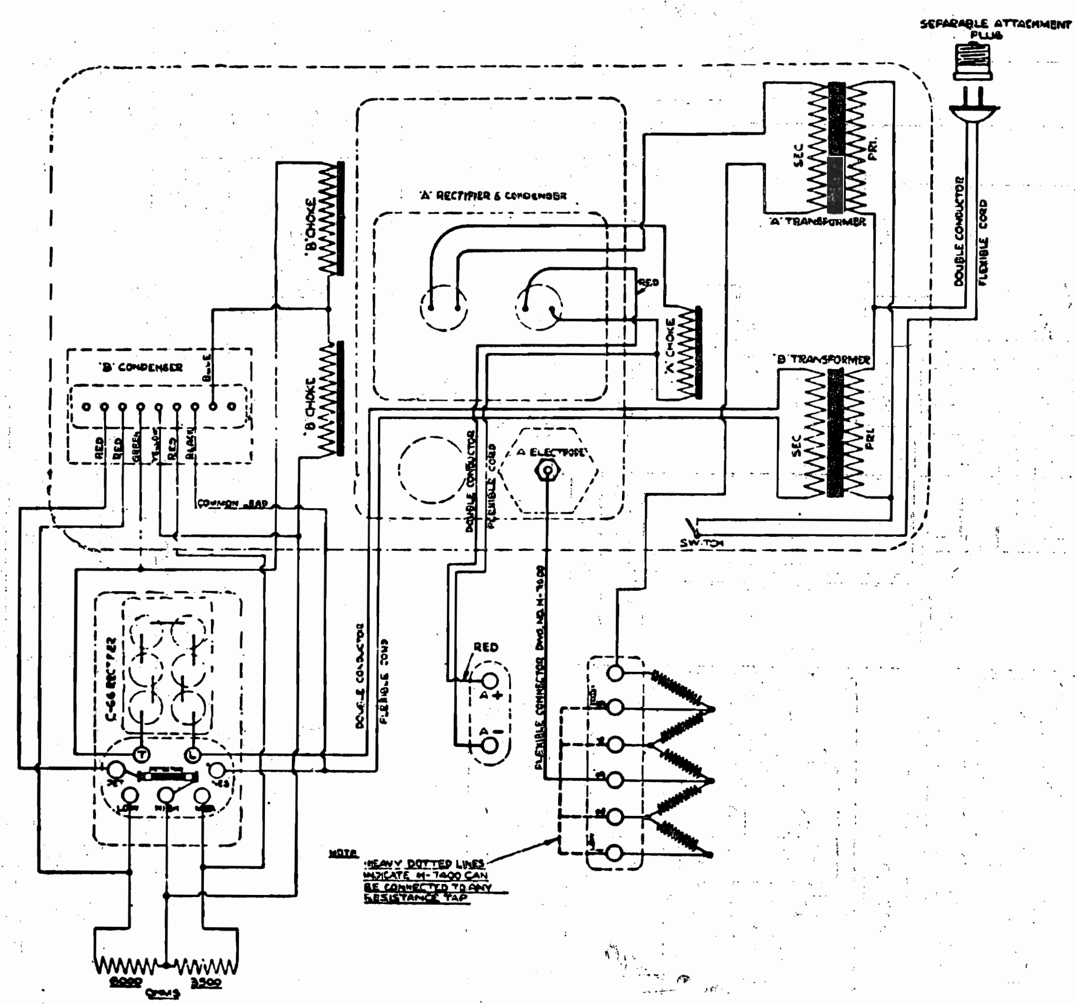
Wiring Diagram, Balkite AB 6-180, Form A

MODEL AB-6-135 Form A

BALKITE PRODUCTS CO.



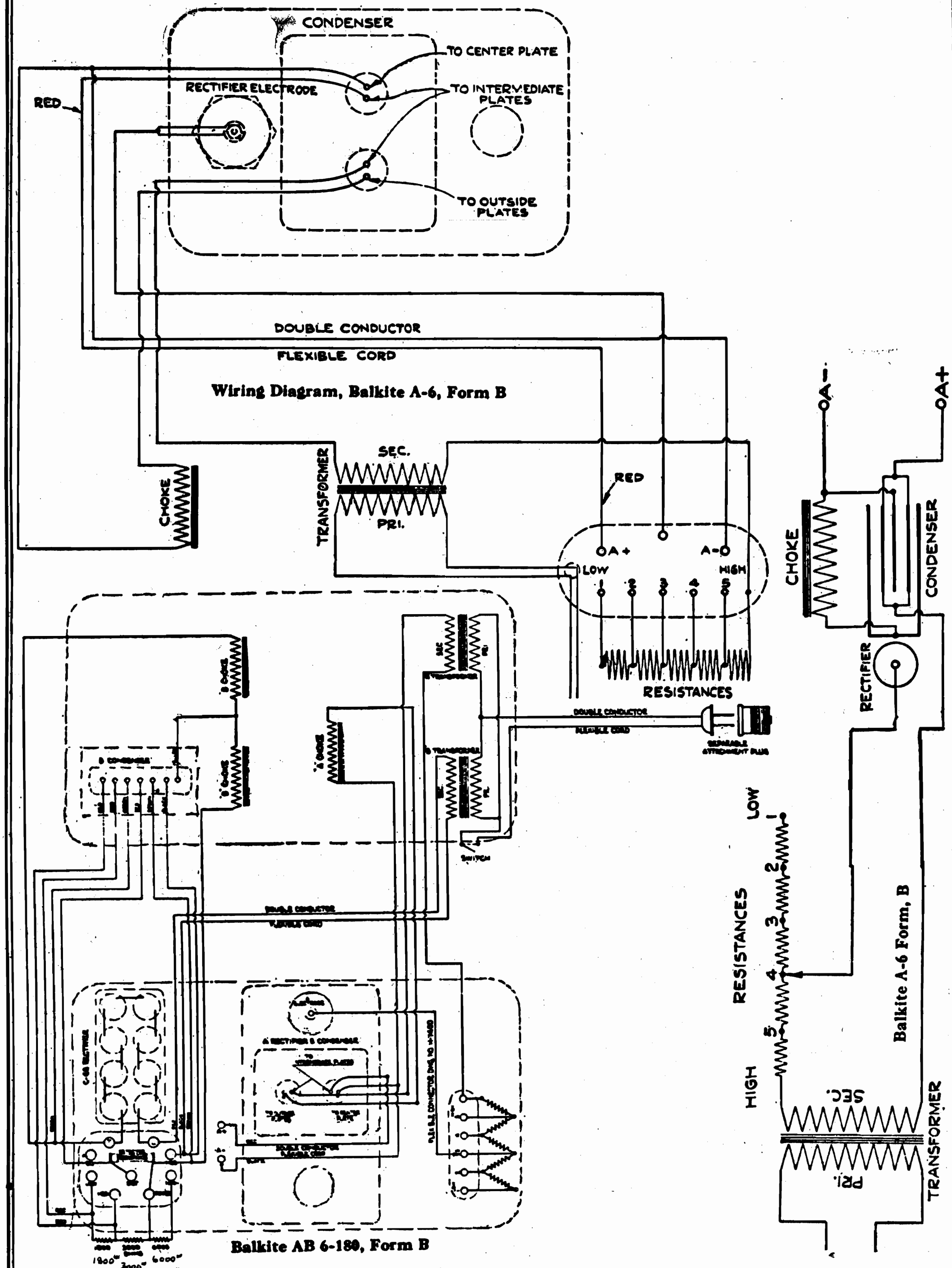
Schematic Wiring Diagram, Balkite AB 6-135, Form A



Wiring Diagram, Balkite AB 6-135, Form A

MODEL AB-6 Form B

BALKITE PRODUCTS CO.



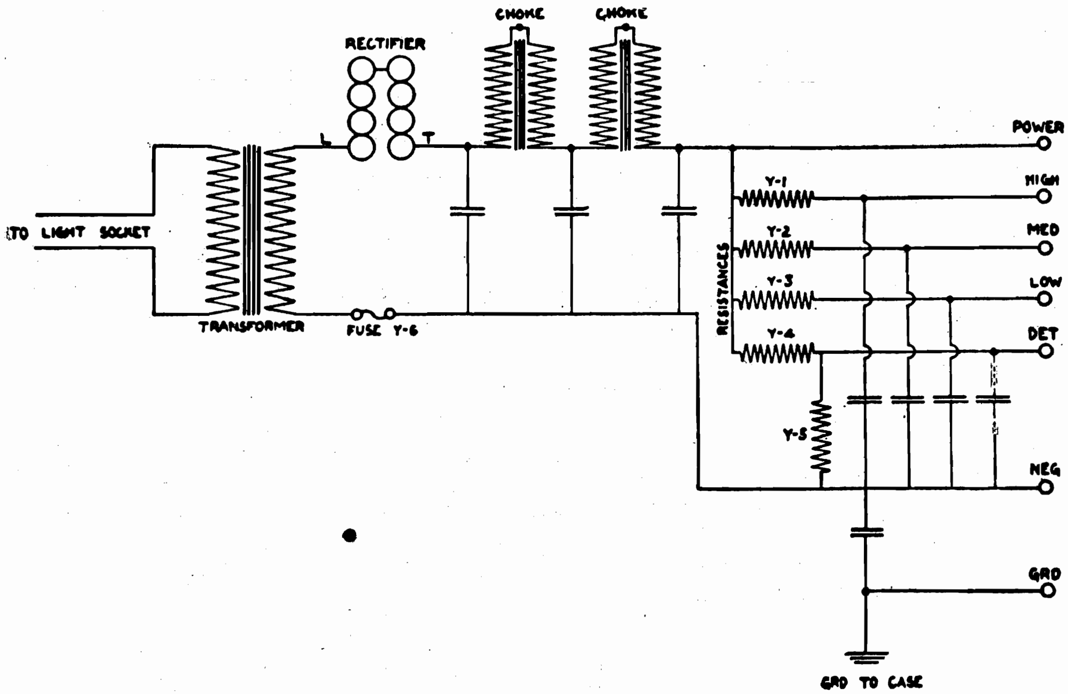
Wiring Diagram, Balkite A-6, Form B

Balkite AB 6-180, Form B

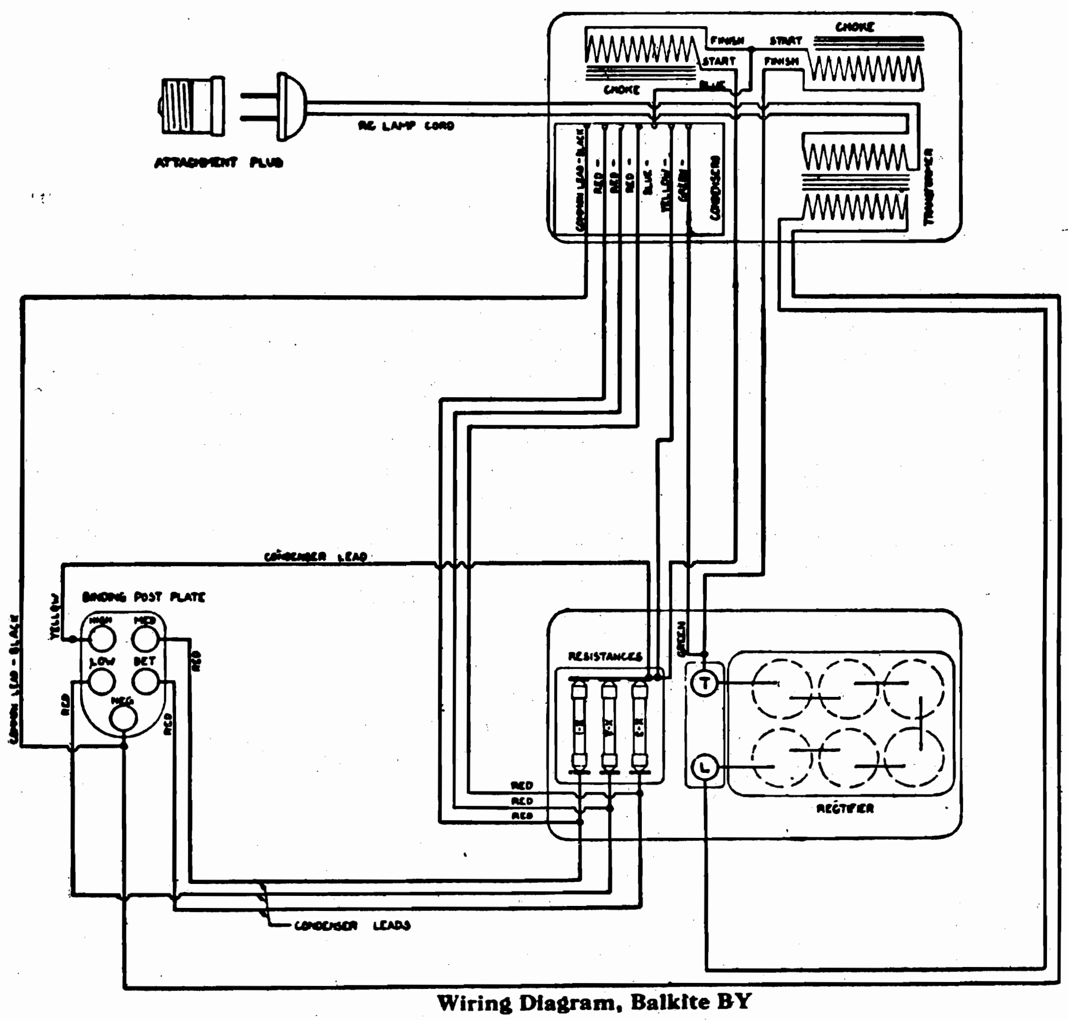
Balkite A-6 Form, B

MODEL BY

BALKITE PRODUCTS CO.



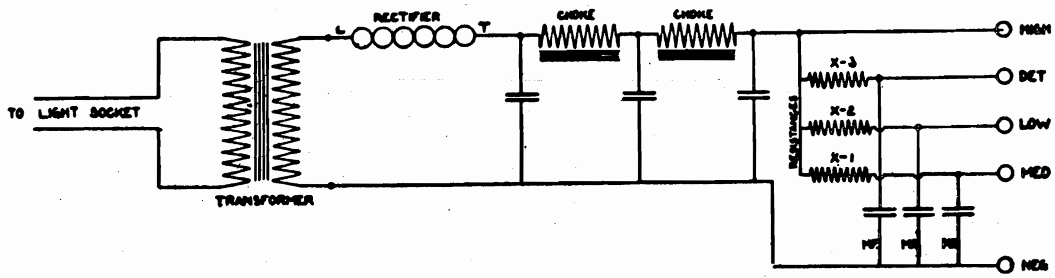
Schematic Wiring Diagram, Balkite BY



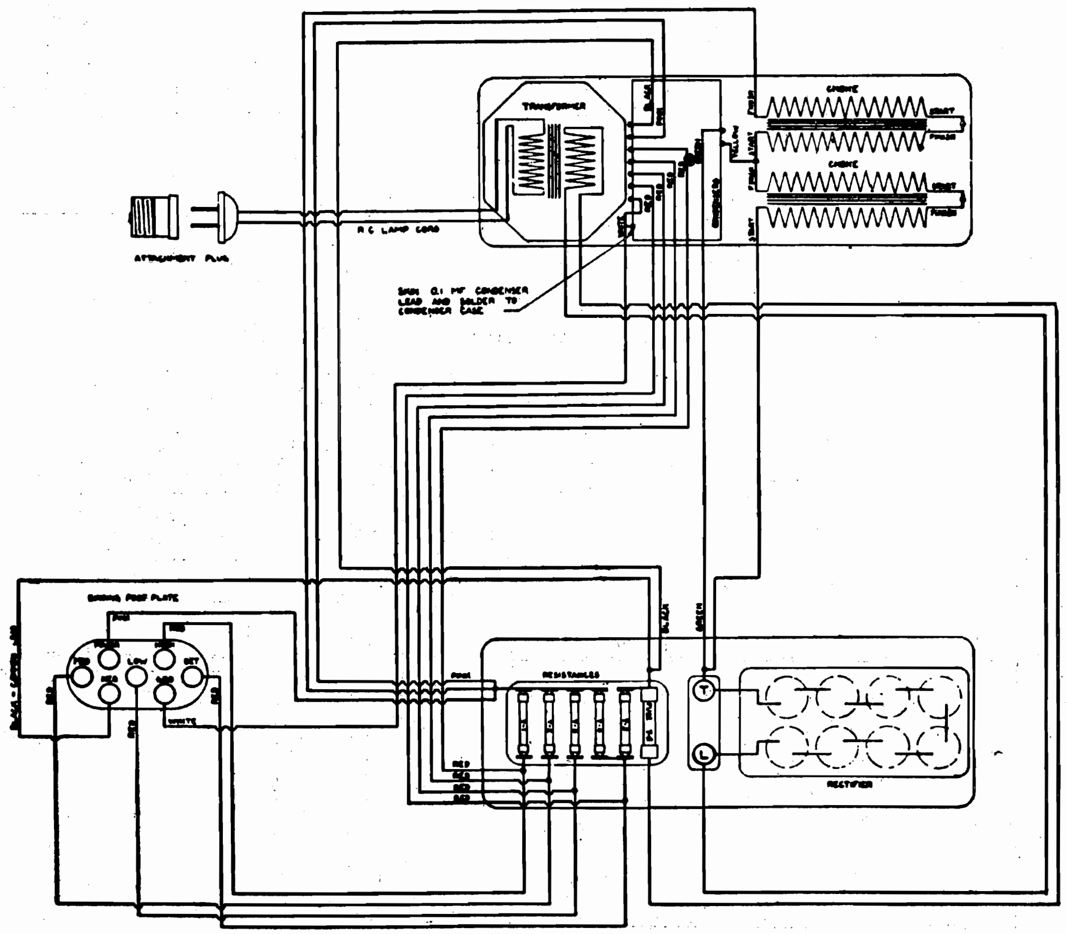
Wiring Diagram, Balkite BY

MODEL A-6
MODEL B-X

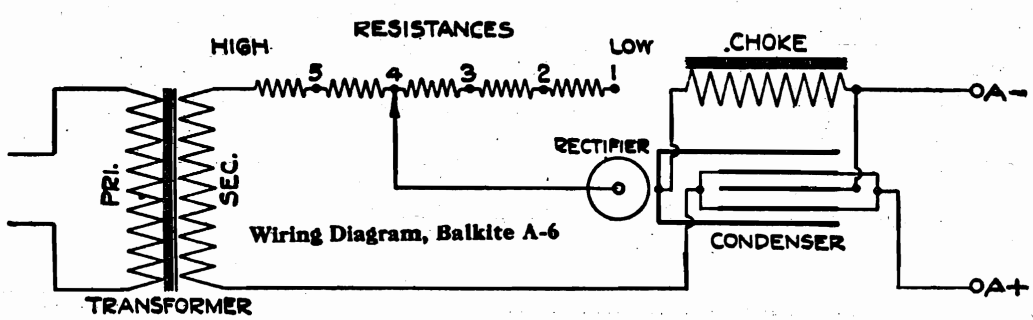
BALKITE PRODUCTS CO.



Schematic Wiring Diagram, Balkite BX



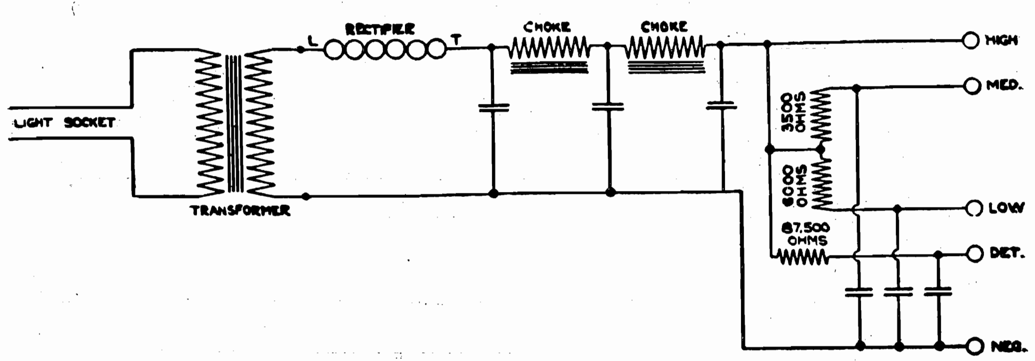
Wiring Diagram, Balkite BX



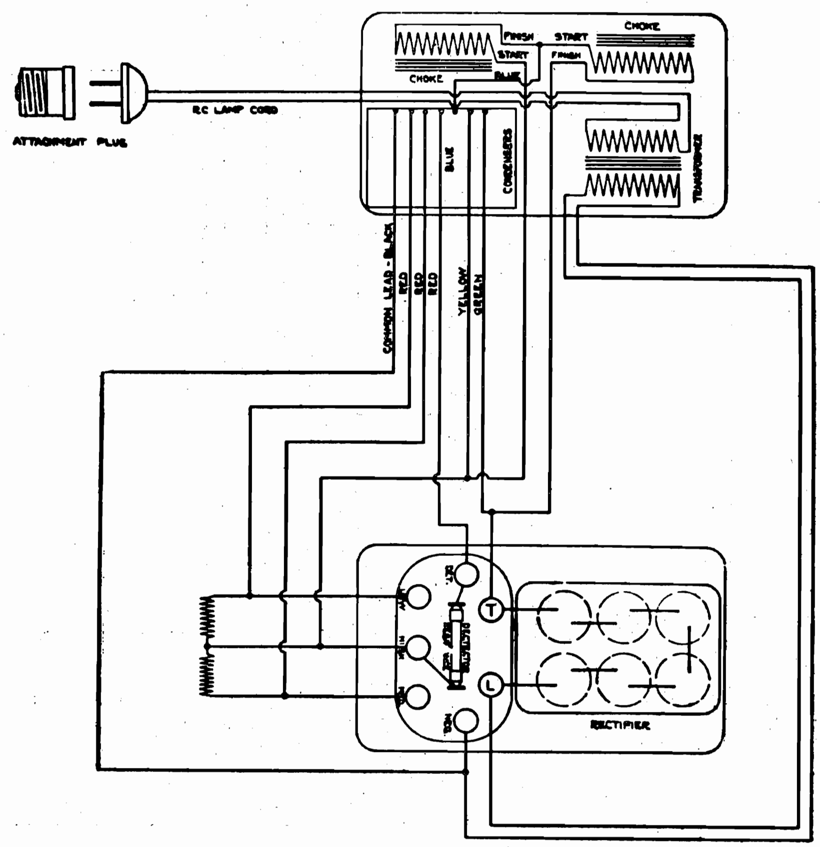
Wiring Diagram, Balkite A-6

MODEL B-135 Form A
MODEL B-W

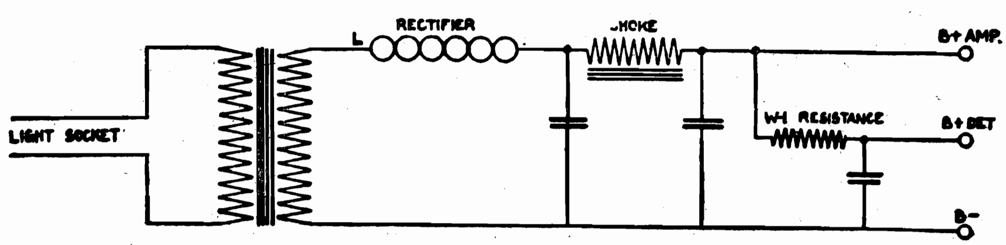
BALKITE PRODUCTS CO.



Schematic Wiring Diagram, Balkite B-135



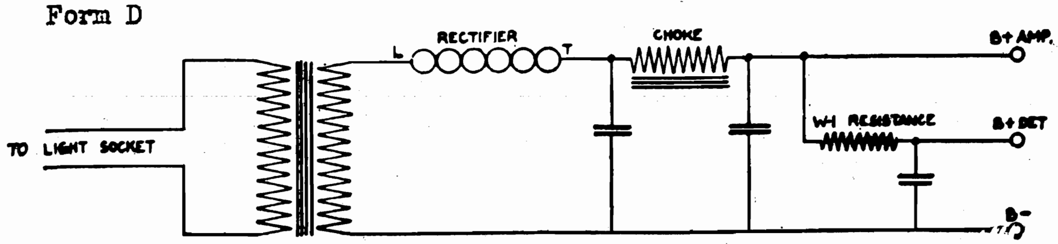
Wiring Diagram, Balkite B-135, Form A



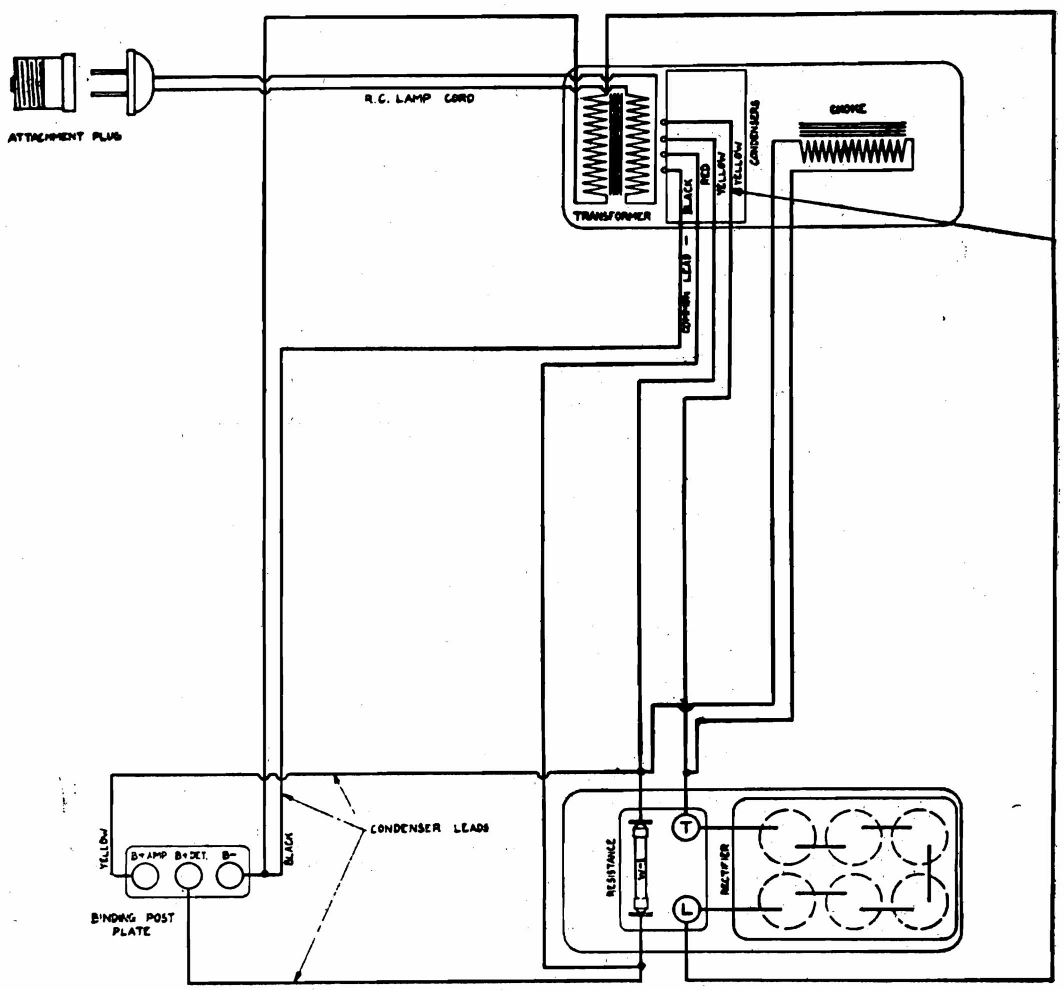
Wiring Diagram, Balkite BW

MODEL B-H
MODEL B-W Form D
MODEL B Form D

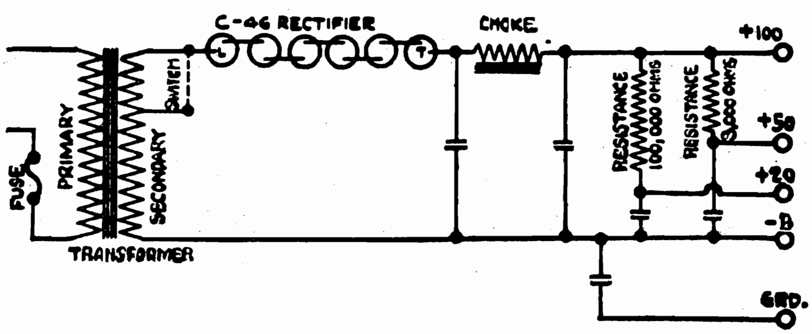
BALKITE PRODUCTS CO.



Schematic Wiring Diagram, Balkite BW or Balkite B, Model D



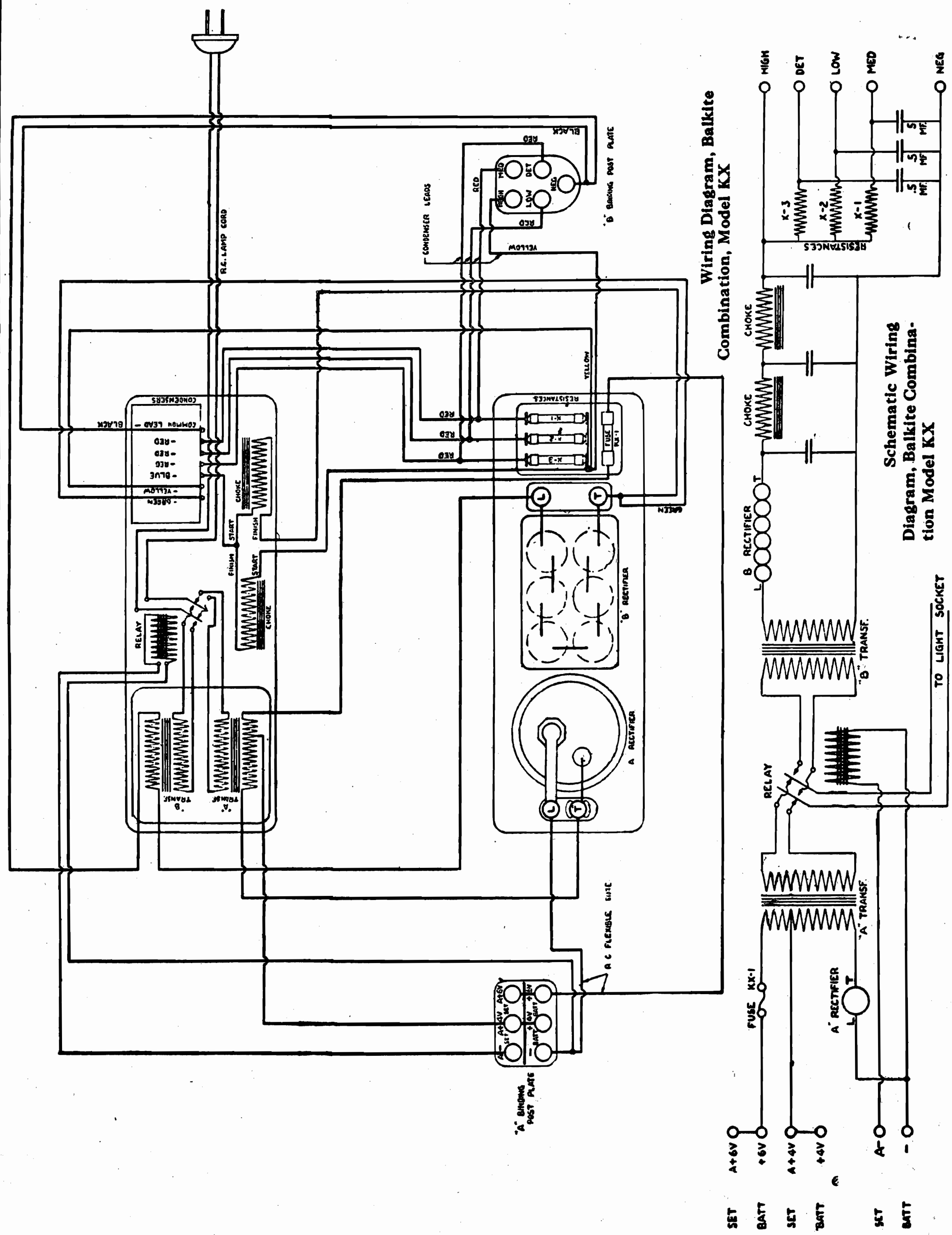
Wiring Diagram, Balkite BW or Balkite B, Model D



Wiring Diagram, Balkite B-H

BALKITE PRODUCTS CO.

MODEL K-X

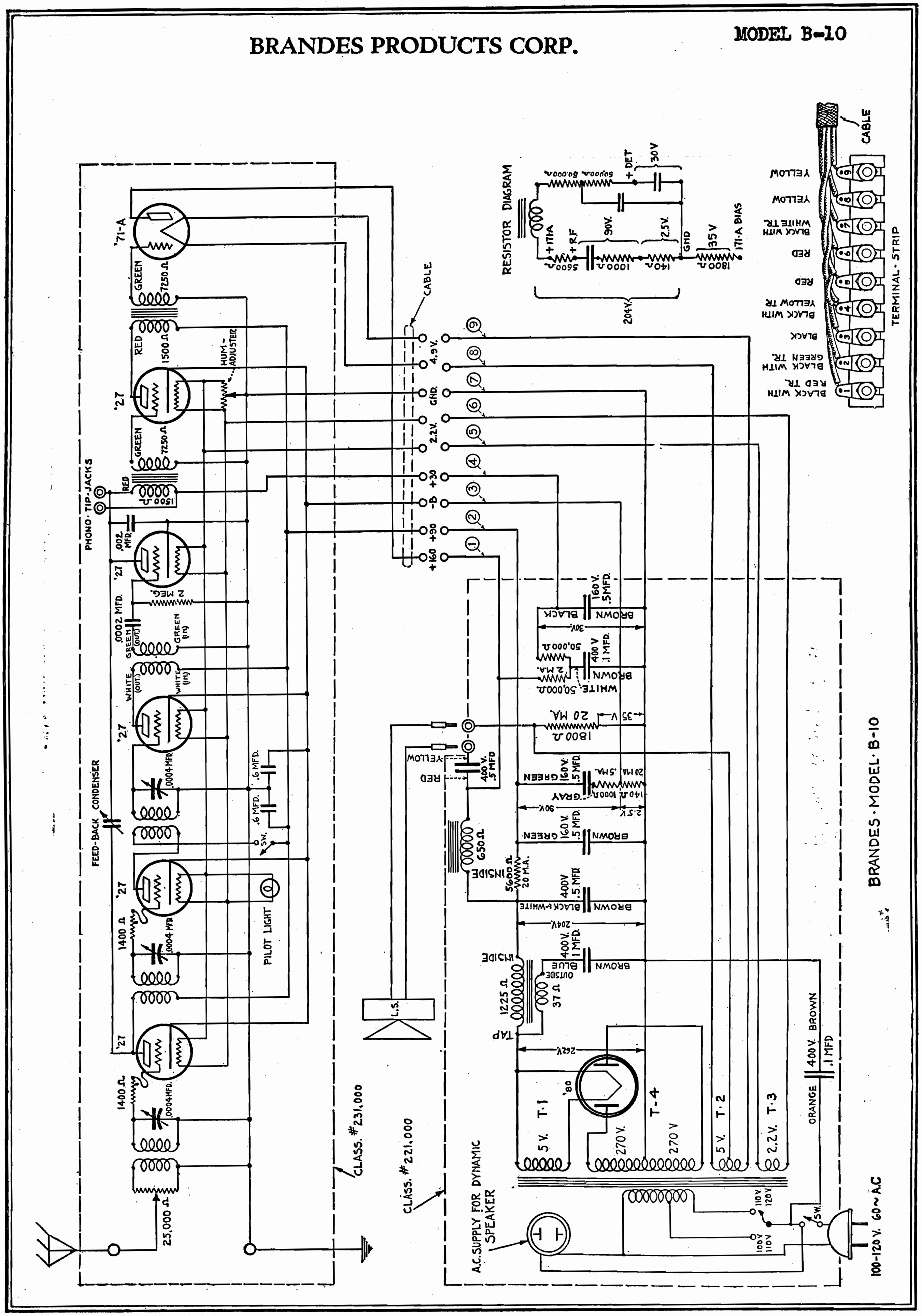


Wiring Diagram, Balkite Combination, Model KX

Schematic Wiring Diagram, Balkite Combination Model KX

BRANDES PRODUCTS CORP.

MODEL B-10



MODEL B-10 -
Voltage

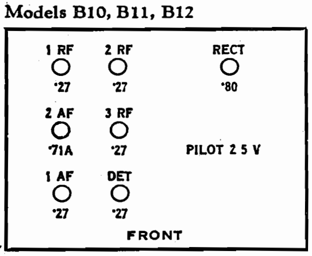
BRANDES PRODUCTS CORP.

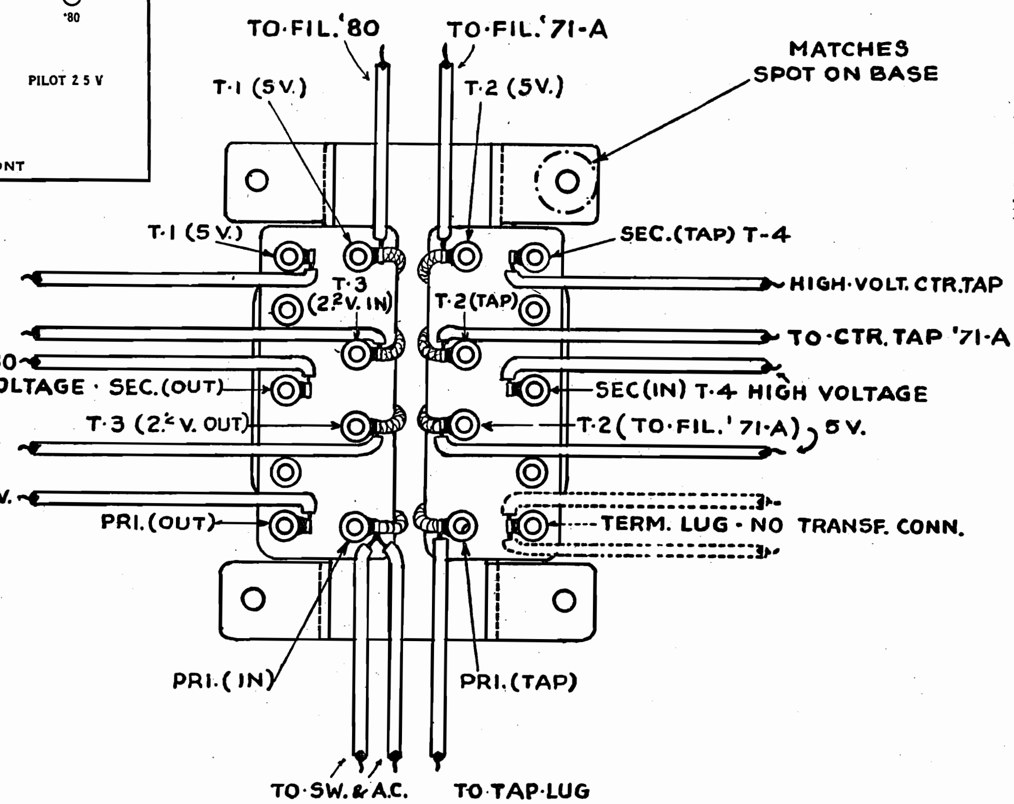
Input Voltage 115				Switch 110-120 Side			
Tube No.	Type Tube	Position of Tube	A Volts	B Volts	C Volts	Normal Plate MA	Plate MA Grid Test
1	'27	1st R.F.	2	88	3	4.3	8.
2	'27	2nd R.F.	2	88	3	4.3	8.
3	'27	3rd R.F.	2	88	3	6.	9.2
4	'27	Detector	2	36	3	3.	3.1
5	'27	1st Audio	2	88	3	5.3	8.2
6	'71A	2nd Audio	5	164	35	20.	30
7	'80	Rectifier	5				

The above readings are the average and may vary due to differences in line voltage, variation in tube characteristics, etc.

The readings are given merely as a guide to work from.

Models B10, B11, B12

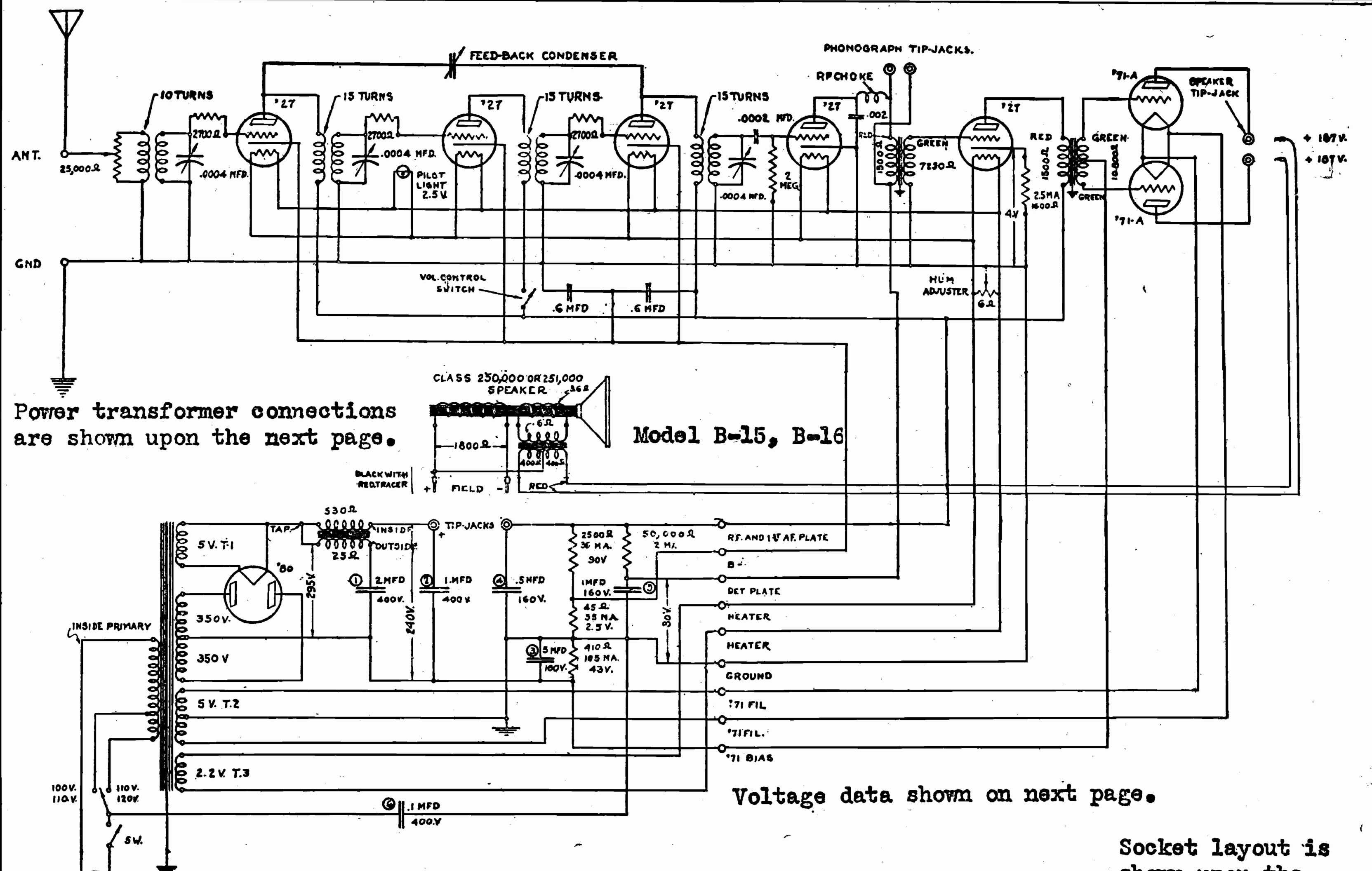




POWER · TRANSFORMER · ASSEMBLY

MODEL B-15, B-16

BRANDES PRODUCTS CORP.



Power transformer connections are shown upon the next page.

Model B-15, B-16

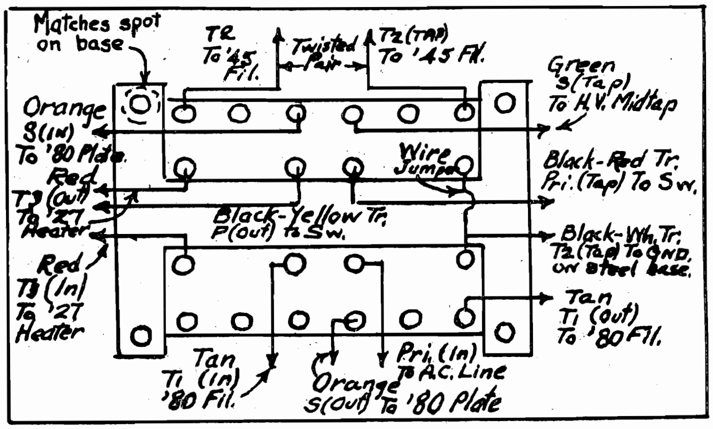
Voltage data shown on next page.

Socket layout is shown upon the reverse side of this sheet.

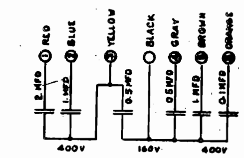
The early production of this receiver made use of type '71 tubes in the output stage. The use of type '45 tubes stated during the later production. In order to enable the use of these 2.5 volt tubes, series resistors were employed in the '71 filament circuit. A resistor was inserted into each filament lead. The "B" and grid bias voltages remained the same for '71s and '45s.

BRANDES PRODUCTS CORP.

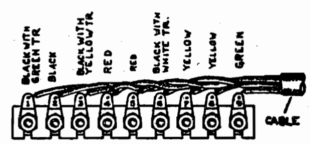
MODEL B-15, B-16
Voltage and Data



POWER TRANSFORMER CONNECTIONS
FOR LATE MODELS



Condenser Block

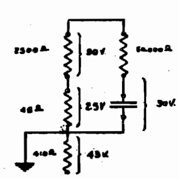


Terminal Strip

BRANDES—Models 15 and 16
Line Voltage 112—Volume Control Position Max
*Grid leak not shorted.

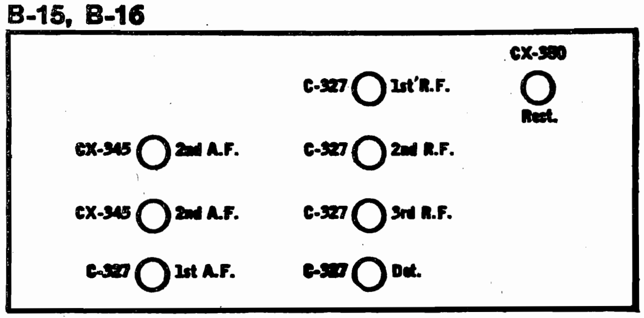
TUBE NO IN ORDER ①	TYPE OF TUBE ②	POSITION OF TUBE 1ST RF DET ETC ③	READINGS, PLUG IN SOCKET OF SET									
			TUBE OUT		TUBE IN TESTER							
			A VOLTS ④	B VOLTS ⑤	A VOLTS ⑥	B VOLTS ⑦	C VOLTS (CONTROL GRID) ⑧	CATHODE-HEATER ⑨ VOLTS	NORMAL PLATE ⑩ M A	PLATE M.A GRID ⑪ TEST	PLATE CHANGE ⑫ M A	SCREEN GRID ⑬ VOLTS
1	227	1st RF	2.3	94	2.2	90	2.5	-	5.6	10.0	4.4	-
2	227	2nd RF	2.3	94	2.2	90	2.5	-	5.6	10.0	4.4	-
3	227	3rd RF	2.3	94	2.2	90	2.5	-	5.6	10.0	4.4	-
4	227	Det.	2.3	80	2.2	24	0	-	1.3	1.3	*-	-
5	227	1st A	2.3	95	2.2	85	5	-	3	4.2	1.2	-
6	245	2nd A	2.4	210	2.3	190	36	-	18	21	3	-
7	245	2nd A	2.4	210	2.3	190	36	-	18	21	3	-
8	280	-	5	-	4.8	-	-	-	100	-	-	-
9												
10												

The above voltage table shows '45 type tubes in the output stage. When '71s are used, the filament voltage without the tubes in the sockets is 4.5 and the plate voltage under similar conditions is 200. With the tubes in the sockets the filament voltage is about 4.5, the plate voltage about 187, grid bias, 36 volts and plate current about 20 ma.



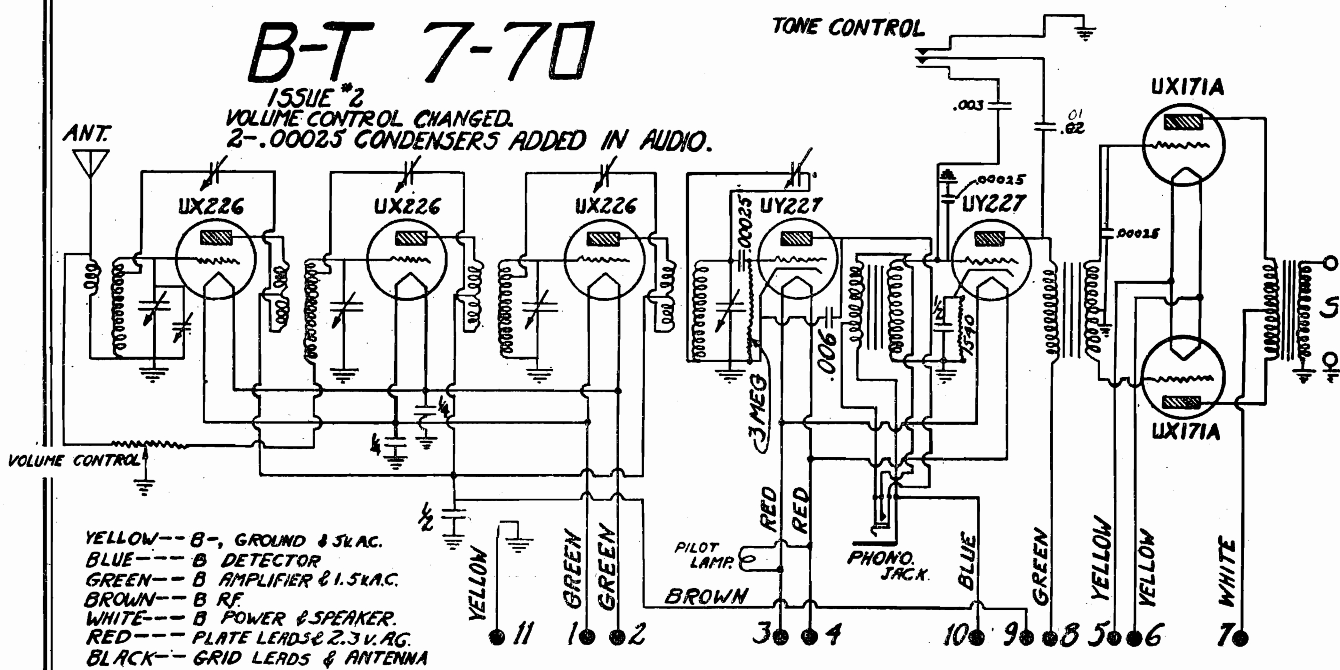
Resistor Diagram

B-15, B-16

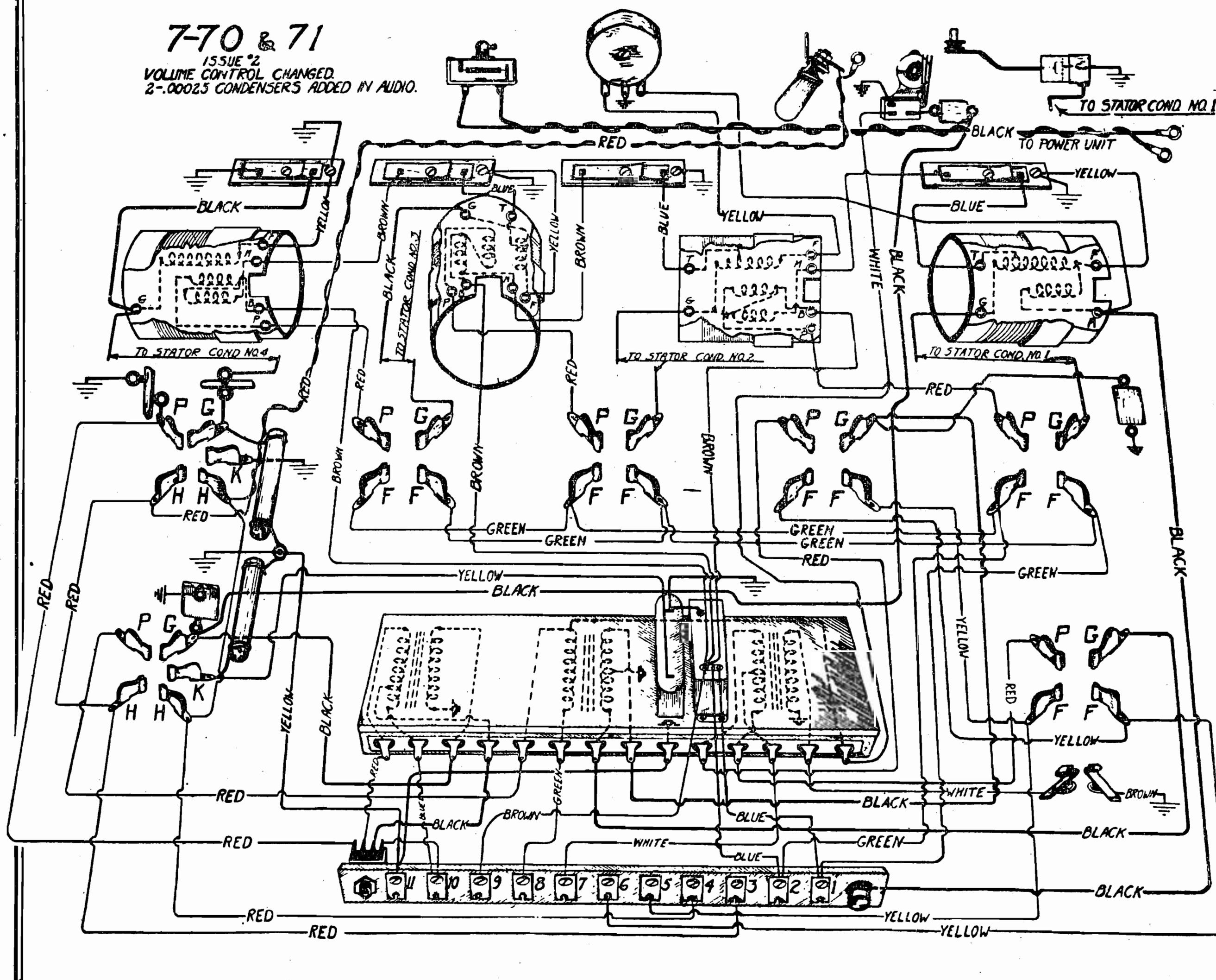


BREMER-TULLY MFG. CO

MODEL 7-70 Receiver

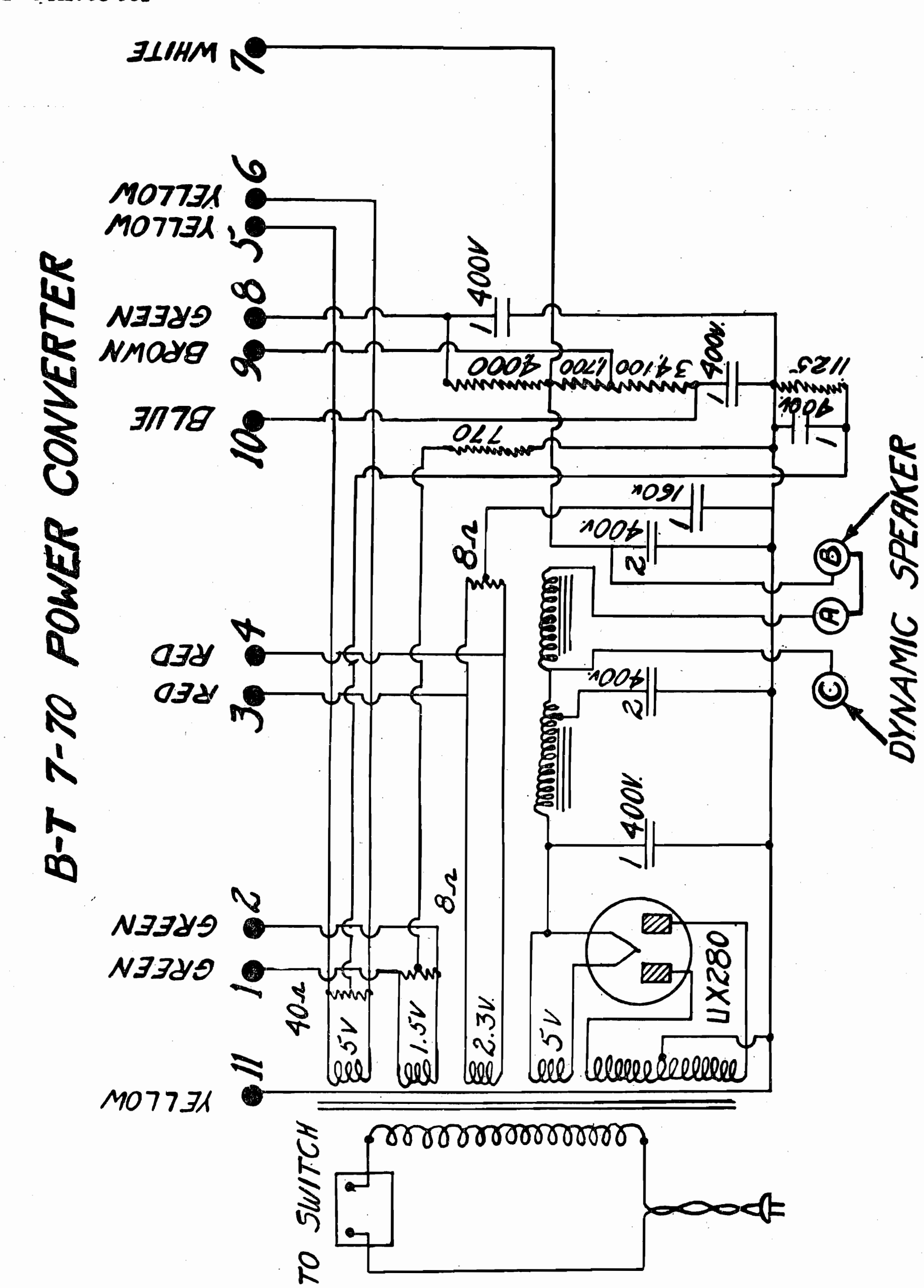


YELLOW-- B-, GROUND & 5V. A.C.
BLUE---- B DETECTOR
GREEN-- B AMPLIFIER & 1.5V. A.C.
BROWN-- B RF.
WHITE--- B POWER & SPEAKER.
RED---- PLATE LEADS & 2.3 V. A.C.
BLACK-- GRID LEADS & ANTENNA



MODEL 7-70
Power Converter

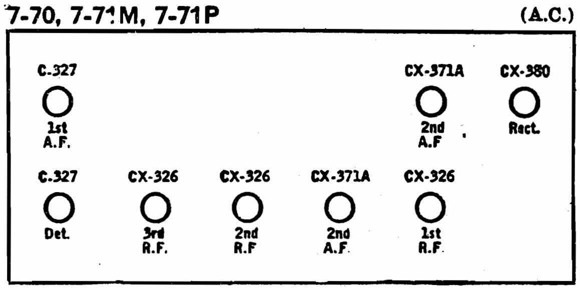
BREMER-TULLY MFG. CO



BREMER-TULLY—Models 7-70 and 7-71
Line Voltage 115

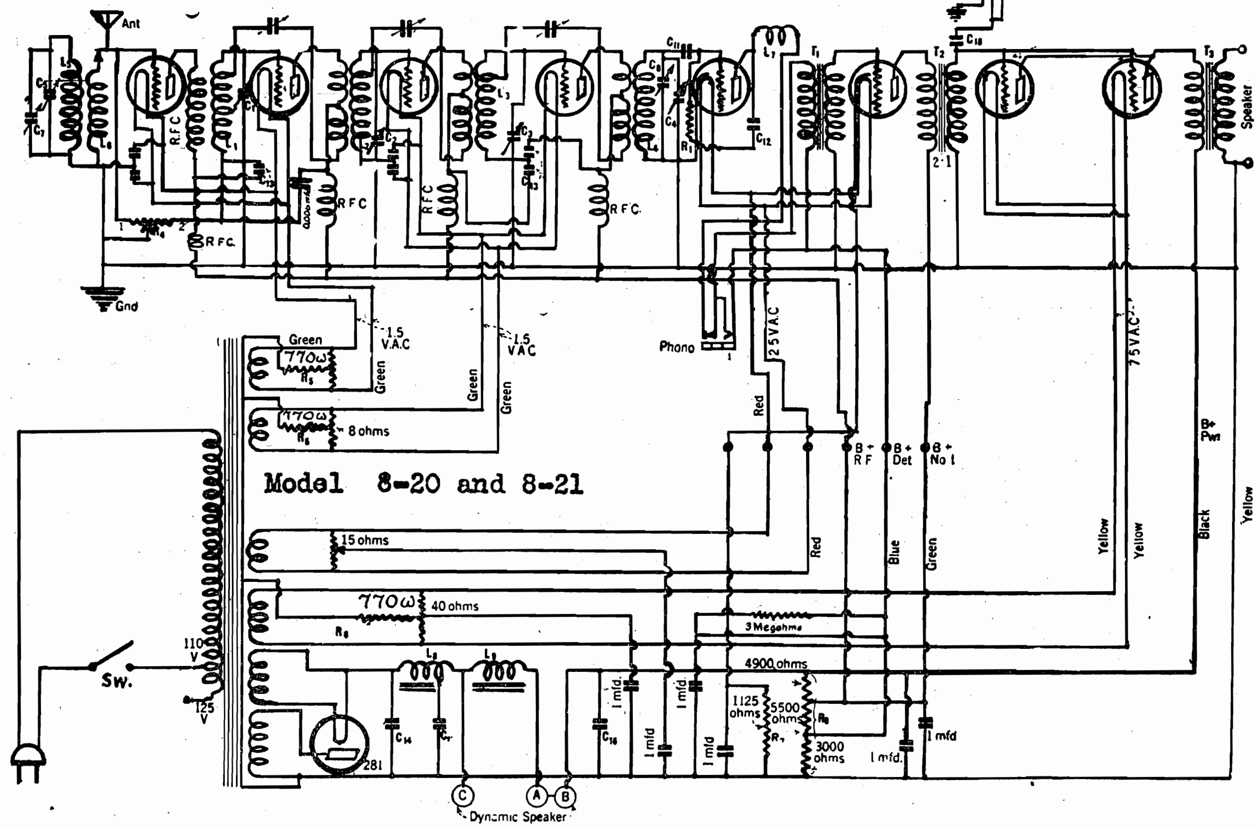
Tube No. in Order	Type of Tube	Position of Tube 1st RF Det Etc	Readings, Plug in Socket of Set: Tube Out: A Volts	Tube Out: B Volts	Tube in Tester: A Volts	B Volts	C Volts	Cathode Volts	Normal Plate MA	Plate MA Grid Test	Plate MA Charge
	226	1st.R.F.			1.4	150	9	—	5	12	7
	171A	Push-Pull			4.9	130	30	—	18	31	13
	226	2nd.R.F.			1.4	150	9	—	5	12	7
	226	3rd.R.F.			1.4	150	9	—	5	12	7
	227	Detector			2.1	60	0	—	2	-	-
	227	1st.A.F.			2.1	150	8	—	5	8	3
	171A	Push-Pull			4.9	150	18	—	18	31	13

7-70, 7-71M, 7-71P **(A.C.)**

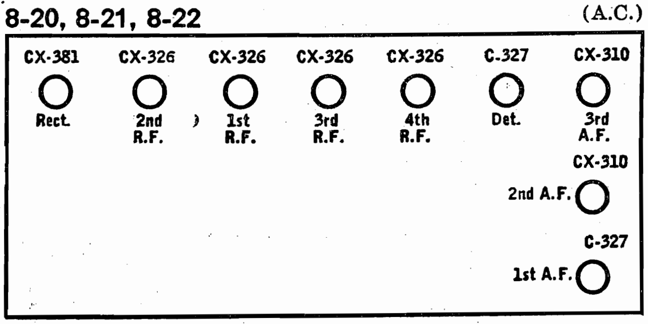


BREMER-TULLY MFG. CO

MODEL 8-20, 8-21
MODEL 8
Counterphase

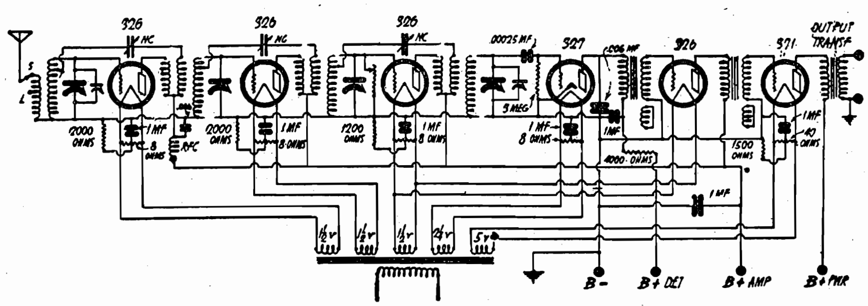


8-20, 8-21, 8-22



(A.C.) **BREMER-TULLY—Models 8-20 and 8-21**
Line Voltage 115

TUBE NO IN ORDER	TYPE OF TUBE	POSITION OF TUBE 1ST R.F. DET. ETC	READINGS, PLUG IN SOCKET OF SET — TUBE OUT: A VOLTS	TUBE OUT: B VOLTS	TUBE IN TESTER: A VOLTS	B VOLTS	C VOLTS	CATHODE VOLTS	NORMAL PLATE M.A.	PLATE M.A. GRID TEST	PLATE M.A CHANGE
1	226	1st. R.F.			1.4	150	10		5	10	5
2	226	Ant.			1.4	150	10		5	10	5
3	226	2nd. R.F.			1.4	150	10		5	10	5
4	226	3rd. R.F.			1.4	150	10		5	10	5
5	227	Detector			2.2	60	0		2	-	-
6	227	1st. A.F.			2.2	130	7		5	10	5
7	310	2nd. A.F.			7.5	350	18		20	50	30
8	310	2nd. A.F.			7.5	350	18		20	50	30
9											
10											

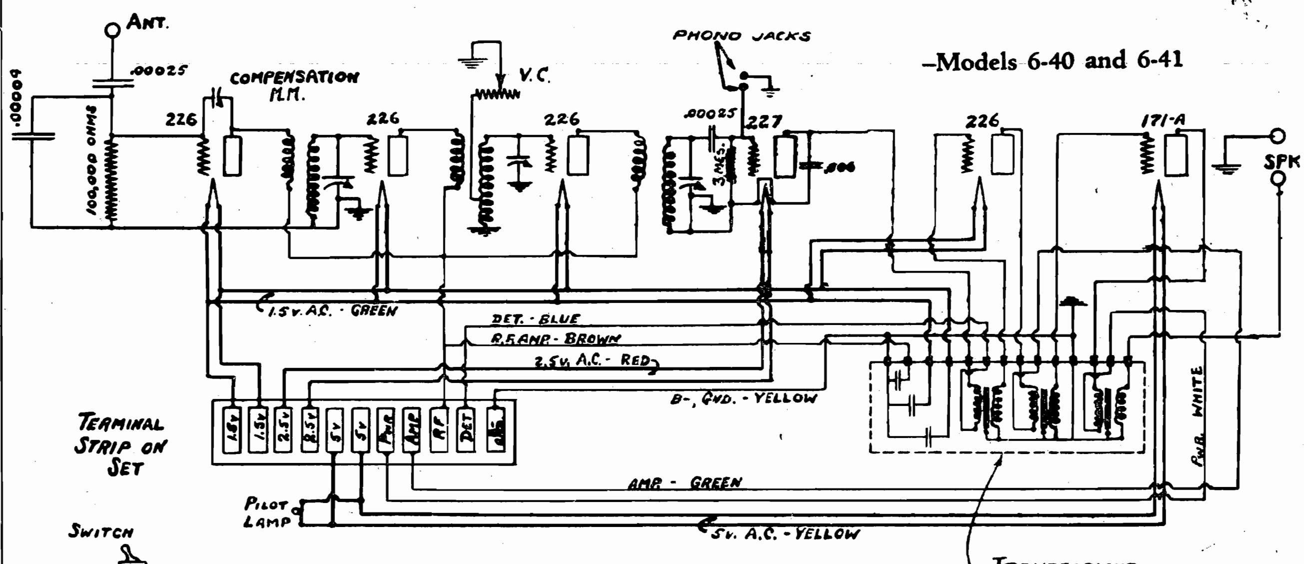


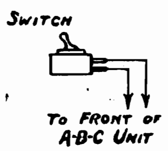
Model Counterphase "8"

MODEL 6-40, 6-41

BREMER-TULLY MFG. CO

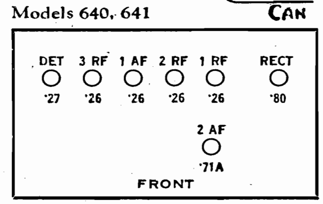
–Models 6-40 and 6-41

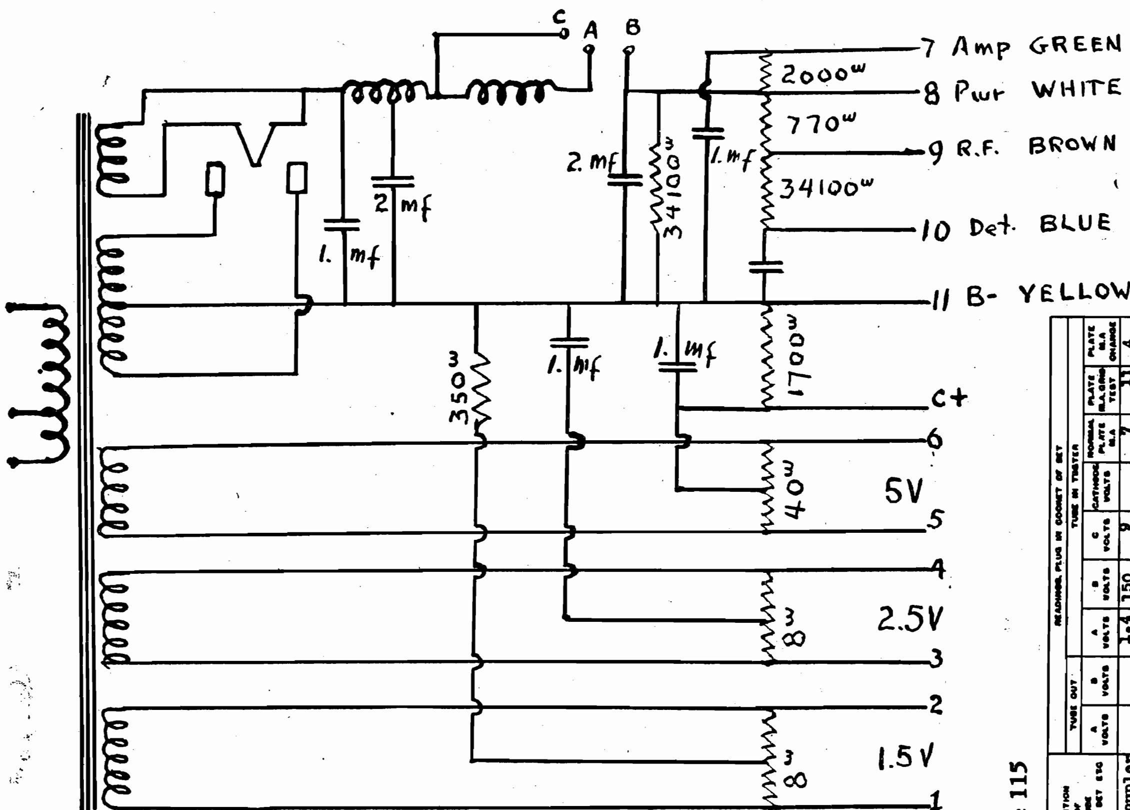




YELLOW - B- AND GROUND - 5 v. A.C.
BLUE - B. DET.
GREEN - B. AMP. - 1.5 v. A.C.
BROWN - B. R.F. - ANT.
WHITE - B. PWR. - SPK.
RED - PLATE LEADS - 2.5 v. A.C.
BLACK - GRID LEADS

Models 640, 641





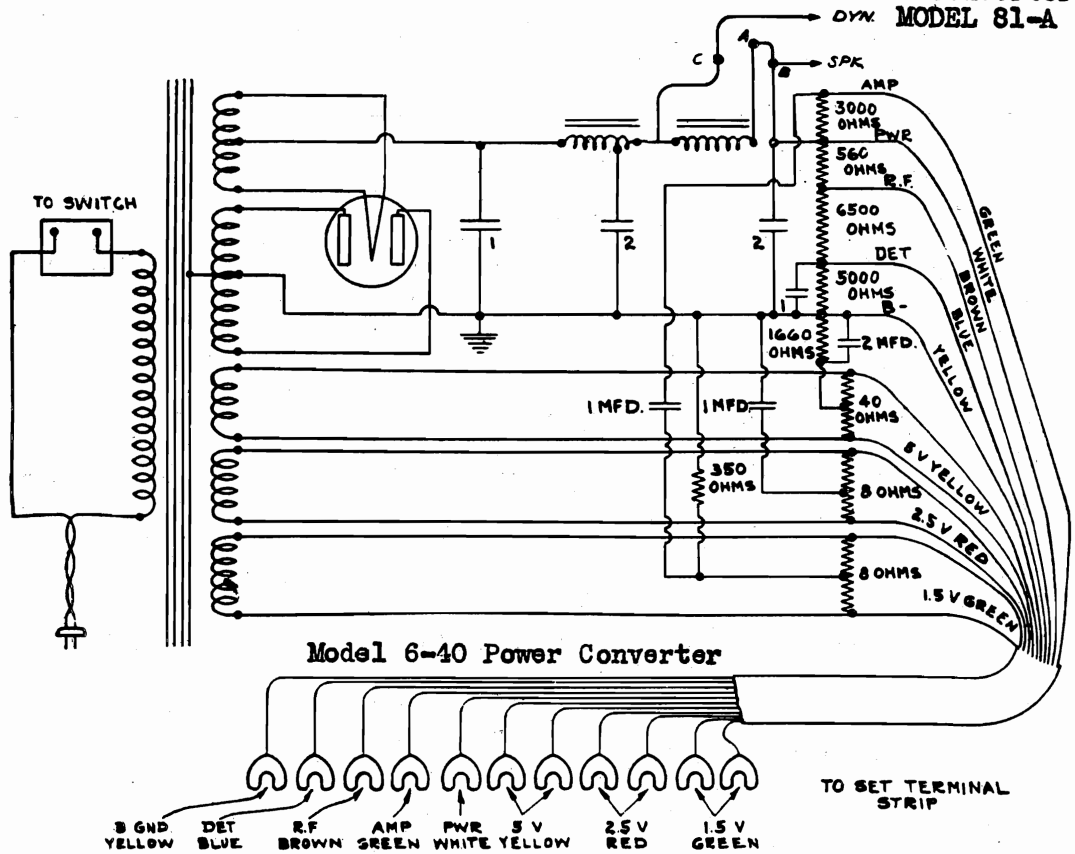
Model 6-40 ABC Power Pack

Line Voltage 115

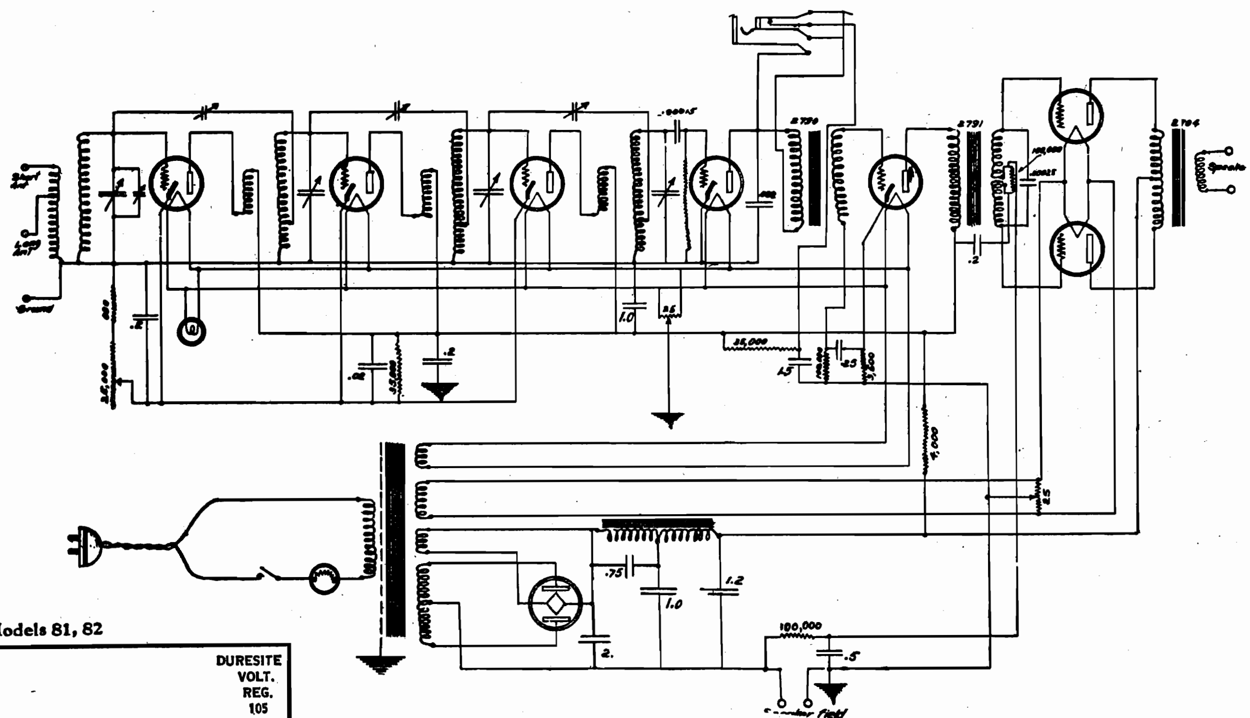
Tube No in Order	Type of Tube	Position of Tube 1st R.F. Det Etc	Tube Out: A Volts	Tube Out: B Volts	Readings, Plug in Socket of Set, Tube in Tester: A Volts	B Volts	C Volts	Cathode Volts	Normal Plate M.A	Plate M.A. Grid Test	Plate M.A Change
1	226	Ant. Coupler			1.4	150	9		7	11	4
2	226	1st. R.F.			1.4	150	9		8	12	4
3	226	1st. A.F.			1.4	140	9		7-8	11-12	4
4	226	2nd. R.F.			1.4	150	9		8	12	4
5	227	Detector			2.2	60	0		3	-	-
6	171A	PWR			4.9	150	30		18	26	8

BREMER-TULLY MFG. CO

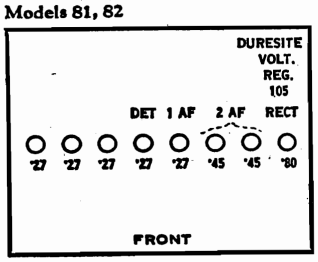
MODEL 6-40 Converter MODEL 81-A



Model 6-40 Power Converter



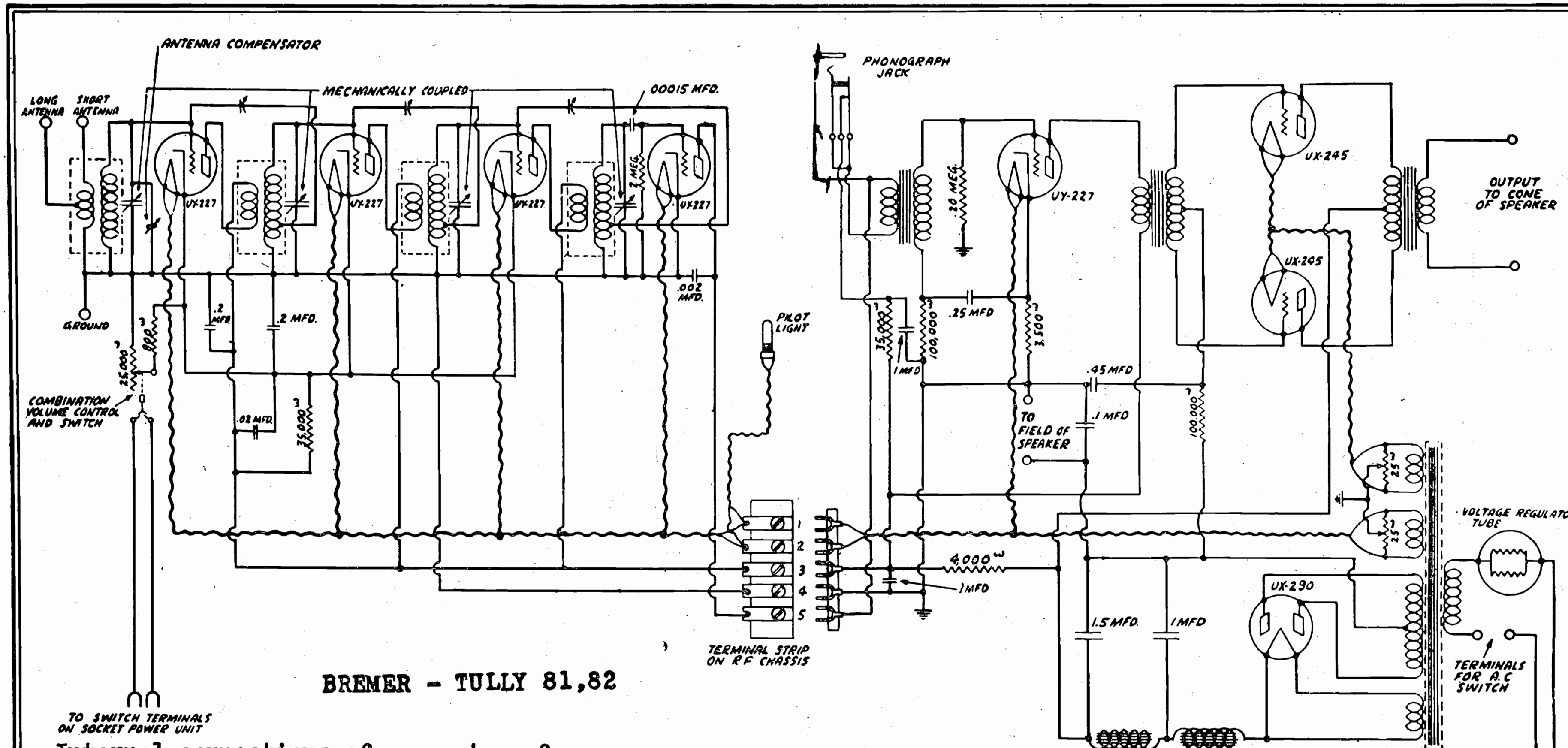
Models 81, 82



Model 81-A

MODEL 81, 82

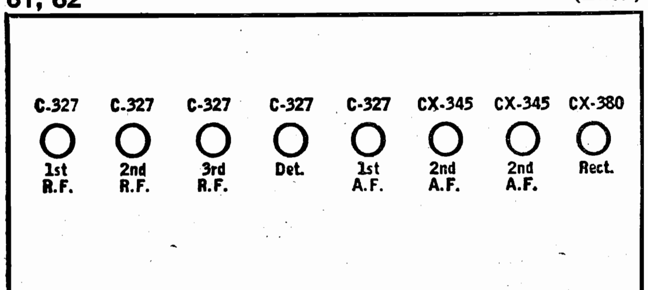
BREMER-TULLY MFG. CO



BREMER - TULLY 81,82

Internal connections of power transformer, filter and bypass condenser can are shown on page 398

81, 82 (Batt.)



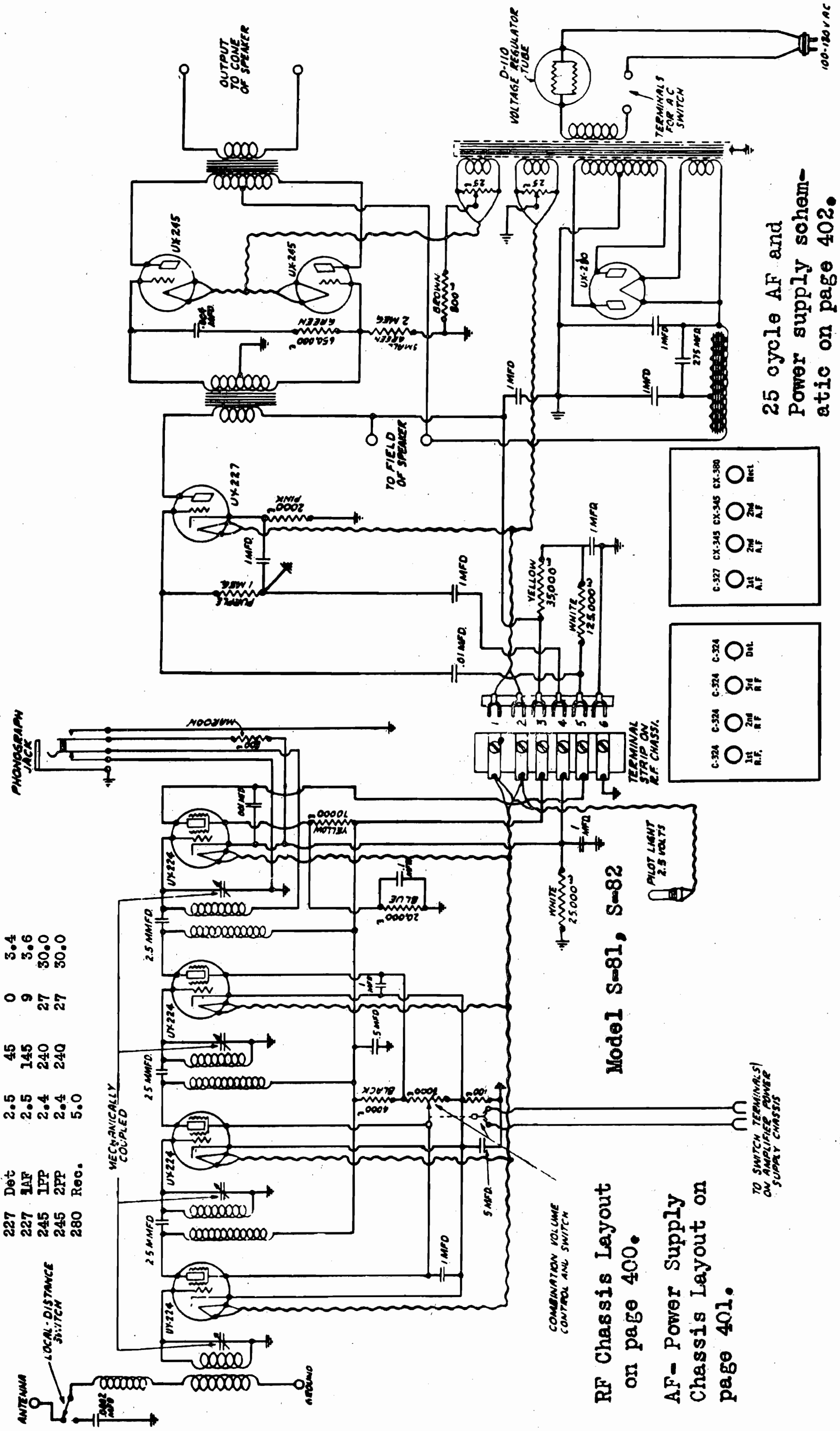
BREMER-TULLY—Models 81-82
Line Voltage 120—Volume Control Position Max
Note: Do not remove rectifier tube before turning off set as filament voltage is too high with rectifier tube out.

TUBE NO IN ORDER ①	TYPE OF TUBE ②	POSITION OF TUBE 1ST R.F. DET. ETC ③	READINGS. PLUG IN SOCKET OF SET: TUBE OUT: A VOLTS ④	TUBE OUT: B VOLTS ⑤	TUBE IN TESTER: A VOLTS ⑥	B VOLTS ⑦	C VOLTS (CONTROL GRID) ⑧	CATHODE-HEATER VOLTS ⑨	NORMAL PLATE M.A. ⑩	PLATE M.A GRID TEST ⑪	PLATE CHANGE M.A. ⑫	SCREEN GRID VOLTS ⑬
1	227	1st RF	2.75	160	2.5	152	13	13	3.0	6.1	3.1	-
2	227	2nd RF	2.75	160	2.5	152	13	13	3.0	11.8	8.8	-
3	227	3rd RF	2.75	160	2.5	152	13	13	3.0	11.8	8.8	-
4	227	Det.	2.75	160	2.5	152	-	-	3.2	3.2	0	-
5	227	1st AF	2.75	180	2.6	44	13	13	3.7	4.3	.6	-
6	245	2nd AF	2.65	208	2.45	148	-	-	25	30	4	-
7	245	2nd AF	2.65	208	2.45	256	-	-	25	30	4	-
8	280		4.85	-	4.75	256	-	-	80	-	-	-
9	Ballast		77 V-A.C.									
10												

AF and Power Unit Chassis layout is shown on the reverse side of this page.

BREMER-TULLY MFG. CO

MODEL S-81, S-82



		A	B	C	Plate Current
227	1RF	2.5	150	12	5.5 ma
227	2RF	2.5	150	12	5.5
227	3RF	2.5	150	12	5.5
227	Det	2.5	45	0	3.4
227	1AF	2.5	145	9	3.6
245	1PP	2.4	240	27	30.0
245	2PP	2.4	240	27	30.0
280	Rec.	5.0			

Model S-81, S-82

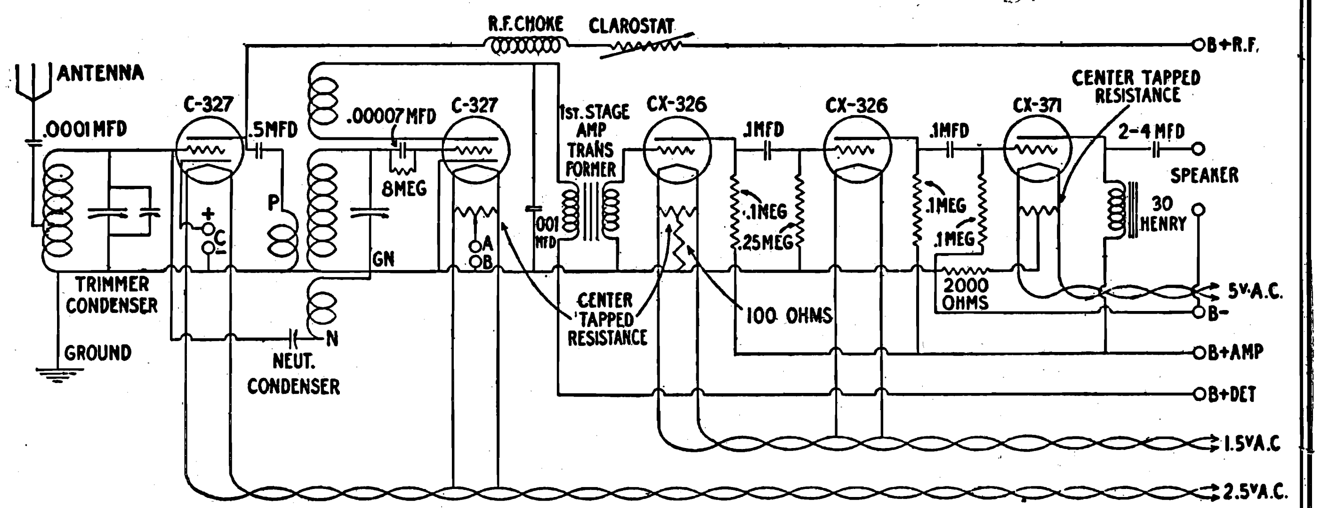
RF Chassis Layout on page 400.

AF- Power Supply Chassis Layout on page 401.

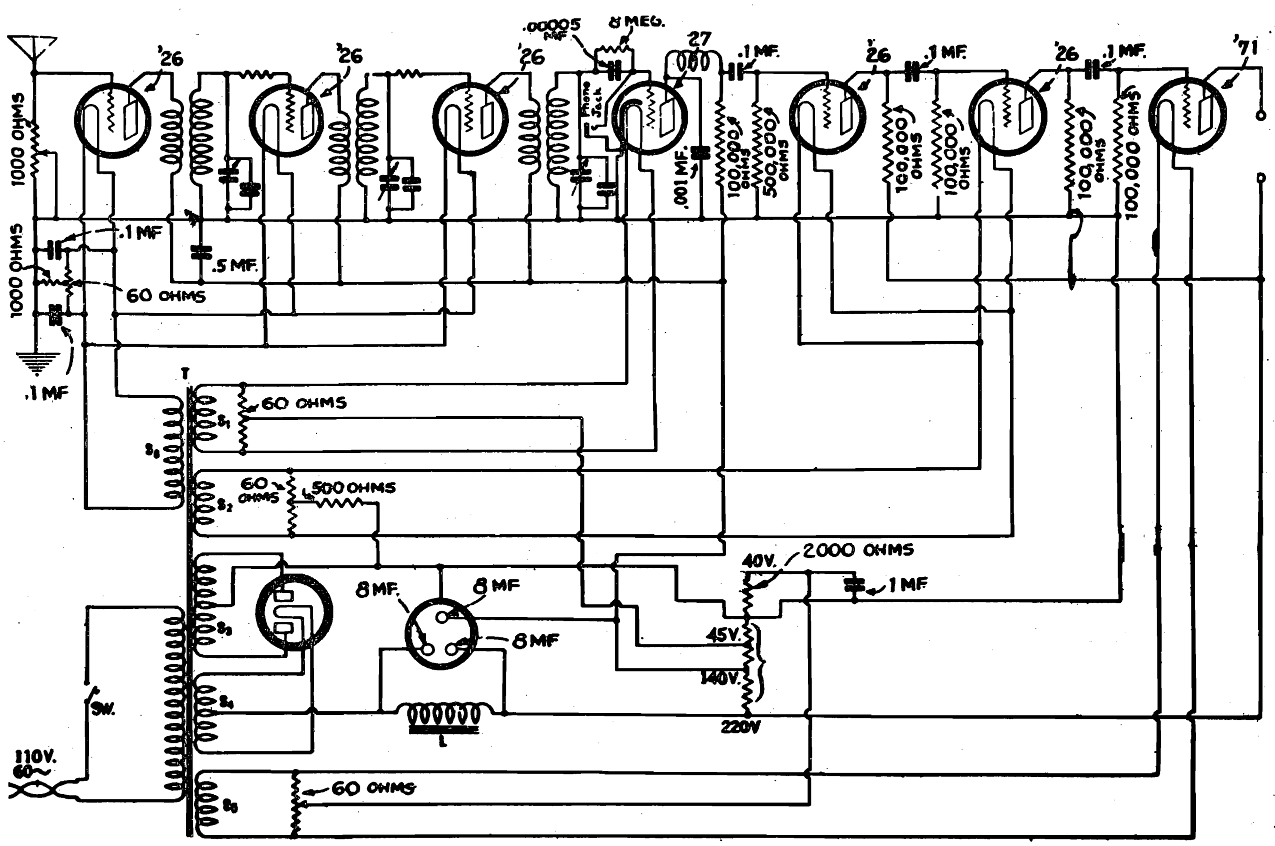
25 cycle AF and Power supply schematic on page 402.

BROWNING - DRAKE CORP.

MODEL 5 Tube AC Kit
MODEL 34,36,38



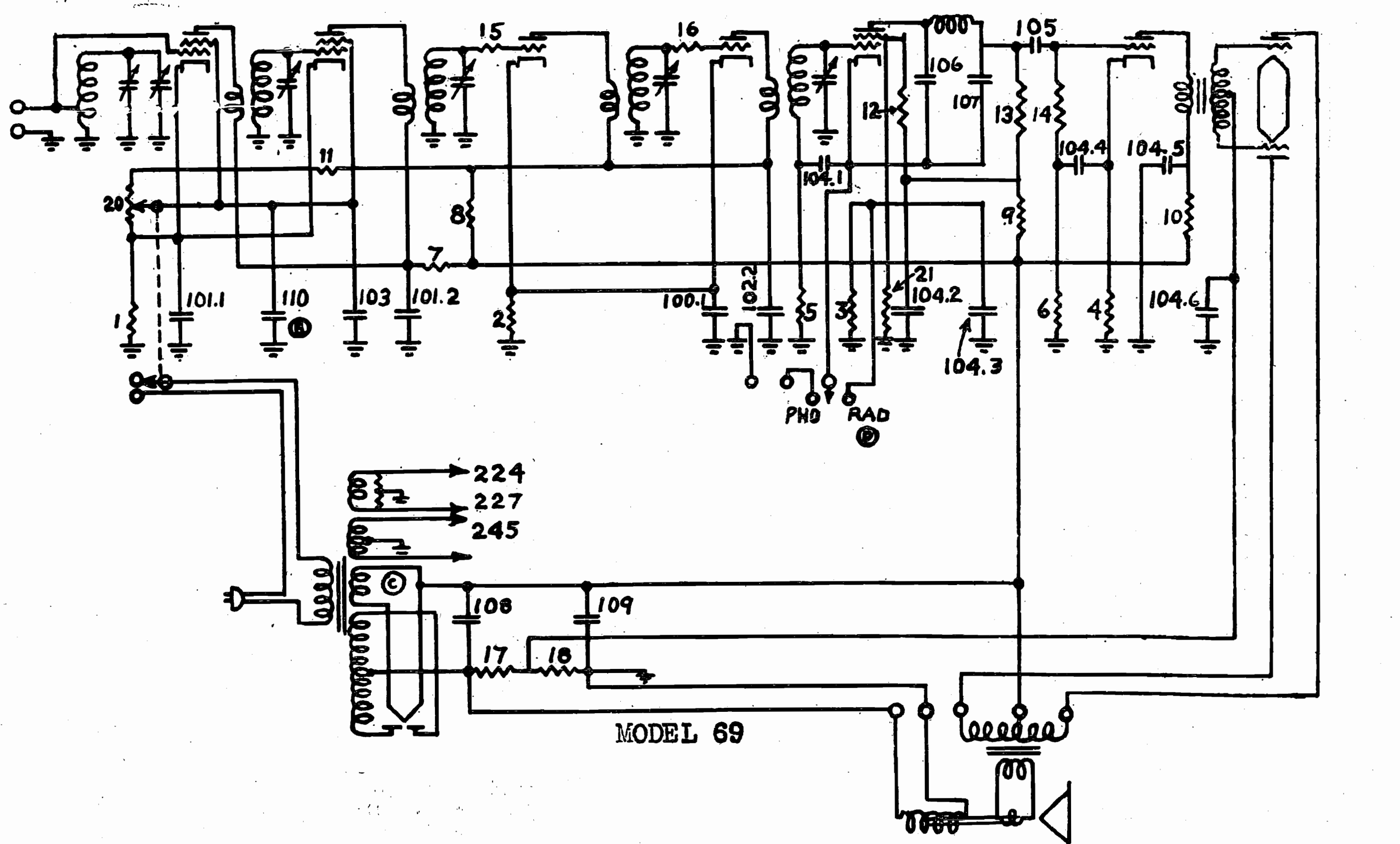
THE SCHEMATIC WIRING OF THE FIVE TUBE A-C



BROWNING DRAKE 34, 36 and 38

MODEL 69

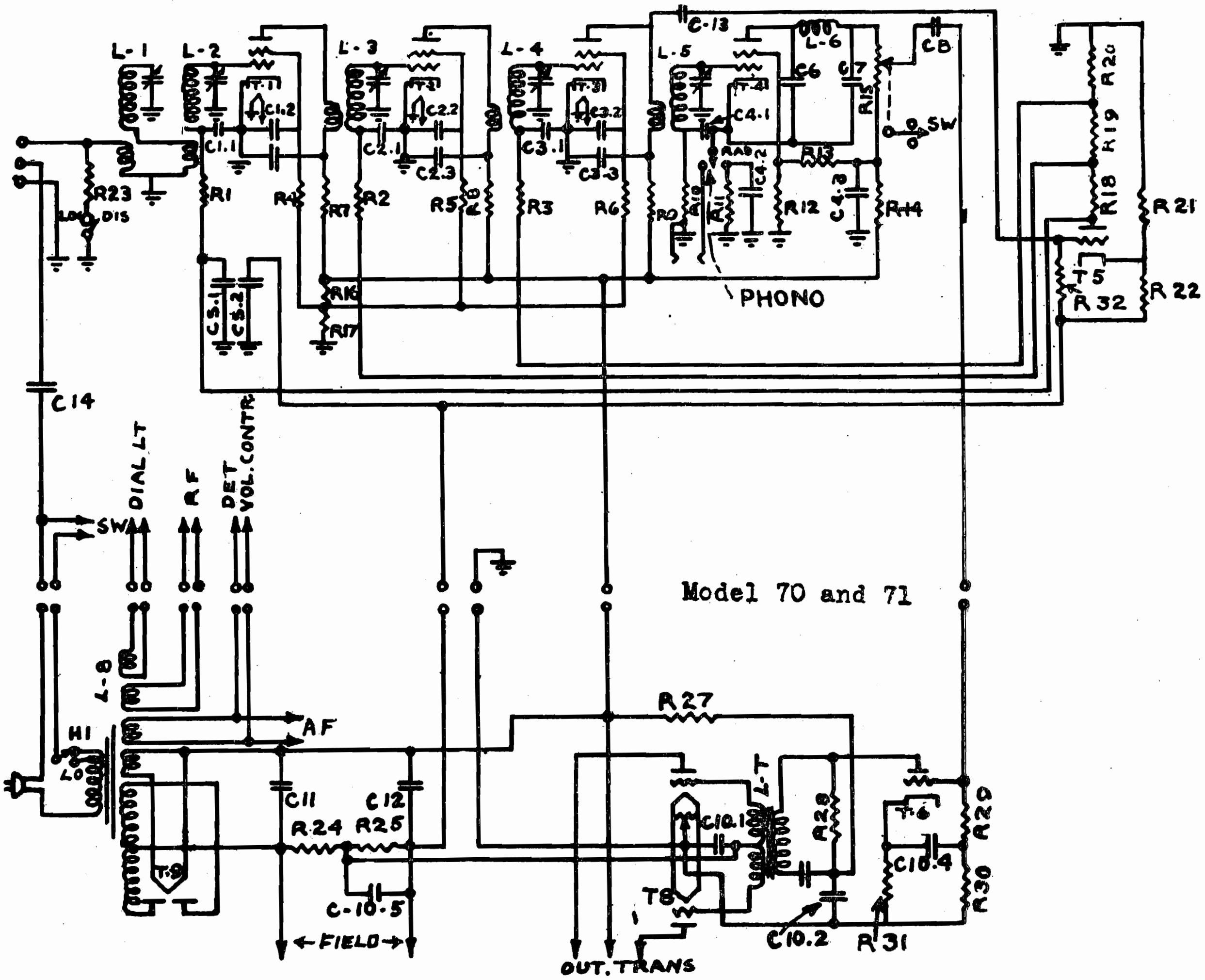
BROWNING - DRAKE CORP.



1. 400 ohms; 2. 600 ohms; 3. 50000 ohms; 4. 3000 ohms; 5. .5 megohm; 6. 1 megohm; 7. 45000 ohms; 8. 20000 ohms; 9. .25 megohm; 10. 60000 ohms; 11. 90 ohms; 12 and 13. .25 megohm; 14. 2 mogohms 15. 2000 ohms; 16. 2000 ohms; 17 and 18. .25 megohms; 19. 30 ohms. 20. 10000 ohms; 21. .1 megohm 101.1 and 101.2 and 102.1 and 102.2 are .5 mfd. each. 103 is .1 mfd. 104.1 and 104.2 and 104.3 and 104.4 and 104.5 are .2 mfd.; 104.6 is .5 mfd.; 105. .01 mfd.; 106. .00025 mfd.; 107. .00025 mfd.; 108 and 109 are 8 mfd. and 110 is .01 mfd.

MODEL 70, 71

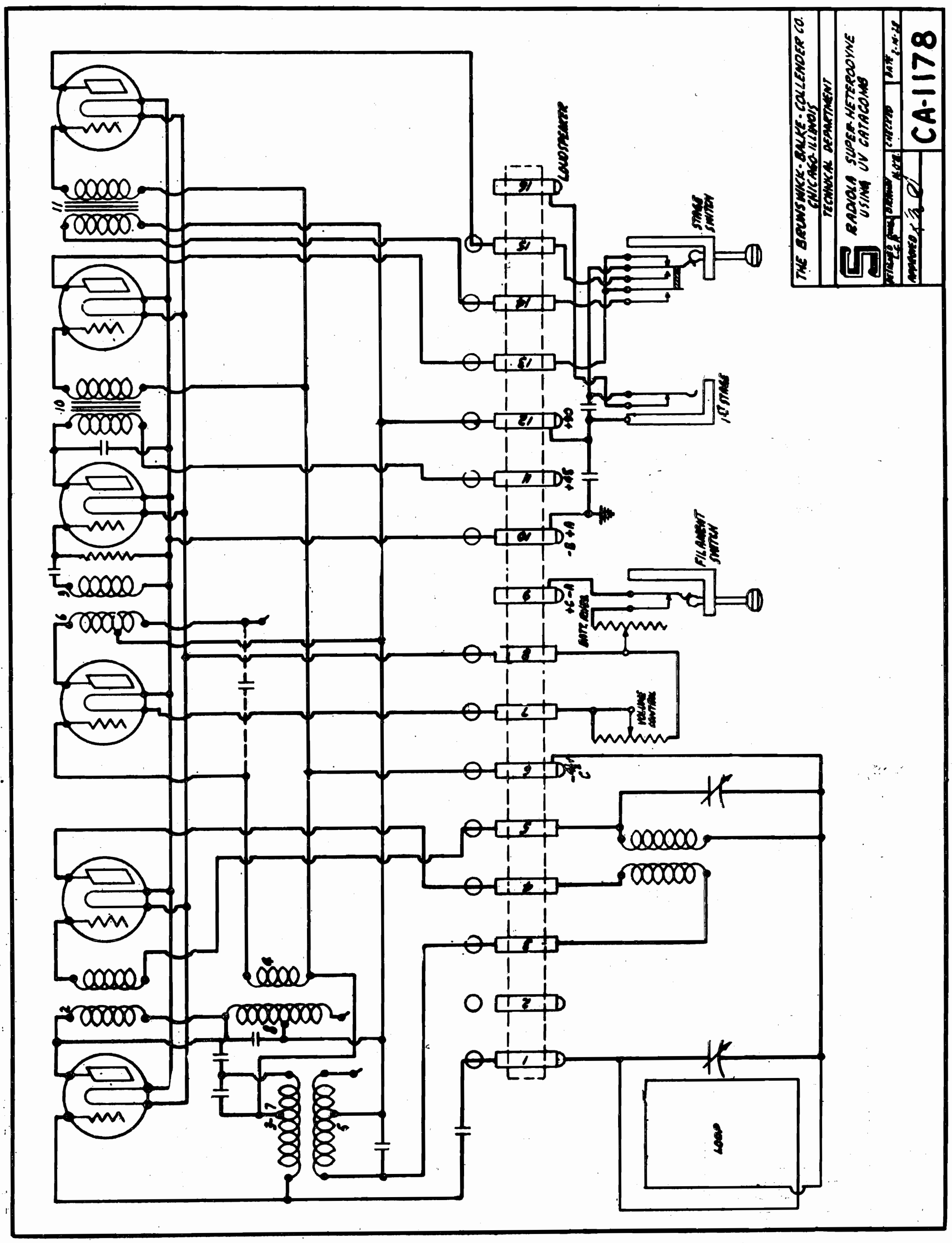
BROWNING - DRAKE CORP.



R1,R2,R3,R14,R15	.25 megohm	R28	20000 ohms
R4,R5,R6	10000 ohms	R30,R32	2 megohms
R7,R8,R9	20000 ohms	R31	2000 ohms
R10,R29	1 megohm	C1.1;C2.1;C3.1;C1.2;C2.2;C3.2	.1 mfd
R11,R18,R19	40000 ohms	C1.3;C2.3;C3.3	.1 mfd
R12	.1 megohm	C4.1;C4.2	.1 mfd.
R13	.25 megohm	C4.3	.25 mfd
R16	40000 ohms	C5.1; C5.2	1. mfd
R17	90000 ohms	C6,C7, C13	.00025 mfd
R20	200000 ohms	C8	.01 mfd.
R21	300 ohms	C10.1	.25 mfd
R22	45 ohms	C10.2	.5 mfd
R23,R26	20 ohms	C10.3	.1 mfd
R24	.5 megohm	C10.4	.2 mfd
R25	.15 megohm	C10.5	2. mfd
R27	10000 ohms	C14	.00025 mfd

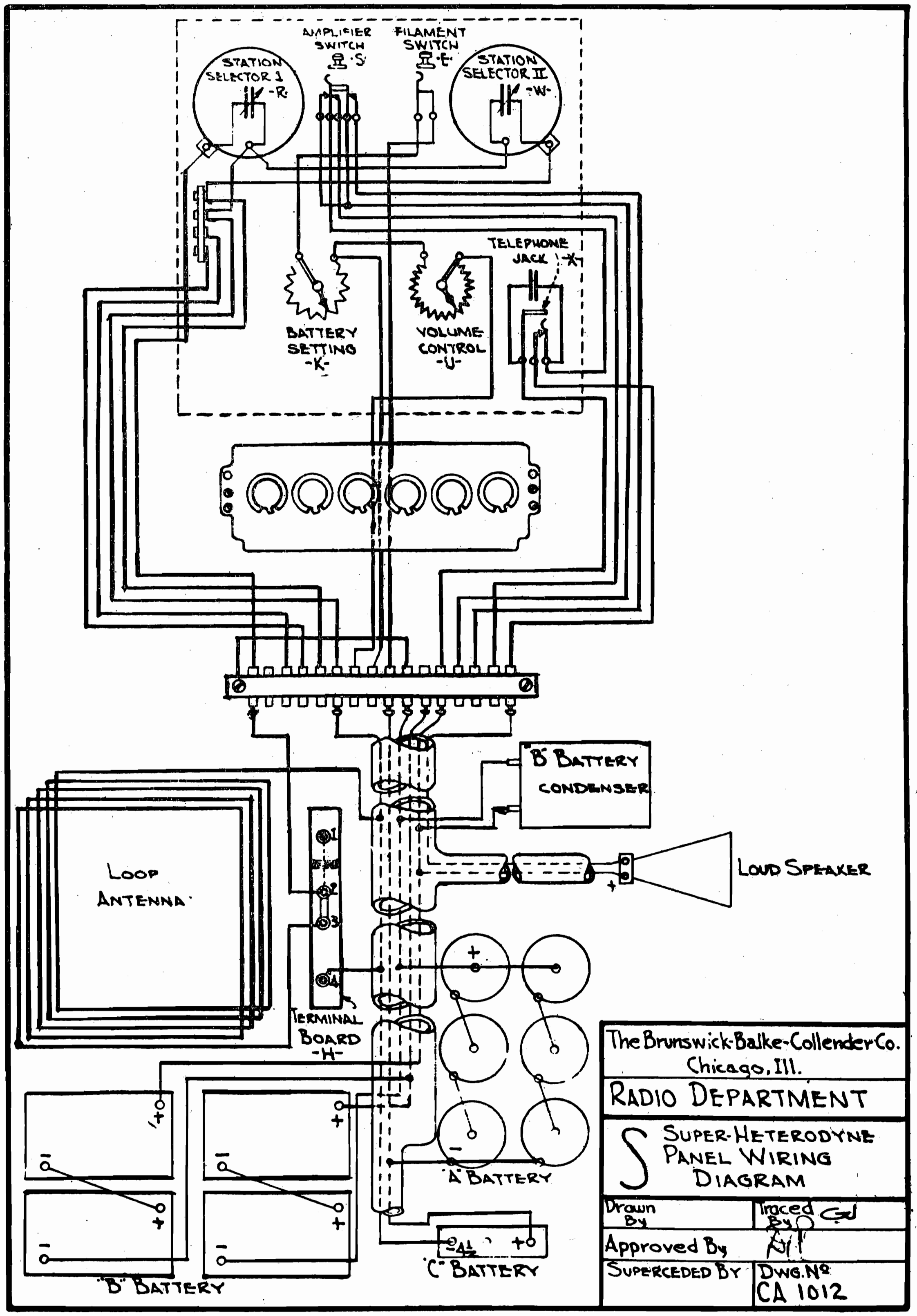
BRUNSWICK RADIO CORPORATION

MODEL Radiola
Superhet erodyne
with UV Catacomb



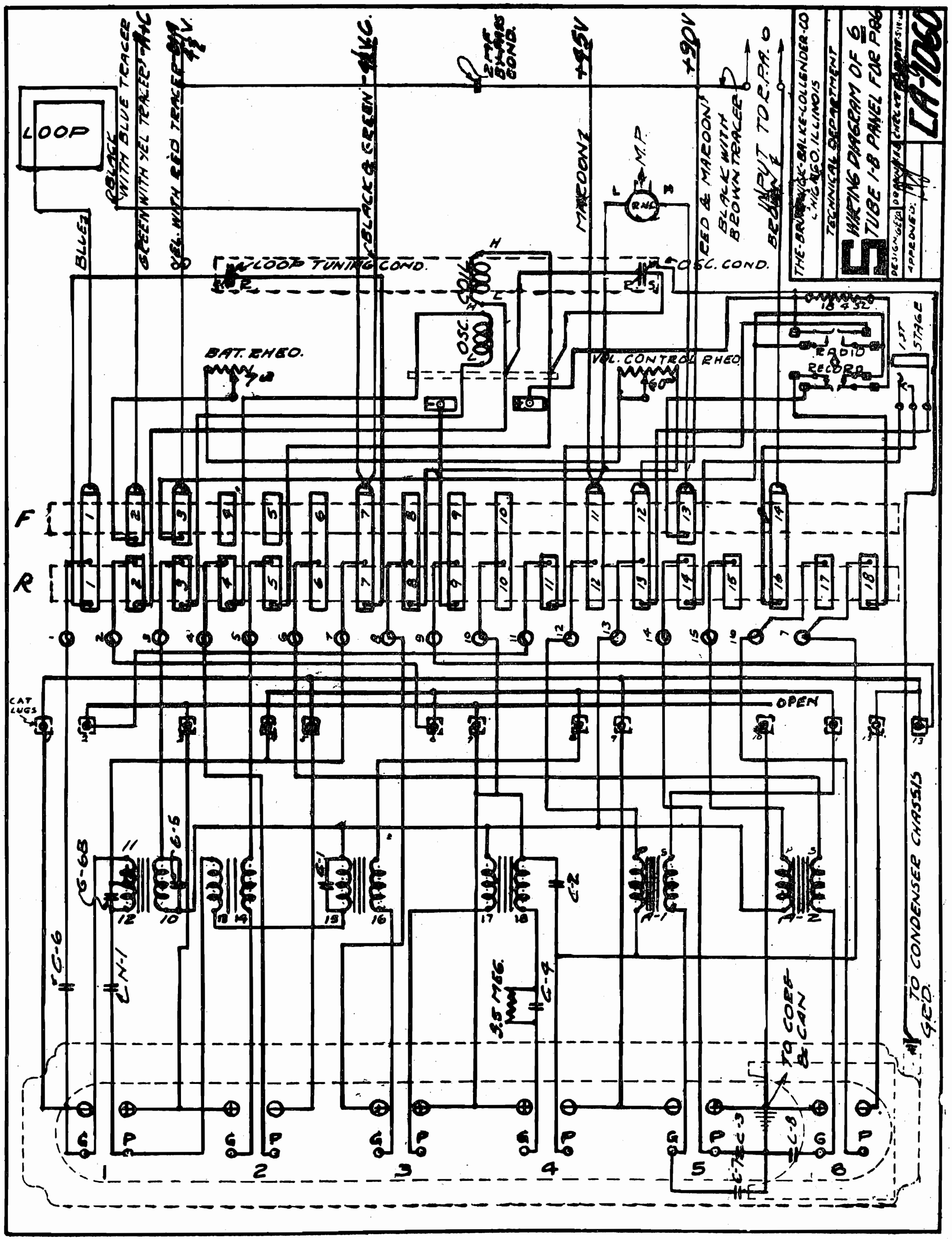
MODEL Superheterodyne
Panel Wiring

BRUNSWICK RADIO CORPORATION



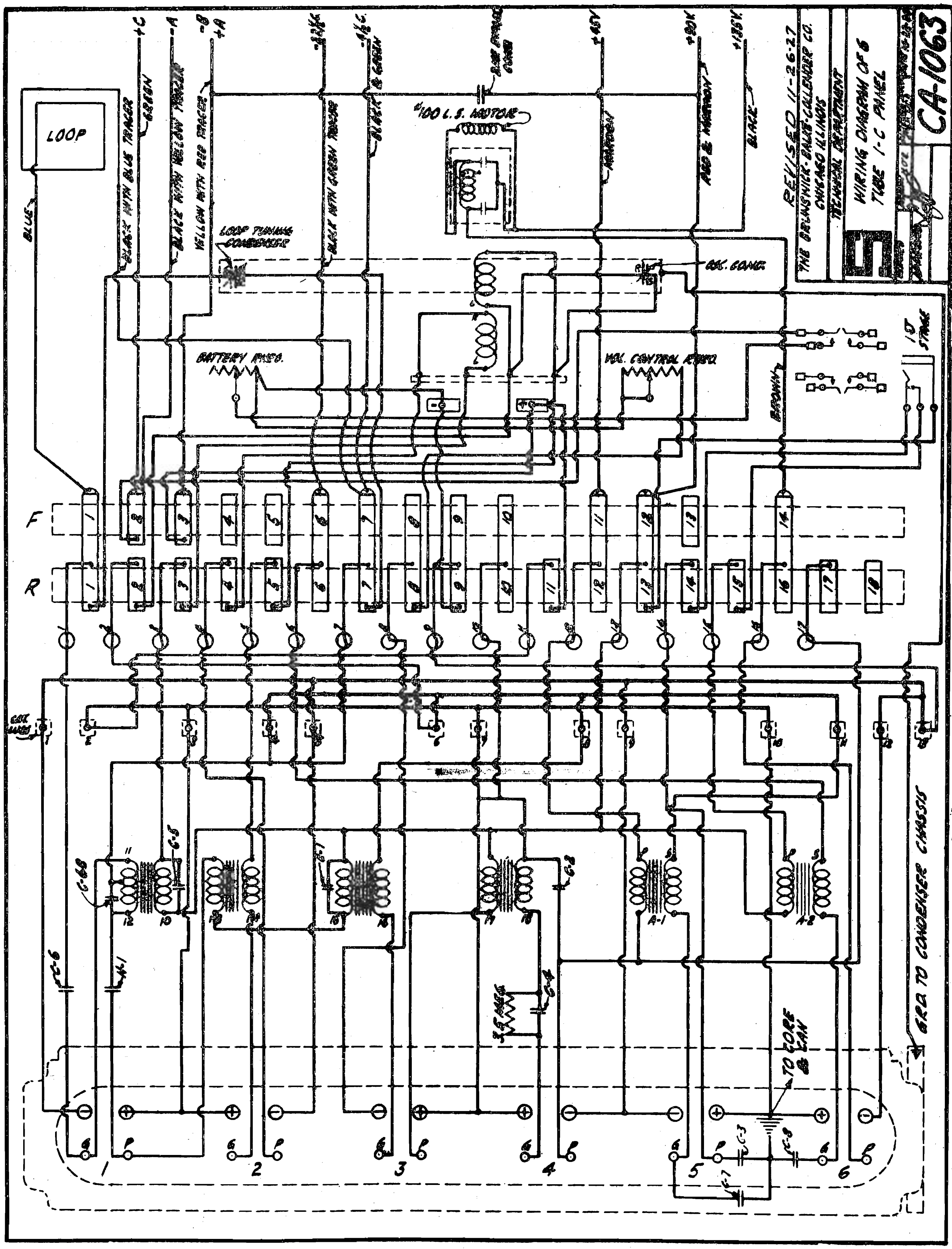
BRUNSWICK RADIO CORPORATION

MODEL PR-6
6 Tube 1-B Panel



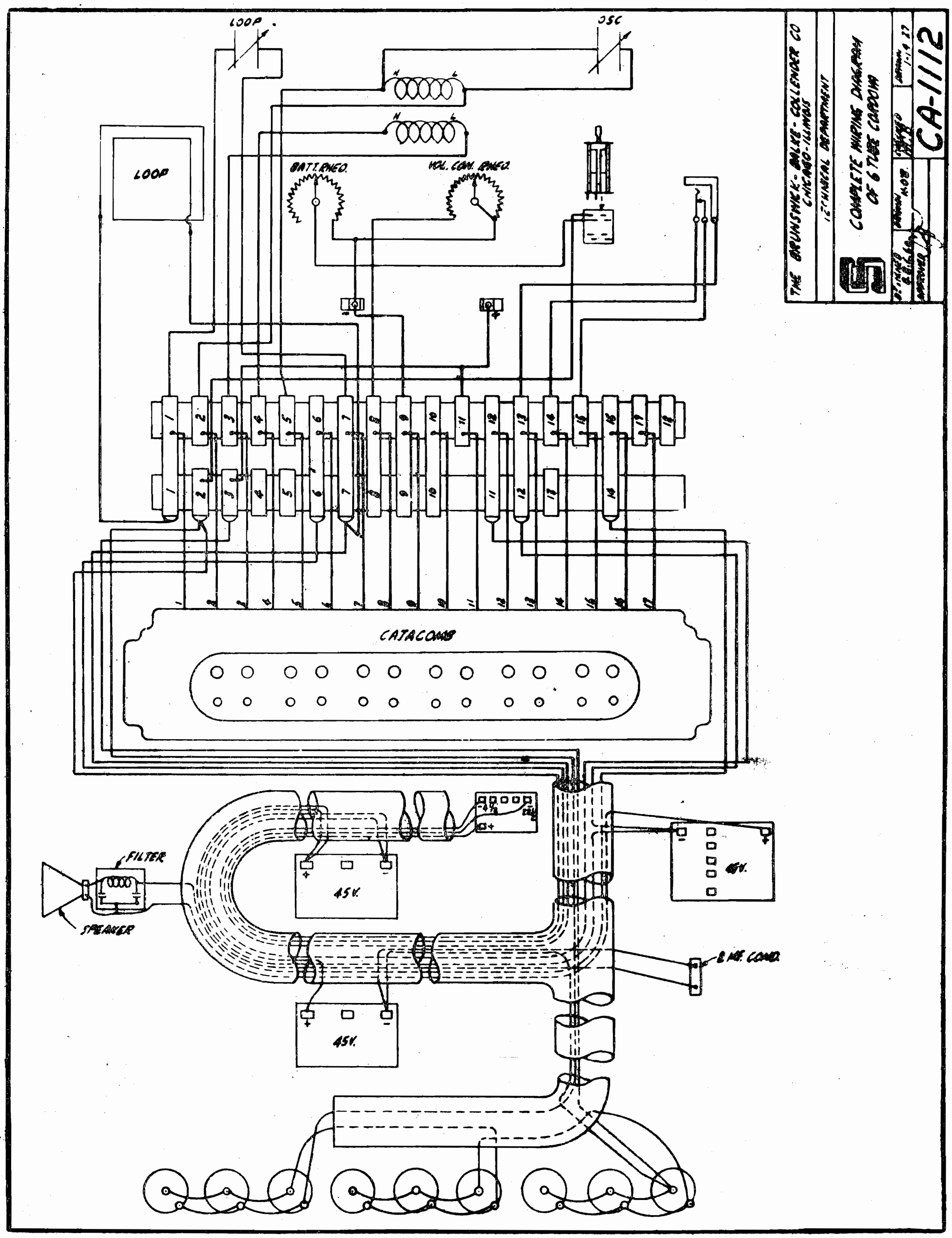
MODEL PR-6
6 Tube 1-C
Panel

BRUNSWICK RADIO CORPORATION



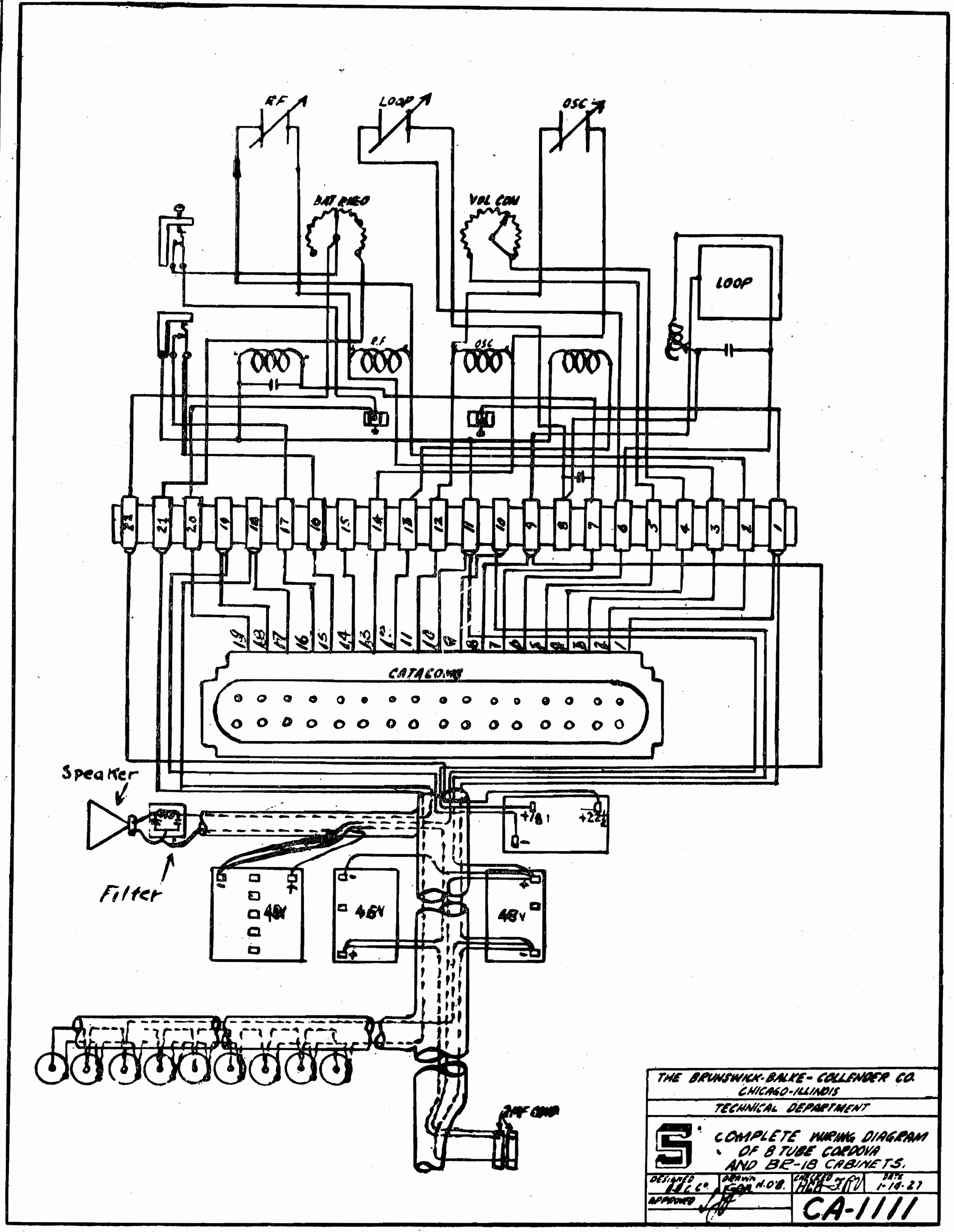
BRUNSWICK RADIO CORPORATION

MODEL 6 Tube
Cordova



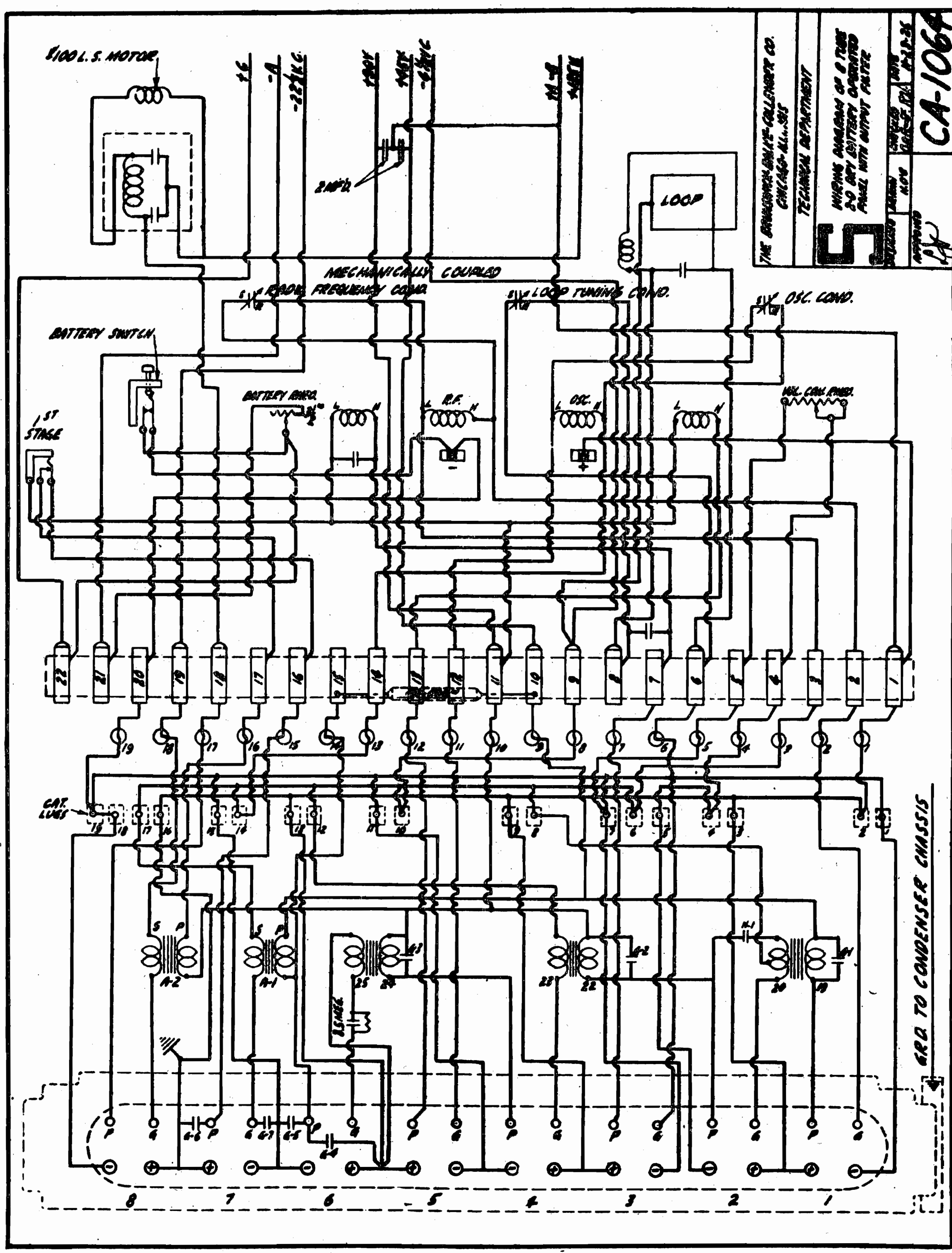
MODEL 8 Tube
Cordova

BRUNSWICK RADIO CORPORATION



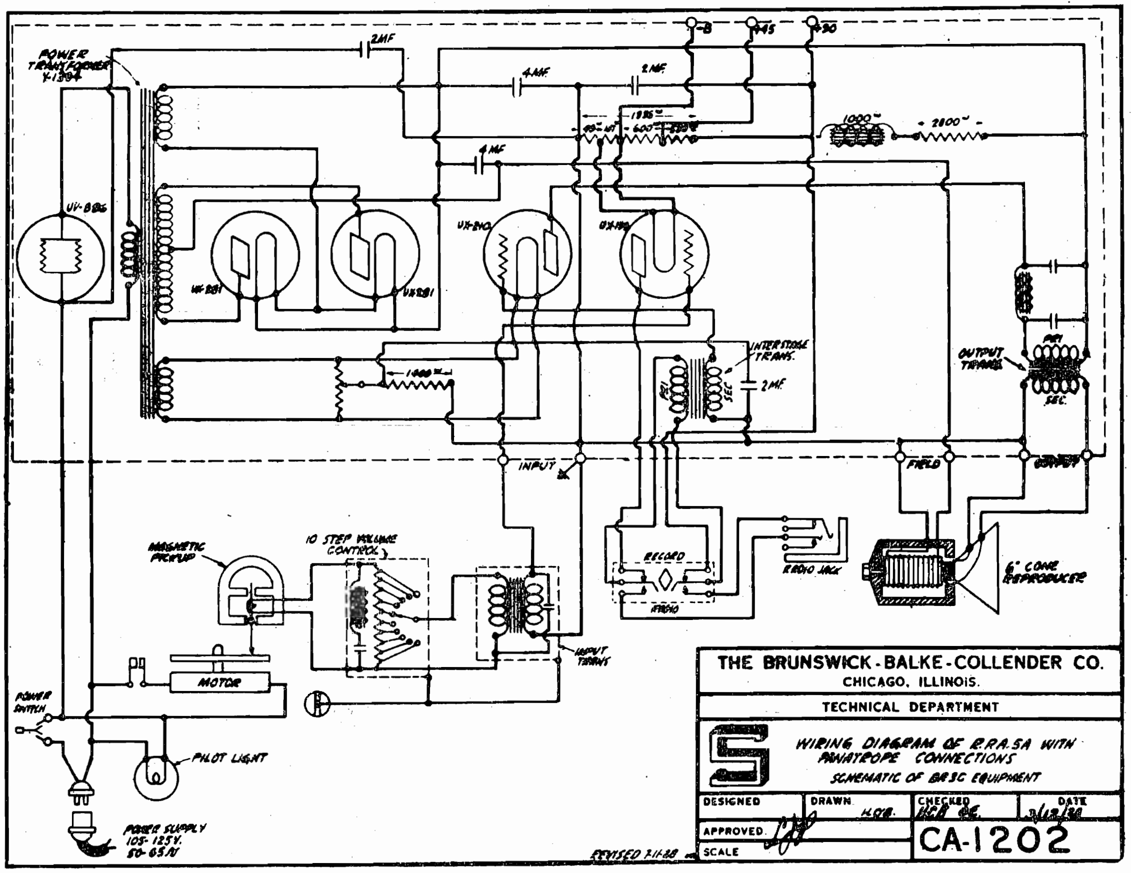
BRUNSWICK RADIO CORPORATION

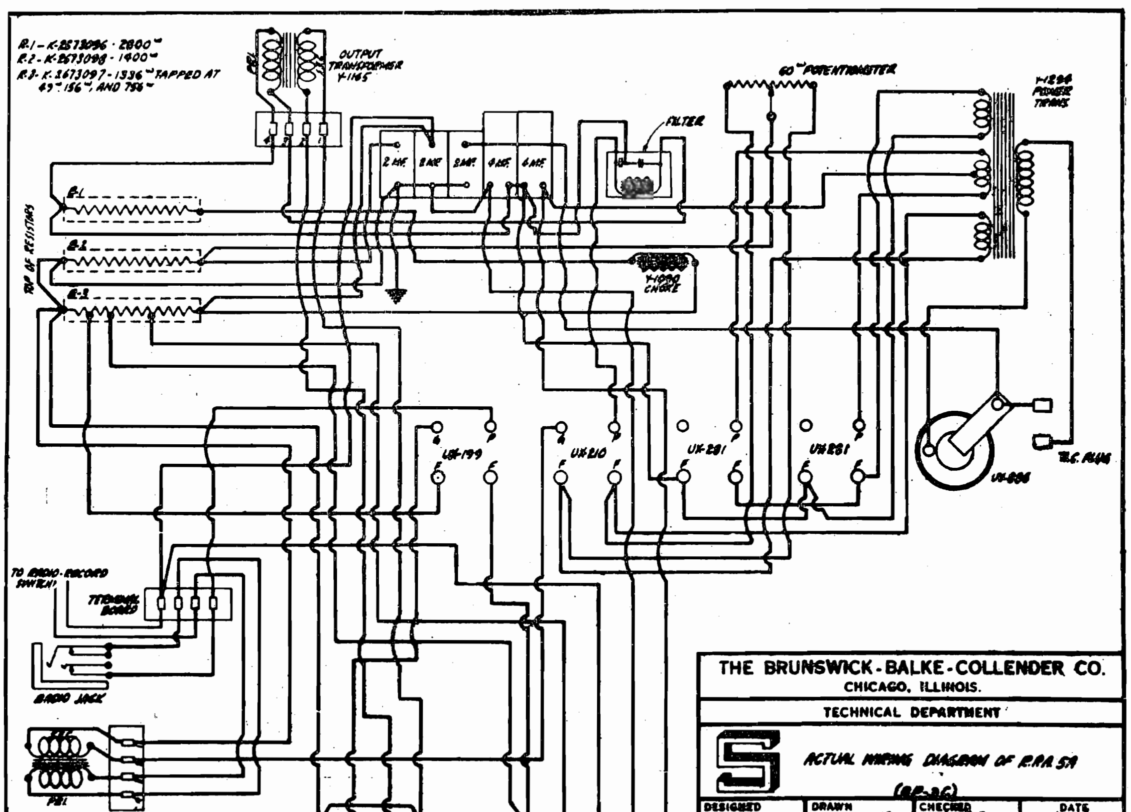
MODEL 8 Tube
2-D Battery



MODEL RPA-5A

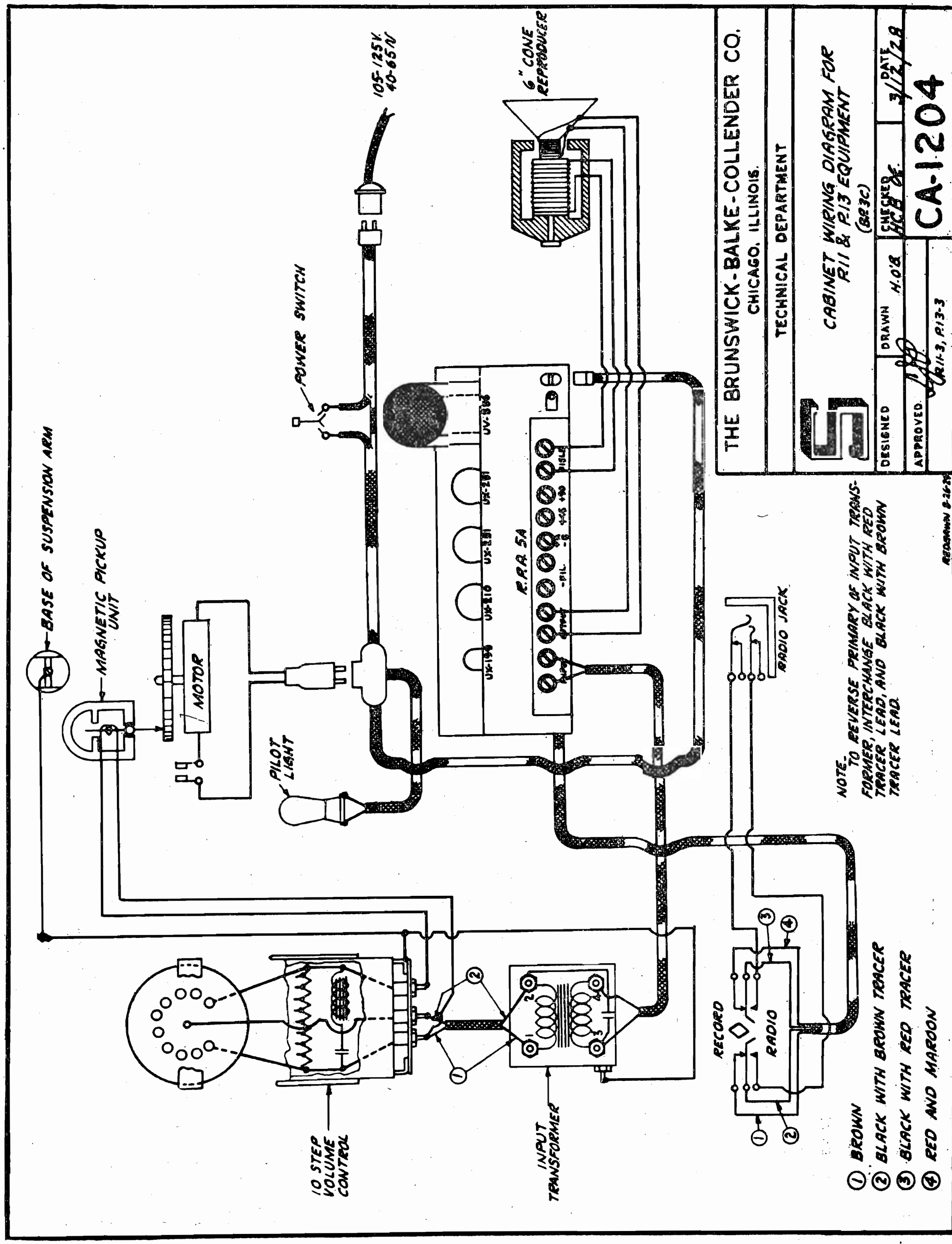
BRUNSWICK RADIO CORPORATION





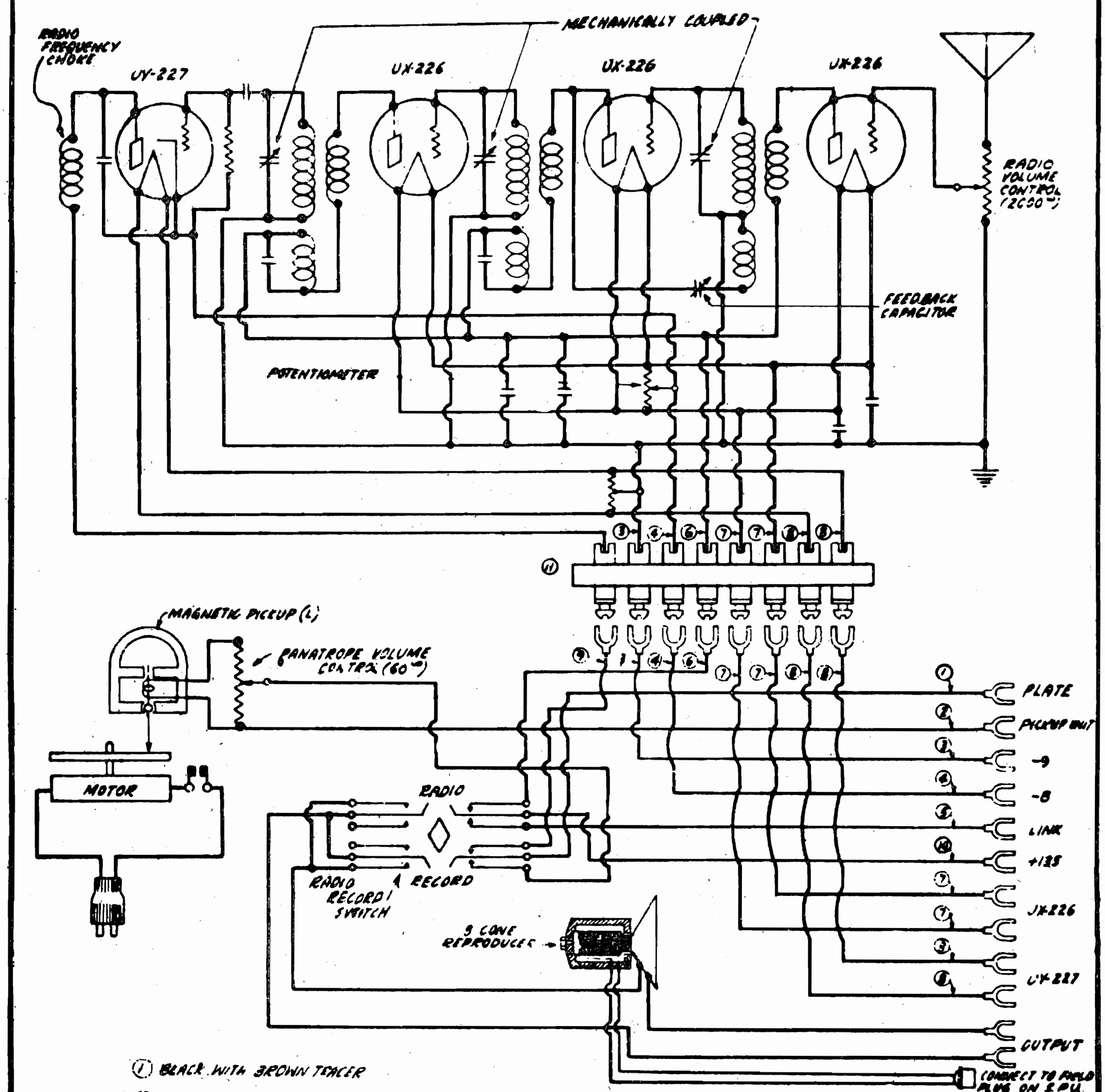
BRUNSWICK RADIO CORPORATION

MODEL P-11, P-13
Cabinet Wiring



MODEL 3 KR8
RF Schematic

BRUNSWICK RADIO CORPORATION



(1) BLACK WITH BROWN TRACER
(2) BROWN
(3) BLACK WITH GREEN TRACER
(4) BLACK WITH RED TRACER
(5) MAROON
(6) RED AND MAROON
(7) BLACK WITH YELLOW TRACER
(8) BLUE
(9) RED
(10) BLACK
(11) BROWN WITH WHITE TRACER

BRUNSWICK—Model 3KR8
Line Voltage 115—Volume Control Minimum

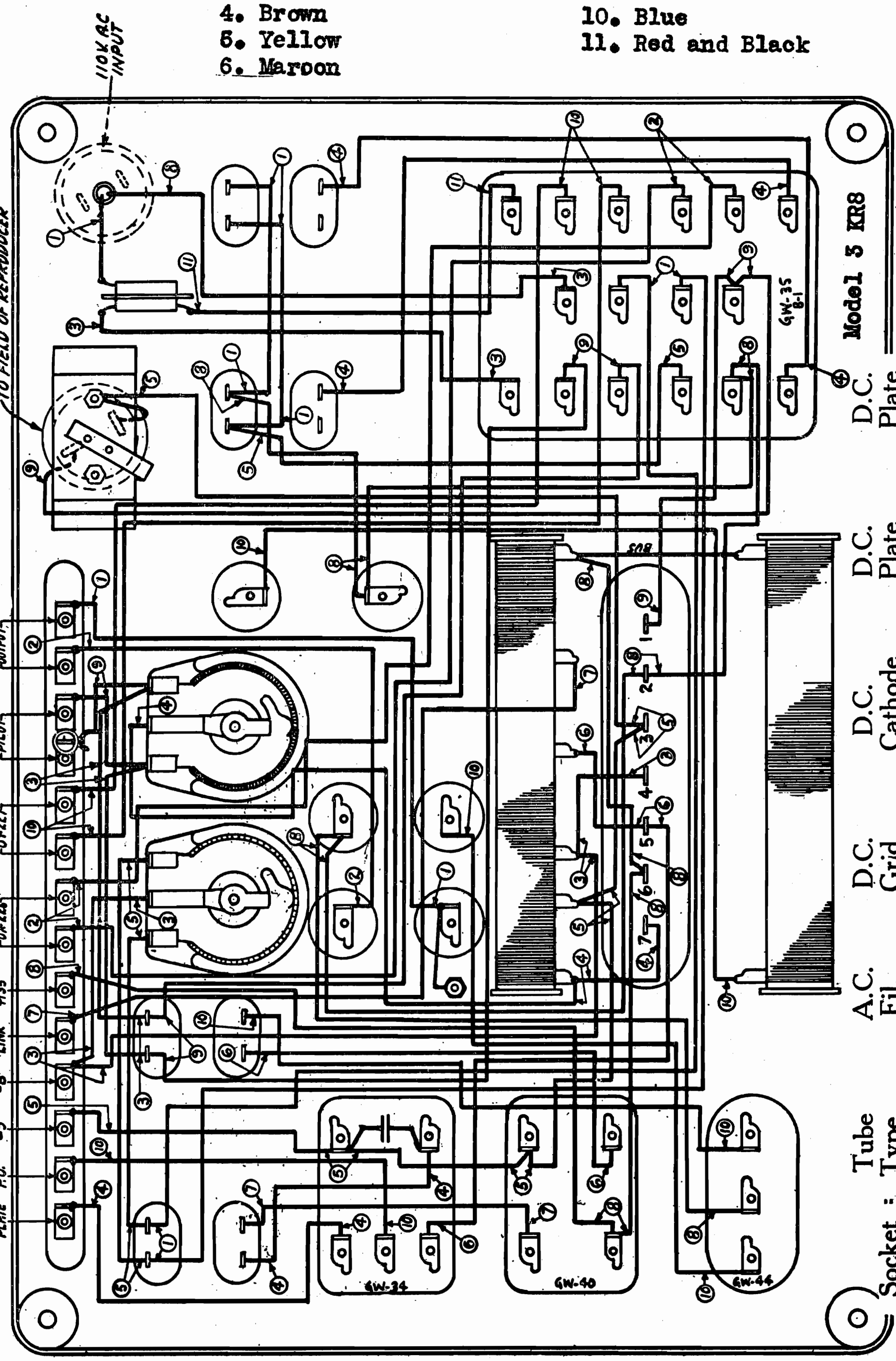
Tube No. in Order	Type of Tube	Position of Tube 1st R.F. Det. etc.	Readings, Plug in Socket of Set								
			Tube Out		Tube in Tester						
			A Volts	B Volts	A Volts	B Volts	C Volts	Cathode Volts	Normal Plate M.A.	Plate M.A. Grid Test	Plate M.A. Change
1	226	1st.R.F.	1.5	138	1.4	130	9	-	5	9.5	4.5
2	226	2nd.R.F.	1.5	138	1.4	130	9	-	5	9.5	4.5
3	226	3rd.R.F.	1.5	138	1.4	130	9	-	5	9.5	4.5
4	227	Detector	2.4	138	2.1	45	0	-	2.2	2.2	0
5	226	1st.A.F.	1.5	138	1.4	135	9	-	5	10.0	5.0
6	250	2nd.A.F.	7.0	500	6.6	450	70	-	50	55.0	5.0

BRUNSWICK 3 KR8 Radio Chassis

MODEL 3 KR8
SPU Chassis

BRUNSWICK RADIO CORP.

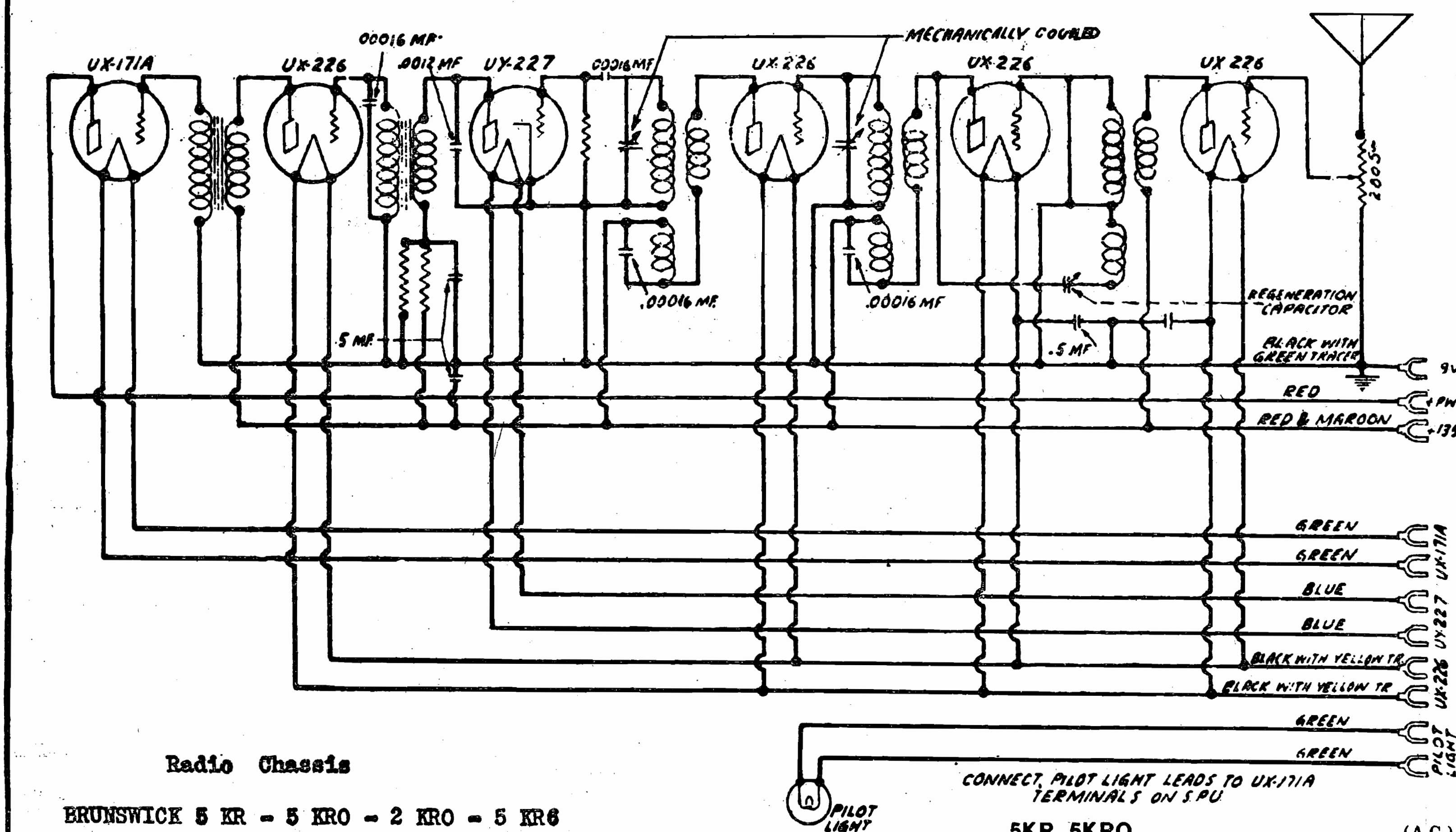
1. Black
2. Black with Yellow Tracer
3. Black with Red Tracer
4. Brown
5. Yellow
6. Maroon
7. Maroon and Red
8. Red
9. Green
10. Blue
11. Red and Black



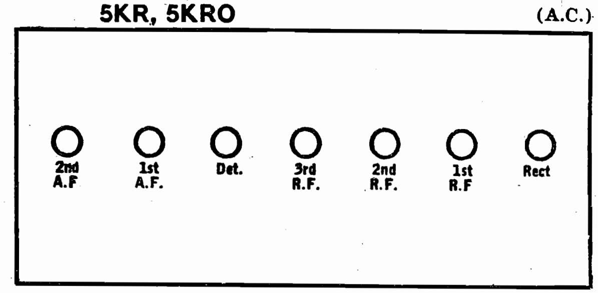
Tube Socket : Type	A.C. Fil. Voltage	D.C. Grid Voltage	D.C. Cathode Voltage	D.C. Plate Voltage	D.C. Plate Current
1st R. F. UX-226	1.4	—9	None	130	4—6
2nd R. F. UX-226	1.4	—9	None	130	4—6
3rd R. F. UX-226	1.4	—9	None	130	4—6
Detector UY-227	2.1	None*	0	45	2—3

MODEL 5 KR,
5 KRO, 5 KR6
2 KRO RF Schematic

BRUNSWICK RADIO CORP.



5KR, 5KRO (A.C.)



Radio Chassis

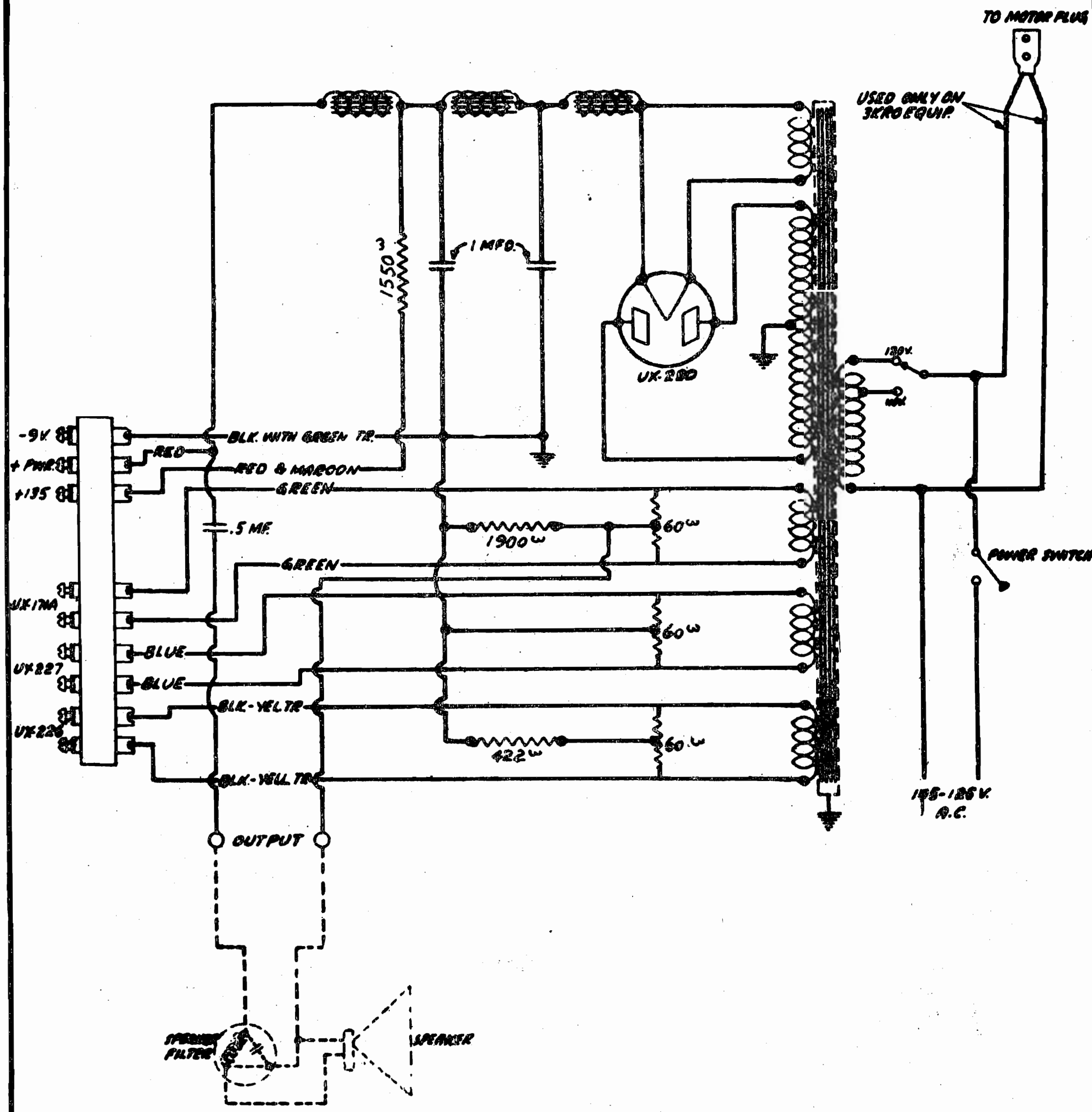
BRUNSWICK 5 KR - 5 KRO - 2 KRO - 5 KR6

BRUNSWICK—Models 5KR—5KRO— —2KRO
Line Voltage 110—110 Volt Tap—Volume Control Minimum

Tube No. in Order	Type of Tube	Position of Tube 1st R.F. Det. Etc.	Readings, Plug in Socket of Set: Tube Out: A Volts	B Volts	Tube in Tester: A Volts	B Volts	C Volts	Cathode Volts	Normal Plate M.A.	Plate M.A. Grid Test	Plate M.A. Change
1	226	1st.R.F.	1.5	140	1.4	135	10	-	5	9	4
2	226	2nd.R.F.	1.5	140	1.4	135	10	-	5	9	4
3	226	3rd.R.F.	1.5	140	1.4	135	10	-	5	9	4
4	227	Detector	2.5	140	2.35	50	0	-	3	3.1	.1
5	226	1st.A.F.	1.5	140	1.4	135	10	-	5	9	4
6	171A	PowerA.F.	5.5	200	5.0	150	30	-	16.0	18.0	2.0
7	280	Rectifier	-	-	5.0	-	-	-	20.0	-	-

MODEL 5 KR, 5 KRO
2 KRO, 3 KRO
SPU Schematic

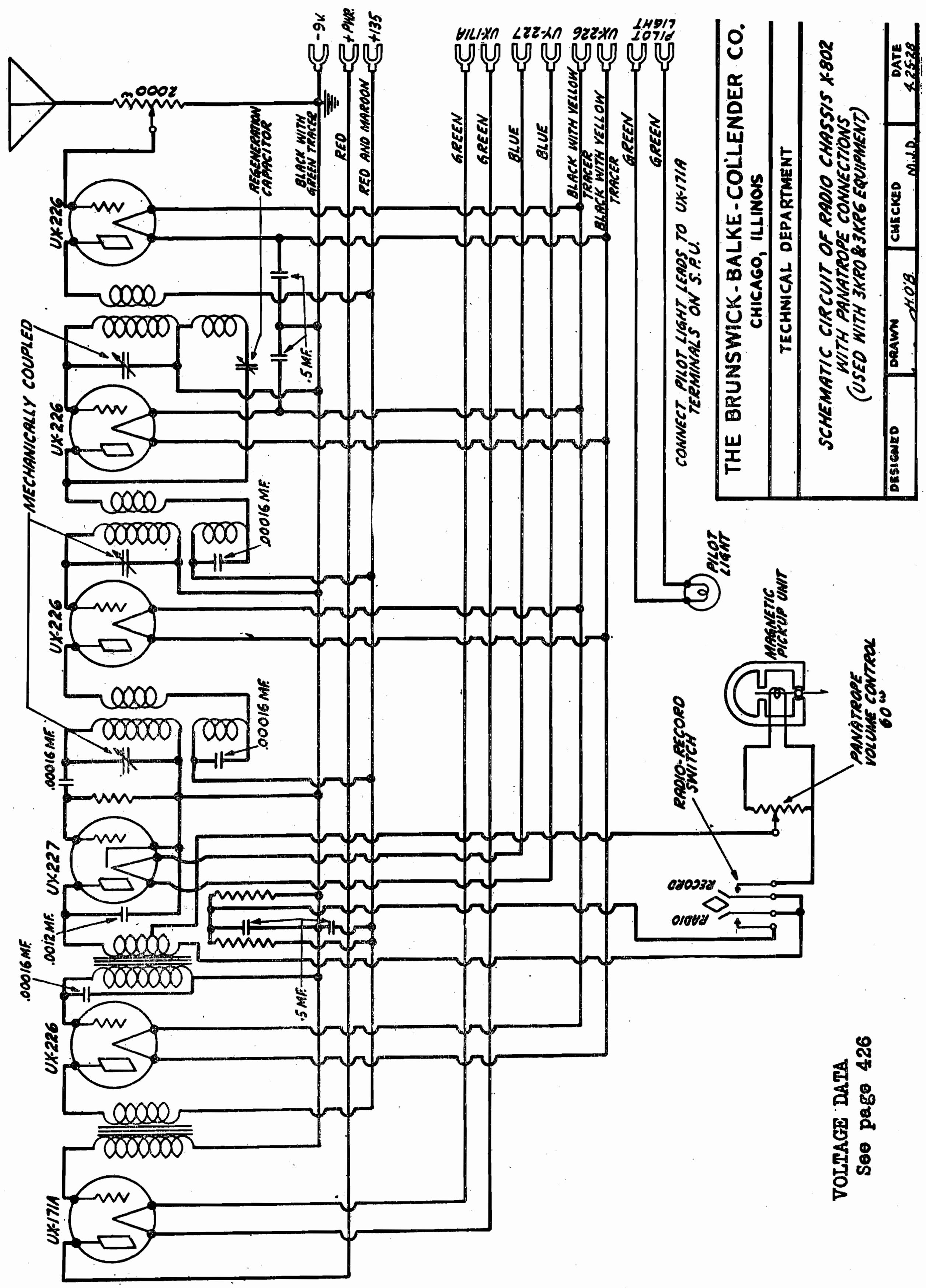
BRUNSWICK RADIO CORP.



Model 5 KR, 5 KRO, 2 KRO, 3 KRO SPU.

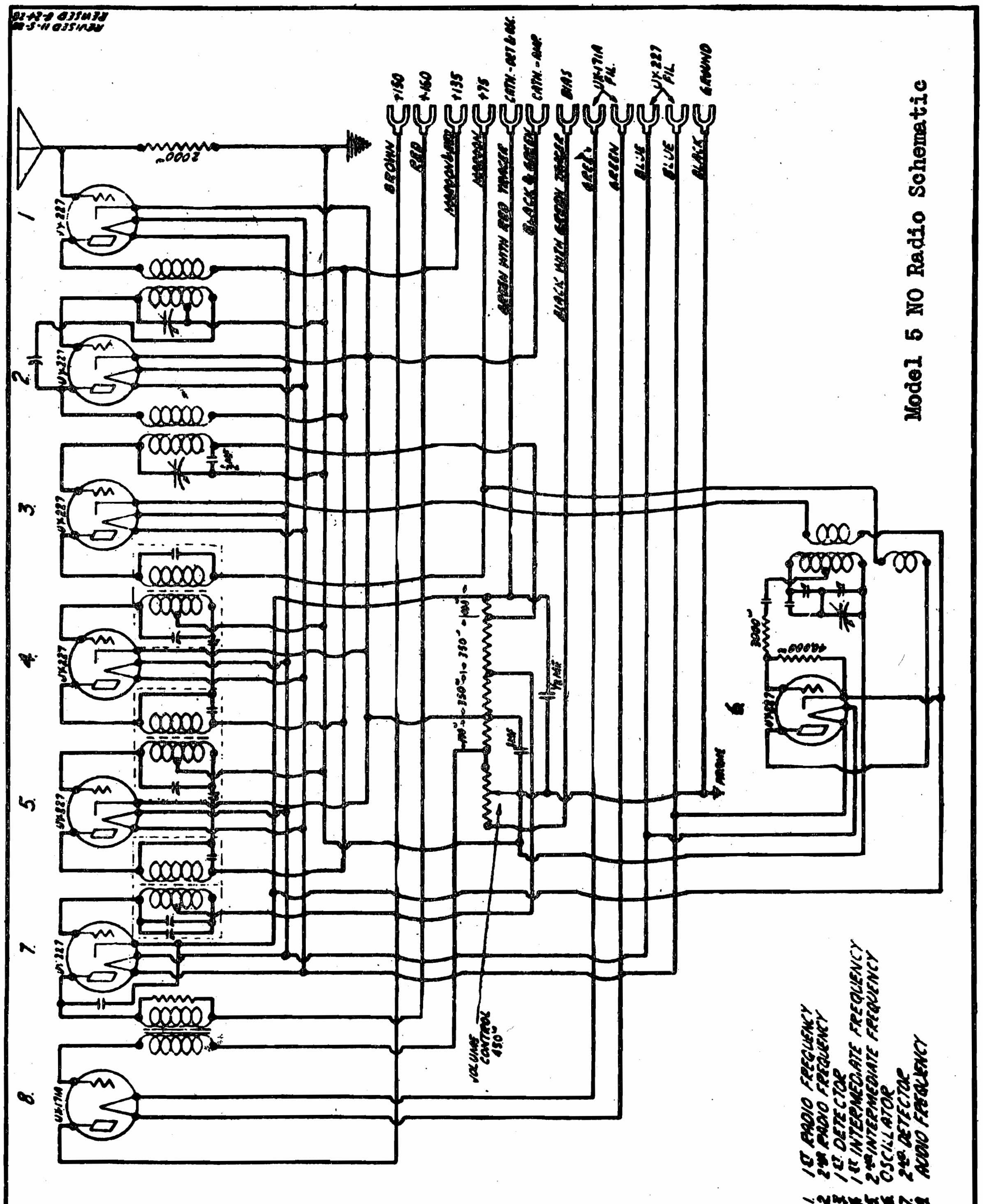
MODEL 3 KRO, 3 KR6
RF Schematic

BRUNSWICK RADIO CORP.

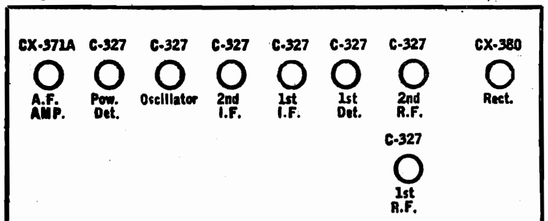


BRUNSWICK RADIO CORP.

MODEL 5 NO
RF Schematic



5NO (A.C.)

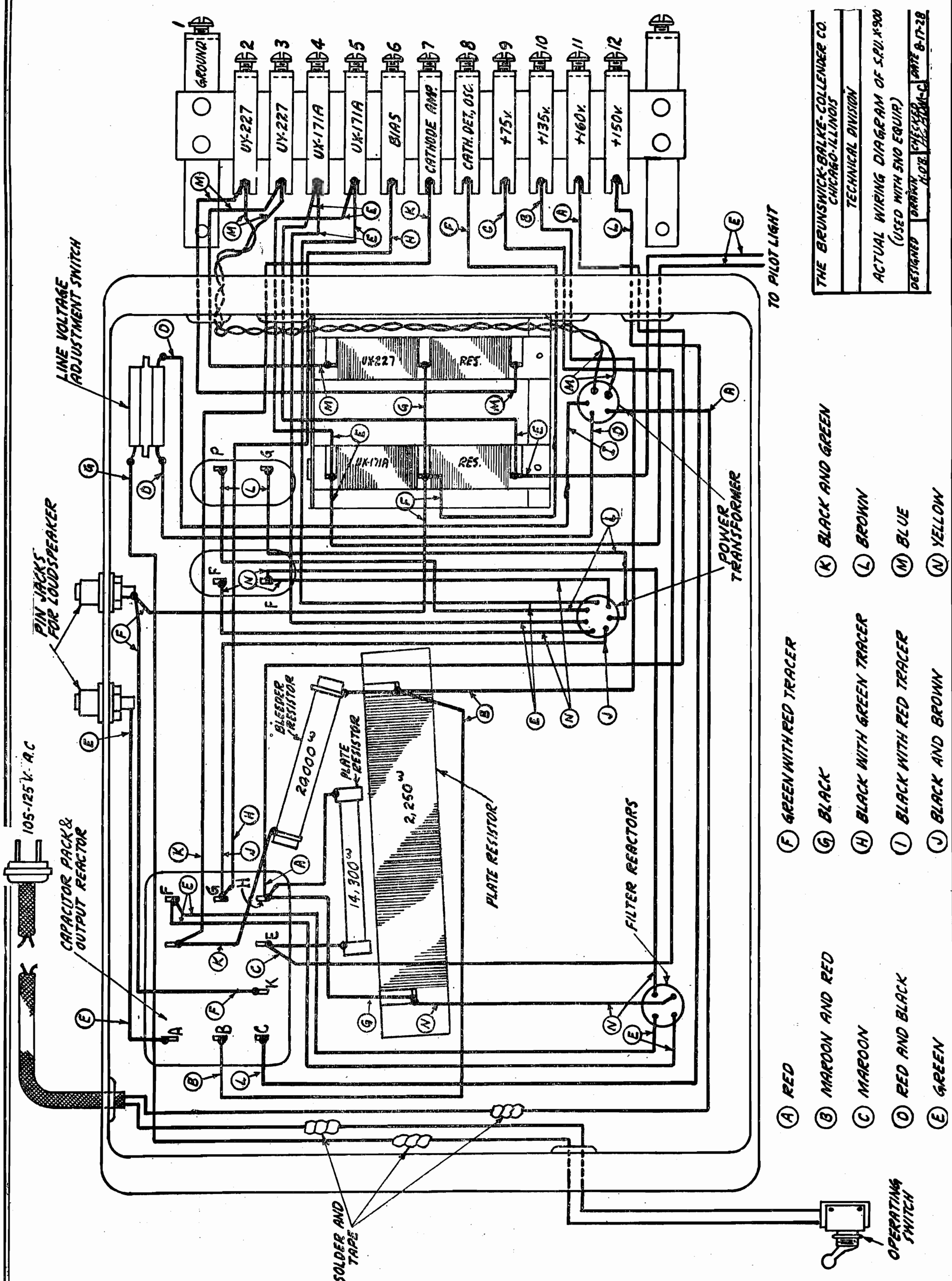


BRUNSWICK—Model 5NO—
Line Voltage 110—Volume Control Minimum

TUBE NO. IN ORDER	TYPE OF TUBE	POSITION OF TUBE 1ST R.F. DET. ETC.	READINGS, PLUG IN SOCKET OF SET — TUBE OUT: A. VOLTS	TUBE OUT: B VOLTS	TUBE IN TESTER: A VOLTS	B VOLTS	C VOLTS	CATHODE VOLTS	NORMAL PLATE M.A.	PLATE M.A. GRID TEST	PLATE M.A. CHANGE
1.	227	Ant.Coupler	2.35	170	2.25	160	24	27	1.0	2.0	1.0
2.	227	1st.R.F.	2.35	170	2.25	160	24	27	1.0	2.0	1.0
3.	227	1st.Det.	2.35	94	2.25	80	10	0	1.0	2.0	1.0
4.	227	1st.I.F.	2.35	170	2.25	160	24	27	1.0	3.0	2.0
5.	227	2nd.I.F.	2.35	170	2.25	160	24	27	1.0	3.0	2.0
6.	227	Oscillator	2.35	120	2.25	75	-	-	7.0	0	0.0
7.	227	2nd.Det.	2.35	170	2.25	160	19	-	1.0	2.0	1.0
8.	171A	Power	5.5	160	5.0	150	30	-	20.0	22.0	2.0
9.	280	Rectifier	-	-	5.0	-	-	-	20.0	-	-

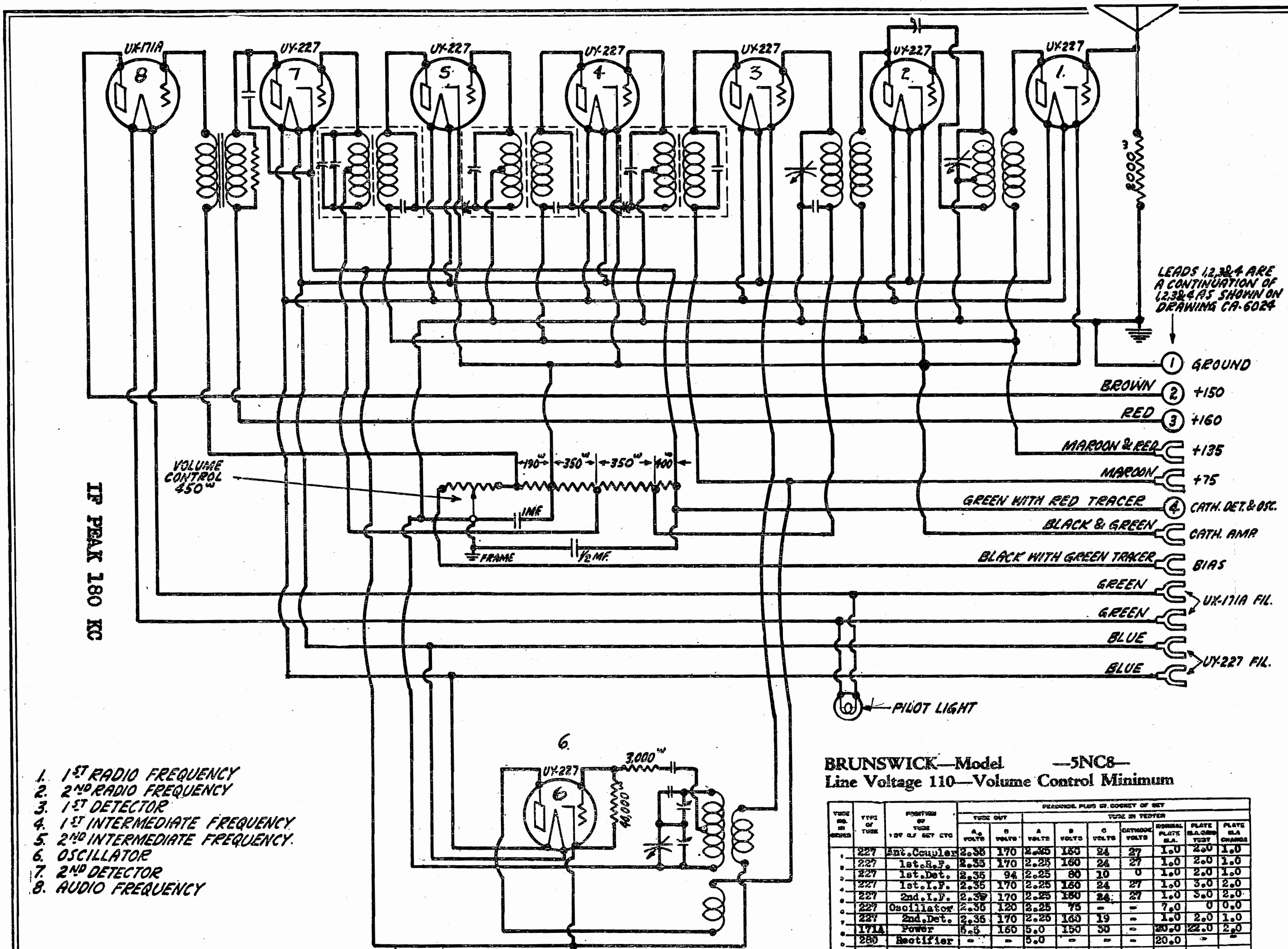
MODEL 5 NO
SPU Chassis

BRUNSWICK RADIO CORP.



BRUNSWICK RADIO CORP.

MODEL 5 NC8
Radio Schematic

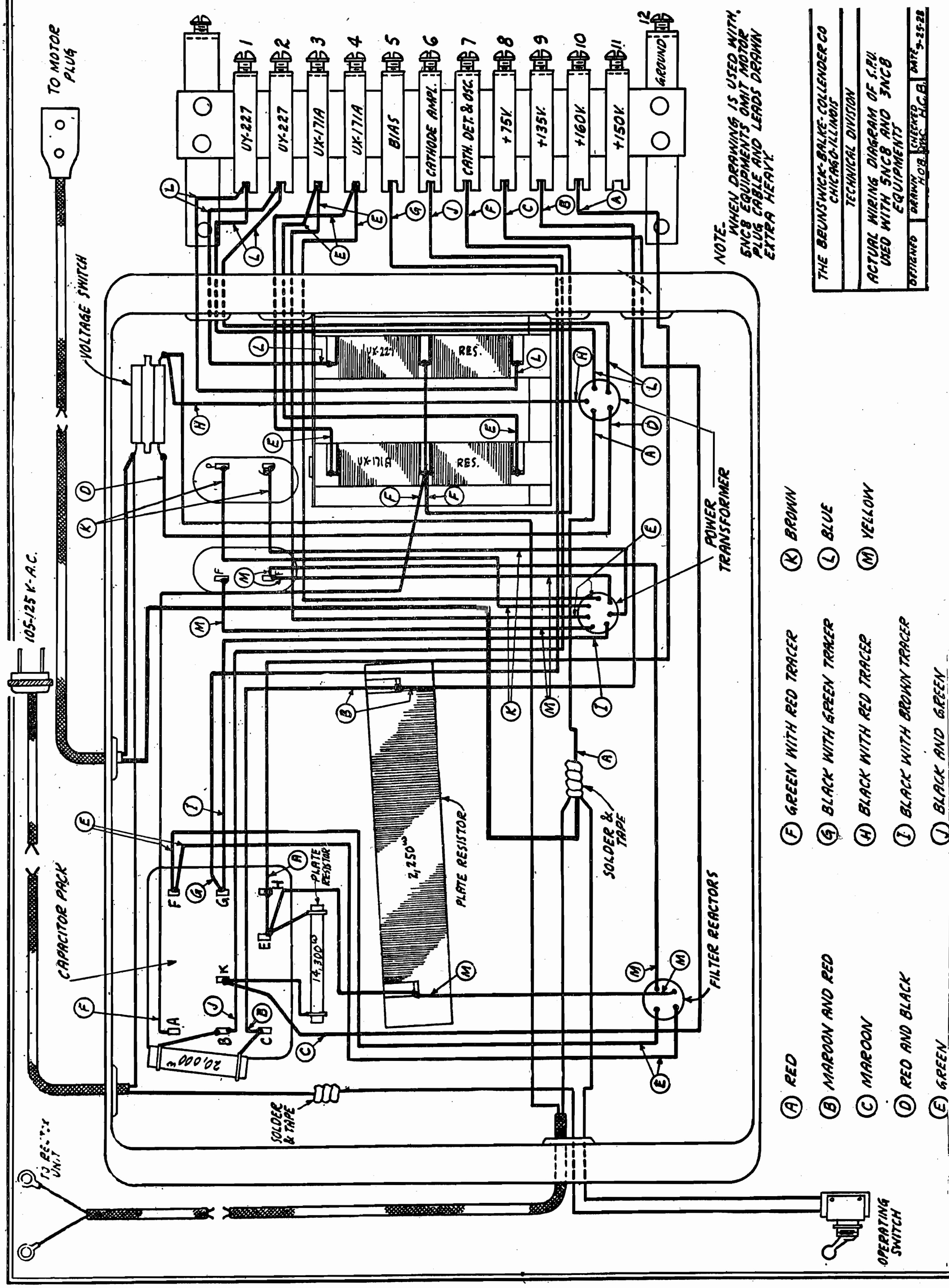


BRUNSWICK—Model —5NC8—
Line Voltage 110—Volume Control Minimum

Tube No. in Series	Type of Tube	Position of Tube	Readings, Plug in Socket of Set								
			Tube Out		Tube in Tester						
			A Volts	B Volts	A Volts	B Volts	C Volts	Cathode Volts	Normal Plate M.A.	Plate M.A. Grid Test	Plate M.A. Change
1	227	Ant.Coupler	2.35	170	2.25	160	24	27	1.0	2.0	1.0
2	227	1st.R.F.	2.33	170	2.25	160	24	27	1.0	2.0	1.0
3	227	1st.Det.	2.35	94	2.25	80	10	0	1.0	2.0	1.0
4	227	1st.I.F.	2.35	170	2.25	160	24	27	1.0	3.0	2.0
5	227	2nd.I.F.	2.35	170	2.25	160	24	27	1.0	3.0	2.0
6	227	Oscillator	2.35	120	2.25	75	-	-	7.0	0	0.0
7	227	2nd.Det.	2.35	170	2.25	160	19	-	1.0	2.0	1.0
8	171A	Power	5.5	160	5.0	150	30	-	20.0	22.0	2.0
9	280	Rectifier	-	-	5.0	-	-	-	20.0	-	-

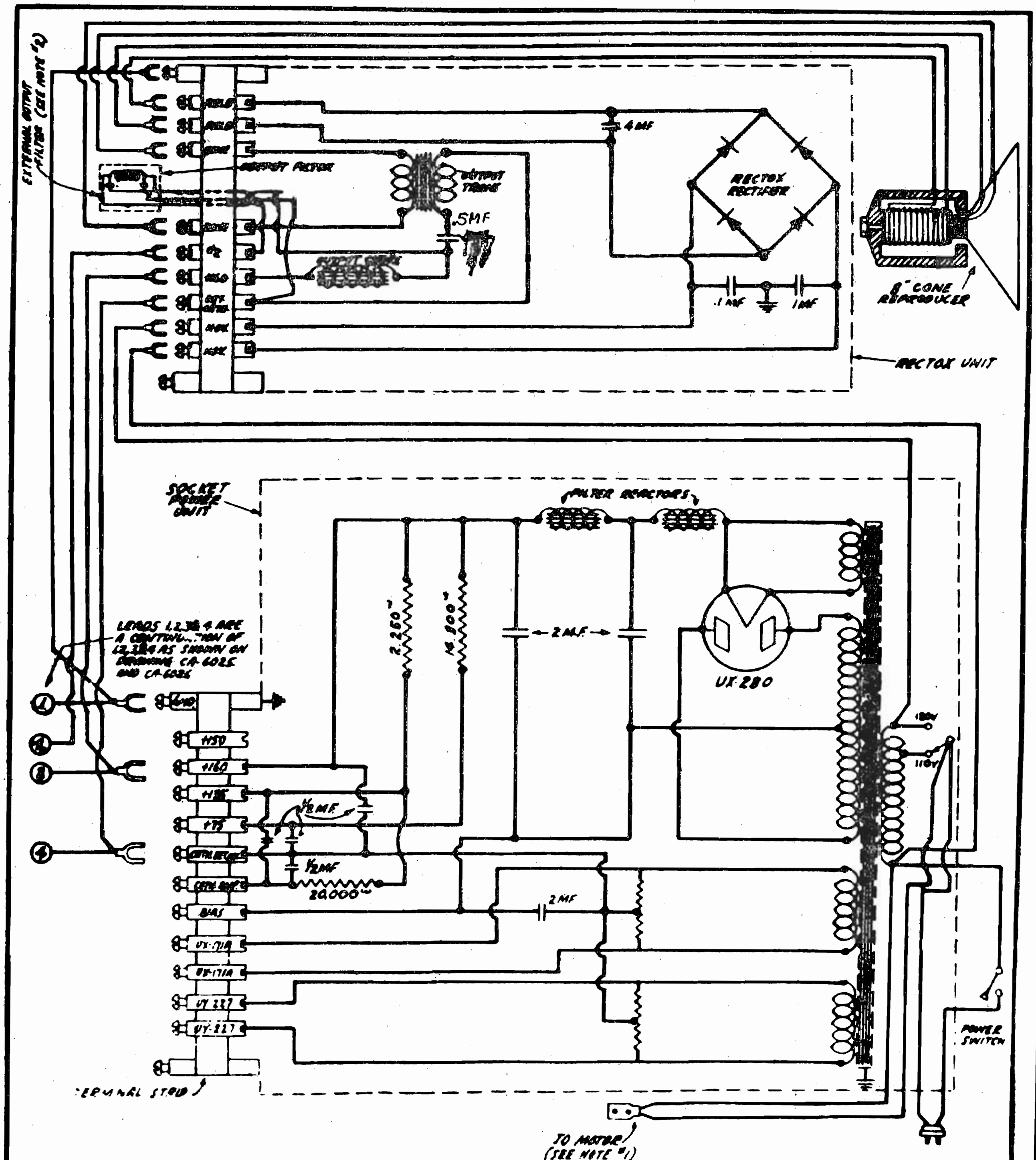
MODEL 3 NC8, 5 NC8
Audio Chassis

BRUNSWICK RADIO CORP.



BRUNSWICK RADIO CORP.

MODEL 3 NC8, 5 NC8
Audio Schematic

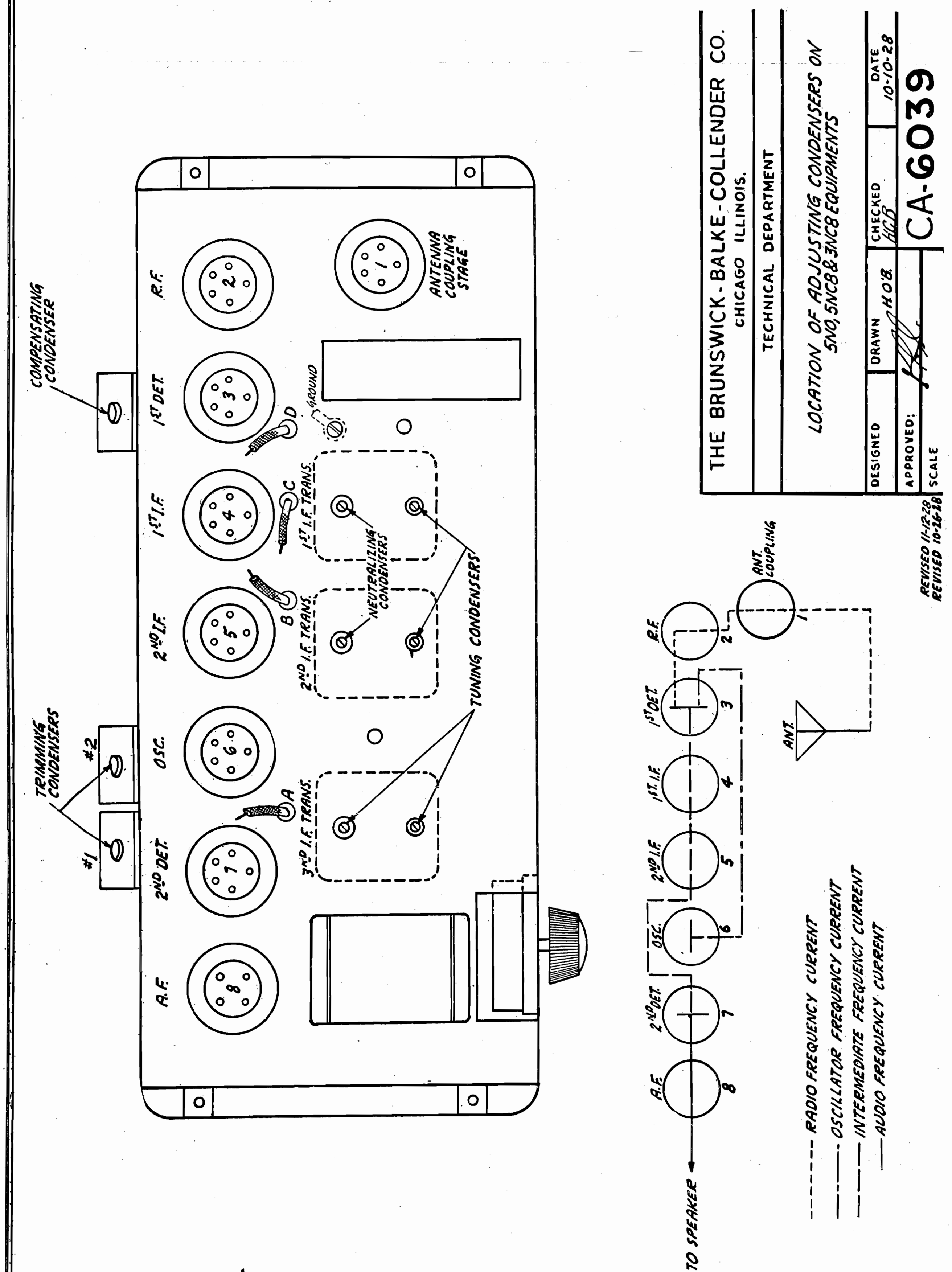


Model 3 NC8, 5 NC8 Audio Schematic

NOTE-
1. MOTOR PLUG AND LEADS NOT USED WITH S.P.U. FOR 3NC8 EQUIPMENT
2. EXTERNAL OUTPUT FILTER IS USED ONLY ON THE 3NC8 EQUIPMENTS

MODEL 5 NO, 5 NC8, 3 NC8
Trimmer Locations

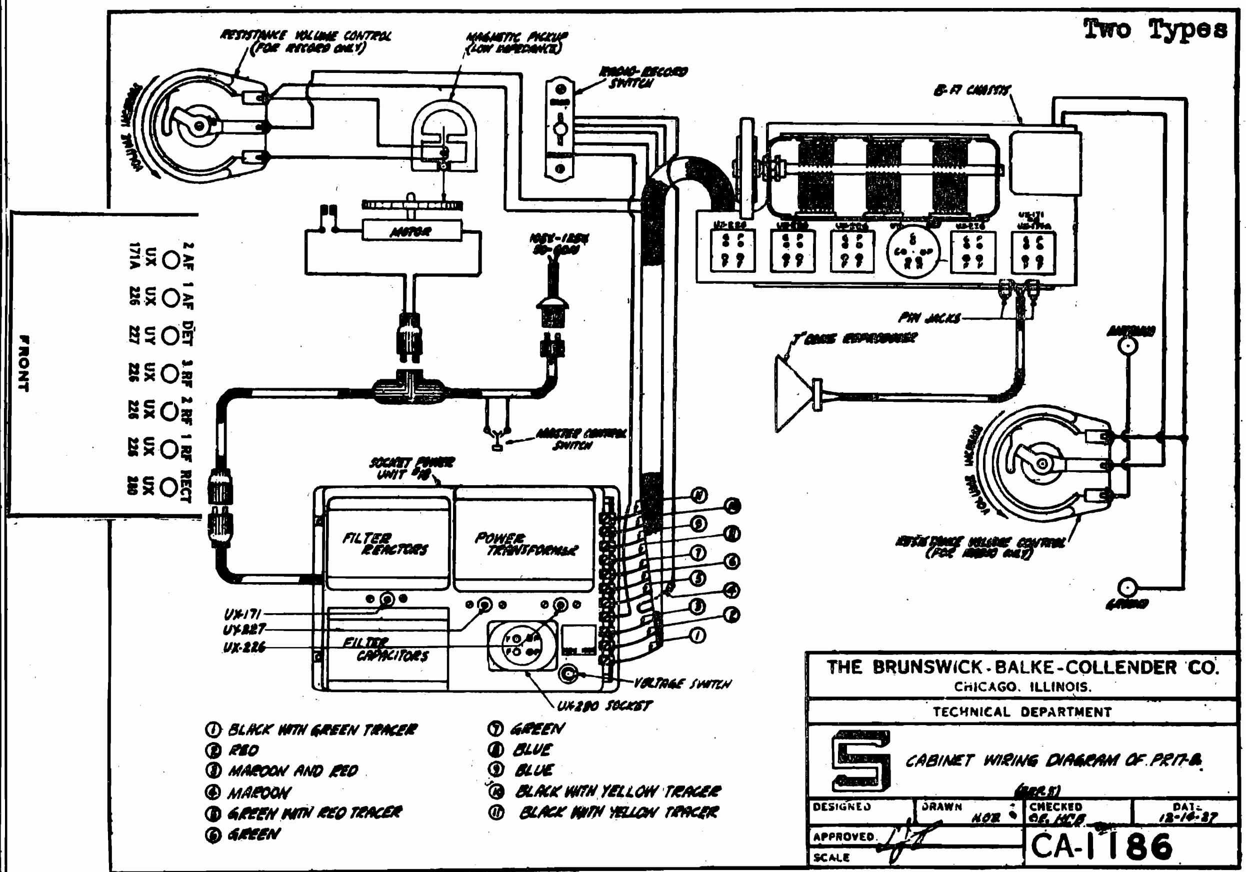
BRUNSWICK RADIO CORP.

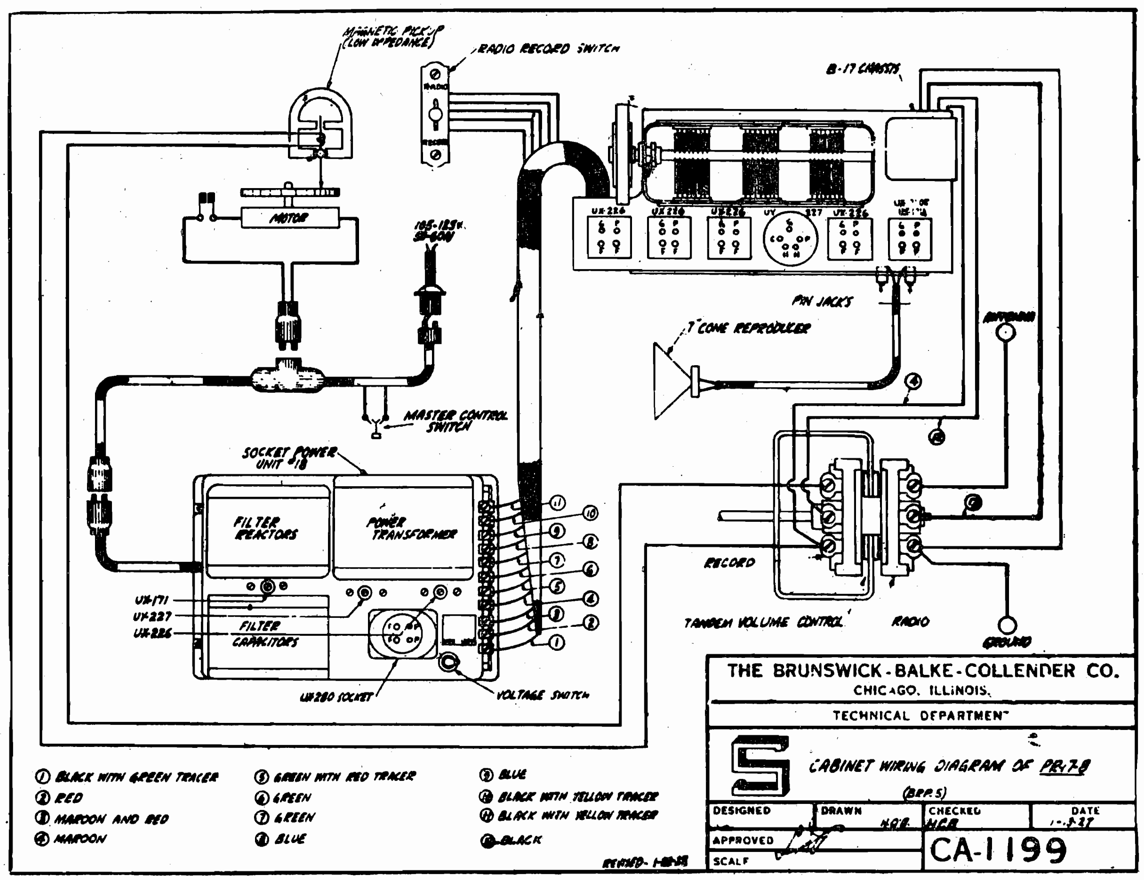


BRUNSWICK RADIO CORPORATION

MODEL PR-17-8, BRP-5

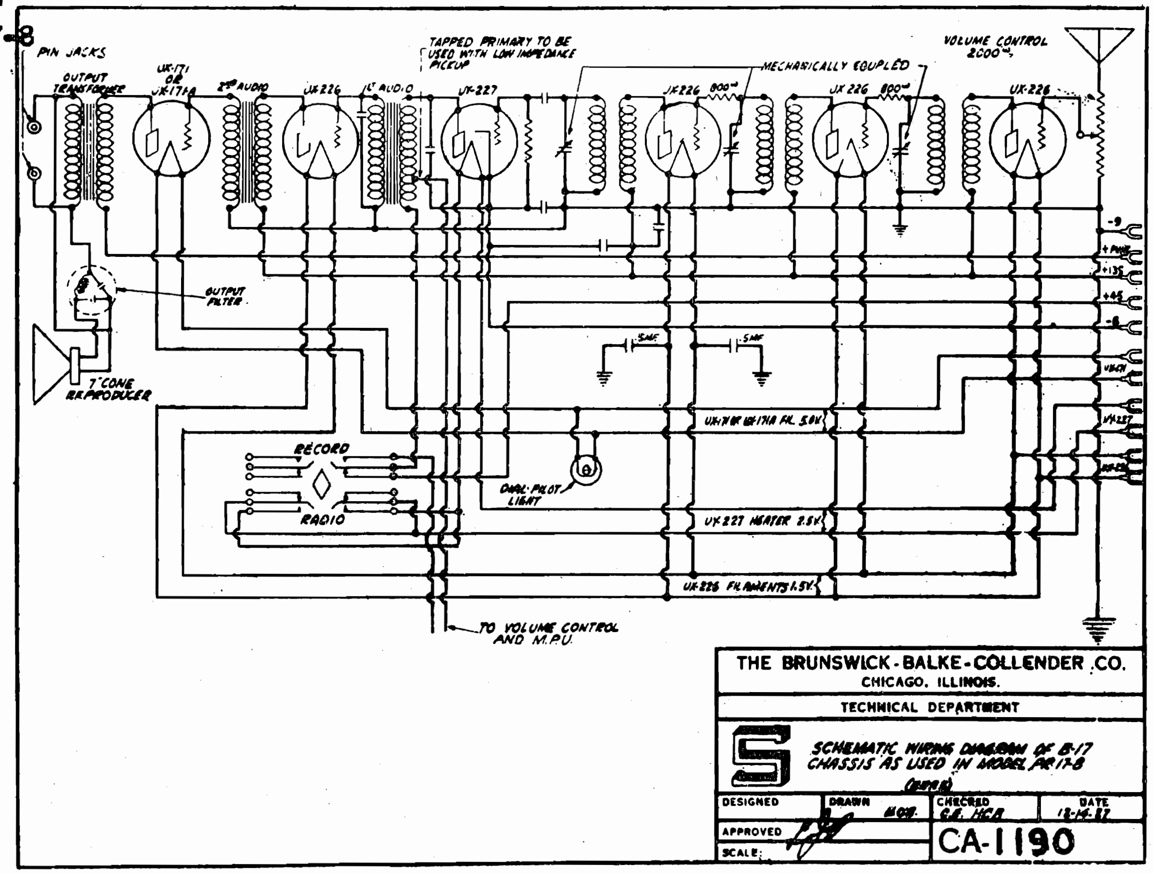
Two Types

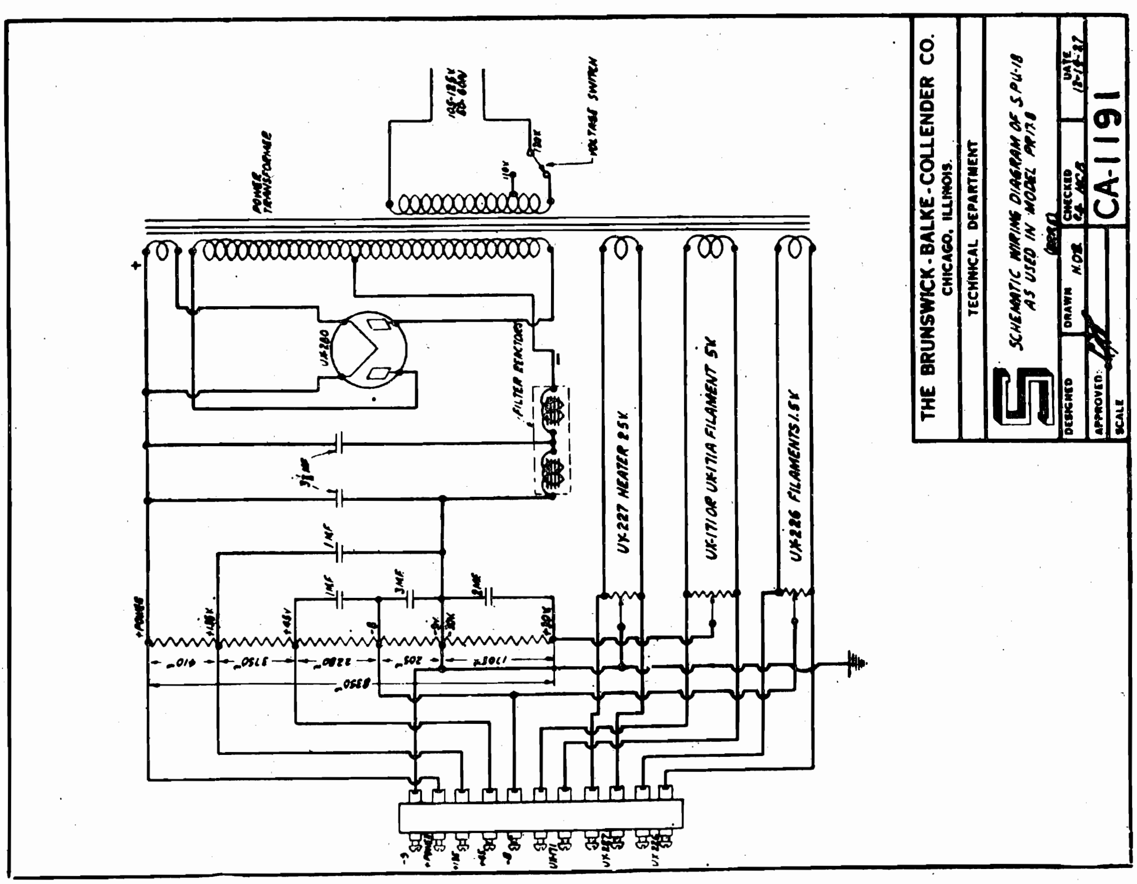




MODEL B-17
MODEL SPU 18
For
PR-17-8

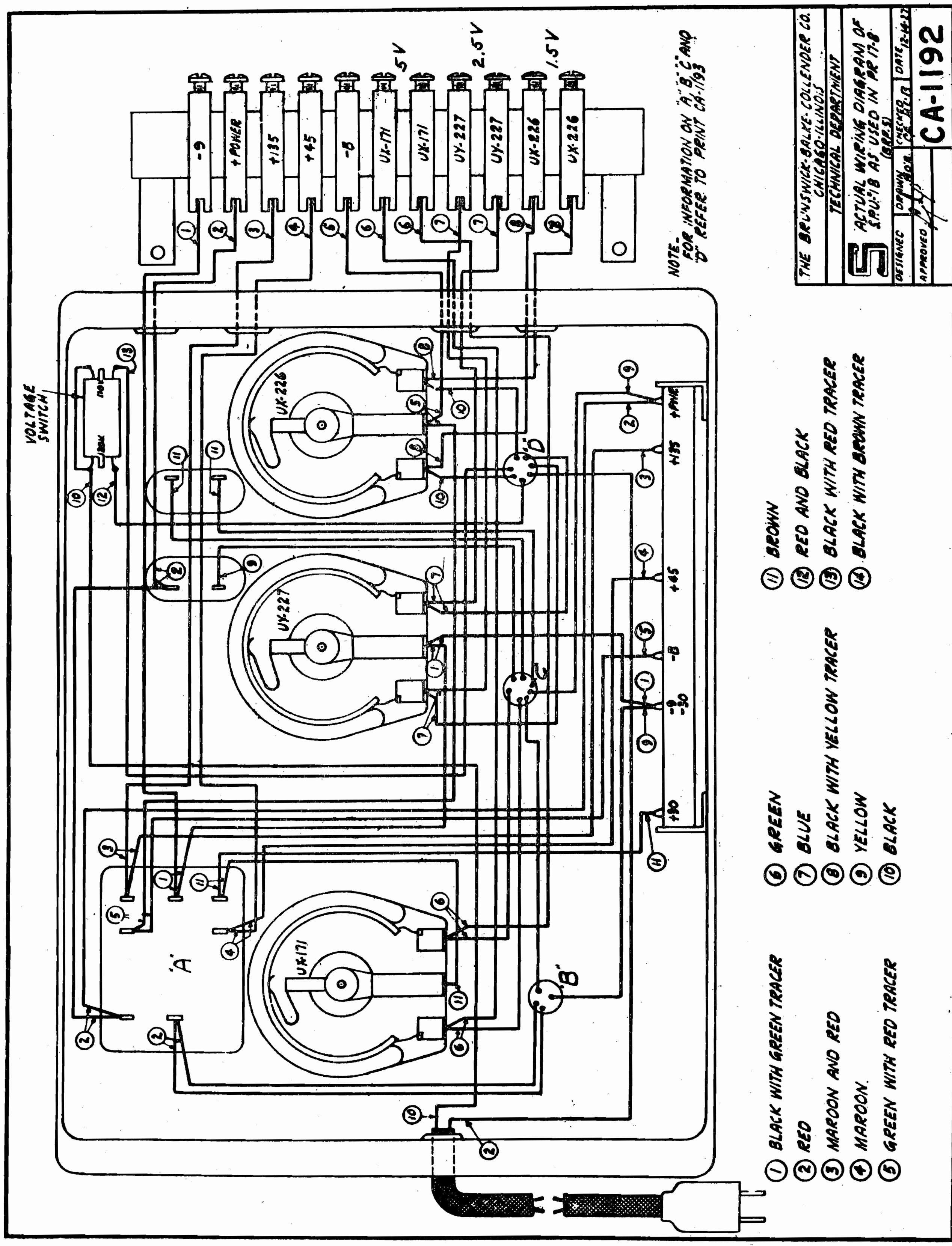
BRUNSWICK RADIO CORPORATION





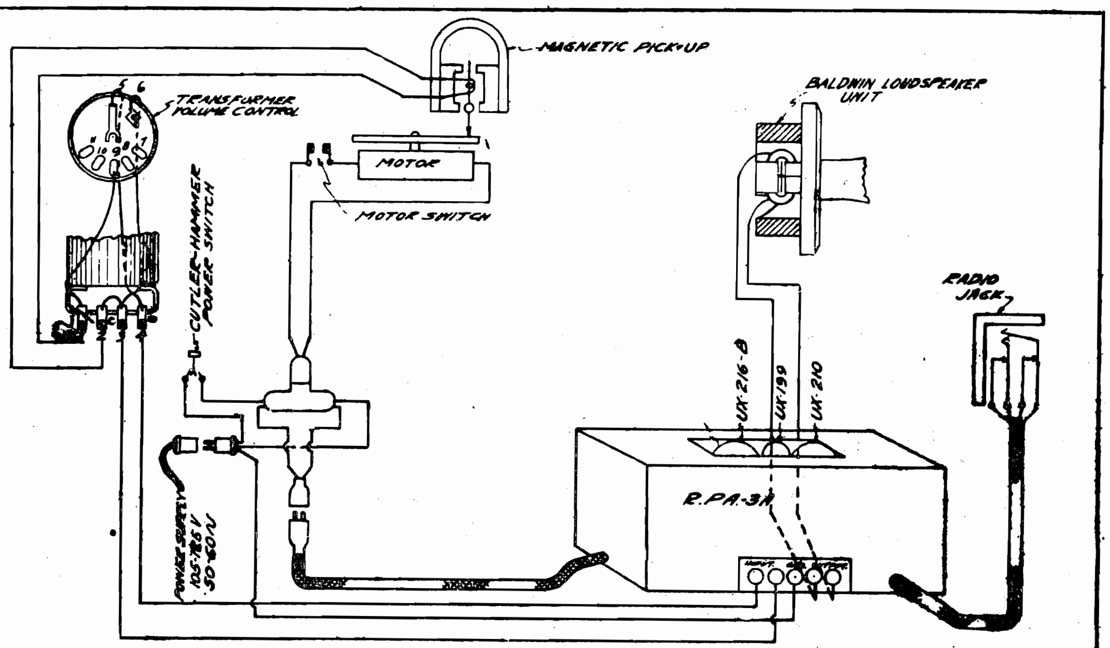
BRUNSWICK RADIO CORPORATION

MODEL SPU-18
Chassis for PR-17



MODEL P-14

BRUNSWICK RADIO CORPORATION



Models Brunswick Panatropes P2, P9, P14 (1926)

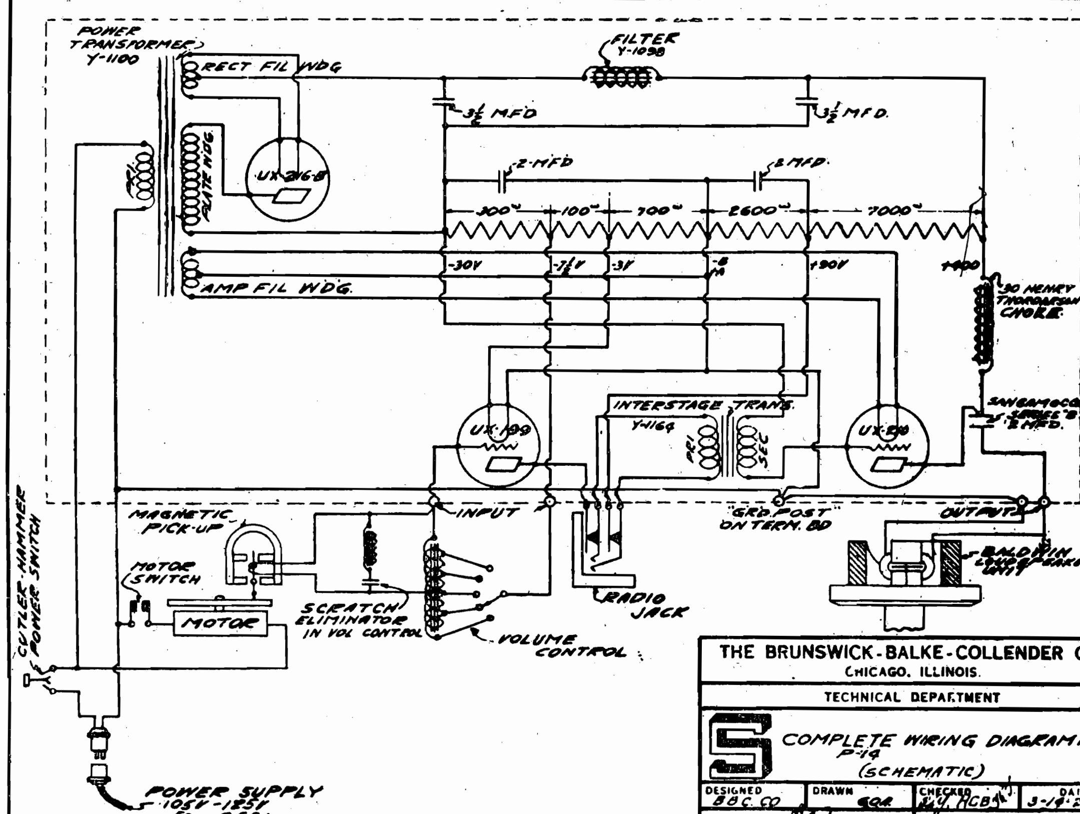
RECT	1 AF	2 AF
'81	X'99	'10

REAR (L TO R)

THE BRUNSWICK-BALKE-COLLENDER CO.
CHICAGO, ILLINOIS
TECHNICAL DEPARTMENT

CABINET WIRING DIAGRAM FOR MODEL P-14

DESIGNED B.B.C.Co. | APPROVED: | SCALE: | DATE 3-19-27 | CA-1128



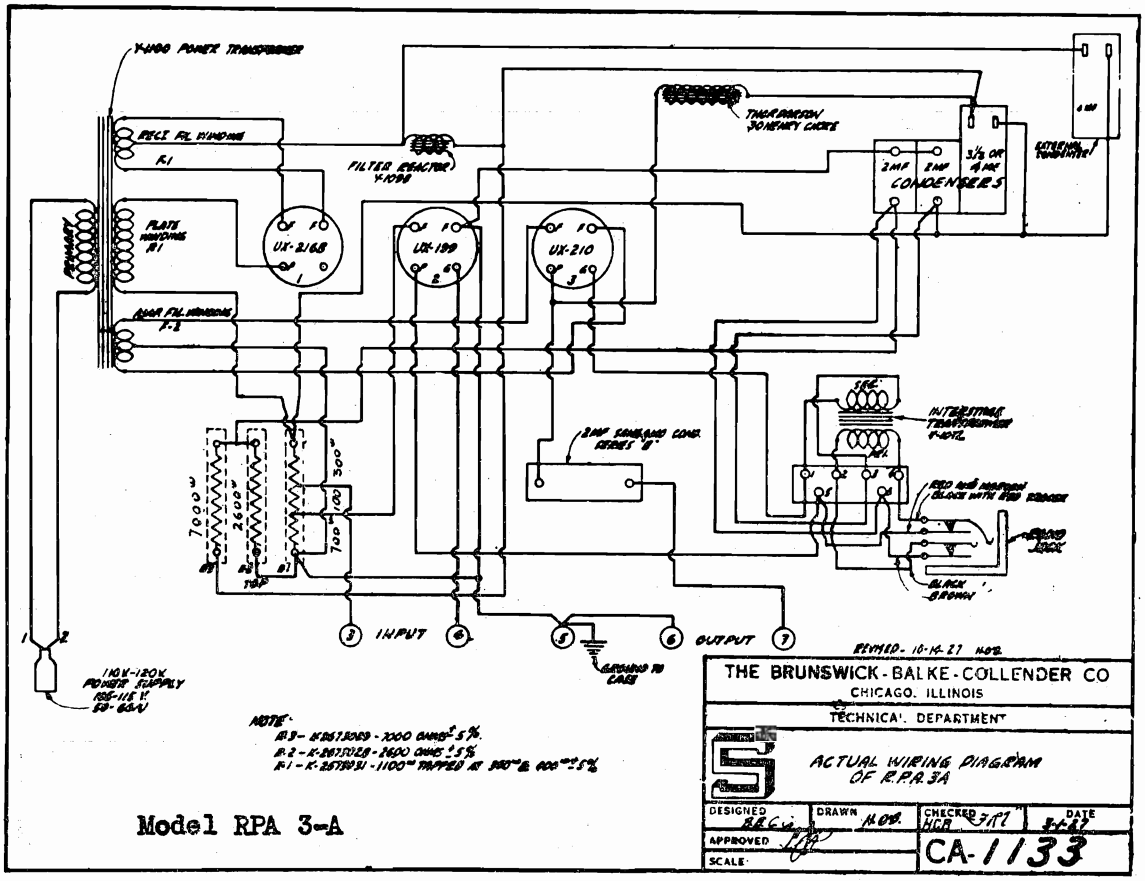
THE BRUNSWICK-BALKE-COLLENDER CO.
CHICAGO, ILLINOIS.
TECHNICAL DEPARTMENT

COMPLETE WIRING DIAGRAM FOR P-14 (SCHEMATIC)

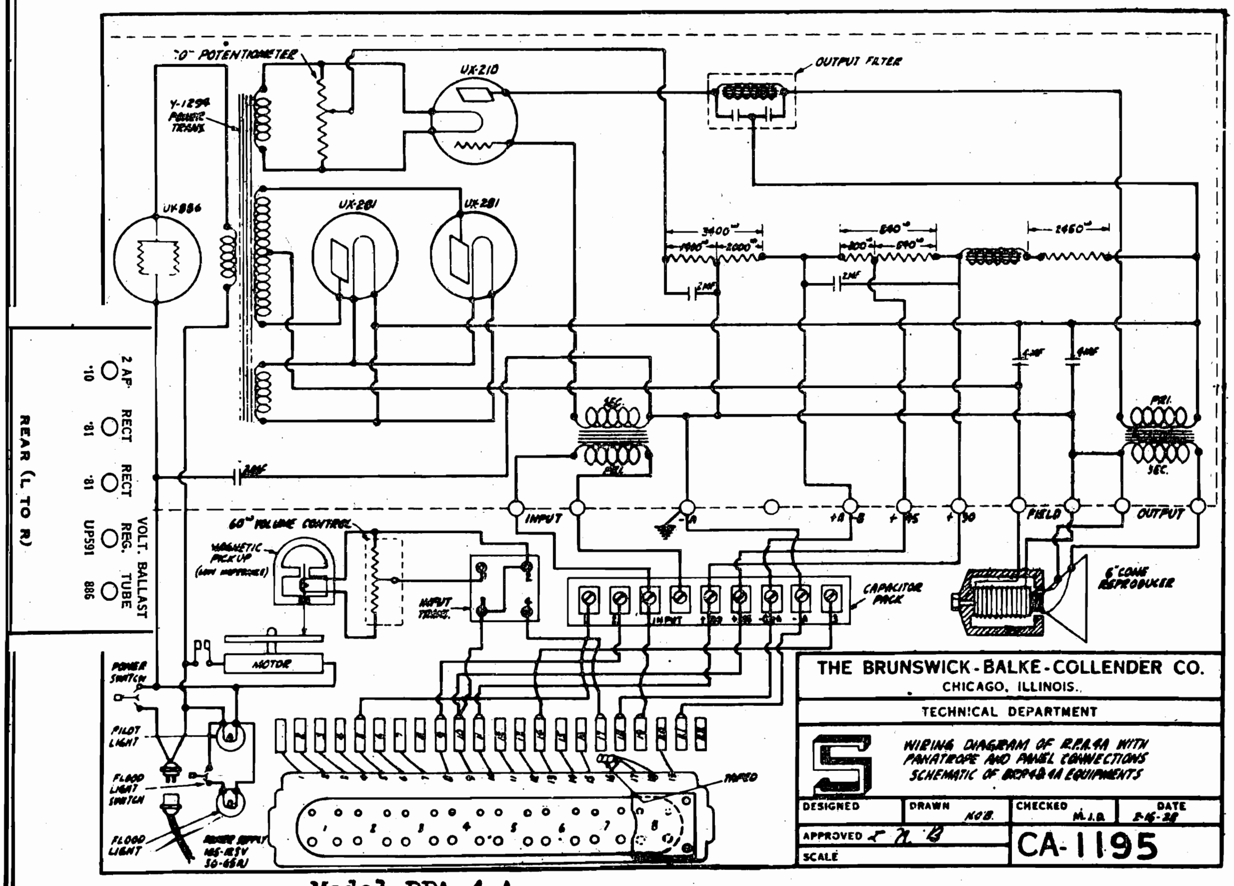
DESIGNED B.B.C. CO. | DRAWN EQR | CHECKED HCB | DATE 3-19-27 | APPROVED | SCALE | CA-1136

BRUNSWICK RADIO CORPORATION

MODEL RPA-3A
MODEL RPA-4A



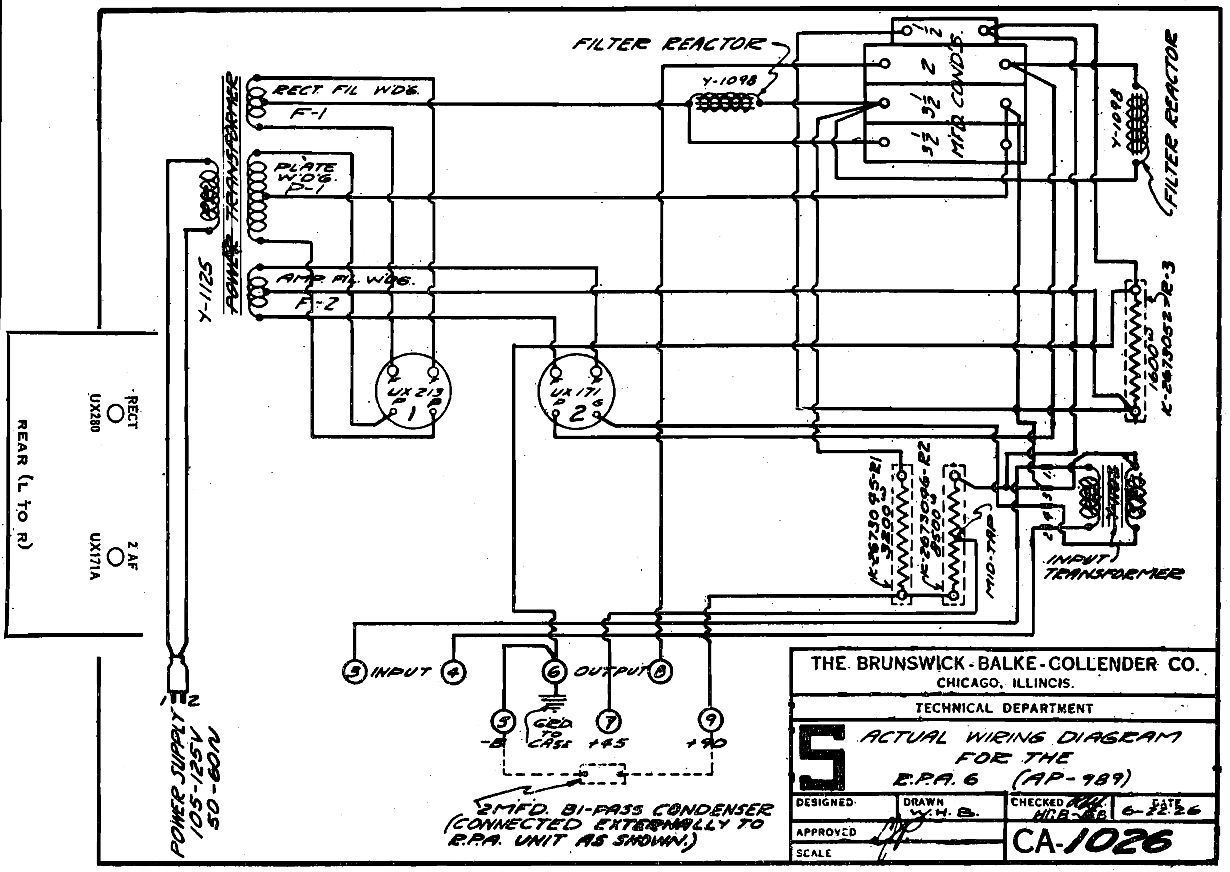
Model RPA 3-A

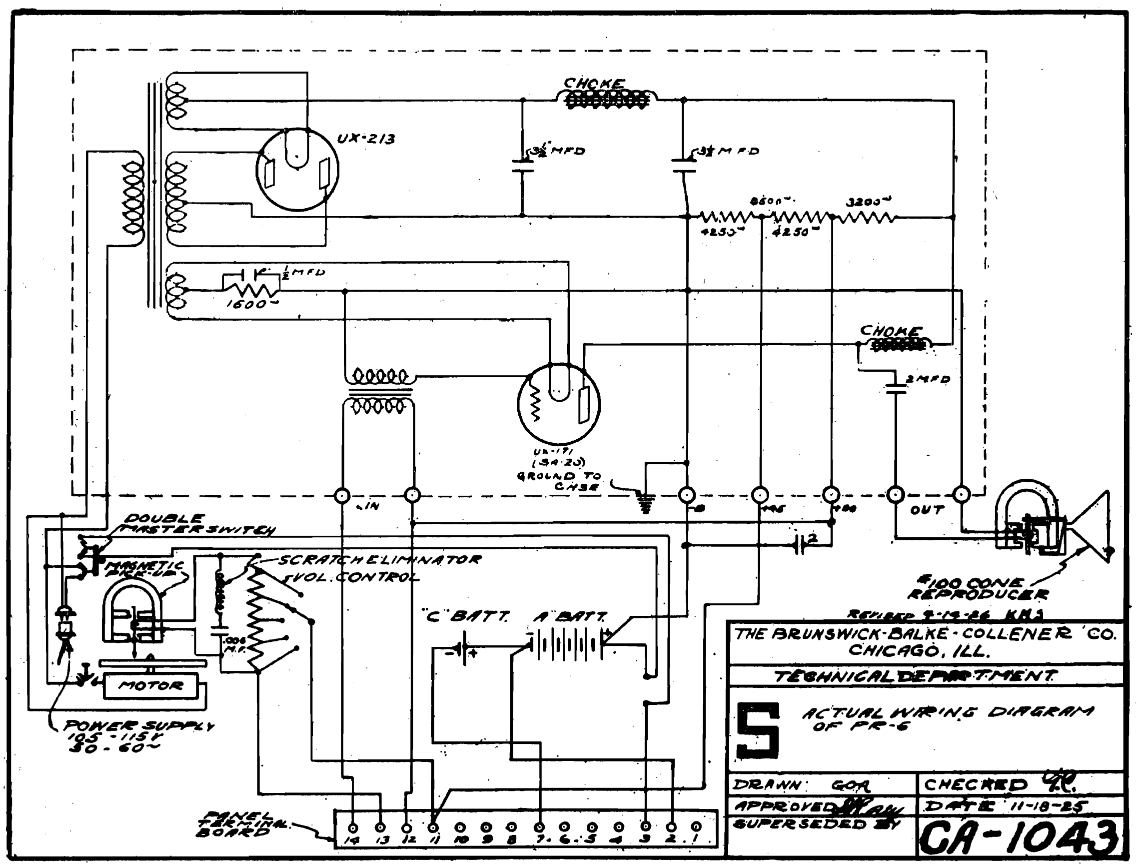


Model RPA 4-A

MODEL RPA-6
MODEL PR-6

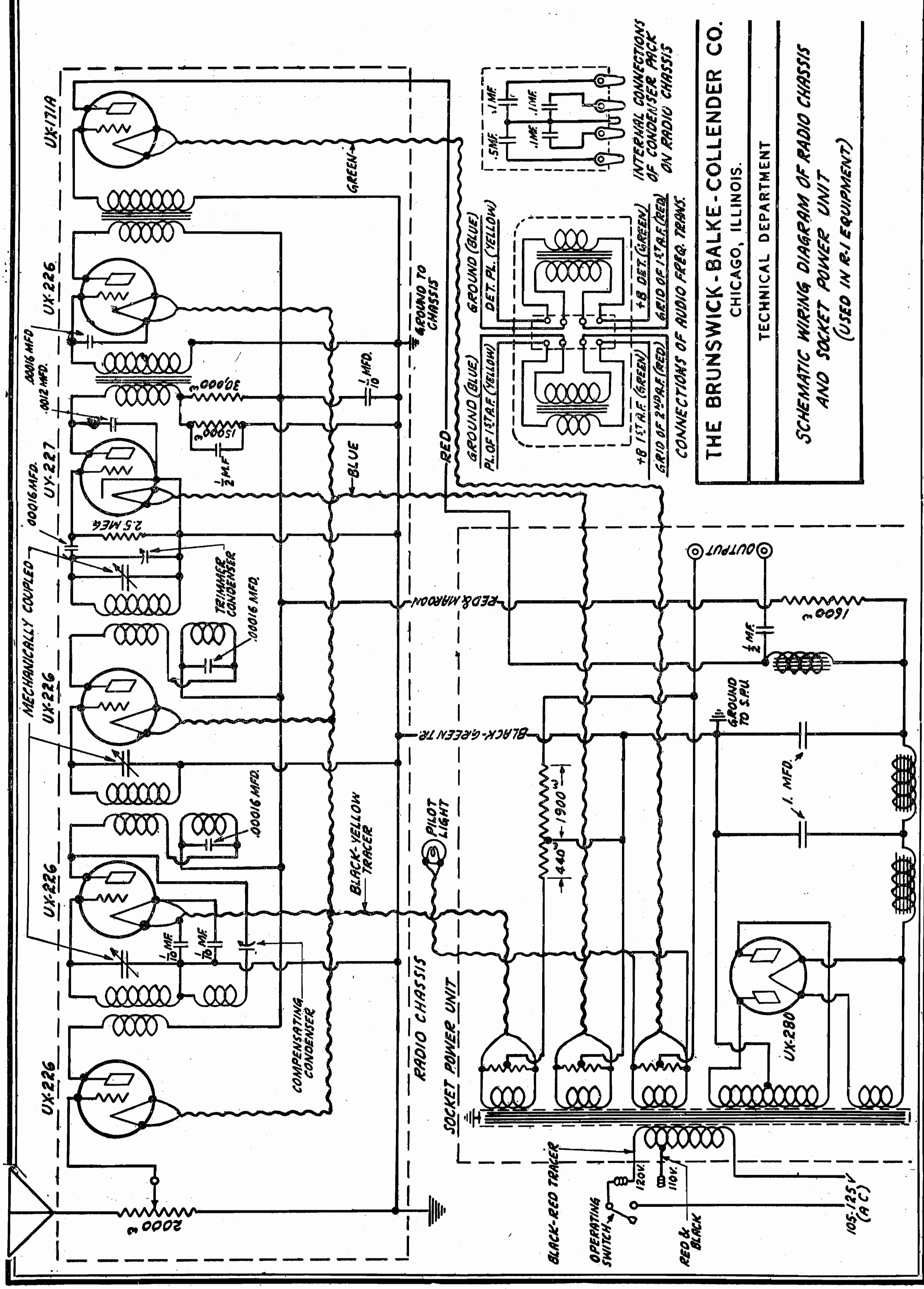
BRUNSWICK RADIO CORPORATION





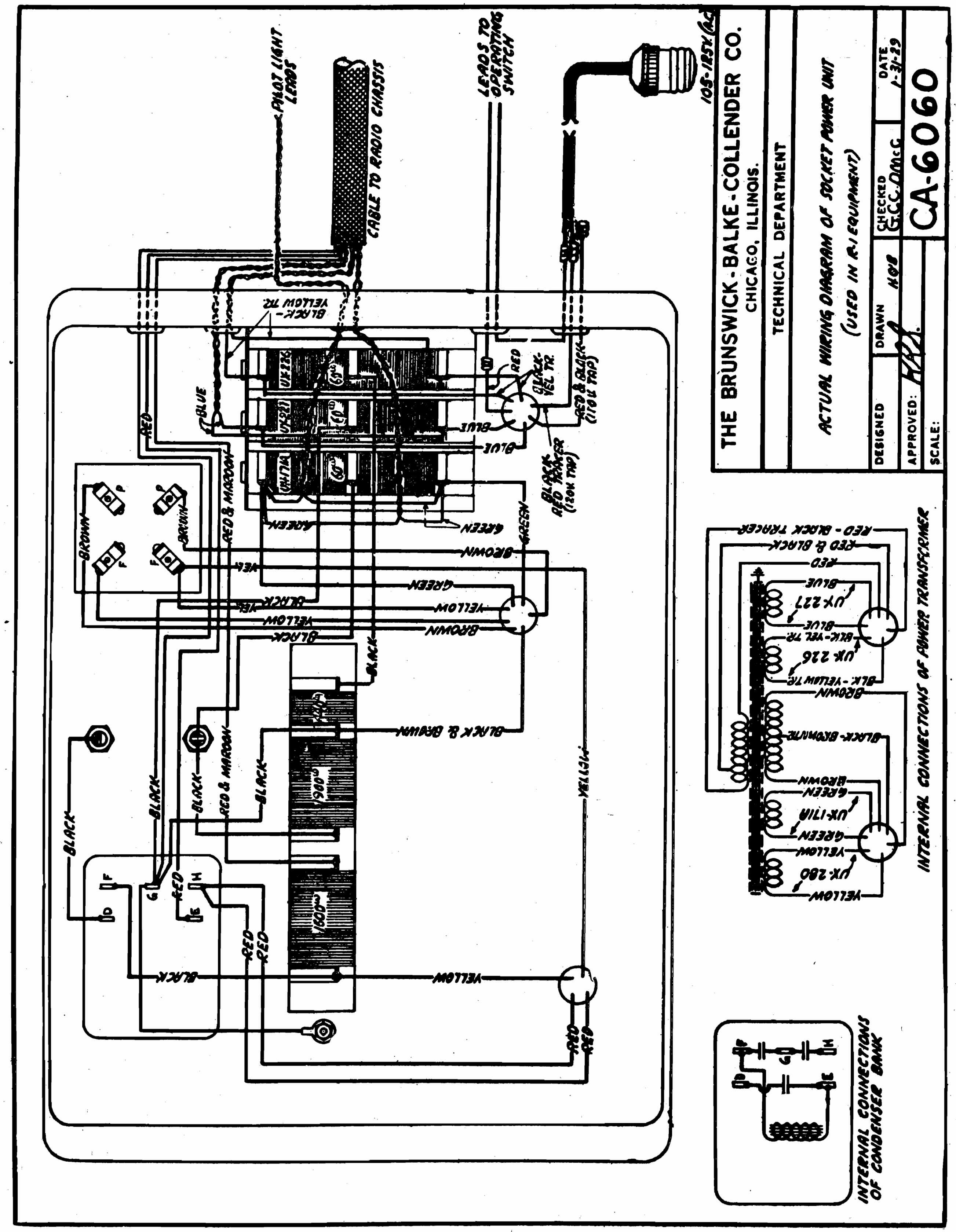
BRUNSWICK RADIO CORPORATION

MODEL R-1



MODEL R-1
Chassis

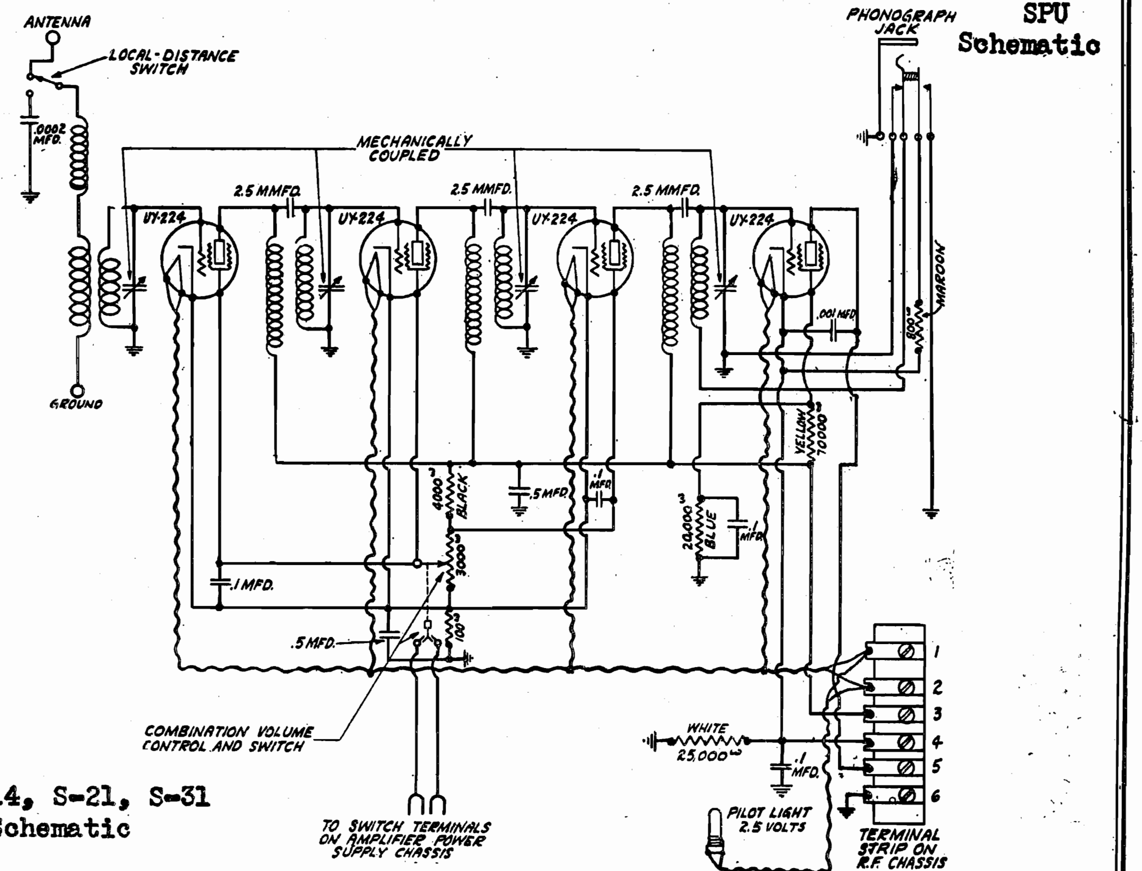
BRUNSWICK RADIO CORPORATION



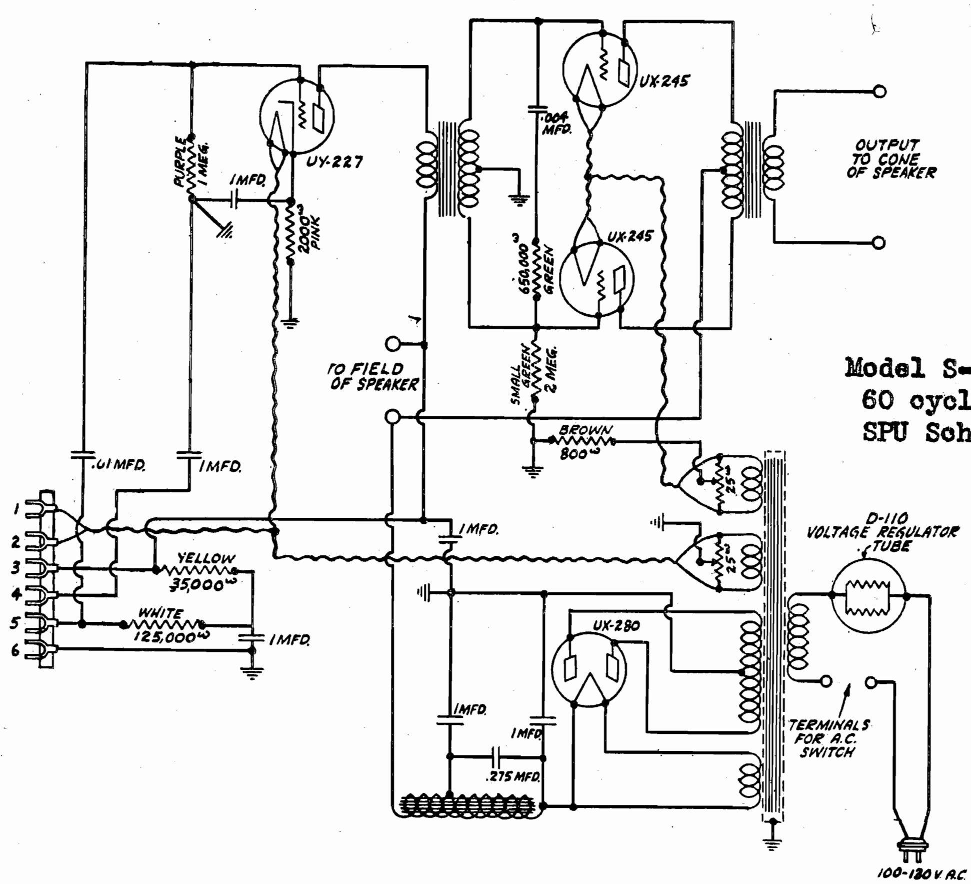
BRUNSWICK RADIO CORPORATION

MODEL S-14, S-21, S-31, S-81, S-82 AC Radio Schematic

MODEL S-14, S21 S-81 AF and SPU Schematic



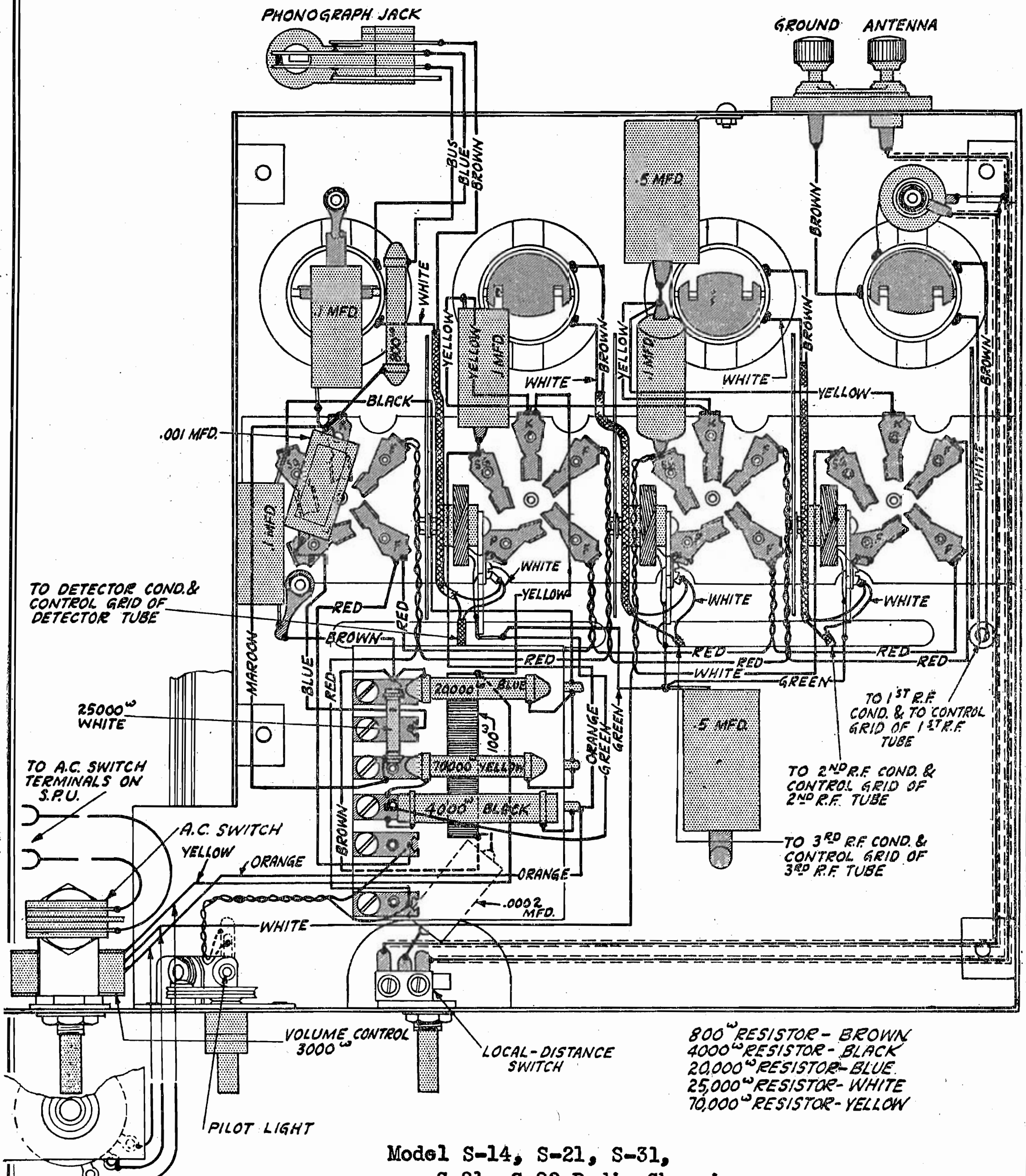
Model S-14, S-21, S-31 Radio Schematic



Model S-14, S-21 60 cycle AF and SPU Schematic

MODEL S-14, S-21, S-31
S-81, S-82 Radio
Chassis

BRUNSWICK RADIO CORPORATION



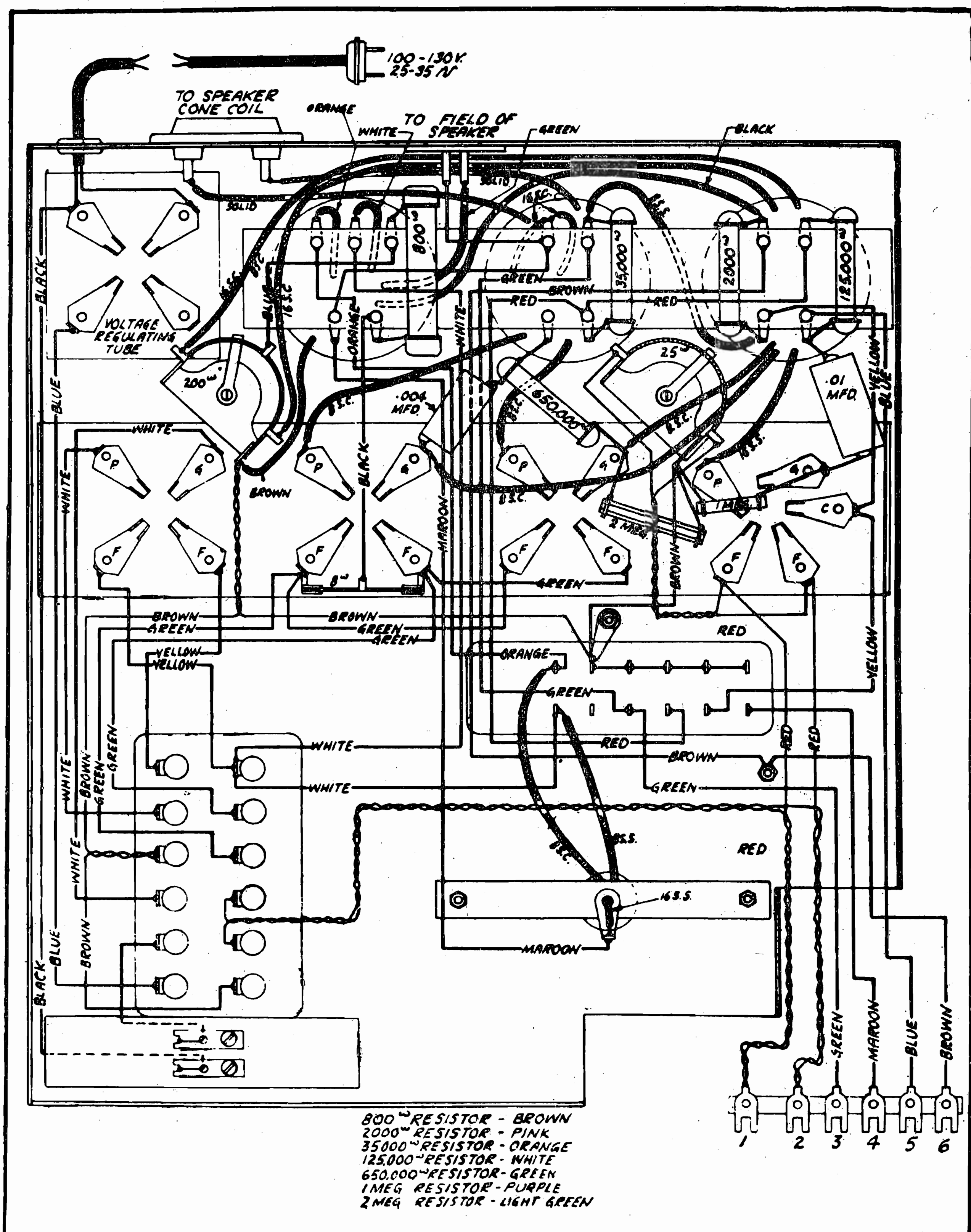
Model S-14, S-21, S-31,
S-81, S-82 Radio Chassis

SCHEMATIC CIRCUIT OF RADIO CHASSIS USING UY-224 TUBES

7008

BRUNSWICK RADIO CORPORATION

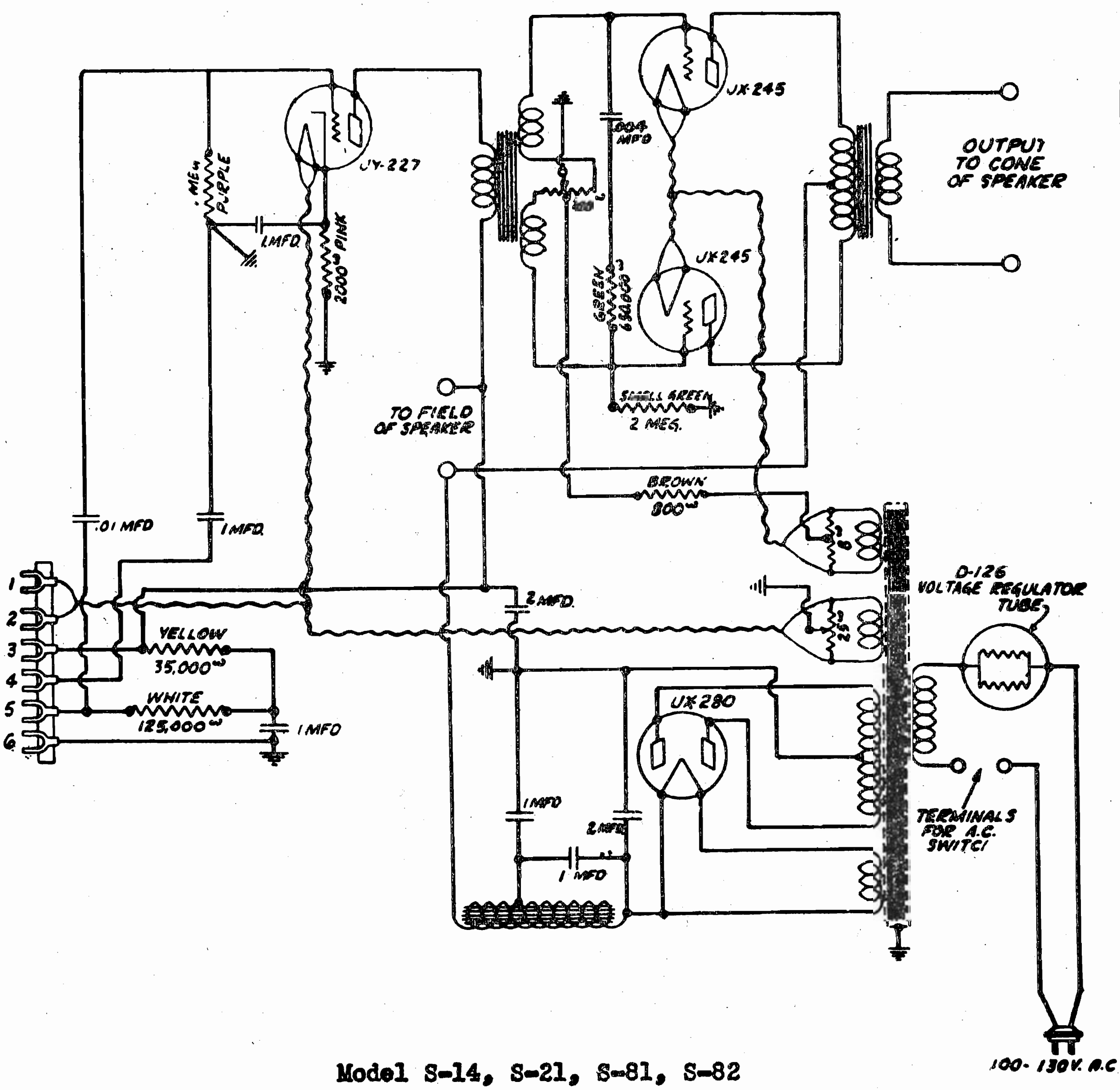
MODEL S-14, S-21, S-81, S-82
25 cycle AF
Chassis



Model S-14, S-21, S-81, S-82 AF Chassis
25 cycle

MODEL S-14, S-21
S-81, S-82 AC
25 cycle AF
Schematic

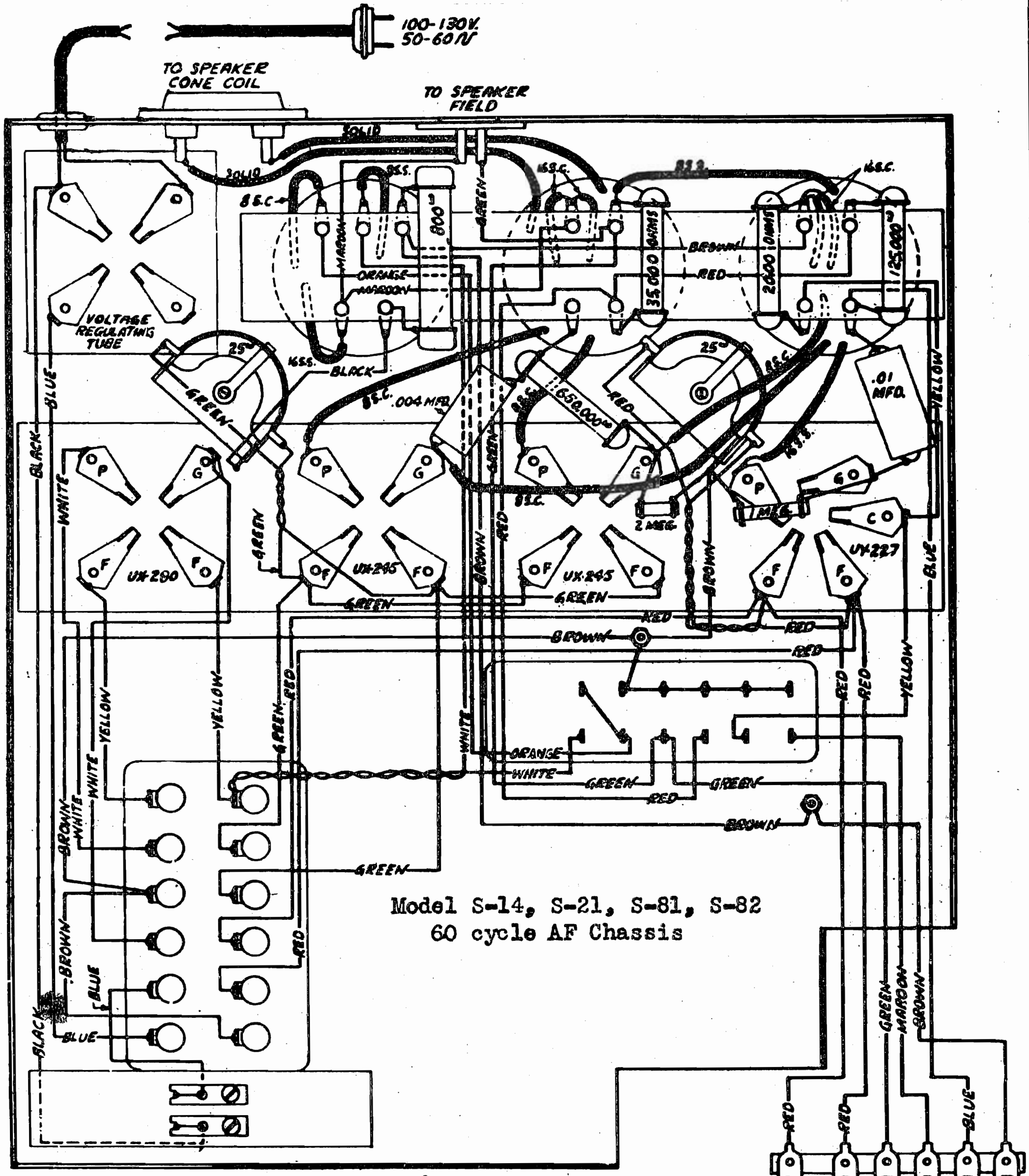
BRUNSWICK RADIO CORPORATION



Model S-14, S-21, S-81, S-82
25 cycle AF Schematic

BRUNSWICK RADIO CORPORATION

MODEL S-14, S-21
S-81, S-82
60 cycle AF
Chassis



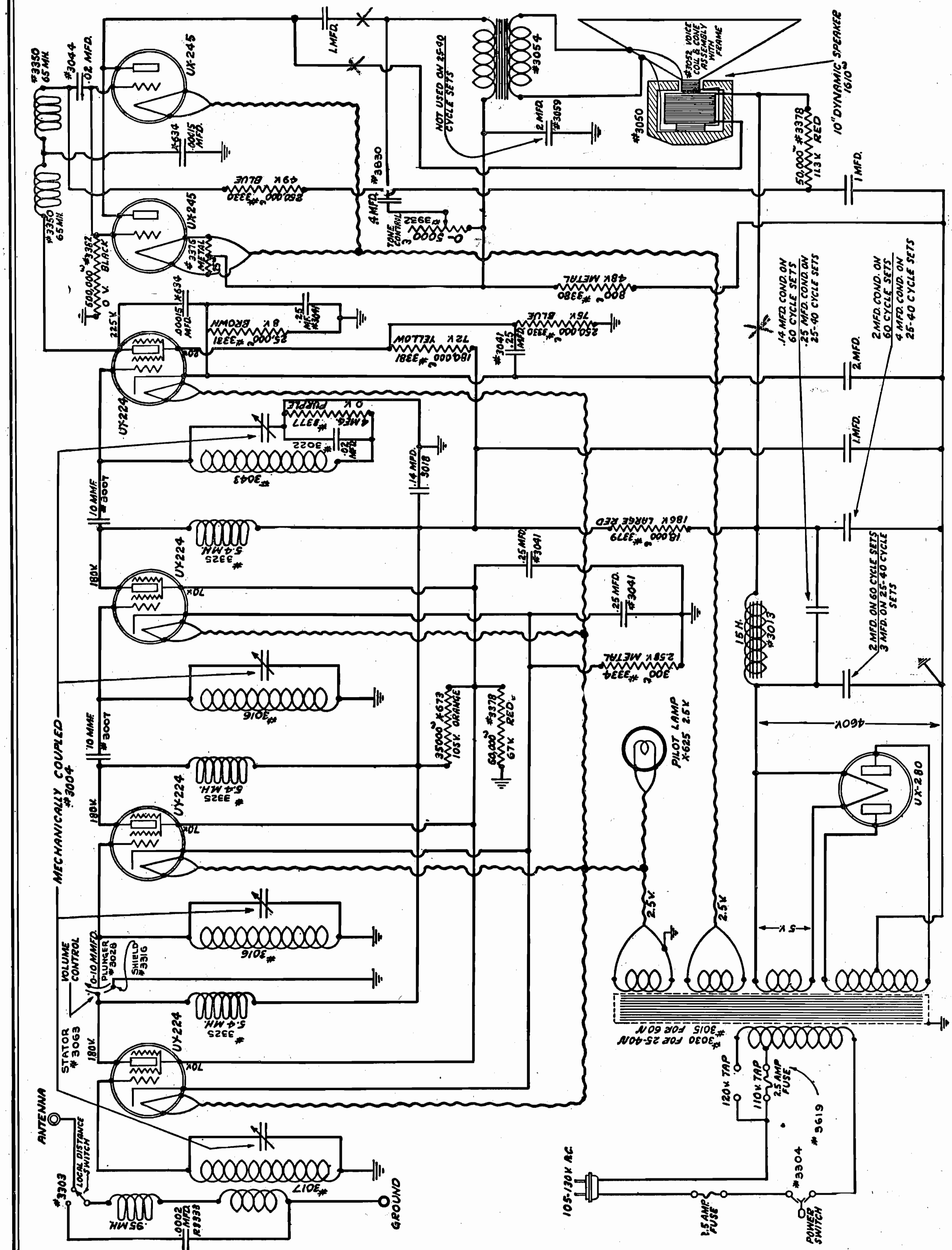
Model S-14, S-21, S-81, S-82
60 cycle AF Chassis

800 ω RESISTOR - BROWN
2000 ω RESISTOR - PINK
35,000 ω RESISTOR - ORANGE
125,000 ω RESISTOR - WHITE
650,000 ω RESISTOR - GREEN
1 MEG. RESISTOR - PURPLE

2 MEG. RESISTOR - LIGHT GREEN

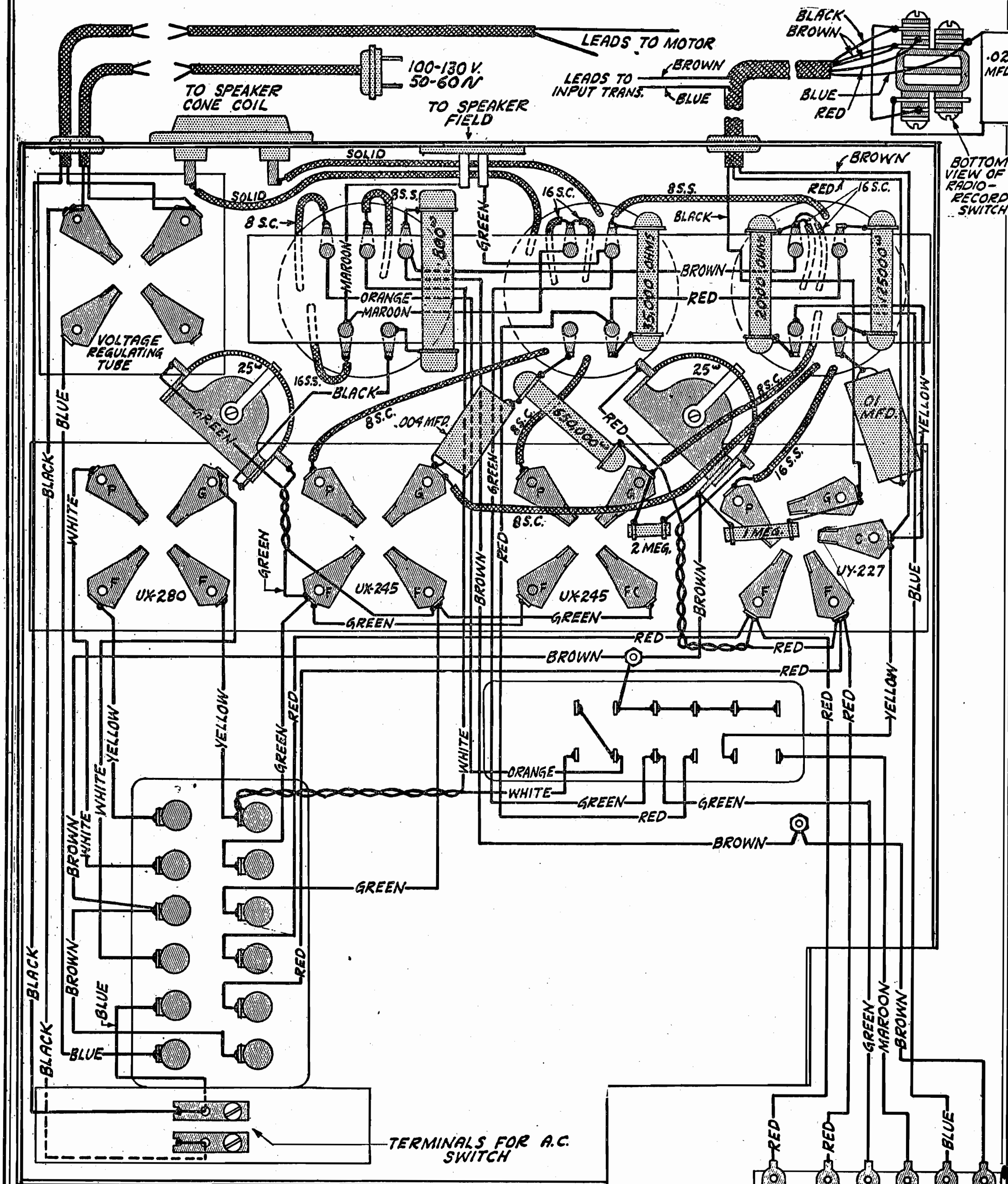
MODEL 15, 22 AC
Schematic
Also 32 and 42 AC

BRUNSWICK RADIO CORPORATION



BRUNSWICK RADIO CORPORATION

MODEL S-31
60 cycle AF Chassis



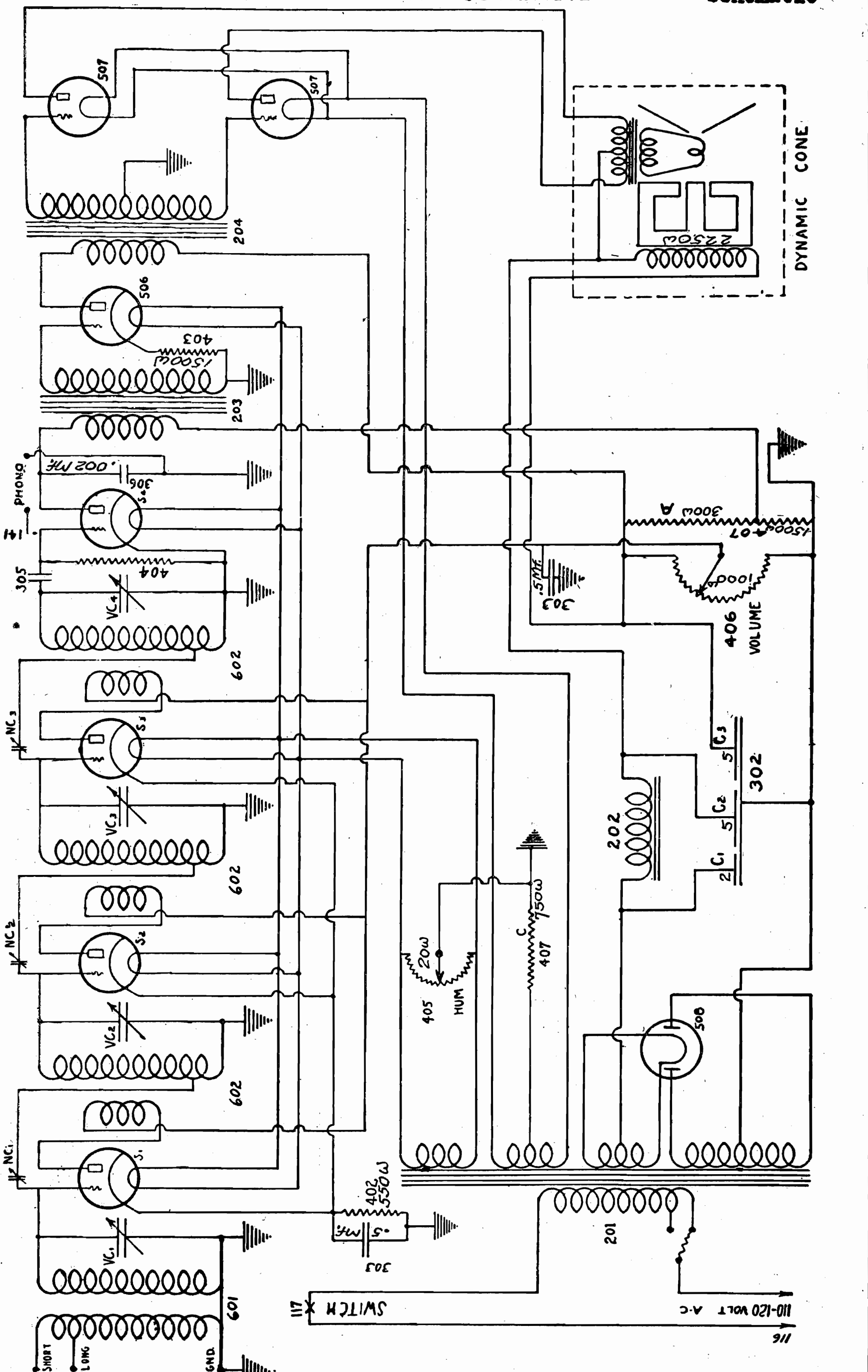
#8 S.C. = #8 STRAND COPPER WIRE
#8 S.S. = #8 STRAND SILVER WIRE
#16 S.C. = #16 STRAND COPPER WIRE
#16 S.S. = #16 STRAND SILVER WIRE

800 ω RESISTOR - BROWN
2000 ω RESISTOR - PINK
35000 ω RESISTOR - ORANGE
125,000 ω RESISTOR - WHITE
650,000 ω RESISTOR - GREEN
1 MEG. RESISTOR - PURPLE
2 MEG. RESISTOR - GREEN

ACTUAL WIRING DIAGRAM OF AUDIO AMPLIFIER POWER SUPPLY CHASSIS USED S-31 COMBINATION **6083**

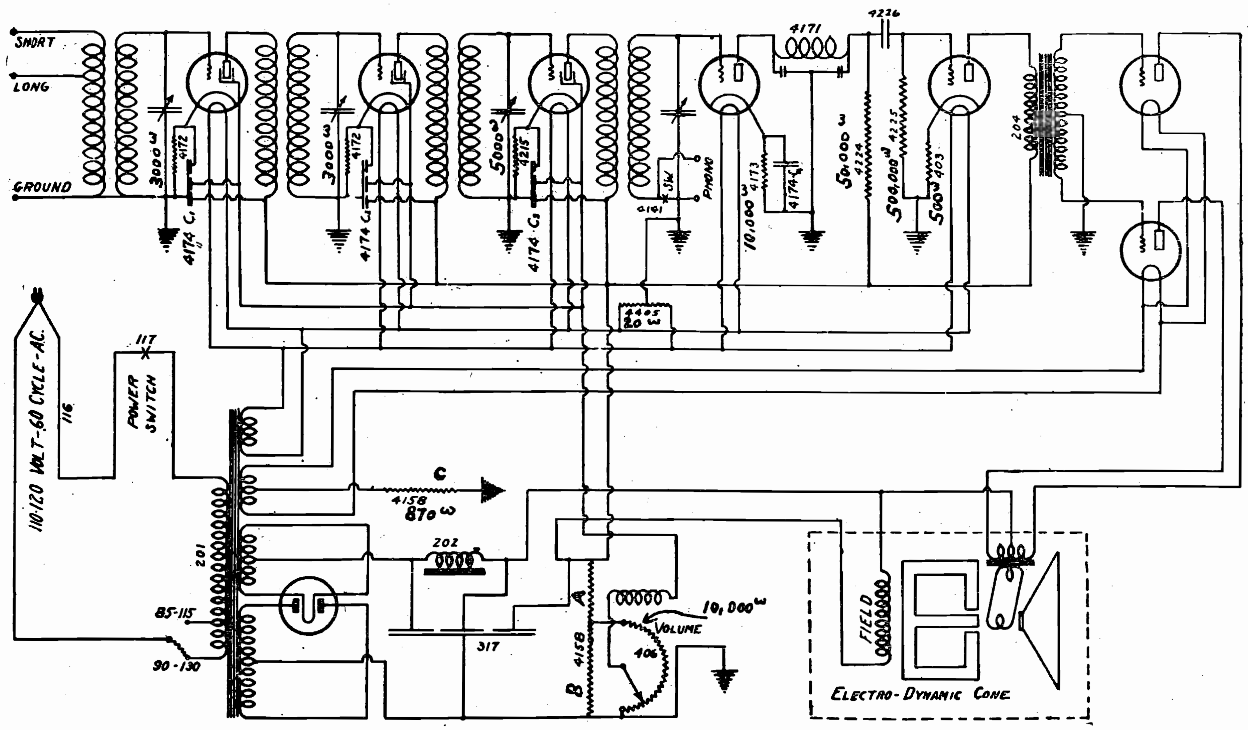
BUSH & LANE PIANO COMPANY

MODEL 10
Schematic



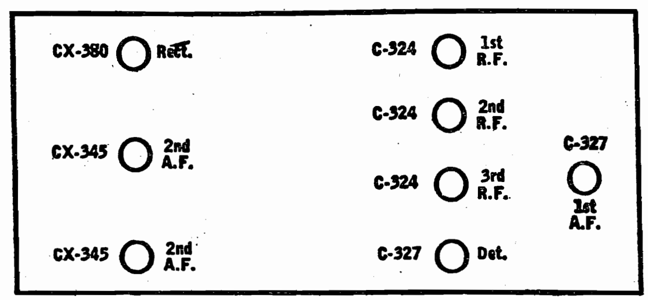
MODEL 12
Schematic and Data

BUSH & LANE PIANO COMPANY



4158—Voltage Divider Resistor 5750 Ohms, Total.

No.12 Screen Grid

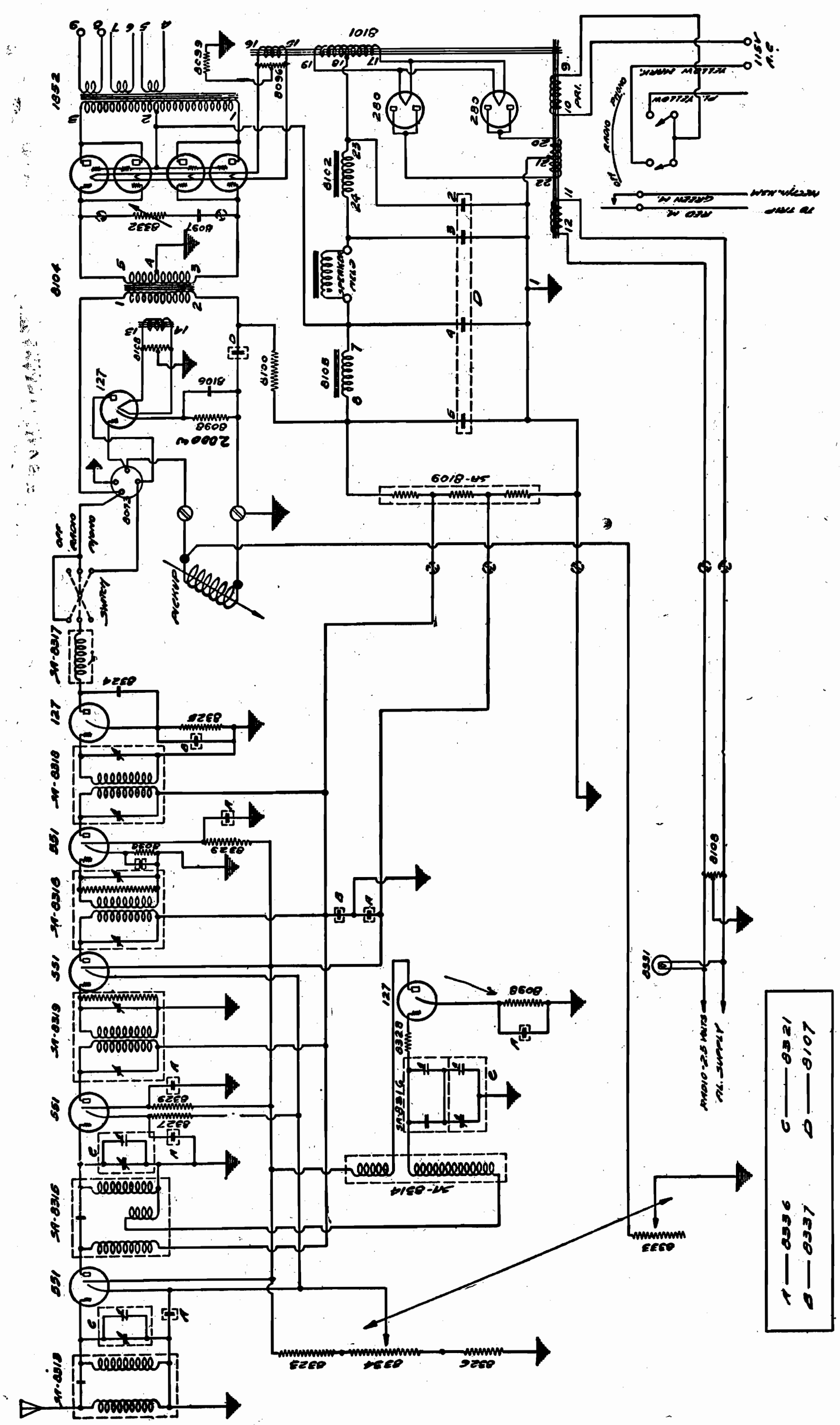


Line Voltage 112—Set on 120 Volt Tap

Tube No. in Order (1)	Type of Tube (2)	Position of Tube 1st R.F. Det., etc. (3)	Readings, Plug in Socket of Set: Tube Out: A Volts (4)	Tube Out: B Volts (5)	Tube in Tester: A Volts (6)	Tube in Tester: B Volts (7)	C Volts (Control Grid) (8)	Cathode-Heater Volts (9)	Normal Plate (10) M.A.	Plate M.A. Grid (11) Test	Plate Change (12) M.A.	Screen Grid (13) Volts
1	224	1st RF	2.45	185	2.35	170	3.5	3	1	4	3	65
2	224	2nd RF	2.45	185	2.35	170	3.0	3	1.0	4	3	65
3	224	3rd RF	2.45	185	2.35	170	3.0	3	1.6	4	3	65
4	227	Det.	2.45	150	2.35	130	18.0	18.0	1.8	3	1.2	-
5	227	1st AF	2.45	110	2.35	160	10.0	10	7.4	9	1.5	-
6	245	Pwr.	2.45	285	2.36	230	45	-	26	30	4	-
7	245	Pwr.	2.45	285	2.36	230	45	-	26	30	4	-
8	280	Rect.	5.	-	4.8	-	-	-	80	-	-	-
9												
10												

CAPEHART CORPORATION

MODEL 400,401,402
Schematic

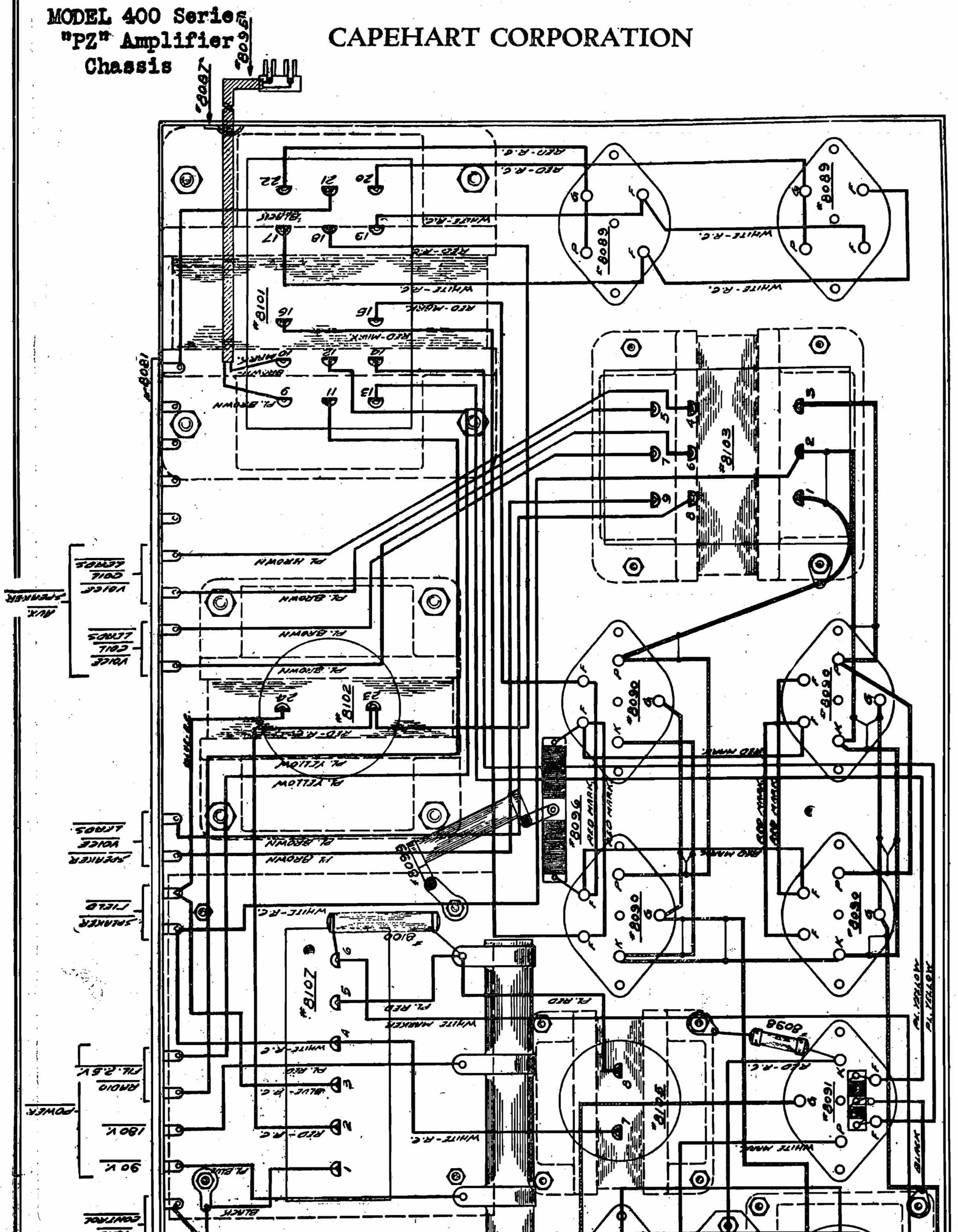


SCHEMATIC - CAPEHART TUNER & AMPLIFIER #400 - #401 - #402

8096 - Large 10 ohm CT
8097 - .004 mfd
8098 - 2000 ohms
8099 - 105 ohms
8100 - 11000 ohms
8108 - Small 10 ohm CT
8106 - Pentode bias cond. 300 mfd
8107 - 5 section cond. 24 mfd
8109 - 6250 ohms
8323 - 20 megohms
8325 - 30000 ohms
8326 - 200 ohms
8327 - 1800 ohms
8328 - 3000 ohms
8329 - 300 ohms
8330 - .0009 mfd
8331 - 2.5 volt lamps

MODEL 400 Series "PZ" Amplifier Chassis

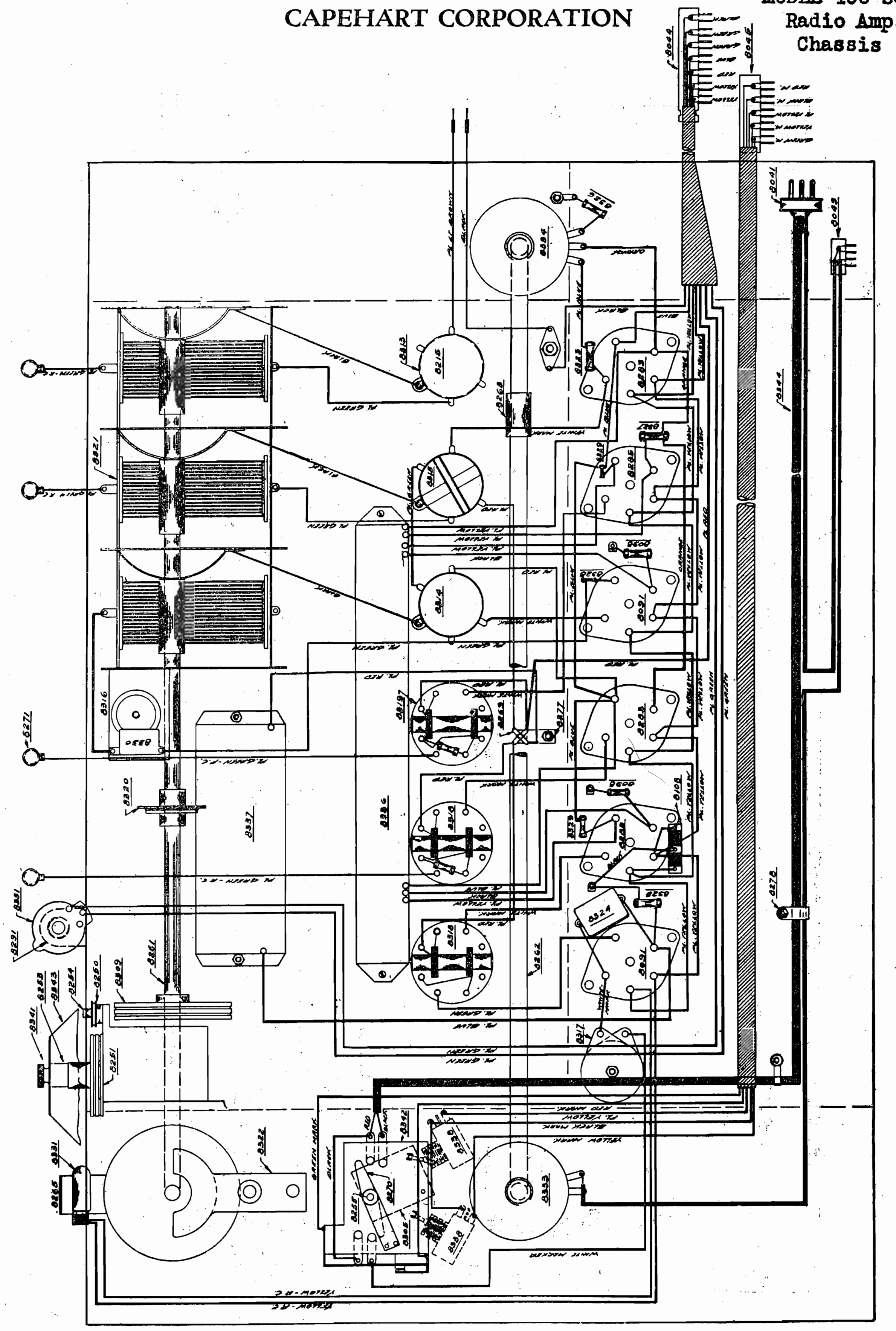
CAPEHART CORPORATION



PICTORIAL-UNDERSIDE OF CAPEHART PZ AMPLIFIER #8078 (400 Series)

CAPEHART CORPORATION

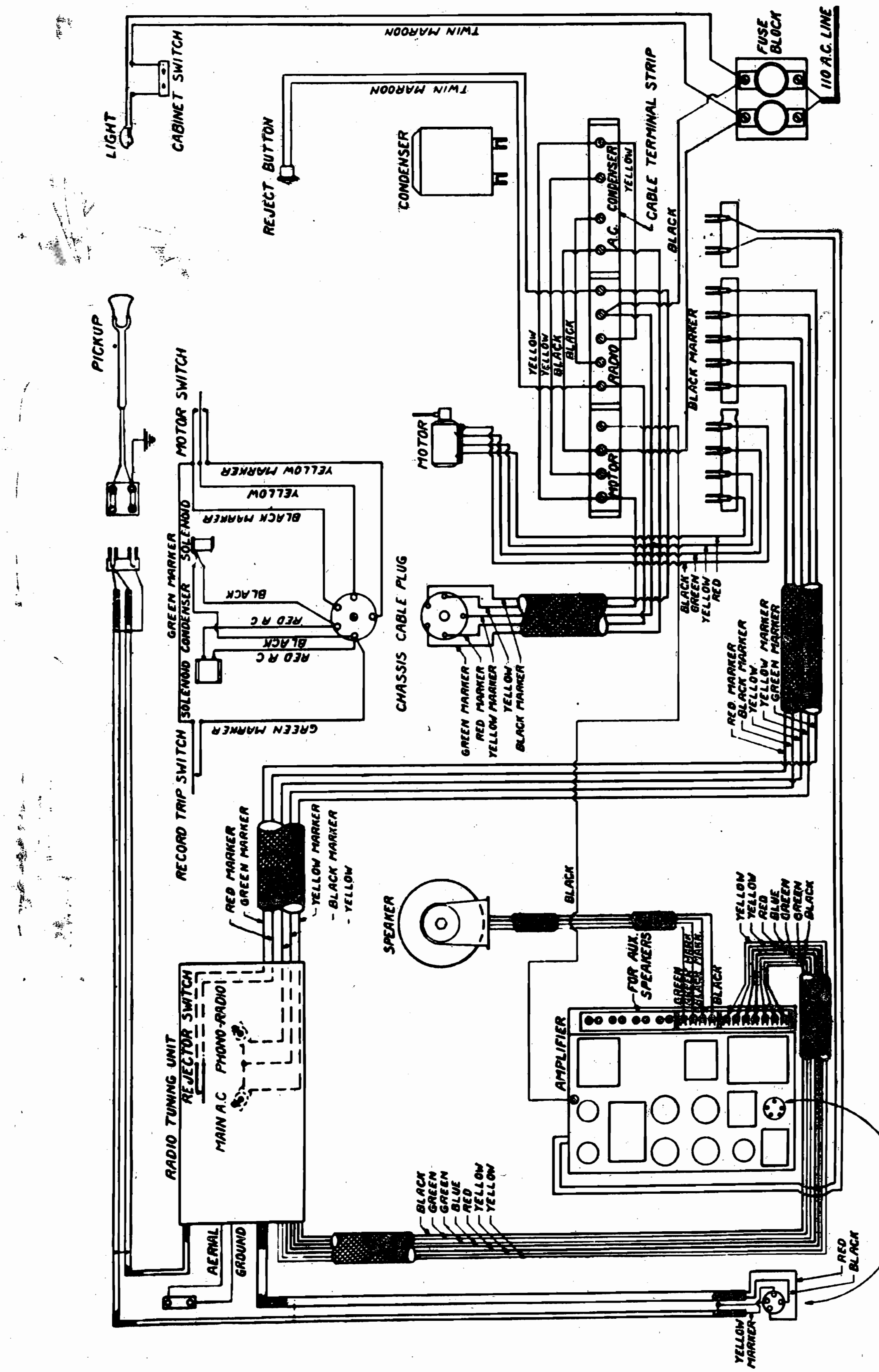
MODEL 400 Series Radio Amp. Chassis



VICTORIAL-CAPEHART RADIO TUNER #8076 (400 Series)

MODEL 400, 401, 402
Complete Wiring

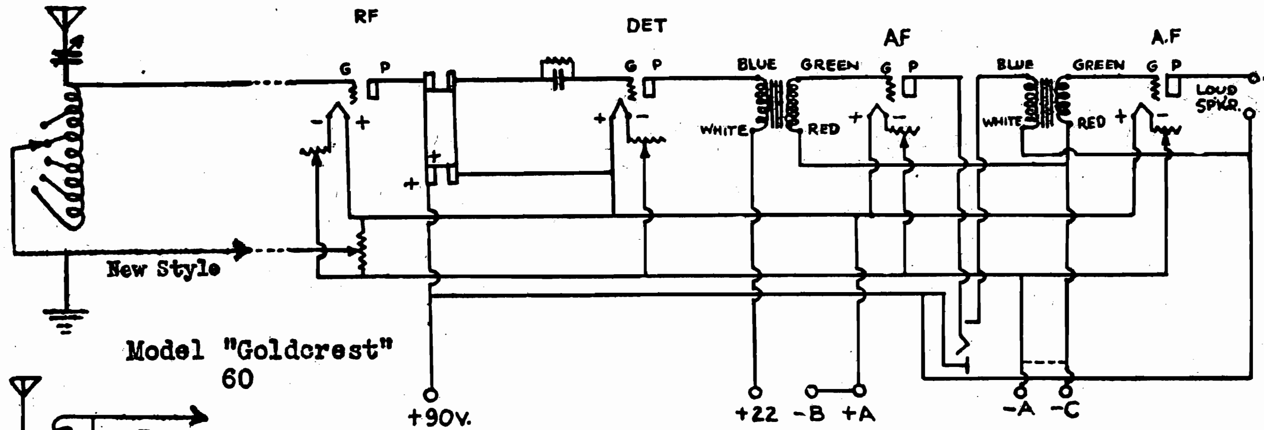
CAPEHART CORPORATION



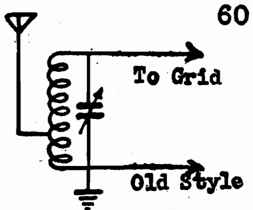
WIRING DIAGRAM CAPEHART DE LUXE MODEL #400 #401 & #402

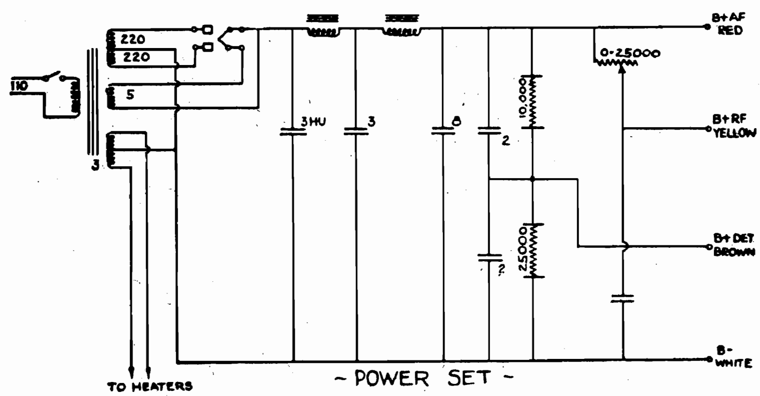
CLEARTONE RADIO CORPORATION

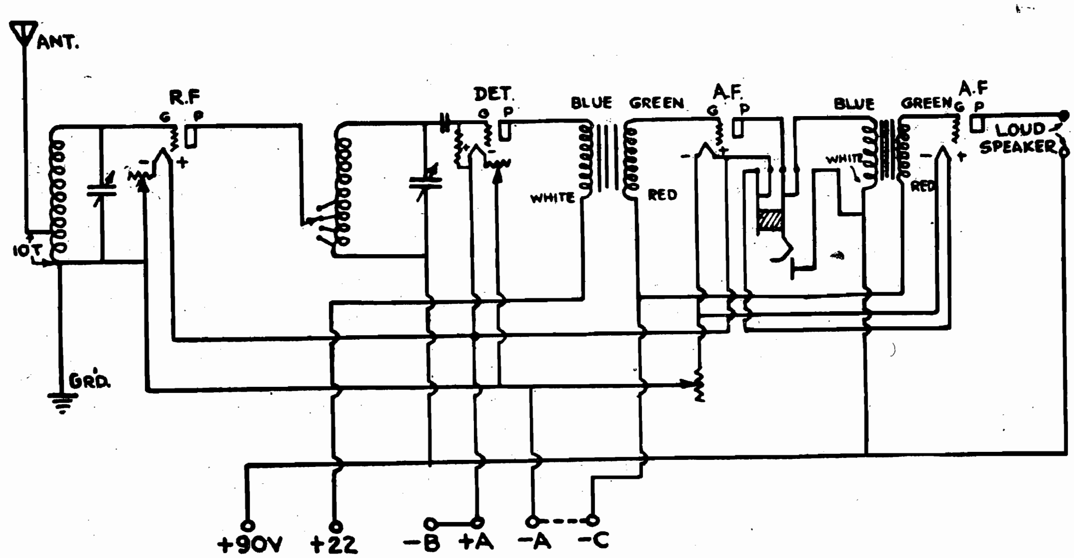
MODEL 60
Goldcrest
MODEL 70
Clearodyne



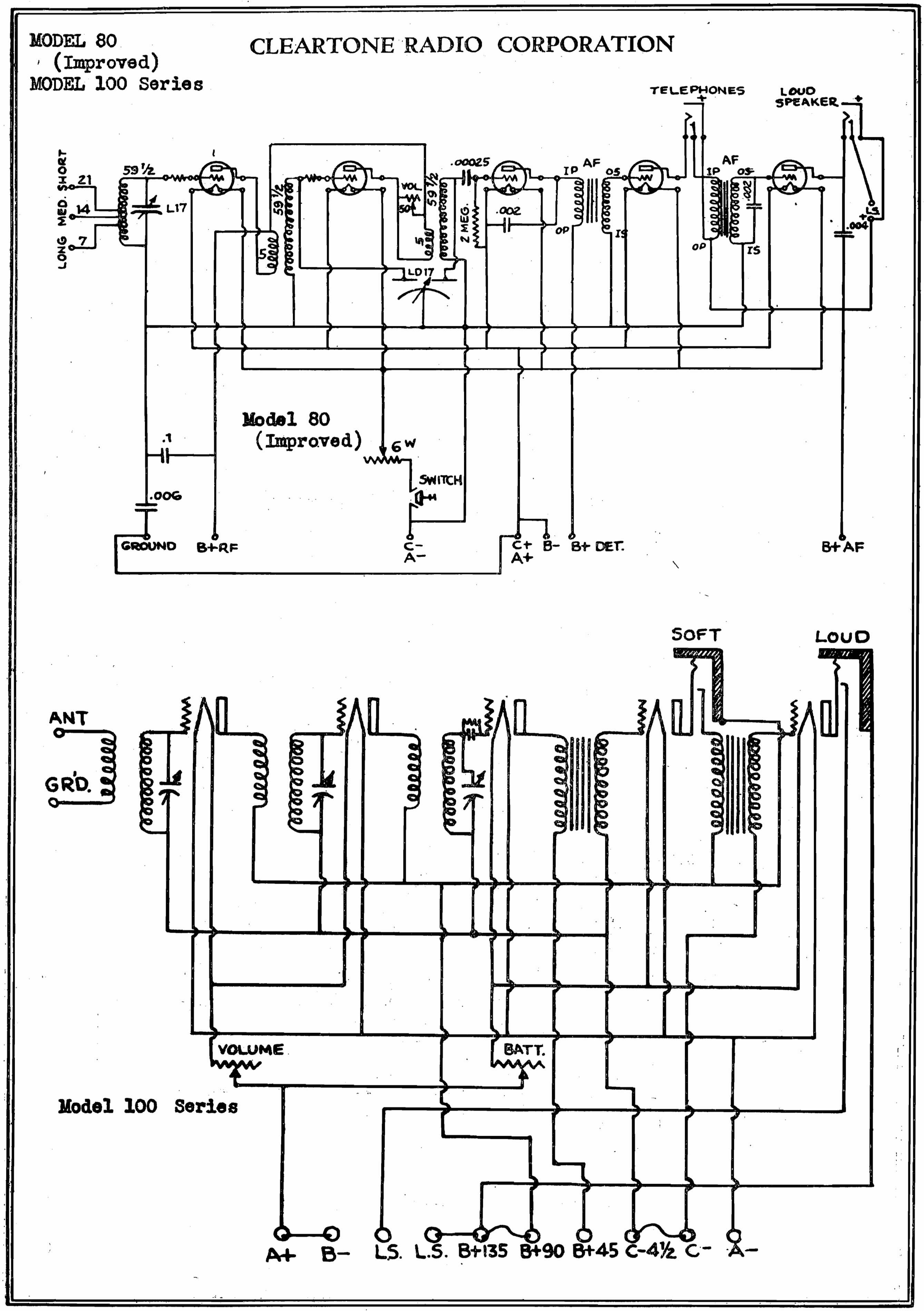
Model "Goldcrest" 60





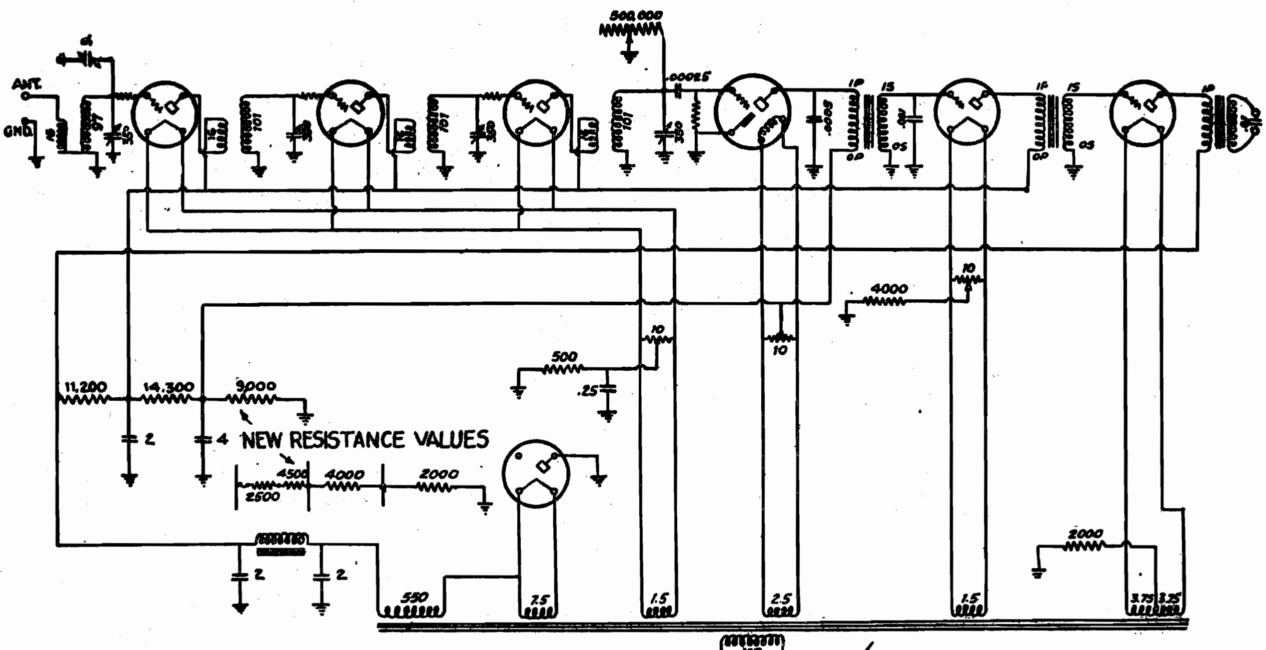


Model Clearodyne 70

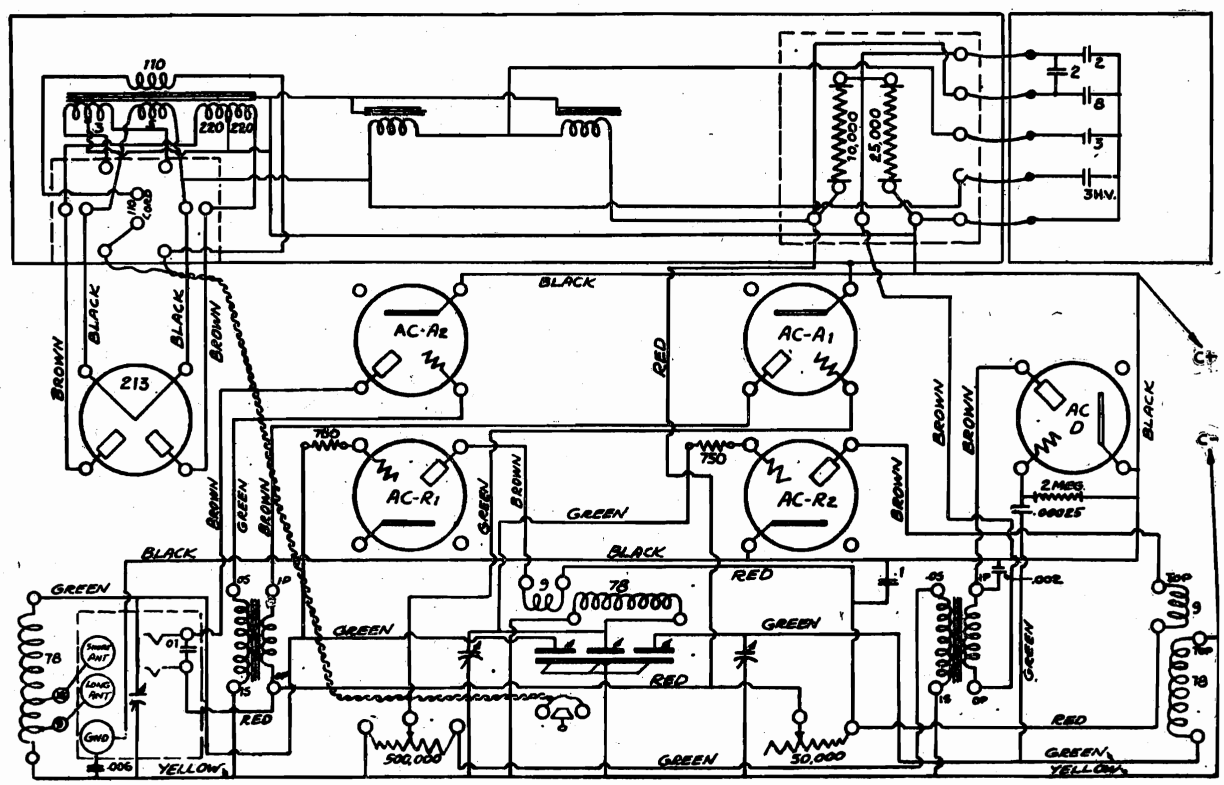

MODEL 80
(Improved)
MODEL 100 Series
CLEARTONE RADIO CORPORATION
TELEPHONES
LOUD SPEAKER
LONG
MED.
SHORT
21
14
7
59½
L17
.00025
2 MEG.
.002
AF
IP
OS
OP
IS
.004
VOL.
LD17
Model 80
(Improved)
6W
SWITCH
.1
.006
GROUND
B+RF
C−
A−
C+
A+
B−
B+ DET.
B+AF
SOFT
LOUD
ANT
GRD.
VOLUME
BATT.
Model 100 Series
A+
B−
L.S.
L.S.
B+135
B+90
B+45
C-4½
C−
A−

CLEARTONE RADIO CORPORATION

MODEL 110
MODEL 112



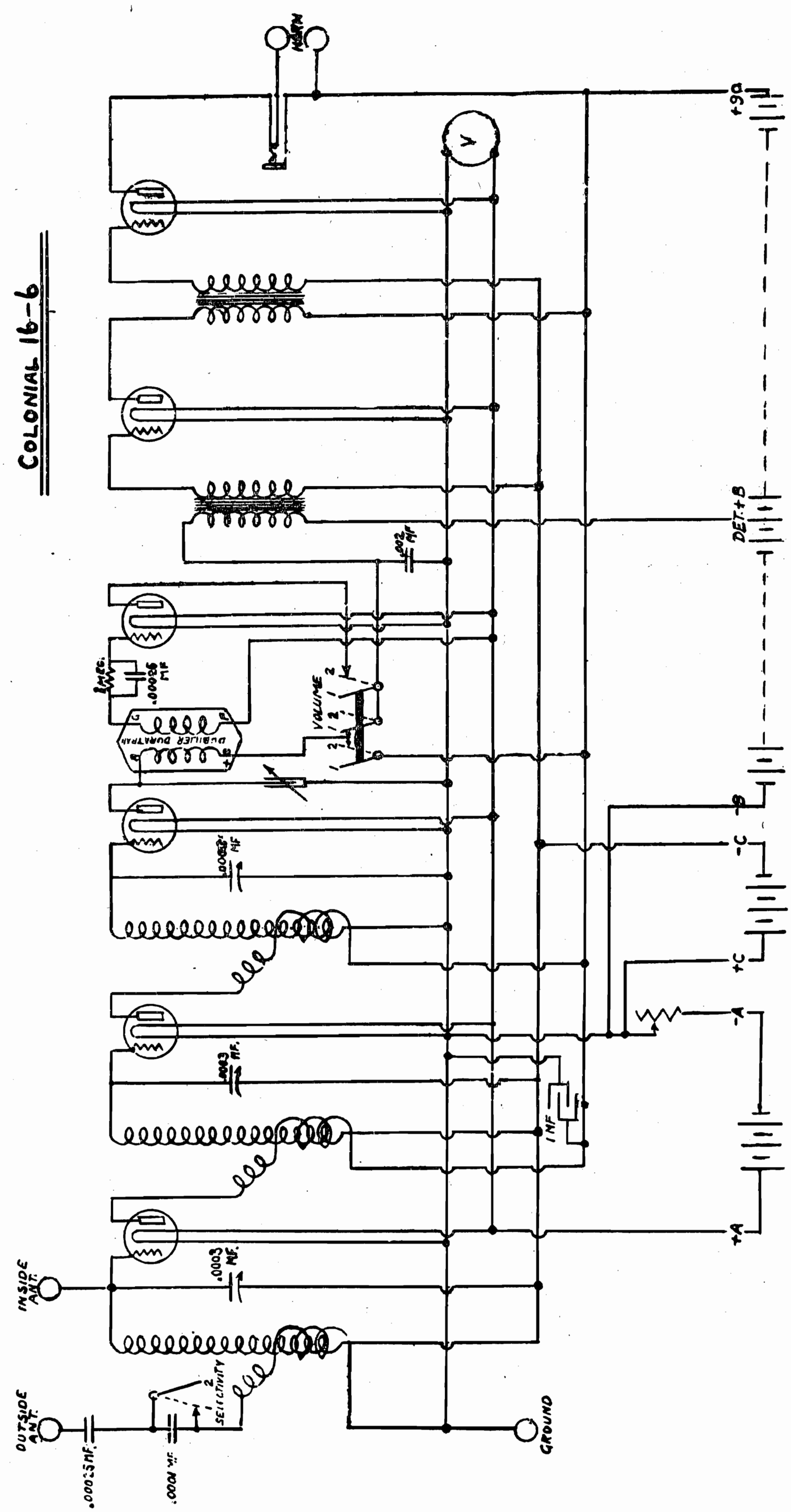
Model Cleartone 112



Model Cleartone 110

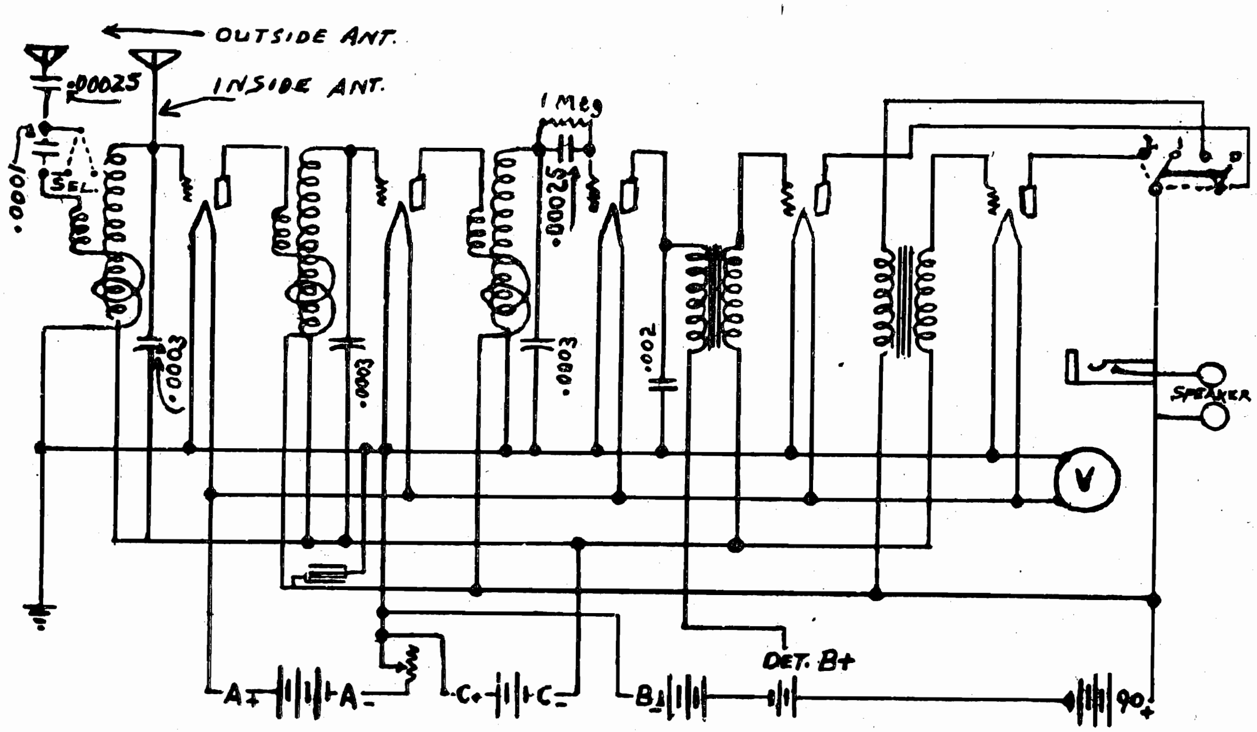
COLONIAL RADIO CORP.

MODEL 16-6

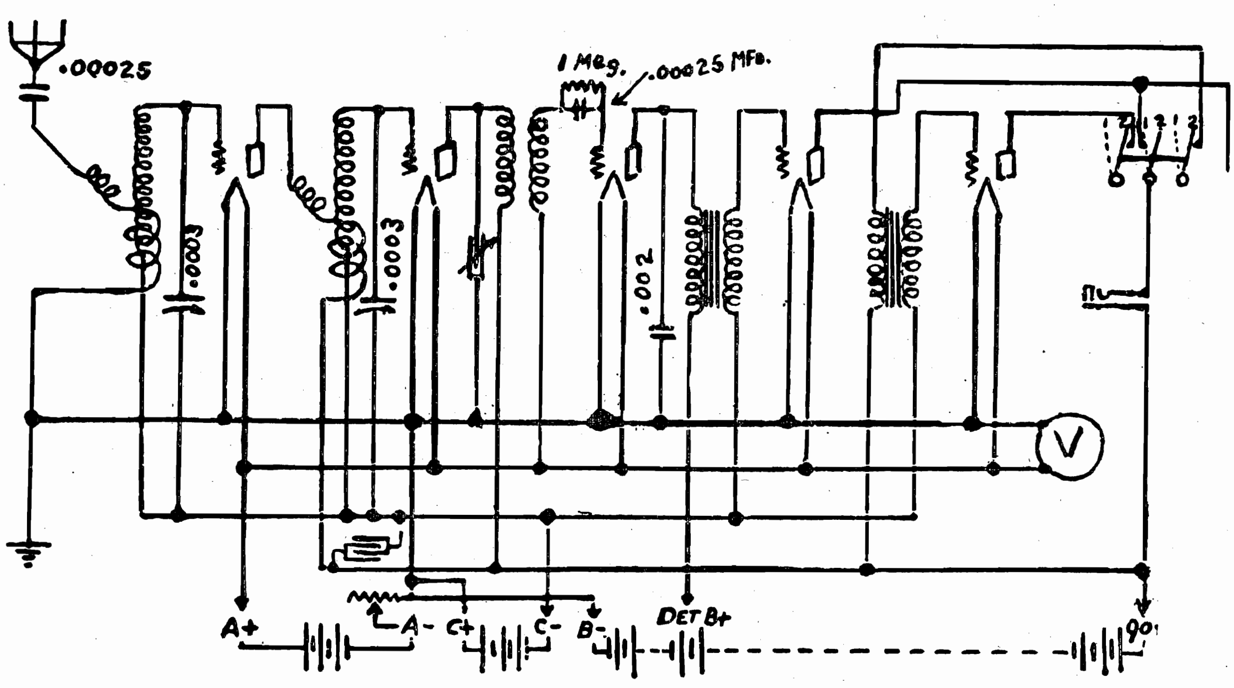


MODEL 16-5
MODEL 17-5

COLONIAL RADIO CORP.



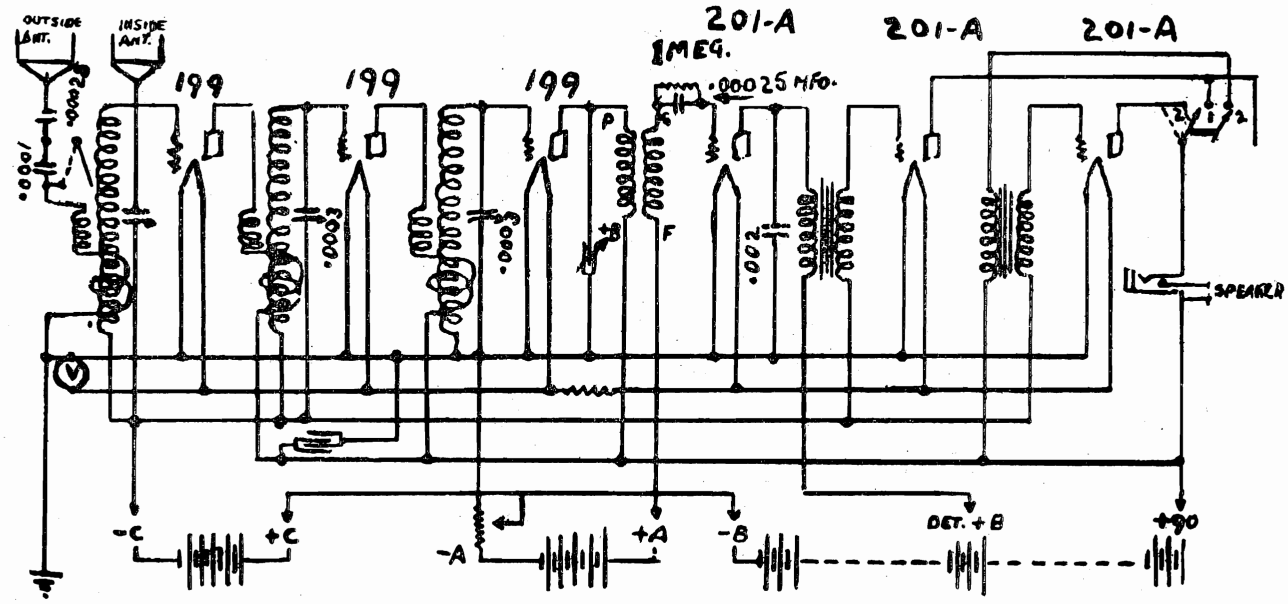
Model 16-5



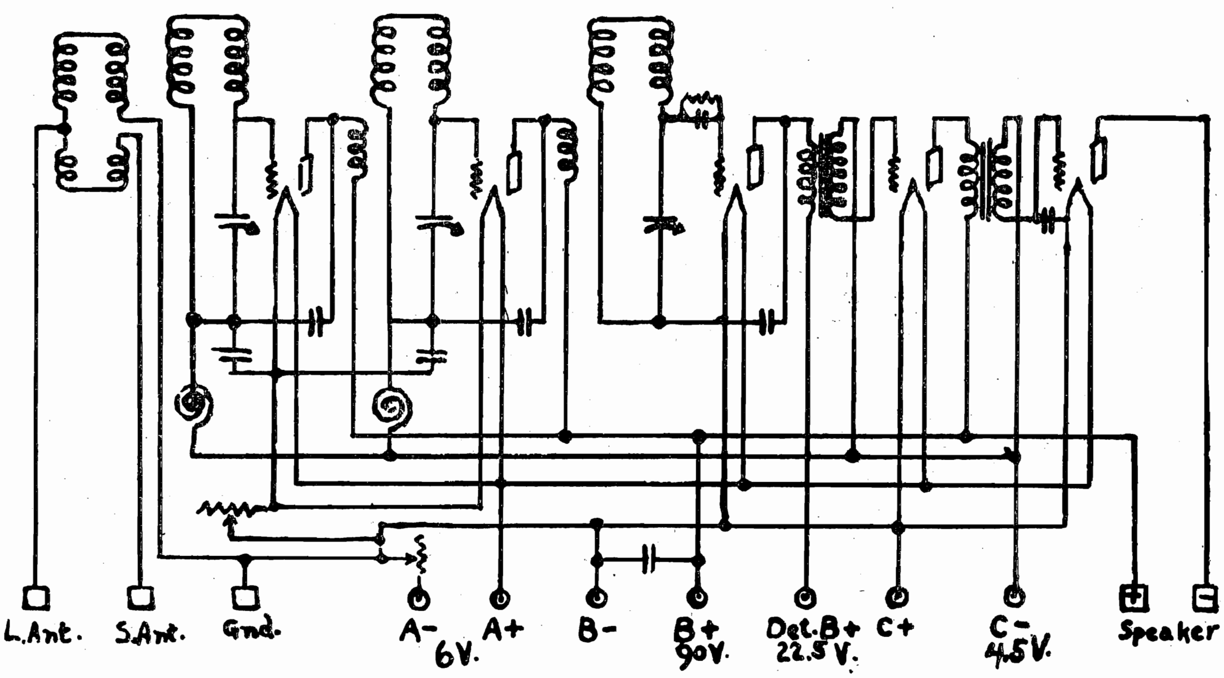
Model 17-5

COLONIAL RADIO CORP.

MODEL 20
MODEL 21



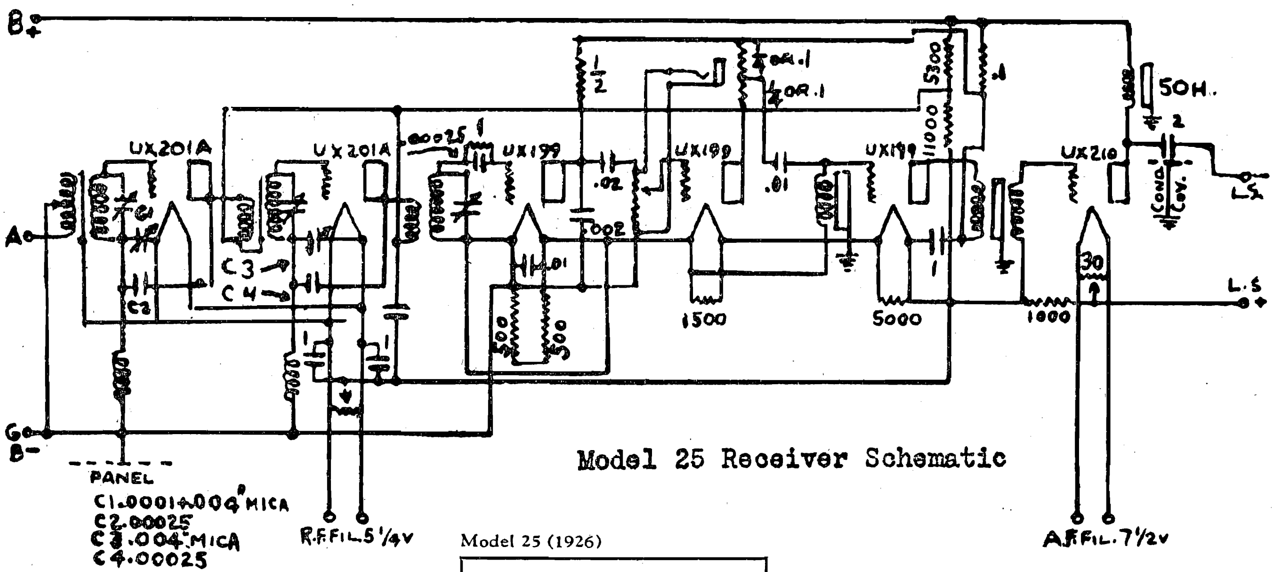
Model 20



Model 21

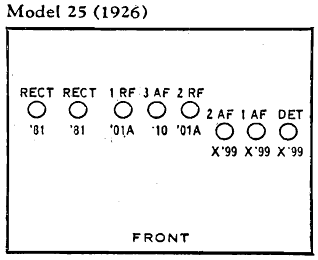
MODEL 25

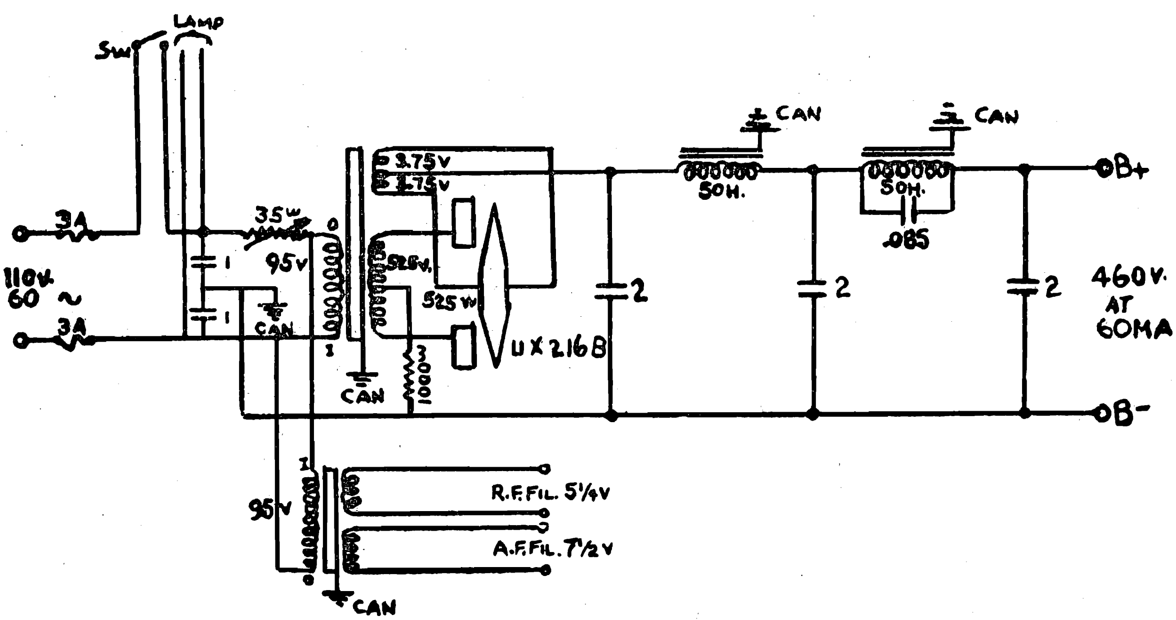
COLONIAL RADIO CORP



Model 25 Receiver Schematic

Model 25 (1926)

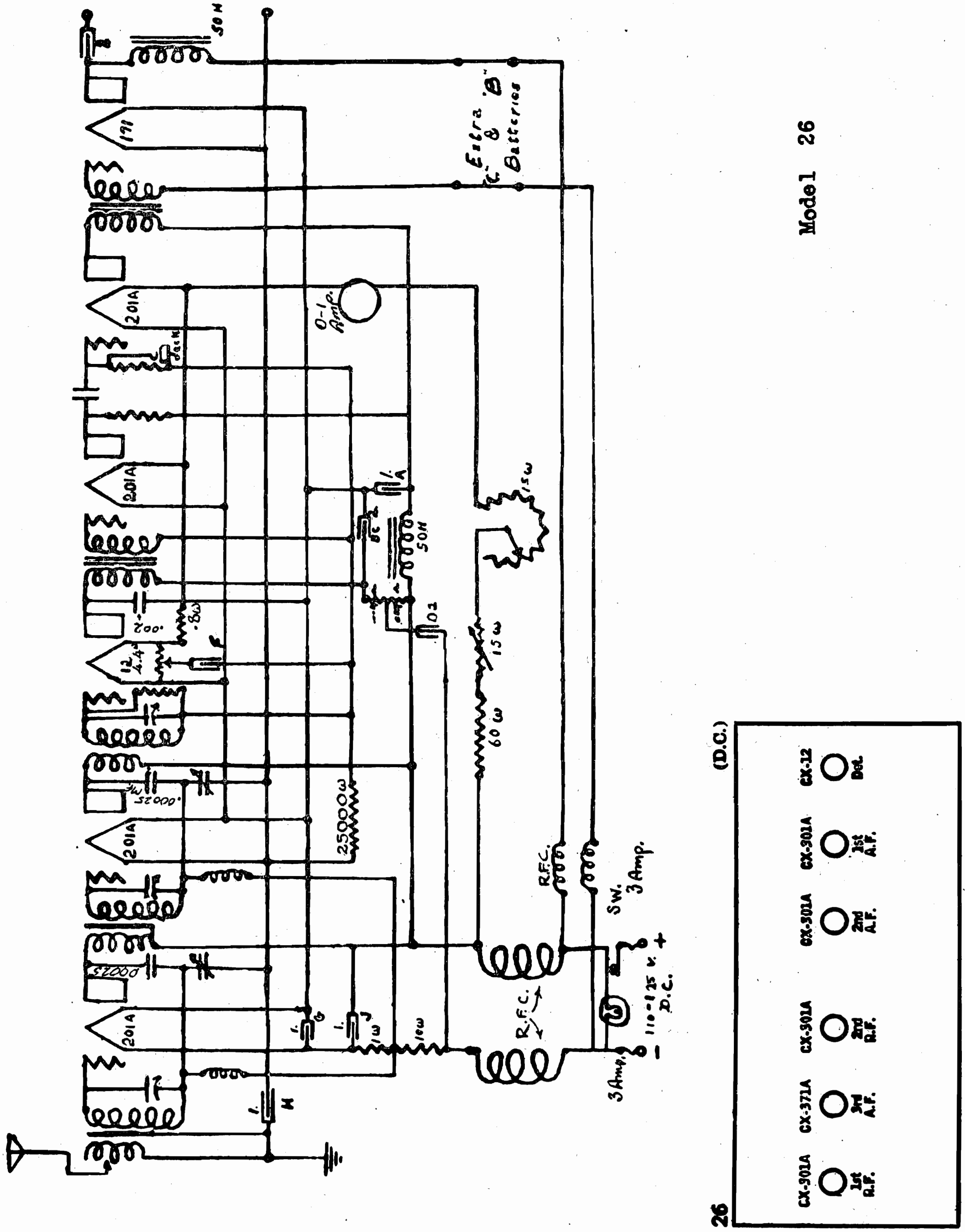


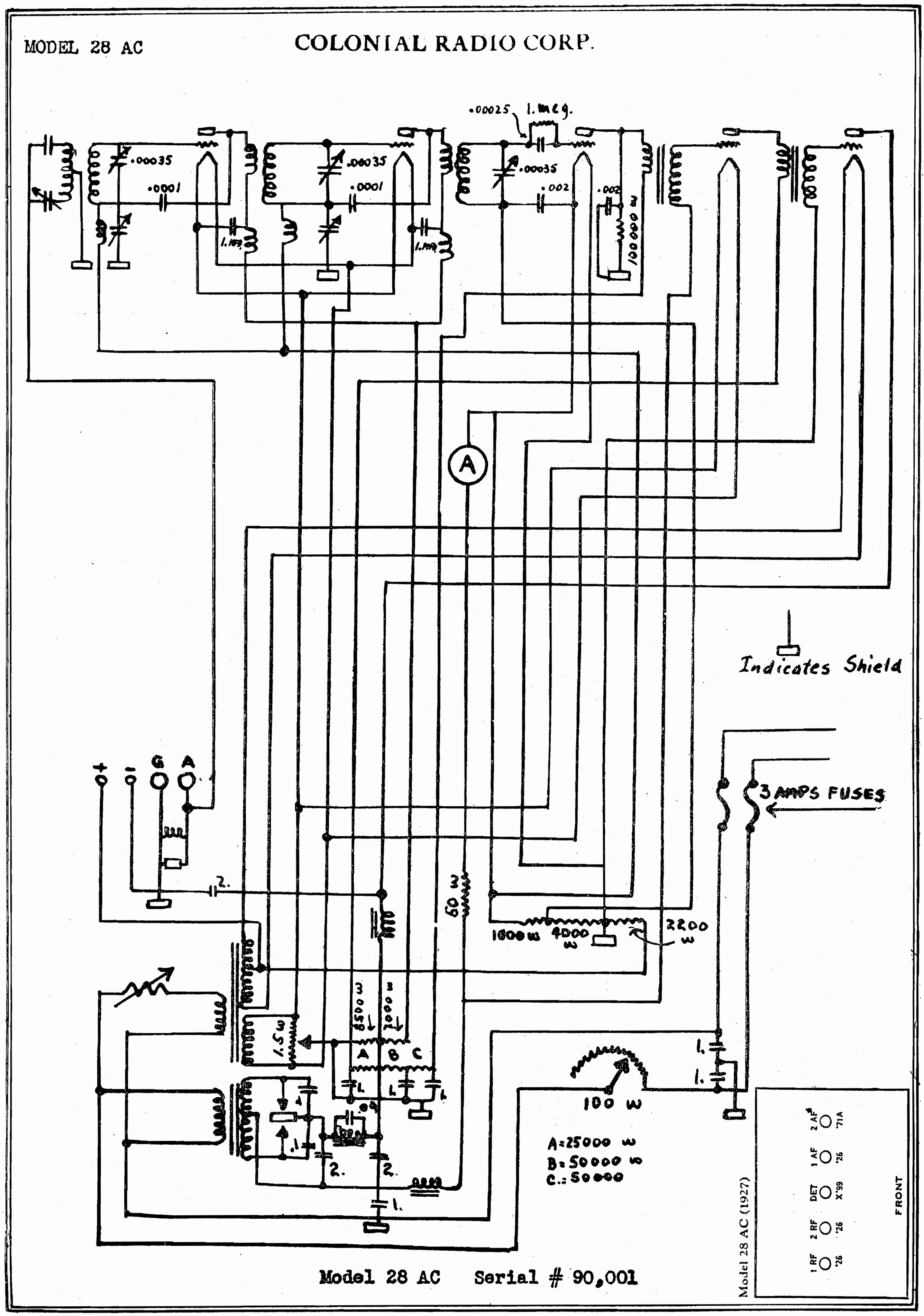


Model 25 Power Pack Schematic

COLONIAL RADIO CORP.

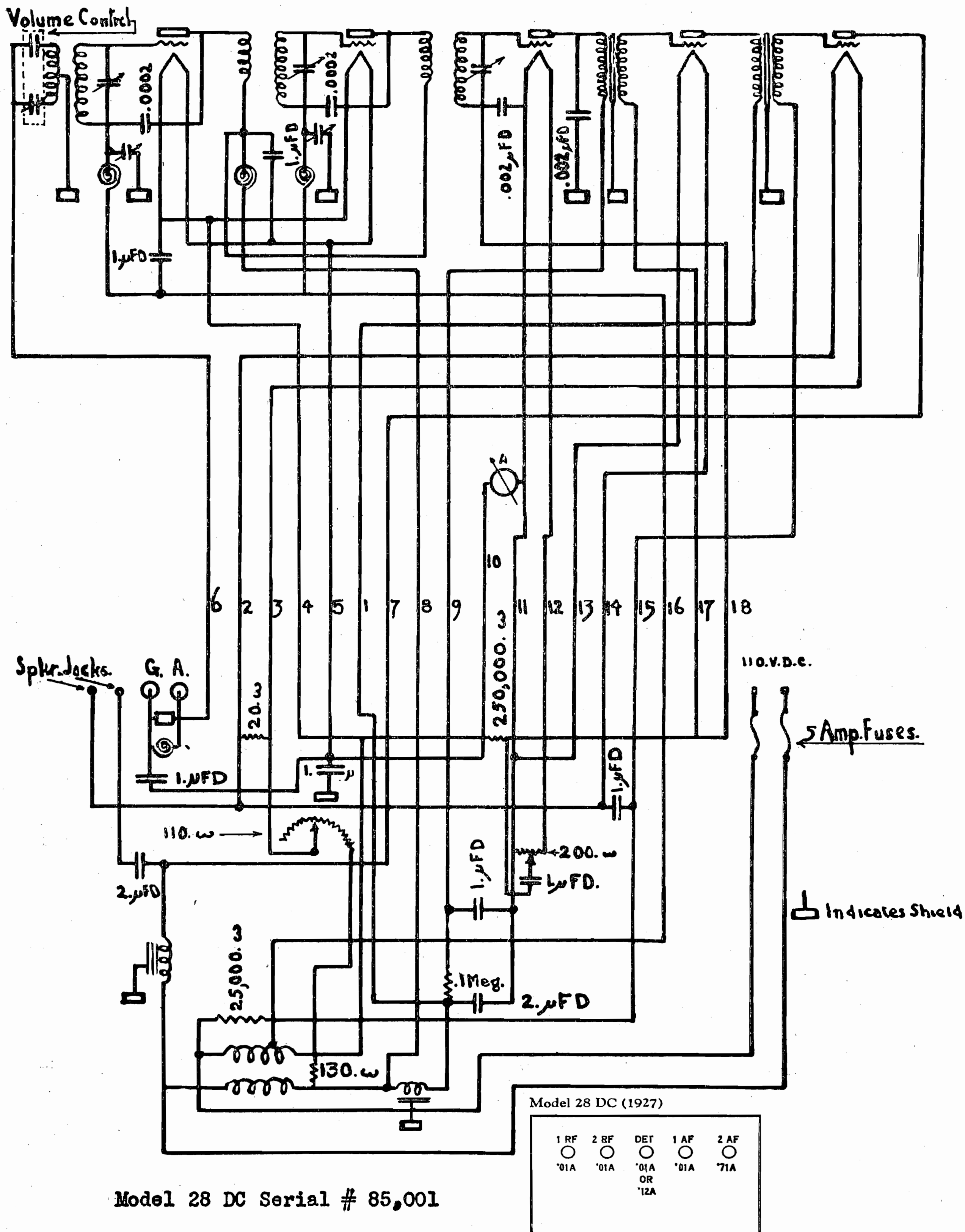
MODEL 26




MODEL 28 AC
COLONIAL RADIO CORP.
.00035
.0001
.00025
1.meg.
.002
100000 w
A
Indicates Shield
3 AMPS FUSES
+
-
G
A
2.
60 w
1600 w
4000 w
2200 w
1.5 w
A
B
C
1.
2.
100 w
A=25000 w
B=50000 w
C.=50000
Model 28 AC (1927)
1 RF '26
2 RF '26
DET X'99
1 AF '26
2 AF '71A
FRONT
Model 28 AC Serial # 90,001

COLONIAL RADIO CORP.

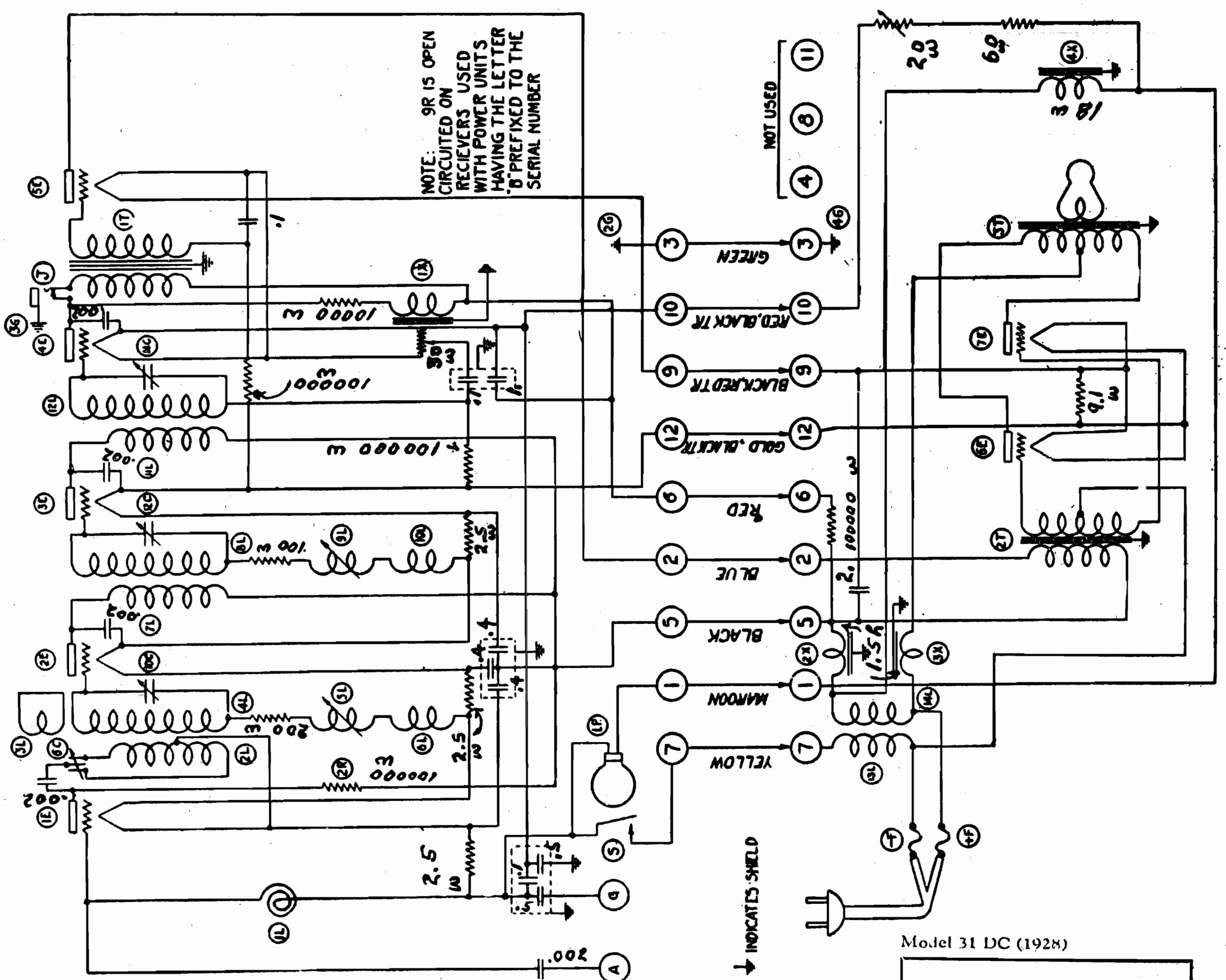
MODEL 28 DC



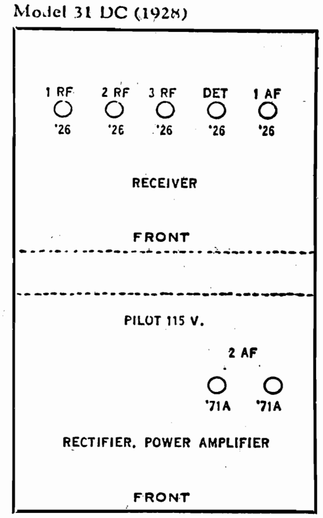
Model 28 DC Serial # 85,001

MODEL 31 DC

COLONIAL RADIO CORP.



Model 31 DC (1928)



CIRCUIT DIAGRAM
MODEL 31 DC 50,001 - 40,001
COLONIAL RADIO CORPORATION

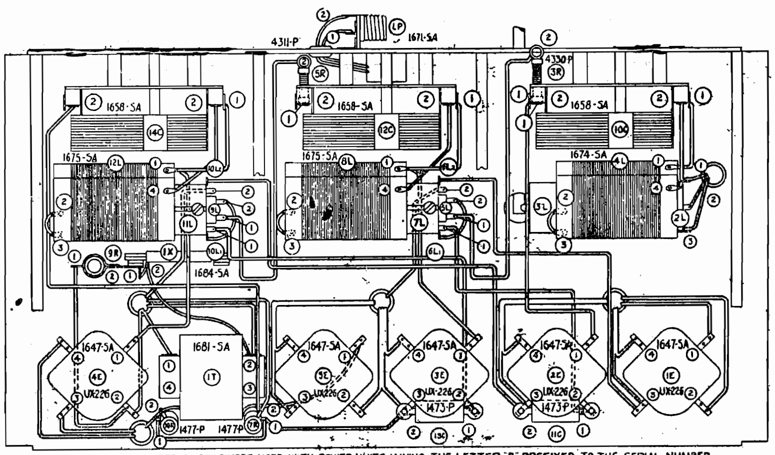
STAGE	TUBE	GRID VOLTAGE MIN.	GRID VOLTAGE MAX.	FILAMENT VOLTAGE MIN.	FILAMENT VOLTAGE MAX.	PLATE VOLTAGE MIN.	PLATE VOLTAGE MAX	PLATE CURRENT MIN.	PLATE CURRENT MAX.
1ST RF	CX 326 UX 226	2	4	1.4	1.6	50	90	2	5
2ND R.F	"	2	4	1.4	1.6	75	120	5	10
3RD R.F	"	2	4	1.4	1.6	75	115	5	10
DETECTOR	"	2	4	1.3	1.5	40	70	1	.5
1ST AF	"	1.5	3	1.3	1.5	70	100	2.5	5.5
2ND A.F *1	UX 171 A CX 371 A	12	16	4.4	5.1	75	115	8	20
2ND A.F *2	"	12	16	4.4	5.1	75	115	8	20

TUBE CURRENT AND VOLTAGE CHART

Model 31 D. C. 50,010

COLONIAL RADIO CORP.

MODEL 31 DC Data
MODEL 31 AC Voltage

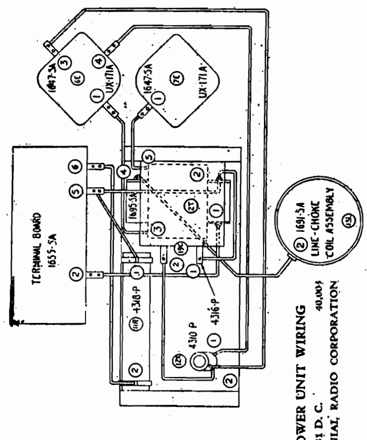


NOTE 9R IS OPEN CIRCUITED ON RECEIVERS USED WITH POWER UNITS HAVING THE LETTER "B" PREFIXED TO THE SERIAL NUMBER.

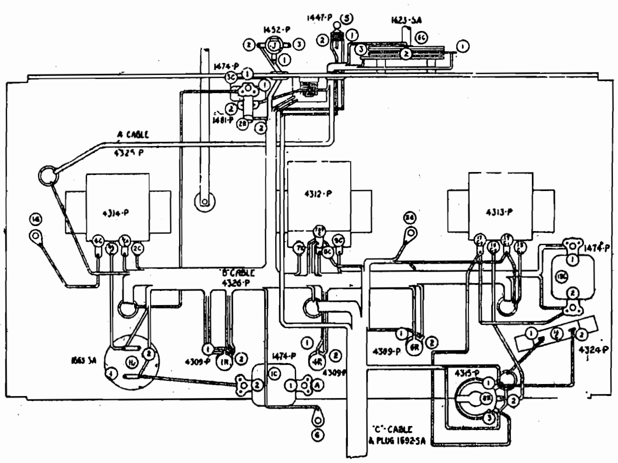
CODE	COLOR	TYPE	CODE	COLOR	TYPE	CODE	COLOR	TYPE	CODE	COLOR	TYPE	CODE	COLOR	TYPE	CODE	TYPE
1E1-1L1	BLACK	B-CAB.	3E4-6R2	(WHITE)*	C CAB.	4L1-10C1	RED	JUMP.	9L2-10L1	RED & WHITE	JUMP	1T1-5E1	GREEN (BLACK SPAG	LEAD	3E2-13C1	SOLDER
1E2-5C1	RED & WHITE	JUMP.	4E3-9R1	GREEN	JUMP	4L4-10C4	RED	"	10L2-2E3	GREEN	"	1T2-10R2	YELLOW	"	1X1-9R2	MOUNT.
1E3-4R1	BLUE	B-CAB.	4E3-15C1	GREEN	B CAB.	5L1-3R2	RED & WHITE	"	11L1-3E2	BLACK	"	1X2-1T2	GREEN OR RED	"	3R1-10C2	"
1E4-1R2	WHITE	"	4E3-8R3	BLUE	JUMP	5L2-6L1	"	"	11L-C	"	B CAB.	8L2-8L3	GREEN	JUMP	5R1-12C2	"
2E2-11C1	NO WIRE	SOLDER	4E-8R1	WHITE	"	6L2-1E3	GREEN	"	12L-14C1	RED	JUMP	17C-1T2	RED	"		
2E3-11C2	"	"	5E2-2	BLUE	C CAB.	7L1-2E2	BLACK	"	12L1-4E1	RED	"	7R2-16C1	WHITE	"		
2E3-6R1	BLUE	B CAB.	5E3-8R1	(YELLOW)*	C CAB.	7L-C	"	B CAB.	12L-14C2	"	"	7R-10R	BLUE	"		
2E4-4R2	WHITE		5E4-9	BLACK, RED TR.	C CAB.	8L1-12C1	RED	JUMP.	14C-7R2	"	"	7R1-3E3	"	"		
10R2-18C1	YELLOW	JUMP.	2L1-6C3	BLUE	A CAB.	8L-3E1	"	"	18C-2E1	"	"	LP1-1R1	"	B CAB.	* DOES PASS "C" CAB.	NOT THRU
3E3-12	GOLD, BLACK TR	C CAB.	2L2-1R2	YELLOW	B CAB.	8L4-12C2	"	"	1T1-J2	YELLOW	B CAB	LP2-1	MAROON	C CAB.		
3E3-13C2	NO WIRE	SOLDER	2L3-6C1	WHITE	A CAB.	9L1-5R2	RED & WHITE	"	4L2-4L3	GREEN	JUMP.	12L1-12L2	GREEN	JUMP.		

TOP VIEW OF RADIO SET WIRING
Model 31 DC 50,002

CODE	COLOR	TYPE
8E3-12R2	BLACK	JUMP
6E4-12R1	"	"
2-2T1	BLUE	"
5-11R1	RED	"
5-2T2	"	"
6-11R2	RED & WHITE	"
19C1-2T2	YELLOW	"
19C2-12R1	WHITE	"
2T3-6E1	"	LEAD
2T5-7E1	YELLOW	"
2T6-12L2	GREEN	JUMP



POWER UNIT WIRING
Model 31 D. C. 40,003
COLONIAL RADIO CORPORATION



CODE	COLOR	TYPE	CODE	COLOR	TYPE	CODE	COLOR	TYPE	CODE	COLOR	TYPE	CODE	TYPE
1E1-1L4	BLACK	B CAB.	1L4-1R1	RED	B CAB.	5C-1L1	BLACK	B CAB.	1-LP2	MAROON	C CAB.	5C-2R	SOLDER
1E3-4R1	BLUE	"	1L3-C	"	JUMP.	4C-2L	"	"	15C-17C	YELLOW	JUMP.	1C-A	"
1E-1R0	WHITE	"	4C-15C	BLUE	B CAB.	4C-7L	"	"	18C-18R		"	3E-J2	MTG.
2E-6R	BLUE	"	4C-16	GREEN	JUMP	1R-5	RED	"	16C-8R	"	"		
2E-4R	WHITE		5C-1E3	RED & WHITE	"	1R-LP1	BLUE	"	8R-16C	BLACK	"		
3E-12	GOLD, BLACK TR	C CAB.	5C-6C3	GREEN	A CAB.	J1-15C	WHITE	"	17C-1T	RED	"		
3E-6R	(WHITE)*		6C-2L3	WHITE	"	J2-1T1	YELLOW	"	16C-7R	WHITE	"		
4E-15C	GREEN	B CAB.	6C-2L	BLUE	"	2L-1R	"	"	17C-8R	RED & WHITE	"		
4E-8R	BLUE	JUMP	7C-1R	WHITE	B CAB.	5E-8R	(YELLOW)*	C CAB.	C-5	BLACK	C CAB.		
4E-8R	WHITE	"	8C-4R	RED & WHITE	"	10-8R	RED, BLACK TR.	"	S-7	YELLOW	"		
5E-2	BLUE	C CAB.	9C-6R	GREEN	"	3-2G	GREEN	"	9-5E	BLACK, RED TR.	"		
1L-7C	YELLOW	JUMP	2C-G	"	"	6-17C	RED	"	*	DOES NOT PASS THRU "C" CAB.			

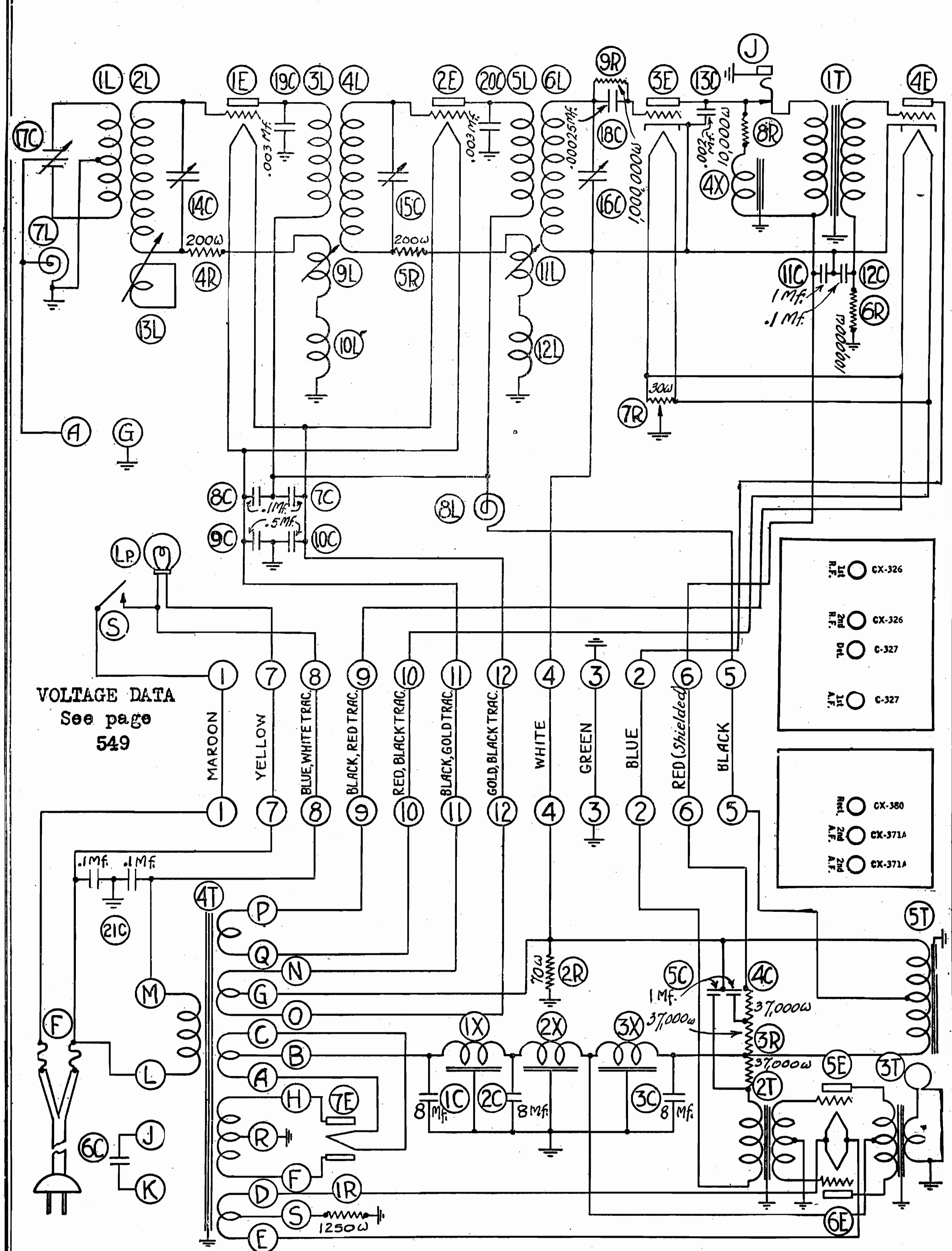
BOTTOM VIEW OF RADIO SET WIRING
Model 31 DC 50,003
COLONIAL RADIO CORPORATION

STAGE	TUBE	GRID VOLTAGE AT SOCKET MIN.	GRID VOLTAGE AT SOCKET MAX.	FILAMENT VOLTAGE AT TRANSFORMER MIN.	FILAMENT VOLTAGE AT TRANSFORMER MAX.	FILAMENT VOLTAGE AT SOCKET MIN.	FILAMENT VOLTAGE AT SOCKET MAX.	PLATE VOLTAGE AT SOCKET MIN.	PLATE VOLTAGE AT SOCKET MAX.	PLATE CURRENT AT SOCKET MIN.	PLATE CURRENT AT SOCKET MAX.
1ST R.F.	UX-226	-4.5	-6.1	1.53	1.77	1.35	1.55	95	125	6	9
2ND R.F.	UX-226	-4.5	-6.1	1.53	1.77	1.35	1.55	95	125	6	9
DETECTOR	UY-227	0	0	1.98	2.42	1.75	2.15	30	40	2	3
1ST A.F.	UY-227	-4.5	-6.1	1.98	2.42	1.75	2.15	80	110	3	4
2ND A.F.	UX-171A	-38	-52	4.6	5.10	4.55	5.05	160	220	15	21
3RD A.F.	UX-171A	-38	-52	4.6	5.10	4.55	5.05	160	220	15	21
RECTIFIER	UX-280	—	—	4.6	5.10	4.55	5.05	—	—	42	58

TUBE CURRENT AND VOLTAGE CHART
Model 31 AC 60001-5001

MODEL 31 AC

COLONIAL RADIO CORP.

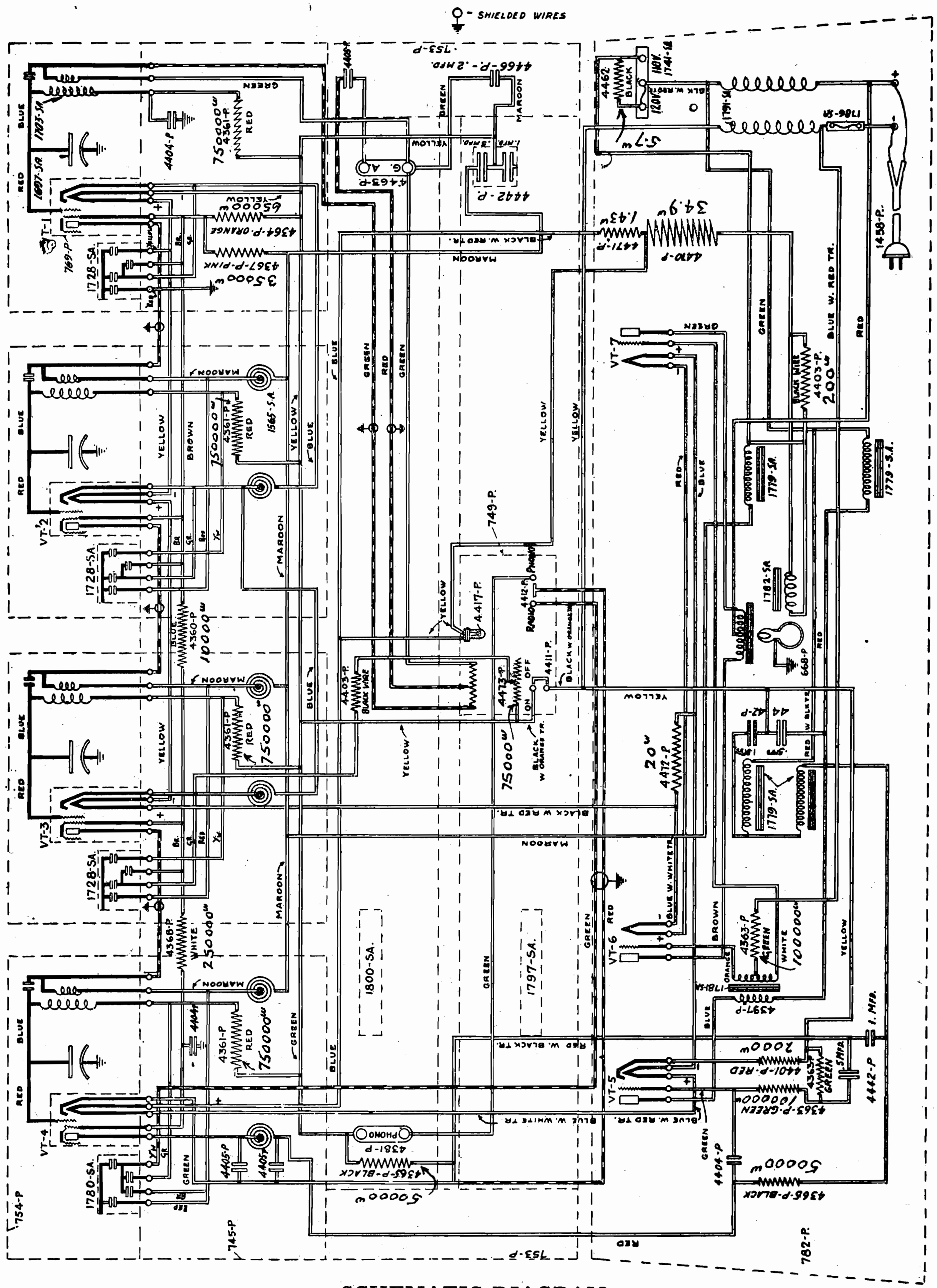


CIRCUIT DIAGRAM

MODEL 31 AC 60001-5001

COLONIAL RADIO CORP.

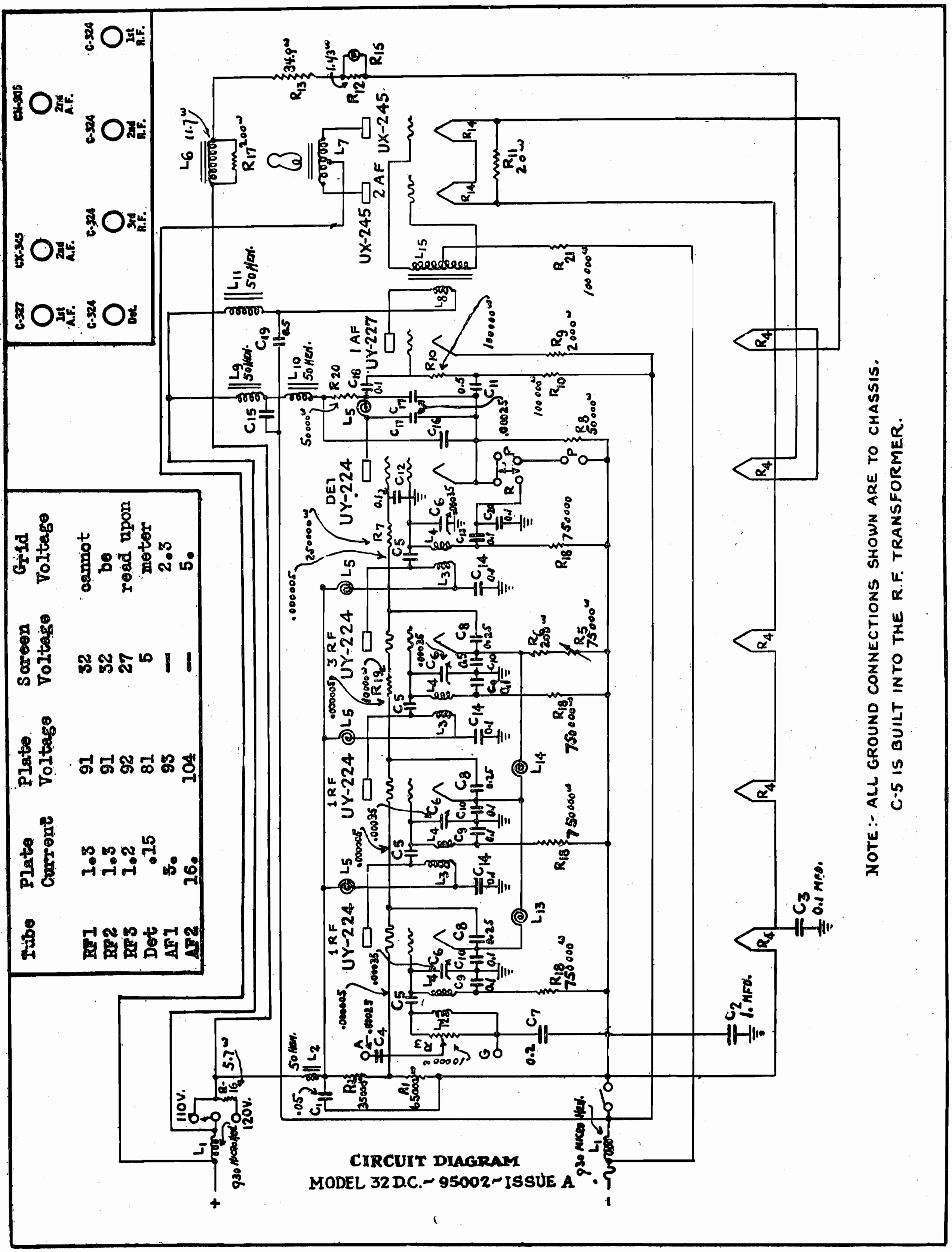
MODEL 32 DC
Chassis



SCHEMATIC DIAGRAM
Model 32 D.C. — 95001 — Issue A

MODEL 32 DC

COLONIAL RADIO CORP.

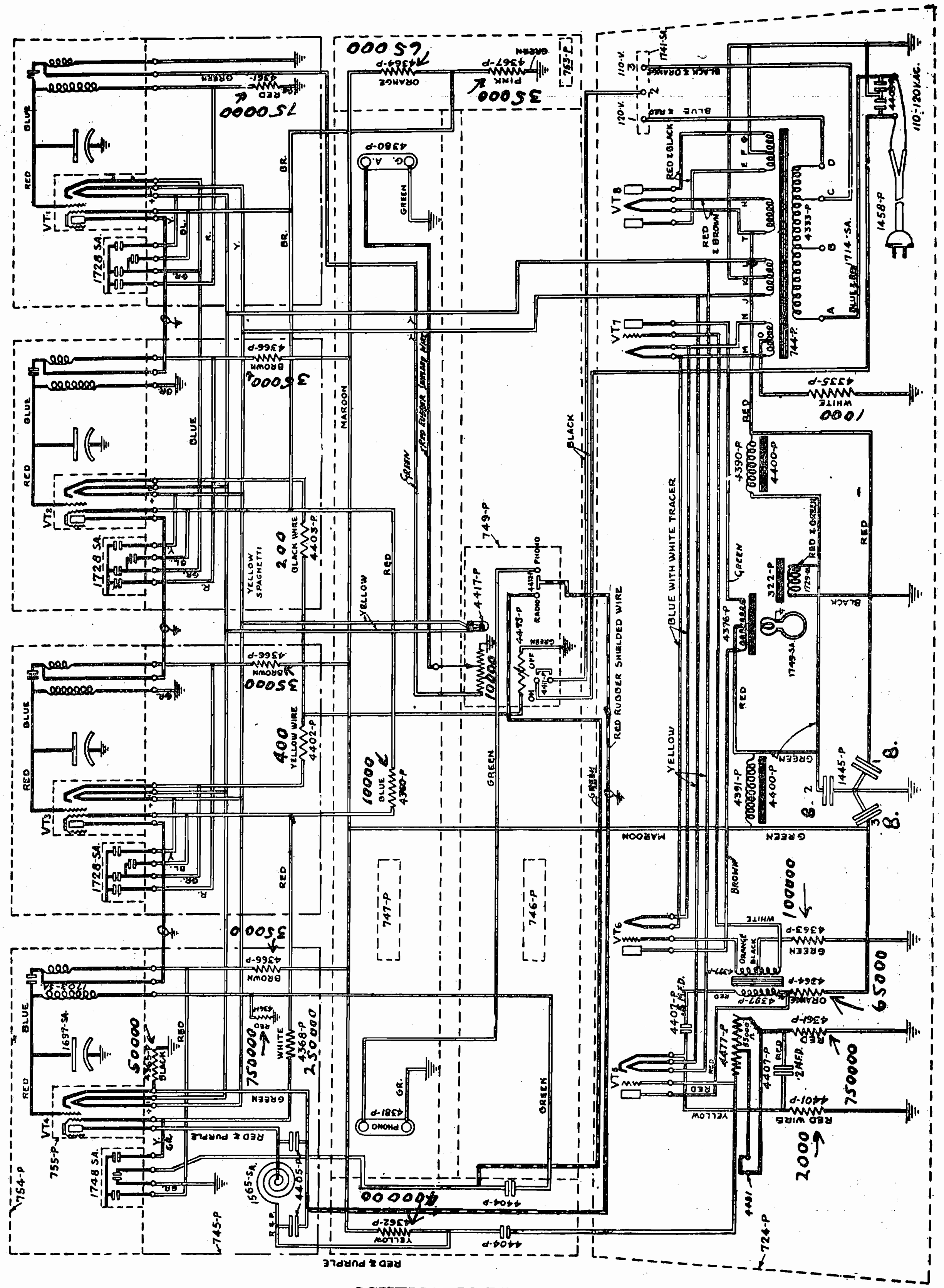


Tube	Plate Current	Plate Voltage	Screen Voltage	Grid Voltage
RF1	1.3	91	32	cannot
RF2	1.3	91	32	be
RF3	1.2	92	27	read upon
Det	.15	81	5	meter
AF1	3.	93	—	2.3
AF2	16.	104	—	5.

Chassis layout on next page.

COLONIAL RADIO CORP.

MODEL 32 AC Chassis

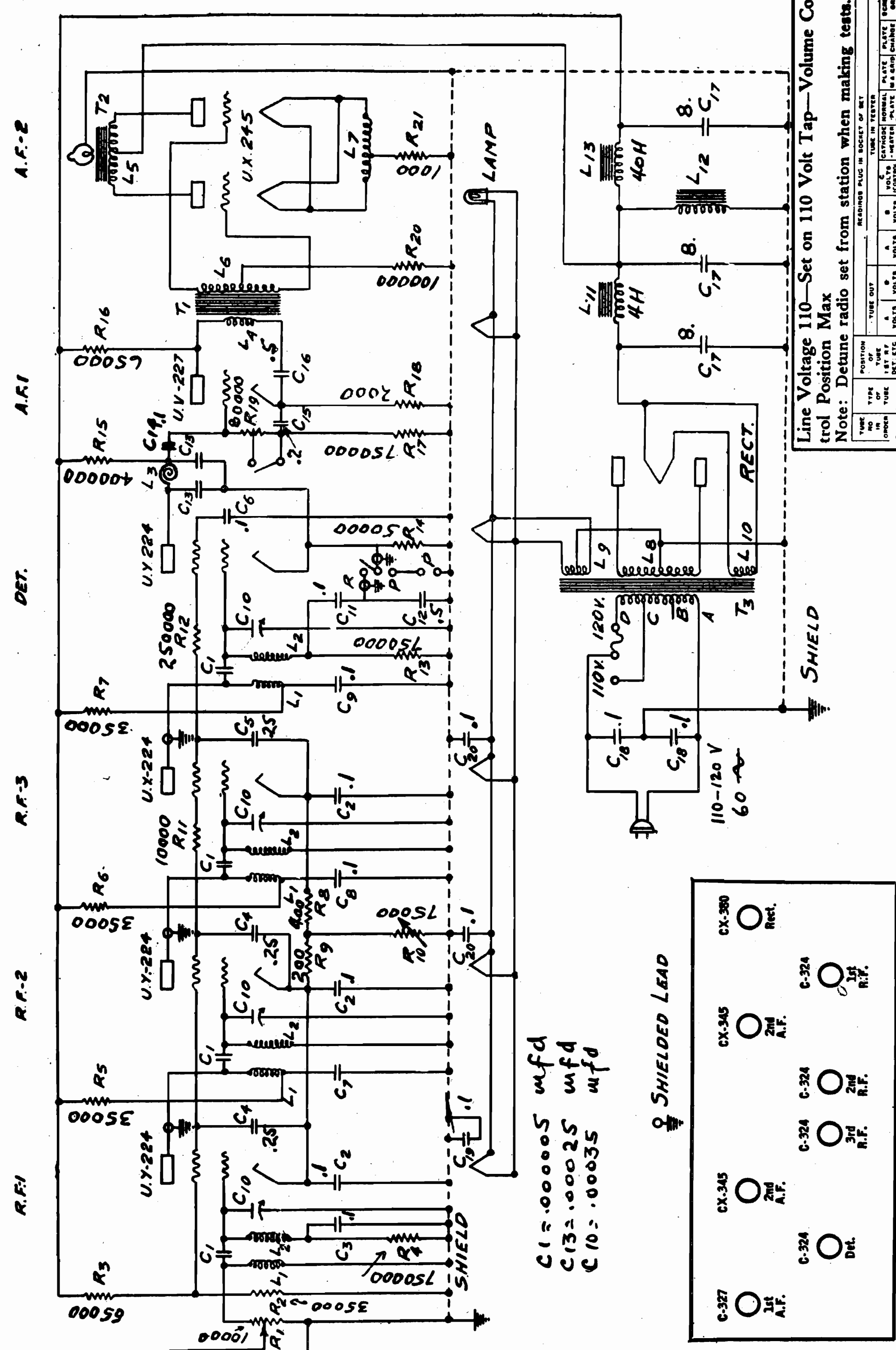


SCHEMATIC DIAGRAM

Model 32 A.C. 100001-Issue-J

MODEL 32 AC
Schematic

COLONIAL RADIO CORP.



Line Voltage 110—Set on 110 Volt Tap—Volume Control Position Max
Note: Detune radio set from station when making tests.

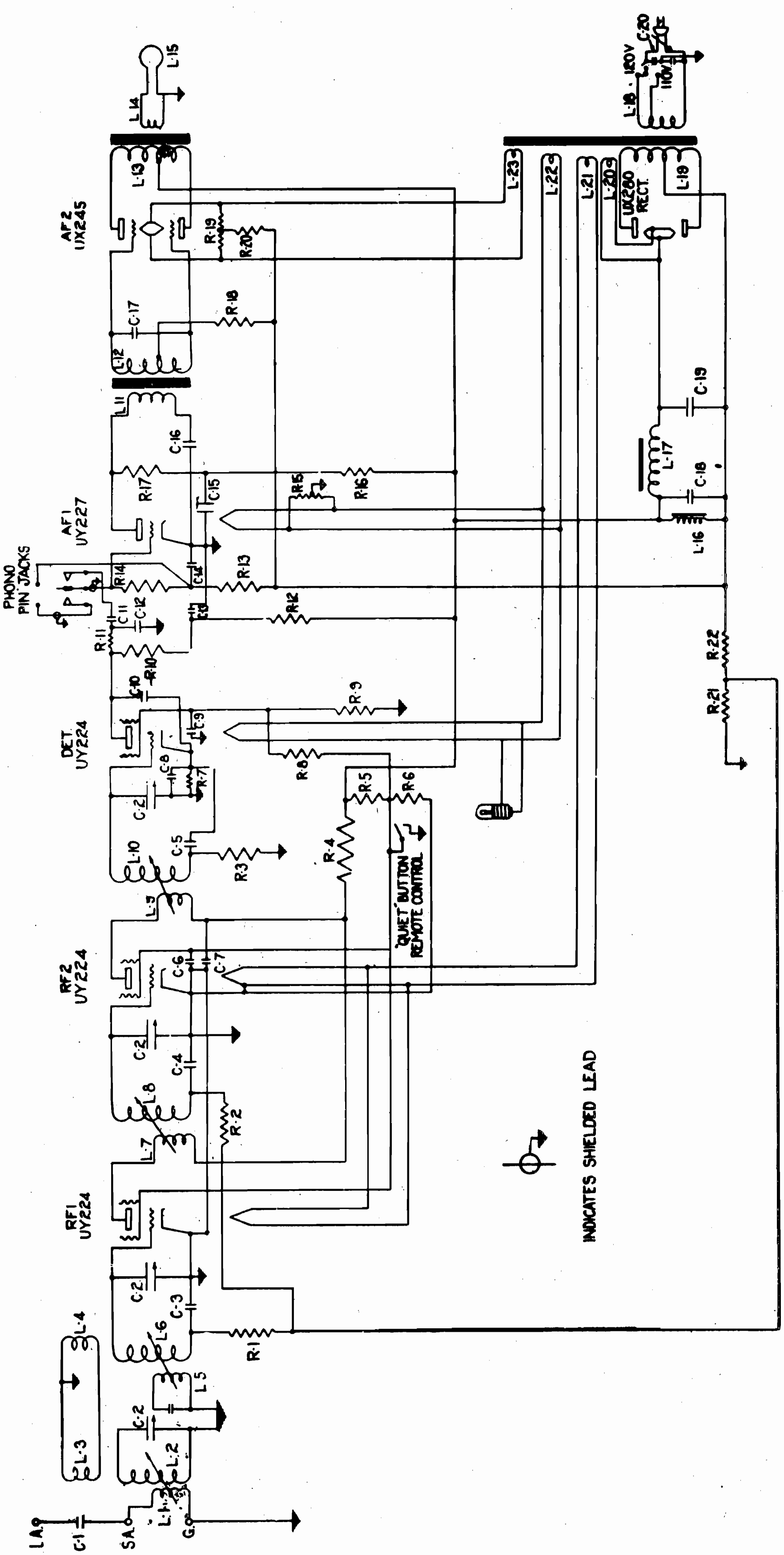
Tube No. in order (1)	Type of tube (2)	Position of tube 1st RF Det. etc. (3)	Tube out: A volts (4)	Tube out: B volts (5)	Tube in tester: A volts (6)	B volts (7)	C volts (control grid) (8)	Cathode-heater volts (9)	Normal plate M.A. (10)	Plate M.A. grid test (11)	Plate change M.A. (12)	Screen grid volts (13)
1	224	1st RF	2.45	162	2.4	160	1.3	-	3			55
2	224	2nd RF	2.45	162	2.4	160	1.3	-	3			55
3	224	3rd RF	2.45	168	2.4	160	1.3	-	3			55
4	224	Det.	2.45	110	2.4	110	-	-	.8			15
5	227	1st A	2.45	102	2.4	100	-	-	3			-
6	245	2nd A	2.45	235	2.4	230	28	-	22	25	4	-
7	245	2nd A	2.45	235	2.4	250	28	-	22	25	4	-
8	280	Rect.	4.9	-	4.8	-	-	-	100	-	-	-

NOTE:- C_1 IS BUILT INTO THE R.F. TRANSFORMERS

CIRCUIT DIAGRAM
MODEL 32 AC ~ 100002 - ISSUE J

COLONIAL RADIO CORP.

MODEL 33,34,35 AC
Schematic



NOTE—In the 25 cycle models, R_3 is shorted out and there is an additional 1 mfd. condenser connected from the R.F. screen-grids to ground.

Socket layout on page 560

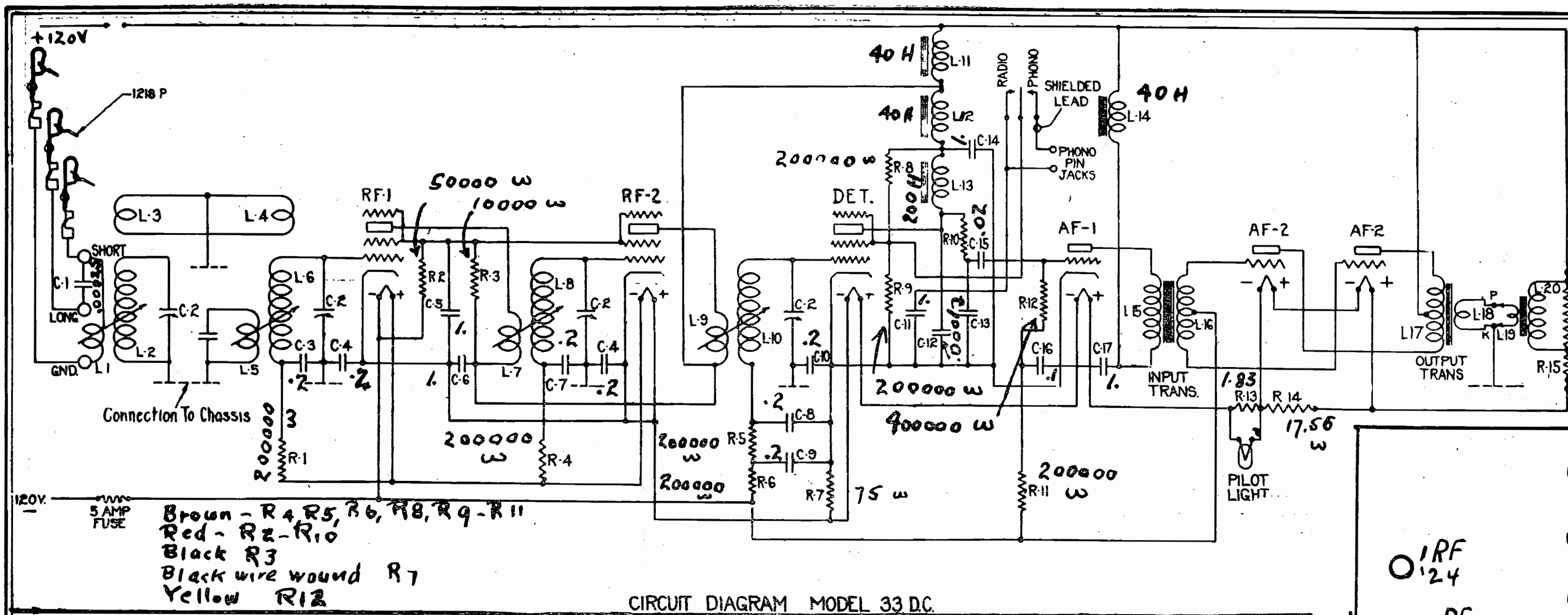
Remote Control tuning notes on page 560

Remote Control circuit on page 561

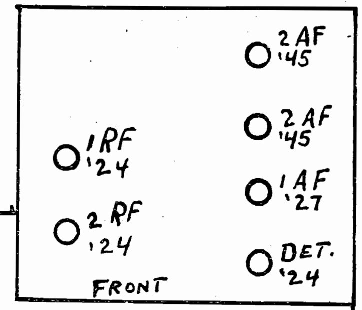
Electrical values on next page.

MODEL 33 DC
34 DC
Schematic

COLONIAL RADIO CORP.



CIRCUIT DIAGRAM MODEL 33 D.C.



TUBE VOLTAGE AND CURRENT READINGS

Actual Voltages Applied to Tubes

	RF1	RF2	Det.	AF1	AF2
Plate Voltage	110v.	110v.	105v.	110v.	110v.
Control-Grid Voltage	–2.3	–2.3	–4.8	–4.8	–13
Screen-Grid Voltage	72	72	40		
Plate Current	2.5 m.a.	2.5 m.a.	0.8 m.a.	4 m.a.	15 m.a.

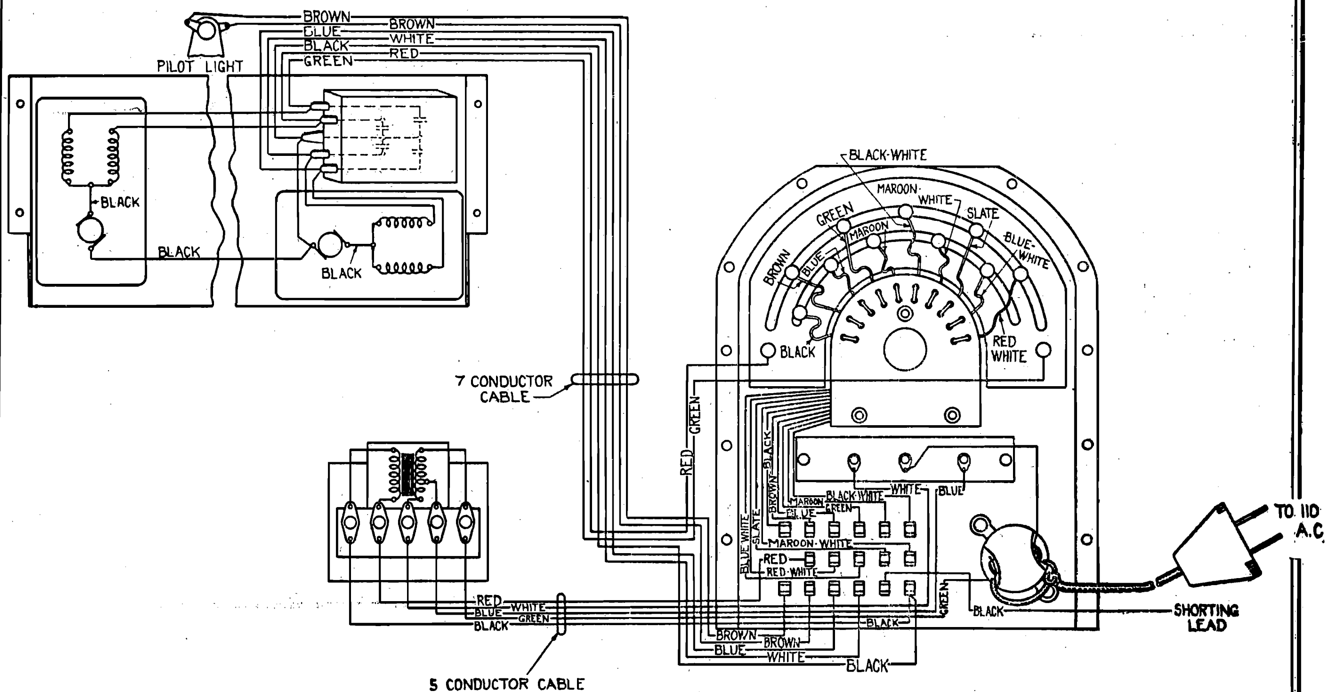
Voltages as Read on a 1000 OHMS Per Volt Meter

Plate Voltages on the 250 v. scale; Control-Grid Voltages on the 50 v. scale; Screen-Grid Voltages on the 100 v. scale

Plate Voltage	100 v.	100 v.	85 v.	100 v	100 v.
Control-Grid Voltage	–0.6	–0.6	–0.5	0.35	12
Screen-Grid Voltage	68	68	10		
Plate Current	2.5 m.a.	2.5 m.a.	0.8 m.a.	4 m.a.	15 m.a.

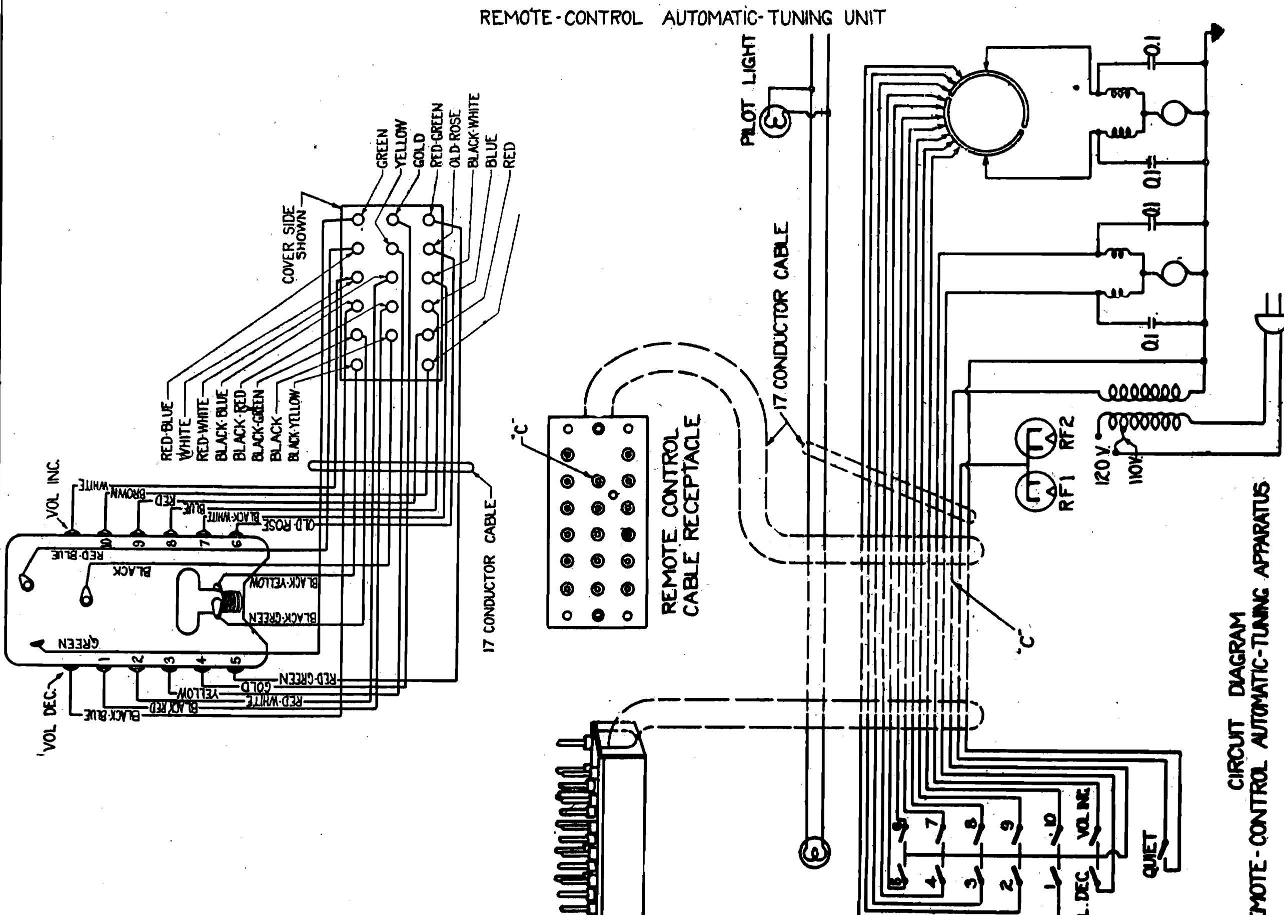
COLONIAL RADIO CORP.

MODEL 33, 34, 35 AC
Remote Control
Schematic



WIRING DIAGRAM

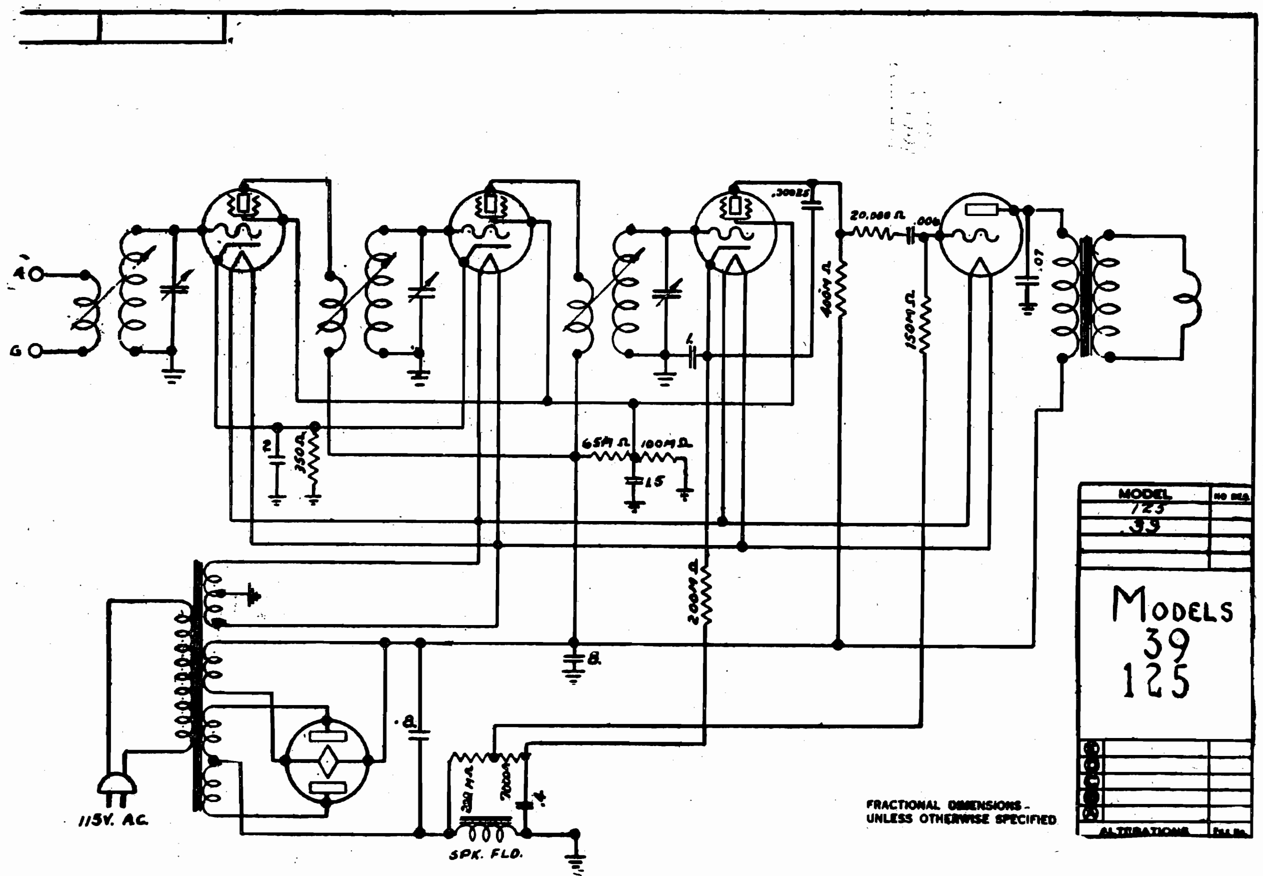
REMOTE-CONTROL AUTOMATIC-TUNING UNIT

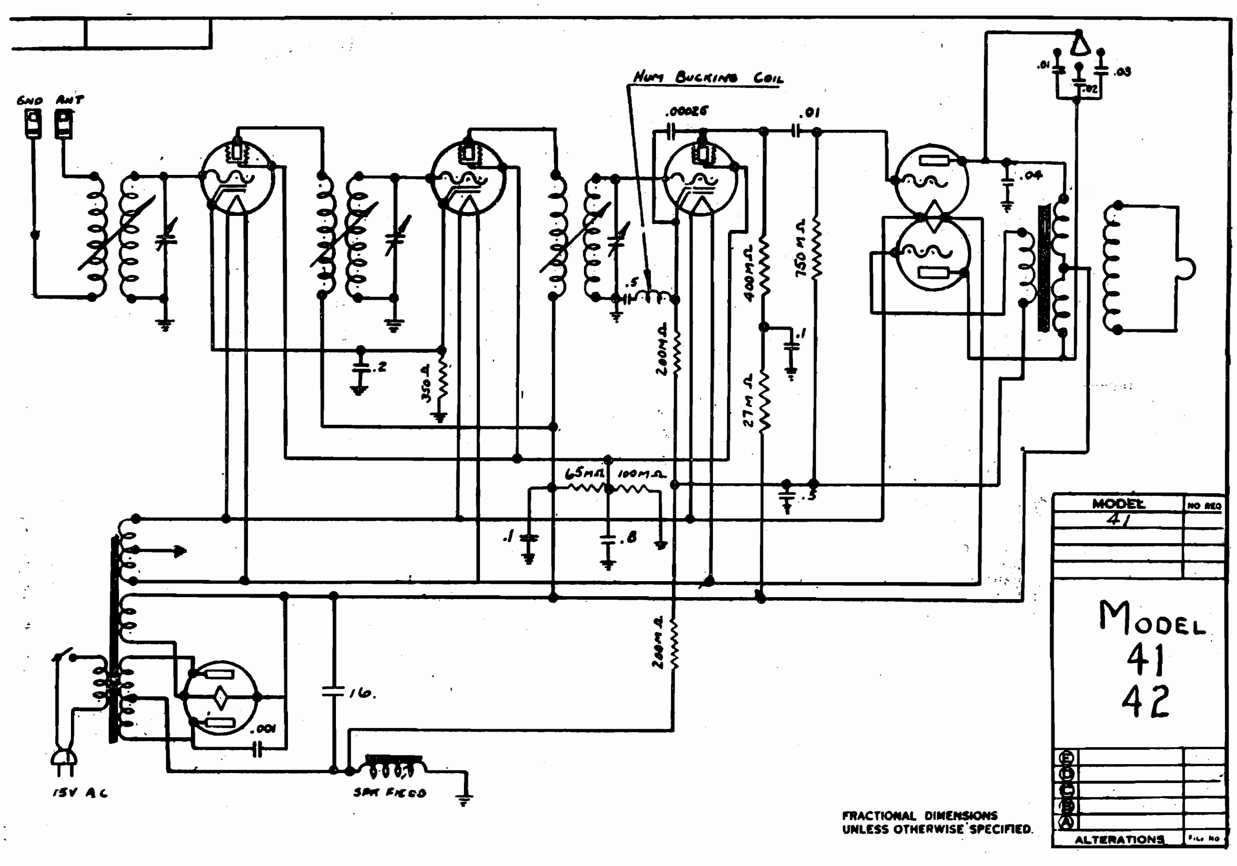


CIRCUIT DIAGRAM
REMOTE-CONTROL AUTOMATIC-TUNING APPARATUS

MODEL 39, 125
MODEL 41,42
Schematics

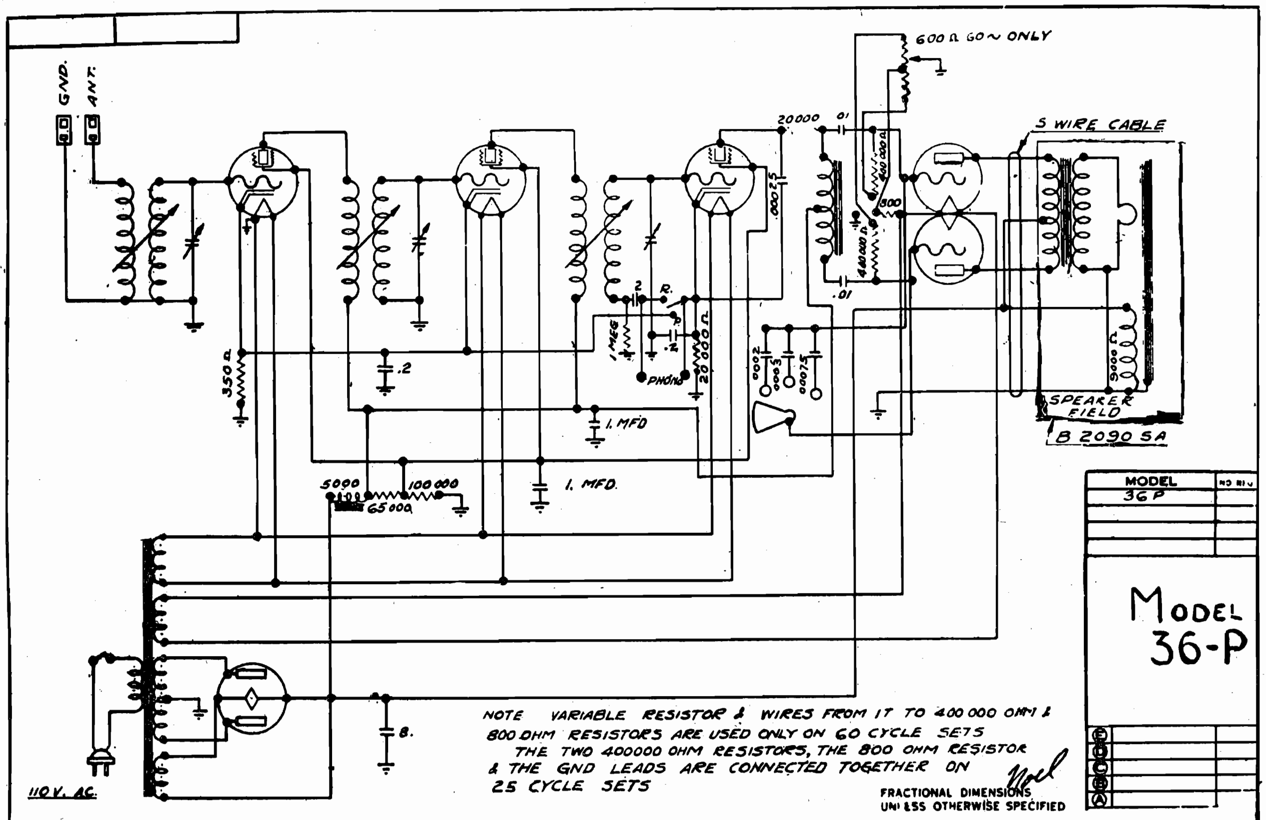
COLONIAL RADIO CORP.

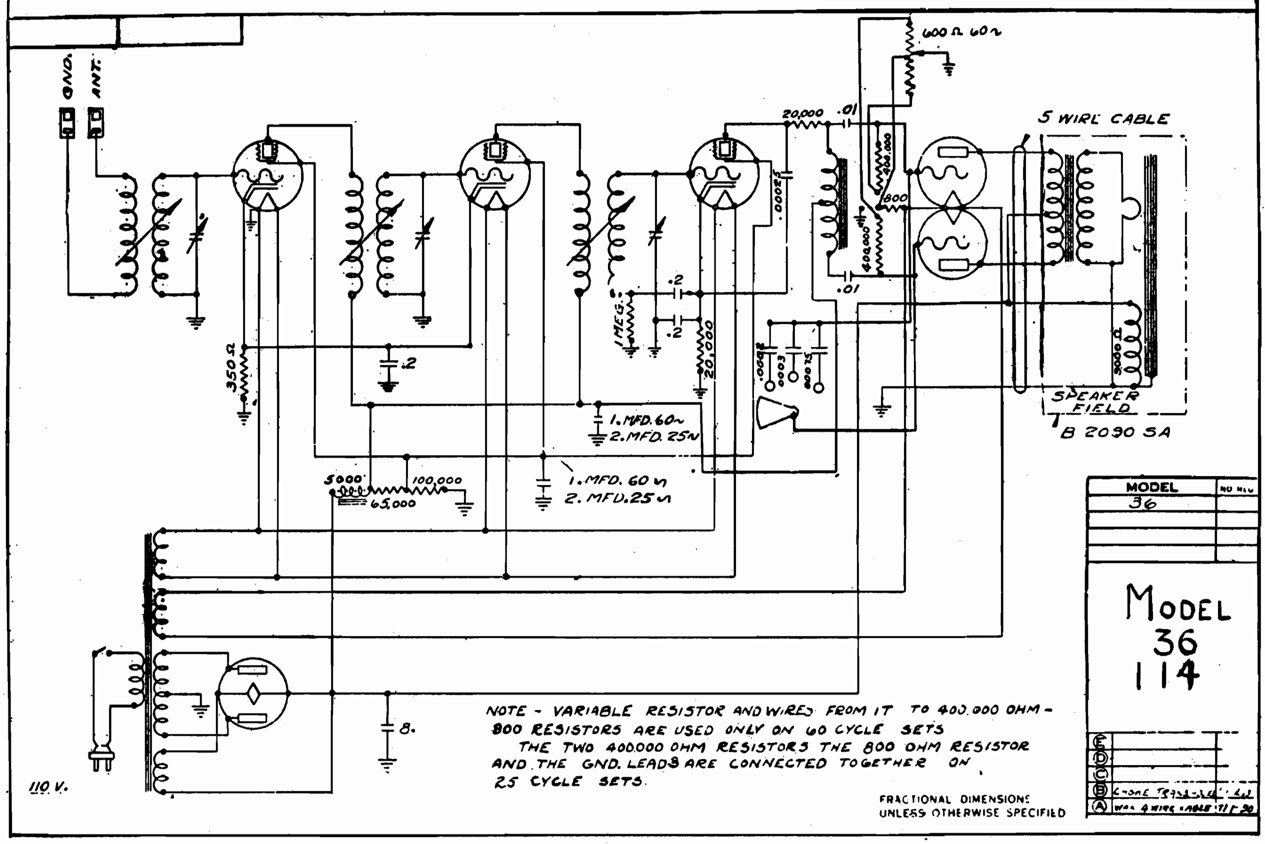




COLONIAL RADIO CORP.

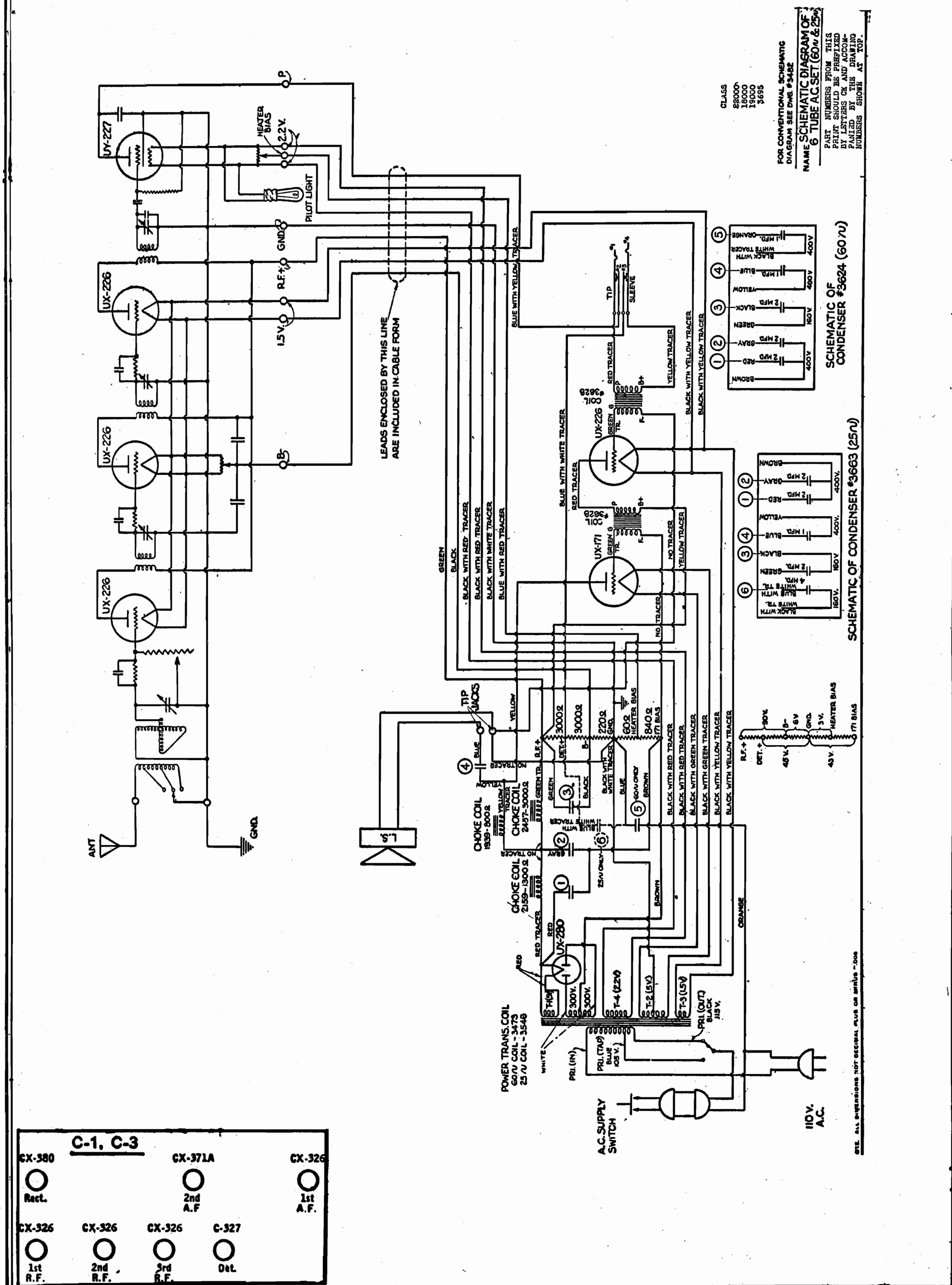
MODEL 36
MODEL 36-P
MODEL 114





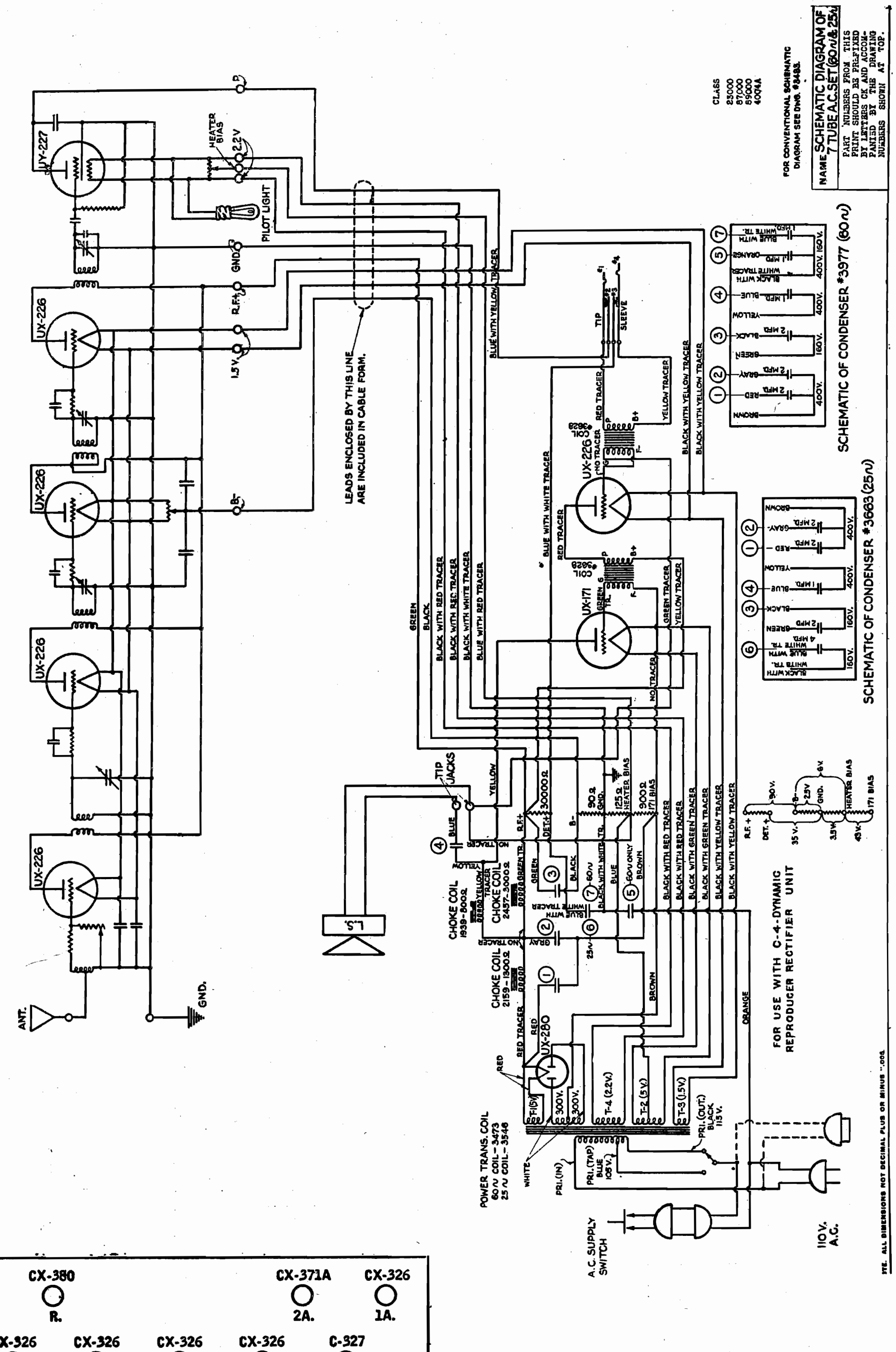
COLUMBIA PHONOGRAPH COMPANY

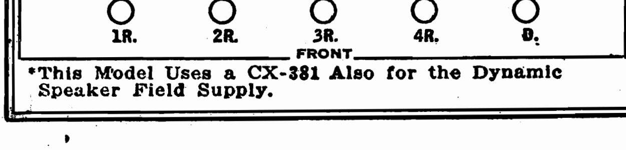
MODEL C-1, C-3
Schematic



MODEL C-2, C-4
Schematic

COLUMBIA PHONOGRAPH COMPANY

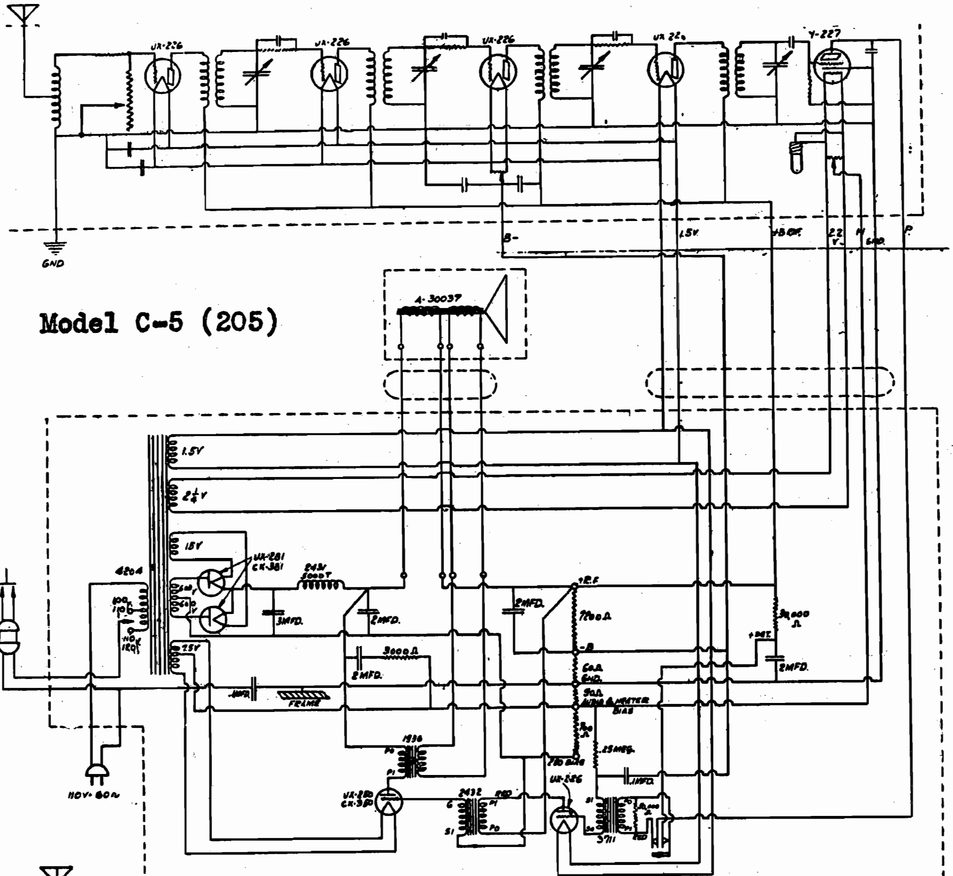




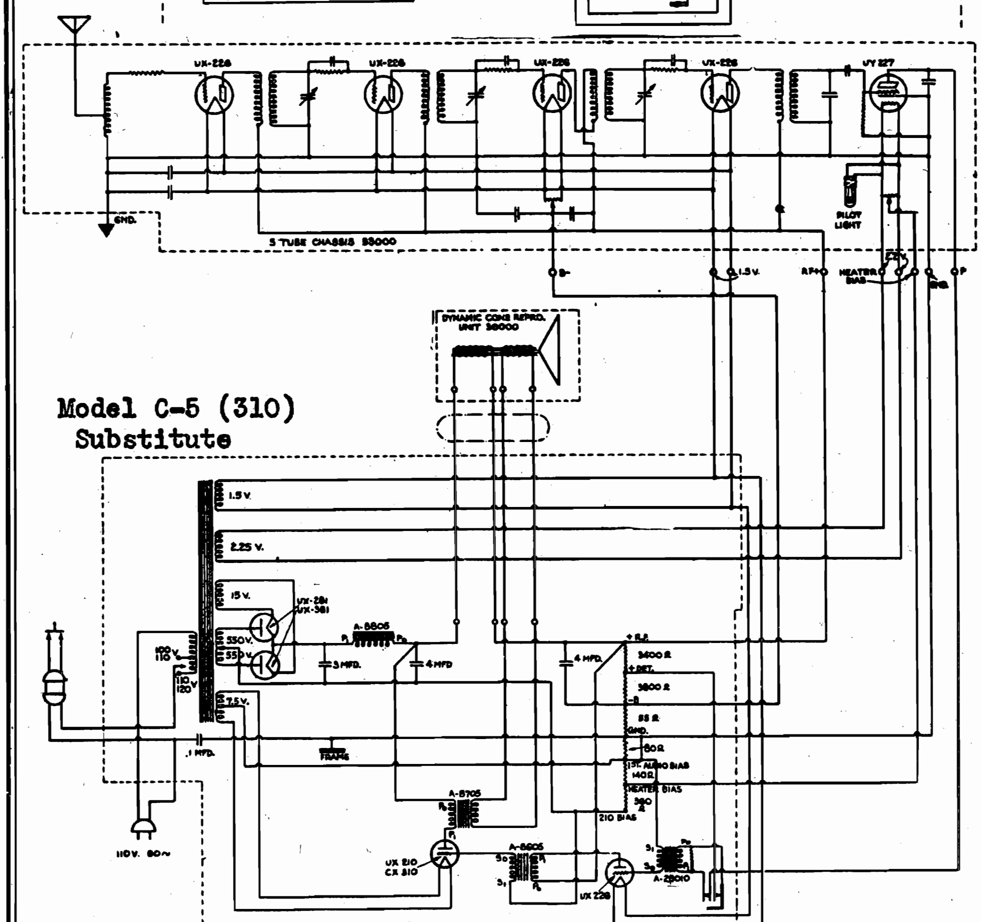
*This Model Uses a CX-381 Also for the Dynamic Speaker Field Supply.

COLUMBIA PHONOGRAPH COMPANY

MODEL C-5 (205)
MODEL C-5 (310)
Schematic
Voltage
Socket



Model C-5 (205)

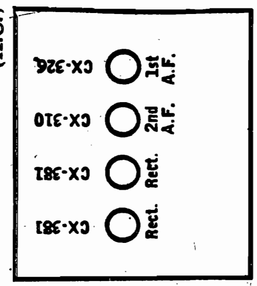


Model C-5 (310)
Substitute

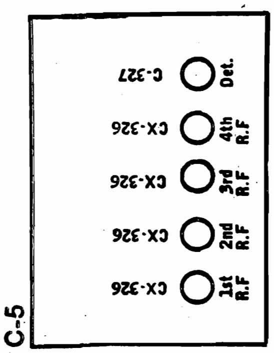
Line Voltage 116

Tube No. in Order	Type of Tube	Position of Tube 1st R.F. Det. etc.	Tube Out: A Volts	Tube Out: B Volts	Tube in Tester: A Volts	Tube in Tester: B Volts	Tube in Tester: C Volts	Tube in Tester: Cathode Volts	Tube in Tester: Normal Plate M.A	Tube in Tester: Plate M.A Grid Test	Tube in Tester: Plate M.A Change
1	226	1st. R.F.	1.48	90	1.4	84	2.5		5.8	9.8	4.0
2	226	2nd. R.F.	1.48	90	1.4	84	2.5		5.8	9.8	4.0
3	226	3rd. R.F.	1.48	90	1.4	84	2.5		5.8	9.8	4.0
4	226	4th. R.F.	1.48	90	1.4	84	2.5		5.8	9.8	4.0
5	227	DET.	2.3	44	2.0	36	3.5		1.6	1.6	0
6	226	1st. A.	1.56	88	1.4	72	2.0		4.8	7.8	3.0
7	210	2nd. A.	7.9	512	7.4	430	32.5		24.	28.	4.0
8											
9	281	Rect.	-	-	7.0	-	-		28.0	-	-
10	281	Rect.	-	-	7.4	-	-		28.0	-	-

(A.C.)

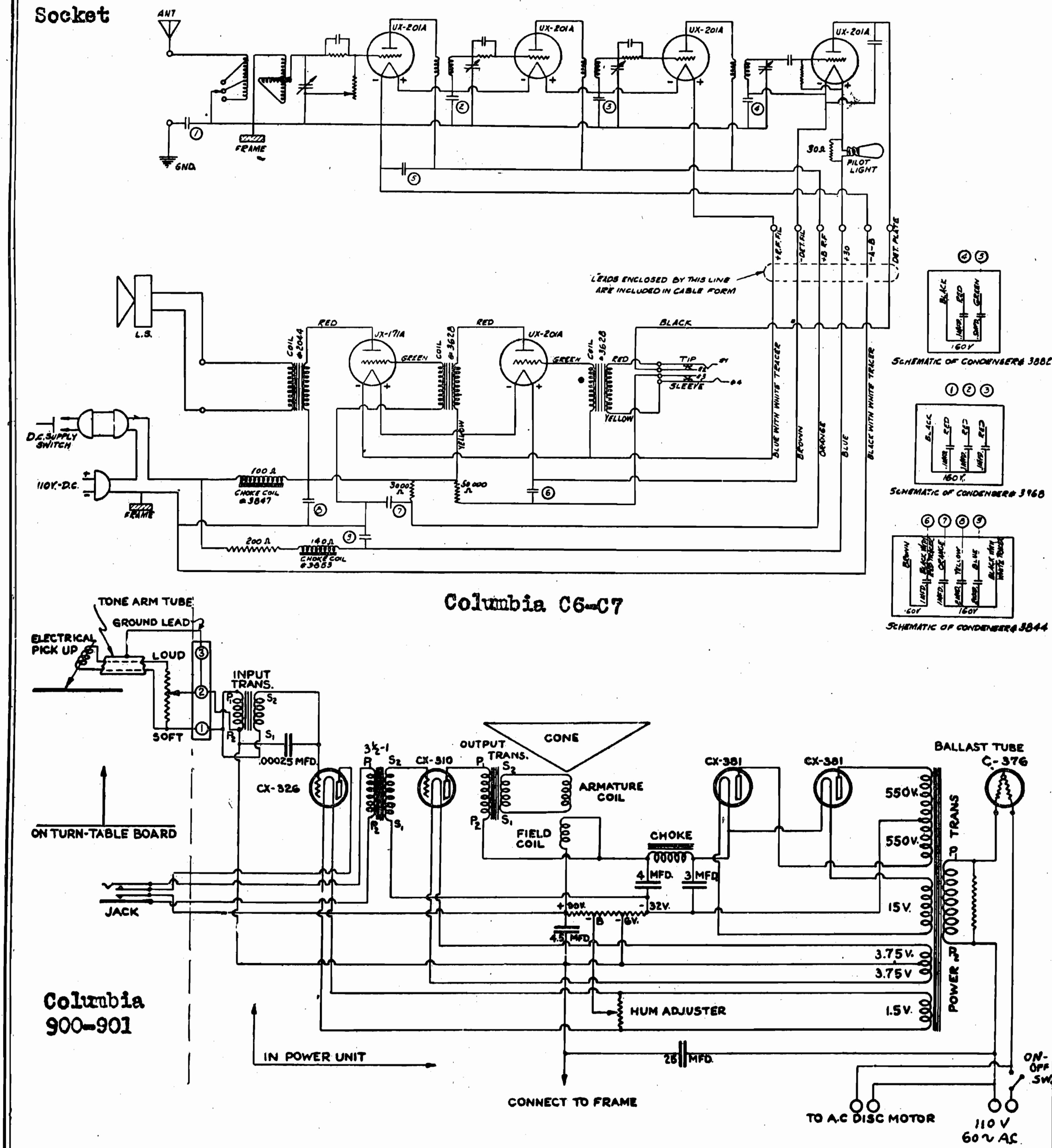


C-5

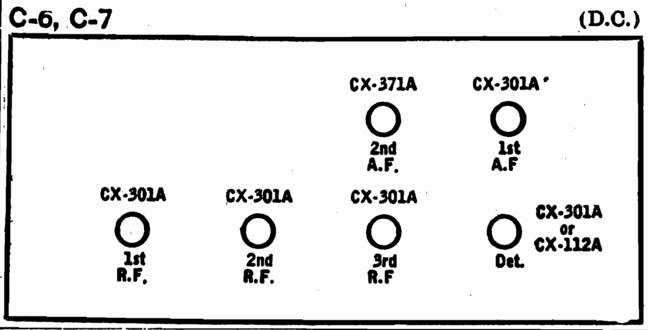


MODEL C-6, C-7
MODEL 900, 901
Schematic
Socket

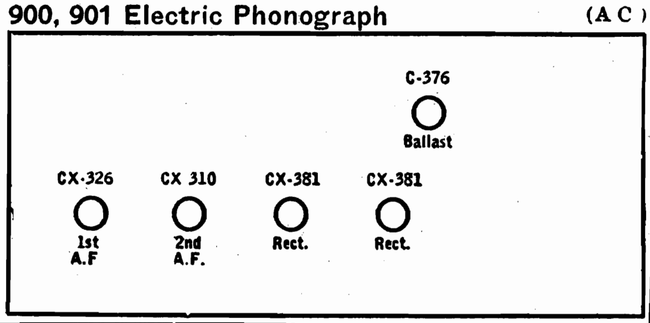
COLUMBIA PHONOGRAPH COMPANY



C-6, C-7 (D.C.)

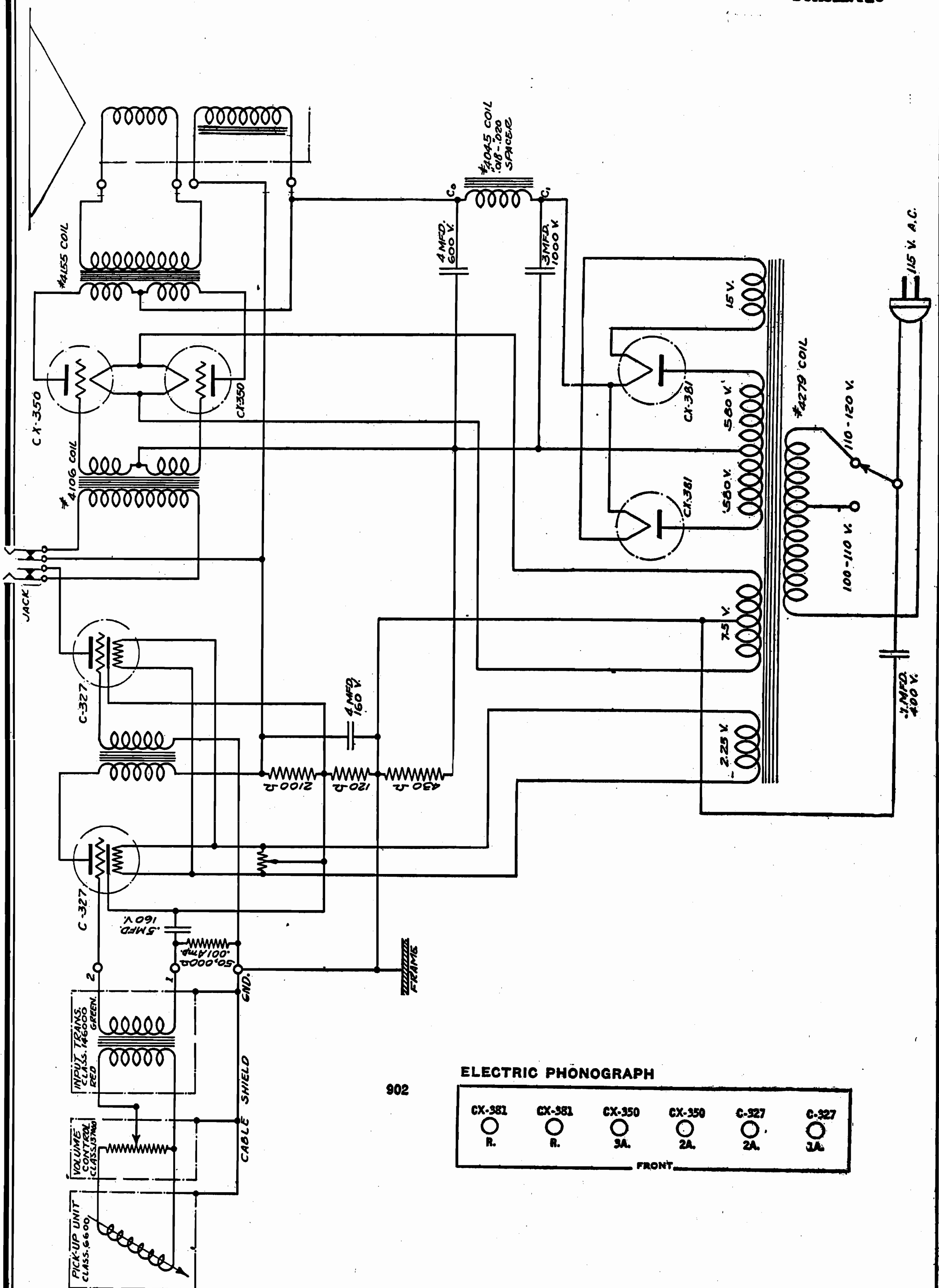


900, 901 Electric Phonograph (A C)



COLUMBIA PHONOGRAPH COMPANY

MODEL 902
Schematic



902

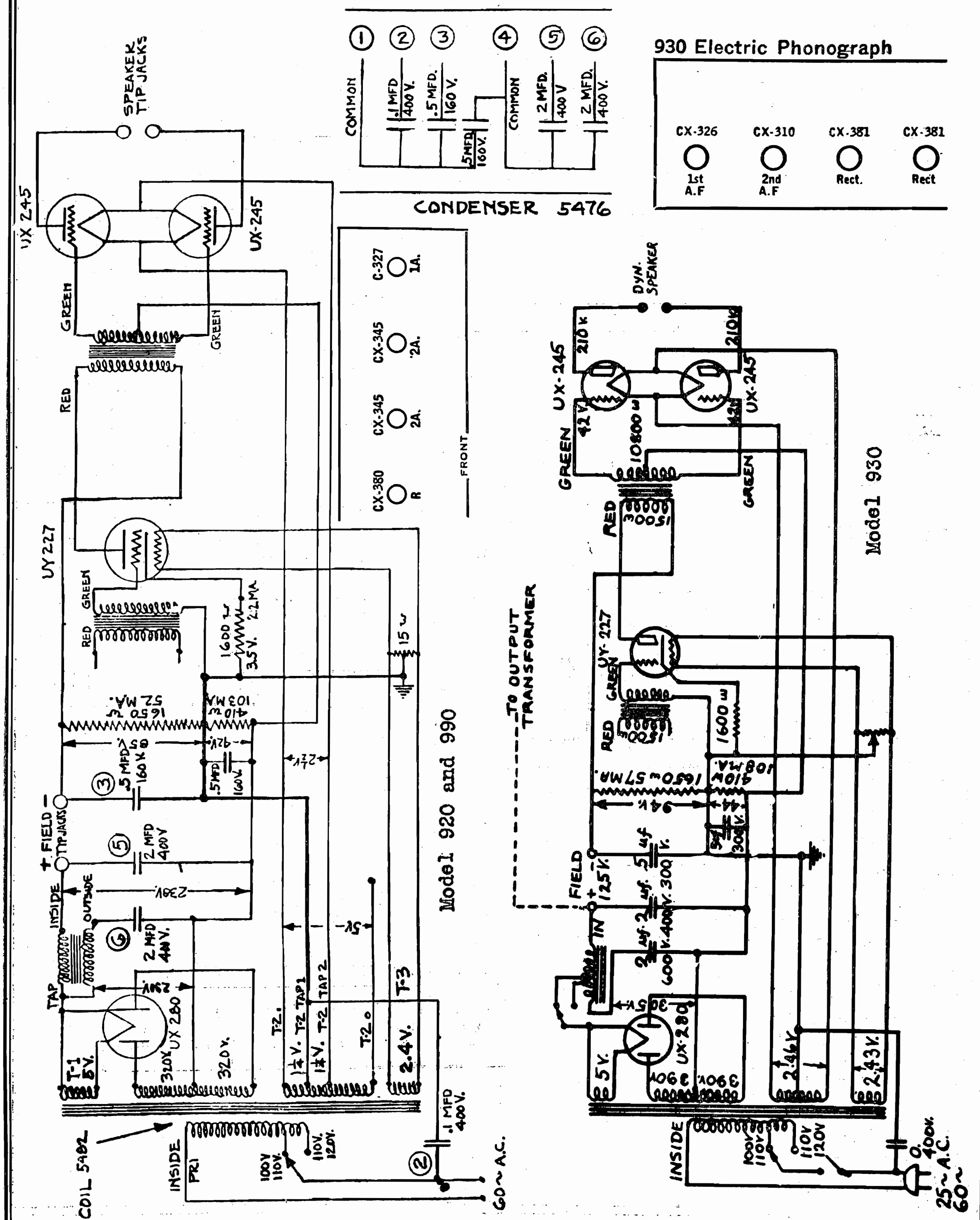
ELECTRIC PHONOGRAPH

CX-381	CX-381	CX-350	CX-350	C-327	C-327
R.	R.	3A.	2A.	2A.	1A.

FRONT

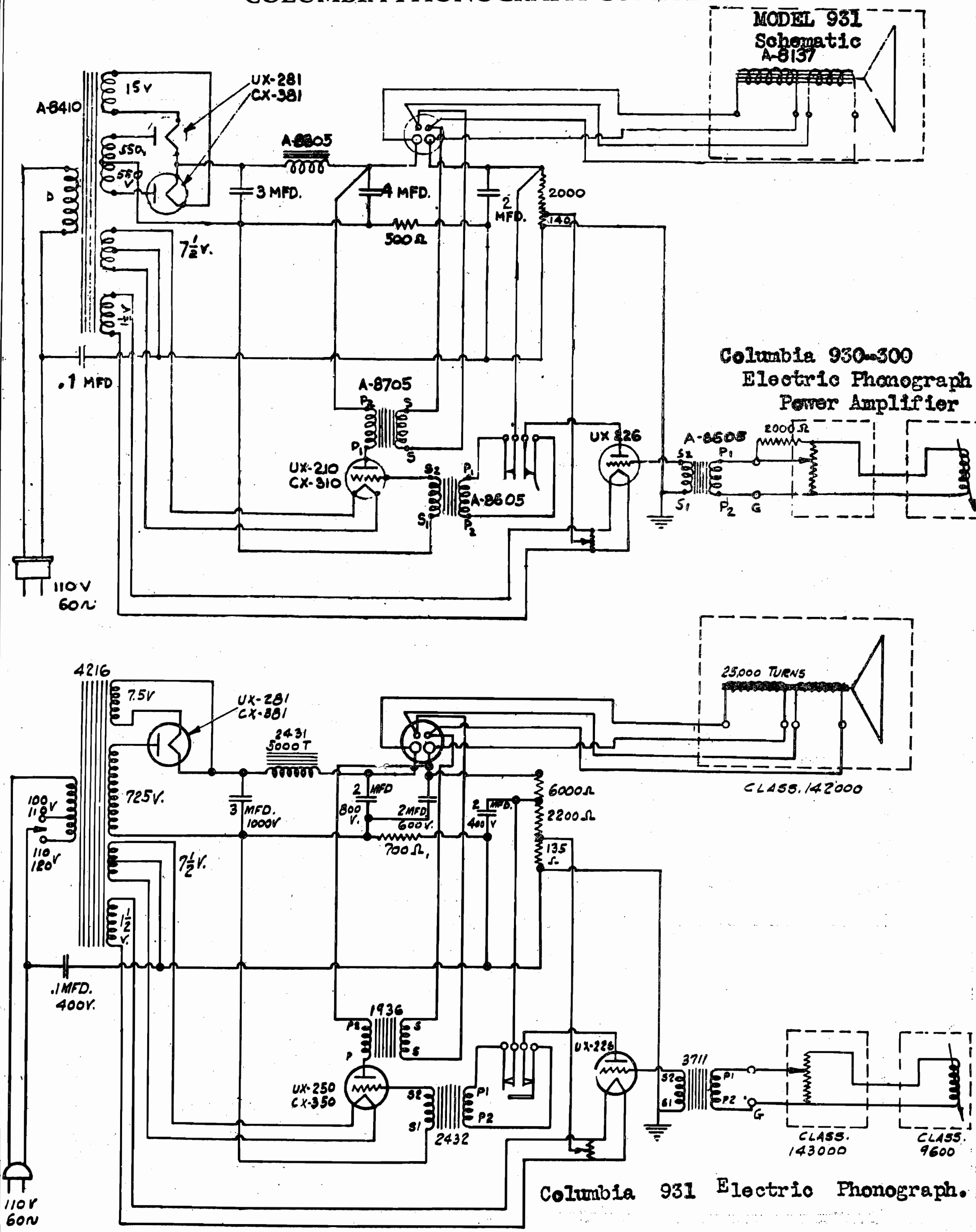
MODEL 920
MODEL 930
MODEL 990
Schematic

COLUMBIA PHONOGRAPH COMPANY



COLUMBIA PHONOGRAPH COMPANY

MODEL 930-300
MODEL 931



930 Electric Phonograph (A.C.)

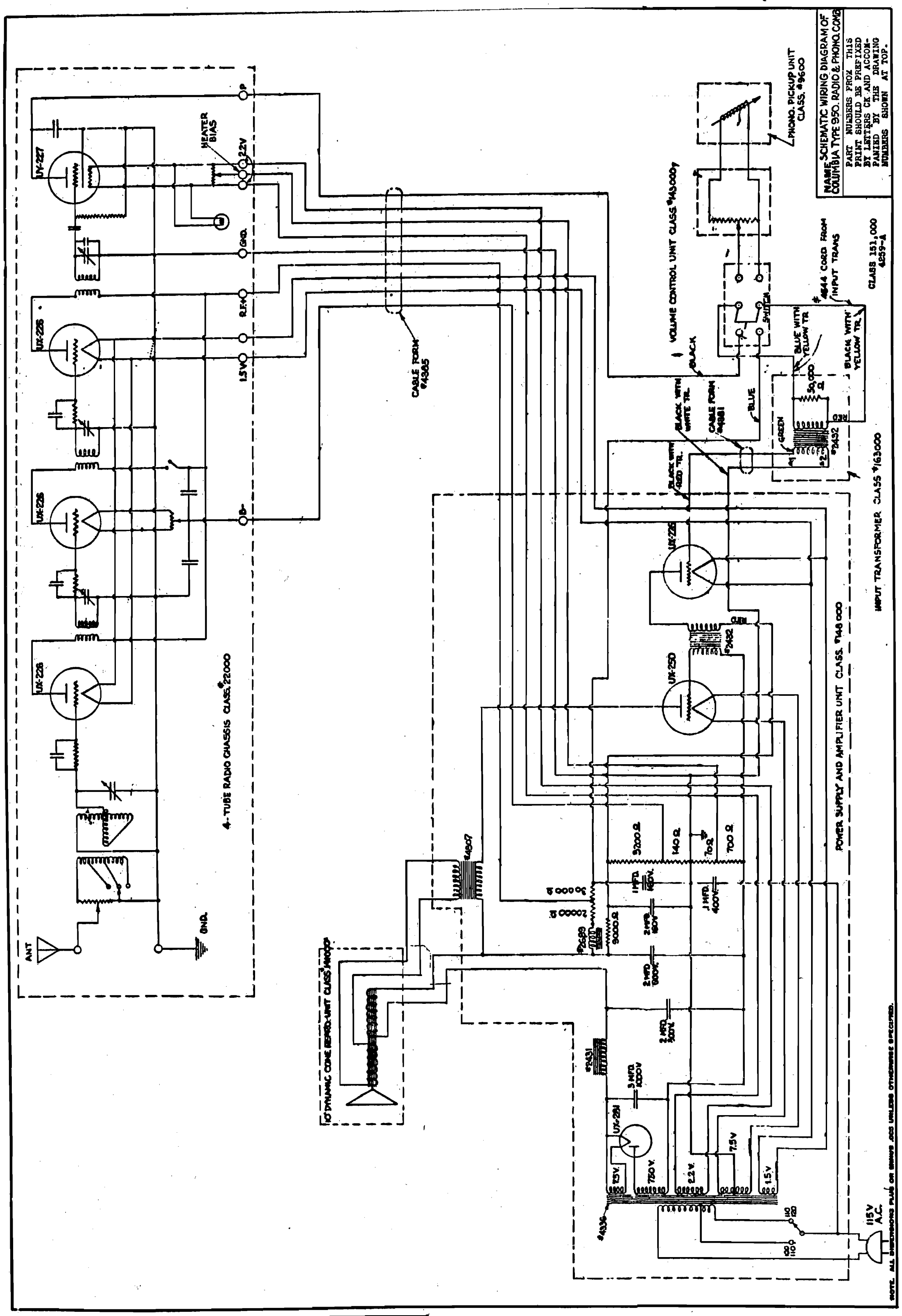
CX-326	CX-310	CX-381	CX-381
1st A.F.	2nd A.F.	Rect.	Rect.

931 Electric Phonograph (A.C.)

CX-381	CX-381	CX-350	CX-326
Rect.	Rect.	2nd A.F.	1st A.F.

COLUMBIA PHONOGRAPH COMPANY

MODEL 950
Schematic



CX-381	950	CX-350	CX-326
R.		2A.	1A.

CX-326	CX-326	CX-326	C-327
1R.	2R.	3R.	D.

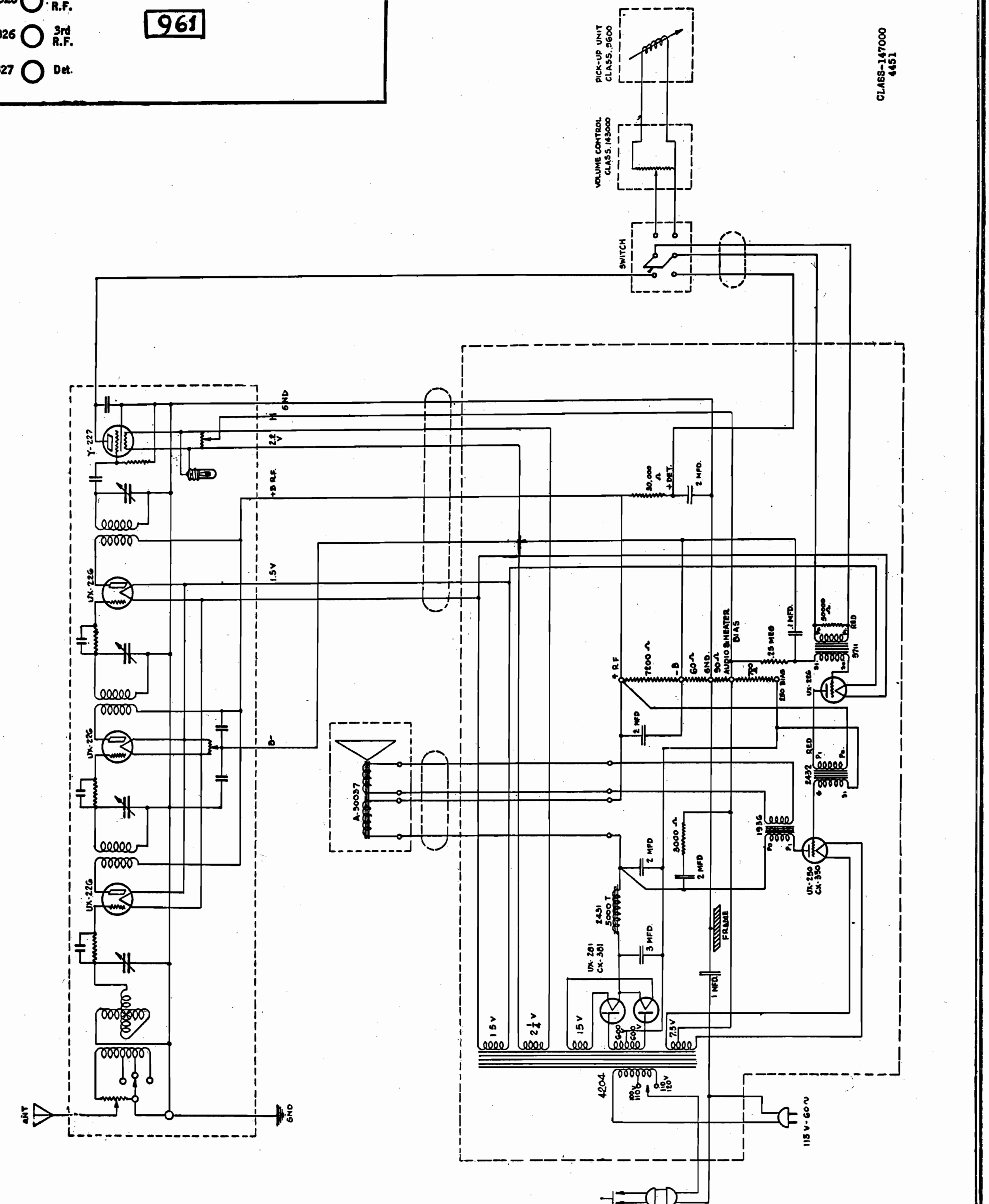
FRONT

MODEL 961

COLUMBIA PHONOGRAPH COMPANY

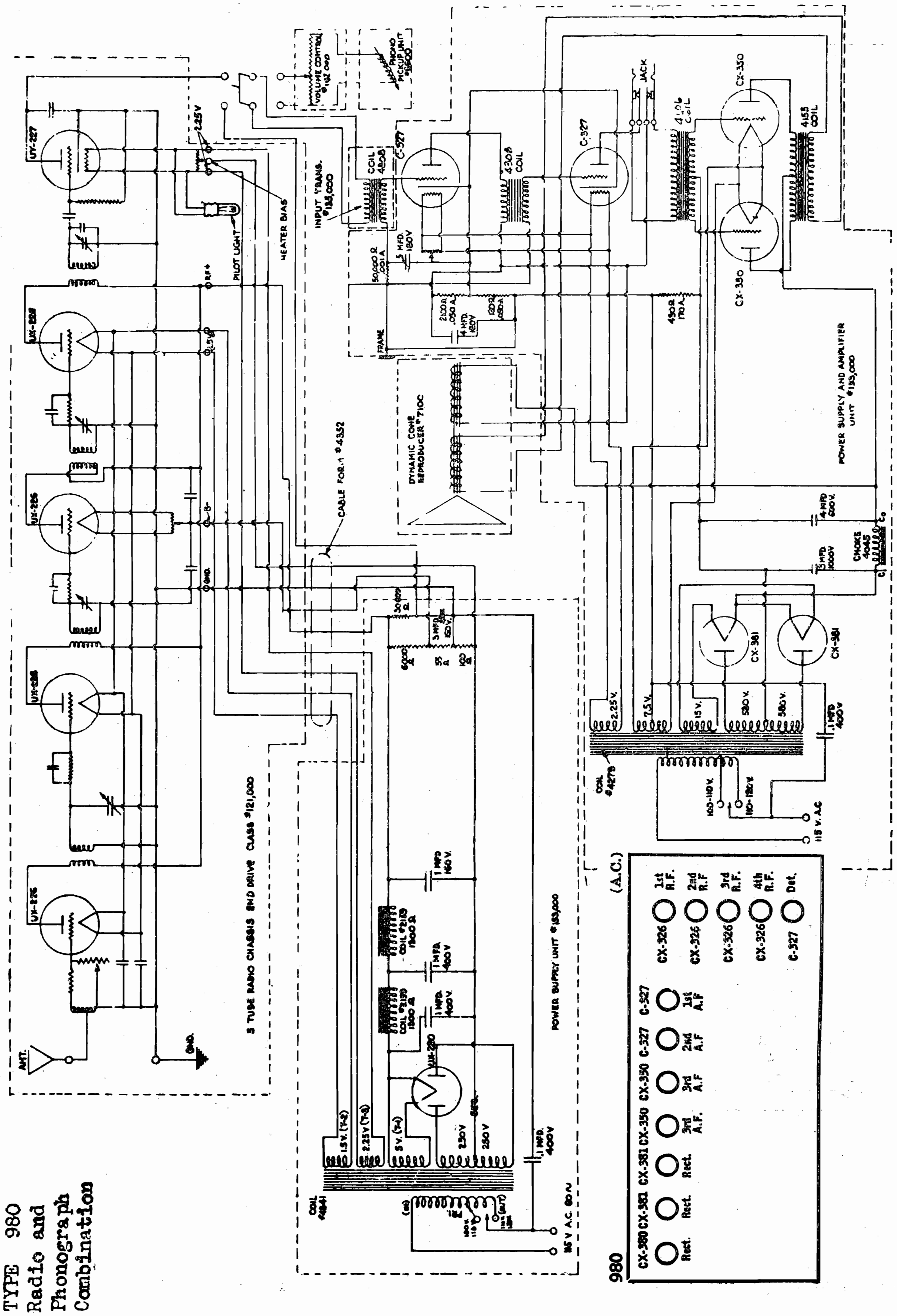
Chassis			CX-381	CX-381	CX-350	CX-326
CX-326	1st R.F.		Rect.	Rect.	2nd A.F.	1st A.F.
CX-326	2nd R.F.					
CX-326	3rd R.F.					
C-327	Det.					

961



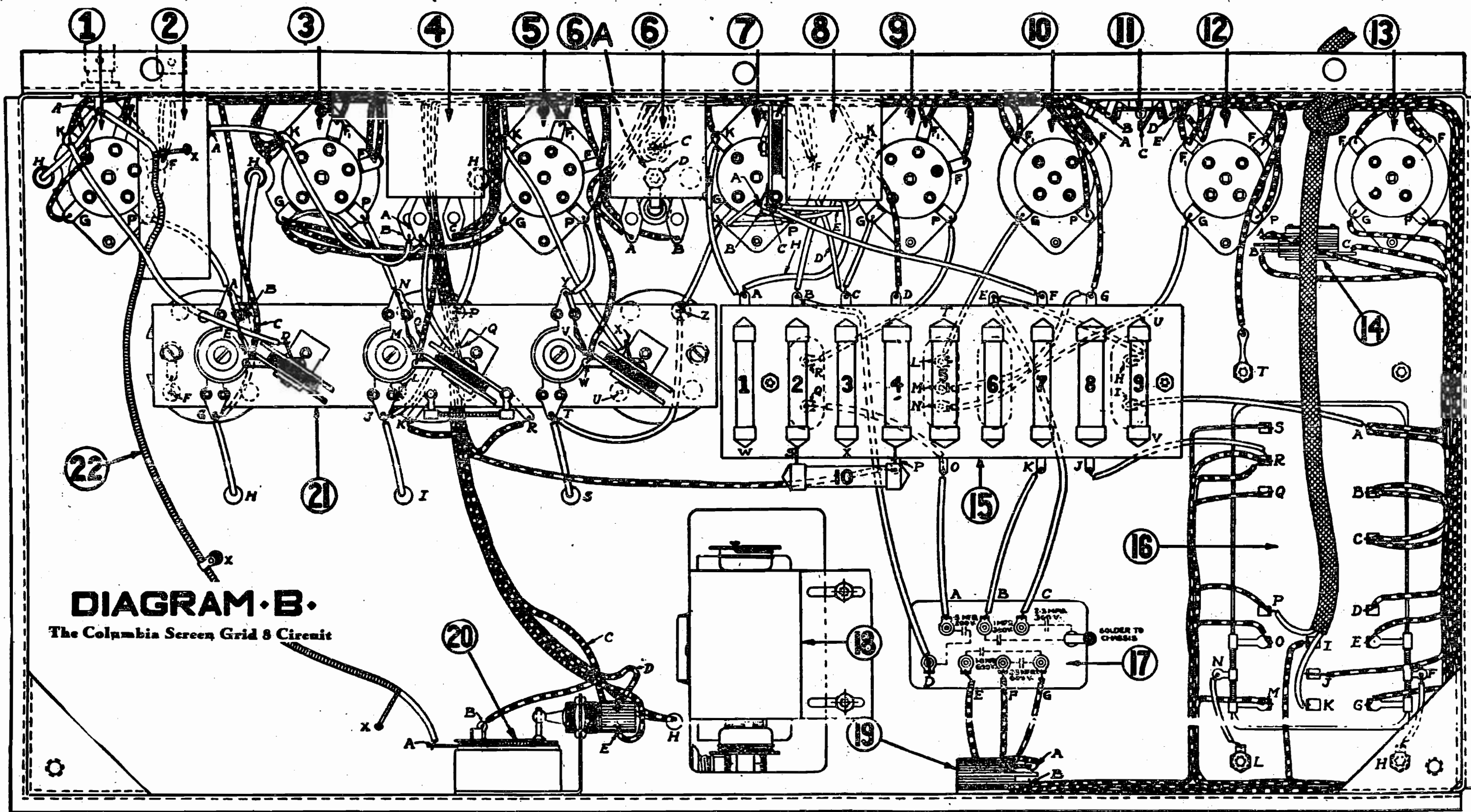
COLUMBIA PHONOGRAPH COMPANY

MODEL 980



COLUMBIA RADIO CORPORATION

MODEL SG-8
Bottom View
#1



DIAGRAM·B·
The Columbia Screen Grid 8 Circuit

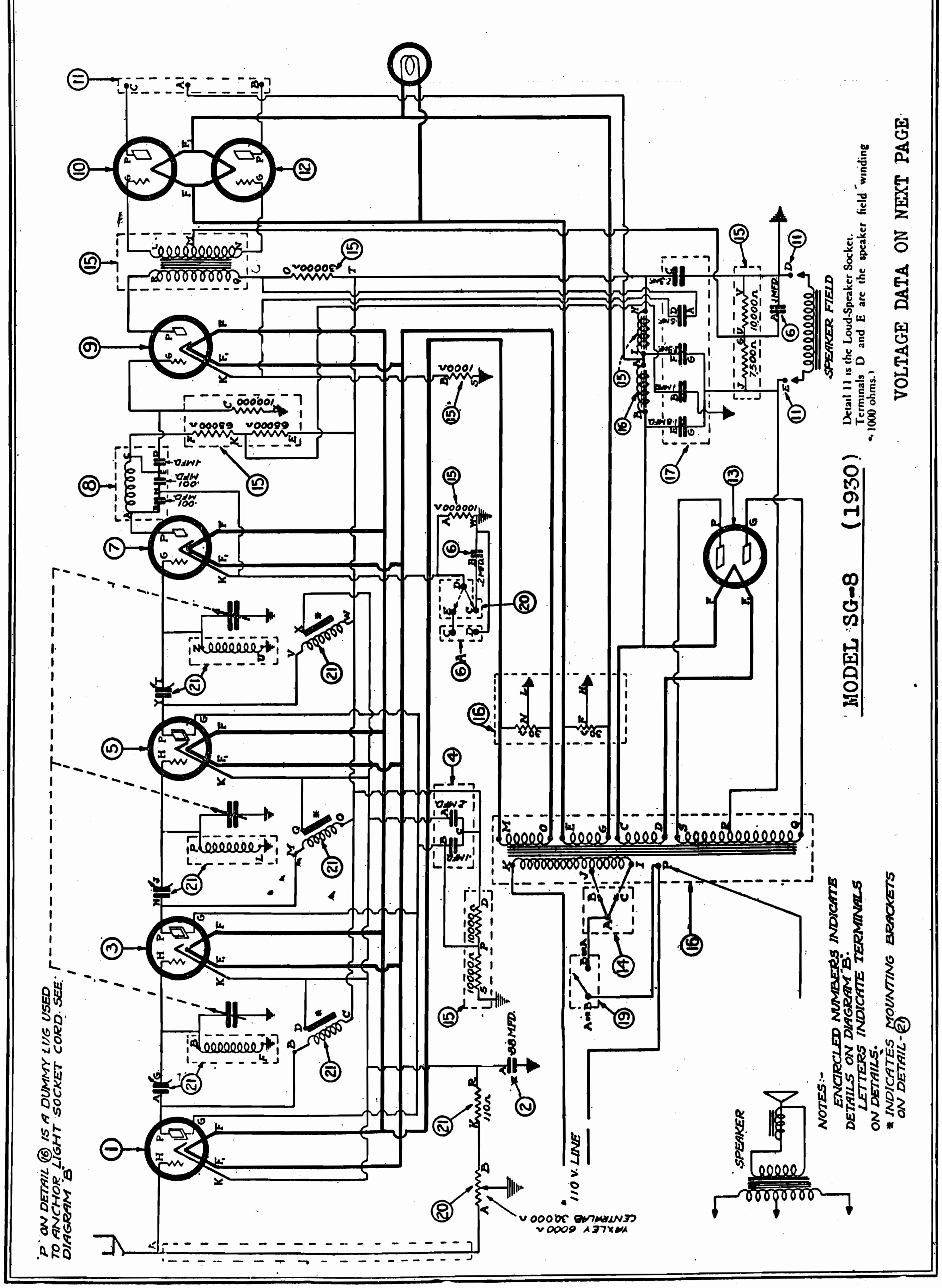
MODEL SG-8 BOTTOM VIEW

Tube No. In Order (1)	Type Of Tube (2)	Position of Tube 1st. R.F Det., Etc (3)	Readings, Plug In Socket Of Set — Tube Out: A Volts (4)	Tube Out: B Volts (5)	Tube In Tester: A Volts (6)	B Volts (7)	C Volts (Control Grid) (8)	Cathode —Heater Volts (9)	Normal Plate M.A. (10)	Plate M.A. Grid Test (11)	Plate Change M.A. (12)	Screen Grid Volts (13)
1	224	1st R.F.	2.45	180	2.4	174	—1.5	1.5	4.5	6.7	2.2	80
2	224	2nd R.F.	2.45	180	2.4	174	—1.5	1.5	4.5	6.7	2.2	80
3	224	3rd R.F.	2.45	180	2.4	174	—1.5	1.5	4.5	6.7	2.2	80
4	227	Det.	2.45	106	2.4	106	—14.5	14.5	.2		...	
5	227	1st A.F.	2.45	162	2.4	68	—3.	3.	3.2	3.8	.6	
6	245	2nd.A.F.	2.35	230	2.2	212	—3.8		20	23	3.	
7	245	2nd A.F.	2.35	230	2.2	212	—3.8		19	22	3.	

Line Voltage 115. Set on Low (1) Volt Tap. Volume Control Position Maximum

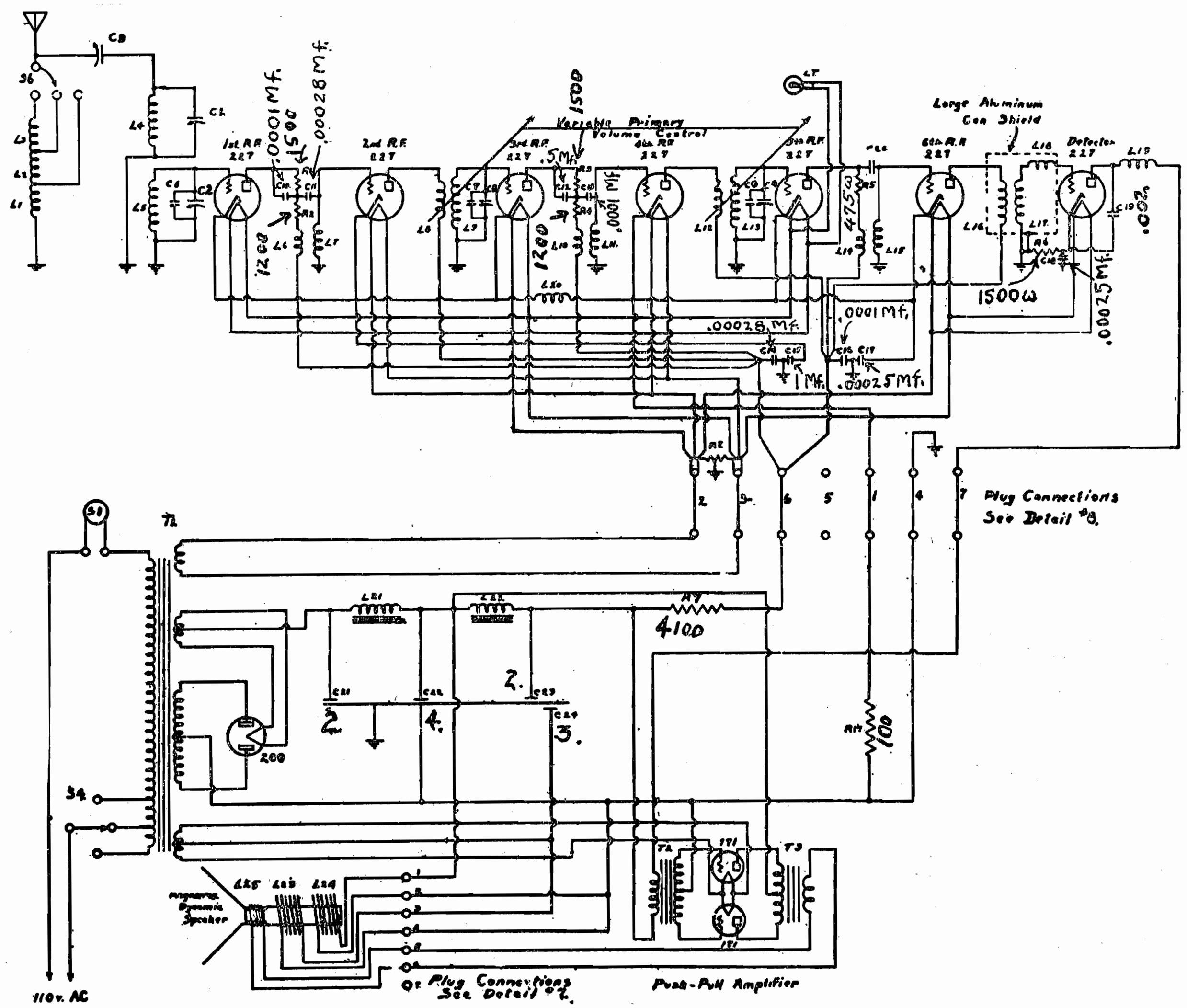
MODEL SG-8
Schematic

COLUMBIA RADIO CORPORATION

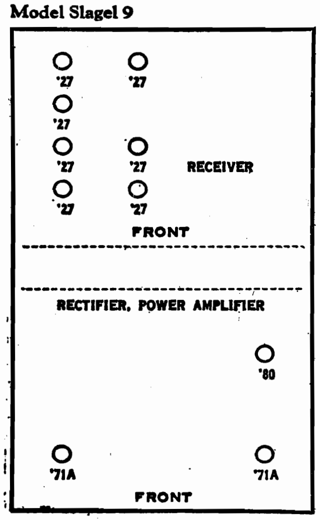


CONTINENTAL RADIO CORPORATION

MODEL "Slagle" 9 with '71A's Schematic



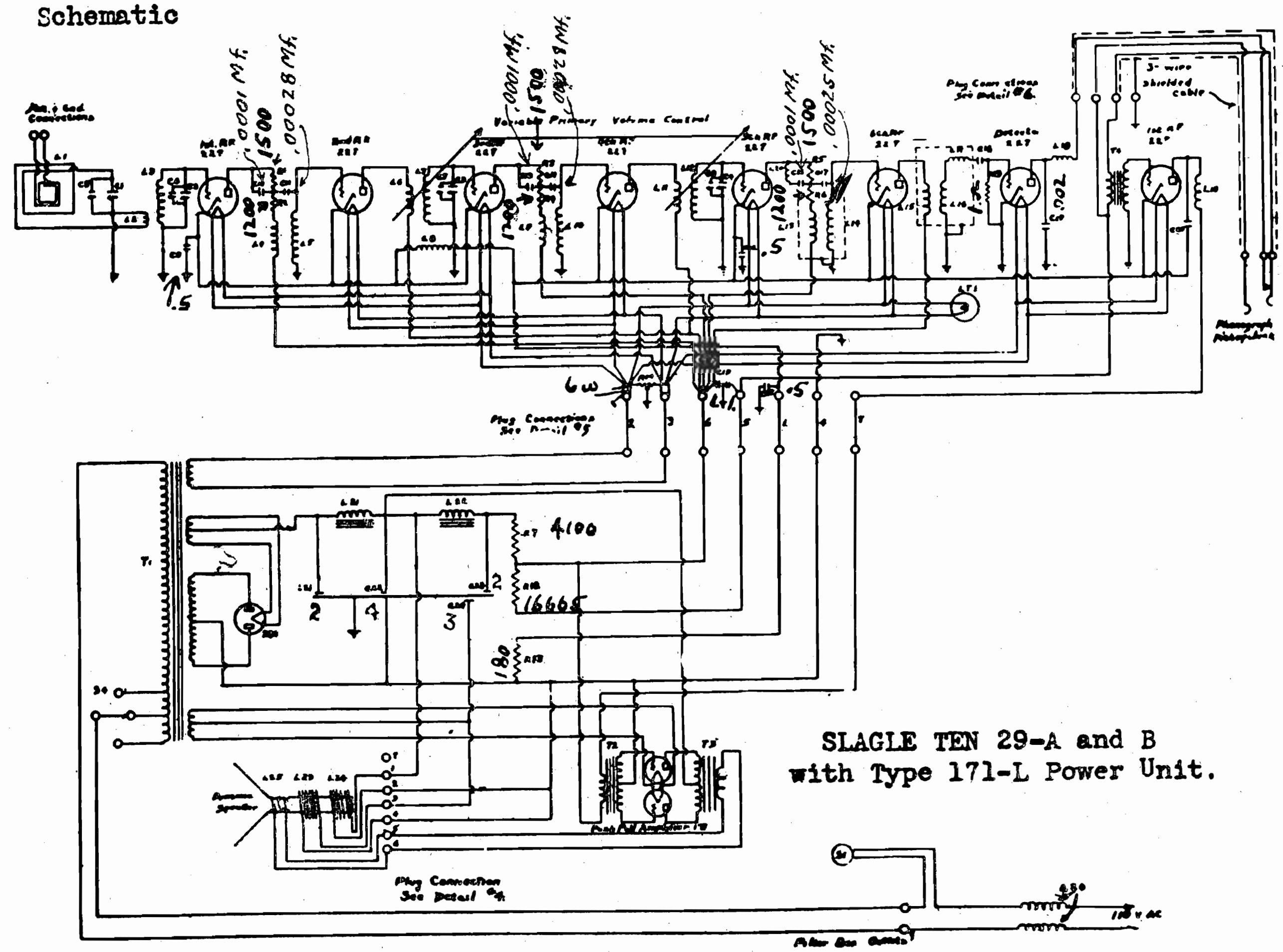
Model Slagel 9



Tube	Fil. Voltage	Plate Voltage	Plate Current	Grid Voltage	Cathode Plus
RF1	2.15	80	4.5ma	3.	3.
RF2	2.15	88	5.3	3.	3.
RF3	2.15	80	4.0	3.	3.
RF4	2.15	88	5.3	3.	3.
RF5	2.15	80	4.5	3.	3.
RF6	2.15	89	4.6	3.	3.
Det	2.15	180	1.	20.	
PP1	4.9	172	17.	37.	
PP2	4.9	172	17	37.	
Rec	4.5				

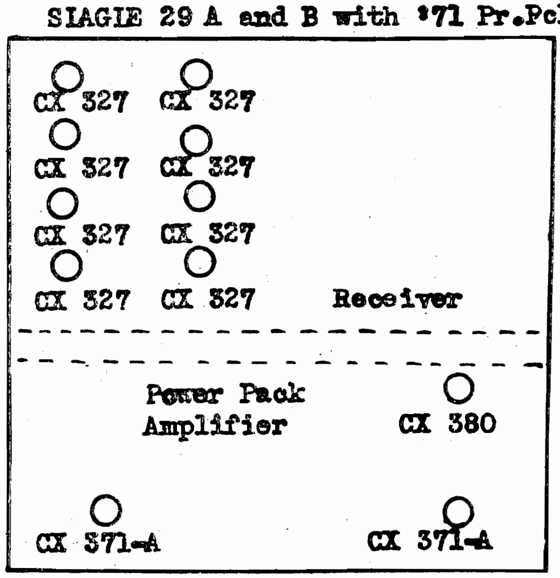
MODEL "Slagle" 10 29-A and B with '71A Power Pack. Schematic

CONTINENTAL RADIO CORPORATION



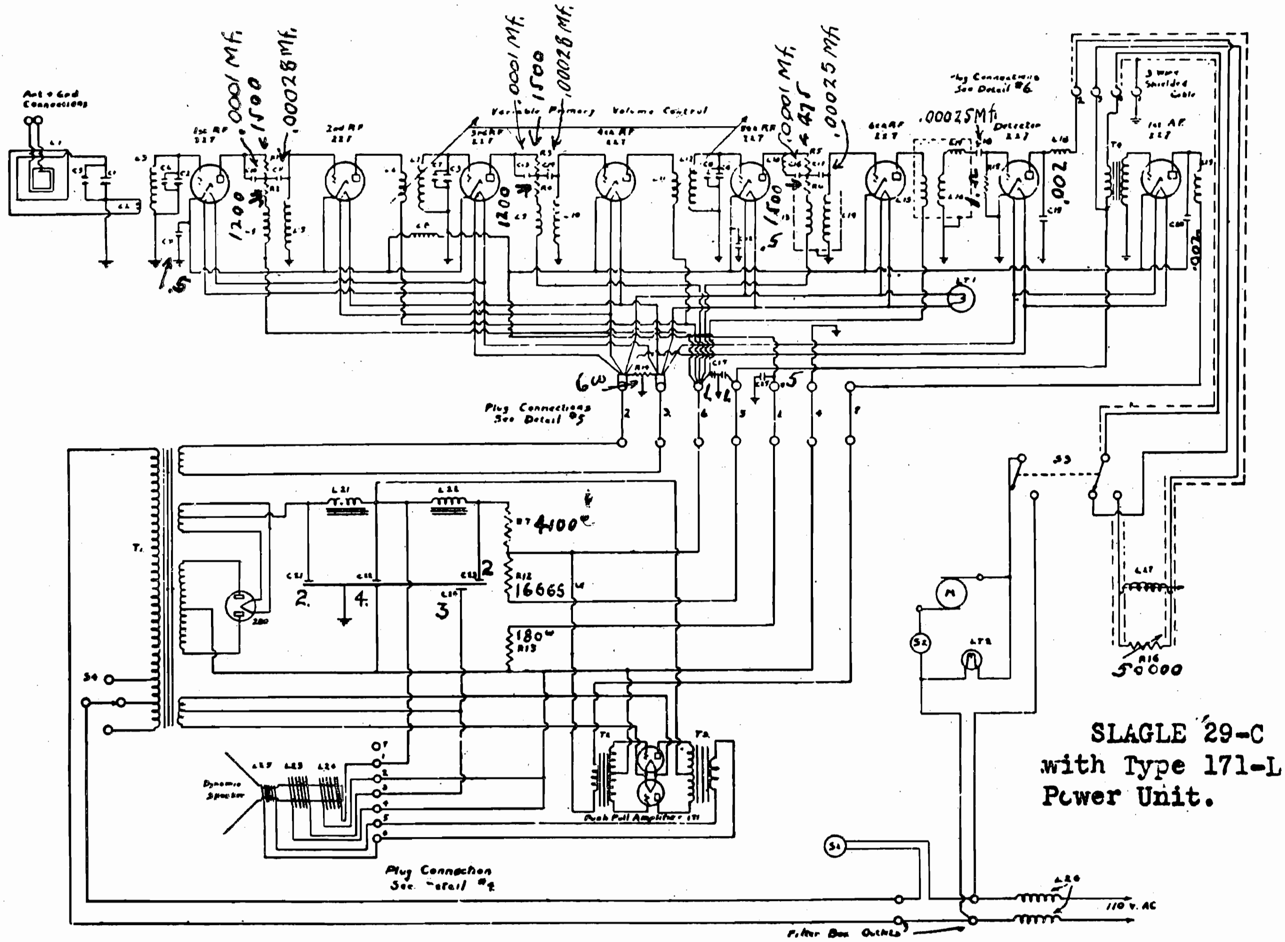
SLAGLE TEN 29-A and B with Type 171-L Power Unit.

SIAGIE 29 A and B with '71 Pr.Pck.

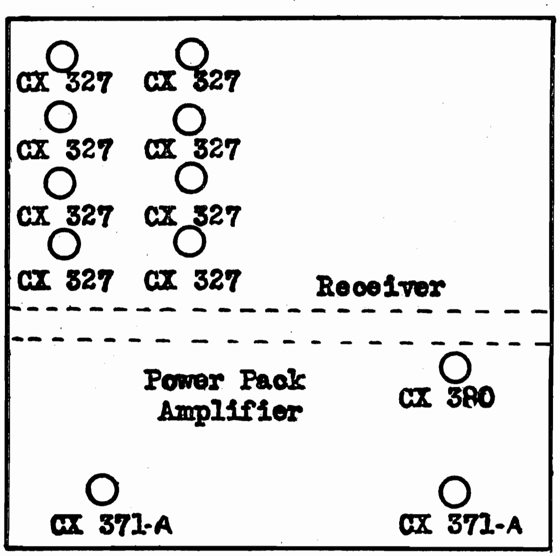


CONTINENTAL RADIO CORPORATION

MODEL "Slagle"
29-C with '71A
Power Pack.
Schematic

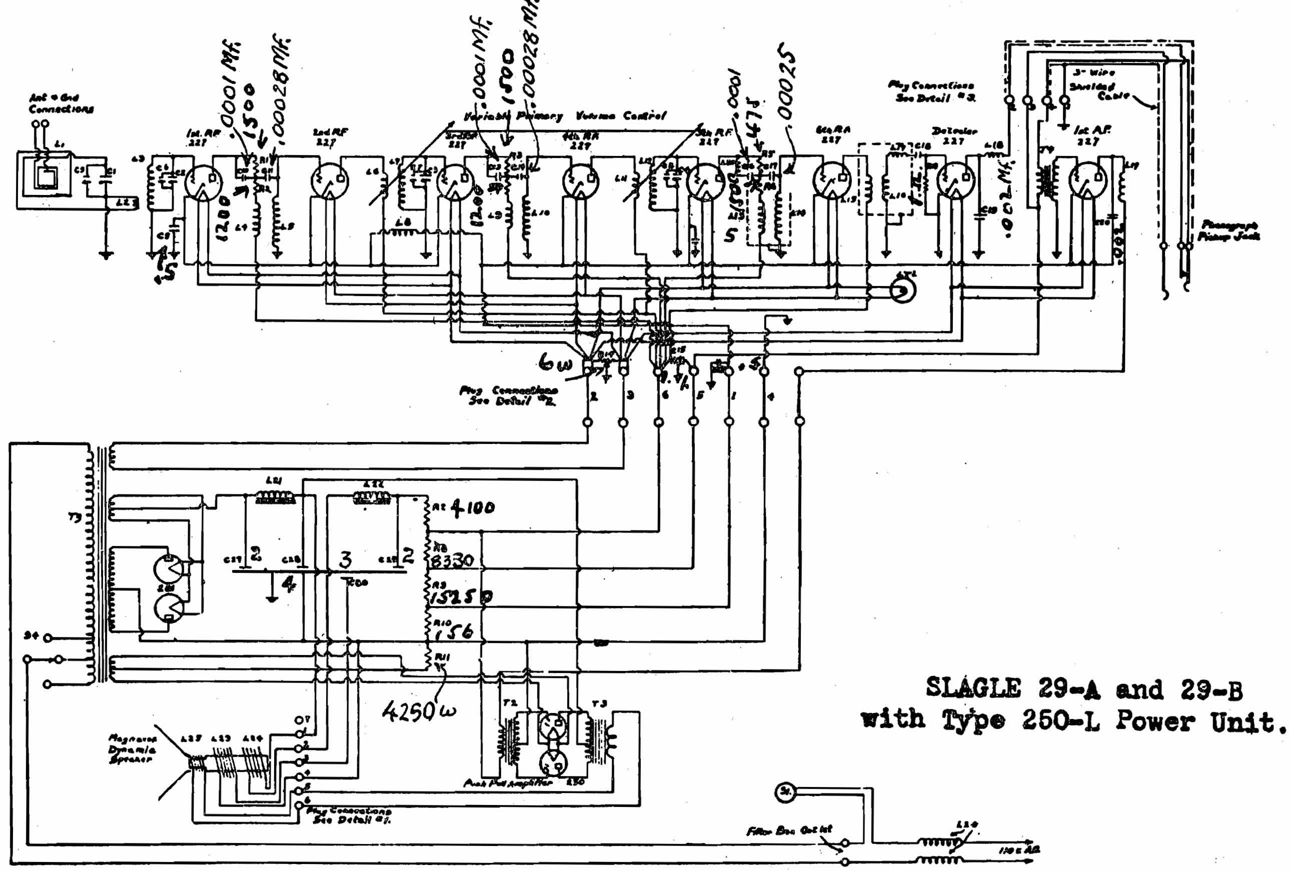


SLAGLE 29-C
with Type 171-L
Power Unit.



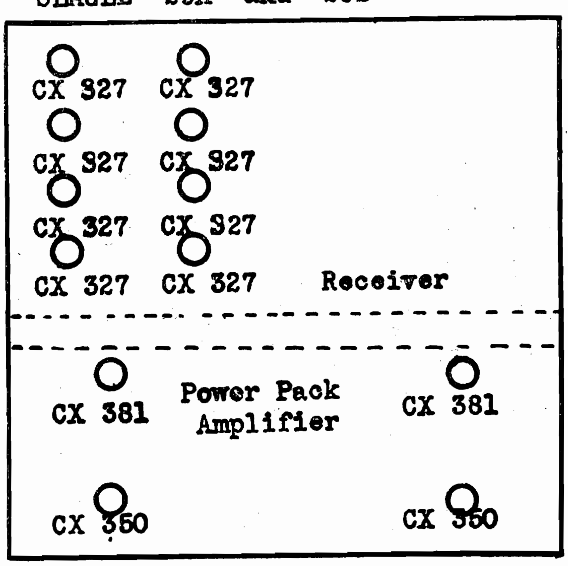
MODEL "Slagle"
29-A and 29-B
with '50 Power
Pack.
Schematic

CONTINENTAL RADIO CORPORATION



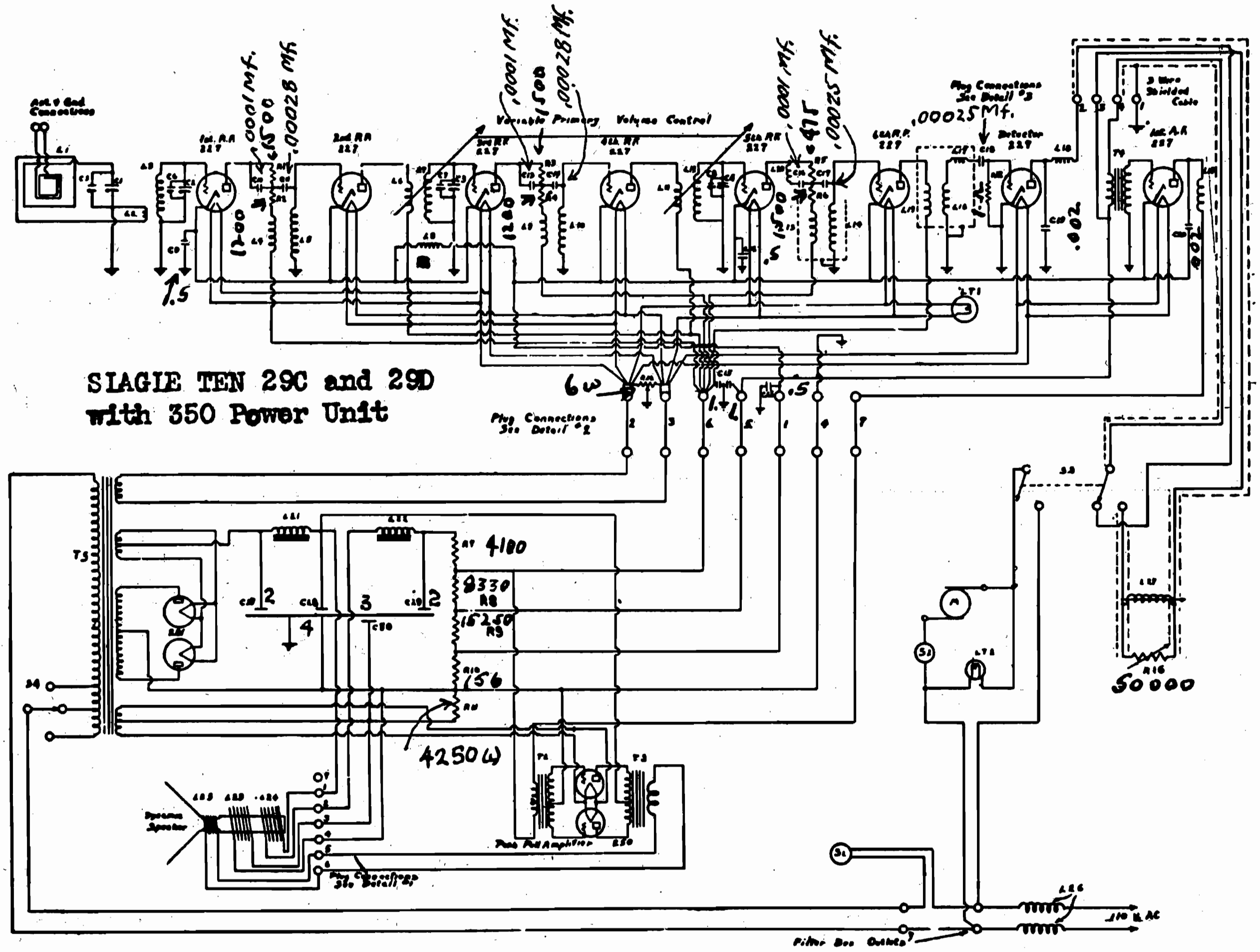
SLAGLE 29-A and 29-B
with Type 250-L Power Unit.

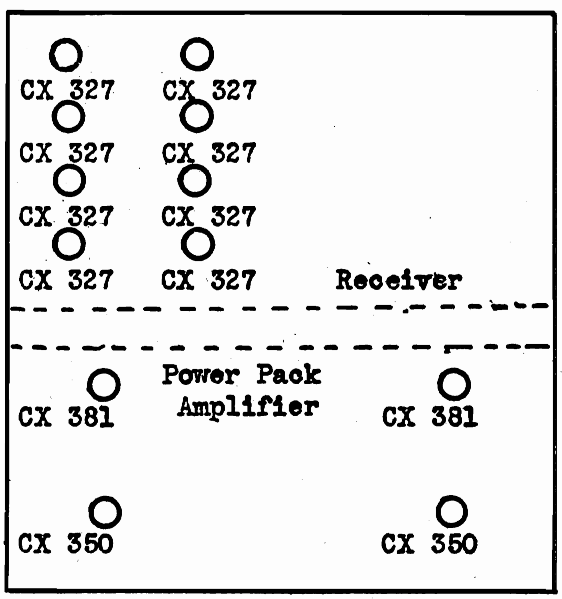
SLAGLE 29A and 29B



CONTINENTAL RADIO CORPORATION

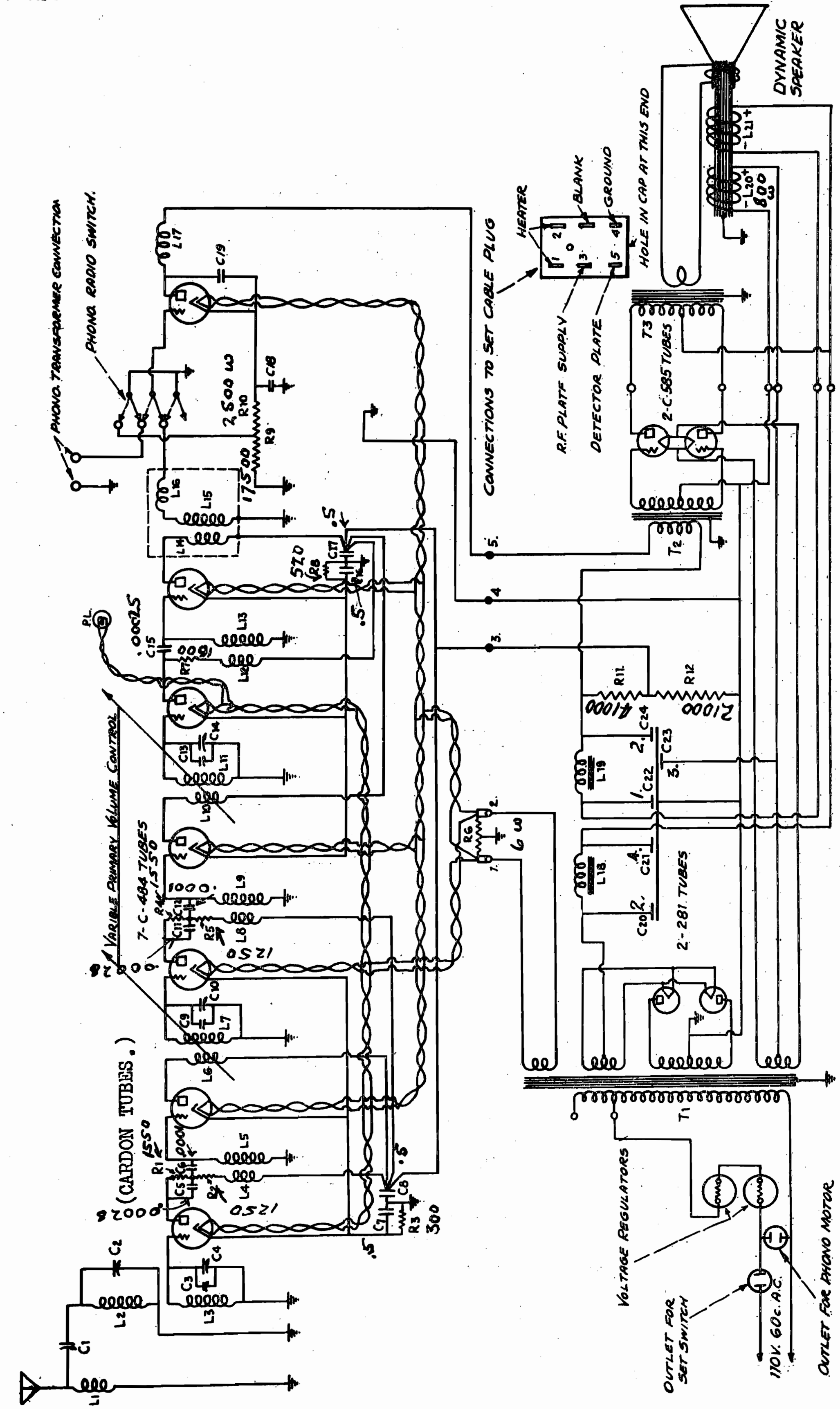
MODEL "Slagle" 29-C and 29-D with '50 Power Pack. Schematic





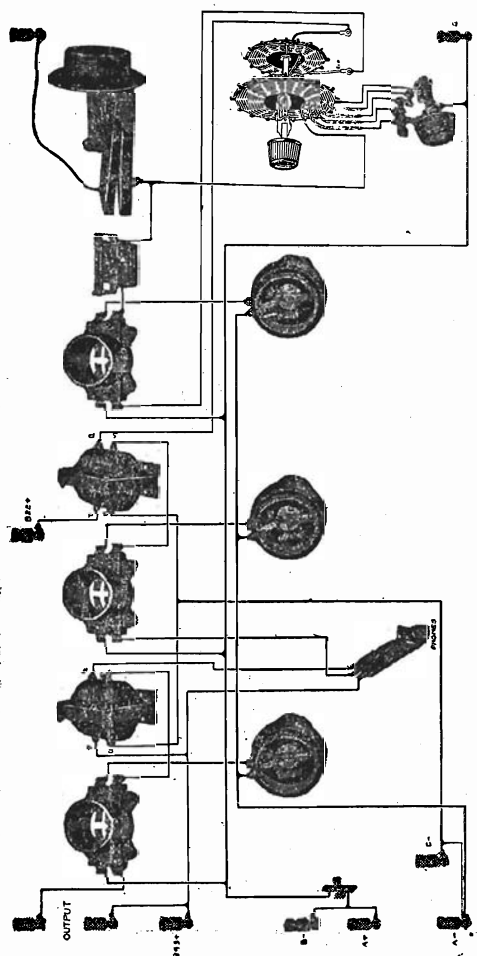
MODEL Star Raider
R-20, R-30, R-40
Schematic

CONTINENTAL RADIO CORPORATION

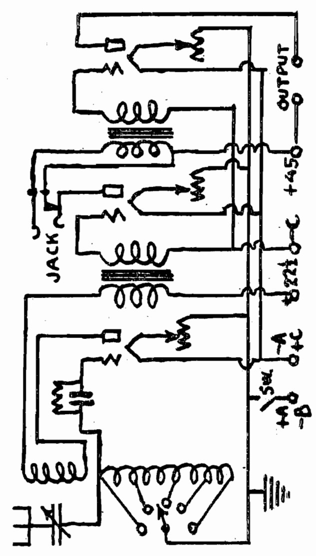


MODEL XJ,XL
MODEL 3B, 3C
Schematic

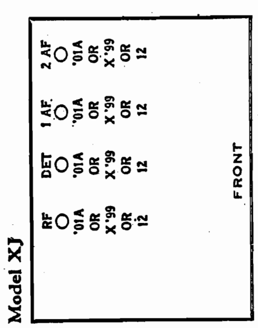
CROSLEY RADIO CORP.

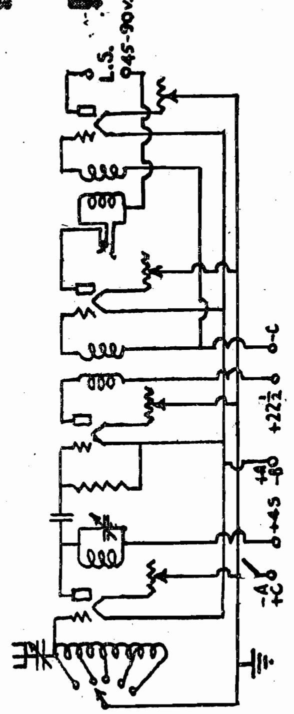


Crosley 3B or 3C Detector and Two-step Amplifier Receiver

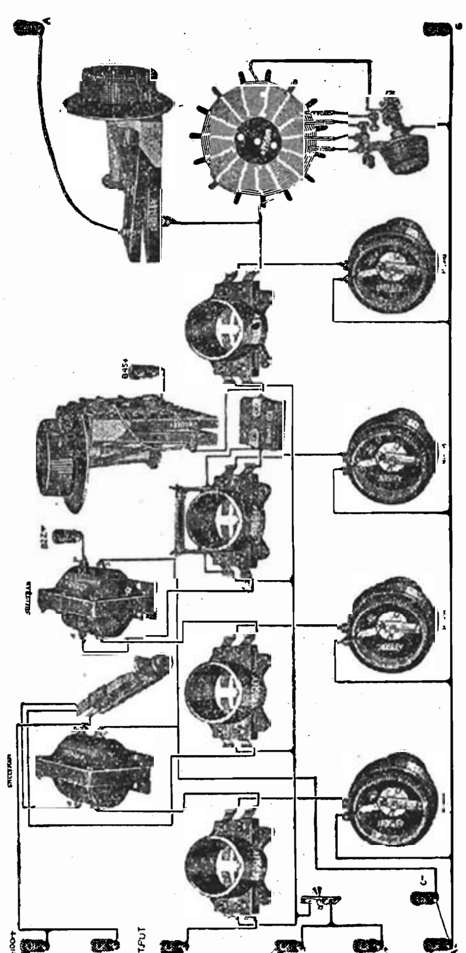


MODEL 3B or 3C





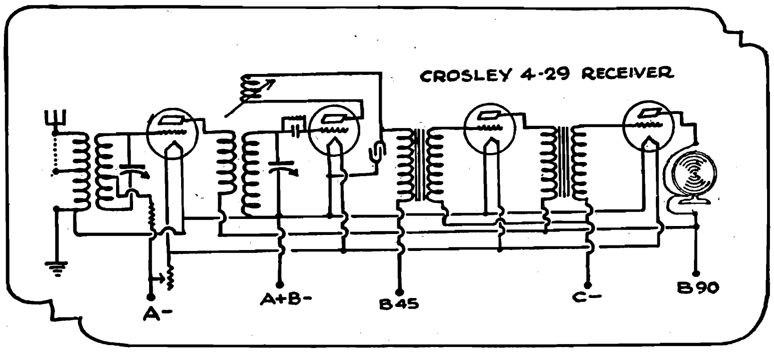
MODELS XJ and XL



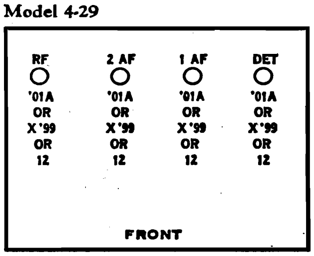
Crosley Models XJ and XL Circuit

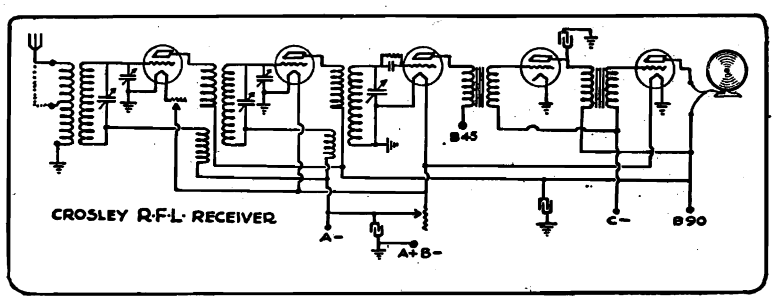
MODEL 4-29
MODEL RFL 60,75
Schematic

CROSLEY RADIO CORP.

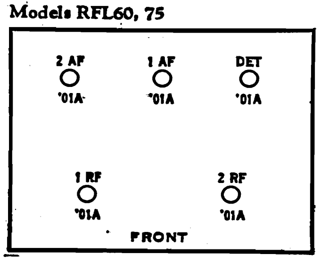


Model 4-29



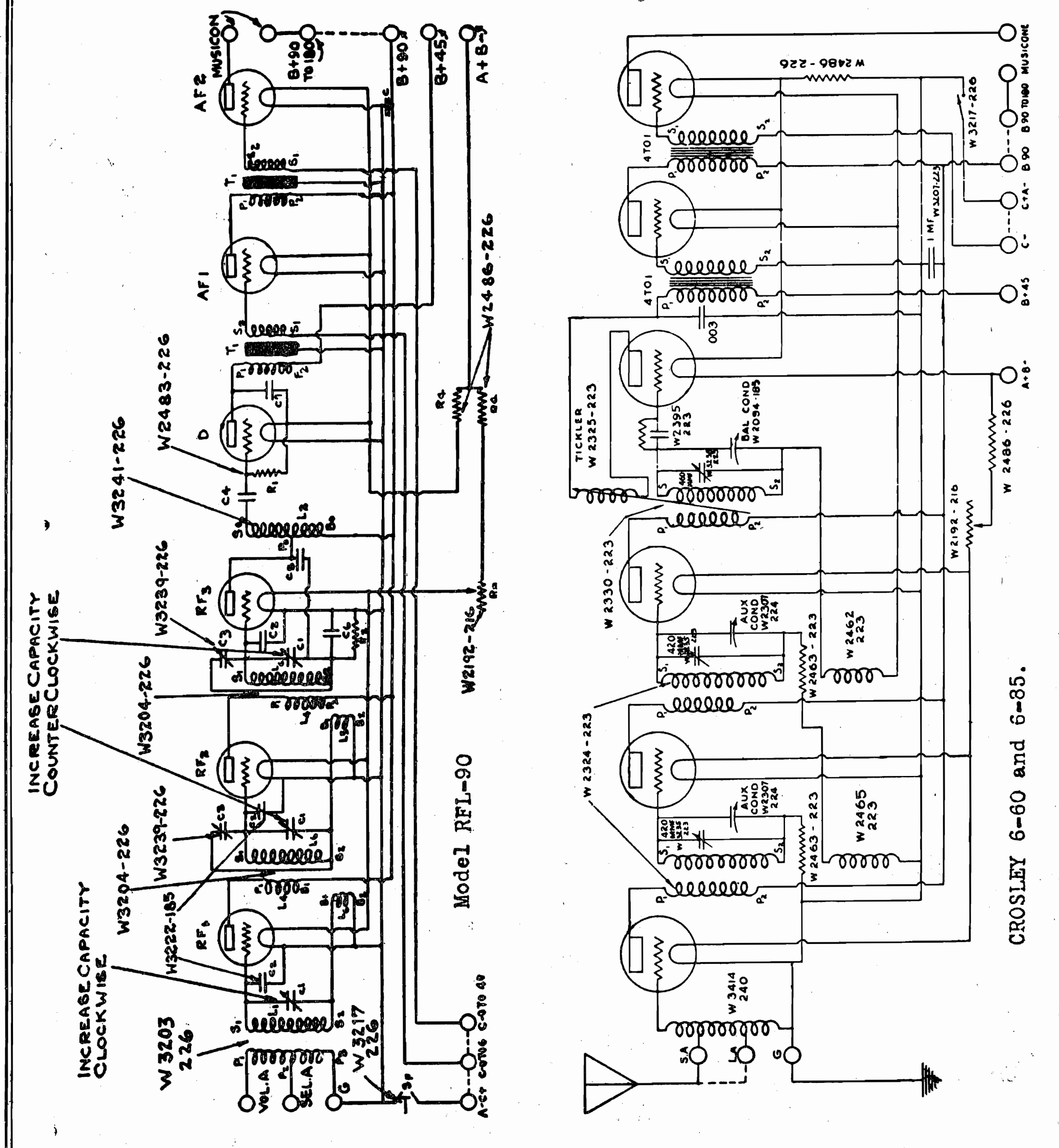


Models RFL60, 75



CROSLEY RADIO CORP.

MODEL RFL 90
MODEL 6-60, 6-85
Schematic



RFL 90 (Batt.)

CX-301A or CX-112A	CX-301A	CX-301A	CX-301A	CX-301A or CX-300A or CX-112A
2nd A.F.	1st A.F.	2nd R.F.	3rd R.F.	Det.

CX-301A — 1st R.F.

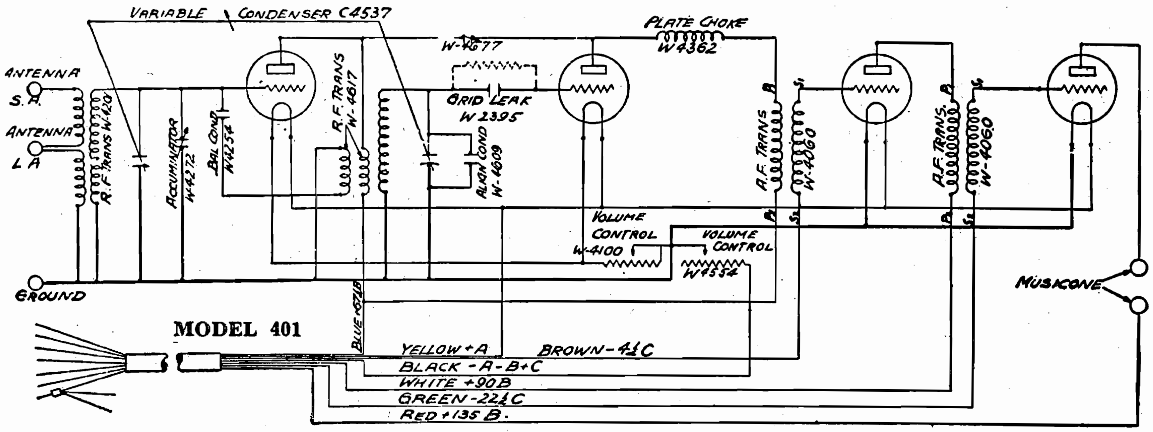
6-60, 6-85 (Batt.)

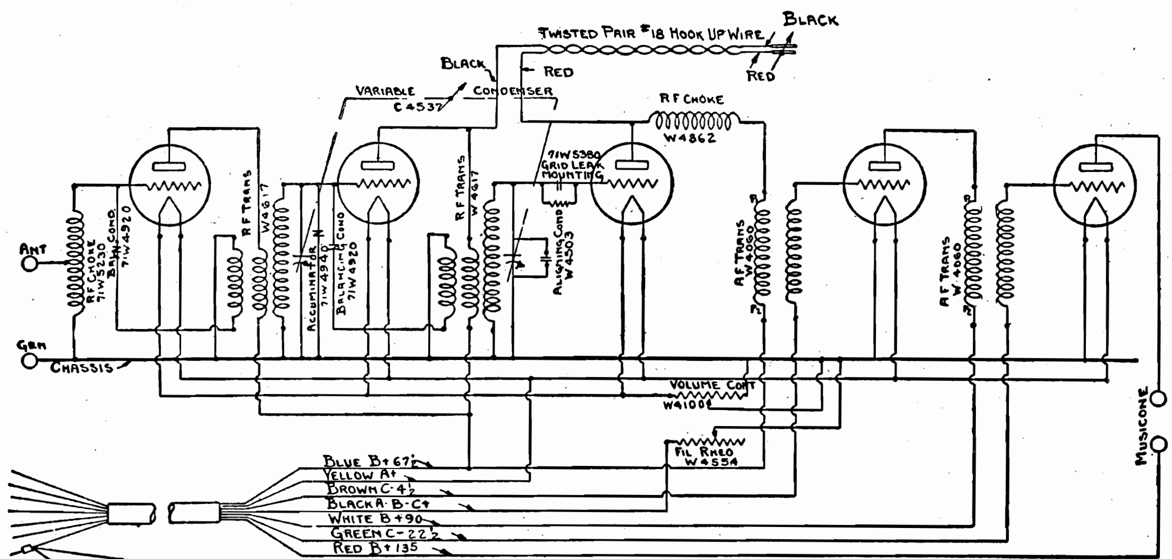
CX-301A	*CX-112A or *CX-371A	CX-301A	CX-301A	CX-301A or CX-300A or CX-112A
1st R.F.	2nd A.F.	3rd R.F.	1st A.F.	Det.

CX-301A — 2nd R.F.

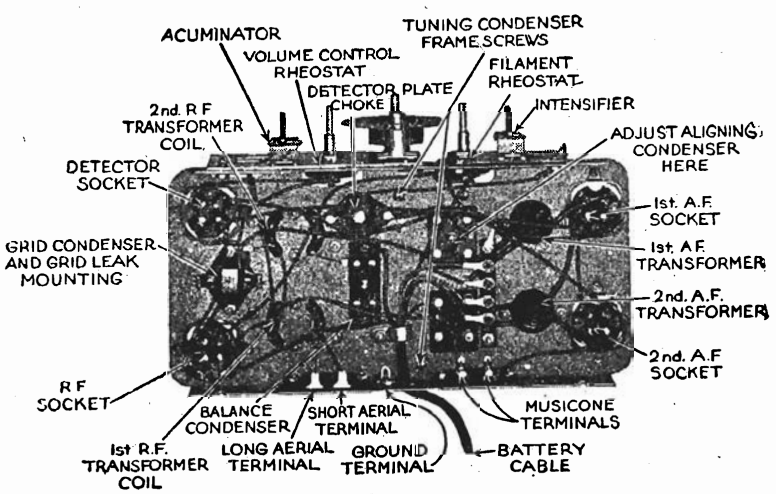
MODEL 401
MODEL 401-A
Schematic

CROSLEY RADIO CORP



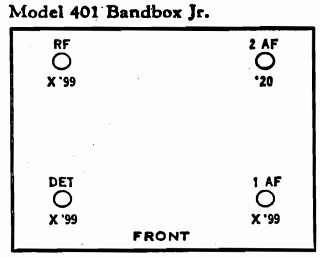


CIRCUIT, MODEL 401-A

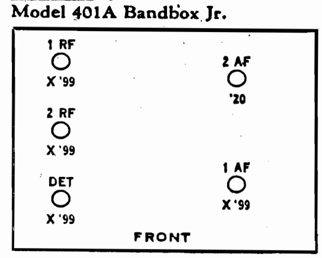


BOTTOM VIEW, MODEL 401 CHASSIS

Model 401 Bandbox Jr.

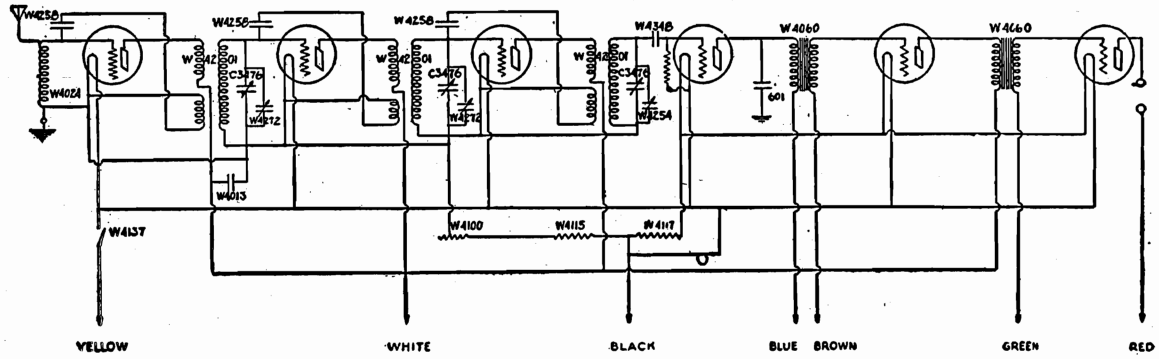


Model 401A Bandbox Jr.

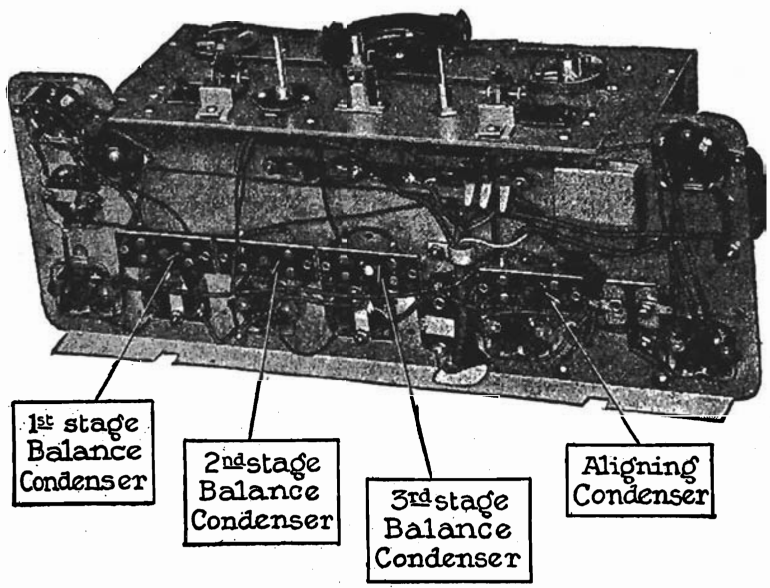


CROSLEY RADIO CORP.

MODEL 601
A-C. Power Unit for A.C.7
Schematic



CIRCUIT OF MODEL 601



BOTTOM VIEW, MODEL 601 CHASSIS

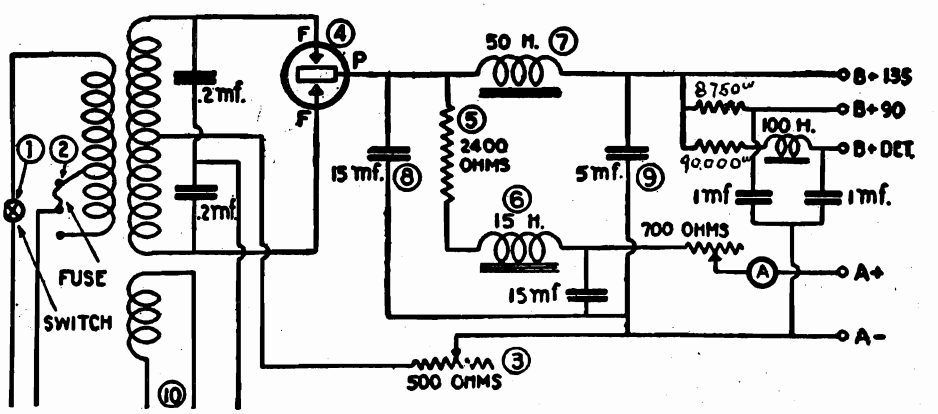
Loudspeaker.

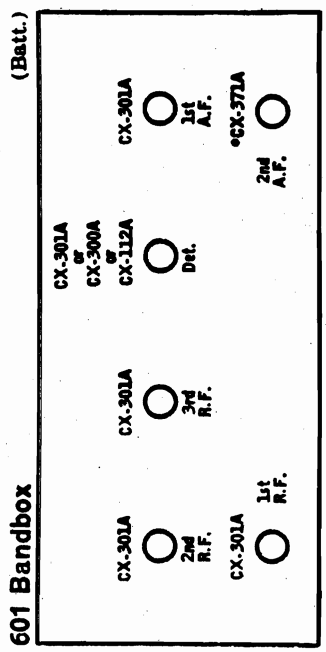
1. Any model Crosley Musicone may be used with Bandbox, Model 601.
2. If a 171 output tube is used with 180 volts on the plate, Crosley Dynacone, Type E, is recommended for greatest volume and highest quality of reproduction. **Type E. Dynacone must be used—Type F cannot be operated with this set.**

Removing Indicator Dial And Replacing Belts.

1. Take out three screws attaching indicator dial to center pulley and remove dial.
2. Loosen screws which control tension of belts and take off belts. If center tuning condenser is to be replaced, remove also center pulley.
3. Replace in reverse order, being sure to put belts on pulleys with pulley drive pins through belt holes.

A.C.Power Unit for Model A.C.7 Receiver.



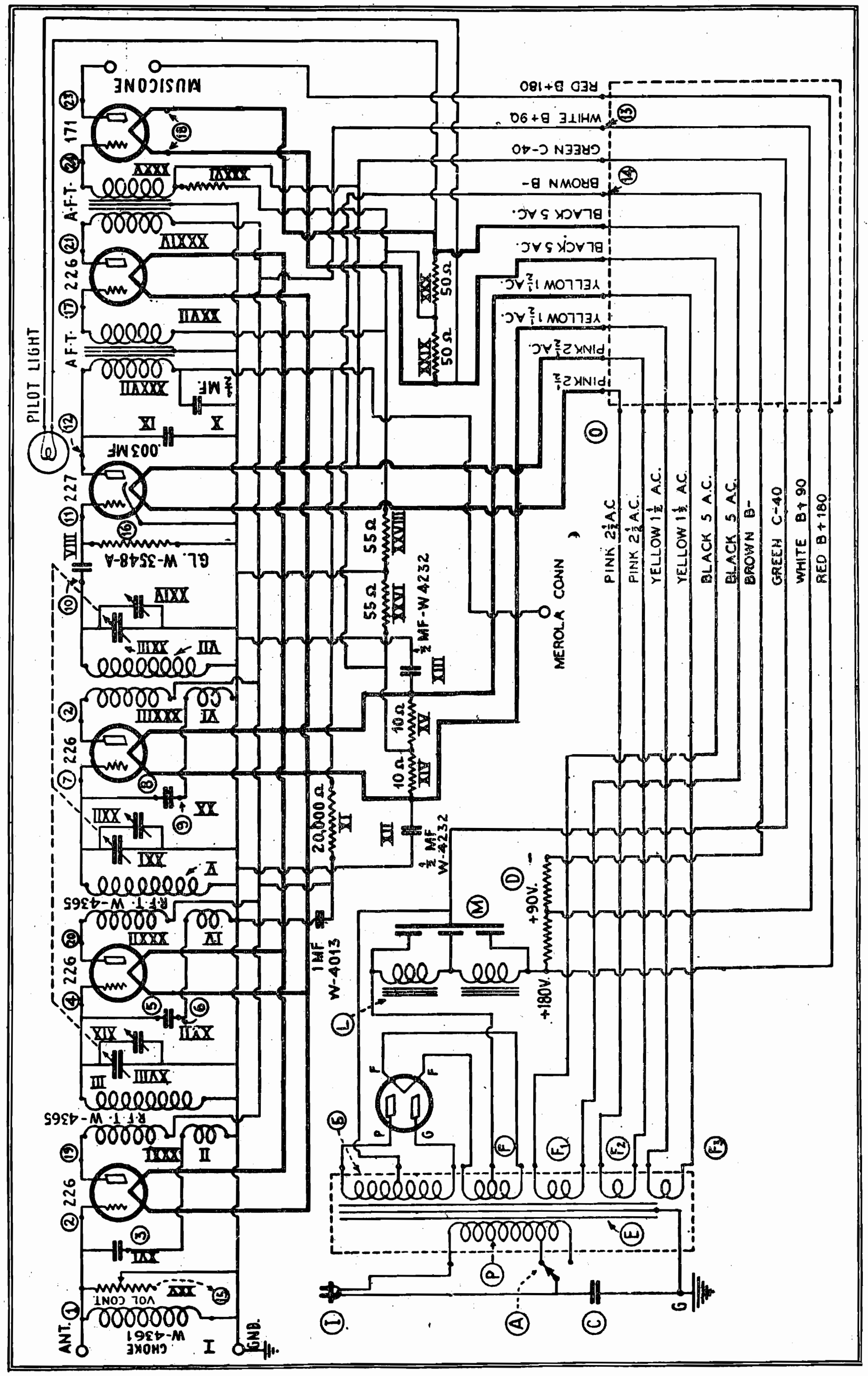


CROSLEY—Model 601

TUBE NO. IN ORDER	TYPE OF TUBE	POSITION OF TUBE 1ST R.F. DET. ETC	READINGS, PLUG IN SOCKET OF SET — TUBE OUT: A VOLTS	TUBE OUT: B VOLTS	TUBE IN TESTER: A VOLTS	B VOLTS	C VOLTS	CATHODE VOLTS	NORMAL PLATE M.A	PLATE M.A GRID TEST	PLATE M.A CHANGE
	201A	1st.R.F.	5.1	90	5	90	0.0		7.0	11.0	4.0
	201A	2nd.R.F.	5.1	90	5	90	0.0		7.0	11.0	4.0
	201	3rd.R.F.	5.1	90	5	90	0.0		7.0	11.0	4.0
	201A	Detector	5.1	45	5	45	0.0		2.0	5.5	3.5
	201A	1st.A.F.	5.1	90	5	90	4.5		5.0	7.0	2.0
	171A	2nd.A.F.	5.1	135	5	135	22.5		20.0	25.0	6.0

MODEL 602 A.C.
Power Converter for
MODELS 104,105,106
Schematic

CROSLEY RADIO CORP

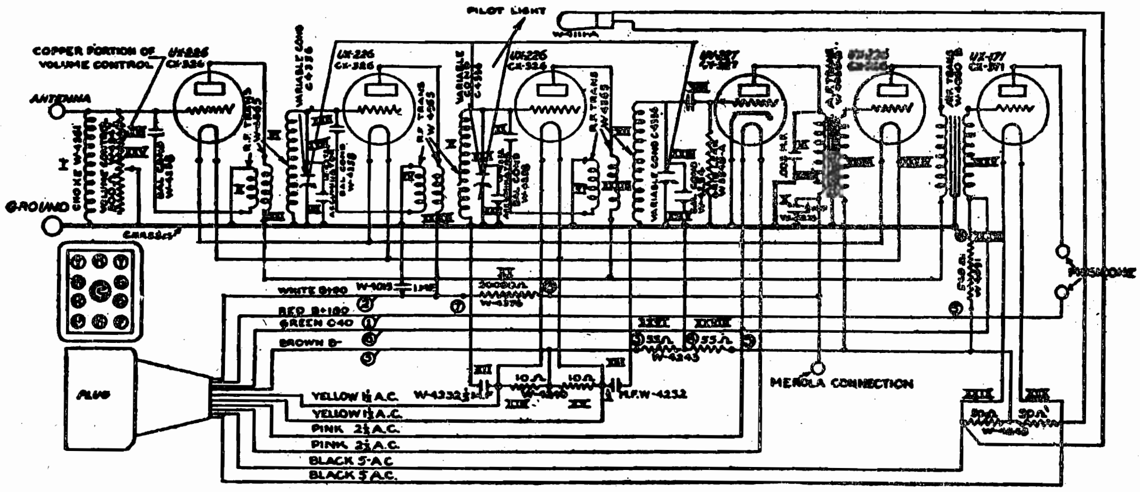


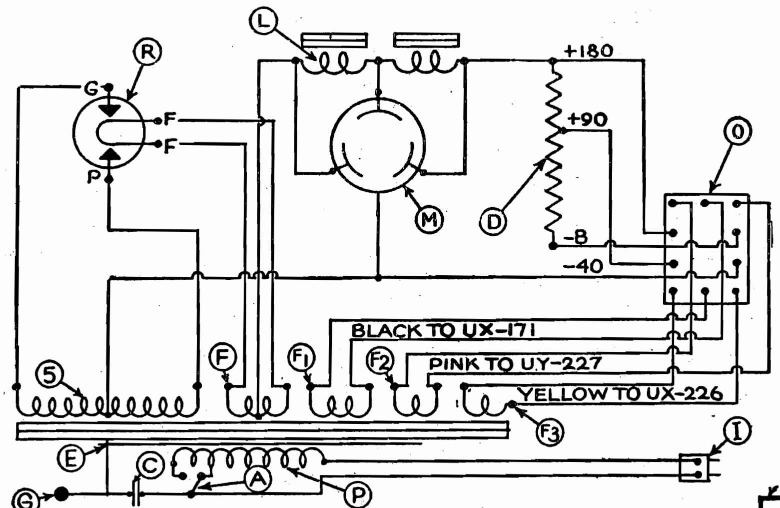
Circuits of the Crosley Model 602 A. C. Bandbox and Power Converter Models 104, 105 and 106. The dotted square at the lower right represents the plug by which the ten connections are made.

Values and Numbers Not Specified in Diagram.
Grid Leak—2 megohms.
VI-VII—R.F. Transformer, W4365.
X—By-Pass Condenser, W4233.
XI—Detector Plate Resistor, W4376.
XIV-XV—Center-Tap Resistor, W4240.
XVI-XVII-XX—Balancing Condensers, W4258.
XIX-XXII—Acuminators, (Compensating Condensers), W4272.
XVIII-XXI-XXIII—Tuning Condensers.
XXIV—Balancing Condenser, W4254.
XXV—Volume Control, 300 ohms, W4247.
XXVII-XXXIV—A.F. Transformers, W4060B (A .0008-mf. by-pass condenser W4512 is shunted across the secondary XXXV).
XXXVI—"C" Biasing Resistor, 540 ohms, W4391.

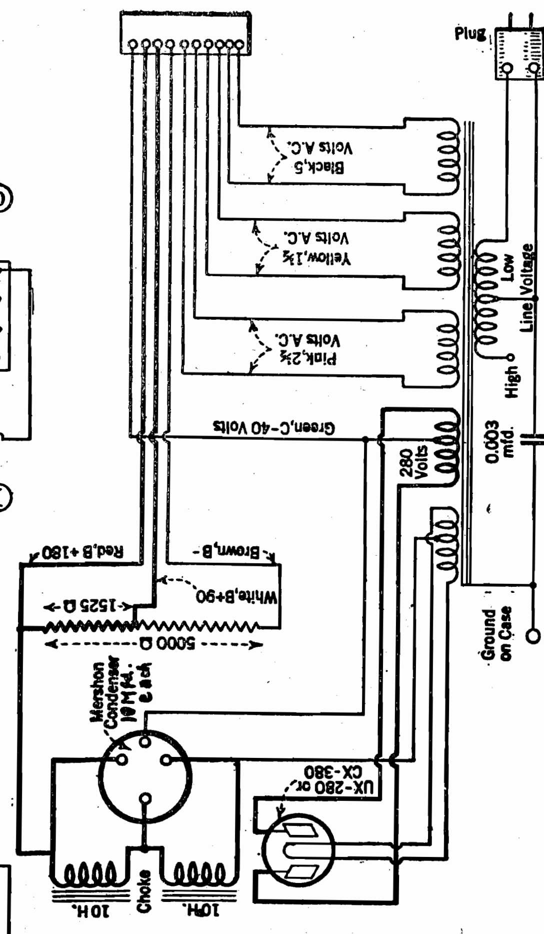
CROSLEY RADIO CORP

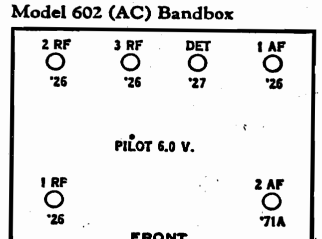
MODEL 602
MODEL 602 Power Unit
MODELS 104, 105, 106
MODELS 104R, 105R



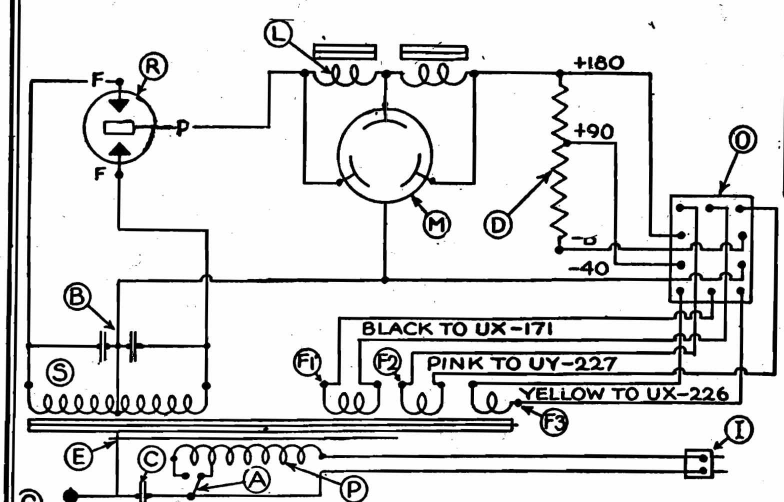


CIRCUIT DIAGRAM OF MODELS 104, 105, AND 106 POWER CONVERTER





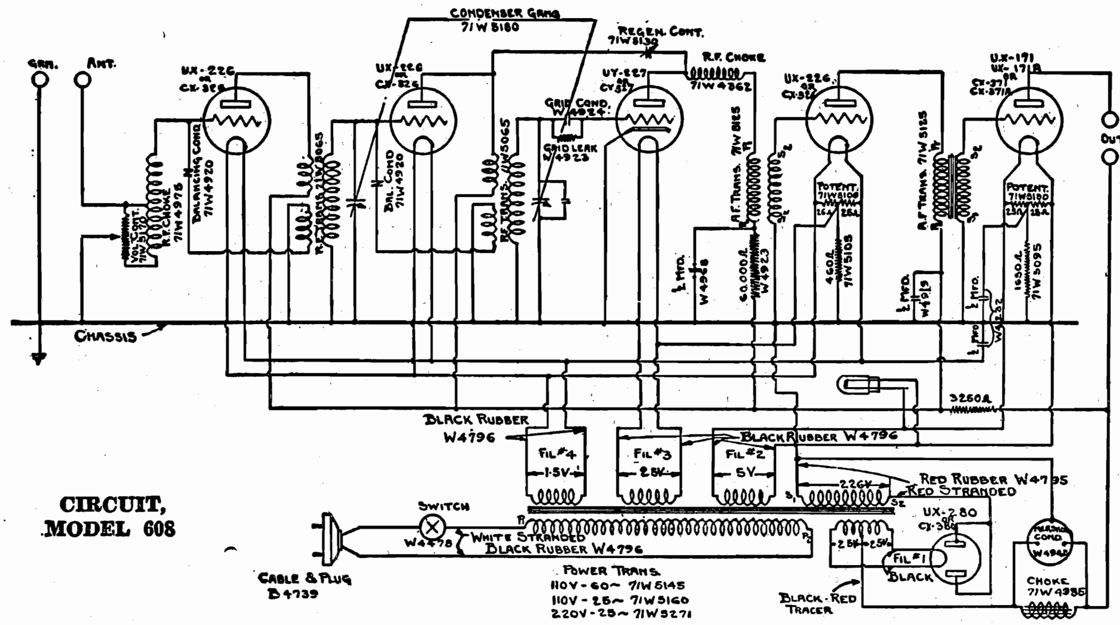
Model 602 (AC) Bandbox



CIRCUIT DIAGRAM OF MODELS 104R AND 105R POWER CONVERTER

MODEL 608
Schematic
Voltage, Bottom View

CROSLEY RADIO CORP.



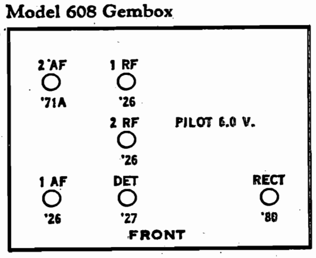
CIRCUIT, MODEL 608

CROSLEY—Model 608

Line Voltage 115—227 Emitter Biased 7 Volts Negative with Respect to Filament. Detector Grid Test Made with Grid Leak Shorted

TUBE NO. IN ORDER	TYPE OF TUBE	POSITION OF TUBE 1ST R.F., DET., ETC.	READINGS, PLUG IN SOCKET OF SET								
			TUBE OUT		TUBE IN TESTER						
			A VOLTS	B VOLTS	A VOLTS	B VOLTS	C VOLTS	CATHODE VOLTS	NORMAL PLATE M.A.	PLATE M.A. GRID TEST	PLATE M.A. CHANGE
1	226	1st.R.F.	1.55	120	1.45	115	7		5.5	9.0	3.5
2	226	2nd.R.F.	1.55	120	1.45	115	7		5.5	9.0	3.5
3	227	Detector	2.40	100	2.20	30	0		1.5	1.8	.3
4	226	1st.A.F.	1.55	120	1.45	110	7		5.0	8.5	3.5
5	171A	2nd.A.F.	5.2	210	5.00	135	25		15.0	17.0	2.0
6	280	Rectifier	5.3		5.00						

Model 608 Gembox



Tuning Condensers.

1. The complete condenser gang should be removed and replaced as a unit.

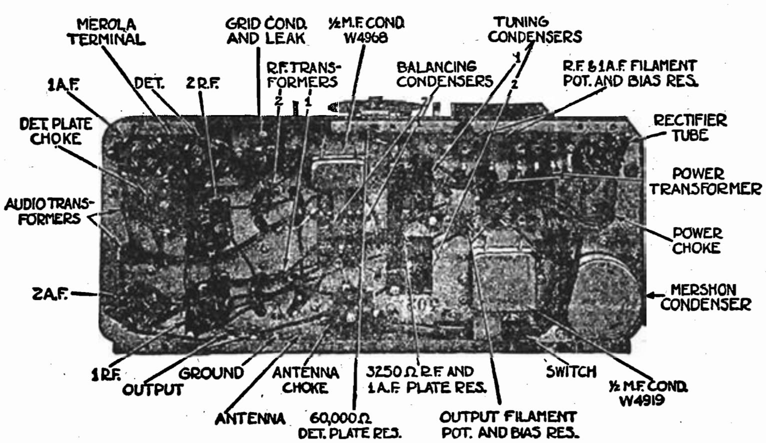
2. Take off station selector knob and remove leads from pilot light socket first. Then unsolder condenser leads and remove gang. Replace in reverse order.

Regeneration.

1. Regeneration is secured by means of a small variable condenser connecting the detector plate to the plate of the second r. f. tube. The amount of regeneration may be controlled by adjusting this condenser.

Alignment of Tuning Condensers

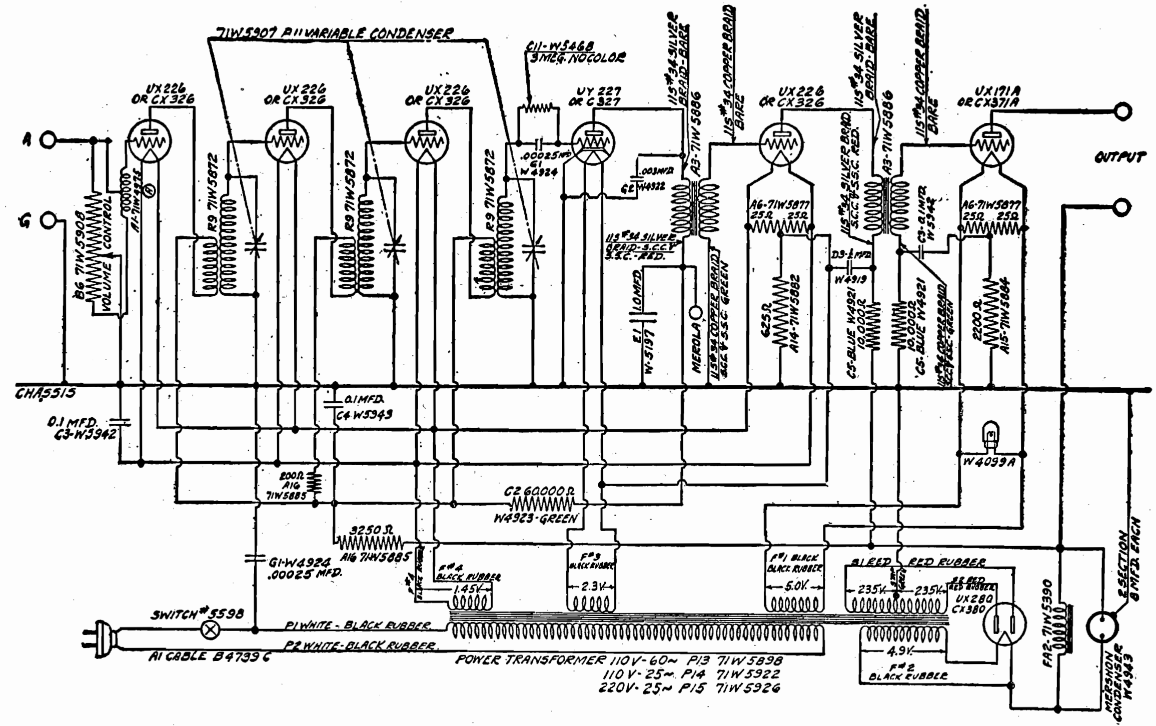
1. A small adjustable aligning condenser shunted across the detector-stage tuning condenser serves as a means of aligning the tuning condensers so that they track together properly.



BOTTOM VIEW, MODEL 608 CHASSIS

CROSLEY RADIO CORP.

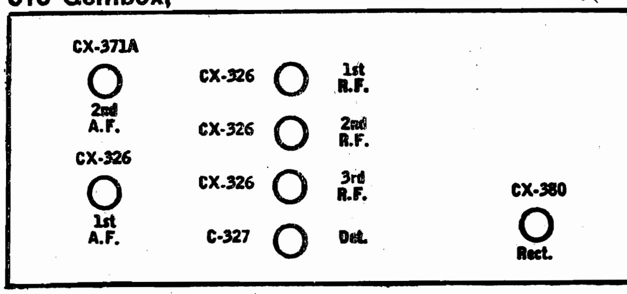
MODEL 610
Schematic
Voltage, Bottom View

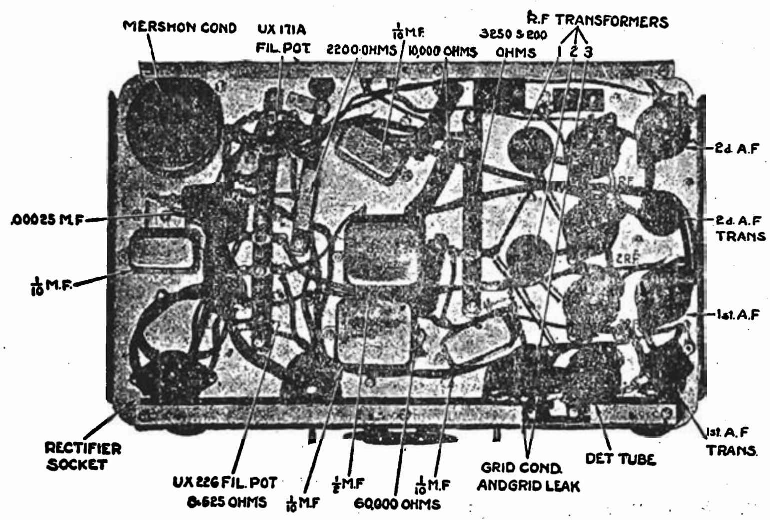


CROSLEY—Models 610-
Line Voltage 115—Volume Control Position Max

Tube No. in Order	Type of Tube	Position of Tube 1st R.F. Det., Etc.	Tube Out: A Volts	Tube Out: B Volts	Tube in Tester: A Volts	Tube in Tester: B Volts	C Volts (Control Grid)	Cathode-Heater Volts	Normal Plate M.A.	Plate M.A. Grid Test	Plate Change M.A.	Screen Grid Volts
1	226	1st RF	1.55	165	1.45	160	13.0	-	5.0	8.0	3.0	-
2	226	2nd RF	1.55	165	1.45	160	13.0	-	5.0	8.0	3.0	-
3	226	3rd RF	1.55	165	1.45	160	13.0	-	5.0	8.0	3.0	-
4	227	Det.	2.50	150	2.30	30	-	13.0	2.5	2.9	0.4	-
5	226	1st AF	1.55	180	1.45	175	13.0	-	5.0	8.0	3.0	-
6	171A	2nd AF	5.3	185	5.00	170	40.0	-	20.0	23.0	3.0	-
7	280	Rect.	5.4	-	5.00	-	-	-	30	-	-	-

610 Gembox, (A.C.)





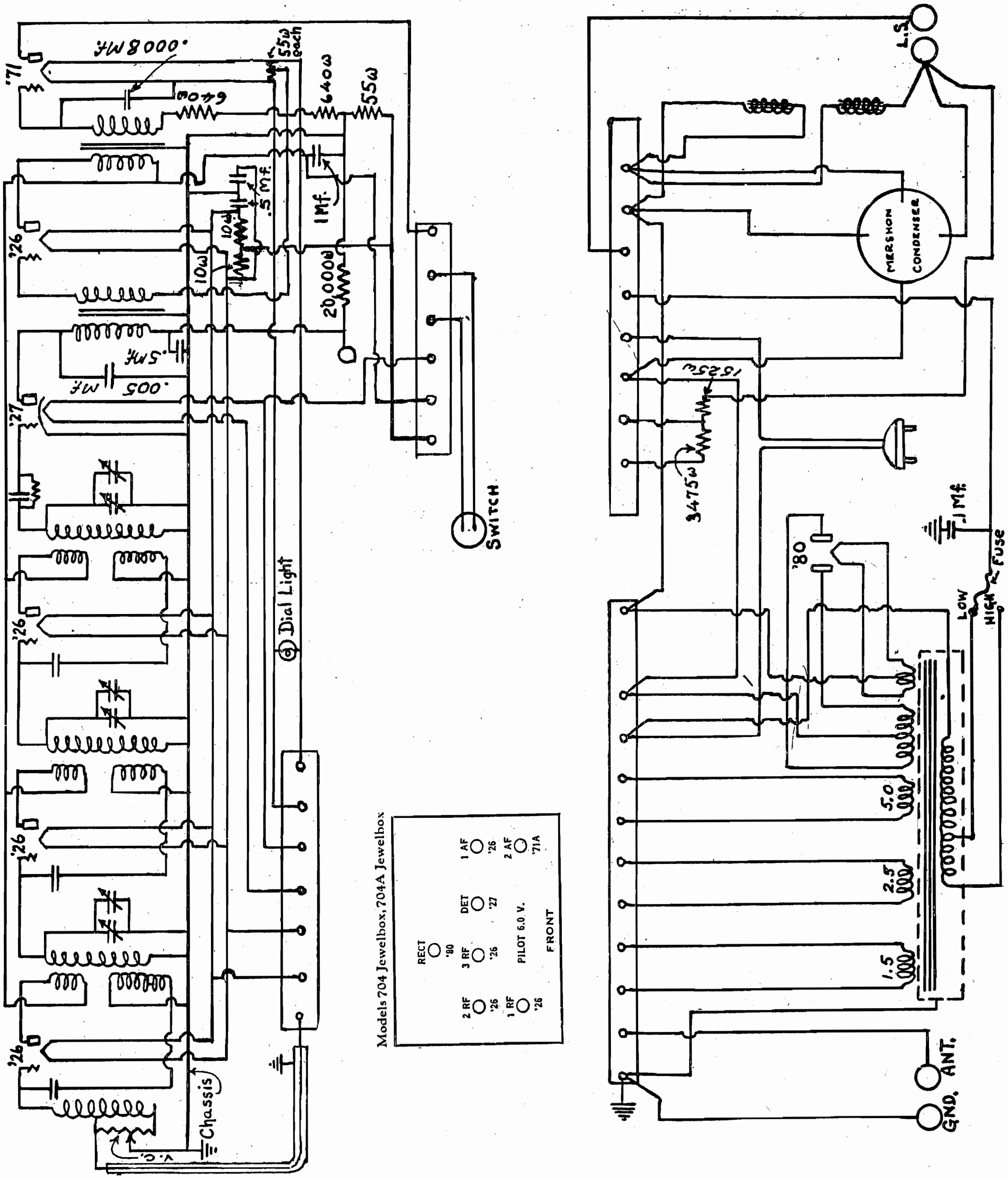
Balancing.

With the set in operation, slightly adjust the angles of the radio-frequency coils until the set does not oscillate at any point in its wave length range or until the sensitivity is improved. The first coil toward the front of the set is the most critical to this adjusting operation, the second coil next, while the third coil seldom needs to be touched.

In making these adjustments, always replace the lid before checking the operation.

MODEL 704
MODEL 704 Power Unit
Schematic
MODEL 704-A Voltage

CROSLEY RADIO CORP.

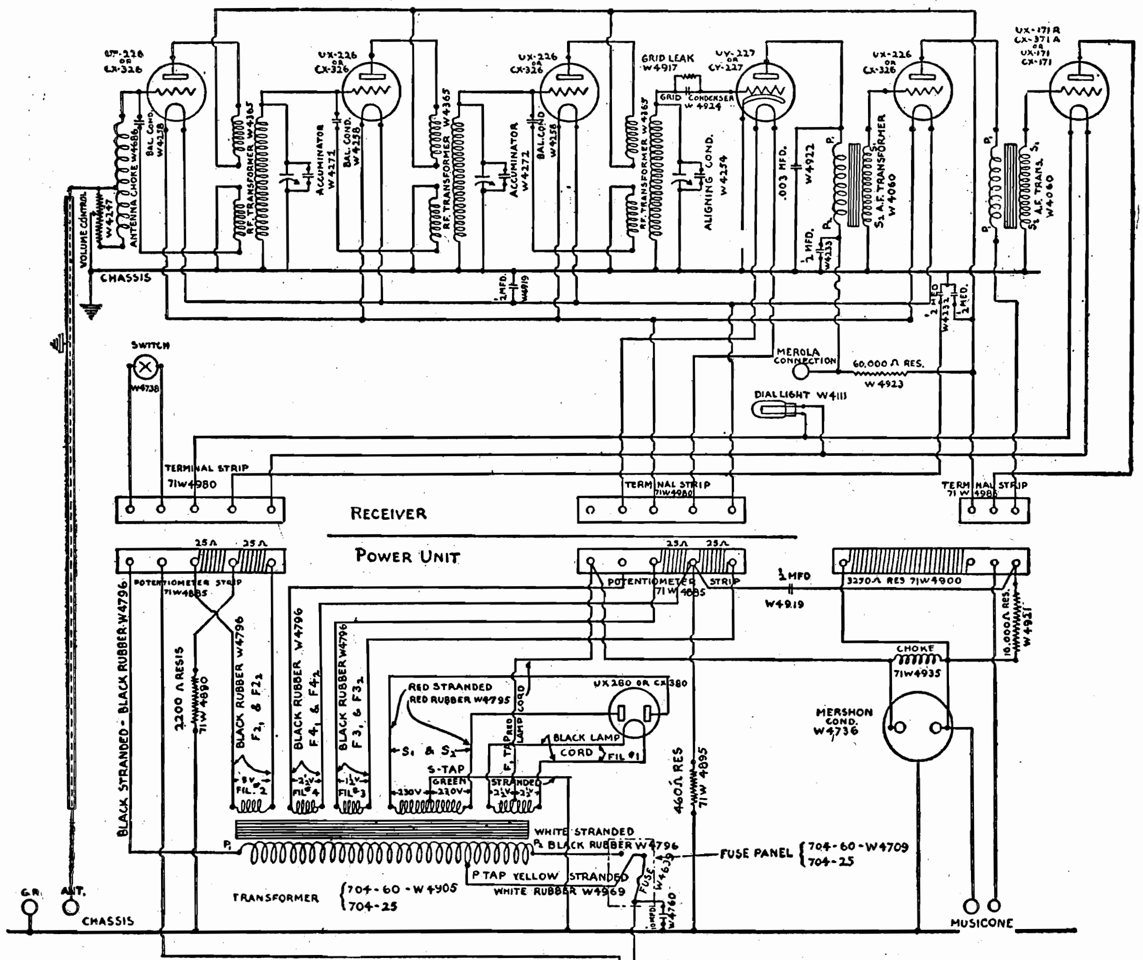


Tube	Fil. Vol.	Plate Vol.	Grid Bias.	Plate Cur.
RF1	1.3	98	3.	7. ma
RF2	1.3	98	3.	7.
RF3	1.3	98	3.	7.
Det	1.7	42	-	2.5
AF1	1.3	95	5.	3.2
AF2	4.8	159	35.	17.
Rec.	4.5			

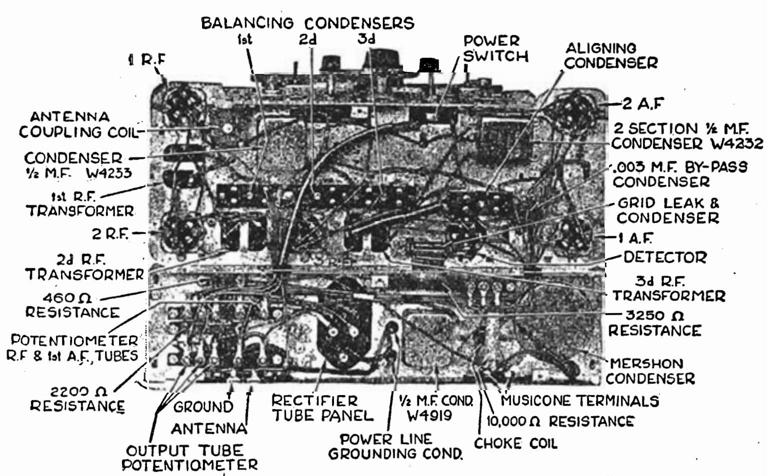
Voltage Data For Crosley 704-A

CROSLEY RADIO CORP

MODEL 704-A
Schematic, Bottom View



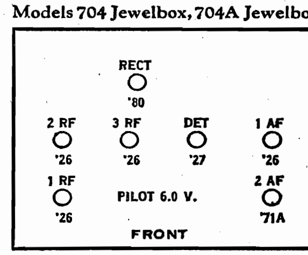
CIRCUIT, MODEL 704-A



BOTTOM VIEW, MODEL 704-A CHASSIS

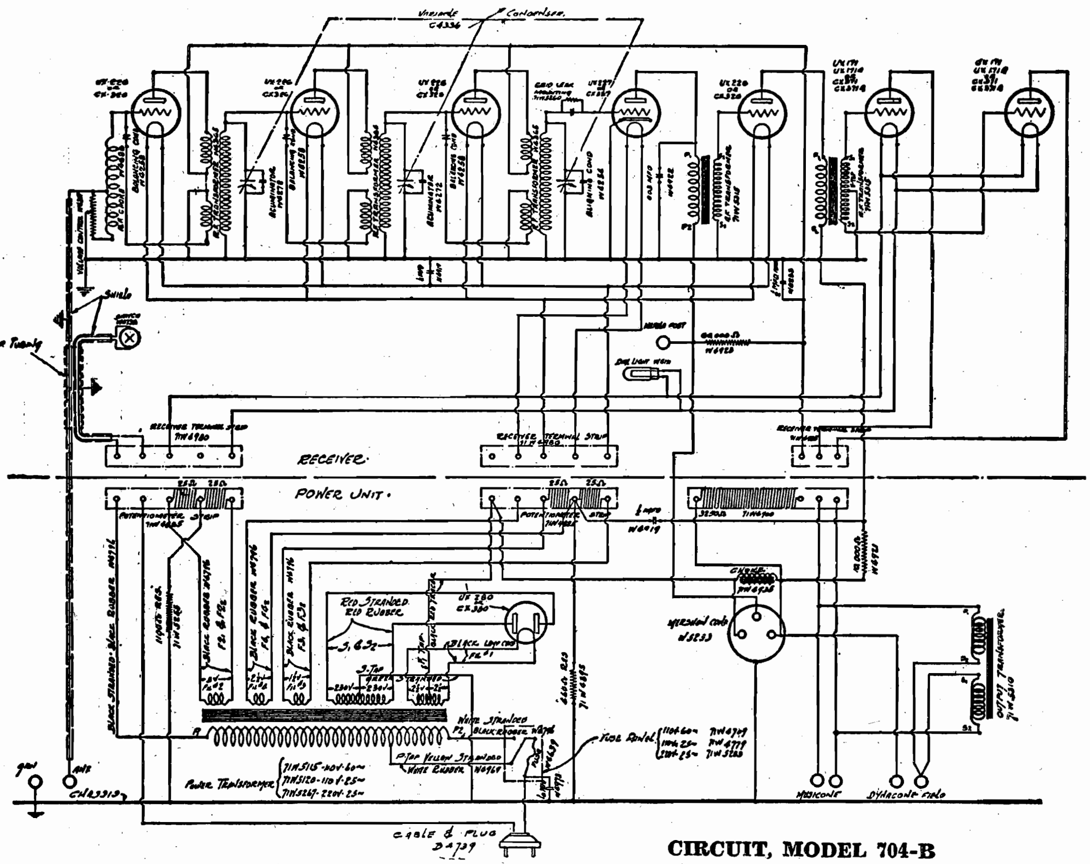
NOTE:—This service sheet applies to all Jewelbox Model 704 sets having seven tubes, including rectifier (single output tube only) numbered from GJD 16,000 to 21,000.

Models 704 Jewelbox, 704A Jewelbox

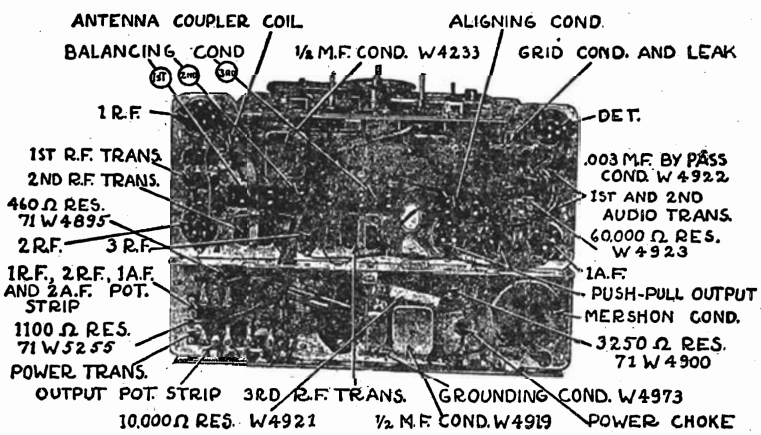


MODEL 704-B
Schematic, Bottom View
Voltage

CROSLEY RADIO CORP.



CIRCUIT, MODEL 704-B

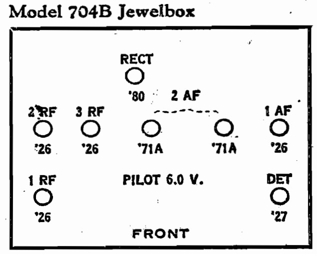


BOTTOM VIEW, MODEL 704-B CHASSIS

Alignment of Tuning Condensers.

1. A small auxiliary variable condenser shunted across the detector tuning condenser serves as a means of aligning the tuning condensers so that they "track" together.

Model 704B Jewelbox

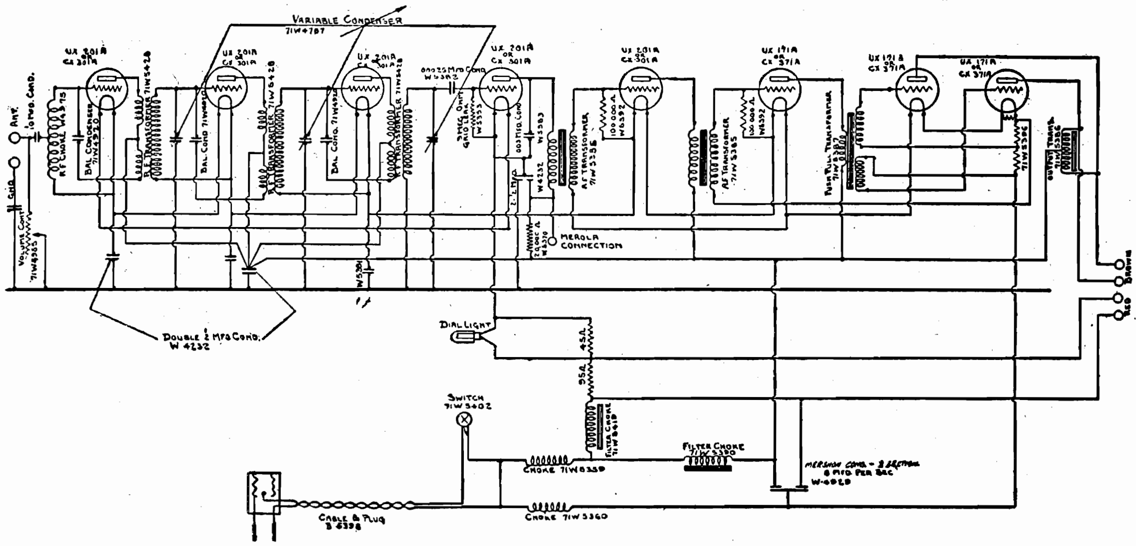


Line Voltage 117.5—227 Emitter Based 11 Volts Negative with Respect to Filament. Detector Grid Test Made with Grid Leak Shorted

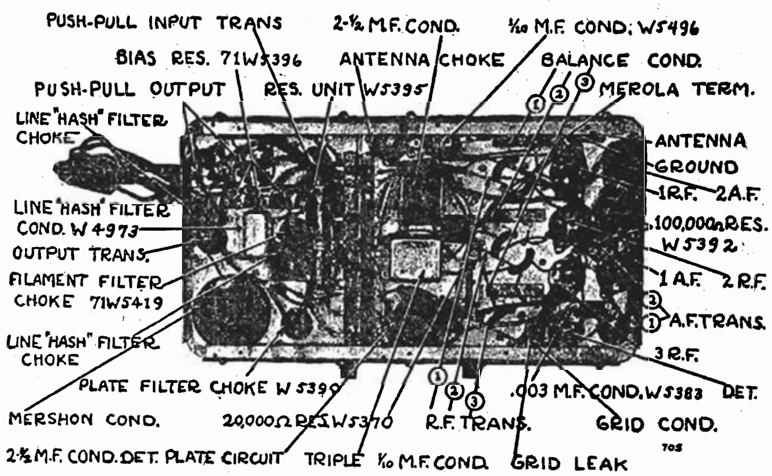
TUBE NO. IN ORDER	TYPE OF TUBE	POSITION OF TUBE 1ST. R.F., DET., ETC.	READINGS, PLUG IN SOCKET OF SET								
			TUBE OUT		TUBE IN TESTER						
			A VOLTS	B VOLTS	A VOLTS	B VOLTS	C VOLTS	CATHODE VOLTS	NORMAL PLATE M.A.	PLATE M.A. GRID TEST	PLATE M.A. CHANGE
1	226	1st.R.F.	1.6	160	1.5	150	11.0		6.5	12.0	5.5
2	226	2nd.R.F.	1.6	160	1.5	150	11.0		6.5	13.4	6.9
3	226	3rd.R.F.	1.6	160	1.5	150	11.0		6.5	13.4	6.9
4	227	Detector	2.50	150	2.25	30	0.0		2.2	2.75	.55
5	226	1st.A.F.	1.6	220	1.5	120	9.0		6.2	8.0	1.8
6	171A	2nd.A.F.	5.3	185	5.0	170	37.5		20.0	23.0	3.0
7	171A	2nd.A.F.	5.3	185	5.0	170	37.5		20.0	23.0	3.0
8	280	Rectifier	5.3		4.9						

CROSLEY RADIO CORP.

MODEL 705
Schematic,
Bottom and Rear View

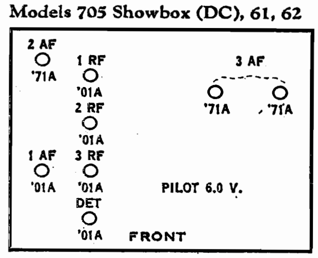


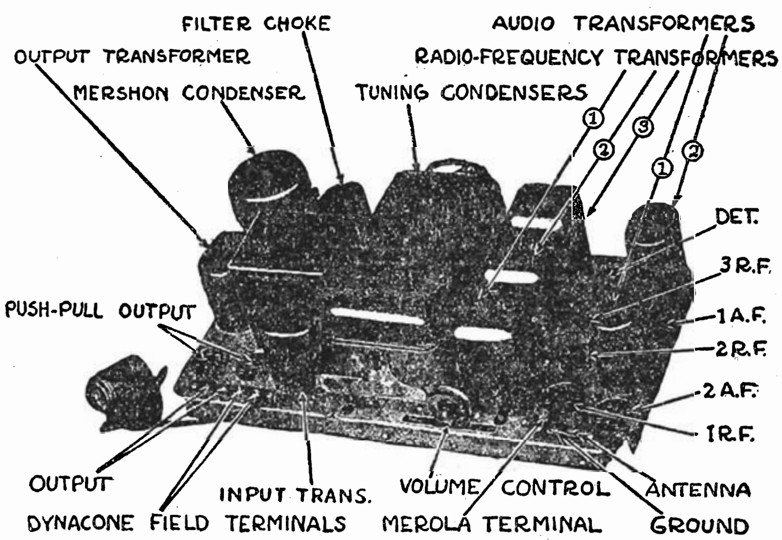
CIRCUIT, MODEL 705



BOTTOM VIEW, MODEL 705 CHASSIS

Models 705 Showbox (DC), 61, 62





REAR VIEW, MODEL 705 CHASSIS

Repairing and Replacing Parts

Replacing Parts.

1. In replacing parts on Model 705 the bottom must be removed.

Tuning Condensers.

1. The complete condenser gang should be removed and replaced as a unit.

2. Take off knobs and remove leads from pilot light socket and volume control first. Next remove switch from holder. Then unsolder condenser leads and remove assembly. Replace in reverse order.

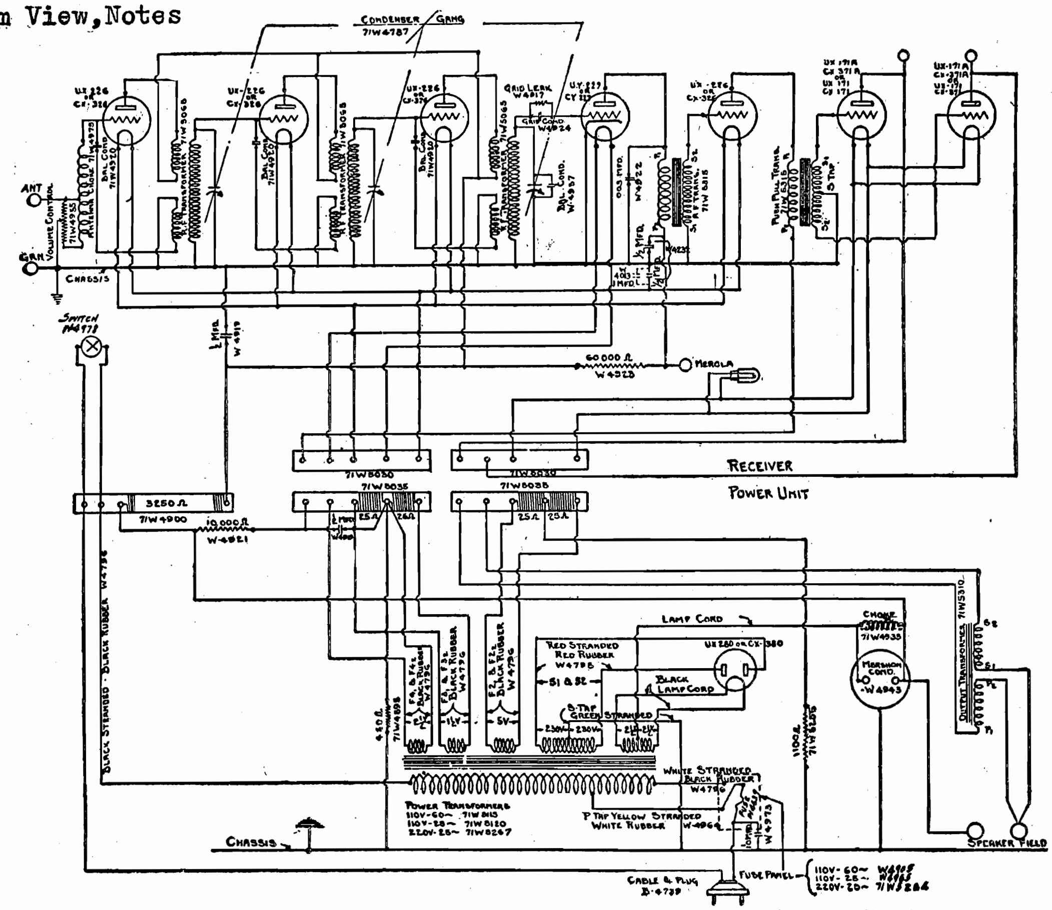
Radio-Frequency Transformers.

1. Unsolder leads first. Then remove shield can. Finally take off transformer coils. Replace in reverse order.

2. **Mark all leads and terminals.**

MODEL 706
Schematic, Voltage
Bottom View, Notes

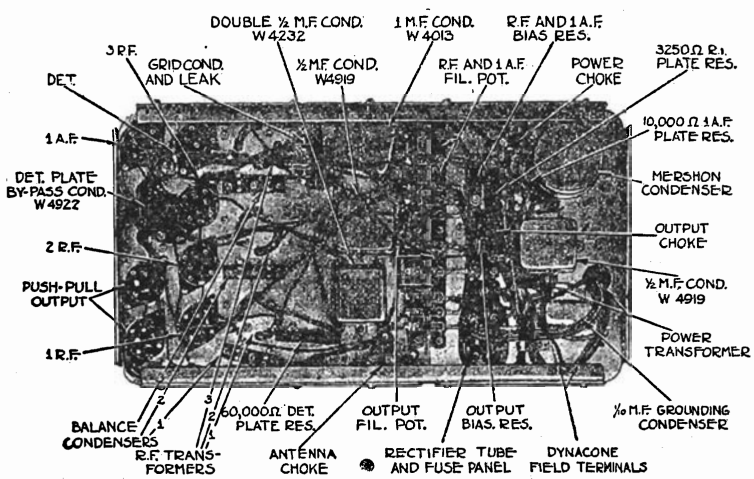
CROSLEY RADIO CORP.



CROSLEY- 706

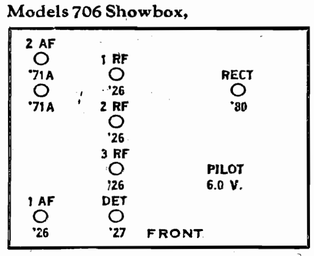
Line Voltage 117.5—227 Emitter Based 11 Volts Negative with Respect to Filament. Detector Grid Test Made with Grid Leak Shorted

TUBE NO IN ORDER	TYPE OF TUBE	POSITION OF TUBE 1ST R.F., DET., ETC.	READINGS. PLUG IN SOCKET OF SET								
			TUBE OUT		TUBE IN TESTER						
			A VOLTS	B VOLTS	A VOLTS	B VOLTS	C VOLTS	CATHODE VOLTS	NORMAL PLATE M.A.	PLATE M.A. GRID TEST	PLATE M A CHANGE
1	226	1st.R.F.	1.6	160	1.5	150	11.0		6.5	12.0	5.5
2	226	2nd.R.F.	1.6	160	1.5	150	11.0		6.5	13.4	6.9
3	226	3rd.R.F.	1.6	160	1.5	150	11.0		6.5	13.4	6.9
4	227	Detector	2.50	150	2.25	30	0.0		2.2	2.75	.55
5	226	1st.A.F.	1.6	220	1.5	120	9.0		6.2	8.0	1.8
6	171A	2nd.A.F.	5.3	185	5.0	170	37.5		20.0	23.0	3.0
7	171A	2nd.A.F.	5.3	185	5.0	170	37.5		20.0	23.0	3.0
8	280	Rectifier	5.3		4.9						



BOTTOM VIEW, MODEL 706 CHASSIS

Models 706 Showbox,



Audio-Frequency Transformers.

1. Both audio transformers are mounted in a single can. They must be removed as a single unit.
2. Unsolder leads. Remove nuts holding assembly in position and take off transformers. Replace in reverse order.

Tuning Condensers.

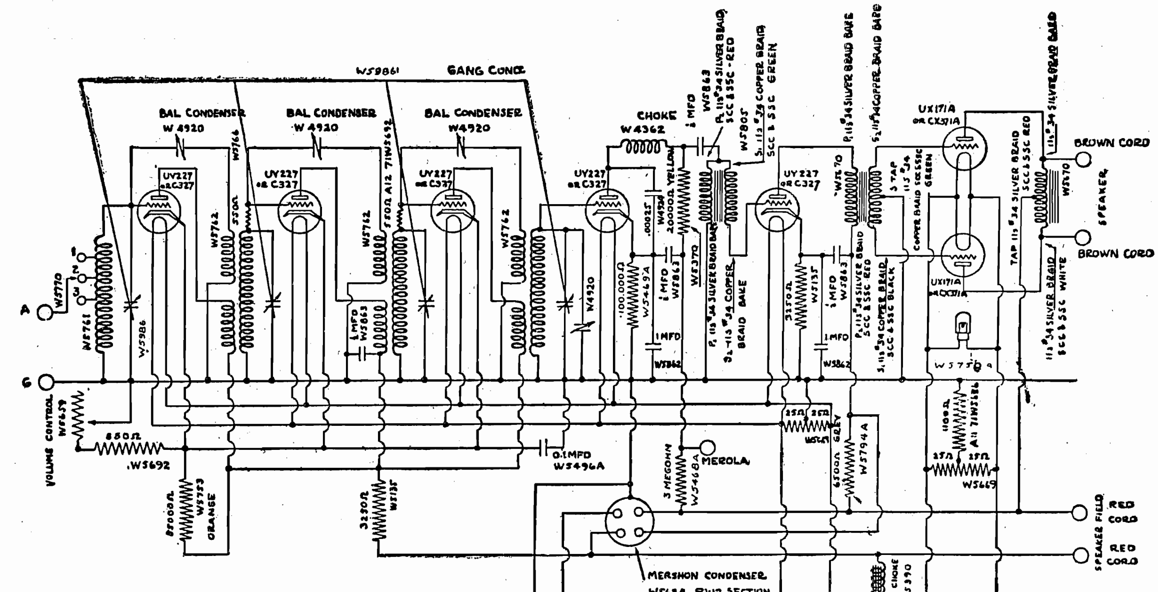
1. The complete condenser gang should be removed and replaced as a unit.
2. Take off knobs and remove leads from pilot light socket and volume control first. Next remove switch from holder. Then unsolder condenser leads and remove assembly. Replace in reverse order.

Radio-Frequency Transformers.

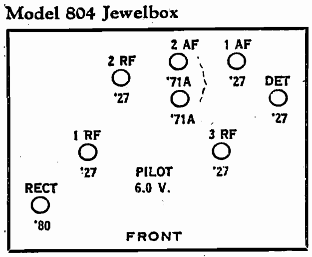
1. Unsolder leads first. Then remove shield can. Finally take off transformer coils. Replace in reverse order.

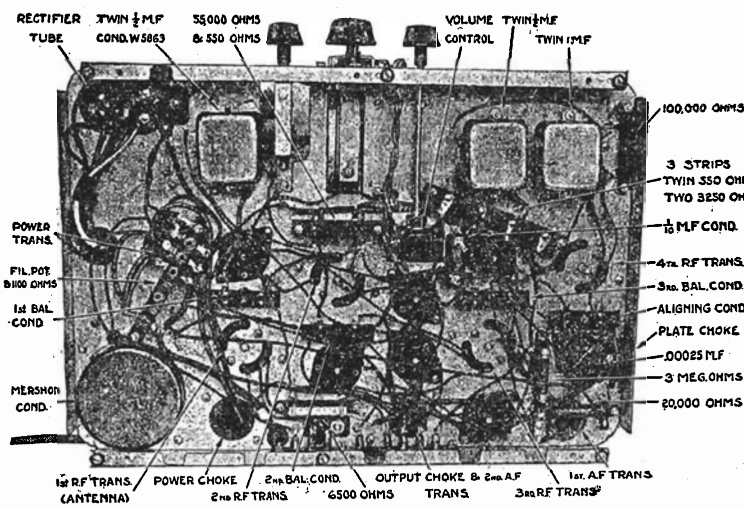
CROSLEY RADIO CORP.

MODEL 804
Schematic, Voltage
Bottom View, Notes



Model 804 Jewelbox





CROSLEY—Model 804
Line Voltage 117.5—Set on High Volt Tap—Volume Control Position Max

TUBE No. IN ORDER	TYPE OF TUBE ②	POSITION OF TUBE 1ST. R.F DET., ETC. ③	READINGS, PLUG IN SOCKET OF SET — TUBE OUT: A VOLTS ④	TUBE OUT: B VOLTS ⑤	TUBE IN TESTER: A VOLTS ⑥	B VOLTS ⑦	C VOLTS (CONTROL GRID) ⑧	CATHODE-HEATER ⑨ VOLTS	NORMAL PLATE ⑩ M.A.	PLATE M.A. GRID ⑪ TEST	PLATE CHANGE ⑫ M.A.	SCREEN GRID ⑬ VOLTS
1	227	1st RF	2.45	185	2.20	175	12	12	5.2	8.0	3.8	-
2	227	2nd RF	2.45	185	2.20	175	12	12	5.2	8.0	3.8	-
3	227	3rd RF	2.45	185	2.20	175	12	12	5.2	8.0	3.8	-
4	227	Det.	2.45	150	2.20	150	22	12	0.2	0.25	.05	-
5	227	1st AF	2.45	225	2.20	164	13	12	5.2	8.0	3.8	-
6	171A	2nd AF	5.2	200	5.10	180	40	-	18	25	7.0	-
7	171A	2nd AF	5.2	200	5.10	180	40	-	18	25	7.0	-
8	280	Rect.	5.0	-	4.80	-	-	-	80	-	-	-

Alignment and Balancing.

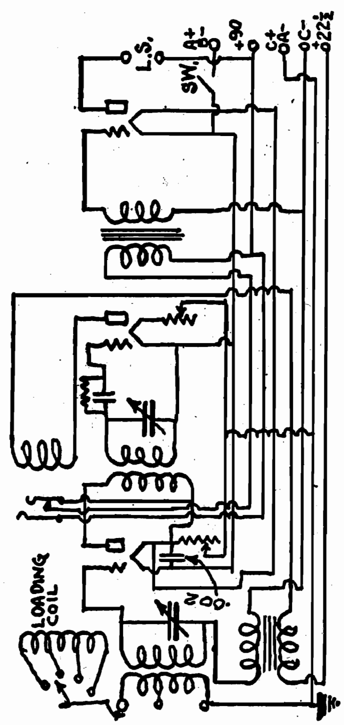
1. A small, adjustable, aligning condenser is shunted across the detector stage tuning condenser for aligning the tuning condensers controlled by the station selector.
2. Small, adjustable neutrodyne condensers are provided for balancing. Follow the instructions for balancing given on page 4, "Crosley Service Manual." Insulate one of the heater prongs, **not the emitter. Do not use headphones.**

Connections.

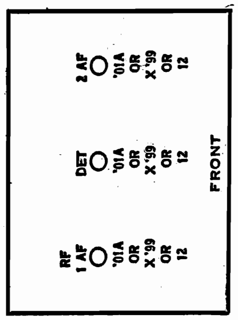
1. Follow the connection diagram shown herewith. A small lead near the antenna terminal is provided in order to adjust the set for best operation with different types of aerials. For average operation with an average antenna, this lead should be inserted in terminal "2" at the rear of the chassis. For greatest sensitivity, insert the lead in terminal "1", and for greatest selectivity in terminal "3".

MODEL TRIRDYN
MODEL 51
MODEL 5-38
Schematic

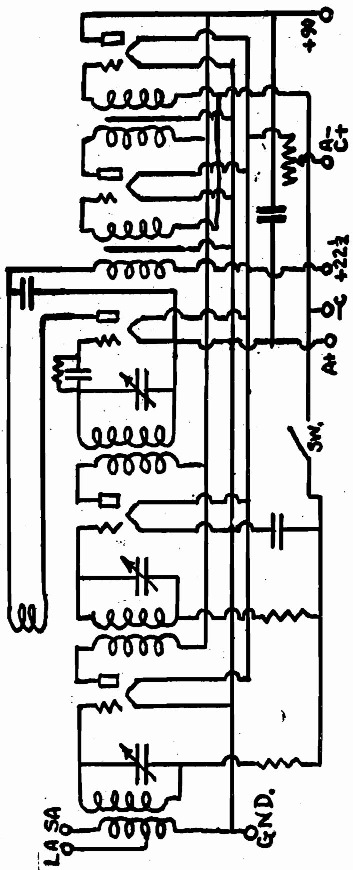
CROSLEY RADIO CORP.



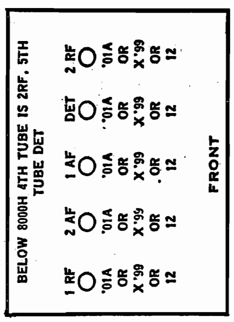
MODEL TRIRDYN



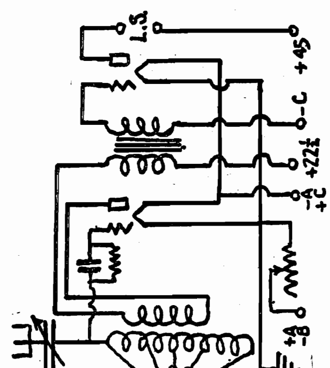
Model Trirdyn



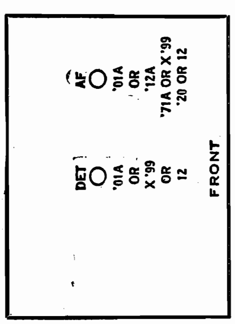
MODEL 5-38



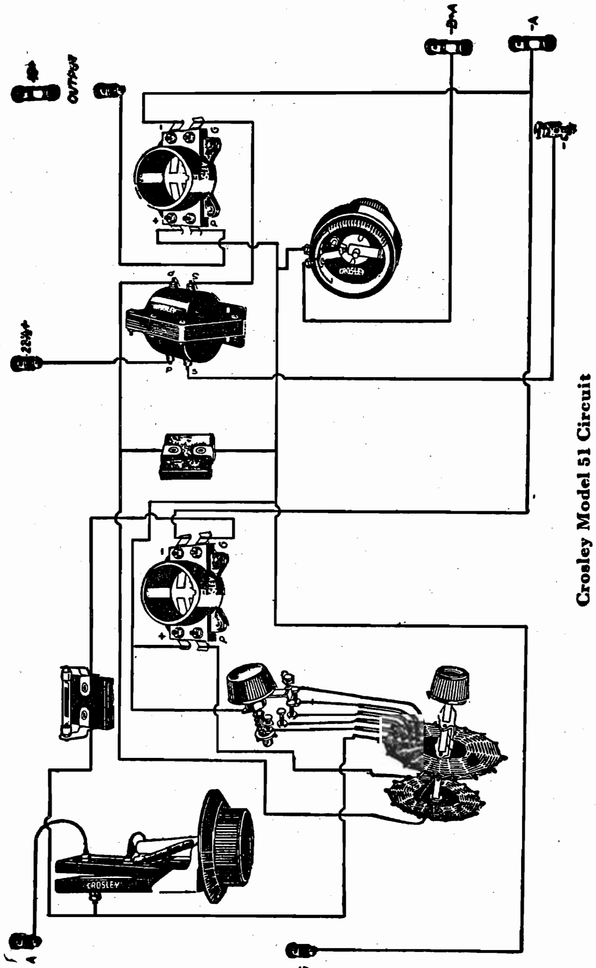
Model 5-38, Series 2 (Serial No. 8000H & Above)



MODEL 51



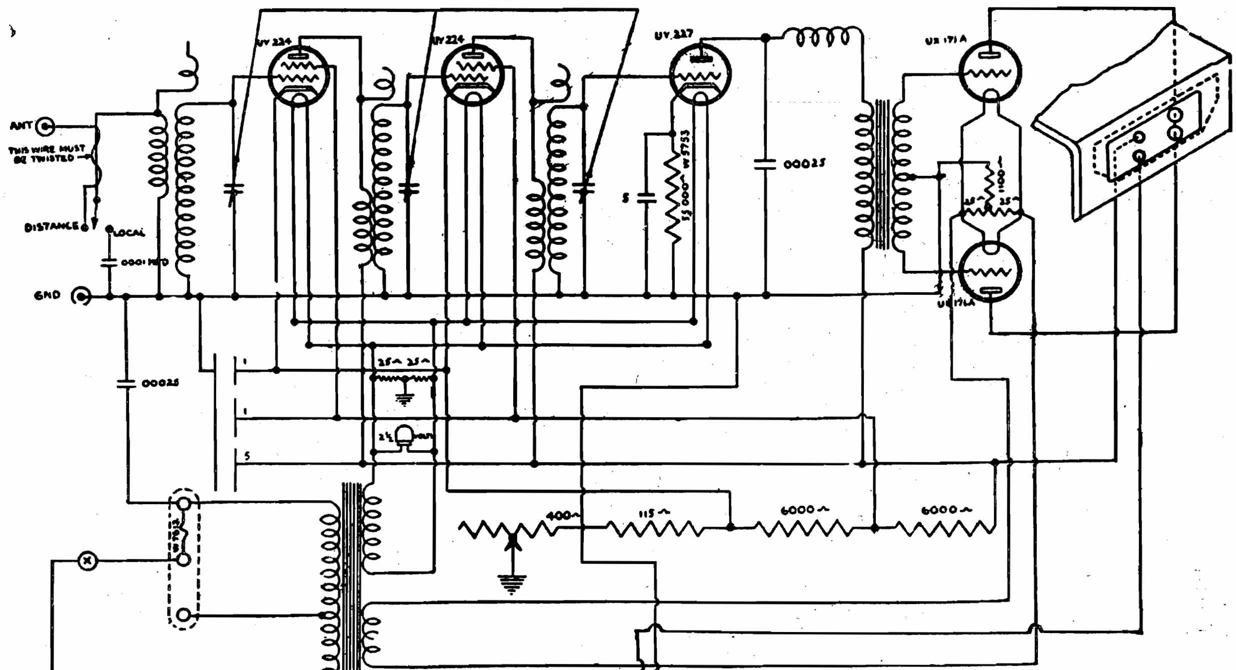
Model 51



Crosley Model 51 Circuit

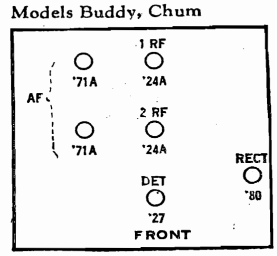
MODEL BUDDY, CHUM
Schematic, Voltage

CROSLEY RADIO CORP



"BUDDY and CHUM"

Models Buddy, Chum



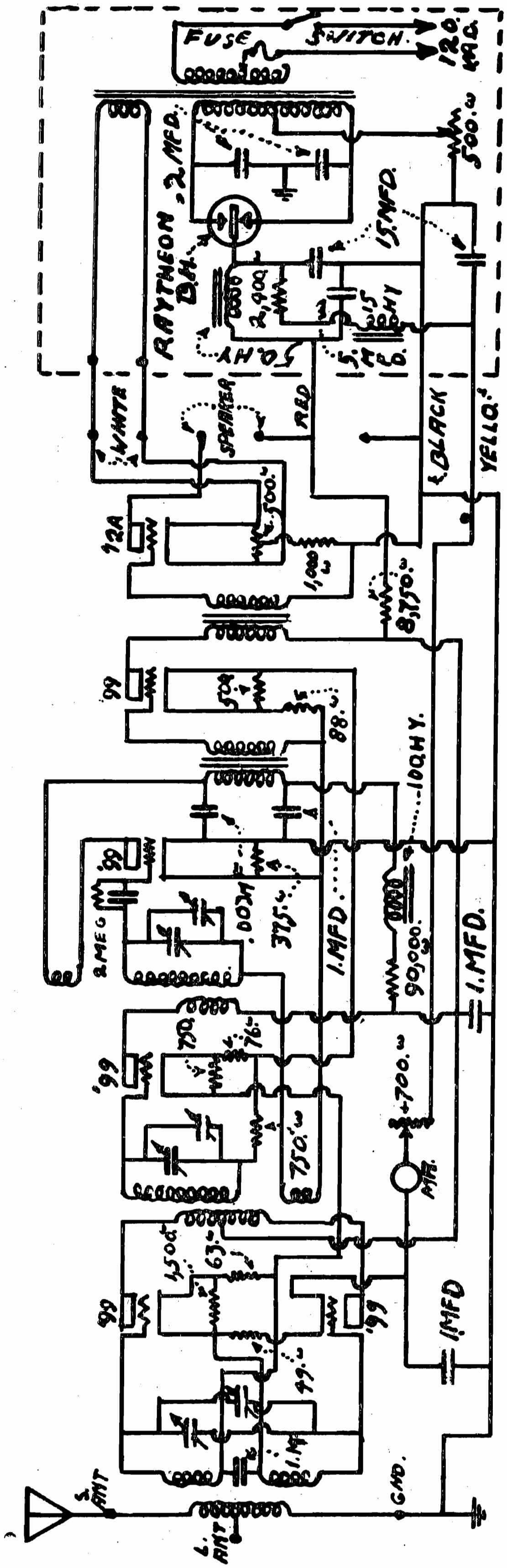
VOLTAGE LIMITS

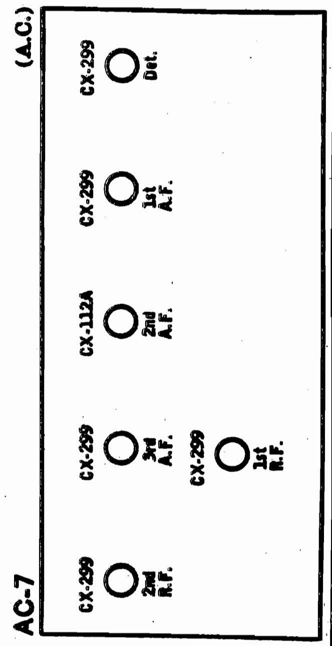
	Volume Control On Full	
Filament Voltages		
R.F. and Detector tubes	2.4	
A.F. and Rectifier tubes	4.8	
- - -	- - -	
Plate Voltages		
All tubes but Rectifier	170	
Rectifier tube	250 each	
- - -	- - -	
Control Grid Voltages		
R.F. tubes	2.8	
Detector tube	12.0	16.0
A.F. tubes	38.0	
- - -	- - -	
Screen Grid Voltages		
R.F.tubes	85.0	

The above readings are to be taken with the receiver in full operating condition, with the volume control on full, and with a line voltage of 117.5 when the fuse is in the "High" position or of 107.5 when the fuse is on the "Low" position. In the case of 220 volt receivers, the line voltages should be respectively 235 and 215. Measure plate and grid voltages with a high-resistance D.C. voltmeter (at least 800 ohms per volt.) These voltages are to be measured from the plate or grid socket contact to the emitter contact or negative filament contact, unless otherwise noted in the table. The contacts must be reached from the bottom of the receiver (unless a set tester is used) with tubes, dial light, and speaker in place. Use a low-range A.C. voltmeter to measure the filament voltages.

MODEL AC-7
AC-7C

CROSLEY RADIO CORP.



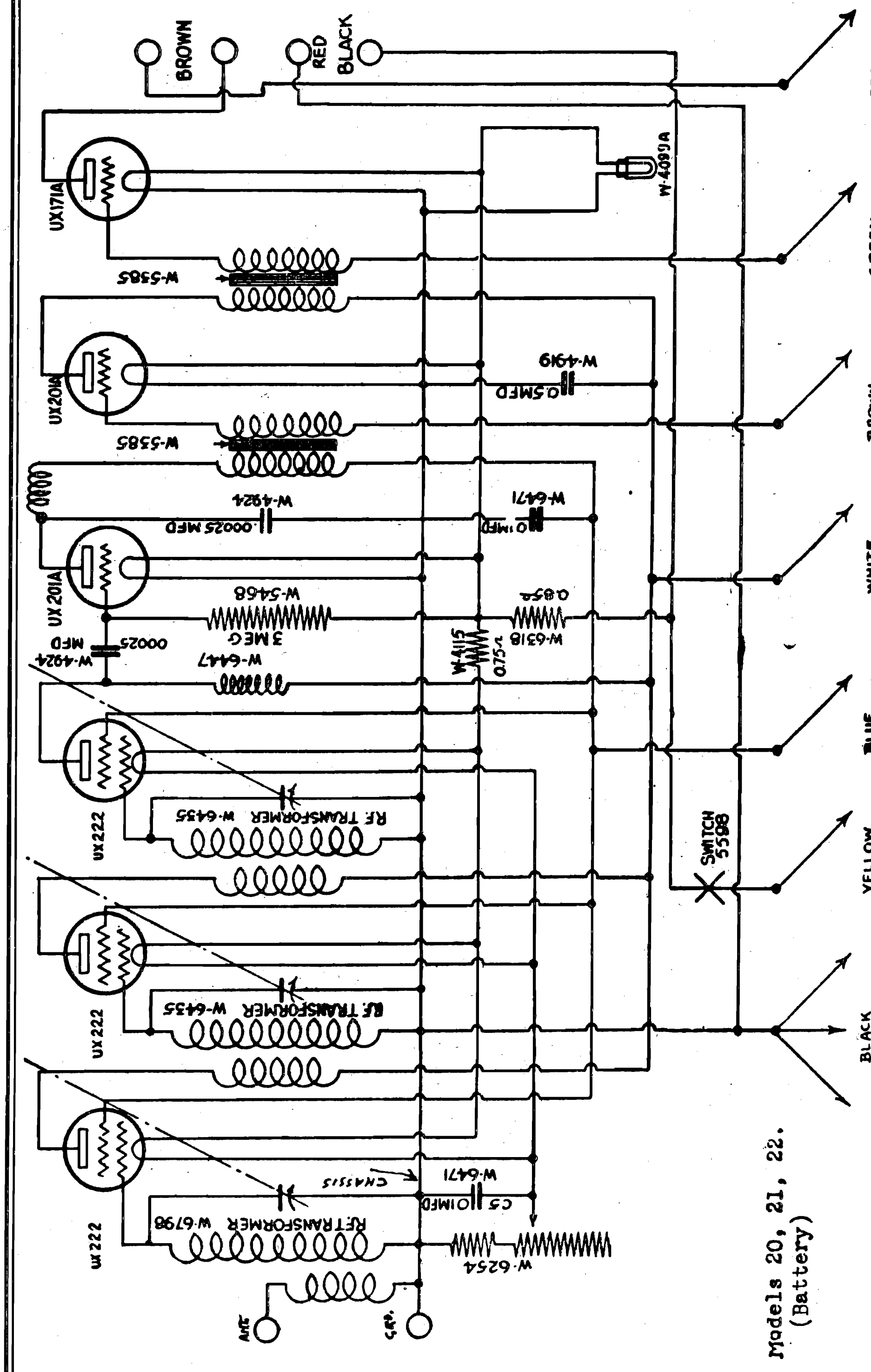


CROSLEY

MODELS AC-7 AND AC-7C

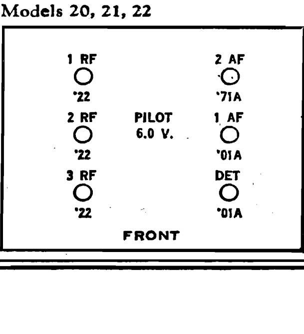
MODELS 20,21,22
Schematic, Data
MODELS 21,22
Voltage Data

CROSLEY RADIO CORP



Models 20, 21, 22.
(Battery)

Models 20, 21, 22



CROSLEY—Models 21-22
Line Voltage 115—Volume Control Position Max
Note: Battery operated.

Tube No in Order ①	Type of Tube ②	Position of Tube 1st R.F Det..Etc ③	Readings, Plug in Socket of Set: Tube Out: A Volts ④	B Volts ⑤	Tube in Tester: A Volts ⑥	B Volts ⑦	C Volts (Control Grid) ⑧	Cathode-Heater Volts ⑨	Normal Plate ⑩ M.A	Plate M.A Grid ⑪ Test	Plate Change ⑫ M.A.	Screen Grid ⑬ Volts
1	222	1st RF	3.3	135	3.2	135	1.5	-	.8	1.8	1.0	45
2	222	2nd RF	3.3	135	3.2	135	1.5	-	.8	1.8	1.0	45
3	222	3rd RF	3.3	135	3.2	135	1.5	-	.8	1.8	1.0	45
4	201A	Det.	5.0	-	4.9	45	-	-	2.0	5.0	3.0	-
5	201A	1st AF	5.0	135	4.9	135	9	-	3.5	8.0	4.5	-
6	171A	2nd AF	5.0	180	4.9	180	40.5	-	20	24	4.0	-

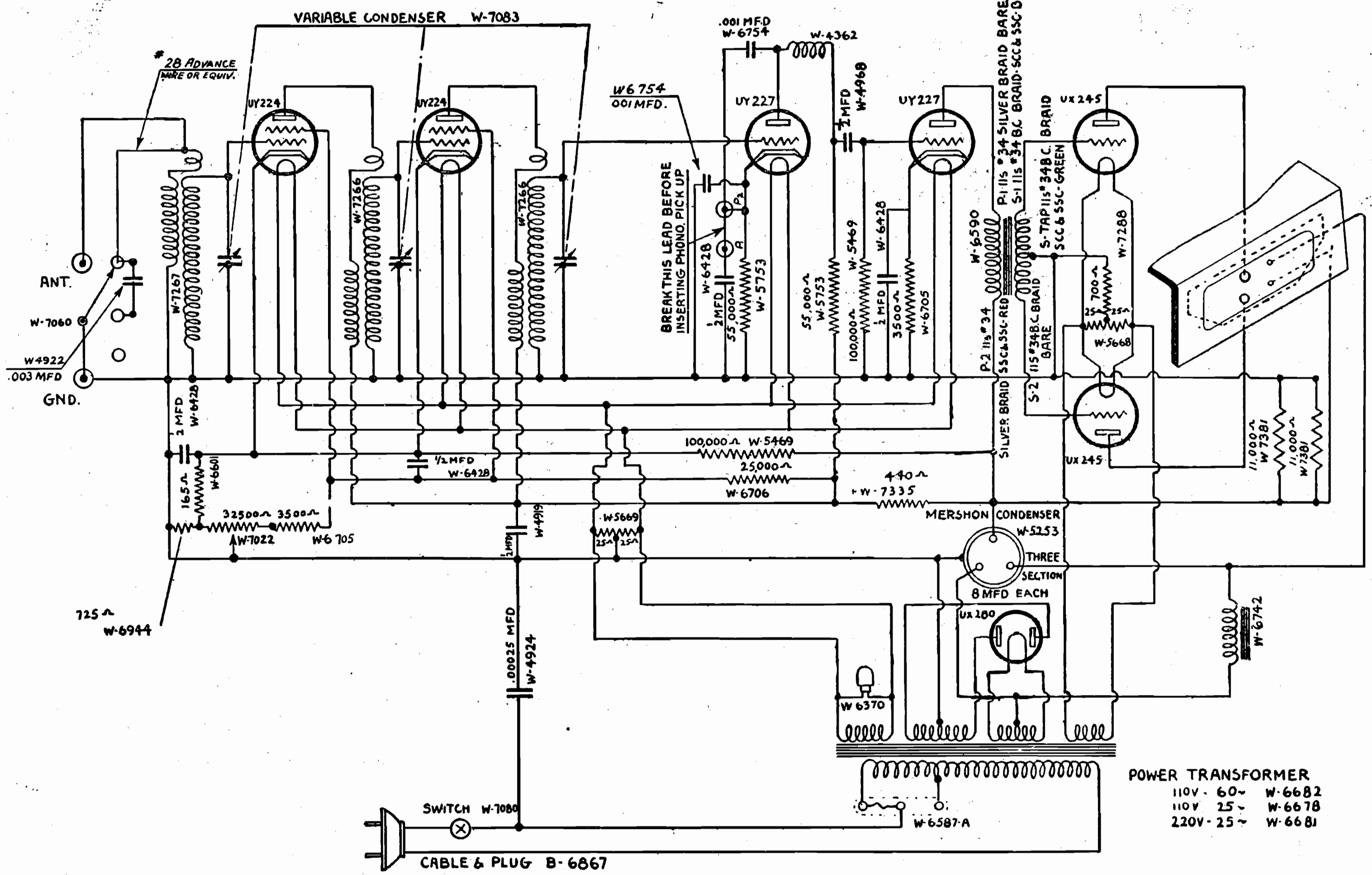
1. The original chasses were built for use with Type E Dynacone. When the type C Dynacone (with separately excited field coils) was introduced, two terminals (Red and Black) were added to the chassis for supplying the field of the "C" type speaker with current direct from the storage battery, or "A" supply.

2. For a short time the yellow and black filament terminals were connected to the points shown by the dotted lines marked "2Y" and "2B" on the circuit diagram.

3. In recent chasses the 3 megohm resistor W5468 in the detector grid circuit is replaced by an A-2 radio-frequency choke, the 0.85 ohm resistor is moved to the negative filament lead, and the detector grid return is connected to the negative side of the 0.85 ohm resistor. See the changes marked "3" on the circuit diagram.

MODELS 30S, 31S, 33S, 34S
Schematic, Voltage, Notes

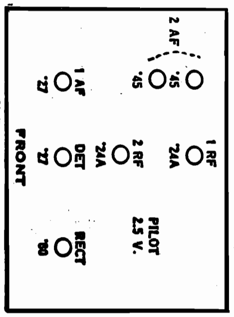
CROSLEY RADIO CORP.



CROSLEY—63 Chassis
Models 30S, 31S, 33S, 34S and Playmate.

Tube No. in Order Tested (1)	Type of Tube (2)	Position of Tube in Set (3)	Meter Readings with Jewell Test Plug in Socket of Set — Operating Voltages: Filament or Heater (4)	Plate or Anode (5)	Control Grid—Space Gd + (6)	Normal Grid—Screen Gd + (7)	Cathode to Heater (8)	Milliamperes: Screen Gd L. H. 80 Plate (9)	Plate R. H. 80 Plate (10)	Tube Test (11)	Plate Current Change (12)	(13)
1	224	1 R.F.	2.43	153	-1.4	65	1.2	-	2.95	6.	3.03	
2	224	2 R.F.	2.43	153	-1.4	65	1.2	-	2.85	5.25	2.4	
3	227	Det.	2.4	114	-	-10.9	11.8	-	.3	.39	.9	
4	227	1 A.F.	2.45	140	-	-4.	10	-	2.85	3.6	.75	
5	245	2.A.F.	2.35	224	-	-42.5		-	30.	33.6	4.6	
6	245	2 A.F.	2.35	224	-	-42.5	-	-	30.	33.6	4.6	
7	280	Rect.	5.1	-	-	-	-	55	55	-	-	

Models 30-S, 31-S, 33-S, 34-S



Installation

These receivers are designed for operation with Type M Dynacoil speakers. The chassis is equipped with a socket into which a plug on the end of the speaker cord fits. Although not shown on page 29, the more recently built chassis of the 40S series are equipped with sockets for Type M Dynacoil speakers instead of with terminals for Type J Dynacoils.

The line voltage should be checked and the chassis fuse inserted in the proper clips as described on page 29 in connection with the 40S series of receivers. If the owner of the receiver complains of tubes burning out too often check the line voltage and see that the fuse is inserted in its proper clips.

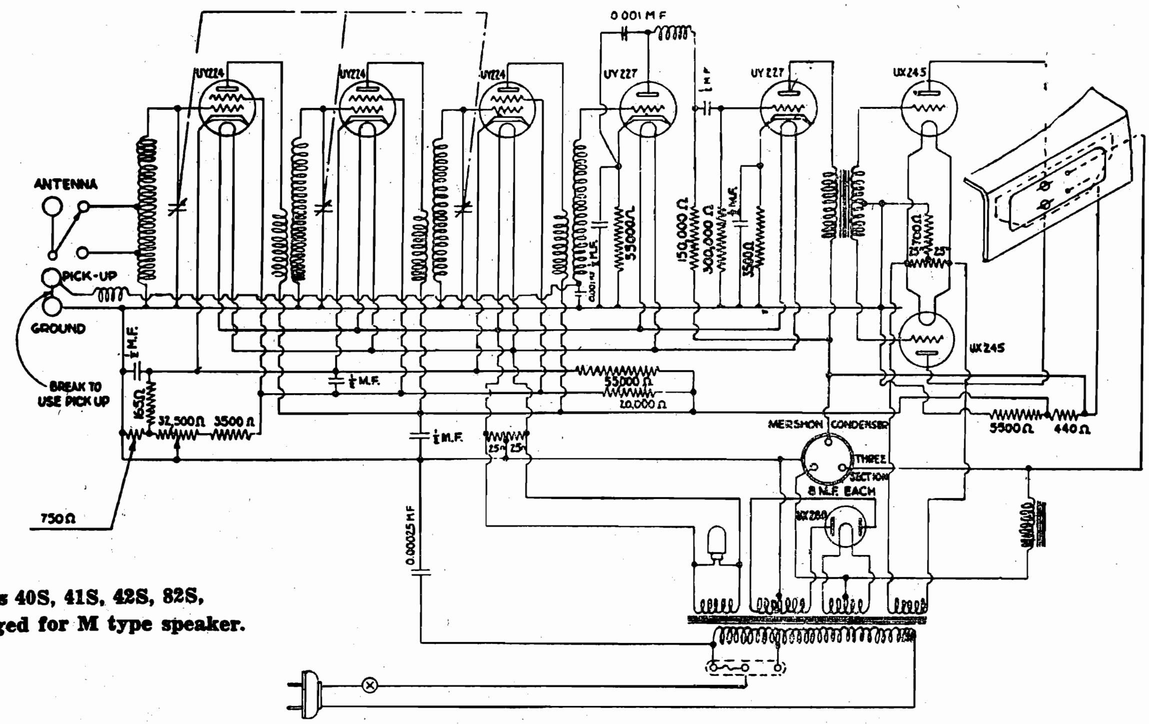
If the dial light burns out, replace it with a 2½ volt Mazda miniature base bulb No. 41. If the fuse requires to be replaced use a two ampere cartridge type automobile light fuse (two ampere fuses are also used on recent chasses of the 40S series)

Installation of Model 30S Unitrad chassis, which is the chassis with front panel only for console mounting, is similar to that described on page 29 for Model 40S. Model 31S is in a metal, table type case. Model 33S and 34S are mounted in wooden consoles, with built-in speakers

CROSLEY RADIO CORP.

MODELS 40S,41S,42S,82S
Schematic,Voltage

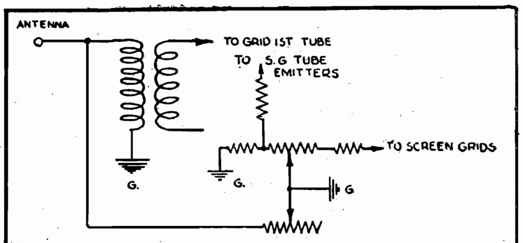
For model 41S receiver, a Dynacoil speaker type J, model 244, is required.



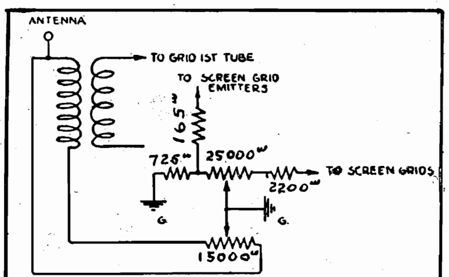
Models 40S, 41S, 42S, 82S, arranged for M type speaker.

CROSLEY—73 Chassis—Models 40S-41S-42S-82S
Line Voltage 117.5—Set on High Volt Tap—Volume Control Position Max

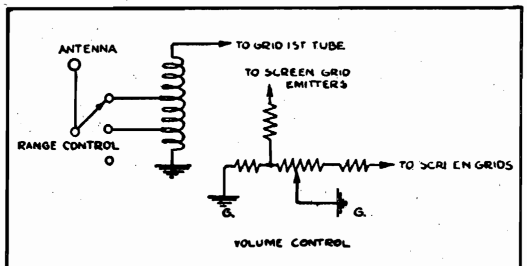
TUBE NO IN ORDER	TYPE OF TUBE	POSITION OF TUBE 1ST RF DET ETC	READINGS, PLUG IN SOCKET OF SET — TUBE OUT: A VOLTS	TUBE OUT: B VOLTS	TUBE IN TESTER: A VOLTS	B VOLTS	C VOLTS (CONTROL GRID)	CATHODE-HEATER VOLTS	NORMAL PLATE M.A.	PLATE M.A. GRID TEST	PLATE CHANGE M.A.	SCREEN GRID VOLTS
1	224	1st RF	2.60	180	2.40	175	1,5	1,5	1.5	4.0	2.5	70
2	224	2nd RF	2.60	180	2.40	175	1.8	1.5	1.5	4.0	2.5	70
3	224	3rd RF	2.60	180	2,40	175	1.5	1.5	1,5	4.0	2.5	70
4	227	Det.	2.60	100	2.45	100	12	12	.2	.3	.1	-
5	227	1st AF	2.65	280	2.45	180	15	12	4.0	5.0	1.0	-
6	245	2nd AF	2.55	265	2,30	240	48	-	26	30	4.0	-
7	245	2nd AF	2.55	265	2.30	240	48	-	26	30	4.0	-
8	280	Rect.	5.60	-	5.00		-	-	100	-	-	-



First Type of Volume Control.

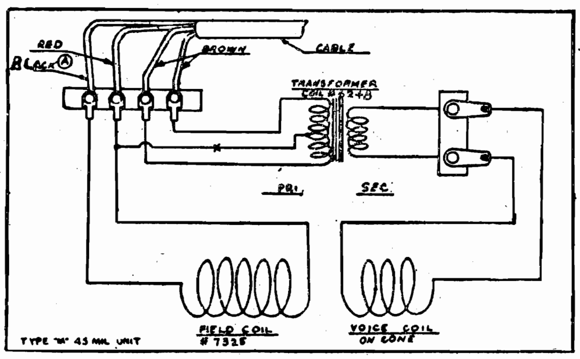


Second Type of Volume Control.



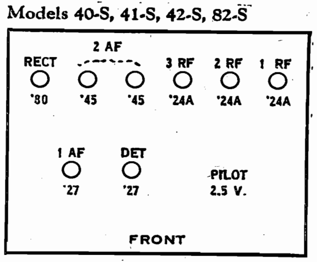
Third Type of Volume Control.

Models 42S and 82S are equipped with Dynacoil speakers, type J, model 255.



For model 40S receiver, Dynacoil type J, model 254 is supplied.

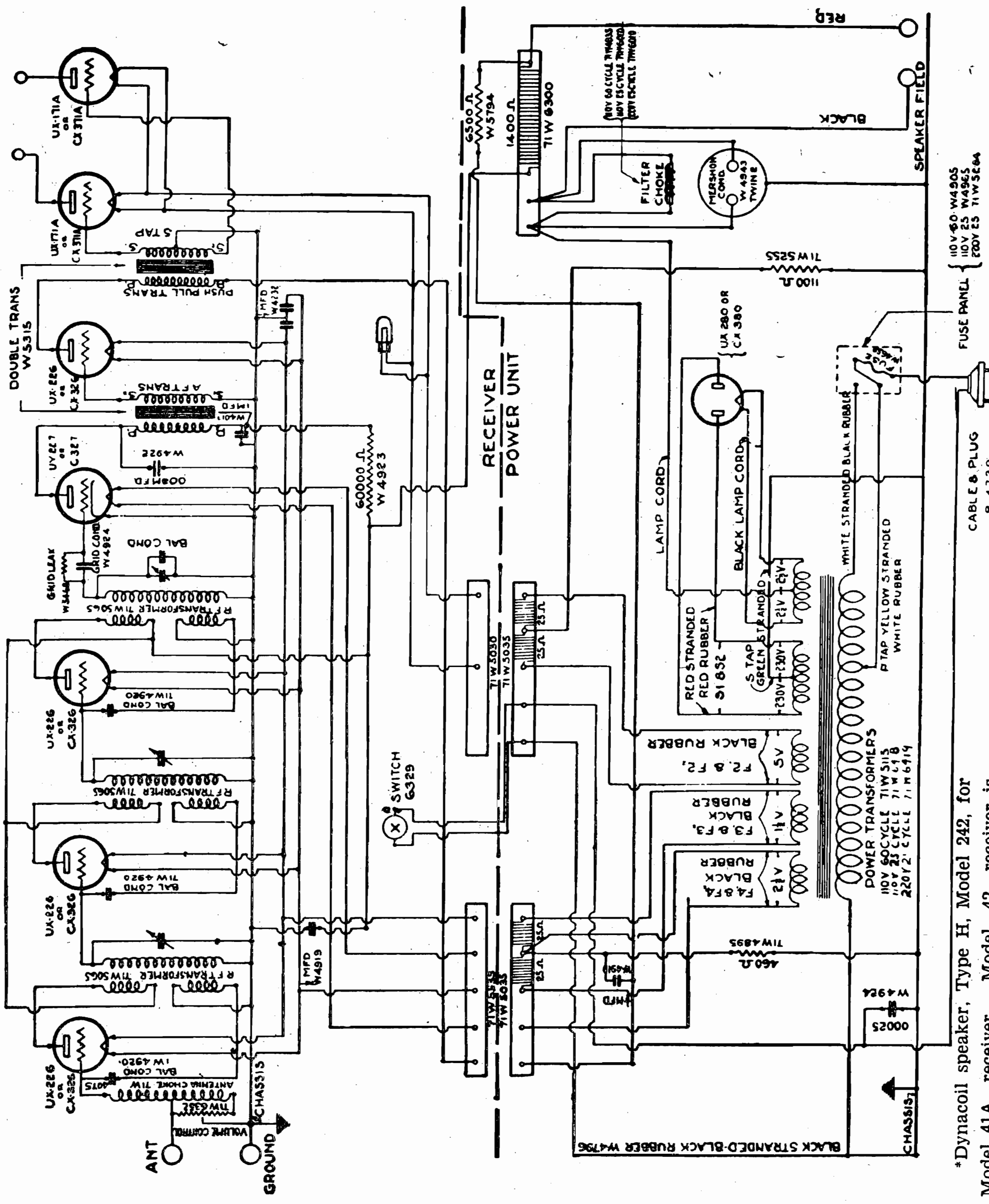
Models 40-S, 41-S, 42-S, 82-S



(ABOVE)
Connections for Dynacoils Types G,H,J,M
Red and Black leads to field coil. Brown leads to speaker output transformer.

MODELS 41, 41A, 42
Schematic, Voltage

CROSLEY RADIO CORP.



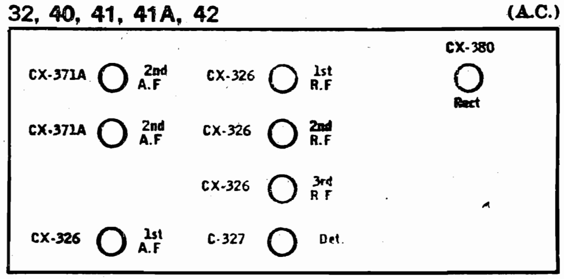
*Dynacoil speaker, Type H, Model 242, for Model 41A receiver Model 42 receiver is equipped with built-in Dynacoil speaker, Type H, Model 243.

*Note—Mershon Condenser in set will probably be ruined if speaker field circuit is opened while set is in operation.

CROSLEY—Models 41-41A-42-704-706
Line Voltage 117.5—227 Emitter Based 11 Volts Negative with Respect to Filament. Detector Grid Test Made with Grid Leak Shorted

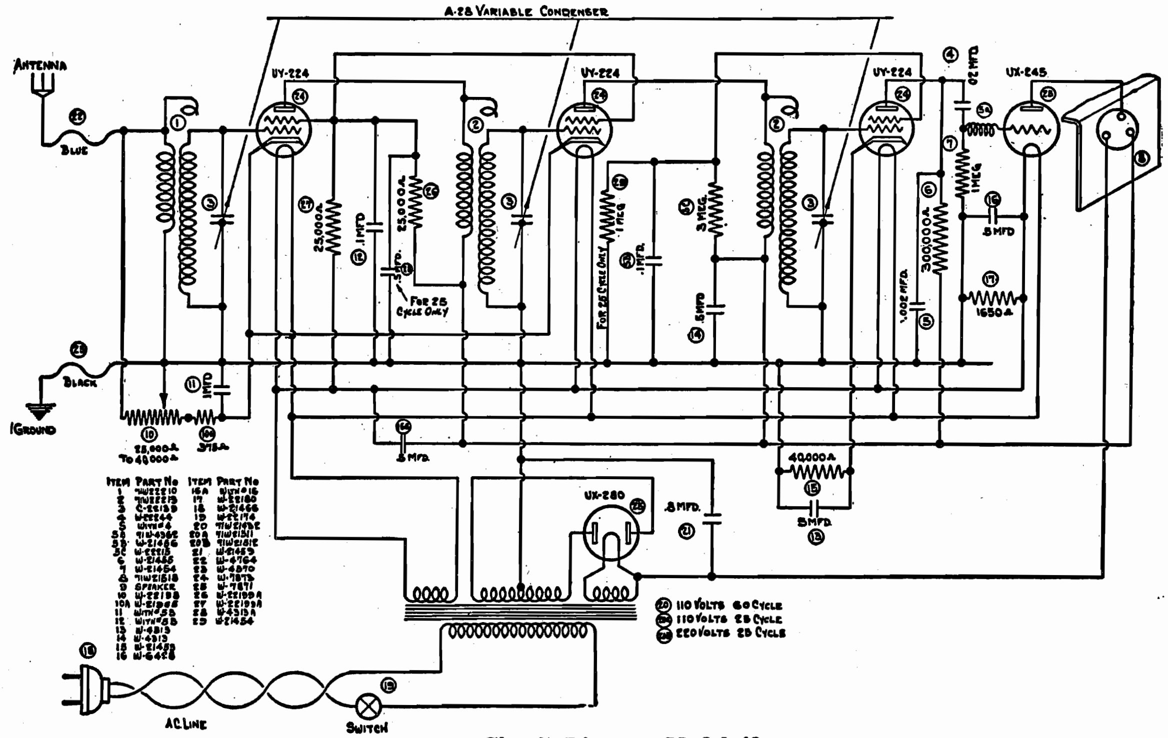
Tube No in Order	Type of Tube	Position of Tube 1st RF Det Etc	Readings Plug in Socket of Set: Tube Out A Volts	Tube Out B Volts	Tube in Tester A Volts	B Volts	C Volts	Cathode Volts	Normal Plate M.A	Plate M.A Grid Test	Plate M A Change
1	226	1st.R.F.	1.6	160	1.5	150	11.0		6.5	12.0	5.5
2	226	2nd.R.F.	1.6	160	1.5	150	11.0		6.5	13.4	6.9
3	226	3rd.R.F.	1.6	160	1.5	150	11.0		6.5	13.4	6.9
4	227	Detector	2.50	150	2.25	30	0.0		2.2	2.75	.55
5	226	1st.A.F.	1.6	220	1.5	120	9.0		6.2	8.0	1.8
6	171A	2nd.A.F.	5.3	185	5.0	170	37.5		20.0	23.0	3.0
7	171A	2nd.A.F.	5.3	185	5.0	170	37.5		20.0	23.0	3.0
8	280	Rectifier	5.3		4.9						

32, 40, 41, 41A, 42 (A.C.)



MODEL 48
Schematic, Voltage

CROSLEY RADIO CORP.



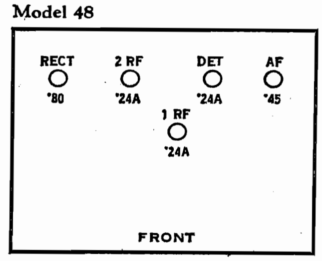
Circuit Diagram Model 48

Voltage Limits

To be measured with tubes in place, speaker connected, and line voltage of 117½ (235 for 220 volt receivers. Measure plate and grid voltages with a high-resistance D. C. volt-meter (600 ohms or more per volt) from plate or grid socket contact to emitter contact. Use a low-range A. C. meter to measure filament voltages.

Filament Voltages	
All tubes but rectifier	2.3 to 2.5
Rectifier tube	4.6 to 4.8
Plate Voltages	
R. F. amplifier tubes	160 to 190
Detector tube	105 to 125
A. F. amplifier tube	125 to 155
Rectifier tube	220 A. C.
Screen Grid Voltages	
R. F. amplifier tubes	80 to 90
Detector tube	40 to 50
Control Grid Voltages	
R. F. amplifier tubes	2.5 to 3.1
Detector tube	6.0 to 7.0
A. F. amplifier tube	25 to 35

Model 48



Installation Notes

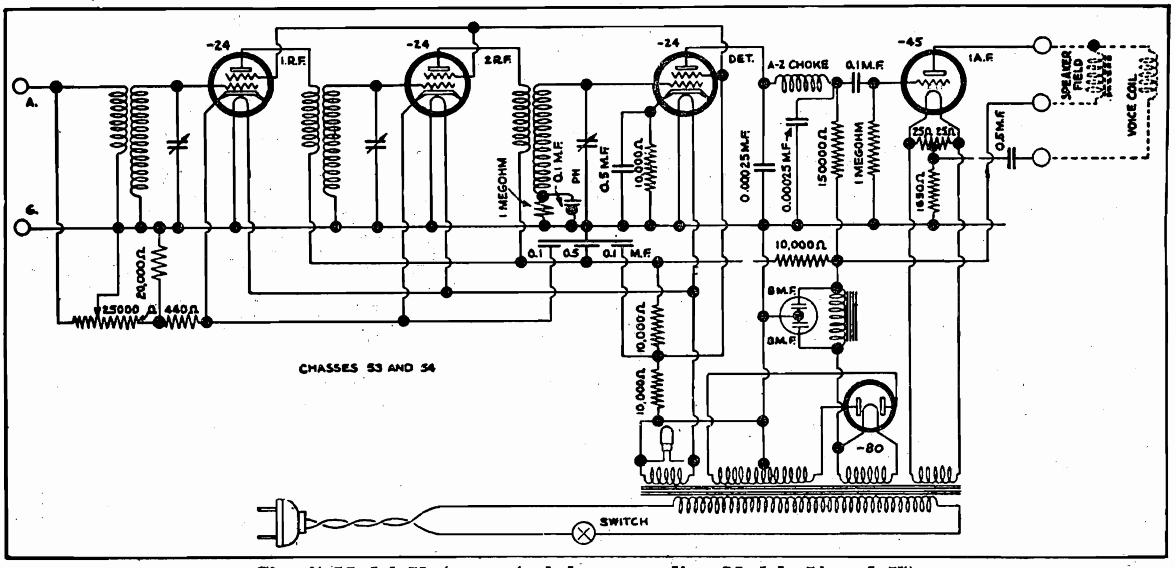
Because of the low sensitivity of this chassis it is better to use a comparatively large aerial with it if possible. A good ground should, of course, be used.

One must be careful in inserting the speaker plug not to force it in when the prongs are improperly lined up with the socket holes.

This model employs the following tubes: two -24 screen grid amplifiers, a -24 screen grid detector, a -45 power output amplifier, and a -80 rectifier.

MODEL 53,54,57
Schematic,Voltage

CROSLEY RADIO CORP.



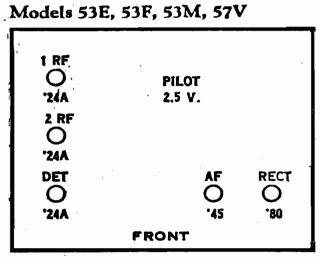
Circuit Model 53 (see note below regarding Models 54 and 57)

Circuit, Models 54 and 57

Model 54 circuit differs from that shown in the diagram in the following particulars: The "PH" terminals are between the r. f. transformer coil and the 0.1 m. f. condenser, instead of between this condenser and ground, as shown. The triple unit condenser near the center of the diagram has values, from right to left, of 0.1, 0.1, 0.5 microfarads, instead of those shown. There is no dial light on Model 54.

Model 57 differs in circuit from the above description in the following particulars: An additional condenser of 0.25 m. f. capacity is shunted across the filter choke. The primary of the speaker output transformer is connected in the position in which the speaker field is shown in the above diagram. Instead of being connected to the 1650 ohm resistor through a condenser, as shown in the above diagram, the bottom speaker terminal is connected to ground. The speaker field is connected from this grounded terminal to the middle speaker terminal on the diagram, so that current from the positive "B" circuit flows through the speaker field to ground. A fixed condenser is shunted across the 1650 ohm output biasing resistor.

Models 53E, 53F, 53M, 57V



Voltage Limits

Filament Voltages	
R. F. and Detector Tubes	2.1 to 2.3
A. F. Tube	2.2 to 2.4
Rectifier Tube	4.1 to 4.3
Plate Voltages	
R. F. Tubes	160 to 180
Detector Tube	215 to 245
A. F. Tube	230 to 260
Rectifier Tube (A. C. Voltage)	340 to 370 each plate
Control Grid Voltages	
R. F. Tubes	3.1 to 3.5
Detector Tube	9.0 to 10.0
A. F. Tube	45.0 to 50.0
Screen Grid Voltages	
R. F. and Detector Tubes	85 to 95
Approximate Plate Current Values	
R. F. Tubes	0.0032
Detector Tube	0.00035
A. F. Tube	0.0335
Rectifier Tube	0.045

To be measured with speaker connected, tubes in place, and line voltage of 117½ (235 for 220 volt receivers) with fuse in "High" position or of 107½ (215 for 220 volt receivers) with fuse in "Low" position. Measure plate and grid voltages with a high-resistance D. C. voltmeter (600 ohms or more per volt) from plate or grid tube contact to emitter contact, except in the case of the grid voltages of the detector and audio tubes, which should be measured from the emitters to the chassis. The filaments of the output and rectifier tubes serve as the emitters, while the other tubes have heaters and separate emitters. Measure filament voltages with a low-range A. C. voltmeter.

Black 0	Orange 3	Violet 7
Brown 1	Yellow 4	Gray 8
Red 2	Green 5	White 9
	Blue 6	

For example, a resistor with orange body color, green end color, and a red dot has a resistance of 3500 ohms.

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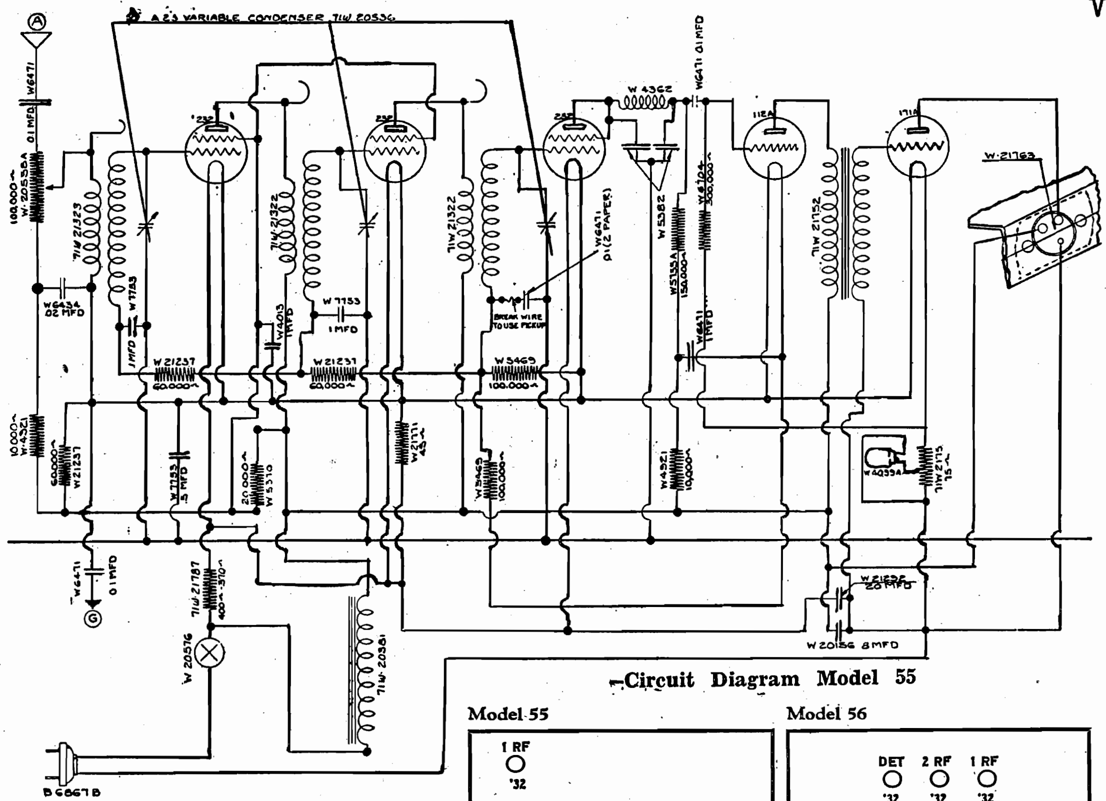
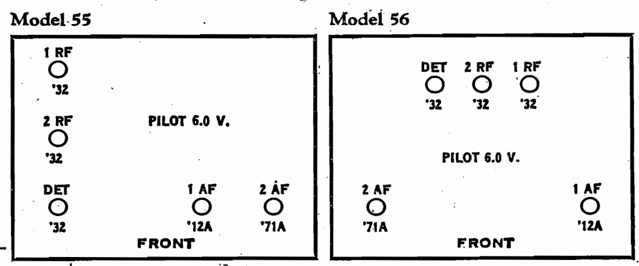
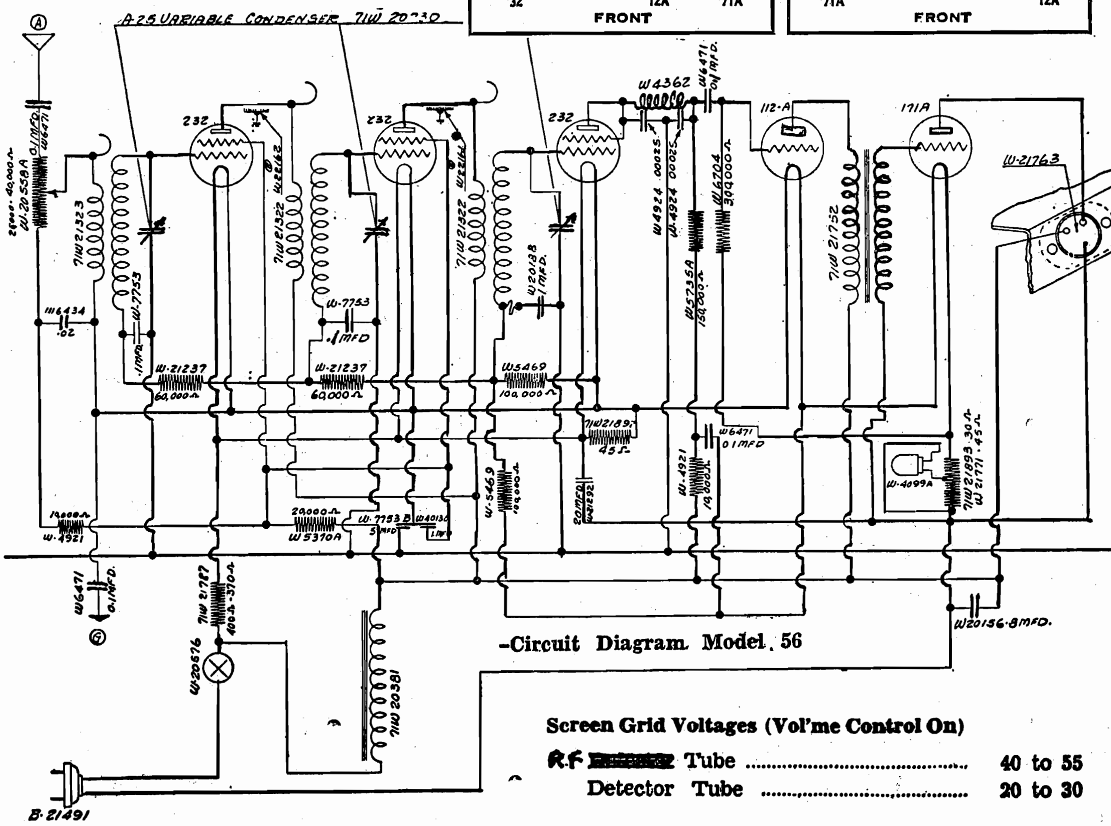
MODEL 55
MODEL 56
Schematic
Voltage



Circuit Diagram Model 55





Circuit Diagram Model 56

Screen Grid Voltages (Vol'me Control On)

RF Tube	40 to 55
Detector Tube	20 to 30

Plate Voltages

R. F. Tubes	80 to 90
Detector Tube	20 to 30
1st A. F. Tube	75 to 90
Output Tube	85 to 100

Control Grid Voltages

R. F. and Detector Tubes	1.2 to 1.8
1st A. F. Tube	4.0 to 5.0
Output Tube	10.0 to 15.0

Filament Voltages

R. F. and Detector Tubes	1.5 to 2.0
A. F. Tubes	4.2 to 5.0

MODEL 55
MODEL 56
Parts Lists

CROSLEY RADIO CORP.

Parts List Model 55

INSTRUCTIONS FOR ORDERING—Give part number, description of part, and serial number of receiver on which part is to be used. If article wanted is not listed separately, then that part of complete assembly containing this article should be ordered. Goods shipped on open account to Crosley Wholesale Distributors only. Cash must accompany Dealer and Consumer orders. Prices are subject to the usual trade discounts.

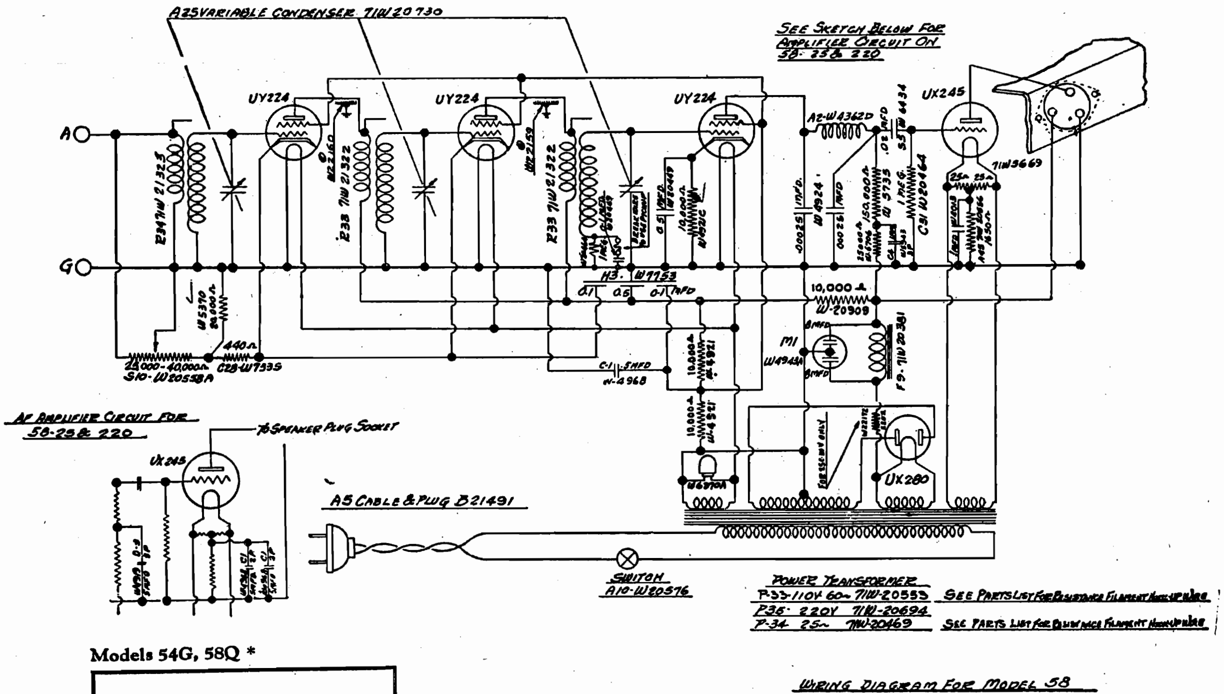
Qty.	Part No.	Description	List Price Each
1	D-21761	Chassis	2.00
5	W-7871	Socket (4 Prong)	.25
5	W-7874	Socket Guide	.10
2	W-21322	R. F. Transformer	2.50
1	W-21323	R. F. Transformer (Ant.)	2.50
3	W-21739	Grid Connectors	.25
3	B-21174	R. F. Coil Shield	.50
1	W-20558	Volume Control	1.75
	W-20536	Variable condenser gang	18.00
1	W-20981	Spider	.30
1	W-7154	Dial Gear	.15
1	W-5596	Set Screw	.05
1	W-5354D	Dial Indicator	.25
1	W-4899	Pinion	.35
1	W-20594	Pinion Bracket (inner)	.15
1	W-20595	Pinion Bracket (outer)	.15
1	W-4907	Spring Washer	.05
1	W-20722	Dial Light Bracket	.25
1	W-20576	Power Switch	.75
1	B-21762	Chassis Plate	.15
1	W-20156	8 Mfd. Condenser	5.00
1	W-21760	Filament drop resistor (400-370 ohms)	1.00
1	W-21779	Filament drop resistor bracket	.10
2	W-4435	Asbestos Washer	.05
1	W-20381	Filter Choke	3.25
1	W-21292	Electrolytic Condenser (20 mfd.)	2.00
1	W-21752	A. F. Transformer	5.00
		PARTS UNDER CHASSIS	
1	W-6471	0.1 Mfd. Fixed Condenser (2 paper)	1.00
1	W-21109	Resistor Assembly	1.00
	W-5713	Mounting Strip	.25
	W-5370	Ressitor 20,000 ohms (red, black, orange spot)	.60
1	W-21237	Resistor 60,000 ohms (blue, black, orange spot)	.60
2	W-5382	0.00025 Mfd. Fixed Condenser	.35
1	W-6471	0.1 Mfd. Fixed Condenser (2 paper)	1.00
1	W-5469	Resistor 100,000 ohms (brown, black, yellow spot)	.60
2	W-21237	Resistor 60,000 ohm	.60
1	W-6434	0.02 Mfd. Fixed Condenser	.60
1	W-20940	Resistor Assembly	1.00
	W-5713	Mounting Strip	.25
	W-4921	Resistor 10,000 ohms	.60
1	W-4362	Plate Choke	.50
1	W-7753	0.1-0.5-0.1 Mfd. Fixed Condenser	2.00
1	W-4013	1. Mfd. Fixed Condenser (2 paper)	1.35
1	W-6471	0.1 Mfd. Fixed Condenser	1.00
1	W-21754	Resistor Assembly	3.15
	W-21771	Mounting Strip & Resistance (45 ohm)	.45
	W-5735	Resistor 150,000 ohms (brown, green, yellow spot)	.60
	W-4921	Resistor 10,000 ohms (brown, black, orange spot)	.60
	W-5469	Resistor 100,000 ohms (brown, black, yellow spot)	.60
	W-6704	Resistor 300,000 ohms (orange black, yellow spot)	.60
1	W-20630	Bottom Bracket	.10
1	W-6471	0.1 Mfd. Fixed Condenser (2 paper)	1.00
1	W-21751	Resistance Assembly (45-30 ohms)	.40
1	W-21798	Junction Block	.10
1	W-6471	0.1 Mfd. Fixed Condenser (2 paper)	1.00
1	W-20883	Terminal (A. G & P H.)	.50
1	W-21763	Speaker Terminal Socket	.40
1	B-6867	Cable	1.50
1	C-21581	R. F. Shield Assembly	1.25
1	C-20658	Chassis Bottom	.50
1	W-20167	Knob (large)	.40
2	W-20482	Knob (small)	.35

Parts List Model 56

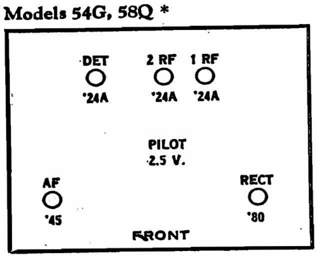
Qty.	Part No.	Description	List Price Each
1	C-21900	Chassis	1.75
5	W-7871	Socket (4 prong)	.25
5	W-7874	Socket Guide	.10
1	W-20558	Volume Control	1.75
1	W-21752	A. F. Transformer	5.50
1	W-21760	Filament Drop Resistor (400-370 ohms)	1.00
1	W-21779	Filament Drop Resistor Bracket	.10
2	W-4435	Asbestos Washer	.05
1	W-20730	Variable Condenser Gang	18.00
1	W-20981	Spider	.30
1	W-22093	Dial	.25
1	W-22094	Dial Strip	.25
1	W-20977	Dial Band	.20
2	W-21322	R. F. Transformers	2.50
1	W-21223	R. F. Transformers (antenna)	2.50
3	W-21739	Grid Connectors	.25
3	W-21257	R. F. Coil Shields	.50
1	C-20871	R. F. Shield	1.25
1	W-20576	Power Switch	.75
1	W-22090	Dial Light Bracket	.25
1	W-21901	Chassis Plate	.15
1	W-20381	Filter Choke	3.25
1	W-20156	Condenser (8 Mfd. 2 paper)	5.00
1	W-21763	Speaker Terminal	.40
1	W-20883	Terminal A. G. & PH.	.50
		PARTS UNDER CHASSIS	
1	W-21893	Fixed Resistance (30 ohm)	.40
1	W-21892	Fixed Resistance (45 ohm)	.40
1	W-20188	0.1 Mfd. Fixed Condenser	.60
1	W-4362	Plate Choke	.50
2	W-4924	0.00025 Mfd. Fixed Condenser	.35
2	W-6471	0.1 Mfd. Fixed Condenser (2 paper)	1.00
1	W-6434	0.02 Mfd. Fixed Condenser	.60
1	W-7753	0.1-0.5-0.1 Mfd. Fixed Condenser	2.00
1	W-4013	1. Mfd. Fixed Condenser (2 paper)	1.35
1	W-21237	Resistor (60,000 ohms) Blue, black, orange	.60
1	W-5469	Resistor 100,000 ohms Brown, black, yellow	.60
1	W-21237	Resistor (60,000) ohms)	.60
3	W-21127	Stiffened Sleeving (3-8"x2")	.05
1	W-20873	Bottom Bracket	.10
2	W-6471	0.1 Mfd. Fixed Condenser (2 paper)	1.00
1	W-21895	Fixed Resistance Assembly	2.50
	W-21771	Resistance and mounting strip (45 ohms)	.45
	W-5735	Resistor 150,000 ohms (Brown, green, yellow)	.60
	W-6704	Resistor 300,000 ohms (Orange, black, yellow)	.60
	W-4921	Resistor 10,000 ohms (Brown, black, orange)	.60
1	W-21894	Resistance Assembly	2.35
	W-6028	Mounting Strip	.30
	W-4921	Resistor (10,000 ohm Brown, black, orange	.60
	W-5469	Resistor (100,000 ohm) Brown, black, yellow	.60
	W-5370	Resistor (20,000 ohm) Red, black, orange	.60
1	W-21292	20 Mfd. Condenser	2.00
1	B-21491	Cable	1.50
1	C-20872	Chassis Bottom	.50
2	W-20482	Knob (Small)	.35

CROSLEY RADIO CORP.

MODEL 58
Schematic
Parts List



Models 54G, 58Q *



Circuit Diagram Model 58

For Voltage Data See Model 54

Parts List—Model 58

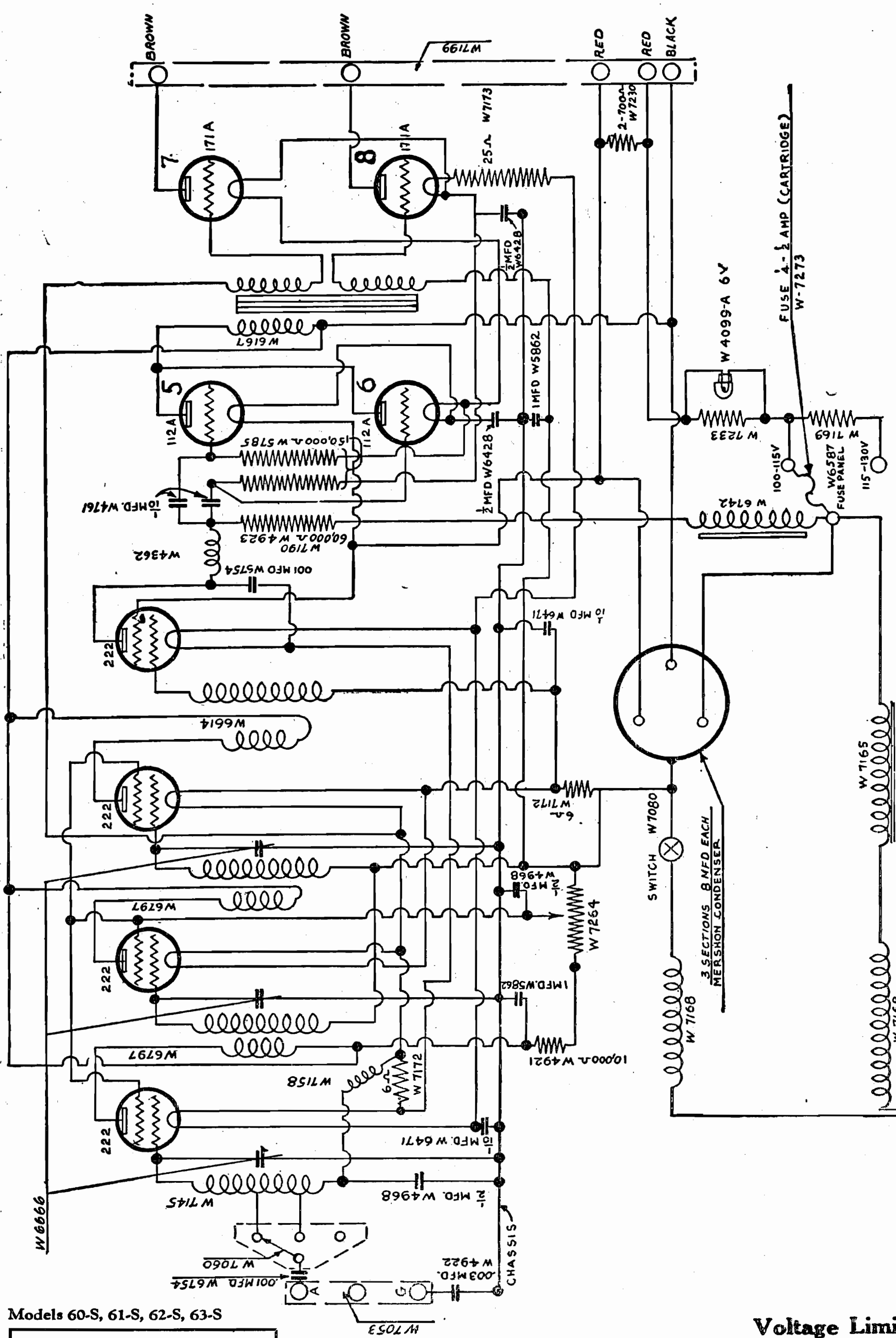
INSTRUCTIONS FOR ORDERING—Give part number, description of part, and serial number of receiver on which part is to be used. If article wanted is not listed separately, then that part of complete assembly containing this article should be ordered. Goods shipped on open account to Crosley Wholesale Distributors only. Cash must accompany Dealer and Consumer orders. Prices are subject to the usual trade discounts.

Qty.	Part No.	Description	List Price Each
1	W-21569	Chassis	1.75
3	W-7873	Socket (5 Prong)	.30
2	W-7871	Socket (4 Prong)	.25
1	W-21518	Speaker Socket	.40
4	W-7874	Socket Guide	.10
1	W-21297	Socket Guide (280)	.10
1	W-20883	Terminal Board (A. G. & Ph.)	.50
1	W-20558	Volume Control	1.75
1	W-20381	Filter Choke	3.25
1	W-4943	Mershon Condenser	4.25
2	W-5033	Condenser Clamp	.15
1	W-4946	Condenser Cap	.25
1	W-20730	Variable Condenser Gang	18.00
1	W-22090	Dial Light Bracket Assembly	.40
1	W-22095	Dial Drum Assembly	.80
	W-22094	Dial Indicator Cover	.25
	W-20977	Dial Band	.20
2	W-21322	R. F. Transformer	2.50
1	W-21323	R. F. Transformer (Antenna)	2.50
3	W-21739	Grid Connector	.25
3	W-21257	R. F. Coil Shield	.50
1	W-20576	Power Switch	.75
1	W-22025	Power Transformer (110 V. 60 Cycle)	13.00
2	W-21597	Tie Straps	.10
1	C-20871	R. F. Shield	1.25

Qty.	Part No.	Description	List Price Each
		PARTS UNDER CHASSIS	
1	W-5669	25 -25 ohm Resistance	.40
1	W-20556	1650 ohm Resistance	.35
1	W-5943	.1 Mfd. Fixed Condenser	1.10
2	W-4924	.00025 Mfd. Fixed Condenser	.35
1	W-4362	Plate Choke	.50
1	W-6434	.02 mfd. Fixed Condenser	.60
1	W-4013	1. mfd. Fixed Condenser	1.35
1	W-20449	.5 -.1 mfd. Fixed Condenser	1.25
1	W-7753	.1 -.5 -.1 mfd. Fixed Condenser	2.00
1	W-4968	.5 mfd. Fixed Condenser	1.20
1	W-21955	3250 ohm Candohm Resistance (2 Section)	.80
1	W-21956	3160 ohm Candohm Resistance	.30
1	W-22043	Mounted Resistor Assembly	2.35
	W-20099	Mounting Strip	.30
	W-5735	150.000 ohm Resistor	.60
	W-5370	20,000 ohm Resistor	.60
	W-6706	25,000 ohm Resistor	.60
1	W-22082	Mounted Resistor Assembly	3.00
	W-20099	Mounting Strip	.30
	W-4921	10,000 ohm Resistor	.60
2	W-20464	1 Meg. Resistor	.60
	W-7335	440 Ohm Resistor	.60
1	B-21491	Cable	1.50
1	C-20872	Chassis Bottom	.50
1	W-20873	Bottom Bracket	.10
2	W-20482	Knob	.35
	W-7947	Knob Spring	.05

MODELS 60S, 61S, 62S, 63S
Schematic, Voltage

CROSLEY RADIO CORP.



Control Grid Voltages

R. F. Tubes	1.4 to 2.3
Detector tube	4.0 to 5.5
112A A. F. tubes (measured to low side of grid resistor)	4.2 to 5.5
Output tubes	14.0 to 19.0

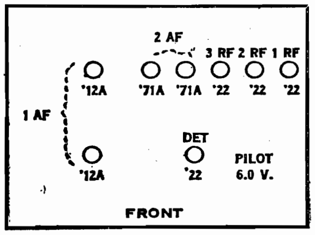
Screen Grid Voltages

1st R. F. tube	47 to 67
2nd and 3rd R. F. tubes	50 to 70
Detector	14 to 34

Plate Voltages

1st R. F. tube	90 to 100
2nd R. F. tube	93 to 103
3rd R. F. tube	95 to 105
Detector tube	64 to 74
A. F. Tube No. 5 (see circuit diagram for this and following tube numbers)	66 to 76
A. F. tube No. 6	72 to 82
Output tube, No. 7	77 to 87
Output tube, No. 8	81 to 91

Models 60-S, 61-S, 62-S, 63-S

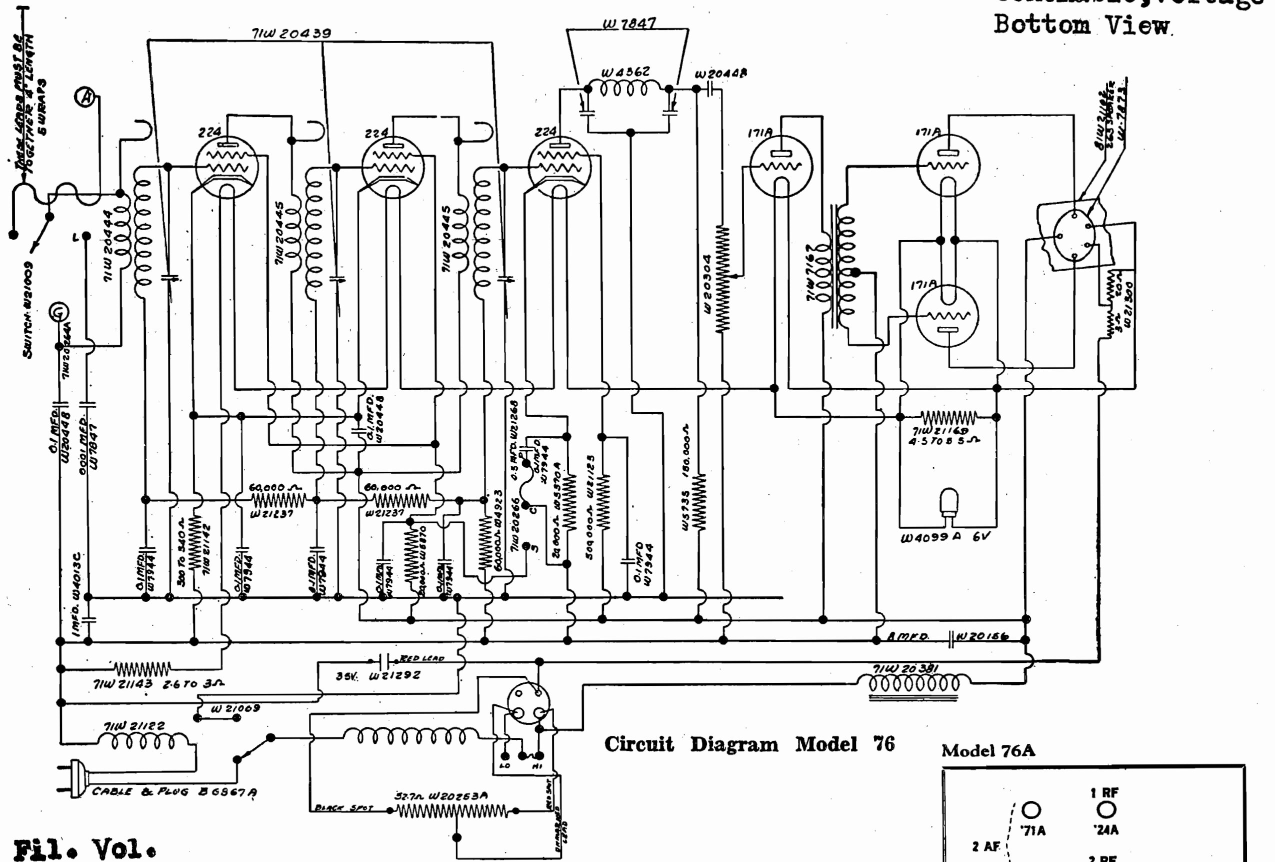


Voltage Limits

	Volume Control on Full
Filament Voltages	
R. F. and Detector tubes	2.6 to 3.4
All A. F. tubes	4.2 to 5.5

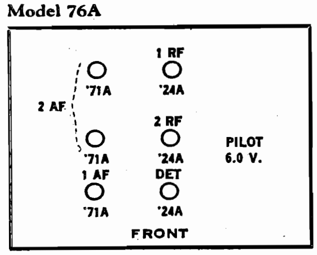
CROSLEY RADIO CORP.

MODEL 76
Schematic, Voltage
Bottom View



Circuit Diagram Model 76

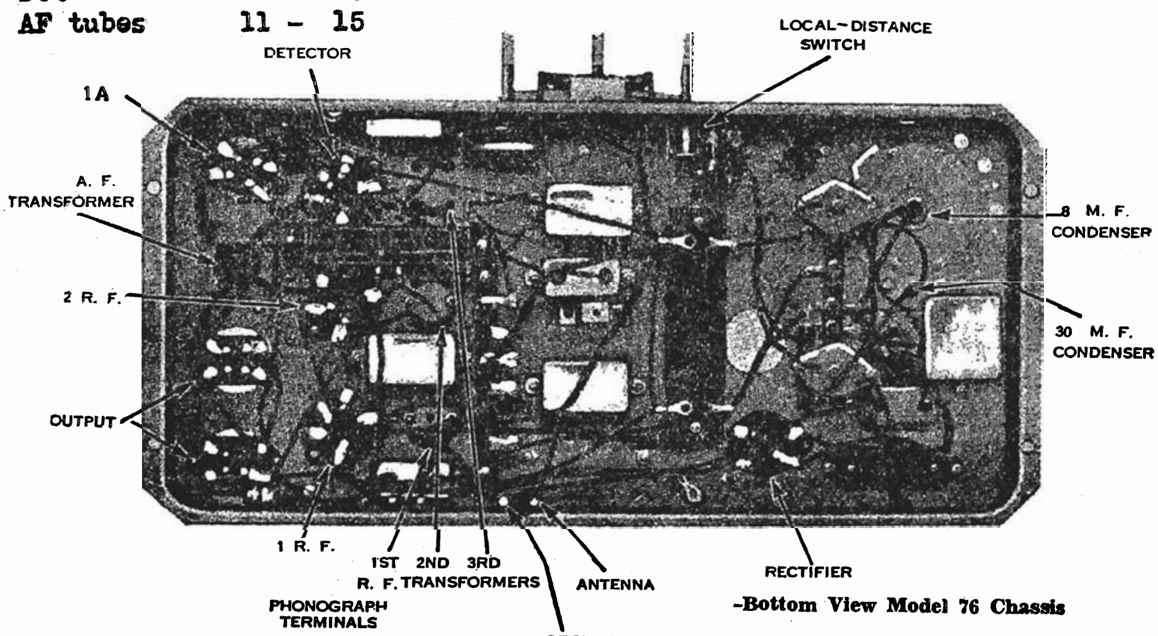
Model 76A



Fil. Vol.		
RF and Det	2.3- 2.6	
AF tubes	4.6- 5.2	
Plate Vol.		
RF tubes	90 - 110	
Det	60 - 70	
AF tubes	80 - 100	
Control Grid		
RF tubes	2 - 3.0	
Det	3 - 3.5	
AF tubes	11 - 15	

Screen Grid	
RF tubes	60 - 80
Det	9 - 11

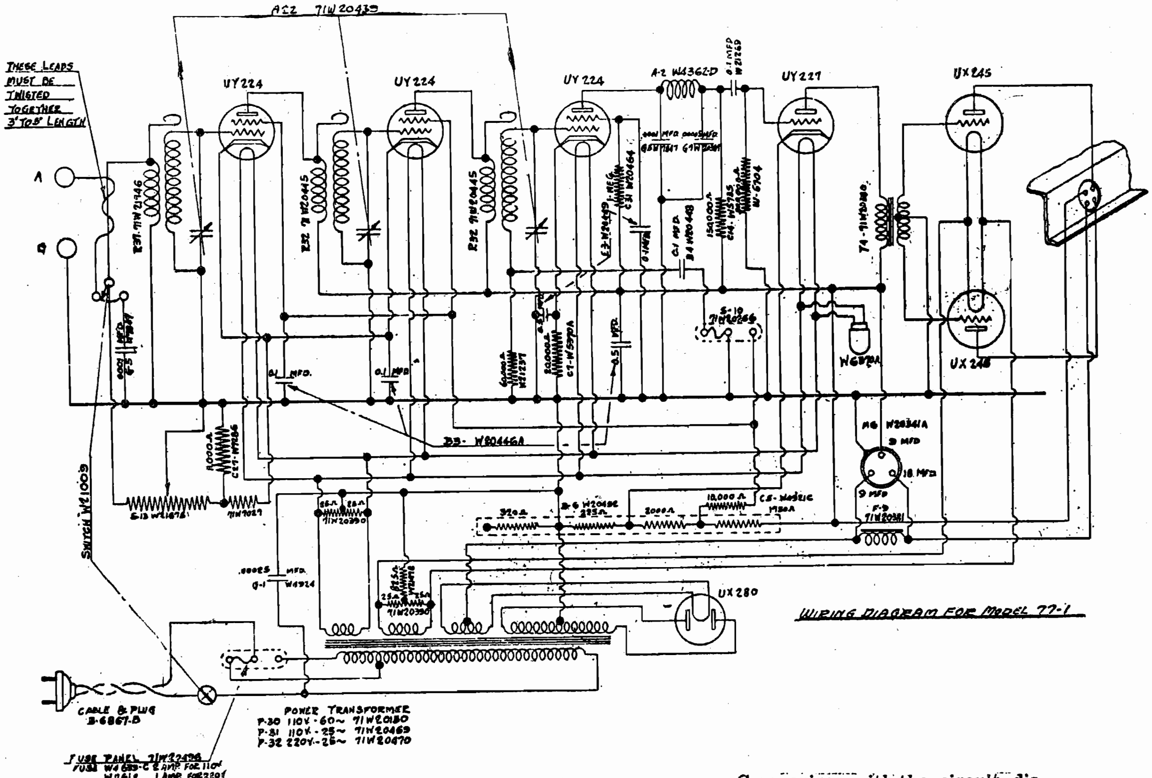
To be measured with speaker in circuit. Fuse in "high" for 117.5 line voltage and in "low" position for 107.5 line voltage.



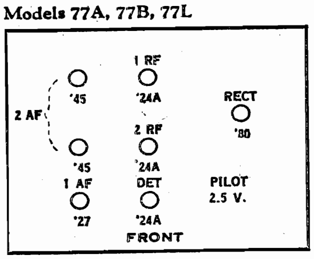
-Bottom View Model 76 Chassis

MODEL 77-1
Schematic
Bottom View, Notes

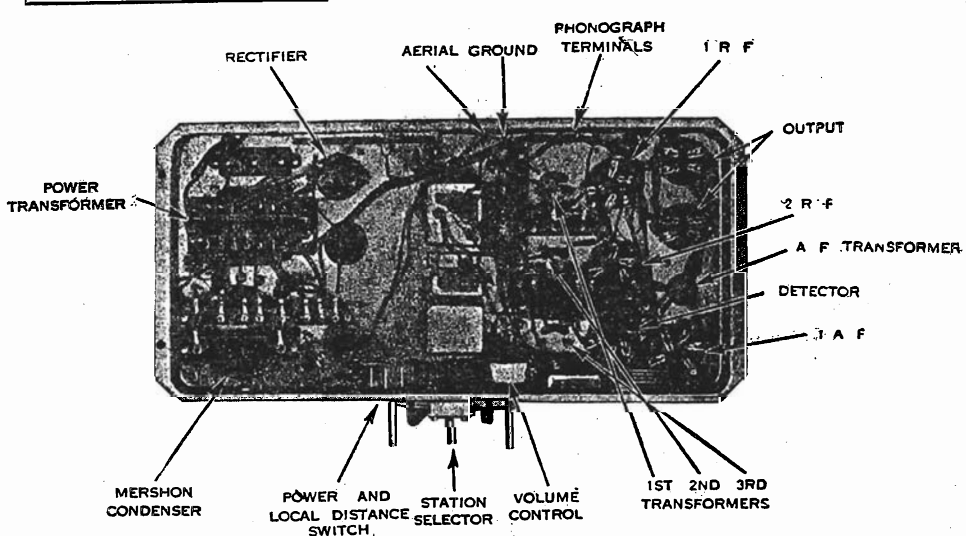
CROSLEY RADIO CORP.



Models 77A, 77B, 77L



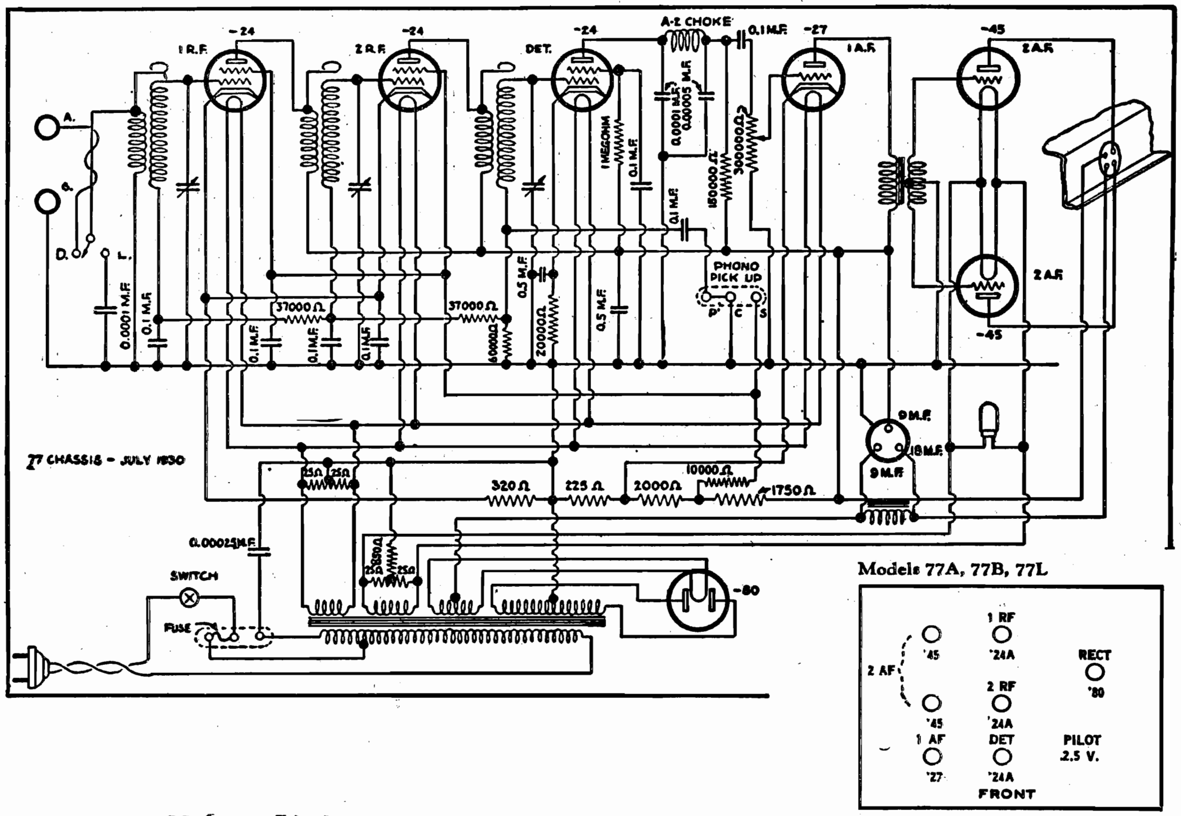
Comparison with the circuit diagram of Model 77, will show that the 37,000 ohm and 16,000 ohm isolating resistors, and the 0.1 micro-farad isolating condensers have been removed from the radio-frequency circuit. In addition a new type of volume control is used, located in the first stage r. f. instead of in the audio frequency circuit. The antenna coil has a low-impedance primary, and is not interchangeable with that on Model 77. These are the essential differences.



Bottom View Model 77-1

MODELS 77A,77B,77L
Schematic,Voltage

CROSLEY RADIO CORP.



Models 77A, 77B, 77L

Voltage Limits

Filament Voltages	
All tubes but rectifier	2.3 to 2.6
Rectifier tube	4.6 to 5.2
Plate Voltages	
R. F. tubes	140 to 160
Detector tube	85 to 110
1st Audio tubes	125 to 150
Output tubes	230 to 260
Rectifier tube (A. C. Voltage)	250 to 280 each plate
Control Grid Voltages	
R. F tubes	1.6 to 3.2
Detector tube	2.0 to 3.2
1st Audio tube	8.0 to 10.0
Output tubes	45. to 65.
Screen Grid Voltages	
R. F. tubes	75 to 90
Detector tube	35 to 55

To be measured with speaker connected and line voltage of 117½ (235 for 220 volt receivers) with fuse in "High" position or of 107½ (215 for 220 volt receivers) with fuse in "Low" position. Measure plate and grid voltages with a high-resistance, D. C. voltmeter (600 ohms or more per volt) from plate or grid tube contact to emitter contact, except in the case of the grid voltage of the first audio tube, which should be measured from the emitter to the chassis. The filaments of the output and rectifier tubes serve as the emitters, while the other tubes have heaters and separate emitters. Measure filament voltages with a low-range, A. C. voltmeter.

All voltage readings are to be taken with the speaker connected and the tubes in place.

Installation Notes

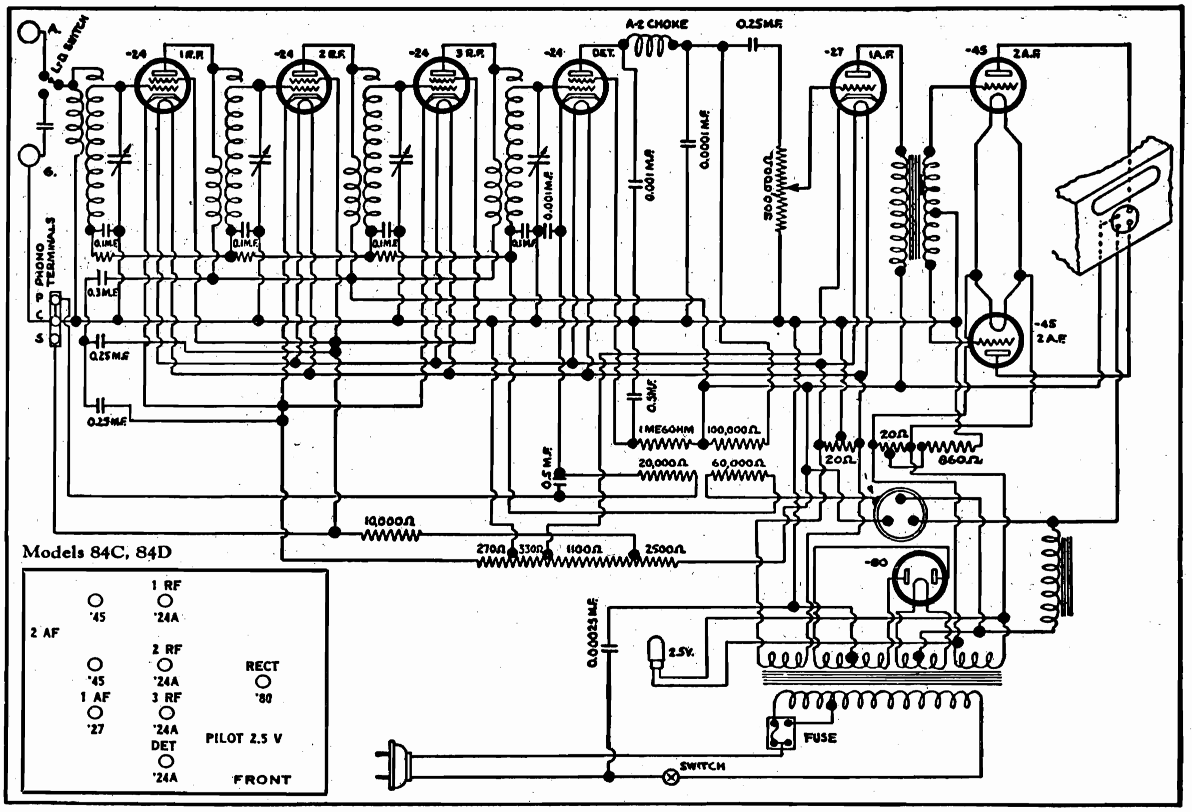
Recommended aerial length: 50 feet or more for outdoor aerial, 20 to 50 feet for indoor aerial.

There are three terminals at the rear of the chassis, marked "P", "C", and "S", for phonograph pick up devices. Instructions for connecting these in Crosley phono-radio combinations will be found in the instruction books accompanying the receivers. To connect other types of phonograph pick up, a single-pole double-throw switch is required. Cut the wire between terminals "P" and "C". Connect the center pole of the switch to terminal "C". Connect the end poles of the switch to terminals "P" and "S". Connect the two leads from the phonograph pick up to the switch poles which are connected to "P" and "C" (terminal "C" is grounded to the chassis). For phonograph reproduction, throw the switch so that the terminals "C" and "S" are connected together. For radio reproduction, throw the switch so that the terminals "P" and "C" are connected together. The volume of phonograph reproduction may be controlled by the volume control on the radio receiver.

If the phonograph attachment is disconnected from the receiver at any time and it is desired to obtain radio reception, it will be necessary to connect a wire from "P" to "C."

MODELS 84C, 84D
Schematic, Voltage
Notes

CROSLEY RADIO CORP.



INSTALLATION NOTES

Recommended aerial length, 50 feet or more for outdoor installations; 20 feet or more for indoor installations.

Terminals are provided for phonograph pick-up devices. When such a device is connected, the wire between terminals "P" and "C" must be out. If the pick-up device is afterwards disconnected, a wire must be connected between "P" and "C" before the receiver may be operated.

To connect a phonograph pick-up a double throw, single-pole switch must be used. Connect the middle pole of the switch to terminal "C" and the end poles to terminals "P" and "S". Connect the pick-up to the switch poles which are connected to "P" and "C", and cut the wire between "P" and "C", as described above. Throw switch toward "P" pole for radio reproduction or toward "S" pole for phonograph reproduction.

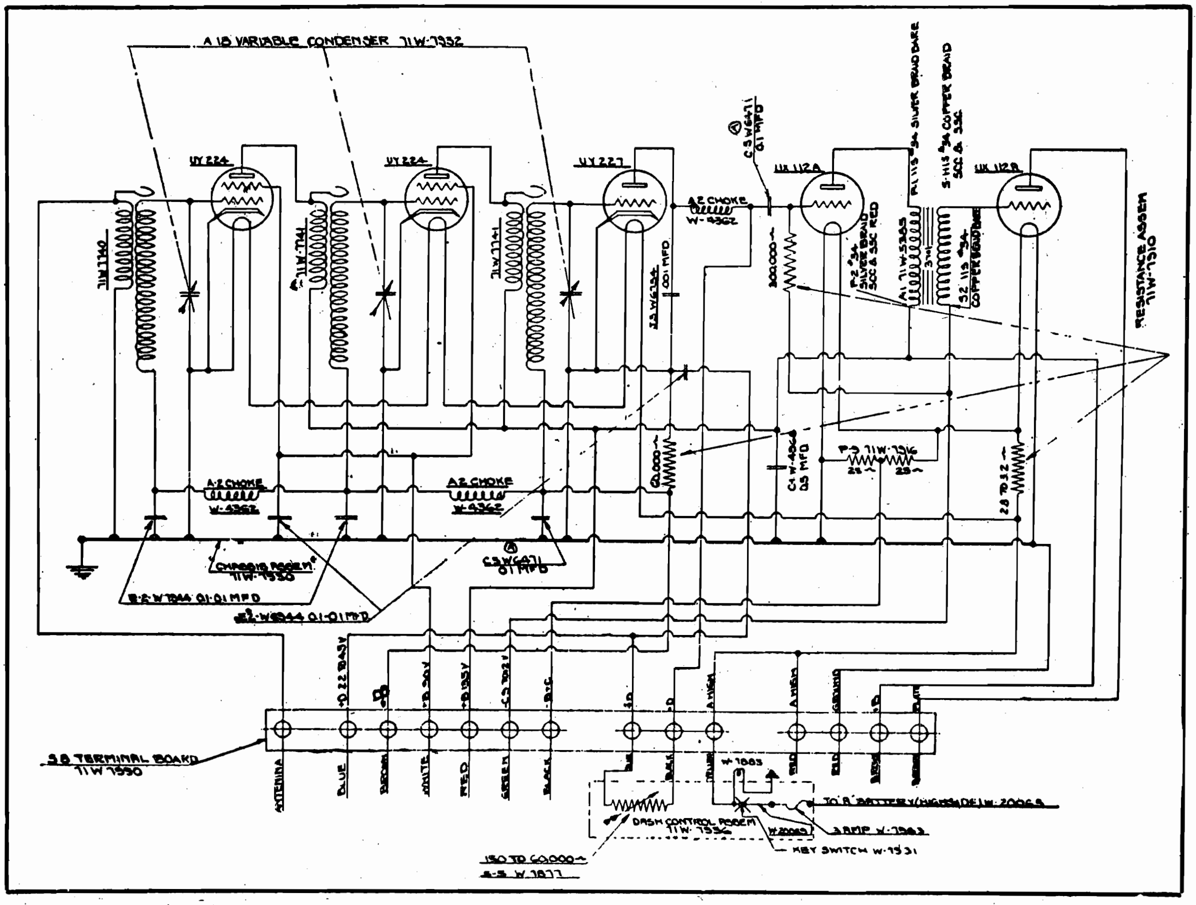
Voltage Limits

Filament Voltages	
All tubes but rectifier	2.3 to 2.6
Rectifier tube	4.6 to 5.2
Plate Voltages	
R. F. tubes	170 to 190
Detector tube	95 to 105
1st Audio tube	130 to 150
Output tubes	220 to 250
Rectifier tube (A. C. voltage)	250 to 280 each plate
Control Grid Voltages	
R. F. tubes	2.5 to 3.5
Detector tube	4.0 to 7.0
1st Audio tube	8.0 to 11.0
Output tubes	40.0 to 50.0
Screen Grid Voltages	
R. F. tubes	60 to 75
Detector tube	35 to 55

To be measured with speaker connected and line voltage of 117½ (235 for 220 volt receivers) with fuse in "High" position or of 107½ (215 for 220 volt receivers) with fuse in "Low" position. Measure plate and grid voltages with a high-resistance, D. C. voltmeter (600 ohms or more per volt) from plate or grid tube contact to emitter contact, except in the case of the grid voltage of the first audio tube, which should be measured from the emitter to the chassis.

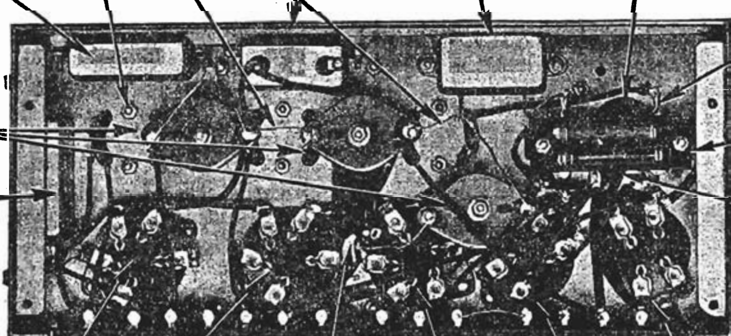
CROSLEY RADIO CORP.

MODEL 90 AUTO
Schematic, Voltage



Filament Voltages	
R. F. and Detector Tubes	2.0
A. F. Tubes	4.7
Plate Voltages	
All Tubes but Detector	135
Detector Tube	22½

Control Grid Voltages	
R. F. Tubes	2.5
Detector Tube	3.0
A. F. Tubes	12.0
Screen Grid Voltages	
R. F. Tubes	90



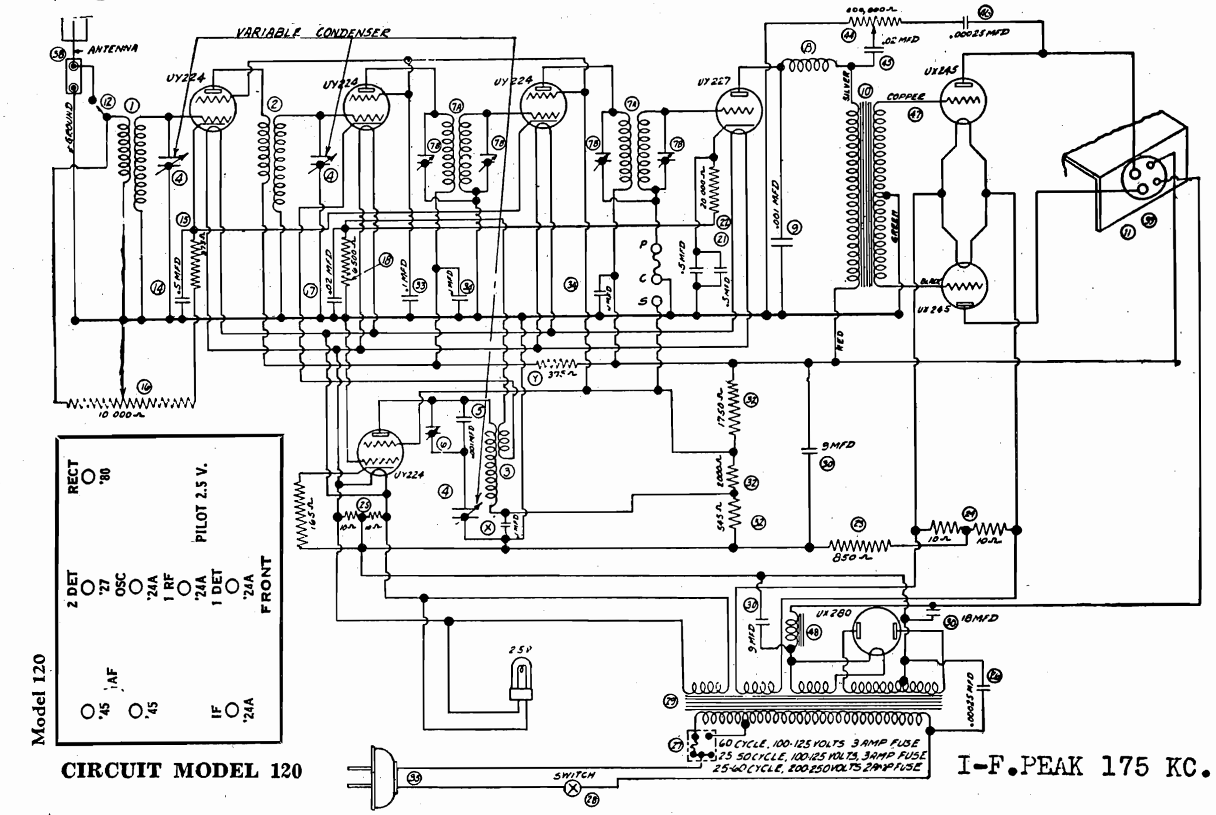
Model 90 Auto

2 AF	1 AF	DET	2 RF	1 RF
'12A	'12A	'27	'24A	'24A

FRONT

MODEL 120
Schematic
Voltage,Notes

CROSLEY RADIO CORP.



CIRCUIT MODEL 120

I-F.PEAK 175 KC.

Voltage Limits

Filament Voltages	
All tubes but output and rectifier ..	2.4 to 2.6
Output tubes	2.3 to 2.5
Rectifier tube	4.6 to 5.2
Plate Voltages	
1st R. F. and Intermediate Amplifiers	150 to 170
Oscillator	16 to 25
1st Detector	145 to 165
2nd Detector	135 to 155
Output	245 to 275
Rectifier (A. C. voltage)	260 to 290 each plate
Screen Grid Voltages	
All screen grid tubes	85 to 95
Control Grid Voltages	
1st R. F. and Intermediate Amplifiers .	2.5 to 3.5
Oscillator	0.5 to 1.5
1st Detector	6.0 to 8.0
2nd Detector	13.0 to 17.0
Output tubes	50 to 58.0

To be measured with speaker connected, volume control on full, and line voltage of 117½ (235 for 220 volt receivers) with fuse in "High" position, or of 107½ (215 for 220 volt receivers) with fuse in "Low" position.

Changes In 120 Chassis

Service Bulletin No. A1 of March 15th covers the A. B. J. A. series of the 120 Chassis. Sets having serial prefix letters A. B. J. B. contain the following changes. Prices of parts remain the same.

W-22017 I. F. Transformer Assembly is replaced by W-22017-E I. F Transformer Assembly.

W-21989 Coil Assembly is replaced by W-21989-B Coil Assembly.

W-21295 I. F. Transformer Assembly is replaced by W-21295-B I F Transformer Assembly.

W-21964 Flexible Resistor (165 ohms) is omitted.

W-21965 Flexible Resistor (375 ohms) is added.

W-21995 R. F. Transformer (oscillator) (Rear) is replaced by W-22589 R. F Transformer (oscillator).

New type I. F. Coil Assemblies are marked with a dot of red paint.

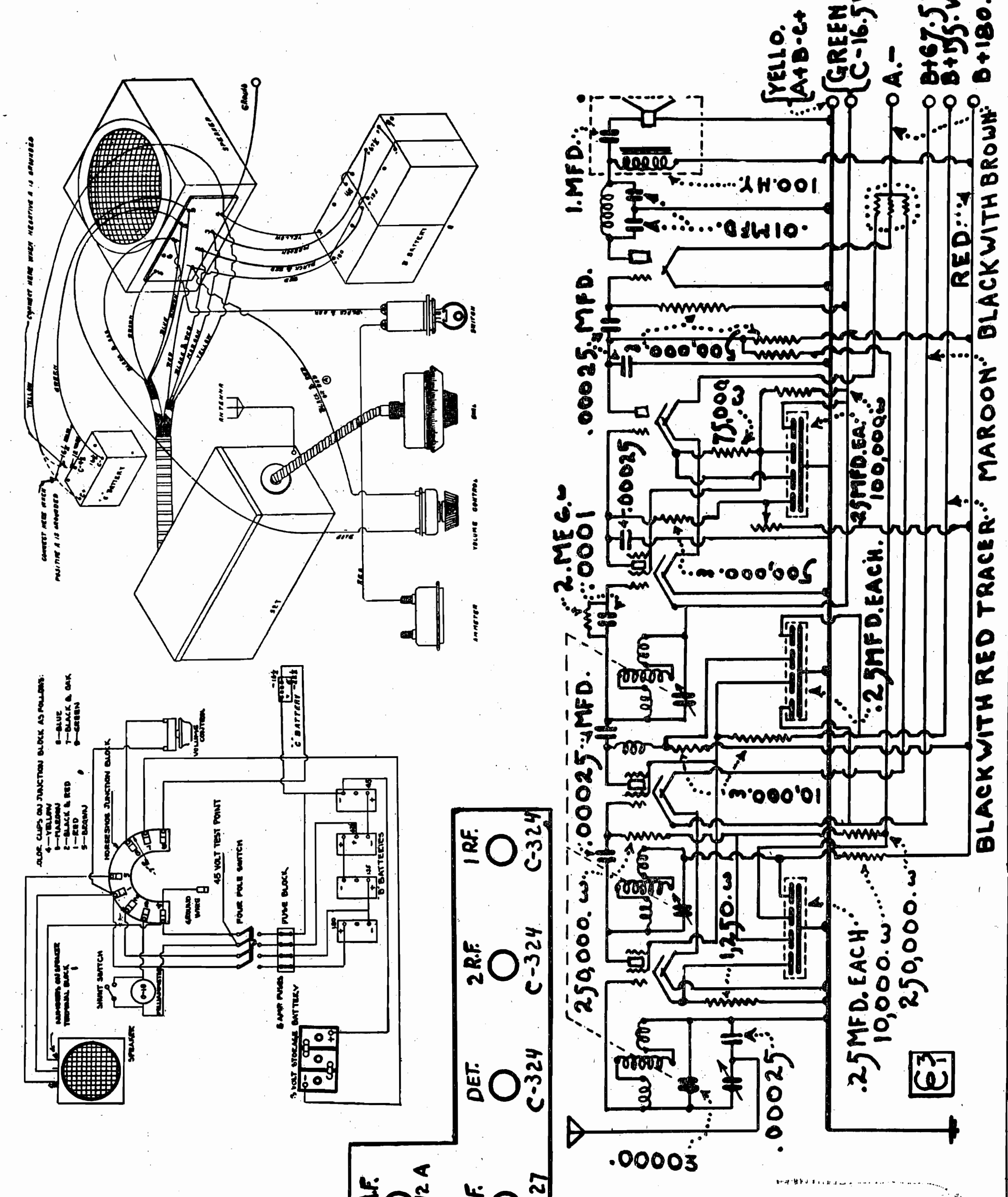
New type R. F. Transformer (oscillator), W-22589, has five connections instead of four

To Compensate For Long Aerial With 120 Chassis

Model 120 is so sensitive that a long aerial may give undesirably great pick-up. To reduce the pick-up, connect a 0.0025 mfd. condenser from the antenna terminal to the ground terminal of the receiver, and a 0.00005 mfd. condenser in the antenna lead.

MODEL 3002

DELCO·RADIO CORP



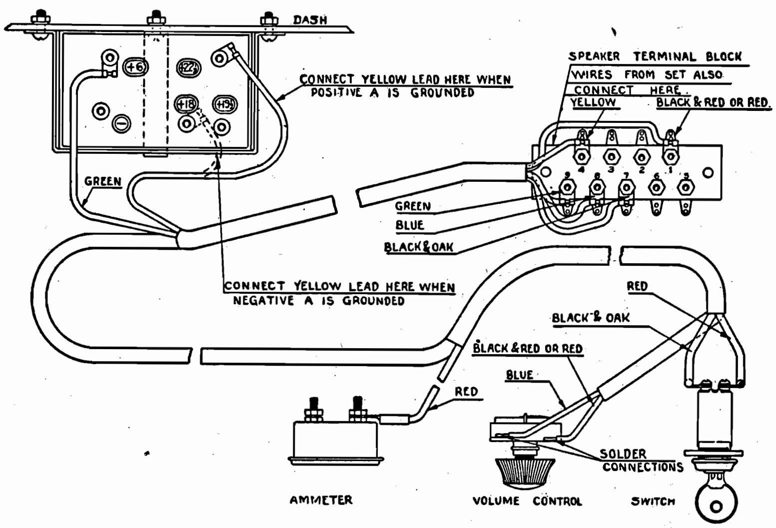
Delco Radio Model 3002

Type of Tube	Position of Tube	Tube in Test Kit					
		Filament Volts	Plate Volts	Control Grid Volts	Screen Volts	Plate M.A. Current	Plate M.A. Grid Test
224	1—R. F.	1.9	125	4.8	100	3.2	5.4
224	2—R. F.	1.9	72	0	42	2.2	2
224	Detector	1.9	15	0	10	.13	0
227	1—A. F.	1.9	45	1	-	.19	.27
212-A	2—A. F.	3.9	137	.2	-	5.5	10.5

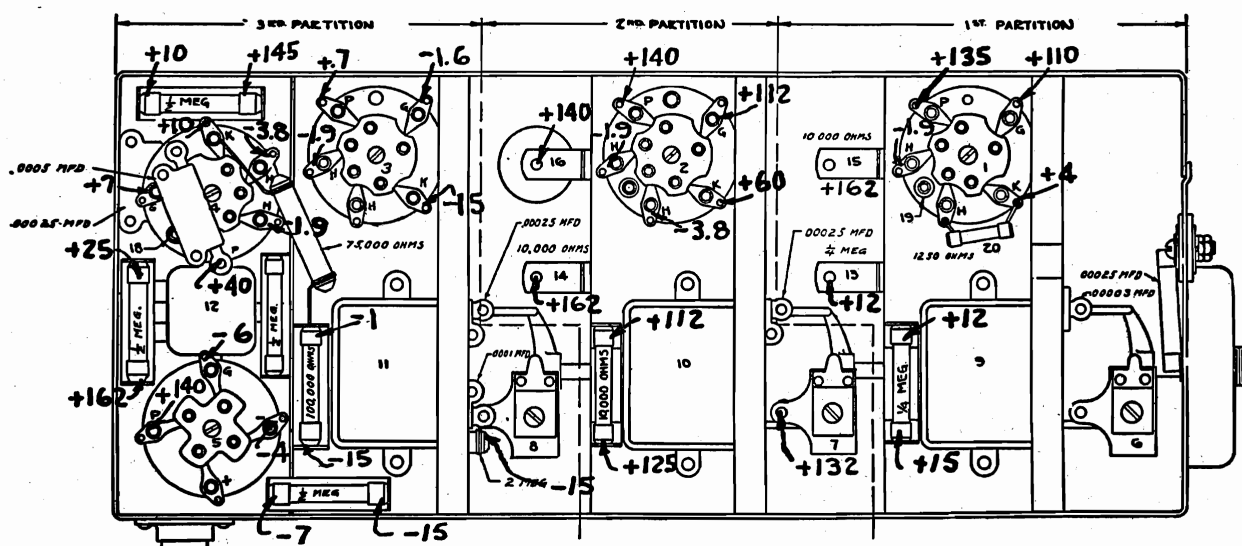
MODEL 3002
Notes
Parts Layout

DELCO RADIO CORP

After the set is in operation on a powerful signal, it will be necessary to tune the antenna circuit so that weaker signals will be received with the maximum volume. The best way to do this is to connect a milliammeter, with a zero to ten milliampere scale, in series with the B Plus 67.5 volt maroon lead. (Connect positive side of meter to set.) Insert a small screw driver in the hole in the bottom of the receiver located nearest the antenna terminal and adjust the large screw on the first balancing condenser. This is located about two inches above the hole. Adjustments should be made by turning the screw until the minimum reading on the meter is obtained. While this adjustment is being made, the station selector should be turned slightly in either way to determine whether or not the reading can be further decreased. This adjustment is a very delicate operation and requires only a slight movement in either direction, not to exceed one full turn. If a meter is not available, a weaker signal should be selected and the set adjusted to maximum volume by varying the position of the screw. Care should be taken not to apply excessive pressure in making this adjustment. While it will do no damage to ground the screw driver to the set while adjusting the screw, the signals will be cut out whenever the screw driver touches the case. A little tape wound around the screw driver will prevent this. It is impossible to receive a shock while making this adjustment. Make above adjustment only through the hole located nearest the aerial connection. After installation is complete, check all connections for correct locations and tightness.

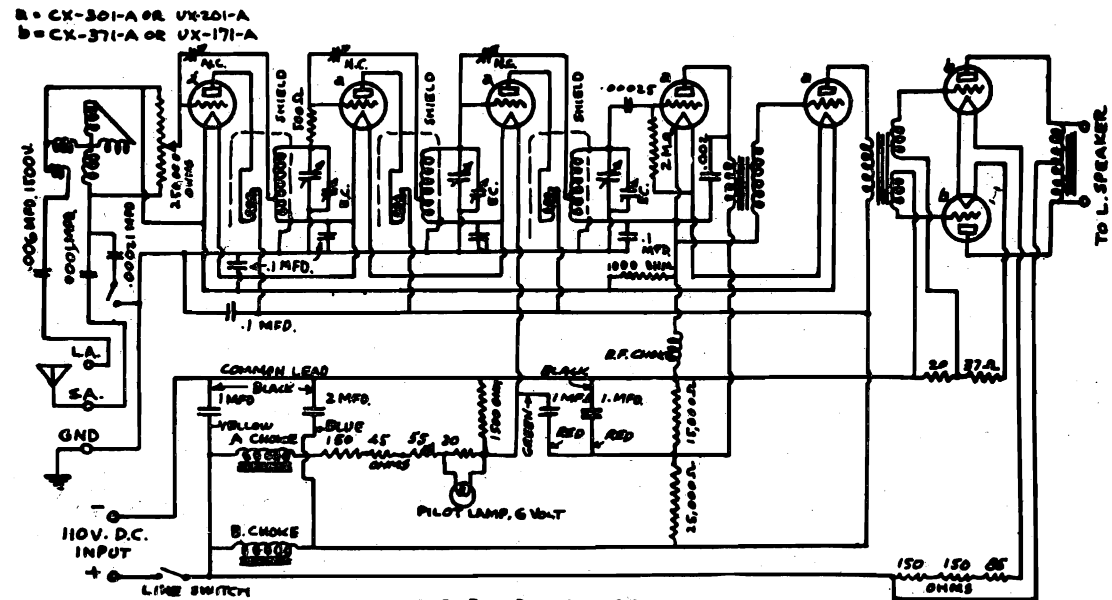


Control Wiring Harness Connections.



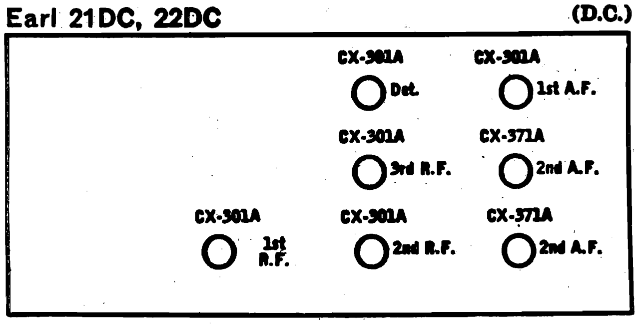
EARL RADIO CORP.

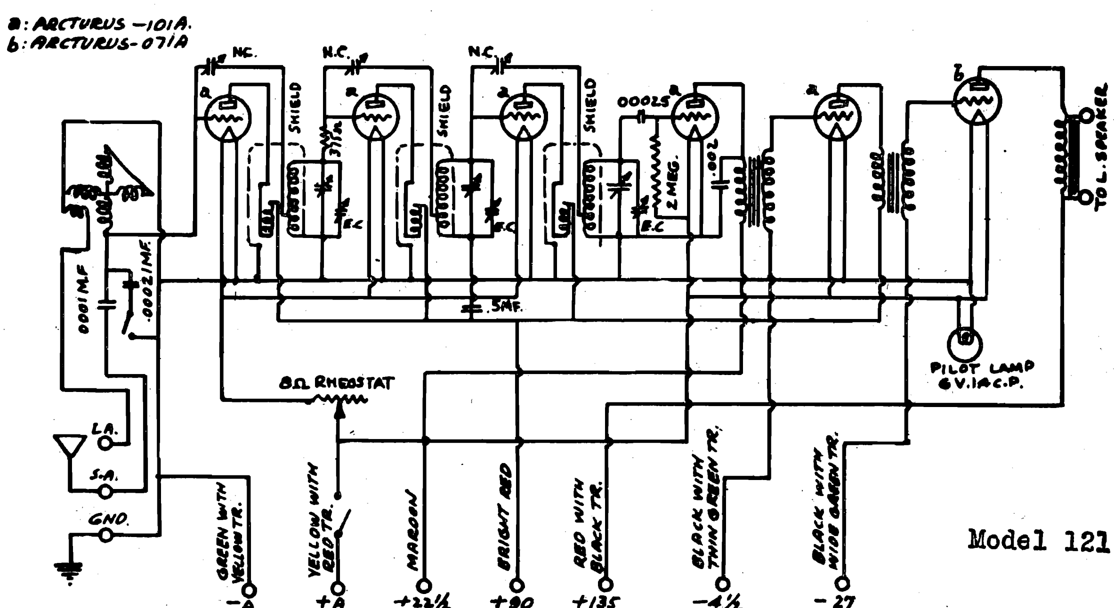
MODEL 21 DC, 22 DC
MODEL 121



Model 21 DC, 22 DC

Earl 21DC, 22DC (D.C.)

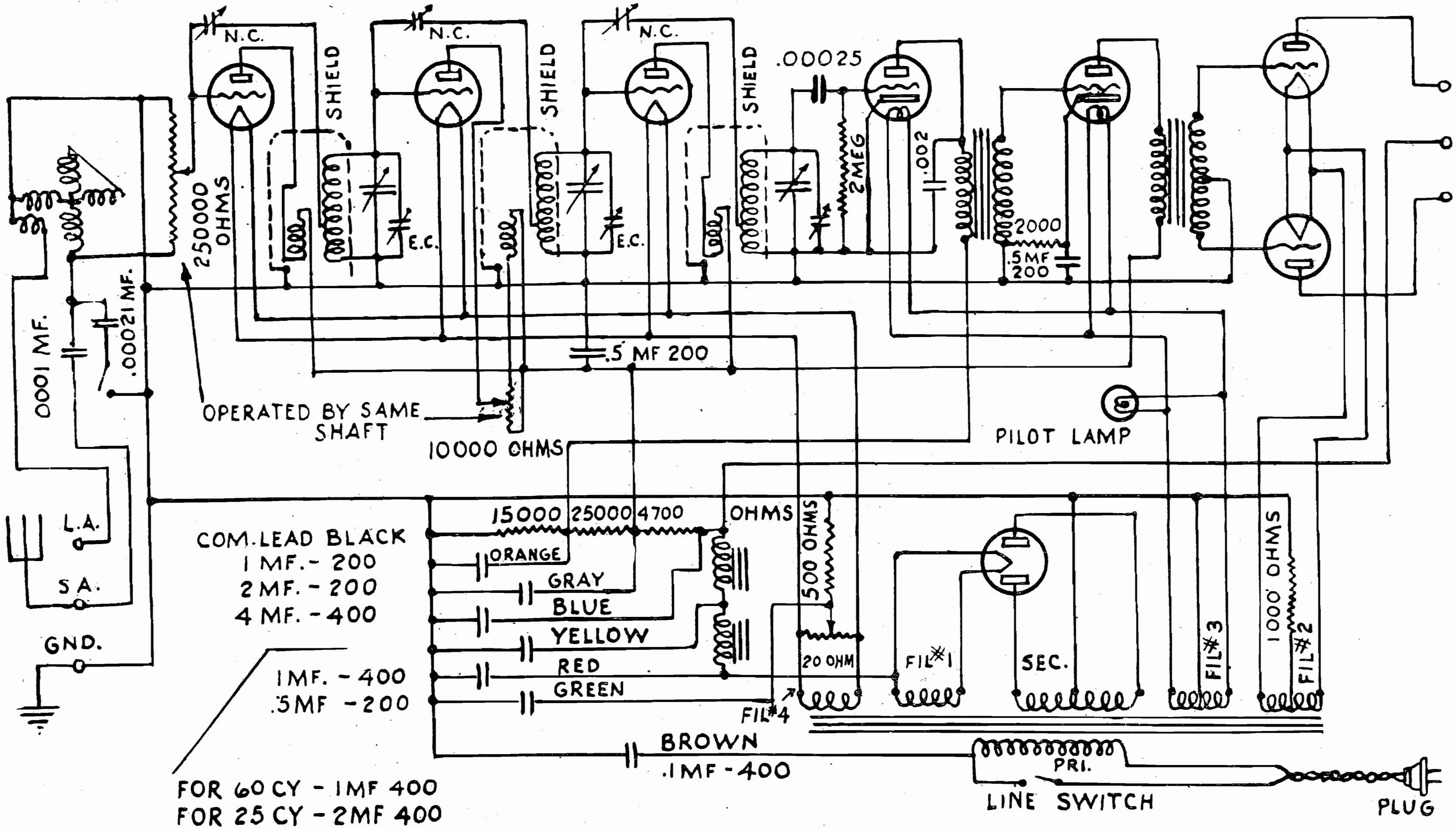




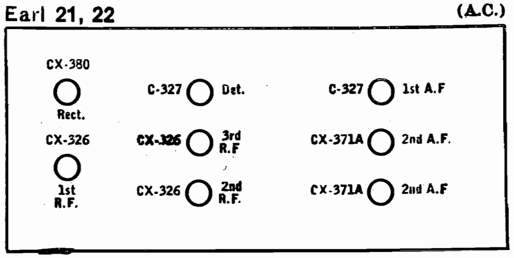
Model 121

MODEL 21, 22 AC
Schematic

EARL RADIO CORP.



Earl 21, 22 (A.C.)



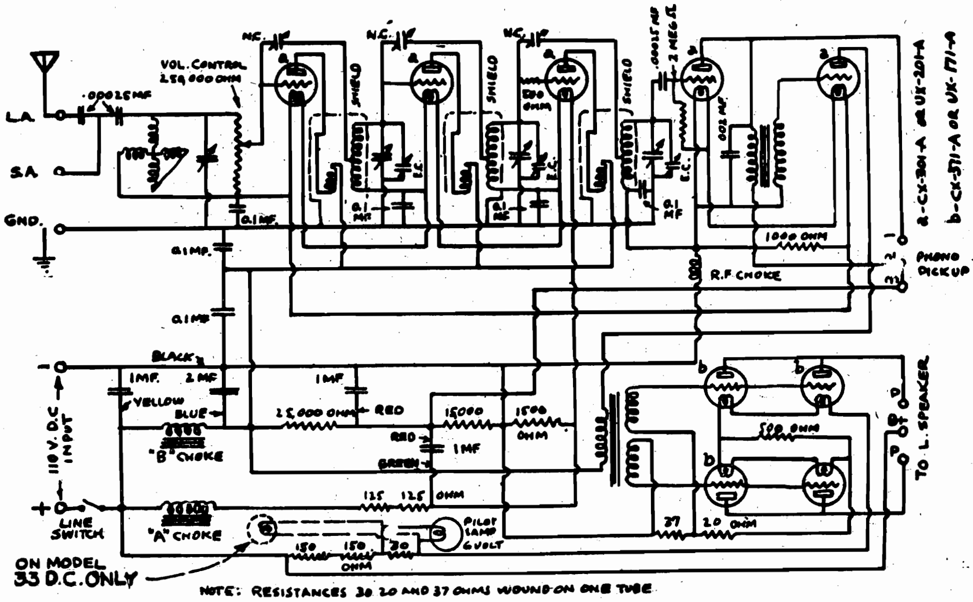
FRESHMAN—Earl—Model 21-22
Line Voltage 116—Volume Control Position On

Tube No. in Order (1)	Type of Tube (2)	Position of Tube 1st RF Det Etc (3)	Tube Out: A Volts (4)	Tube Out: B Volts (5)	Tube in Tester: A Volts (6)	Tube in Tester: B Volts (7)	Tube in Tester: C Volts (Control Grid) (8)	Cathode-Heater Volts (9)	Normal Plate M.A (10)	Plate M.A Grid Test (11)	Plate Change M.A (12)	Screen Grid Volts (13)
1	226	1st RF	1.5	80	1.47	76	5	-	2.3	4.6	2.3	
2	226	2nd RF	1.5	80	1.47	76	5	-	2.3	4.6	2.3	
3	226	3rd RF	1.5	80	1.47	76	5	-	2.3	5.1	2.3	
4	227	Det.	2.15	32	1.9	20	-	-	1.0	1.0	0	
5	227	1st A	2.15	92	1.90	72	4.5	5	2.5	5.0	2.5	
6	171A	2nd A	5.0	135	4.85	125	29	-	13.0	3.5	22.0	
7	171A	2nd A	5.0	135	4.85	125	29	-	13	35	22	
8	280	Rect.	5.6	-	5.4	-	-	-	40			
9												
10												

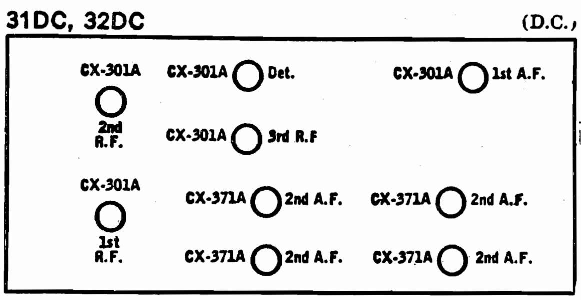
Readings Plug in Socket of Set

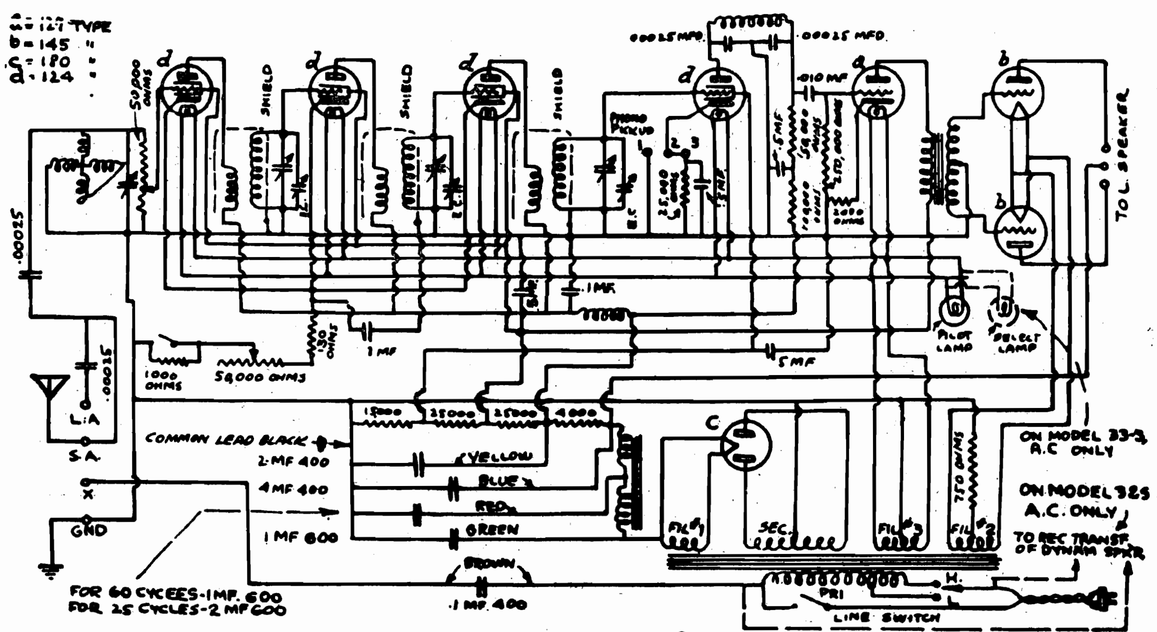
MODEL 24 DC
MODEL 31 DC, 32 DC
MODEL 33-S AC
Schematic

EARL RADIO CORP.



Model 24 DC, 31 DC, 32 DC

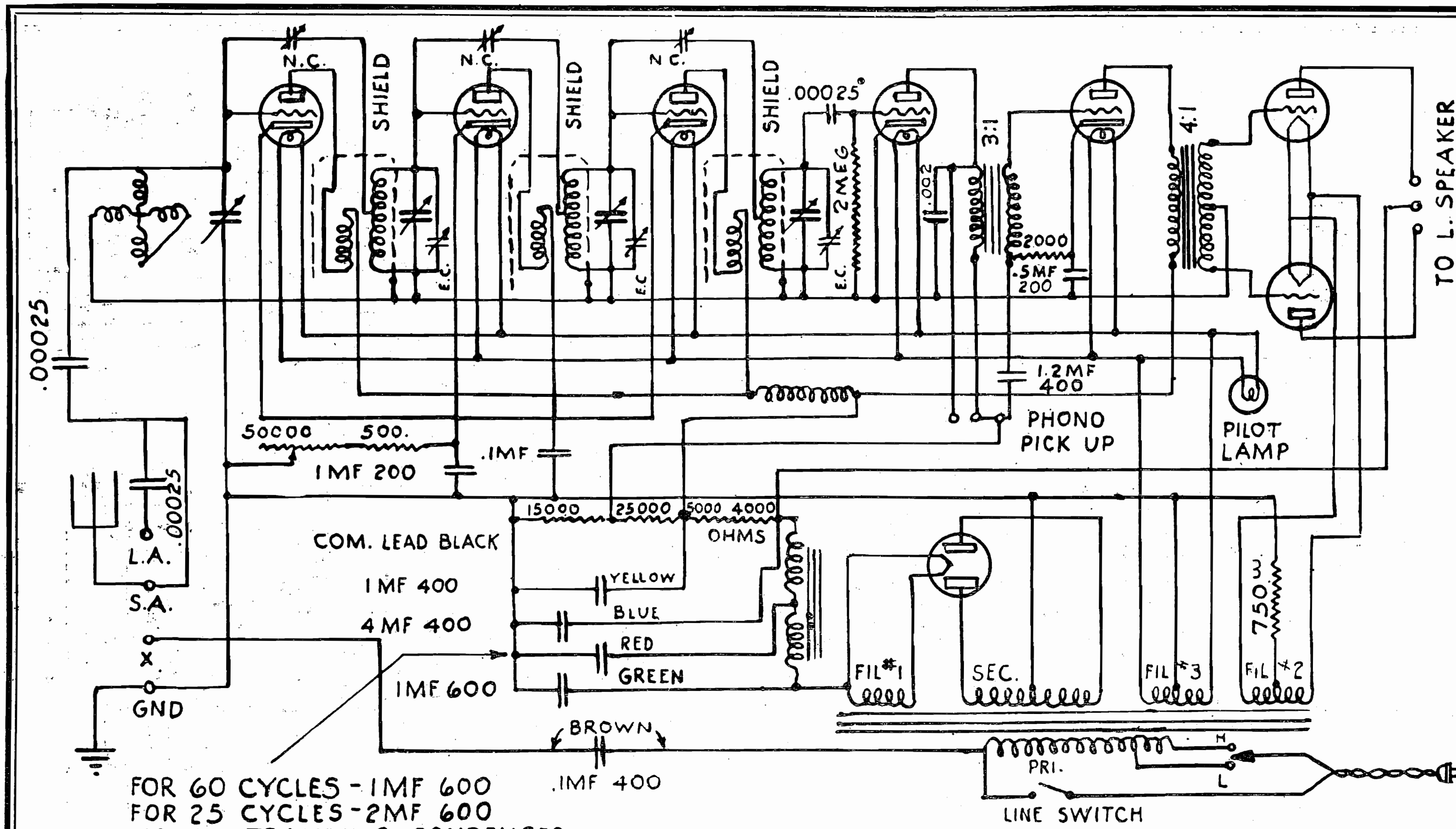




Model 33-S AC

MODEL 31, 32 AC
Schematic

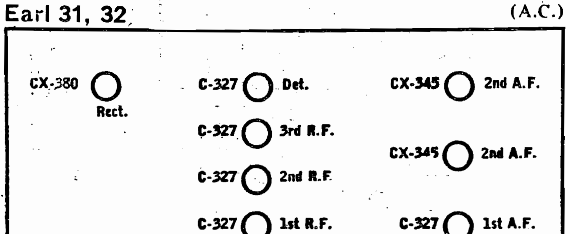
EARL RADIO CORP.



FOR 60 CYCLES - IMF 600
FOR 25 CYCLES - 2MF 600
NC - NEUTRALIZING CONDENSER
EC - EQUALIZING CONDENSER

EARL MODELS 31 and 32

Earl 31, 32 (A.C.)

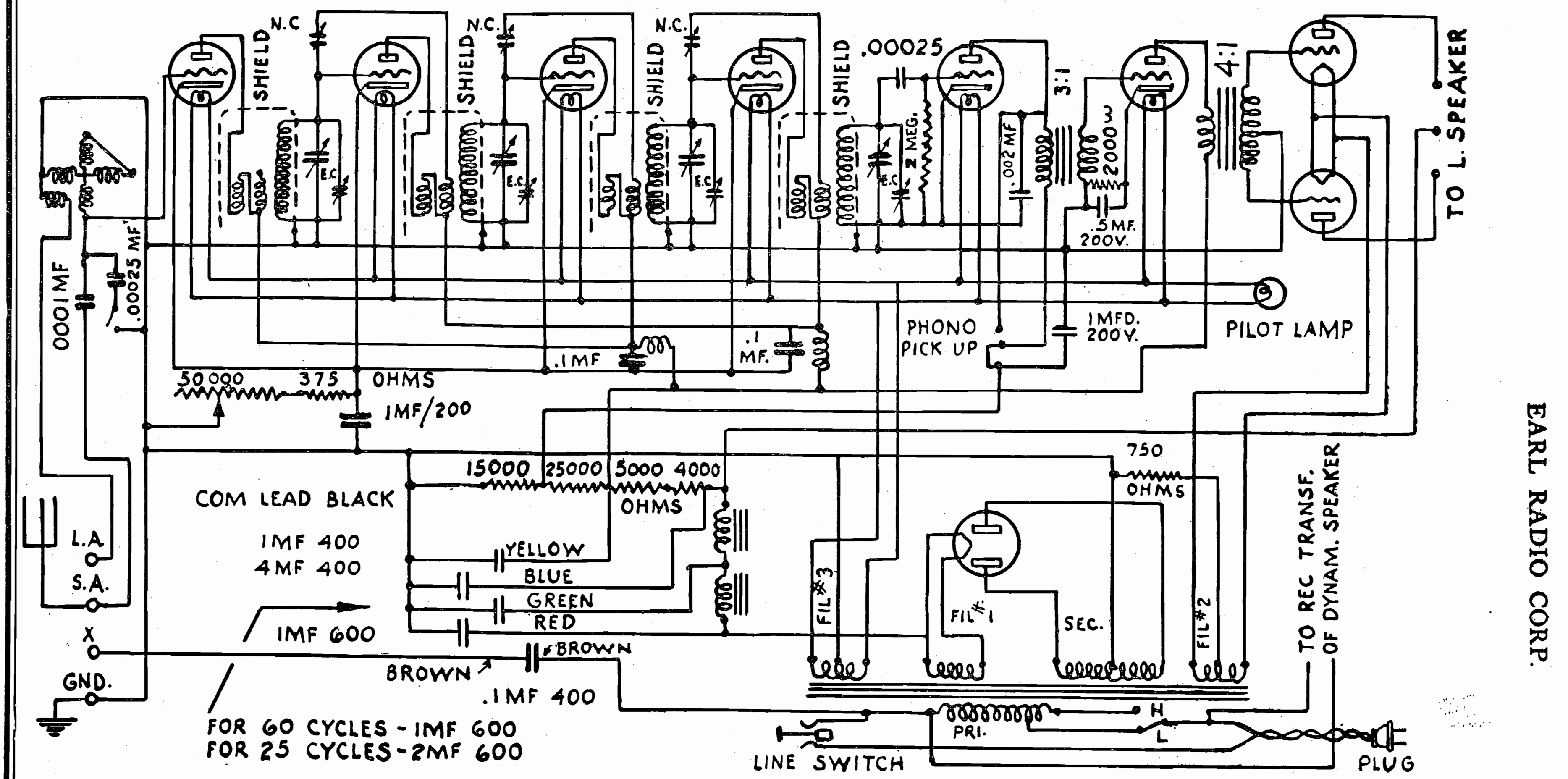


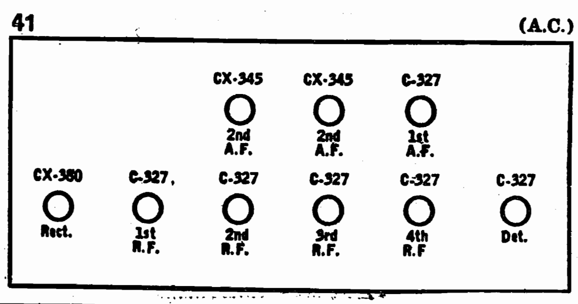
FRESHMAN—Earl—Model 31-32
Line Voltage 116—Set on High Volt Tap—Volume Control Position On

Tube No in Order ①	Type of Tube ②	Position of Tube 1st R.F. Det. Etc ③	Readings, Plug in Socket of Set — Tube Out: A Volts ④	Tube Out: B Volts ⑤	Tube in Tester: A Volts ⑥	Tube in Tester: B Volts ⑦	C Volts (Control Grid) ⑧	Cathode-Heater Volts ⑨	Normal Plate M.A ⑩	Plate M.A Grid Test ⑪	Plate Change M.A ⑫
1	227	1st RF	2.18	92	2.07	86	5	5	3.5	8.1	4.6
2	227	2nd RF	2.18	92	2.05	86	5	5	3.5	8.1	4.6
3	227	3rd RF	2.18	92	2.04	86	5	5	3.5	8.1	4.6
4	227	Det.	2.16	35	2.05	21	0.5	-	0.9	0.9	0
5	227	1st A	2.22	100	2.05	81	5	5	2.8	5.6	2.8
6	245	2nd A	2.45	220	2.33	195	37	-	23	62	4
7	245	2nd A	2.45	220	2.33	195	37	-	23	62	4
8	280	Rect.	5.4	-	4.85	-	-	-	60		

EARL RADIO CORP.

MODEL 41, 42 AC
Schematic



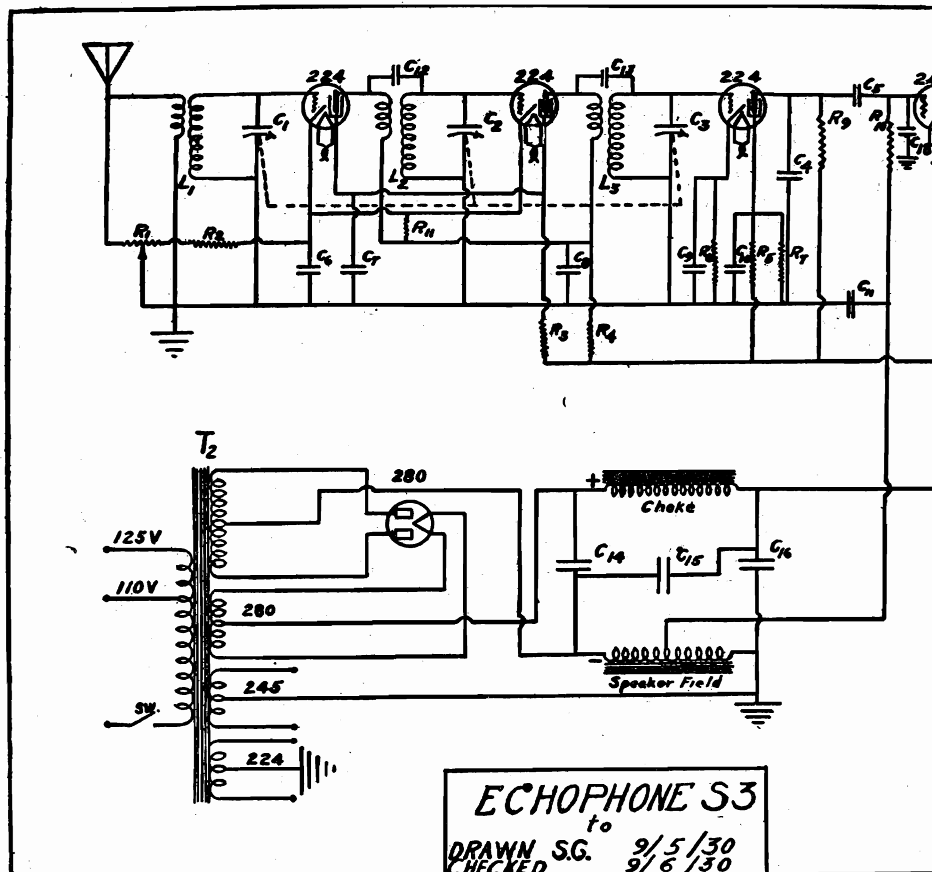


FRESHMAN—Earl—Model 41
Line Voltage 116—Set on High Volt Tap—Volume Control Position On

Tube No in Order (1)	Type of Tube (2)	Position of Tube 1st R F Det Etc (3)	Readings Plug in Socket of Set — Tube Out: A Volts (4)	Tube Out: B Volts (5)	Tube in Tester: A Volts (6)	B Volts (7)	C Volts Control Grid (8)	Cathode-Heater Volts (9)	Normal Plate M A (10)	Plate M A Grid Test (11)	Plate Change M A (12)	Screen Grid Volts (13)
1	227	1st RF	2.40	75	2.25	72	4	5	2.8	5.8	2.7	
2	227	2nd RF	2.40	75	2.25	72	4	5	2.8	5.5	2.7	
3	227	3rd RF	2.40	75	2.27	72	4	5	2.8	5.5	2.7	
4	227	4th RF	2.40	75	2.25	72	4	5	2.8	5.5	2.7	
5	227	Det.	2.40	26	2.25	15	1.5	0	1.0	1.0	0	
6	227	1st A	2.46	82	2.32	67	4	5	2.4	4.8	2.4	
7	245	2nd A	2.57	208	2.37	183	35	-	22	50	4	
8	245	2nd A	2.57	208	2.37	183	35	-	22	50	4	
9	280	Rect.	5.5	-	4.8	-	-	-	65	-	-	
10												

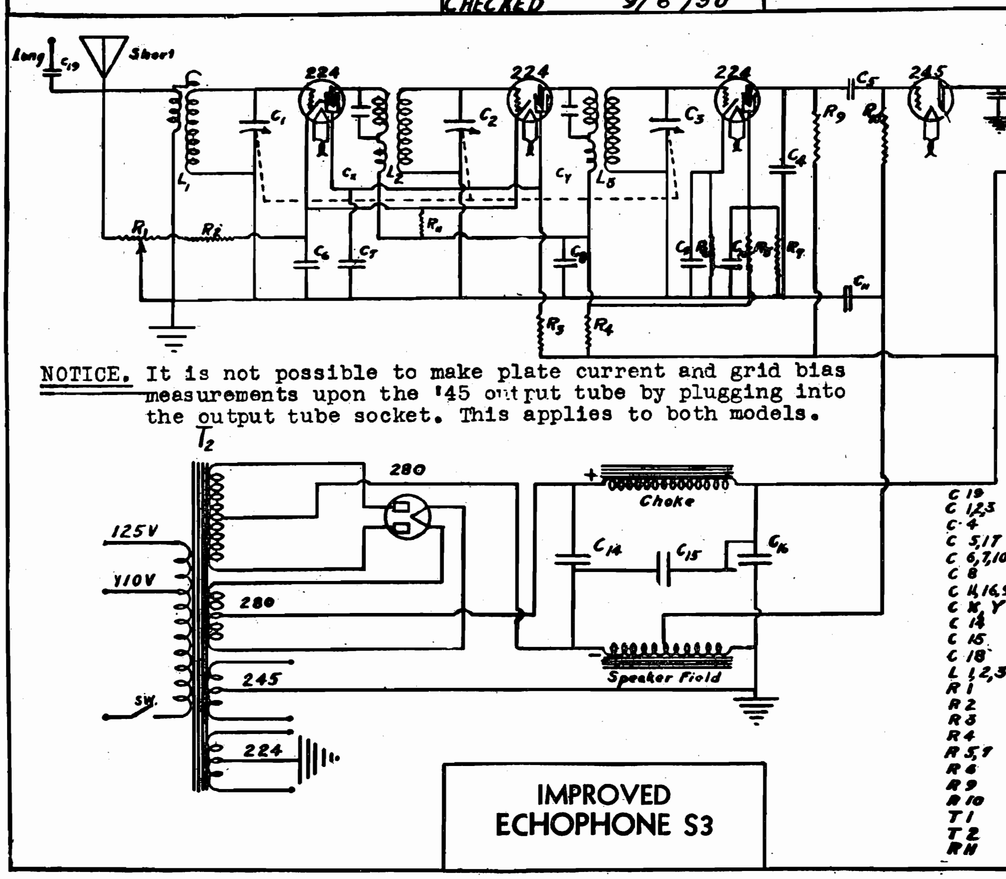
ECHOPHONE RADIO MFG. CO.

MODEL S-3
MODEL S-3 (Rev.)
Schematic



C 1,2,3	.00035 MFD.
C 4	.00025 MFD.
C 5	.02 MFD.
C 6,7,9,10	.1 MFD.
C 8	1. MFD.
C 11,16	.5 MFD.
C 12,13	11. M.MFD.
C 14	1. MFD.
C 15	2. MFD.
C 18	.00025 MFD.
L 1,2,3	R.F. TRANS.
R 1	2000 OHM
R 2	300 OHM
R 3	250000 OHM
R 4	15000 OHM
R 5,7	1. Meg ohm
R 6	100000 OHM
R 9	500000 OHM
R 10	2 MEGOHM
T 1	OUTPUT TRANS.
T 2	POWER TRANS.
R 11	50000 OHM

ECHOPHONE S3
to
DRAWN S.G. 9/5/30
CHECKED 9/6/30



NOTICE. It is not possible to make plate current and grid bias measurements upon the '45 output tube by plugging into the output tube socket. This applies to both models.

COIL DATA ETC.
ANTENNA
PRIMARY SECONDARY
250 TURNS 120 TURNS
NO.36 WIRE NO.29 WIRE
ONE-TURN DEAD END
R.F. COILS
40 TURNS OF CLOSE-COUPLED PRIMARY
500 TURN BOBBIN
SHUNTED WITH C_X & C_Y
50 MMFD. CONDENSER
SECONDARY 126 TURNS

C 19	.0001 MFD.
C 1,2,3	.00035 MFD.
C 4	70. M.MFD.
C 5,17	.02 MFD.
C 6,7,10	.1 MFD.
C 8	1. MFD.
C 11,16,9	.5 MFD.
C X, Y	50 M.MFD.
C 14	1. MFD.
C 15	2. MFD.
C 18	.00025 MFD.
L 1,2,3	R.F. TRANS'MRS.
R 1	2000 OHM.
R 2	300 OHM.
R 3	250000 OHM.
R 4	20000 OHM.
R 5,7	1. MEGOHM.
R 6	50000 OHM.
R 9	500000 OHM.
R 10	2 Megohm.
T 1	OUTPUT TRANS.
T 2	POWER TRANS.
R 11	50000 OHM.

IMPROVED
ECHOPHONE S3

MODEL S-3
Voltage
Notes

ECHOPHONE RADIO MFG. CO.

Model S-3

1. **Plate of 245 Tube**
   #5 to ground
   Normal .... 250 volts
   Low .... 235 volts
   High .... 275 volts

2. **R. F. Plate**
   #25 to ground
   Normal .... 140 volts
   Low .... 120 volts
   High .... 160 volts

3. **R. F. Screen**
   #14 to ground
   Normal .... 60 volts
   Low .... 50 volts
   High .... 75 volts

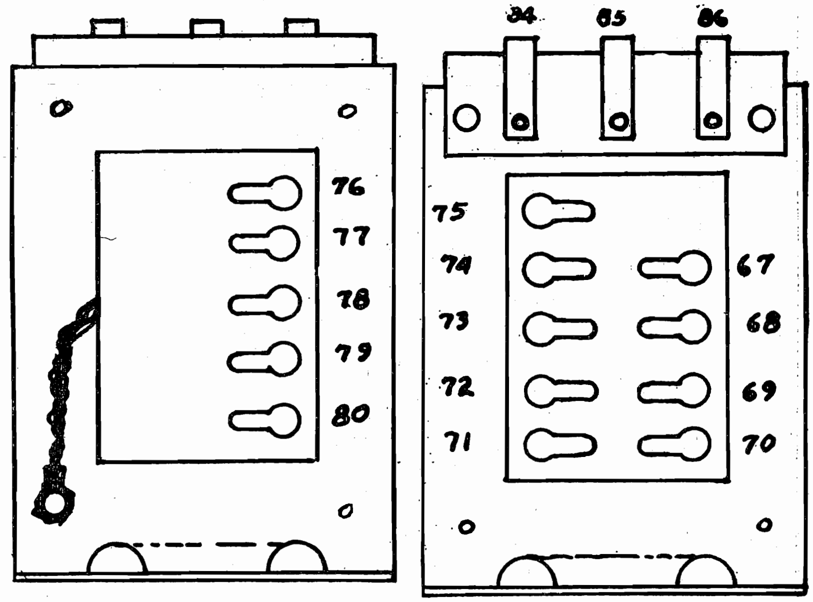
4. **Detector Plate**
   #13 to ground
   Normal .... 80 volts
   Low .... 70 volts
   High .... 90 volts

5. **Detector Screen**
   #9 to ground
   Normal .... 25 volts
   Low .... 20 volts
   High .... 30 volts

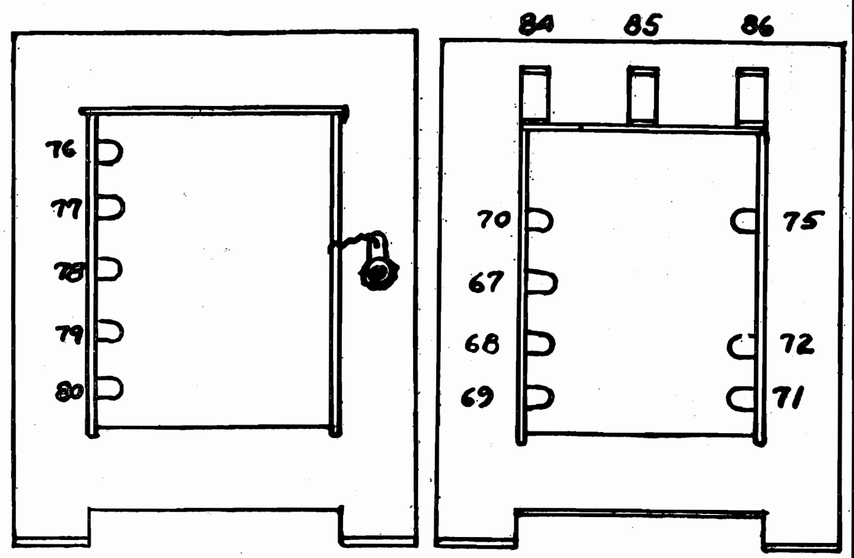
6. **Detector Cathode**
   #10 to ground
   .... 5 to 10 volts

7. **R. F. Cathode**
   #15 to ground
   .... 1.5 to 2.5 volts

8. **245 Bias**
   #48 to ground
   Normal .... 50 volts
   Low .... 40 volts
   High .... 55 volts



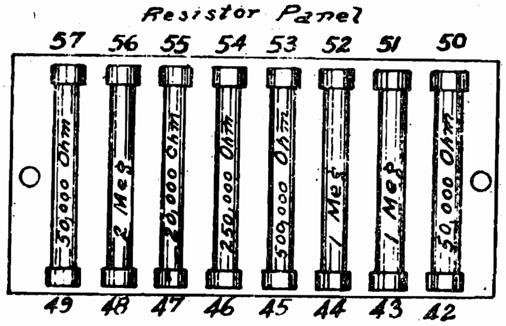
TYPE HA



TYPE JE

Drawing showing corresponding terminal positions on two types of power transformers used on S-3.

Resistor Panel



Power Transformer

75-73 Pri. winding 74 low voltage tap.

72-71 Fil. winding 280 tube 70 center tap.

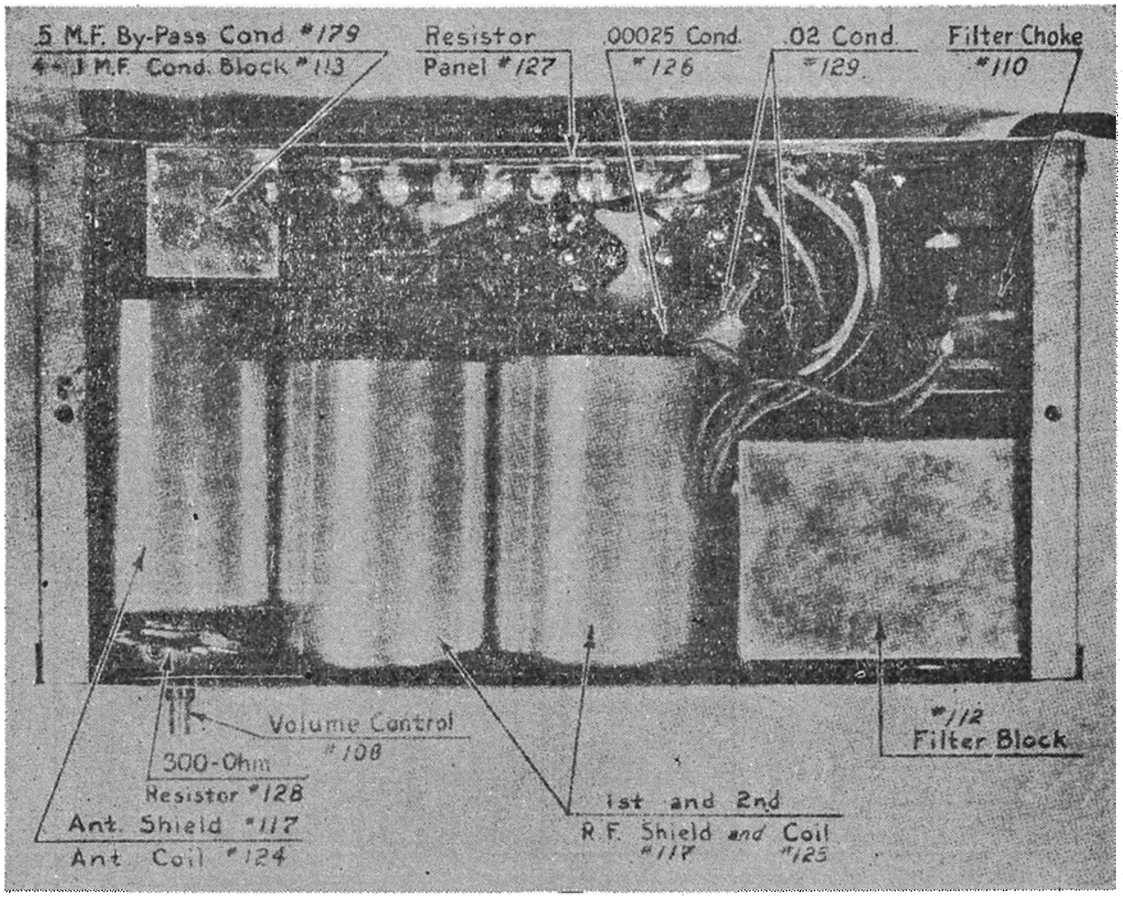
69-67 High voltage Sec. 68 center tap.

76-80 Fil. winding for 224 tubes.

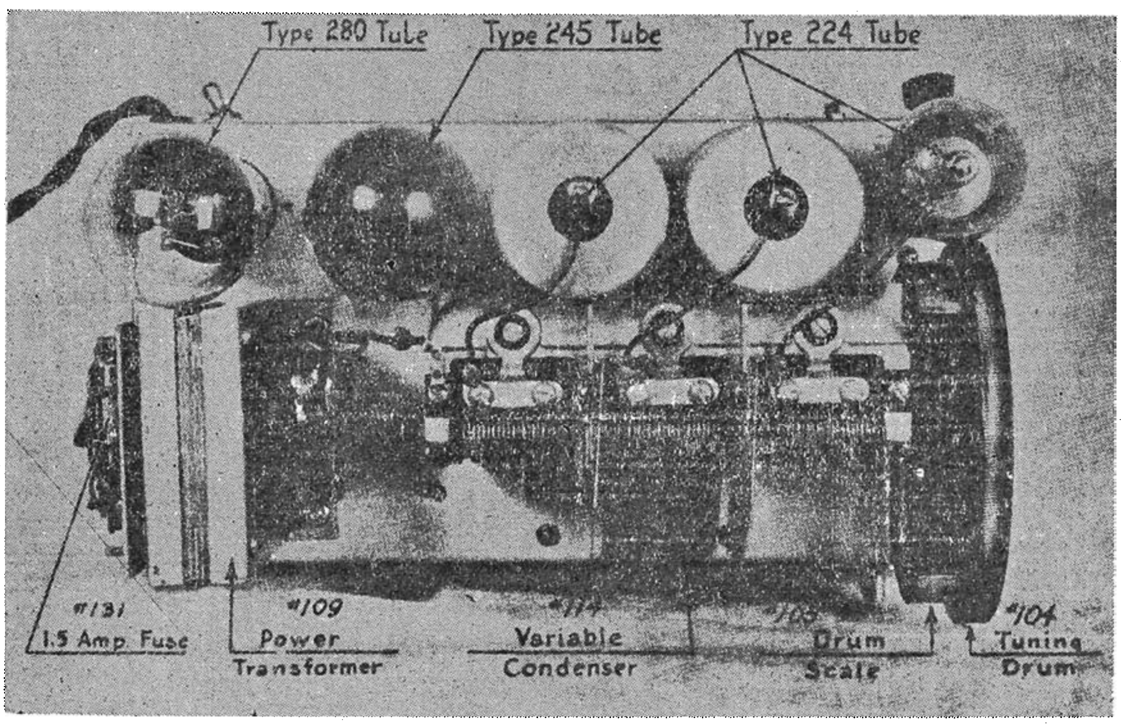
77-79 Fil. winding for 245 tube 78 center tap.

MODEL S-3
Chassis

ECHOPHONE RADIO MFG. CO.



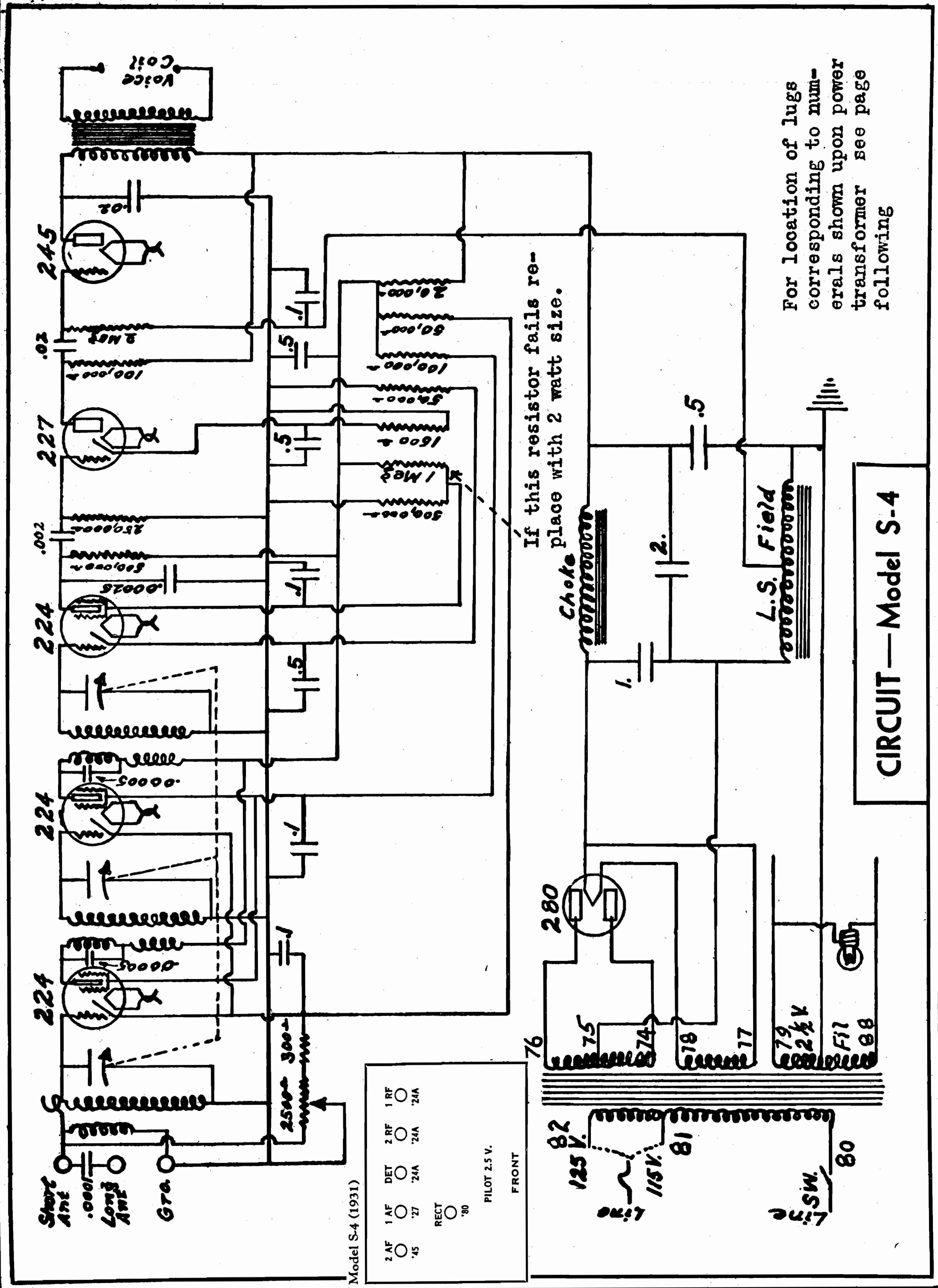
ECHOPHONE — Model S-3



ECHOPHONE — Model S-3

MODEL S-4
Schematic

ECHOPHONE RADIO MFG. CO.

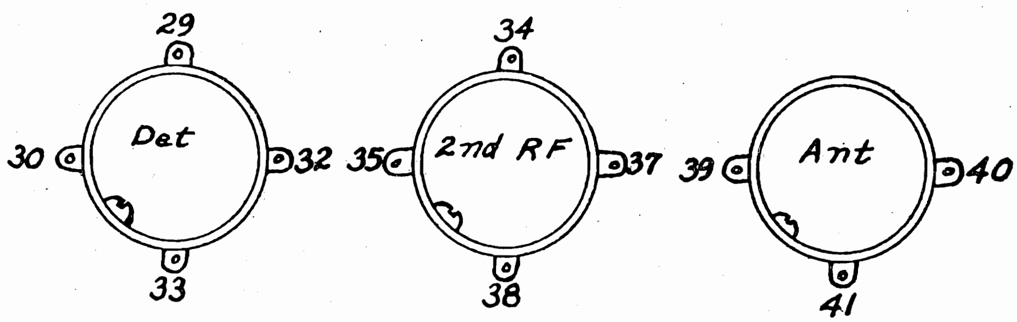


ECHOPHONE RADIO MFG. CO.

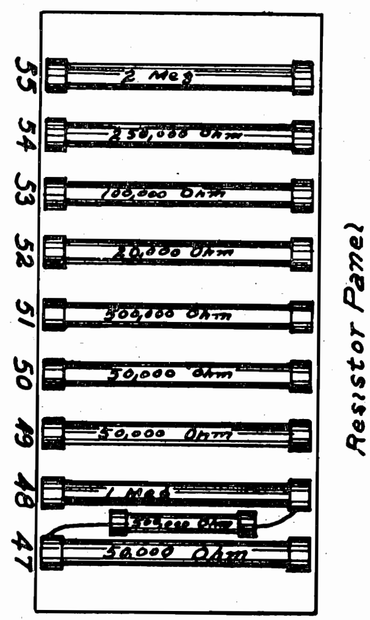
MODEL S-4
Voltage
Data

The Antenna coil has a bobbin primary and also a single close-coupled incomplete turn around grid end of secondary coil. The R. F. coils have a bobbin primary and also a close-coupled primary. A .00005 condenser is connected across the bobbin primary.

In some of the later S-4 models bank-wound "Litz" wire coils are used. These R. F. coils have a small honey-comb primary coil mounted in the ground end of the secondary coil and a capacitor across the plate and grid terminals of the coil. The "Litz" antenna coil has a tight-coupled primary wound over the ground end of the secondary coil.



Continuity Chart For
Litz Wire Bank Wound Coils
Echophone
Model — S4



1. Plate of 245 Tube.

#5 to ground

Normal—225 volts
Low— 200 volts
High— 250 volts

2. R. F. Plate.

#25 to ground

Normal—110 volts
Low— 100 volts
High— 120 volts

3. R. F. Screen.

#14 to ground

Normal—50 volts
Low— 40 volts
High— 60 volts

4. Detector Plate.

#13 to ground

Normal—30 volts
Low— 25 volts
High— 50 volts

5. Detector Screen.

#9 to ground

Normal—20 volts
Low— 15 volts
High— 30 volts

6. Detector Cathode

#10 to ground

3 to 6 volts

7. R. F. Cathode.

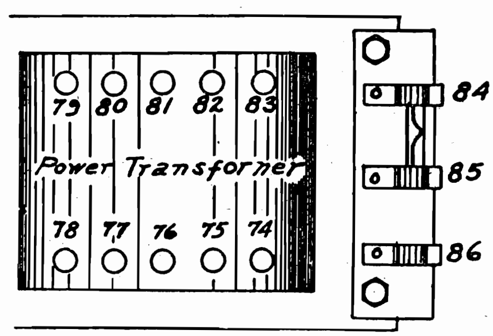
#15 to ground

1.5 to 2.5 volts

8. 245 Bias.

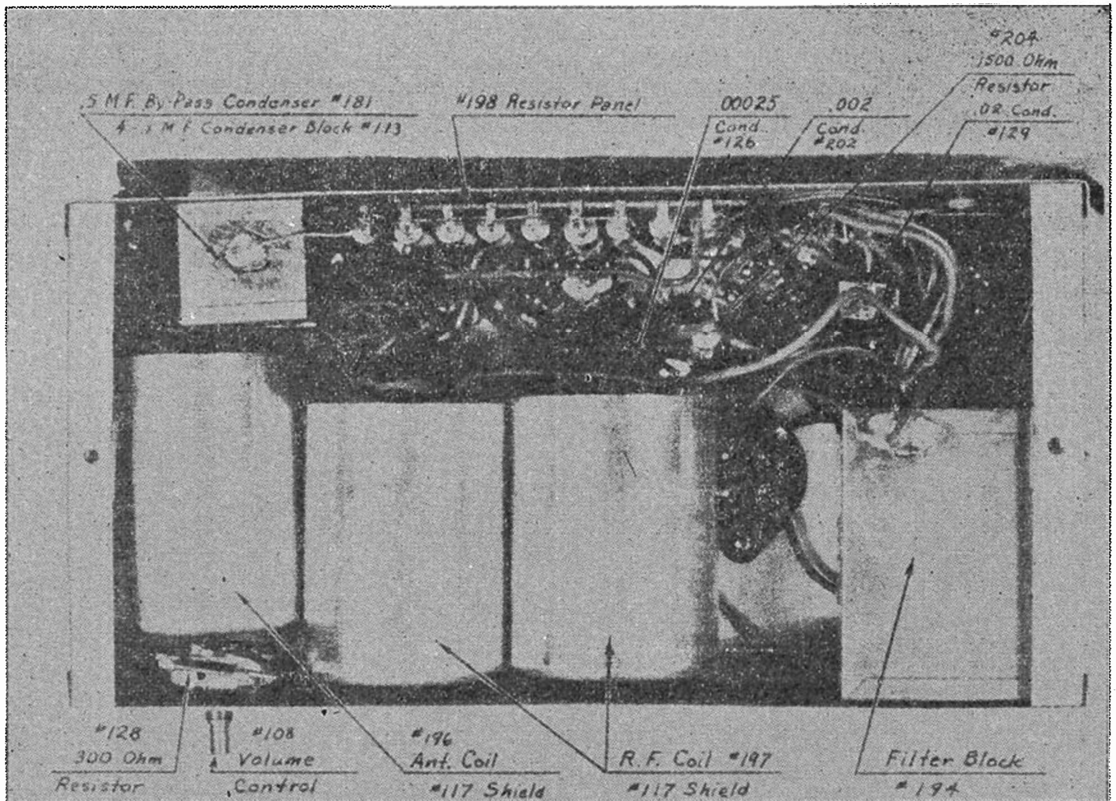
#48 to ground

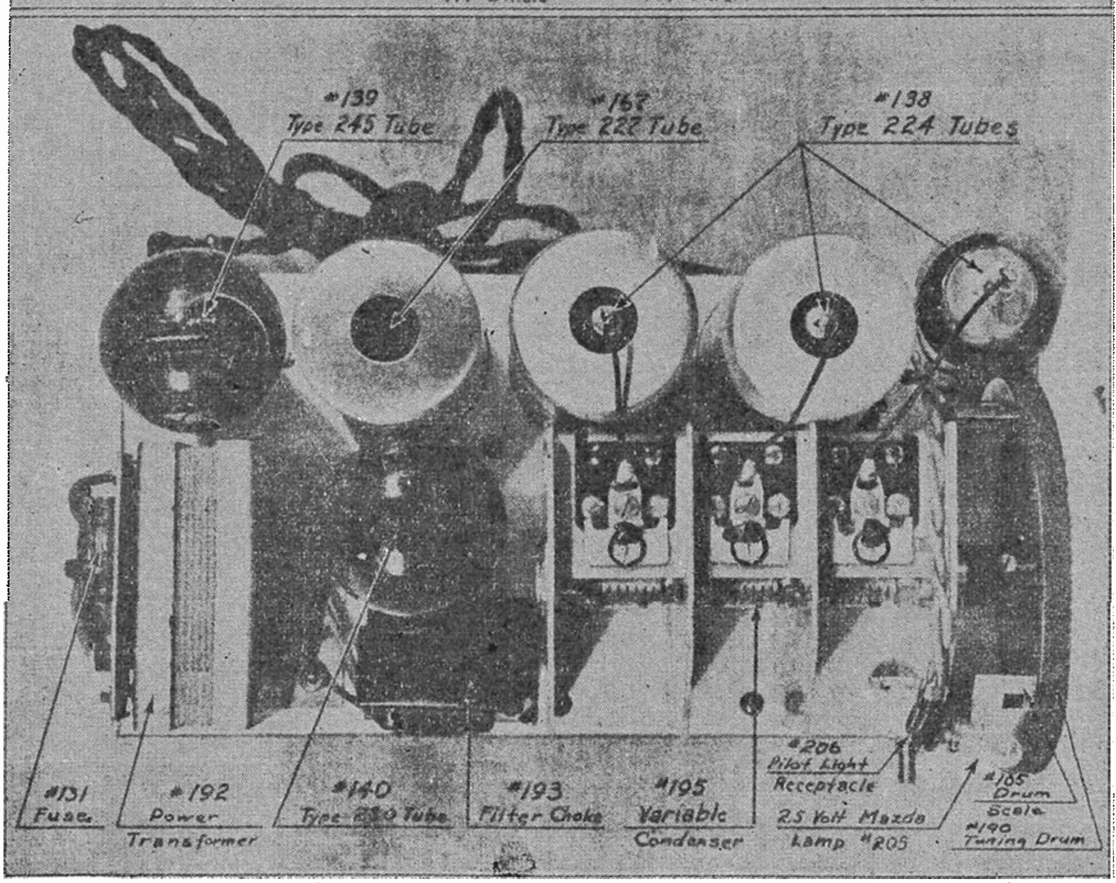
Normal—50 volts
Low— 40 volts
High— 55 volts



MODEL S-4
Chassis

ECHOPHONE RADIO MFG. CO.





ECHOPHONE Model S-4

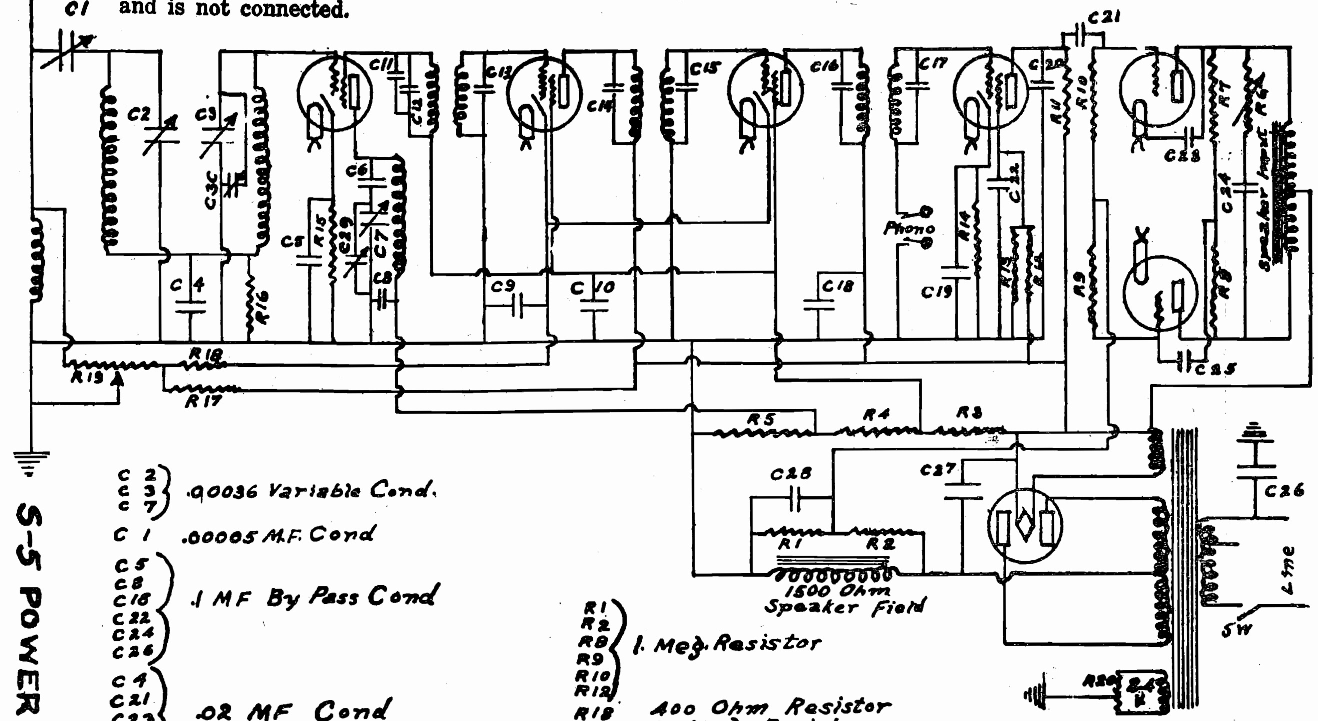
MODEL S-5
(Dynatron)
Schematic

ECHOPHONE RADIO MFG. CO.

On all sets having serial numbers above 100050, two wires are brought through the chassis pan from the primary lugs on the transformer.

One of these (for 115-130 volts) is connected to one of the service cord wires and the other is taped up and is not connected.

To change set for 100 to 115 volts, disconnect the service cord from transformer lead and connect to taped lead from transformer. Be sure to retape end of transformer lead which is not used.



C 2, C 3, C 7 — .00036 Variable Cond.
C 1 — .00005 M.F. Cond
C 5, C 8, C 16, C 22, C 24, C 26 — .1 MF By Pass Cond
C 4, C 21, C 23, C 25, C 28 — .02 MF Cond
C 6, C 11 — .001 MF Cond
C 20 — 00025 MF Cond
C 9, C 18, C 19 — .5 MF By Pass Cond
C 27 — 8 MF Filter Cond.

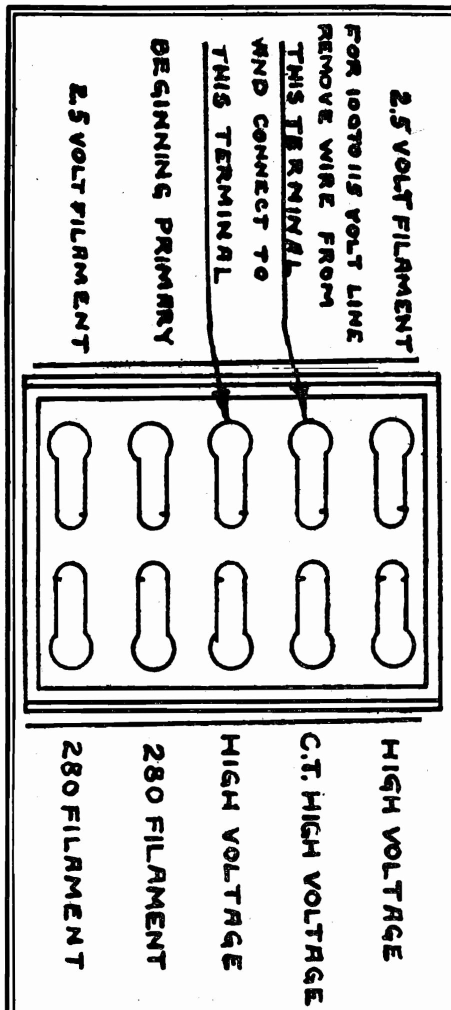
R1, R2, R8, R9, R10, R12 — 1. Meg. Resistor
R 18 — 400 Ohm Resistor
R 17 — .5 Meg. Resistor
R 19 — 15000 Ohm Potentiometer
R 20 — 20 Ohm Center tapped Resistor
R 11, R 13 — .5 Meg. Resistors
R 7 — 2.5 Meg Resistor
R 6 — 15000 Ohm Variable Resistor
R 3 — 20000 Ohm Resistor
R 4 — 20000 Ohm Resistor
R 5 — 10000 Ohm Resistor
R 14 — 50000 Ohm Resistor
R 15 — 1500 Ohm Res
R 16 — 1000 Ohm Resistor

PEAK FREQUENCY
175 KC

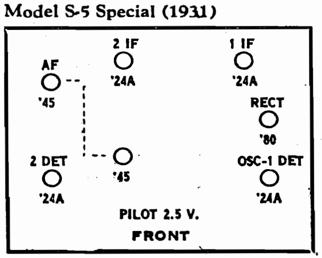
ECHOPHONE SUPERHETERODYNE S-5—CIRCUIT DIAGRAM

With DYNATRON Oscillator

S-5 POWER TRANSFORMER

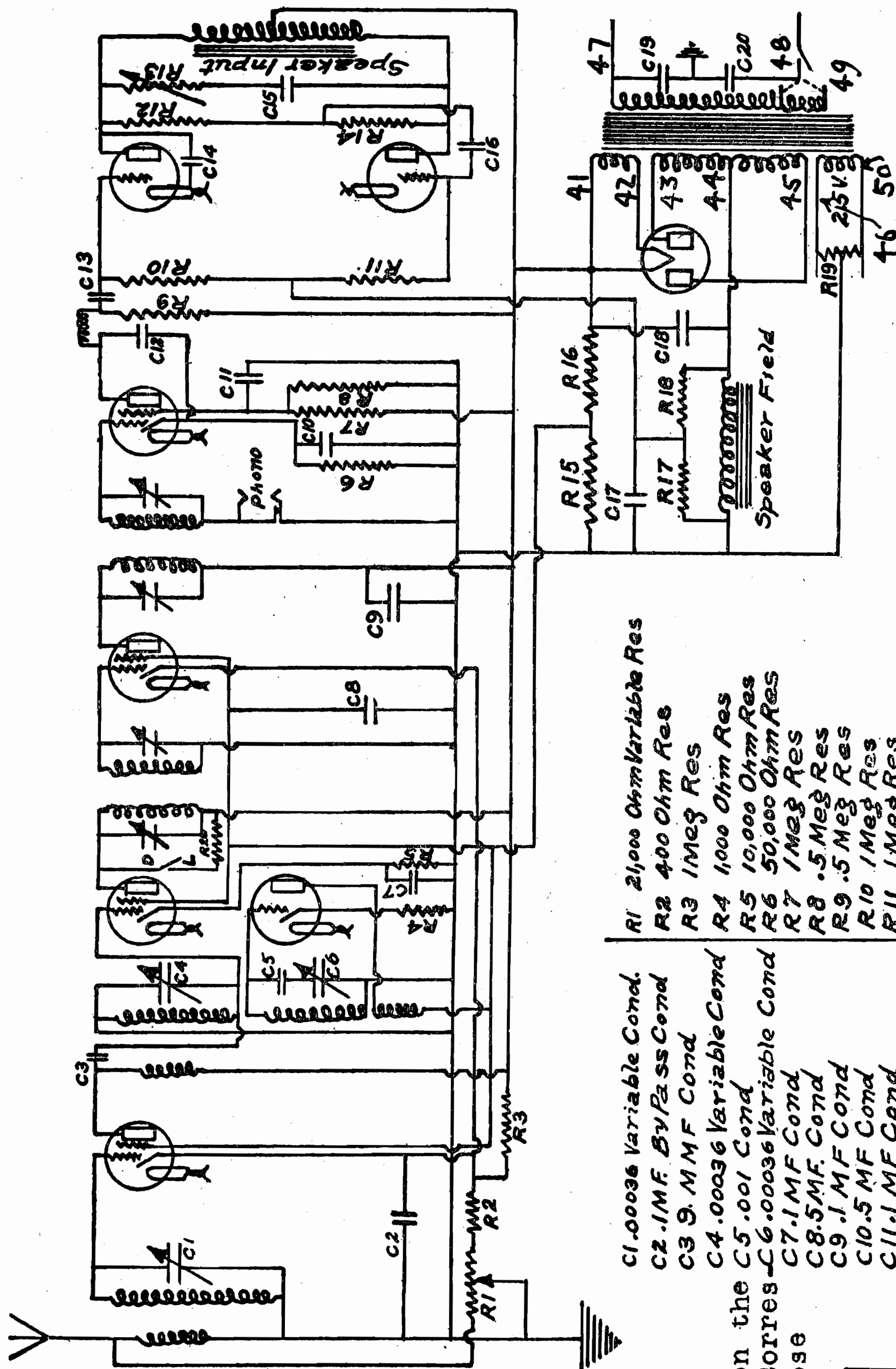


Model S-5 Special (1931)



MODEL S-5 (Rev.)
Schematic

ECHOPHONE RADIO MFG. CO.



Echophone Superheterodyne

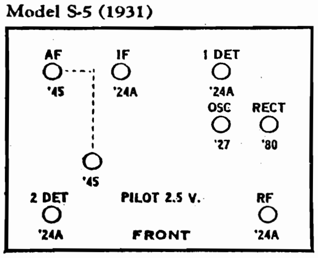
Model S-5

CIRCUIT DIAGRAM

- C1 .00036 Variable Cond.
- C2 .1 MF. By Pass Cond
- C3 9. MMF Cond
- C4 .00036 Variable Cond
- C5 .001 Cond
- C6 .00036 Variable Cond
- C7 .1 MF Cond
- C8 .5 MF. Cond
- C9 .1 MF Cond
- C10 .5 MF Cond
- C11 .1 MF Cond
- C12 .00025 Cond
- C13 .02 MF Cond
- C14 .02 MF Cond
- C15 .1 MF Cond
- C16 .02 MF Cond
- C17 .02 MF Cond
- C18 8. MF Cond
- C19 .05 MF Cond
- C20 .05 MF Cond

- R1 21,000 Ohm Variable Res
- R2 400 Ohm Res
- R3 1 Meg Res
- R4 1,000 Ohm Res
- R5 10,000 Ohm Res
- R6 50,000 Ohm Res
- R7 1 Meg Res
- R8 .5 Meg Res
- R9 .5 Meg Res
- R10 1 Meg Res
- R11 1 Meg Res
- R12 .25 Meg Res
- R13 15,000 Ohm Variable Res
- R14 1 Meg Res
- R15 50,000 Ohm Res
- R16 20,000 Ohm Res
- R17 1 Meg Res
- R18 1 Meg Res
- R19 20 Ohm Center Tapped Res
- R20 5,000 Ohm Res.

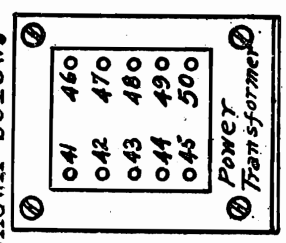
Model S-5 (1931)



PEAK
FREQUENCY

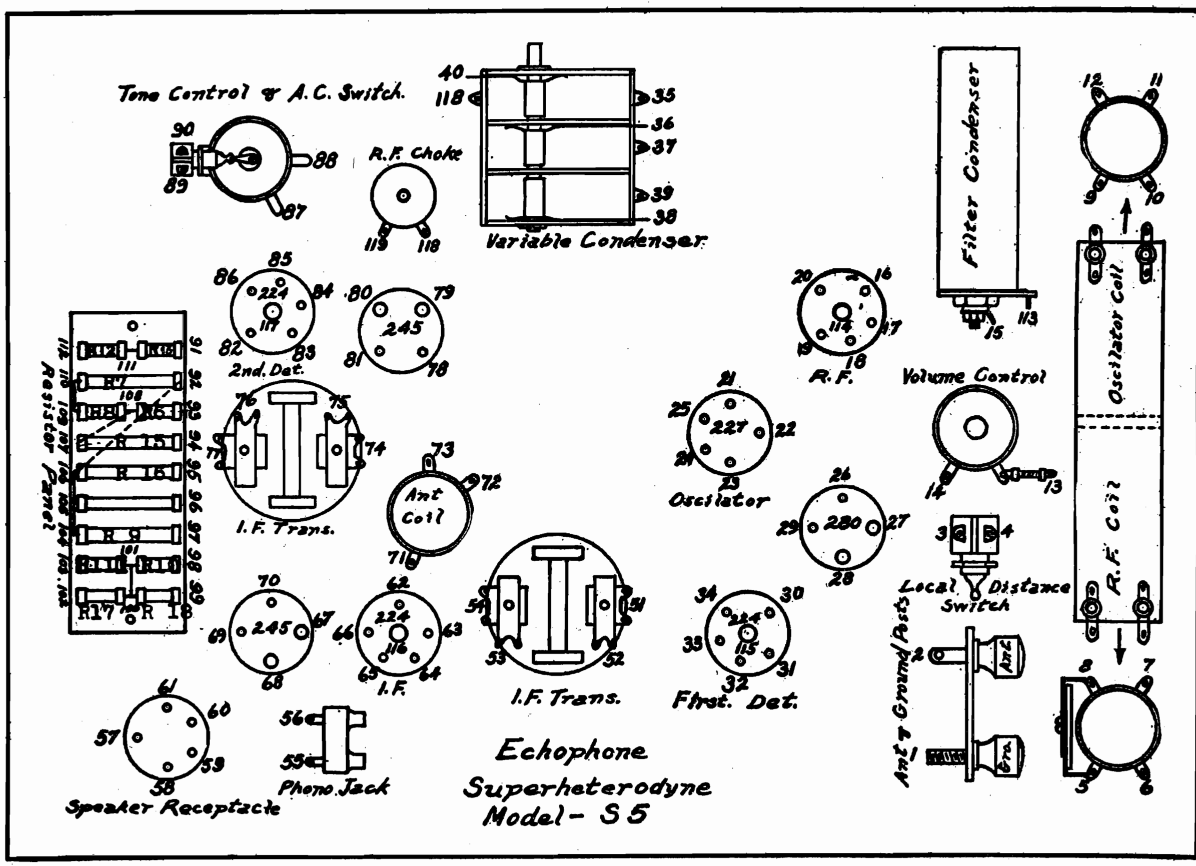
175 KC

The numbers on the Pwr. Trans. correspond with those shown below.



ECHOPHONE RADIO MFG. CO.

MODEL S-5
Voltage
Data



Model S-5

VOLTAGE TESTS

Voltages given are tested on 250-volt scale of 1000 ohms, per volt meter.

All voltage tests were made with volume control on full and tone control in off position, no signal in receiver, line voltage 115 volts with A. C. line connected to terminals 47-49 on power transformer.

Speaker must be connected to receiver.

R. F. Plate
#19 to ground
Low .... 210 volts
Normal .... 220 volts
High .... 230 volts

R. F. Screen
#20 to ground
Low .... 75 volts
Normal .... 80 volts
High .... 90 volts

R. F. Cathode
#16 to ground .... 1.5 to 3 volts

Oscillator Plate
#21 to ground
Low .... 75 volts
Normal .... 80 volts
High .... 90 volts

Oscillator Cathode
#23 to ground .... 4 to 6 volts

I. F. Plate
#66 to ground
Low .... 210 volts
Normal .... 220 volts
High .... 230 volts

I. F. Screen
#62 to ground
Low .... 75 volts
Normal .... 80 volts
High .... 90 volts

I. F. Cathode
#63 to ground .... 1.5 to 3 volts

First Detector Plate
#84 to ground
Low .... 210 volts
Normal .... 220 volts
High .... 230 volts

First Detector Screen
#80 to ground
Low .... 75 volts
Normal .... 80 volts
High .... 90 volts

First Detector Cathode
#31 to ground .... 5 to 7 volts

Second Detector Plate
#83 to ground .... 60 to 80 volts

Second Detector Screen
#82 to ground
Low .... 25 volts
Normal .... 30 volts
High .... 35 volts

Second Detector Cathode
#86 to ground .... 5 to 7 volts

245 Plates
#61-58 to ground
Low .... 210 volts
Normal .... 220 volts
High .... 230 volts

245 Bias
#101 to ground .... Neg. 20 to 40 volts

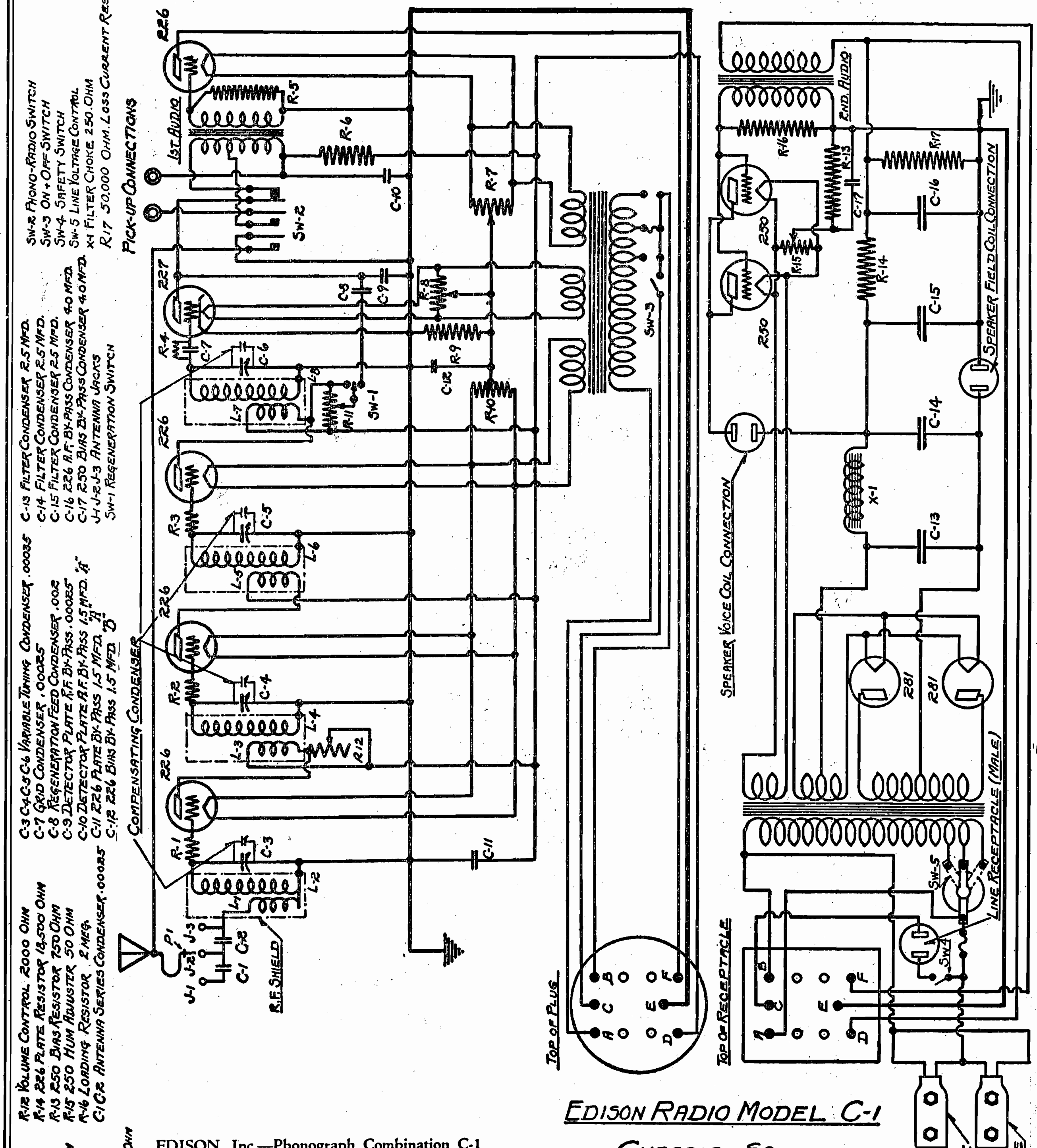
Speaker Field Voltage Drop
#60-59
Low .... 90 volts
Normal .... 100 volts
High .... 110 volts

280 Filament
#27-28 .... 4.5 to 5.2 volts

Filaments for All 2.5 Volt Tubes
#67-68 .... 2.2 to 2.5 volts

THOMAS A. EDISON, INC.

MODEL C-1
CHASSIS SC
Schematic



EDISON RADIO MODEL C-1

CHASSIS SC.

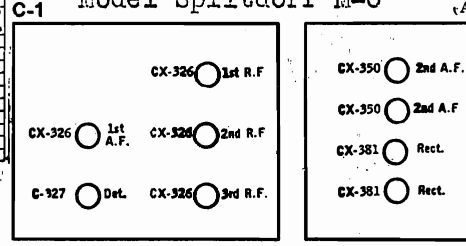
Also

Model Splitdorf M-6

EDISON, Inc.—Phonograph Combination C-1
Line Voltage 102—Set on 102.5 Volt Tap
Volume Control Position Max

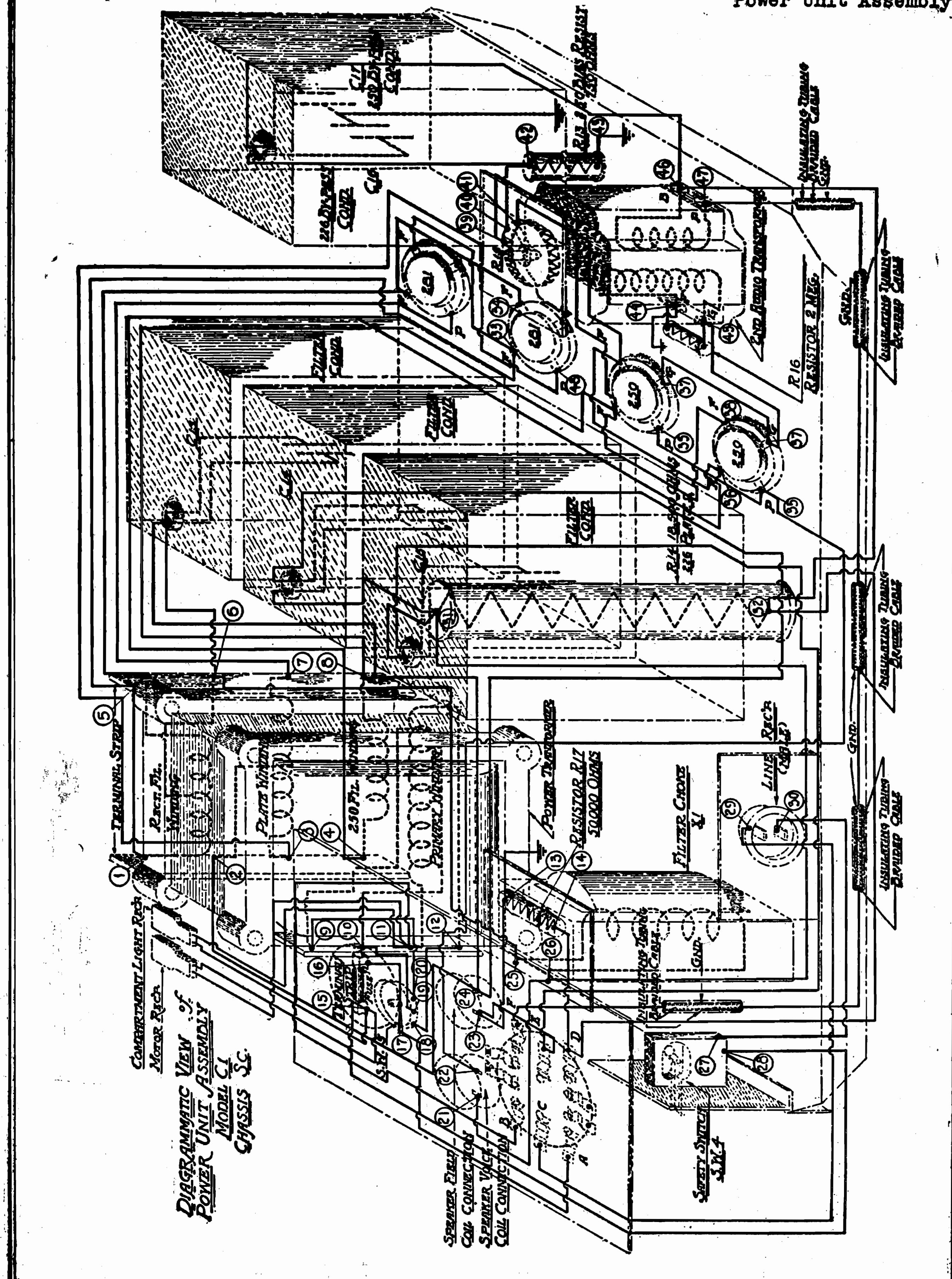
Tube No. in Order (1)	Type of Tube (2)	Position of Tube 1st RF Det Etc. (3)	Readings, Plug in Socket of Set: Tube Out: A Volts (4)	B Volts (5)	Tube in Tester: A Volts (6)	B Volts (7)	C Volts (Control Grid) (8)	Cathode-Heater Volts (9)	Normal Plate M.A. (10)	Plate M.A. Grid Test (11)	Plate Change M.A. (12)	Screen Grid Volts (13)
1	226	1 R.F.	-	-	1.45	120	9.5	-	3.5	10	6.5	-
2	226	2 R.F.	-	-	1.45	120	9.5	-	3.5	10	6.5	-
3	226	3 R.F.	-	-	1.45	120	9.5	-	3.5	10	6.5	-
4	227	Det.	-	-	2.1	33	-	9.5	2	-	-	-
5	226	1 A.F.	-	-	1.4	116	9	-	3	10	7	-
6	250	2 A.F.	-	-	7.25	405	70	-	96	130	33	-
7	250	2 A.F.	-	-	7.25	405	70	-	96	130	33	-
8	281	Rect.	-	-	7.2	-	-	-	124	-	-	-
9	281	Rect.	-	-	7.2	-	-	-	124	-	-	-
10	-	-	-	-	-	-	-	-	-	-	-	-

C-1 (A.C.)



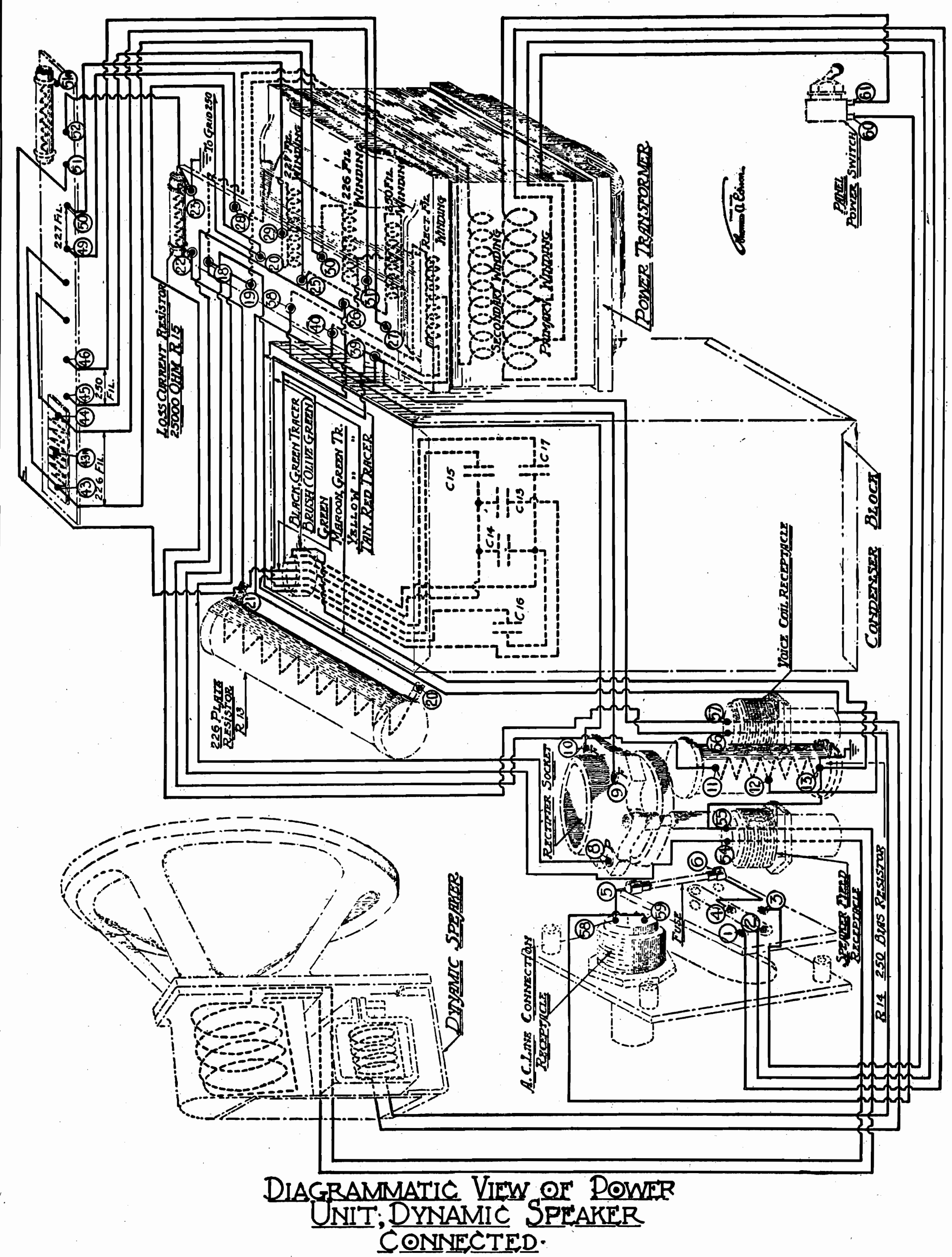
THOMAS A. EDISON, INC.

MODEL C-1
CHASSIS SC
Power Unit Assembly



THOMAS A. EDISON, INC.

MODELS R1,R2,C2
CHASSIS Jr and Jc
Power Unit Assembly

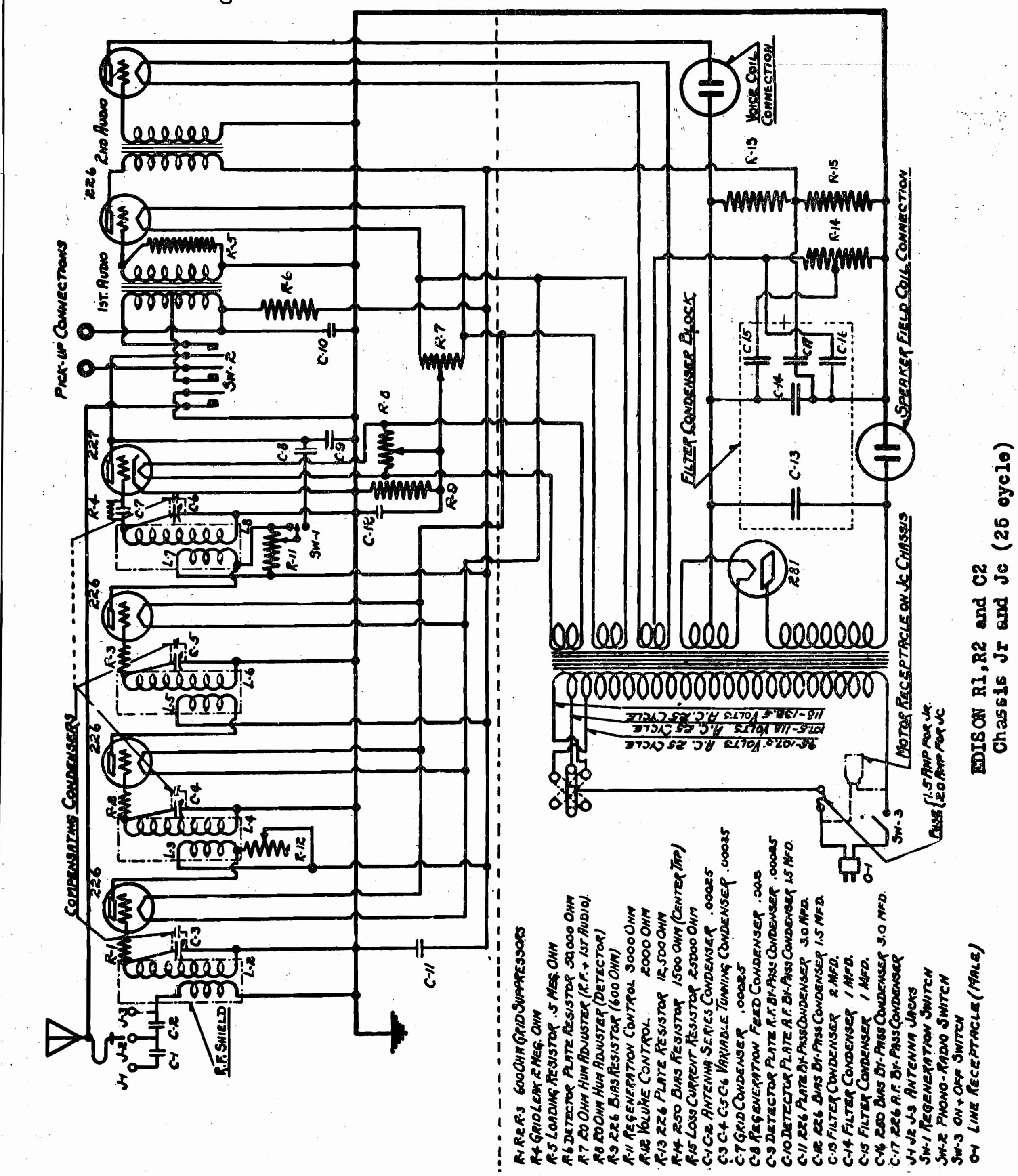


DIAGRAMMATIC VIEW OF POWER UNIT; DYNAMIC SPEAKER CONNECTED.

MODELS R1, R2 AND C2
CHASSIS JR AND JC
25 CYCLE

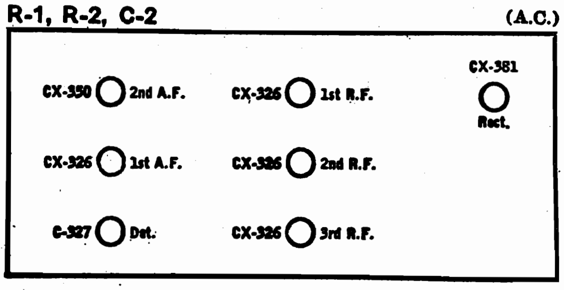
MODELS R1,R2,C2
CHASSIS Jr and Jc
Schematic Voltage

THOMAS A. EDISON, INC.



EDISON R1,R2 and C2
Chassis Jr and Jc (25 cycle)

R-1, R-2, C-2 (A.C.)

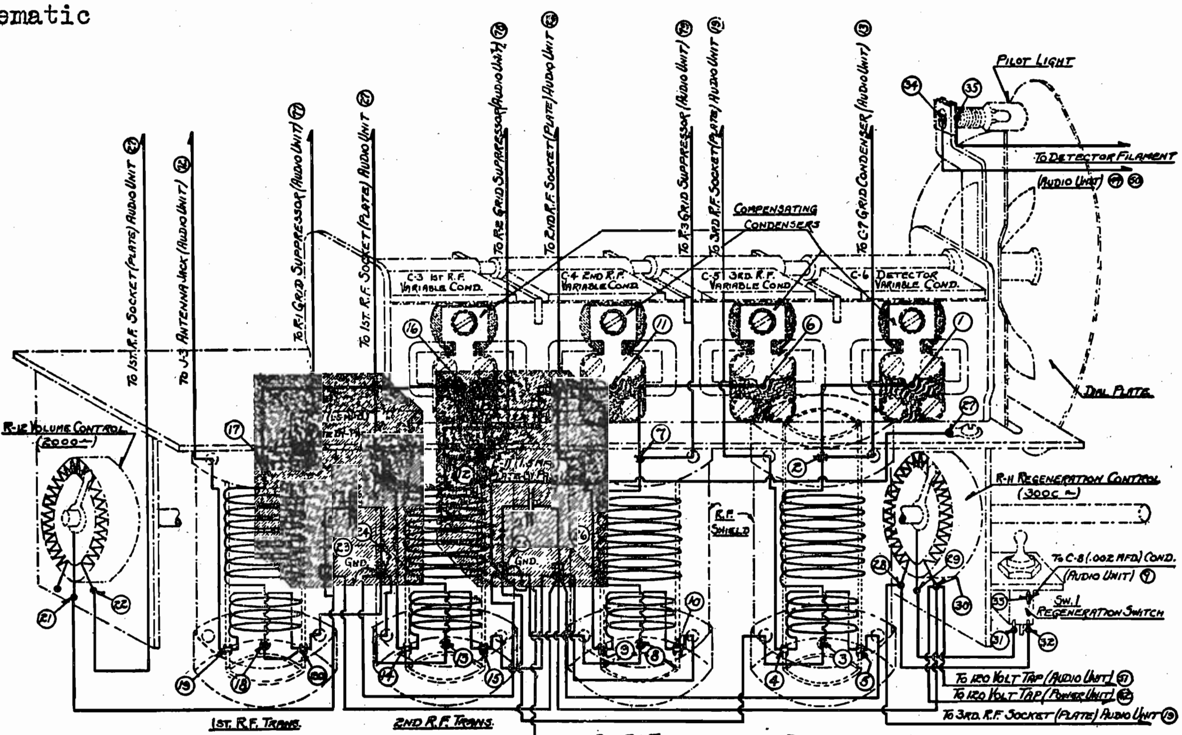


EDISON, Inc.—Models R-1, R-2 and Edison Radio Phonograph Combination C-2
Line Voltage 102—Set on 102.5
Volume Control Position Max

Tube No. in Order (1)	Type of Tube (2)	Position of Tube 1st R.F. Det., etc. (3)	Readings, Plug in Socket of Set: Tube Out: A Volts (4)	Tube Out: B Volts (5)	Tube in Tester: A Volts (6)	B Volts (7)	C Volts (Control Grid) (8)	Cathode-Heater Volts (9)	Normal Plate M.A. (10)	Plate M.A. Grid Test (11)	Plate Change M.A. (12)	Screen Grid Volts (13)
1	226	1 R.F.	-	-	1.45	120	9.5	-	3.5	10	6.5	-
2	226	2 R.F.	-	-	1.45	120	9.5	-	3.5	10	6.5	-
3	226	3 R.F.	-	-	1.45	120	9.5	-	3.5	10	6.5	-
4	227	Det.	-	-	1.9	35		-9.5	1.5	-	-	-
5	226	1 A.F.	-	-	1.35	115	8.5	-	2.5	10	7.5	-
6	250	2 A.F.	-	-	7.2	320	55	-	36	56	20	-
7	281	Rect.	-	-	7.2	-	-	-	100	-	-	-

MODELS R1,R2,C2(60 cyc.)
Diagram
Schematic

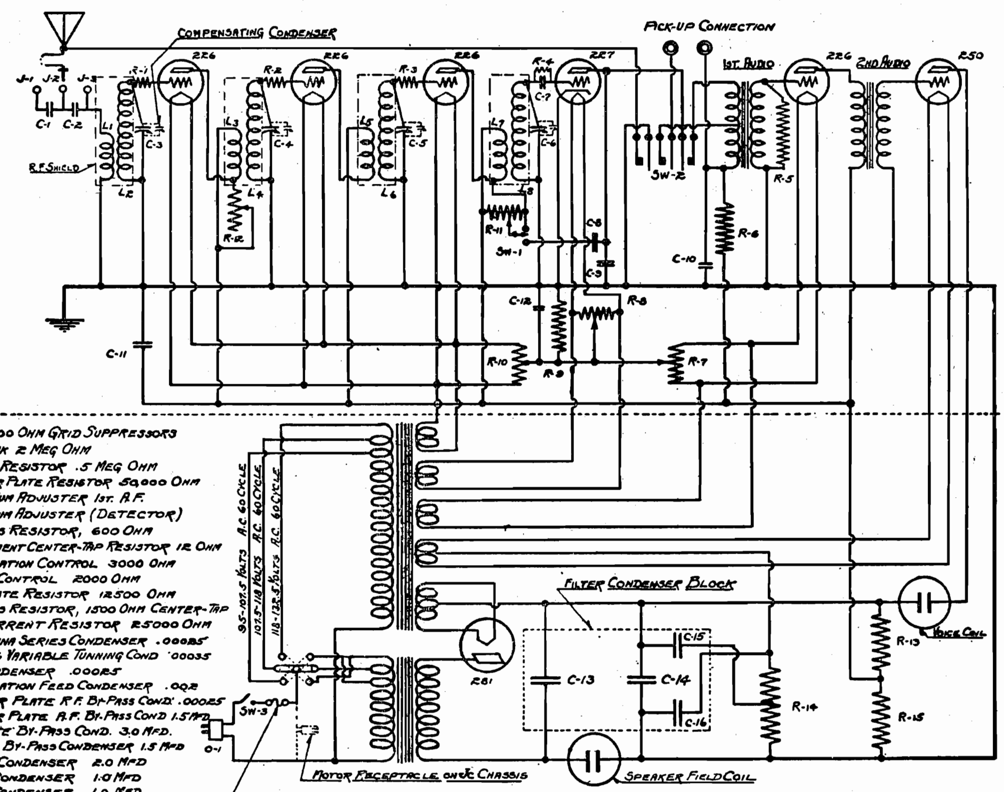
THOMAS A. EDISON, INC.



DIAGRAMMATIC VIEW of R.F. UNIT ASSEMBLY

NOTE;- C-11 3 MFD CONDENSER PLATE BY-PASS CONDENSER COMPOSED OF TWO 1.5 MFD. CONDENSERS IN PARALLEL.

MODELS R-1 R-2 + C-2
CHASSIS JR + JC



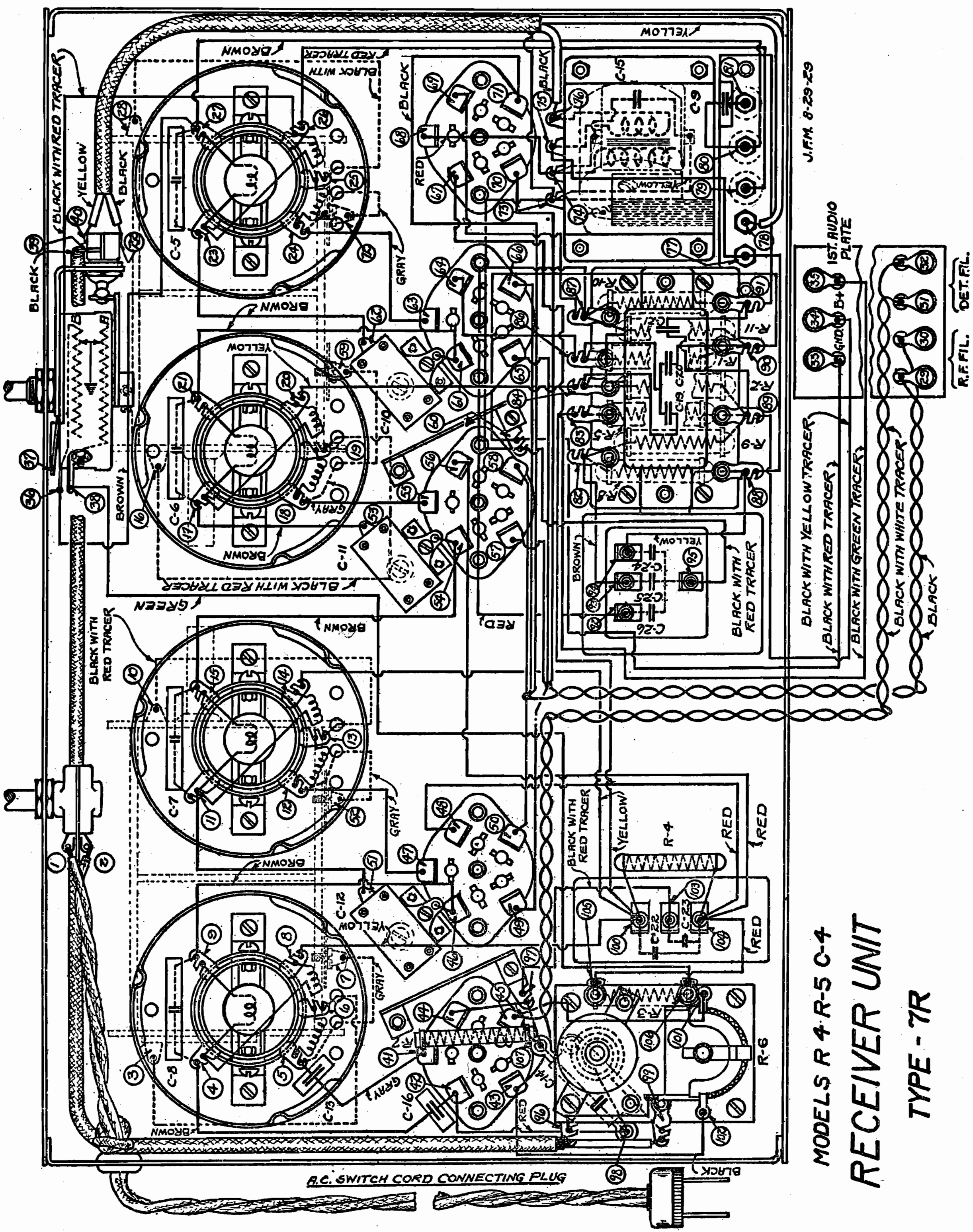
R-1 R-2 R-3 600 OHM GRID SUPPRESSORS
R-4 GRID LEAK 2 MEG OHM
R-5 LOADING RESISTOR .5 MEG OHM
R-6 DETECTOR PLATE RESISTOR 50,000 OHM
R-7 20 OHM HUM ADJUSTER 1ST. R.F.
R-8 20 OHM HUM ADJUSTER (DETECTOR)
R-9 226 BIAS RESISTOR, 600 OHM
R-10 R.F. FILAMENT CENTER-TAP RESISTOR 12 OHM
R-11 REGENERATION CONTROL 3000 OHM
R-12 VOLUME CONTROL 2000 OHM
R-13 226 PLATE RESISTOR 12500 OHM
R-14 250 BIAS RESISTOR, 1500 OHM CENTER-TAP
R-15 LOSS CURRENT RESISTOR 25000 OHM
C-1 C-2 ANTENNA SERIES CONDENSER .00025
C-3 C-4 C-5 C-6 VARIABLE TUNNING COND .00035
C-7 GRID CONDENSER .00025
C-8 REGENERATION FEED CONDENSER .002
C-9 DETECTOR PLATE R.F. BY-PASS COND. .00025
C-10 DETECTOR PLATE A.F. BY-PASS COND 1.5 MFD
C-11 226 PLATE BY-PASS COND. 3.0 MFD.
C-12 226 BIAS BY-PASS CONDENSER 1.5 MFD
C-13 FILTER CONDENSER 2.0 MFD
C-14 FILTER CONDENSER 1.0 MFD
C-15 FILTER CONDENSER 1.0 MFD
C-16 250 BIAS BY-PASS CONDENSER 3.0 MFD
J-1 J-2 J-3 ATENNA JACKS
SW-1 REGENERATION-SWITCH
SW-2 PHONO-RADIO SWITCH
SW-3 ON-OFF SWITCH
O-1 LINE RECEPTACLE (MALE)

SCHEMATIC DIAGRAM
EDISON RADIO FOR MODELS R-1 R-2 + C-2
CHASSIS JR + JC

Also
Model Splitdorf M-5

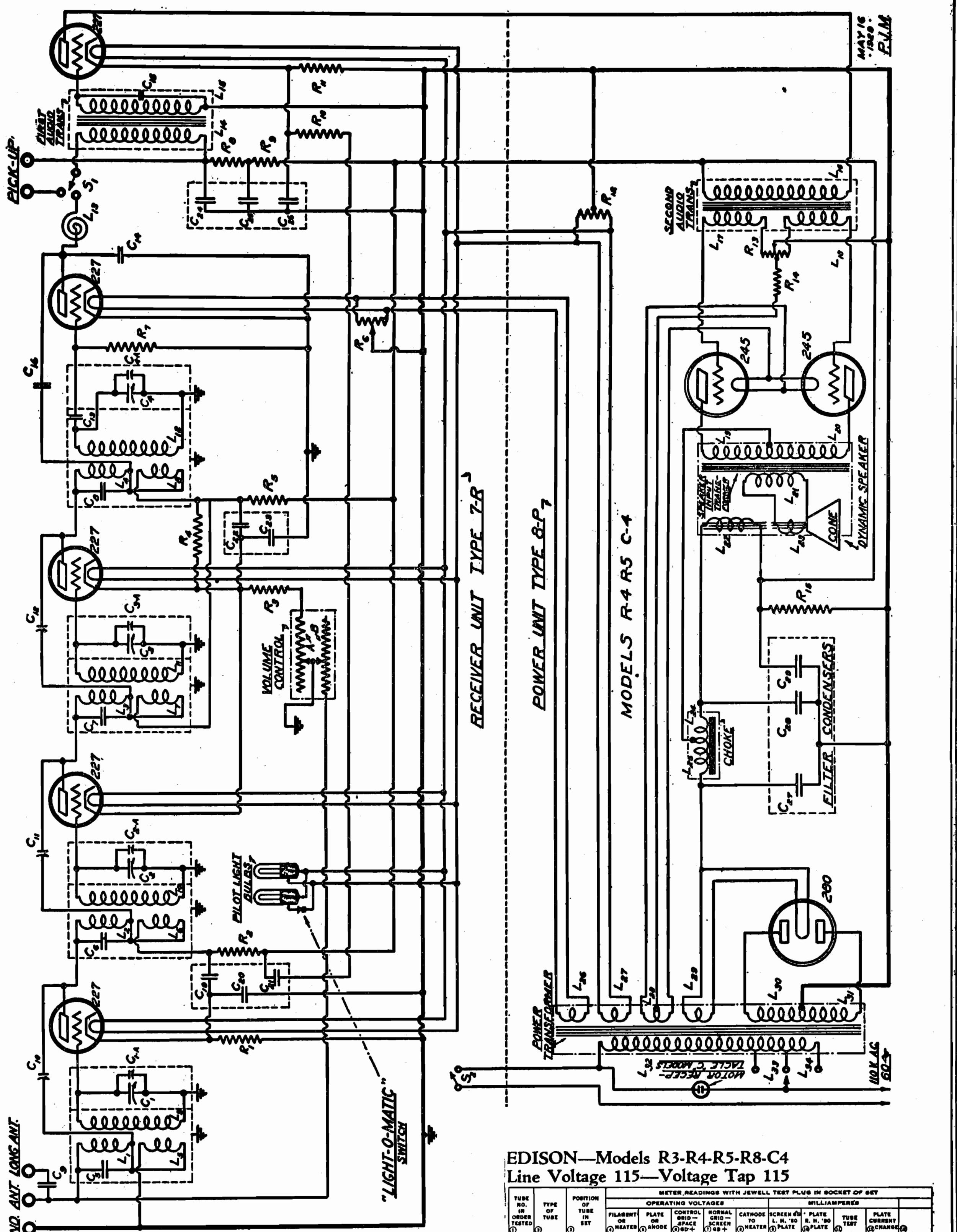
MODELS R4,R5,C4
Receiver Chassis Wiring

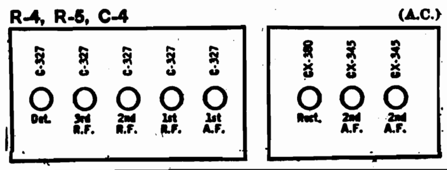
THOMAS A. EDISON, INC.



THOMAS A. EDISON, INC.

MODELS R4,R5,C4
Schematic





EDISON—Models R3-R4-R5-R8-C4
Line Voltage 115—Voltage Tap 115

TUBE NO. IN ORDER TESTED (1)	TYPE OF TUBE (2)	POSITION OF TUBE IN SET (3)	METER READINGS WITH JEWELL TEST PLUG IN SOCKET OF SET: OPERATING VOLTAGES: FILAMENT OR HEATER (4)	PLATE OR ANODE (5)	CONTROL GRID—SPACE GD+ (6)	NORMAL GRID—SCREEN GD+ (7)	CATHODE TO HEATER (8)	SCREEN GD L. H. '80 PLATE (9)	MILLIAMPERES: PLATE R. H. '80 PLATE (10)	TUBE TEST (11)	PLATE CURRENT CHANGE (12)	(13)
1	227	1 R.F	2.35	114	-	6	-	-	5.6	7.5	1.9	
2	227	2 R.F.	2.35	114	-	6	-	-	5.6	9.5	3.9	
3	227	3 R.F.	2.35	114	-	6	-	-	5.6	9.5	3.9	
4	227	Det.	2.35	28	-	-	-	-	2.0	2.0	0	
5	227	1 A.F.	2.35	110	-	6.5	-	-	3.7	5.0	1.3	
6	245	PP-AF	2.4	250	-	46	-	-	27.5	32	4.5	
7	245	PP-AF	2.4	250	-	46	-	-	27.5	32	4.5	
8	280	Rect.	4.9	-	-	-	50.4	50.4	-	-	-	

MODELS R4,R5,C4
Parts List

THOMAS A. EDISON, INC.

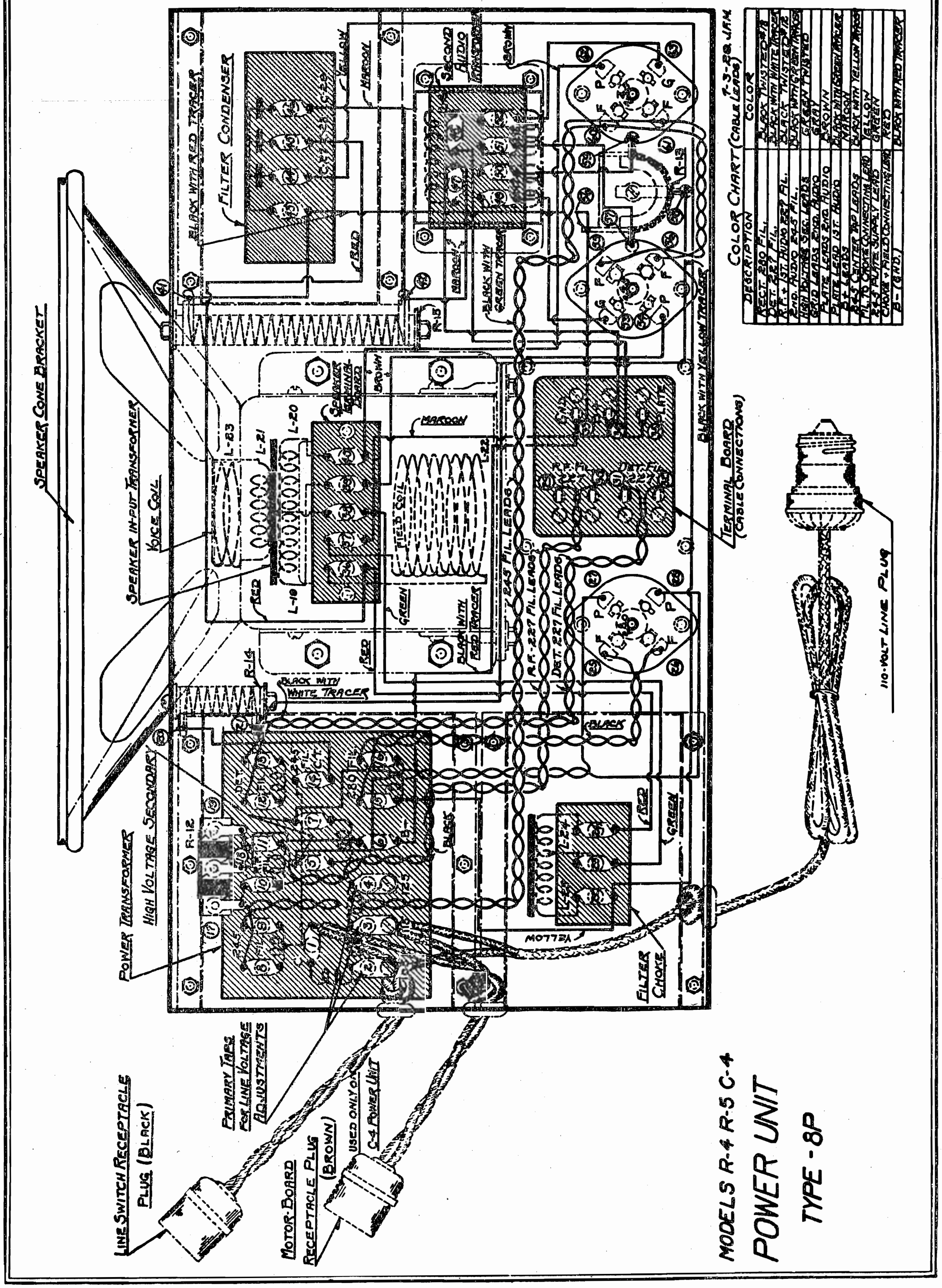
IDENTIFICATION OF PARTS
TO ACCOMPANY PLATE No. 1-A
"LIGHT-O-MATIC" MODELS R-4, R-5 and C-4

NO.	NAME AND FUNCTION	ELECTRICAL VALUE
C-1 C-2	Tuning condenser, 1st r. f. stage. Tuning condenser, 2nd r. f. stage.	2-gang variable condenser, maximum capacity. each section 355 mmfds.
C-3 C-4	Tuning condenser, 3rd r. f. stage. Tuning condenser, detector stage.	2-gang variable condenser, maximum capacity. each section 355 mmfds.
C-5 C-6 C-7 C-8	Each a fixed condenser tuning the long wave primary circuit of the associated transformer to approximately 450 kilocycles.	Each a .00025 mfd. fixed moulded mica condenser.
C-9	Long antenna series condenser.	.000125 mfd. fixed moulded mica condenser.
C-10 C-11 C-12	Neutralizing condensers, 1st, 2nd and 3rd r. f. stages, respectively.	Each an adjustable condenser, 40 to 80 mmfds.
C-13	Detector grid condenser.	.0001 mfd. fixed moulded mica condenser.
C-14	Detector plate condenser.	.001 mfd. fixed moulded mica condenser.
C-15	High frequency cut-off condenser.	.00045 mfd. fixed moulded mica condenser.
C-16	Detector Neutralizing Condenser	.000125 Mfd. fixed condenser.
C-19 C-20 C-21	Plate by-pass condenser, 1st r. f. stage. Bias by-pass condenser, 1st r. f. stage. Hum balance condenser (1st a. f.)	.1 mfd. 300v. paper condenser. .1 mfd. 300v. paper condenser. .16 mfd. 300v. paper condenser. (C-19, 20 and 21 in same can.)
C-22 C-23	Plate by-pass condenser, 2nd and 3rd r. f. Bias by-pass condenser, 2nd and 3rd r. f.	.1 mfd. 300v. paper condenser. 1. mfd. 150v. paper condenser. (C-22 and 23 in same can.)
C-24 C-25 C-26	A. f. by-pass condenser, detector plate. Filter condenser, detector plate supply Bias by-pass condenser, 1st a. f. stage.	1. mfd. 300v. paper condenser. .5 mfd. 300v. paper condenser. 1. mfd. 150v. paper condenser. (C-24, 25 and 26 in same can.)
C-27 C-28 C-29	1st filter condenser. 2nd filter condenser. 3rd filter condenser.	2. mfd. 600v. paper condenser. 2. mfd. 600v. paper condenser. 1. mfd. 300v. paper condenser. (C-27, 28 and 29 in same can.)
C-1A C-2A C-3A C-4A	Tuning conpensator, 1st r. f. Tuning compensator, 2nd r. f. Tuning compensator, 3rd r. f. Tuning compensator, detector.	Each an adjustable air and mica dielectric condenser mounted on side of variable condenser section which it shunts.
R-1	Bias resistor, 1st r. f. stage.	1,000 ohm resistance, 1 watt.
R-2	Isolating resistor, 1st r. f.	1,000 ohm resistance, 1 watt.
R-3	Minimum bias resistor, 2nd and 3rd r. f.	400 ohm resistance, 1 watt.
R-4 R-5 R-6 R-7 R-8 R-9	Bleeder resistor. Isolating resistor, 2nd and 3rd r. f. Detector heater hum adjuster. Detector grid leak. 2nd section detector filter resistor. 1st section detector filter resistor.	40,000 ohm resistance, 1 watt. 400 ohm resistance, 1 watt. 20 ohm potentiometer. 1.5 megohm resistance, 1 watt. 25,000 ohm resistance, 1 watt. 25,000 ohm resistance, 1 watt.

IDENTIFICATION OF PARTS (Continued)

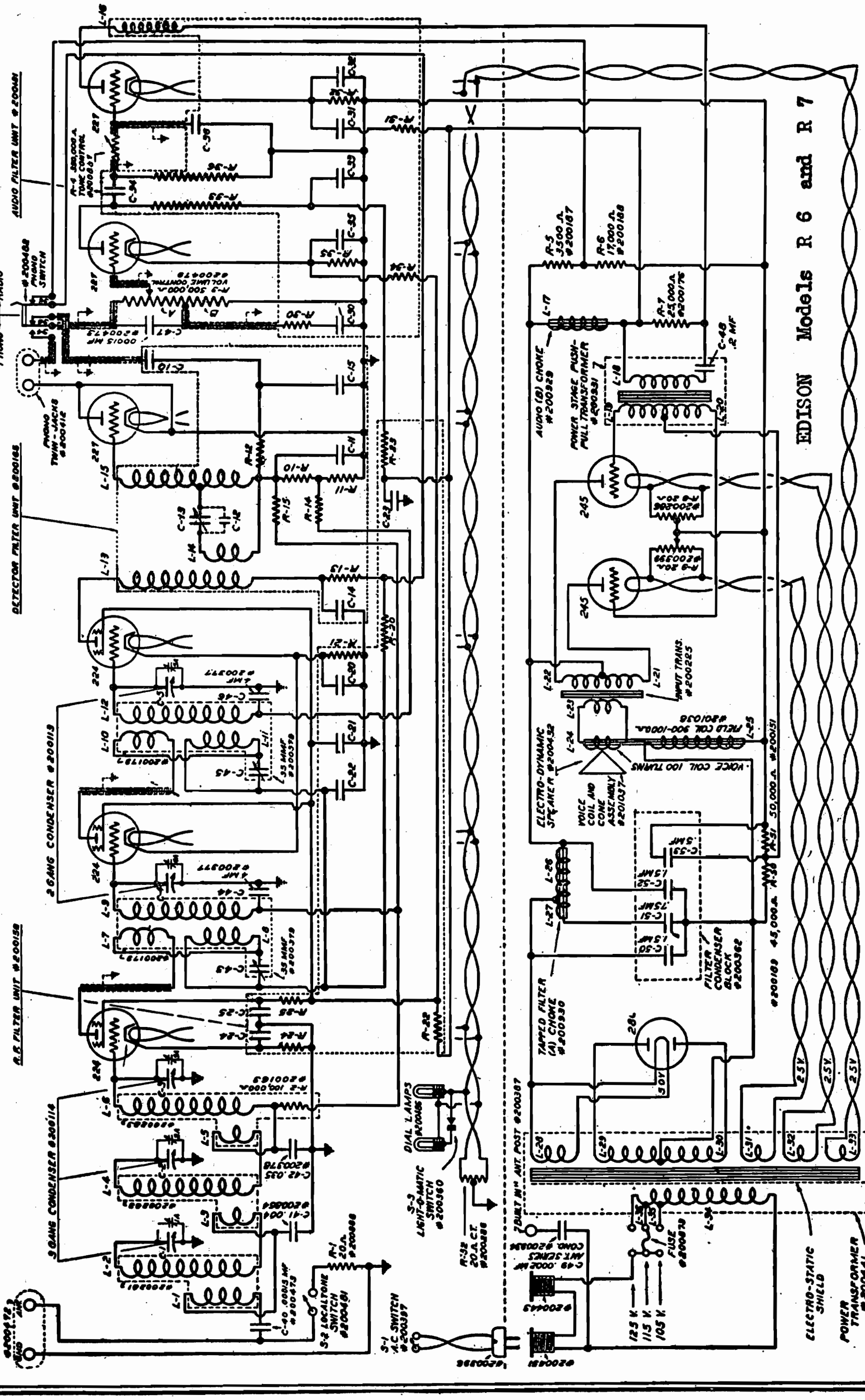
NO.	NAME AND FUNCTION	ELECTRICAL VALUE
R-10 R-11 R-12 R-13 R-14 R-15	Hum balance resistor (1st a. f.) Bias resistor, 1st a. f. stage. R. f. and a. f. heater center tapped resistor. Push-pull balancing resistor. Bias resistor, 2nd a. f. stage. Power supply loss current resistor.	6,000 ohm resistance, 1 watt. 2,000 ohm resistance, 1 watt. 20 ohm fixed center-tapped resistance. 200 ohm center-tapped potentiometer. 780 ohm, 5 watt resistance. 10,000 ohm, 5 watt resistance.
L-1 L-2 L-3 L-4	Long wave primary, 1st r. f. transformer. Long wave primary, 2nd r. f. transformer. Long wave primary, 3rd r. f. transformer. Long wave primary, detector input transformer.	Each a 500 microhenry coil.
L-5 L-6 L-7 L-8	Short wave primary, 1st r. f. transformer. Short wave primary, 2nd r. f. transformer. Short wave primary, 3rd r. f. transformer. Short wave primary, detector input transformer.	Each a 7½ turn coil.
L-9 L-10 L-11 L-12	Secondary, 1st r. f. transformer. Secondary, 2nd r. f. transformer. Secondary, 3rd r. f. transformer. Secondary, detector input transformer.	Each a 245 microhenry coil, (measured in sheld).
L-13	Detector plate r. f. choke.	50 to 65 millihenry choke.
L-14 L-15	Primary, 1st a. f. transformer. Secondary, 1st a. f. transformer.	4:1 ratio a. f. transformer.
L-16 L-17 L-18	Primary, 2nd a. f. transformer. Secondary, 2nd a. f. transformer. Secondary, 2nd a. f. transformer.	5:1 ratio a. f. transformer with separate secondaries connected in series by variable resistance R-13.
L-19 L-20 L-21 L-22 L-23	Half primary, speaker input transformer. Half primary, speaker input transformer. Secondary, speaker input transformer. Field coil, dynamic speaker. Voice coil, dynamic speaker.	Speaker input transformer, mounted in speaker frame, utilizing center tapped primary. 4,500 ohm field coil.
L-24 L-25	Inside third of filter choke. Outside two-thirds of filter choke.	20 henry, 375 ohm choke.
L-26 L-27 L-28 L-29 L-30 L-31 L-32 L-33 L-34	Detector heater secondary winding. R. f. and a. f. heater secondary winding. 2nd a. f. fil. secondary winding. Rectifier fil. secondary winding. Half high voltage secondary winding. Half high voltage secondary winding. Low line voltage primary winding. Additional section of primary winding for medium voltage. Additional section of primary winding for high line voltage.	Power transformer.
S-1	Radio-phono. switch.	S. P. D. T. toggle switch, operated by volume control shaft.
S-2	Line switch.	S. P. S. T. toggle switch.
	Light-O-Matic Switch.	Located in dial mechanism, operating Light-O-Matic pilot light.
	Motor Receptacle (Brown).	This plug provides 110 volts A. C. for operation of phonograph motor in radio phonograph combination model.
	Volume Control	A—Wire wound, 5,000 ohms. B—Graphite, 10,000 ohms.

THOMAS A. EDISON, INC. MODELS R4,R5,C4 Power Unit Chassis Wiring

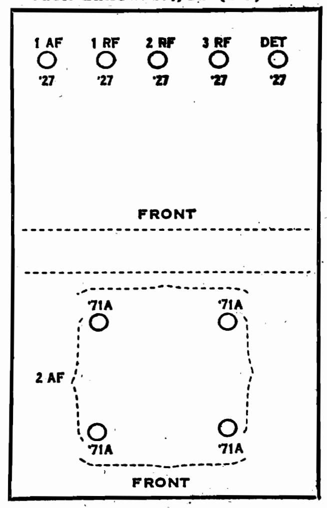


MODELS R6,R7
Schematic

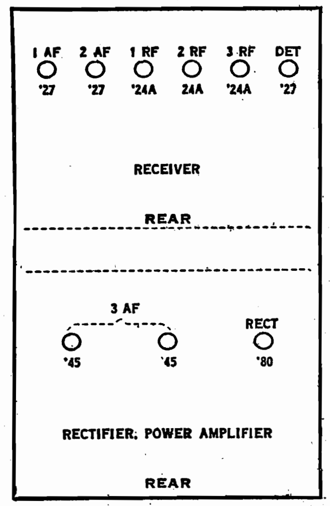
THOMAS A. EDISON,, INC.



Models Edisons R4, R5 (DC)



Models Edisons R6, R7

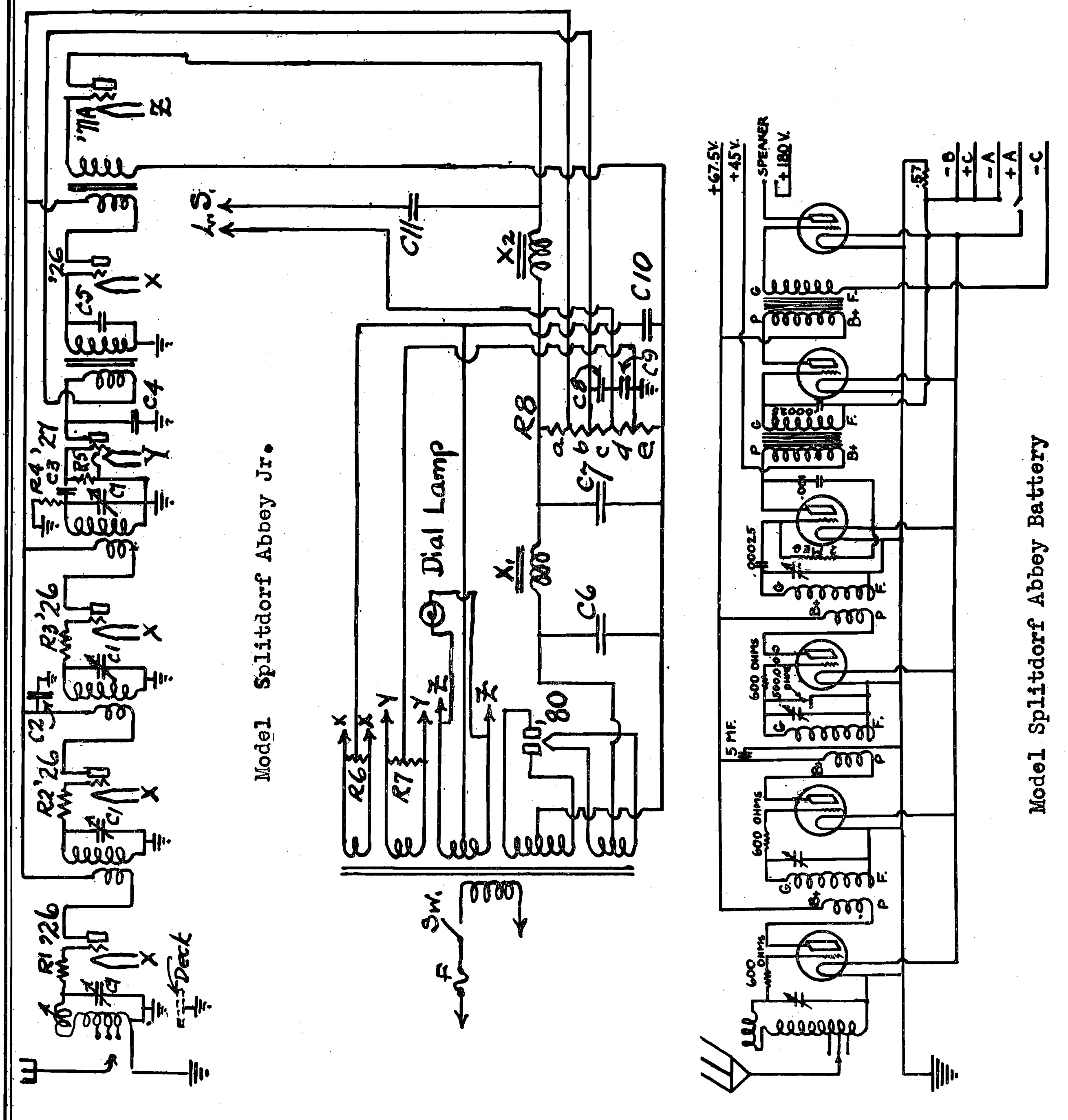


EDISON—Models R6 and R7
Line Voltage 115—Voltage Tap 115
***Grid Volts 8-10 on Strong Signal**
†Volume Control Minimum 2.5—Maximum .5

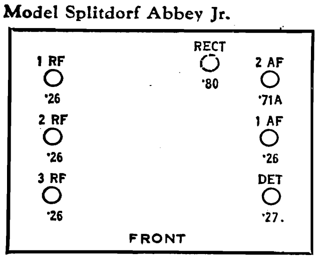
Tube No. in Order Tested (1)	Type of Tube (2)	Position of Tube in Set (3)	Meter Readings with Jewell Test Plug in Socket of Set: Operating Voltages: Filament or Heater (4)	Plate or Anode (5)	Control Grid—Space (6) GD†	Normal Grid—Screen (7) GD*	Cathode to Heater (8)	Milliamperes: Screen or L. H. '80 Plate (9)	Plate R. H. '80 Plate (10)	Tube Test (11)	Plate Current Change (12)	(13)
1	224	1 R.F.	2.2	190	.2	80	2.5	.9	3.5	6.0	2.5	
2	224	2 R.F.	2.2	190	.2	80	2.5	.9	3.5	6.0	2.5	
3	224	3 R.F.	2.2	190	.2	80	2.5	.9	3.5	6.0	2.5	
4	227	Det.	2.2	-	-	-*	-	-	-	-	-	
5	227	1 A.F.	2.2	40	-	.5-2.5†	3.0	-	1.1	1.4	3.0	
6	227	2 A.F.	2.2	115	-	.5	6.0	-	3.8	4.8	1.0	
7	245	PP-AF	2.45	260	-	45	-	-	31.0	36.0	5.0	
8	245	PP-AF	2.45	260	-	46	-	-	31.0	36.0	5.0	
9	280	Rect.	4.85	-	-	-	-	45.0	45.0	-	-	

THOMAS A. EDISON, INC.

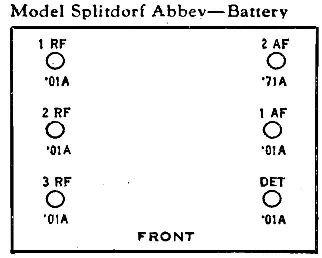
MODEL Splitdorf Abbey Jr.
MODEL Splitdorf Abbey Bat
Schematic



Model Splitdorf Abbey Jr.

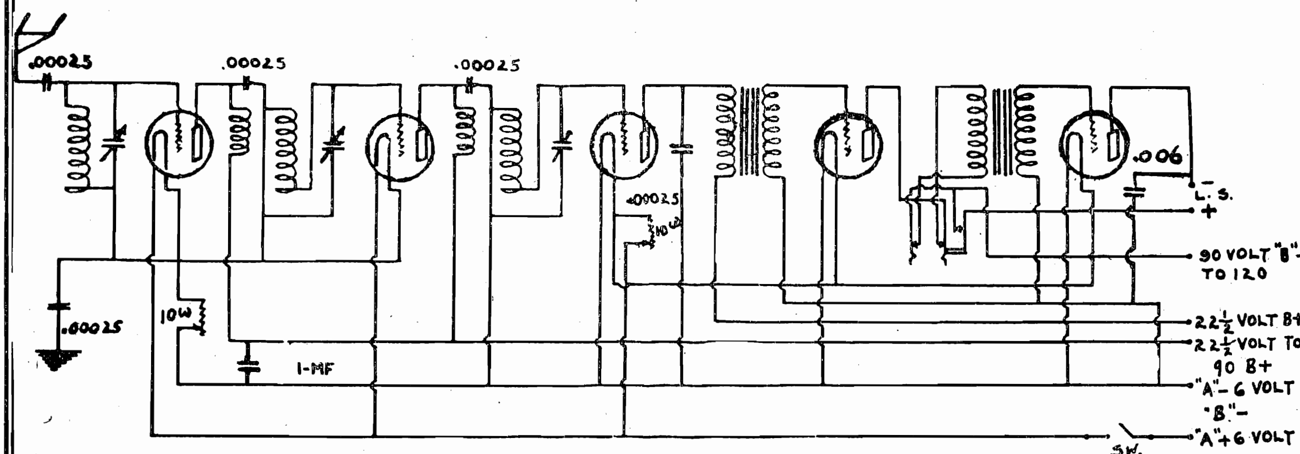


Model Splitdorf Abbev—Battery

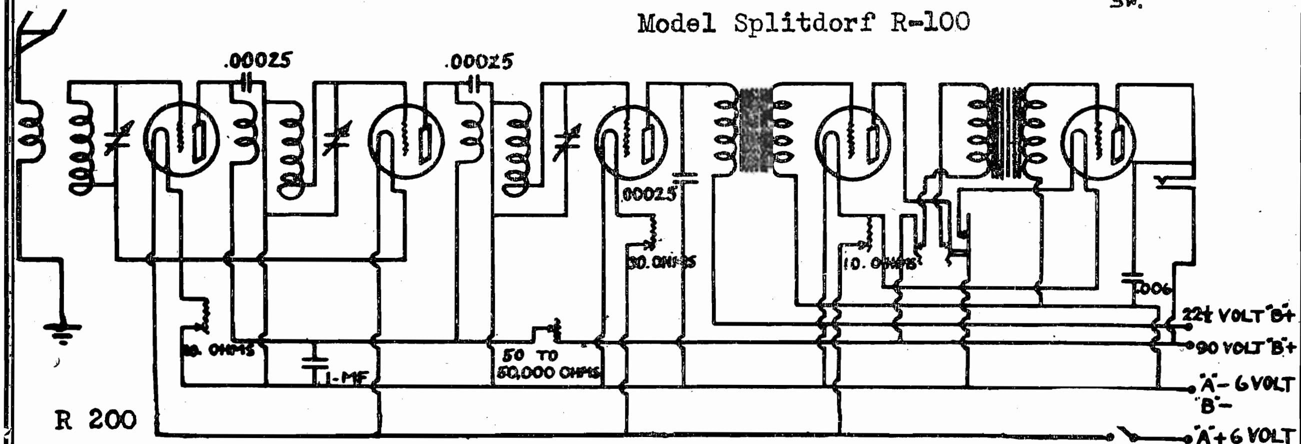


MODEL Splitdorf R-100
MODEL Splitdorf R-200
MODEL Splitdorf RV-695
Schematic

THOMAS A. EDISON, INC.

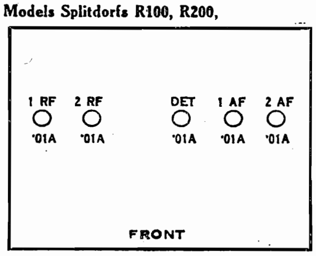


Model Splitdorf R-100

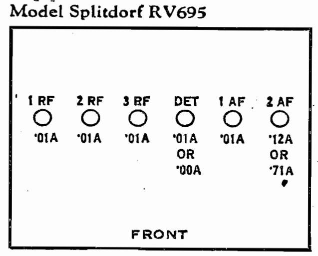


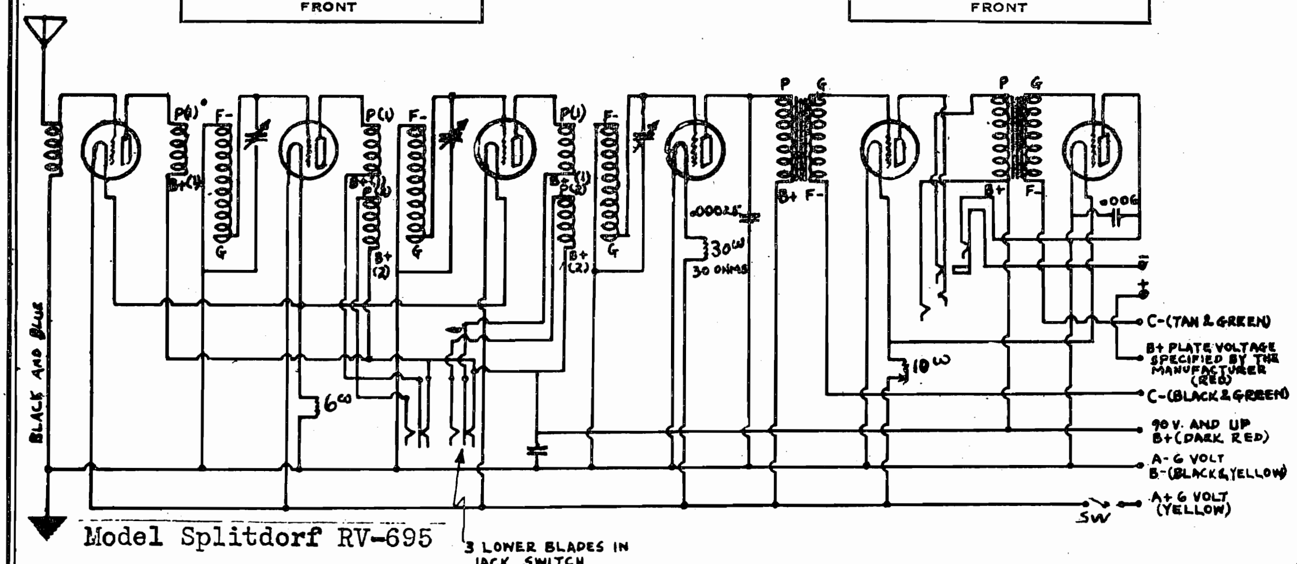
Model Splitdorf R-200

Models Splitdorfs R100, R200,



Model Splitdorf RV695

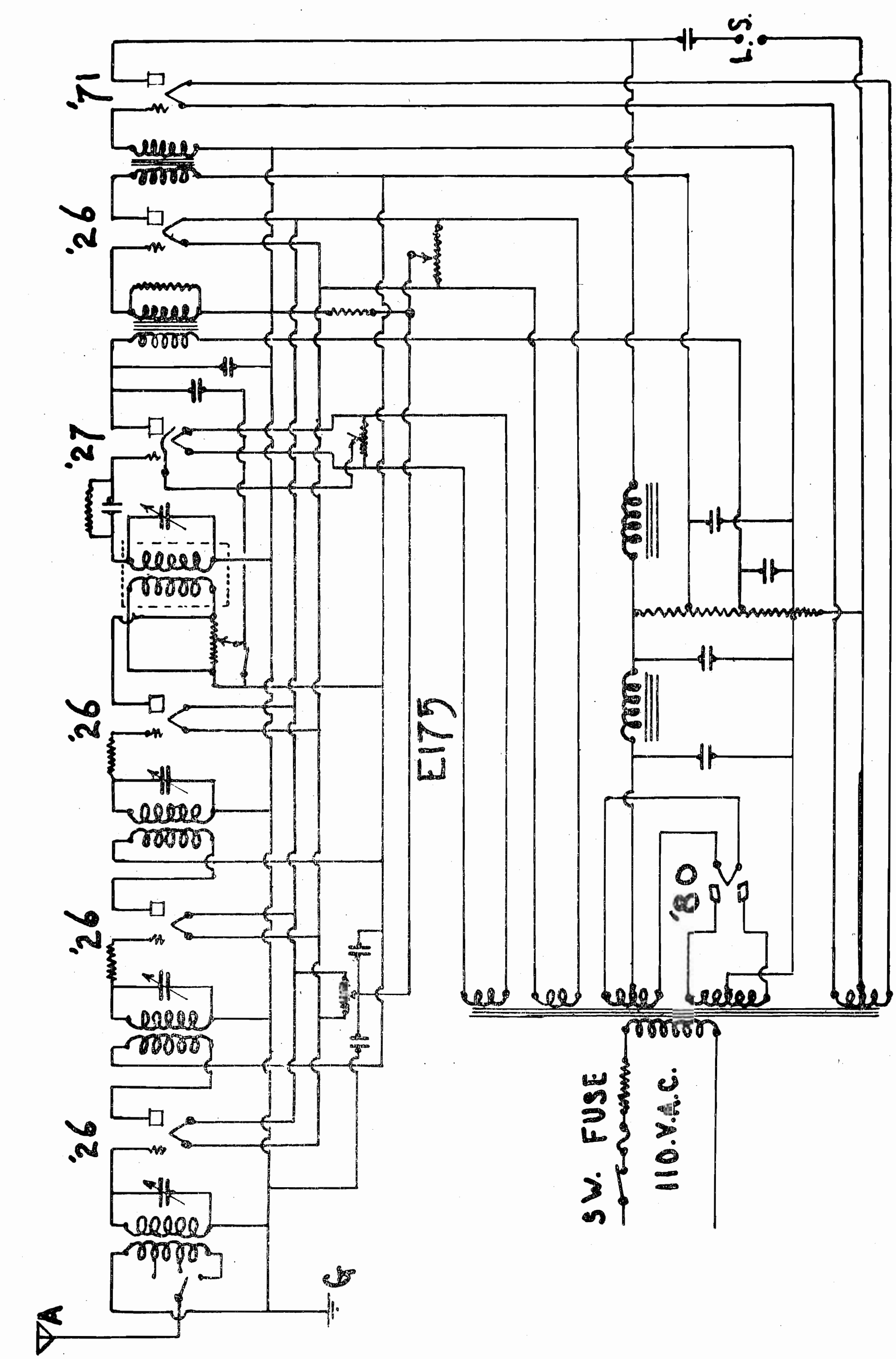




Model Splitdorf RV-695

MODEL Splitdorf E-175
Schematic

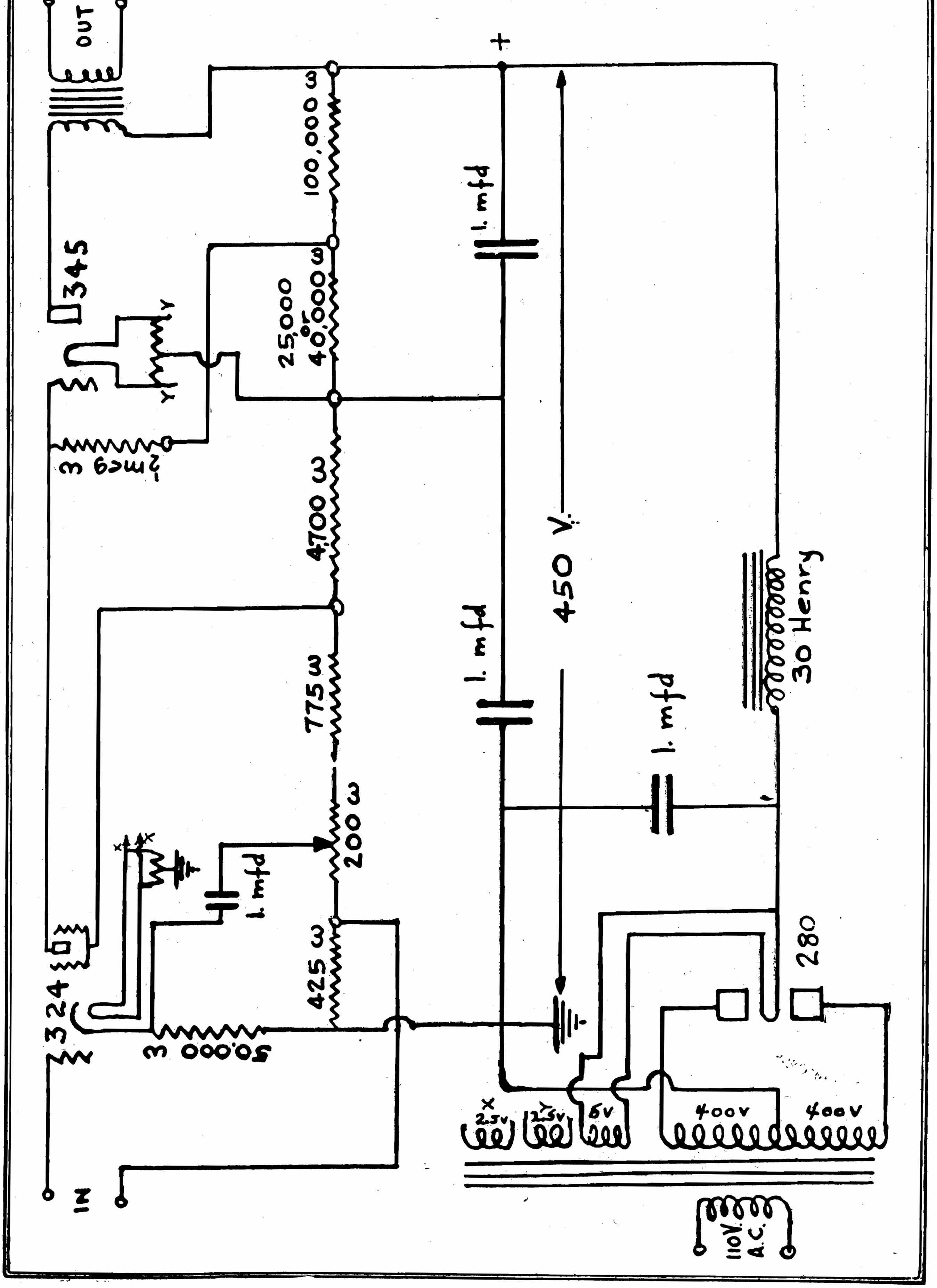
THOMAS A. EDISON, INC.



Model Splitdorf E-175

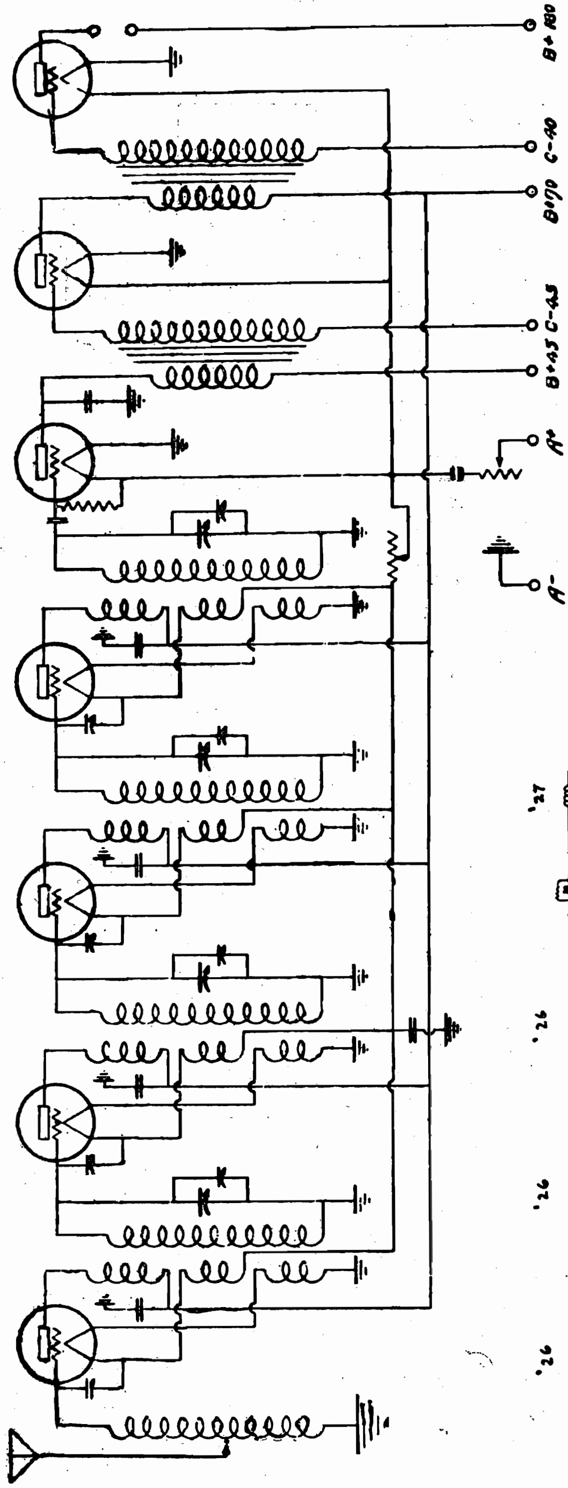
ELECTRAD, INC.

MODEL Loftin-White '45

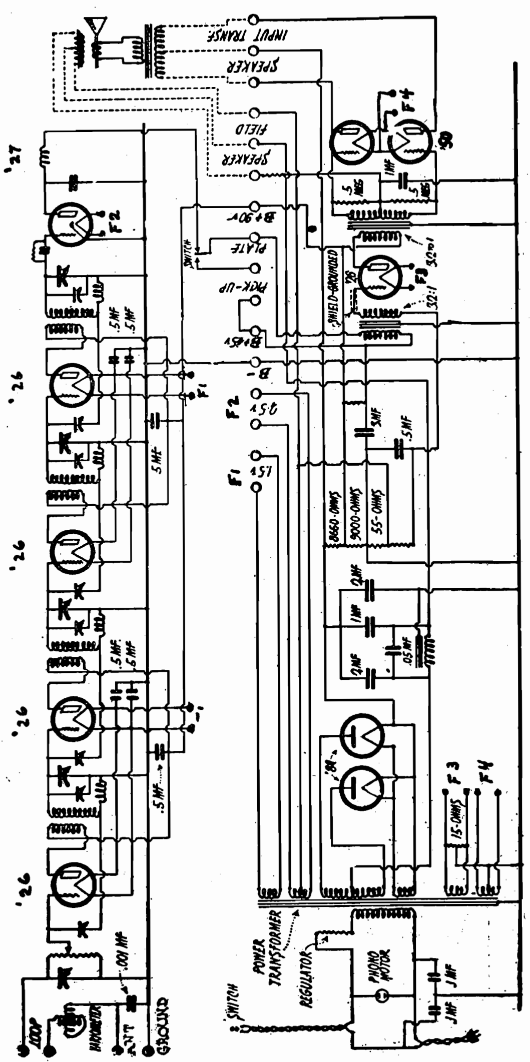


ELECTRICAL RESEARCH LABORATORIES, Inc.

MODEL S-61
MODEL R-1
Schematic

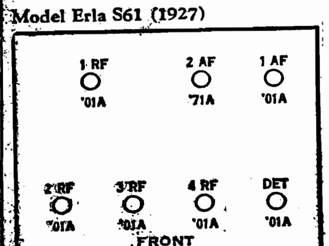


ERLA S-61 RFL SET RADIO RECEIVER CIRCUIT

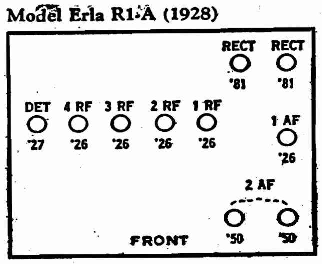


ERlA Model R-1 and Model A Power Unit

Model Erla S61 (1927)

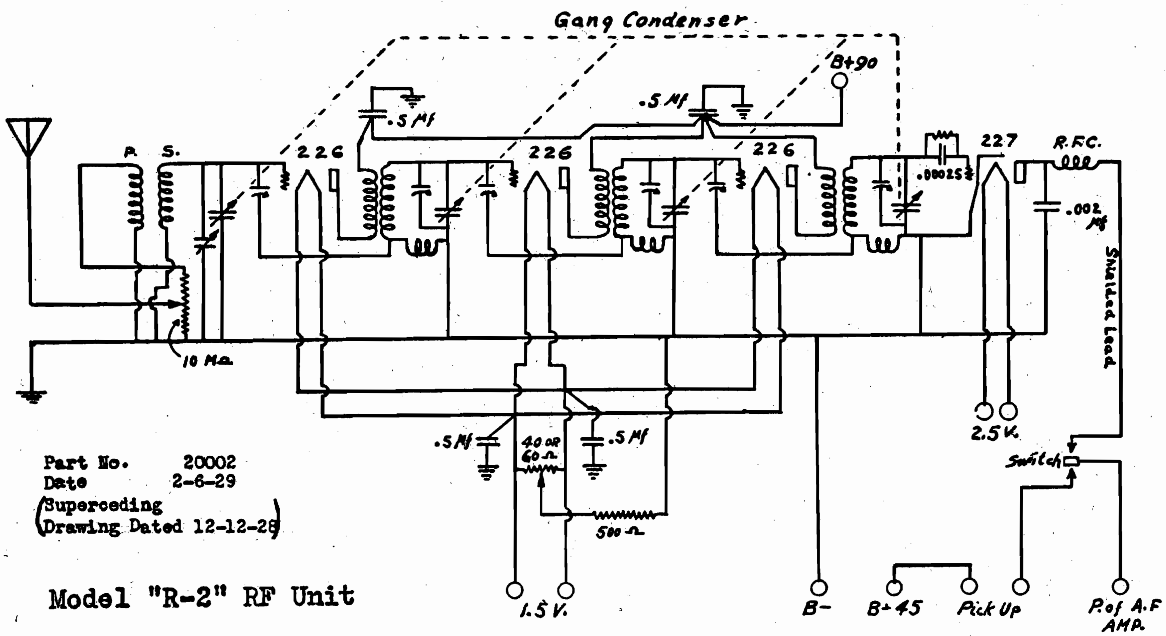


Model Erla R1-A (1928)



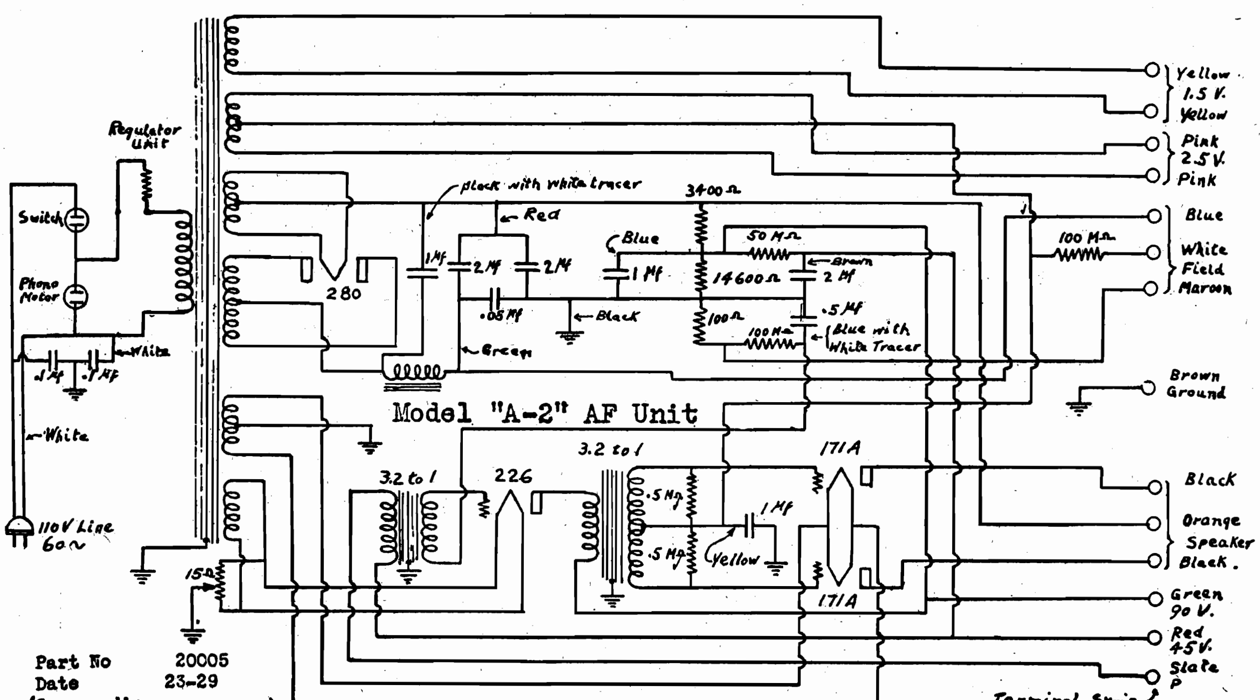
MODEL RF Unit
MODEL AF Unit
Schematic

ELECTRICAL RESEARCH LABORATORIES, Inc.



Part No. 20002
Date 2-6-29
(Superceding
Drawing Dated 12-12-28)

Model "R-2" RF Unit

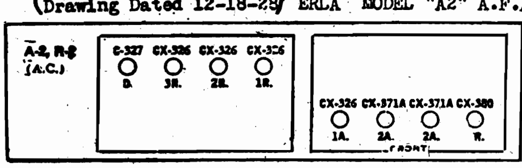


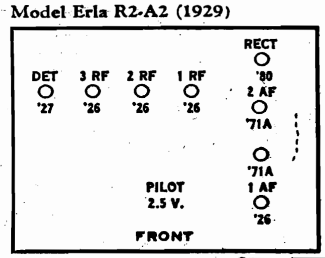
Model "A-2" AF Unit

Part No 20005
Date 23-29
(Superceding
Drawing Dated 12-18-28)

ERLA MODEL "A2" A.F.AMPLIFIER

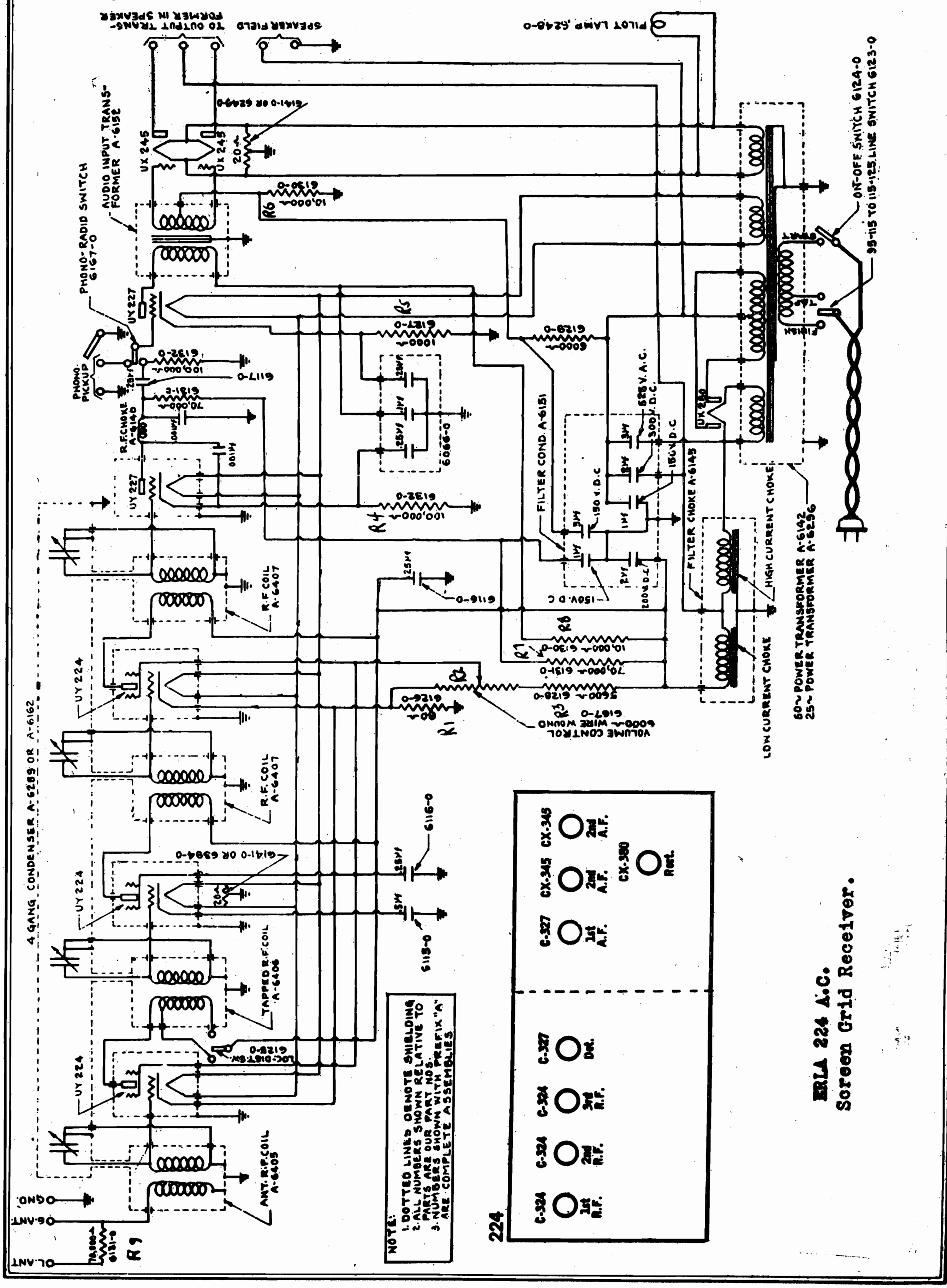
Model Erla R2-A2 (1929)





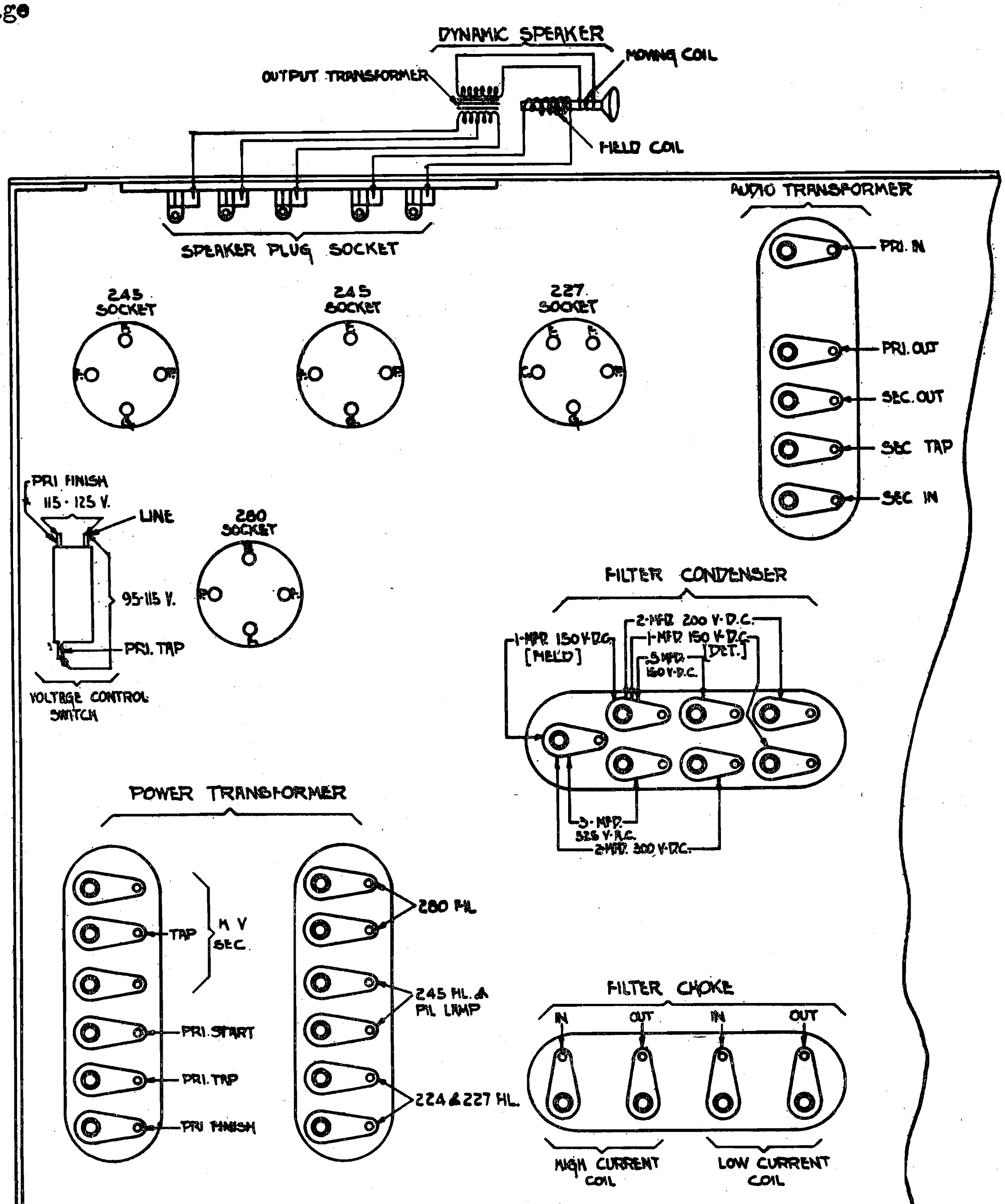
ELECTRICAL RESEARCH LABORATORIES, Inc.

MODEL 224 AC Schematic



MODEL 224 AC
Chassis
Voltage

ELECTRICAL RESEARCH LABORATORIES, Inc.



ERLA 224 A.C.
Screen Grid Receiver.

Details of Power Supply Terminal Connections

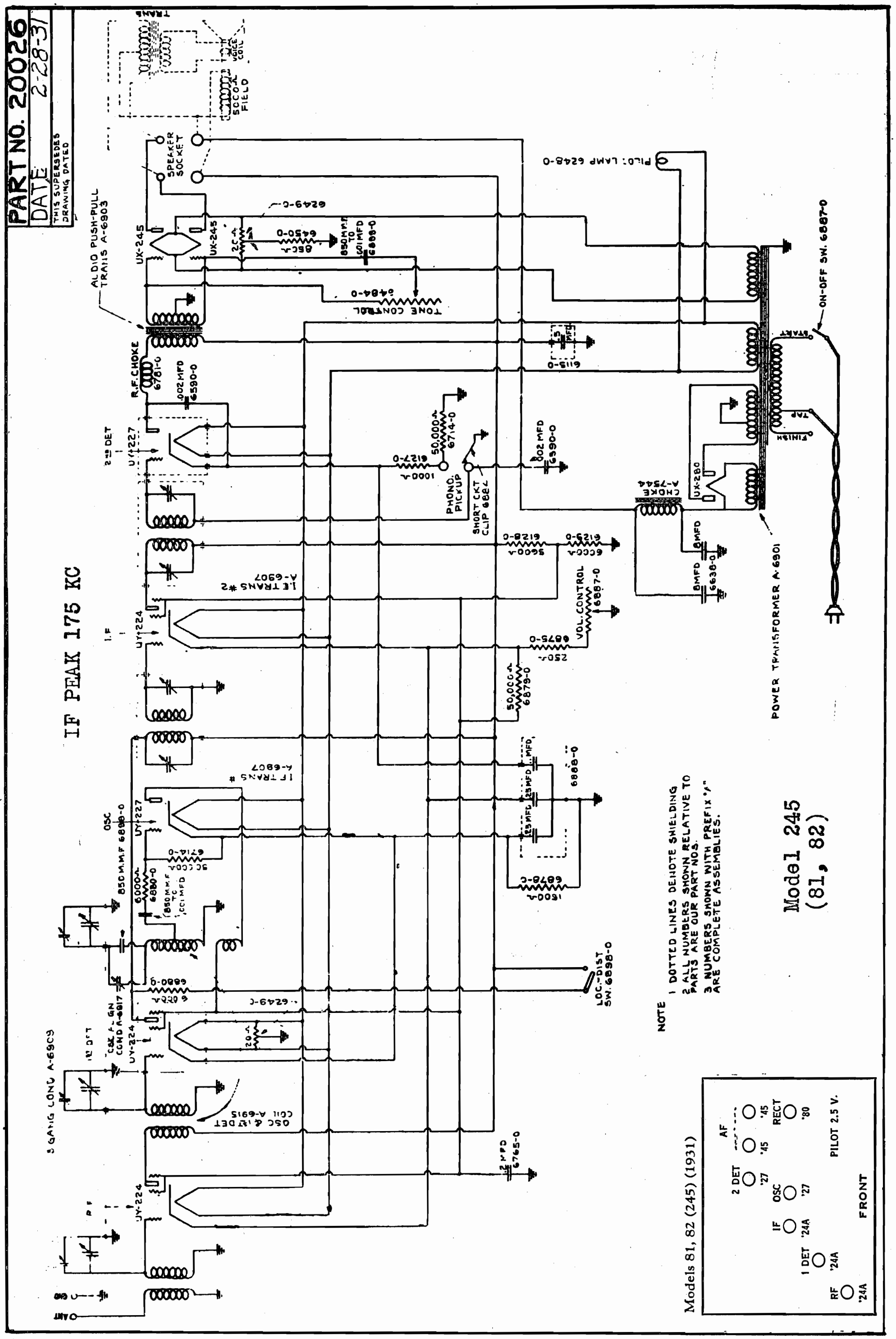
	Tube	Fil.	Screen Grid to cathode	Plate to cathode	Ground to cathode	Grid to Filament
	280	4.8 to 5v AC		340 to 360v DC		
	245	2.4 to 2.5v AC		240 to 250v DC		45 to 50v DC
Audio	227	2.35 to 2.4v AC		90 to 100v DC	4.5v DC	
DET.	227	2.35 to 2.4v AC		60 to 75v DC	6 to 7.5v DC	
	224	2.35 to 2.4v AC	75 to 80v DC	160 to 170v DC	1.5 to 2v DC	

(The above are based on line voltage of 110 volts and the switch in the 95-115 position.)

(Volume control set to full volume position.)

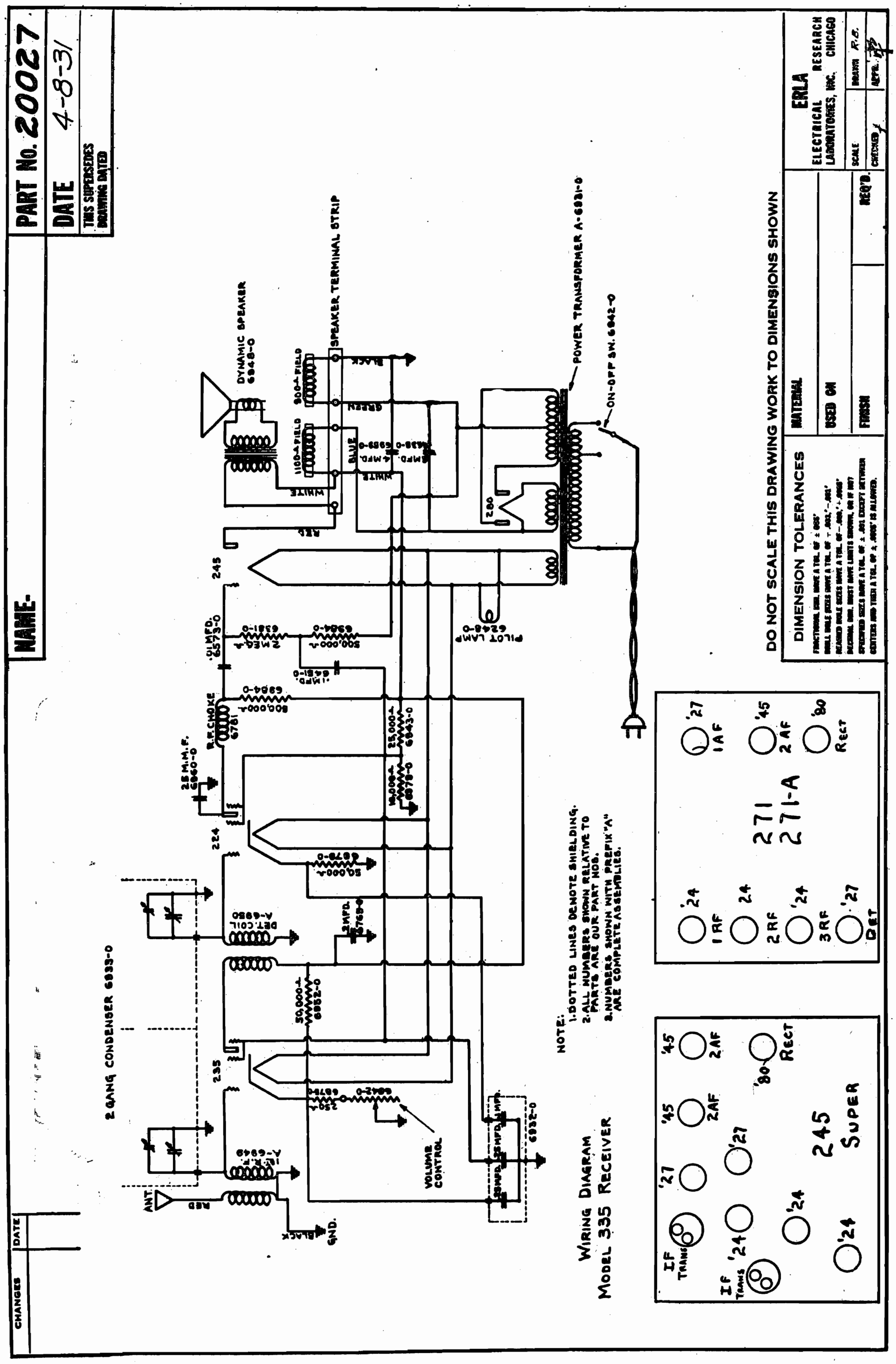
ELECTRICAL RESEARCH LABORATORIES, Inc.

MODEL 81, 82 (245)
Schematic



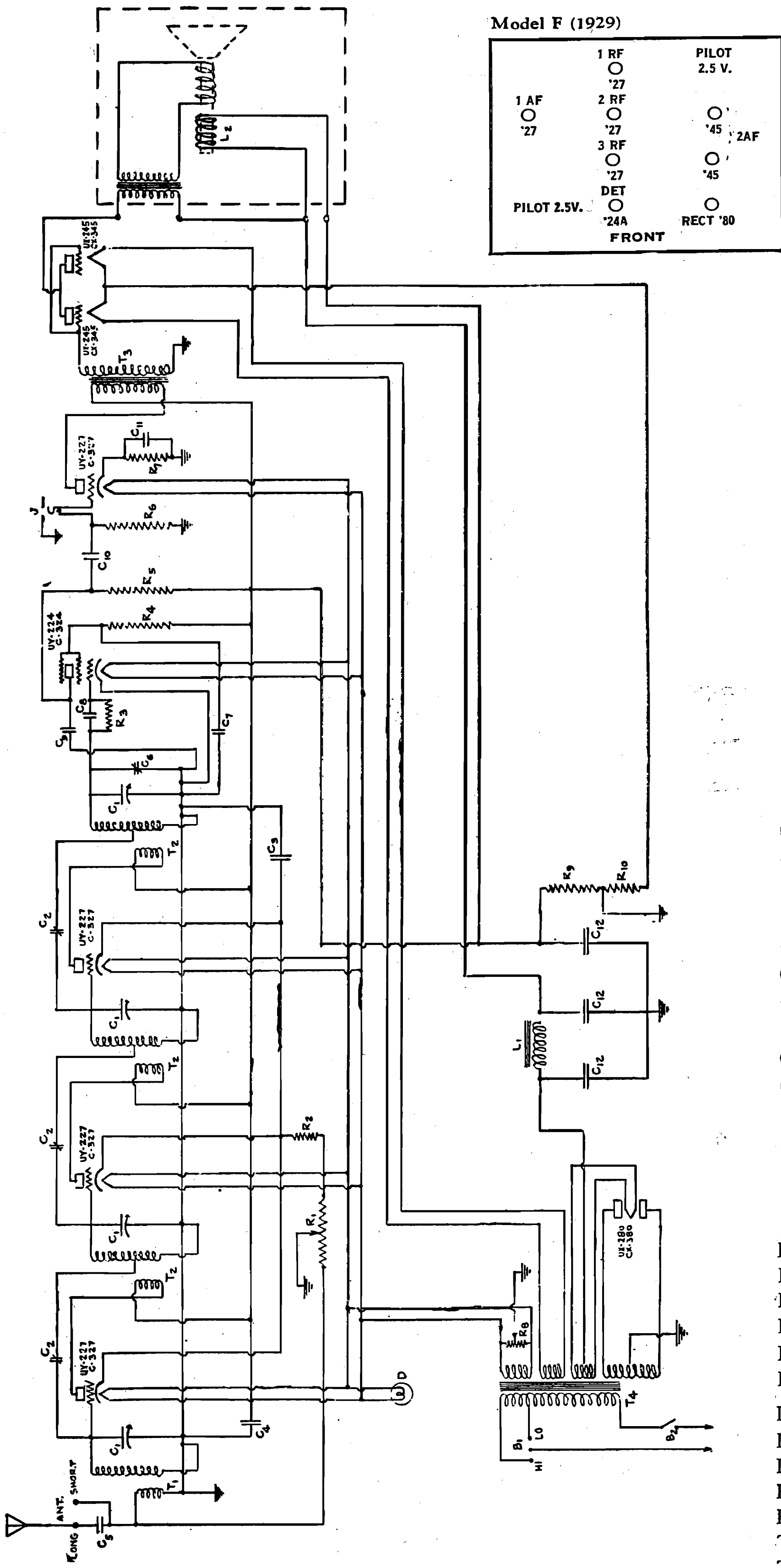
ELECTRICAL RESEARCH LABORATORIES, Inc.

MODEL 335
Schematic



MODEL F
Schematic
Data

EMERSON RADIO AND PHONOGRAPH CORPORATION



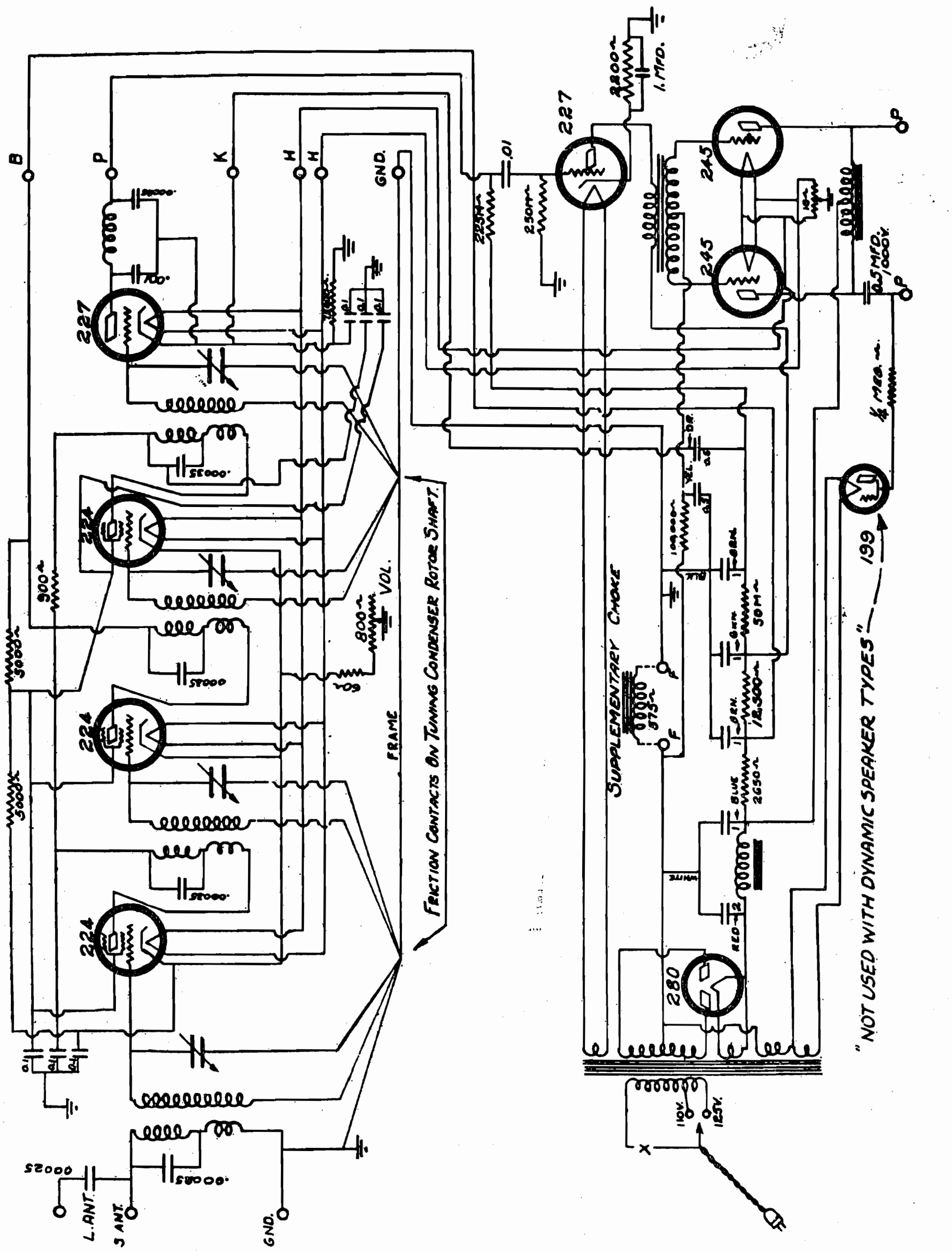
Model "F"
Line Voltage 115—Set on High Volt Tap—Volume Control Position Full On *Last Stage Is 2 No. 245 in Parallel

Tube No. in Order	Type of Tube	Position of Tube 1st R.F. Det. Etc.	Tube Out: A Volts	Tube Out: B Volts	Tube in Tester: A Volts	B Volts	C Volts (Control Grid)	Cathode-Heater Volts	Normal Plate M.A.	Plate M.A. Grid Test	Plate Change M.A.	Screen Grid Volts
1	227	1st RF	2.4	119	2.3	115	7	7	3.8	4.6	.8	-
2	227	2nd RF	2.4	119	2.3	115	7	7	3.8	4.6	.8	-
3	227	3rd RF	2.4	119	2.3	115	7	7	3.8	4.6	.8	-
4	224	Det.	2.4	50	2.3	50	0.8	-	0.7	0.7	-	5.
5	227	1st A	2.4	128	2.3	100	8.5	8.5	6.2	7.5	1.3	-
6	245	2nd A*	5.2	290	2.4	175	31	-	24.	28	4.	-
7	245	2nd A*	5.2	290	2.4	175	31	-	24.	28	4	-
8	280	Rect.	-	-	4.75	-	-	-	90.	-	-	-
9												
10												

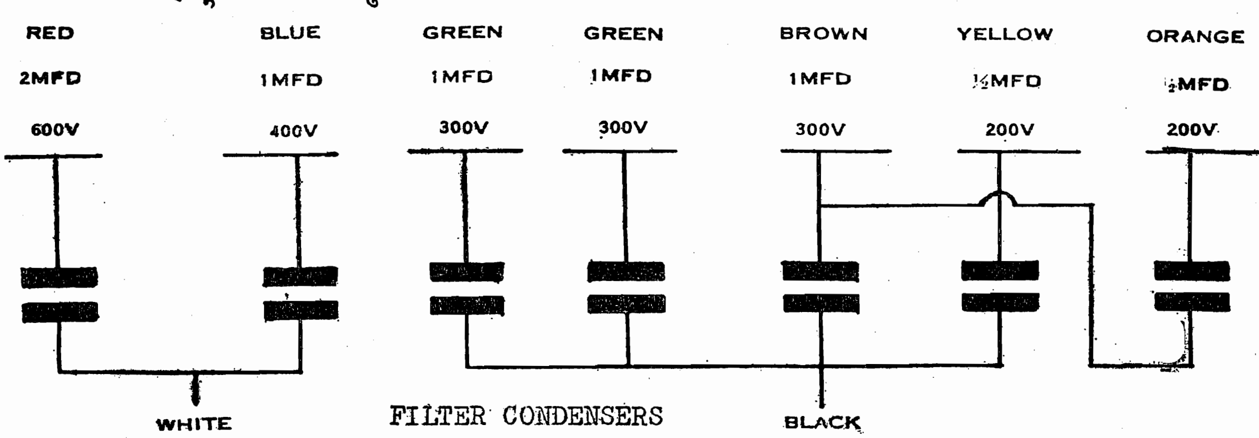
C_1 Tuning Condenser.
C_2 Neutralizing Condenser.
C_3 R.F. Grid Bias Condenser .25 MF.
C_4 R.F. Plate By-Pass Condenser .25 MF.
C_5 Antenna Condenser .00025 MF.
C_6 Det. Padding Condenser.
C_7 Det. Screen Grid Bias Condenser .25 MF.
C_8 Det. Control Grid Condenser .0001 MF.
C_9 Det. Plate Condenser .0005 MF.
C_{10} 1st Audio Coupling Condenser 0.1 MF.
C_{11} 1st Audio Grid Condenser 0.5 MF.
C_{12} Filter Condensers 8.0 MF Each.
L_1 Filter Choke.
L_2 Speaker Field 2500 Ohms.
J Phonograph Jack.
D Dial Lamp.
R_1 Volume Control 15,000 Ohms.
R_2 R.F. Grid Bias Resistance 620 Ohms.
R_3 Det. Control Grid Resistance .5 Megohm.
R_4 Det. Screen Grid Resistance .5 Megohm.
R_5 1st Audio Coupling Resistance .1 Megohm.
R_6 1st Audio Grid Resistance .5 Megohm.
R_7 1st Audio Grid Bias Resistance 1750 Ohms.
R_8 Hum Control 20 Ohms.
R_9 Loss Current Resistance 4500 Ohms.
R_{10} 245 Grid Bias Resistance 650 Ohms.
T_1 Antenna Transformer.
T_2 R.F. Inter stage Transformer.
T_3 Input Audio Transformer.
T_4 Power Transformer.
B_1 Hi-Lo S.P.D.T. Toggle Switch.
B_2 S.P.S.T. Toggle Switch.

MODEL 65
Schematic

EMERSON RADIO AND PHONOGRAPH CORPORATION



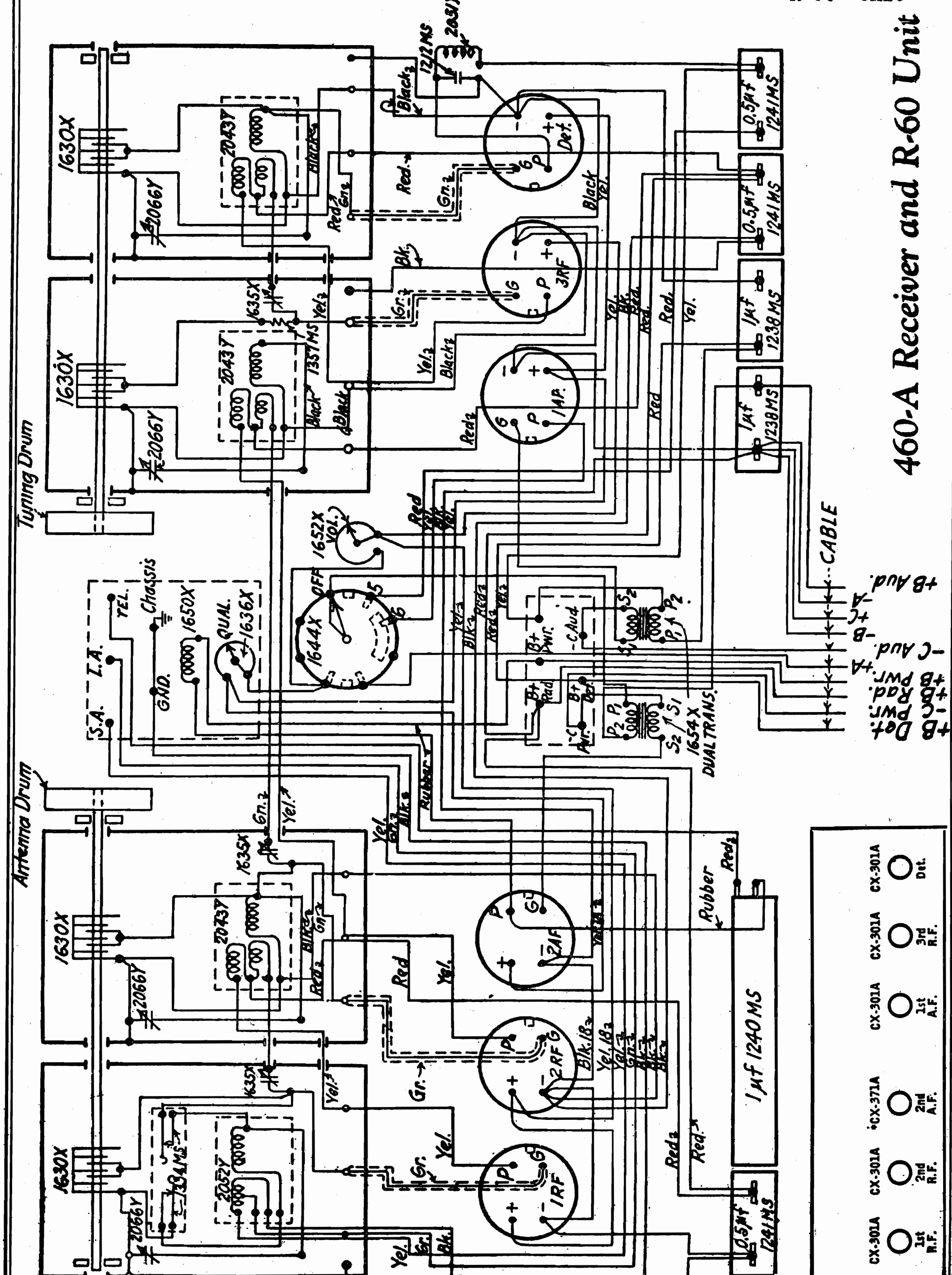
Voltage Data On Next Page



FILTER CONDENSERS

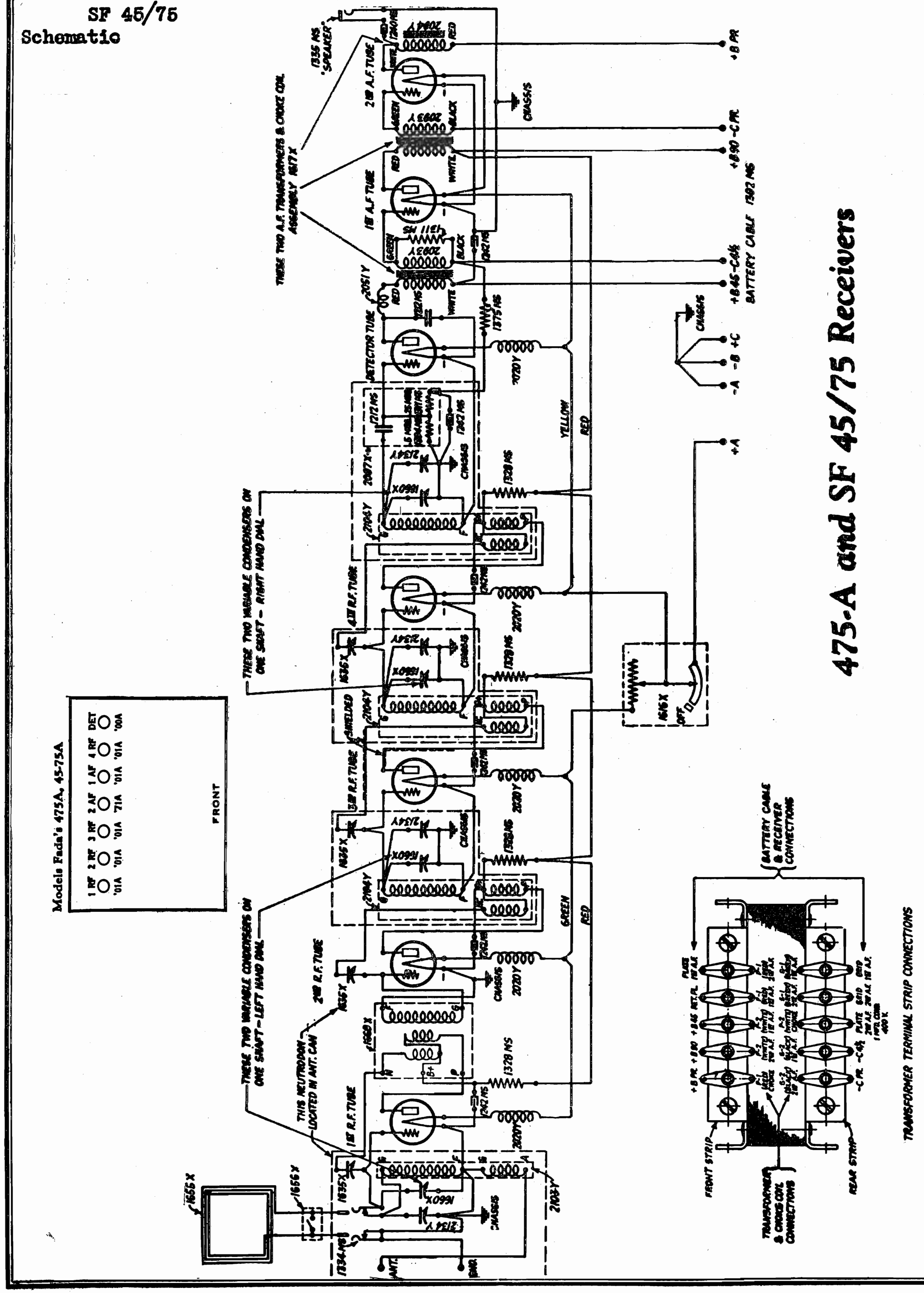
FADA RADIO & ELECTRIC CORP.

MODEL 460-A Receiver
R-60 Unit



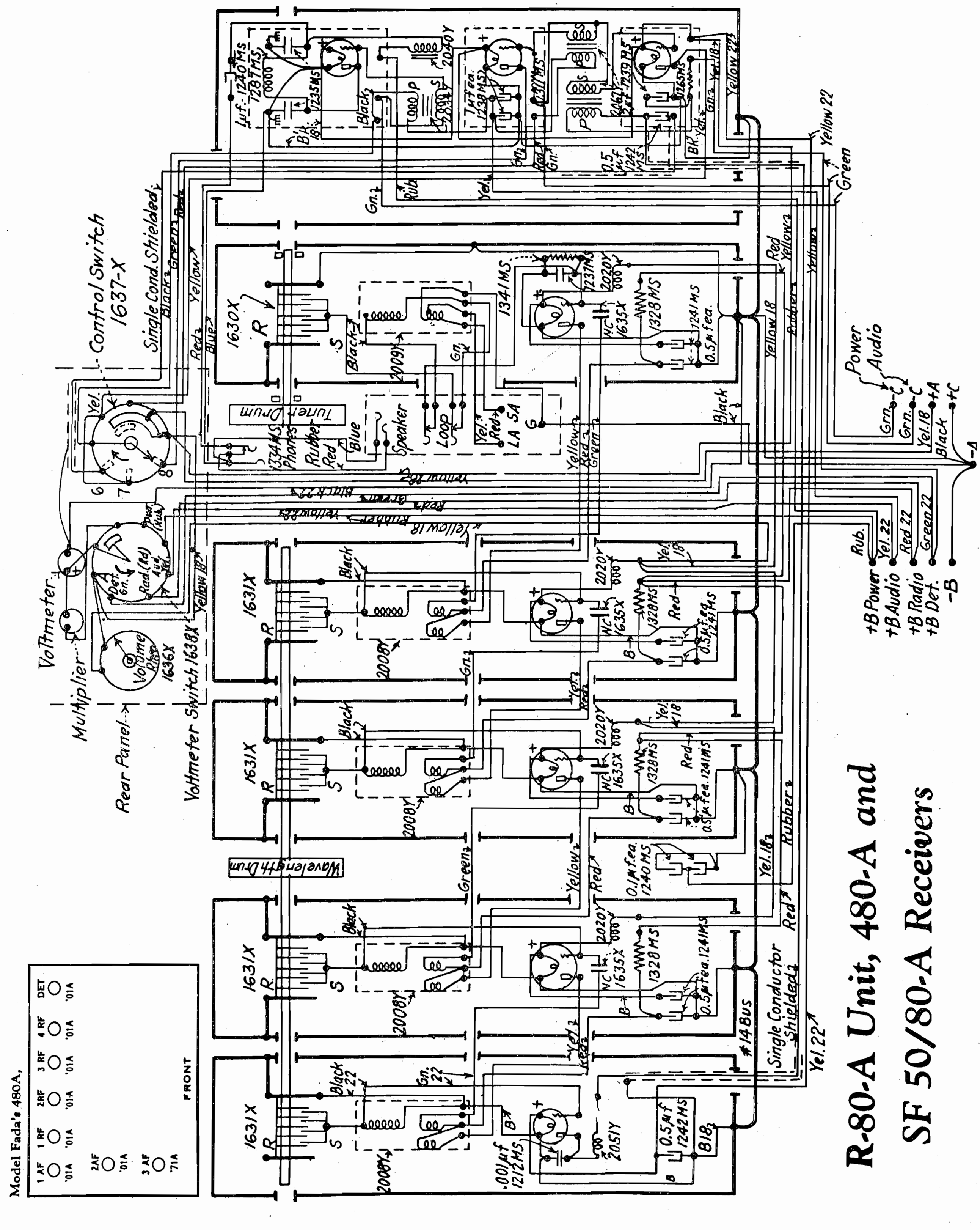
MODEL 475-A
SF 45/75
Schematic

FADA RADIO & ELECTRIC CORP



FADA RADIO & ELECTRIC CORP.

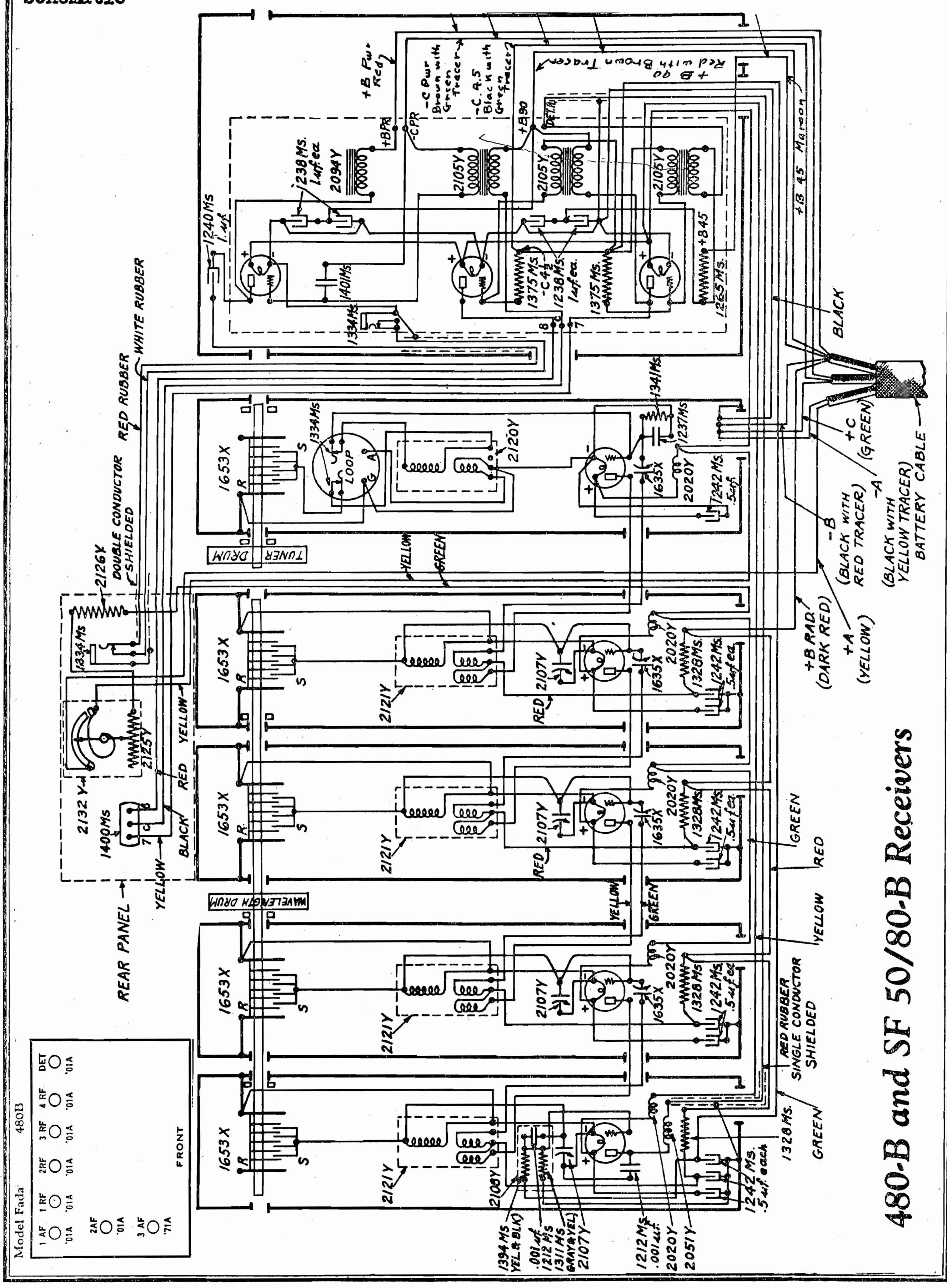
MODEL R-80-A Unit
480-A
SF 50/80-A
Schematic



R-80-A Unit, 480-A and SF 50/80-A Receivers

MODEL 480-B
SF 50/80-B
Schematic

FADA RADIO & ELECTRIC CORP.



MODEL 475UA
472UA
475CA
472CA

FADA RADIO & ELECTRIC CORP.

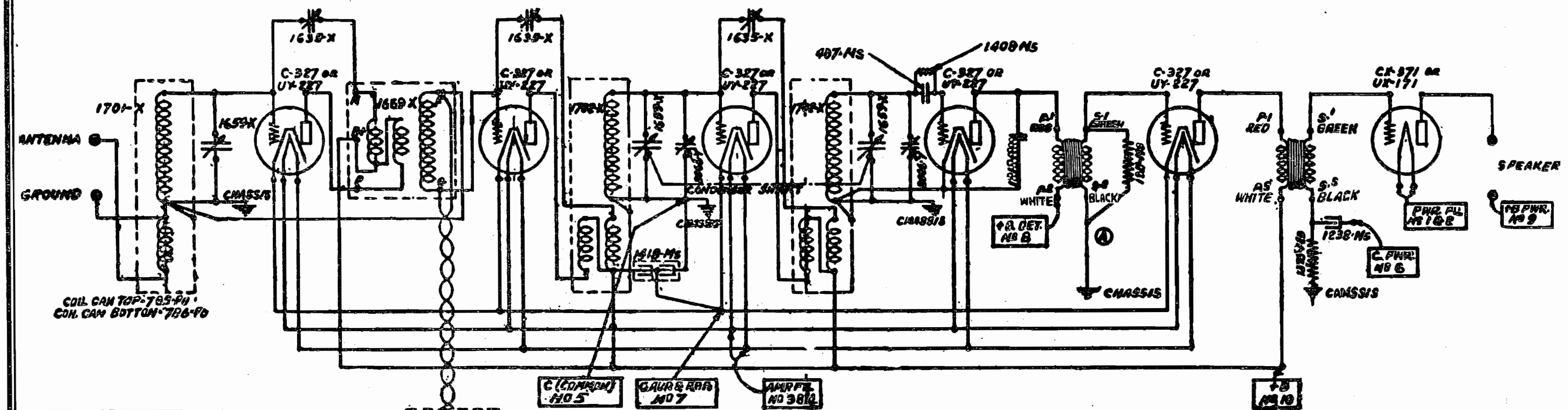
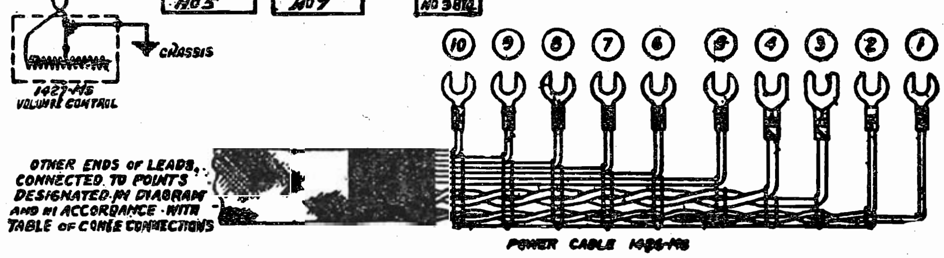


TABLE OF CABLE CONNECTIONS		
NO		COLOR
1	PWR. FIL.	BLACK } LIGHT TWISTED
2	PWR. FIL.	BLACK }
3	AMP. FIL.	BLACK }
4	AMP. FIL.	BLACK } HEAVY TWISTED
5	C (COMMON)	GREEN
6	C PWR.	BROWN WITH WIDE GREEN TRACER
7	GAUR & RAR	BLACK WITH WIDE GREEN TRACER
8	+B DET.	MAROON
9	+B PWR.	RED
10	+B	RED WITH WIDE BLACK TRACER



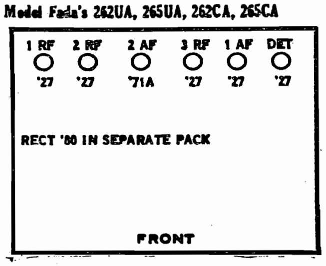
OTHER ENDS OF LEADS CONNECTED TO POINTS DESIGNATED IN DIAGRAM AND IN ACCORDANCE WITH TABLE OF CABLE CONNECTIONS

"Special" A. C. Receiver 265-UA or CA and RP-65-UA or CA 262-UA or CA and RP-62-UA or CA

For Power Unit See Model "C"

1212-Ms	Condenser - Detector filter - .001 mfd
1238-Ms	Condenser - By-pass - 1.0 mfd - 200 Volts (small)
1242-Ms	Condenser - By-pass - 0.5 mfd - 200 Volts (small)
1311-Ms	Resistance - carbon - 250,000 ohms (yellow)
1375-Ms	Resistance - carbon - 125,000 ohms (grey)
1407-Ms	Grid Condenser - .000125 mfd
1408-Ms	Grid Leak - 2 meg
1418-Ms	Condenser - By-pass - 0.25 - 0.25 mfd 200-400V.
1341-Ms	Resistance - carbon (green) 20,000 ohms
1410-Ms	Main filter condenser block - 10½ mfd
1414-Ms	Resistance - W.W. (yellow & white) - 250 ohms
1415-Ms	Resistance - W.W. (green & white) 2,000 ohms
1416-Ms	Resistance - W.W. (white & white) 3,000 ohms
1417-Ms	Resistance - carbon (blue) - 50,000 ohms
1419-Ms	Condenser (line buffer) - 0.5 mfd - 400 volts

Model Fada's 262UA, 265UA, 262CA, 265CA



MODEL 262UA, 262CA 265UA, 265CA

FADA RADIO & ELECTRIC CORP.

1212-Ms	.001 mfd	
1238-Ms	1.0 mfd	200 volts (small)
1240-Ms	1.0 mfd	(large)
1242-Ms	0.5 mfd	200 volts (small)
1311-Ms	250,000 ohms (yellow)	
1357-Ms	W.W. 180 ohms	
1375-Ms	Carbon - 125,000 ohms (grey)	
1407-Ms	.000125 mfd	
1408-Ms	2 meg	
1418-Ms	.25-.25 mfd	200-400v. (3 term)

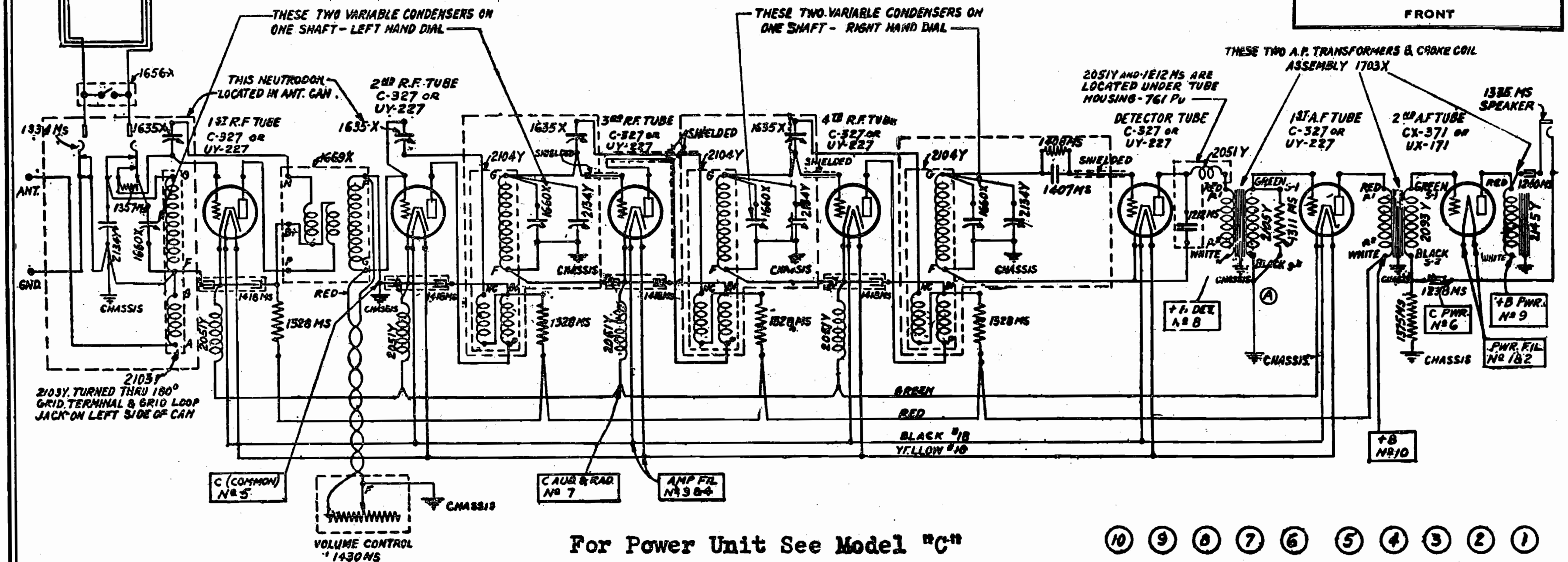
2-1334-Ms Carbon - 1,200 ohms (dark green)

Model Fada's 475UA, 472UA, 475CA, 472CA

1 RF	2 RF	3 RF	2 AF	1 AF	4 RF	DET
'27	'27	'27	'71A	'27	'27	'27

RECT '80 IN SEPARATE PACK

FRONT



For Power Unit See Model "C"

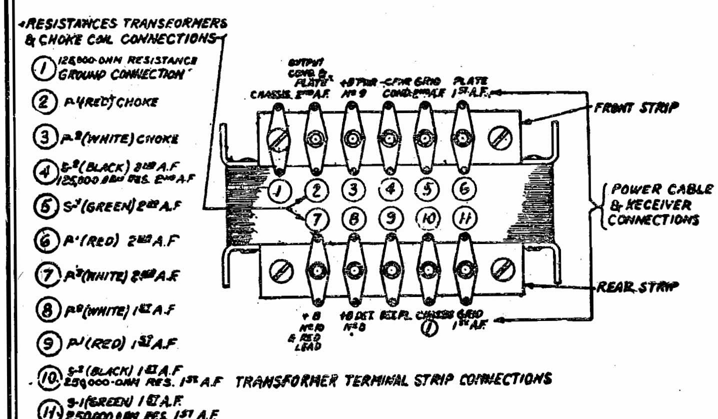
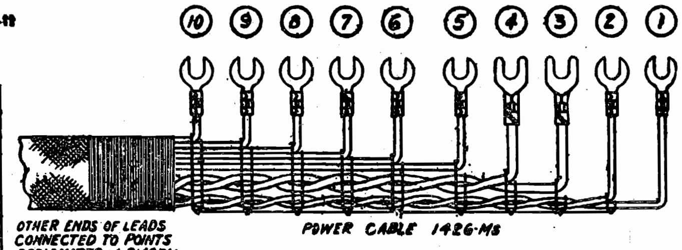


TABLE OF CABLE CONNECTIONS		
NO		COLOR
1	PWR. FIL.	BLACK } LIGHT TWISTED
2	PWR. FIL.	BLACK }
3	AMP. FIL.	BLACK } HEAVY TWISTED
4	AMP. FIL.	BLACK }
5	C (COMMON)	GREEN
6	C PWR.	BROWN WITH WIDE GREEN TRACER
7	C AUD & RAD	BLACK WITH WIDE GREEN TRACER
8	+B DET.	MAROON
9	+B PWR.	RED
10	+B	RED WITH WIDE BLACK TRACER



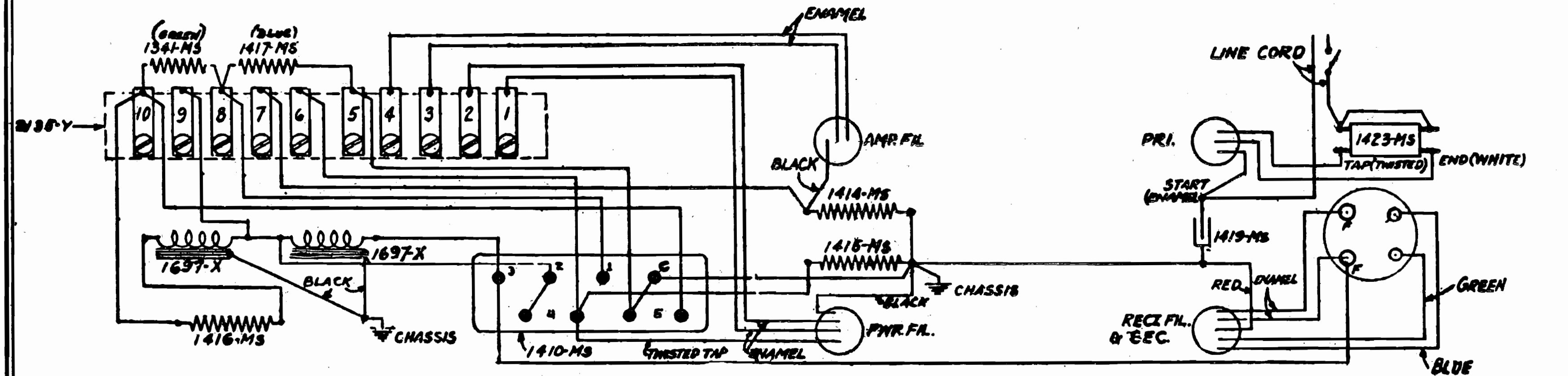
OTHER ENDS OF LEADS CONNECTED TO POINTS DESIGNATED IN DIAGRAM AND IN ACCORDANCE WITH TABLE OF CABLE CONNECTIONS

"7" AC Receiver

475-UA or CA and SF45/75-UA or CA
472-UA or CA and SF45/72-UA or CA

FADA RADIO & ELECTRIC CORP.

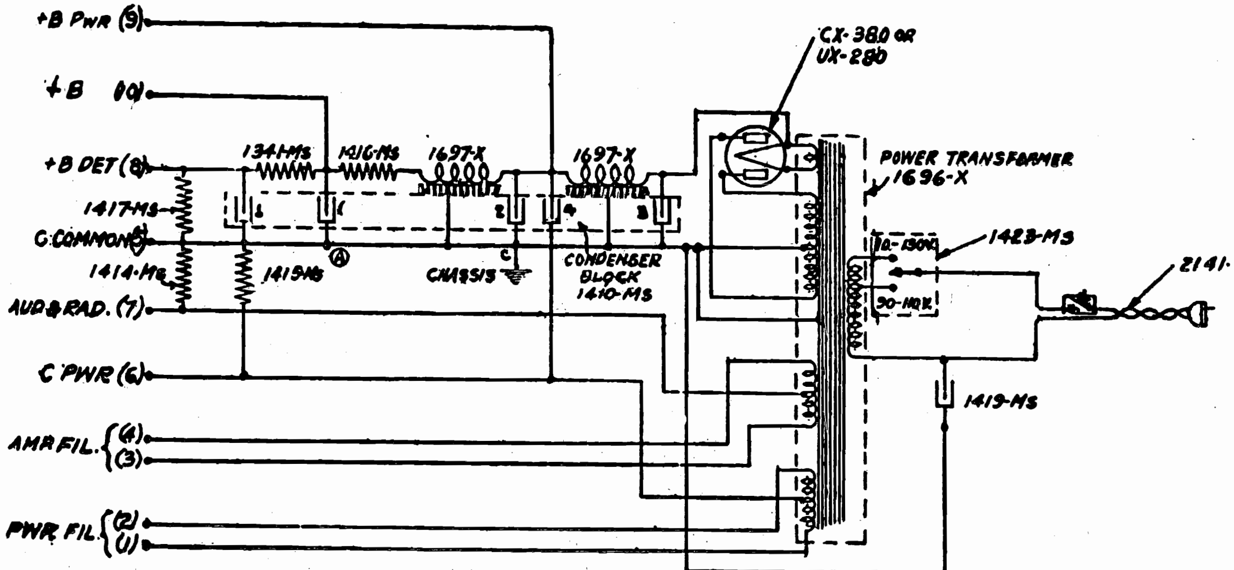
MODEL "C"
Electric Unit



ACTUAL WIRING DIAGRAM

TABLE OF CABLE CONNECTIONS

1, 2 } POWER FILAMENT
3, 4 } AMP. FILAMENT
5- C.COMMON
6- C PWR
7- C AUD. & RAD.
8- +B DET.
9- +B PWR
10- +B



SCHEMATIC WIRING DIAGRAM

Type "J" unit for 25 cycle current is similar, except that a 1706X power transformer is used instead of the 1696X transformer as indicated on the type "C" unit for 60 cycles.

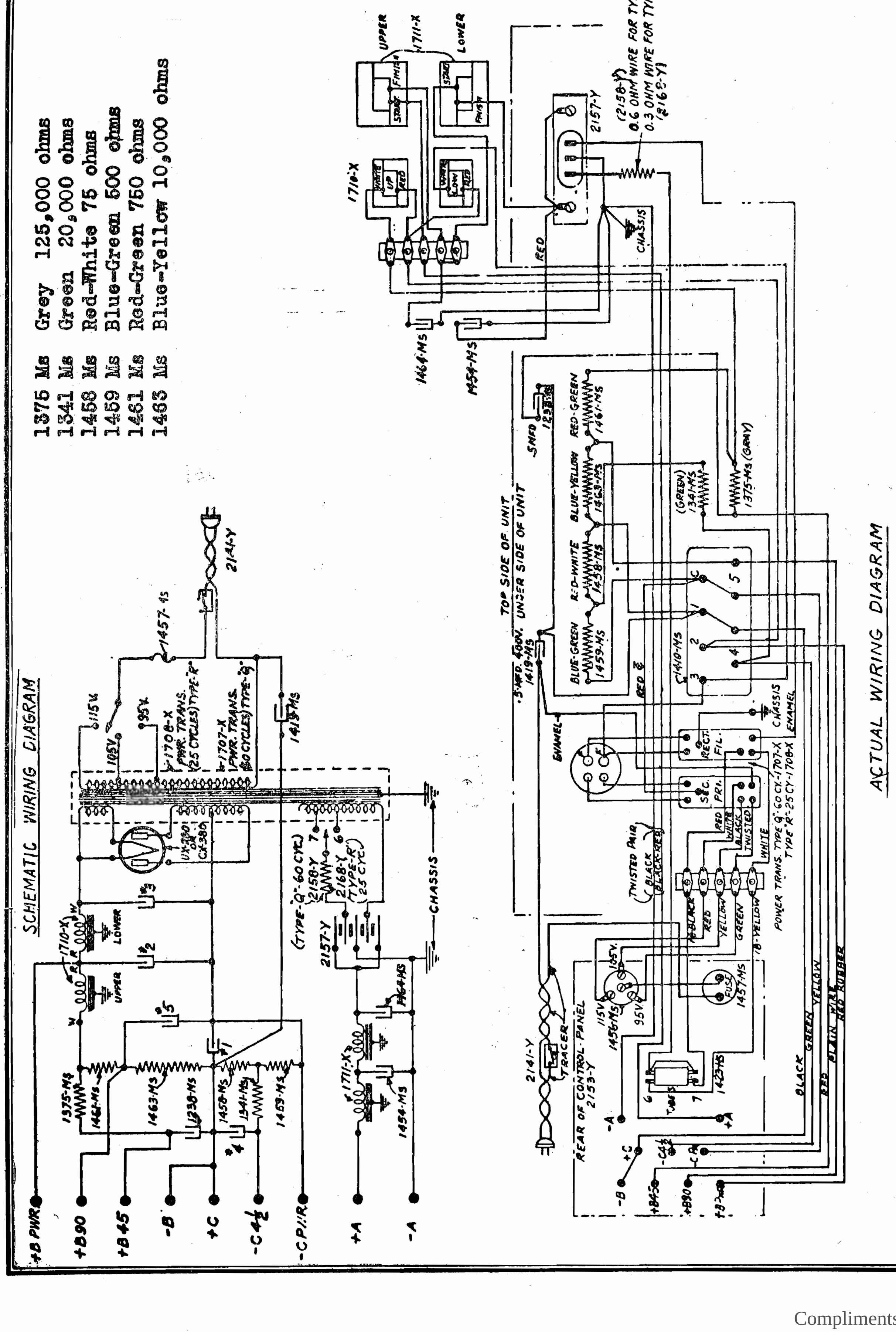
1341 Ms	Carbon	20,000 ohms	red and green or green only
1414 Ms	Wire	250 ohms	yellow and white
1415 Ms	Wire	2,000 ohms	green and white
1416 Ms	Wire	3,000 ohms	white and white
1417 Ms	Carbon	50,000 ohms	blue

Type "C" Electric Unit, used with "Special" and "7" AC Receivers

MODEL ABC S.P.U.
66-Q, 62-R

FADA RADIO & ELECTRIC CORP.

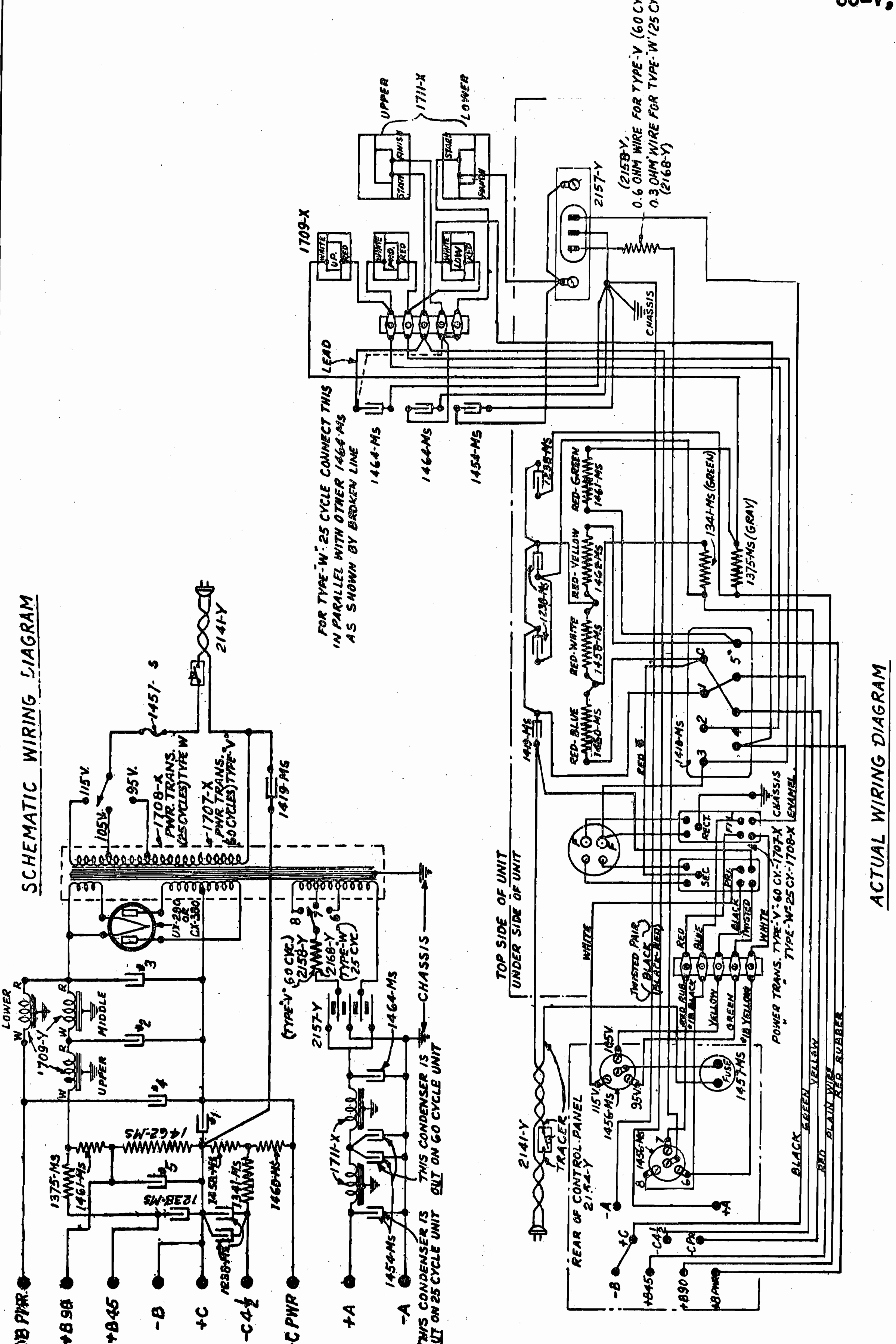
1375 Ms	Grey	125,000 ohms	
1341 Ms	Green	20,000 ohms	
1458 Ms	Red-White	75 ohms	
1459 Ms	Blue-Green	500 ohms	
1461 Ms	Red-Green	750 ohms	
1463 Ms	Blue-Yellow	10,000 ohms	



"ABC" Six Volt Tube Supply Unit — Types 66-Q and 62-R

FADA RADIO & ELECTRIC CORP.

MODEL ABC S.P.U.
86-V, 82-W



"ABC" Six Volt Tube Supply Unit — Types 86-V and 82-W

MODEL 10,11,30,31
MODEL 10Z,11Z,30Z,31Z FADA RADIO & ELECTRIC CORP.
Schematic

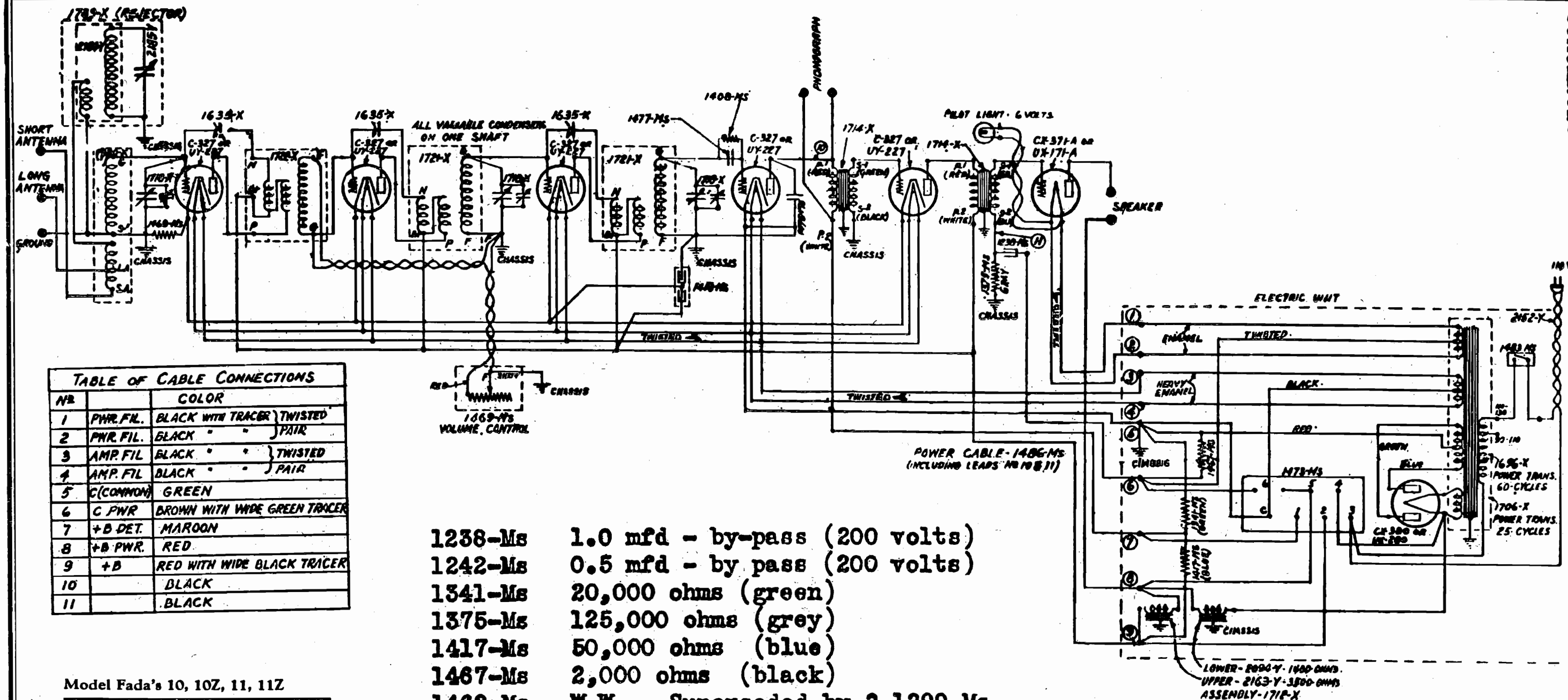
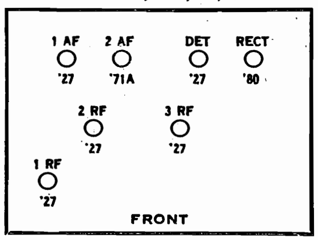


TABLE OF CABLE CONNECTIONS

No		COLOR
1	PWR. FIL.	BLACK WITH TRACER } TWISTED PAIR
2	PWR. FIL.	BLACK " "
3	AMP. FIL	BLACK " " } TWISTED PAIR
4	AMP. FIL	BLACK " "
5	C (COMMON)	GREEN
6	C PWR	BROWN WITH WIDE GREEN TRACER
7	+B DET.	MAROON
8	+B PWR.	RED
9	+B	RED WITH WIDE BLACK TRACER
10		BLACK
11		BLACK

Model Fada's 10, 10Z, 11, 11Z

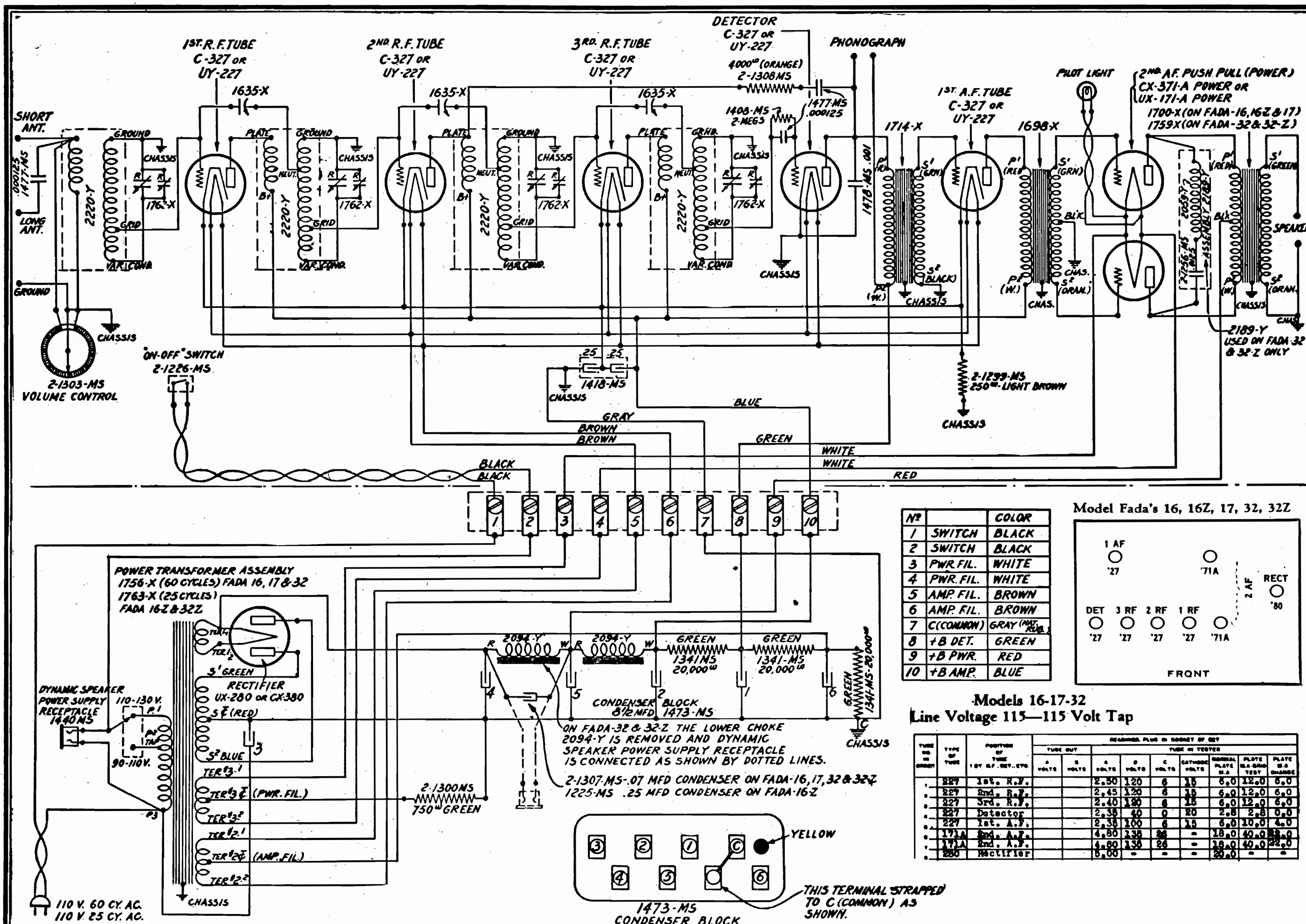


1238-Ms	1.0 mfd - by-pass (200 volts)
1242-Ms	0.5 mfd - by pass (200 volts)
1341-Ms	20,000 ohms (green)
1375-Ms	125,000 ohms (grey)
1417-Ms	50,000 ohms (blue)
1467-Ms	2,000 ohms (black)
1468-Ms	W.W. - Superseded by 2-1299-Ms
1469-Ms	Volume control - 20,000 ohms
1477-Ms	.000125 mfd moulded mica (green dot)
1478-Ms	Condenser - .001 mfd moulded mica (yellow)
1485-Ms	Pilot lamp - 6 volts (orange)
2-1299-Ms	Resistor - 250 ohms (light brown)
2094-Y	Choke - 1,400 ohms
2163-Y	Choke - 3,500 ohms

10, 11, 30 *and* 31 *Receivers*—60 cycles
10Z, 11Z, 30Z *and* 31Z *Receivers*—25 cycles

MODEL 16,17,32
MODEL 16Z,32Z
Schematic

FADA RADIO & ELECTRIC CORP.



Nº		COLOR
1	SWITCH	BLACK
2	SWITCH	BLACK
3	PWR. FIL.	WHITE
4	PWR. FIL.	WHITE
5	AMP. FIL.	BROWN
6	AMP. FIL.	BROWN
7	C (COMMON)	GRAY (MAT. RUB.)
8	+B DET.	GREEN
9	+B PWR.	RED
10	+B AMP.	BLUE

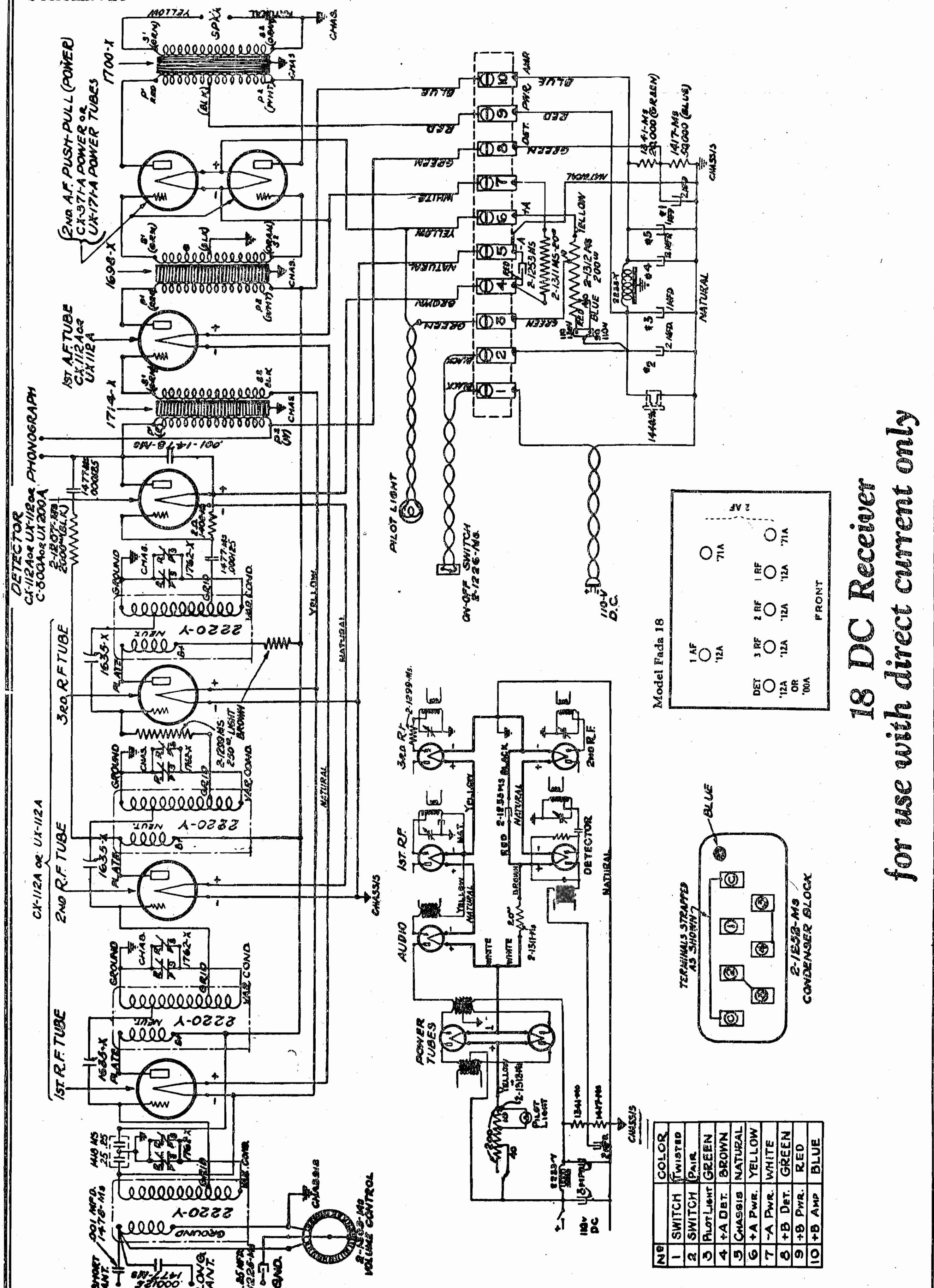
Models 16-17-32
Line Voltage 115—115 Volt Tap

Tube No. in Order	Type of Tube	Position of Tube 1st R.F., Det., etc.	Readings plug in socket of set: Tube out A Volts	Tube out B Volts	Tube in tester A Volts	B Volts	C Volts	Cathode Volts	Normal Plate M.A.	Plate M.A. Grid Test	Plate M.A. Change
1	227	1st. R.F.			2.50	120	6	15	6.0	12.0	6.0
2	227	2nd. R.F.			2.45	120	6	15	6.0	12.0	6.0
3	227	3rd. R.F.			2.40	120	6	15	6.0	12.0	6.0
4	227	Detector			2.38	40	0	20	2.8	2.8	0.0
5	227	1st. A.F.			2.38	100	6	15	6.0	10.0	4.0
6	171A	2nd. A.F.			4.80	135	26	-	18.0	40.0	22.0
7	171A	2nd. A.F.			4.80	135	26	-	18.0	40.0	22.0
8	280	Rectifier			5.00	-	-	-	20.0	-	-

16, 17 and 32 Receivers - 60 cycles   16-Z and 32-Z Receivers - 25 cycles

MODEL 18 DC
Schematic

FADA RADIO & ELECTRIC CORP.



Nº		COLOR
1	SWITCH	TWISTED PAIR
2	SWITCH	
3	PILOT LIGHT	GREEN
4	+A DET.	BROWN
5	CHASSIS	NATURAL
6	+A PWR.	YELLOW
7	-A PWR.	WHITE
8	+B DET.	GREEN
9	+B PWR.	RED
10	+B AMP	BLUE

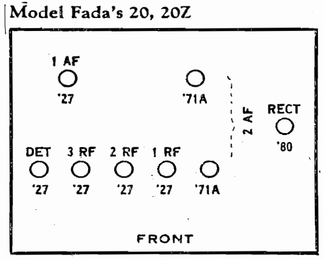
FADA RADIO & ELECTRIC CORP.

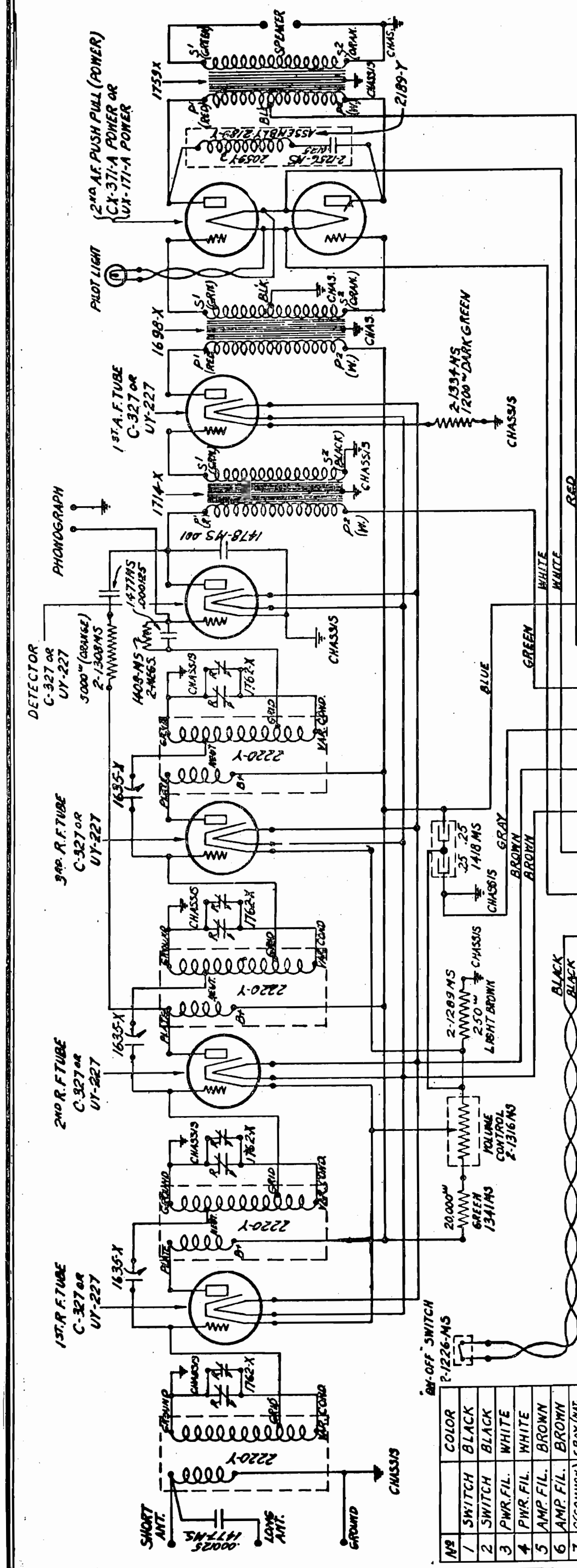
MODEL 20,
MODEL 20Z
Schematic

Line Voltage 115—Set on High Voltage—Volume Control Position Max

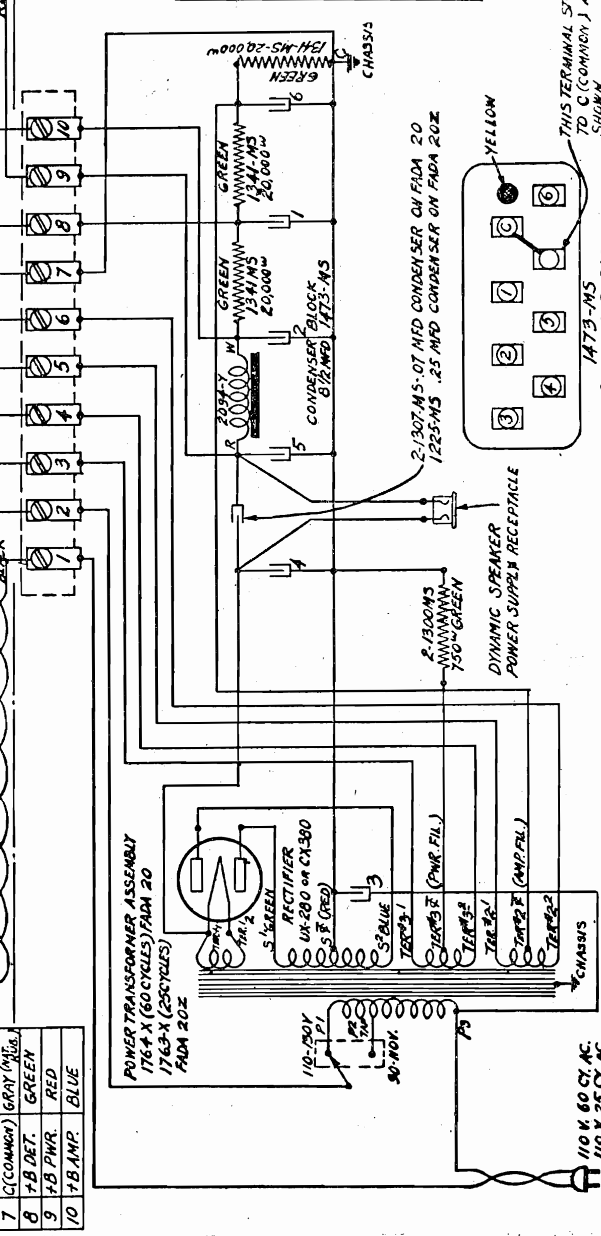
Tube No. in Order (1)	Type of Tube (2)	Position of Tube 1st R.F. Det., etc. (3)	Readings Plug in Socket of Set — Tube Out: A Volts (4)	Tube Out: B Volts (5)	Tube in Tester: A Volts (6)	Tube in Tester: B Volts (7)	C Volts (Control Grid) (8)	Cathode-Heater Volts (9)	Normal Plate M.A. (10)	Plate M.A. Grid Test (11)	Plate Change M.A. (12)	Screen Grid Volts (13)
1	327	1st RF	2.5	142	2.4	140	7	16	6.2	11.0	4.8	-
2	327	2nd RF	2.5	142	2.4	140	7	16	6.2	11.0	4.8	-
3	327	3rd RF	2.5	142	2.4	140	7	16	6.2	11.0	4.8	-
4	327	Det.	2.5	46	2.4	46	0	21	3.4	5.0	1.6	-
5	327	1st AF	2.5	125	2.4	124	7	16	5.0	6.7	1.7	-
6	371	2nd AF	5.1	155	5.0	154	33	-	20.0	23.0	3.0	-
7	371	2nd AF	5.1	155	5.0	154	33	-	20.0	23.0	3.0	-
8	380	Rect.	5.1	-	5.0	-	-	-	84	-	-	-

Model Fada's 20, 20Z





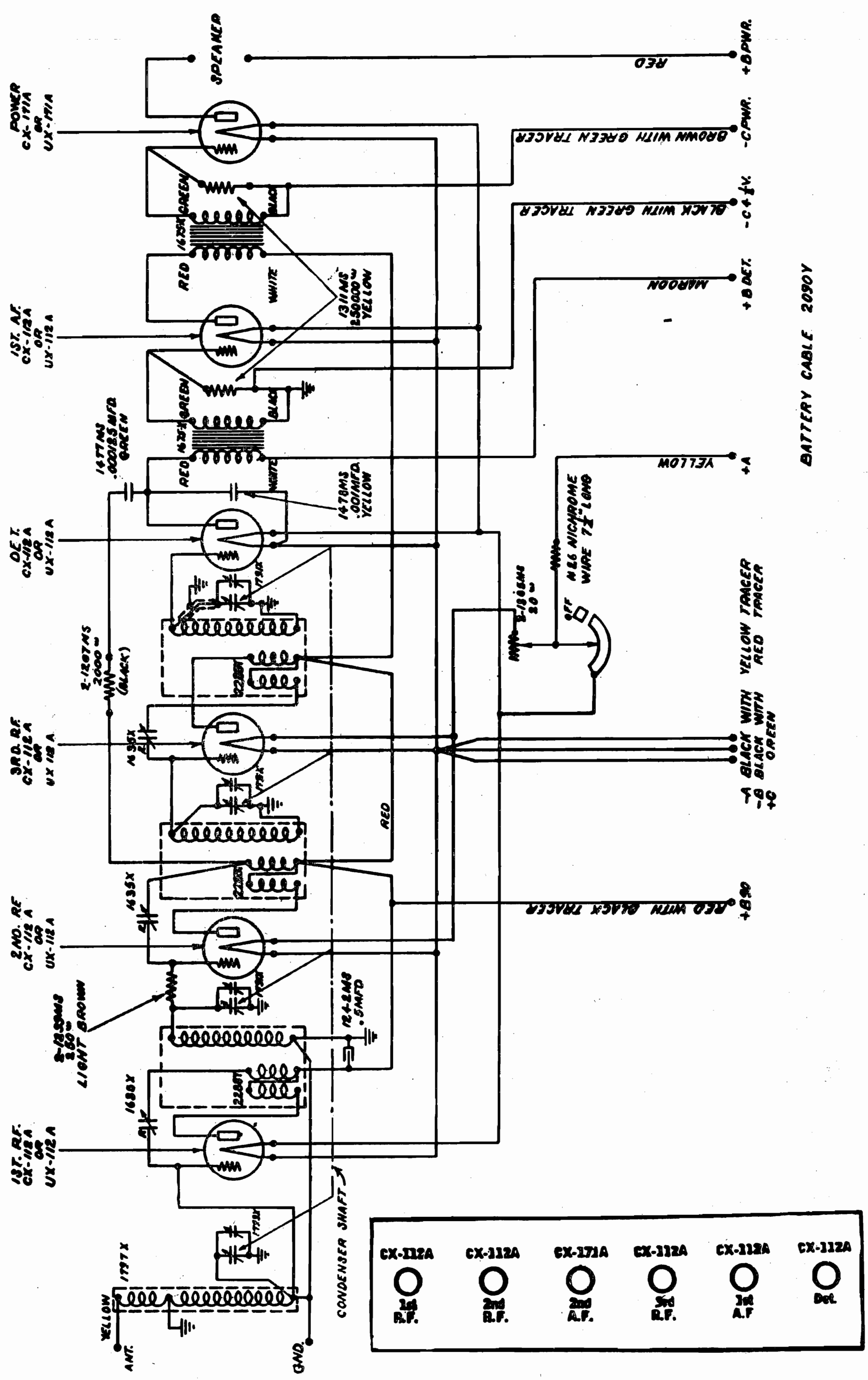
Nº		COLOR
1	SWITCH	BLACK
2	SWITCH	BLACK
3	PWR. FIL.	WHITE
4	PWR. FIL.	WHITE
5	AMP. FIL.	BROWN
6	AMP. FIL.	BROWN
7	C (COMMON)	GRAY (HAT. BLUE)
8	+B DET.	GREEN
9	+B PWR.	RED
10	+B AMP.	BLUE



20 Receiver—AC 60 cycles 20-Z Receiver—AC 25 cycles

MODEL 22 Battery Schematic

FADA RADIO & ELECTRIC CORP.

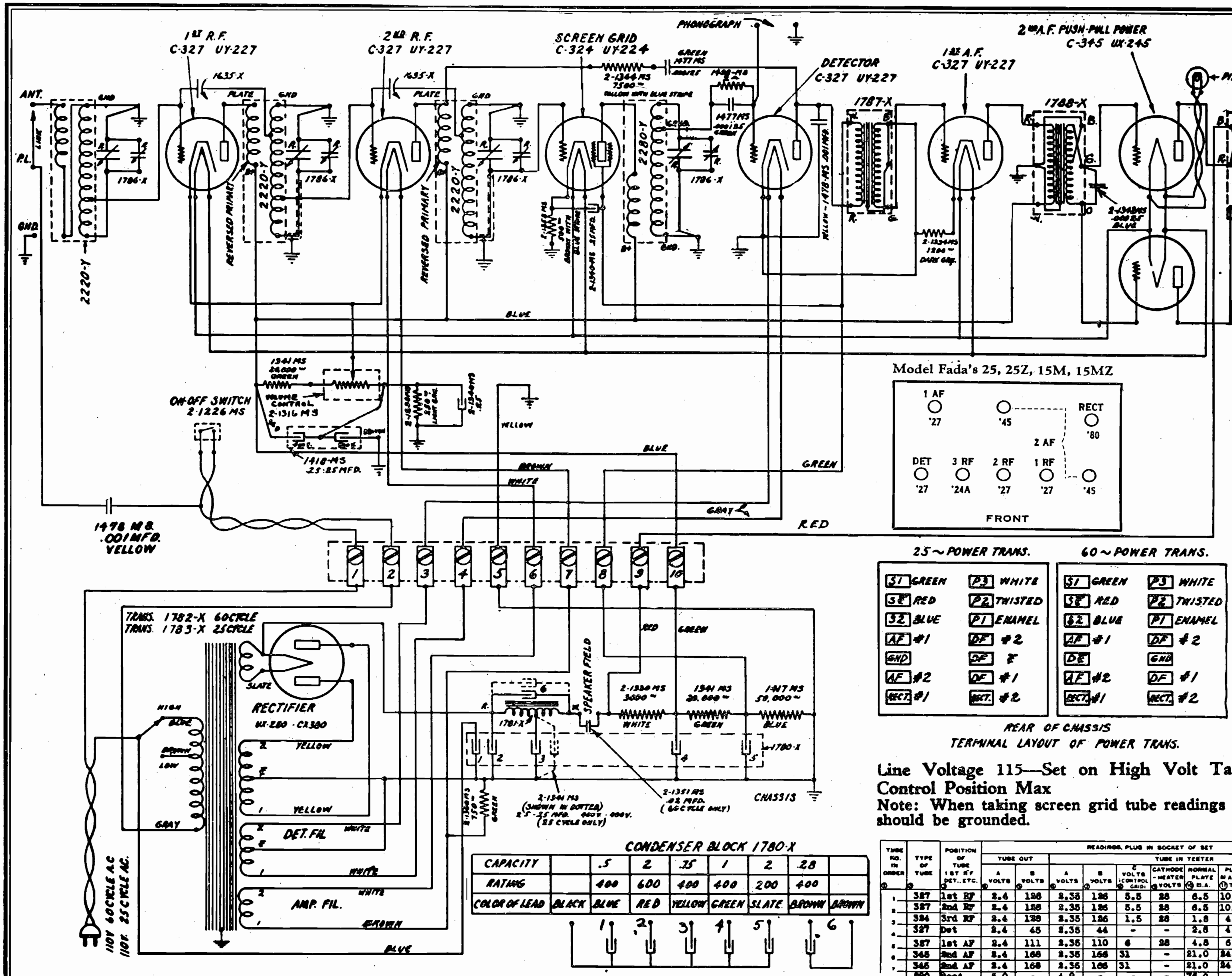


22 Battery Model Receiver

FADA RADIO & ELECTRIC CORP.

MODEL 25
MODEL 25Z
Schematic

25 Receiver—AC 60 cycles
25-Z Receiver—AC 25 cycles



Line Voltage 115—Set on High Volt Tap—Volume Control Position Max

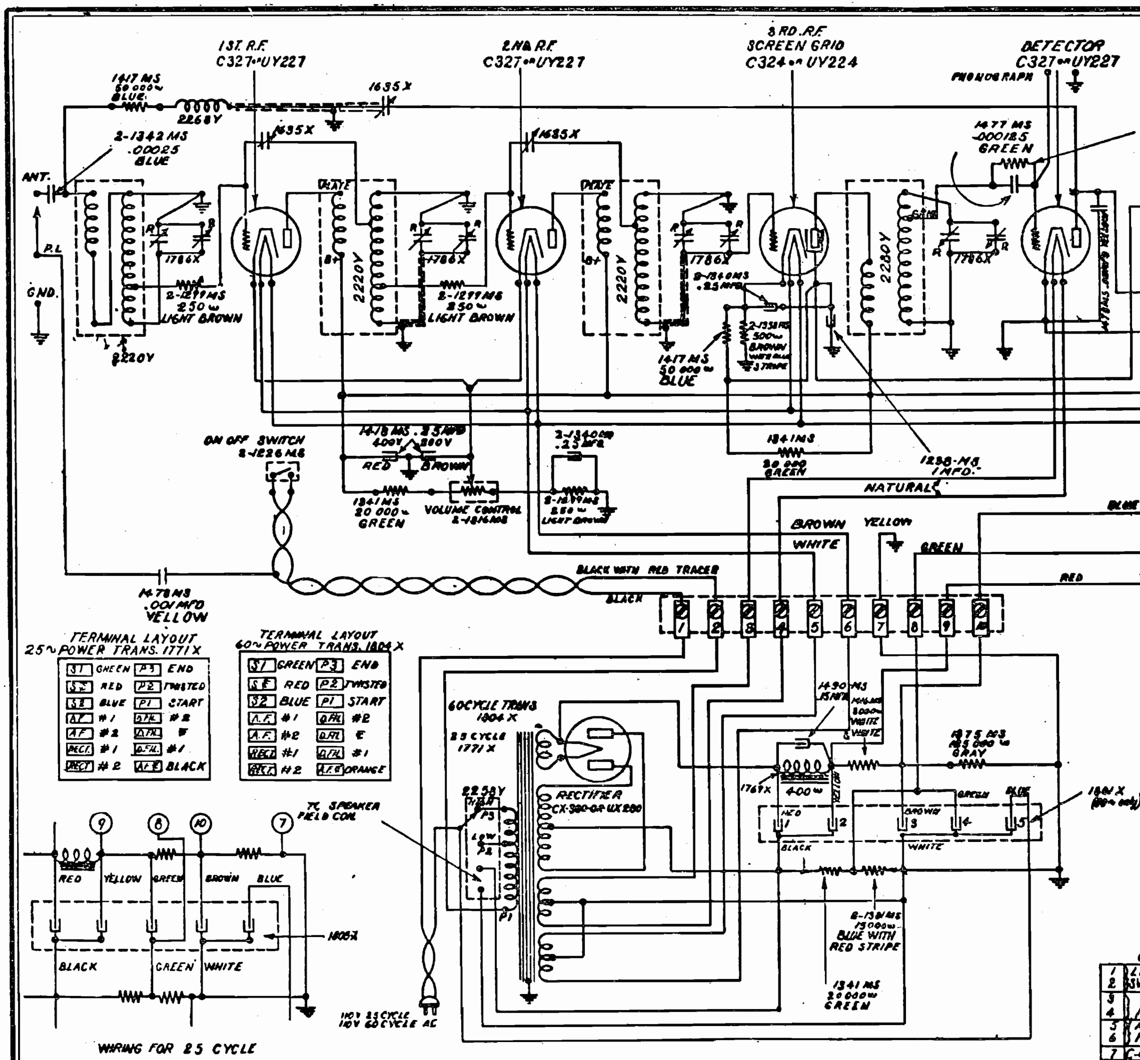
Note: When taking screen grid tube readings control grid should be grounded.

CONDENSER BLOCK 1780-X

CAPACITY		.5	2	.25	1	2	.28	
RATING		400	600	400	400	200	400	
COLOR OF LEAD	BLACK	BLUE	RED	YELLOW	GREEN	SLATE	BROWN	BROWN

Tube No. in Order (1)	Type of Tube (2)	Position of Tube 1st RF Det., etc. (3)	Readings, Plug in Socket of Set — Tube Out: A Volts (4)	Tube Out: B Volts (5)	Tube in Tester: A Volts (6)	Tube in Tester: B Volts (7)	C Volts (Control Grid) (8)	Cathode-Heater Volts (9)	Normal Plate M.A. (10)	Plate M.A. Grid Test (11)	Plate Change M.A. (12)	Screen Grid Volts (13)
1	327	1st RF	2.4	128	2.35	126	5.5	28	6.5	10.5	4.0	-
2	327	2nd RF	2.4	128	2.35	126	5.5	28	6.5	10.5	4.0	-
3	324	3rd RF	2.4	128	2.35	126	1.5	28	1.8	4.0	2.2	-
4	327	Det	2.4	45	2.35	44	-	-	2.8	4.2	1.4	43
5	327	1st AF	2.4	111	2.35	110	6	28	4.8	6.4	1.6	-
6	345	2nd AF	2.4	168	2.35	166	31	-	21.0	24.0	3.0	-
7	345	2nd AF	2.4	168	2.35	166	31	-	21.0	24.0	3.0	-
8	280	Rect.	5.0	-	4.9	-	-	-	75.0	-	-	-

MODEL 25 and 25Z
M-250 and M-250Z units FADA RADIO & ELECTRIC CORP.



Line Voltage 120—Voltage Tap High
Volume Control Maximum

TUBE NO. IN ORDER TESTED (1)	TYPE OF TUBE (2)	POSITION OF TUBE IN SET (3)	METER READINGS WITH JEWELL TEST PLUG IN SOCKET OF SET — OPERATING VOLTAGES: FILAMENT OR HEATER (4)	PLATE OR ANODE (5)	CONTROL GRID—SPACE GD+ (6)	NORMAL GRID—SCREEN GD+ (7)	CATHODE TO HEATER (8)	MILLIAMPERES: SCREEN GD L. H. 80 PLATE (9)	PLATE R. H. '80 PLATE (10)	TUBE TEST (11)	PLATE CURRENT CHANGE (12)	(13)
1	227	1 R.F.	2.5	140	-	6	6	-	8	11	3	
2	227	2 R.F.	2.5	140	-	6	6	-	8	11	3	
3	224	3 R.F.	2.5	140	50	3	3	-	2.5	3	.5	
4	227	Det.	2.5	45	-	0	0	-	3	-	-	
5	227	1 A.F.	2.5	120	-	6	6	-	5	7	2	
6	245	2 A.F.	2.5	250	-	50	-	-	25	30	5	
7	245	2 A.F.	2.5	250	-	50	-	-	25	30	5	
8	280	Rect.	5.0	-	-	-	-	40	40	-	-	
9												
10												

CABLE 8-1362 MS.

1	LINE	BLACK
2	SWITCH	BLACK WITH RED TRACER
3	DET	GRAY
4	FIL.	
5	AMP	WHITE
6	FIL.	BROWN
7	C-COMMON	YELLOW
8	-C PWR.	GREEN
9	+B PWR.	RED
10	+B AMP.	BLUE

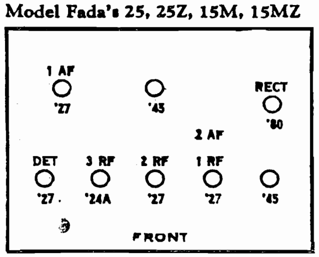
60~ CONDENSER BLOCK 1801X

CAPACITY	2	2	2	1	.5		
RATING	600	400	400	200	400		
TOLERANCE	PLUS 20% MINUS 10%						
COLOR of LEAD	BLACK	RED	YELLOW	BROWN	GREEN	BLUE	WHITE

25~ CONDENSER BLOCK 1805X

CAPACITY	2	2	2	.5		1		
RATING	600	400	400	400		400		
TOLERANCE	PLUS 20% MINUS 10%							
COLOR of LEAD	BLACK	RED	YELLOW	BROWN	BLUE	WHITE	GREEN	GREEN

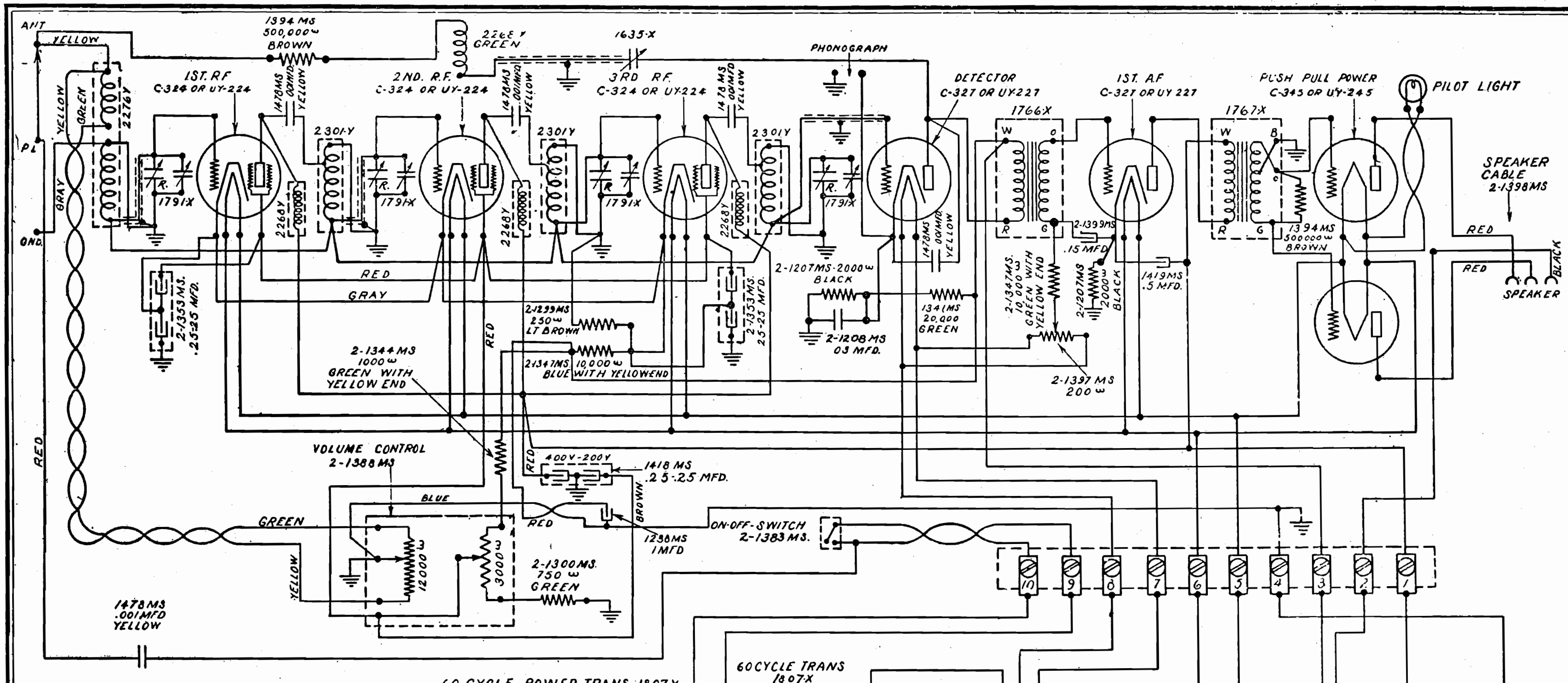
Model Fada's 25, 25Z, 15M, 15MZ

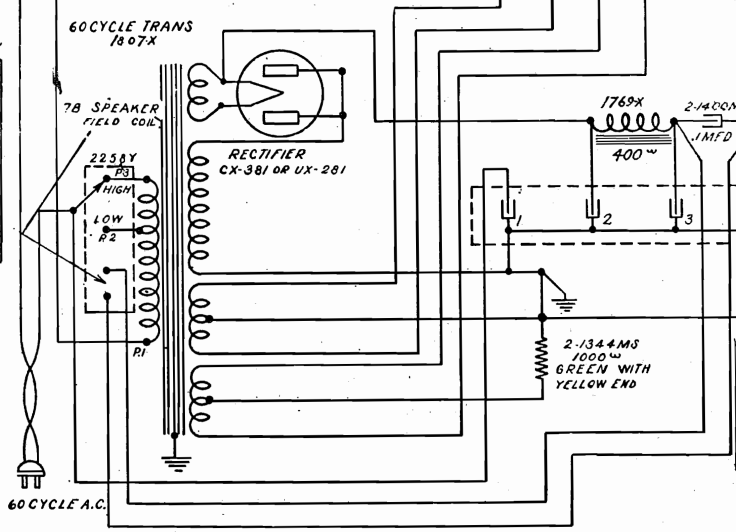


25 and 25-Z Receivers used with M-250 and M-250-Z Electric Units

FADA RADIO & ELECTRIC CORP.

MODEL 35-B
Schematic, Voltage





CONDENSER BLOCK 1790-X.

CAPACITY	.5	2	2	2	1	1
RATING	400	600	600	400	400	200
TOLERANCE	PLUS 20%		MINUS 10%			
COLOR OF LEAD	BLACK	BLUE	RED	YELLOW	BROWN	GREEN	SLATE

60 CYCLE POWER TRANS. 1807-X

SEC.1	GREEN	PRI.3	WHITE
SEC.2	BLUE	PRI.2	TWISTED
DET.F.	¢	PRI.	#1
AMP.F.	#1	DET.F.	#2
SHIELD & GND.		AMP.F.	¢ RED
AMP.F.	#2	DET.F.	#1
RECT.	#1	RECT.	#2

CABLE 2-1352 MS

1	+B AMP.	RED BLACK TRACER
2	+ PWR.	RED
3	+B DET.	MAROON
4	C-COMMON	GREEN
5, 6	AMP. FIL.	HEAVY TWISTED BLACK
7, 8	DET. FIL.	LIGHT TWISTED BLACK
9, 10	LINE SWITCH	LIGHT TWISTED BLACK WITH RED TRACER

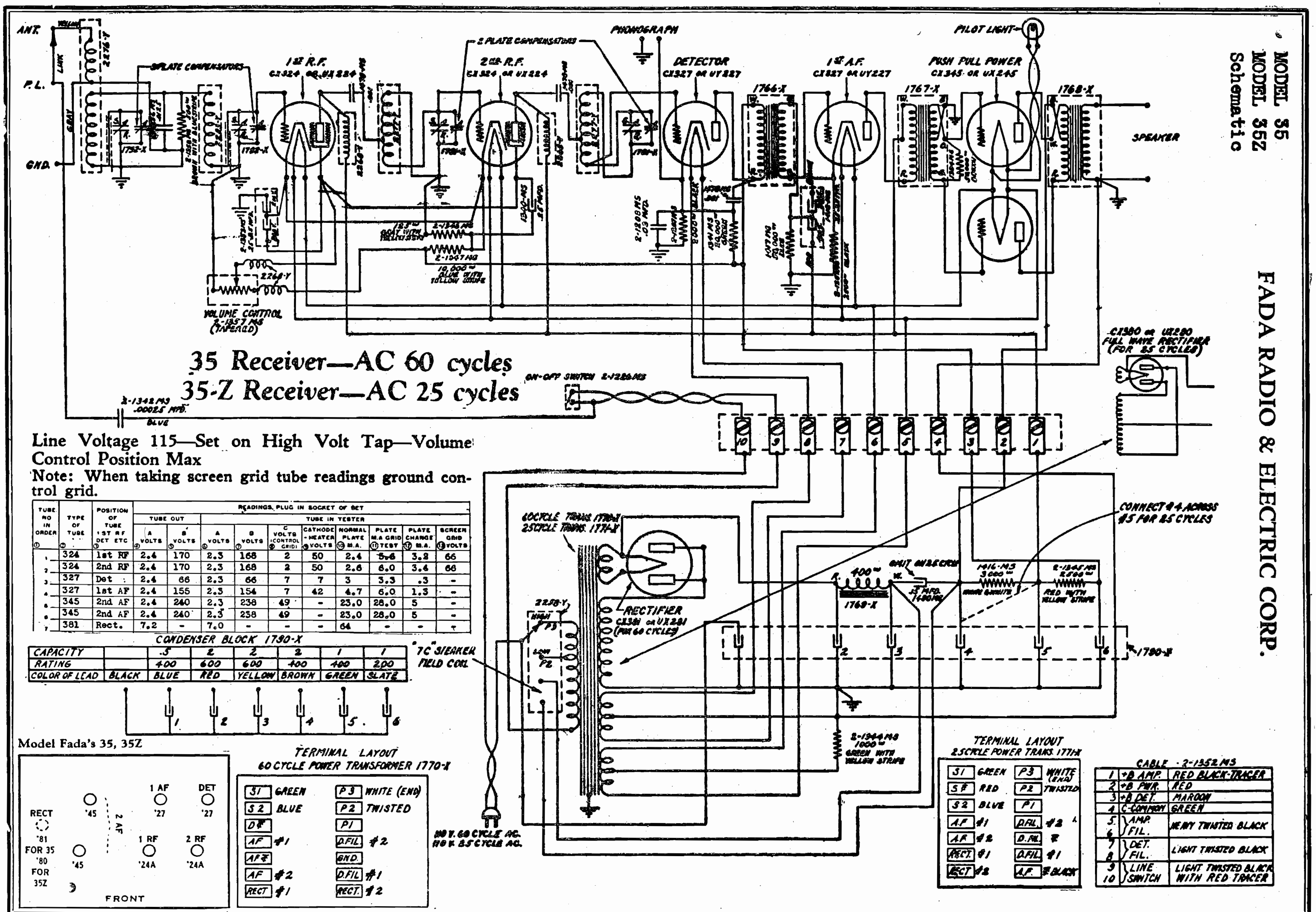
FADA—Model 35-B
Line Voltage 120—Voltage Tap High
Volume Control Maximum

TUBE NO. IN ORDER TESTED (1)	TYPE OF TUBE (2)	POSITION OF TUBE IN SET (3)	METER READINGS WITH JEWELL, TEST PLUG IN SOCKET OF SET — OPERATING VOLTAGES: FILAMENT OR HEATER (4)	PLATE OR ANODE (5)	CONTROL GRID—SPACE GD+ (6)	NORMAL GRID—SCREEN GD+ (7)	CATHODE TO HEATER (8)	MILLIAMPERES: SCREEN GD L. H. 80 PLATE (9)	PLATE R. H. '80 PLATE (10)	TUBE TEST (11)	PLATE CURRENT CHANGE (12)
1	224	1 R.F.	2.4	160	65	3	42	-	2.	4	2
2	224	2 R.F.	2.4	160	65	3	42	-	2.	4	2
3	224	3 R.F.	2.4	160	65	3	42	-	2.	4	2
4	227	Det	2.4	80	-	10	10	-	.2	1	.8
5	227	1 A.F.	2.4	150	-	10	10	-	5.	6.5	1.5
6	245	2 A.F.	2.4	240	-	45	40	-	25.	30.	5
7	245	2 A.F.	2.4	240	-	45	-	-	25.	30	5
8	280	Rect.	7.1	-	-	-	-	32.5	32.5	-	-

Wiring Diagram 35-B

MODEL 35
MODEL 35Z
Schematic

FADA RADIO & ELECTRIC CORP.



35 Receiver—AC 60 cycles
35-Z Receiver—AC 25 cycles

Line Voltage 115—Set on High Volt Tap—Volume Control Position Max

Note: When taking screen grid tube readings ground control grid.

TUBE NO IN ORDER ①	TYPE OF TUBE ②	POSITION OF TUBE 1ST RF DET ETC ③	READINGS, PLUG IN SOCKET OF SET — TUBE OUT: A VOLTS ④	TUBE OUT: B VOLTS ⑤	TUBE IN TESTER: A VOLTS ⑥	B VOLTS ⑦	C VOLTS (CONTROL GRID) ⑧	CATHODE-HEATER VOLTS ⑨	NORMAL PLATE M.A. ⑩	PLATE M.A GRID TEST ⑪	PLATE CHANGE M.A. ⑫	SCREEN GRID VOLTS ⑬
1	324	1st RF	2.4	170	2.3	168	2	50	2.4	5.6	3.2	66
2	324	2nd RF	2.4	170	2.3	168	2	50	2.6	6.0	3.4	66
3	327	Det	2.4	66	2.3	66	7	7	3	3.3	.3	-
4	327	1st AF	2.4	155	2.3	154	7	42	4.7	6.0	1.3	-
5	345	2nd AF	2.4	240	2.3	238	49	-	23.0	28.0	5	-
6	345	2nd AF	2.4	240	2.3	238	49	-	23.0	28.0	5	-
7	381	Rect.	7.2	-	7.0	-	-	-	64	-	-	-

CONDENSER BLOCK 1790-X

CAPACITY		.5	2	2	2	1	1
RATING		400	600	600	400	400	200
COLOR OF LEAD	BLACK	BLUE	RED	YELLOW	BROWN	GREEN	SLATE

Model Fada's 35, 35Z

RECT '81 FOR 35, '80 FOR 35Z — '45 — '45 — 2 AF — 1 AF '27 — DET '27 — 1 RF '24A — 2 RF '24A — FRONT

TERMINAL LAYOUT
60 CYCLE POWER TRANSFORMER 1770-X

S1 GREEN	P3 WHITE (END)
S2 BLUE	P2 TWISTED
DF	P1
AF #1	D.FIL #2
AF F	GND.
AF #2	D.FIL #1
RECT. #1	RECT. #2

TERMINAL LAYOUT
25 CYCLE POWER TRANS. 1771-X

S1 GREEN	P3 WHITE (END)
S F RED	P2 TWISTED
S2 BLUE	P1
A.F. #1	D.FIL. #2
A.F. #2	D.FIL. F
RECT. #1	D.FIL. #1
RECT. #2	A.F. F BLACK

CABLE 2-1352 MS

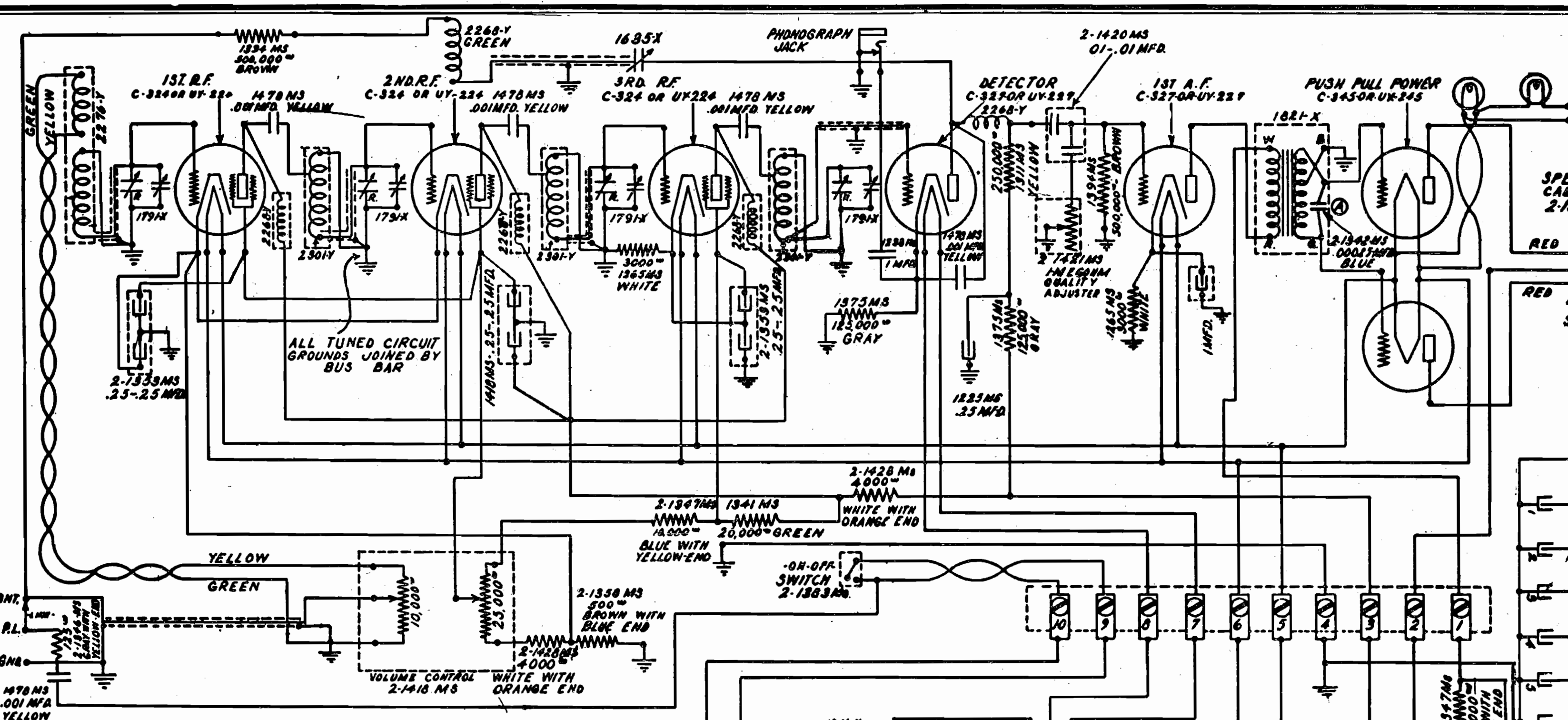
1	+B AMP.	RED BLACK-TRACER
2	+B PWR.	RED
3	+B DET.	MAROON
4	C-COMMON	GREEN
5, 6	AMP. FIL.	HEAVY TWISTED BLACK
7, 8	DET. FIL.	LIGHT TWISTED BLACK
9, 10	LINE SWITCH	LIGHT TWISTED BLACK WITH RED TRACER

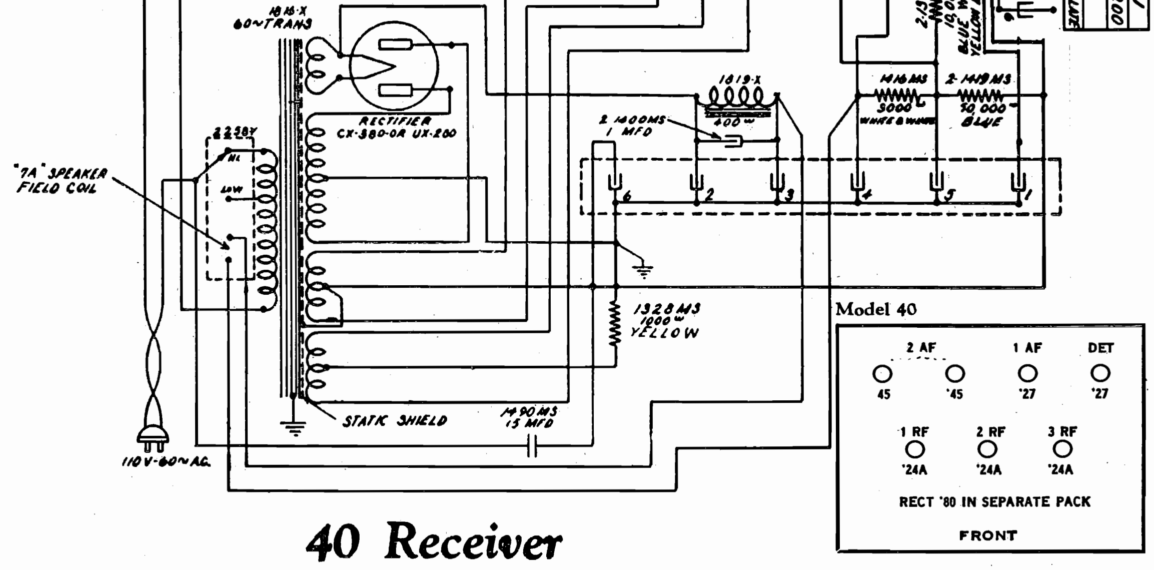
MODEL 40
Schematic

FADA RADIO & ELECTRIC CORP.

CONDENSER BLOCK 1817X

CAPACITY		.5	2	2	2	1	1
RATING		400	600	600	400	400	200
TOLERANCE	PLUS 20%			MINUS 10%			
COLOR of LEAD	BLACK	BLUE	RED	YELLOW	BROWN	GREEN	SLATE





FADA—Model 40
Line Voltage 120—Voltage Tap High
Volume Control Maximum

TUBE NO. IN ORDER TESTED (1)	TYPE OF TUBE (2)	POSITION OF TUBE IN SET (3)	METER READINGS WITH JEWELL TEST PLUG IN SOCKET OF SET — OPERATING VOLTAGES: FILAMENT OR HEATER (4)	PLATE OR ANODE (5)	CONTROL GRID—SPACE GD+ (6)	NORMAL GRID—SCREEN GD+ (7)	CATHODE TO HEATER (8)	MILLIAMPERES: SCREEN GD L. H. '80 PLATE (9)	PLATE R. H. '80 PLATE (10)	TUBE TEST (11)	PLATE CURRENT CHANGE (12)
1	224	1 R.F.	2.5	190	70	4	45	-	2	3.	1.
2	224	2 R.F.	2.5	190	70	4	45	-	2	3.	1.
3	224	3 R.F.	2.5	190	105	7	40	-	2	3.6	.6
4	227	Det.	2.5	100	-	15	15	-	.2	-	-
5	227	1 A.F.	2.5	160	-	3	40	-	4.6	-	-
6	245	2 A.F.	2.5	250	-	50	-	-	26.	30.	4.
7	245	2 A.F.	2.5	250	-	50	-	-	26.	30.	4.
8	280	Rect.	5	-	-	-	-	27.	27.	-	-

60 CYCLE POWER TRANS. 1816-X

SEC-1	GREEN	PRI. 3	WHITE
SEC E	RED	PRI-2	TWISTED
SEC-2	BLUE	PRI-1	START
AMP.F.	#1	DET.F.	#2
AMP.F.	#2	DET.F.	E
RECT.	#1	DET.F.	#1
RECT.	#2	AMP.F.	E ORANGE

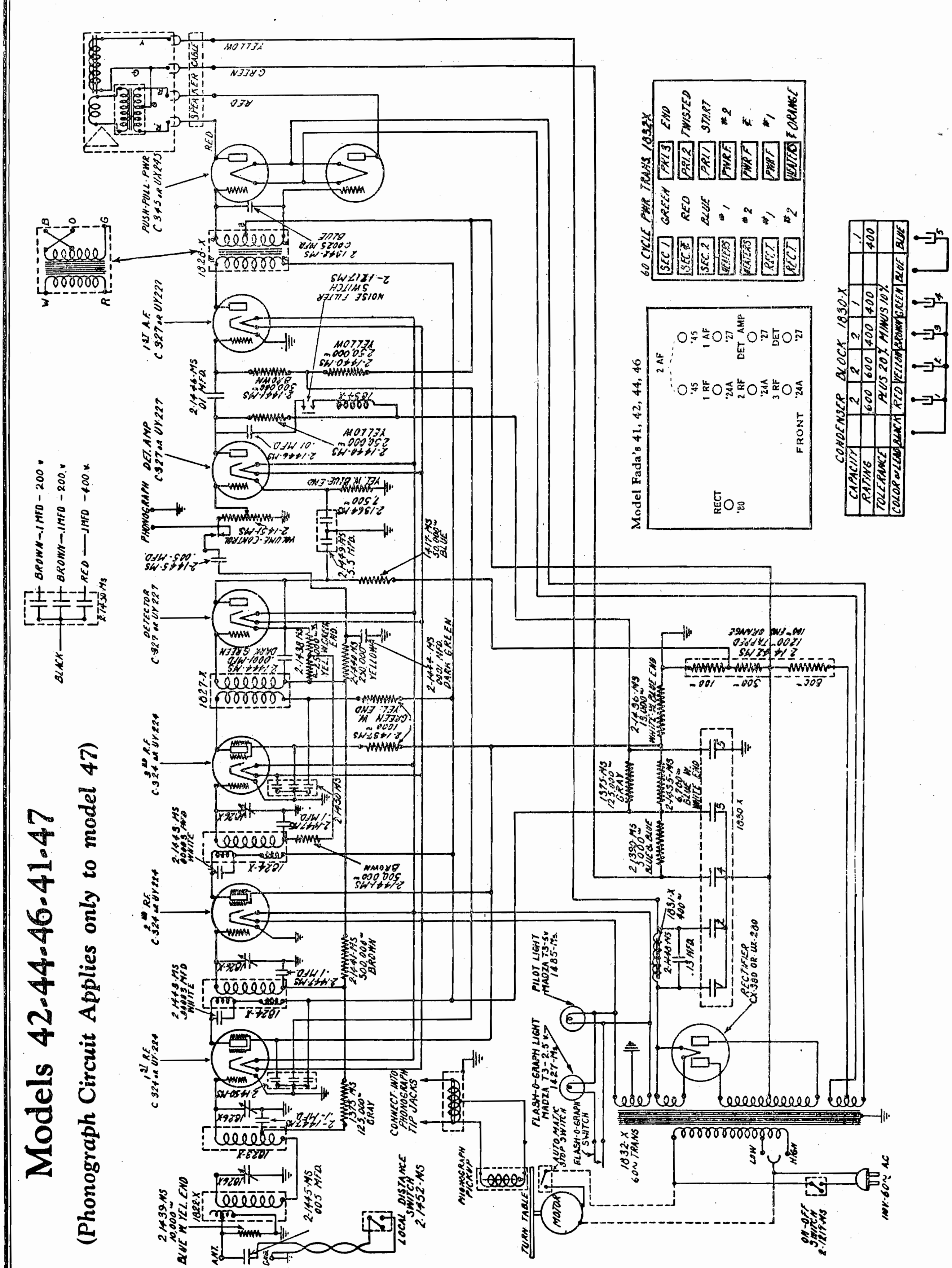
CABLE 2-1352 MS

1	+B AUD.	RED-BLACK-TRACER
2	+PWR.	RED
3	+B DET & RF	MAROON
4	C-COMMON	GREEN
5, 6	AMP FIL.	HEAVY-TWISTED-BLK
7, 8	DET FIL	LIGHT-TWISTED-BLK.
9, 10	LINE SWITCH	LIGHT-TWISTED-BLACK WITH RED TRACER

40 Receiver

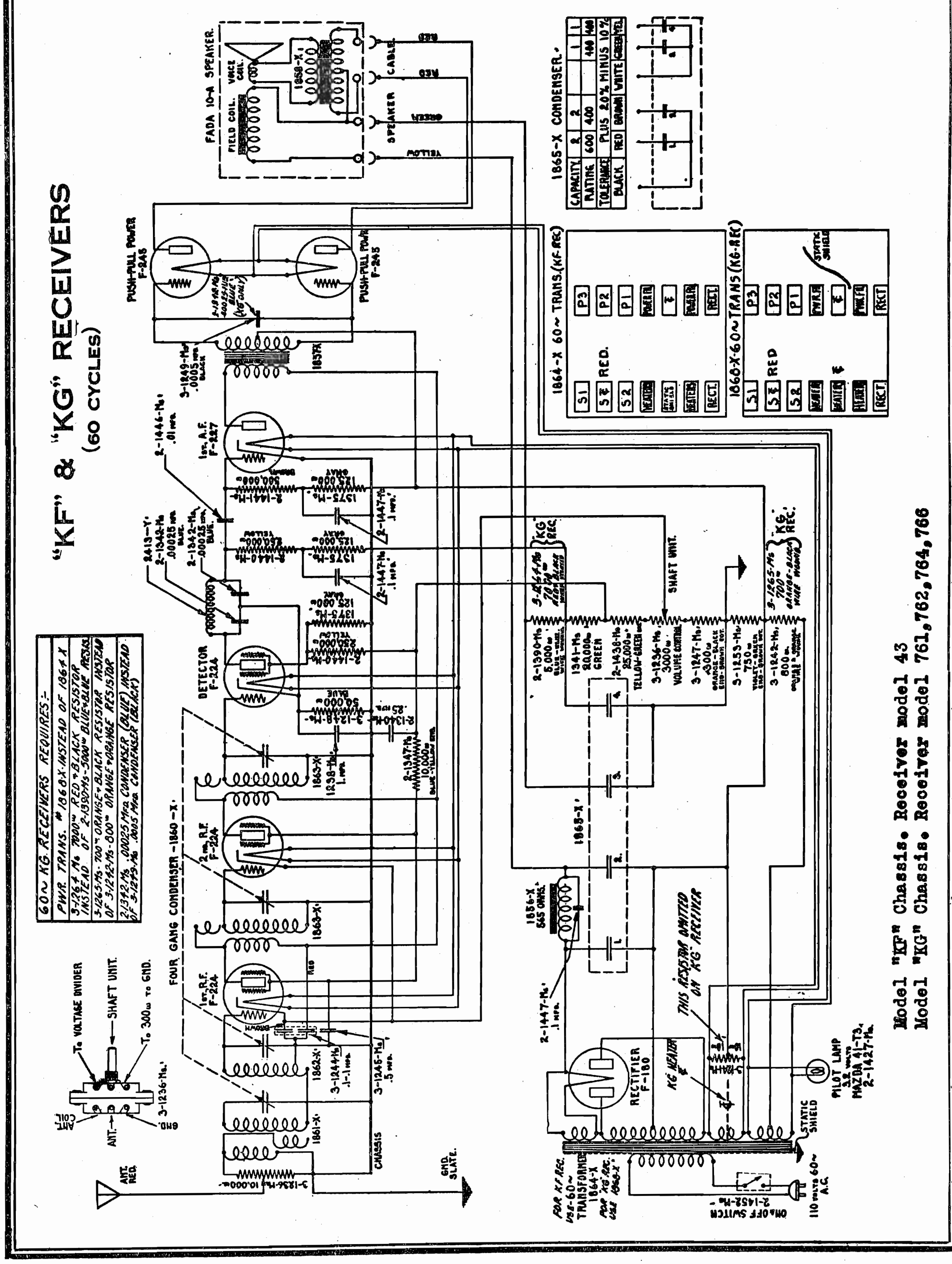
MODEL 42,44,46,41,47
Schematic

FADA RADIO & ELECTRIC CORP.



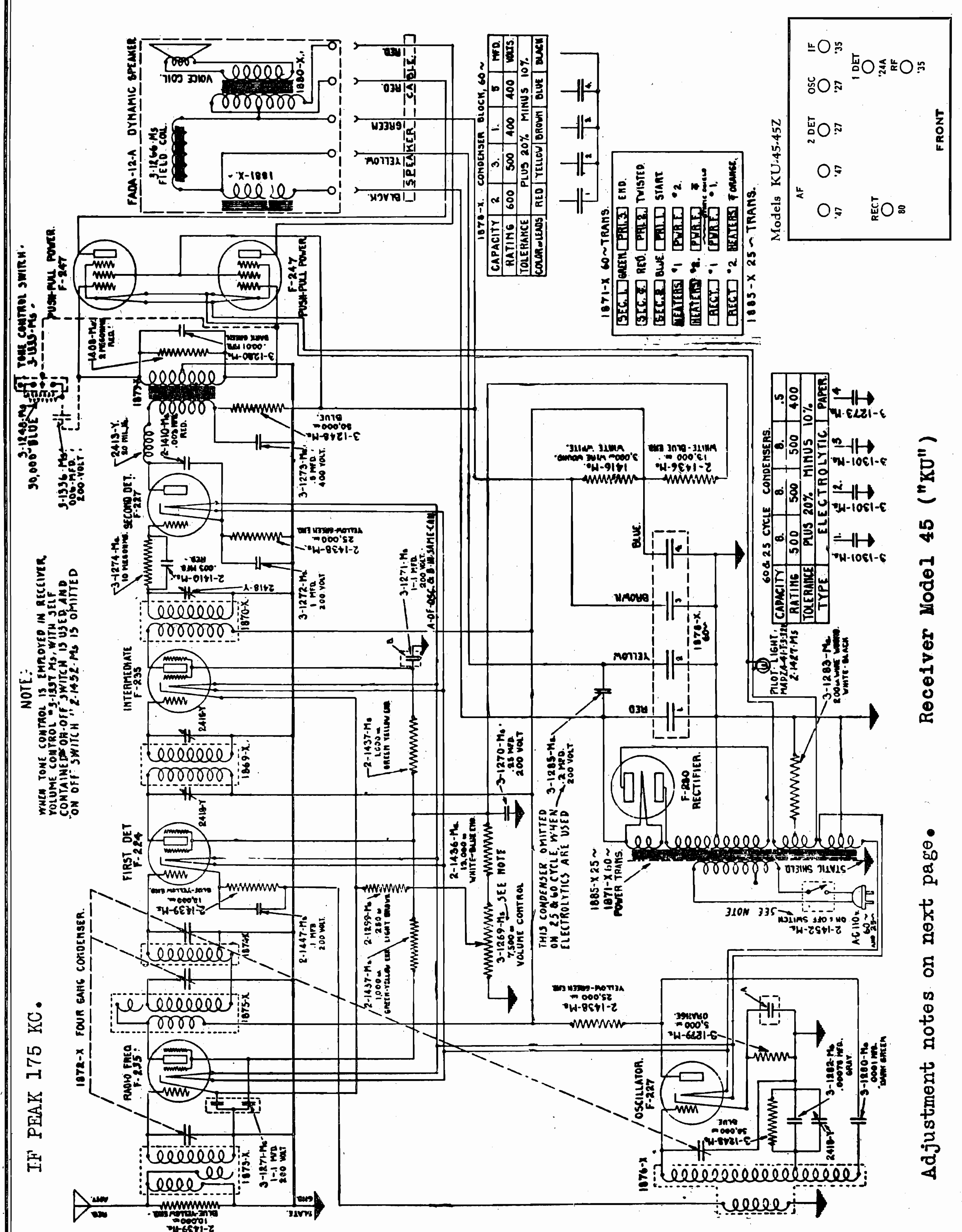
FADA RADIO & ELECTRIC CORP.

MODEL "KF", (43)
MODEL "KG", (761,762, 764,766)
Schematic



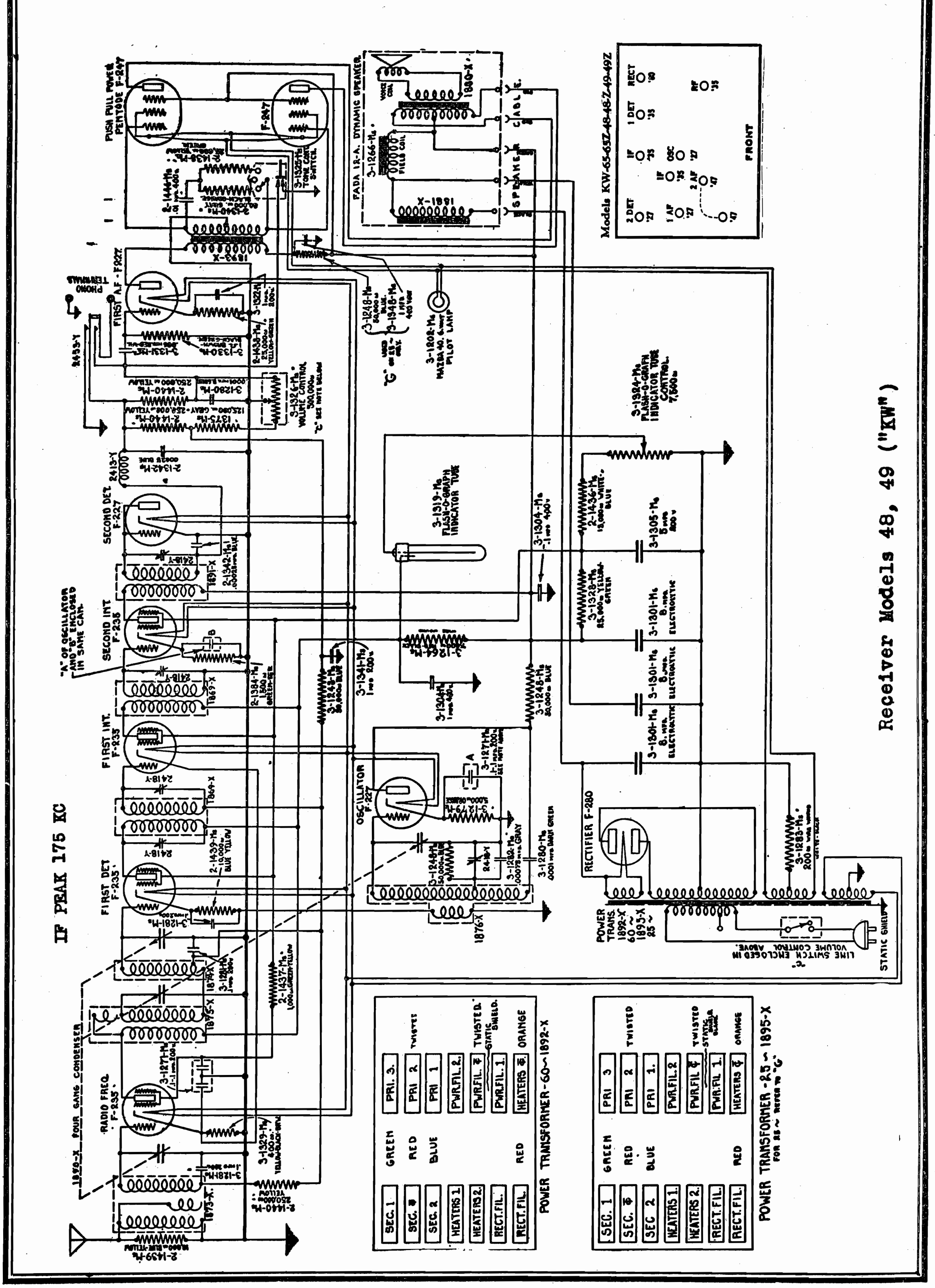
MODEL 45, 45-Z (KU)
Schematic

FADA RADIO & ELECTRIC CORP.



FADA RADIO & ELECTRIC CORP

MODEL 48,49 (KW)
Schematic



MODEL 45,48,49
Service Notes

FADA RADIO & ELECTRIC CORP.

SPECIAL DATA FOR MODELS 45, 48 and 49 RECEIVERS

Trimmer adjustment frequencies are 175 KC, 600 KC and 1400 KC. The trimmer condensers on the model 45 receiver are located in the rear right hand corner of the chassis looking at the chassis from the front. Two of the IF trimmers are on the right hand side, near the rear and the third trimmer condenser (IF) is that most distant from the right hand rear corner of the chassis. The trimmer upon the rear of the chassis, near the right hand corner is the oscillator series condenser.

In the models 48 and 49, the oscillator series condenser control is accessible from the top of the chassis, on the left end of the chassis to the left of the shields. The four IF trimmers are accessible through the rear of the chassis, one the left end, looking at the chassis from the front.

The suggested output meter is of the type suitable for connection across the speaker voice coil. The 1st detector control grid must be disconnected for the IF trimmer adjustments and the oscillator "A" lead is connected to the 1st detector control grid cap upon the tube.

The variable gang condenser compensators for the model 45 are located on top of their respective tuning condenser sections. They can be adjusted with a screw driver. The compensator adjusting screws are at ground potential. The adjustment is made at 1400 KC without disturbing the main tuning sections. The suggestion is made to connect the antenna circuit of the receiver through a dummy antenna or a 250 mmfd condenser. The oscillator series condenser is adjusted at 600 KC

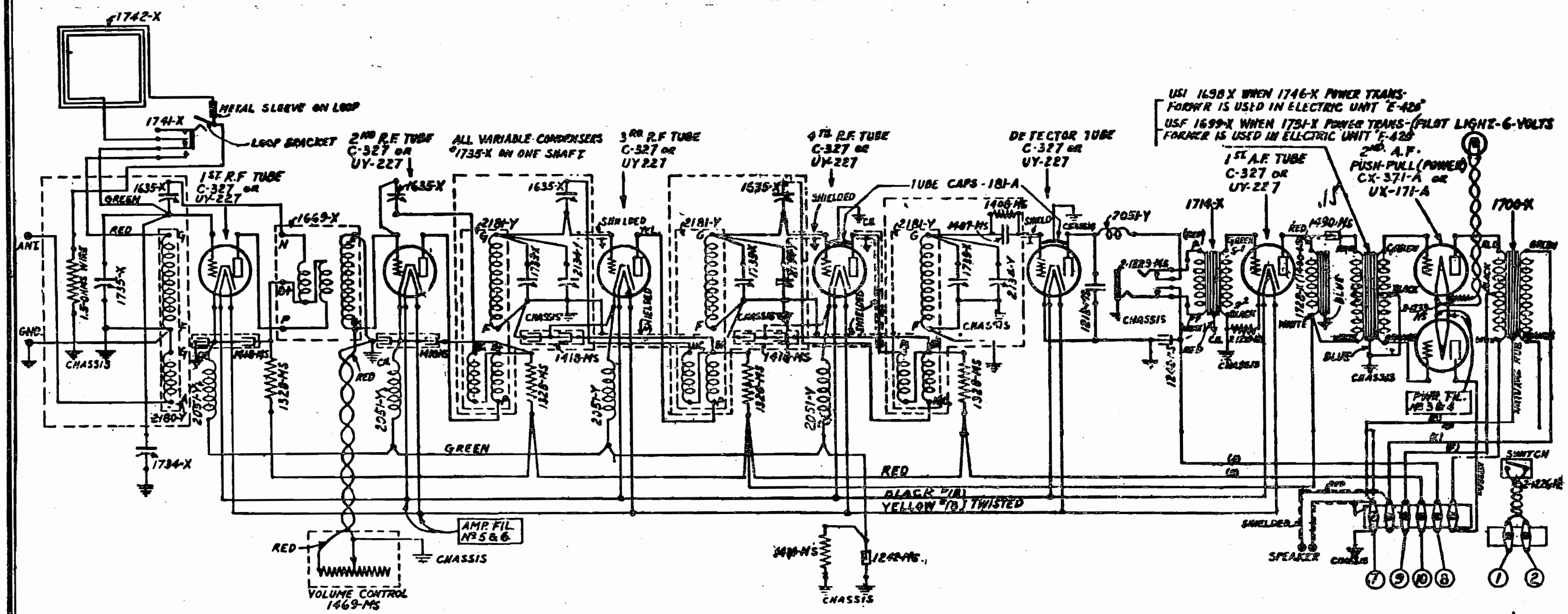
The main tuning condenser compensators are located at the top of their main tuning sections in the 48 and 49 models. They can be adjusted with a screw driver and since the screws are at ground potential and insulated screw driver is not required. There are four holes in the overall condenser and tube housing cover. The screw driver is inserted through these holes.

The tuning condenser compensators are adjusted at 1400 KC. The oscillator series condenser is adjusted at 600 KC. The intermediate trimmers are adjusted at 175 KC. Due to the physical location of the oscillator series condenser it is permissible to remove the overall condenser and tube shield housing cover to permit the insertion of the standard #4 socket wrench for adjustment purposes.

The suggestion is made to check the 175 KC adjustment of the test oscillator by beating that signal against one of its harmonics represented by the carrier frequency of a broadcasting station of correct frequency which is tuned in with the receiver operated in normal manner. Some of the harmonics of a 175 KC signal are 1400 KC.,1225 KC., 1050 KC., 875 KC., and 700 KC.

FADA RADIO & ELECTRIC CORP.

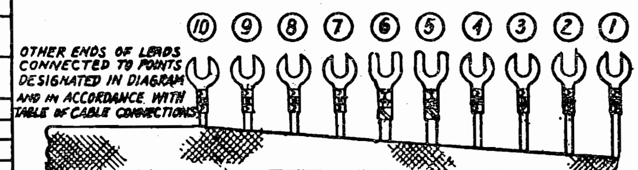
MODEL 50, 70, 71, 72
50-Z, 70-Z
Schematic
Voltage



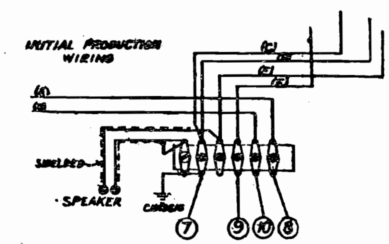
50, 70, 71 and 72 Receivers

TABLE of CABLE CONNECTIONS

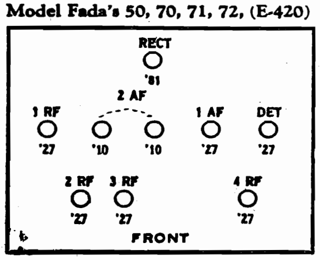
No		COLOR	
1	LINE	BLACK WITH RED TRACER	LIGHT TWISTED
2	SWITCH	BLACK " " "	
3	PWR. FIL.	BLACK	LIGHT TWISTED
4		BLACK	
5	AMP. FIL.	BLACK	HEAVY TWISTED
6		BLACK	
7	C (COMMON)	GREEN	
8	+B DET.	MAROON	
9	+B PWR.	RED	
10	+B 90	RED WITH BLACK TRACER	



POWER CABLE #2-1220-MS



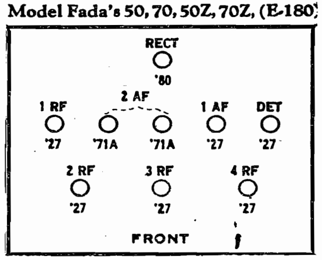
Model Fada's 50, 70, 71, 72, (E-420)



FADA—Models 50-70 with E-180 Electric Unit
Line Voltage 120—110-130 Volt Tap

Tube No. in Order	Type of Tube	Position of Tube (1st. R.F. Det., etc.)	Tube Out: A Volts	Tube Out: B Volts	Tube in Tester: A Volts	B Volts	C Volts	Cathode Volts	Normal Plate M.A.	Plate M.A. Grid Test	Plate M.A. Change
1	227	1st. R.F.			2.5	95	5	12.5	4.0	7.0	3.0
2	227	2nd. R.F.			2.5	95	5	12.5	4.0	7.0	3.0
3	227	3rd. R.F.			2.5	95	5	12.5	4.0	7.0	3.0
4	227	4th. R.F.			2.5	95	5	12.5	4.0	7.0	3.0
5	227	DETECTOR			2.5	35	0	16.0	2.2	2.2	0.0
6	227	1st. A.F.			2.5	90	5	12.5	4.0	6.0	2.0
7	171A	2nd. A.F.			5.0	190	45	-	18.0	55.0	37.0
8	171A	2nd. A.F.			5.0	190	45	-	18.0	55.0	37.0
9	280	RECTIFIER			5.0	-					

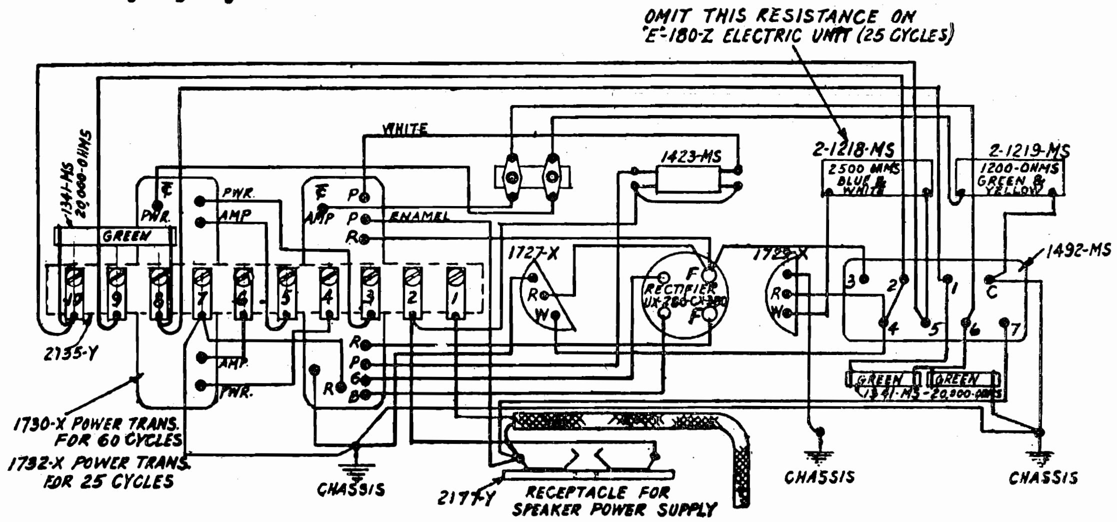
Model Fada's 50, 70, 50Z, 70Z, (E-180)



Model E-180, E-180Z E-420, E-420Z power packs are shown on pages following.

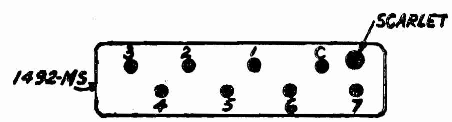
MODEL E-180, E-180Z
Electric Unit
for 50, 70, 71, 72

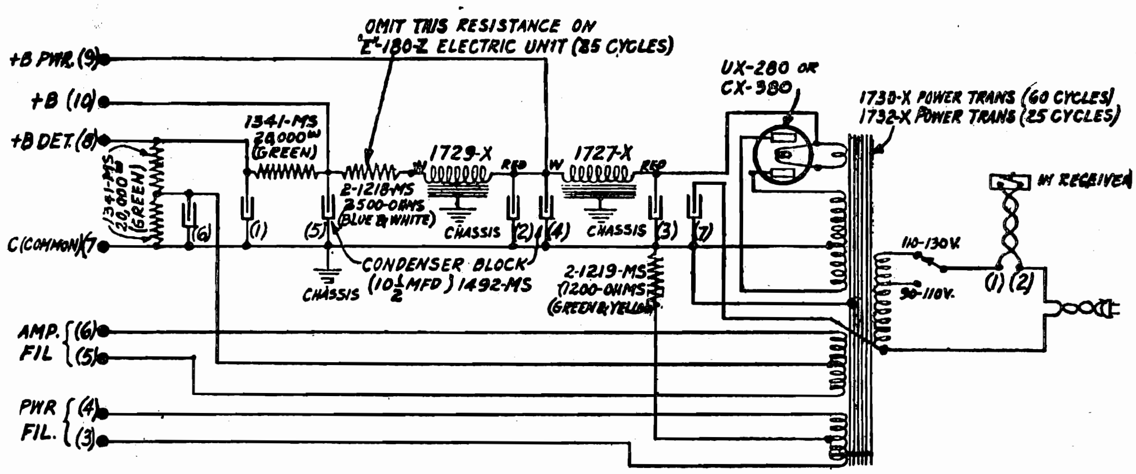
FADA RADIO & ELECTRIC CORP.



ACTUAL WIRING DIAGRAM OF "E-180 & "E-180-Z ELECTRIC UNIT

Nor should it be a difficult matter to keep in mind that all "E-180" sets can be identified by their having two round cans in the "rear row" (the power pack) This immediately identifies the set as requiring a 280 rectifier tube and type 171-A amplifier tubes.





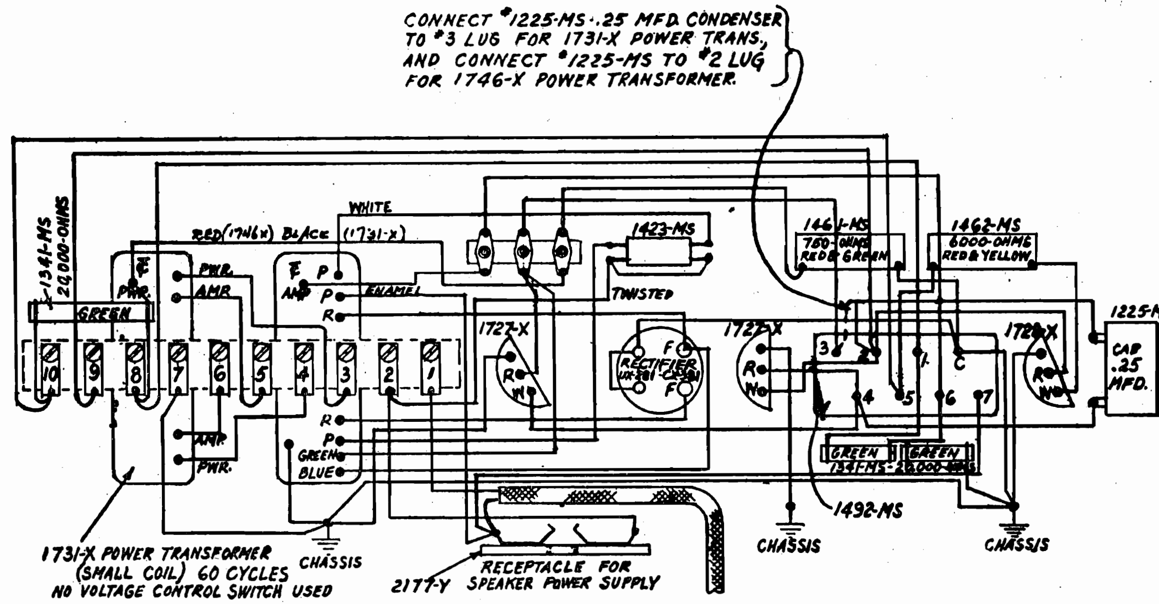
SCHEMATIC WIRING DIAGRAM OF "E-180 & "E-180-Z ELECTRIC UNIT

ELECTRICAL VALUES
ELECTRIC UNIT TYPE E- 180

1225-MS	.25 mfd 400 volts
1341-MS	carbon 20,000 ohms (green)
1461-MS	wire 750 ohms red-green
1462-MS	wire 6000 ohms red-yellow
1492-MS	condenser block 10.5 mfd
2-1218-MS	wire 2500 ohms blue-white
2-1219-MS	wire 1200 ohms green-yellow
1727-X	choke 600 ohms
1729-X	choke 3500 ohms

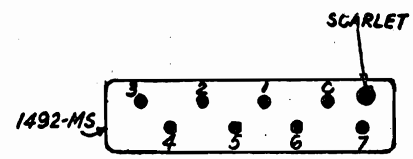
MODEL E-420,E-420Z
Electric Unit
for 50,70,71,72

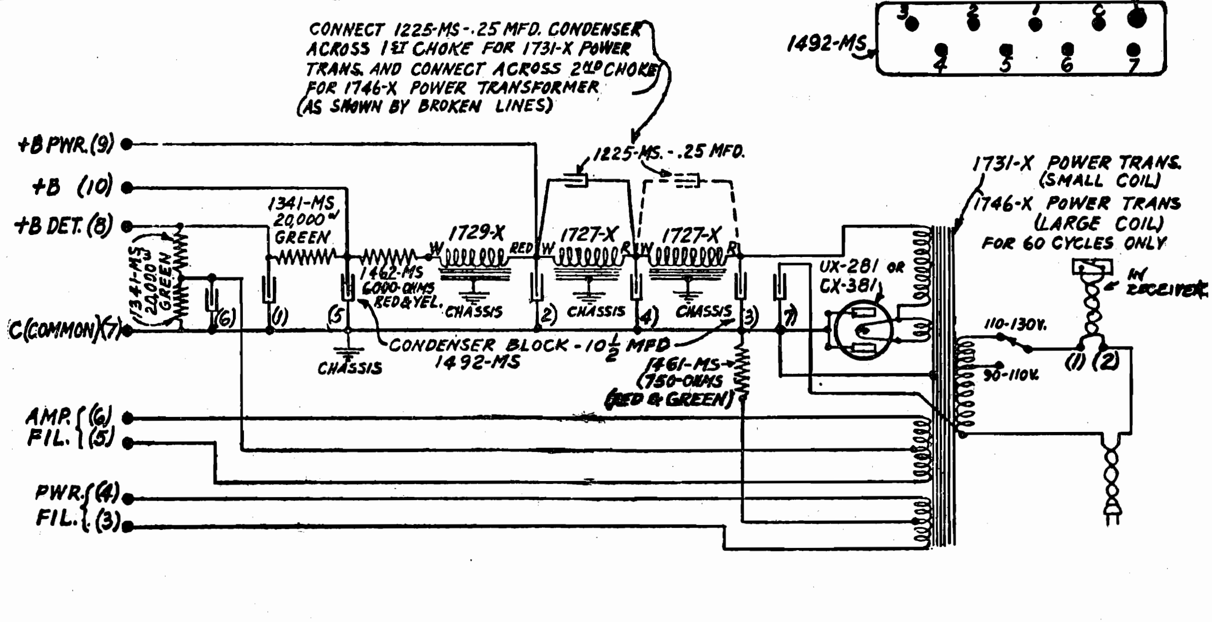
FADA RADIO & ELECTRIC CORP.



ACTUAL WIRING DIAGRAM OF "E-420 ELECTRIC UNIT

Now it should not be a difficult matter to keep in mind that all "E-420" sets can be identified by their having three round cans in the "rear row" (the power pack). This immediately identifies the set as requiring a 281 rectifier tube and type 210 amplifier tubes.





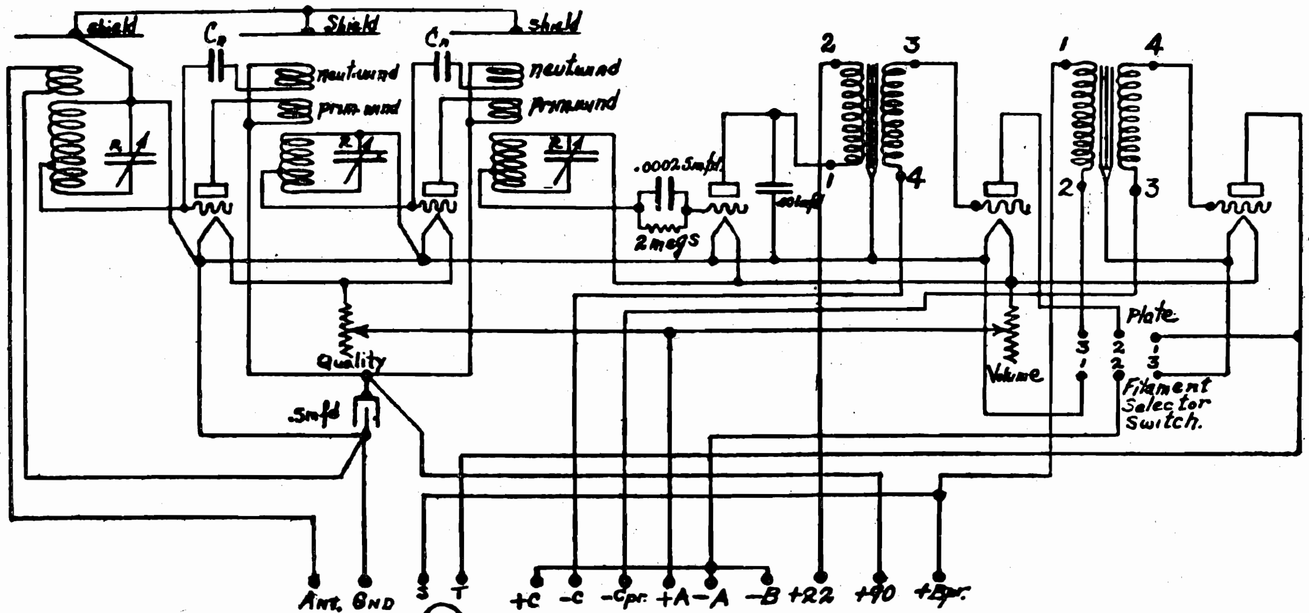
SCHEMATIC WIRING DIAGRAM OF "E-420" ELECTRIC UNIT.

ELECTRICAL VALUES
ELECTRIC UNIT TYPE E-420

1225-MS	.25 mfd 400 volts	2-1218-MS	wire 2500 ohms blue-white
1341-MS	carbon 20,000 ohms green	2-1219-MS	wire 1200 ohms green-yellow
1461-MS	wire 750 ohms red-green	1727-X	choke 600 ohms
1462-MS	wire 6000 ohms red-yellow	1729-X	choke 3500 ohms
1492-MS	condenser block 10.5 mfd		

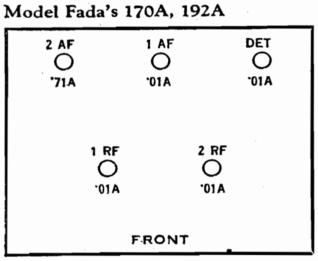
MODEL 192-A Receiver
192-S
192-BS Units
MODEL 160 Neutrodyne

FADA RADIO & ELECTRIC CORP.

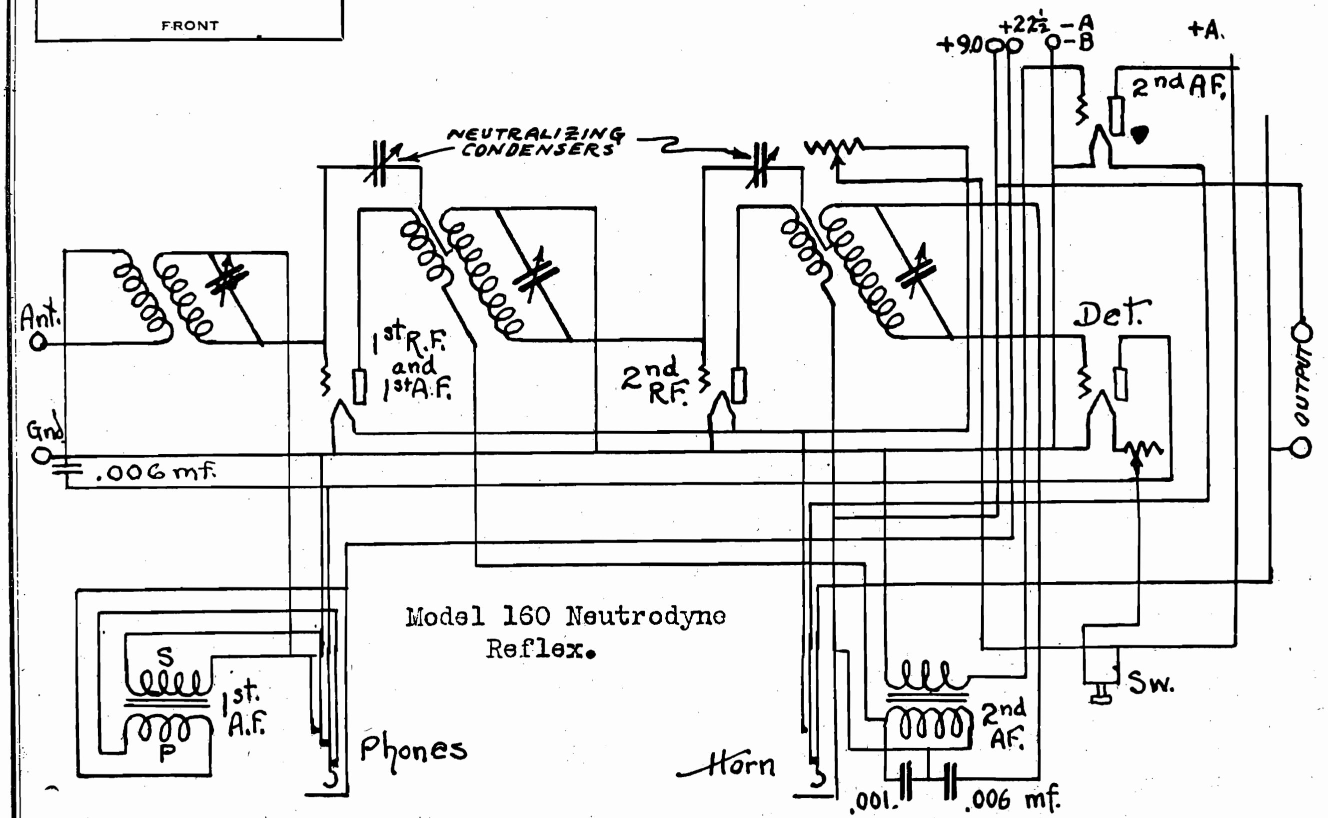


(Note S=Sleeve T=Tip connections to jack) 192-A Receiver, 192-S and 192 BS Units

Model Fada's 170A, 192A



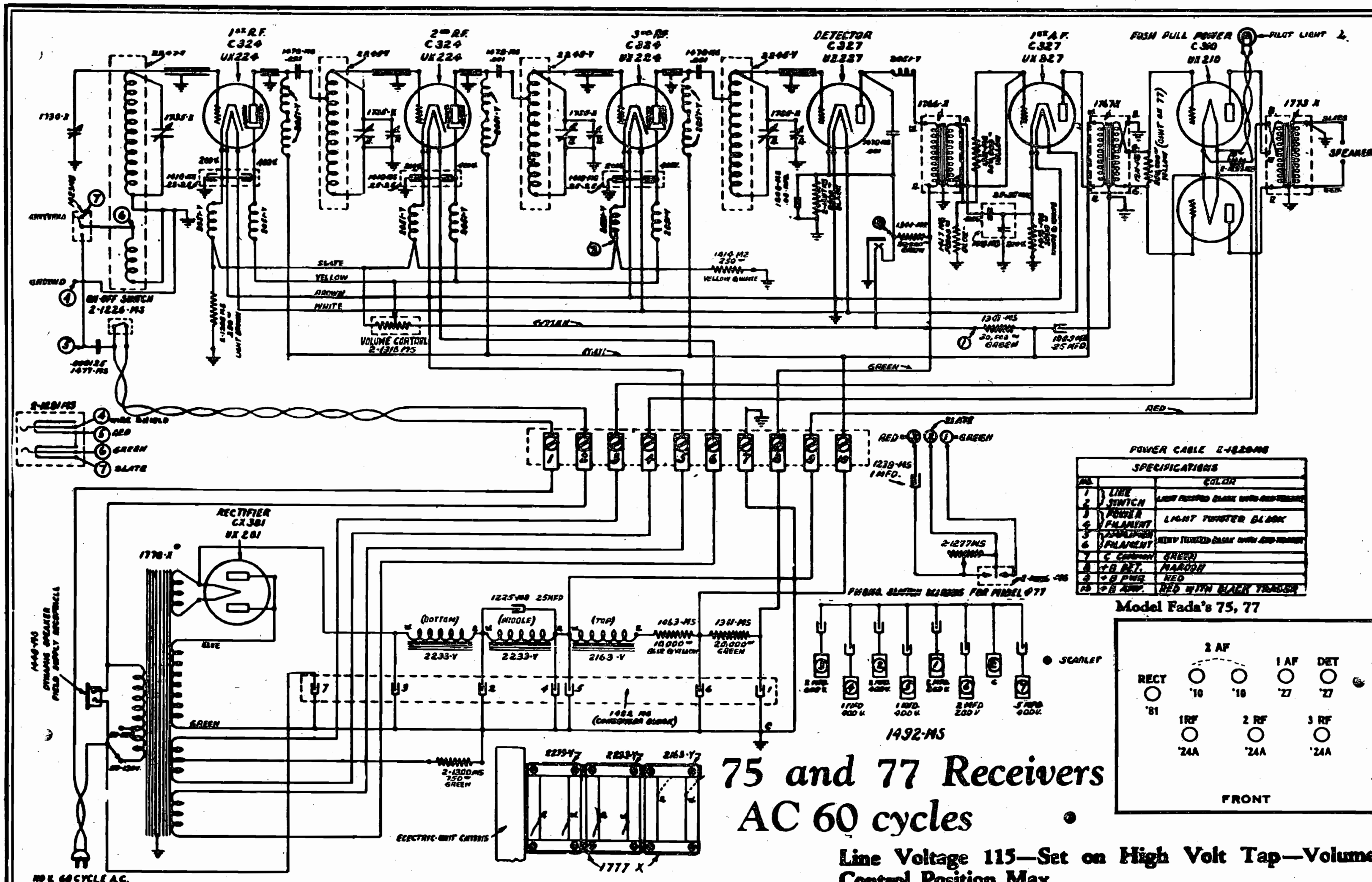
Model 192-A Receiver, 192-S and 192-BS Units



Model 160 Neutrodyne Reflex.

FADA RADIO & ELECTRIC CORP.

MODEL 75, 77
Schematic
Voltage
Notes



75 and 77 Receivers
AC 60 cycles

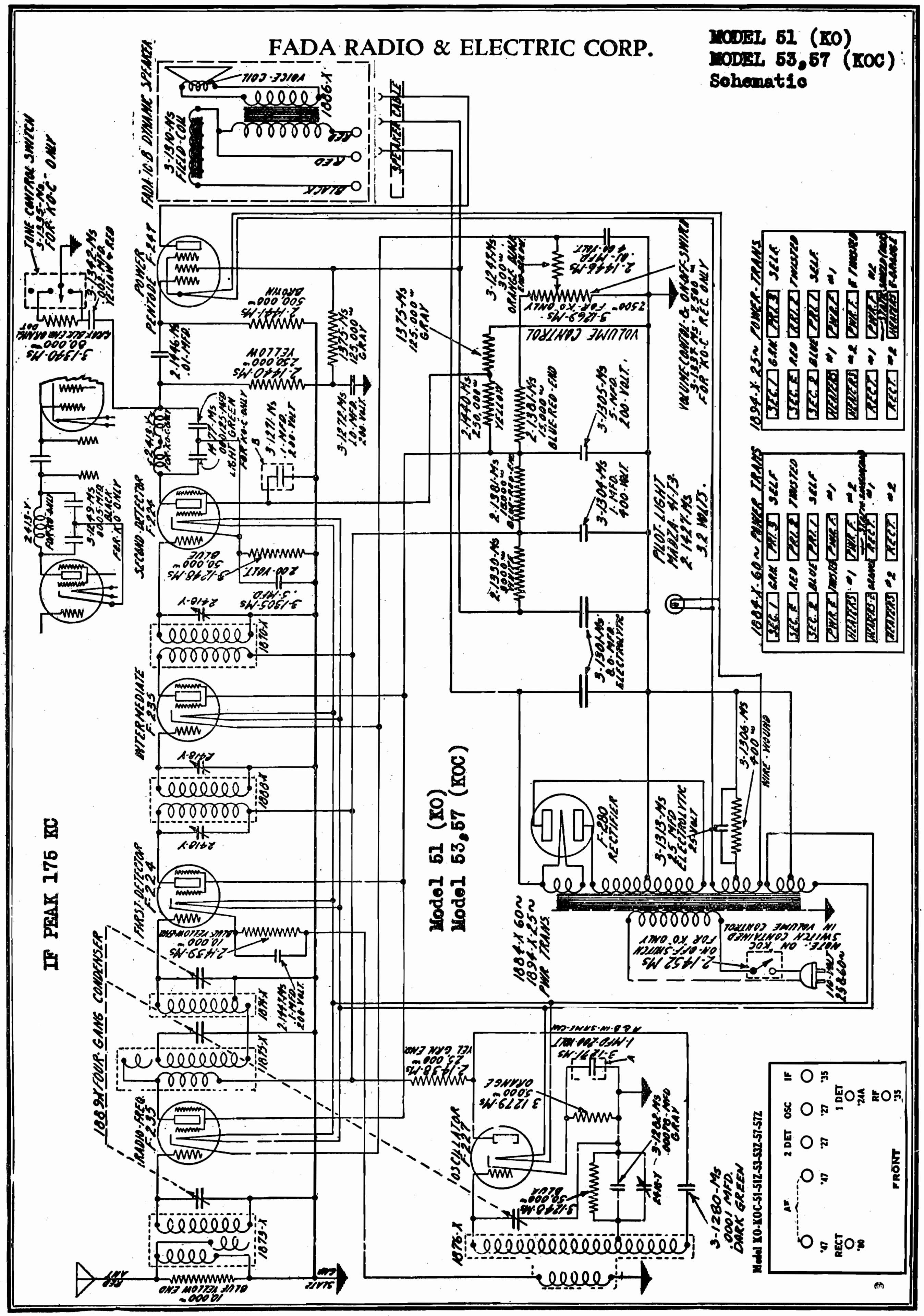
Line Voltage 115—Set on High Volt Tap—Volume Control Position Max

Note: When taking screen grid tube readings control grid should be grounded.

Tube No. in Order	Type of Tube	Position of Tube 1st R.F. Det., etc.	Tube Out: A Volts	Tube Out: B Volts	Tube in Tester: A Volts	Tube in Tester: B Volts	Tube in Tester: C Volts (Control Grid)	Tube in Tester: Cathode-Heater Volts	Tube in Tester: Normal Plate M.A.	Tube in Tester: Plate M.A. Grid Test	Tube in Tester: Plate Change M.A.	Tube in Tester: Screen Grid Volts
1	324	1st RF	2.4	165	2.35	163	2	2	0.5	3.0	2.5	25
2	324	2nd RF	2.4	165	2.35	163	2	2	0.5	3.0	2.5	25
3	324	3rd RF	2.4	165	2.35	163	2	2	0.5	3.0	2.5	25
4	327	Det	2.4	61	2.35	61	9	9	0.2	2.0	1.8	-
5	327	1st AF	2.4	165	2.35	164	9	12	4.0	4.8	.8	-
6	310	2nd AF	7.0	415	6.6	412	33	-	18.0	15.0	4.0	-
7	310	2nd AF	7.0	415	6.6	412	33	-	18.0	15.0	4.0	-
8	381	Rect.	7.0	-	6.6	-	-	-	61.0	-	-	-

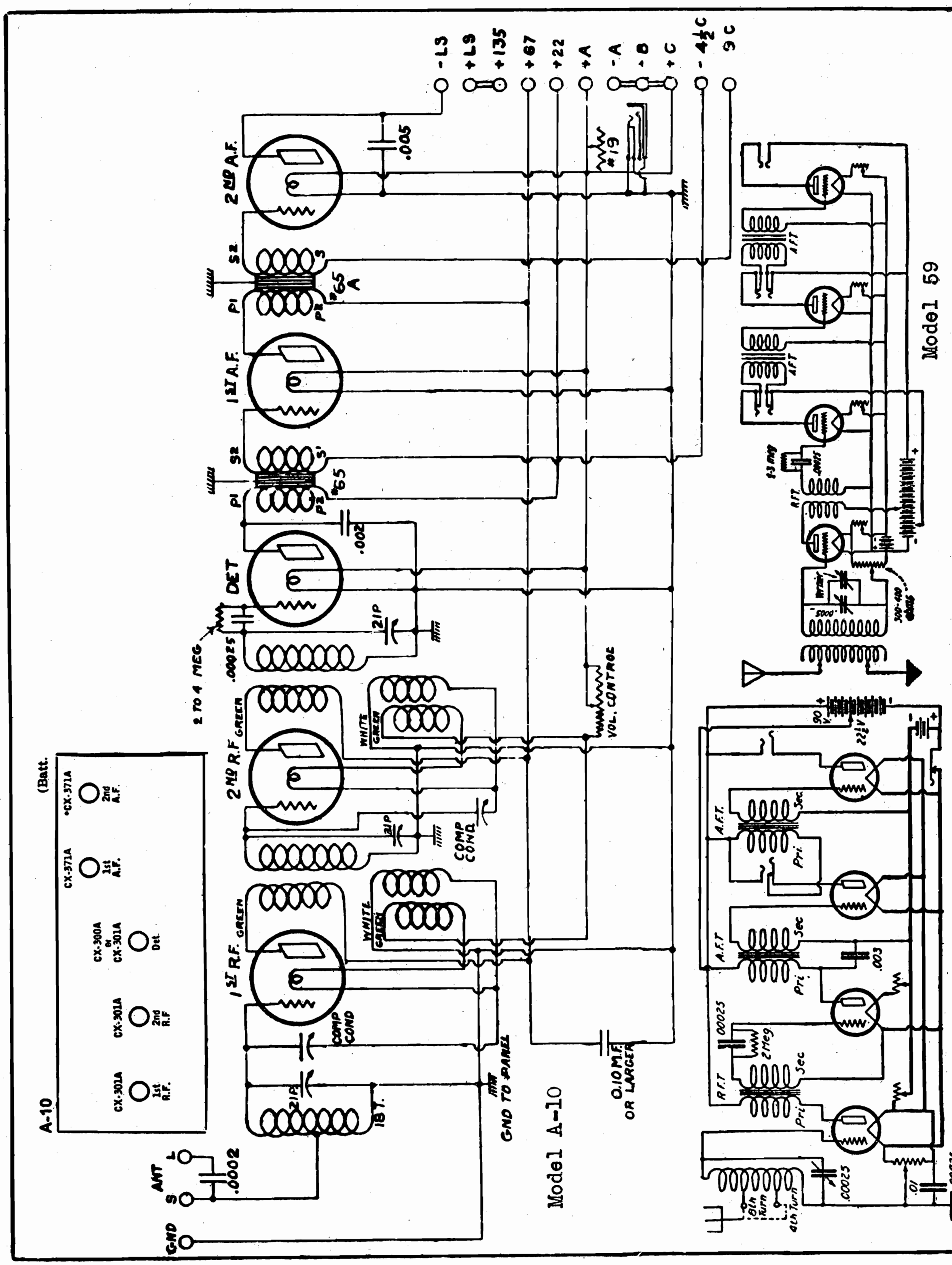
COMPENSATING INSTRUCTIONS FOR MODELS 75 AND 77

The compensating condenser is located beneath the small hole in the left side of each RF shield can (facing the front of the set) and may be adjusted with a screw driver. There is no compensating condenser in the shield can to the extreme left; its function being performed by the antenna vernier.


FADA RADIO & ELECTRIC CORP.
MODEL 51 (KO)
MODEL 53,57 (KOC)
Schematic
IF PEAK 175 KC
Model 51 (KO)
Model 53,57 (KOC)
Model KO-KOC-51-51Z-53-53Z-57-57Z
FRONT

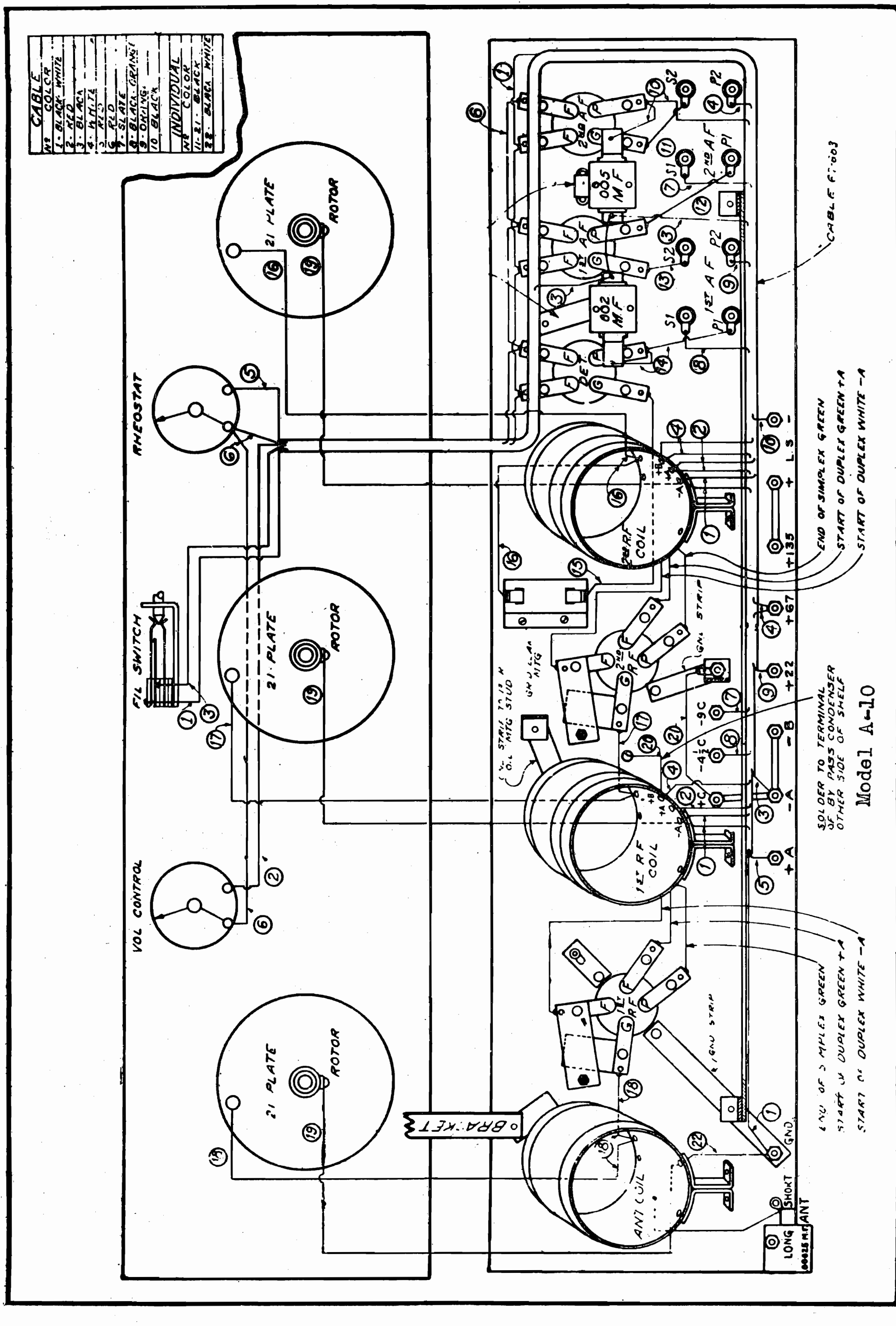
FEDERAL RADIO CORP.

MODELS A-10, 59, 102
Schematic



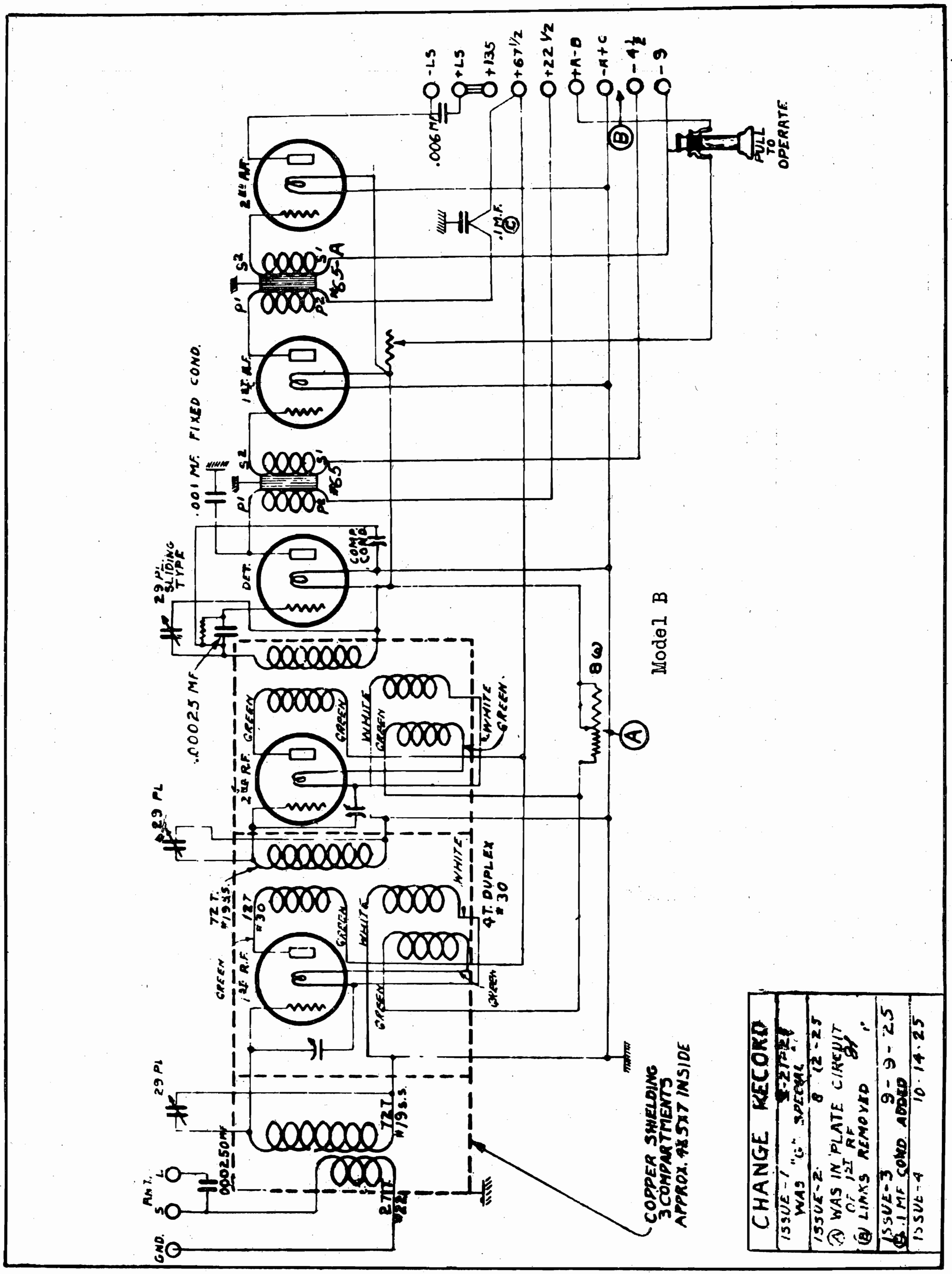
MODEL A-10
Wiring Diagram

FEDERAL RADIO CORP.



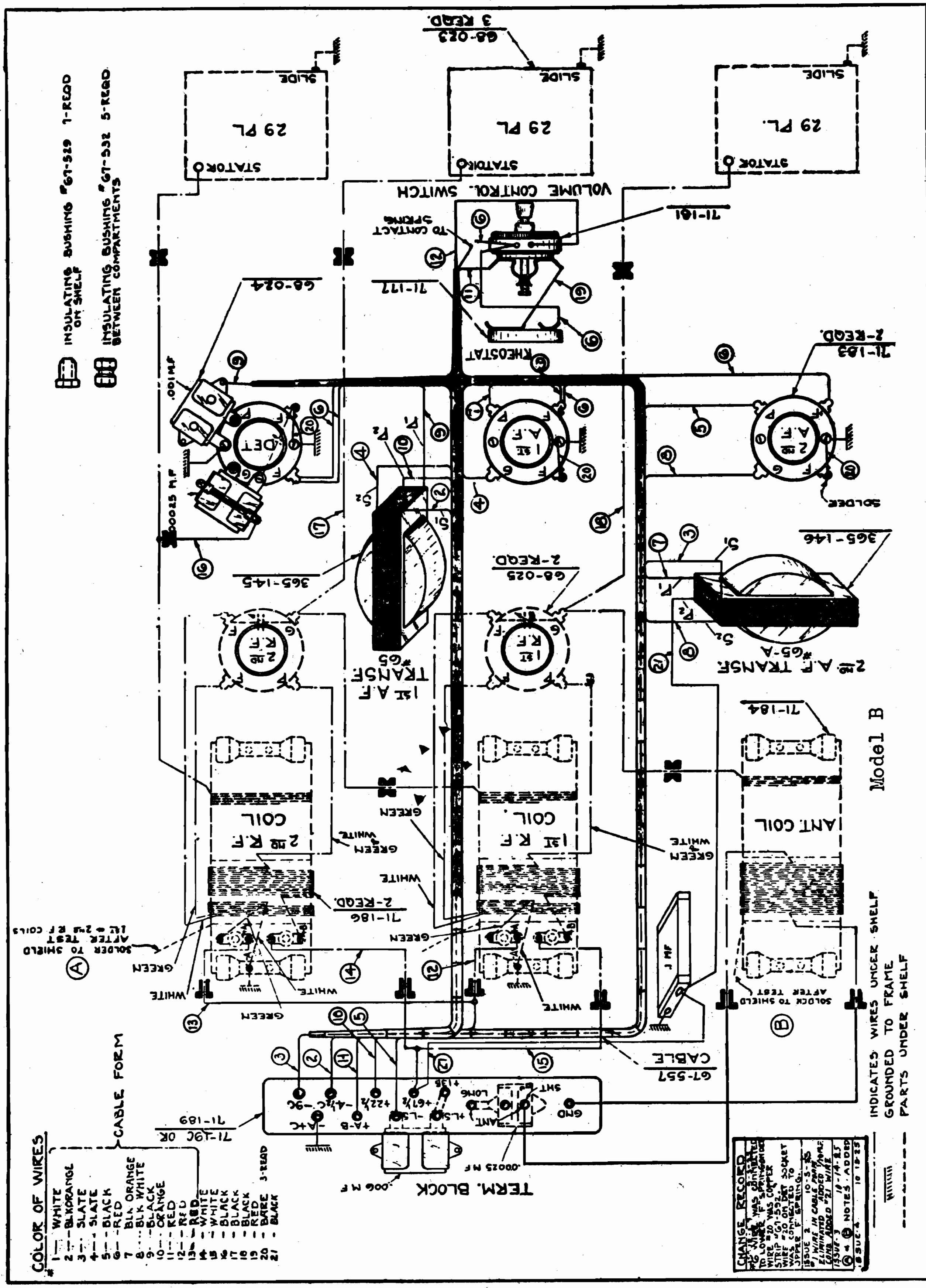
FEDERAL RADIO CORP.

MODEL B
Schematic



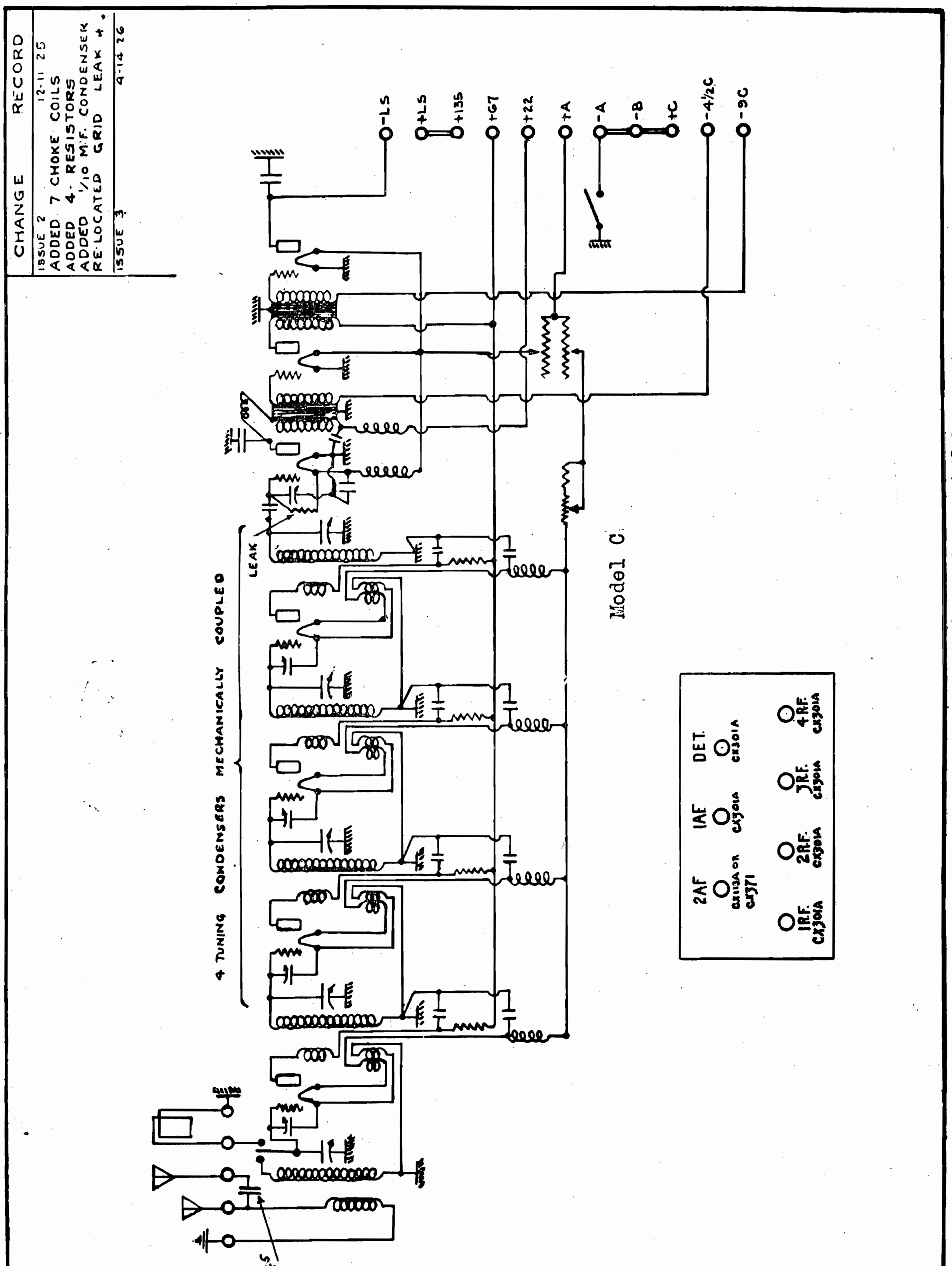
MODEL B
Wiring Diagram

FEDERAL RADIO CORP.



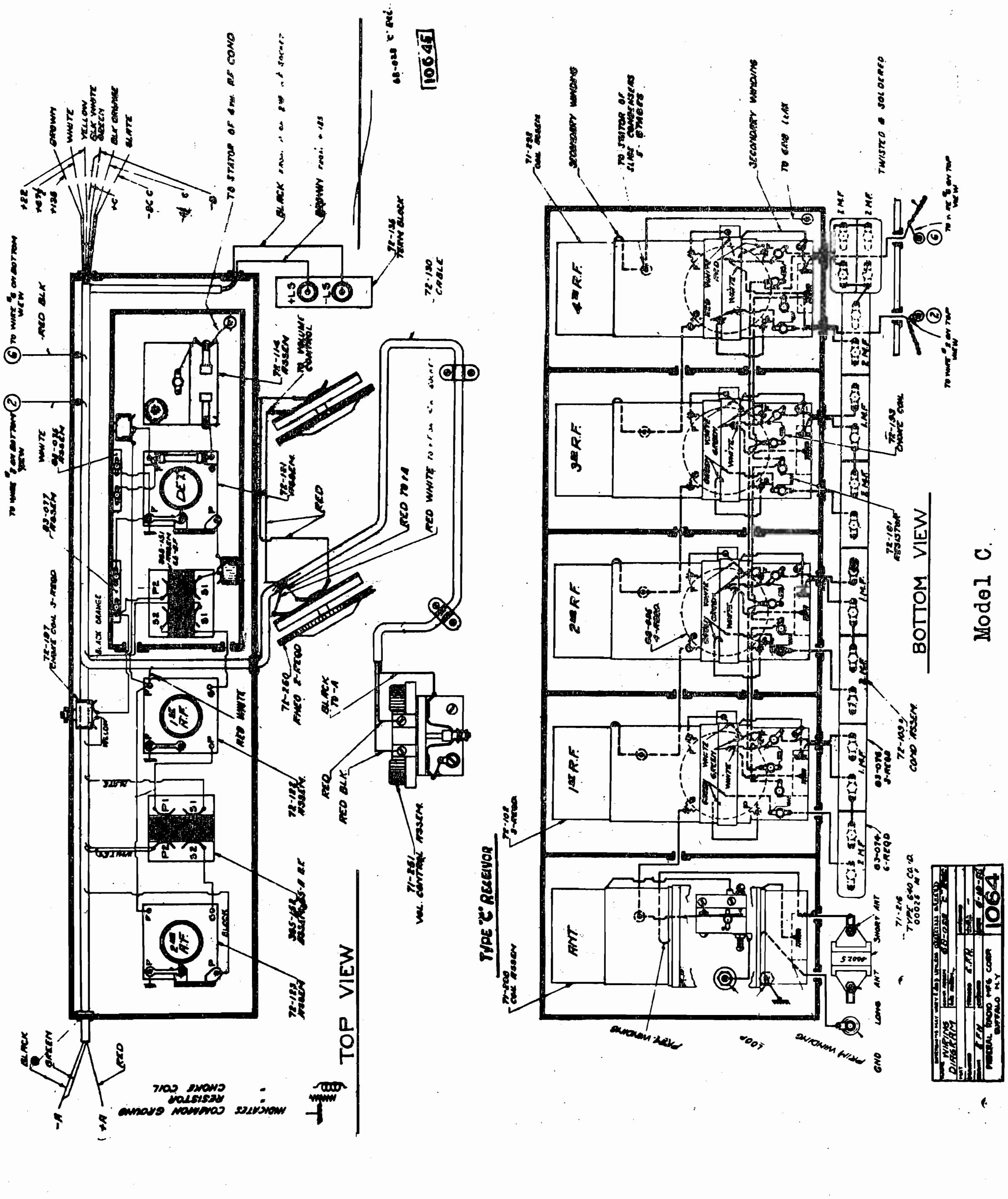
FEDERAL RADIO CORP.

MODEL C
Schematic



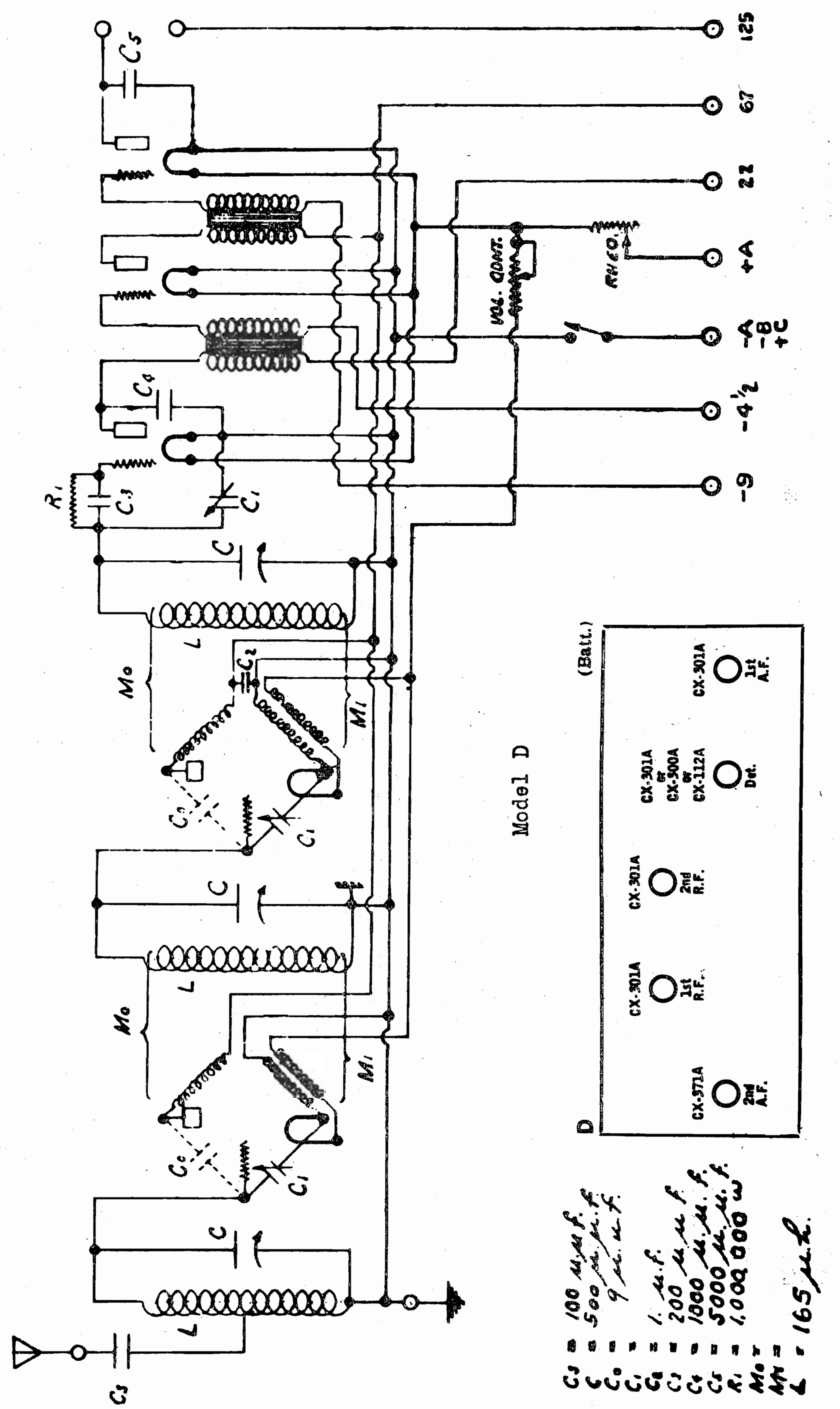
MODEL C
Wiring Diagram

FEDERAL RADIO CORP.



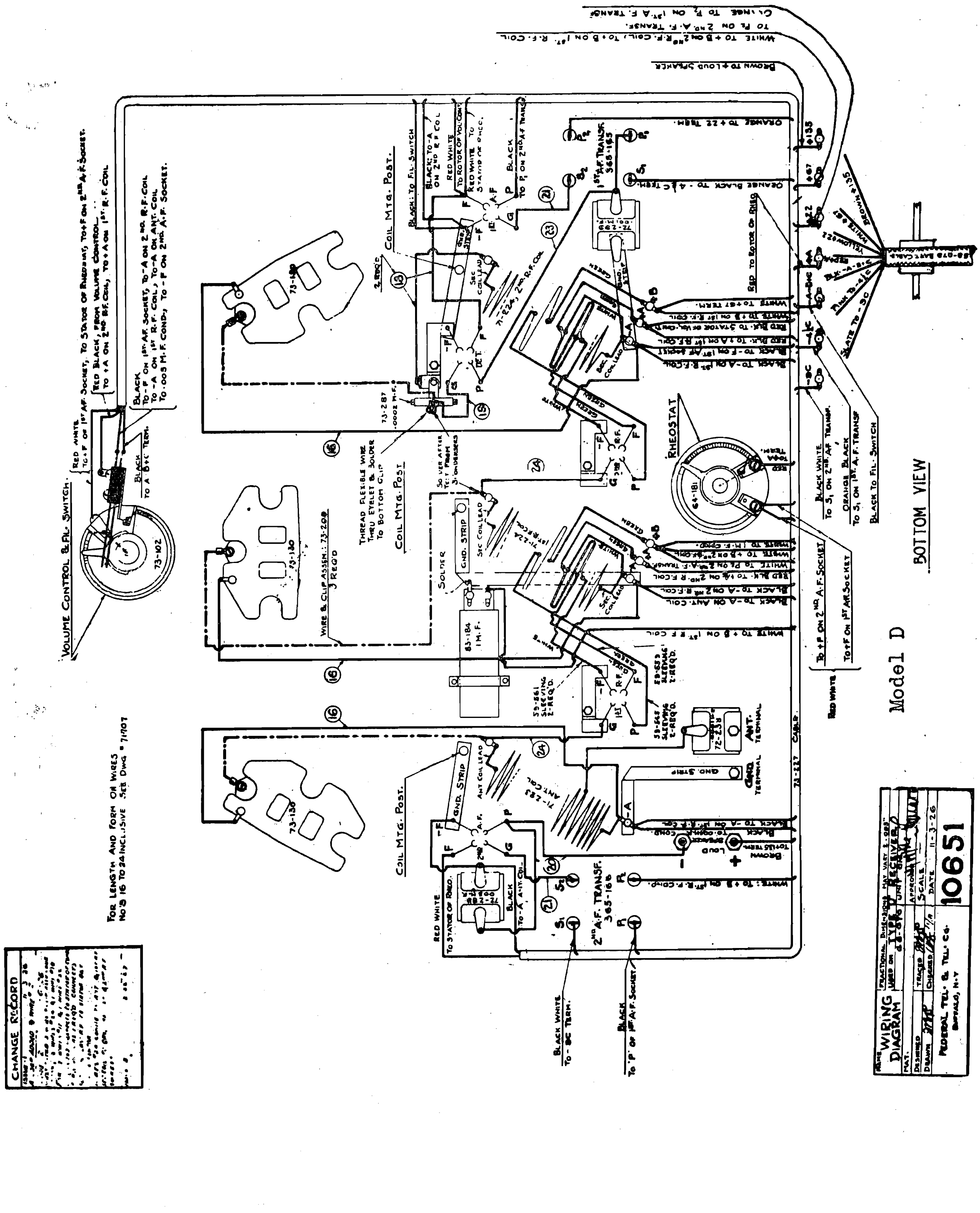
FEDERAL RADIO CORP.

MODEL D, CODE 68-070
Schematic



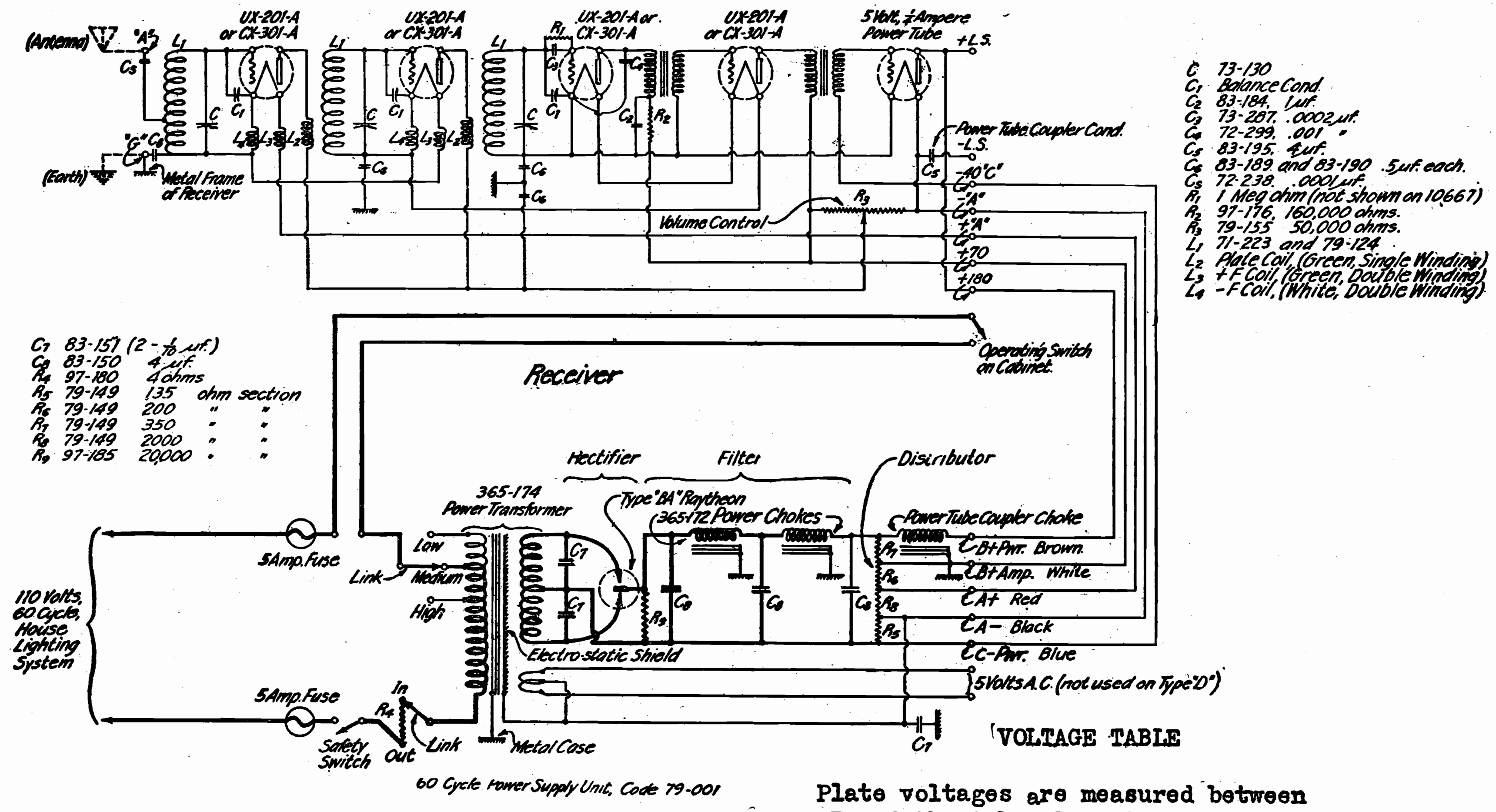
MODEL D, Battery
Wiring Diagram

FEDERAL RADIO CORP.



FEDERAL RADIO CORP.

MODEL D CODE 79-070
Schematic



VOLTAGE TABLE

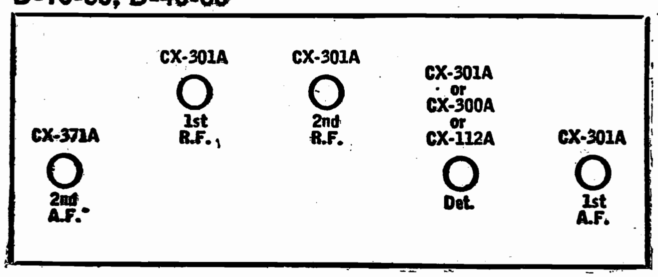
Plate voltages are measured between -F and the tube elements.

1st RF Plate	60 volts
2nd RF Plate	65 volts
Detector Plate	21* volts
1st AF Plate	70 volts
Output Plate	187 volts

Measured with low resistance voltmeter. When high resistance meter is used, voltage may be 50 volts.

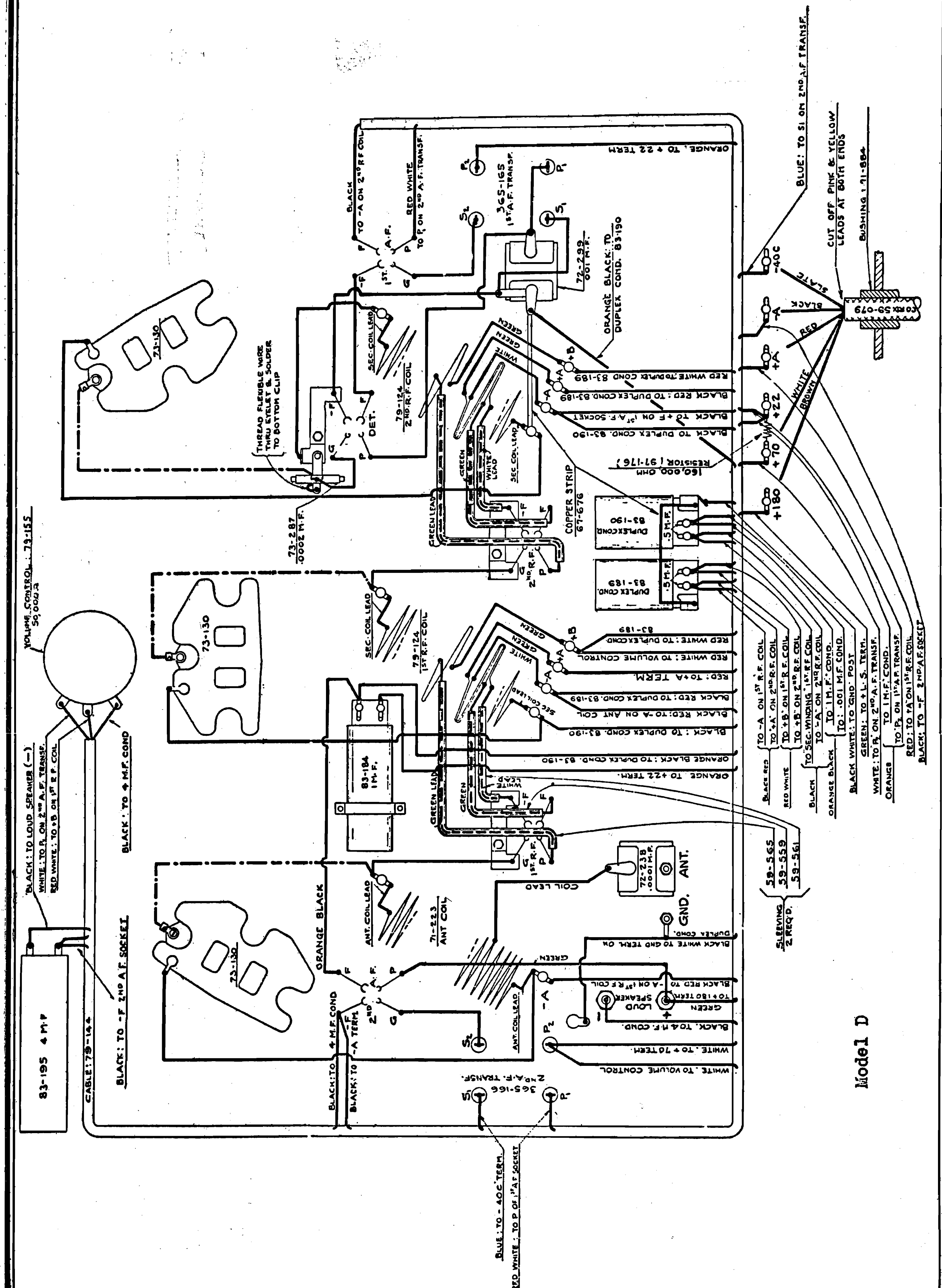
Model D

D-10-60, D-40-60



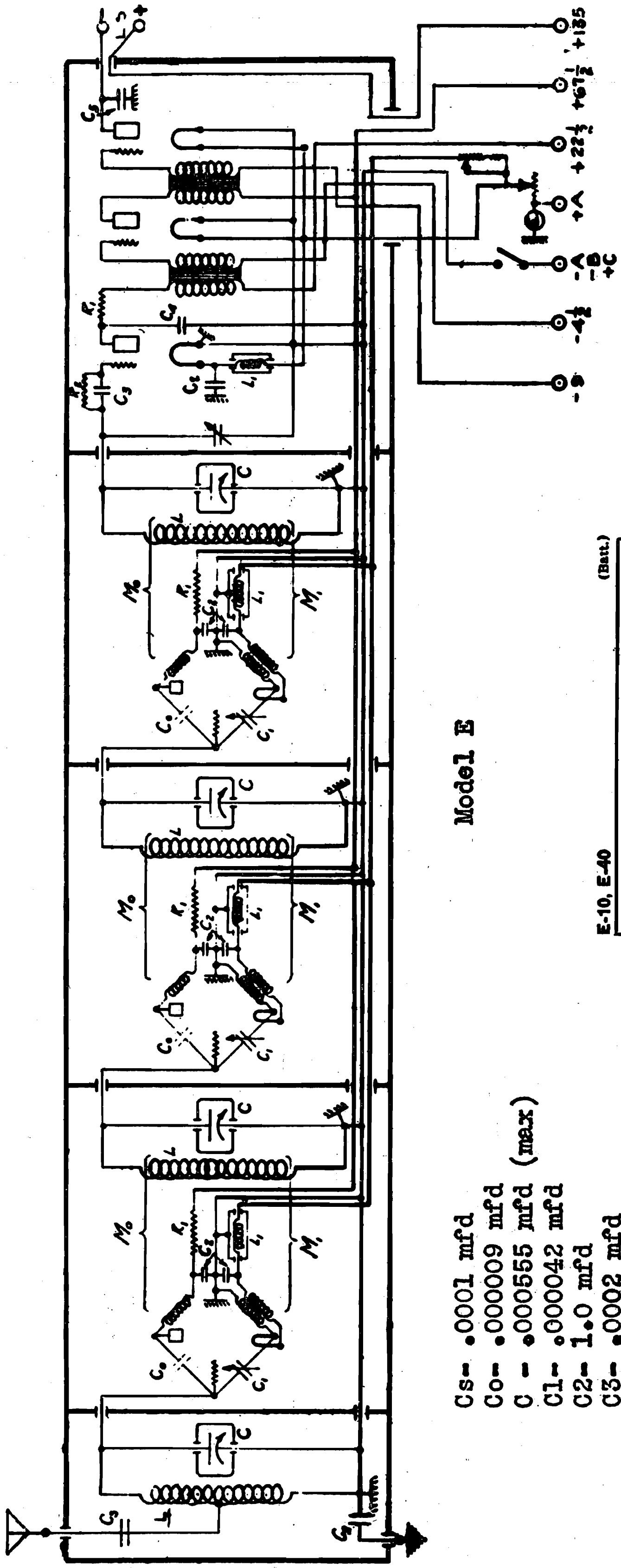
MODEL D(60 Cycle)
Receiver Chassis

FEDERAL RADIO CORP.

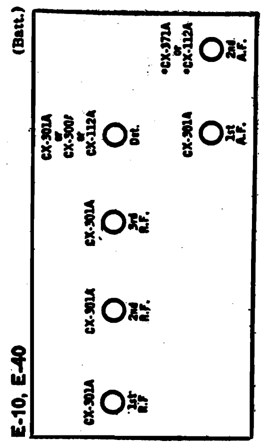


FEDERAL RADIO CORP.

MODEL E CODE 68-060
Schematic



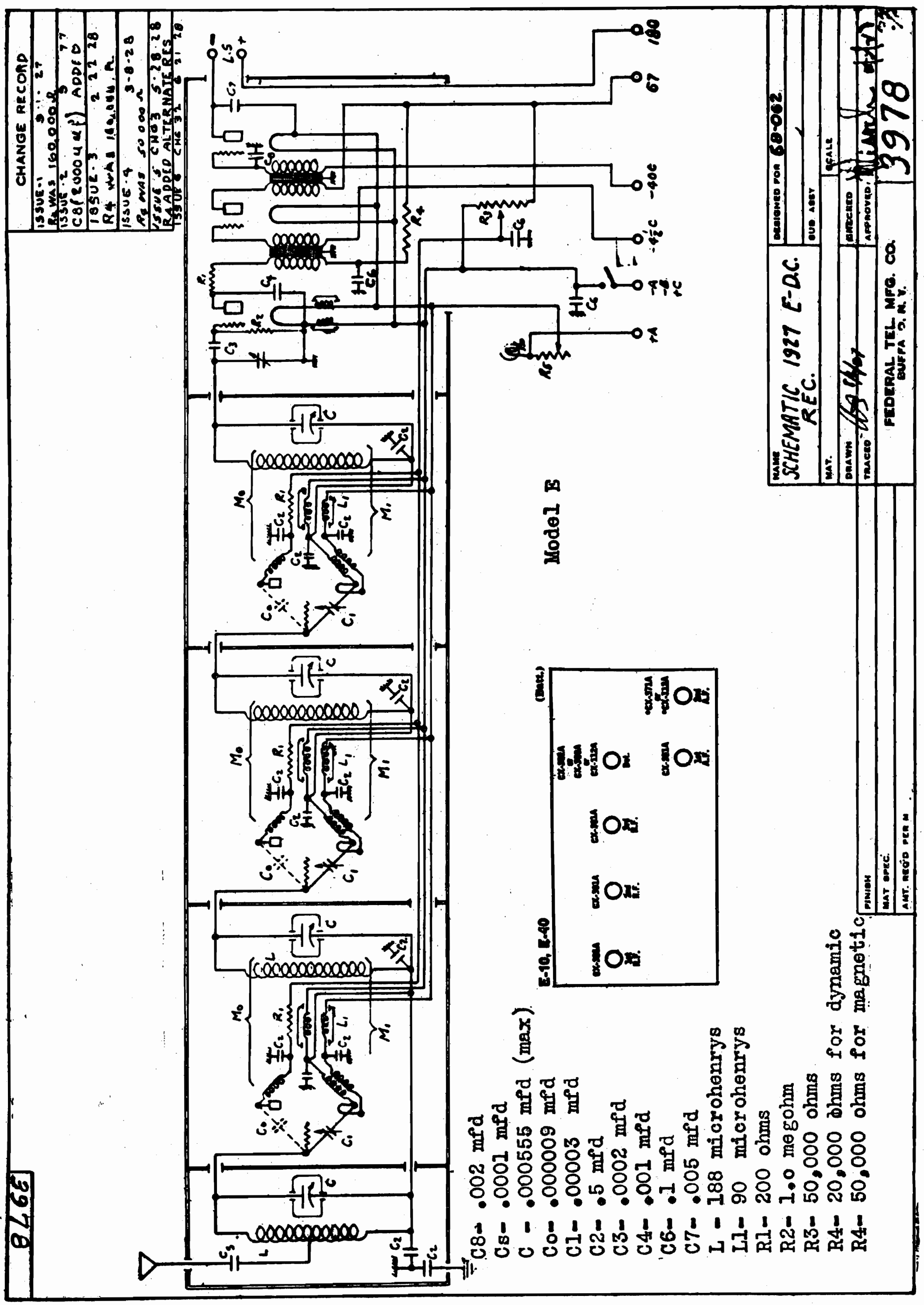
Model E



Cs = .0001 mfd
Co = .000009 mfd
C = .000555 mfd (max)
C1 = .000042 mfd
C2 = 1.0 mfd
C3 = .0002 mfd
C4 = .001 mfd
C5 = .005 mfd
Mo = 25.5 microhenrys
M1 = 5.25 microhenrys
R1 = 200 ohms (low capacity)
R2 = 1.0 megohm
L = 100 microhenry
L1 = 360 microhenry

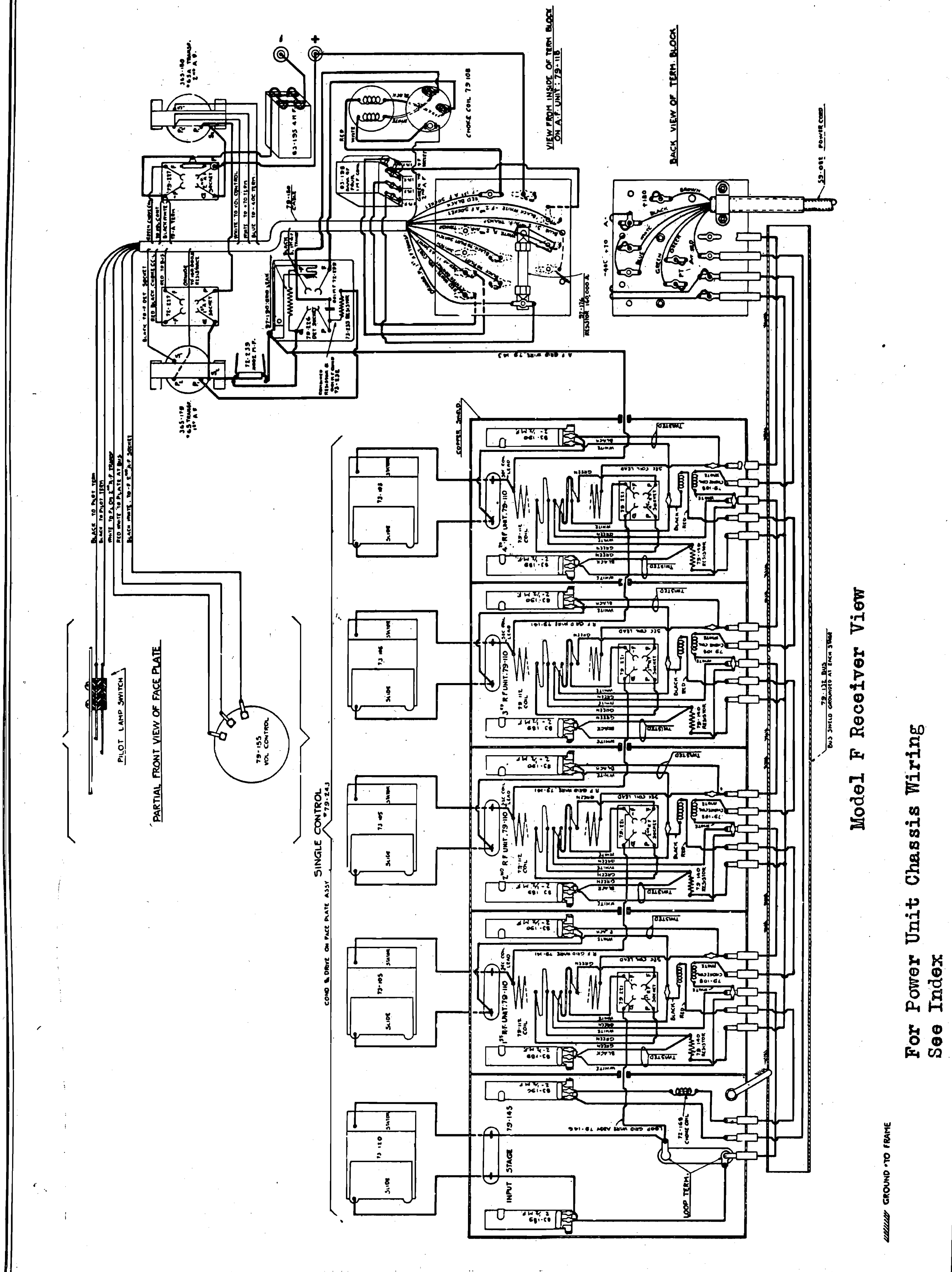
MODEL E DC
Schematic

FEDERAL RADIO CORP.



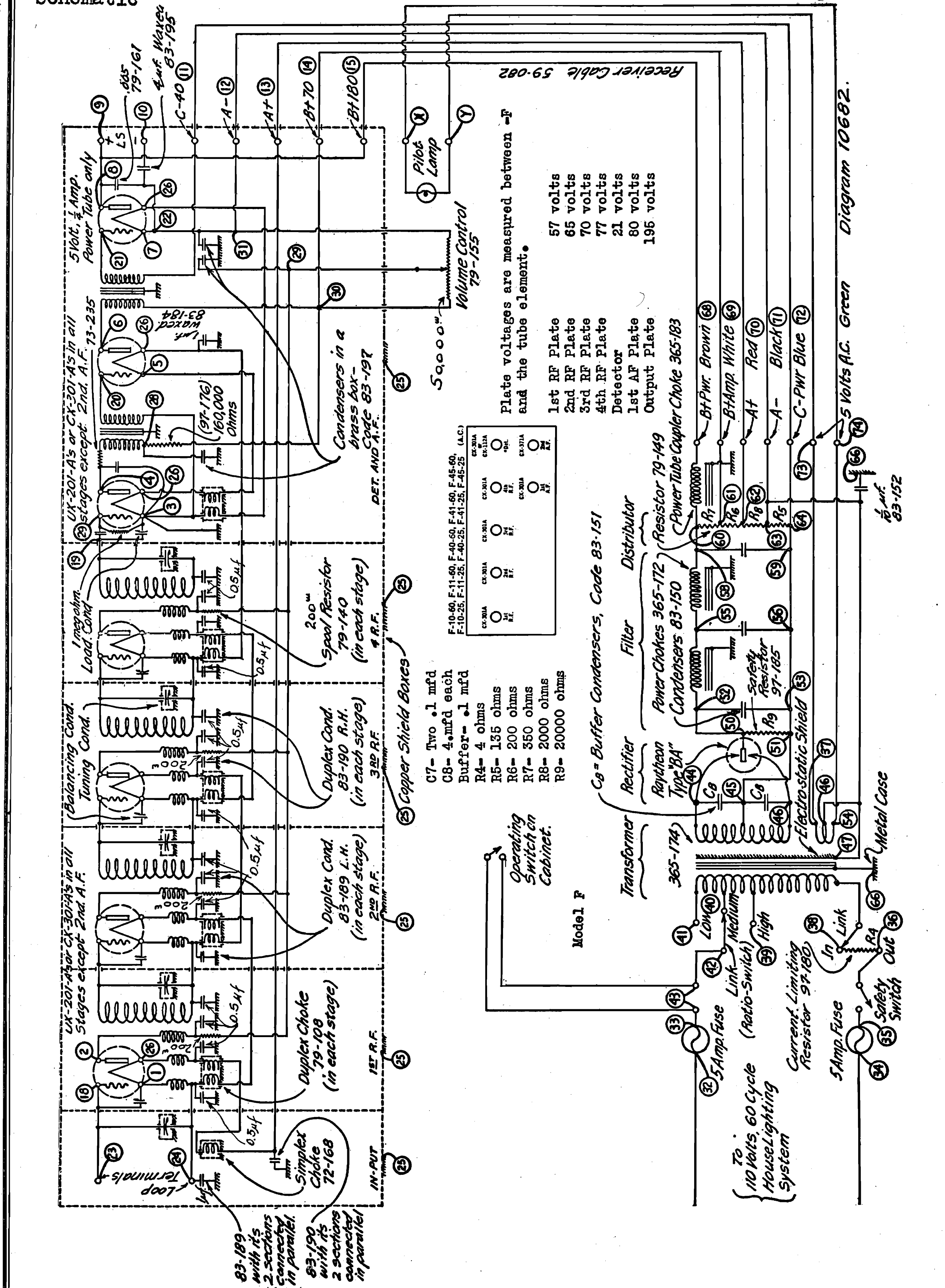
FEDERAL RADIO CORP.

MODEL F, CODE 79-080
Receiver Chassis



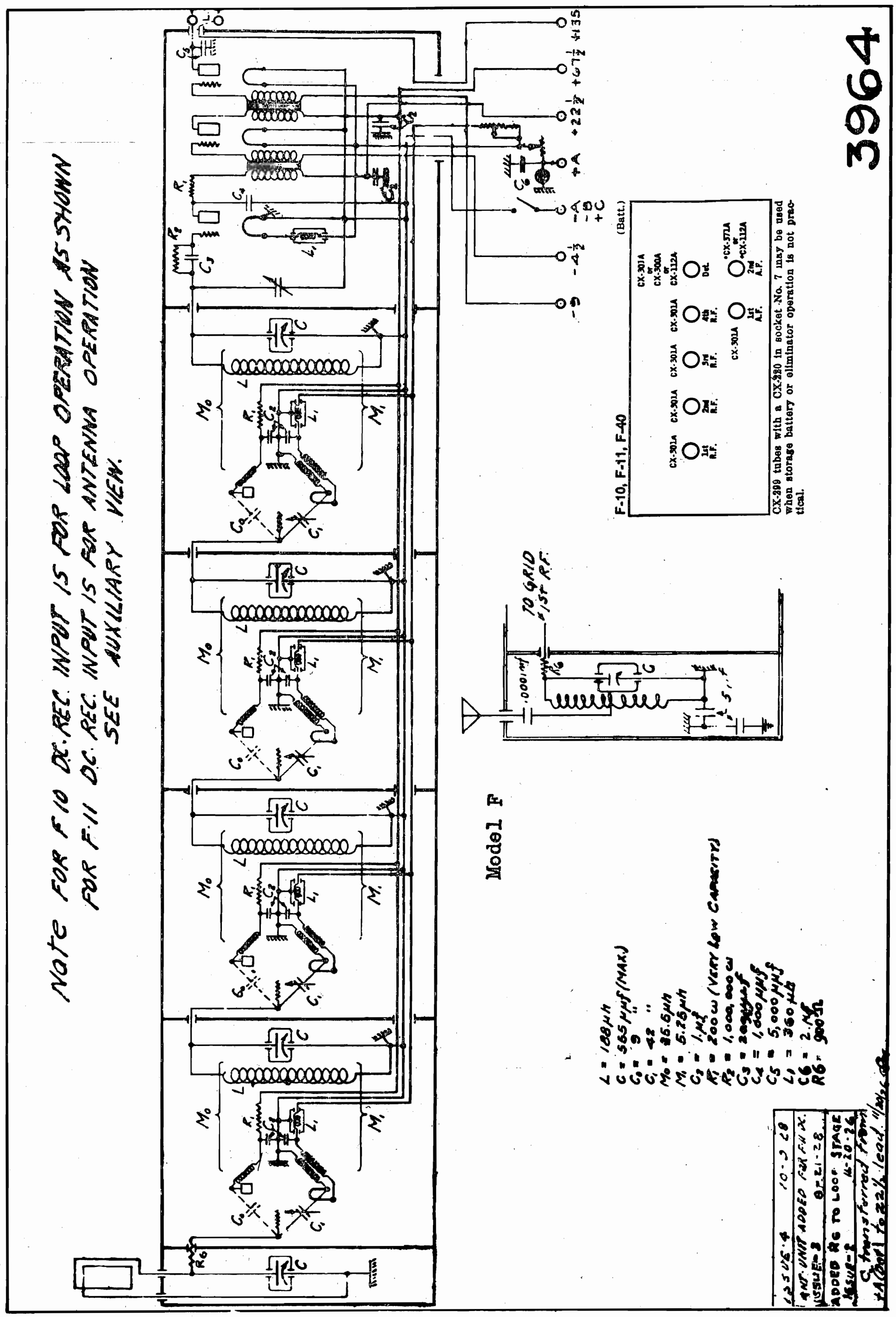
MODEL F, CODE 79-080
Schematic

FEDERAL RADIO CORP.



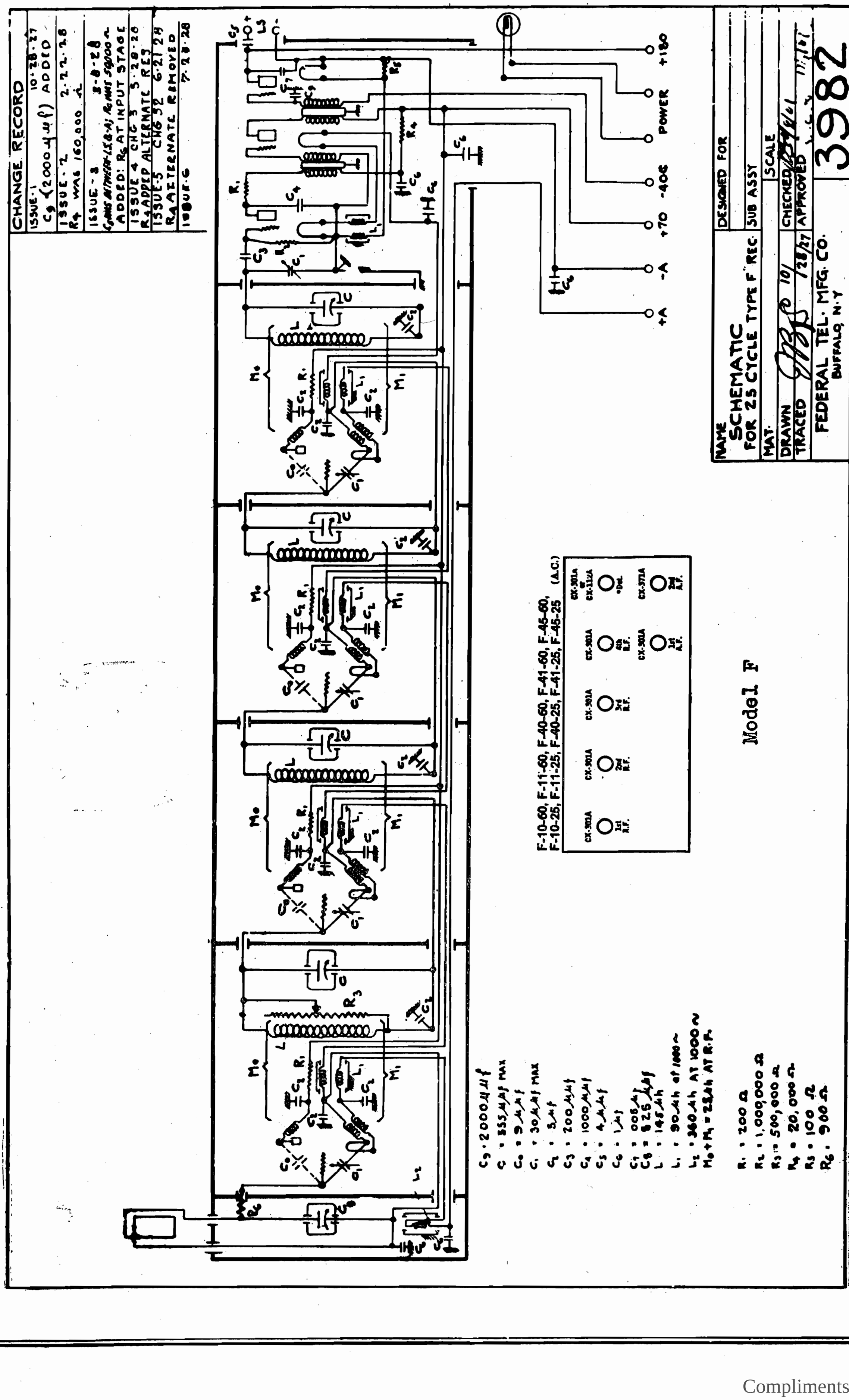
FEDERAL RADIO CORP.

MODEL F-10 DC
F-11 DC



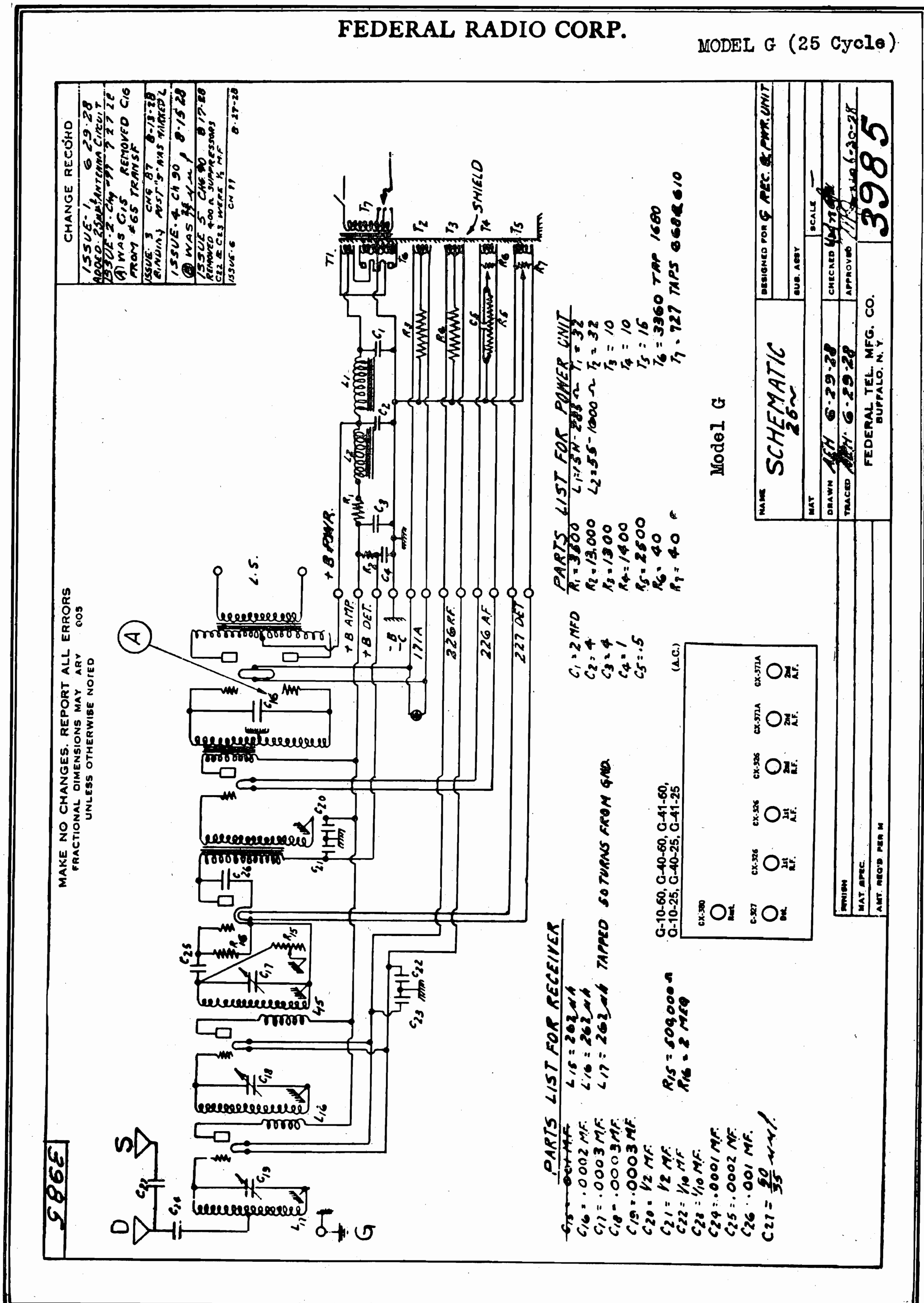
FEDERAL RADIO CORP.

MODEL F (25 Cycle)



FEDERAL RADIO CORP.

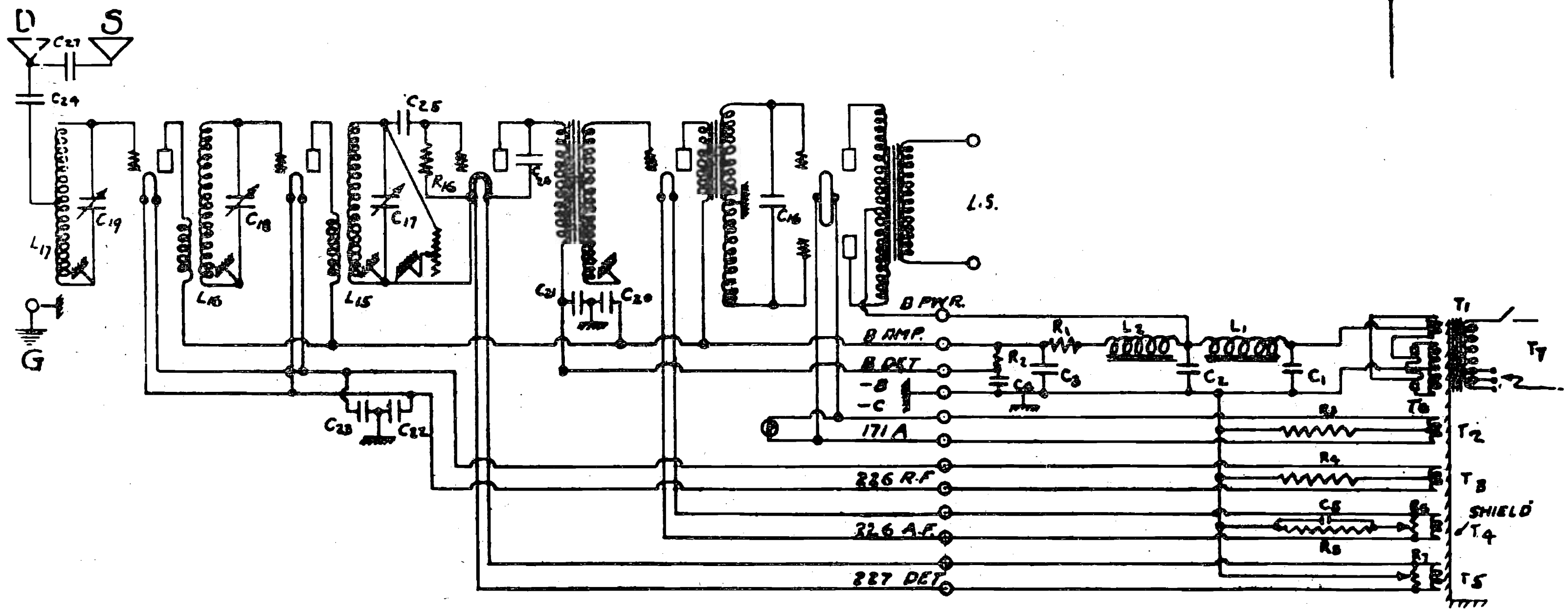
MODEL G (25 Cycle)



MODEL H CODE 71-030

FEDERAL RADIO CORP.

CHANGE RECORD	
ISSUE-1	8-17-28



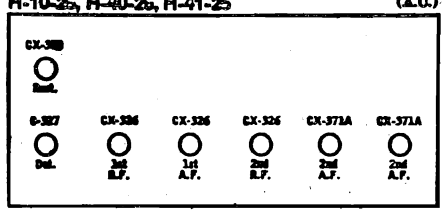
PARTS LIST FOR REC.

C16	= .0002 mf	L15	= 262 μh
C17	= .0003 mf	L16	= 262 μh
C18	= .0003 mf	L17	= 262 μh
C19	= .0003 mf		
C20	= 1/2 mf		
C21	= 1/2 mf	R15	= 500,000 Ω
C22	= 1/10 mf	R16	= 2 Meg
C23	= 1/10 mf		
C24	= .0001 mf		
C25	= .0002 mf		
C26	= .001 mf		
C27	= 50/35 mmf.		

PARTS LIST FOR POWER UNIT

C1 = 1 mf	R1 = 3500 Ω	L1 = 15h - 285 Ω	T1 = 24
C2 = 1 mf	R2 = 13,000 Ω	L2 = 55h - 1600 Ω	T2 = 24
C3 = 2 mf	R3 = 1300 Ω		T3 = 8
C4 = 1 mf	R4 = 1400 Ω		T4 = 8
C5 = 1/2 mf	R5 = 2500 Ω		T5 = 12
	R6 = 40 Ω		T6 = 2390
	R7 = 40 Ω		T7 = 573

H-10-60, H-40-60, H-41-60,
H-10-25, H-40-25, H-41-25 (A.C.)



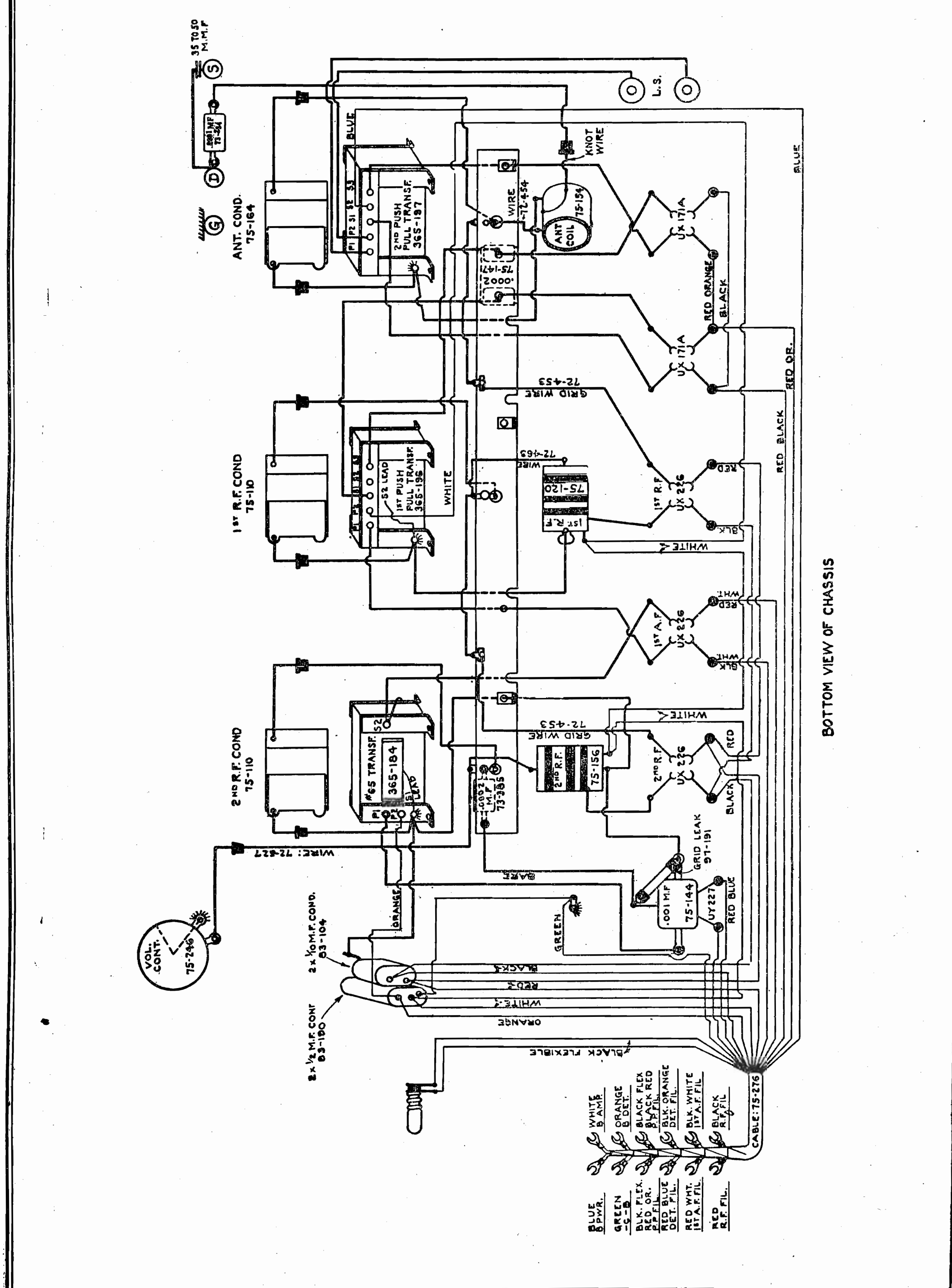
VOLTAGES

Plate voltages are measured between the chassis and the respective tube plates.

1st RF Plate	125 volts	1st RF Fil.	1.45 volts
2nd RF Plate	125 volts	2nd RF Fil.	1.45 volts
Detector Plate	62 volts	Detector Fil	2.25 volts
1st AF Plate	125 volts	1st AF Fil.	1.45 volts
Output Plates	190 volts	Output Fil.	5.1 volts
Grids and Cathodes	0 volts		

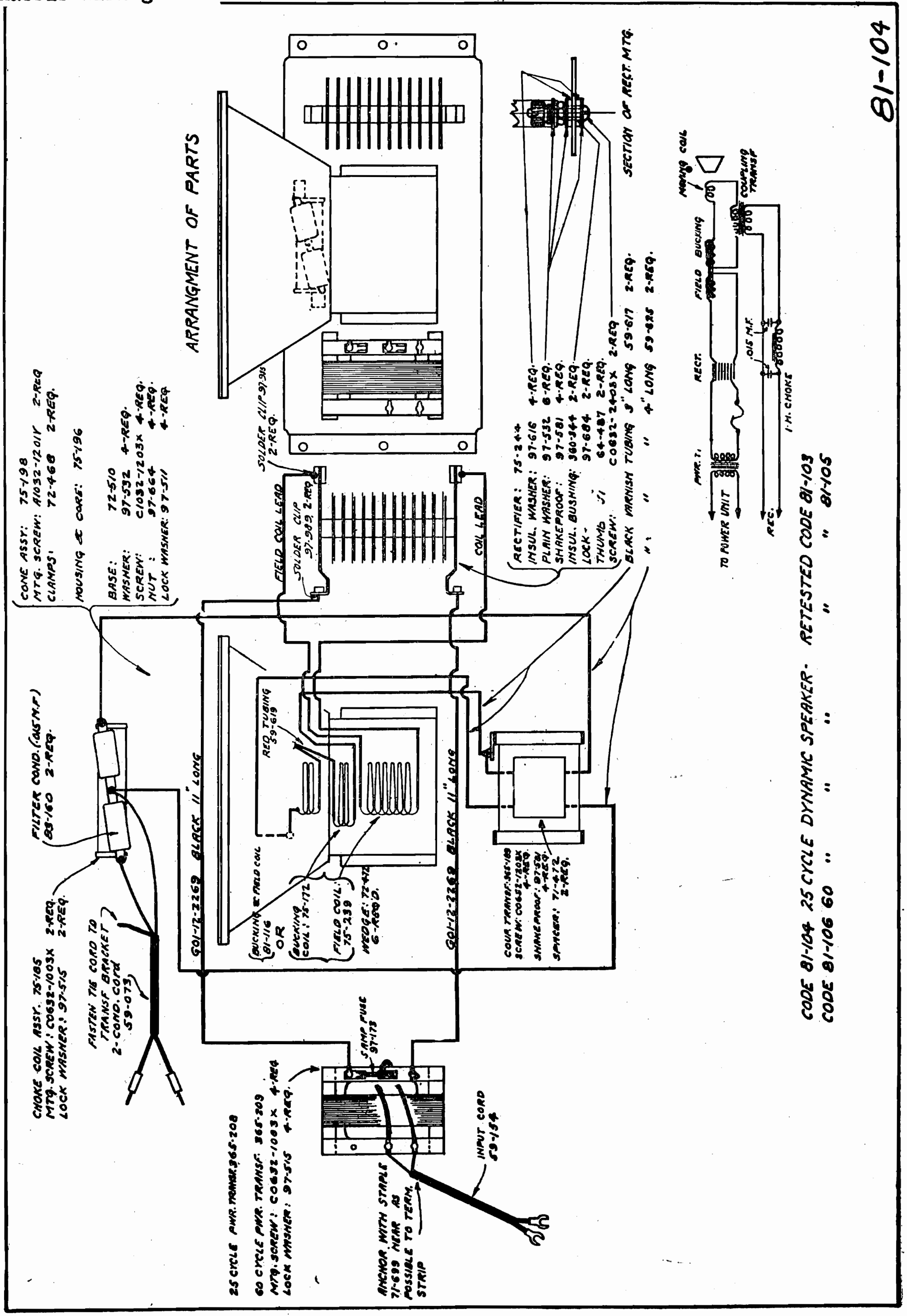
FEDERAL RADIO CORP.

MODEL H Receiver
Chassis Wiring



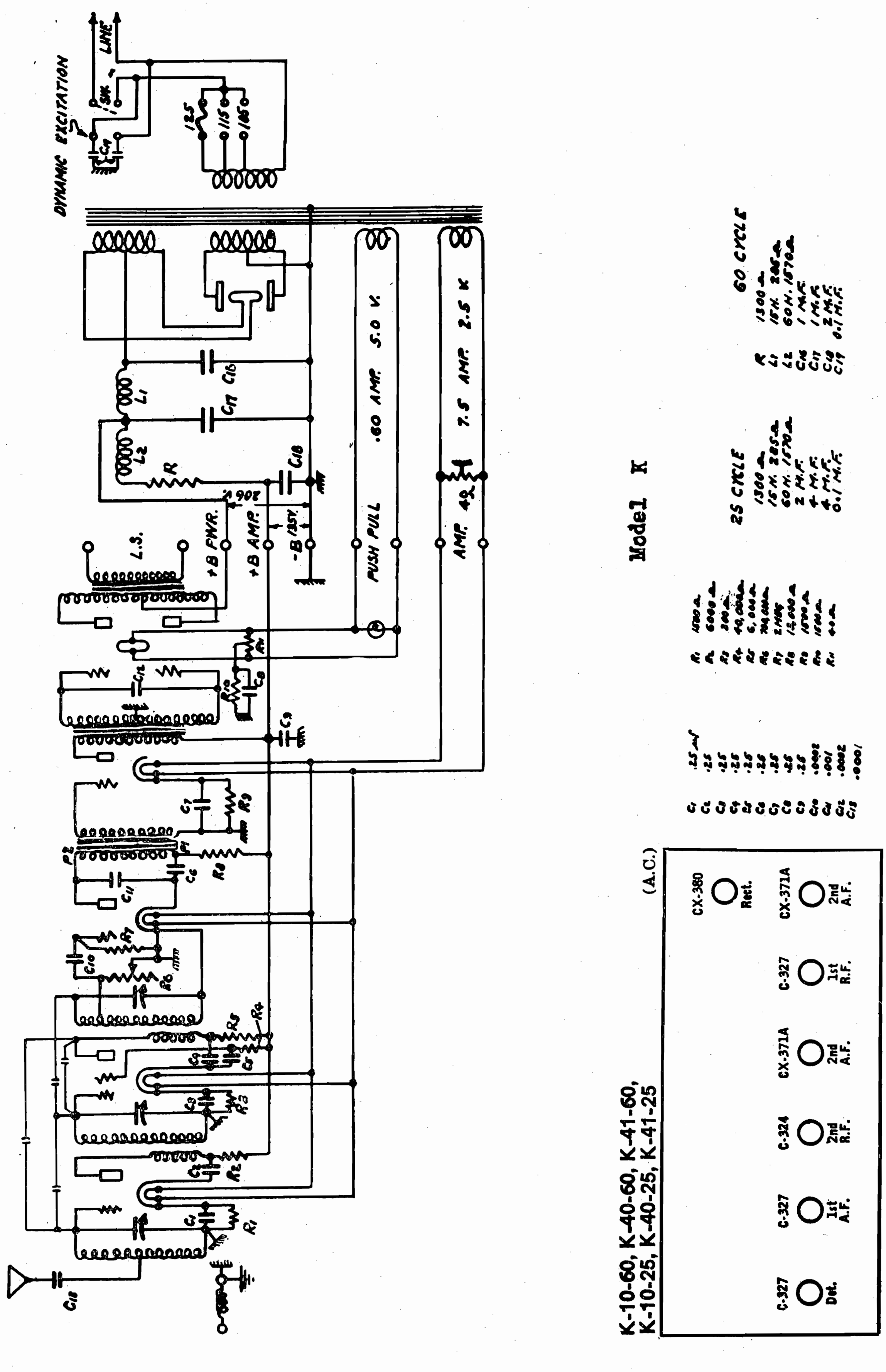
MODEL H Power Unit
Chassis Wiring

FEDERAL RADIO CORP.



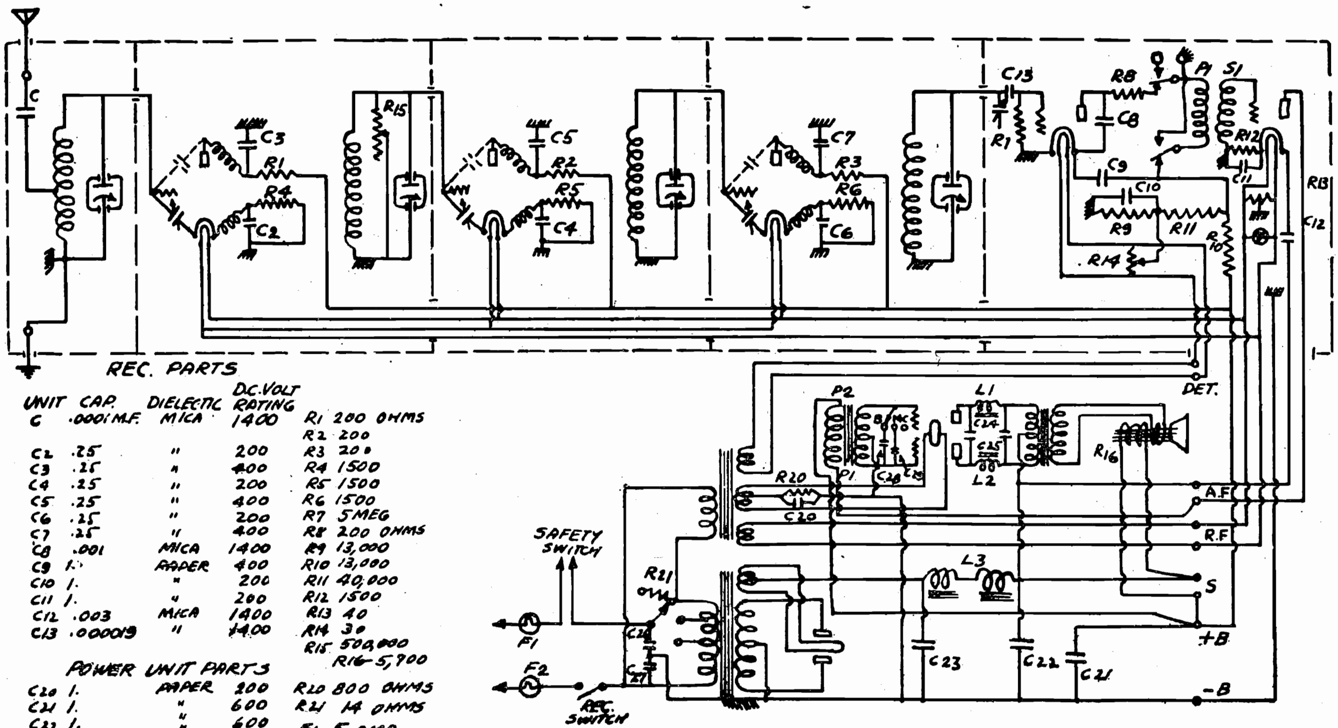
FEDERAL RADIO CORP.

MODEL K



MODEL M

FEDERAL RADIO CORP.



REC. PARTS

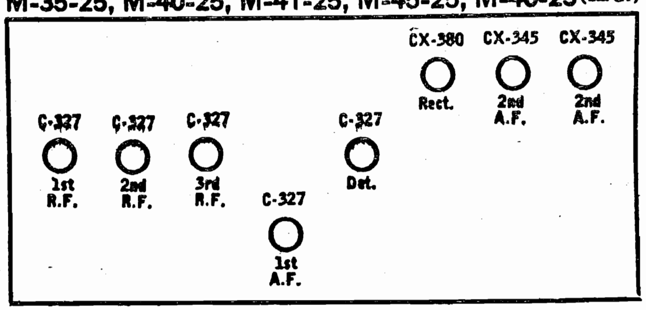
UNIT	CAP.	DIELECTIC	DC. VOLT RATING	
C	.0001 M.F.	MICA	1400	R1 200 OHMS
				R2 200
C2	.25	"	200	R3 200
C3	.15	"	400	R4 1500
C4	.25	"	200	R5 1500
C5	.25	"	400	R6 1500
C6	.15	"	200	R7 5MEG
C7	.25	"	400	R8 200 OHMS
C8	.001	MICA	1400	R9 13,000
C9	1.	PAPER	400	R10 13,000
C10	1.	"	200	R11 40,000
C11	1.	"	200	R12 1500
C12	.003	MICA	1400	R13 40
C13	.00001	"	1400	R14 30
				R15 500,000
				R16-5,700

POWER UNIT PARTS

C20	1.	PAPER	200	R20 800 OHMS
C21	1.	"	600	R21 14 OHMS
C22	1.	"	600	F1 5 AMP.
C23	2.	"	600	F2 5 AMP
C24	.015	"	1400	L1
C25	.020	"	1400	
C26	.015	"	1400	L2
C27	.015	"	1400	L3
C28	.003	"	1400	
C29	.0015	"	1400	

Type M

M-35-60, M-40-60, M-41-60, M-45-60, M-46-60,
M-35-25, M-40-25, M-41-25, M-45-25, M-46-25 (A.C.)



FEDERAL—Type M
Line Voltage 113—Set on 113 Volt Tap—Volume Control Position Off

TUBE NO. IN ORDER (1)	TYPE OF TUBE (2)	POSITION OF TUBE 1ST. R.F. DET., ETC. (3)	READINGS, PLUG IN SOCKET OF SET: TUBE OUT: A VOLTS (4)	B VOLTS (5)	TUBE IN TESTER: A VOLTS (6)	B VOLTS (7)	C VOLTS (CONTROL GRID) (8)	CATHODE-HEATER VOLTS (9)	NORMAL PLATE M.A. (10)	PLATE M.A. GRID TEST (11)	PLATE CHANGE M.A. (12)	SCREEN GRID VOLTS (13)
1	227	1st RF	2.7	160	2.5	116	0	-	13	16	3	
2	227	2nd RF	2.7	160	2.5	116	0	-	13	16	3	
3	227	3rd RF	2.7	160	2.5	116	0	-	13	16	3	
4	227	Det.	2.9	180	2.5	118	0	16	1	1	0	
5	227	1st AF	2.8	160	2.5	114	0	-	11	12	1	
6	245	1st P	2.7	276	2.5	252	48	-	30	34	4	
7	245	2nd P	2.7	276	2.5	252	48	-	30	34	4	
8	280	Rect.	5.8	-	4.9	-	-	-	120	-	-	
9												
10												

MODEL 35, 40
Data
MODEL "Cathedral Tone"
Schematic

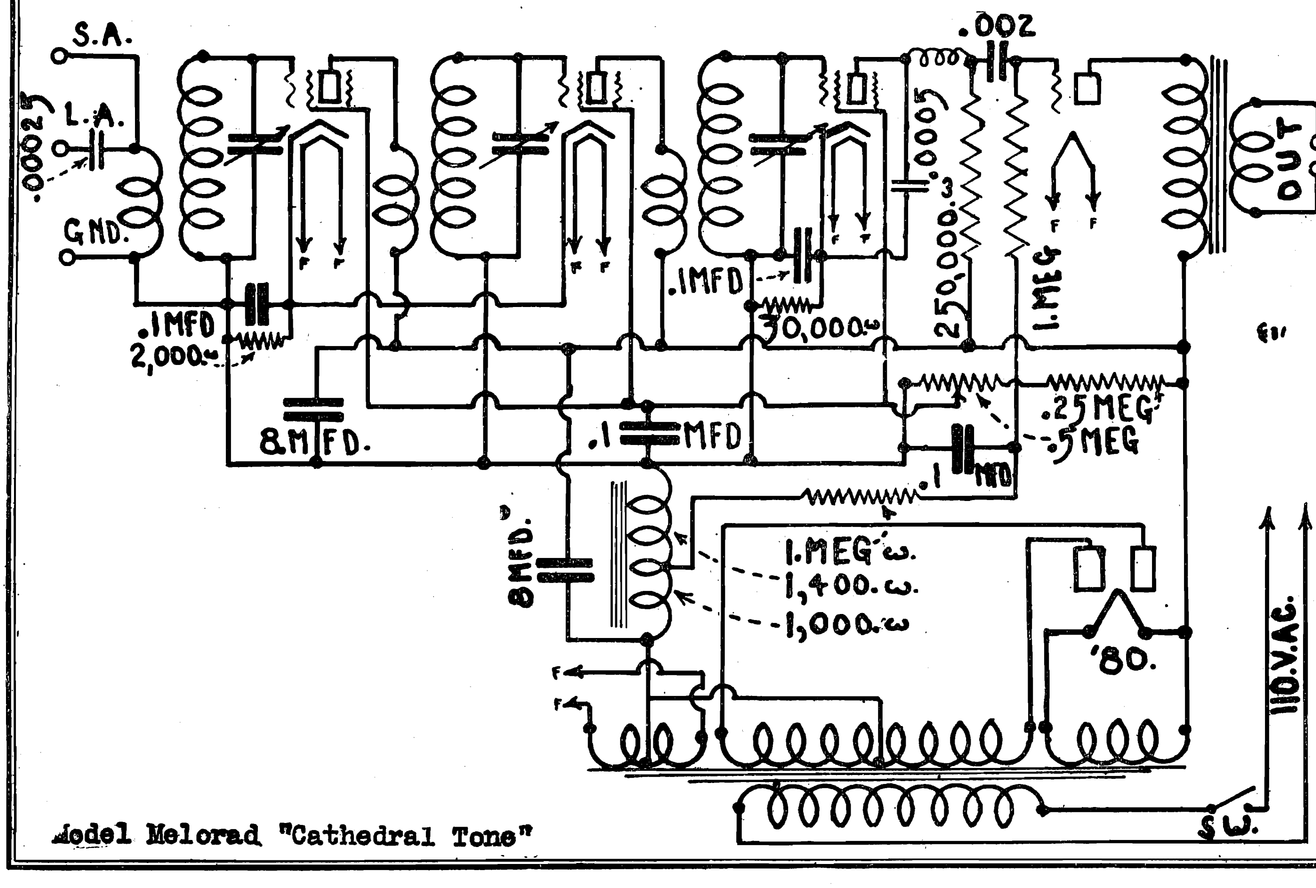
FEDERATED PURCHASER

Model 35, 40

ADJUSTMENTS The 175 kc. oscillator must be accurately tuned to 175 kc. and only 175 kc. If this precaution is not observed it will be impossible to align the oscillator to the rest of the set and the set will not operate correctly as the oscillator is designed for exact 175 kc. operation.

The second intermediate frequency amplifier transformer shield can is removed and one side of the small variator condenser is disconnected from the primary coil. This coil is connected so that it still is in the plate circuit of the tube but the tuning condenser is not connected in the circuit. Now remove the grid cap from the intermediate amplifier tube and connect a 3 megohm resistor from the control grid to ground. Now connect the output from the 175 kc. oscillator to the grid of the intermediate frequency amplifier tube and tune the secondary for maximum deflection of the output meter. (Low voltage alternating current meter, 0 to 3 volts, connected across the voice coil of speaker). Now remove the shield can and connect the small tuning condenser that was previously removed back across the primary coil. With the 175 kc. oscillator connected the same as before, tune the primary for a maximum deflection of the output meter. (Caution: Do not under any circumstances try to retune the secondary after having tuned the primary. **This is important.**) After having tuned this stage proceed to the next intermediate frequency:

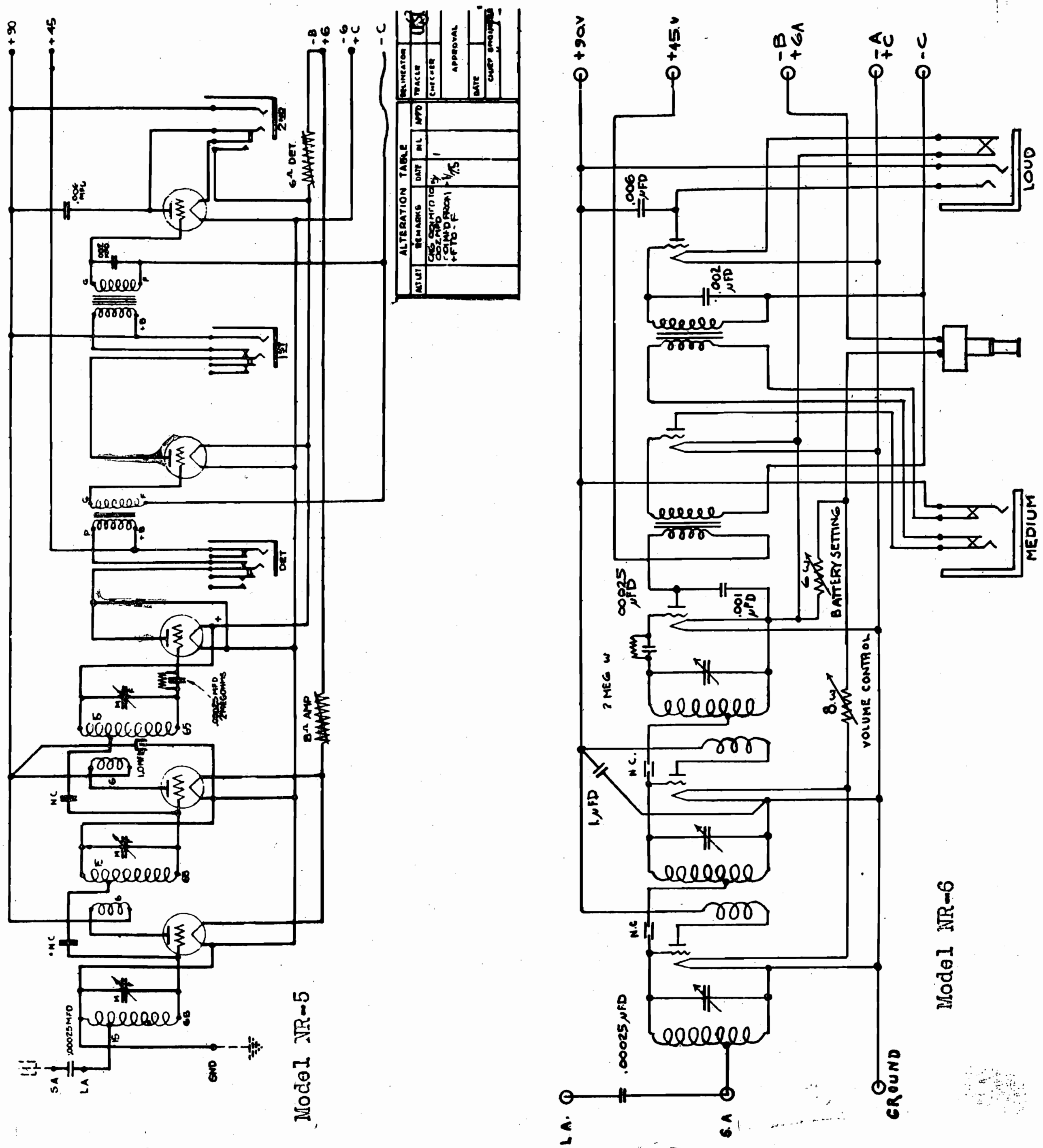
(b) Replace the grid cap on the intermediate frequency amplifier and proceed to the first detector tube. Remove this tube cap and connect the 175 kc. oscillator as before, being sure to connect the 3 megohm resistor from control grid to ground. Now proceed to tune the intermediate frequency transformer by tuning the secondary first for maximum deflection of the output meter and then tuning the primary for maximum deflection. Tuning this transformer must be done very carefully as the selectivity of the whole receiver depends entirely on the tuning of this transformer.



Model Melorad "Cathedral Tone"

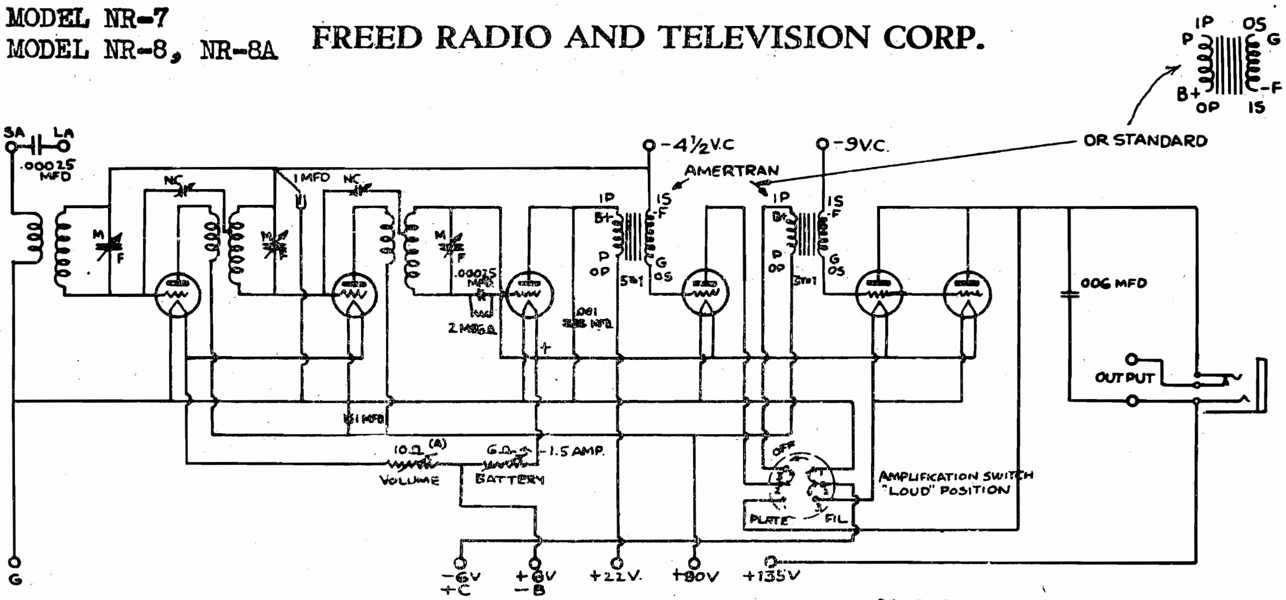
FREED RADIO AND TELEVISION CORP.

MODEL NR-5
MODEL NR-6

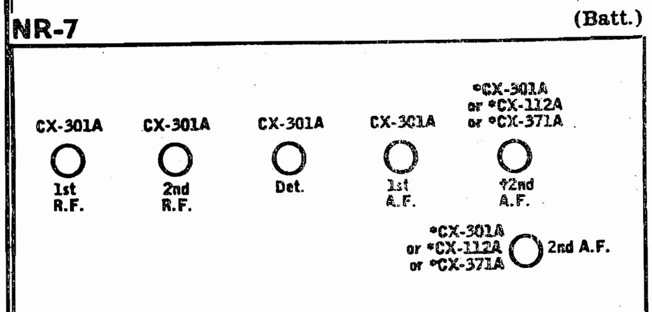


MODEL NR-7
MODEL NR-8, NR-8A

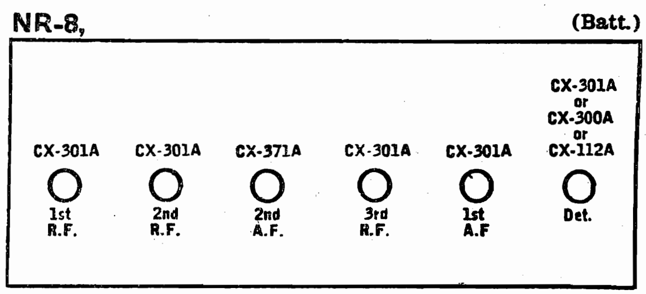
FREED RADIO AND TELEVISION CORP.

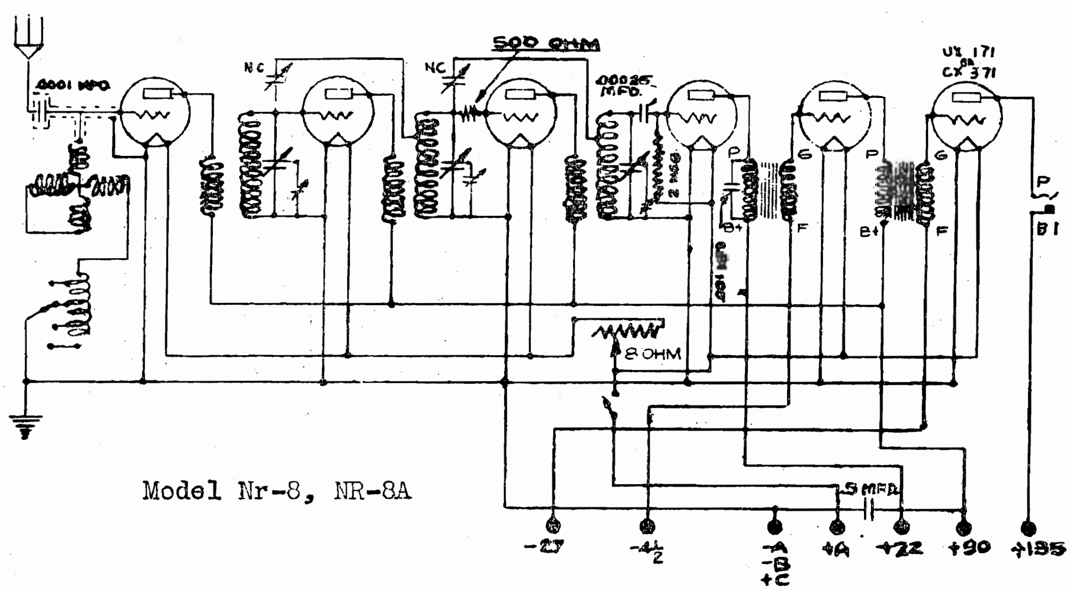


Model NR-7



† If CX-301A's are used, use both stages in parallel. If power tubes are used, one tube in either 2nd A. F. socket is sufficient.

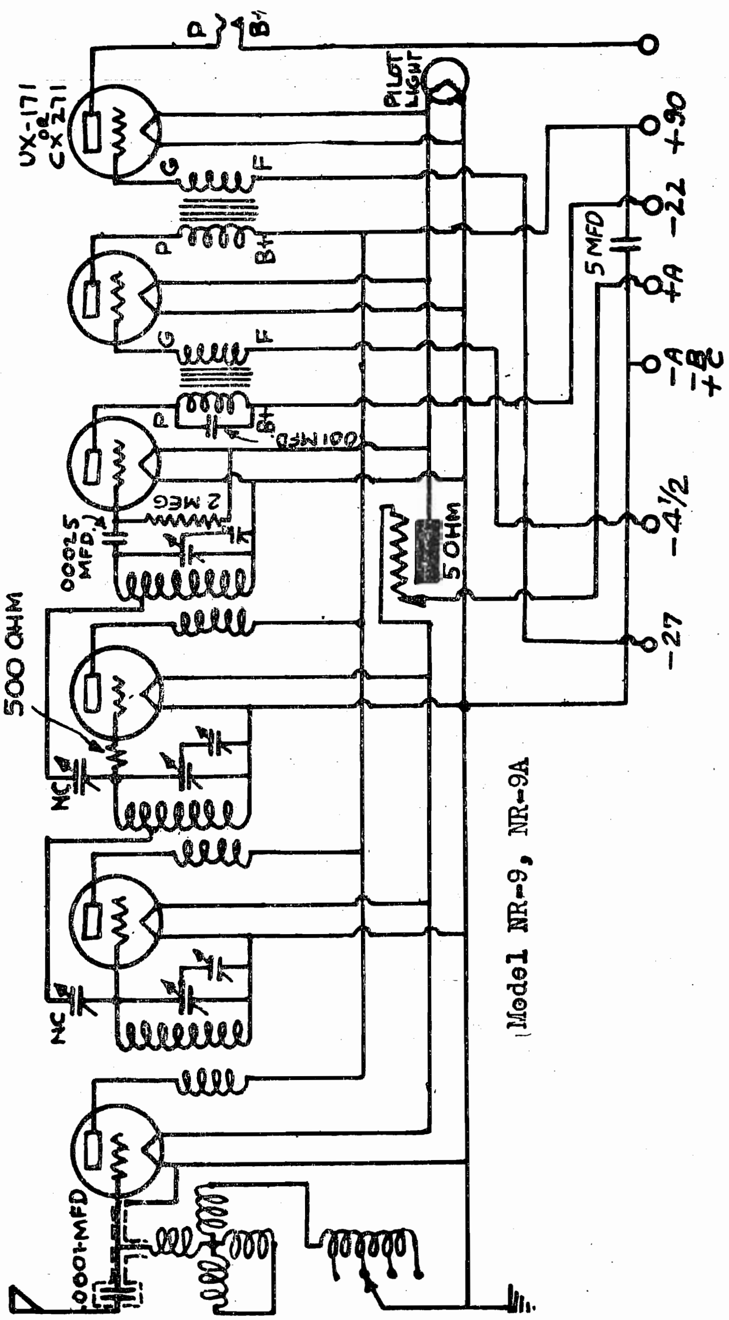


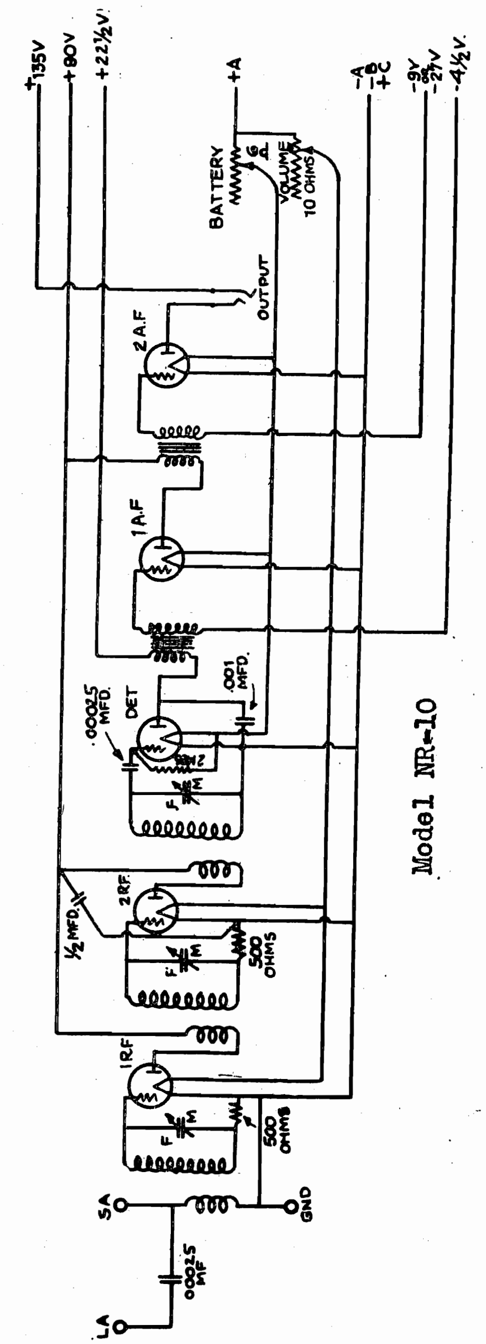


Model Nr-8, NR-8A

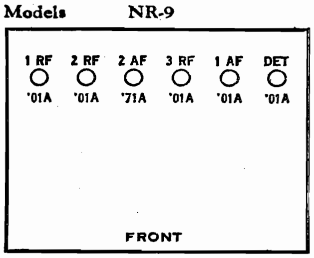
FREED RADIO AND TELEVISION CORP.

MODEL NR-9, NR-9A
MODEL NR-10

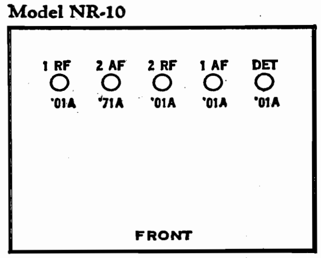




Models NR-9

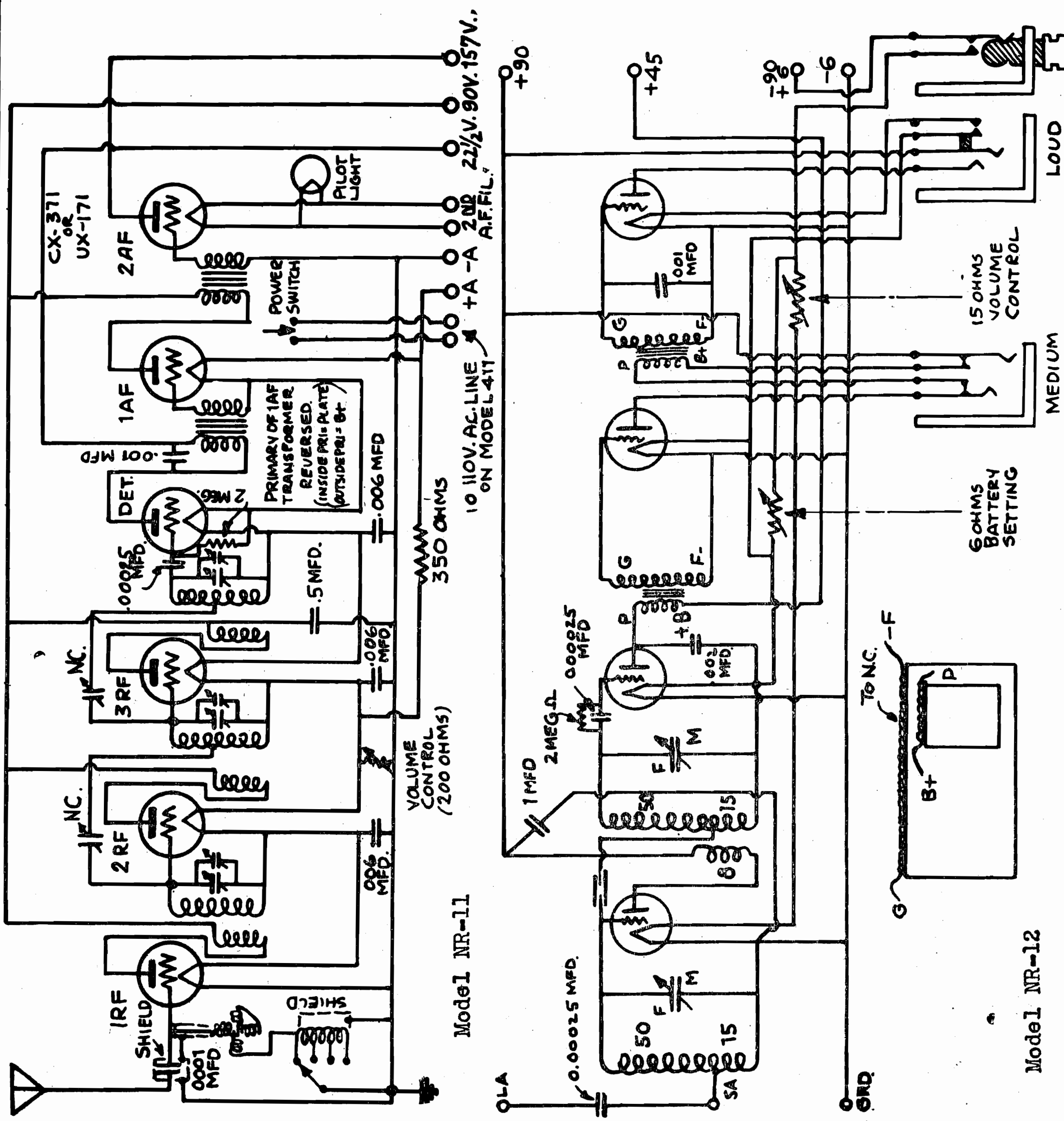


Model NR-10



MODEL NR-11
MODEL NR-12

FREED RADIO AND TELEVISION CORP.



Power Pack For NR-11 On Next Page

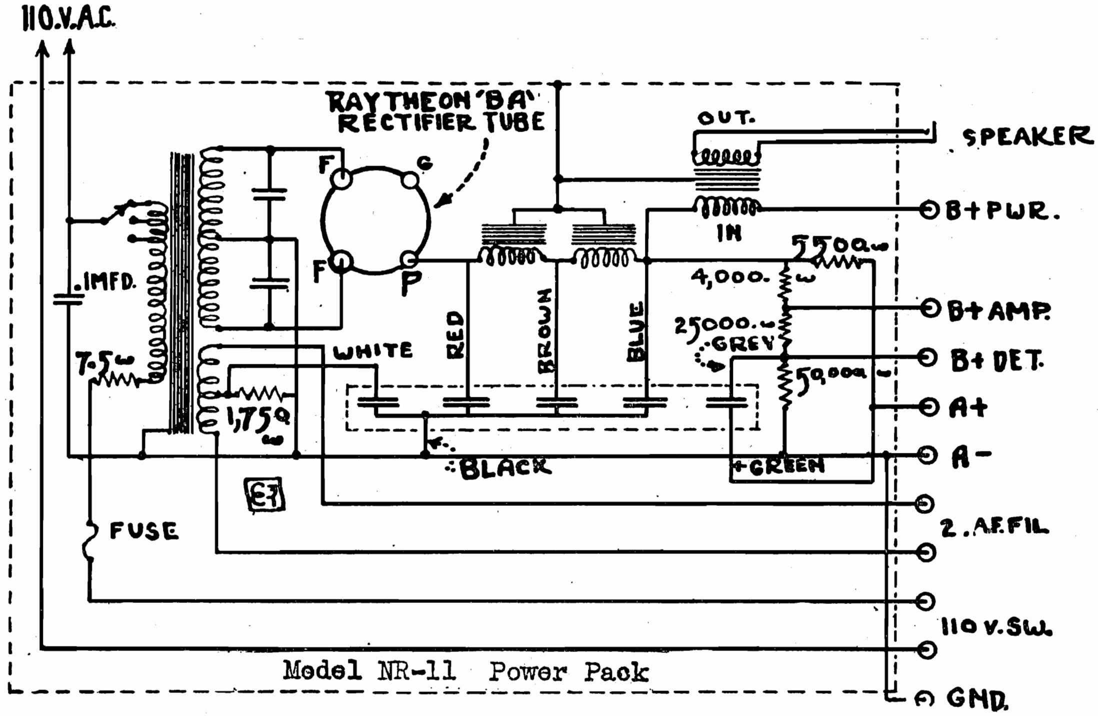
NR-11

CX-301A	CX-301A	CX-371A	CX-301A	CX-301A	CX-301A or CX-300A or CX-112A
1st R.F.	2nd R.F.	2nd A.F.	3rd R.F.	1st A.F.	Det.

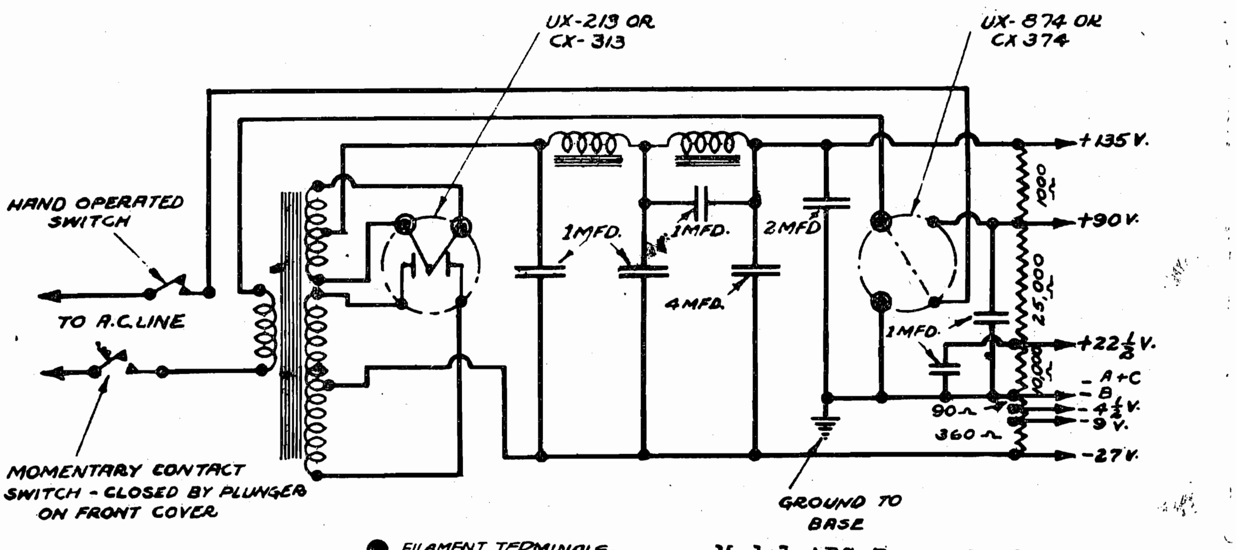
This is an A.C. series filament receiver. All tubes except the 2nd A.F. stage tube must be ¼ ampere tubes.

FREED RADIO AND TELEVISION CORP.

MODEL NR-11
Power Pack
MODEL ABC
Power Pack



Model NR-11 Power Pack



Model ABC Power Pack

ALTERATION TABLE				
ALT. LET	REMARKS	DATE	IN'L	APP'D
C	REDRAWN	10-6	[illegible]	[illegible]

DELINEATOR [illegible]
TRACER
CHECKER
APPROVAL
DATE [illegible]
CHIEF ENGINEER

Freed-Eisemann
SPERRY BUILDING BROOKLYN - NEW YORK

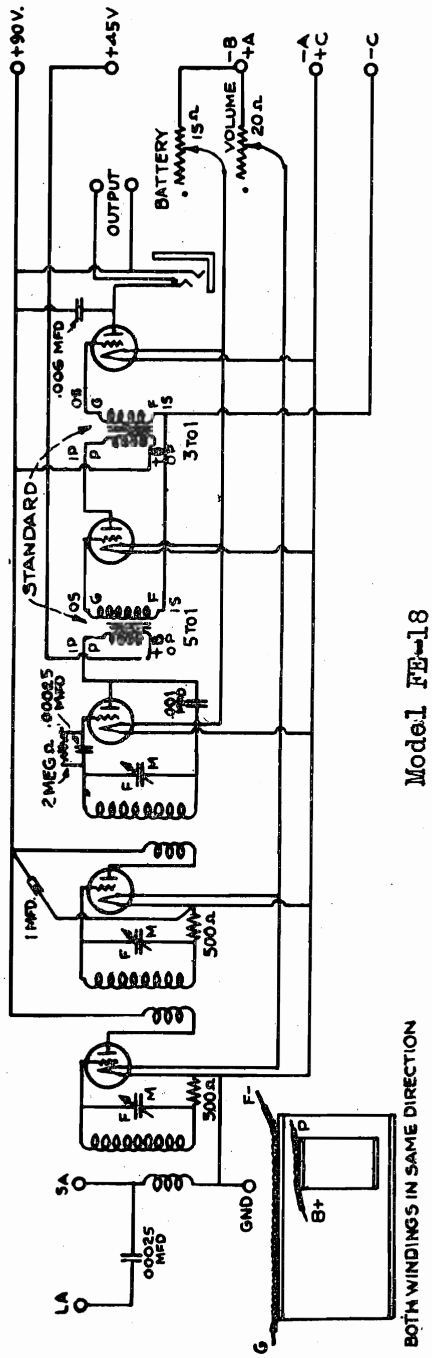
SCHEMATIC CIRCUIT DIAGRAM ~OF~ "B" AND "C" ELIMINATOR
SCALE
DATE 4-12-27

949

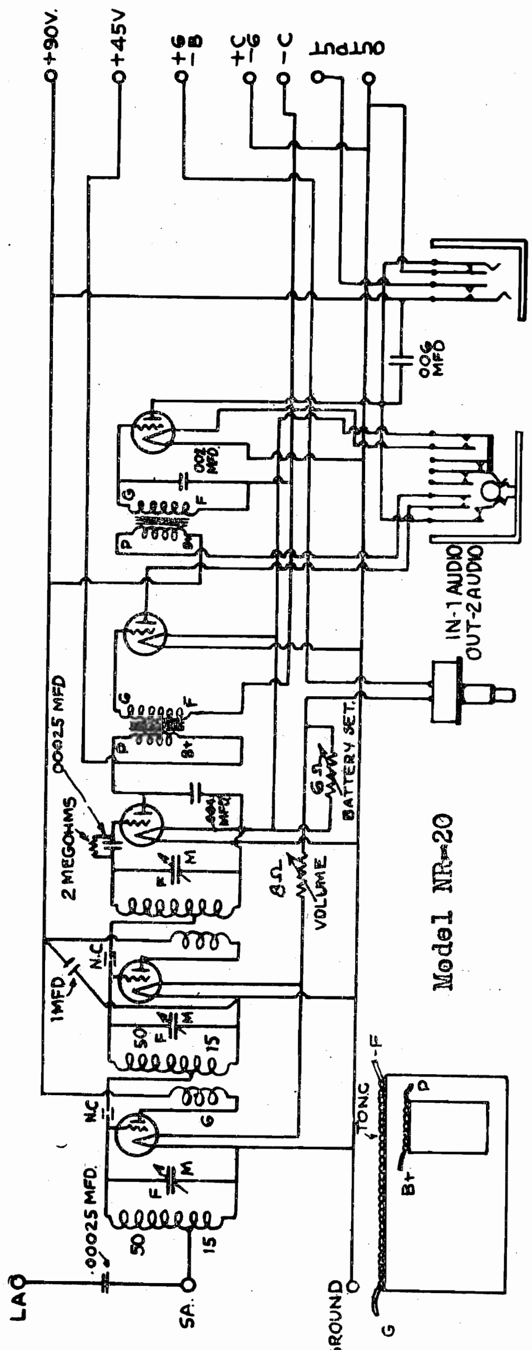
DRAWING NUMBER W.D.-16

MODEL FE-15
MODEL FE-18
MODEL NR-20

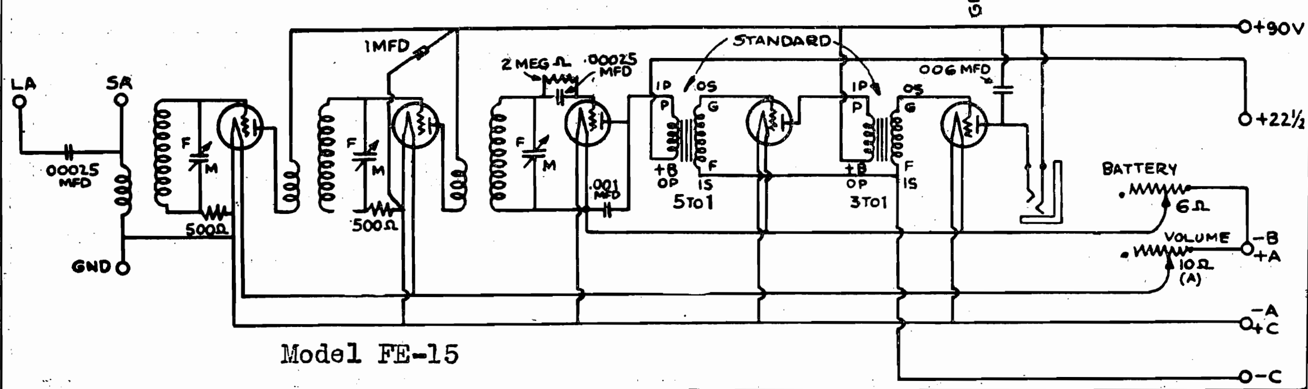
FREED RADIO AND TELEVISION CORP.



Model FE-18



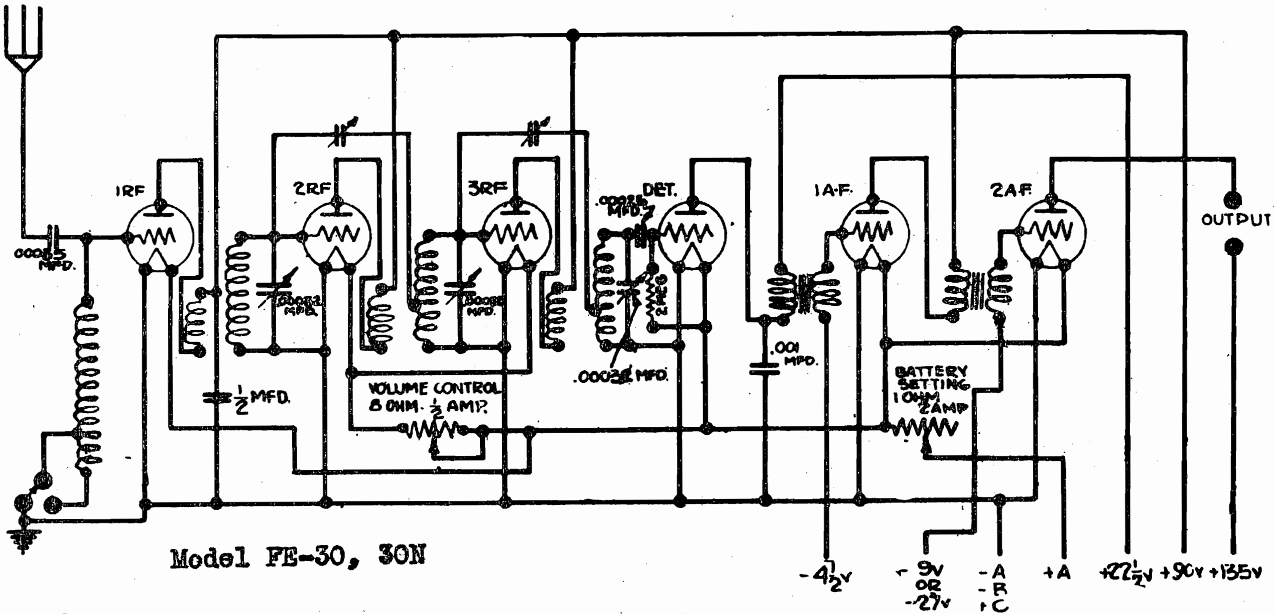
Model NR-20



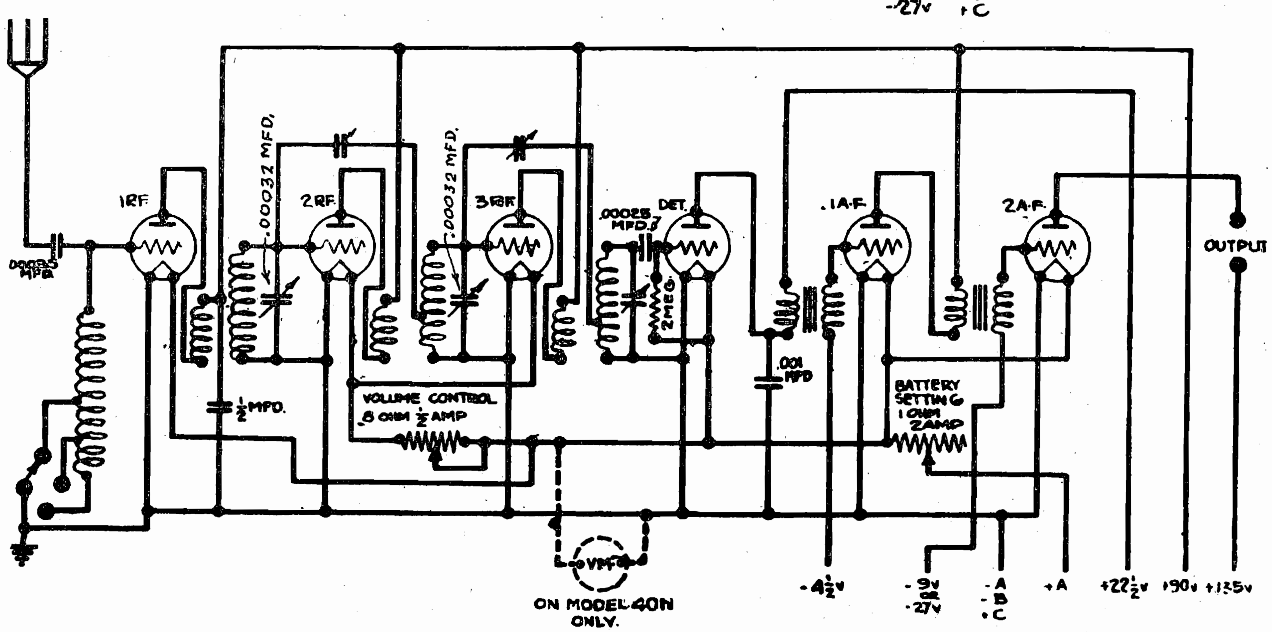
Model FE-15

FREED - EISEMANN RADIO CORP.

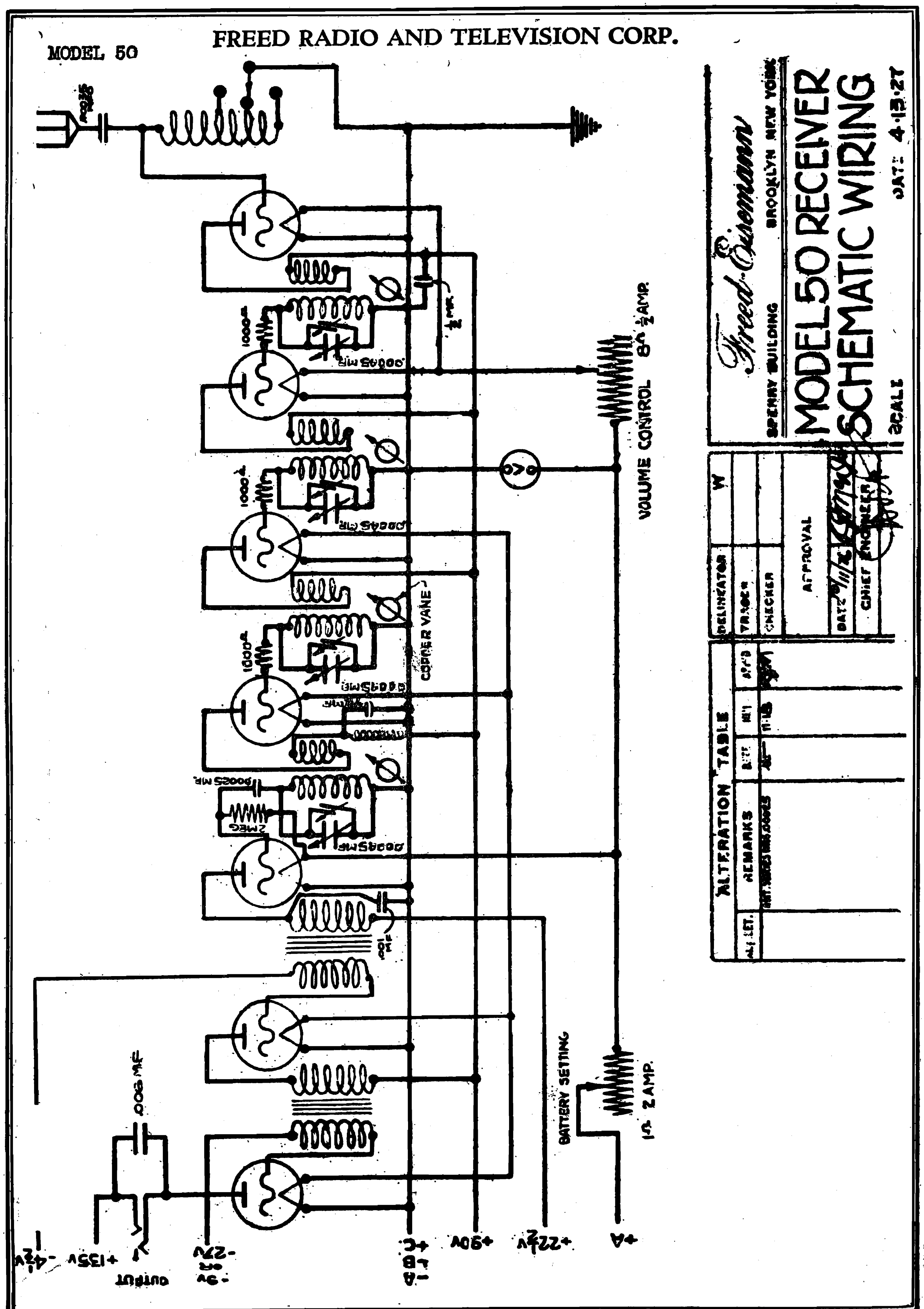
MODEL FE-30, 30N
MODEL 40N, 48N



Model FE-30, 30N

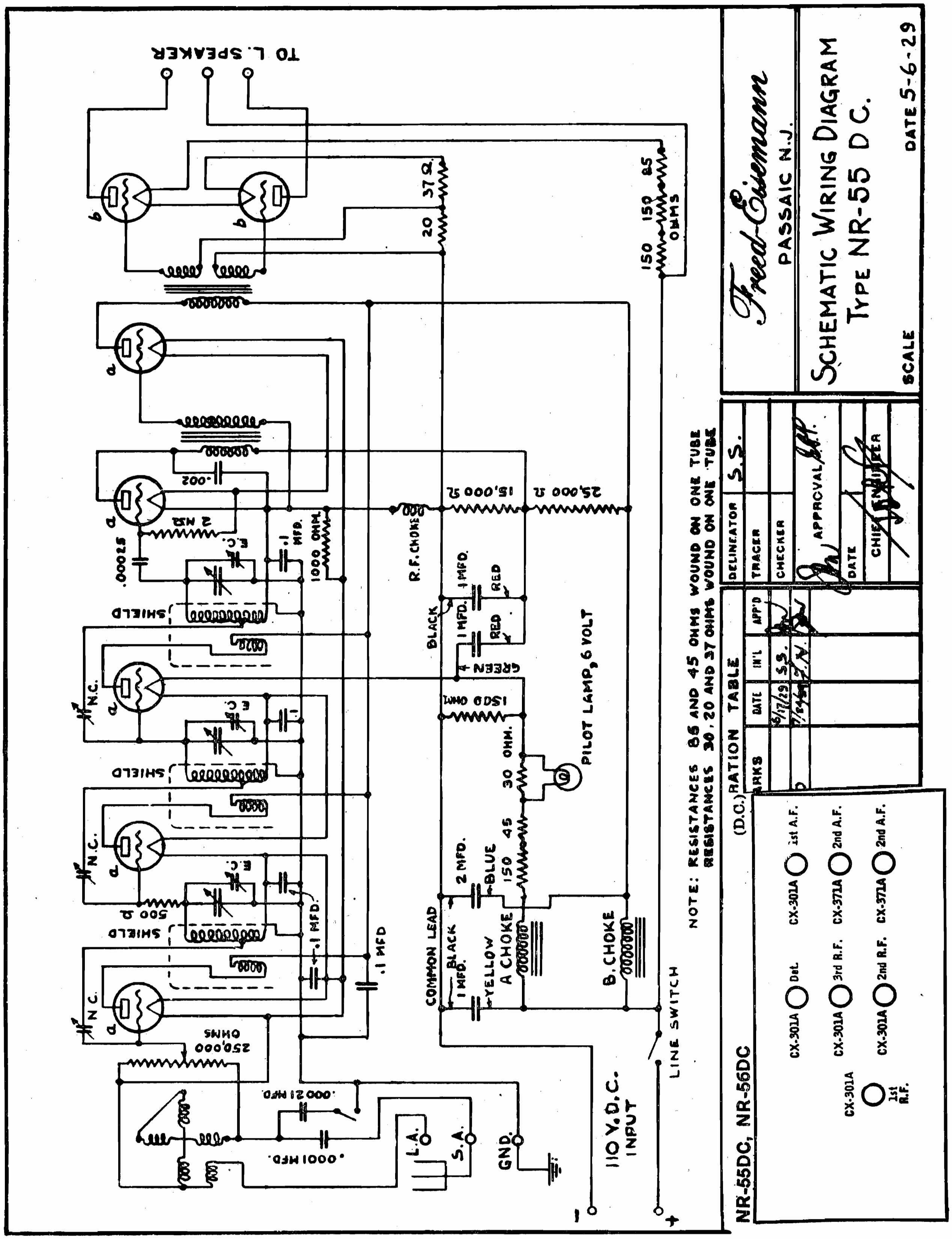


Model 40N, 48N

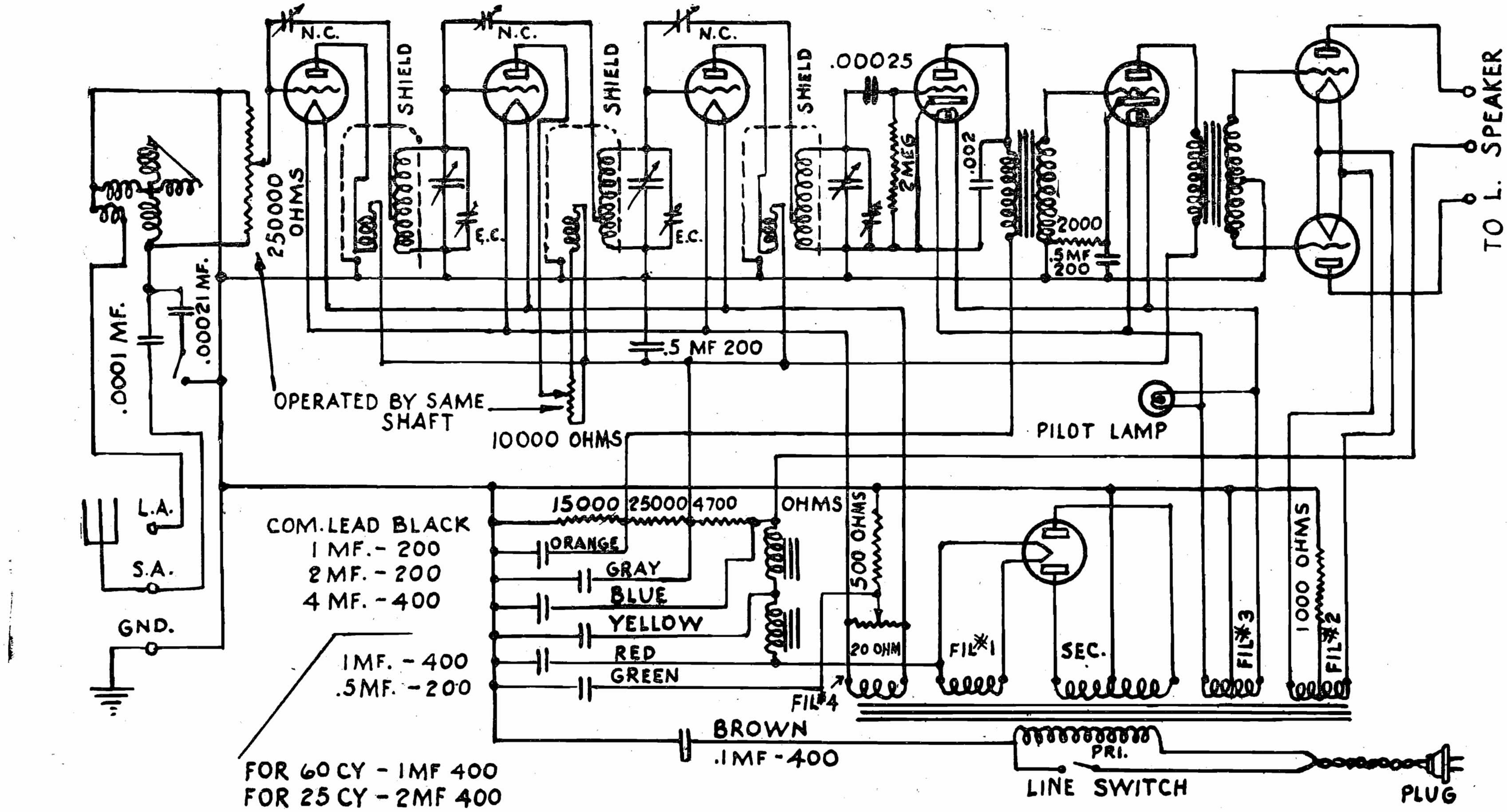

FREED RADIO AND TELEVISION CORP.
MODEL 50
Freed-Eisemann
SPERRY BUILDING BROOKLYN NEW YORK
MODEL 50 RECEIVER
SCHEMATIC WIRING
DATE 4-13-27
SCALE
DELINEATOR
TRACER
CHECKER
APPROVAL
DATE
CHIEF ENGINEER
ALTERATION TABLE
REMARKS
VOLUME CONTROL 8Ω ½ AMP.
BATTERY SETTING
1Ω 2 AMP.
COPPER VANE
.0005 MF
1000Ω
2 MEG
.006 MF
½ MF
+A
+22½V
+90V
+C -B -A
-27V OR AC-
+135V
-4½V
OUTPUT

FREED RADIO AND TELEVISION CORP.

MODEL NR-55 DC



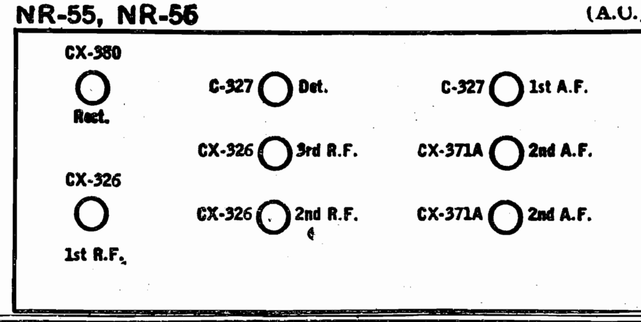
MODEL NR-55, NR-56 AC FREED RADIO AND TELEVISION CORP.



FREED-EISEMANN—Model 55
Line Voltage 116—Volume Control Position Full On

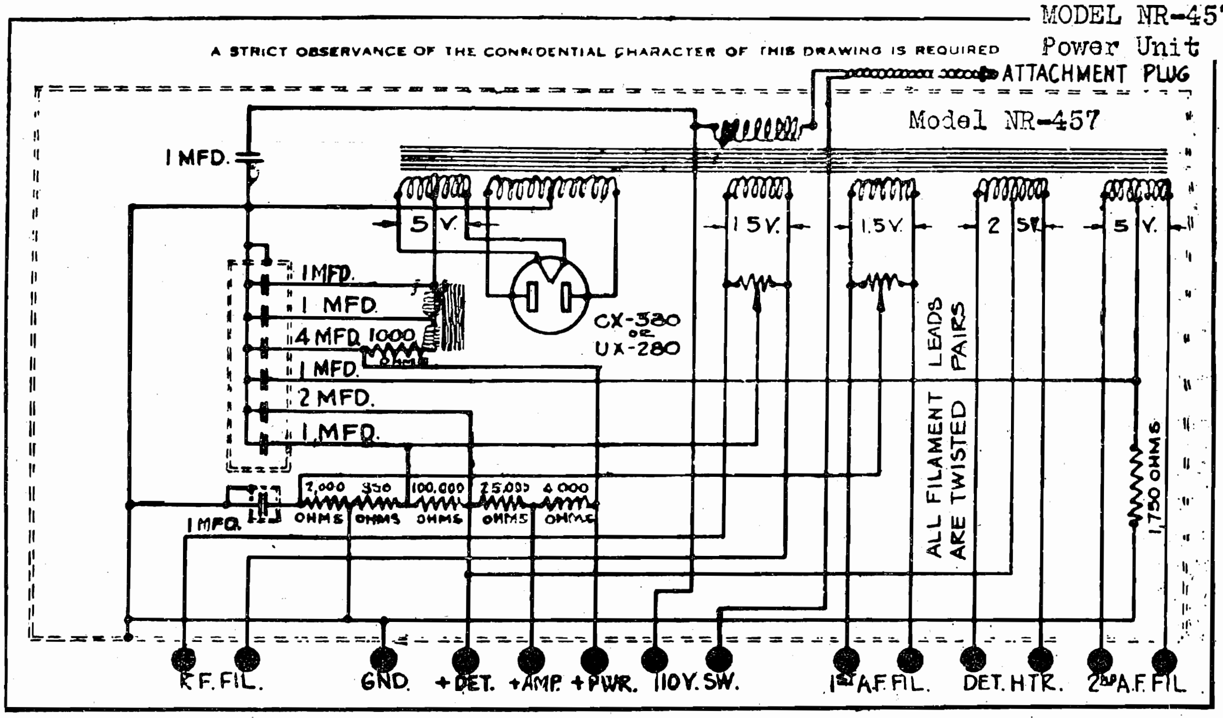
Tube No. in Order (1)	Type of Tube (2)	Position of Tube 1st RF Det. etc. (3)	Readings, Plug in Socket of Set: Tube Out: A Volts (4)	B Volts (5)	Tube in Tester: A Volts (6)	B Volts (7)	C Volts (Control Grid) (8)	Cathode-Heater Volts (9)	Normal Plate M.A. (10)	Plate M.A. Grid Test (11)	Plate Change M.A. (12)	Screen Grid Volts (13)
1	226	1st RF	1.5	80	1.46	76	5	-	2.4	4.6	2.2	
2	226	2nd RF	1.5	80	1.46	76	5	-	2.4	4.6	2.2	
3	226	3rd RF	1.5	80	1.47	76	5	-	2.4	4.6	2.2	
4	227	Det.	2.14	32	1.9	30	-	-	1.0	1.0	0.0	
5	227	1st A	2.15	92	1.97	72	4.5	5	2.5	5.0	2.5	
6	171A	2nd A	5.0	135	4.85	125	29	-	13.4	35	22	
7	171A	2nd A	5.0	135	4.85	125	29	-	13	35	22	
8	280	Rect.	5.6	-	5.4	-	-	-	40	-	-	
9												
10												

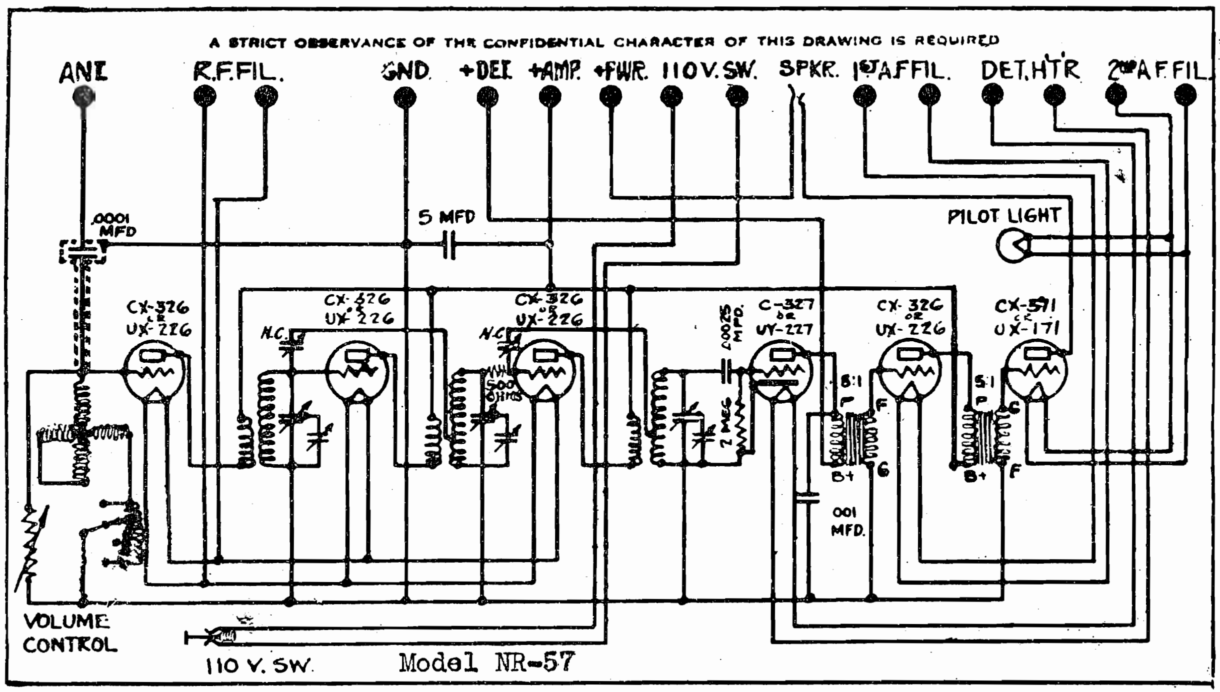
NR-55, NR-56 (A.U.)



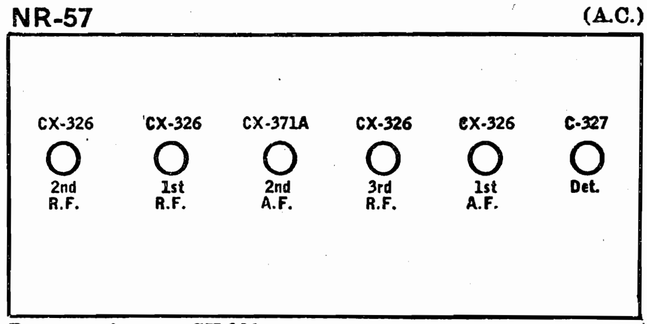
FREED RADIO AND TELEVISION CORP.

MODEL NR-57
Schematic
MODEL NR-457
Power Unit





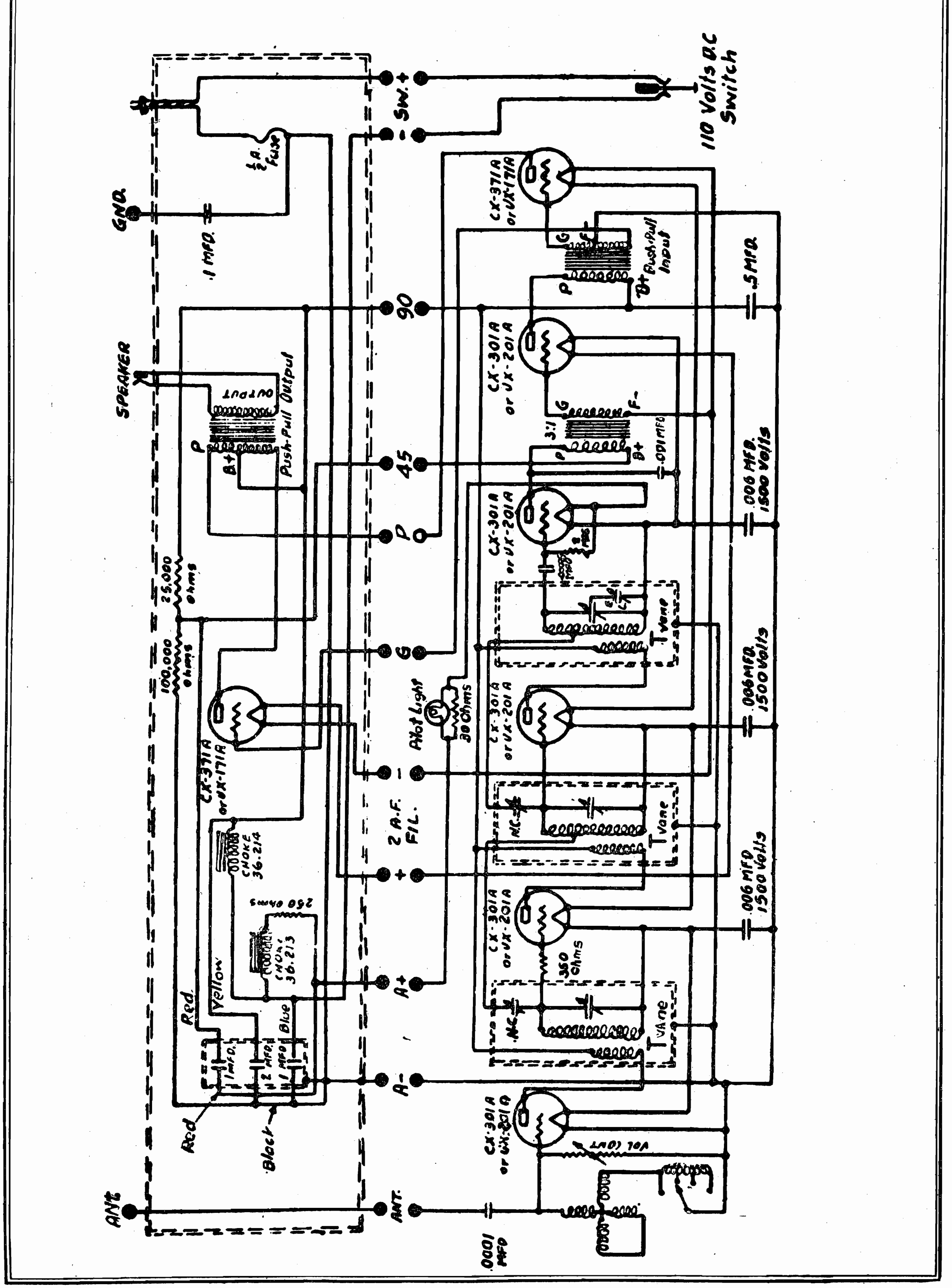
NR-57 (A.C.)



Power unit uses CX-380.

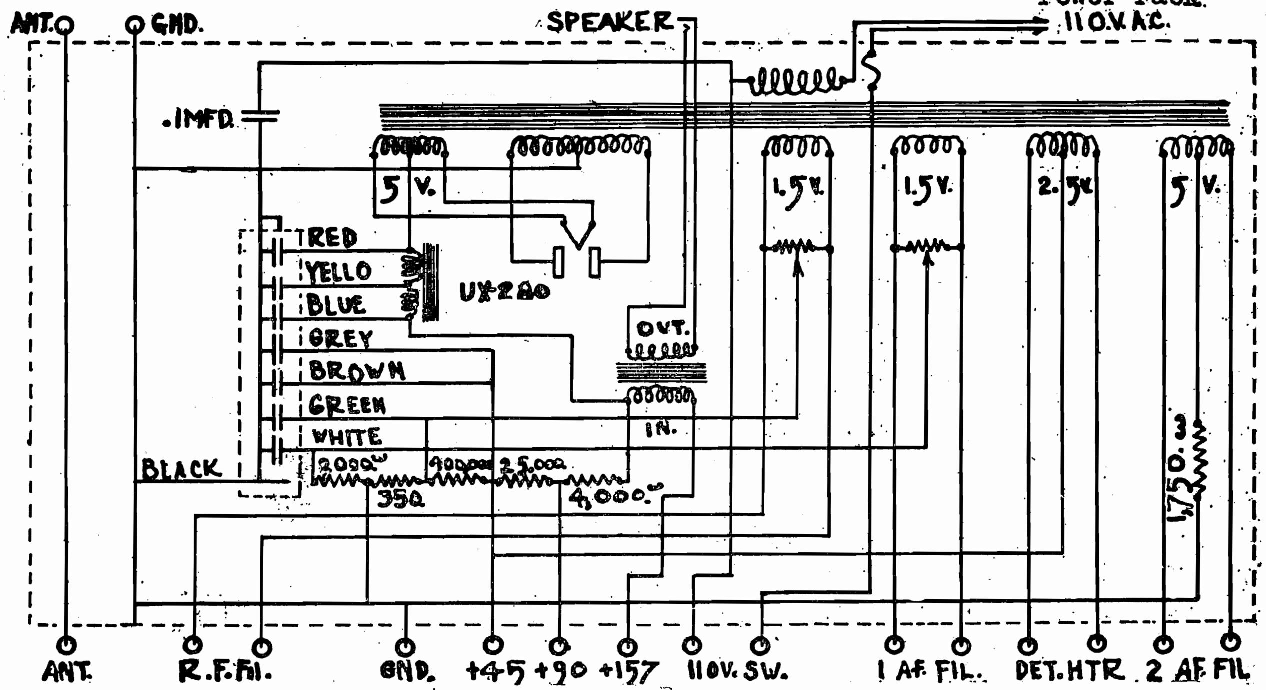
MODEL NR-60 DC

FREED RADIO AND TELEVISION CORP.

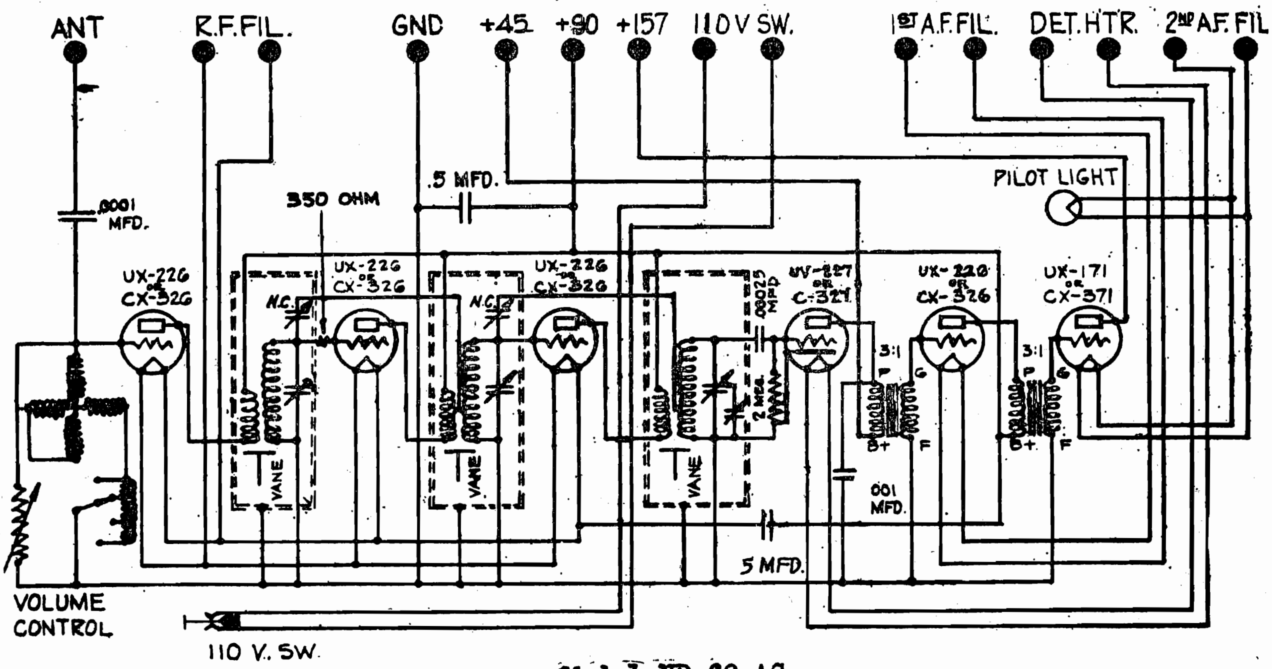


MODEL NR-60 AC
Schematic
MODEL NR-460 AC
Power Pack

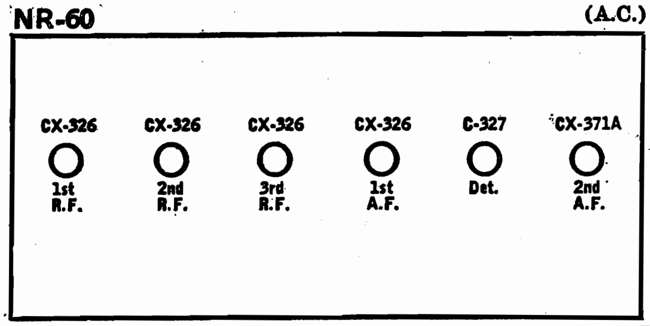
FREED RADIO AND TELEVISION CORP.



Model NR-460 AC.

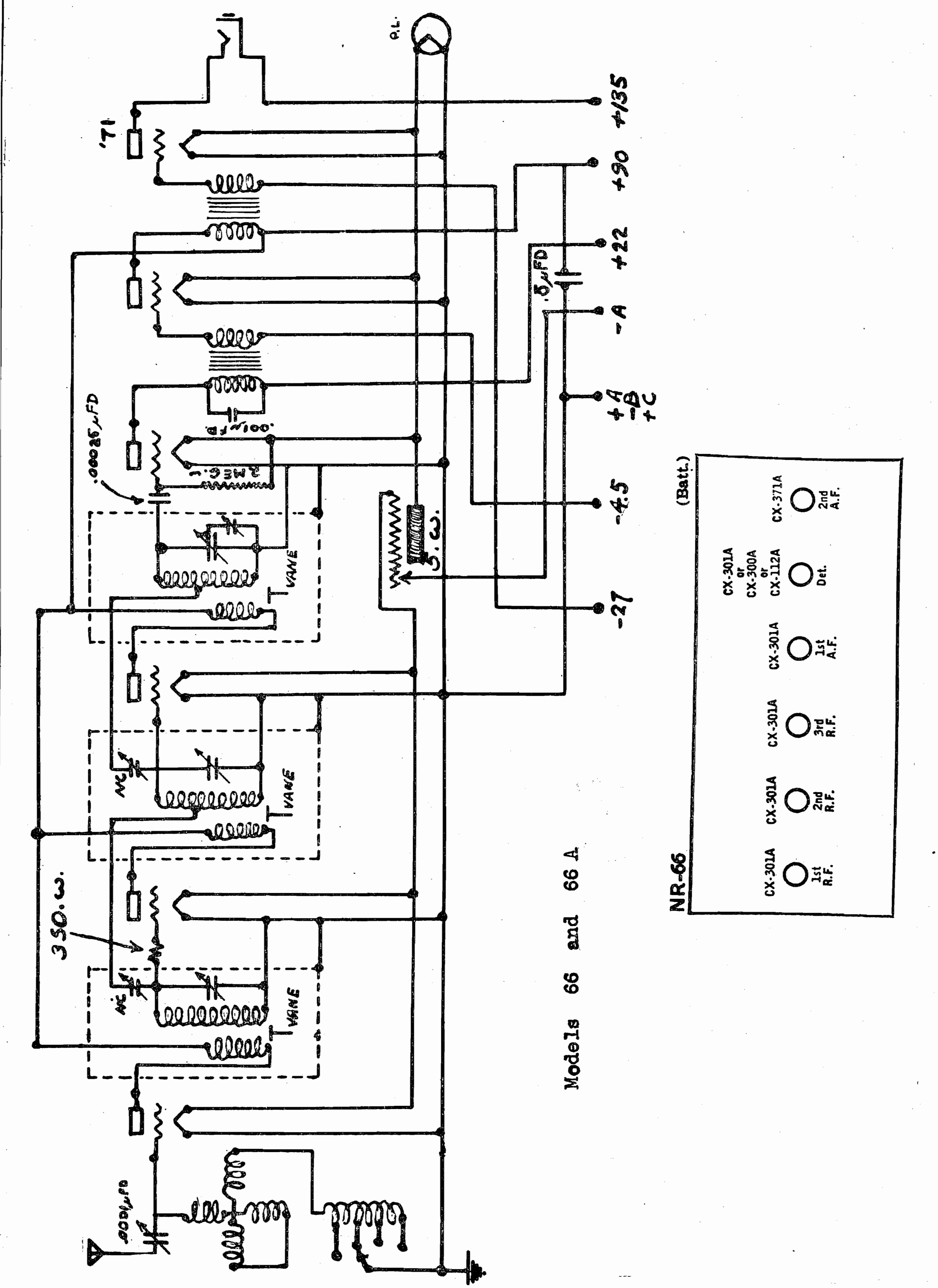


Model NR-60 AC



MODEL NR-66, 66A

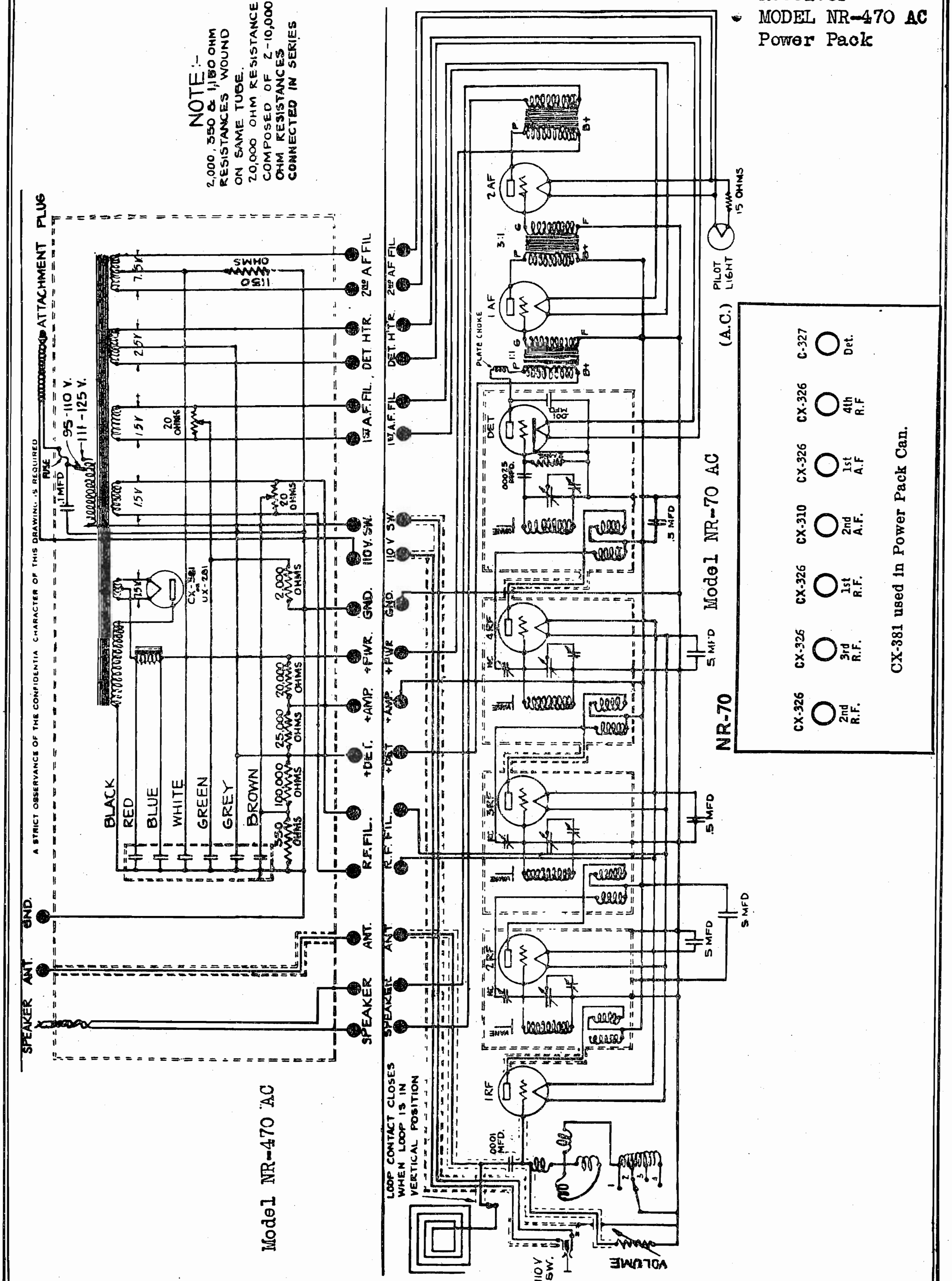
FREED RADIO AND TELEVISION CORP.



Models 66 and 66 A

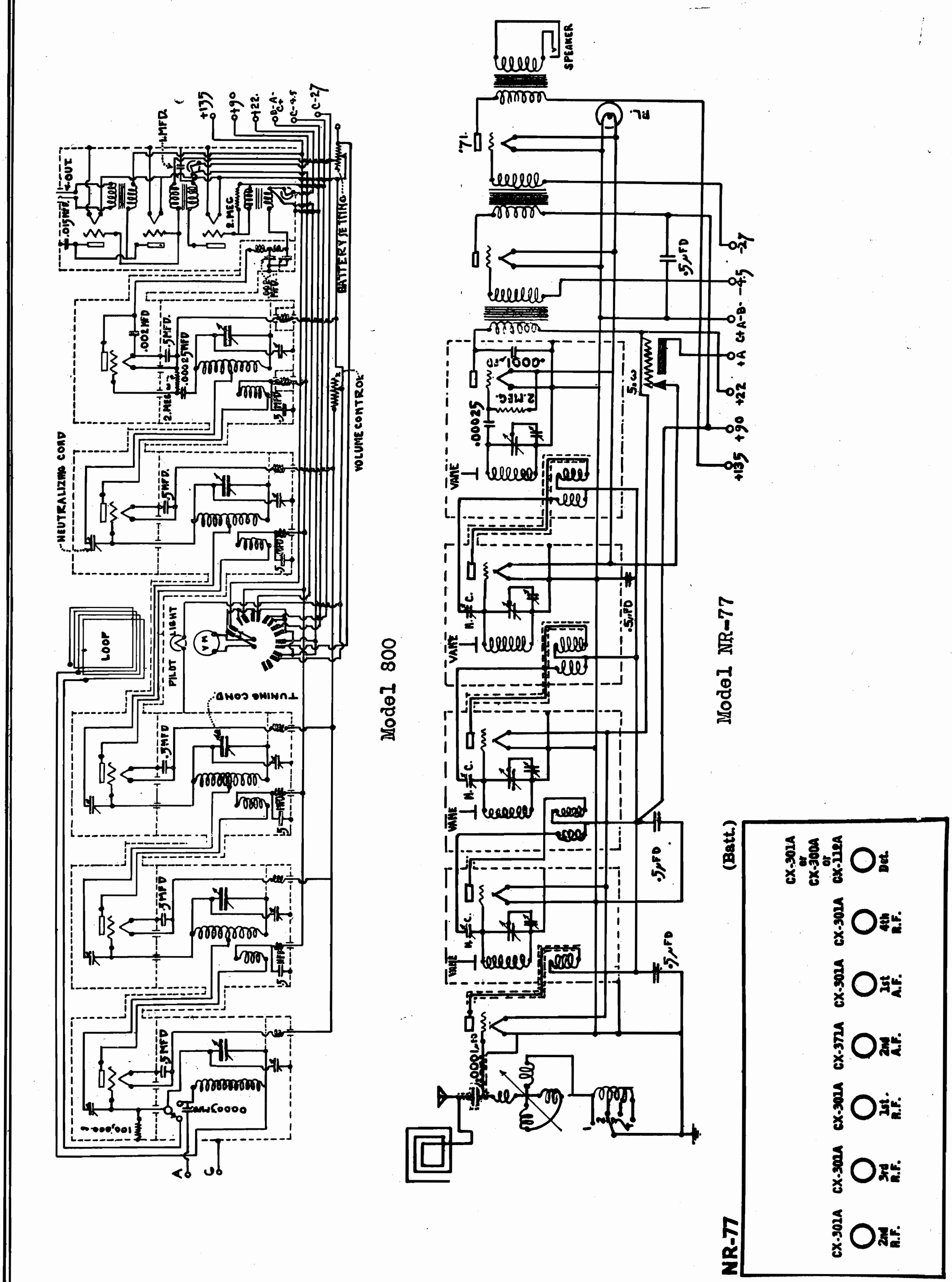
FREED RADIO AND TELEVISION CORP.

MODEL NR-70 AC
Receiver
MODEL NR-470 AC
Power Pack



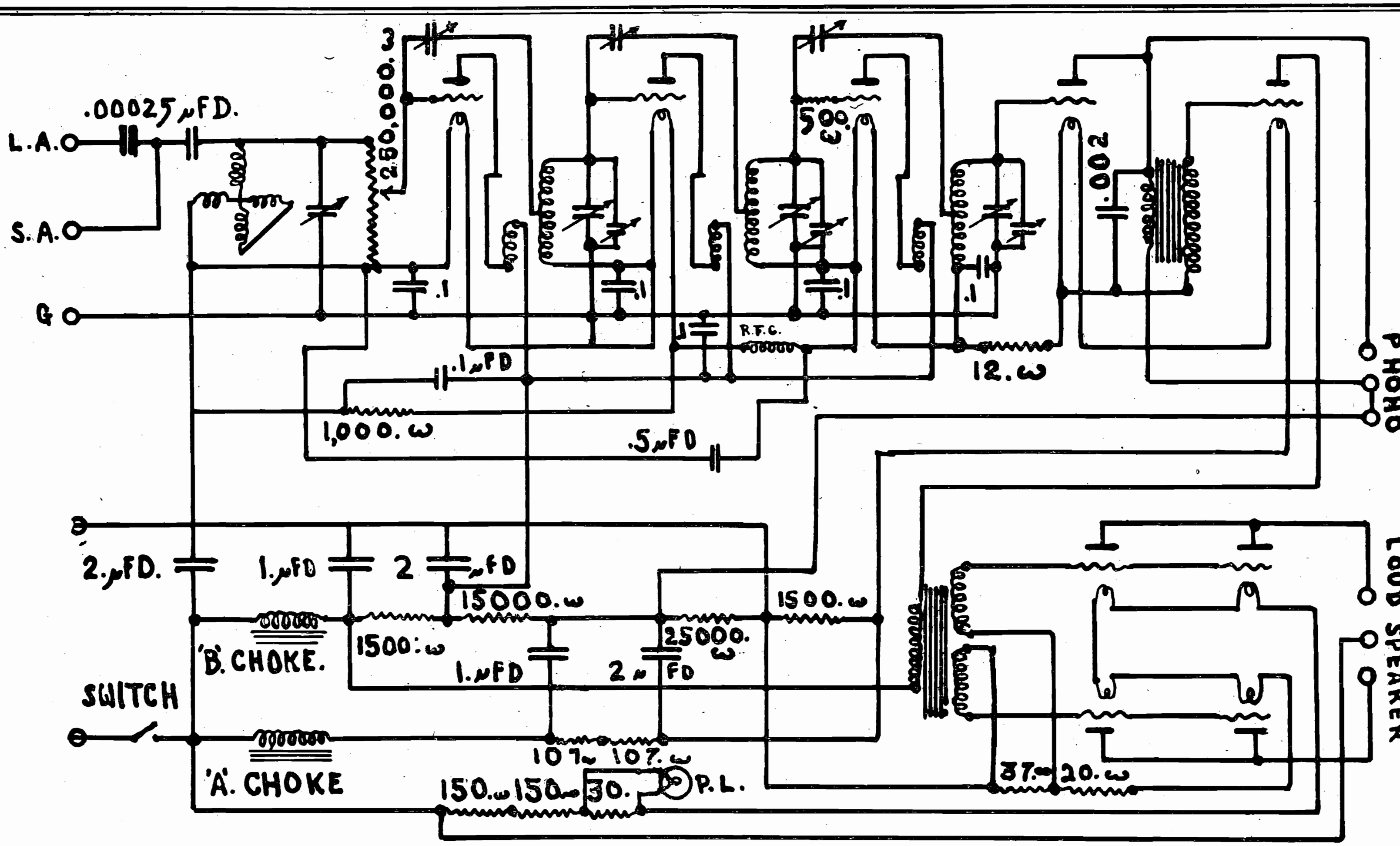
MODEL NR-77
MODEL 800

FREED RADIO AND TELEVISION CORP.

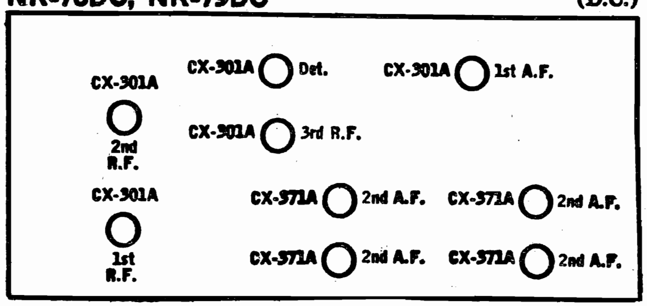


FREED RADIO AND TELEVISION CORP.

MODEL NR-78 DC
NR-79 DC



NR-78DC, NR-79DC (D.C.)

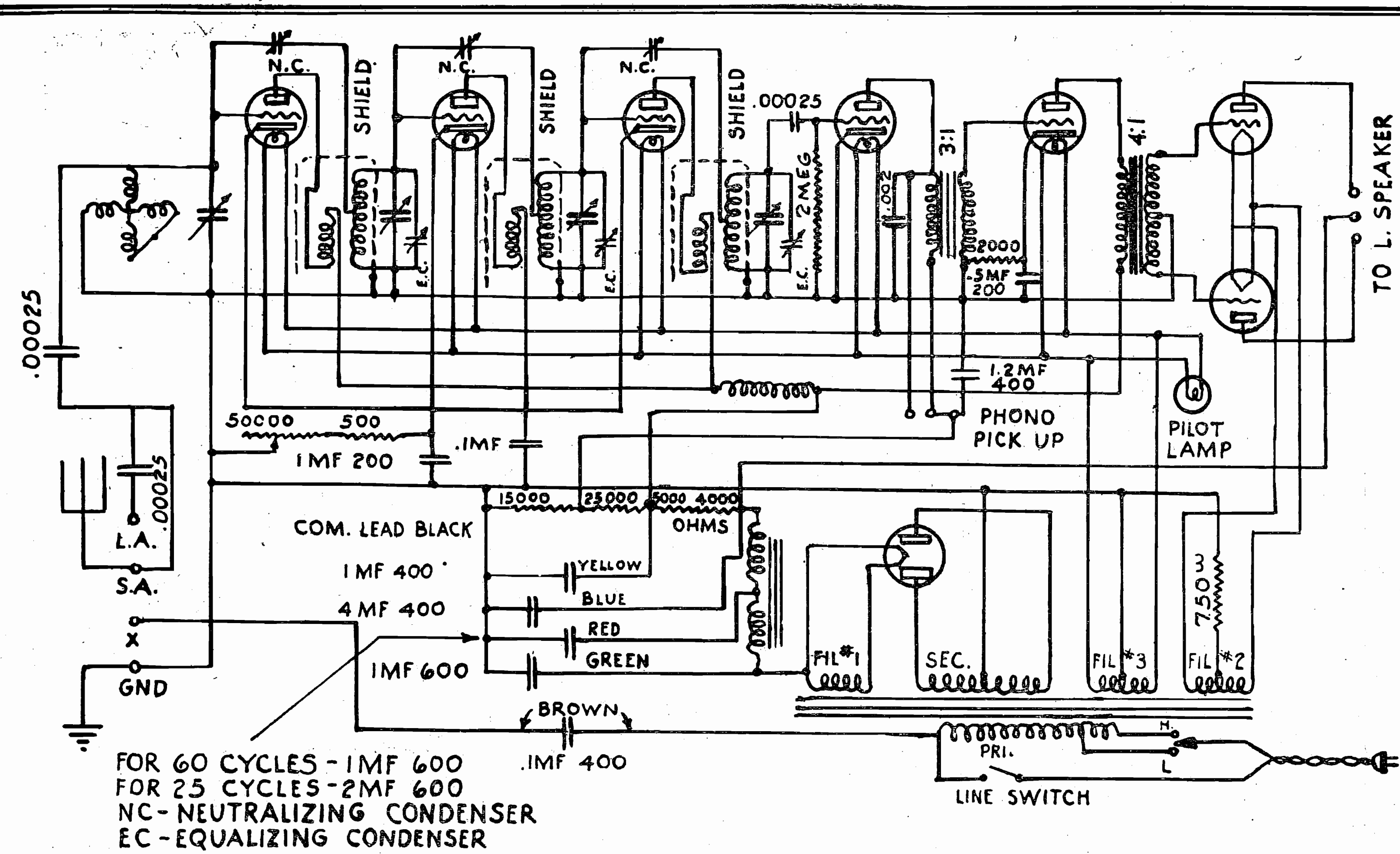


FREED-EISEMANN—Model 78 D. C.
Line Voltage 110 D. C.—Set on D. C. Volt Tap—Volume Control Position Full On

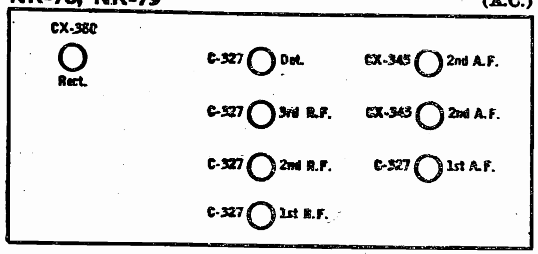
TUBE NO. IN ORDER (1)	TYPE OF TUBE (2)	POSITION OF TUBE 1ST R.F DET. ETC. (3)	READINGS, PLUG IN SOCKET OF SET — TUBE OUT: A. VOLTS (4)	B VOLTS (5)	TUBE IN TESTER: A VOLTS (6)	B VOLTS (7)	C VOLTS (CONTROL GRID) (8)	CATHODE-HEATER VOLTS (9)	NORMAL PLATE M.A. (10)	PLATE M.A. GRID TEST (11)	PLATE CHANGE M.A. (12)	SCREEN GRID VOLTS (13)
1	201A	1st RF	-	-	4.5	75	4.5	-	3.7	4.0	.3	
2	201A	2nd RF	-	-	4.5	75	4.2	-	3.7	4.0	.3	
3	201A	3rd RF	-	-	4.5	75	0	-	3.7	4.0	.3	
4	201A	Det.	-	-	4.5	31	3.5	-	0.5	2.9	2.4	
5	201A	1st A	-	-	4.5	75	4.0	-	1.0	3.5	2.5	
6	171A	2nd A	-	-	4.5	75	15	-	6.0	24	18.0	
7	171A	2nd A	-	-	4.5	75	15	-	6.0	24	18.0	
8	171A	2nd A	-	-	4.5	75	15	-	6.0	24.6	18.0	
9	171A	2nd A	-	-	4.5	75	15	-	6.0	24	18.0	
10												

MODEL NR-78 AC
NR-79 AC

FREED RADIO AND TELEVISION CORP.



NR-78, NR-79 (A.C.)

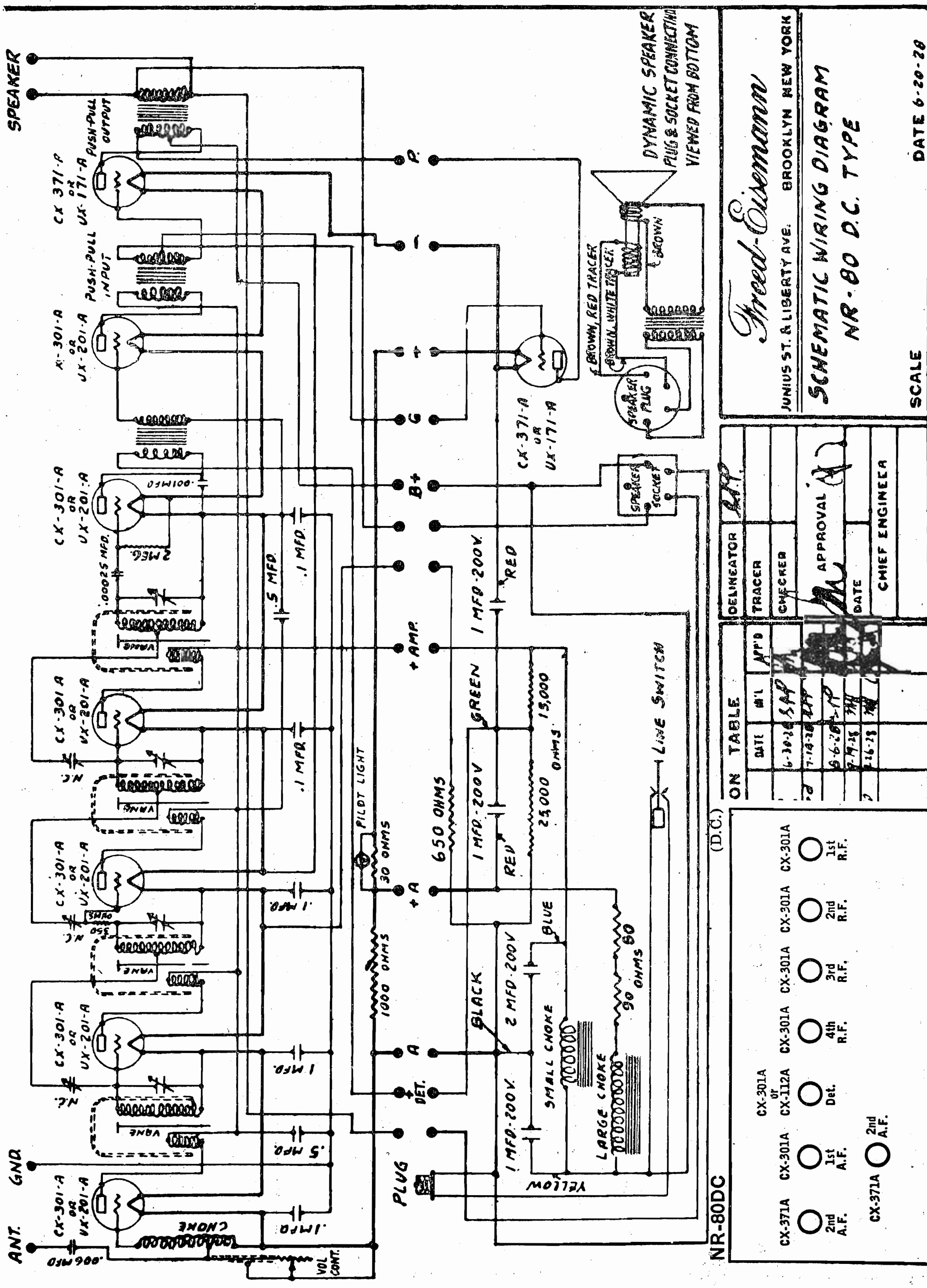


FREED-EISEMANN—Model 78-79
Line Voltage 116—Set on High Volt Tap—Volume Control Position Full On

Tube No. in Order	Type of Tube	Position of Tube 1st RF Det etc	Tube Out: A Volts	Tube Out: B Volts	Tube in Tester: A Volts	B Volts	C Volts (Control Grid)	Cathode-Heater Volts	Normal Plate M.A.	Plate M.A. Grid Test	Plate Change M.A.	Screen Grid Volts
1	227	1st RF	2.18	92	2.07	86	5	5	3.3	7.8	4.5	
2	227	2nd RF	2.18	92	2.07	86	5	5	3.3	7.8	4.5	
3	227	3rd RF	2.18	92	2.07	86	5	5	3.3	7.8	4.5	
4	227	Det.	2.18	35	2.07	31	0.5	-	0.9	-0.9	0	
5	227	1st A	2.22	100	2.07	81	5	5	2.6	5.6	2.5	
6	245	2nd A	2.45	220	2.33	195	37	-	25	62	4	
7	245	2nd A	2.45	220	2.33	195	37	-	25	62	4	
8	280	Rect.	5.4	-	4.85	-	-	-	60	-	-	
9												
10												

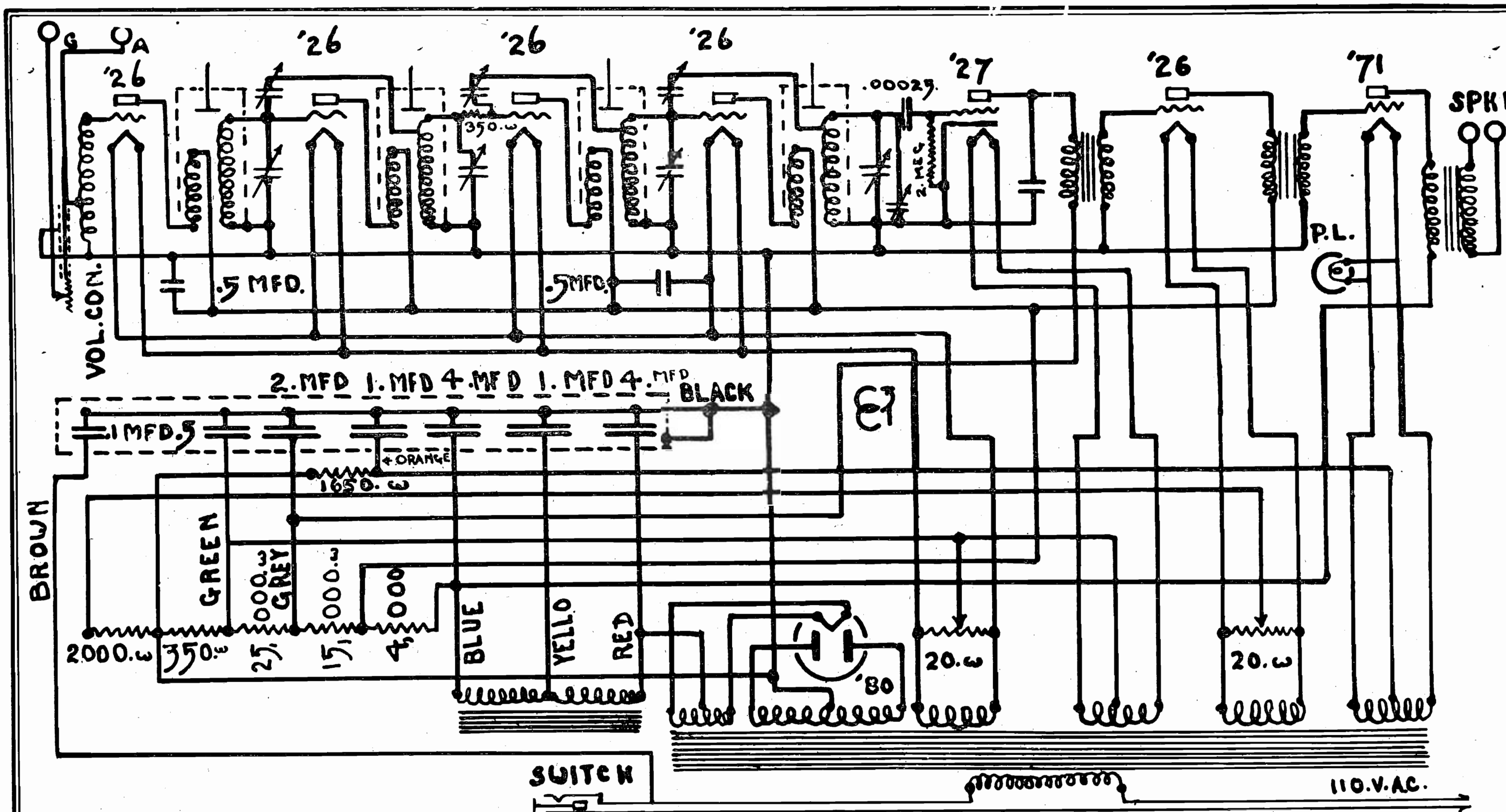
FREED RADIO AND TELEVISION CORP.

MODEL NR-80 DC



MODEL NR-80 AC

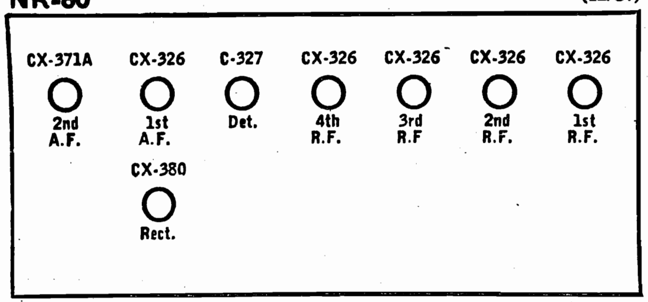
FREED RADIO AND TELEVISION CORP.



FREED-EISEMANN—Model NR-80
Line Voltage 120

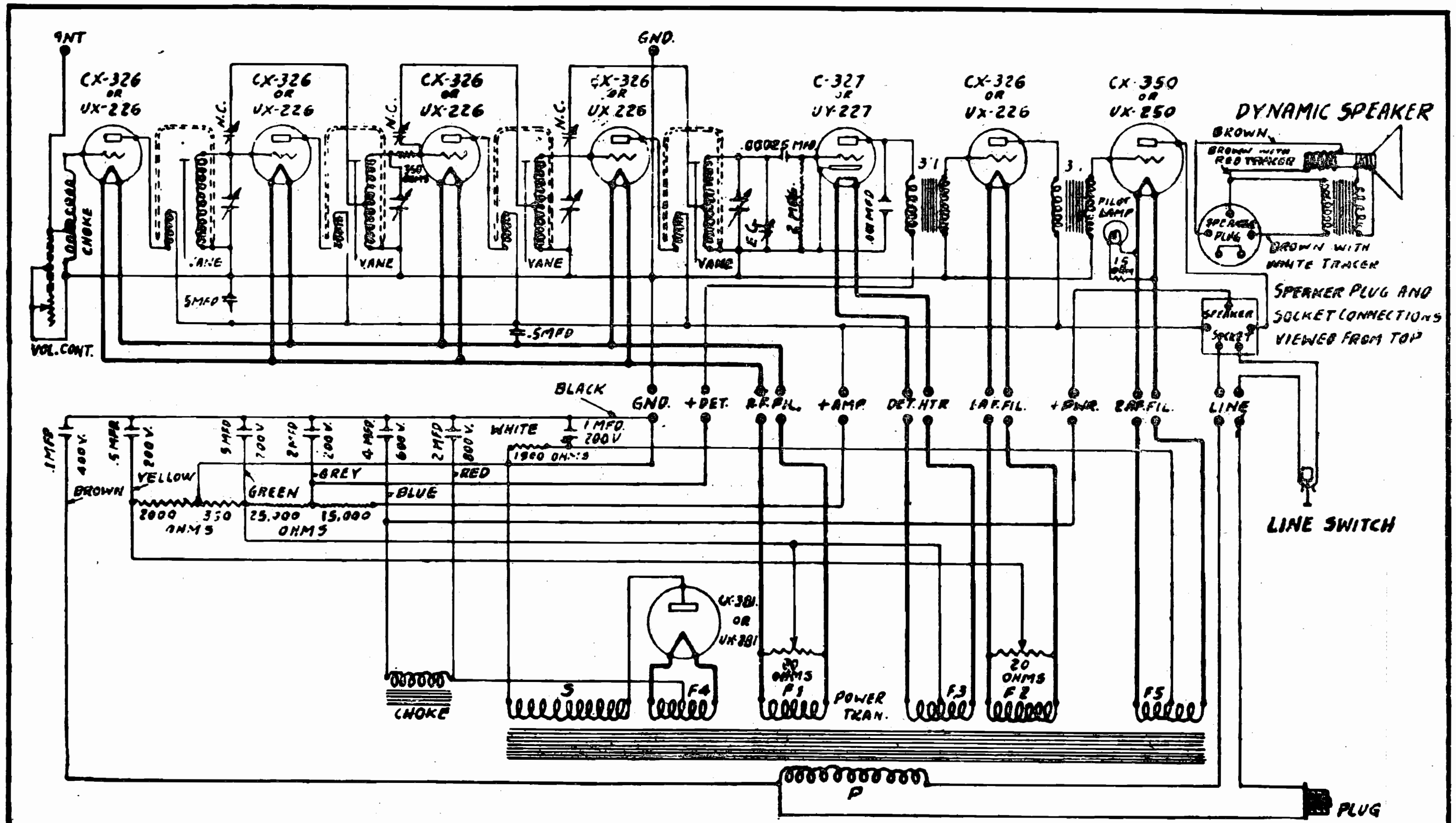
Tube No. in Order	Type of Tube	Position of Tube 1st. R.F., Det., Etc.	Readings, Plug in Socket of Set: Tube Out: A Volts	Tube Out: B Volts	Tube in Tester: A Volts	B Volts	C Volts	Cathode Volts	Normal Plate M.A.	Plate M.A. Grid Test	Plate M.A. Change
1	226	1st.R.F.	1.5	105	1.45	90	6.0	-	3.5	7.7	4.2
2	226	2nd.R.F.	1.5	105	1.45	90	6.0	-	3.5	7.7	4.2
3	226	3rd.R.F.	1.5	105	1.45	90	6.0	-	3.5	7.7	4.2
4	226	4th.R.F.	1.5	105	1.45	90	6.0	-	3.5	7.7	4.2
5	227	Detector	2.25	60	2.10	45	0.0	-	2.0	2.0	0.0
6	226	1st.A.F.	1.5	105	1.45	90	6.5	-	3.2	7.2	4.0
7	171	2nd.A.F.	5.2	192	5.00	150	30.0	-	17.0	18.5	1.0
8	280	Rectifier	5.2	-	5.00	-	-	-	20.0	-	-
9											
10											

NR-80 (A.C.)

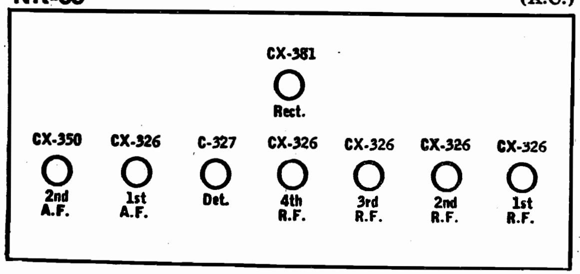


MODEL NR-85 AC

FREED RADIO AND TELEVISION CORP.



NR-85



(A.C.) FREED-EISEMANN—Model NR-85
Line Voltage 120

Tube No. in Order	Type of Tube	Position of Tube 1st. R.F., Det., etc.	Readings, Plug in Socket of Set: Tube Out: A Volts	Tube Out: B Volts	Tube in Tester: A Volts	B Volts	C Volts	Cathode Volts	Normal Plate M.A.	Plate M.A. Grid Test	Plate M.A. Change
1	226	1st.R.F.	1.5	112	1.45	100	6.0	-	3.7	8.2	4.5
2	226	2nd.R.F.	1.5	112	1.45	100	6.0	-	3.7	8.2	4.5
3	226	3rd.R.F.	1.5	112	1.45	100	6.0	-	3.7	8.2	4.5
4	226	4th.R.F.	1.5	112	1.45	100	6.0	-	3.7	8.2	4.5
5	227	Detector	2.35	110	2.20	35	0.0	-	1.8	1.8	0.0
6	226	1st.A.F.	1.5	112	1.45	100	6.2	-	3.7	8.2	4.5
7	250	2nd.A.F.	7.65	380	7.5	310	54.0	-	35.0	43.5	8.0
8	281	Rectifier	7.65	-	7.5	-		-	28.0	-	-
9											
10											

Freed-Eisemann

JUNIUS ST. & LIBERTY AVE. BROOKLYN NEW YORK

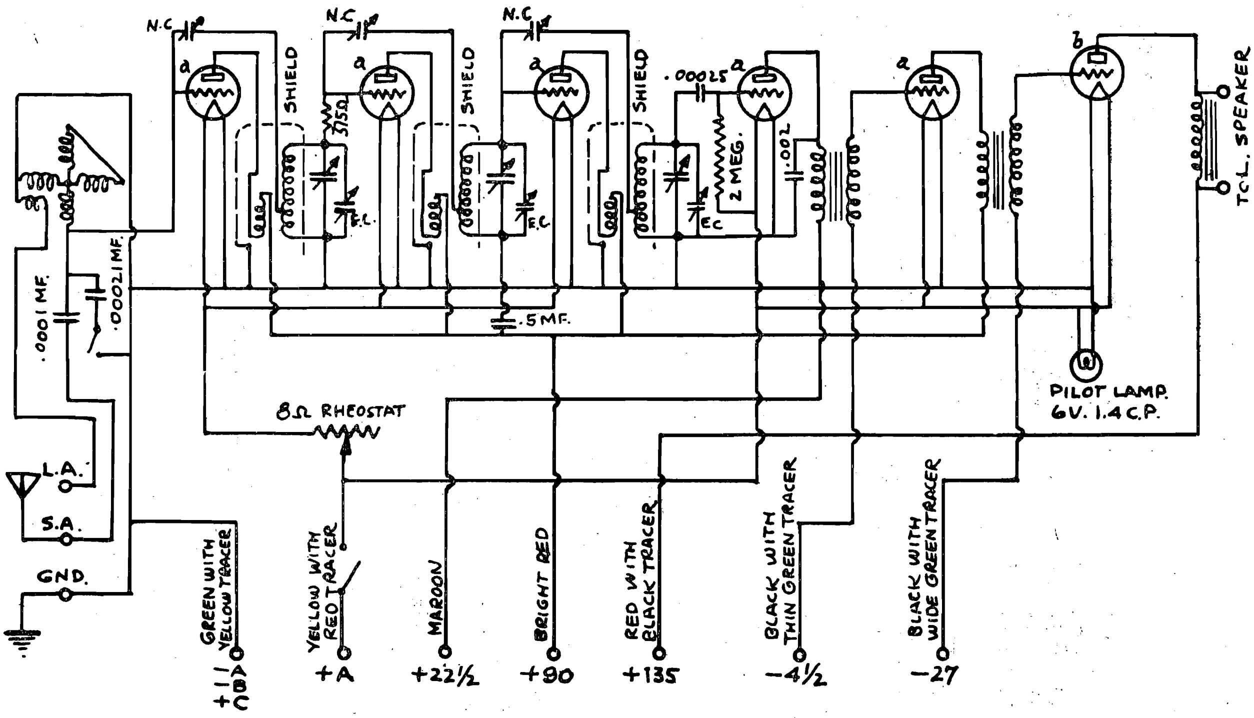
SCHEMATIC WIRING DIAGRAM
NR-85 TYPE

SCALE

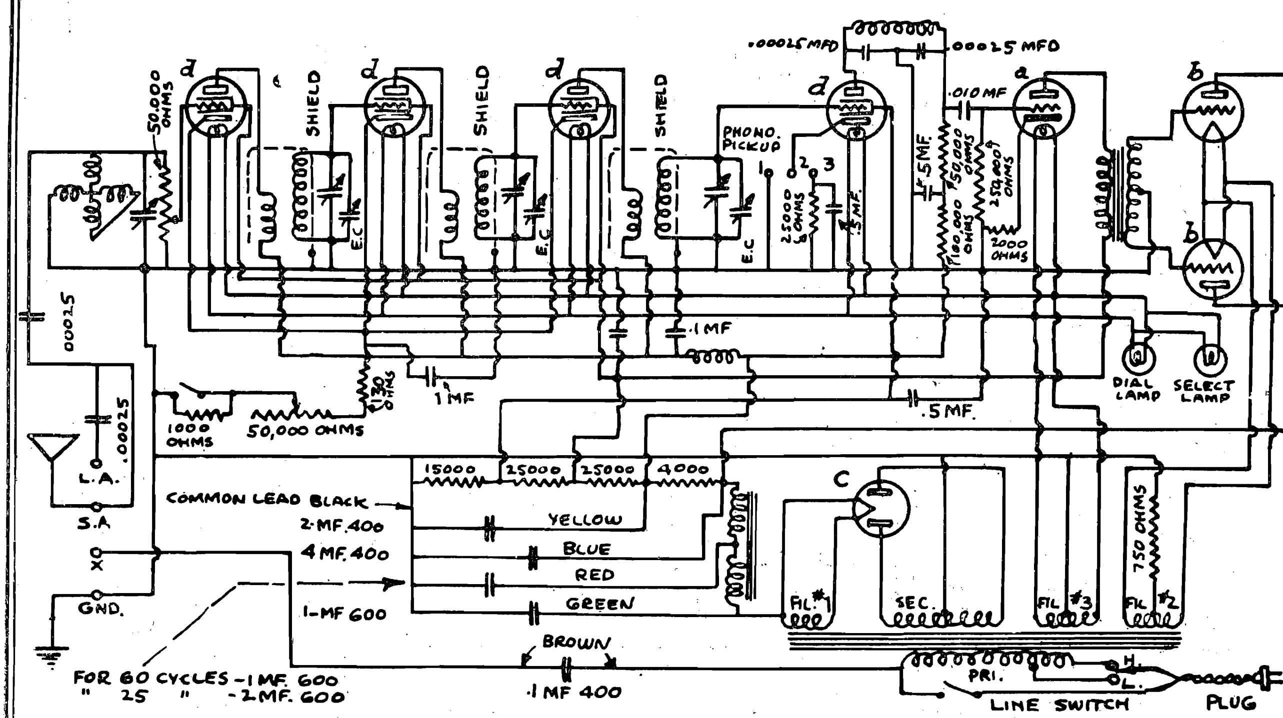
DATE 6-14-28

MODEL NR-53
MODEL NR-90-S

FREED RADIO AND TELEVISION CORP.



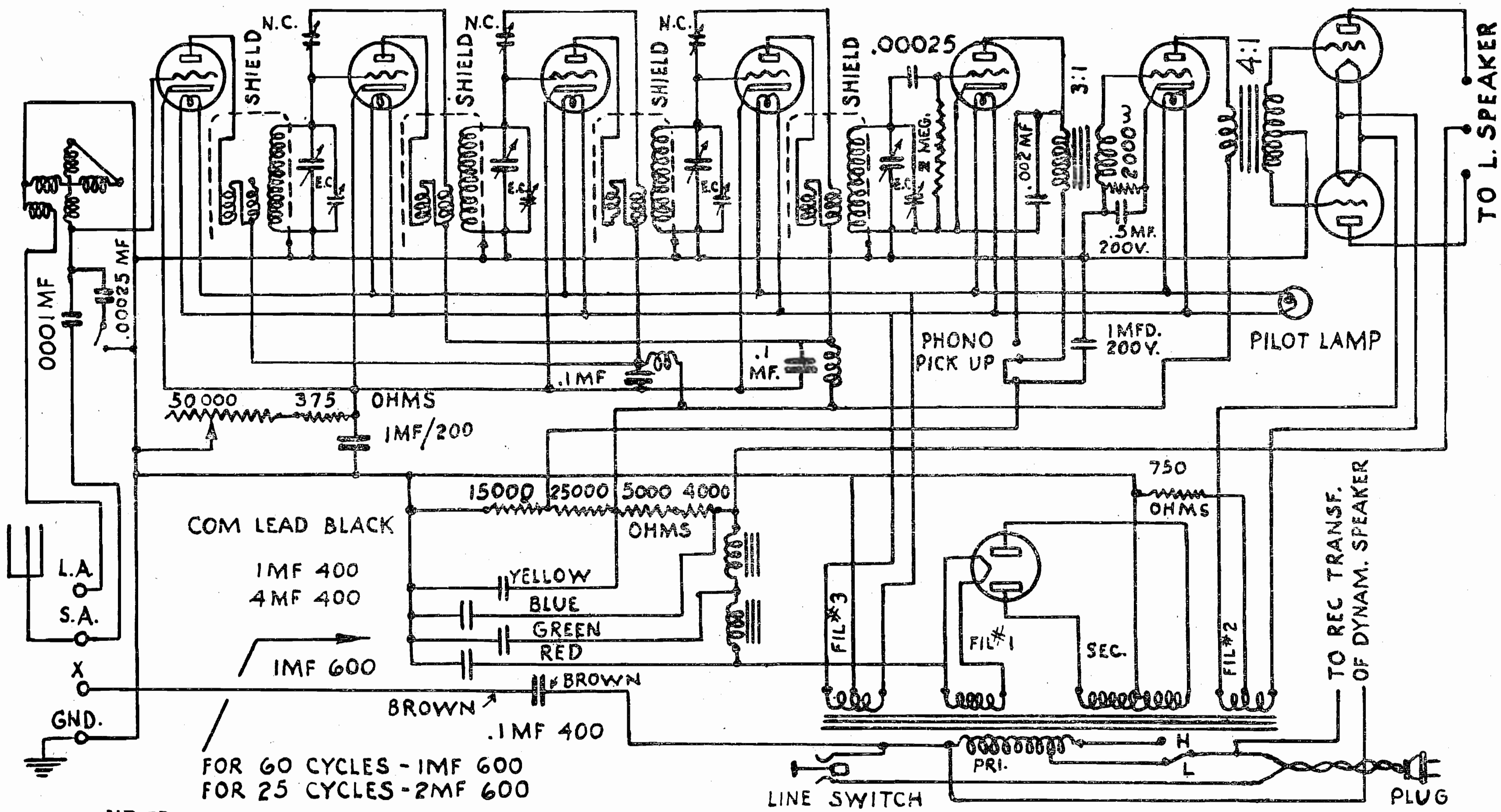
Model NR-53



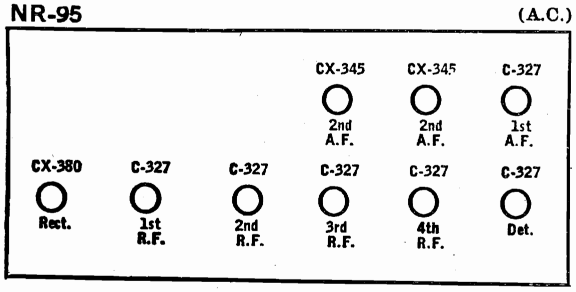
Model NR-90-S

FREED RADIO AND TELEVISION CORP.

MODEL NR-95 AC



NR-95 (A.C.)

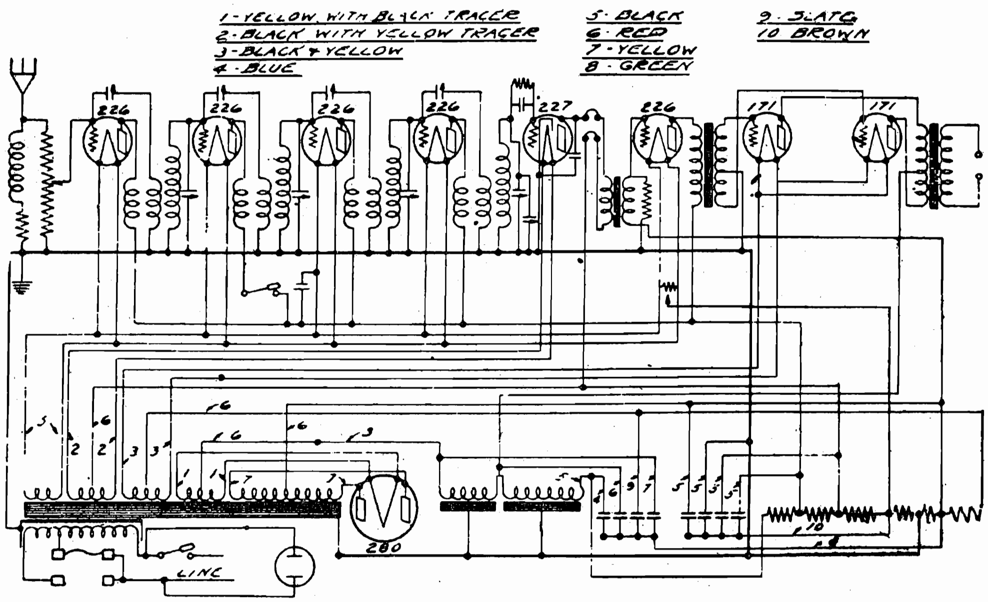


FREED-EISEMANN—Model 95
Line Voltage 116—Set on High Volt Tap—Volume Control Position Full On

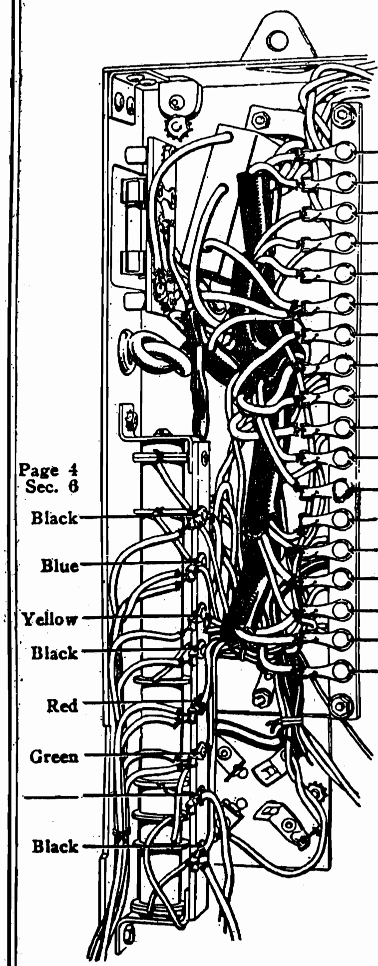
Tube No. in Order ①	Type of Tube ②	Position of Tube 1st RF Det Etc ③	Tube Out: A Volts ④	Tube Out: B Volts ⑤	Tube in Tester: A Volts ⑥	Tube in Tester: B Volts ⑦	Tube in Tester: C Volts (Control Grid) ⑧	Cathode-Heater Volts ⑨	Normal Plate M.A. ⑩	Plate M.A. Grid Test ⑪	Plate Change M.A. ⑫	Screen Grid Volts ⑬
1	227	1st RF	2.40	76	2.25	71	4	5.	2.8	5.6	2.8	
2	227	2nd RF	2.40	76	2.25	71	4	5	2.8	5.6	2.8	
3	227	3rd RF	2.40	75	2.25	71	4	5	2.8	5.6	2.8	
4	227	4th RF	2.40	75	2.25	71	4	5	2.8	5.6	2.8	
5	227	Det.	2.40	26	2.25	15	1.5	-	1.0	1.7	.7	
6	227	1st A	2.40	82	2.35	67	4	5	2.4	4.8	2.4	
7	245	2nd A	2.57	208	2.37	183	35	-	22	26	4	
8	245	2nd A	2.57	208	2.37	183	35	-	22	26	4	
9	280	Rect.	5.5	-	4.8	-	-	-	64	-	-	
10												

JESSE FRENCH & SONS PIANO CO.

MODEL 8 Tube AC



Power Block Connections



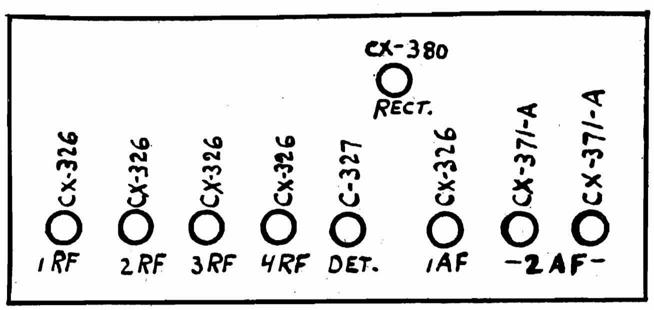
Note—Where two wires are same color they may be connected to either terminal marked that color. Red wire should connect between wires brought out of same large tubing.

JESSE FRENCH

8 - A.C. Power Set.

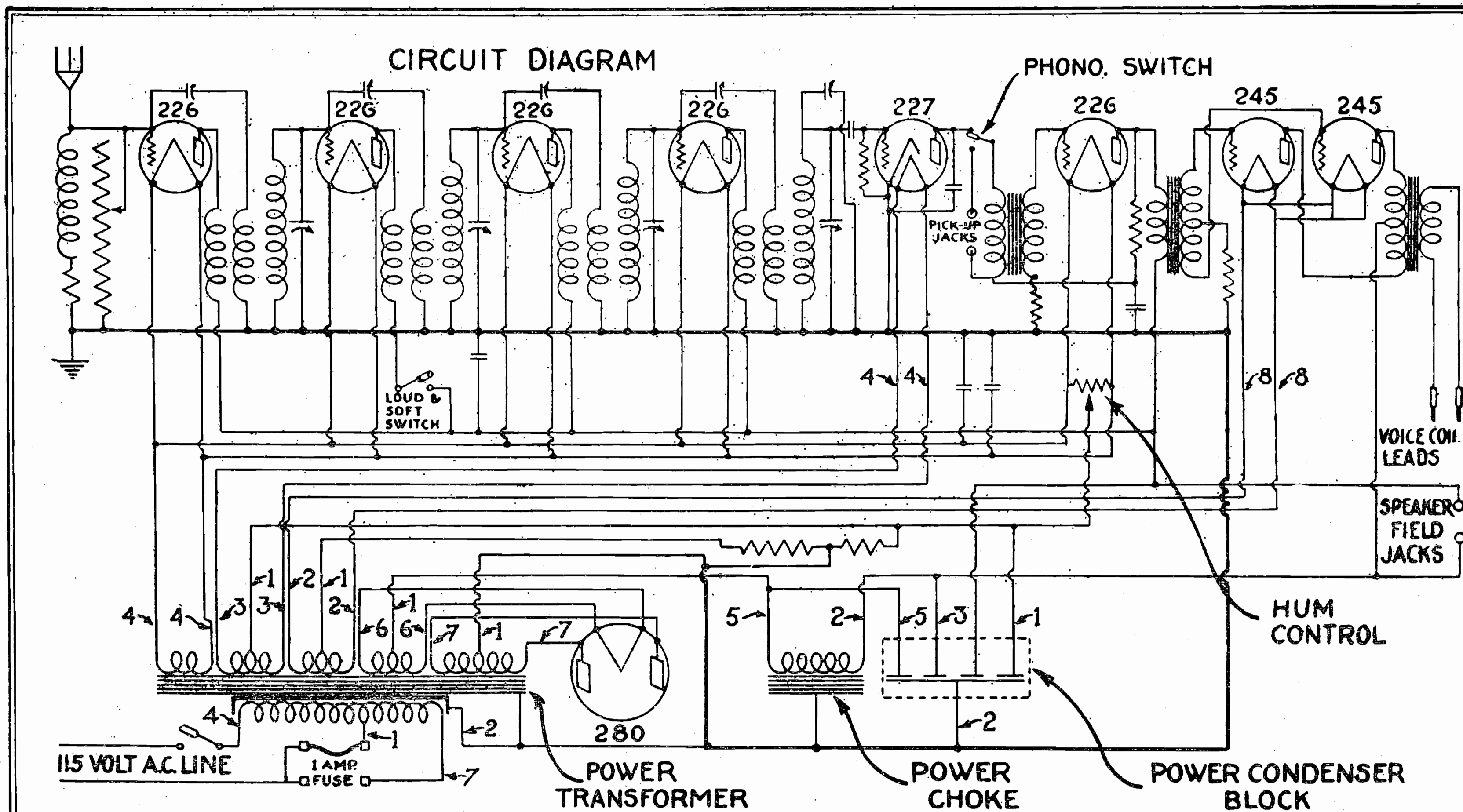
Line Voltage 116—2nd A. F. Stage—2 Tubes Push Pull

TUBE NO IN ORDER	TYPE OF TUBE	POSITION OF TUBE 1ST RF DET ETC	READINGS, PLUG IN SOCKET OF SET								
			TUBE OUT		TUBE IN TESTER						
			A VOLTS	B VOLTS	A VOLTS	B VOLTS	C VOLTS	CATHODE VOLTS	NORMAL PLATE M.A.	PLATE M.A GRID TEST	PLATE M.A CHANGE
1	226	1st.R.F.	1.55	117	1.5	110	5.5	-	6.5	10.5	4.0
2	226	2nd.R.F.	1.55	117	1.5	110	5.5	-	6.5	10.5	4.0
3	226	3rd.R.F.	1.55	117	1.5	110	5.5	-	6.5	10.6	4.0
4	226	4th.R.F.	1.55	117	1.5	110	5.5	-	6.5	10.5	4.0
5	227	Detector	2.40	125	2.2	25	45	-	1.4	1.4	0.0
6	226	1st.A.F.	1.55	107	1.5	100	7.5	-	3.5	7.0	3.5
7	171A	2nd.A.F.	5.30	170	5.0	158	33	-	18.0	21.0	3.0
8	171A	2nd.A.F.	5.30	170	5.0	158	33	-	18.0	21.0	3.0



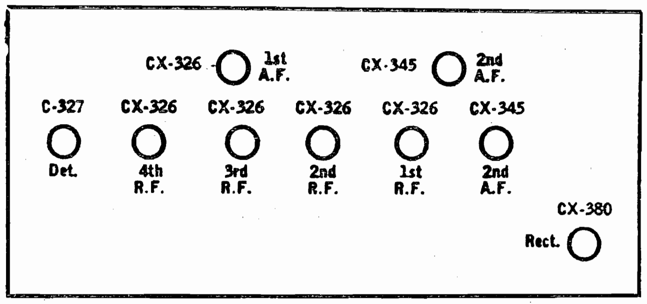
MODEL 5-093

JESSE FRENCH & SONS PIANO CO.



JESSE FRENCH

Model 5-093



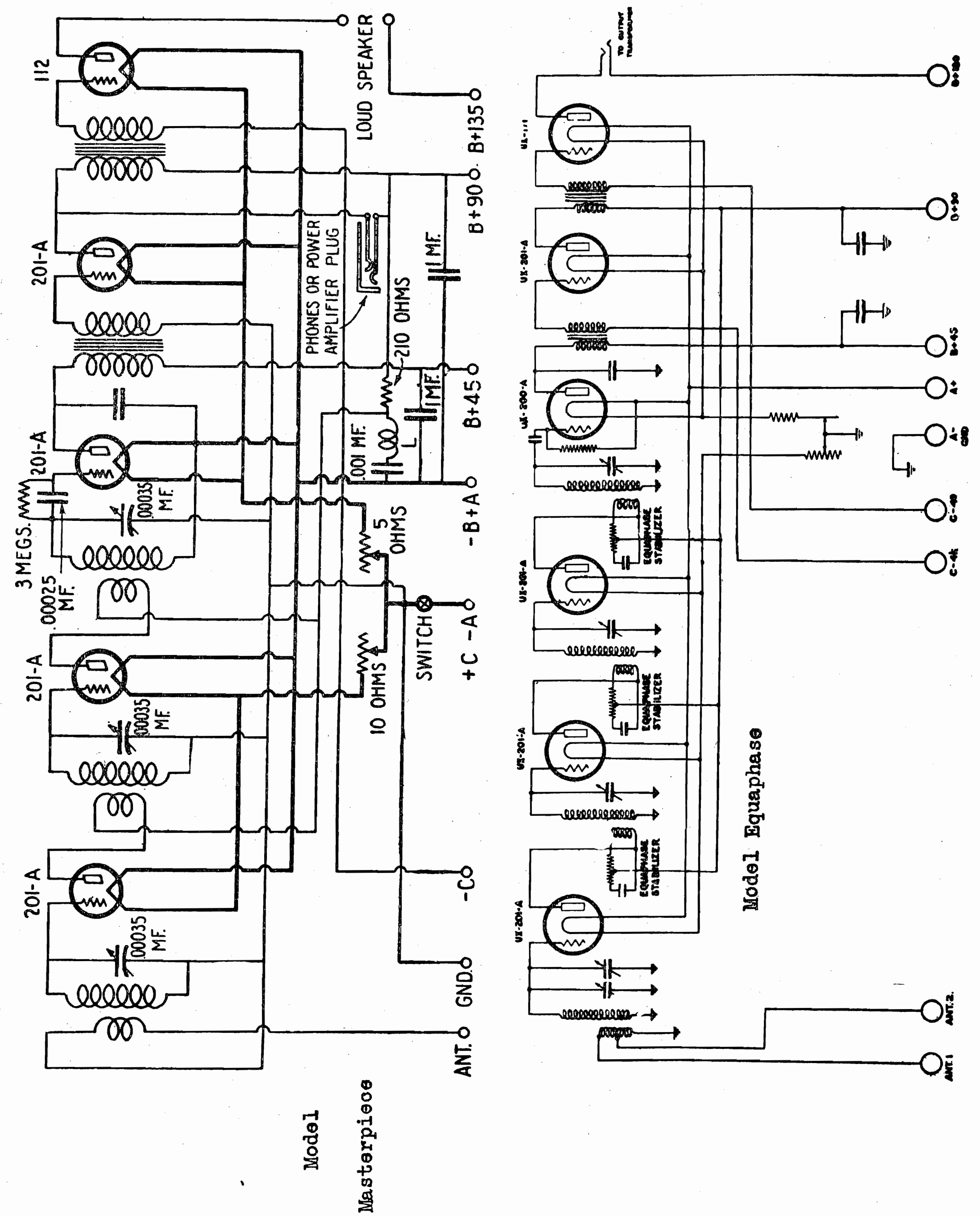
Line Voltage 120—Set on 120 Volt Tap—Volume Control Position Max

Note: "C" Bias Voltage Reading on Audio tubes is low due to the current draw of the set tester and high resistances in the set.

Tube No. in Order (1)	Type of Tube (2)	Position of Tube 1st RF Det etc (3)	Readings, Plug in Socket of Set: Tube Out: A Volts (4)	B Volts (5)	Tube in Tester: A Volts (6)	B Volts (7)	C Volts (Control Grid) (8)	Cathode-Heater Volts (9)	Normal Plate M.A (10)	Plate M.A. Grid Test (11)	Plate Change M.A (12)	Screen Grid Volts (13)
1	226	1st RF	1.5	140	1.4	132	10	-	5	9	4	-
2	226	2nd RF	1.5	140	1.4	132	10	-	5	9	4	-
3	226	3rd RF	1.5	140	1.4	132	10	-	5	9	4	-
4	226	4th RF	1.5	140	1.4	132	10	-	5	9	4	-
5	227	Det.	2.6	112	2.3	30	0	10	2	2	0	-
6	226	1st AF	1.5	127	1.4	117	6.5	-	4.5	6.5	3	-
7	245	PP	2.6	260	2.4	245	11.5	-	25	29	4.5	-
8	245	PP	2.6	260	2.4	245	11.5	-	25	29	4.5	-
9	280	Rect.	5.8		4.9				90			

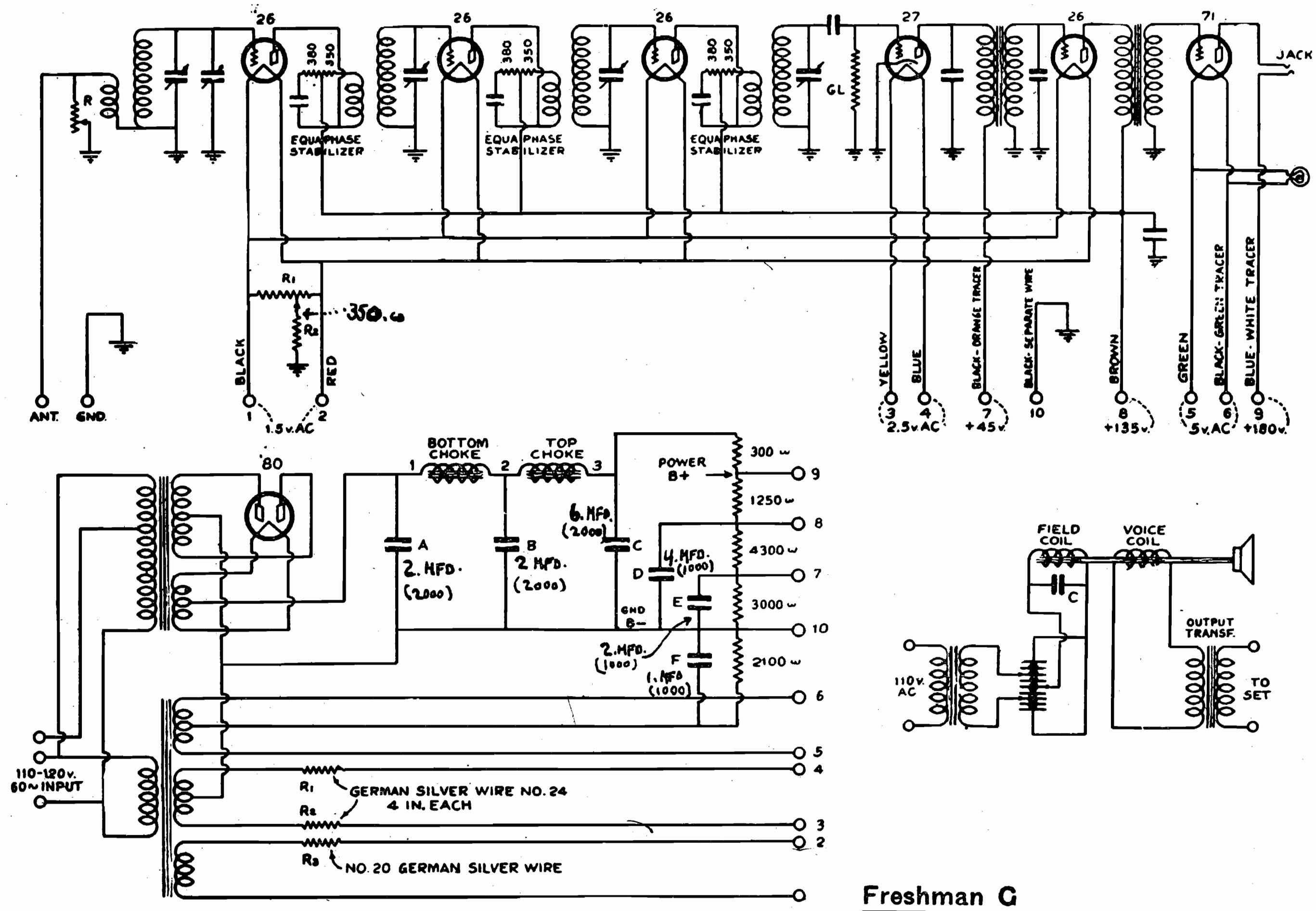
CHARLES FRESHMAN CO., INC.

MODEL Masterpiece
MODEL Equaphase

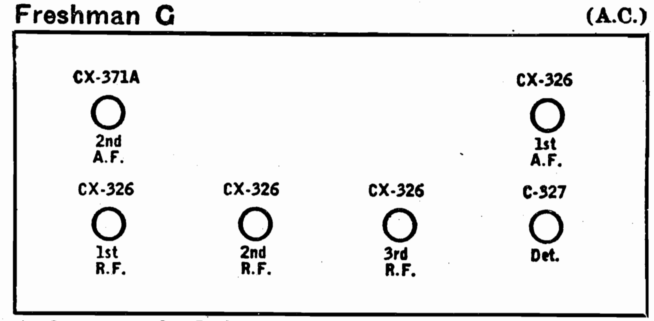


MODEL G

CHARLES FRESHMAN CO., INC.



Freshman G (A.C.)



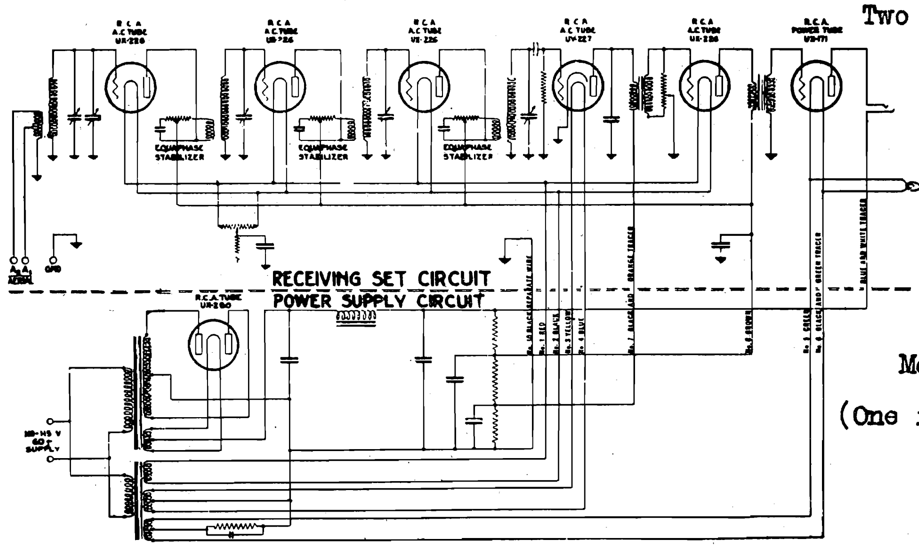
A. C. operated. To be used with model 9-60-5 Power Supply Unit using a CX-380.

FRESHMAN—Model "G"
Line Voltage 120—120 Volt Tap

Tube No. in Order	Type of Tube	Position of Tube 1st R.F. Det. etc.	Readings Plug in Socket of Set: Tube Out: A Volts	Tube Out: B Volts	Tube in Tester: A Volts	B Volts	C Volts	Cathode Volts	Normal Plate M.A	Plate M.A Grid Test	Plate M.A Change
1	226	1st. R.F.	1.45	140	1.35	135	9	-	5	9	4
2	226	2nd. R.F.	1.45	140	1.35	135	9	-	5	9	4
3	226	3rd. R.F.	1.45	140	1.35	135	9	-	5	9	4
4	227	Detector	2.3	140	2.00	50	0	-	3	3.1	.1
5	226	1st. A.F.	1.45	140	1.35	135	9	-	5	9	4
6	171A	2nd. A.F.	5.5	200	5.10	175	37	-	16.0	18.0	2.0
7	280	Rectifier	-	-	5.10	-	-	-	20	-	-

MODEL G, with
G-60-S Power Unit
Two Types.

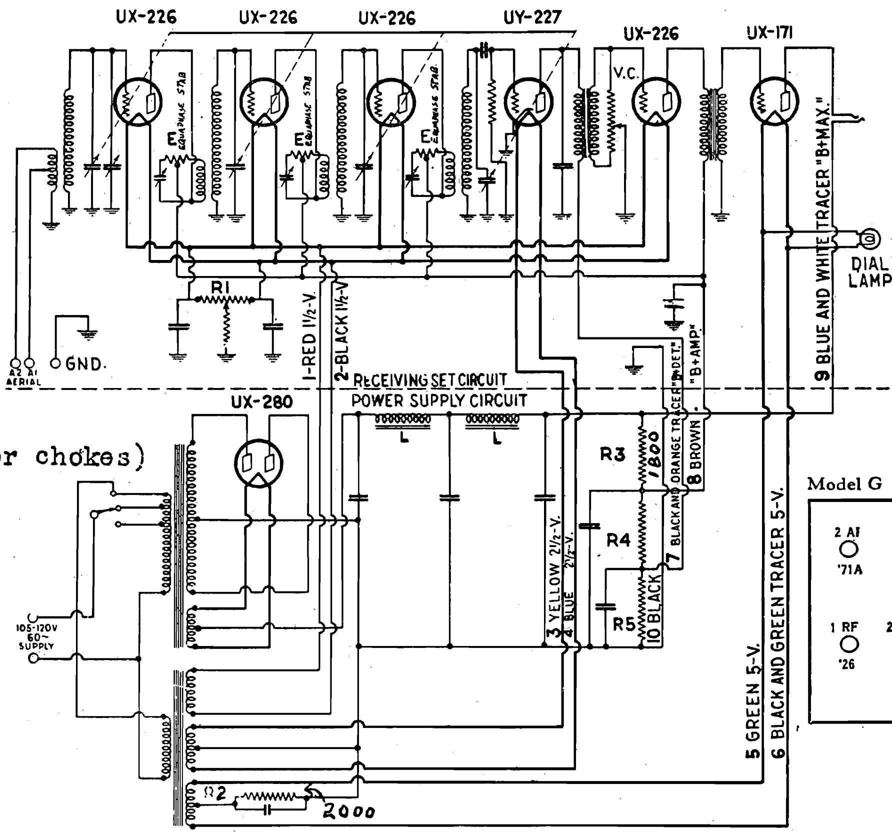
CHARLES FRESHMAN CO., INC.



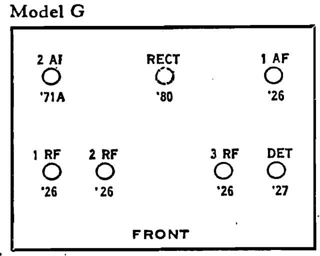
Model G.
(One filter choke)

Schematic diagram of Model "G" Chassis and Model G-60-S Power Supply.
Note the one choke coil in Power Supply Circuit.

Model G.
(Two filter chokes)



Model G

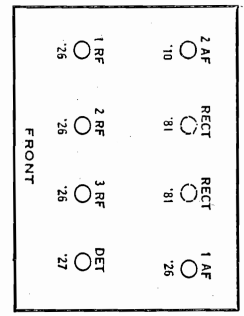


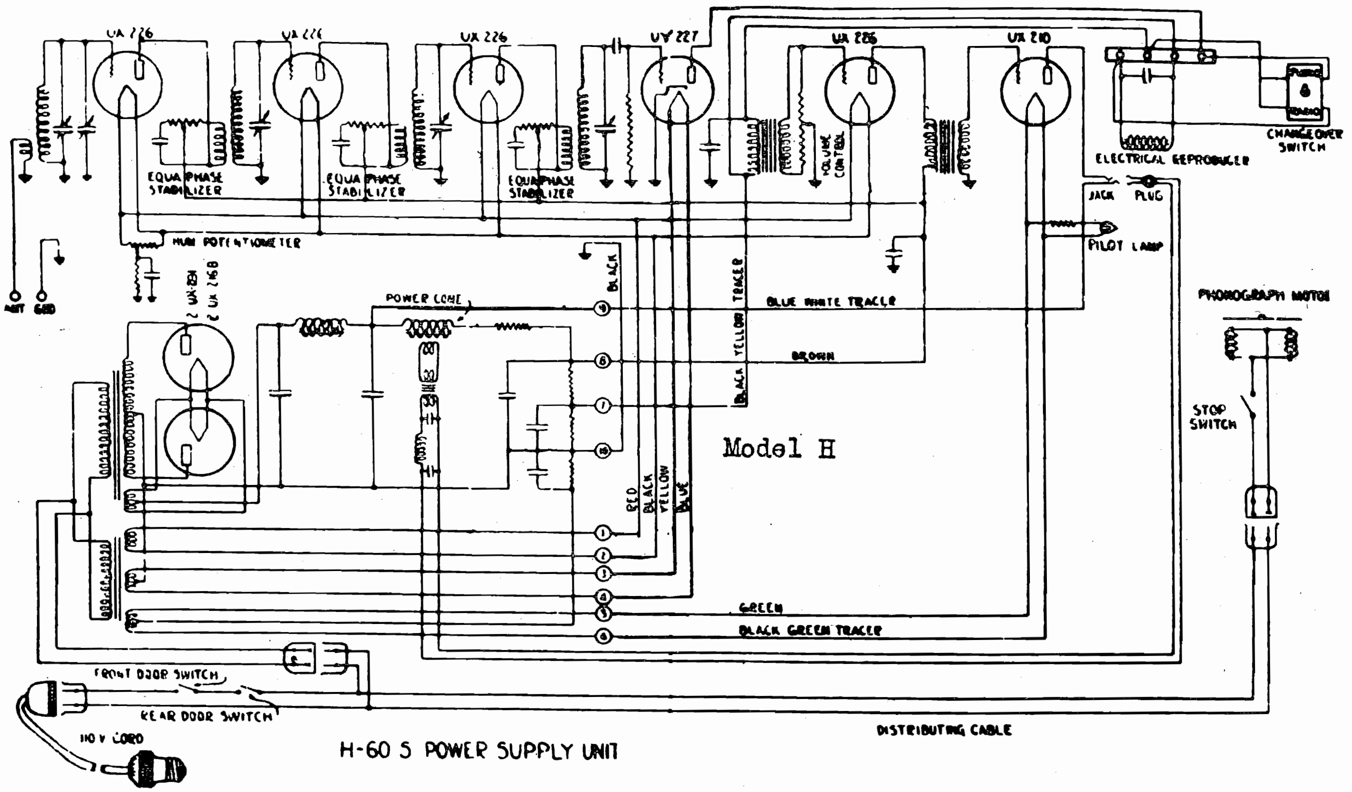
Circuits of the Freshman "Model G" Equaphase and the "Model G—60-S" Power Supply Unit.

Tube	Fil. Voltage.	Plate Voltage.	Grid Voltage
RF1	1.5	130	7.
RF2	1.5	130	7.
RF3	1.5	130	7.
Det.	2.5	50	0.
AF1	1.5	130	7.
AF2	5.0	180	40.

MODEL H
MODEL ABC Power Unit

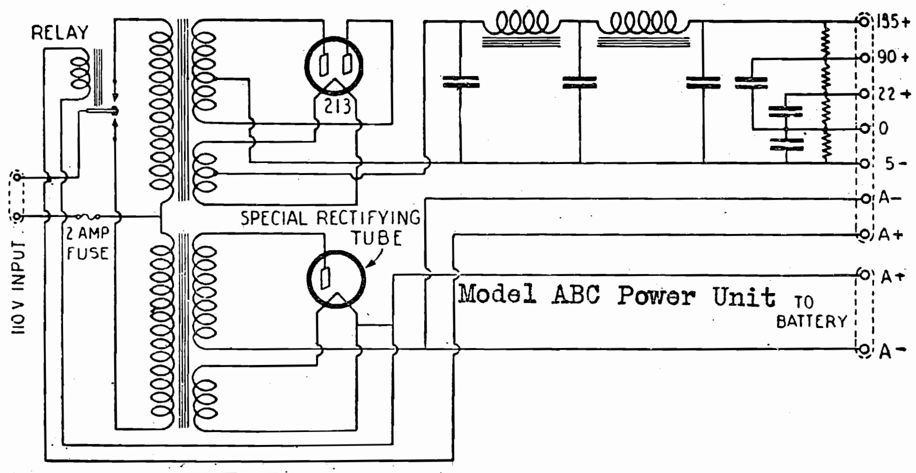
CHARLES FRESHMAN CO., INC.





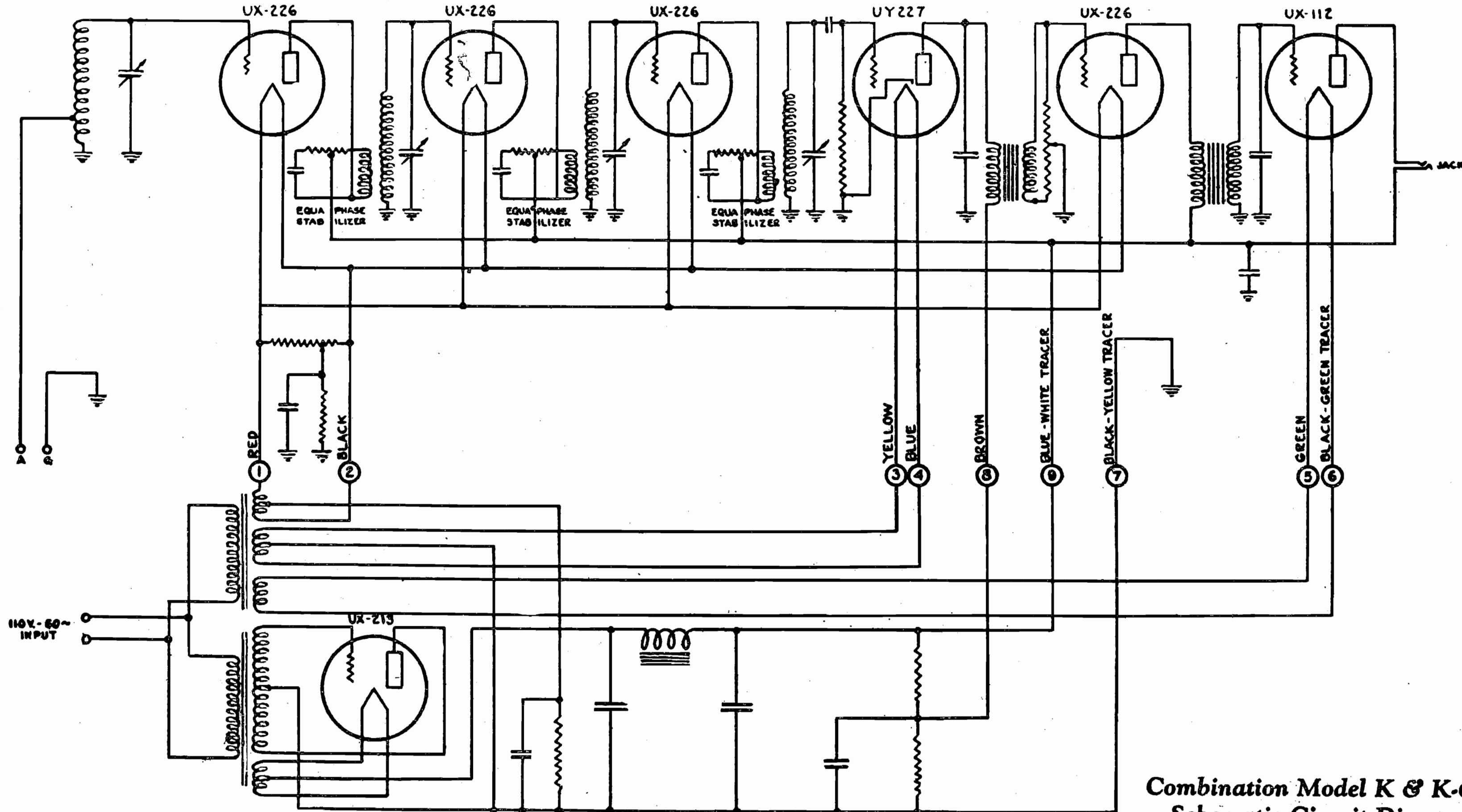
FRESHMAN—Model "H"
Line Voltage 120—120 Volt Tap

TUBE NO. IN ORDER	TYPE OF TUBE	POSITION OF TUBE 1ST R.F. DET., ETC	READINGS, PLUG IN SOCKET OF SET								
			TUBE OUT		TUBE IN TESTER						
			A VOLTS	B VOLTS	A VOLTS	B VOLTS	C VOLTS	CATHODE VOLTS	NORMAL PLATE M A	PLATE M.A GRID TEST	PLATE M A CHANGE
1	226	1st. R.F.	1.45	148	1.35	140	10	-	5.3	9.6	4.3
2	226	2nd. R.F.	1.45	148	1.35	140	10	-	5.3	9.6	4.3
3	226	3rd. R.F.	1.45	148	1.35	140	10	-	5.3	9.6	4.3
4	227	DETECTOR	2.35	140	2.00	50	0	-	2.75	2.75	0.0
5	226	1st. A.F.	1.46	148	1.35	140	10	-	5.3	9.6	4.3
6	210	2nd. A.F.	7.5	480	7.3	410	33	-	21.0	24.0	3.0
7	281	RECTIFIER	-	-	7.3	-	-	-	48.0	-	-
8											
9											
10											



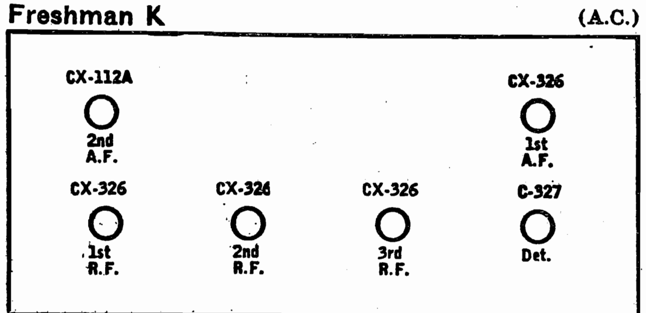
MODEL K

CHARLES FRESHMAN CO., INC.



Combination Model K & K-60-S
Schematic Circuit Diagram.

Freshman K

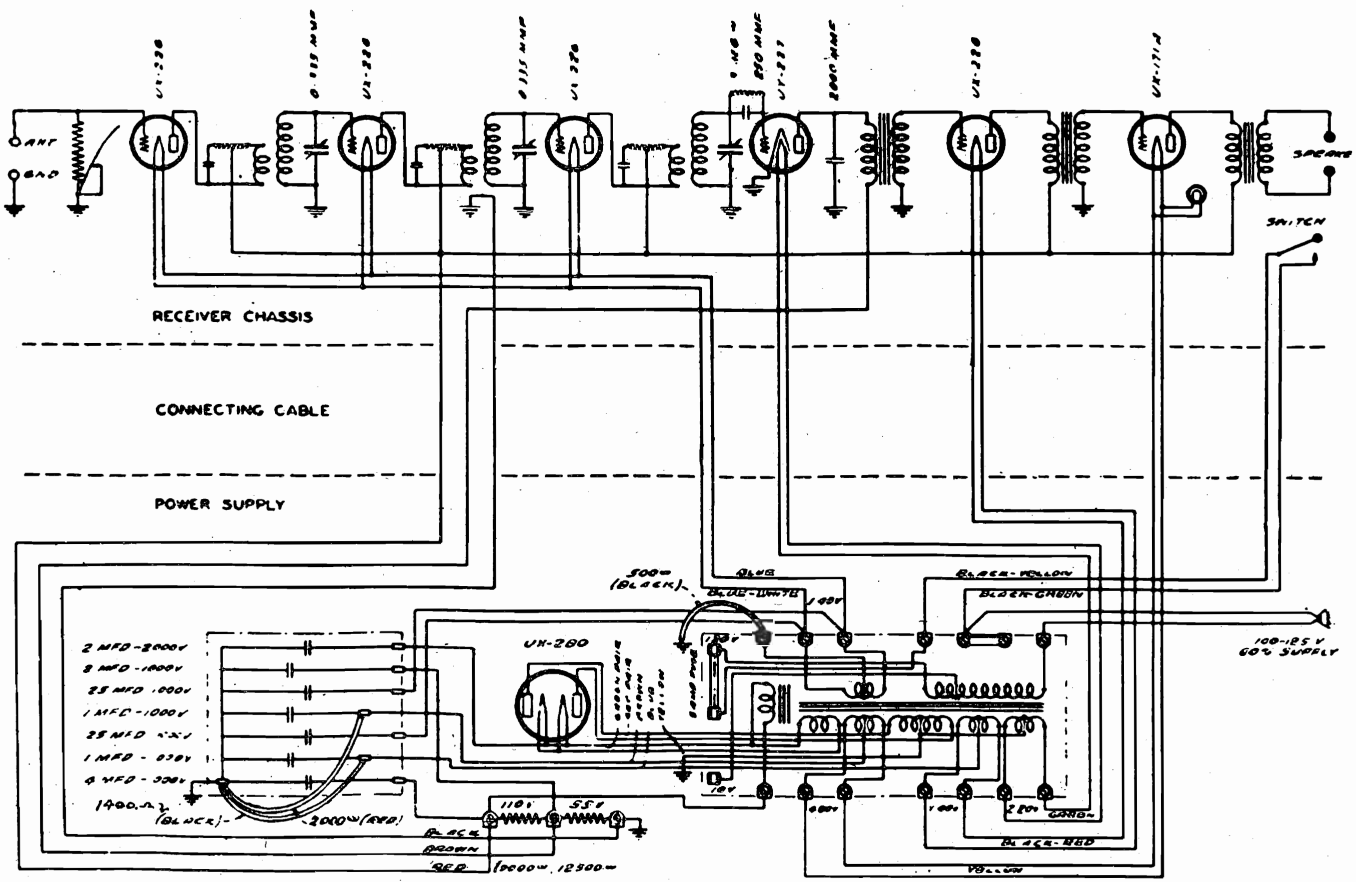


FRESHMAN—Model "K"
Line Voltage 120—120 Volt Tap

Tube No. in Order	Type of Tube	Position of Tube 1st R.F. Det., etc.	Readings Plug in Socket of Set: Tube Out: A Volts	Tube Out: B Volts	Tube in Tester: A Volts	B Volts	C Volts	Cathode Volts	Normal Plate M.A.	Plate M.A. Grid Test	Plate M.A. Change
1	226	1st. R.F.	1.45	148	1.35	140	9	-	5.2	9.4	4.2
2	226	2nd. R.F.	1.45	148	1.35	140	9	-	5.2	9.4	4.2
3	226	3rd. R.F.	1.45	148	1.35	140	9	-	5.2	9.4	4.2
4	227	Detector	2.35	140	2.00	45	0	-	2.6	2.6	0.0
5	226	1st. A.F.	1.45	148	1.35	140	9	-	5.2	9.4	4.2
6	112A	2nd. A.F.	5.0	140	4.7	135	12	-	10.0	14.0	4.0
7	280	Rectifier	-	-	4.7	-	-	-	20.0	-	-

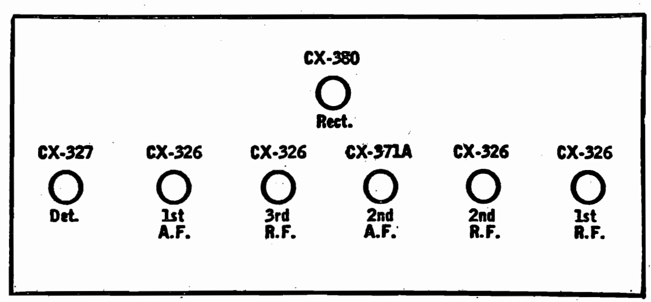
MODEL M

CHARLES FRESHMAN CO., INC.



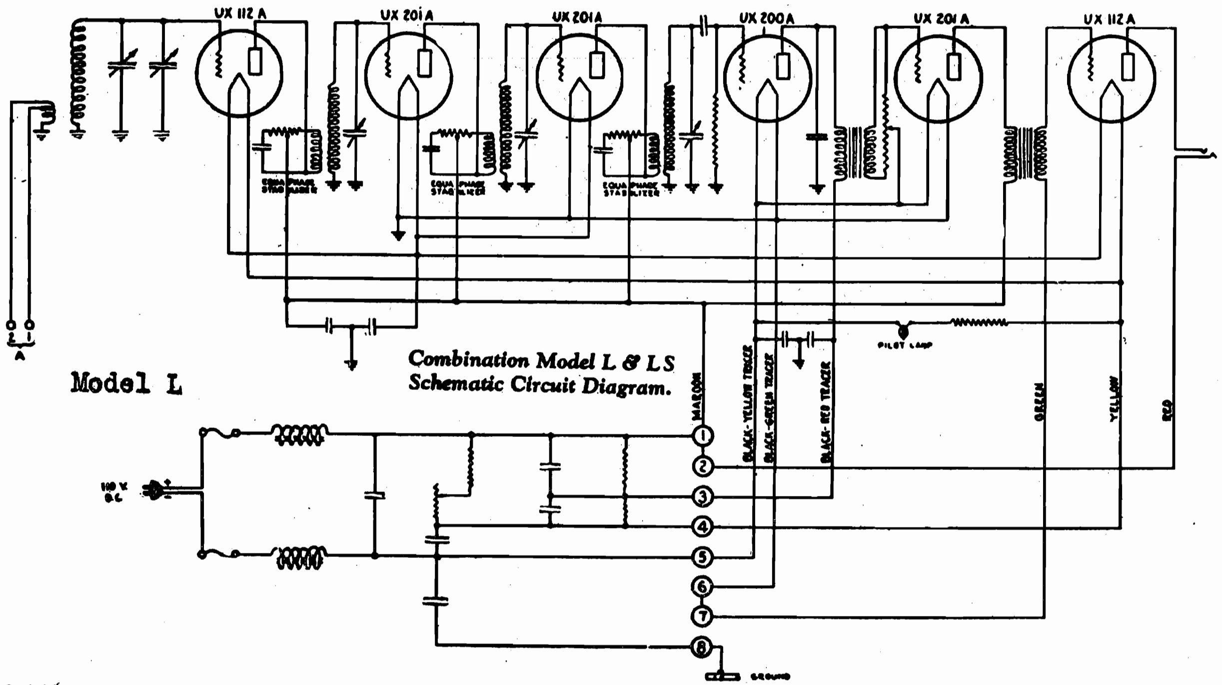
FRESHMAN—Model "M"
Line Voltage 120—120 Volt Tap

TUBE NO. IN ORDER	TYPE OF TUBE	POSITION OF TUBE 1ST R.F., DET., ETC.	READINGS, PLUG IN SOCKET OF SET: TUBE OUT: A VOLTS	B VOLTS	TUBE IN TESTER: A VOLTS	B VOLTS	C VOLTS	CATHODE VOLTS	NORMAL PLATE M.A	PLATE M.A GRID TEST	PLATE M.A CHANGE
1	226	1st. R.F.	1.45	158	1.35	150	12	-	5.5	9.7	4.2
2	226	2nd. R.F.	1.45	158	1.35	150	12	-	5.5	9.7	4.2
3	226	3rd. R.F.	1.45	158	1.35	150	12	-	5.5	9.7	4.2
4	227	Detector	2.35	150	2.00	50	0	-	2.75	2.75	0.0
5	226	1st. A.F.	1.45	158	1.35	150	10	-	5.5	9.7	4.2
6	171A	2nd. A.F.	4.90	150	4.80	135	25	-	17.0	19.0	2.0
7	280	Rectifier	-	-	4.80	-	-	-	22.0	-	-
8											
9											
10											



MODEL L
MODEL N

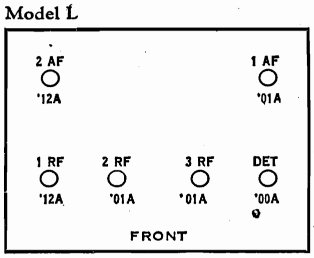
CHARLES FRESHMAN CO., INC.



Model L

Combination Model L & LS Schematic Circuit Diagram.

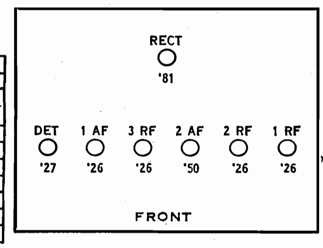
Model L

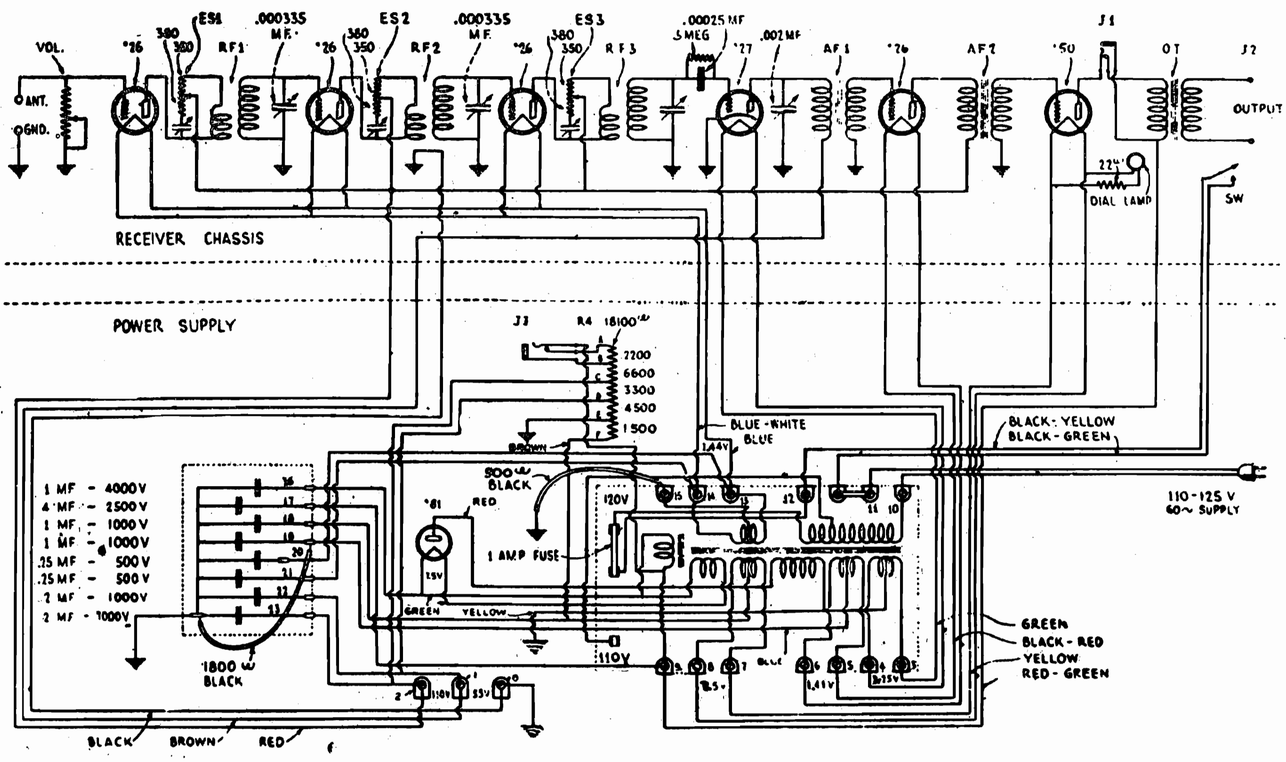


FRESHMAN—Model "N"
Line Voltage 119—120 Volt Tap

TUBE NO. IN ORDER	TYPE OF TUBE	POSITION OF TUBE 1ST. R.F. DET., ETC.	READINGS, PLUG IN SOCKET OF SET: TUBE OUT: A VOLTS	TUBE OUT: B VOLTS	TUBE IN TESTER: A VOLTS	B VOLTS	C VOLTS	CATHODE VOLTS	NORMAL PLATE M.A	PLATE M.A GRID TEST	PLATE M.A CHANGE
1	226	1st. R.F.	1.45	100	1.35	90	6	-	3.2	7.4	4.2
2	226	2nd. R.F.	1.45	100	1.35	90	6	-	3.2	7.4	4.2
3	226	3rd. R.F.	1.45	100	1.35	90	6	-	3.2	7.6	4.2
4	227	Detector	2.40	100	2.25	50	0	-	2.2	2.2	0.0
5	226	1st. A.F.	1.45	100	1.35	90	6	-	3.2	7.4	4.2
6	250	2nd. A.F.	7.4	350	7.2	300	50	-	36.0	43.5	7.5
7	281	Rectifier	-		7.2	-	-	-	46.0	-	-

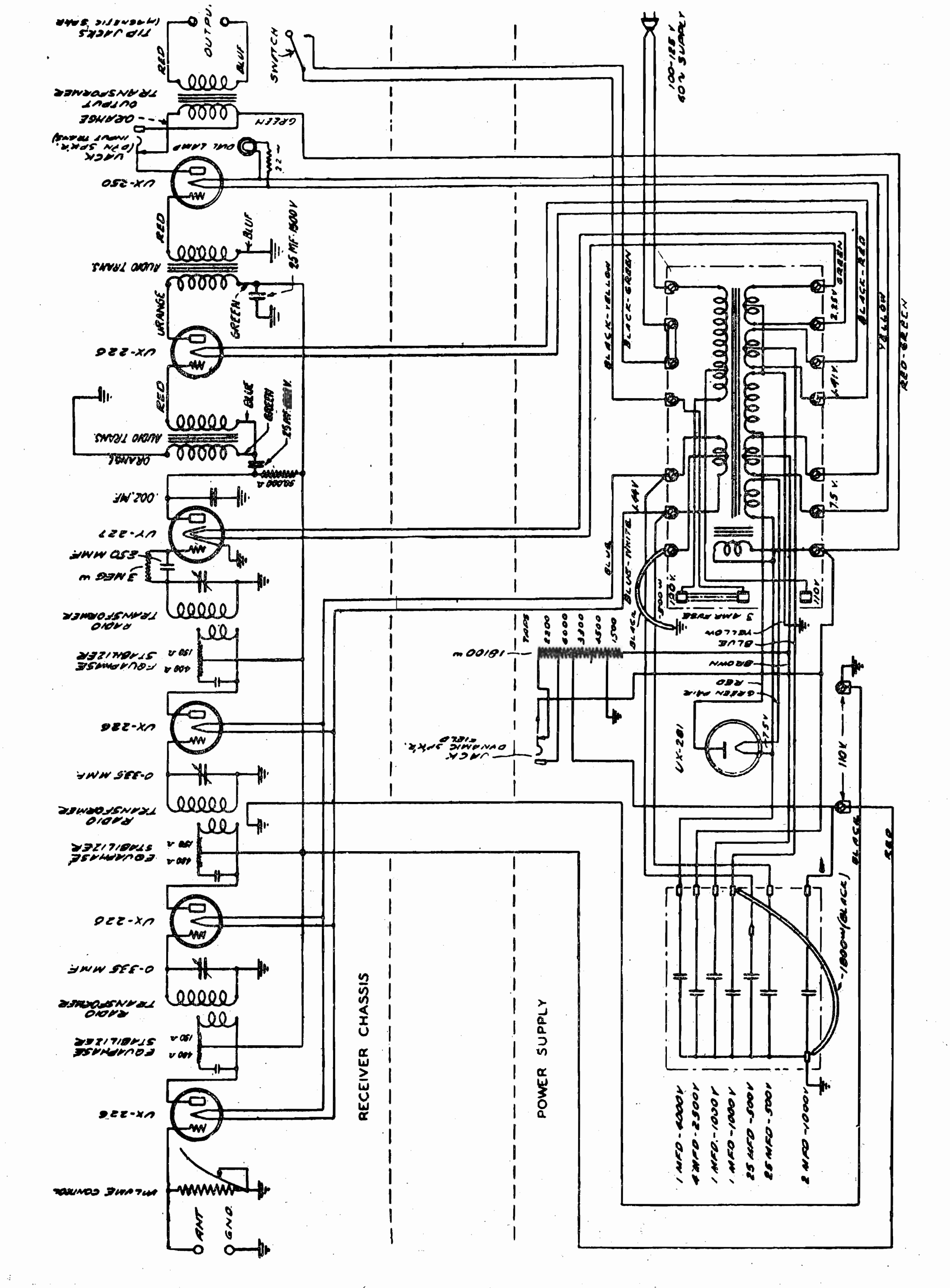
Model N





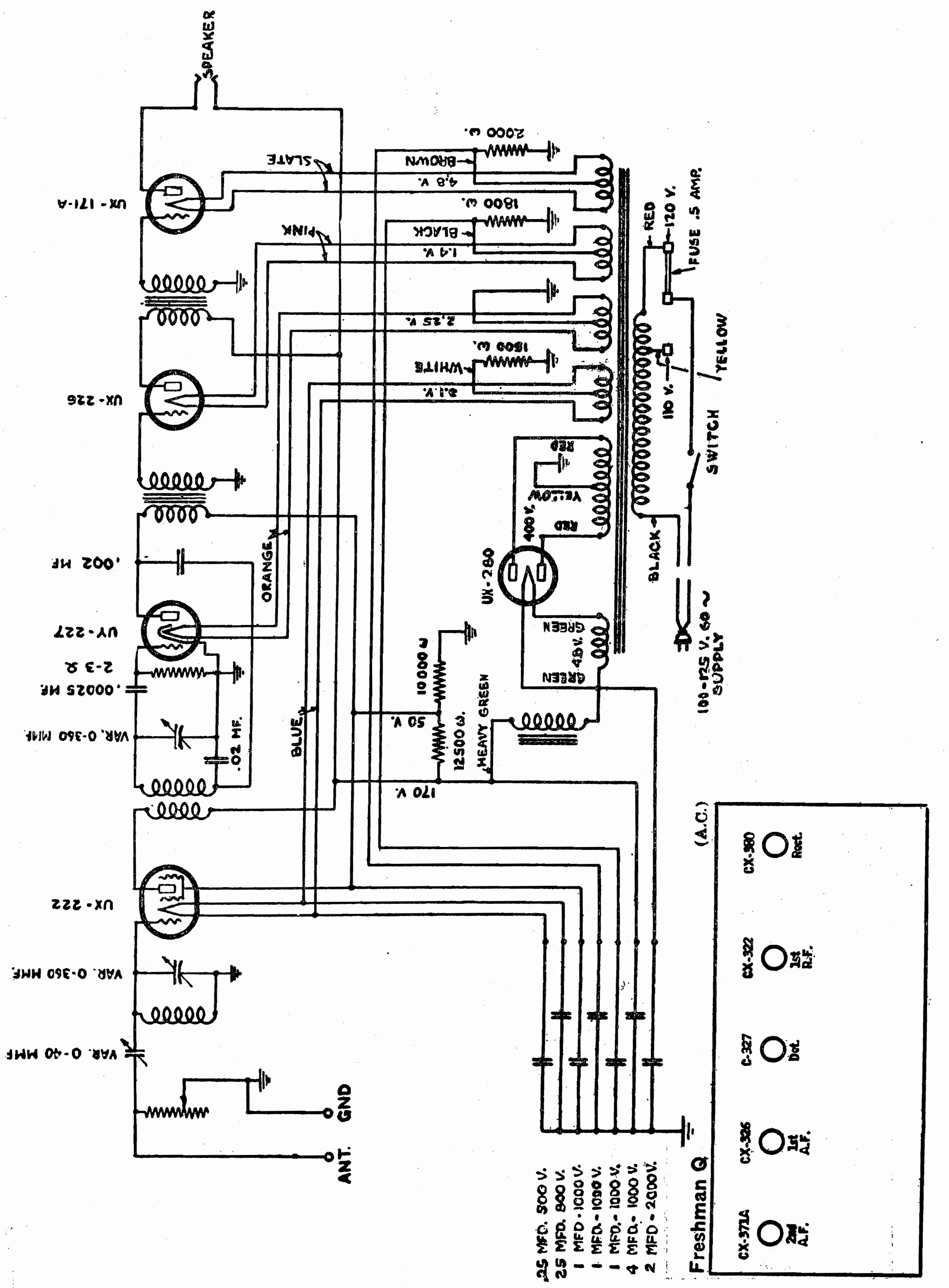
MODEL 2N with
2N-60-S Power Unit

CHARLES FRESHMAN CO., INC.



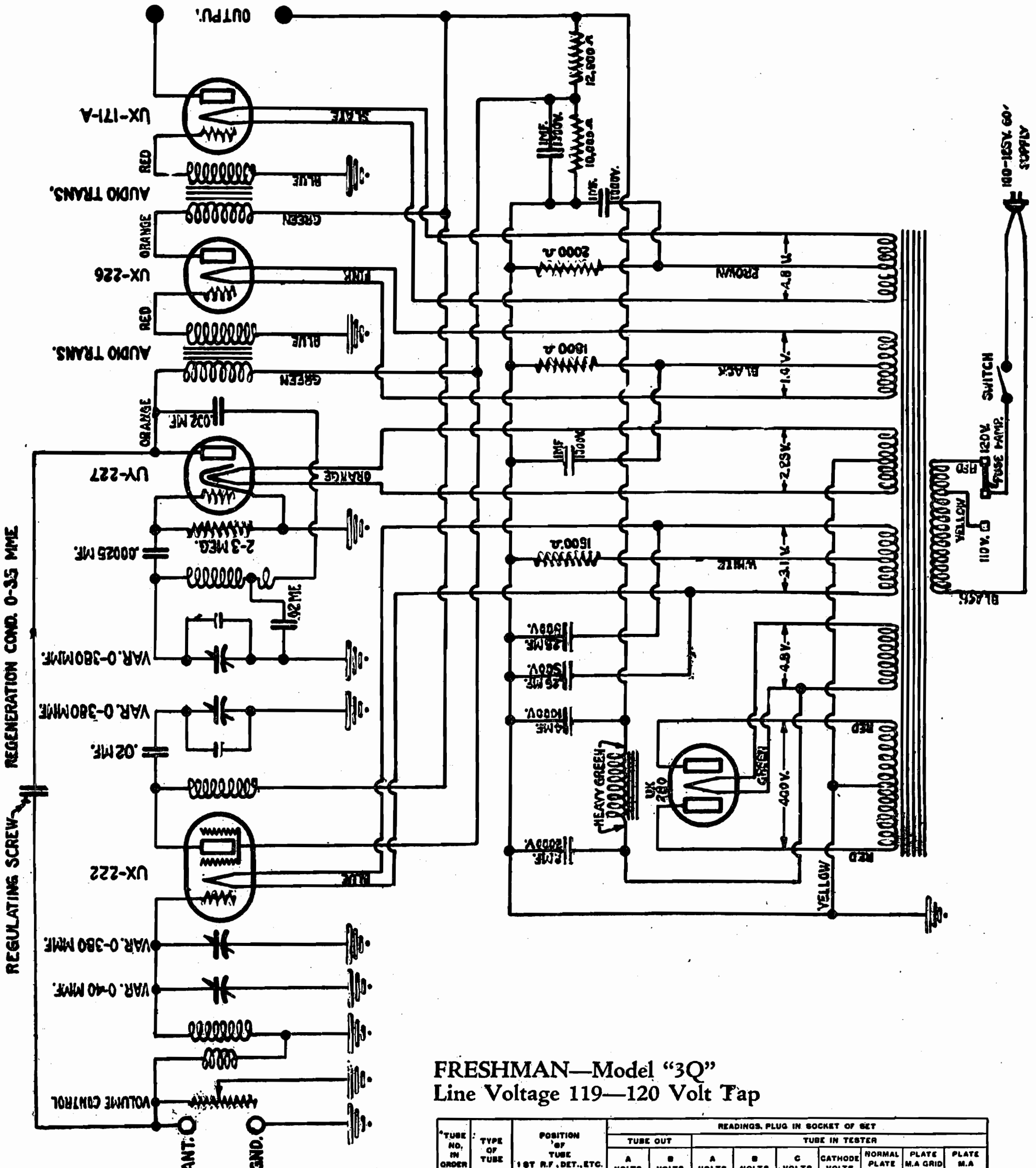
CHARLES FRESHMAN CO., INC.

MODEL Q-15, Q-16



MODEL 3-Q-15
3-Q-16

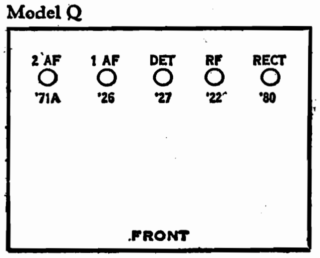
CHARLES FRESHMAN CO., INC.



FRESHMAN—Model "3Q"
Line Voltage 119—120 Volt Tap

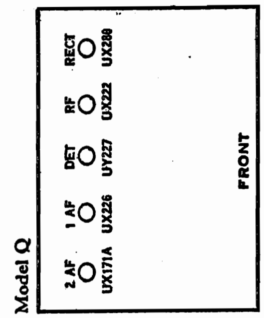
TUBE NO. IN ORDER	TYPE OF TUBE	POSITION OF TUBE 1ST R.F., DET., ETC.	READINGS, PLUG IN SOCKET OF SET								
			TUBE OUT		TUBE IN TESTER						
			A VOLTS	B VOLTS	A VOLTS	B VOLTS	C VOLTS	CATHODE VOLTS	NORMAL PLATE M.A	PLATE M.A GRID TEST	PLATE M.A CHANGE
1	222	1st. R.F.	3.10	162	3.00	150	3.0				
2	227	Detector	2.35	150	2.10	50	0.0		2.75	2.75	0.0
3	226	1st. A.F.	1.45	150	1.35	140	10		4.2	8.6	4.4
4	171A	2nd. A.F.	4.90	140	4.60	125	25		16.5	18.0	1.5
5	280	Rectifier	-	-	4.60	-	-		22.0	-	-
6											

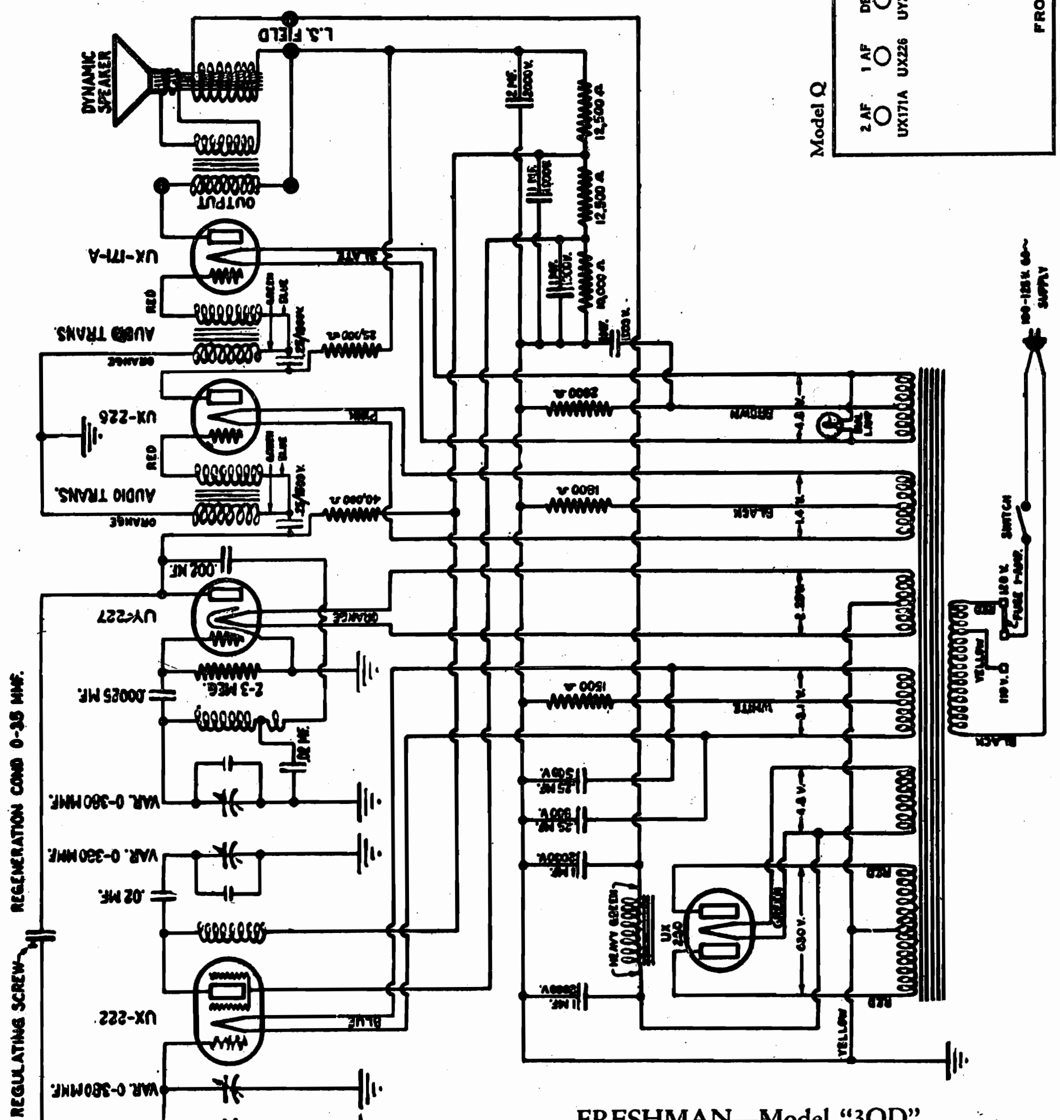
Model Q



CHARLES FRESHMAN CO., INC.

MODEL QD-16-S



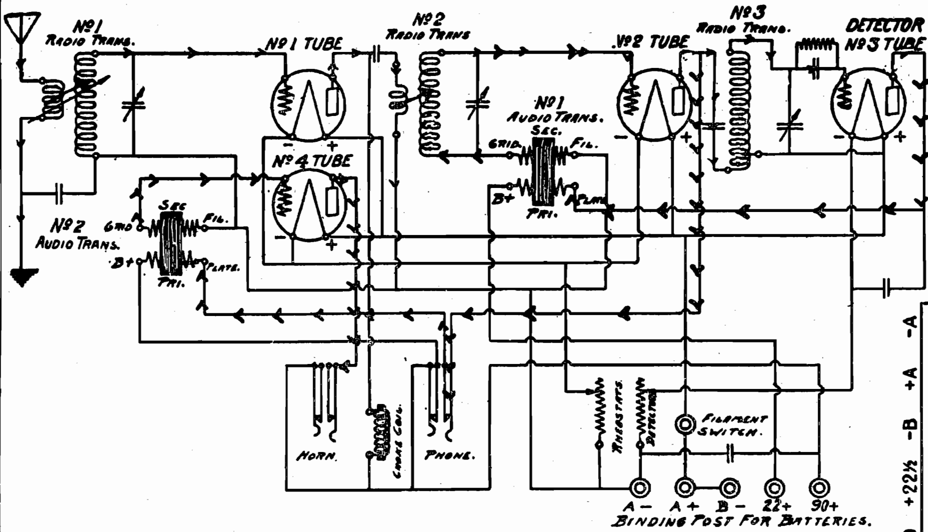


FRESHMAN—Model "3QD"
Line Voltage 119—120 Volt Tap

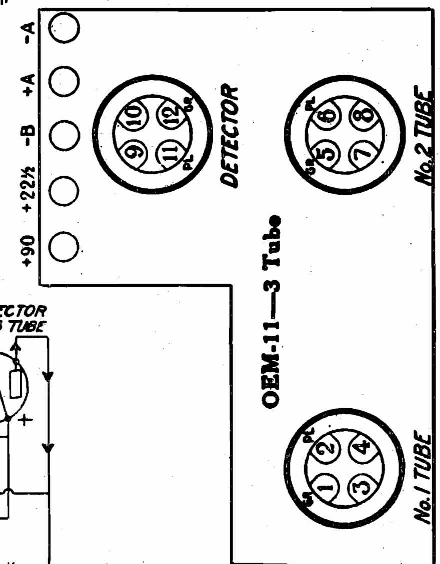
TUBE NO IN ORDER	TYPE OF TUBE	POSITION OF TUBE 1ST R.F DET..ETC	READINGS, PLUG IN SOCKET OF SET								
			TUBE OUT		TUBE IN TESTER						
			A VOLTS	B VOLTS	A VOLTS	B VOLTS	C VOLTS	CATHODE VOLTS	NORMAL PLATE M.A	PLATE M.A GRID TEST	PLATE M.A CHANGE
1	222	1st. R.F.	3.10	130	3.00	120	3.0				
2	227	Detector	2.35	100	2.15	40	0.0		2.75	2.75	0.0
3	226	1st. A.F.	1.45	110	1.35	100	6.0		4.0	8.0	4.0
4	171A	2nd. A.F.	4.90	185	4.70	170	38.0		16.0	18.0	2.0
5	280	Rectifier	-	-	4.70	-	-		22.0	-	-
6											
7											
8											
9											
10											

GENERAL MOTORS RADIO CORP.

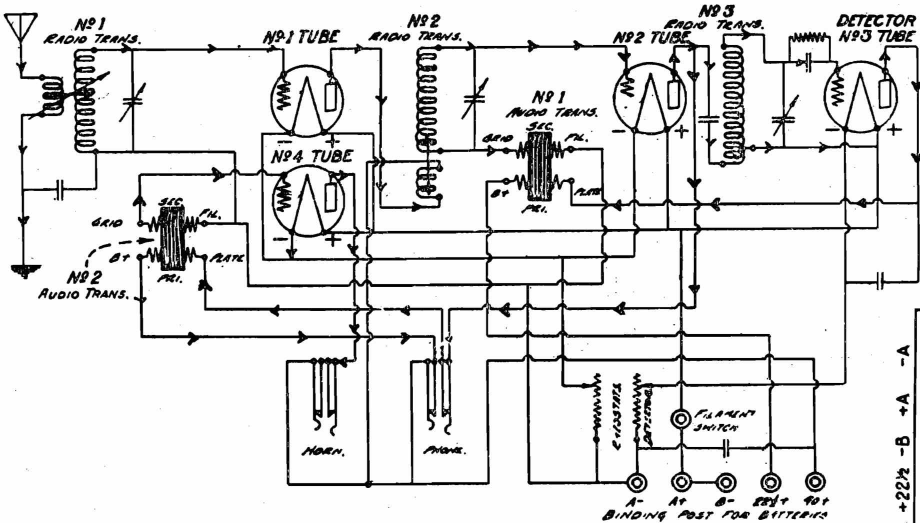
MODEL OEM-7 4 Tube
MODEL OEM-7 Super-Sel.
MODEL OEM-11 3 Tube



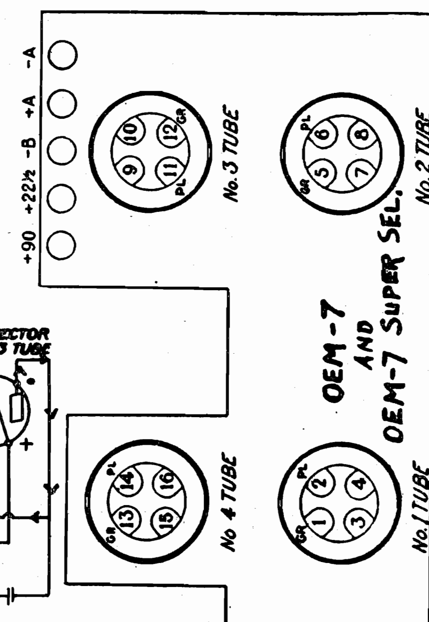
OEM-7 — 4-Tube



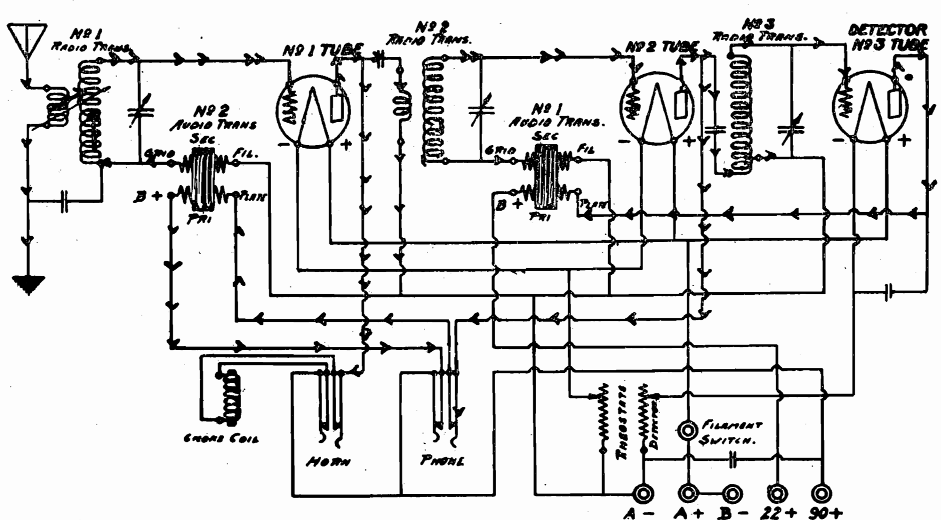
OEM-11 — 3 Tube



OEM-7 — Super-Selective



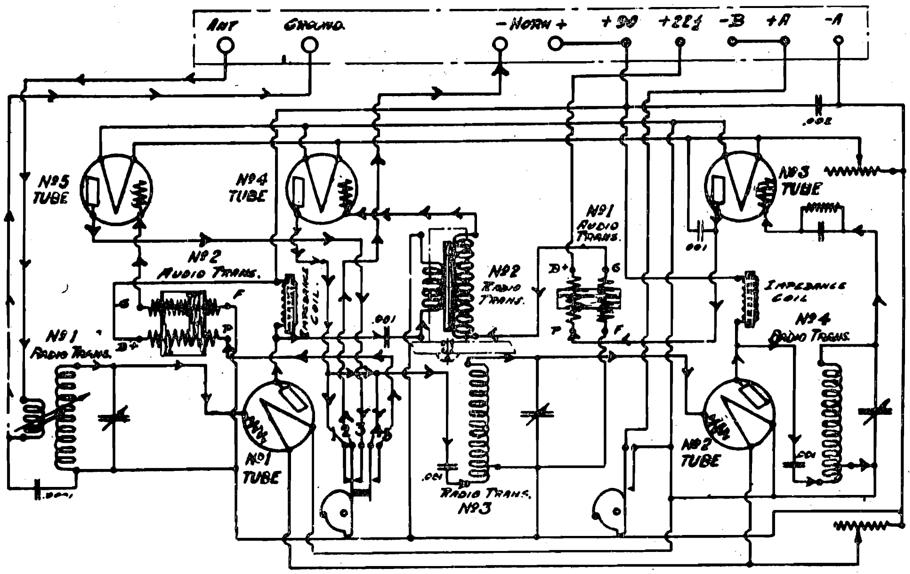
OEM-7 AND OEM-7 SUPER SEL.



OEM-11 — 3-Tube

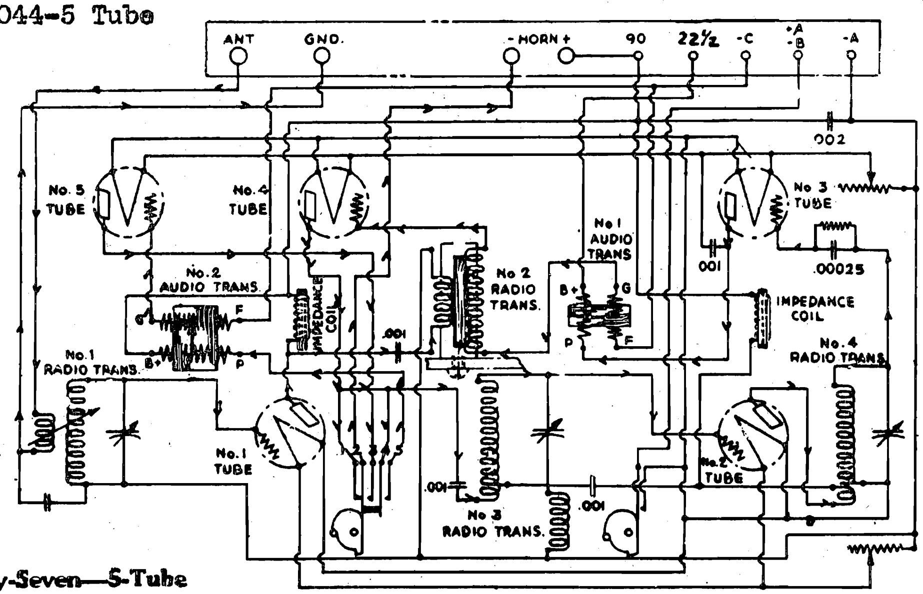
MODEL 5044-5 Tube
MODEL 527-5 Tube

GENERAL MOTORS RADIO CORP.

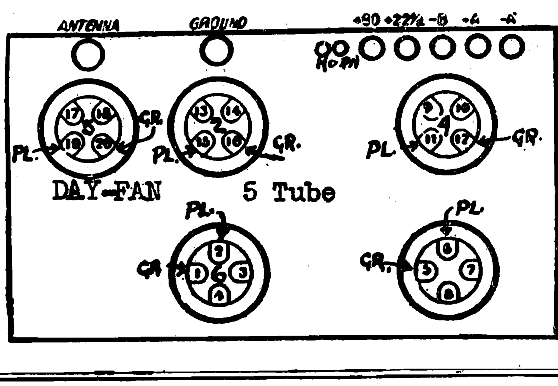


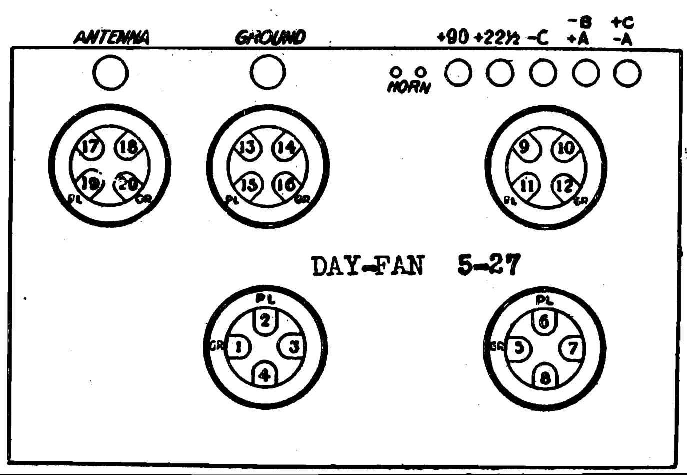
DAY-FAN FIVE

Model 5044-5 Tube



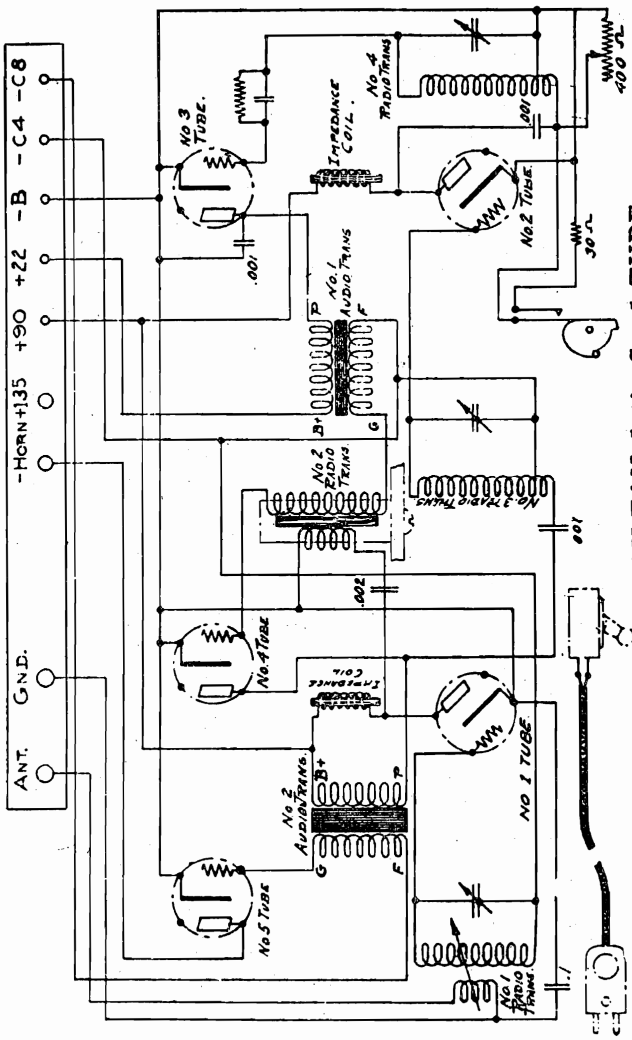
Day-Fan Five Twenty-Seven—5-Tube



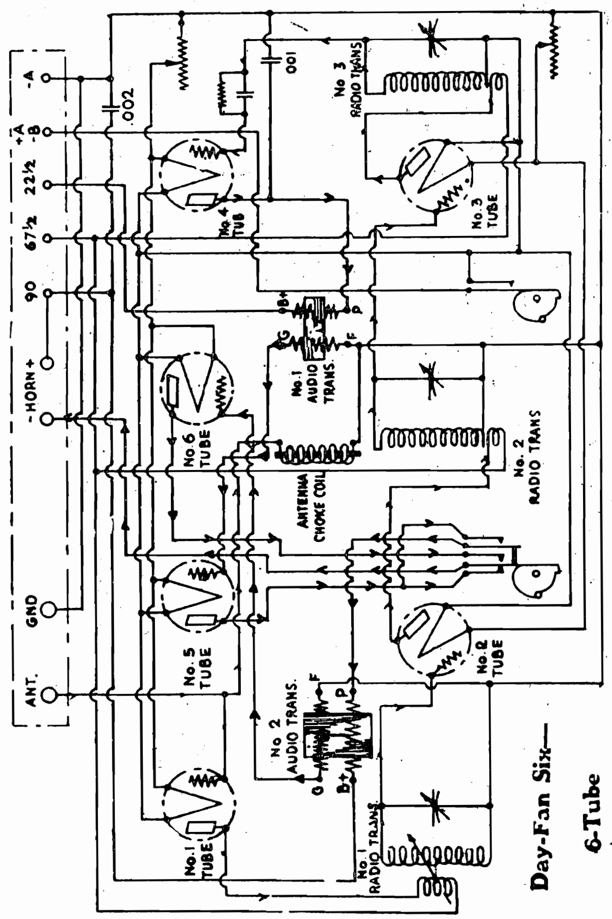


GENERAL MOTORS RADIO CORP.

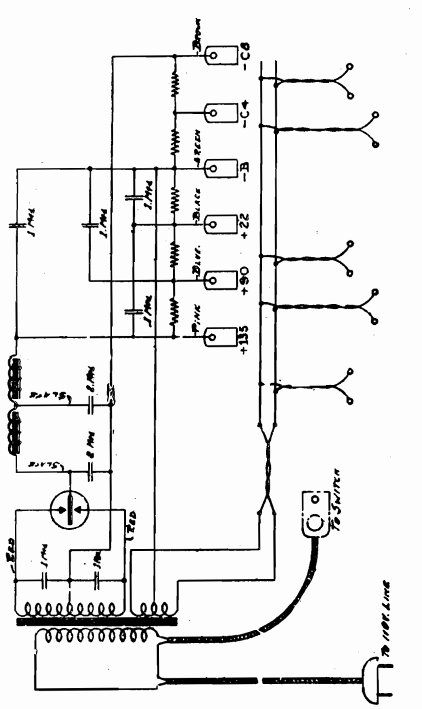
MODEL Day-Fan 5-AC
MODEL Day-Fan 5
MODEL Day-Fan 5-AC SPU



DAY-FAN 5 A. C.—5 TUBE



Day-Fan Six—6-Tube

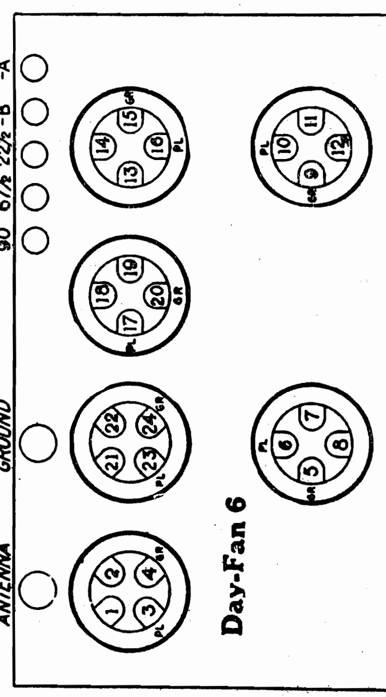


POWER SUPPLY FOR 5 TUBE A. C. SET

SUB-PANEL OF DAY-FAN 5 TUBE A. C.

CABLE COLOR CODE

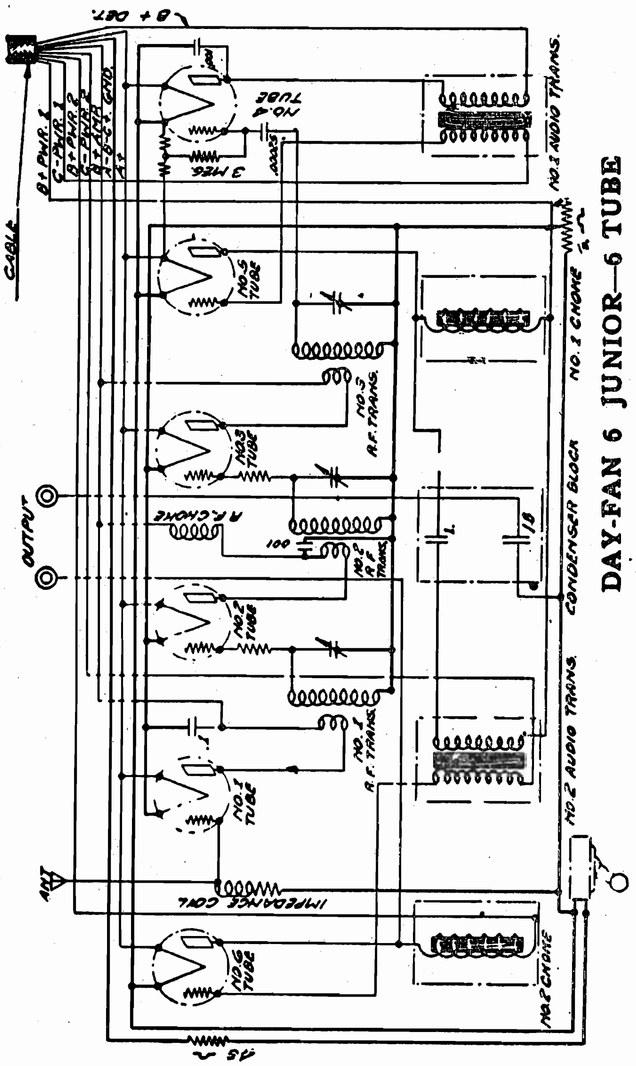
Terminal	Wire Color	Power
Horn +	Red	135
No. 1	Maroon	90
No. 2	Red and Black	22
No. 3	Black	B + C
No. 4	Yellow and Black	C4
No. 5	Yellow Solid	C8



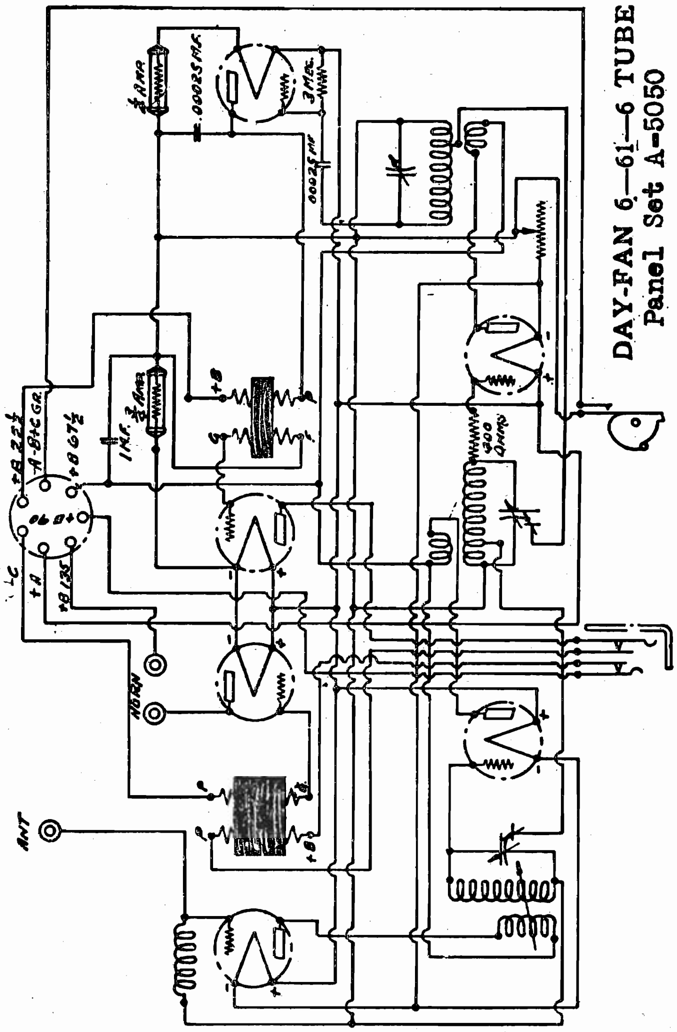
Day-Fan 6

MODEL Day-Fan 6 Jr.
MODEL Day-Fan 6-61
(5050)

GENERAL MOTORS RADIO CORP.



DAY-FAN 6 JUNIOR—6 TUBE



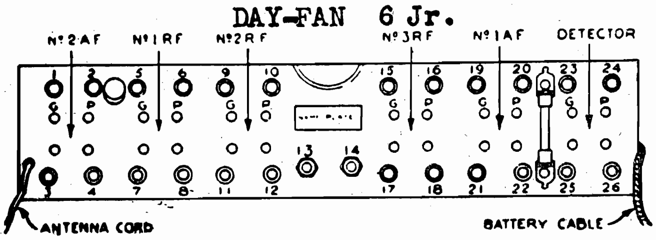
DAY-FAN 6—61—6 TUBE
Panel Set A-5050

STANDARD BATTERY CABLE CONNECTIONS

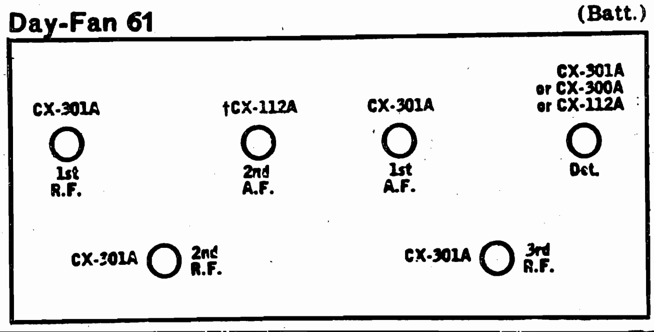
(DAY-FAN 6 Jr.)

Color of Wire	N. E. M. A. Rating
Red	B + Pwr. 2.
Red and White	B + Pwr. 1.
Red and Maroon	B + Amp.
Maroon	B + Det.
Yellow	A +
Green with Red and Yellow tracers	B —, A —, C +.
Black and Green	C — Pwr. 1.
Black and White	C — Pwr. 2.

DAY-FAN 6 Jr.

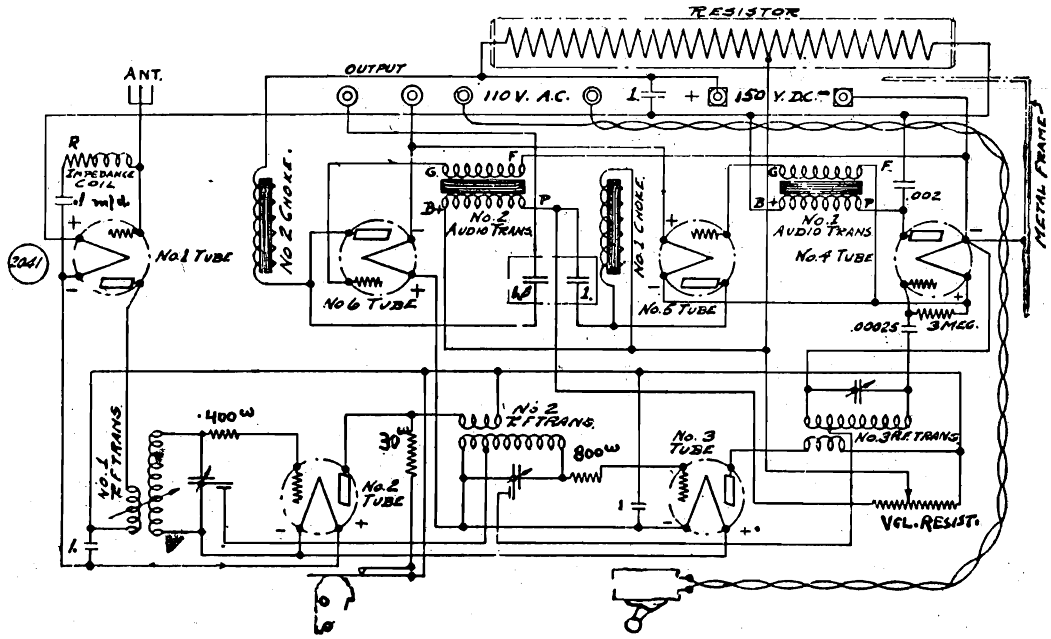


Day-Fan 61 (Batt.)

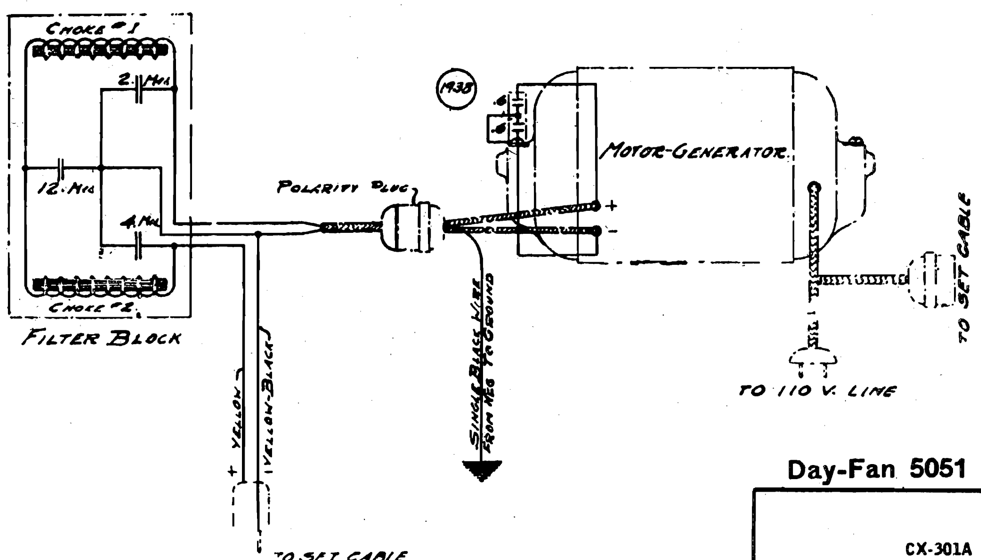


GENERAL MOTORS RADIO CORP.

MODEL Day-Fan 5051 (MG Set)
Motor-Generator

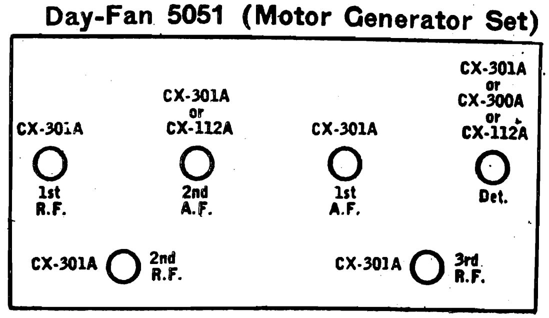


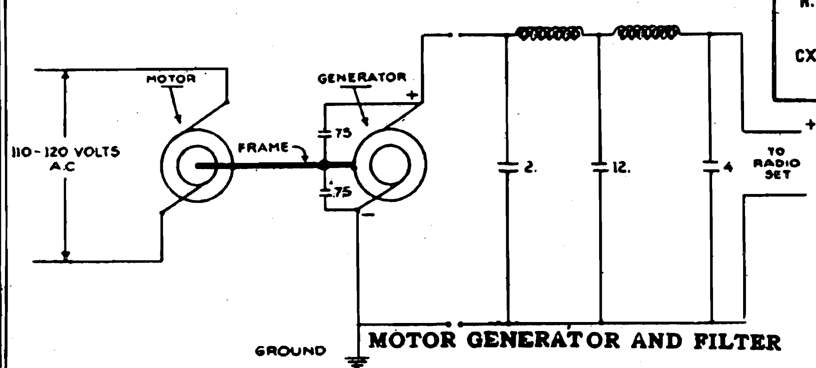
MOTOR GENERATOR SET—6 TUBE



MOTOR GENERATOR AND FILTER

Day-Fan 5051 (Motor Generator Set)

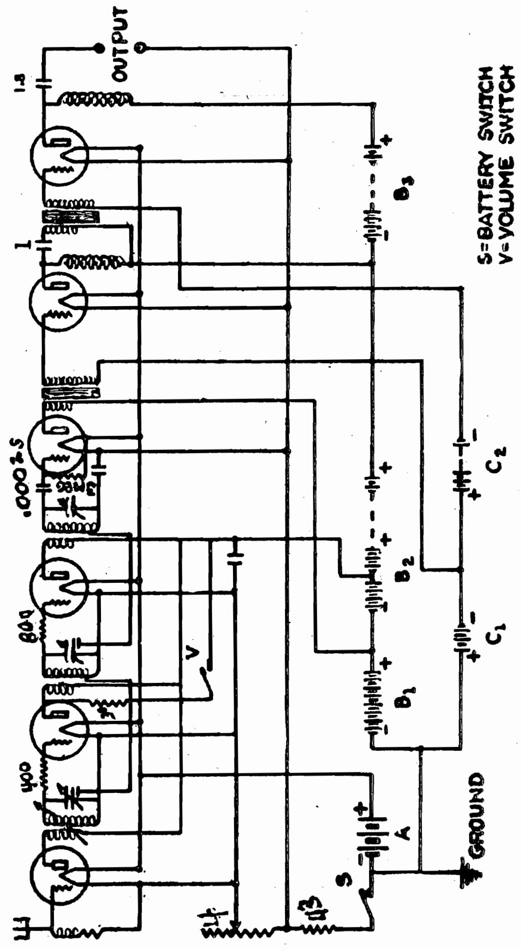




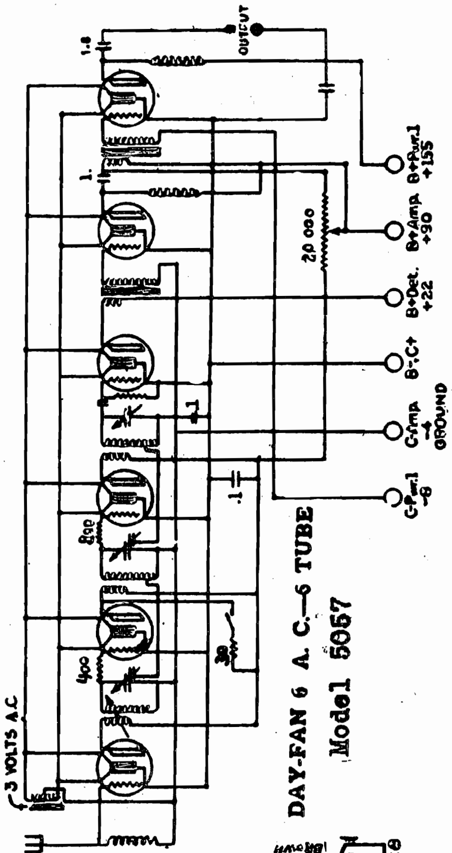
MOTOR GENERATOR AND FILTER

MODEL Day-Fan 5053.
MODEL Day-Fan 5057
MODEL Day-Fan 5057SPU

GENERAL MOTORS RADIO CORP.



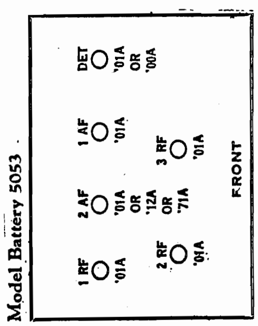
DAY-FAN 6 B—6 TUBE Model 5053

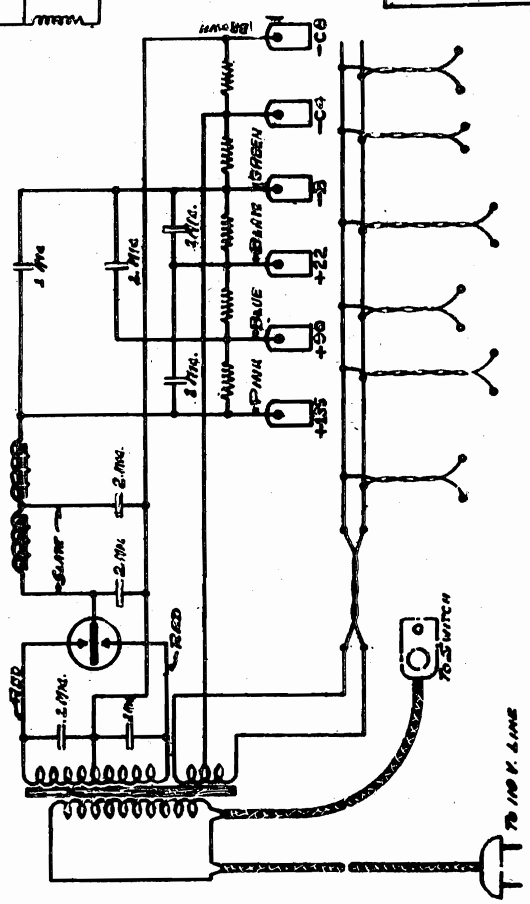


DAY-FAN 6 A. C.—6 TUBE Model 5057

POWER CABLE COLOR CODE

Color of Wire	N. E. M. A. Rating
Red and White	B + Pwr. 1
Red and Maroon	B + Amp.
Maroon	B + Det.
Green with Red and Yellow	B —, C +.
Black and Green	C — Amp. and Ground
Black and White	C — Pwr. 1

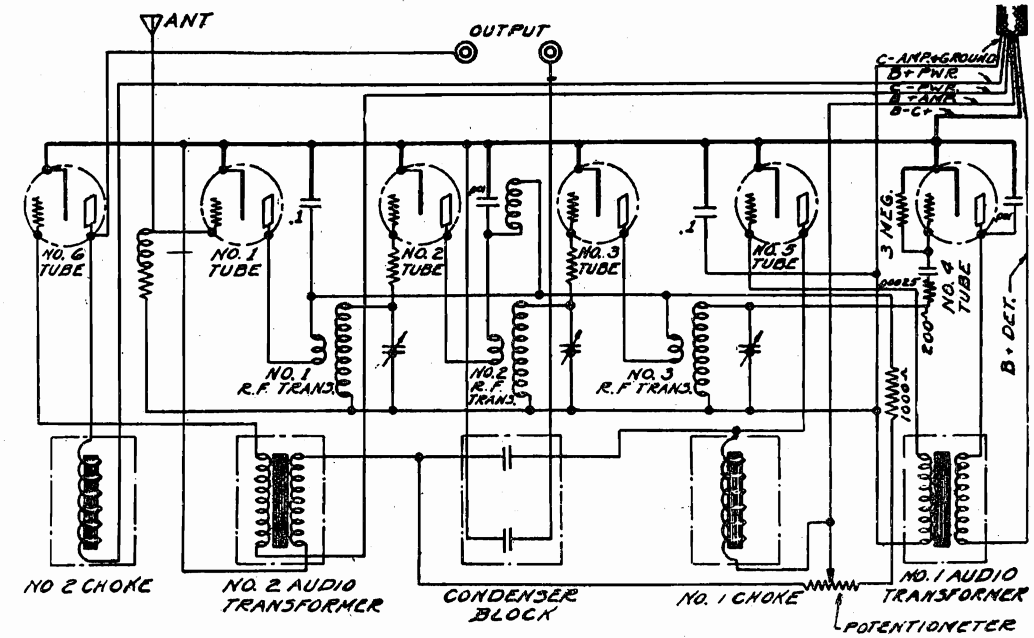




POWER SUPPLY FOR 6 TUBE A. C. SET Model 5057

GENERAL MOTORS RADIO CORP.

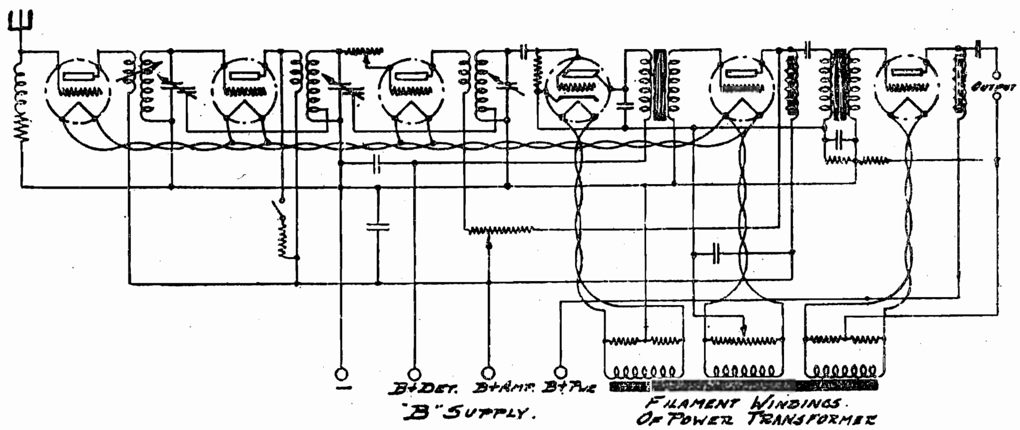
MODEL Day-Fan 5066
MODEL Day-Fan 5065
MODEL 5524, 5525,
SPU For 5065



DAY-FAN 6 JUNIOR A C POWER SET
Model 5066

POWER CABLE COLOR CODE: Model 5066

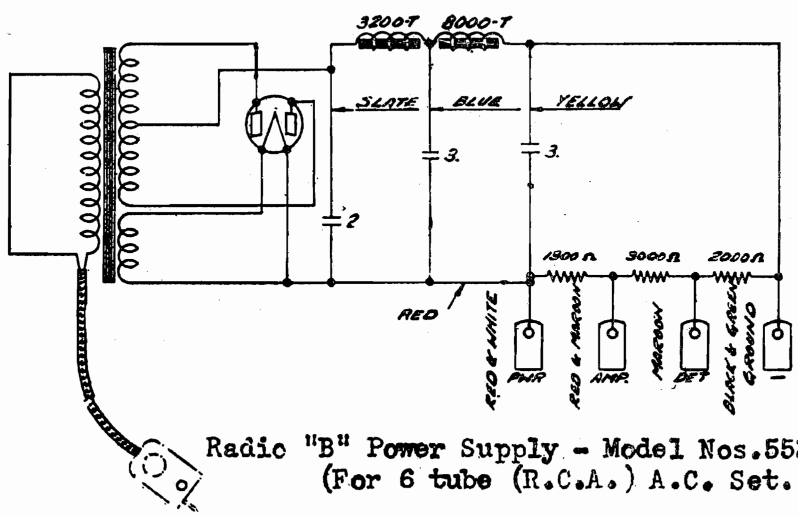
Color of Wire	N. E. M. A. Rating
Red and White	B + Power
Red and Maroon	B ++ Amp.
Maroon	B +++ Det.
Green with Red and Yellow Tracers	B —, C +
Black and Green	C — Amp., and Gr.
Black and White	C — Power

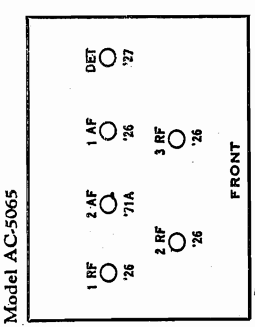


DAY-FAN 6 A. C. (R. C. A. TUBE) POWER SET — Model 5065

POWER CABLE COLOR CODE: Model 5065

Color of Wire	N. E. M. A. Rating
Red and White	B + Power
Red and Maroon	B + + Amp.
Maroon	B + Det.
Black with Green tracer	B — and Ground



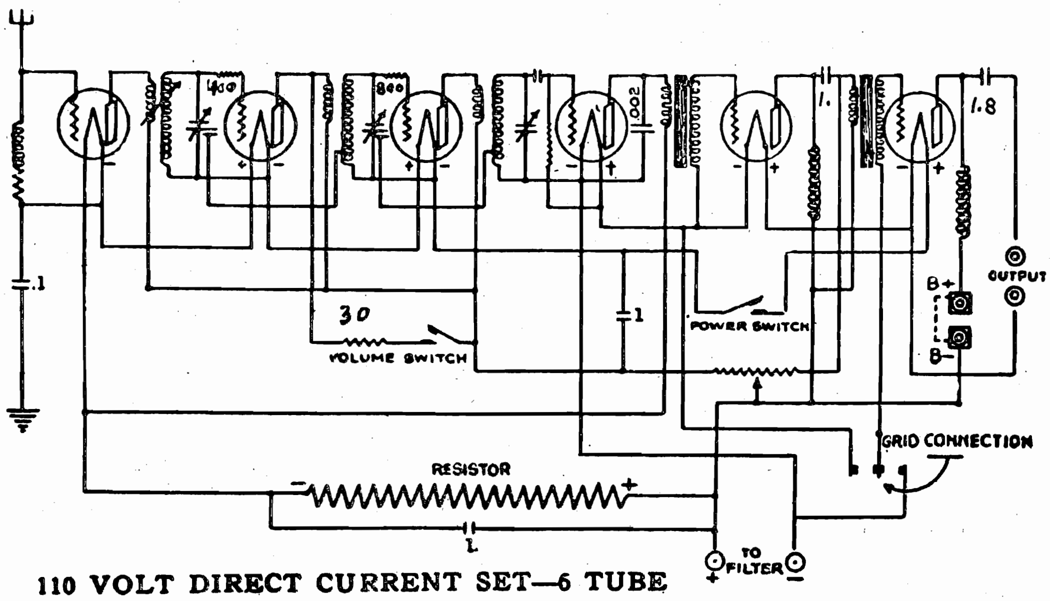


Model AC-5065

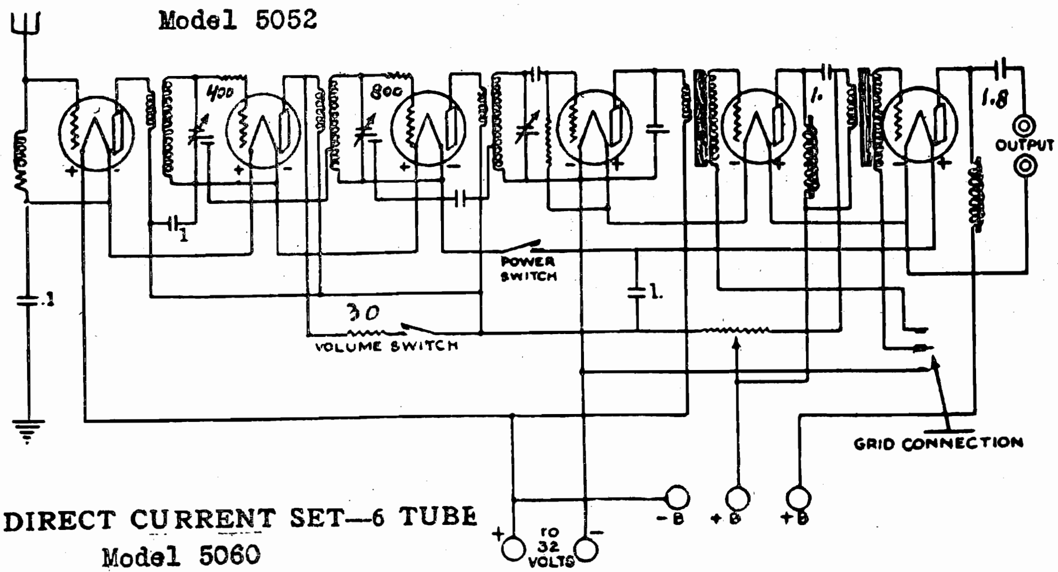
Radio "B" Power Supply - Model Nos. 5524 and 5525.
(For 6 tube (R.C.A.) A.C. Set.)

MODEL Day-Fan 5052
MODEL Day-Fan 5060

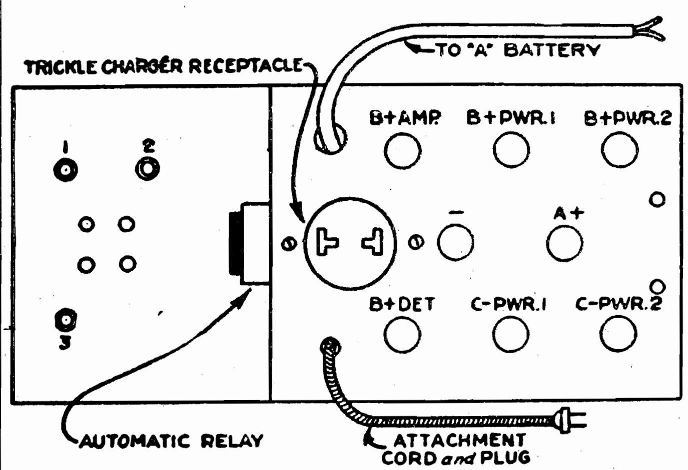
GENERAL MOTORS RADIO CORP.



110 VOLT DIRECT CURRENT SET—6 TUBE
Model 5052

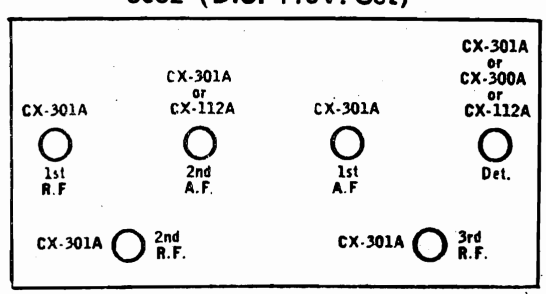


32 VOLT DIRECT CURRENT SET—6 TUBE
Model 5060



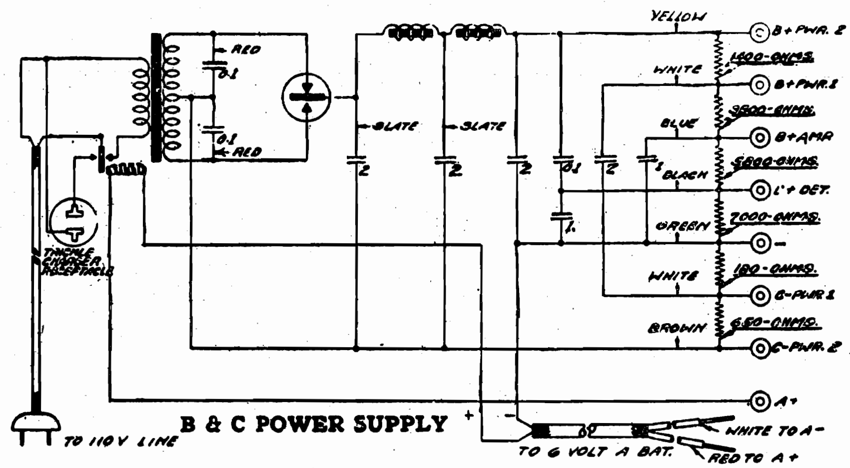
B & C POWER SUPPLY

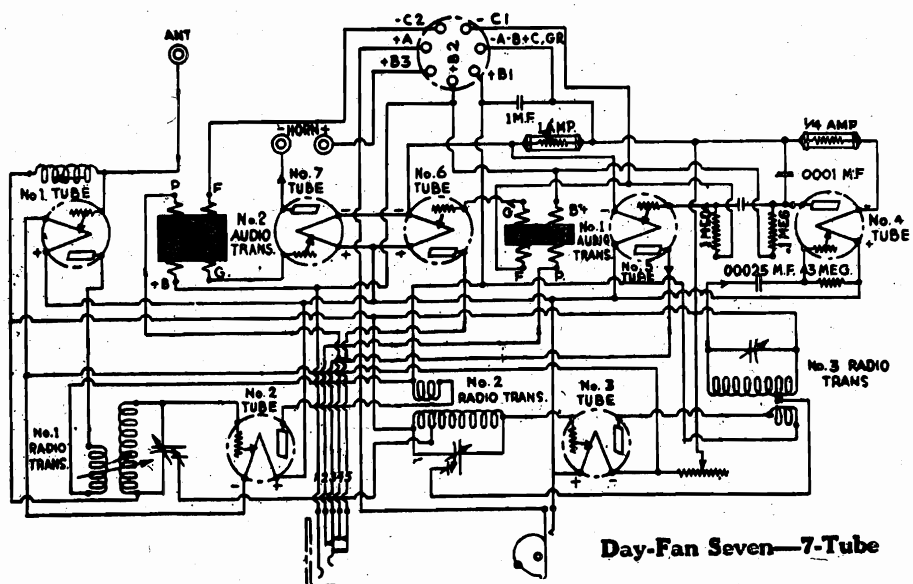
Day-Fan 5060 (D.C. 32V. Set)
" " 5052 (D.C. 110V. Set)



GENERAL MOTORS RADIO CORP.

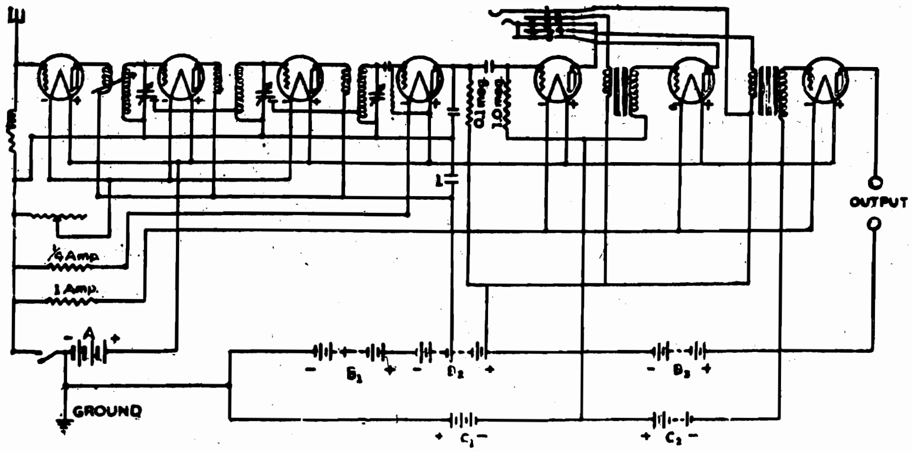
MODEL Day-Fan 5050-7
MODEL "B & C" SPU





Day-Fan Seven—7-Tube

Model 5050-7



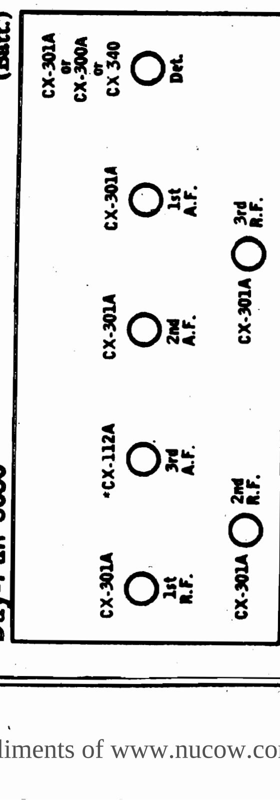
DAY-FAN 7—7 TUBE

Model 5050

STANDARD BATTERY CONNECTIONS TO DAY-FAN 7 (5050)

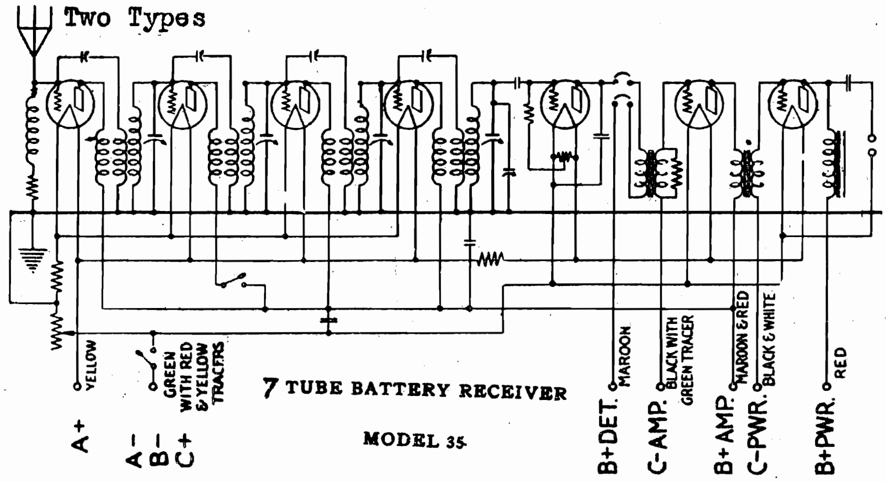
Color of Cable Wire	Voltage
Pink	B + Power
Blue	B + 90
Yellow	B + 67½
Red	A + 6
Green	B —, A —, C +
Black	C — 4
Brown	C — Power

Day-Fan 5050



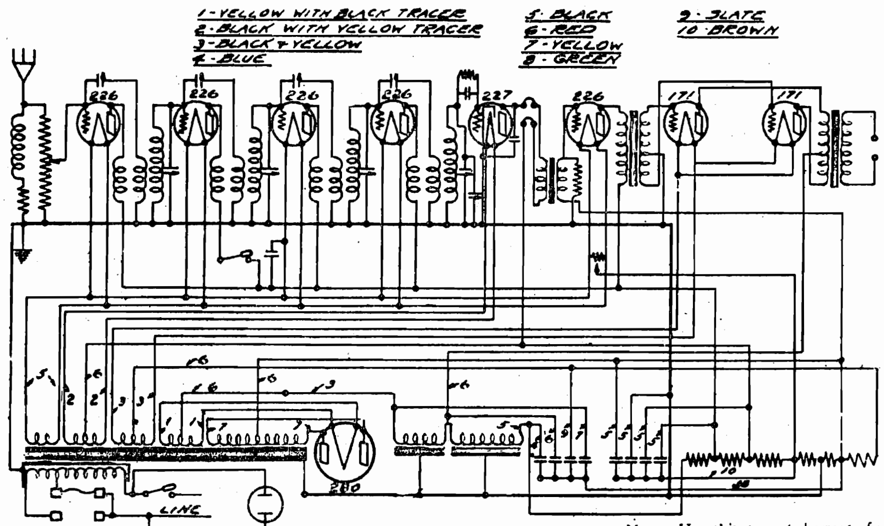
MODEL Day-Fan 35
MODEL Day-Fan 25, 26, 27, 28, 43, 48
Two Types

GENERAL MOTORS RADIO CORP.



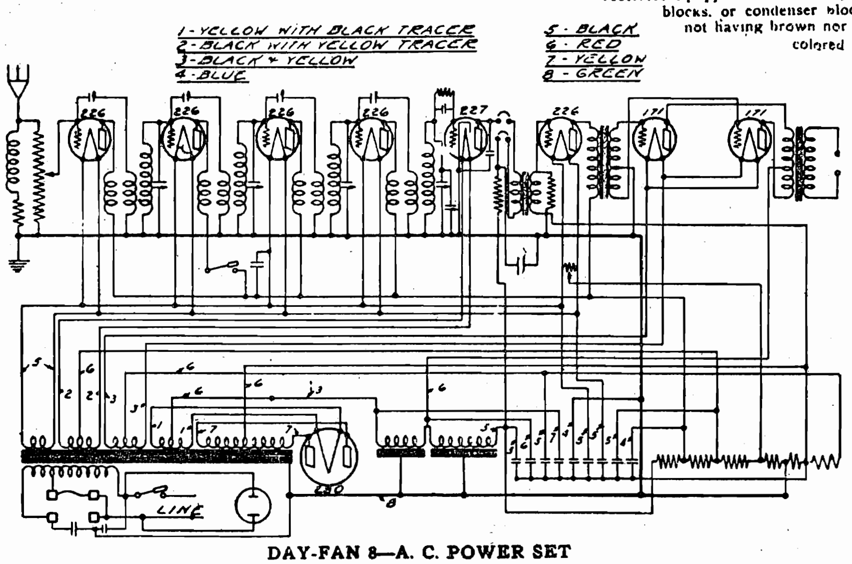
7 TUBE BATTERY RECEIVER

MODEL 35



DAY-FAN 8—A. C. POWER SET.

Note—Use this circuit diagram for receivers equipped with sealed power blocks, or condenser blocks not having brown nor slate colored leads

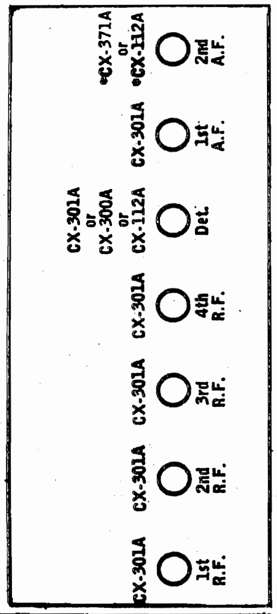


DAY-FAN 8—A. C. POWER SET

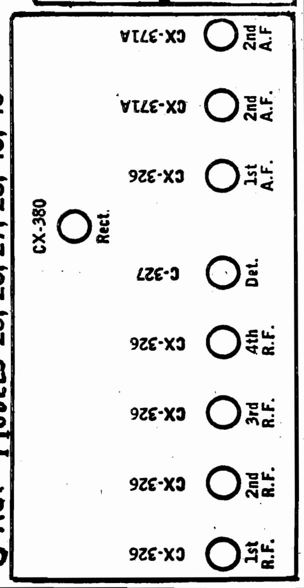
Note—Use this circuit diagram for receivers equipped with sealed power blocks, or condenser blocks not having brown nor slate colored leads.

DAY-FAN—Models 25-26
Line Voltage 116—2nd A. F. Stage—2 Tubes Push Pull

Tube No. in Order	Type of Tube	Position of Tube 1st R F Det Etc	Tube Out: A Volts	Tube Out: B Volts	Readings Plug in Socket of Set, Tube in Tester: A Volts	B Volts	C Volts	Cathode Volts	Normal Plate M.A.	Plate M.A. Grid Test	Plate M.A. Change
1	226	1st.R.F.	1.55	117	1.5	110	5.5	-	6.5	10.5	4.0
2	226	2nd.R.F.	1.55	117	1.5	110	5.5	-	6.5	10.5	4.0
3	226	3rd.R.F.	1.55	117	1.5	110	5.5	-	6.5	10.5	4.0
4	226	4th.R.F.	1.55	117	1.5	110	5.5	-	6.5	10.5	4.0
5	227	Detector	2.40	125	2.2	25	45	-	1.4	1.4	0.0
6	226	1st.A.F.	1.55	107	1.5	100	7.5	-	3.5	7.0	3.5
7	171A	2nd.A.F.	5.30	170	5.0	158	33	-	18.0	21.0	3.0
8	171A	2nd.A.F.	5.30	170	5.0	158	33	-	18.0	21.0	3.0



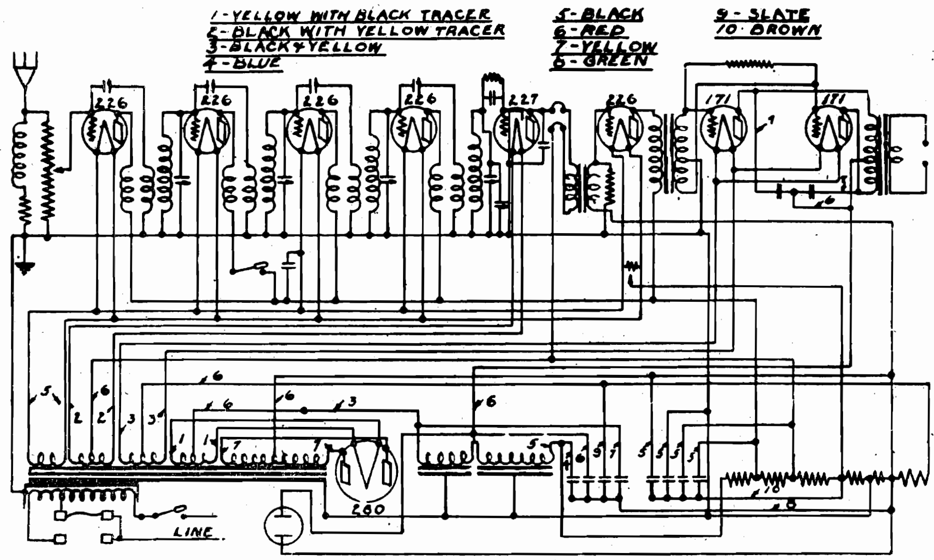
MODEL 35



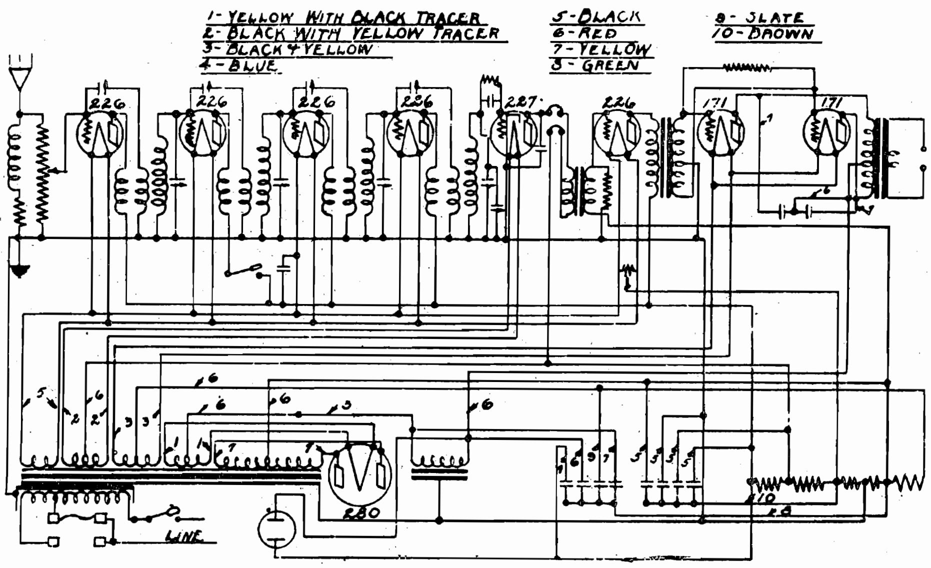
8-AC. MODELS-25, 26, 27, 28, 43, 48

GENERAL MOTORS RADIO CORP.

MODEL Day-Fan 5077
MODEL Day-Fan 5080

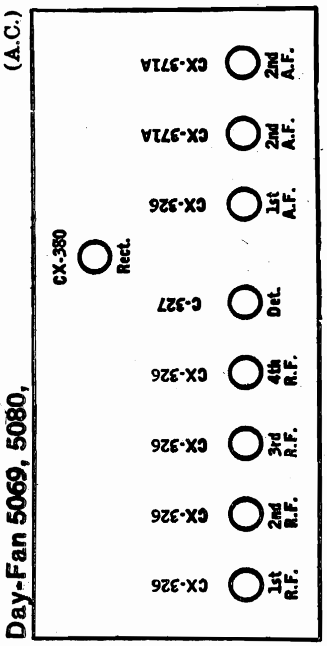


DAY-FAN 8-TUBE — MODEL 5077
(For Use with 200-Volt D. C. Dynamic Speaker)

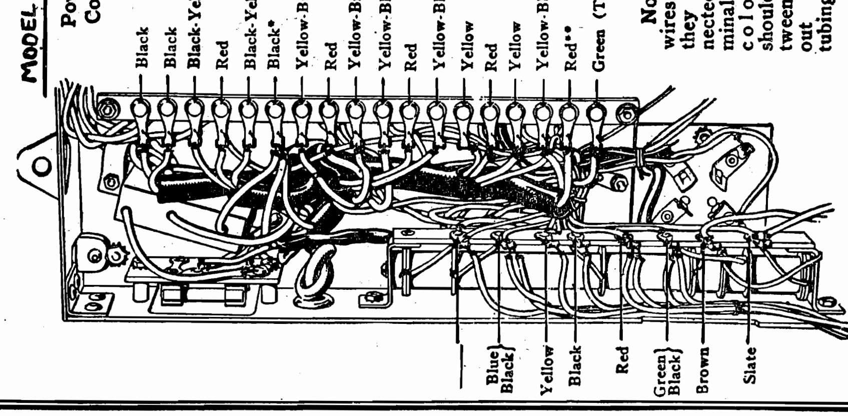


DAY-FAN 8-TUBE — MODEL 5080
(For Use with 110-Volt D. C. Dynamic Speaker)

Day-Fan 5069, 5080, (A.C.)



MODEL 5080
Power Block Connections



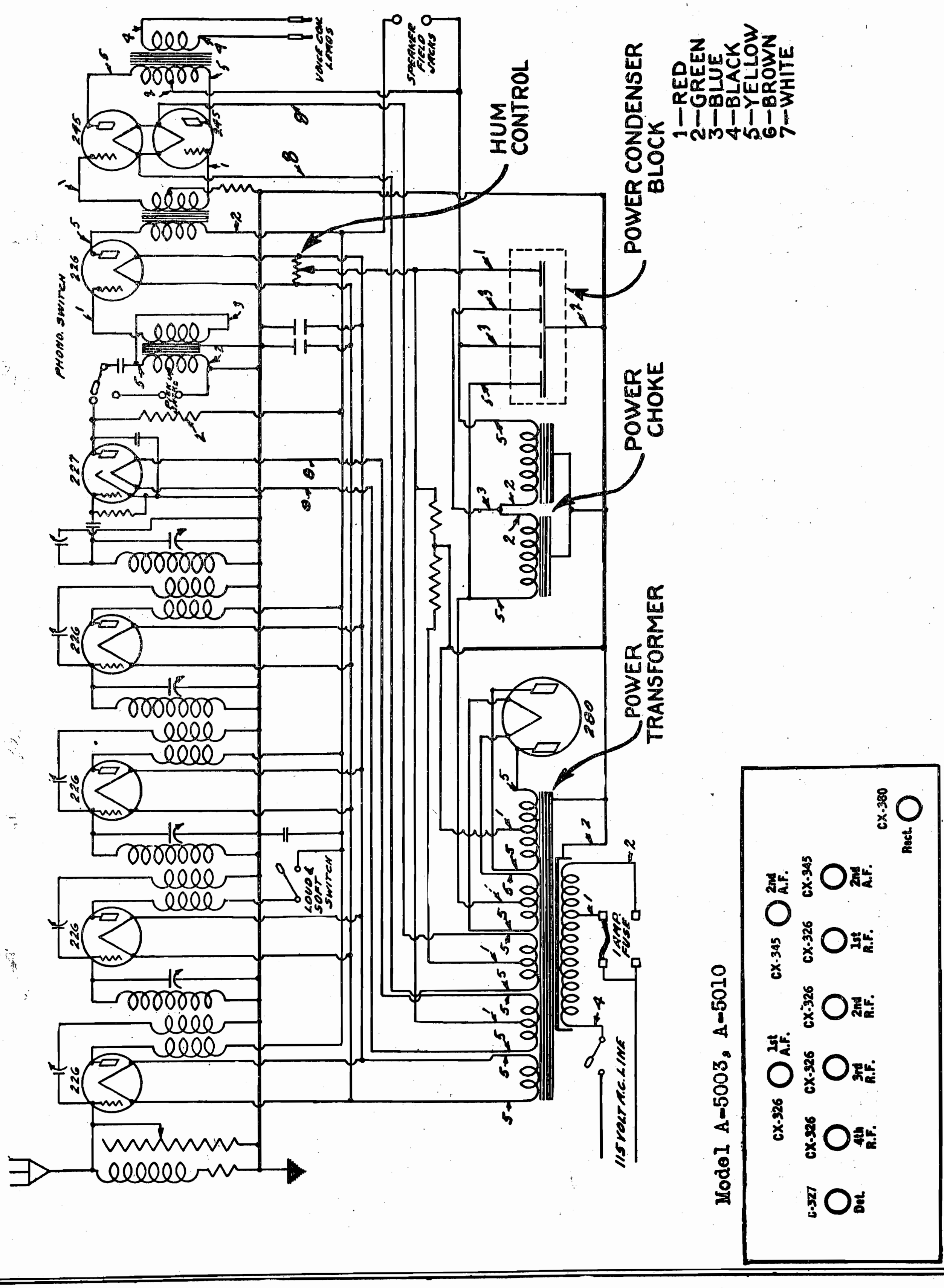
Note — Where two wires are same color they may be connected to either terminal marked that color. Red wire should connect between wires brought out of same large tubing.

Tube	Fil. Vol.	Plate Vol.	Grid Vol.	Plate Current
RF1	1.3	150	9	4.5
RF2	1.3	150	9	4.5
RF3	1.3	150	9	4.5
RF4	1.3	150	9	4.5
Det	2.2	30	**	1.7
AB1	1.3	130	5	4.5
PP1	2.25	235	7 see note	27.5
PP2	2.25	235	7 see note	27.5

Low output tube bias due to resistance in grid circuit.

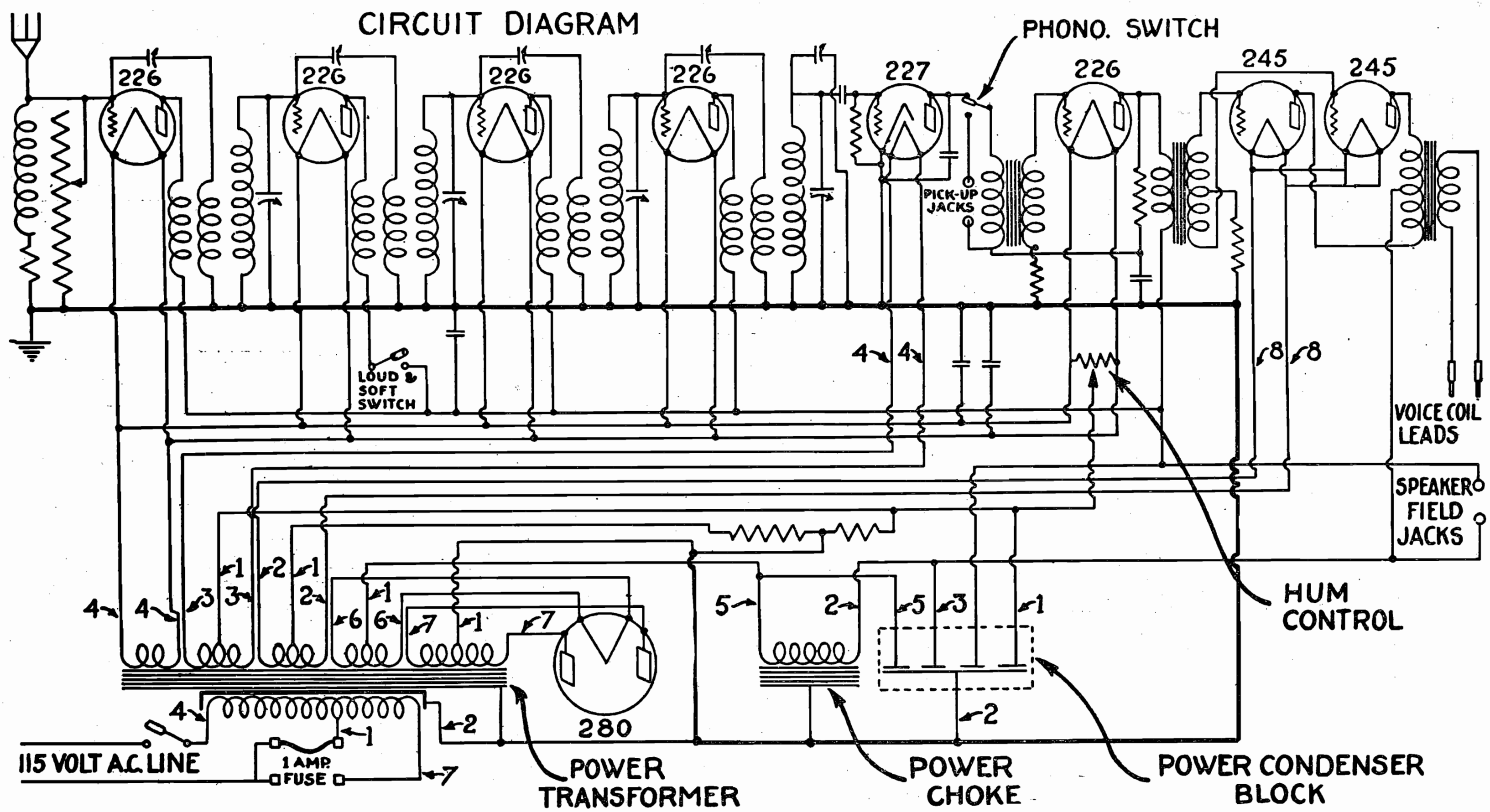
GENERAL MOTORS RADIO CORP.

MODEL Day-Fan A-5003
A-5010



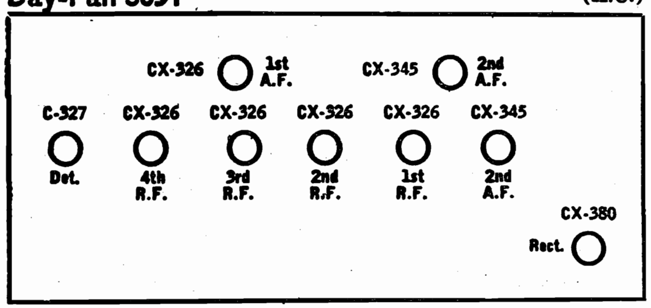
GENERAL MOTORS RADIO CORP. MODEL Day-Fan 5091

CIRCUIT DIAGRAM



1—RED
2—GREEN
3—BLUE
4—BLACK
5—YELLOW
6—BROWN
7—WHITE

Day-Fan 5091 (A.C.)



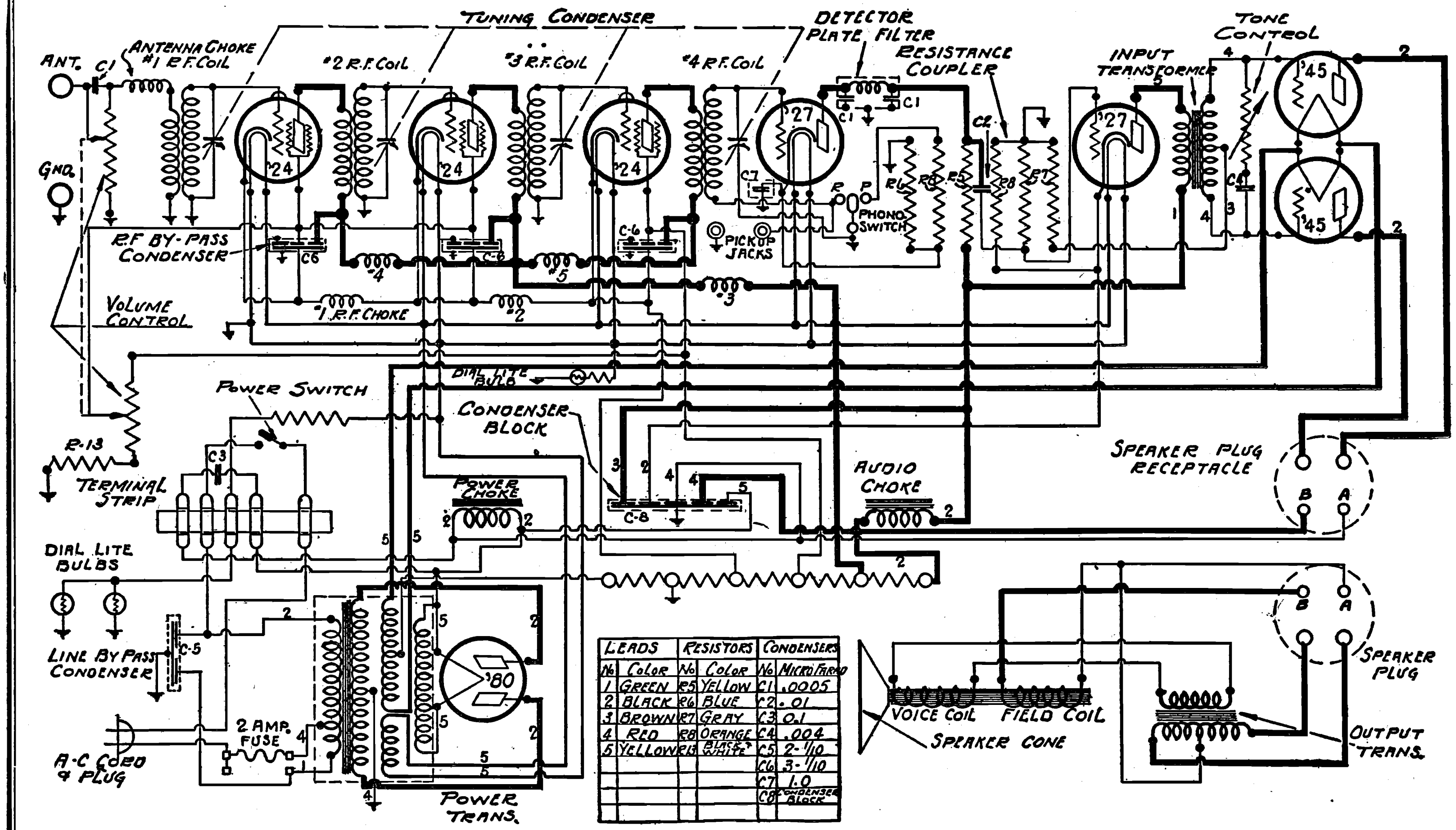
DAY-FAN—Model 5091
Line Voltage 120—Set on 120 Volt Tap—Volume Control Position Max
Note: "C" Bias Voltage Reading on Audio tubes is low due to the current draw of the set tester and high resistances in the set.

Tube No. in Order ①	Type of Tube ②	Position of Tube 1st RF Det. etc ③	Readings, Plug in Socket of Set: Tube Out: A Volts ④	B Volts ⑤	Tube in Tester: A Volts ⑥	B Volts ⑦	C Volts (Control Grid) ⑧	Cathode-Heater Volts ⑨	Normal Plate M.A ⑩	Plate M.A Grid Test ⑪	Plate Change M.A. ⑫	Screen Grid Volts ⑬
1	226	1st RF	1.5	140	1.4	132	10	-	5	9	4	-
2	226	2nd RF	1.5	140	1.4	132	10	-	5	9	4	-
3	226	3rd RF	1.5	140	1.4	132	10	-	5	9	4	-
4	226	4th RF	1.5	140	1.4	132	10	-	5	9	4	-
5	227	Det.	2.6	112	2.3	30	0	10	2	2	0	-
6	226	1st AF	1.5	127	1.4	117	6.5	-	4.5	6.5	3	-
7	245	PP	2.6	260	2.4	245	11.5	-	25	29	4.5	-
8	245	PP	2.6	260	2.4	245	11.5	-	25	29	4.5	-
9	280	Rect.	5.8		4.9				90			

DAY-FAN
CHASSIS MODEL 5091
1929 – 1930

MODEL 120,130,140
Below Serial
29100A-1700B

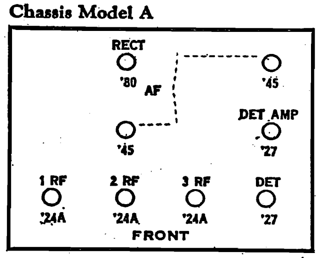
GENERAL MOTORS RADIO CORP



LEADS		RESISTORS		CONDENSERS	
No	Color	No	Color	No	Micro Farad
1	GREEN	R5	YELLOW	C1	.0005
2	BLACK	R6	BLUE	C2	.01
3	BROWN	R7	GRAY	C3	0.1
4	RED	R8	ORANGE	C4	.004
5	YELLOW	R13	BLACK & WHITE	C5	2-1/10
				C6	3-1/10
				C7	1.0
				C8	CONDENSER BLOCK

Circuit Diagram of Chassis with Serial Numbers Below 29100A and 1700B.

Chassis Model A



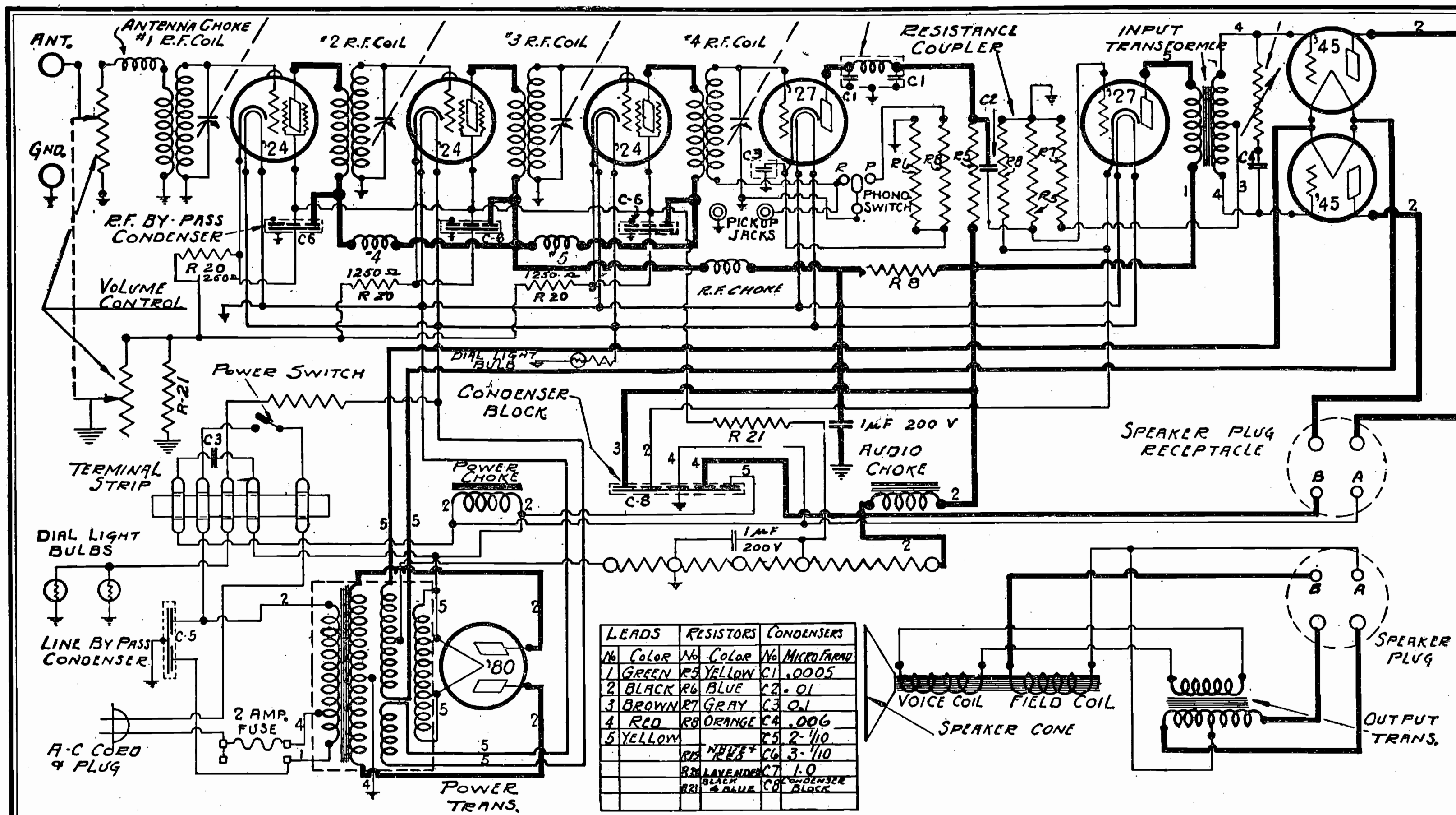
Models 120, 130 & 140

(Chassis Models "A" and "B")

TUBE NO. IN ORDER TESTED (1)	TYPE OF TUBE (2)	POSITION OF TUBE IN SET (3)	METER READINGS WITH JEWELL TEST PLUG IN SOCKET OF SET: OPERATING VOLTAGES: FILAMENT OR HEATER (4)	PLATE OR ANODE (5)	CONTROL GRID—SPACE GD+ (6)	NORMAL GRID—SCREEN GD+ (7)	CATHODE TO HEATER (8)	MILLIAMPERES: SCREEN GD L. H. '80 PLATE (9)	PLATE R. H. '80 PLATE (10)	TUBE TEST (11)	PLATE CURRENT CHANGE (12)
1	24	1 R.F.	2.2	140	-2	60	+2	-	1.5	2.5	1
2	24	2 R.F.	2.2	140	-2	-60	+2	-	1.5	2.5	1
3	24	3 R.F.	2.2	140	-2	60	+2	-	1.5	2.5	1
4	27	Det.	2.2	100	-	-15	+15	-	.5	2.5	2
5	27	1 A.F.	2.2	135	-	-2	+8	-	4.5	5.8	1.3
6	45	2 A.F.	2.3	235	-	-25	-	-	25	29	4
7	45	2 A.F.	2.3	235	-	-25	-	-	25	29	4
8	80	Rect.	4.5	-	-	-	-	45	45	-	-

MODEL 120,130,140
Between Serial
29100A-62100A
1700B-1946B

GENERAL MOTORS RADIO CORP.



LEADS		RESISTORS		CONDENSERS	
No	Color	No	Color	No	Micro Farad
1	GREEN	R5	YELLOW	C1	.0005
2	BLACK	R6	BLUE	C2	.01
3	BROWN	R7	GRAY	C3	0.1
4	RED	R8	ORANGE	C4	.006
5	YELLOW			C5	2-1/10
		R19	WHITE + RED	C6	3-1/10
		R20	LAVENDER	C7	1.0
		R21	BLACK & BLUE	C8	CONDENSER BLOCK

Circuit Diagram of Chassis with Serial Numbers Between 29100A and 62100A; and 1700B and 1946B.

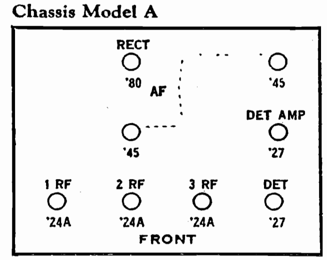
Models 120, 130 & 140

(Chassis Models "A" and "B")

Tube	Fil. V.	Pl. V.	C.G.Volts	S.G.Volts	Cath. Volts	Pl. Cur. (MA)
RF-1	2.3	150	- 3	55	3	2.
RF-2	2.3	150	- 3	55	3	2.
RF-3	2.3	150	- 3	55	3	2.
Det.	2.3	100	- 8	..	10	.2
AF-1	2.3	140	- 3	..	10	4.
AF-2	2.3	220	-12	..	..	30.
AF-2	2.3	220	-12	..	..	30.
Rect	4.5	...	...	..	..	100.

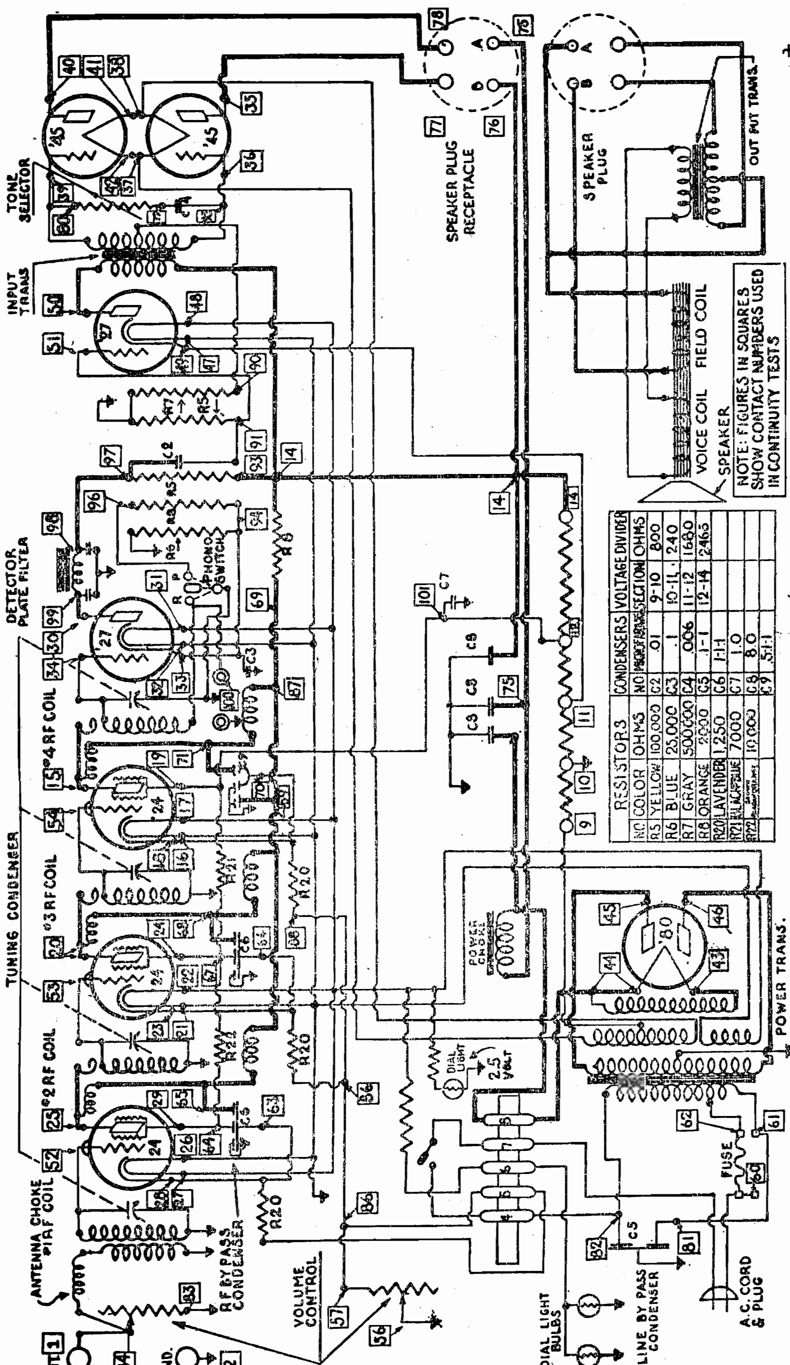
Line Voltage - 110 Volume Control on Full

Chassis Model A

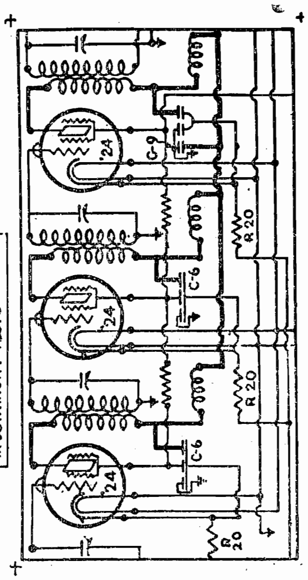


MODEL 120,130,140
Above Serial
62100A-1964B

GENERAL MOTORS RADIO CORP.



RESISTORS			CONDENSERS		VOLTAGE DIVIDER	
NO	COLOR	OHMS	NO	MICROFARADS	SECTION	OHMS
R5	YELLOW	100,000	C2	.01	9-10	800
R6	BLUE	25,000	C3	.1	10-11	240
R7	GRAY	500000	C4	.006	11-12	1680
R8	ORANGE	2000	C5	1-1	12-14	2463
R20	LAVENDER	1,250	C6	1-1-1		
R21	BLACK/BLUE	7000	C7	1.0		
R22	[illegible]	10,000	C8	8.0		
			C9	.5-1-1		



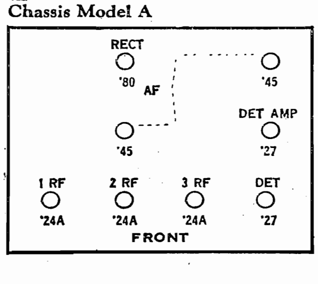
The above diagram shows the circuits of sets using the R. F. Coils with the single turn primaries. The insert shows the part of the circuit which is different from the above, in sets using the original type R. F. Coils.

Sets with Serial Numbers Above 62100A

Type of Tube	Position of Tube	TUBE IN SET ANALYSER: "A" Volts	"B" Volts	"C" Volts Control Grid	Screen Volts	Cathode Volts	Normal Plate MA	Grid Change
'24	1st R. F.	2.3	170	—3	60	3	2.	4.
'24	2nd R. F.	2.3	170	—3	63	3	2.	4.
'24	3rd R. F.	2.3	170	—3	75	3	2.	4.
'27	Detector	2.3	100	—12	....	12	.2	.2
'27	1st A. F.	2.3	165	—3	....	12	4.	7.
'45	2nd A. F.	2.3	235	—12	....	....	30.	35.
'45	2nd A. F.	2.3	235	—12	....	....	30.	35.
'80	Rectifier	4.5	......	....	....	....	100.	....

Line Voltage 110 Volume Control on Full

Chassis Model A



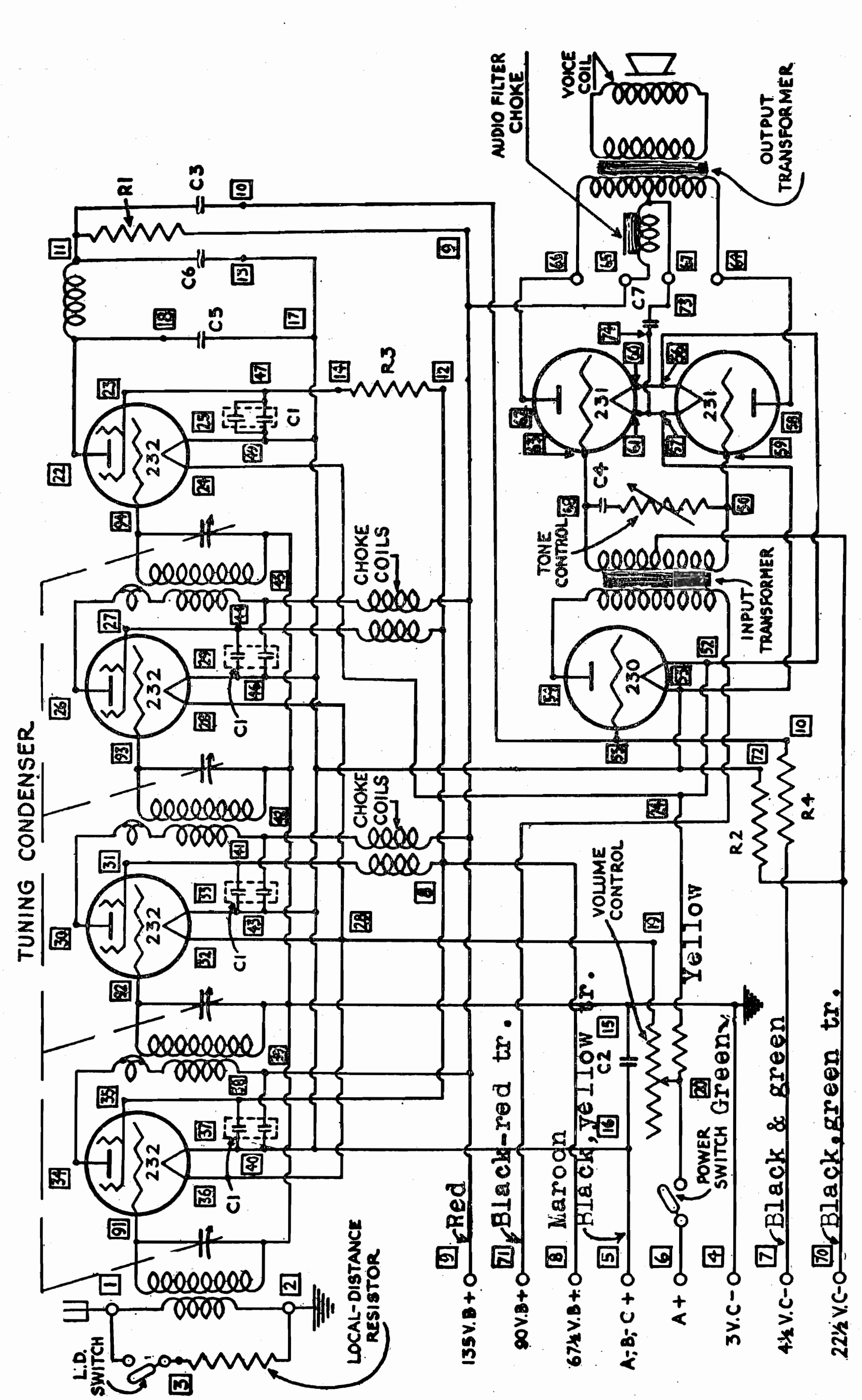
Models 120, 130 & 140

(Chassis Models "A" and "B")

Circuit Diagram of Chassis with Serial Numbers Above 62100A and 1964B.

GENERAL MOTORS RADIO CORP.

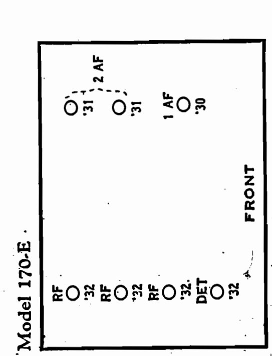
MODEL 170-(E)
Schematic



Tube	Fil	Plate	Screen	Plate Crnt.
1 RF	1.7	140	68	1.2 ma
2 RF	1.7	140	68	1.4
3 RF	1.7	140	68	1.5
Det	1.7	80	10	.2
1 AF	1.7	85	-	1.5
2 AF	1.7	135	-	7.

RESISTORS				
NO.	BODY	END	BAND	OHMS
R1	BROWN	BLACK	YELLOW	100,000
R2	RED	BLACK	YELLOW	200,000
R3	GREEN	BLACK	YELLOW	500,000
R4	RED	BLACK	GREEN	2,000,000

CONDENSERS	
NO	MICROFARADS
C1	.1-.1
C2	.5
C3	.01
C4	.002
C5	.0005
C6	.0001
C7	1.0

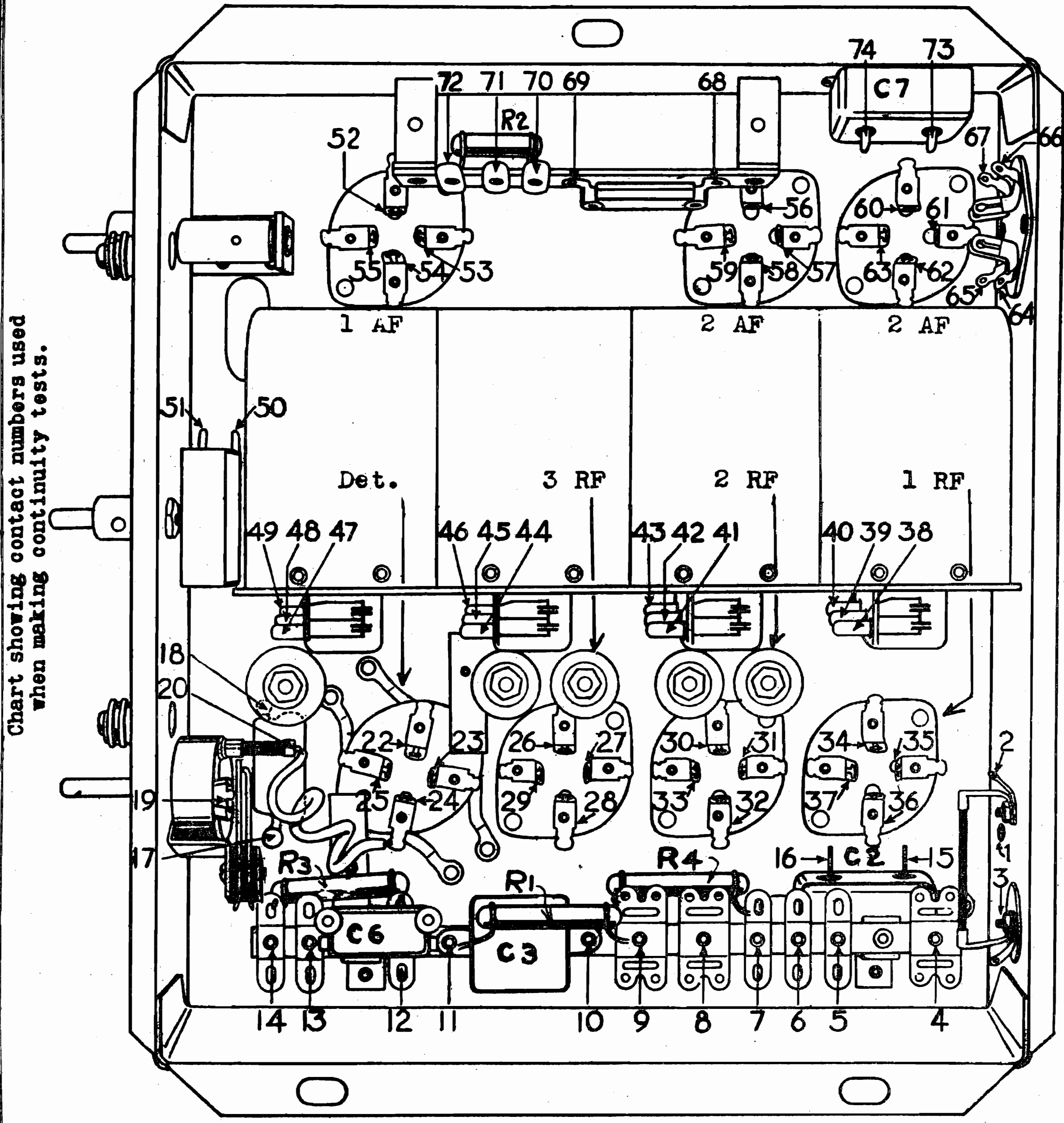


Model 170, Battery Powered Receiver

(Chassis Model E)

MODEL 170-(E)
Chassis

GENERAL MOTORS RADIO CORP.



NOTE: NOS. 91, 92, 93 & 94 ARE GRID CAPS OF 1 ST, 2ND & 3RD R.F. TUBES AND DETECTOR TUBE.

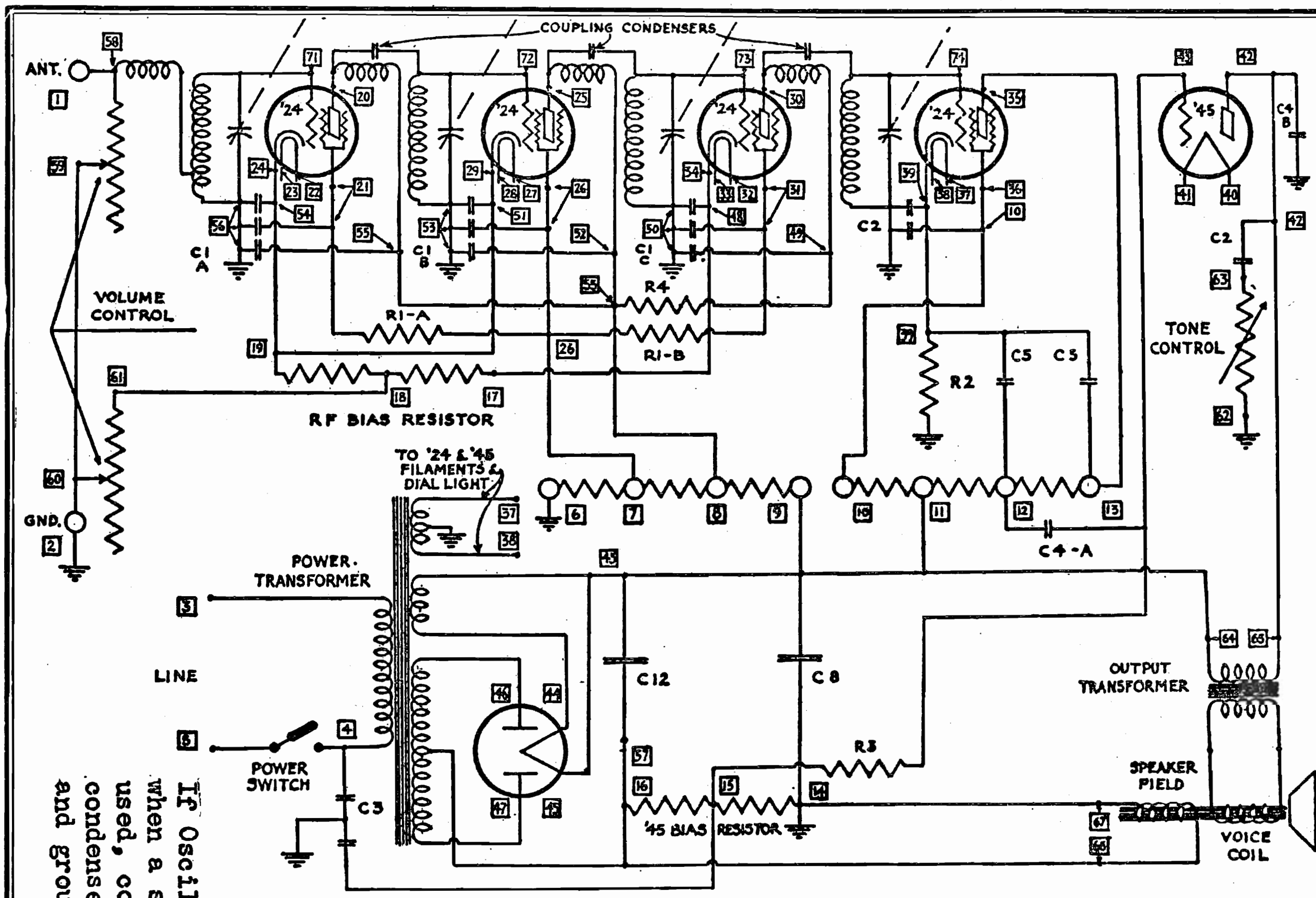
Model 170 Receiver
Chassis Model E
(PIONEER BATTERY POWERED RECEIVER)

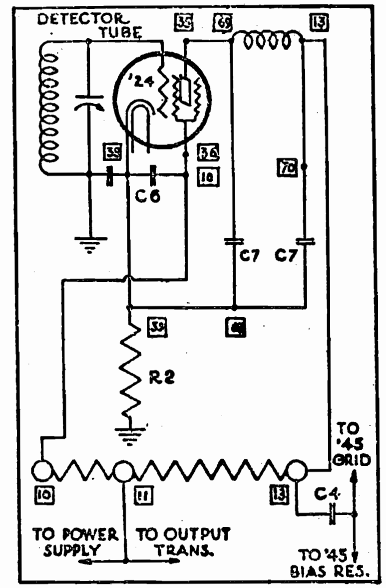
FILTER UNIT

Filter Units, Part No. 1202735, have been supplied to the field with instructions for installation on Model "E" Chassis with Serial Nos. below 3205-E only. All receivers above 3205-E have the Filter Units incorporated in the chassis and speaker. These parts include the Audio Filter Choke which is mounted on the speaker and one 1 Mfd. condenser located in the Chassis. On sets with Serial Numbers below 3205-E, use No. 1951 Speaker. Sets with Serial Numbers above 3205-E use Speaker No. 1952.

GENERAL MOTORS RADIO CORP.

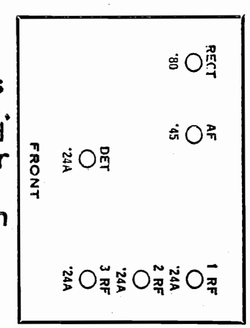
MODEL 110,180,190
Little General





The above insert shows a part of the Detector Circuit for Chassis with serial numbers above 23156 MA and 1611 MB — In the Chassis with Circuits as shown above, the Detector Plate Filter Circuit includes a choke coil in the Plate Circuit instead of one section of the Voltage Divider as in previous Chassis.

Models 110, 180, 190



FIXED CONDENSERS	
NO.	CAPACITY
C-1	.1-.1-.1 Mfd.
C-2	.5-.1-.25 Mfd.
C-3	.5-.1 Mfd.
C-4	.01 Mfd.
C-5	.00025 Mfd.
C-6	.5-.5 Mfd.
C-7	.0001 Mfd
C-8	8.0 Mfd.
C-12	12.0 Mfd.

SINGLE FIXED RESISTORS				
NO.	OHMS RESISTANCE	COLOR BODY	END	DOT
R 1	15,000	Brown	Green	Orange
R 2	25,000	Red	Green	Orange
R 3	500,000	Green	Black	Yellow
R 4	1,000	Insulated Resistor Wire		

VOLTAGE DIVIDER	
SECTION	RESISTANCE
6-7	25,000 Ohms
7-8	15,000 Ohms
8-9	6,000 Ohms
10-11	2 Megohms
11-12	250,000 Ohms
12-13	15,000 Ohms
On chassis with serial numbers above 23156 MA	
11-13	250000 Ohms

'45 BIAS RESISTOR	
SECTION	RESISTANCE
14-15	100,000
~~15-16~~	~~250,000~~
15-16	150,000
R.F. BIAS RESISTOR	
SECTION	RESISTANCE
17-18	1,000
18-19	500

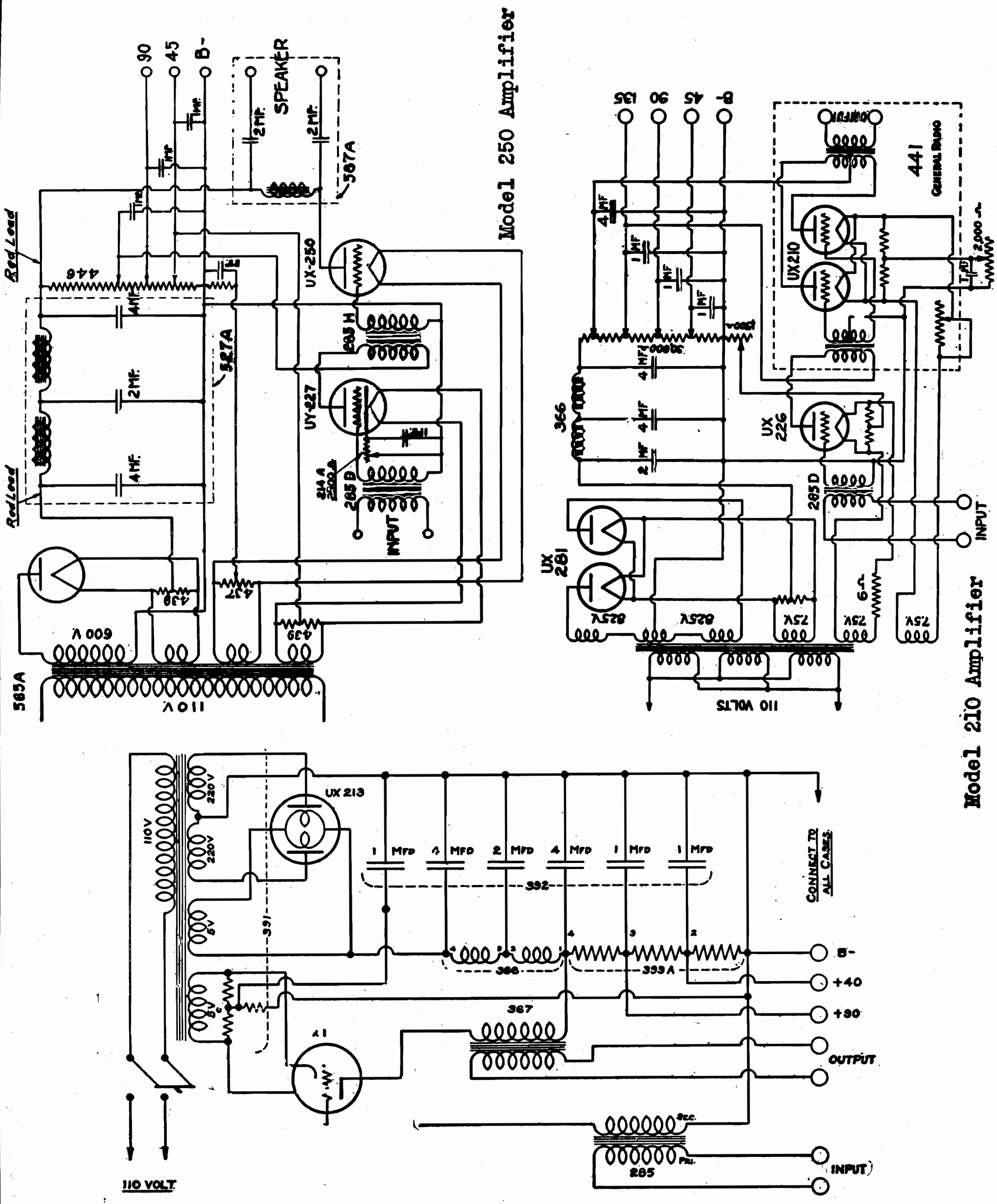
TUBE	TYPE	FIL.	PLATE	CON.GRID	S.GRID	CATHODE	NORMAL MA.	GRID CHANGE
'24	1RF	2.4	165	3.1	80	3	2.5	2.5
'24	2RF	2.4	165	3.1	92	3	2.5	2.5
'24	3RF	2.4	160	3.1	82	3	2.5	2.5
'24	DET	2.5	100	6.5	12	10	.2	.1
'45	1AF	2.4	225	3.0			20	40
'80	RECT	4.5	360				20	

NOTE: In Chassis with serial numbers above 23156 MA and 1611 MB, the Tone Control Condenser and the Line By-Pass Condenser are included in the same can, with capacities as shown for Condenser No. C 2.

If Oscillation persists when a small aerial is used, connect a .0001 mfd condenser across the aerial and ground posts.

GENERAL RADIO CO

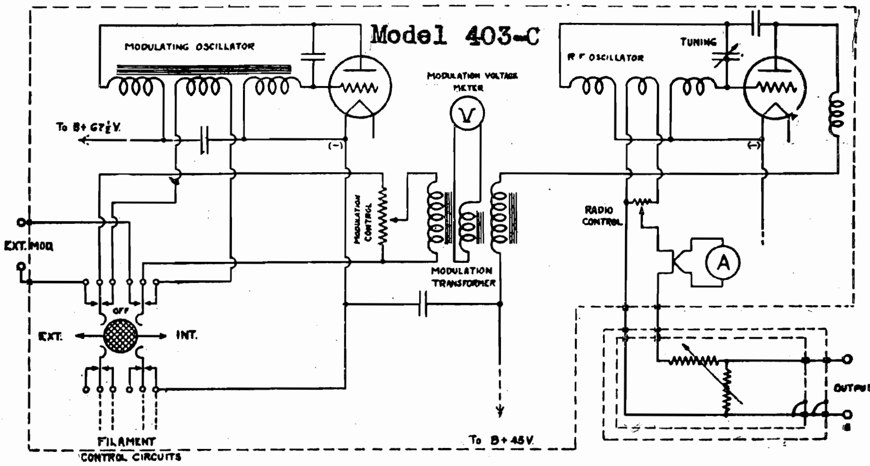
MODEL 250 Amplifier
MODEL 210 Amplifier
MODEL 390 Eliminator



(Showing the schematic diagram of the Type 390 Rectron "B" Eliminator and Power Amplifier)

MODEL 403-C
MODEL 361-B

GENERAL RADIO CO



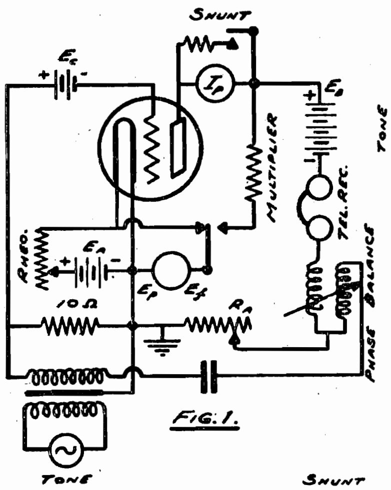


FIG. 1.

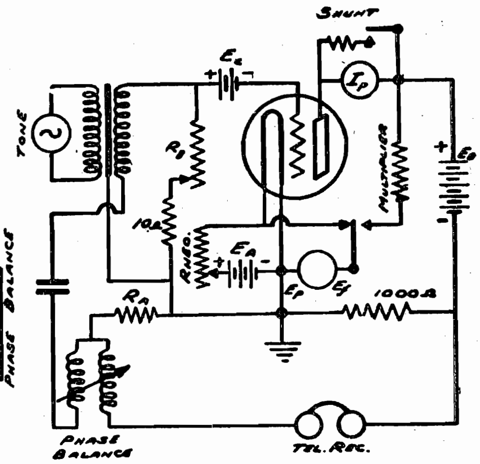


FIG. 2.

Model 361-B

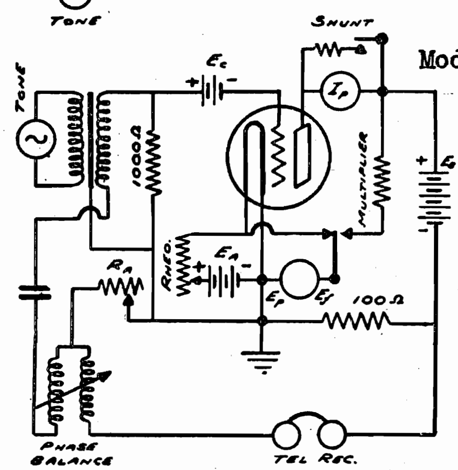


FIG. 3.

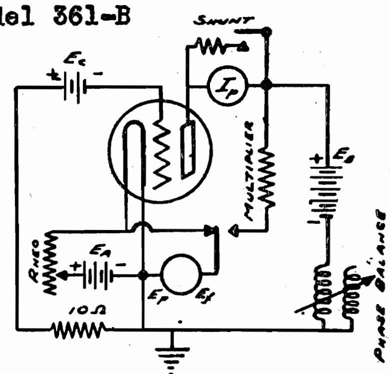


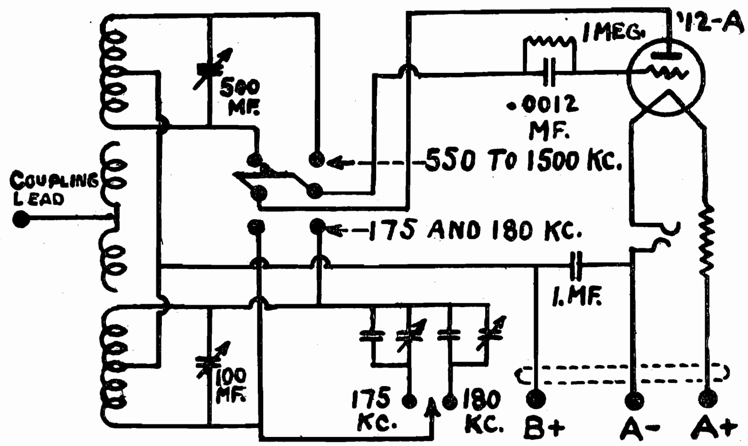
FIG. 4.

Figure 1 Amplification Constant.
Figure 2 Plate Resistance
Figure 3 Mutual Conductance
Figure 4 Static characteristics

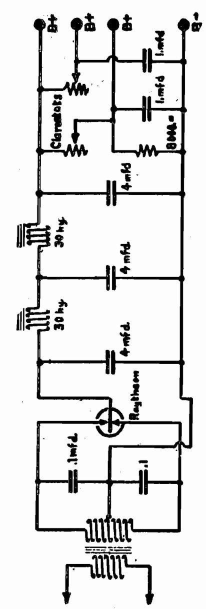
Special adaptors are available for conversion and application of the 361-B bridge to AC tubes.

GENERAL RADIO CO

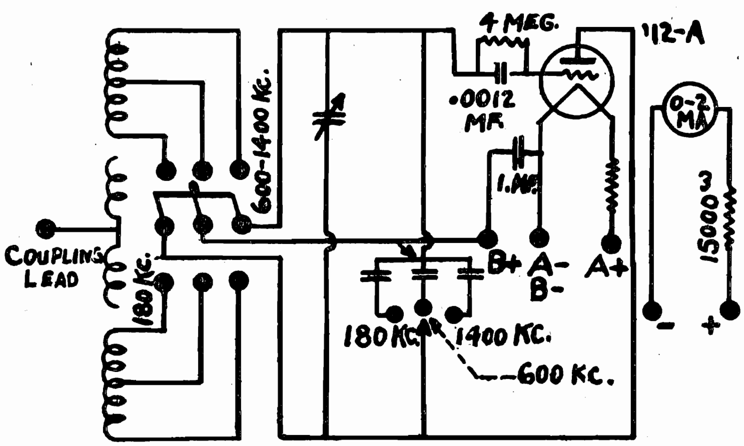
MODEL 360 Oscillator
MODEL 360-A Oscillator
MODEL 320 Oscillator



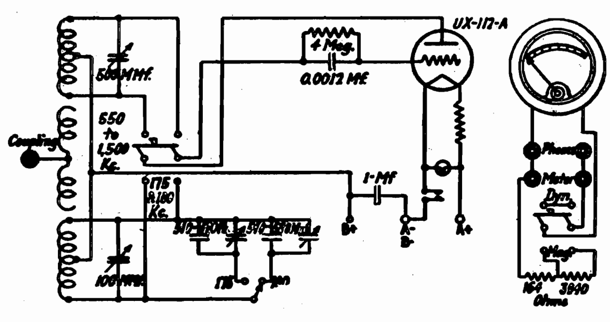
Model 360 Oscillator



GENERAL RADIO ELIMINATOR



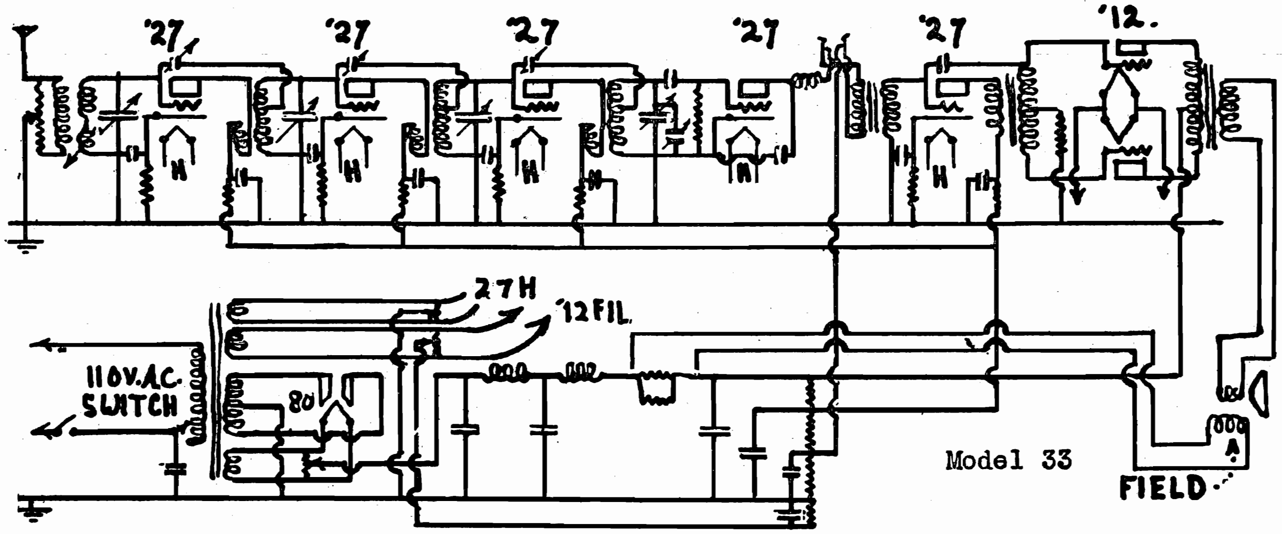
Model 320 Oscillator



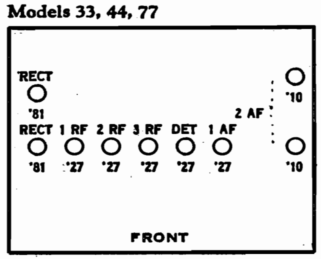
Model 360-A Oscillator

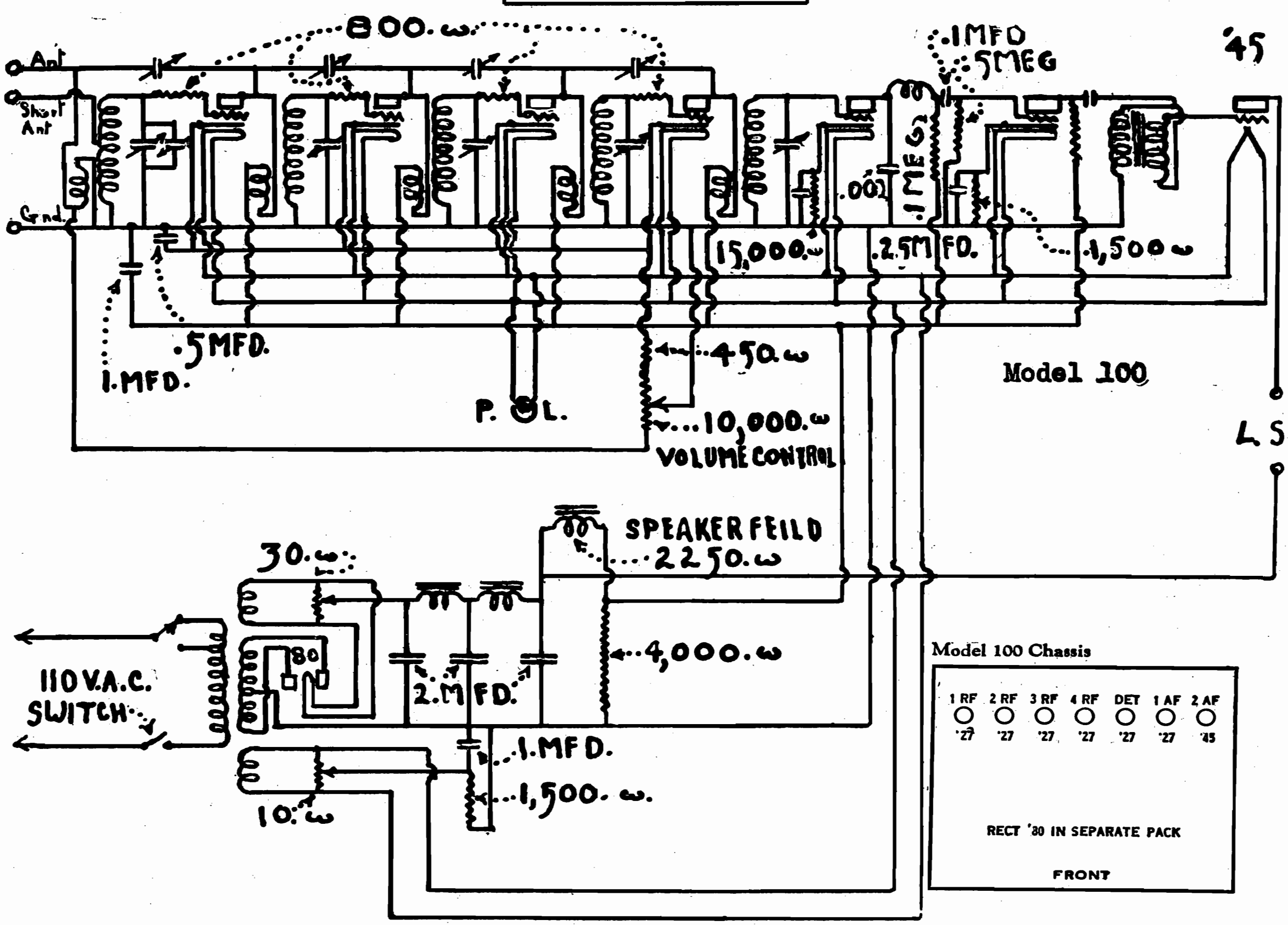
GILFILLAN BROS.

MODEL 33
MODEL 100



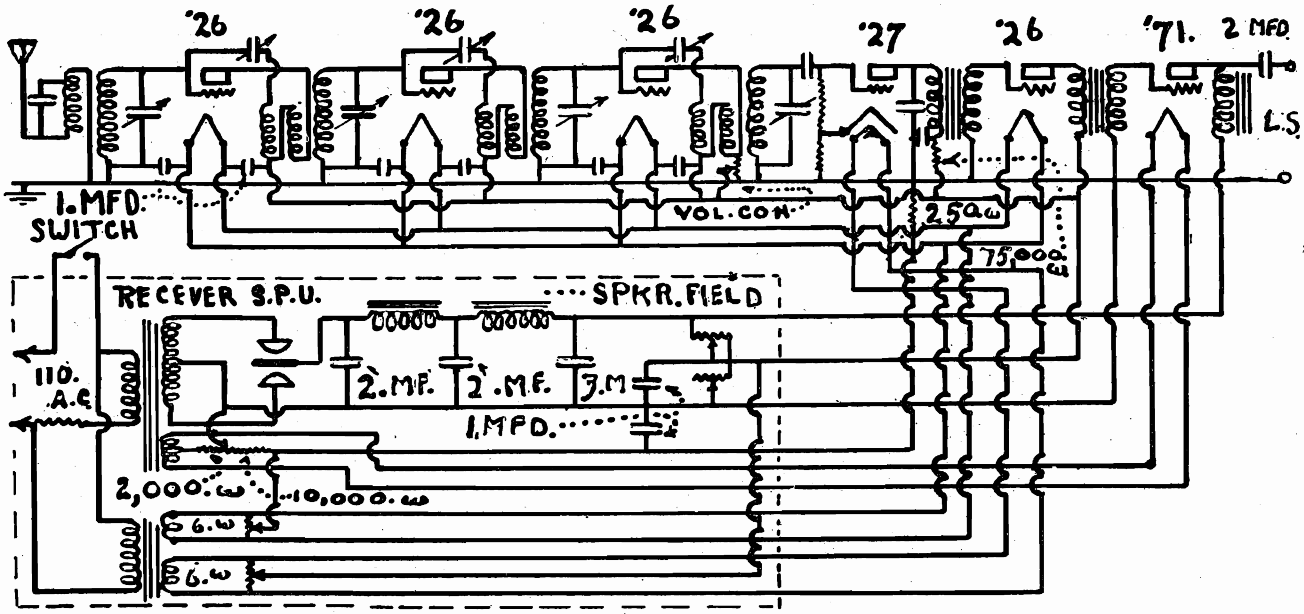
Models 33, 44, 77



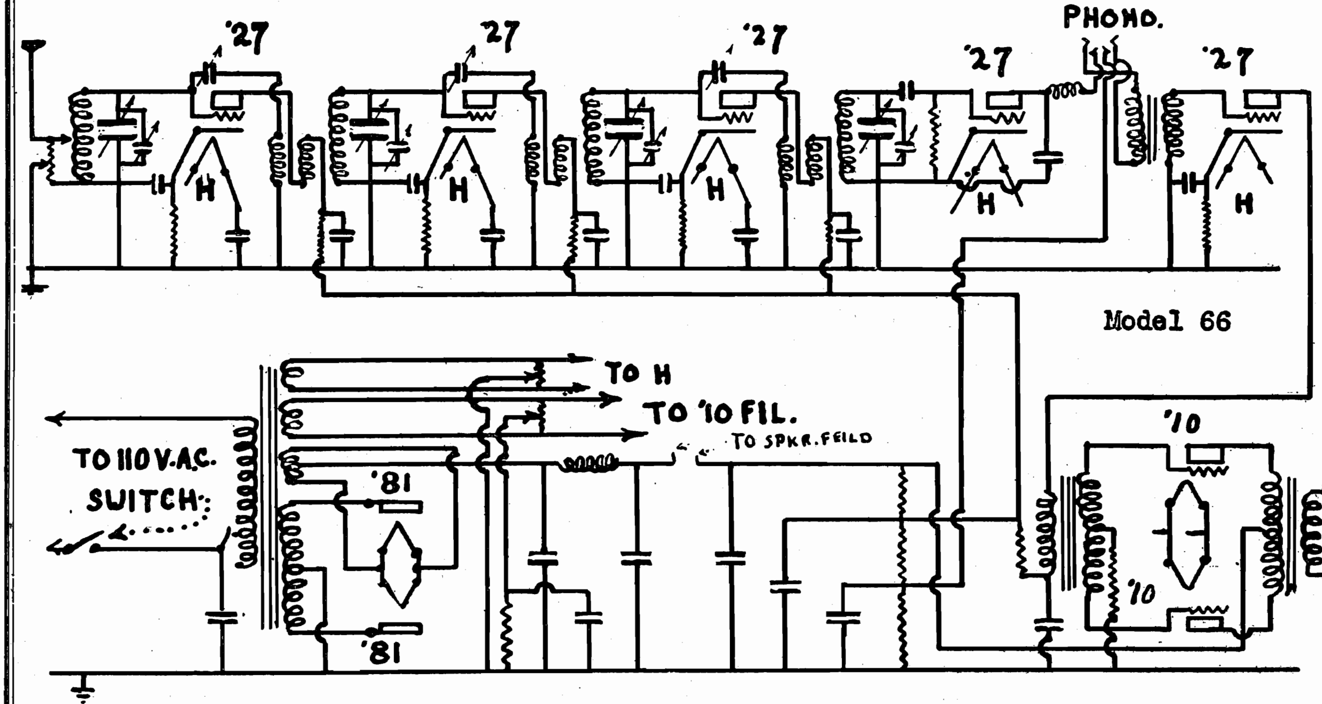


MODEL 60
MODEL 66

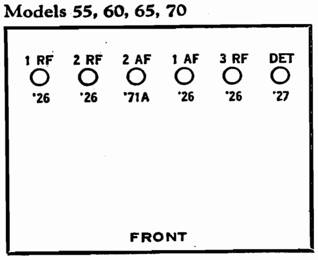
GILFILLAN BROS..



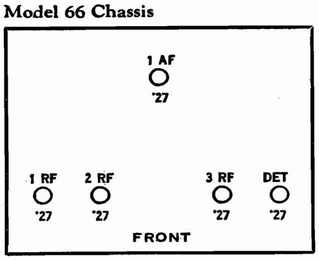
Model 60



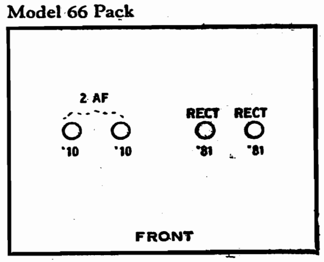
Models 55, 60, 65, 70



Model 66 Chassis

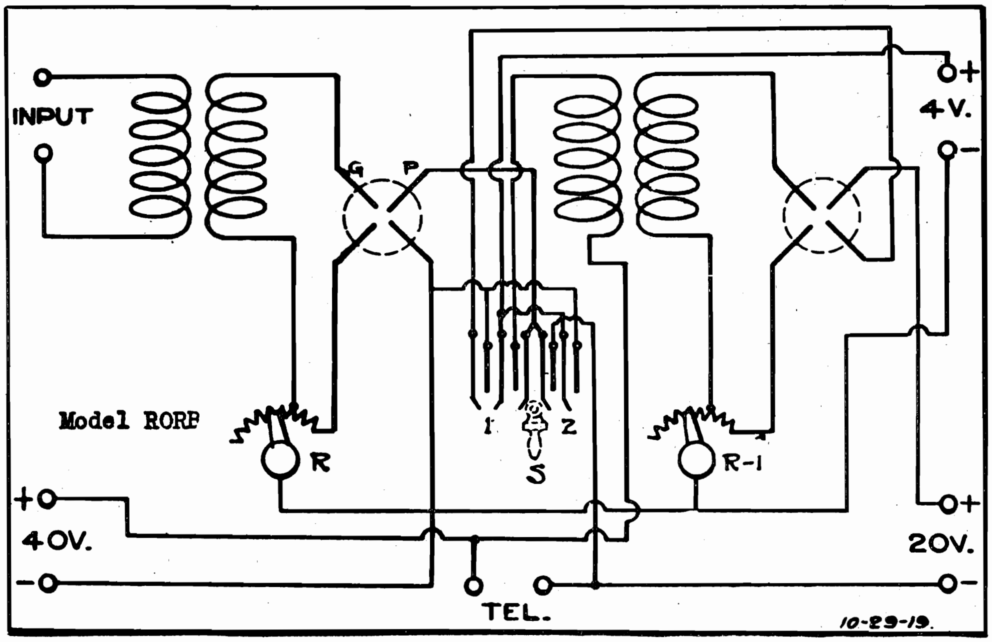


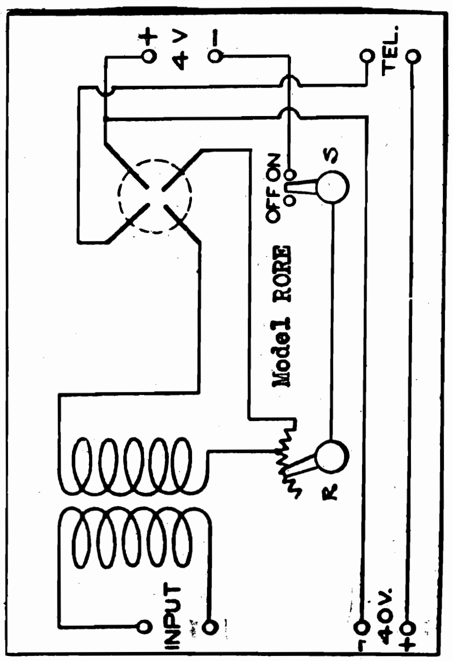
Model 66 Pack

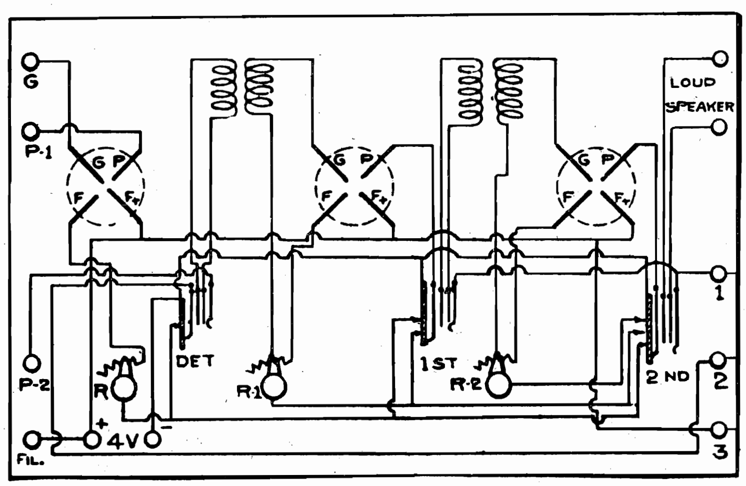


A. H. GREBE & CO.

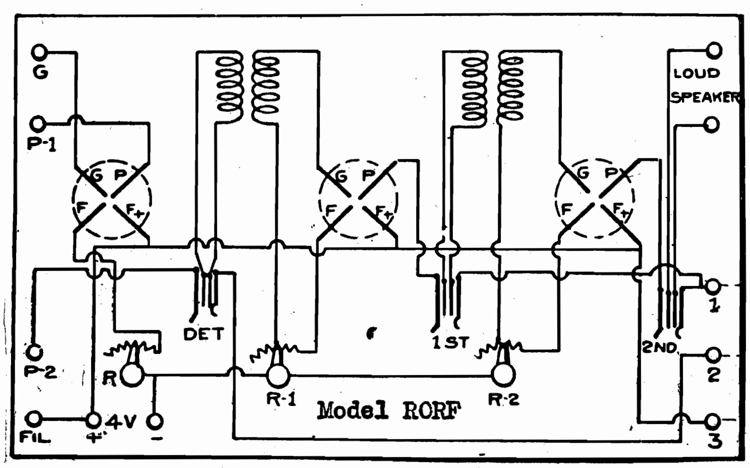
MODEL RORB
MODEL RORD
MODEL RORE
MODEL RORF





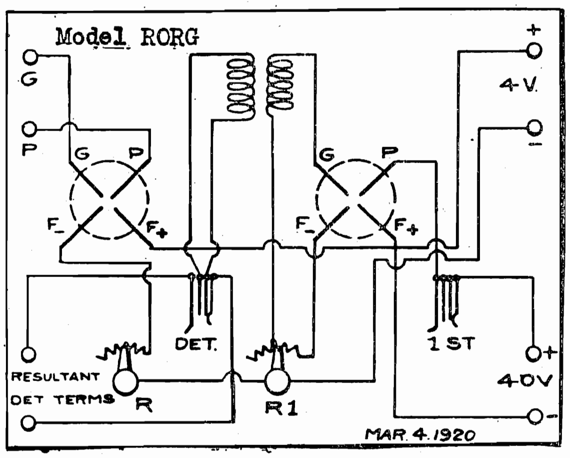


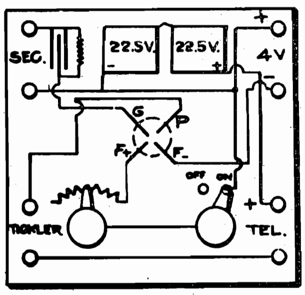
Model RORD

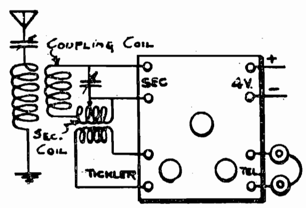


MODEL RORG
MODEL RORH
MODEL RORJ
MODEL RORK
MODEL RORL

A. H. GREBE & CO.

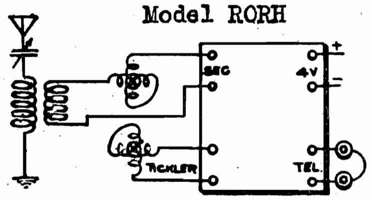




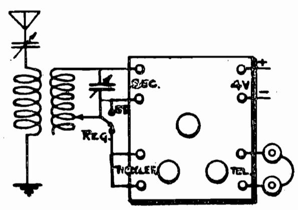


-TICKLER-

Model RORH

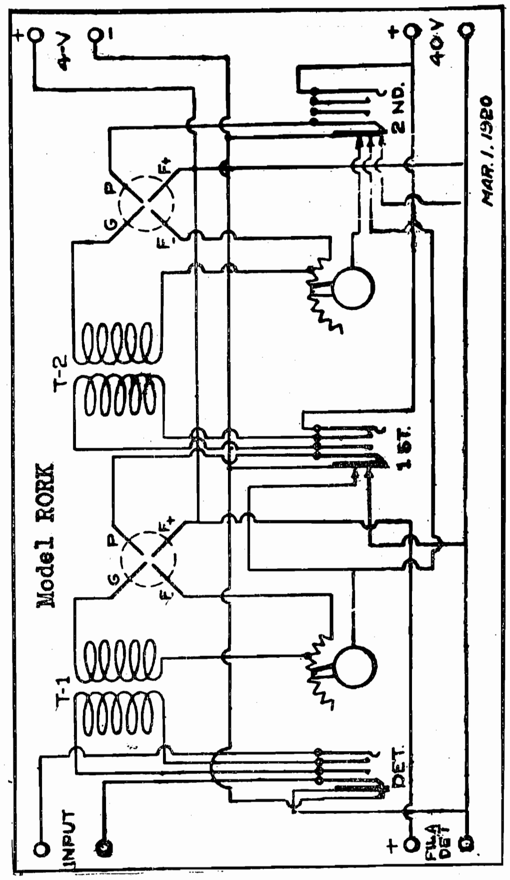


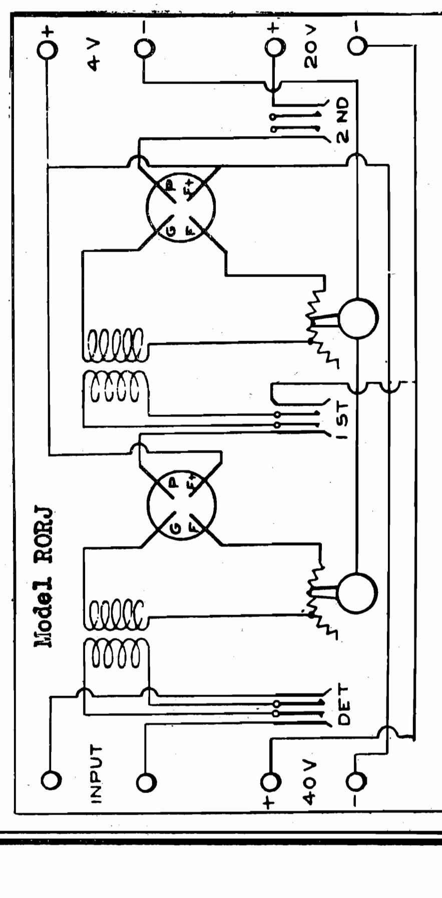
-WING-GRID-LOAD-

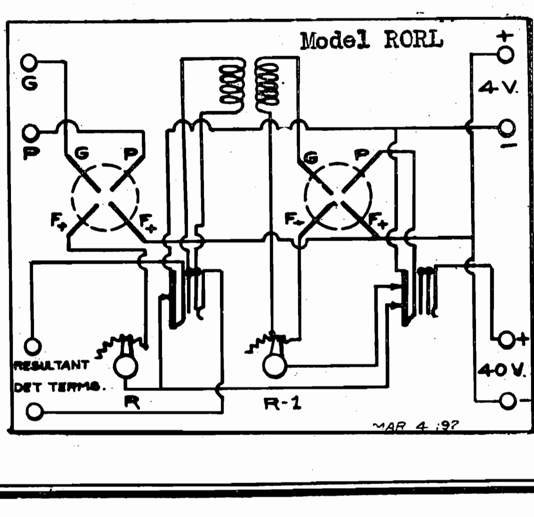


LOOSE COUPLER

FEB 28 1920







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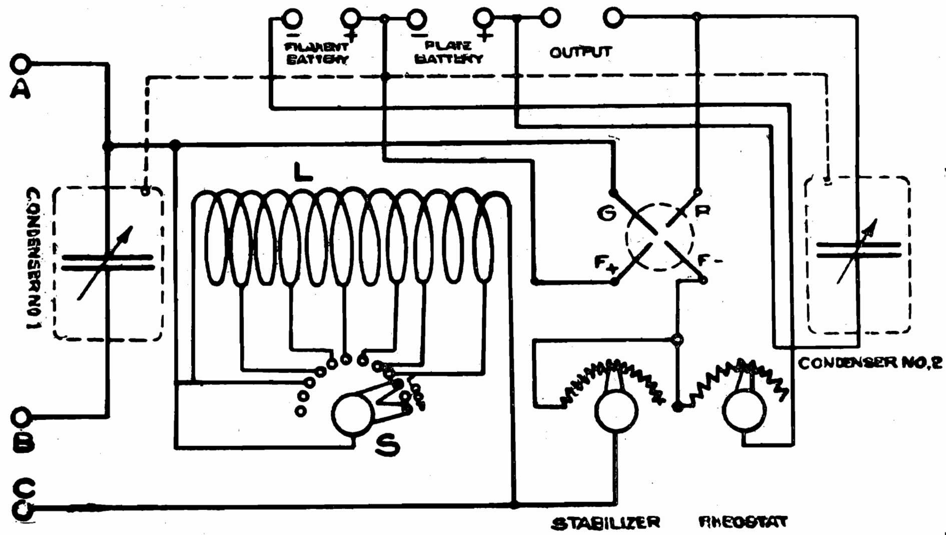
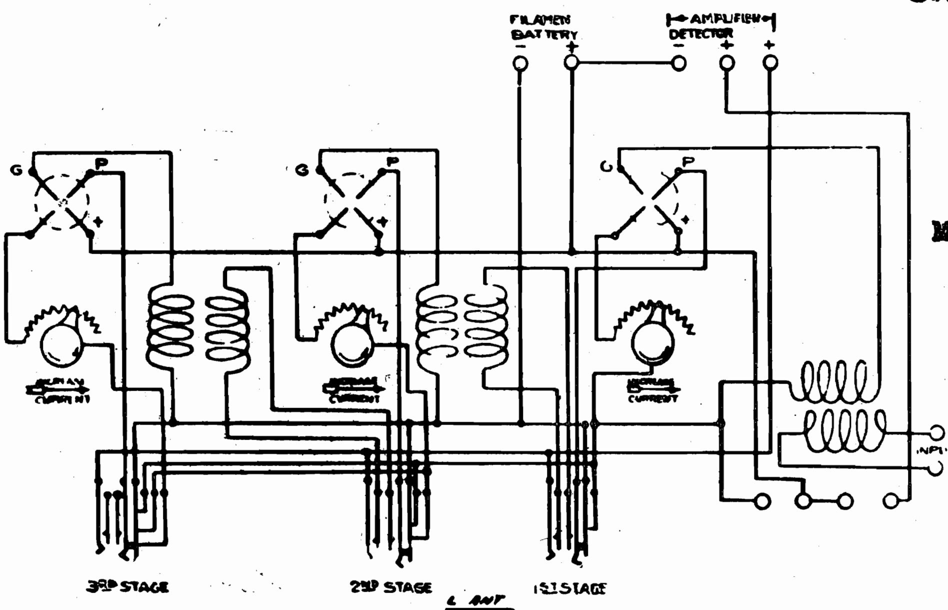
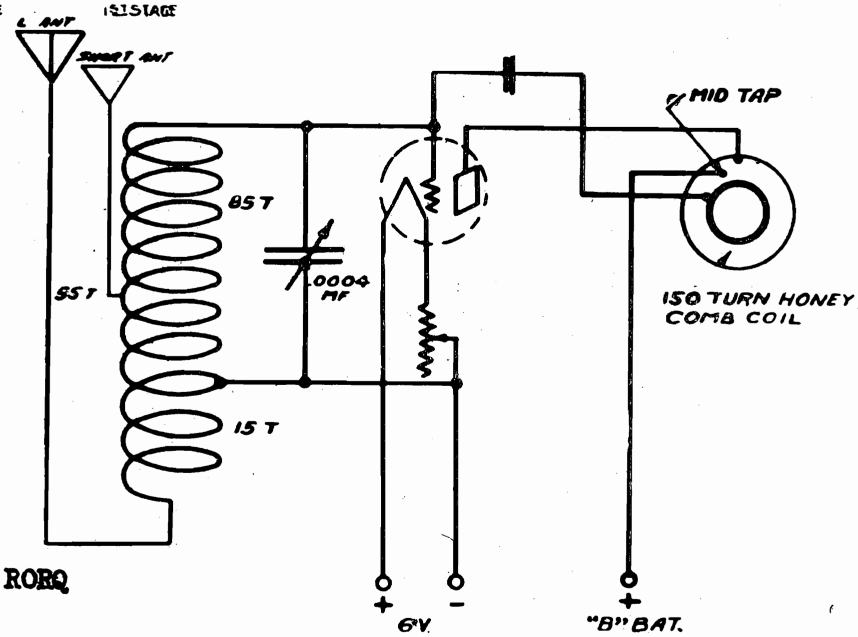
MODEL RORN
MODEL RORO
MODEL RORQ

Model RORN





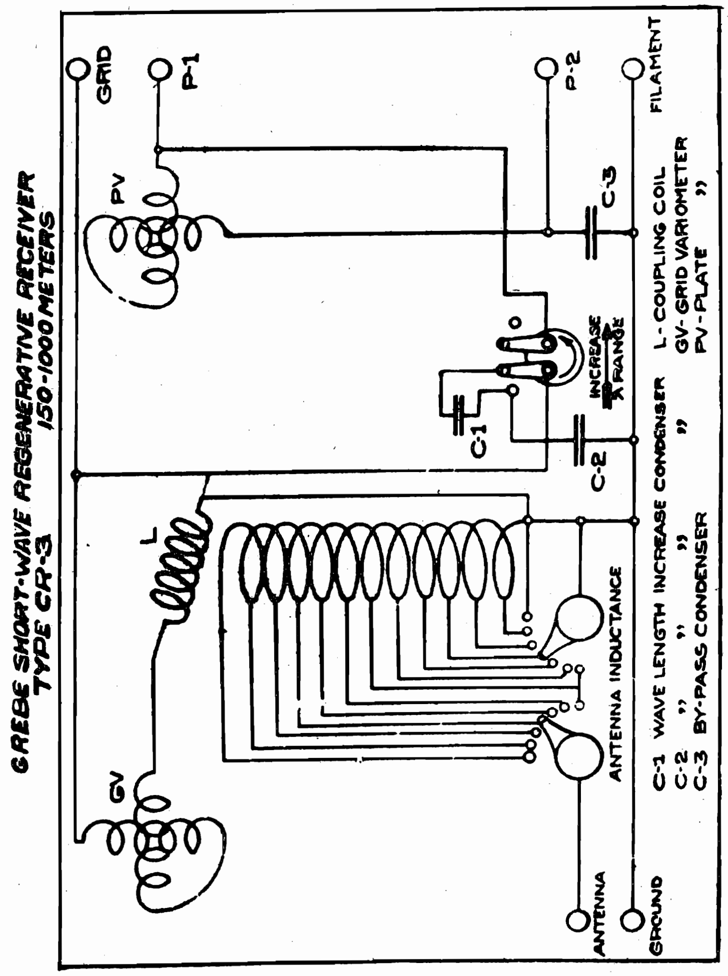
Model RORO

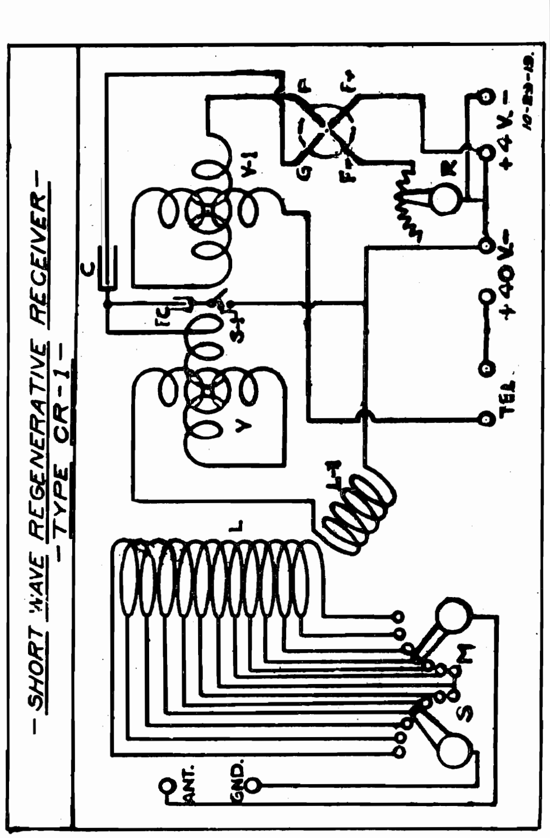


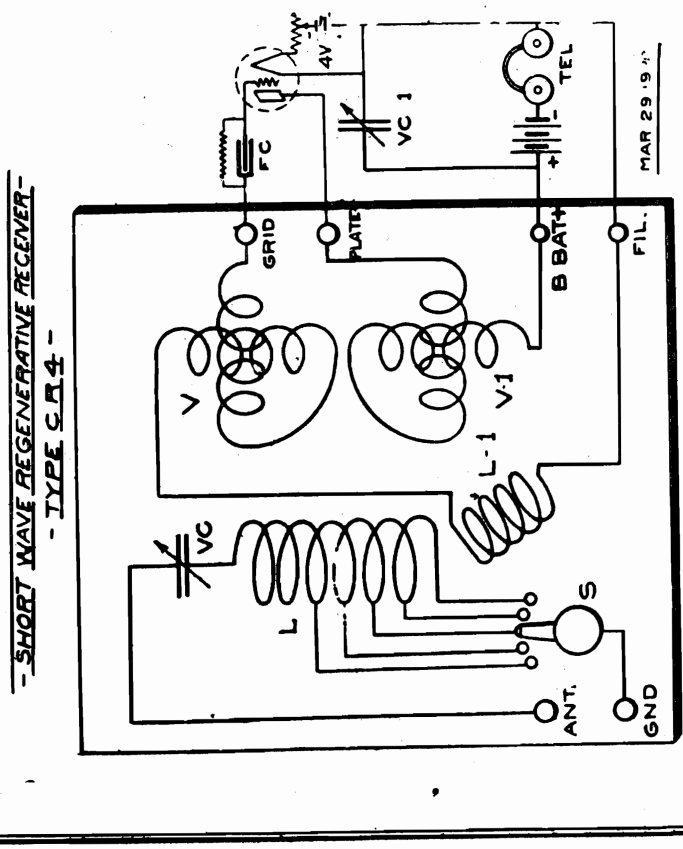
Model RORQ

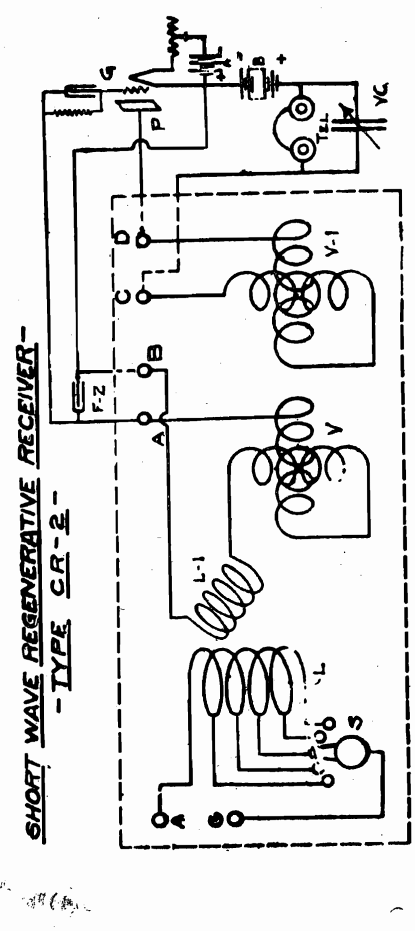
MODEL CR-1 MODEL CR-3
MODEL CR-2 MODEL CR-4

A. H. GREBE & CO.



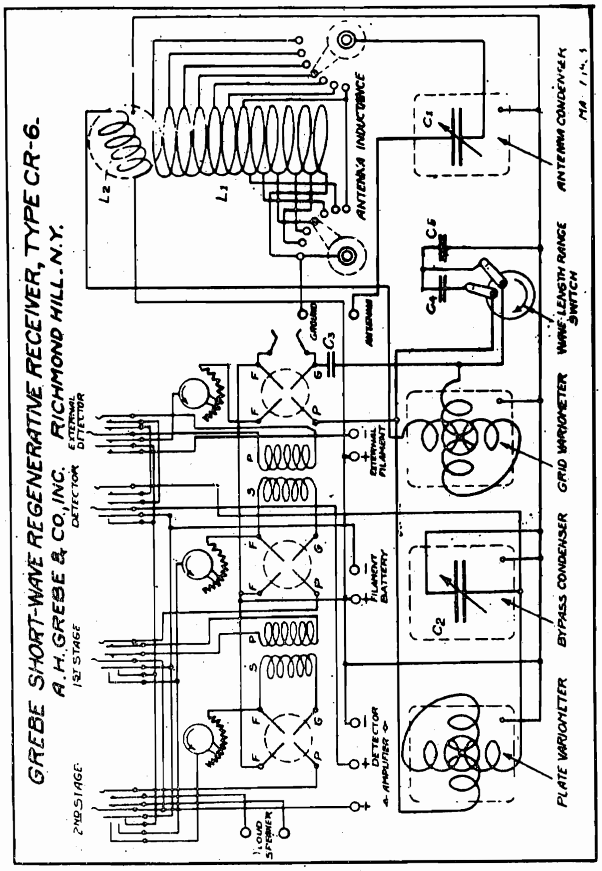


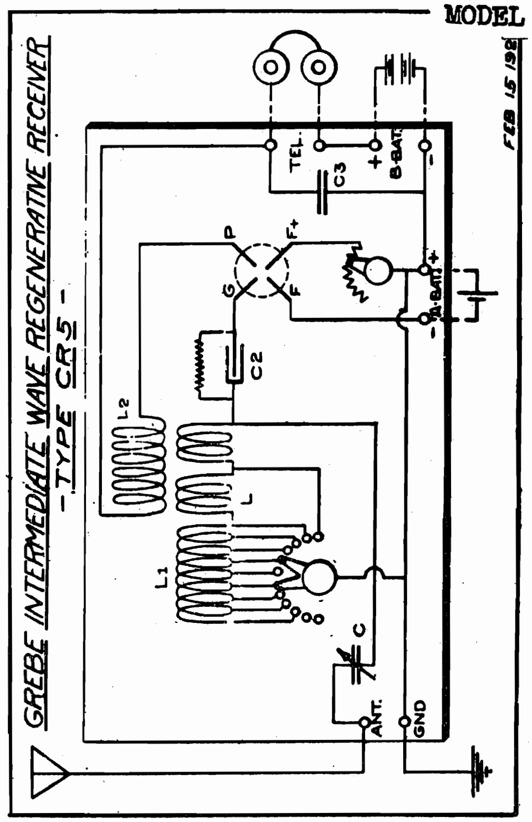


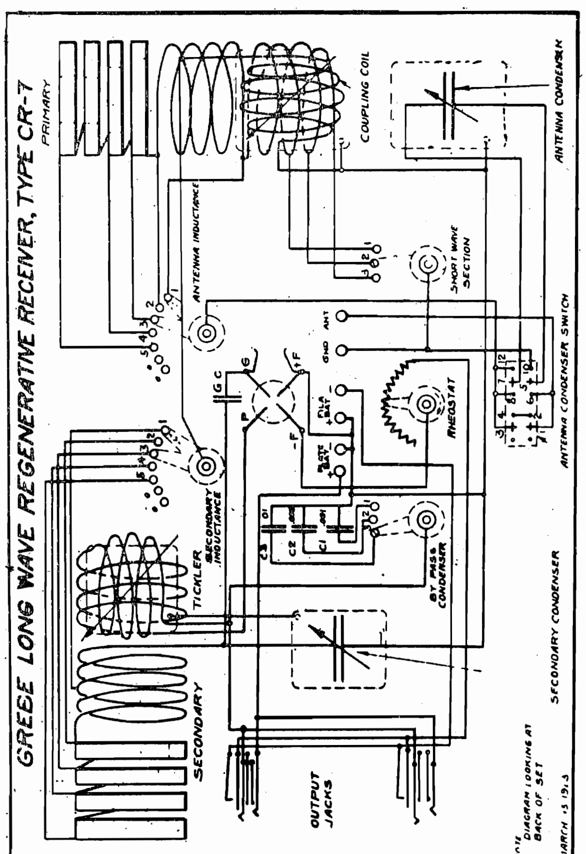


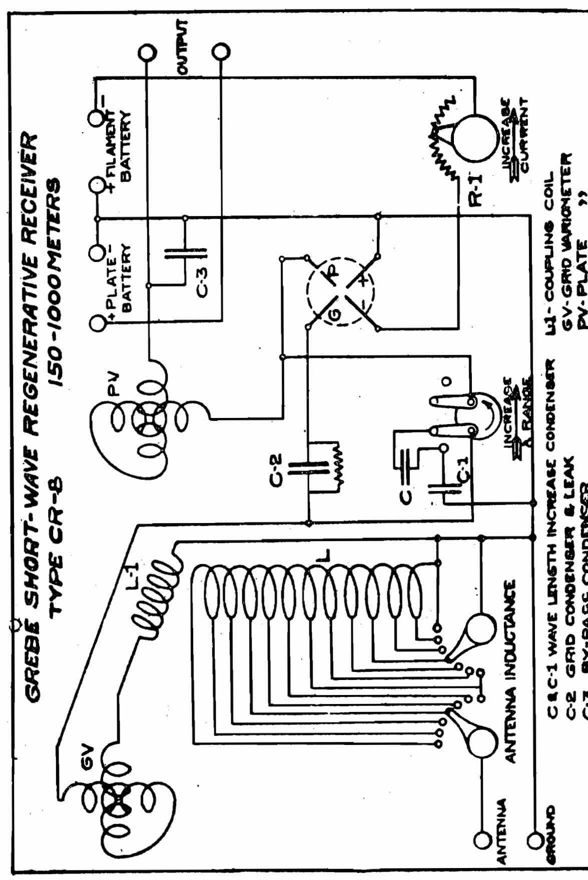
A. H. GREBE & CO.

MODEL CR-5
MODEL CR-6
MODEL CR-7
MODEL CR-8



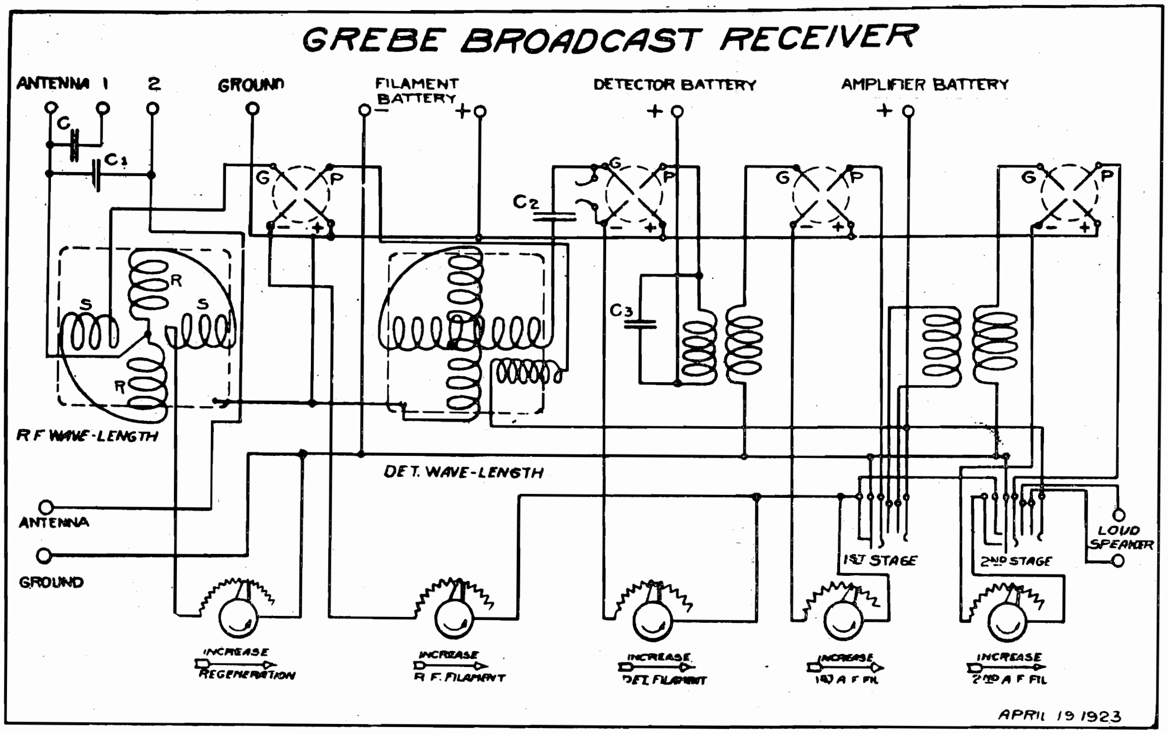


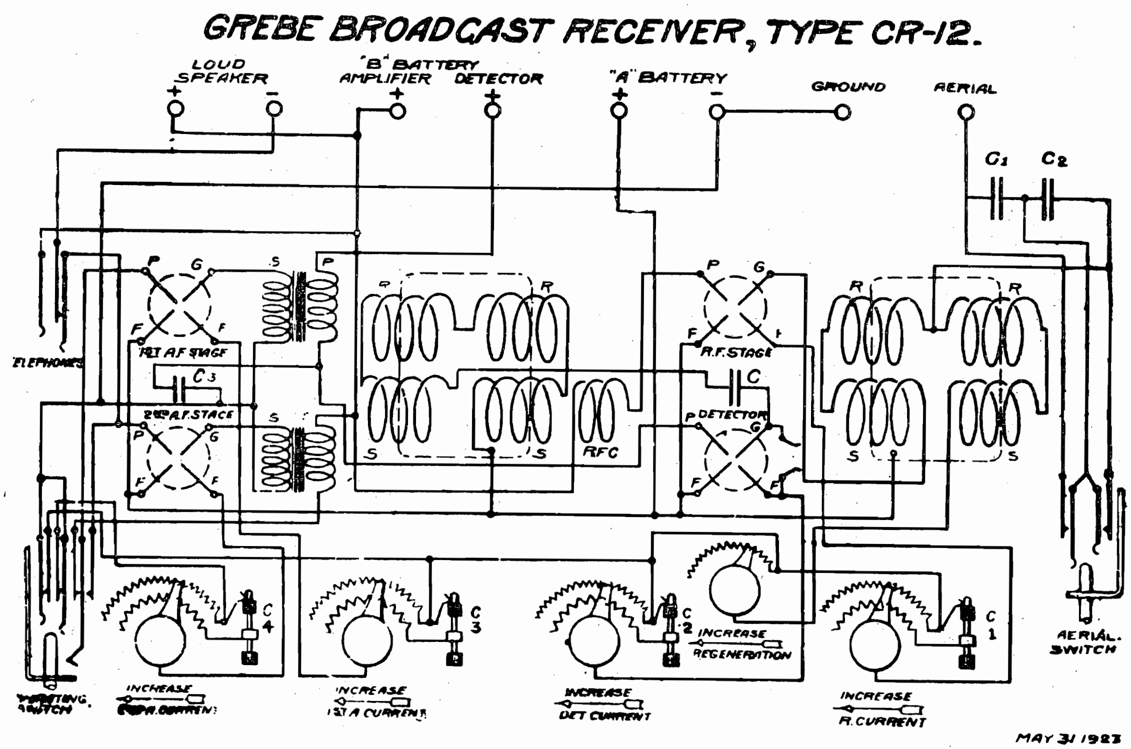




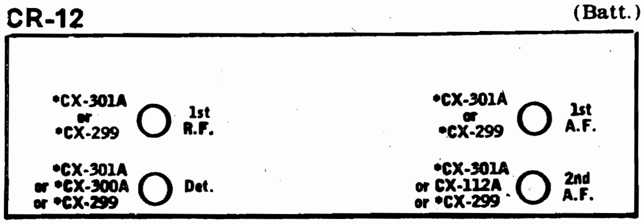
MODEL Broadcast Receiver
MODEL CR-12

A. H. GREBE & CO.,





CR-12 (Batt.)



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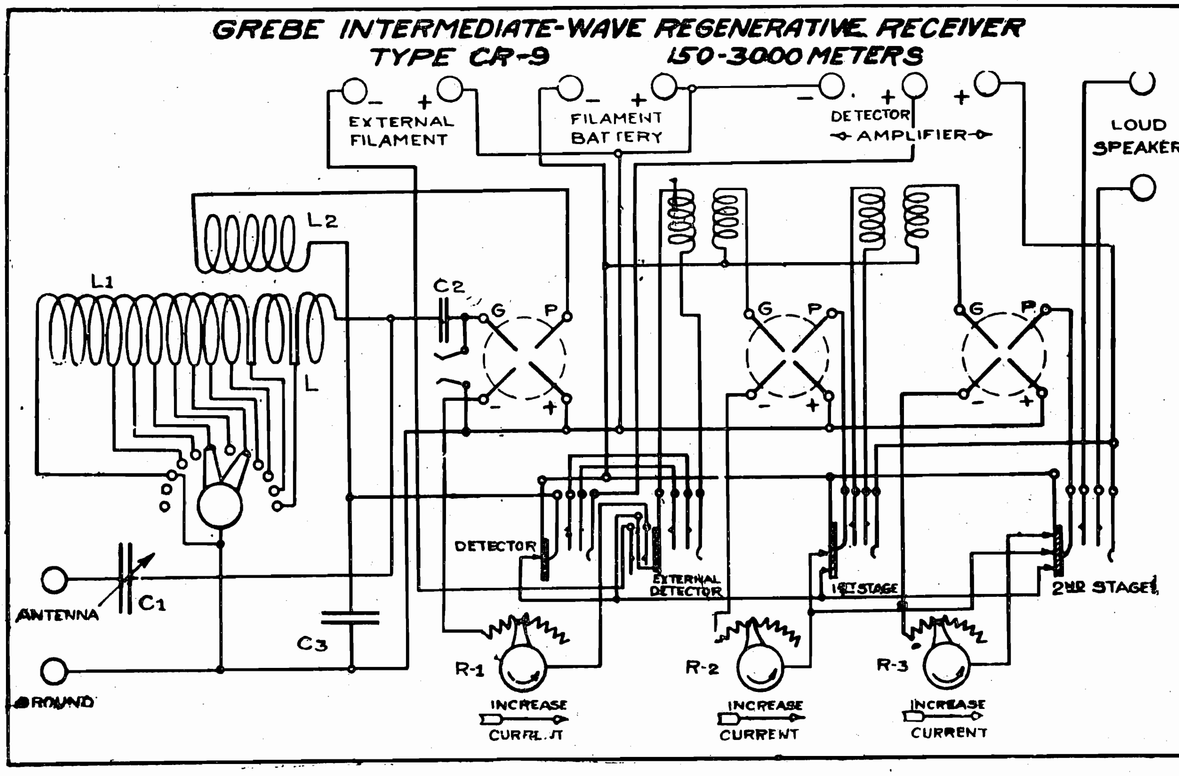
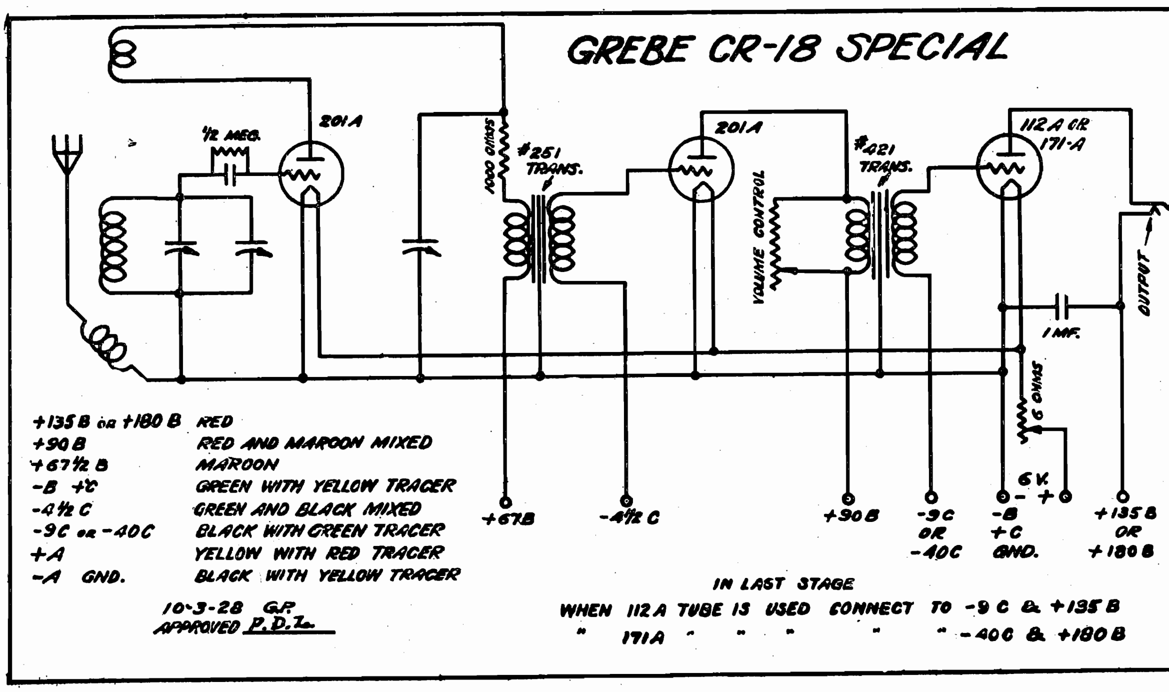
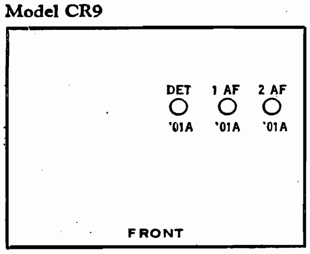
MODEL CR-9
MODEL CR-18 (Special)

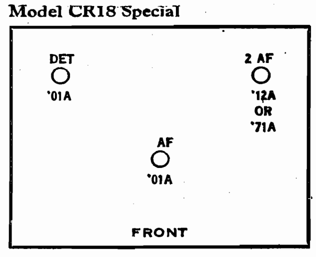




Model CR9



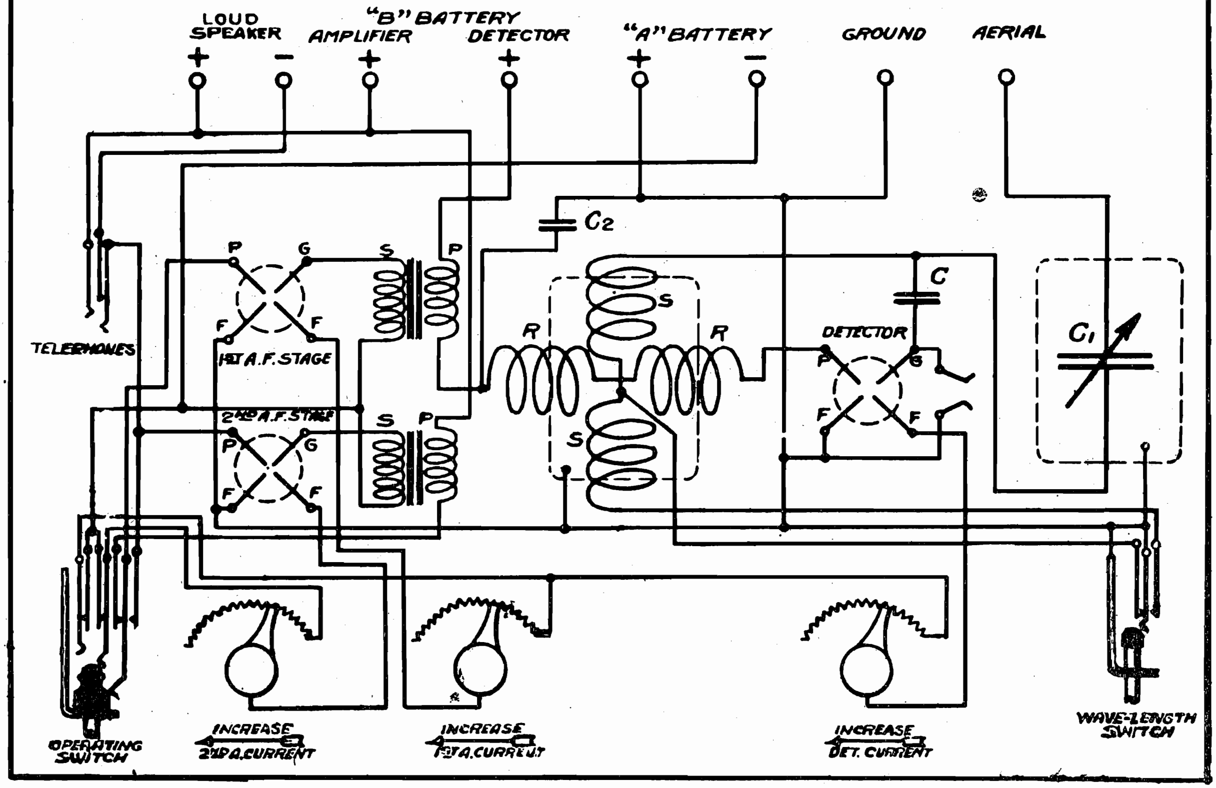
Model CR18 Special



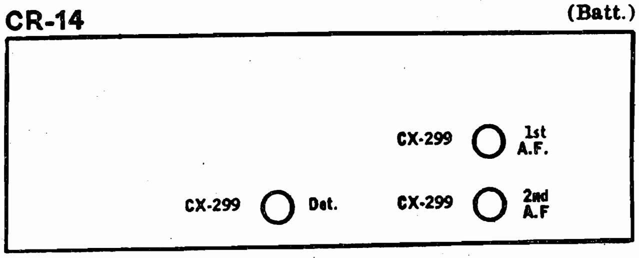
MODEL CR-13
MODEL CR-14

A. H. GREBE & CO.,

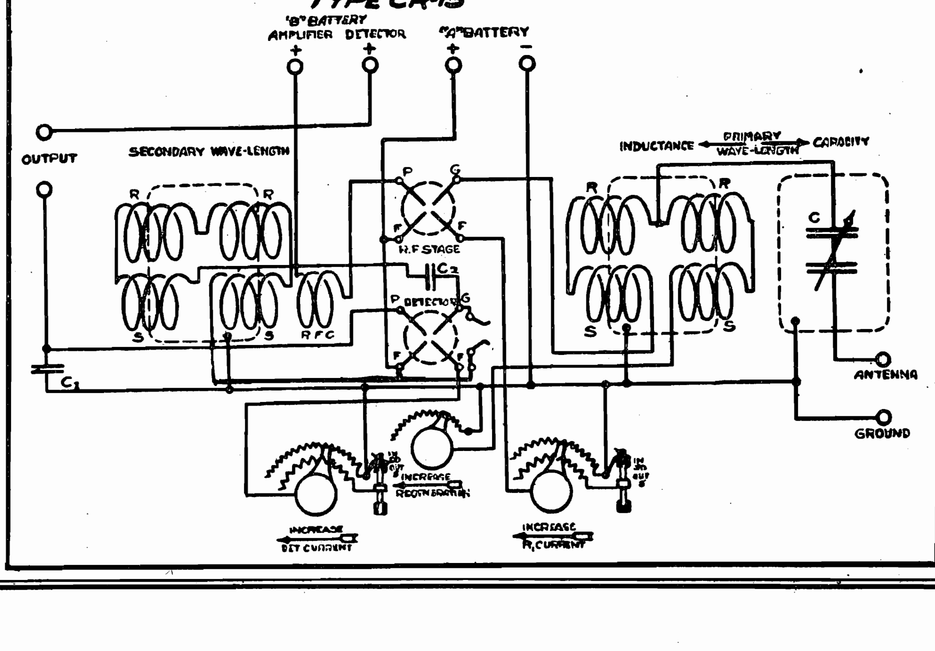
GREBE BROADCAST RECEIVER, TYPE CR-14.



CR-14 (Batt.)

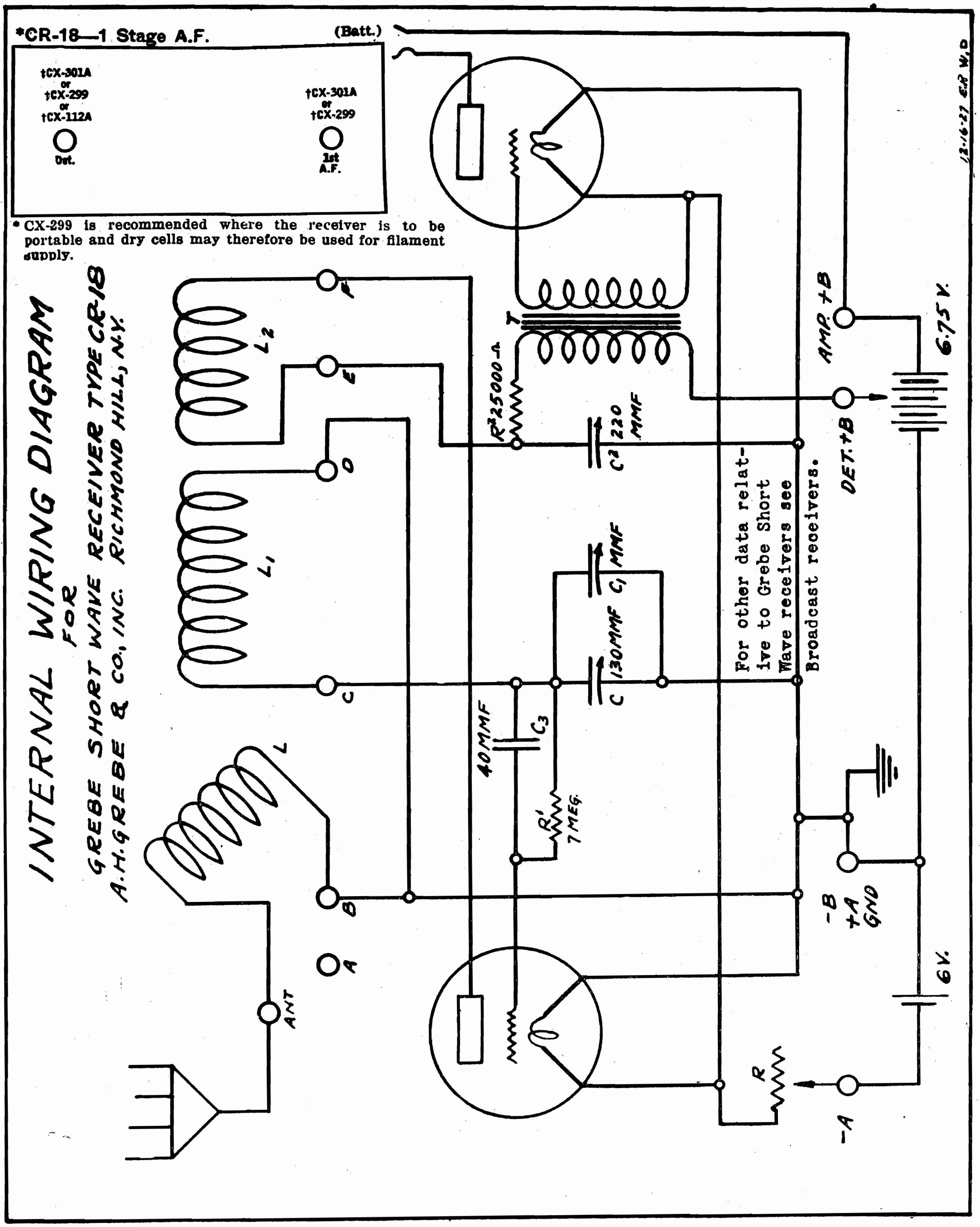


GREBE "13" REGENERATIVE RECEIVER, 80 TO 300 M.
TYPE CR-13



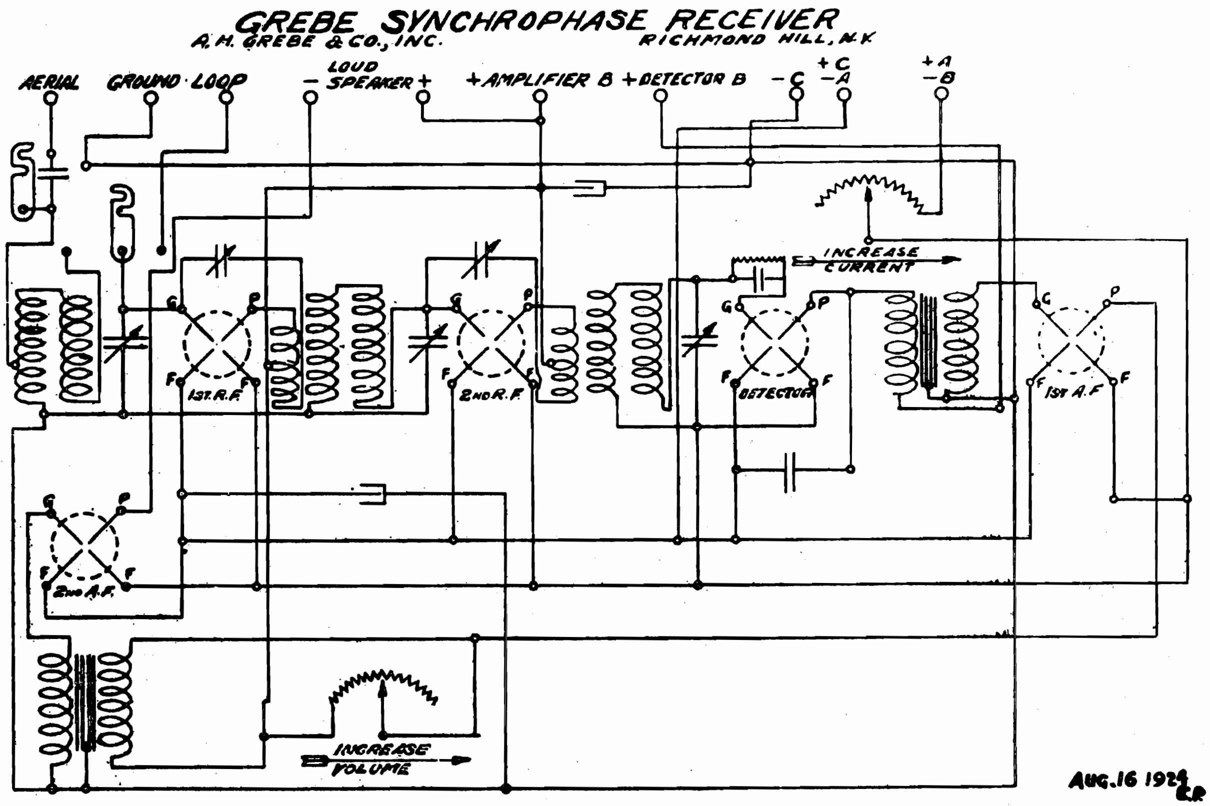
MODEL CR-18

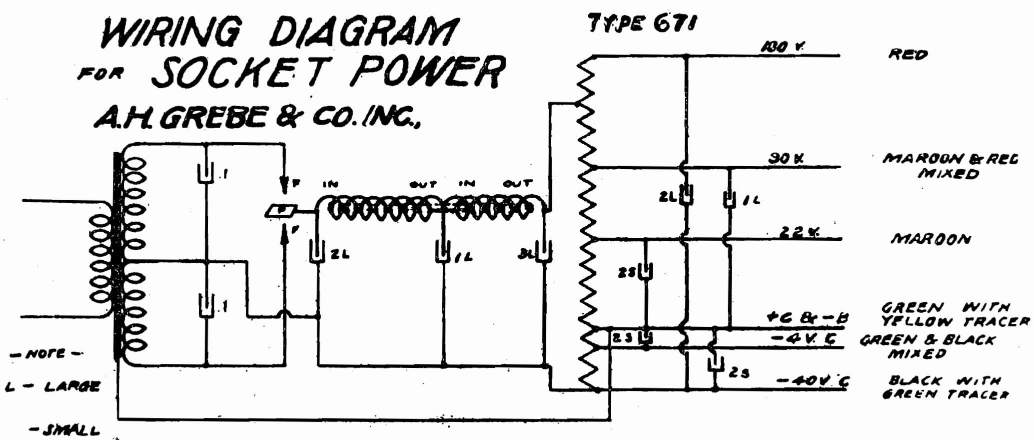
A. H. GREBE & CO.



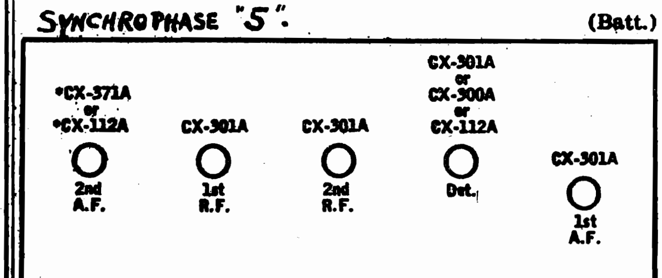
MODEL Synchrophase 5
With 671 Socket Power

A. H. GREBE & CO.,





SYNCHROPHASE "5". (Batt.)

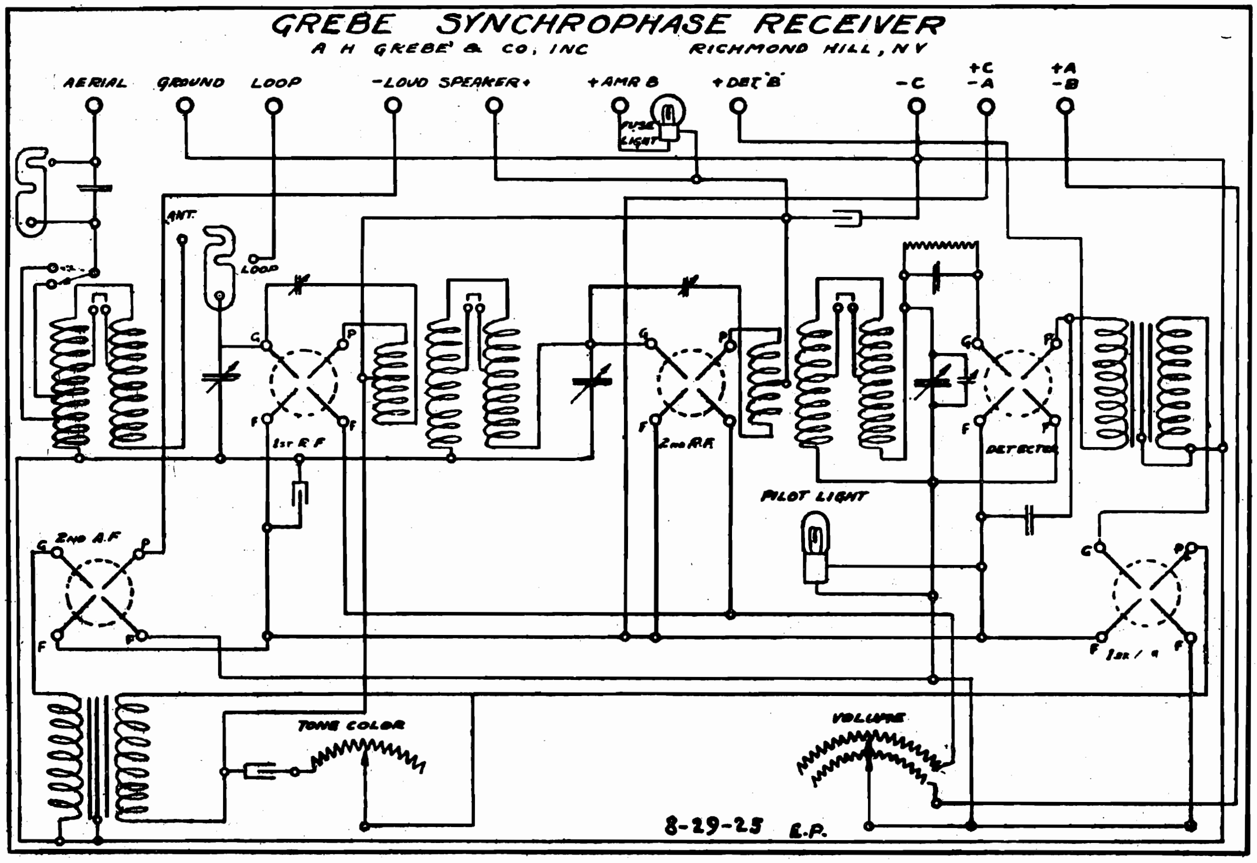


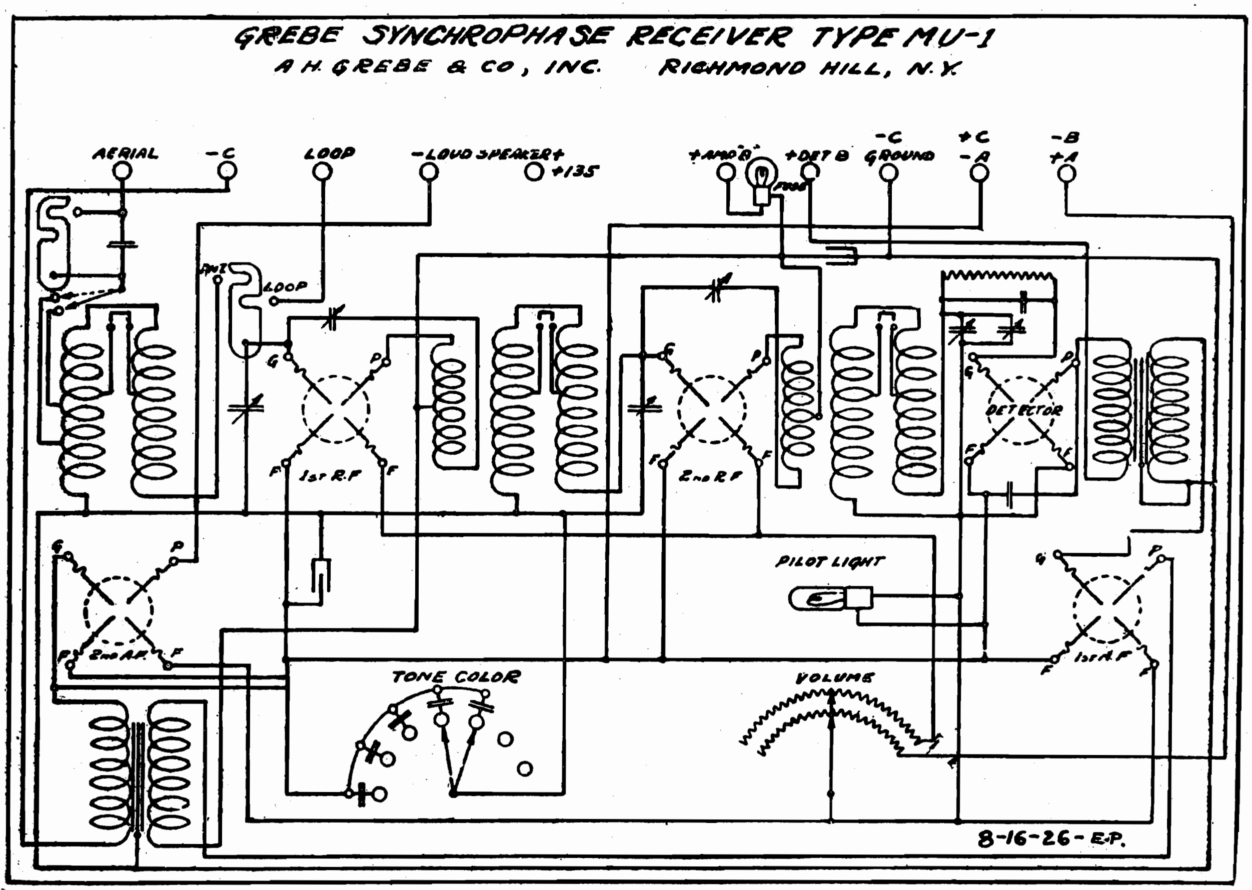
GREBE SYNCHROPHASE "5" with 671 Socket Power

Tube No. in Order	Type of Tube	Position of Tube 1st. RF, Det., etc.	Readings Plug in Socket of Set — Tube Out: A Volts	Tube Out: B Volts	Tube in Tester: A Volts	Tube in Tester: B Volts	Tube in Tester: C Volts	Cathode Volts	Normal Plate M.A.	Plate M.A. Grid Test	Plate M.A. Change
1	201A	1st. R.F.	6	115	5	105	0		7.0	11.0	4.0
2	201A	2nd. R.F.	6	115	5	105	0		7.0	11.0	4.0
3	201A	Detector	6	40	5	28	0		2.5	5.5	3.0
4	201A	1st. A.F.	6	115	5	105	0		7.0	11.0	4.0
5	171A	2nd. A.F.	6	200	5	180	40		20.0	26.0	6.0

A. H. GREBE & CO., Inc.

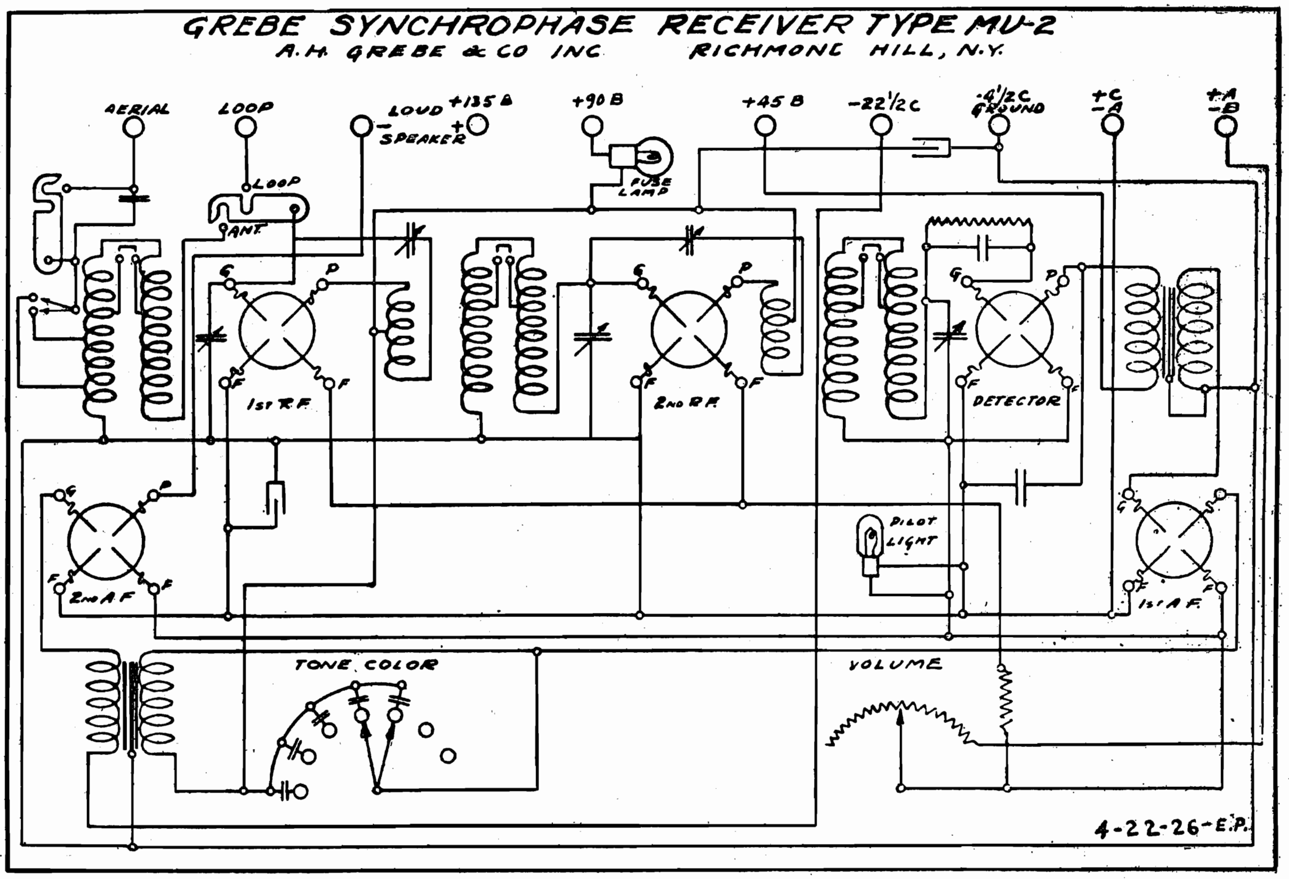
MODEL Synchrophase 1925
MODEL Synchrophase MU-1

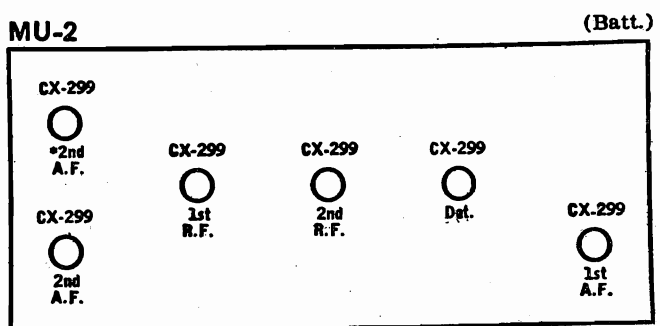




MODEL Synchrophase MU-2

A. H. GREBE & CO., Inc.

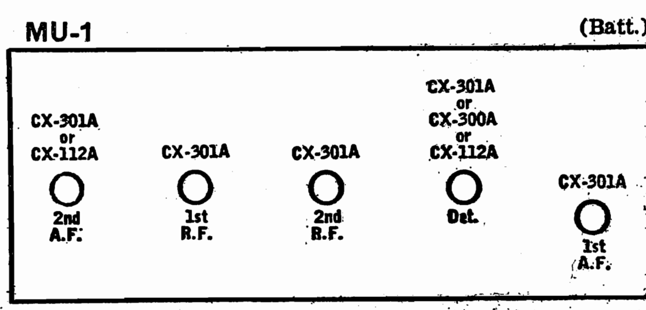




* 2nd Audio Frequency tubes are in parallel.

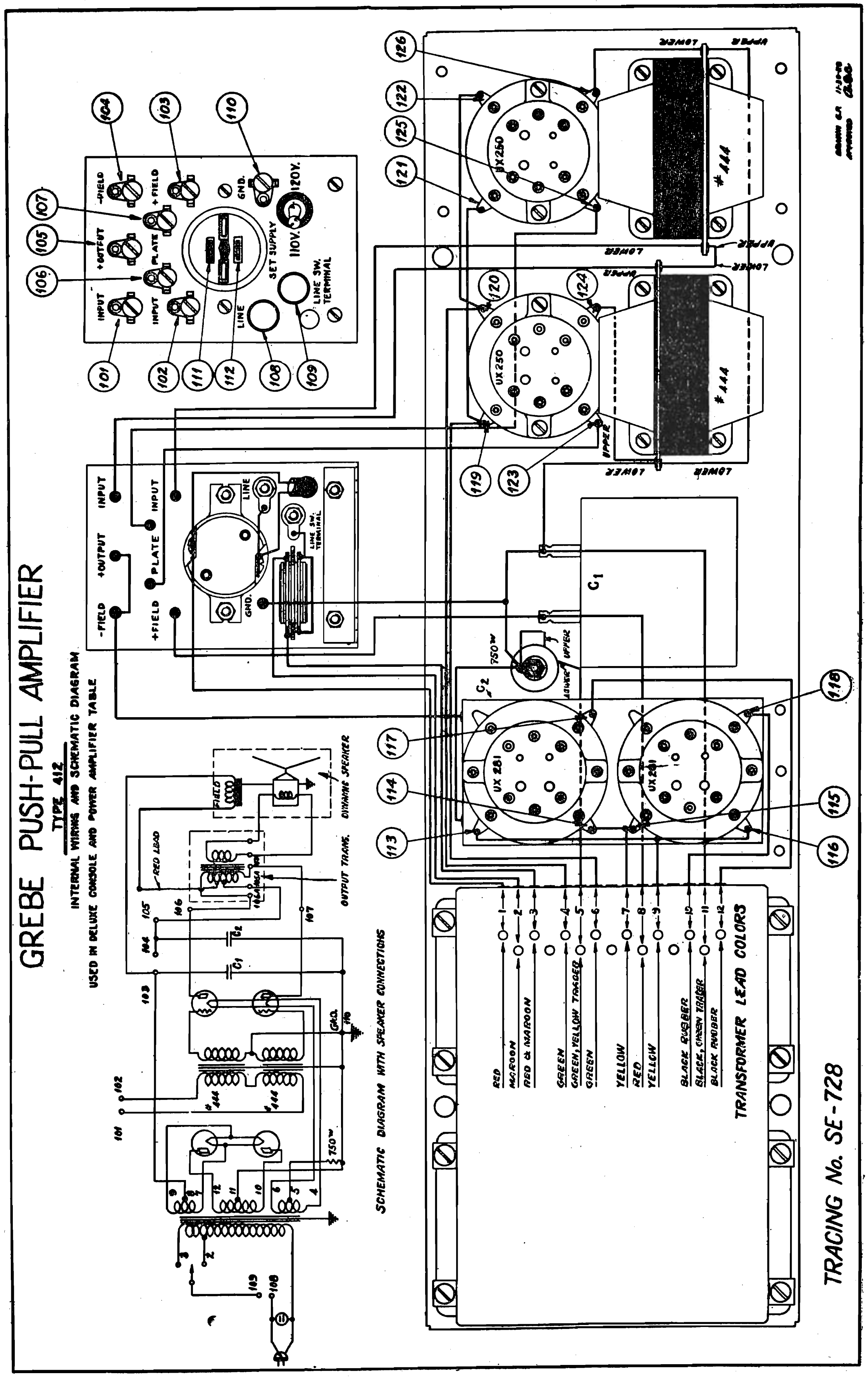
GREBE SYNCHROPHASE "5" or "MU-1"
Tube No. 5 Used in 1925 Models
Tube No. 6 Used in Early 1927 Models
Tube No. 7 Used in Late 1927 Models

TUBE NO IN ORDER	TYPE OF TUBE	POSITION OF TUBE 1ST R.F DET. ETC	READINGS, PLUG IN SOCKET OF SET								
			TUBE OUT		TUBE IN TESTER						
			A VOLTS	B VOLTS	A VOLTS	B VOLTS	C VOLTS	CATHODE VOLTS	NORMAL PLATE M.A.	PLATE M.A. GRID TEST	PLATE M.A CHANGE
1	201A	1st. R.F.	6	100	5	90	4.5		5.0	7.5	2.5
2	201A	2nd. R.F.	6	100	5	90	4.5		5.0	7.5	2.5
3	201A	Detector	6	25	5	90	5.0		2.0	5.5	3.5
4	201A	1st. A.F.	6	100	5	90	4.5		5.0	7.5	2.5
5	201A	2nd. A.F.	6	100	5	90	4.5		5.0	7.5	2.5
6	112	2nd. A.F.	6	150	5	135	9		9.0	13.5	4.5
7	171A	2nd. A.F.	6	209	5	180	40		20.0	26.0	6.0



A. H. GREBE & CO., Inc.

MODEL 412
Push-Pull Amplifier



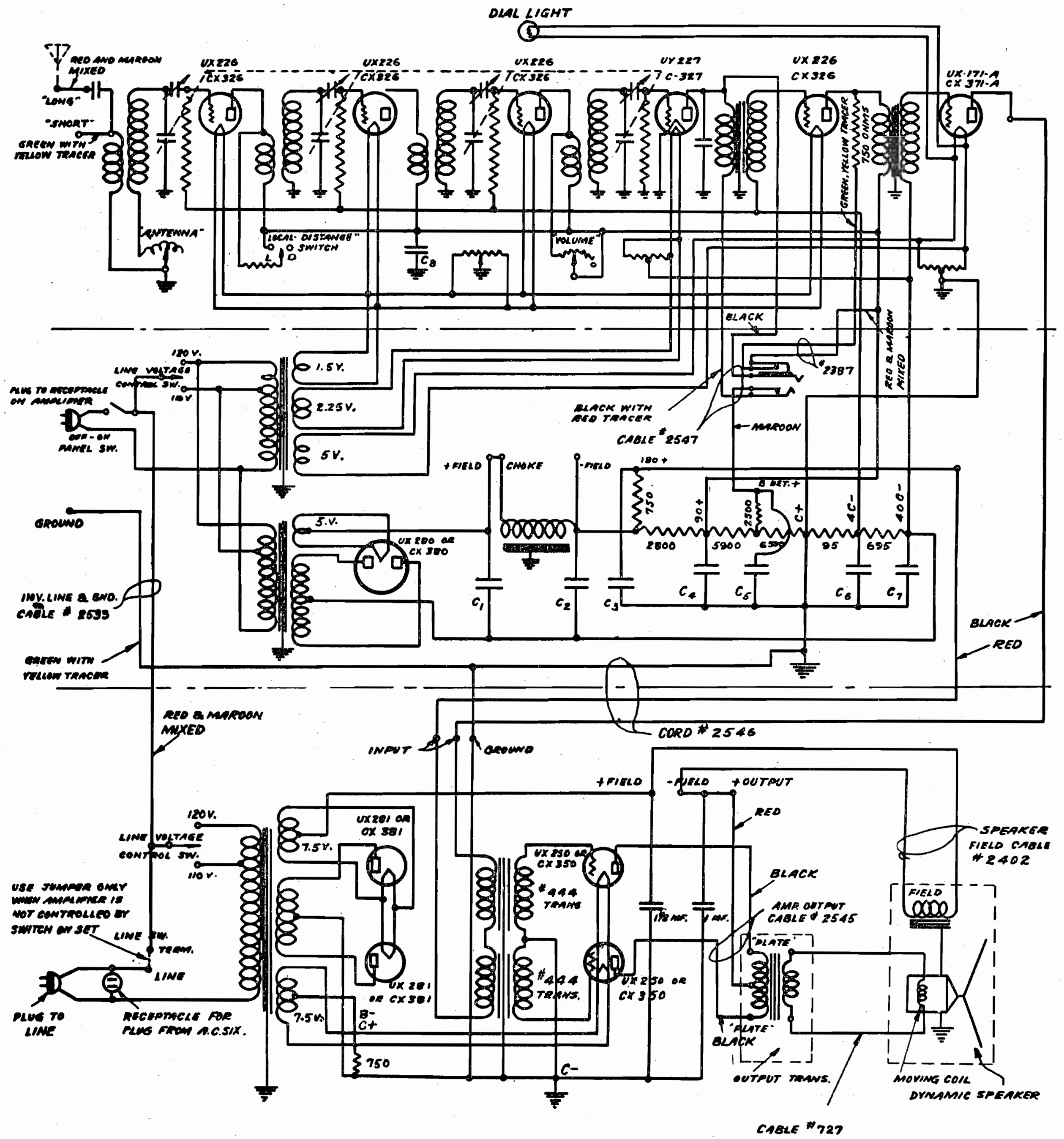
MODEL 428
DeLux Console

A. H. GREBE & CO.

WIRING DIAGRAM FOR GREBE DELUXE CONSOLE TYPE 428

A.C. SIX RECEIVER, PUSH PULL AMPLIFIER TYPE 412
OUTPUT TRANS. TYPE 419 AND DYNAMIC SPEAKER TYPE 400

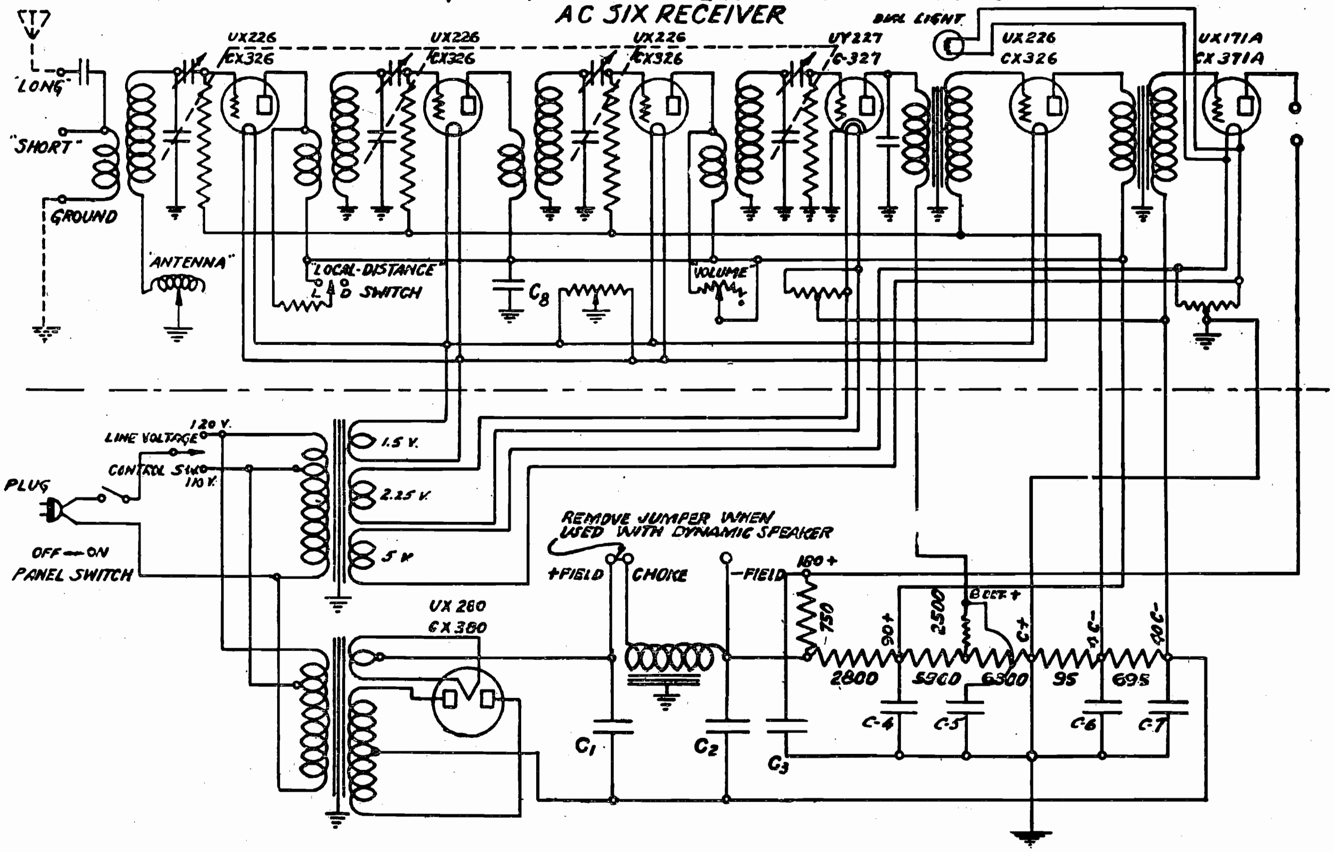
A. H. GREBE & CO., INC.
RICHMOND HILL, N.Y.



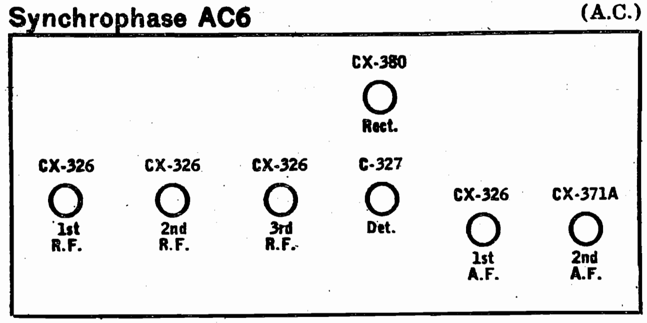
A. H. GREBE & CO., Inc.

MODEL Synchrophase AC-6
Schematic

WIRING DIAGRAM FOR GREBE SYNCHROPHASE
AC SIX RECEIVER



Synchrophase AC6 (A.C.)

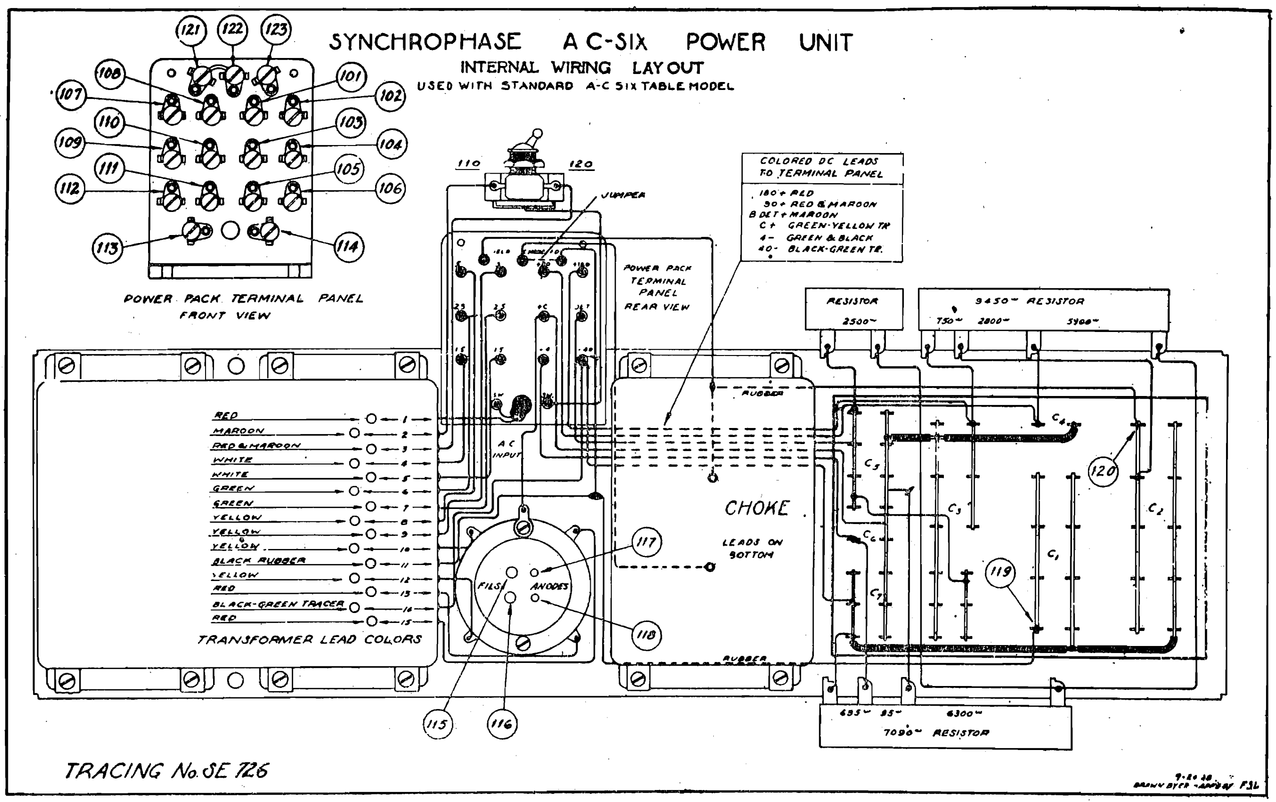


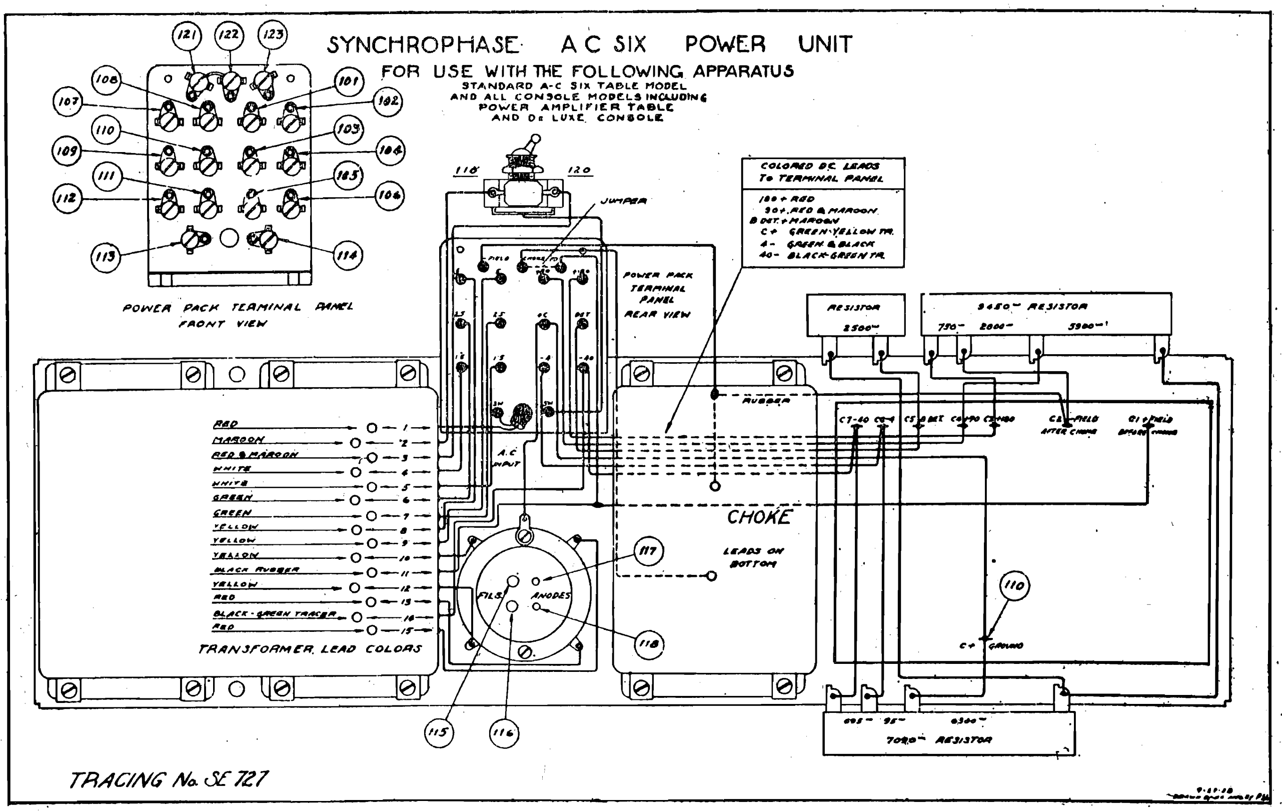
GREBE—Type A. C. 6
Line Voltage 120—Set on 120 Volt Tap

(1) Tube No. in Order	(2) Type of Tube	(3) Position of Tube 1st RF Det Etc	Readings, Plug in Socket of Set — Tube Out: (4) A Volts	(5) B Volts	Tube in Tester: (6) A Volts	(7) B Volts	(8) C Volts (Control Grid)	(9) Cathode-Heater Volts	(10) Normal Plate M A	(11) Plate M.A Grid Test	(12) Plate Change M A	(13) Screen Grid Volts
1	226	1st RF	1.5	105	1.4	100	-	-	7.8	7.8	0	
2	226	2nd RF	1.5	105	1.4	100	-	-	7.8	7.8	0	
3	226	3rd RF	1.5	105	1.4	100	-	-	7.8	7.8	0	
4	227	Det.	2.5	50	2.2	45	-	-	2.5	2.5	0	
5	226	1st AF	1.5	100	1.4	100	4.5	R-40	3.8	8.0	4.2	
6	171A	2nd AF	5.5	280	5.2	195	40.0	-	20.0	25.0	5.0	
7	280	Rect.	5.5	-	5.2	-	-	-	60	-	-	
8												
9												
10												

MODEL Synchrophase AC-6
Power Unit
Chassis
Two Types

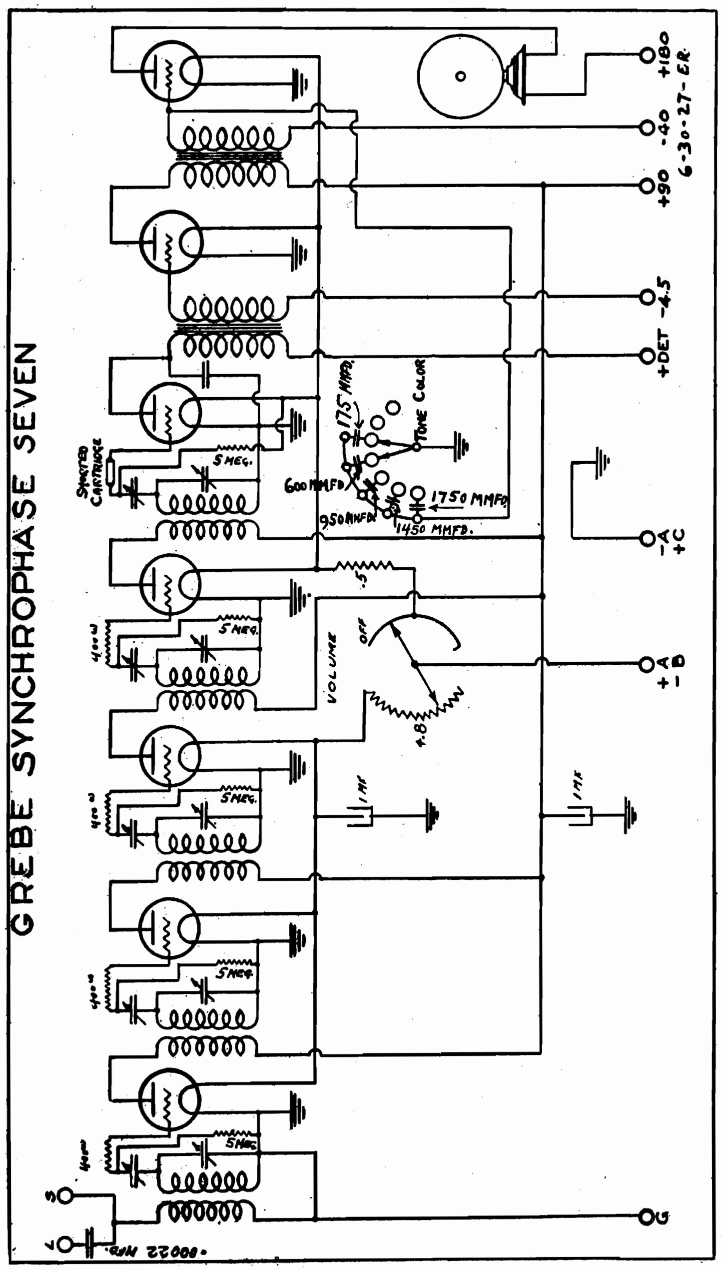
A. H. GREBE & CO., Inc.

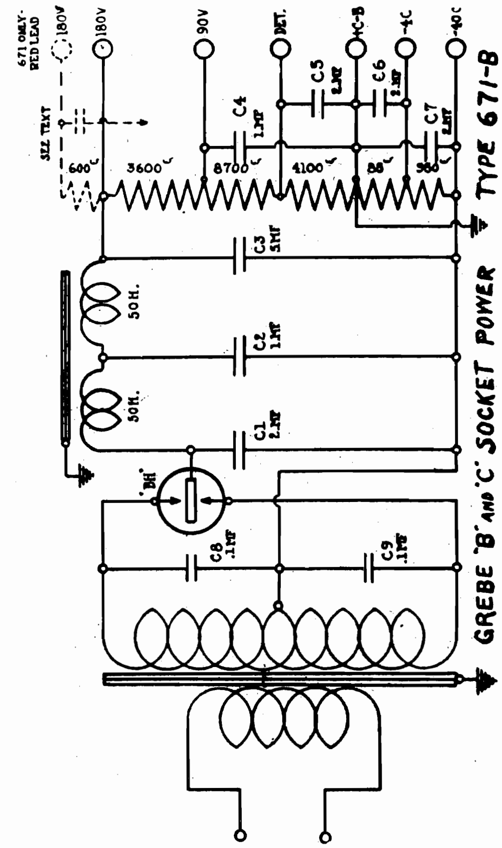


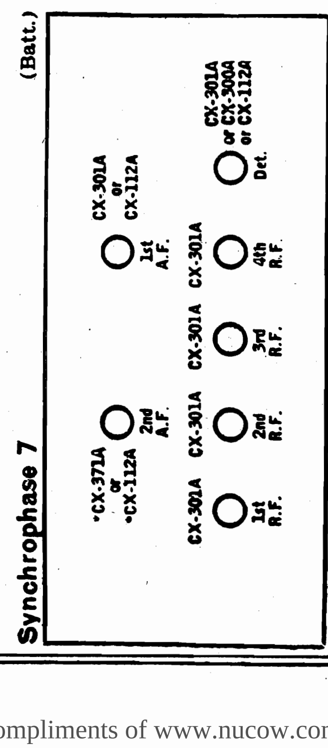


A. H. GREBE & CO.,

MODEL Synchrophase 7
Battery Type
Socket Power Unit 671-B

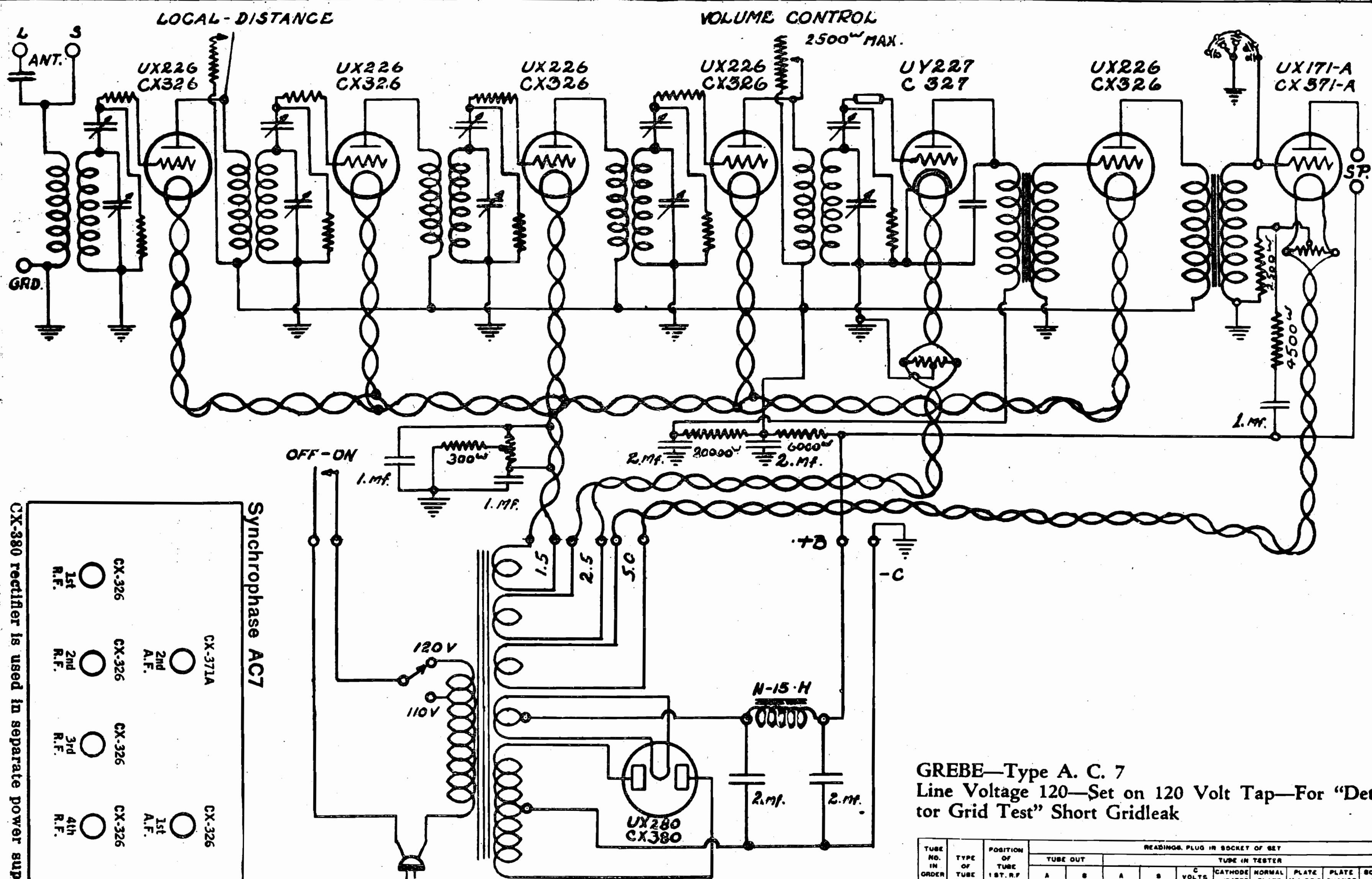






MODEL Synchrophase 7
Schematic

A. H. GREBE & CO.



GREBE—Type A. C. 7
Line Voltage 120—Set on 120 Volt Tap—For "Detector Grid Test" Short Gridleak

TUBE NO. IN ORDER ①	TYPE OF TUBE ②	POSITION OF TUBE 1ST. R.F DET. ETC. ③	READINGS, PLUG IN SOCKET OF SET									
			TUBE OUT		TUBE IN TESTER							
			A VOLTS ④	B VOLTS ⑤	A VOLTS ⑥	B VOLTS ⑦	C VOLTS (CONTROL GRID) ⑧	CATHODE-HEATER VOLTS ⑨	NORMAL PLATE M.A ⑩	PLATE M.A GRID TEST ⑪	PLATE CHANGE M.A. ⑫	SCREEN GRID VOLTS ⑬
1	226	1st RF	1.5	105	1.4	100	-	-	7.8	7.8	0	
2	226	2nd RF	1.5	105	1.4	100	-	-	7.8	7.8	0	
3	226	3rd RF	1.5	105	1.4	100	-	-	7.8	7.8	0	
4	226	4th RF	1.5	105	1.4	100	-	-	7.8	7.8	0	
5	227	Det.	2.5	100	2.3	40	0	0	2.8	3.6	.8	
6	226	1st AF	1.5	105	1.4	100	5.0	-	4.0	8.2	4.2	
7	171A	2nd AF	5.7	280	5.2	200	40.0	-	20.0	25.0	5.0	
8	280	Rect.	-	-	5.2	-	-	-	60	-	-	

SYNCHROPHASE SEVEN A. C. RECEIVER

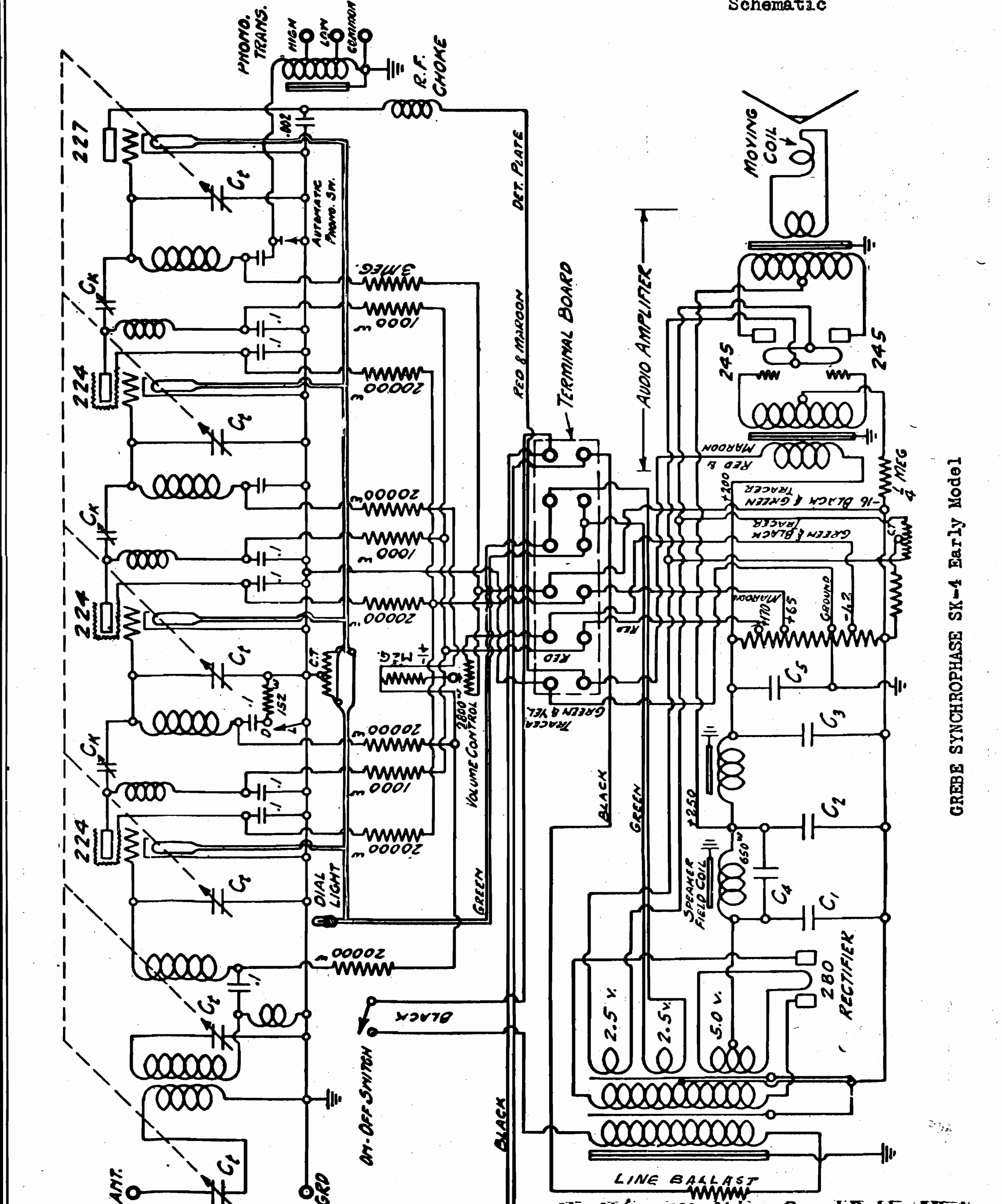
Synchrophase AC7 (A.C.)

CX-371A 2nd A.F.			CX-326 1st A.F.	
CX-326 1st R.F.	CX-326 2nd R.F.	CX-326 3rd R.F.	CX-326 4th R.F.	C-327 Det.

CX-380 rectifier is used in separate power supply unit.

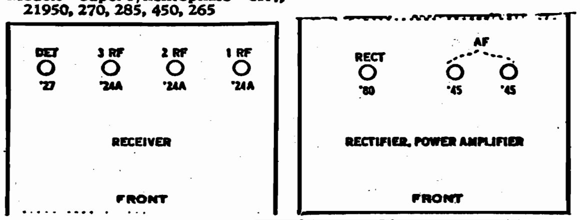
A. H. GREBE & CO.

MODEL Synchrophase SK-4
Early Model
Schematic



Line Voltage 120—Volume Control Position Min.*
Note: x Resistors in circuit prevent readings.
Note: -*-224 plate current read with volume control at maximum position.

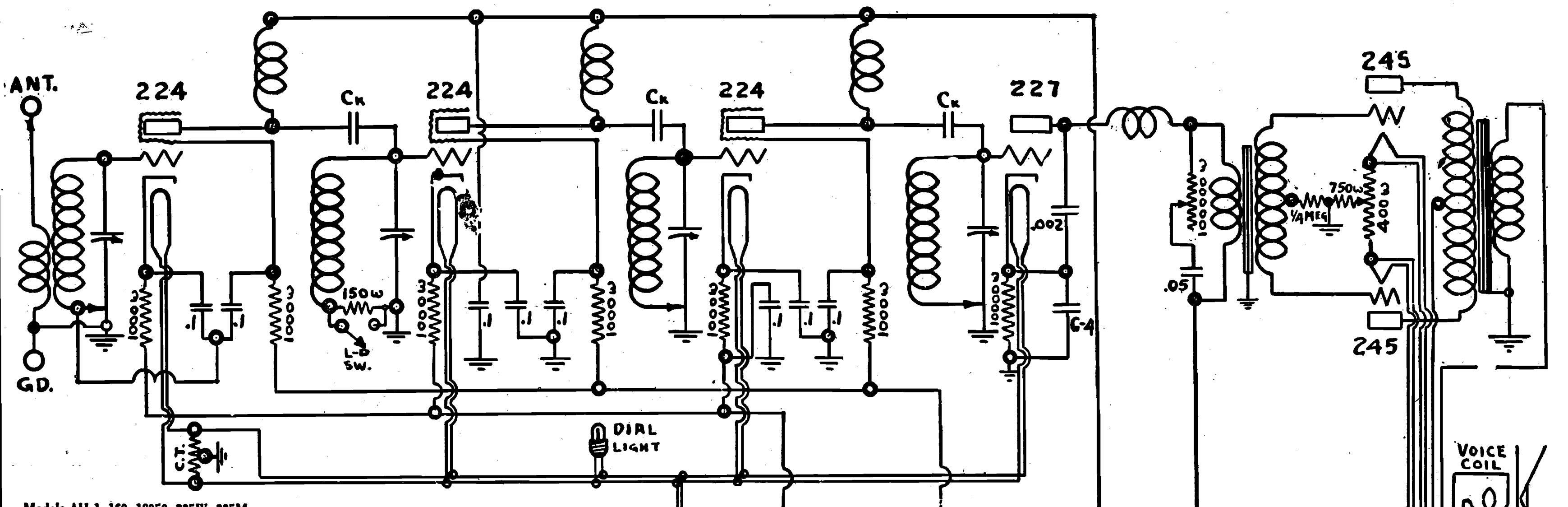
Models Super-synchrophase SK4, 21950, 270, 285, 450, 265

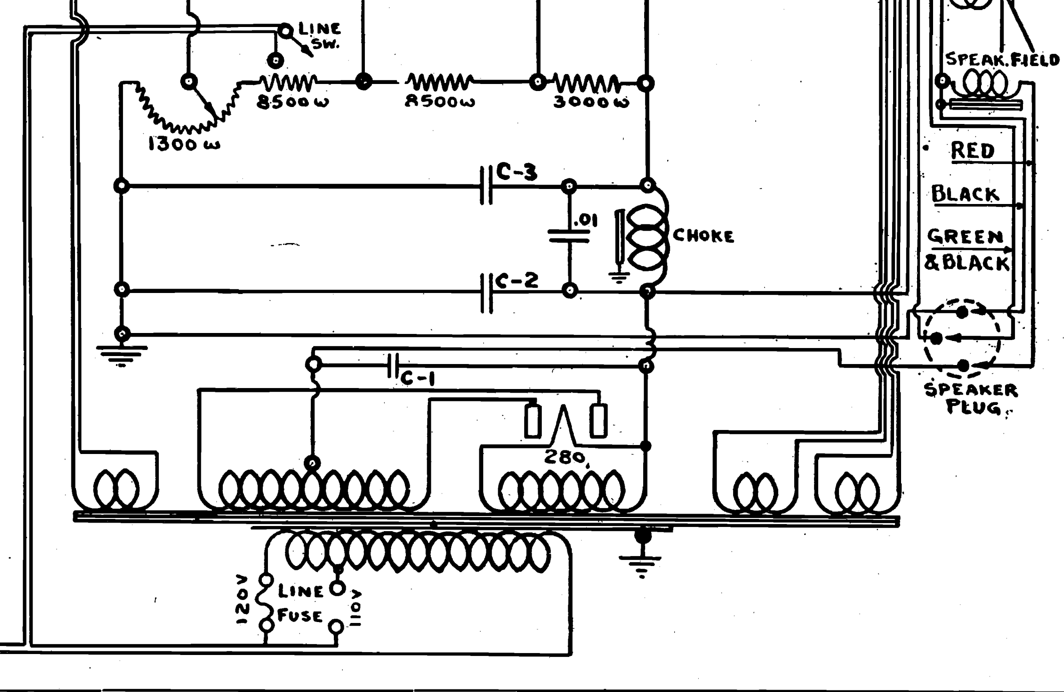


Tube No. in Order (1)	Type of Tube (2)	Position of Tube 1st RF Det. etc. (3)	Readings Plug in Socket of Set — Tube Out: A Volts (4)	Tube Out: B Volts (5)	Tube in Tester: A Volts (6)	B Volts (7)	C Volts Control Grid (8)	Cathode-Heater Volts (9)	Normal Plate MA (10)	Plate MA Grid Test (11)	Plate Change MA (12)	Screen Grid Volts (13)
1	224	1st RF	2.7	195	2.35	188	14	-	0	2	2	57
2	224	2nd RF	2.7	195	2.35	188	14	-	0	2	2	57
3	224	3rd RF	2.7	195	2.35	188	14	-	0	2	2	57
4	227	Det.	2.7	195	2.35	210	x	-	.8	.8	0	-
5	245	1st AF	2.7	270	2.35	245	x	-	30	34	4	-
6	245	2nd AF	2.7	270	2.35	245	x	-	30	34	4	-
7	280	Rect.	7	-	5.2	-	x	-	90	-	-	-

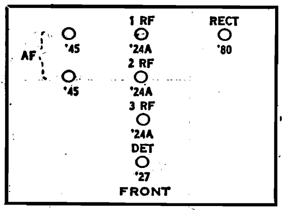
MODEL AH-1
Schematic

A. H. GREBE & CO.





Models AH-1, 160, 18950, 225W, 225M



Line Voltage 115—Volume Control Full On

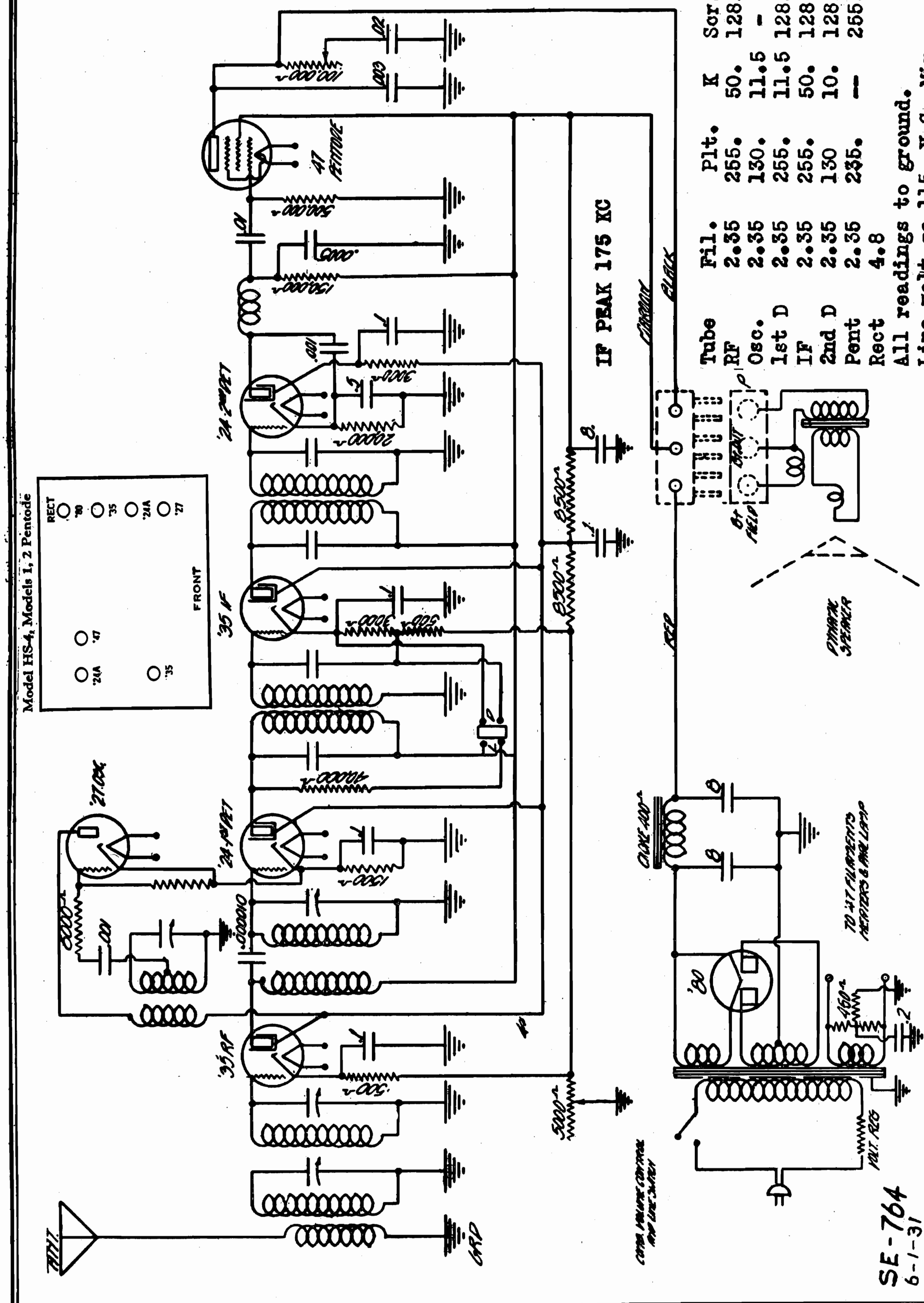
Tube No. in Order Tested (1)	Type of Tube (2)	Position of Tube in Set (3)	Filament or Heater (4)	Plate or Anode (5)	Control Grid-Space GD+ (6)	Normal Grid-Screen GD+ (7)	Cathode to Heater (8)	Screen GD L.H. '80 Plate (9)	Plate R.H. '80 Plate (10)	Tube Test (11)	Plate Current Change (12)
			Meter Readings with Jewell Test Plug in Socket of Set: Operating Voltages					Milliamperes			
1	224	1 R.F.	2.4	160	2.5	80	-	-	2.5		
2	224	2 R.F.	2.4	160	2.5	80	-	-	2.5		
3	224	3 R.F.	2.4	160	2.5	80	-	-	2.5		
4	227	Det.	2.4	200	-	20	-	-	2.0		
5	245	PP-AF	2.4	250	-	14	-	-	50		
6	245	PP-AF	2.4	250	-	14	-	-	50		
7	280	Rect.	4.8	-	-	-	-	50	50		

Volume Control Minimum

Tube No. in Order Tested (1)	Type of Tube (2)	Position of Tube in Set (3)	Filament or Heater (4)	Plate or Anode (5)	Control Grid-Space GD+ (6)	Normal Grid-Screen GD+ (7)	Cathode to Heater (8)	Screen GD L.H. 80 Plate (9)	Plate R.H. 80 Plate (10)	Tube Test (11)	Plate Current Change (12)
			Meter Readings with Jewell Test Plug in Socket of Set: Operating Voltages					Milliamperes			
1	224	1 R.F.	2.4	190	15	90	-	-	2.5		
2	224	2 R.F.	2.4	190	15	90	-	-	2.5		
3	224	3 R.F.	2.4	190	15	90	-	-	2.5		
4	227	Det.	2.4	225	-	21	-	-	2.0		
5	245	PP-AF	2.4	250	-	14	-	-	50		
6	245	PP-AF	2.4	250	-	14	-	-	50		
7	280	Rect.	4.8	-	-	-	-	50	50		

MODEL HS-4
1 Pentode

A. H. GREBE & CO.



Tube	Fil.	Plt.	K	Scr.
RF	2.35	255.	50.	128.
Osc.	2.35	130.	11.5	-
1st D	2.35	255.	11.5	128.
IF	2.35	255.	50.	128.
2nd D	2.35	130	10.	128.
Pent	2.35	235.	—	255.
Rect	4.8			

All readings to ground.
Line voltage 115. V.C. Min.

MODEL HS-4
With 45 P.P.

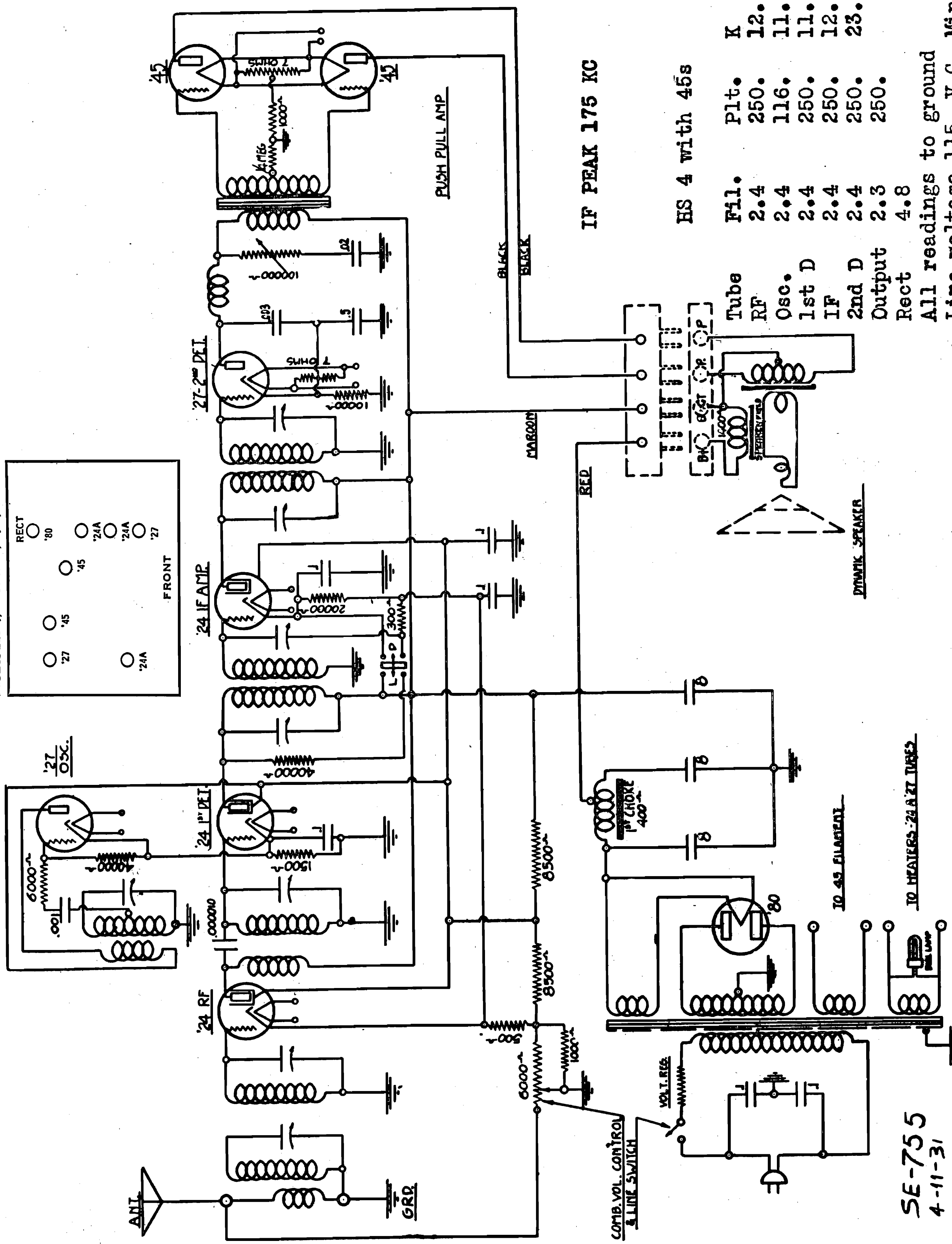
A. H. GREBE & CO.

IF PEAK 175 KC

HS 4 with 45s

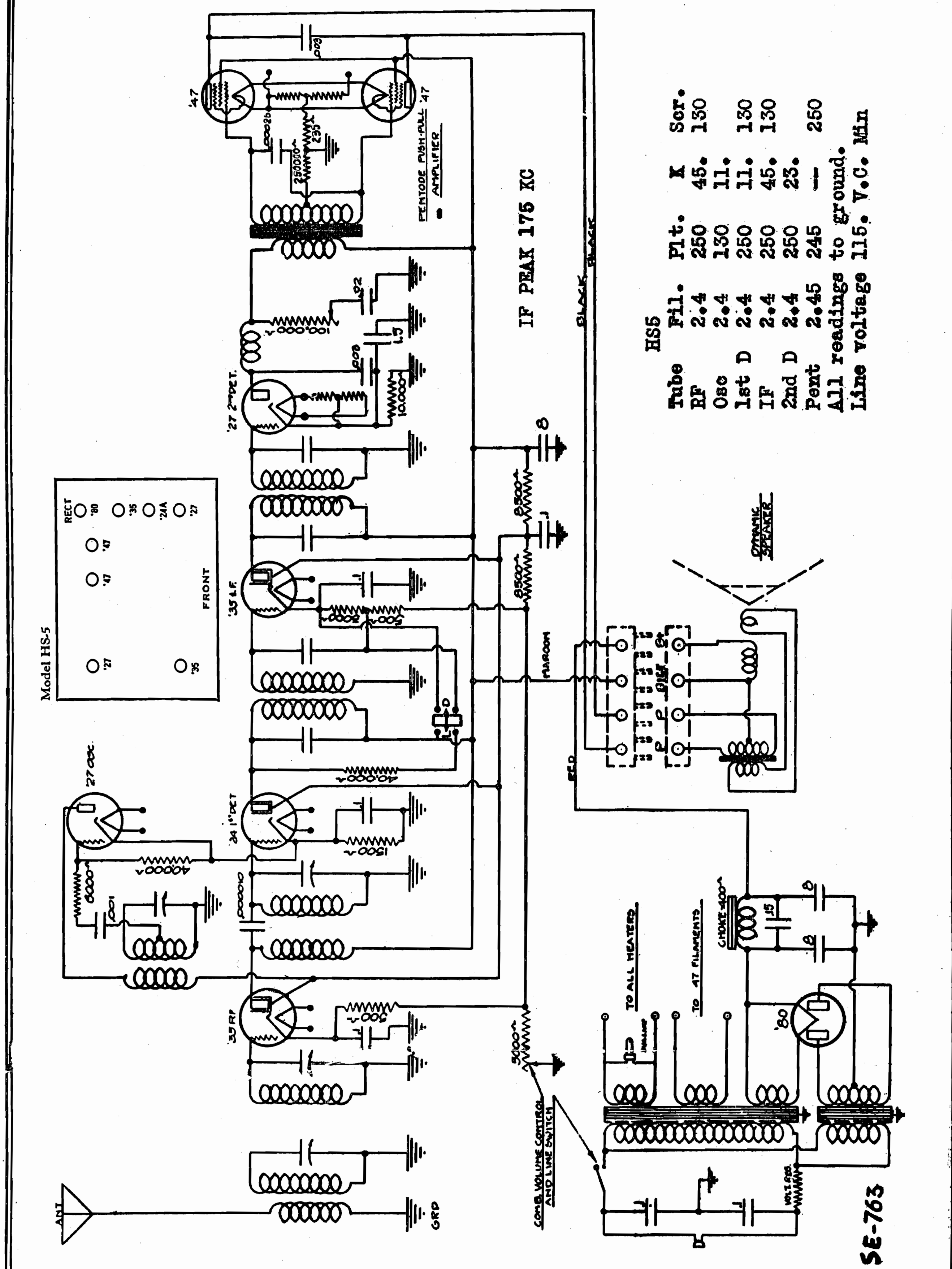
Tube	Fil.	Plt.	K	Scr.
RF	2.4	250.	12.	116.
Osc.	2.4	116.	11.	--
1st D	2.4	250.	11.	116.
IF	2.4	250.	12.	116.
2nd D	2.4	250.	23.	
Output	2.3	250.		
Rect	4.8			

All readings to ground
Line voltage 115. V.C. Min.



MODEL HS-5

A. H. GREBE & CO.



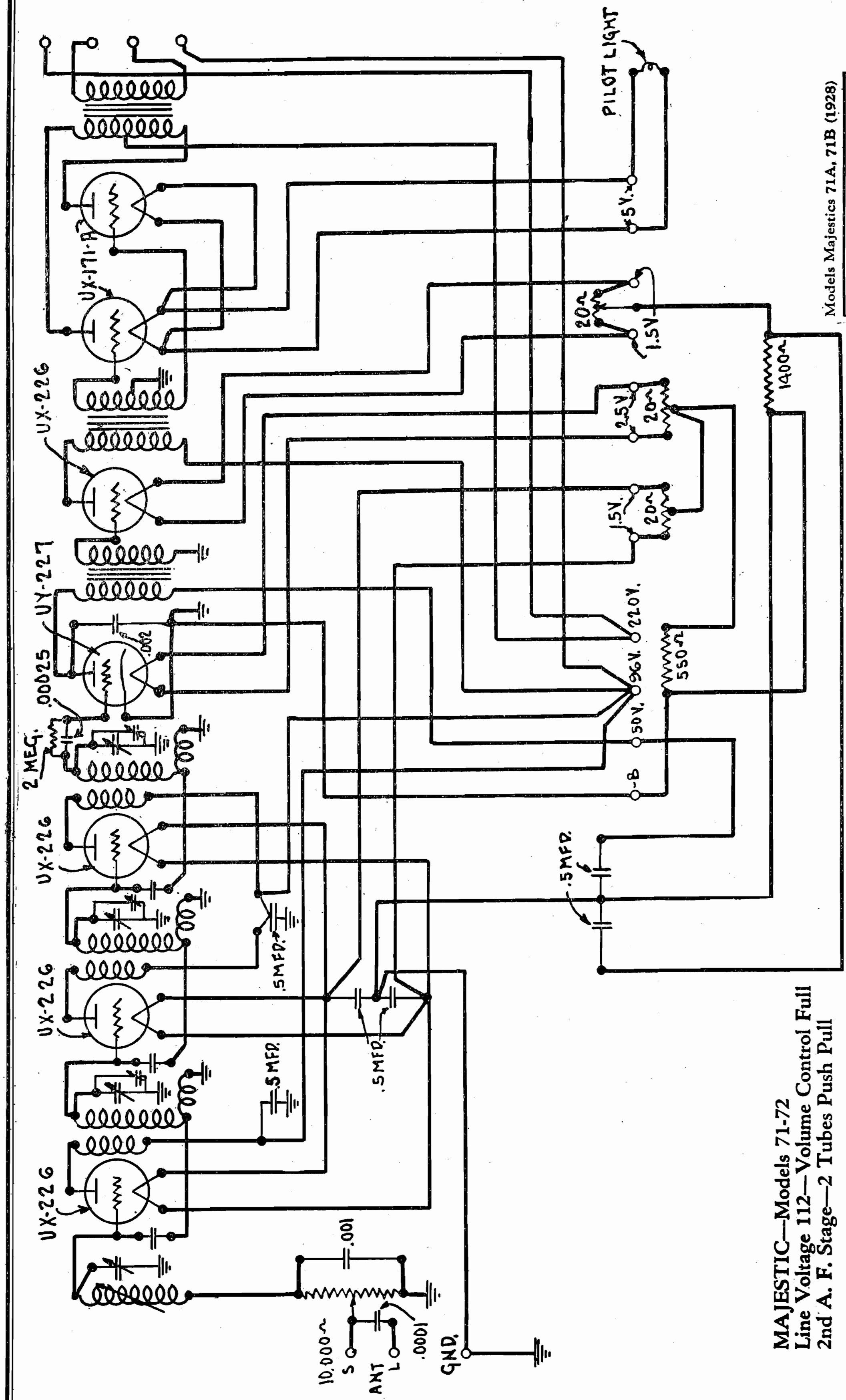
HS5

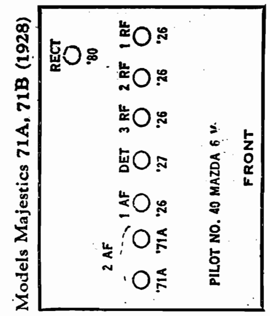
Tube	Fil.	Plt.	K	Scr.
RF	2.4	250	45.	130
Osc	2.4	130	11.	
1st D	2.4	250	11.	130
IF	2.4	250	45.	130
2nd D	2.4	250	23.	
Pent	2.45	245	—	250

All readings to ground.
Line voltage 115. V.C. Min

GRIGSBY - GRUNOW CO.

MODEL 70 Chassis





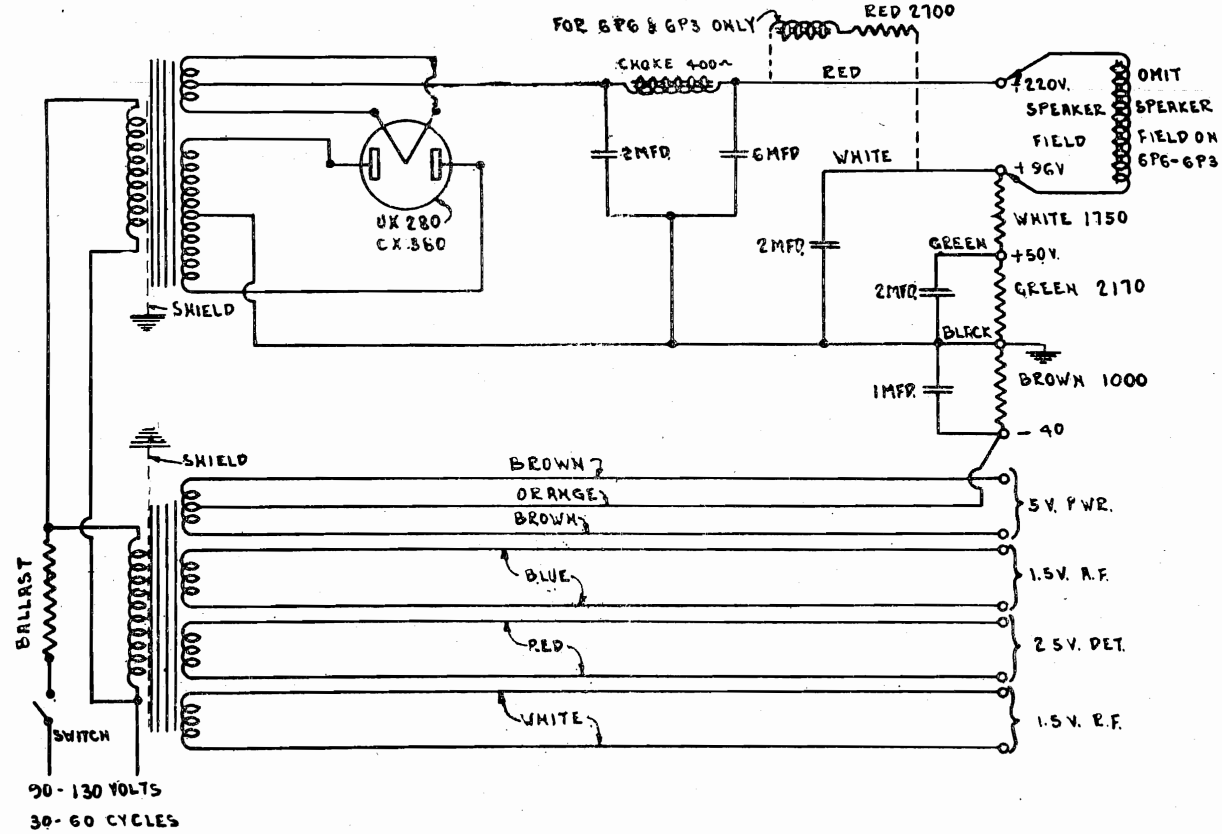
MAJESTIC—Models 71-72
Line Voltage 112—Volume Control Full
2nd A. F. Stage—2 Tubes Push Pull

TUBE NO IN ORDER	TYPE OF TUBE	POSITION OF TUBE 1ST R.F. DET..ETC.	TUBE OUT A VOLTS	TUBE OUT B VOLTS	TUBE IN TESTER A VOLTS	TUBE IN TESTER B VOLTS	TUBE IN TESTER C VOLTS	TUBE IN TESTER CATHODE VOLTS	NORMAL PLATE M.A.	PLATE M.A. GRID TEST	PLATE M.A. CHANGE
1	226	1st. R.F.	1.5	102	1.4	96	5	-	3.5	8.5	5.0
2	226	2nd. R.F.	1.5	102	1.4	96	5	-	3.5	8.5	5.0
3	226	3rd. R.F.	1.5	102	1.4	96	5	-	3.5	8.5	5.0
4	227	Detector	2.4	100	2.2	40	0	-	3.0	3.0	0
5	226	1st. A.F.	1.5	100	1.4	83	4	-	3.5	8.0	4.5
6	171A	2nd. A.F.	5.0	192	4.8	180	40	-	20.0	23.0	3.0
7	171A	2nd. A.F.	5.0	192	4.8	180	40	-	20.0	23.0	3.0
8	280	Rectifier	-	-	4.8	-	[illegible]	-	20.0	-	[illegible]
9											
10											

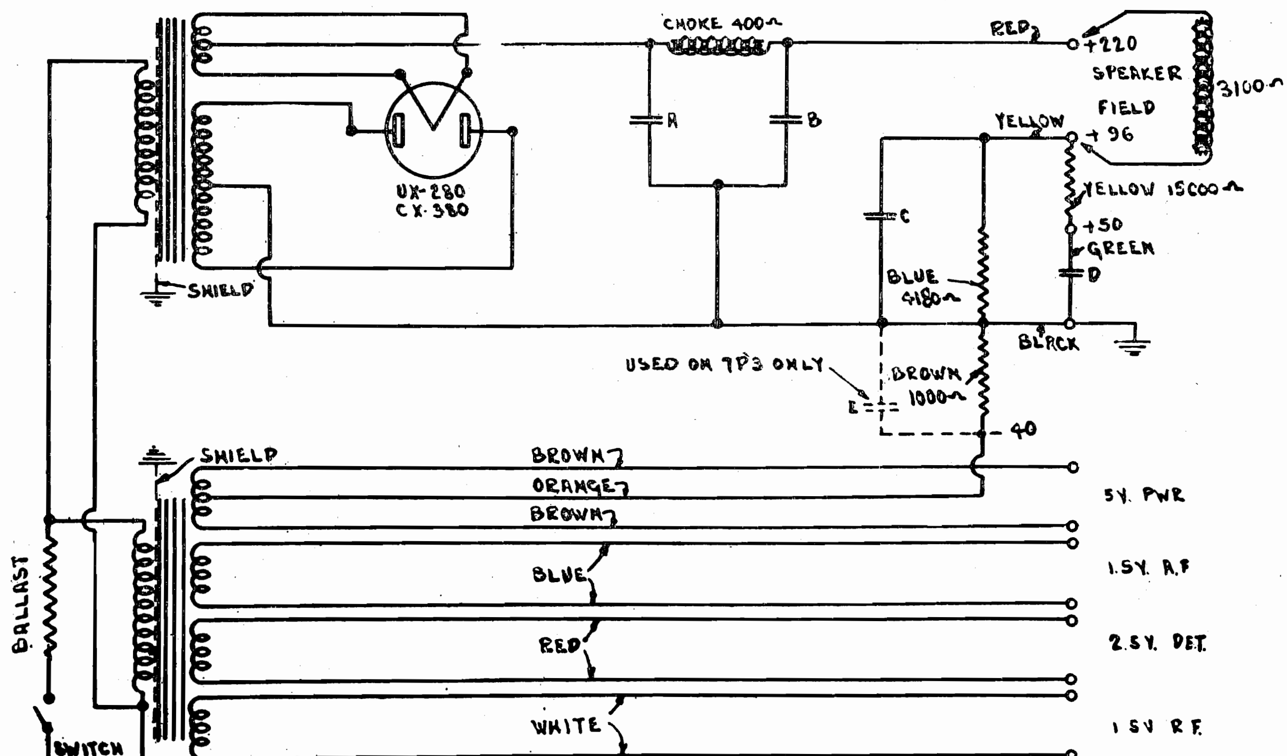
MODEL 7-P-6, 7-P-3
Two Types

GRIGSBY - GRUNOW CO.

SCHEMATIC DIAGRAM OF 7P6-7P3 POWER PACK (OLD WIRING)



SCHEMATIC DIAGRAM OF 7P6-7P3 POWER PACK

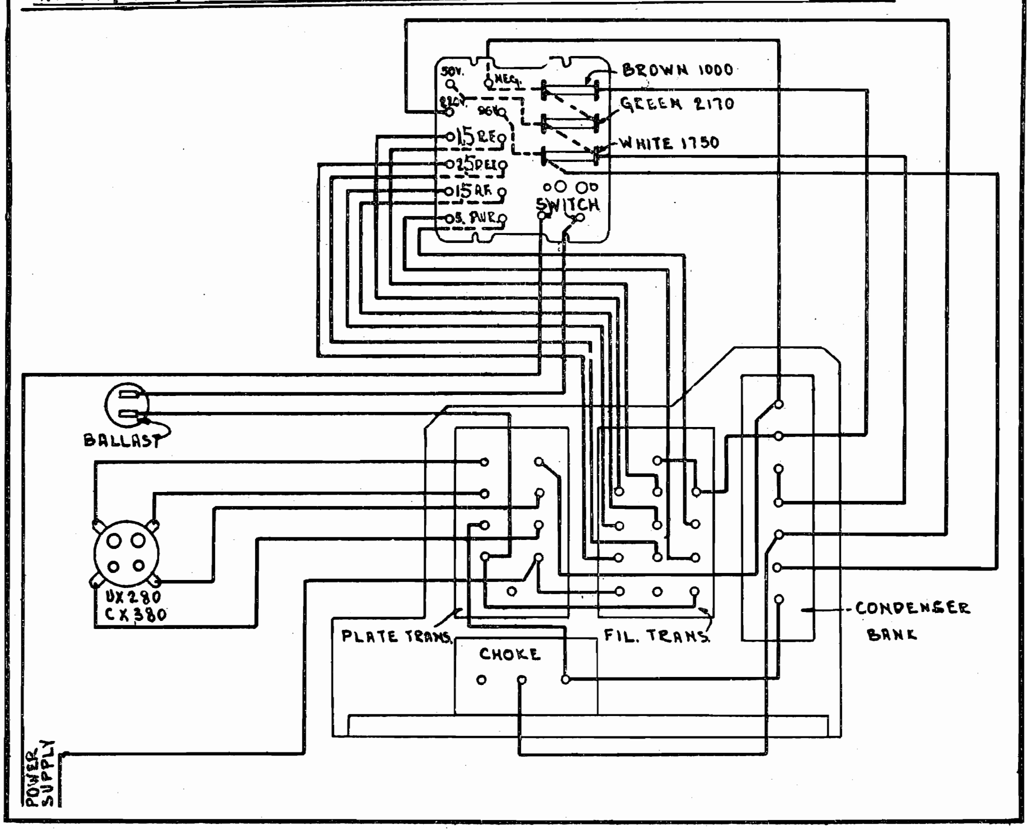


	A	B	C	D	E	
7P6	2	3	3	1		MFD.
7P3	2	6	2	2	1	MFD.

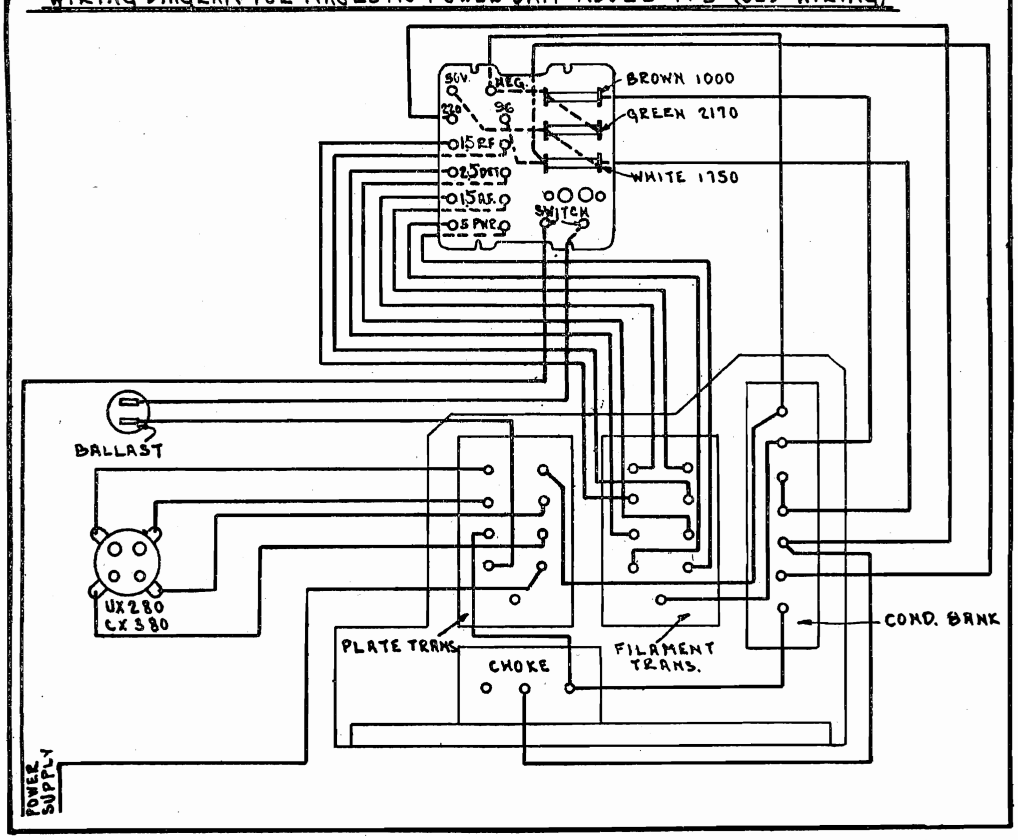
GRIGSBY - GRUNOW CO.

MODEL 7-P-6, 7-P-3
Wiring Diagram
Old Wiring

WIRING DIAGRAM FOR MAJESTIC POWER UNIT MODEL 7P6 (OLD WIRING)

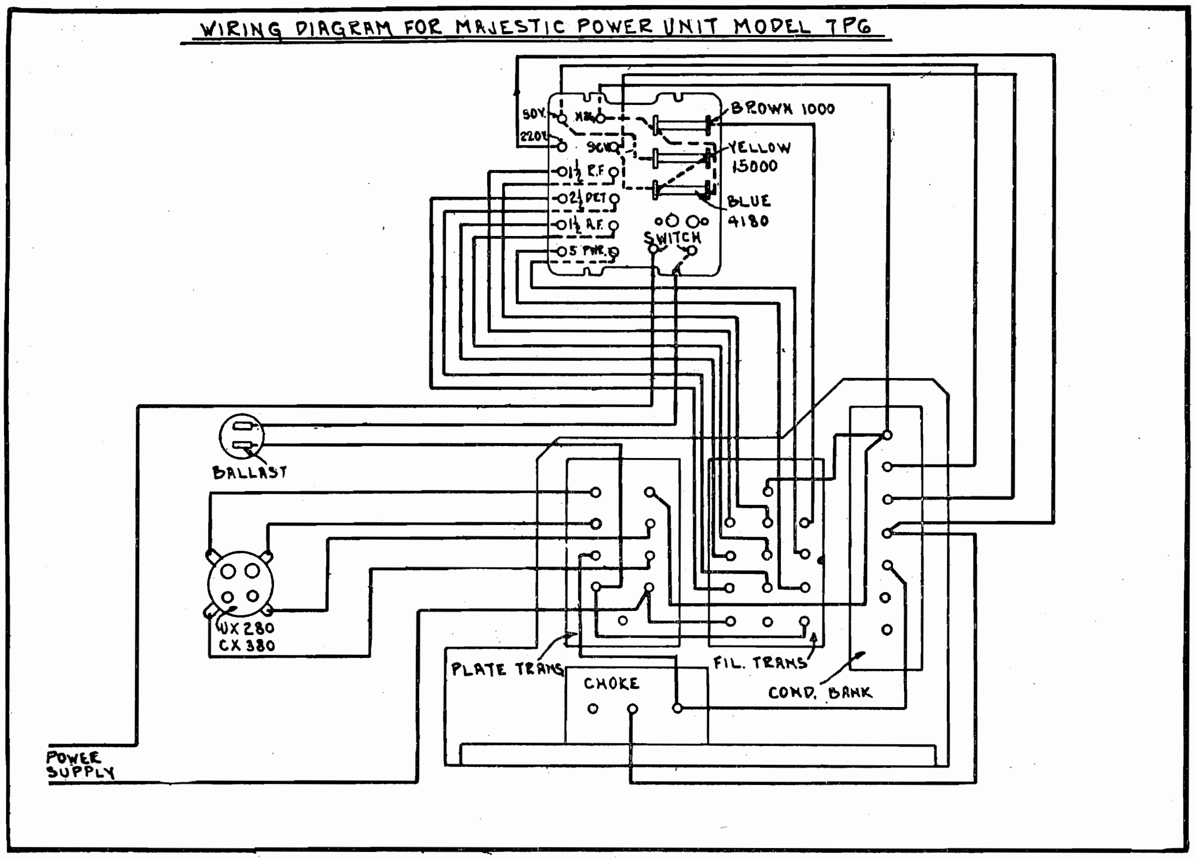


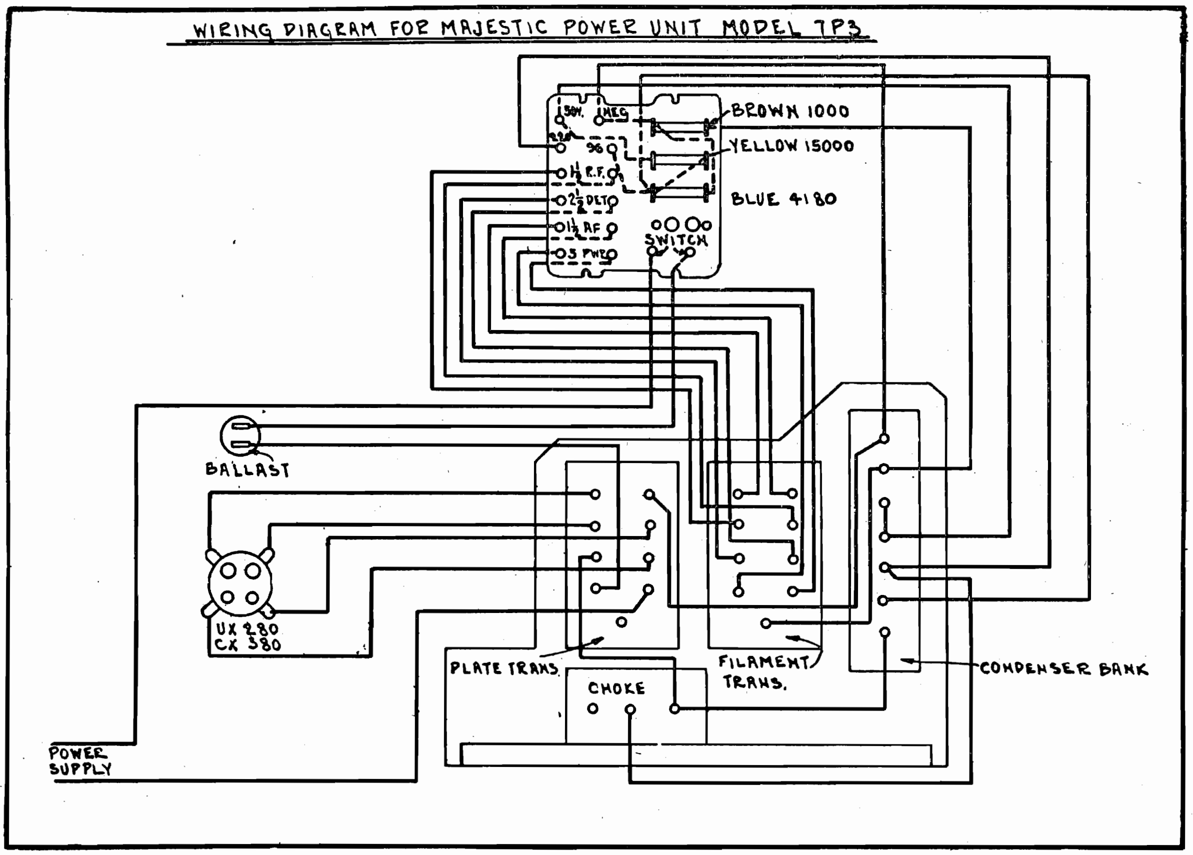
WIRING DIAGRAM FOR MAJESTIC POWER UNIT MODEL 7P3 (OLD WIRING)



MODEL 7-P-6, 7-P-3
Wiring Diagram

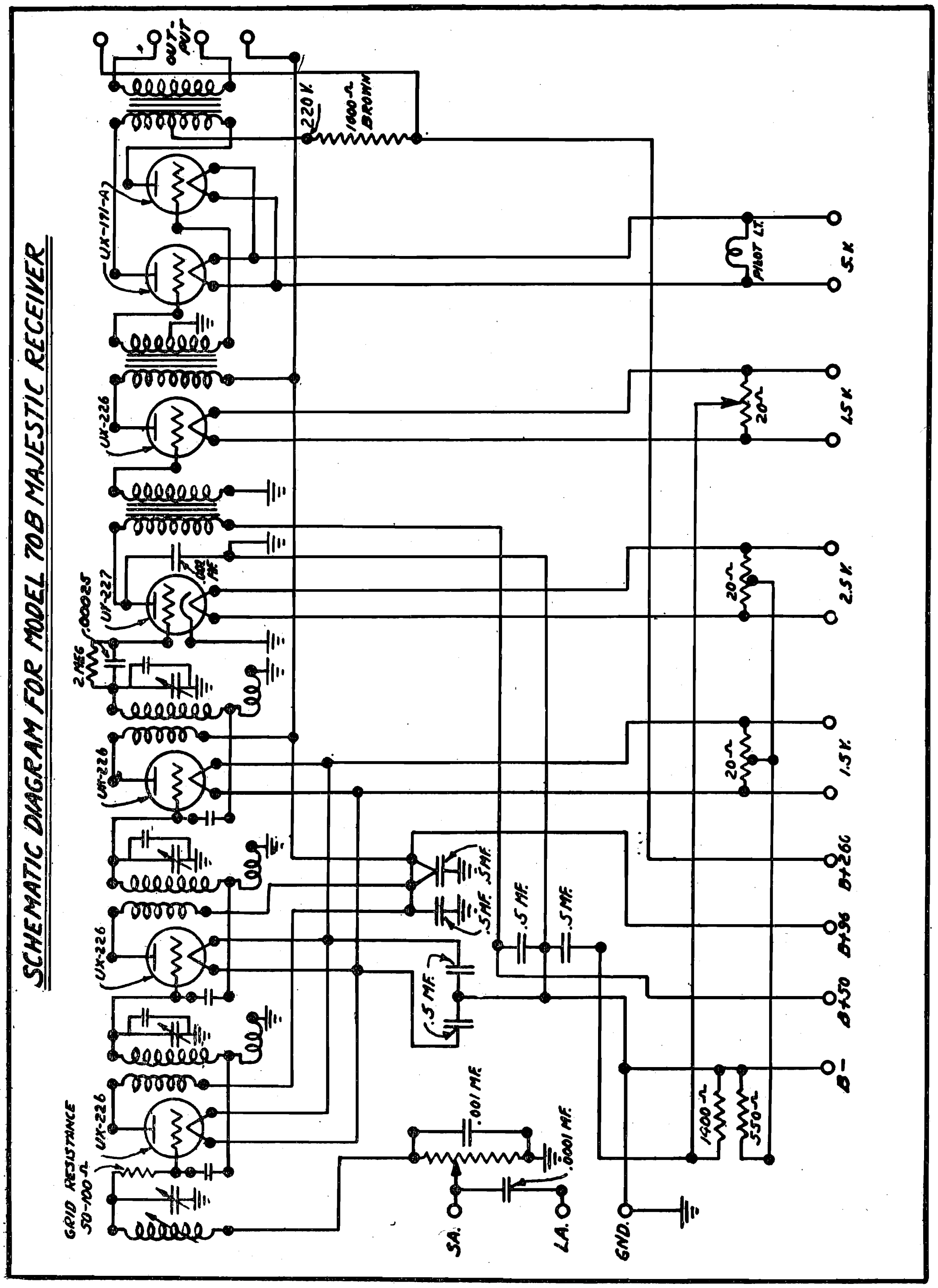
GRIGSBY - GRUNOW CO.





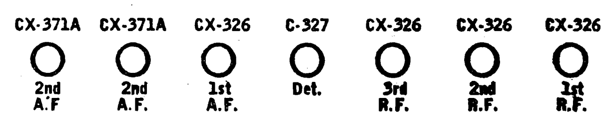
GRIGSBY - GRUNOW CO.

MODEL 70-B



Line Voltage 112—Volume Control Full
2nd A. F. Stage—2 Tubes Push Pull

Tube No. in Order	Type of Tube	Position of Tube 1st R.F. Det., Etc.	Readings, Plug in Socket of Set: Tube Out A Volts	Tube Out B Volts	Tube in Tester A Volts	Tube in Tester B Volts	C Volts	Cathode Volts	Normal Plate M.A.	Plate M.A. Grid Test	Plate M.A Change
1	226	1st. R.F.	1.5	102	1.4	96	5	-	3.5	8.5	5.0
2	226	2nd. R.F.	1.5	102	1.4	96	5	-	3.5	8.5	5.0
3	226	3rd. R.F.	1.5	102	1.4	96	5	-	3.5	8.5	5.0
4	227	Detector	2.4	100	2.2	40	0	-	3.0	3.0	0
5	226	1st. A.F.	1.5	100	1.4	83	4	-	3.5	8.0	4.5
6	171A	2nd. A.F.	5.0	192	4.8	180	40	-	20.0	23.0	3.0
7	171A	2nd. A.F.	5.0	192	4.8	180	40	-	20.0	23.0	3.0
8	280	Rectifier	-	-	4.8	-	-	-	20.0	-	-

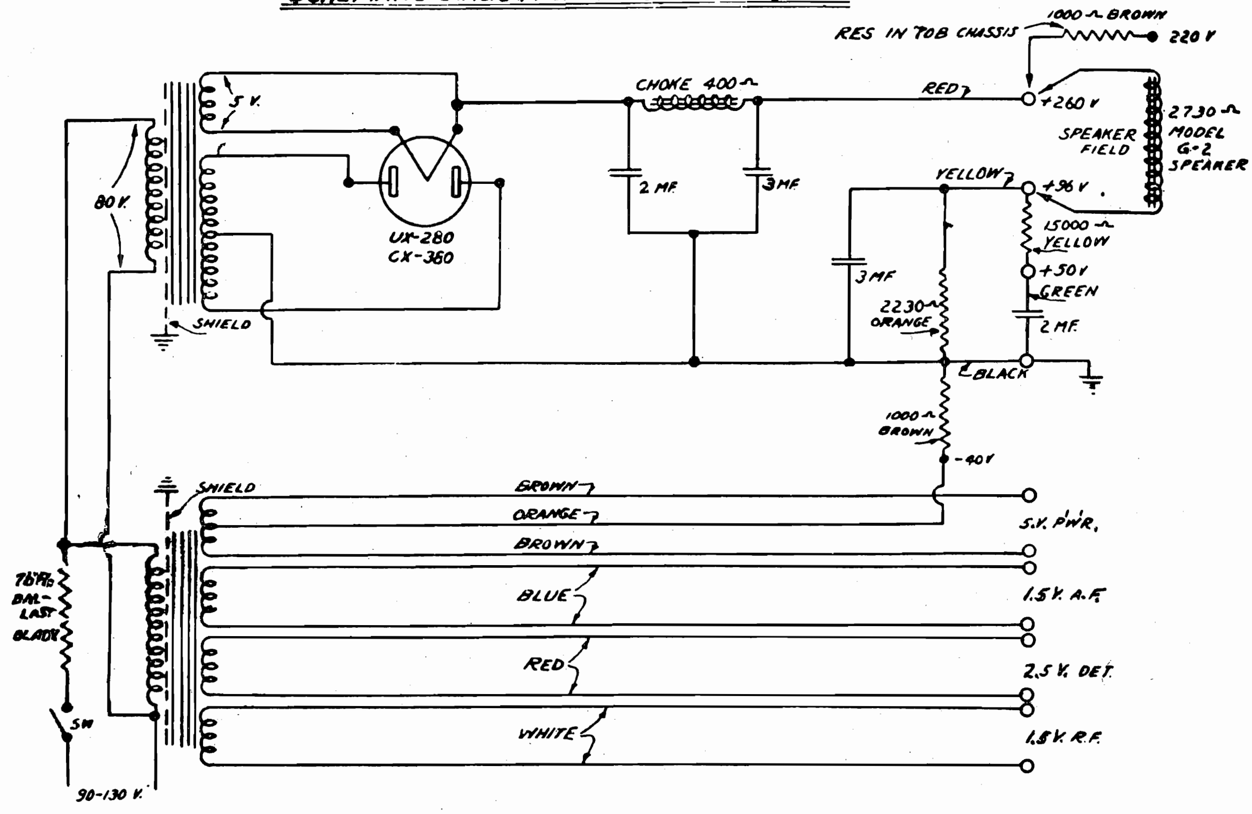


Separate Power Unit uses CX-380.

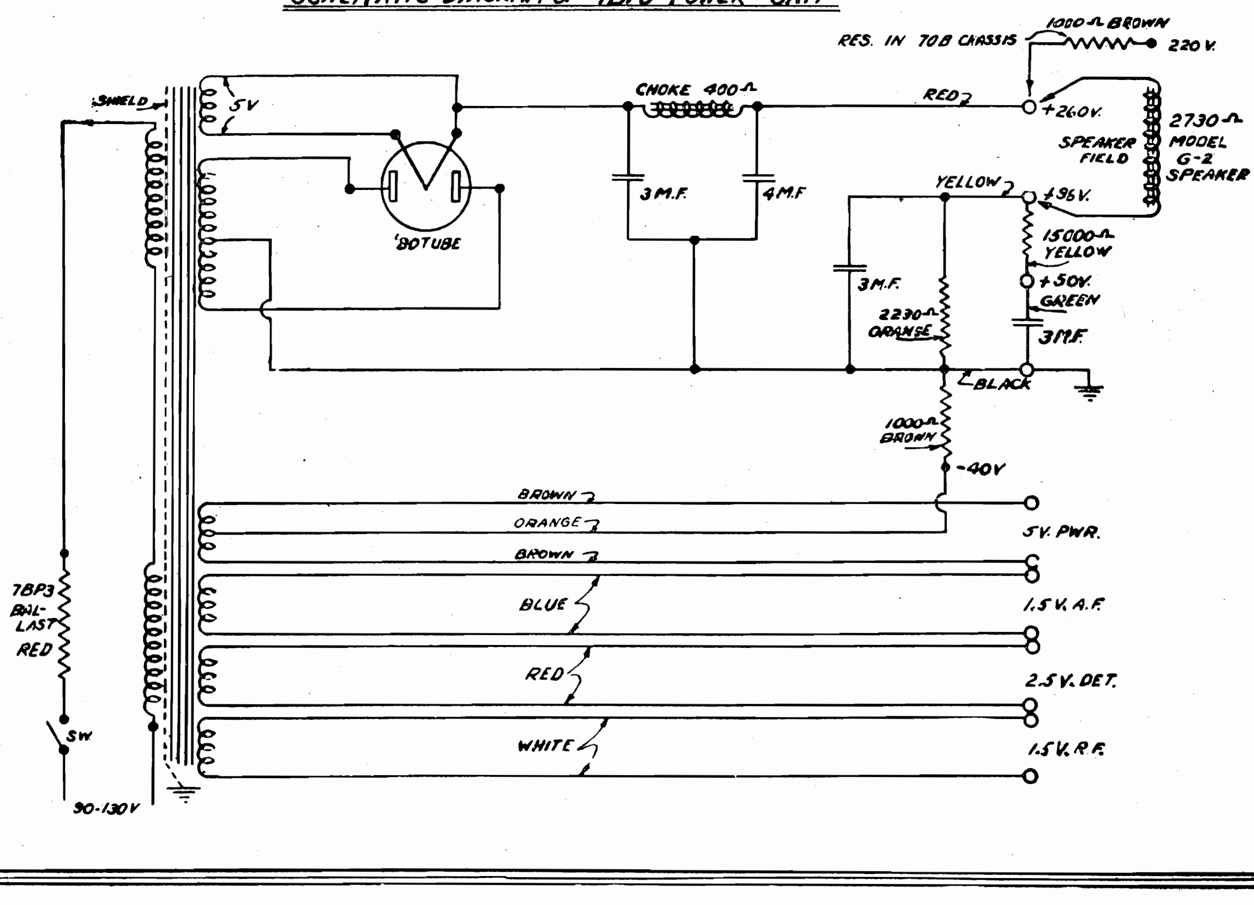
MODEL 7-BP-6, 7-BP-3
Schematic

GRIGSBY - GRUNOW CO.

SCHEMATIC DIAGRAM OF 7BP6 POWER UNIT



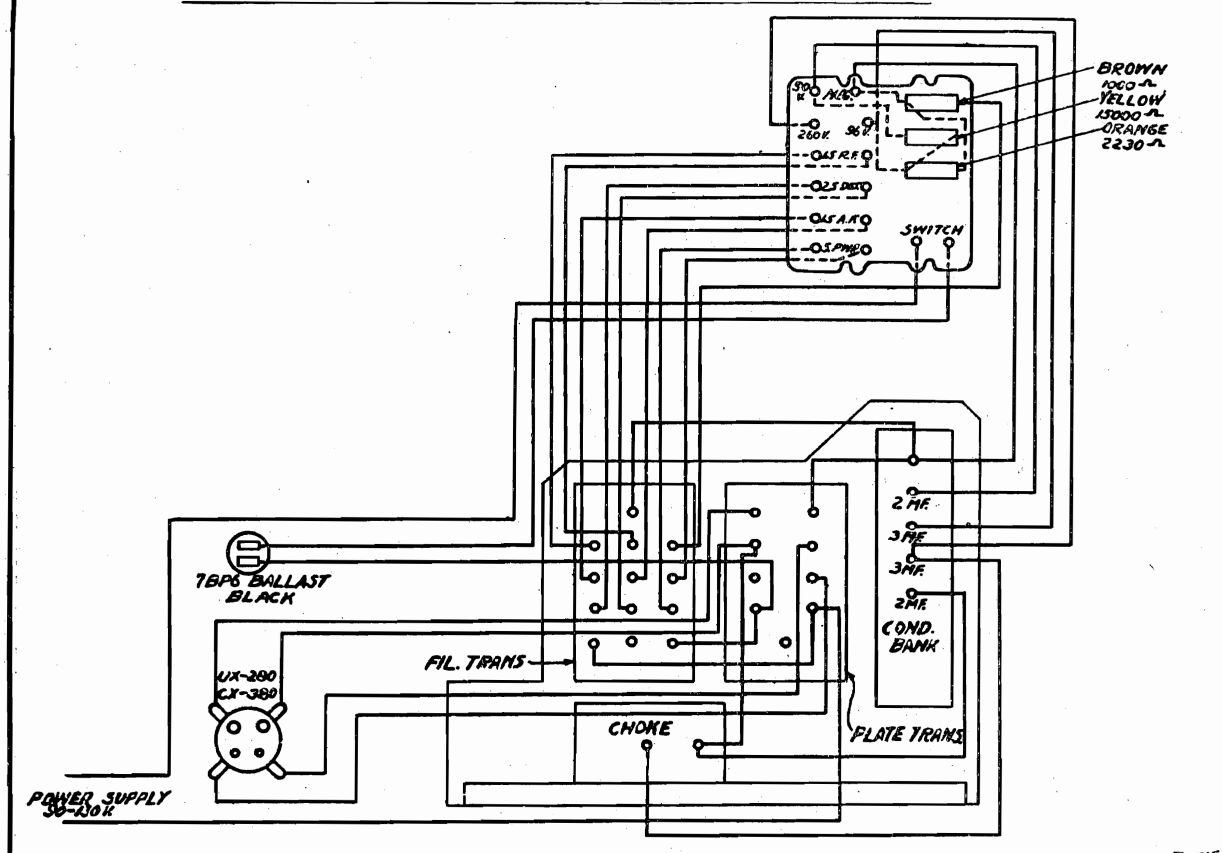
SCHEMATIC DIAGRAM OF 7BP3 POWER UNIT



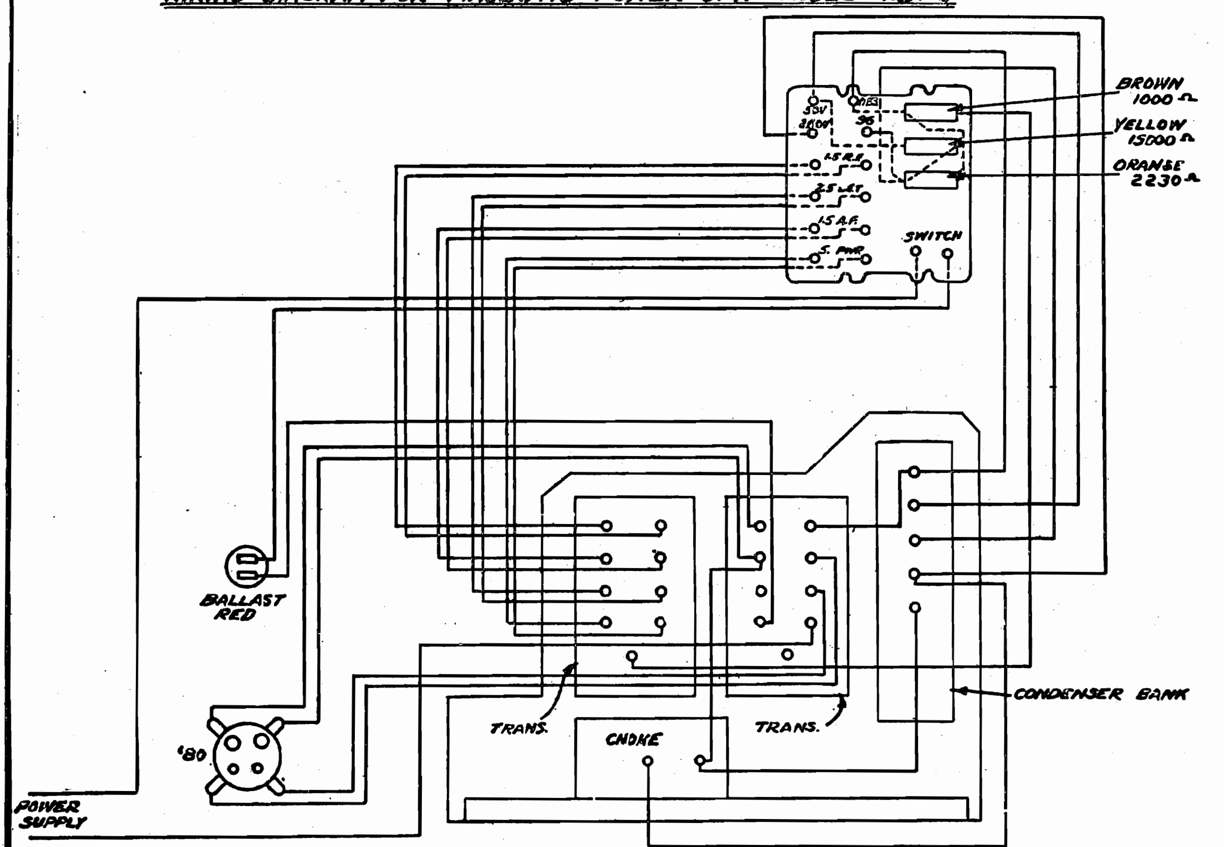
GRIGSBY - GRUNOW CO.

MODEL 7-BP-6, 7-BP-3
Wiring Diagram

WIRING DIAGRAM FOR MAJESTIC POWER UNIT – MODEL 7BP6



WIRING DIAGRAM FOR MAJESTIC POWER UNIT MODEL 7BP3

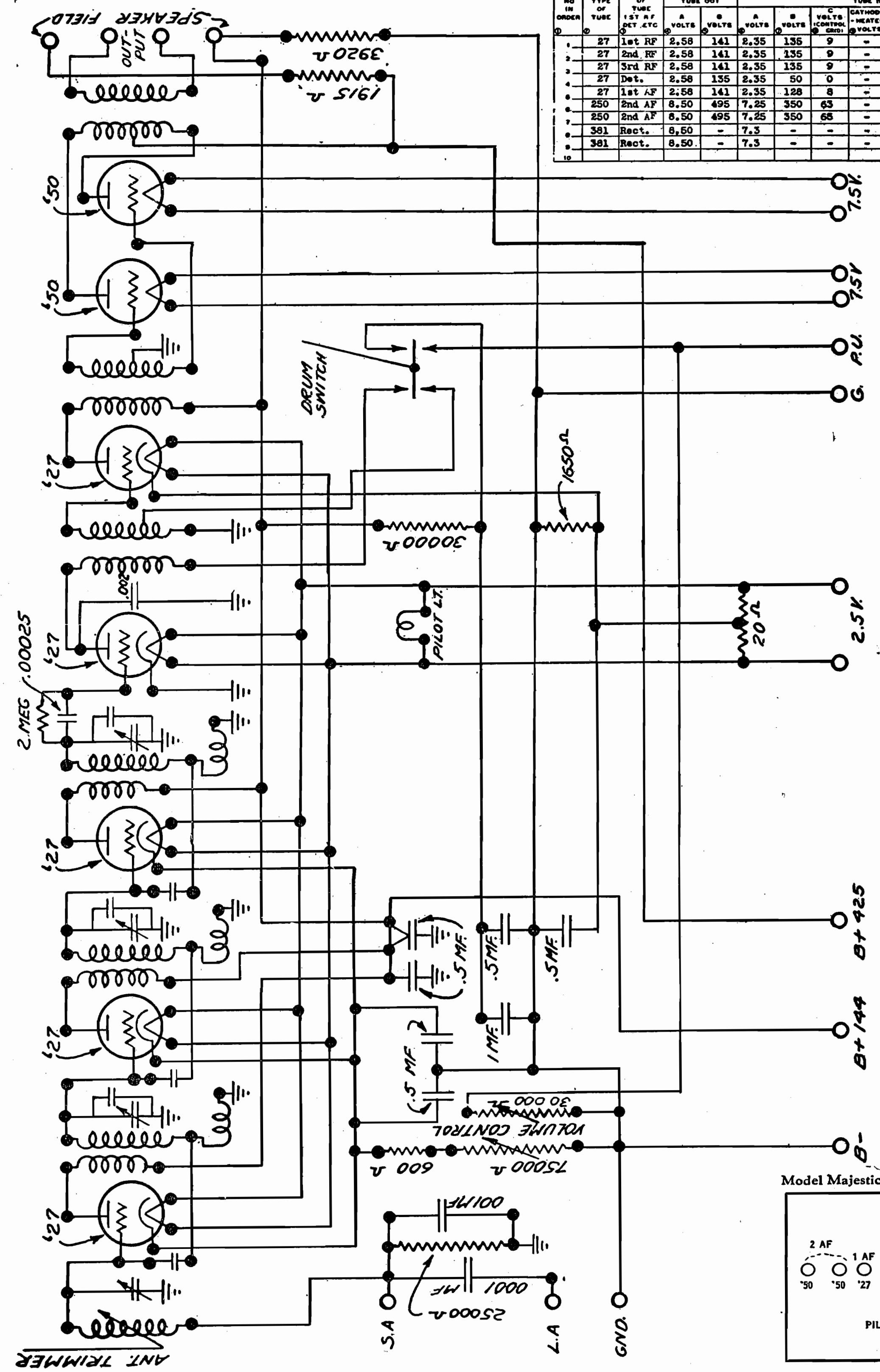


MODEL 180

GRIGSBY - GRUNOW CO.

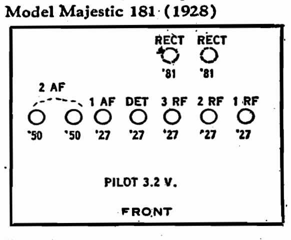
MAJESTIC—Model 181
Line Voltage 112—Set on *Volt Tap—Volume Control Position Full On
***Voltage Regulator Is Used**

TUBE NO IN ORDER	TYPE OF TUBE	POSITION OF TUBE 1ST RF DET. ETC	READINGS, PLUG IN SOCKET OF SET. TUBE OUT A VOLTS	TUBE OUT B VOLTS	TUBE IN TESTER. A VOLTS	B VOLTS	C VOLTS (CONTROL GRID)	CATHODE-HEATER VOLTS	NORMAL PLATE M.A.	PLATE M.A. GRID TEST	PLATE CHANGE M.A.	SCREEN GRID VOLTS
1	27	1st RF	2.58	141	2.35	135	9	-	5	8	3	-
2	27	2nd RF	2.58	141	2.35	135	9	-	5	8	3	-
3	27	3rd RF	2.58	141	2.35	135	9	-	5	8	3	-
4	27	Det.	2.58	135	2.35	50	0	-	3	3	-	-
5	27	1st AF	2.58	141	2.35	128	8	-	4	5.3	1.3	-
6	250	2nd AF	8.50	495	7.25	350	63	-	45	47	2	-
7	250	2nd AF	8.50	495	7.25	350	65	-	45	47	2	-
8	381	Rect.	8.50	-	7.3	-	-	-	68	-	-	-
9	381	Rect.	8.50	-	7.3	-	-	-	68	-	-	-
10												

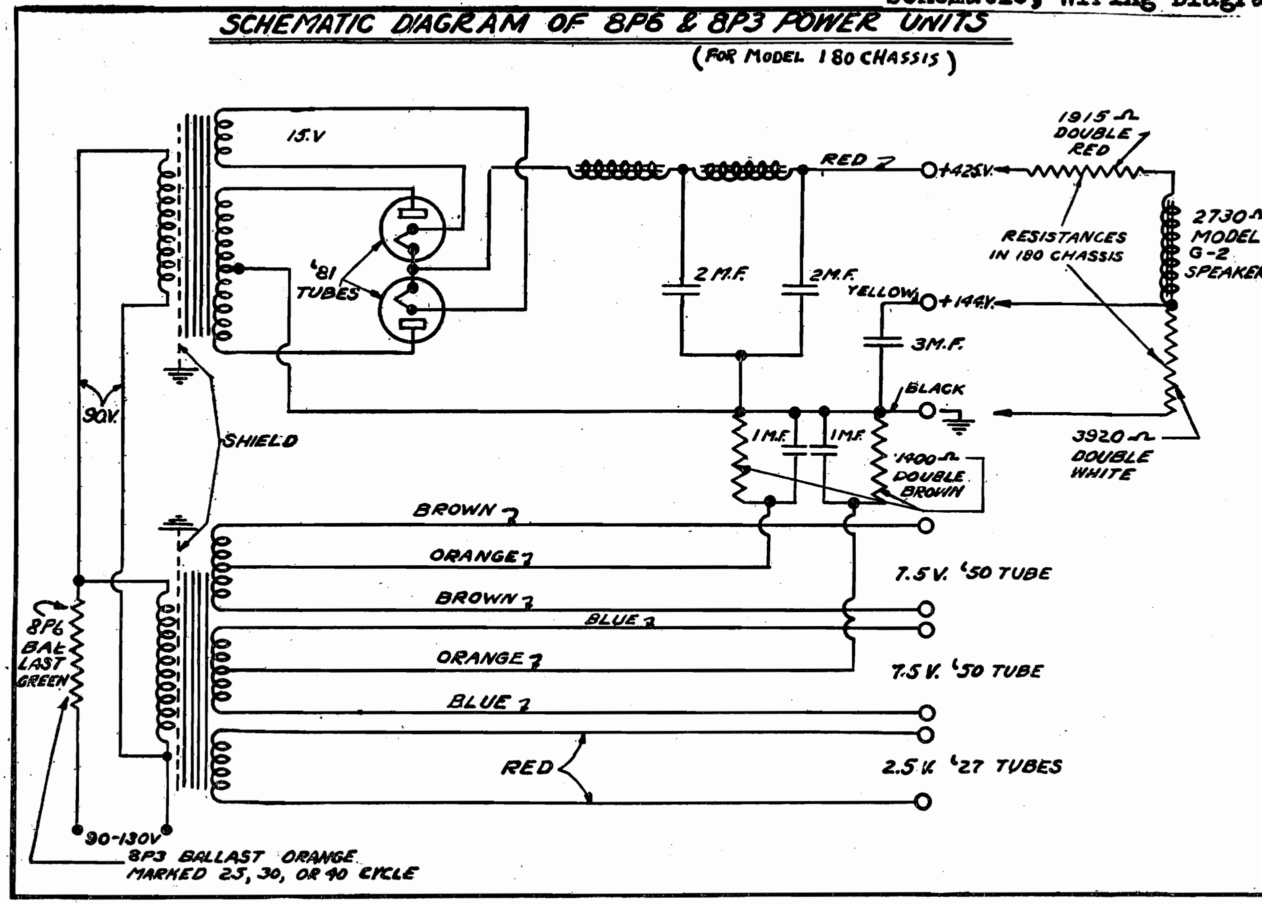


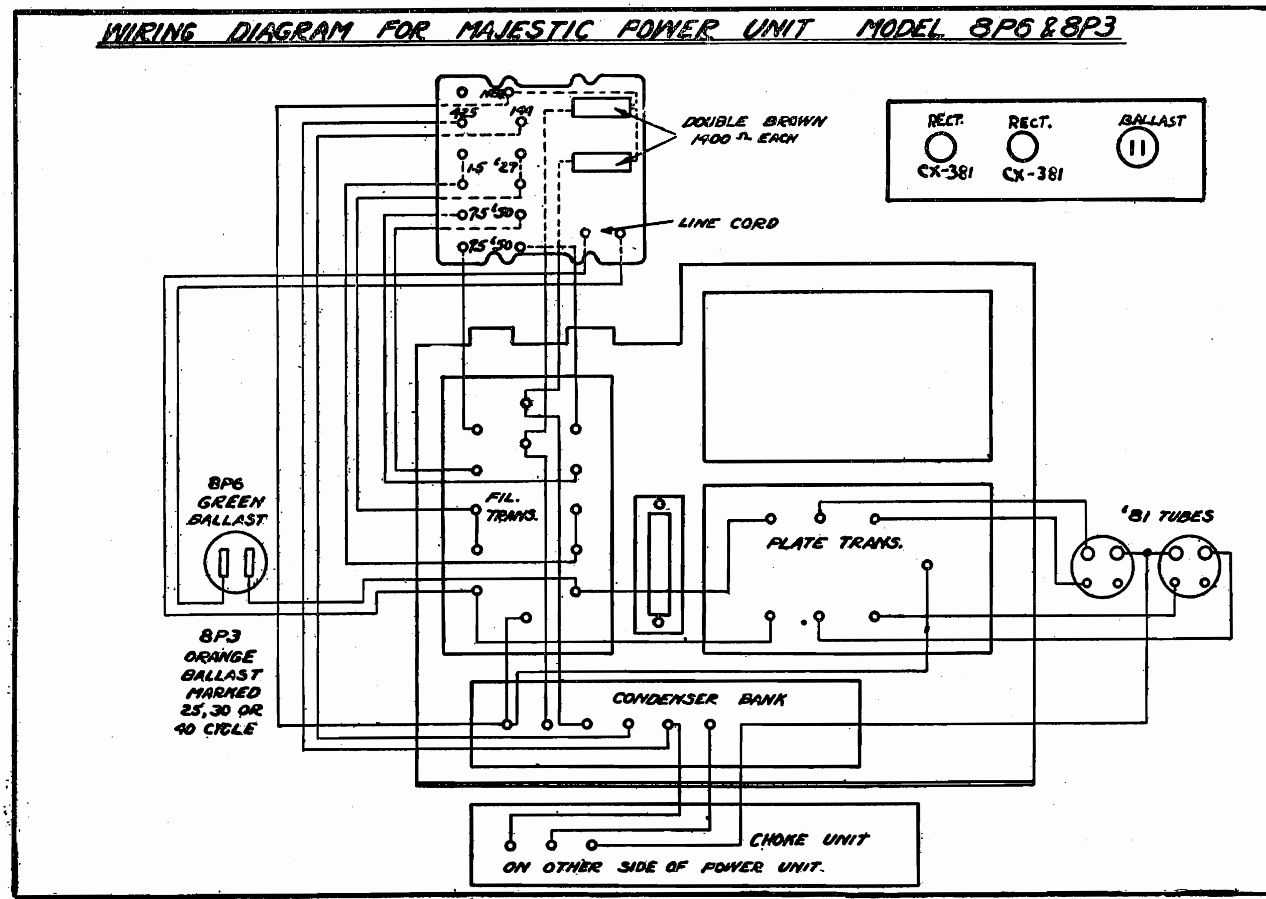
SCHEMATIC DIAGRAM FOR MODEL 180 MAJESTIC RECEIVER

Model Majestic 181 (1928)



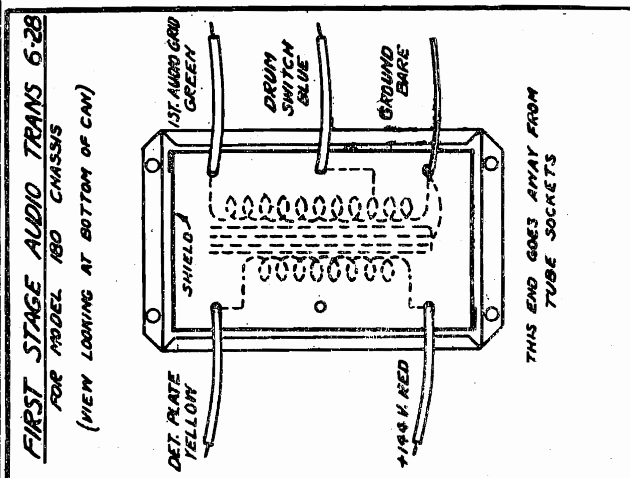
GRIGSBY-GRUNOW CO. MODEL 8-P-6, 8-P-3 Schematic, Wiring Diagram

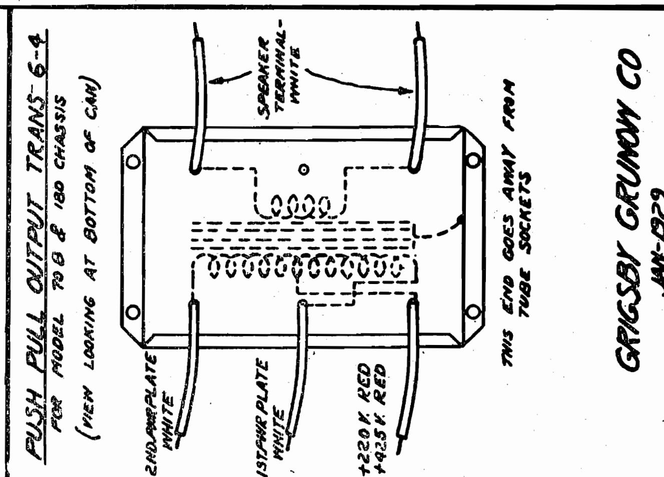


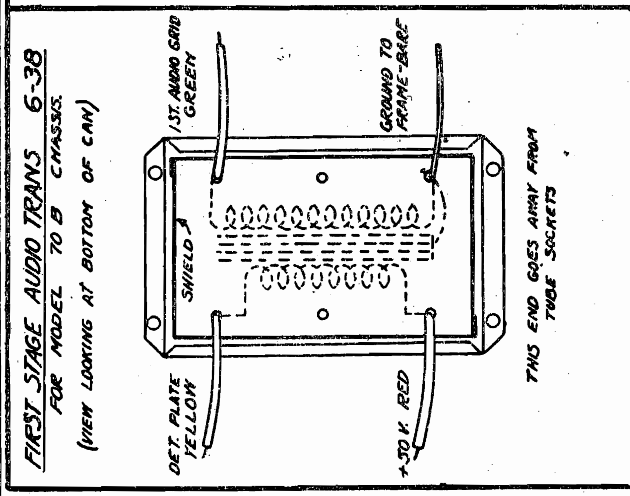


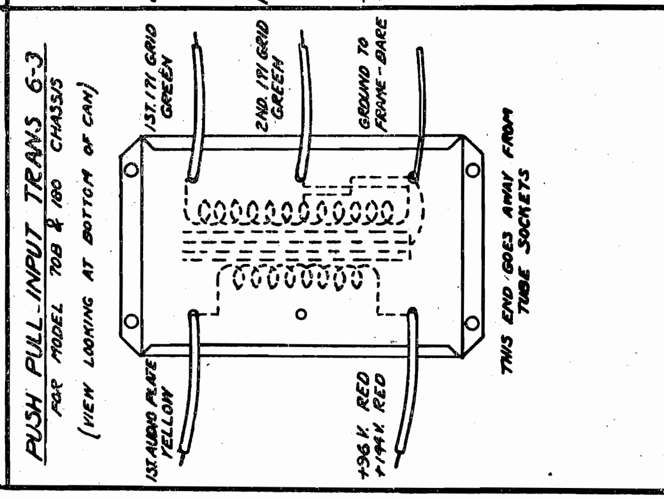
MODELS 70-B,180
Data

GRIGSBY - GRUNOW CO.









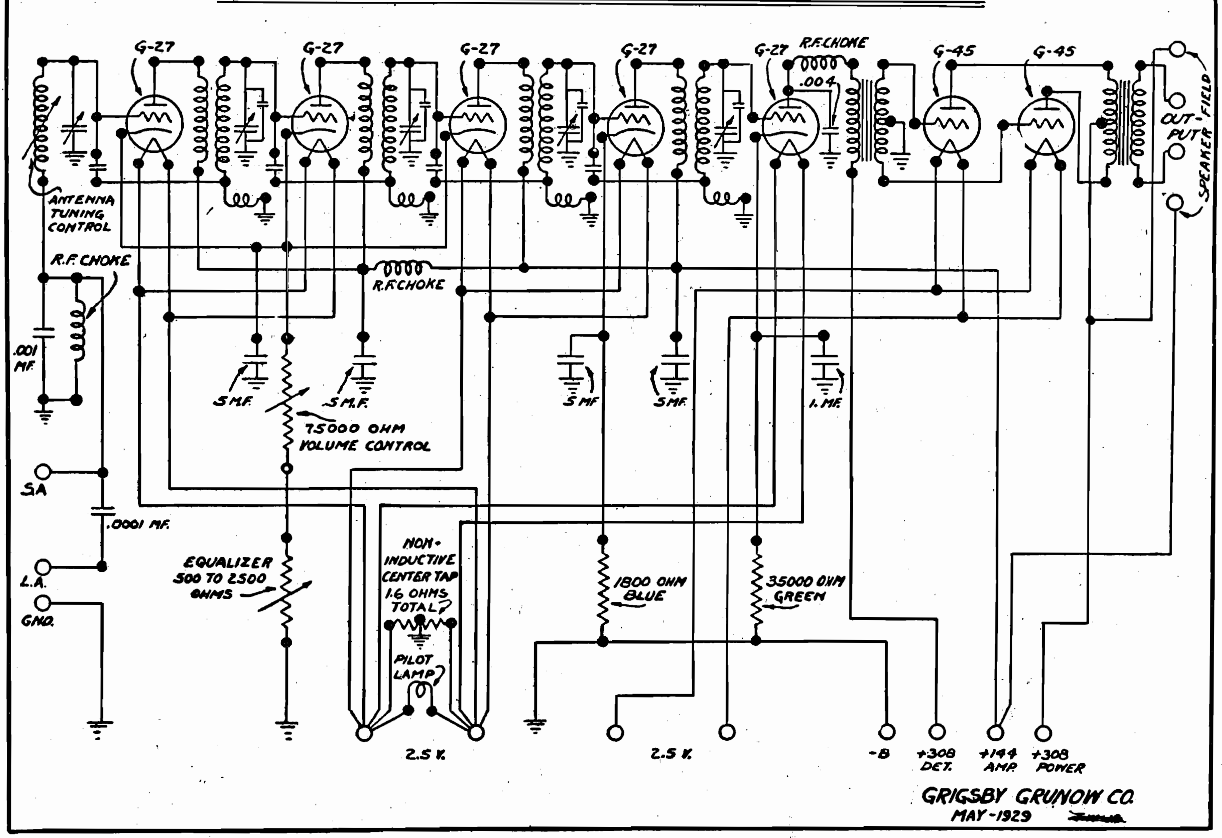
BALLAST SPECIFICATIONS FOR THE VARIOUS TYPES OF MAJESTIC ELECTRIC POWER UNITS

POWER UNIT TYPE	FREQUENCY CYCLES PER SECOND	BALLAST MARKING	BALLAST COLOR	LINE VOLTAGE	PRIMARY VOLTS	
7P6	60	B	BLACK	115	80	
7P3	25-30-40	B	BLACK	115	60	
7BP6	60	7BP6	BLACK	115	80	
7BP6	60	7BP6	BLUE	230	160	
7BP3	25	7BP3 25	RED	115	80	
7BP3	30	7BP3 30	RED	115	80	
7BP3	40	7BP3 40	RED	115	80	
8P6	60	8 P6	GREEN	115	90	
8P6	60	8 P6	YELLOW	230	180	
8P3	25	8P3 25	ORANGE	115	90	
8P3	30	8P3 30	ORANGE	115	90	
8P3	40	8P3 40	ORANGE	115	90	

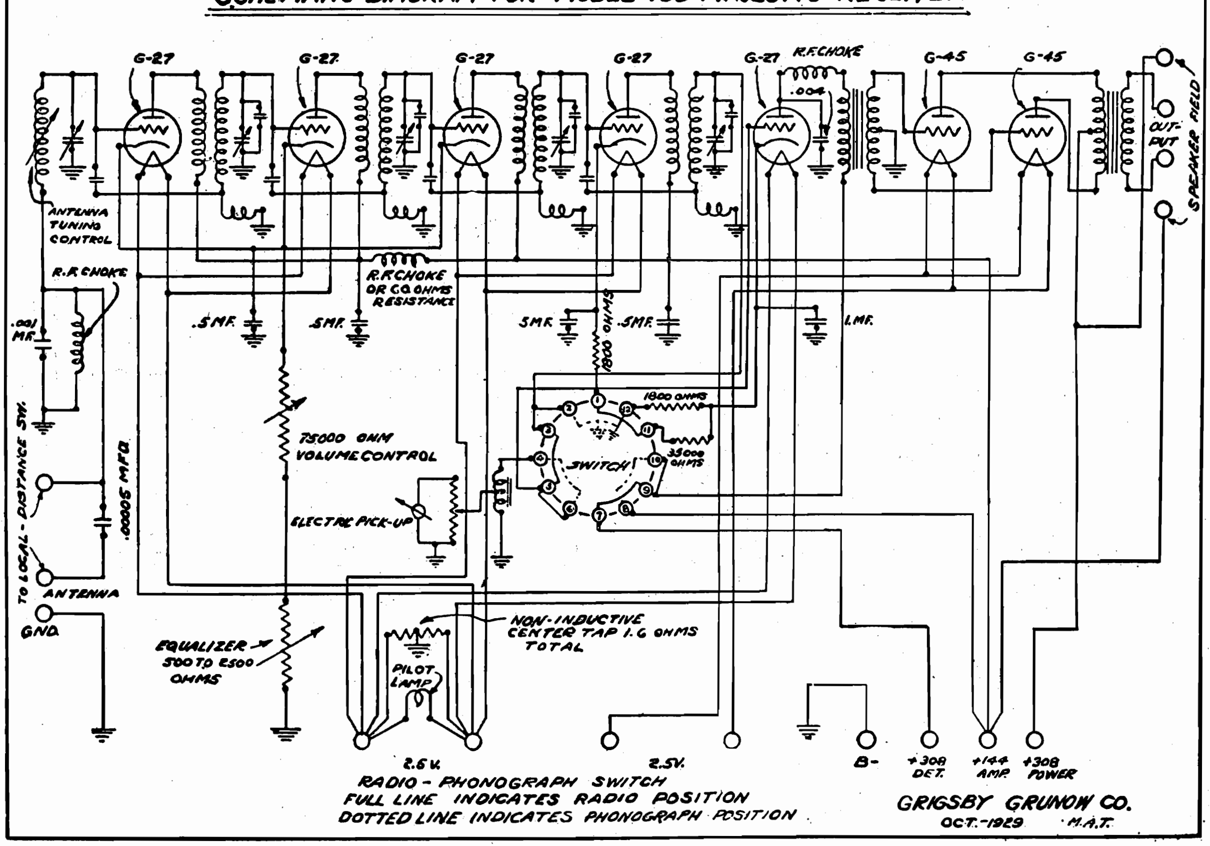
GRIGSBY - GRUNOW CO.

MODEL 90,100
Schematic

SCHEMATIC DIAGRAM FOR MODEL 90 MAJESTIC RECEIVER

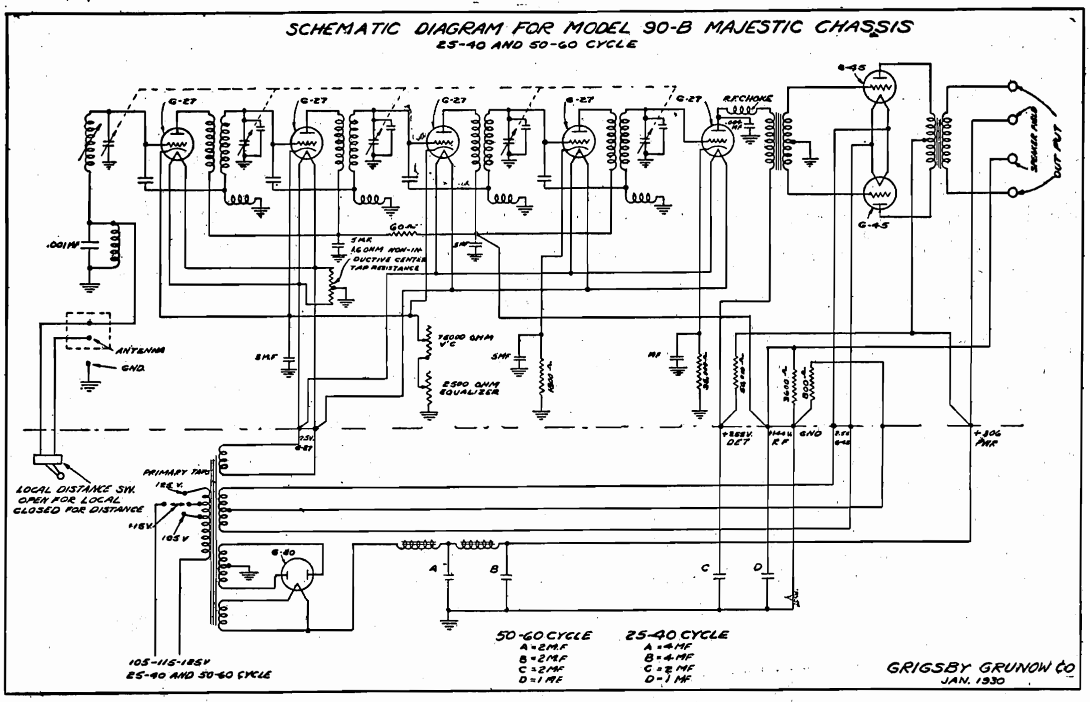


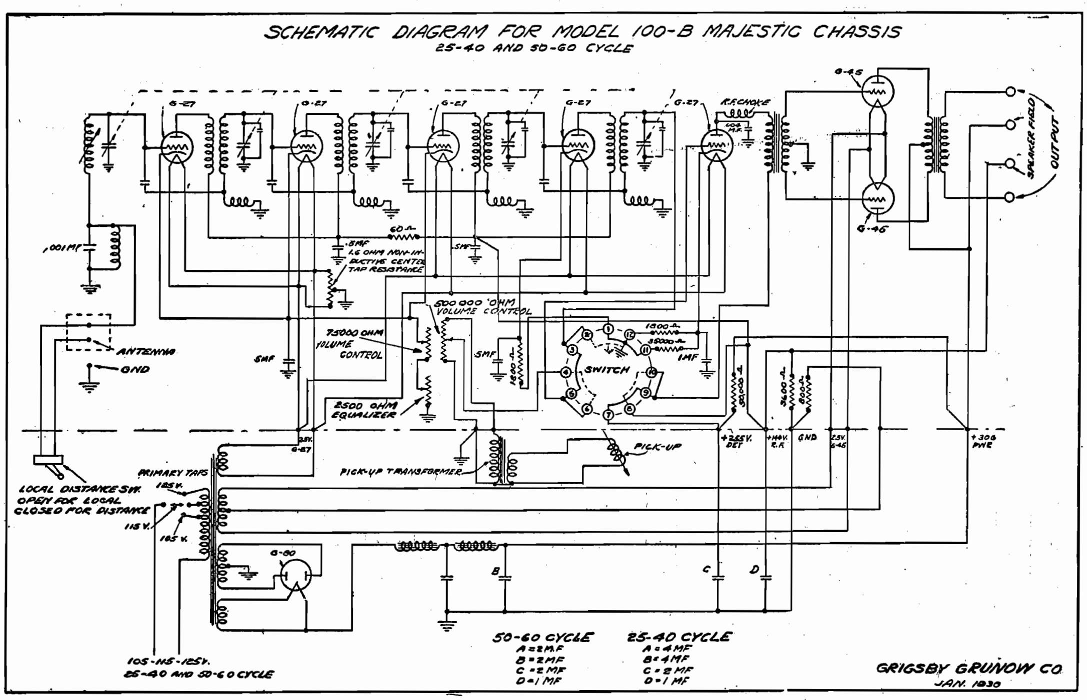
SCHEMATIC DIAGRAM FOR MODEL 100 MAJESTIC RECEIVER



MODEL 90-B
MODEL 100-B

GRIGSBY - GRUNOW CO.

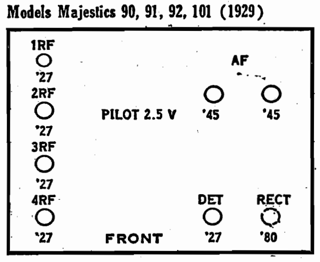




Line Voltage 112—Set on *Volt Tap—Volume Control Pesition Full On
***Voltage Regulator Is Used**

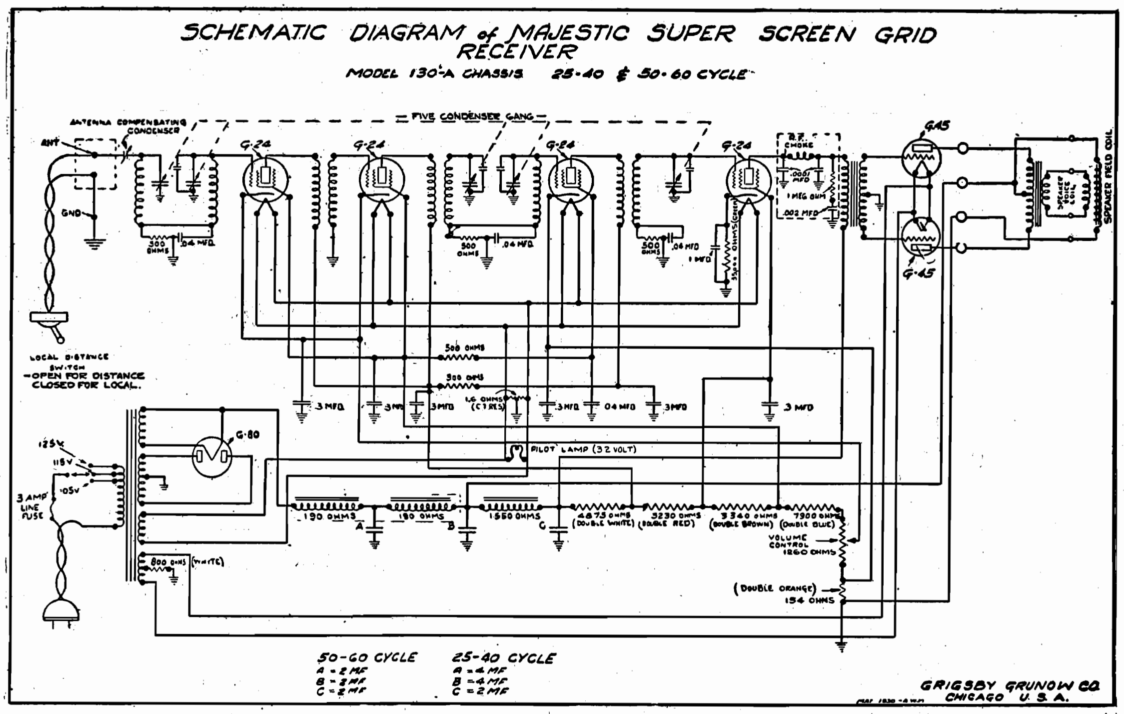
TUBE NO. IN ORDER ①	TYPE OF TUBE ②	POSITION OF TUBE 1 ST. R.F. DET., ETC. ③	READINGS, PLUG IN SOCKET OF SET									
			TUBE OUT		TUBE IN TESTER							
			④ A VOLTS	⑤ B VOLTS	⑥ A VOLTS	⑦ B VOLTS	⑧ C VOLTS (CONTROL GRID)	⑨ CATHODE-HEATER VOLTS	⑩ NORMAL PLATE M.A.	⑪ PLATE M.A. GRID TEST	⑫ PLATE CHANGE M.A.	⑬ SCREEN GRID VOLTS
1	27	1st RF	2.58	148	2.35	130	8	8	5.5	7.8	2.3	-
2	27	2nd RF	2.58	148	2.35	130	8	8	5.5	7.8	2.3	-
3	27	3rd RF	2.58	148	2.35	130	8	8	5.5	7.8	2.3	-
4	27	4th RF	2.58	148	2.35	130	9	-9	5	7.2	2.2	-
5	27	Det.	2.58	306	2.35	270	30	30	1	1	1	-
6	245	Power	2.65	275	2.45	250	50	-	32	37	5	-
7	245	Power	2.65	275	2.45	250	50	-	32	37	5	-
8	380	-	-	-	-	-	-	-	100	-	-	-

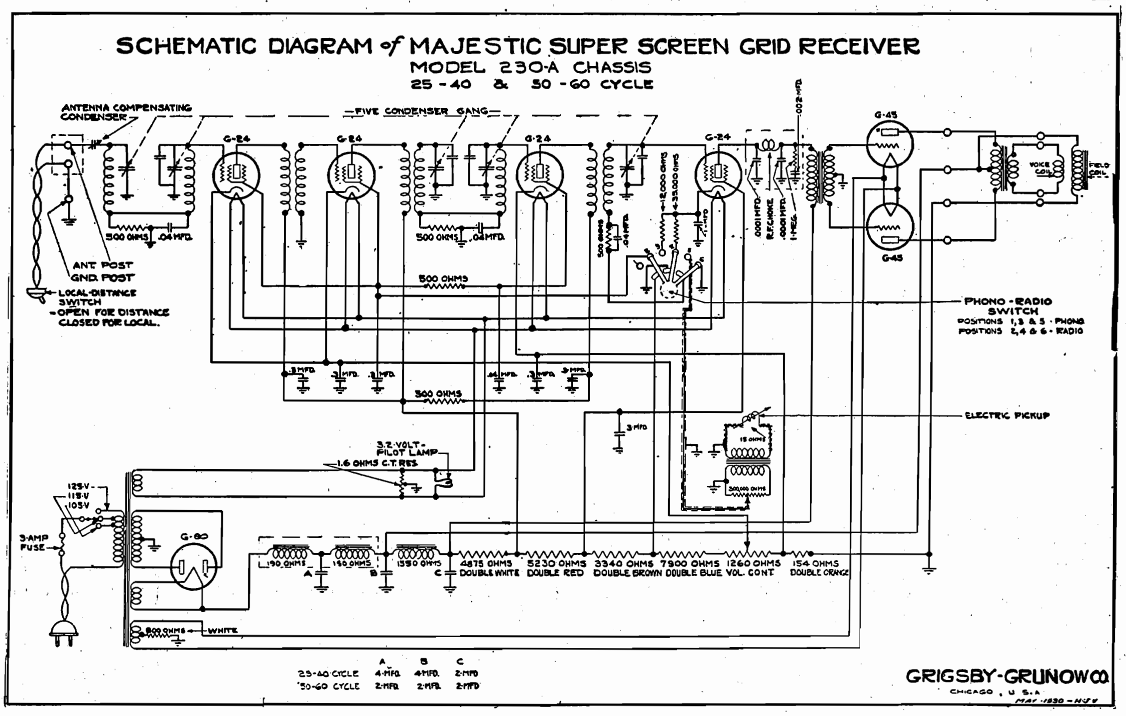
Models Majestics 90, 91, 92, 101 (1929)



MODEL 130-A
MODEL 230-A

GRIGSBY - GRUNOW CO.

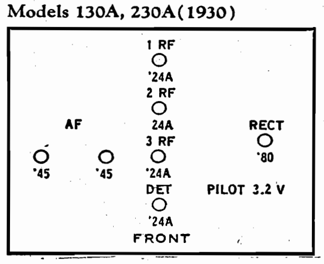




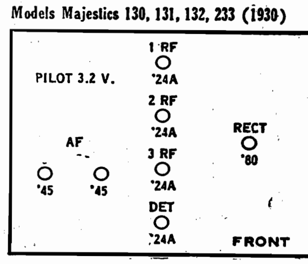
MAJESTIC—Models 130, 131, 132 and 233
Line Voltage 115—Voltage Tap 115
Volume Control Maximum

Tube No. in Order Tested (1)	Type of Tube (2)	Position of Tube in Set (3)	Meter Readings with Jewell Test Plug in Socket of Set — Operating Voltages — Filament or Heater (4)	Plate or Anode (5)	Control Grid—Space Gd + (6)	Normal Grid—Screen Gd + (7)	Cathode to Heater (8)	Milliamperes — Screen Gd L. H. '80 Plate (9)	Plate R. H. '80 Plate (10)	Tube Test (11)	Plate Current Change (12)
1	G-24	1 R.F.	2.35	180	3	90	3	-	3		
2	G-24	2 R.F.	2.35	180	3	90	3	-	3		
3	G-24	3 R.F.	2.35	180	3	90	3	-	3		
4	G-24	Det.	2.35	263	12	125	12	-	5		
5	G-45	PP-AF	2.45	250	-	50	-	-	32		
6	G-45	PP-AF	2.45	250	-	50	-	-	32		
7	G-80	Rect.	4.8	-	-	-	-	45	45		

Models 130A, 230A (1930)



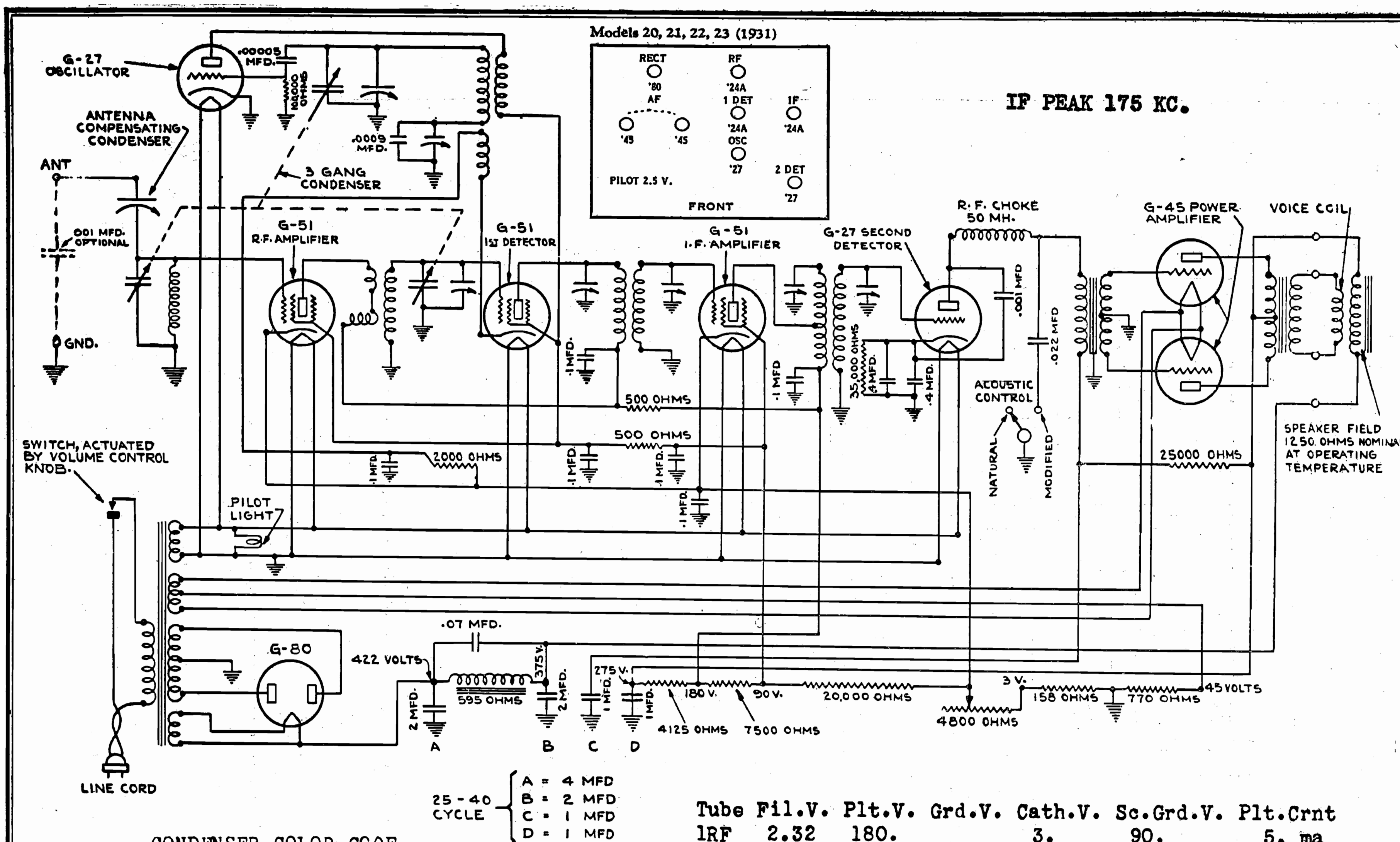
Models Majestics 130, 131, 132, 233 (1930)



MODEL 20,21,22,23

GRIGSBY - GRUNOW CO.

IF PEAK 175 KC.



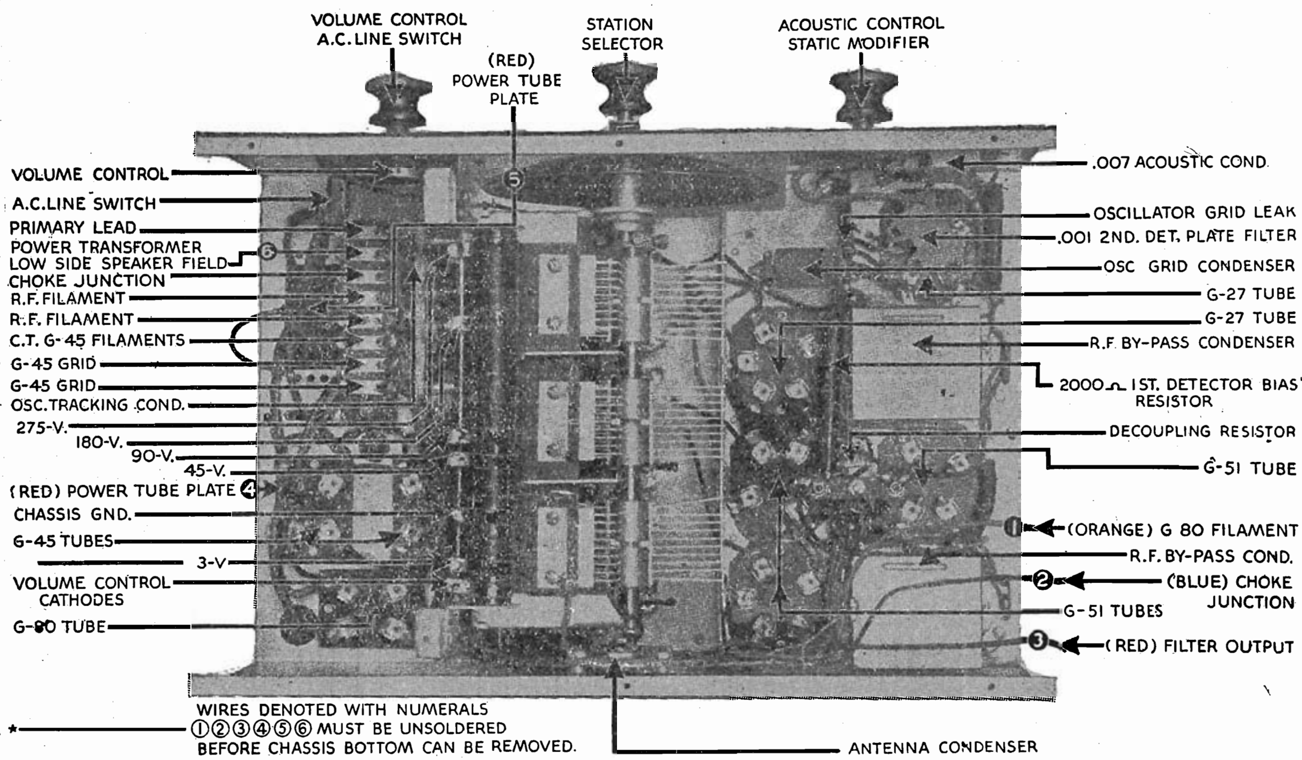
CONDENSER COLOR CODE

2 mfd condenser- Orange, stranded
2 mfd condenser- Blue, stranded
1 mfd condenser- Red, stranded
1 mfd condenser- Green stranded
Condenser common- Black stranded
.C7 mfd condenser- White stranded

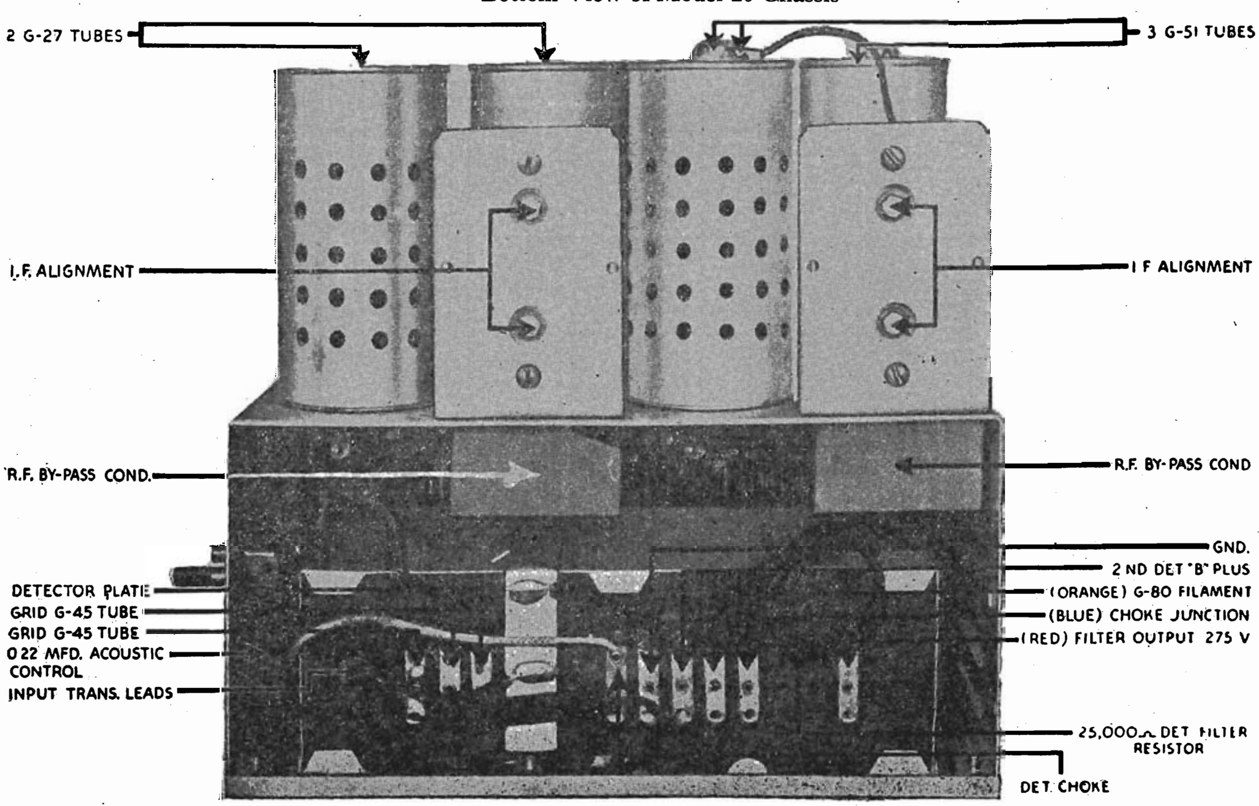
Tube	Fil.V.	Plt.V.	Grd.V.	Cath.V.	Sc.Grd.V.	Plt.Crnt
1RF	2.32	180.		3.	90.	5. ma
Osc.	2.32	90.		0.		4.
1Det.	2.32	180.		8.	90.	1.
1IF	2.32	180.		3.	90.	5.
2Det	2.32	255.		21		8.
PPAF	2.36	275.	45.			28.
PPAF	2.36	275.	45.			28.
Rec.	4.88	410.				80.

GRIGSBY - GRUNOW CO.

MODEL 20 Chassis



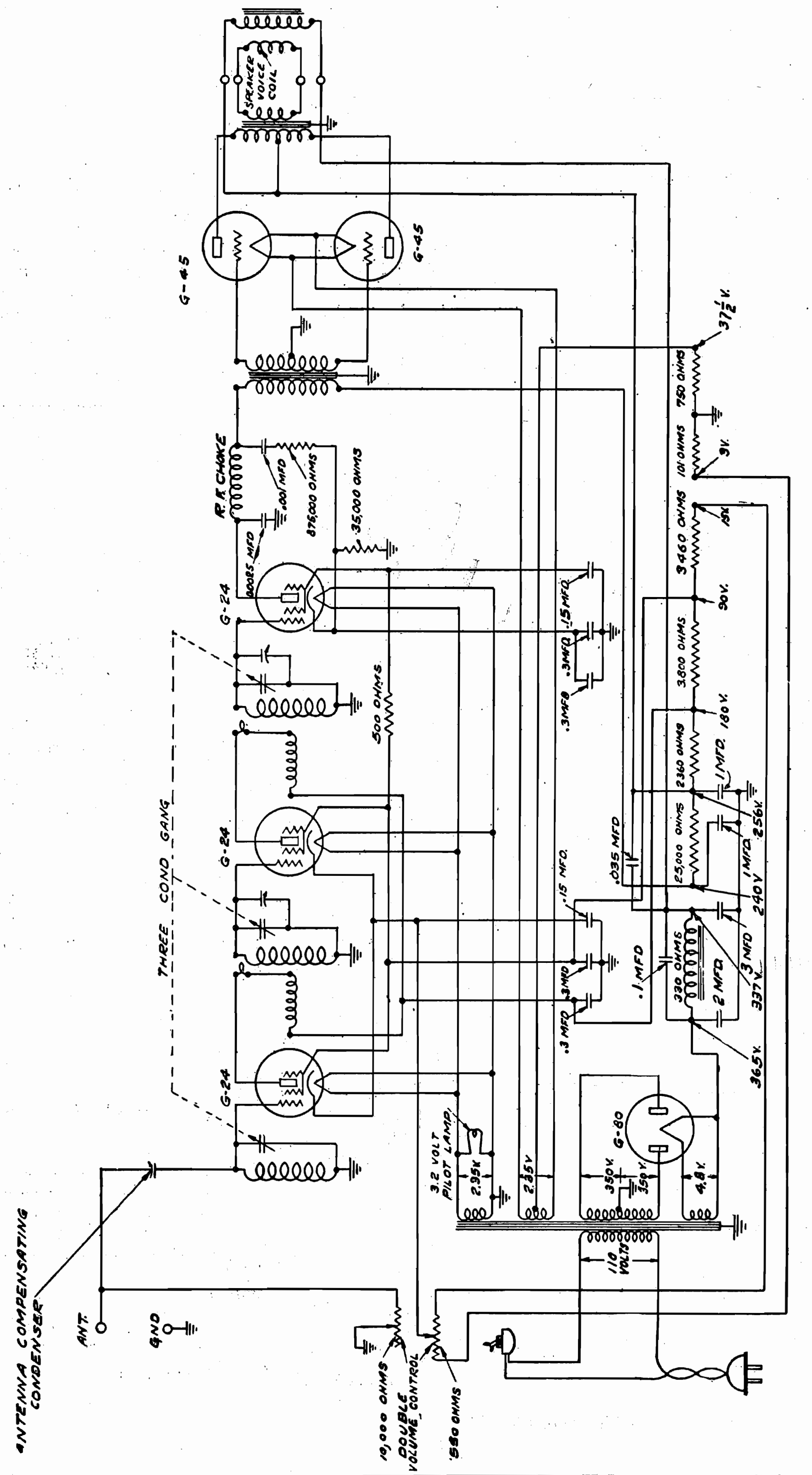
Bottom View of Model 20 Chassis

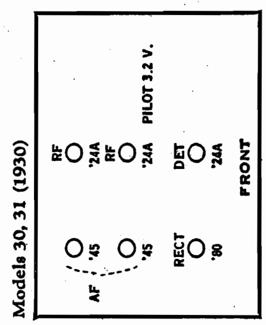


End View of Model 20 Chassis

MODEL 30, 31

GRIGSBY - GRUNOW CO.



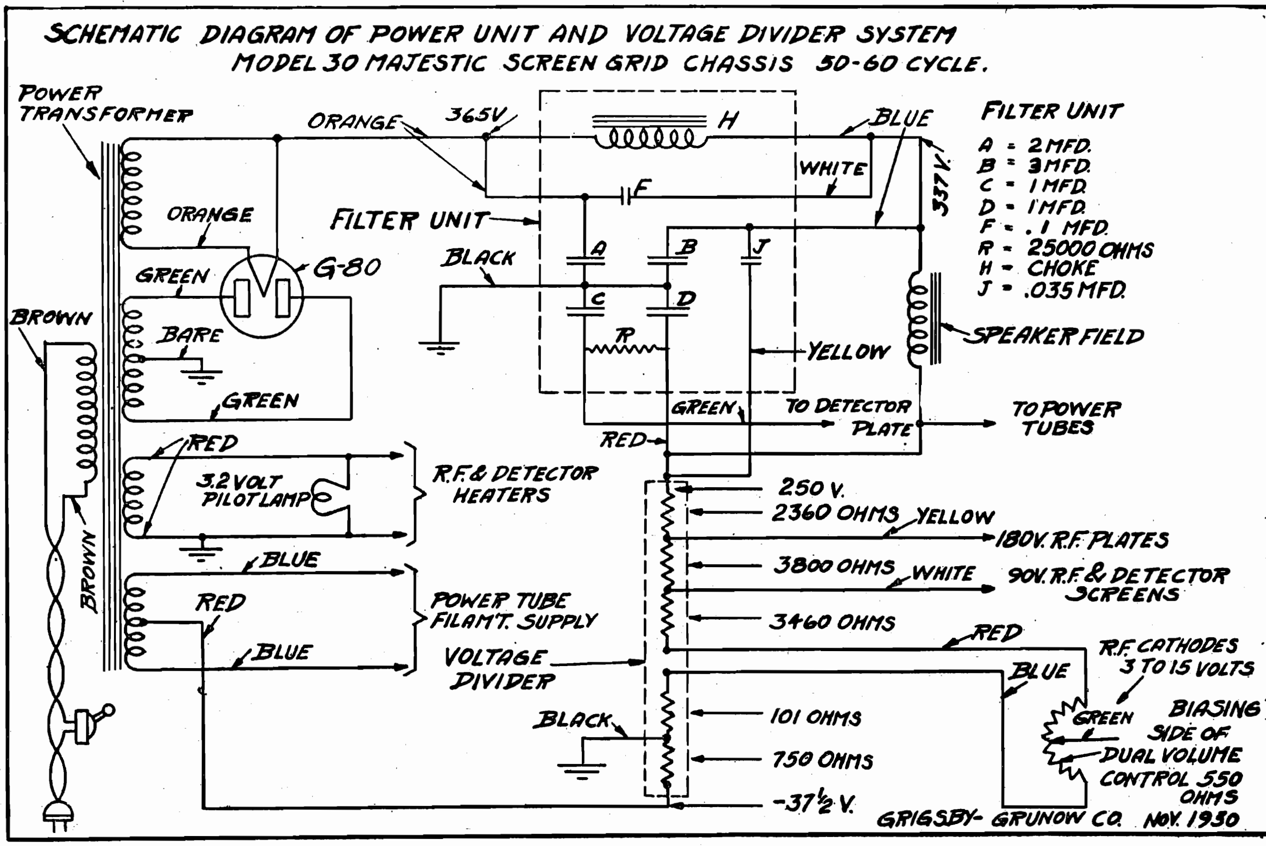


COLOR CODE
POWER TRANSFORMER

Brown (Small Solid)	Primary
Brown (Small Solid)	Primary
Blue	Filament (2) G-45
Blue	Filament (2) G-45
Red (Heavy Solid)	Heater (3) G-24
Red (Heavy Solid)	Heater (3) G-24
Red (Small Stranded)	Center Tap G-45
Green	Anode
Bare	C. T. Anode
Green	Anode
Orange	Filament (1) G-80
Orange	Filament (1) G-80

GRIGSBY - GRUNOW CO.

MODEL 30
Voltage-Data



FILTER UNIT

Condenser

	From:	Connect to:
Orange	2 mfd. condenser	G-80 Socket (Filament)
Blue	3 mfd. condenser	Junction of Speaker Field and Choke
Green	1 mfd. condenser	Start of Primary of Input Transformer
Red	1 mfd. condenser	Free end of 2360 ohm resistor
Yellow	.035 mfd. condenser	Free end of 2360 ohm resistor
White	.10 mfd. condenser	Junction of Speaker Field and Choke
Black	condenser common	Ground

Choke

	Connect to:
Orange	G-80 socket (Filament)
Blue	Junction of speaker field and choke

Caution

Under no condition, attempt to use a ground connection on the antenna binding posts. Be certain that the antenna and ground wires are on their respective posts.

Under no circumstances should a gas pipe be used for a ground.

Model G-6 Dynamic Speaker

The Model G-6 Dynamic Speaker used on the Model 30 receiver is a highly efficient speaker. The field construction is of the improved "U" Type. The field coil is treated in an impregnating compound that keeps it weatherproof and allows air cooling. The field coil resistance is 1,000 ohms. The G-6 speaker uses a nine inch cone of waterproof lacquered buckram made by the same process as the Super-Colotura G-5 cone. The G-6 Dynamic Speaker has been designed to give a uniform response over the audio frequency range. The cone coil is the same as used on Model G-5 Speaker.

Speaker Cables

During the periods of production of the G-6 Speaker, different colored wires will be used for the field and voice coil leads, in the cable. So that the service man may easily check the circuits, we are listing below the three groups which will be used:

Standard Cable	Revamped Cable	Revamped Cable	Chassis Connections	Speaker Terminal Connections	
Blue	Red	White	Secondary of Output Transformer	White	Voice Coil Leads
Blue	Red	White		White	
Red	Yellow	Red	"B" Maximum on Multiple Resistor	Red	Field Coil Leads
Black	Green	Blue	Speaker Field and Choke Junction	Blue	

For example you may be called upon to check a Receiver and Speaker, and upon examination you find that the leads are two White wires, and a Red and a Blue wire. Reference to the group above will eliminate any trouble you might experience in determining whether the leads in question are voice coil or field coil leads.

Table of Voltages

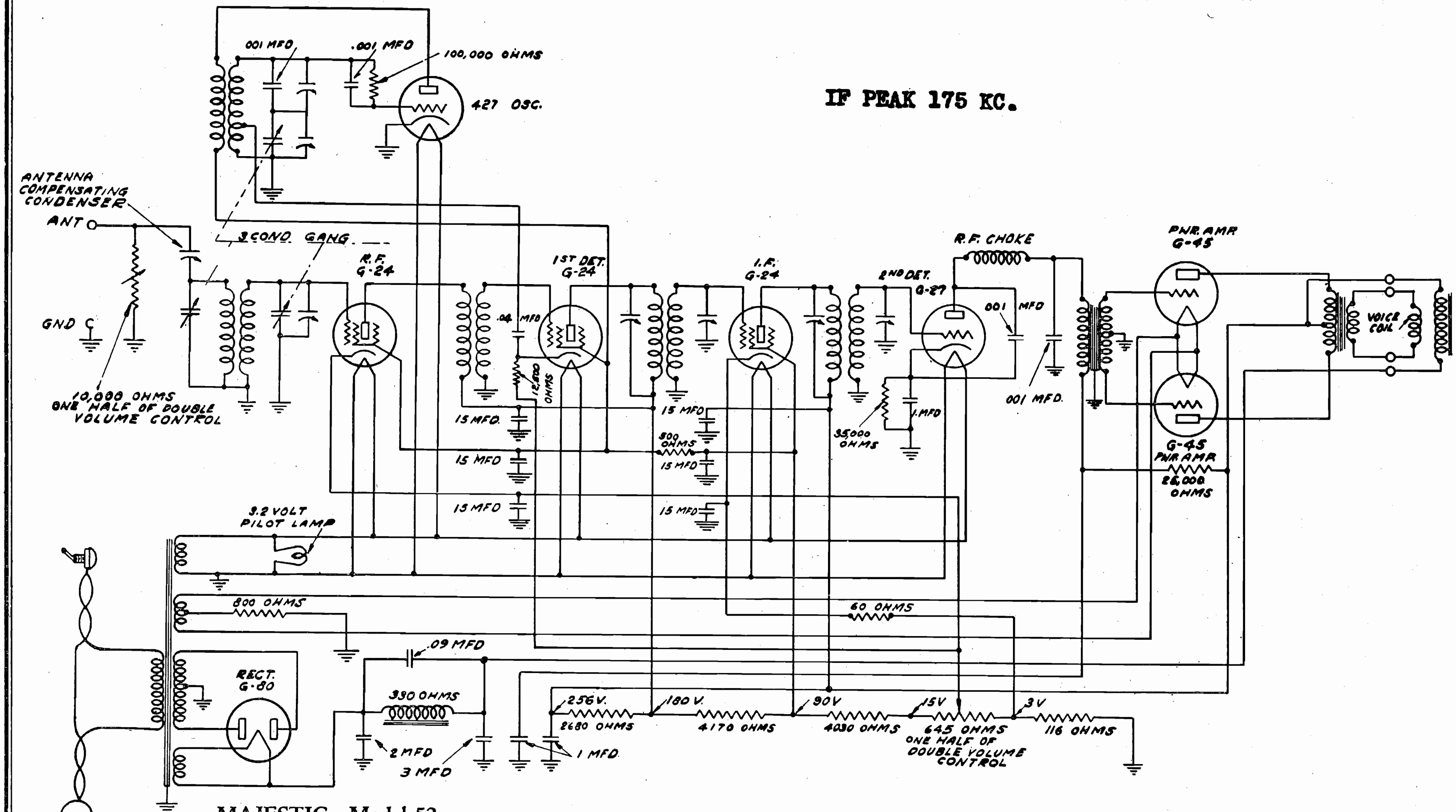
Stage	Tube	Fil. Volts	Plate Volts	Grid Volts	Cath. Volts	Normal Plate M. A.	Screen Volts
1st R. F.	G-24	2.35	180	3	3	3	90
2nd R. F.	G-24	2.35	180	3	3	3	90
Detector	G-24	2.35	225	10	10	3	90
1st Pwr.	G-45	2.35	250	37.5		25	
2nd Pwr.	G-45	2.35	250	37.5		25	
Rect.	G-80	4.80	358			40	

NOTE: All Plate, Screen Grid, Control Grid, and Cathode Voltages are measured from Ground (chassis) with a standard 1,000 ohm per volt, voltmeter.

MODEL 50, 52

GRIGSBY - GRUNOW CO.

IF PEAK 175 KC.



MAJESTIC—Model 52
Line Voltage 110+=Volume Control Full On

TUBE NO. IN ORDER TESTED ①	TYPE OF TUBE ②	POSITION OF TUBE IN SET ③	METER READINGS, WITH JEWELL TEST PLUG IN SOCKET OF SET — OPERATING VOLTAGES: FILAMENT OR HEATER ④	PLATE OR ANODE ⑤	CONTROL GRID—SPACE GD+ ⑥	NORMAL GRID—SCREEN GD+ ⑦	CATHODE TO HEATER ⑧	MILLIAMPERES: SCREEN GD L. H. '80 PLATE ⑨	PLATE R. H. '80 PLATE ⑩	TUBE TEST ⑪	PLATE CURRENT CHANGE ⑫
1	G 24	1 R.F.	2.35	180	3	90	-	.6	3	5.5	2.5
2	G 27	Osc.	2.35	90	-	-	0	-	7.3	7.8	.5
3	G 24	1 Det.	2.35	180	6.5	90	-	.1	.3	.5	.2
4	G 24	I.F.	2.35	255	4.0	90	-	2.35	7.0	8.8	1.2
5	G 27	2 Det.	2.35	225	-	22	22	-	.6	.8	.2
6	G 45	PP-AF	2.35	210	-	38	-	-	25.0	30.0	5.0
7	G 45	PP-AF	2.35	210	-	38	-	-	25.0	30.0	5.0
8	G 80	Rect.	4.9	-	-	-	-	45	45	-	-

Models 50, 52 (1930)

2 DET '27 — IF '24A — 1 DET '24A — OSC '27 — RF '24A

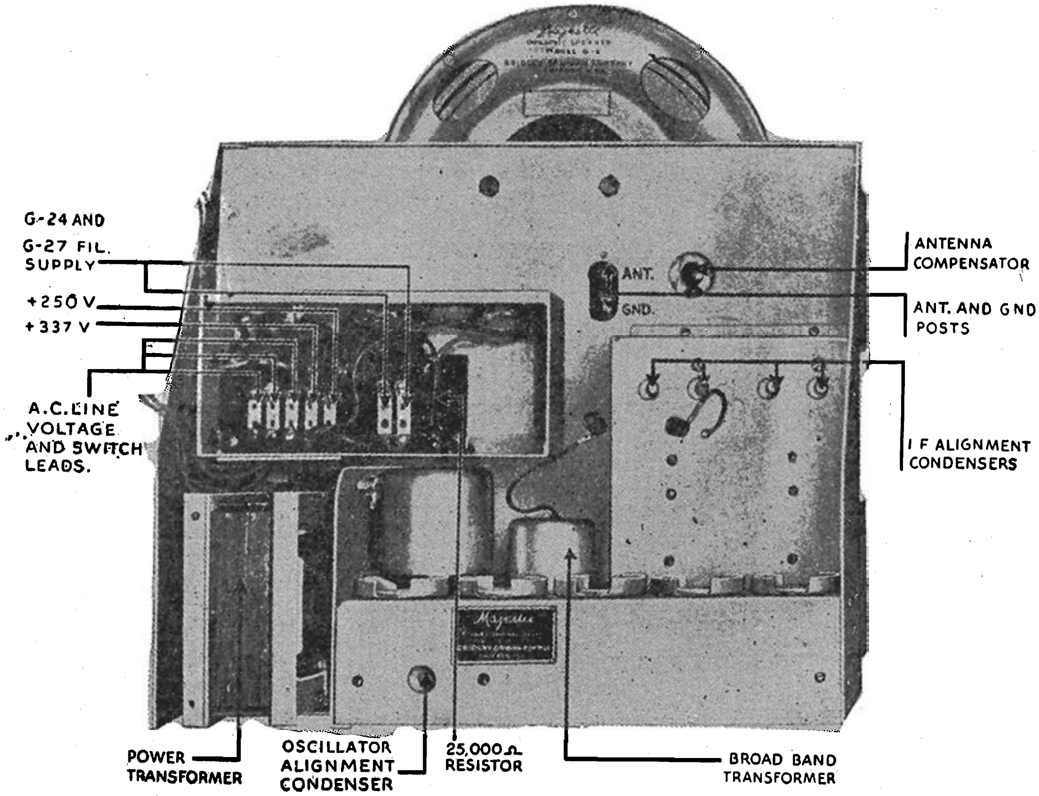
PILOT 3.2 V.

AF '45 '45 — RECT '80

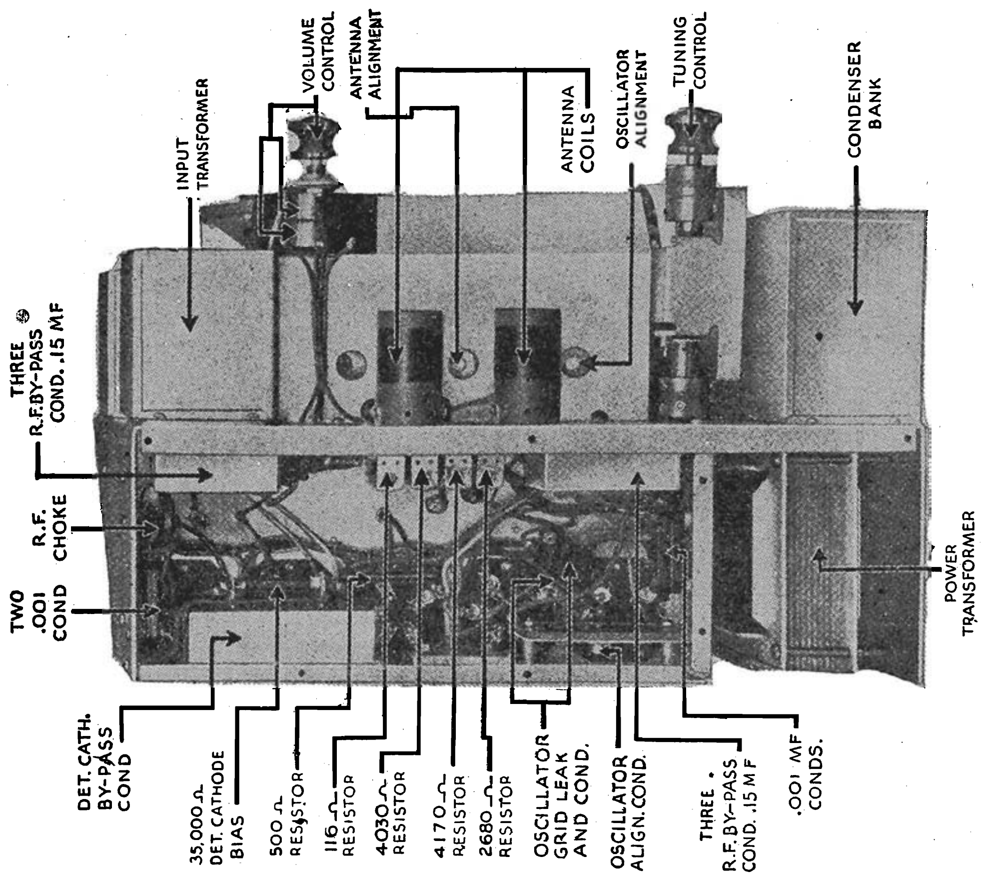
FRONT

GRIGSBY - GRUNOW CO.

MODEL 50
Chassis Views



Rear View of Model 50 Chassis, Showing Voltage Taps, Etc.

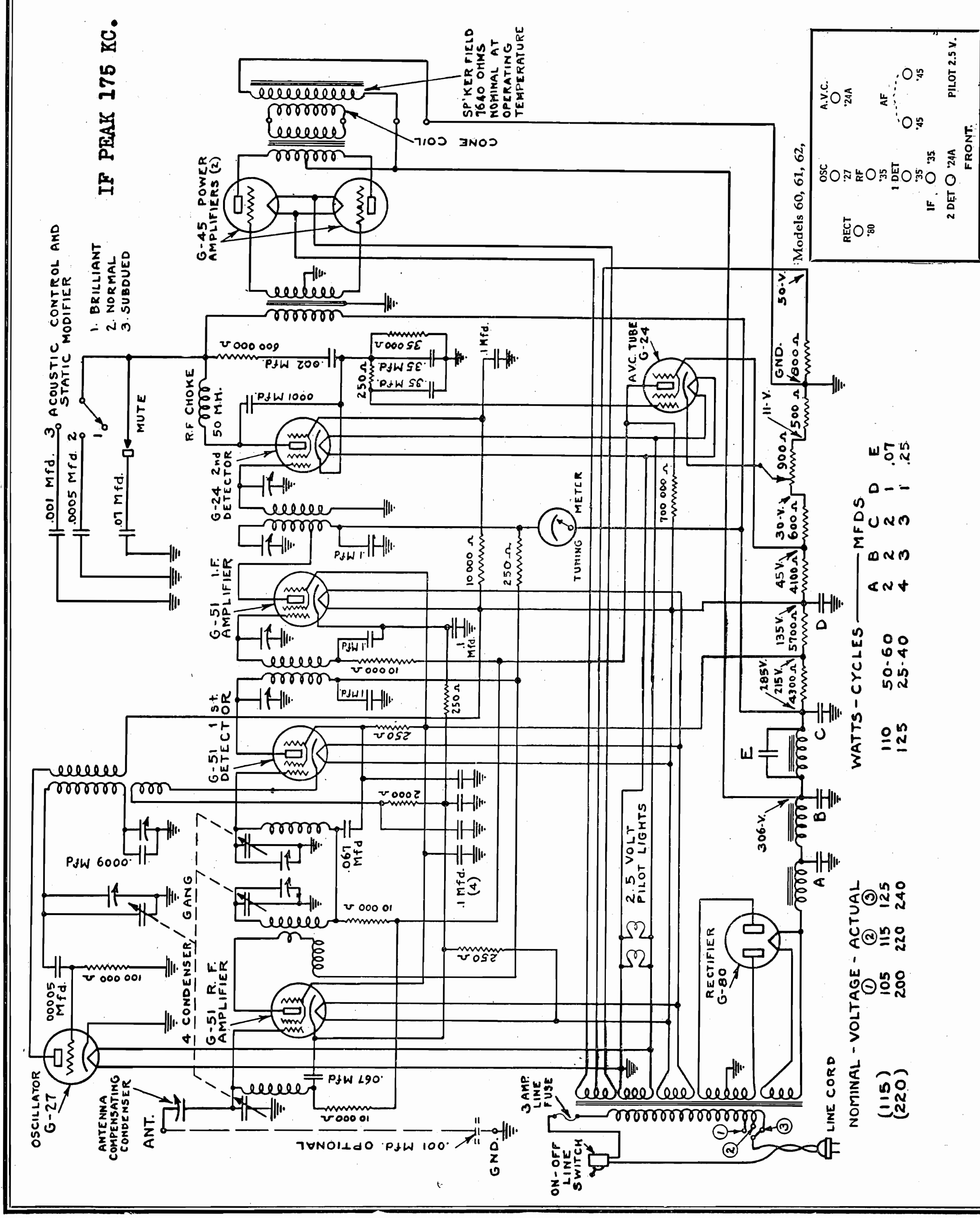


Bottom View of Model 50 Chassis

MODEL 60,61,62
Schematic

GRIGSBY - GRUNOW CO.

Additional data on pages following



MODEL 60,61,62
MODEL 160,163
Data

GRIGSBY- GRUNOW CO.

OPERATING VOLTAGES FOR MODEL 60 and 160 CHASSIS OR 61,62,163 Receivers

		Fil.	Plate.	Screen.	Con.Grd.	Cathode	Plate Crnt.
1st RF	G-51	2.35	285	215		3	4.5 ma
Osc.	G-27	2.35	135				4.0
1st Det	G-51	2.35	285	215		8	4.5
IF Amp	G-51	2.35	285	215		3	4.5
2nd Det	G-24	2.35	275	135		12	.25
1st PA	G-45	2.4	300		50.		32.5
2nd PA	G-45	2.4	300		50		32.5
AVC	G-24	2.35	+	45		11	0.
Rect	G-80	4.88	490				90. Per anode

\+ Readings of the automatic volume control tube plate terminal will be erratic because of the 700000 ohm resistance which is in series with the plate supply lead.

Note.. All plate, screen grid, control and cathode voltages are measured from Ground (chassis) with a standard 1000 ohms per volt meter. Voltage readings with volume control setting at maximum.

COLOR CODING DATA

Power Transformer. Start of winding of primary Red
105 volts Red and white
115 volts Yellow
125 volts Green

Filament 45 Blue. Centre tap 45 Red
Filament 80 Brown. Rectifier anodes Green. Centre tap anodes Bare
Heater 2nd Det.,AVC, and Osc. Red
Heater white (135 volts above ground)

Filter Unit.
2 mfd condenser Green. 2 mfd condenser Red. 2 mfd condenser Blue. 1 mfd condenser Yellow. .07 mfd condenser White. Condenser common Black.

Choke
Filter output Red. Detector choke low side Green. Junction ofchokes Blue.

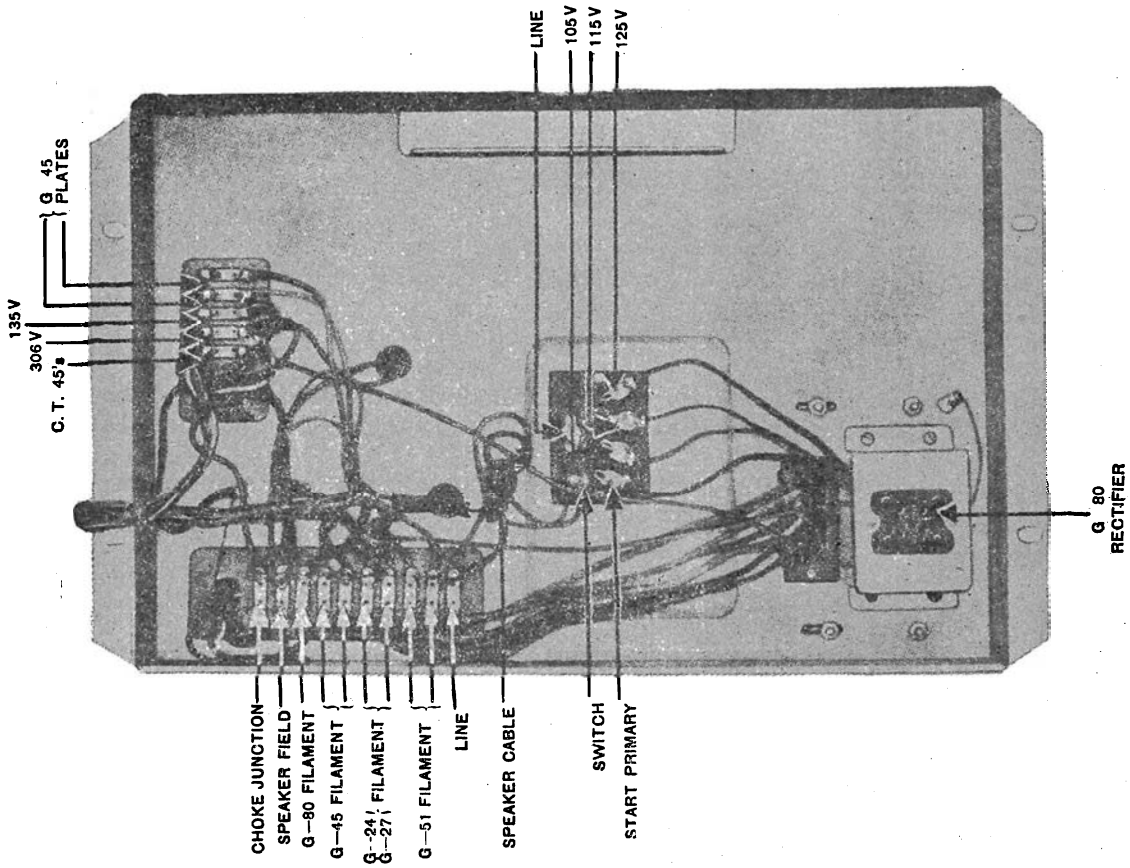
G eneral
The antenna compensator control islocated adjacent to the antenna terminal. A 3 ampere fuse is used.

Resistances.
100000 ohm oscillator grid leak - Orange. 600000 ohm Acoustic control- Red. 700000 ohm AVC plate resistor - Yellow. 35000 ohm 2nd detector cathode bias- Grn 5700 ohm section of voltage divider- Blue. 10000 ohm 2nd detector screen decoupler- Orange. 250 ohm 1st detector screen, 1st detector plate, 2nd detector cathode,AVC grid, RF and 1st detector decoupler- Green. 250 ohm RF,1st detector, IF auto bias- Yellow.2000 ohm 1st detector auto bias-Blue.

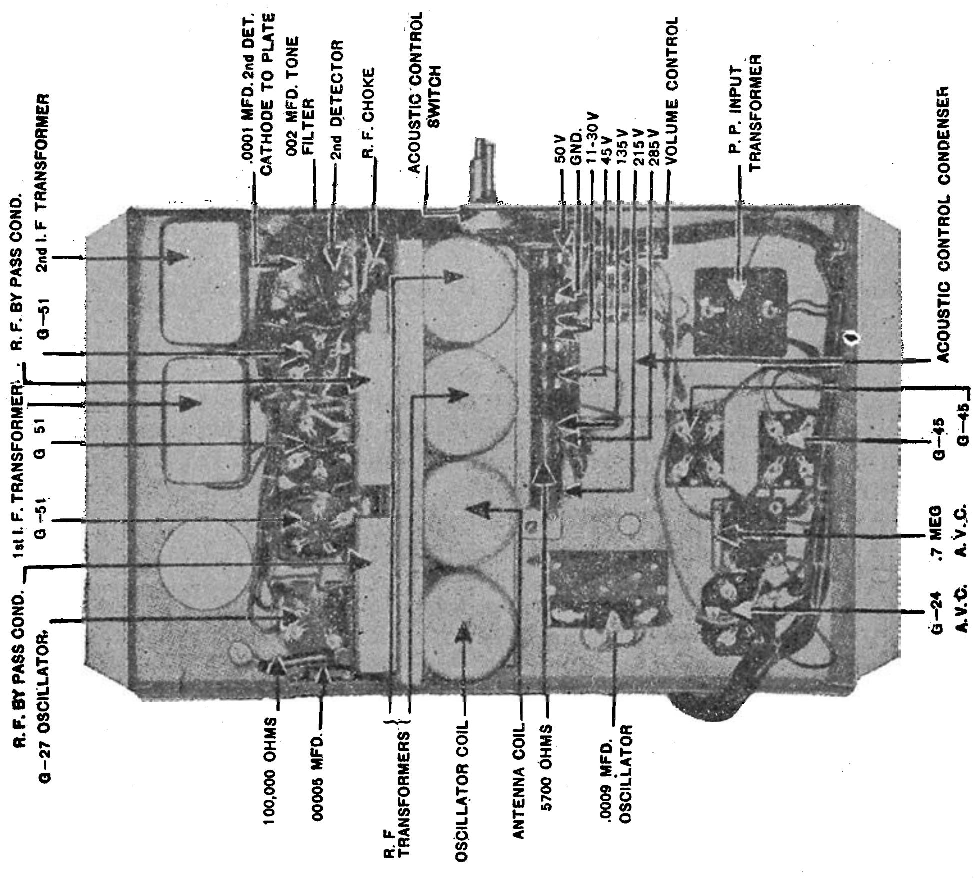
Model - 163
The radio circuit and performance of the model 163 is identical to that of the model 60 chassis. The front panel controls of the 163 combination are radio controls only, and are the same as that of the model 61 and 62 radio receivers. The second detector tube grid comprises the audio frequency input circuit, that is when the phono switch is in phono position. The second detector tube becomes and audio amplifier, the grid bias and input circuit being changed accordingly.

MODEL 60,61
Chassis Views

GRIGSBY - GRUNOW CO.



View Showing Power Supply Circuit Model 60 Chassis

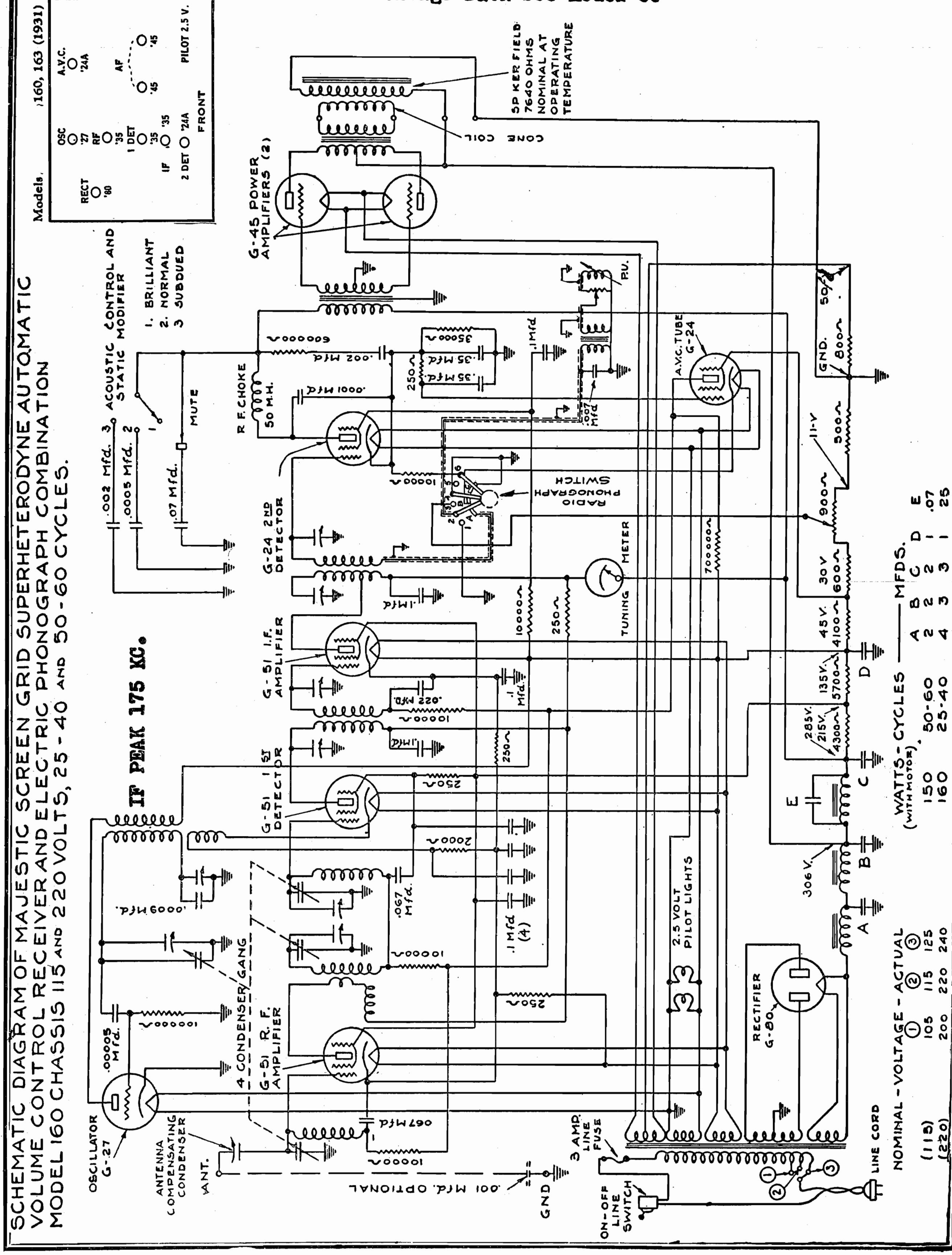


Interior View Model 60 Chassis

GRIGSBY - GRUNOW CO.

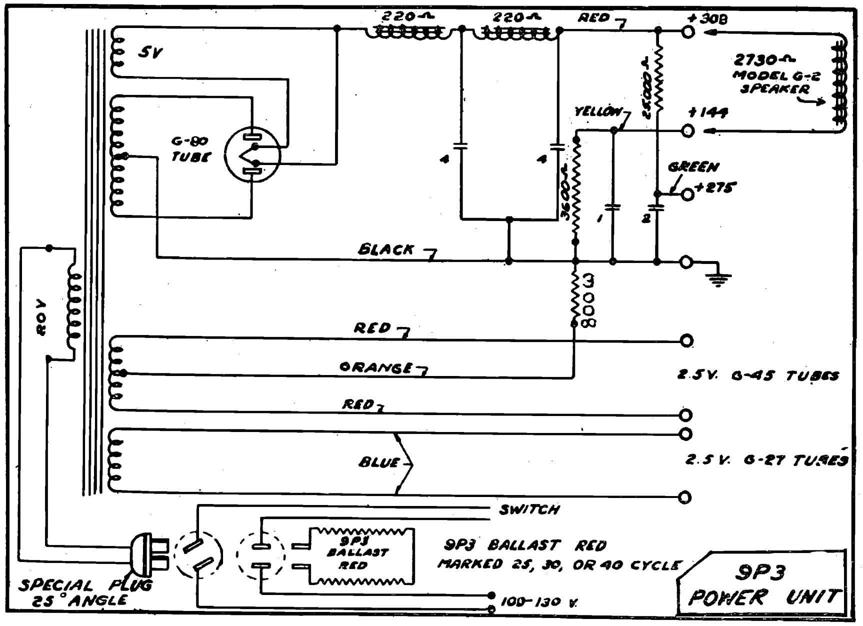
MODEL 160,163
Schematic

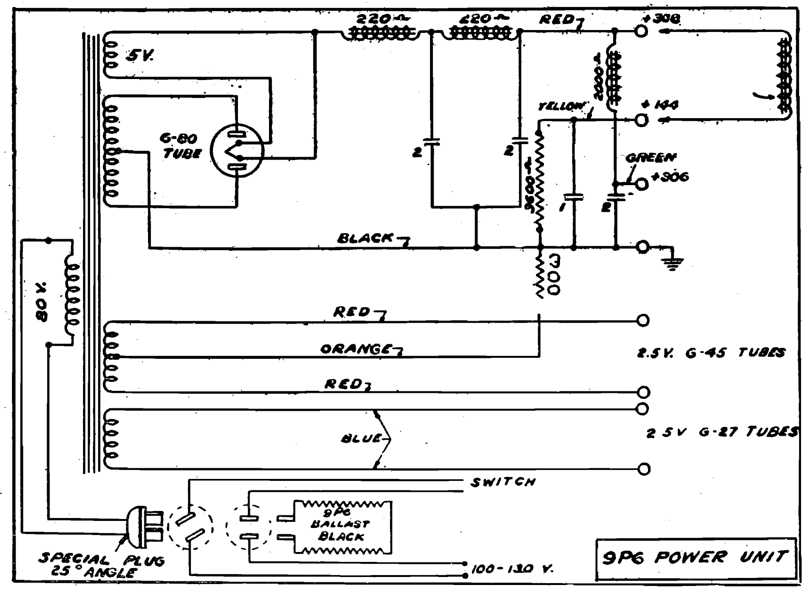
For Voltage Data See Model 60



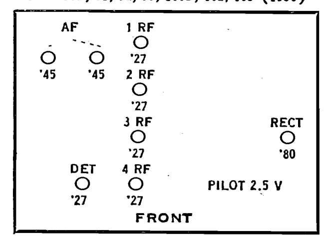
MODEL 9-P-3, 9-P-6
Schematic, Data

GRIGSBY - GRUNOW CO.





Models 90B, 91, 92, 93, 100B, 102, 103 (1930)



Coding of 1928 and 1929 Models

1. Parts with like part number in different assemblies and models are interchangeable others are not.
2. The following prefixes and model numbers are for 1928 apparatus assemblies:

GA	G1—Power Speaker for 7-A Chassis only
70-A	7-A—Chassis for 1928 No. 71 and No. 72 models only
60-A	6-A—Chassis for 1928 No. 61 and No. 62 models only
7P-6	Power Pack, 60 cycle for No. 7-A Chassis only
7P-3	Power Pack, 30 cycle for No. 7-A Chassis only
6P-6	Power Pack, 60 cycle for No. 6-A Chassis only
6P-3	Power Pack, 30 cycle for No. 6-A Chassis only

The following prefixes and model numbers are for 1929 apparatus assemblies.

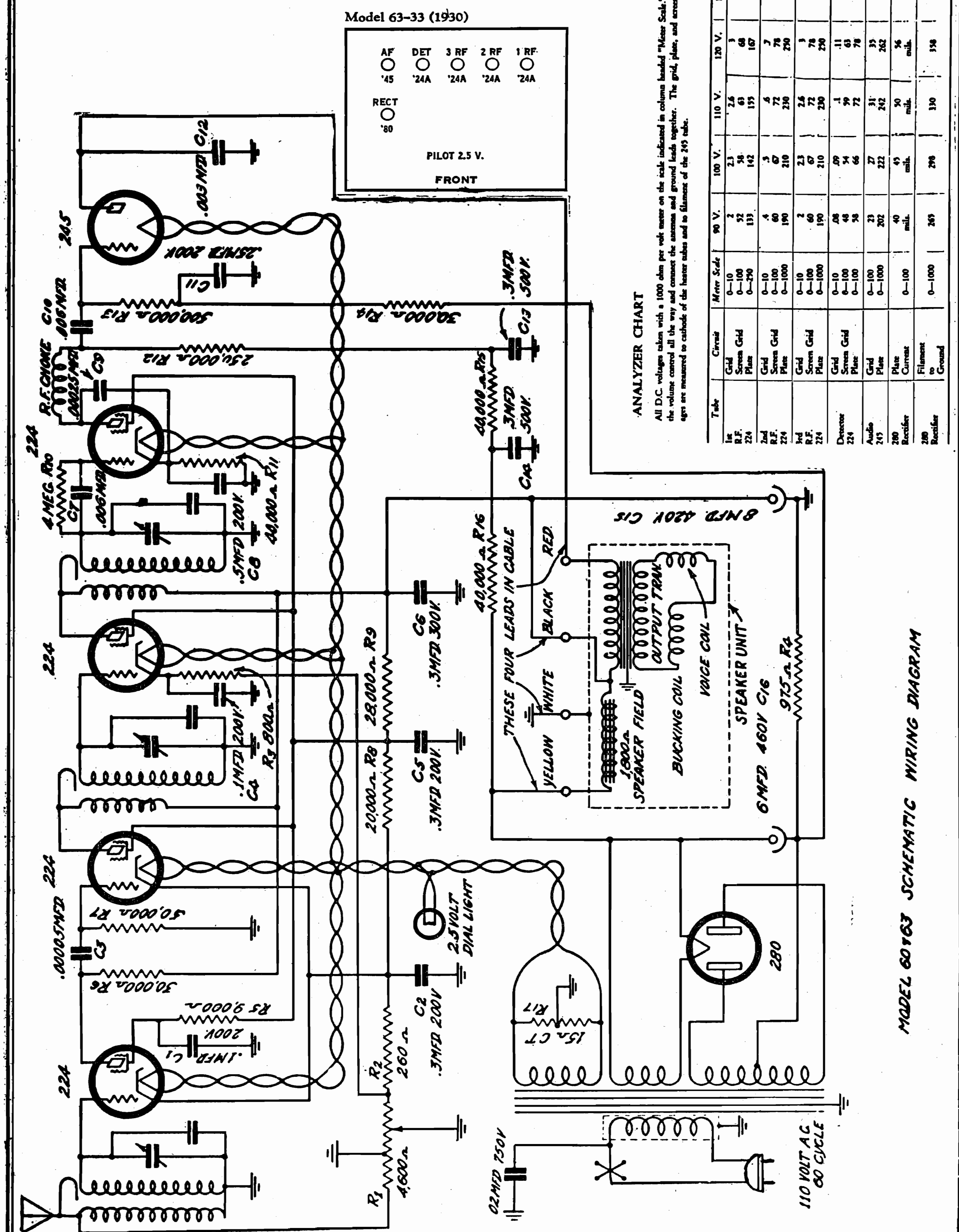
GB	G2—Super Dynamic Speaker for 7-B Chassis and 180 Chassis
70B	7-B—Chassis for 1929 No. 71 and No. 72 models only
180	180—Chassis for 1929 No. 181 radio and phonograph combination
7-BP-6	Power Pack, 60 cycle for 7-B Chassis only
7-BP-3	Power Pack, 30 cycle for 7-B Chassis only
8-P-6	Power Pack, 60 cycle for 180 Chassis only
8-P-3	Power Pack, 25, 30, 40 cycle for 180 Chassis only

MAJESTIC—Model 91 and 92
Line Voltage 112—Set on *Volt Tap—Volume Control Position Full On
***Voltage Regulator Is Used**

Tube No. in Order (1)	Type of Tube (2)	Position of Tube 1st R.F. Det., etc. (3)	Readings, Plug in Socket of Set: Tube Out: A Volts (4)	B Volts (5)	Tube in Tester: A Volts (6)	B Volts (7)	C Volts (Control Grid) (8)	Cathode-Heater Volts (9)	Normal Plate M A (10)	Plate M.A. Grid Test (11)	Plate Change M.A (12)	Screen Grid Volts (13)
1	27	1st RF	2.58	148	2.35	•130	8	8	5.5	7.8	2.3	-
2	27	2nd RF	2.58	148	2.35	130	8	8	5.5	7.8	2.3	-
3	27	3rd RF	2.58	148	2.35	130	8	8	5.5	7.8	2.3	-
4	27	4th RF	2.58	148	2.35	130	9	9	5	7.2	2.2	-
5	27	Det.	2.58	306	2.35	270	30	30	1	1	1	-
6	245	Power	2.65	275	2.45	250	50	-	32	37	5	-
7	245	Power	2.65	275	2.45	250	50	-	32	37	5	-
8	380	-	-	-	-	-	-	-	100	-	-	-
9												
10												

MODEL 60, 63
Schematic
Voltage

GULBRANSEN CO.



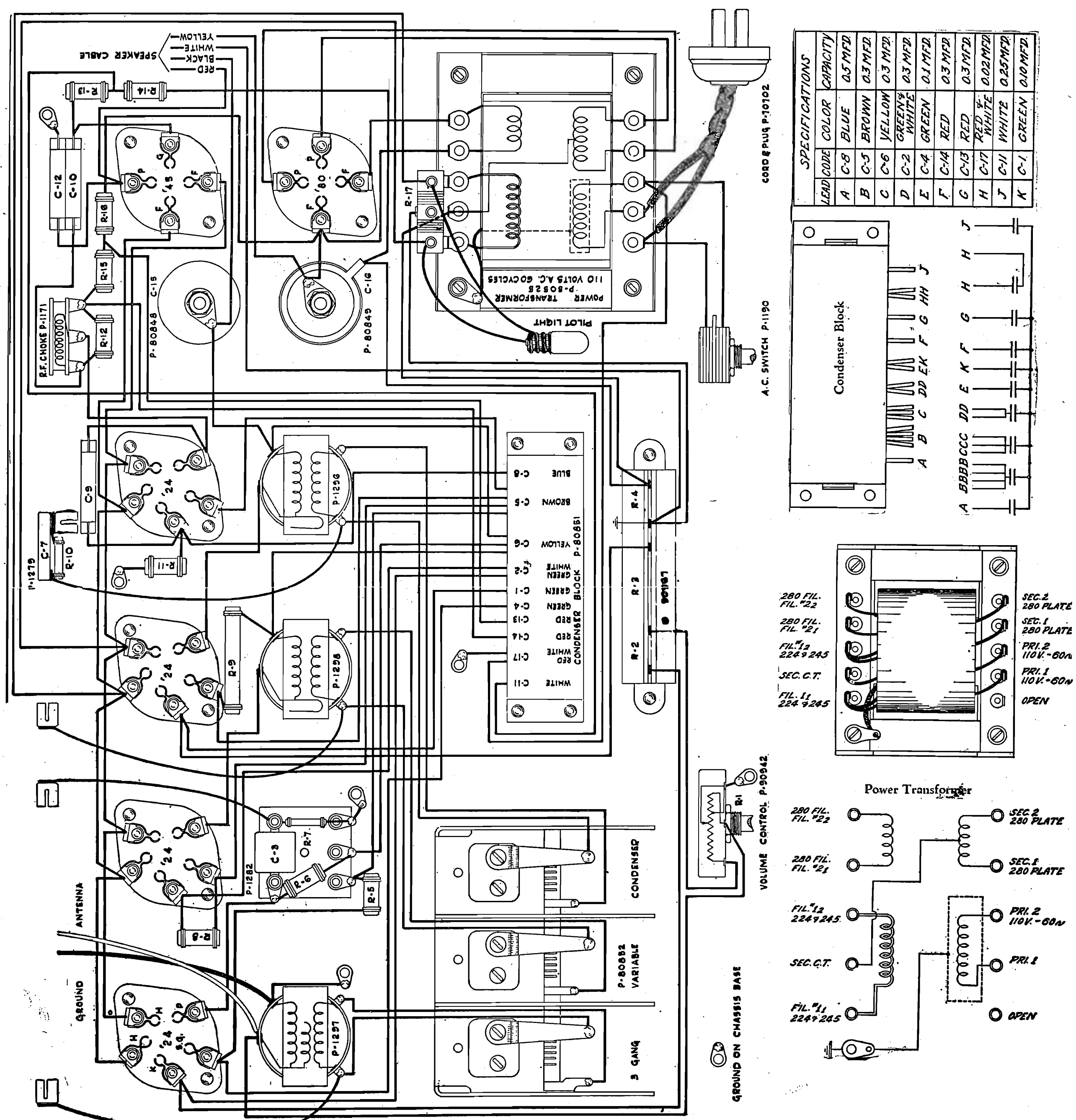
ANALYZER CHART

All D.C. voltages taken with a 1000 ohm per volt meter on the scale indicated in column headed "Meter Scale." Turn on the volume control all the way and connect the antenna and ground leads together. The grid, plate, and screen grid voltages are measured to cathode of the heater tubes and to filament of the 245 tube.

Tube	Circuit	Meter Scale	90 V.	100 V.	110 V.	120 V.	130 V.
1st R.F. 224	Grid	0—10	2	2.3	2.6	3	3.3
	Screen Grid	0—100	52	58	63	68	73
	Plate	0—250	133	142	155	167	178
2nd R.F. 224	Grid	0—10	.4	.5	.6	.7	.8
	Screen Grid	0—100	60	67	72	78	83
	Plate	0—1000	190	210	230	250	278
3rd R.F. 224	Grid	0—10	2	2.3	2.6	3	3.3
	Screen Grid	0—100	60	67	72	78	83
	Plate	0—1000	190	210	230	250	278
Detector 224	Grid	0—10	.08	.09	.1	.11	.12
	Screen Grid	0—100	48	54	59	63	67
	Plate	0—100	58	66	72	78	87
Audio 245	Grid	0—100	23	27	31	35	40
	Plate	0—1000	202	222	242	262	282
280 Rectifier	Plate Current	0—100	40 mils.	45 mils.	50 mils.	56 mils.	64 mils.
280 Rectifier	Filament to Ground	0—1000	265	298	330	358	392

MODEL 60, 63
Chassis

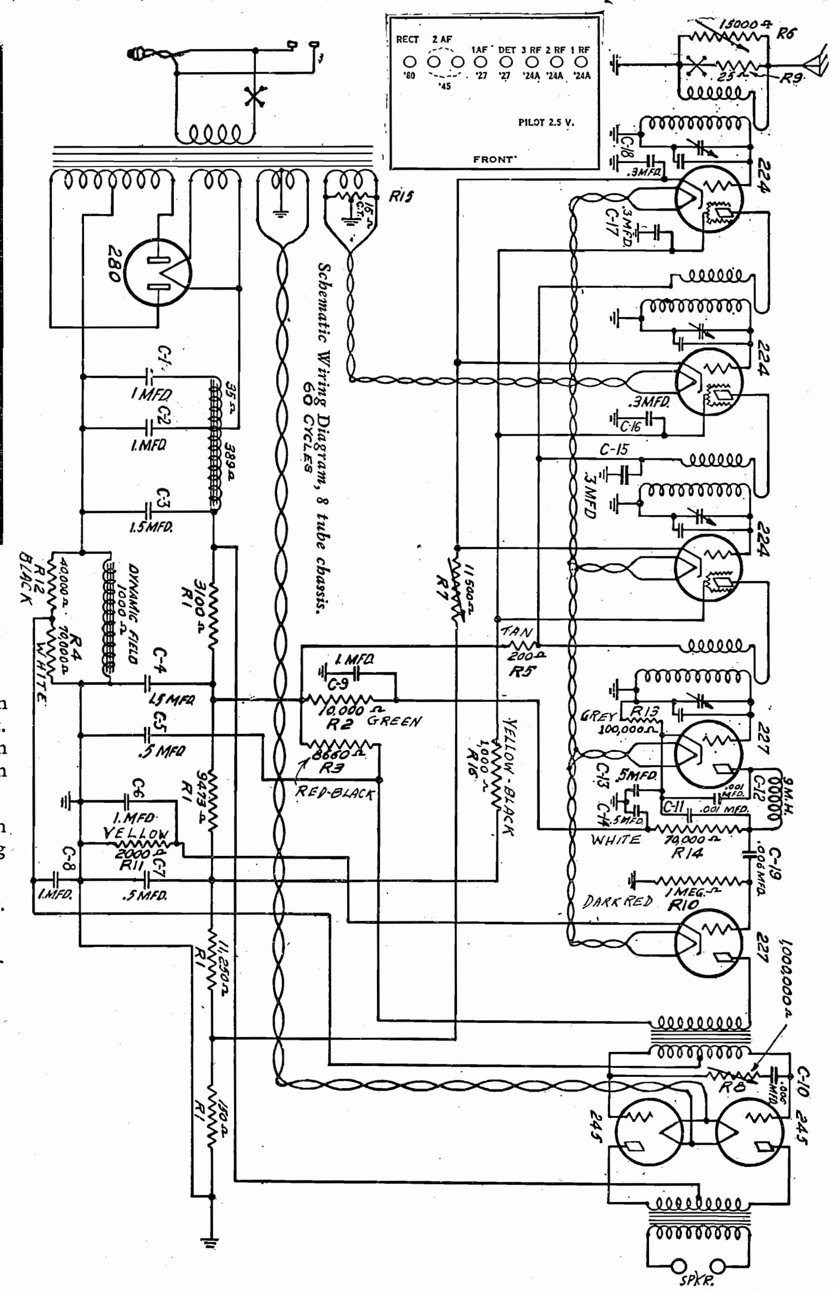
GULBRANSEN CO.



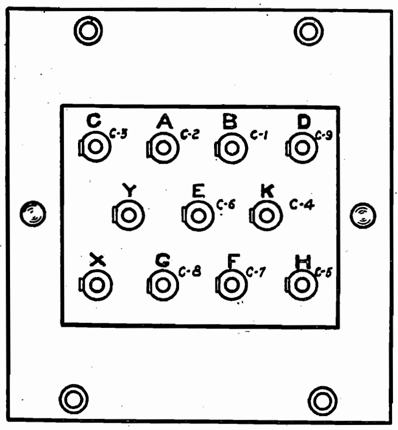
SPECIFICATIONS			
LEAD	CODE	COLOR	CAPACITY
A	C-8	BLUE	0.5 MFD.
B	C-5	BROWN	0.3 MFD.
C	C-6	YELLOW	0.3 MFD.
D	C-2	GREEN & WHITE	0.3 MFD.
E	C-4	GREEN	0.1 MFD.
F	C-14	RED	0.3 MFD.
G	C-13	RED	0.3 MFD.
H	C-17	RED & WHITE	0.02 MFD.
J	C-11	WHITE	0.25 MFD.
K	C-1	GREEN	0.10 MFD.

GULBRANSEN CO.

MODEL 160, 161
60 Cycles
Schematic-Data



Schematic Wiring Diagram, 8 tube chassis.
60 CYCLES



CAPACITY		
CODE	60 CYCLE	25 CYCLE
A	1.0 MF. C-2	
B	1.0 MF. C-1	2.5 MF. C-1
C	1.5 MF. C-3	4. MF. C-3
D	1.0 MF. C-9	1.0 MF. C-9
E	1.0 MF. C-6	1.0 MF. C-6
F	0.5 MF. C-7	0.5 MF. C-7
G	1.0 MF. C-8	1.5 MF. C-8
H	0.5 MF. C-5	0.5 MF. C-5
K	1.5 MF. C-4	2.0 MF. C-4
X	COMMON	COMMON
Y	COMMON	COMMON

X A B C D E F G H K Y

Filter Condenser (60 and 25 cycle receivers).

FIXED CONDENSERS

Condensers C1 to C9 inclusive are in the filter block. C1, C2, C3, C4, and C7 are in the main filter circuits. C5 bypasses R3, which is the 8,660 ohm resistor in the first audio plate circuit. C6 by-passes R11, the cathode bias resistor on the first audio stage. C8 by-passes the grid bias on the 245 tubes, (obtained through R4 and R12) and C9 bypasses the 10,000 ohm resistor R2 in the detector plate circuit.

C10 and C19 are located on the resistor-condenser terminal strip (See Fig. 4) and are both .006 mfd. moulded condensers. C10 is in the tone control circuit, while C19 is the coupling condenser in the resistance coupled amplifier.

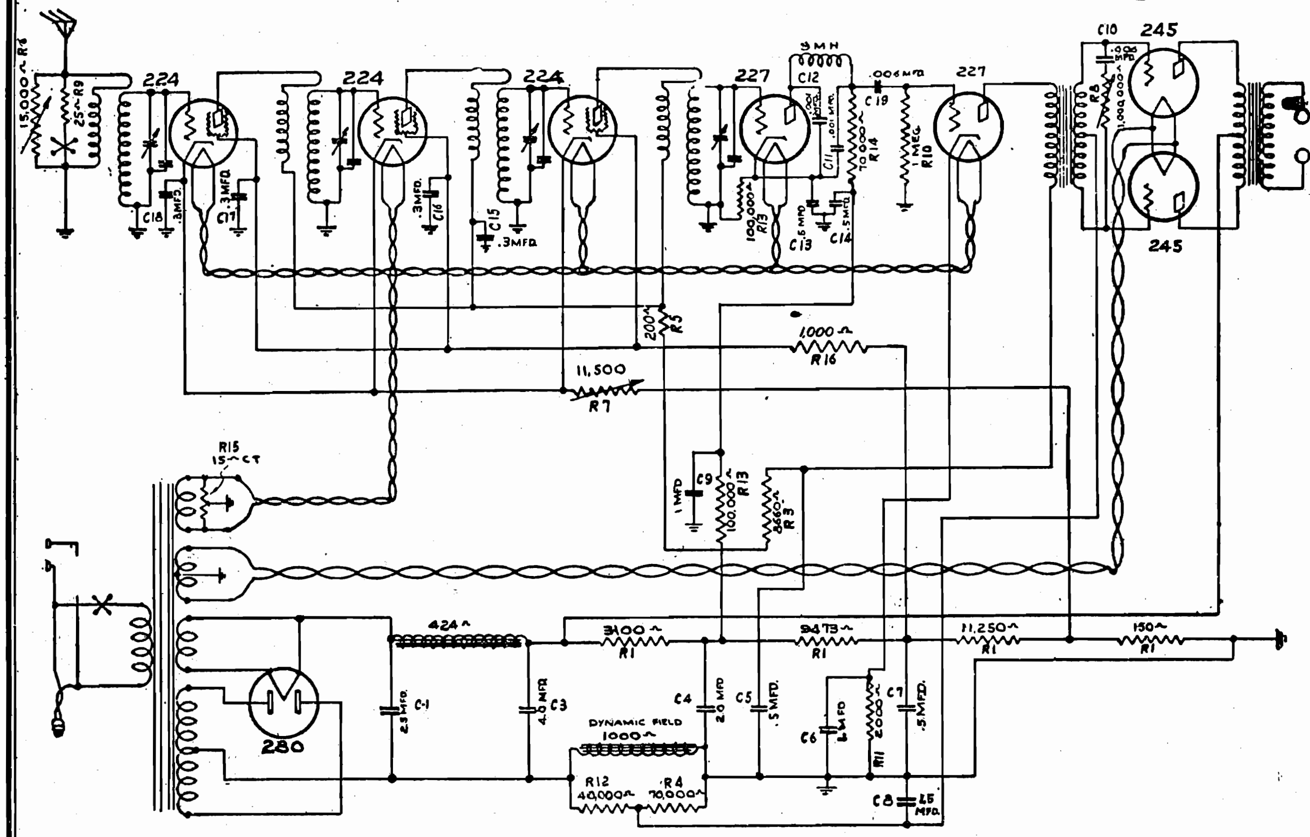
C11 and C12 are .001 mfd. moulded condensers, and are used in the detector plate circuit filter. C13 and C14 are the two units in the dual ½ mfd. by-pass condenser.

C15, C16 and C18 are located in the triple 3 mfd. condenser case. C17 is a single .3 mfd. condenser, and is mounted alongside of the triple .3 mfd. condenser case.

Code Fig. 1	Stock No.	Capacity
C1 to C9 inclusive	80818	9 Mfds. total. Filter block.
C10 and C19	80822	.006 Mfd. White paint spot.
C11 and C12	80821	.001 Mfd. Grey paint spot.
C13 and C14	80826	Dual .5 Mfd. Metal case.
C15, C16, C18	80817	Triple .3 Mfd. Metal case.
C17	80820	.3 Mfd. Metal case.

GULBRANSEN CO.

MODEL 160, 161
25 Cycles
Schematic
Voltage



Schematic Wiring Diagram, 25 Cycle Model.

The filter system of the 25-cycle chassis shown above is somewhat different than that in the 60-cycle chassis, and the detector plate circuit resistor has been changed from 10,000 ohms to 100,000 ohms.

All servicing data, with the exception of the tube voltages, is the same for both the 25 and 60-cycle chassis.

APPROXIMATE OPERATING VOLTAGES

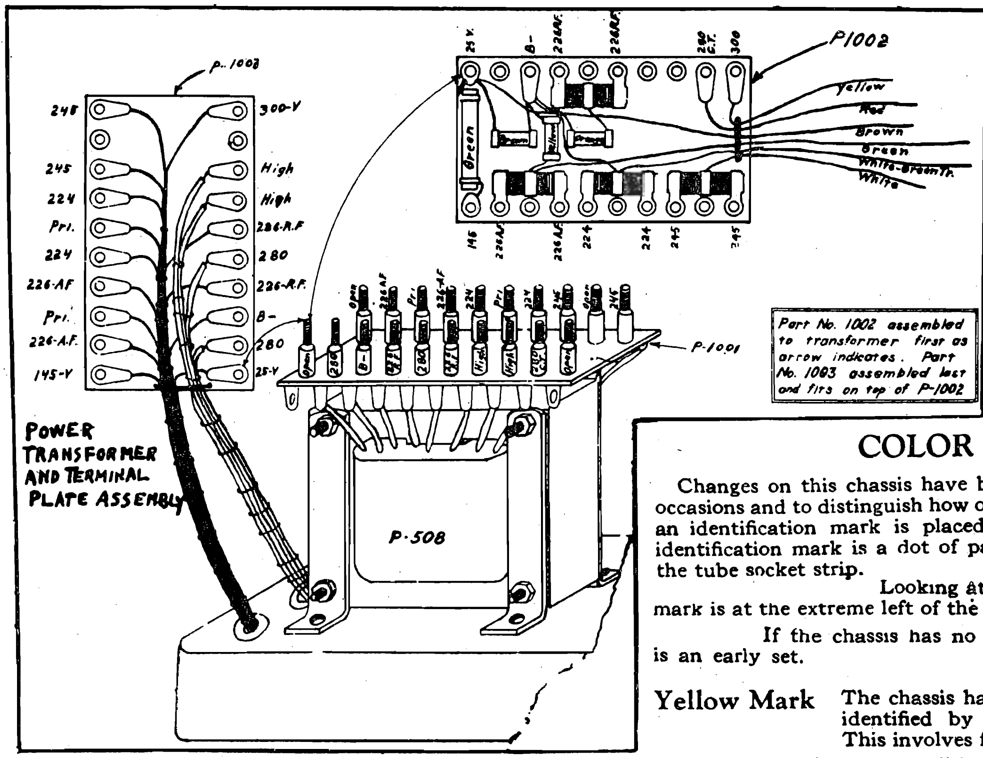
A. C. LINE VOLTAGE—117. VOLUME CONTROL FULL ON

Tube	Position	Filament	Plate	Screen	Grid*	Cathode
224	1st R.F.	2.3	178	90	— 3.0*	3.0
224	2nd R.F.	2.3	178	90	— 3.0*	3.0
224	3rd R.F.	2.3	178	90	— 3.0*	3.0
227	Detector	2.3	100		—10.5*	10.5
227	1st Audio	2.3	130			9.0
245	2nd Audio	2.4	250		51.0	
245	2nd Audio	2.4	250		51.0	
280	Rectifier	4.7				

* Grid voltages on the 224 R.F. and 227 detector tubes are taken from grid to cathode and not from grid to ground. The grid voltage on the first audio tube is measured from cathode to ground.

GULBRANSEN CO.

MODEL 200, 291,292 295, 9950
Voltage Data



OPERATING VOLTAGES

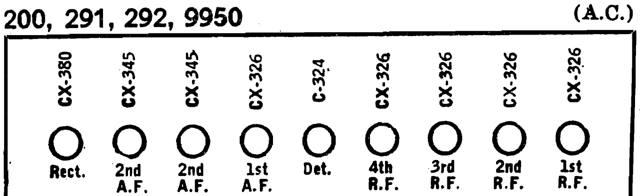
Type of Tube	Position of Tube	TUBE IN TEST SET "A" Volts	"B" Volts	Control Grid ("C") Volts	Screen Volts	Screen Current	Cathode Volts	Normal Ma.	Grid Test Ma.
226	1st R.F.	1.35	116	8.5				4.7	8.7
226	2nd R.F.	1.35	116	8.5				4.7	8.7
226	3rd R.F.	1.35	116	8.5				4.7	8.7
226	4th R.F.	1.35	116	8.5				4.7	8.7
224	Det.	2.2	80	1.3	15		—	—	—
226	1st A.F.	1.4	110	1.0 ← READING LOW DUE TO RESISTANCE COUPLING				4.0	5.0
245	2nd A.F.	2.2	232	42				27	32
245	2nd A.F.	2.2	232	42				27	32
280	Rect.	4.6						84	

Line Voltage During Test—115 Volts

REVISION OF OPERATING VOLTAGES

Type of Tube	Position of Tube	TUBE IN TEST SET "A" Volts	"B" Volts	Control Grid ("C") Volts	Screen Volts	Screen Current	Cathode Volts	Normal Ma.	Grid Test Ma.
224	Det.	2.2	75	1.3	15				
226	1st A.F.	1.4	77	1.0				4	5

200, 291, 292, 9950 (A.C.)



COLOR CODE

Changes on this chassis have been made on several different occasions and to distinguish how one chassis differs from another, an identification mark is placed on each one changed. This identification mark is a dot of paint found on the end rivet of the tube socket strip.

Looking at the chassis from the back the mark is at the extreme left of the 226 tube socket

If the chassis has no mark it is understood that it is an early set.

Yellow Mark The chassis having the first changes may be identified by the yellow indicating mark. This involves four changes.

1. A "dual volume control" in place of the single type. The new volume control is made in two sections, with five lugs. The section nearest the chassis, having two lugs, operates exactly the same as the single volume control. The section behind the first, having three lugs, is placed in the first audio circuit to reduce the audio amplification and operates in tandem with the antenna volume control.

2. An interchange of position of the two audio transformers The re-arrangement of the audio transformers has not altered their connections in the circuit.

3. An addition of a "dual half microfarad condenser" and two carbon resistors in the "B" circuit of the detector and first audio tubes. The 40,000 ohm black resistor with one section of the dual condenser is placed in the detector circuit (224) and the 15,000 ohm blue resistor with the other section of the dual condenser is placed in the first audio circuit (226). You will note that the yellow and blue leads in the cable connecting to the terminal strip have been interchanged.

4. A change in the location of the grounding of No. 1 lug on the condenser block. This lug is now grounded to the condenser case with a short piece of bare wire.

Red Mark (Serial Number 39,000-42,999) All chassis having a red mark on the rivet of the tube socket strip have all of the changes mentioned above and in addition, have a one-tenth microfarad condenser connected from ground to one side of the 110 volt line A peculiarity that may be experienced by the addition of this condenser is a loud hum on every station tuned in only when the antenna wire coming from the set is connected to ground. This can be eliminated by reversing the plug in the socket. Also be sure your antenna is not grounded, either by some other set being connected to your aerial or through any other means.

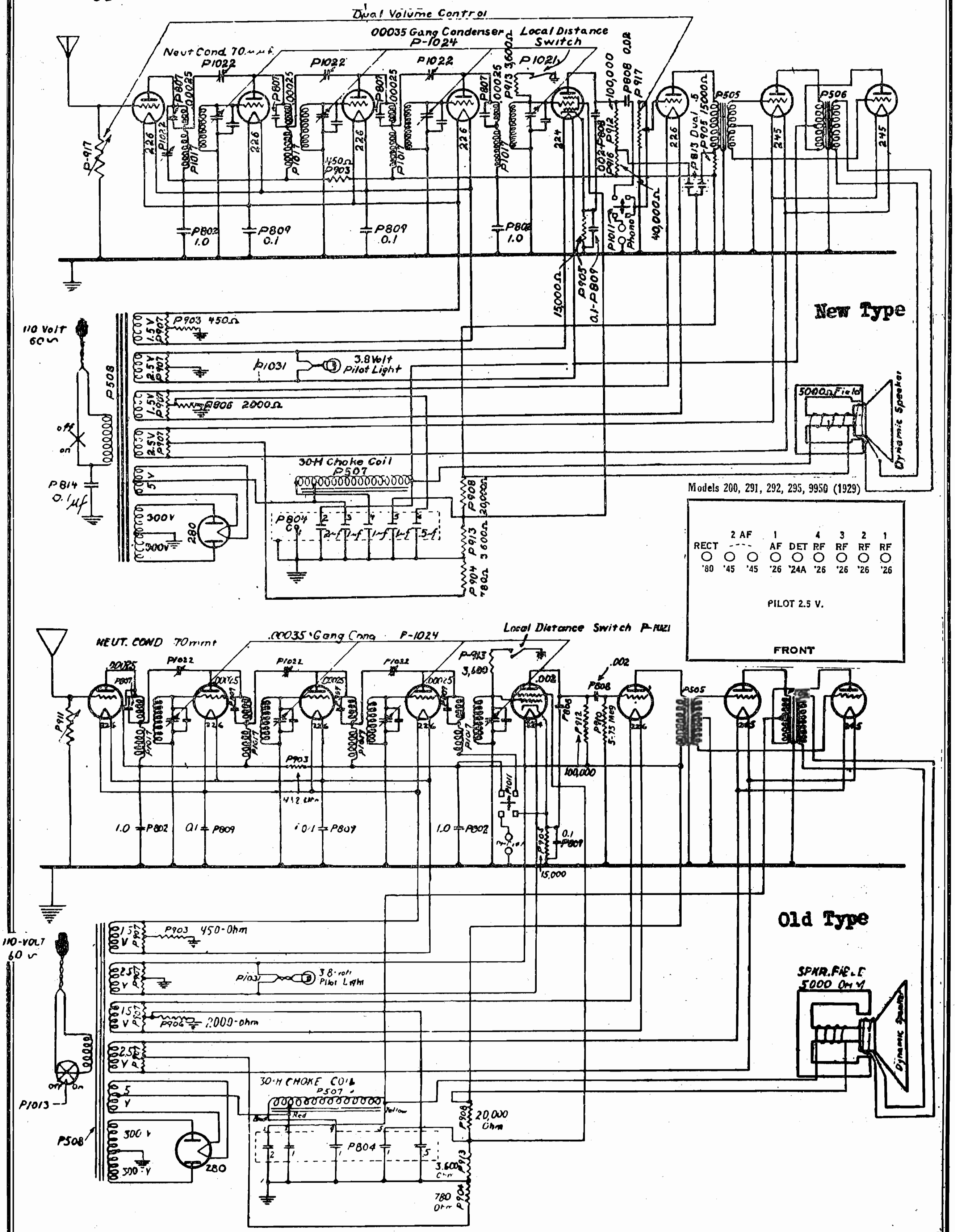
Green Mark (Serial Number 43,000 and up) All Chassis with a green mark on the rivet of the tube socket strip contain the above changes and in addition have a change in the "combination phonograph switch" circuit. This changed circuit makes use of only the audio system of the set for phonograph reproduction, whereas the original circuit included the detector tube

The Phonograph, Radio, On, and Off positions of the switch are the same as in the early sets. To obtain maximum volume and best tone quality a pick-up coupling transformer should be used to match the pick-up used.

MODEL 200, 291, 292, 295, 9950

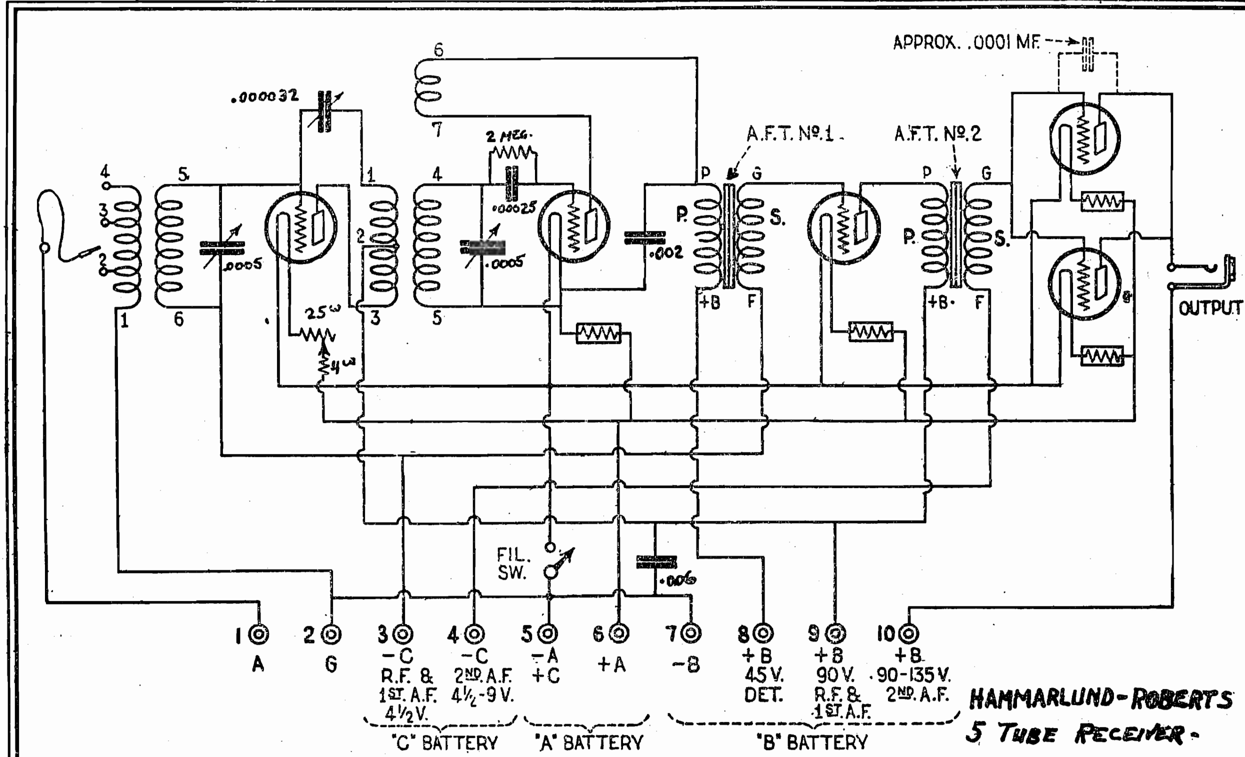
Schematic
Two Types

GULBRANSEN CO.

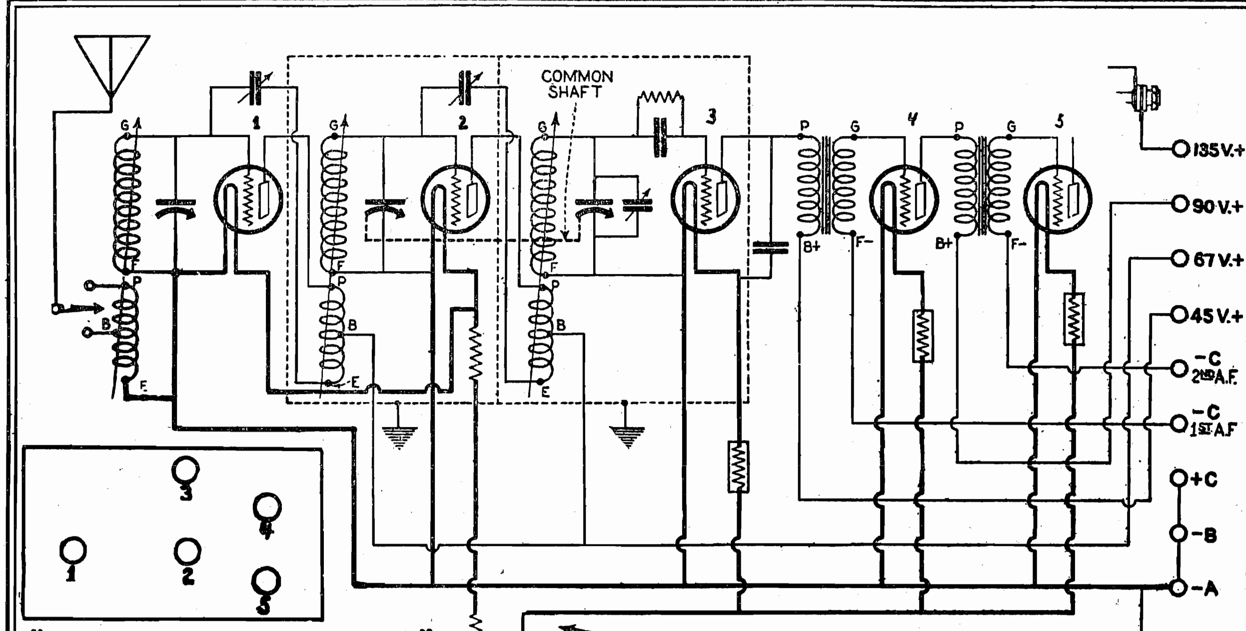


HAMMARLUND-ROBERTS, INC.

MODEL H-R 5 Tube
MODEL H-R "HI-Q"



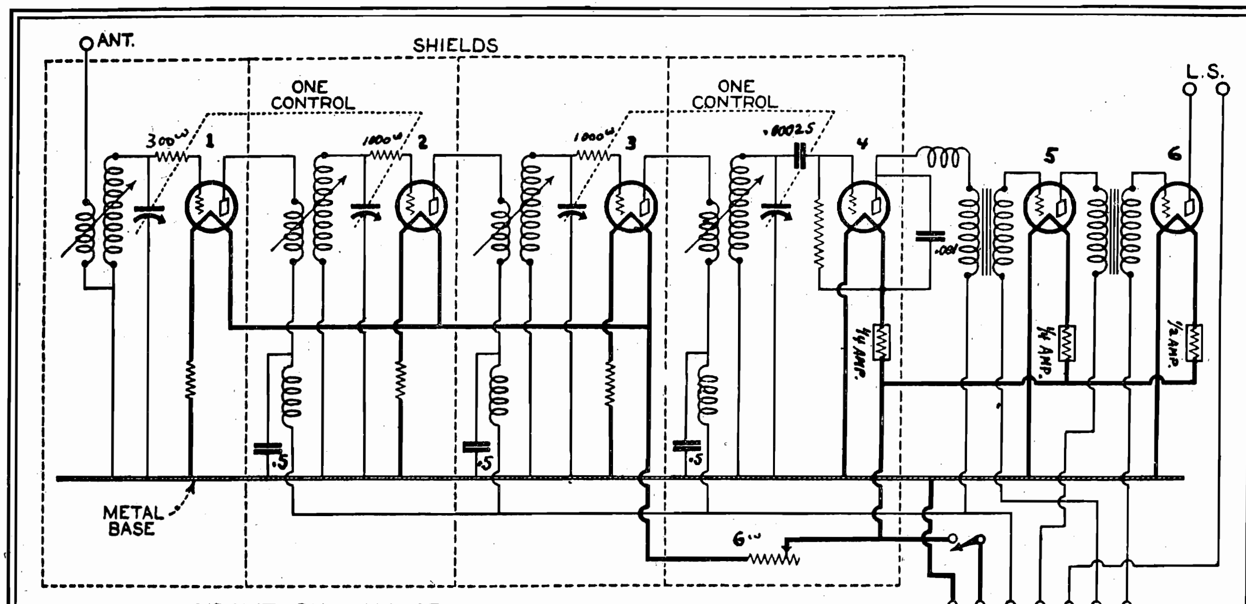
HAMMARLUND-ROBERTS 5 TUBE RECEIVER -



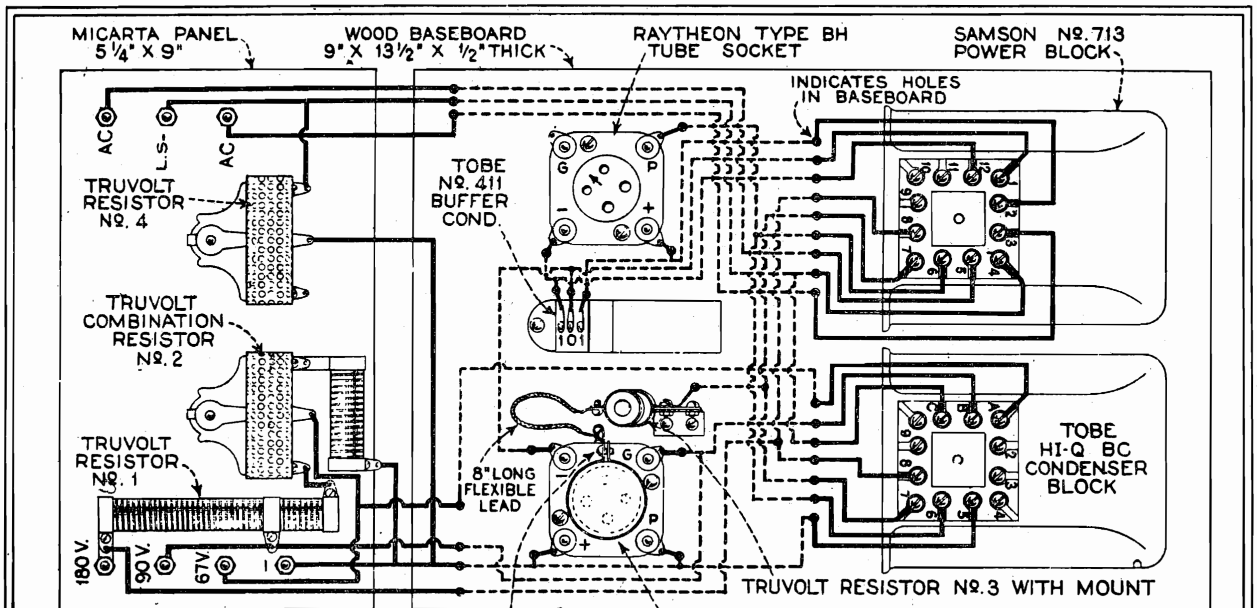
"HAMMARLUND - ROBERTS"
HI-Q RECEIVER

MODEL H-R "HI-Q" 6

HAMMARLUND-ROBERTS, INC.

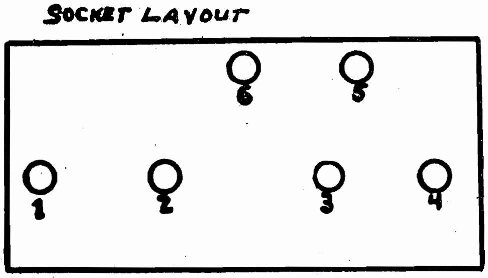


- CIRCUIT DIAGRAM OF -
HAMMARLUND - ROBERTS "HI-Q SIX" RECEIVER



WIRING DIAGRAM OF -
HAMMARLUND ROBERTS "HI-Q SIX" POWER SUPPLY
- FOR USE WITH 171 POWER TUBE -

SOCKET LAYOUT

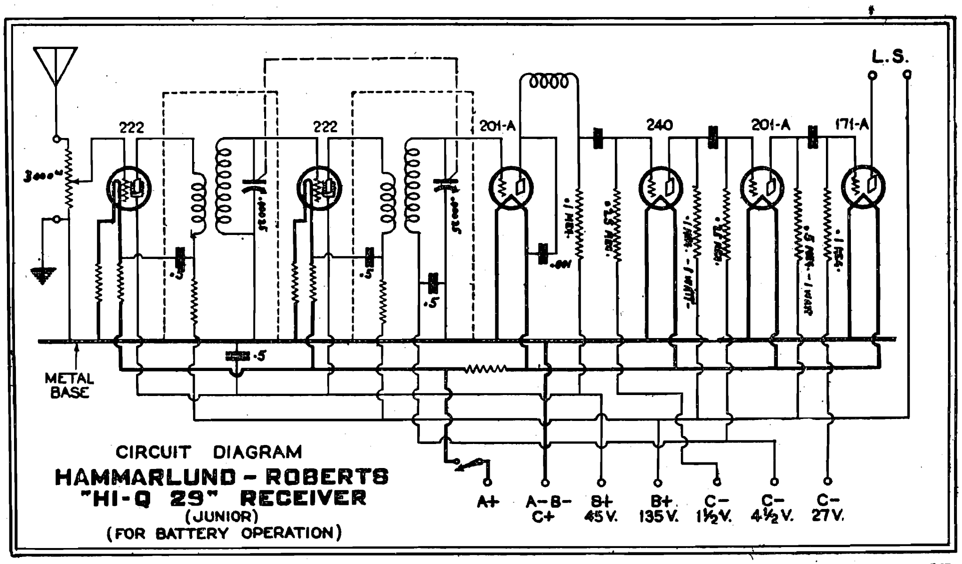


Battery Cable			
To	B+	135	Gray
"	B+	90	Yellow
"	B+	67	Blue
"	B-	C+ A-	Black
"	C-	4.5	Green
"	C-	9.	Brown
"	A+		Red

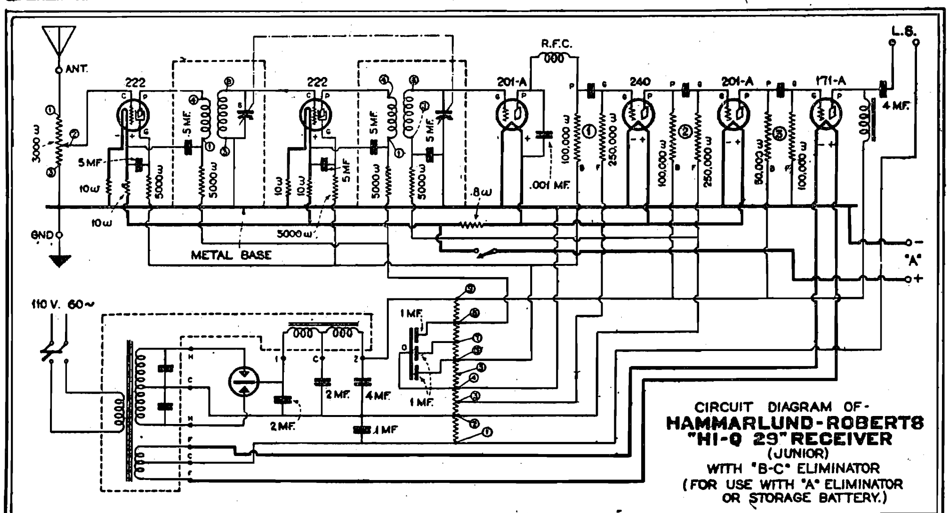
Power Cable			
To	B+	180	Gray
"	B+	90	Yellow
"	B+	67	Blue
"	B-		Black
"	C-		Green
"	Fil. center tap		Brown

HAMMARLUND-ROBERTS, INC.

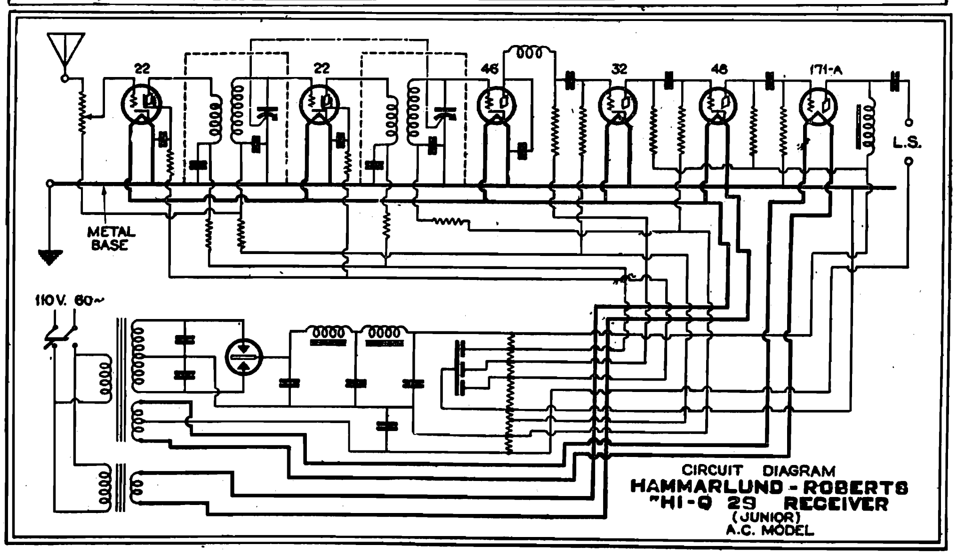
MODEL H-R "HI-Q" 29 Junior-Three Types



CIRCUIT DIAGRAM
HAMMARLUND - ROBERTS
"HI-Q 29" RECEIVER
(JUNIOR)
(FOR BATTERY OPERATION)



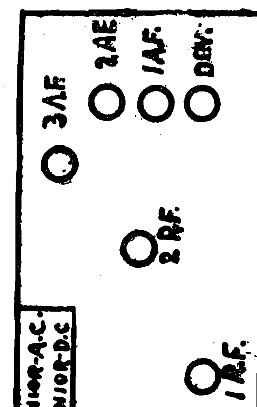
CIRCUIT DIAGRAM OF-
HAMMARLUND-ROBERTS
"HI-Q 29" RECEIVER
(JUNIOR)
WITH "B-C" ELIMINATOR
(FOR USE WITH "A" ELIMINATOR
OR STORAGE BATTERY.)



CIRCUIT DIAGRAM
HAMMARLUND - ROBERTS
"HI-Q 29" RECEIVER
(JUNIOR)
A.C. MODEL

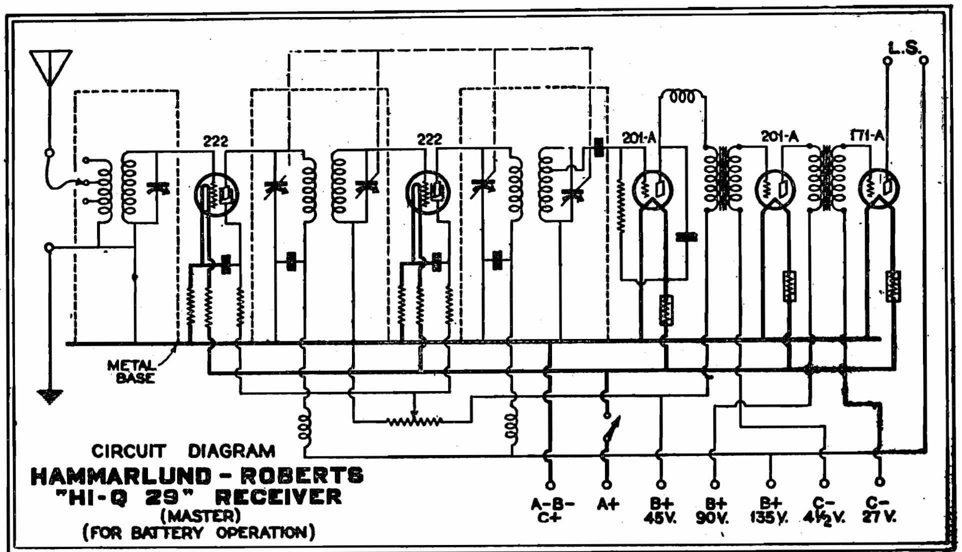
HI-Q 29 Jr. Battery cable.

To	B + 135	-	Grey
"	B + 45	-	Blue
"	B -, A -, C +		Black
"	C - 1.5		Yellow
"	C - 4.5		Green
"	C - 27.		Brown
"	A +		Red

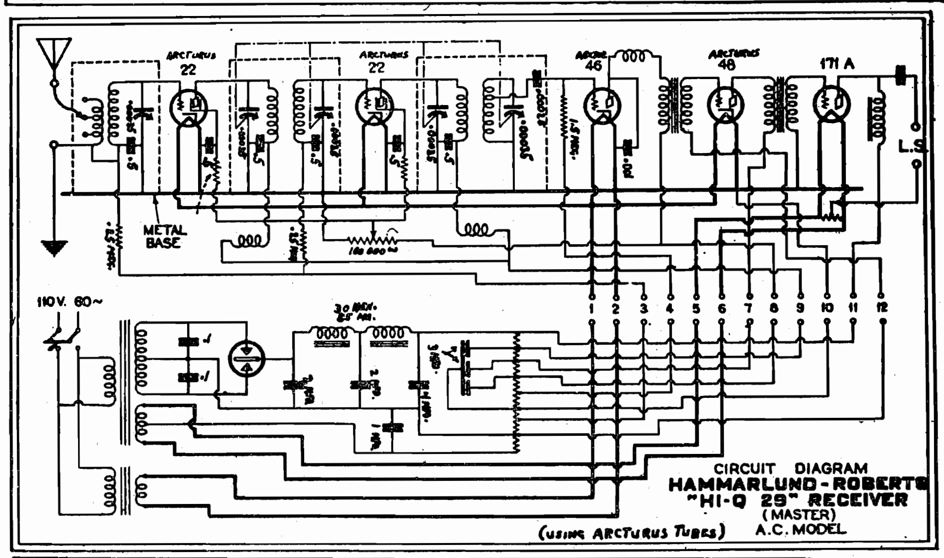


MODEL H-R "HI-Q" 29
Master-Three Types

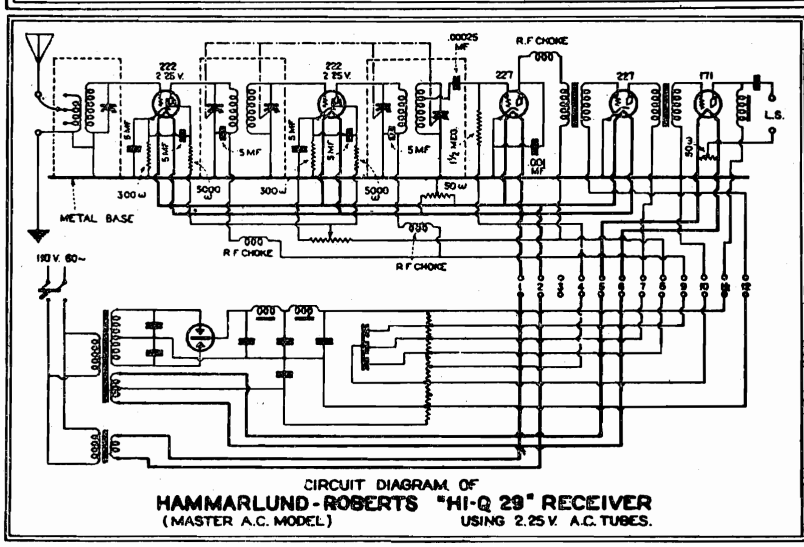
HAMMARLUND-ROBERTS, INC.



CIRCUIT DIAGRAM
HAMMARLUND - ROBERTS "HI-Q 29" RECEIVER
(MASTER)
(FOR BATTERY OPERATION)



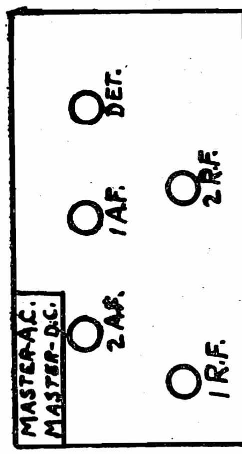
CIRCUIT DIAGRAM
HAMMARLUND - ROBERTS "HI-Q 29" RECEIVER
(MASTER)
(using ARCTURUS Tubes) A.C. MODEL



CIRCUIT DIAGRAM OF
HAMMARLUND-ROBERTS "HI-Q 29" RECEIVER
(MASTER A.C. MODEL) USING 2.25V. A.C. TUBES.

MASTER A.C. — POWER CABLE

1-RED, 2-BLACK } 15 V. A.C.
3-RED-GREEN TRACER. C-, 1 VOLT.
4-BLACK-GREEN TRACER, C+4.5V.
5-RED-YELLOW TRACER, 6-BLACK YELLOW TRACER } 5 V. A.C.
7-YELLOW, B+90V.
8-BLUE, B+45V.
9-SLATE, B+135V
10-GREEN, B-C+
11-BROWN, B+180V.
12-WHITE, C-4.5V

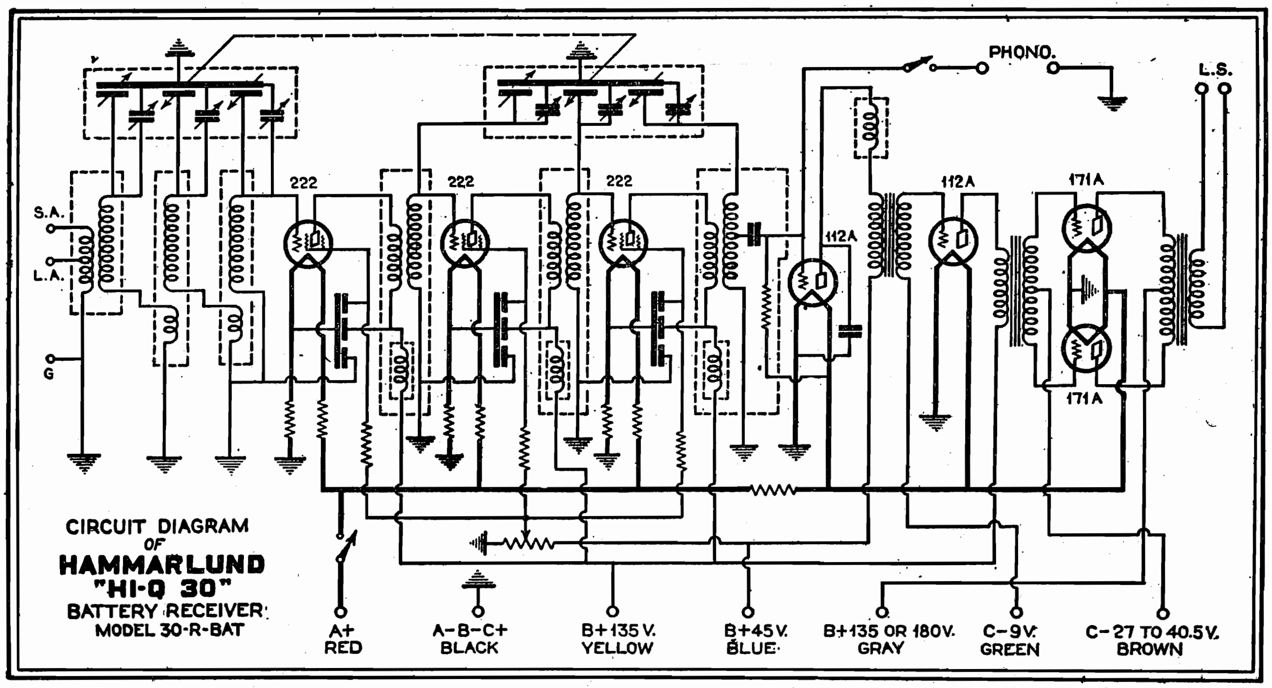


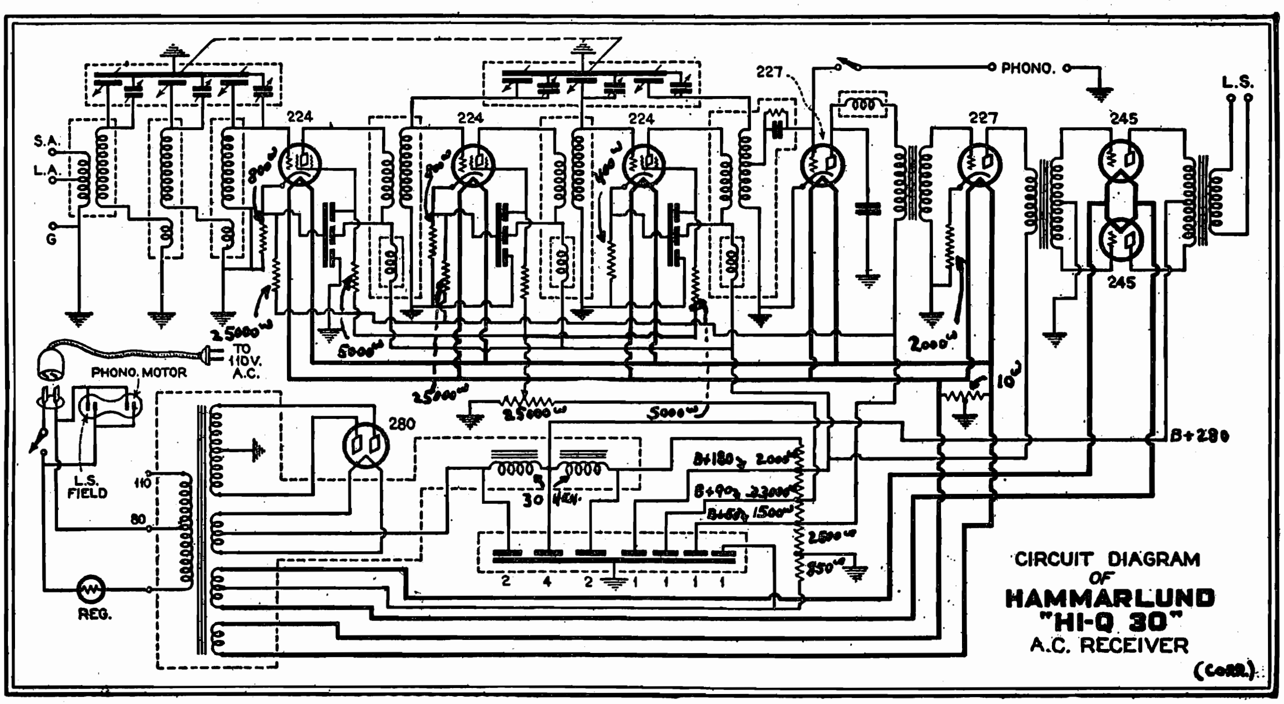
Master D.C. - Batt. cable.

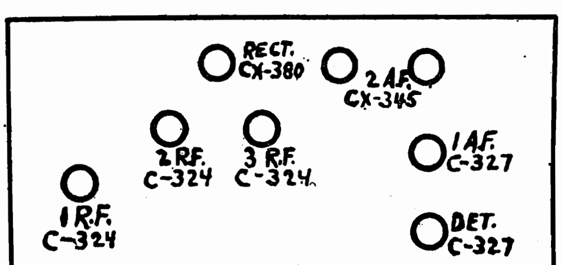
To	B+ 135	Gray
"	B+ 90	Yellow
"	B+ 45	Blue
"	B-, C+, A-,	Black
"	C- 4.5	Green
"	C- 27.	Brown
"	A+	Red

HAMMARLUND-ROBERTS, INC.

MODEL H-R "HI-Q" 30
A.C.-Battery

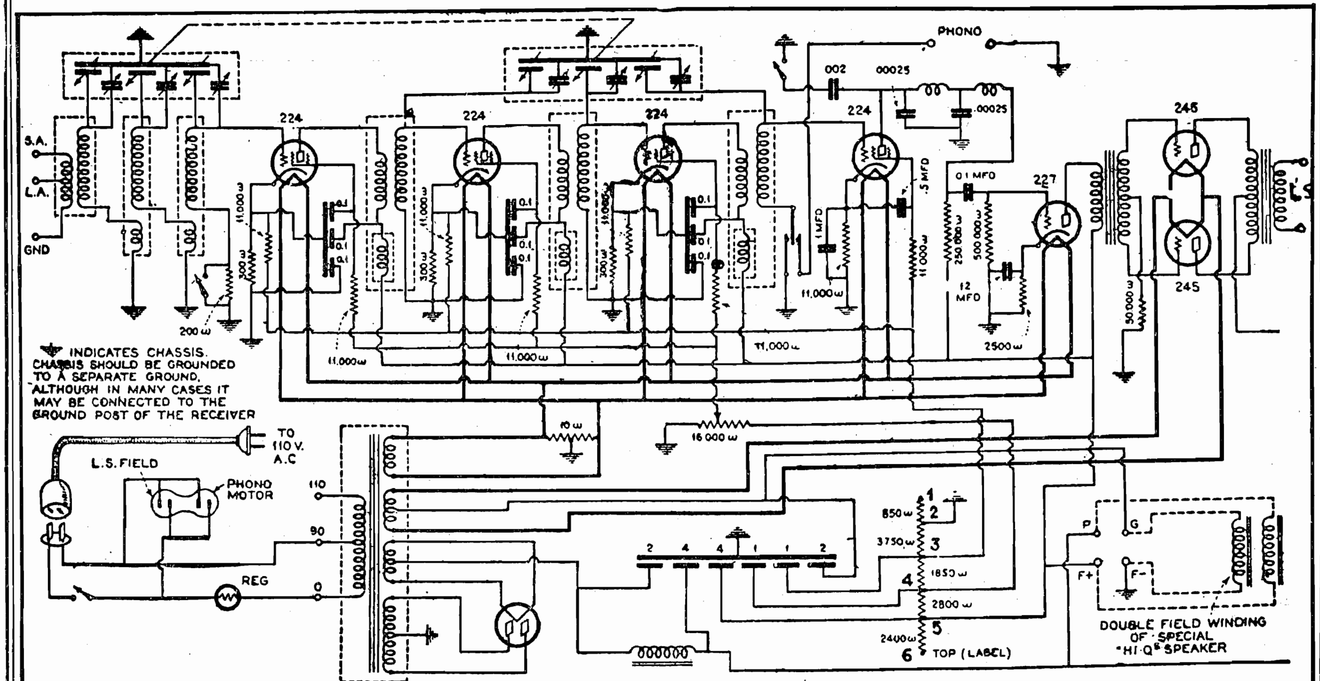




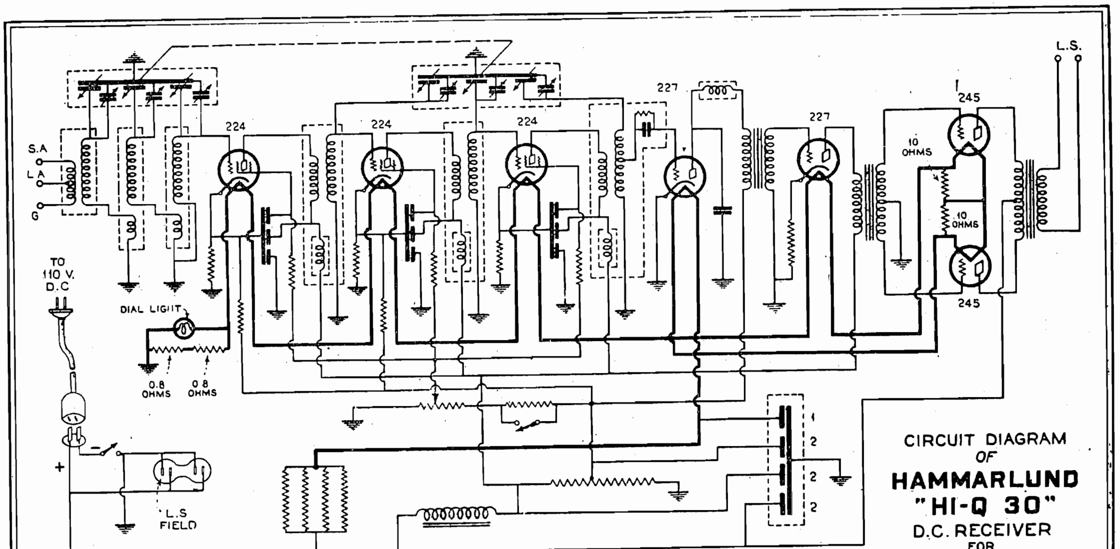


MODEL H-R "HI-Q"30 D.C.
MODEL H-R "HI-Q"31

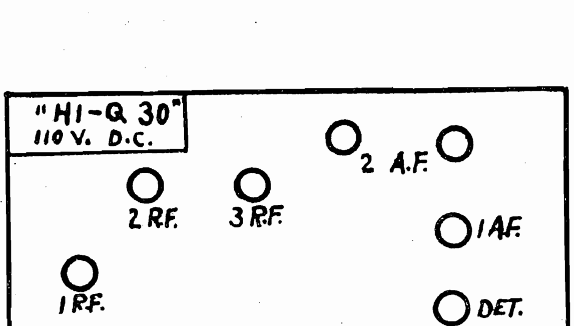
HAMMARLUND-ROBERTS, INC.



Model H-R "HI-Q"31



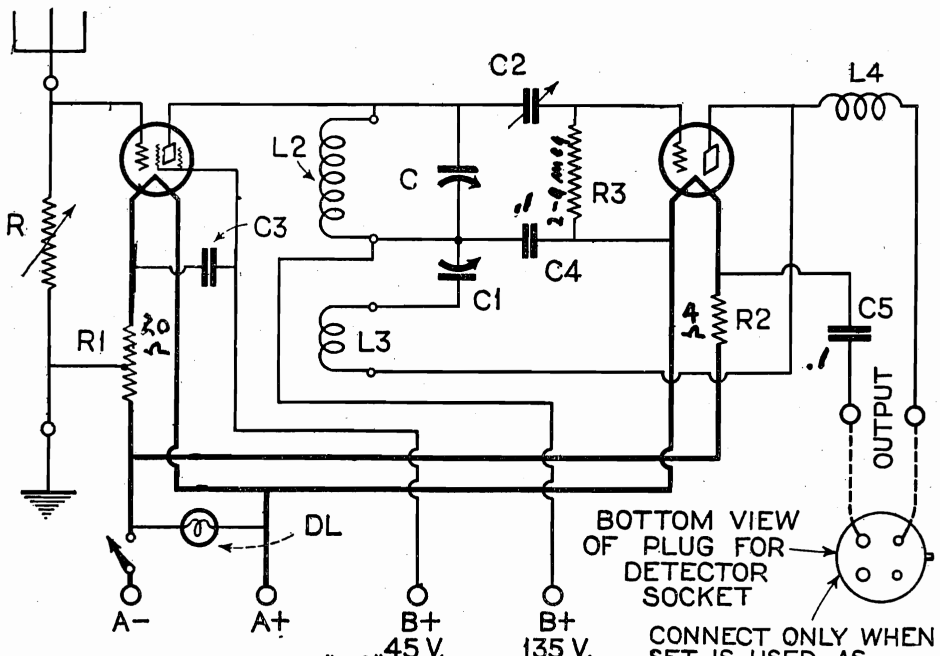
CIRCUIT DIAGRAM OF HAMMARLUND "HI-Q 30" D.C. RECEIVER FOR 110 VOLTS DIRECT CURRENT



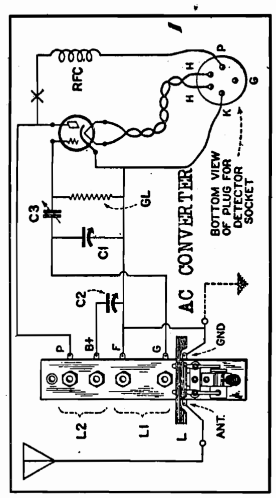
HI-Q 30 D.C.		
Voltmeter readings from chassis to:		
Top of voltage divider		- 110 V.
Middle tap		- 60. "
(P) term.of socket	# 1, 2. 3 and 5	- 100 "
(P) " " "	# 4	- 50 "
(P) " " "	# 6 and 7	- 110 "
(G) " " "	# 1, 2 and 3	- 20 ."
(K) " " "	# 1, 2 and 3	- 1-2"
(K) " " "	# 5	- 6 "

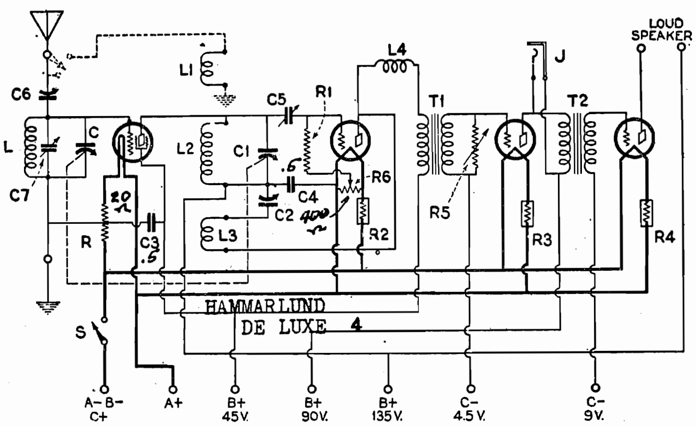
MODEL Hawk
MODEL DeLuxe
MODEL Z4 Commander
MODEL Trans-Oceanic Two
MODELS AC & DC Converters

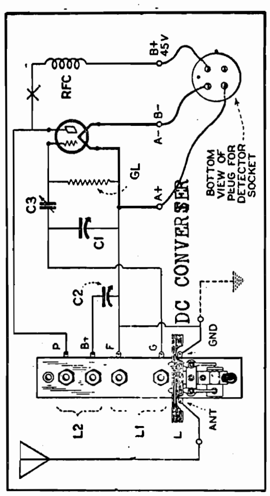
HAMMARLUND MFG. CO.



HAMMARLUND TRANS-OCEANIC "TWO"



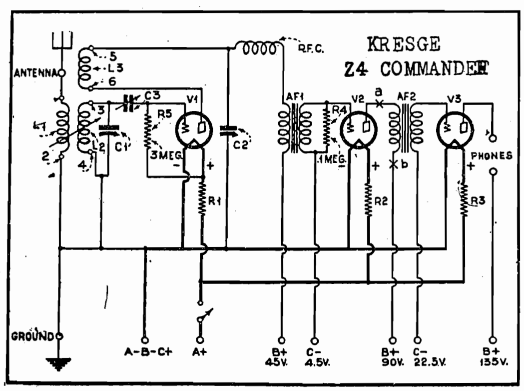


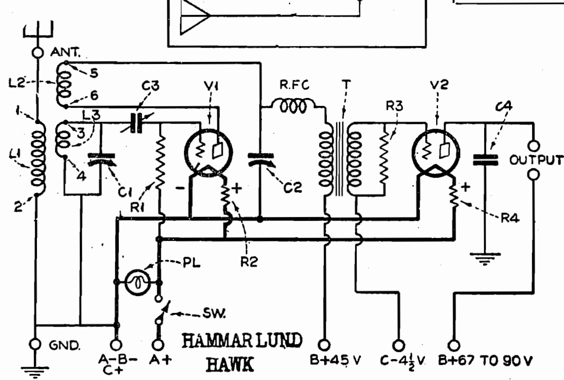


Coil Table

Wave Band (Meters)	Secondary Turns	Tickler Turns
14 to 24	3	3
22 to 40	7	5
36 to 65	15	6
60 to 110	24	12

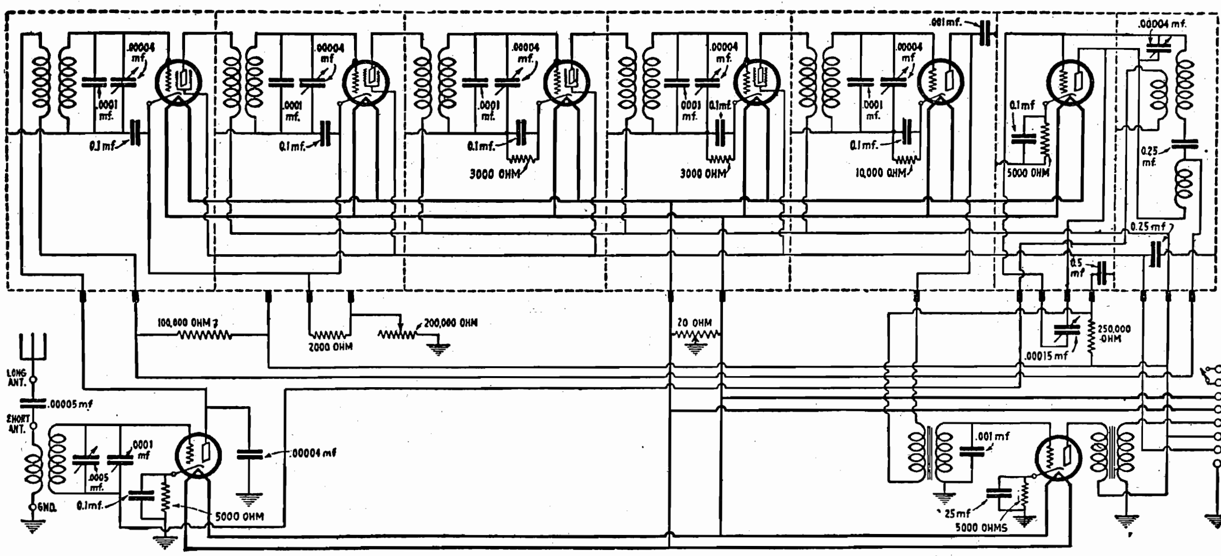
HAMMARLUND HAWK



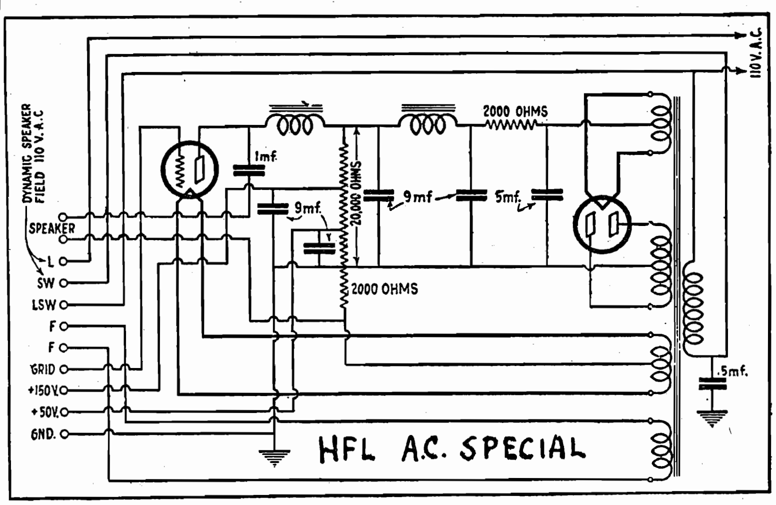


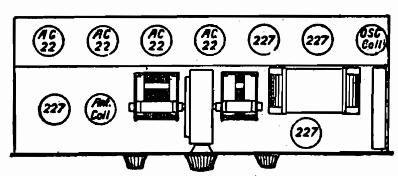
HIGH FREQUENCY LABORATORIES

MODEL A.C. Special
MODEL 9-in-Line

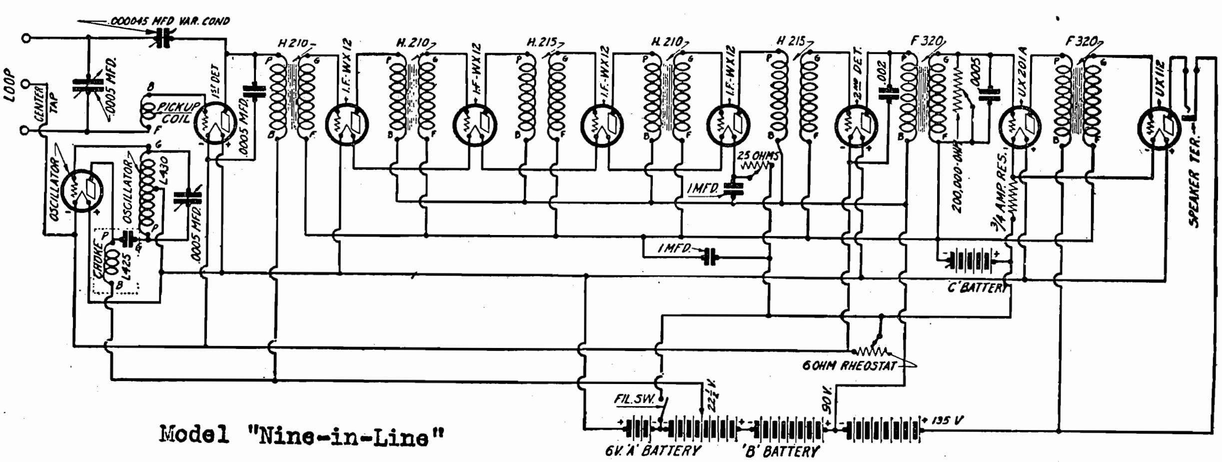


Model "A.C.Special"





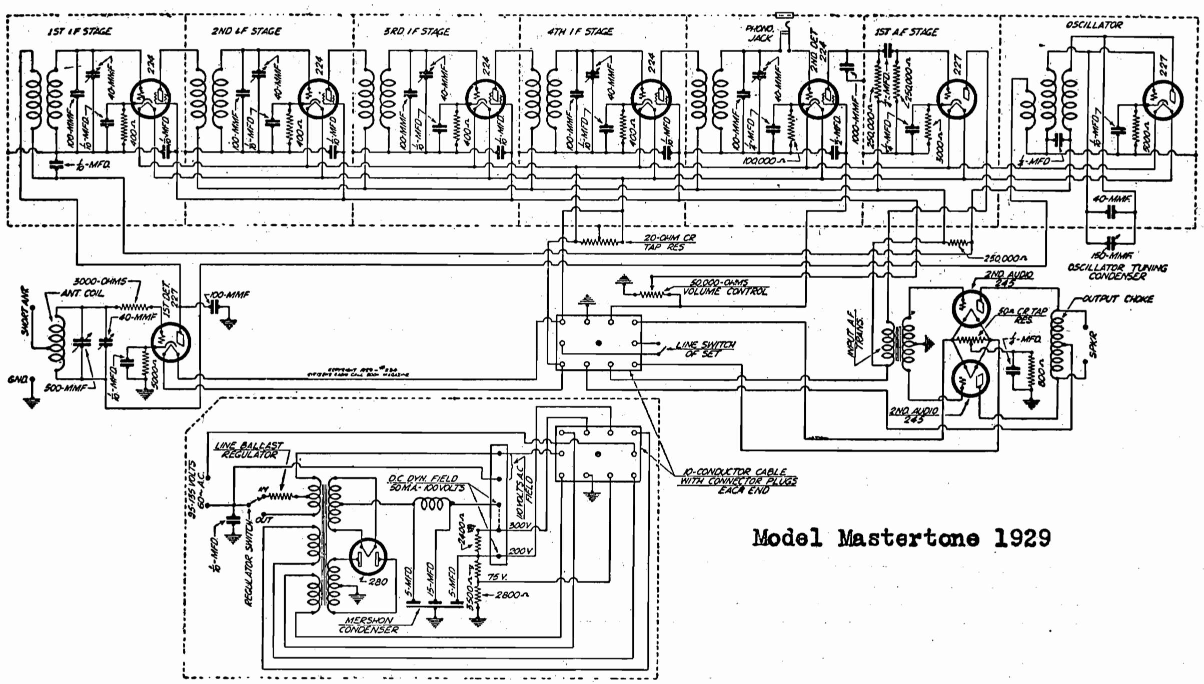
Tube layout showing position of respective tubes.



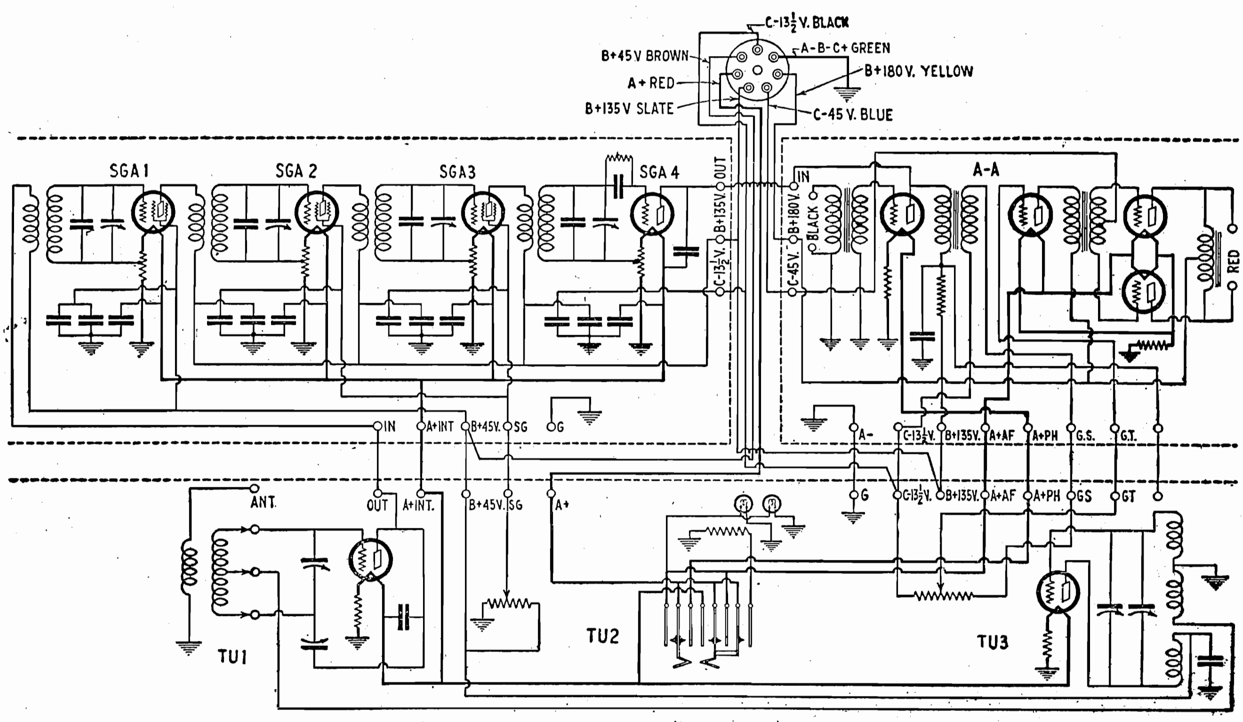
Model "Nine-in-Line"

MODEL Mastertone 1929
MODEL Isotone 10

HIGH FREQUENCY LABORATORIES



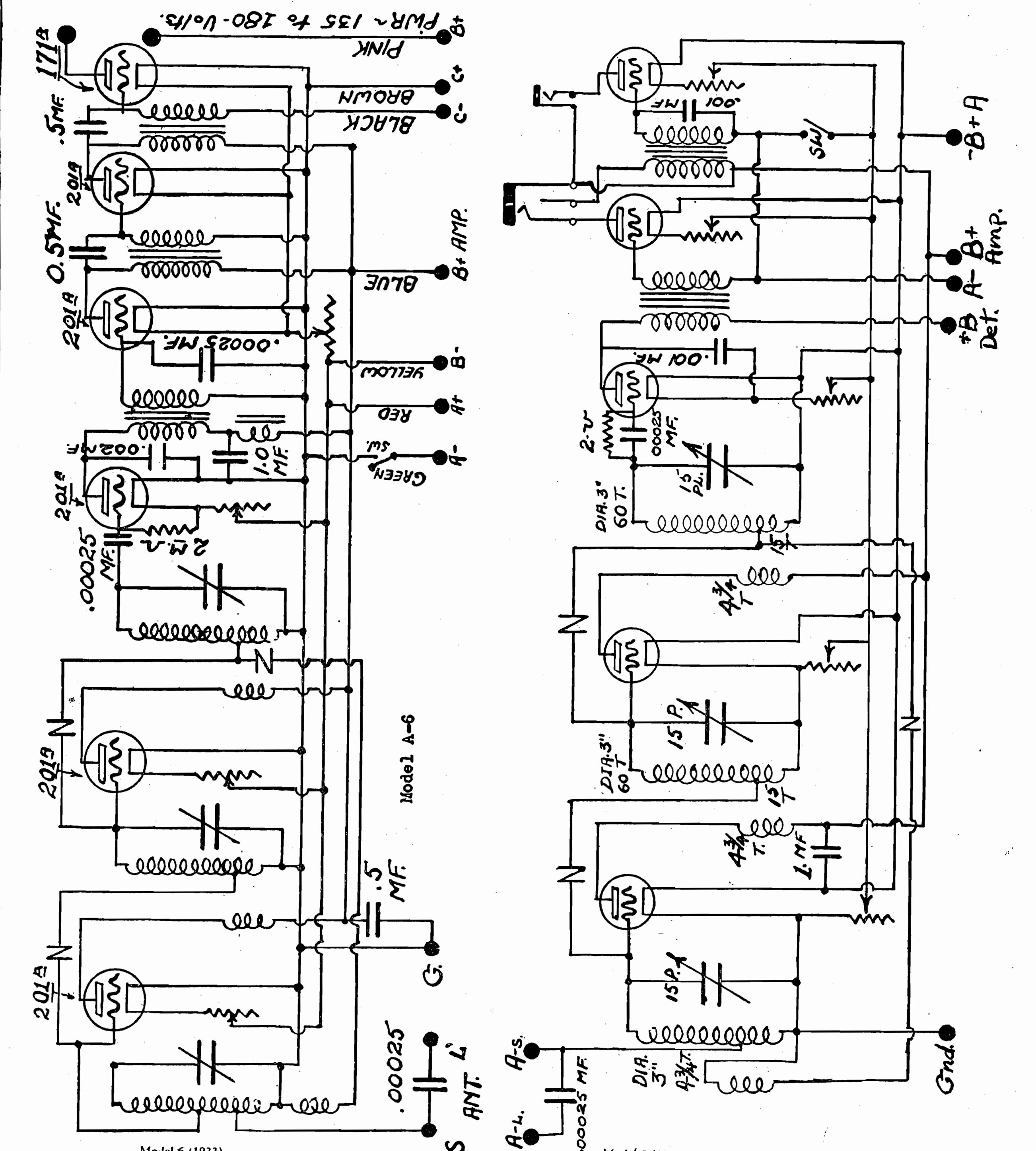
Model Mastertone 1929



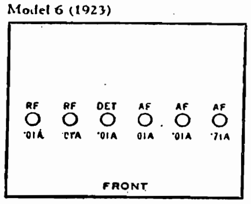
Model Isotone 10

HOWARD RADIO CO.

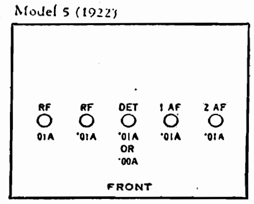
MODEL A-5
MODEL A-6



Model 6 (1923)

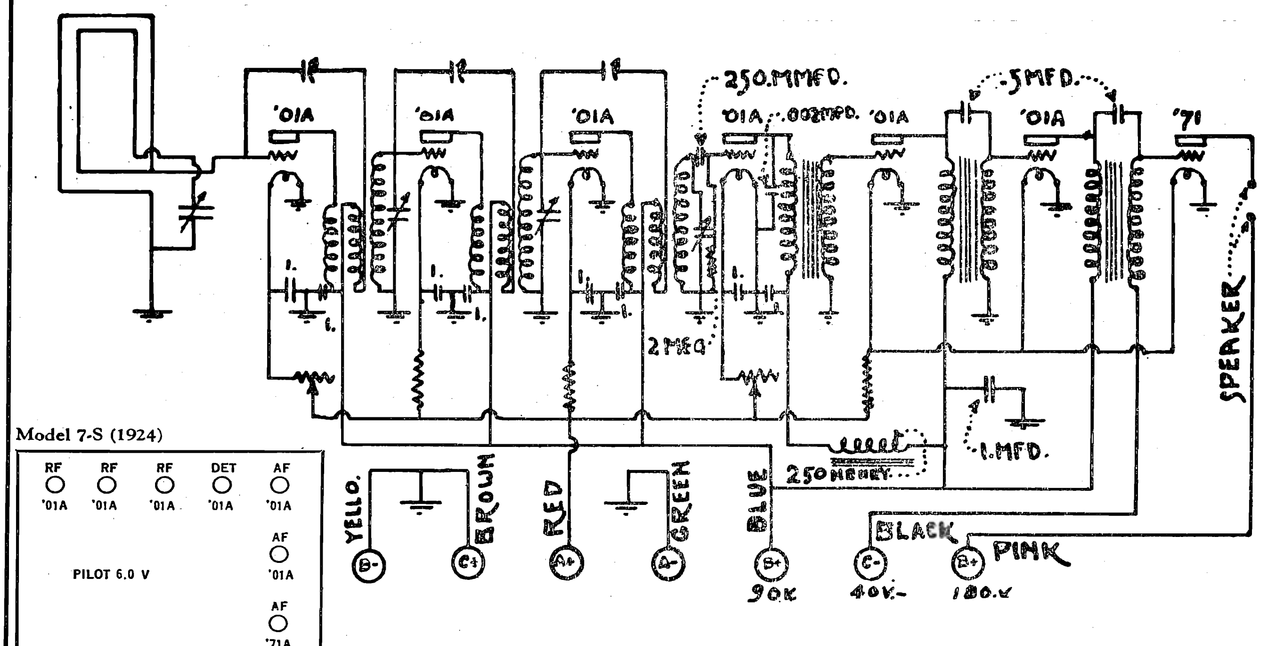


Model 5 (1922)

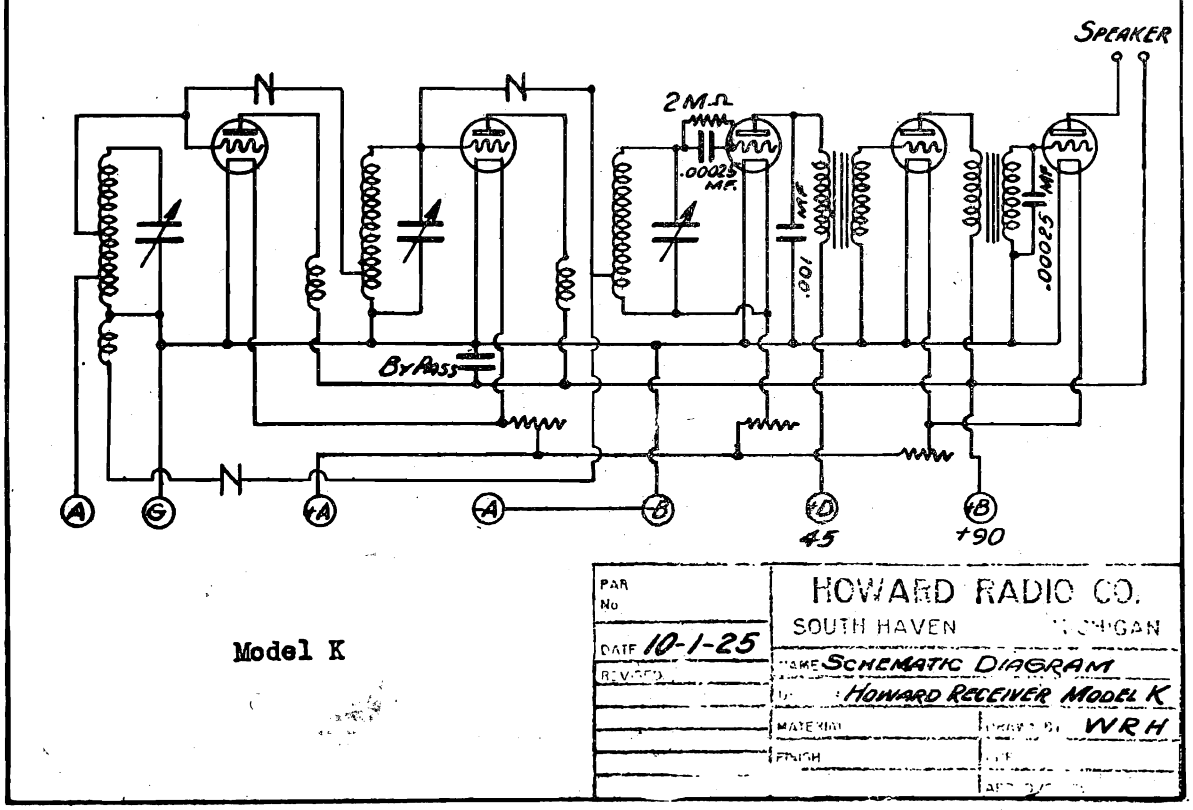


MODEL SN-7
MODEL K

HOWARD RADIO CO



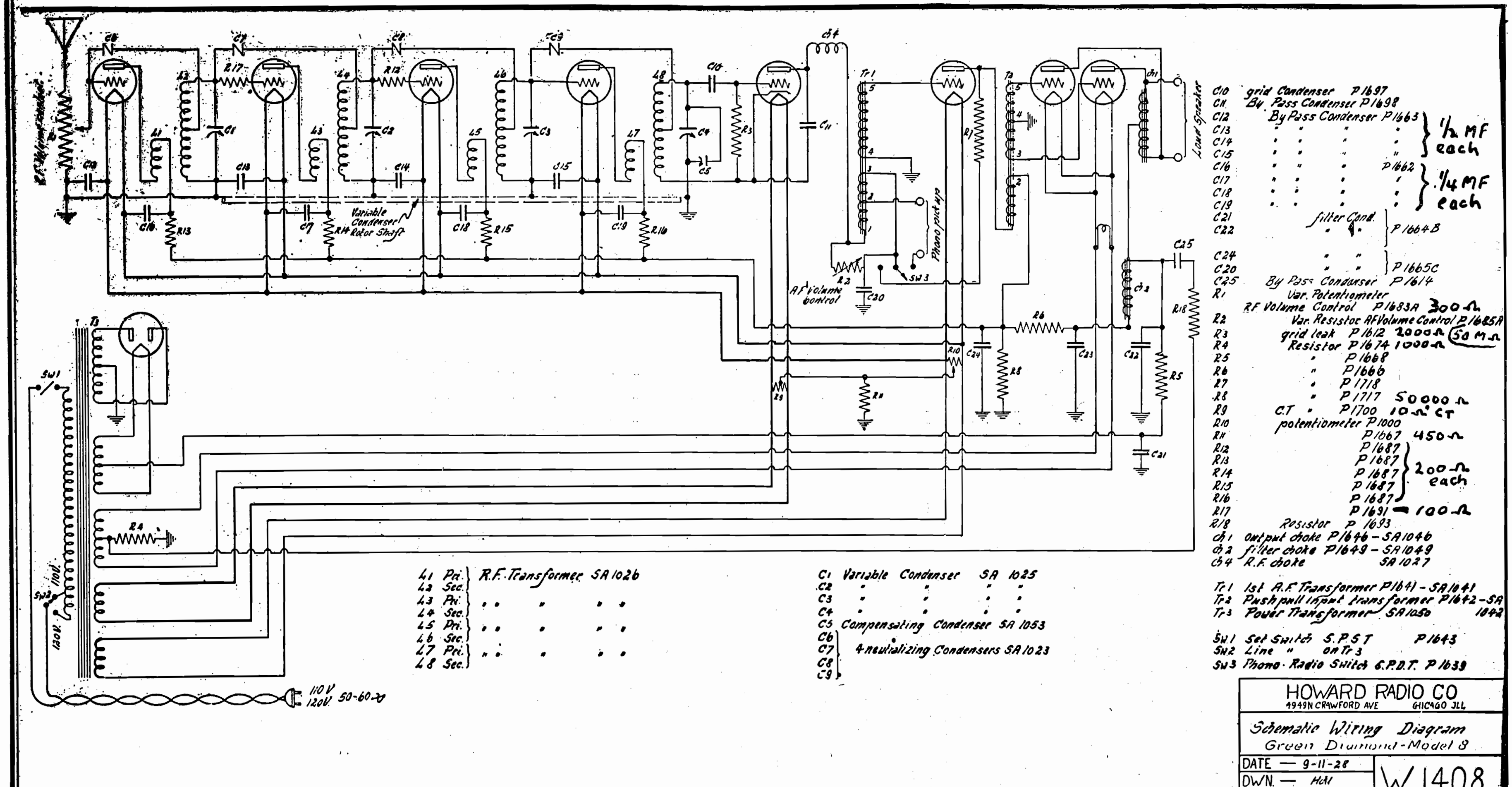
Model SN-7 Neutrodyne



Model K

MODEL Green Diamond 8 (Magnetic Speaker)

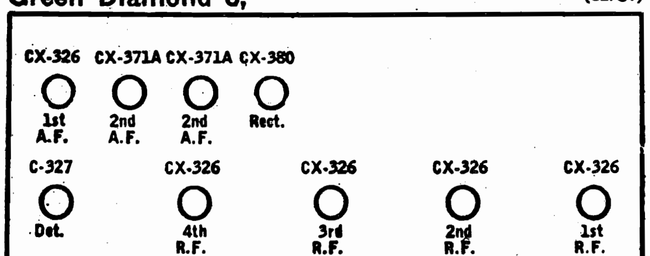
HOWARD RADIO CO.



HOWARD—Green—Diamond 8
Line Voltage 115—2nd A. F. 2 Tubes—Push Pull

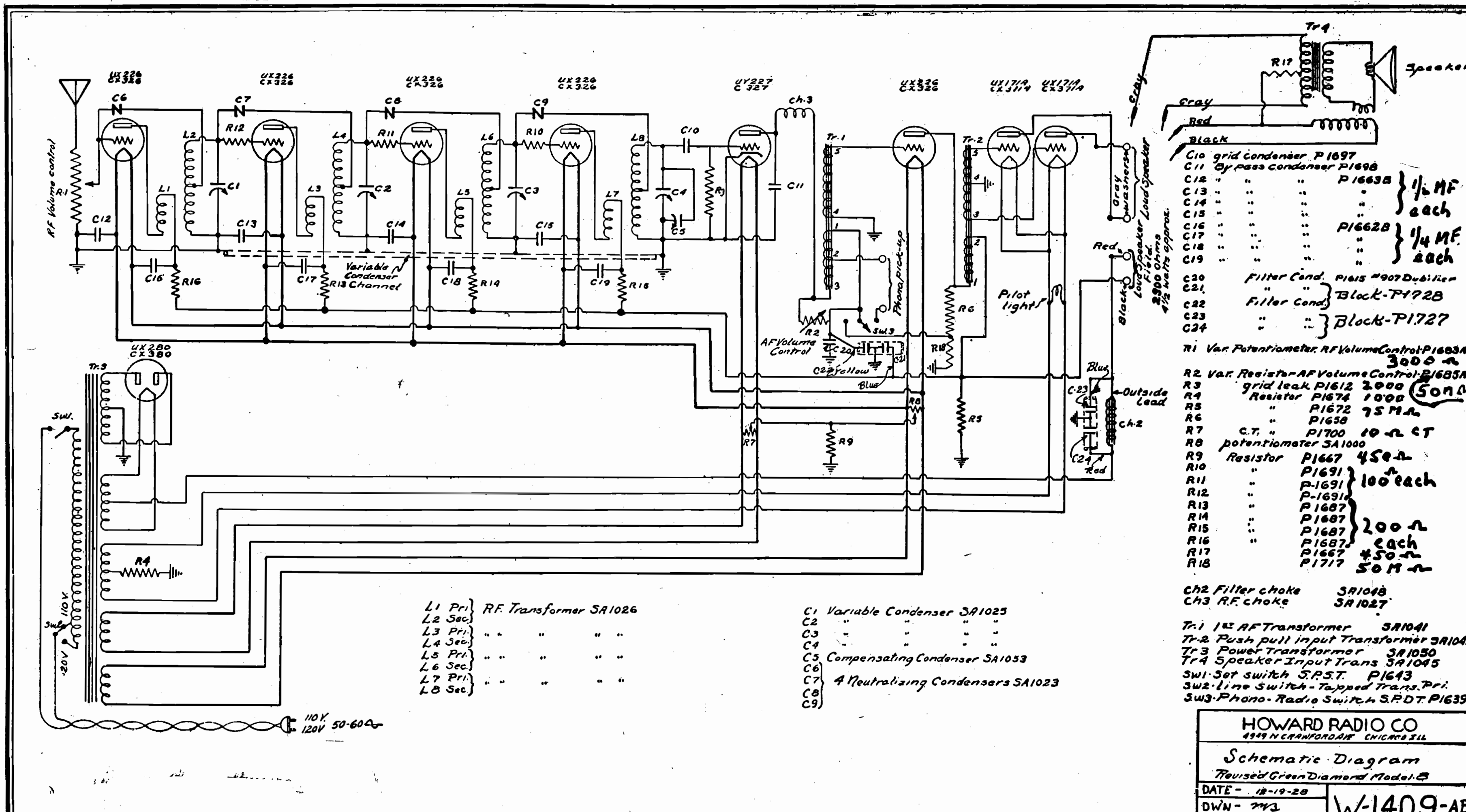
TUBE NO. IN ORDER	TYPE OF TUBE	POSITION OF TUBE 1ST RF DET ETC	READINGS, PLUG IN SOCKET OF SET: TUBE OUT A VOLTS	TUBE OUT B VOLTS	TUBE IN TESTER A VOLTS	B VOLTS	C VOLTS	CATHODE VOLTS	NORMAL PLATE M.A.	PLATE M.A. GRID TEST	PLATE M.A. CHANGE
1	226	1st.R.F.	1.3	136	1.2	132	9	-	4.4	8.2	3.8
2	226	2nd.R.F.	1.3	136	1.2	132	9	-	4.4	8.2	3.8
3	226	3rd.R.F.	1.3	136	1.2	132	9	-	4.4	8.2	3.8
4	226	4th.R.F.	1.3	136	1.2	132	9	-	4.4	8.2	3.8
5	227	Det.	2.3	110	2.1	23	0	9	1.4	1.4	0.0
6	226	1st.A.F.	1.3	136	1.2	124	8	-	4.4	8.2	3.8
7	171	2nd.A.F.	4.5	176	4.4	161	32	-	13	14	1.0
8	171	2nd.A.F.	4.5	176	4.4	161	32	-	13	14	1.0
9	280	Rectifier	4.7	-	4.5	-	-	-	26	-	-

Green Diamond 8, (A.C.)

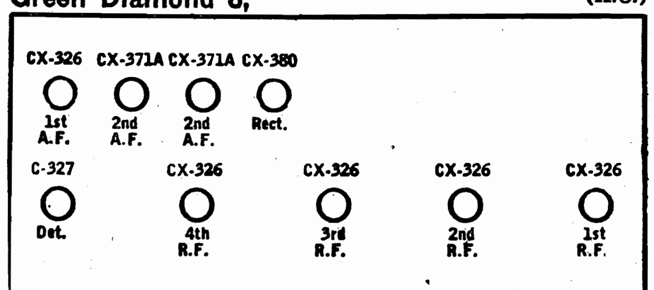


MODEL Green Diamond 8
(Dyn. Spkr. '71)

HOWARD RADIO CO.



Green Diamond 8, (A.C.)

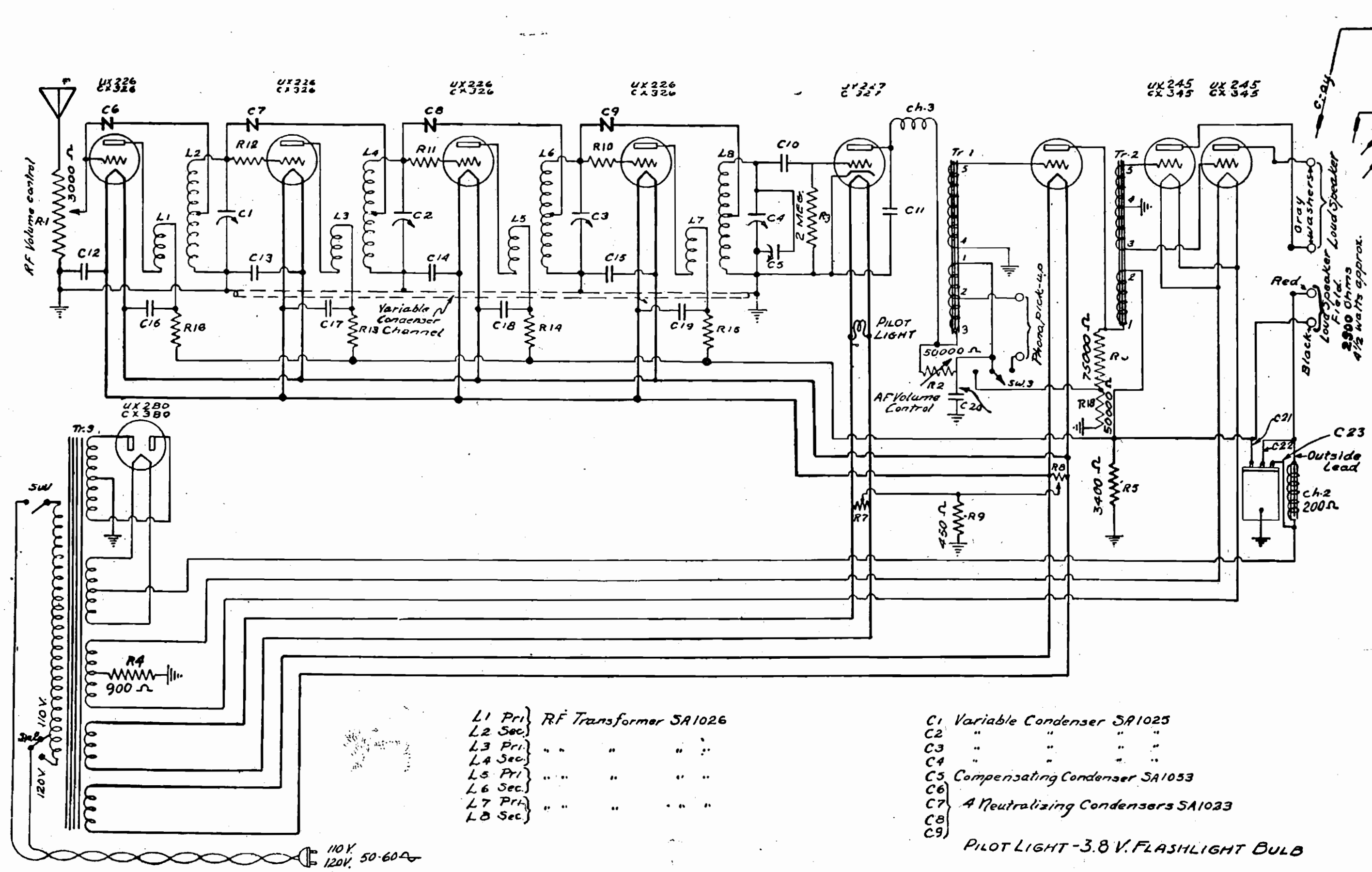


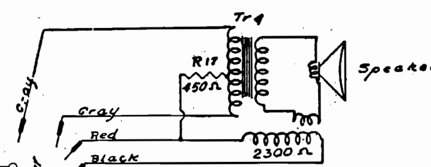
HOWARD—Green—Diamond 8
Line Voltage 115—2nd A. F. 2 Tubes—Push Pull

Tube No. in Order	Type of Tube	Position of Tube 1st R.F. Det. etc.	Readings, Plug in Socket of Set: Tube Out — A Volts	Tube Out — B Volts	Tube in Tester — A Volts	B Volts	C Volts	Cathode Volts	Normal Plate M.A.	Plate M.A. Grid Test	Plate M.A. Change
1	226	1st.R.F.	1.3	136	1.2	132	9	-	4.4	8.2	3.8
2	226	2nd.R.F.	1.3	136	1.2	132	9	-	4.4	8.2	3.8
3	226	3rd.R.F.	1.3	136	1.2	132	9	-	4.4	8.2	3.8
4	226	4th.R.F.	1.3	136	1.2	132	9	-	4.4	8.2	3.8
5	227	Det.	2.3	110	2.1	23	0	9	1.4	1.4	0.0
6	226	1st.A.F.	1.3	136	1.2	124	8	-	4.4	8.2	3.8
7	171	2nd.A.F.	4.5	176	4.4	161	32	-	13	14	1.0
8	171	2nd.A.F.	4.5	176	4.4	161	32	-	13	14	1.0
9	280	Rectifier	4.7	-	4.5	-	-	-	26	-	-

MODEL Green Diamond 8 (Dyn. Spkr. '45)

HOWARD RADIO CO





C10 grid condenser P1697
C11 By pass condenser P1698
C12 " " " P1663B ⎫
C13 " " " " ⎬ ½ M.F. EACH
C14 " " " "
C15 " " " " ⎭
C16 " " " P1662B ⎫
C17 " " " " ⎬ ¼ M.F. EACH
C18 " " " "
C19 " " " " ⎭
C20 Filter Cond. P1615 #907 Dubilier
C21, C22, C23 Filter Cond. " " } HOWARD Electrolitic Cond. SA-1090

R1 Var. Potentiometer. RF Volume Control P1683A 3000 Ω
R2 Var. Resistor AF Volume Control P1685A 50 M Ω
R3 grid leak P1612 2000 Ω
R4 Resistor P1761
R5 " P1760
R6 " P1658
R7 C.T. " P1700 10 Ω CT
R8 potentiometer SA1000
R9 Resistor P1667 450 Ω
R10 " P1691 } 400 Ω EACH
R11 " P-1691
R12 " P-1687 ⎫
R13 " P1687
R14 " P1687 ⎬ 200 Ω EACH
R15 " P1687
R16 " P1687 ⎭
R17 " P1667 450 Ω
R18 P1717 50 M Ω

Ch2 Filter choke SR1048
Ch3 R.F. choke SR1027

Tr-1 1st AF Transformer SR1041
Tr-2 Push pull input Transformer SR1042
Tr3 Power Transformer P1800
Tr4 Speaker Input Trans SA1045
SW1-Set switch S.P.S.T. P1643
SW2-Line switch-Tapped Trans. Pri.
SW3-Phono-Radio Switch S.P.D.T. P1639

HOWARD RADIO CO
4949 N CRAWFORD AVE CHICAGO ILL
Schematic Diagram TYPE E
Revised Green Diamond Model-8
DATE - 12-19-28
DWN - 743
W-1409-E

REVISED. 7-9-29.

HOWARD—Model SH-245
Line Voltage 120—Set on High Volt Tap—Volume Control Position No Change

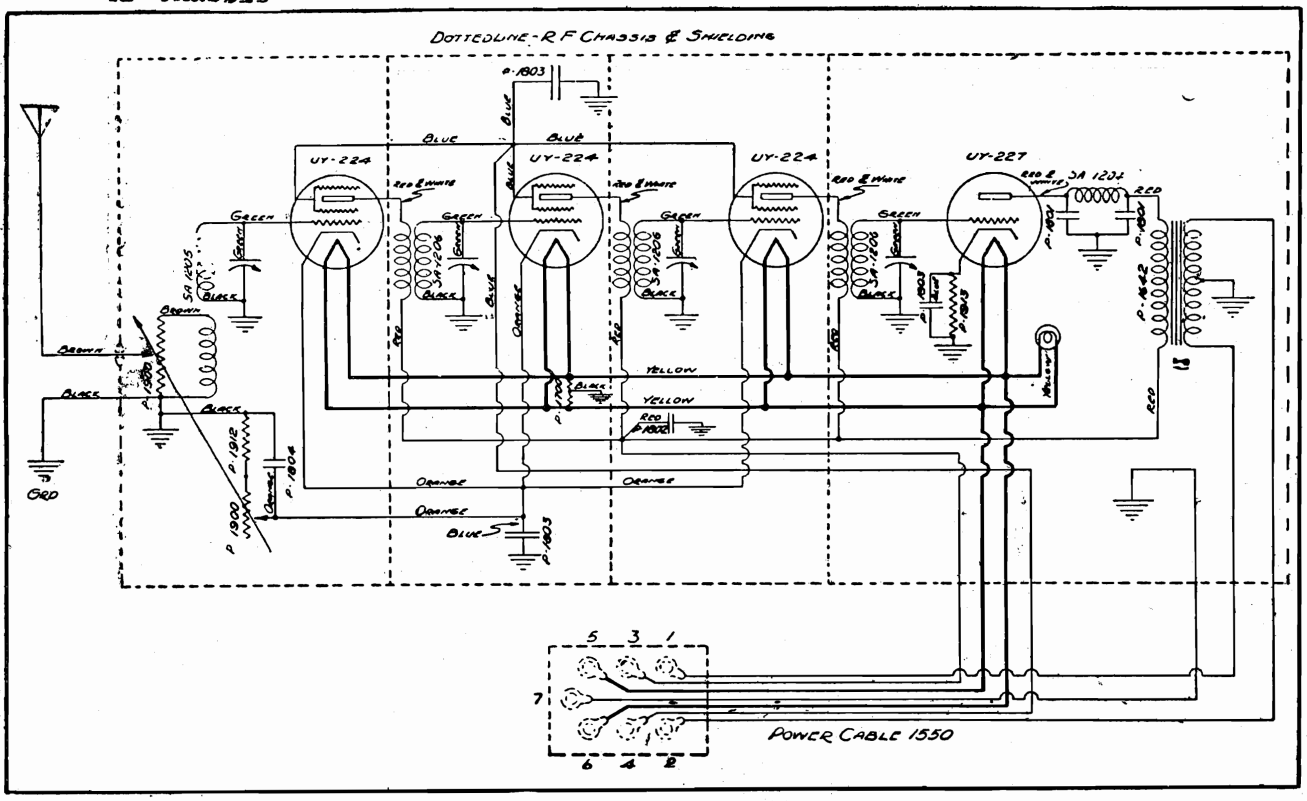
TUBE NO IN ORDER ①	TYPE OF TUBE ②	POSITION OF TUBE 1ST RF DET ETC ③	READINGS, PLUG IN SOCKET OF SET: TUBE OUT A VOLTS ④	B VOLTS ⑤	TUBE IN TESTER: A VOLTS ⑥	B VOLTS ⑦	C VOLTS (CONTROL GRID) ⑧	CATHODE - HEATER ⑨ VOLTS	NORMAL PLATE ⑩ M A	PLATE M.A GRID ⑪ TEST	PLATE CHANGE ⑫ M.A	SCREEN GRID ⑬ VOLTS
1	226	1st RF	1.4	120	1.35	116	8	-	4.5	7.5	3	-
2	226	2nd RF	1.4	120	1.35	116	8	-	4.5	7.5	3	-
3	226	3rd RF	1.35	120	1.3	116	8	-	4.5	7.5	3	-
4	226	4th RF	1.35	120	1.3	116	8	-	4.5	7.5	3	-
5	227	Det.	2.25	44	2.1	20	-	-	.8	-	-	-
6	226	1st A	1.35	120	1.3	116	8	-	2.2	5.4	3.2	-
7	245	2nd A	2.2	245	2.1	235	36	-	22	26	9	-
8	245	2nd A	2.2	245	2.1	235	36	-	22	26	4	-
9	280	Rect.	5	-	4.8	-	-	-	100	-	-	-

Green Diamond 8, Type SH (A.C.)

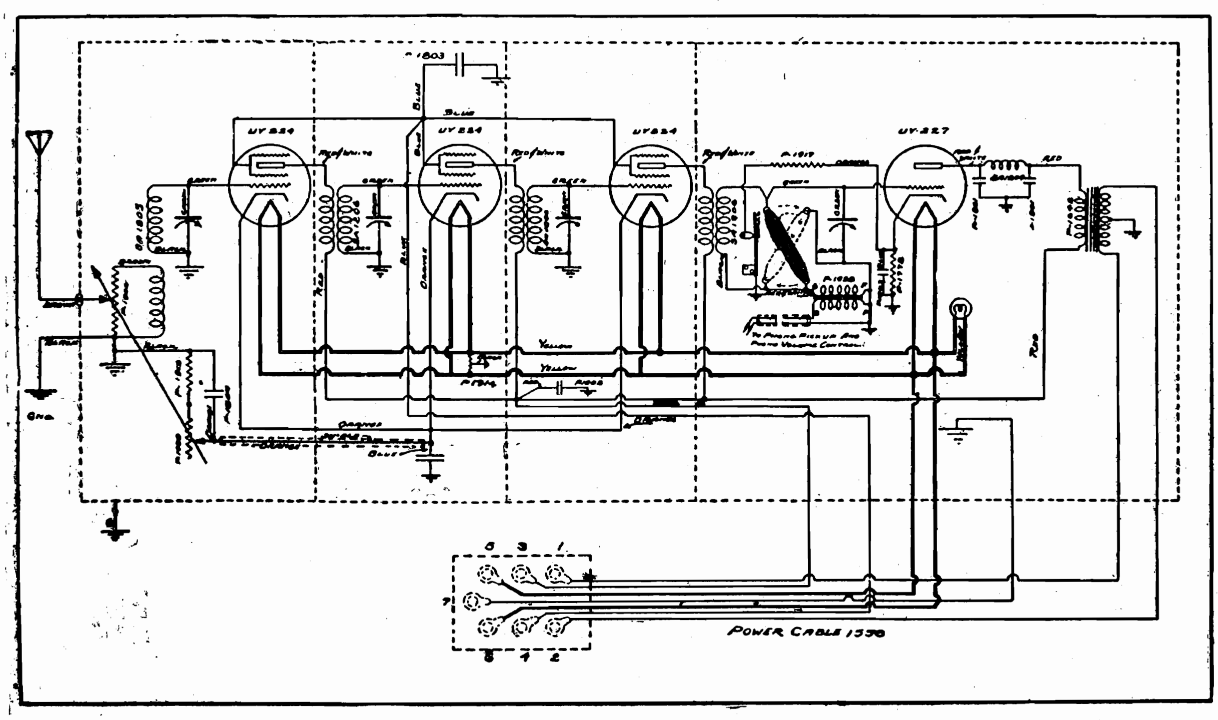
CX-326	CX-345	CX-345	CX-380	
1st A.F.	2nd A.F.	2nd A.F.	Rect.	
C-327	**CX-326**	**CX-326**	**CX-326**	**CX-326**
Det.	4th R.F.	3rd R F	2nd R F.	1st R.F.

MODEL SG "A"
RF Chassis
MODEL SG "C"
RF Chassis

HOWARD RADIO CO.



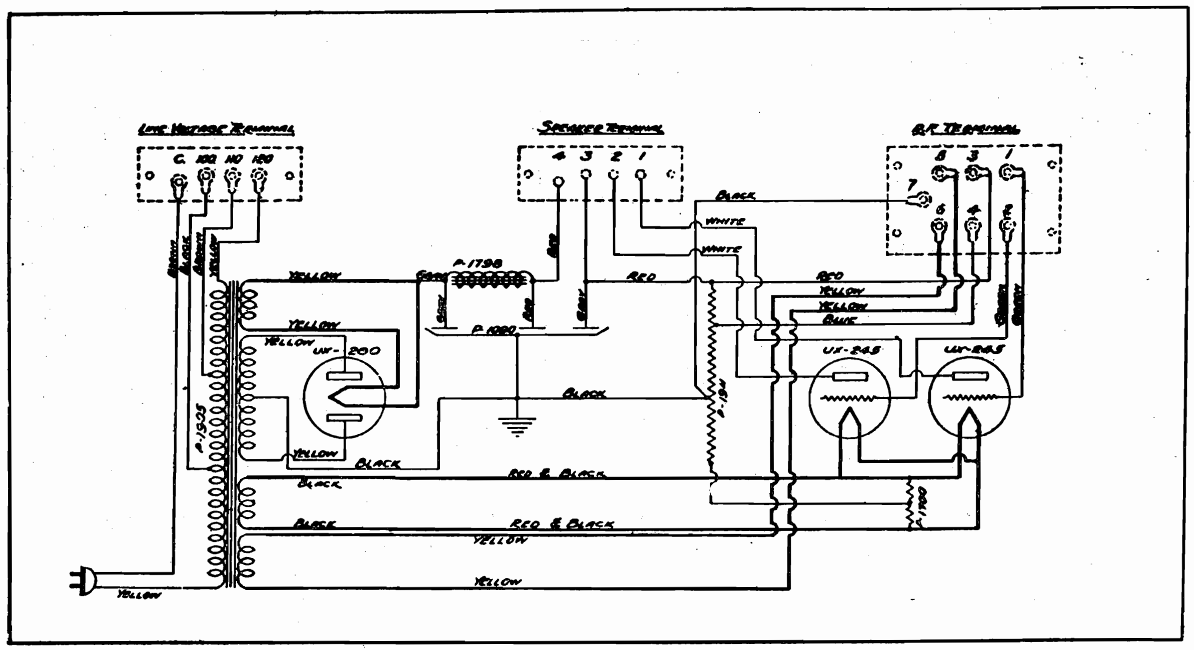
R.F. Chassis Model S.G."A"



R.F.Chassis Model S.G."C"

HOWARD RADIO CO

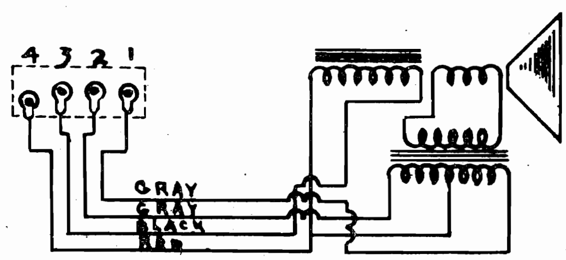
MODEL SG"A"
AF Chassis
MODEL SG"C"
AF Chassis
Voltage



Power Unit and A.F.Amplifier for HOWARD Models S.G."A" and S.G."C"

R.F.Chassis Term.Plate.

1	Gray	Audio Grid	
2	Gray	Audio Grid	
3	Red	B +	175 Volts
4	Blue	B +	70 "
5	Yellow	Fil.	2.25 "
6	Yellow	Fil.	2.25 "
7	Black	B -	Ground



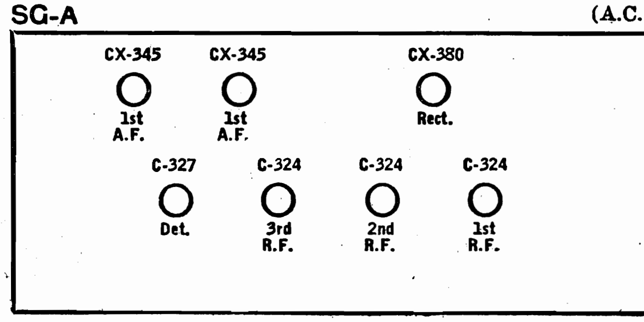
Dyn. Speaker
for models S.G."A" and S.G."C".

HOWARD RADIO—Model A—Screen Grid
Line Voltage 110—Set on 110 Volt Tap
Volume Control Position Max
*Detector Plate Voltage on Phone Combination

Tube No. in Order (1)	Type of Tube (2)	Position of Tube 1st R.F. Det., etc. (3)	Readings, Plug in Socket of Set — Tube Out: A Volts (4)	B Volts (5)	Tube in Tester: A Volts (6)	B Volts (7)	C Volts (Control Grid) (8)	Cathode-Heater Volts (9)	Normal Plate M A (10)	Plate M.A. Grid Test (11)	Plate Change M A. (12)	Screen Grid Volts (13)
1	224	1 R.F.	2.40	171	2.26	164	2.7	1.9	3.3	4.3	1.0	64
2	224	2 R.F.	2.40	171	2.26	164	2.7	1.9	3.3	4.3	1.0	64
3	224	3 R.F.	2.40	171	2.26	164	2.7	1.9	3.3	4.3	1.0	64
4	227	Det.	2.45	161	2.32	*150	15.1X	11.6	1.1	1.4	0.3	-
5	245	P. P.	2.33	272	2.21	251	47.0	-	26	30	4.0	-
6	245	P. P.	2.33	272	2.21	251	47.0	-	26	30	4.0	-
7	280	Rect.	5.54	-	4.65	-	-	-	64	-	-	-

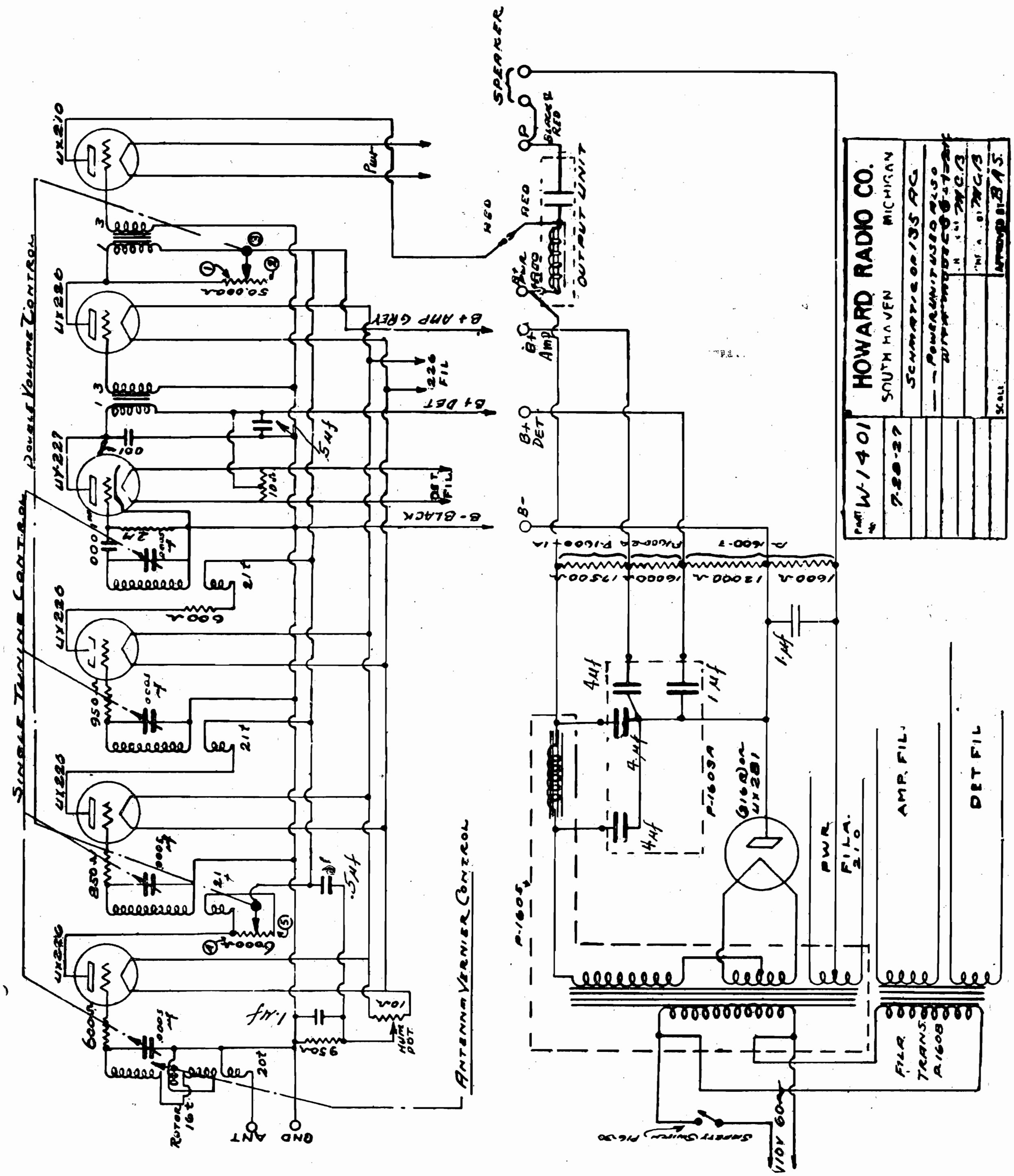
XDetector coil shorted to give correct voltage when measuring detector

SG-A (A.C.)

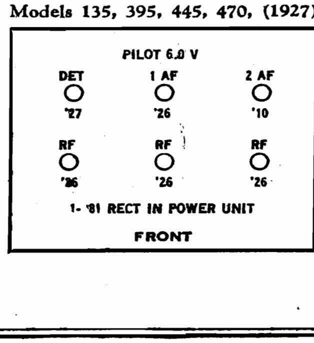


MODEL 395,445,470,495
(135-AC Chassis)

HOWARD RADIO CO.

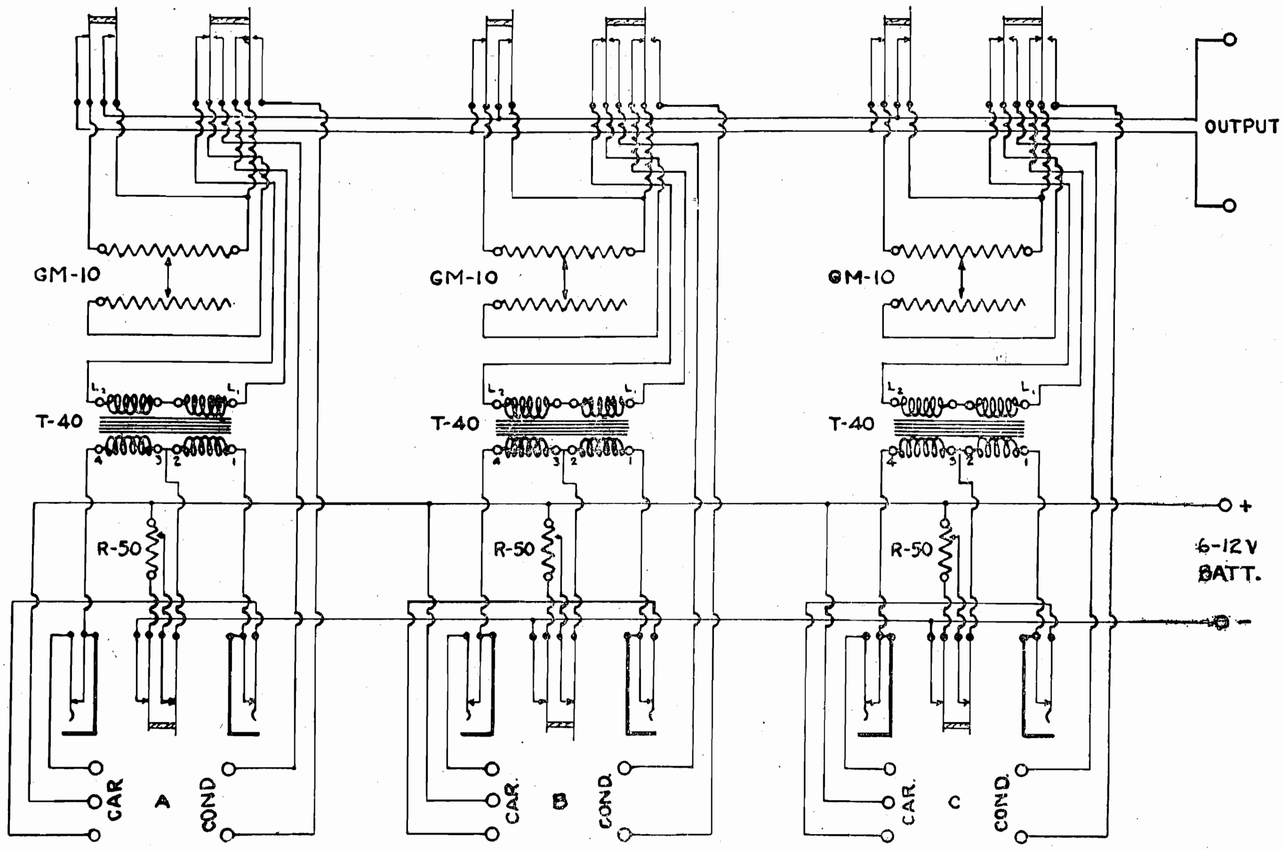


Models 135, 395, 445, 470, (1927)

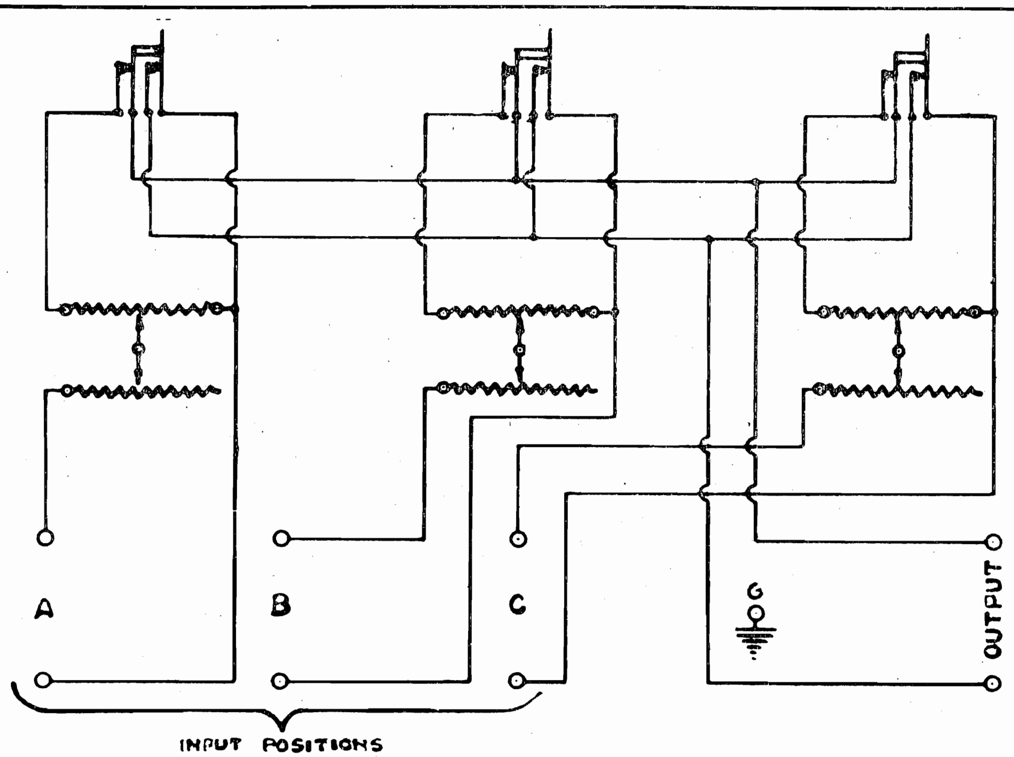


J. E. JENKINS AND S. E. ADAIR

MODEL 3B Mixing Panel
MODEL 3C Mixing Panel



Schematic of:- 3B MIXING PANEL

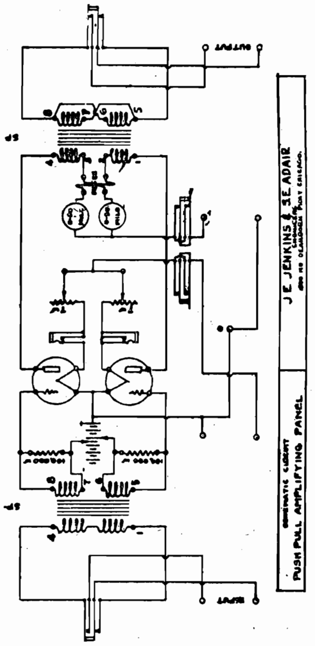


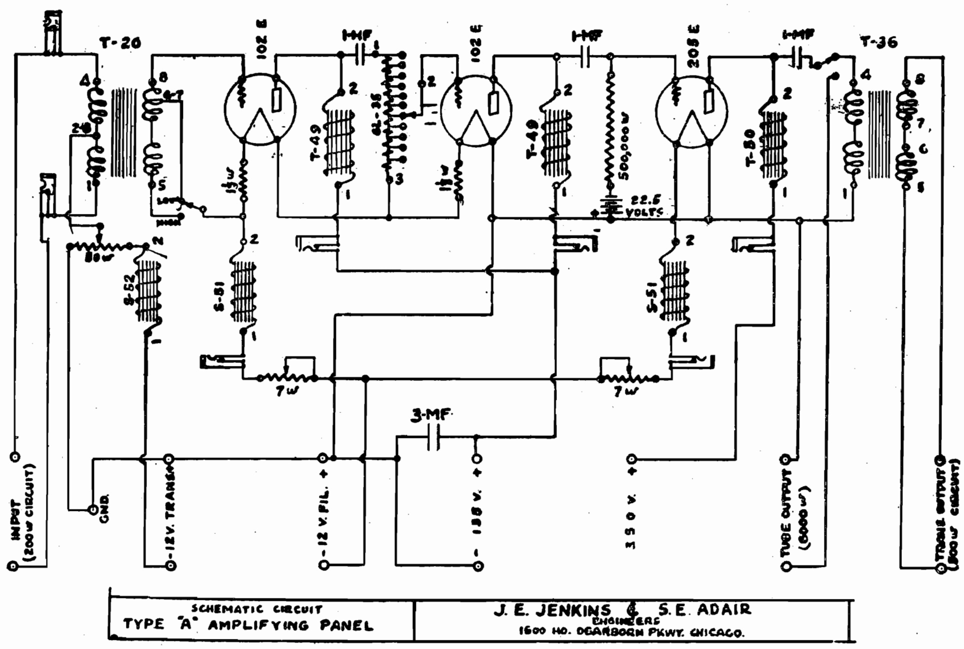
SCHEMATIC CIRCUIT
3-C MIXING PANEL

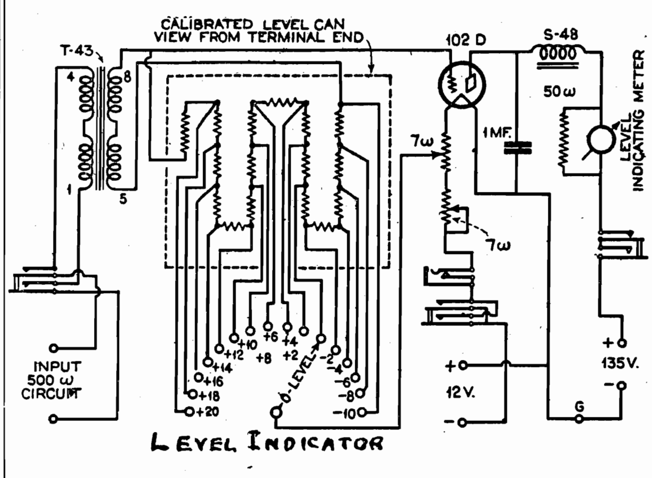
J.E. JENKINS & S.E. ADAIR
ENGINEERS
1500 NO. DEARBORN PKWY. CHICAGO

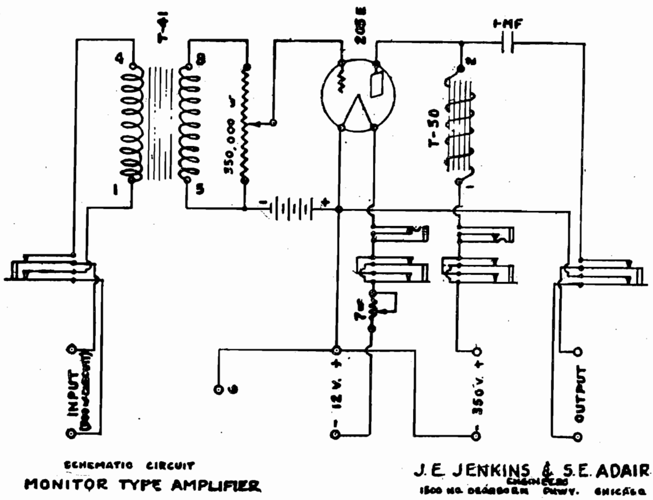
MODEL A Two Types
MODEL PushPull Amp.
MODEL Monitor Amp.
MODEL Level Indicator

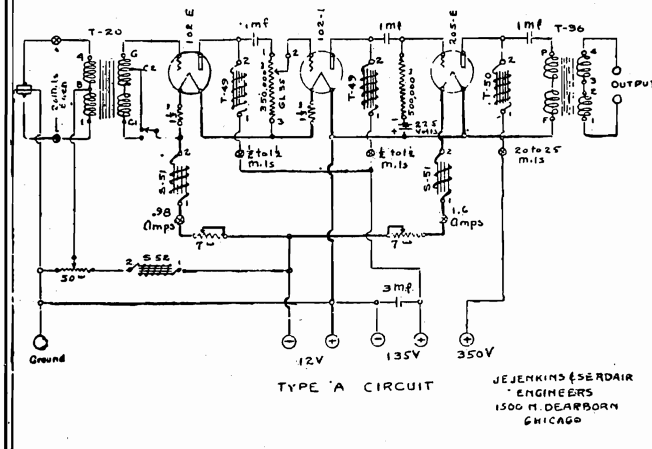
J. E. JENKINS AND S. E. ADAIR

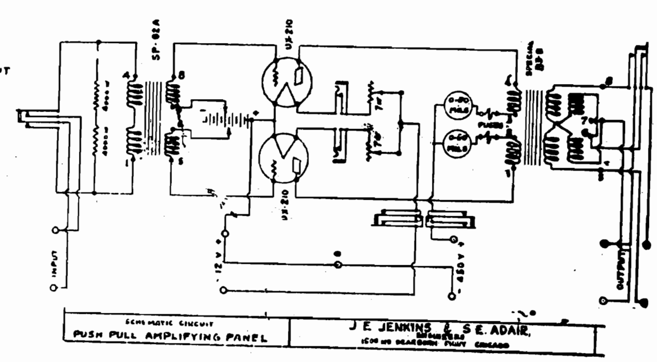






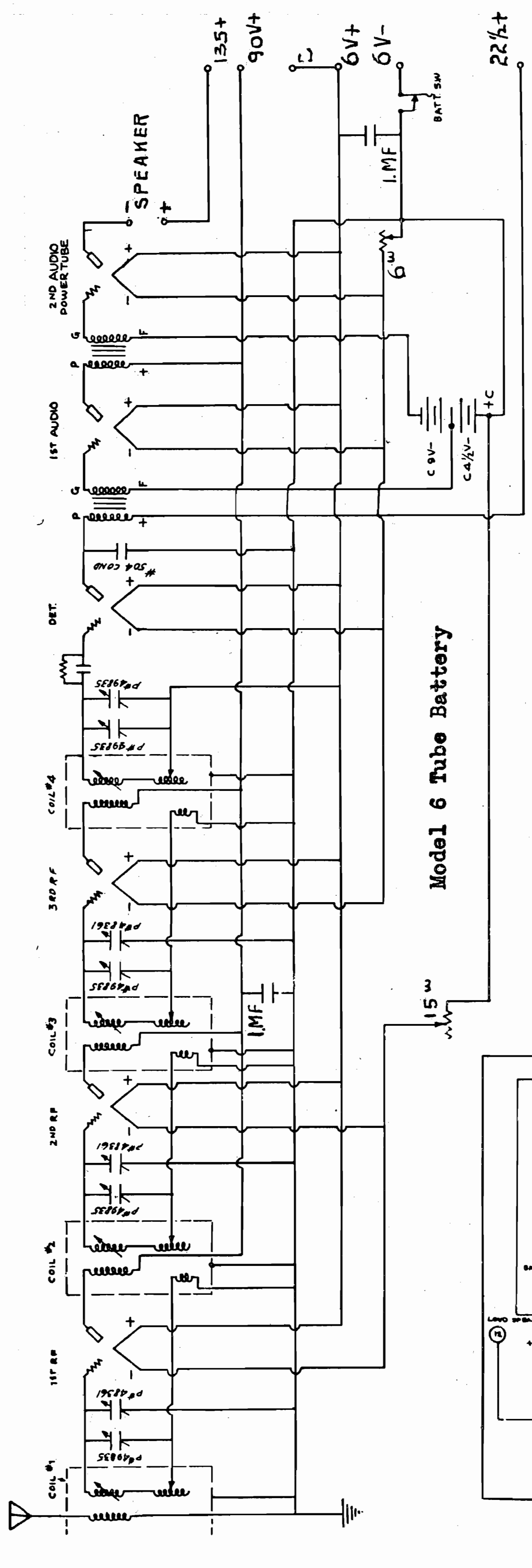




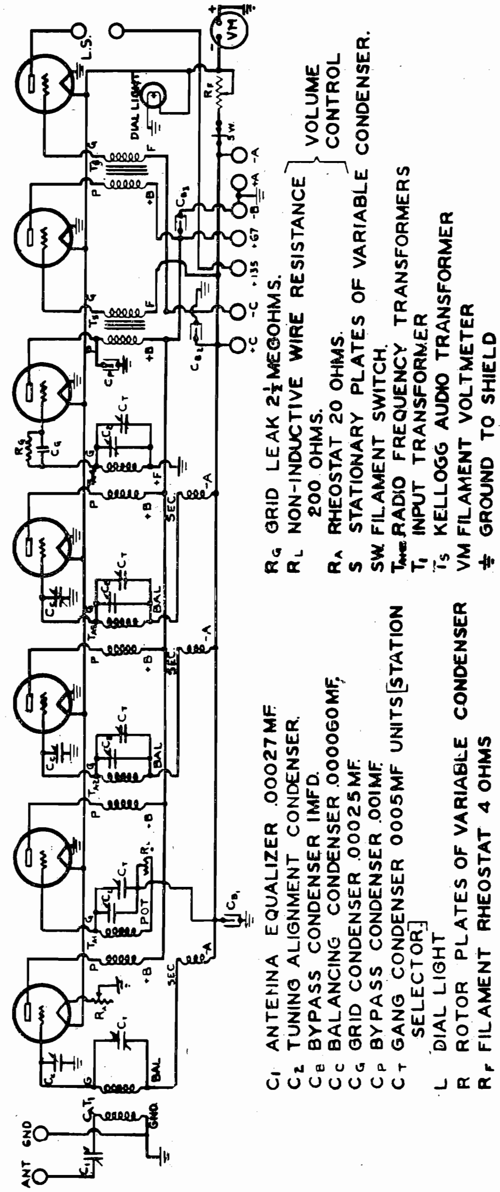


KELLOGG SWITCHBOARD & SUPPLY CO.

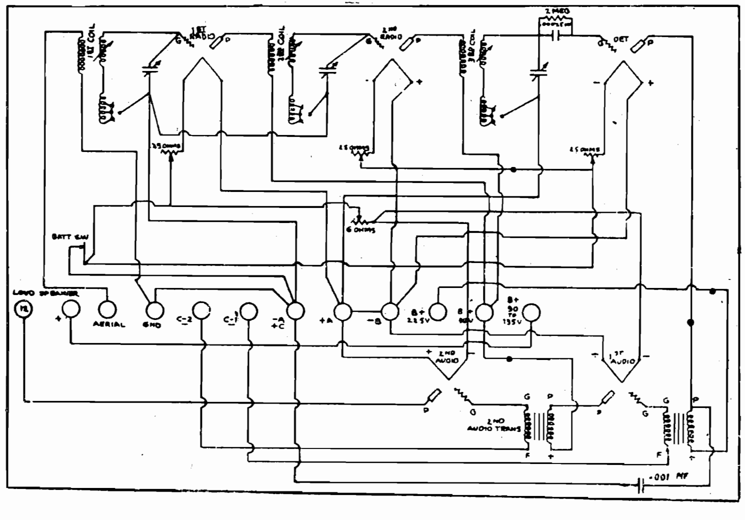
MODEL 6 Tube Battery
MODEL 7 Tube Cascade
MODEL Wave Master



Model 6 Tube Battery



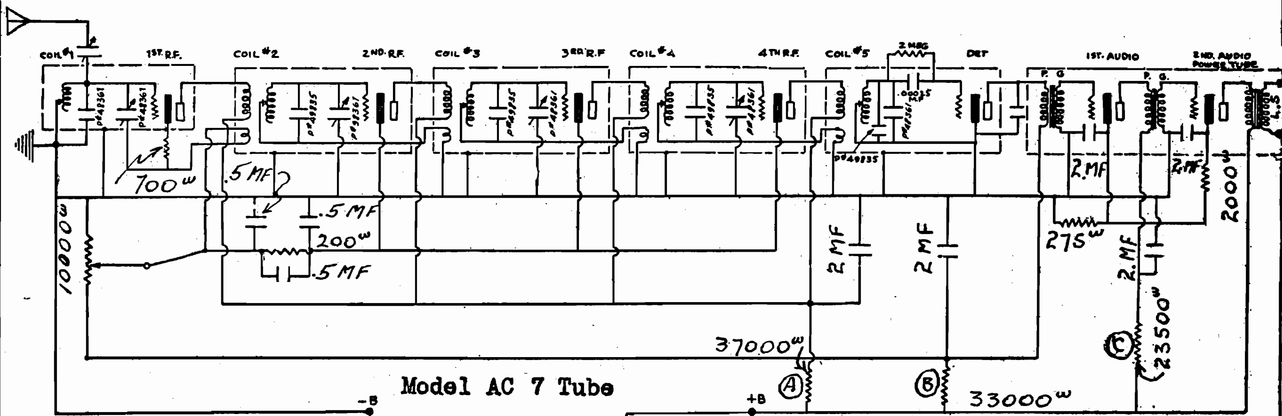
Model 7 Tube Cascade



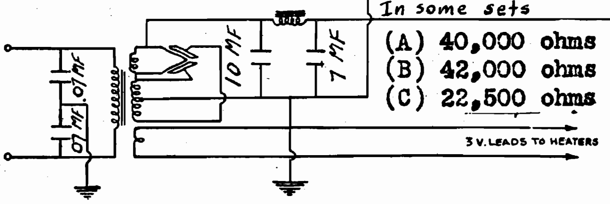
Model Wave Master

MODEL RFL 701
MODEL AC 7 Tube
MODEL Chassis B

KELLOGG SWITCHBOARD & SUPPLY CO.



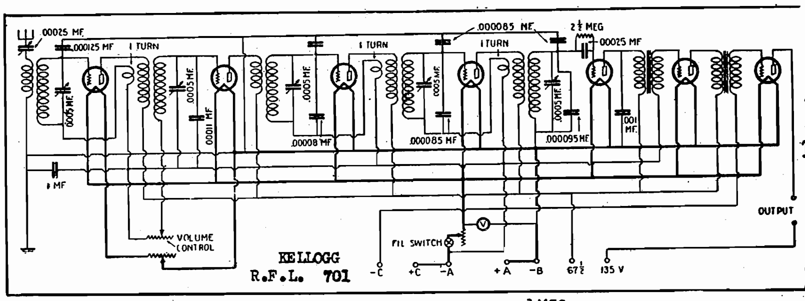
Model AC 7 Tube



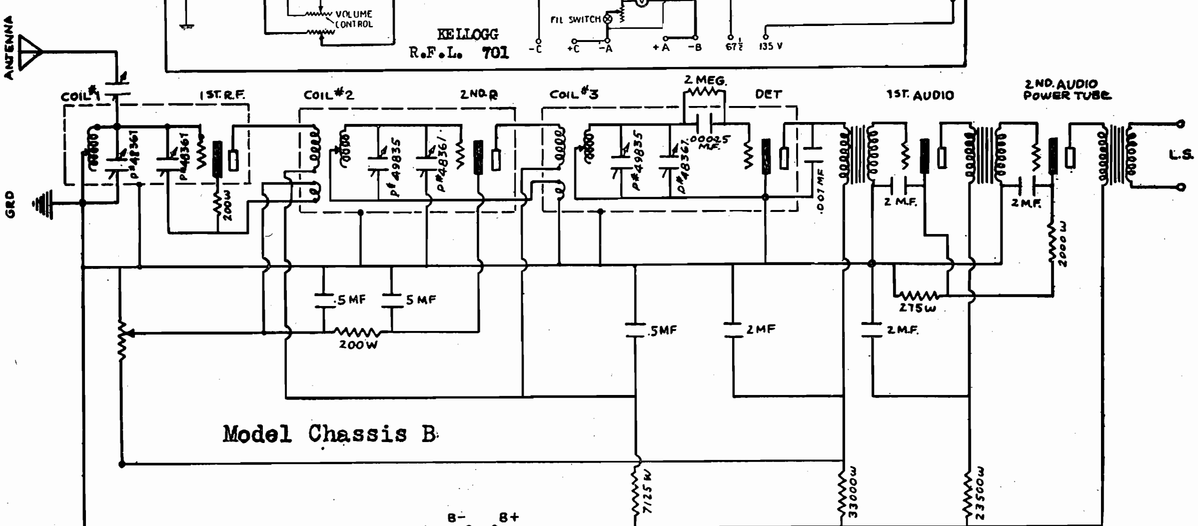
In some sets
(A) 40,000 ohms
(B) 42,000 ohms
(C) 22,500 ohms

KELLOGG—7 Tube "A" Chassis
Line Voltage 115—Volume Control Full

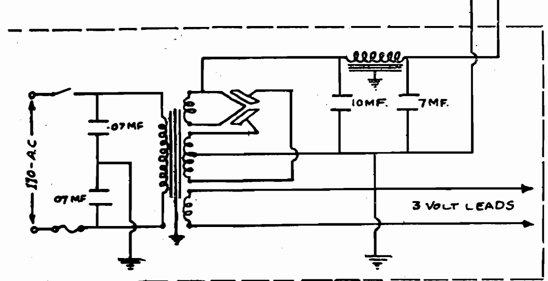
TUBE NO. IN ORDER	TYPE OF TUBE	POSITION OF TUBE 1ST. R.F., DET., ETC.	READINGS, PLUG IN SOCKET OF SET: TUBE OUT: A VOLTS	B VOLTS	TUBE IN TESTER: A VOLTS	B VOLTS	C VOLTS	CATHODE VOLTS	NORMAL PLATE M.A.	PLATE M.A. GRID TEST	PLATE M.A. CHANGE
1	401	1st.R.F.	2.75	115	2.75	108	3.5	-	6.2	10.5	4.3
2	401	2nd.R.F.	2.75	115	2.75	108	4.5	-	6.2	10.5	4.3
3	401	3rd.R.F.	2.75	115	2.75	108	4.5	-	6.2	10.5	4.3
4	401	4th.R.F.	2.75	115	2.75	108	4.5	-	6.2	10.5	4.3
5	401	Detector	2.75	26	2.75	23	0.0	-	1.4	1.5	.1
6	401	1st.A.F.	2.75	115	2.75	108	5.0	-	6.2	10.5	4.3
7	403	2nd.A.F.	2.75	165	2.75	153	33.5	-	13.2	15.2	2.0
8	280	Rectifier	-	-	4.8	-	-	-	22.0	-	-



Model RFL 701



Model Chassis B

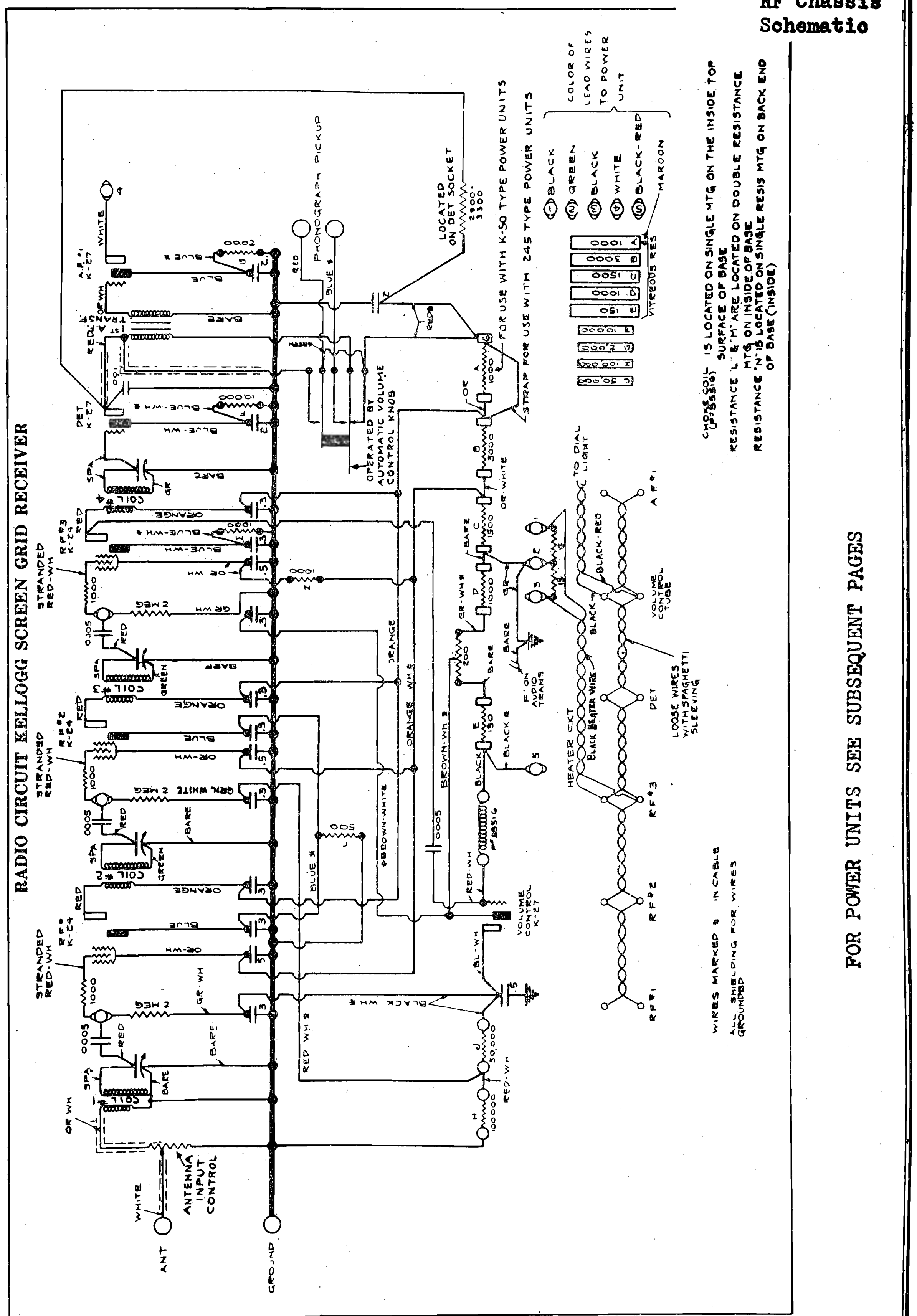


KELLOGG—5 Tube "B" Chassis
Line Voltage 115—Volume Control Full

TUBE NO IN ORDER	TYPE OF TUBE	POSITION OF TUBE 1ST R.F. DET. ETC	READINGS, PLUG IN SOCKET OF SET: TUBE OUT: A VOLTS	B VOLTS	TUBE IN TESTER: A VOLTS	B VOLTS	C VOLTS	CATHODE VOLTS	NORMAL PLATE M.A.	PLATE M.A. GRID TEST	PLATE M.A CHANGE
1	401	1st.R.F.	2.75	113	2.75	105	3.1	-	6.0	9.5	3.5
2	401	2nd.R.F.	2.75	113	2.75	105	4.2	-	6.0	9.5	3.5
3	401	Detector	2.75	28	2.75	25	0.0	-	1.4	1.5	.1
4	401	1st.A.F.	2.75	113	2.75	105	4.2	-	6.0	9.5	3.5
5	403	2nd.A.F.	2.75	113	2.75	105	4.8	-	4.3	6.0	1.7
6	280	Rectifier	-	-	4.60	-	-	-	20.0	-	-
7											
8											
9											
10											

KELLOGG SWITCHBOARD & SUPPLY CO.

MODEL 523,524,525, 526,527,528
RF Chassis Schematic



MODEL 523,526
Power Unit
Schematic

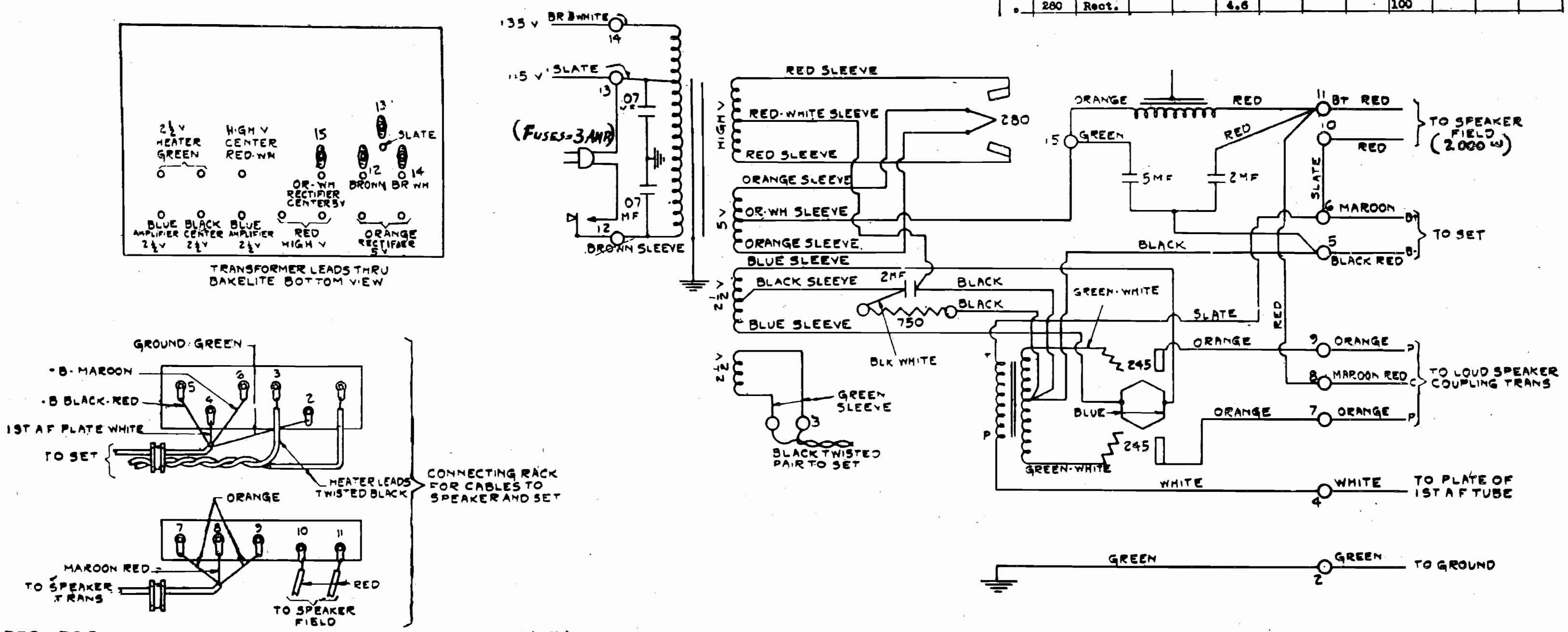
KELLOGG SWITCHBOARD & SUPPLY CO.

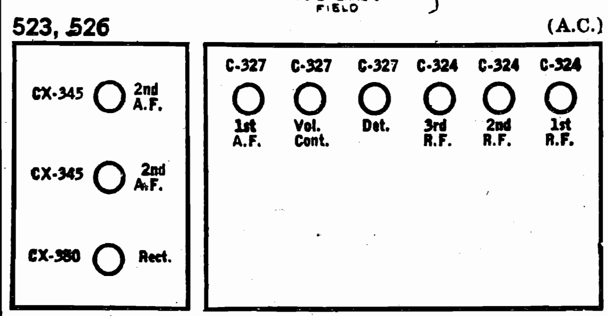
POWER UNIT CIRCUIT
245 TYPE

FOR SETS 523, 526

KELLOGG—Model 526-25 Cycle
Line Voltage 112—Volume Control Position Full On
***Volume Control Tube**

Tube No. in Order ①	Type of Tube ②	Position of Tube 1st R.F. Det., Etc. ③	Readings, Plug in Socket of Set — Tube Out: A Volts ④	Tube Out: B Volts ⑤	Tube in Tester: A Volts ⑥	B Volts ⑦	C Volts (Control Grid) ⑧	Cathode-Heater Volts ⑨	Normal Plate M.A. ⑩	Plate M.A. Grid Test ⑪	Plate Change M.A. ⑫	Screen Grid Volts ⑬
1	224	1st RF	2.5	132	2.4	128	1	1	1.2	-	-	40
2	224	2nd RF	2.5	132	2.4	128	1	1	1.2	-	-	40
3	224	3rd RF	2.5	132	2.4	128	1	1	1.2	-	-	40
4	227	Det.	2.5	132	2.3	128	12	12	1.2	-	-	-
5	227	*	2.5	24	2.3	24	1	40	-	-	-	-
6	227	1st A	2.45	144	2.3	128	8	8	4.4	-	-	-
7	245	2nd A	2.45	260	2.2	228	40		28	-	-	-
8	245	2nd A	2.45	260	2.2	228	40		28	-	-	-
9	280	Rect.			4.6				100			



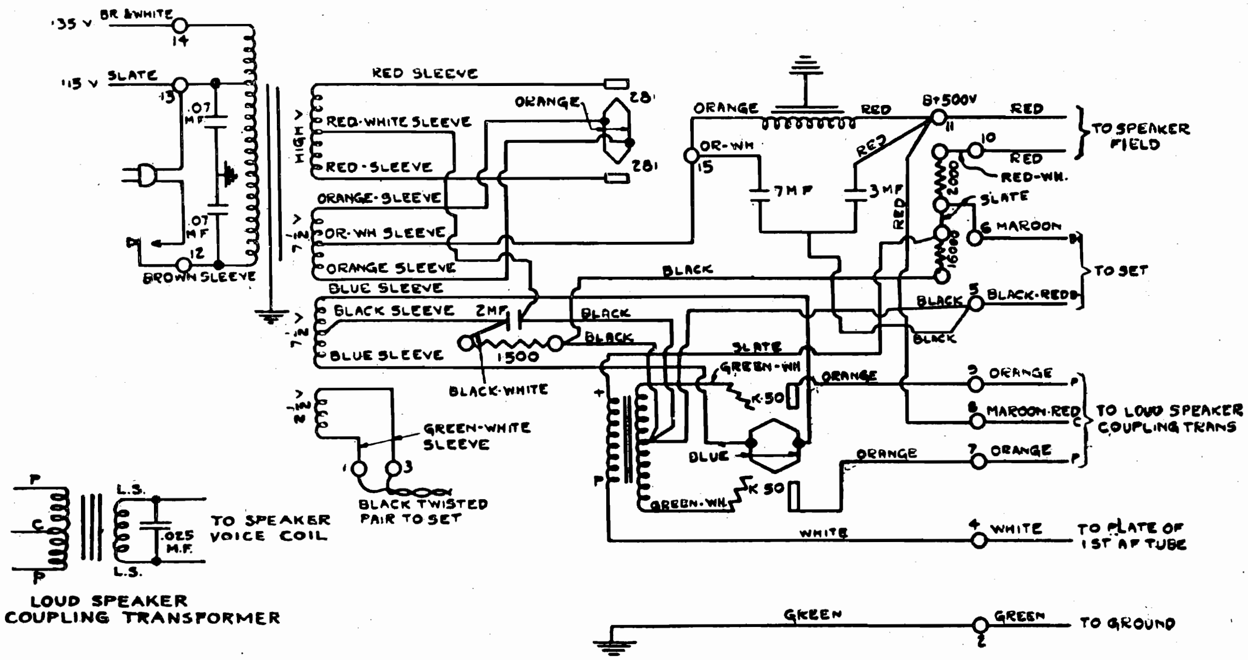


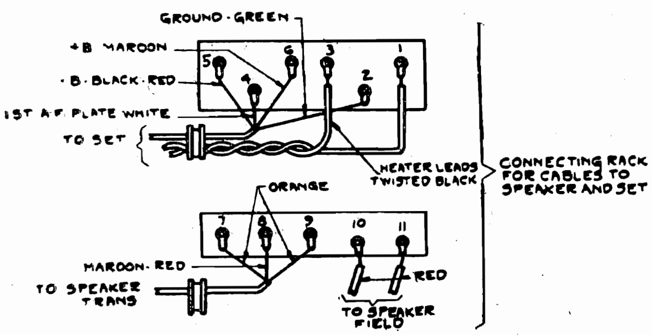
KELLOGG—Model 523-60 Cycle
Line Voltage 112—Volume Control Position Full On
***Volume Control Tube**

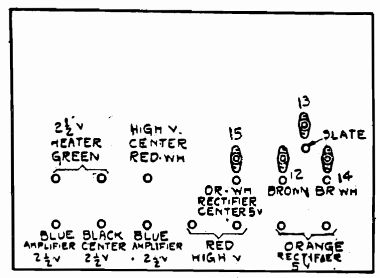
Tube No. in Order ①	Type of Tube ②	Position of Tube 1st R.F. Det. Etc. ③	Readings, Plug in Socket of Set — Tube Out: A Volts ④	Tube Out: B Volts ⑤	Tube in Tester: A Volts ⑥	B Volts ⑦	C Volts (Control Grid) ⑧	Cathode-Heater Volts ⑨	Normal Plate M.A. ⑩	Plate M.A. Grid Test ⑪	Plate Change M.A. ⑫	Screen Grid Volts ⑬
1	224	1st RF	2.5	132	2.4	128	1	1	1.2	-	-	40
2	224	2nd RF	2.5	132	2.4	128	1	1	1.2	-	-	40
3	224	3rd RF	2.5	132	2.4	128	1	1	1.2	-	-	40
4	227	Det.	2.5	132	2.3	128	12	12	1.2	-	-	-
5	227	*	2.5	24	2.3	24	1	40	-	-	-	-
6	227	1st A	2.45	144	2.3	128	8	8	4.4	-	-	-
7	245	2nd A	2.45	260	2.2	228	40		28	-	-	-
8	245	2nd A	2.45	260	2.2	228	40		28	-	-	-
9	280	Rect.			4.6				100			

KELLOGG SWITCHBOARD & SUPPLY CO.

MODEL 524, 525, 527, 528
Power Unit Schematic

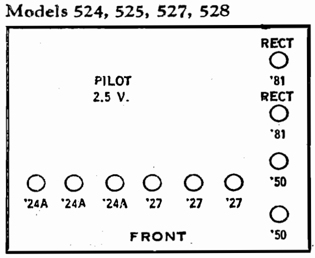






TRANSFORMER LEADS THRU BAKELITE BOTTOM VIEW

Models 524, 525, 527, 528



POWER UNIT CIRCUIT K-50 TYPE

FOR SETS 524, 525, 527, 528

KELLOGG—527-528-25 Cycle
Line Voltage 112—*Volume Control Tube

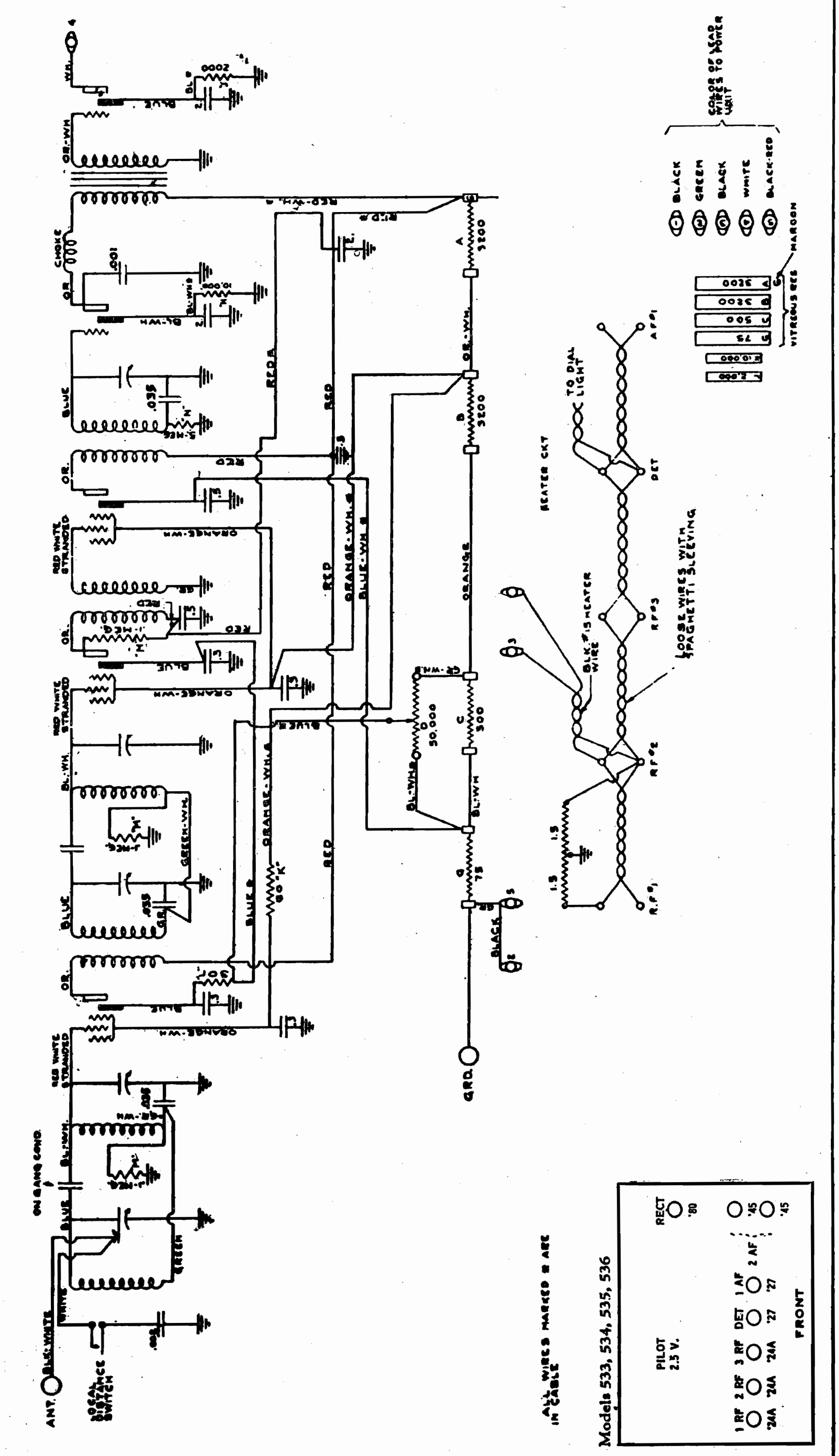
Tube No. in Order (1)	Type of Tube (2)	Position of Tube 1st RF Det. etc. (3)	Readings, Plug in Socket of Set: Tube Out: A Volts (4)	B Volts (5)	Tube in Tester: A Volts (6)	B Volts (7)	C Volts (Control Grid) (8)	Cathode-Heater Volts (9)	Normal Plate M.A. (10)	Plate M.A. Grid Test (11)	Plate Change M.A. (12)	Screen Grid Volts (13)
1	224	1st RF	2.4	164	2.25	160	2	2	1.4	1.6	.2	46
2	224	2nd RF	2.4	164	2.25	160	2	2	1.4	1.6	.2	46
3	224	3rd RF	2.4	164	2.25	160	2	2	1.4	1.6	.2	46
4	227	Det.	2.4	200	2.25	180	17	17	1.8	-	-	-
5	227	*	2.4	28	2.25	28	-	45	-	-	-	-
6	227	1st A	2.4	220	2.25	188	10	10	5	-	-	-
7	250	2nd A	7.5	440	7.4	420	86	-	30	-	-	-
8	250	2nd A	7.5	440	7.4	420	86	-	30	-	-	-
9	281	Rect.	7.5	-	7.4	-	-	-	60	-	-	-
10	281	Rect.	7.5	-	7.4	-	-	-	60	-	-	-

KELLOGG—524-525-60 Cycle
Line Voltage 112—*Volume Control Tube

Tube No. in Order (1)	Type of Tube (2)	Position of Tube 1st RF Det. etc. (3)	Readings, Plug in Socket of Set: Tube Out: A Volts (4)	B Volts (5)	Tube in Tester: A Volts (6)	B Volts (7)	C Volts (Control Grid) (8)	Cathode-Heater Volts (9)	Normal Plate M.A. (10)	Plate M.A. Grid Test (11)	Plate Change M.A. (12)	Screen Grid Volts (13)
1	224	1st RF	2.4	164	2.25	160	2	2	1.4	1.6	.2	46
2	224	2nd RF	2.4	164	2.25	160	2	2	1.4	1.6	.2	46
3	224	3rd RF	2.4	164	2.25	160	2	2	1.4	1.6	.2	46
4	227	Det.	2.4	200	2.25	180	17	17	1.8	-	-	-
5	227	*	2.4	28	2.25	28	-	45	-	-	-	-
6	227	1st A	2.4	220	2.25	188	10	10	5	-	-	-
7	250	2nd A	7.5	440	7.4	420	86	-	30	-	-	-
8	250	2nd A	7.5	440	7.4	420	86	-	30	-	-	-
9	281	Rect.	7.5	-	7.4	-	-	-	60	-	-	-
10	281	Rect.	7.5	-	7.4	-	-	-	60	-	-	-

MODEL 533,534
535,536
R.F.Chassis
Schematic

KELLOGG SWITCHBOARD & SUPPLY CO.

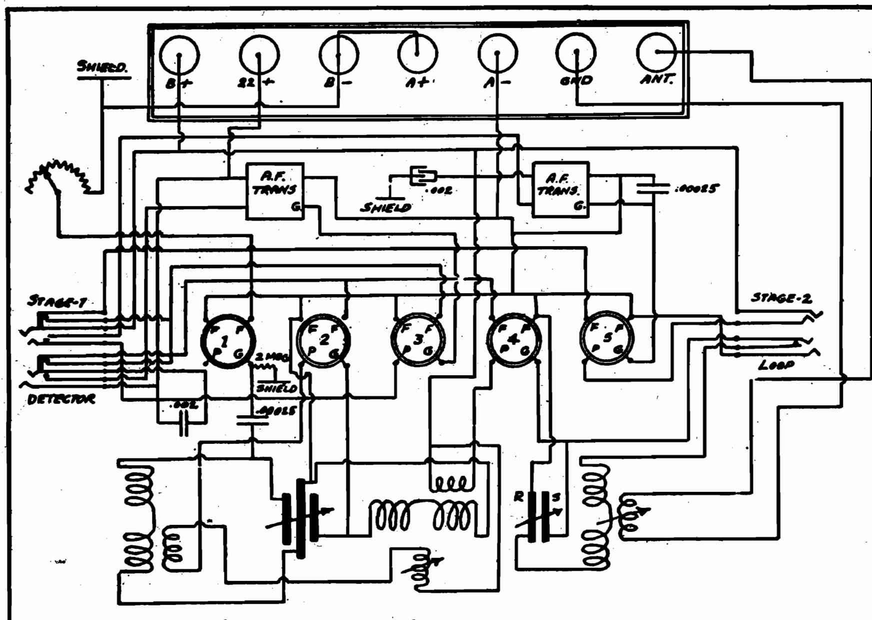


RADIO CIRCUIT KELLOGG SCREEN GRID RECEIVER

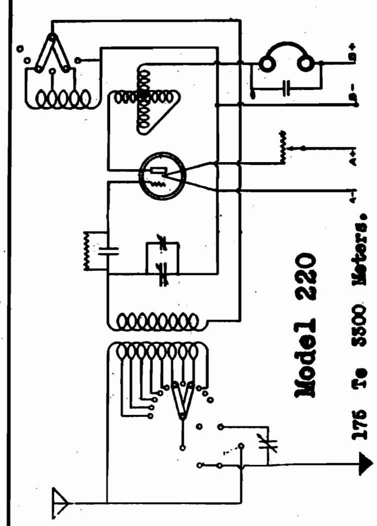
FOR POWER UNITS SEE INDEX

COLIN B. KENNEDY CORP.

MODEL 220
MODEL 281
MODELS 15,16(Type 430-43)
MODEL 175 to 25000 Meter

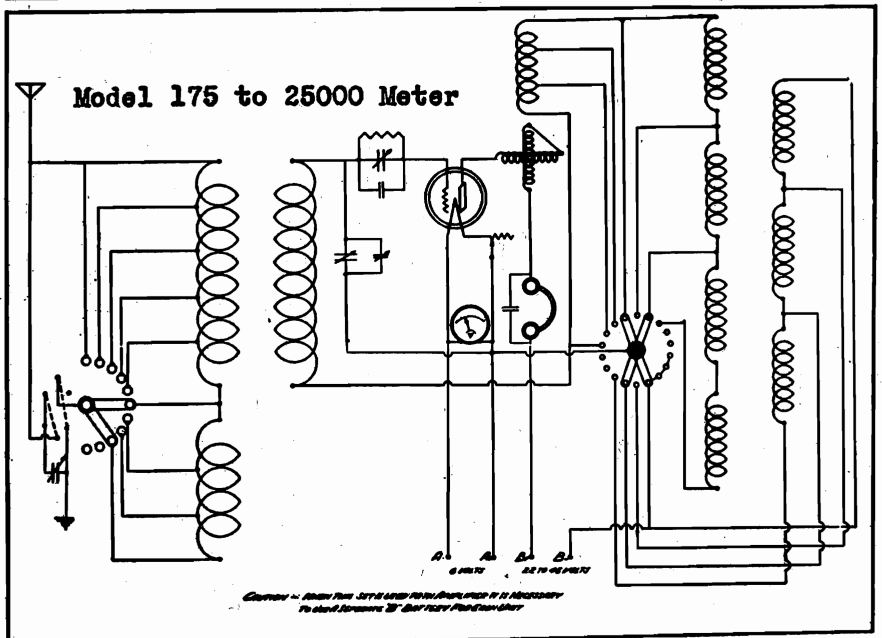


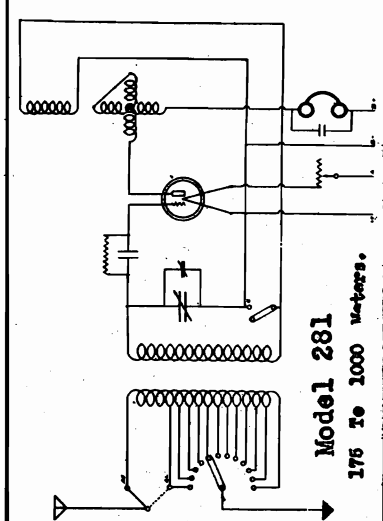
Models 15,16(Type 430-43) Tube order: 4, - 2, - 1, - 3, - 5.



Model 220 175 To 3300 Meters.

Model 175 to 25000 Meter

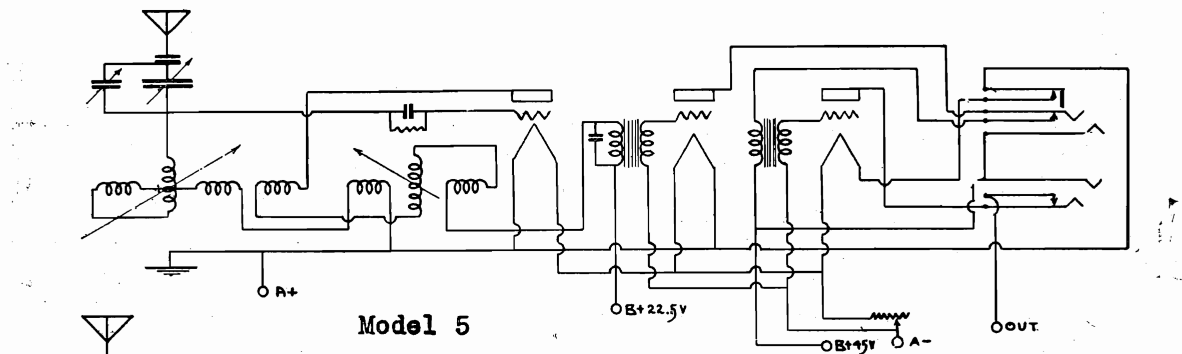




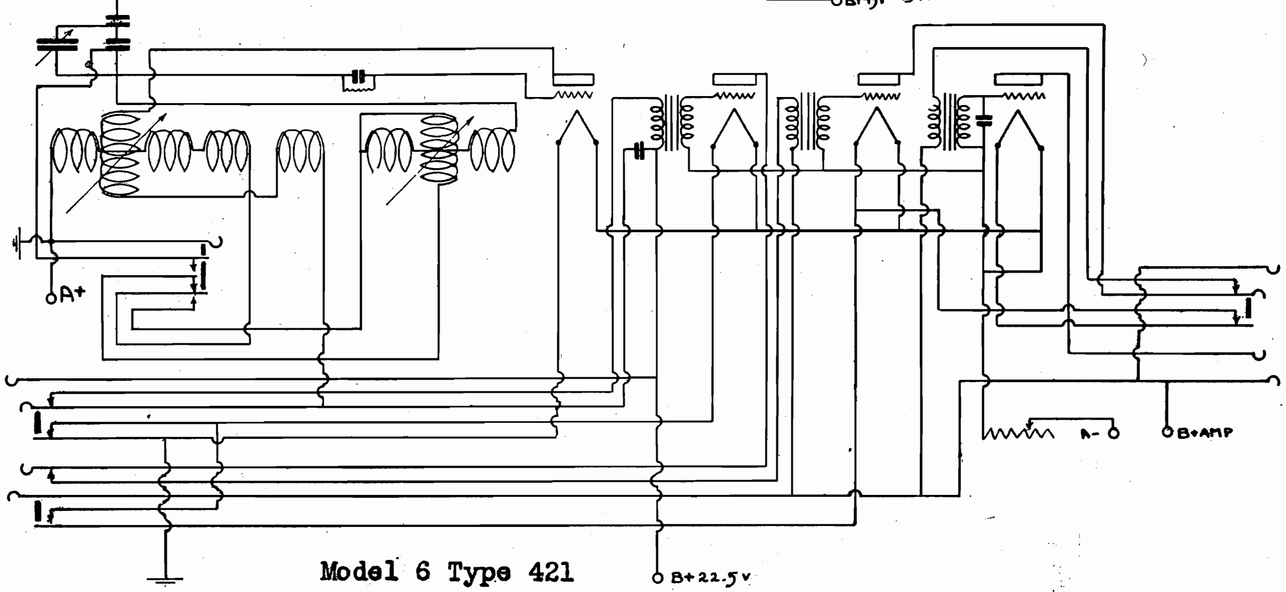
Model 281 175 To 1000 Meters.

MODEL 5
MODEL 6 Type 421
MODEL 6 Type 420

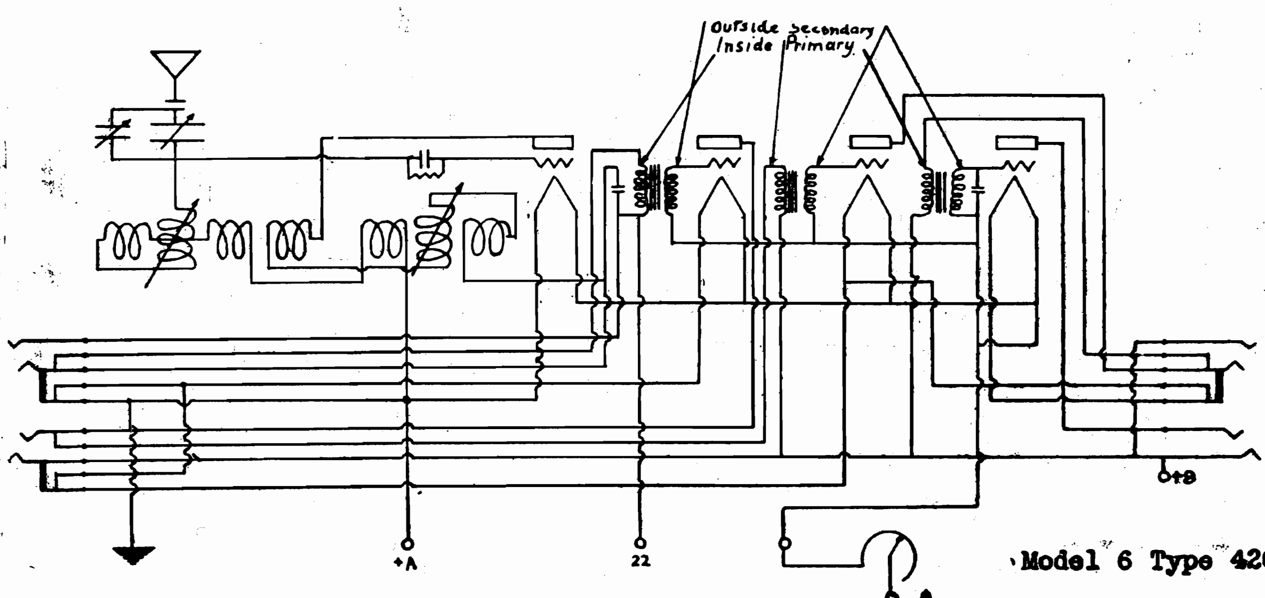
COLIN B. KENNEDY CORP.



Model 5



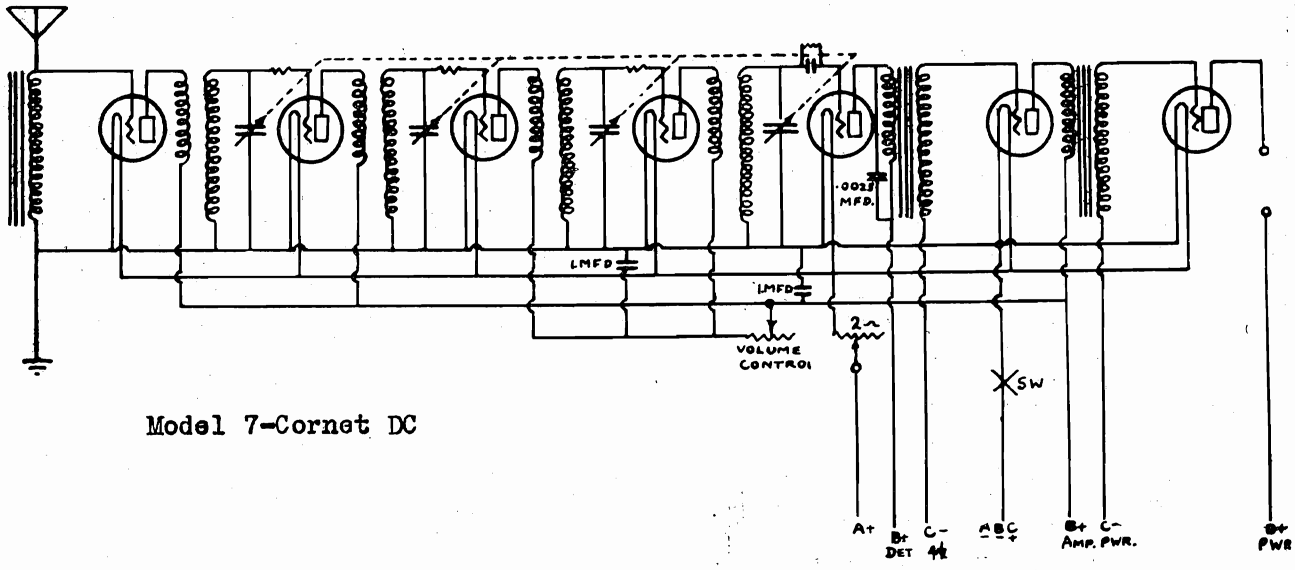
Model 6 Type 421



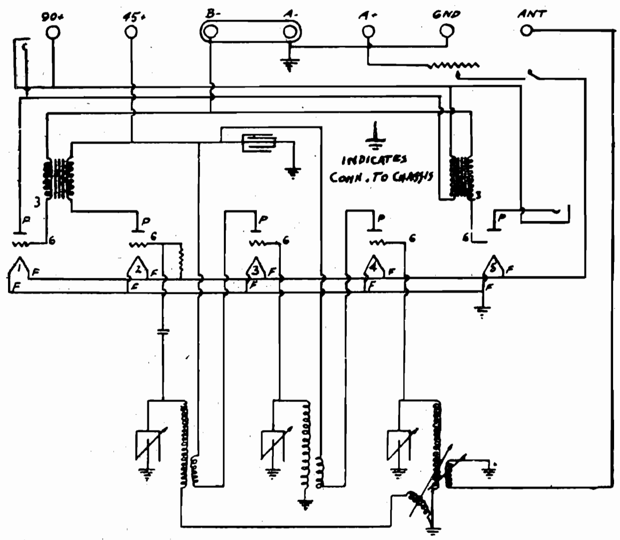
Model 6 Type 420

COLIN B. KENNEDY CORP.

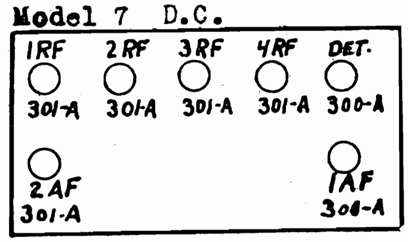
MODEL 7-Cornet DC
MODEL 20 Type 440
MODEL 30 Type 435



Model 7-Cornet DC



Model 7 D.C.

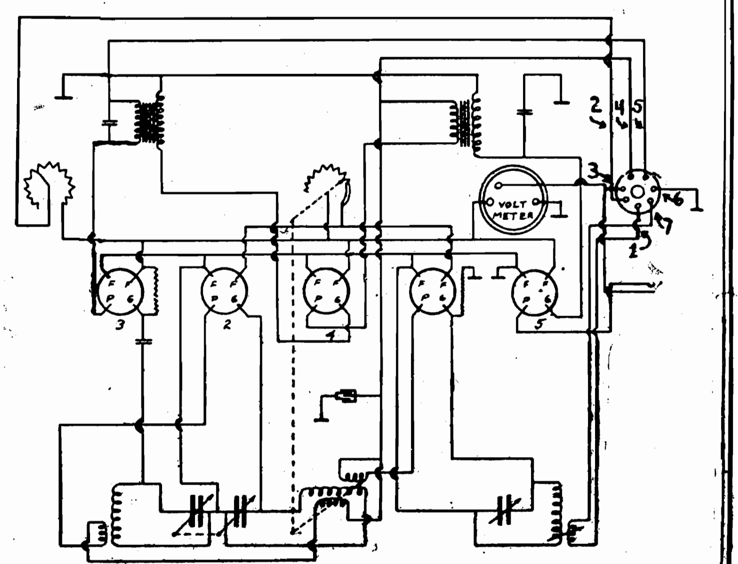


Model 20
Type 440
Tube Order
4,-3,-2,-1,-5.

Model 30
Type 435

Stripling Connections
and
Cable Colors.

1 Antenna - Brown
2 +A - Red
3 +B3 -- Pink
4 +B2 - Blue
5 +B1 — Yellow
6 -A&B - Green
7 Ground - Black

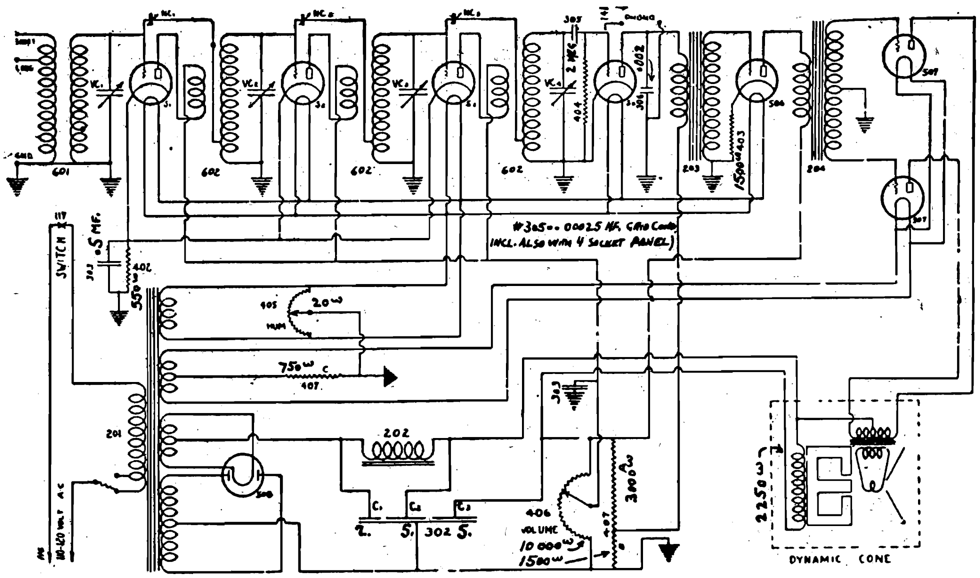


KENNEDY—Model 30-32
Line Voltage 120—Volume Control Full On

Tube No in Order Tested (1)	Type of Tube (2)	Position of Tube in Set (3)	Filament or Heater (4)	Plate or Anode (5)	Control Grid—Space (6) GD+	Normal Grid—Screen (7) GD+	Cathode to Heater (8)	Screen GD L H 60 (9) Plate	Plate R H 60 (10) Plate	Tube Test (11)
			Meter Readings with Jewell Test Plug in Socket of Set							
			Operating Voltages					Milliamperes		
1	224	1 R.F.	2.3	160	3.5	60	-	-	2.2	
2	224	2 R.F.	2.3	160	3.5	60	-	-	2.4	
3	224	3 R.F.	2.3	160	3.5	60	-	-	2.2	
4	227	Det.	2.3	125	-	10	-	-	1.5	
5	227	1 A.F.	2.3	155	-	9	-	-	2.4	
6	245	PP-AF	2.3	230	-	45	-	-	28	
7	245	PP-AF	2.3	230	-	45	-	-	28	
8	280	Rect.	4.8	-	-	-	-	45	45	

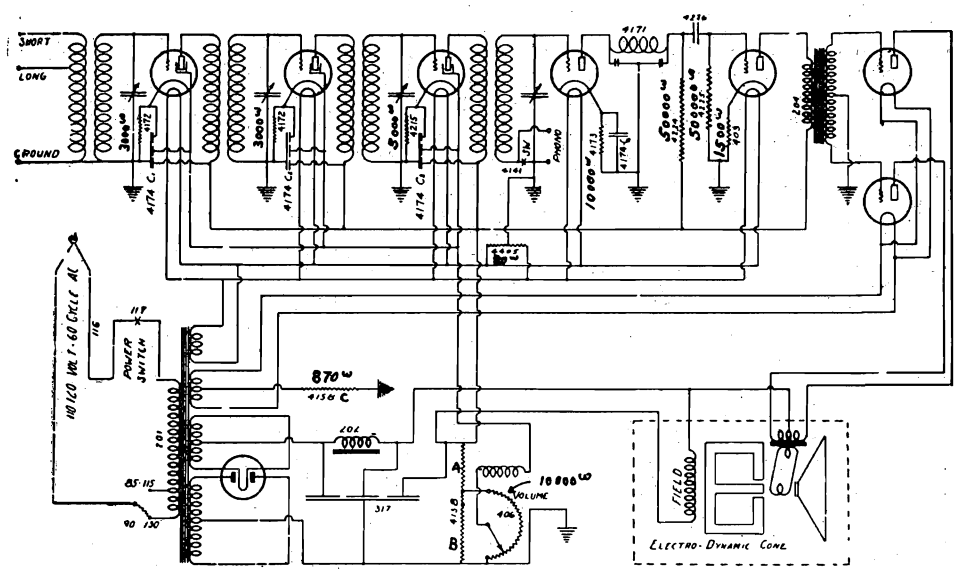
MODEL 10
MODEL 20

COLIN B. KENNEDY CORP.



#407 — A, B, C, = VOLTAGE DIVIDER RESISTOR — 5250 ω TOTAL.

Model 10



#4158 — A, B, C = VOLTAGE DIVIDER RESISTOR — 5750 ω TOTAL

Model 20

KENNEDY—Model 10
Line Voltage 112—Set on 120 Volt Tap

Tube No in Order (1)	Type of Tube (2)	Position of Tube 1st RF Det., etc (3)	Tube Out: A Volts (4)	Tube Out: B Volts (5)	Tube in Tester: A Volts (6)	Tube in Tester: B Volts (7)	C Volts (Control Grid) (8)	Cathode-Heater Volts (9)	Normal Plate (10) M.A.	Plate M.A. Grid (11) Test	Plate Change (12) M.A.	Screen Grid (13) Volts
1	227	1st RF	2.45	130	2.37	118	8	8	5.8	8.8	3	
2	227	2nd RF	2.45	130	2.37	118	8	8	5.8	8.8	3	
3	227	3rd RF	2.45	130	2.37	118	8	8	5.8	8.8	3	
4	227	Det.	2.45	135	2.37	38	0	0	2.1	2.1	0	
5	227	1st AF	2.45	160	2.37	112	9	9	4.8	6.5	1.7	
6	245	Pwr.	2.45	290	2.45	240	45	-	30	35	5	
7	245	Pwr.	2.45	290	2.45	240	45	-	30	35	5	
8	280	Rect.	5		5.0	-	-	-	112	-	-	

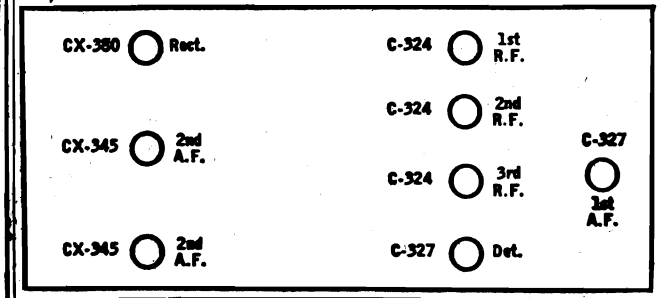
Readings, plug in socket of set.

KENNEDY—Model 20—Screen Grid
Line Voltage 112—Set on 120 Volt Tap

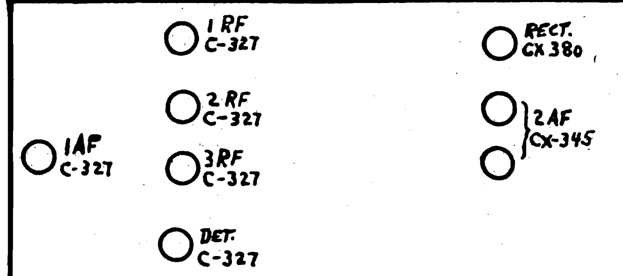
Tube No in Order (1)	Type of Tube (2)	Position of Tube 1st RF Det., etc (3)	Tube Out: A Volts (4)	Tube Out: B Volts (5)	Tube in Tester: A Volts (6)	Tube in Tester: B Volts (7)	C Volts (Control Grid) (8)	Cathode-Heater Volts (9)	Normal Plate (10) M.A.	Plate M.A. Grid (11) Test	Plate Change (12) M.A.	Screen Grid (13) Volts
1	224	1st RF	2.45	185	2.35	170	3.5	3	1	4	3	65
2	224	2nd RF	2.45	185	2.35	170	3.0	3	1.0	4	3	65
3	224	3rd RF	2.45	185	2.35	170	3.0	3	1.6	4	3	65
4	227	Det.	2.45	150	2.35	130	18.0	18.0	1.8	3	1.2	-
5	227	1st AF	2.45	110	2.35	160	10.0	10	7.4	9	1.5	-
6	245	Pwr.	2.45	285	2.36	230	45	-	26	30	4	-
7	245	Pwr.	2.45	285	2.36	230	45	-	26	30	4	-
8	280	Rect.	5.	-	4.8	-	-	-	80	-	-	-

Readings, plug in socket of set.

20, (A.C.)

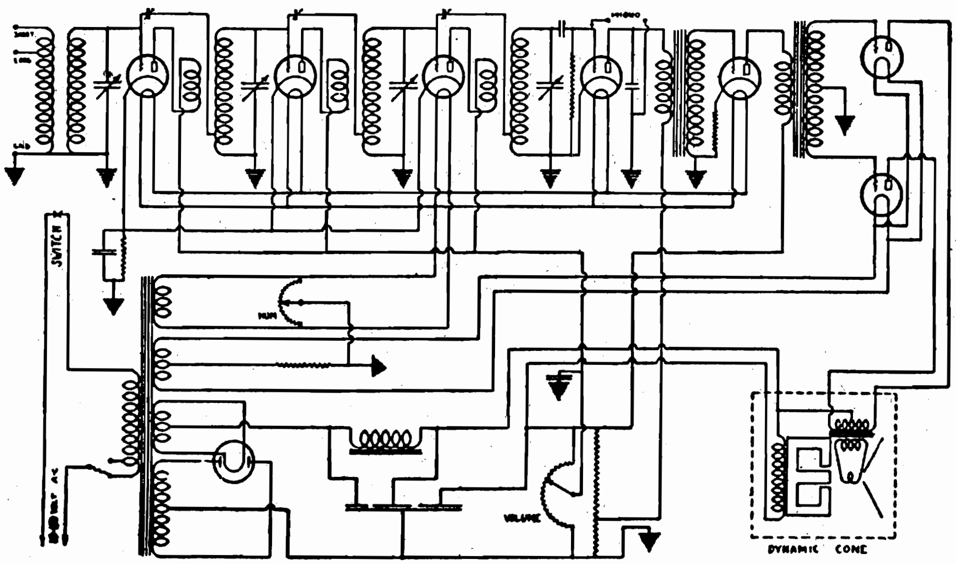


10 (A.C.)



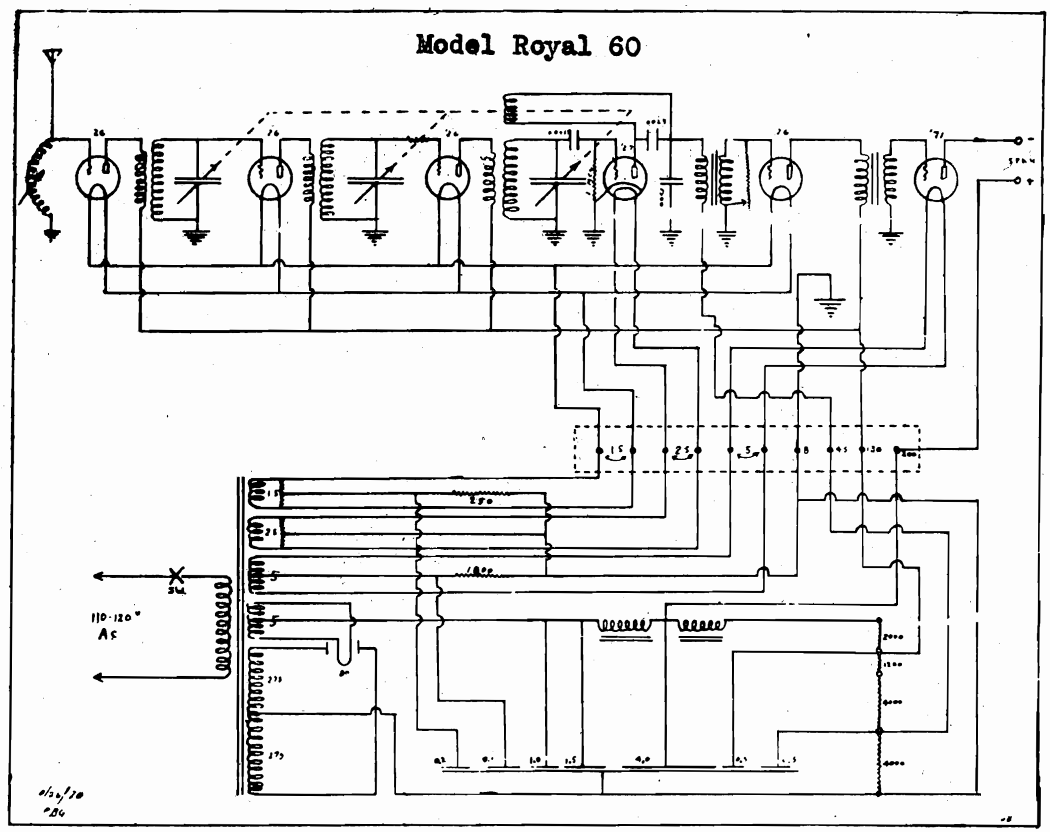
COLIN B. KENNEDY CORP.

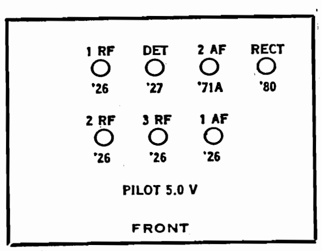
MODEL Royal
MODEL Royal 60



Model Royal

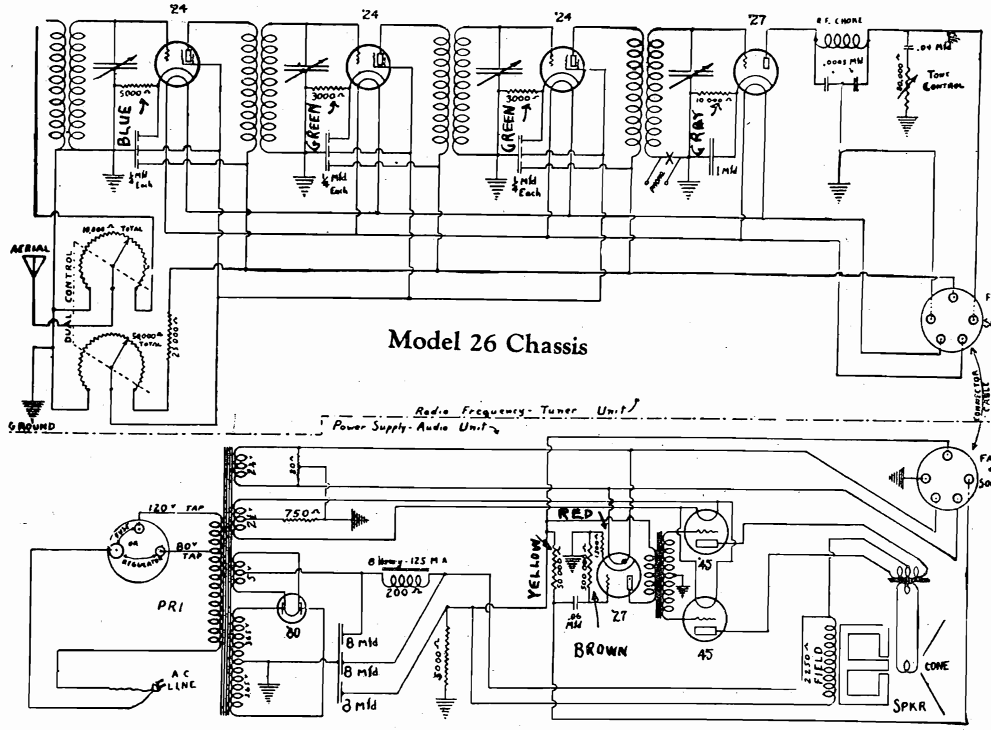
Model Royal 60





MODEL 26
Schematic
Chassis, Notes

COLIN B. KENNEDY CORP.



Model 26 Chassis

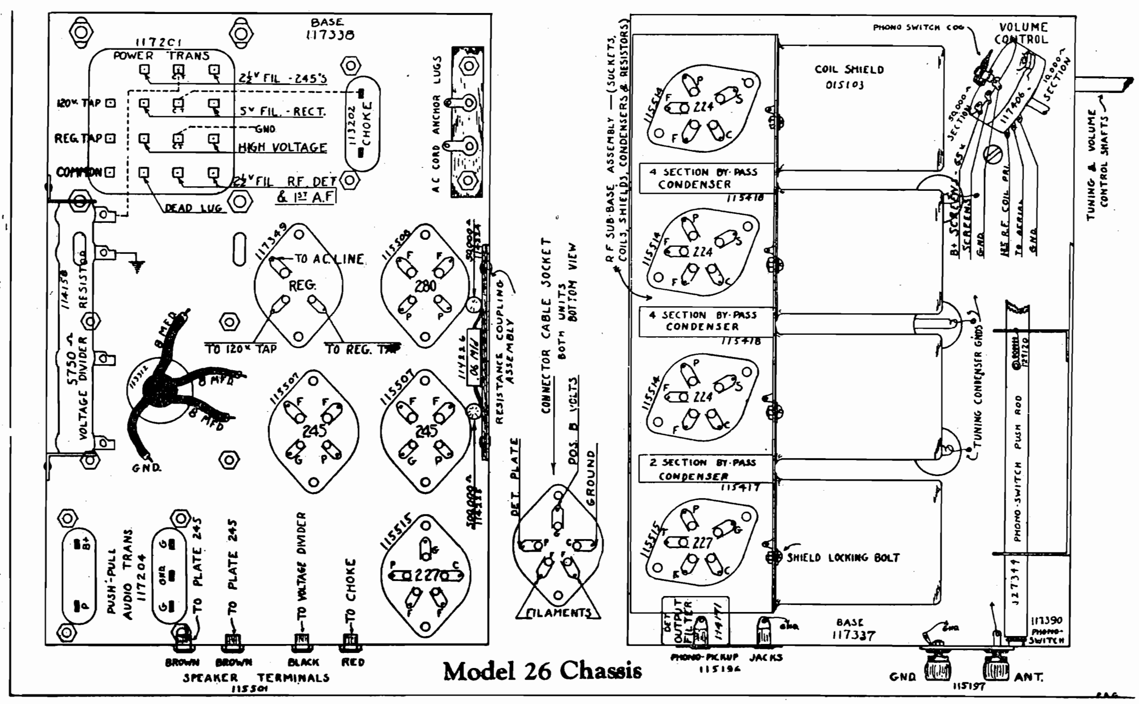
Special Note—Regulator Tubes

The Duresite type 415 line voltage regulator tube has been recommended for Kennedy Model 26 receivers. This tube is unsatisfactory for the model 826-B, however, as the short wave receiver adds to the current draw. The proper Duresite regulator tube for the long wave-short wave chassis only (model 826-B) is type 449.

The chassis model 26 is provided with an extra socket for a voltage regulator tube. Receivers are shipped with a plug in this socket which contains a line fuse. The plug automatically connects the line through the fuse, onto the 120 volt primary tap. This transformer tap will provide sufficiently accurate voltages to the set between line voltages of about 108 to 125.

The resistance values of the various colored biasing resistors employed are as follows:

Green	3,000 ohms	Yellow	50,000 ohms
Blue	5,000 ohms	Brown	500,000 ohms
Grey	10,000 ohms	Red	1,500 ohms



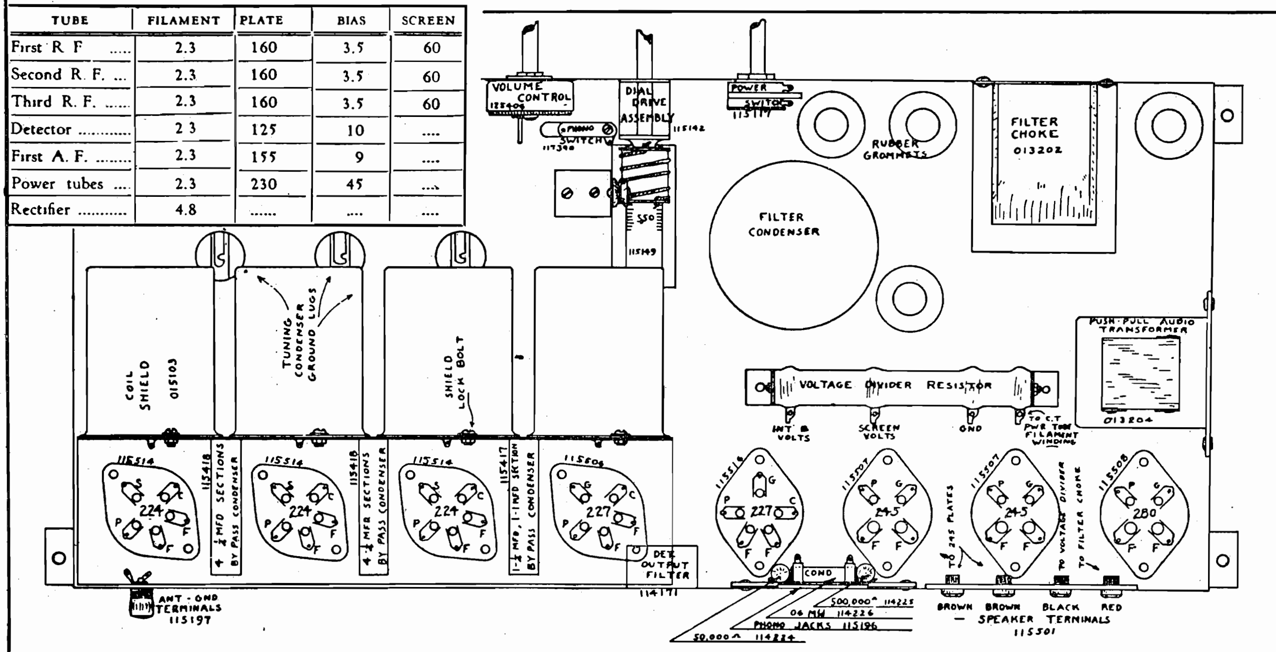
Model 26 Chassis

COLIN B. KENNEDY CORP.

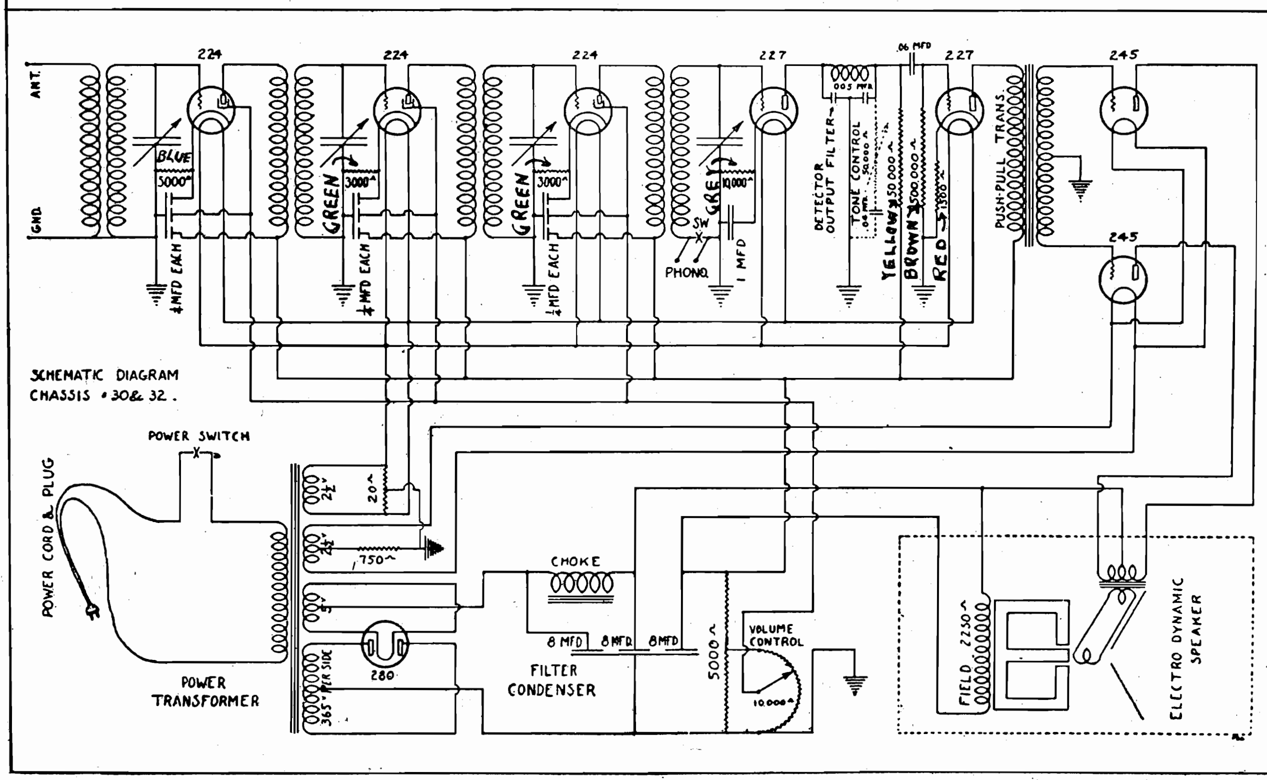
MODEL 30 & 32
Schematic
Chassis

Socket and Transformer Terminal Diagram of Model 30 and 32 Chassis

TUBE	FILAMENT	PLATE	BIAS	SCREEN
First R F	2.3	160	3.5	60
Second R. F. ...	2.3	160	3.5	60
Third R. F.	2.3	160	3.5	60
Detector	2 3	125	10	....
First A. F.	2.3	155	9	....
Power tubes	2.3	230	45	....
Rectifier	4.8	......	....	....



Schematic Circuit Diagram of Model 30 and 32 Chassis

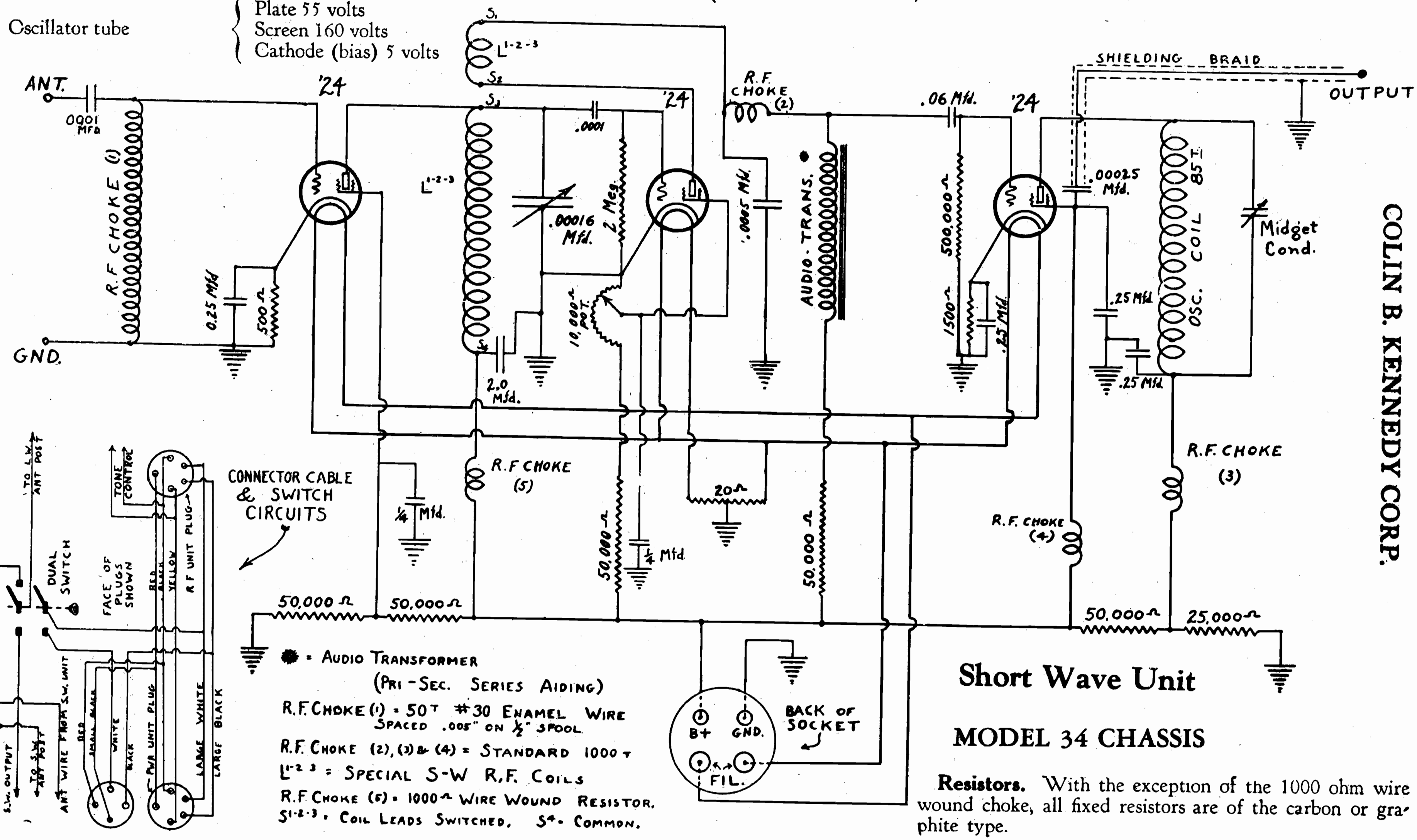


MODEL 34
Schematic
Voltage

COLIN B. KENNEDY CORP.

Radio frequency tube:	Plate 160 volts	
	Screen 70 volts	
	Cathode (bias) 1.1 volts	
Detector tube:	Plate 140 volts	
	Screen 30 volts	
	(Volume on Maximum)	
Oscillator tube	Plate 55 volts	
	Screen 160 volts	
	Cathode (bias) 5 volts	

Yellow	50,000	ohms
Red	1,500	ohms
Red (large)	2	megohms
Grey	25,000	ohms
Brown	500,000	ohms
Black	500	ohm
	(Flexible covered resistor)	



● = Audio Transformer
(Pri - Sec. Series Aiding)
R.F. Choke (1) = 50T #30 Enamel Wire Spaced .005" on 1/2" Spool.
R.F. Choke (2), (3) & (4) = Standard 1000 Ω
L1-2-3 = Special S-W R.F. Coils
R.F. Choke (5) = 1000 Ω Wire Wound Resistor.
S1-2-3 = Coil Leads Switched, S4 = Common.

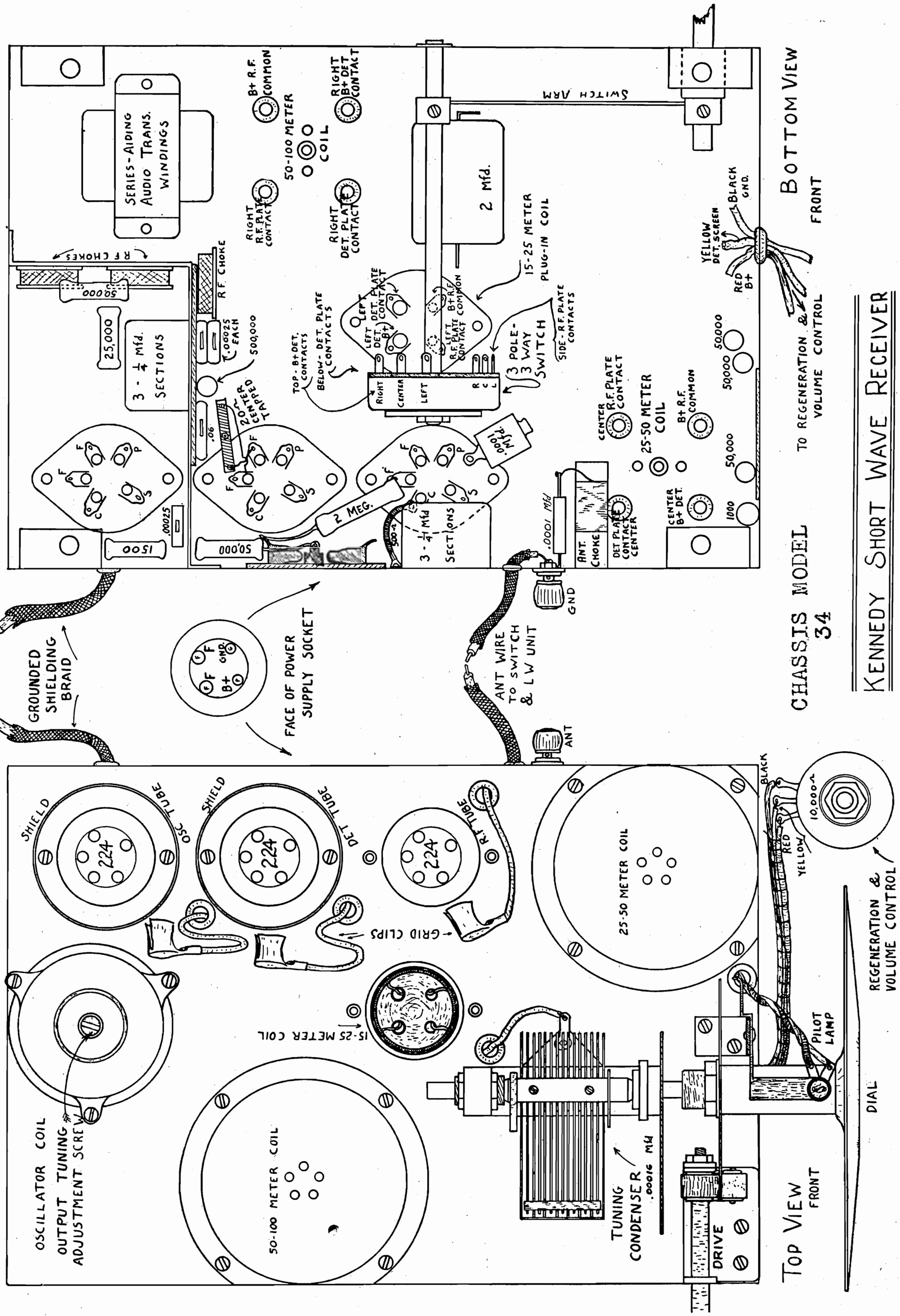
Short Wave Unit

MODEL 34 CHASSIS

Resistors. With the exception of the 1000 ohm wire wound choke, all fixed resistors are of the carbon or graphite type.

COLIN B. KENNEDY CORP.

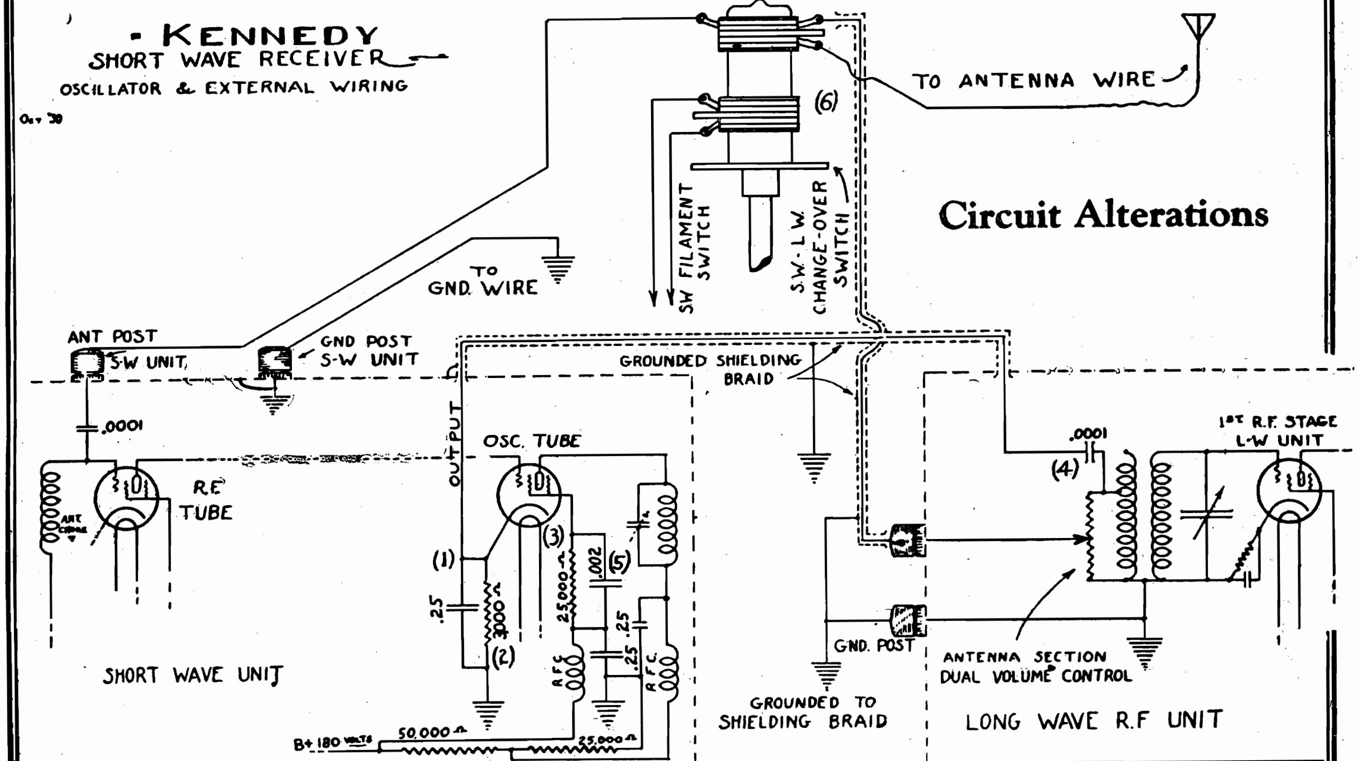
MODEL 34
Chassis



MODEL 34
Oscillator
Data

COLIN B. KENNEDY CORP.

Circuit Alterations



Short Wave Chassis Model 34

Certain minor alterations in wiring, as well as the addition of a few small parts, have been made in the production of the short wave chassis, model 34.

These changes have been made as they increase the ease in handling and the efficiency of the unit, but are not recommended for units built prior to the time of their adoption in production.

Variations in the circuit diagram in this booklet are shown in the illustration on this page. It will be noted that the changes have been made in the oscillator and external wiring circuits only—the short wave radio frequency stage and detector remaining entirely as previously indicated. The changes are as follows, numbers corresponding to those on illustration.

(1) The short wave oscillator output is now taken from the cathode of the oscillator tube instead of the screen.

(2) A 3,000-ohm biasing resistor replaces the 1,500-ohm resistor previously indicated at the oscillator cathode.

(3) A 25,000-ohm graphite resistor has been placed in the screen circuit between the R. F. choke and screen.

(4) A .0001 mfd. condenser has been placed in the long wave R. F. unit, at the ungrounded end of the volume control.

(5) A .002 mfd. condenser is placed across the 25,000-ohm screen grid series resistor.

(6) The long wave-short wave change over switch is rewired as indicated in the accompanying diagram. The portion of the switch utilized in turning the filaments of the S-W unit on and off remains unchanged. The other portion, single pole-double throw, is now rewired so that the antenna is thrown to either short wave or long wave units as required, being entirely disconnected from the unit it is not intended to connect to. The antenna is now connected to the center pole of this switch, as per diagram.

It will be noted that the short wave unit output now connects permanently to the long wave antenna coil primary through the .0001 mfd. condenser located in the long wave R. F. unit, without being cut in and out by the change over switch, as formerly. This does not add a noticeable load to this circuit, for long wave reception, so does not need to be switched.

Shielding braid is used over the short wave output wire, and the wire from the switch to the antenna post of the long wave unit.

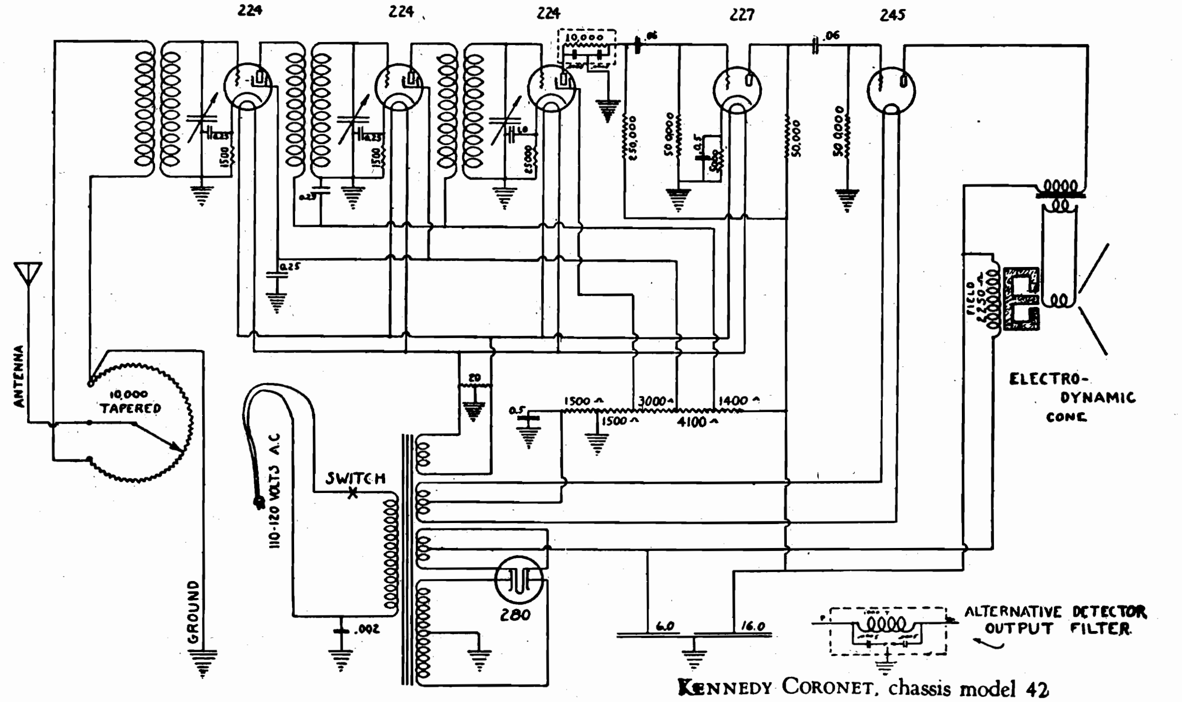
The 10,000-ohm wire wound regeneration and volume control, in the short wave unit, has been replaced by a 10,000-ohm graphite control. This provides a smooth control—less inclined to be noisy.

The ground wire is connected to the ground post of the short wave unit, as formerly indicated.

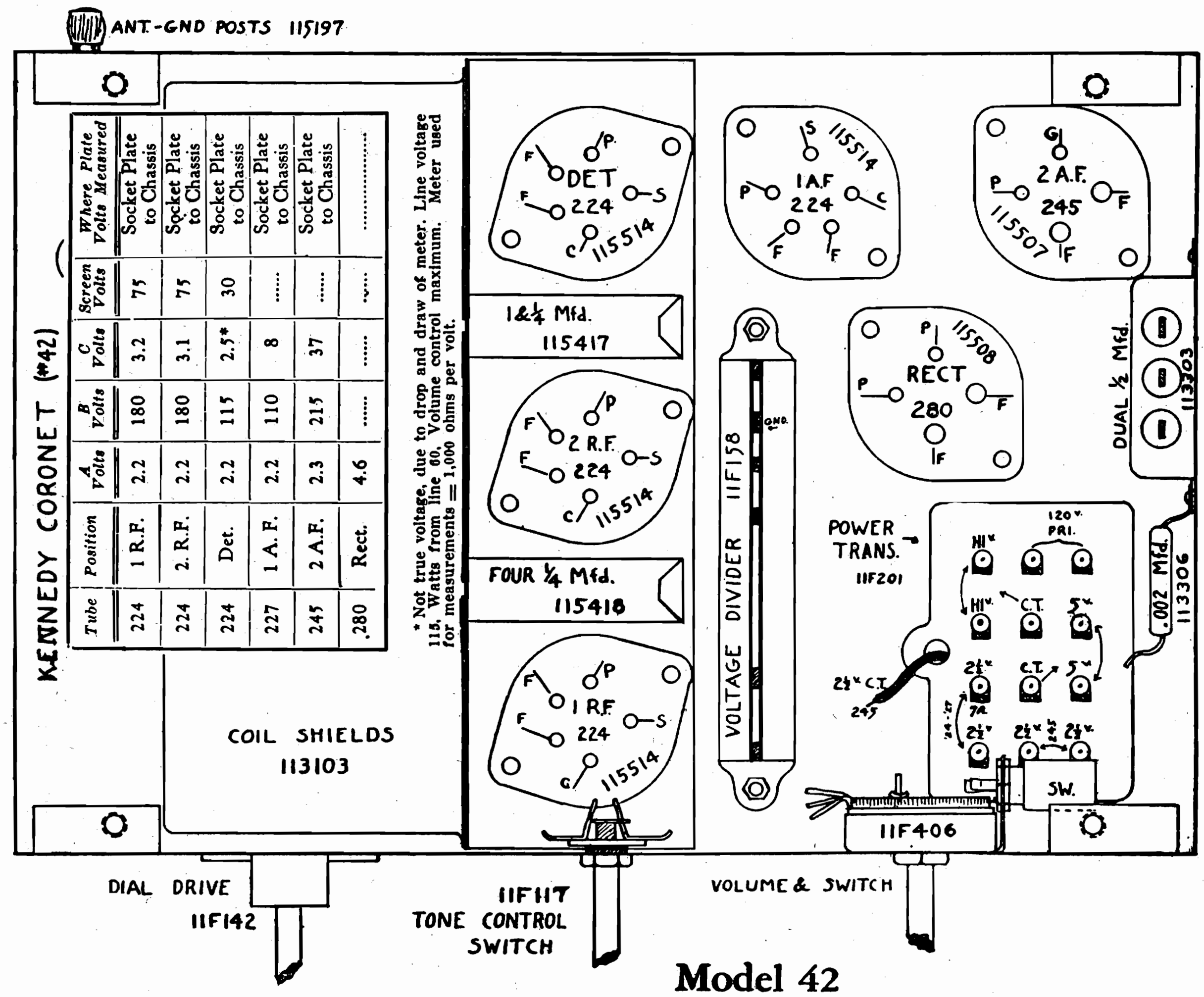
The antenna is now connected to the wire leading from the changeover switch.

COLIN B. KENNEDY CORP

MODEL Coronet 42
Schematic
Chassis, Voltage



KENNEDY CORONET, chassis model 42



KENNEDY CORONET (#42)

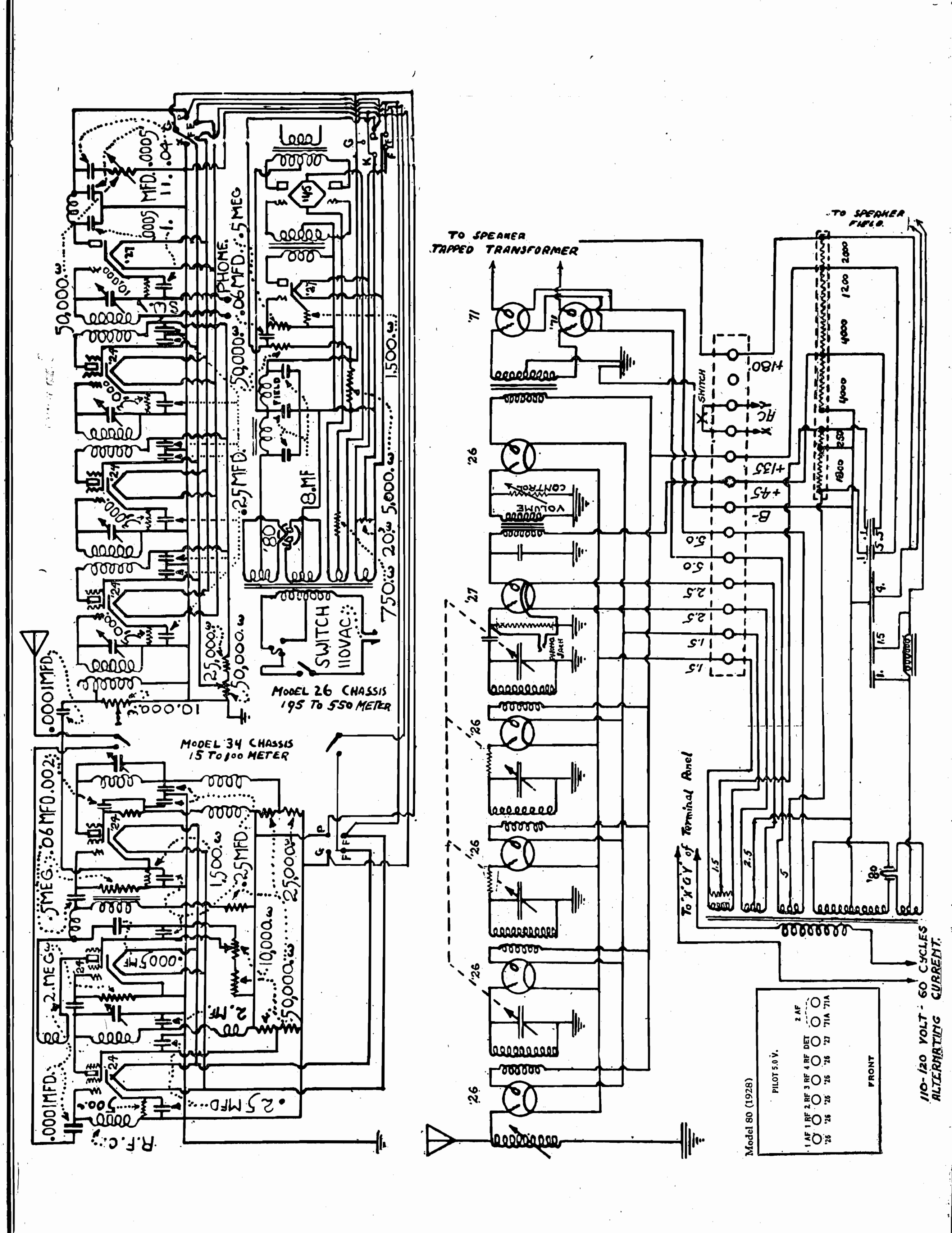
Tube	Position	A Volts	B Volts	C Volts	Screen Volts	Where Plate Volts Measured
224	1 R.F.	2.2	180	3.2	75	Socket Plate to Chassis
224	2. R.F.	2.2	180	3.1	75	Socket Plate to Chassis
224	Det.	2.2	115	2.5*	30	Socket Plate to Chassis
227	1 A.F.	2.2	110	8	......	Socket Plate to Chassis
245	2 A.F.	2.3	215	37	......	Socket Plate to Chassis
280	Rect.	4.6	......	......	......	......

* Not true voltage, due to drop and draw of meter. Line voltage 115. Watts from line 60. Volume control maximum. Meter used for measurements = 1,000 ohms per volt.

Model 42

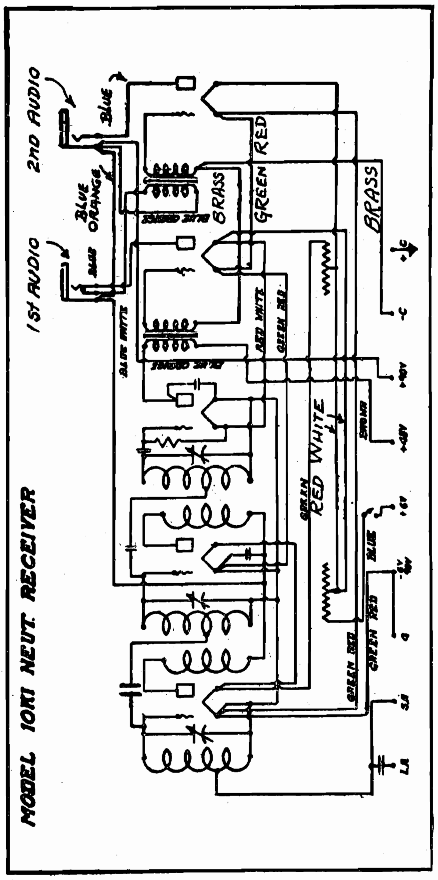
COLIN B. KENNEDY CORP.

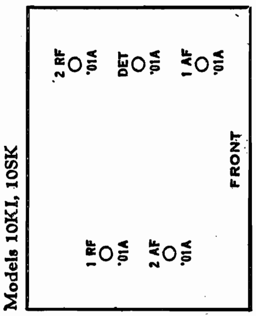
MODEL Royal 80
MODEL 826-B



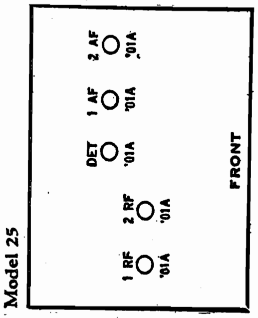
KING MFG. CORP.

MODEL 10 K1, 10 SK
MODEL 25
MODEL 30

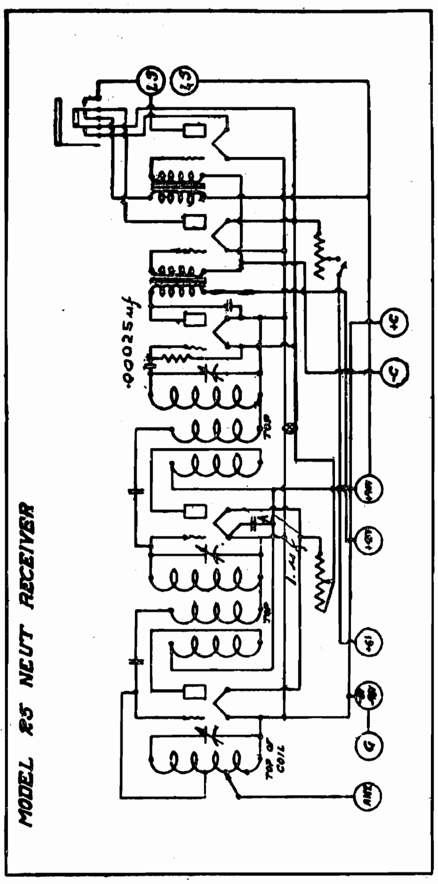


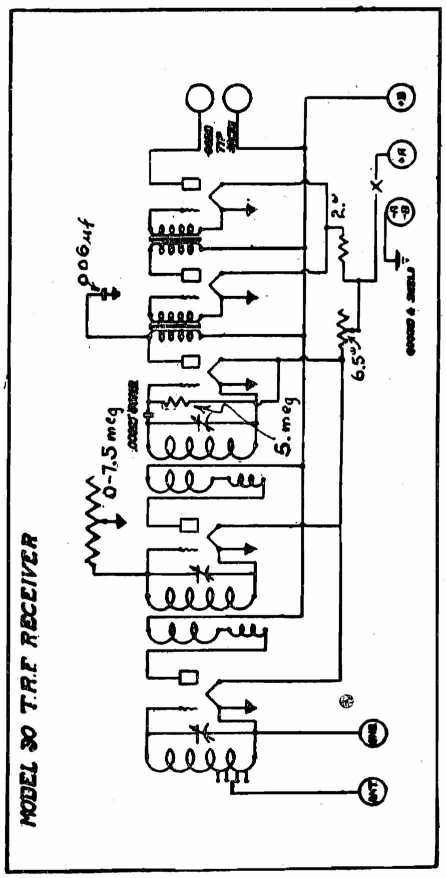


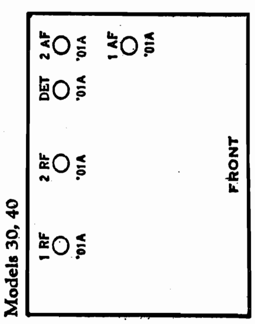
Models 10K1, 10SK



Model 25



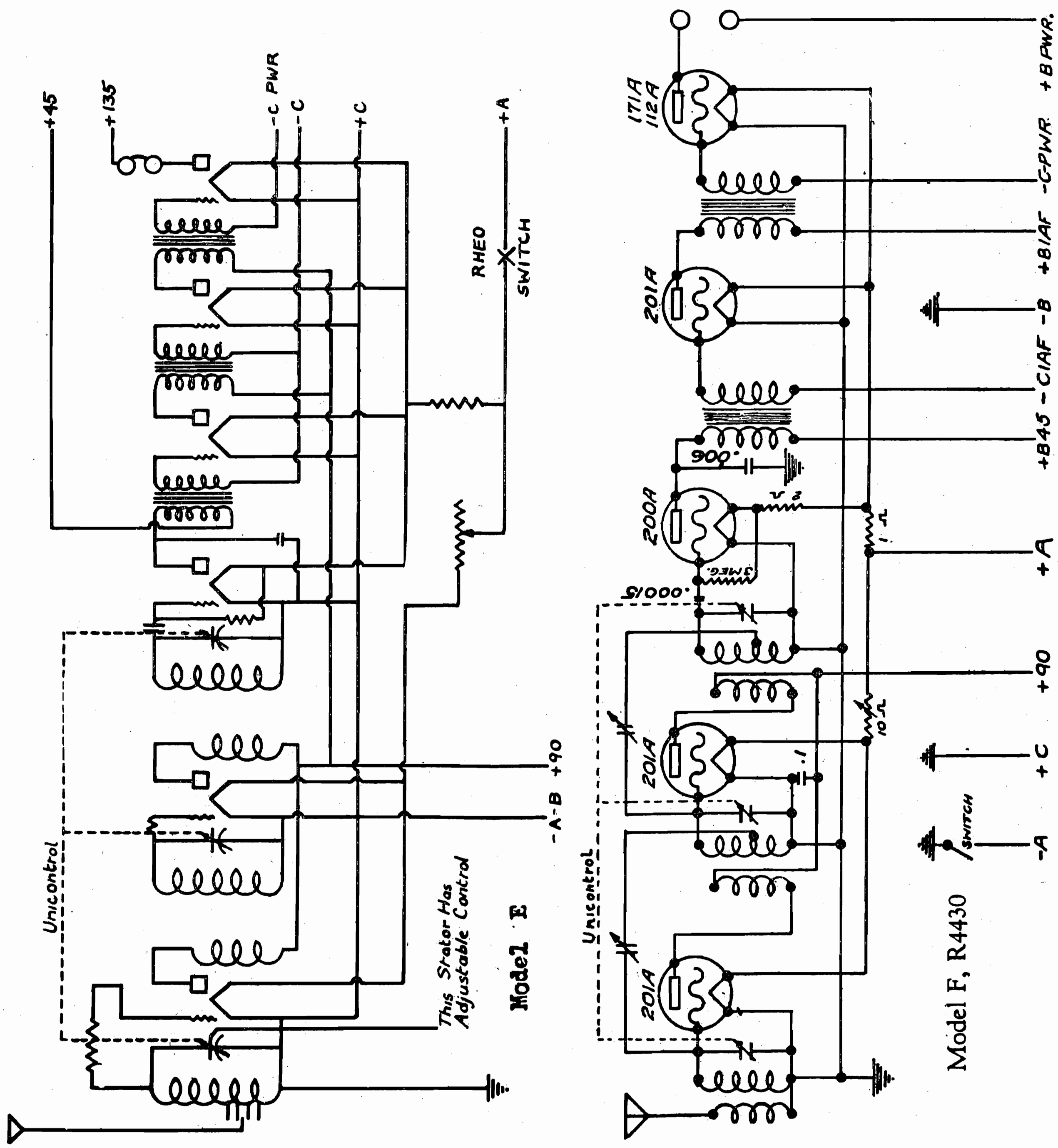




Models 30, 40

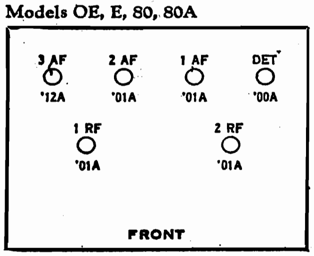
MODEL E
MODEL F

KING MFG. CORP.

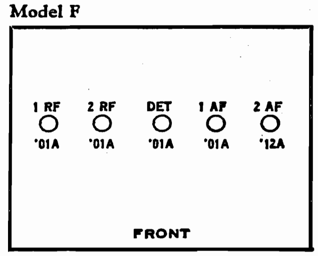


Model F, R4430

Models OE, E, 80, 80A

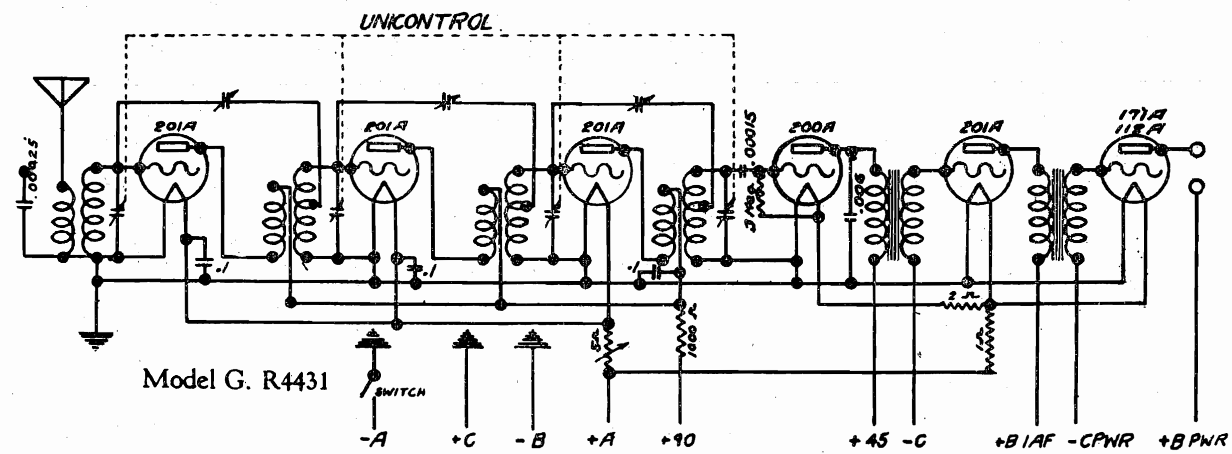


Model F

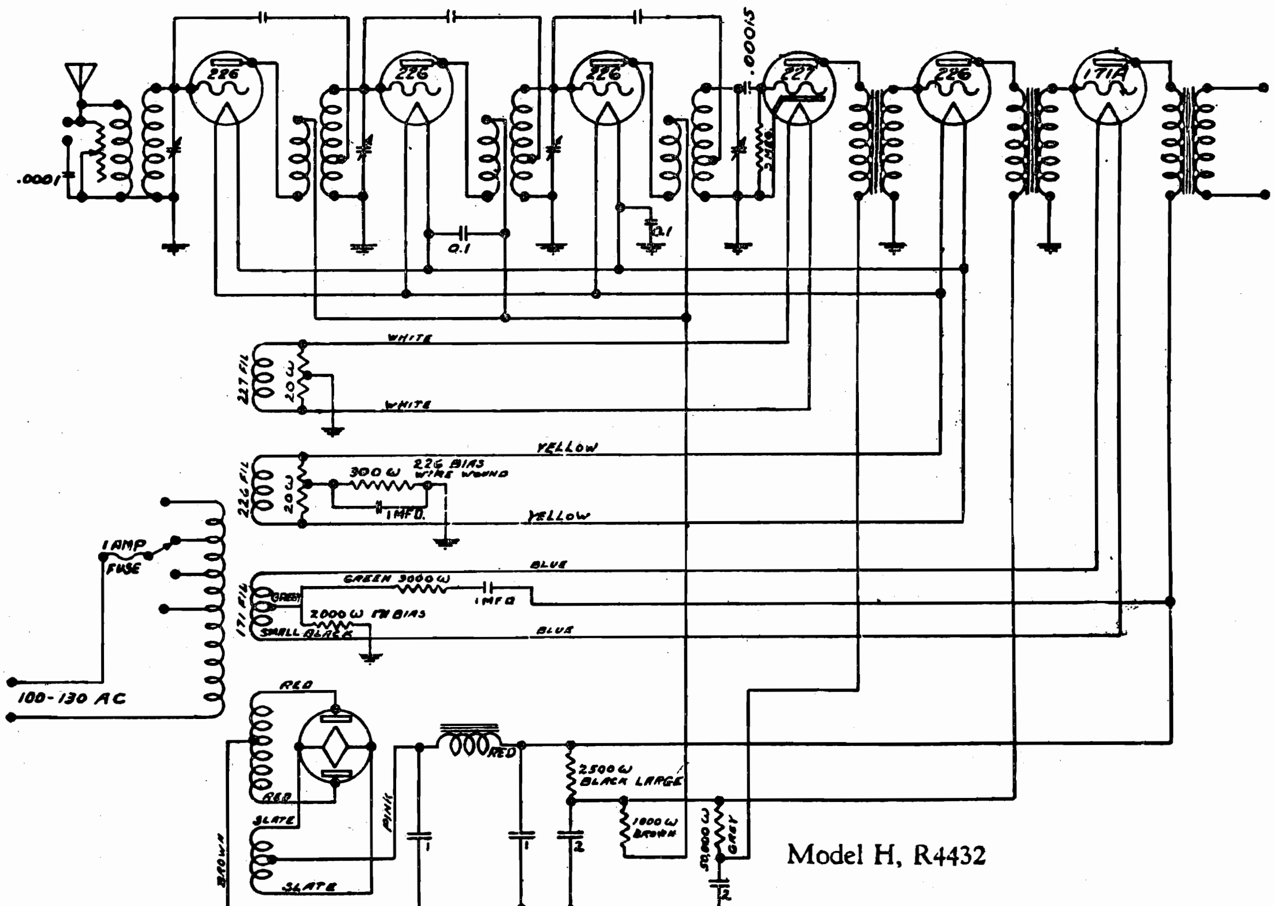


KING MFG. CORP.

MODEL G
MODEL H

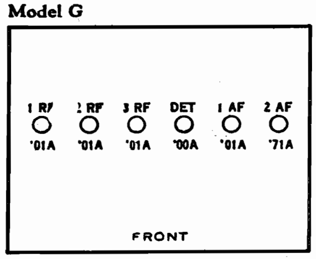


Model G. R4431

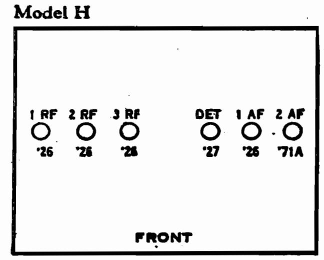


Model H, R4432

Model G

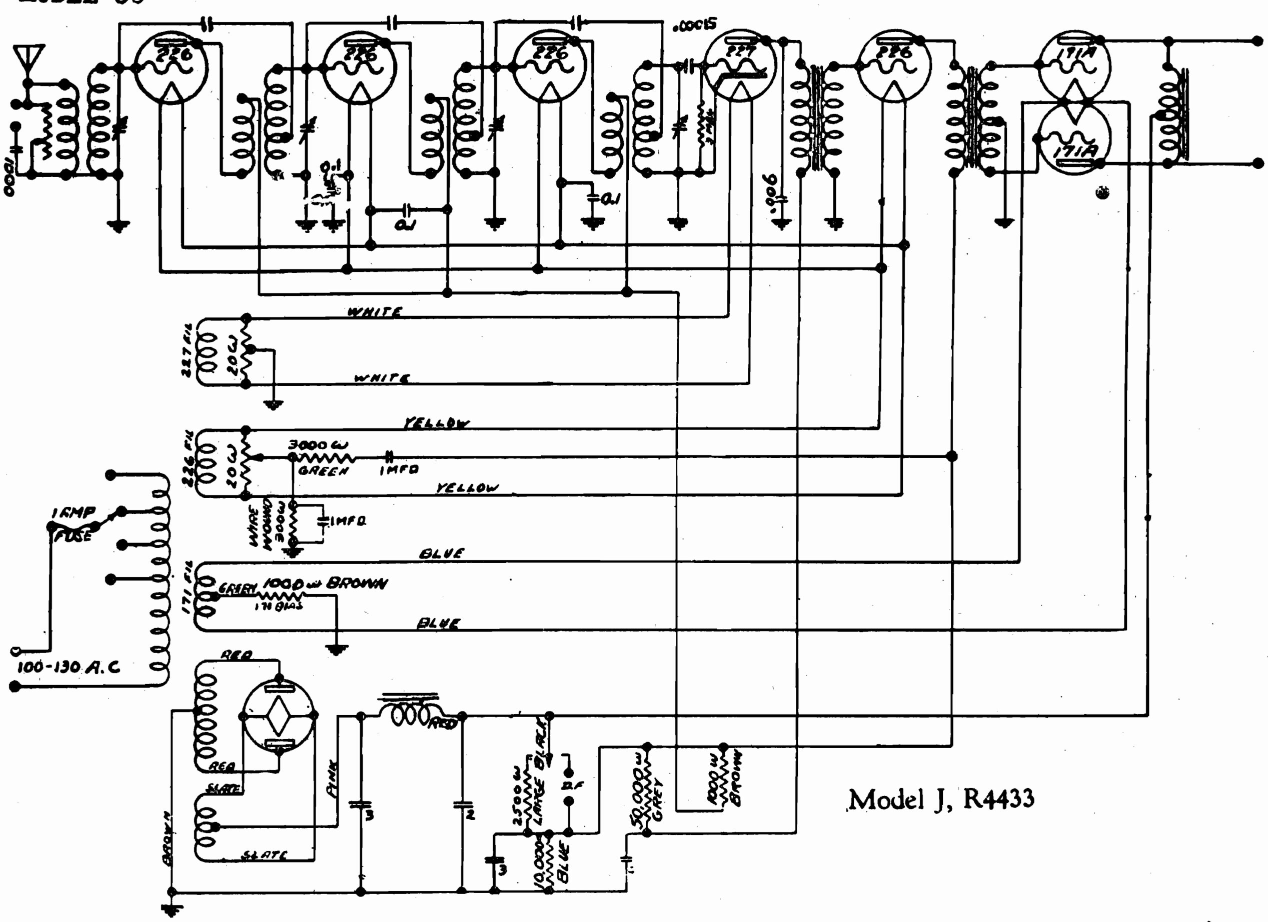


Model H

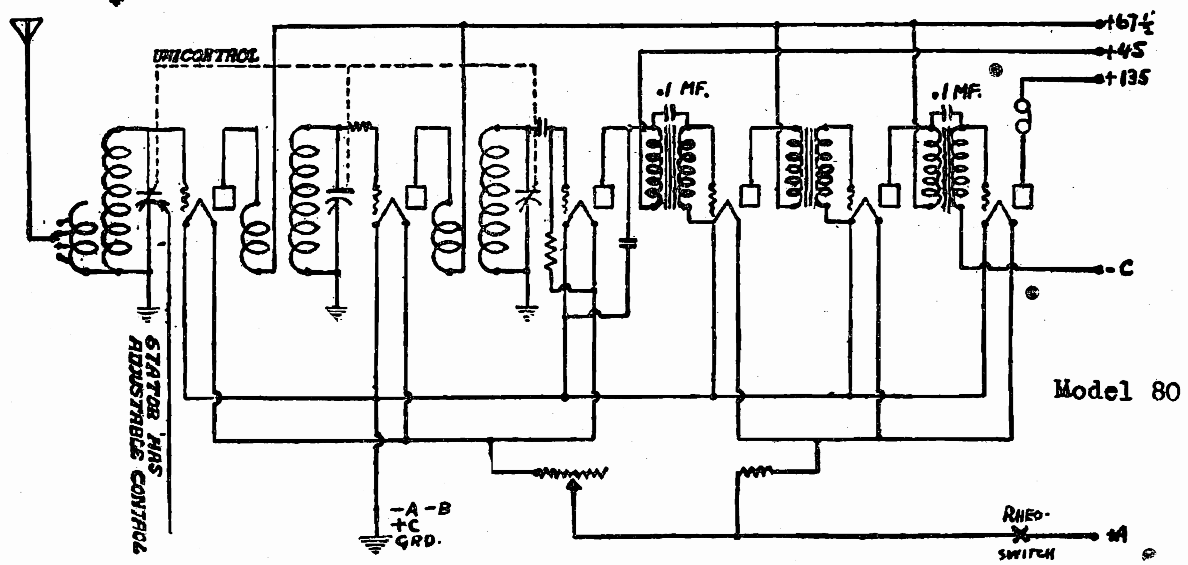


MODEL J
MODEL 80

KING MFG. CORP.

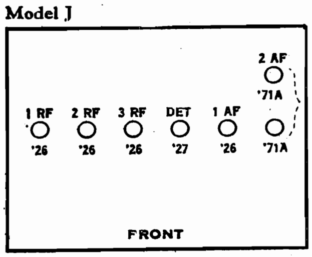


Model J, R4433

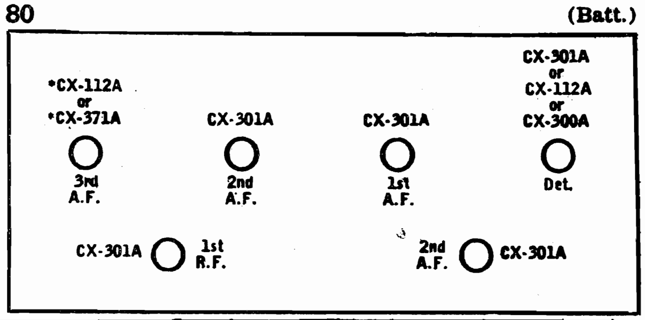


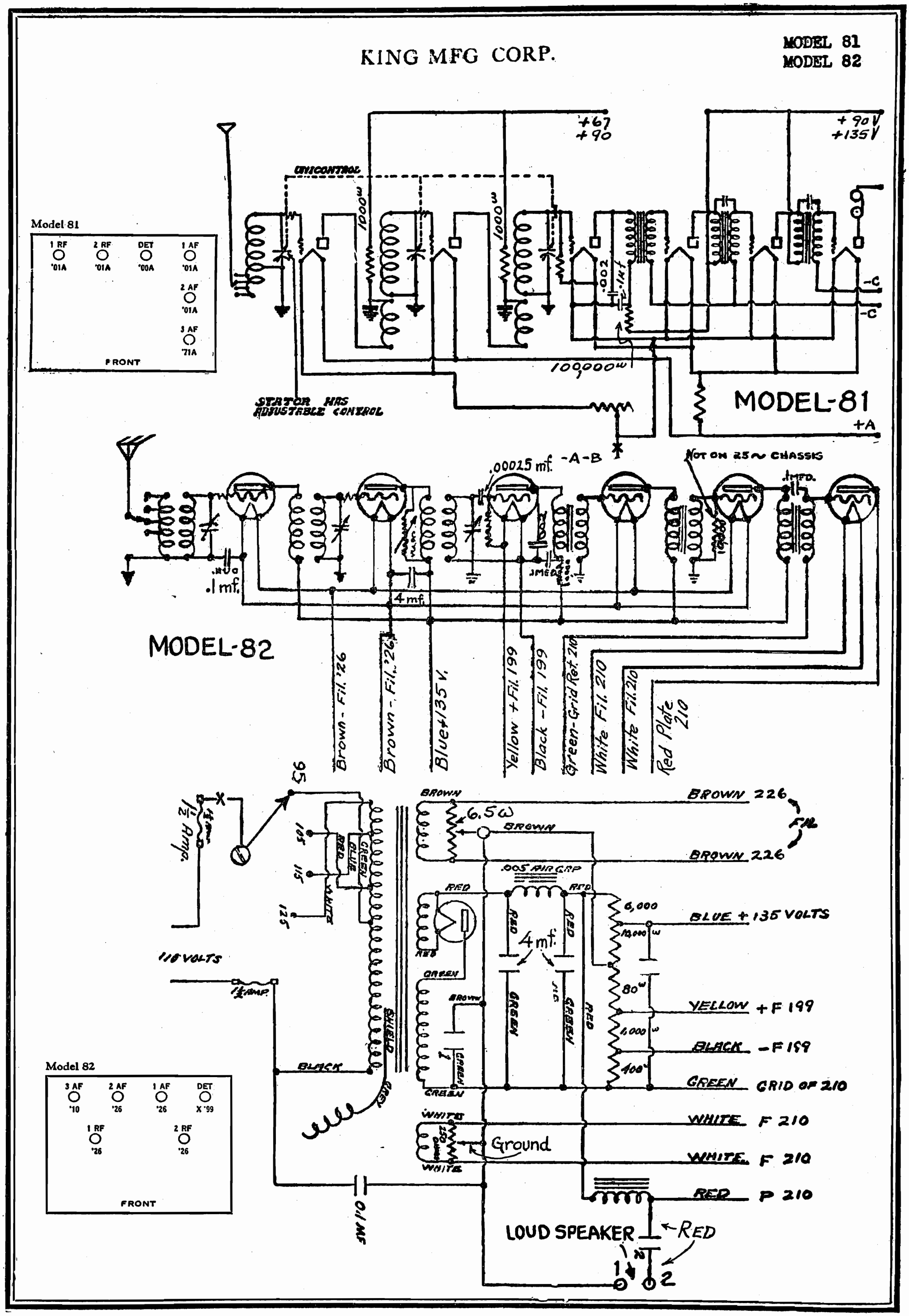
Model 80

Model J



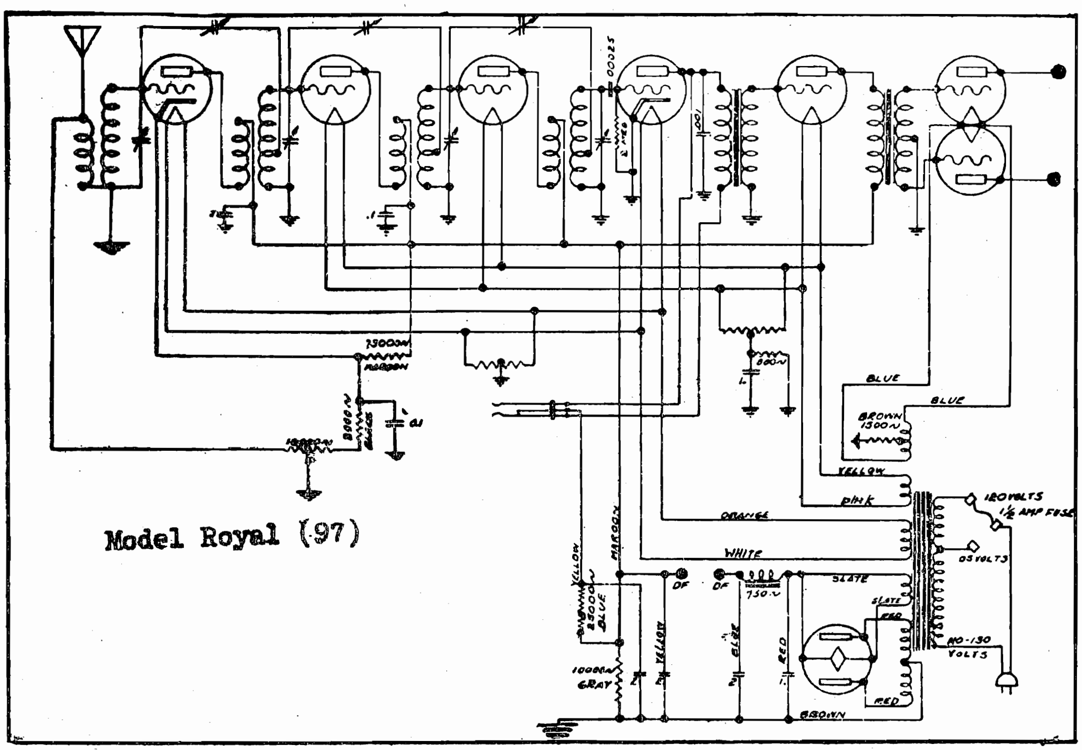
80 (Batt.)



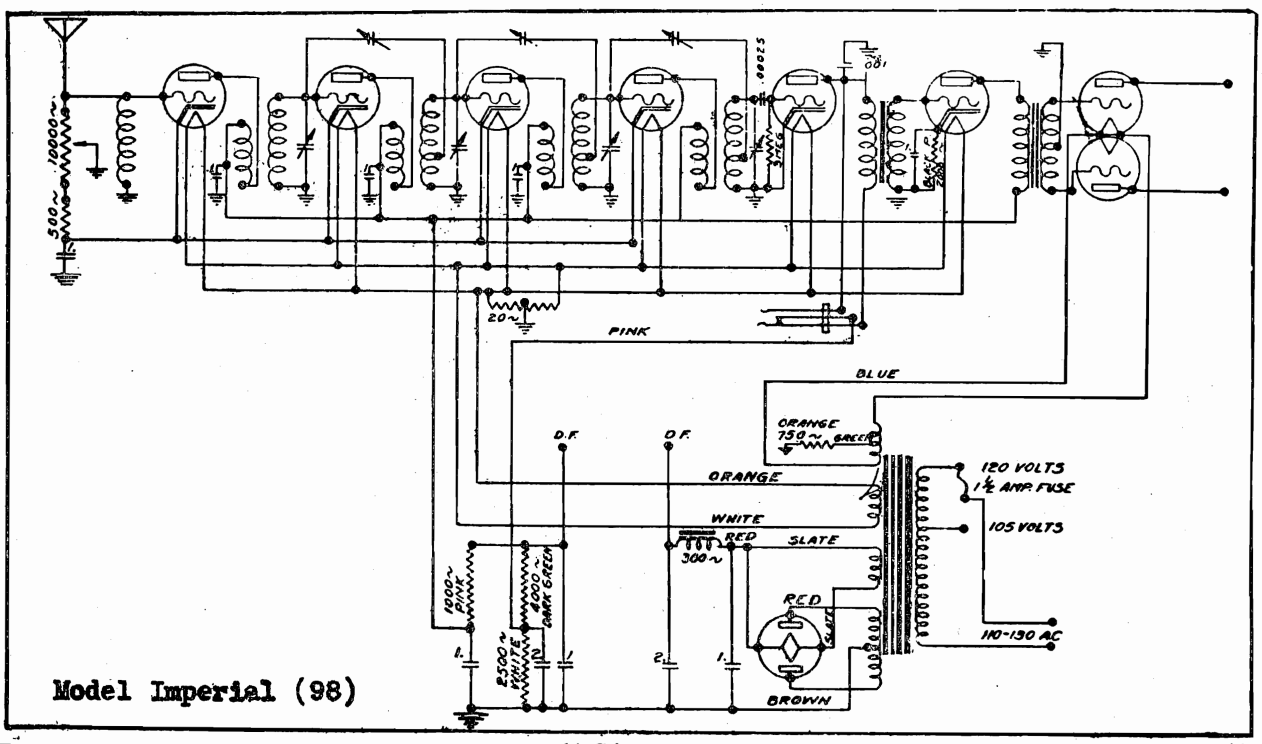

KING MFG CORP.
MODEL 81
MODEL 82
Model 81
1 RF '01A
2 RF '01A
DET '00A
1 AF '01A
2 AF '01A
3 AF '71A
FRONT
UNICONTROL
STATOR HAS ADJUSTABLE CONTROL
+67 +90
+90V +135V
1000ω
1000ω
.002
100,000ω
MODEL-81
+A
-C
-C
NOT ON 25~ CHASSIS
.00025 mf.
-A-B
.1 mf.
4 mf.
MODEL-82
Brown - Fil. '26
Brown - Fil. '26
Blue +135 V.
Yellow + Fil. 199
Black - Fil. 199
Green-Grid Ret. 210
White Fil. 210
White Fil. 210
Red Plate 210
1/2 Amp.
95
105
115
125
118 VOLTS
BROWN
6.5ω
BROWN
BROWN 226
BROWN 226
.005 AIR GAP
RED
RED
RED
RED
4 mf.
6,000
10,000ω
BLUE +135 VOLTS
GREEN
GREEN
GREEN
80ω
YELLOW +F 199
1,000ω
BLACK -F 199
400ω
GREEN GRID OF 210
WHITE F 210
Ground
WHITE F 210
WHITE
WHITE
BLACK
RED P 210
.01 MF
LOUD SPEAKER
RED
1
2
Model 82
3 AF '10
2 AF '26
1 AF '26
DET X '99
1 RF '26
2 RF '26
FRONT

MODEL ROYAL (97)
MODEL IMPERIAL (98)

KING MFG. CORP.

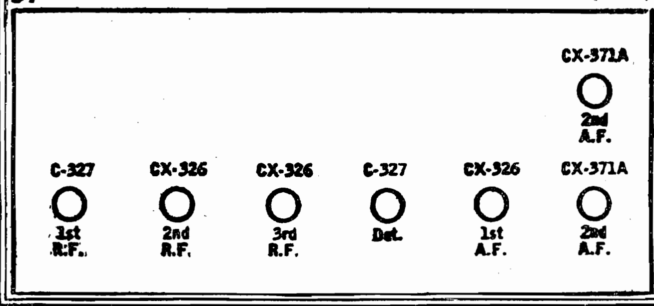


Model Royal (97)

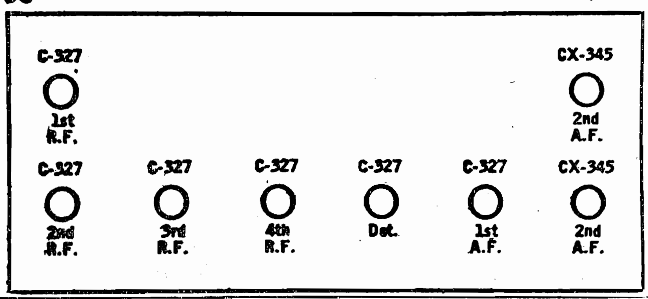


Model Imperial (98)

97 (A.C.)

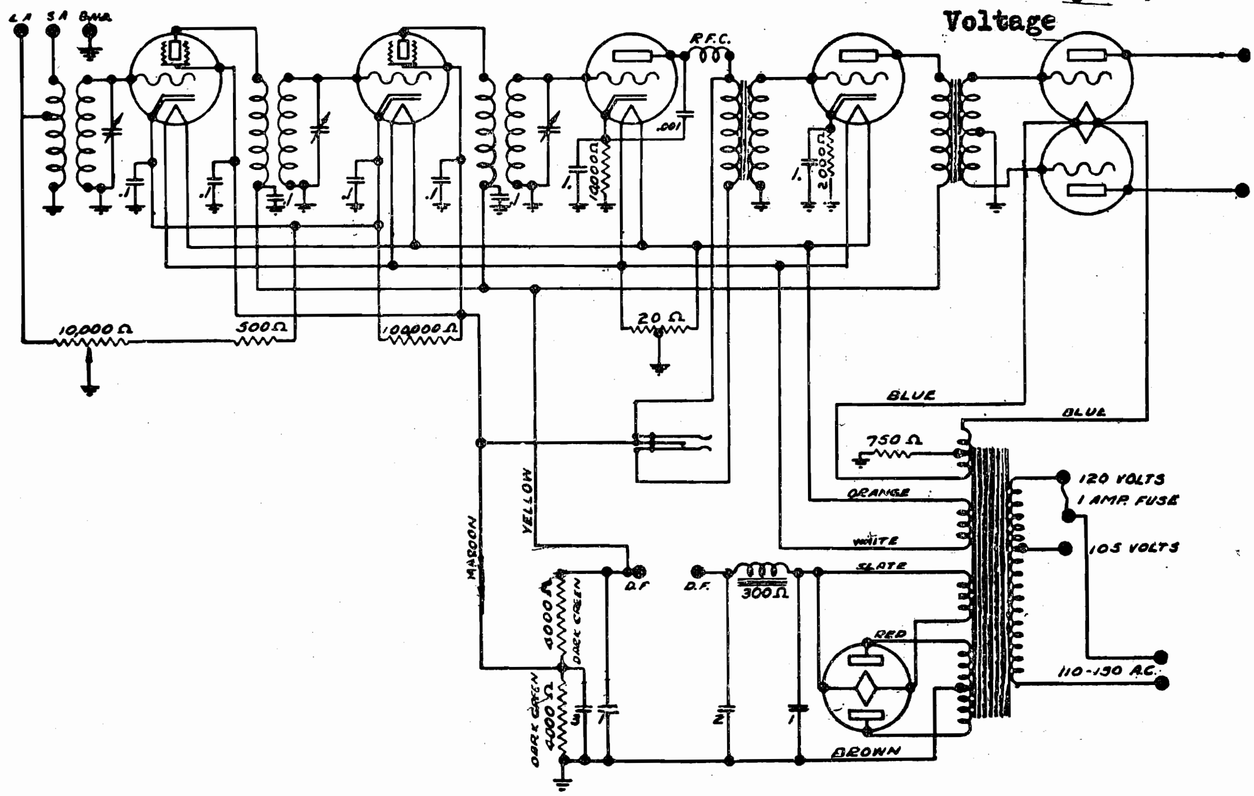


98 (A.C.)



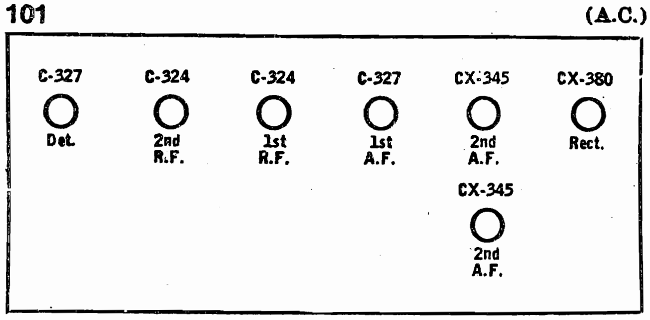
KING MFG. CORP.

MODEL Monarch (101)
Schematic - Voltage
MODEL Royal (97)
Voltage



MONARCH Model 101.					
Tube	Stage	Fil. V.	Plate V.	Screen. Grid V.	Control Grid V.
'24	1 R.F.	2.5	180	85	3.5
'24	2 R.F.	2.5	180	85	3.5
'27	Det.	2.5	90	-----	10.
'27	1 A.F.	2.5	170	-----	13.
'45	2 A.F.	2.5	220	-----	50.
'45	2 A.F.	2.5	220	-----	50.

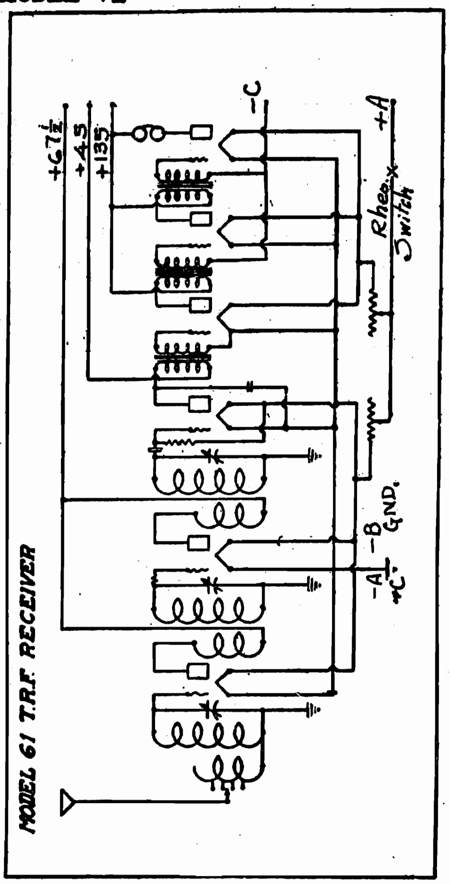
101 (A.C.)

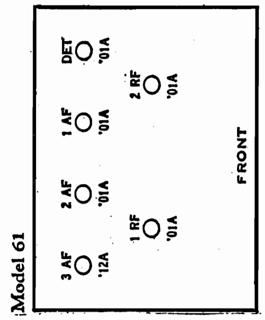


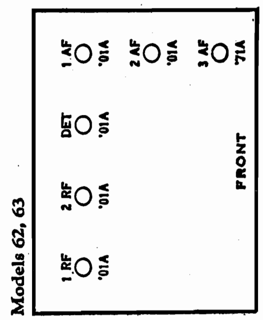
Model 97 Line: 105 Volts.					
Tube	Stage	Fil. V.	Plate V.	Grid V.	Cath. V.
'27	1 R.F.	2.4	136	11.	-----
'26	2 R.F.	1.6	136	10	
'26	3 R.F.	1.6	136	10	
'27	Det.	2.4	52	-----	------
'26	1 A.F.	1.6	127	8.	
'71	2 A.F.	5.1	184	36	
'71	2 A.F.	5.1	184	36	

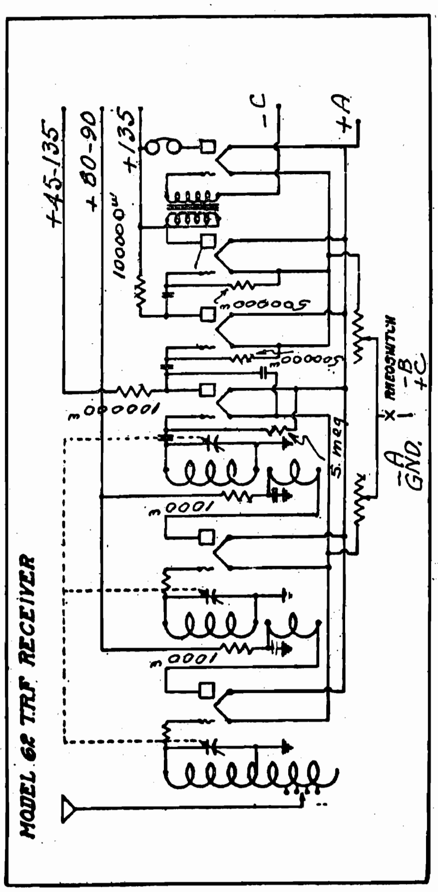
MODEL 61
MODEL 62,63
MODEL 71

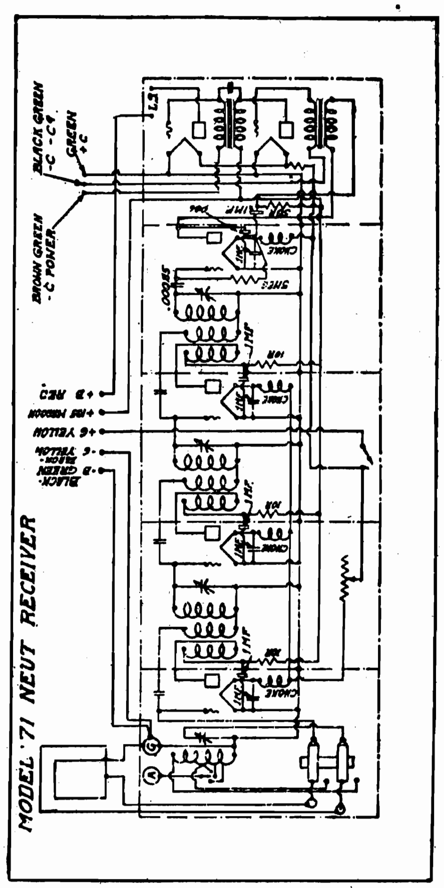
KING MFG. CORP.

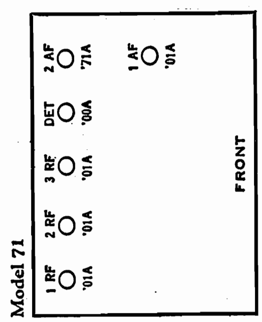






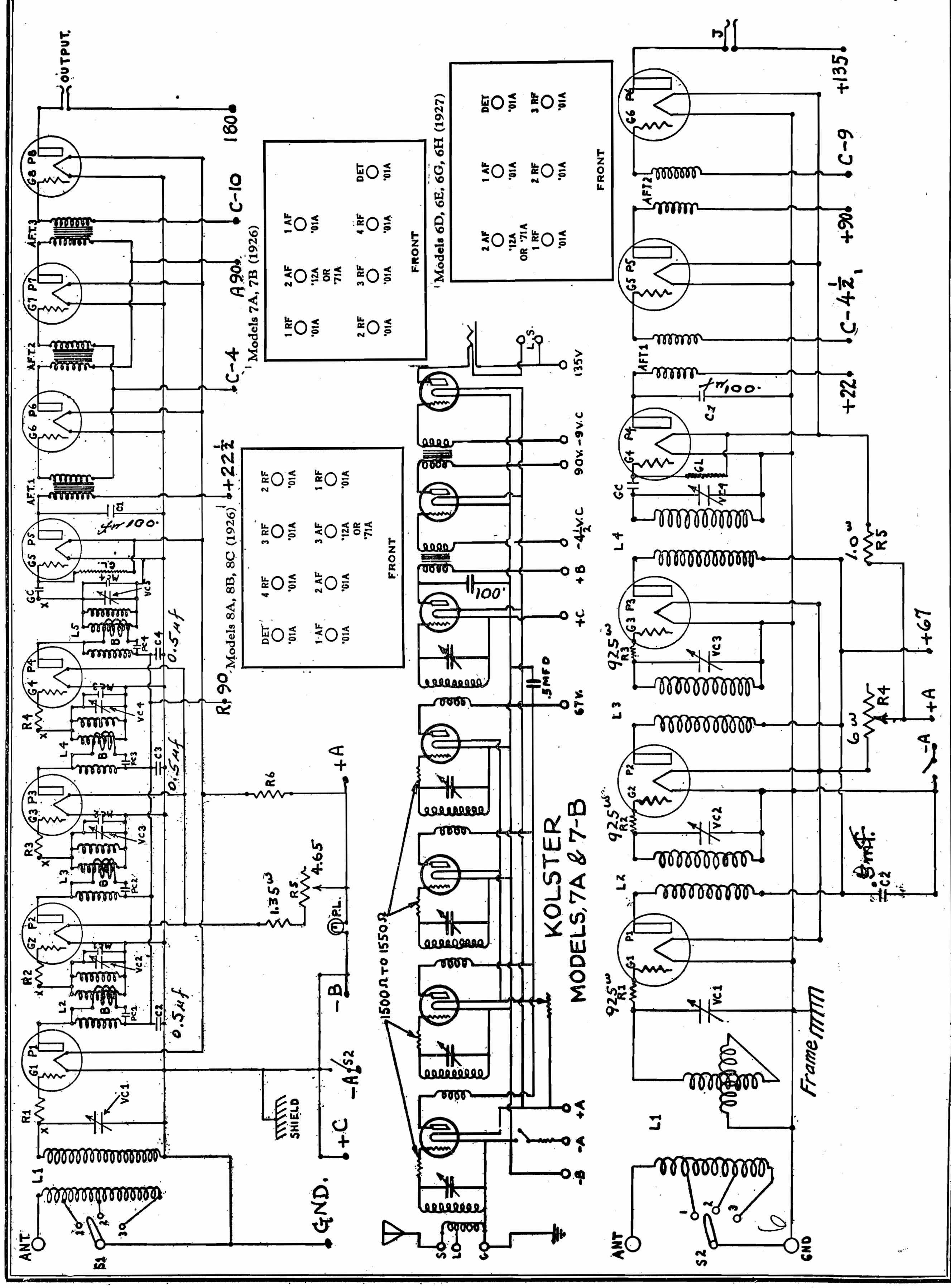






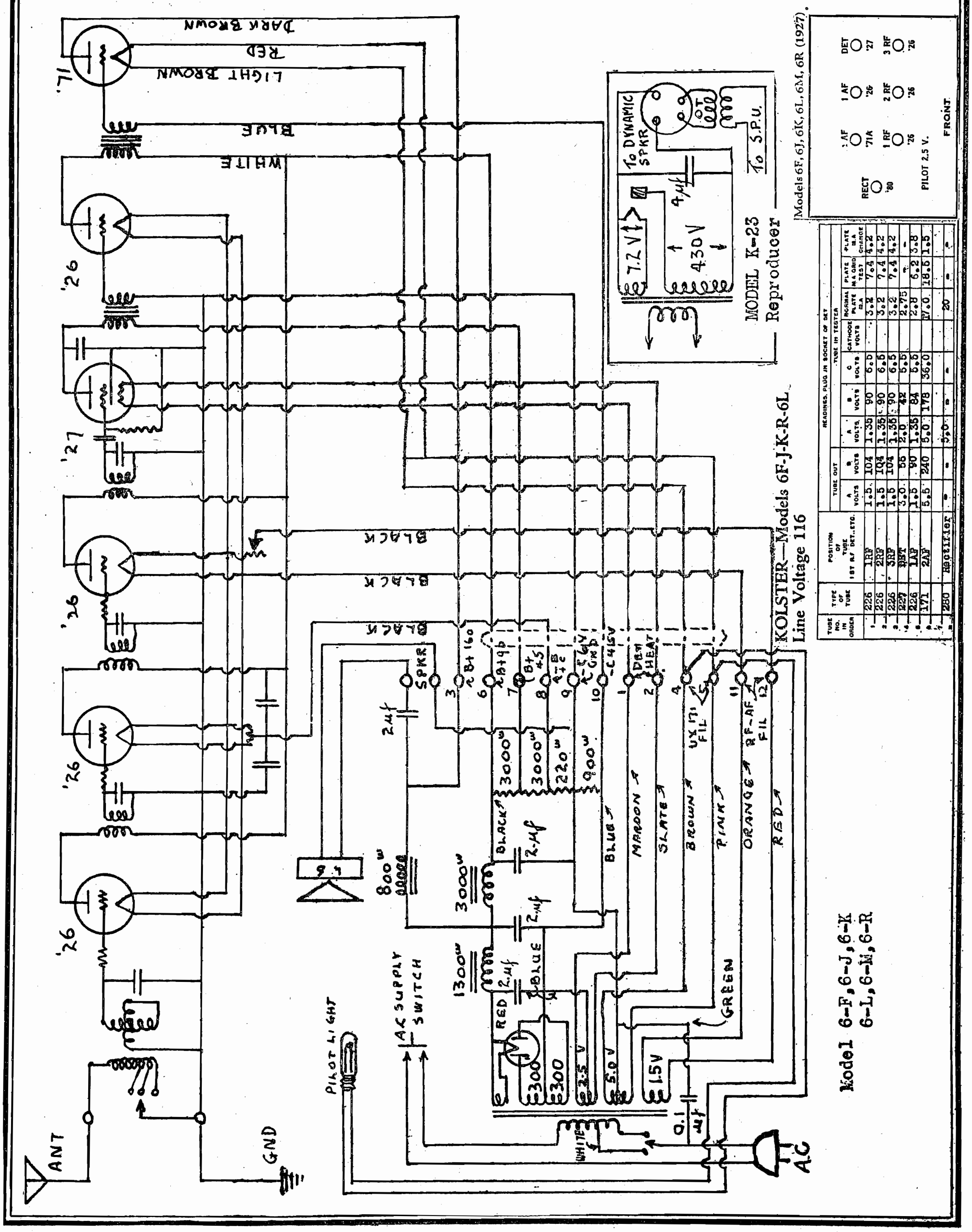
KOLSTER RADIO, INC.

MODELS 6D, 6E, 6G, 6H (1927)
MODELS 7A, 7B (1926)
MODELS 8A, 8B, 8C (1926)



KOLSTER RADIO, INC.

MODEL 6-F, 6-J, 6-K
6-L, 6-M, 6-R
MODEL K-23
Reproducer
Schematic



KOLSTER—Models 6F-J-K-R-6L
Line Voltage 116

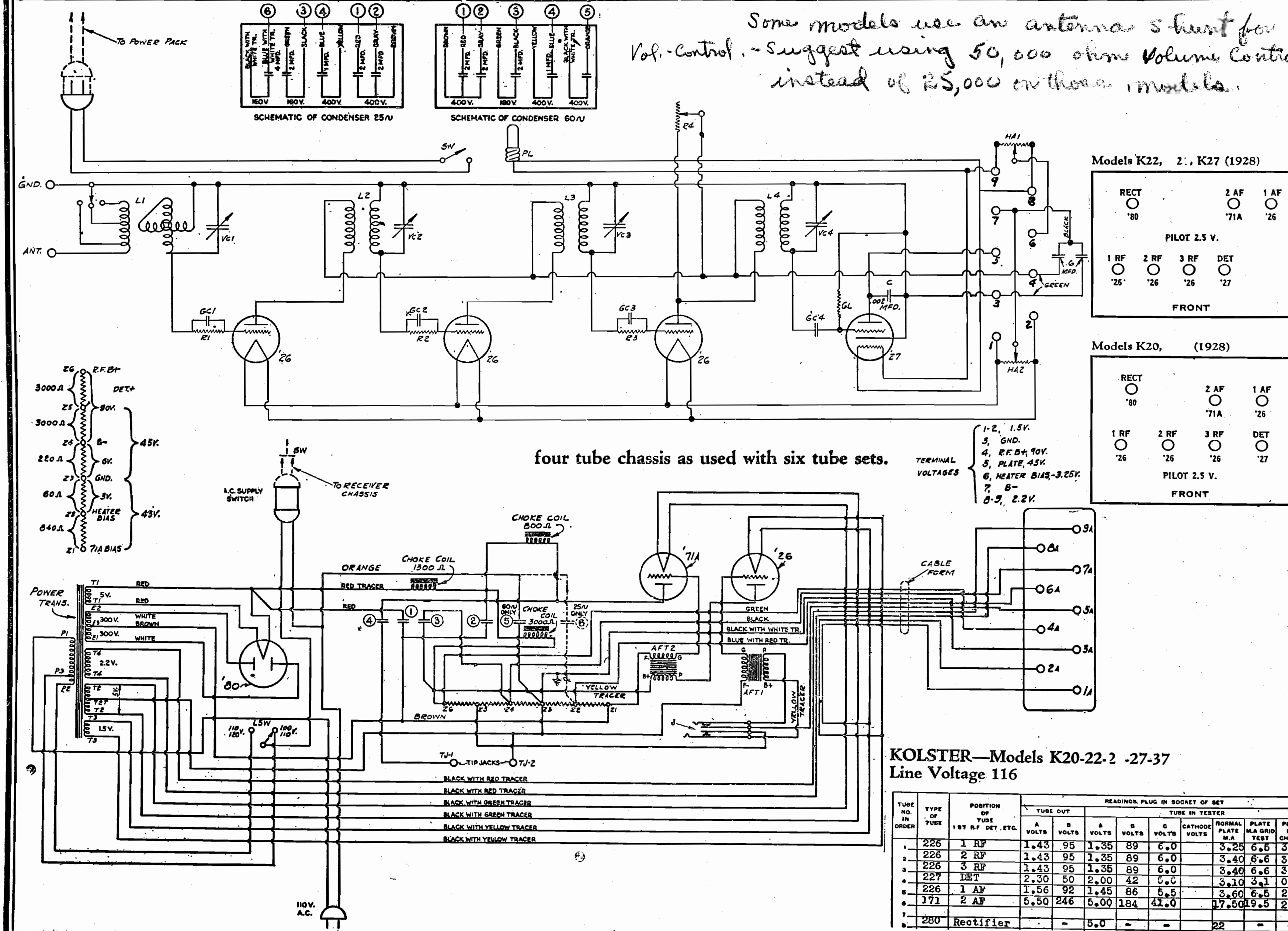
TUBE NO. IN ORDER	TYPE OF TUBE	POSITION OF TUBE 1ST R.F. DET., ETC.	TUBE OUT A VOLTS	TUBE OUT B VOLTS	READINGS, PLUG IN SOCKET OF SET — TUBE IN TESTER A VOLTS	B VOLTS	C VOLTS	CATHODE VOLTS	NORMAL PLATE M.A	PLATE M.A GRID TEST	PLATE M.A CHANGE
1	226	1RF	1.5	104	1.35	90	6.5		3.2	7.4	4.2
2	226	2RF	1.5	104	1.35	90	6.5		3.2	7.4	4.2
3	226	3RF	1.5	104	1.35	90	6.5		3.2	7.4	4.2
4	227	DET	3.0	55	2.0	42	5.5		2.75	-	-
5	226	1AF	1.5	90	1.35	84	5.5		2.8	6.2	3.8
6	171	2AF	5.5	240	5.0	178	36.0		17.0	18.5	1.5
7											
8	280	Rectifier	-	-	5.0	-	-		20	-	-

Model 6-F, 6-J, 6-K
6-L, 6-M, 6-R

MODEL K-20,K-22,K-27
Schematic, Voltage

KOLSTER RADIO, INC.

Some models use an antenna shunt for Vol.-Control. - Suggest using 50,000 ohm Volume Control instead of 25,000 on those models.



four tube chassis as used with six tube sets.

KOLSTER—Models K20-22-2 -27-37
Line Voltage 116

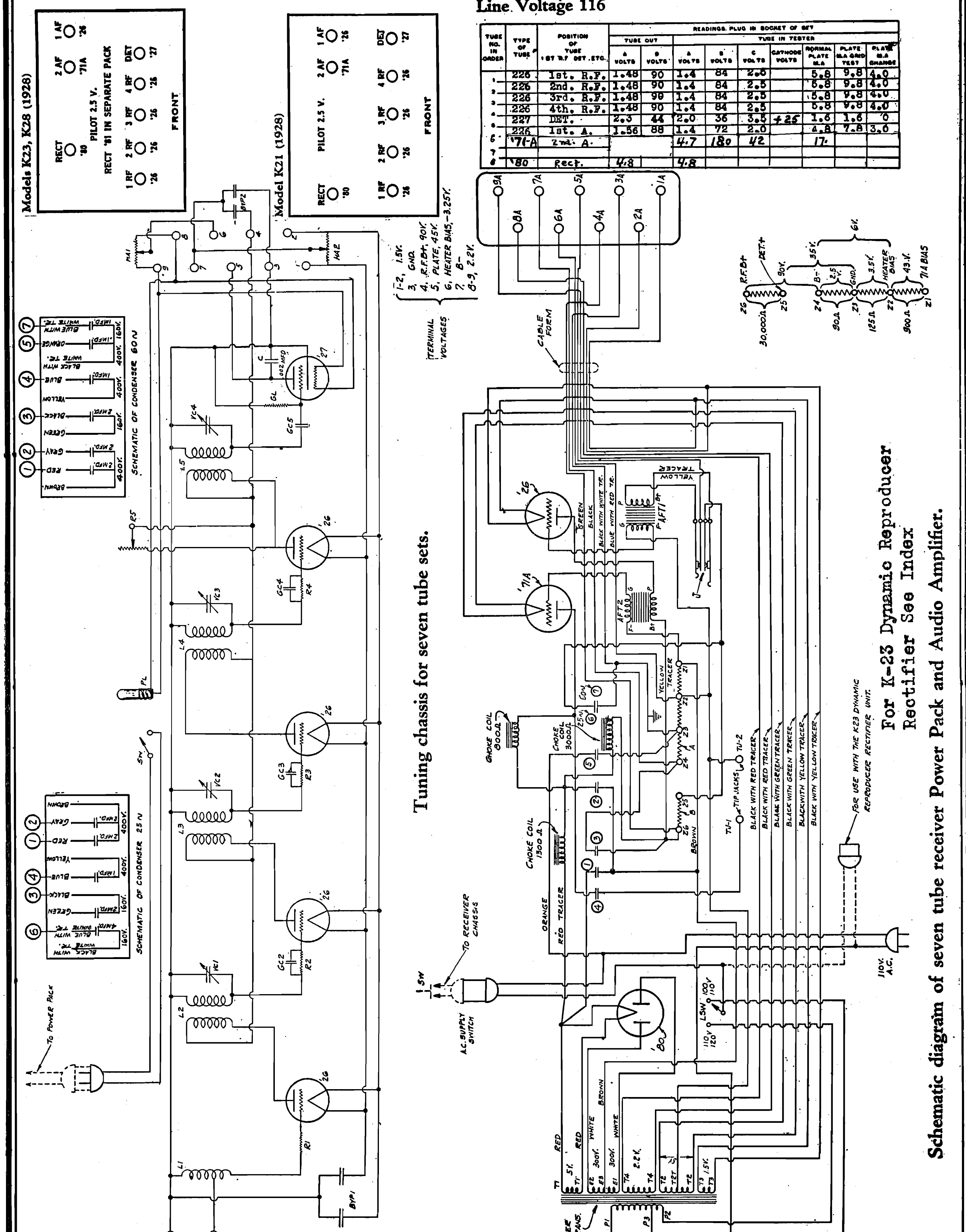
Tube No. in Order	Type of Tube	Position of Tube 1st R.F. Det. Etc.	Readings, Plug in Socket of Set: Tube Out: A Volts	Tube Out: B Volts	Tube in Tester: A Volts	Tube in Tester: B Volts	Tube in Tester: C Volts	Tube in Tester: Cathode Volts	Tube in Tester: Normal Plate M.A	Tube in Tester: Plate M.A Grid Test	Tube in Tester: Plate M.A Change
1	226	1 RF	1.43	95	1.35	89	6.0		3.25	6.5	3.25
2	226	2 RF	1.43	95	1.35	89	6.0		3.40	6.6	3.2
3	226	3 RF	1.43	95	1.35	89	6.0		3.40	6.6	3.2
4	227	DET	2.30	50	2.00	42	5.C		3.10	3.1	0.0
5	226	1 AF	1.56	92	1.45	86	5.5		3.60	6.5	2.9
6	171	2 AF	5.50	246	5.00	184	41.0		17.50	19.5	2.0
7											
8	280	Rectifier	-	-	5.0	-	-		22	-	-

KOLSTER RADIO, INC.

MODEL K-21, K-23, K-28
Schematic, Voltage

KOLSTER—Models K21-23
Line Voltage 116

TUBE NO. IN ORDER	TYPE OF TUBE	POSITION OF TUBE 1ST R.F. DET. ETC.	READINGS. PLUG IN SOCKET OF SET — TUBE OUT: A VOLTS	TUBE OUT: B VOLTS	TUBE IN TESTER: A VOLTS	TUBE IN TESTER: B VOLTS	TUBE IN TESTER: C VOLTS	CATHODE VOLTS	NORMAL PLATE M.A	PLATE M.A GRID TEST	PLATE M.A CHANGE
1	226	1st. R.F.	1.48	90	1.4	84	2.5		5.8	9.8	4.0
2	226	2nd. R.F.	1.48	90	1.4	84	2.5		5.8	9.8	4.0
3	226	3rd. R.F.	1.48	90	1.4	84	2.5		5.8	9.8	4.0
4	226	4th. R.F.	1.48	90	1.4	84	2.5		5.8	9.8	4.0
5	227	DET.	2.3	44	2.0	36	3.5	+25	1.6	1.6	0
6	226	1st. A.	1.56	88	1.4	72	2.0		4.8	7.8	3.0
6	'71-A	2nd. A.			4.7	180	42		17.		
7											
8	'80	Rect.	4.8		4.8						



Tuning chassis for seven tube sets.

For K-23 Dynamic Reproducer
Rectifier See Index

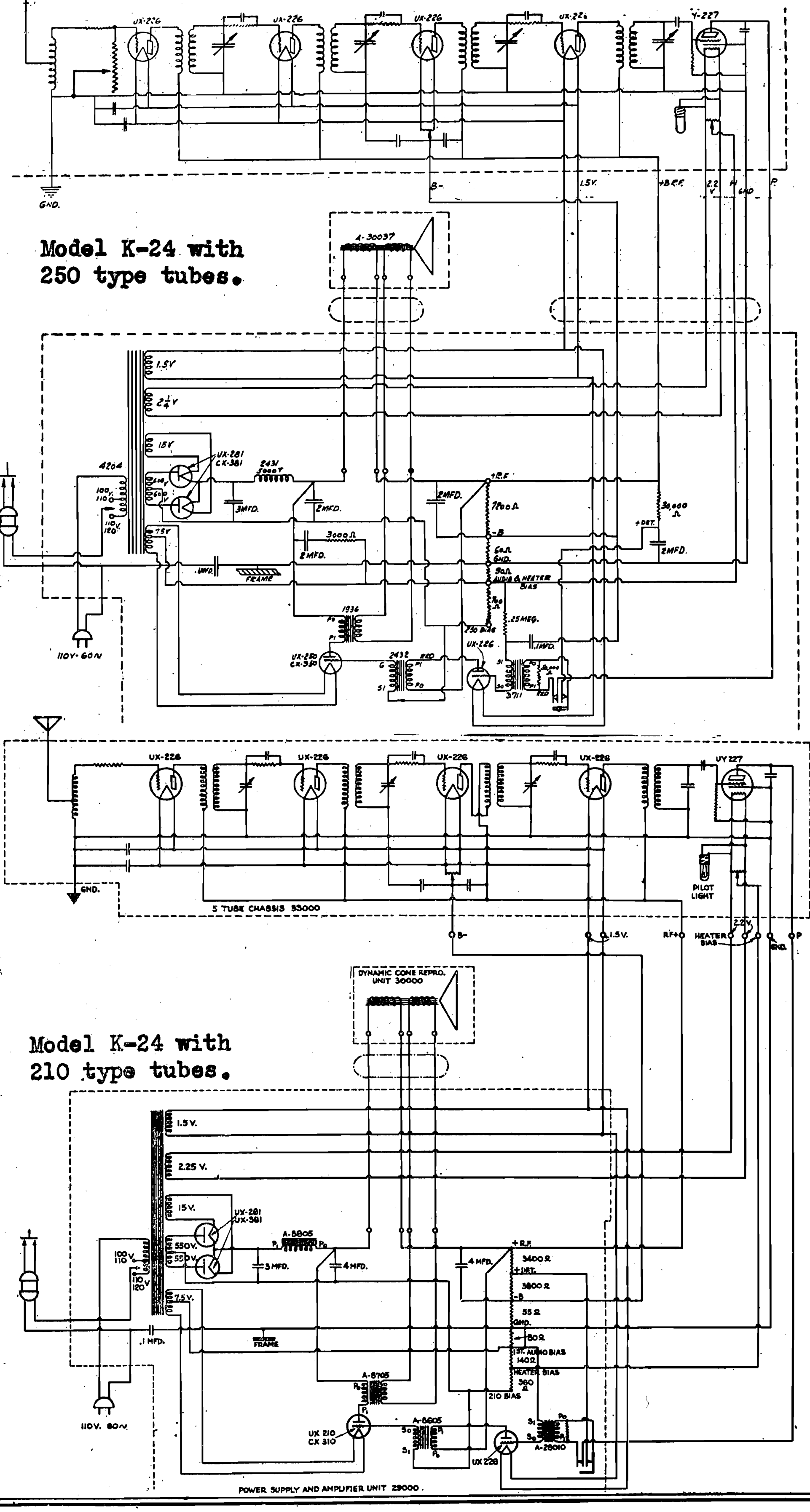
Schematic diagram of seven tube receiver Power Pack and Audio Amplifier.

MODEL K-24(250)
MODEL K-24(210)
Schematic, Voltage

KOLSTER RADIO, INC.

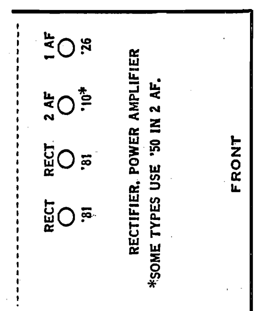
Model K-24 with 250 type tubes.

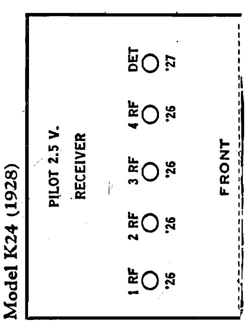
Model K-24 with 210 type tubes.



Line Voltage 116

Tube No. in Order	Type of Tube	Position of Tube 1st R.F. Det. etc.	Readings, Plug in Socket of Set: Tube Out: A Volts	Tube Out: B Volts	Tube in Tester: A Volts	B Volts	C Volts	Cathode Volts	Normal Plate M.A	Plate M.A Grid Test	Plate M.A Change
1	226	1st. R.F.	1.48	90	1.4	84	2.5		5.8	9.8	4.0
2	226	2nd. R.F.	1.48	90	1.4	84	2.5		5.8	9.8	4.0
3	226	3rd. R.F.	1.48	90	1.4	84	2.5		5.8	9.8	4.0
4	226	4th. R.F.	1.48	90	1.4	84	2.5		5.8	9.8	4.0
5	227	DET.	2.5	44	2.0	36	3.5		1.6	1.6	0
6	226	1st. A.	1.56	88	1.4	72	2.0		4.8	7.8	3.0
7	210	2nd. A.	7.9	512	7.4	430	32.5		24.	28.	4.0
8											
9	281	Rect.	-	-	7.0	-	-		28.0	-	-
10	281	Rect.	-	-	7.4	-	-		28.0	-	-

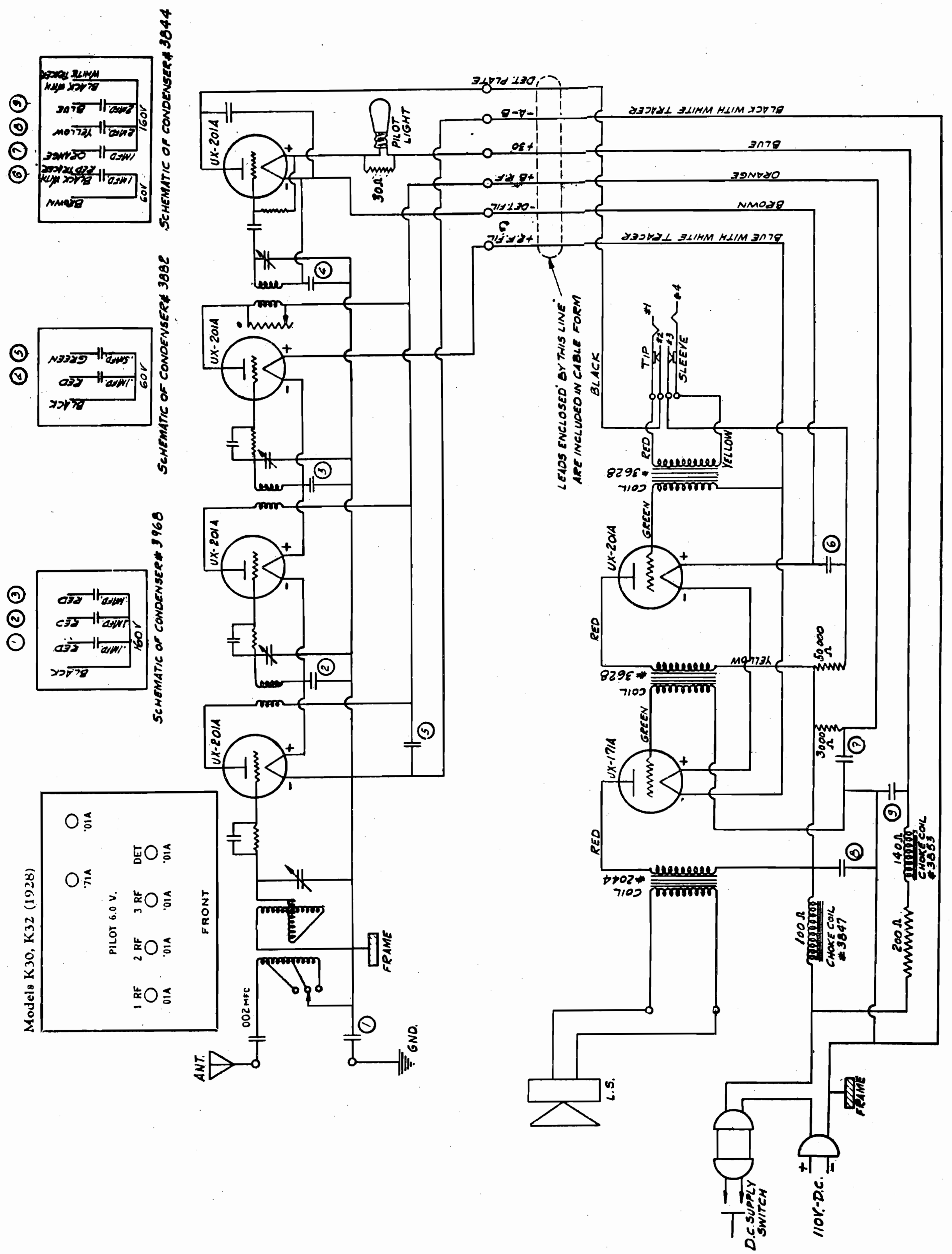




Model K24 (1928)

MODELS K-30, K-32 (1928)

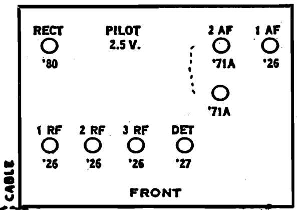
KOLSTER RADIO, INC.



MODEL K-42
Schematic
Voltage

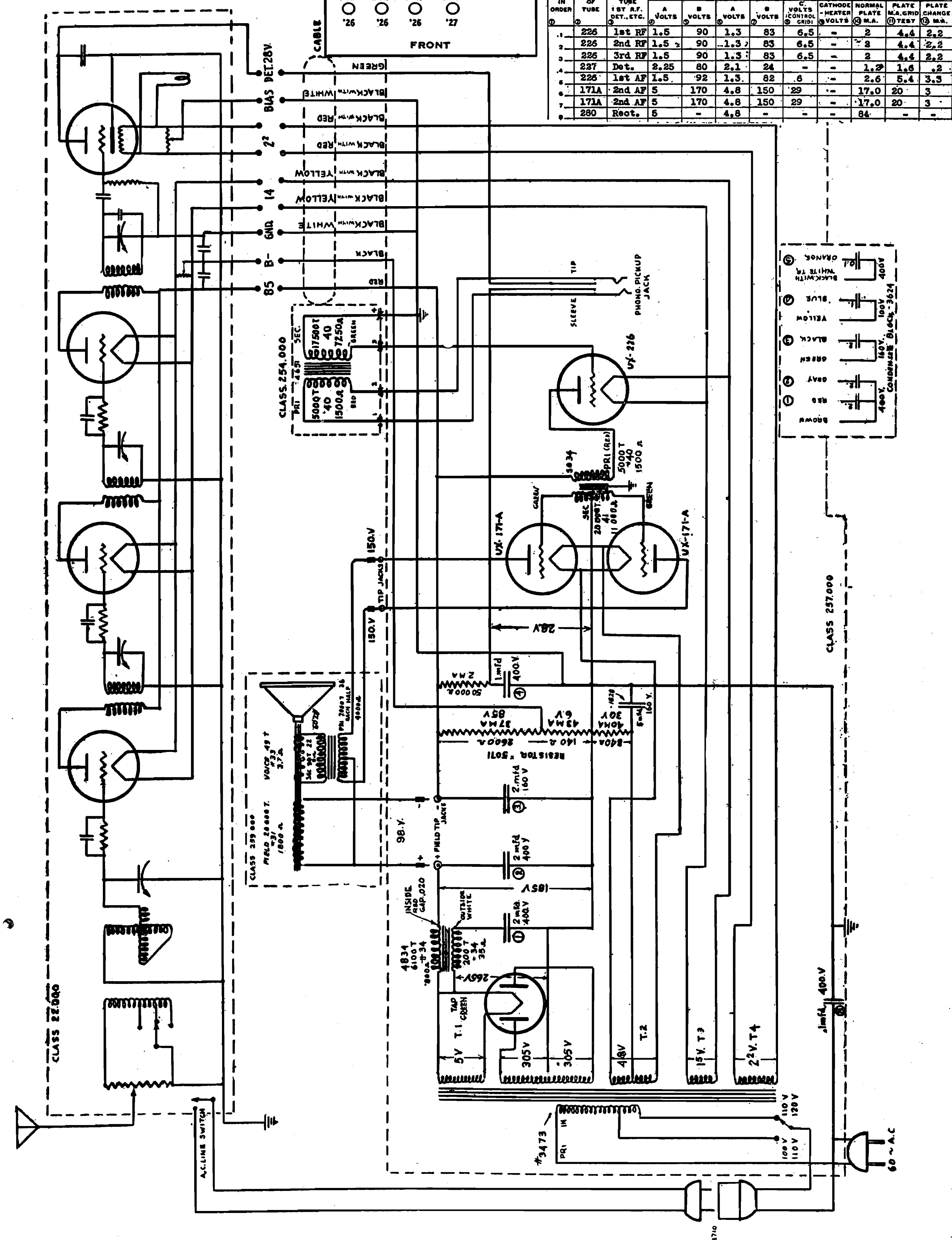
KOLSTER RADIO, INC.

Model K42 (1930)



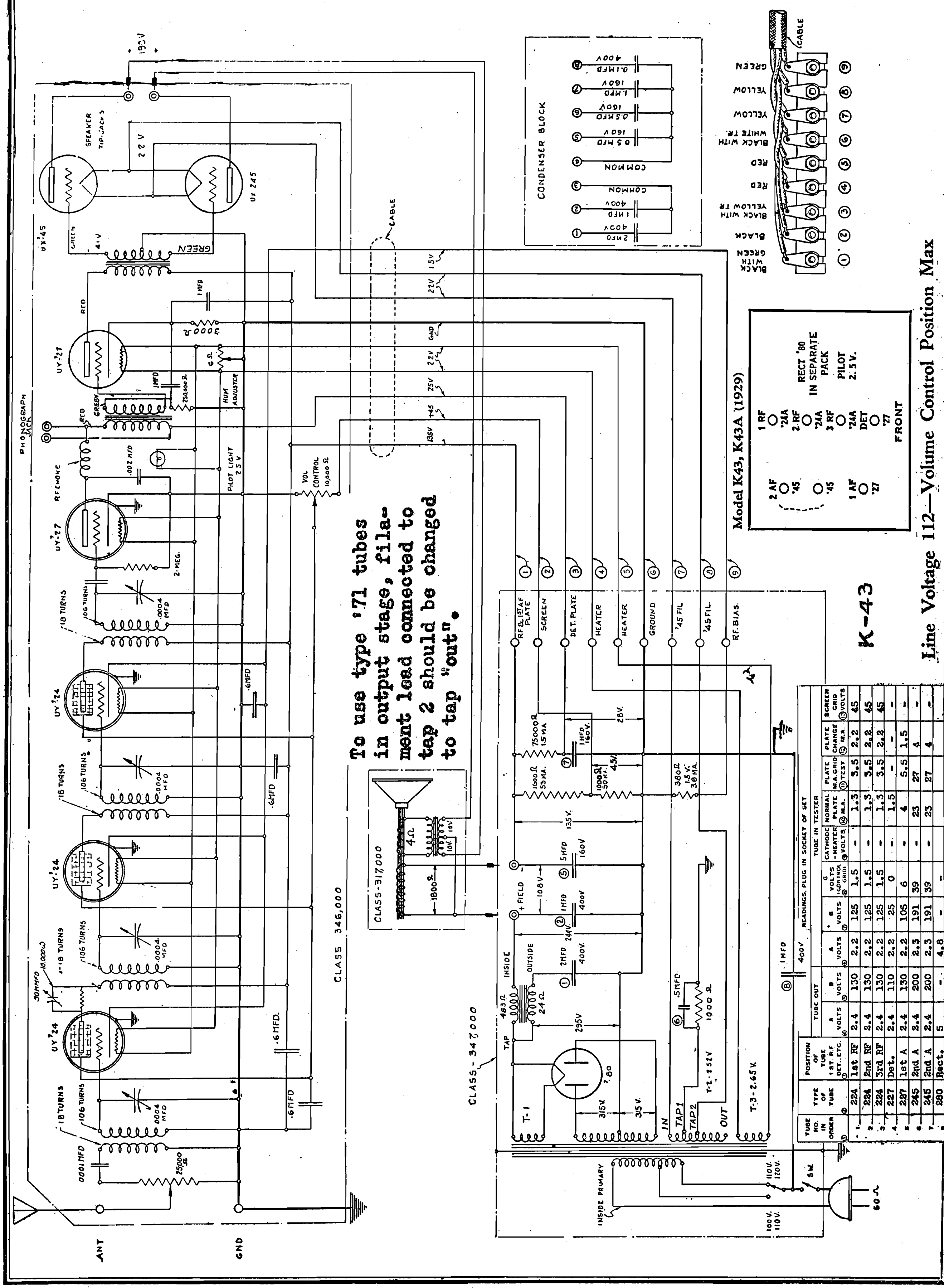
KOLSTER—Model 42
Line Voltage 112—Volume Control Position Max
*Grid Leak Shorted

TUBE NO. IN ORDER ①	TYPE OF TUBE ②	POSITION OF TUBE 1ST R.F. DET., ETC. ③	READINGS, PLUG IN SOCKET OF SET: TUBE OUT: A VOLTS ④	TUBE OUT: B VOLTS ⑤	TUBE IN TESTER: A VOLTS ⑥	TUBE IN TESTER: B VOLTS ⑦	C VOLTS (CONTROL GRID) ⑧	CATHODE-HEATER VOLTS ⑨	NORMAL PLATE M.A. ⑩	PLATE M.A. GRID TEST ⑪	PLATE CHANGE M.A. ⑫
1	226	1st RF	1.5	90	1.3	83	6.5	-	2	4.4	2.2
2	226	2nd RF	1.5	90	1.3	83	6.5	-	2	4.4	2.2
3	226	3rd RF	1.5	90	1.3	83	6.5	-	2	4.4	2.2
4	227	Det.	2.25	80	2.1	24	-	-	1.2	1.6	.2
5	226	1st AF	1.5	92	1.3	82	.6	-	2.6	5.4	3.3
6	171A	2nd AF	5	170	4.8	150	29	-	17.0	20	3
7	171A	2nd AF	5	170	4.8	150	29	-	17.0	20	3
8	280	Rect.	5	-	4.8	-	-	-	84	-	-



KOLSTER RADIO, INC.

MODELS K-43, K-43A (1929)
Schematic, Voltage



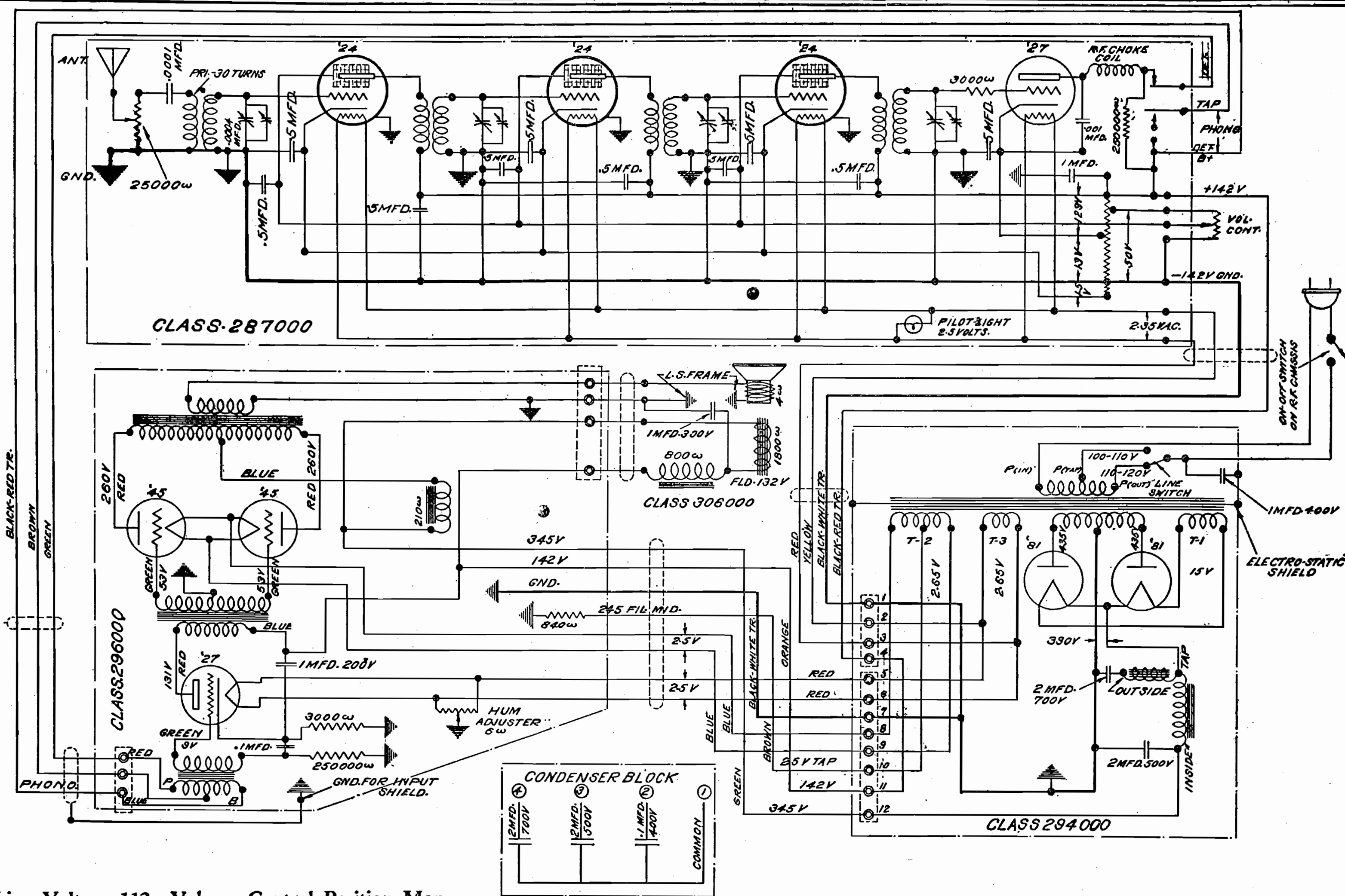
To use type '71 tubes in output stage, filament lead connected to tap 2 should be changed to tap "out".

Line Voltage 112—Volume Control Position Max

TUBE NO. IN ORDER ①	TYPE OF TUBE ②	POSITION OF TUBE 1ST. R.F. DET., ETC. ③	TUBE OUT: A VOLTS ④	TUBE OUT: B VOLTS ⑤	READINGS. PLUG IN SOCKET OF SET — TUBE IN TESTER: A VOLTS ⑥	B VOLTS ⑦	G VOLTS (CONTROL GRID) ⑧	CATHODE-HEATER VOLTS ⑨	NORMAL PLATE M.A. ⑩	PLATE M.A. GRID TEST ⑪	PLATE CHANGE M.A. ⑫	SCREEN GRID VOLTS ⑬
1	224	1st RF	2.4	130	2.2	125	1.5	-	1.3	3.5	2.2	45
2	224	2nd RF	2.4	130	2.2	125	1.5	-	1.3	3.5	2.2	45
3	224	3rd RF	2.4	130	2.2	125	1.5	-	1.3	3.5	2.2	45
4	227	Det.	2.4	110	2.2	25	0	-	1.5	-	-	-
5	227	1st A	2.4	130	2.2	105	6	-	4	5.5	1.5	-
6	245	2nd A	2.4	200	2.3	191	39	-	23	27	4	-
7	245	2nd A	2.4	200	2.3	191	39	-	23	27	4	-
8	280	Rect.	5	-	4.8	-	-					

MODEL K-44 (1929)
Schematic
Voltage

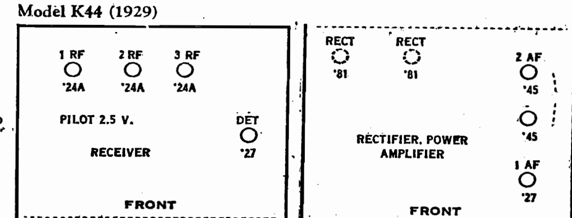
KOLSTER RADIO, INC.



Line Voltage 112—Volume Control Position Max

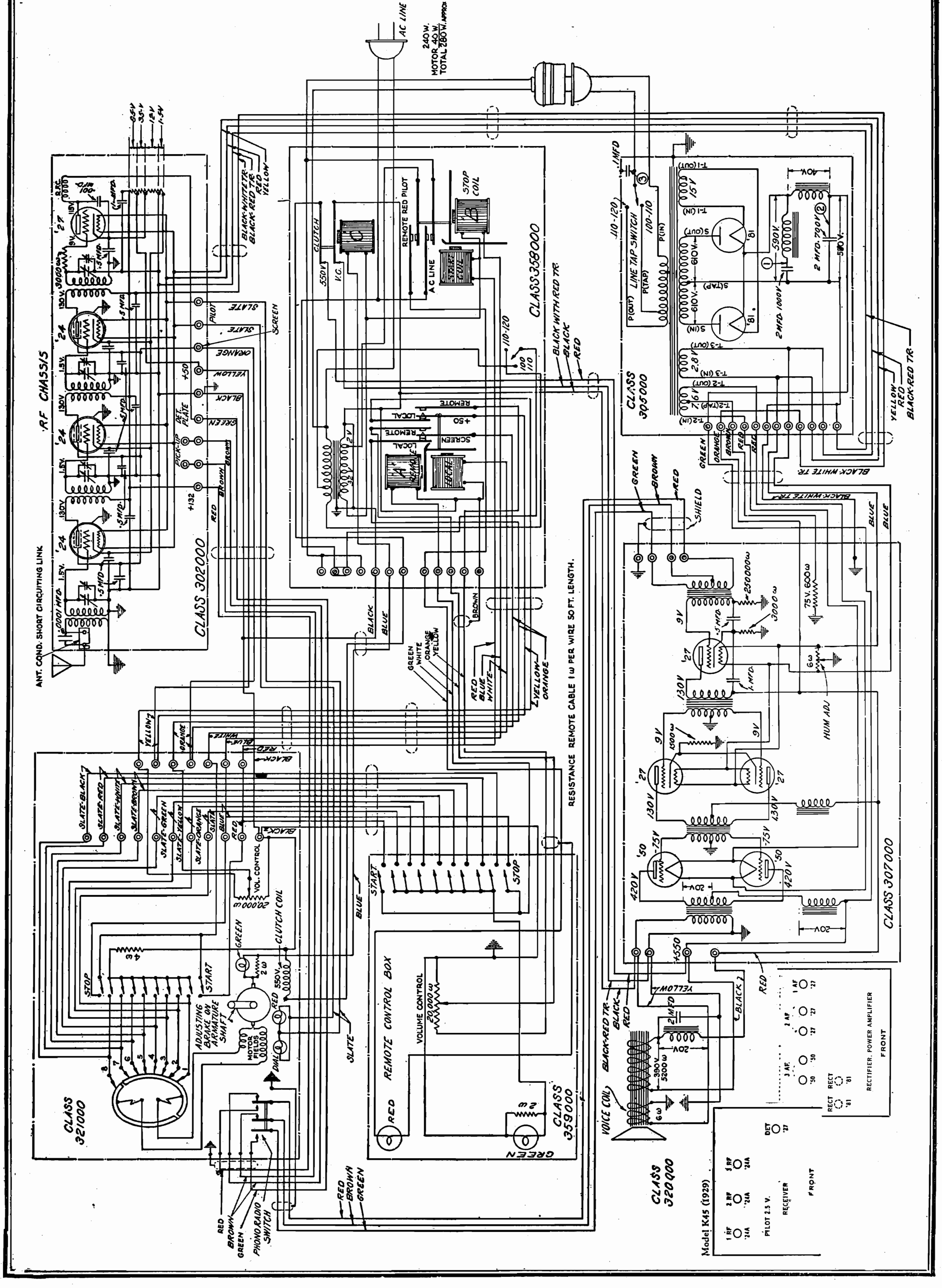
Tube No. in Order (1)	Type of Tube (2)	Position of Tube 1st R.F. Det., etc. (3)	Readings, Plug in Socket of Set: Tube Out: A Volts (4)	B Volts (5)	Tube in Tester: A Volts (6)	B Volts (7)	C Volts (Control Grid) (8)	Cathode-Heater Volts (9)	Normal Plate M.A. (10)	Plate M.A. Grid Test (11)	Plate Change M.A. (12)	Screen Grid Volts (13)
1	224	1st RF	2.4	133	2.2	130	1.5	-	1.2	3	2.2	45
2	224	2nd RF	2.4	133	2.2	130	1.5	-	1.2	3	2.2	45
3	224	3rd RF	2.4	133	2.2	130	1.5	-	1.2	3	2.2	45
4	227	Det.	2.4	125	2.2	120	10	-	2	4	2	-
5	227	1st A	2.4	135	2.2	108	6	-	5	6.5	1.5	-
6	245	2nd A	2.4	280	2.3	250	50	-	35	39	4	-
7	245	2nd A	2.4	280	2.3	250	50	-	35	39	4	-
8	281	Rect.	7.5	-	7.3	-	-	-	-	55	-	-
9	281	Rect.	7.5	-	7.3	-	-	-	-	55	-	-

Model K44 (1929)



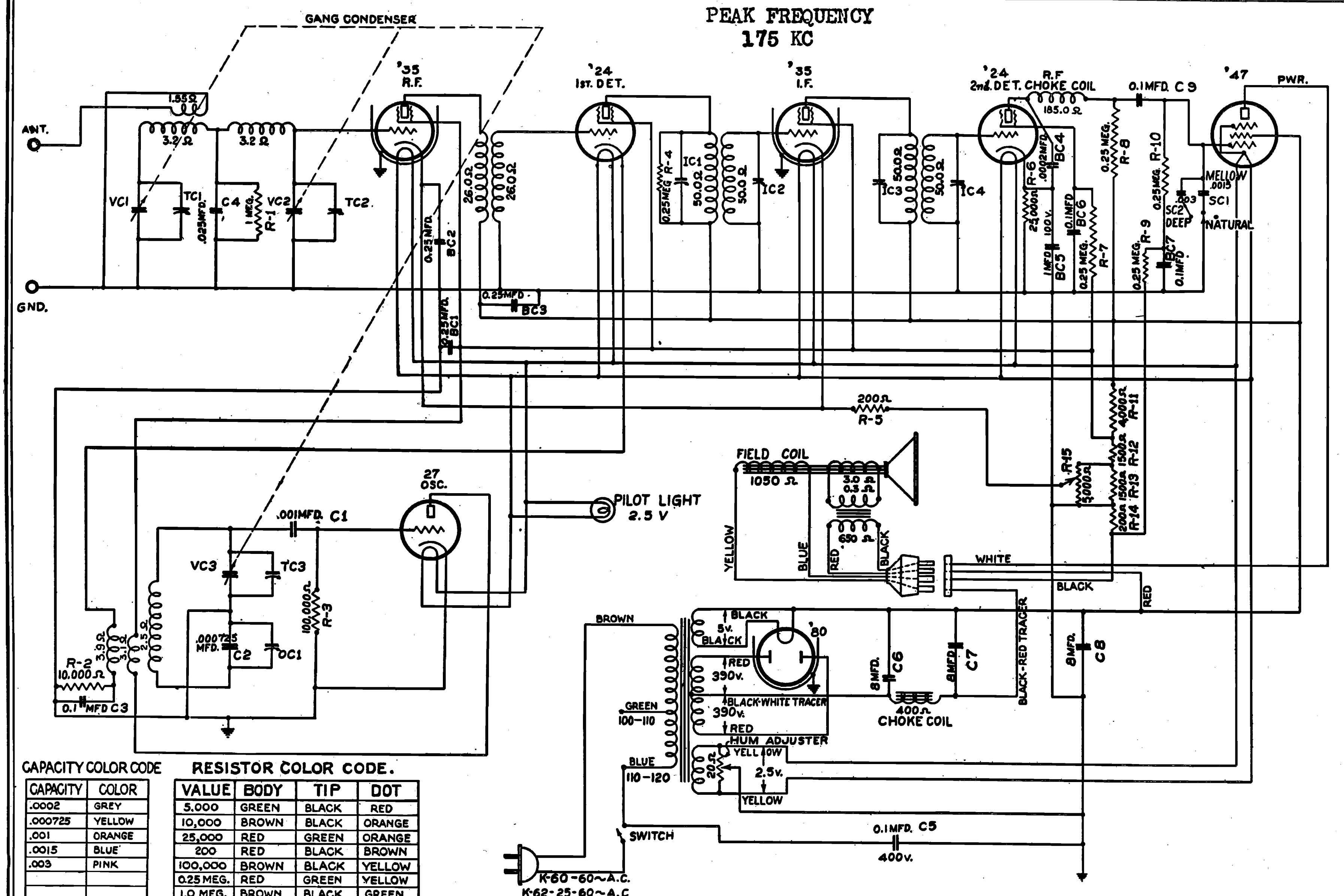
MODEL K-45

KOLSTER RADIO, INC.



MODEL K-60, K-62

KOLSTER RADIO, INC.



CAPACITY COLOR CODE

CAPACITY	COLOR
.0002	GREY
.000725	YELLOW
.001	ORANGE
.0015	BLUE
.003	PINK

RESISTOR COLOR CODE.

VALUE	BODY	TIP	DOT
5,000	GREEN	BLACK	RED
10,000	BROWN	BLACK	ORANGE
25,000	RED	GREEN	ORANGE
200	RED	BLACK	BROWN
100,000	BROWN	BLACK	YELLOW
0.25 MEG.	RED	GREEN	YELLOW
1.0 MEG.	BROWN	BLACK	GREEN

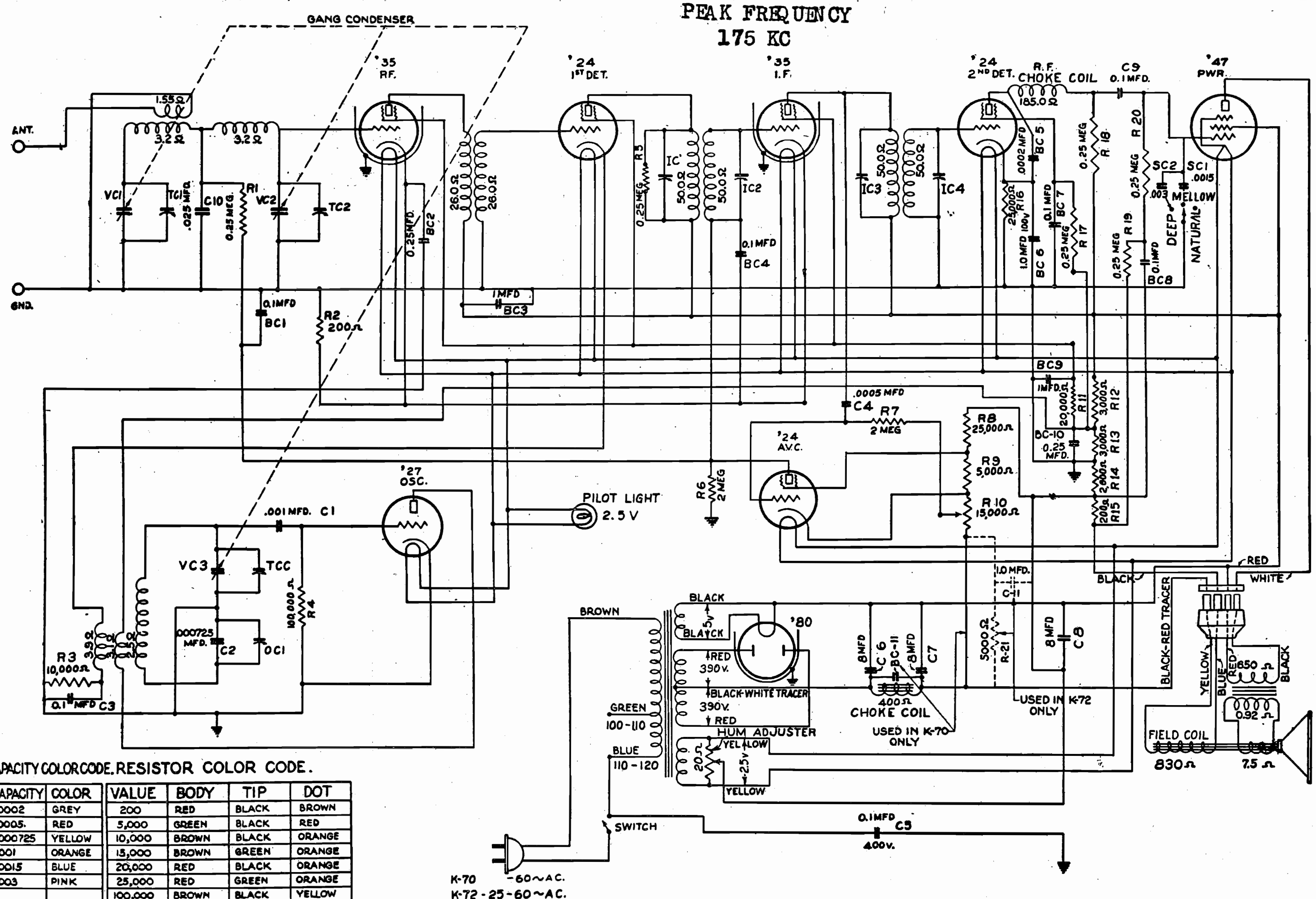
Power Consumption 95 Watt

KOLSTER — INTERNATIONAL RADIO MODELS K-60—K-62 -1931-

MODEL K-70, K-72

KOLSTER RADIO, INC.

PEAK FREQUENCY
175 KC



CAPACITY COLOR CODE.

CAPACITY	COLOR
.0002	GREY
.0005.	RED
.000725	YELLOW
.001	ORANGE
.0015	BLUE
.003	PINK

RESISTOR COLOR CODE.

VALUE	BODY	TIP	DOT
200	RED	BLACK	BROWN
5,000	GREEN	BLACK	RED
10,000	BROWN	BLACK	ORANGE
15,000	BROWN	GREEN	ORANGE
20,000	RED	BLACK	ORANGE
25,000	RED	GREEN	ORANGE
100,000	BROWN	BLACK	YELLOW
0.25 MEG.	RED	GREEN	YELLOW
2 MEG.	RED	BLACK	GREEN

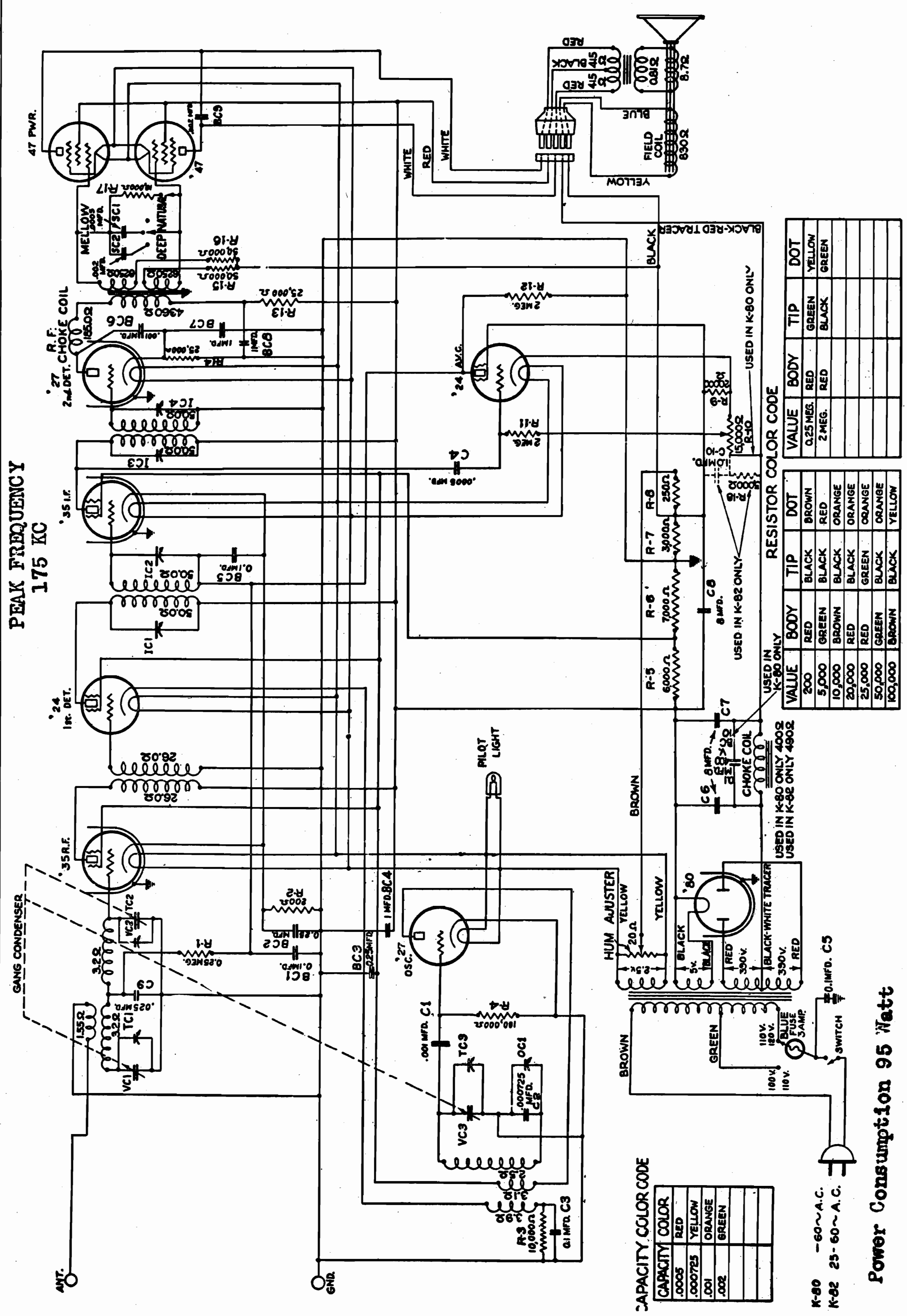
POwer Consumption 95 Watt

KOLSTER — INTERNATIONAL RADIO MODELS K-70—K-72

-1931-

MODEL K-80, K-82

KOLSTER RADIO, INC.



RESISTOR COLOR CODE

VALUE	BODY	TIP	DOT
200	RED	BLACK	BROWN
5,000	GREEN	BLACK	RED
10,000	BROWN	BLACK	ORANGE
20,000	RED	BLACK	ORANGE
25,000	RED	GREEN	ORANGE
50,000	GREEN	BLACK	ORANGE
100,000	BROWN	BLACK	YELLOW

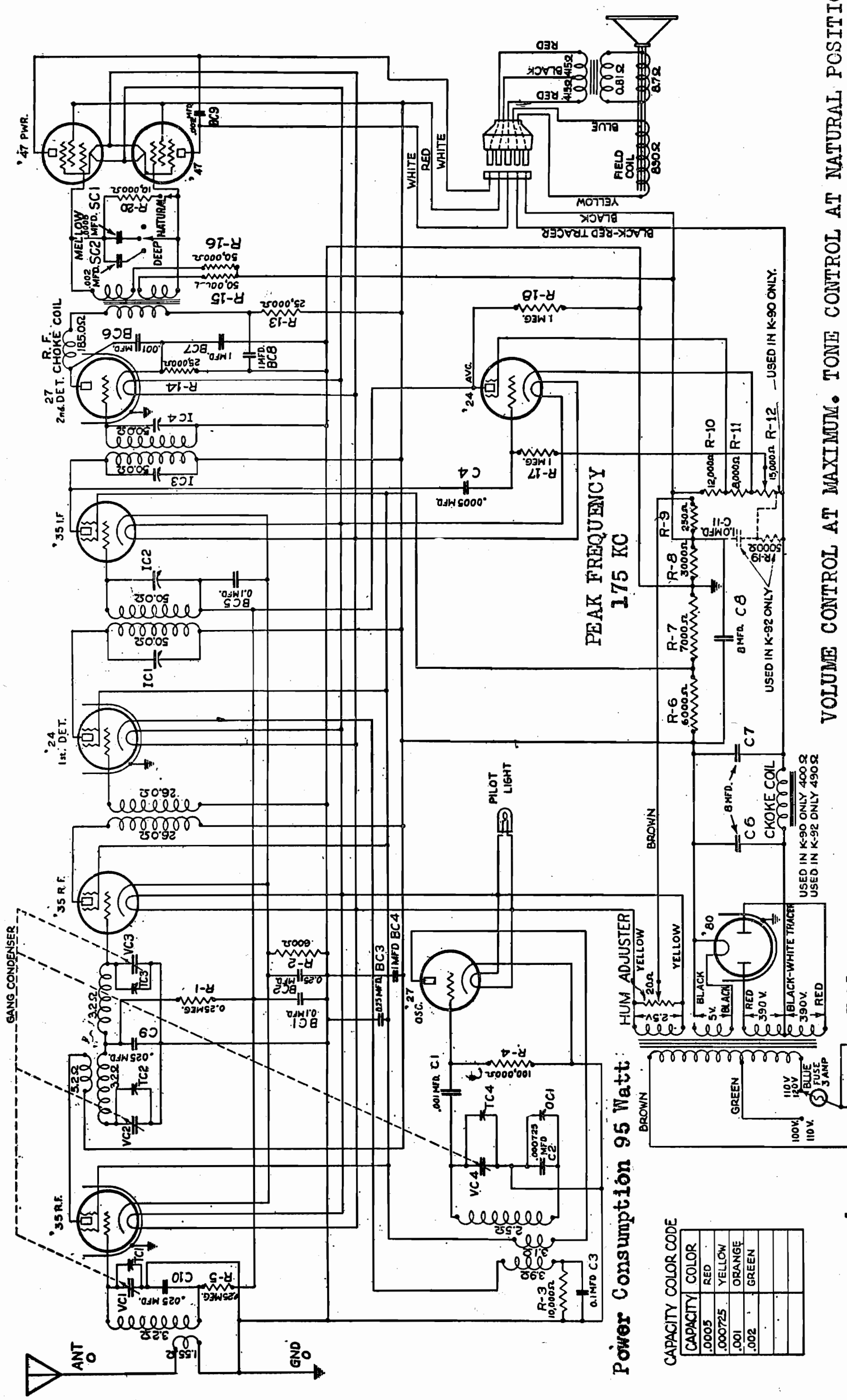
VALUE	BODY	TIP	DOT
0.25 MEG.	RED	GREEN	YELLOW
2 MEG.	RED	BLACK	GREEN

CAPACITY COLOR CODE

CAPACITY	COLOR
.0005	RED
.000725	YELLOW
.001	ORANGE
.002	GREEN

MODEL K-90, K-92
Schematic
Voltage

KOLSTER RADIO, INC.



PEAK FREQUENCY
175 KC

Power Consumption 95 Watt

VOLUME CONTROL AT MAXIMUM. TONE CONTROL AT NATURAL POSITION.

TUBE	CGV	SGV	KV	PV	P.MA.
RF	-0.2	75	68	176	3
Osc.	0	-	62	73	5.5
1st.Det.	-5.6	72	68	175	.52
IF	-0.4	75	68	177	2.6
2nd.Det.	-15	-	76	145	.65
AVC	-0.5	44	-58	67	0
Pwer.	-12	250	-	228	28
Rect.	-	-	-	-	47

CAPACITY COLOR CODE

CAPACITY	COLOR
.0005	RED
.000725	YELLOW
.001	ORANGE
.002	GREEN

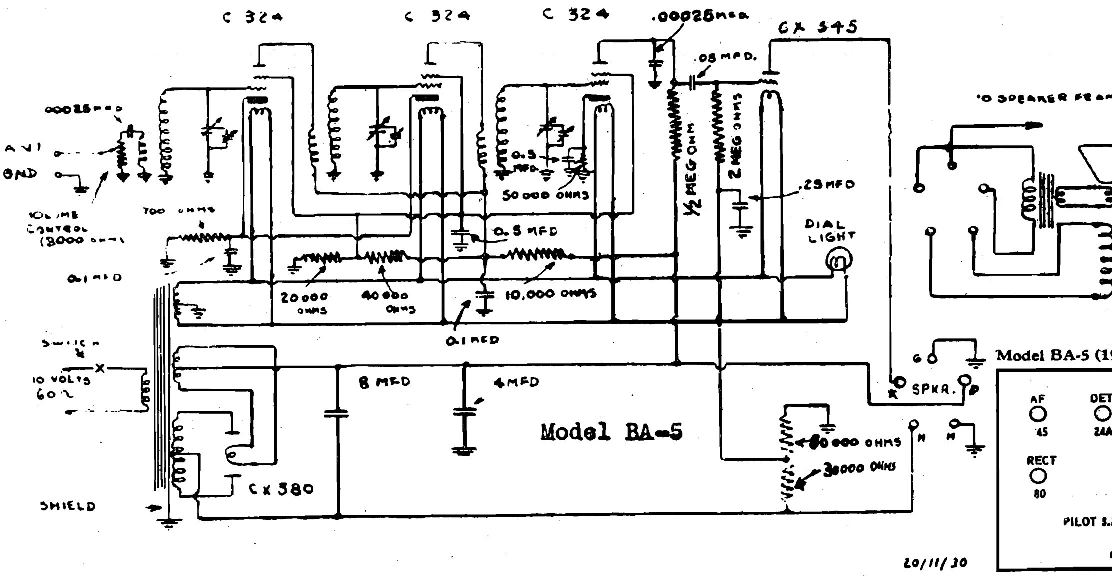
RESISTOR COLOR CODE

VALUE	BODY	TIP	DOT
600	BLUE	BLACK	BROWN
8,000	GRAY	BLACK	RED
10,000	BROWN	BLACK	ORANGE
12,000	BROWN	RED	ORANGE
25,000	RED	GREEN	ORANGE
50,000	GREEN	BLACK	ORANGE
100,000	BROWN	BLACK	YELLOW

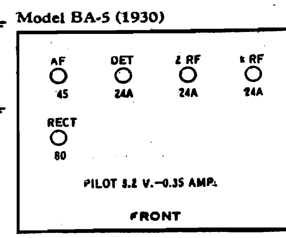
VALUE	BODY	TIP	DOT
0.25 MEG.	RED	GREEN	YELLOW
1 MEG.	BROWN	BLACK	GREEN
5000	GREEN	BLACK	RED

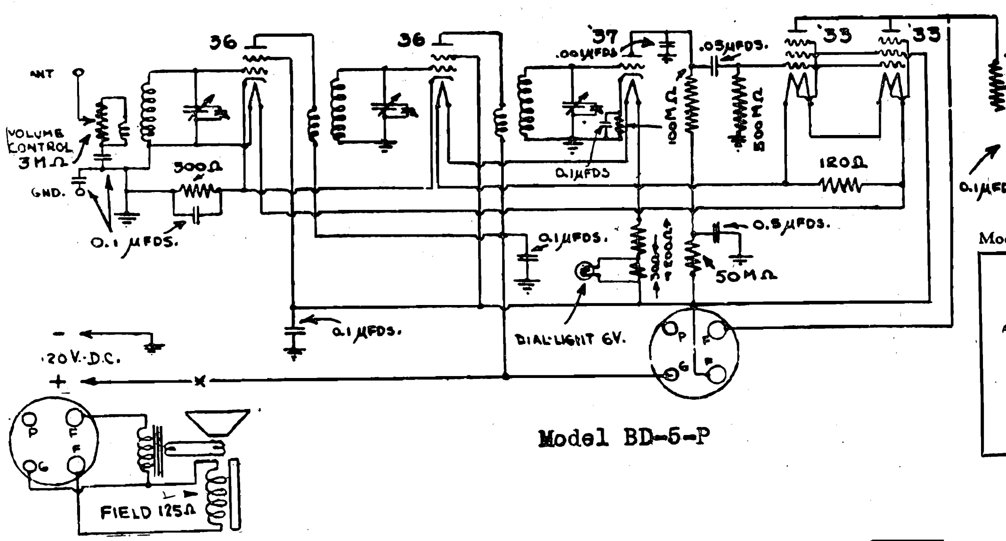
MODEL BA-5
MODEL BD-5-P
MODEL BD-6

LANG RADIO CO.

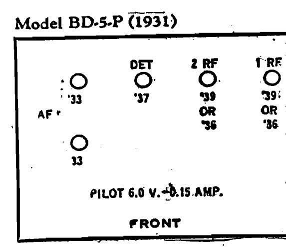


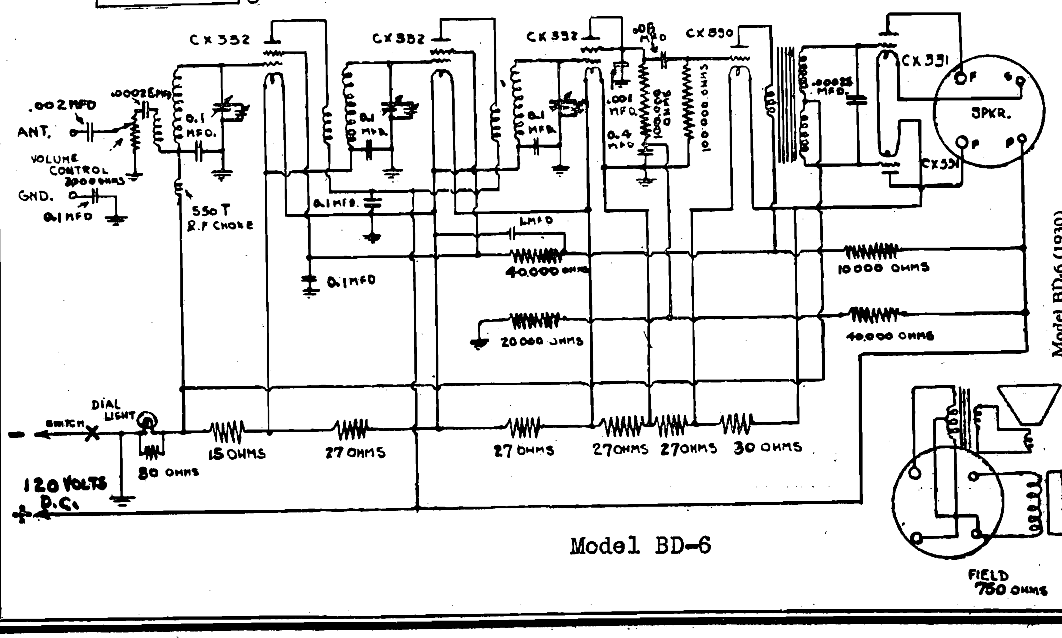
Model BA-5



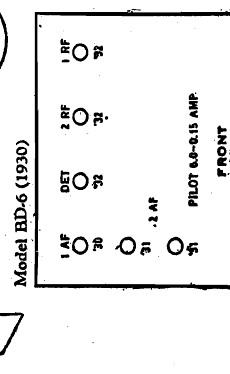


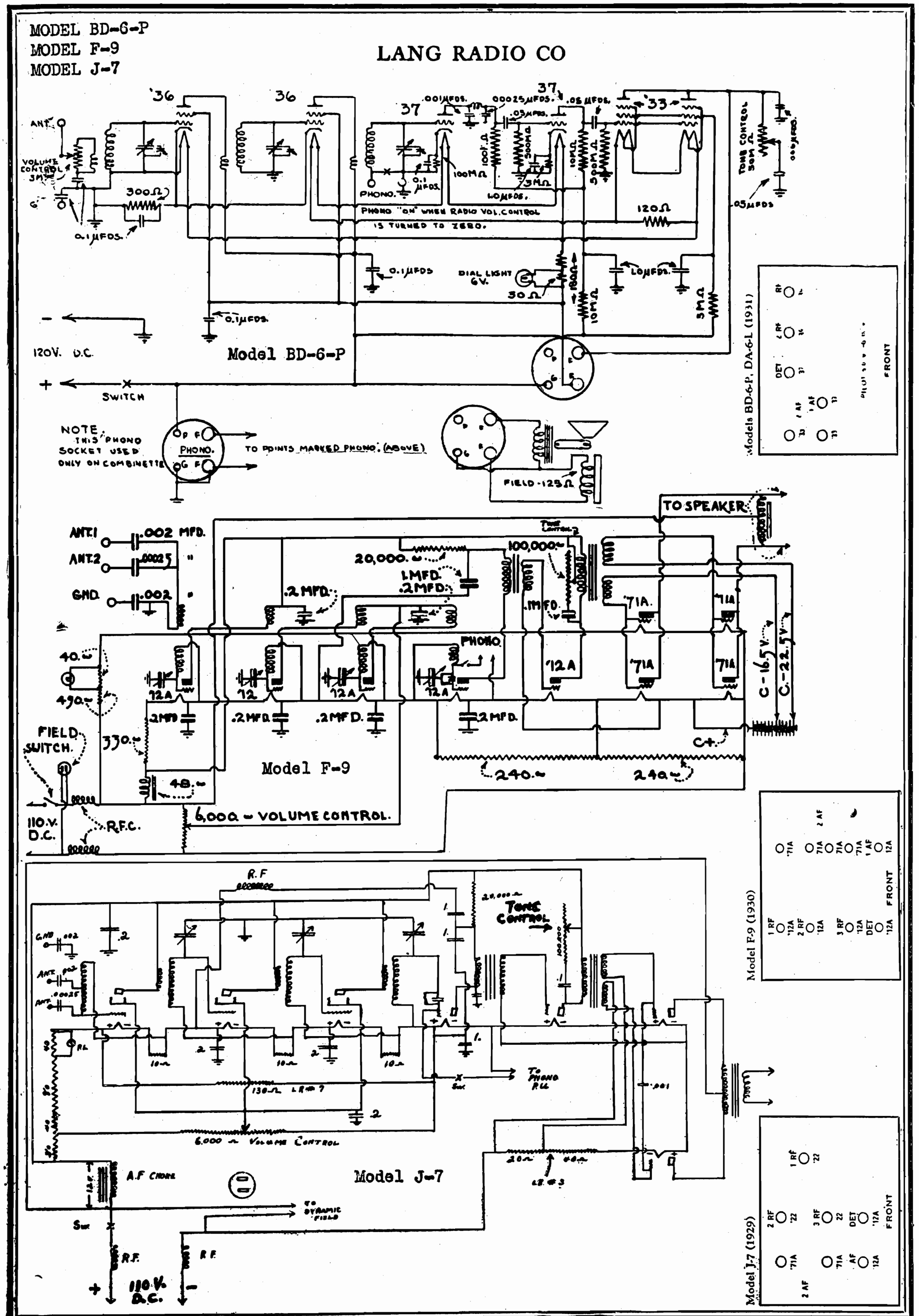
Model BD-5-P





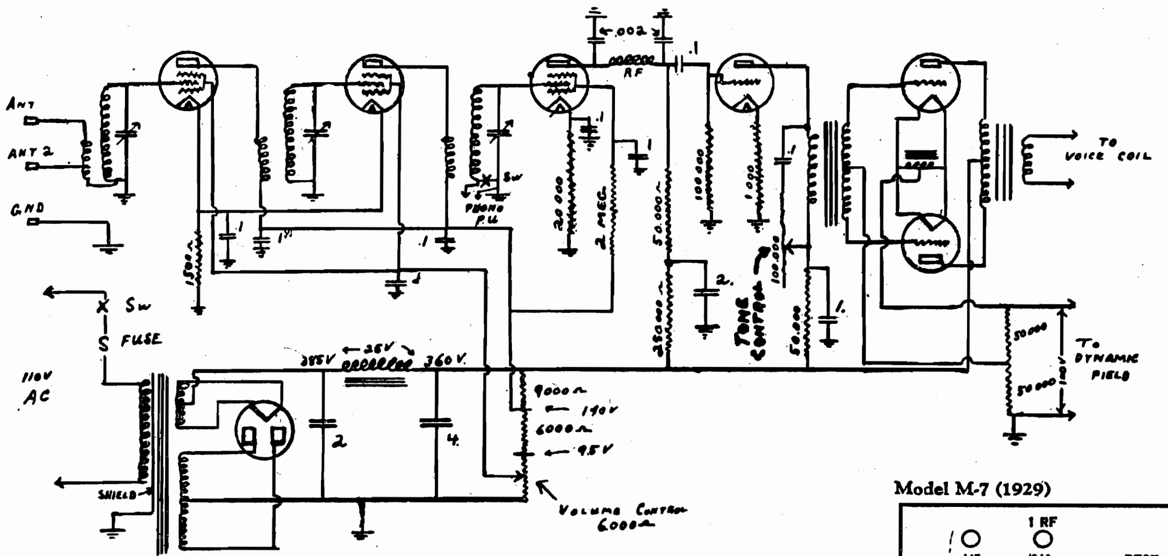
Model BD-6




MODEL BD-6-P
MODEL F-9
MODEL J-7
LANG RADIO CO
Model BD-6-P
120V. D.C.
SWITCH
NOTE. THIS PHONO SOCKET USED ONLY ON COMBINETTE
TO POINTS MARKED PHONO (ABOVE)
PHONO "ON" WHEN RADIO VOL. CONTROL IS TURNED TO ZERO.
DIAL LIGHT 6V.
FIELD-125Ω
TONE CONTROL
Models BD-6-P, DA-6-L (1931)
FRONT
Model F-9
TO SPEAKER
6,000 ~ VOLUME CONTROL.
FIELD SWITCH.
110.V. D.C.
R.F.C.
Model F-9 (1930)
Model J-7
R.F
TONE CONTROL
6,000 ~ VOLUME CONTROL
A.F CHOKE
TO DYNAMIC FIELD
110.V. D.C.
Model J-7 (1929)

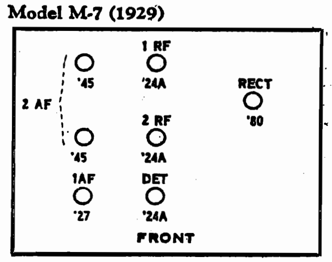
MODEL M-7
MODEL R-8

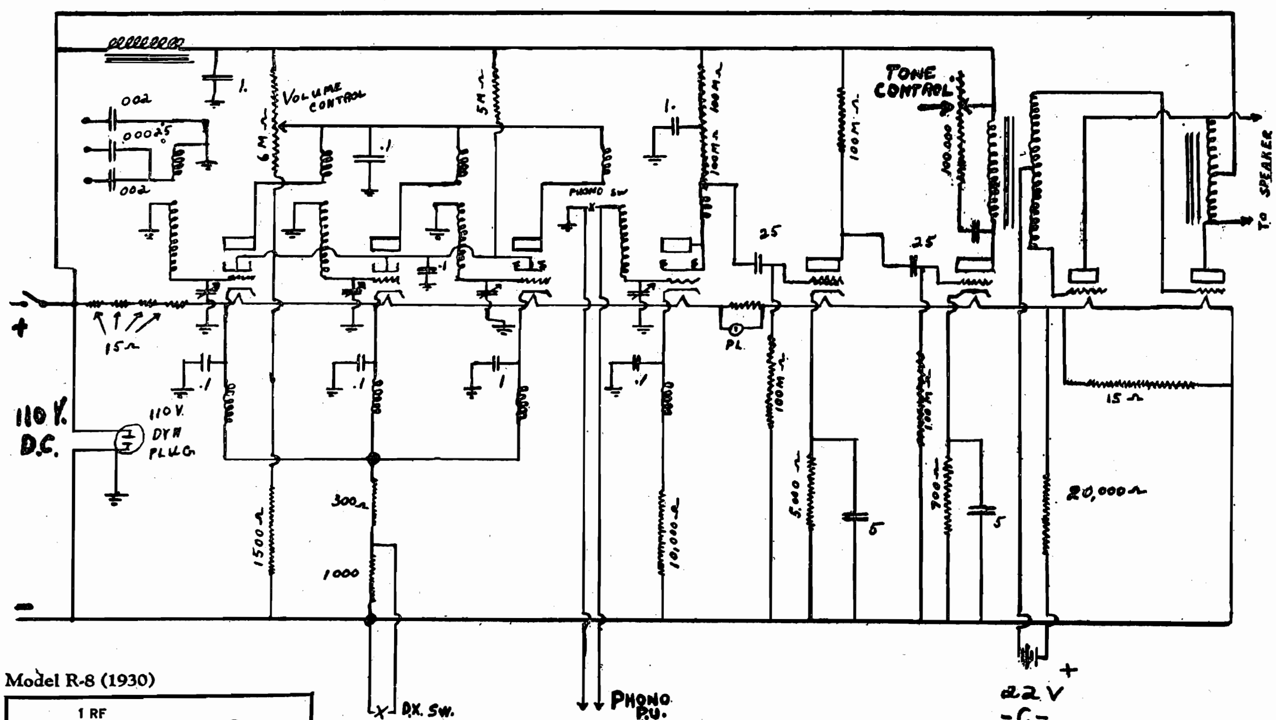
LANG RADIO CO.



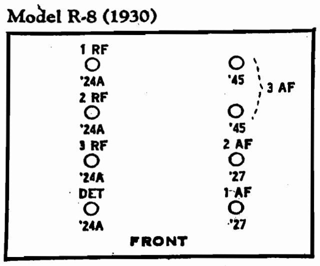
Model M-7

Model M-7 (1929)





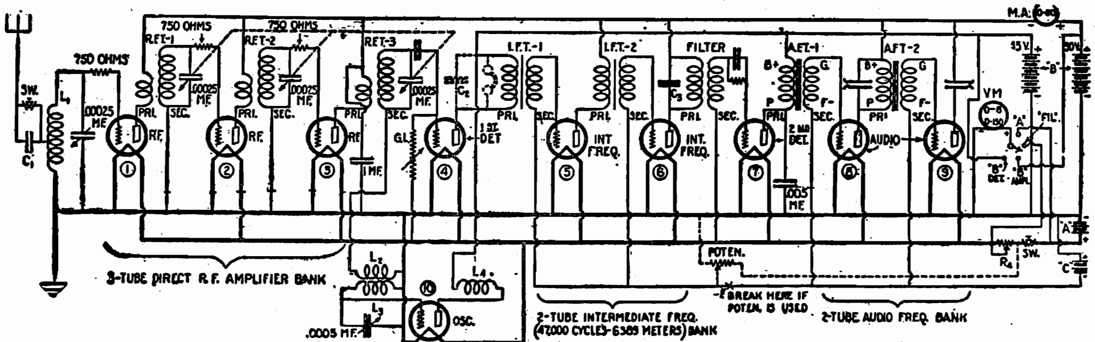
Model R-8 (1930)



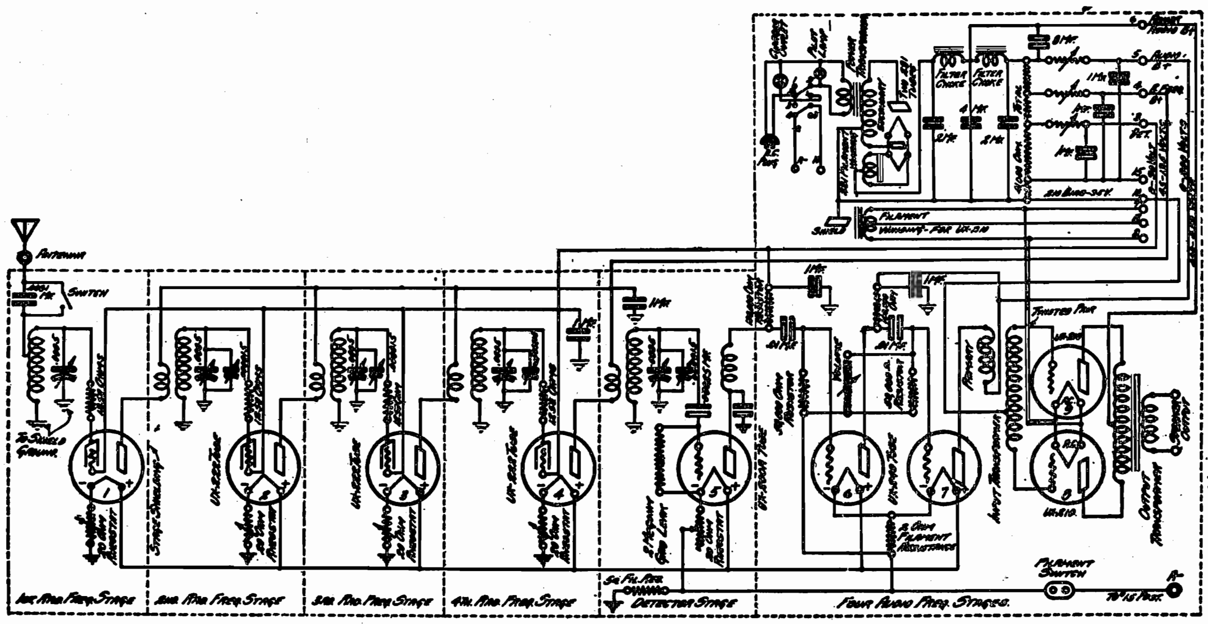
Model R-8

MODEL C-10
MODEL Silver-Ghost
MODEL C

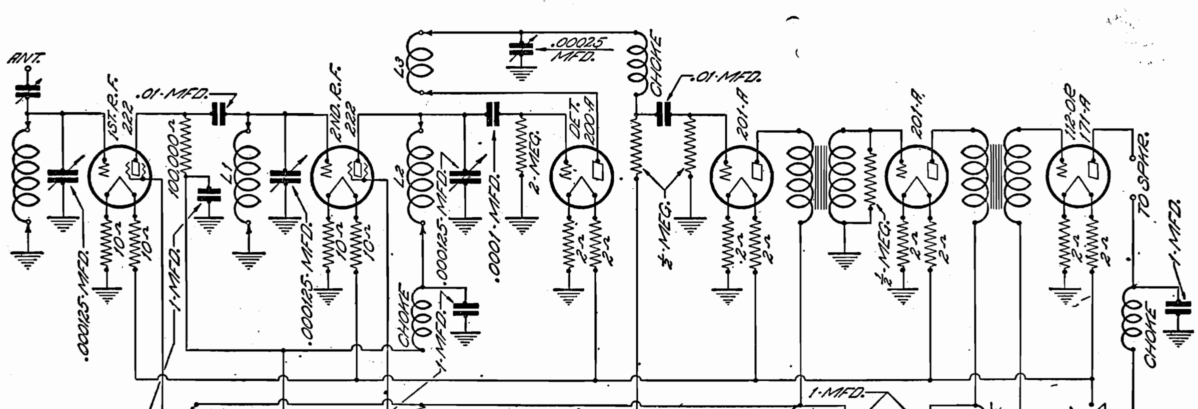
C. R. LEUTZ, INC.



The Experimenters' Information Service Navy Model C-10 super-heterodyne designed for a wave-length range from 600 meters down to 50 meters, the band being covered through the expedient of interchangeable coils.



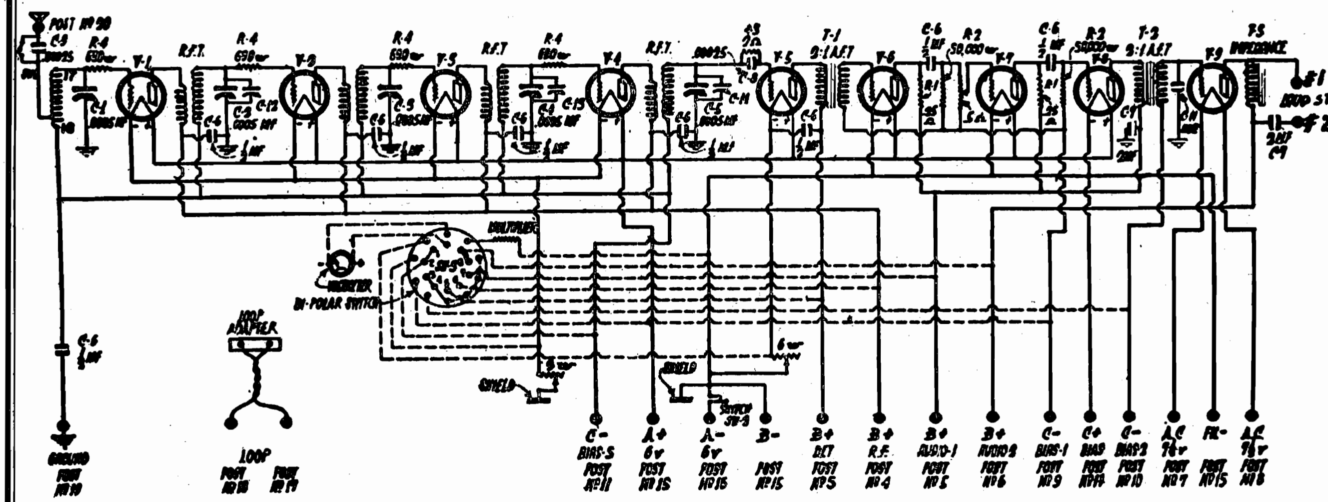
Circuit Diagram of New "Silver Ghost" Receiver



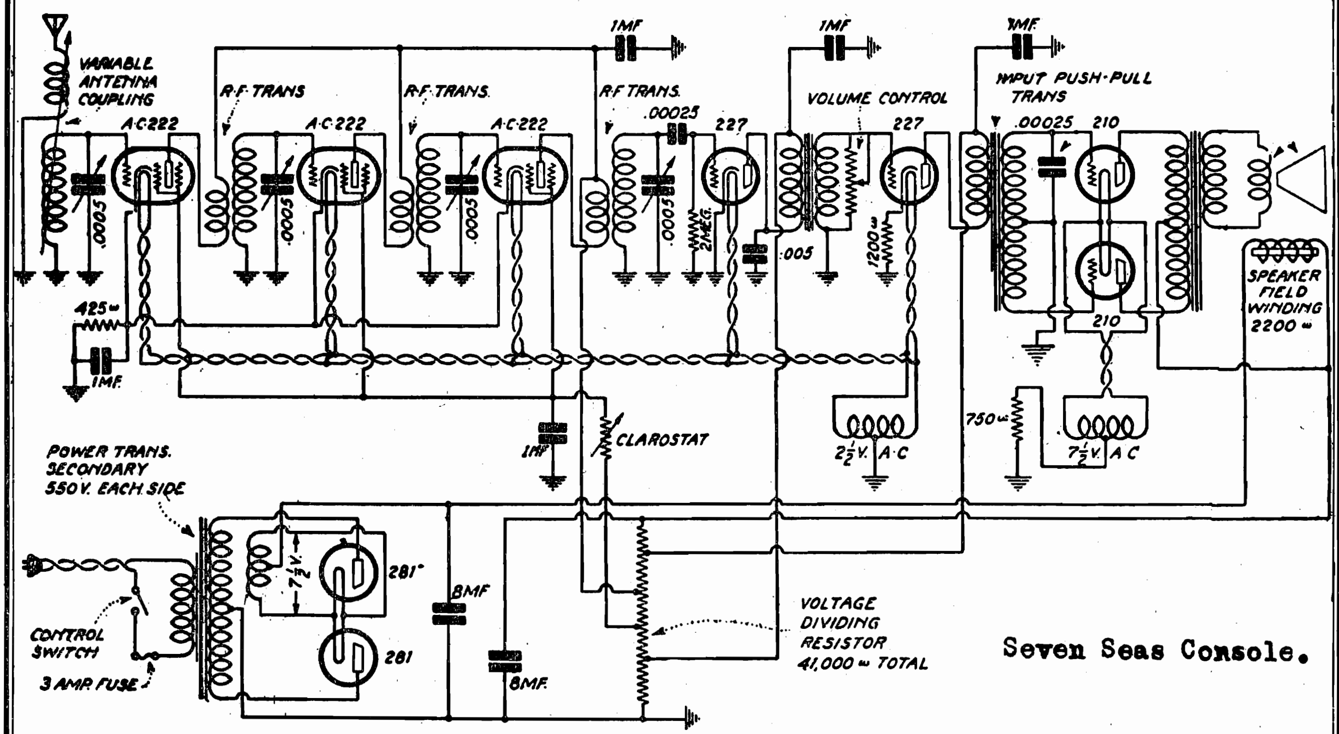
273

MODEL Trans-Oceanic
MODEL Seven Seas

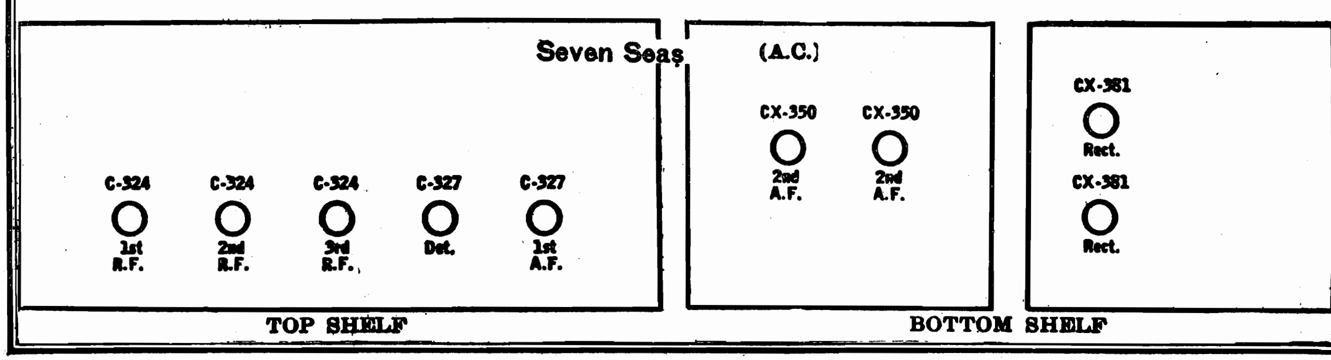
C. R. LEUTZ, INC.



Universal Trans-Oceanic Receiver.

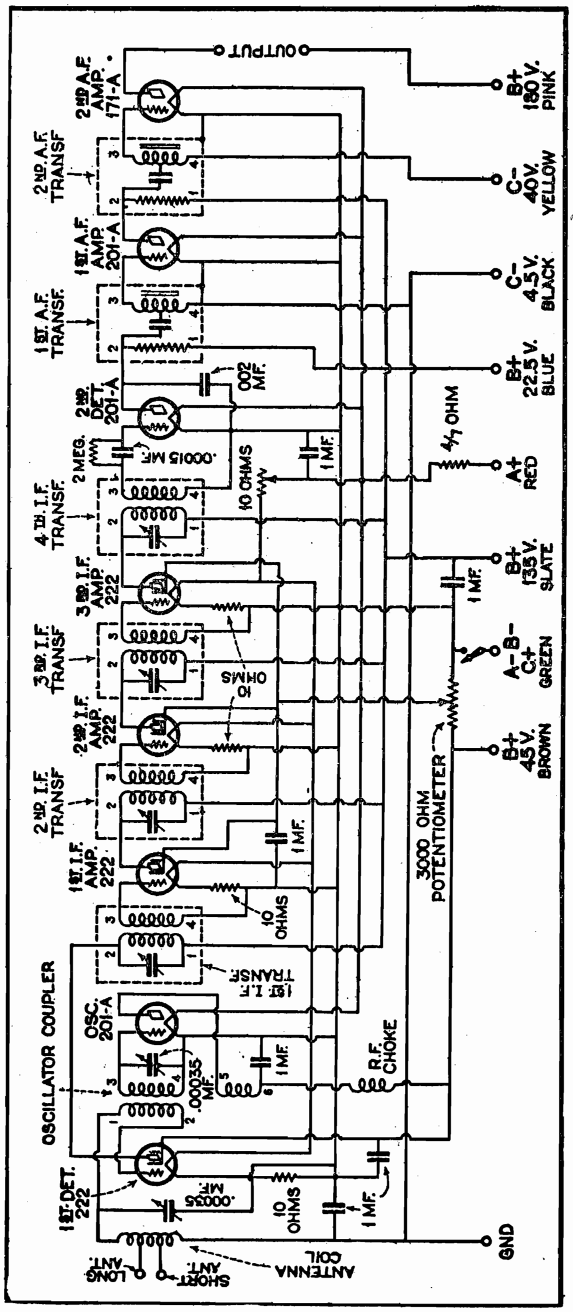


Seven Seas Console.

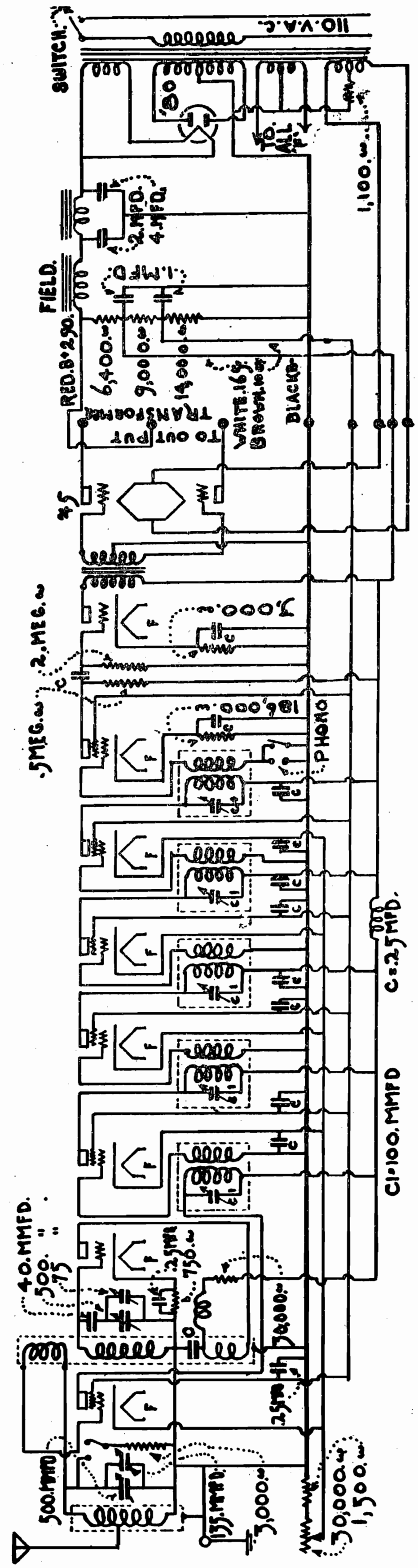


LINCOLN RADIO CORP.

MODEL 8-80
MODEL 31



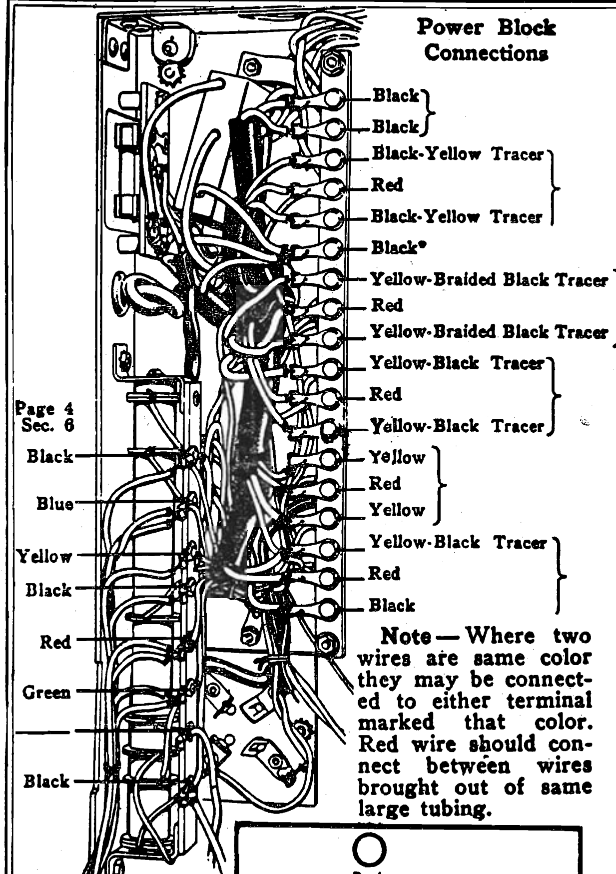
Model 8-80



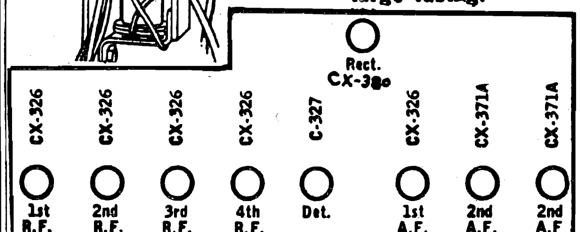
Model 31

McMILLAN RADIO CO.

MODEL "8"
Two Types



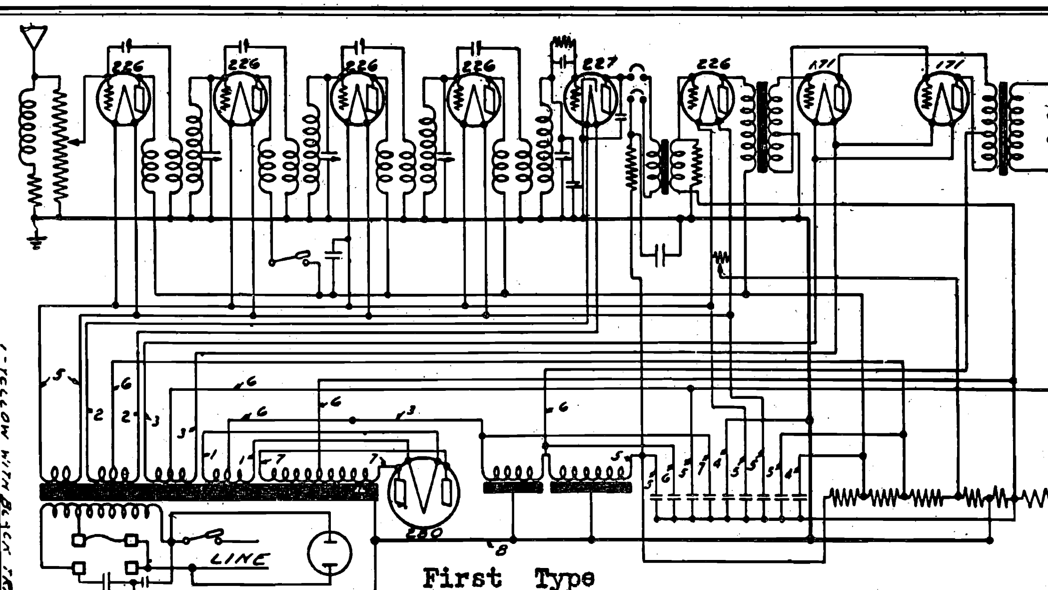
Note—Where two wires are same color they may be connected to either terminal marked that color. Red wire should connect between wires brought out of same large tubing.



Line Voltage 116—2nd A. F. Stage—2 Tubes Push Pull

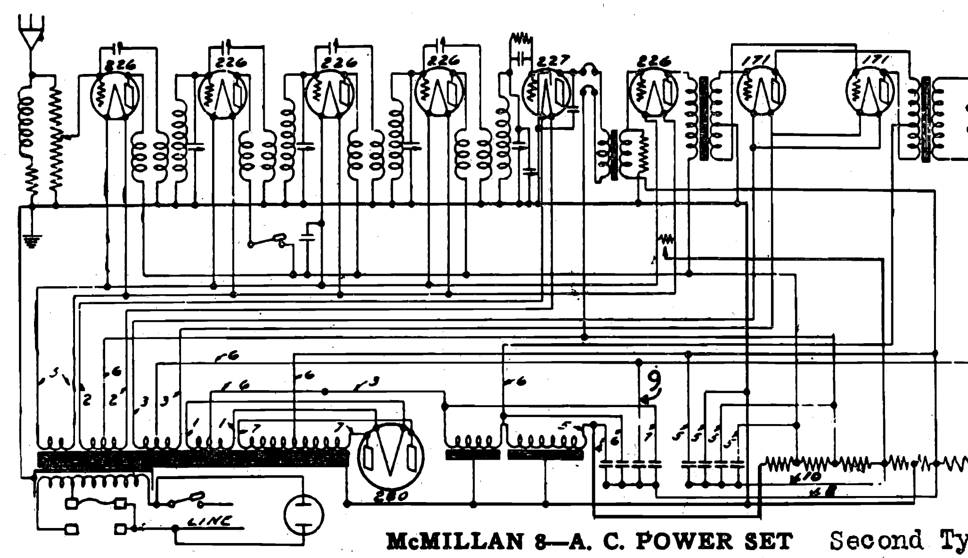
TUBE NO IN ORDER	TYPE OF TUBE	POSITION OF TUBE 1ST R F DET ETC	TUBE OUT A VOLTS	TUBE OUT B VOLTS	TUBE IN TESTER A VOLTS	TUBE IN TESTER B VOLTS	TUBE IN TESTER C VOLTS	CATHODE VOLTS	NORMAL PLATE M.A.	PLATE M.A. GRID TEST	PLATE M.A CHANGE
1	226	1st.R.F.	1.55	117	1.5	110	5.5	-	6.5	10.5	4.0
2	226	2nd.R.F.	1.55	117	1.5	110	5.5	-	6.5	10.5	4.0
3	226	3rd.R.F.	1.55	117	1.5	110	5.5	-	6.5	10.5	4.0
4	226	4th.R.F.	1.55	117	1.5	110	5.5	-	6.5	10.5	4.0
5	227	Detector	2.40	125	2.2	25	45	-	1.4	1.4	0.0
6	226	1st.A.F.	1.55	107	1.5	100	7.5	-	3.5	7.0	3.5
7	171A	2nd.A.F.	5.30	170	5.0	158	33	-	18.0	21.0	3.0
8	171A	2nd.A.F.	5.30	170	5.0	158	33	-	18.0	21.0	3.0

1 - YELLOW WITH BLACK TRACER
2 - BLACK WITH YELLOW TRACER
3 - BLACK & YELLOW
4 - BLUE
5 - BLACK
6 - RED
7 - YELLOW
8 - GREEN
9 - SLATE
10 - BROWN



McMILLAN 8—A. C. POWER SET

Use this circuit diagram for all receivers equipped with a sealed power transformer block, or condenser block not having any brown or slate colored leads.

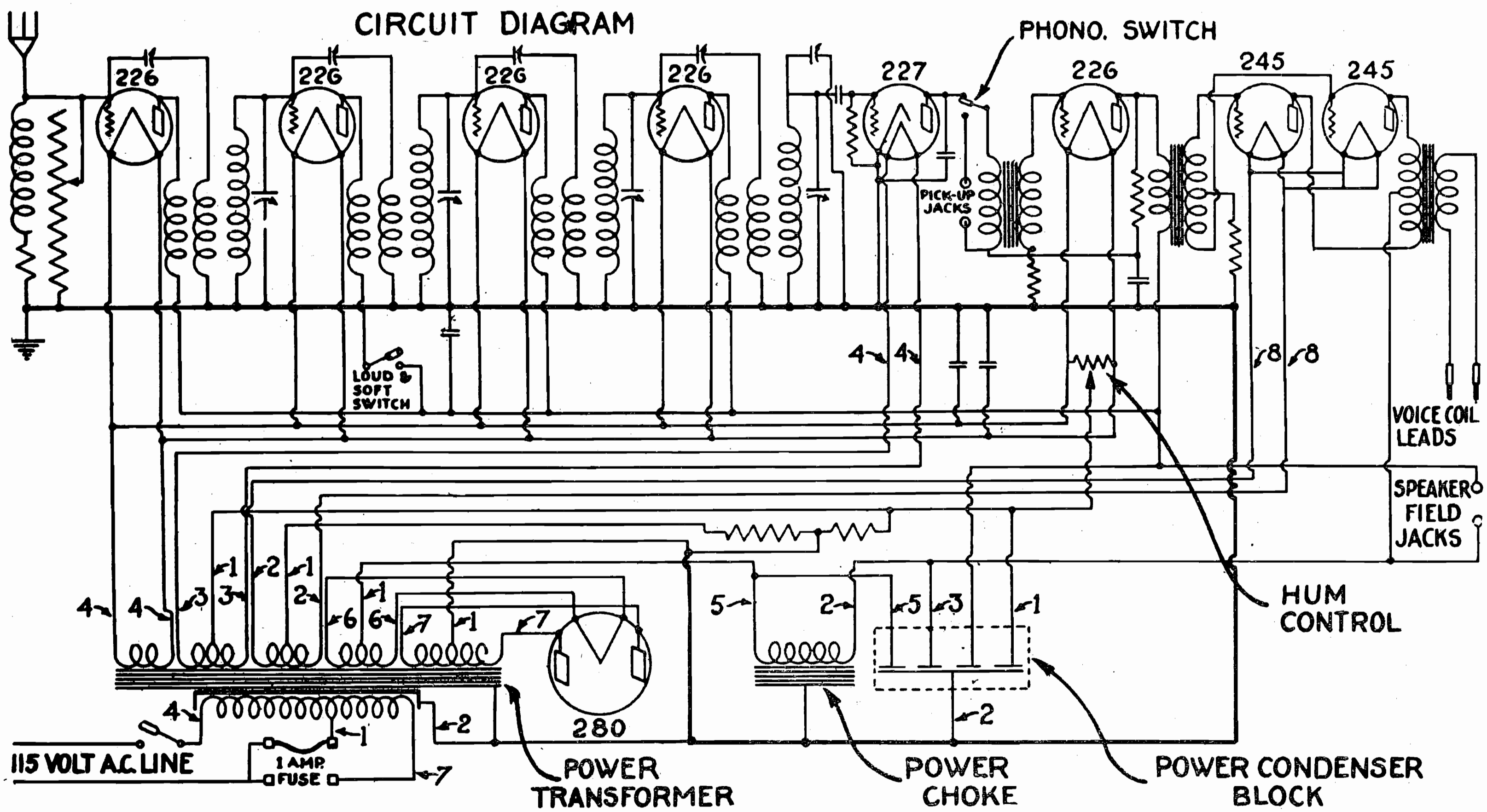


McMILLAN 8—A. C. POWER SET Second Type

Note—Use this circuit diagram for receiver equipped with power blocks having removable covers or condenser blocks having one brown and one slate colored lead

MODEL Series 900

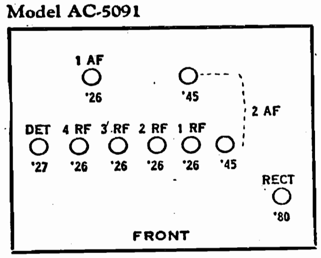
McMILLAN RADIO CO.



Line Voltage 120—Set on 120 Volt Tap—Volume Control Position Max

Note: "C" Bias Voltage Reading on Audio tubes is low due to the current draw of the set tester and high resistances in the set.

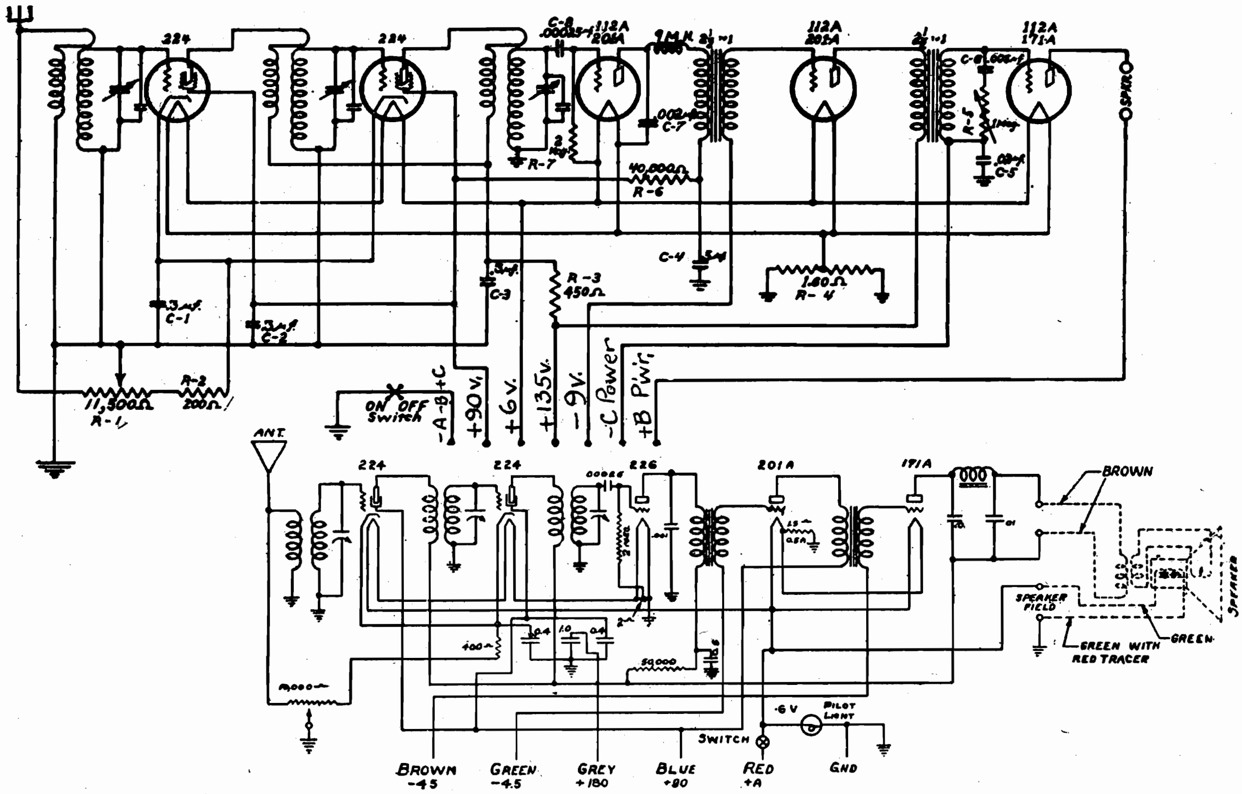
Model AC-5091



Tube No. in Order (1)	Type of Tube (2)	Position of Tube 1st R.F. Det., Etc. (3)	Readings, Plug in Socket of Set: Tube Out: A Volts (4)	Tube Out: B Volts (5)	Tube in Tester: A Volts (6)	B Volts (7)	C Volts (Control Grid) (8)	Cathode-Heater Volts (9)	Normal Plate M.A. (10)	Plate M.A. Grid Test (11)	Plate Change M.A. (12)	Screen Grid Volts (13)
1	226	1st RF	1.5	140	1.4	132	10	-	5	9	4	-
2	226	2nd RF	1.5	140	1.4	132	10	-	5	9	4	-
3	226	3rd RF	1.5	140	1.4	132	10	-	5	9	4	-
4	226	4th RF	1.5	140	1.4	132	10	-	5	9	4	-
5	227	Det.	2.6	112	2.3	30	0	10	2	2	0	-
6	226	1st AF	1.5	127	1.4	117	6.5	-	4.5	6.5	3	-
7	245	PP	2.6	260	2.4	245	11.5	-	25	29	4.5	-
8	245	PP	2.6	260	2.4	245	11.5	-	25	29	4.5	-
9	280	Rect.	5.8		4.9				90			
10												

MONTGOMERY-WARD & CO.

MODELS 62-055,49,1522,1922
MODELS 1522,1562
Voltage, Schematic
Chassis,Bottom View



General Description

Not many of these chassis were put out. Because of the high "A" battery consumption, certain changes were suggested that could be made to reduce "A" battery consumption.

Diagram No. 1 gives the original circuit and it will be seen that the tube circuit consists of—
2—224's, 1—226; 1—201A, and 1—171A.

Diagram No. 2 shows the changes to be made so the set will consume less "A" battery current. The tubes are now:
2—NY 64's, or 236's; 2—201A; and 1—112A

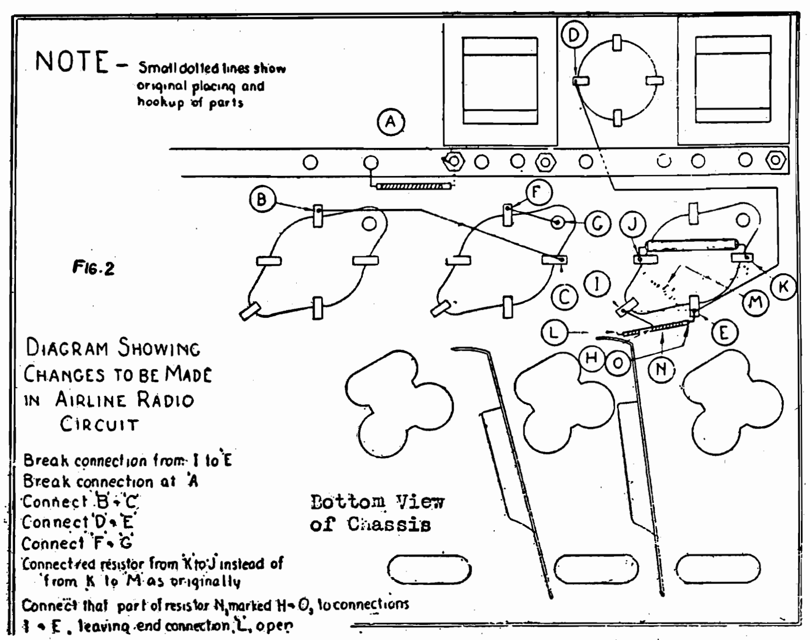
The NY 64 tubes are screen-grid battery operated tubes which were designed for use in automobile radio sets. Their current consumption is small, their amplification factor quite high and they are rugged and very long lived.

The "A" and "B" batteries are not changed to convert the receiver for lower "A" battery consumption.

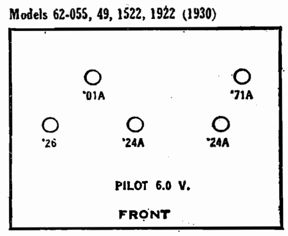
Make the changes shown on the diagram. Connect the storage battery to black (neg.) and red (pos.) leads. Insert two NY 64 tubes in sockets marked 224. Place a 201A in socket marked 226, and one 201A in socket marked 201A. Use a 112A in socket marked 171A. Turn on filament switch and see if tubes light—if so connect "B" batteries as tagged, except "B + 180" lead—connect this to "B + 135" terminal.

Connect two 4½ Volt "C" batteries in series. The "C — 4½" Volt lead goes to the connection between the 4½ Volt "C" batteries. The "C — 45" goes to the 4½ Volt part of the second battery.

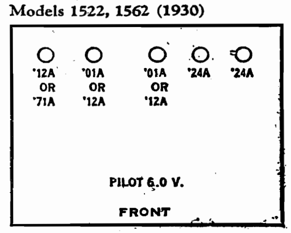
It is recommended that these changes not be made on sets where the customer is entirely satisfied with the operation and the life of the "A" battery. The operation with the 224 tubes is very highly satisfactory. The sensitivity is extremely high, and the tone quality very good.



Models 62-055, 49, 1522, 1922 (1930)

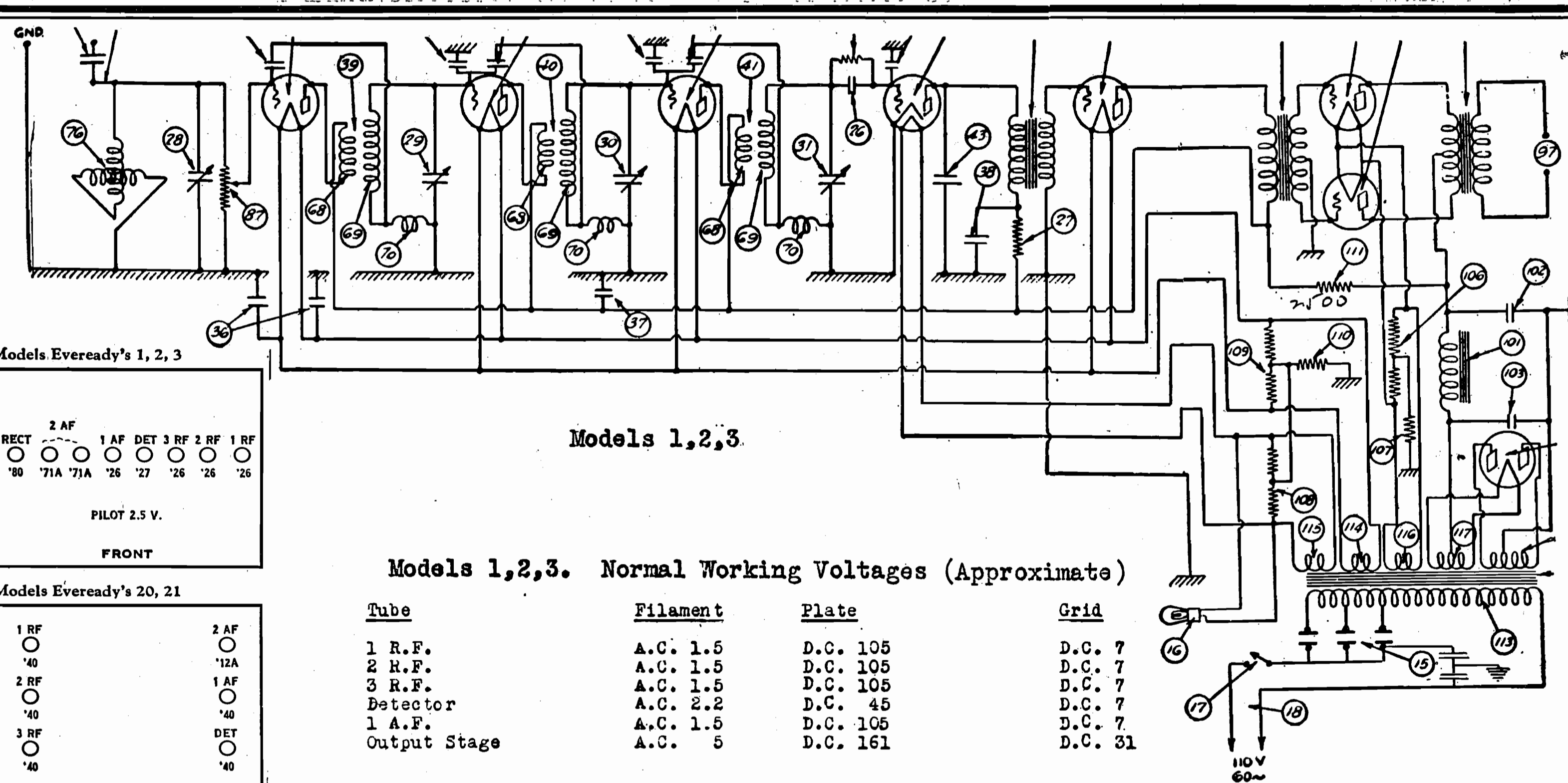


Models 1522, 1562 (1930)



NATIONAL CARBON CO.

MODEL 1,2,3
MODEL 20,21



Models Eveready's 1, 2, 3

RECT	2 AF		1 AF	DET	3 RF	2 RF	1 RF
'80	'71A	'71A	'26	'27	'26	'26	'26

PILOT 2.5 V.

FRONT

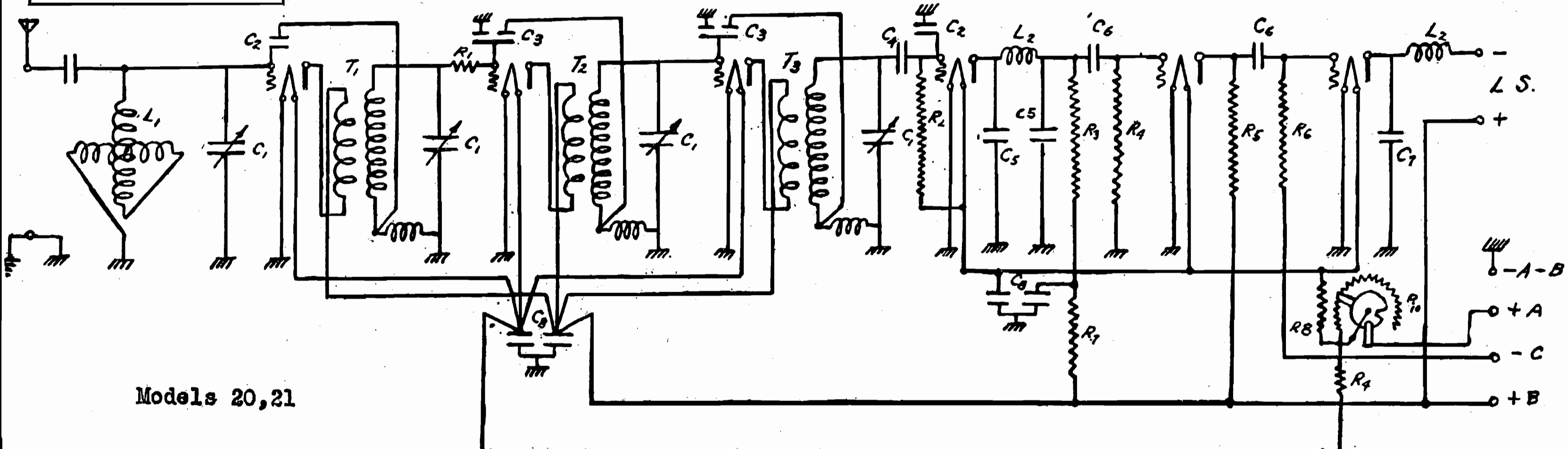
Models Eveready's 20, 21

1 RF '40	2 AF '12A
2 RF '40	1 AF '40
3 RF '40	DET '40

FRONT

Models 1,2,3. Normal Working Voltages (Approximate)

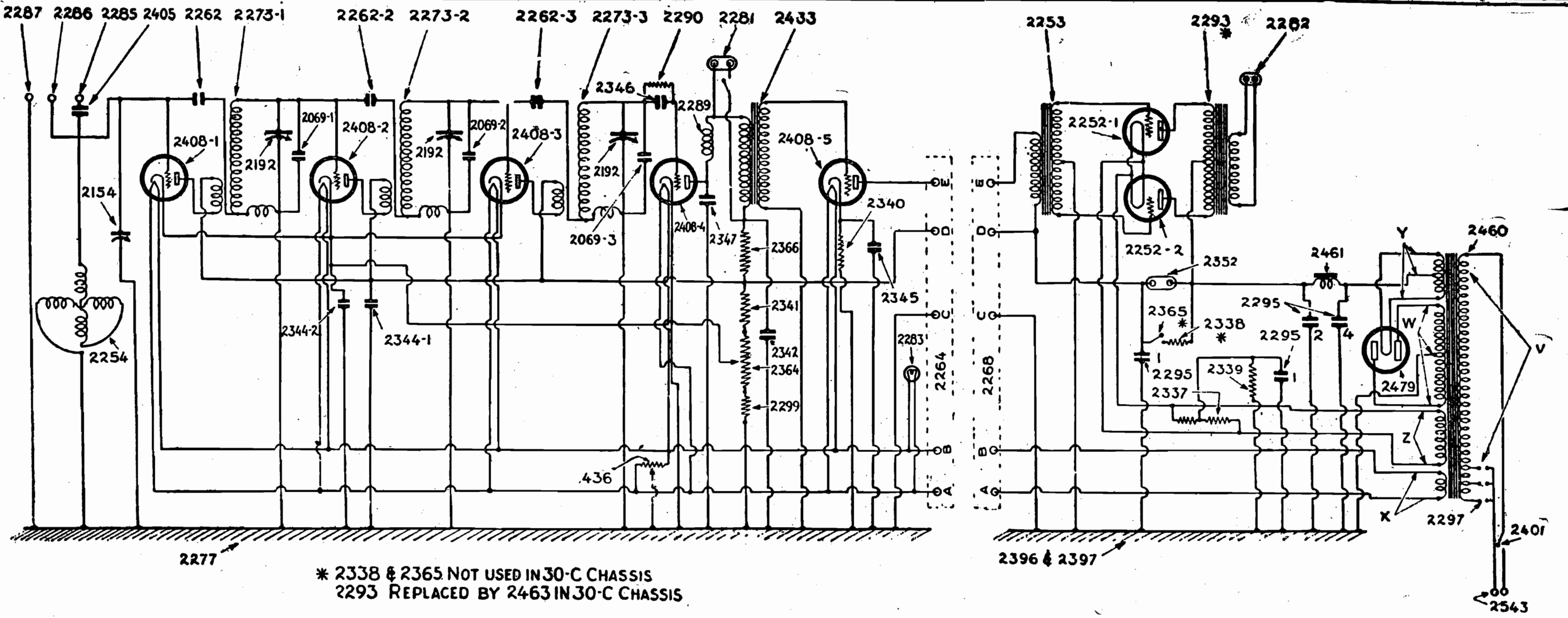
Tube	Filament	Plate	Grid
1 R.F.	A.C. 1.5	D.C. 105	D.C. 7
2 R.F.	A.C. 1.5	D.C. 105	D.C. 7
3 R.F.	A.C. 1.5	D.C. 105	D.C. 7
Detector	A.C. 2.2	D.C. 45	D.C. 7
1 A.F.	A.C. 1.5	D.C. 105	D.C. 7
Output Stage	A.C. 5	D.C. 161	D.C. 31



Models 20,21

MODEL 31, 32, 33, 34
Eveready

NATIONAL CARBON CO.



* 2338 & 2365 NOT USED IN 30-C CHASSIS
2293 REPLACED BY 2463 IN 30-C CHASSIS

* Not used in 30-C chassis.

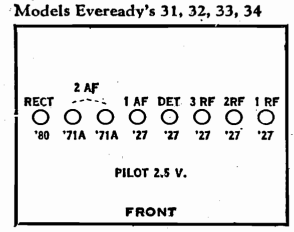
PART NO.	ELECTRICAL VALUE		PART NO.	ELECTRICAL VALUE	
2290	2	megohms	2344-1	.5	mfd
2366	17500	ohms	2344-2	.5	mfd
2299	175	ohms	2405	.0001	mfd
2340	1750	ohms	2346	.0001	mfd
2341	3500	ohms	2347	.00025	mfd
2436	10	ohms	2343	2	mfd
2364	600	ohms	2345	1	mfd
2339	1000	ohms			
2388	2500	ohms*			

NORMAL WORKING VOLTAGES (APPROXIMATE)

Tube	Filament	Plate	Grid
1 R.F.	A.C. 2.45	D.C. 100	D.C. 6
2 R.F.	A.C. 2.45	D.C. 100	D.C. 6
3 R.F.	A.C. 2.45	D.C. 100	D.C. 6
Detector	A.C. 2.45	D.C. 50	-
1 A.F.	A.C. 2.45	D.C. 100	D.C. 4.5
Output stage	A.C. 5.1	D.C. 175	D.C. 38
Rectifier Receiver	A.C. 5.1		

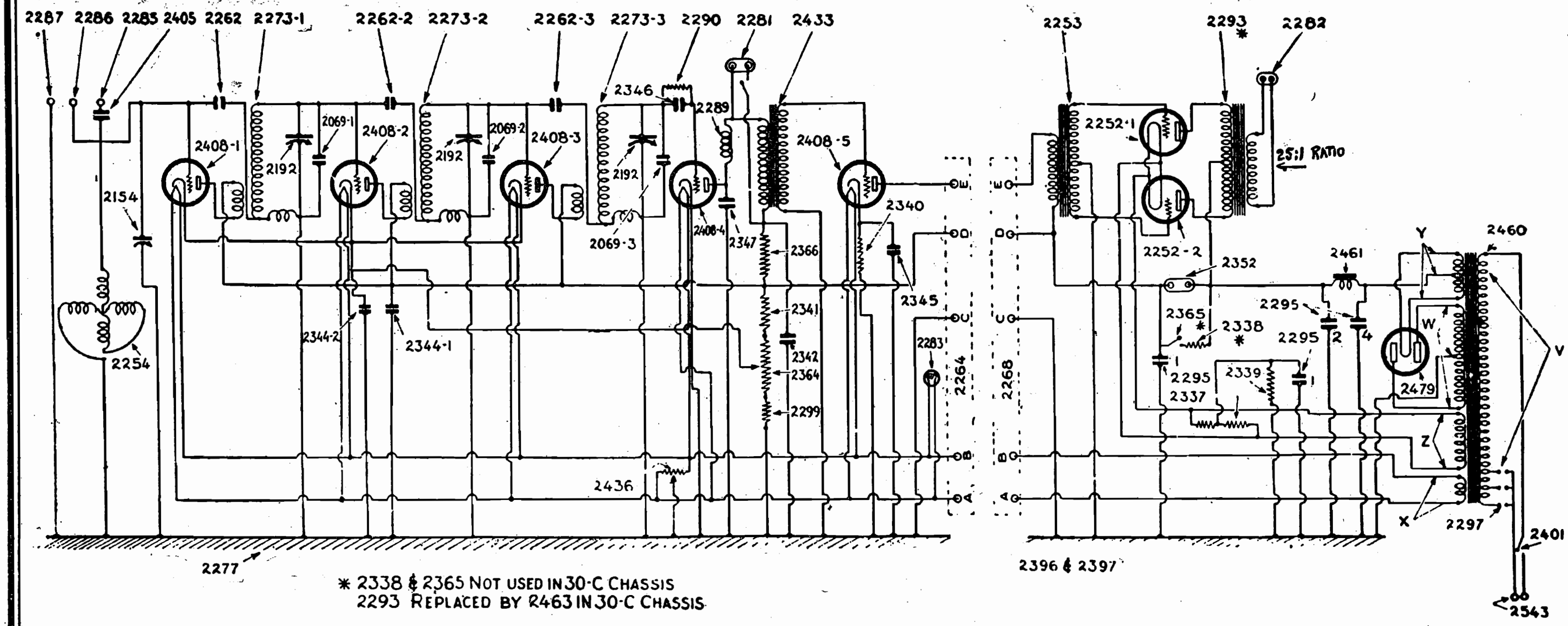
(Line Voltage 119. Set on 115 Volt Tap. Volume Control on Full.)

Models Eveready's 31, 32, 33, 34



NATIONAL CARBON CO.

MODEL 42,43,44
Eveready



* 2338 & 2365 NOT USED IN 30-C CHASSIS
2293 REPLACED BY R463 IN 30-C CHASSIS

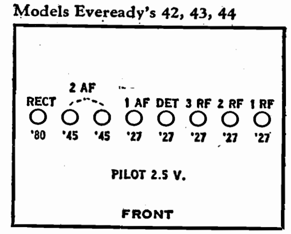
2344-1	.5	mfd	2290	2	megohms
2344-2	.5	mfd	2366	17500	ohms
2405	.0001	mfd	2299	175	ohms
2346	.0001	mfd	2340	1750	ohms
2347	.00025	mfd	2341	3500	ohms
2343	2	mfd	2436	10	ohms
2345	1	mfd	2364	600	ohms

2707 replaces 2339 900 ohms

NORMAL WORKING VOLTAGES (APPROXIMATE)

Tube	Filament	Plate	Grid
1 R. F.	A. C. 2.45	D. C. 100	D. C. 6
2 R. F.	A. C. 2.45	D. C. 100	D. C. 6
3 R. F.	A. C. 2.45	D. C. 100	D. C. 6
Detector	A. C. 2.45	D. C. 50	-
1 A. F.	A. C. 2.45	D. C. 100	D. C. 4.5
Output Stage	A. C. 2.5	D. C. 250	D. C. 50

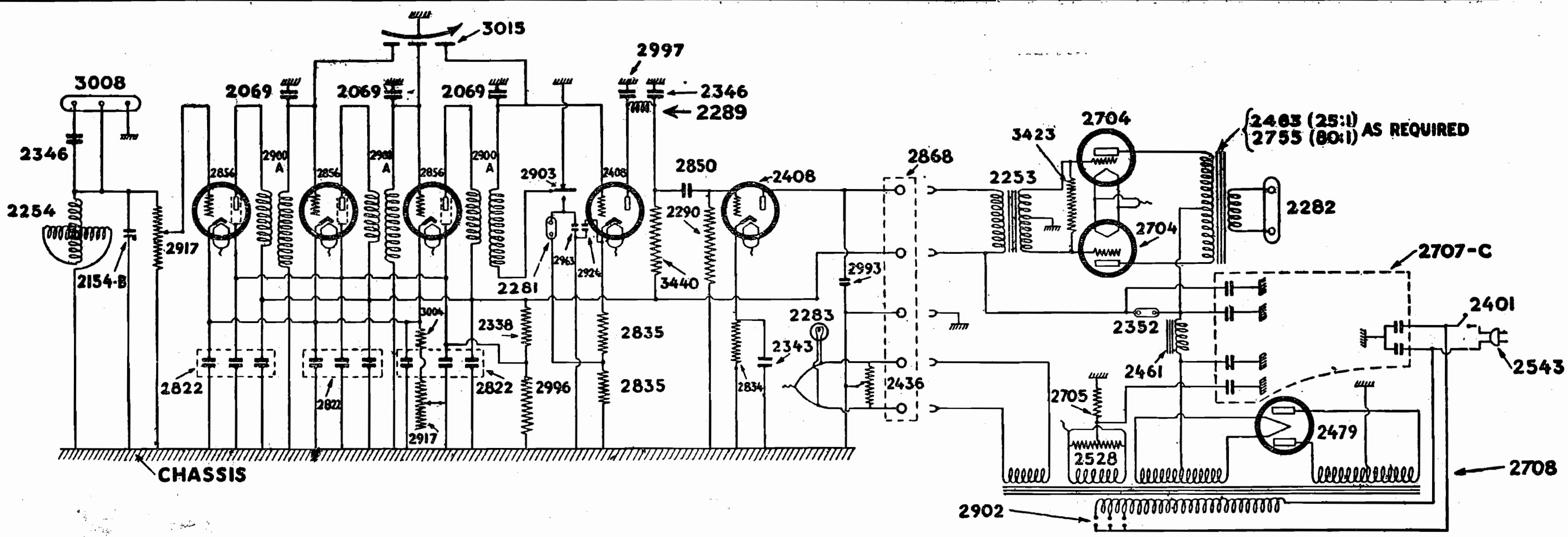
Models Eveready's 42, 43, 44



Series 40 Receivers employ a 5000 ohm field coil.

MODEL 52,53,54
Eveready

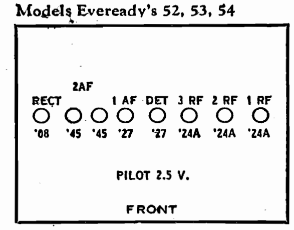
NATIONAL CARBON CO.



2290	2.	megohms	* 3 in one can			
2835	4000	ohms				
3440	125000	ohms				
3004	200	ohms	2346	.0001	mfd	*
2834	3000	ohms	2822	.5	mfd	*
2338	2500	ohms	2924	1	mfd	
2996	2250	ohms	2850	.01	mfd	
2917 *			2343	2.	mfd	
2528	50	ohms	2963	.002	mfd	
2705	900	ohms	2993	.004	mfd	
3423	100000	ohms	2997	.0005	mfd	

* Two sections
R-f section is 500,000 ohms
Screen voltage section is
10,000 ohms

Models Eveready's 52, 53, 54



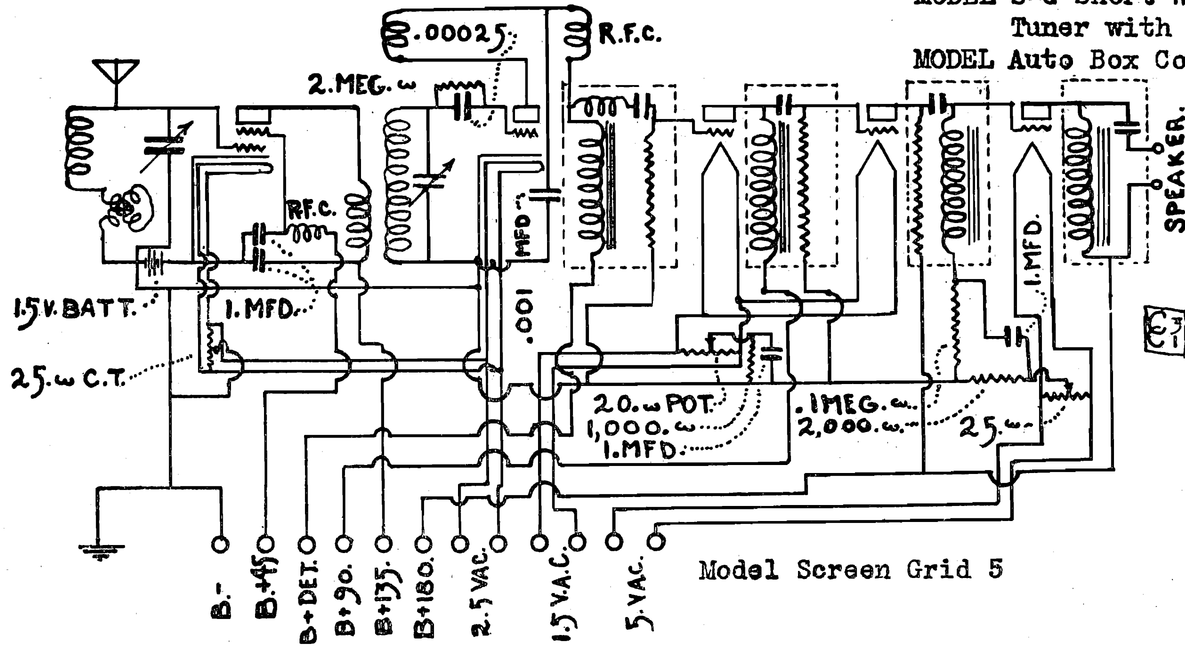
NORMAL WORKING VOLTAGES (APPROXIMATE)

Tube	Filament	Plate	Grid	Screen
1 R.F.	A.C. 2.3	D.C. 160	D.C. 2.2	D.C. 70
2 R.F.	A.C. 2.3	D.C. 160	D.C. 2.2	D.C. 70
3 R.F.	A.C. 2.3	D.C. 160	D.C. 2.2	D.C. 70
Detector	A.C. 2.3	D.C. 65	D.C. 5.8	
1 A.F.	A.C. 2.3	D.C. 150	D.C.11.7	
Output Stage	A.C. 2.4	D.C. 240	D.C. 46	
Rectifier	A.C. 4.8			

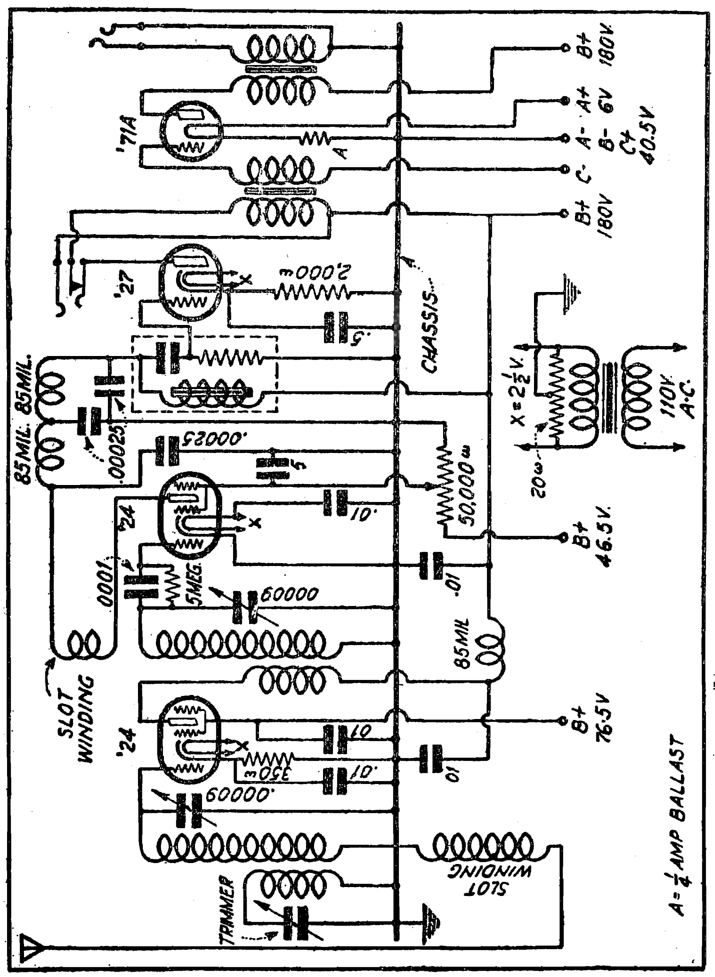
(Line Voltage 117. Set on 115 Volt Tap. Volume Control Position on Full.)

THE NATIONAL COMPANY

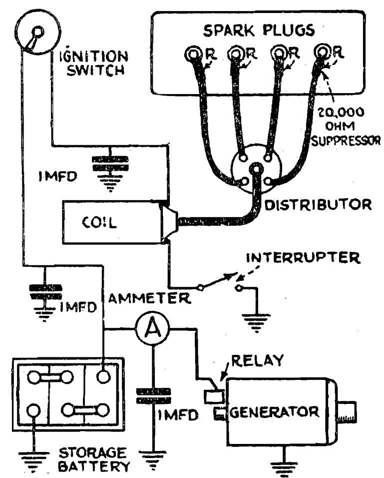
MODEL S-G 5
MODEL S-G
Short Wave Tuner
MODEL S-G Short Wave
Tuner with '71
MODEL Auto Box Conn.



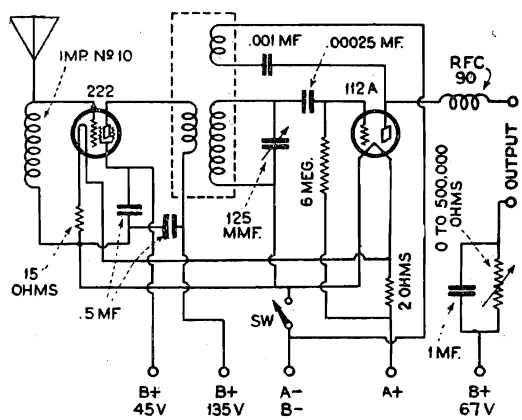
Model Screen Grid 5



Model Screen Grid Short Wave (71)



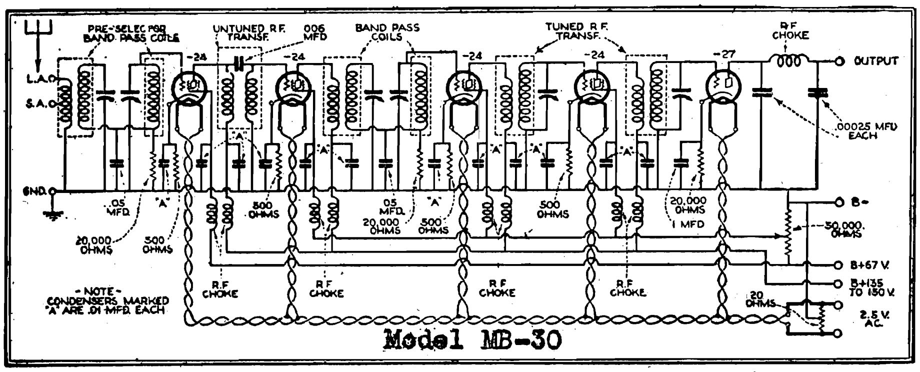
Model Auto Box Connections

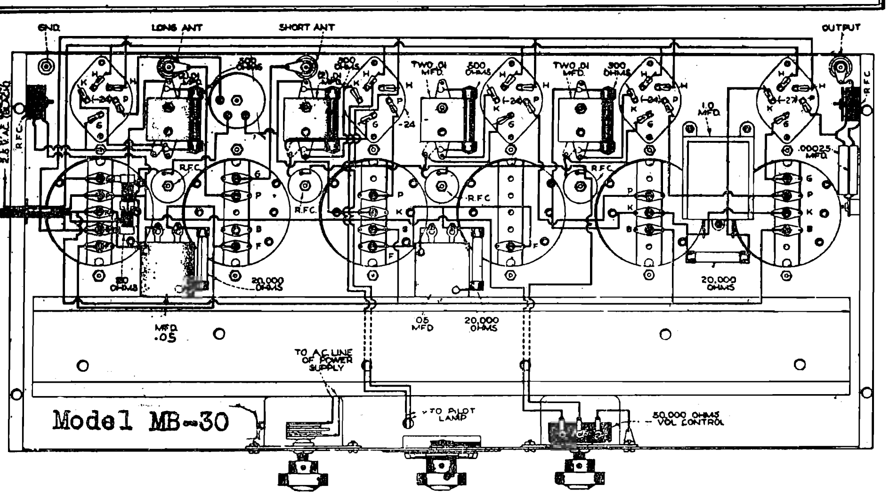


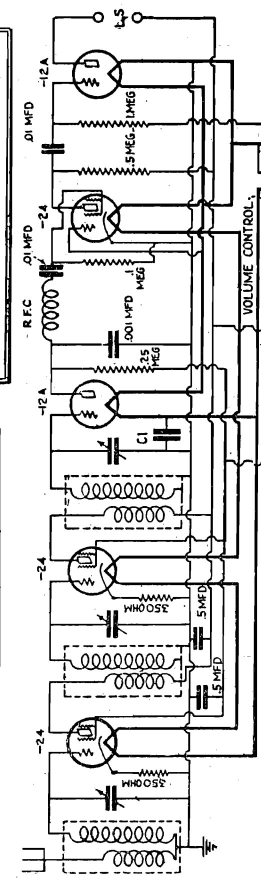
Model Screen Grid S.W. Tuner

MODEL MB-30
Schematic, Chassis
MODEL MB-29
MODELS Thrill Box AC, Short Wave
MODEL Auto Box

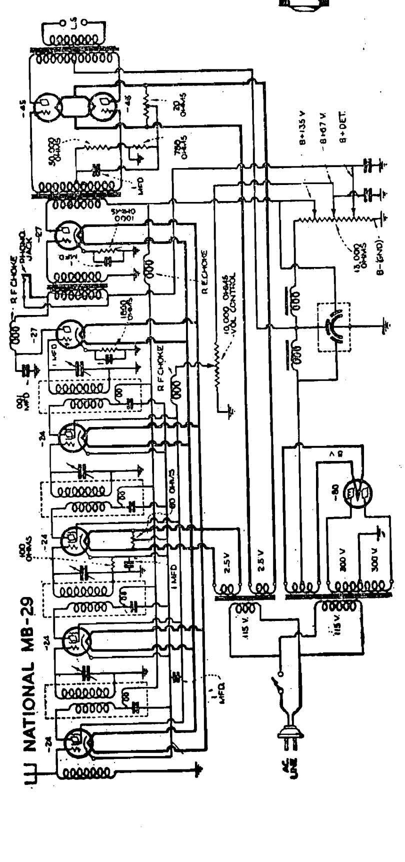
THE NATIONAL COMPANY

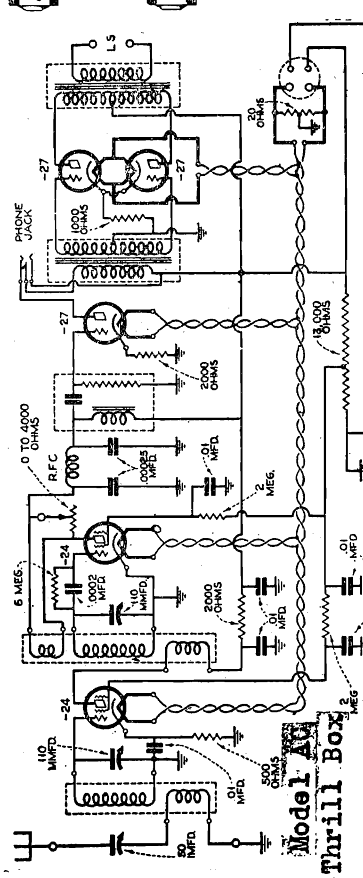




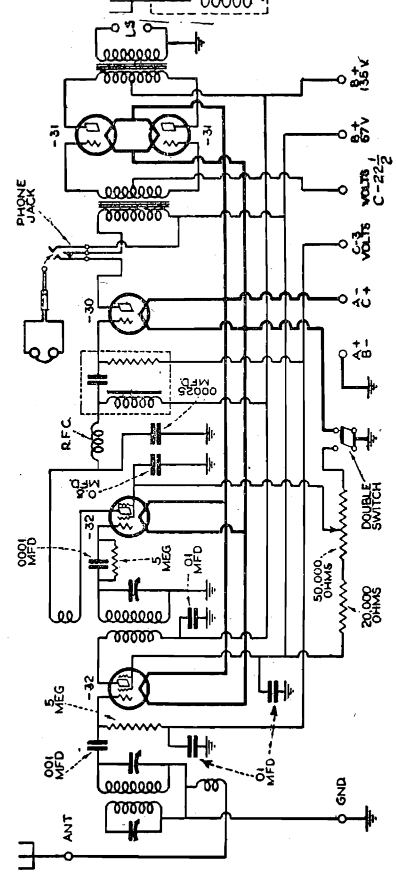


Model Auto Box
See preceding page for battery connections.





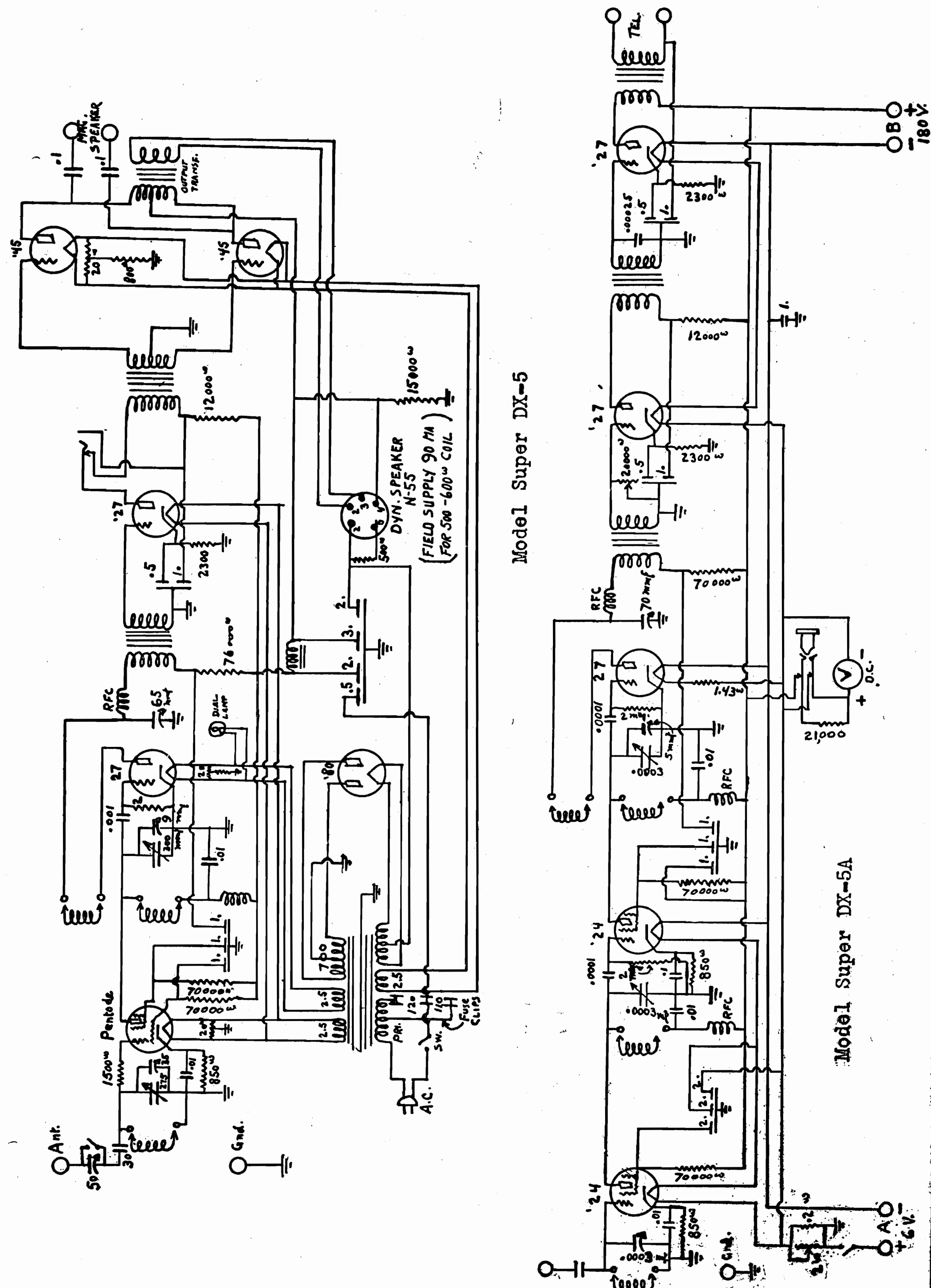
Model AC Thrill Box



Model Short-Wave Thrill Box 2-volt Tubes

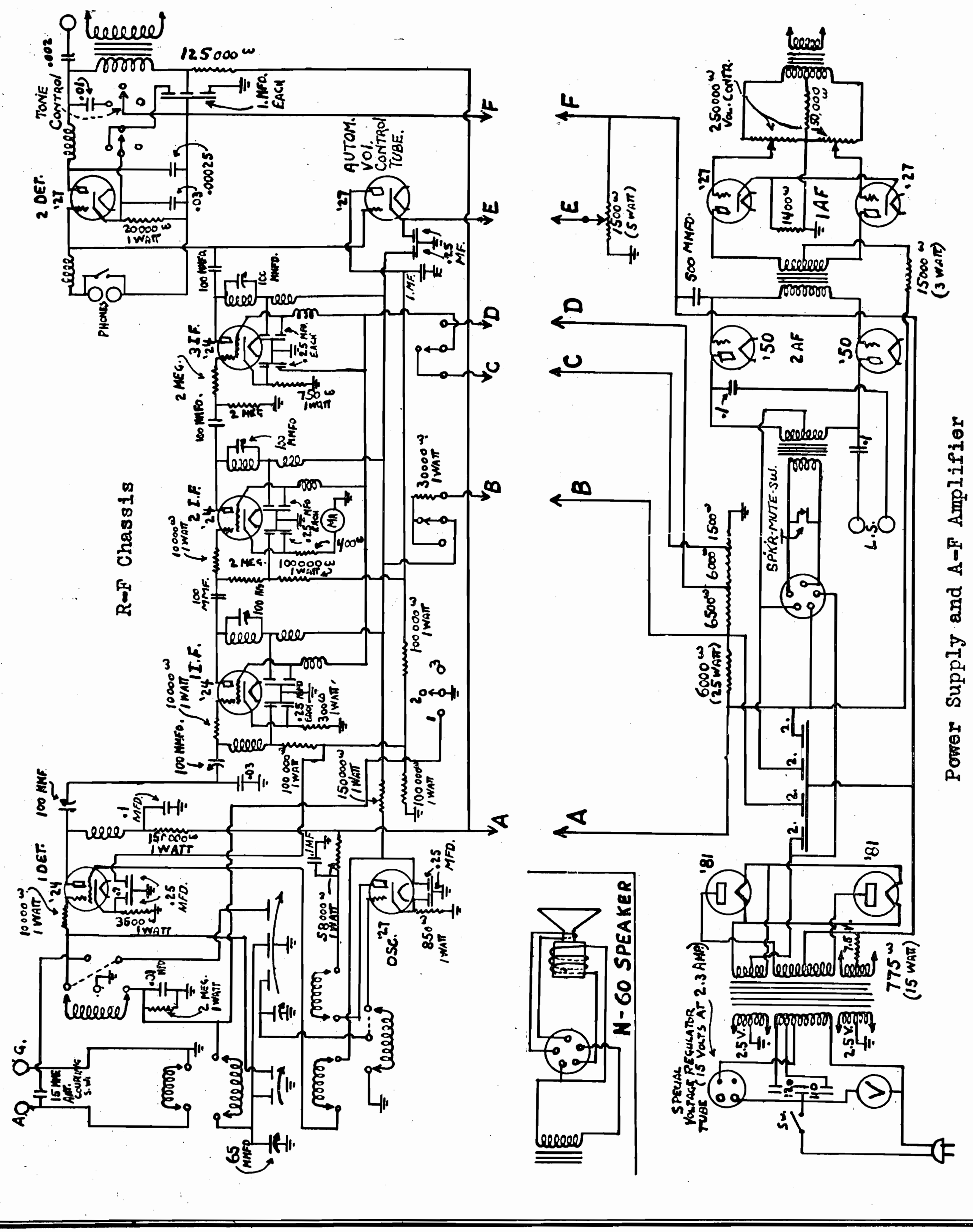
MODEL Super DX-5
MODEL Super DX-5A

NORDEN-HAUCK, INC.



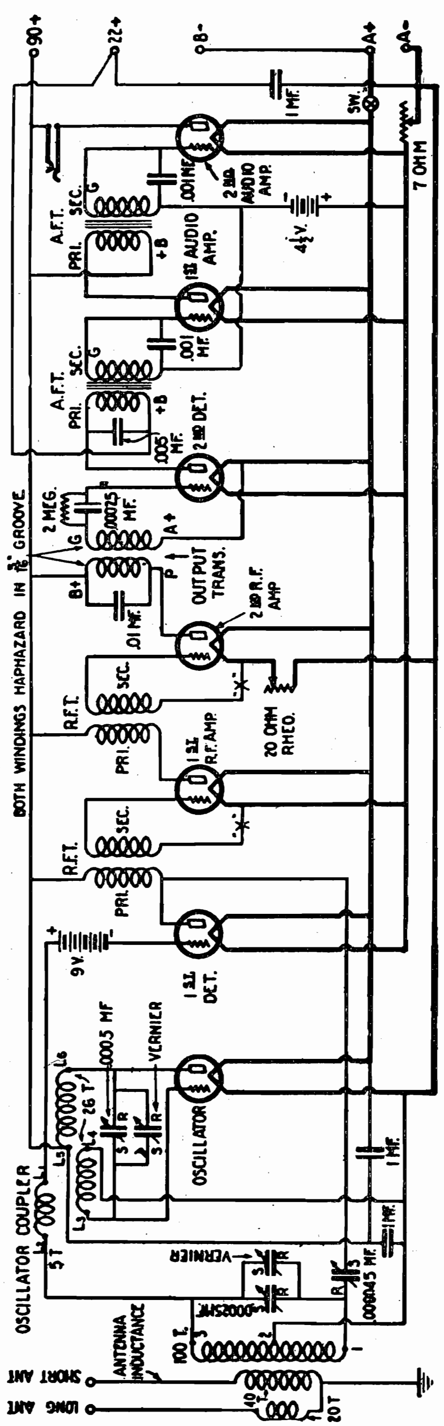
MODEL Admiralty Super 12

NORDEN-HAUCK, INC.

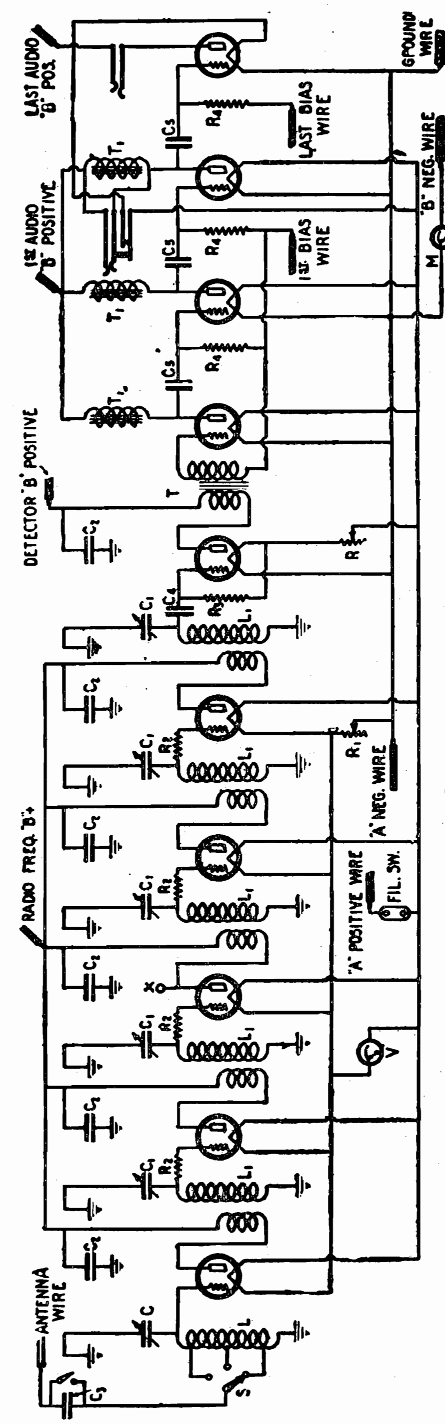


NORDEN-HAUCK, INC.

MODEL C-7
MODEL Super 10



Model C-7 Norden Hauck super-heterodyne receiver.

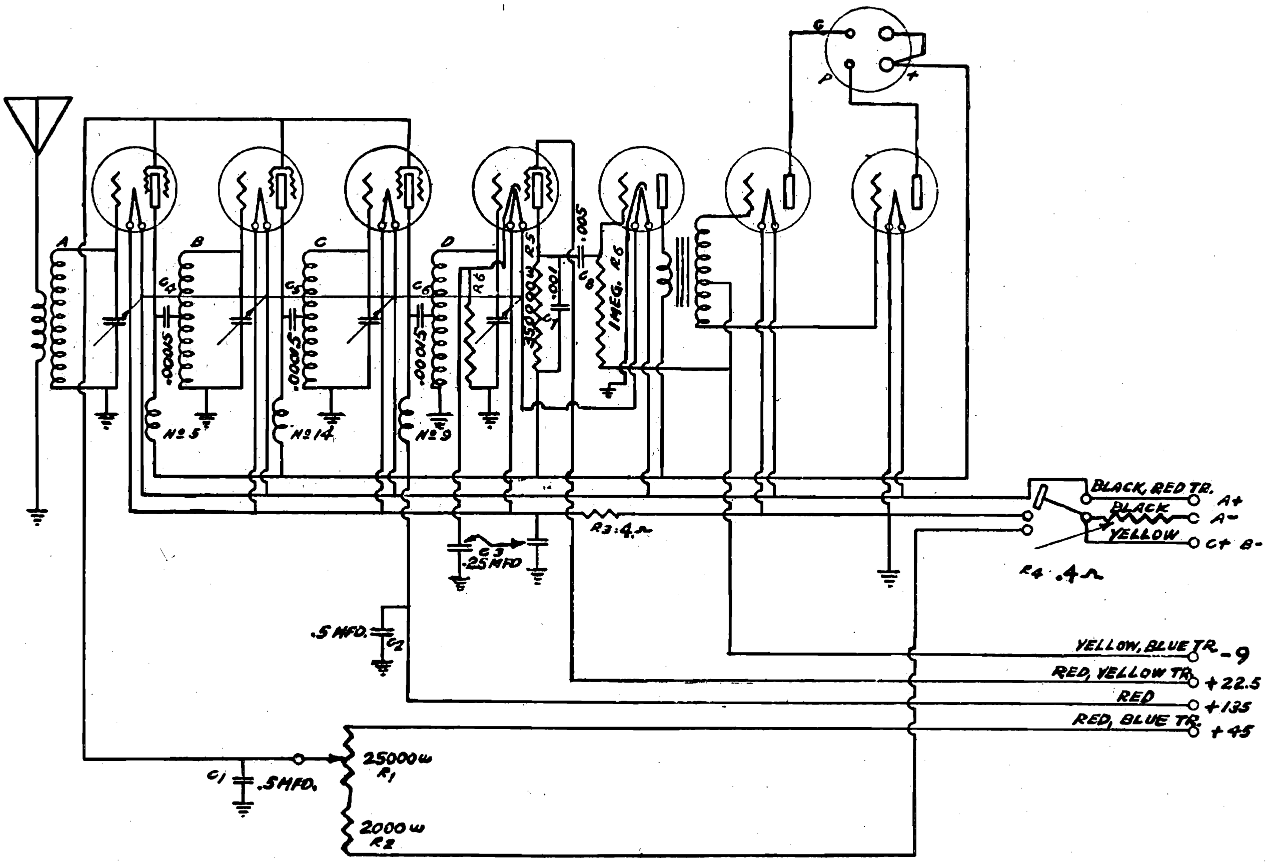


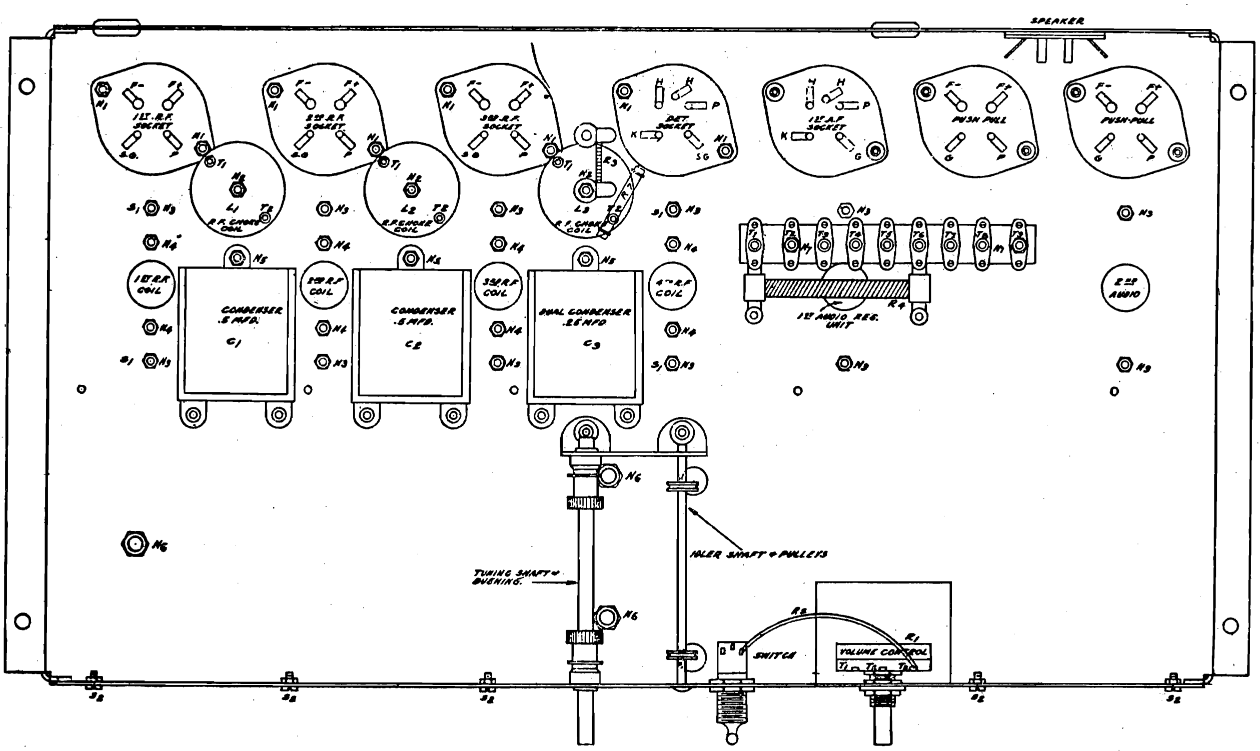
Super 10.

R is 20 ohms. R1 is 7 ohms. R2 is 750 ohms. R3 is 2 megohms. R4 is 30000 ohms. C3 is .00025 mfd. C4 is .00025 mfd. C2 is .5 mfd. C5 is .1 mfd.

OZARKA, INC.

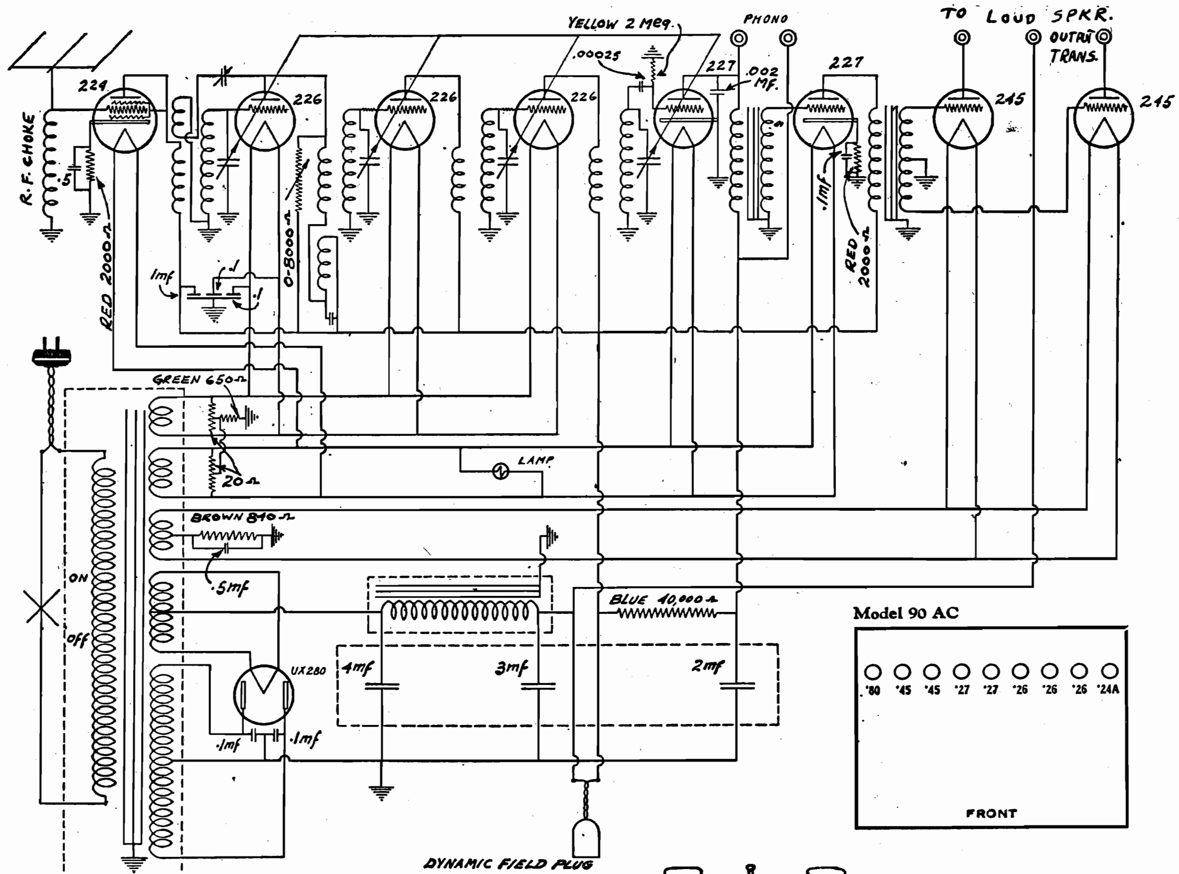
MODEL 91 - Battery
Schematic, Chassis





MODEL 90
Schematic, Chassis
Voltage

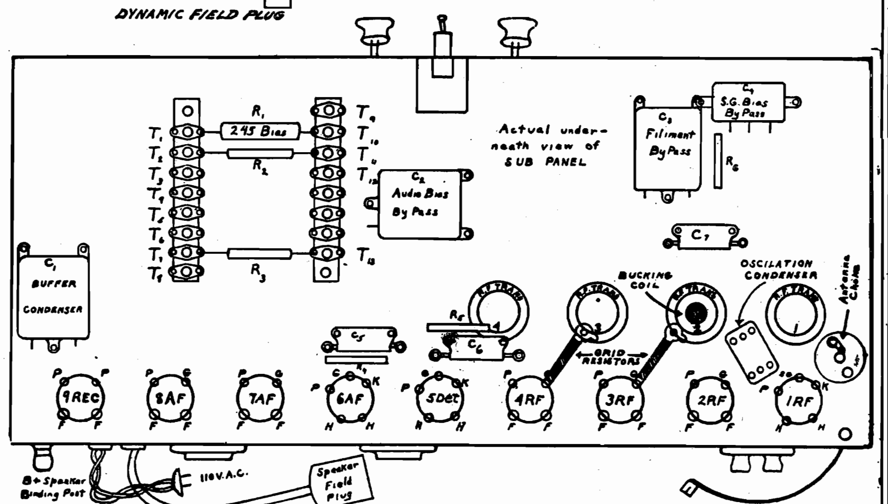
OZARKA, INC.

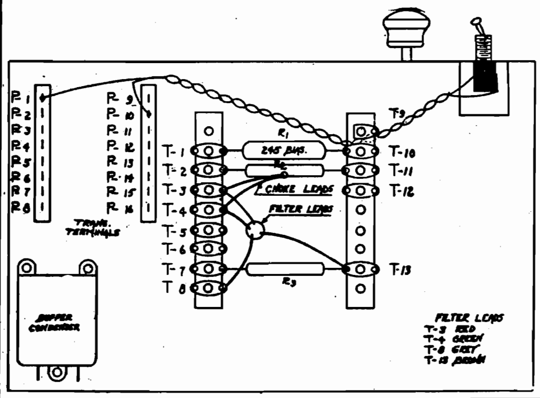


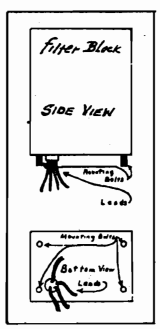
MODEL 90

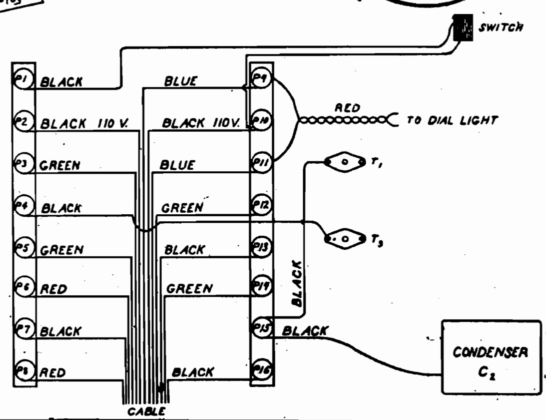
Tube	Type	Plate	Grid
R.F.	'24	160	160
R.F.	'26	160	
R.F.	'26	160	
R.F.	'26	160	
Det.	'27	40	
A.F.	'27	150	
Pwr.	'45	300	
Pwr.	'45	300	

Volume Max.
All Volts to Ground.
Grid Volts Fil. To Grd.



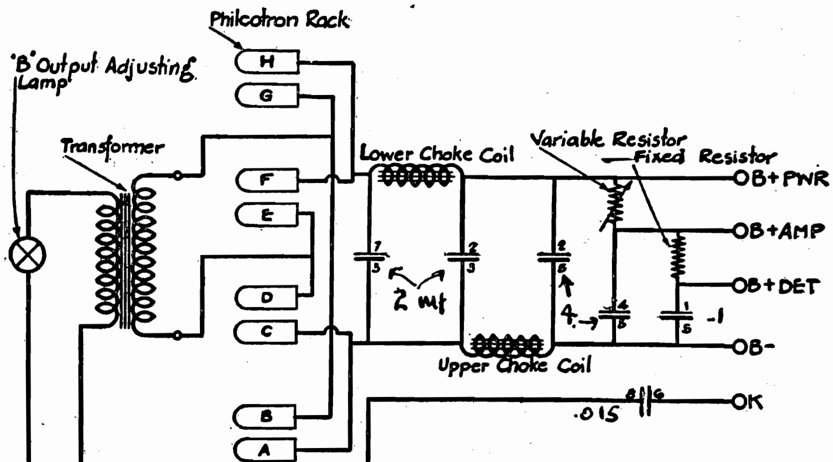






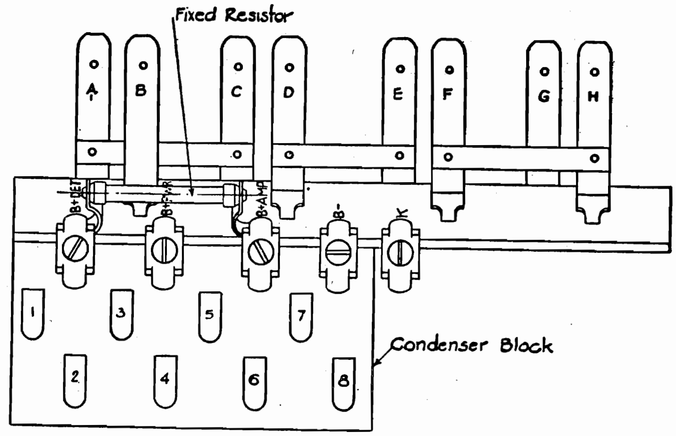
PHILCO RADIO & TELEVISION CORP.

MODEL B-253
MODEL B-603
Power Units



B-603 and B-253 Socket Powers

Note—Numbers on Condensers refer to numbers on Terminals.



Socket Power B, Type B-603

Supplies B power for sets having one to ten tubes—any standard type—including a power tube such as type UX-171, UX-112 or UX-120.

For use on 50- or 60-cycle, 105–125-volt alternating current.
Full-wave Philco electrolytic rectifier.

Average voltage at amplifier terminals:
B+ PWR 135–150 volts, depending on load.
B+ AMP 50–100 volts, adjustable.

Maximum continuous current rating: 50 milliamperes.
Average current consumption: 12 A.C. watts.
Overall dimensions: Length (front to back) 8⅝″; width 8⅛″; height 7⅞″.

Socket Power B, Type B-253

Same as type B-603 except with special transformer and extra large filter for use on 25-, 30- or 40-cycle current as well as on 50 or 60 cycles for exceptional sets which may require the 25-cycle super-filter.

MODEL 180 B
MODEL "B" Part of
AB Unit

PHILCO RADIO & TELEVISION CORP.

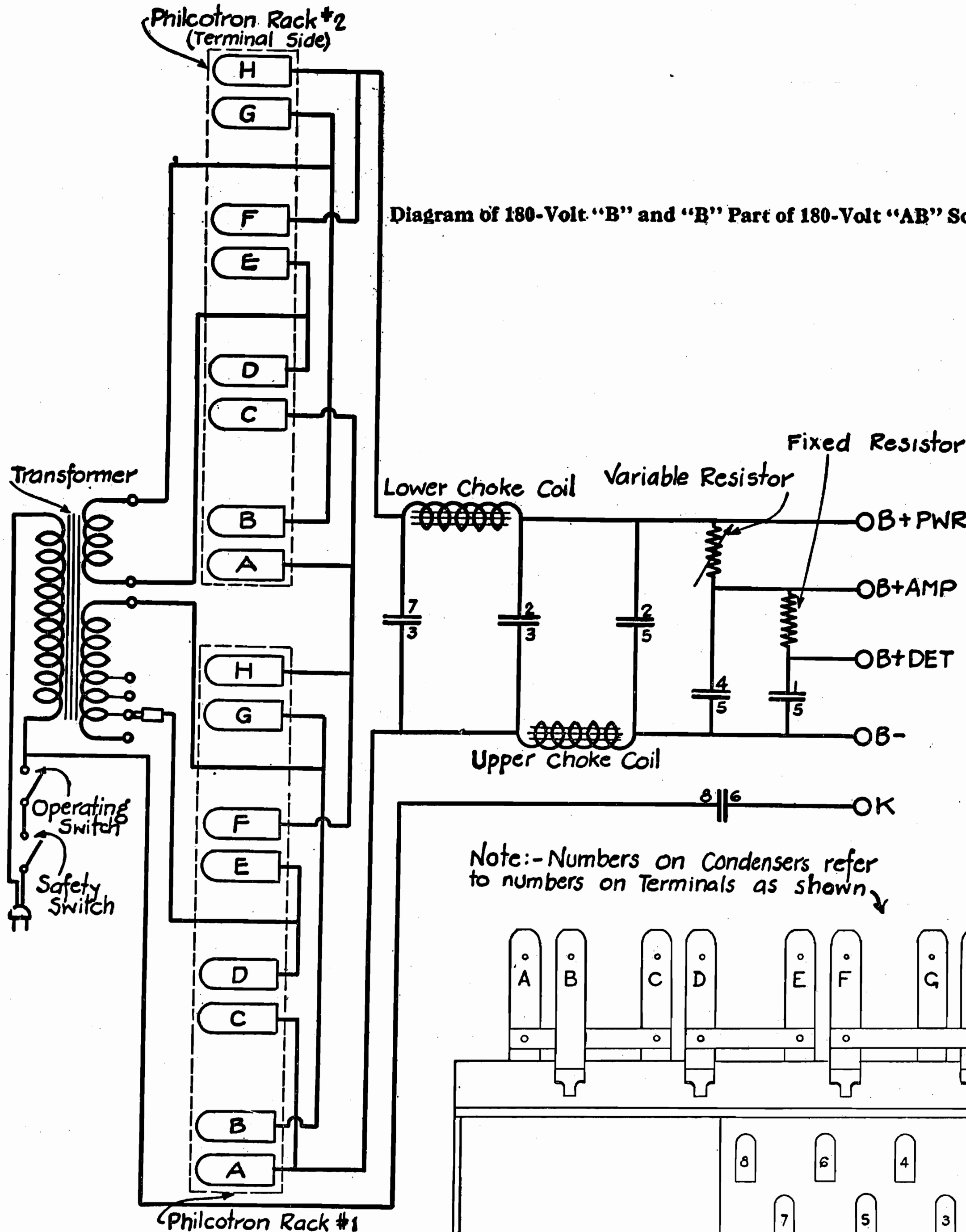
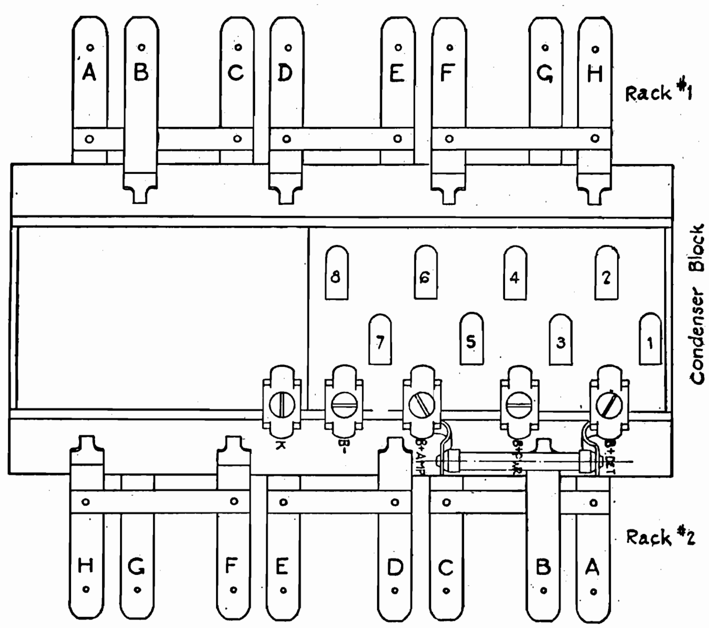


Diagram of 180-Volt "B" and "B" Part of 180-Volt "AB" Socket Powers

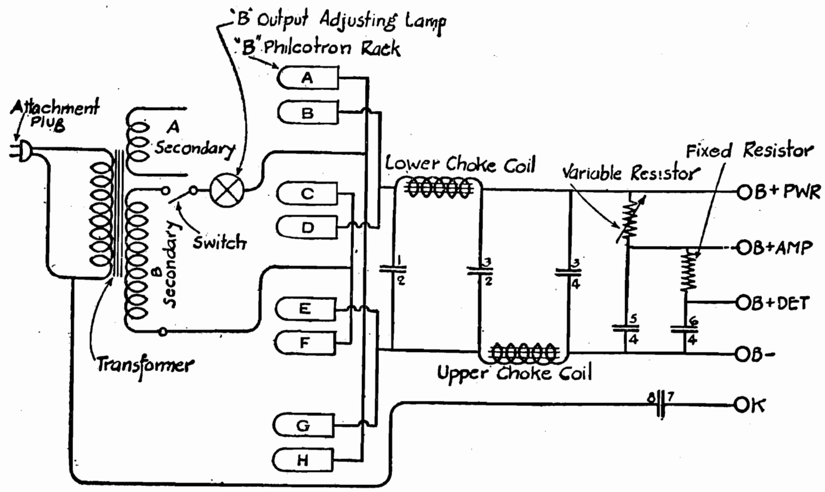
Note:- Numbers on Condensers refer to numbers on Terminals as shown



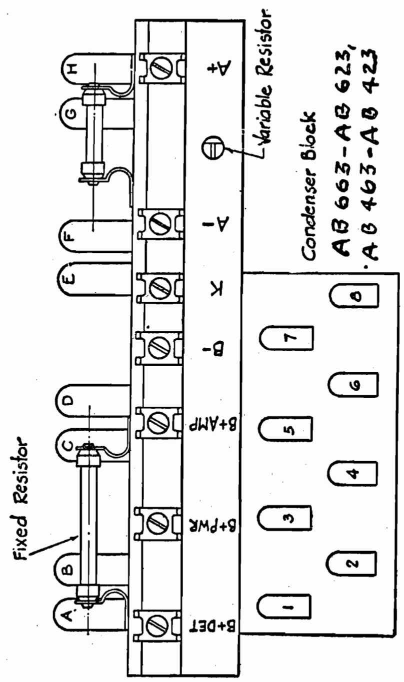
Philcotron Racks and Condenser Lugs Marked for Testing for 180-Volt "B" and "B" Part of 180-Volt "AB" Socket Powers

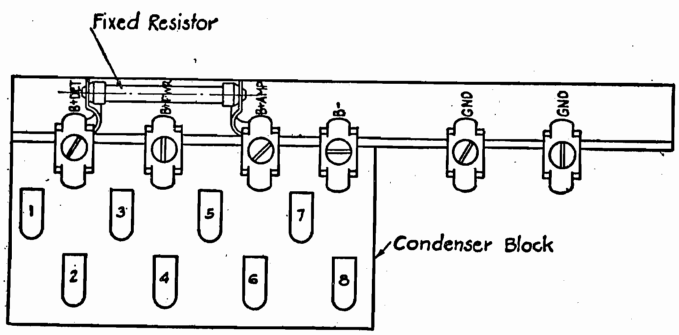
PHILCO RADIO & TELEVISION CORP.

MODEL AB-423, AB-463
AB-623, AB-663
Power Units

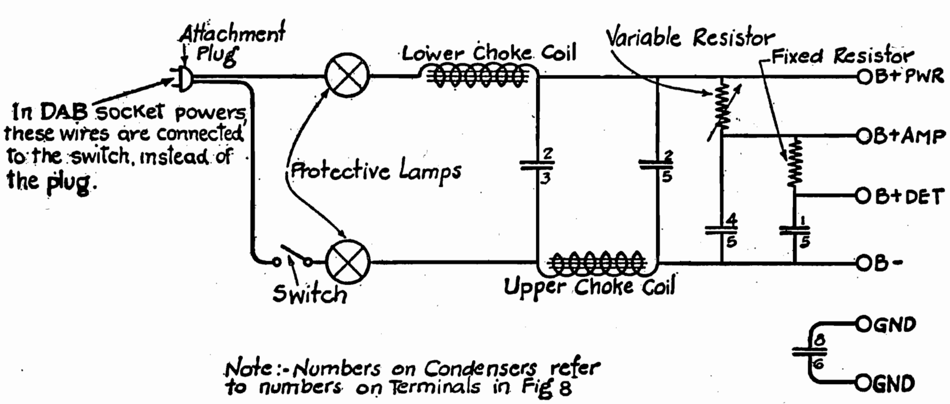


Schematic Wiring Diagram of Types AB-663, AB-623, AB-463, AB-423 Socket Powers





Terminal Strip and Condenser Block of "DB" and "DAB" Socket Powers



Wiring Diagram of "DB" and "B" Part of "DAB" Socket Powers

MODEL DB
MODEL AB-463,
AB-623,
AB-663
Specifications

PHILCO RADIO & TELEVISION CORP.

Socket Power B, Type DB

Similar to type B-603 for use on 105–125-volt *direct current.*

Supplies B power at detector and two amplifier voltages for sets having one to ten tubes of any standard type.

Maximum continuous current rating: 50 milliamperes.
Average current consumption: 3 D.C. watts.
Dimensions same as type B-603.

Socket Power AB, Type AB-663

Supplies A power at 6 volts and B power at detector and two amplifier voltages for receiving sets having from one to eight 5-volt storage battery tubes including a power tube such as type UX-171 or UX-112. For use on 50- or 60-cycle, 105–125-volt alternating current.

A battery: Philco type UD-86
A rectifier: Extra large, type AA Philcotron.

	LOW	MEDIUM	HIGH
A trickle charge rates, D.C. amps.	.2	.4	.8
A current consumption, A.C. watts.	15	25	45

B rectifier: Full-wave Philco electrolytic
Average B voltage at amplifier terminals:
B+ PWR 135–150 volts, depending on load.
B+ AMP 50–100 volts, adjustable.

Maximum continuous B current rating: 50 milliamperes.
Average B current consumption: 12 A.C. watts.
Overall dimensions: Length (front to back) 12¾"; width 13⅝"; height 8½".

Socket Power AB, Type AB-623

Same as type AB-663 except with special transformer and extra large B current filter for use on 25-, 30- or 40-cycle current as well as on 50 or 60 cycles for exceptional sets which may require the 25-cycle super-filter.

Socket Power AB, Type AB-463

Supplies A power at 4 volts and B power at detector and two amplifier voltages for sets having from one to ten 3-volt dry cell tubes, including Radiolas. For use on 50- or 60-cycle, 105–125-volt alternating current.

A battery: Philco Type UD-44
A rectifier: Large, type A Philcotron

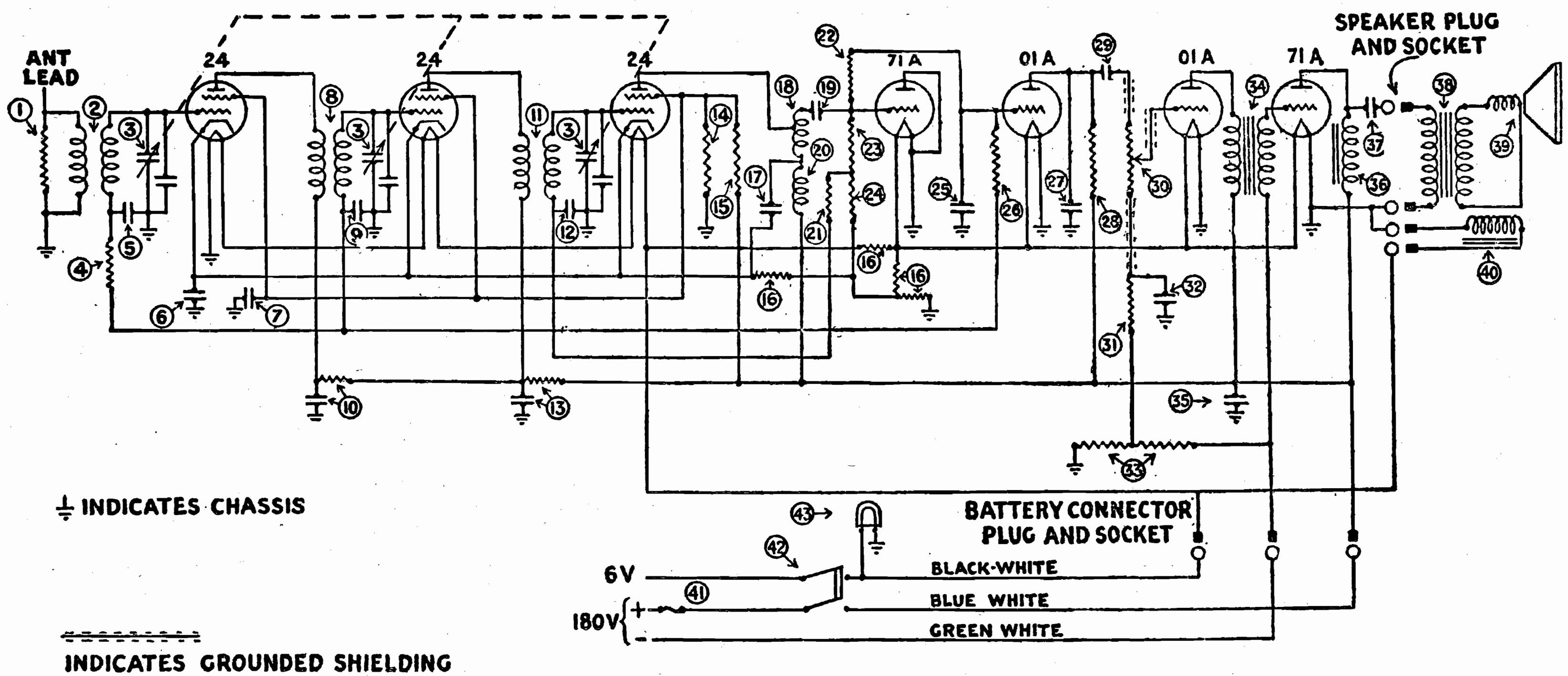
	LOW	MEDIUM	HIGH
A trickle charge rates, D.C. amps:	.075	.15	.30
A current consumption, A.C. watts:	9	12	18

B rectifier: Full-wave Philco electrolytic
Average B voltage at amplifier terminals
B+ PWR 135 volts.
B+ AMP 50–90 volts, adjustable.

Maximum continuous B current rating: 50 milliamperes.
Average B current consumption: 10 A.C. watts.
Overall dimensions: Length (front to back) 12¾"; width 13⅝"; height 8½".

MODEL 3
Transitone
Schematic
Parts List

PHILCO RADIO & TELEVISION CORP.



COMPENSATING

Compensating condensers in all Philco Transitone Receivers are carefully adjusted at the factory, and ordinarily need not be readjusted.

If necessary to readjust, a good oscillator should be used. With the Receiver and oscillator set up for operation, and the volume control of the Receiver turned on full—adjust the oscillator signal to a frequency between 1000 and 1200 kilocycles, or 100 and 120 on the Receivers. Tune the Receiver sharply to the signal and then reduce the oscillator signal so that it is barely audible in the Speaker.

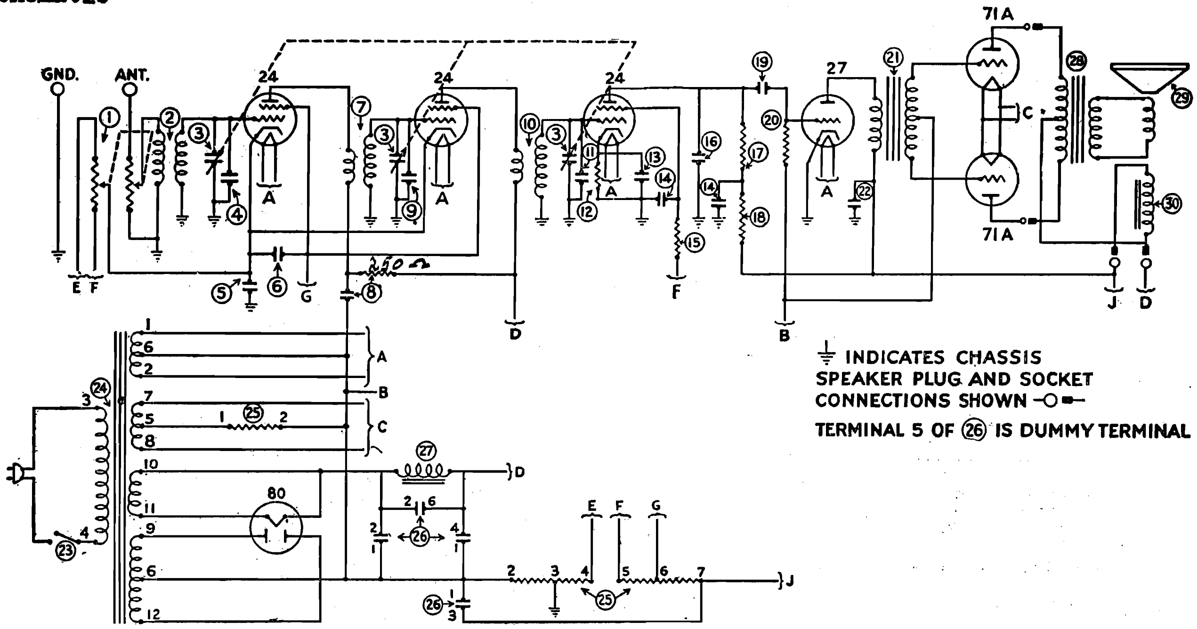
Using the special fibre wrench, adjust the third compensating condenser to that point at which the maximum signal is heard in the Speaker, then adjust the second and finally the first condenser in the same manner, always adjusting for that position which gives the maximum signal.

After the adjustments are completed tune the Receiver to several broadcast programs to make sure that the stations are tuned in at the proper place on the tuning scale.

13	Condenser and Resistor (.05 mfd with 250 ohms)	3615-C
14	Resistor (50,000 ohms—1 watt)	4237
15	Resistor (25,000 ohms—1 watt)	3656
16	Resistor (4-section)	4407
17	Condenser (.00025 mfd)	3082
18	Fourth R. F. Transformer	3775-B
19	Condenser (.00005 mfd)	3774
20	R. F. Choke	3256-A
21	Resistor (1,000,000 ohms—½ watt)	4409
22	Resistor (250,000 ohms — ½ watt)	4410
23	Resistor (100,000 ohms — ½ watt)	4411
24	Resistor (100,000 ohms — ½ watt)	4411
25	Condenser (.00025 mfd)	3082
26	Resistor (1,000,000 ohms — 1 watt)	4414
27	Condenser (.00025 mfd)	3082
28	Resistor (100,000 ohms — ½ watt)	4411
29	Condenser (.015 mfd)	3793-D
30	Volume Control	4463
31	Resistor (250,000 ohms — ½ watt)	4410
32	Condenser (.25 mfd)	4487
33	Resistor (2-section)	4408
34	Audio Transformer	3241
35	Condenser (2.0 mfd)	4418
36	Audio Choke	4485
37	Output Condenser (1.0 mfd)	4420

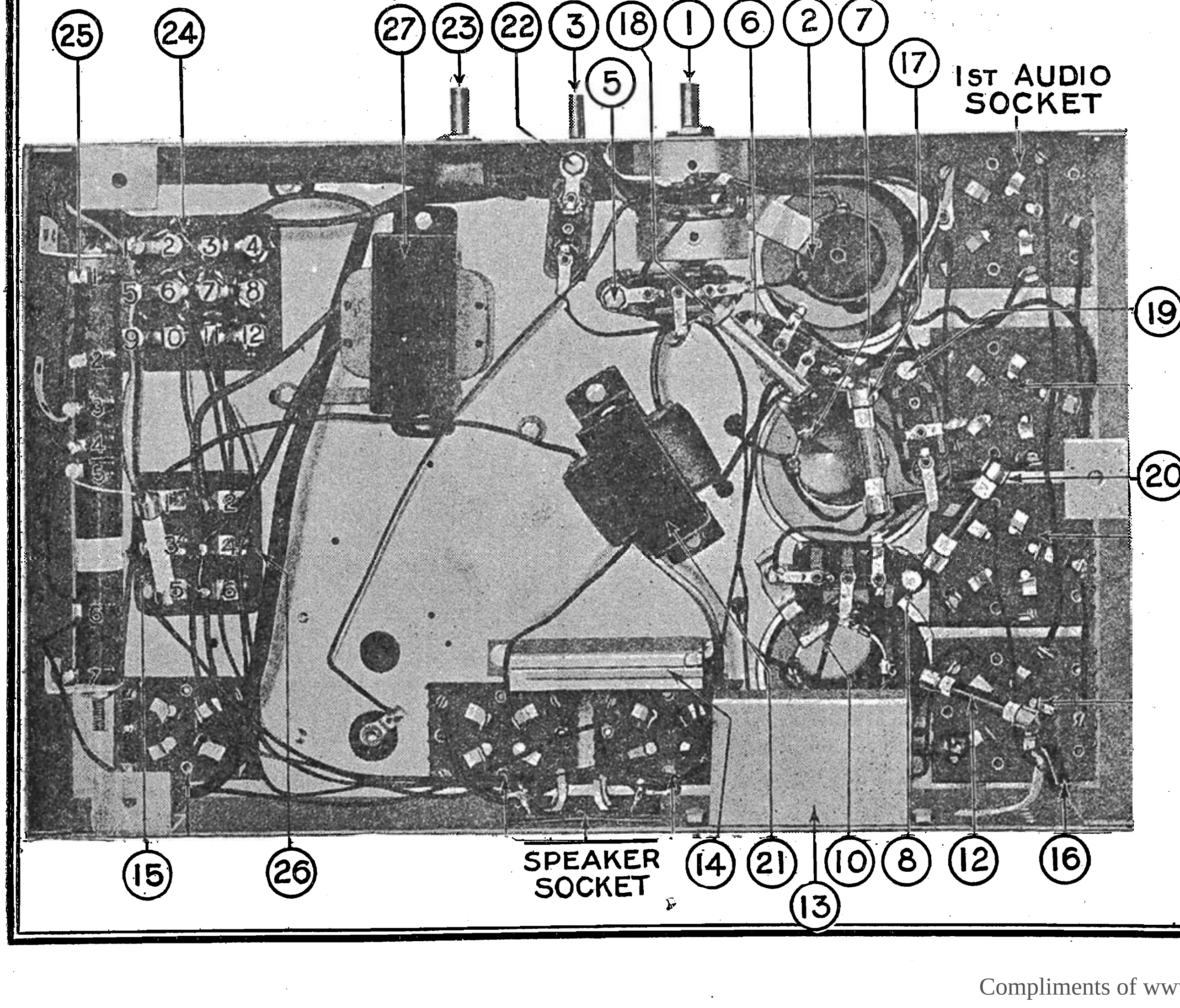
MODEL 20, 20-A
Chassis
Schematic

PHILCO RADIO & TELEVISION CORP.



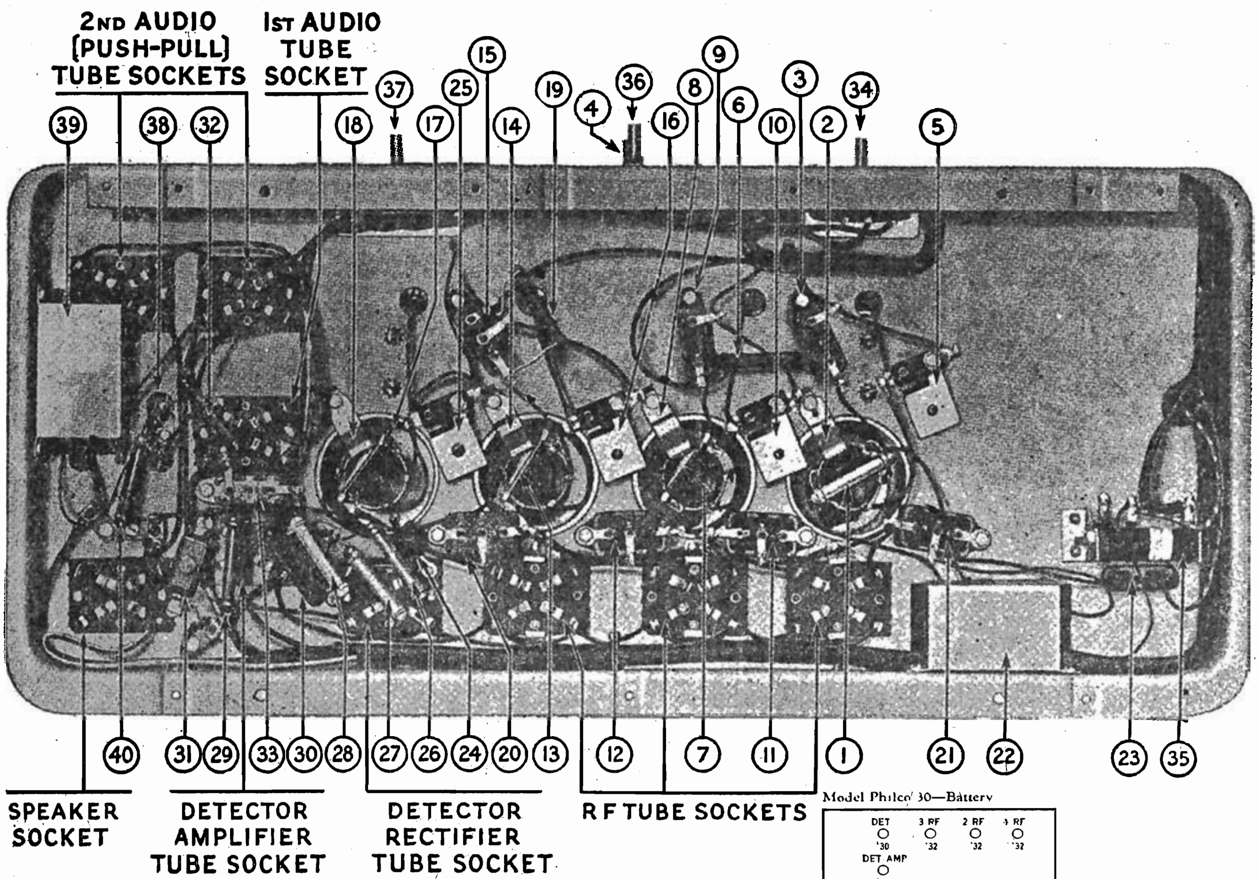
DIFFERENT CIRCUIT ARRANGEMENT FOR MODEL 20-A

Model 20-A for use on 25-60 cycle lines is wired differently than the Model 20. The plate supply lead for the two 24 R. F. Tubes is taken from the low side of the Speaker field Coil. The lead "D" to the 24 tubes should be changed to "J" for the Model 20-A only. This will change the plate voltage from 250 volts to 115-125 volts. The plate current readings will also be lower than those given in the table.



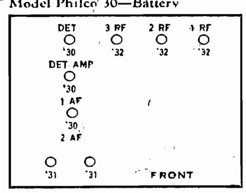
MODEL 30
Chassis
Schematic

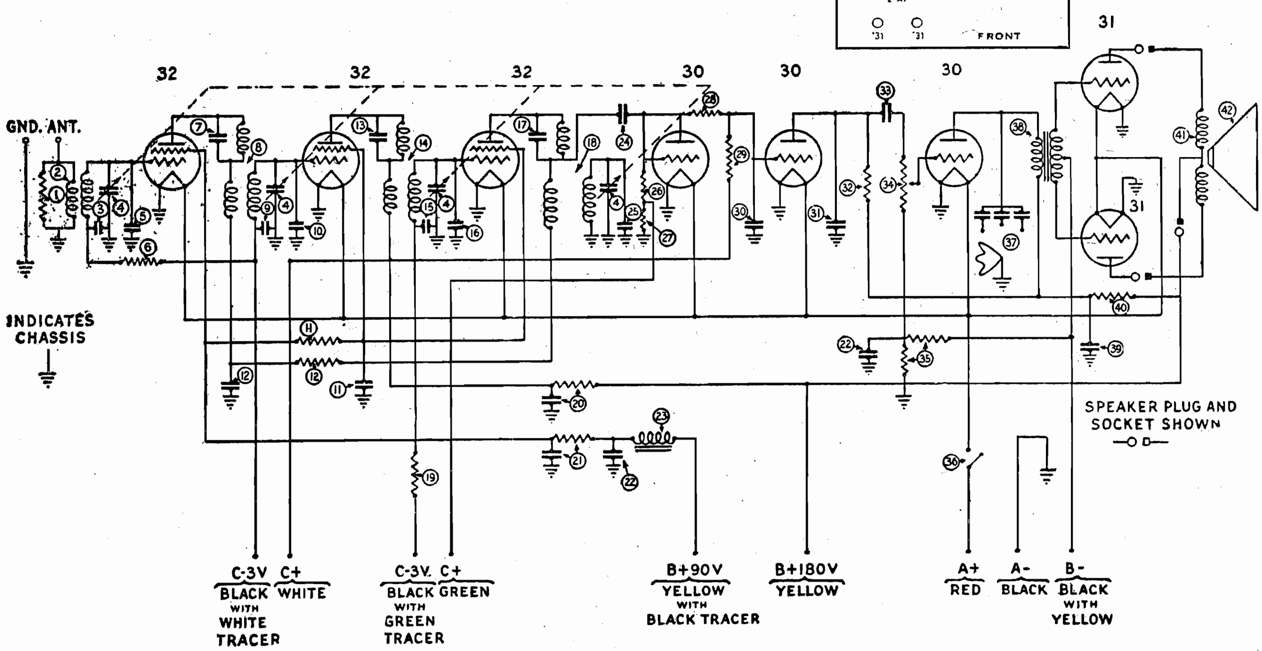
PHILCO RADIO & TELEVISION CORP.



Model 30

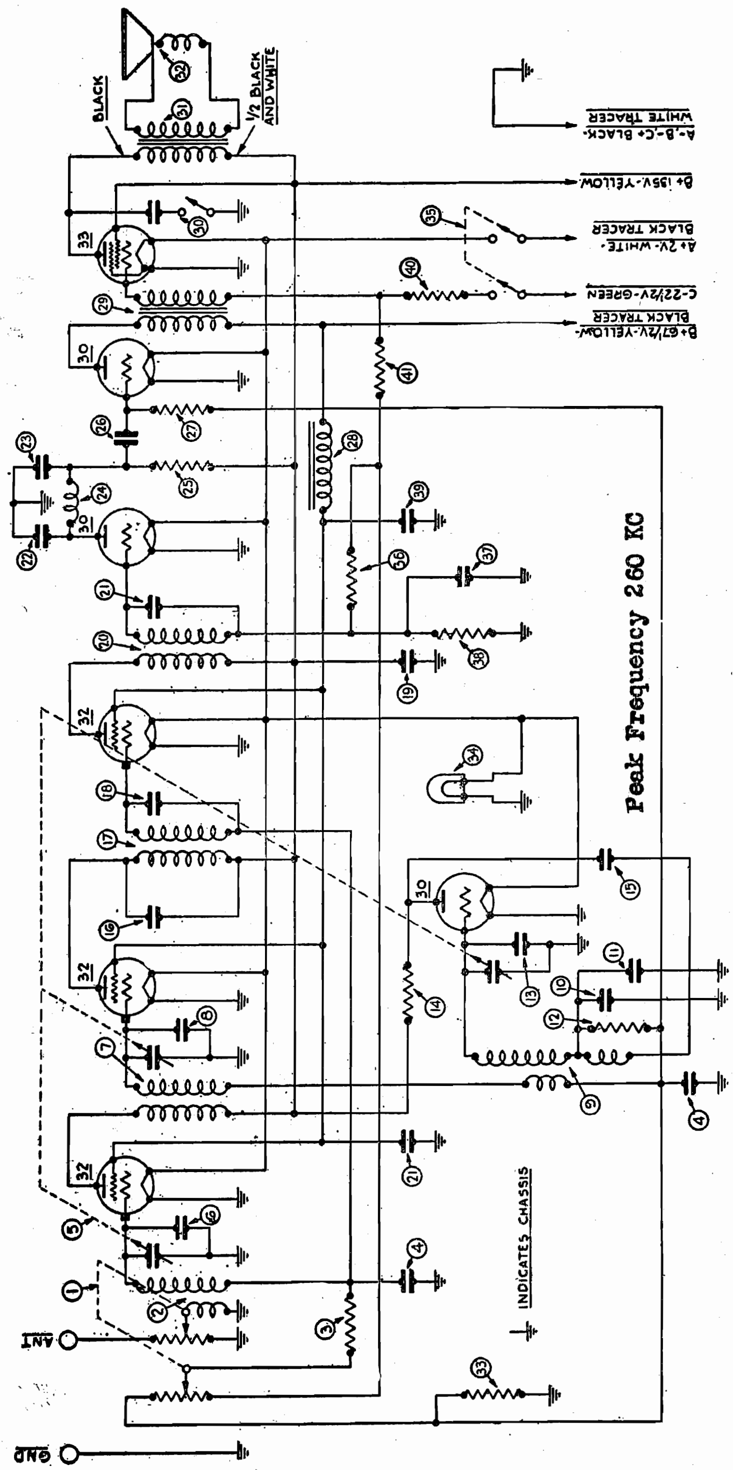
Model Philco 30—Battery





PHILCO RADIO & TELEVISION CORP.

MODEL 35
Schematic
Voltage



Model 35-B is similar to Model 35 except that the pilot light is omitted. Furthermore, a resistor # 5792 is supplied with Model 35-B. The Model 35-B is intended for use with the Air-Cell battery.

Tube Socket Readings Taken with Set Tester.

Tube	Circuit	Filament Volts	Plate Volts	Grid Volts	Plate Current Milliamperes	Screen Grid Volts
32	R. F.	1.9	133	...	3.0	60
32	1st Det.	1.9	133	...	3.0	63
30	Osc.	1.9	60	...	1.5	...
32	I. F.	1.9	133	...	3.5	60
30	2nd Det.	1.9	55	2.5	.05	...
30	1st Audio	1.9	65	...	.05	...
33	Output	1.9*	125*	7*	12.*	135*

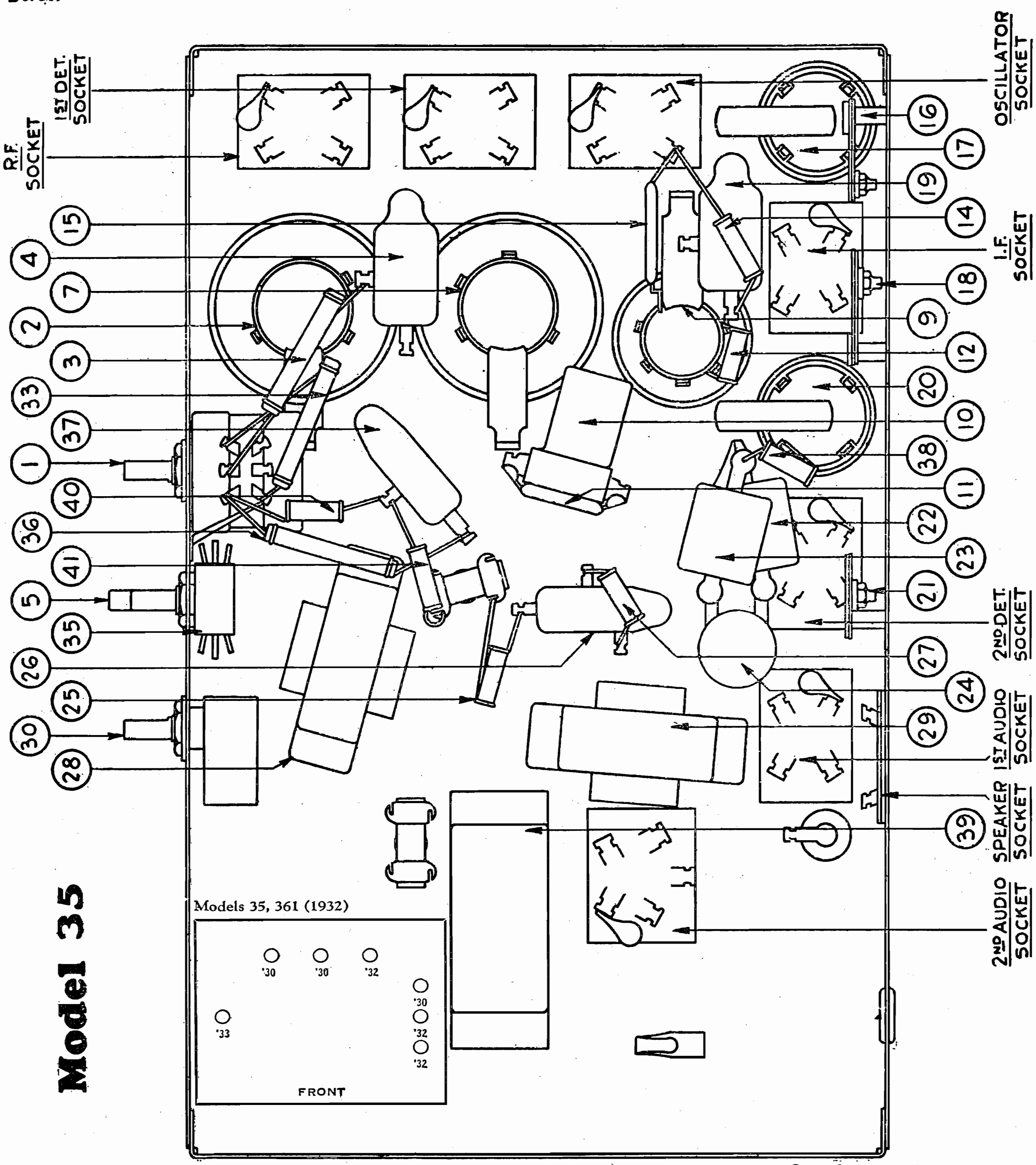
All readings taken with volume control at maximum, antenna disconnected, and ground connected.
*These readings must be taken from the under side of the chassis using test prods and leads unless the set checker is specially equipped for testing pentode tubes.

Always use high-resistance voltmeter, preferably 1000 ohms per volt, when checking voltages in the Receiver. For reading plate and screen voltages, use a 250- or 300-volt scale. Voltage readings taken with meters having less than 250,000 ohms resistance will be lower than voltages given in the

The Model 35 Receiver is designed for use with the latest 2-volt filament type tubes only.

MODEL 35
Chassis
Data

PHILCO RADIO & TELEVISION CORP.



Resistor Data

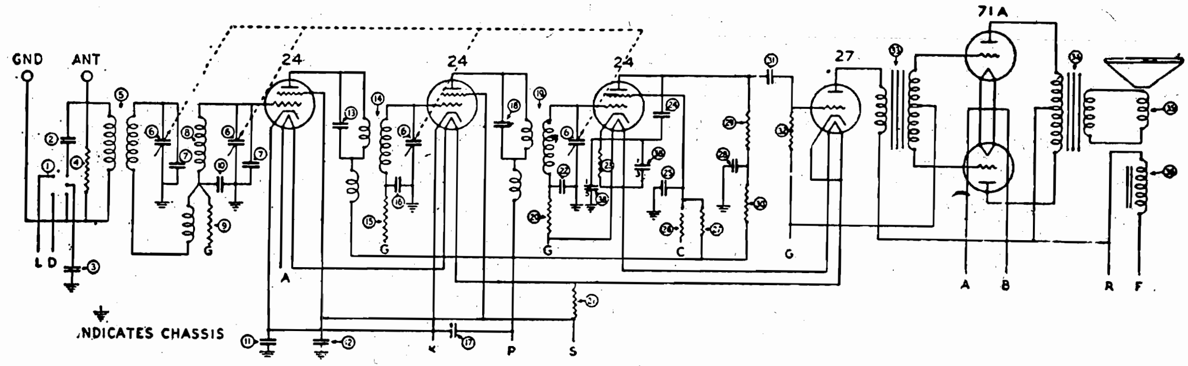
No. on Figs. 1 and 2	COLOR Body	Tip	Dot	Resistance Ohms
3 25	Red	Yellow	Yellow	240,000
12 14	Green	Brown	Orange	51,000
27	Yellow	White	Yellow	490,000
33	Orange	Black	Red	3,000
36	Orange	Red	Orange	32,000
38	White	White	Orange	99,000
40	Green	Black	Red	5,000
41	Brown	Black	Orange	10,000

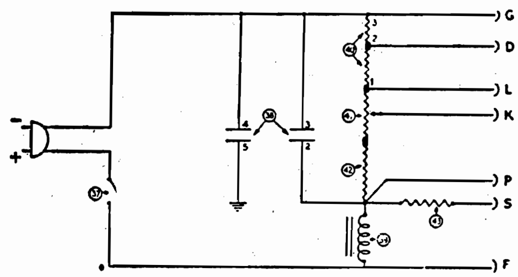
Condenser Data

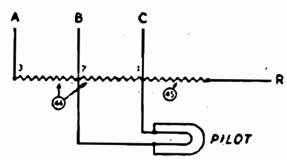
No. on Figs. 1 and 2	Capacity—MFD
4 19 37	.09
11	.000410
15	.000110
22 23	.002
26	.01
39	2.

MODEL 40 DC

PHILCO RADIO & TELEVISION CORP.







NOTE. Switch 1 Right-Hand Terminals are shorted in local position. Left-Hand Terminals are shorted in distance position.
Resistor (45) is mounted at bottom of cabinet.

TUBE SOCKET READINGS

Line Voltage 115

Tube	Circuit	Filament	Plate	Screen Grid	Control Grid	Plate Mils
24	1 R. F.	2.1	100	75	.4	2.7
24	2 R. F.	2.1	100	75	.4	2.7
24	Detector	2.1	45	15	1.8	....
27	1 A. F.	2.4	87	..	.2	2.7
71-A	2 A. F.	5	85	..	13	15
71-A	2 A. F.	5	85	..	13	15

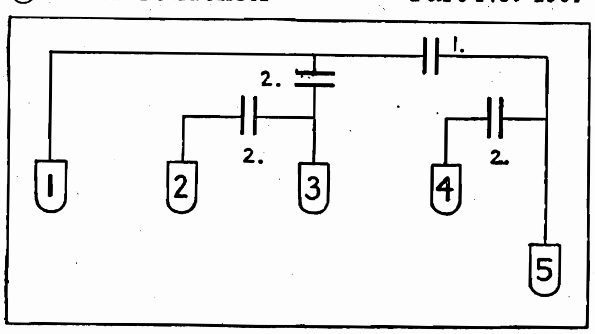
Readings must be taken with volume control on full and local distance switch in distance position.

Always use high-resistance voltmeter, preferably 1000 ohms per volt, when checking voltages in the Receiver. For reading plate and screen voltages, use a 250- or 300-volt scale. Voltage readings taken with meters having less than 250,000 ohms resistance will be lower than voltages given in the table.

RESISTOR VALUES

No. on Fig. 2	Terminals	Ohms Resistance
(4)—(20)—(43)		5,000
(9)—(15)		33,000
(21)—(42)		25,000
(23)—(30)		100,000
(26)		13,000
(27)		70,000
(29)—(32)		500,000
(40)	1-2	800
	2-3	250
(44)	1-2	2
	2-3	4
(45)	(Note: 20-inch—External)	53

(38) Filter Condenser **Part No. 4067**

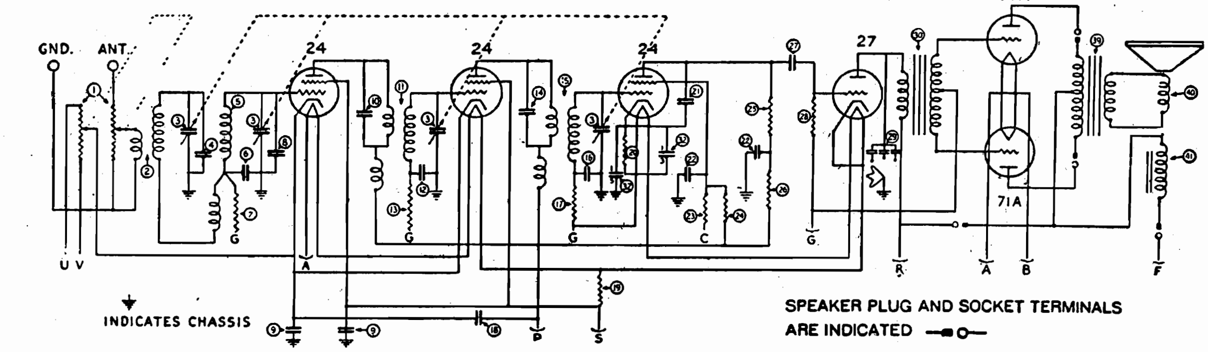


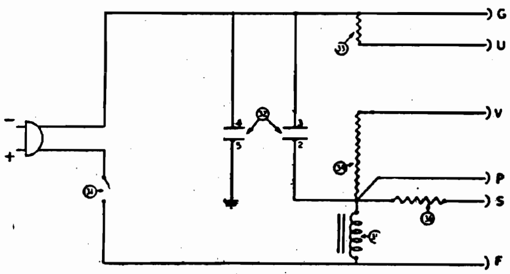
CONDENSER CAPACITIES

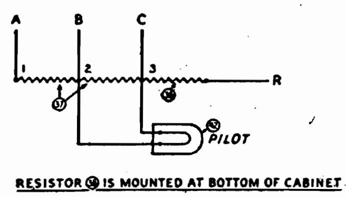
No. on Fig. 2	Capacity
(2)	.002
(3)—(31)	.01
(10)—(16)—(17)—(22)	.05
(11)—(12)—(25)—(28)	.25
(24)	.0005

PHILCO RADIO & TELEVISION CORP.

MODEL 41 DC, 42 DC
Schematic
Voltage
Values







Model Philco 41

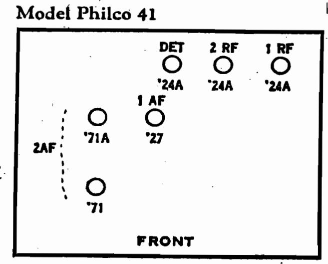


Table 1—TUBE SOCKET READINGS
Line Voltage 115

Tube	Circuit	Filament	Plate	Screen Grid	Control Grid	Plate Mils
24	1 R. F.	2.1	100	75	.4	2.7
24	2 R. F.	2.1	100	75	.4	2.7
24	Detector	2.1	45	15	1.8	...
27	1 A. F.	2.4	87	..	.2	2.7
71-A	2 A. F.	5	85	..	13	15
71-A	2 A. F.	5	85	..	13	15

Readings must be taken with volume control on full.

Always use high-resistance voltmeter, preferably 1000 ohms per volt, when checking voltages in the Receiver. For reading plate and screen voltages, use a 250- or 300-volt scale. Voltage readings taken with meters having less than 250,000 ohms resistance will be lower than voltages given in the table.

Table 2—RESISTOR VALUES

No. on Figs. 2 and 3	Terminals	Ohms Resistance
17—36		5,000
23		13,000
19—34		25,000
7—13		33,000
24		70,000
20—26		100,000
25—28		500,000
33		250
37	1-2	4
37	2-3	2
38	(Note: 20-inch—External)	53

32 Filter Condenser **Part No. 4067**

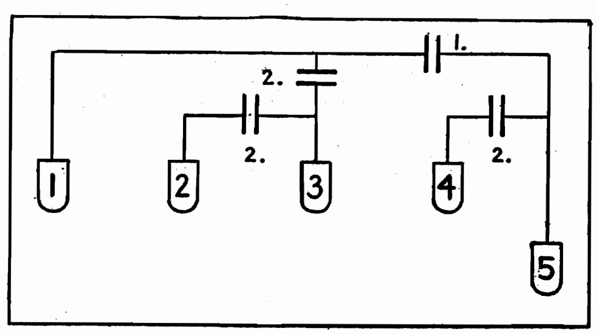


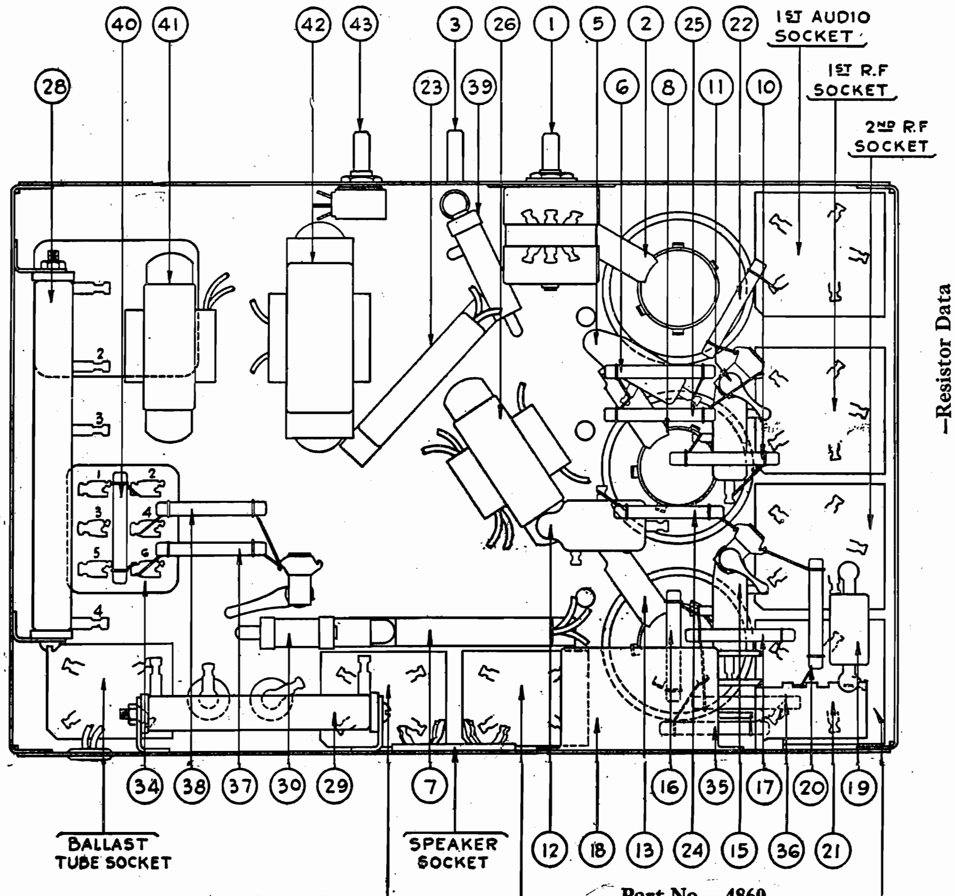
Table 3—CONDENSER CAPACITIES
(Other than Filter Condenser)

No. on Figs. 2 and 3	MFD. Capacity
27	.01
6—12—16—18	.05
9—22	.25
21	.0005

MODEL 46,46-E DC
Chassis
Resistor Data

PHILCO RADIO & TELEVISION CORP.

Models 46 and 46-E

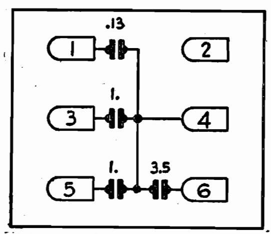


Condenser Data
(Other than Filter Condenser)

No. on Figs. 2 and 3	Capacity MFD
(24)	.0005
(22)	.01
(5)—(12)—(13)	.05
(7)	.05 and 250-ohm resistor
(19)—(21)—(38)	.25 (two sections)

For Model 46-E DC

Part No.—4860



Tube Socket Readings Taken with Set Tester, DC Line, 240 Volts

Tube Type	Tube Circuit	Filament Voltage	Plate Voltage	Grid Voltage	Screen Grid Voltage	Cathode Voltage (Measured with Prod)	Plate Milliamperes
14	1st R. F.	13.5	190	.4	80	3.5	5.5
14	2nd R. F.	13.5	190	.4	75	3.5	5.5
14	Detector	13.0	0	0	20	9.5	.3
17	1st Audio	12.5	60	0	..	3.0	2.5
71-A	Second Audio Push-Pull	5.5	180	53	...	...	12.0
71-A	Second Audio Push-Pull	5.5	185	53	..	...	12.0
3	Ballast	128	...	....	..	...	....

All readings taken with antenna disconnected and ground on. Volume Control on full.

The majority of set testers are not equipped to measure a DC filament voltage as high as 14 volts. In this case the volt meter binding post prods will have to be used. This method must also be used in checking cathode voltages across resistances No. 17, No. 35, No. 28 and No. 29.

The field coil of the Speaker used with this Receiver is of low resistance. It is not the same as the field coil used with the AC Electric Receiver. If, by mistake, a speaker from an AC Electric Receiver is plugged into the DC Receiver no damage will result.

—Resistor Data

No. on Figs. 2 and 3	Terminal	Resistance	Color Body	Color Tip	Color Dot
(28)	1—2 2—3 3—4	16 105 1500	Tubular		
(29)		200	Tubular		
(10)—(35)		250	Flat Wire Wound		
(30)		350	Flat Wire Wound		
(14)		5,000	Green	Black	Red
(6)—(11)—(37)—(39)—(41)		32,000	Orange	Red	Orange
(17)		51,000	Green	Brown	Orange
(40)—(42)		70,000	Jade Green		
(20)		99,000	White	White	Orange
(25)		240,000	Red	Yellow	Yellow
(19)—(23)		490,000	Yellow	White	Yellow

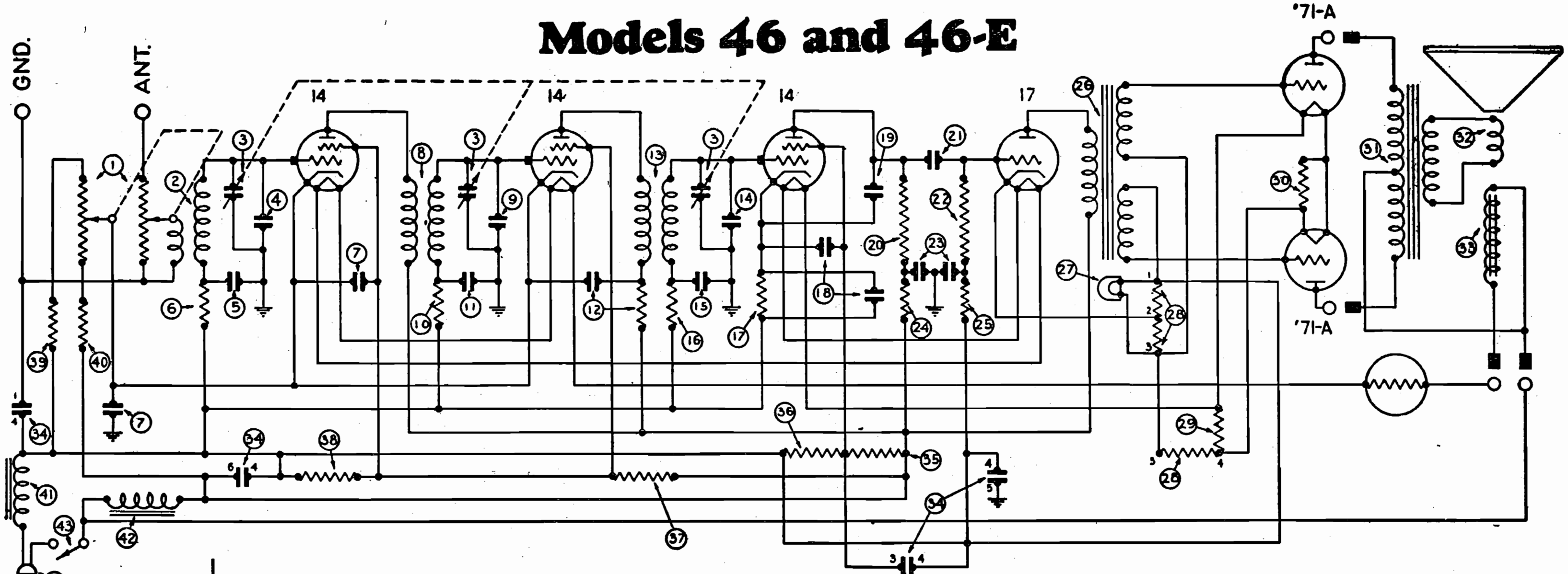
Resistor Data For Model 46-E

No. on Figs. 2 and 3	Terminal	Resistance	Color
(28)	2—3 1—2 3—4	10 14 29	Tubular
(29)		200	Tubular
(30)		210	Flat Wire Wound
(39)		250	Flat Wire Wound
(16)		5,000	Yellow
(37)—(40)		13,000	Belgium Blue
(6)—(10)—(17)—(36)		33,000	Belgium Blue—Yellow Tip
(35)—(38)		70,000	Jade Green
(24)		100,000	Silver Gray—Yellow Tip
(25)		250,000	White
(20)—(22)		500,000	Battle Gray

PHILCO RADIO & TELEVISION CORP.

MODEL 46, 46-E DC
Schematic
Voltage
Condenser

Models 46 and 46-E



INDICATES CHASSIS   SPEAKER PLUG AND SOCKET CONNECTIONS SHOWN

Model 46 for operation on 110-120 Volts DC
Model 46-E for operation on 210-240 Volts DC.

Table 1—Tube Socket Readings Taken with Set Tester, DC Line, 115 Volts

Tube		Filament Voltage	Plate Voltage	Grid Voltage	Screen Grid Voltage	Cathode Voltage (Measured with Prod)	Plate Milliamperes
Type	Circuit						
14	1st R. F.	13.5	100	1.5	60	2.5	2
14	2nd R. F.	13.5	100	1.5	60	2.5	2
14	Detector	13.5	30	1.0	25	2.5	.1
17	1st Audio	13.5	100	.25	..	4.5	5
71-A	2d Audio	4.5	90	15.5	..	...	11.5
71-A	Push-Pull	4.5	90	15.5	..	...	11.5
2	Ballast	8	...	.....	..	...	....
3	Ballast	128	...	.....	..	...	....

All readings taken with antenna disconnected and ground on. Volume Control on full.

The majority of set testers are not equipped to measure a DC filament voltage as high as 14 volts. In this case the volt meter binding post prods will have to be used. This method will also have to be used in checking cathode voltages across resistances No. 17—No. 39 and No. 28 and No. 29.

The field coil of the Speaker used with this Receiver is of low resistance. It is not the same as the field coil used with the AC Electric Receiver. If, by mistake, a speaker from an AC Electric Receiver is plugged into the DC Receiver no damage will result.

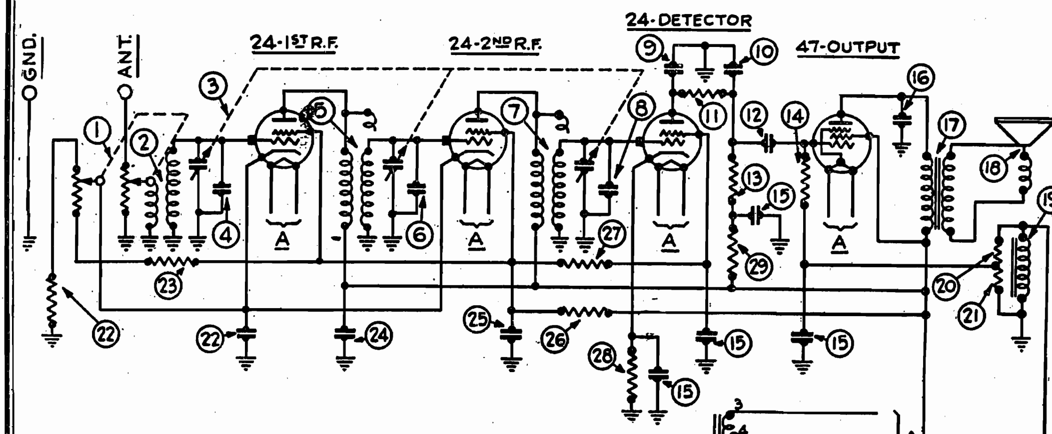
Table 2—Condenser Data
(Other than Filter Condenser)

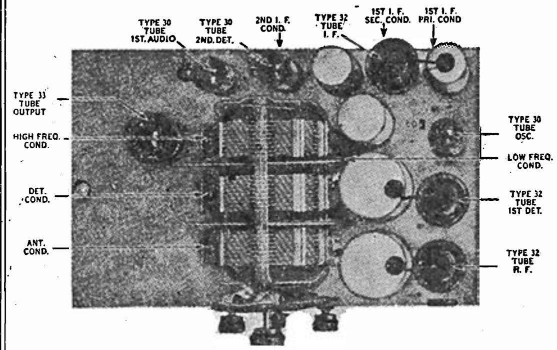
No. on Figs. 2 and 3	Capacity MFD
19	.0005
21	.01
5—11—15	.05
12	.05 and 250-ohm resistor
7	.25
18—22	.25 (two sections)

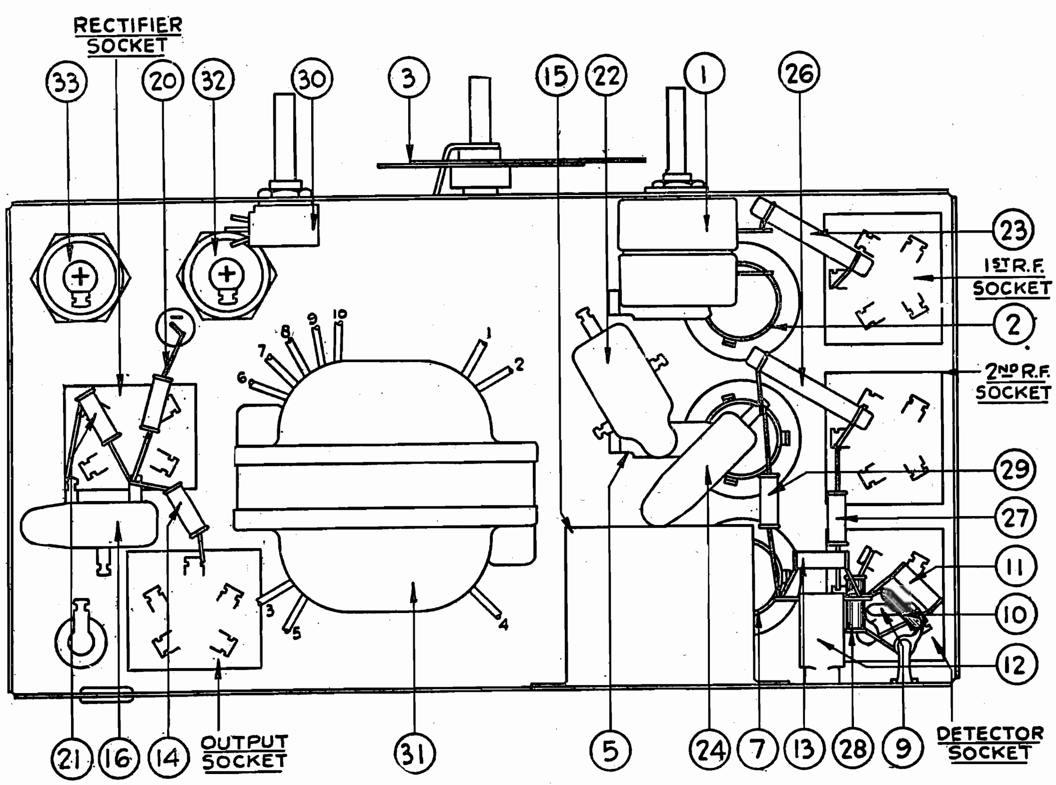
MODEL 50,50-A
Schematic
Chassis

PHILCO RADIO & TELEVISION CORP.

PHILCO MODELS 50 AND 50-A







ADJUSTMENT OF MODELS 50 AND 50-A

Adjustment of the compensating condensers in the model 50 should be done with the aid of a good oscillator for the R.F. signal. The oscillator lead should be connected to the "ANT" terminal of the receiver. A good ground connection must be made from the receiver to the grounded side of the oscillator and to a water or radiator pipe.

Either the ear method or an output meter, connected across the speaker voice coil terminals can be used while adjusting.

When the Receiver is set up for operation, adjust the oscillator signal to a frequency which is approximately 1400 kilocycles.

With the volume control advanced to maximum, and using a weak oscillator signal, tune the receiver sharply to the oscillator note.

Adjust the third R. F. compensating condenser by means of the Philco fibre wrench, part 3164, for maximum output signal. If an output meter is being used, adjust for maximum reading.

Next adjust the second R. F. compensating condenser and finally the first. In each case, always adjust for maximum signal or reading.

PHILCO RADIO & TELEVISION CORP.

MODEL 50,50-A
Voltage
Resistor Data
Condenser Data

Models 50 and 50-A Receivers

Model 50 Receivers are for operation on 100-130 volt, 50-60 cycle AC lines
Model 50-A Receivers are for operation on 100-130 volt, 25-60 cycle AC lines

Table 1—Tube Socket Readings Taken with AC Set Tester AC Line—115 volts

Tube		Filament Volts	Plate Volts	Screen Grid Volts	Control Grid Volts	Cathode Volts	Plate Milli-amperes
Type	Circuit						
24	1st R.F.	2.4	245	90	2.5	3.0	4.5
24	2nd R.F.	2.4	250	90	2.5	3.0	5.5
24	Det.	2.4	100	42	8.0	8.0	0
47	Output	2.4	175*	190*	1.0*	...	2.7*
80	Rect.	5.0	...	...	...	...	30/

Note—Volume Control on full; Station Selector turned to Low Frequency End.
*These readings must be taken from the underside of the chassis, using test prods and leads unless the set checker is specially equipped for testing pentode tubes.

Table 2—Power Transformer Voltages

Terminals	A.C. Volts		Color
1-2	105 to 125	Primary	Black (Small Gauge)
3-5	2.5	Filament of 24 and 47	Black
6-7	5.	Filament of 80	Light Blue
8-10	700.	Plates of 80	Yellow
4	.....	Center Tap of 3-5	Black, Yellow Tracer
9	.....	Center Tap of 8-10	Yellow, Green Tracer

Table 3—Condenser Data

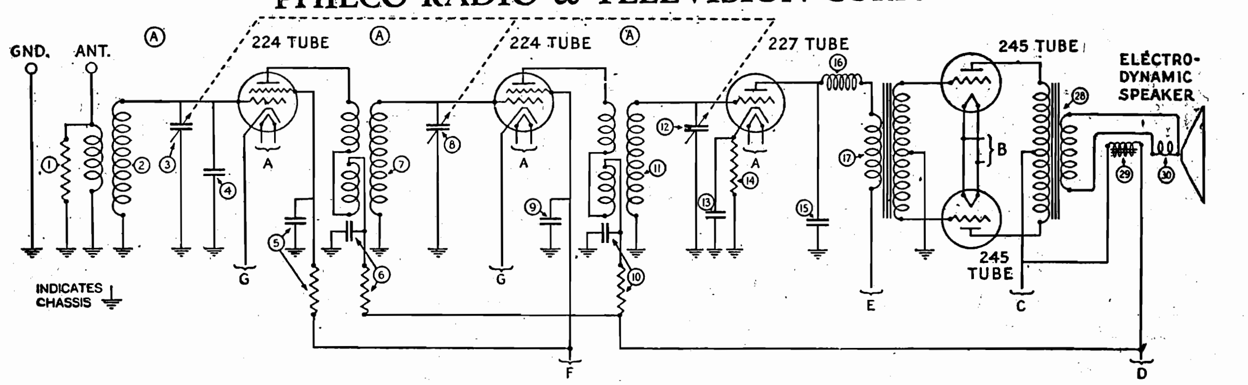
No. on Figs. 2 and 3	Capacity MFD	Container
9 10	.00025	Yellow
12 16	.01	Black Bakelite Container
25	.05	Black Bakelite Container
22	.05 and 150 Ohm resistor	Black Bakelite Container
15	.1, .15, .25, 2-.5 (50-60 cycles) .05, .15, .25, 2-.5 (25-40 cycles)	Metal Container
24	.05	
33	(50 to 60 cycles) 6. (25 to 40 cycles) 10.	Electrolytic Electrolytic
34	6.	Electrolytic

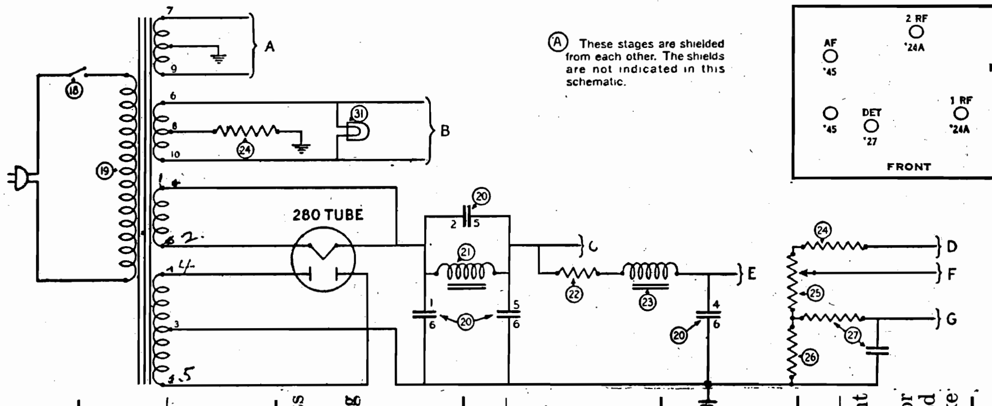
Table 4—Resistor Data

No. on Figs. 3 and 4	Power (Watts)	Resistance	Color		
			Body	Tip	Dot
22	...	150 and .05 Mfd.	Black Bakelite Container		
11	.5	10,000	Brown	Black	Orange
23	1.	15,000	Brown	Green	Orange
26	1.	25,000	Red	Green	Orange
28	.5	32,000	Orange	Red	Orange
27 29	.5	99,000	White	White	Orange
21	.5	160,000	Brown	Blue	Yellow
13	.5	240,000	Red	Yellow	Yellow
14 20	.5	490,000	Yellow	White	Yellow

MODEL 65

PHILCO RADIO & TELEVISION CORP.





(A) These stages are shielded from each other. The shields are not indicated in this schematic.

Model Philco 65

Table 8
Tube Socket Readings

Type Tube	"A" Volts	"B" Volts	"B" Volts (Screen Grid)	"C" Volts (Control Grid)	MA Plate	Cathode
224	2.5	150	*.2 to 75	1.5	1.5	+1.5
227	2.5	250	....	28	†.8 to 3.5	+28
245	2.5	250	....	50	32	....
280	5.0	350-V. A.C.	....	....	55	....

*The voltage varies from 75 volts with the volume control turned for full volume to .2 volts with the control turned for minimum volume.

†When there is no signal being reproduced the detector plate current will be about .8 MA. Strong signals will cause a rise in current to 3.5 MA.

Table 9
Power Transformer Voltage [AC]

Terminals	A.C. Volts	Secondary
1–2	700	A.C. Supply to Plates of Rectifier Tube
3		Center Tap of Rectifier Plate Secondary
4–5	5.0	Rectifier Filament
6–10	2.5	Filament 245 Tubes
8		Center Tap of 245 Tube Secondary
7–9	2.5	Heater 224 and 227 Tubes

Green lead—Center Tap for Secondary 7–9
Current Consumption—125 V. A.C. 95 Watts

Table 10
D. C. Voltage Across Filter Condenser Block

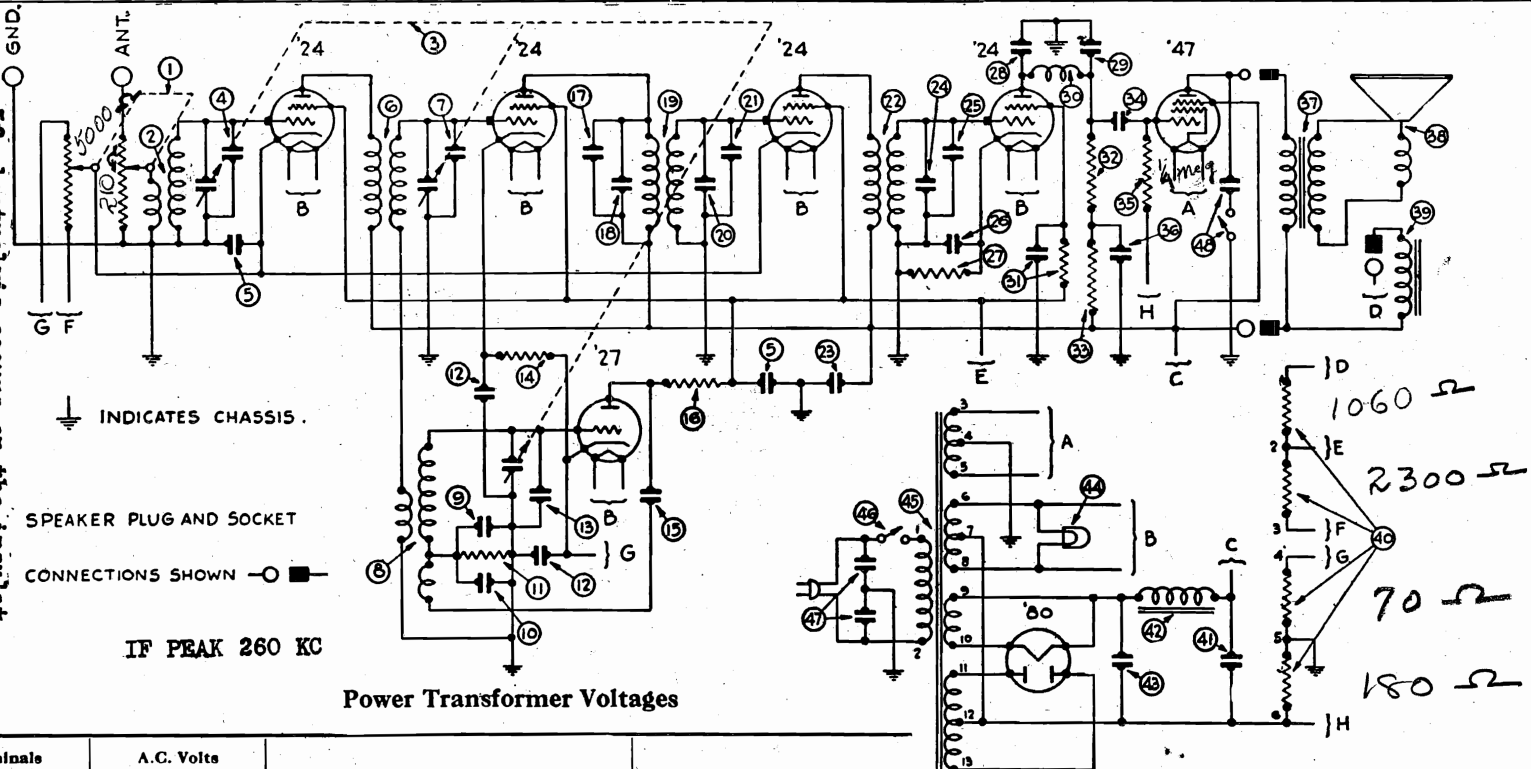
Terminals	D.C. Volts	Capacity	Circuit
1–6	325	2.0 Mfd.	First Filter Section, Ground to 280 Filament
2–5	20	.15 Mfd.	Parallel with First Choke Coil
3	...	...	Blank Terminal for Detector Plate Resistor
4–6	280	1.0 Mfd.	Last Filter Section, Gnd. to Det. Plate Lead
5–6	305	2.0 Mfd.	2d Filter Section, Gnd. to End of First Choke

Table 11
Voltage Across Resistors

Resistor Number	Resistor Terminal	Voltage Drop	Circuit
24	1–2	45–50	Grid Bias for the 245 Tubes
	3–4	75–80	Reduces B Voltage for the Screen Grid
22	1–2	4–10	Detector Plate Voltage
14	1–2	28	Detector Grid Bias
Field Coil of Speaker		135–140	Supplies Field Energy of Dynamic Speaker

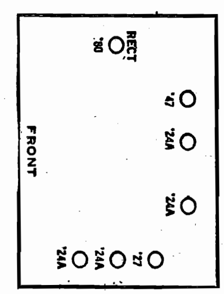
PHILCO RADIO & TELEVISION CORP.

MODEL 70, 70-A
Below B-22,000
Voltage
Schematic
MODEL 570
Grandfather Clock



If electrolyis occurs on the insulation of the wire between the filter choke and the electrolytic condenser, unsolder the wire and cover with spaghetti.

Models 70, 70A, 70E, 270, 270A



MODEL 570 Grandfathers Clock contains the same radio equipment as Model 70

Power Transformer Voltages

Terminals	A.C. Volts		
1–2	105 to 125	Primary	Black (Small Gauge)
3–5	2.5	Filament of 47	Dark Green
6–8	2.5	Filament of 24	Black (Heavy Gauge)
9–10	5.	Filament of 80	Light Blue
11–13	700.	Plates of 80	Yellow
4	.....	Center Tap of 3–5	Black, Green Tracer
7	.....	Center Tap of 6–8	Black, Yellow Tracer
12	.....	Center Tap of 11–13	Yellow, Green Tracer

Tube Socket Readings Taken with AC Set Tester AC Line—115 volts

Tube Type	Tube Circuit	Filament Volts	Plate Volts	Screen Grid Volts	Control Grid Volts	Cathode Volts	Plate Milli-amperes
24	1st R. F.	2.25	250	85	3.	19.5	3.
24	1st Det.	2.25	250	87	5.5	21.5	.5
27	Osc.	2.25	85	...	2.	19.5	2.5
24	1st I. F.	2.25	250	87	3.	19.5	3.
24	2nd Det.	2.25	105	75	6.	22.	.1
47	Audio	2.25	245	255	1.	...	...
80	Rectifier	4.7	...	...	...	...	40/plate

Note—Volume Control Off; Station Selector turned to Low Frequency End.

MODEL 70,70-A
Chassis- Data
MODEL 570
Grandfather Clock.

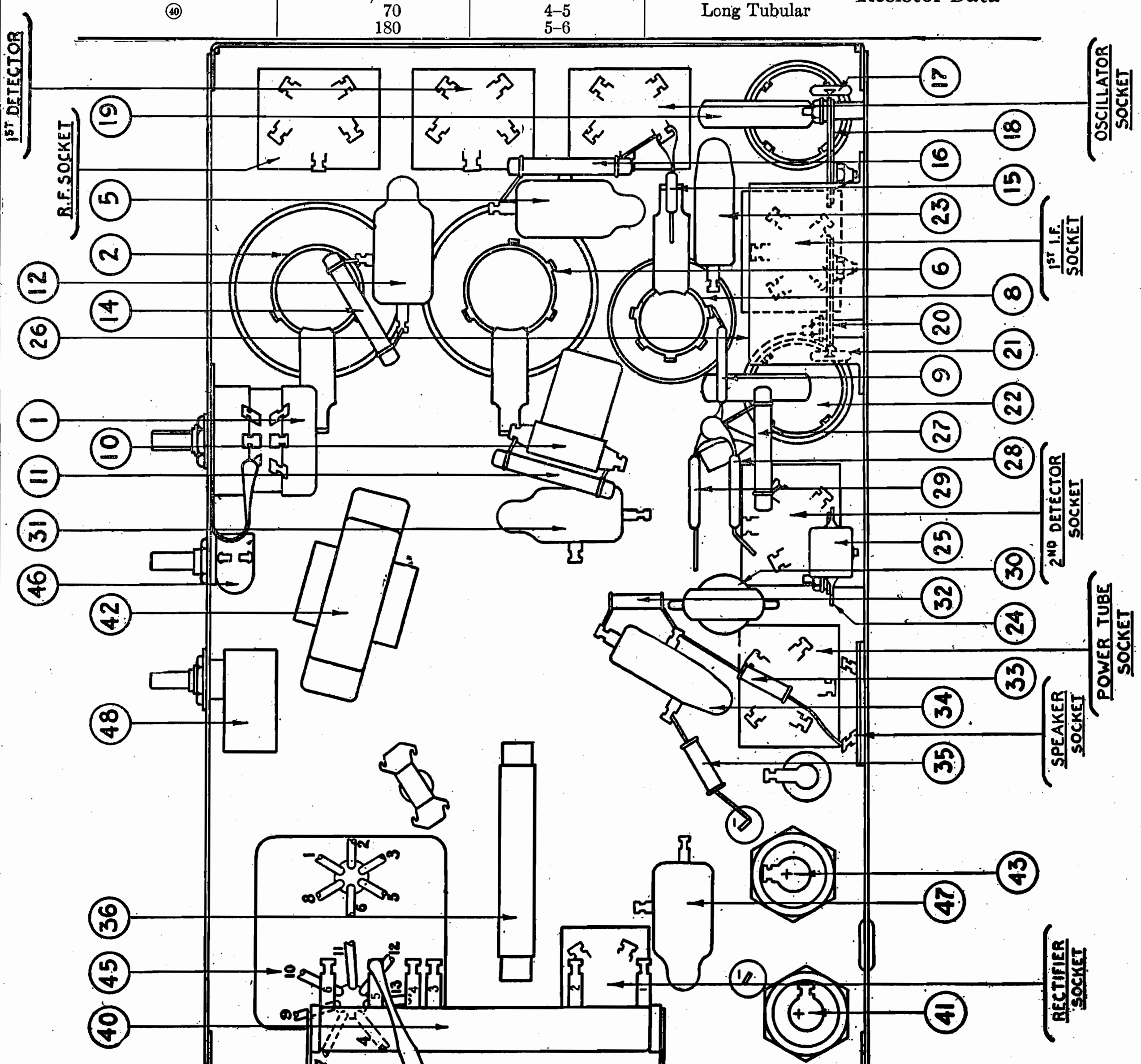
PHILCO RADIO & TELEVISION CORP.

Condenser Data

No. on Figs. 3 and 4	Capacity MFD	Color
5	.09	
9	.00041	Yellow Orange
12	.09	
15 17 21	.00011	Blue, Golden Yellow
23	.05	
25	.00005	Light Blue, White
26	.5	
28	.0005	Green
29	.00025	Yellow
31	.09 and 250 Ohm Resistor	
34	.01	
36	.25	
41	(25 to 40 cycles) 10.	
41	(50 to 60 cycles) 6.	
43	6.	

Resistor Data

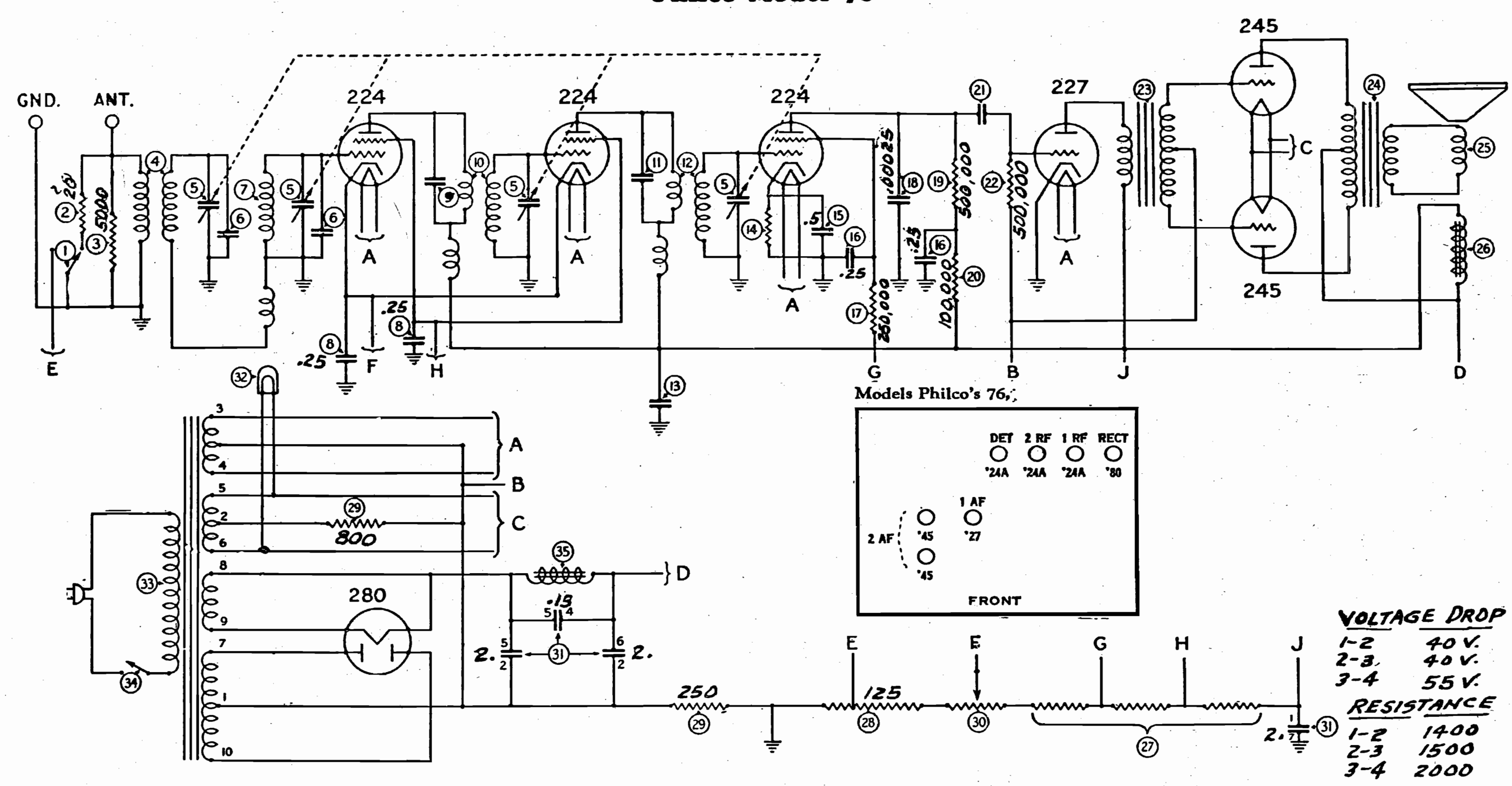
No. on Figs. 3 and 4	Resistance	Terminal	Color Body	Color Tip	Color Dot
11 27	50,000	..	Green	Brown	Orange
14	5,000	.	Green	Black	Red
16	13,000	...	Brown	Orange	Orange
32 35	250,000	..	Red	Yellow	Yellow
33	100,000	...	White	White	Orange
	1,060	1–2			
	2,300	2–3			
40	70	4–5	Long Tubular		
	180	5–6			



PHILCO RADIO & TELEVISION CORP.

MODEL 76

Philco Model 76



Power Transformer Voltages

Terminals	A.C. Volts	Secondary
1		Center Tap for 280 Plate
2		Center Tap for 245 Tubes
3– 4	2.67	Heaters of 224 and 227 Tubes
5– 6	2.68	Filaments of 245 Tubes
8– 9	5.00	Filament of 280 Tube
7–10	7.50	Plate of 280 Tube
Red Wire		Center Tap for 224 and 227 Tubes
Red Wire		Primary } Through panel together
Red Wire		Primary } Through panel together

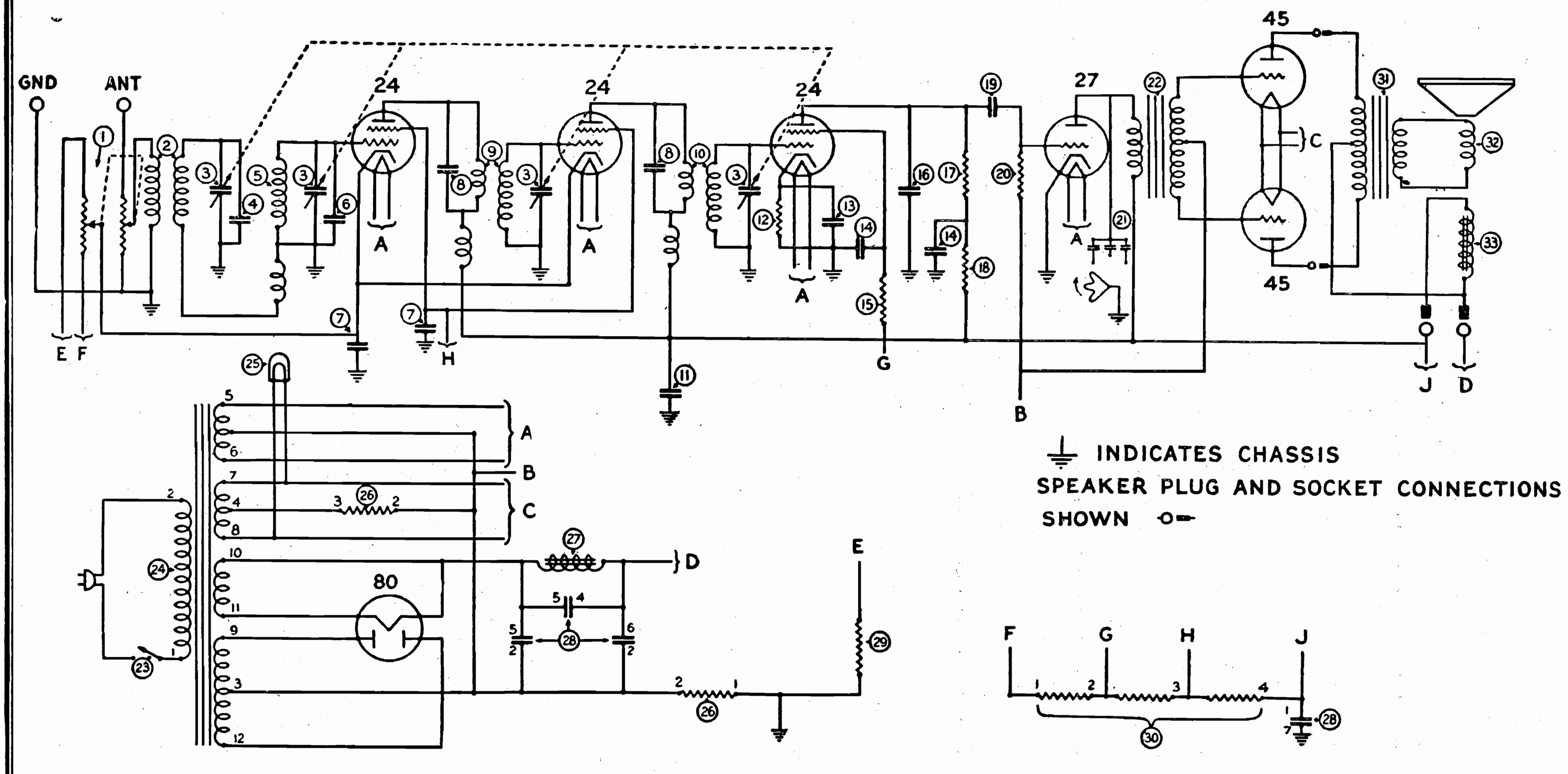
Model 76.

Vol.Contr.set to max. - Line Volts:115

Tube Type	Location	Fil. Volts	Plate Volts	S.G. Volts	Contr. Gr. Volts	Cathode Volts	Plate Ma.
'24	1 R.F.	2.3	145	90	3.	13.	3.5
'24	2 R.F.	2.3	145	90	3.	13.	3.5
'24	Det.	2.3	36	30	1.4	12.	0.
'27	1 A.F.	2.3	140		1.	10.	3.
'45	2 A.F.	2.2	230		46.		30
'45	2 A.F.	2.2	230		46.		30
'80	Rect.	4.5					50

PHILCO RADIO & TELEVISION CORP.

MODEL 77, 77-A
Schematic

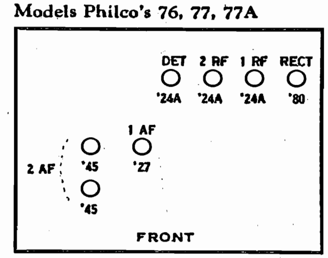


COMPENSATING

Always use an oscillator signal when adjusting compensating condensers. With the Receiver set up for operation, adjust the oscillator and Receiver so the signal is turned in between 120 and 140 on the tuning scale. Have the Receiver volume control turned on full. Adjust the oscillator so that the received signal is very weak. Using a fibre wrench turn down on the adjusting nut of the first compensating condenser until it is quite tight. This purposely throws the first stage out of balance while adjusting the second stage.

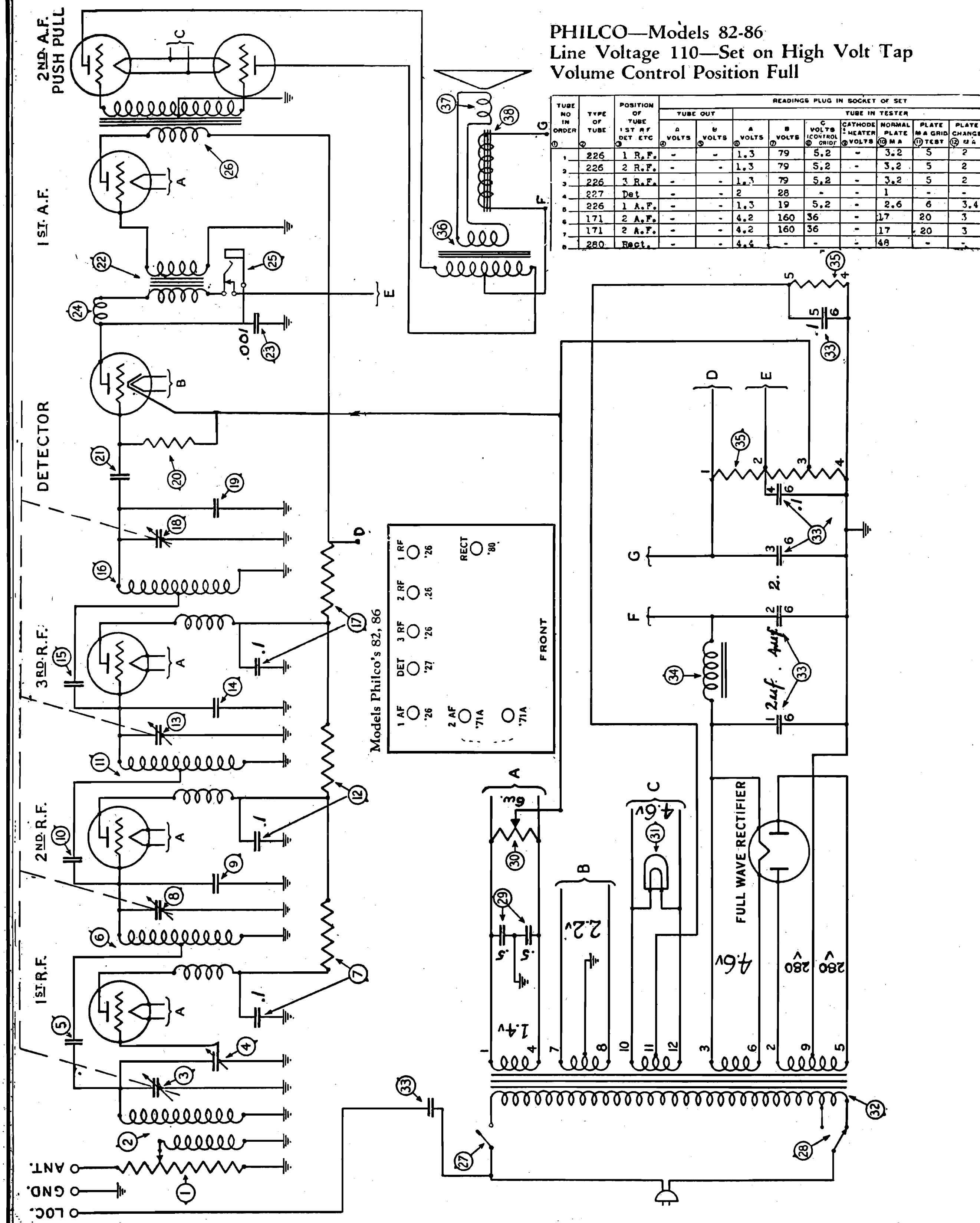
After tightening this first adjusting nut compensate the second condenser in the usual manner, that is, tune the Receiver very carefully to the oscillator signal and adjust the compensating condenser for the maximum signal. After this adjustment has been made, adjust the first compensating condenser in the same manner.

Models Philco's 76, 77, 77A



MODEL 82,86

PHILCO RADIO & TELEVISION CORP.

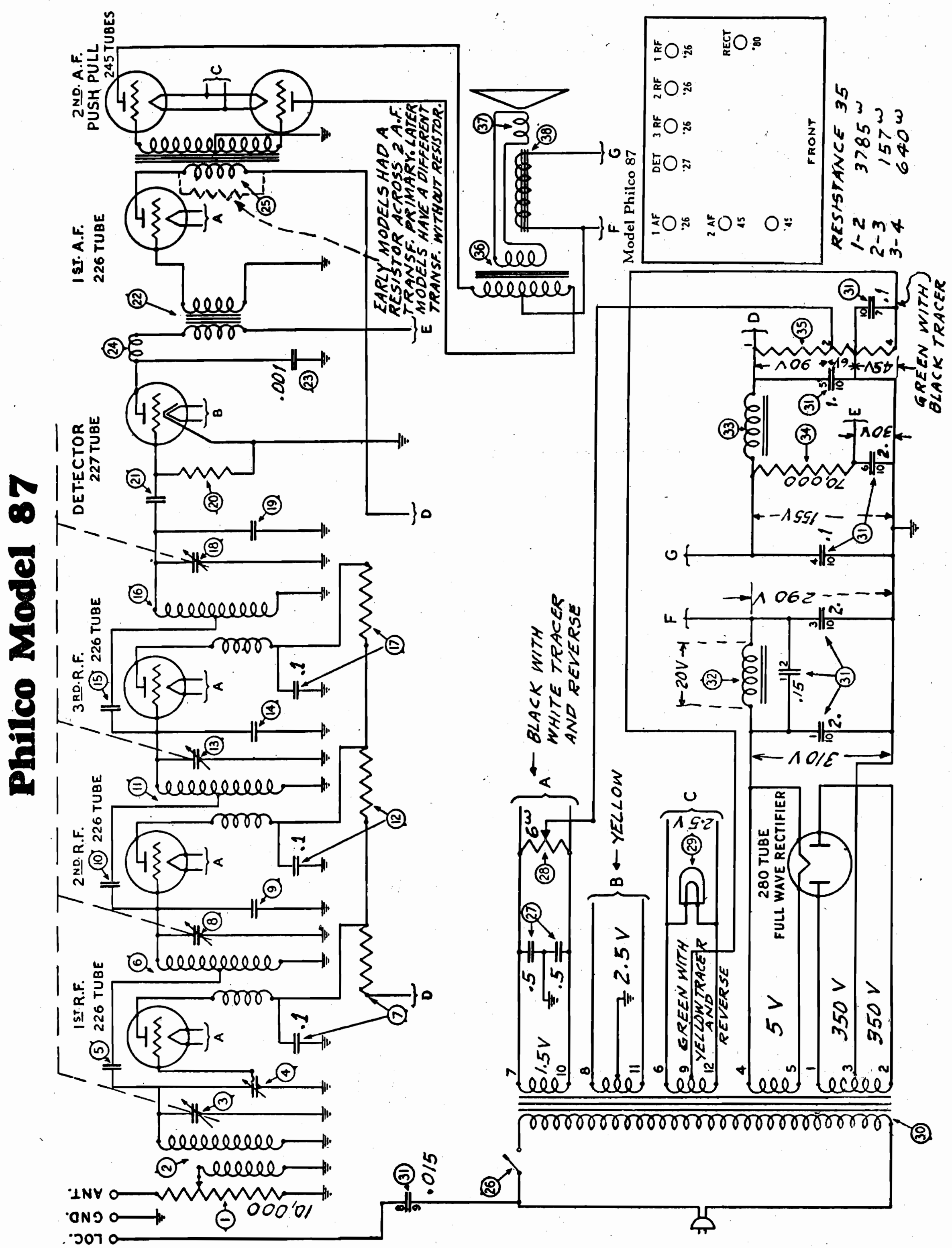


PHILCO—Models 82-86
Line Voltage 110—Set on High Volt Tap
Volume Control Position Full

Tube No in Order (1)	Type of Tube (2)	Position of Tube 1st RF Det Etc (3)	Readings Plug in Socket of Set: Tube Out: A Volts (4)	B Volts (5)	Tube in Tester: A Volts (6)	B Volts (7)	C Volts (Control Grid) (8)	Cathode - Heater Volts (9)	Normal Plate M A (10)	Plate M A Grid Test (11)	Plate Change M A (12)
1	226	1 R.F.	-	-	1.3	79	5.2	-	3.2	5	2
2	226	2 R.F.	-	-	1.3	79	5.2	-	3.2	5	2
3	226	3 R.F.	-	-	1.3	79	5.2	-	3.2	5	2
4	227	Det	-	-	2	28	-	-	1	-	-
5	226	1 A.F.	-	-	1.3	19	5.2	-	2.6	6	3.4
6	171	2 A.F.	-	-	4.2	160	36	-	17	20	3
7	171	2 A.F.	-	-	4.2	160	36	-	17	20	3
8	280	Rect.	-	-	4.4	-	-	-	48	-	-

PHILCO RADIO & TELEVISION CORP.

MODEL 87
Schematic
Socket



MODEL 95

PHILCO RADIO & TELEVISION CORP.

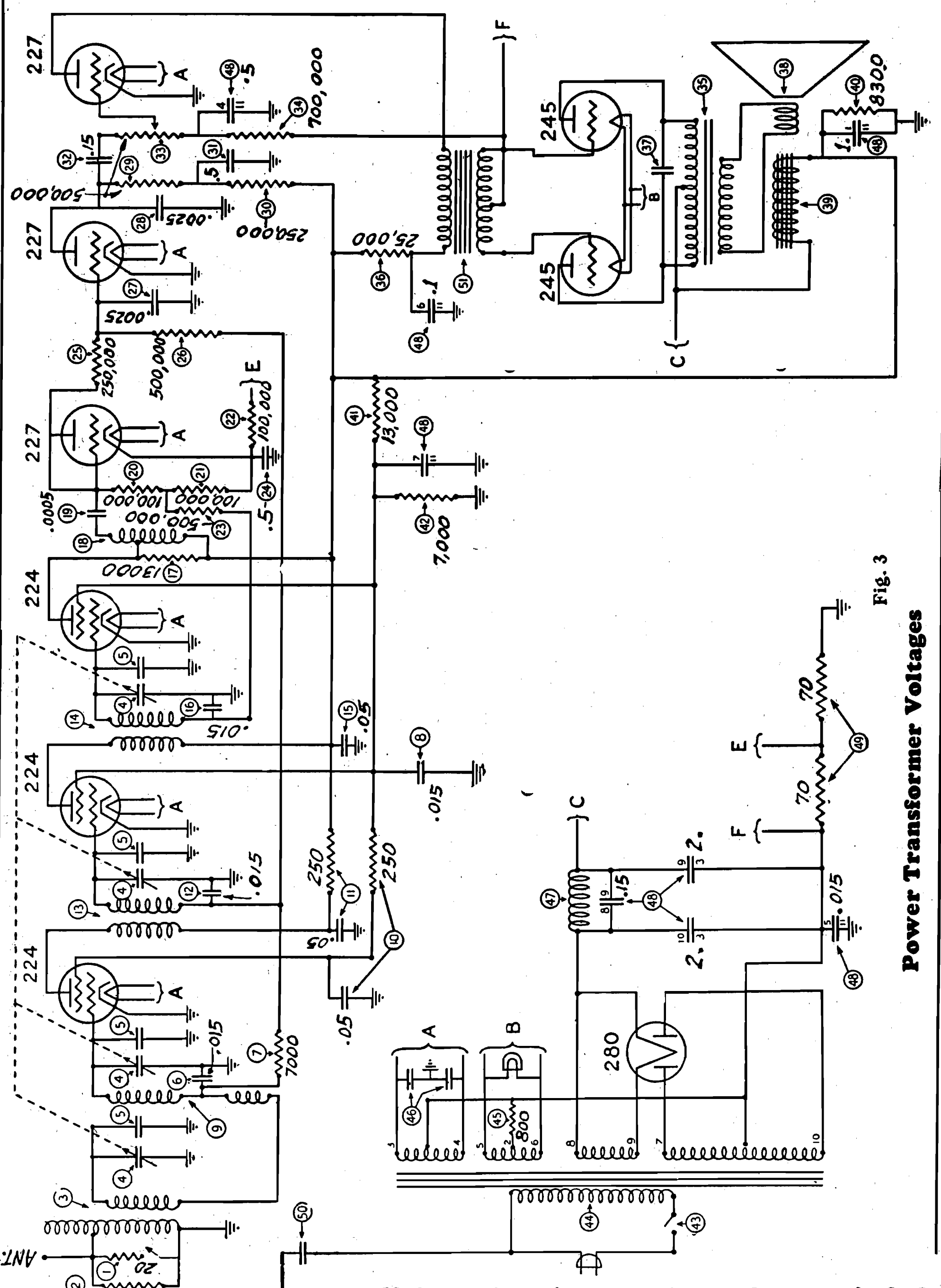
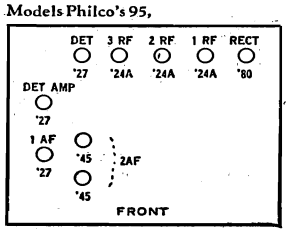


Fig. 3

Power Transformer Voltages

Terminals	A.C. Volts	Secondary
3 – 4	2.67	Heaters of 224 and 227 Tubes
5 – 6	2.68	Filaments of 245 Tubes
2		Center Tap for 245 Tubes
8 – 9	5.00	Filament of 280 Tube
7 – 10	7.50	Plate of 280 Tube
1		Center Tap for 280 Tube
Yellow Wire		Center Tap for 224 and 227 Tubes
Black Wire		Primary
Green Wire		Primary

Models Philco's 95,



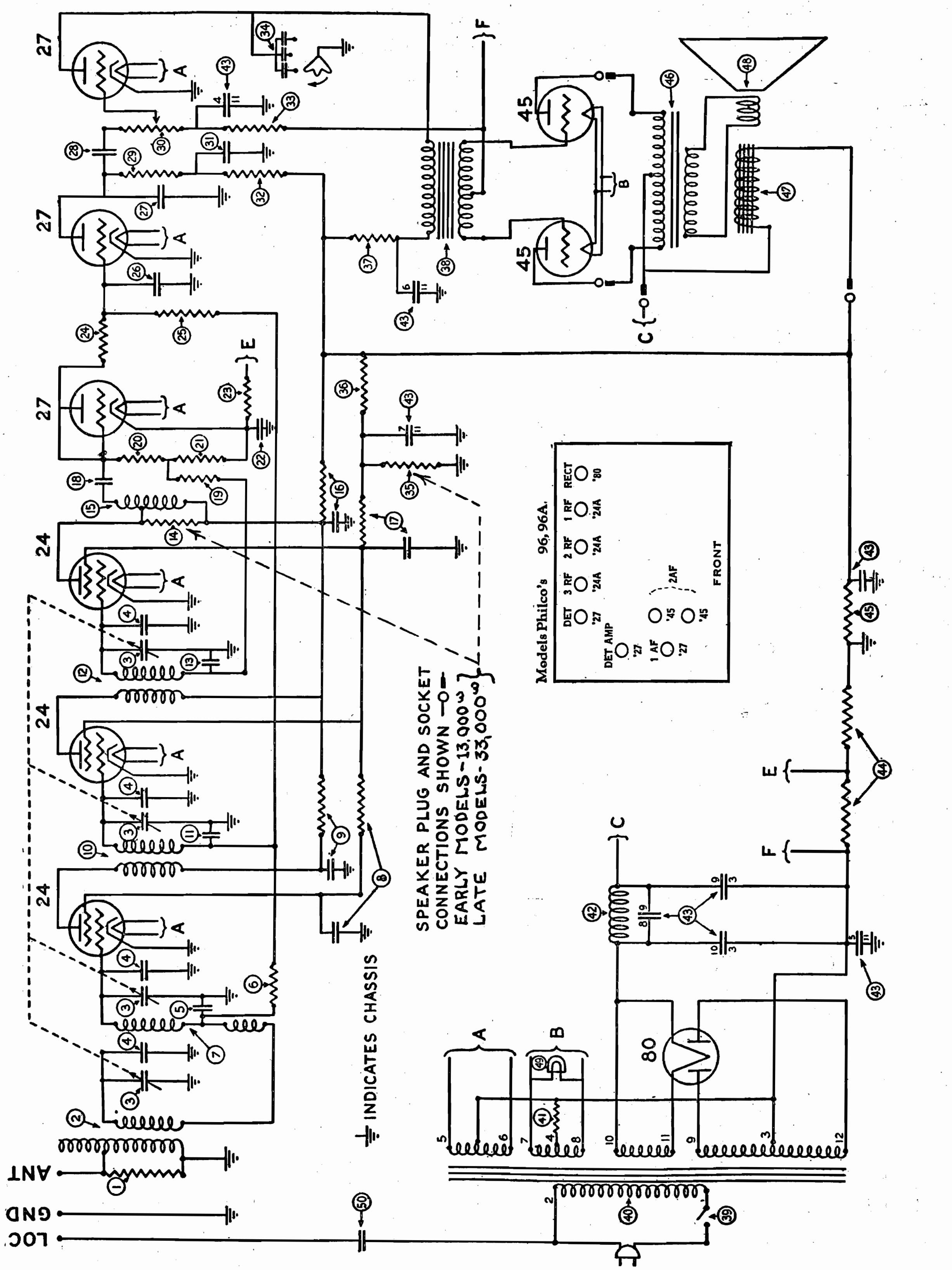
Voltages Read with A.C. Set Tester. A.C. Line 115 Volts.

Tube Type	Tube Circuit	Filament Volts	Plate Volts	Screen Grid Volts	Control Grid Volts	Cathode Volts	Plate Milli-Amperes
280	Rectifier	4.5					43/Plate
224	1st R. F.	2.15	155	95	0	5.3	4
224	2d R. F.	2.15	155	95	0	5.3	4
224	3d R. F.	2.15	155	95	0	5.3	4
227	Det.	2.15	0		–.5	.7	0
227	Det. Amp.	2.15	27		–.5	5.5	0
227	1st A. F.	2.15	85		–2.0*	5.5	2.5
245	2d A. F.	2.2	250		41		28
245	2d A. F.	2.2	250		41		28

*This is read with Volume Control off. With it on the reading will be .2 volt.

PHILCO RADIO & TELEVISION CORP.

MODEL 96,96-A
Schematic



PHILCO RADIO & TELEVISION CORP.

MODEL 112,112-A
Below 174,001
Voltage
Electrical Values

Models 112 and 112-A Receivers

Model 112 Receivers are for operation on 100-130 volt, 50-60 cycle AC lines
Model 112-A Receivers are for operation on 100-130 volt, 25-60 cycle AC lines

Table 1—Tube Socket Readings Taken with AC Set Tester AC Line—115 volts

Tube		Filament Volts	Plate Volts	Screen Grid Volts*	Control Grid Volts	Cathode Volts	Plate Milli-Amperes	Screen-Grid Milli-Amperes ‡
Type	Circuit							
24	1st R. F.	2.1	190	60	.2	5	1.7	1.75
27	Osc.	2.1	45	..	.7	7	1.6	....
24	1st Det.	2.1	180	62	4.6	8	.5†	.15
24	1st I. F.	2.1	185	65	...	5	1.5	1.7
24	2nd I. F.	2.1	190	82	2.2	5	3	1.85
27	Det. Rect.	2.2	...	..	.4	.5	.....	....
27	Det. Amp.	2.2	35	..	.4	5	.20‡	....
27	1st A. F.	2.1	95	..	1.2	5	4.	....
45	2nd A. F.	2.2	255	..	50	...	32.5	....
45	2nd A. F.	2.2	255	..	50	...	32.5	....
80	Rect.	4.9	...	..	...	...	50/Plate	....

*Read with C 100 Scale.
†Read with 20 Mil. Scale.
‡Read with 2 Mil. Scale.

Note—Volume Control Off; Station Selector turned to Low Frequency End; Range Switch set in "Normal" Position.

Table 2—Power Transformer Voltages

Terminals	A.C. Volts	
1—2		Primary
3		Center Tap 80 Tube
4		Center Tap 45 Tubes
5—6	2.67	Heaters for 24 and 27 Tubes
7—8	2.68	Filaments for 45 Tubes
9—12	750.	Plates 80 Tube
10—11	5.0	Filament 80 Tube
Rubber Covered Lead		Center Tap for 24 and 27 Tubes

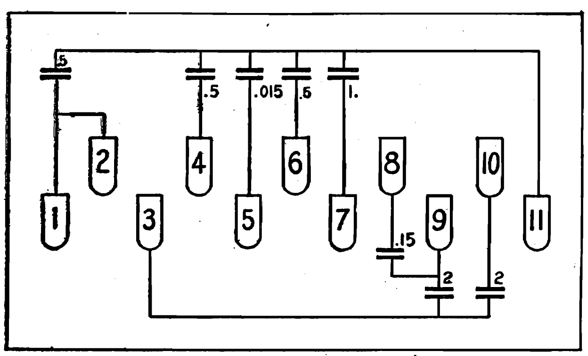
Table 3—Condenser Data
(Other Than Filter Condenser)

No. on Figs.	CAPACITY	COLOR
6	.05	Bakelite Container
10 11	.05 and 250 Ohm Resistor	Bakelite Container
17	.25 (two sections)	Metal Container
19 23 27 33 38	.00011	Blue, Golden Yellow
21	.0007	White, Golden Yellow
28	.05	Bakelite Container
29	.05 and 250 Ohm Resistor	Bakelite Container
35	.00005	Light Blue, White
40	.5	Metal Container
42	.00025	Yellow
43	.015	Bakelite Container
45	.05	Bakelite Container
61	.015 (two sections)	Bakelite Container
67	.05	Bakelite Container

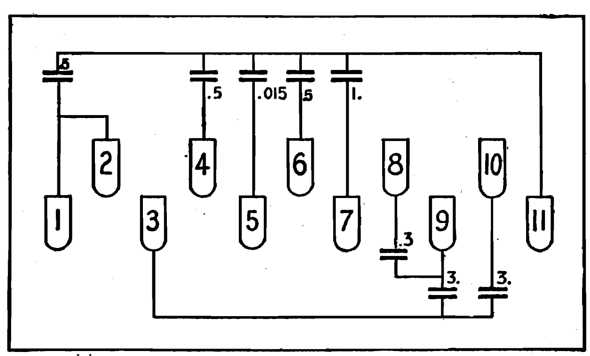
Table 4—Resistor Data

No. on Figs.	Power (Watts)	Resistance	COLOR Body	Tip	Dot
20	1.	1,000	Brown	—Black	—Red
1	.5	10,000	Brown	—Black	—Orange
18	1.	13,000	Brown	—Orange	—Orange
51 52	1.	25,000	Red	—Green	—Orange
16 39 70	.5	50,000	Green	—Brown	—Orange
48 64	1.	70,000	Violet	—Black	—Orange
8 41 66 68	.5	100,000	White	—White	—White
46	1.	250,000	Red	—Yellow	—Yellow
34	.5	500,000	Yellow	—White	—Yellow
44	1.	500,000	Yellow	—White	—Yellow
58		70	Flat Wire Wound (two sections)		
59		800	Short Tubular		
57		10,000	Long Tubular		

Model 112 Condenser Block Part No. 3754

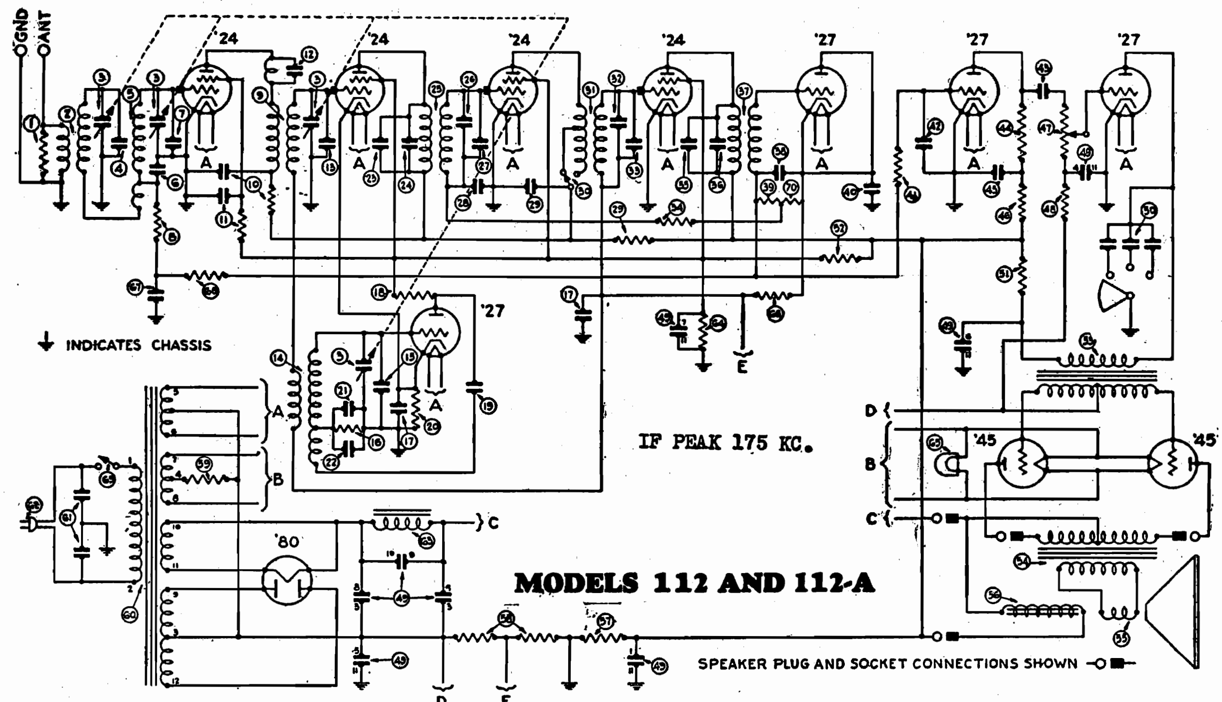


Model 112-A Condenser Block Part No. 3755



PHILCO RADIO & TELEVISION CORP.

MODEL 112,112-A
Below #174,001
MODEL 212,212-A
Schematics

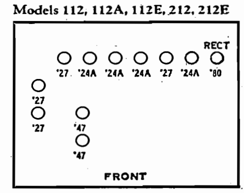


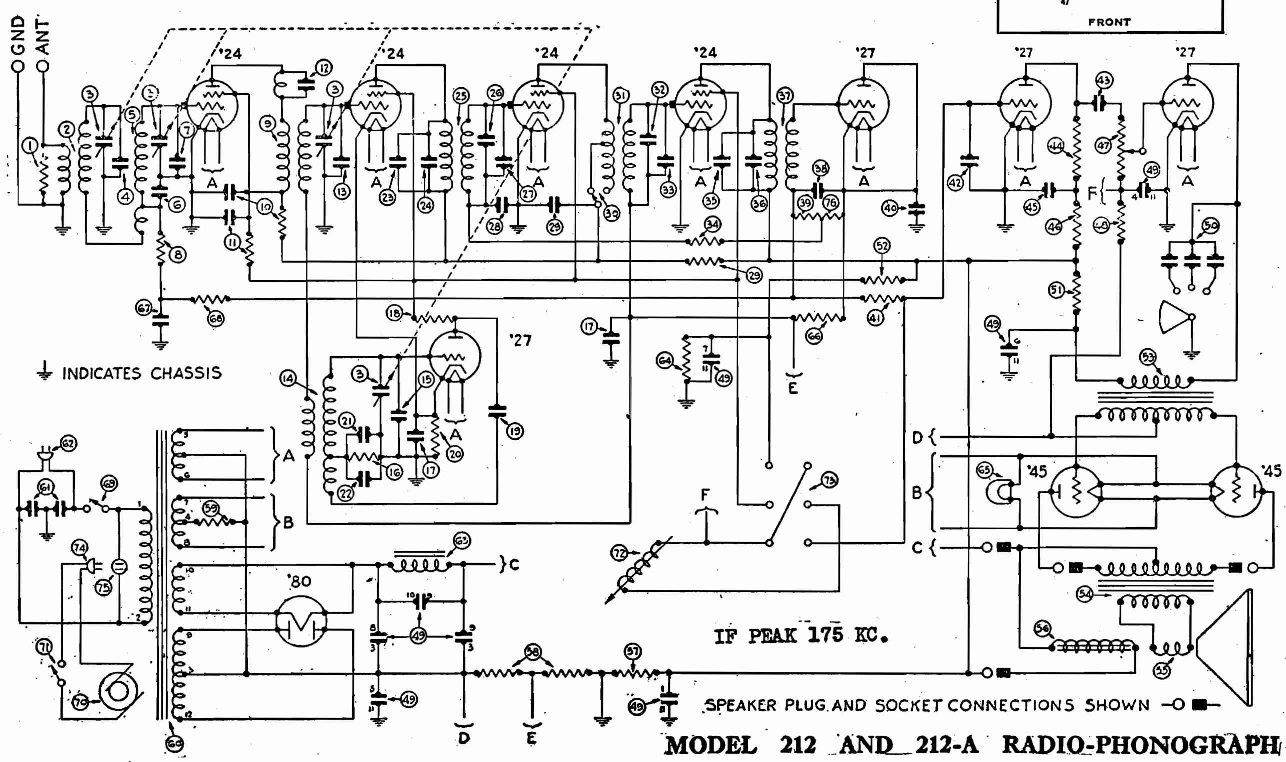
MODELS 112 AND 112-A

SPECIAL NOTE
Resistor (70) in models 112,112-A is (76) in models 212,212-A

For voltage data and other values applying to models 212,212-A, see data for models 112,112-A

Models 112, 112A, 112E, 212, 212E

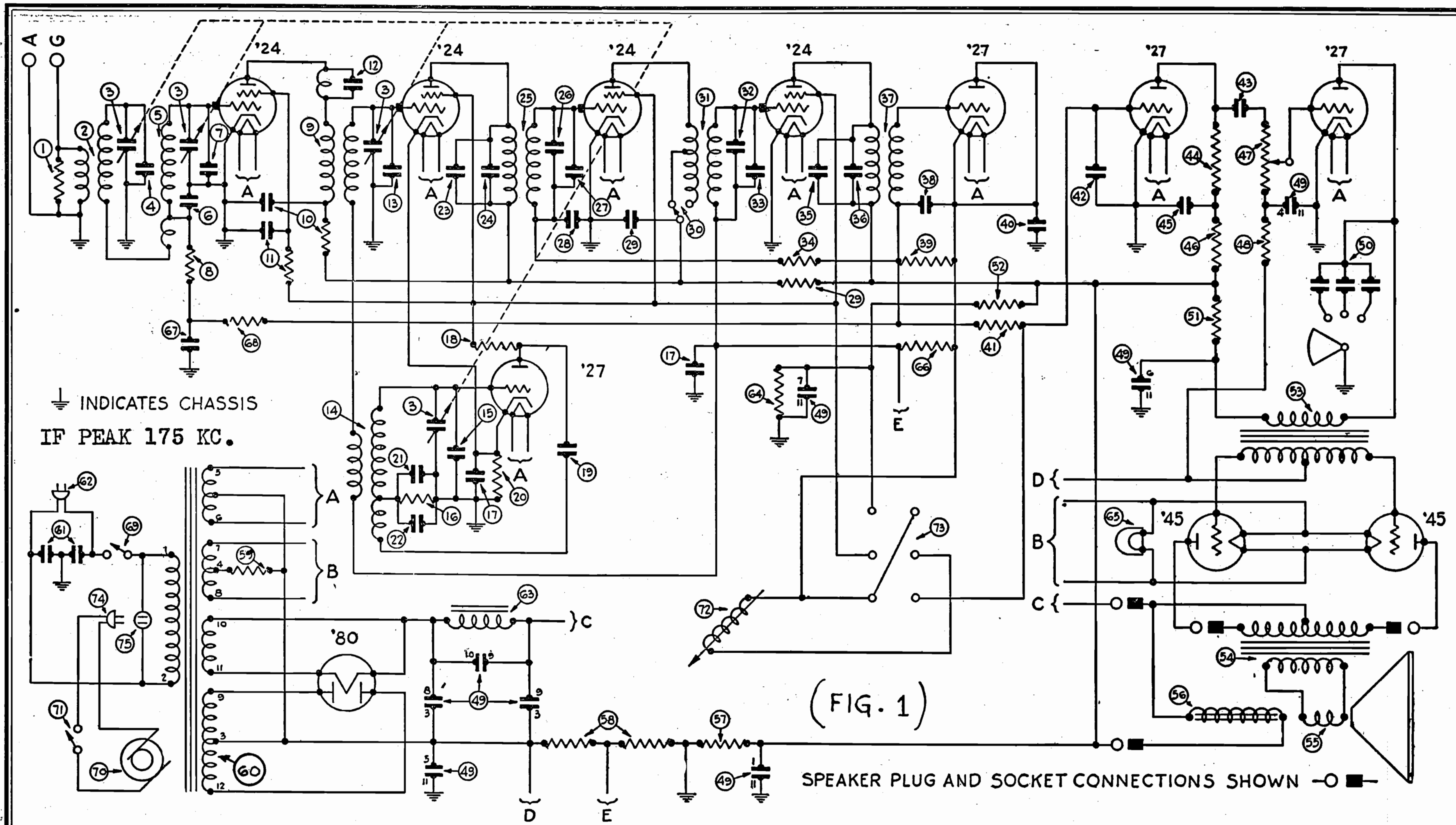




MODEL 212 AND 212-A RADIO-PHONOGRAPH

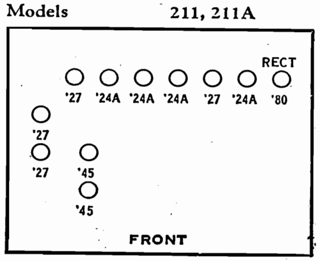
PHILCO RADIO & TELEVISION CORP.

MODEL 211, 211-A



(FIG. 1)

Models 211, 211A



NOTE:—Starting January 15th, the connection from the pick-up to the Detector Rectifier Cathode is changed so as to reach the connection between the volume control No. 47 and resistor No. 48. This change has been made by removing the green wire in the radio-phono switch cable from resistor No. 66, and lengthening it to reach the connection indicated at the volume control.

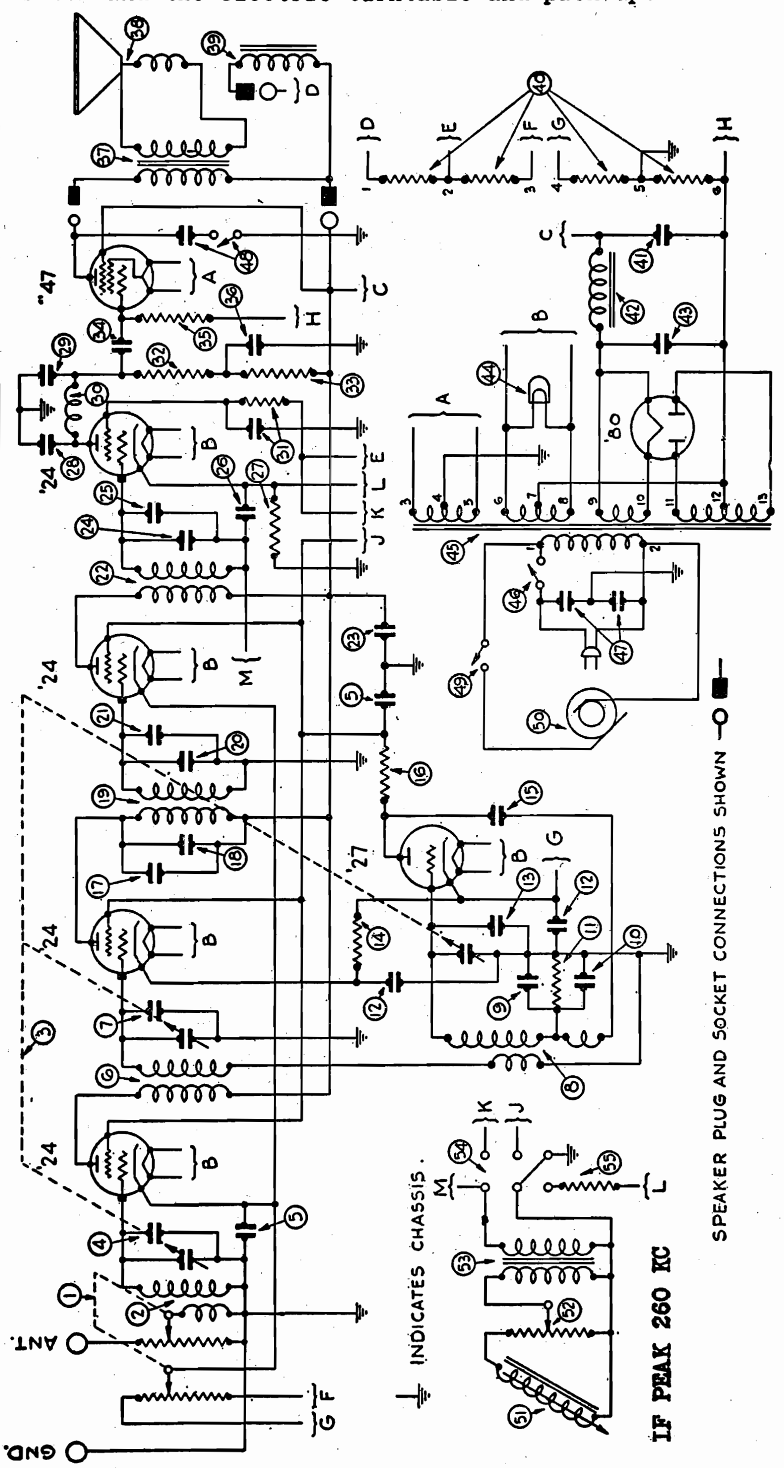
Voltage, resistor and condenser data furnished in connection with Models 111 and 111-A is applicable in every respect to Models 211 and 211-A.

PHILCO RADIO & TELEVISION CORP.

MODEL 270 AND 270-A RADIO-PHONOGRAPH

MODEL 70 IS FOR USE ON 50-60 CYCLE 105-125 VOLT AC LINES
MODEL 70-A IS FOR USE ON 25 CYCLE 105-125 VOLT AC LINES

The chassis of the 270 and 270-A are the same as the chassis for the 70 and 70-A except for the additional wiring to the radio-phono switch and the electric turntable and pick-up.



ADDITIONAL PARTS LIST - MODELS 270 AND 270-A

		Part No.
48	Switch (for motor)	5168
50	Motor (50 to 60 cycle)	4543
	(25 cycle)	4561
51	Pick-Up Head	5251
52	Volume Control	5117
53	Pick-Up Coupling Transformer	5167
54	Phono-Radio Switch	5170
55	Resistor (33000 ohms)	3525
	Turntable	4547
	Cord Connector Plug	4091
	Cord Connector Socket	4124
	Needle Cup	4101
	Needle Box	4102

In case of audio howl and the shipping screws have been properly loosened, the condition can usually be eliminated by placing a metal tube shield over the detector tube

Do not attempt repair work on the turntable motor. Should this part become defective, replace with another motor and return it to the factory

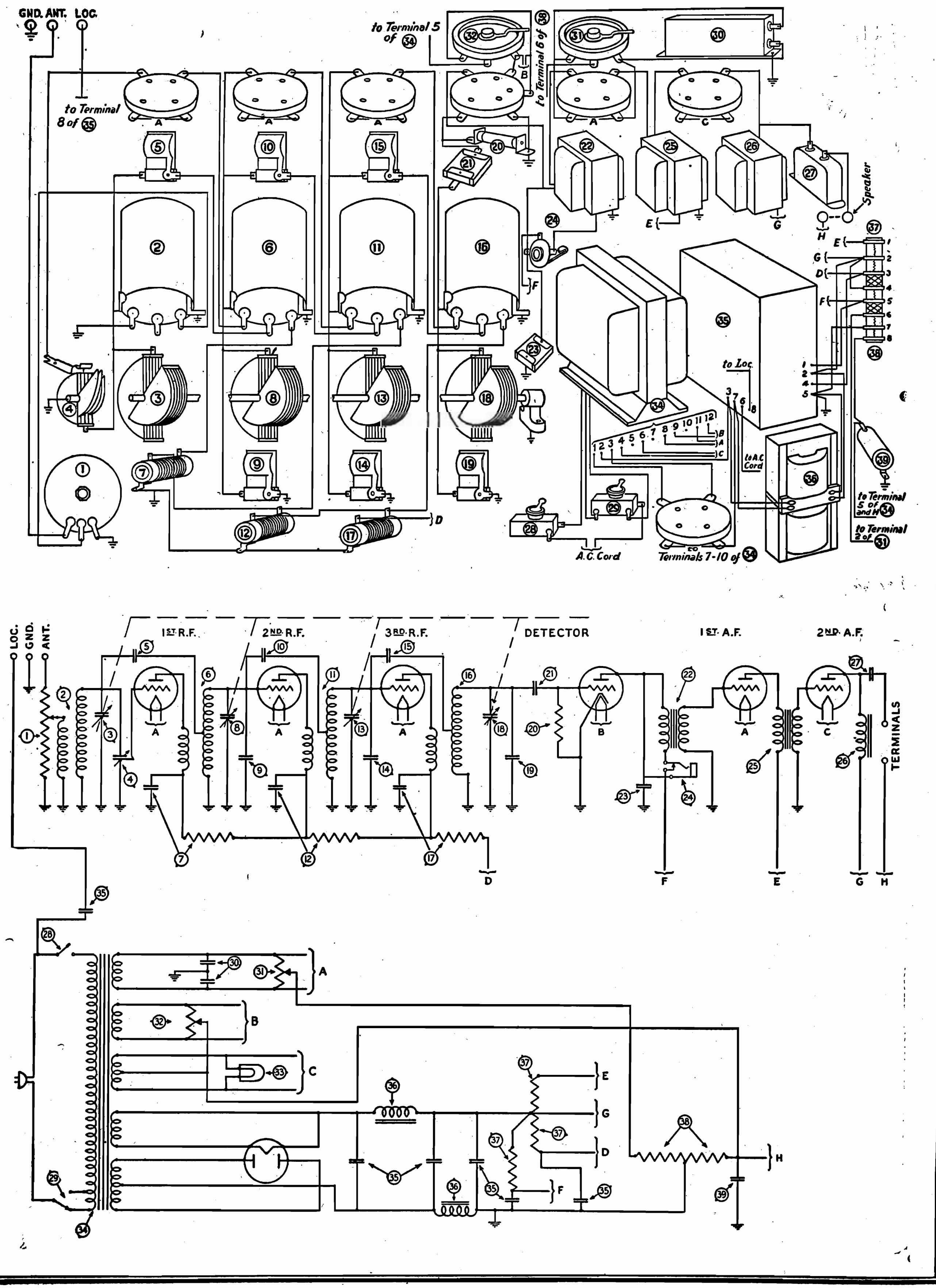
The pick-up should be handled in the same way. If it doesn't operate properly, - remove the mounting bolt which holds the pick-up head to the tone arm, - replace with another and return it to the factory.

Grease the worm gear of the motor with a clear petroleum jelly or a commercially pure vaseline. In order to oil the bearings of the motor it is necessary to remove the turntable.

There is an oil cup located at the top of the motor board, in which a few drops of light machine oil may be added as needed.

PHILCO RADIO & TELEVISION CORP.

MODEL 500 Series
Schematic
Chassis



MODEL 296, 296-A

PHILCO RADIO & TELEVISION CORP.

Installation Hints on Model 296 Radio-Phonograph

Cardboard packing is placed between the motor disc and the field coils to protect the disc in shipping. Be sure that this packing is removed before placing in service.

There are three causes for complaints such as "distorted," "fuzzy" or "noisy" reproduction when playing records on the Model 296.

Usually the trouble is caused by the turntable motor board being in contact with the cabinet. It is absolutely necessary that the four bolts holding the motor board in place be loosened when the Model 296 is put into service. Pure gum washers are between the motor board and the cabinet, so that when the bolts are loosened the motor board is freely floating on the gum washers.

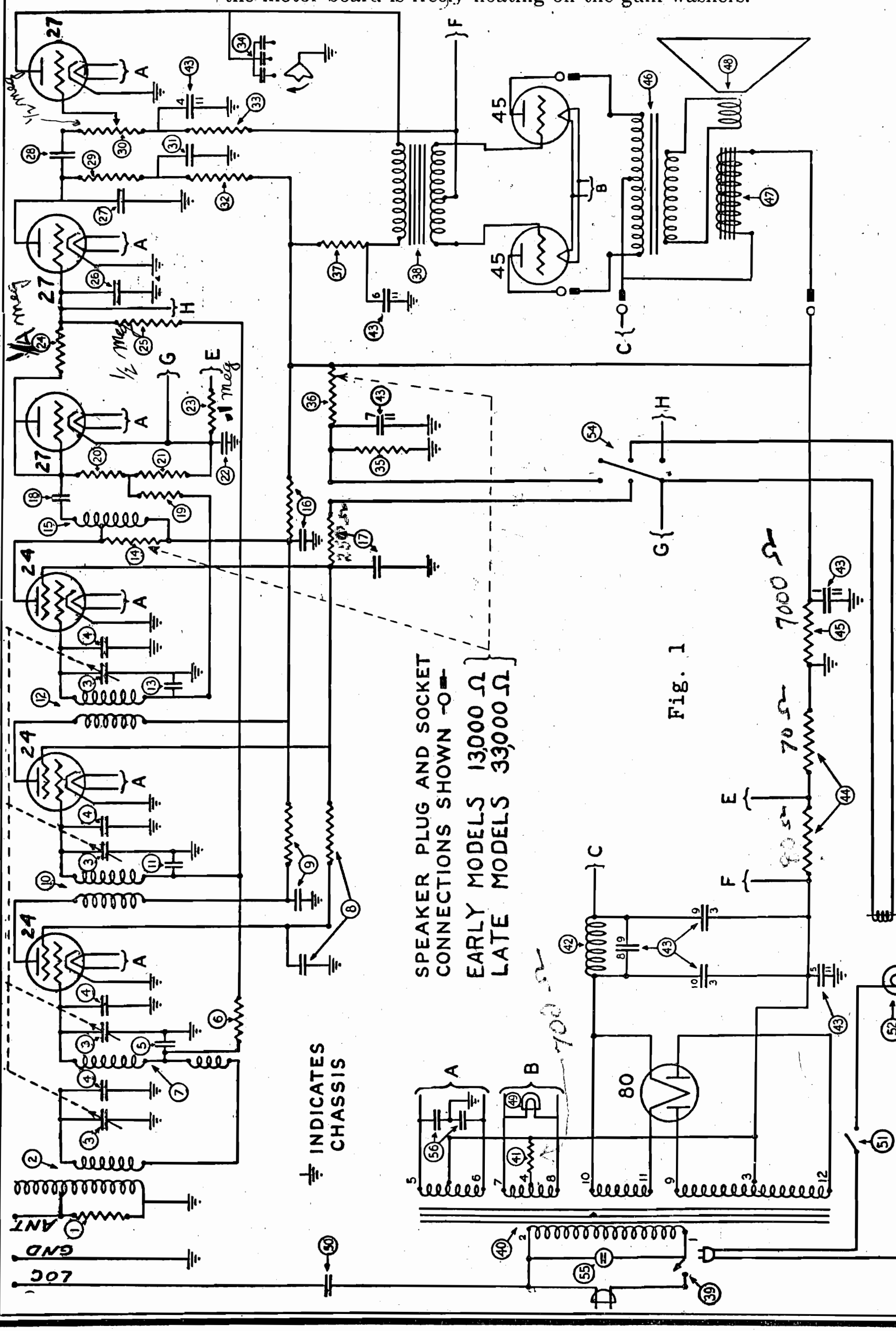


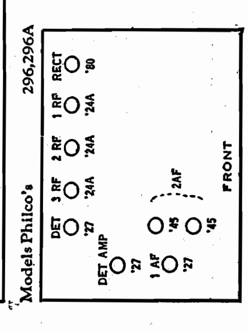
Fig. 1

The first production models of the 296 and 296-A will use a low impedance type pick-up, Part No. 4144, with a coupling transformer, Part No. 4145. The standard Philco pick-up will not be used for the first few weeks.

Whenever the low impedance type pick-up, Part No. 4144 is used be sure the coupling transformer Part No. 4145 is used also. The transformer, however, must not be used with the standard pick-up.

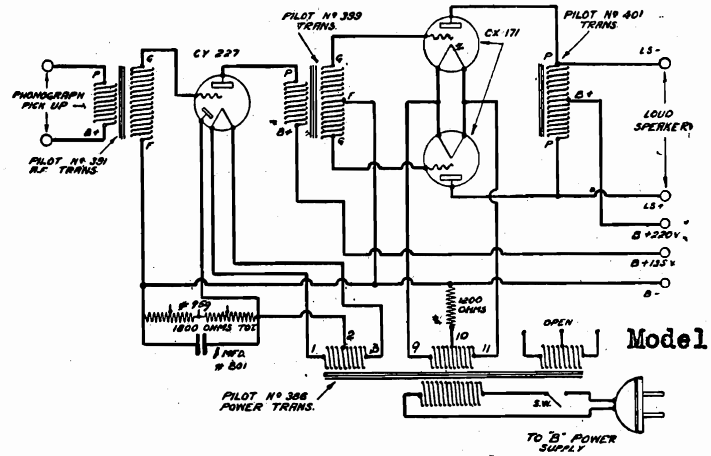
A heater by-pass condenser has been added to the 296 and 296-A chassis. The number in Fig. 1 is (56) and the part number is 3557. This condenser prevents any tendency of the Receiver to oscillate, which may have been noticed on the first few Radio-Phonograph Receivers.

The chassis of the 296 and 296-A are the same as the chassis for the 96 and 96-A except for the additional wiring to the radio-phono switch and the electric turntable and pickup.

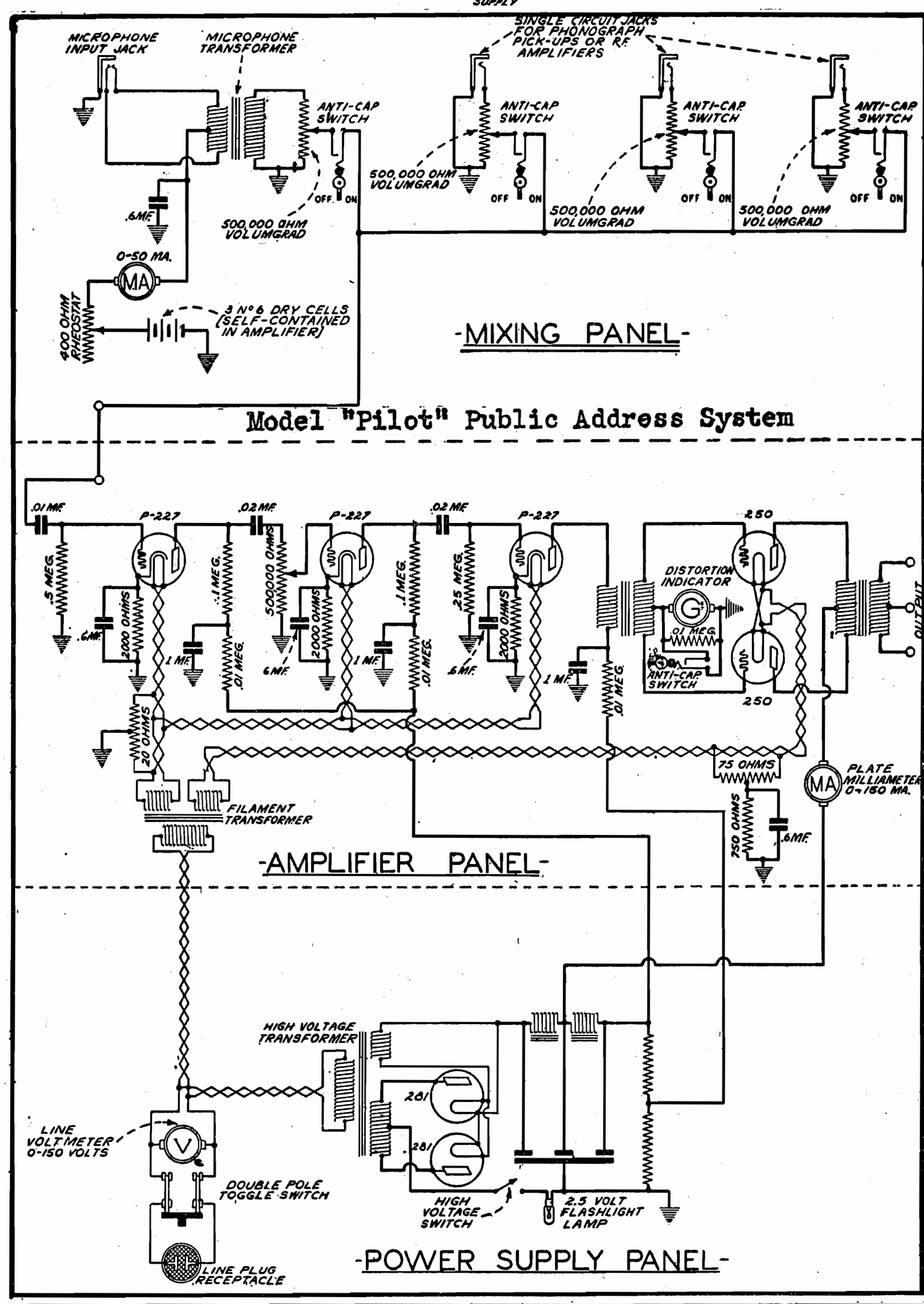


PILOT RADIO & TUBE CORP.

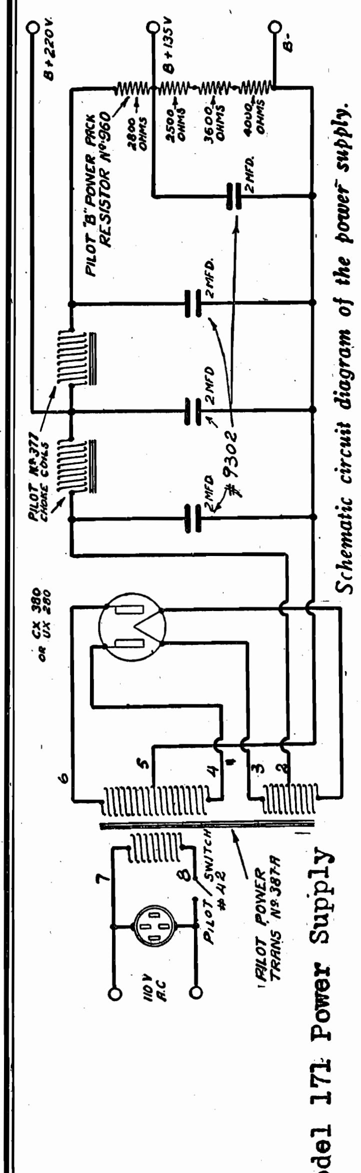
MODEL "171" Power Amplifier
MODEL "Pilot" Public Address System



Model 171 Amplifier



Model "Pilot" Public Address System

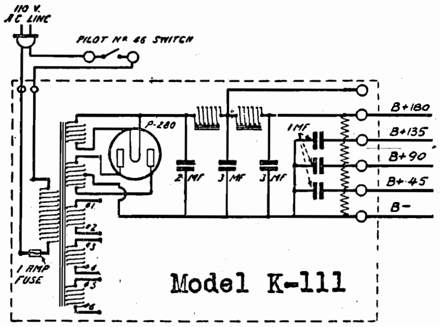


Schematic circuit diagram of the power supply.

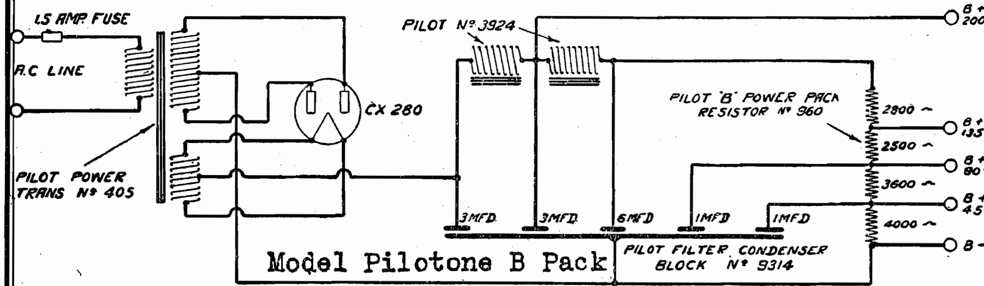
Model 171 Power Supply

MODEL K-111 ABC Pack
MODEL Pilotone B Pack
MODEL ABC Pack for SP5
MODEL Jumbo Power Pack
MODEL Jumbo ABC

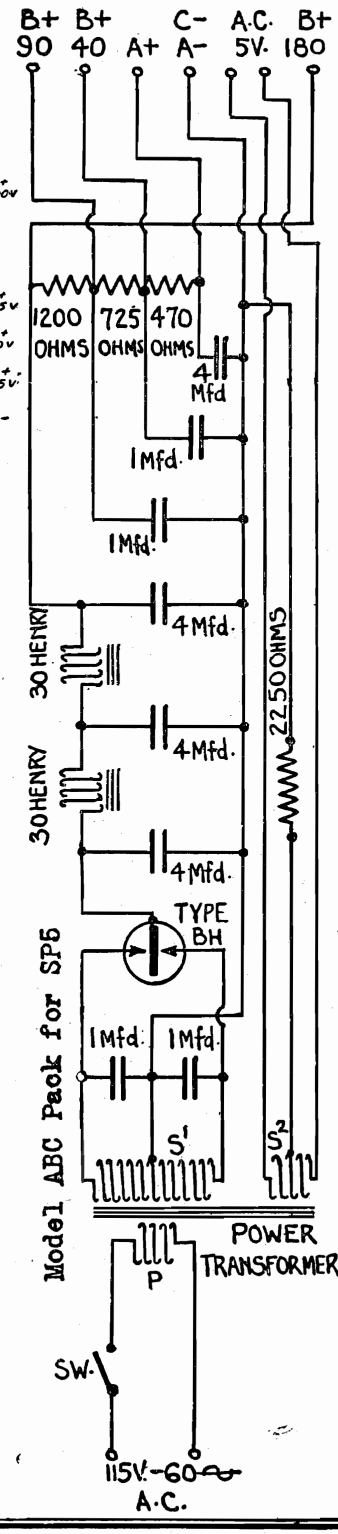
PILOT RADIO & TUBE CORP.



Model K-111

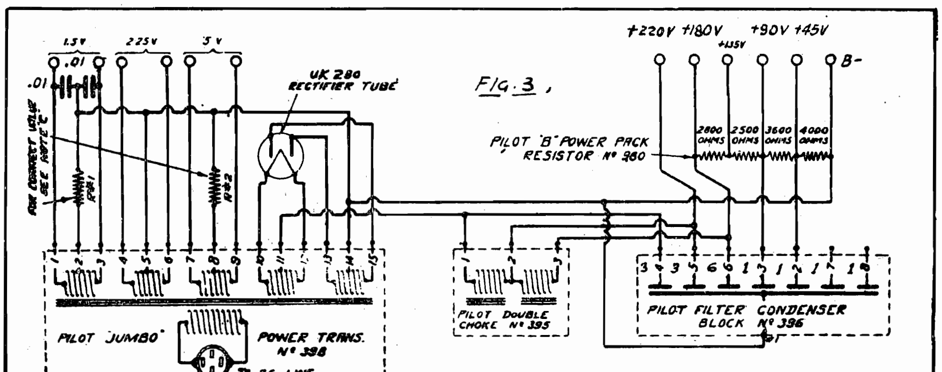


Model Pilotone B Pack



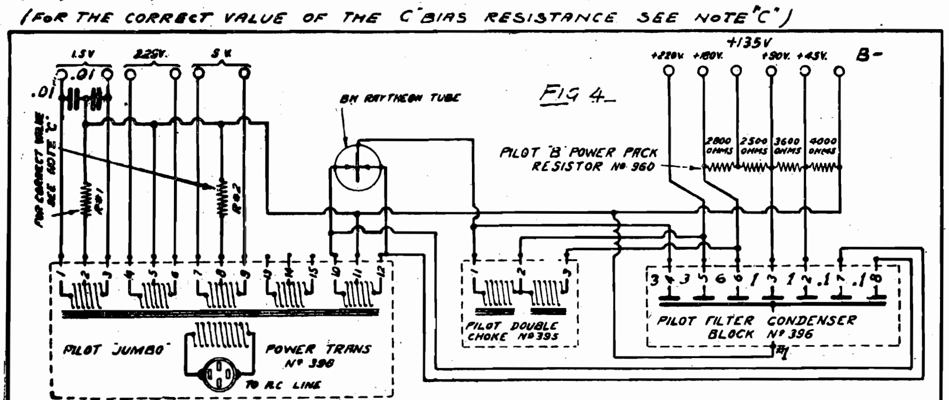
Model ABC Pack for SP5

— SCHEMATIC DIAGRAM OF A PILOT "JUMBO" A.B.C. ELIMINATOR USING THE UX 280 RECTIFIER TUBE FOR THE PLATE SUPPLY — (FOR THE CORRECT VALUE OF THE "C" BIAS RESISTANCE SEE NOTE C)



Model Jumbo ABC

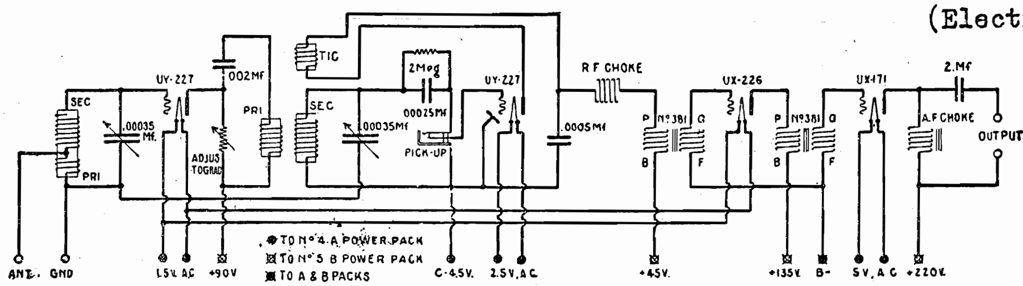
— SCHEMATIC DIAGRAM OF A PILOT "JUMBO" ABC ELIMINATOR USING THE BH RAYTHEON GAS RECTIFIER TUBE FOR PLATE SUPPLY — (FOR THE CORRECT VALUE OF THE "C" BIAS RESISTANCE SEE NOTE "C")



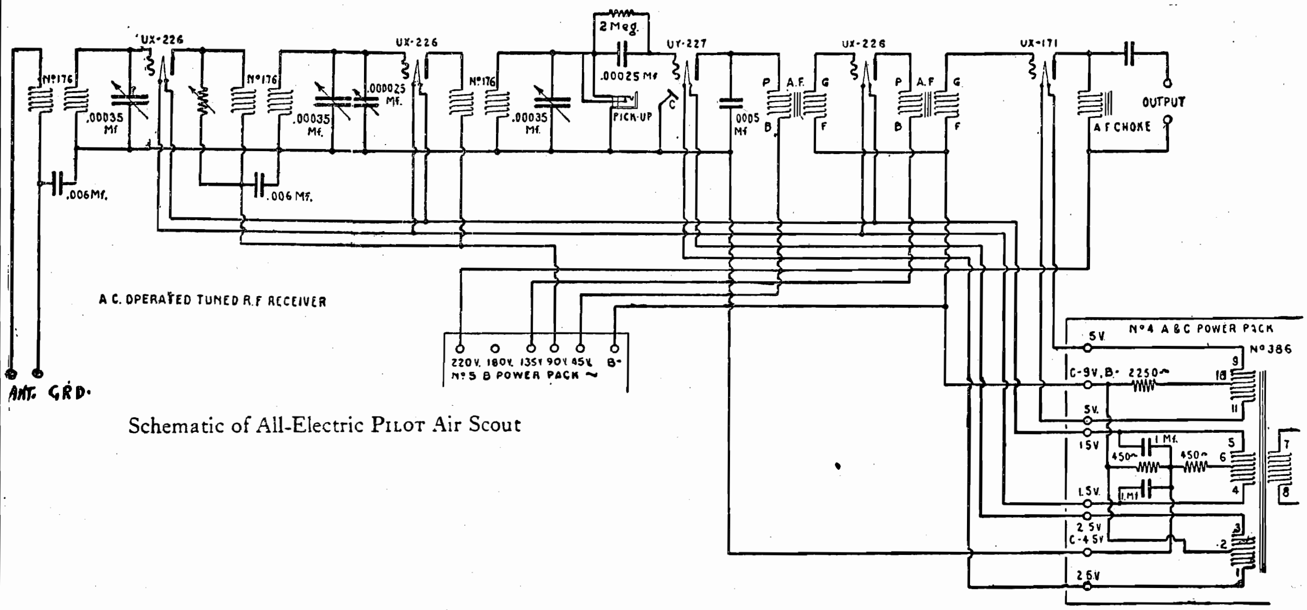
Model Jumbo Pack

PILOT RADIO & TUBE CORP.

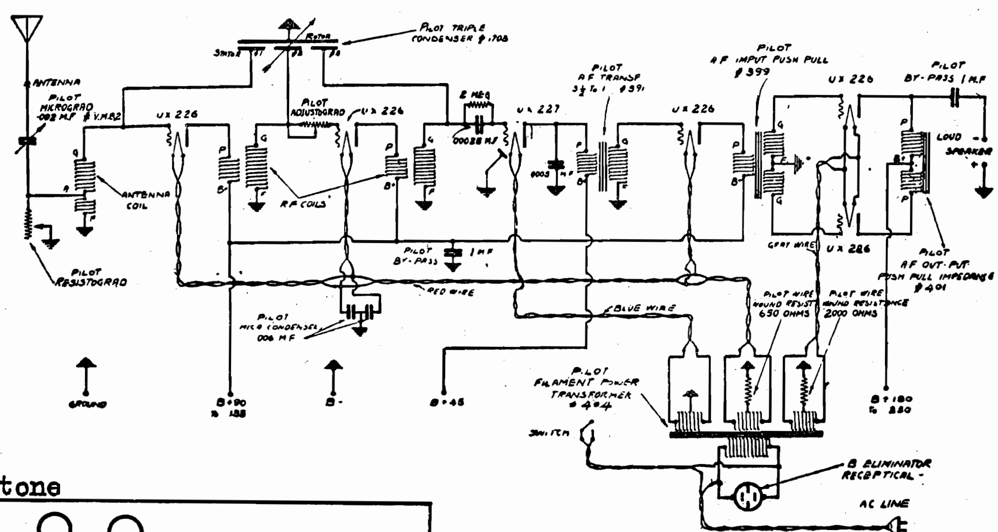
MODEL Air Hound (All-Electric)
MODEL Air Scout (All-Electric)
MODEL Pilotone (Electric)



The Air Hound All-Electric Receiver, One Stage R.F., Detector, Two Stages A.F.

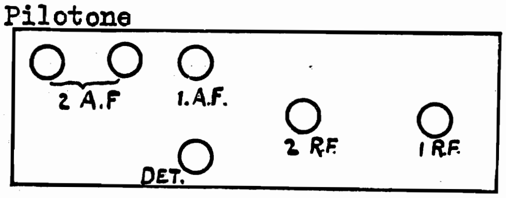


Schematic of All-Electric Pilot Air Scout



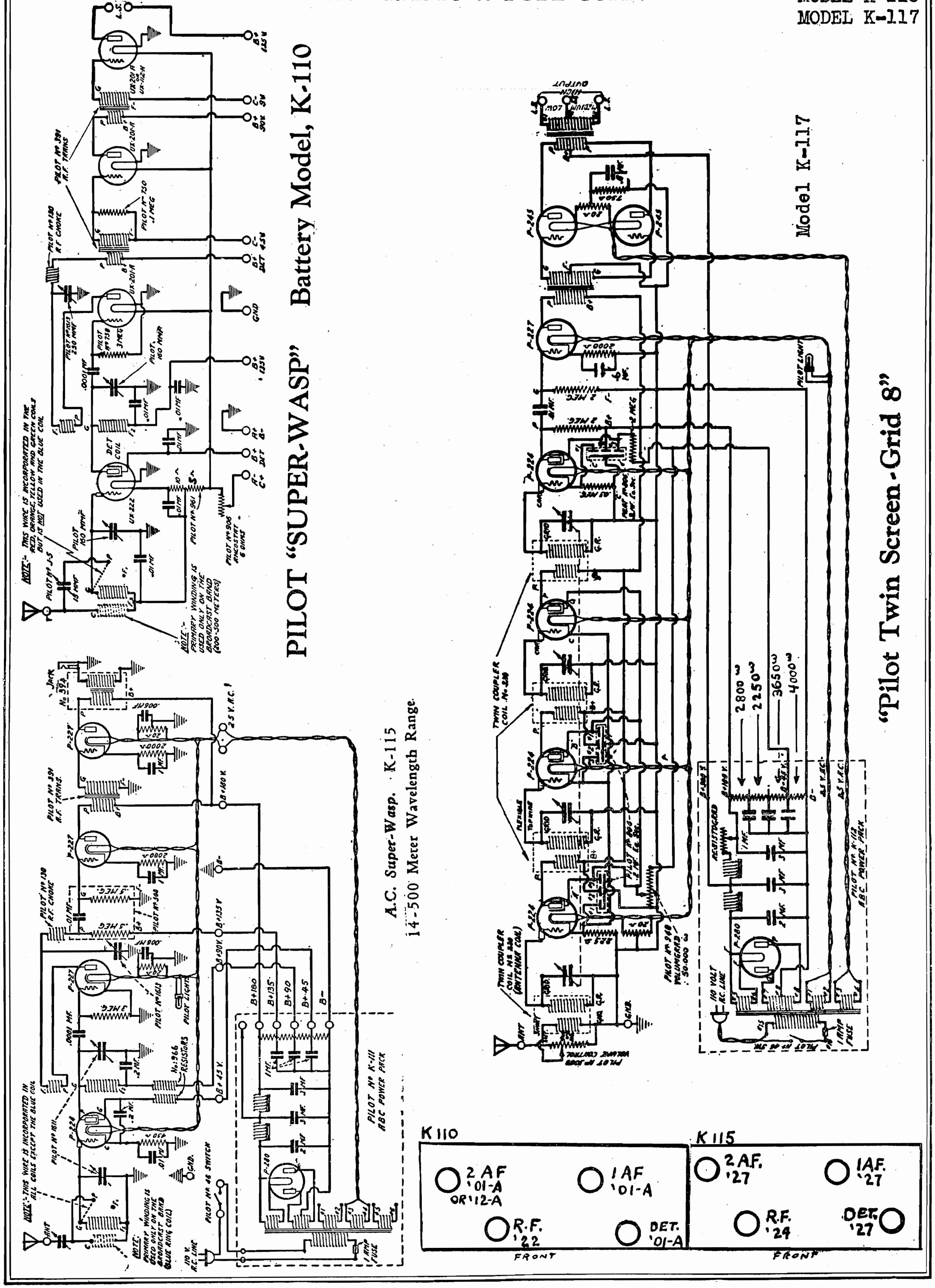
Pilotone Electric receiver

Pilotone



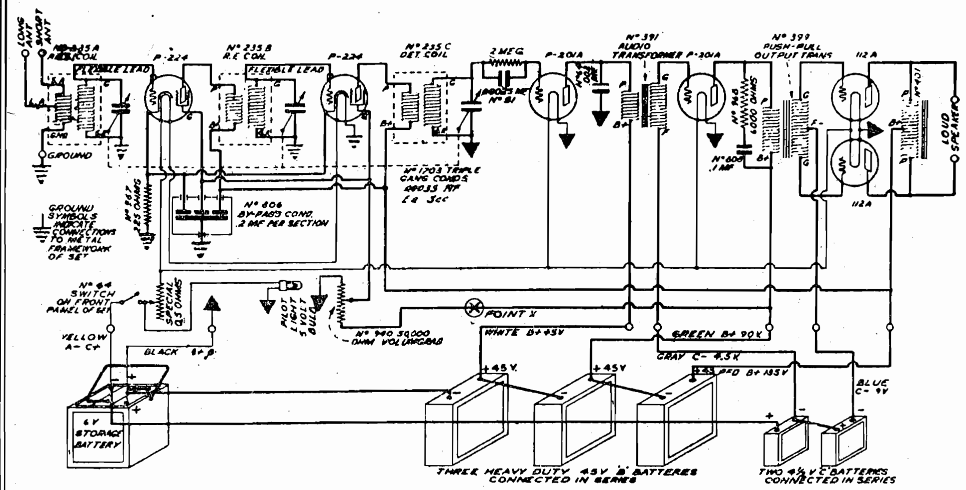
PILOT RADIO & TUBE CORP.

MODEL K-110
MODEL K-115
MODEL K-117

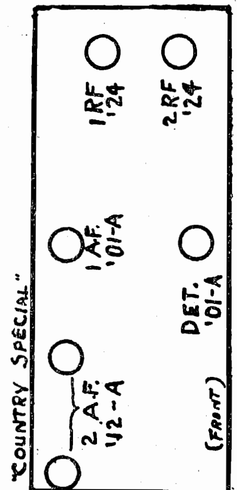


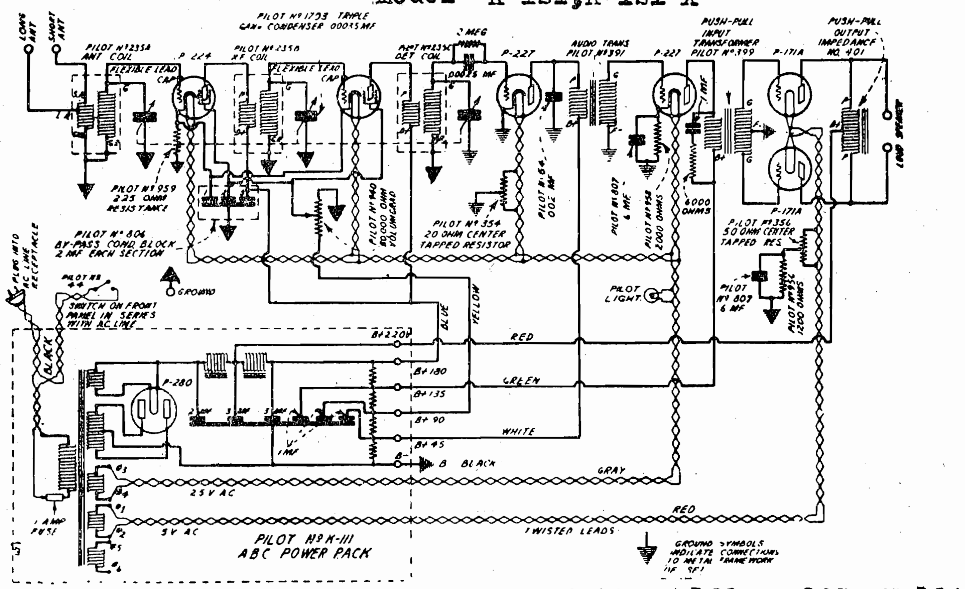
MODEL K-121, K-121X
MODEL PE-6 SG, K-122, K-123, K-124
MODEL K-126, K-128

PILOT RADIO & TUBE CORP.

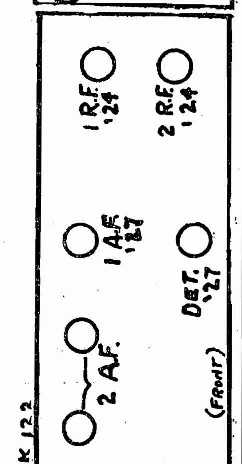


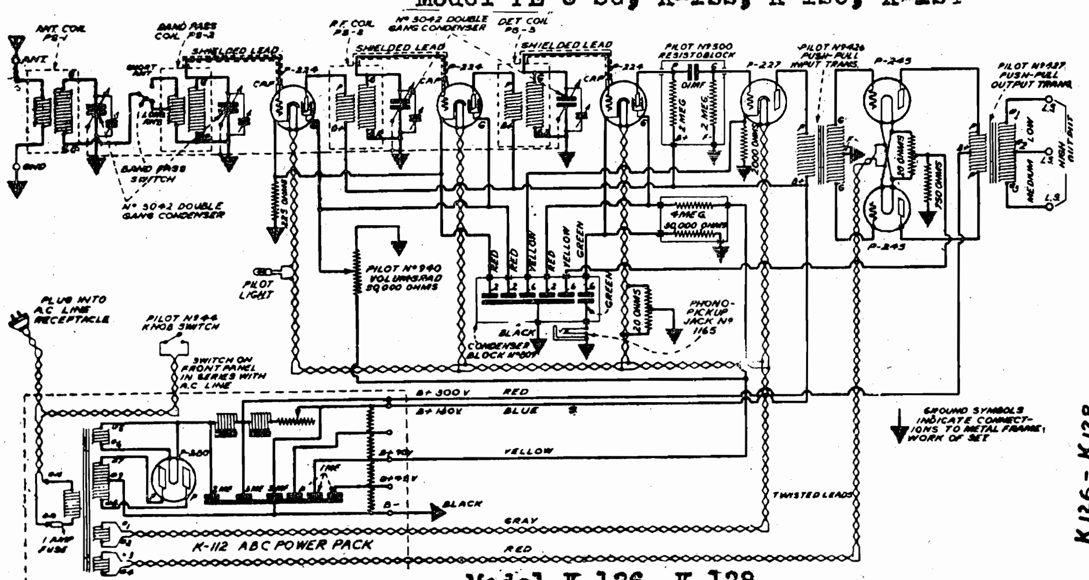
Model K-121, K-121 X



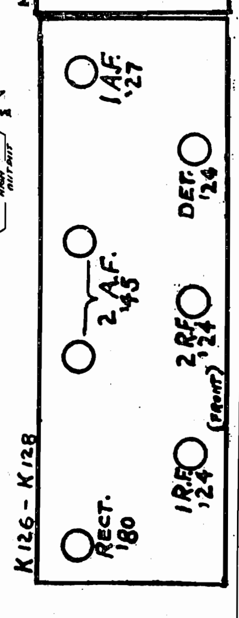


Model PE 6 SG, K-122, K-123, K-124



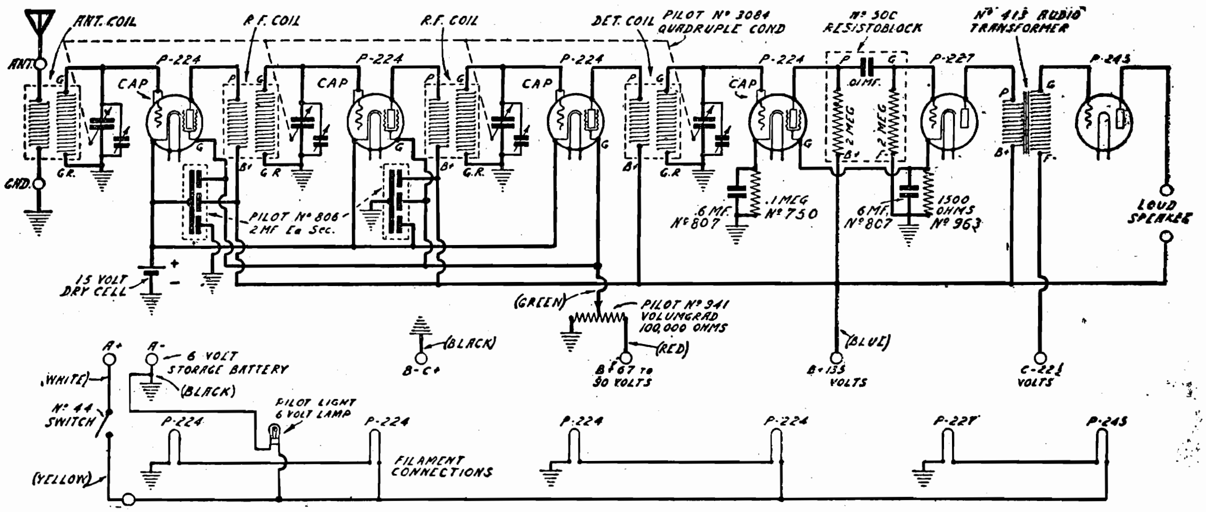


Model K-126, K-128

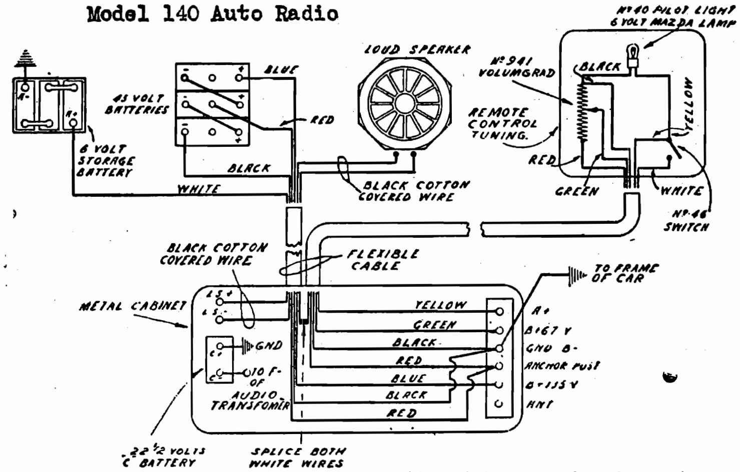


PILOT RADIO & TUBE CORP.

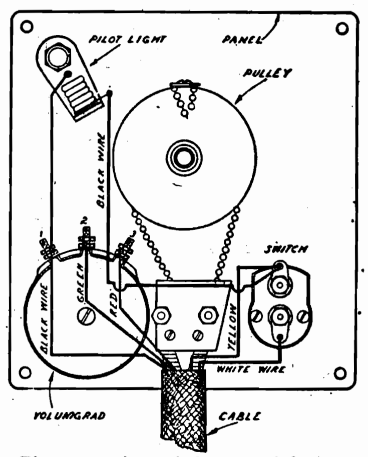
MODEL 140 Auto Radio
MODEL S.W.Converter



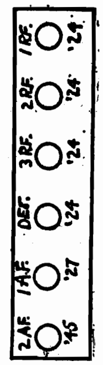
Model 140 Auto Radio

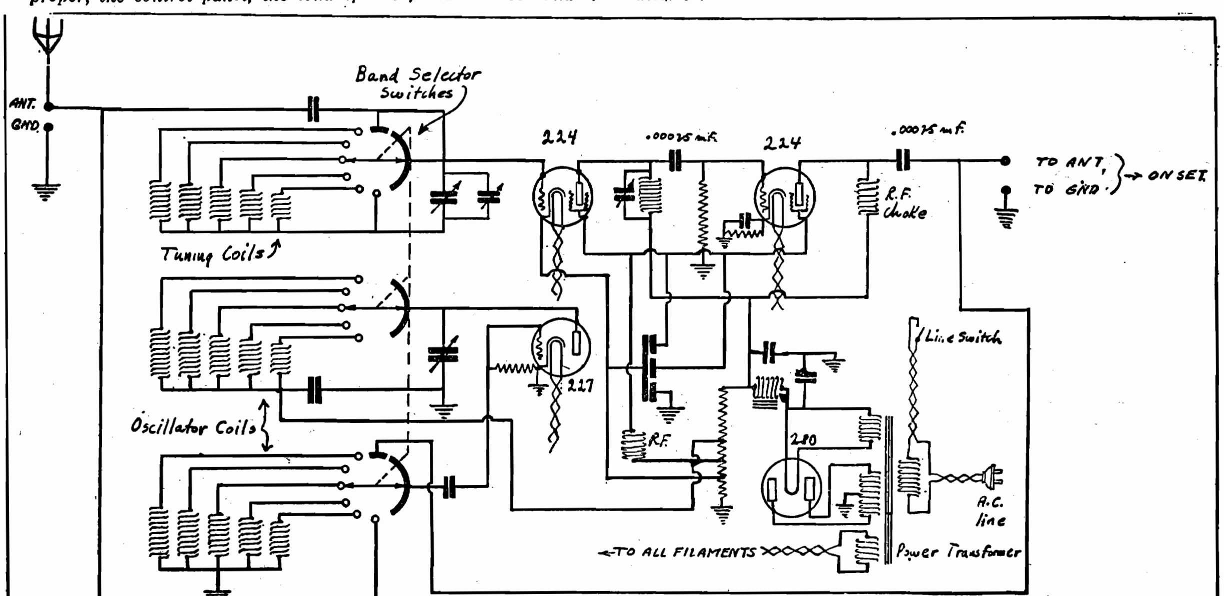


Complete diagram of connections of the "Auto Pilot," showing the receiver proper, the control panel, the loud speaker, and the "A" and "B" batteries.



The connections of the control devices in picture form.



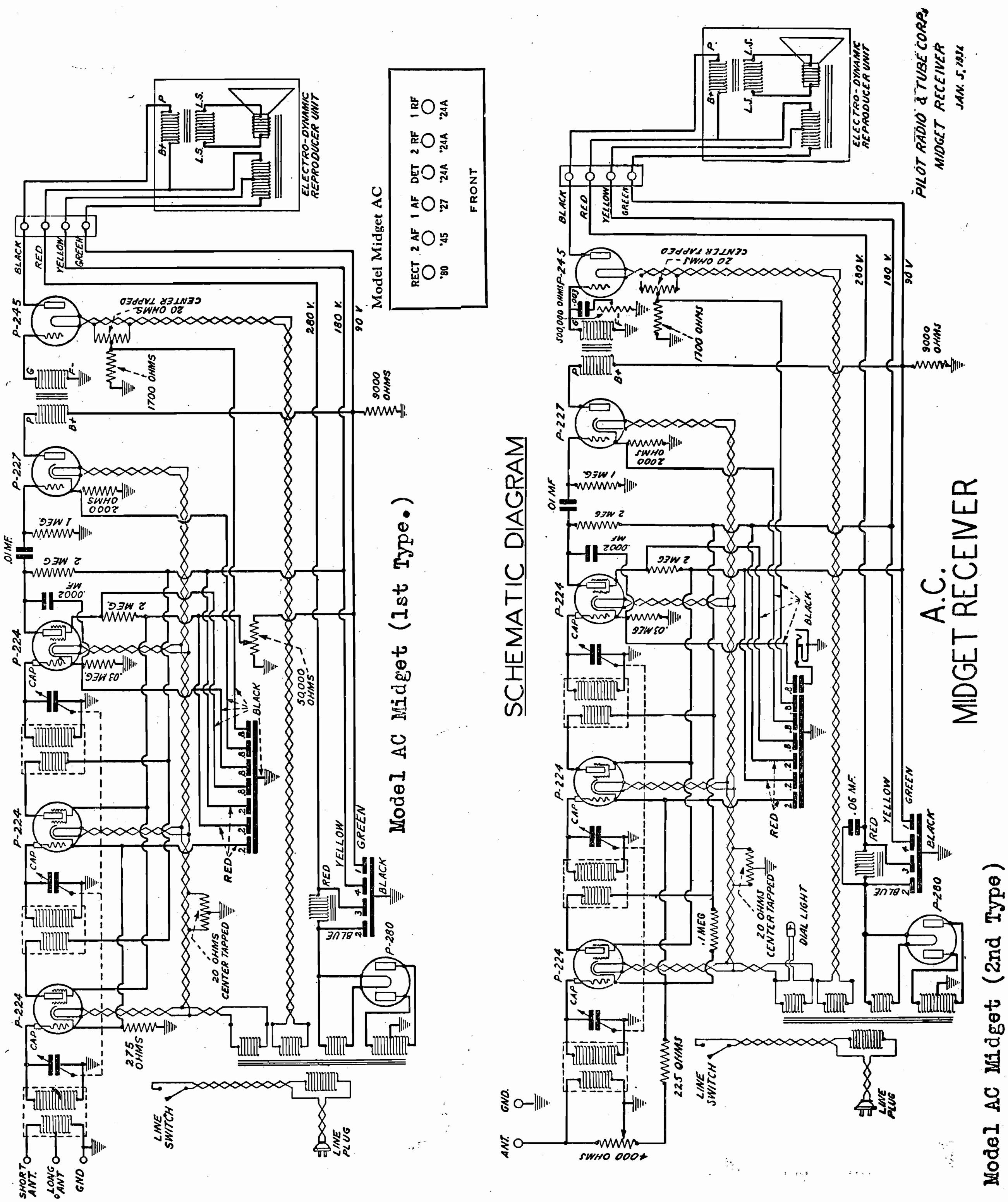


IF PEAK 550 KC

Model S.W.Converter

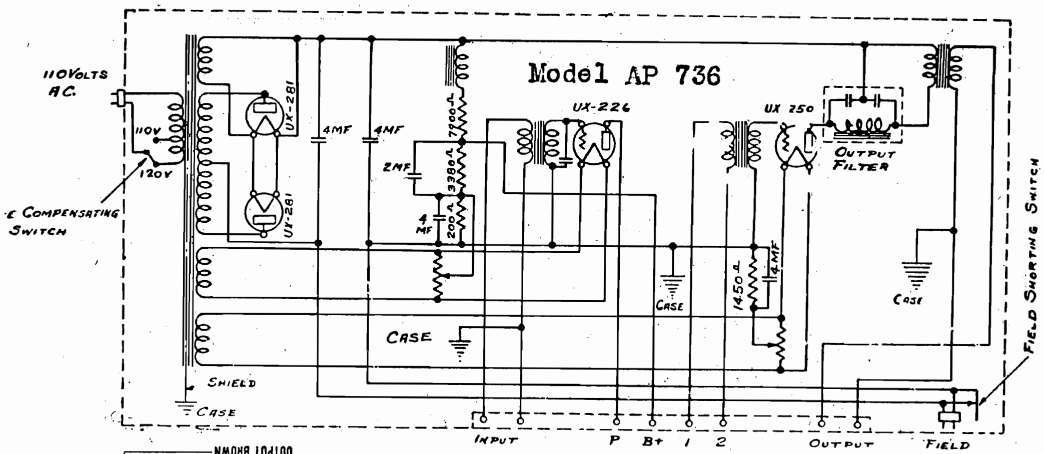
PILOT RADIO & TUBE CORP.

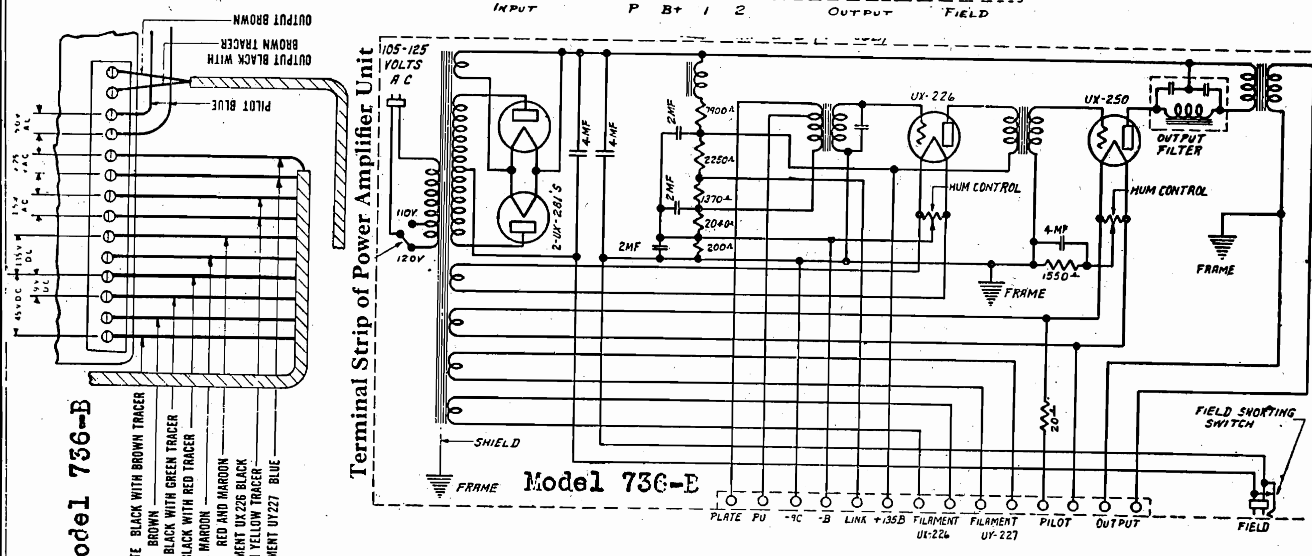
MODEL AC Midget
S-155, S-155-A, S-155-B, S-155-F, C-157, C-157-A, C-157-B, C-157-F



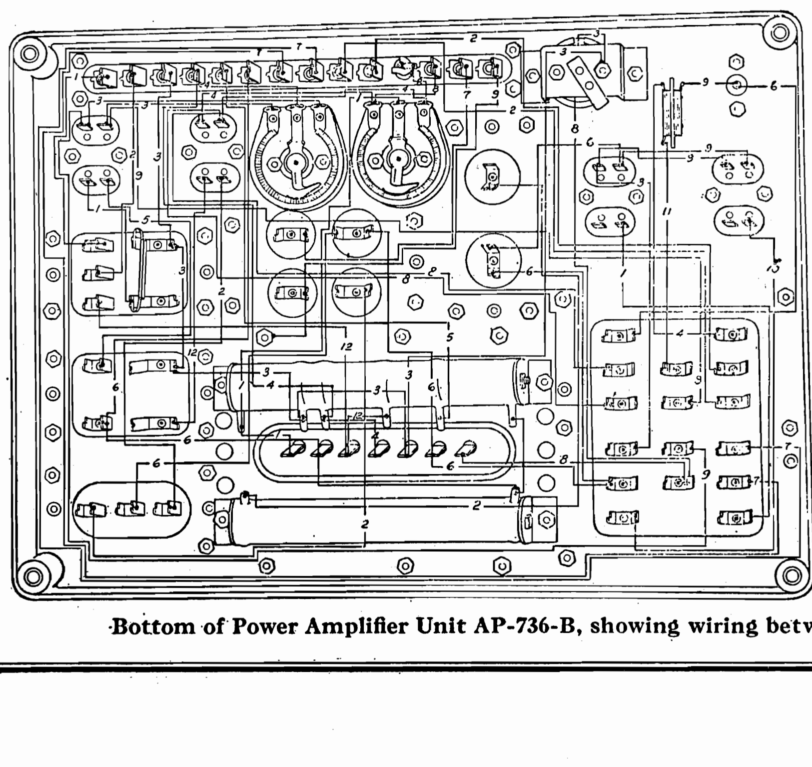
MODEL AP-736
MODEL AP-736-B

R. C. A. VICTOR CO., INC.





Wiring Diagram of Power Amplifier Unit AP-736-B



Bottom of Power Amplifier Unit AP-736-B, showing wiring between terminals

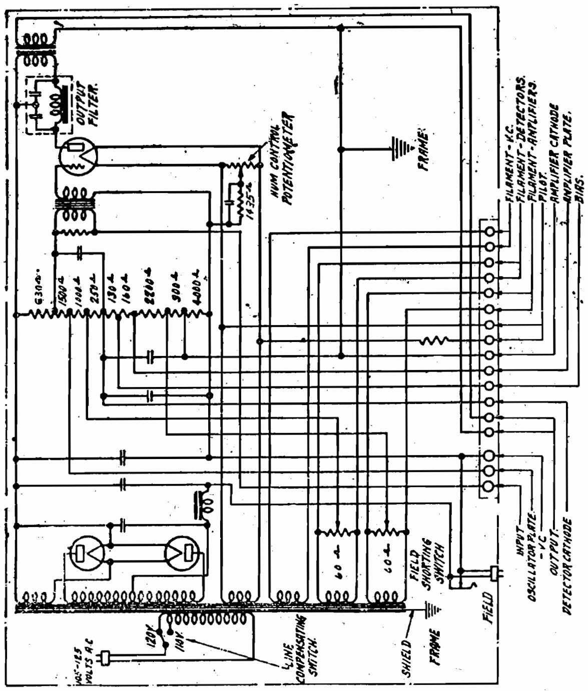
Color Code

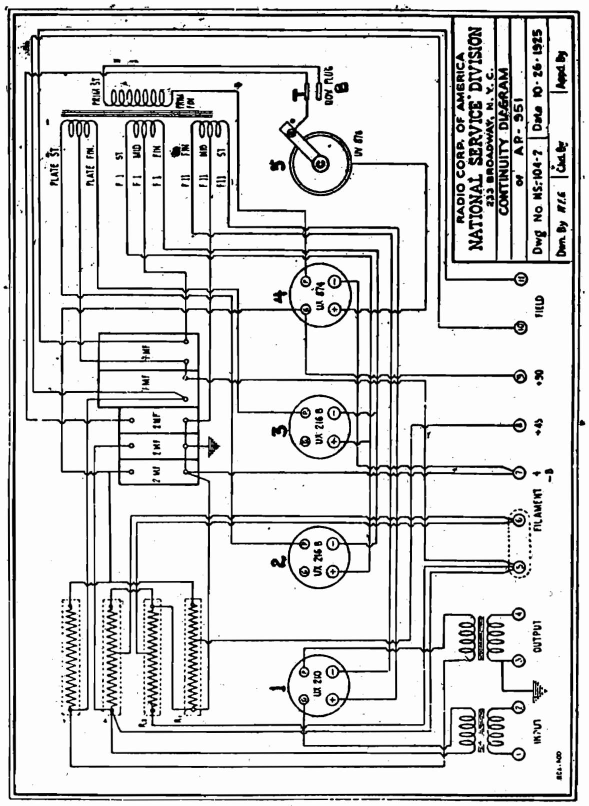
1. Brown
2. Blue
3. Yellow
4. Black with Red Tracer
5. Red and Maroon
6. Red
7. Black with Yellow Tracer
8. Green
9. Black
10. Light Brown
11. Red and Black
12. Maroon

MODEL AP-777-C
MODEL AP-947
MODEL AP-951
MODEL AP-951-A, 974-A
AP-997-A

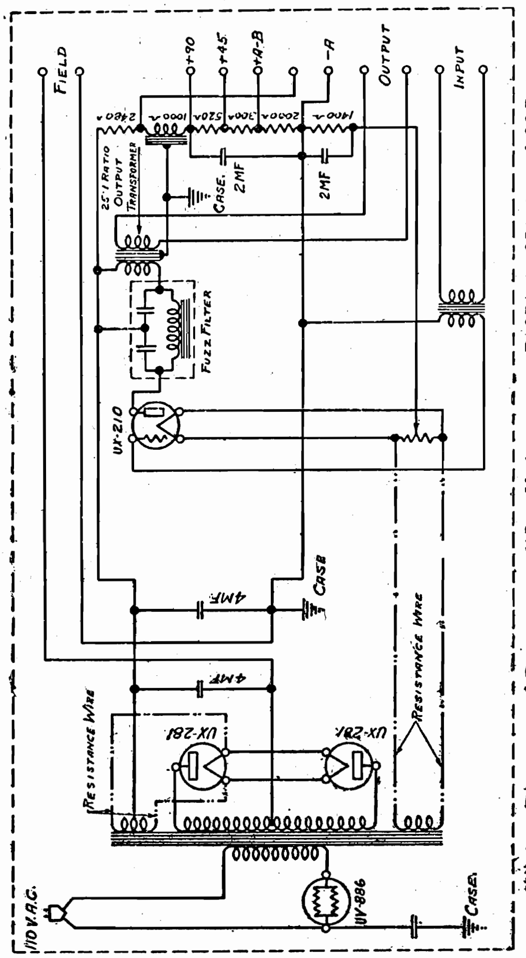
R. C. A. VICTOR CO., INC.

Model AP-777-C



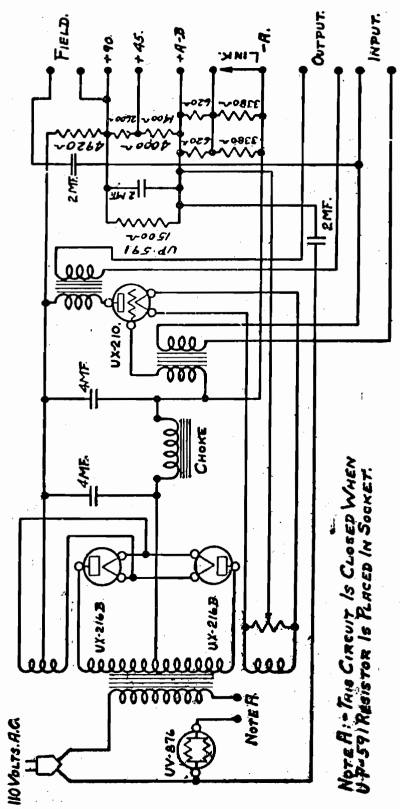


Model AP 951



Wiring Diagram of Power Amplifier Units AP-974-A, 951-A and 997-A

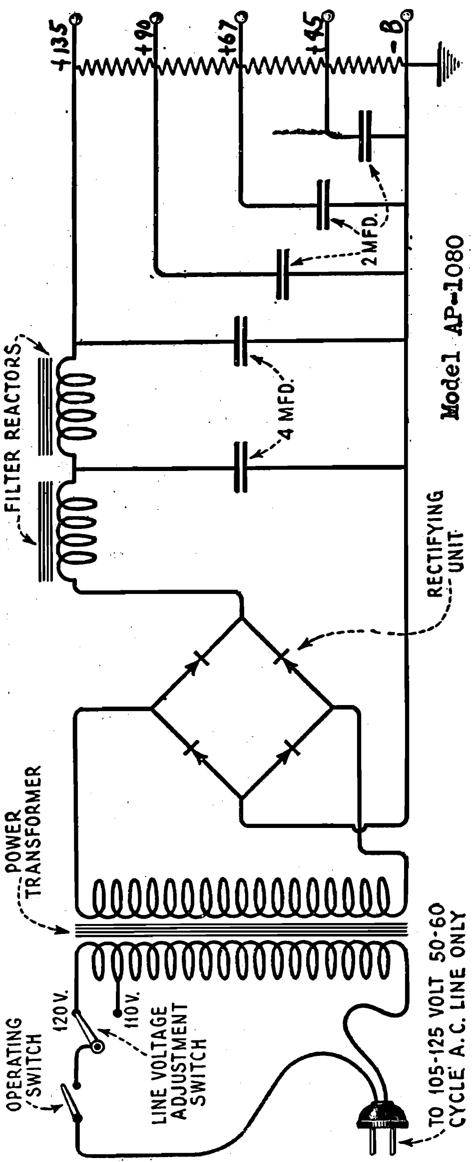
Used on Victor 9-25, 9-55



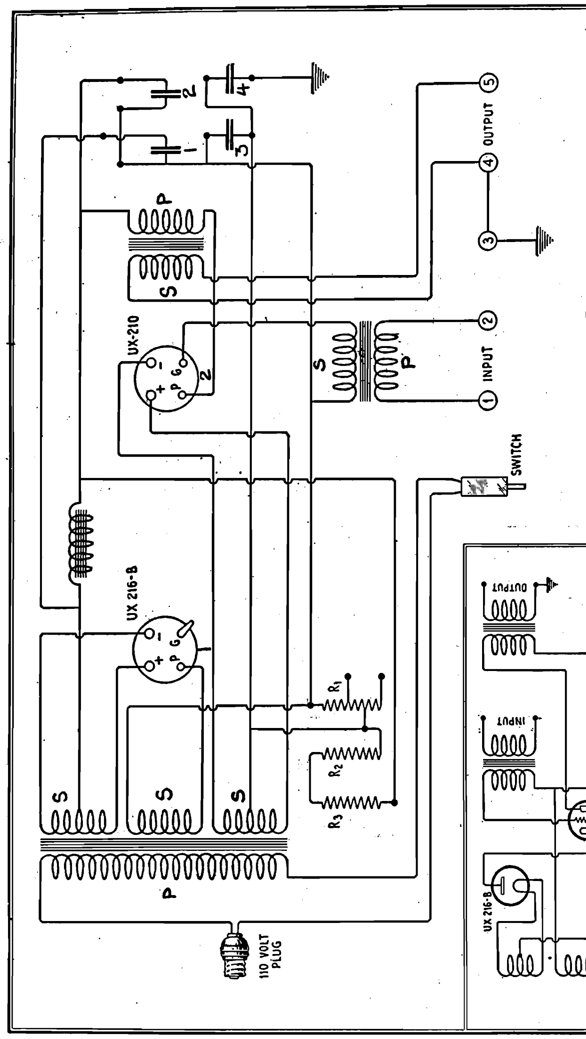
Victor designation RPA 14
Used on 3-40, Borgia II, Hyperion
Model AP-947

R. C. A. VICTOR CO., INC.

MODEL AP-937
MODEL AP-935
MODEL AP-1080



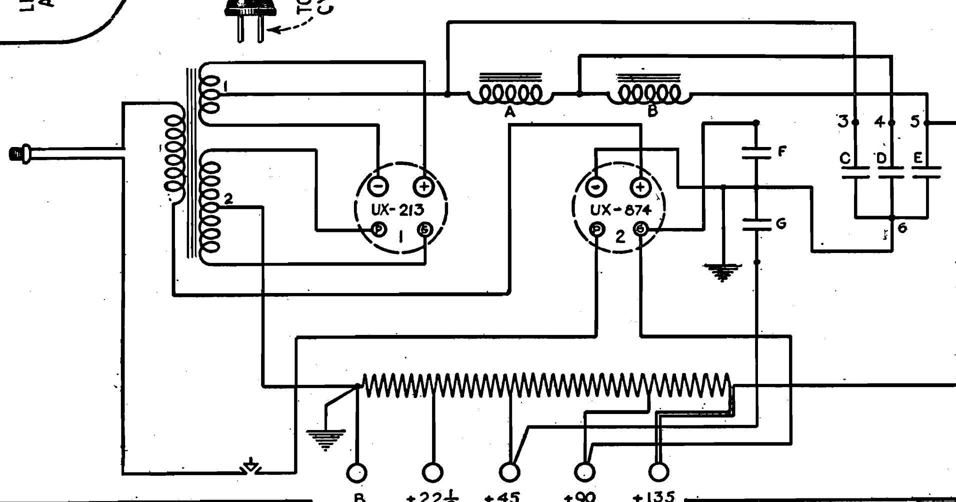
Model AP-1080

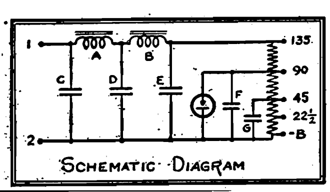


RADIO CORP. OF AMERICA
NATIONAL SERVICE DIVISION
233 BROADWAY, N. Y. C.
CONTINUITY DIAGRAM
AP-935

Dwg. No. NS-UR-1D	Date 5-15-25
Dwn. By JPA	Ckd. By	Appd. By

Model AP-935





CONTINUITY DIAGRAM

Model AP-937

RADIO CORP OF AMERICA
NATIONAL SERVICE DIVISION
233 BROADWAY NYC

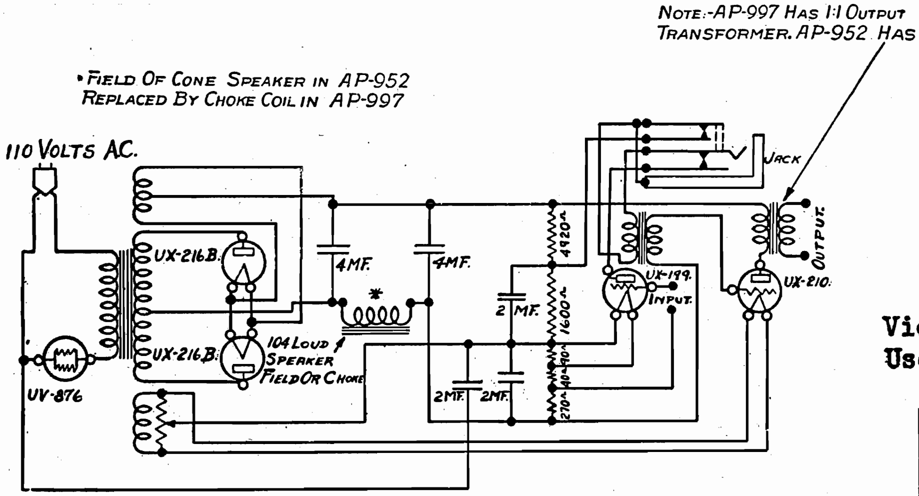
RCA DUO-RECTRON

MODEL AP-937

Dwg. NS-DR-1D	DATE 4-9-26
Dwn by JM	Ckd by C.R.U.	Appd by

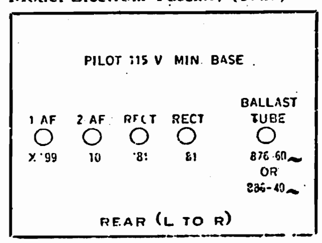
MODEL AP-995
MODEL AP-952
MODEL AP-997-C
MODEL 12-25 Tuscany
MODEL 8-60

R. C. A. VICTOR CO., INC.



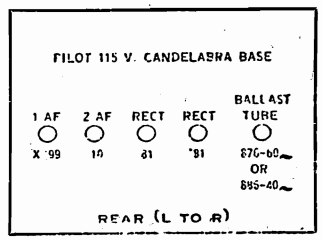
Wiring Diagram AP 952, and AP 997

Model Electrola Tuscany (1926)

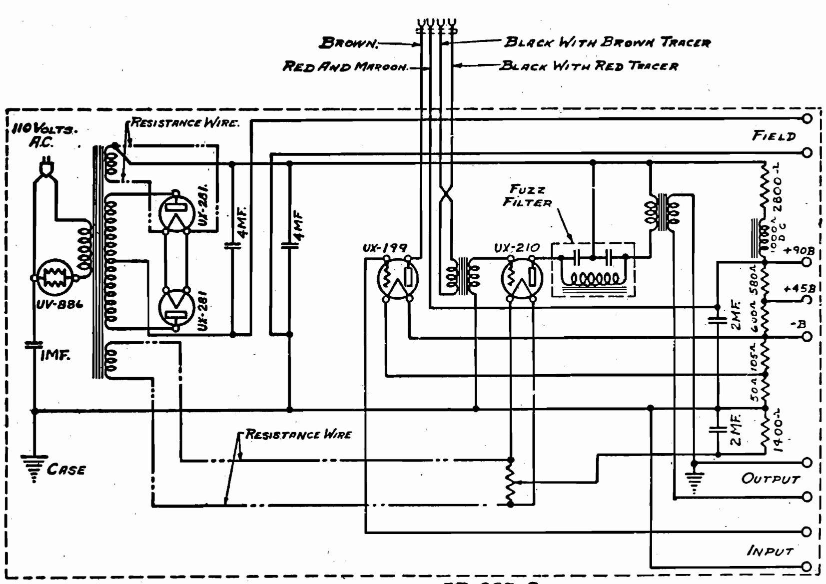


Victor designation RPA 5
Used on 12-25, Tuscany

Models Victors 8-60, 12-2, 12-25 (1926)



Victor designation RPA-5 Spec.
Used on 8-60.



Wiring Diagram of Power-Amplifier Unit AP-997-C

Used on Victor 12-15.

a. The AP-947-X differs from the AP-947 in that it has a 25 to 1 output transformer and no filter choke.

b. The AP-997-X differs from the AP-997 in this same manner.

c. The AP-952-Y differs from the AP-952 only in the substitution of a terminal strip for the input jack.

d. The AP-997-Y differs from the AP-997 in that it has a 25 to 1 output transformer, a fuzz filter, a terminal strip instead of a jack, and no filter choke.

e. The AP-947-A, AP-951-B, and AP-997-A differ from the AP-947 in that they require the UX-281 and UV-886 Radiotrons instead of the UX-216-B and UV-876; a 25 to 1 output transformer is used; the resistors are of different values; resistance wire is used in the UX-281 and UX-210 filament leads; and the filter choke instead of being connected in the filter circuit is used in the voltage drop circuit to stabilize the amplifier.

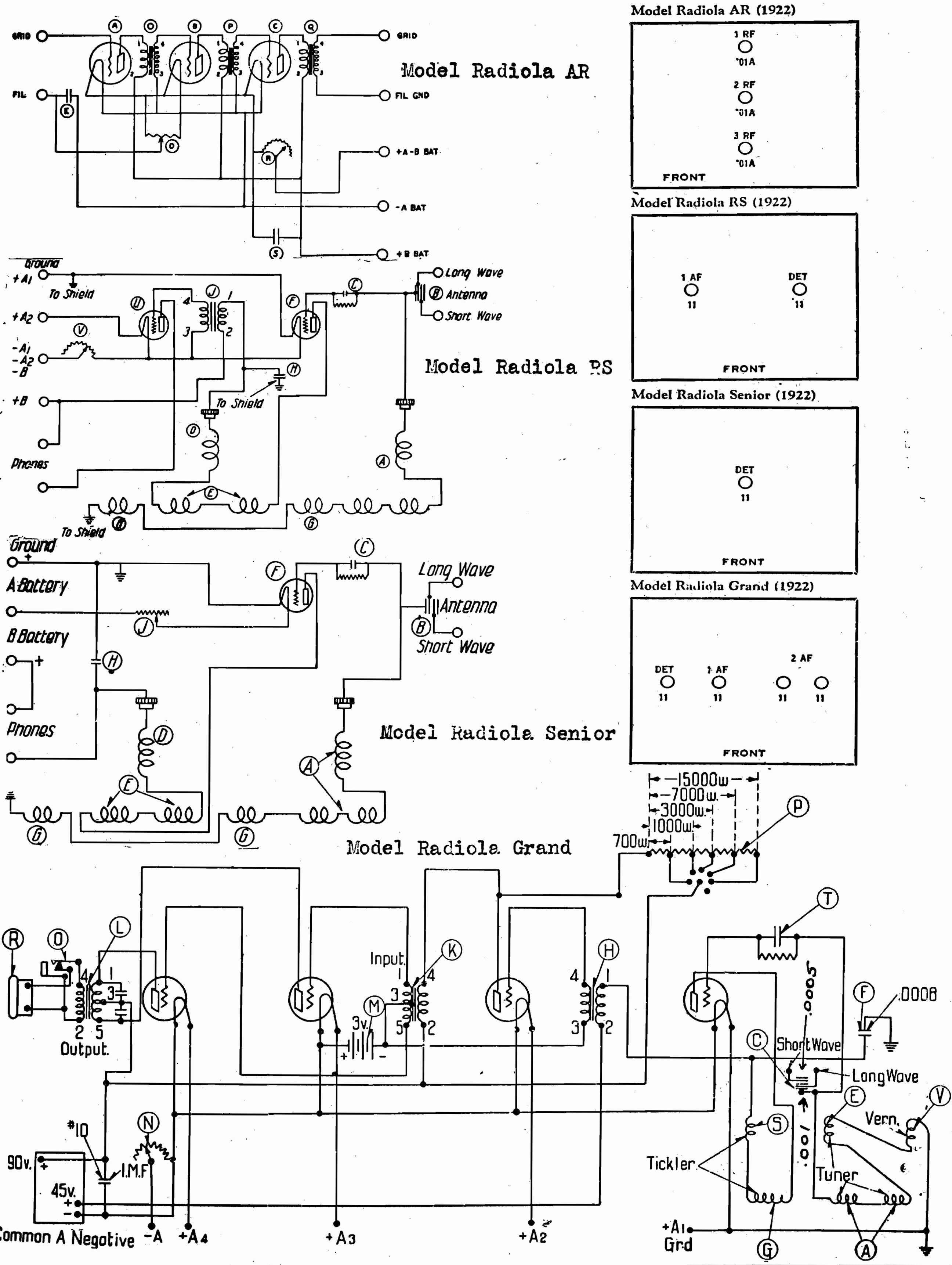
f. The AP-997-C differs from the AP-997 in the same respects as described in (e) above.

The list below for Victor power-amplifier units contained in new instruments since June 1, 1927 gives the RCA symbol number, the Victor part number, and the instrument on which each unit is used.

RCA SYMBOL	VICTOR PART NO.	USED ON
AP-947-X	20652	9-40*
AP-997-X	18575	10-51
AP-952-Y	18569	10-70
AP-997-Y		
AP-947-A	18891	9-25
AP-997-A	18574	9-55
-AP-951-B		
AP-997-C	20564	12-15

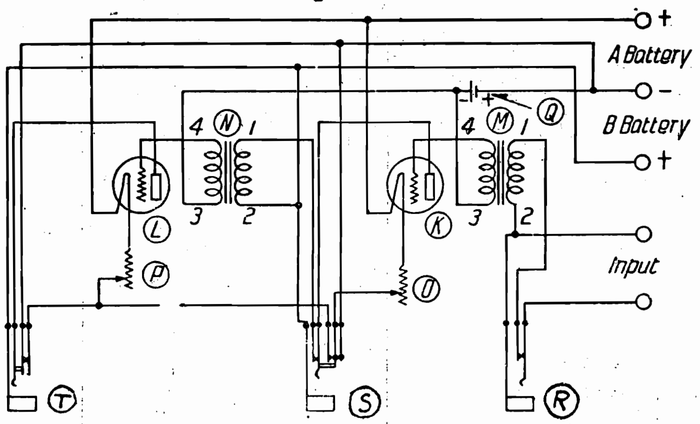
R. C. A. VICTOR CO., INC.

MODEL Radiola Grand
MODEL Radiola Senior
MODEL Radiola AR
MODEL Radiola RS



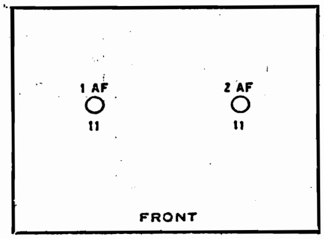
MODEL Radiola II
MODEL Radiola III
MODEL Radiola
Balanced Amp.
MODEL Radiola Sen. Amp.

R. C. A. VICTOR CO., INC.

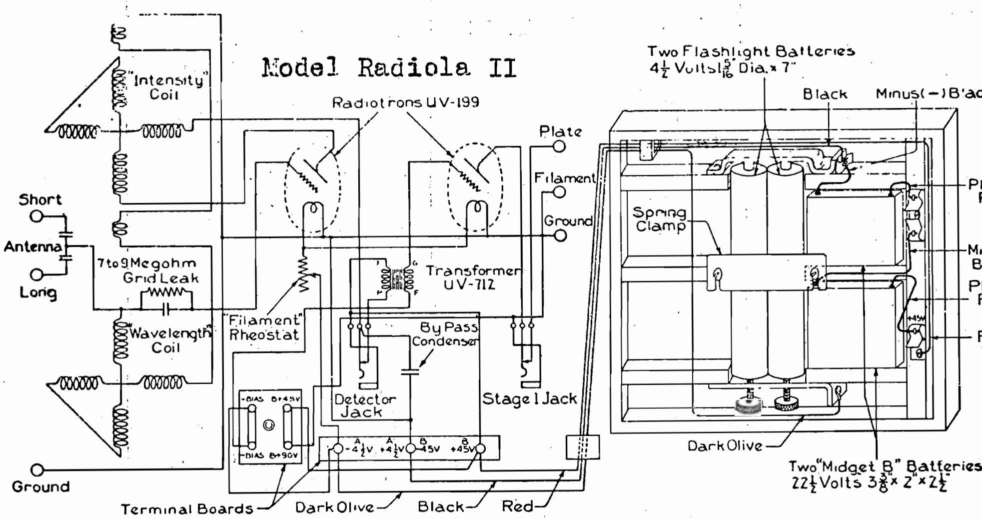


Model Senior Amp.

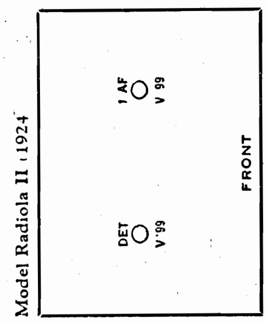
Model Radiola Senior Amplifier (1922)

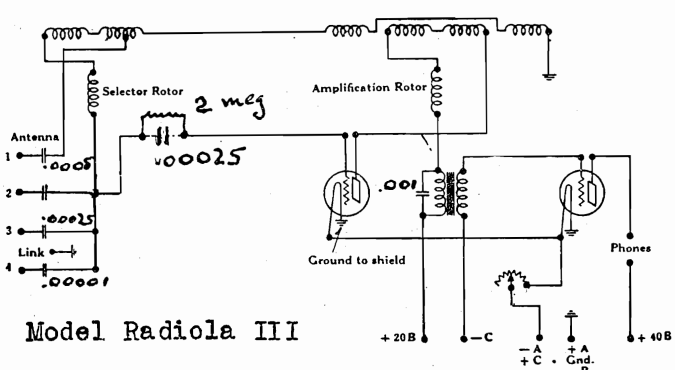


Model Radiola II



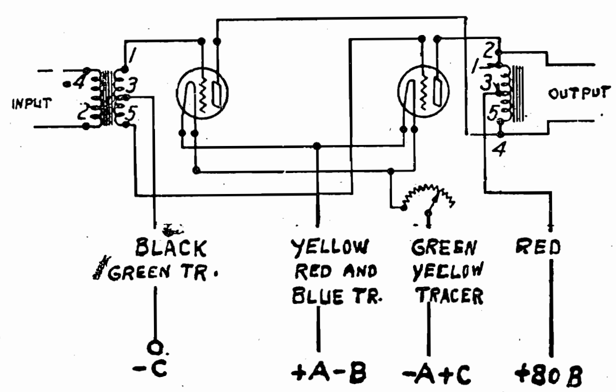
Model Radiola II (1924)



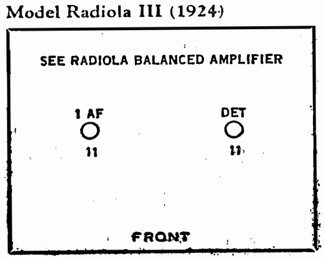


Model Radiola III

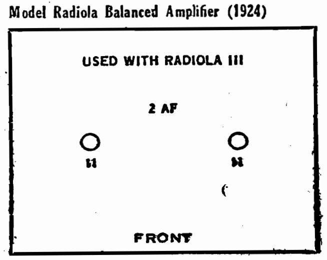
Model Balanced Amp.



Model Radiola III (1924)

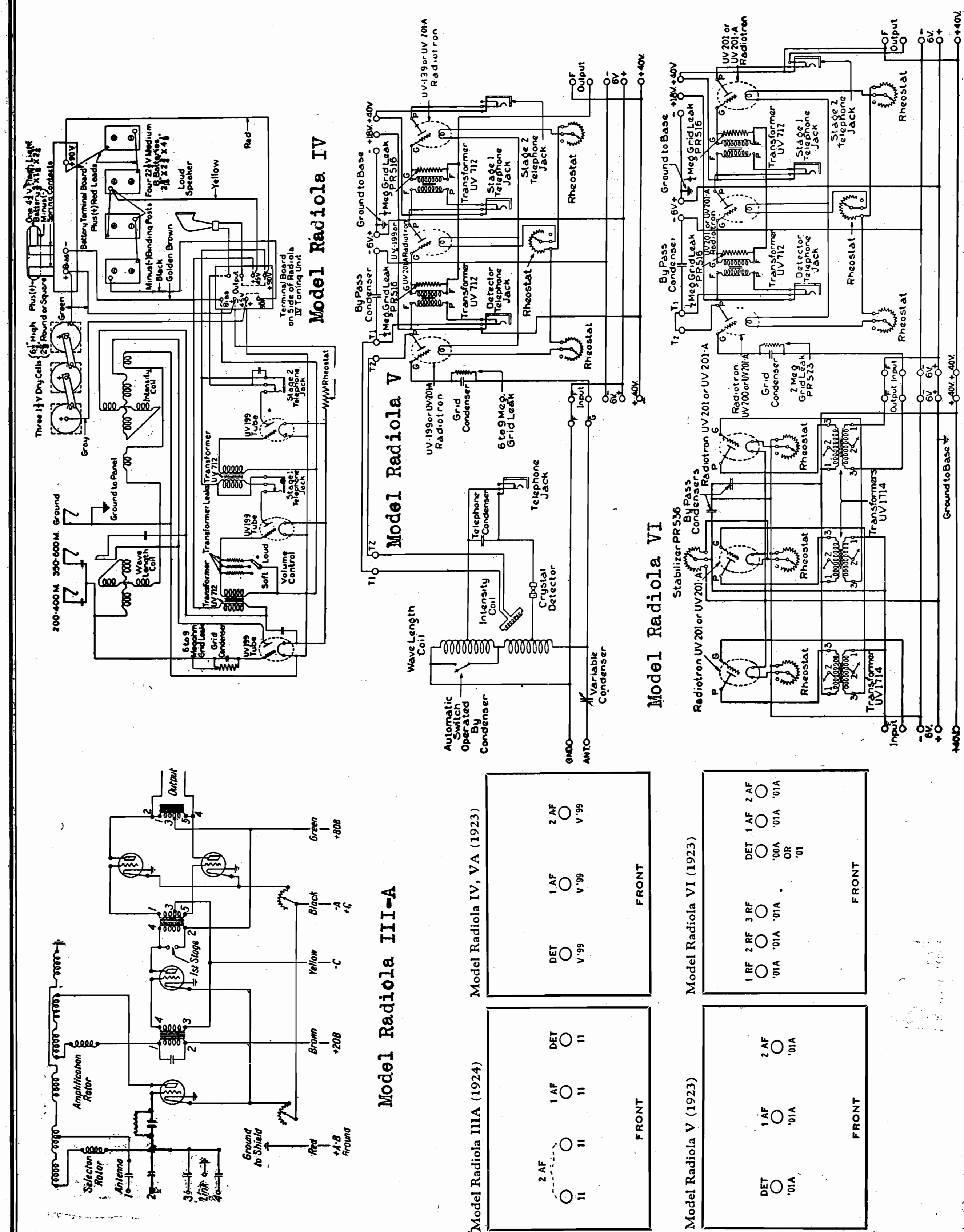


Model Radiola Balanced Amplifier (1924)



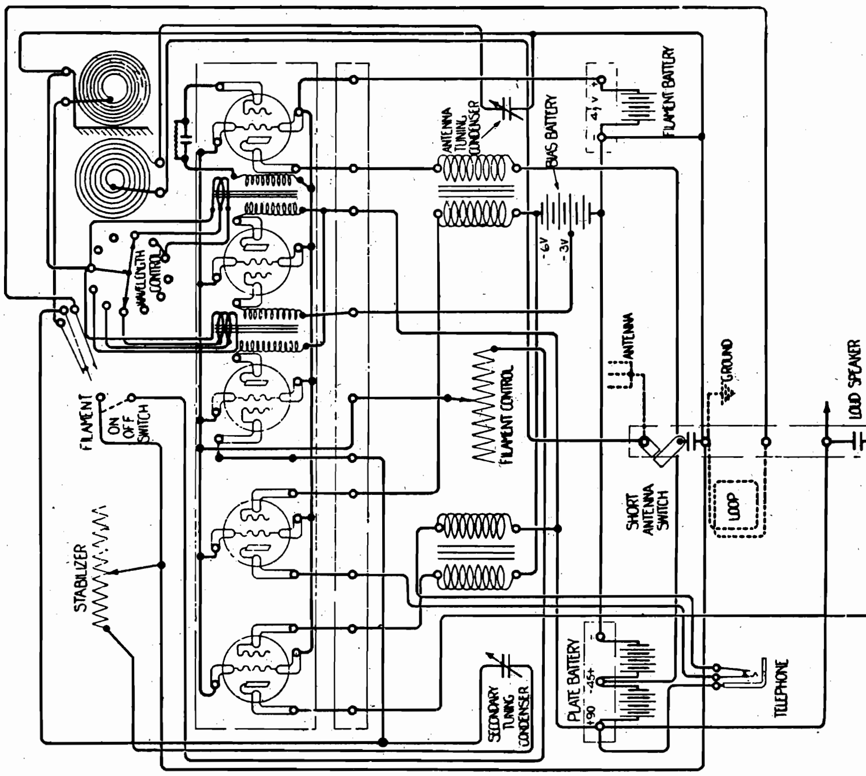
R. C. A. VICTOR CO., INC.

MODEL Radiola III-A
MODEL Radiola IV
MODEL Radiola V
MODEL Radiola VI

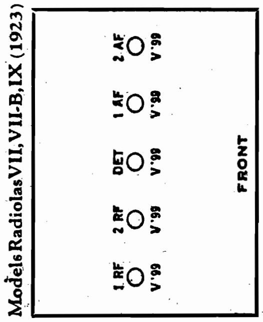


MODEL Radiola VII
MODEL Radiola VII-B
MODEL Radiola IX

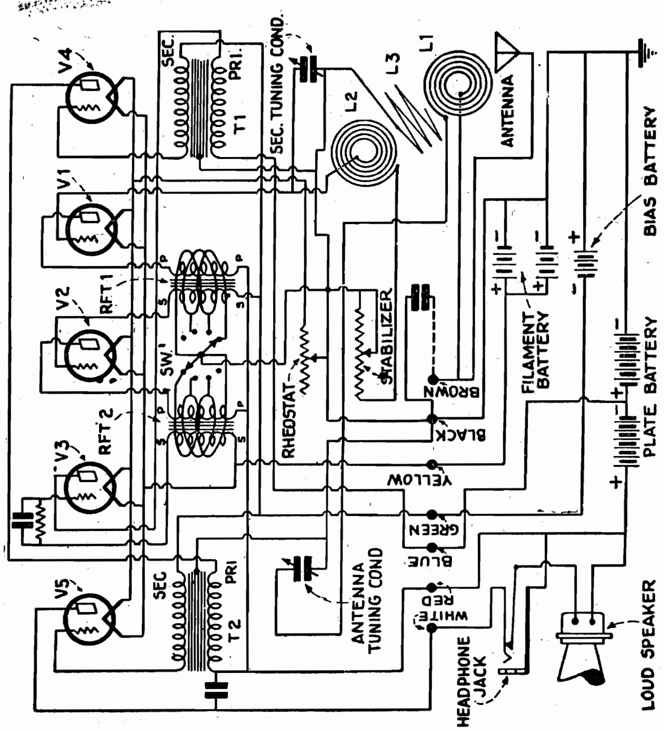
R. C. A. VICTOR CO., INC.



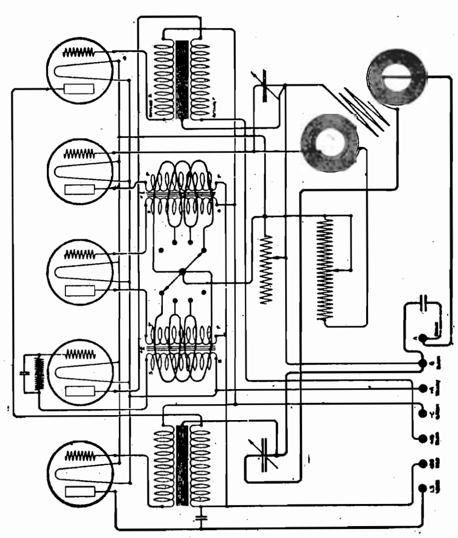
Model Radiola VII



Models Radiolas VII, VII-B, IX (1923)



Model Radiola VII-B

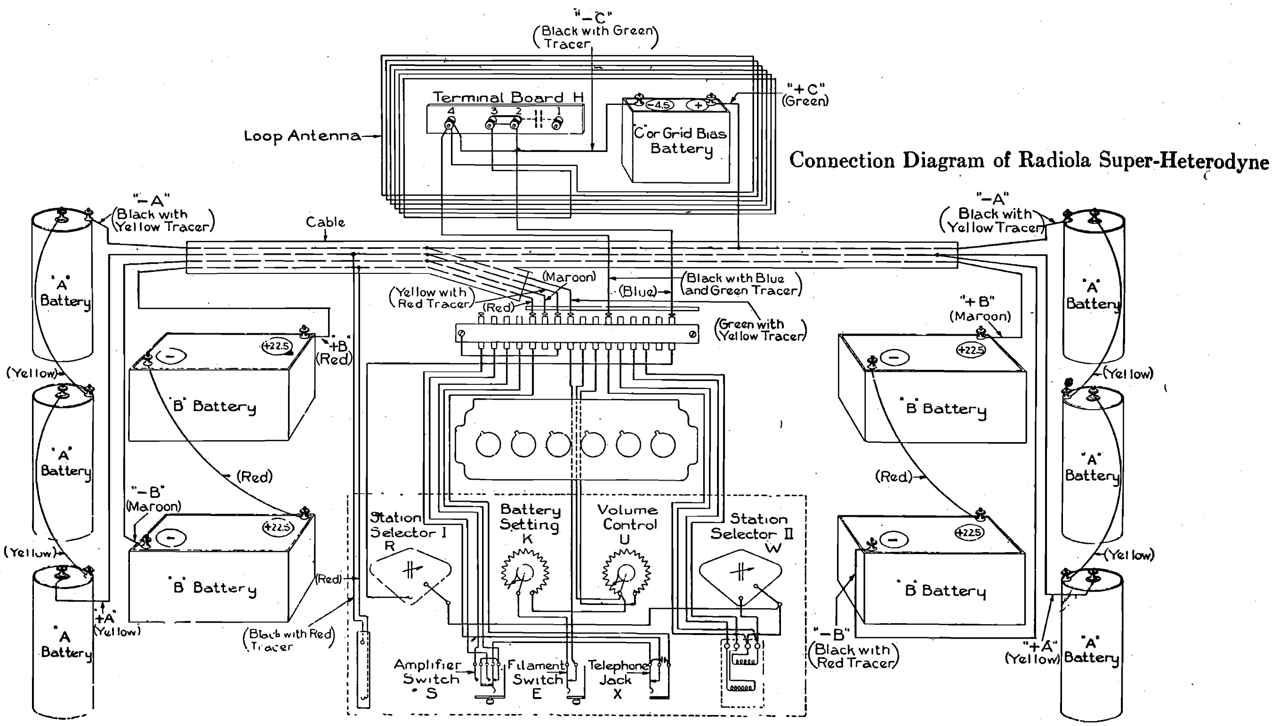


Model Radiola IX

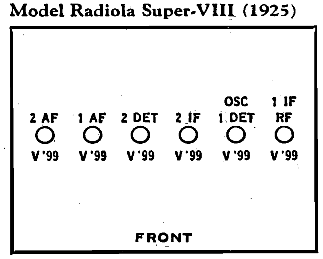
R. C. A. VICTOR CO., INC.

MODEL Radiola Super VIII

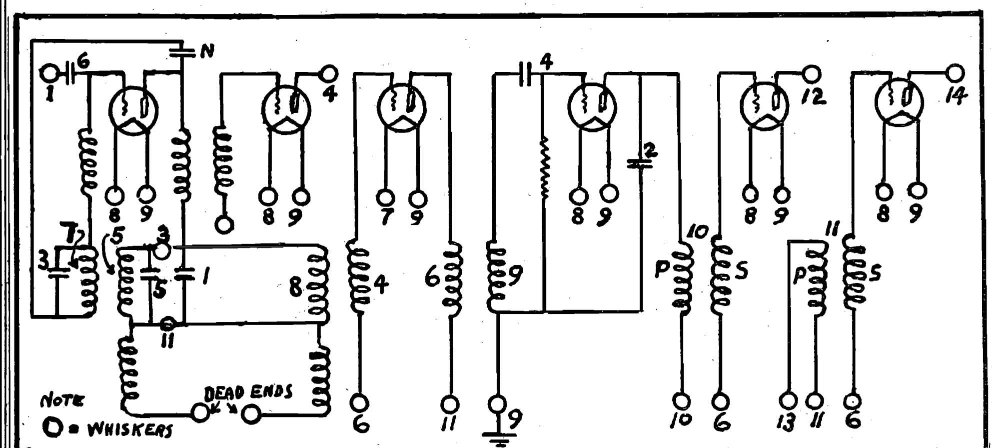
Connection Diagram of Radiola Super-Heterodyne



Model Radiola Super-VIII (1925)



Continuity Test Circuit Of Standard Six Tube Catacomb. Radiolas 24, Super-Heterodyne, Super-VIII.



Term No.	
From 6 to 9	Maximum 4.5 volts. Minimum 4 volts
9 to 10	Maximum 4.5 volts. Minimum 3 volts with all tubes lighted.
10 to 11	Maximum 45 volts. Minimum 34 volts.
11 to 12	Maximum 45 volts. Minimum 34 volts.
8 to 10	Maximum 3 volts when the volume control rheostat is at 100, and the battery setting rheostat is properly adjusted.

The numbers refer to terminals on the catacomb terminal board starting at the right when looking at the front of the panel.

MODEL R-5 AC
Parts List
Notes

R. C. A. VICTOR CO., INC.

RCA Victor Radiolette R-5

The RCA Victor Radiolette R-5 is a two tuned circuit R.F. type radio receiver. Compact construction together with good sensitivity, selectivity and high output are features of this receiver.

The receiver uses four Radiotrons, two UY-224, one UX-280, and one RCA-247 Power Output Pentode. Referring to Figure 1 and tracing a signal through the various stages we find the following action taking place.

The antenna and ground are connected to each side of a 20,000 Ohm potentiometer. The moving contact of the potentiometer is connected to the primary of the first R.F. transformer through a .00013 MFD. condenser, the other side of the transformer being connected to ground. The action of the potentiometer, reducing the voltage applied to the grid of the first R.F. tube, constitutes that of a volume control. The secondary of the R.F. transformer is connected to the grid circuit of the R.F. Radiotron UY-224, which is tuned by one unit of the gang condenser. The plate circuit of this tube works into the primary coil of the 2nd R.F. transformer.

The detector is of the regenerative, grid bias type and its output is coupled by means of resistance coupling to the output Radiotron RCA-247. The regenerative feature of the detector is unusual in that it uses two regeneration coils. One of these resonates at a low frequency and improves the sensitivity at that end, while the other has but few turns and brings up the sensitivity at the high frequency end.

The output stage uses the RCA-247 Output Pentode which gives a high undistorted output—2.5 watts—together with a high gain in the stage

The grid bias for this tube is obtained by using a portion of the drop across the reproducer field. Due to the fact that the plate current of the RCA-247 represents the greatest portion of the total plate current, using the drop across the field acts as a semi-self biasing arrangement.

Plate and grid supply to all tubes is supplied through the use of Radiotron UX-280. The filter is of the "brute force" type. The reproducer unit field coil functions as the reactor. One electrolytic 10 MFD. capacitor and one paper 2 MFD. capacitor act as filter capacitors.

LINE-UP CAPACITOR ADJUSTMENTS

Two adjustable capacitors are provided for aligning the two tuned circuits at the high frequency end of the scale. The following procedure may be used for making any readjustments that may be necessary.

A. Procure an Oscillator giving a modulated signal at exactly 1400 K.C. Also procure a special socket wrench such as RCA Victor Stock No. 3007.

B. An output indicator is necessary. This may be a current squared thermo-galvanometer connected to the secondary of the output transformer in place of the cone coil or other types of output indicators.

C. Turn the station selector until the knob reads exactly 0. Then remove the chassis from the cabinet being careful not to disturb the setting of the dial. The gang condenser rotor plates should be fully meshed with the stator plates. If not, then the dial drum must be adjusted until such a condition exists. Replace the chassis in the cabinet.

D. Place the oscillator in operation at exactly 1400 K.C. and couple its output to the antenna lead. Set the dial scale at 85 and place the Radiolette in operation. Place a soft pad on the bench and turn the instrument on its side. Now with the special wrench, adjust each line-up capacitor until maximum output is obtained in the output meter. Be careful to adjust the volume control or oscillator output so that an excessive reading is not obtained. Go over each adjustment a second time to compensate for any interlocking of adjustments.

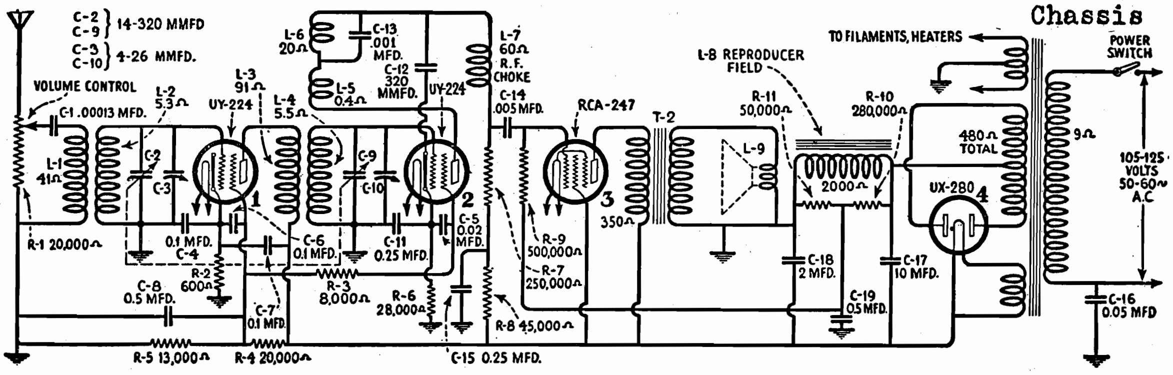
REPLACEMENT PARTS

Part No.	DESCRIPTION	List Price
2549	Resistor—250,000 Ohms—Carbon type—Package of 5	$3.00
2747	Cap—Control grid contactor cap—Package of 5	.50
2954	Capacitor—By-pass capacitor pack containing three 0.1 Mfd. capacitors	.75
2955	Transformer—First R.F. transformer complete with mounting washer and nut	1.50
2956	Transformer—Second R.F. transformer complete with mounting washer and nut	2.00
2957	Capacitor—10 Mfd. electrolytic type—Complete with terminal, insulating washer, mounting nut and lock washer	3.00
2958	Switch—Operating switch complete with mounting washers and nut	.60
2959	Volume control—20,000 Ohm Volume control complete with mounting washers and nut	1.50
2960	Dial—Dial scale complete with set screws—Package of 2	.50
2961	Coil—Detector plate R.F. choke coil	.50
2962	Capacitor—0.005 Mfd. audio coupling capacitor	.75
2963	Resistor—8000 Ohms—Carbon type—Package of 5	2.50
2964	Resistor—13000 Ohms—Carbon type—Package of 5	2.50
2965	Resistor—600 Ohms—Carbon type—Package of 5	2.50
2966	Resistor—28,000 Ohms—Carbon type—Package of 5	2.50
2967	Resistor—45,000 Ohms—Carbon type—Package of 5	2.50
2969	Resistor—50,000 Ohms—Carbon type—Package of 5	2.50
2970	Resistor—500,000 Ohms—Carbon type—Package of 5	2.50
2971	Resistor—280,000 Ohms—Carbon type—Package of 5	2.50
2972	Shield—Radiotron shield complete with mounting screw, washer and nut	.50
2975	Rivet—Eyelet rivet for mounting cone—Package of 100	.50
2976	Knob—Volume control or operating switch knob—Package of 5	1.50
2977	Knob—Station selector knob—Package of 5	2.50
2978	Screw assembly—Loudspeaker mounting screw assembly comprising four screws, four washers, four lock washers, eight nuts and four eyelets	.60
2981	Capacitor—320 Mmfd. detector plate R.F. by-pass capacitor	.50

Part No.	DESCRIPTION	List Price
3006	Capacitor—.001 Mfd.—Used across low frequency tickler coil	$0.50
3007	Wrench—Special wrench for R.F. line-up condenser adjustments	1.00
5817	Resistor—20,000 Ohms—Carbon type	.90
7054	Cord—Power cord complete with male connector plug	1.00
7229	Socket—Five prong Radiotron socket complete with insulating shield—3 used—Package of 2	.50
7230	Socket—Four prong Radiotron socket complete with insulating shield—1 used—Package of 2	.50
7231	Capacitor—Filter and by-pass capacitor pack—Comprising one 0.05 mfd., two 0.5 mfd., two 0.25 mfd. and one 2.0 mfd. condensers	2.50
7232	Capacitor—2 gang variable tuning capacitor	5.00
7234	Transformer—Output transformer—With fibre terminal board	1.50
7236	Cone—Reproducer cone complete with voice coil and paper ring	1.50
8669	Transformer—Power transformer—105–125 volt, 50-60 cycle—Complete with mounting washers and nuts	6.00
8670	Transformer—Power transformer—105–125 volt, 25–40 cycle—Complete with mounting washers and nuts	9.00
8671	Transformer—Power transformer—220 volts, 50–60 cycles—Complete with mounting washers and nuts	8.00
10434	Resistor—Mid-tapped filament resistor—Used on early models only	.50
	SPECIAL PARTS SUPPLIED ON ORDER ONLY (Not to be stocked)	
2979	Board—Baffle board complete with grille cloth	.75
2980	Escutcheon—Station selector escutcheon complete with mounting screws	.75
7233	Board—Resistor mounting board—Less all resistors, capacitors and coils	1.00
7235	Coil—Field coil complete with bracket and cone ring	2.00
9321	Cabinet—Cabinet complete—Less all equipment	7.25
9339	Chassis—Receiver chassis complete—Less reproducer unit, knobs and Radiotrons	27.50
9340	Reproducer unit—Reproducer unit complete	4.75

MODEL R-5 AC
Schematic
Voltage
Chassis

R. C. A. VICTOR CO., INC.



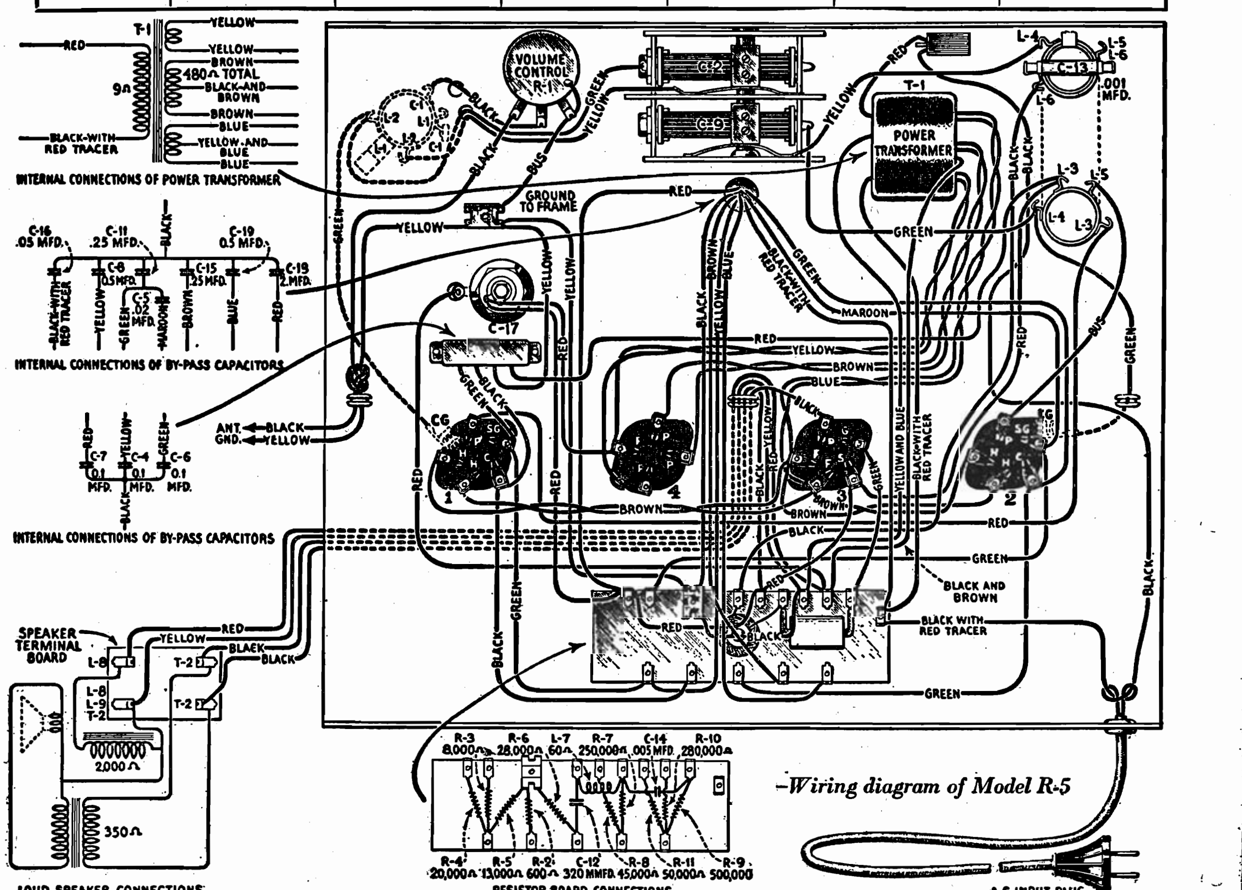
Schematic Circuit Diagram of Model R-5

SOCKET VOLTAGE READINGS

110-VOLT LINE

These are readings obtained with the usual Set Analyzers and are not true readings of the voltages at which the Radiotrons operate.

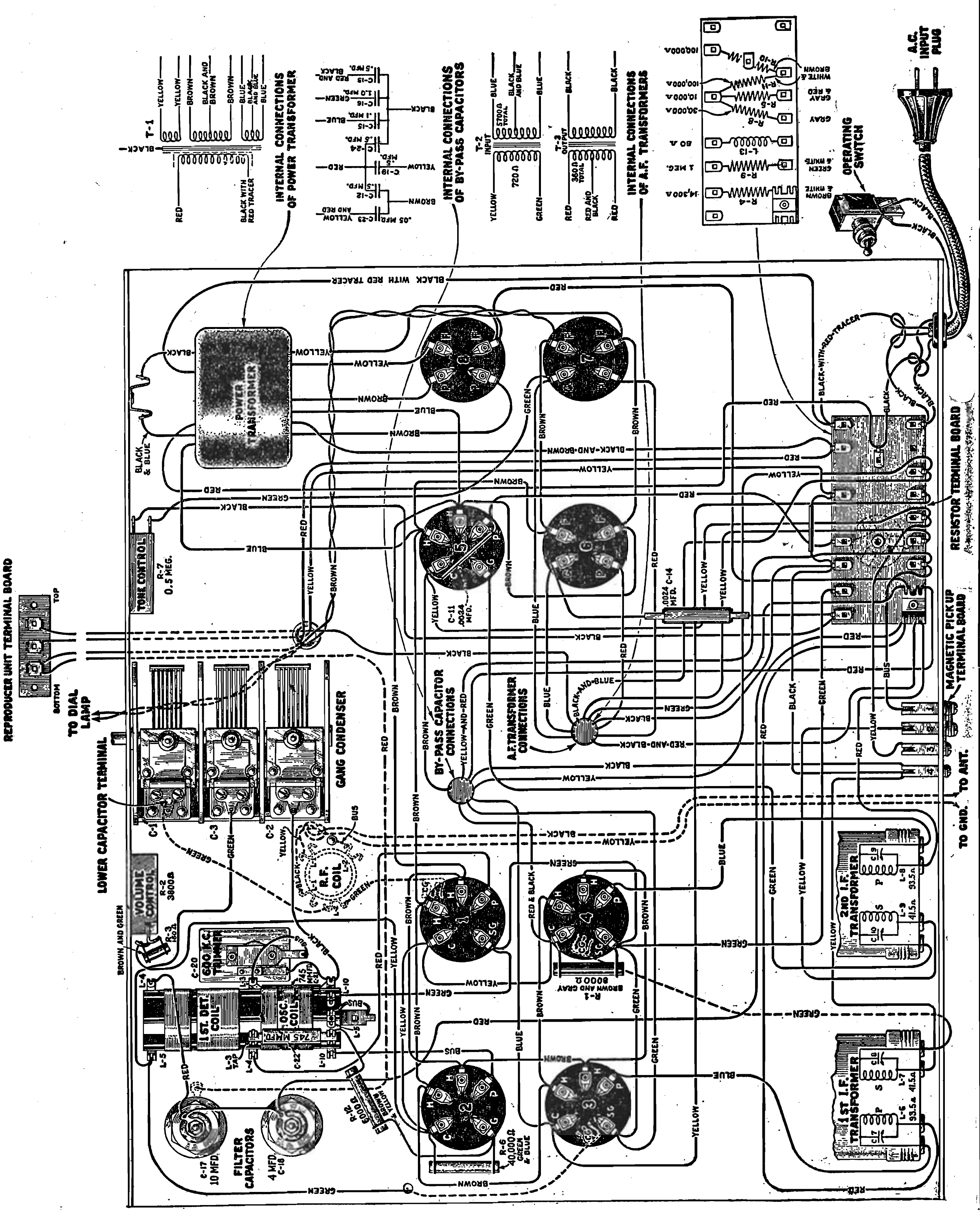
Radiotron No.	Heater to Cathode Volts	Cathode or Filament to Control Grid Volts	Cathode or Filament to Screen Grid Volts	Cathode or Filament to Plate Volts	Plate Current M. A.	Heater Volts
1	3.0	3.0	85	225	4.0	2.2
2	7.0	7.0	65	100	0.25	2.2
3	——	2.0	225	215	30.0	2.2



Wiring diagram of Model R-5

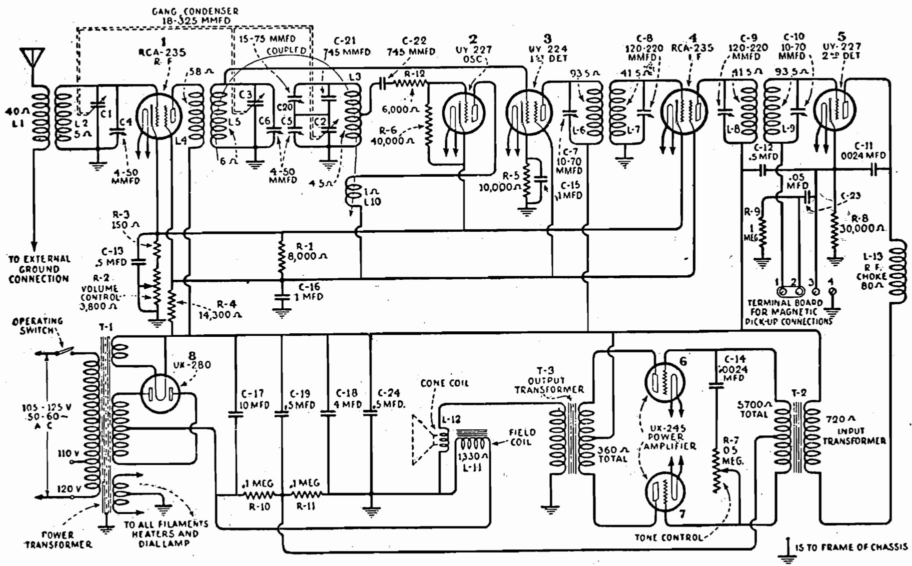
MODEL R-7, R-9 AC
Superette
Chassis

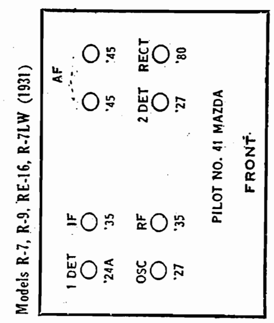
R. C. A. VICTOR CO., INC.



MODEL R-7,R-9 AC
Superette
Schematic

R. C. A. VICTOR CO., INC.





IF PEAK 175 KC

RADIOLA SUPERETTE

SERVICE NOTES ***

The can at the extreme center rear of the top of the chassis is AF transformer assembly. Directly in front of it is the RF bypass capacitor pack. The can at the left front facing the chassis is the 10 mfd electrolytic condenser. Directly to the rear of this can is the 4 mfd electrolytic condenser. To the right of this can, towards the center of the chassis is the RF transformer.

The 600 KC trimming condenser is accessible by means of a screw adjustment located on top of the chassis, to the right of the electrolytic condenser cans, between the cans and the RF transformer.

The 1400 KC line-up condensers are accessible through three holes in the bottom of the cabinet. With the cabinet tilted away from the operator and the rear of the chassis to the right of the operator, the extreme left hand hole is for the RF condensers, the middle hole for the detector condenser and the extreme right hand hole is for the oscillator condenser.

The IF transformer tuning condensers are accessible from the rear of the chassis. The two holes near the magnetic pickup terminal board are for the 2nd IF transformer. With the cabinet on its side, the upper hole is for the Primary circuit and the lower hole is for the Secondary circuit. The lower pair of holes, near the edge of the chassis are for the 1st IF transformer. The upper hole is for the Secondary circuit adjustment and the lower hole is for the Primary circuit adjustment.

The tone control can is opened by pressing with a pin or sharp instrument through the hole in the side of the can.

For 110 volt operation interchange the black and red lead with the folded over and tapped end, with the black with red-tracer lead connected to one of the terminals. When the change has been made tape up the black-red lead.

Volume Control Maximum

Tube	Cathode-Heater	Cathode-Grid	Cathode-Screen	Cathode-Plate	Plate Current	Fil.
RF	2.5	2.5	65	225	4.C ma	2.4
Osc.	2.5	0.		55	5.0	2.4
1Det	5.C	5.0	60	215	0.5	2.4
IF	2.5	2.5	65	225	4.0	2.4
2Det	60.	*10.		200	0.5	2.4
AF		*20.		215	20.	2.4
AF		*20.		215	20.	2.4

* Not true reading because of resistance in circuit.

R. C. A. VICTOR CO., INC.

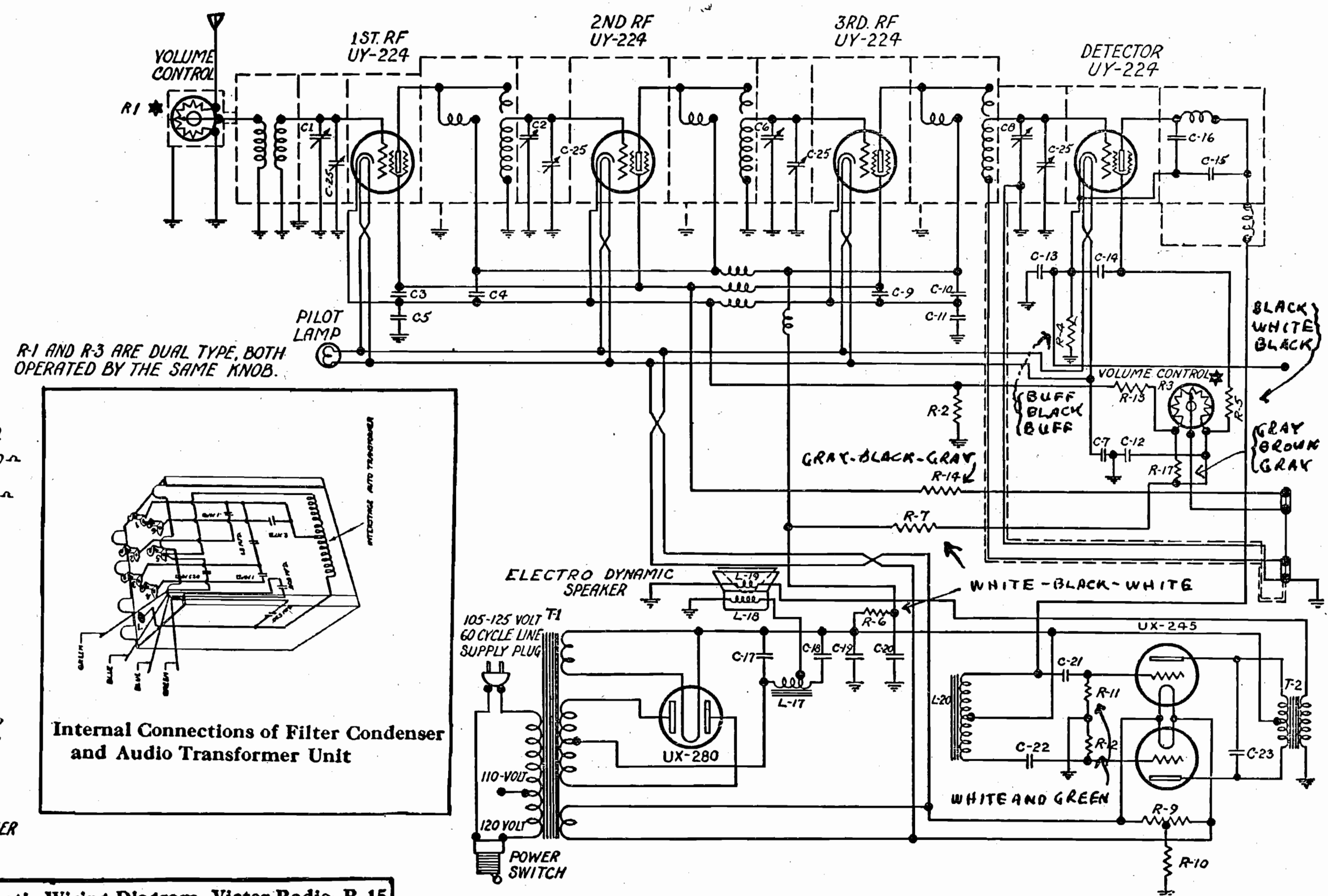
MODEL Victor R-15
Schematic

C-1 TUNING CONDENSER
C-2 TUNING CONDENSER
C-3 0.1 MFD. CONDENSER
C-4 0.1 MFD. CONDENSER
C-5 0.1 MFD. CONDENSER
C-6 TUNING CONDENSER
C-7 0.1 MFD. CONDENSER
C-8 TUNING CONDENSER
C-9 0.1 MFD. CONDENSER
C-10 0.1 MFD. CONDENSER
C-11 0.1 MFD. CONDENSER
C-12 0.1 MFD. CONDENSER
C-13 .75 MFD. CONDENSER
C-14 .25 MFD. CONDENSER
C-15 320 MMF. CONDENSER
C-16 320 MMF. CONDENSER
C-17 0.1 MFD. CONDENSER
C-18 2.0 MFD. CONDENSER
C-19 1.5 MFD. CONDENSER
C-20 1.0 MFD. CONDENSER
C-21 .025 MFD. CONDENSER
C-22 .025 MFD. CONDENSER
C-23 .005 MFD. CONDENSER
C-25 5 TO 15 MMF. ADJ. COND.

R-1 VAR. RESISTOR 50,000 Ω
R-2 120 Ω RESISTOR
R-3 VAR. RESISTOR 50,000 Ω
R-4 17,000 Ω RESISTOR
R-5 200,000 Ω RESISTOR
R-6 3,200 Ω RESISTOR
R-7 3,200 Ω RESISTOR
R-9 55 Ω RESISTOR
R-10 715 Ω RESISTOR
R-11 430,000 RESISTOR
R-12 430,000 RESISTOR
R-13 830 Ω RESISTOR
R-14 16,000 Ω RESISTOR
R-17 12,000 Ω RESISTOR

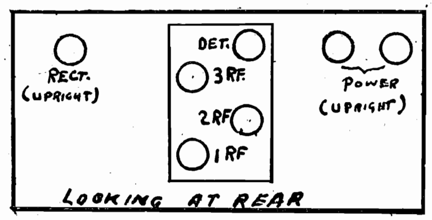
T-1 POWER TRANSFORMER
T-2 OUTPUT TRANSFORMER

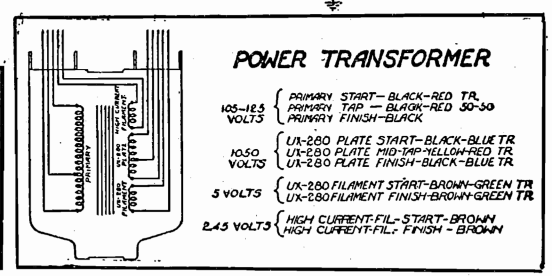
L-17 FILTER REACTOR
L-18 SPEAKER FIELD
L-19 SPEAKER VOICE COIL
L-20 INTERSTAGE TRANSFORMER



Schematic Wiring Diagram, Victor Radio R-15

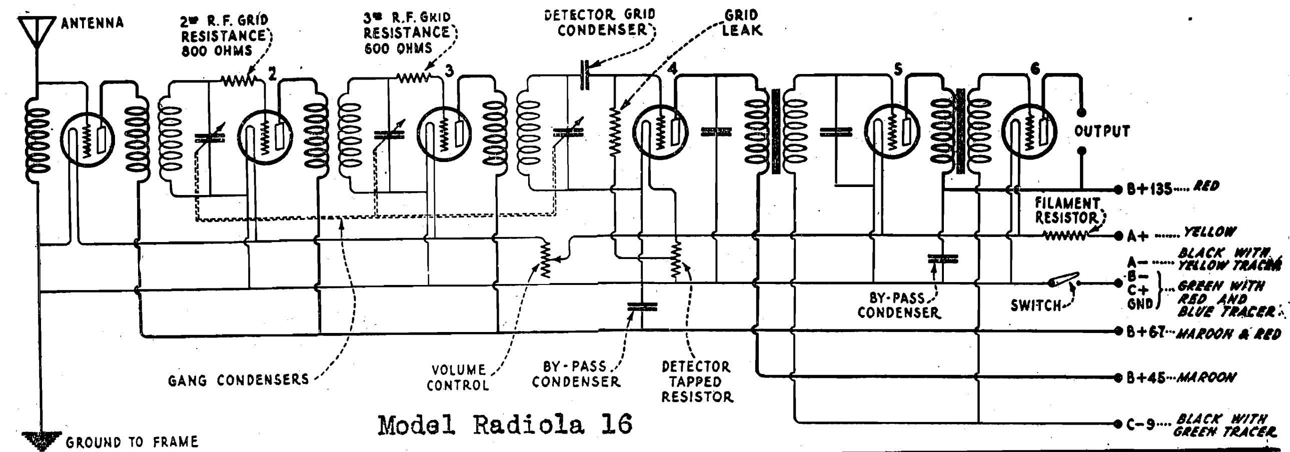
Tube	Fil.V.	Plt.V.	Grd.V.	S Grd.V.	Plt.Crnt.
1RF	2.1	153	2.7	78.	2.9 ma
2RF	2.1	154	2.7	77.	3.4
3RF	2.1	152	2.8	75.	3.1
Det	2.1	215	4.6	34.	0.4
PPAF	2.05	190	4.5		25.
Rect	4.1	Plate current each Plt.36.			



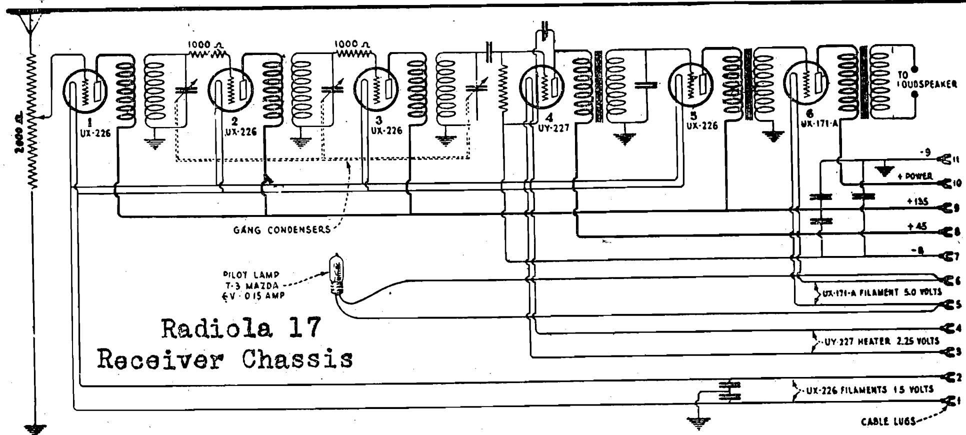


R. C. A. VICTOR CO., INC.

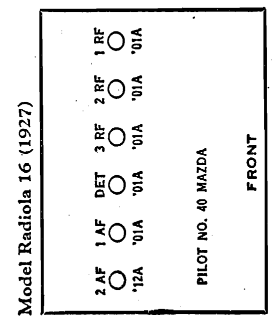
MODEL Radiola 16
MODEL Radiola 17



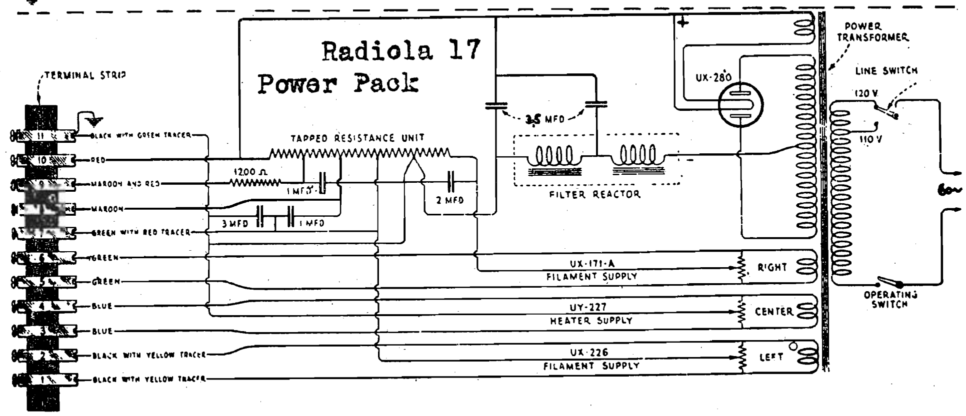
Model Radiola 16

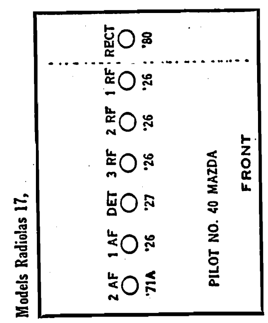


Radiola 17
Receiver Chassis

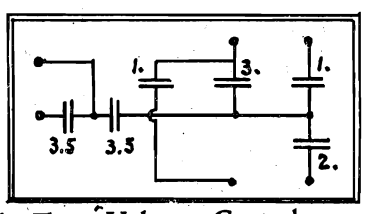


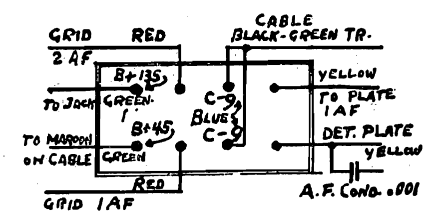
Radiola 17
Power Pack





Internal Connections
of filter condenser
Radiola 17 Pack





Connections to A.F.Transf
RADIOLA 16

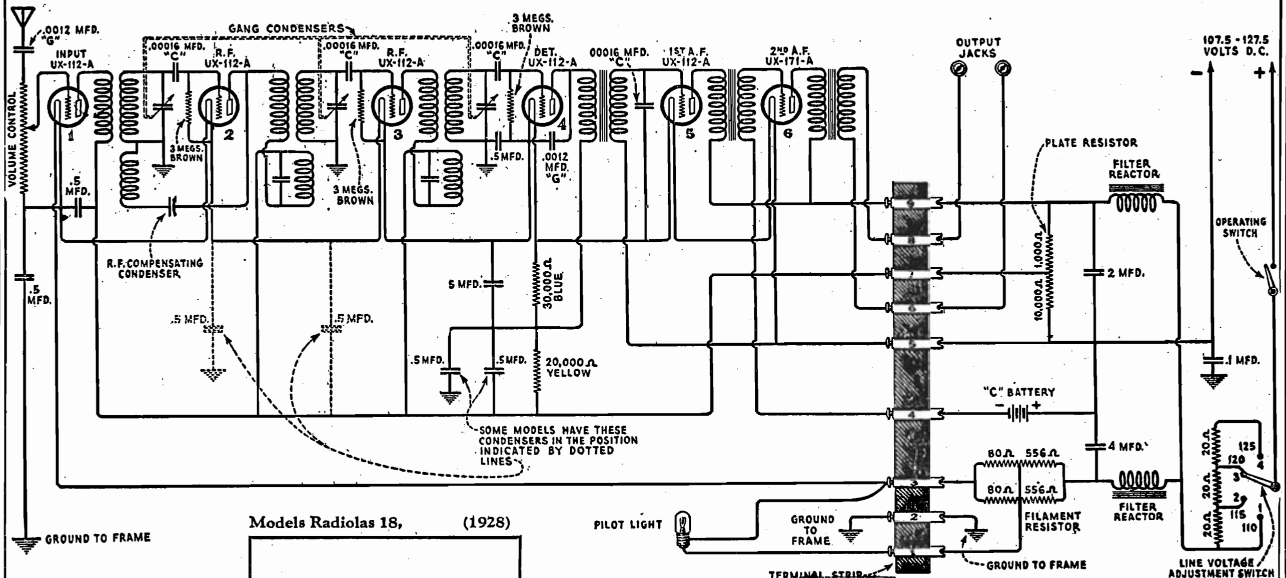
Circa 1927 AD

RADIOLA—Models 17
Line Voltage 112—120 Volt Tap—Volume Control Full

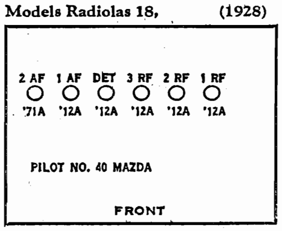
TUBE NO IN ORDER	TYPE OF TUBE	POSITION OF TUBE 1ST RF DET ETC	READINGS PLUG IN SOCKET OF SET								
			TUBE OUT		TUBE IN TESTER						
			A VOLTS	B VOLTS	A VOLTS	B VOLTS	C VOLTS	CATHODE VOLTS	NORMAL PLATE M.A	PLATE M.A GRID TEST	PLATE M.A CHANGE
1	226	1st. R.F.	1.4	125	1.3	122	8	-	4.5	8.5	4.0
2	226	2nd. R.F.	1.4	125	1.3	122	8	-	4.5	8.5	4.0
3	226	3rd. R.F.	1.4	125	1.3	122	8	-	4.5	8.5	4.0
4	227	Detector	2.4	125	2.2	22	0	-	3.0	3.1	.1
5	226	1st. A.F.	1.4	125	1.3	120	8	-	4.0	7.8	3.8
6	171A	2nd. A.F.	4.9	200	4.7	132	30	-	16.0	18.0	2.0
7	280	Rectifier	-	-	4.8	-	-	-	20.0	-	-

MODEL Radiola 18 DC
MODEL Radiola 18 AC

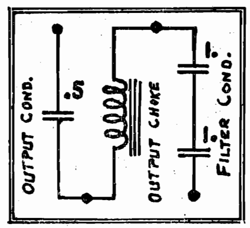
R. C. A. VICTOR CO., INC.



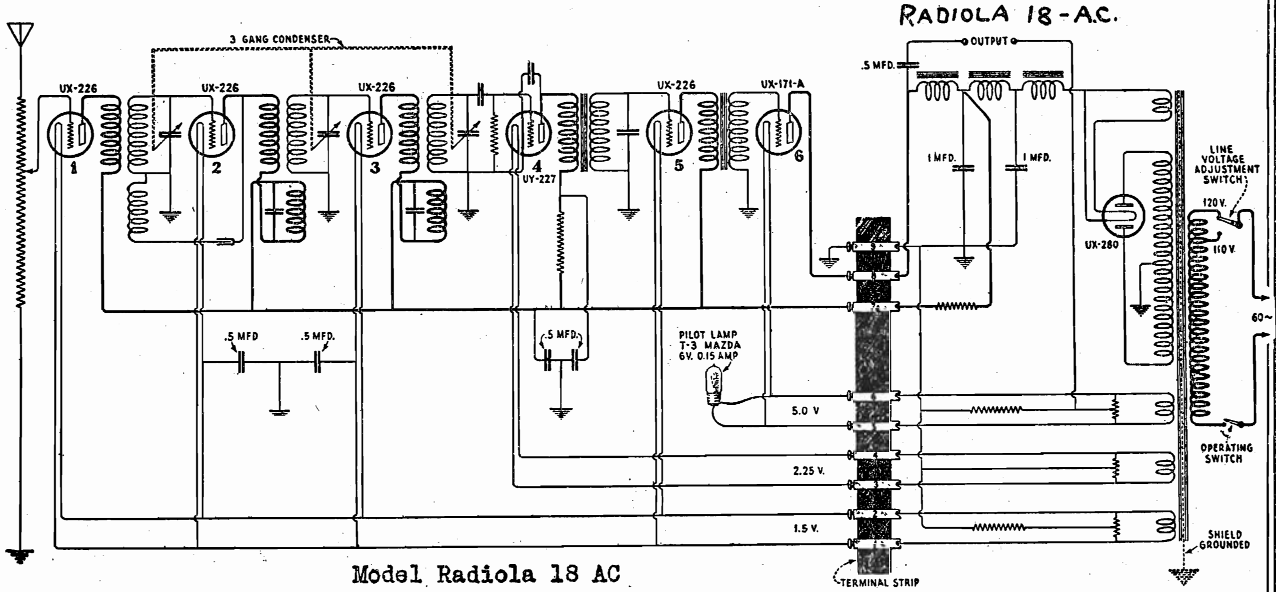
Models Radiolas 18, (1928)



Model Radiola 18 DC



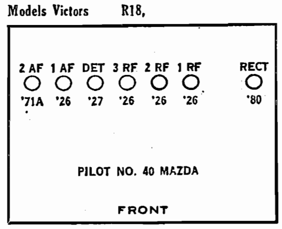
RADIOLA 18-A.C.



Model Radiola 18 AC

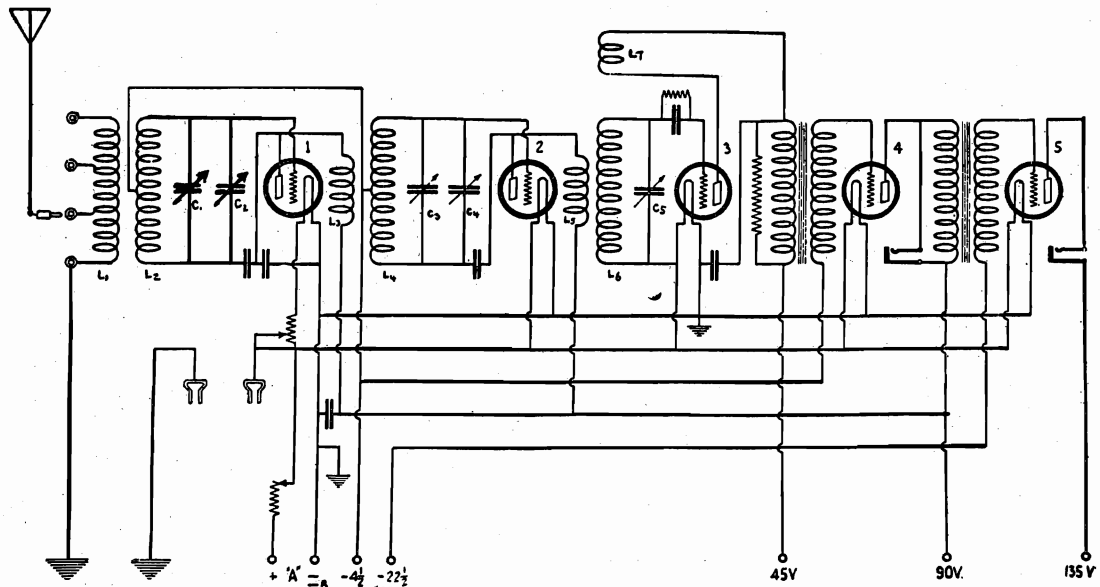
Model 18 D.C.				
Tube No.	Fil. to Grid Volts	Fil. to Plate Volts	Plate Ma.	Fil. Volts
1	5	45	4.5	4.7
2	4	50	5.	4.8
3	4	55	5.5	5.
4	4	21	1.	5.1
5	10	90	3.5	5.2
6	22.5	90	10.	5.3

Models Victors R18,

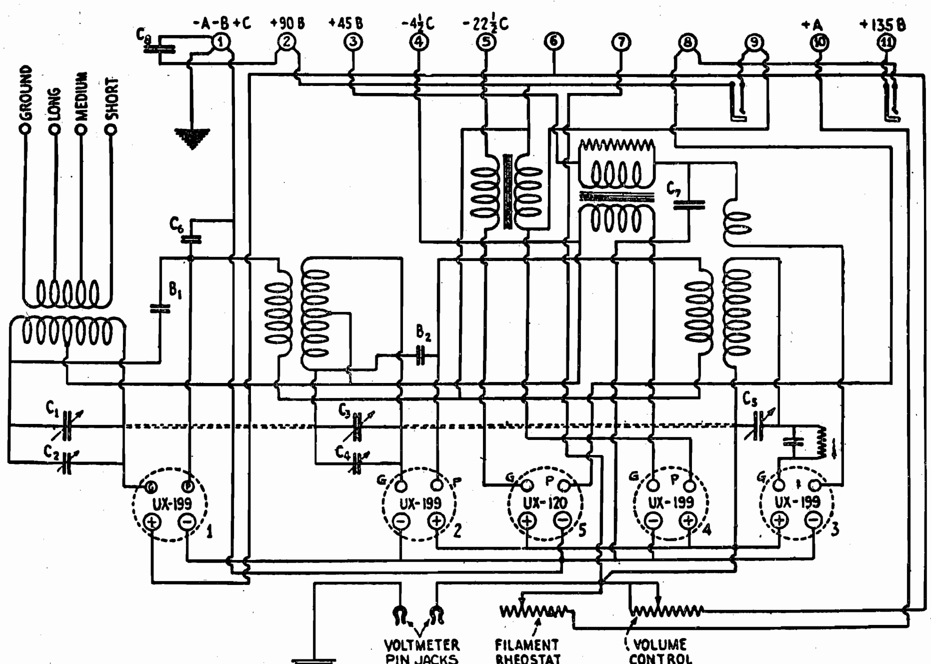


MODEL Radiola 20

R. C. A. VICTOR CO., INC.

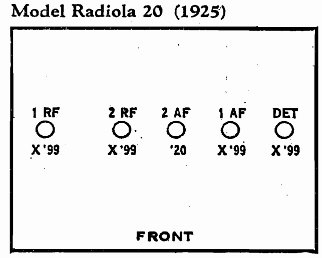


Radiola 20.



Continuity Diagram of the Radiola 20

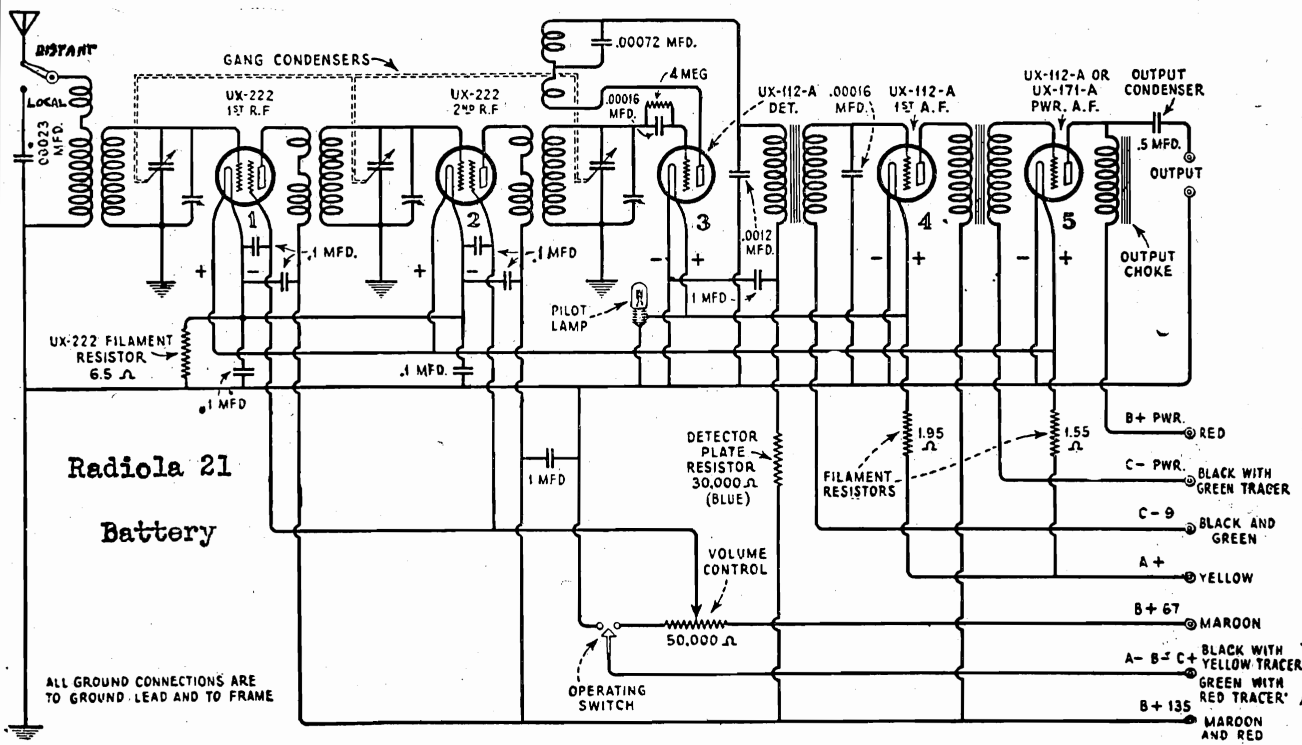
Model Radiola 20 (1925)



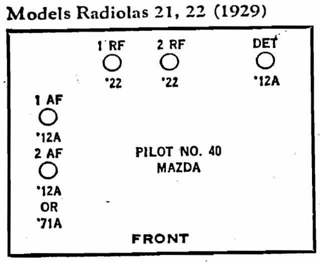
B plus 135	Red
B plus 90	Maroon and Red
B plus 45	Maroon
A- B- C plus	Green and Yellow-Red Tracer
-4.5	Black and Green
-22.5	Black with Green Tracer
A plus	Yellow

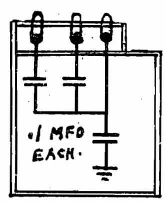
R. C. A. VICTOR CO., INC.

MODEL Radiola 21, 22

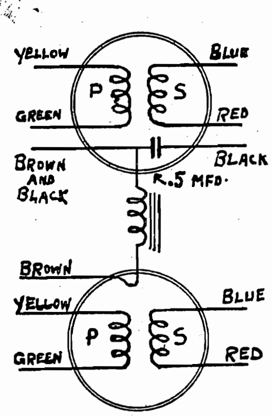


Models Radiolas 21, 22 (1929)





RF Bypass Unit



Internal connections of A-F coupling unit.

RADIOLA—Models 21 and 22
Volume Control at Minimum

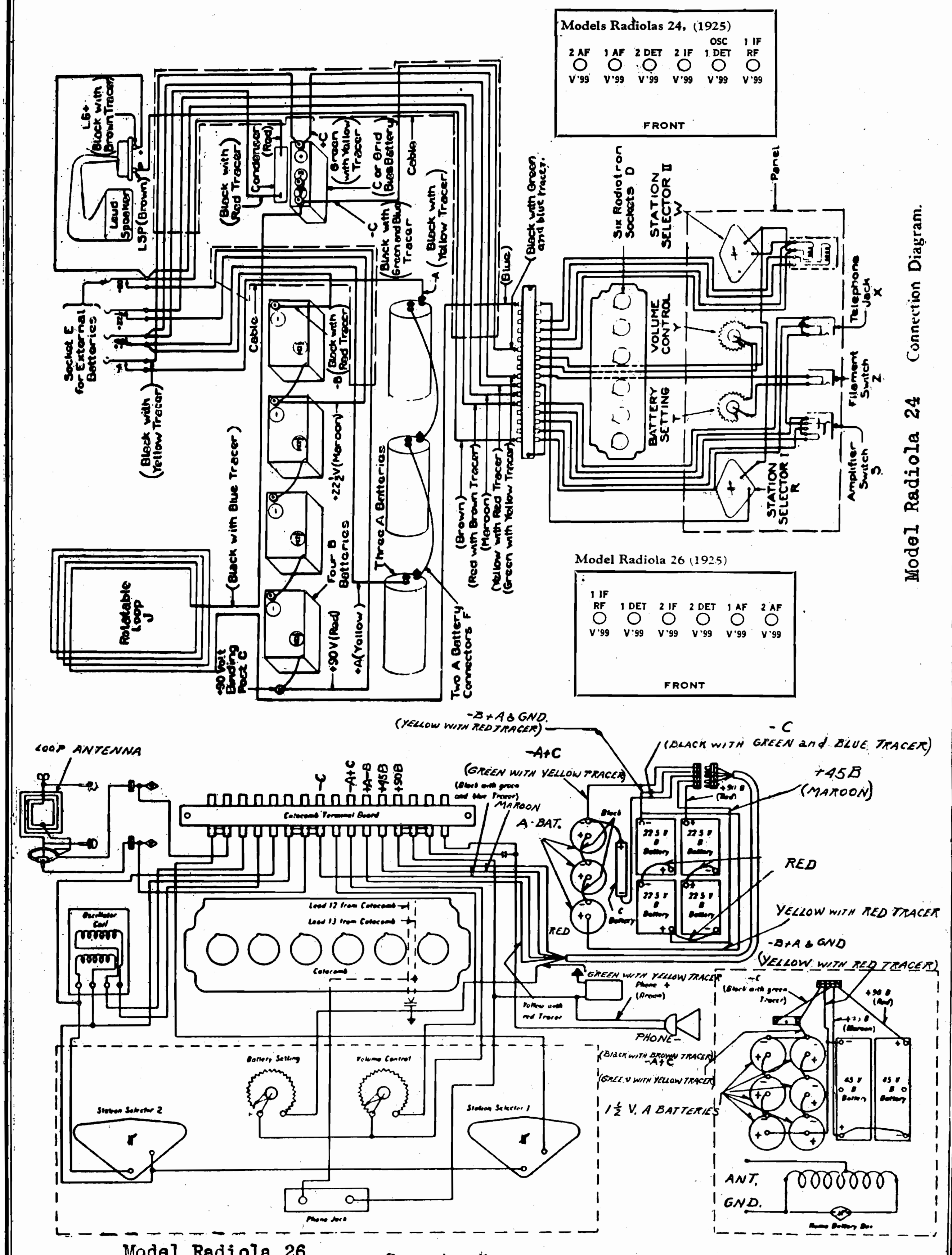
Tube No. in Order Tested (1)	Type of Tube (2)	Position of Tube in Set (3)	Meter Readings with Jewell Test Plug in Socket of Set — Operating Voltages: Filament or Heater (4)	Plate or Anode (5)	Control Grid—Space Gd + (6)	Normal Grid—Screen Gd + (7)	Cathode to Heater (8)	Milliamperes: Screen Gd L. H. '80 Plate (9)	Plate R. H. '80 Plate (10)	Tube Test (11)	Plate Current Change (12)	(13)
1	222	1 R.F.	3.2	135	1.6	0	-	-	0			
2	222	2 R.F.	3.2	135	1.6	0	-	-	0			
3	112A	Det.	5.0	45	-	-	-	-	3.5			
4	112A	1 A.F.	5.0	125	-	9	-	-	6.5			
5	171A	PWR	5.0	130	-	27	-	-	15			
6												
7												

Volume Control at Maximum

Tube No. in Order Tested (1)	Type of Tube (2)	Position of Tube in Set (3)	Meter Readings with Jewell Test Plug in Socket of Set — Operating Voltages: Filament or Heater (4)	Plate or Anode (5)	Control Grid—Space Gd + (6)	Normal Grid—Screen Gd + (7)	Cathode to Heater (8)	Milliamperes: Screen Gd L H 80 Plate (9)	Plate R H 80 Plate (10)	Tube Test (11)	Plate Current Change (12)	(13)
1	222	1 R.F.	3.2	135	1.6	67	-	-	5.0			
2	222	2 R.F.	3.2	135	1.6	67	-	-	5.0			
3	112A	Det.	5.0	45	-	-	-	-	3.5			
4	112A	1 A.F.	5.0	125	-	9	-	-	6.5			
5	171A	PWR	5.0	130	-	27	-	-	15			
6												
7												

R. C. A. VICTOR CO., INC.

MODEL Radiola 24
MODEL Radiola 26



Model Radiola 24 Connection Diagram.

Model Radiola 26 Connection diagram

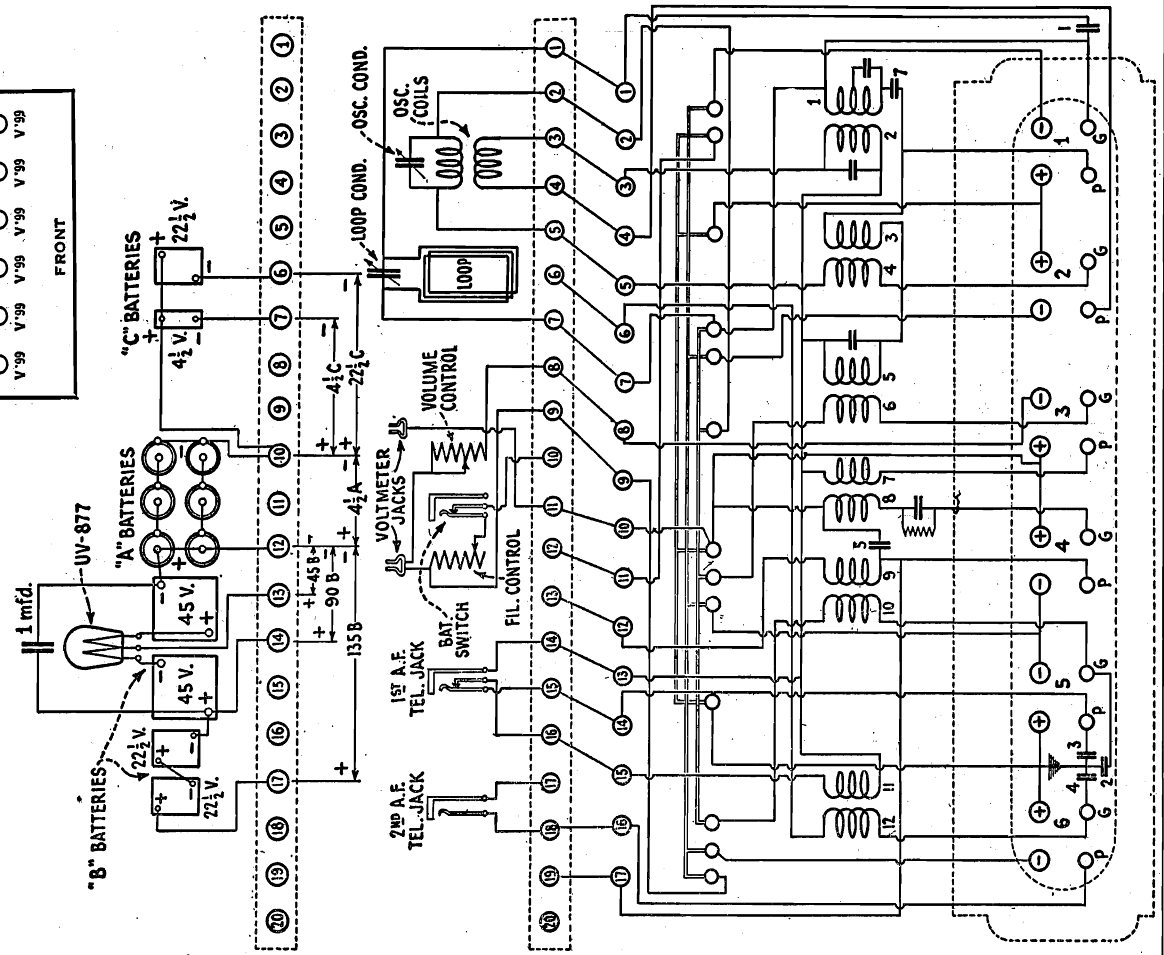
MODEL Radiola 25

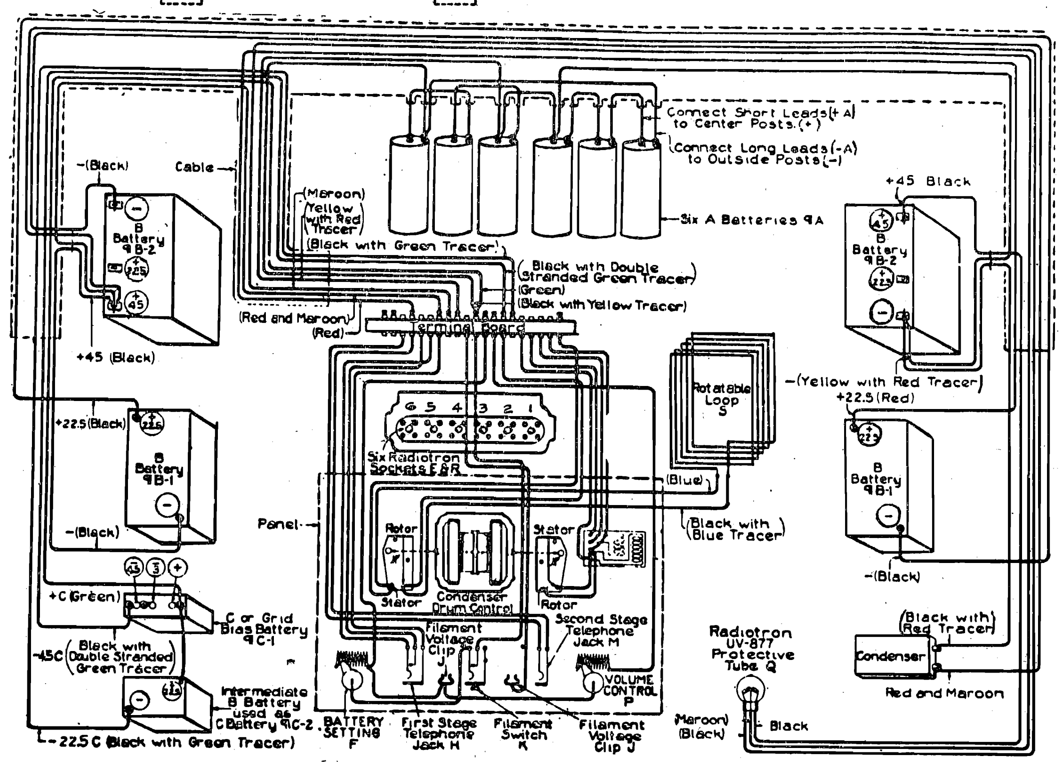
R. C. A. VICTOR CO., INC.

Models Radiolas 24, 25 (1925)

2 AF	1 AF	2 DET	2 IF	OSC 1 DET	1 IF RF
V'99	V'99	V'99	V'99	V'99	V'99

FRONT



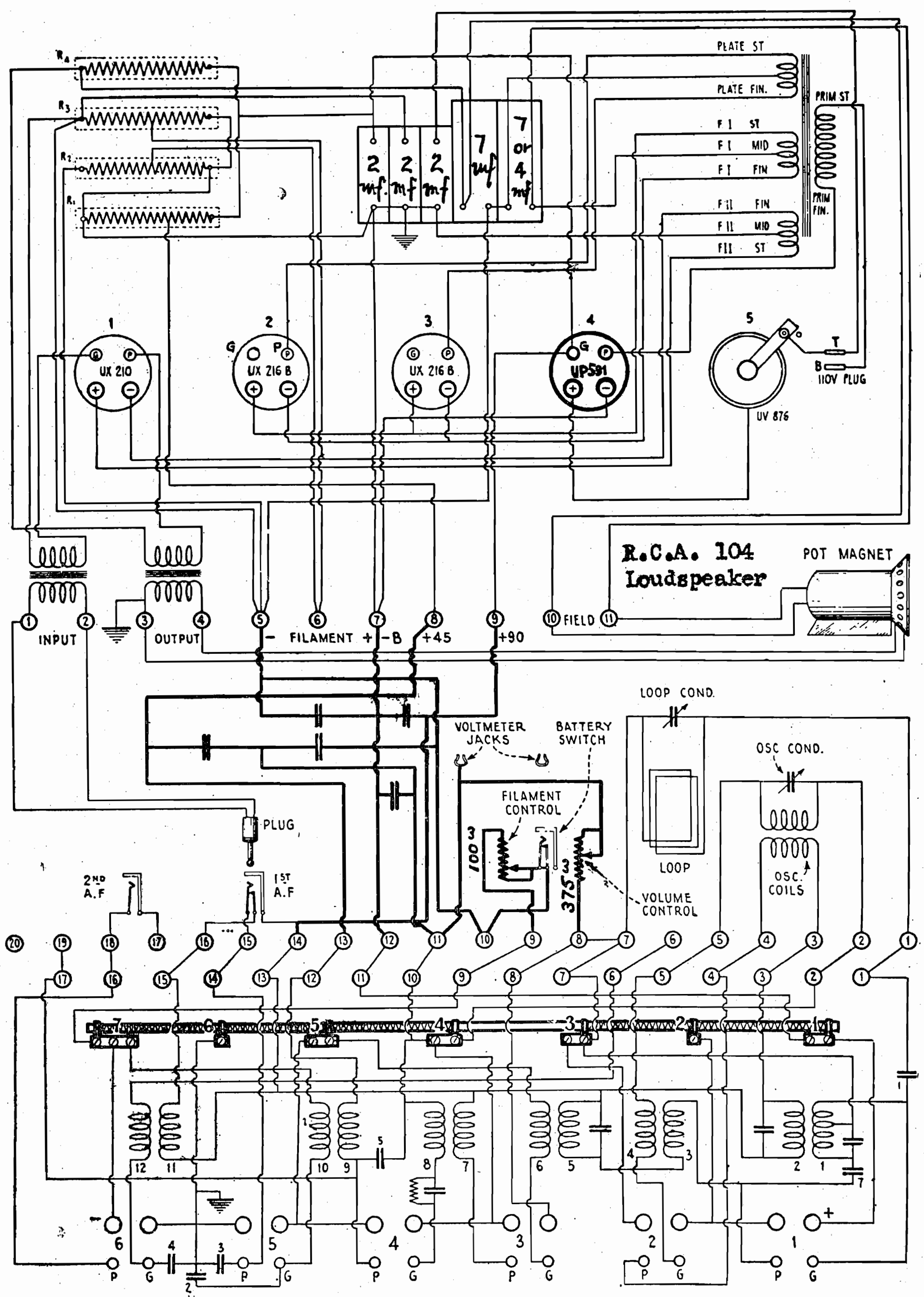


VOLTAGE READINGS TAKEN AT CATACOMB TERMINAL STRIP

VOLTS	+ TERMINAL	- TERMINAL
135B	17	12
90B	14	12
45B	13	12
22½C	20	6
4½C	20	7
4½A	12	10

R. C. A. VICTOR CO., INC.

MODEL Radiola 25
With 104 Power Pack



VOLTAGE READINGS OF RADIOLA 25

Between terminals 10 and 12	31 volts with tubes lighted
12 " 13	21.5 " normal
13 " 14	41 volts normal

RADIOLA 25 A.C. RESISTANCES

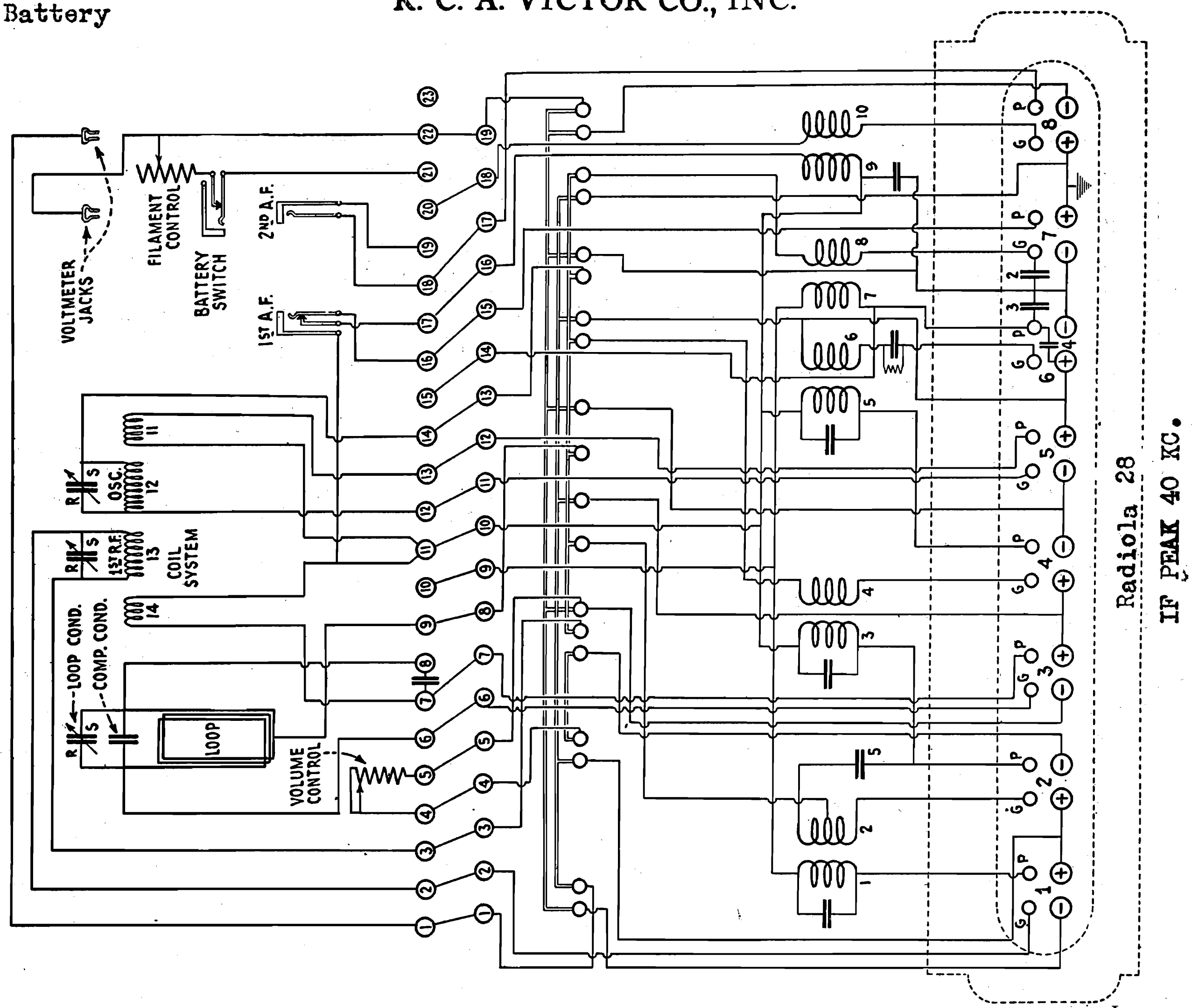
Terminals	Lower limit	Normal	Upper limit
1 and 2	218.5 V.	230 V.	241.5 V.
2 and 3	192 "	201 "	208 "
3 and 4	open	open	open "
4 and 5	151.9 "	155 "	158.1 "
5 and 6	143 "	150 "	153 "
6 and 7	44.75 "	50 "	55.25 "

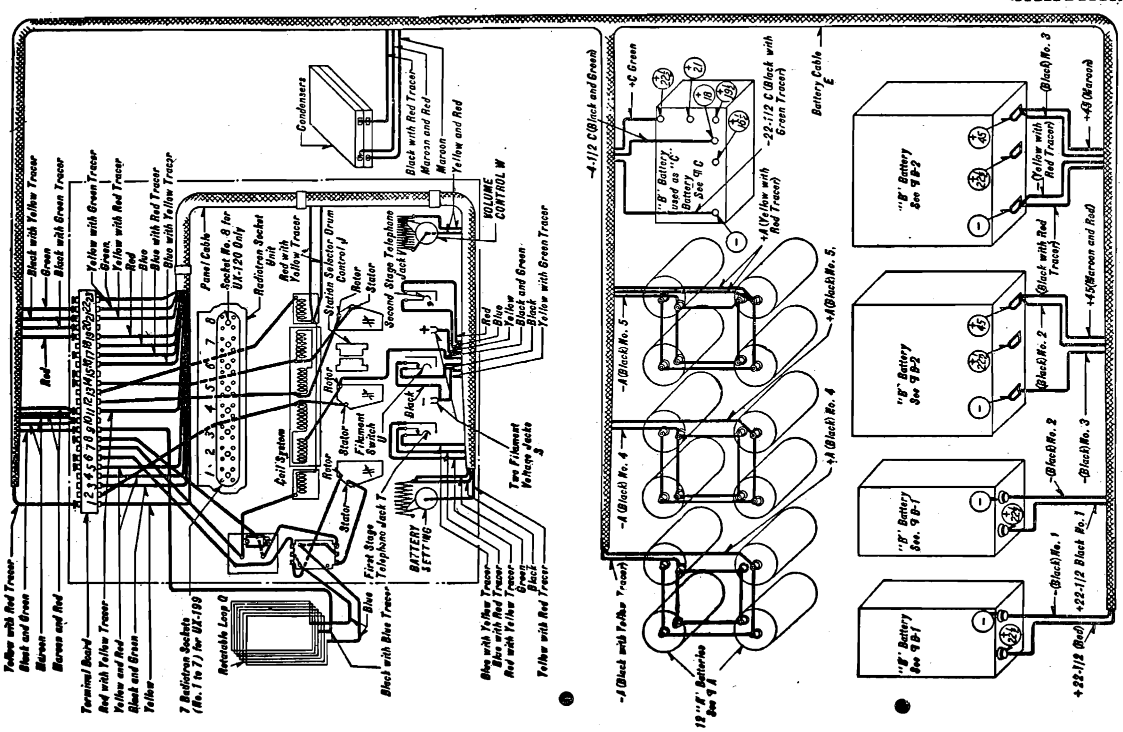
RADIOLA 25
A.C. OPERATED
With
Model 104 Loudspeaker and Model UP-971 A.C. Package.

(A.C.Package Changes Shown In Heavy Lines.)

MODEL Radiola 28
Battery

R. C. A. VICTOR CO., INC.



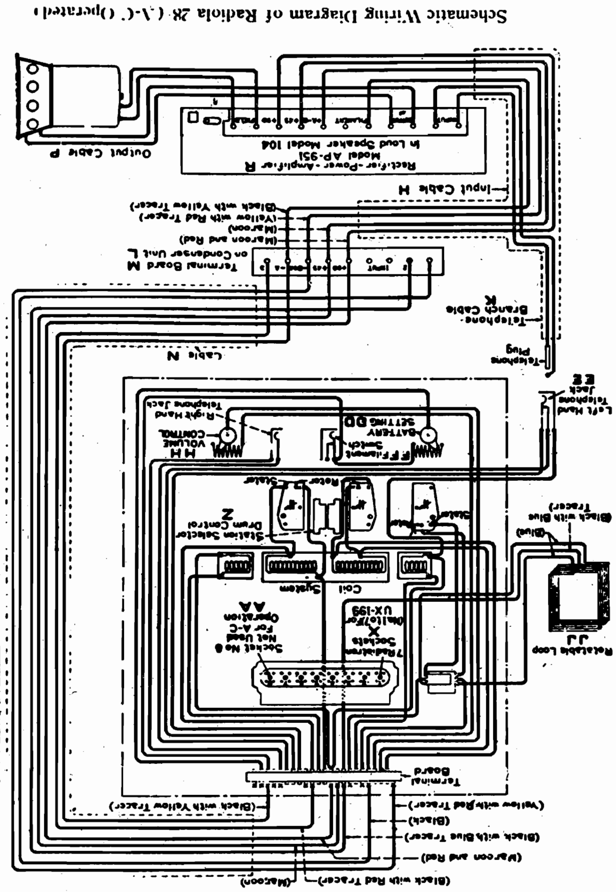


WIRING DIAGRAM FOR RADIOLA 28

In this wiring diagram, two or more leads of a like color contained in the same cable may be distinguished by the numeral following the color designation at each end of a given lead.

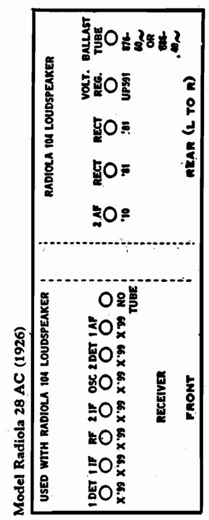
R. C. A. VICTOR CO., INC.

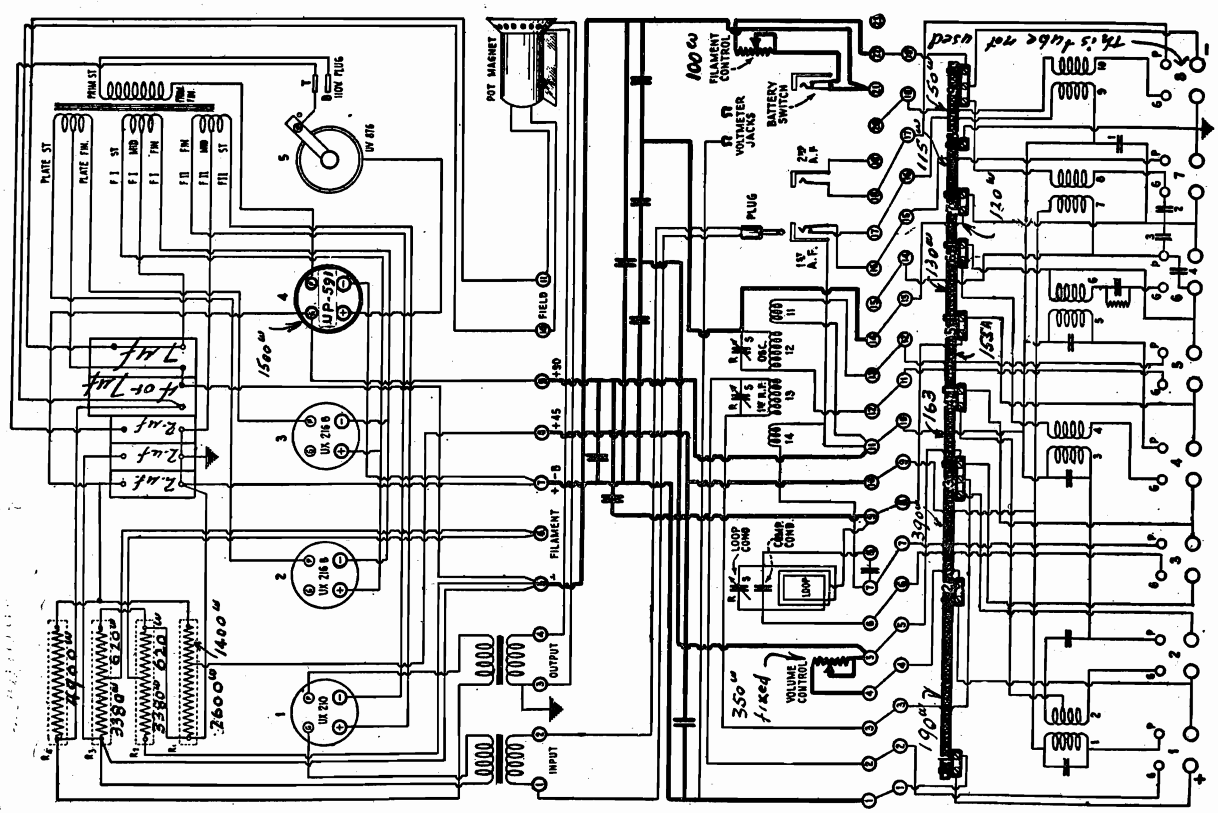
MODEL Radiola 28 AC
With 104 Power Supply



RADIOLA 28 - A.C. OPERATED

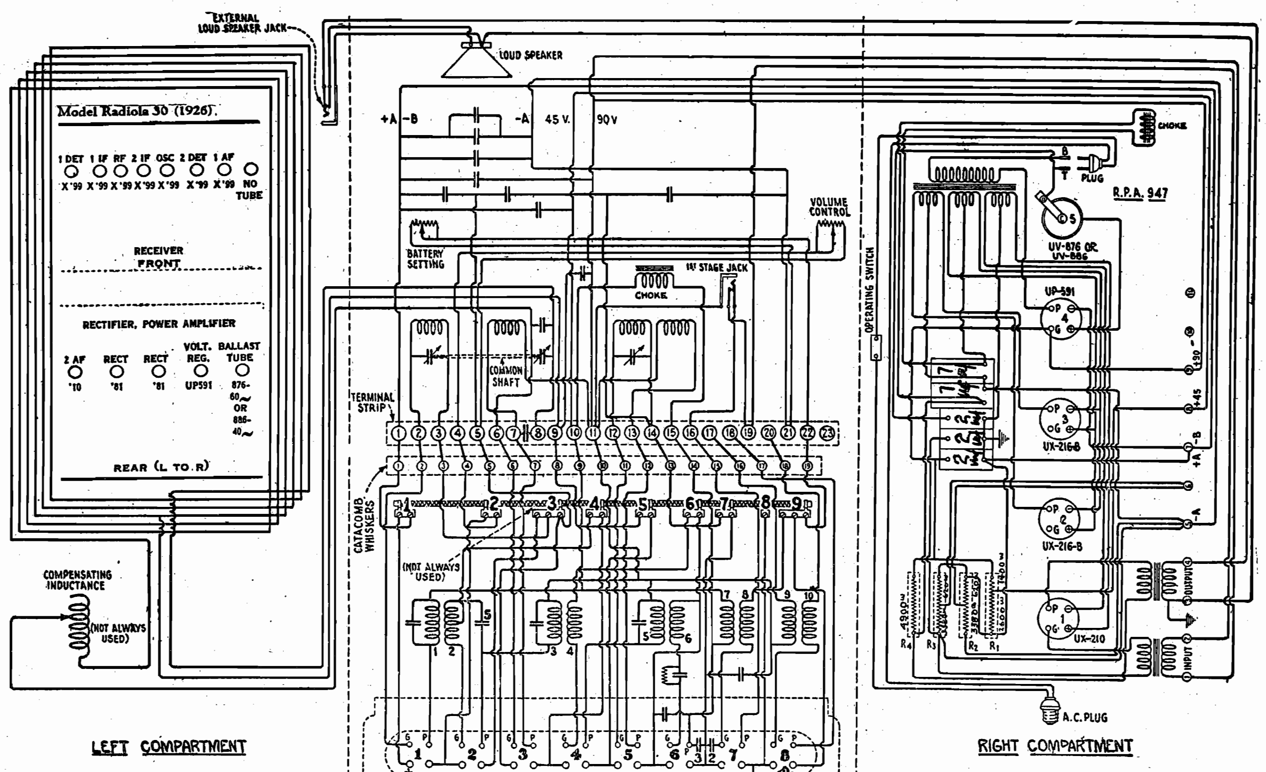
RADIOLA 28 - A.C. OPERATED With Model 104 Loudspeaker
And Model UP-972 A.C. Package.
(A.C. Package Changes Shown In Heavy Lines.)





MODEL Radiola 30 AC
With 104 Power Pack

R. C. A. VICTOR CO., INC.



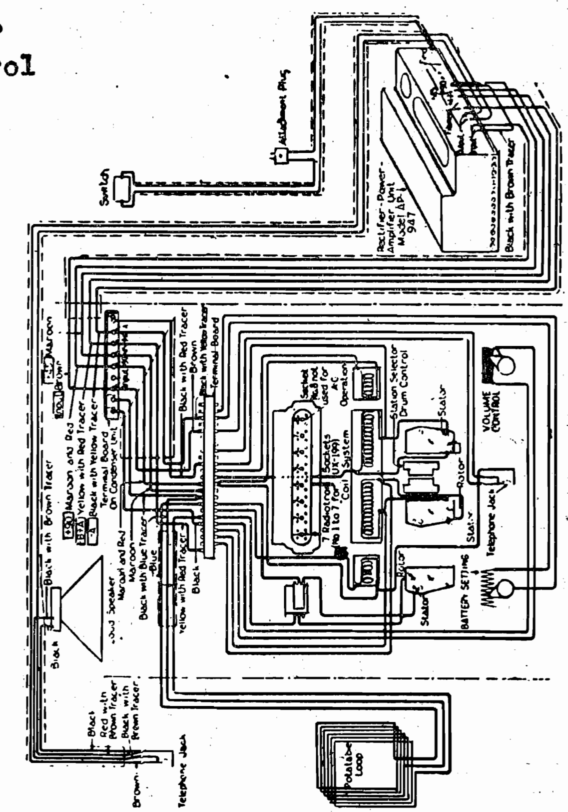
Model Radiola 30 AC

RESISTANCES AT RESISTANCE STRIP
with 375 ohm volume control

Terminals	Low	Normal	High
1 and 2	185	190	195
2 and 3	350	400	450
3 and 4	158	163	168
4 and 5	150	155	160
5 and 6	125	130	135
6 and 7	116	120	124
7 and 8	111	115	119
8 and 9	45	50	55

RESISTANCES AT RESISTANCE STRIP
with 250 Volume Control

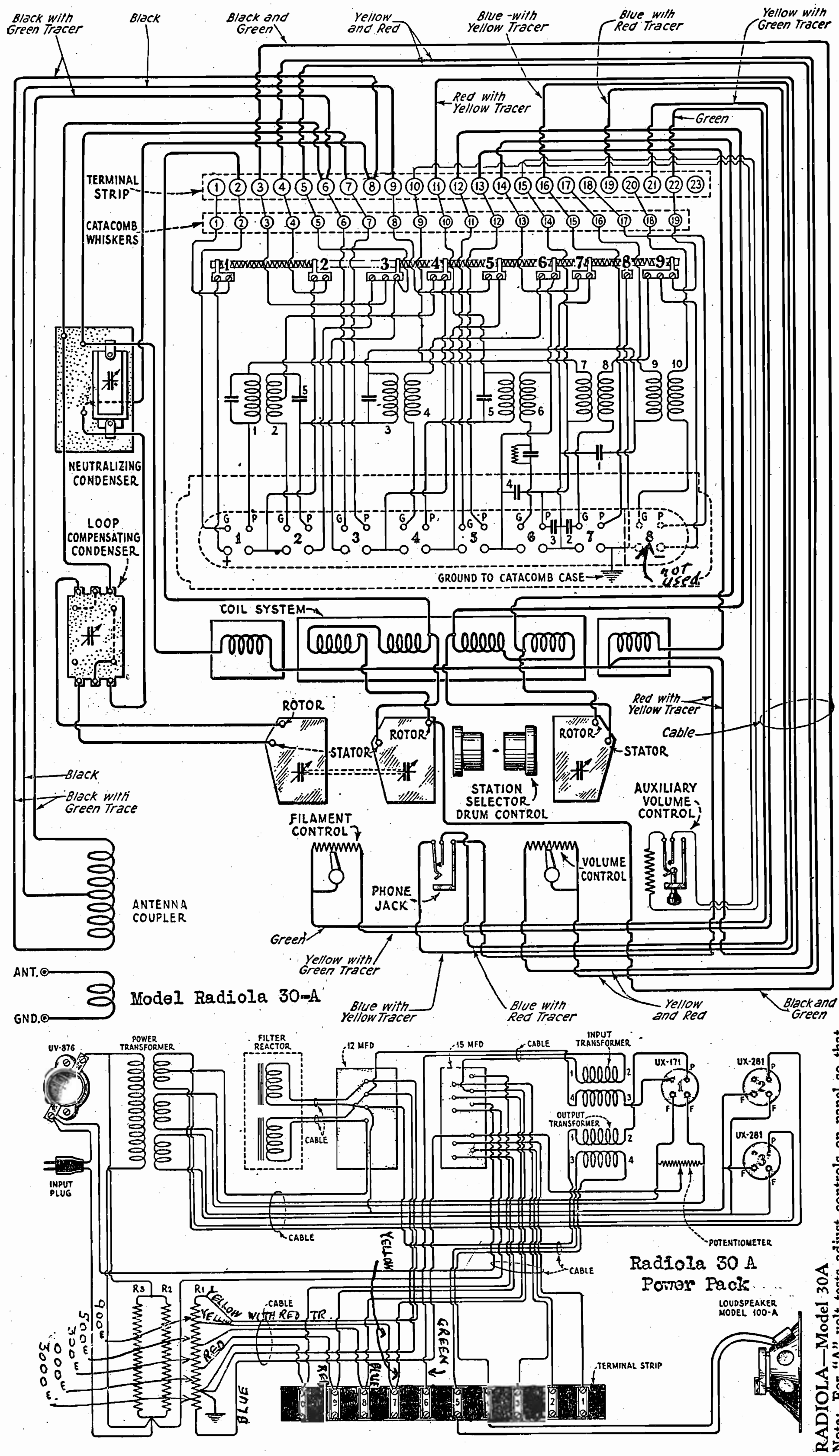
Terminals	Low	Normal	High
1 and 2	260	271	282
2 and 3	open	open	open
3 and 4	230	236.5	243
4 and 5	191	197	203
5 and 6	176	183.5	191
6 and 7	146	154.5	163
7 and 8	137	145.5	154
8 and 9	45	50.	55



Schematic Wiring Diagram of Radiola 30.

R. C. A. VICTOR CO., INC.

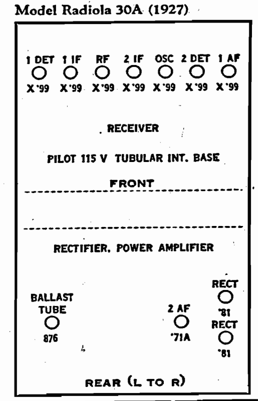
MODEL Radiola 30-A
MODEL Radiola 30-A AC Power Pack

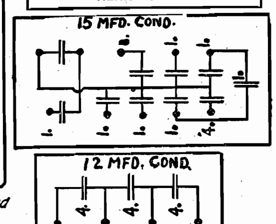


RESISTANCES AT RESISTANCE TERMINALS

Terminals	Low	Normal	High
1 and 2	260	271	282
2 and 3	open	open	open
3 and 4	230	236.5	243
4 and 5	191	197	203
5 and 6	176	183.5	191
6 and 7	146	154.5	163
7 and 8	137	145.5	154
8 and 9	45	50	55

Model Radiola 30A (1927)





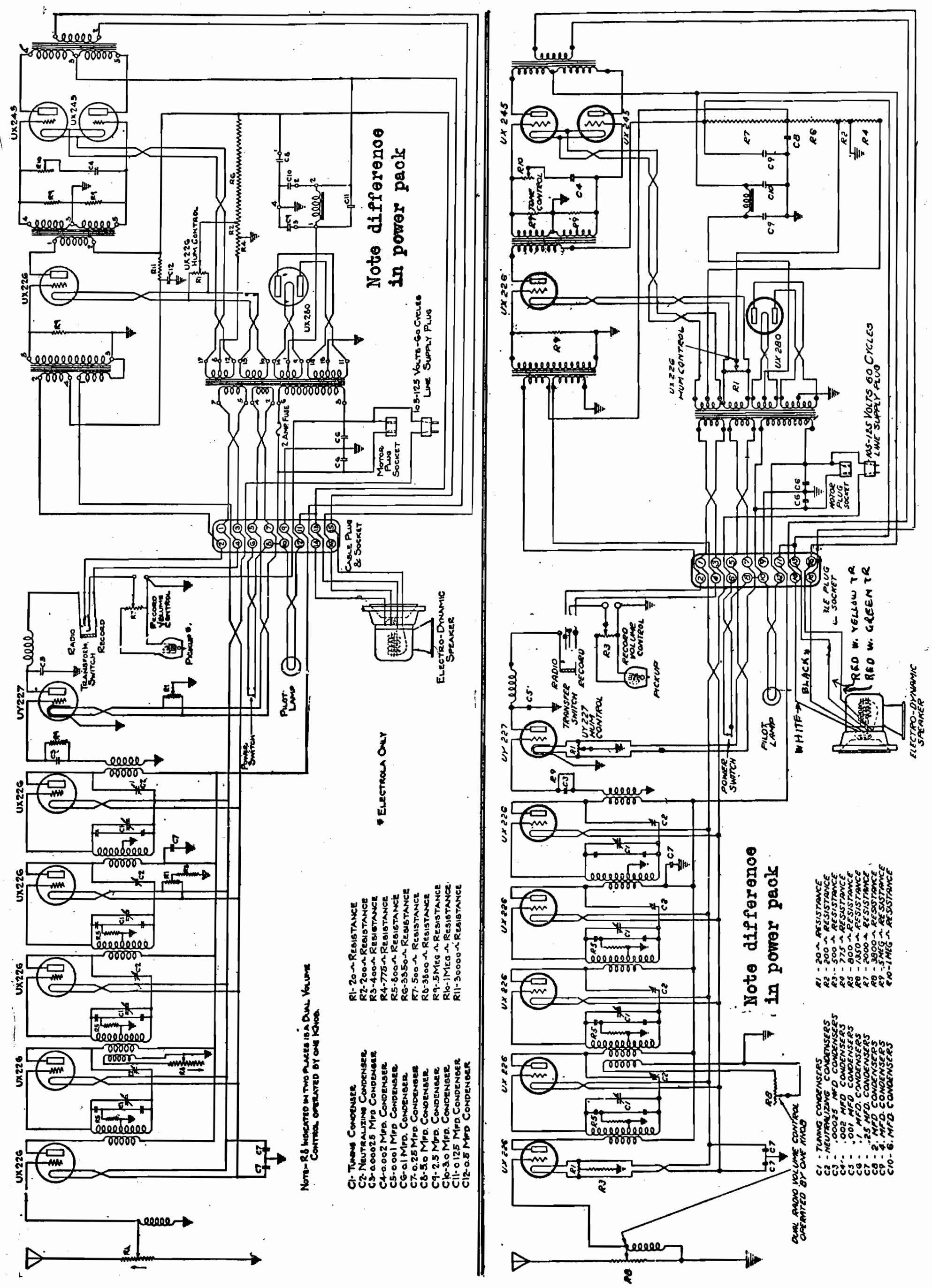
RADIOLA—Model 30A

Note: For "A" volt tests adjust controls on panel so that reading on first tube tested is that shown. This gives an average condition of operation and a margin of safety in all tests.

Tube No. in Order	Type of Tube	Position of Tube 1st RF Det etc	Tube Out A Volts	Tube Out B Volts	Tube in Tester A Volts	B Volts	C Volts	Cathode Volts	Normal Plate M.A.	Plate M.A. Grid Test	Plate M.A. Change
1	199	1st. DET.	6.5	47	3.2	26	7		-	-	-
2	199	1st. I.F.	6.7	73	2.9	72	7		2	3	1
3	199	Tuned R.F.		76	3.4	74	7		2	3	1
4	199	2nd. I.F.		80	2.9	84	7		2	3	1
5	199	Oscillator		80	3.0	79	7		2.6	4.2	1.6
6	199	2nd. DET.		38	2.9	38	2		1.4	0	0
7	199	1st. A.F.		8.6	2.9	84	7		2.4	3.6	1.2
8	171	Power Amp.		-	5.5	210	43		16	24	8
9	281	Rectifier		-	7	-	-		45	-	-
10	281	Rectifier		-	7	-	-		45	-	-

MODEL Victor R-32, RE-45 and R-52

R. C. A. VICTOR CO., INC.

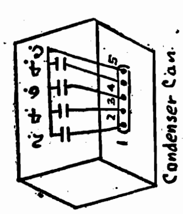


CABLE TERMINAL VOLTAGES

Between 1 and 3 1.7 volts AC.
5 and 7 2.35volts AC.
2 and 9 39. volts DC.
9 and 11 105. volts DC.
13 and 15 185. volts DC.

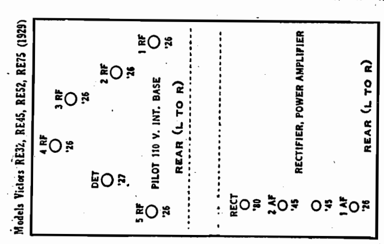
MULTI-PLUG TERMINALS

#1. Brown-white tracer for 226 filament. #2. Blue for transfer switch.
#3. Brown-white tracer for 226 filament. #4. White for transfer switch.
#5. Brown-blue tracer for 227 filament. #6. Black-red tracer for power switch.
#7. Brown-blue tracer for 227 filament. #8. Black-red tracer for power switch.
#9. Braided copper shield to ground. #10. Brown-red tracer for pilot light.
#11. Red-yellow tracer -B of 226. #12. Brown-red tracer for pilot light.
#13. Red-yellow tracer for field. #14. White for voice coil. #15. Red-green tracer for speaker field. #16. Black for voice coil.



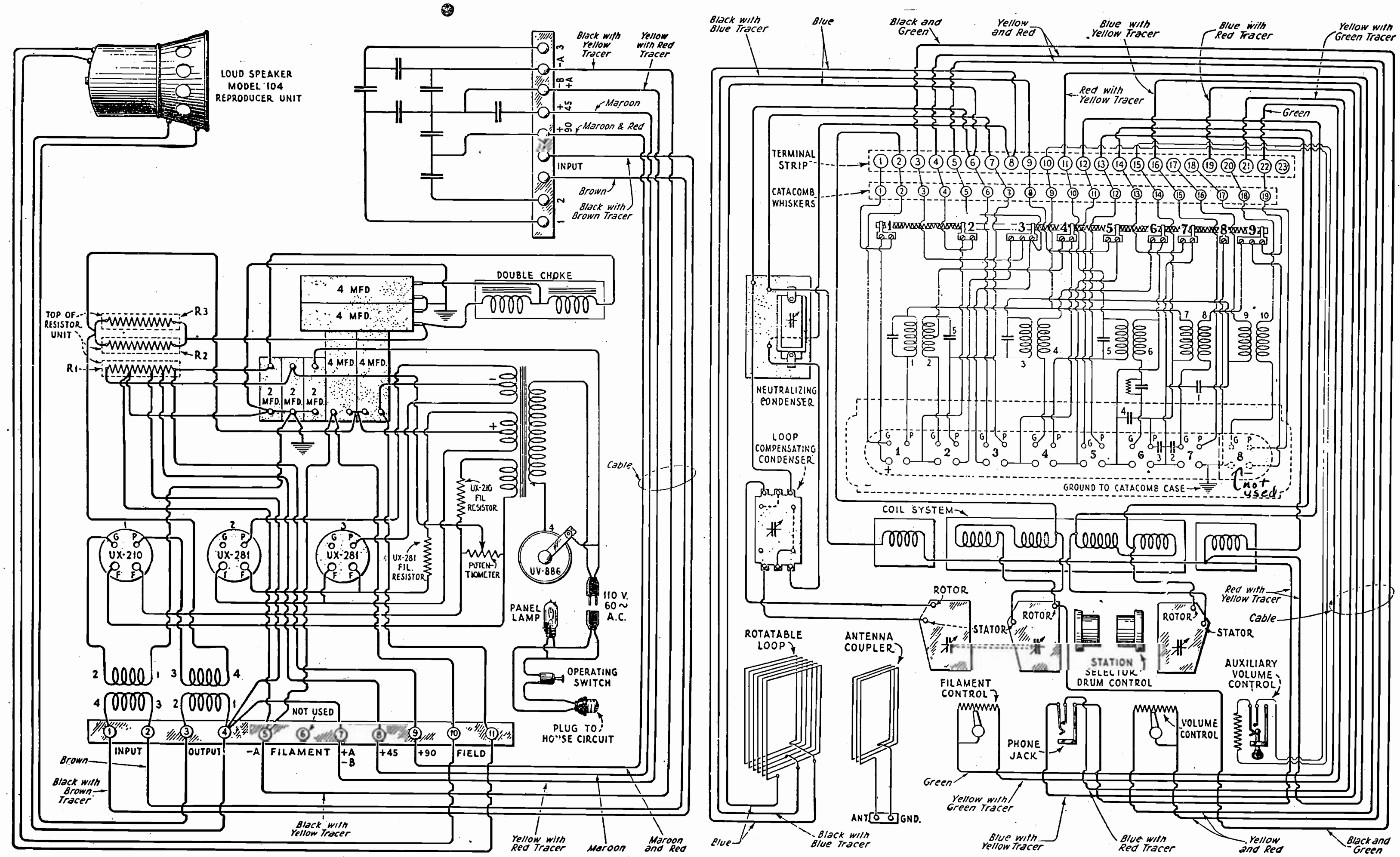
VICTOR—Model R-32
Line Voltage 115—Volume Control Position Max
*Antenna Coupling Stage

Tube No. in Order (1)	Type of Tube (2)	Position of Tube 1st RF Det etc. (3)	Readings, Plug in Socket of Set: Tube Out: A Volts (4)	Tube Out: B Volts (5)	Tube in Tester: A Volts (6)	B Volts (7)	C Volts (Control Grid) (8)	Cathode-Heater Volts (9)	Normal Plate M A (10)	Plate M.A Grid Test (11)	Plate Change M A (12)	Screen Grid Volts (13)
1	226	1st RF	1.5	112	1.4	112	8	-	2.8	6.6	3.8	-
2	226	*	1.5	112	1.4	112	8	-	2.8	6.6	3.8	-
3	226	2nd RF	1.5	112	1.4	112	8	-	2.8	6.6	3.8	-
4	226	3rd RF	1.5	112	1.4	112	8	-	2.8	6.6	3.8	-
5	226	4th RF	1.5	112	1.4	112	8	-	2.8	6.6	3.8	-
6	227	Det.	2.45	52	2.3	44	2	-	1.2	1.2	-	-
7	226	1st A	1.5	112	1.4	100	6	-	3.4	6.2	2.8	-
8	245	2nd A	2.4	260	2.3	240	45	-	28	32	6	-
9	245	2nd A	2.4	260	2.3	240	45	-	28	32	6	-
10	280	Rect.	5	-	4.4	-	-	-	72	-		-



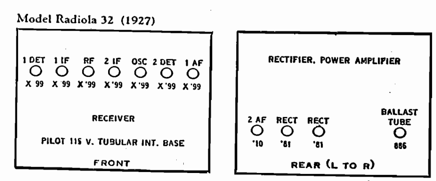
MODEL Radiola 32 AC

R. C. A. VICTOR CO., INC.



Model Radiola 32 AC
Power Pack

Model Radiola 32



DC Resistance of Resistor Strip

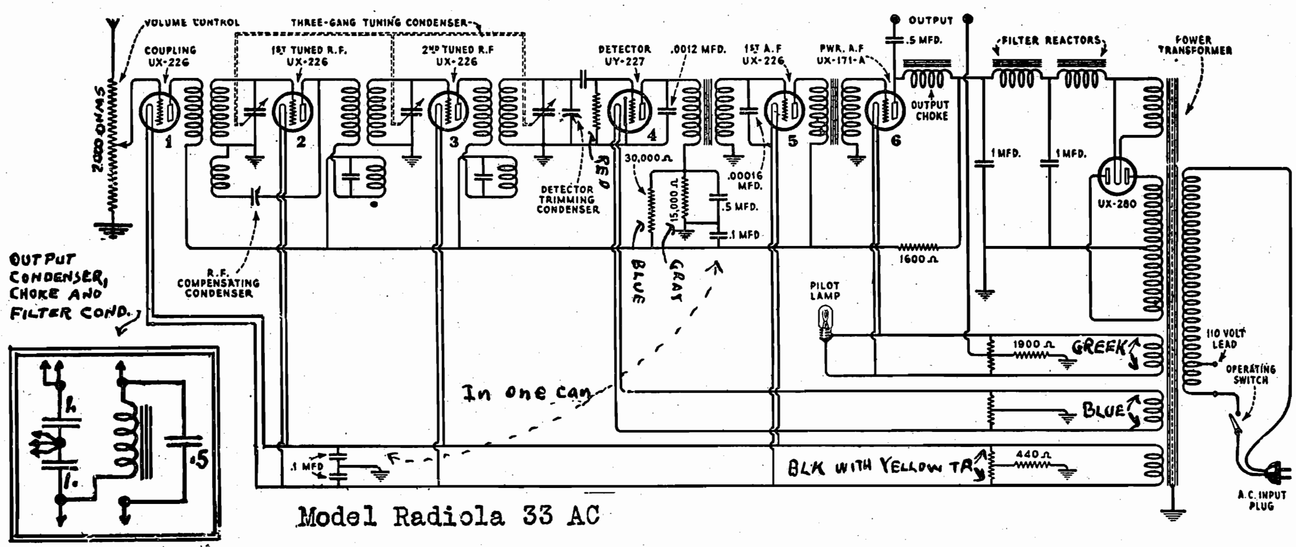
Between Terminals	
1 and 2	271 ohms
2 and 3	open
3 and 4	236.5
4 and 5	197
5 and 6	183.5
6 and 7	154.5
7 and 8	145.5
8 and 9	50

RADIOLA—Model 32

Readings are approximately the same as on model 30A except a 210 power tube is used in last A.F. stage and 2—281 rectifier tubes are used. These three tubes operate on a filament voltage of 7. The plate voltage of the 210 tube is 425 volts, normal milliamperes 22, grid test 42, indicating a change of 20 M.A. The output of rectifier tubes is approximately 60 M.A. each.

MODEL Radiola 33 AC
MODEL Radiola 33 DC

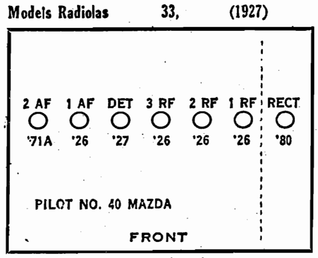
R. C. A. VICTOR CO., INC.



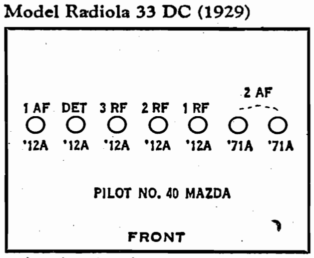
Model Radiola 33 AC

Output condenser, choke and filter condenser.

Models Radiolas 33, (1927)

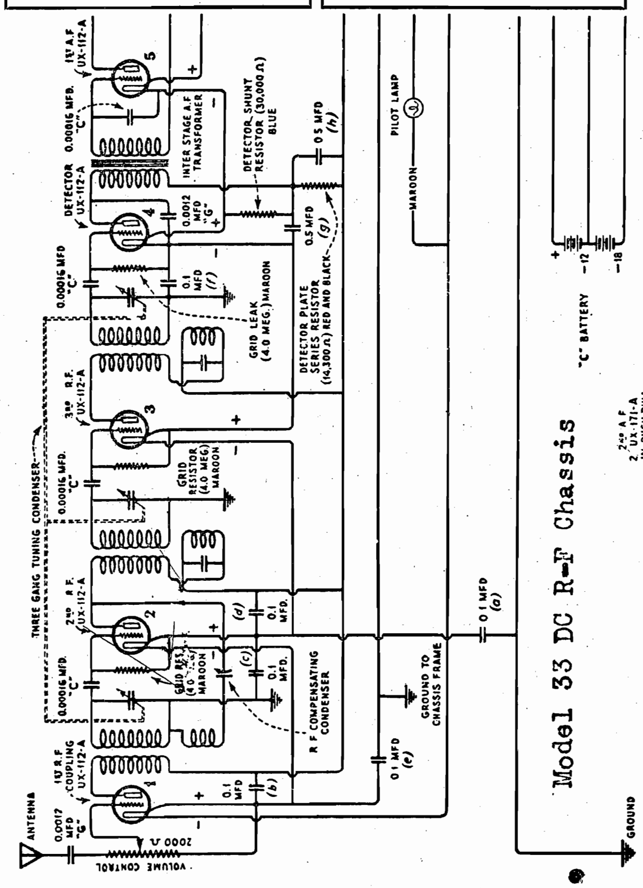


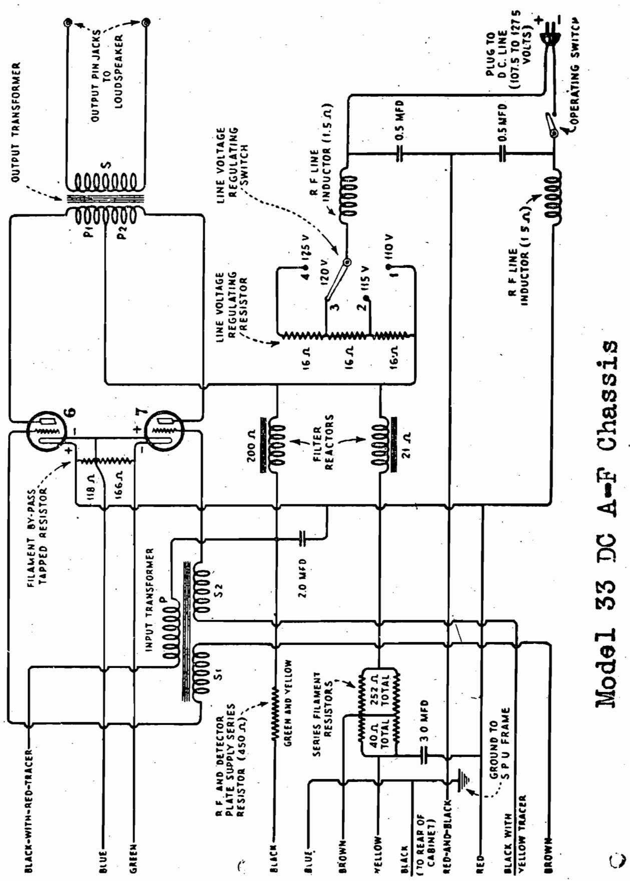
Model Radiola 33 DC (1929)



RADIOLA—Model -33 A.C.
Line Voltage 112—120 Volt Tap—Volume Control Full

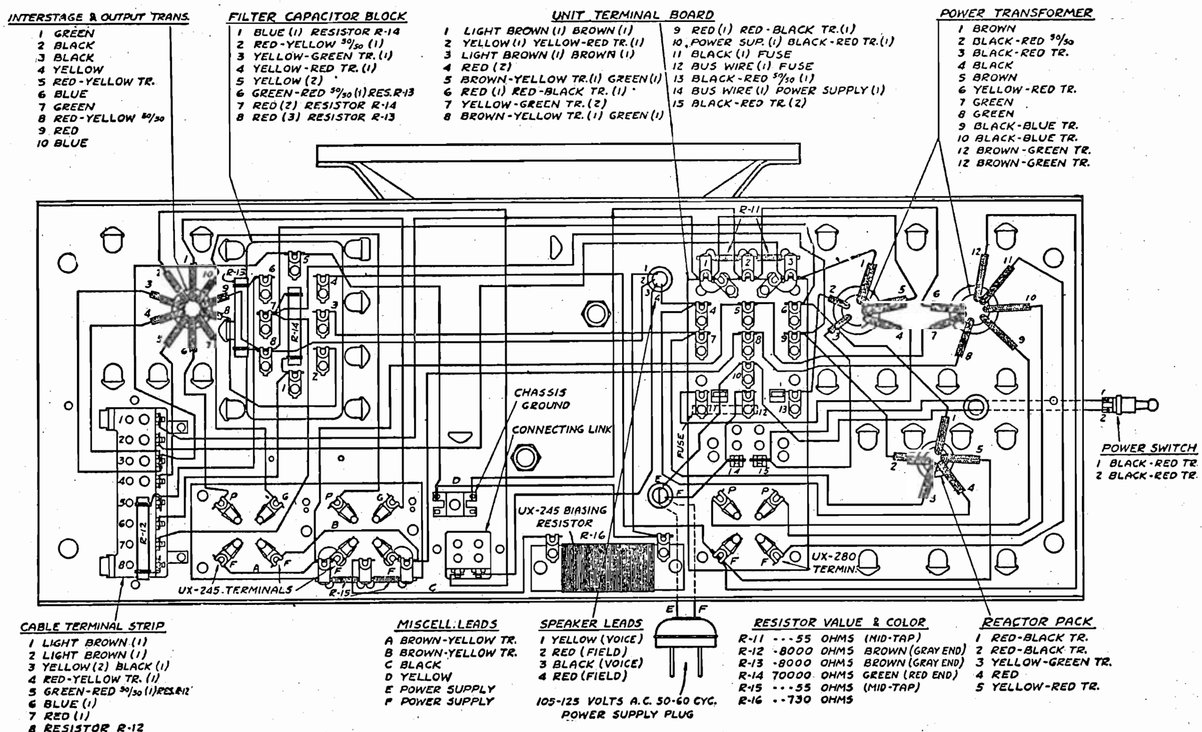
TUBE NO IN ORDER	TYPE OF TUBE	POSITION OF TUBE 1ST R.F DET ETC	READINGS PLUG IN SOCKET OF SET								
			TUBE OUT		TUBE IN TESTER						
			A VOLTS	B VOLTS	A VOLTS	B VOLTS	C VOLTS	CATHODE VOLTS	NORMAL PLATE M.A	PLATE M.A GRID TEST	PLATE M.A CHANGE
1	226	1st. R.F.	1.4	125	1.3	122	8	-	4.5	8.5	4.0
2	226	2nd. R.F.	1.4	125	1.3	122	8	-	4.5	8.5	4.0
3	226	3rd. R.F.	1.4	125	1.3	122	8	-	4.5	8.5	4.0
4	227	Detector	2.4	125	2.2	22	0	-	3.0	3.1	.1
5	226	1st. A.F.	1.4	125	1.3	120	8	-	4.0	7.8	3.8
6	171A	2nd. A.F.	4.9	200	4.7	132	30	-	16.0	18.0	2.0
7	280	Rectifier	-	-	4.8	-	-	-	20.0	-	-





R. C. A. VICTOR CO., INC.

MODEL Victor R-35, R-39, RE-57
A-F Chassis, Voltage



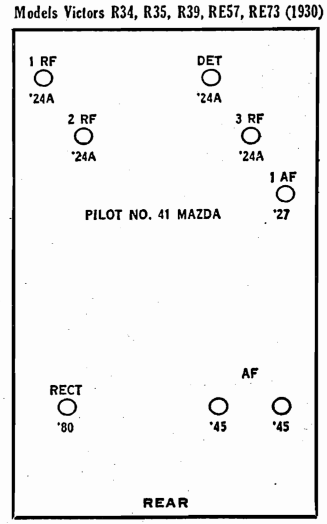
NOTE:—Filter Condenser Bank and Cable Terminal Strip are the only parts having numbers. All other numbers are given for reference only.

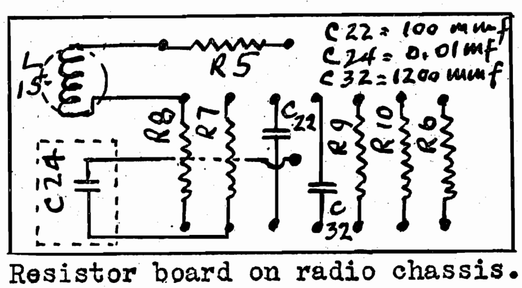
Bottom View of Amplifier-Speaker Unit, showing Wiring between Terminals.

VICTOR—Model "Micro-Synchronous"
Line Voltage 112—Voltage Tap 120—Volume Control Full

TUBE NO IN ORDER TESTED (1)	TYPE OF TUBE (2)	POSITION OF TUBE IN SET (3)	METER READINGS WITH JEWELL TEST PLUG IN SOCKET OF SET — OPERATING VOLTAGES: FILAMENT OR HEATER (4)	PLATE OR ANODE (5)	CONTROL GRID—SPACE GD + (6)	NORMAL GRID—SCREEN GD + (7)	CATHODE TO HEATER (8)	MILLIAMPERES: SCREEN GD L. H. '80 PLATE (9)	PLATE R. H. '80 PLATE (10)	TUBE TEST (11)	PLATE CURRENT CHANGE (12)	(13)
1	224	1 R.F.	2.15	172	2.5	80	-	-	2.5	5	2.5	
2	224	2 R.F.	2.15	172	2.5	80	-	-	2.5	5	2.5	
3	224	3 R.F.	2.15	172	2.5	80	-	-	2.5	5	2.5	
4	224	Det.	2.15	75*	-	2.5	8	-	-	-	-	
5	227	1 A.F.	2.15	55	-	0	-	-	1.5	1.8	.3	
6	245	PP-AF	2.25	185	-	36	-	-	19	22	3.0	
7	245	PP-AF	2.25	185	-	36	-	-	19	22	3.0	
8	280	-	4.8	-	-	-	-	36	36	-	-	

Models Victors R34, R35, R39, RE57, RE73 (1930)





Resistor board on radio chassis.

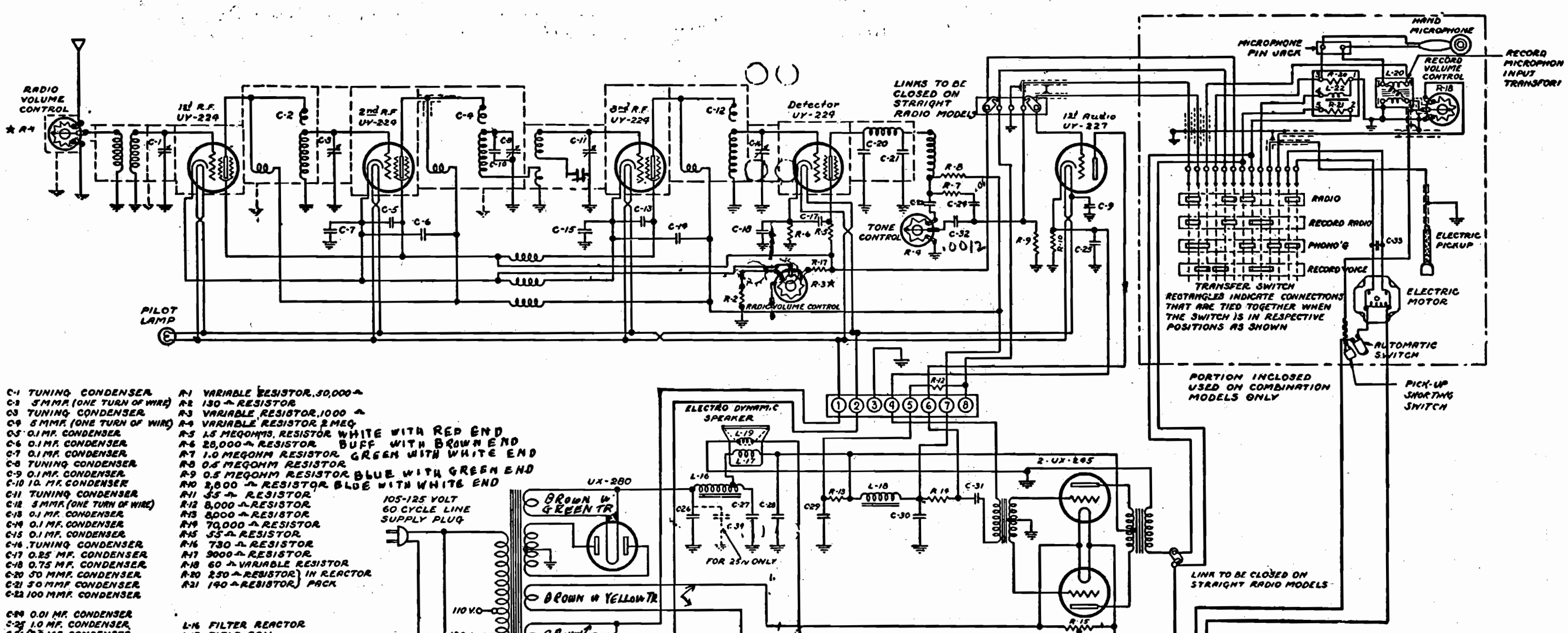
VOLTAGES ACROSS AMPLIFIER TERMINAL STRIP

Between 1 and 2 — 2.6 volts AC
3 and 7 — 300. volts DC
3 and 6 — 275. volts DC
3 and 8 — 295. volts DC

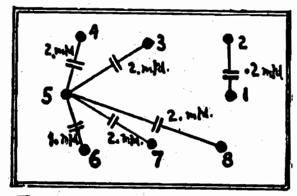
(The radio chassis is disconnected during these tests)

MODEL Victor R-35, R-39
RE-57
Schematic

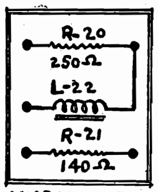
R. C. A. VICTOR CO., INC.



NOTE—Broken lines along wires indicate grounded shielding.



FILTER CONDENSER BANK.



MICROPHONE REACTOR.—TERMINALS AND CONNECTIONS.

POWER TRANSFORMER COLOR CODE

Primary- Black-red tracer
Primary tap- Black-red. 50/50
Primary- Black
280 filament-Brown-green tracer
280 filament-Brown-green tracer
245 filament-Brown-yellow tracer
245 filament-Brown-yellow tracer
Plate winding-Black-blue tracer
Plate midtap -Yellow-red tracer
Plate winding-Black-blue tracer
224-227 heaters-Brown
224-227 heaters-Brown

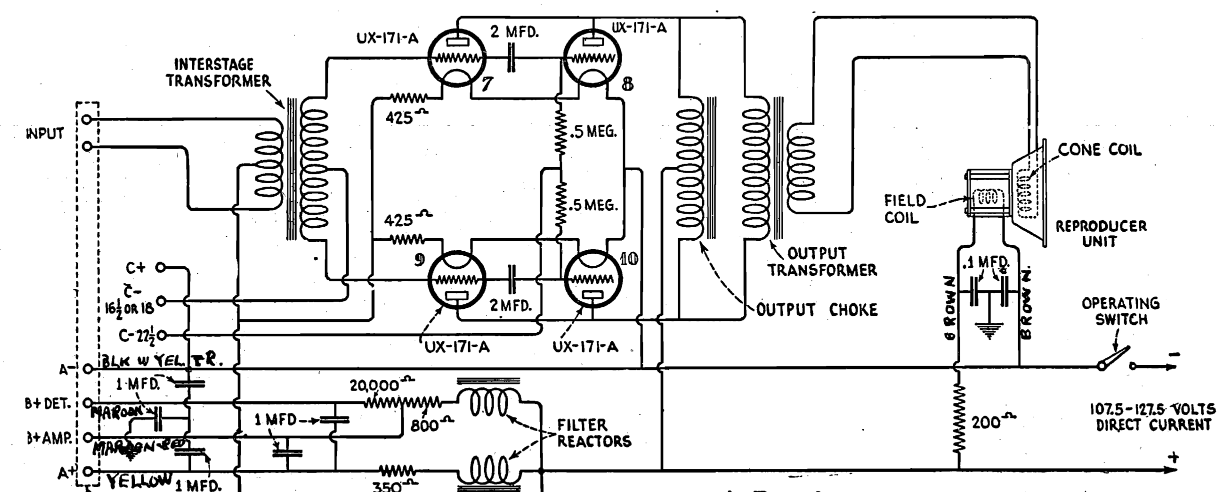
INTERSTAGE AND OUTPUT TRANSFORMER COLOR CODES

Interstage transformer
Primary start-Red-yellow 50/50
Primary finish-Red-yellow tracer
Secondary start-Green
Secondary midtap-Yellow
Secondary finish-Green

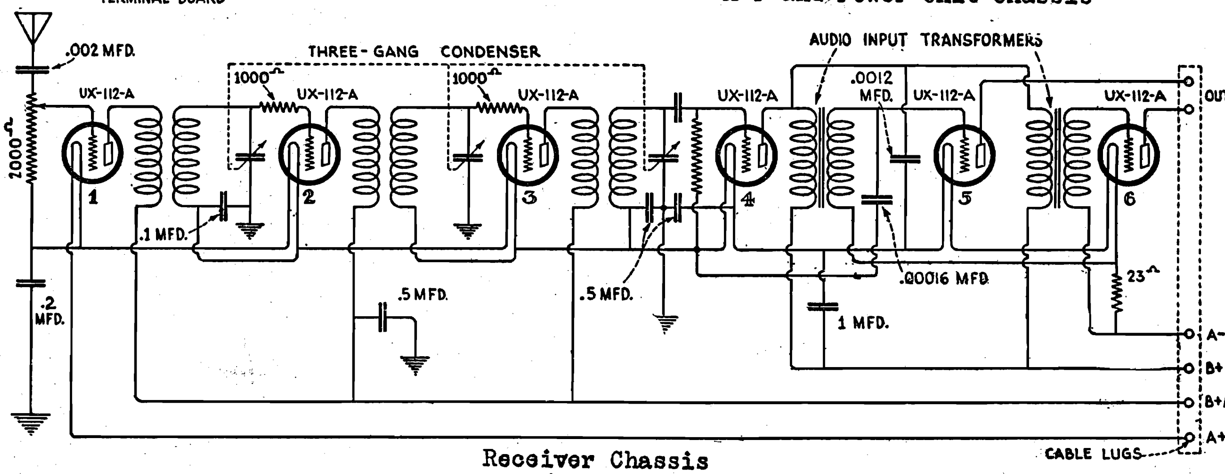
Output transformer
Primary start-Blue
Primary midtap-Red
Primary finish-Blue
Secondary start-Yellow
Secondary finish-Black

R. C. A. VICTOR CO., INC.

MODEL Radiola 41 DC



A-F and Power Unit Chassis

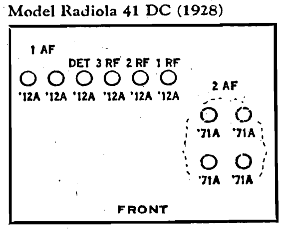


Receiver Chassis

VOLTAGES

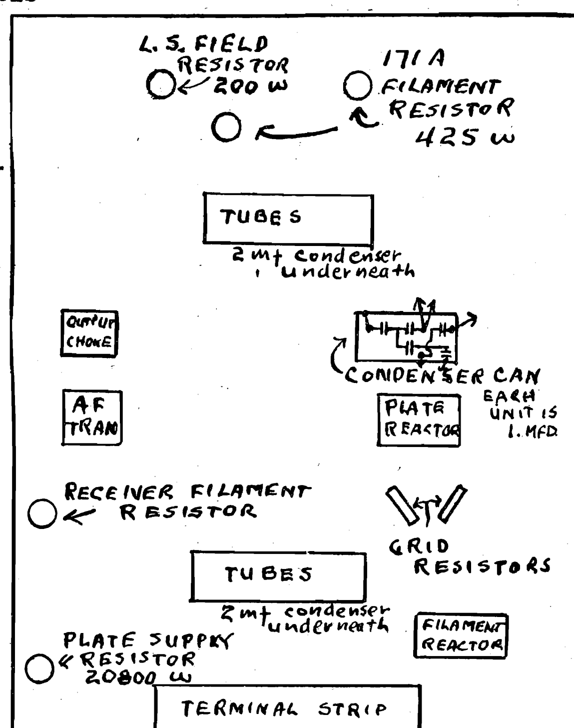
Tube	+Fil.-Grid	Fil.-Plt.	Pl.Crnt.	Fil. V
1	4.2	22	1.5 ma	4.3
2	4.1	26	2.0	4.4
3	4.2	31	2.4	4.5
4	4.0	15	1.0	4.6
5	10.	95	6.0	4.8
6	10.	100	7.0	5.0
9	27.	100	6.5	4.8
10	4.	95	6.5	5.0
7	27.	100	7.0	5.0
8	4.	95	6.5	5.0

Model Radiola 41 DC (1928)



TERMINAL VOLTAGES
120 Volt DC Line

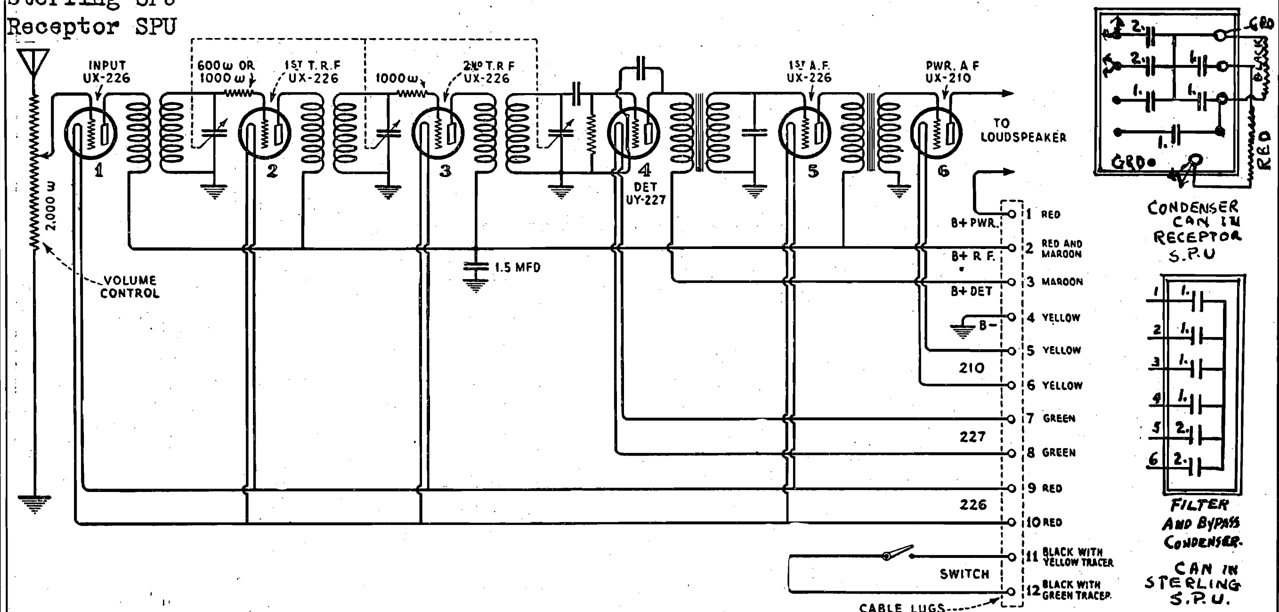
A-	to	A+	35 volts
A+	to	B+Det	5 volts
A+	to	B+Amp	21 volts



Layout of A-F and Power Unit

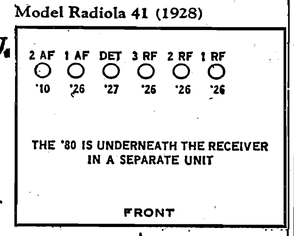
MODEL Radiola 41 AC
R-F Chassis
Sterling SPU
Receptor SPU

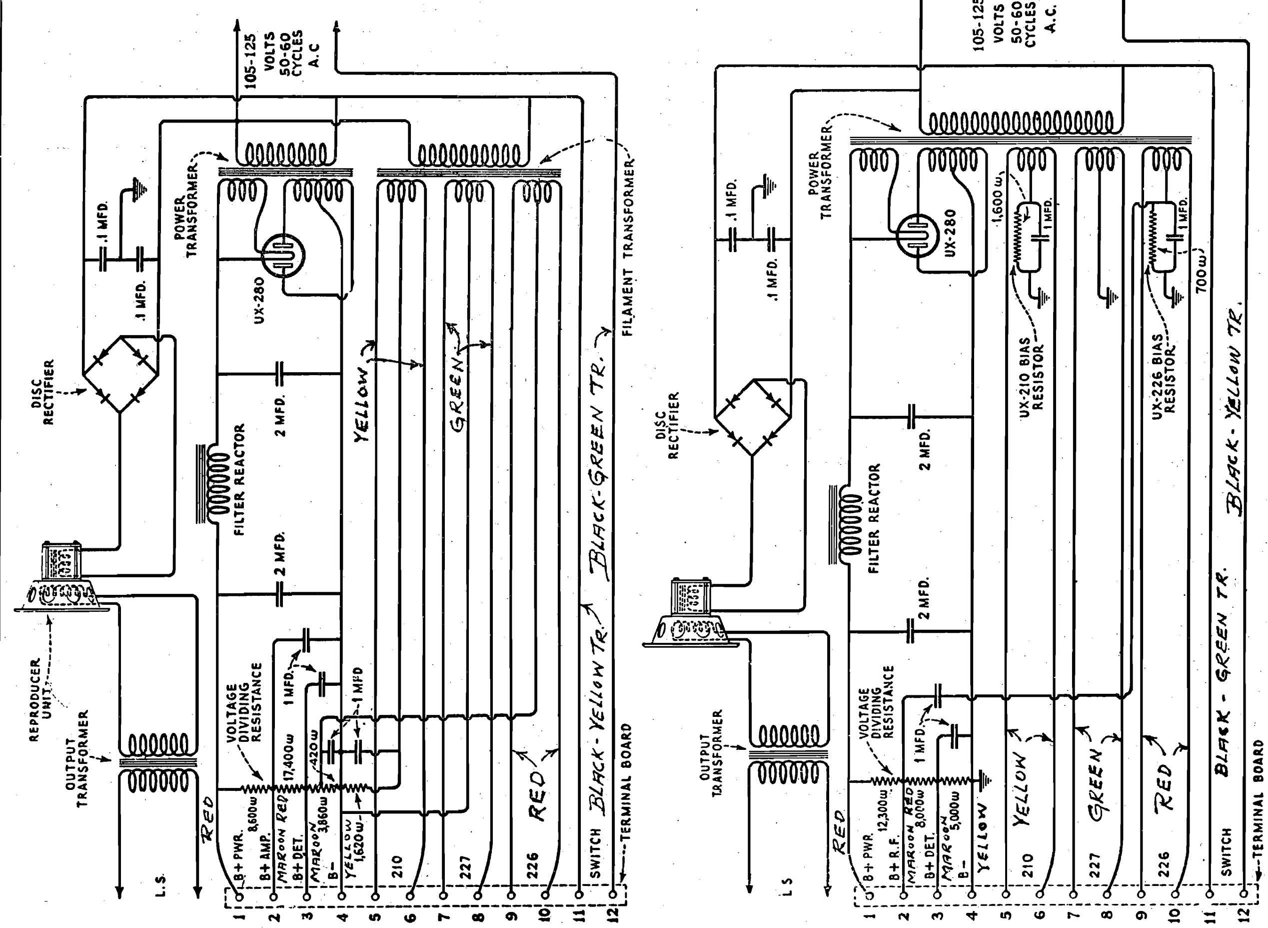
R. C. A. VICTOR CO., INC.



	STERLING					RECEPTOR			
Tube	Grd.V.	Plt.V.	Plt.Crnt.	Fil.V.	Tube	Grd.V.	Plt.V.	Plt.Crnt.	Fil.V.
1	10	125	3.5 ma	1.5	1	7.	93	2.5 ma	1.5
2	10	125	3.5	1.5	2	7.	93	2.5	1.5
3	10	125	3.5	1.5	3	7.	93	2.5	1.5
4	-	25	2.0	2.5	4	-	33	2.0	2.5
5	10	125	3.5	1.5	5	7.	93	2.5	1.5
6	20	300	16.	7.5	6	22.	310	16.	7.5

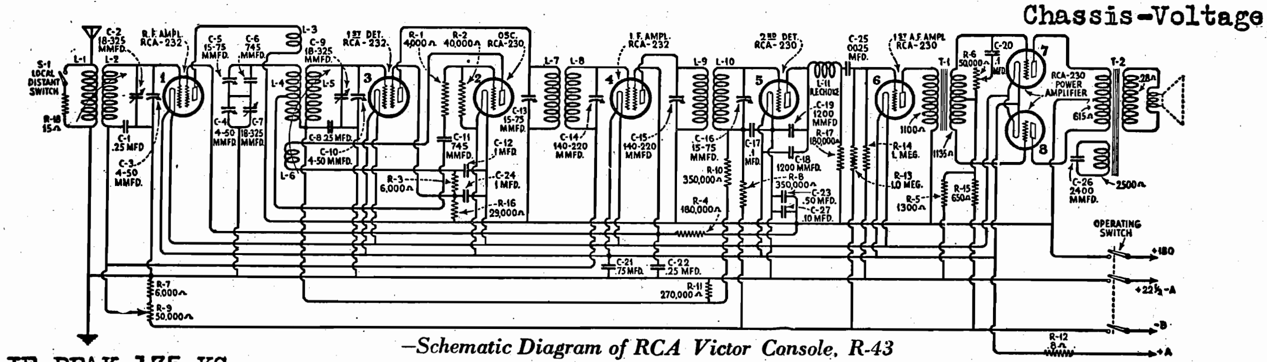
Model Radiola 41 (1928)





MODEL R-43
Schematic
Chassis-Voltage

R. C. A. VICTOR CO., INC.

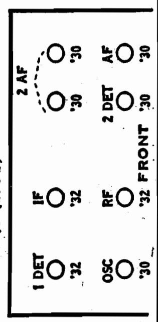


—*Schematic Diagram of RCA Victor Console, R-43*

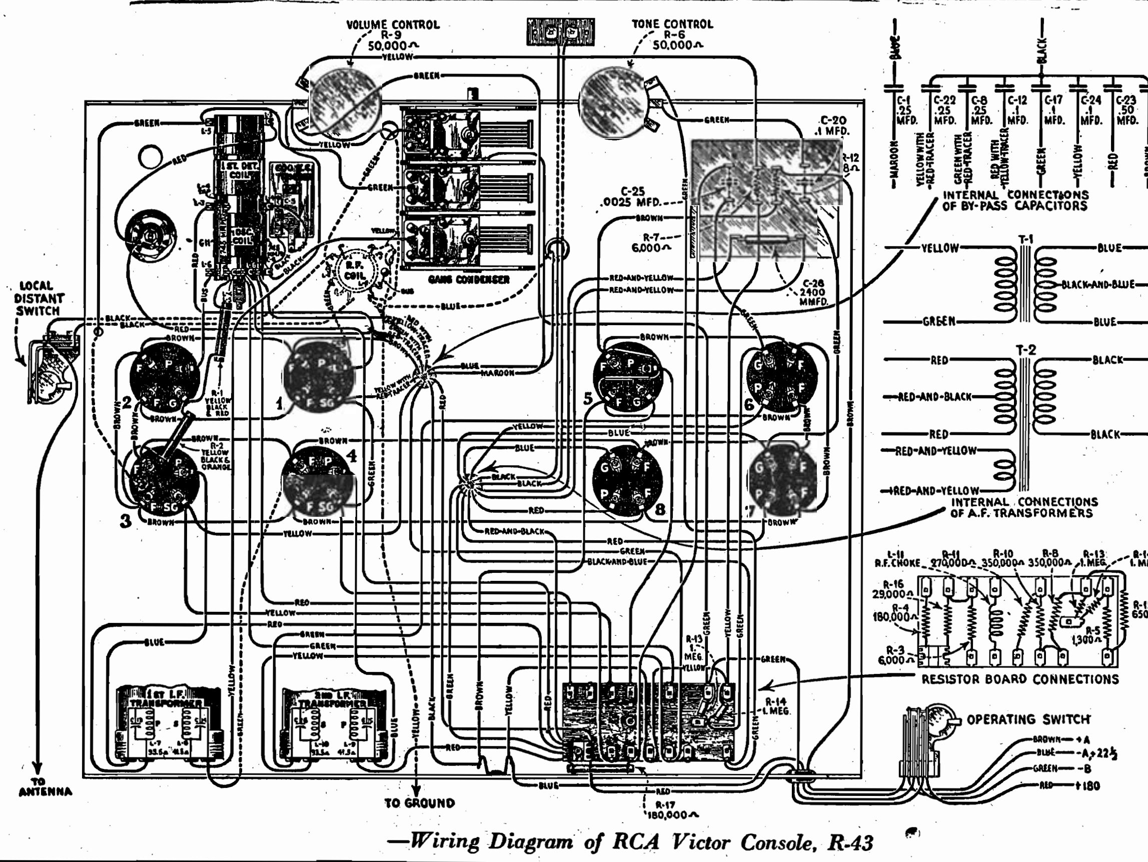
IF PEAK 175 KC.

BATTERIES AT FULL VOLTAGE—NO SIGNAL BEING RECEIVED

These voltages are those obtained with one of the usual set analyzers. The values indicated, therefore, are not necessarily the voltages that actually appear at the Radiotron Sockets when the voltmeter is not connected.



Tube No.	Filament to Control Grid Volts	Filament to Screen Grid Volts	Filament to Plate Volts	Plate Current M. A.	Filament Volts
VOLUME CONTROL AT MINIMUM					
1	22	55	155	0	2.0
2	—	—	50	3.0	2.0
3	0.5	65	150	0.5	2.0
4	22	55	155	0	2.0
5	5.0	—	90	0	2.0
6	2.0	—	150	2.5	2.0
7	15.0	—	1[illegible]0	0.5	2.0
8	15.0		150	0.5	2.0
VOLUME CONTROL AT MAXIMUM					
1	1.5	45	150	2.5	2.0
2	—	—	50	3.0	2.0
3	0.5	60	150	0.5	2.0
4	1.5	45	150	2.5	2.0
5	5.0	—	90	0	2.0
6	2.0	—	150	2.5	2.0
7	15.0	—	150	0.5	2.0
8	15.0	—	150	0.5	2.0

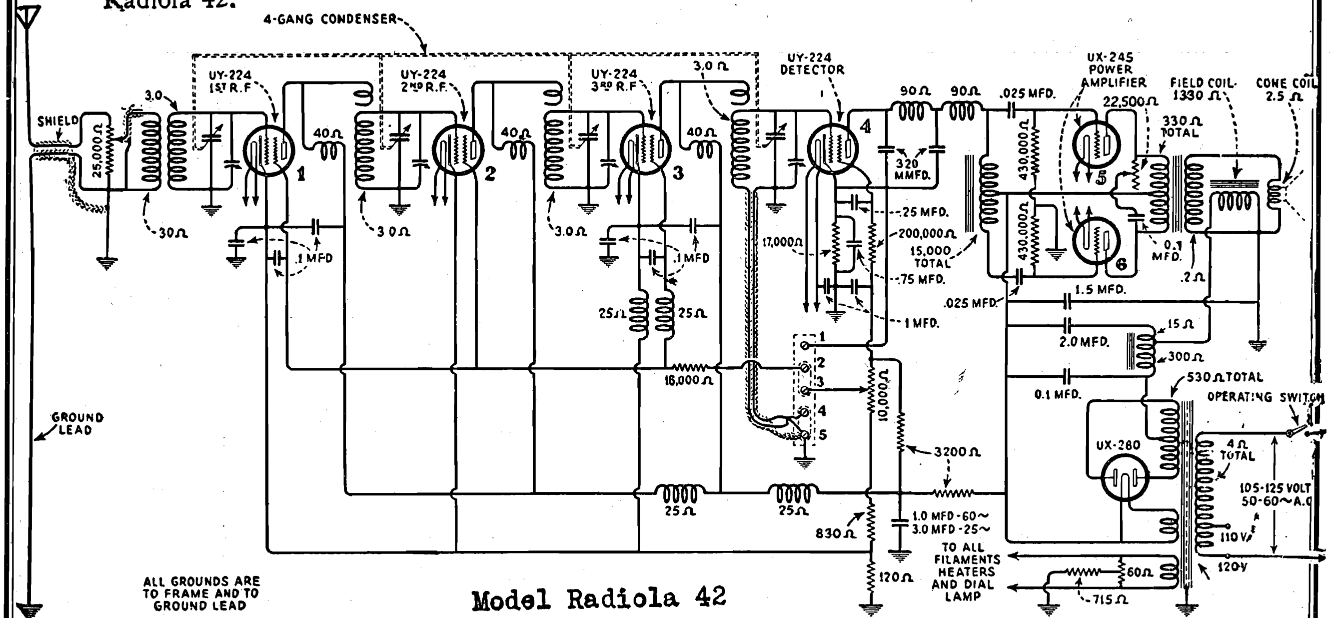


—*Wiring Diagram of RCA Victor Console, R-43*

Radiola 42 Schematic
Model R-43 Notes

R. C. A. - VICTOR CO., INC.

All the information contained in the Radiola 48 Service Notes will therefore apply to the Radiola 42.



Model Radiola 42

It will be noted that a new volume control is used. The antenna section of this unit has a value of 25,000 ohms instead of 50,000 ohms as used in the Radiola 48. This volume control is also being used as a replacement in Radiola 48. The screen grid voltage section has a value of 10,000 ohms and the 12,000 ohm shunt resistor is not used. The 0.005 mfd. condenser across the plates of Radiotrons UX-245 has been omitted due to the connection of the tone control in the same position. When making replacements of the condenser and reactor unit it will be necessary to clip the two leads that are connected to the .005 mfd. condenser close to the container. The reason for this is that the replacement unit supplied is suitable for either the Radiola 42 or 48.

Model R-43 Service Notes

The RCA Victor Console, R-43 is an eight tube screen grid battery operated Super-Heterodyne radio receiver.

Three Radiotrons RCA-232 are used in the R.F., 1st detector and I.F. stages respectively. Five Radiotrons RCA-230 are used in the Oscillator, 2nd detector, 1st audio and push-pull power stage.

A reference to the RCA Victor Radiola Superette Service Notes will give the details of circuit operation up to and including the second detector. The audio circuits of the R-43 are however, considerably different from the R-7. A discussion of their function follows:

The first audio stage operates in the usual manner, its output being fed into the grid circuit of the push-pull stage. The output stage is of the push-pull type, in which the tubes are biased to substantially plate current cut-off. The arrangement is such that the output stage may deliver substantially four times the output that would be obtained with the same tubes operated in the usual circuit. This system is very economical due to there being but a small amount of residual plate current flowing in the output stage.

Current is drawn only when a modulated signal is being received.

An extra winding, shunted by a capacitor, is placed on the output transformer. The purpose of this circuit is to provide a high frequency cut-off for the audio amplifier.

A tone control is provided, which consists of a 0.1 mfd. capacitor and a 50,000 Ohm variable resistor connected across one half of the secondary of the input transformer. This circuit functions to reduce the high frequency output as the resistance is decreased.

The permanent magnet dynamic loudspeaker used with this receiver is a new development and gives all the fine quality and life-like reproduction inherent in this type of reproducer.

The receiver is designed for use with the new Eveready Aircell "A" battery which provides a life in excess of 600 ampere hours. The receiver draws but .48 amperes, giving approximately 1200 hours life from a single filament battery.

The plate and grid supply for all Radiotrons is furnished from four heavy duty "B" batteries. Due to the low current drain—8 to 15 M.A.—excellent life is obtained from this source of current.

SERVICE DATA

A reference to the RCA Victor Superette, R-7 Service Notes will give complete details on R.F., oscillator and I.F. adjustments as well as the usual service information required with this type of receiver.

BATTERIES

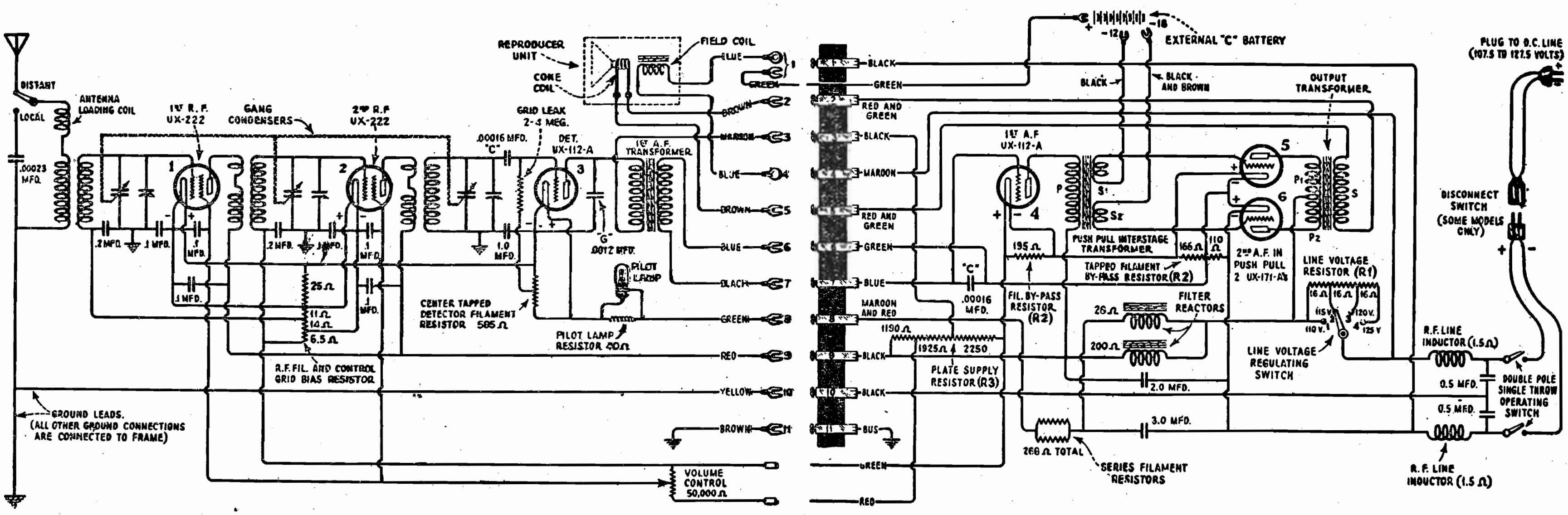
The Eveready Aircell "A" battery must be kept clean and the plates covered with water at all times. Operation at temperatures of 40 degrees Fahrenheit or lower is not recommended and if attempted will result in damage to the battery. Having the battery idle at this temperature does not in any way affect it. If it is essential that an installation be made where the receiver is to be operated at 40 degrees Fahrenheit or less, a single cell storage battery should be used. Due to the low current drain, excellent life from one charging will be obtained.

"B" batteries should be replaced when their output voltage has dropped 25% under load.

SPECIAL NOTE*** Material within border very important information

MODEL Radiola 46 DC
MODEL Radiola 44 AC
Terminal Voltage
MODEL Radiola 46 AC
Terminal Voltage

R. C. A. VICTOR CO., INC.



Model 46 AC Terminal Voltage

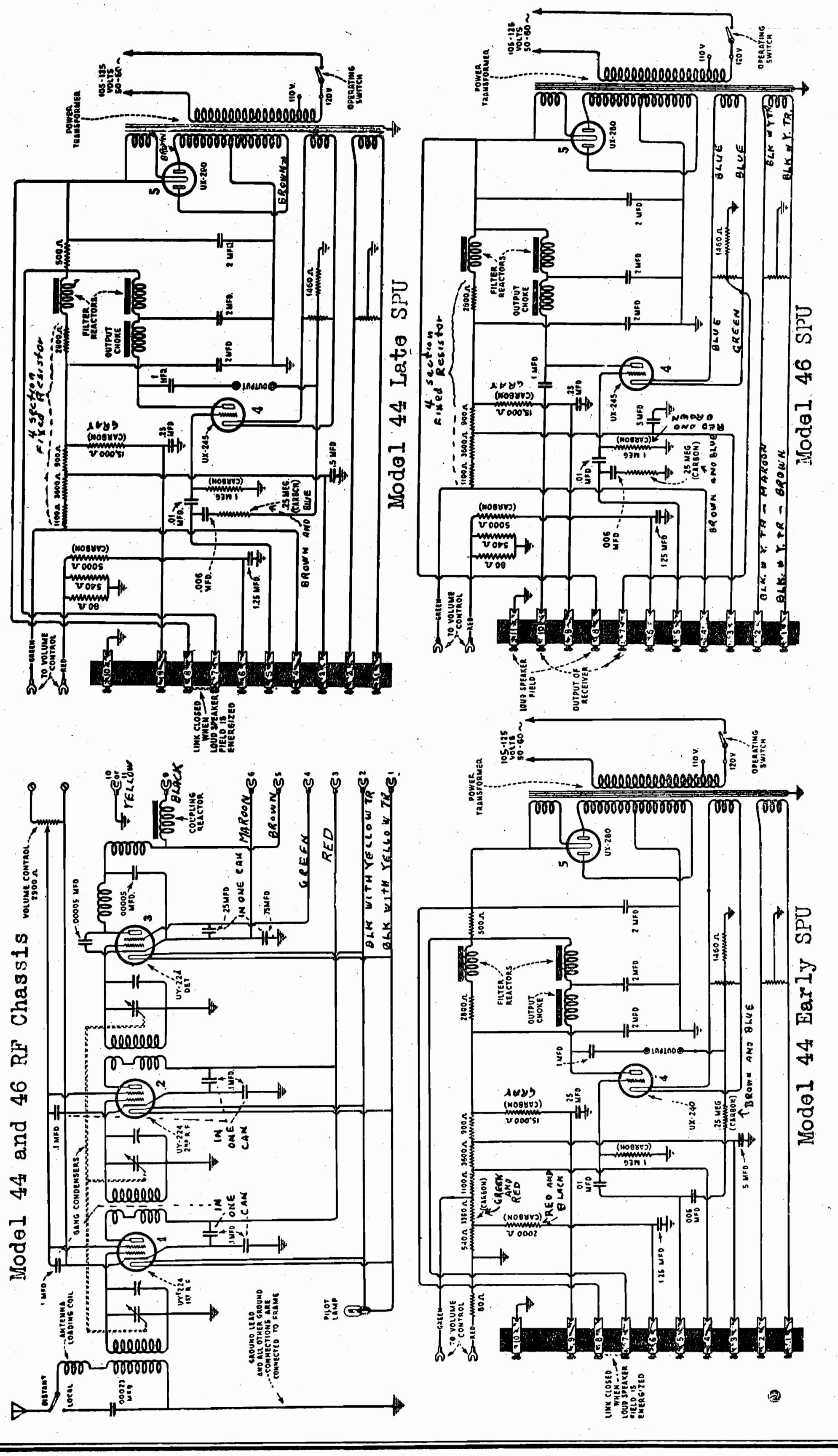
Terminals	Voltage Control at Min	Max
1 to 2	2.5 A.C.	2.5 A.C.
3 to Red VC lead	185. D.C.	170. D.C.
4 to 6	70. D.C.	65. D.C.
6 to 9	195. D.C.	180. D.C.
6 to 11	5. D.C.	5. D.C.
8 to 11	320. D.C.	320. D.C.
Red VC lead to 11	2.1D.C.	2.1 D.C.
Arm of VC lead to Red VC lead	0.	70. D.C.

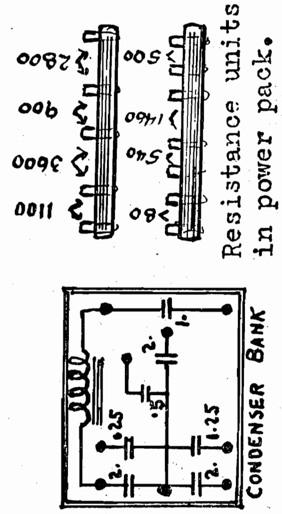
Model 44 AC Terminal Voltage

Terminals	Vol. Control at Min.	Max.
1 to 2	2.5 A.C.	2.5 A.C.
3 to Red VC lead	185. D.C.	170. D.C.
4 to 6	70 D.C.	60. D.C.
6 to 9	195 D.C.	180 D.C.
6 to 10	5. D.C.	5. D.C.
8 to 10	330 D.C.	330 D.C.
Red VC lead to 10	2.1 D.C.	2.1 D.C.
Arm of VC lead to Red VC lead	0.	70. D.C.

MODEL 44,46 RF Chassis
MODEL 44 Early SPU
MODEL 44 Late SPU
MODEL 46 SPU

R. C. A. VICTOR CO., INC.

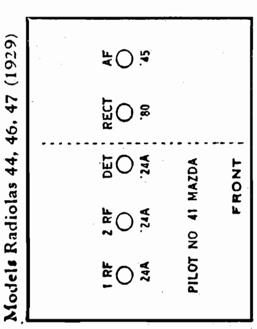




RADIOLA—Models 44-46
Line Voltage 120—Set on 120 Volt Tap—Volume Control Position Max

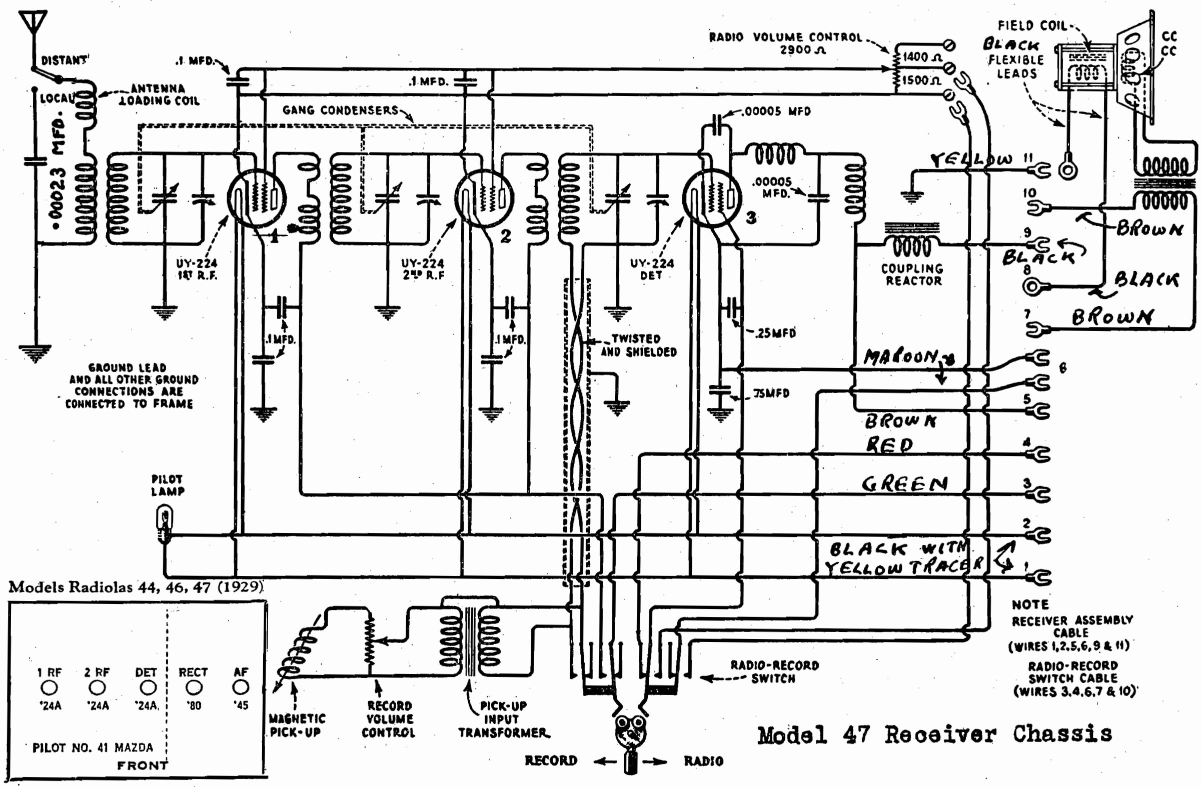
Tube No in Order (1)	Type of Tube (2)	Position of Tube 1st RF Det Etc (3)	Tube Out: A Volts (4)	Tube Out: B Volts (5)	Readings, Plug in Socket of Set: A Volts (6)	B Volts (7)	C Volts (Control Grid) (8)	Tube in Tester: Cathode-Heater Volts (9)	Normal Plate M.A. (10)	Plate M.A. Grid Test (11)	Plate Change M.A. (12)	Screen Grid Volts (13)
1	224	1st RF	2.50	164	2.35	164	1.5	1.5	1.5	3.8	2.3	45.0
2	224	2nd RF	2.50	164	2.35	164	1.5	1.5	1.5	3.8	2.3	45.0
3	224	Det.	2.50	164	2.35	100	6.0	7.0	0.1	0.8	0.7	50.0
4	245	Audio	2.65	336	2.5	230	6.0	-	32.0	34.0	2.0	-
5	280	Rect.	5.2	-	5.0	260	-	-	50.0	-	-	-

Models Radiolas 44, 46, 47 (1929)

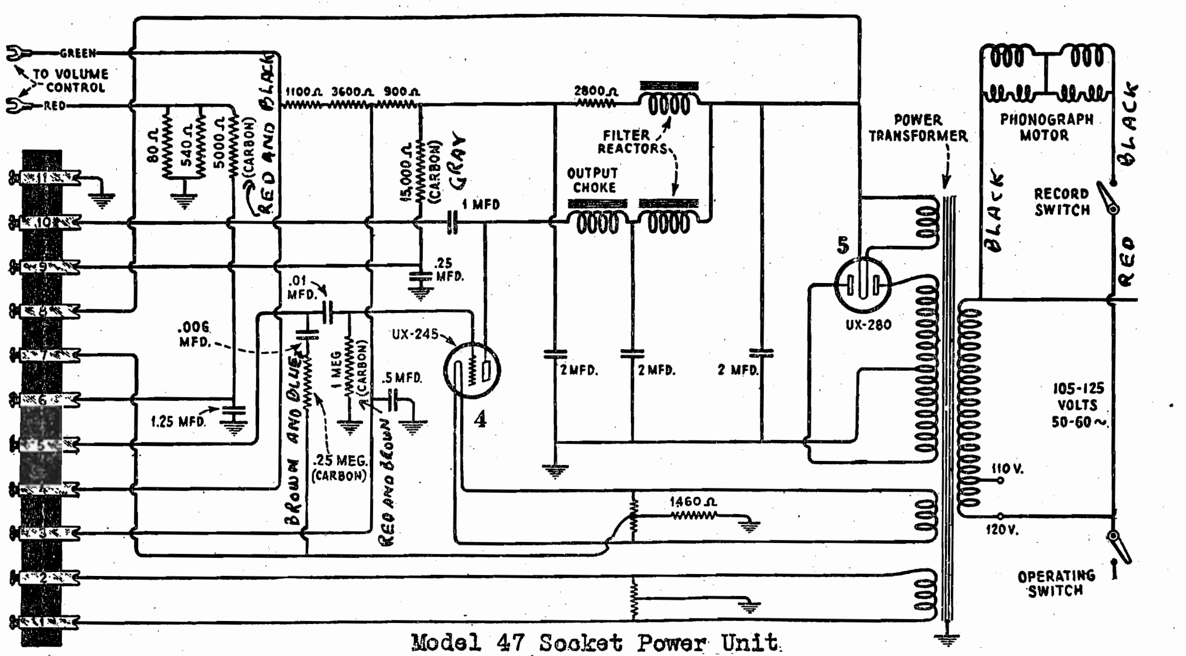


MODEL Radiola 47

R. C. A. VICTOR CO., INC.



Model 47 Receiver Chassis



Model 47 Socket Power Unit.

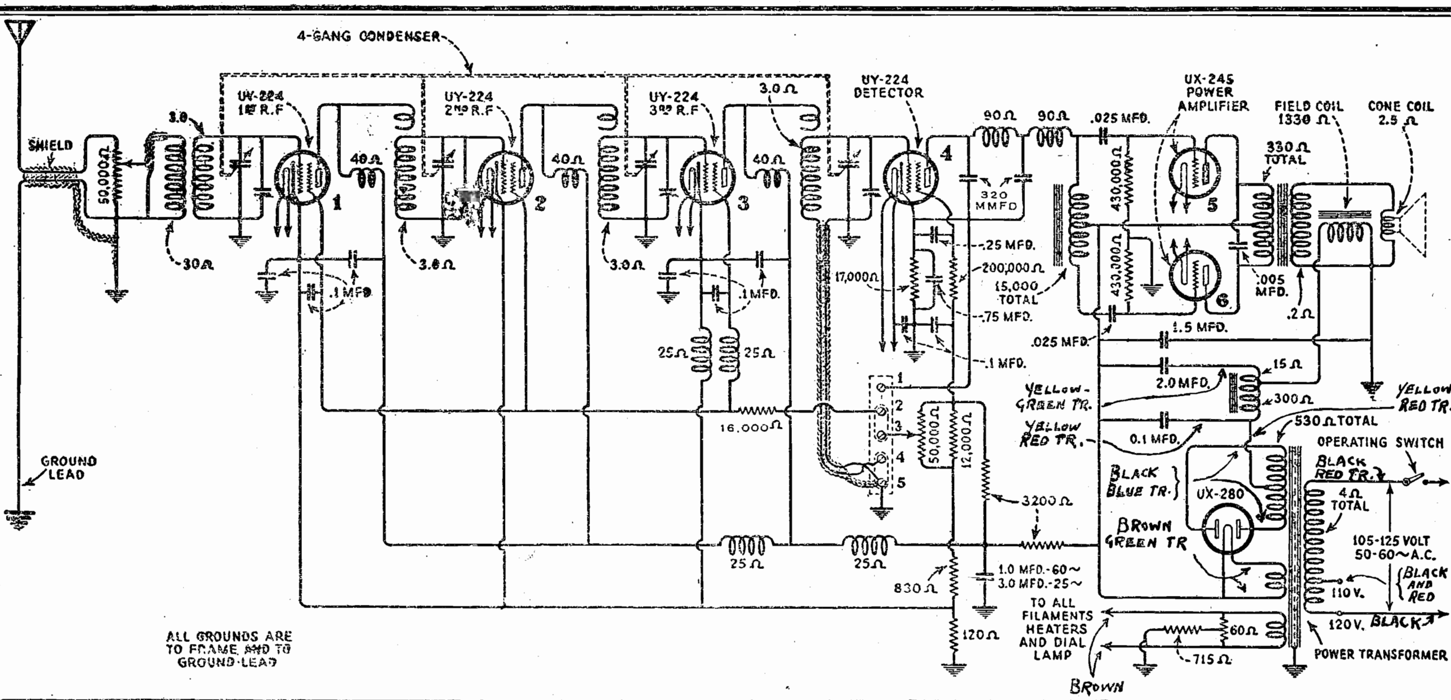
SOCKET VOLTAGES—RADIOLA 47

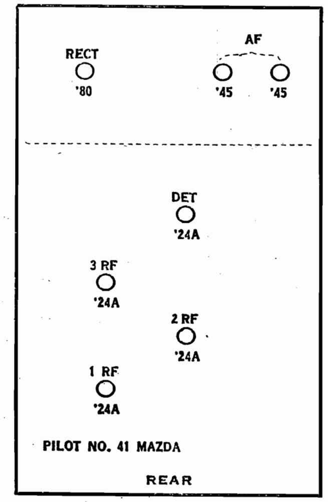
Volume Control at Minimum—Radio-Record Switch at "Radio"

Socket No.	Cathode to Heater Volts	Fil. to Control grid Volts	Cathode or fil. to plate Volts	Plate Current Millamperes	Filament or Heater Volts
1	2.1	—	190	0	2.35
2	2.1	—	185	0	2.35
3	18	—	120	3.0	2.35
4	—	6.0	225	29.0	2.35

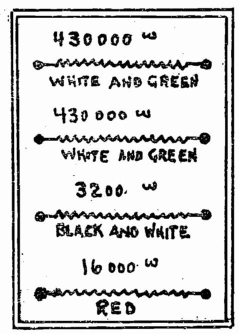
MODEL Radiola 48

R. C. A. VICTOR CO., INC.

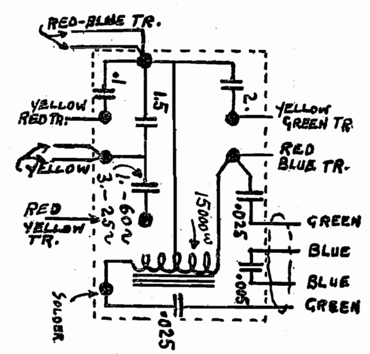




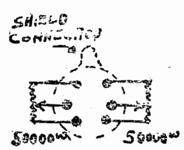
Socket Voltages. (120 Volt Line.) VOL.CONTR. AT MAXIMUM.							
Tube No.	Cath.to Heater V. D.C.	Cath. or Fil. to Contr.Gr. Volts D.C.	Cath.to Screen Gr. Volts D.C.	Cath.or Fil. to Plate Volts D.C.	Plate Current Ma.	S.G. Current Ma.	Heater or Fil. Volts.
1	-40	-2.5	+85	160	3.	0.2	2.3
2	-36	-2.5	+85	155	3.5	0.15	2.3
3	-36	-2.5	+75	155	3.5	0.15	2.3
4	-28	-7.5	+55	225	0.5	0.1	2.3
5	---	-1.	---	200	25.	---	2.3
6	---	-1.	---	200	25.	---	2.3



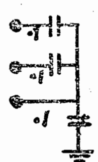
Resistor Mounting Board Connections



Internal connections of Capacitor and Coupling Reactor Pack



Internal Connections of Volume Control



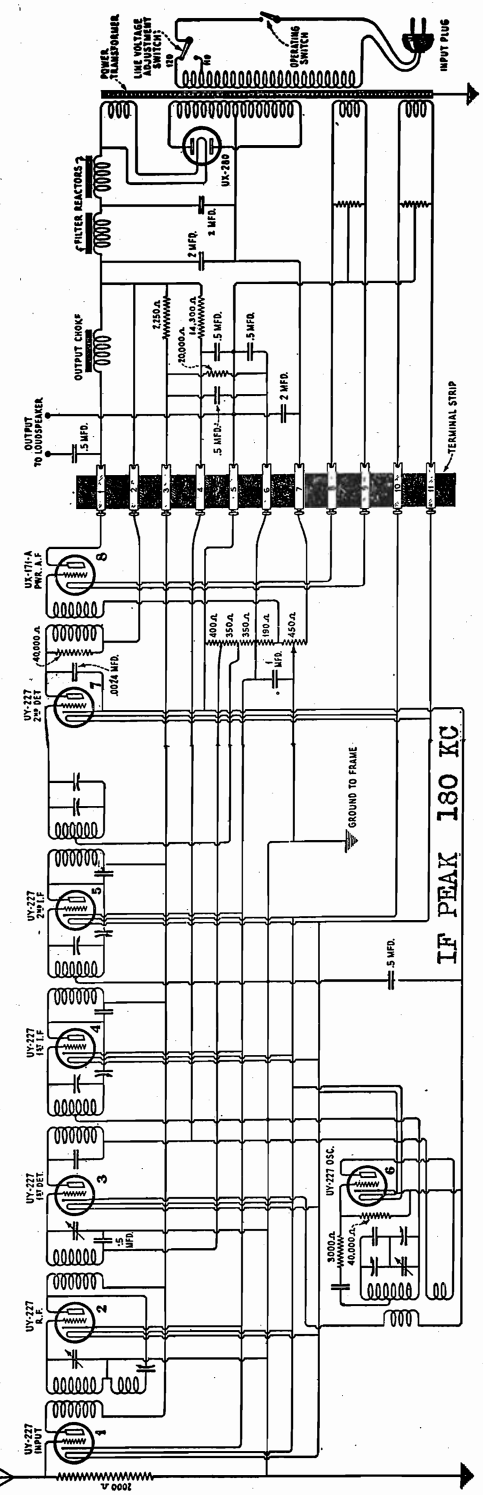
Bypass Condenser Units

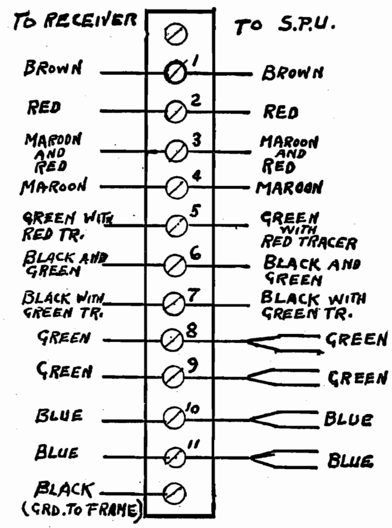
R. C. A. VICTOR CO., INC.

MODEL Radiola 60

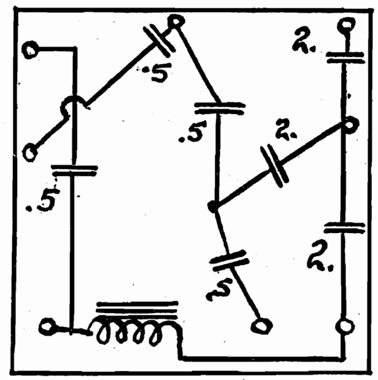
RADIOLA 50 is the same as the Radiola 17 with the exception that it makes use of a 100-A speaker and the receiver is mounted in a console cabinet.

Radiola 51 is the same as the Radiola 18. The Radiola 51 AC is the same as the Radiola 18 AC, except that it is mounted in a console cabinet. The Radiola 51 DC is the same as the Radiola 18 DC, except that it is mounted in a console cabinet.



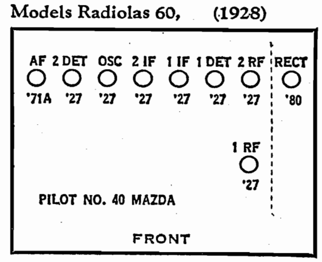


Terminal Strip



Filter, bypass condensers and output choke.

Models Radiolas 60, (1928)



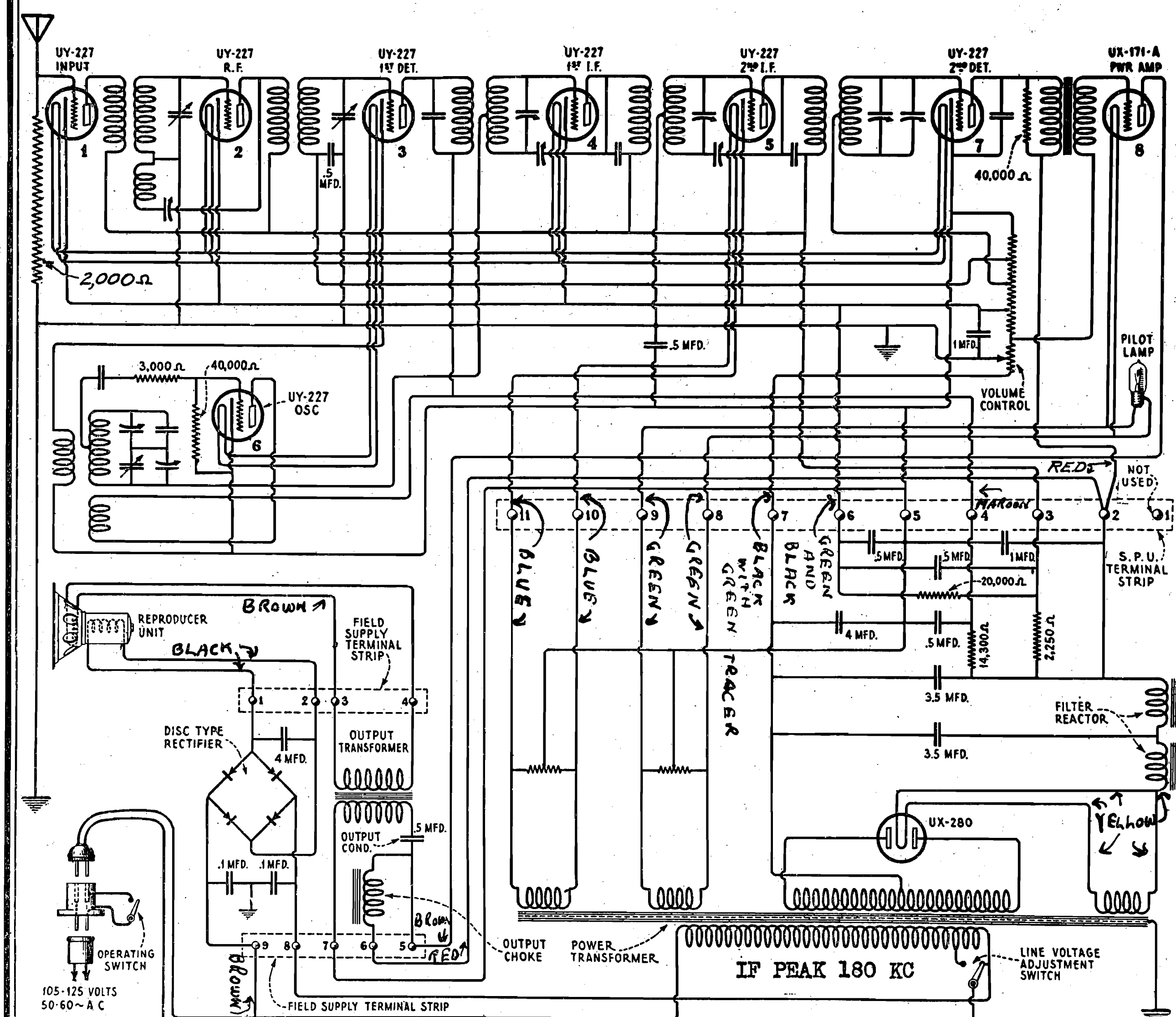
RADIOLA—Model 60

TUBE NO. IN ORDER	TYPE OF TUBE	POSITION OF TUBE 1ST R.F DET., ETC	READINGS, PLUG IN SOCKET OF SET — TUBE OUT: A VOLTS	TUBE OUT: B VOLTS	TUBE IN TESTER: A VOLTS	B VOLTS	C VOLTS	CATHODE VOLTS	NORMAL PLATE M.A.	PLATE M.A GRID TEST	PLATE M.A CHANGE
1	227	Ant. Coup.	2.35	148	2.2	144	18.0	25	1.0	3.0	2.0
2	227	1st. R.F.	2.35	148	2.2	144	18.0	25	1.0	3.0	2.0
3	227	1st. Det.	2.35	84	2.2	70	9.0	0	1.0	3.0	2.0
4	227	1st. I.F.	2.35	148	2.2	144	13.0	25	1.0	4.0	3.0
5	227	2nd. I.F.	2.35	148	2.2	144	18.0	25	1.0	4.0	3.0
6	227	Oscillator	2.35	118	2.2	70	0.0	0	7.0	7.0	0.0
7	227	2nd. Det.	2.35	162	2.2	157	18.0	0	1.0	3.0	2.0
8	171A	1st. Audio.	5.00	178	4.8	157	31.5		15.0	17.0	2.0
9	280	Rectifier	5.00		4.8				19.0		
10											

Note: The above readings were taken with a line voltage of 117 volts. The volume control should be set centrally with the line vertical in order to get the above readings. The "C" voltage on tubes 1, 2, 4, and 5 will vary from 9 to 27 volts; depending on the position of this volume control, hence, these readings are taken at the middle point.

MODEL Radiola 62

R. C A. VICTOR CO., INC.



SOCKET VOLTAGES

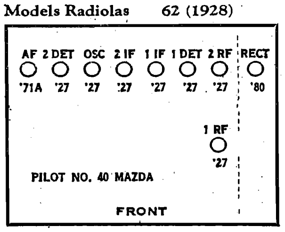
Tube	Fil. V.	Plt. V.	Grid V.	Pl. Crnt
Coupling	2.05	130	8.	3.5 ma
RF	2.05	130	8.	3.5
1 Det	2.05	80	8.	.5
1 IF	2.05	130	8.	3.
2 IF	2.05	130	8.	3.5
Oscil	2.05	75	-	5.
2 Det	2.05	150	15.	---
AF	4.4	180 c	39.	15.

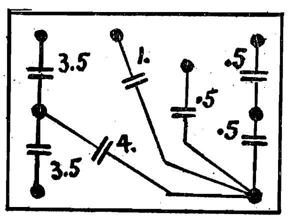
TERMINAL VOLTAGES

Between 2 and 7	210 volts DC
3 and 7	160 volts DC
4 and 7	110 volts DC
8 and 9	5 volts AC
10 and 11	2.5 volts AC

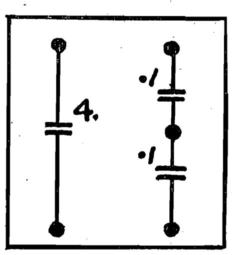
Output voltage of disc rectifier with field connected should be 100 volts.

Models Radiolas 62 (1928)

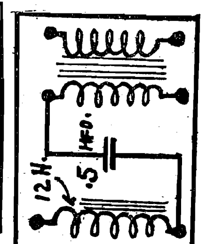




Filter and Bypass Condensers



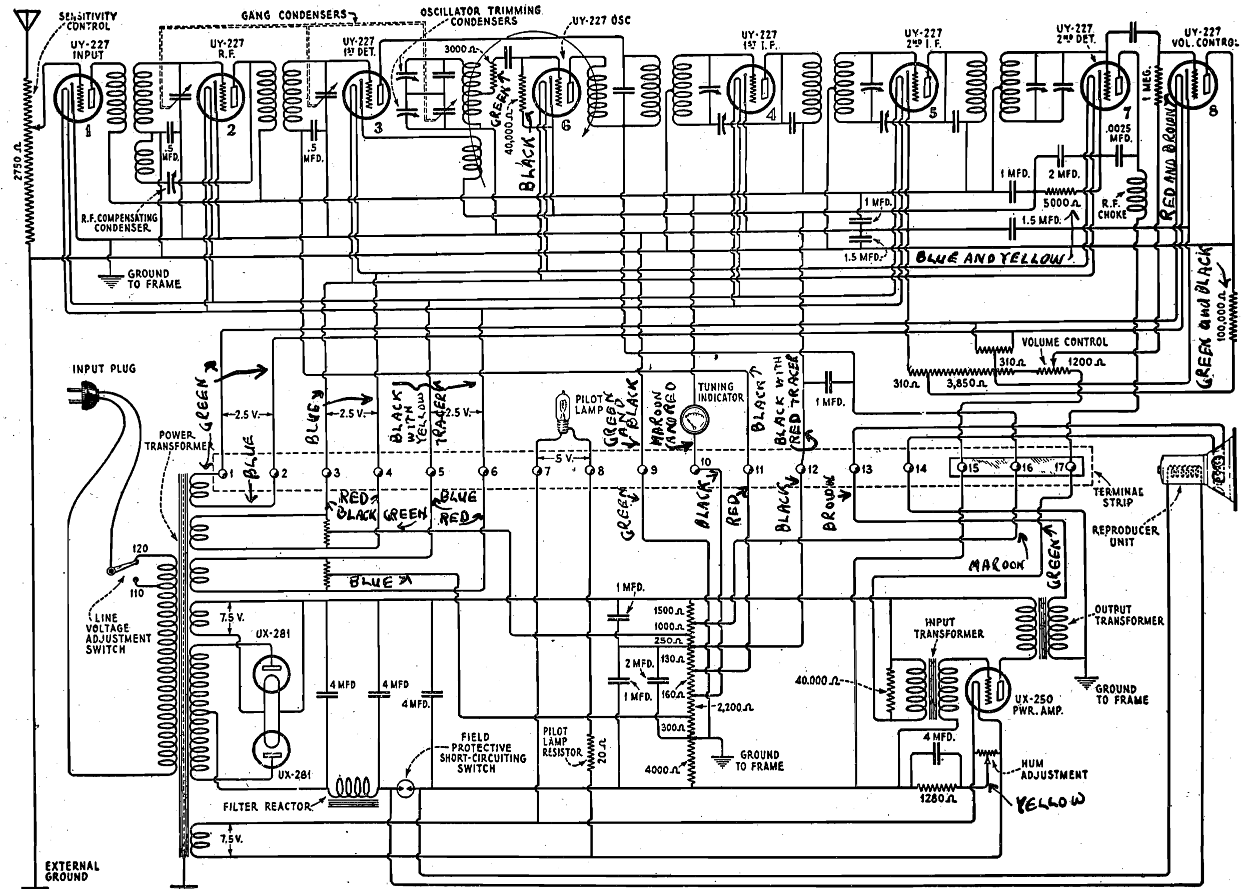
Condenser Bank for Field Supply



Coupling Unit

R. C. A. VICTOR CO., INC.

MODEL Radiola 64
Schematic
Voltage

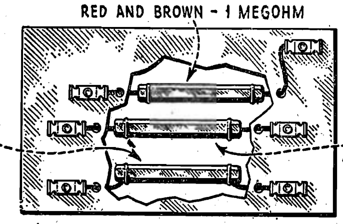


IF PEAK 180 KC

TERMINAL VOLTAGES

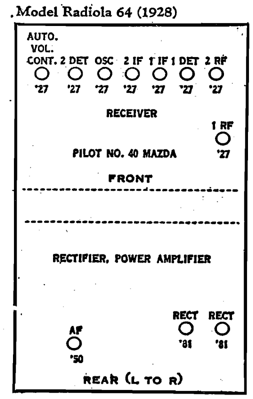
1 and 2	2.5 V. AC.
3 and 4	2.5 V. AC.
5 and 6	2.5 V. AC.
7 and 8 Light On	5.0 V. AC.
9 and 15	150. V. DC.
11 and 15	300. V. DC.
12 and 15	315. V. DC.
15 and 16	400. V. DC.
15 and 17	500. V. DC.

RED AND BROWN - 1 MEGOHM



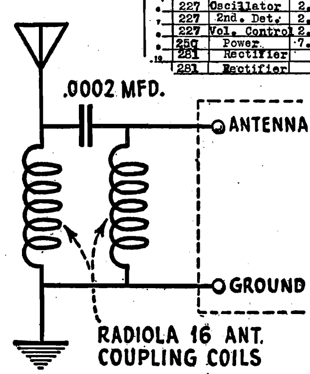
Arrangement of resistors on terminal board

Model Radiola 64 (1928)

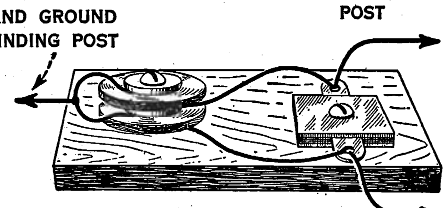


RADIOLA—Model 64
Line Voltage 112—Volume Control Full

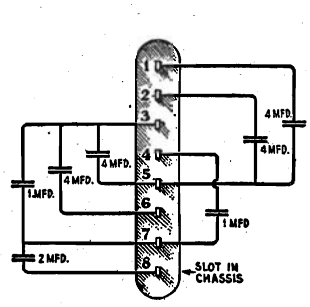
Tube No. in Order	Type of Tube	Position of Tube 1st. R.F., Det., etc.	Readings, Plug in Socket of Set: Tube Out: A Volts	Tube Out: B Volts	Tube in Tester: A Volts	B Volts	C Volts	Cathode Volts	Normal Plate M.A.	Plate M.A. Grid Test	Plate M.A. Change
1	227	Ant.Coup.St.	2.5	128	2.4	124	25	13.5	3.4	7.8	4.4
2	227	Tuned R.F.	2.5	128	2.4	124	25	16.0	3.3	7.1	3.8
3	227	Tuned 1stDet	2.5	80	2.4	75	25	16.0	.2	2.9	2.7
4	227	1st. I.F.	2.5	128	2.4	124	9	13.5	3.4	7.8	4.5
5	227	2nd. I.F.	2.5	128	2.4	124	9	13.5	3.4	7.8	4.5
6	227	Oscillator	2.5	80	2.4	75	25	13.5	7.0	7.6	.6
7	227	2nd. Det.	2.5	180	2.4	176	25	13.5	-	-	-
8	227	Vol. Control	2.5	80	2.4	75	4	-	-	-	-
9	250	Power	7.5	584	7.2	392	65	-	52	55	3.0
10	281	Rectifier			7.4				50		
	281	Rectifier			7.4				50		



RADIOLA 16 ANT. COUPLING COILS



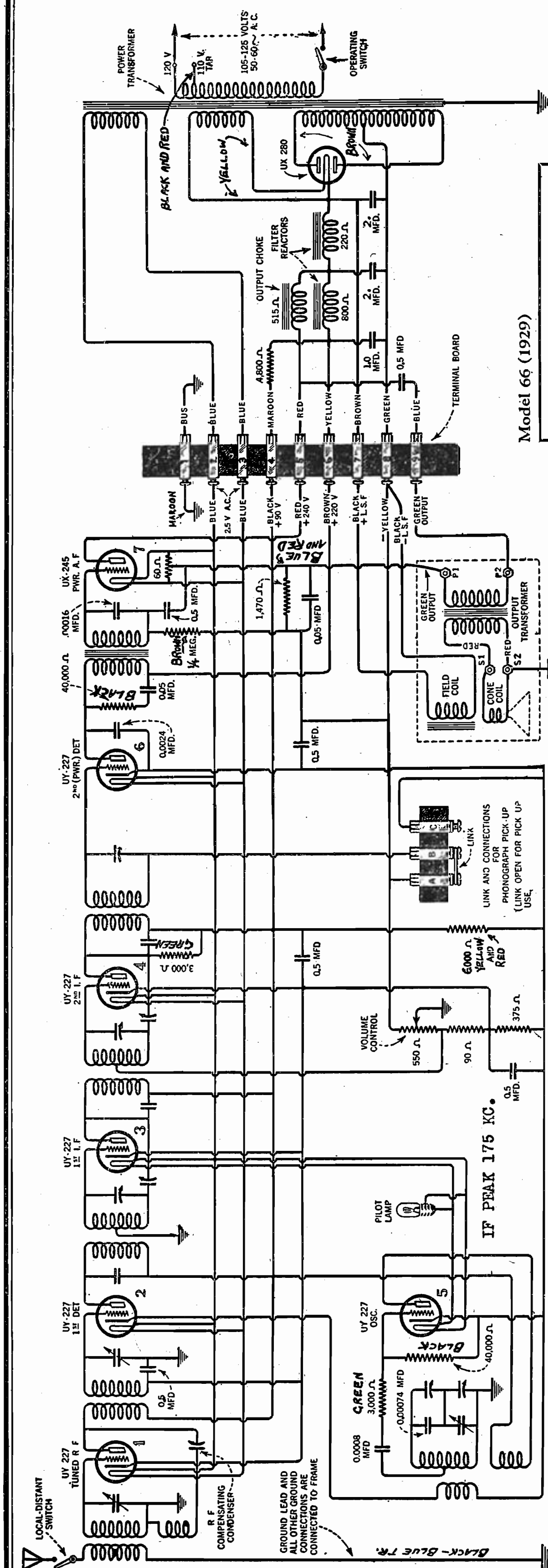
Long wave interference filter

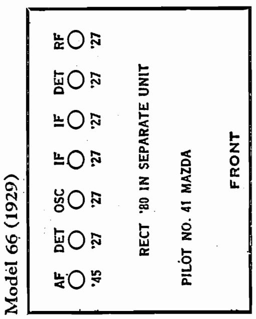


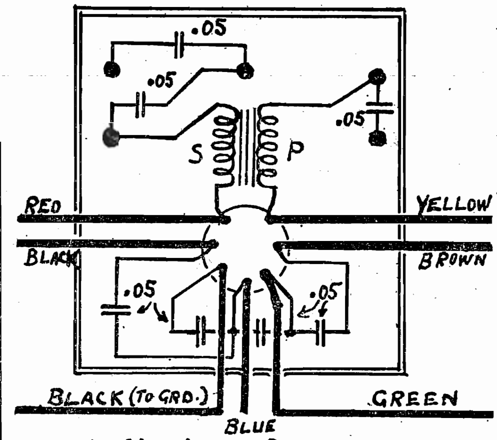
Internal connections of filter condensers

R. C. A. VICTOR CO., INC.

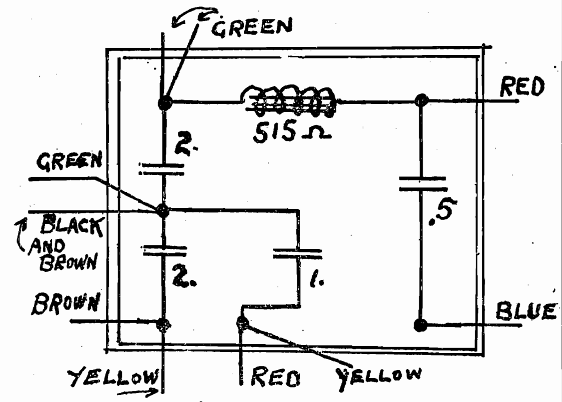
MODEL Radiola 66



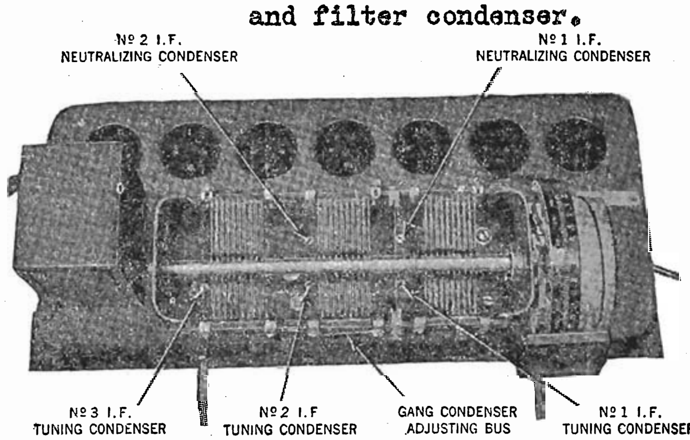




Audio transformer and bypass condenser



Output choke, condenser and filter condenser.



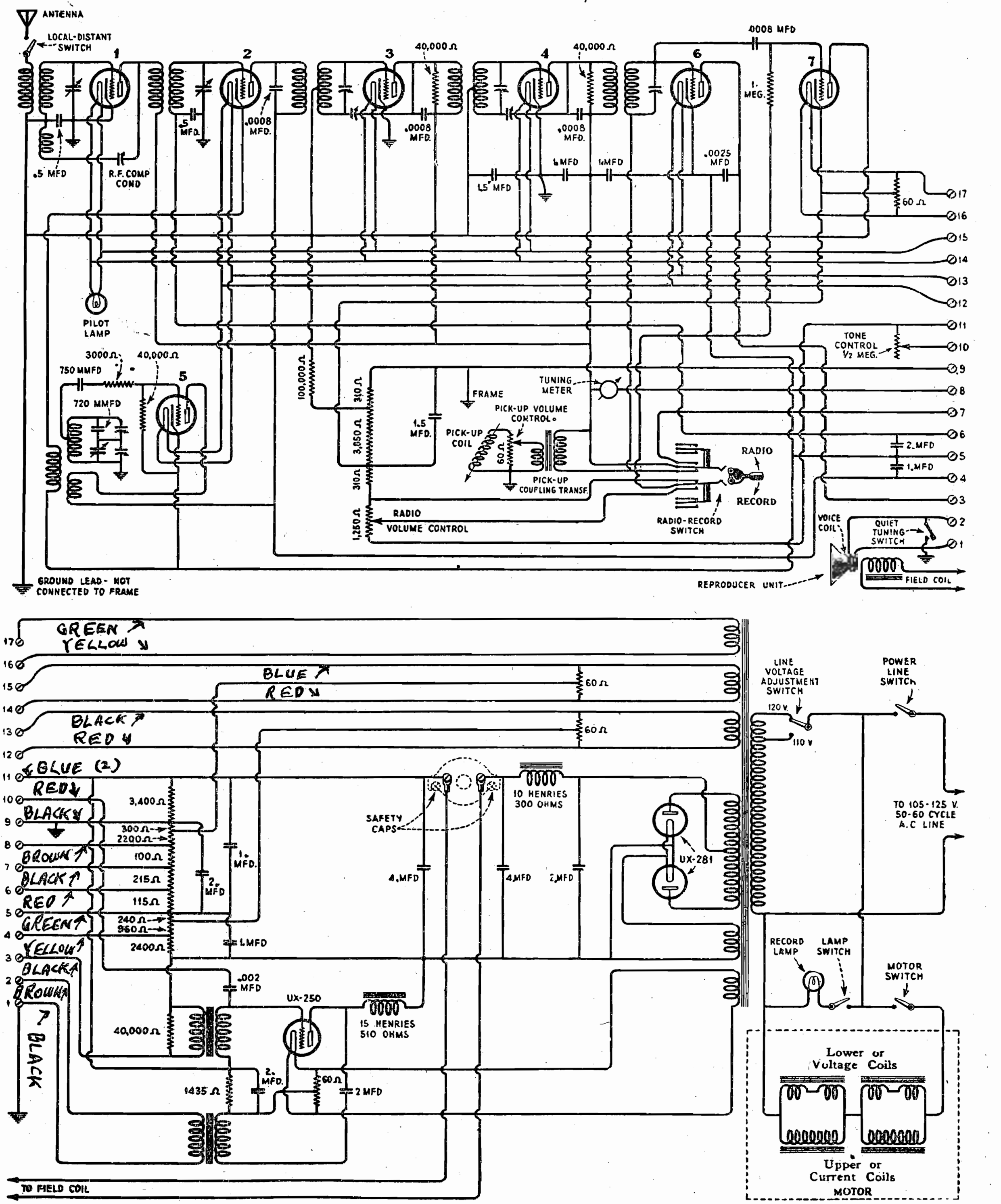
Condenser adjusting screws for I.F. transformers

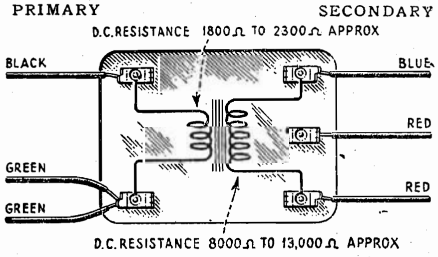
RADIOLA—Model 66
Line Voltage 120.0—Set on 120.0 Volt Tap—Volume Control Position Max

TUBE NO. IN ORDER (1)	TYPE OF TUBE (2)	POSITION OF TUBE 1ST R.F DET. ETC (3)	READINGS, PLUG IN SOCKET OF SET — TUBE OUT: A VOLTS (4)	B VOLTS (5)	TUBE IN TESTER: A VOLTS (6)	B VOLTS (7)	C VOLTS (CONTROL GRID) (8)	CATHODE-HEATER VOLTS (9)	NORMAL PLATE M A (10)	PLATE M.A GRID TEST (11)	PLATE CHANGE M.A (12)	SCREEN GRID VOLTS (13)
1	227	RF	2.65	83.0	2.4	80.0	3.0	24.0	4.5	8.6	4.1	-
2	227	1st Det	2.65	83.0	2.4	72.0	7.0	17.0	2.0	3.5	1.5	-
3	227	1st IF	2.65	83.0	2.4	80.0	3.0	23.0	4.5	8.6	4.1	-
4	227	2nd IF	2.65	83.0	2.4	80.0	3.0	23.0	4.5	8.6	4.1	-
5	227	OSC.	2.65	83.0	2.4	66.0	0.0	16.0	6.4	6.8	.4	-
6	227	2nd Det	2.65	237.0	2.4	236.0	29.0	17.0	.1	1.0	.9	-
7	245	AF	2.65	237.0	2.4	224.0	17.0	-	32.0	34.0	2.0	-
8	280	Rect.	5.2	-	5.0	250	-	-	52.0	-	-	-

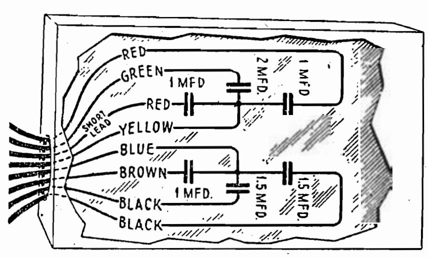
MODEL Radiola 67
Schematic

R. C. A. VICTOR CO., INC.

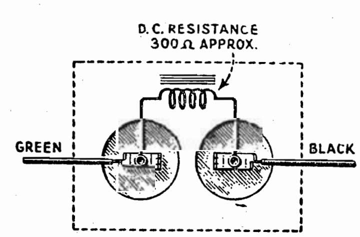




Internal connections of input transformer



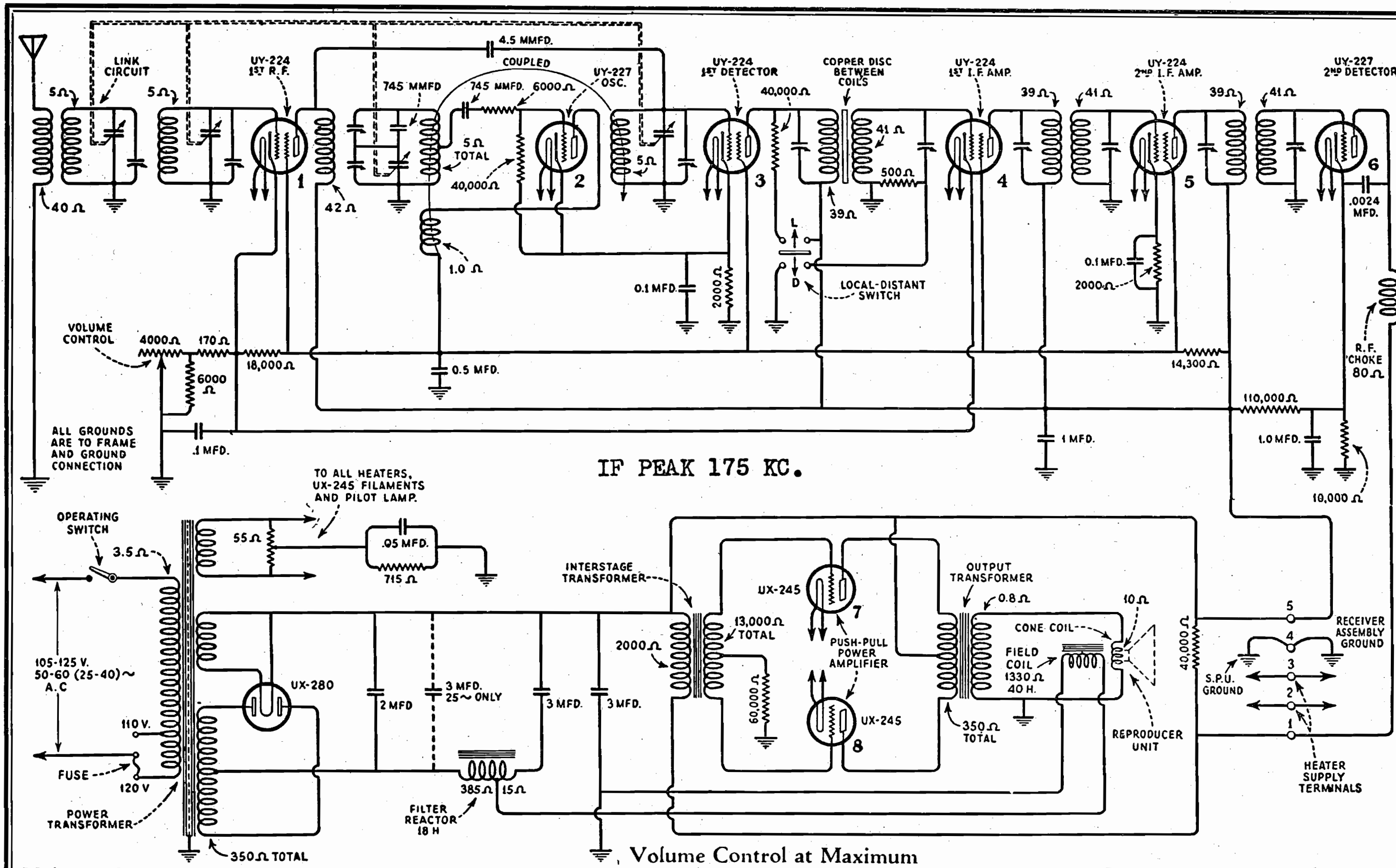
Internal connections of receiver by-pass condensers



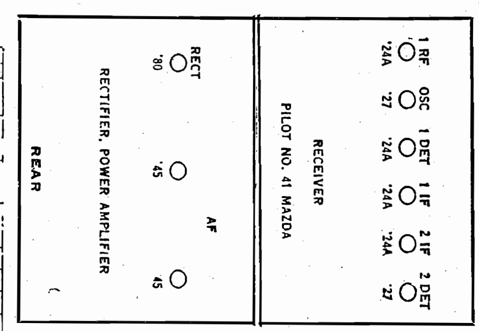
Internal connections of filter reactor

R. C. A. VICTOR CO., INC.

MODEL Radiola 80
Schematic
Voltage



Models Radiolas 80,



Volume Control at Minimum

Tube No. in Order Tested	Type of Tube	Position of Tube in Set	Filament or Heater	Plate or Anode	Control Grid-Space Gd +	Normal Grid-Screen Gd +	Cathode to Heater	Screen Gd L H 80 Plate	Plate R H 80 Plate	Tube Test	Plate Current Change	
1	224	1 R.F.	2.2	230	10	75	-25	0	0			
2	227	Osc.	2.2	65	-	-	-22	-	7.5			
3	224	1 Det.	2.2	240	10	82	-25	.1	0			
4	224	1 I.F.	2.2	230	10	75	-25	0	0			
5	224	2 I.F.	2.2	250	6	90	-32	1.0	2.2			
6	227	2 Det.	2.2	220	-	22	-12	-	.25			
7	245	PP-AF	2.2	210	-	20*	-	-	28.0			
8	245	PP-AF	2.2	210	-	20*	-	-	28.0			
9	280	Rect.	4.6	-	-	-	-	-	-			
10												

Volume Control at Maximum

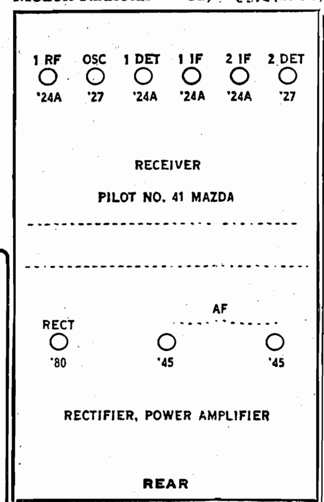
*Not True Reading Due to Resistor in Circuit

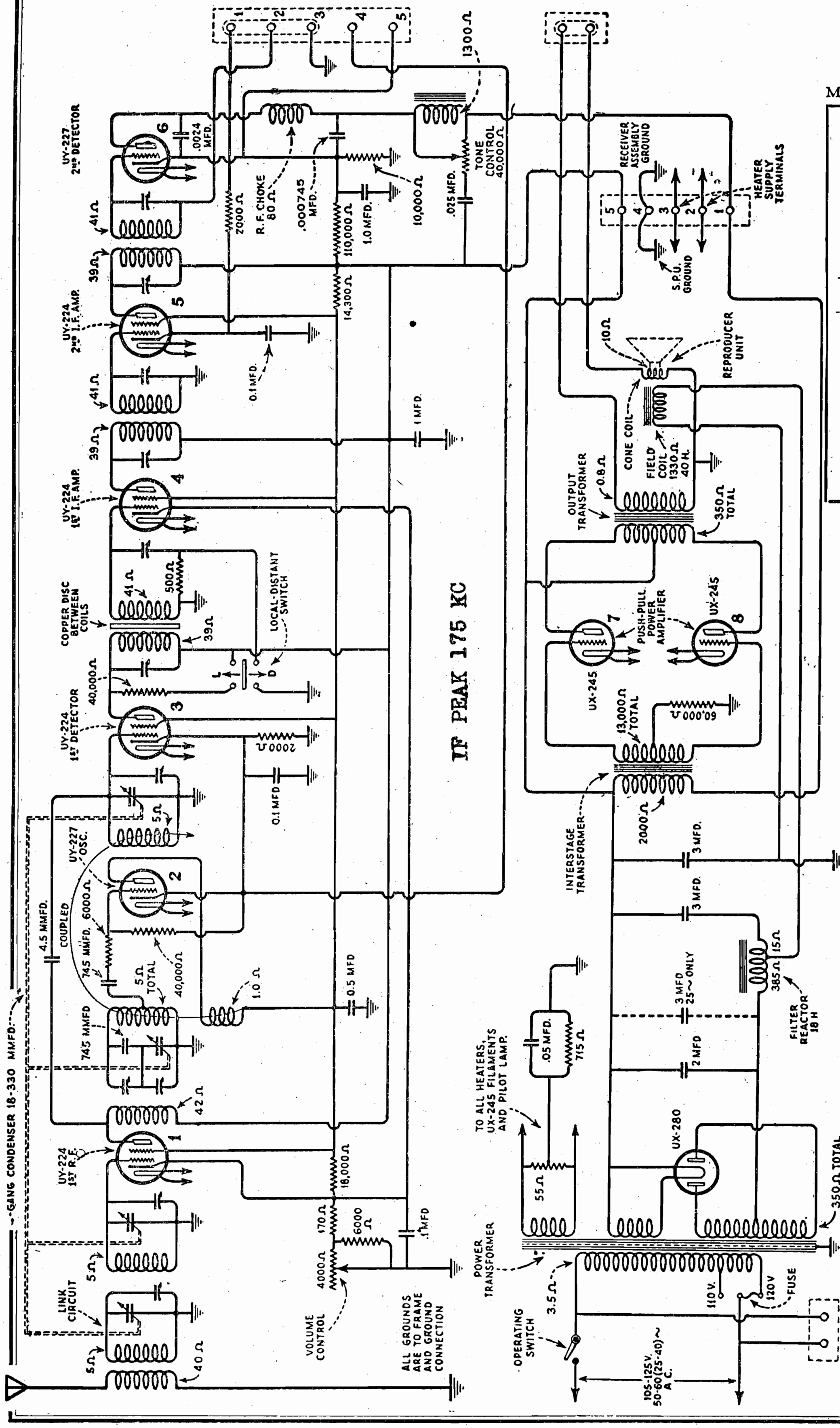
Tube No. in Order Tested	Type of Tube	Position of Tube in Set	Filament or Heater	Plate or Anode	Control Grid-Space Gd +	Normal Grid-Screen Gd +	Cathode to Heater	Screen Gd L H 80 Plate	Plate R H 80 Plate	Tube Test	Plate Current Change	
1	224	1 R.F.	2.2	240	2.2	80	-34	.5	3.2			
2	227	Osc.	2.2	60	-	-	-22	-	6.5			
3	224	1 Det.	2.2	230	9.5	72	-25	.1	.25			
4	224	1 I.F.	2.2	240	2.2	78	-34	.5	1.0			
5	224	2 I.F.	2.2	240	4.2	78	-31.5	.5	1.6			
6	227	2 Det.	2.2	212	-	22	-12	-	.25			
7	245	PP-AF	2.2	206	-	19*	-	-	25.0			
8	245	PP-AF	2.2	206	-	19*	-	-	25.0			
9	280	Rect.	4.6	-	-	-	-	-	-			
10												

R. C. A. VICTOR CO., INC.

MODEL Radiola 82
Schematic

Models Radiolas 82,.. ....(1930)

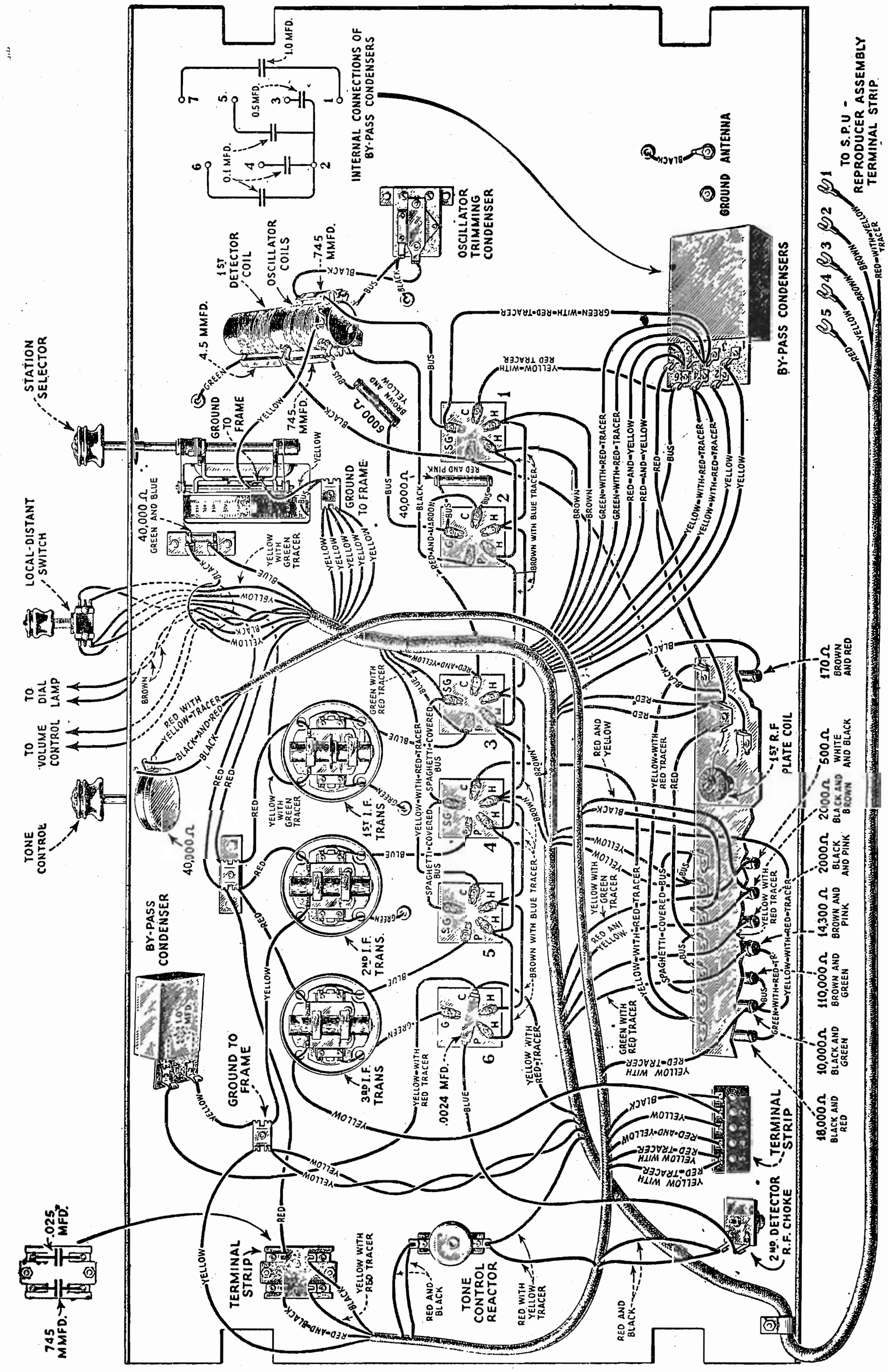




Schematic circuit diagram of Radiola 80 with tone control and Radiola 82.
(Note:—The terminal strip in series with the cone coil and the extra A. C. terminals are not included with the Radiola 80.)

MODELS Radiola 82 and 86
with Remote Control
Assembly Wiring

R. C. A. VICTOR CO., INC.

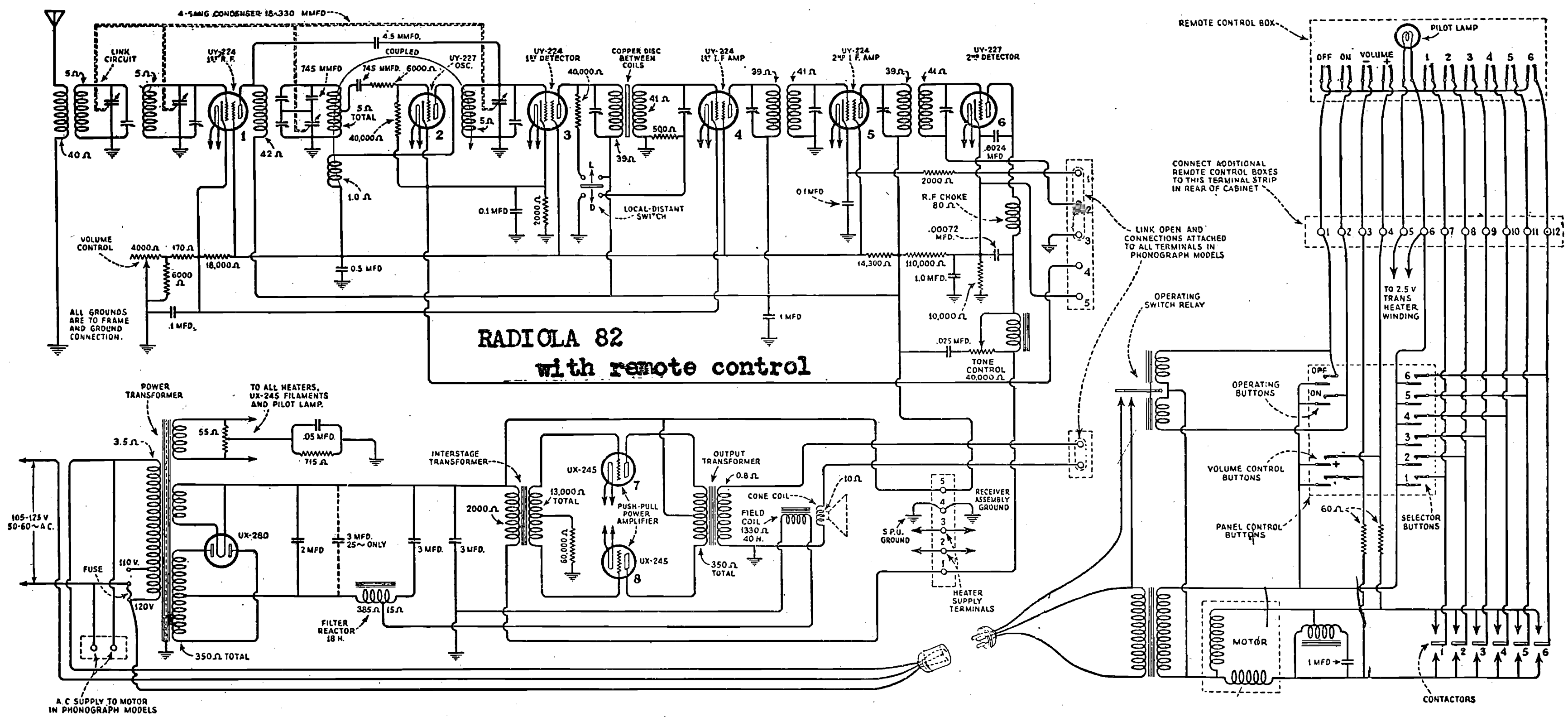


RECEIVER ASSEMBLY

RADIOLA 82 and 86 with Remote Control

MODEL Radiola 82 with Remote Control Schematic

R. C. A. VICTOR CO., INC.



IF PEAK 175 KC

The cable to the remote control box supplied with the remote control models is twenty-five (25) feet in length. This is ample for most rooms as it is very rare that a person wishes to listen to a program at a greater distance from the loudspeaker.

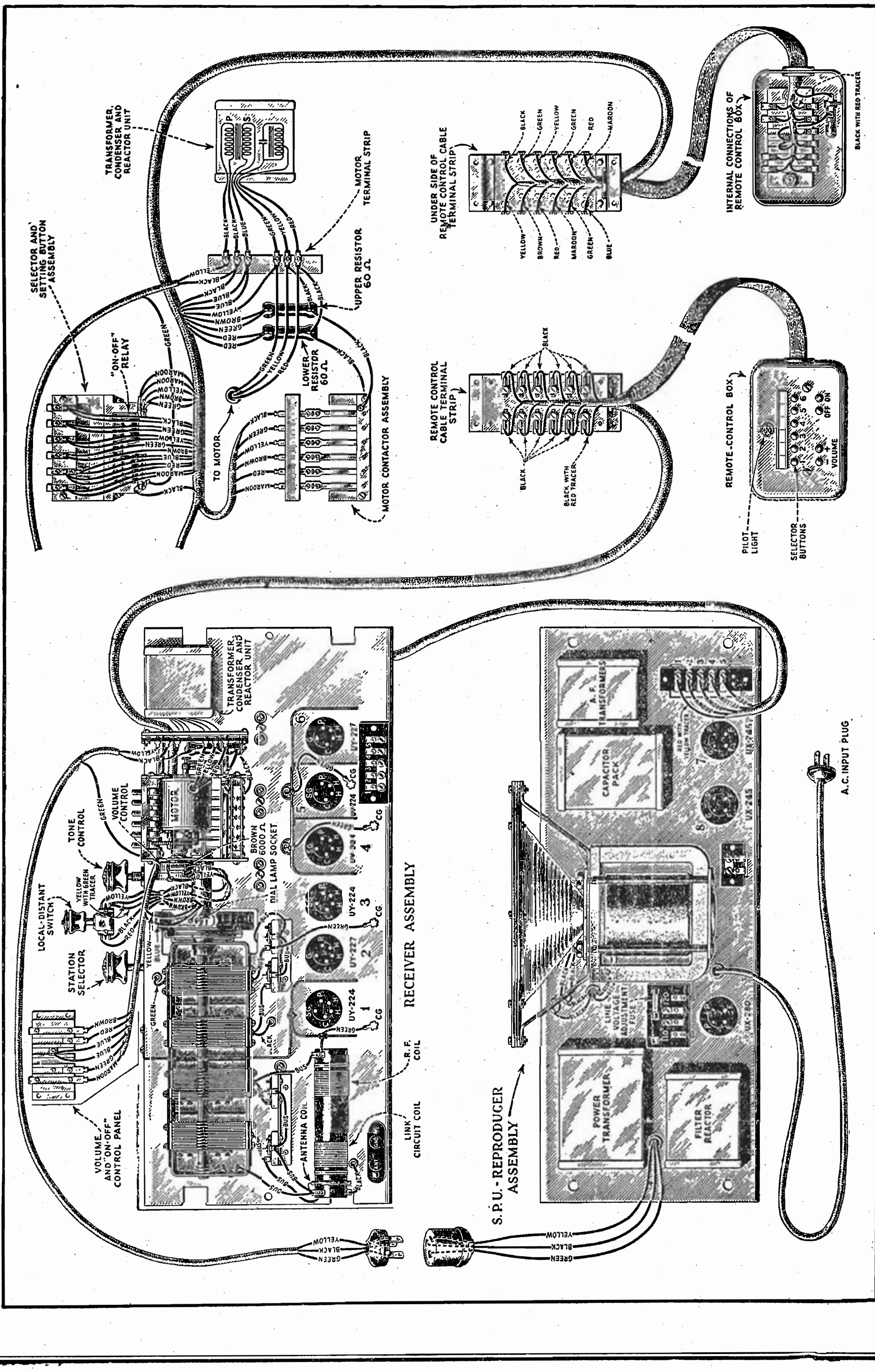
If, however, it is desired to place the remote control box at a greater distance from the set, any twelve conductor cable, the wires of which are No. 14 or larger in size, may be used to splice onto the regular cable and increase the total length up to seventy-five (75) feet. Figure 8 shows the method recommended for adding this additional cable.

The setting of the drums is made by the pins on the front panel. These are known as the "setting buttons." The selector button is pressed and the drum is moved by the motor until the corresponding contactor is midway between the contacts. The pin will now fall in the hole in the drum if pushed in by the finger. See Figure 7. Holding the pin firmly in the hole, the desired station is then accurately tuned in by means of the manual station selector knob. After tuning the pin is then released. As the point on the opposite side of the drum is where the diameter of the drum changes, the contactor is half way between the contacts. Pressing the selector buttons will therefore cause no movement of the motor. If another button is pressed and the drum moved, pressing the original button will always bring the drum back to the position for which it was set.

Referring to the schematic diagram, it will be noted that a common lead is used for the pilot lamp and the selector buttons in the remote control box. By doing this, when a selector button on the box is pressed, the current through the common lead is increased, likewise the voltage drop in the lead is increased. The result is that while the motor is running the pilot lamp becomes very dim. As soon as the motor stops, the lamp flashes bright, thus indicating that the motor has stopped and the station is tuned in. If the station is not then heard, it is necessary to press the + volume control button a little at a time until the desired output level is obtained.

MODELS Radiola 82 and 86 with Remote Control Receiver Chassis

R. C. A. VICTOR CO., INC.

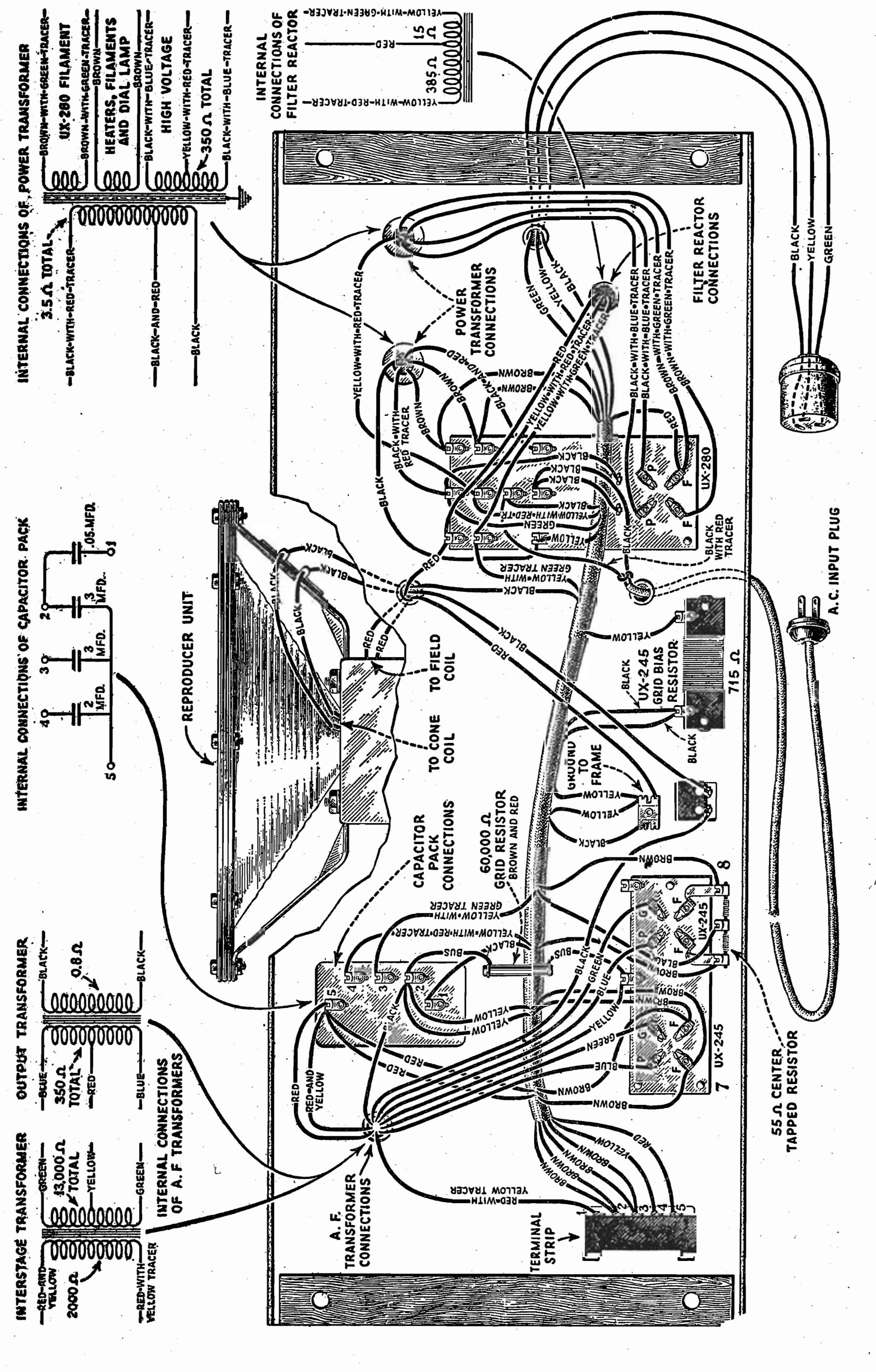


Assembly Wiring Diagram

Models Radiola 82 and 86 with Remote Control

R. C. A. VICTOR CO., INC.

MODELS Radiola 82 and 86 with Remote Control Power Unit Chassis



SOCKET POWER UNIT ASSEMBLY

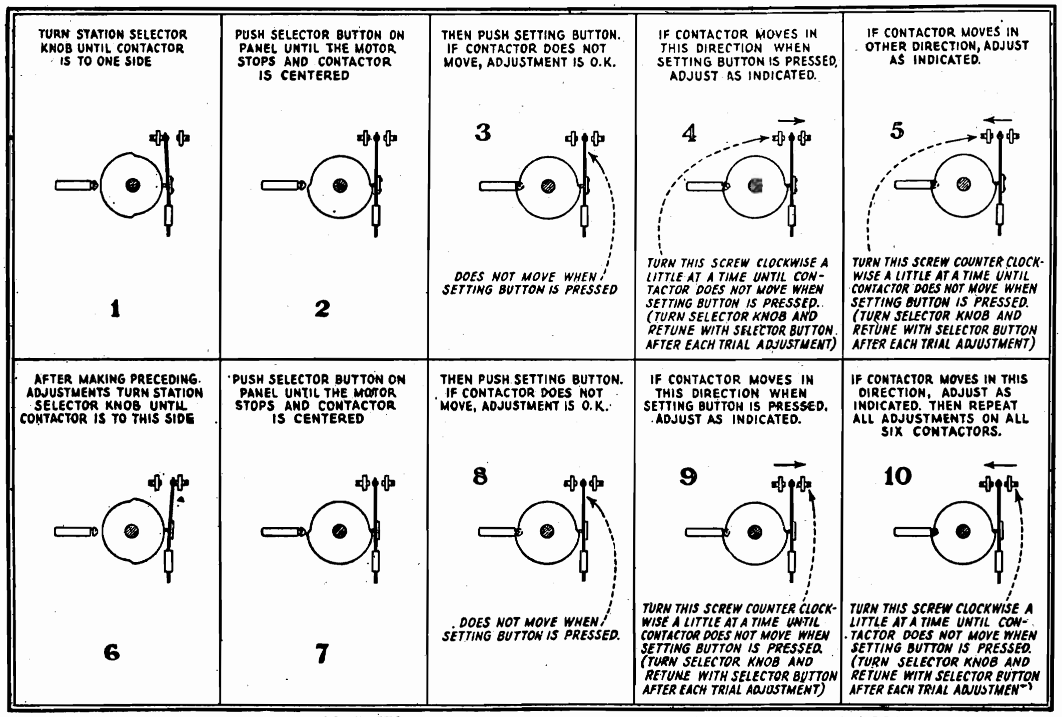
RADIOLA Models 82 and 86 with Remote Control

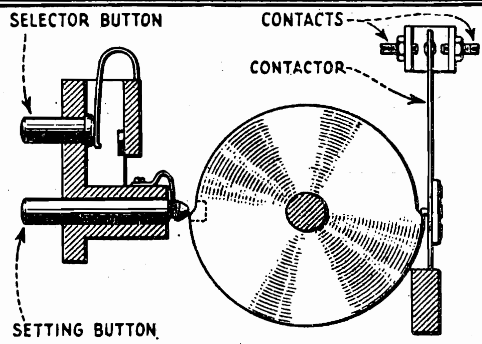
R. C. A. VICTOR CO., INC.

MODELS Radiola 82 and 86 with Remote Control Remote Control Units

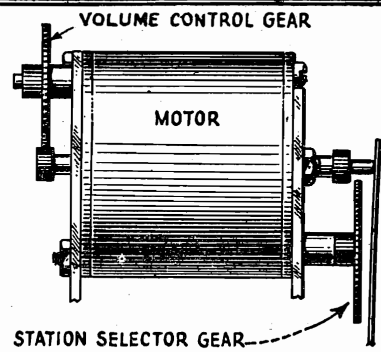
MOTOR CONTACTOR ADJUSTMENT CHART

Repeat Entire Procedure For All Contactors

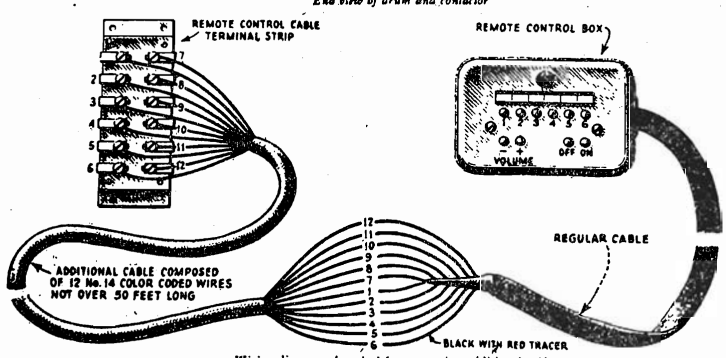




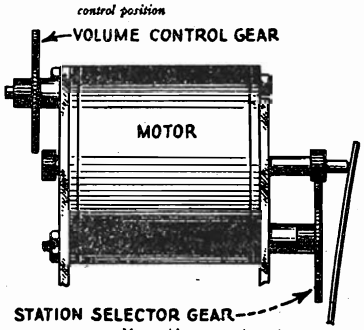
End view of drum and contactor



Motor with armature in volume control position



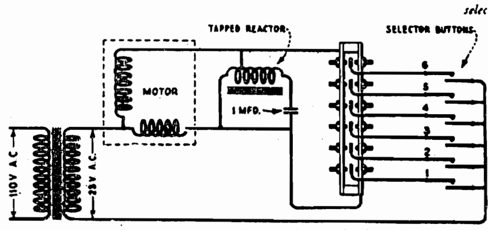
Wiring diagram of method for connecting additional cable



Motor with armature in station selector position

This is figure 8 illustrating the method of increasing the length of the cable.

For additional remote control data, see RAE-79 service data.



Schematic diagram of motor circuits

R. C. A. VICTOR CO., INC.

MODEL Radiola 86
Audio Circuit Diagrams

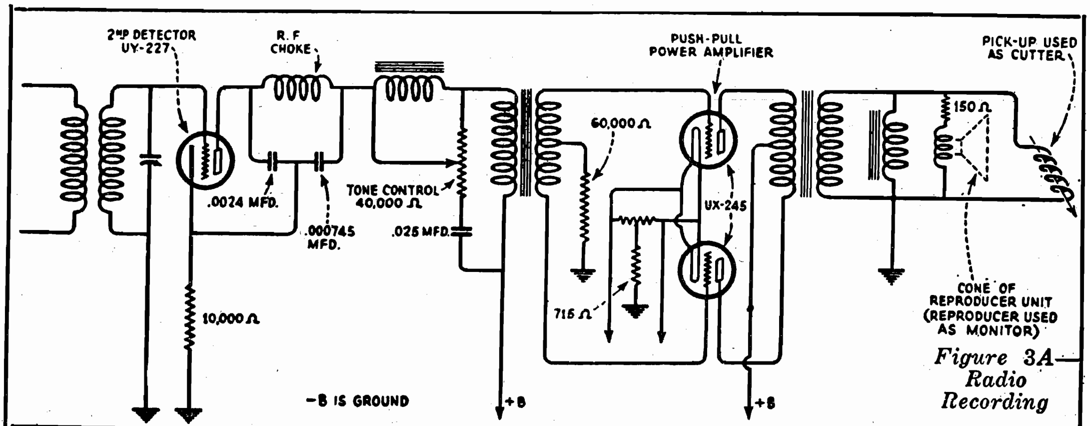


Figure 3A—Radio Recording

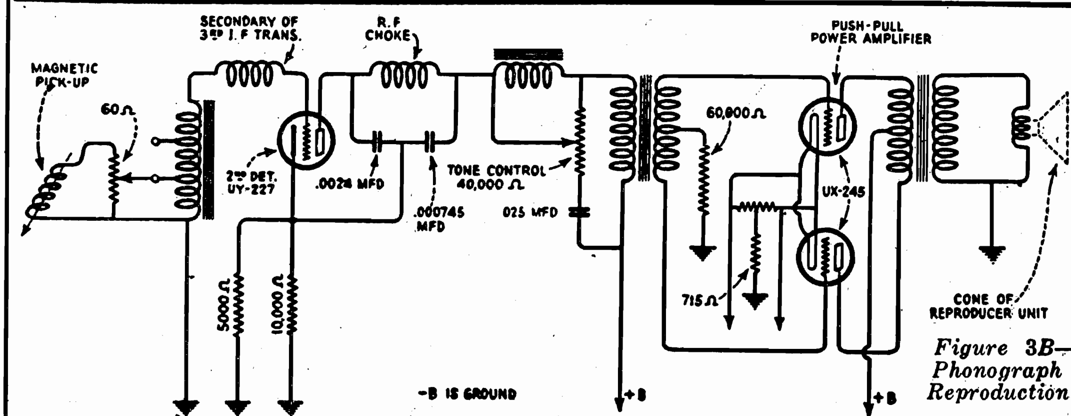


Figure 3B—Phonograph Reproduction

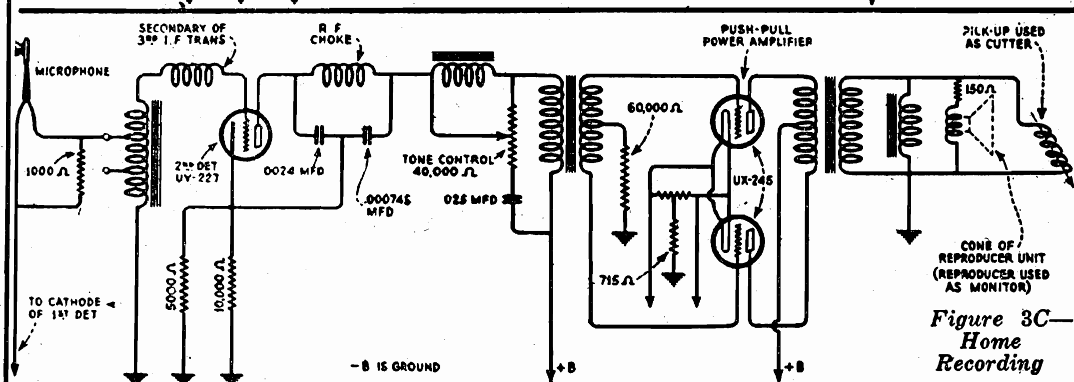


Figure 3C—Home Recording

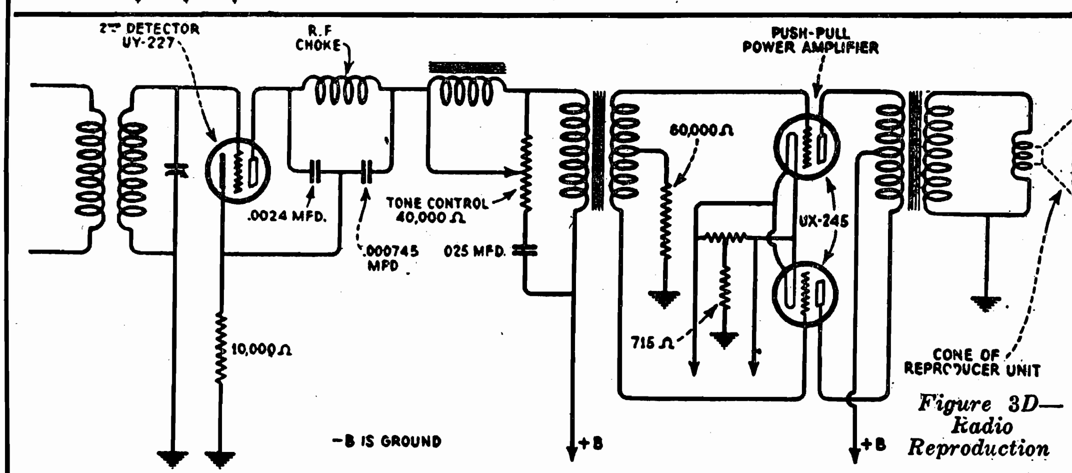
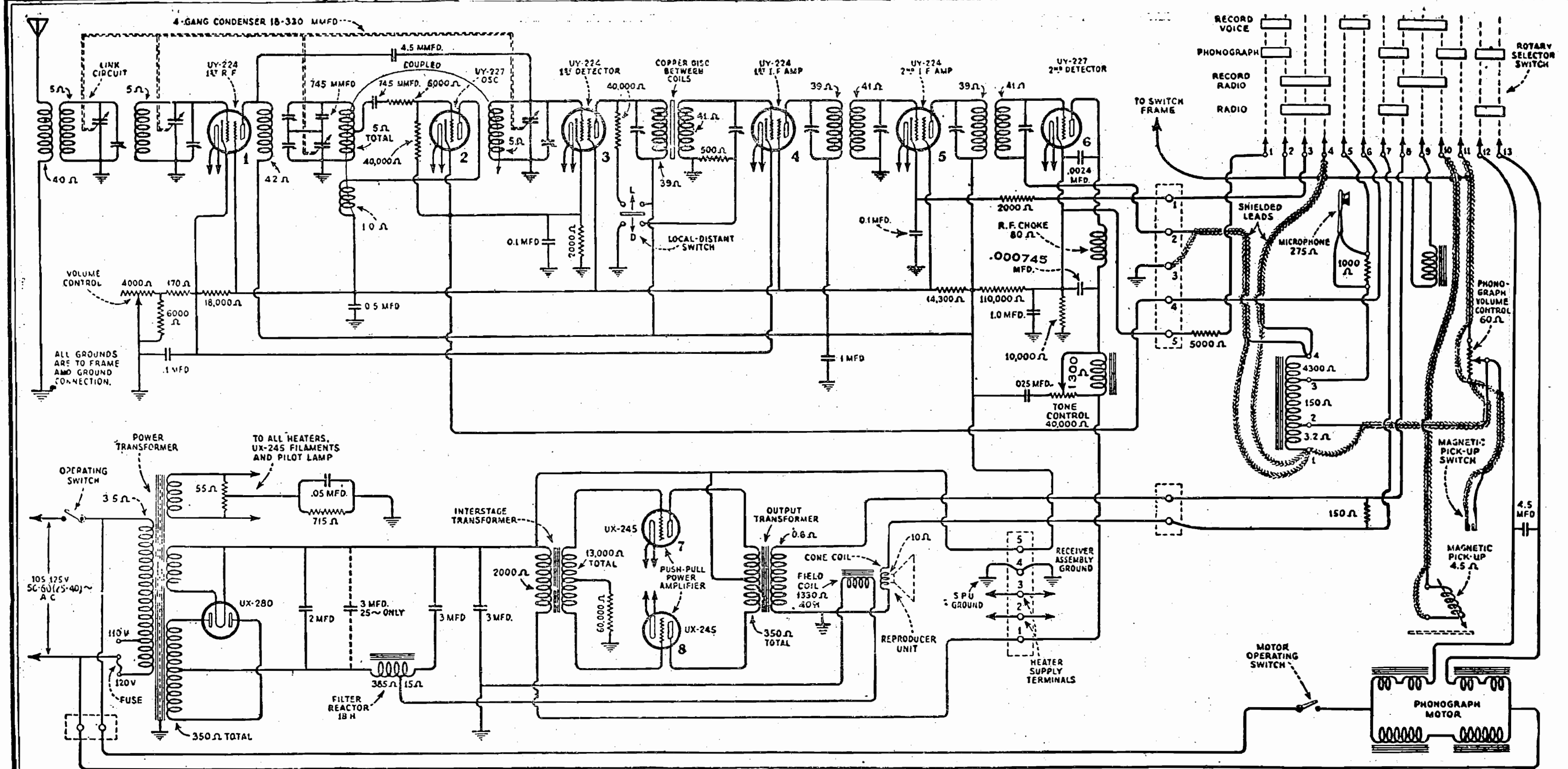


Figure 3D—Radio Reproduction

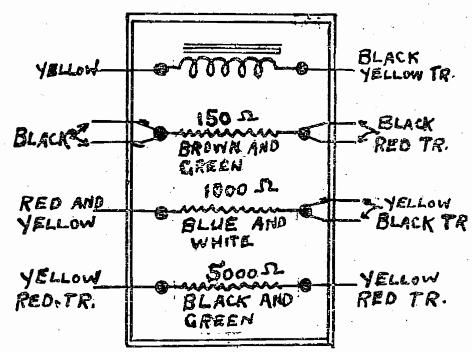
MODEL Radiola 86
Schematic

R. C. A. VICTOR CO., INC.



Rotary Switch Connections

#1 Yellow w. Red Tr.
#2 Yellow
#3 Black w. Green Tr.
#4 Yellow w. Green Tr.
#5 Yellow w. Black Tr.
#6 Red and Yellow
#7 Black
#8 Black w. Red Tr.
#9 Black w. Yellow Tr.
#10 Metal braid
#11 Black and Yellow
#12, #13 Black



Resistor and Reactor Unit

For chassis layouts see Model Radiola 82 and also Models 82-86 with remote control.

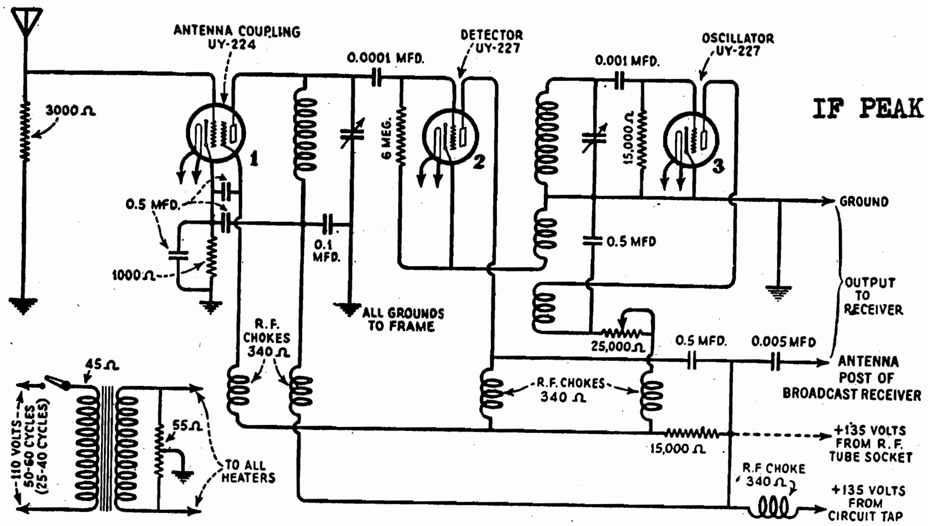
Power Consumption
Radio alone 120 watts
Combination 200 watts

For socket layout see Model Radiola 82

For voltage data, see Model Radiola 82.

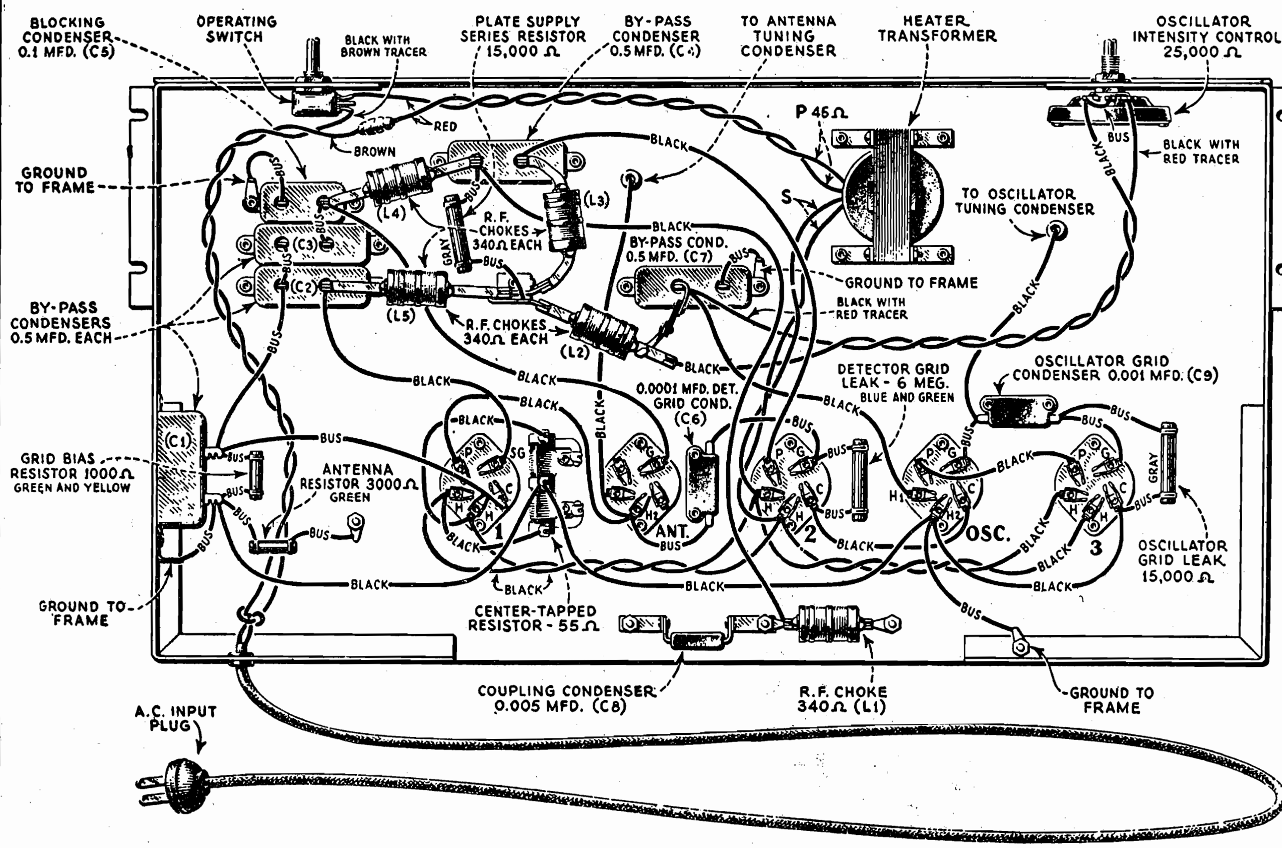
R. C. A. VICTOR CO., INC.

MODEL RCA Short Wave Adaptor Victor SW-10 Schematic- Chassis



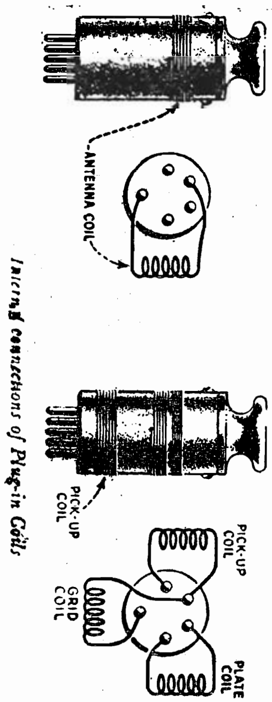
IF PEAK 1000 KC

RCA RADIOLA SHORT WAVE ADAPTOR

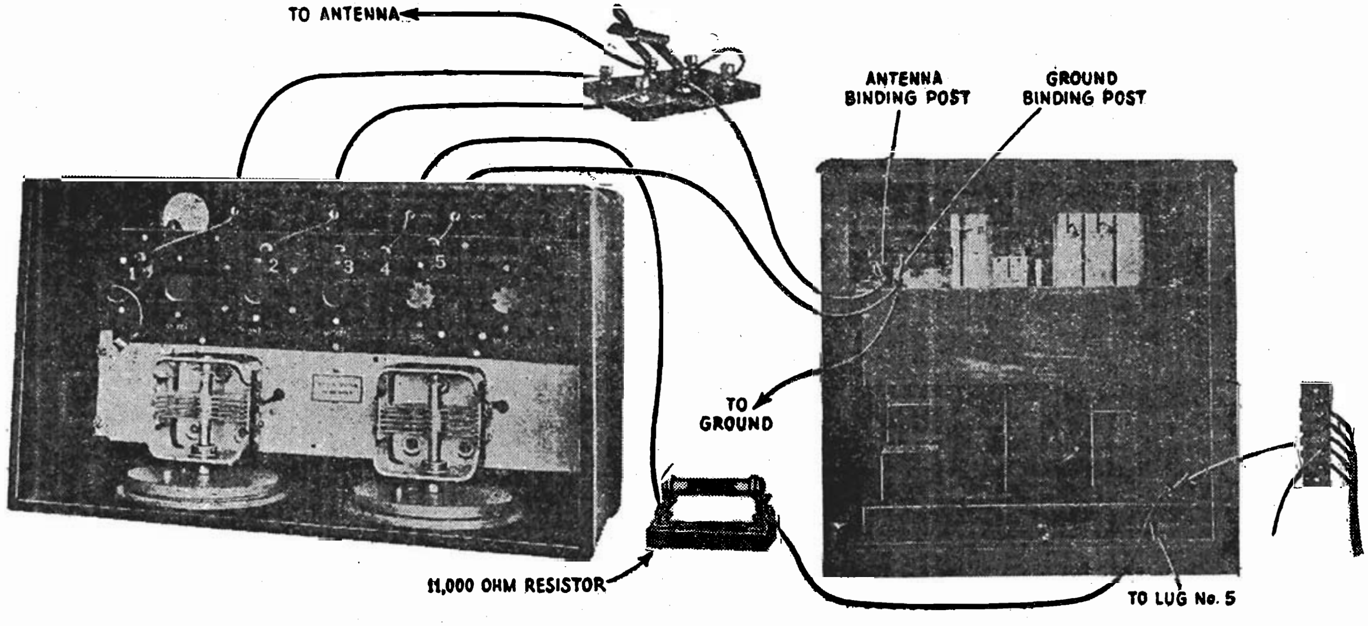


MODEL RCA Short Wave Adaptor Victor SW-10
Voltage- Data

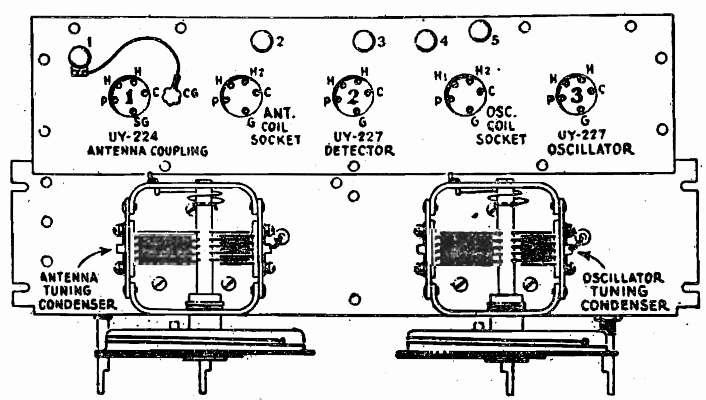
R. C. A. VICTOR CO., INC.



Internal connections of Plug-in Coils



Connections of Short Wave Adaptor to Radiola 80



Test points of Short Wave Adaptor

OSCILLATOR INTENSITY CONTROL AT MAXIMUM

Socket No.	Cathode to Heater Volts D. C.	Cathode to Control Grid Volts D. C.	Cathode to Screen Grid Volts D. C.	Cathode to Plate Volts D. C.	Heater Volts A. C.	Plate Current M.A. D.C.	Screen Grid Current M.A. D.C.
1	—1	—1	43	125	2.45	1.60	0.25
2	0	—1.3*	—	50	2.45	2.0	—
3	0	—0.4*	—	45	2.45	2.8	—

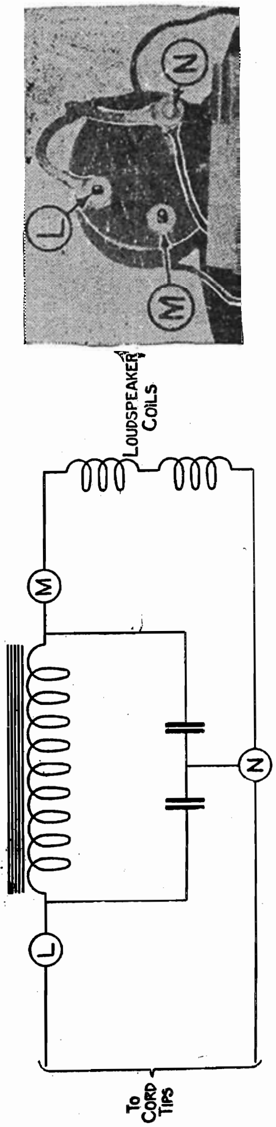
OSCILLATOR INTENSITY CONTROL AT MINIMUM

Socket No.	Cathode to Heater Volts D. C.	Cathode to Control Grid Volts D. C.	Cathode to Screen Grid Volts D. C.	Cathode to Plate Volts D. C.	Heater Volts A. C.	Plate Current M.A. D.C.	Screen Grid Current M.A. D.C.
1	—1.2	—1.2	54	127	2.45	1.25	0.28
2	0	0	—	56	2.45	3.0	—
3	0	—0.3*	—	23	2.45	1.7	—

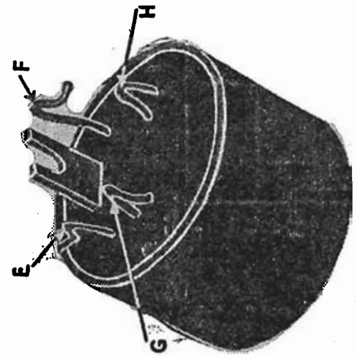
*Measured on 50 volt range. Is inaccurate because of voltmeter resistance in shunt with grid circuit resistance. Actual grid voltage is slightly higher than the readings.

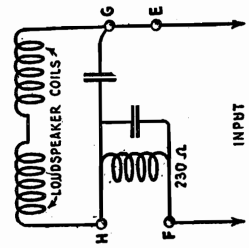
R. C. A. VICTOR CO. INC.

MODELS 100-A, 100-B, 103, 104-AC
Speakers

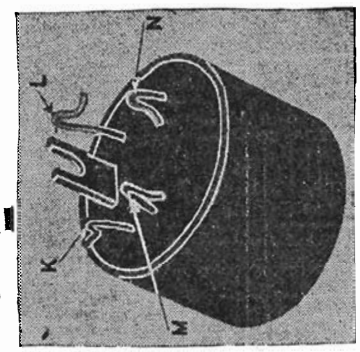


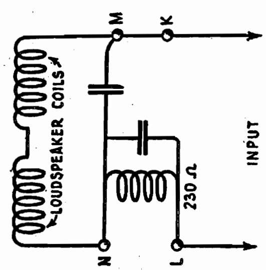
Schematic circuit diagram of RCA Loudspeaker Model 100A and photo of the filter unit



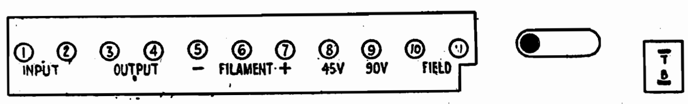


Schematic circuit of Loudspeaker 100B coils and filter and photo of filter unit



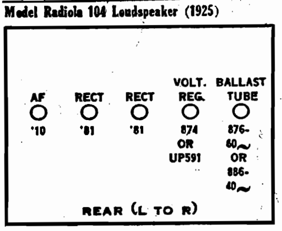


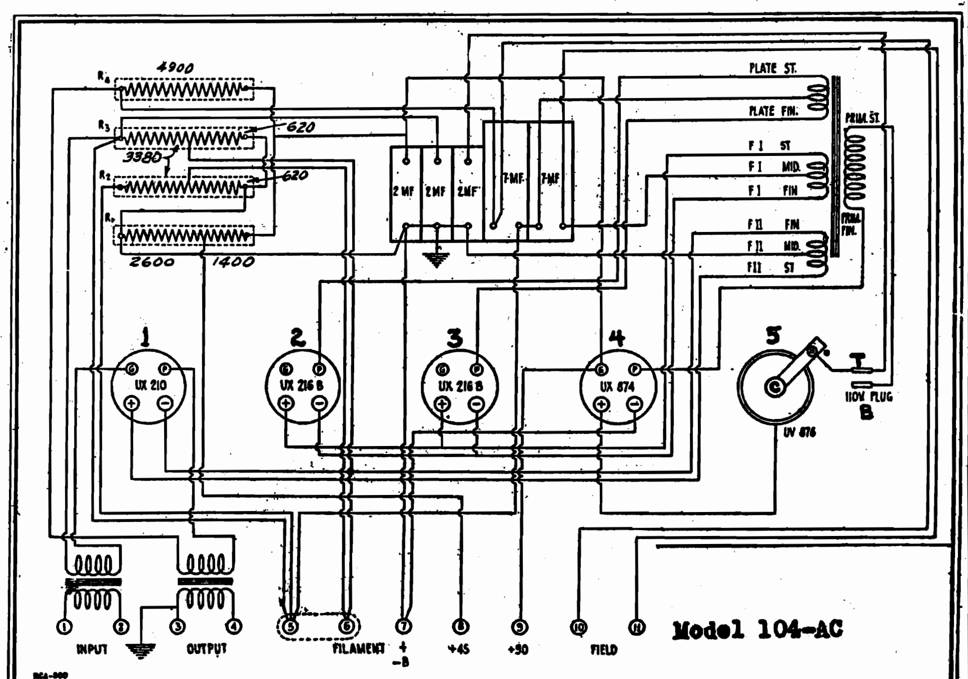
Schematic circuit of Loudspeaker 103 coils and filter and photo of filter unit



Terminal Layout

Model Radiola 104 Loudspeaker (1925)

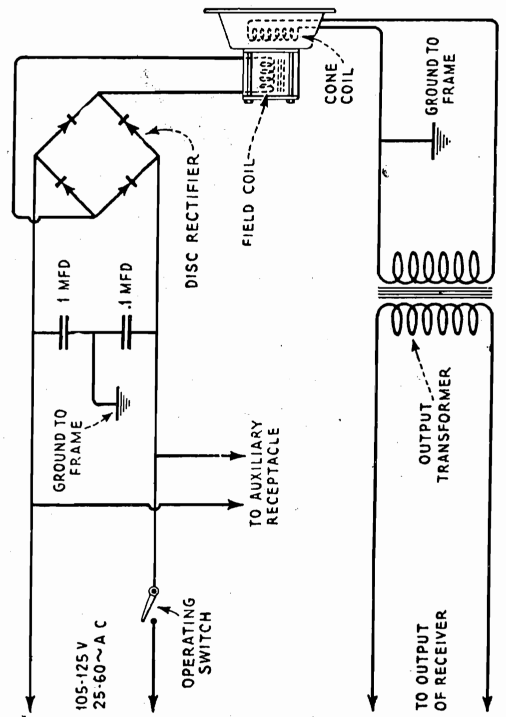




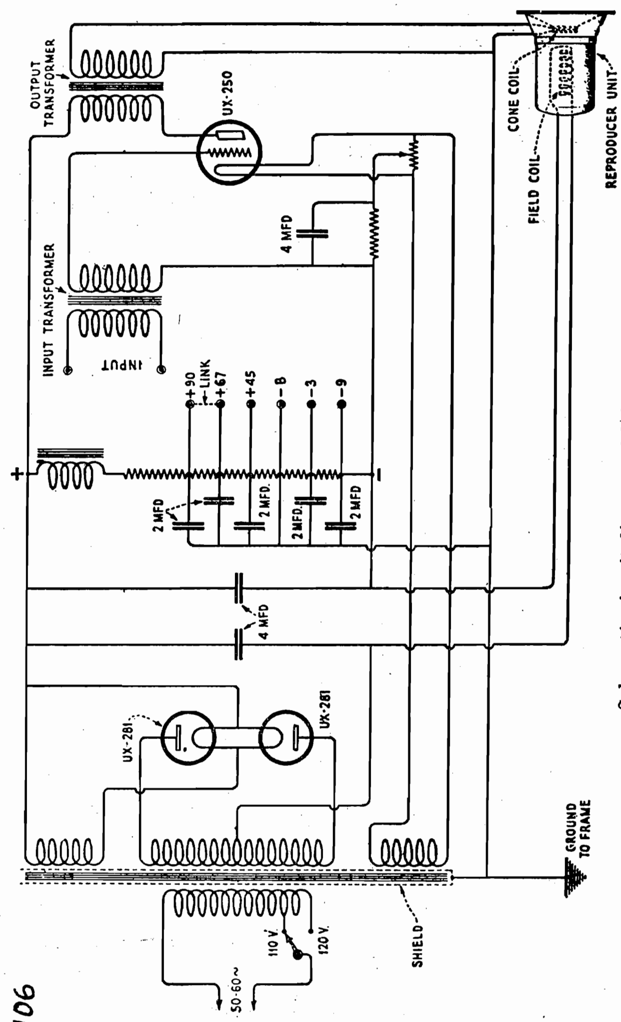
Model 104-AC

MODELS 105,106
Speakers

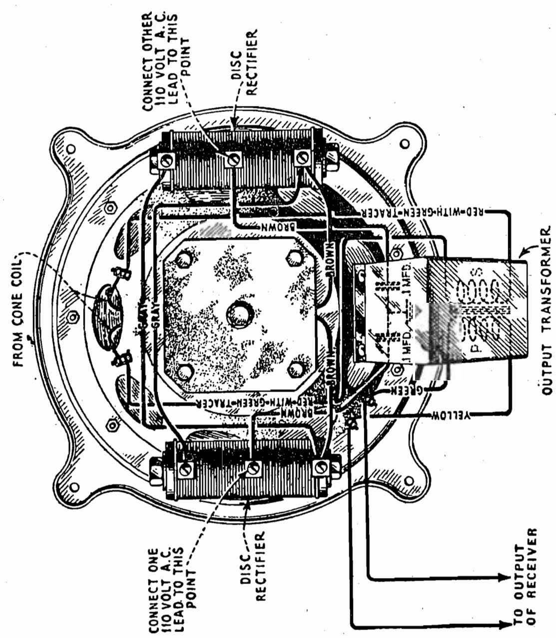
R. C. A. VICTOR CO., INC.



Schematic wiring diagram of Loudspeaker 106

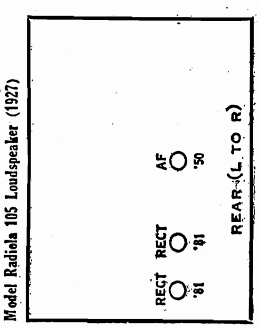


Schematic circuit diagram of RCA Loudspeaker 105.



Wiring diagram of reproducer unit 106

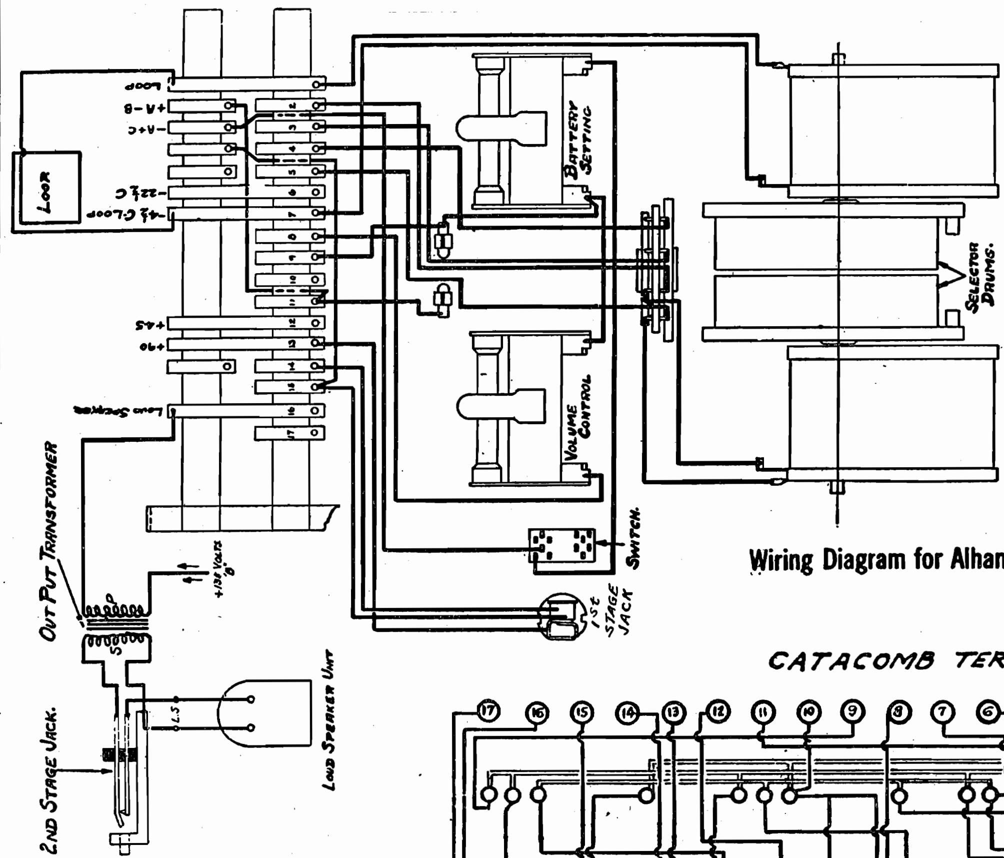
106 Speaker
Voltage across field coil.
With field connected 80 volts
With field disconnected 95 volts



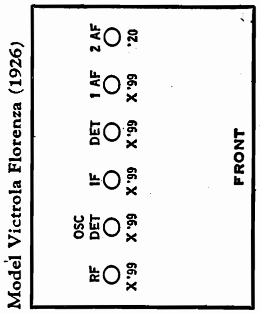
Model Radiola 105 Loudspeaker (1927)

R. C. A. VICTOR CO., INC.

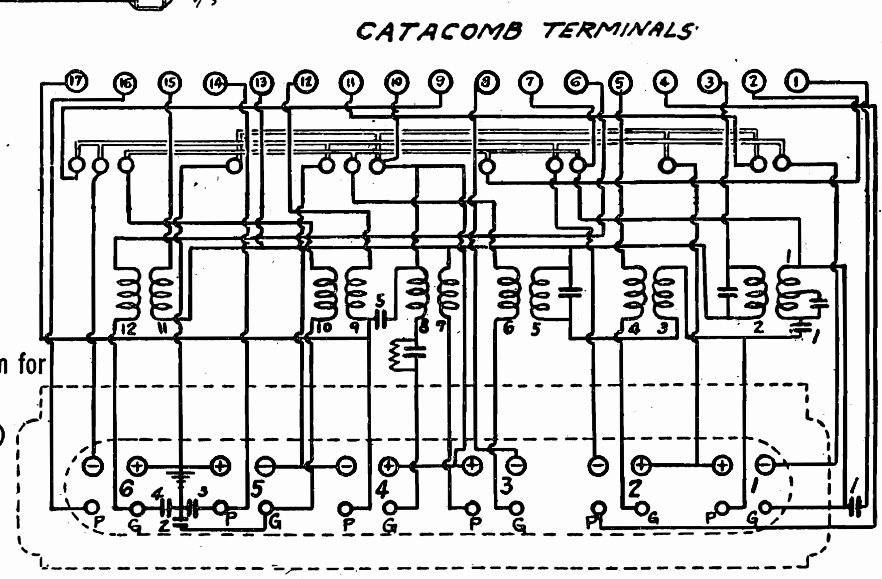
MODEL Victor Alhambra I (7-1)
MODEL Victor Alhambra II
MODEL Victor Florenza



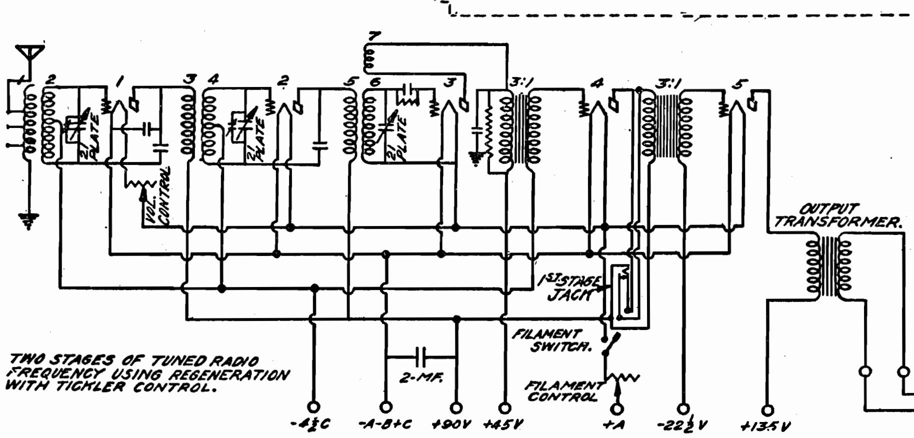
Wiring Diagram for Alhambra II and Florenza



Model Victrola Florenza (1926)

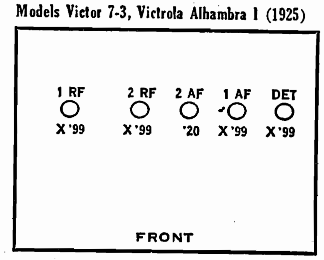


Radiola 25 Catacomb Continuity Diagram for Alhambra II (7-2) and Florenza (9-1)



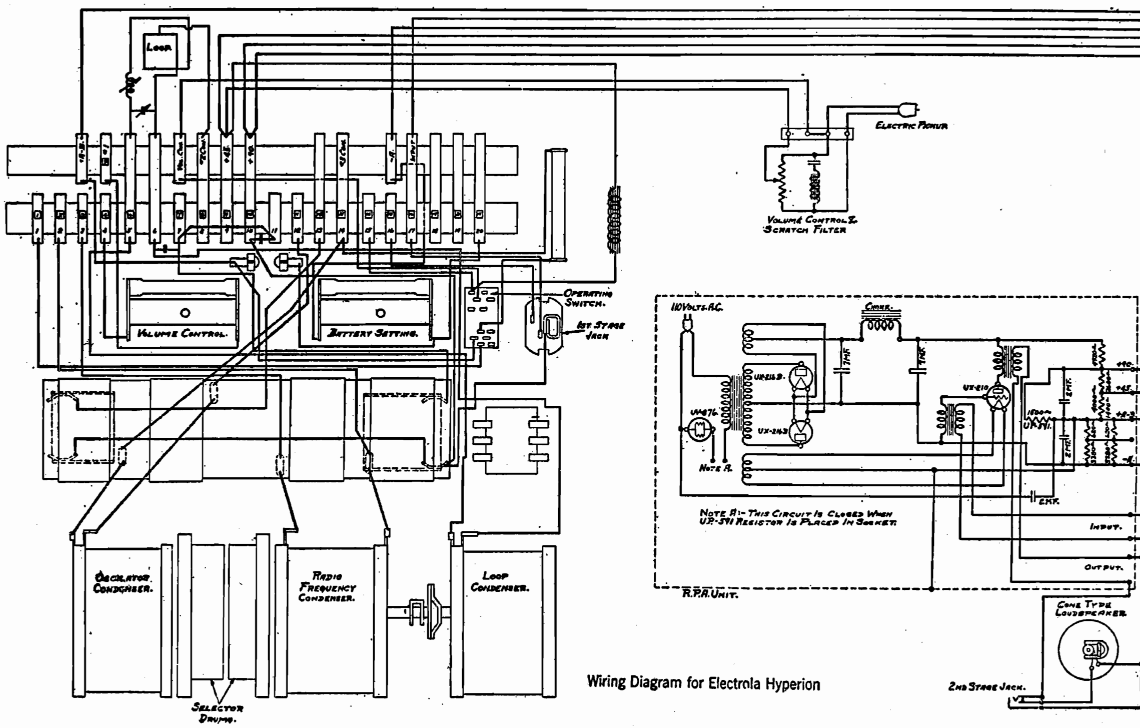
Wiring Diagram Alhambra I (7-1)

Models Victor 7-3, Victrola Alhambra I (1925)

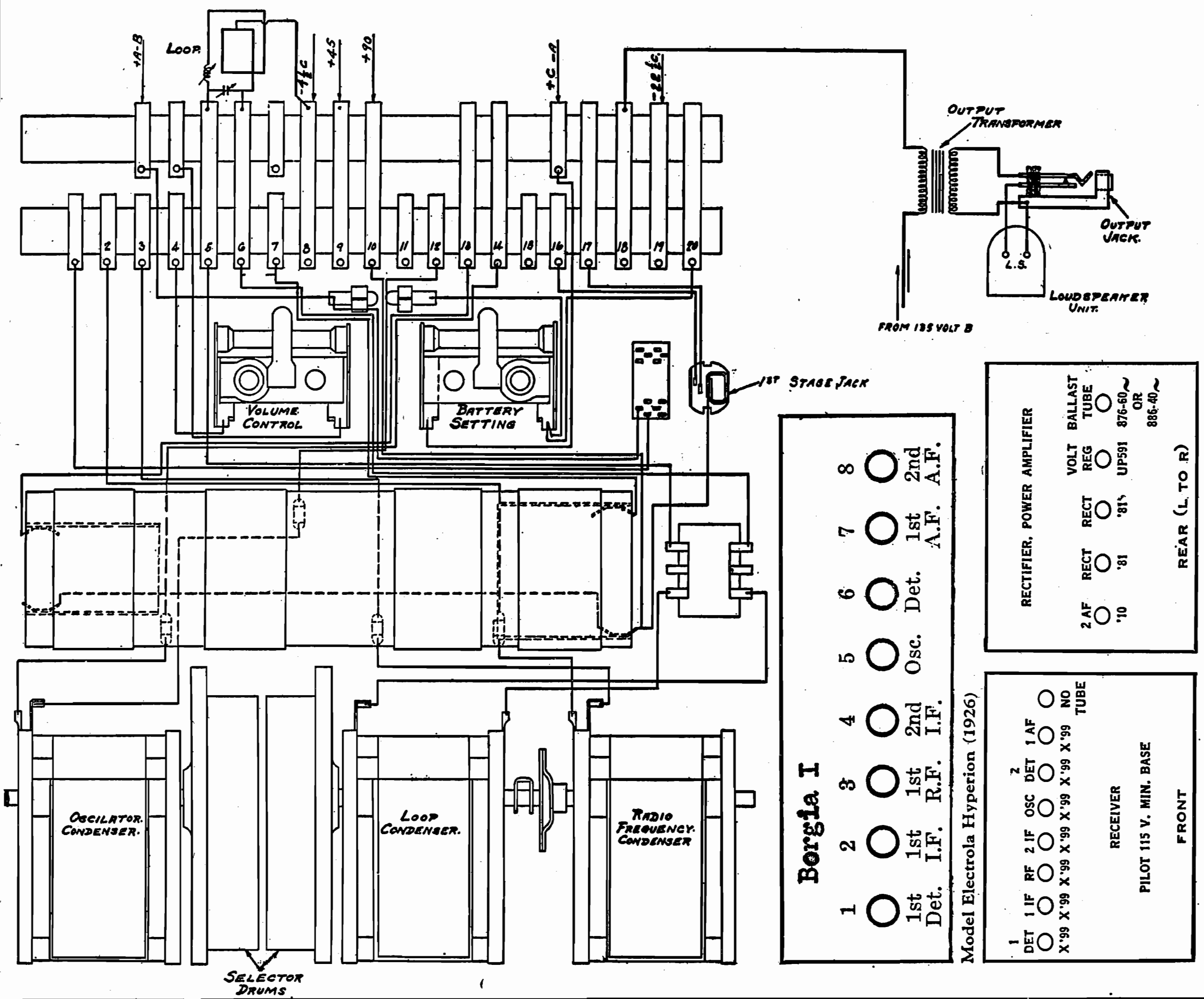


MODEL Victor Borgia I
MODEL Victor Hyperion Electrola

R. C. A. VICTOR CO., INC.

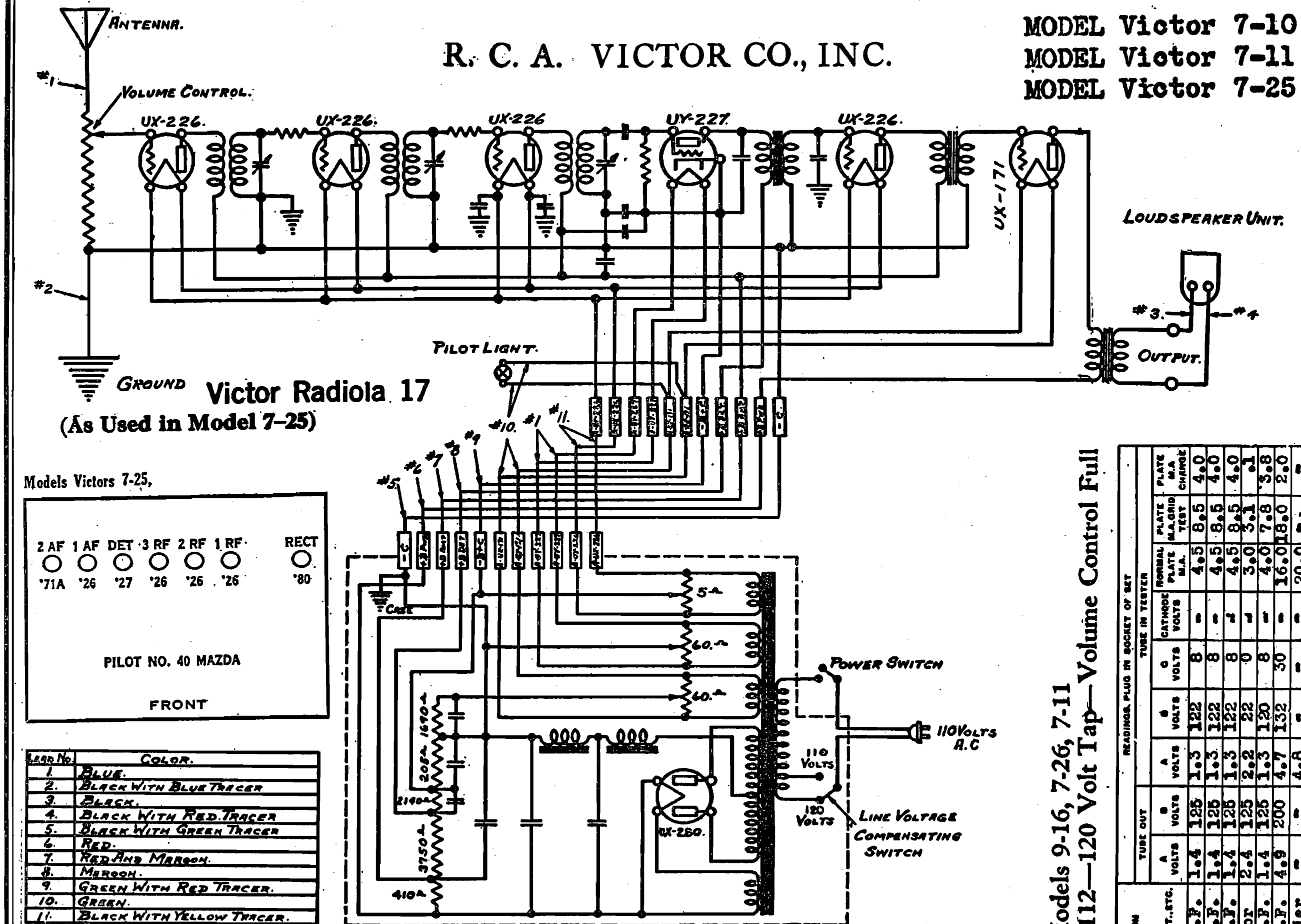


Wiring Diagram for Electrola Hyperion



R. C. A. VICTOR CO., INC.

MODEL Victor 7-10
MODEL Victor 7-11
MODEL Victor 7-25



Victor Radiola 17
(As Used in Model 7-25)

Models Victors 7-25,

2 AF	1 AF	DET	3 RF	2 RF	1 RF	RECT
'71A	'26	'27	'26	'26	'26	'80

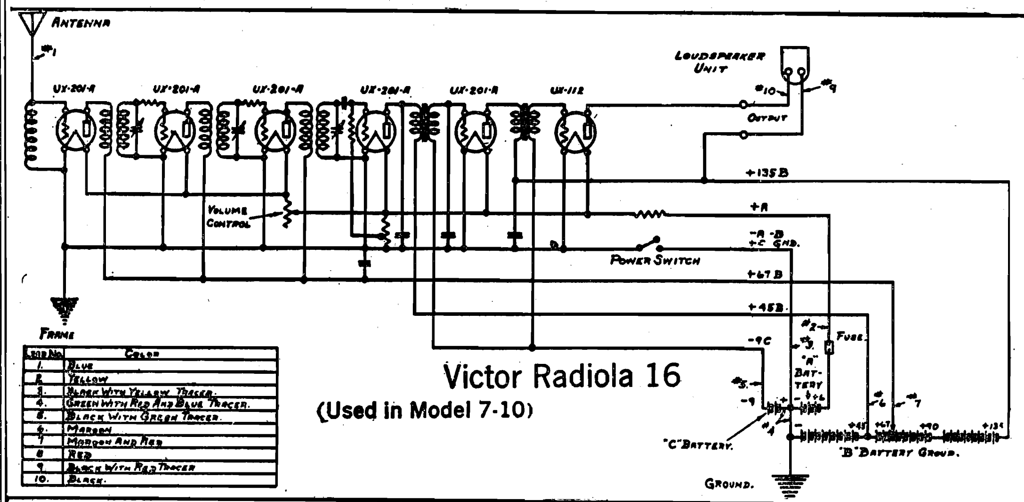
PILOT NO. 40 MAZDA

FRONT

LEAD No.	COLOR.
1.	BLUE.
2.	BLACK WITH BLUE TRACER
3.	BLACK.
4.	BLACK WITH RED TRACER
5.	BLACK WITH GREEN TRACER
6.	RED.
7.	RED AND MAROON.
8.	MAROON.
9.	GREEN WITH RED TRACER.
10.	GREEN.
11.	BLACK WITH YELLOW TRACER.

VICTOR—Models 9-16, 7-26, 7-11
Line Voltage 112—120 Volt Tap—Volume Control Full

TUBE NO. IN ORDER	TYPE OF TUBE	POSITION OF TUBE 1ST. R.F. DET., ETC.	READINGS, PLUG IN SOCKET OF SET								
			TUBE OUT		TUBE IN TESTER						
			A VOLTS	B VOLTS	A VOLTS	B VOLTS	C VOLTS	CATHODE VOLTS	NORMAL PLATE M.A.	PLATE M.A. GRID TEST	PLATE M.A CHANGE
1	226	1st.R.F.	1.4	125	1.3	122	8	-	4.5	8.5	4.0
2	226	2nd.R.F.	1.4	125	1.3	122	8	-	4.5	8.5	4.0
3	226	3rd.R.F.	1.4	125	1.3	122	8	-	4.5	8.5	4.0
4	227	Detector	2.4	125	2.2	22	0	-	3.0	3.1	.1
5	226	1st.A.F.	1.4	125	1.3	120	8	-	4.0	7.8	3.8
6	171A	2nd.A.F.	4.9	200	4.7	132	30	-	16.0	18.0	2.0
7	280	Rectifier	-	-	4.8	-	-	-	20.0	-	-



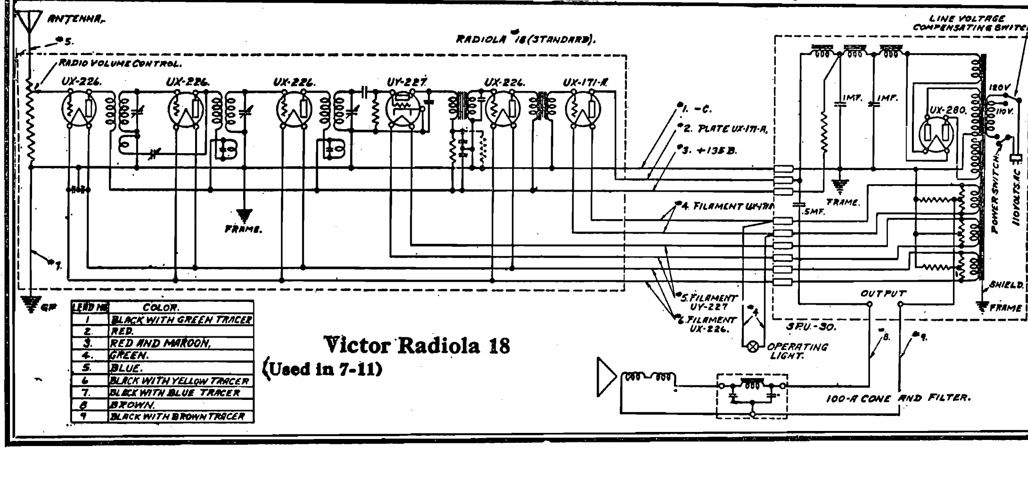
LEAD No.	COLOR
1.	BLUE
2.	YELLOW
3.	BLACK WITH YELLOW TRACER.
4.	GREEN WITH RED AND BLUE TRACER.
5.	BLACK WITH GREEN TRACER.
6.	MAROON
7.	MAROON AND RED
8.	RED
9.	BLACK WITH RED TRACER
10.	BLACK.

Victor Radiola 16
(Used in Model 7-10)

Models Victors R16, 7-10 (1925)

2 AF	1 AF	DET	3 RF	2 RF	1 RF
'12A	'01A	'01A	'01A	'01A	'01A

FRONT



LEAD No.	COLOR.
1	BLACK WITH GREEN TRACER
2.	RED.
3.	RED AND MAROON.
4.	GREEN.
5.	BLUE.
6	BLACK WITH YELLOW TRACER
7.	BLACK WITH BLUE TRACER
8	BROWN.
9	BLACK WITH BROWN TRACER

Victor Radiola 18
(Used in 7-11)

Models Victor 7-11,

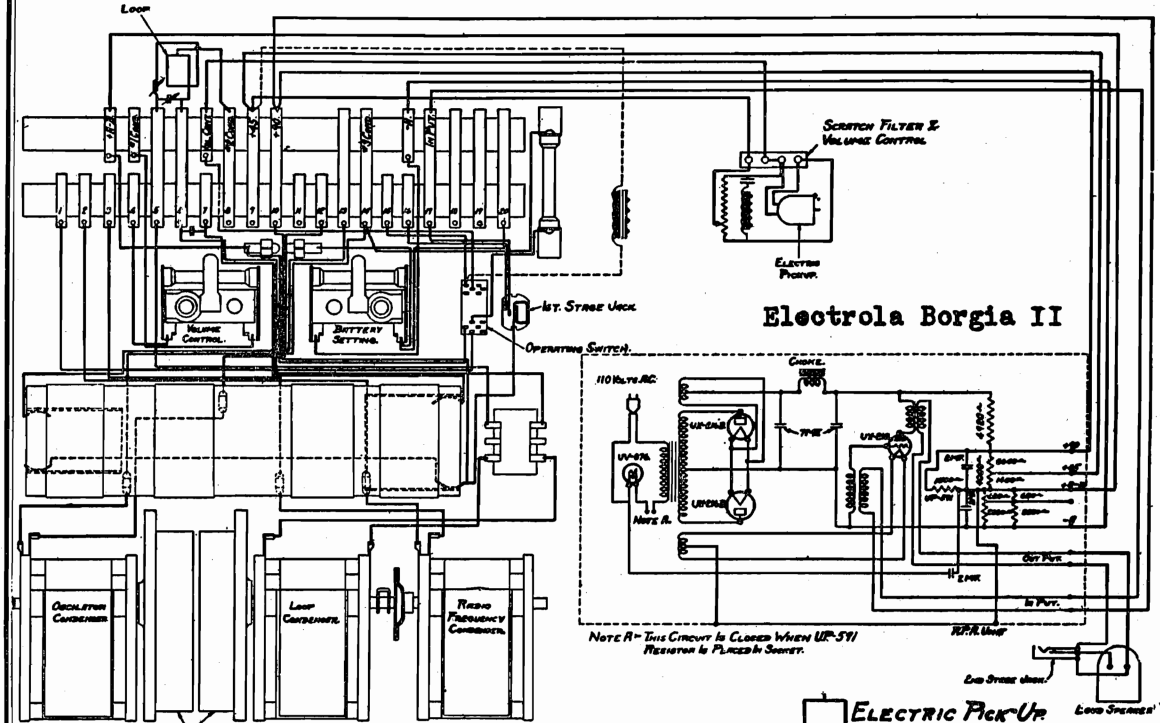
2 AF	1 AF	DET	3 RF	2 RF	1 RF	RECT
'71A	'26	'27	'26	'26	'26	'80

PILOT NO. 40 MAZDA

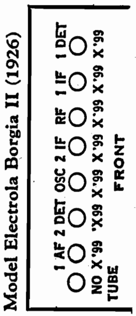
FRONT

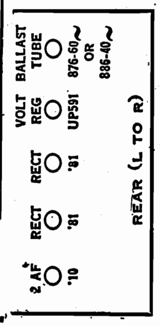
MODEL Victor Borgia II
MODEL Victor Tuscany
MODEL Victor Cromwell

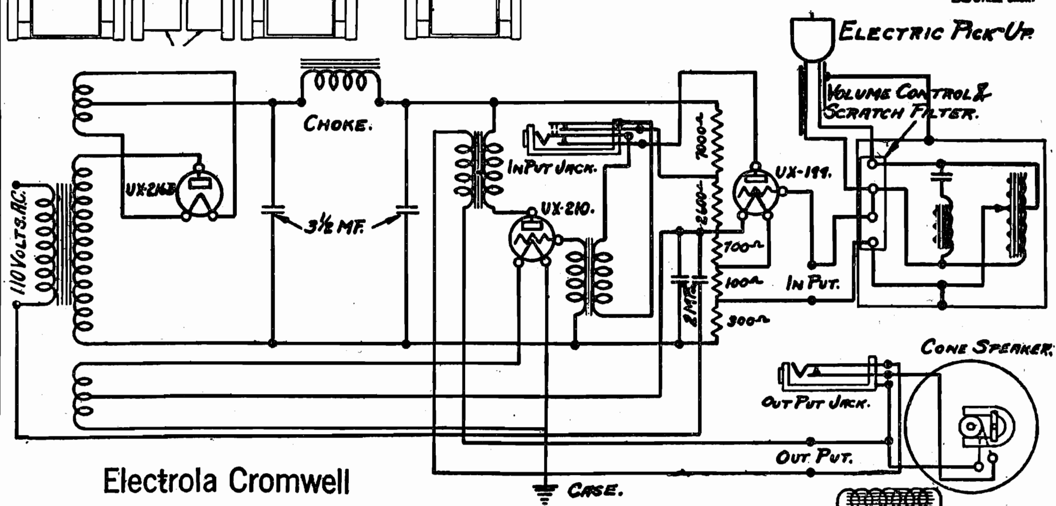
R. C. A. VICTOR CO., INC.



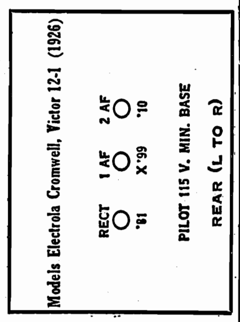
Electrola Borgia II

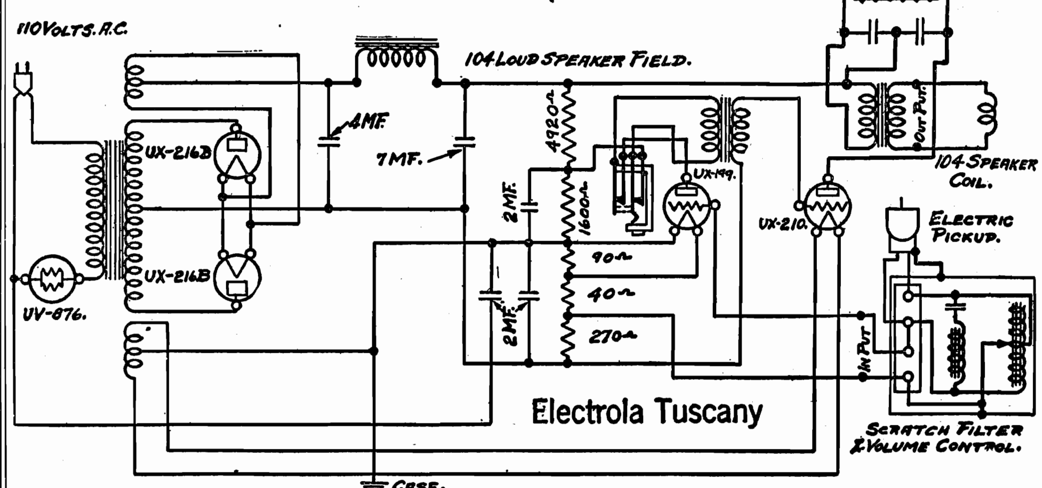




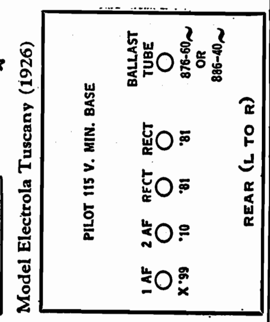


Electrola Cromwell



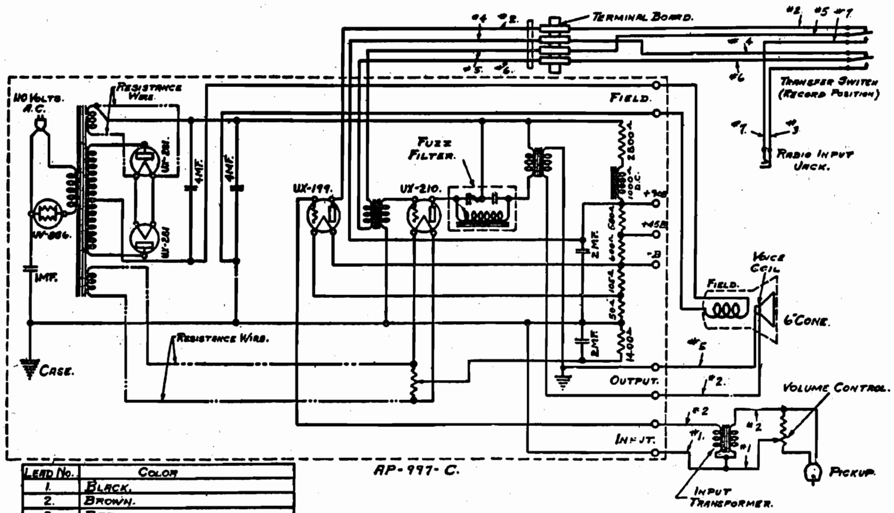


Electrola Tuscany



R. C. A. VICTOR CO., INC.

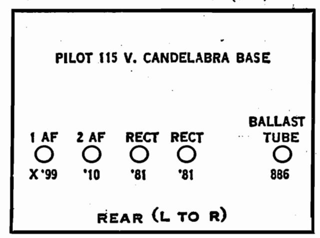
MODEL Victor 12-15
MODEL Victor 12-15-C
MODEL Victor E-35

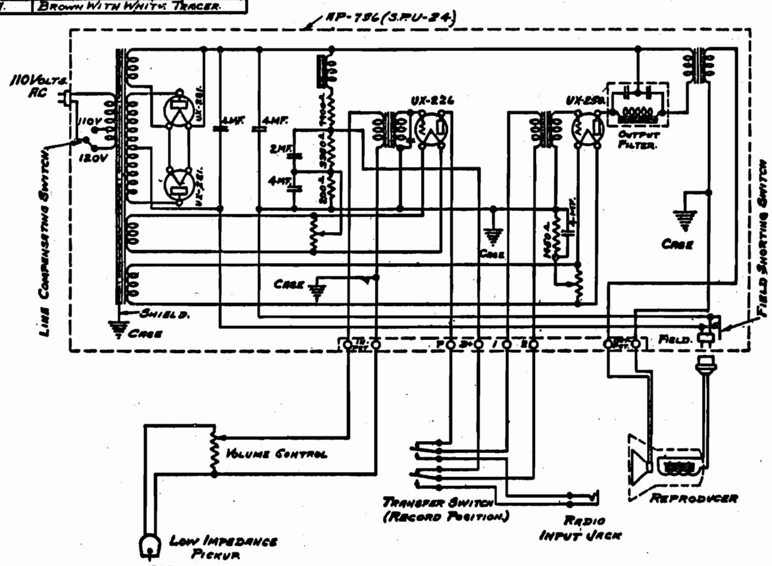


Lead No.	Color
1.	Black.
2.	Brown.
3.	Red.
4.	Red And Maroon.
5.	Black With Brown Tracer.
6.	Black With Red Tracer.
7.	Brown With White Tracer.

Wiring Diagram of 12-15

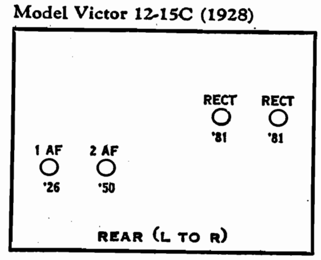
Models Victors 12-15 (1927)

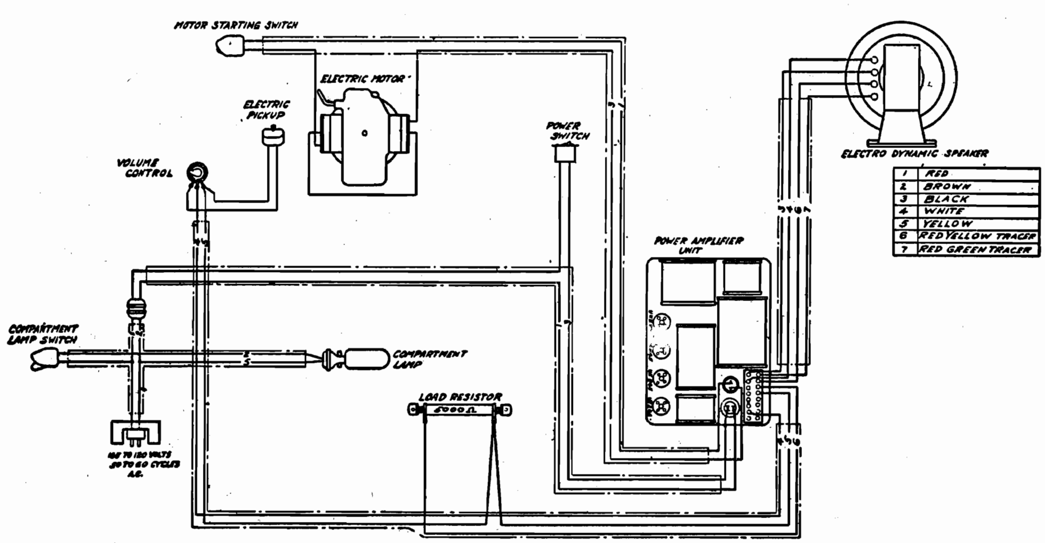




Wiring Diagram 12-15 above serial No. 2600

Model Victor 12-15C (1928)



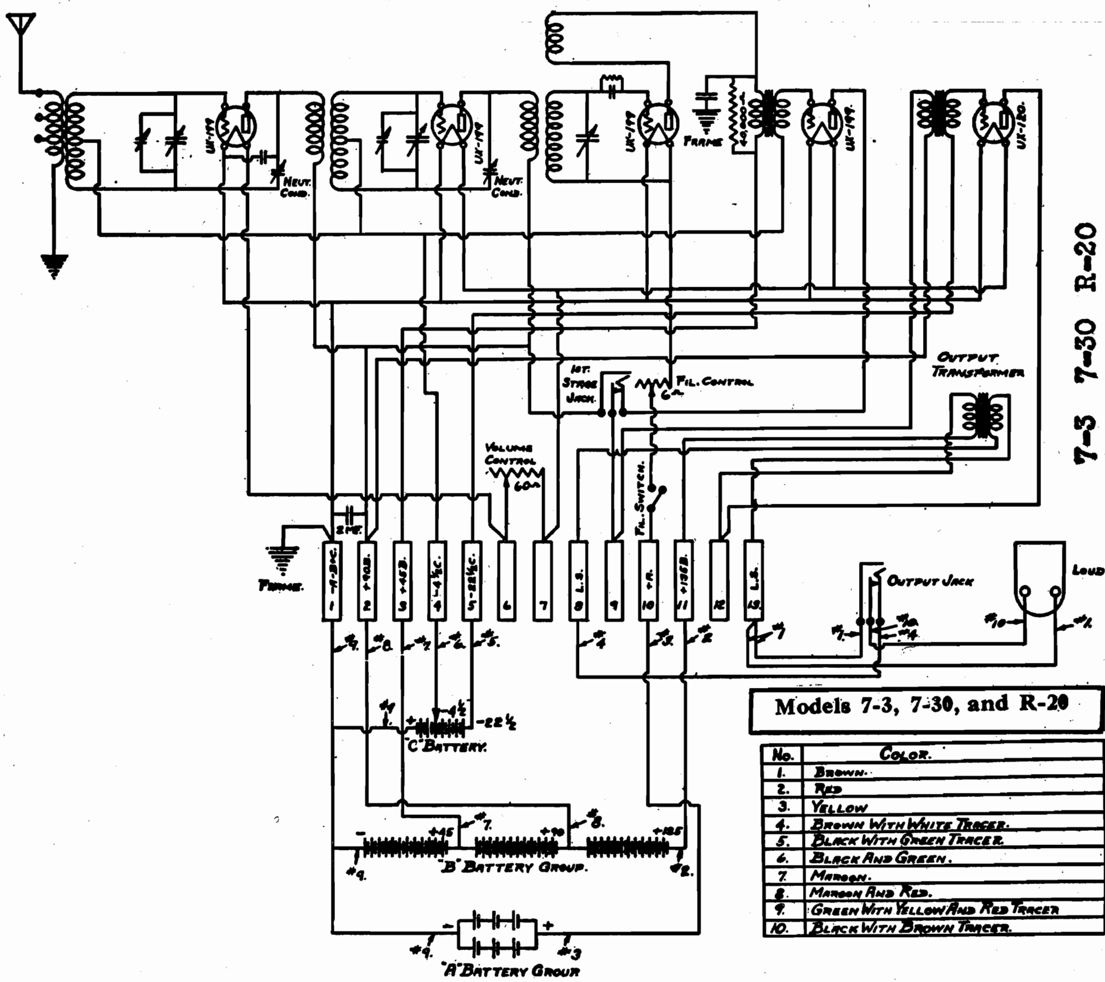


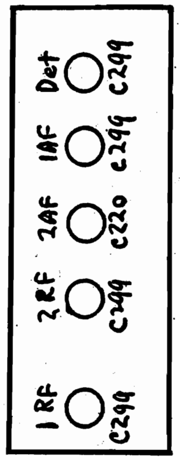
1	RED
2	BROWN
3	BLACK
4	WHITE
5	YELLOW
6	RED YELLOW TRACER
7	RED GREEN TRACER

Cable Wiring Electrola E-35

MODEL Victor 7-3, 7-30, R-20
MODEL Victor 7-26

R. C. A. VICTOR CO., INC.

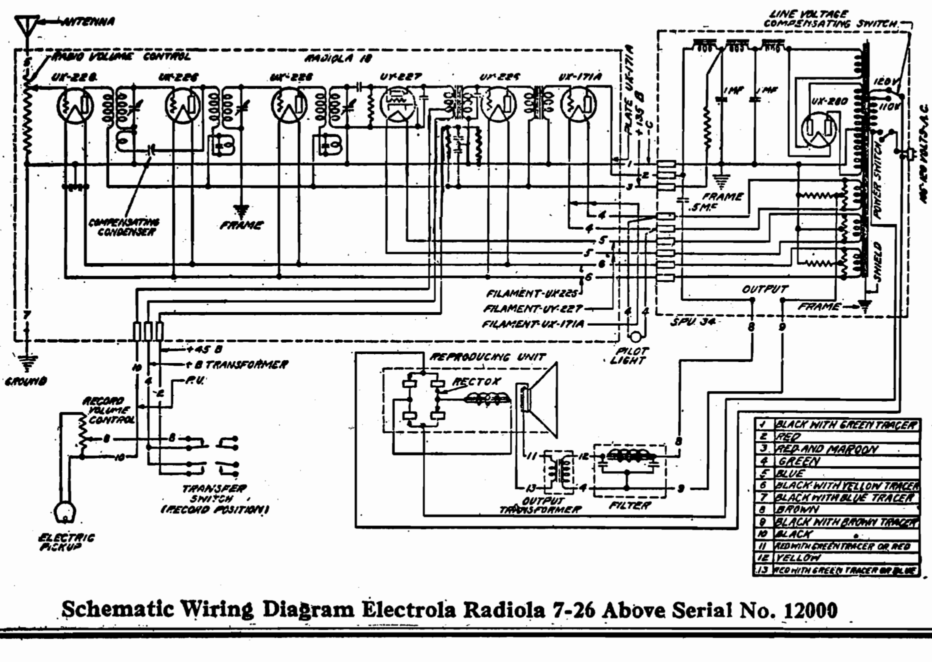




Models 7-3, 7-30, and R-20

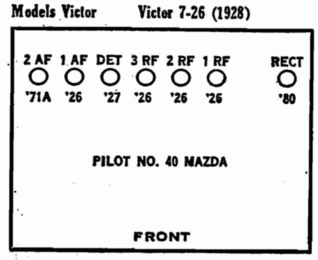
No.	Color.
1.	Brown.
2.	Red
3.	Yellow
4.	Brown With White Tracer.
5.	Black With Green Tracer.
6.	Black And Green.
7.	Maroon.
8.	Maroon And Red.
9.	Green With Yellow And Red Tracer
10.	Black With Brown Tracer.

For 7-26 voltage data, see index.



1	BLACK WITH GREEN TRACER
2	RED
3	RED AND MAROON
4	GREEN
5	BLUE
6	BLACK WITH YELLOW TRACER
7	BLACK WITH BLUE TRACER
8	BROWN
9	BLACK WITH BROWN TRACER
10	BLACK
11	RED WITH GREEN TRACER OR RED
12	YELLOW
13	RED WITH GREEN TRACER OR BLUE

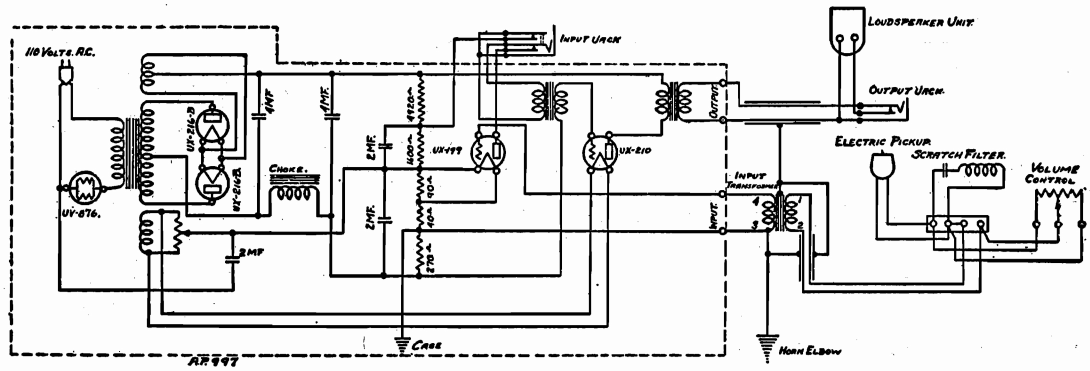
Models Victor Victor 7-26 (1928)



Schematic Wiring Diagram Electrola Radiola 7-26 Above Serial No. 12000

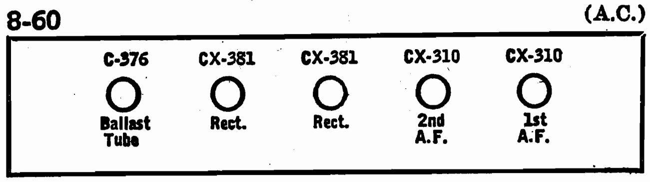
R. C. A. VICTOR CO., INC.

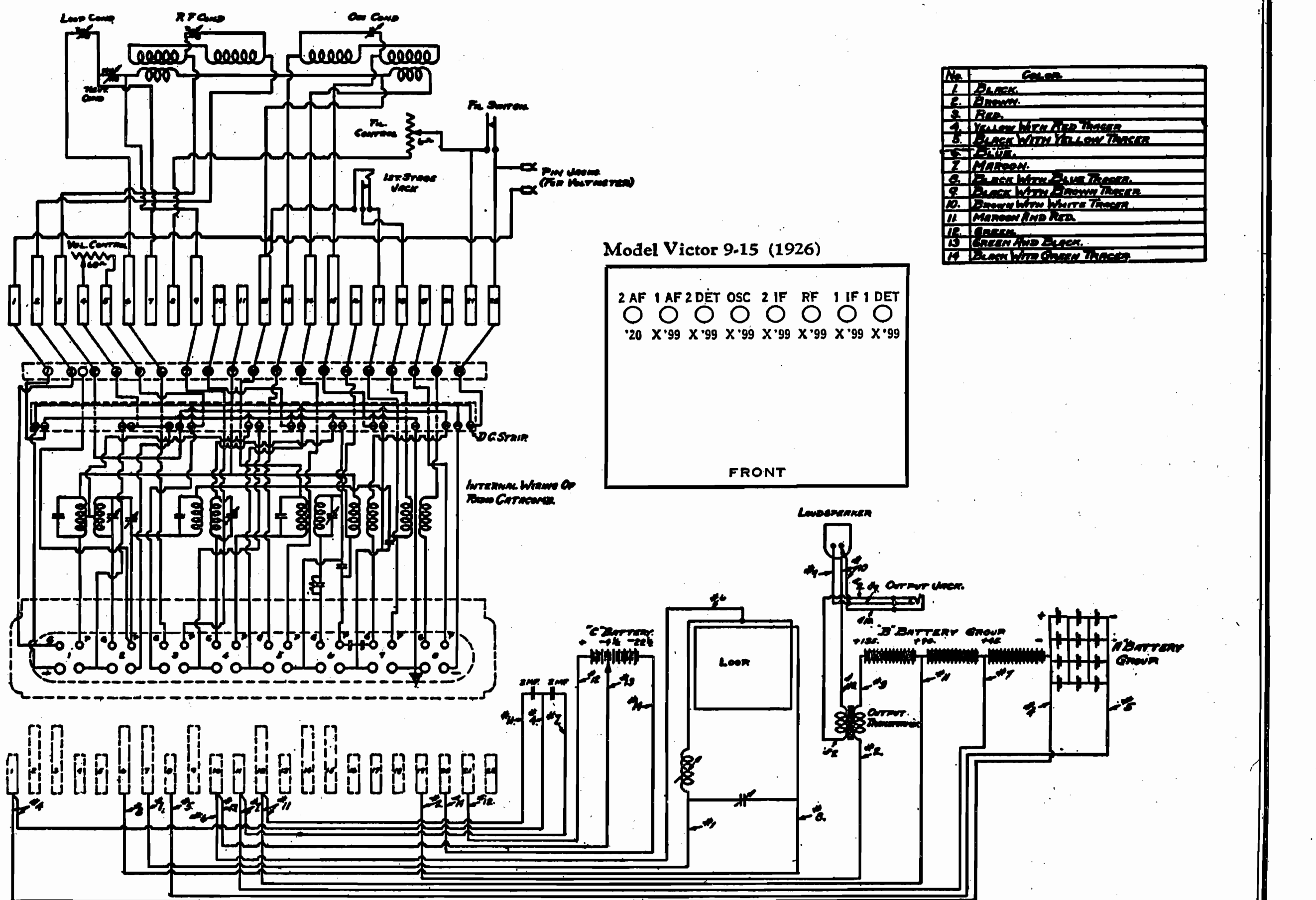
MODEL Victor 8-60
MODEL Victor 9-15



Wiring Diagram for Electrola 8-60

8-60 (A.C.)





No.	Color.
1.	Black.
2.	Brown.
3.	Red.
4.	Yellow With Red Tracer
5.	Black With Yellow Tracer
6.	Blue.
7.	Maroon.
8.	Black With Blue Tracer.
9.	Black With Brown Tracer.
10.	Brown With White Tracer.
11	Maroon And Red.
12.	Green.
13	Green And Black.
14	Black With Green Tracer.

Model Victor 9-15 (1926)

2 AF	1 AF	2 DET	OSC	2 IF	RF	1 IF	1 DET
'20	X'99	X'99	X'99	X'99	X'99	X'99	X'99

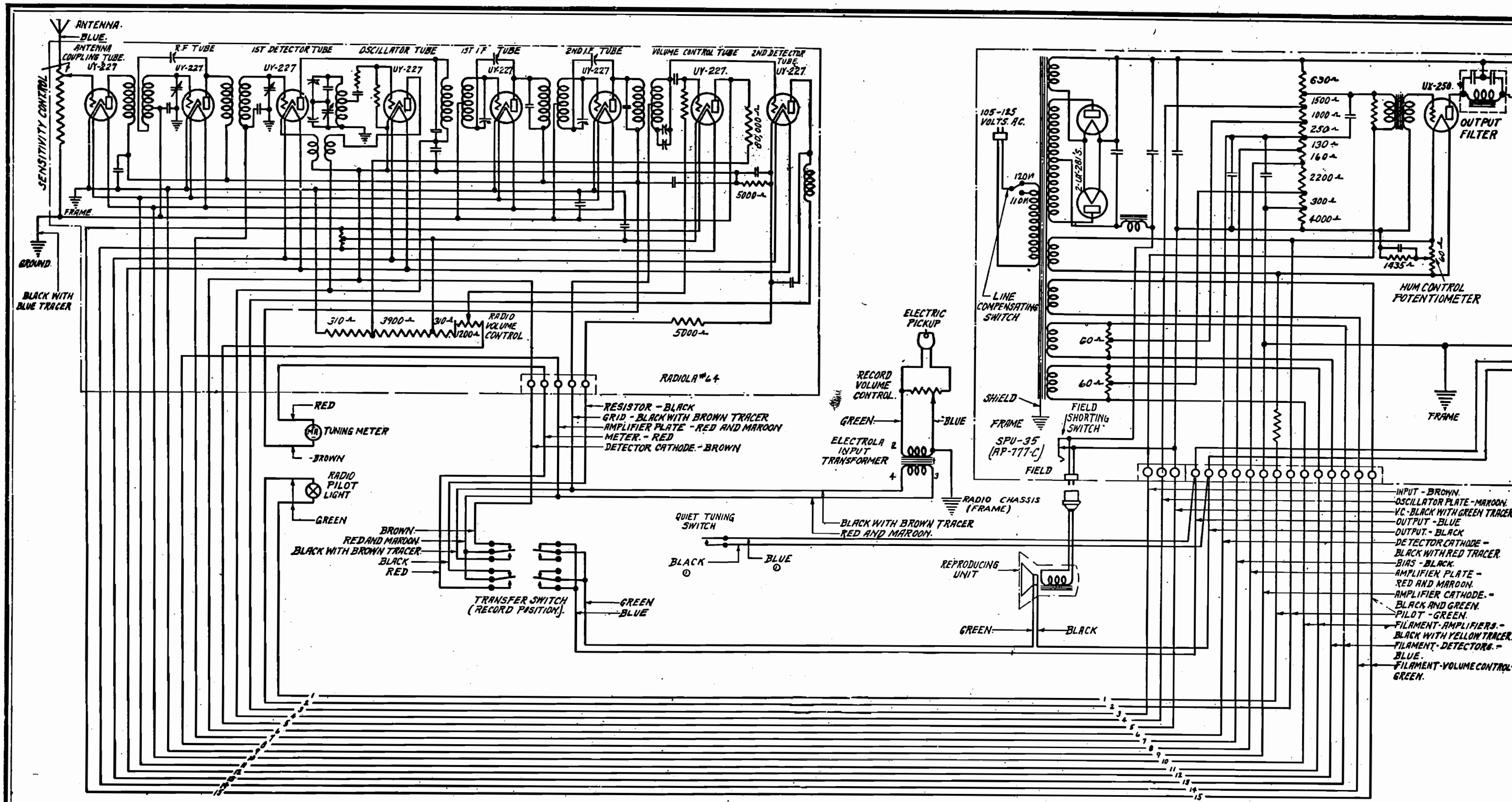
FRONT

Note—Numbered Terminals In Broken Lines Same As Those In Full Lines.

Wiring Diagram for 9-15

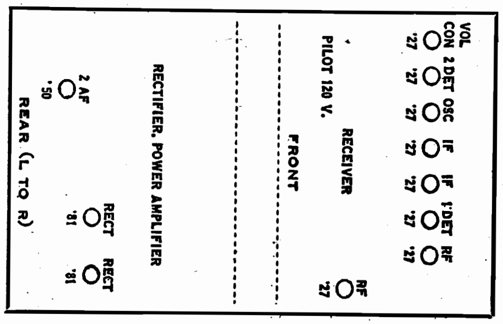
MODEL Victor 9-18

R. C. A. VICTOR CO., INC.



Schematic Wiring Diagram Electrola Radiola Model 9-18

Models Victors 9-18,

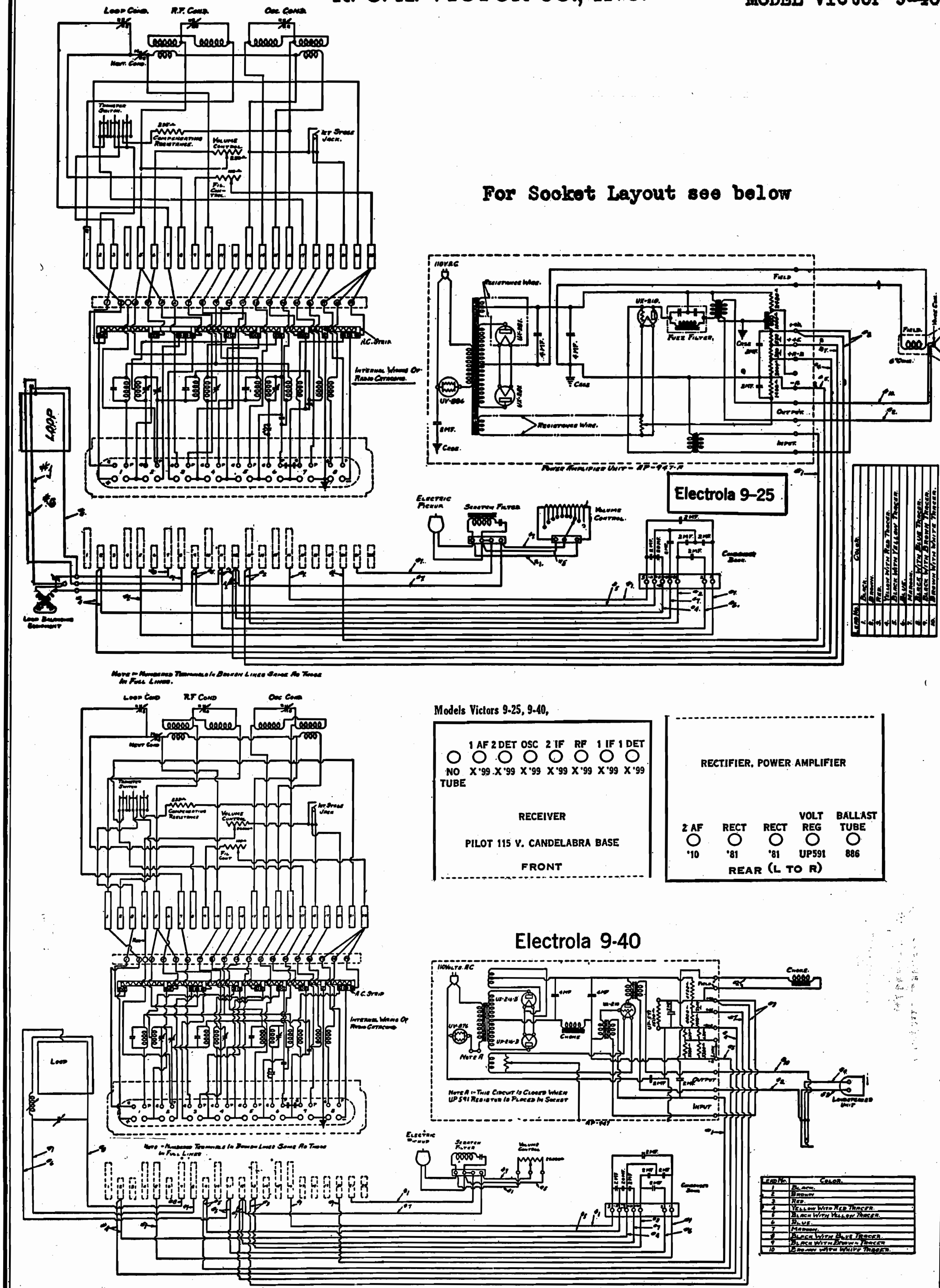


VICTOR—Model 9-18
Line Voltage 116—120 Volt Tap—Volume Control Full

Tube No. in Order	Type of Tube	Position of Tube 1st. R.F., Det., Etc.	Readings, Plug in Socket of Set								
			Tube Out		Tube in Tester						
			A Volts	B Volts	A Volts	B Volts	C Volts	Cathode Volts	Normal Plate M.A.	Plate M.A. Grid Test	Plate M.A Change
1	227	Ant. Coup. St.	2.5	128	2.4	124	25	13.5	3.4	7.8	4.4
2	227	Tuned R.F.	2.5	128	2.4	124	25	16.0	3.3	7.1	3.8
3	227	Tuned 1stDet	2.5	80	2.4	75	25	16.0	.2	2.9	2.7
4	227	1st. I.F.	2.5	128	2.4	124	9	13.5	3.4	7.8	4.5
5	227	2nd. I.F.	2.5	128	2.4	124	9	13.5	3.4	7.8	4.5
6	227	Oscillator	2.5	80	2.4	75	25	13.5	7.0	7.6	.6
7	227	2nd. Det.	2.5	180	2.4	176	25	13.5	-	-	-
8	227	Volume Cont.	2.5	80	2.4	75	4	-	-	-	-
9	250	Power	7.5	584	7.2	392	65	-	52	55	3.0
10	281	Rectifier			7.4				50		
11	281	Rectifier			7.4				50		

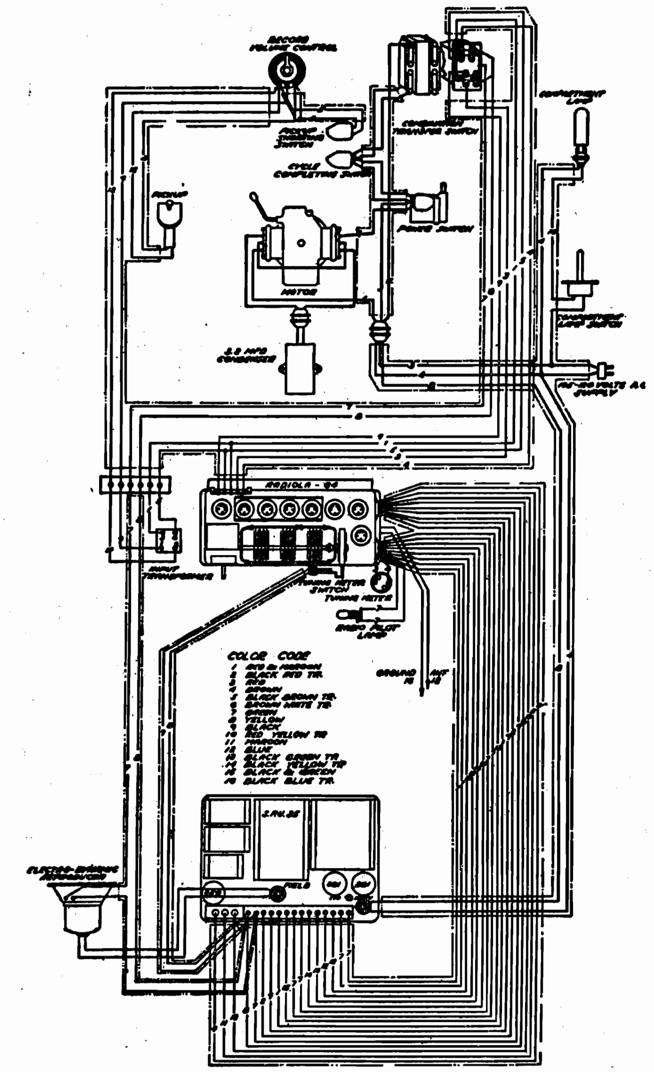
R. C. A. VICTOR CO., INC.

MODEL Victor 9-25
MODEL Victor 9-40

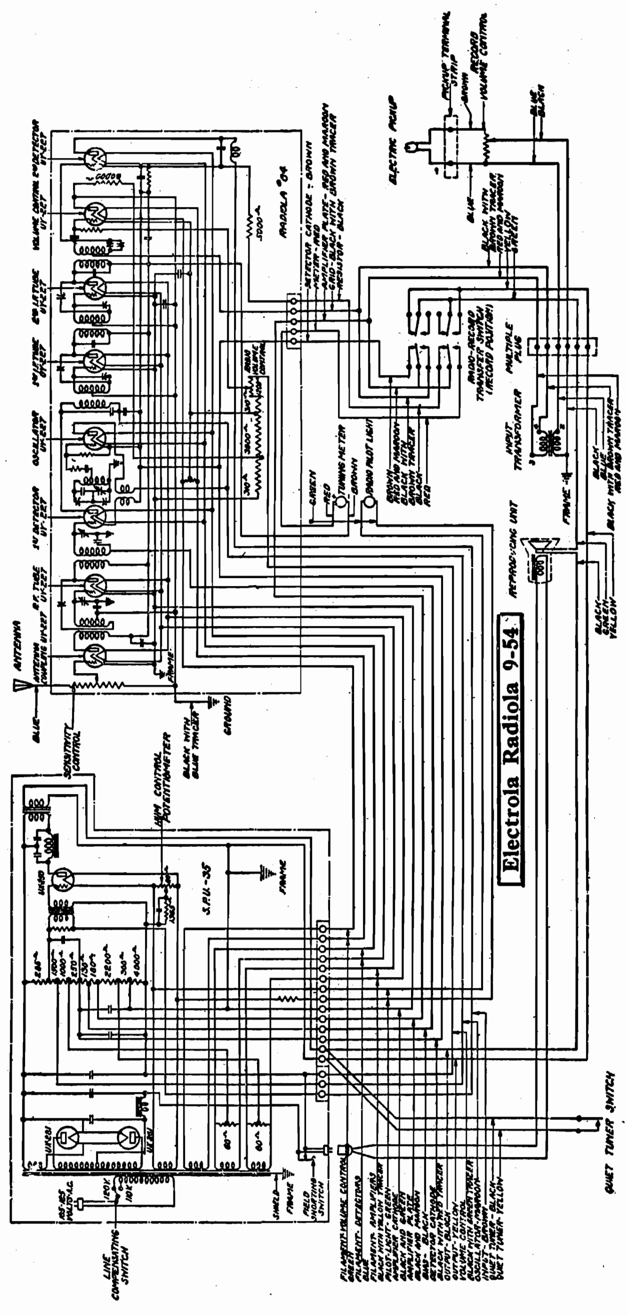


MODEL Victor 9-54

R. C. A. VICTOR CO., INC.

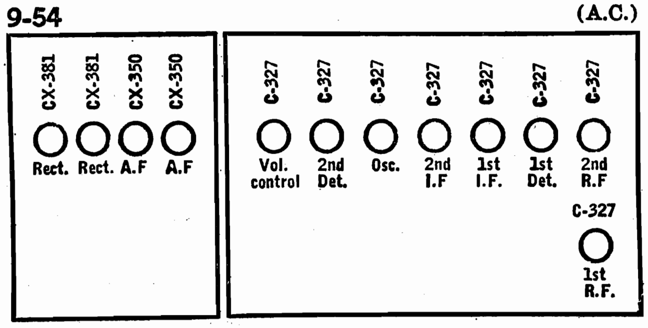


Cable Wiring Diagram Automatic Electrola Radiola 9-54 above Serial No. 6401



This receiver employs the Radiola 64 chassis. For special information relating to the receiver and power pack chassis, see Radiola 64.

9-54 (A.C.)



VICTOR—Model 9-54
Line Voltage 116—120 Volt Tap—Volume Control Full

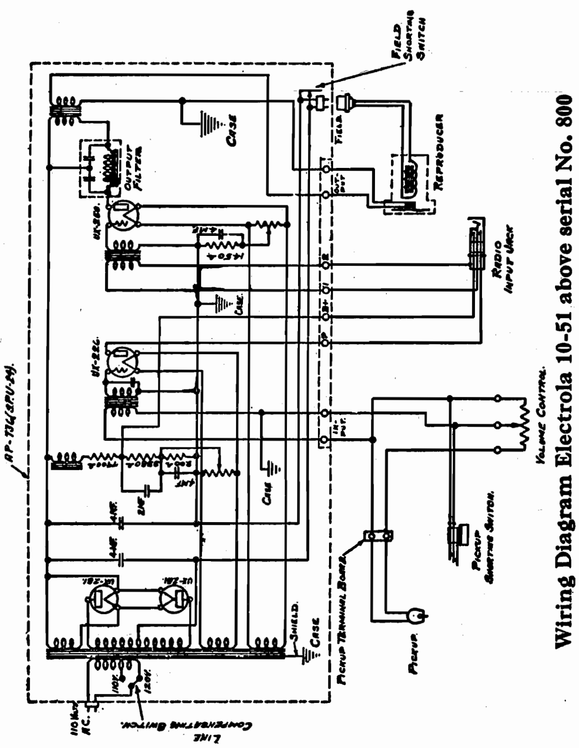
TUBE NO. IN ORDER	TYPE OF TUBE	POSITION OF TUBE 1ST. R.F. DET. ETC.	READINGS, PLUG IN SOCKET OF SET: TUBE OUT		TUBE IN TESTER						
			A VOLTS	B VOLTS	A VOLTS	B VOLTS	C VOLTS	CATHODE VOLTS	NORMAL PLATE M.A.	PLATE M.A. GRID TEST	PLATE M.A CHANGE
1	227	Ant.Coup.St.	2.5	128	2.4	124	25	13.5	3.4	7.8	4.4
2	227	Tuned R.F.	2.5	128	2.4	124	25	16.0	3.3	7.1	3.8
3	227	Tuned 1stDet.	2.5	80	2.4	75	25	16.0	.2	2.9	2.7
4	227	1st. I.F.	2.5	128	2.4	124	9	13.5	3.4	7.8	4.5
5	227	2nd. I.F.	2.5	128	2.4	124	9	13.5	3.4	7.8	4.5
6	227	Oscillator	2.5	80	2.4	75	25	13.5	7.0	7.6	.6
7	227	2nd. Det.	2.5	180	2.4	176	25	13.5	-	-	-
8	227	Volume Cont.	2.5	80	2.4	75	4	-	-	-	-
9	250	Power	7.5	584	7.2	392	65	-	52	55	3.0
10	281	Rectifier			7.4				50		
11	281	Rectifier			7.4				50		

R. C. A. VICTOR CO., INC.

MODEL Victor 10-51A
MODEL Victor 9-55

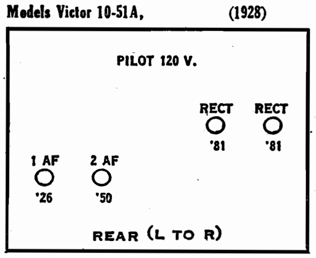
Electrola 9-55 Receiver

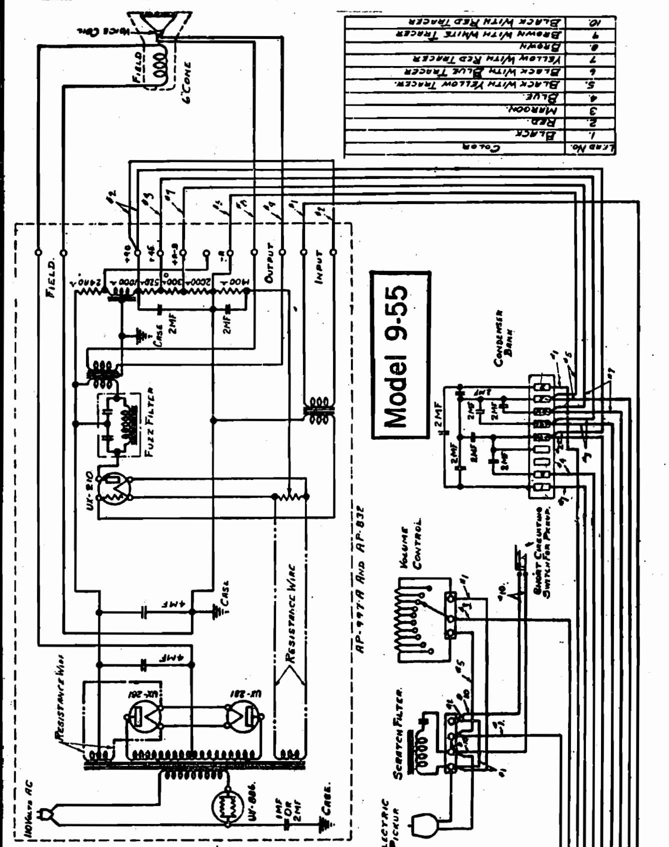
CX-299	CX-299	CX-299	CX-299	CX-299	CX-299	CX-299	
1st Det.	1st I.F.	1st R.F.	2nd I.F.	Osc.	2nd Det.	1st A.F.	

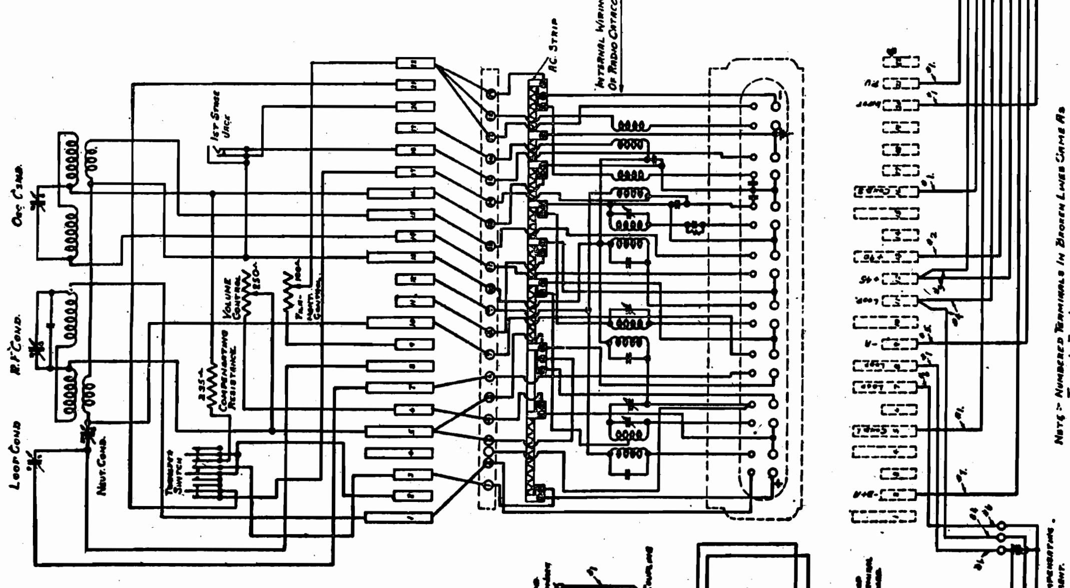


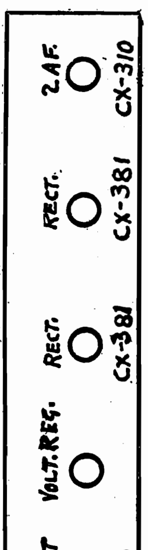
Wiring Diagram Electrola 10-51 above serial No. 800

Models Victor 10-51A, (1928)





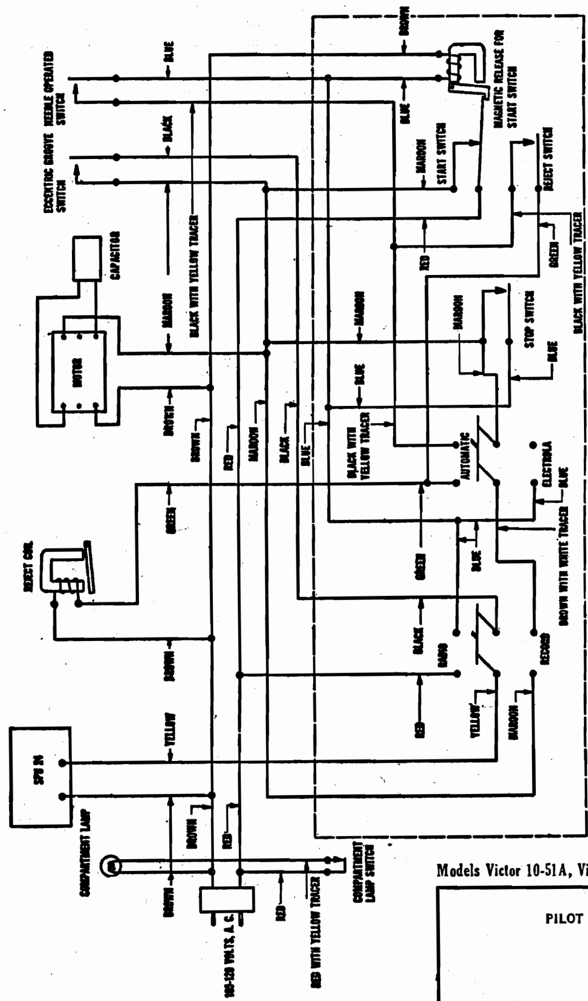




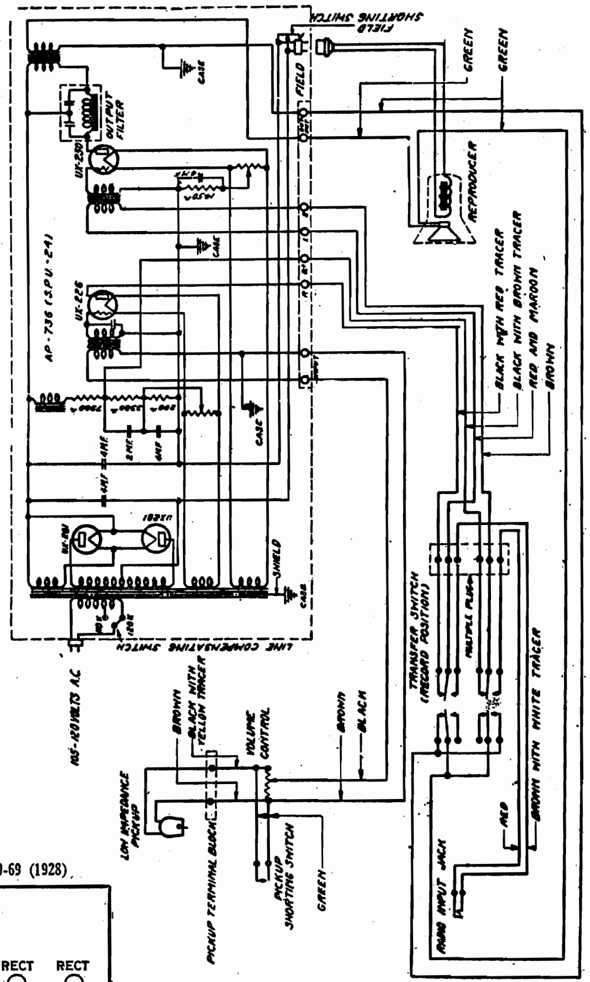
Electrola 9-55 Power Unit

MODEL Victor 10-69

R. C. A. VICTOR CO., INC.

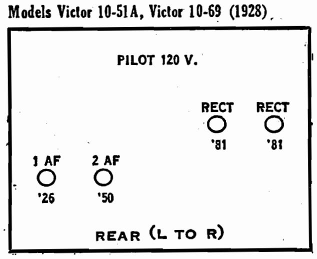


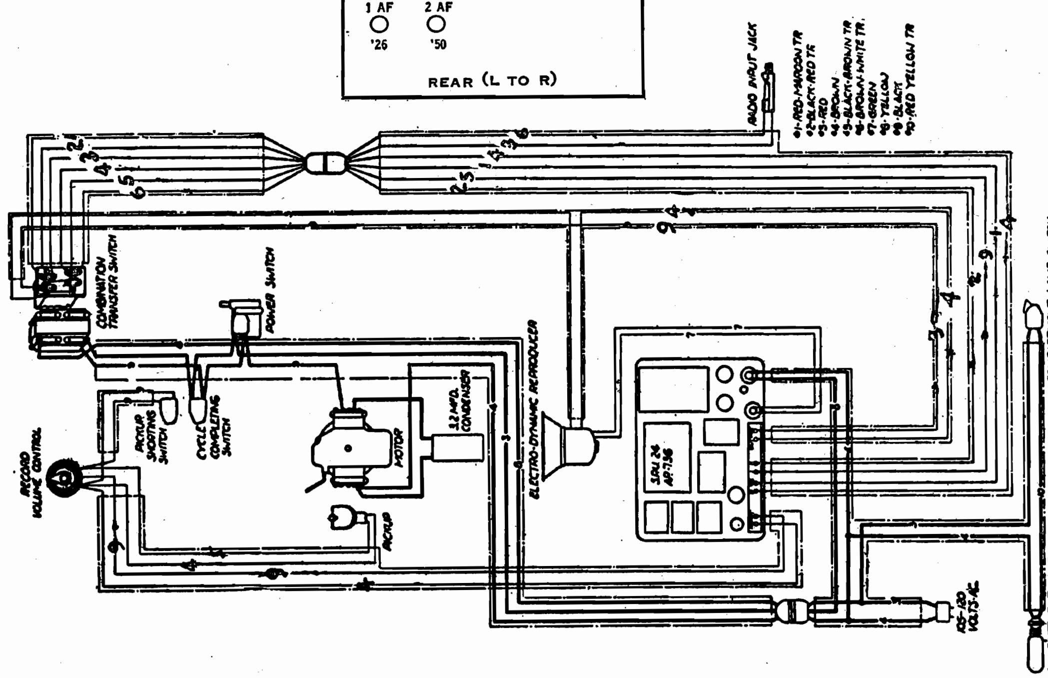
A. C. Power Wiring Diagram Automatic Electrola No. 10-69



Schematic Wiring Diagram Automatic Electrola No. 10-69

Models Victor 10-51A, Victor 10-69 (1928)



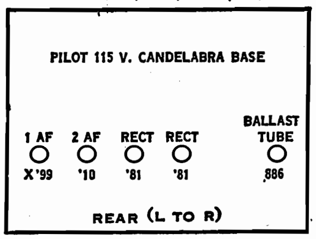


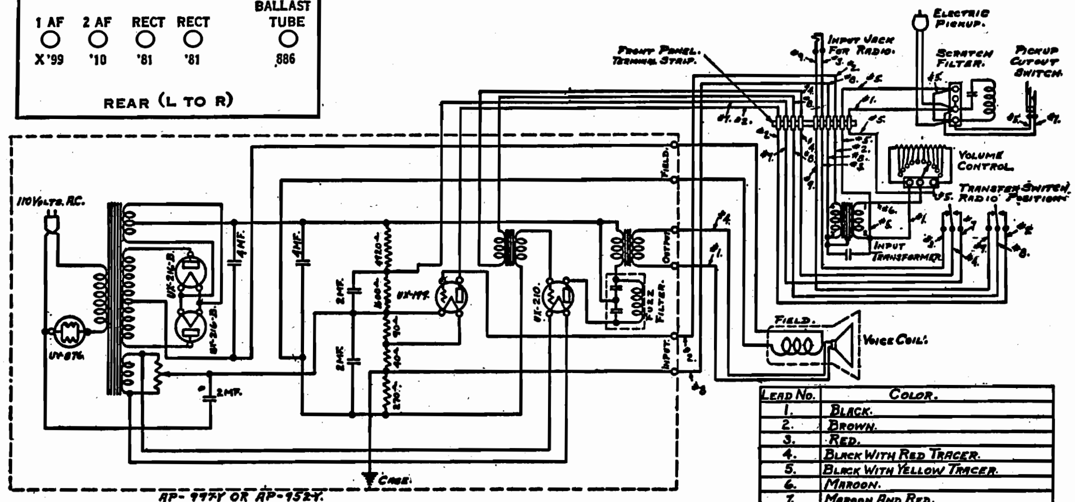
Cable Wiring Diagram Automatic Electrola 10-69, above Serial No. 5001

R. C. A. VICTOR CO., INC.

MODEL Victor 10-70
MODEL Victor 10-70-A
MODEL Victor 12-25

Models Victors 10-51, 10-70, 12-15 (1927)

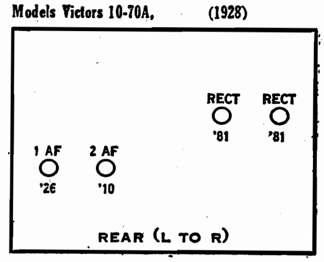


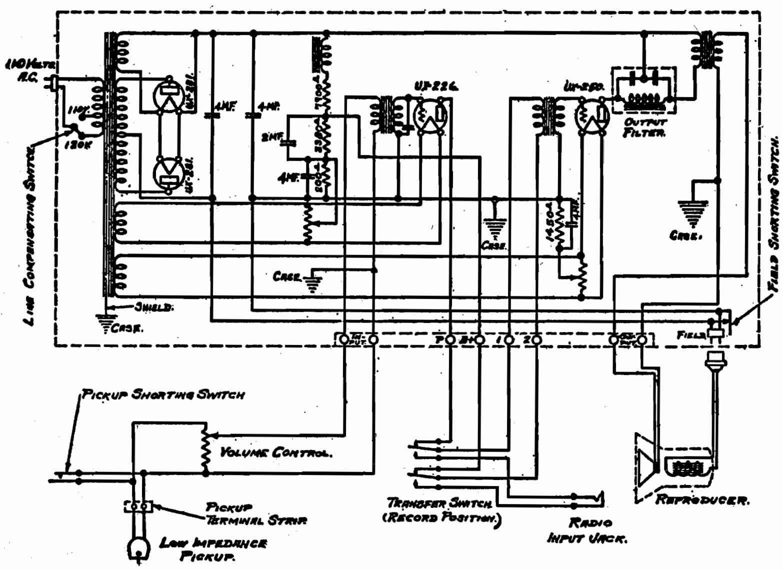


Lead No.	Color
1.	Black.
2.	Brown.
3.	Red.
4.	Black With Red Tracer.
5.	Black With Yellow Tracer.
6.	Maroon.
7.	Maroon And Red.
8.	Black With Brown Tracer.
9.	Brown With White Tracer.

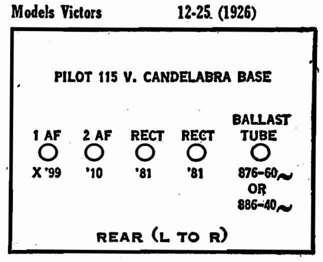
Wiring Diagram—Electrola 10-70

Models Victors 10-70A, (1928)

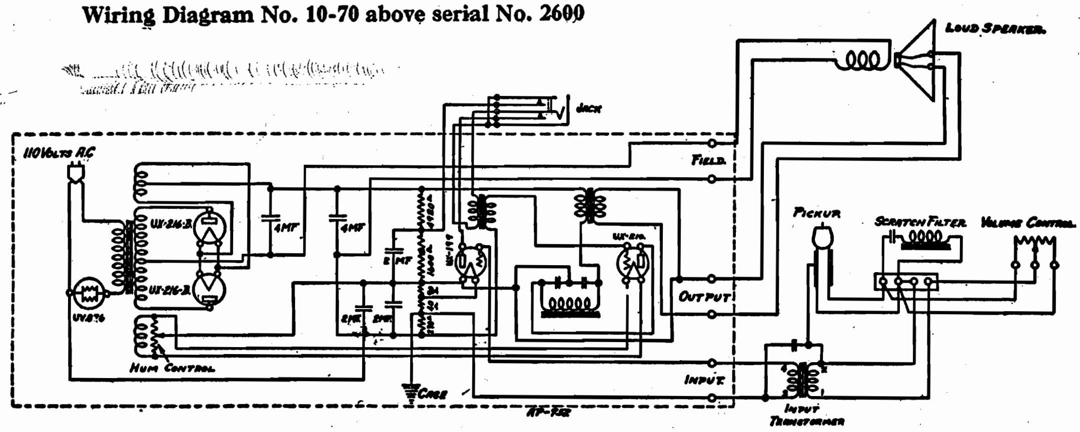




Models Victors 12-25 (1926)



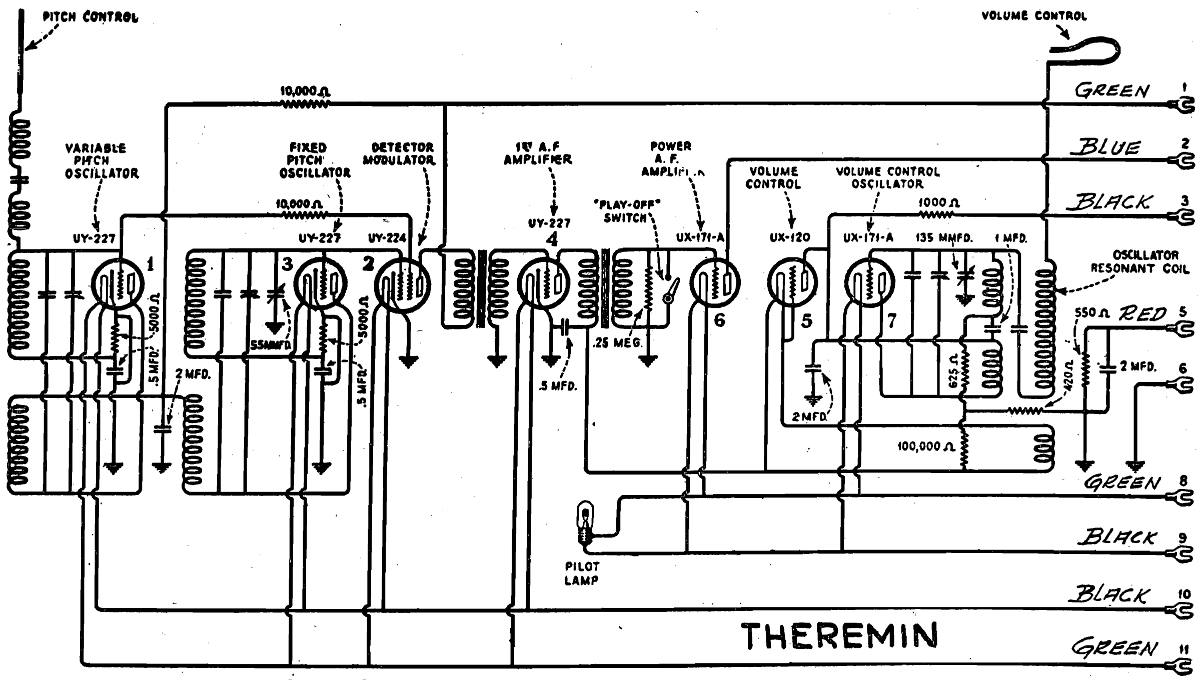
Wiring Diagram No. 10-70 above serial No. 2600

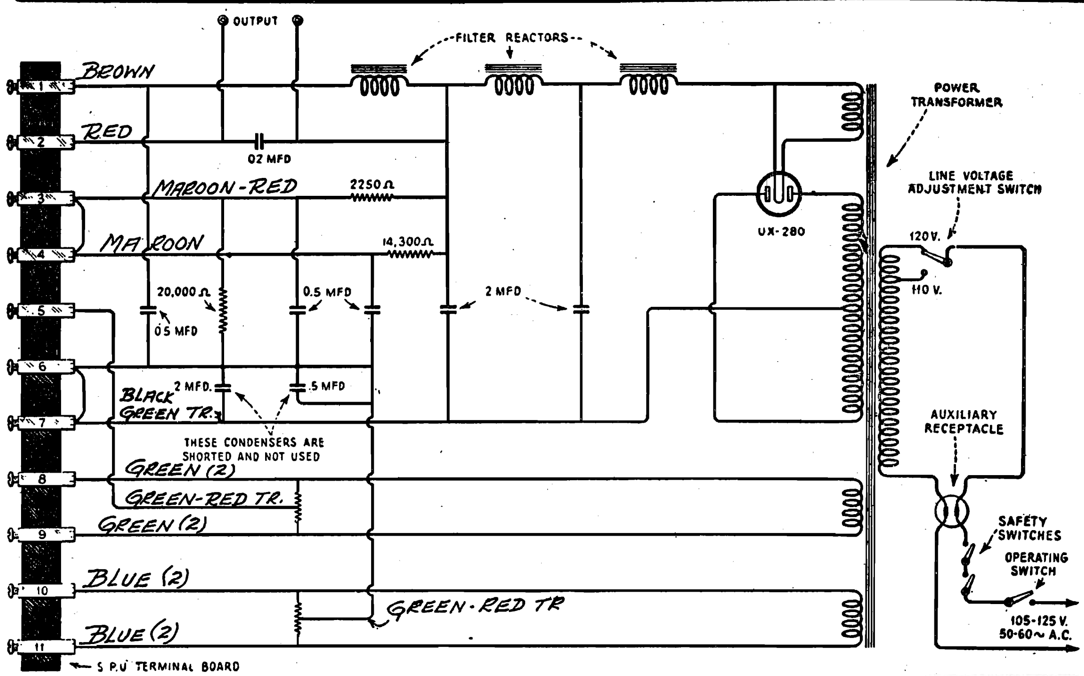


Electrola 12-25

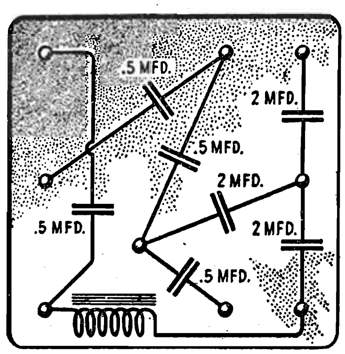
MODEL Theremin

R. C. A. VICTOR CO., INC.





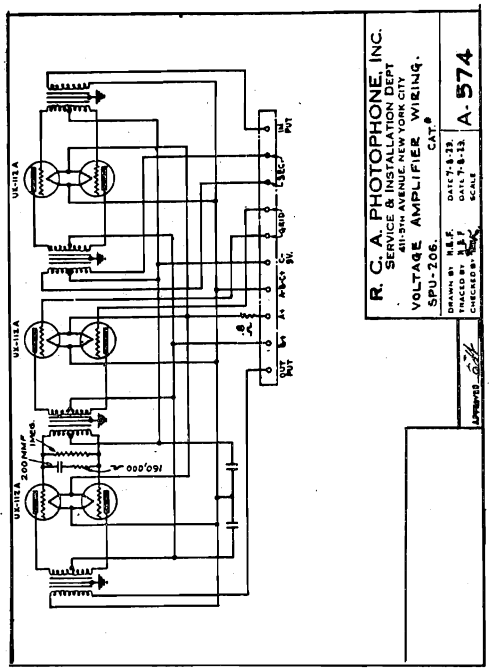
Terminals Nos.	Cable on Tubes Lighted Volts	Cable Off Volts
1 to 6 (D.C.)	190	260
2 to 6	190	260
3 to 6	140	230
5 to 6	29.0	0
8 to 9 (A.C.) rms	2.5	2.8
10 to 11 (A.C.) rms	4.7	5.0

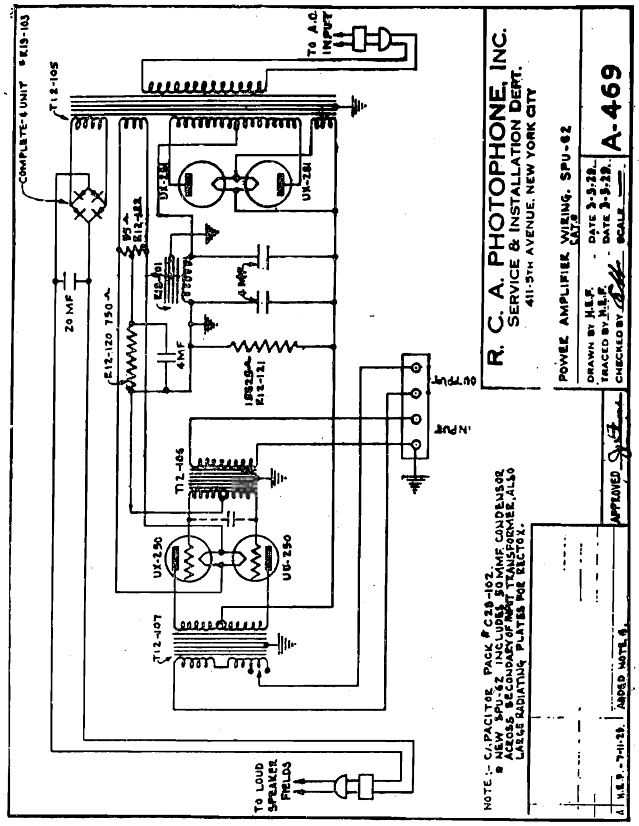


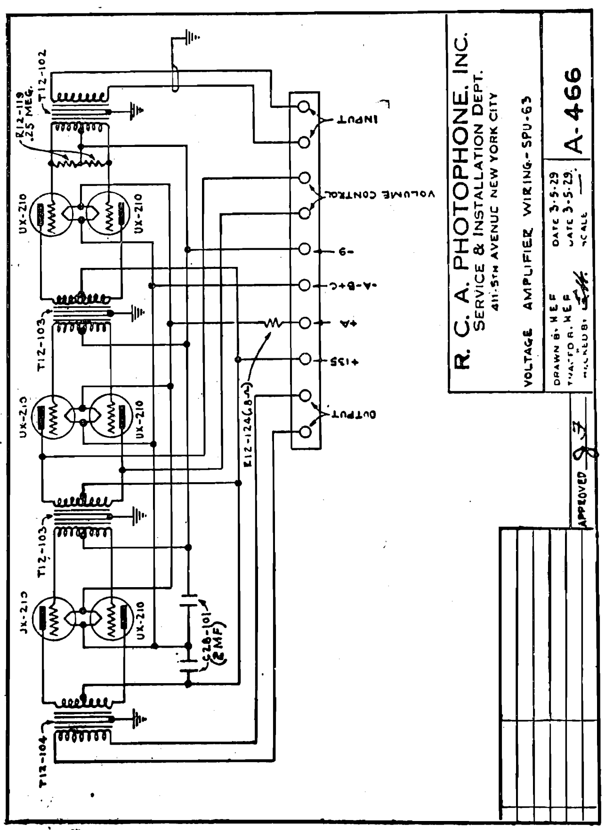
—Internal connections of filter and by-pass condensers, and filter reactor

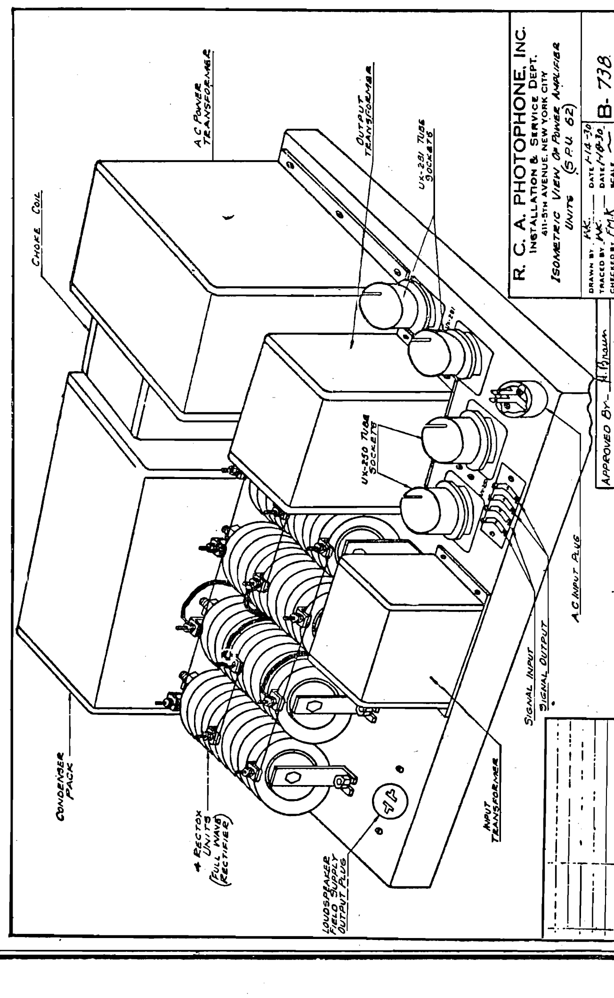
MODEL Photophone SPU 62
Schematic- Chassis
MODEL Photophone SPU 63
MODEL Photophone SPU 206

R. C. A. VICTOR CO., INC.



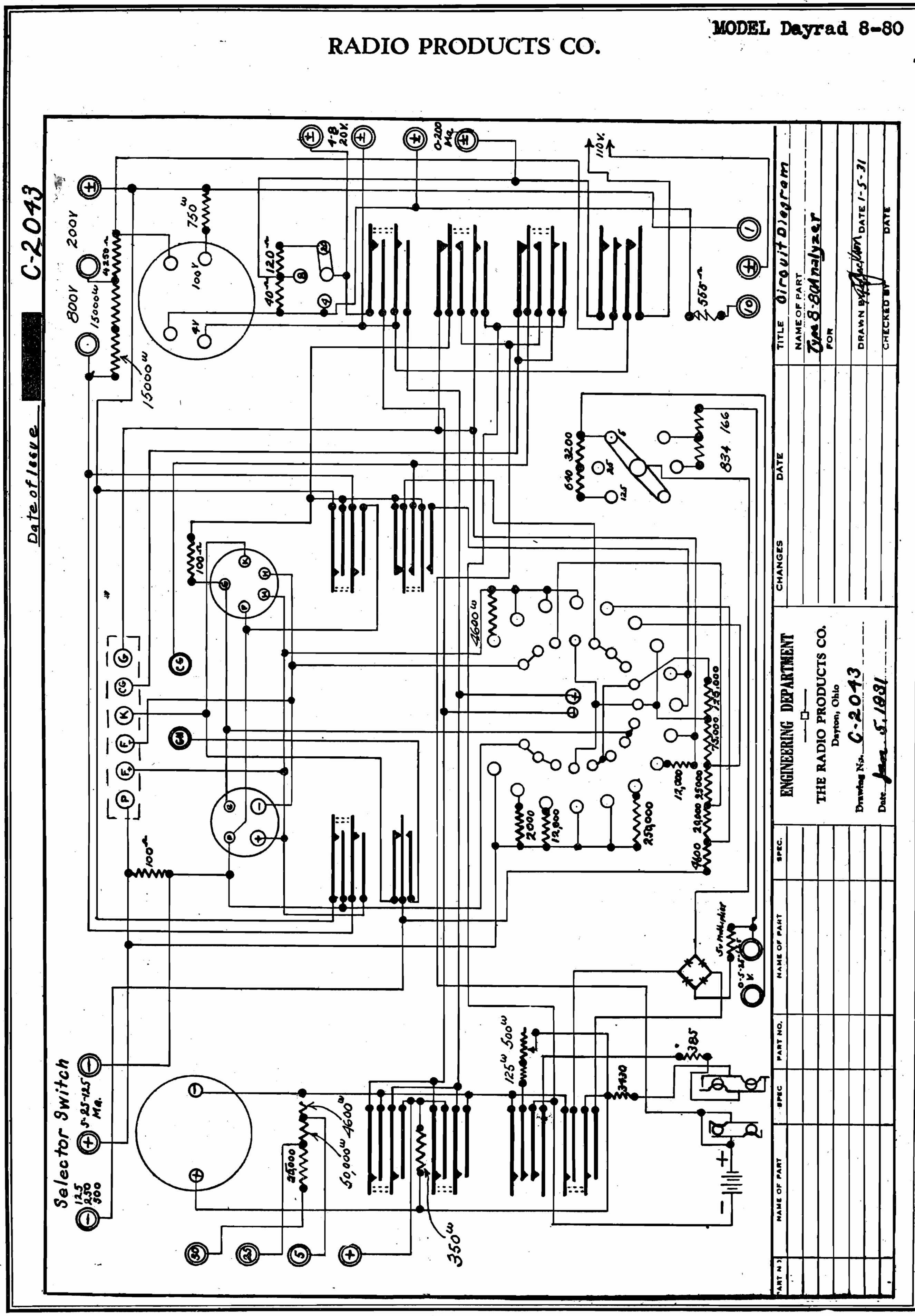






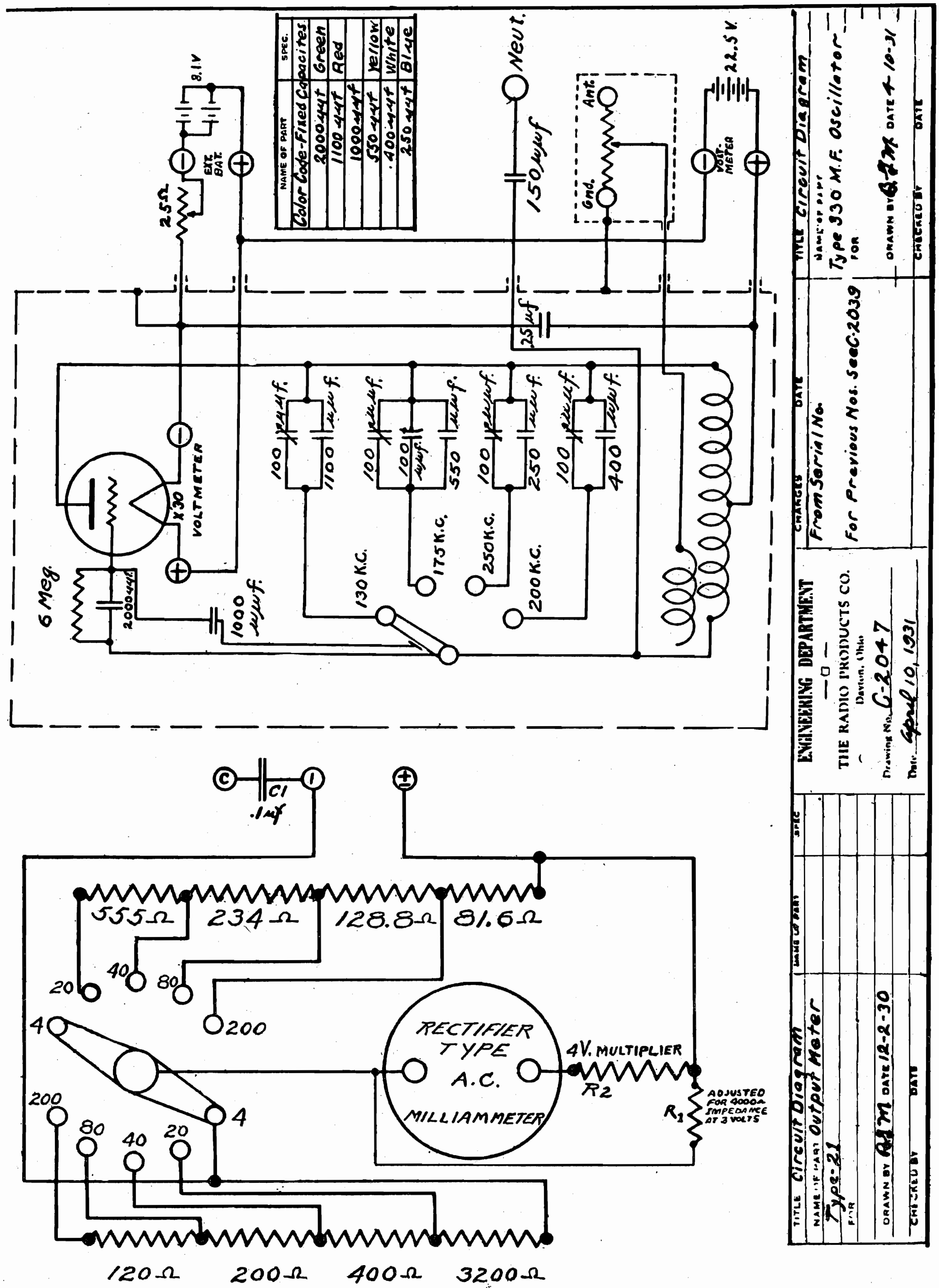
MODEL Dayrad 8-80

RADIO PRODUCTS CO.



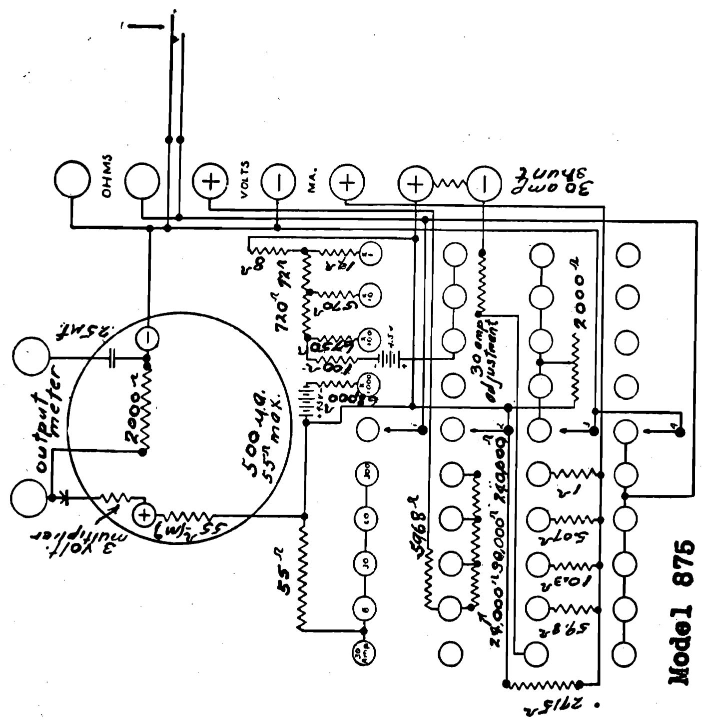
MODEL Dayrad 21
Output Meter
MODEL 330 mmf
Oscillator

RADIO PRODUCTS CO.

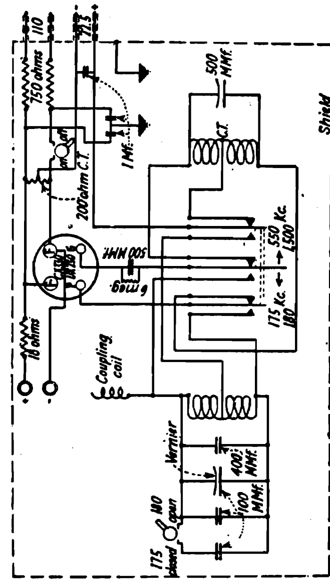


RADIO PRODUCTS CO.

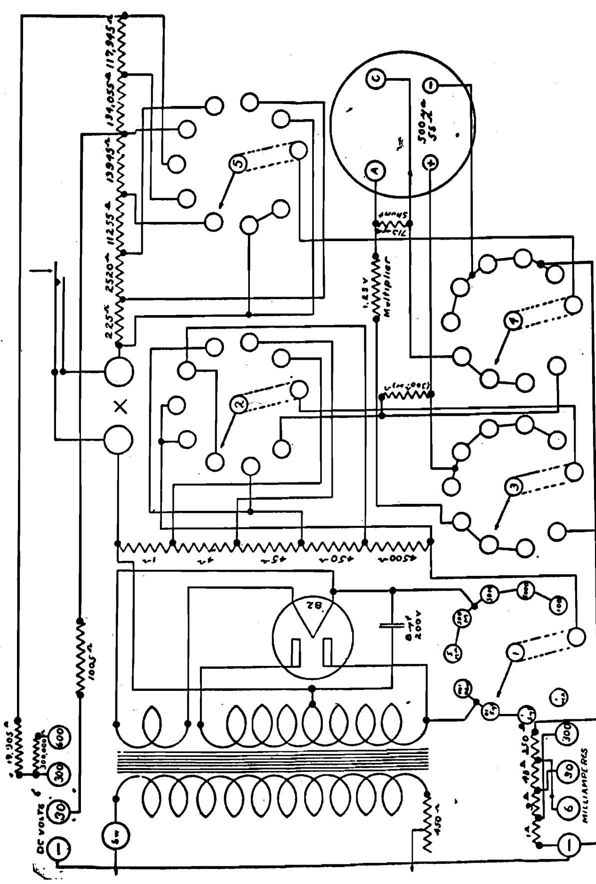
MODEL Dayrad 180
MODEL Dayrad HR
MODEL Dayrad 870
MODEL Dayrad 875



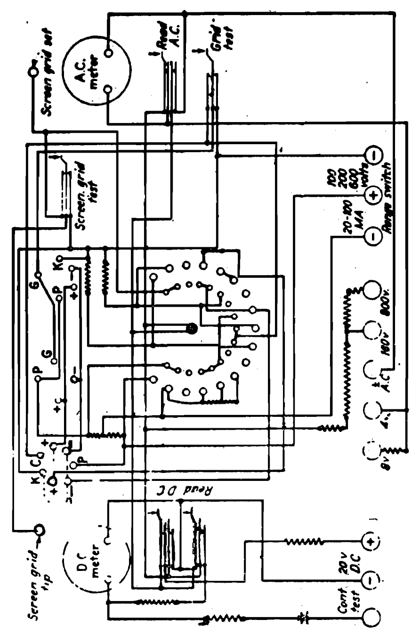
Model 875



DayRad (Type 180)



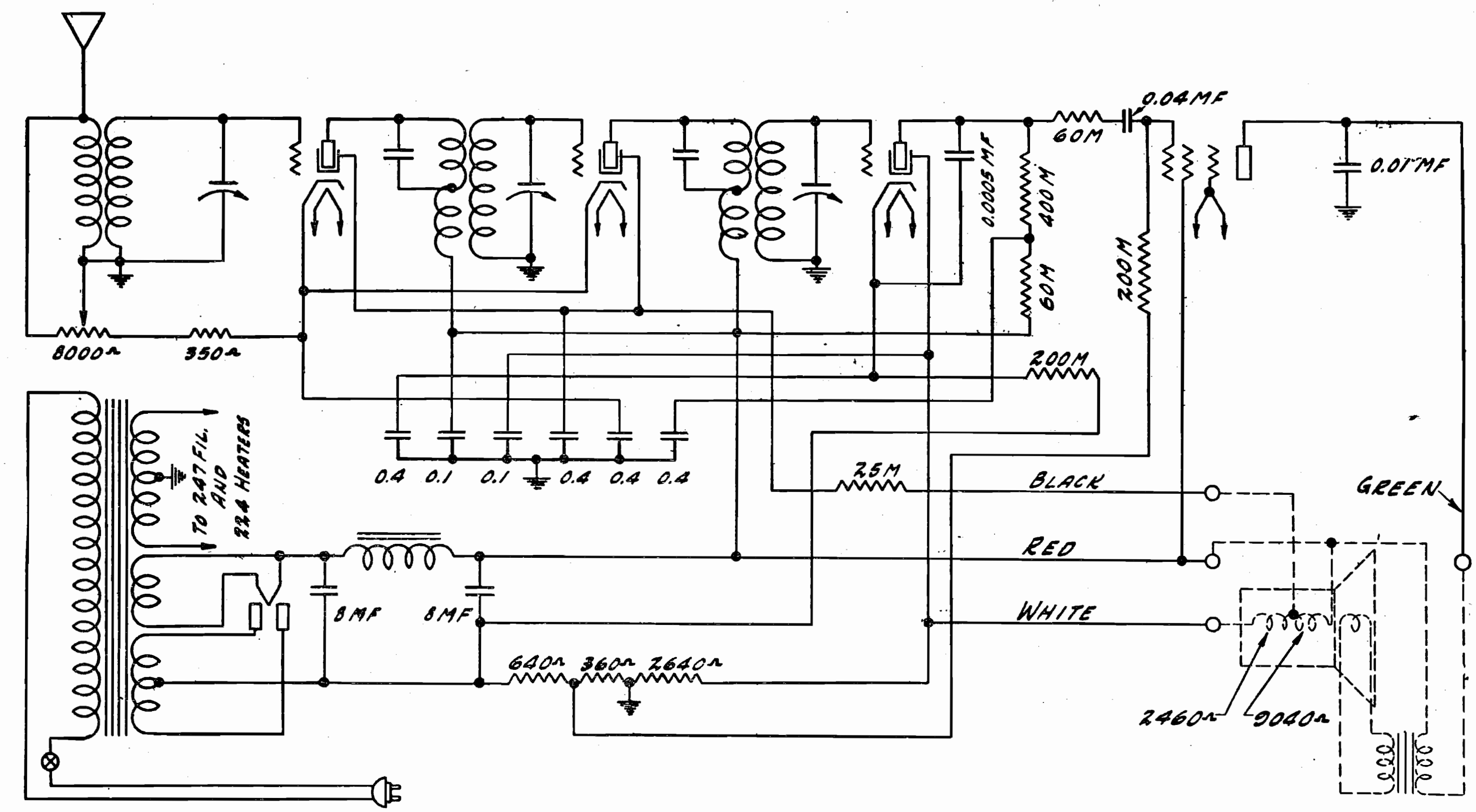
Schematic diagram of the Dayrad Type 870 Test Meter, which operates from the 110-volt, 60-cycle line. All values are given



Dayrad HR

MODEL 74-R (2nd Type)

RADIOTROPE

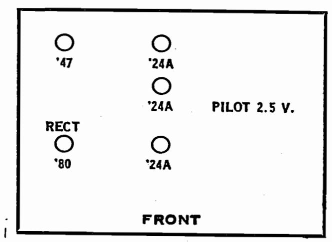


Volume Control at maximum. Line Voltage 115

Tube	"A"	"B"	"C"	Screen	Cathode	Plt. Crn't
1st RF	2.2	250	2.	55.*	2.	2.1 ma
2nd RF	2.2	250	2.	55.*	2.	2.1
Det	2.2	130	2.8	40.*	2.8	.25
AF	2.3	238	18.**	250.		27.
Rect	4.65					28 per anode

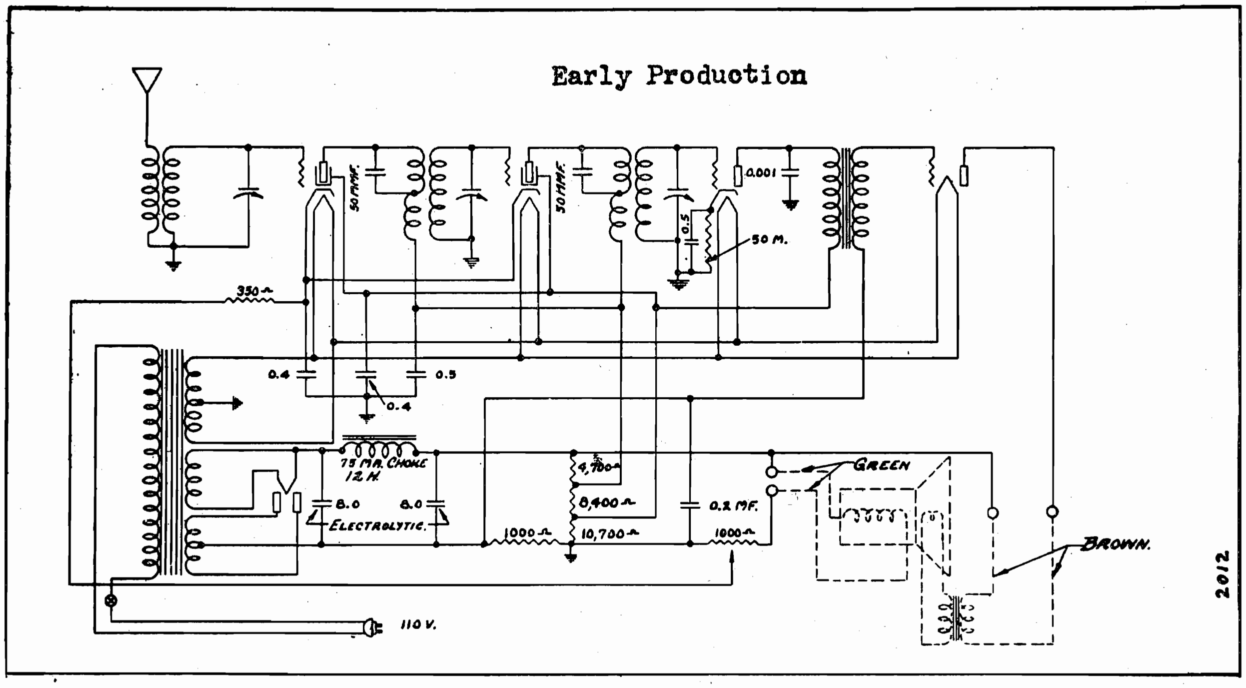
* Reading with 250000 ohm meter. Reading will be less with lower meters

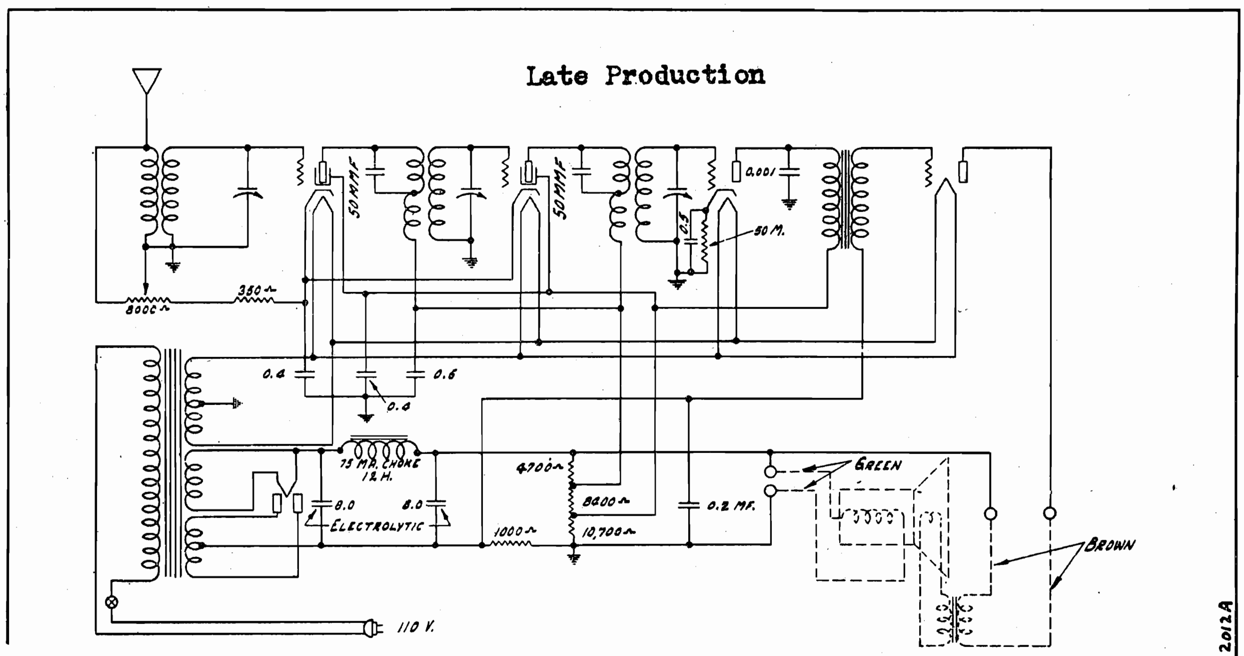
**This voltage read across 360 ohm section of shunt resistance.

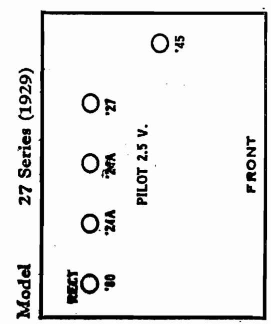


MODEL 27-R

RADIOTROPE





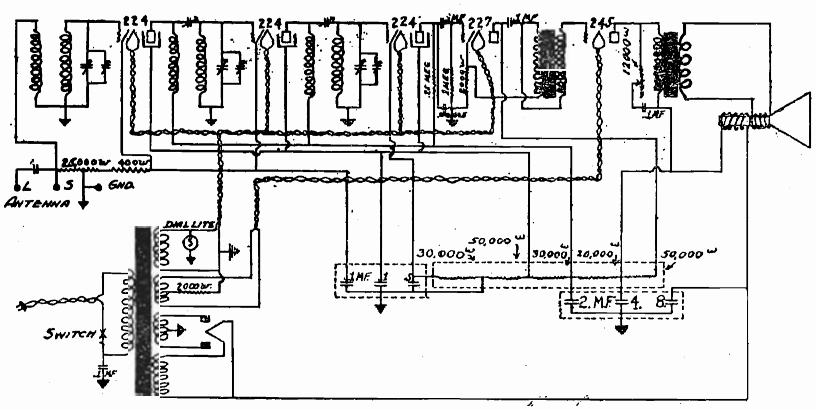


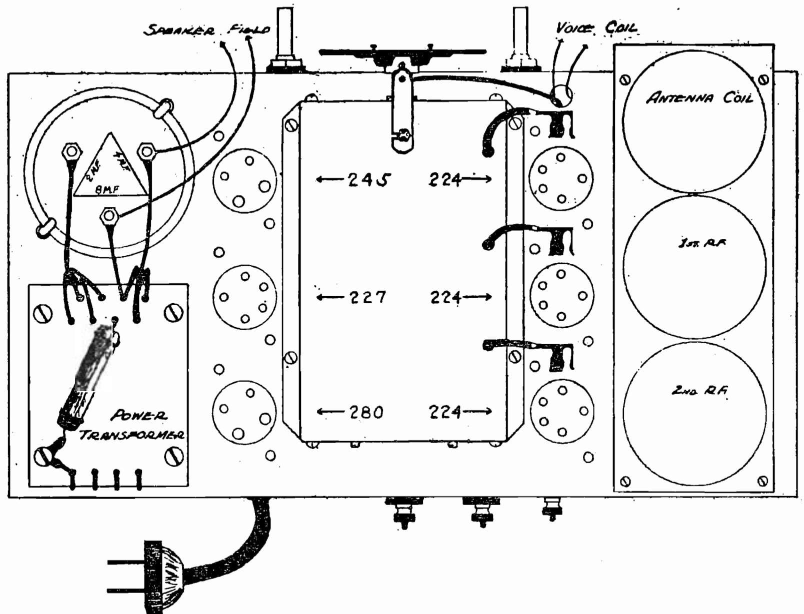
VOLTAGES AT SOCKETS — VOLUME CONTROL AT MAXIMUM — LINE VOLTAGE, 115 — PLUG IN SOCKET OF RECEIVER — TUBE IN TEST SET

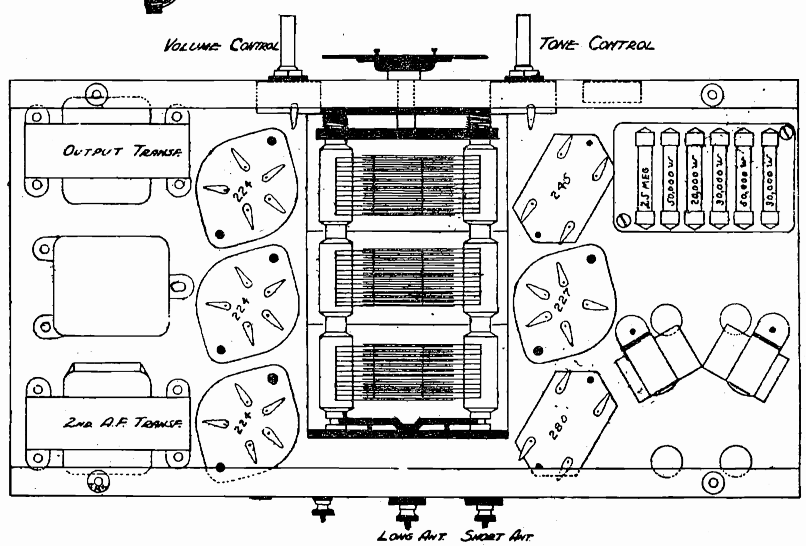
Type of Tube	*Position of Tube*	*Function*	*"A" Volts*	*"B" Volts*	*Control Grid "C" Volts*	*Screen Volts*	*Screen Current MA*	*Cathode Volts*	*Plate MA*	*Grid Test MA*
224	1	1st Radio	2.25	160	2.5	80	.6	2.5	3.	5.1
224	2	2nd Radio	2.25	160	2.5	80	.6	2.5	3.	5.1
227	3	Detector	2.25	70	8.5			8.5	.1	.2
245	4	Audio	2.35	238.	44.				19.	22.
280	5	Rectifier	4.8						26.5 per Plate	

REMLER COMPANY, LTD.

MODEL 14







WIRE COLOR CODE

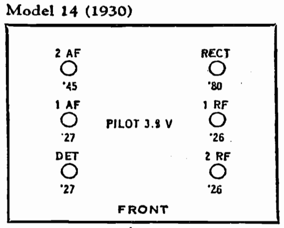
RED - FILAMENT RECTIFIER - KATHODE A.F. - PLATE R.F. - PLATE POWER TUBE - SPEAKER FIELD
BLUE - FILAMENT POWER TUBE - PLATE DETECTOR - +B R.F.
GREEN - KATHODE DETECTOR → GRID POWER TUBE
BROWN - FILAMENT R.F. TUBES AND DETECTOR
BLACK - FILAMENT 1ST. A.F. TUBE - DETECTOR KATHODE - SPEAKER VOICE COIL
YELLOW - SHIELD GRID - PLATE 1ST. A.F. - PLATE RECTIFIER

VOLTAGE TABLE

LINE 115 V. 60 CYCLES

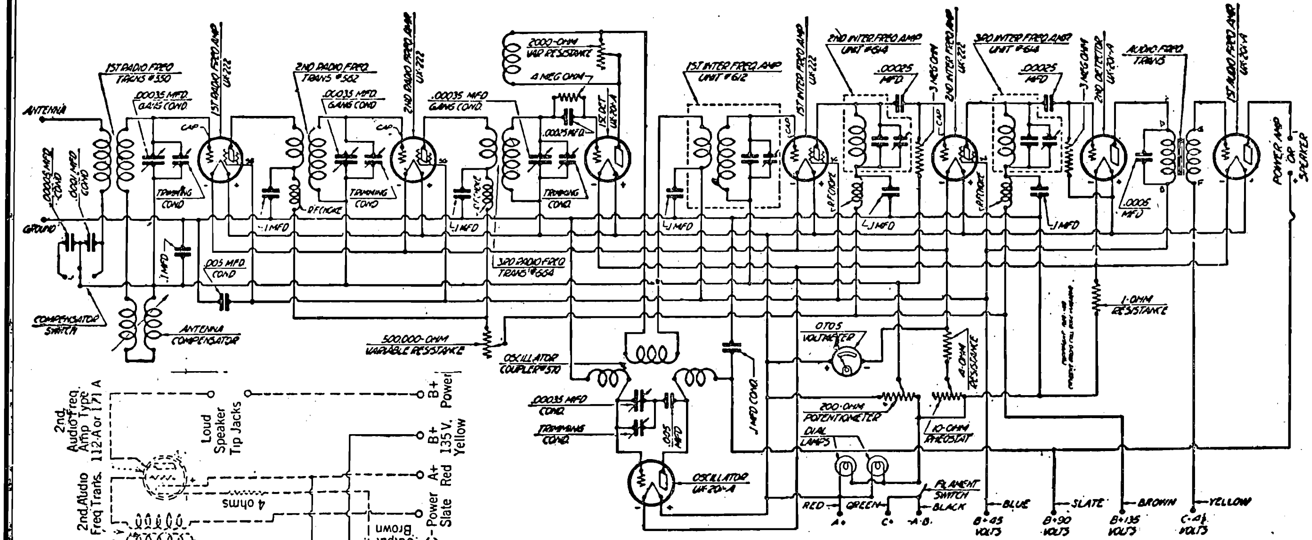
TUBE	POSITION	FIL V.	GRID V	PLATE V.	SG VOLTS
224	1ST R.F.	2.3	3-9	160-185	85-125
224	2ND R.F.	2.3	3-9	160-185	85-125
224	DET.	2.3	48-8	75-115	85-125
227	1ST A.F.	2.3	7	110	
245	POWER	2.4	47	235	
280	RECTIFIER	4.9		400	

Model 14 (1930)

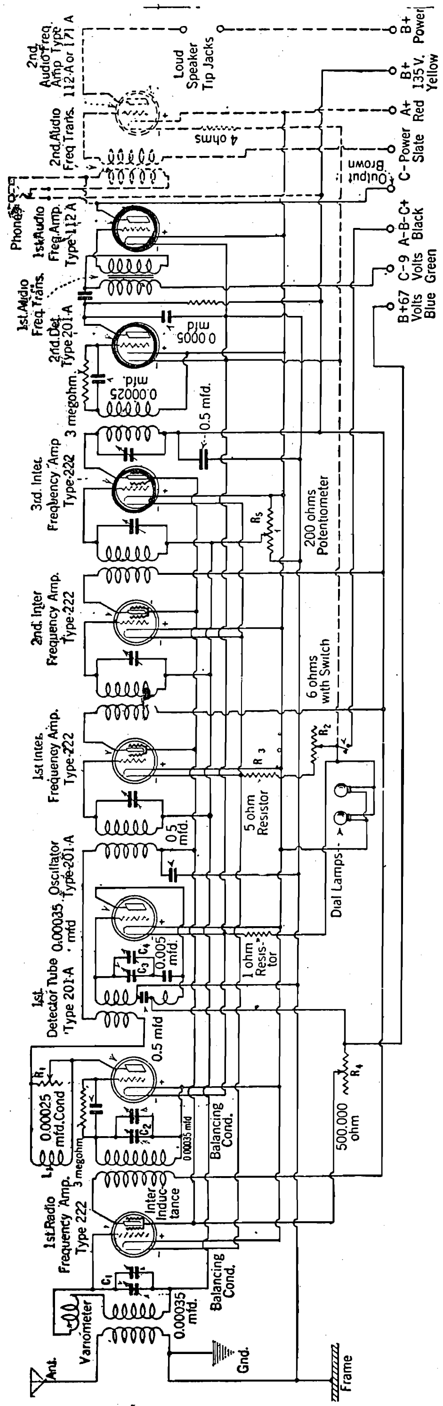


REMLER COMPANY, LTD.

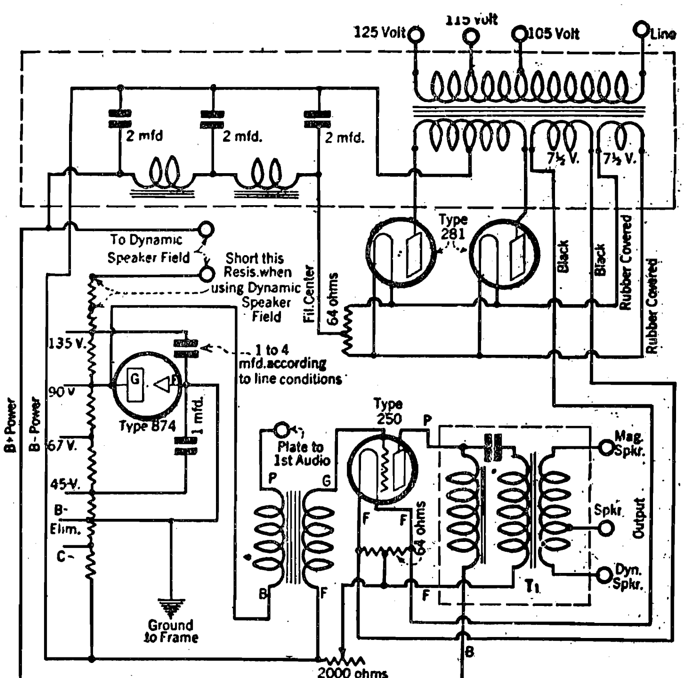
MODEL Best "115 KC"
MODEL Remler "29"



Model Best "115 KC"



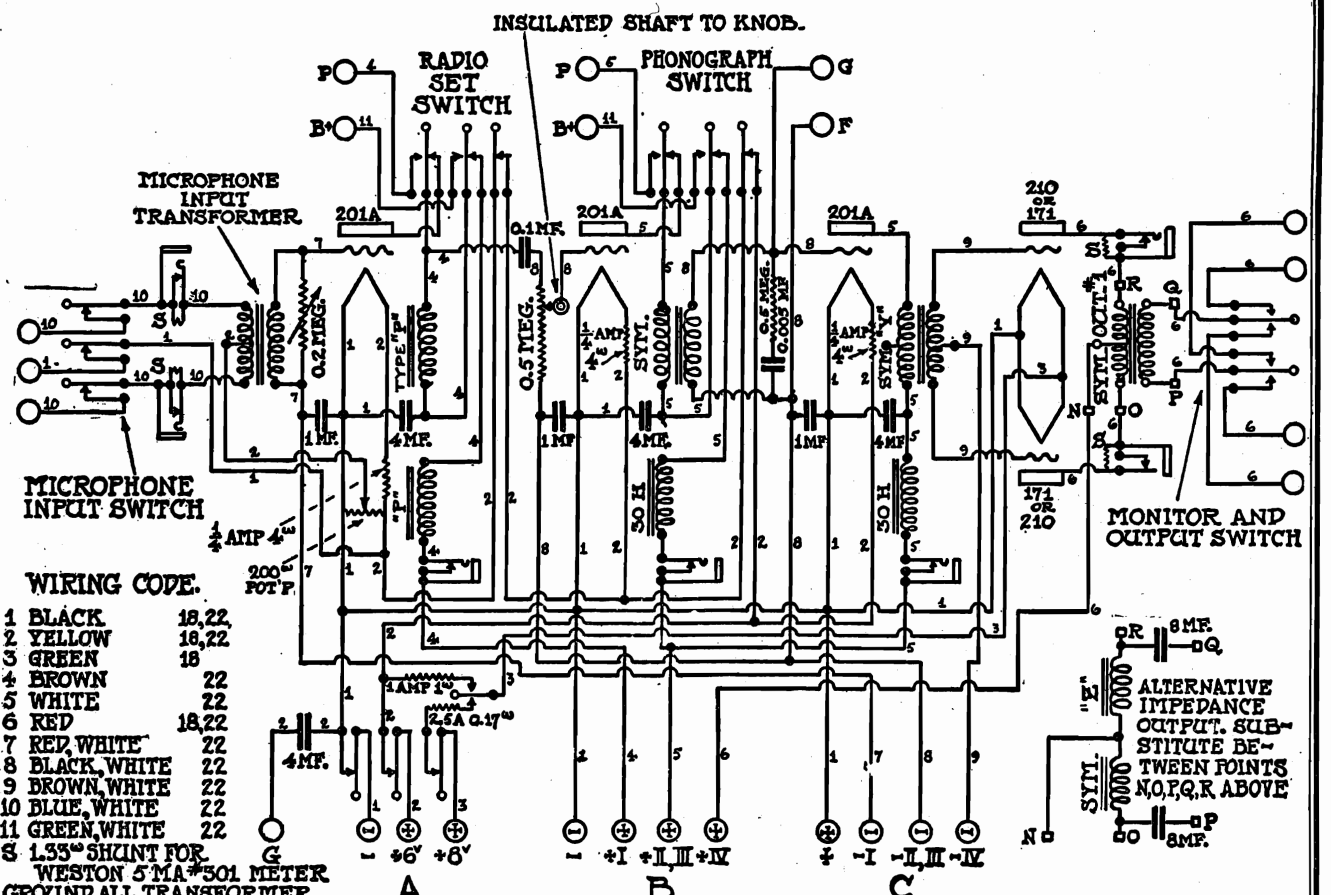
Model Remler "29" Receiver



Model Remler "29" Power Pack

MODEL S-100
MODEL PAM-19
MODEL Amplifier

SAMSON ELECTRIC CO.

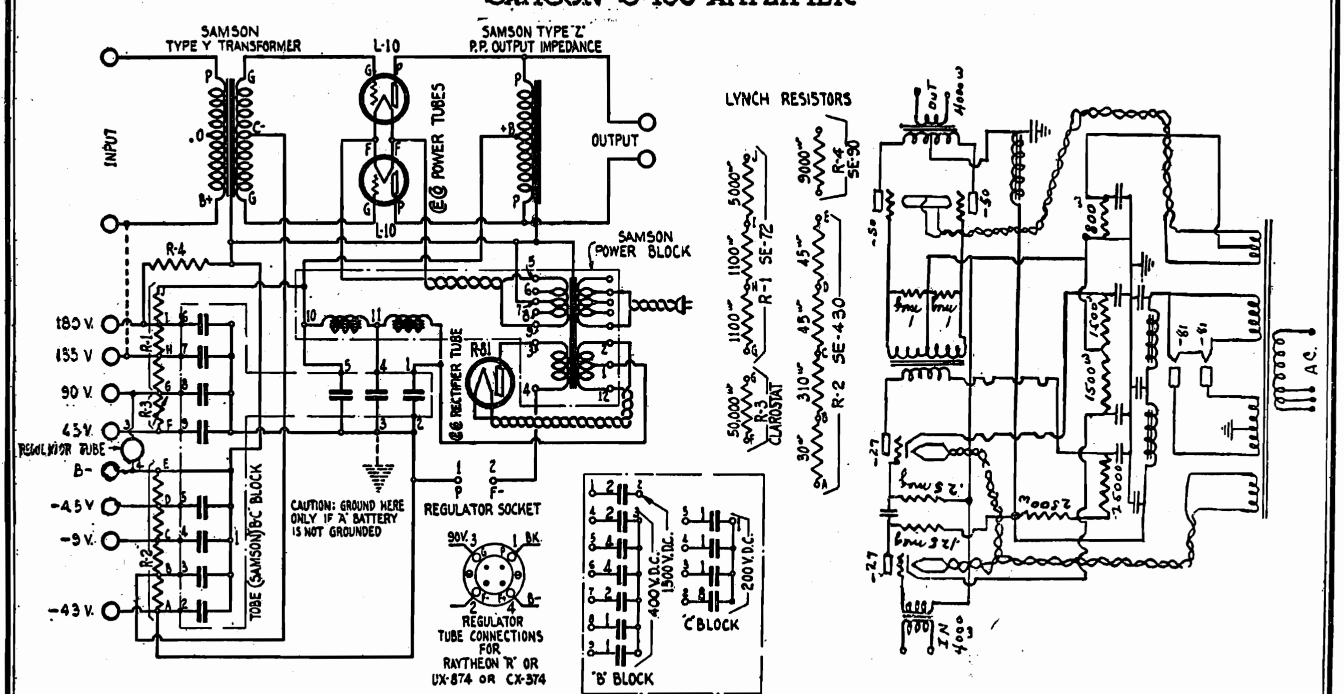


WIRING CODE.

1	BLACK	18,22
2	YELLOW	18,22
3	GREEN	18
4	BROWN	22
5	WHITE	22
6	RED	18,22
7	RED, WHITE	22
8	BLACK, WHITE	22
9	BROWN, WHITE	22
10	BLUE, WHITE	22
11	GREEN, WHITE	22

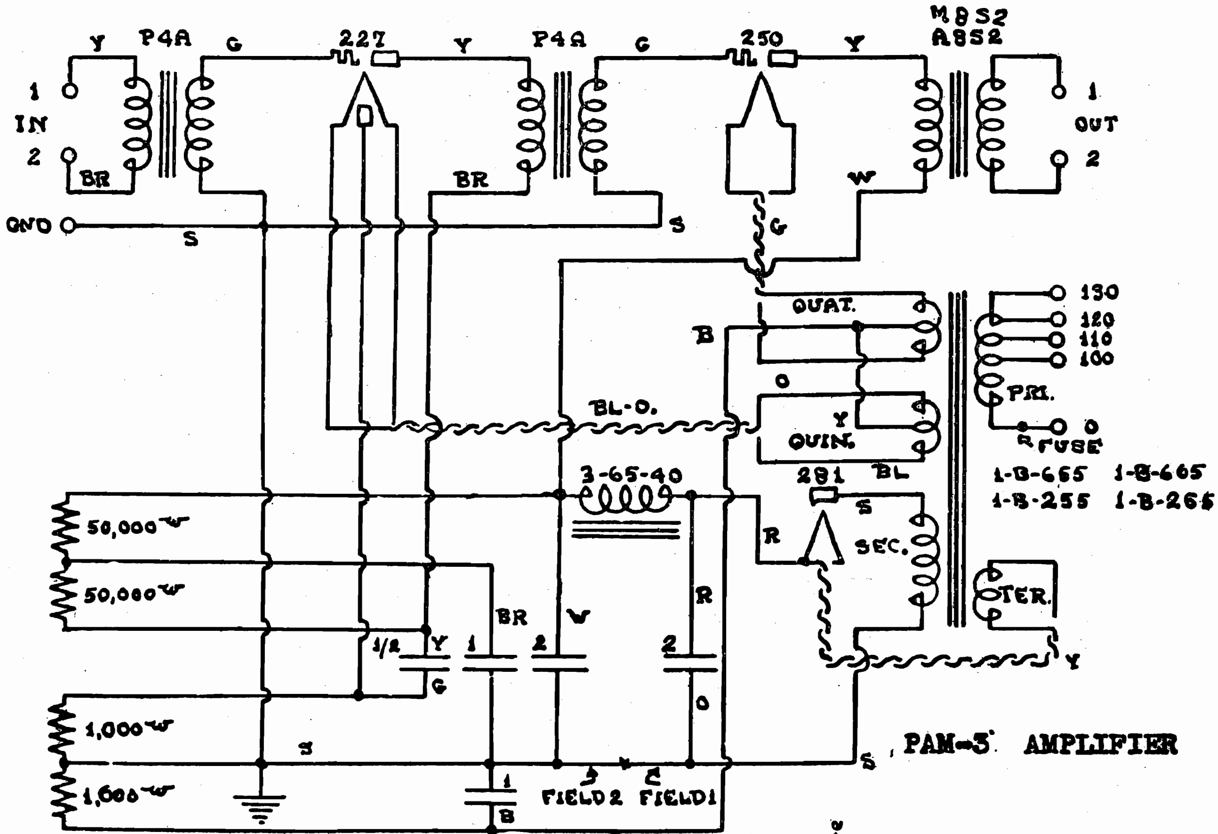
S 1.33Ω SHUNT FOR WESTON 5 MA #301 METER
GROUND ALL TRANSFORMER AND IMPEDANCE CASES.

GROUP ADDRESS SYSTEM
SAMSON S-100 AMPLIFIER

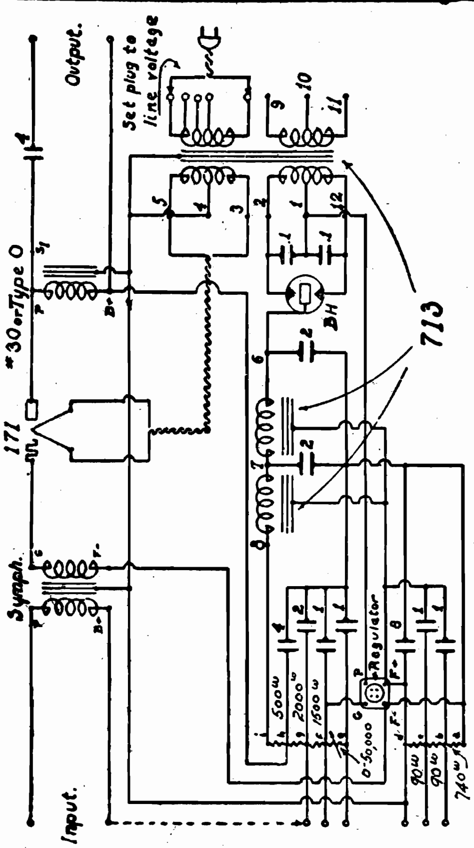


MODEL PABC-2
MODEL PABC-3
MODEL PAM-3

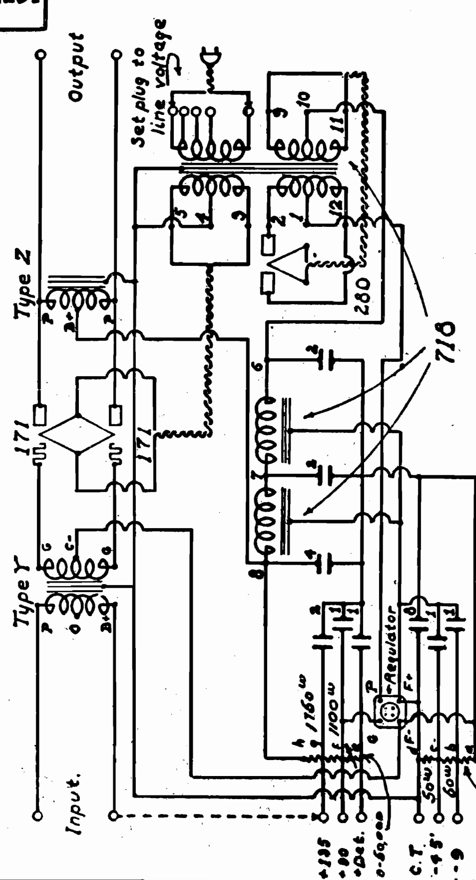
SAMSON ELECTRIC CO.



PAM-3 AMPLIFIER



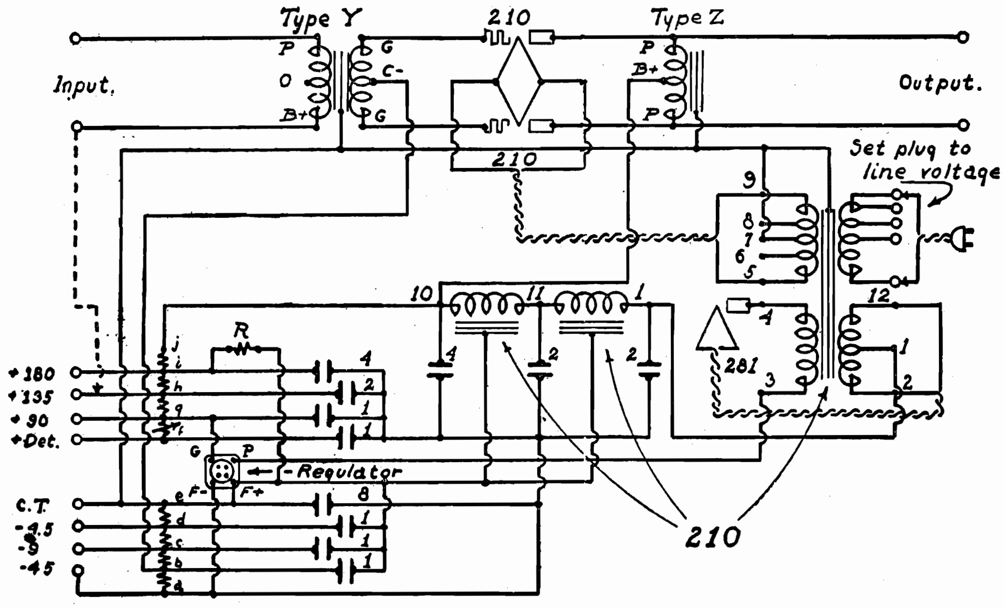
PABC-2 Schematic



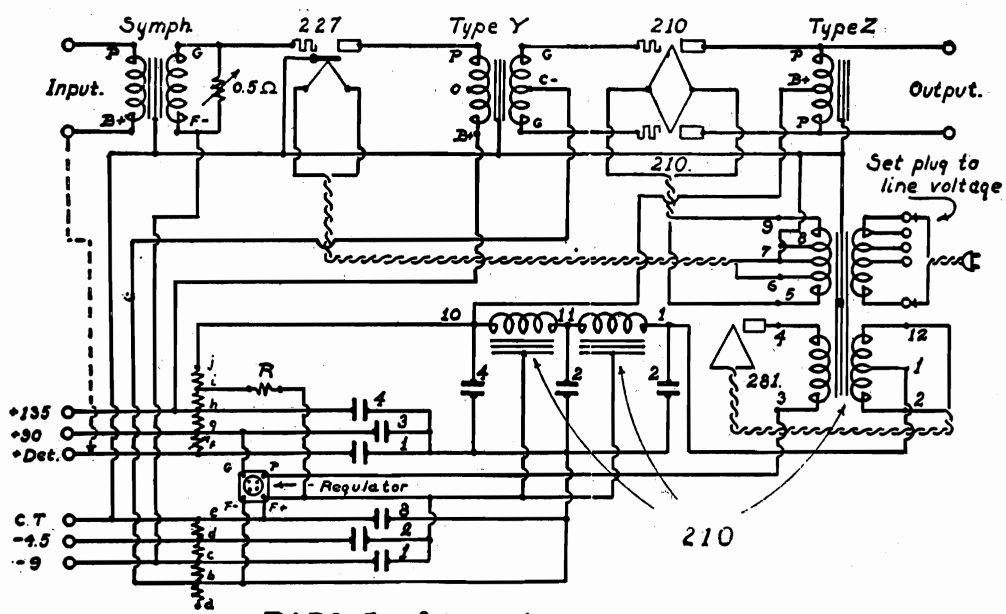
PABC-3 Schematic

MODEL PABC-4
MODEL PABC-5

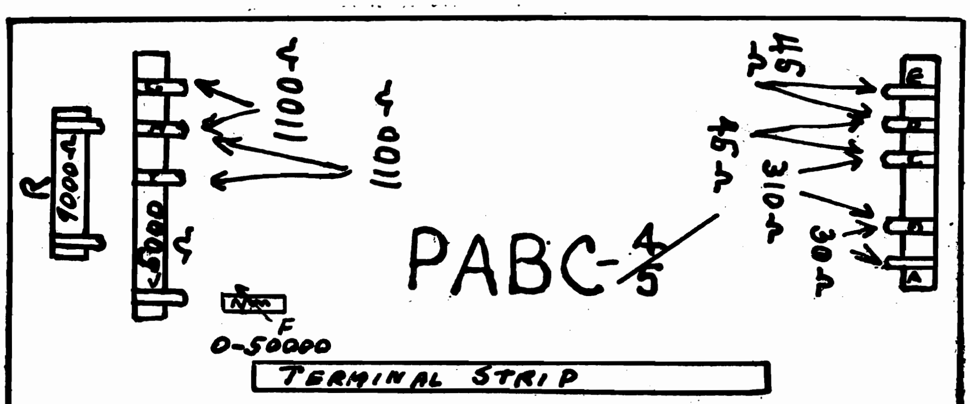
SAMSON ELECTRIC CO.



PABC-4 Schematic.



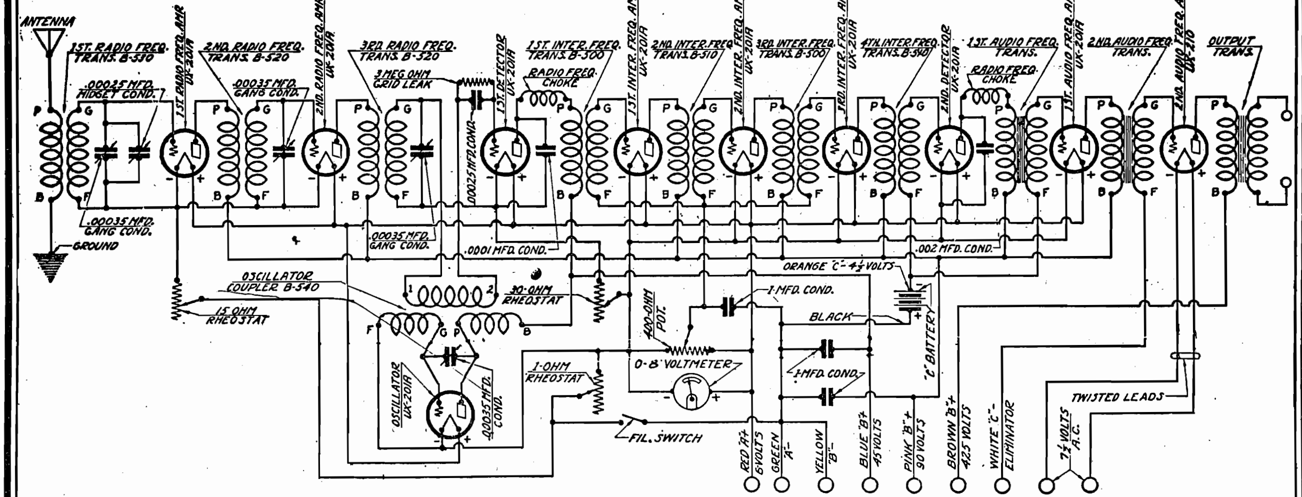
PABC-5 Schematic

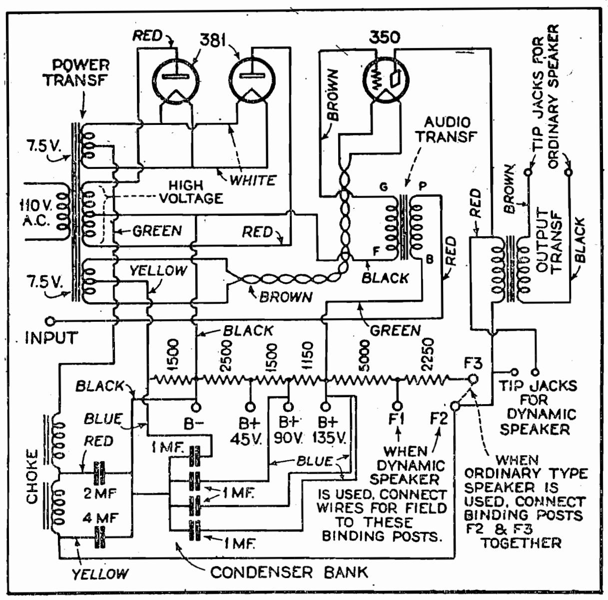


SCOTT TRANSFORMER CO.

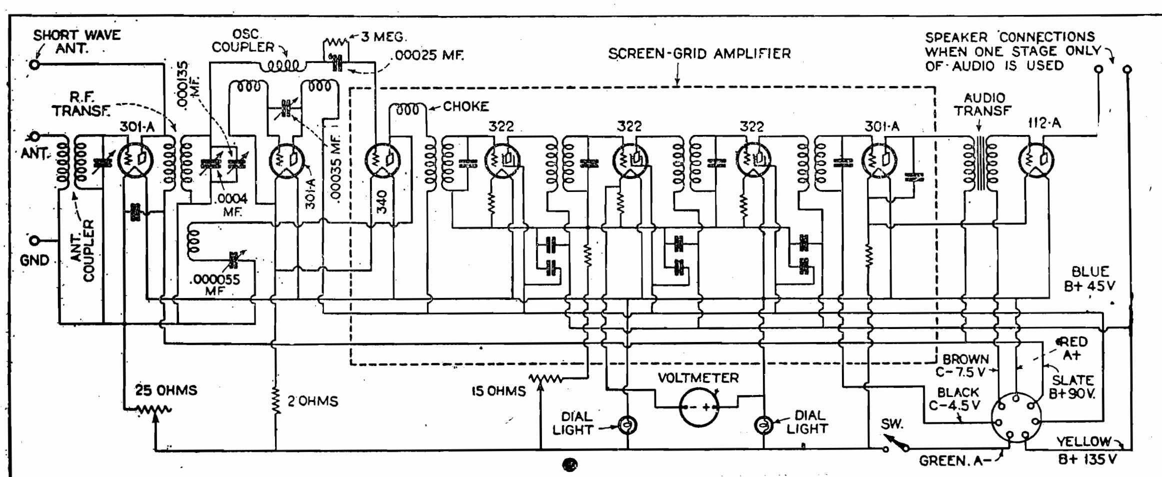
MODEL "World Record" 10
MODEL Shield Grid "9"

Model World Record 10





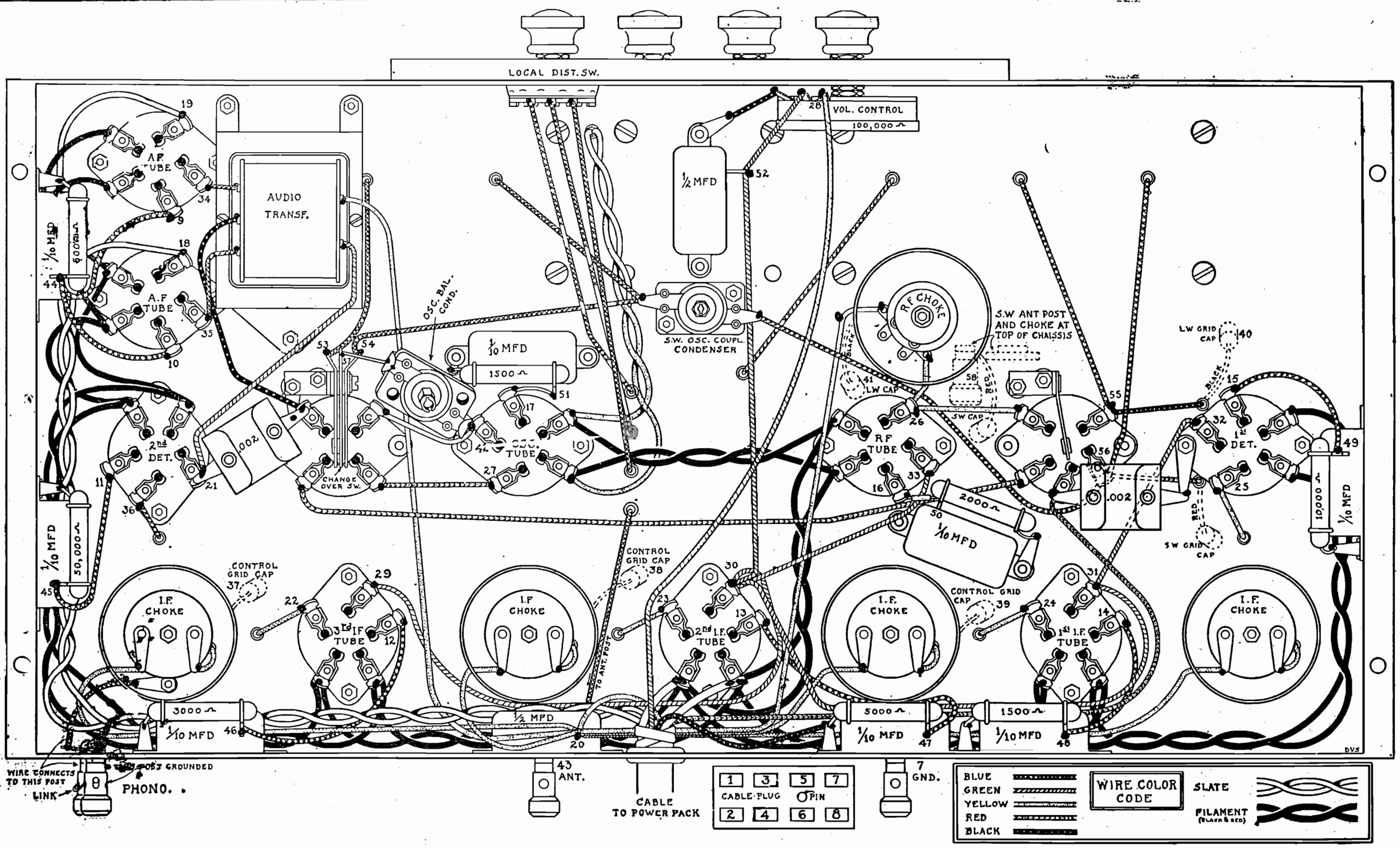
Model Shield Grid 9
Power Pack



Model Shield Grid 9 Receiver Schematic

MODEL "All Wave" Super Receiver Chassis

SCOTT TRANSFORMER CO.



HOW TO DISTINGUISH OSCILLATOR FROM R. F. COIL

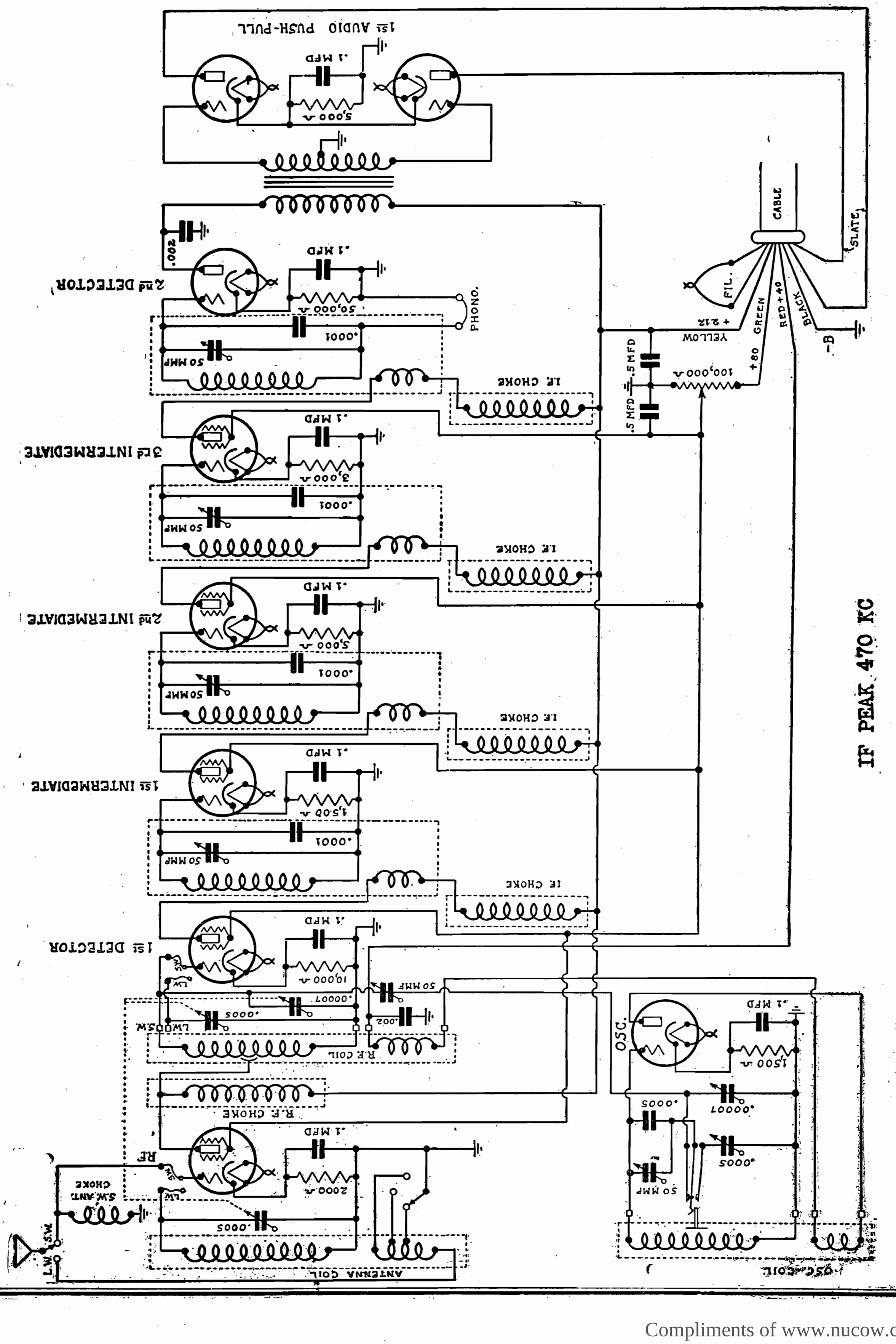
	Oscillator Coil	R. F. Coil
15-21 Meters	Two Enamel Wire Windings	One Enamel Wire Winding
21-27 Meters	Two Enamel Wire Windings	One Enamel Wire Winding
27-38 Meters	Two Enamel Wire Windings	One Enamel Wire Winding
38-84 Meters	Two Enamel Wire Windings	One Enamel, One Silk Winding
84-184 Meters	Two Enamel Wire Windings	One Enamel, One Silk Winding

NOTE:—When tuning short wave stations ~~the short~~ wave coils **must be left exposed** (the aluminum covers **should not be replaced**). Be sure that both oscillator and R. F. coils are for the same wave length band:

The tube on the extreme right of the chassis is the first detector

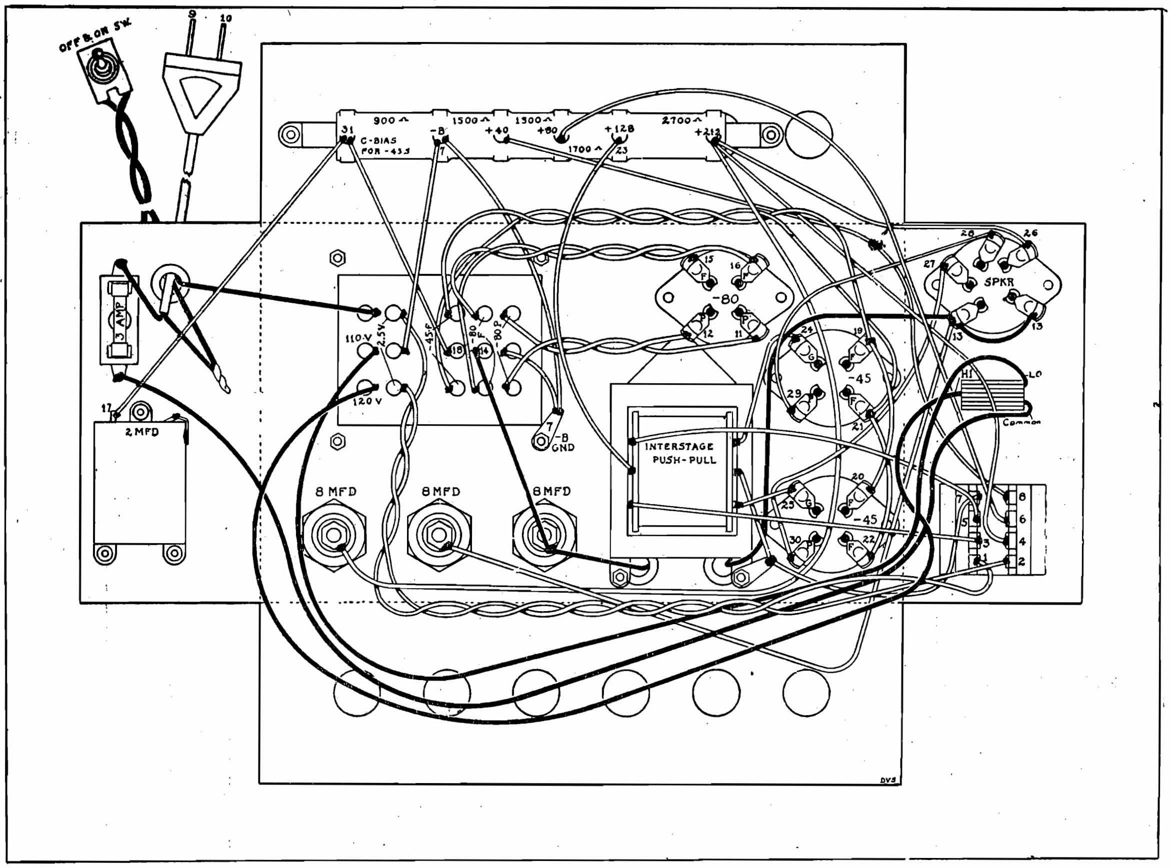
SCOTT TRANSFORMER CO.

MODEL "All Wave" Super Receiver Schematic

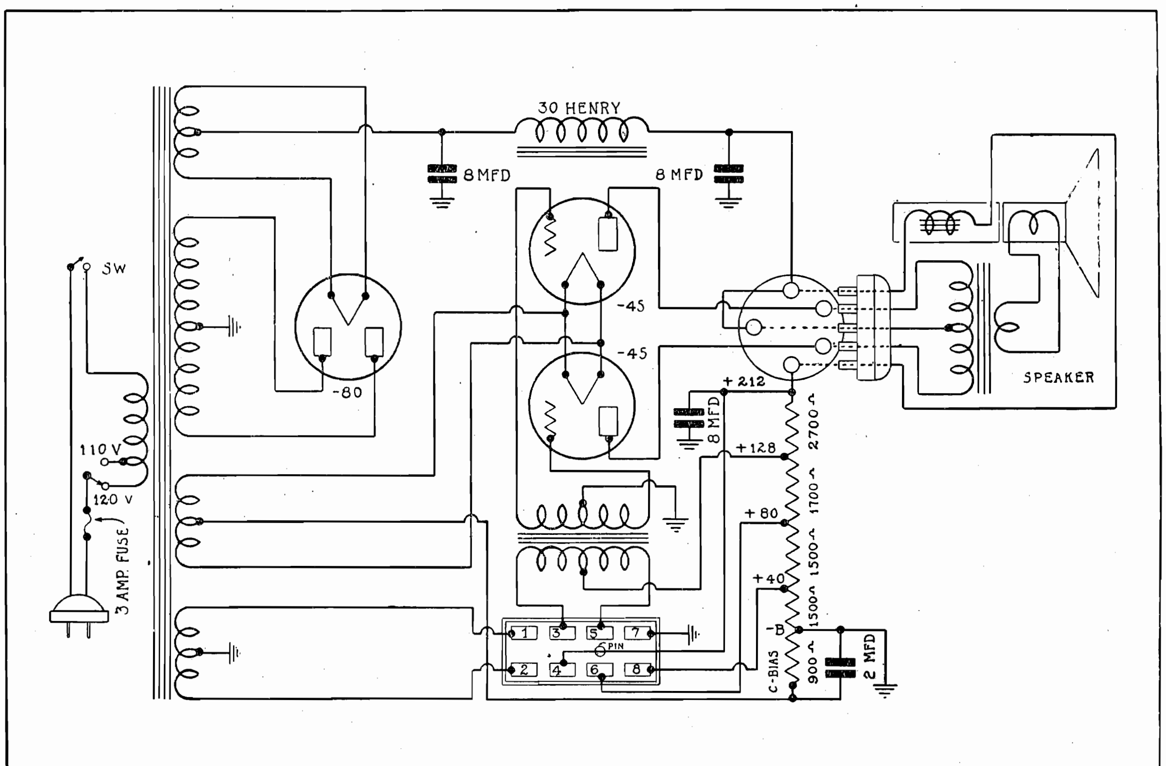


SCOTT TRANSFORMER CO.

MODEL "All Wave" Super
145 Power Pack
Schematic- Chassis



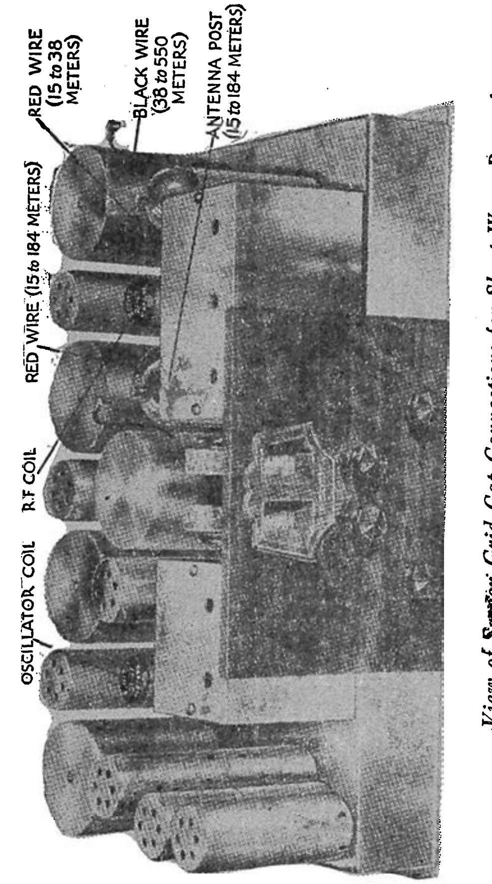
Wiring Diagram of 145 Power Pack



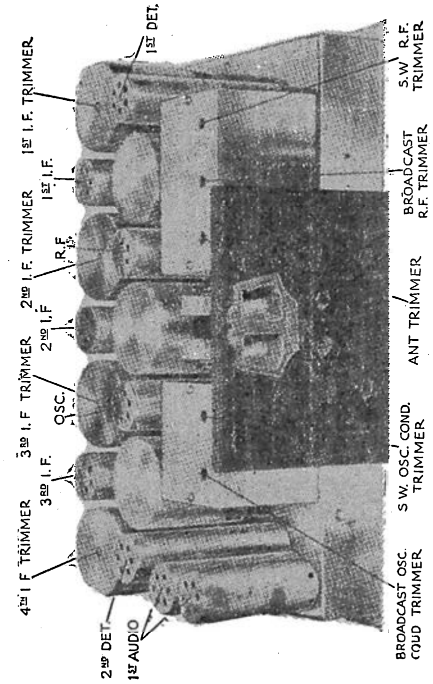
Schematic Diagram of 145 Power Pack

SCOTT TRANSFORMER CO.

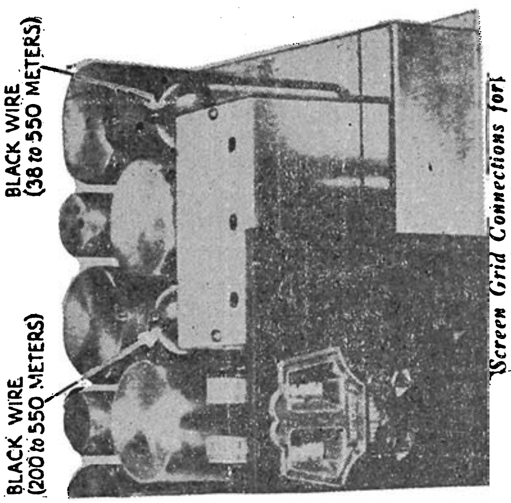
MODEL "All Wave" Super
150 Power Pack
Trimmer Locations
Control Box



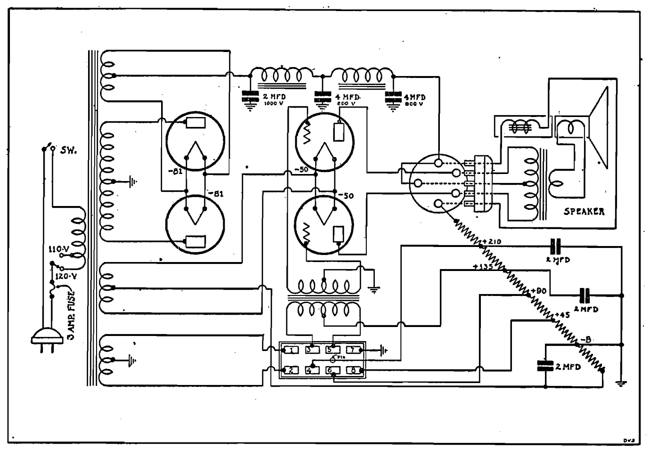
View of Screen Grid Cap Connections for Short Wave Reception



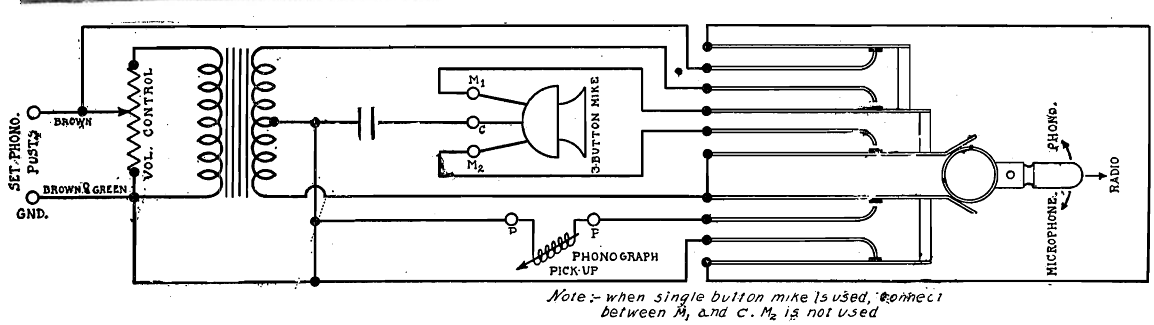
Location of Tubes and Trimmer Condensers



Screen Grid Connections for Broadcast Reception



Schematic Diagram for 150 Power Pack



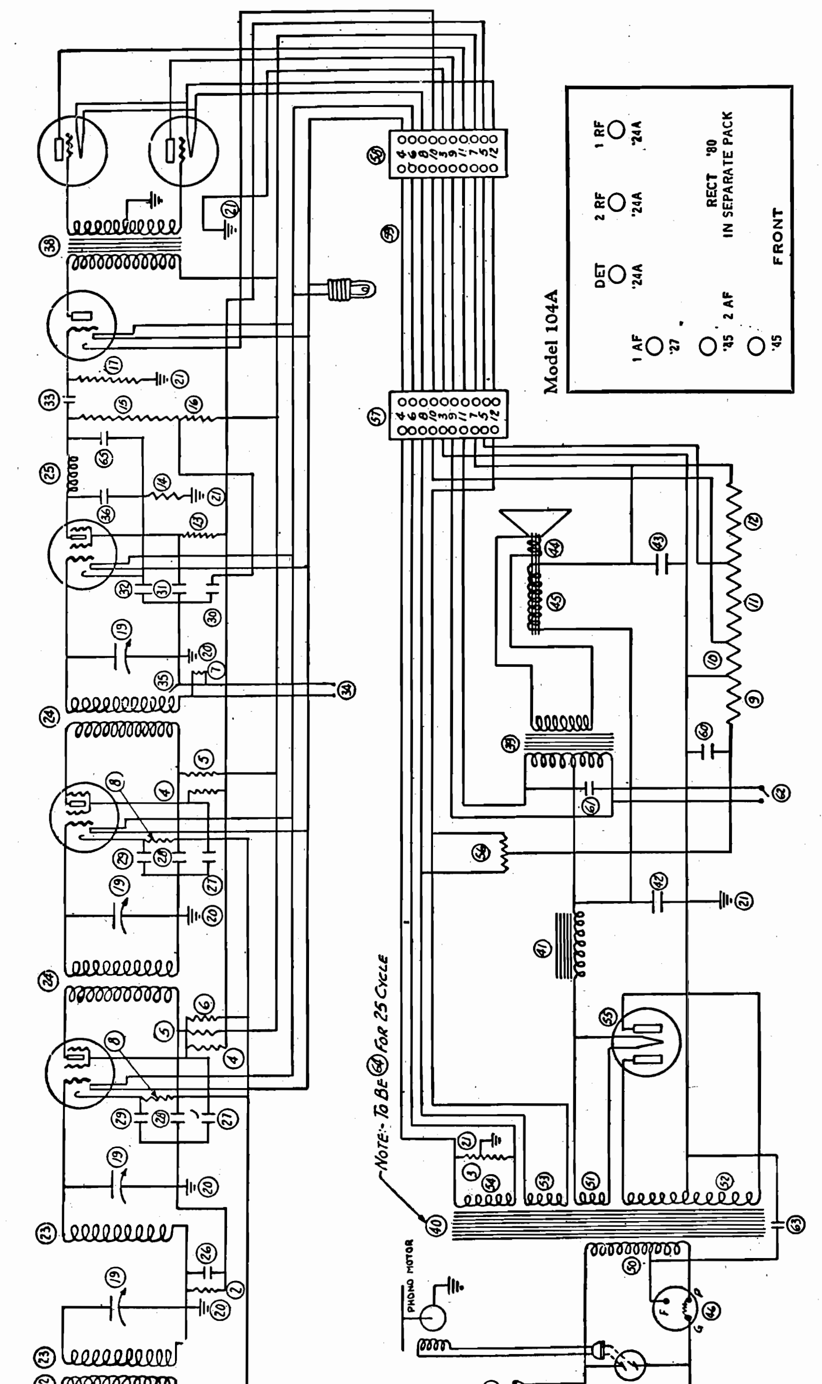
Schematic Diagram of Scott Control Box

MODEL 11,12,15,16
(104)

SENTINEL RADIO CORP.

SENTINEL—Models 11-12-15-16
Line Voltage 115—Volume Control Full On

TUBE NO. IN ORDER TESTED (1)	TYPE OF TUBE (2)	POSITION OF TUBE IN SET (3)	METER READINGS WITH JEWELL TEST PLUG IN SOCKET OF SET — OPERATING VOLTAGES: FILAMENT OR HEATER (4)	PLATE OR ANODE (5)	CONTROL GRID—SPACE GD+ (6)	NORMAL GRID—SCREEN GD+ (7)	CATHODE TO HEATER (8)	MILLIAMPERES: SCREEN GD L. H. '80 PLATE (9)	PLATE R. H. '80 PLATE (10)	TUBE TEST (11)	PLATE CURRENT CHANGE (12)	(13)
1	224	1 R.F.	2.36	176	2.2	87	-	-	3			
2	224	2 R.F.	2.36	176	2.2	87	-	-	3			
3	224	Det.	2.37	62.5*	4.5	10*	-	-	.25			
4	227	1 A.F.	2.4	157	-	12.5	-	-	4.75			
5	245	PP-AF	2.5	235	-	46	-	-	32.5			
6	245	PP-AF	2.5	235	-	46	-	-	32.5			
7	280	Rect.	5.0	-	-	-	-	55	55			

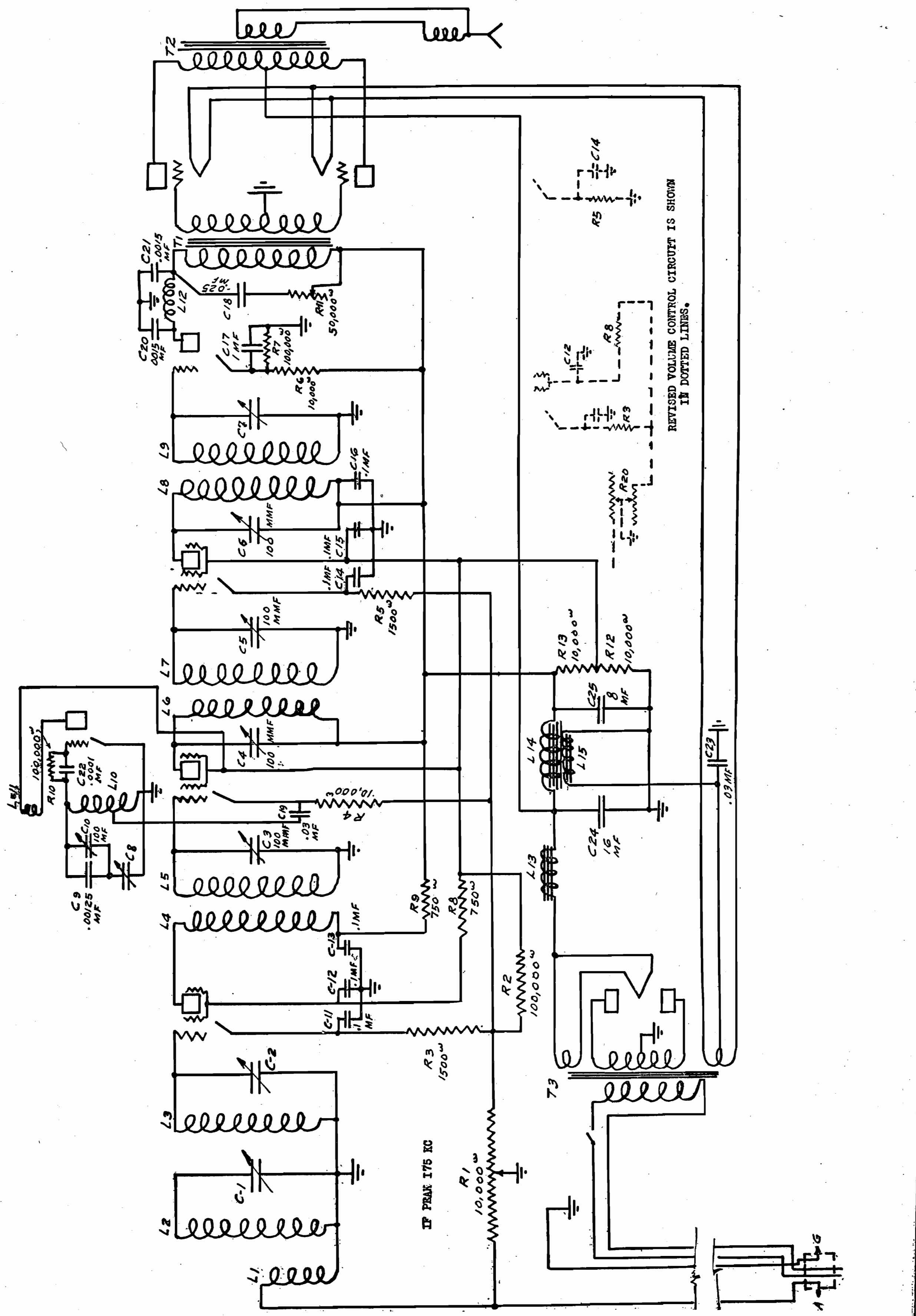


NO.	DESCRIPTION	R	I	E	W
1	VOLUME CONTROL	10M	8(MAX)	∞	0.001
2	COUPLING RESISTOR	750	0	0	0
3	CENTERTAP RESISTOR	20	125	25	.315
4	SCREEN FILTER RESISTANCE	750	1.	.75	.0007
5	PLATE FILTER RESISTANCE	750	4.	3.	.012
6	BIAS RESISTOR	100M	1	93	.09
7	PICKUP LOAD RESISTANCE	2500	0	0	0
8	CATHODE BIAS RESISTANCE	750	4.	3	.012
9	245 BIAS RESISTANCE	775	62	50	3.1
10	AUDIO BIAS RESISTANCE	275	44	12.5	.55
11	SCREEN RESISTANCE	1850	46	80.5	3.6
12	FIELD LOAD RESISTANCE	2100	46	93	4.3
13	SCREEN BLEEDER RESISTANCE	1.5M.M.	.055	110	.006
14	DETECTOR BIAS RESISTANCE	5M	.38	1.9	.0007
15	PLATE LOAD RESISTANCE	300M	.32	96.	.03
16	DETECTOR FILTER RESISTANCE	50M	.32	16	.005
17	GRID RESISTANCE	1M.M.	0	0	0

NO.	DESCRIPTION	NO.	DESCRIPTION	NO.	DESCRIPTION
18	SET EXTERNAL GROUND	35	PHONOGRAPH SWITCH	52	HIGH VOLTAGE WINDING
20	ROTOR BRUSH GROUND	36	DETECTOR R.F. BY PASS .0001mf. MICA	53	245 FILAMENT WINDING
21	CHASSIS GROUND	37	245 BIAS BYPASS COND .025mf. 200	54	224 FILAMENT WINDING
19	TUNING CONDENSER	38	INPUT PUSH-PULL TRANS.	55	RECTIFIER TUBE TYPE 280
22	PRIMARY COIL 690 μh's	39	OUTPUT PUSHPULL TRANS.	56	CENTER TAP 245 FILAMENT
23	BAND PASS INDUCTANCES	40	POWER TRANSFORMER	57	JONES PLUG AND RECEPTICAL
24	R.F. TRANSFORMERS	41	POWER CHOKE 200 Ω	58	CABLE TERMINAL STRIP
25	R.F. CHOKE 8 m.h	42	15 MFD. ELECTROLYTIC CONDENSER	59	18½" CABLE 10 CONDUCTOR
26	COUPLING CONDENSER .025 mfd.	43	5 MFD. ELECTROLYTIC CONDENSER	60	.025 PAPER CONDENSER 300V.
27	SCREEN FILTER COND. .1mfd.-200	44	VOICE COIL	61	.1mfd. PAPER COND. 1000V
28	PLATE FILTER COND 1mfd.-300V	45	FIELD 2000 Ω ±5%	62	TONE CONTROL SWITCH
29	CATHODE BY-PASS COND 1mfd. 200V.	46	BALLAST LAMP SOCKET	63	.005 BY PASS COND.
30	DETECTOR FILTER COND. .5mfd 300V.	47	PHONO-MOTOR OUTLET	64	POWER TRANS. 4296-A FOR 25 CYCLE
31	SCREEN FILTER COND. .25mfd.-200V.	48	LINE SWITCH	65	DETECTOR R.F. BYPASS .0001mfd.
32	CATHODE BY-PASS .1mfd - 200 V.	49	PLUG AND 8' CORD (BELDEN)		
33	COUPLING COND. .005mfd.-MICA	50	POWER PRIMARY .82 amp @ 115V		
34	PICKUP JACK	51	280 FIL. 2 amp. 5V.		

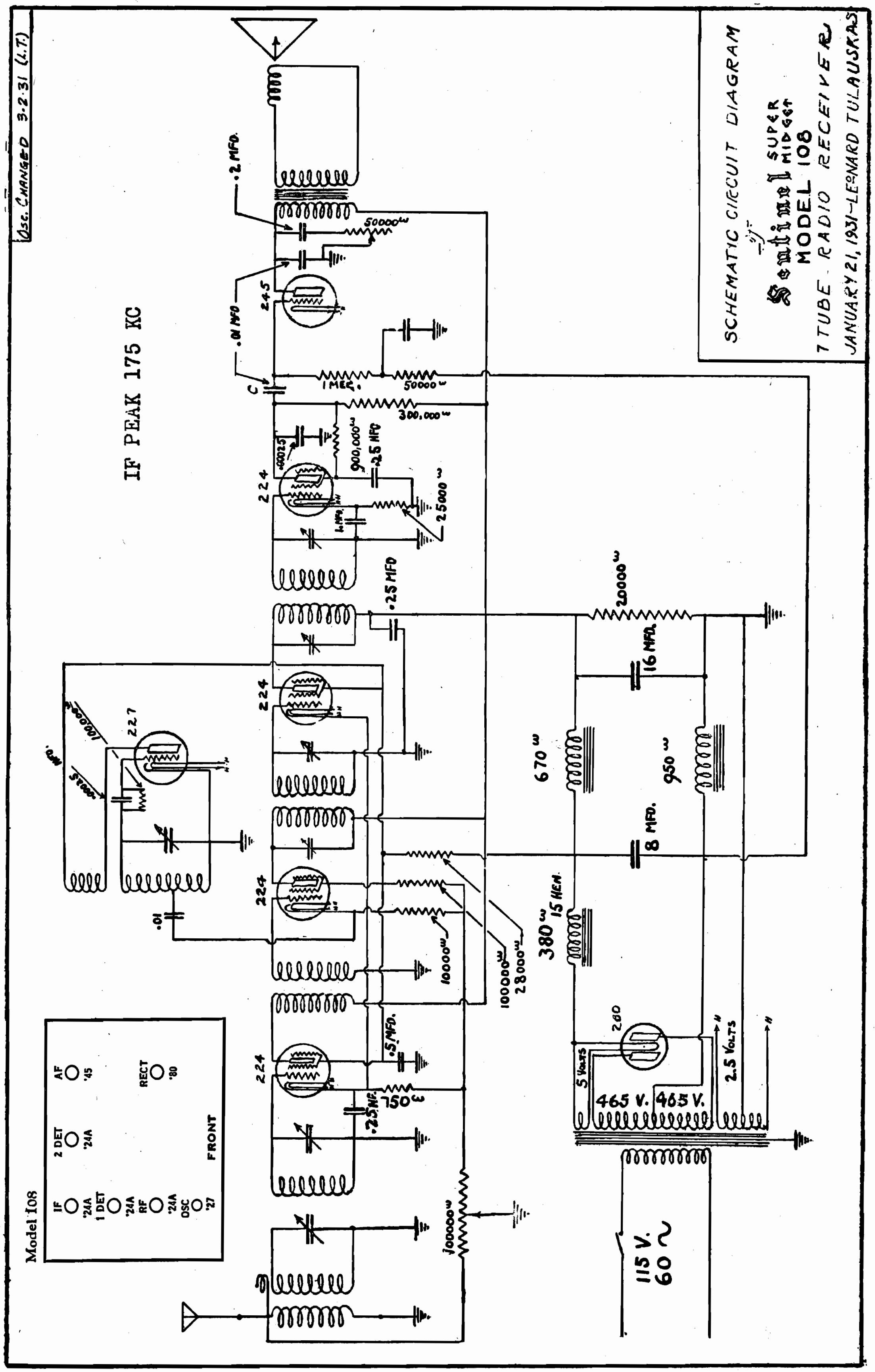
SENTINEL RADIO CORP.

MODEL 106-B
With Changes



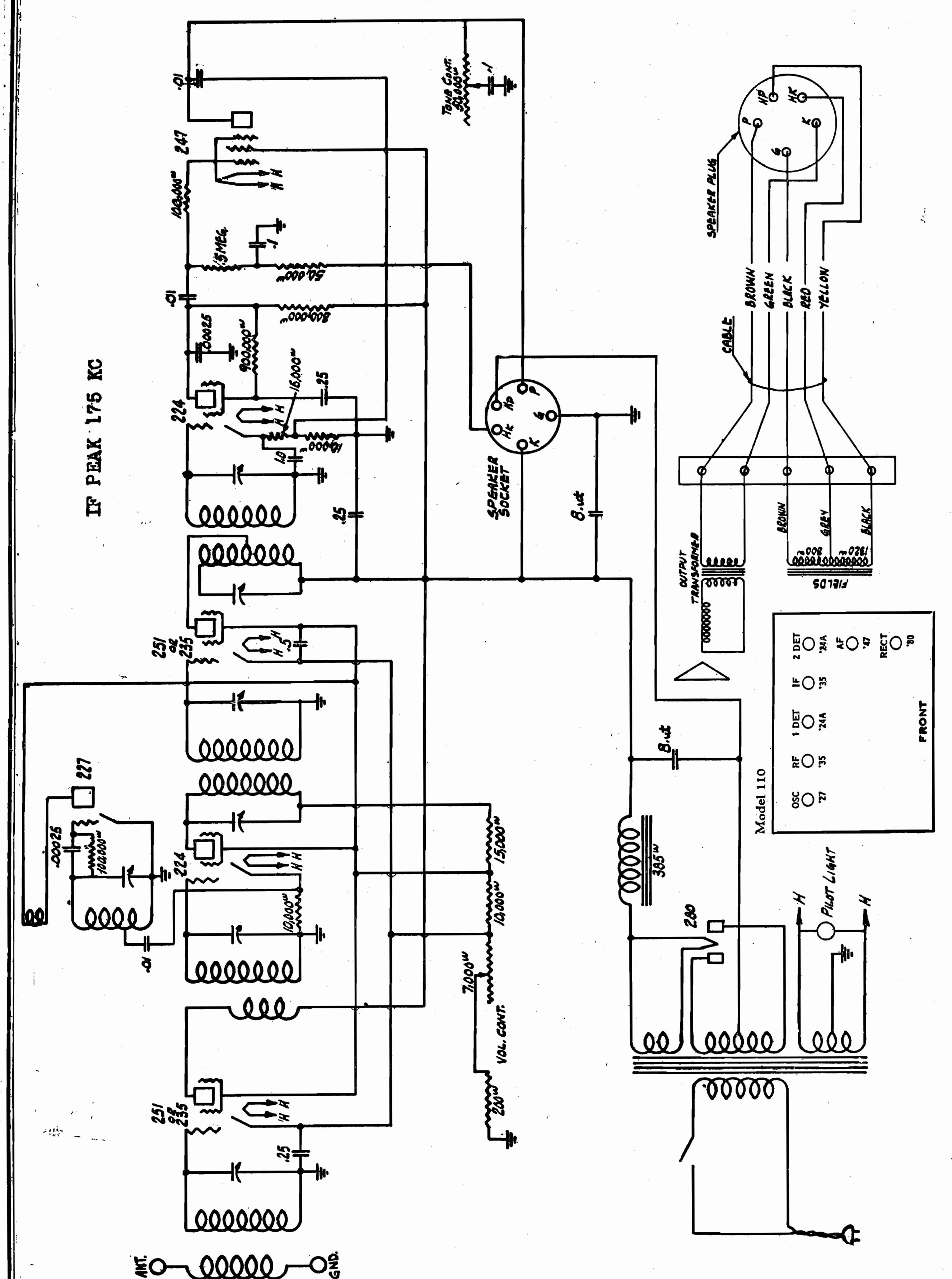
MODEL 108

SENTINEL RADIO CORP.



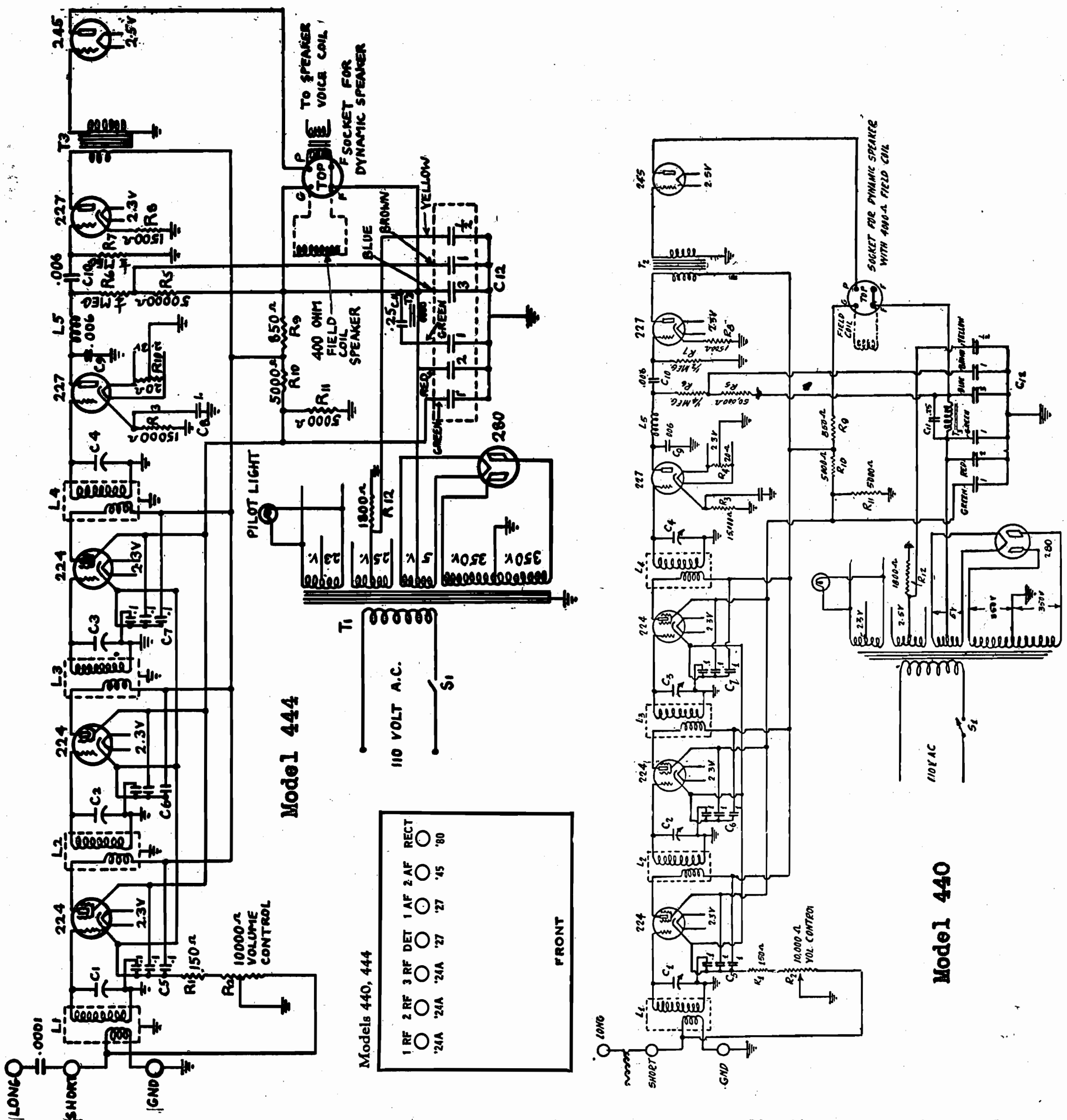
SENTINEL RADIO CORP.

MODEL 108-A,110
Schematic



MODEL 440
MODEL 444

SENTINEL RADIO CORP.

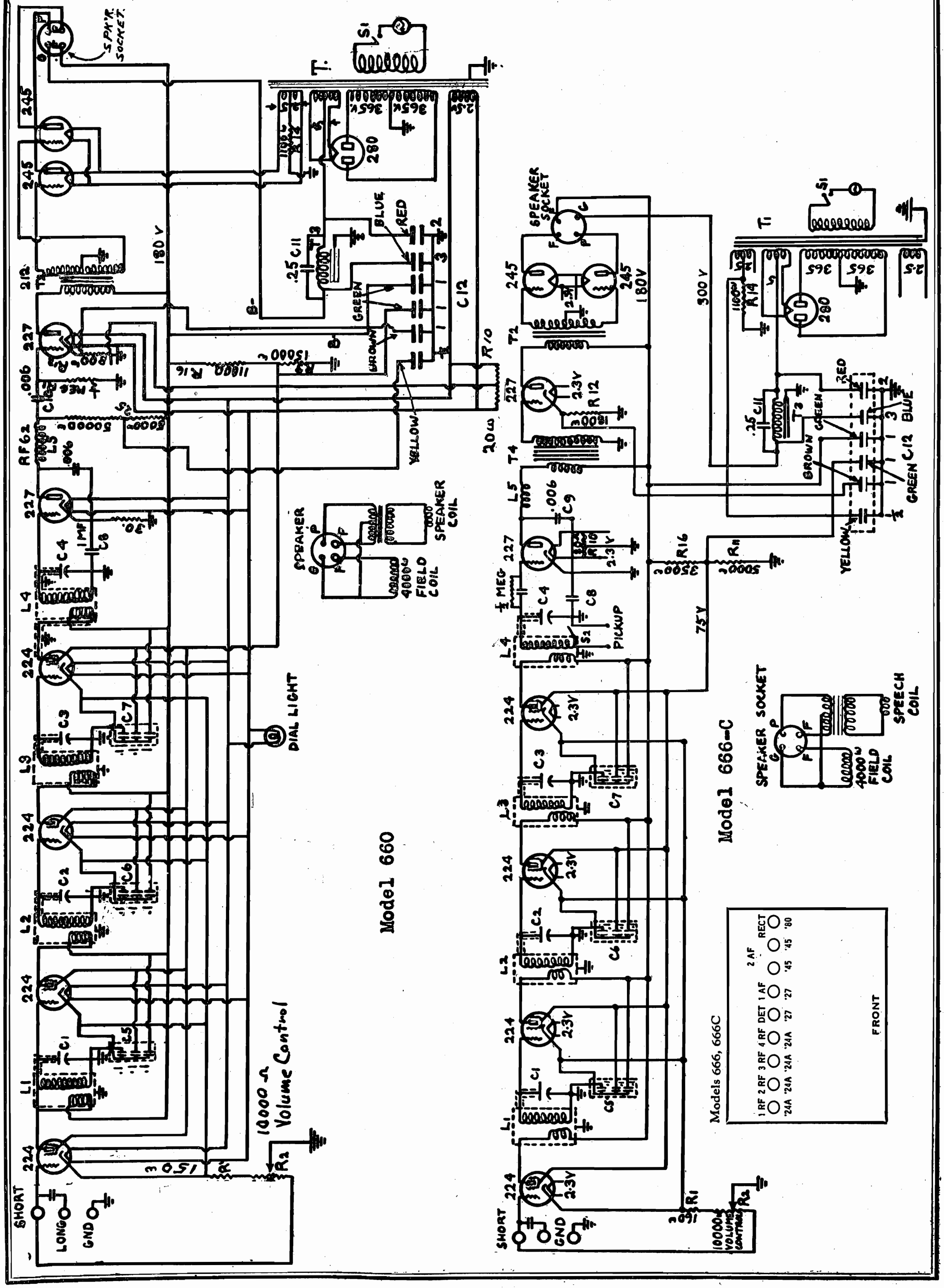


TUBE VOLTAGES Type of Tube	Position of Tube	FILAMENT VOLTS	B VOLTS	C VOLTS	NORMAL PLATE M.A.	SCREEN VOLTS
224	1st RF	2.35	155	2	3.5	75
224	2nd RF	2.35	155	2	3.5	75
224	3rd RF	2.35	155	2	3.5	75
227	Detector	2.35	110	18	.2	
227	1st Audio	2.35	122	8	10.5	
245	Output	2.4	245	50	27	
280	Rectifier	4.75		*55		

350 A.C. Volts each side high voltage secondary
*51-55 M.A. each plate
115 volts line
With volume control to full on position

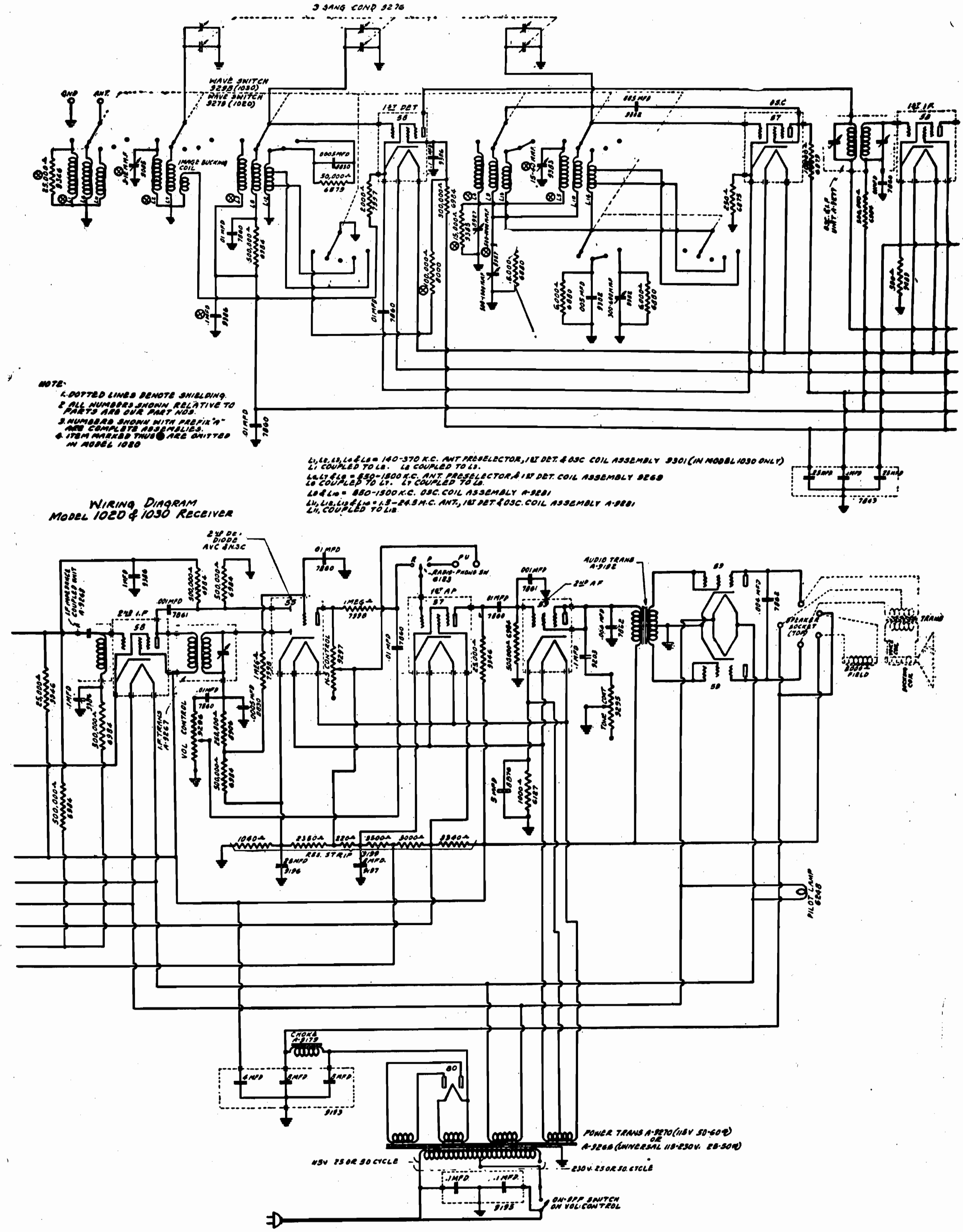
MODEL 660,
MODEL 666-C

SENTINEL RADIO CORP.



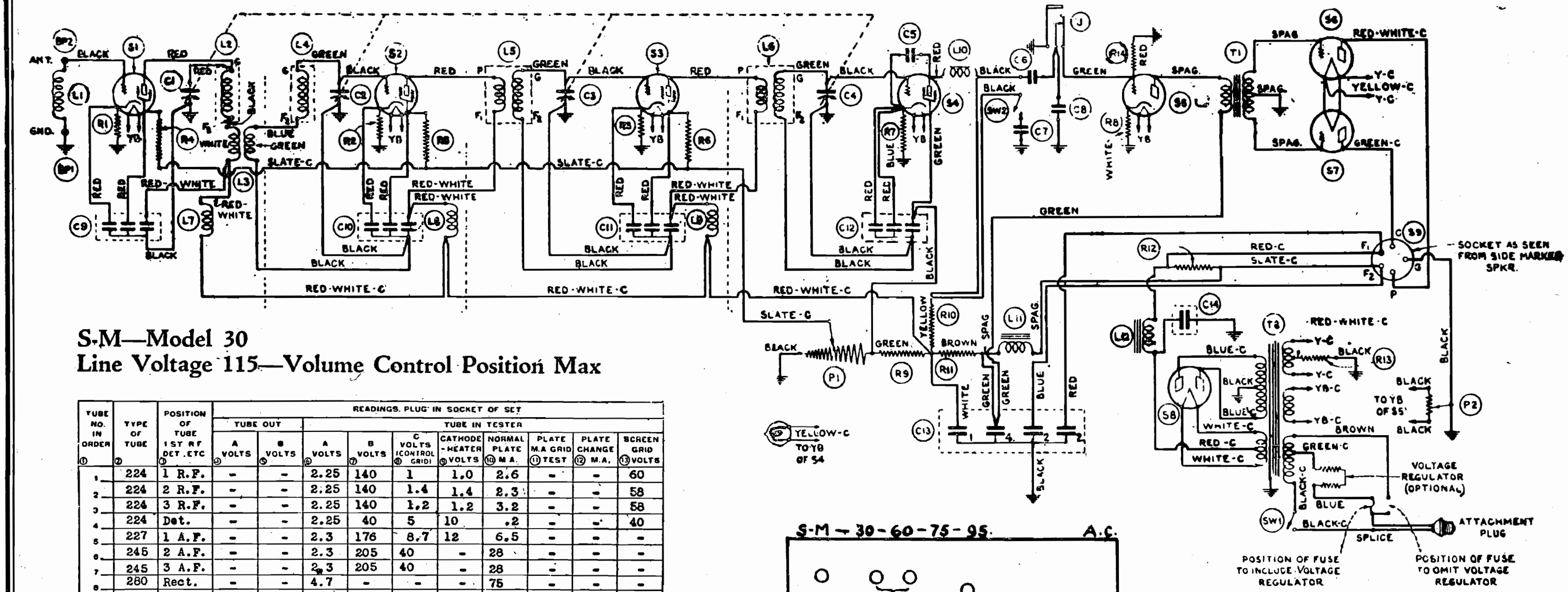
MODEL 1020, 1030

SENTINEL RADIO CORP.



SILVER - MARSHALL, INC.

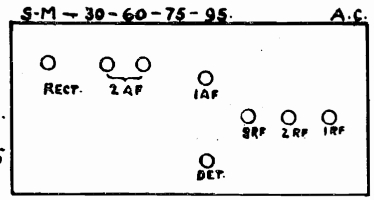
MODEL 30
Schematic, Voltage
MODEL 440

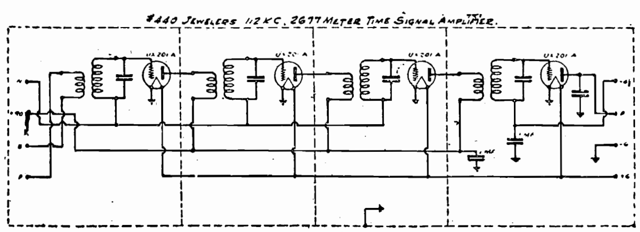


S-M—Model 30
Line Voltage 115—Volume Control Position Max

TUBE NO. IN ORDER ①	TYPE OF TUBE ②	POSITION OF TUBE 1ST RF DET. ETC ③	READINGS. PLUG IN SOCKET OF SET: TUBE OUT: A VOLTS ④	TUBE OUT: B VOLTS ⑤	TUBE IN TESTER: A VOLTS ⑥	B VOLTS ⑦	C VOLTS (CONTROL GRID) ⑧	CATHODE-HEATER VOLTS ⑨	NORMAL PLATE M.A. ⑩	PLATE M.A GRID TEST ⑪	PLATE CHANGE M.A. ⑫	SCREEN GRID VOLTS ⑬
1	224	1 R.F.	-	-	2.25	140	1	1.0	2.6	-	-	60
2	224	2 R.F.	-	-	2.25	140	1.4	1.4	2.3	-	-	58
3	224	3 R.F.	-	-	2.25	140	1.2	1.2	3.2	-	-	58
4	224	Det.	-	-	2.25	40	5	10	.2	-	-	40
5	227	1 A.F.	-	-	2.3	176	8.7	12	6.5	-	-	-
6	245	2 A.F.	-	-	2.3	205	40	-	28	-	-	-
7	245	3 A.F.	-	-	2.3	205	40	-	28	-	-	-
8	280	Rect.	-	-	4.7	-	-	-	75	-	-	-
9	-	-	-	-	-	-	-	-	-	-	-	-
10	-	-	-	-	-	-	-	-	-	-	-	-

THIS DATA APPLIES TO "B", "C", "D" AND "E" VARIATIONS





440 JEWELERS TIME SIGNAL AMPLIFIER

LEGEND

BP1-BP2 = BINDING POSTS

C1-C2-C3-C4 = .00035 MFD COND.
C5-C6 = 150 MMFD. COND
C8 = .0075 MFD. COND.
C7 = .001 MFD. COND.
C9-C10-C11-C12 = .01-.01-.01 MFD COND
C13 = L-4-2-2 MFD. — .1K = 2 MFD CONDS

J - JACK

L1-L7-L8-L9-L10 = #275 CHOKE
L2-L4 = #122 COILS
L3 = #30K COUPLING COIL
L5-L6 = #121 COILS
L11 = #338 CHOKE
L12 = #339 CHOKE

P1 = 10000 ω POT. TAPERED
P2 = 20 ω POT

R1-R2-R3 = 400 ω
R4-R5-R6 = 3000 ω
R7 = 60,000 ω
R8 = 2000 ω
R9 = 10 000 ω
R10 = 300,000 ω
R11 = 3500 ω
R12 = 1800 ω
R13 = 800 ω
R14 = 2 MEGOHM

S1-S2-S3-S4 = UX 224
S5 = UX 227
S6-S7 = UX 245
S8 = UX 280
S9 = SPKR. SOCKET
SW1 = 115 V. SWITCH
SW2 = OVERTONE SWITCH

T1 = #270 AUDIO TRANS.
T2 = #337 U PWR-TRANS.

NOTE 2 - WHITE LEAD OF C13 REMOVED FROM S5 TO T1. ONE RED LEAD OF C12 REMOVED FROM S4 TO S5.

NOTE 3 RED LEAD OF C13 REMOVED FROM F1 OF S9 TO L12. L12 INSERTED IN THE RED LEAD OF T2. C14 ADDED BETWEEN L12 AND R12 AND GROUND

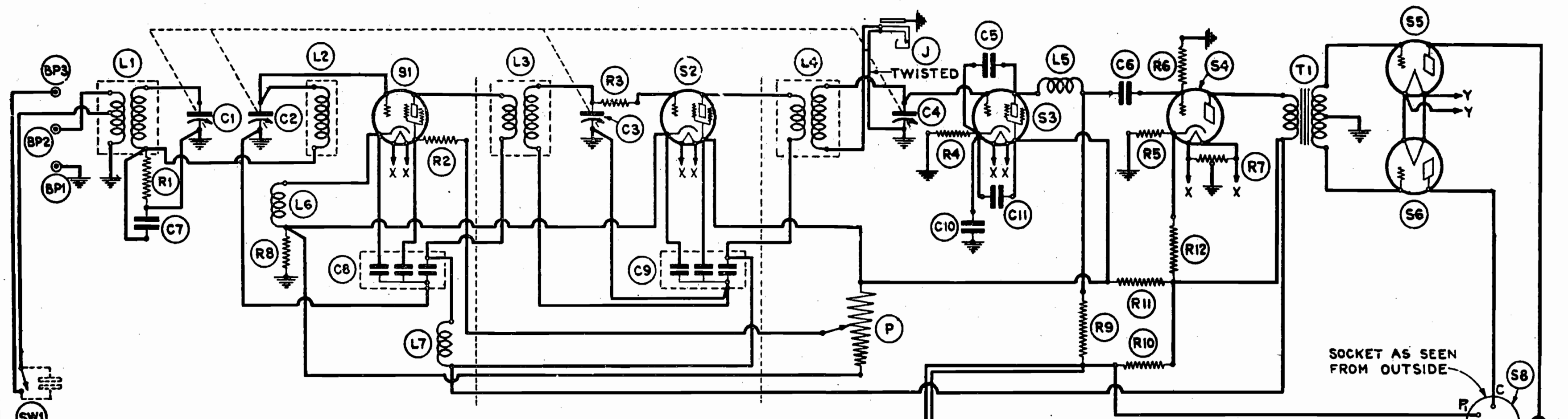
NOTE 4 - RED LEAD OF C12 CONNECTED TO S5 RETURNED TO S4

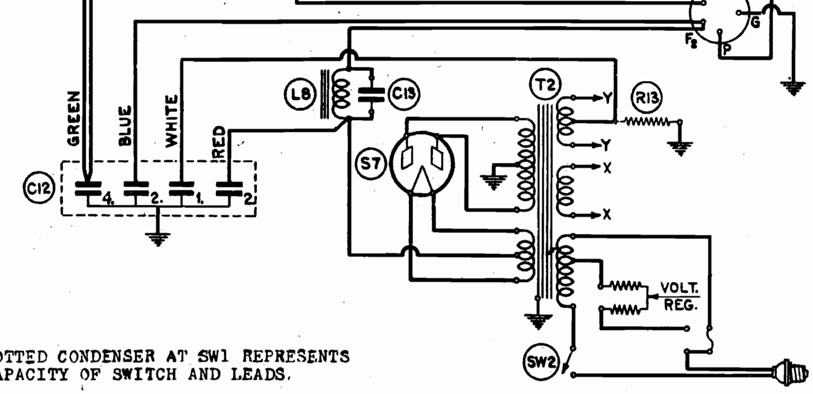
NOTE 5 - RED LEAD OF C13 REMOVED FROM L12 TO F1 OF S9. C14 REMOVED TO OPPOSITE SIDE OF L12.

SCHEMATIC WIRING DIAGRAM			
PART NO		ASSEMBLY NO.	
MATL.		SCHEMATIC NO. 30	
SKETCH BY	KL	SCALE	
DRAWN BY	MK	DATE	5-22-29
CHECKED BY		APPROVED	

MODEL 30B
Schematic, Voltage

SILVER - MARSHALL, INC.





MODEL 30B LEGEND (60 CYCLE MODEL)

BP1 - BND. BINDING POST
BP2 - SHORT ANT. BINDING POST
BP3 - LONG ANT. BINDING POST
C1-C2-C3-C4 - .00035 MFD. COND.
C5 - .00015 MFD. COND.
C6 - .006 MFD. COND.
C7 - .025 MFD. COND.
C8-C9 - (.1-.1-.1) MFD. COND.
C10 - 1 MFD. COND.
C11 - .06 MFD. COND.
C12 - (4.-2.-1.-2.) MFD. COND.
C13 - .25 MFD. COND.
J - PHONO. JACK
L1 - #124 COIL
L2 - #122 COIL
L3-L4 - 123 COILS
L5-L6-L7 - #274 CHOKE COILS
L8 - #339 CHOKE COIL
P - 10,000 OHM POT.

R1 - 60,000 OHM RESISTOR - BLUE
R2 - 2600 OHM RESISTOR
R3-R5 - 400 OHM RESISTORS
R4 - 25,000 OHM RESISTOR - BLACK
R6-R9 - 300,000 OHM RESISTORS - YELLOW
R7 - 40 OHM C.T. RESISTOR
R8 - 200 OHM RESISTOR
R10} R13} 1500 OHM - 800 OHM, RESISTOR
R11-R12 - 10,000 OHM RESISTORS - GREEN
S1-S2-S3 - UY224 TUBES
S4 - UY227 TUBE
S5-S6 - UX245 TUBES
S7 - UX280 TUBE
S8 - SPEAKER SOCKET
SW1 - LOCAL-DISTANCE SWITCH
SW2 - ON-OFF SWITCH
T1 - #270U TRANS.
T2 - #337U TRANS.

TO XX OF S3

DIALITE

LEGEND FOR 25 CYCLE MODEL
SAME AS 60 CYCLE MODEL EXCEPT

C11 - .04 MFD. COND.
C13 - 2. MFD. COND.
T2 - #337-25U TRANS.

ADD 1. MFD. CONDENSER ACROSS TERMINALS OF R12

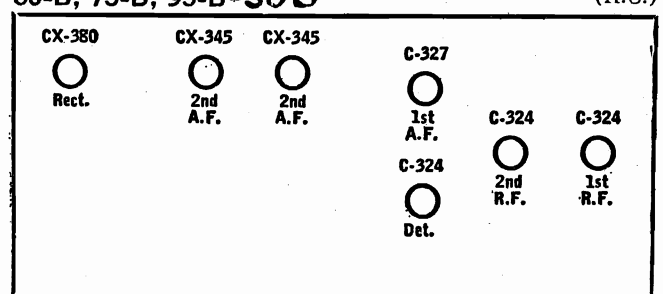
DOTTED CONDENSER AT SW1 REPRESENTS CAPACITY OF SWITCH AND LEADS.

NOTE - WHEN USING PHONOGRAPH JACK CONNECT LOW SIDE OF PHONOGRAPH VOLUME CONTROL TO SLEEVE OF PLUG.

SILVER-MARSHALL—No. 30B-60B-75B-90B
Line Voltage 115—Volume Control Position Max

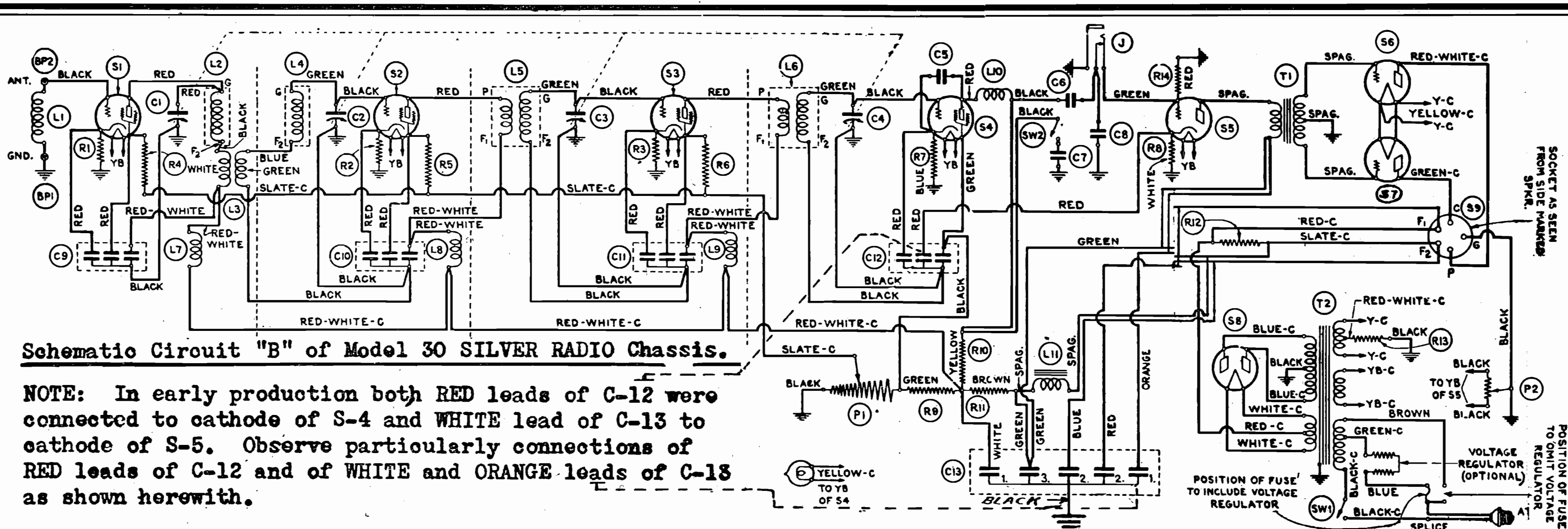
Tube No. in Order ①	Type of Tube ②	Position of Tube 1st R.F. Det., Etc. ③	Tube Out: A Volts ④	Tube Out: B Volts ⑤	Tube in Tester: A Volts ⑥	B Volts ⑦	C Volts (Control Grid) ⑧	Cathode-Heater Volts ⑨	Normal Plate M.A. ⑩	Plate M.A. Grid Test ⑪	Plate Change M.A. ⑫	Screen Grid Volts ⑬
1	224	1 R.F.	-	-	2.5	168	4	4	5	-	-	70
2	224	2 R.F.	-	-	2.5	164	4	4	5	-	-	70
3	224	Det.	-	-	2.5	28	8	8	.5	-	-	70
4	227	1 A.F.	-	-	2.5	150	10	10	6	-	-	-
5	245	2 A.F.	-	-	2.5	264	44	-	30	-	-	-
6	245	2 A.F.	-	-	2.5	264	44	-	30	-	-	-
7	280	Rect.	-	-	4.8	-	-	-	100	-	-	-

60-B, 75-B, 95-B-30B (A.C.)



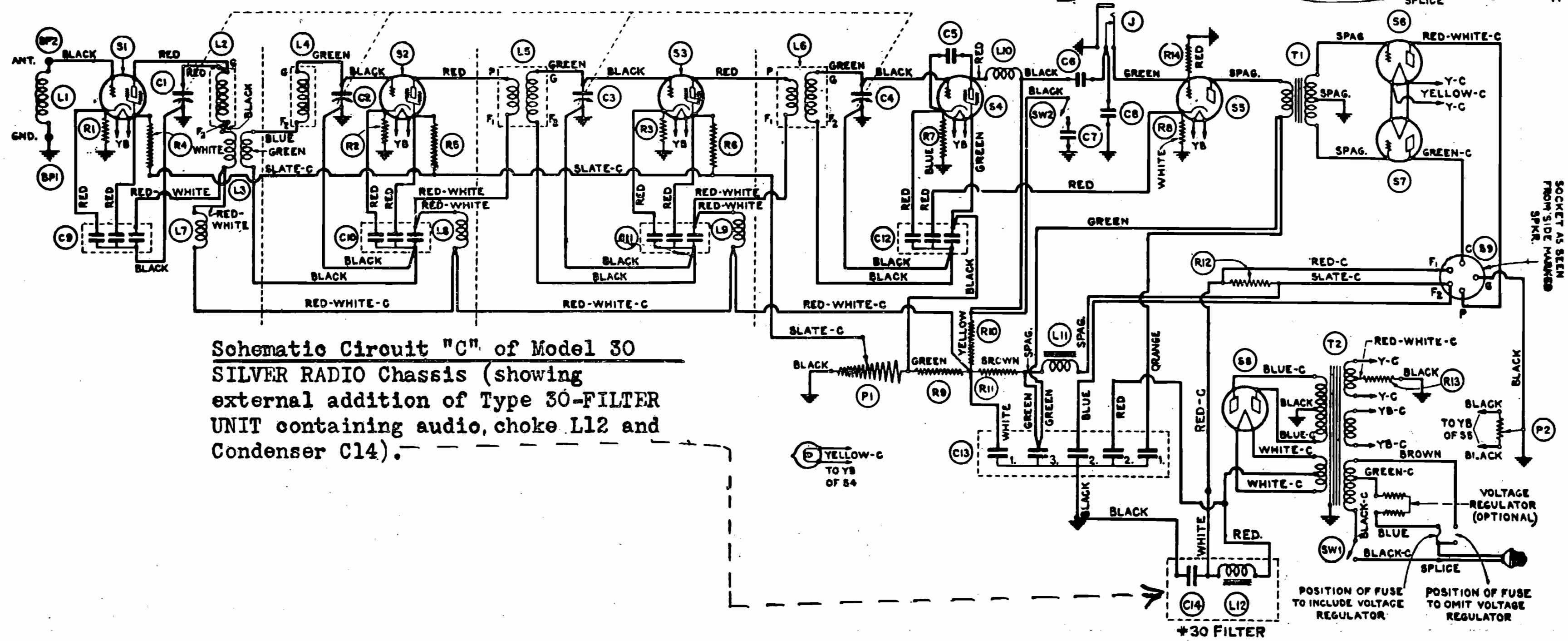
SILVER - MARSHALL, INC.

MODEL 30
Schematic Circuit B
Schematic Circuit C



Schematic Circuit "B" of Model 30 SILVER RADIO Chassis.

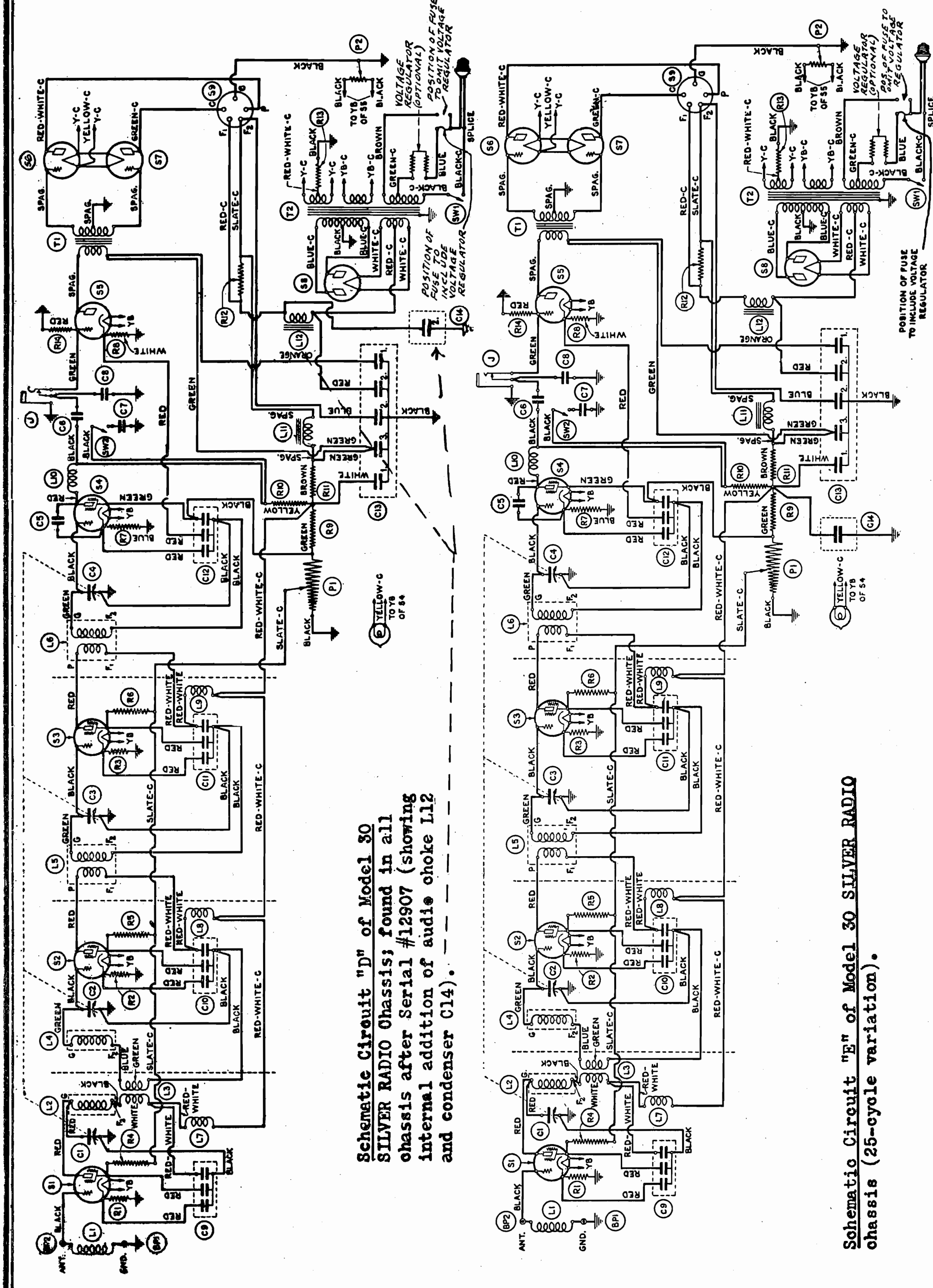
NOTE: In early production both RED leads of C-12 were connected to cathode of S-4 and WHITE lead of C-13 to cathode of S-5. Observe particularly connections of RED leads of C-12 and of WHITE and ORANGE leads of C-13 as shown herewith.



Schematic Circuit "C" of Model 30
SILVER RADIO Chassis (showing external addition of Type 30-FILTER UNIT containing audio, choke L12 and Condenser C14).

MODEL 30
Schematic Circuit D
Schematic Circuit E

SILVER - MARSHALL, INC.

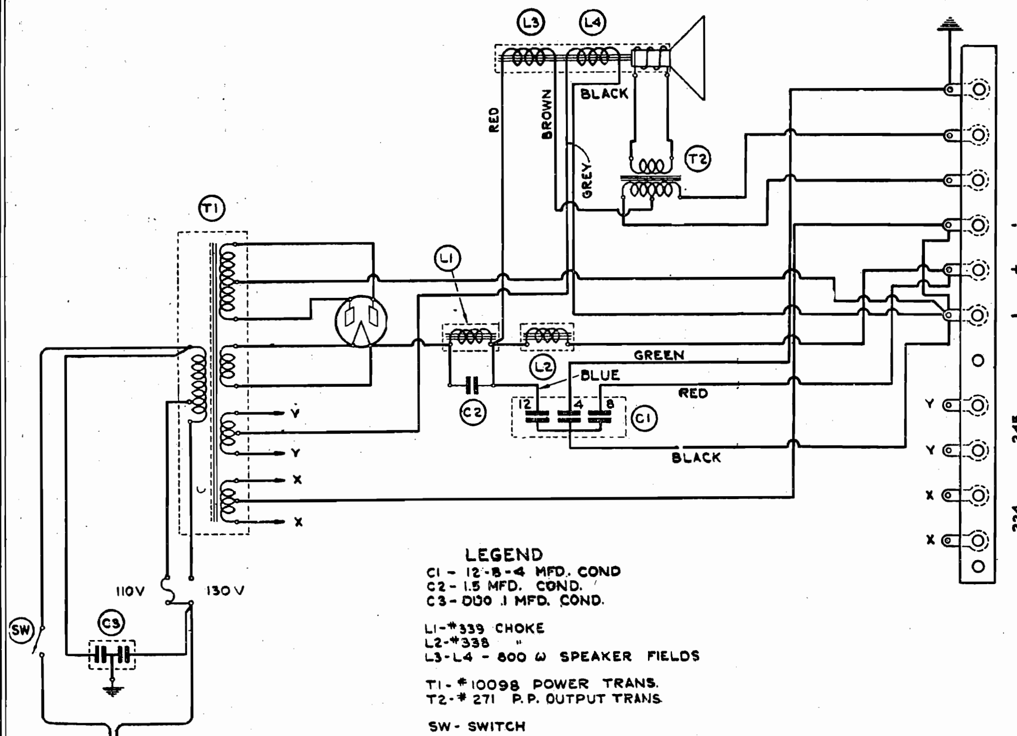


Schematic Circuit "D" of Model 30 SILVER RADIO Chassis; found in all chassis after Serial #12907 (showing internal addition of audio choke L12 and condenser C14).

Schematic Circuit "E" of Model 30 SILVER RADIO chassis (25-cycle variation).

SILVER-MARSHALL, INC.

MODEL 33-A Power Supply
25 and 60 cycles



LEGEND
C1 - 12-8-4 MFD. COND
C2 - 1.5 MFD. COND.
C3 - DUO .1 MFD. COND.

L1 - #339 CHOKE
L2 - #338 "
L3-L4 - 800 ω SPEAKER FIELDS

T1 - #10098 POWER TRANS.
T2 - # 271 P.P. OUTPUT TRANS.

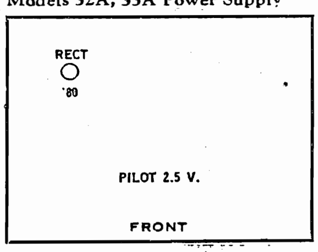
SW - SWITCH

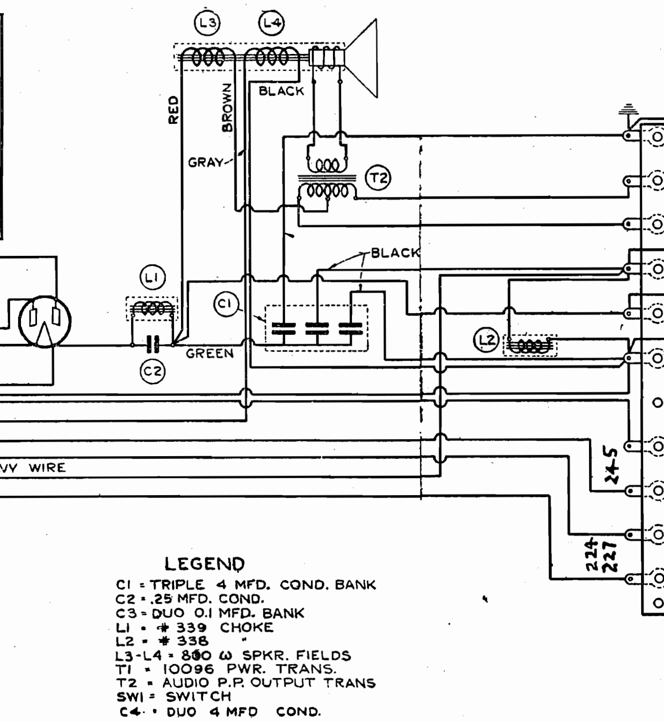
Schematic Diagram of 33-A Power Supply (25 cycle) for SILVER MARSHALL Radio for 34A and 35A receivers

SILVER-MARSHALL—Model 34A

TUBE NO. IN ORDER TESTED (1)	TYPE OF TUBE (2)	POSITION OF TUBE IN SET (3)	METER READINGS WITH JEWELL TEST PLUG IN SOCKET OF SET — OPERATING VOLTAGES: FILAMENT OR (4) HEATER	PLATE OR (5) ANODE	CONTROL GRID—SPACE (6) GD+	NORMAL GRID—SCREEN (7) GD+	CATHODE TO (8) HEATER	MILLIAMPERES: SCREEN GD L.H. '80 (9) PLATE	PLATE R.H. '80 (10) PLATE	TUBE TEST (11)	PLATE CURRENT (12) CHANGE
1	224	1 R.F.	2.40	184	3.5	-	61	-	2.4		
2	224	2 R.F.	2.40	185	3	-	64	-	2.4		
3	224	Det.	2.44	108	13	-	13	-	.2		
4	227	1 A.F.	2.48	140	-	2	9	-	4.4		
5	245	2 A.F.	2.34	220	-	40	-	-	20		
6	245	2 A.F.	2.32	220	-	40	-	-	21		
7	280	Rect.	5.	-	-	-	-	26	26		

Models 32A, 33A Power Supply





LEGEND
C1 = TRIPLE 4 MFD. COND. BANK
C2 = .25 MFD. COND.
C3 = DUO 0.1 MFD. BANK
L1 = # 339 CHOKE
L2 = # 338
L3-L4 = 800 ω SPKR. FIELDS
T1 = 10096 PWR. TRANS.
T2 = AUDIO P.P. OUTPUT TRANS
SW1 = SWITCH
C4 = DUO 4 MFD COND.

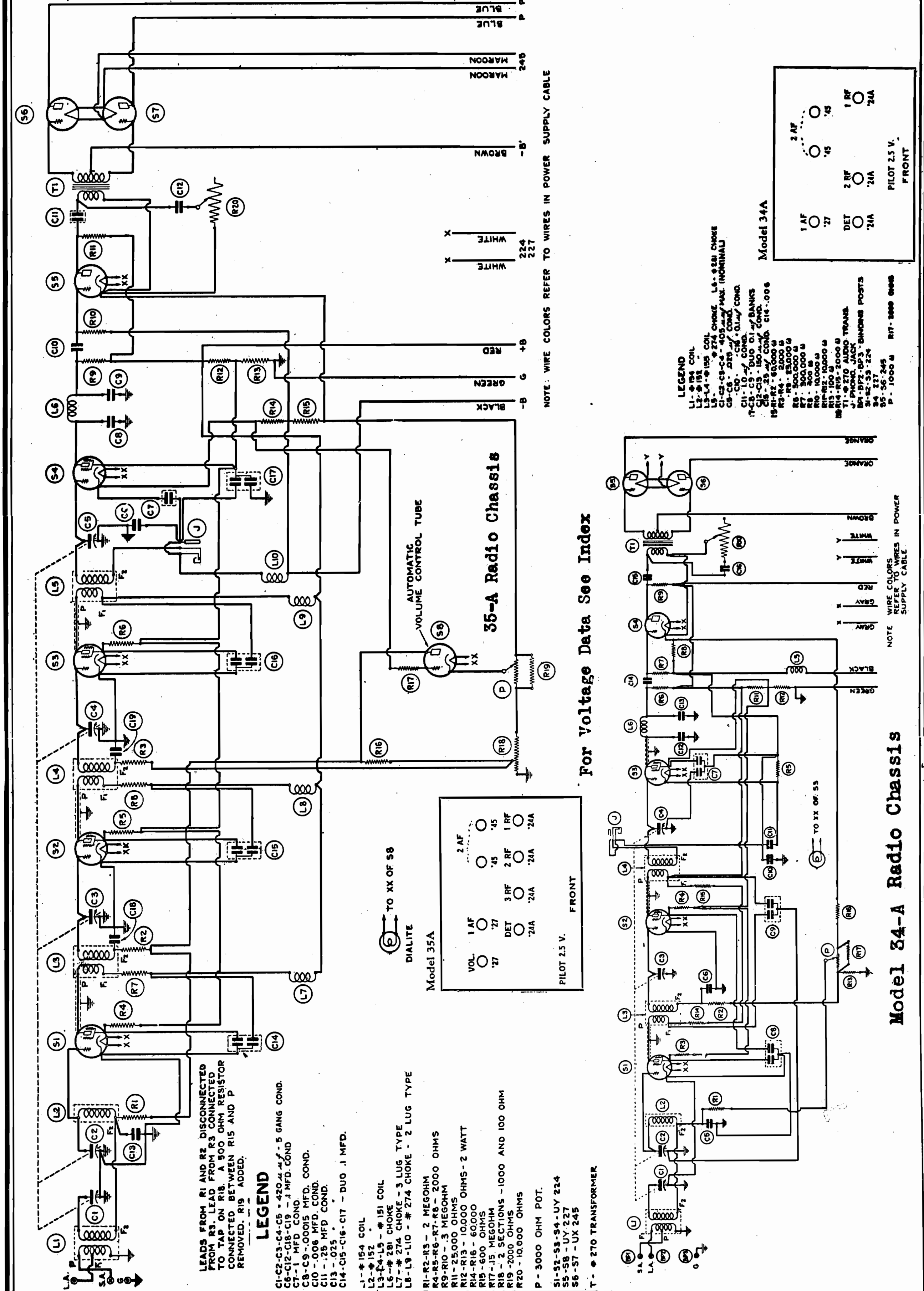
Schematic Diagram of 33-A Power Supply (60 cycle) for SILVER MARSHALL Radio for 34A and 35A receivers.

SILVER-MARSHALL—Model 35A

TUBE NO. IN ORDER TESTED (1)	TYPE OF TUBE (3)	POSITION OF TUBE IN SET (3)	METER READINGS WITH JEWELL TEST PLUG IN SO… — OPERATING VOLTAGES: FILAMENT OR (4) HEATER	PLATE OR (5) ANODE	CONTROL GRID—SPACE (6) GD+	NORMAL GRID—SCREEN (7) GD+	CATHODE TO (8) HEATER	MILLIA…: SCREEN GD L.H. '80 (9) PLATE	PLATE R.H. '80 (10) PLATE
1	224	1 R. F.	2.15	176	0	74	66	-	3.7
2	224	2 R.F.	2.15	176	0	73	66	-	3.5
3	224	3 R.F.	2.17	188	3	73	60	-	2.0
4	224	Det.	2.19	118	11	40	11	-	.2
5	227	1 A.F.	2.20	176	3	14	-	-	2.0
6	245	2 A.F.	2.30	216	-	40	-	-	20
7	245	V.Con.	2.30	216	-	40	-	-	20
8	227	Rect.	2.15	15	8	38	-	-	-
9	280	-	5.	-	-	-	-	28	28

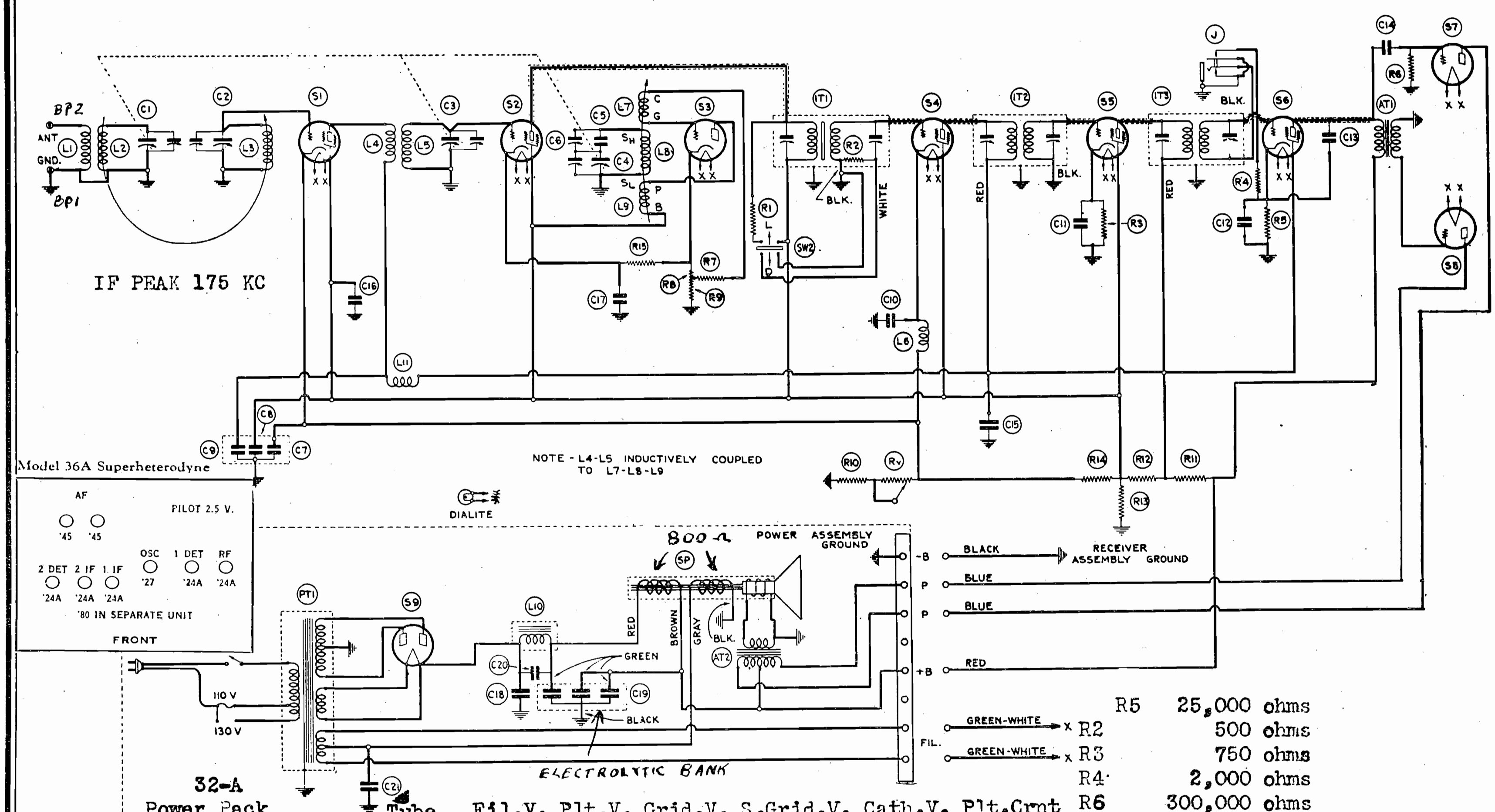
MODEL 34-A
MODEL 35-A

SILVER-MARSHALL, INC.



MODEL 36-A
Schematic, Voltage

SILVER - MARSHALL, INC.



32-A
Power Pack

Tube	Fil.V.	Plt.V.	Grid.V.	S.Grid.V.	Cath.V.	Plt.Crnt
RF	2.27	162		85	7.	4. ma
1Det	2.27	76*		80	37.5	3.
Osc	2.27	82			37.5	11.
1IF	2.27	160		110	42.5	4.
2IF	2.27	160		110	45.	4.
2Det	2.27	245		162	7.	4.
PP1	2.4	255	22.5*			
PP2	2.4	255	42.5			

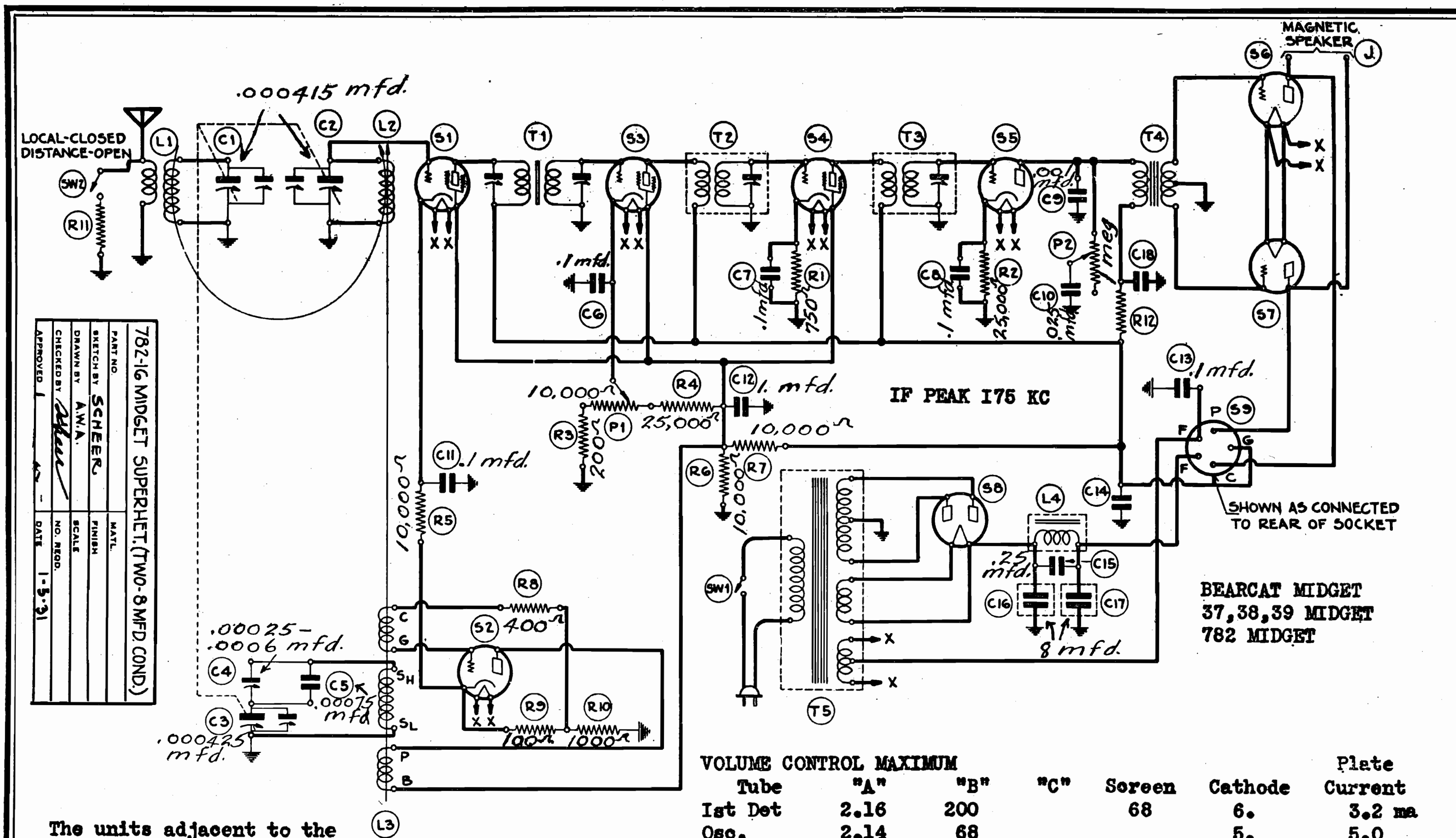
* Misleading due to current drawn by test meter.

C7,8,9	Triple .1 bank	
C10,14,16,20	.25 mfd	
C11,17,21	.1 mfd	
C12,15,18	1. mfd	
C13	.001	
C19	Triple 4. mfd (electrolytic)	

R5	25,000 ohms
R2	500 ohms
R3	750 ohms
R4	2,000 ohms
R6	300,000 ohms
R7	400 ohms
R8,R9	100 ohms,1000 ohms (one strip)
R10	375 ohms
Rv	3000 ohms
R11	3500 ohms
R12	4000 ohms
R13,R15	10000 ohms
R14	20000 ohms

MODEL Bearcat Midget
MODEL 37,38,39 Midget
MODEL 782 Midget

SILVER - MARSHALL, INC.



BEARCAT MIDGET
37,38,39 MIDGET
782 MIDGET

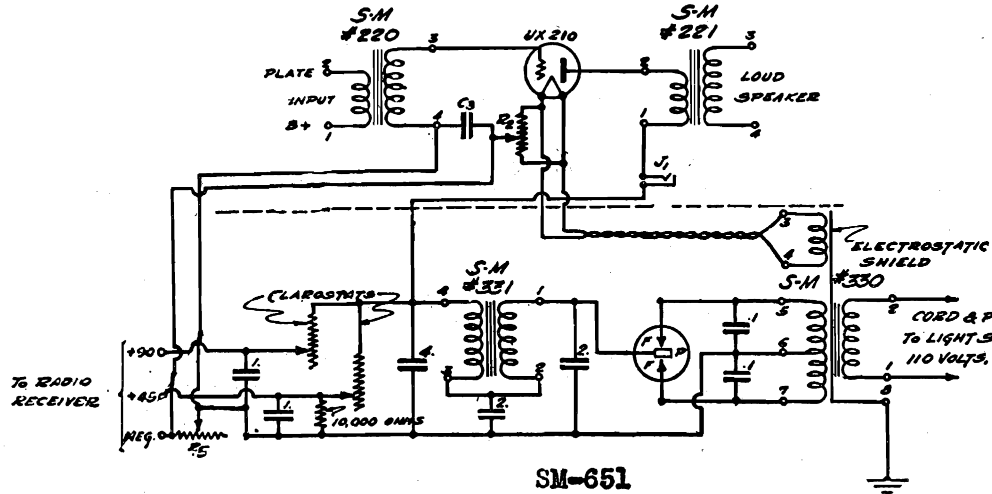
VOLUME CONTROL MAXIMUM

Tube	"A"	"B"	"C"	Screen	Cathode	Plate Current
Ist Det	2.16	200		68	6.	3.2 ma
Osc.	2.14	68			5.	5.0
Ist IF	2.18	200		68	1.6	5.7
2nd IF	2.19	200		68	2.3	5.6
2nd Det	2.20	200			20.	0.8
AF PP	2.25	245	47			29.0
AF PP	2.25	245	47			29.0
Rect.	5.1	400 Volts A.C. per anode				

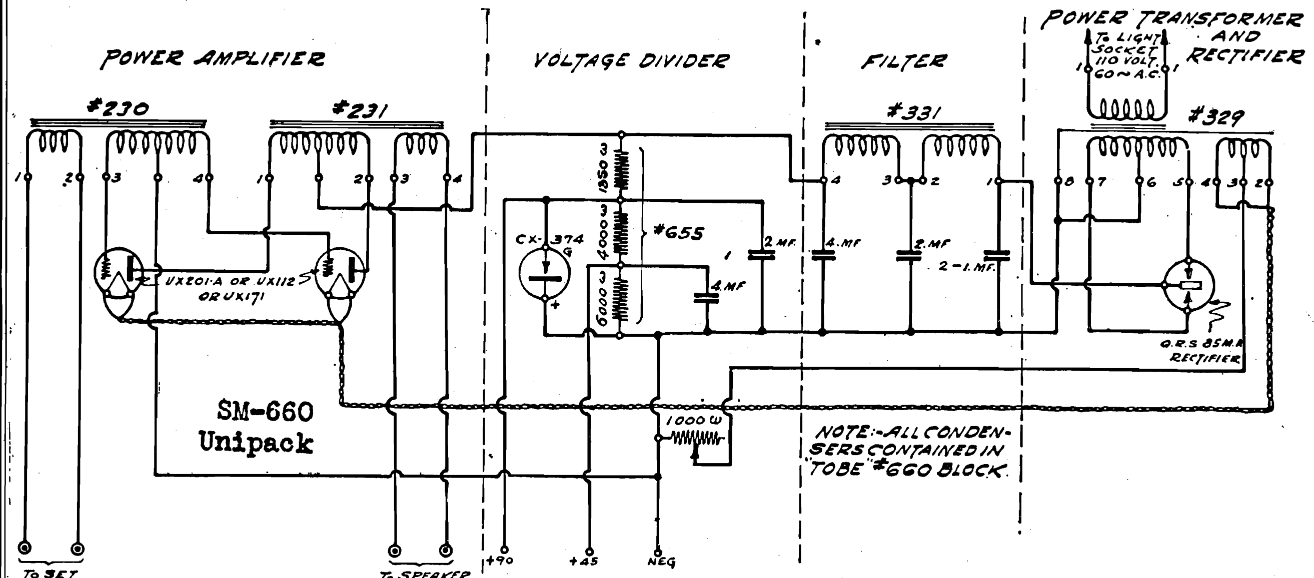
The units adjacent to the shielded IF and 2nd det. tubes are the IF transformers, with the 1st det. next to the 1st IF tube. The tuning condenser section most distant from the dial tunes the osc.

MODEL 651
MODEL 660 Unipack
MODEL 660-B

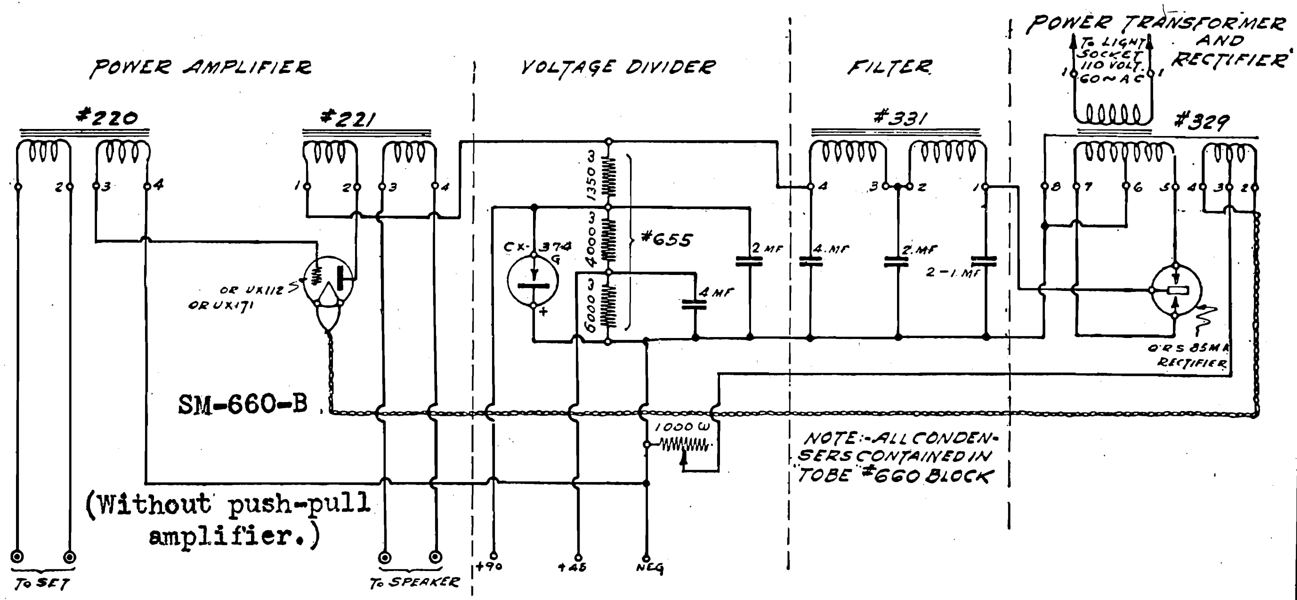
SILVER - MARSHALL, INC.



SM-651



SM-660 Unipack

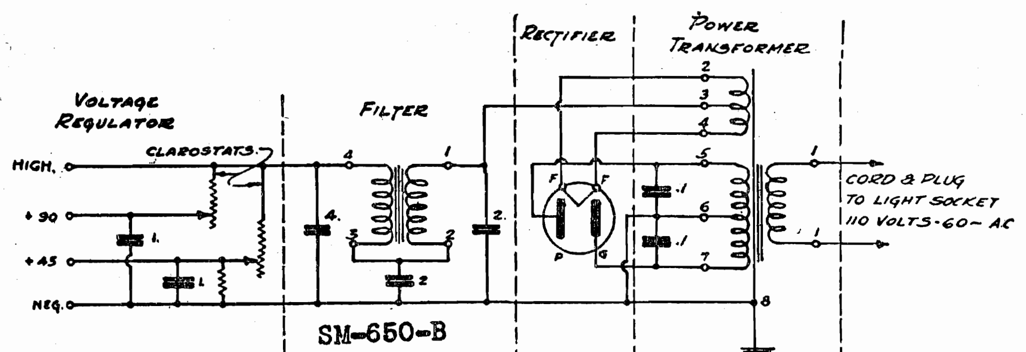


SM-660-B

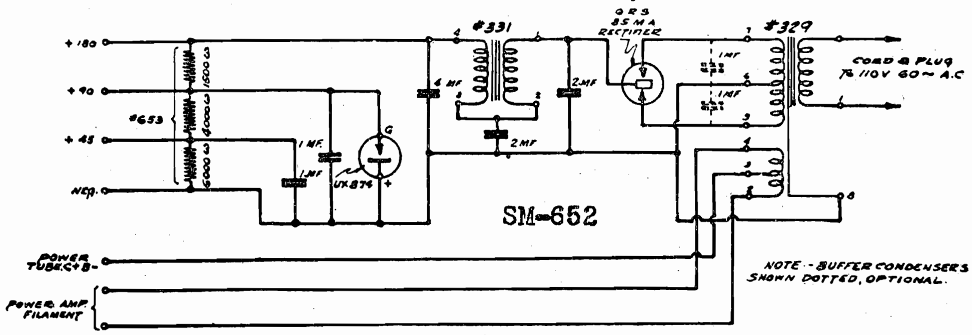
(Without push-pull amplifier.)

MODEL 650-B
MODEL 652
MODEL 669

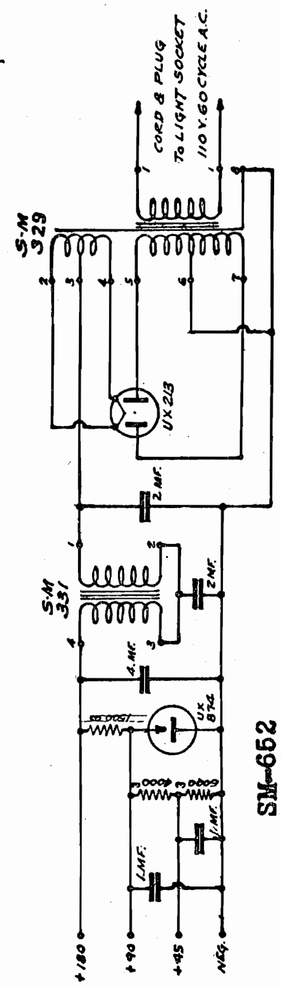
SILVER - MARSHALL, INC.



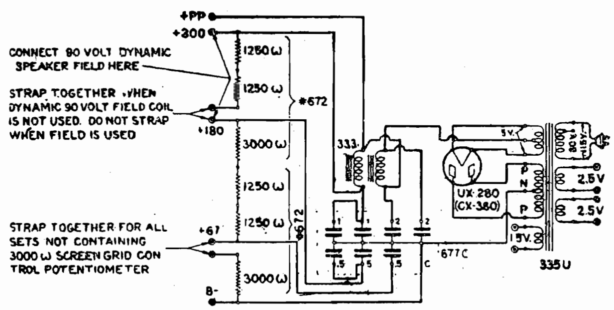
SM-650-B

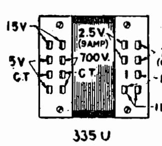


SM-652

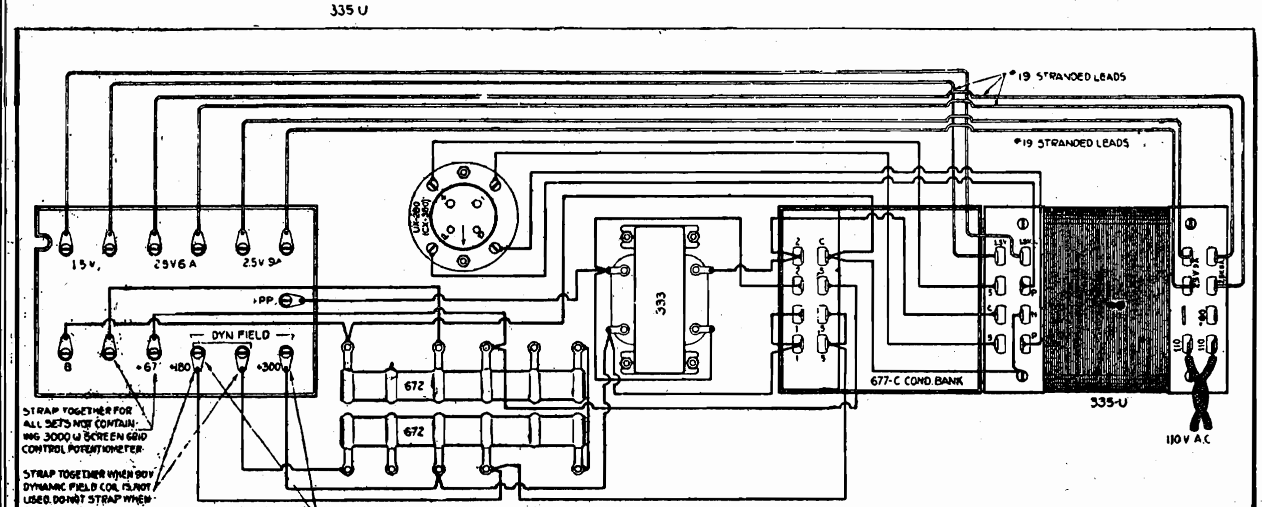


SM-652





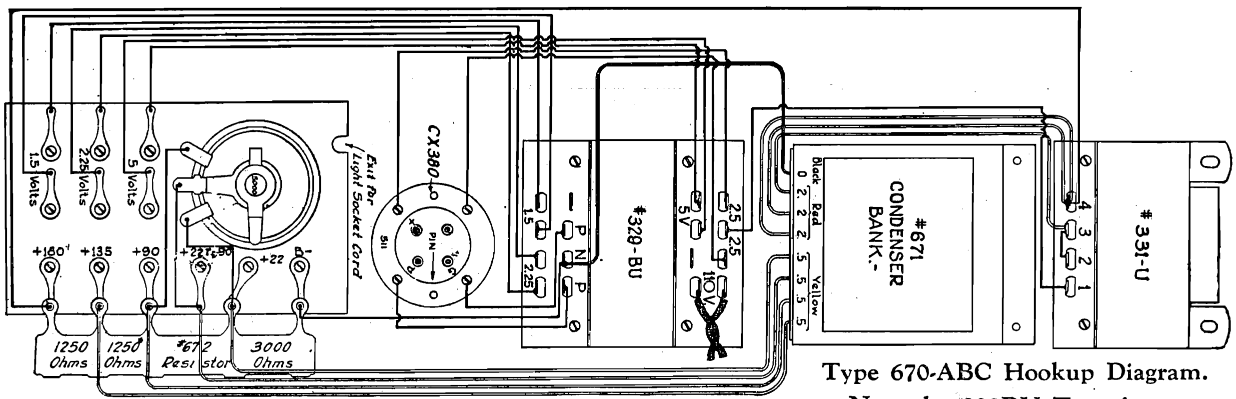
SM-669



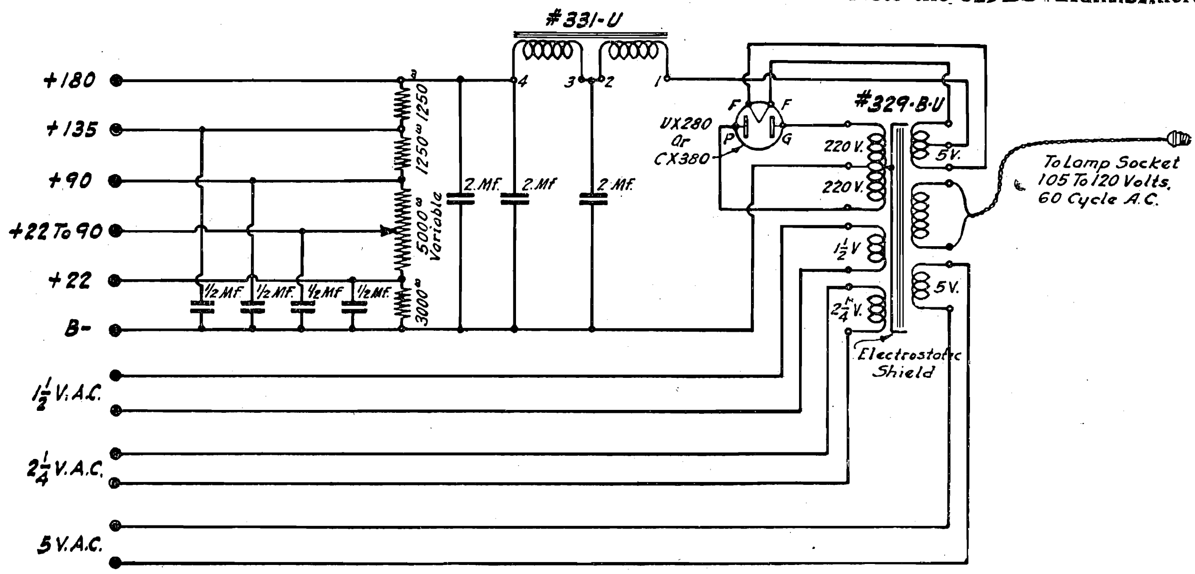
SM-669

SILVER - MARSHALL, INC.

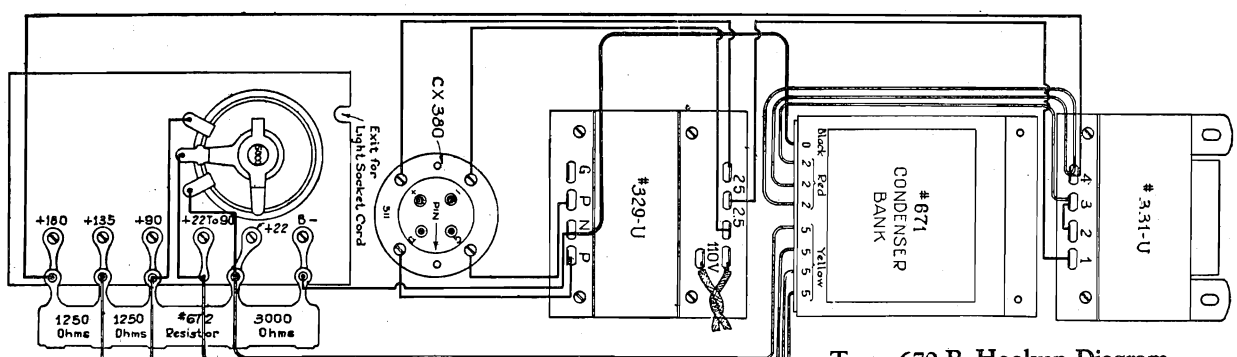
MODEL 670-ABC
MODEL 670-B
Schematic, Chassis



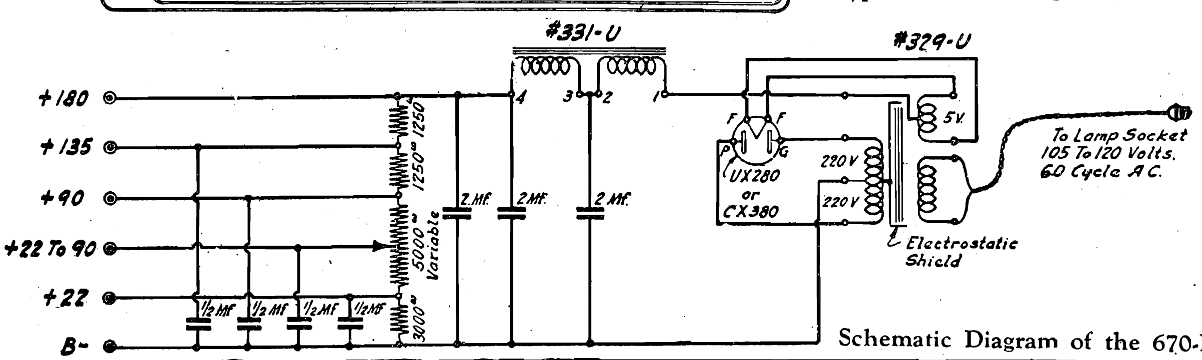
Type 670-ABC Hookup Diagram.
Note the 329BU Transformer.



Schematic Diagram of the 670-ABC



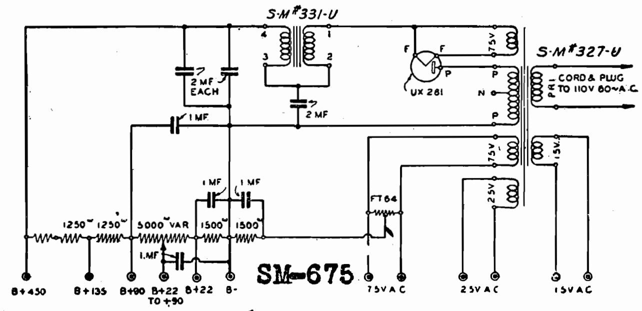
Type 670-B Hookup Diagram

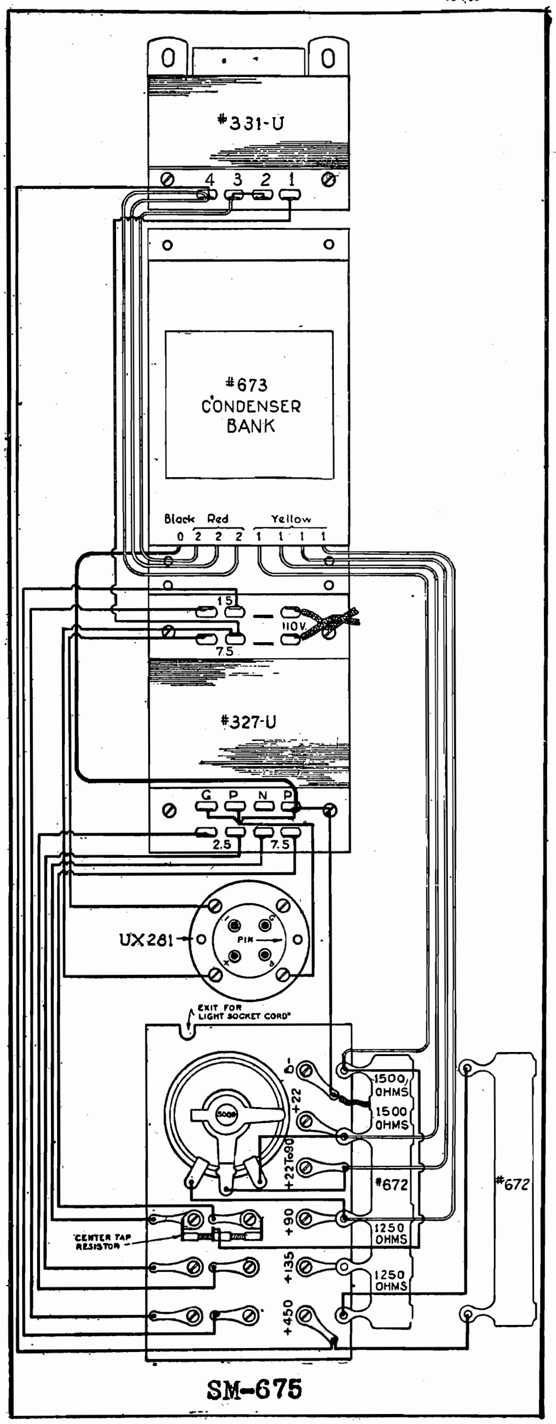


Schematic Diagram of the 670-B

MODEL 675
Schematic
Chassis, Voltage

SILVER - MARSHALL, INC.



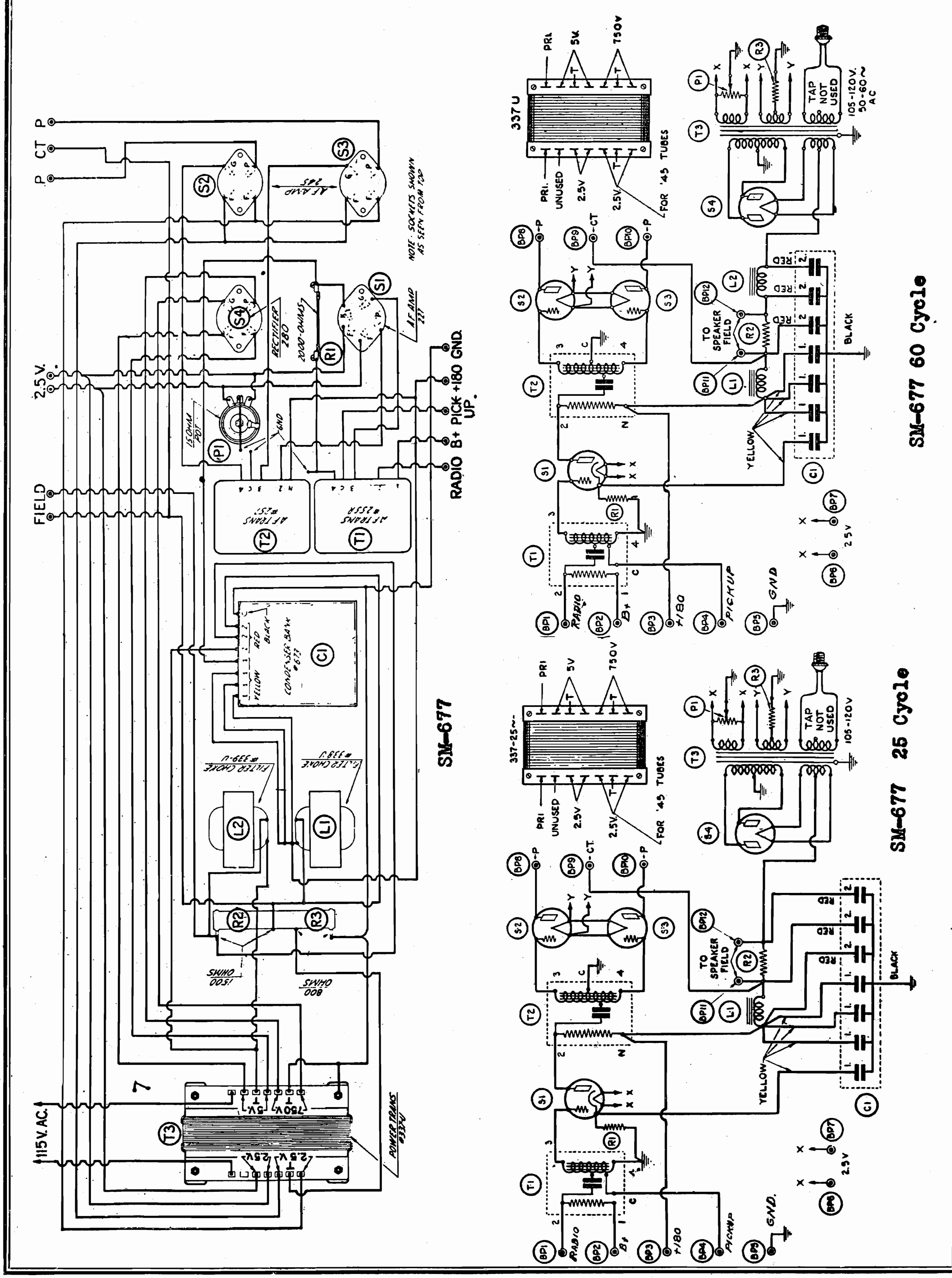


Type No.	Code Word	Secondary		Recti-fier Tube	Filament Windings						Tubes (or Equivalent) Will Operate	Size, Inches			Shpg. Wt., Lbs.	List Price
					First		Second		Third							
		Total Volts	M.A.		Volts	Am-peres	Volts	Am-peres	Volts	Am-peres		High	Wide	Long		
328BU	Transall	1100	150	2—'81	7½	2.5	2½	2	1½	2	2—'50, 2—'26, 1—'27	4⅝	5⅝	4½	16½	$25.00
337U*	Transvaal	750	110	1—'80	2½	9	2½	3	...	...	2—'45, 5—'24 or '27	4⅝	5⅝	4	12	16.00
33725U*	Transmute	750	110	1—'80	2½	9	2½	3	...	...	2—'45, 5—'24 or '27	4⅝	5⅝	4	13	20.00
346	Transtone	820	100	1—'80	2½	10		None			5—'24, 1—'27, 2—'45	4⅝	6⅜	4	13	15.00
34625	Transex	820	100	1—'80	2½	10		None			5—'24, 1—'27, 2—'45	4⅝	6⅜	4	14	20.00
329BU	Transmount	440	85	1—'80	5	2	2½	3.5	1½	5		4½	4 1/16	4 1/16	5	10.00
334	Transflow	300	60	1—'80	...			None			120-volt speaker field	3½	2¾	3⅜	2	7.00
336U	Transnut	520	85	1—'80	2½	3	2½	7.5	1½	4	2—'45, 4—'26, 4—'24 or —'27	4 1/16	3⅜	3⅜	5	10.00
285	Transmor	338	40	1—'26	2½	3½	...	..	...	...	2—'27 or '24	3¼	2⅝	2⅞	3	7.00
28525	Transcycle	338	40	1—'26	2½	3½	.		...		2—'27 or 24	3¼	2⅝	3¼	.	9.50
247	Transform	Filament only			1½	5	2½	3.5	5	1	2—'27, 5—'26, 2—'27	3¼	2⅝	2¼	2½	5.00
249	Transfull	Filament only			2½	9	2½	3	...	..	2—'45, 5—'24 or '27	3¼	2⅝	2¼	2½	5.00
326**	Transduce	Special line voltage reducing transformer									(Any 6 to 10 tube set)	4⅜	3⅛	5	7½	15.00

**326 line voltage reducing transformer is intended to reduce line voltages varying from 200 to 250 volts to 110 volts for the operation of 110 volt, 50 to 60 cycle receivers or amplifiers of up to 150 watt rating, or it may also be reversed and employed to step up a 110 volt line to 220 to 250 volts.
*Equipped with 80 volt primary tap for use with automatic voltage regulating device.

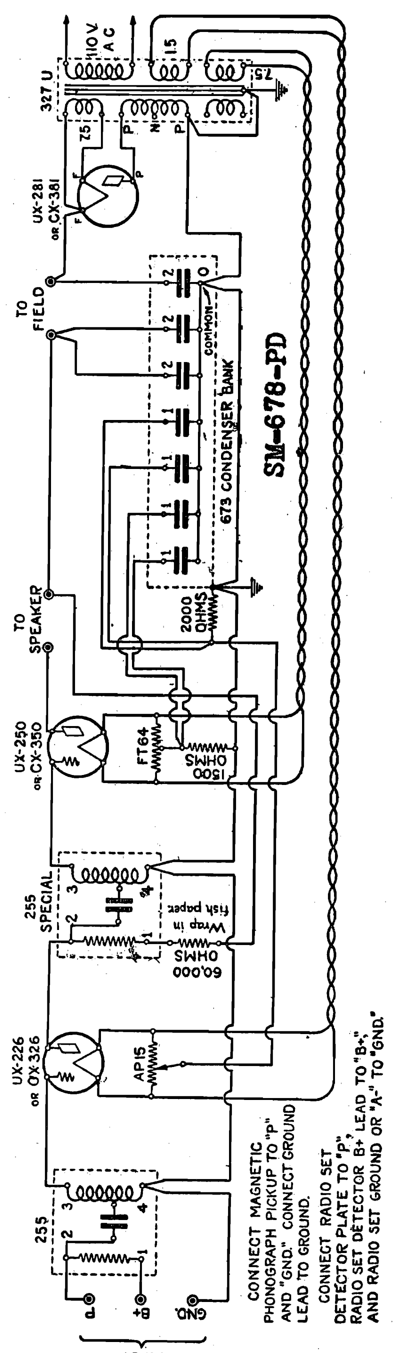
MODEL 677
25 and 60 cycles
Schematic, Chassis

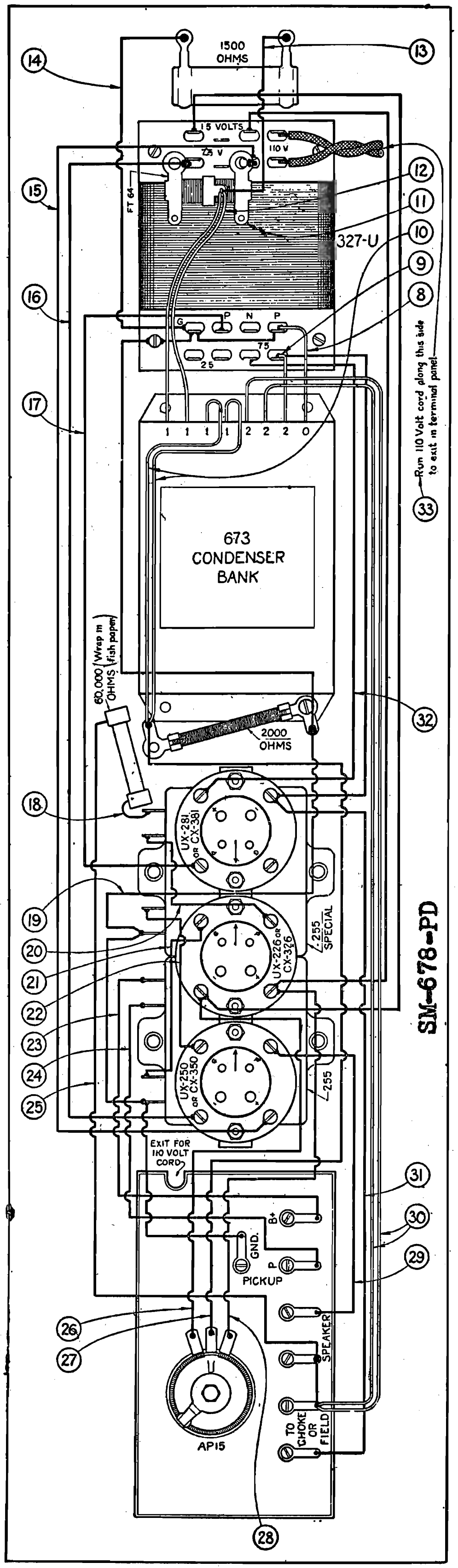
SILVER - MARSHALL, INC.

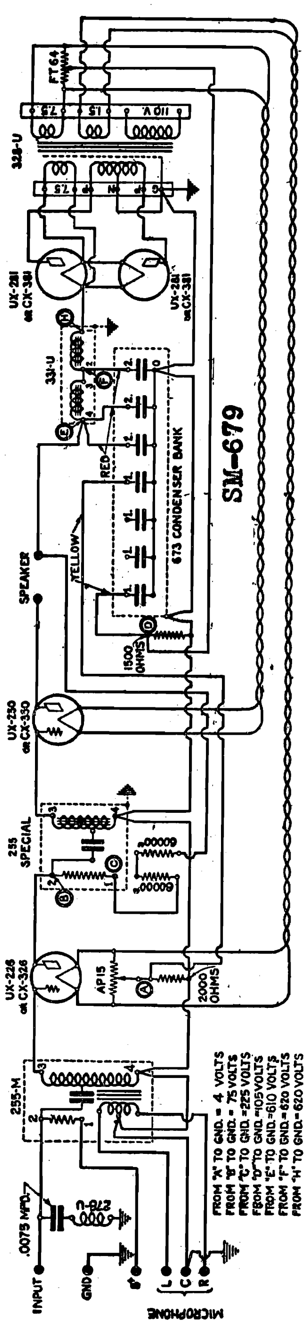


SILVER - MARSHALL, INC.

MODEL 678-PD
Schematic, Chassis
MODEL 679



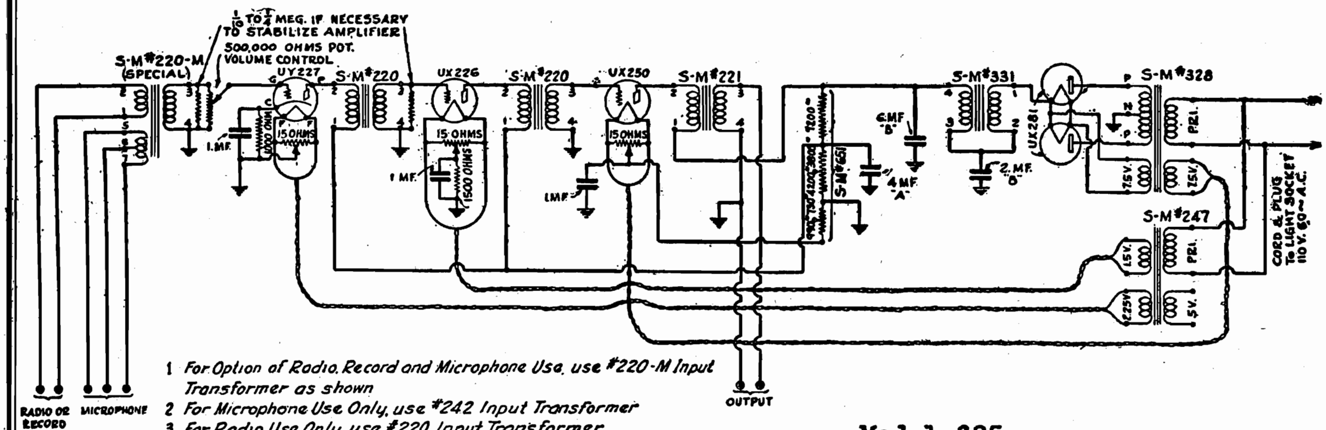




Schematic Diagram of 679 Amplifier

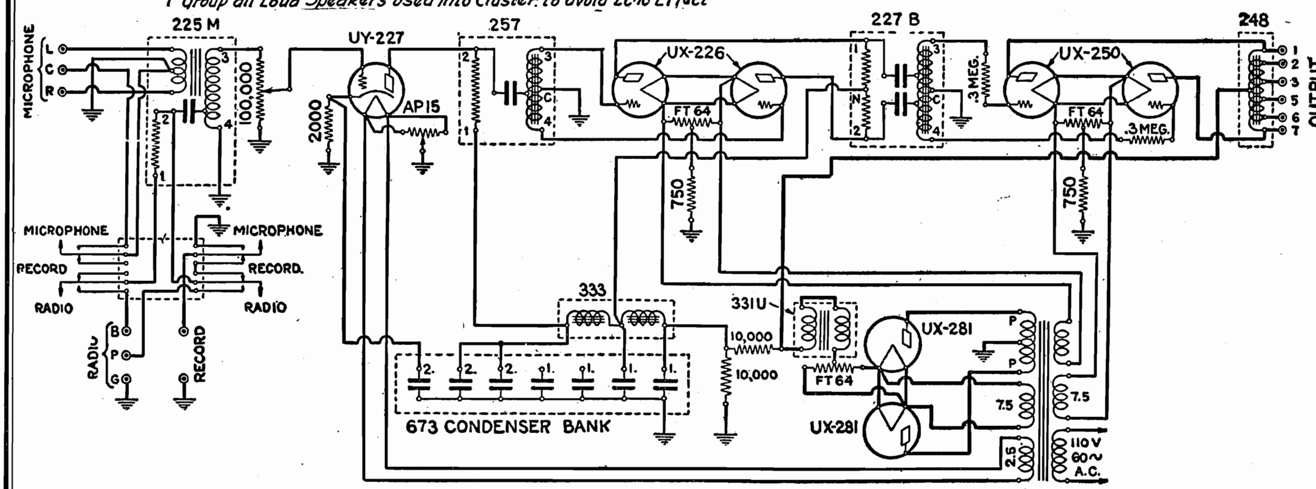
SILVER - MARSHALL, INC.

MODEL 685
MODEL 690
MODEL 692

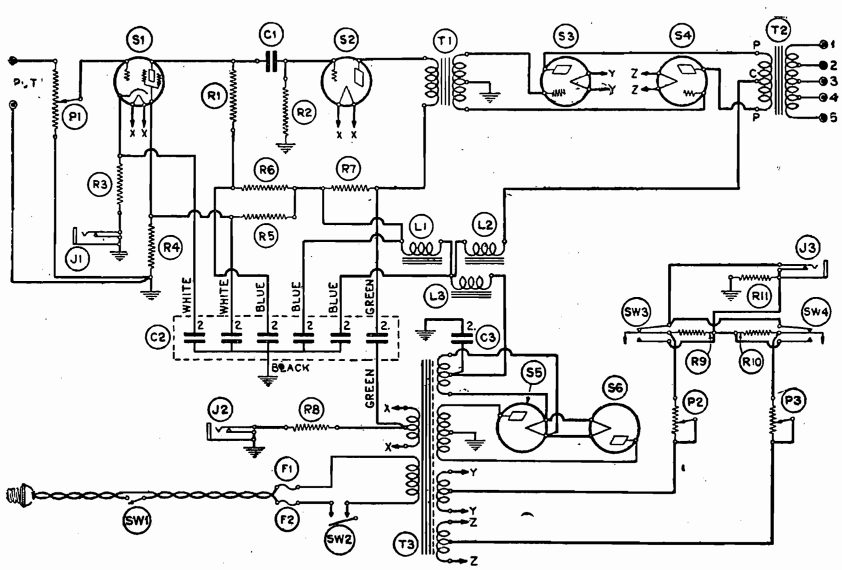


1. For Option of Radio, Record and Microphone Use, use #220-M Input Transformer as shown
2. For Microphone Use Only, use #242 Input Transformer
3. For Radio Use Only, use #220 Input Transformer
4. For Record-Pickup Use Only, Omit Input Transformer and Connect Record-Pickup in place of Input Transformer Secondary directly to Ends of 500,000 Ohm Volume-Control Potentiometer
5. When Using Microphone (Single or Double-Button Type Optional) keep well away from Loud Speakers to avoid "Singing"
6. Use 3 to $4\frac{1}{2}$ Volts of Dry Battery for Microphone
7. Group all Loud Speakers Used into Cluster: to avoid "Echo Effect"

Model 685



Schematic Diagram of the S-M 690 Amplifier

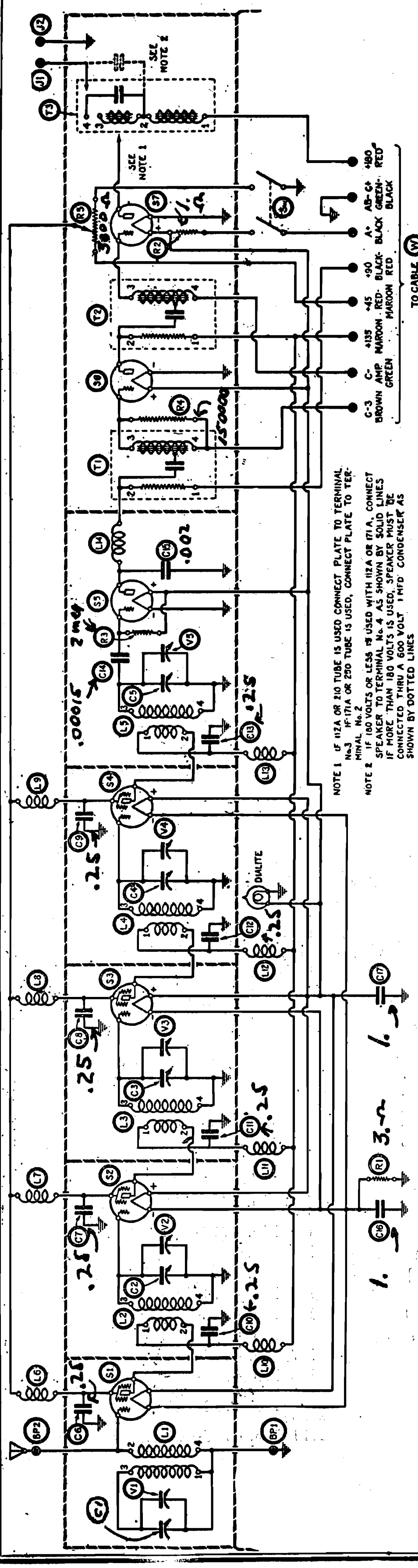


Model 692

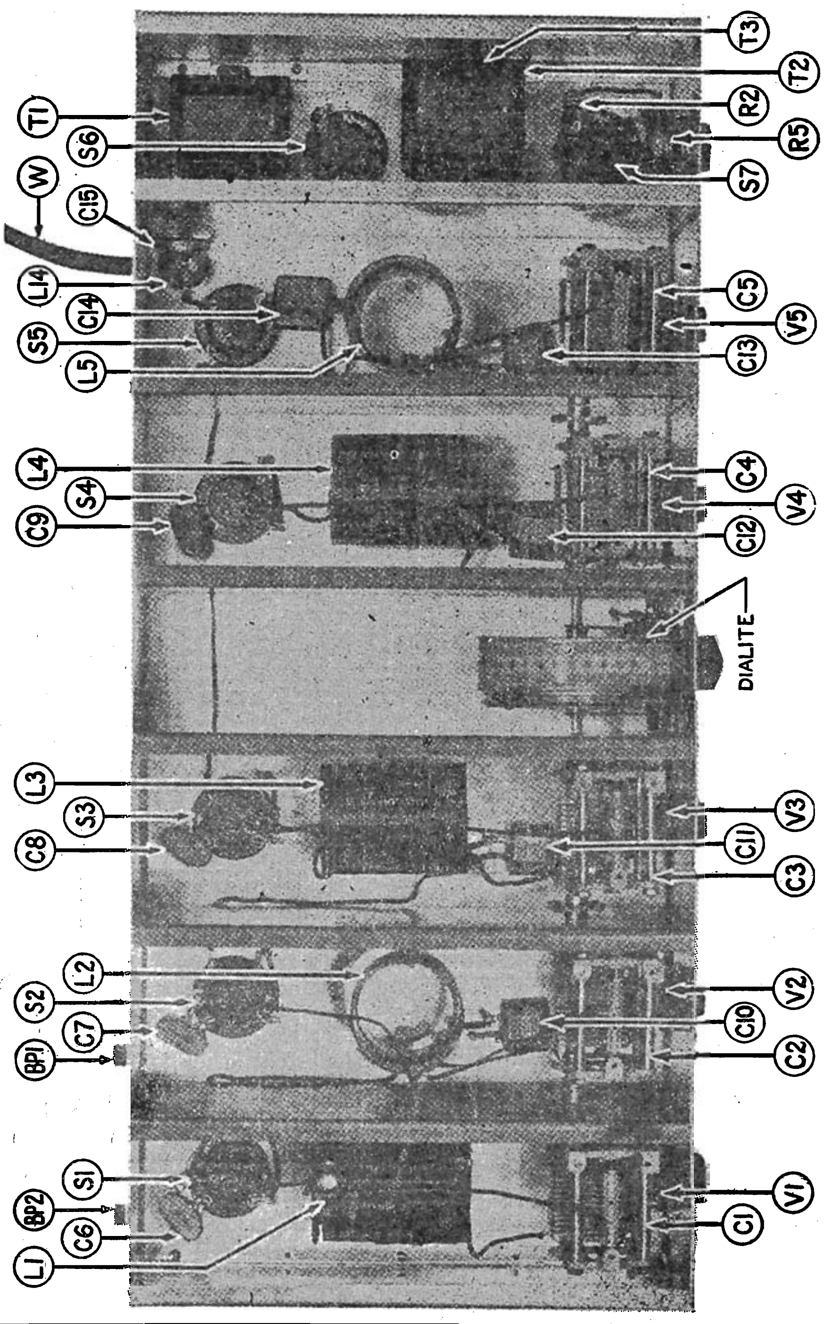
P1	No. 4491—Potentiometer
P2, P3	No. 4490—Potentiometer
R1	No. 4772—Resistor
R2	No. 4700—Resistor
R3	No. 4730—Resistor
R4	No. 4771—Resistor
R5	No. 4685—Resistor
R6	No 4698—Resistor
R7	No. 4726—Resistor
R8	No. 4689—Resistor
R9, R10	No. 4723—Resistor
R11	No. 4776—Resistor

MODEL 710
Sargent-Raymond Seven
Schematic, Chassis

SILVER - MARSHALL, INC.

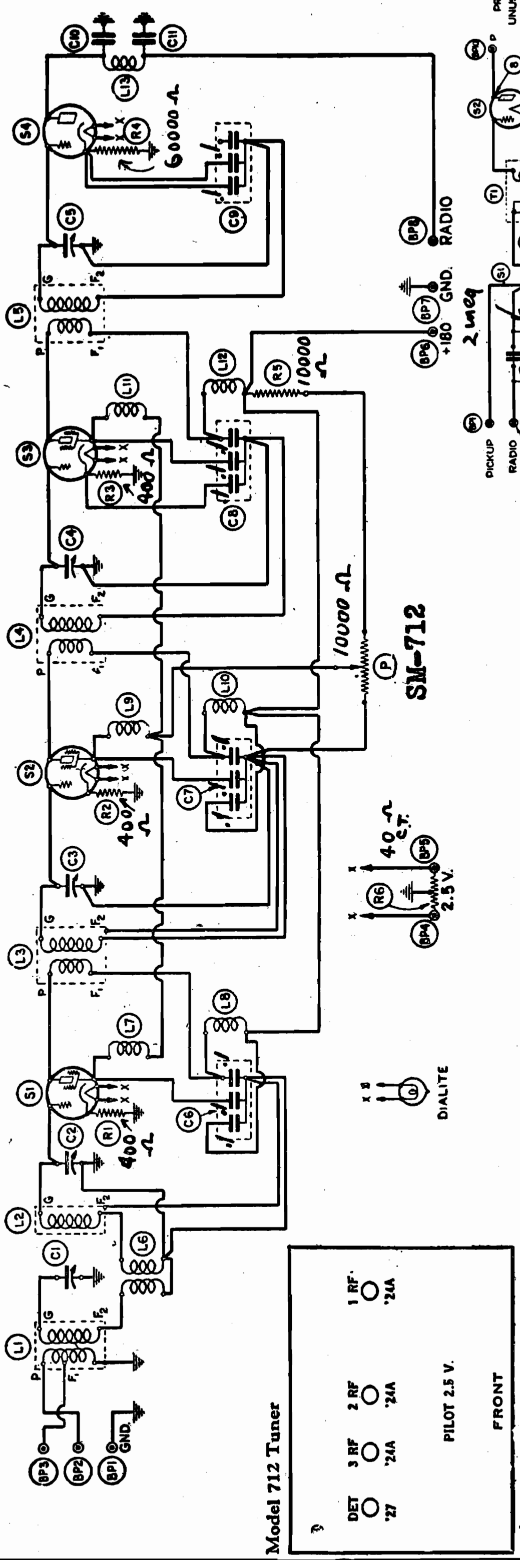


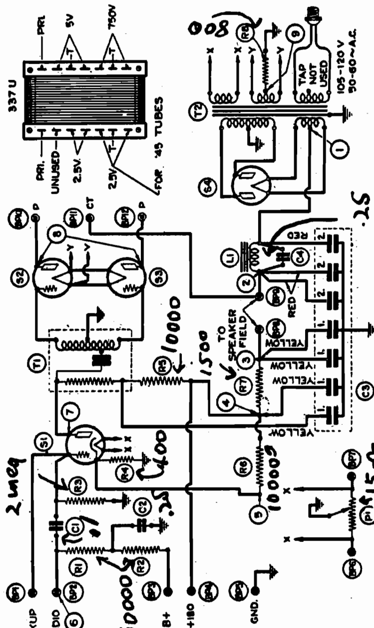
L1	141	antenna coil
L2-L3-L4-L5	142	RF transformer coils
C1-C2-C3-C4-C5	320R	variable condensers, .00035 mfd.
V1-V2-V3-V4-V5	340	midget condensers, .000025 mfd.
L6-L7-L8-L9-L10-L11-L12-L13-L14	275	RF chokes
S1-S2-S3-S4-S5-S6-S7	511	tube sockets
T1	255	first stage AF transformer
T2	256	second stage AF transformer
T3	251	output transformer
W	708	ten lead battery cable



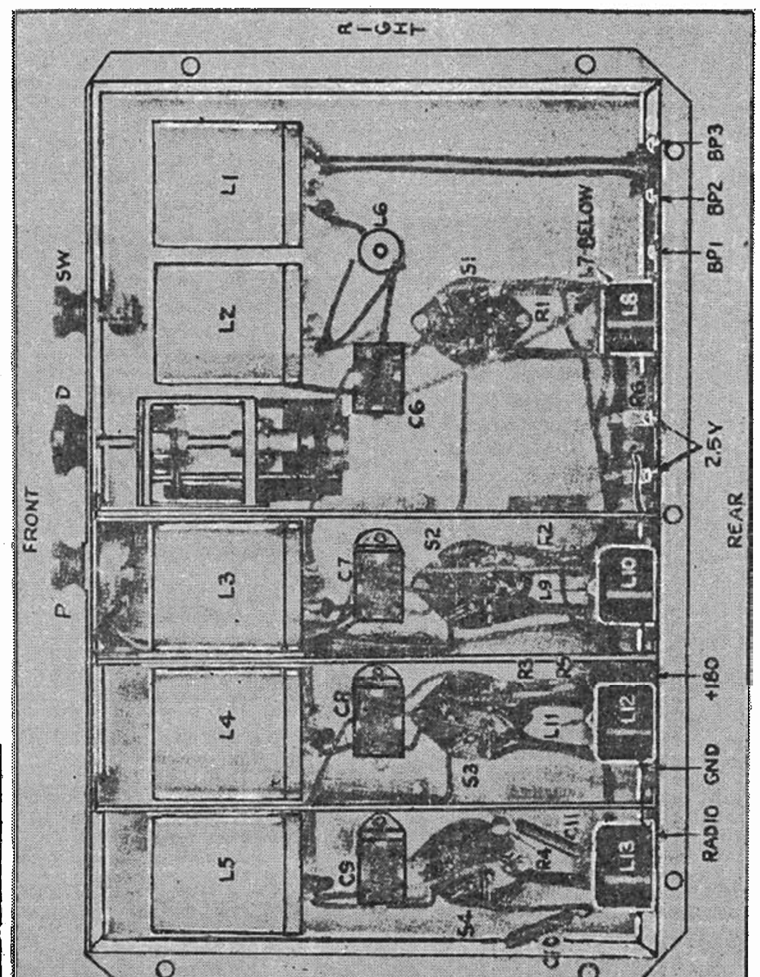
SILVER - MARSHALL, INC.

MODEL 712
Schematic
Chassis
MODEL 677-B





Schematic of 677B Amplifier used with 712 AC Tuner

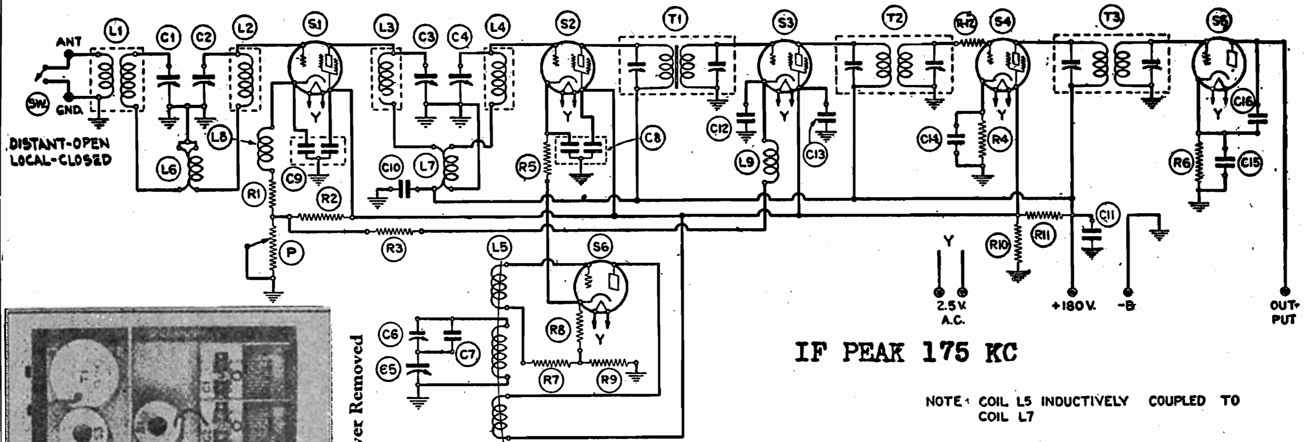


Representative voltages when 677B is connected to 712 Tuner with on-off volume control on full

From (1) to Ground	320
" (2) " "	310
" (3) " "	230
" (4) " "	160
" (5) " "	8
" (6) " "	110
" (7) " "	100
" (8) " "	300
" (9) " "	50

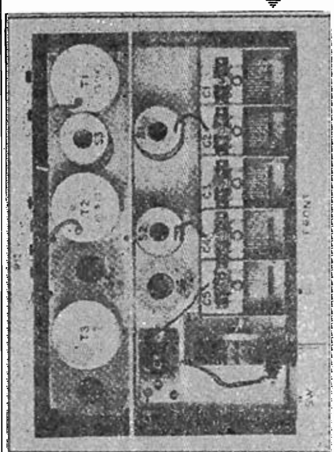
MODEL 714
Schematic
Chassis, Voltage

SILVER - MARSHALL, INC.

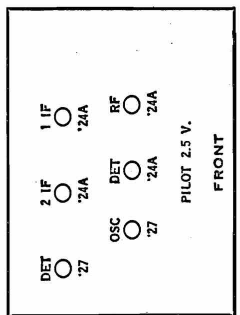


IF PEAK 175 KC

NOTE: COIL L5 INDUCTIVELY COUPLED TO COIL L7



Top View of Tuner with Cover Removed



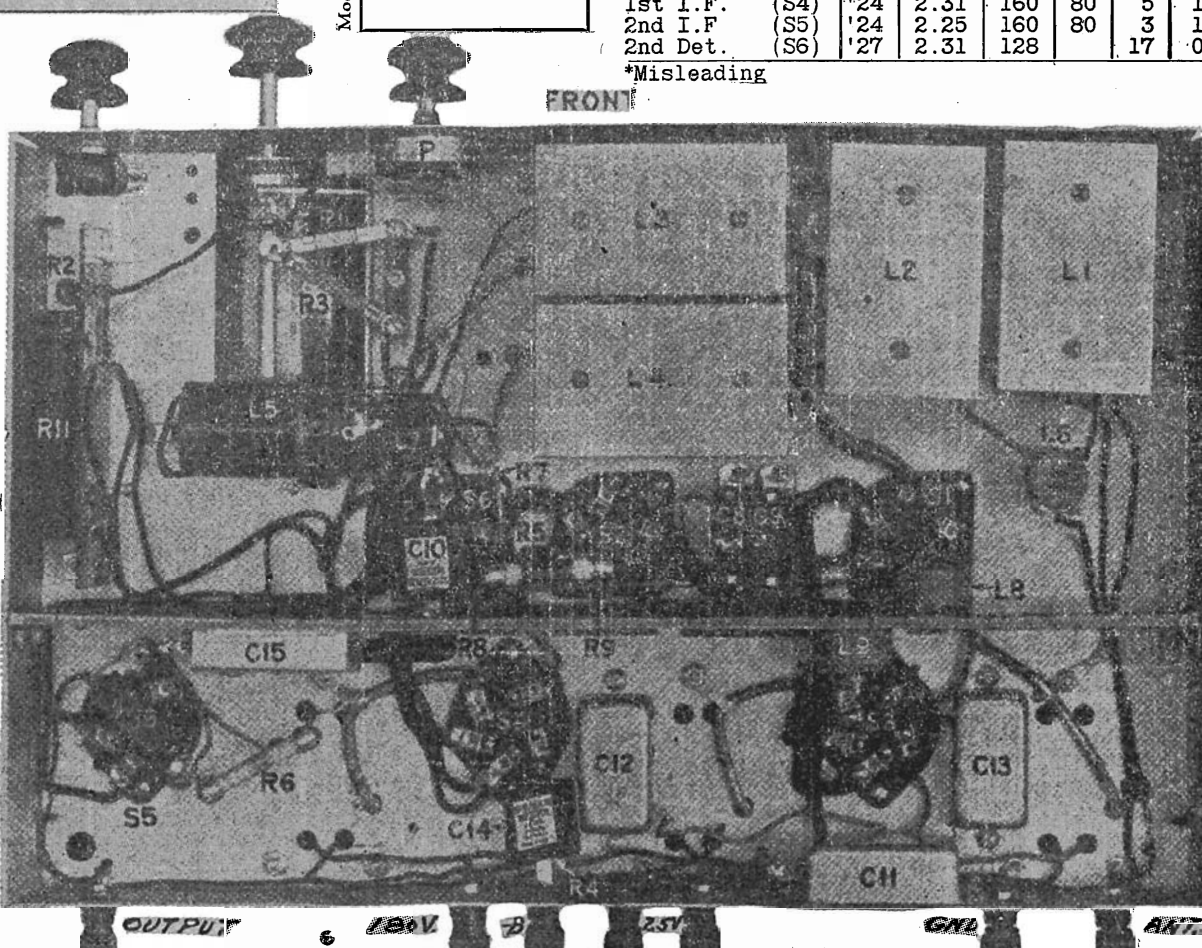
Model 714 Tuner

VOLTAGES WITH VOLUME CONTROL AT MAXIMUM

Tube Number		Type of Tube	"A" Volts	"B" Volts	Screen Volts	"C" Volts	Normal Plate Current MA
R.F	(S1)	'24	2.30	160	80	5	3.0
1st Det.	(S2)	'24	2.27	160	80	7	Note*
Oscillator	(S3)	'27	2.25	80		7	5.9
1st I.F.	(S4)	'24	2.31	160	80	5	1.4
2nd I.F	(S5)	'24	2.25	160	80	3	1.7
2nd Det.	(S6)	'27	2.31	128		17	0.2

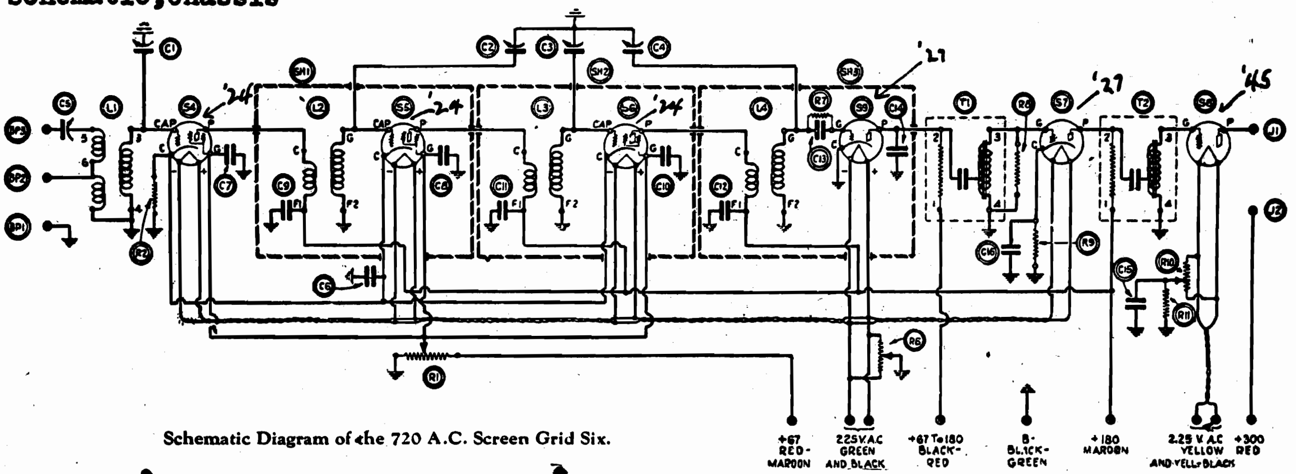
*Misleading

FRONT

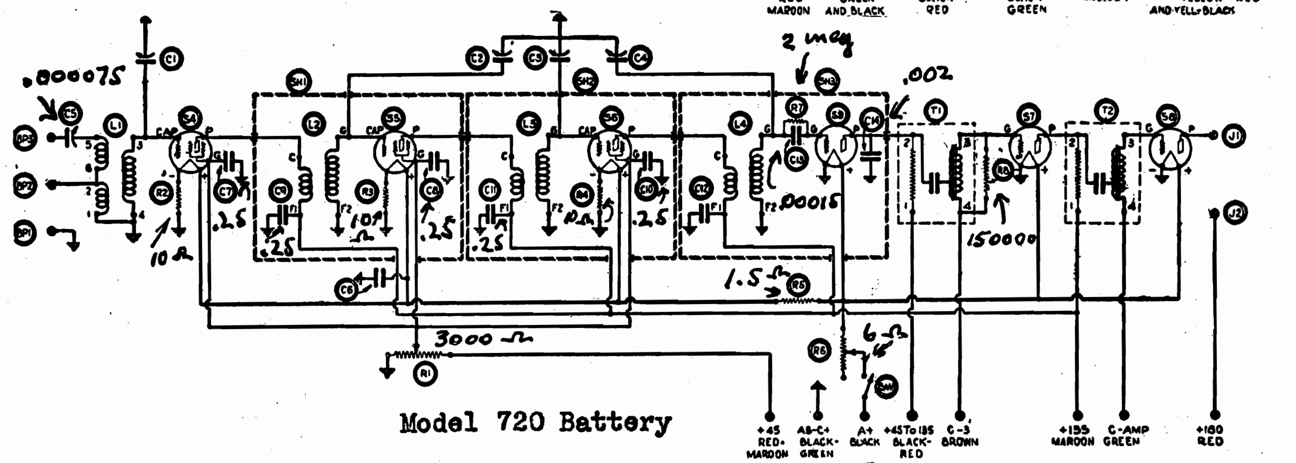


MODEL 720 AC
MODEL 720 Battery
Schematic, Chassis

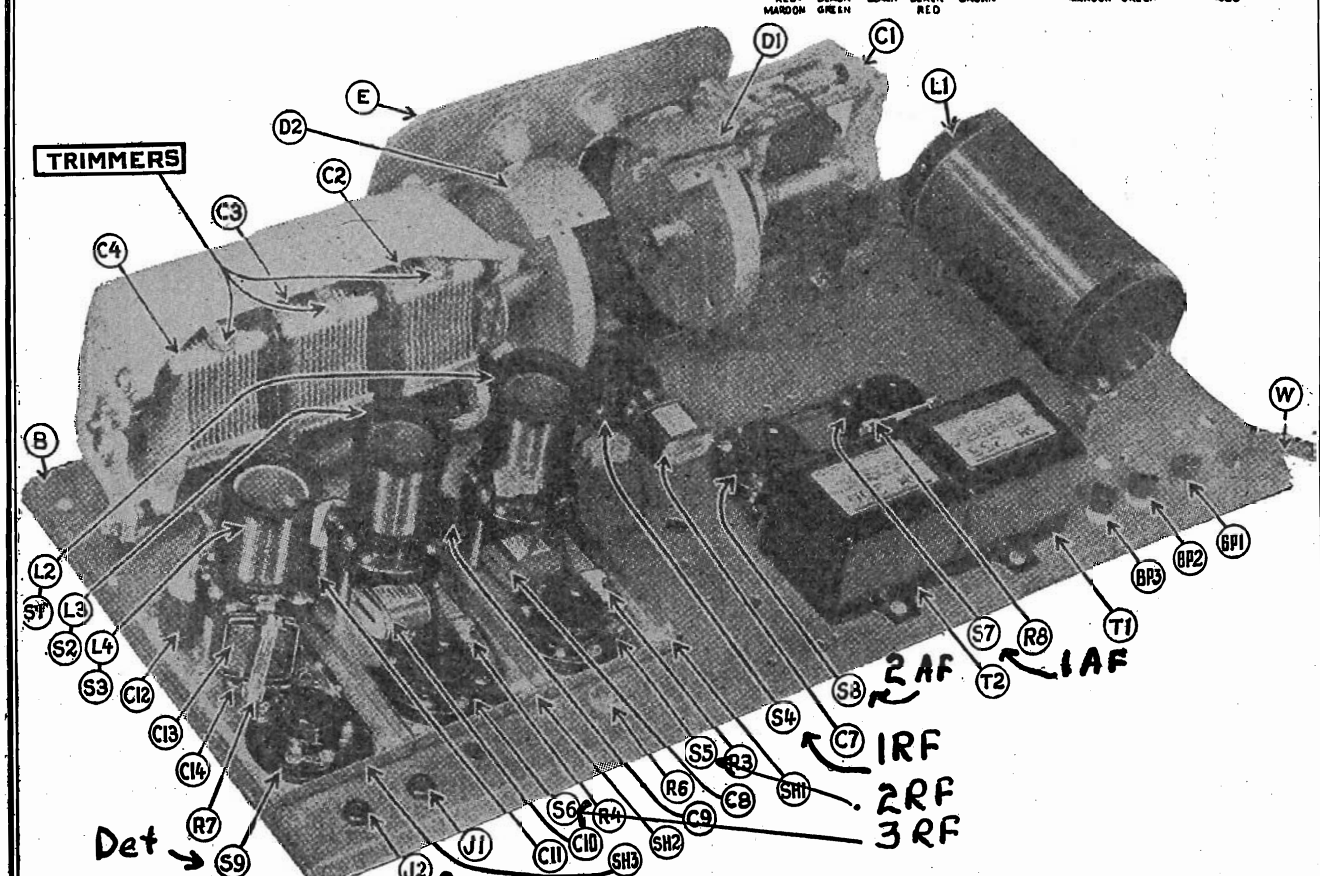
SILVER - MARSHALL, INC.



Schematic Diagram of the 720 A.C. Screen Grid Six.

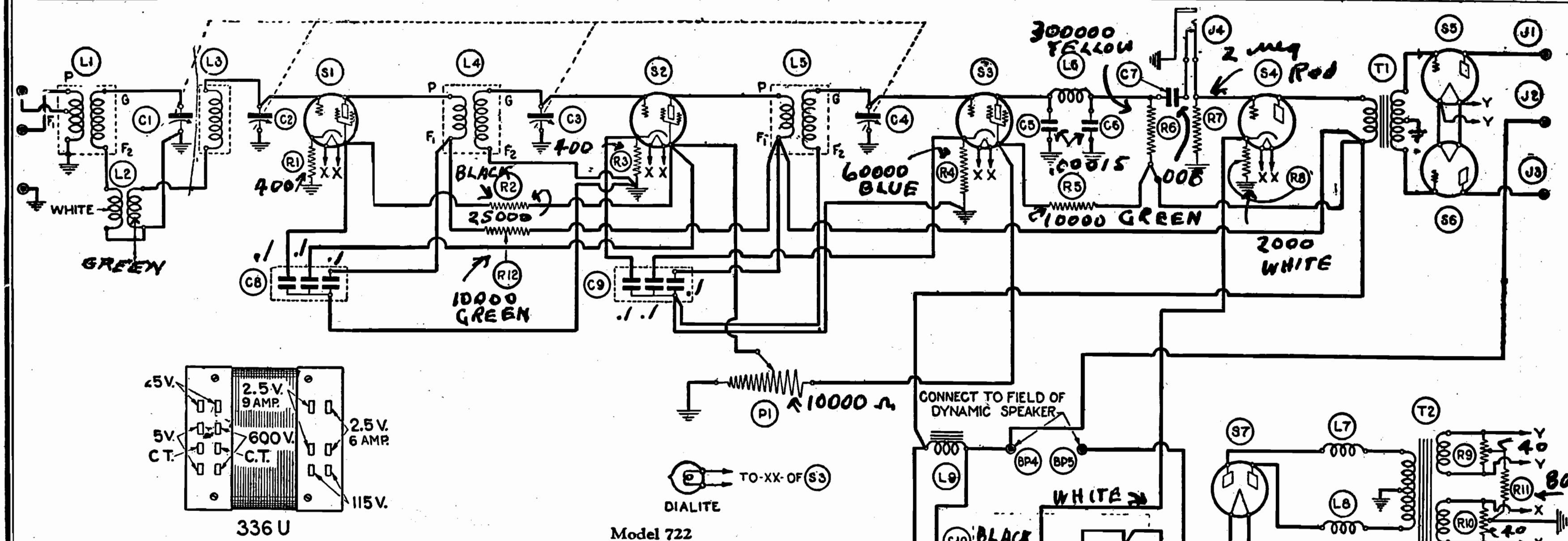


Model 720 Battery

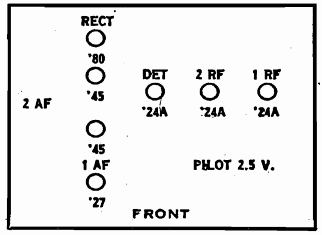


SILVER - MARSHALL, INC.

MODEL 722
Schematic
Voltage, Data



Model 722



GANGING

Voltage tests completed, and the tube shield and power can in place, the receiver may be given an operating test upon connecting an antenna and ground system, after which the small trimmer condensers on the tops of the four sections of the gang condensers must be adjusted to resonance with a screwdriver to provide maximum sharpness of tuning and distance range. This adjustment is made as follows:

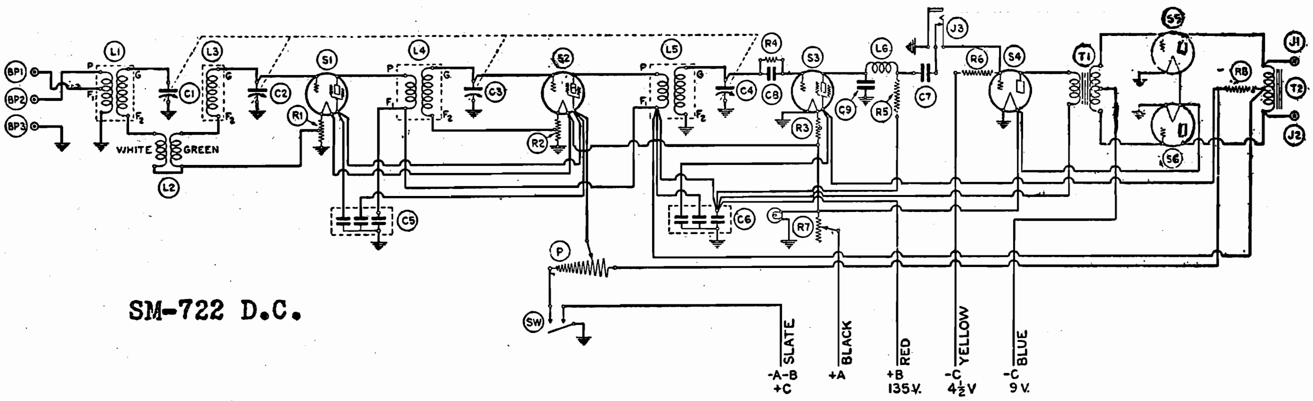
1. Unscrew trimmer condensers **C2, C3, C4** two full turns. The three holes in the cover of the tube shield SH should be directly over the trimmer screws.
2. Connect small antenna to binding post BP1 (or artificially shorten a long one in order to produce a rather weak signal when volume control is turned full on or nearly full on).
3. Tune in a station at 230 to 250 meters.
4. Adjust trimmer C-4 for loudest signal.
5. Adjust trimmer C3 for loudest signal.
6. Adjust trimmer C2 for loudest signal.
7. Adjust trimmer C1 for loudest signal.
8. Re-tune receiver to a station at between 450 and 550 meters.
9. Re-check adjustment of trimmers C1 and C2. If any variation is present, adjust for maximum signal.
10. Re-tune to original short wave station and re-adjust trimmers C2 and then C1, for maximum signal strength.

TEST VOLTAGES

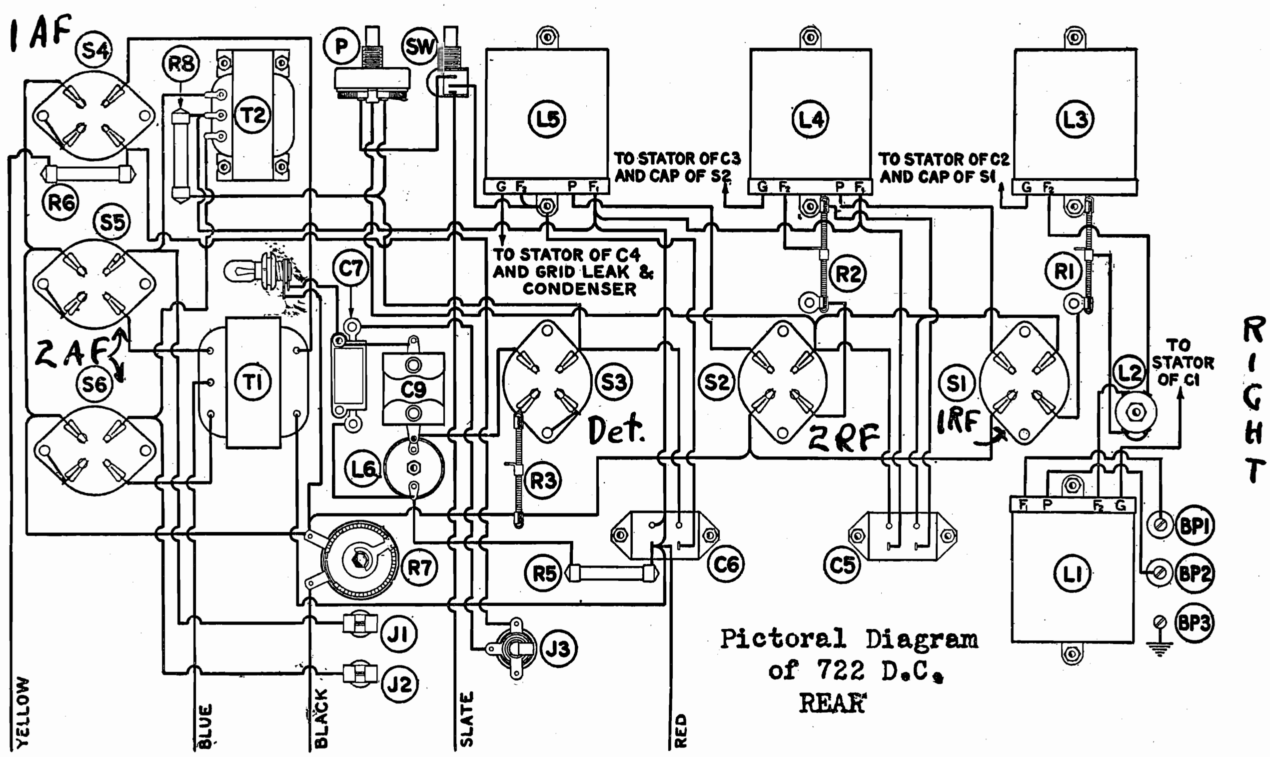
With rectifier tube only in socket;
Voltage across F lugs of tubes S1 to S6 should be 2.45 volts. Across outside lug of P1 and across R5 should be 130 to 150 volts. Chassis -B to arm of P1 (fully right) should be 60 to 70 volts. Chassis to right rear of T1 should be 130,142,155 volts. Chassis to left rear lug of S4, 6 to 9 volts DC. Chassis to right rear lug of S3, 20 to 35 volts DC. Chassis to right rear lug of S2, 1.2 to 2.0 volts DC. Chassis to right rear lug of S1, (P1 turned fully right), 1.2 to 2.0 volts DC. Chassis to J1, 160 to 220 volts DC. Chassis to J2, 170 to 240 volts DC. Chassis to J3. 160 to 220 volts DC.

MODEL 722 DC
Schematic, Chassis

SILVER - MARSHALL, INC.



Schematic diagram of the 722DC, showing all parts keyed



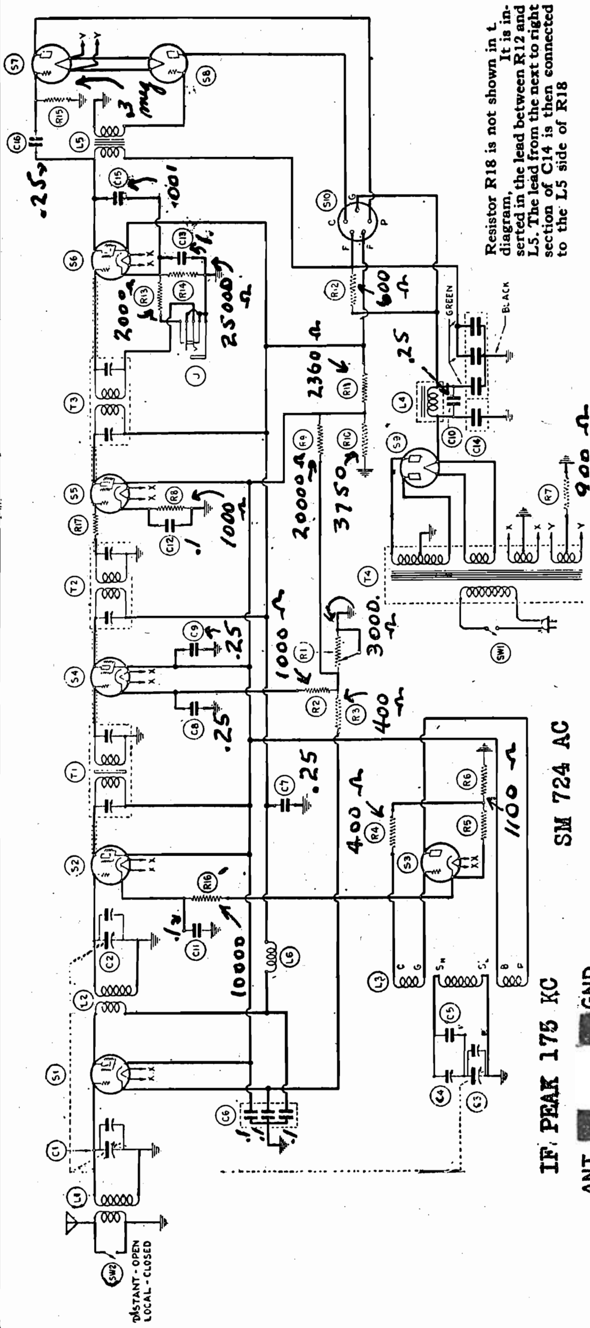
Pictoral Diagram
of 722 D.C.
REAR

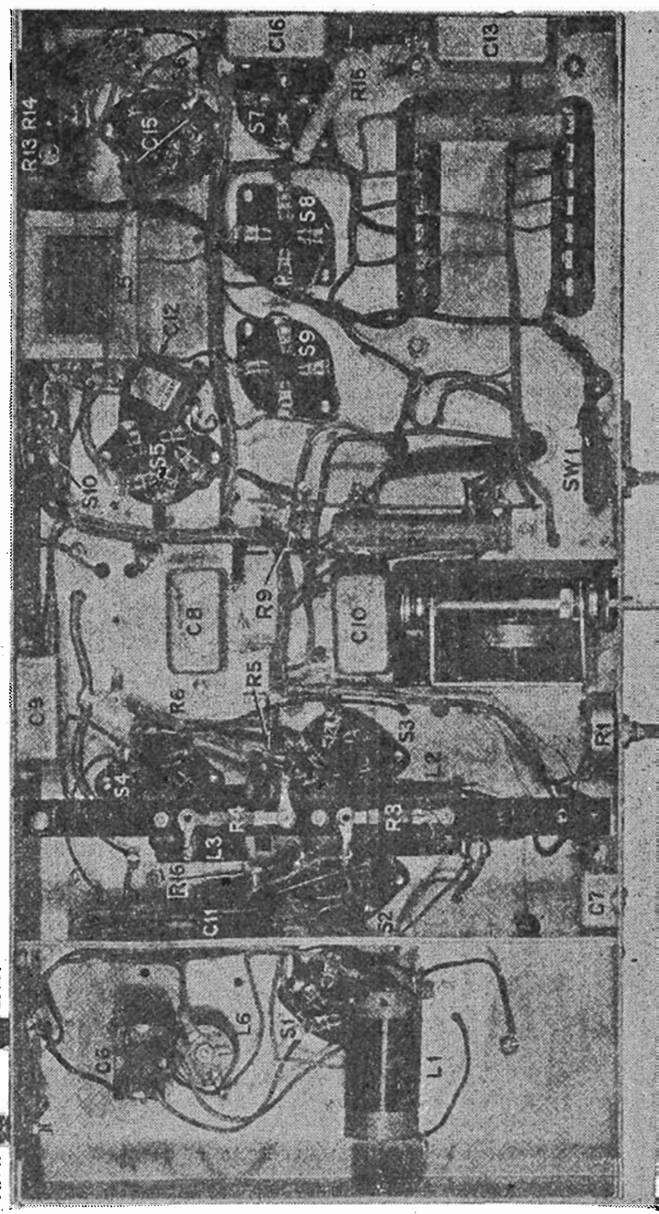
C1,2,3,4,	.00035 mfd 4 gang condenser		
C5,6	block condensers containing three .1 mfd units		
C7	.006 mfd.		
C8	.00015 mfd.		
C9	.0005 mfd.		
P	10000 ohm potentiometer.	R7	Rheostat(sub-base)
R1,2,3	15 ohm center tapped.	R8	20000 ohms (one watt) Orange
R4,6	2 megohm (one watt) Red		
R5	60000 ohm(one watt) Blue		

SILVER - MARSHALL, INC.

MODEL 724 AC
Schematic, Chassis
Voltage Data

Resistor R18 is not shown in diagram. It is inserted in the lead between R12 and L5. The lead from the next to right section of C14 is then connected to the L5 side of R18

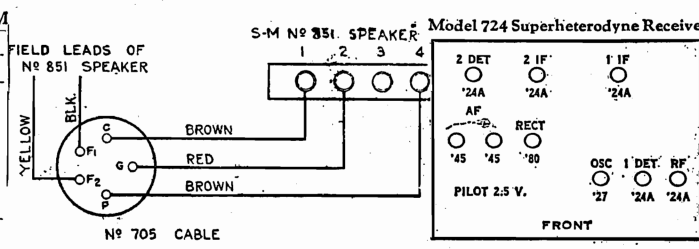




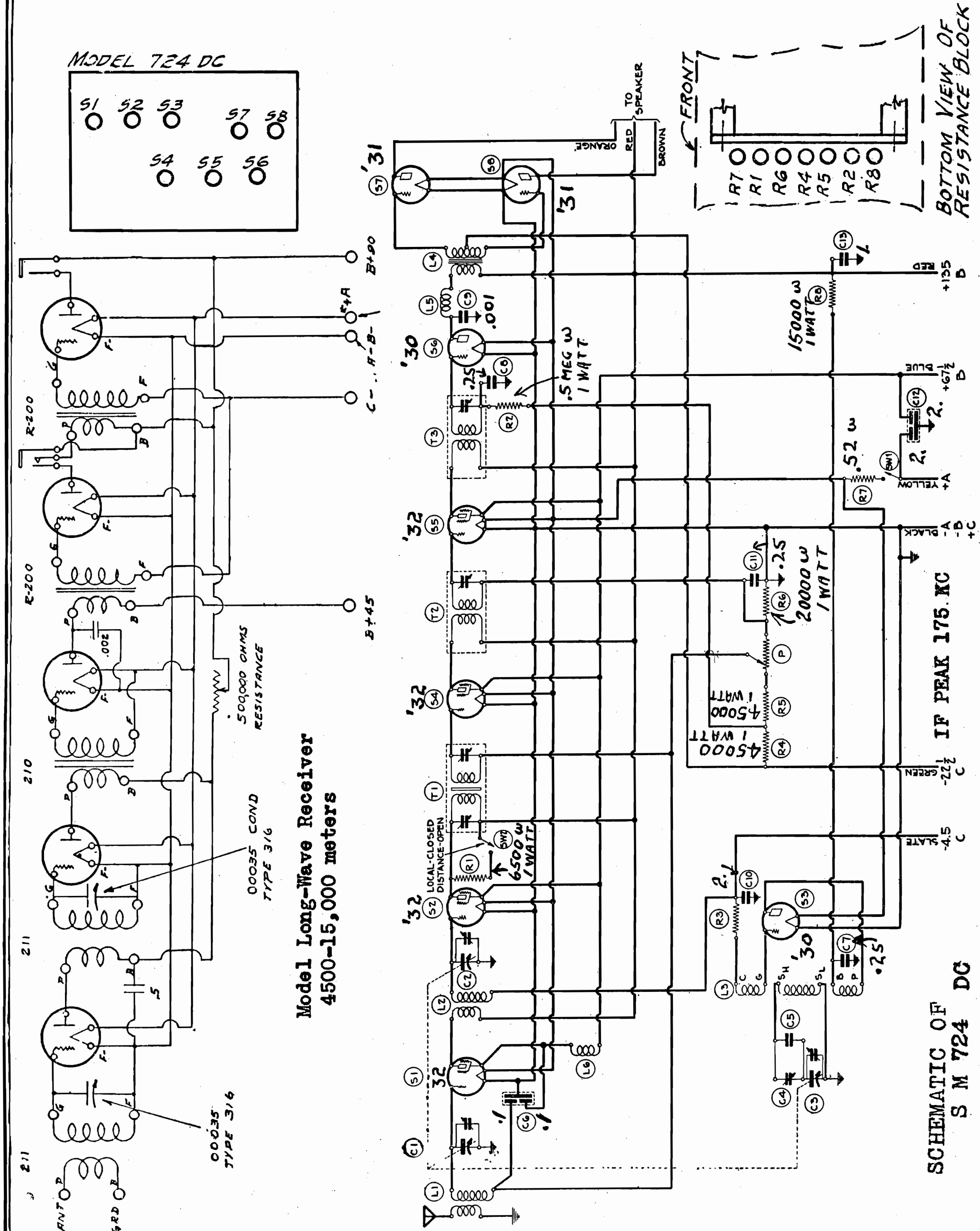
VOLTAGES WITH VOLUME CONTROL AT MAXIMUM

Tube Number	Type of Tube	"A" Volts	"B" Volts	Screen Volts	"C" Volts	Normal Plate Current MA
R.F. (S1)	'24	2.15	168	84	1.3	2.5
1st Det. (S2)	'24	2.16	75	84	9.5	.4
Oscillator (S3)	'27	2.20	78	...	6.5	6.0
1st I. F. (S4)	'24	2.17	165	82	2.8	1.8
2nd I.F. (S5)	'24	2.22	164	83	3.0	2.5
2nd Det. (S6)	'24	2.19	208	160	16.0	.6
Audio (Right) (S7)	'45	2.57	235	...	48.0	27.
Audio (Left) (S8)	'45	2.57	235	...	20.0*	29.
Rectifier (S9)	'80	4.80	...	...	....	....

*Misleading due to current drawn by meter.



MODEL 724 DC
MODEL Long-Wave Receiver SILVER-MARSHALL, INC.



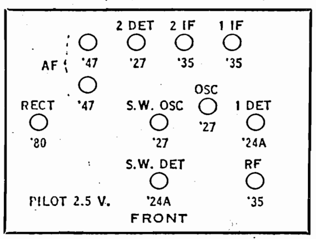
SILVER - MARSHALL, INC.

MODEL 726
Schematic
Voltage, Data

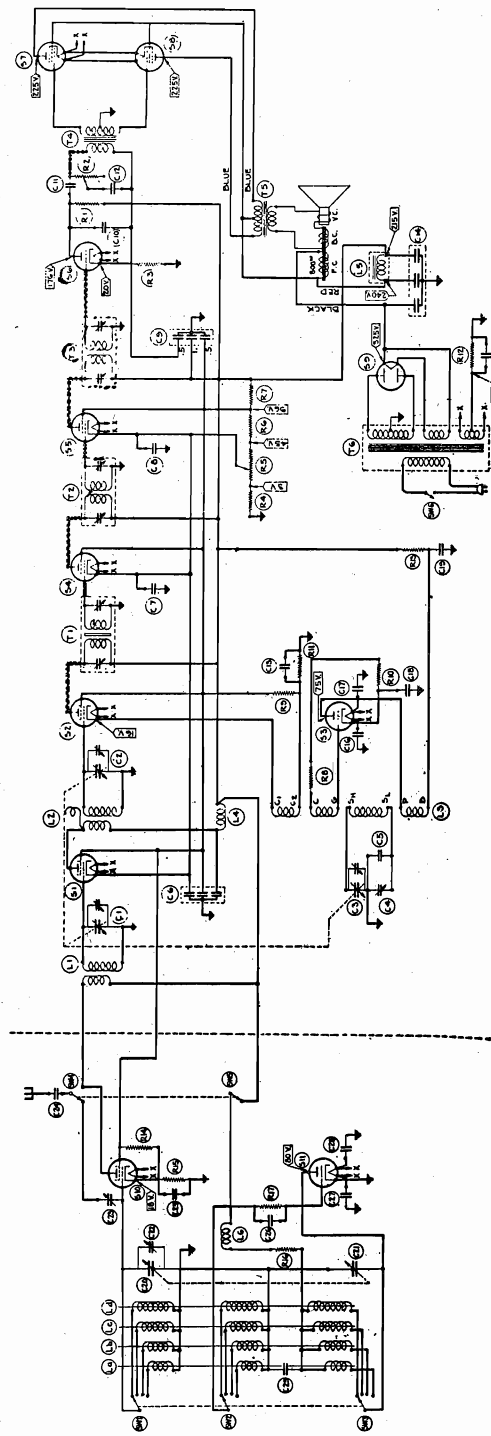
REPLACEMENT PARTS LIST FOR 726 SW & 726
SHORT WAVE-BROADCAST RECEIVERS

Code	Description	Piece Part No.
L1	167-S Coil	
L2	168-S Coil	
L3	175-S Coil	
L4	281 R.F. Choke	
L5	10145 Choke	
L6	277 R.F. Choke	
La	S.W. Coil 10-20 Meters	
Lb	S.W. Coil 20-40 "	
Lc	S.W. Coil 40-80 "	
Ld	S.W. Coil 80-200 "	
T1	1st I.F. Transformer B-1	
T2	2nd I.F. Transformer B-2	
T3	3rd I.F. Transformer B-3	
T4	A-270 Input Transformer	
T5	10143 Output Transformer	
T6	10173-S Power Transformer	
C1-C2-C3	407 Mmfd. Max. (3-gang variable)	13124
C4	Variable 250-600 Mmfd.	16035
C5	750 Mmfd. ± 10% (Mica)	
C6	Triple 0.1 Mfd.	3316
C7	.1 Mfd.	3220
C8	.1 Mfd.	3220
C9	.5, .5, 1.0 Mfd.	13140
C10	.001 Mfd. (Mica)	7039
C11	0.15 Mfd.	13145
C12	.025 Mfd.	3333
C13	.1 Mfd.	3220
C14	Three 4 Mfd. units (dry Electrolytic) Potter	13120
C15	.1 Mfd.	3220
C16	.006 Mfd.	3114
C17	.006 Mfd.	3144
C18	.1 Mfd.	3220
C19	.1 Mfd.	3220
C20-C21	140 Mmfd. (2-gang variable)	13161
C22	80 Mmfd. (variable)	13162
C23	Compensating Cond.	13182
C24	.006 Mfd.	3144
C25	.006 Mfd.	3144
C26	.001 Mfd. (Mica)	7039
C27	.006 Mfd.	3144
C28	.006 Mfd.	3144
R1	30,000 ohms 1 watt	14693
R2	1/2 megohm tapered variable resistor	14368
R3	60,000 ohms 1 watt	4698
R4	100 ohms wire wound	4743
R5	4,500 ohms volume control (tapered)	14367
R6	13,500 ohms 1 watt	14694
R7	15,000 ohms 2 watt	14690
R8	400 ohms wire wound	4701
R9	60,000 ohms 1 watt	4698
R10	100 ohms wire wound	4743
R11	10,000 ohms 1 watt	14696
R12	220 ohms 2 watt	14692
R13	10,000 ohms 2 watt	4726
R14	60,000 ohms 1 watt	4698
R15	6,500 ohms 1 watt	14683
R16	10,000 ohms 2 watt	4726
R17	10,000 ohms 1 watt	14696
SW1-SW2-SW3	S.W. Change-over switch	15115
SW4-SW5	S.W.-BROADCAST SWITCH	15116
SW6	ON-OFF SWITCH (Combination with Pot.)	
S2-S10	'24 Tubes	
S3-S6-S11	'27 "	
S7-S8	'47 "	
S1-S4-S5	'51 "	
S9	'80 "	

Model 726 (S.W. & Broadcast)



As a short wave broadcast receiver, the circuit is as follows. By throwing a switch, the antenna is fed into the short wave detector circuit using a '24 type tube. A short wave oscillator of special design using a '27 tube, operating 650 kc. away from the short wave detector heterodynes the incoming signal to the frequency to which the r.f. stage of the broadcast receiver is tuned, the broadcast tuning dial being set on a clear channel at approximately 650 kc. for best results. As a short wave super, there are therefore three detectors and two oscillators, giving so-called double "suping"



Model 726 S.W. and Broadcast Superhet.

IF PEAK 175 KC

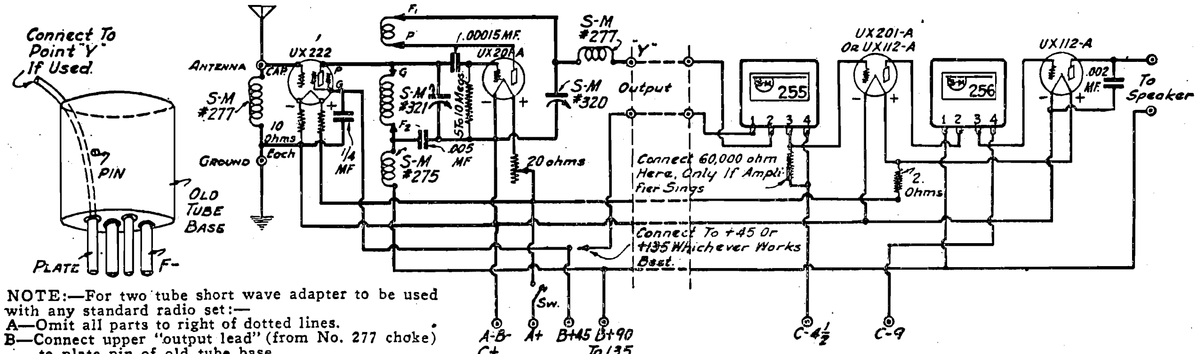
VOLTAGES WITH VOLUME CONTROL AT MAXIMUM

Tube Number		Type of Tube	"A" Volts	"B" Volts	Screen Volts	"C" Volts	Normal Plate Current Mills
S.W. Det	(S10)	'24	2.2	216	96	18	.08
S.W. Osc.	(S11)	'27	2.25	80	....	0	8.
R.F.	(S1)	'51	2.25	216	96	3	6.
1st Det	(S2)	'24	2.35	216	96	16	.1
Osc.	(S3)	'27	2.35	75	....	1.1	10.
1st I.F.	(S4)	'51	2.3	216	96	3	6.
2nd I.F.	(S5)	'51	2.35	216	96	3	6.
2nd Det.	(S6)	'27	2.35	178	....	20	.1
Audio (right)	(S7)	'47	2.4	224	240	16	32.
Audio (left)	(S8)	'47	2.4	220	240	16	32.
Rectifier	(S9)	'80	5.1	.....	....	.....	.....

As a broadcast receiver, the 726SW tunes from below 200 to above 550 meters and as a short wave receiver tunes from just under 10 meters to 200 meters without plug in coils.

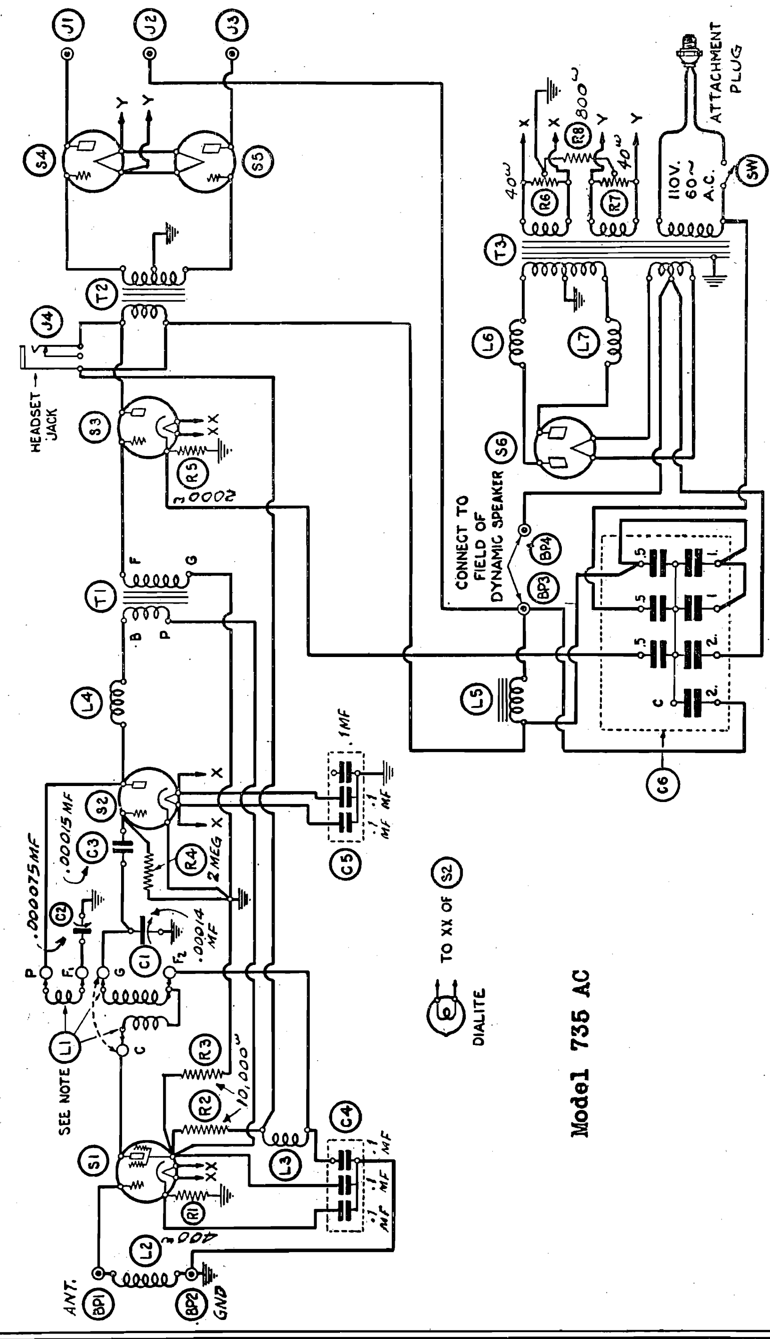
SILVER-MARSHALL, INC.

MODEL 730, 731
MODEL 735 AC
MODEL 735 DC

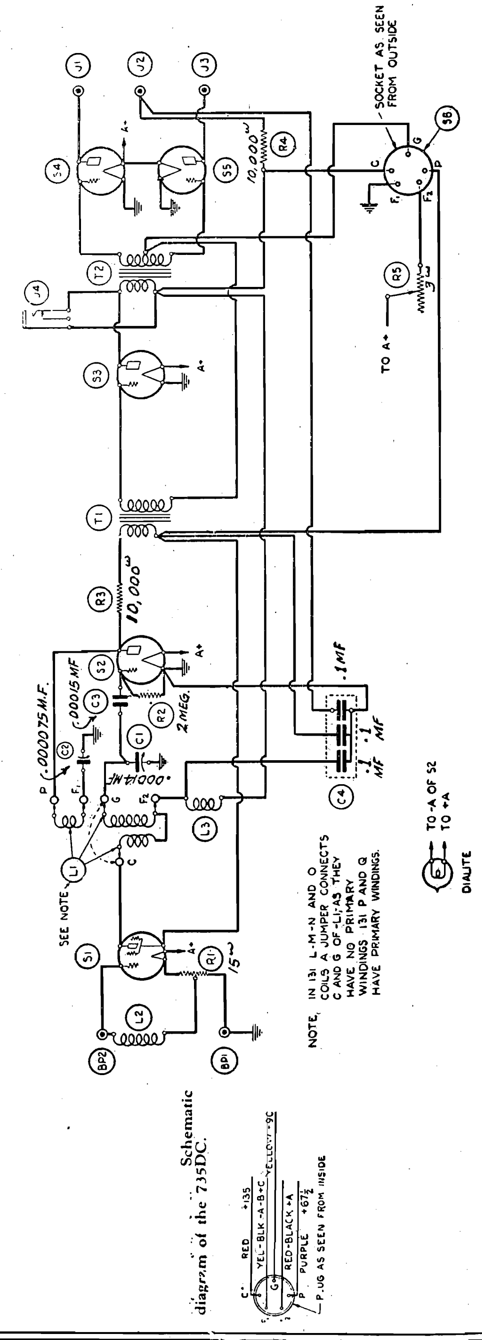


NOTE:—For two tube short wave adapter to be used with any standard radio set:—
A—Omit all parts to right of dotted lines.
B—Connect upper "output lead" (from No. 277 choke) to plate pin of old tube base.
C—Connect battery binding posts to radio set batteries.
D—Insert old tube base adapter in detector socket of regular radio set, which will join the two tube short wave adapter to the audio amplifier of set.

Schematic circuit of 730 and 731 kits, and details of adapter made from an old tube base.

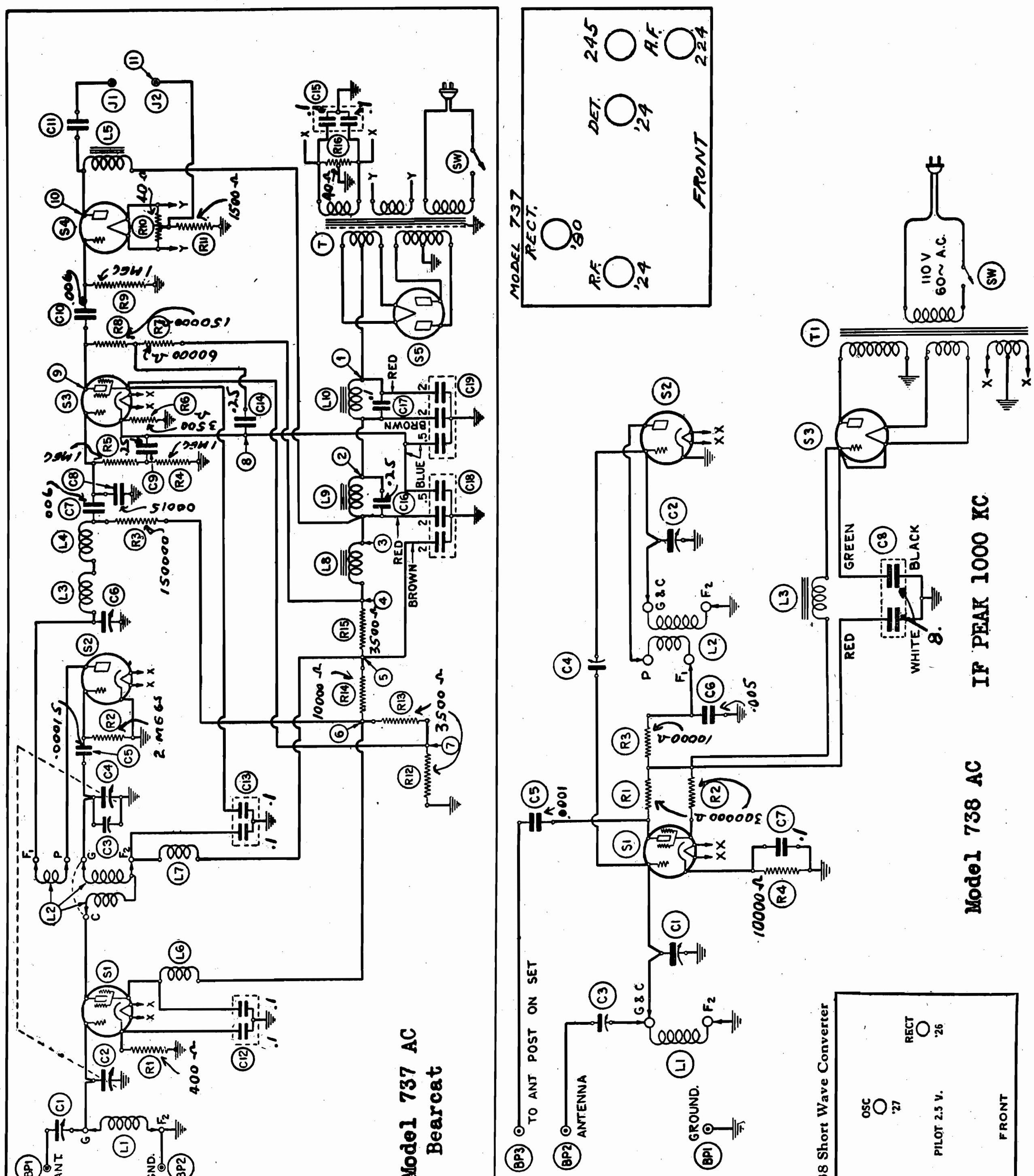


Model 735 AC



Schematic diagram of the 735DC.

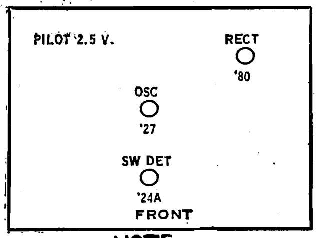
MODEL 737 AC Bearcat
MODEL 738 AC SW Converter SILVER-MARSHALL, INC.



MODEL 739
SW Superhet Converter

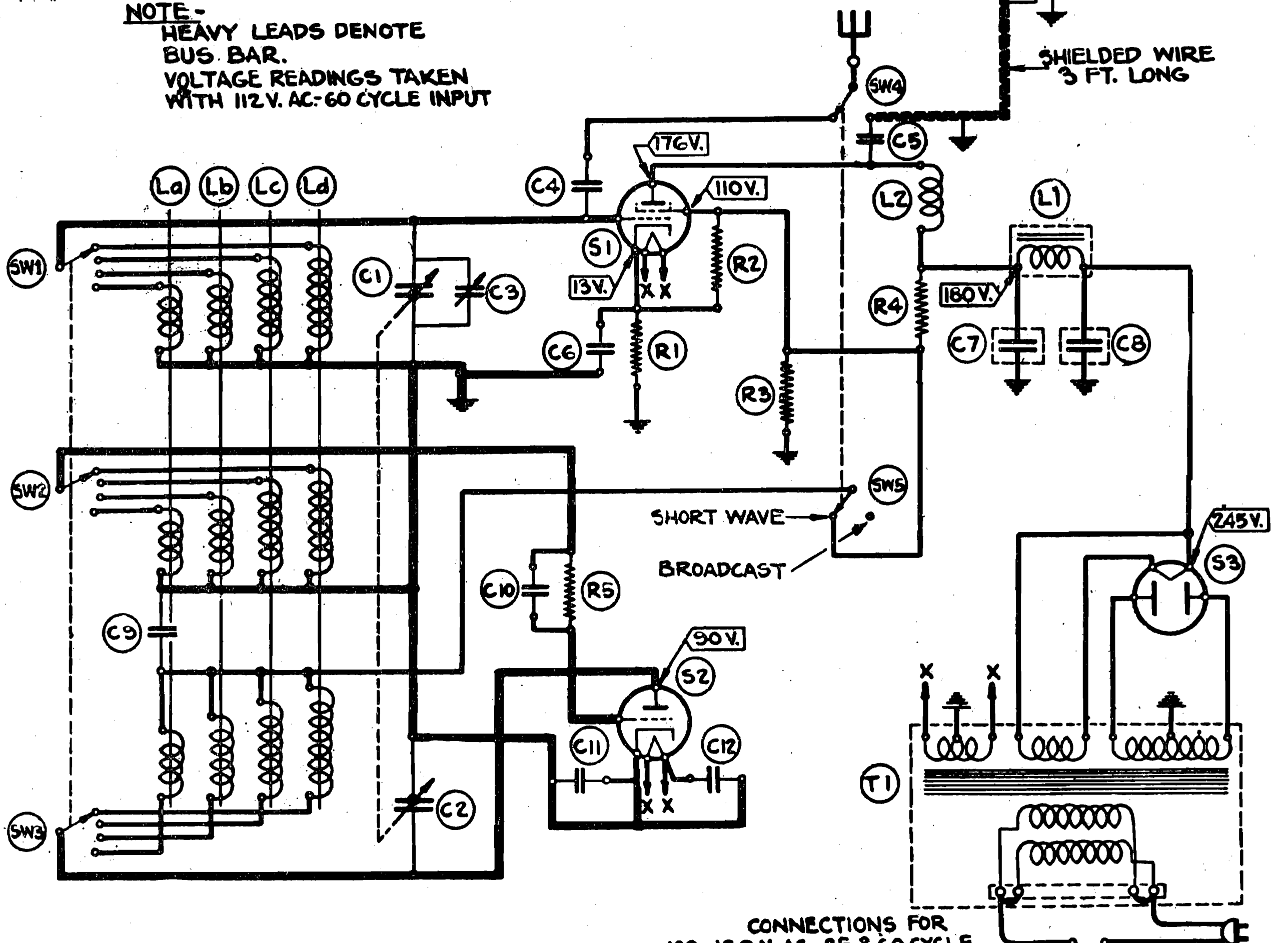
SILVER - MARSHALL, INC.

Model 739 (Short Wave Converter) (1931)



IF PEAK 650 KC

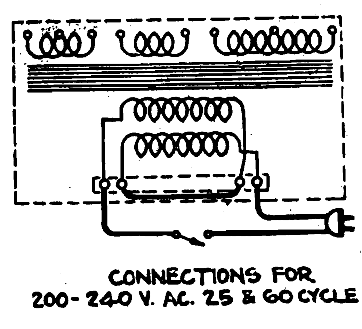
NOTE -
HEAVY LEADS DENOTE
BUS BAR.
VOLTAGE READINGS TAKEN
WITH 112 V. AC.-60 CYCLE INPUT



NOTE:-
PRIMARY NORMALLY WIRED &
SHIPPED FOR 100-120 V. OPERATION

There is a small compensating condenser in series with the antenna lead to the detector circuit (on rear of panel, at top center). This condenser is adjusted at the factory for best operation on a test antenna. It will be found that a slight adjustment of this condenser can be made (with a screw driver) for realigning to the particular antenna-ground combination, on which the 739 is to be operated, to give maximum results. To make this adjustment, the receiver should be tuned to a short wave station and without adjusting any controls, this compensating condenser readjusted a slight fraction of a turn at a time until the station comes in at its best.

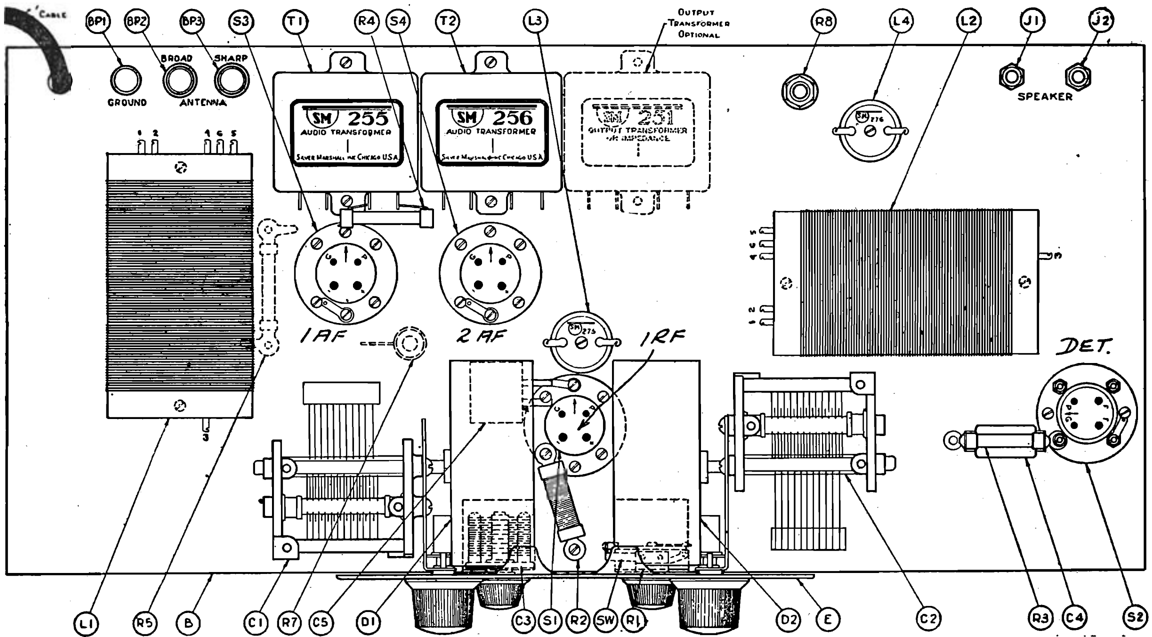
C6,C11,C12	3	Polymet .006 condenser
C5,C10	2	Polymet .0001 "
C9	1	Sprague .1 mfd. condenser
R5	1	Durham 10,000 ohm resistor
R2	1	Durham 60,000 ohm resistor
R1	1	Durham 6500 ohm resistor
R3	1	Durham 6000 ohm resistor 2 watt.
R4	1	Durham 3500 ohm resistor, 2 watt.



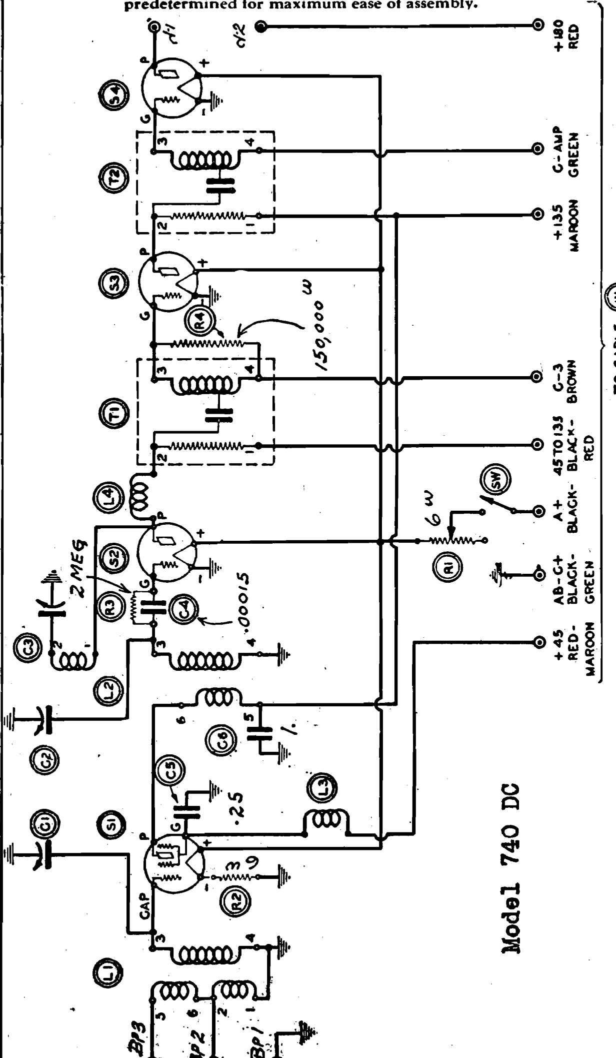
CONNECTIONS FOR
200-240 V. AC. 25 & 60 CYCLE

MODEL 740 DC
MODEL 740 AC
Schematic, Chassis

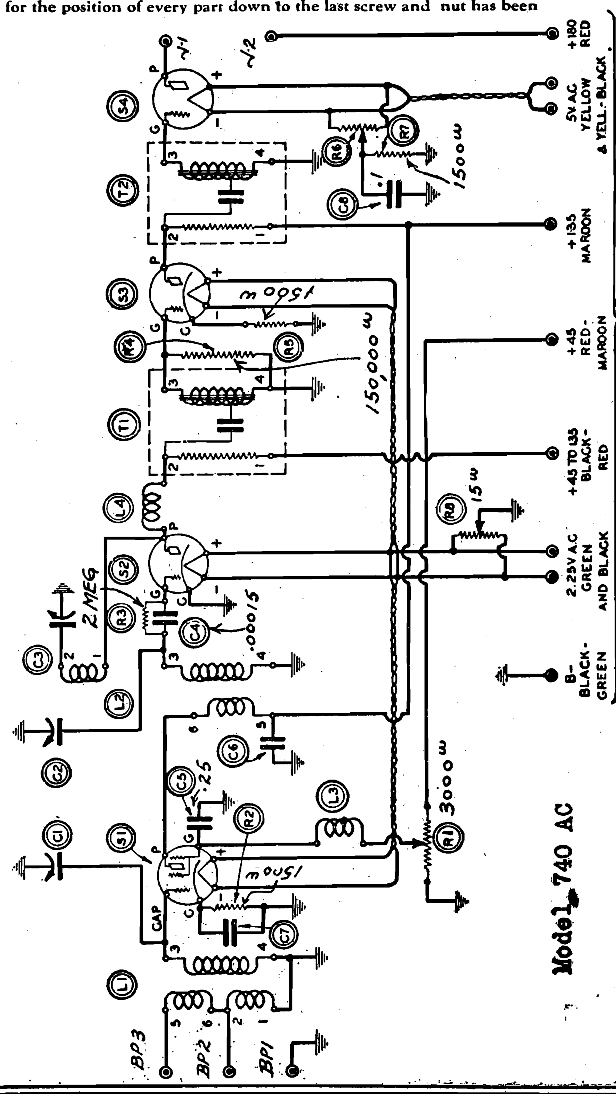
SILVER - MARSHALL, INC.



This layout drawing for the 740 (D. C. tube) Receiver shows the exact positions of all parts, positions of different mounting lugs, and just where screw heads or mounting nuts fall. Additional parts for the 740 AC (A. C. tube) Receiver are shown in dotted lines. This diagram should be studied most carefully in assembling either receiver, for the position of every part down to the last screw and nut has been predetermined for maximum ease of assembly.



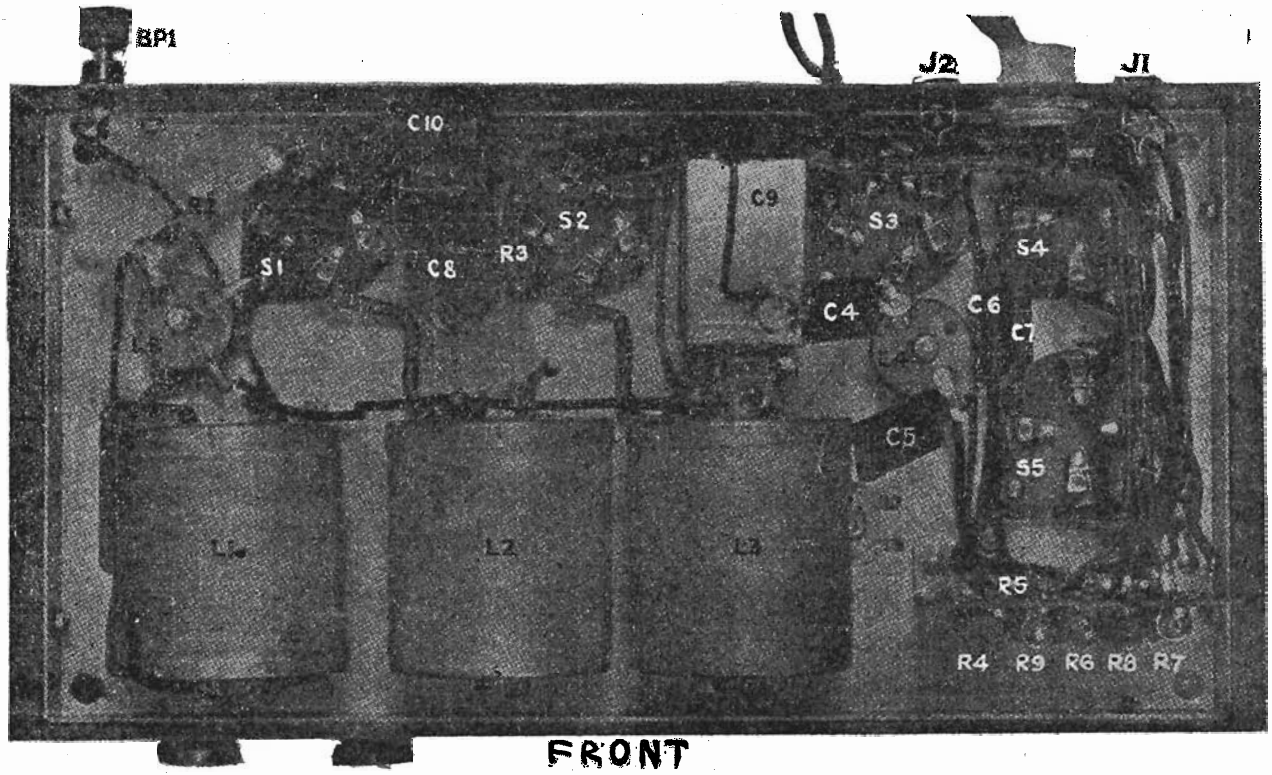
Model 740 DC



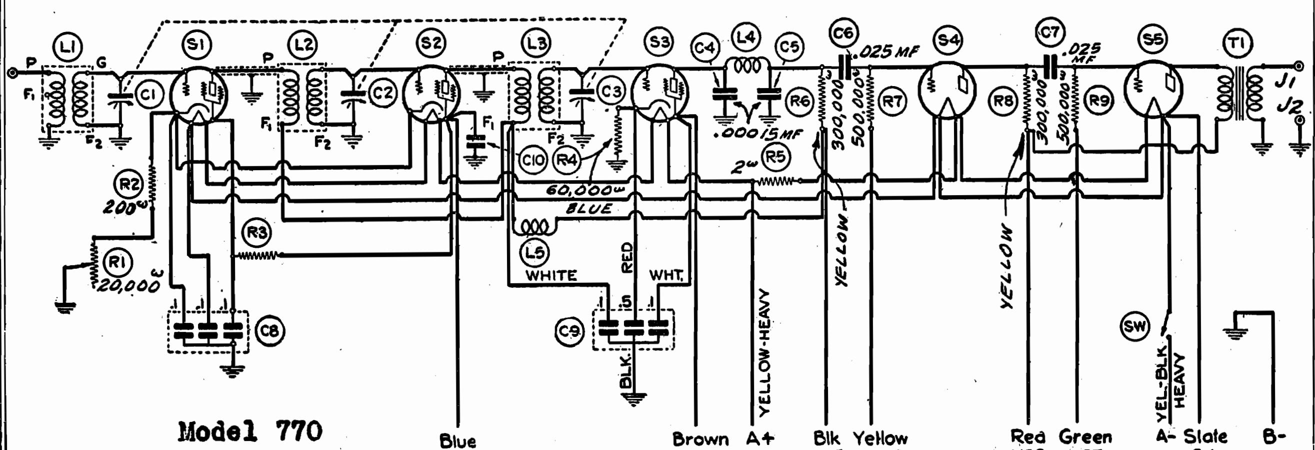
Model 740 AC

SILVER - MARSHALL, INC.

MODEL 770 Auto
Schematic, Chassis

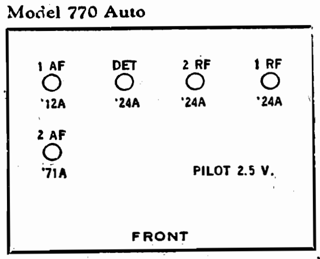


Bottom view of 770 chassis showing location of coils, resistors, and other material which will be of value in replacing parts.



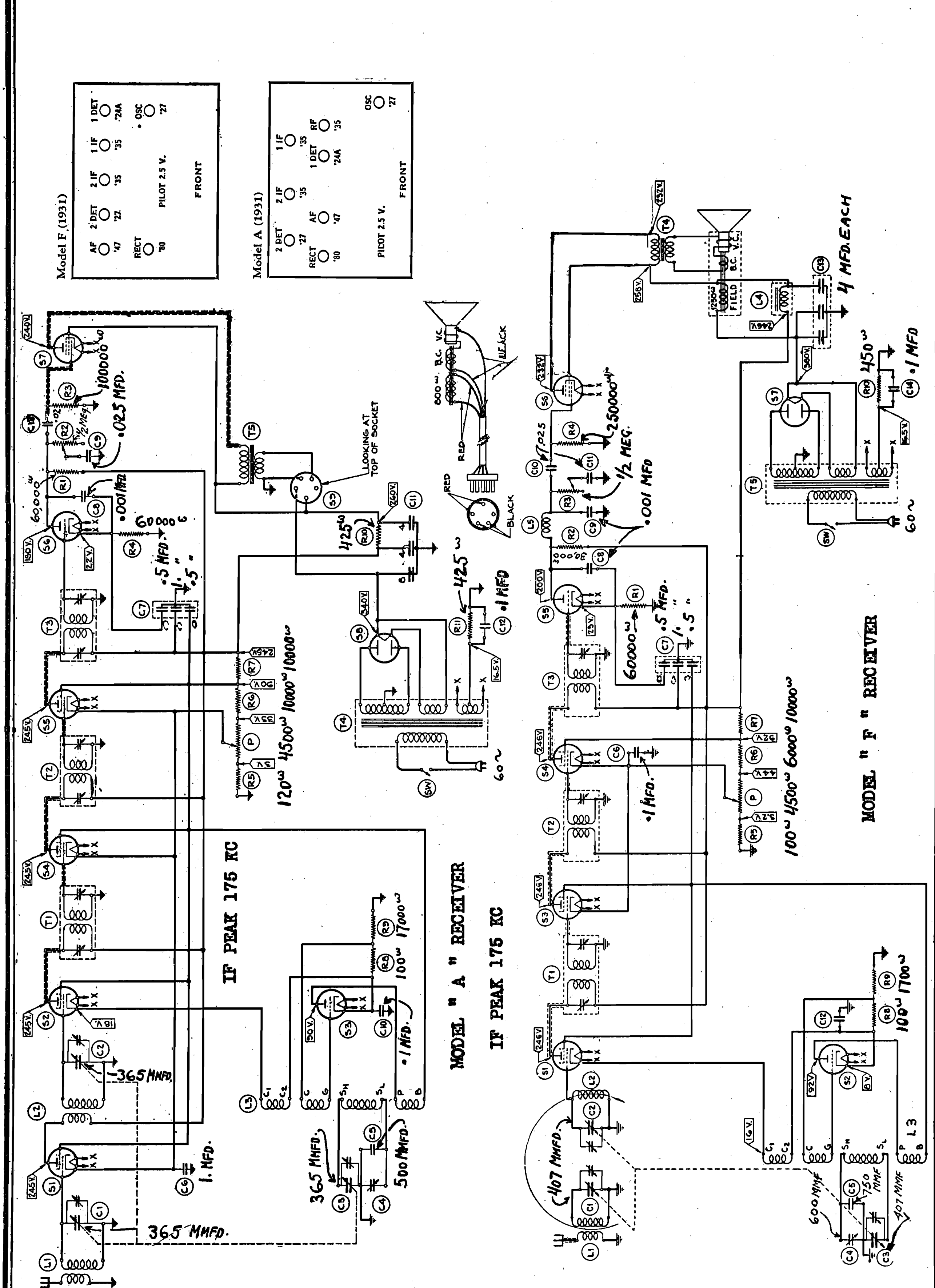
Schematic diagram of 770 Auto-Set.

Model 770 Auto



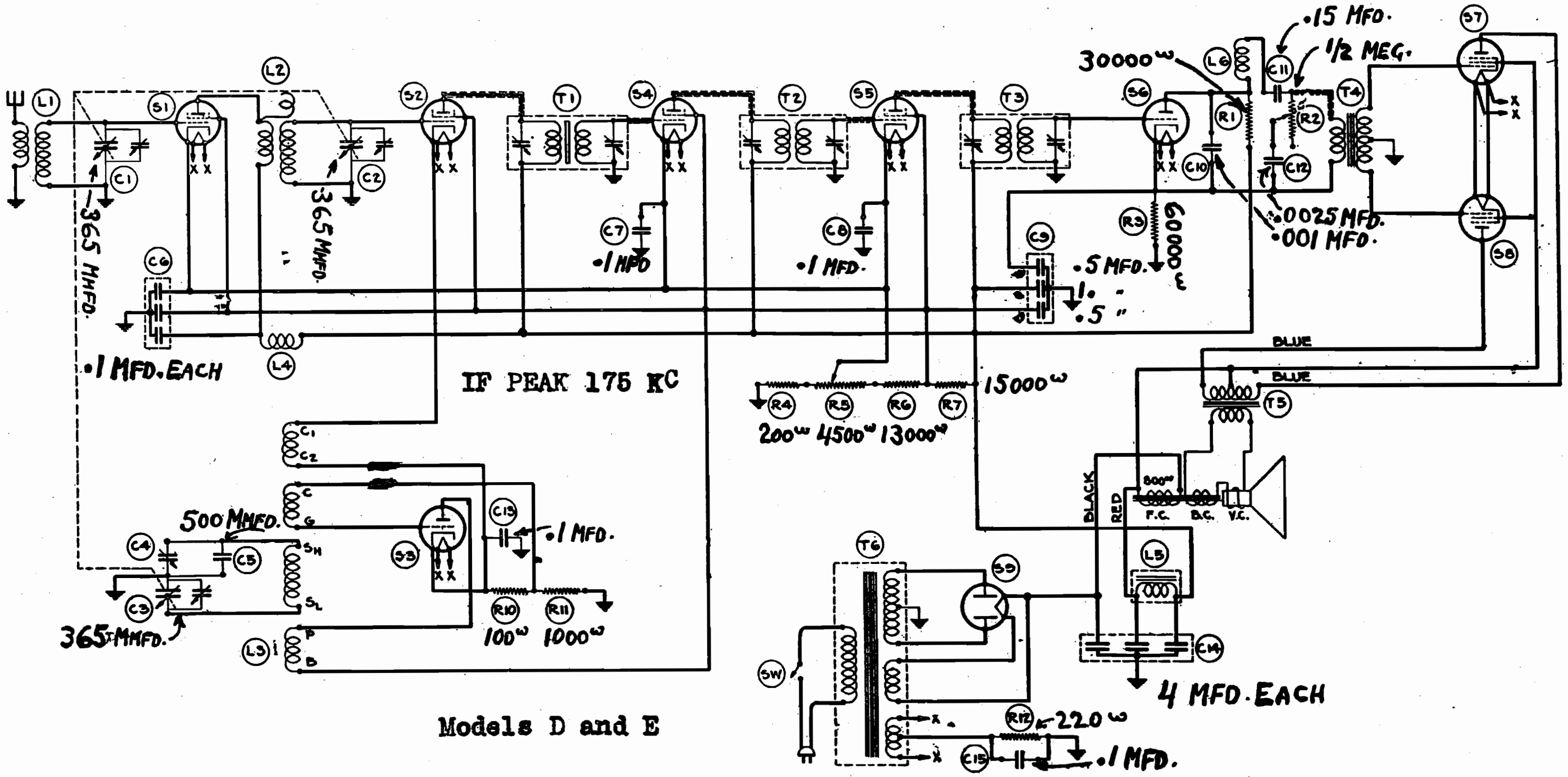
MODEL A.
MODEL F

SILVER - MARSHALL, INC.



MODELS D,E
Schematic,Voltage

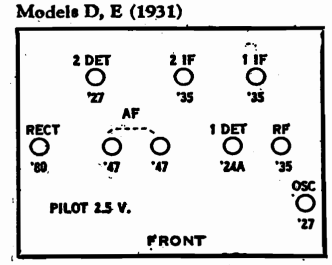
SILVER - MARSHALL, INC.

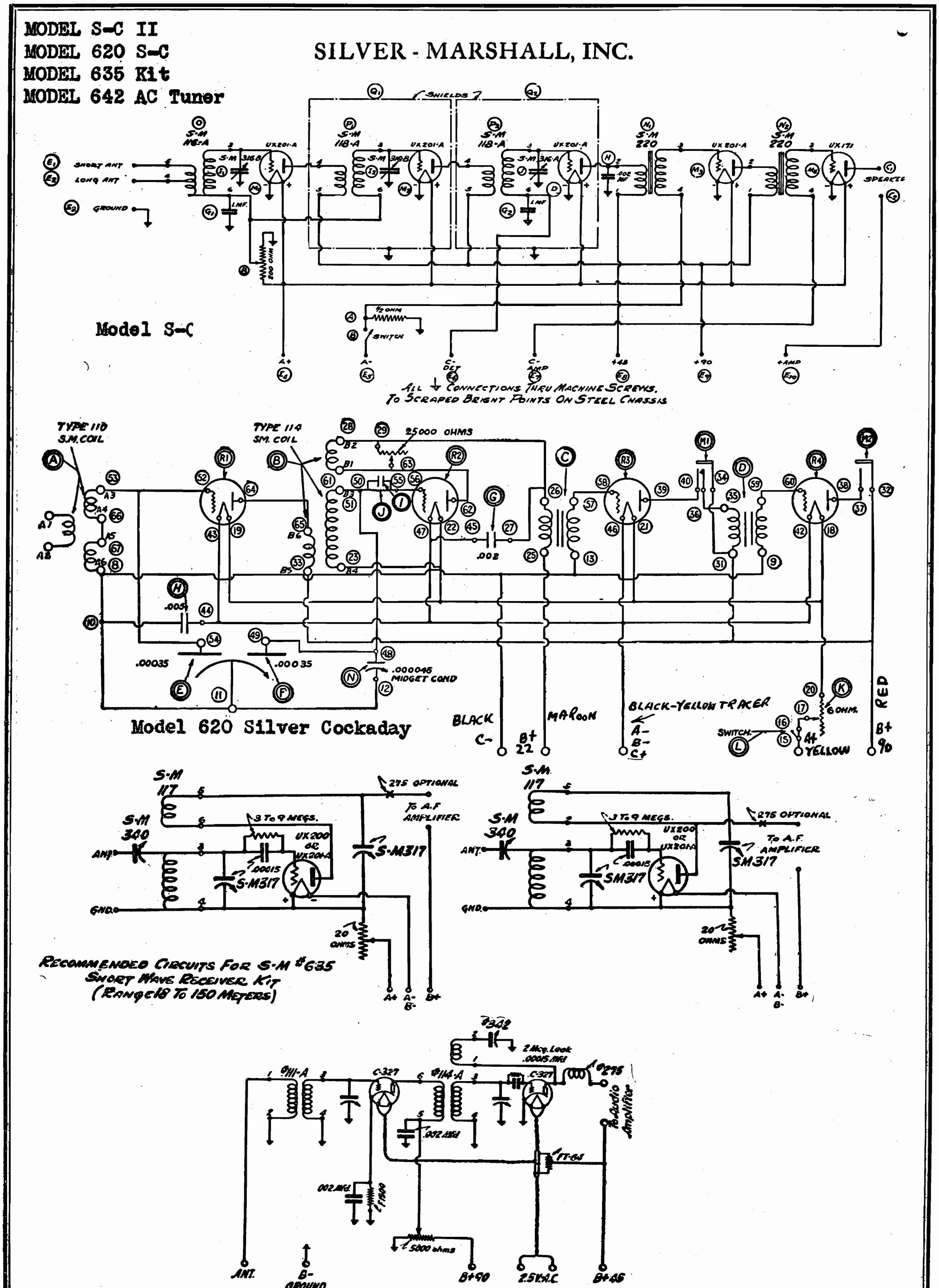


Models D and E

Tube No.	Type	A Volts	B Volts	Screen	C Volts
1st R.F.	551	2.3	225	80	3.2
1st Det.	224	2.3	225	80	12.
Osc.	227	2.3	80		6.2
1st I.F.	551	2.3	225	80	3.2
2nd I.F.	551	2.3	225	80	3.2
2nd Det.	227	2.3	220		20.
Pentodes	247	2.3	220	235	16.5
Rectifier	'280	5.0			

Models D, E (1931)

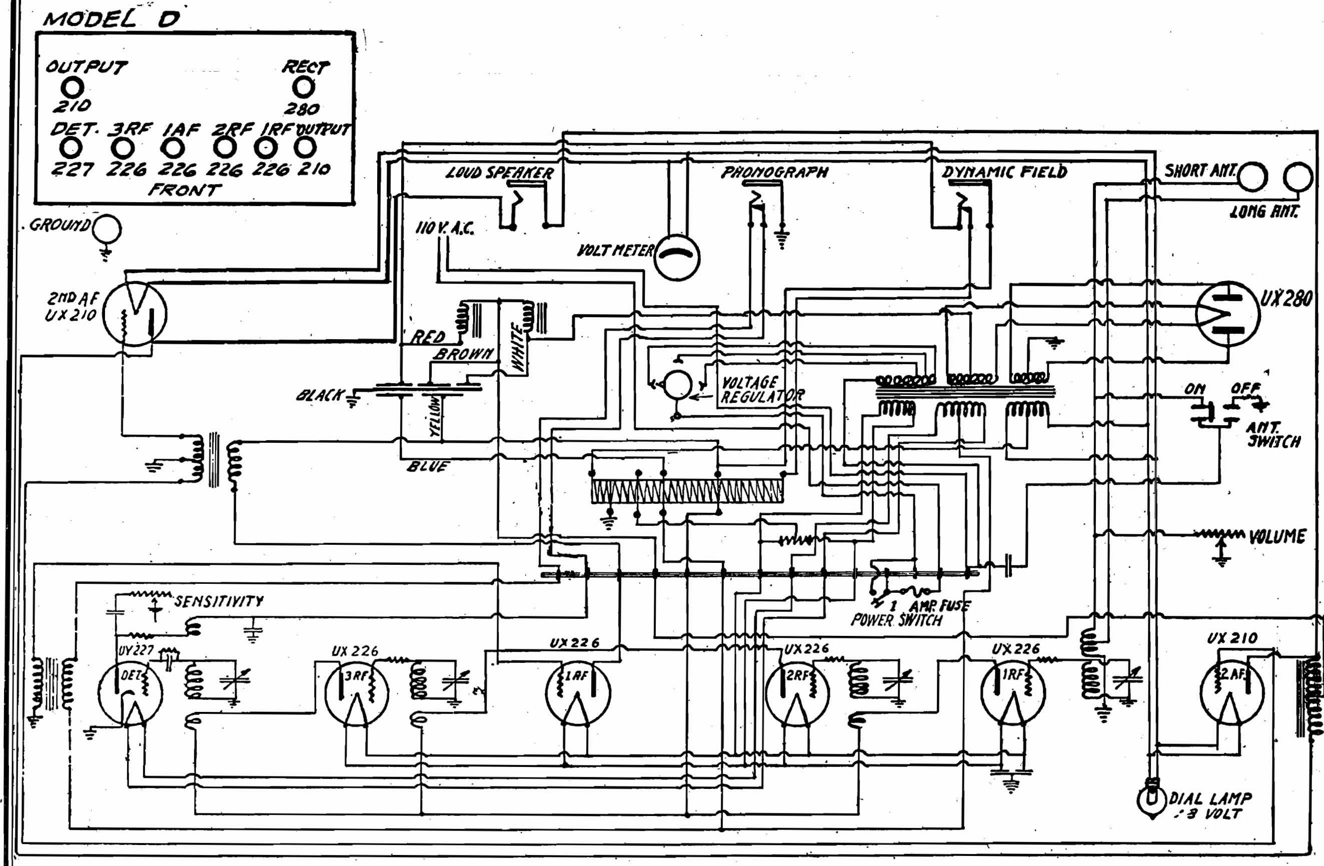




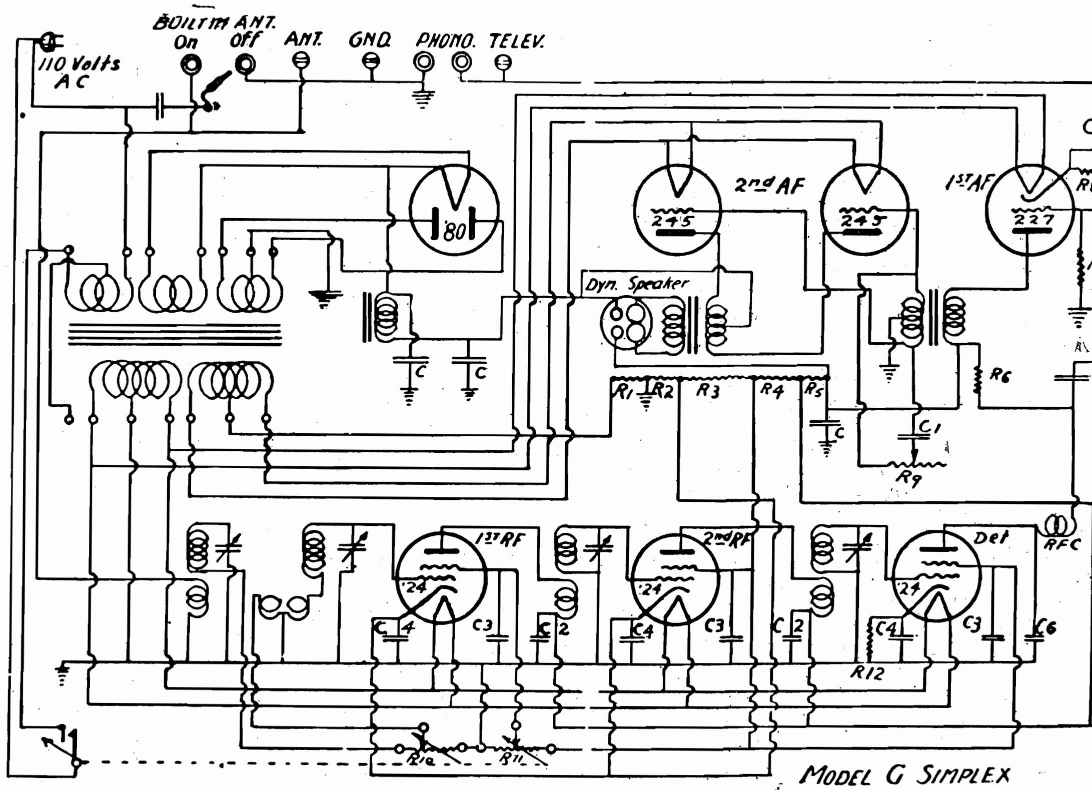
Schematic diagram of 642AC Universal All Wave Tuner

SIMPLEX RADIO CO.

MODEL D Schematic
MODEL G Schematic



CIRCUIT DIAGRAM, MODEL D, SIMPLEX ELECTRIC.

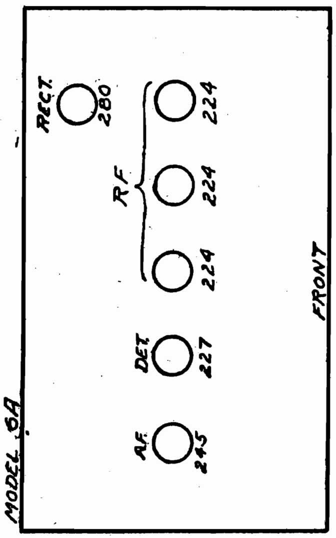


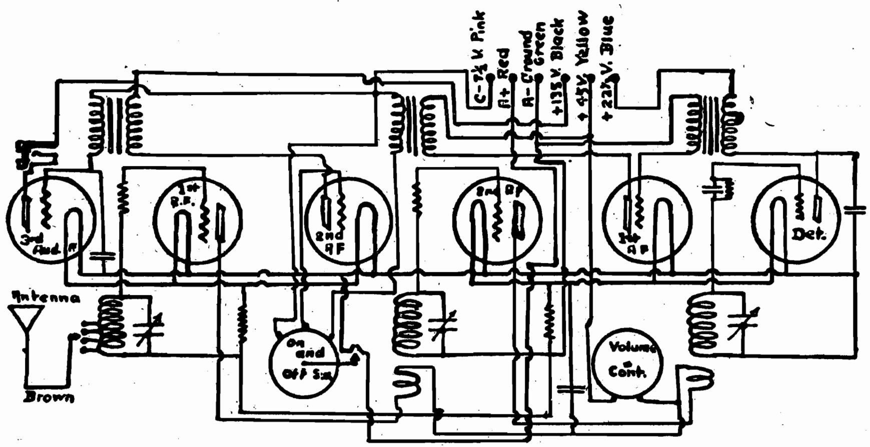
MODEL G SIMPLEX
CIRCUIT DIAGRAM

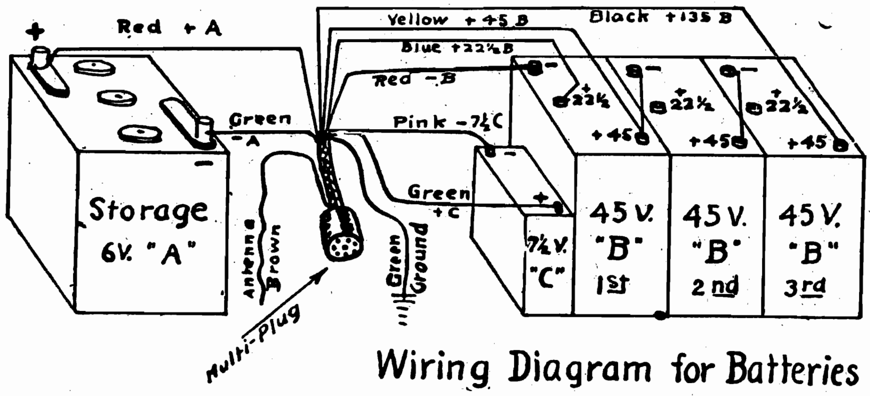
MODEL 6A
MODEL F

SIMPLEX RADIO CO.

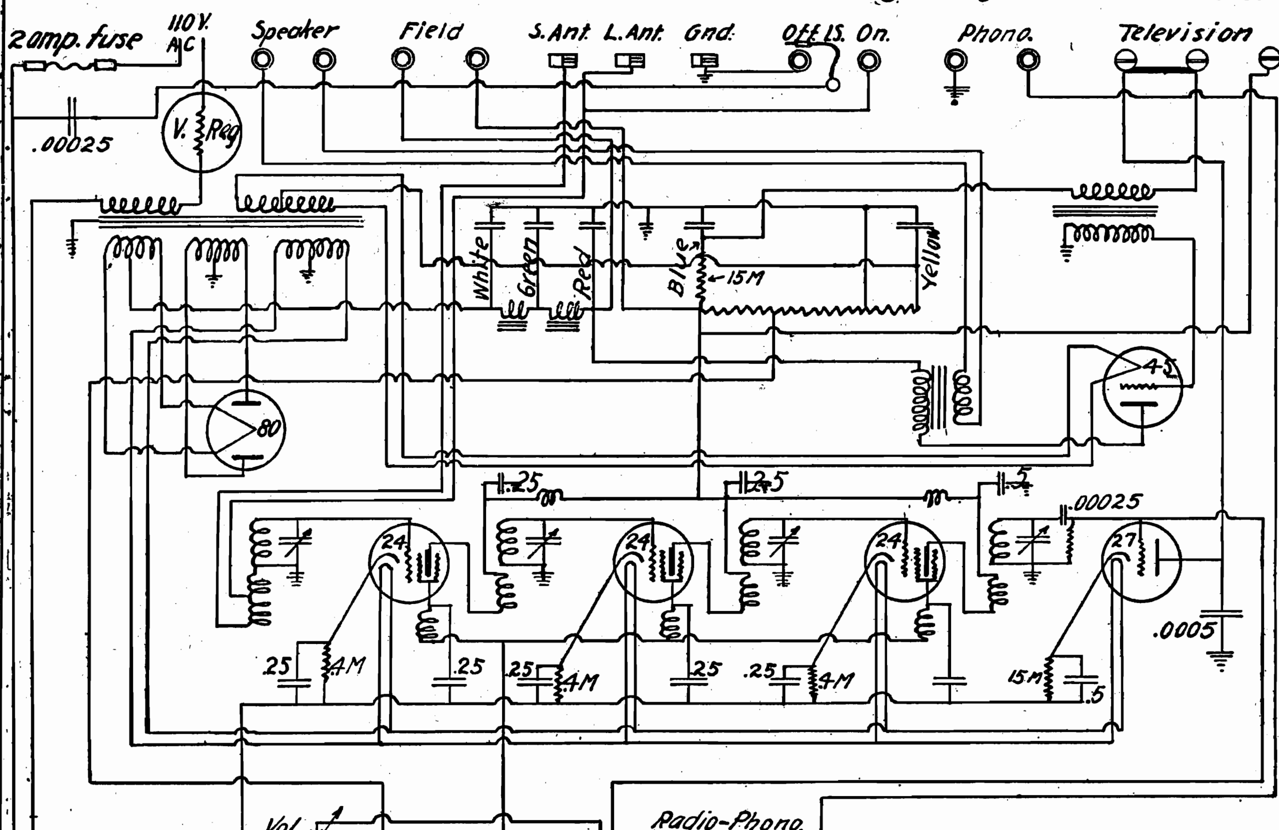
Wiring Diagram Model 6A







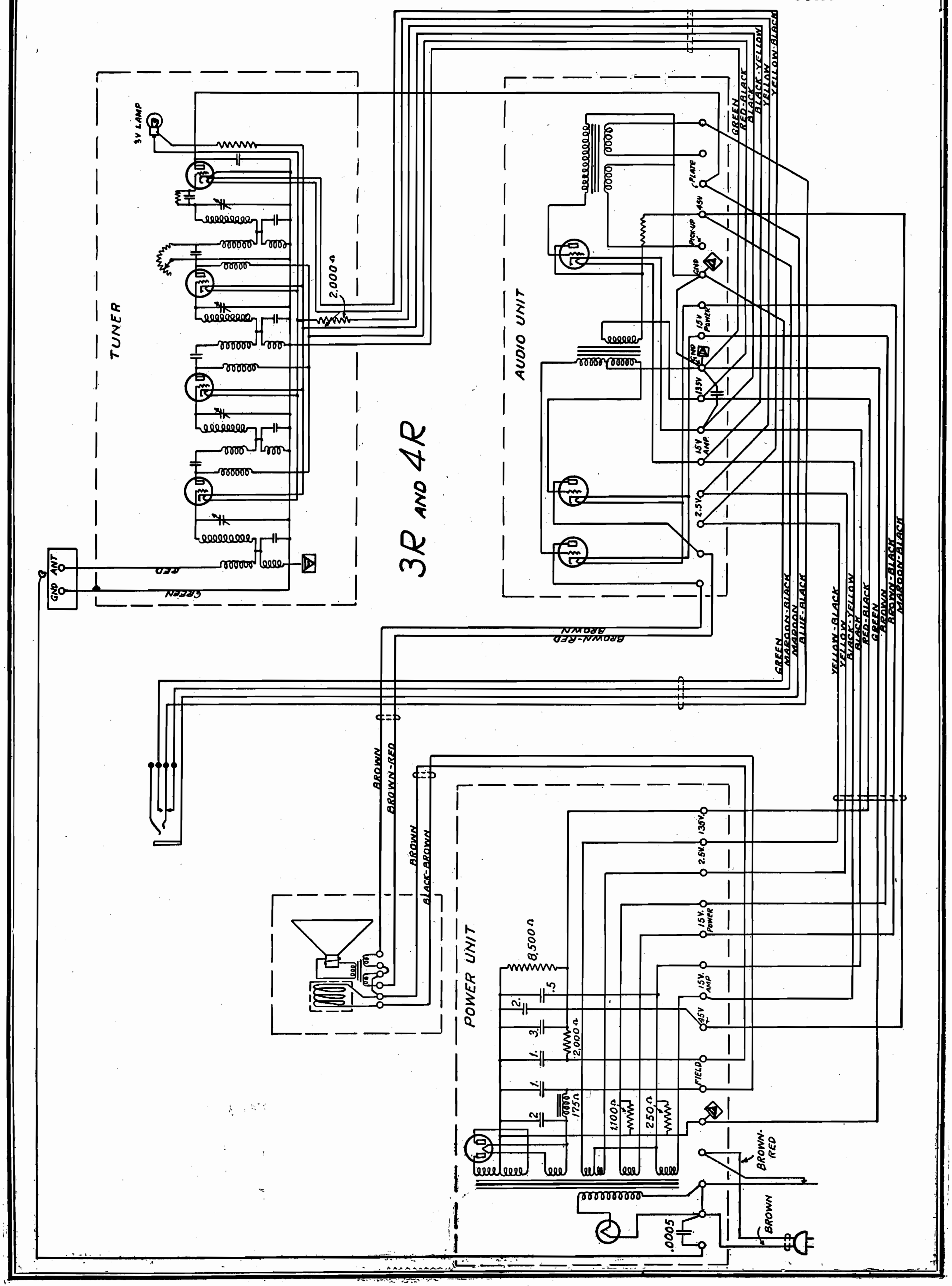
Wiring Diagram for Batteries



Wiring Diagram Model F

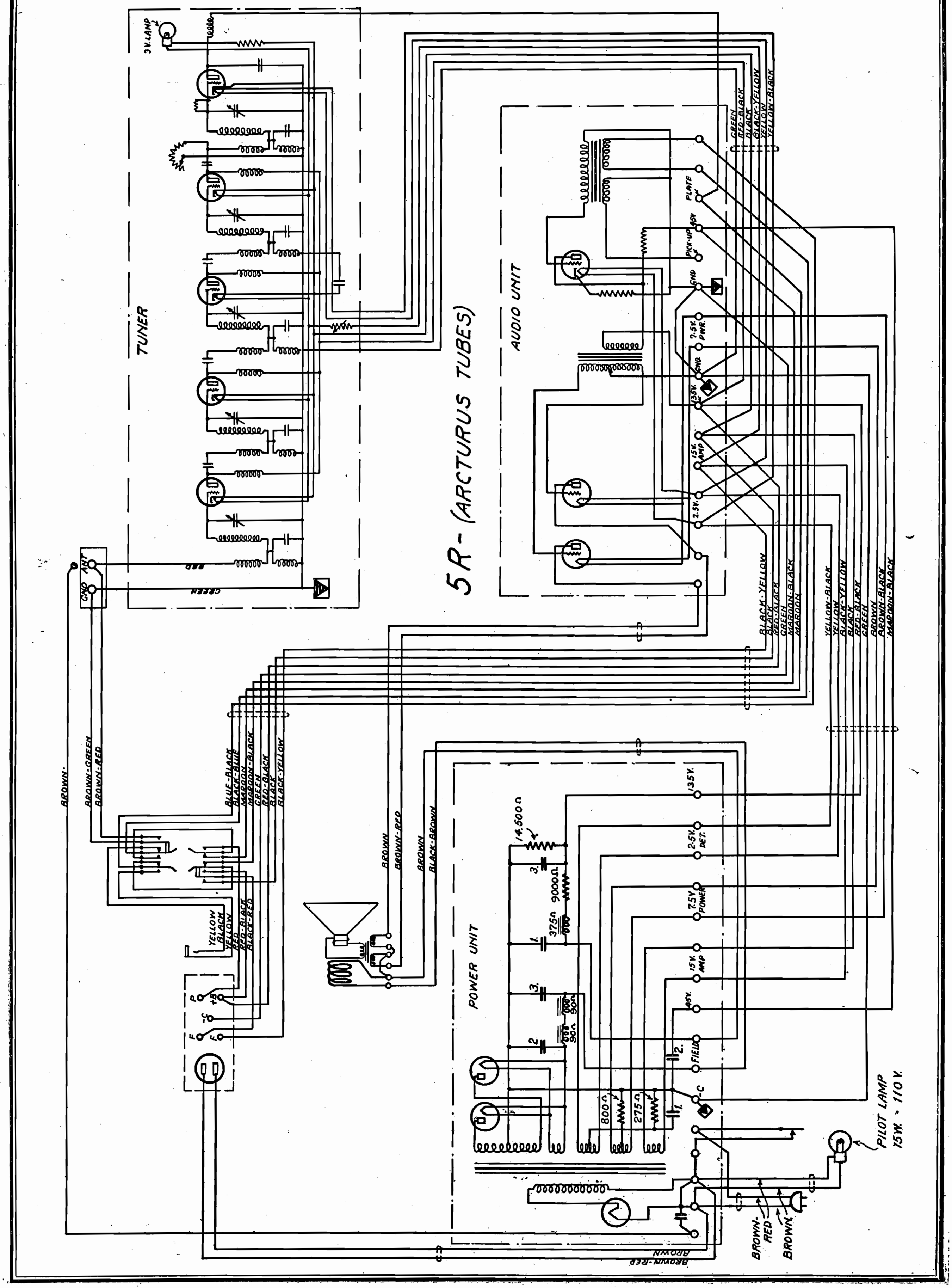
SONORA PHONOGRAPH CO.

MODEL 3R, 4R
Schematic



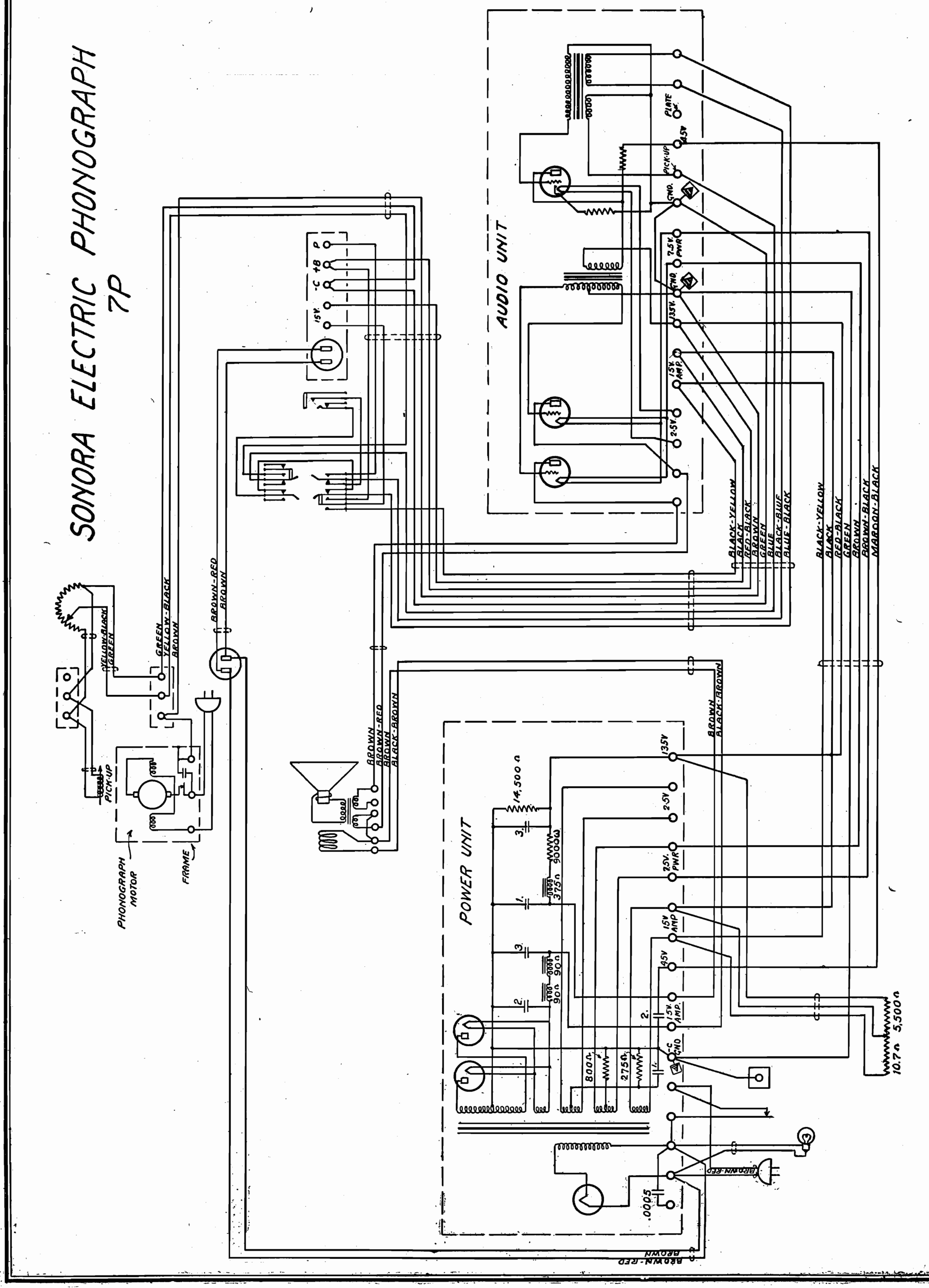
MODEL 5R
Schematic

SONORA PHONOGRAPH CO.



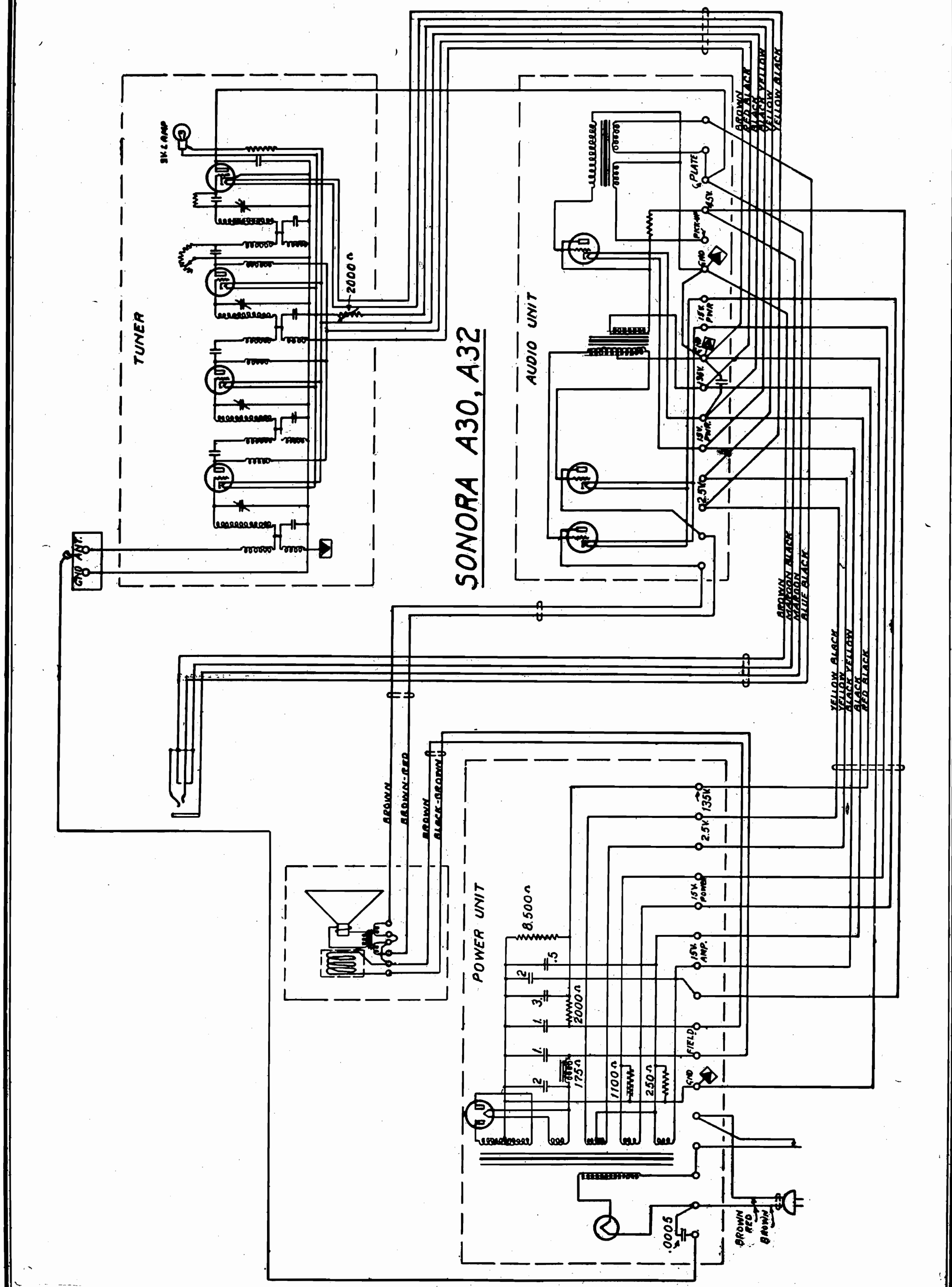
MODEL 7P
Schematic

SONORA PHONOGRAPH CO.



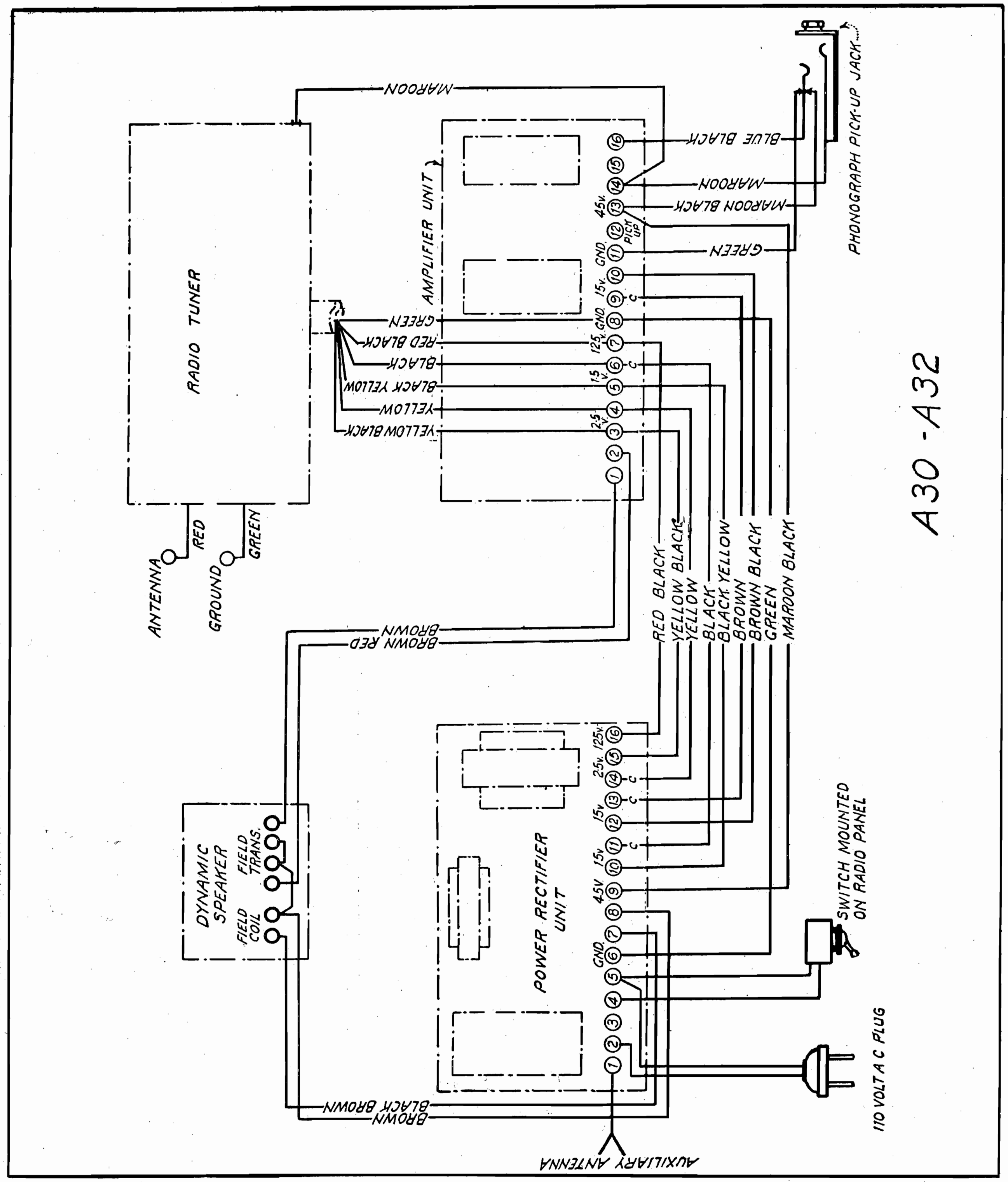
MODEL A30, A32
Schematic

SONORA PHONOGRAPH CO.



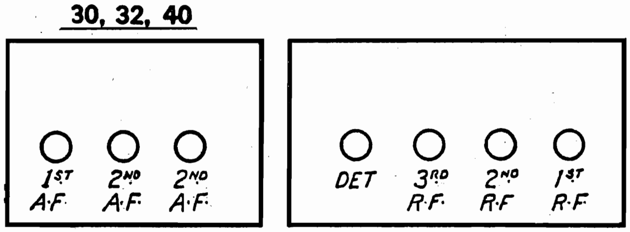
MODEL A30, A32
Wiring Diagram

SONORA PHONOGRAPH CO.



30, 32, 40

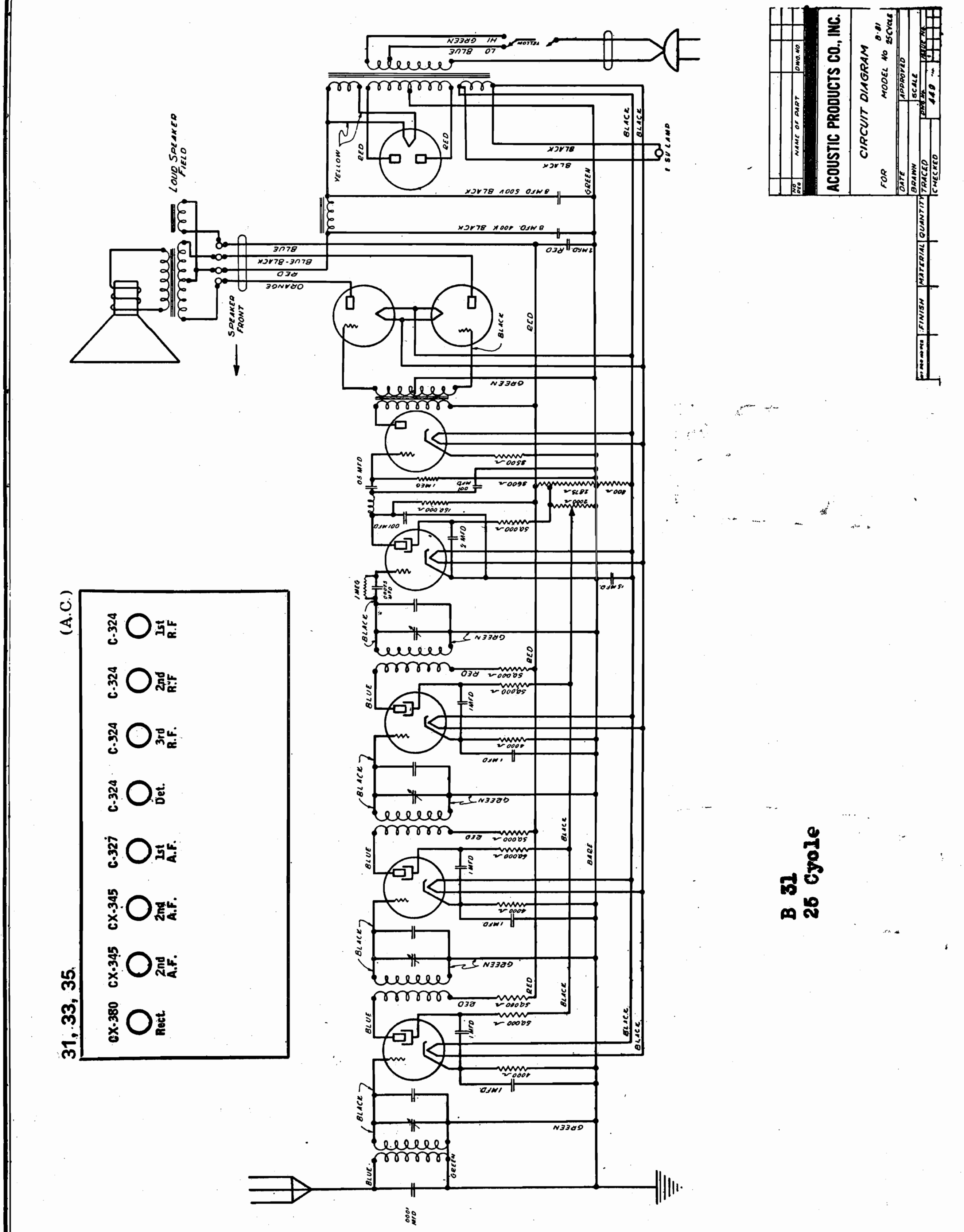
(A.C.)



TUBE NO. IN ORDER	TYPE OF TUBE	POSITION OF TUBE 1ST. R.F., DET., ETC.	READINGS, PLUG IN SOCKET OF SET								
			TUBE OUT		TUBE IN TESTER						
			A VOLTS	B VOLTS	A VOLTS	B VOLTS	C VOLTS	CATHODE VOLTS	NORMAL PLATE M.A.	PLATE M.A. GRID TEST	PLATE M.A CHANGE
1	RA-1	1st.R.F.	15.0	136	14.0	130	6	-	6.6	12.0	5.4
2	RA-1	2nd.R.F.	15.0	136	14.0	130	6	-	6.6	12.0	5.4
3	RA-1	3rd.R.F.	15.0	136	14.0	130	6	-	6.6	12.0	5.4
4	DE-1	Detector	2.5	88	2.1	20	-	6	.8	1.0	0.2
5	RA-1	1st.A.F.	15.0	130	14.0	120	6	-	6.6	12.0	5.4
6	SO-1	2ndA.F.Push	15.0	200	14.0	180	40	-	18.0	22.0	4.0
7	SO-1	2ndA.F.Pull	15.0	200	14.0	180	40	-	18.0	22.0	4.0

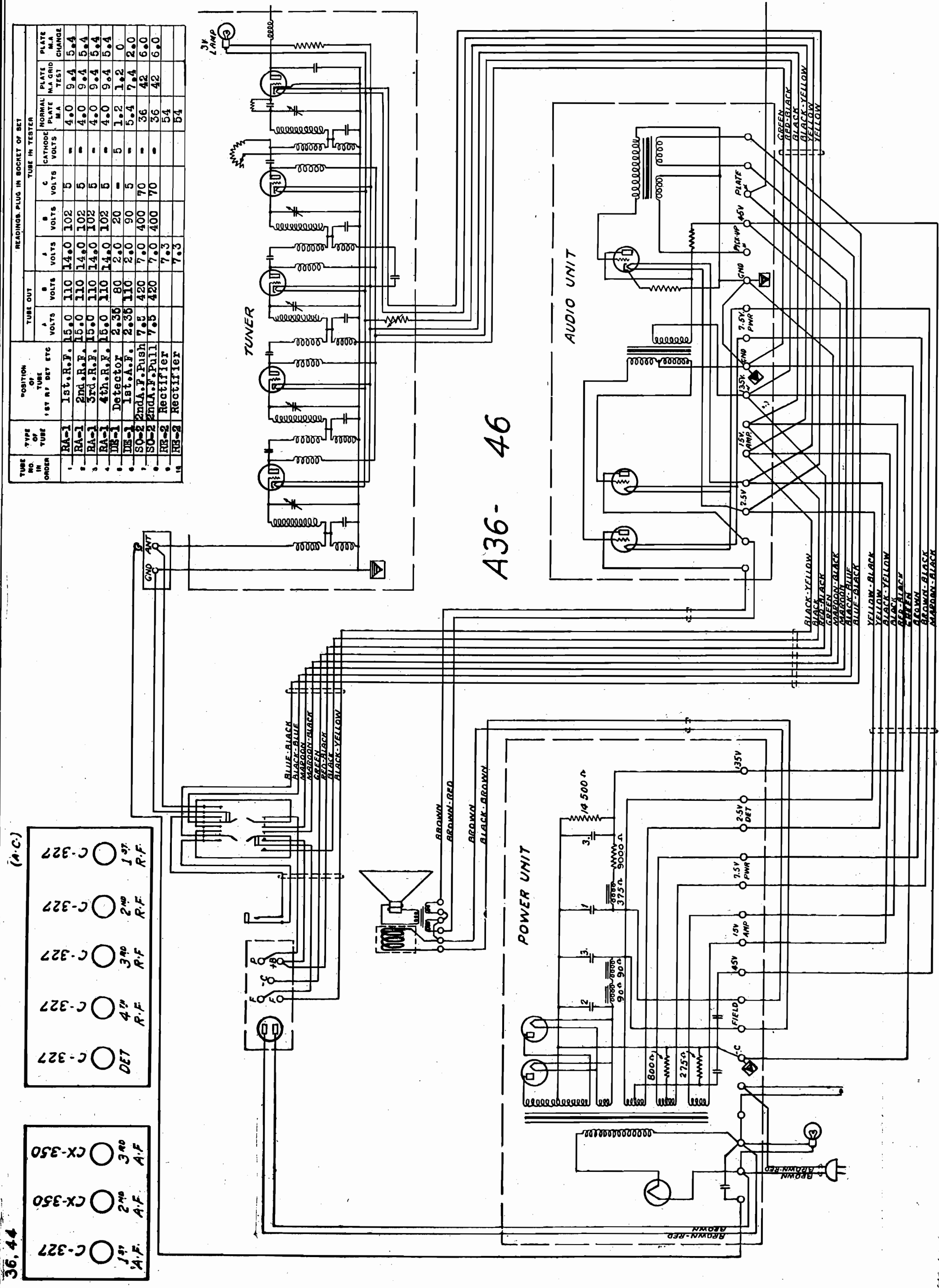
MODEL B31 25 Cycle
Schematic

SONORA PHONOGRAPH CO.



SONORA PHONOGRAPH CO.

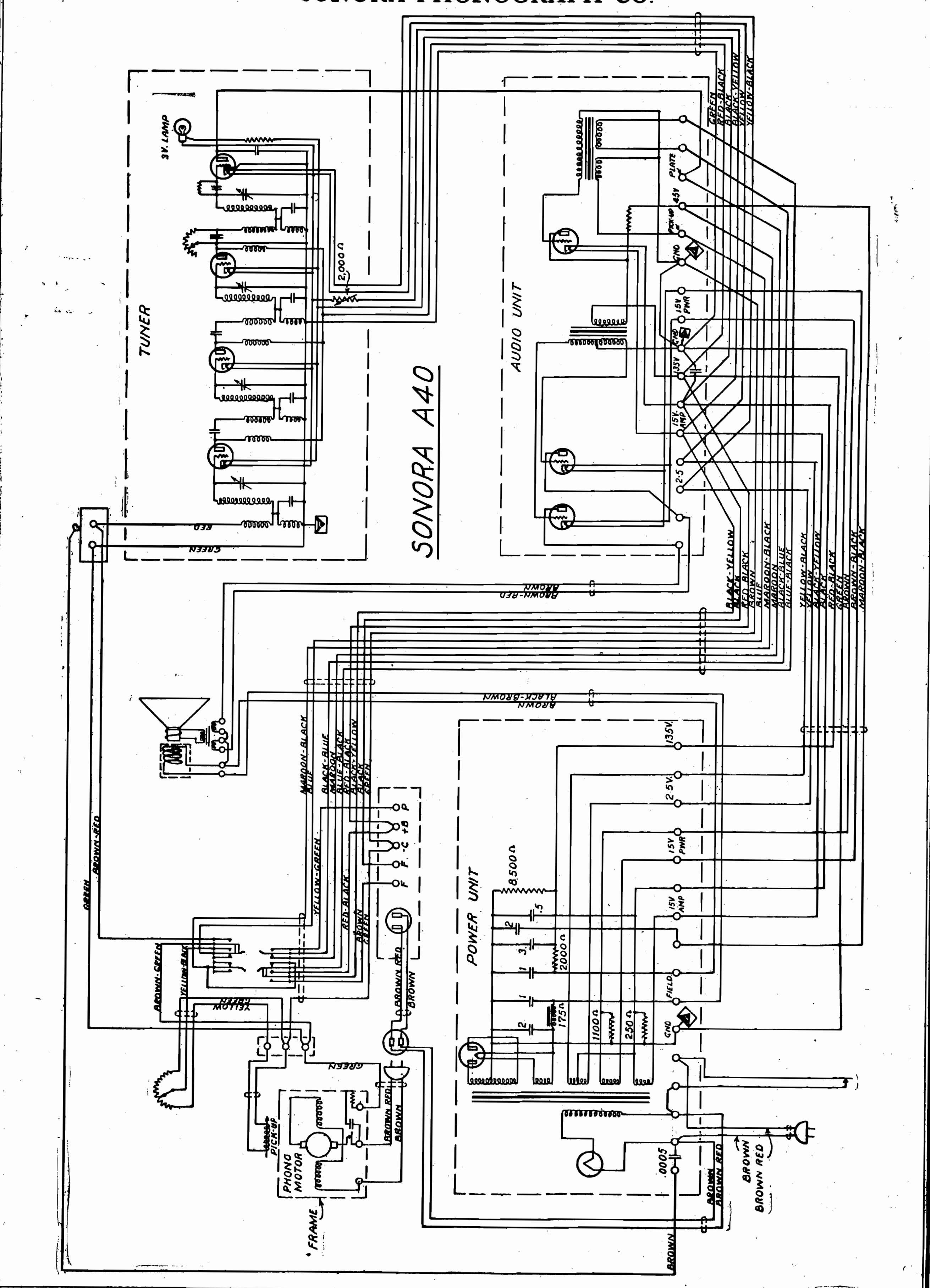
MODEL A36, A46
Schematic



TUBE NO. IN ORDER	TYPE OF TUBE	POSITION OF TUBE 1ST RF DET ETC	READINGS. PLUG IN SOCKET OF SET								
			TUBE OUT		TUBE IN TESTER						
			A VOLTS	B VOLTS	A VOLTS	B VOLTS	C VOLTS	CATHODE VOLTS	NORMAL PLATE M.A	PLATE M.A GRID TEST	PLATE M.A CHANGE
1	RA-1	1st.R.F.	15.0	110	14.0	102	5	-	4.0	9.4	5.4
2	RA-1	2nd.R.F.	15.0	110	14.0	102	5	-	4.0	9.4	5.4
3	RA-1	3rd.R.F.	15.0	110	14.0	102	5	-	4.0	9.4	5.4
4	RA-1	4th.R.F.	15.0	110	14.0	102	5	-	4.0	9.4	5.4
5	DE-1	Detector	2.35	80	2.0	20	-	5	1.2	1.2	0
6	DE-1	1st.A.F.	2.35	110	2.0	90	5	-	5.4	7.4	2.0
7	SO-2	2ndA.F.Push	7.5	420	7.0	400	70	-	36	42	6.0
8	SO-2	2ndA.F.Pull	7.5	420	7.0	400	70	-	36	42	6.0
9	RE-2	Rectifier			7.3				54		
10	RE-2	Rectifier			7.3				54		

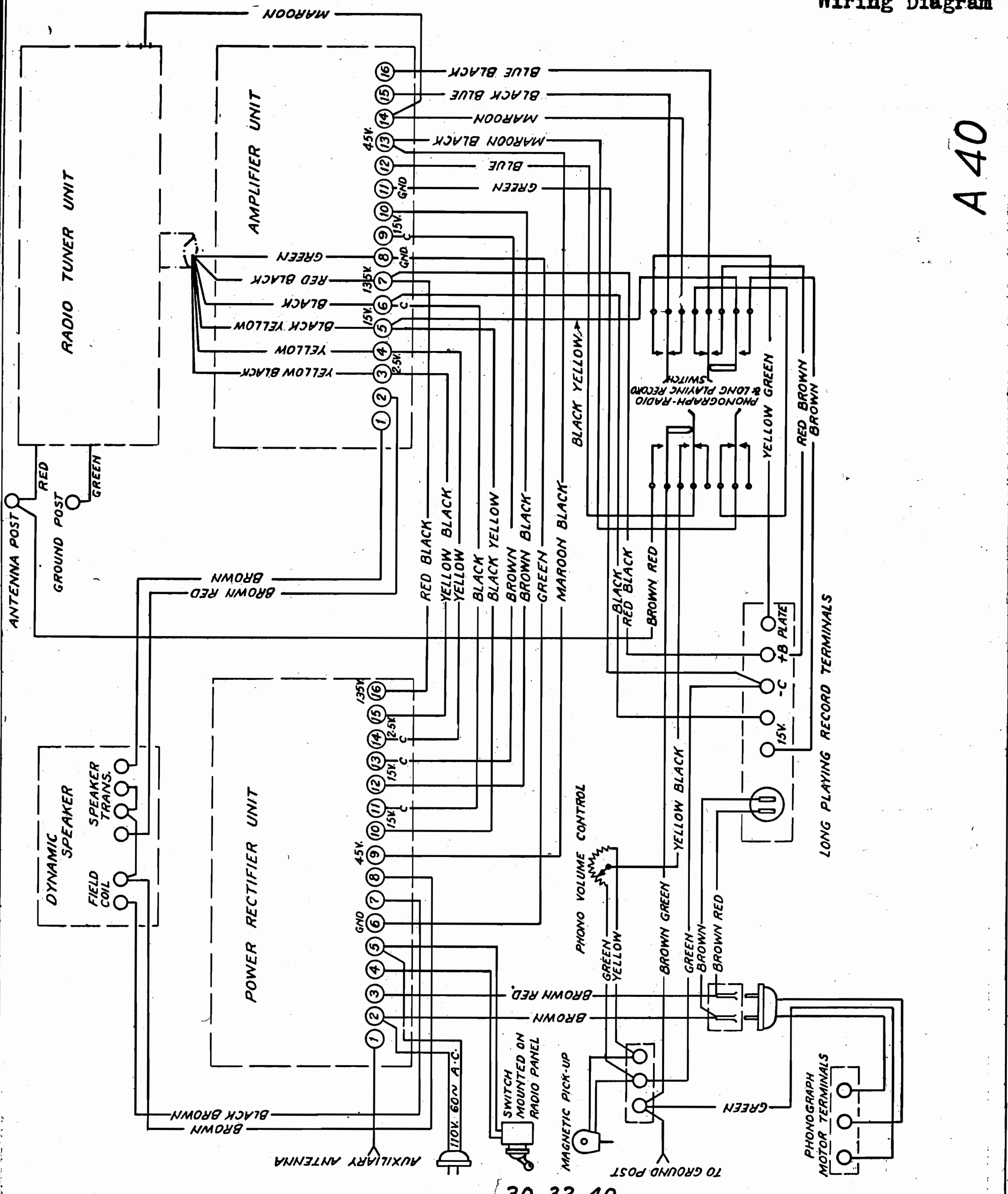
MODEL A40
Schematic

SONORA PHONOGRAPH CO.

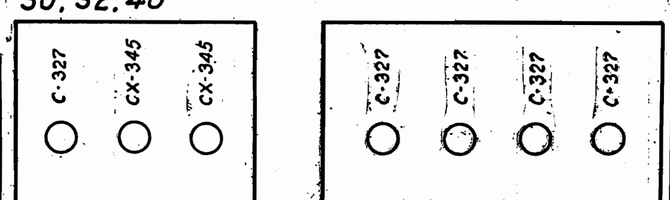


SONORA PHONOGRAPH CO.

MODEL A40
Wiring Diagram



30, 32, 40

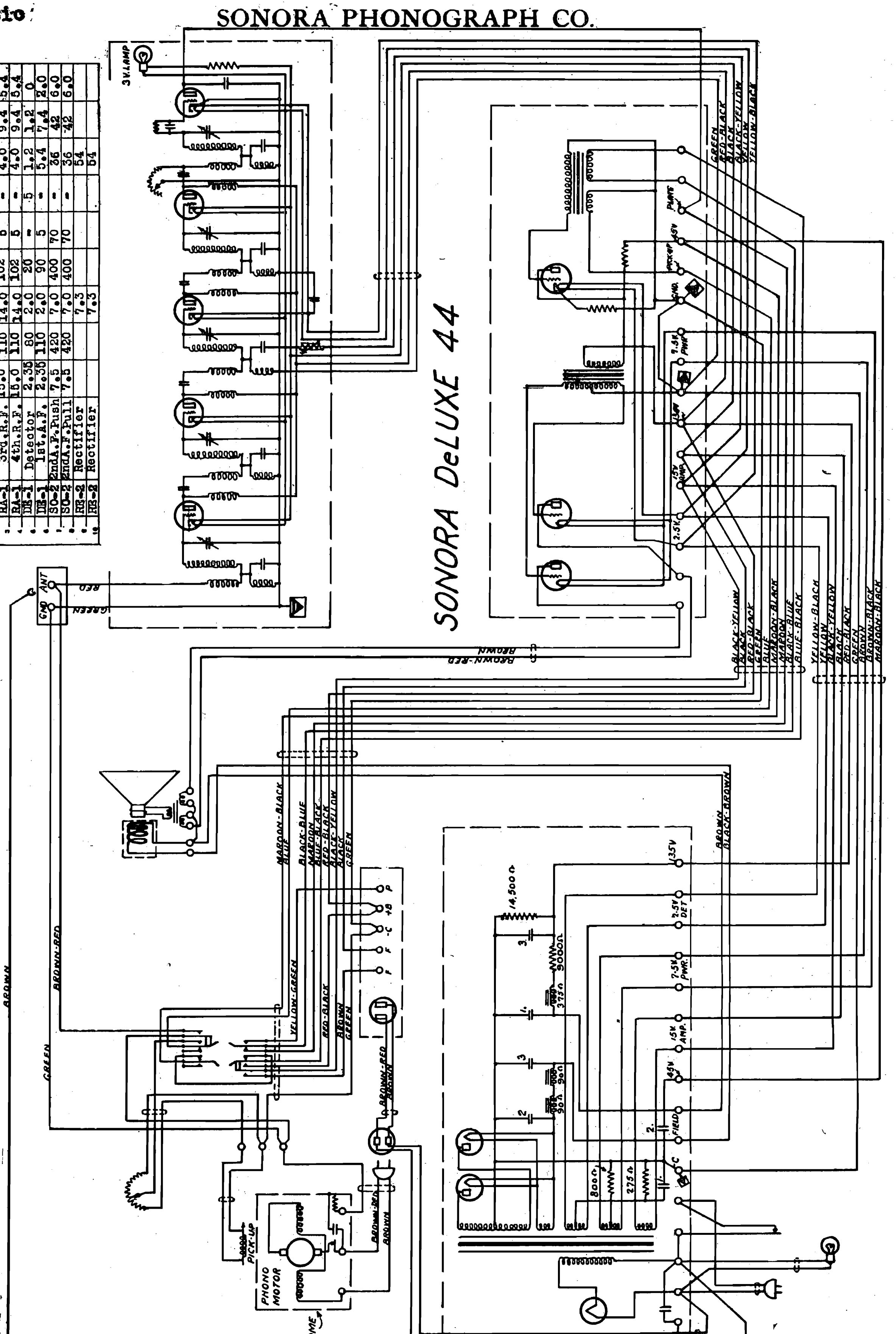


CX-380 USED IN SEPARATE POWER UNIT

TUBE NO. IN ORDER	TYPE OF TUBE	POSITION OF TUBE 1ST. R.F. DET., ETC.	READINGS, PLUG IN SOCKET OF SET: TUBE OUT A VOLTS	TUBE OUT B VOLTS	TUBE IN TESTER A VOLTS	TUBE IN TESTER B VOLTS	C VOLTS	CATHODE VOLTS	NORMAL PLATE M.A.	PLATE M.A. GRID TEST	PLATE M.A CHANGE
1	RA-1	1st.R.F.	15.0	136	14.0	130	6	-	6.6	12.0	5.4
2	RA-1	2nd.R.F.	15.0	136	14.0	130	6	-	6.6	12.0	5.4
3	RA-1	3rd.R.F.	15.0	136	14.0	130	6	-	6.6	12.0	5.4
4	DE-1	Detector	2.5	88	2.1	20	-	6	.8	1.0	0.2
5	RA-1	1st.A.F.	15.0	130	14.0	120	6	-	6.6	12.0	5.4
6	SO-1	2ndA.F.Push	15.0	200	14.0	180	40	-	18.0	22.0	4.0
7	SO-1	2ndA.F.Pull	15.0	200	14.0	180	40	-	18.0	22.0	4.0

MODEL De Luxe 44
Schematic

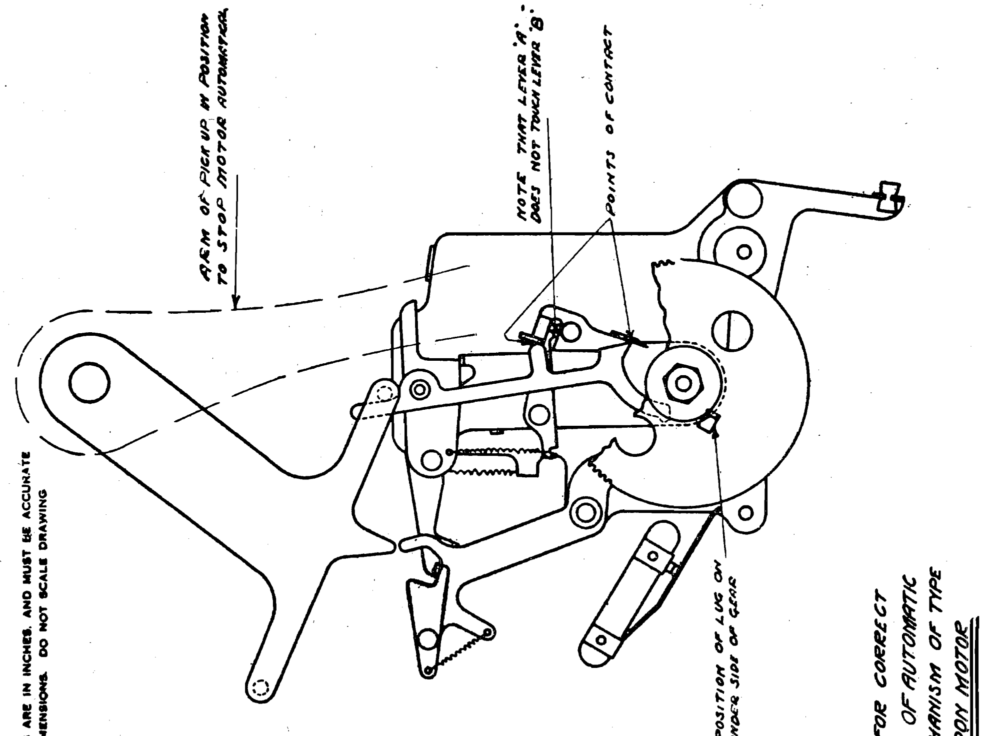
Tube No. in Order	Type of Tube	Position of Tube 1st R.F. Det., etc.	Readings, Plug in Socket of Set: Tube Out A Volts	Tube Out B Volts	Tube in Tester A Volts	B Volts	C Volts	Cathode Volts	Normal Plate M.A.	Plate M.A. Grid Test	Plate M.A. Change
1	RA-1	1st.R.F.	15.0	110	14.0	102	5	-	4.0	9.4	5.4
2	RA-1	2nd.R.F.	15.0	110	14.0	102	5	-	4.0	9.4	5.4
3	RA-1	3rd.R.F.	15.0	110	14.0	102	5	-	4.0	9.4	5.4
4	RA-1	4th.R.F.	15.0	110	14.0	102	5	-	4.0	9.4	5.4
5	DE-1	Detector	2.35	80	2.0	20	-	5	1.2	1.2	0
6	DE-1	1st.A.F.	2.35	110	2.0	90	5	-	5.4	7.4	2.0
7	SO-2	2ndA.F.Push	7.5	420	7.0	400	70	-	36	42	6.0
8	SO-2	2ndA.F.Pull	7.5	420	7.0	400	70	-	36	42	6.0
9	RE-2	Rectifier			7.3				54		
10	RE-2	Rectifier			7.3				54		



SONORA PHONOGRAPH CO.

MODEL 2M
Automatic Stop

IMPORTANT UNLESS OTHERWISE SPECIFIED, DIMENSIONS ARE IN INCHES, AND MUST BE ACCURATE WITHIN ± INCHES WORK TO DIMENSIONS. DO NOT SCALE DRAWING

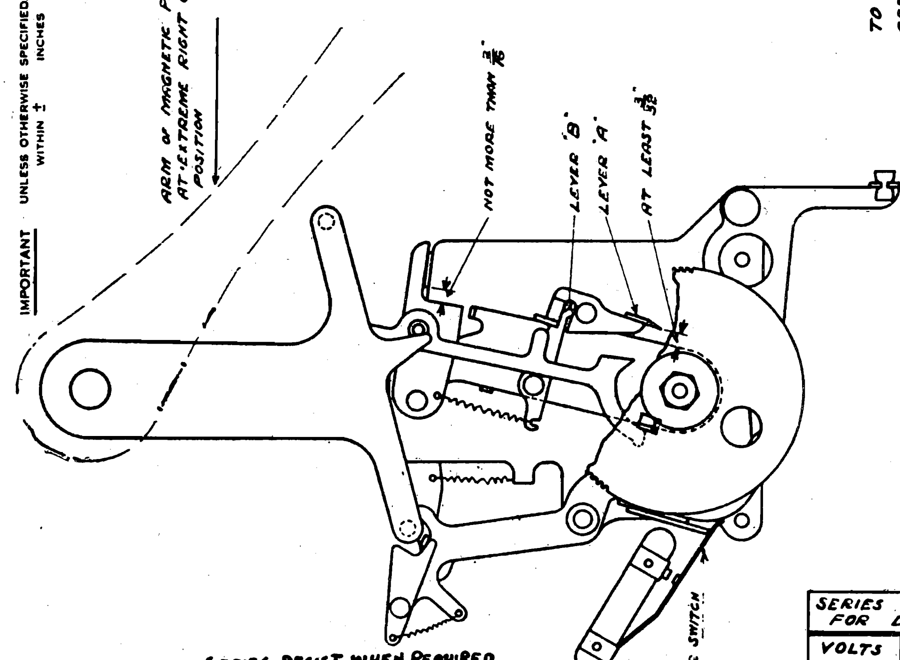


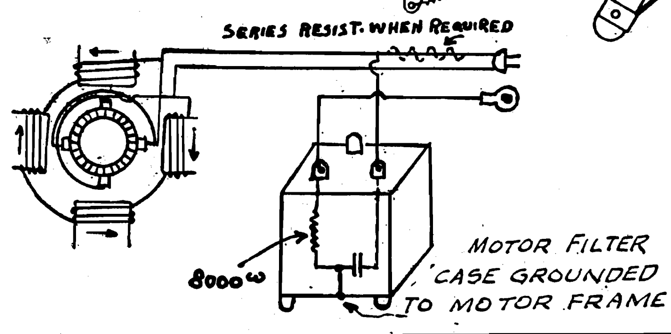
TO CHECK FOR CORRECT ASSEMBLY OF AUTOMATIC STOP MECHANISM OF TYPE 2M MELODON MOTOR

AUTOMATIC STOP MECHANISM OF TYPE 2M MOTOR

ED. SERVICE DEPT DWG #38

SONORA PHONOGRAPH CO. INC NEW YORK NY



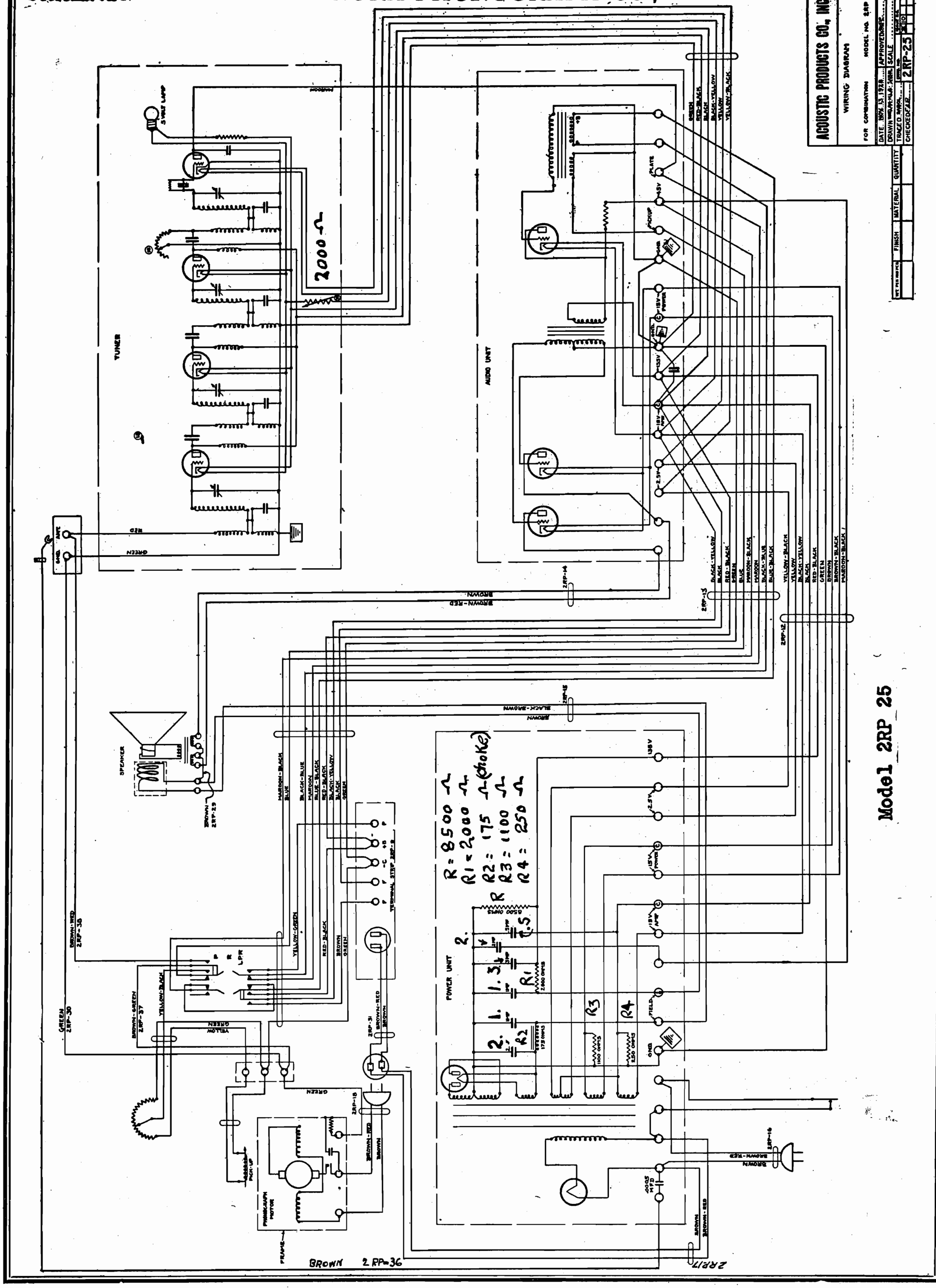


SERIES RESISTANCES REQUIRED FOR DIFFERENT VOLTAGES.

VOLTS	CYCLES	OHMS	WATTS
110	60	NONE	
110	50	25	100
110	40	60	100
110	25	110	100
110	DC.	165	100
220	60	210	200
220	25	330	200
32	DC.	NONE	

MODEL 2RP 25 Cycle Schematic

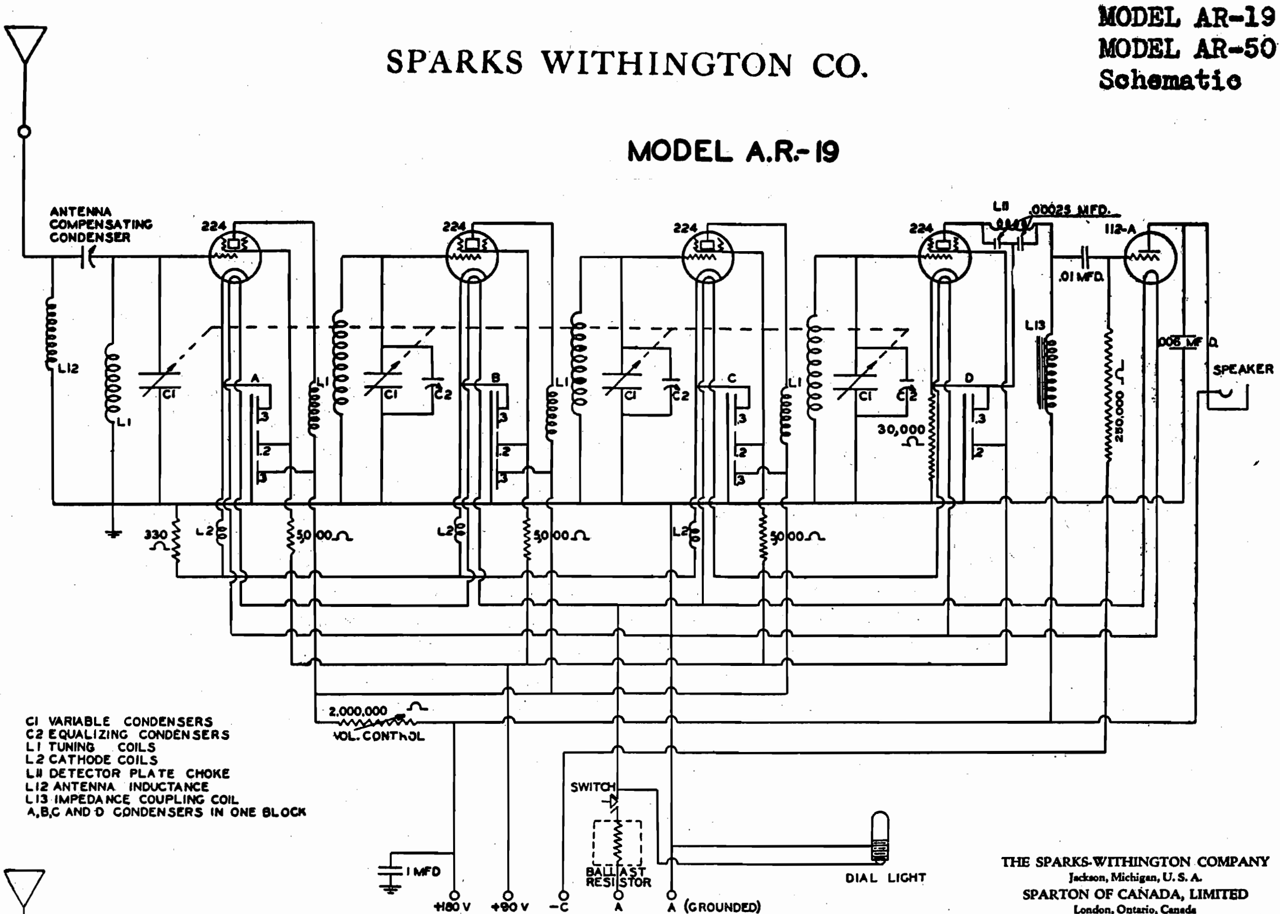
SONORA PHONOGRAPH CO.,



MODEL AR-19
MODEL AR-50
Schematic

SPARKS WITHINGTON CO.

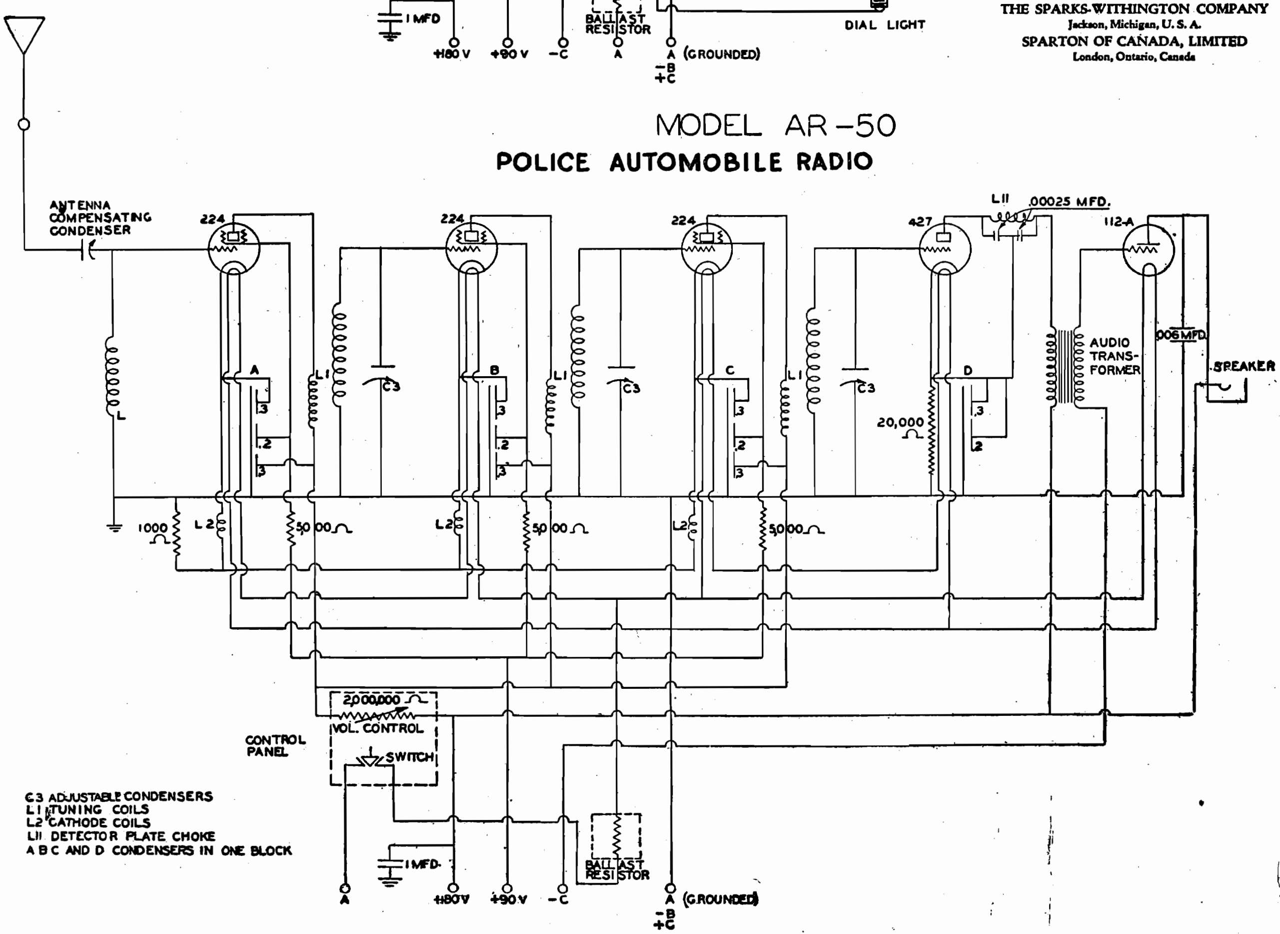
MODEL A.R.-19



C1 VARIABLE CONDENSERS
C2 EQUALIZING CONDENSERS
L1 TUNING COILS
L2 CATHODE COILS
L11 DETECTOR PLATE CHOKE
L12 ANTENNA INDUCTANCE
L13 IMPEDANCE COUPLING COIL
A, B, C AND D CONDENSERS IN ONE BLOCK

THE SPARKS-WITHINGTON COMPANY
Jackson, Michigan, U. S. A.
SPARTON OF CANADA, LIMITED
London, Ontario, Canada

MODEL AR-50
POLICE AUTOMOBILE RADIO

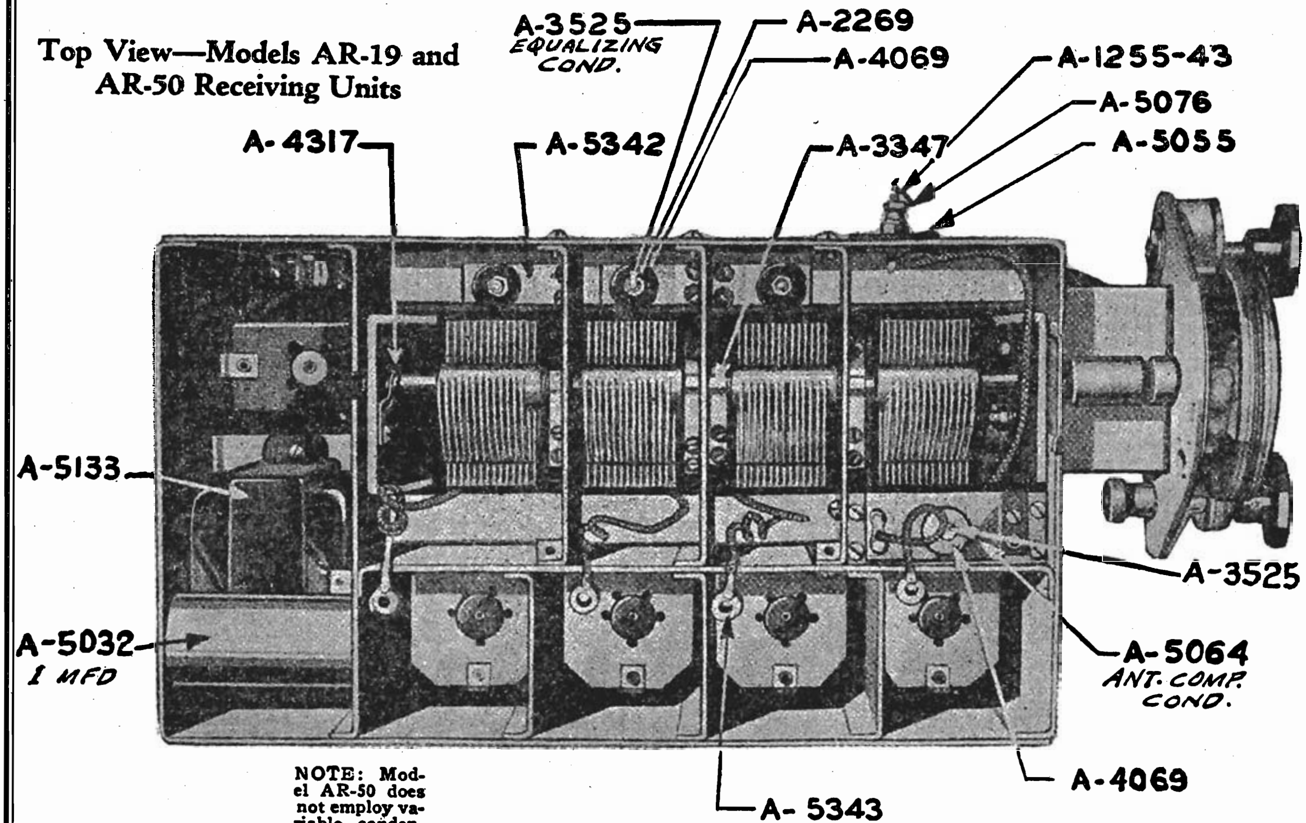


C3 ADJUSTABLE CONDENSERS
L1 TUNING COILS
L2 CATHODE COILS
L11 DETECTOR PLATE CHOKE
A B C AND D CONDENSERS IN ONE BLOCK

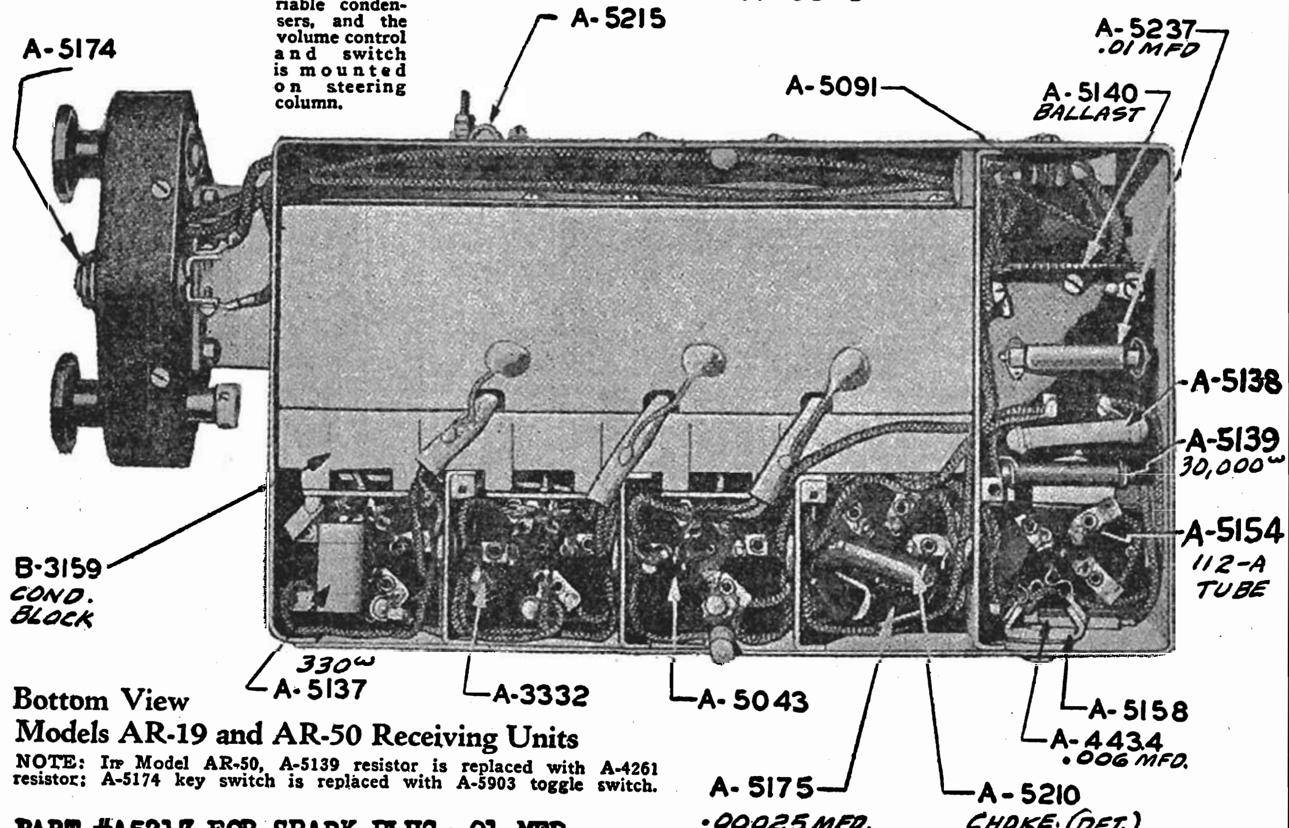
MODEL AR-19
MODEL AR-50
Chassis

SPARKS WITHINGTON CO.

Top View—Models AR-19 and AR-50 Receiving Units



NOTE: Model AR-50 does not employ variable condensers, and the volume control and switch is mounted on steering column.



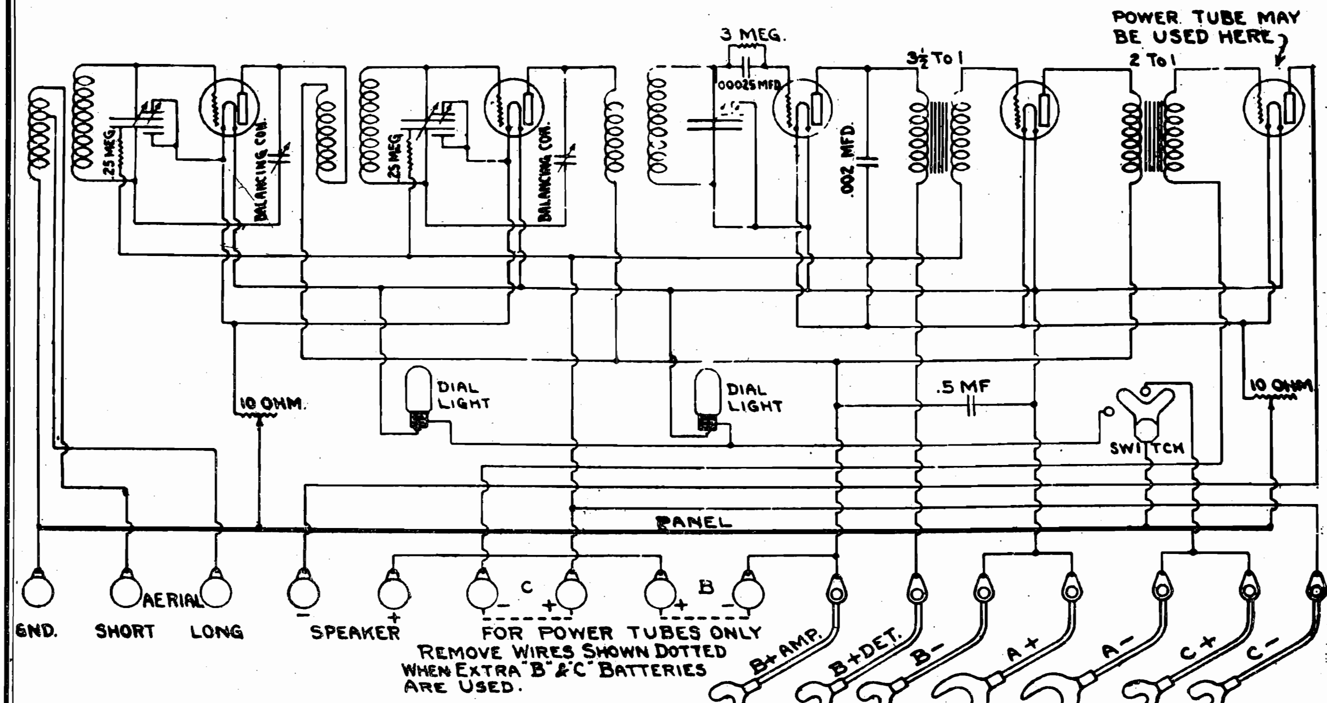
Bottom View
Models AR-19 and AR-50 Receiving Units

NOTE: In Model AR-50, A-5139 resistor is replaced with A-4261 resistor; A-5174 key switch is replaced with A-5903 toggle switch.

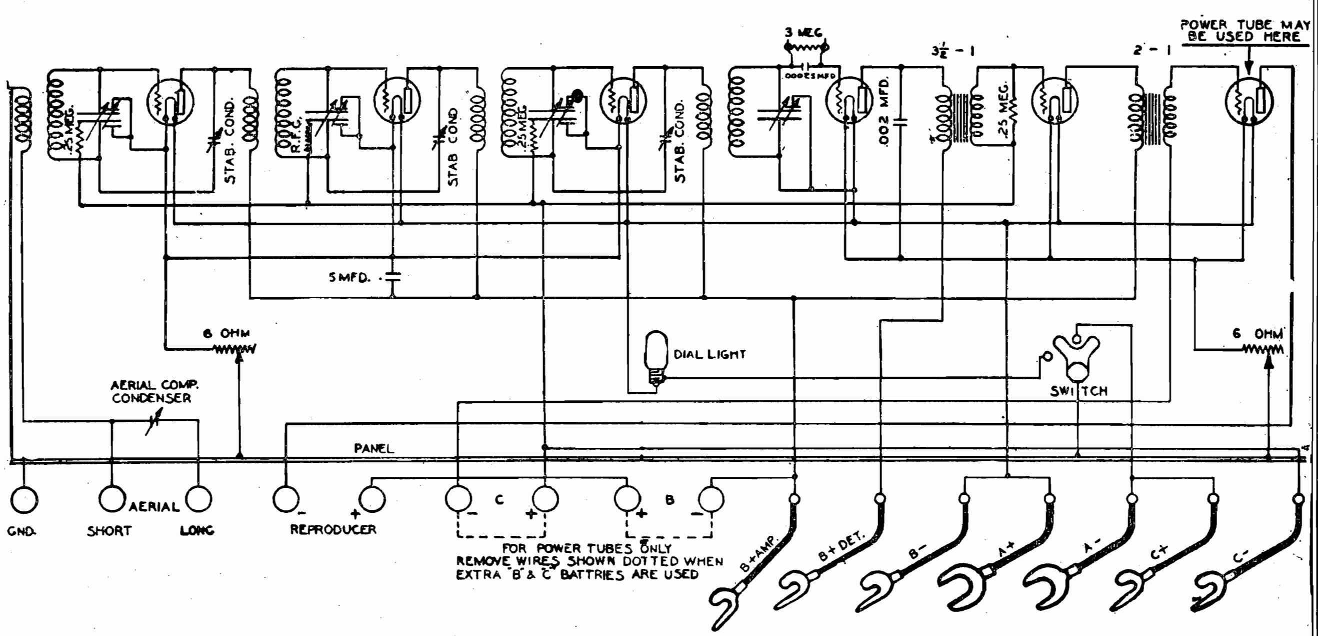
PART #A5217 FOR SPARK PLUG=.01 MFD
PART #A5238 FOR GENERATOR=.01 MFD

SPARKS WITHINGTON CO.

MODEL 5-15
MODEL 5-26
MODEL 6-15
MODEL 6-26

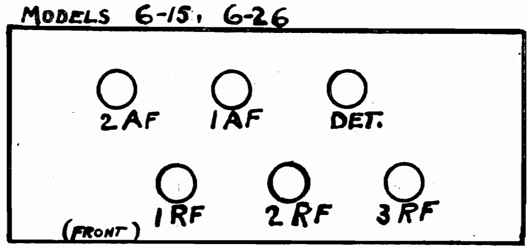


SPARTON Model 5-26
(Model 5-15 same except for dial light.)



SPARTON MODEL 6-26
MODEL 6-15 SAME EXCEPT FOR
DIAL LIGHT & A.F. RHEOSTAT

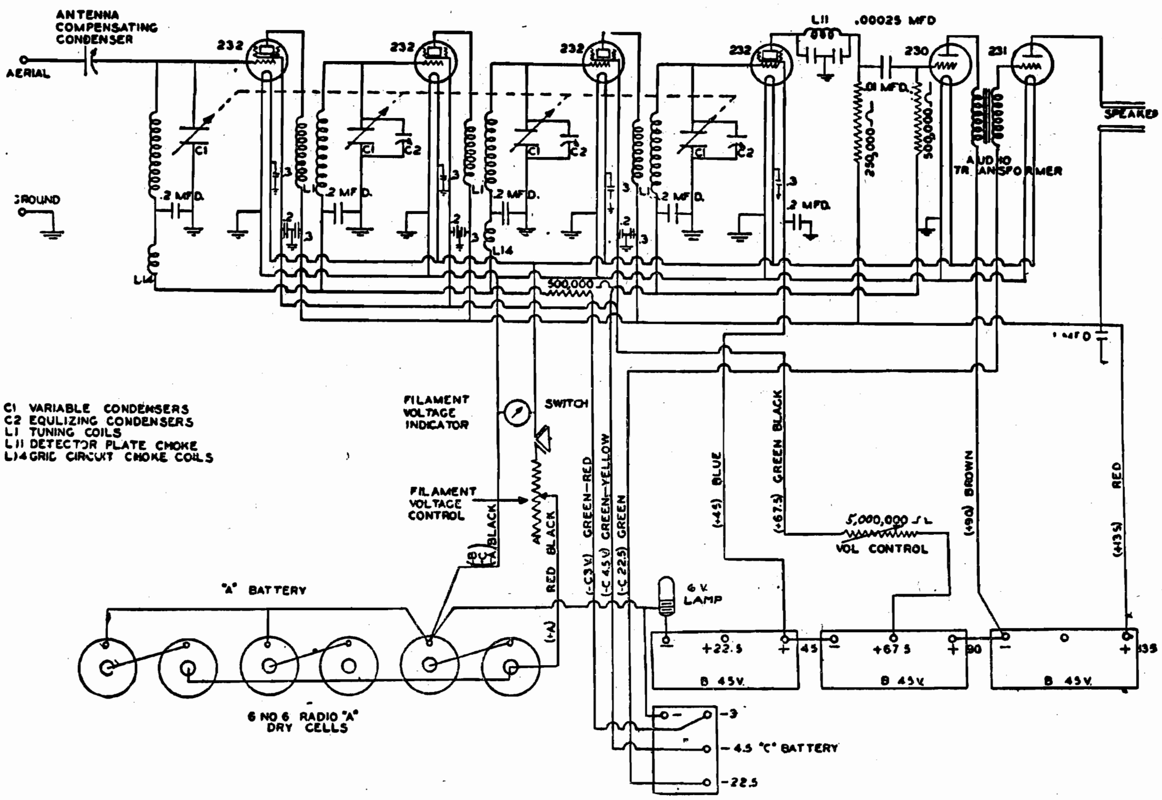
MODELS 6-15, 6-26



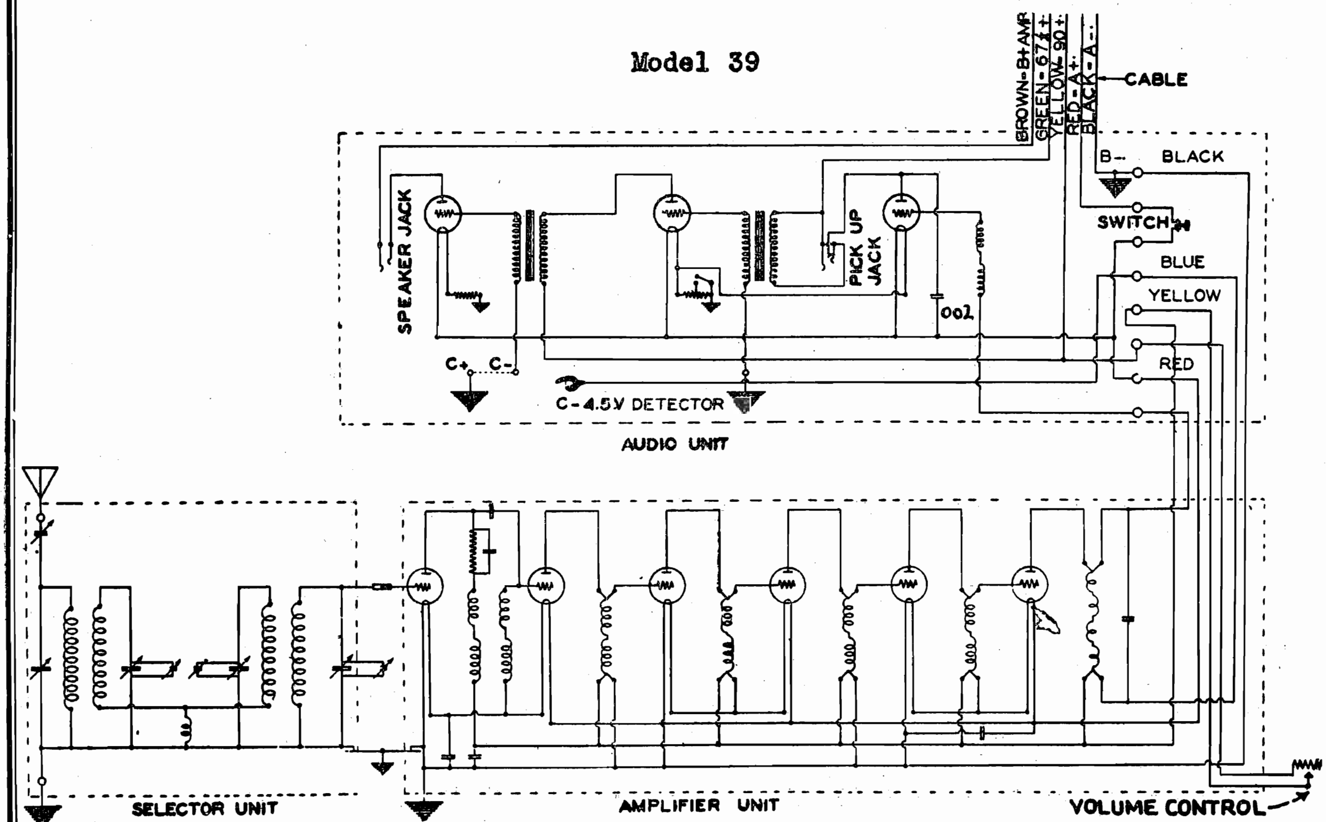
MODEL 31,32
MODEL 39
Schematic

SPARKS WITHINGTON CO.

Model 31,32

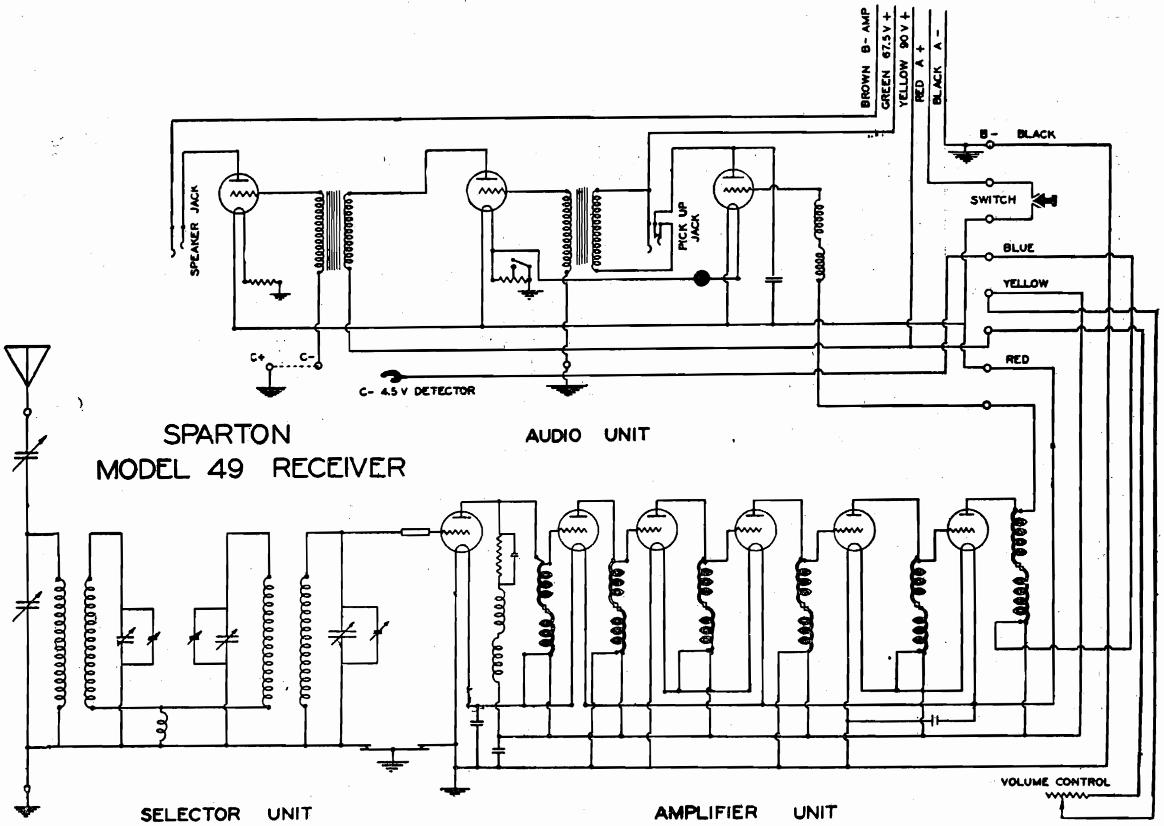


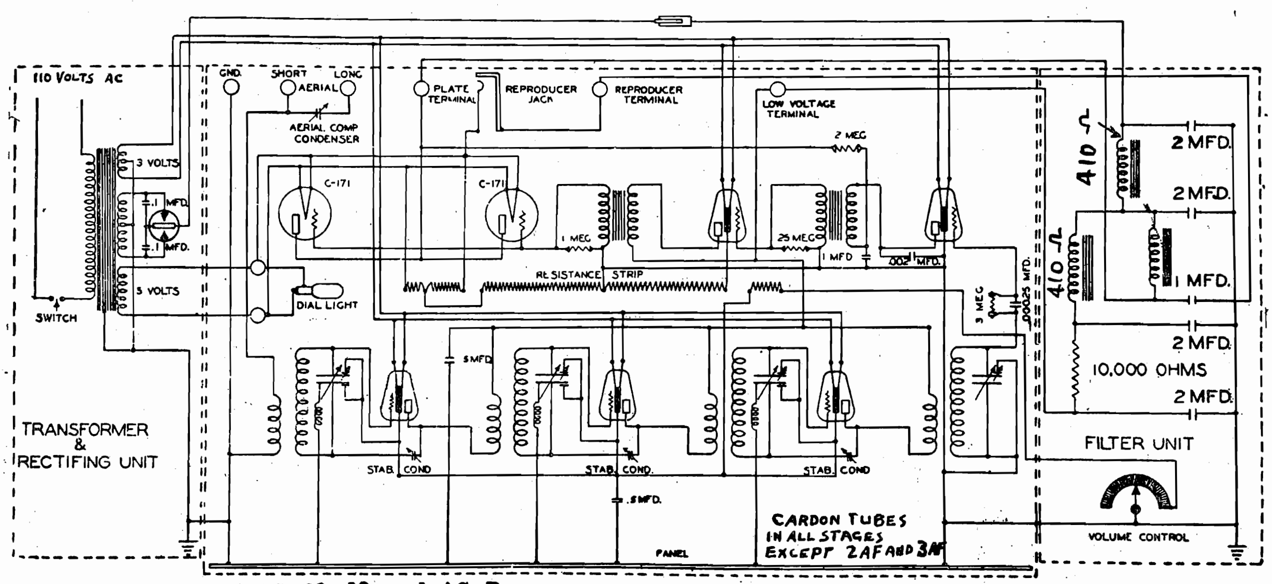
Model 39



SPARKS WITHINGTON CO.

MODEL 49
MODEL AC-7, 62, 63
Schematic, Voltage



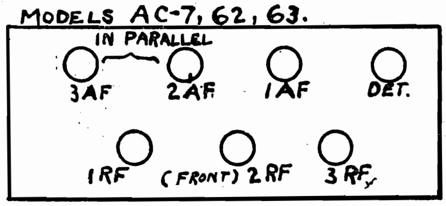


SPARTON AC 62, 62 and AC 7.

Tube	Fil.V.	Grid.V.	Plt.V.
1RF	3	2	150
2RF	3	2	150
3RF	3	2	150
Det	3	-	30
1AF	3	6	150
2AFP	5	40	210
3AFP	5	40	210

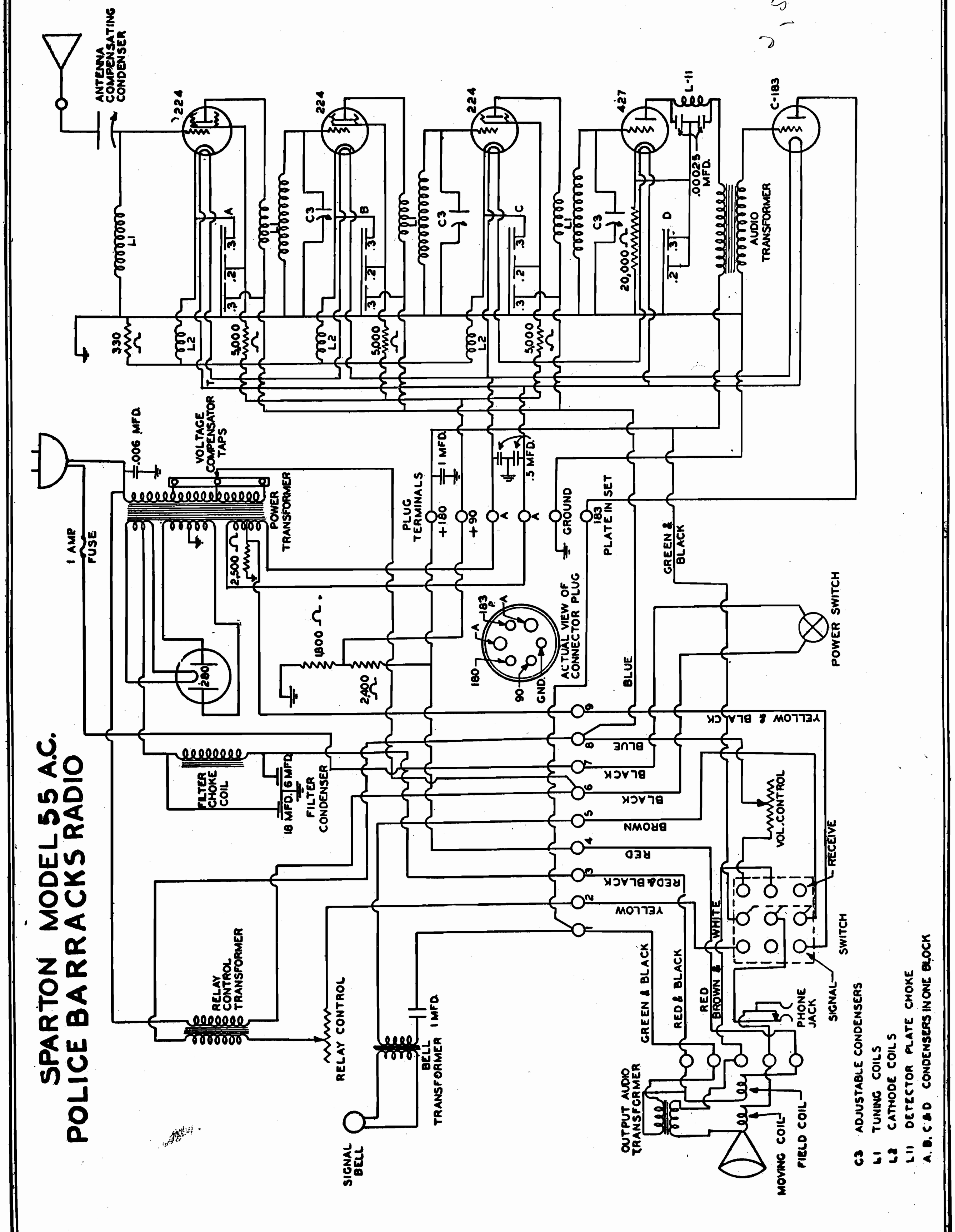
SPARTON
AC-62-63&AC-7
RECEIVER

MODELS AC-7, 62, 63.



MODEL 55
Police Desk
Schematic

SPARKS WITHINGTON CO.
SPARTON OF CANADA LTD.

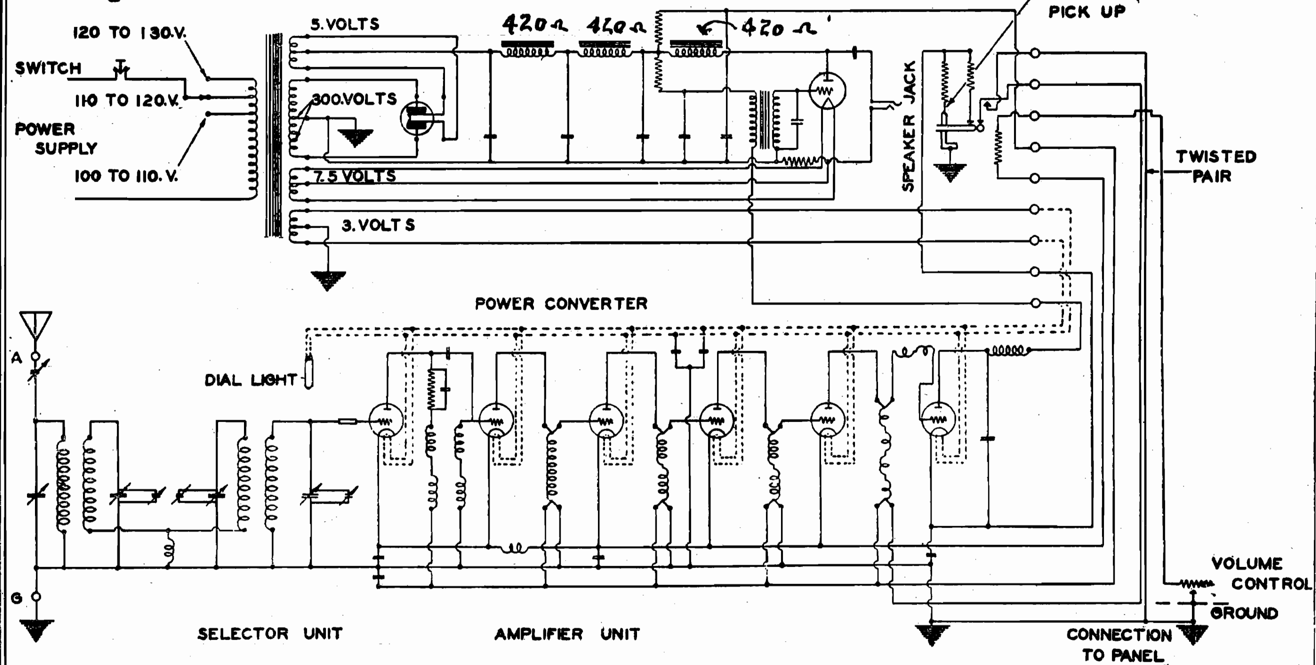


2.5V Final

MODEL 69,79-A,89
Schematic
MODEL 89-A
Schematic
Voltage

SPARKS WITHINGTON CO.

Model 69,79-A,89

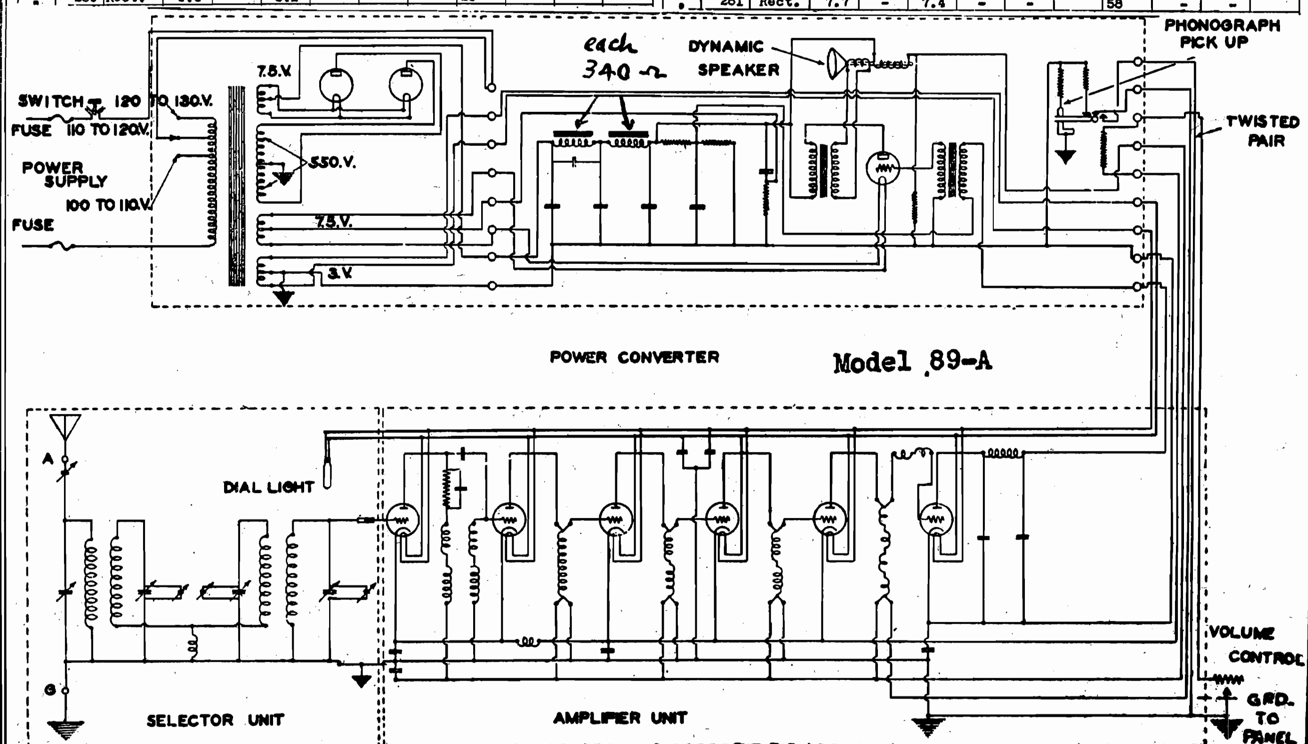


SPARTON—Model 79-A-89 - 69
Line Voltage 120—Volume Control Full

(1) Tube No. in Order	(2) Type of Tube	(3) Position of Tube 1st R.F. Det. etc.	Readings, Plug in Socket of Set: Tube Out (4) A Volts	(5) B Volts	Tube in Tester (6) A Volts	(7) B Volts	(8) C Volts (Control Grid)	(9) Cathode-Heater Volts	(10) Normal Plate M.A.	(11) Plate M.A. Grid Test	(12) Plate Change M.A.	(13) Screen Grid Volts
1	C-484	1st RF	3.2	158	3	128	9		7.	10.6	3.6	
2	C-484	2nd RF	3.2	160	3	158	9		7.8	13.	5.2	
3	C-484	3rd RF	3.2	158	3	158	9		5.5	10.8	5.3	
4	C-484	4th RF	3.2	160	3	158	9		7.9	14.4	6.5	
5	C-484	5th RF	3.2	160	3	158	9		7.4	13.2	5.8	
6	C-484	Det.	3.2	245	3	220	10		1.7	6.	4.3	
7	585	P. Aud.	7.6	310	7.4	220	38		25	29	4	
8	280	Rect.	5.5	-	5.1	-	-		28	-	-	

SPARTON—Model 89-A
Line Voltage 120—Volume Control Full

(1) Tube No. in Order	(2) Type of Tube	(3) Position of Tube 1st R.F. Det. etc.	Readings, Plug in Socket of Set: Tube Out (4) A Volts	(5) B Volts	Tube in Tester (6) A Volts	(7) B Volts	(8) C Volts (Control Grid)	(9) Cathode-Heater Volts	(10) Normal Plate M.A.	(11) Plate M.A. Grid Test	(12) Plate Change M.A.	(13) Screen Grid Volts
1	C-484	1st RF	3.1	145	3	120	9		6.7	10.7	4	
2	C-484	2nd RF	3.1	145	3	140	9		7.5	12.5	5	
3	C-484	3rd RF	3.1	145	3	138	9		8	13.3	5.3	
4	C-484	4th RF	3.1	145	3	138	9		6.5	12.2	5.7	
5	C-484	5th RF	3.1	145	3	138	9		7.6	13	5.4	
6	C-484	Det.	3.1	260	3	.240	25		1.5	7.2	5.7	
7	585	Audio	7.7	535	7.4	380	62		52	57	5	
8	281	Rect.	7.7	-	7.4	-	-		58	-	-	
9	281	Rect.	7.7	-	7.4	-	-		58	-	-	



Resistor Data

SPARKS WITHINGTON CO.

STANDARD RESISTOR COLOR CODE AND RESISTORS USED IN SPARTON RADIO RECEIVING SETS AND SPARTON ENSEMBLES

Standard Resistor Color Code

0—Black	5—Green
1—Brown	6—Blue
2—Red	7—Violet.
3—Orange	8—Gray
4—Yellow	9—White

To determine the value of a resistor, the first significant figure of resistance value is represented by the color of the body of the resistor, and the second figure of resistance value by the color of the tip of the resistor. The number of ciphers following the second figure is determined by the color of the dot or stripe in the center of the body of the resistor. For example, a 20,000 ohm resistor has a red body, black tip, with orange dot or orange stripe. A 2,200 ohm resistor would be red body, with red tip and red dot, or red stripe, and as all colors are the same, it would be a single color resistor.

CARBON RESISTORS

Part No.	Ohms	Watts	Body	Tip	Dot Stripe
B-4114-11	200	.5	Red	Black	Brown
B-4114-3	250	.5	Red	Green	Brown
B-4114-1	500	.5	Green	Black	Brown
B-4114-13	1,000	.5	Brown	Black	Red
A-3397	1,000	2	Light Brown		
A-3397	1,000	2	Brown	Black	Red
A-3750	1,250	3	Brown	Orange	Red
A-3750	1,250	3	Black	Silver	Orange
A-3750	1,250	3	Black		
A-3750	1,250	3	Slate		
A-3325	1,700	2	Dark Brown		
A-3639	1,700	5	Gray	Silver	
A-4613	1,700	1	Brown	Violet	Red
A-5550	2,000	.5	Red	Black	Red
B-4114-6	Use A-5550				
A-5622	2,500	3	Red	Green	Red
A-3232	2,800	.5	Black	Paper Label	
A-4122	2,800	.5	Gray		
A-4122	2,800	.5	Red		
A-4653	2,800	.5	Red	Gray	Red
A-5180	5,000	.5	Green	Black	Red
B-4114-16	Use A-5180				
B-4114-20	Use A-5180				
B-4114-25	7,000	.5	Violet	Black	Red
B-4114-2	8,000	.5	Gray	Black	Red
A-3764-C	10,000	4	Blue		
A-3735	10,000	5	Brown	Black	Orange
A-3735	10,000	5	Gray	Silver	Blue
A-4614	10,000	1	Brown	Black	Orange
B-4114-7	10,000	.5	Brown	Black	Orange
B-4114-5	10,000	.3	Brown	Black	Orange
A-4107	15,000	5	Brown	Green	Orange
A-4107	15,000	5	Gray	Silver	
B-4114-23	15,000	.5	Yellow	Black	Orange
A-2934	20,000	2	Green		
A-2934	20,000	2	Red	Black	Orange
A-3422	20,000	3	Gray		Green
A-3422	20,000	3	Red	Black	Orange
A-4261	20,000	5	Red	Black	Orange
A-4261	20,000	5	Gray	Silver	Blue
B-4114-14	20,000	.5	Red	Black	Orange
B-4114-24	Use B-4114-14				
A-7111	25,000	4.5	Red	Green	Orange

Effective January 1, 1932

Resistor Data

SPARKS WITHINGTON CO.

CARBON RESISTORS—Continued

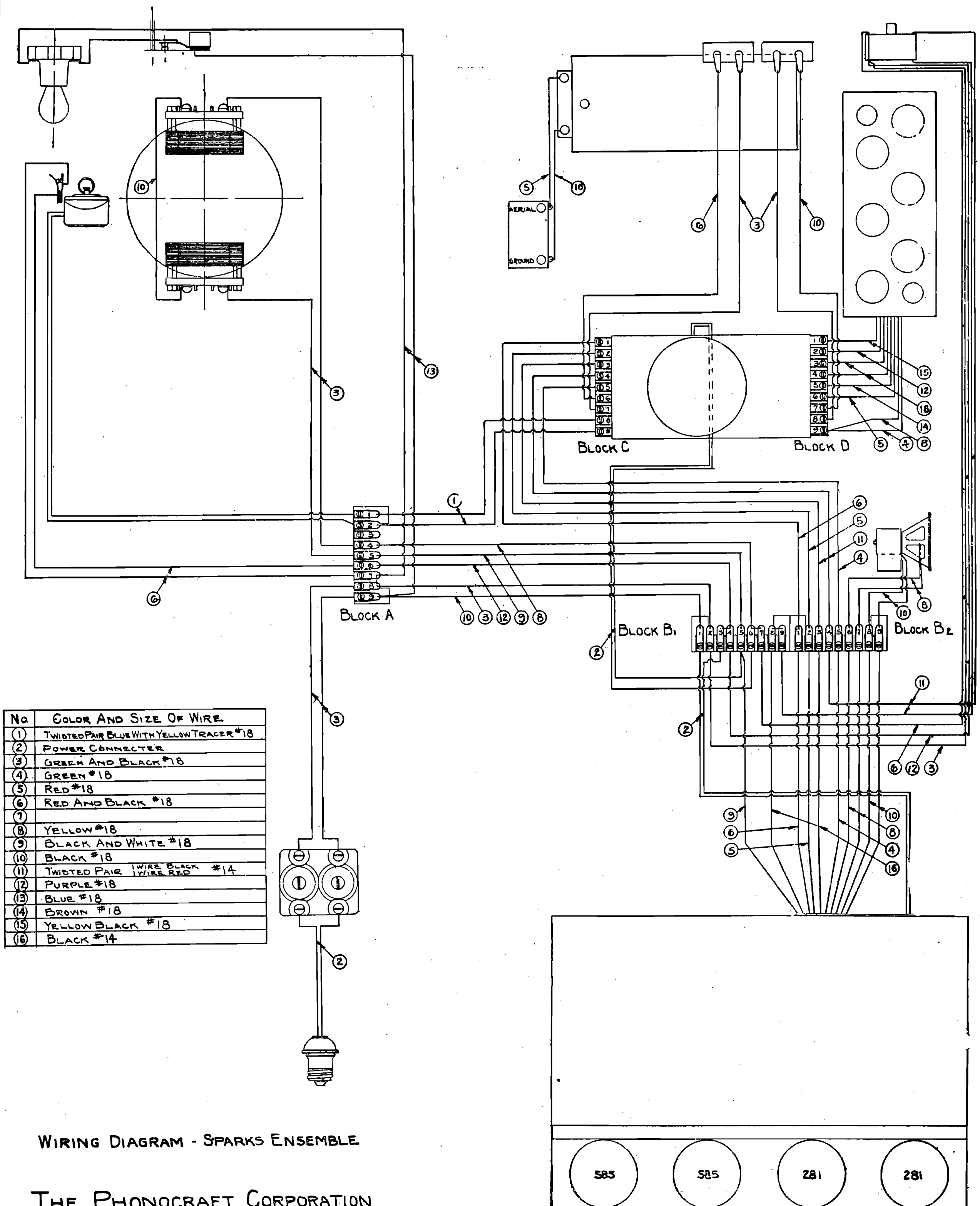
Part No.	Ohms	Watts	Body	Tip	Dot Stripe
B-4114-18	25,000	.5	Red	Green	Orange
A-5139	30,000	1	Orange	Black	
B-4114-19	30,000	.5	Orange	Black	Orange
B-4114-22	40,000	.5	Yellow	Black	Orange
A-3423	50,000	3	Gray		Red
A-3423	50,000	3	Green	Black	Orange
B-4114-12	50,000	.5	Green	Black	Orange
B-4114-15	60,000	.5	Blue	Black	Orange
A-5354	100,000	1	Brown	Black	Yellow
B-4114-10	100,000	.5	Brown	Black	Yellow
B-4114-8	150,000	.5	Brown	Green	Yellow
A-2702-5	200,000		Glass		
B-4114-17	200,000	.5	Red	Black	Yellow
A-1514	250,000		Glass		
A-4234	250,000	1	Red	Green	Yellow
A-5270	Use A-4234				
B-4114-4	250,000	.5	Red	Green	Yellow
A-2702-6	Use A-1514				
A-5269	500,000	1	Green	Black	Yellow
B-4114-9	500,000	.5	Green	Black	Yellow
A-5138	1,000,000	1	Brown	Black	Green
B-4114-21	1,000,000	.5	Brown	Black	Green
A-2702-11	1,000,000		Glass		
A-1515	3,000,000		Glass		
A-2702-13	Use A-1515		Glass		

WIRE WOUND RESISTORS

Part No.	Ohms	Watts	Color	Type	Part No.	Ohms	Watts	Color	Type
A-7411	.43			Special	A-7118	250	1	Blue	Wire Wound
A-6890	.54	2.5	5-23/32"	Wire	A-5137	330	1	Gray	Wire Wound
A-6889	.67	2.5	7-7/64"	Wire	A-3536	900	10	Black	Wire Wound
A-5863	2	5	Blue	Wire Wound	A-7119	1,050	7.5	Blue	Wire Wound
A-4363	7	20	Blue	Wire Wound	A-7018	1,250	4		Candohm
A-7509	8-9			Wire Wound	A-4974	1,250	5	Gray	Candohm
A-5140	(.11 ohms	per ft.	at 20° C.)	Wire	A-6617	1,500	2	Brown	Braided
A-5862	12	10	Blue	Wire Wound	A-3383	3,000	10	Black	Wire Wound
A-4364	12	30	Blue	Wire Wound	A-3535	7,000	10	Black	Wire Wound
A-5890	14	10	Blue	Wire Wound	A-4583	Use A-3535			
A-4366	15	50	Blue	Wire Wound	A-2043	10,000	6	Black	Wire Wound
A-7421	35	.25	Red	Braided	A-4356	20,000		Blue	Wire Wound
A-5889	54	175	Blue	Wire Wound	A-3811	30,000	.5	Black	Wire Wound
A-5861	57	175	Blue	Wire Wound	A-3642	(6.04 ohms	per ft.	at 20° C.)	Wire Wd. Tap.
A-4365	63	10	Blue	Wire Wound	A-4260	2,000-7,000	20	Black	Wire Wd. Tap.
A-3590	110	1	Black	Wire Wound	A-5426	1,800-2,400	8	Blue	Wire Wd. Tap.
A-4670	110	1	Black	Wire Wound	A-5870	Use A-5426			
A-4915	110	1	Black	Candohm	A-6619	2,900-3,000	15	Blue	Wire Wd. Tap.
A-7427	160	1	Blue	Wire Wound	A-7120	2,400-3,200	4.5	Blue	Wire Wd. Tap.
A-6618	200	.5	Red	Braided	A-7461	3,900-4,300		Blue	Wire Wd. Tap.
A-5502	200	1	Red	Candohm	A-6977	5,500-6,000	7	Blue	Wire Wd. Tap.
A-6976	230	3	Blue	Wire Wound	A-7462	60-220-2,100		Blue	Wire Wd. Tap.

MODEL 99
Ensemble
Assembly
Wiring

SPARKS WITHINGTON CO.



No.	Color And Size Of Wire
1	Twisted Pair Blue With Yellow Tracer #18
2	Power Connecter
3	Green And Black #18
4	Green #18
5	Red #18
6	Red And Black #18
7	
8	Yellow #18
9	Black And White #18
10	Black #18
11	Twisted Pair 1 Wire Black 1 Wire Red #14
12	Purple #18
13	Blue #18
14	Brown #18
15	Yellow Black #18
16	Black #14

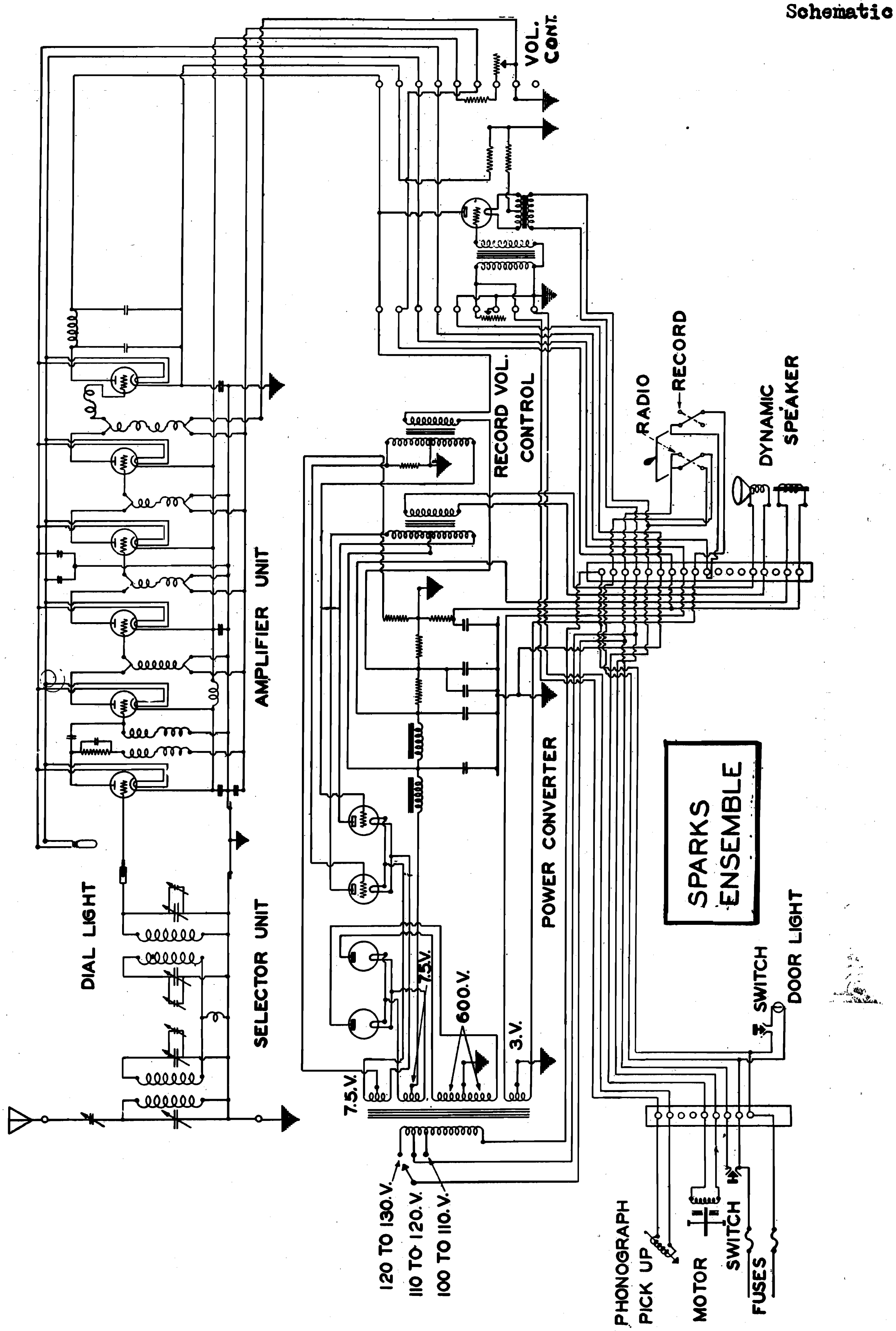
WIRING DIAGRAM - SPARKS ENSEMBLE

THE PHONOCRAFT CORPORATION

APPROVED BY -

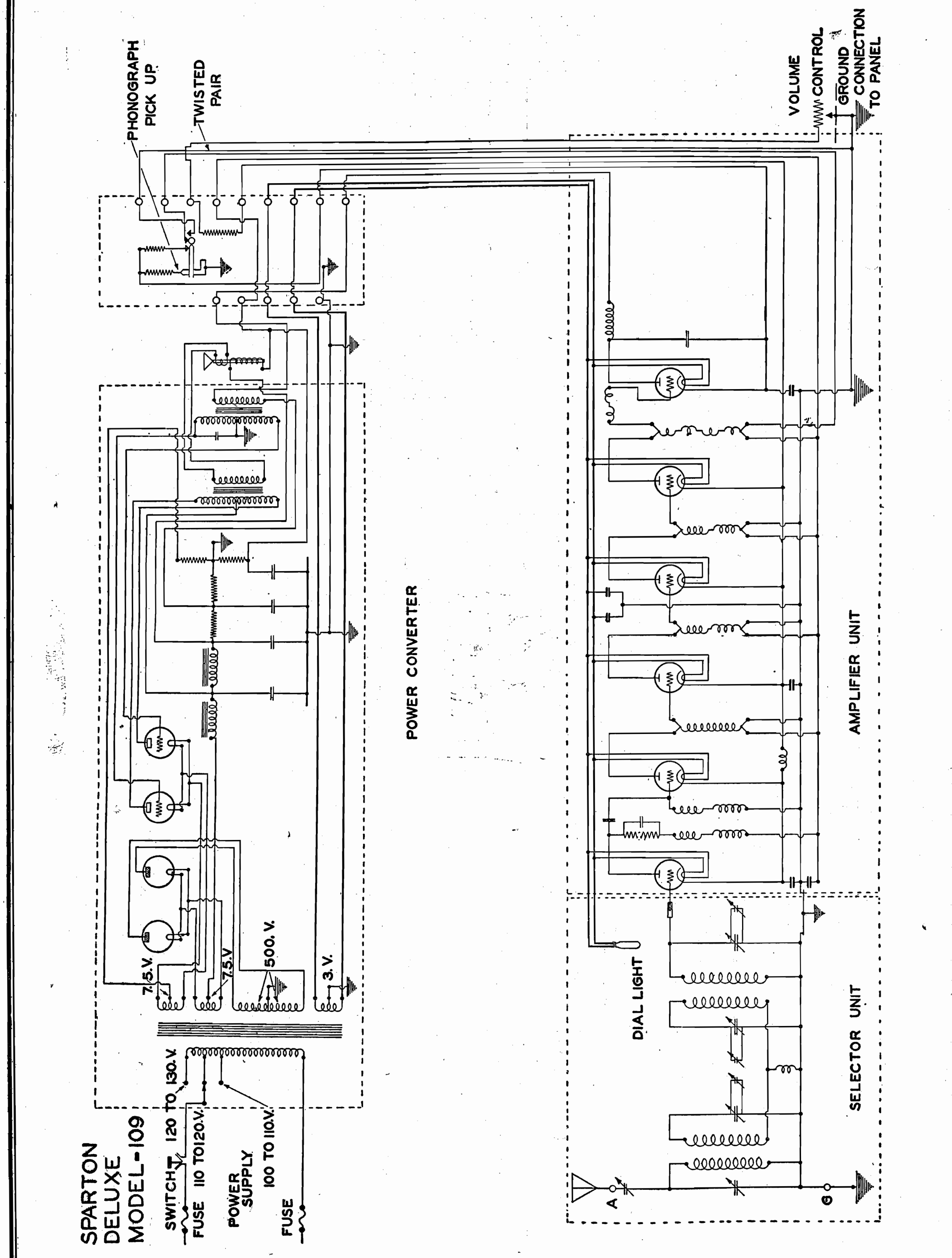
SPARKS WITHINGTON CO.

MODEL 99
Ensemble
Schematic



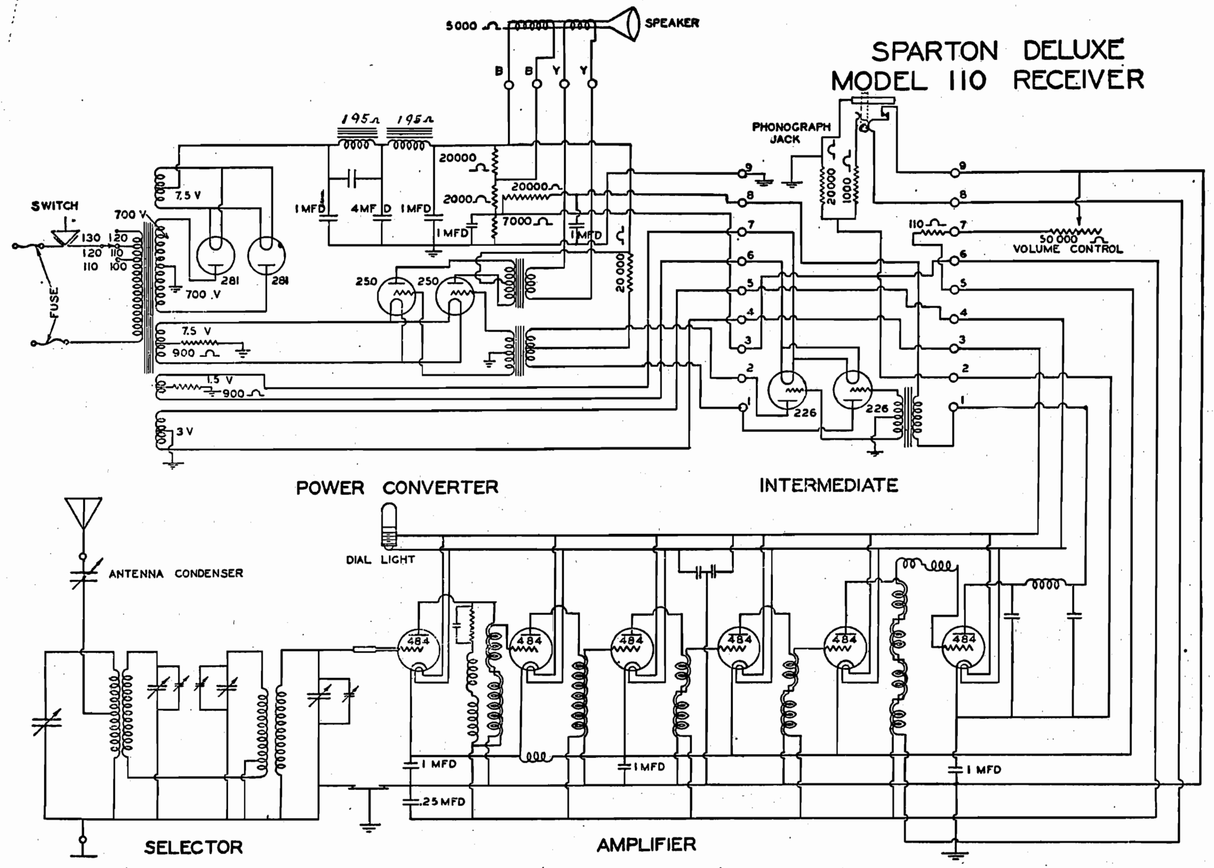
SPARKS WITHINGTON CO.

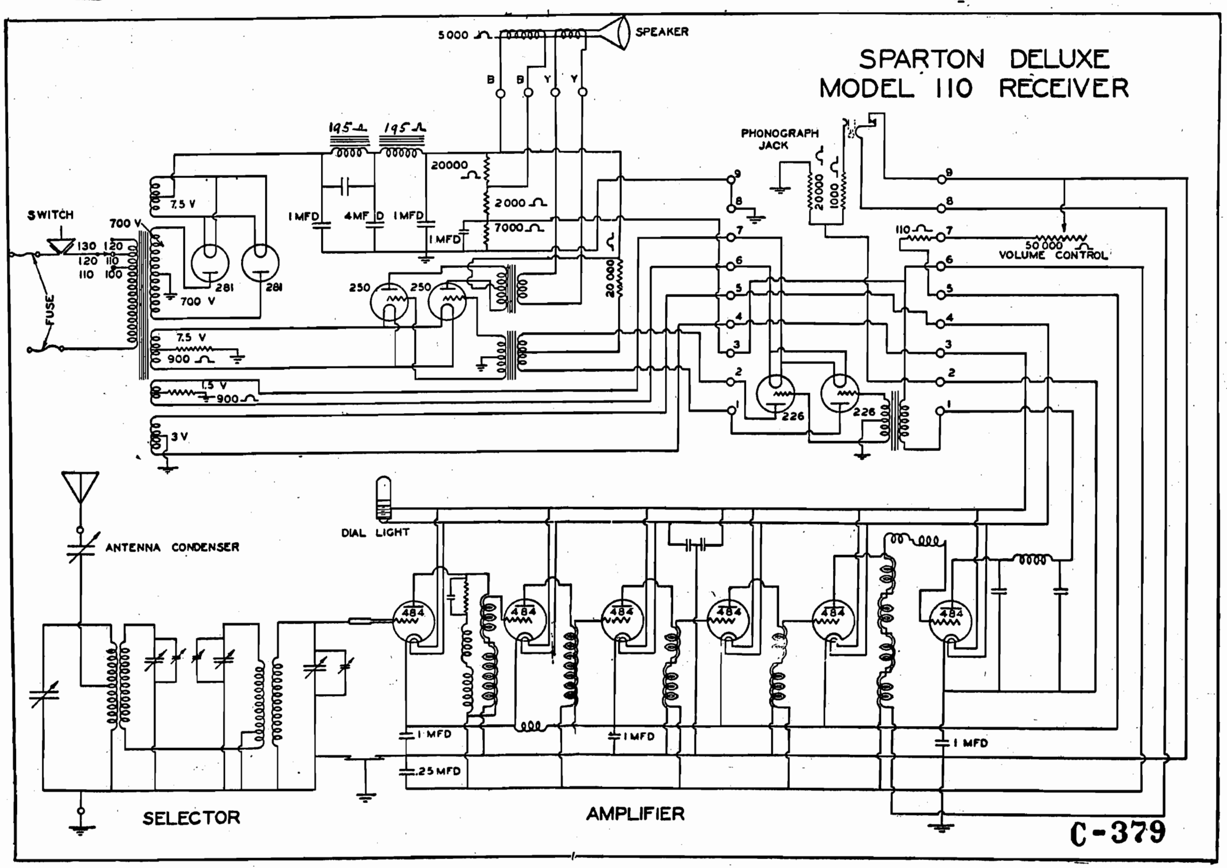
MODEL 109 DeLuxe Schematic



MODEL 110,111 AC
Two Types
Schematics

SPARKS WITHINGTON CO.





C-379

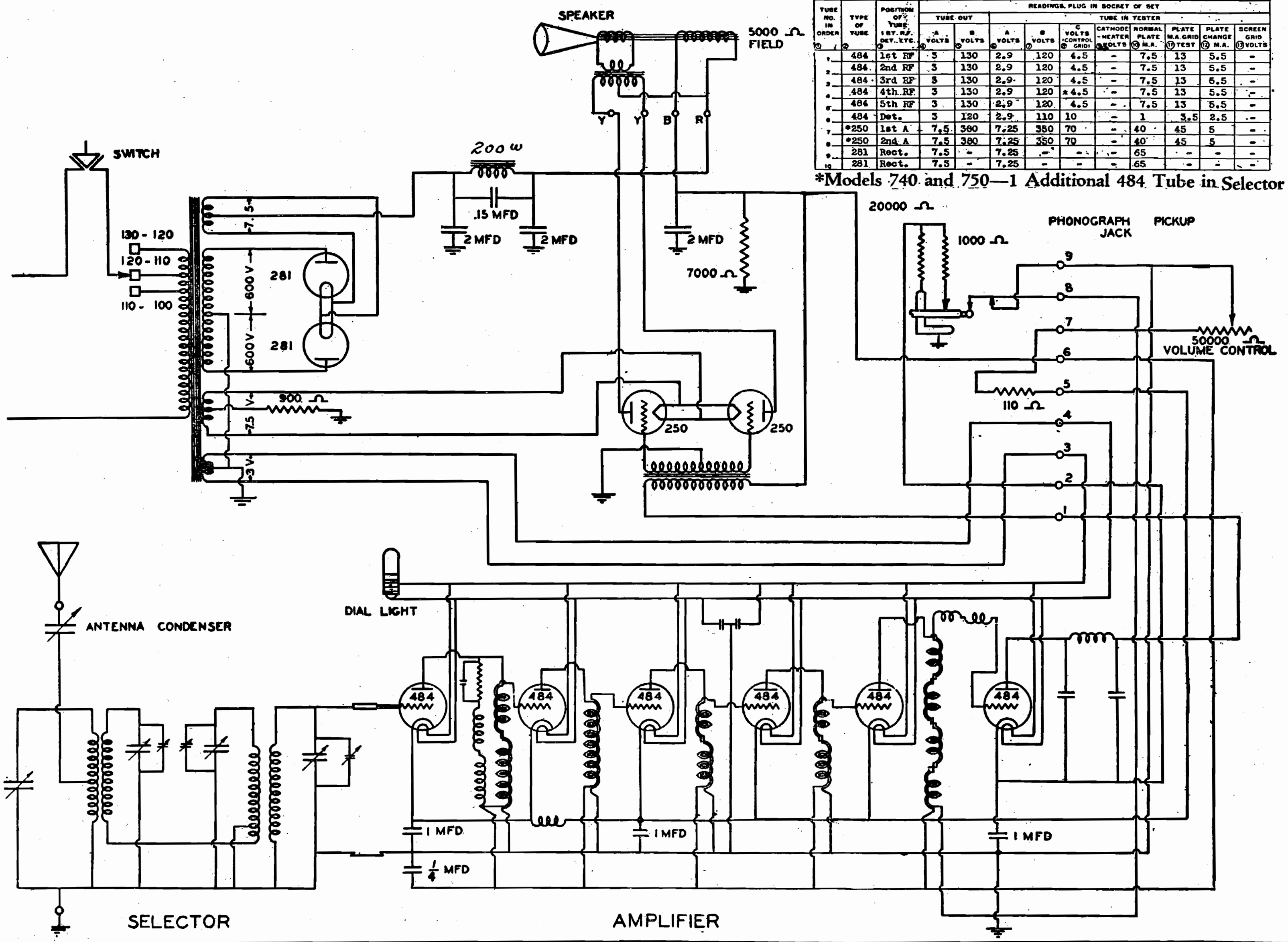
SPARKS WITHINGTON CO.

MODEL 301 AC

SPARTON—Model 301-740-750*
Line Voltage 120—Set on 120-130 Volt Tap—Volume Control Position Max
***250 or 585 types tubes.**

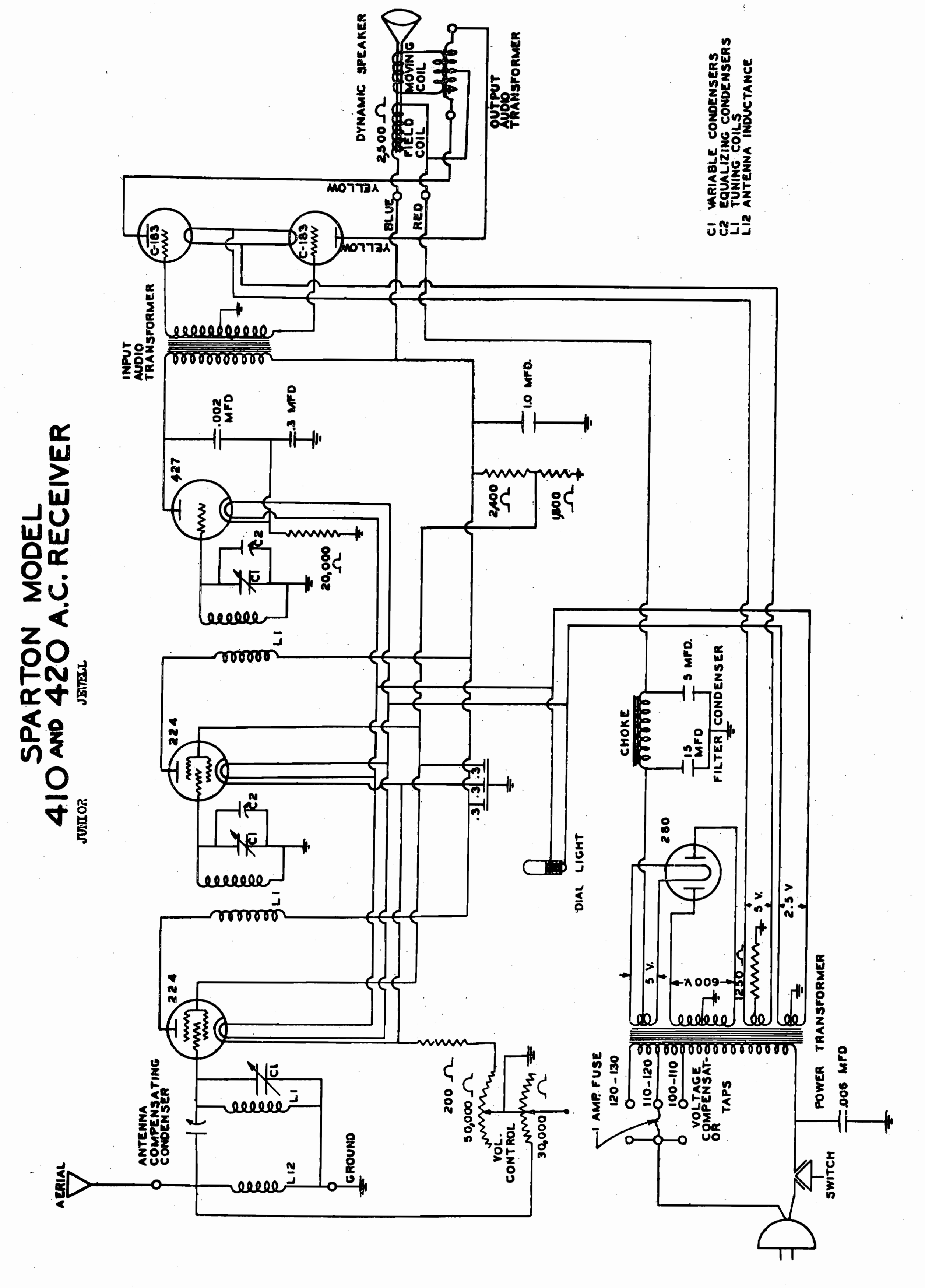
Tube No. in Order (1)	Type of Tube (2)	Position of Tube 1st R.F. Det., Etc. (3)	Readings, Plug in Socket of Set — Tube Out — A Volts (4)	Tube Out — B Volts (5)	Tube in Tester — A Volts (6)	B Volts (7)	C Volts (Control Grid) (8)	Cathode-Heater Volts (9)	Normal Plate M.A. (10)	Plate M.A. Grid Test (11)	Plate Change M.A. (12)	Screen Grid Volts (13)
1	484	1st RF	3	130	2.9	120	4.5	-	7.5	13	5.5	-
2	484	2nd RF	3	130	2.9	120	4.5	-	7.5	13	5.5	-
3	484	3rd RF	3	130	2.9	120	4.5	-	7.5	13	5.5	-
4	484	4th RF	3	130	2.9	120	*4.5	-	7.5	13	5.5	-
5	484	5th RF	3	130	2.9	120	4.5	-	7.5	13	5.5	-
6	484	Det.	3	120	2.9	110	10	-	1	3.5	2.5	-
7	*250	1st A	7.5	380	7.25	350	70	-	40	45	5	-
8	*250	2nd A	7.5	380	7.25	350	70	-	40	45	5	-
9	281	Rect.	7.5	-	7.25	-	-	-	65	-	-	-
10	281	Rect.	7.5	-	7.25	-	-	-	65	-	-	-

*Models 740 and 750—1 Additional 484 Tube in Selector



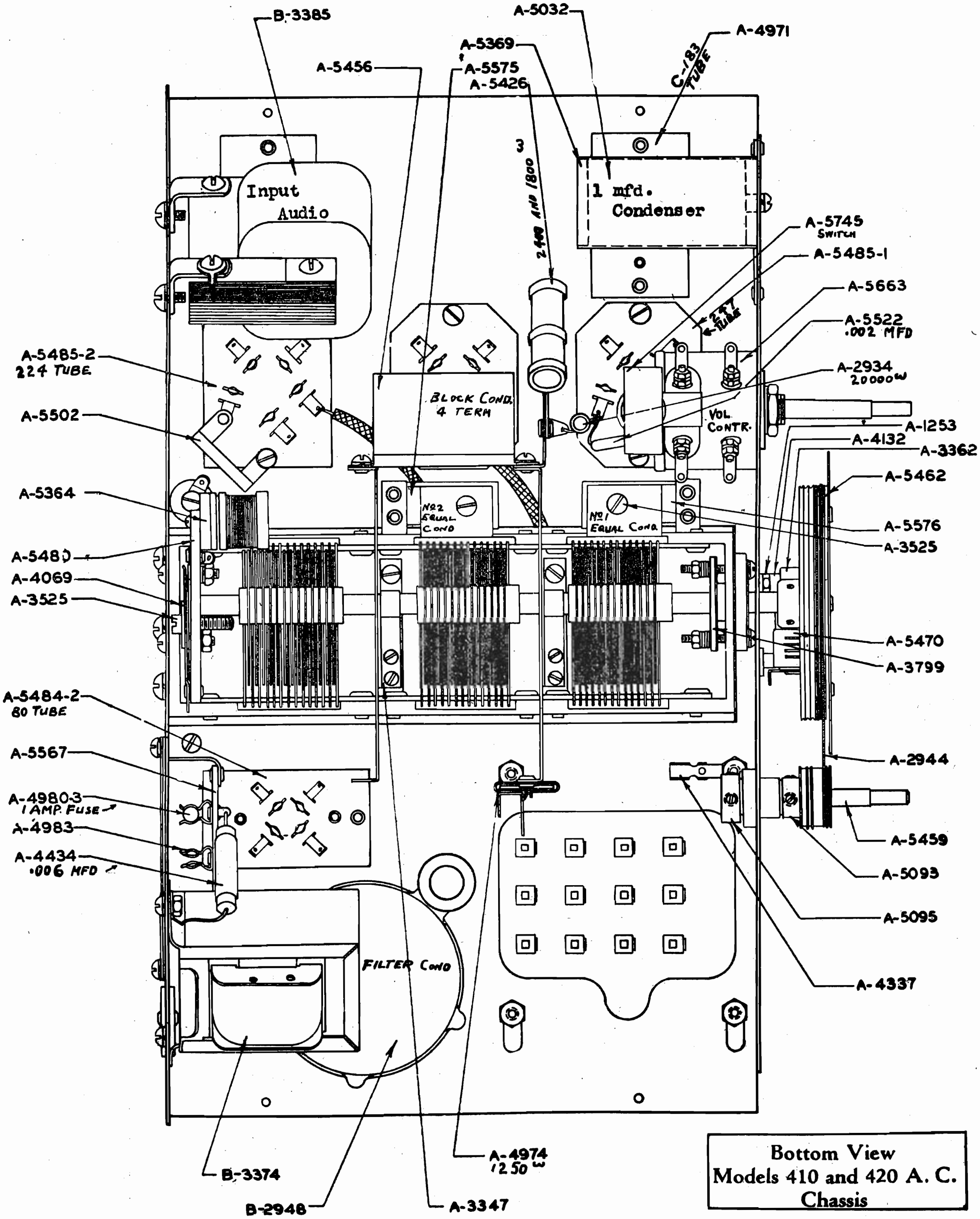
SPARKS WITHINGTON CO.

MODEL 420 AC
Schematic



MODEL 420 AC
Chassis

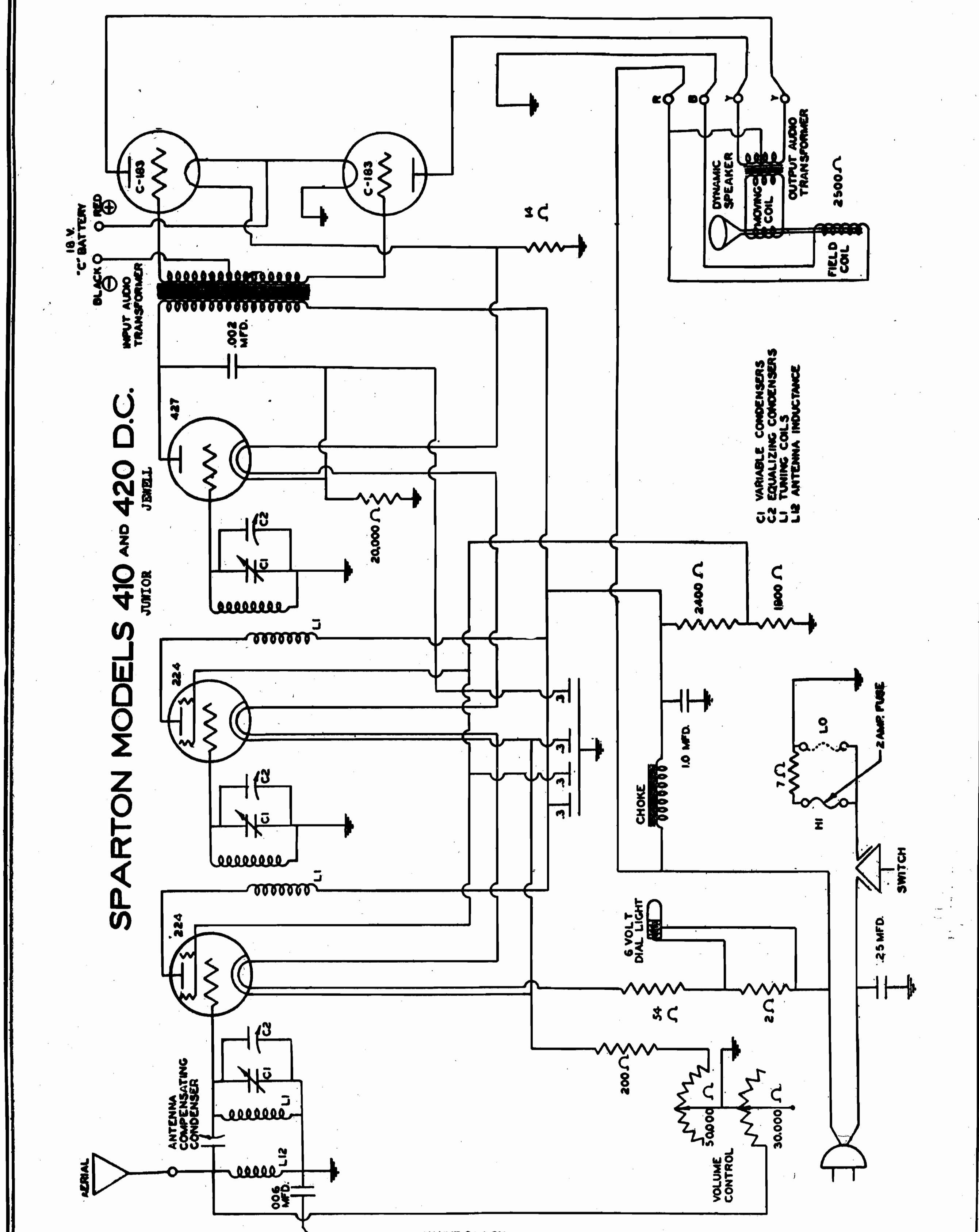
SPARKS WITHINGTON CO.



Bottom View
Models 410 and 420 A. C.
Chassis

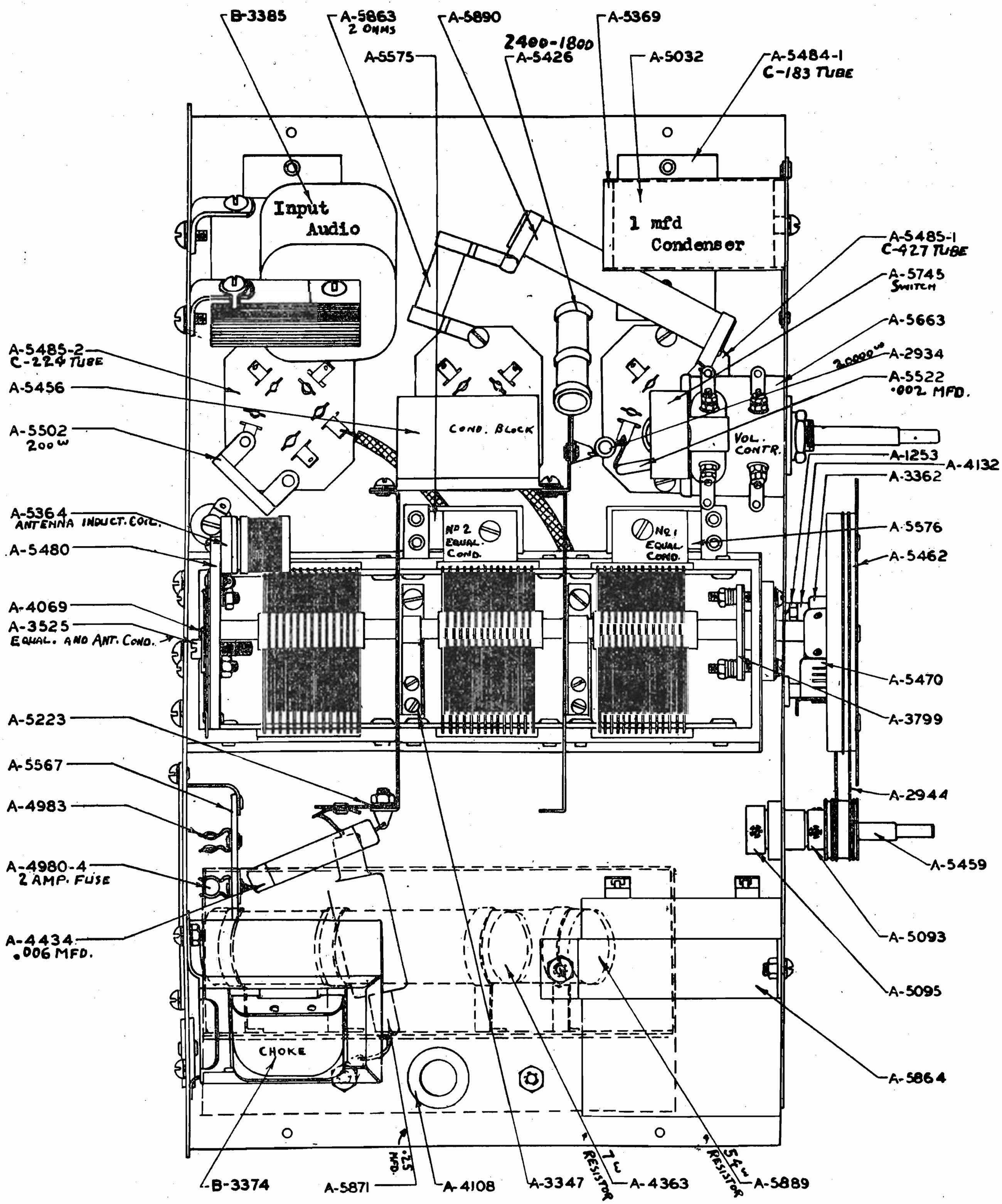
SPARKS WITHINGTON CO.

MODEL 420 DC
Schematic



MODEL 420 DC
Chassis

SPARKS WITHINGTON CO.



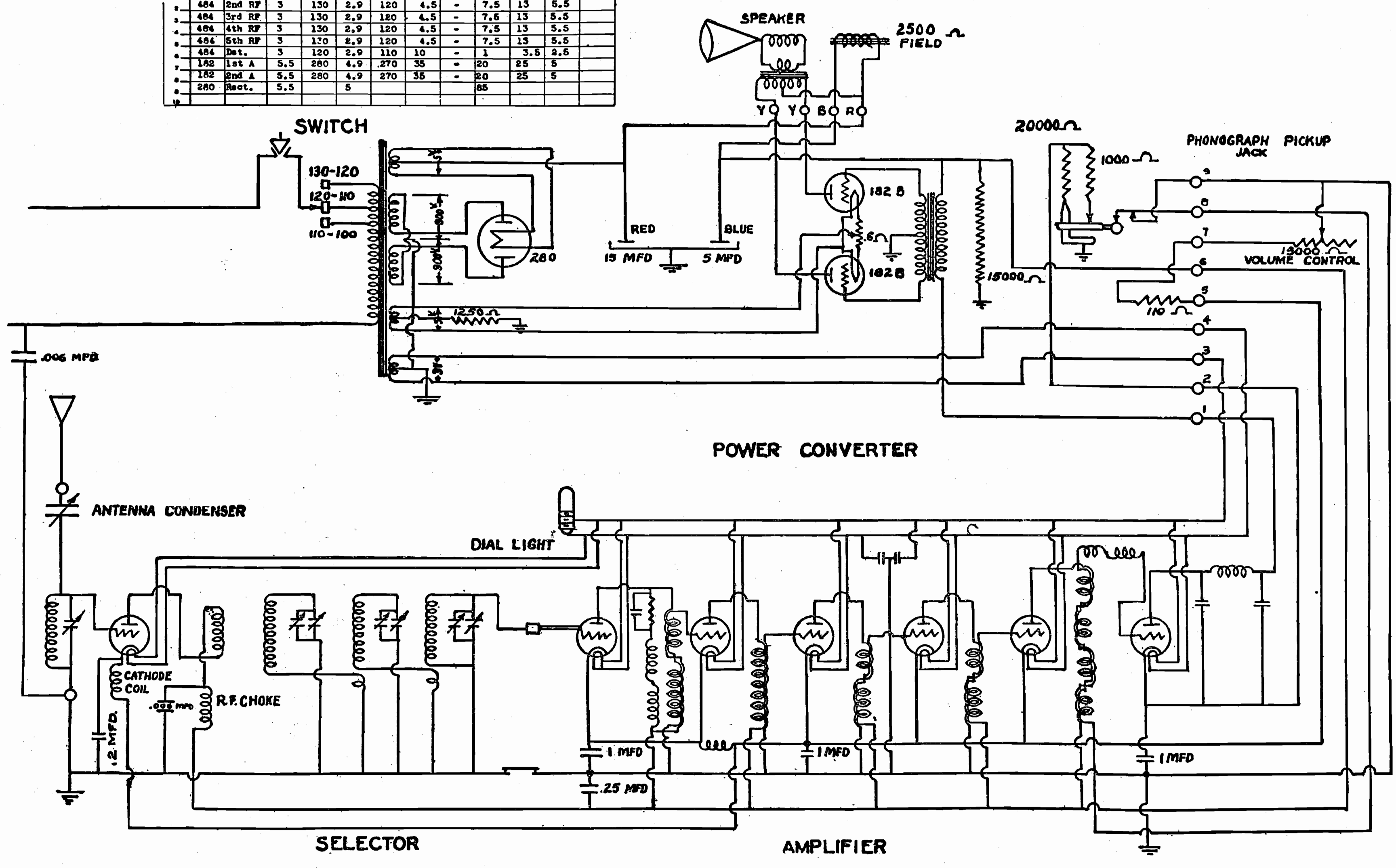
Bottom View—Model 410 and 420 D. C. Chassis

SPARKS WITHINGTON CO.

MODEL 589 AC

SPARTON—Model -589-
Line Voltage 120—Set on 120-130 Volt Tap—Volume Control Position Max

Tube No in Order (1)	Type of Tube (2)	Position of Tube 1st R.F Det. Etc (3)	Readings. Plug in Socket of Set: Tube Out: A Volts (4)	Tube Out: B Volts (5)	Tube in Tester: A Volts (6)	B Volts (7)	C Volts (Control Grid) (8)	Cathode-Heater Volts (9)	Normal Plate M.A. (10)	Plate M.A Grid Test (11)	Plate Change M.A (12)	Screen Grid Volts (13)
1	484	1st RF	3	130	2.9	120	4.5	-	7.5	13	5.5	
2	484	2nd RF	3	130	2.9	120	4.5	-	7.5	13	5.5	
3	484	3rd RF	3	130	2.9	120	4.5	-	7.5	13	5.5	
4	484	4th RF	3	130	2.9	120	4.5	-	7.5	13	5.5	
5	484	5th RF	3	130	2.9	120	4.5	-	7.5	13	5.5	
6	484	Det.	3	120	2.9	110	10	-	1	3.5	2.5	
7	182	1st A	5.5	280	4.9	270	35	-	20	25	5	
8	182	2nd A	5.5	280	4.9	270	35	-	20	25	5	
9	280	Rect.	5.5		5				85			
10												



MODEL 600,610,620,
737 AC.
737 Below # 6502

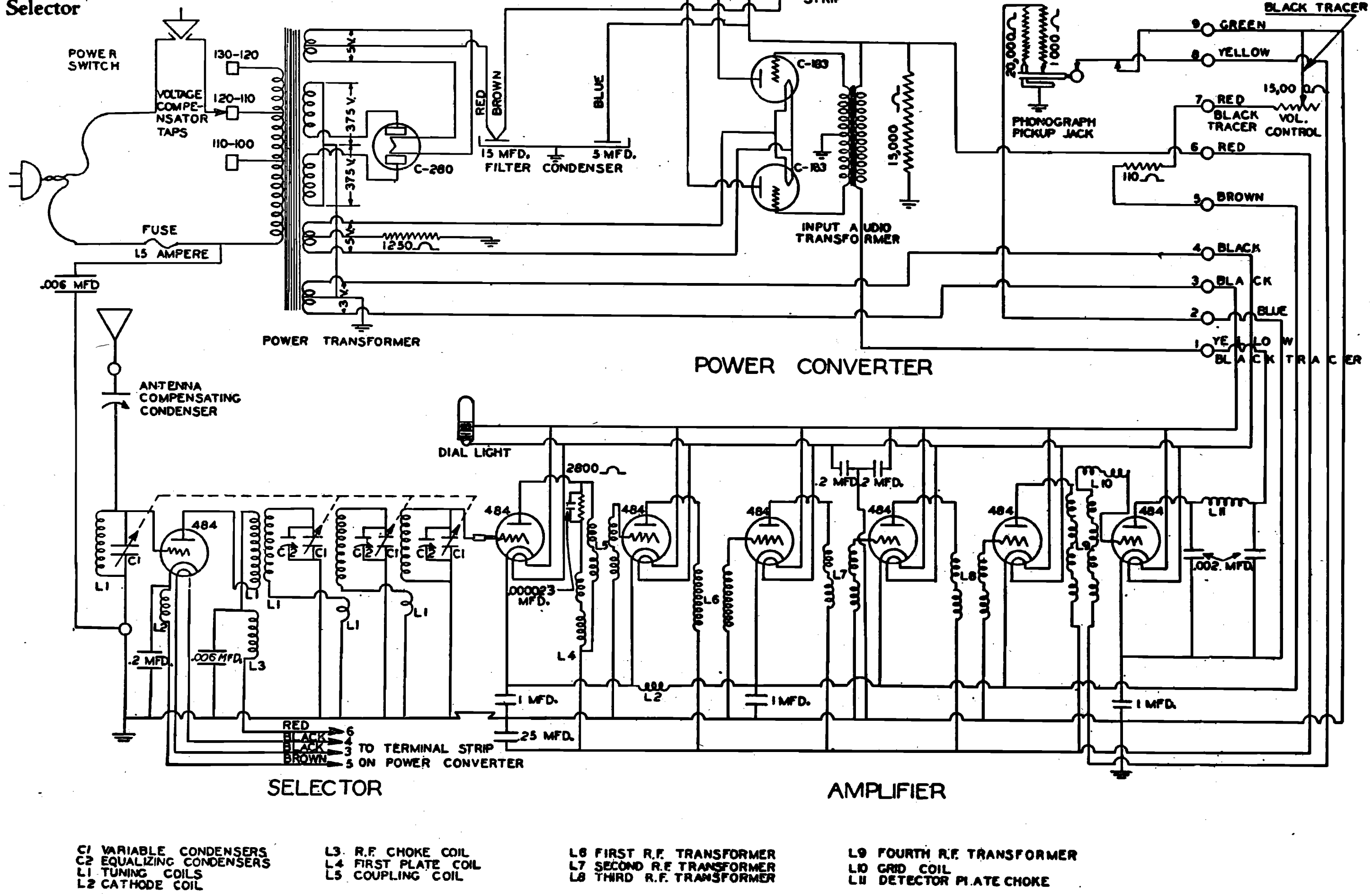
SPARKS WITHINGTON CO.

SPARTON—Model 610-620*
Line Voltage 120—Set on 120-130 Volt Tap—Volume Control Position Max

① Tube No. in Order	② Type of Tube	③ Position of Tube 1st RF Det Etc	Readings, Plug in Socket of Set: Tube Out ④ A Volts	⑤ B Volts	Tube in Tester: ⑥ A Volts	⑦ B Volts	⑧ C Volts (Control Grid)	⑨ Cathode-Heater Volts	⑩ Normal Plate M.A.	⑪ Plate M.A. Grid Test	⑫ Plate Change M.A.	⑬ Screen Grid Volts
1	484	1st RF	3	130	2.9	120	4.5	-	7.5	13	5.5	
2	484	2nd RF	3	130	2.9	120	4.5	-	7.5	13	5.5	
3	484	3rd RF	3	130	2.9	120	4.5	-	7.5	13	5.5	
4	484	4th RF	3	130	2.9	120	4.5	-	7.5	13	5.5	
5	484	5th RF	3	130	2.9	120	4.5	-	7.5	13	5.5	
6	484	Det.	3	120	2.9	110	10	-	1	3.5	2.5	
7	182	1st A	5.5	280	4.9	270	35	-	20	25	5	
8	182	2nd A	5.5	280	4.9	270	35	-	20	25	5	
9	280	Rect.	5.5		5				85			
10												

*Models 600-610-620—1 Additional 484 Tube in Selector

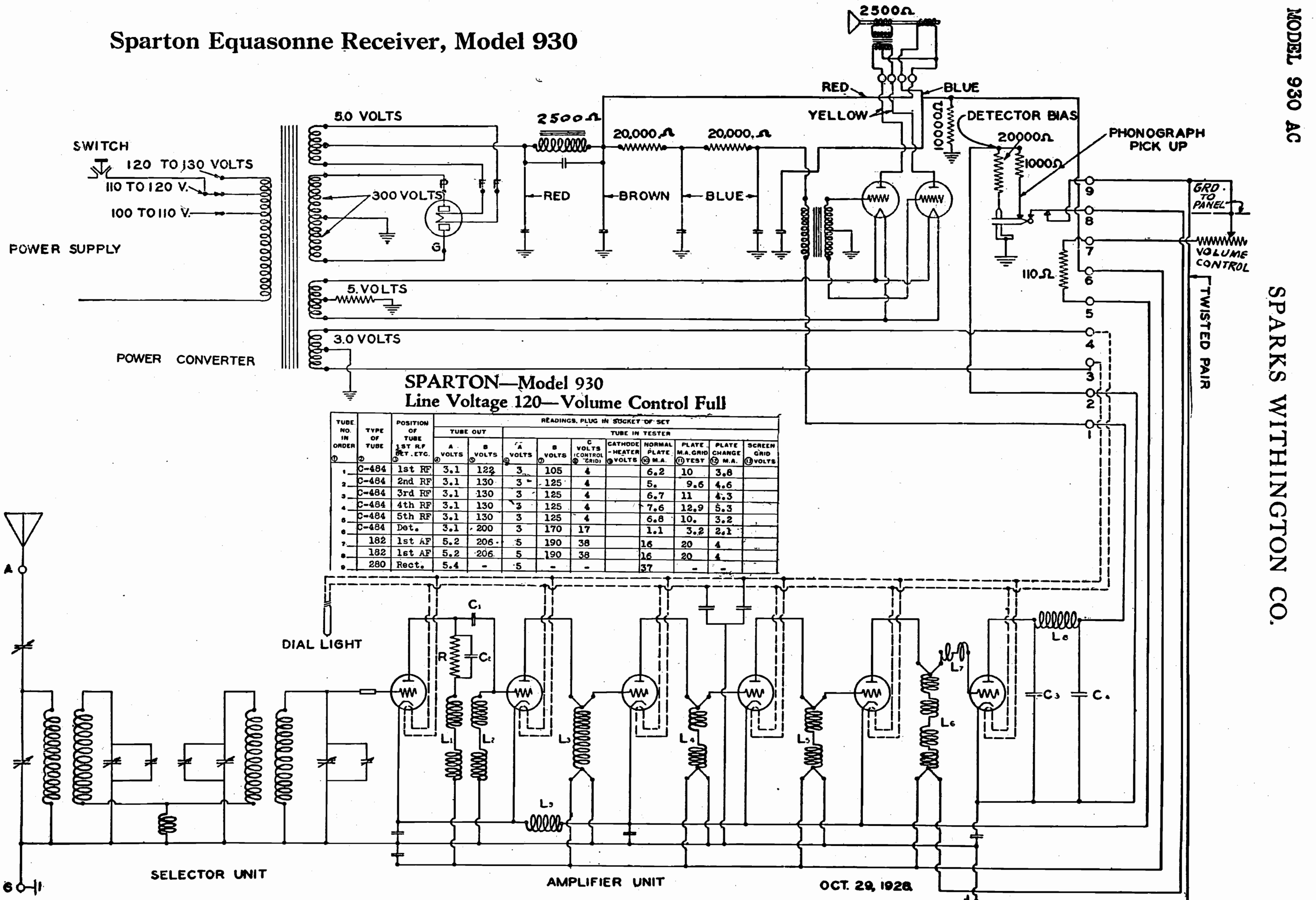
SPARTON MODELS 600 610 AND 620 ALSO 737



MODEL 930 AC

SPARKS WITHINGTON CO.

Sparton Equasonne Receiver, Model 930

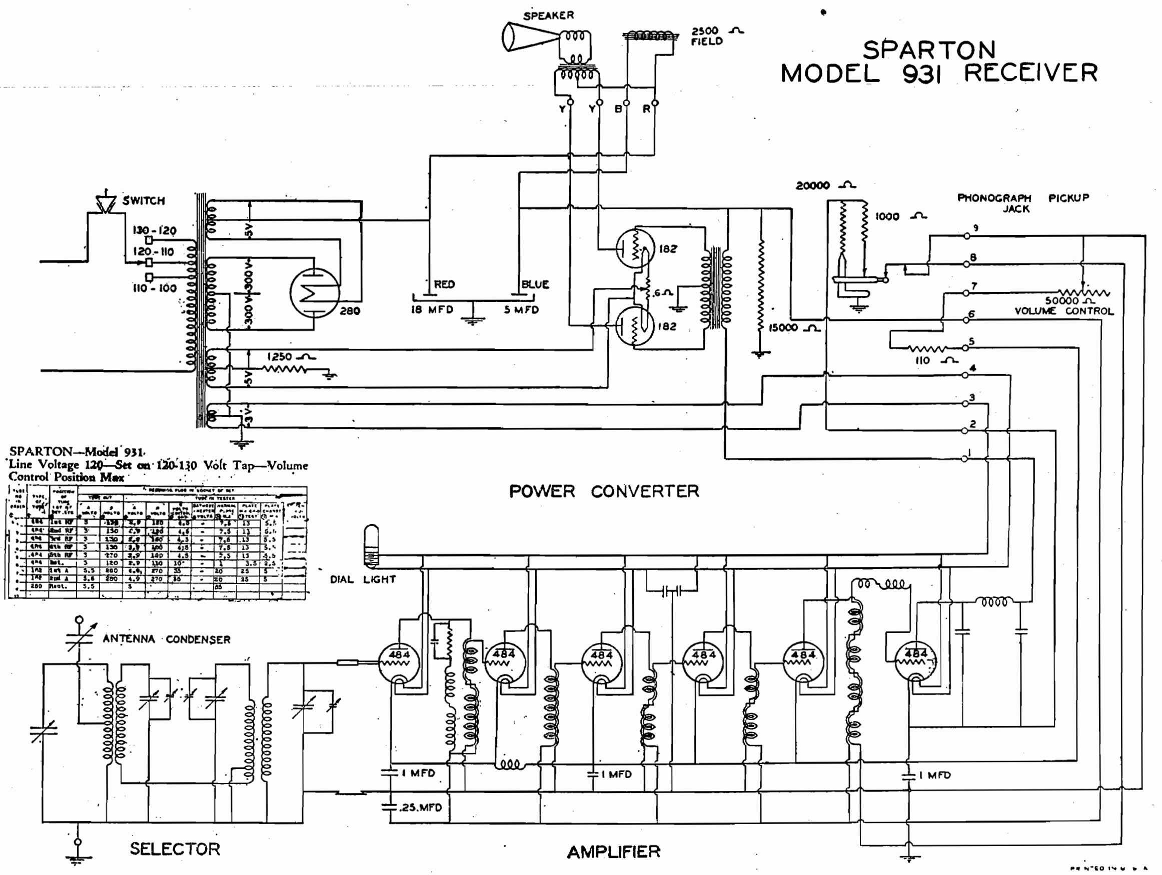


SPARTON—Model 930
Line Voltage 120—Volume Control Full

Tube No. in Order ①	Type of Tube ②	Position of Tube 1st R.F. Det. Etc. ③	Readings, Plug in Socket of Set — Tube Out: A Volts ④	Tube Out: B Volts ⑤	Tube in Tester: A Volts ⑥	B Volts ⑦	C Volts (Control Grid) ⑧	Cathode-Heater Volts ⑨	Normal Plate M.A. ⑩	Plate M.A. Grid Test ⑪	Plate Change M.A. ⑫	Screen Grid Volts ⑬
1	C-484	1st RF	3.1	122	3	105	4		6.2	10	3.8	
2	C-484	2nd RF	3.1	130	3	125	4		5.	9.6	4.6	
3	C-484	3rd RF	3.1	130	3	125	4		6.7	11	4.3	
4	C-484	4th RF	3.1	130	3	125	4		7.6	12.9	5.3	
5	C-484	5th RF	3.1	130	3	125	4		6.8	10.	3.2	
6	C-484	Det.	3.1	200	3	170	17		1.1	3.2	2.1	
7	182	1st AF	5.2	206	5	190	38		16	20	4	
8	182	1st AF	5.2	206	5	190	38		16	20	4	
9	280	Rect.	5.4	-	5	-	-		37	-	-	

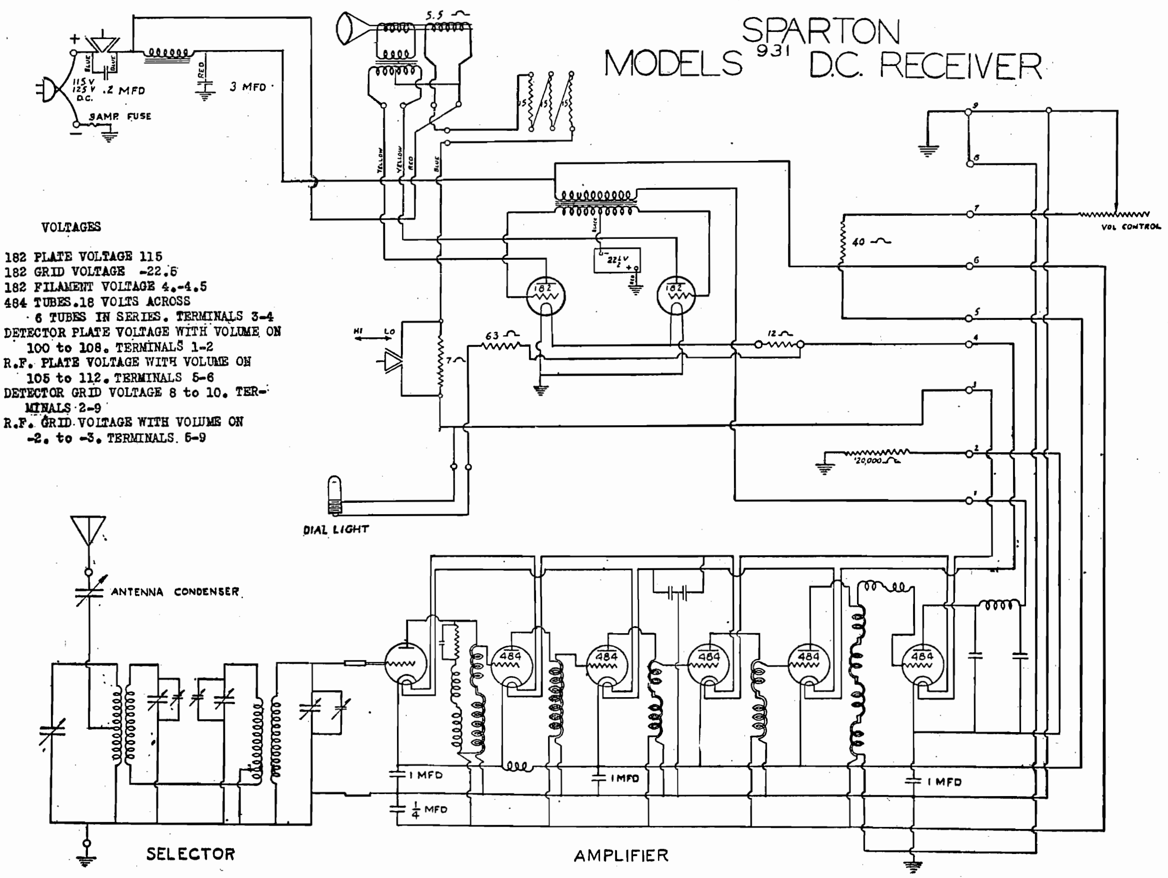
MODEL 931 AC
MODEL 931 DC

SPARKS WITHINGTON CO.



SPARTON—Model 931
Line Voltage 120—Set on 120-130 Volt Tap—Volume Control Position Max

Tube No. in Order	Type of Tube	Position of Tube	Tube Out A Volts	Tube Out B Volts	Tube in Tester A Volts	Tube in Tester B Volts	C Volts (Control Grid)	Cathode Heater Volts	Normal Plate MA	Plate MA Grid Test	Plate Change MA	[illegible]
1	484	1st RF	3	130	2.9	120	4.5	-	7.5	13	5.5	
2	484	2nd RF	3	130	2.9	120	4.6	-	7.5	13	5.5	
3	484	3rd RF	3	130	2.8	120	4.5	-	7.6	13	5.5	
4	484	4th RF	3	130	2.9	100	4.5	-	7.5	13	5.5	
5	484	5th RF	3	120	2.9	100	4.5	-	7.5	13	5.5	
6	484	Det.	3	120	2.9	110	10	-	1	3.5	2.5	
7	182	1st A	5.5	280	4.9	270	35	-	20	25	5	
8	182	2nd A	5.6	280	4.9	270	35	-	20	25	5	
9	280	Rect.	5.5		5				65			
12												

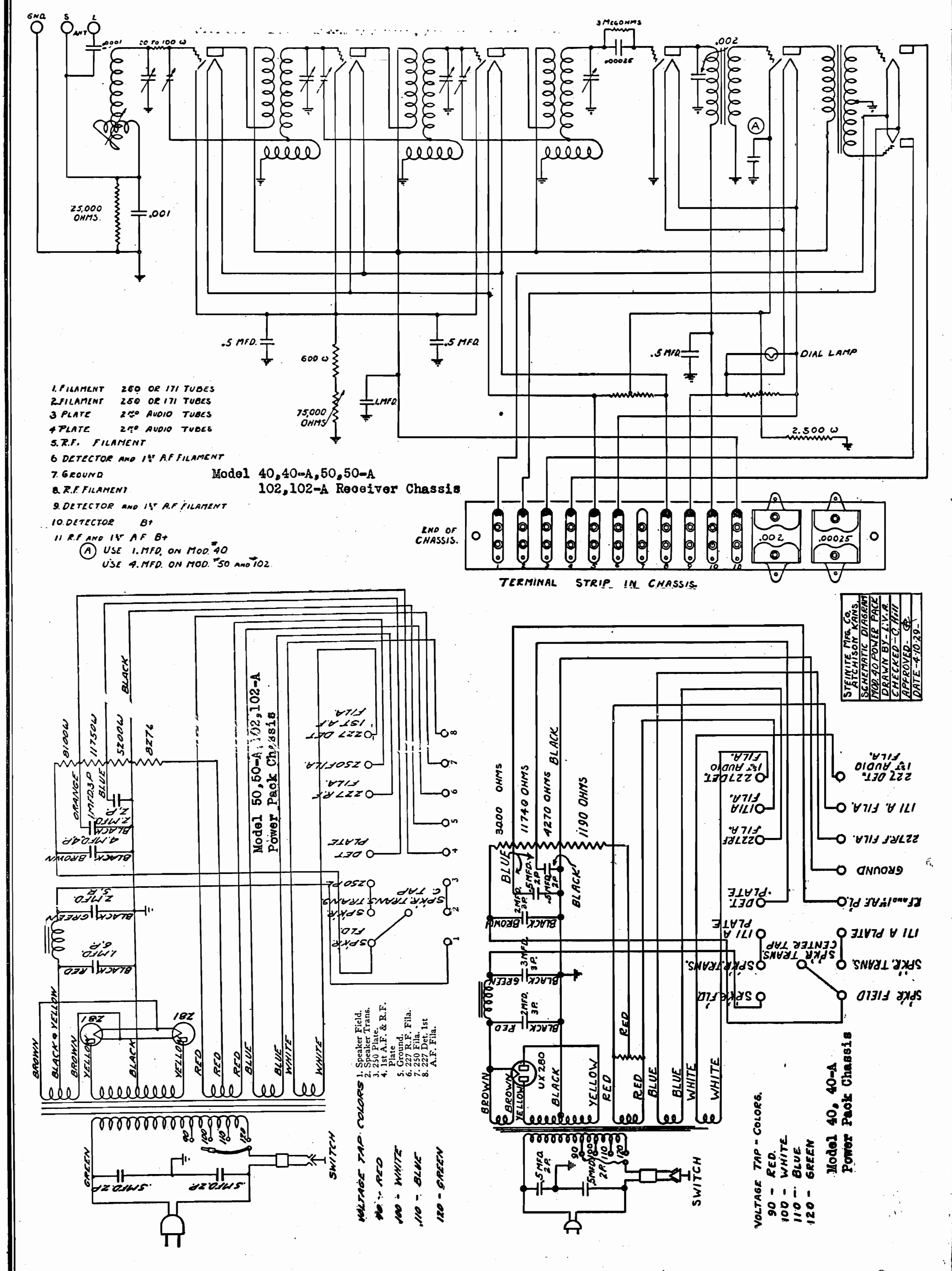


VOLTAGES

182 PLATE VOLTAGE 115
182 GRID VOLTAGE -22.5
182 FILAMENT VOLTAGE 4.-4.5
484 TUBES.18 VOLTS ACROSS
6 TUBES IN SERIES. TERMINALS 3-4
DETECTOR PLATE VOLTAGE WITH VOLUME ON
100 to 108. TERMINALS 1-2
R.F. PLATE VOLTAGE WITH VOLUME ON
105 to 112. TERMINALS 5-6
DETECTOR GRID VOLTAGE 8 to 10. TERMINALS 2-9
R.F. GRID VOLTAGE WITH VOLUME ON
-2. to -3. TERMINALS. 5-9

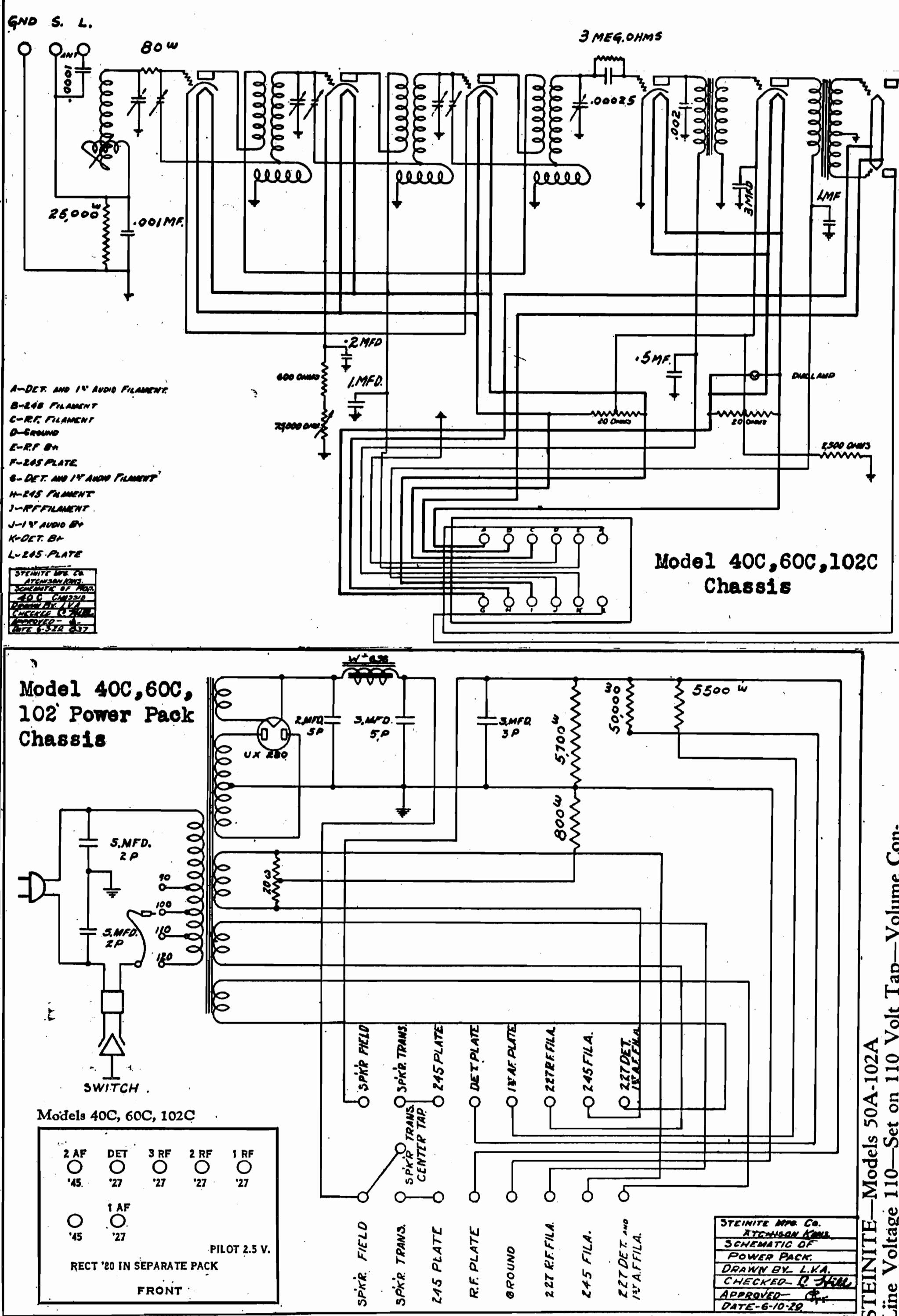
STEINITE RADIO CO.

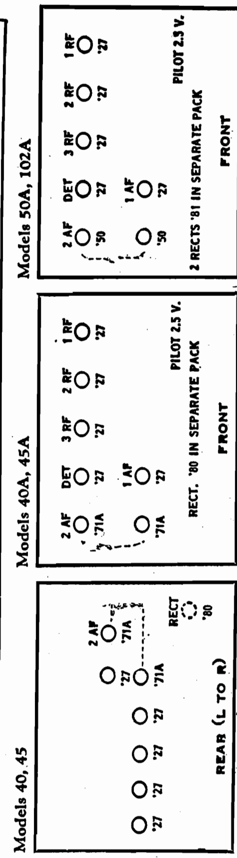
MODEL 40,40-A,50,50-A, 102,102-A
Schematic



MODEL 40C,60C,102C
MODEL 40,45,40A,45A,50A,102
Voltage- Socket

STEINITE RADIO CO.





STEINITE—Models 50A-102A
Line Voltage 110—Set on 110 Volt Tap—Volume Control Position Max

Tube No. in Order ①	Type of Tube ②	Position of Tube 1st R.F. Det., etc. ③	Readings, Plug in Socket of Set — Tube Out: A Volts ④	Tube Out: B Volts ⑤	Tube in Tester: A Volts ⑥	B Volts ⑦	C Volts (Control Grid) ⑧	Cathode-Heater Volts ⑨	Normal Plate M.A. ⑩	Plate M.A. Grid Test ⑪	Plate Change M.A. ⑫	Screen Grid Volts ⑬
1	227	1st RF	2.75	134	2.45	125	6.5	-	4.25	8.25	4	-
2	227	2nd RF	2.75	134	2.45	125	8.7	-	5.0	9.0	4	-
3	227	3rd RF	2.75	134	2.45	125	8.7	-	5.0	9.0	4	-
4	227	Det.	2.65	92	2.40	32	-	-	2.5	2.5	0	-
5	227	1st AF	2.65	144	2.40	118	8.2	-	3.6	6.6	3	-
6	250	2nd AF	7.7	355	7.40	310	51.0	-	36	41	5	-
7	250	2nd AF	7.7	355	7.40	310	51.0	-	36	41	5	-
8	281	Rect.	7.7	-	7.40	-	-	-	60			
9	281	Rect.	7.7	-	7.40	-	-	-	60			

STEINITE—Models 40A-45A
Line Voltage 110—Set on 110 Volt Tap—Volume Control Position Max

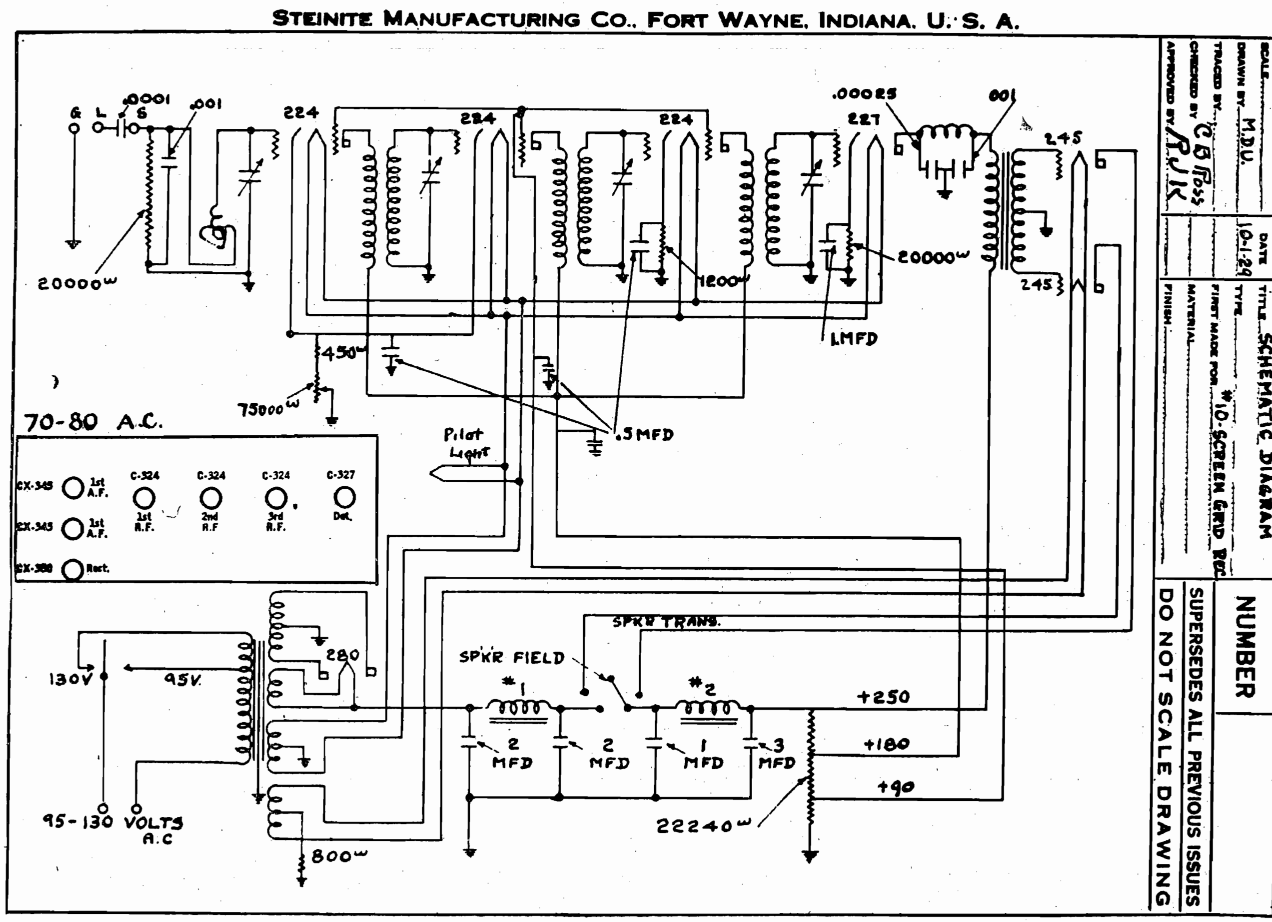
Tube No. in Order ①	Type of Tube ②	Position of Tube 1st R.F. Det., etc. ③	Readings, Plug in Socket of Set — Tube Out: A Volts ④	Tube Out: B Volts ⑤	Tube in Tester: A Volts ⑥	B Volts ⑦	C Volts (Control Grid) ⑧	Cathode-Heater Volts ⑨	Normal Plate M.A. ⑩	Plate M.A. Grid Test ⑪	Plate Change M.A. ⑫	Screen Grid Volts ⑬
1	227	1st RF	2.6	133	2.3	125	6.25	-	4.5	7.5	3	-
2	227	2nd RF	2.6	133	2.3	125	8.5	-	4.6	7.6	3	-
3	227	3rd RF	2.6	133	2.3	125	8.5	-	4.6	7.6	3	-
4	227	Det.	2.6	35	2.3	25	-	-	2.5	2.5	0	-
5	227	1st AF	2.6	142	2.3	120	8.1	-	3.5	6.5	3	-
6	171A	2nd AF	5.0	180	5.0	168	37.5	-	16.0	36	20	-
7	171A	2nd AF	5.0	180	5.0	168	37.5	-	16.0	36	20	-
8	280	Rect.	5.0	-	5.0	-	-	-	65	-	-	-

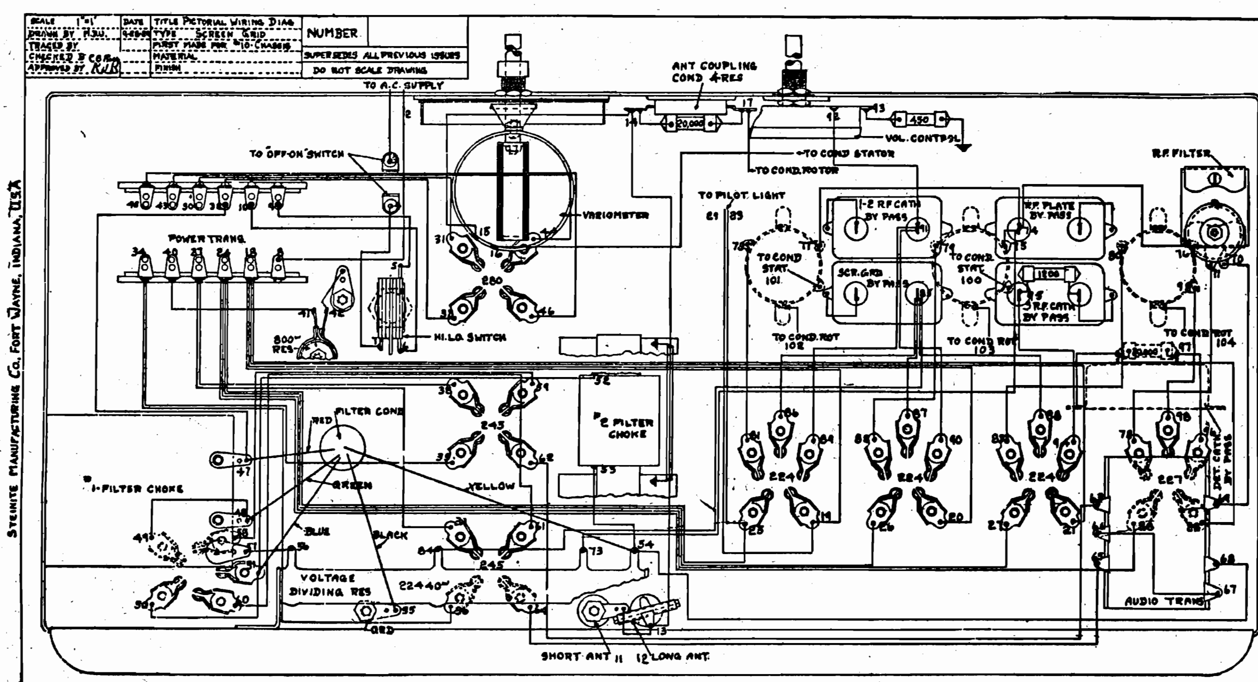
STEINITE—Models 40C-60C-102C
Line Voltage 110—Set on 110 Volt Tap—Volume Control Position Max

Tube No. in Order ①	Type of Tube ②	Position of Tube 1st R.F. Det., etc. ③	Readings, Plug in Socket of Set — Tube Out: A Volts ④	Tube Out: B Volts ⑤	Tube in Tester: A Volts ⑥	B Volts ⑦	C Volts (Control Grid) ⑧	Cathode-Heater Volts ⑨	Normal Plate M.A. ⑩	Plate M.A. Grid Test ⑪	Plate Change M.A. ⑫	Screen Grid Volts ⑬
1	227	1st RF	2.6	133	2.3	125	6.25	-	4.5	8.25	4	-
2	227	2nd RF	2.6	133	2.3	125	8.5	-	5.0	9.0	4	-
3	227	3rd RF	2.6	133	2.3	125	8.5	-	5.0	9.0	4	-
4	227	Det.	2.6	35	2.3	25	-	-	2.5	2.5	0	-
5	227	1st AF	2.6	142	2.3	120	8.1	-	3.6	6.6	3	-
6	245	2nd AF	2.6	270	2.4	250	50	-	35	40	5	-
7	245	2nd AF	2.6	270	2.4	250	50	-	35	40	5	-
8	280	Rect.	5.2	-	-	-						

MODEL 70,80,95
Schematic-Layout
(Chassis #10)

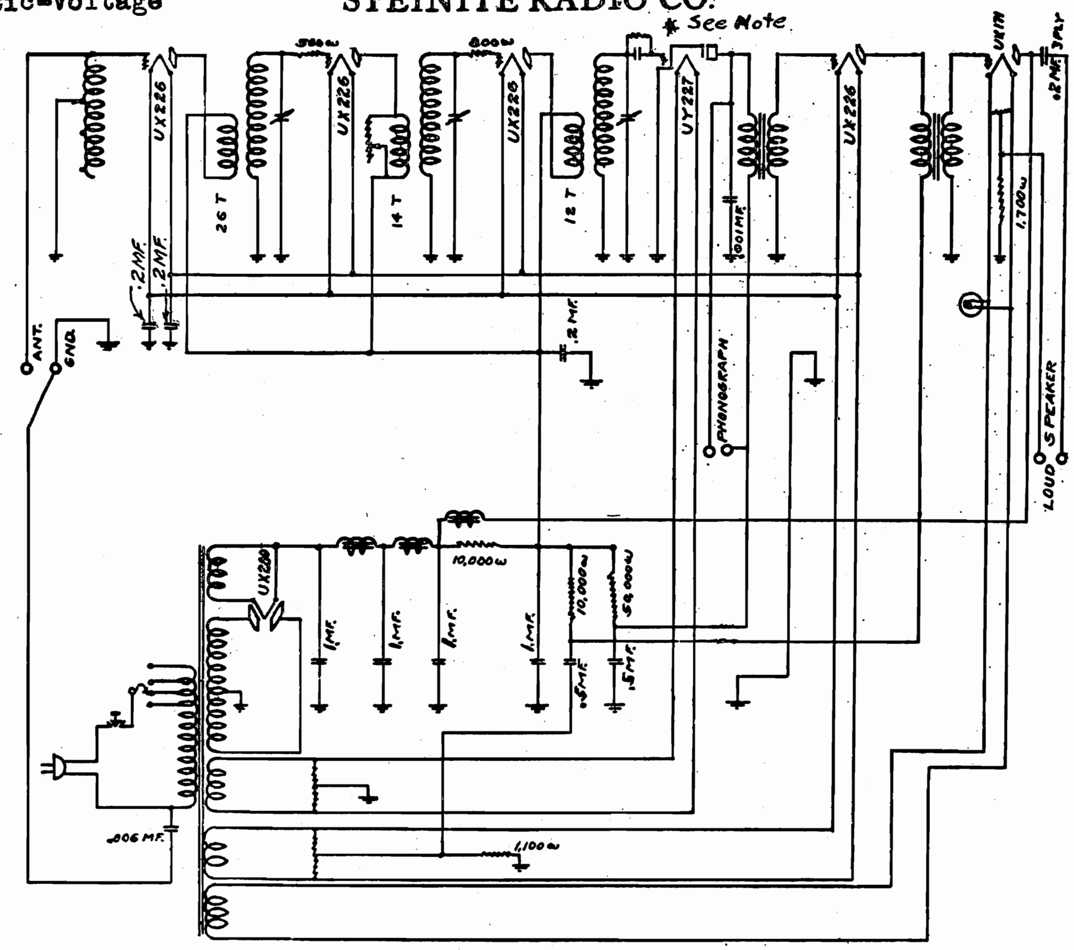
STEINITE RADIO CO.





MODEL 261, 262, 263, 264, 265
Schematic-Voltage
Socket

STEINITE RADIO CO.

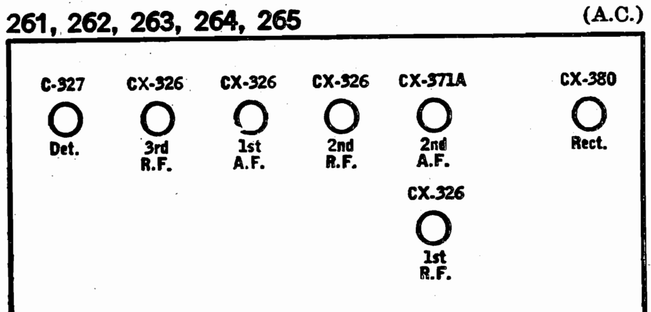


* A small capacity is connected between detector grid and the filament in the form of a piral pair of twisted wires.
**Two bindings posts supplying 110V AC are included on all model 261 sets made since September 20,1938. These are provided for supplying current to dynamic speakers, permitting complete control of the AC supply to both the set and speaker through the toggle switch

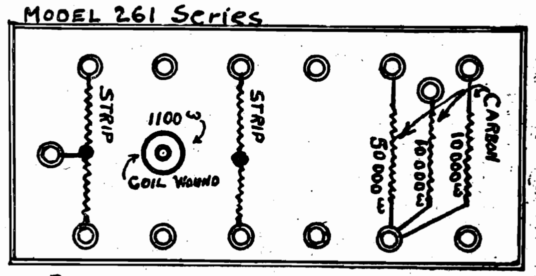
STEINITE--Models 261-262
Line Voltage 112—110 Volt Tap

Tube No. in Order	Type of Tube	Position of Tube 1st. R.F., Det., Etc.	Readings, Plug in Socket of Set: Tube Out: A Volts	Tube Out: B Volts	Tube in Tester: A Volts	B Volts	C Volts	Cathode Volts	Normal Plate M.A.	Plate M.A. Grid Test	Plate M.A. Change
1	226	1st. R.F.	1.45	120	1.30	115	11	-	3.0	7.0	4.0
2	226	2nd. R.F.	1.45	120	1.30	115	11	-	3.0	7.0	4.0
3	226	3rd. R.F.	1.45	120	1.30	115	11	-	3.0	7.0	4.0
4	227	Detector	2.30	116	2.15	44	-	-	2.0	2.0	0.0
5	226	1st. A.F.	1.45	112	1.30	100	10	-	3.0	7.0	4.0
6	171A	2nd. A.F.	4.80	320	4.60	176	33	-	22.0	24.0	2.0
7	280	Rectifier	4.65	-	4.50	-	-	-	20.0	-	-

261, 262, 263, 264, 265 (A.C.)



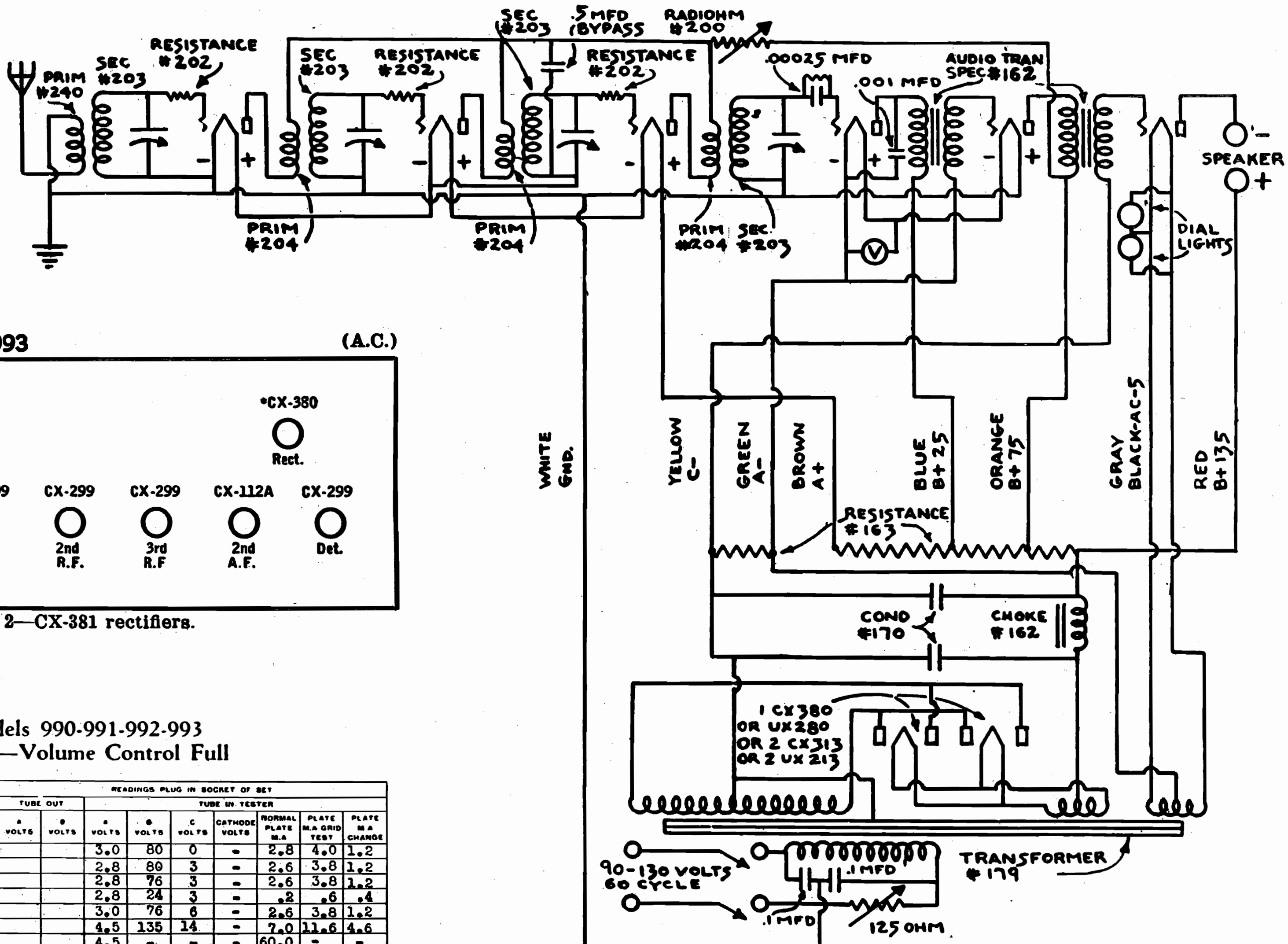
MODEL 261 Series



POWER PACK TERMINAL STRIP

STEINITE RADIO CO.

MODEL 990,991,992,993
Schematic,Socket,Voltage



990, 991, 992, 993 (A.C.)

•CX-380
Rect.

CX-299	CX-299	CX-299	CX-299	CX-112A	CX-299
1st R.F.	1st A.F.	2nd R.F.	3rd R.F	2nd A.F.	Det.

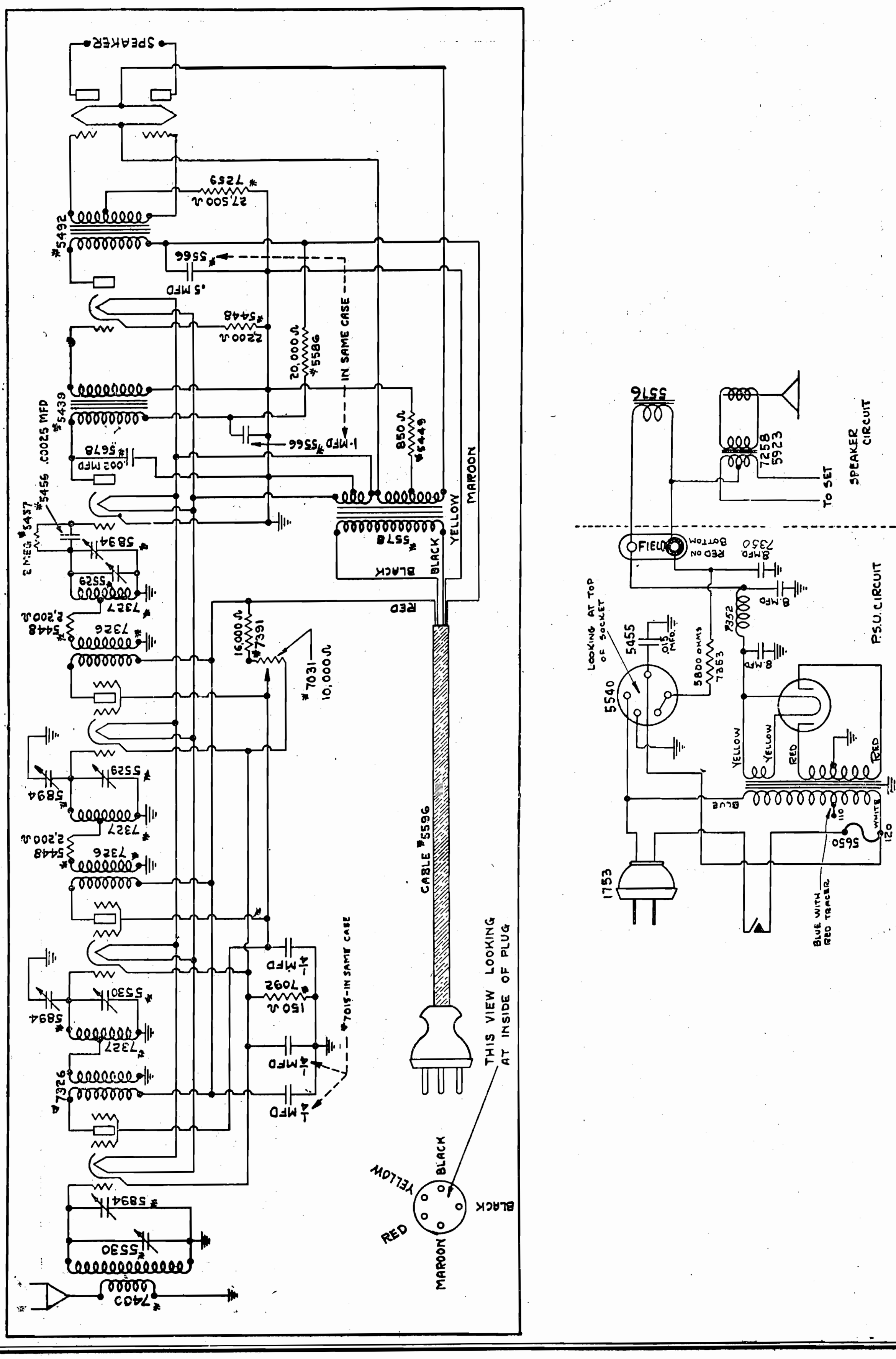
Some models use 2—CX-381 rectifiers.

STEINITE—Models 990-991-992-993
Line Voltage 112—Volume Control Full

TUBE NO IN ORDER	TYPE OF TUBE	POSITION OF TUBE 1ST RF DET ETC	READINGS PLUG IN SOCKET OF SET								
			TUBE OUT		TUBE IN TESTER						
			A VOLTS	B VOLTS	A VOLTS	B VOLTS	C VOLTS	CATHODE VOLTS	NORMAL PLATE M.A	PLATE M.A GRID TEST	PLATE M A CHANGE
1	199	1st. R.F.			3.0	80	0	-	2.8	4.0	1.2
2	199	2nd. R.F.			2.8	80	3	-	2.6	3.8	1.2
3	199	3rd. R.F.			2.8	76	3	-	2.6	3.8	1.2
4	199	Detector			2.8	24	3	-	.2	.6	.4
5	199	1st. A.F.			3.0	76	6	-	2.6	3.8	1.2
6	112A	2nd. A.F.			4.5	135	14	-	7.0	11.6	4.6
7	280	Rectifier			4.5	-	-	-	60.0	-	-
8	or										
9	281	Rectifier			4.7	-	-	-	32.0	-	-
10	281	Rectifier			4.7	-	-	-	32.0	-	-

MODEL 3A

STERLING MFG. CO.

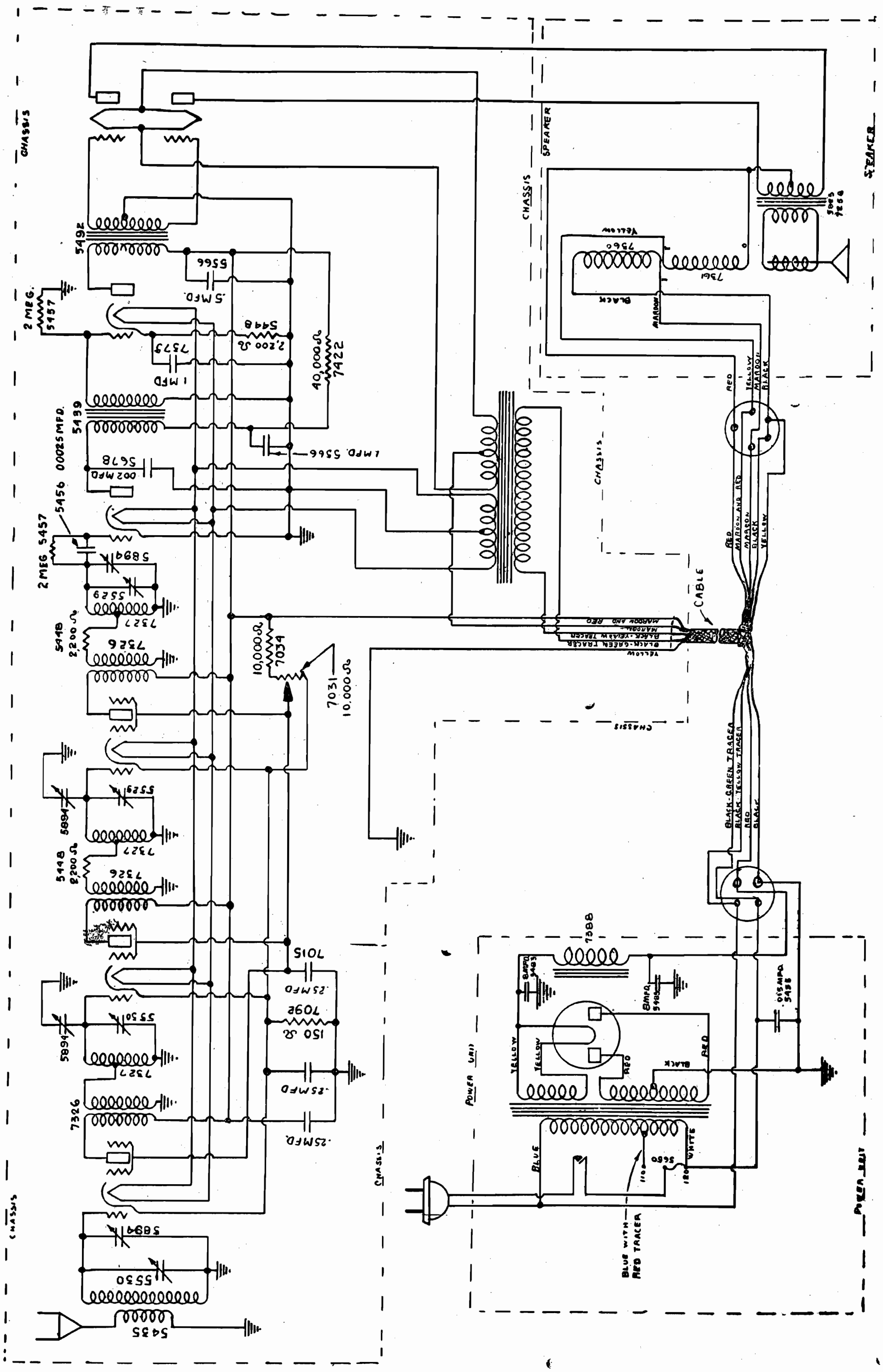


Power Unit and Speaker

MODEL 4
Schematic

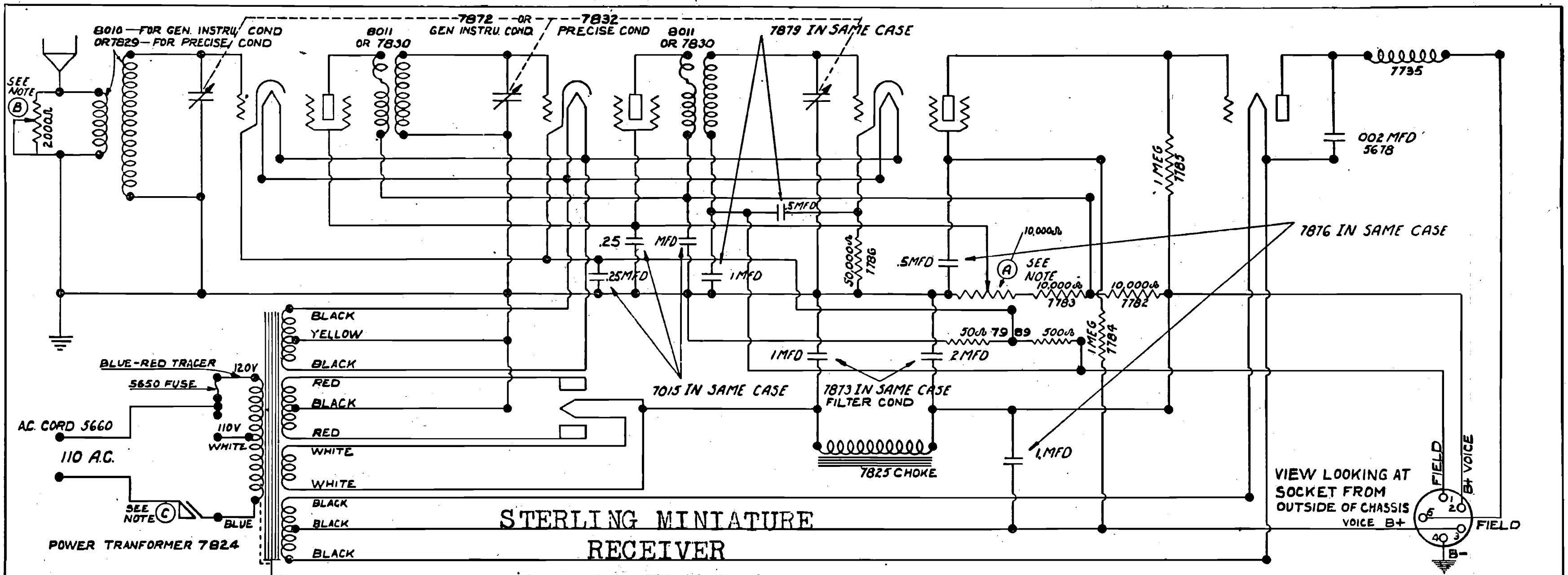
STERLING MFG. CO.

Complete Schematic Diagram of the No. 4 Circuit



MODEL Miniature
Schematic,Voltage

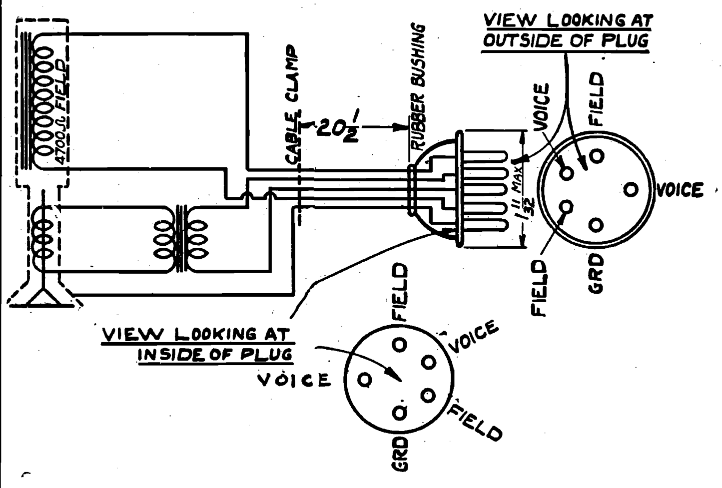
STERLING MFG. CO.



RECEIVER CIRCUIT DIAGRAM

Ground	to	Volume control screen	70 volts
"	"	RF Plate Volume on	165
"	"	RF Screen Volume on	70
"	"	RF Cathode	2
"	"	Power Supply Output	450
"	"	Power Supply Output	390
"	"	Detecor Plate	40*
"	"	Detector Screen	20*
"	"	Detector Cathode	15*
		'45 Grid Bias	35
		'45 Plate	220
"	"	'45 Plate	350**

*The voltages shown are those obtained with a very high resistance voltmeter, such as a 100 microampere meter and a series resistor of 1 megohm. ** '45 Plate reads 350 volts to ground. The cathode is raised 130 volts above ground and the effective '45 plate voltage is 220 volts.



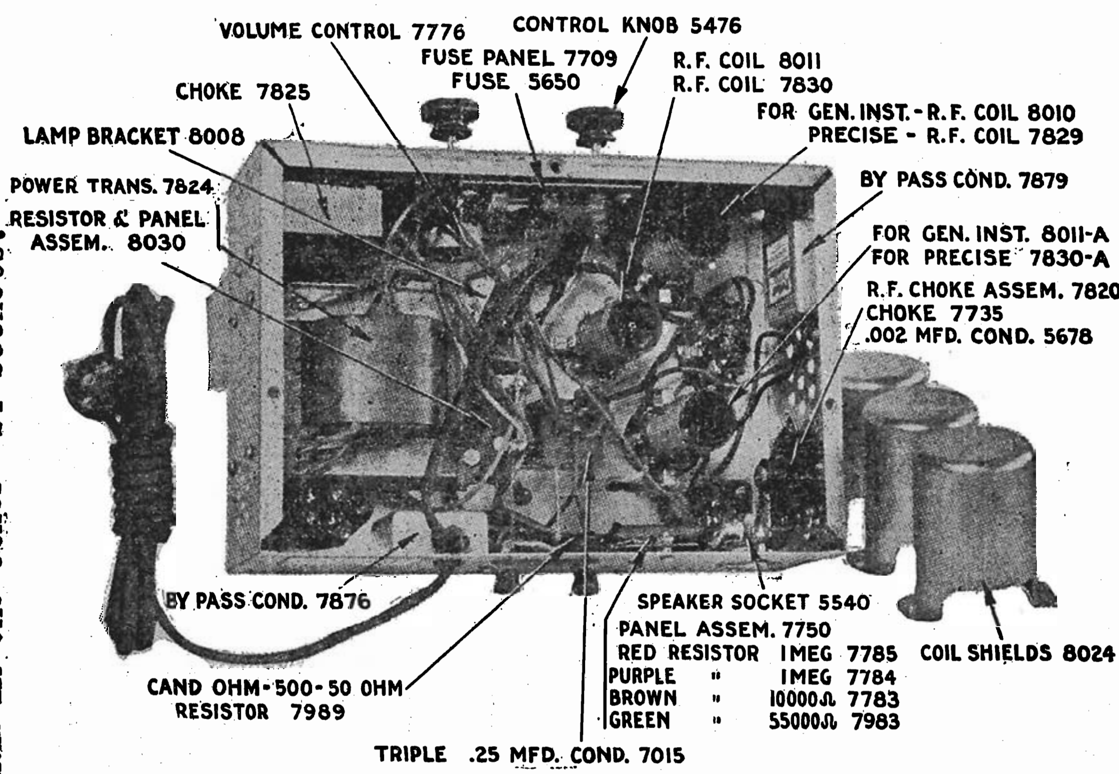
DYNAMIC SPEAKER CIRCUIT DIAGRAM

MODEL Miniature
Chassis Views

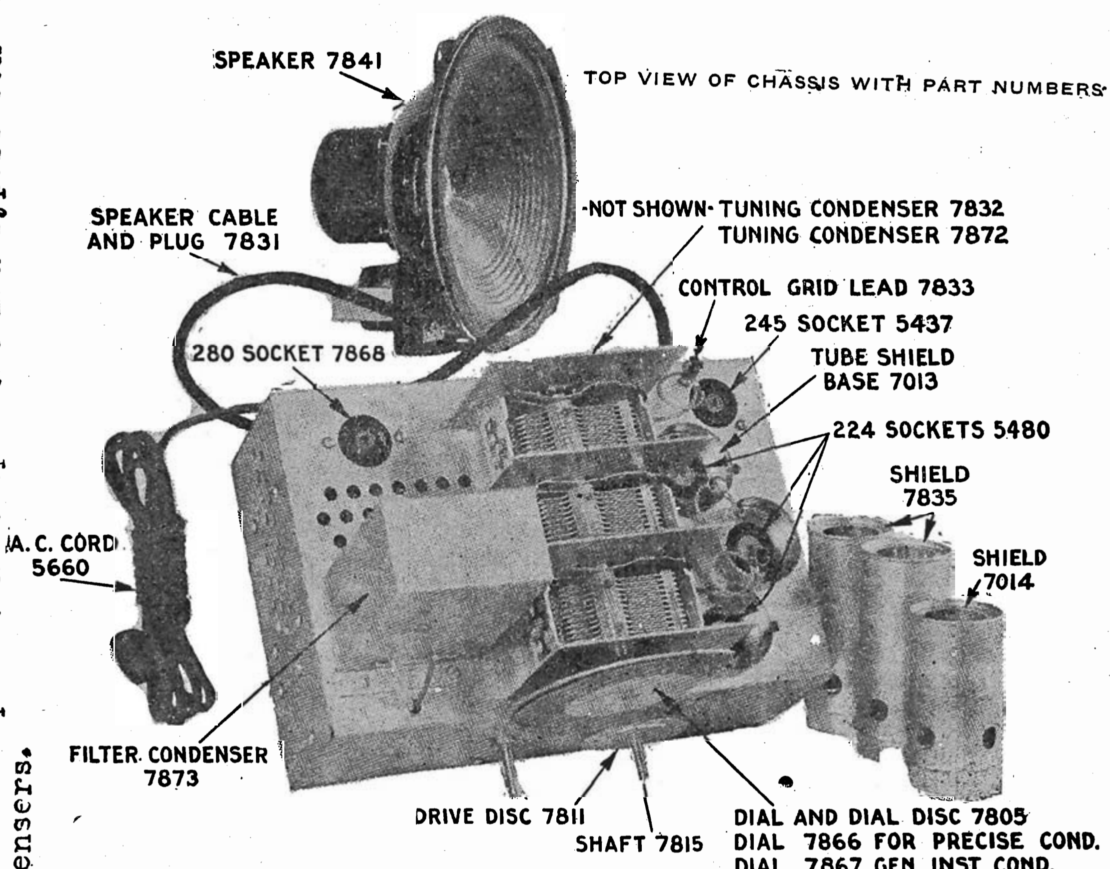
STERLING MFG. CO.

In the event :-
of excessive regeneration difficulties, check the position of the grid wires. If too close together, this trouble is liable to occur. Check the .015 mfd condenser on the center of the fuse panel. Also open .25 mfd bypass condensers.

One possible remedy for excessive hum is some condition in the detector tube circuit. Try each of the '24 tubes in the detector socket. A tube that hums in the detector socket, may not hum in the other '24 sockets.



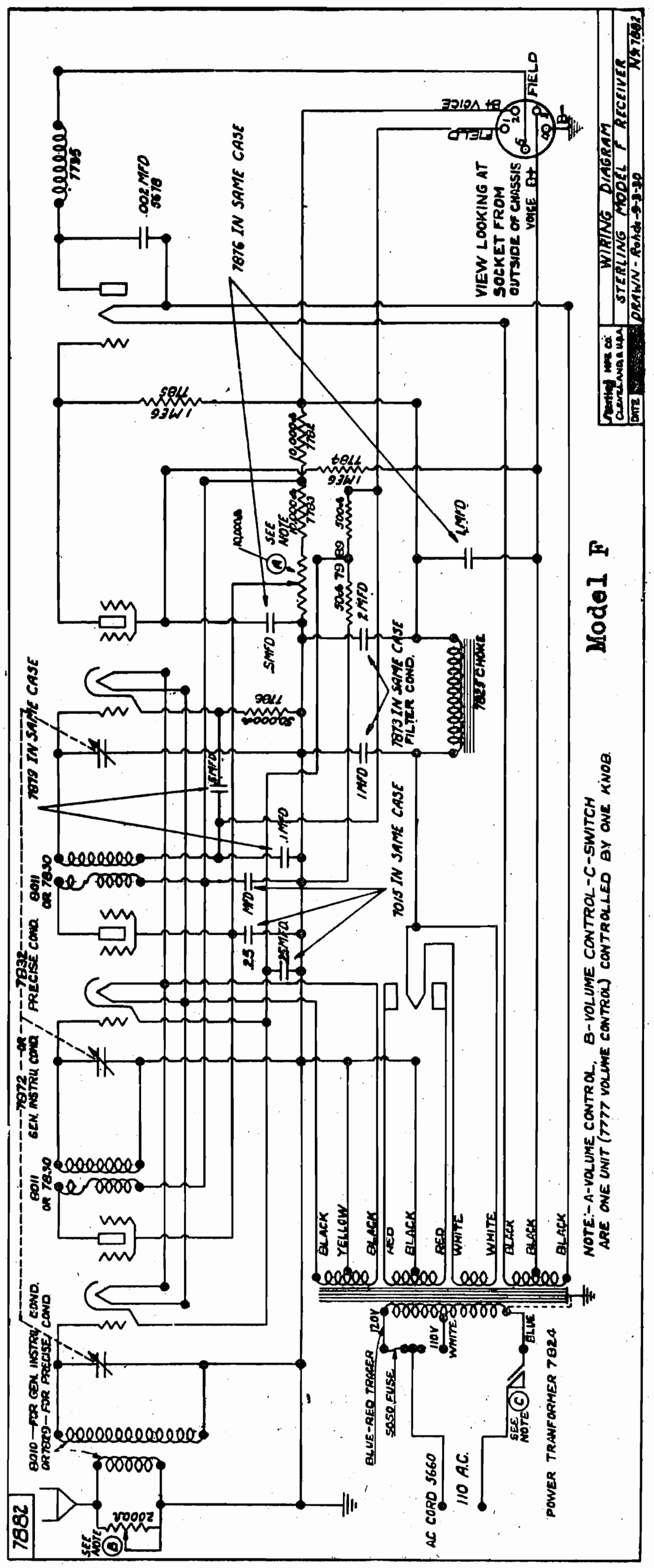
BOTTOM VIEW OF CHASSIS WITH PART NUMBERS

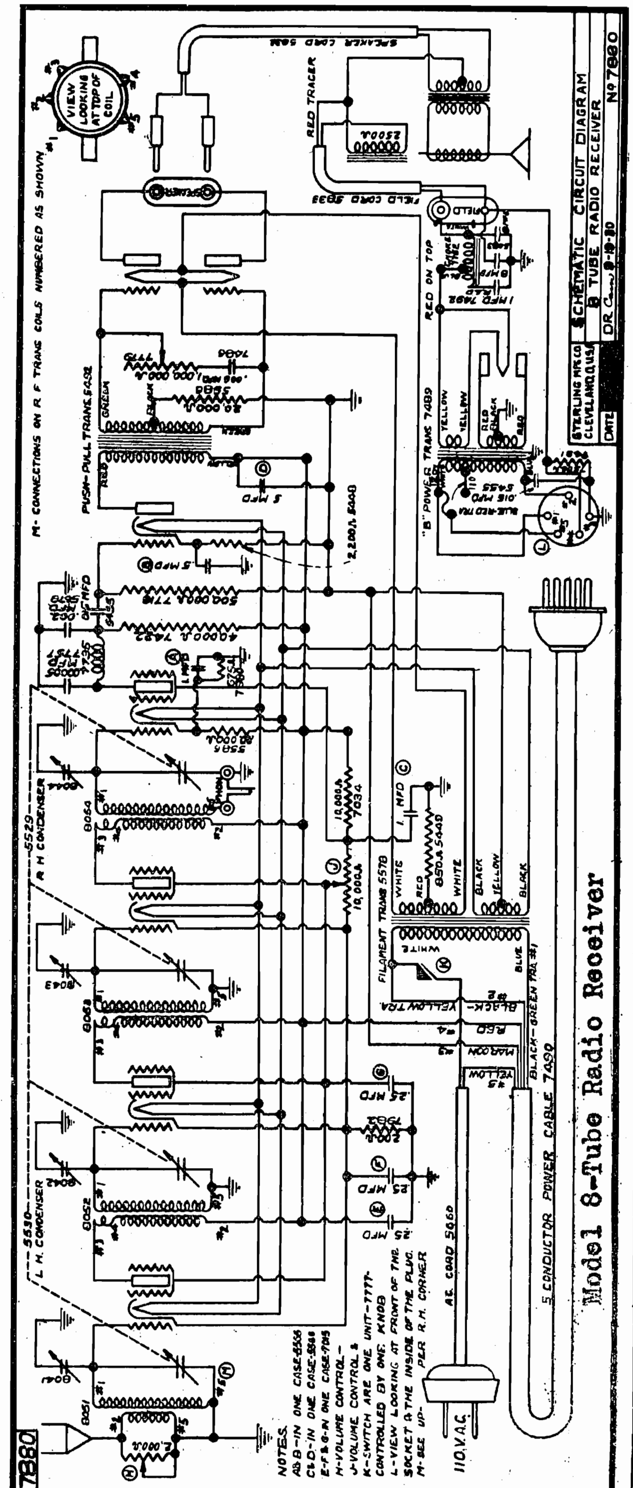


TOP VIEW OF CHASSIS WITH PART NUMBERS

MODEL F
MODEL 8-Tube Receiver

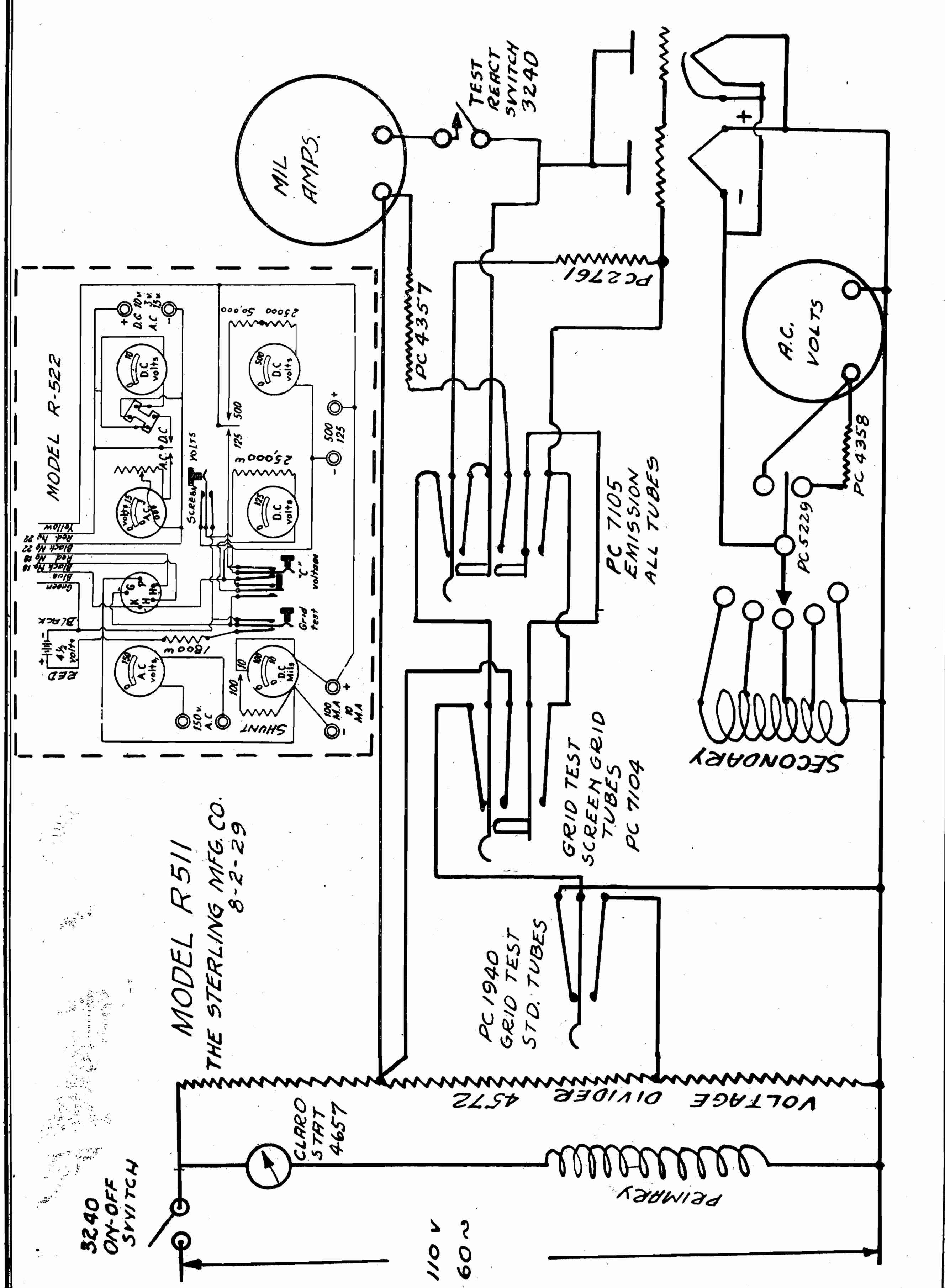
STERLING MFG. CO.

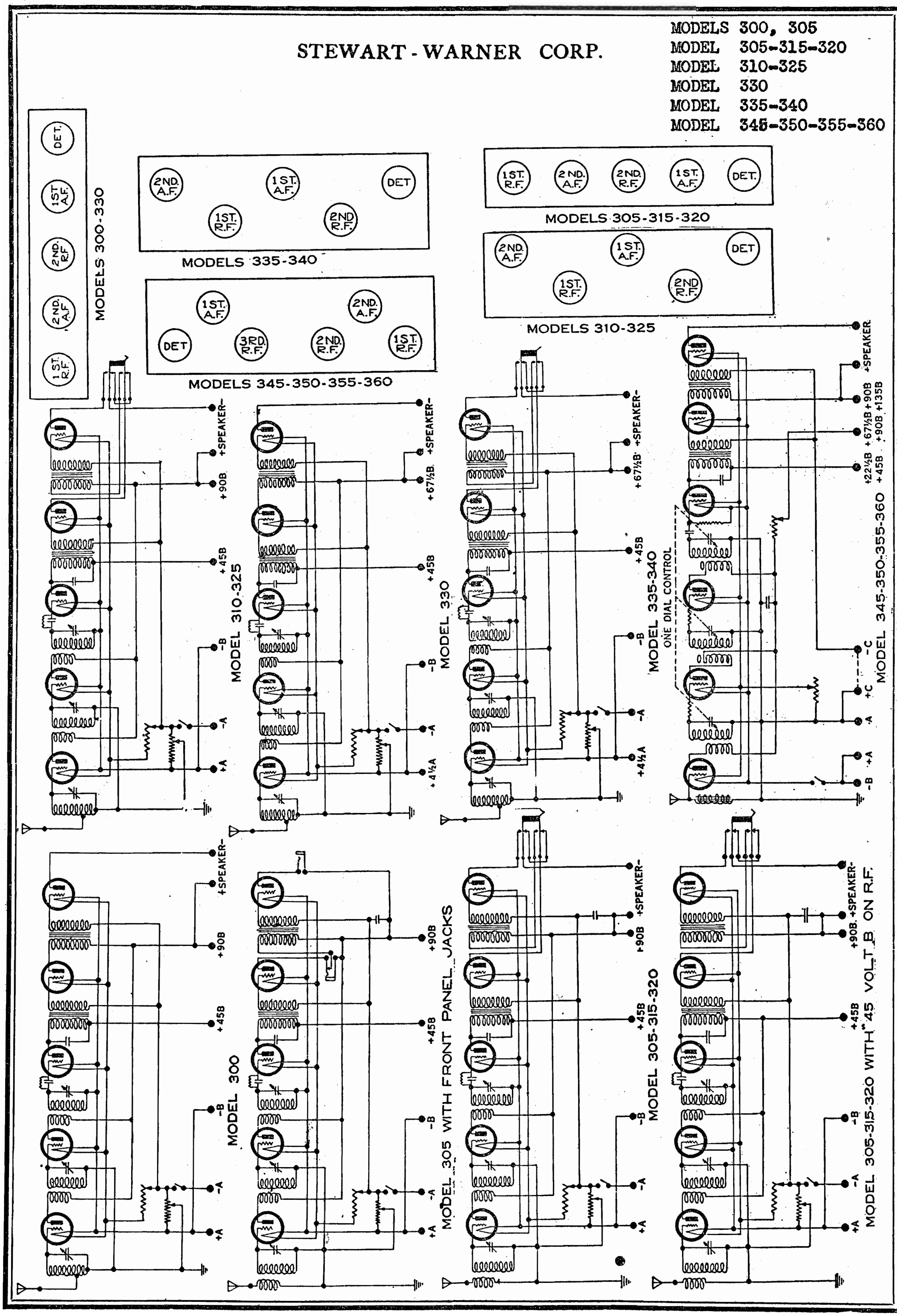




MODEL R-511
MODEL R-522

STERLING MFG. CO.

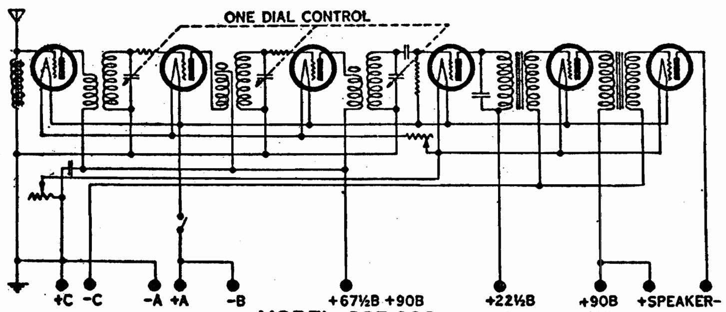




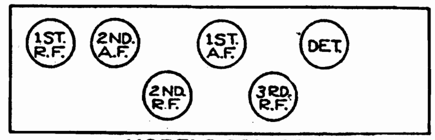
STEWART-WARNER CORP.
MODELS 300, 305
MODEL 305-315-320
MODEL 310-325
MODEL 330
MODEL 335-340
MODEL 345-350-355-360
MODELS 300-330
MODELS 335-340
MODELS 345-350-355-360
MODELS 305-315-320
MODELS 310-325
MODEL 310-325
MODEL 330
MODEL 335-340
ONE DIAL CONTROL
MODEL 345-350-355-360
MODEL 300
MODEL 305 WITH FRONT PANEL JACKS
MODEL 305-315-320
MODEL 305-315-320 WITH 45 VOLT B ON R.F.

MODEL 385-390
MODEL 500,520,525
MODEL 530,535
MODEL 530,535.715,720

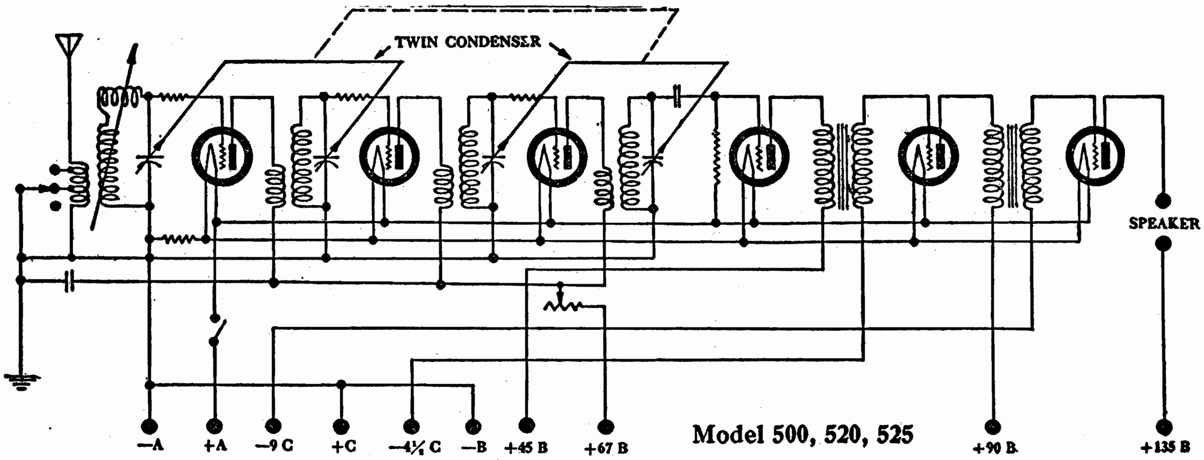
STEWART-WARNER CORP.



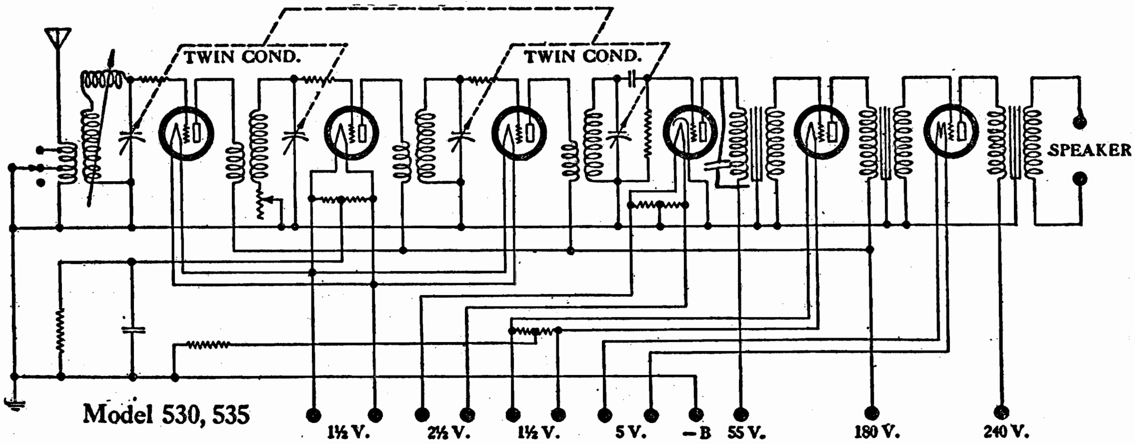
MODEL 385-390



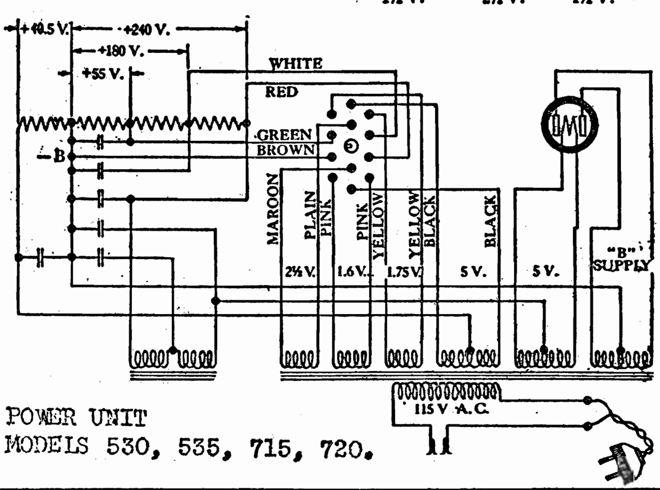
MODELS 385-390



Model 500, 520, 525

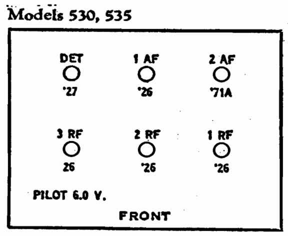


Model 530, 535

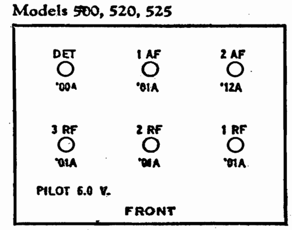


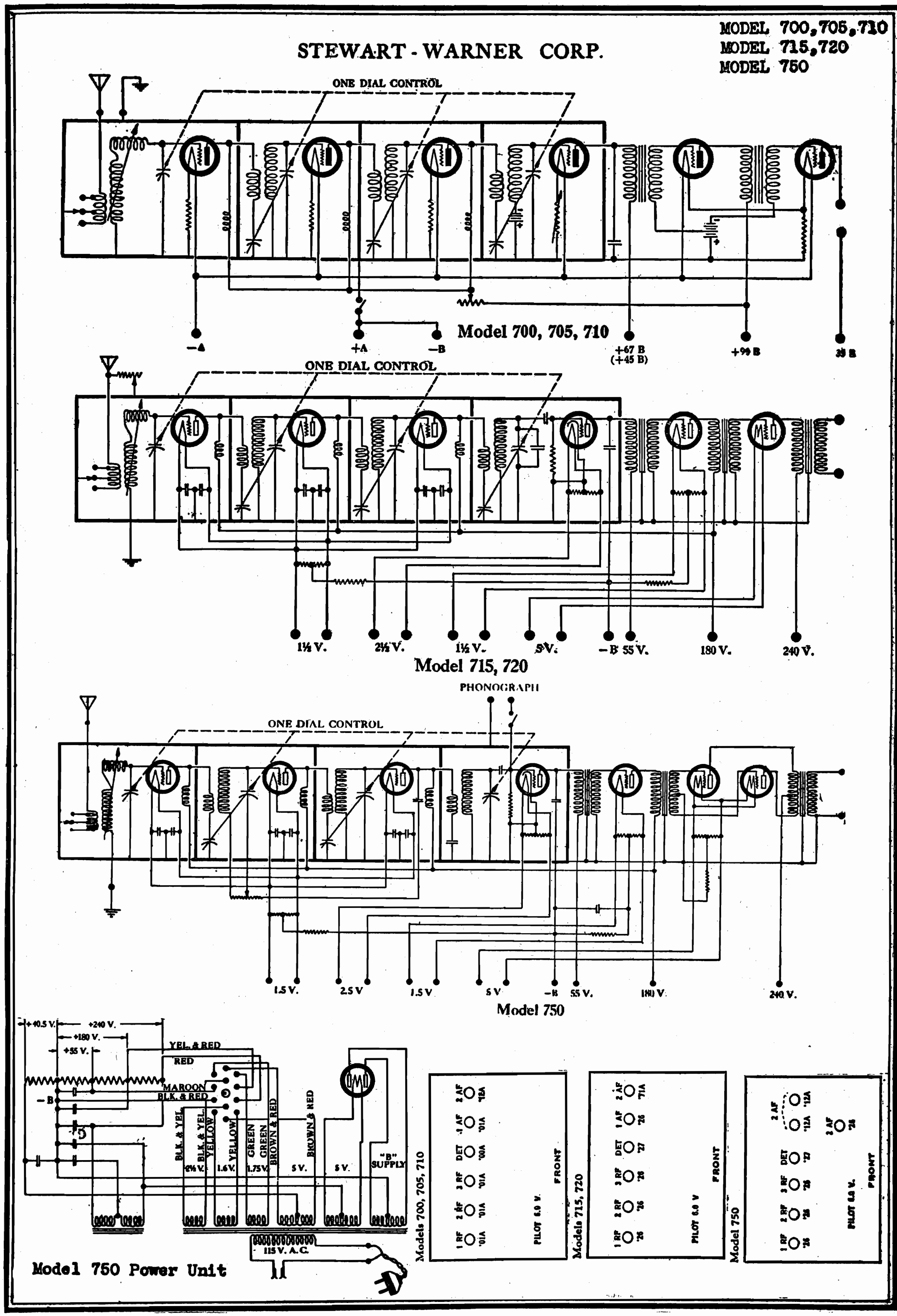
POWER UNIT
MODELS 530, 535, 715, 720.

Models 530, 535



Models 500, 520, 525

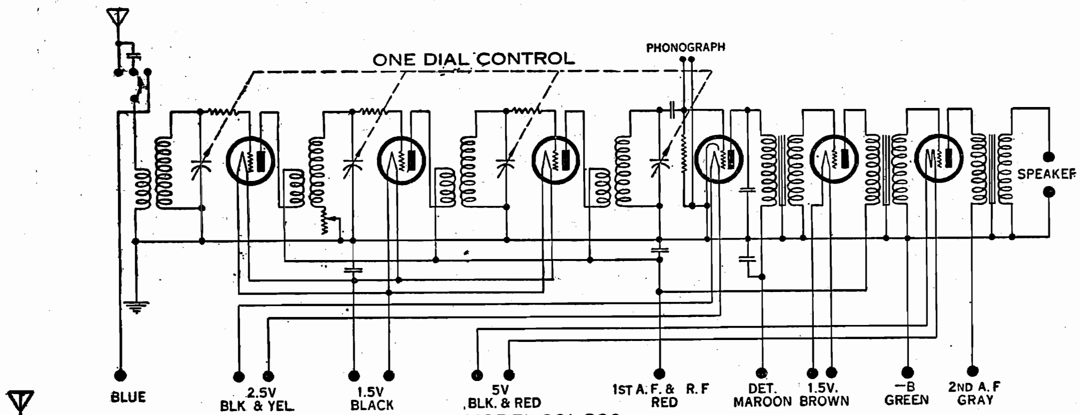




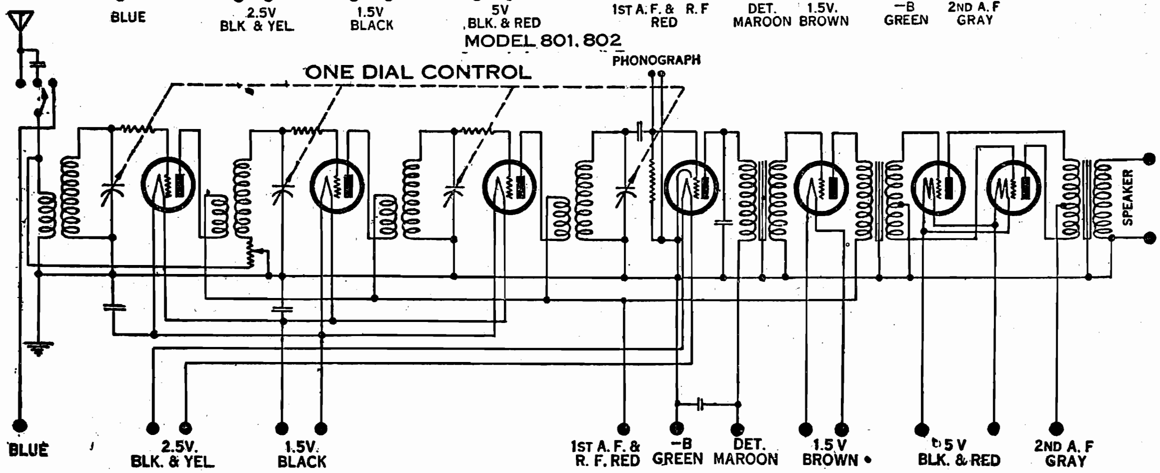
STEWART-WARNER CORP.
MODEL 700,705,710
MODEL 715,720
MODEL 750
ONE DIAL CONTROL
−A
+A
−B
Model 700, 705, 710
+67 B
(+45 B)
+90 B
135 B
ONE DIAL CONTROL
1½ V.
2½ V.
1½ V.
5 V.
−B
55 V.
180 V.
240 V.
Model 715, 720
PHONOGRAPH
ONE DIAL CONTROL
1.5 V.
2.5 V
1.5 V
5 V
−B
55 V.
180 V.
240 V.
Model 750
+40.5 V.
+240 V.
+180 V.
+55 V.
−B
YEL. & RED
RED
MAROON
BLK. & RED
BLK. & YEL.
BLK. & YEL.
YELLOW
YELLOW
GREEN
GREEN
BROWN & RED
BROWN & RED
2½ V.
1.6 V.
1.75 V.
5 V.
5 V.
"B" SUPPLY
115 V. A.C.
Model 750 Power Unit
Models 700, 705, 710
1 RF '01A
2 RF '01A
3 RF '01A
DET '00A
1 AF '01A
2 AF '12A
PILOT 6.0 V.
FRONT
Models 715, 720
1 RF '26
2 RF '26
3 RF '26
DET '27
1 AF '26
2 AF '71A
PILOT 6.0 V
FRONT
Model 750
1 RF '26
2 RF '26
3 RF '26
DET '27
1 AF '12A
2 AF '12A
2 AF '26
PILOT 6.0 V.
FRONT

STEWART - WARNER CORP.

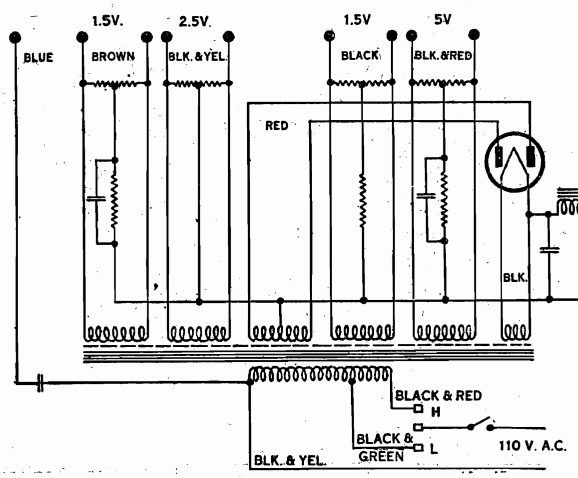
MODEL 801, 802
MODEL 801, 801-A, 811, 811-A (Series B)
MODEL PU 801, 801-A, 811, 811-A
Schematic, Voltage



MODEL 801, 802

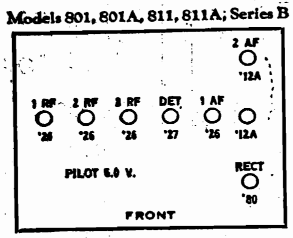


MODEL 801, 801-A, 811, 811-A SERIES B

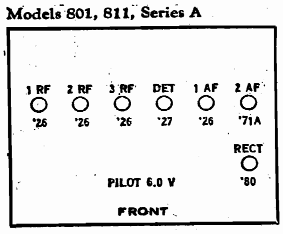


POWER UNIT
MODEL 801, 801-A, 811, 811-A

Models 801, 801A, 811, 811A; Series B



Models 801, 811, Series A



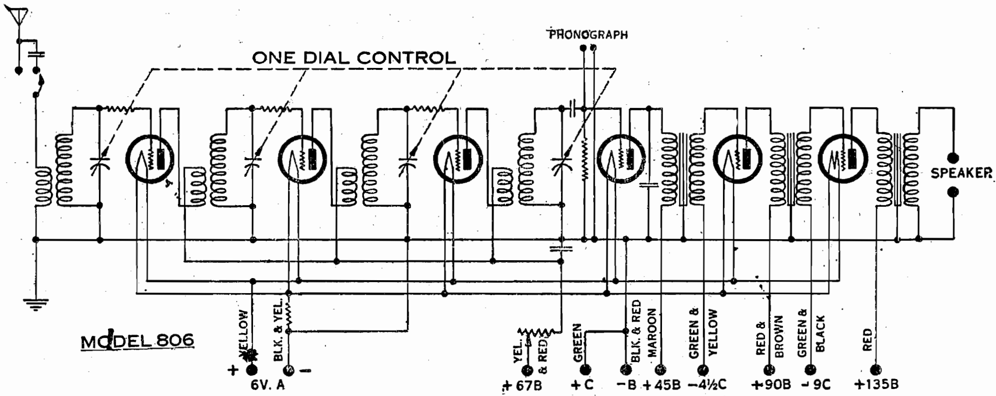
STEWART-WARNER—Model 801 SERIES B
Line Voltage 115 801A-811-811A

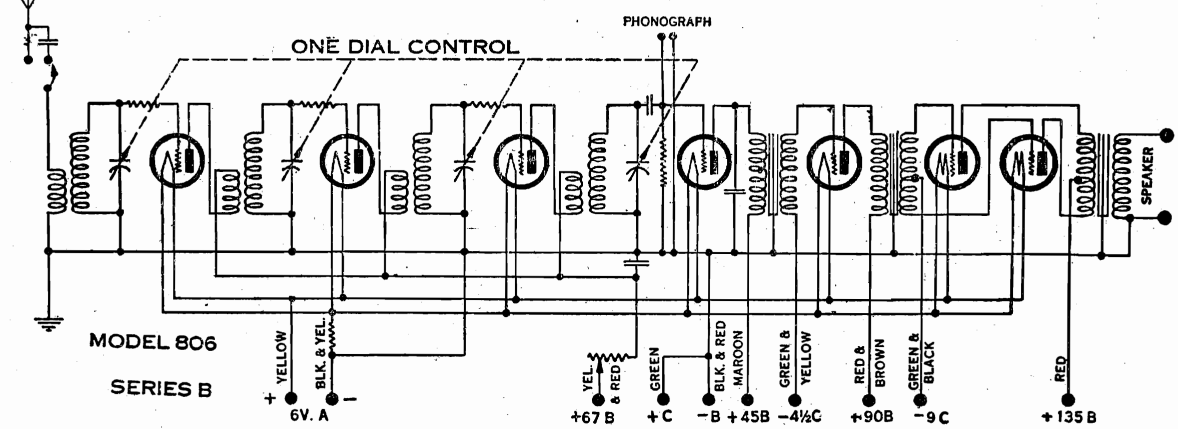
Tube No. in Order	Type of Tube	Position of Tube 1st. R.F., Det., Etc.	Readings, Plug in Socket of Set: Tube Out — A Volts	Tube Out — B Volts	Tube in Tester — A Volts	B Volts	C Volts	Cathode Volts	Normal Plate M.A.	Plate M.A. Grid Test	Plate M.A. Change
1	226	1R.F.	1.46	157	1.33	155	14.8	-	2.9	9.7	6.8
2	226	2R.F.	1.46	158	1.33	156	14.8	-	2.3	9.2	6.9
3	226	3R.F.	1.48	158	1.32	156	14.8	-	1.9	9.5	7.6
4	227	DET.	2.40	132	1.98	25	0	-	1.4	1.45	0.05
5	226	1A.F.	1.62	175	1.42	146	12.5	-	3.3	4.1	0.8
6	112A	2A.F.	5.1	175	4.93	158	12.0	-	9.9	14.9	5.0
7	112A	2A.F.	5.1	175	4.95	158	12.0	-	9.3	14.2	4.9
8	280	Rectifier	5.7		4.78						
9											
10											

The values given apply to all Model 801 receivers, however, some of the early sets operated with lower "B" voltage than shown. On recent sets the "B" voltage has been increased approximately 10% (per cent) above values given in the chart.

STEWART-WARNER CORP.

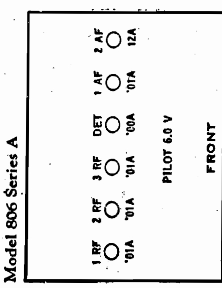
MODEL 806 (Series A)
MODEL 806 (Series B)
MODEL 950 Series (Battery)
Schematic, Voltage



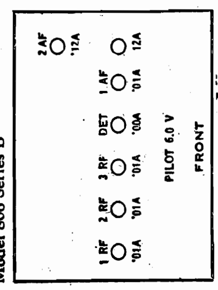


STEWART-WARNER—Model 950 A.C
Line Voltage 115—Volume Control Position Max

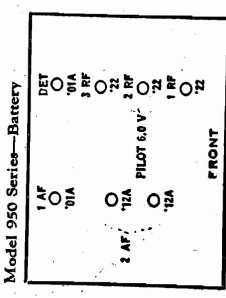
TUBE NO IN ORDER ①	TYPE OF TUBE ②	POSITION OF TUBE 1ST RF DET ETC ③	READINGS PLUG IN SOCKET OF SET — TUBE OUT: A VOLTS ④	TUBE OUT: B VOLTS ⑤	TUBE IN TESTER: A VOLTS ⑥	B VOLTS ⑦	C VOLTS (CONTROL GRID) ⑧	CATHODE-HEATER VOLTS ⑨	NORMAL PLATE MA ⑩	PLATE MA GRID TEST ⑪	PLATE CHANGE MA ⑫	SCREEN GRID VOLTS ⑬
1	224	1st RF	-	-	2.2	166	2	2	3.9	9	6.1	74
2	224	2nd RF	-	-	2.2	166	2	2	3.9	9	6.1	74
3	224	3rd RF	-	-	2.2	166	2	2	3.9	9	6.1	74
4	227	Det.	-	-	2.3	188	18.5	18.5	6	-	-	-
5	227	1st AF	-	-	2.3	182	13.5	13.5	5.8	6.8	1	-
6	245	2nd AF	-	-	2.3	260	46	-	24	28	4	-
7	245	2nd AF	-	-	2.3	260	46	-	24	28	4	-
8	280	Rect.	-	-	4.7	-	-	-	90	-	-	-
9												
10												



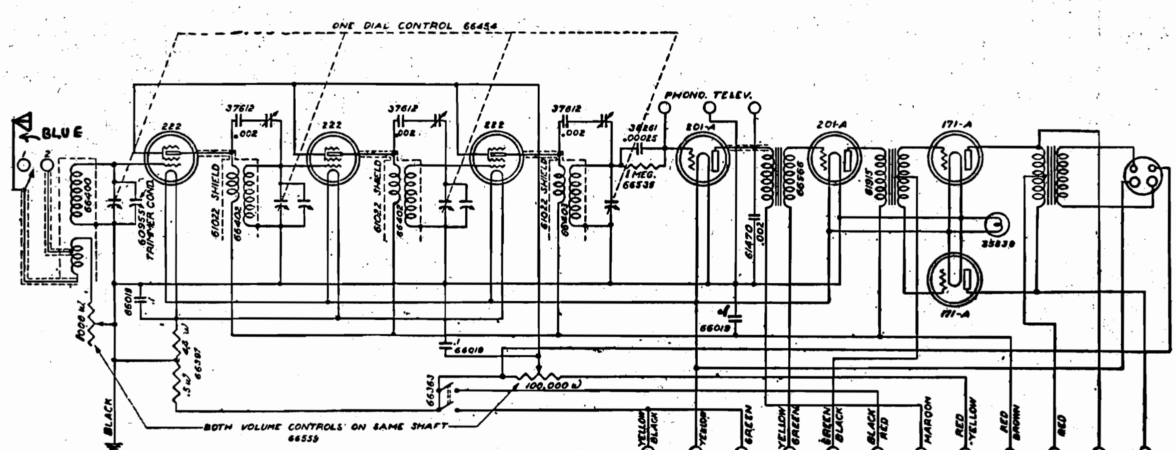
Model 806 Series A



Model 806 Series B



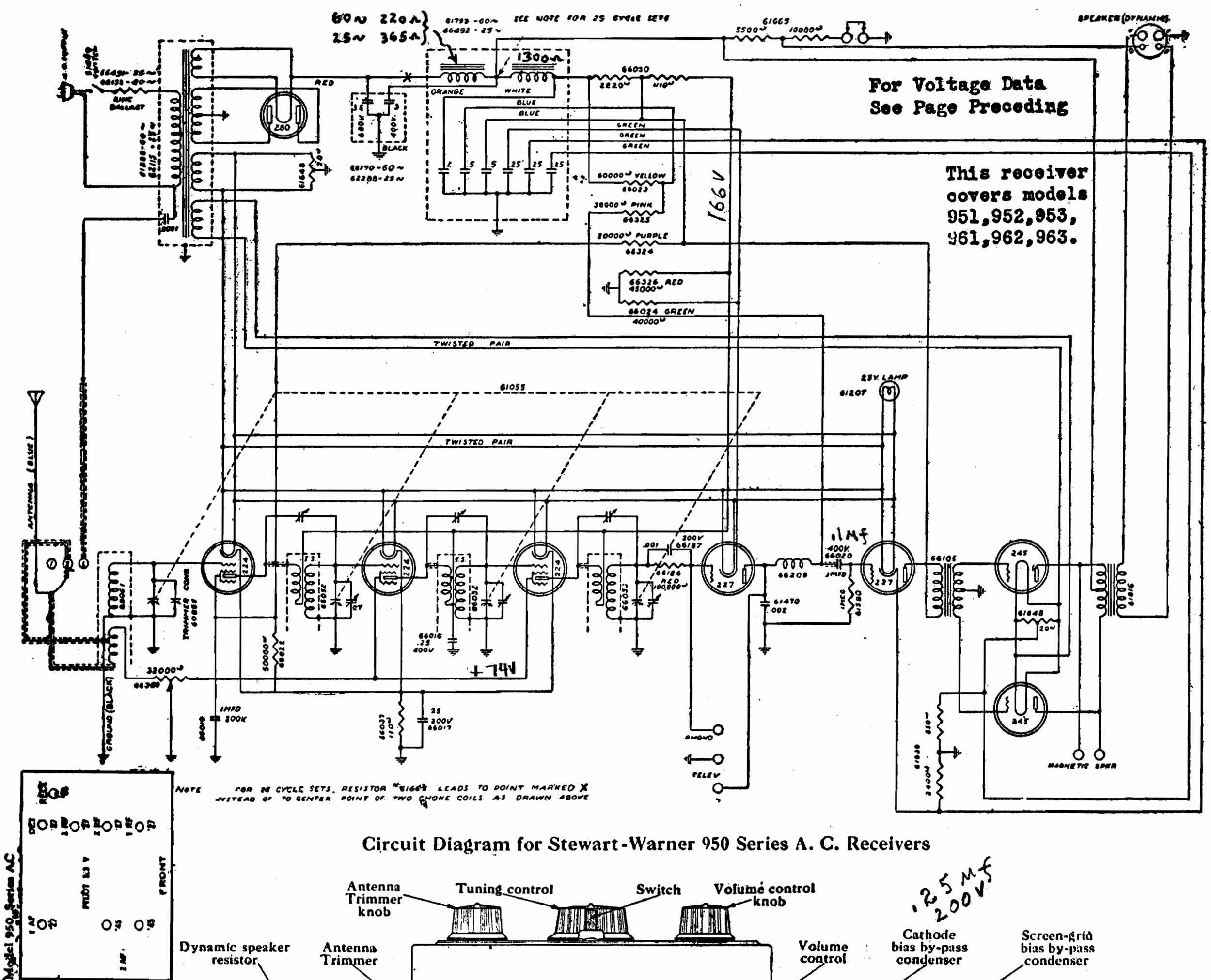
Model 950 Series—Battery



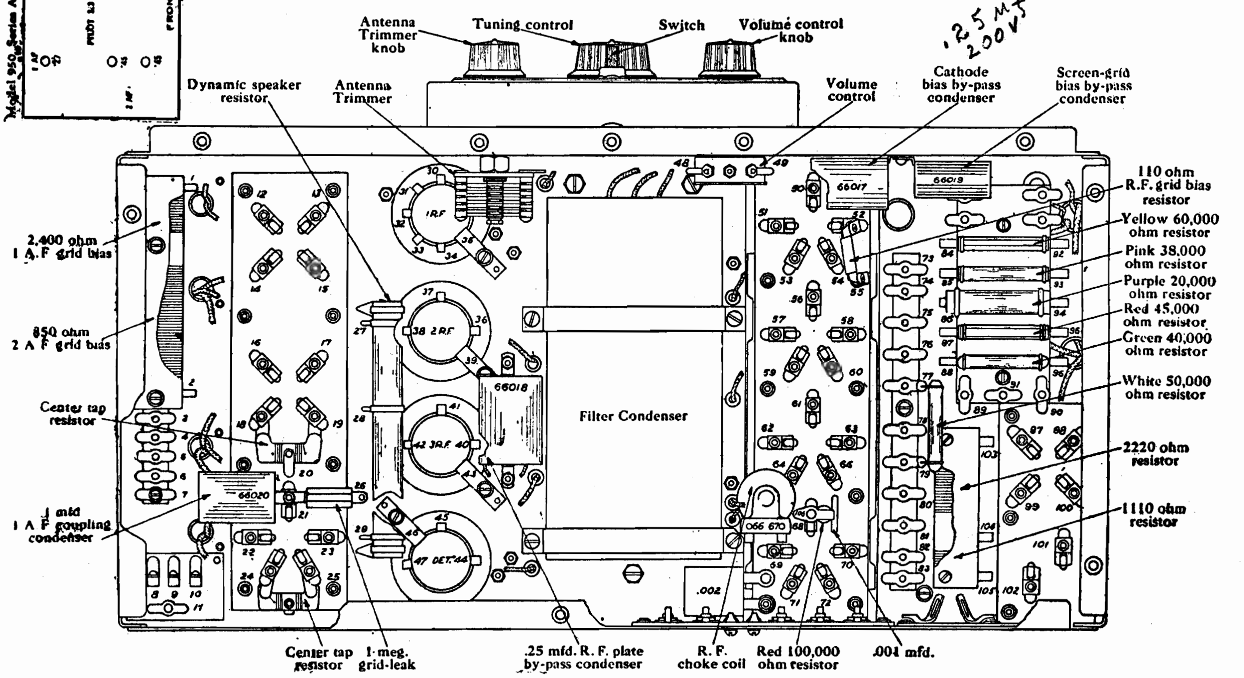
Model 950 Series Battery

MODEL 950 Series (AC)
Schematic, Chassis

STEWART - WARNER CORP.



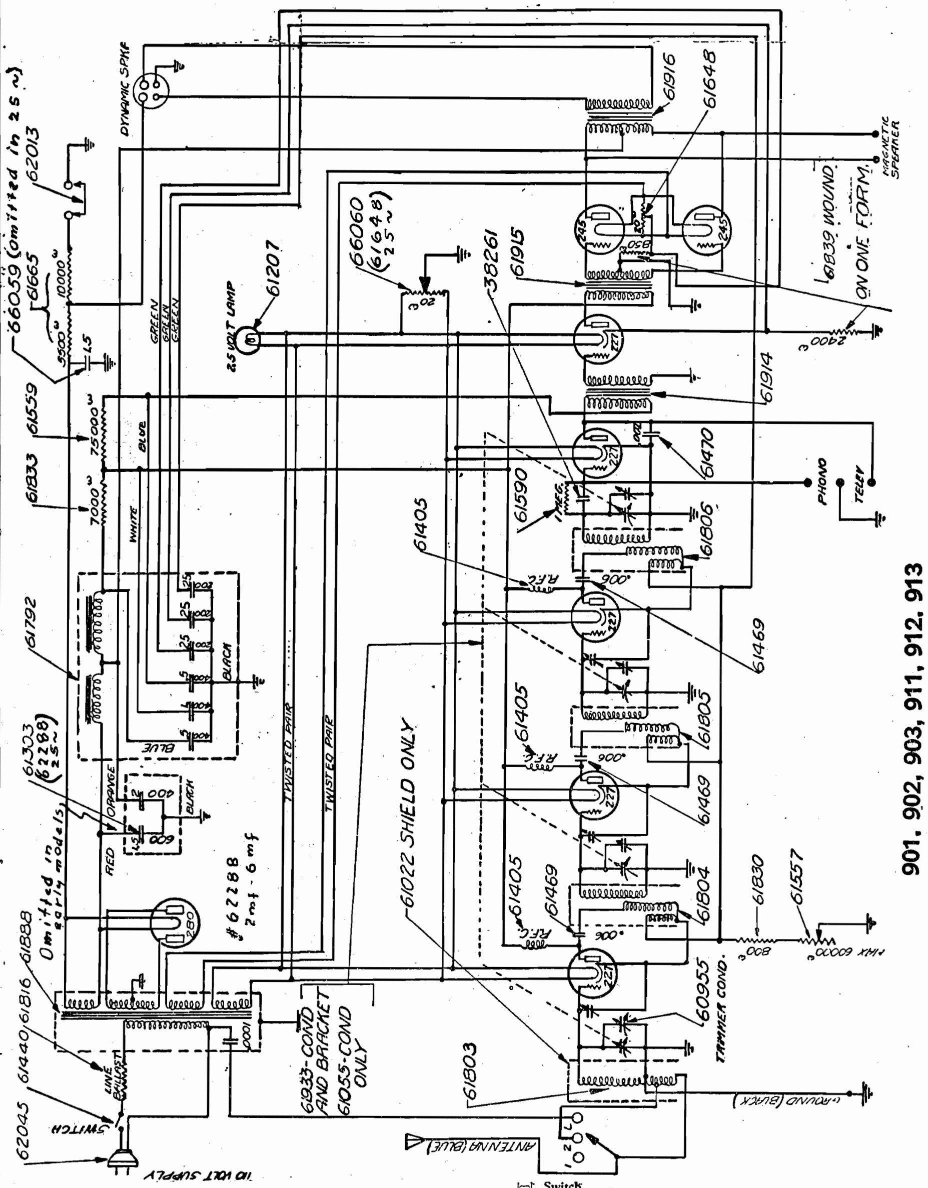
Circuit Diagram for Stewart-Warner 950 Series A. C. Receivers



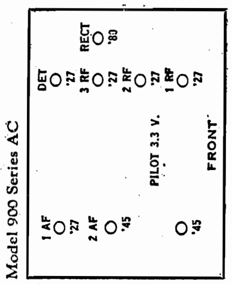
Bottom View of Set

MODEL 901, 902, 903
911, 912, 913
Schematic, Chassis

STEWART - WARNER CORP.

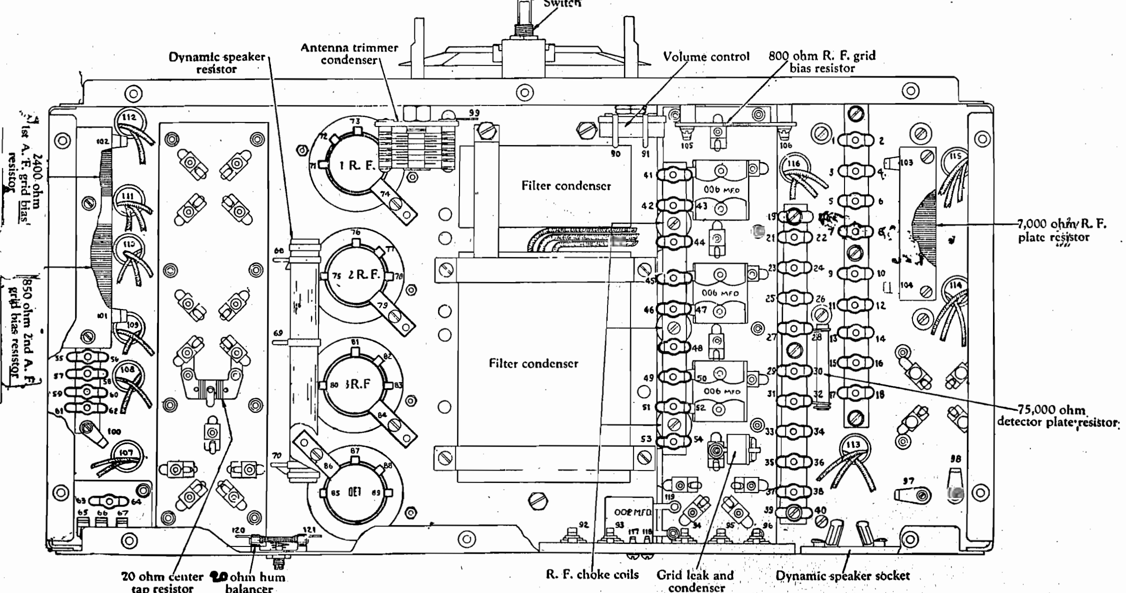


901, 902, 903, 911, 912, 913



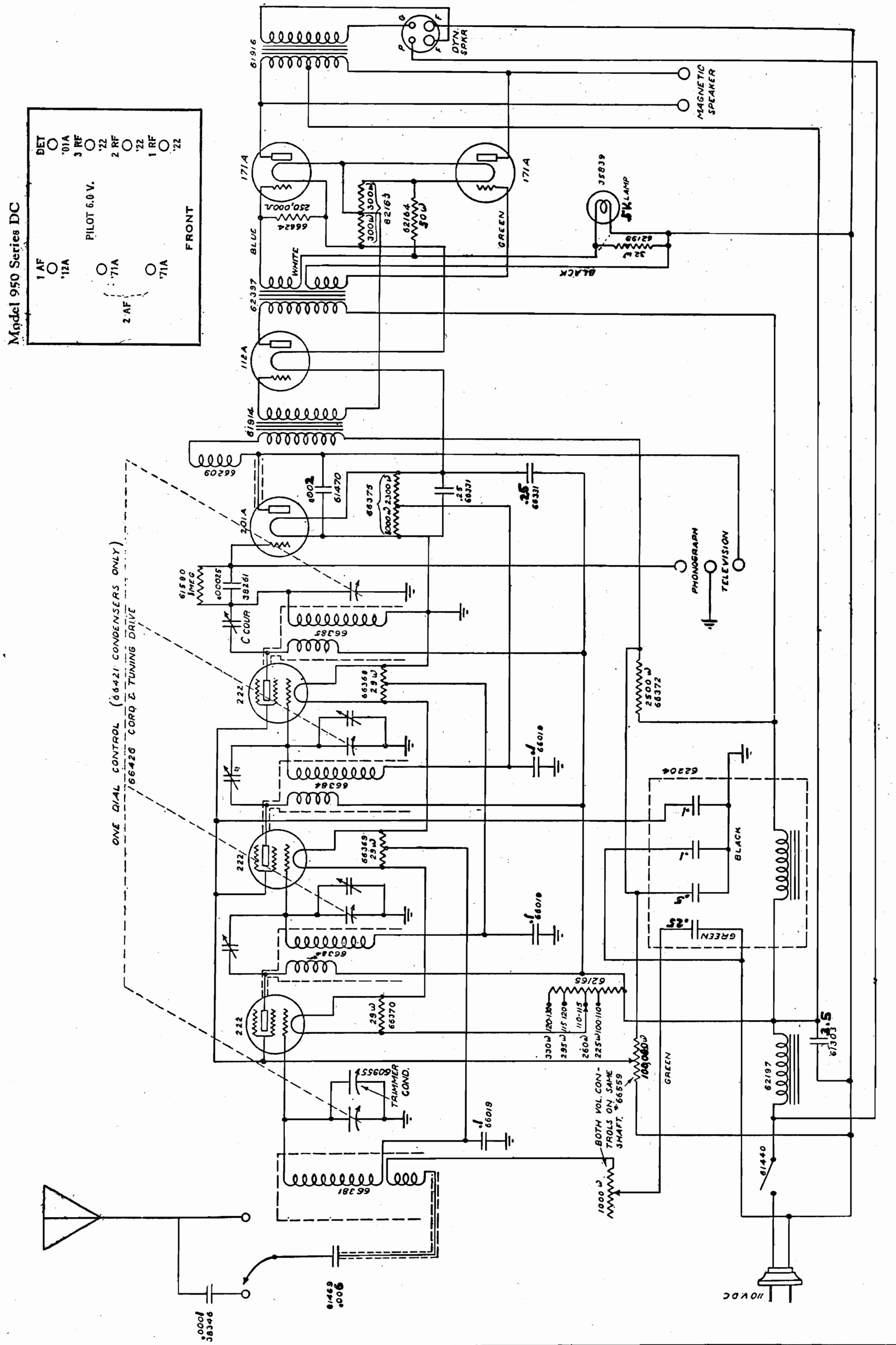
STEWART-WARNER—Series 900 A.C.
Line Voltage 115—Volume Control Position Max

Tube No in Order (1)	Type of Tube (2)	Position of Tube 1st RF Det Etc (3)	Tube Out: A Volts (4)	Tube Out: B Volts (5)	Readings Plug in Socket of Set, Tube in Tester: A Volts (6)	B Volts (7)	C Volts (Control Grid) (8)	Cathode-Heater Volts (9)	Normal Plate MA (10)	Plate MA Grid Test (11)	Plate Change MA (12)
1	227	1st RF			2.2	132	8.5	-	3.8	5.8	2
2	227	2nd RF			2.2	138	8.5	-	3.8	5.8	2
3	227	3rd RF			2.15	132	8.5	-	3.8	5.8	2
4	227	Det.			2.10	32	0	-	2.8	2.8	-
5	227	1st AF			2.2	132	7.5	-	5.4	6.5	11
6	245	2nd AF			2.25	226	47.5	-	26	30	4
7	245	2nd AF			2.25	226	47.5	-	26	30	4
8	280	Rect.			4.7	-	-	-	90	-	-



MODEL 950 Series DC

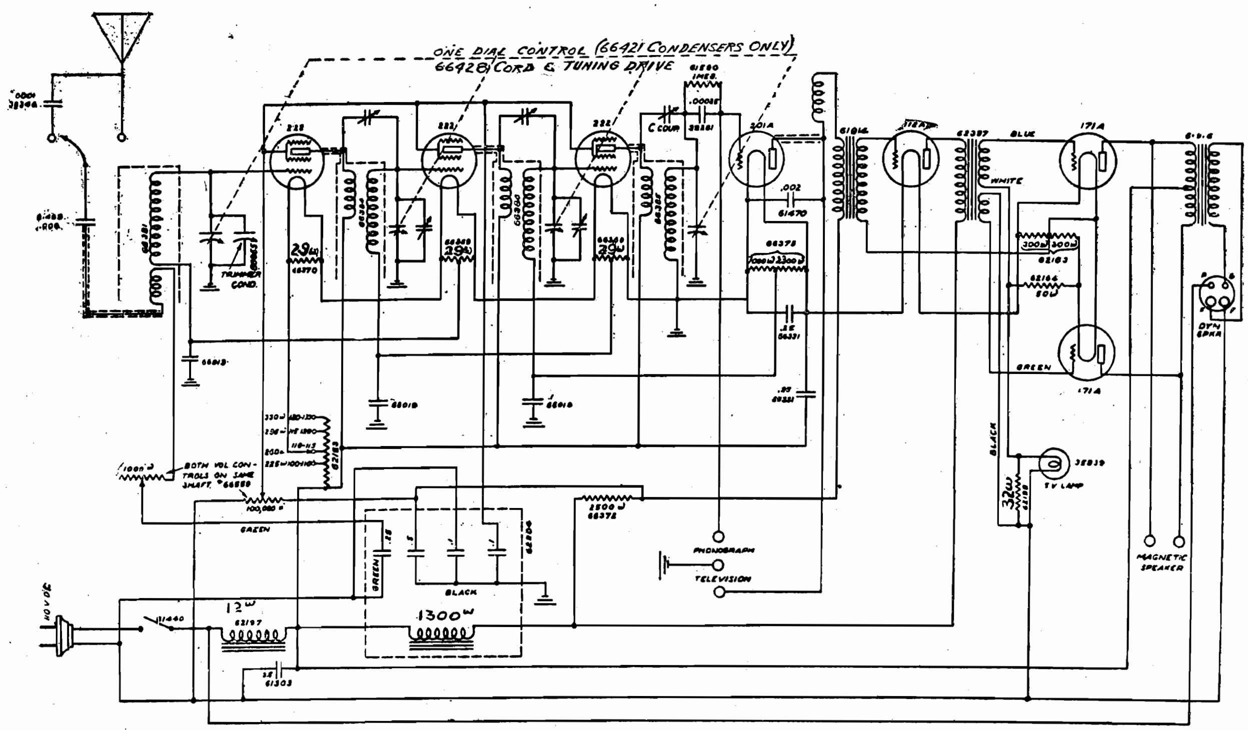
STEWART-WARNER CORP.



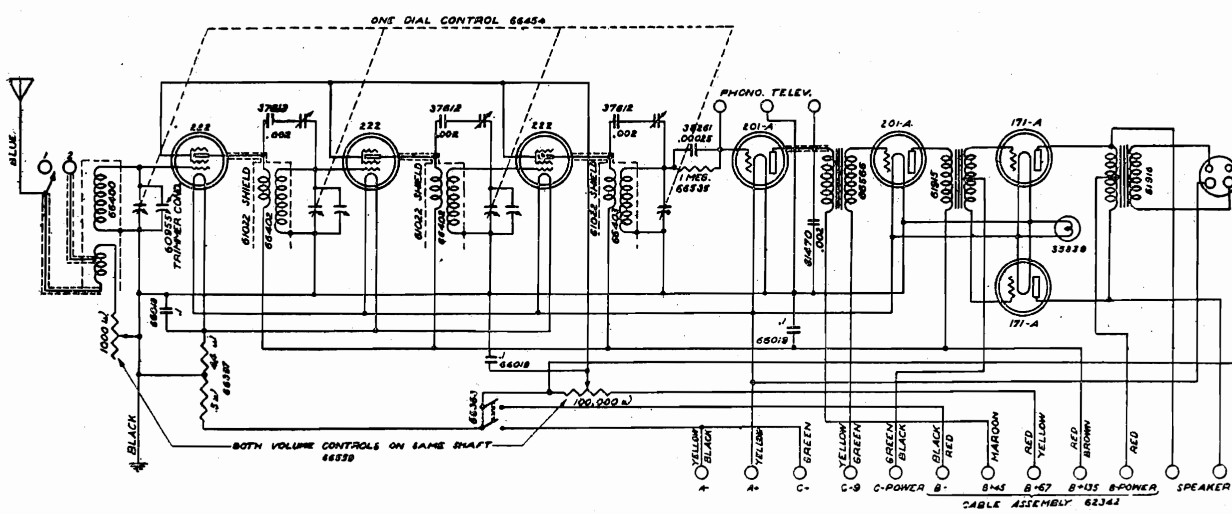
Circuit Diagram of Stewart-Warner 950 Series D. C. Receiver

STEWART-WARNER CORP.

MODEL 971, 972, 973 DC
MODEL 980 Battery



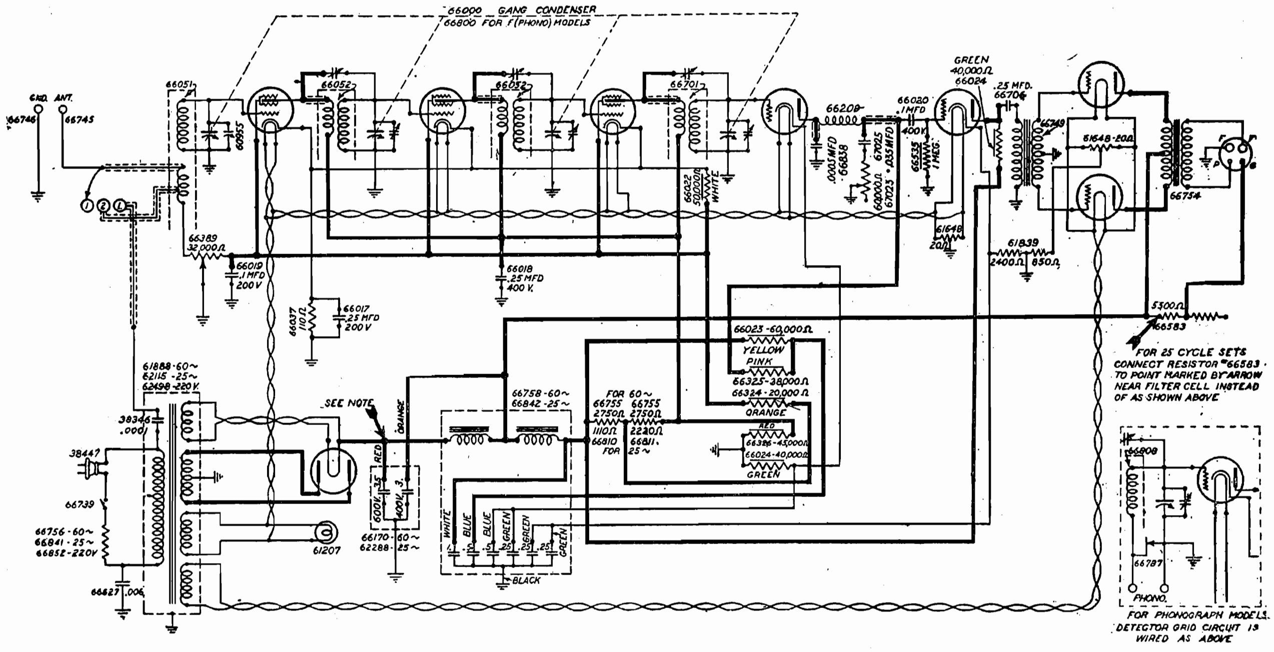
CIRCUIT DIAGRAM FOR STEWART WARNER SERIES 970 D.C. RADIO RECEIVERS



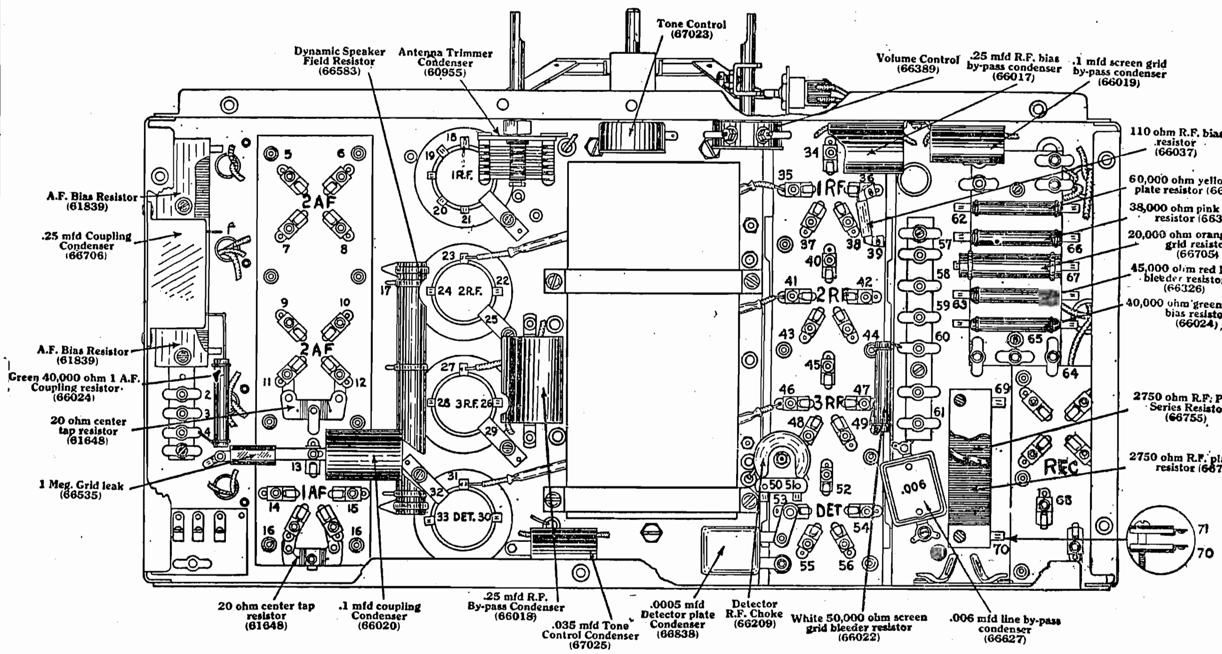
CIRCUIT DIAGRAM FOR STEWART WARNER 980 SERIES BATTERY RECEIVERS

MODEL R-100-A,B,E (AC)
MODEL R-100 Series
Schematic,Chassis

STEWART-WARNER CORP.



Stewart-Warner Model R-100-A, B, and E, Alternating Current Sets



BOTTOM VIEW OF R-100 SERIES A. C. RADIO RECEIVERS

Tube	Position	Fil.	Plate	Grid	Screen	Plate Crnt.	
224	1st RF	2.18	135	2.2	87	5.4	
224	2nd RF	2.2	137	2.2	86	4.	
224	3rd RF	2.22	135	2.2	86.5	4.9	
227	Det	2.2	165	15.5	-	.5	
227	1st AF	2.18	120	.6	-	3.6	
245	Output	2.3	245	48.	-	27.	Line voltage 115
280	Rect	5.0	Plate current is 50 mils per anode				V.C. Full

MODEL R-100-A
Continuity Tests

STEWART - WARNER CORP

RECEIVER CONTINUITY TESTS

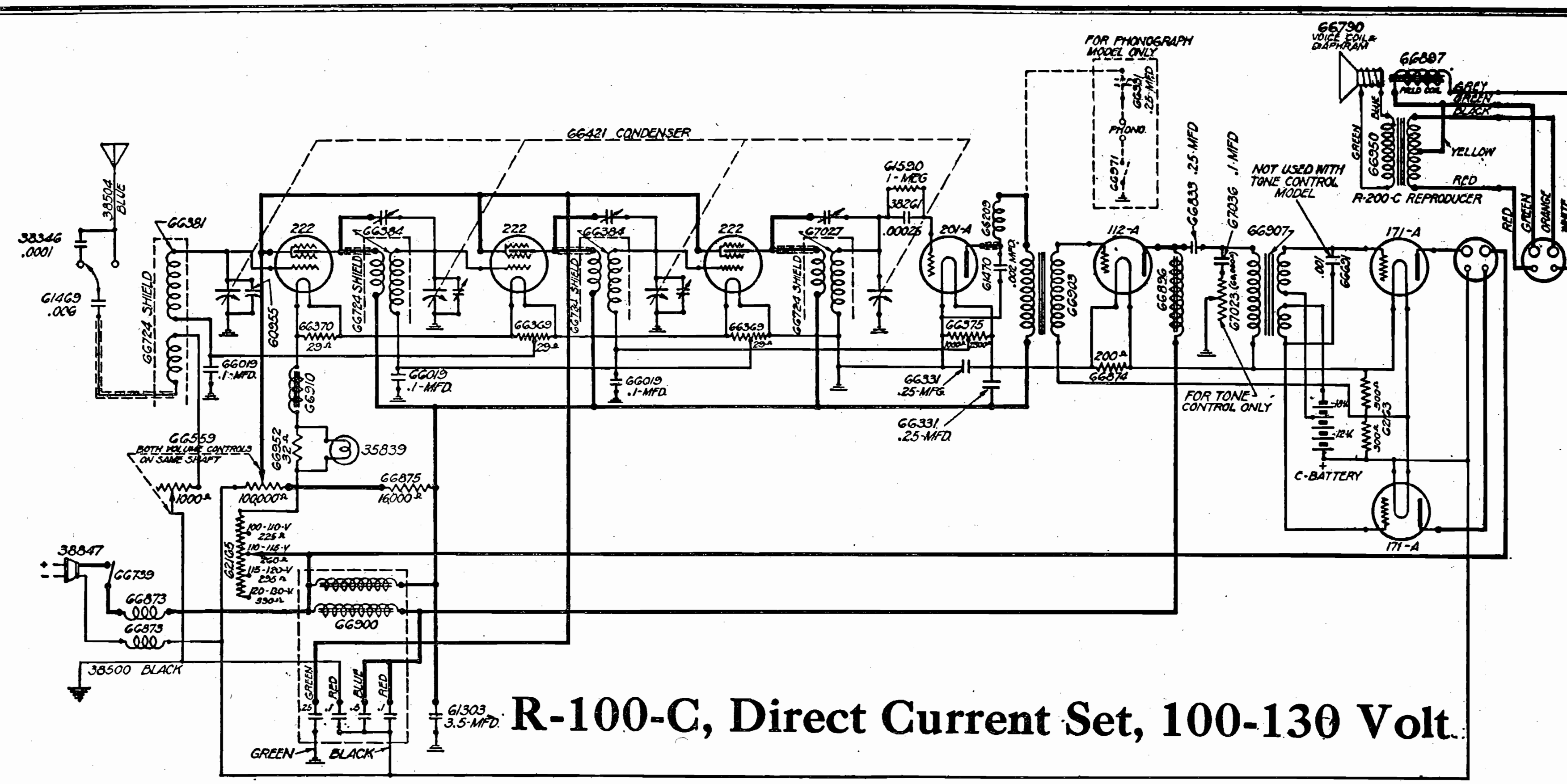
USE HIGH RESISTANCE VOLTMETER. TUBES AND SPEAKER MUST BE IN PLACE BUT SET DISCONNECTED AT SOCKET

CIRCUIT	TERMINALS	APPROX. NORMAL RESIST. READING	NO READING CAUSED BY	HIGH READING (LOW RESISTANCE) CAUSED BY
1 R.F. Plate	35 to 24	60 ohms*	Open 2 RF trans. primary	Shorted RF trans. primary
	35 to 63	17500 ohms*	Open red resistor	Grounded RF transformer primar Broken down or grounded red resistor
	35 to 70	5000 ohms*	Open plate resistor	Shorted "66755 series plate resistor
	35 to 57	6500 ohms	Open filter chokes	Shorted or grounded filter choke
1 R.F. Screen Grid	34 to 47	14000 ohms*	Open white resistor	Shorted or broken down white resistor
	Note: Above test must be made with volume control full on. Volume control is tested at this point by turning it back slowly while watching reading. Voltmeter should go to full reading slowly as control is rotated.			
	34 to 67	14000 ohms*	Open orange resistor	Shorted or defective orange resistor
1 R.F. Control Grid	Grid Wire to Ground	4 ohms	Open 1 RF transformer secondary	Shorted 1 R.F. transformer secondary
1 R.F. Cathode	30 to Grnd.	110 ohms	Open RF bias resistor	Short circuited RF bias resistor
2 R.F. Plate	41 to 28	60 ohms	Open primary 3d RF transformer	Short circuited RF trans. primary
2 R.F. Screen Grid	40 to 47	14000 ohms*	Open white resistor	Short circuited or broken down white resistor
2 R.F. Control Grid	Grid Wire to Ground	4 ohms	Open secondary 2 R.F. transformer	Shorted 2 R.F. transformer secondary
2 R.F. Cathode	42 to Grnd.	110 ohms	Open RF bias resistor	Shorted RF bias resistor
3 R.F. Plate	46 to 33	60 ohms	Open 4th RF trans. primary	Shorted RF transformer primary
3 R.F. Screen Grid	45 to 47	15000 ohms*	Open white resistor	Shorted or broken down white resistor
3 R.F. Control Grid	Grid Wire to Ground	4 ohms	Open 3d R.F. trans. secondary	Shorted 3d R.F. transformer secondary
3 R.F. Cathode	47 to Grnd.	110 ohms	Open RF bias resistor	Shorted RF bias resistor
Det. Plate	53 to 51	80 ohms	Open R.F. choke	Shorted RF trans. primary
	53 to 66	35000 ohms*	Open pink resistor	Shorted or defective pink resist.
	53 to 62	100000 ohms*	Open yellow resistor	Shorted or def. yellow resist.
	53 to 57	100000 ohms	Open filter choke	Shorted or def. yellow or pink resistors
Det. Grid	52 to Grnd.	4 ohms	Open 4th RF trans. secondary	Shorted 4th RF transformer secondary
Det. Cathode	54 to Grnd.	40000 ohms*	Open green resistor	Shorted or def. green resist.
1 A.F. Plate	14 to 4	40000 ohms	Open green plate resist.	Shorted or defective green plate resistor
	1 to Grnd.	1500 ohms	Open primary input trans.	Shorted input trans. primary
1 A.F. Grid	13 to Grnd.	Barely perceptible reading	Open grid leak	Shorted grid leak
1 A.F. Cathode	15 to Grnd.	2400 ohms	Open bias resistor	Shorted bias resistor
2 A.F. Plate	9 to 17 5 to 17	300 ohms) 300 ohms)	Open output transformer primary	Shorted output trans. primary
2 A.F. Grid	10 to Grnd. 6 to Grnd.	5000 ohms) 4500 ohms	Open input transformer secondary	Shorted input trans. secondary

*The value obtained here is not the true resistance because of parallel resistance networks in the set. To obtain true resistance values, one side of the resistor must be unsoldered and then checked when out of the circuit.

MODEL R-100-C (DC)
Schematic, Voltage

STEWART-WARNER CORP.



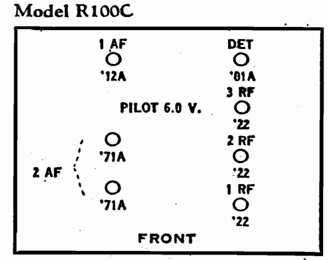
R-100-C, Direct Current Set, 100-130 Volt

VOLTAGE READINGS

LINE VOLTAGE 112

Tube Position	Filament	Screen Grid	Plate	Control Grid
1 R.F.	3	44	68	− 1.5
2 R.F.	3	47	71	− 1.5
3 R.F.	3	51	74	− 1.5
Det.	4.25		69	+ 4.2 ★
1 A.F.	4.25		92	− 3.7
2 A.F.	4.8		97	−14.8
2 A.F.	4.8		102	−15.2

Model R100C



All screen grid, control grid, and plate voltages are taken with respect to the NEGATIVE filament terminal of the tube.

★This reading must be taken from negative filament to grid side of tuning coil because of the grid leak in this circuit.

STEWART-WARNER CORP.

VARIABLE RESISTORS: VOLUME CONTROLS AND RHEOSTATS

Model	Use in Set	Part No.	Resistance	Description
300 315 305 320 310 325	Filament Rheostat	18056	4.5 ohms	Wire-wound rheostat.
	Volume Control	18057	200 ohms	Wire-wound potentiometer.
330 335 340	Filament Rheostat	31923	10 ohms	Wire-wound rheostat
	Volume Control	18057	200 ohms	Wire-wound potentiometer.
345 355 350 360	Filament Rheostat	34762	3.2 ohms	Wire-wound rheostat
	Volume Control	34763	100,000 ohms	Combination wire-wound and carbon strip variable resistor.
385	Filament Rheostat	18056	4.5 ohms	Wire-wound rheostat.
390	Volume Control	18056	4.5 ohms	Wire-wound rheostat.
520 525	Volume Control and Filament Switch	37040	175,000 ohms	Combination wire-wound and carbon strip variable resisto combined with filament switch.
530 535	Volume Control	37892	5,000 ohms	Combination wire-wound and carbon strip variable resistor.
705	Detector Rheostat	37271	20 ohms	Wire-wound rheostat.
710	Vol. Control & Switch	35947	175,000 ohms	Combination variable resistor and filament switch.
715 720	Volume Control	37995	5,000 ohms	Combination wire-wound and carbon strip variable resistor.
750 801 811	Volume Control	39256	10,000 ohms	Metal enclosed carbon strip variable resistor.
806	Volume Control	39725	175,000 ohms	Combination wire-wound and carbon strip variable resistor.
900 Series AC	Volume Control	61557	60,000 ohms	Metal enclosed carbon strip variable resistor.
930-1-2-3	Volume Control	62088	15,000 ohms	Metal enclosed carbon strip variable resistor.
950 Series AC	Volume Control	66389	32,000 ohms	Metal enclosed carbon strip potentiometer.
970-1-2-3	Volume Control	66559	1,000 ohms and 100,000 ohms	Double unit metal enclosed carbon strip variable resistor.
980-1-2-3	Volume Control	66559	1,000 ohms and 100,000 ohms	Double unit metal enclosed carbon strip variable resistor.
R100 A, B & F	Volume Control	66389	32,000 ohms	Metal enclosed carbon strip potentiometer.
	Tone Control	67023	60,000 ohms	Metal enclosed carbon strip variable resistor.
R100C	Volume Control	66559	1,000 ohms and 100,000 ohms	Double unit metal enclosed variable resistor.

VOLTAGE REGULATORS*

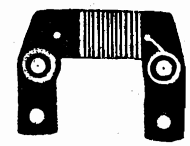
Model	Part No.	Description
900-1-2-3	61816 66547	Brown. Machine Screw mounting. Brown. Two threaded contact pins for mounting.
910-1-2-3	66412	Brown. Plug in type.
940-1-2-3	62151	Brown. Plug in type.
950-1-2-3	62152	Brown. Plug in type.
960-1-2-3	66491	Brown. Plug in type.
990-1-2-3	66514	Brown. Plug in type.
R-100-A	66756	Gold. Plug in type.
R-100-B	66841	Gold. Plug in type.
R-100-E	66852	Gold. Plug in type.

* Note — No resistance values are given since the resistance of all voltage regulators varies widely with temperature and current flowing through the wire.

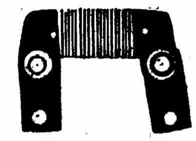
WIRE-WOUND RESISTORS

SHOWN APPROXIMATELY HALF SIZE

38918
1000 ohms. Grid resistor. Used in 800 Series receivers.

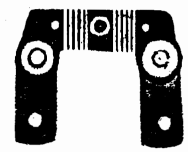


66370
29 ohms. 1 R. F. filament shunt. Used in 950 and R-100 Series D. C.

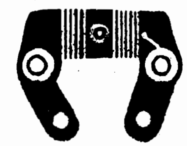


66637
110 ohms. R. F. bias. Used in 960 and R-100 Series A. C.

37621
20 ohms. Center tap resistor. Used in 500, 700, and 800 Series A. C. receivers.



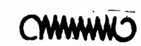
66369
29 ohms. 2 R. F. filament shunt. Used in 950 and R-100 Series D. C.



61648
20 ohms. Center tap resistor. Used in 900, 960, and R-100 Series A. C.

37553
1.65 ohms. A. F. filament resistor. Used in 700 Series battery receivers.

35679
3.0 ohms. R. F. filament resistor. Used in 700 Series battery receivers.



39023
.58 ohms. Filament resistor. Used in Model 806 only.

66297
10,000 ohms. 1 A. F. grid bias. Used in Model 811 only.

38879
4000 ohms. 1 A. F. grid bias. Used in Models 801 and 750.

39956
1000 ohms. 2 A. F. grid bias. Used in 800 A. C. Series B.

38409
20 ohms. Center tap resistor. Used in Model 750 and 800 Series A. C. receivers.

38882
2100 ohms. 2 A. F. grid bias in Model 811 and 800 Series A. Used also as R. F. grid bias in 800 A. C.

39586
1425 ohms. 2 A. F. grid bias. Used in Model 750 only.
39588
1700 ohms. R. F. grid bias. Used in Model 750 only.

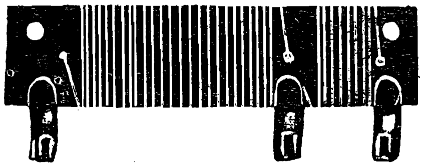
62199
32 ohms. Pilot light shunt. (2 A. F. grid bias.) Used in 950 D. C.

Resistor Data
Part 2

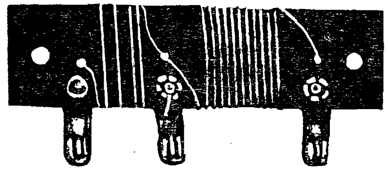
STEWART - WARNER CORP.

WIRE-WOUND RESISTORS

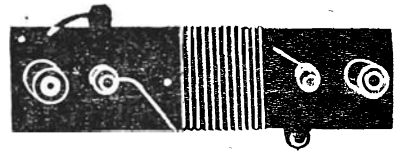
SHOWN APPROXIMATELY HALF SIZE



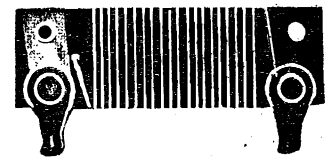
66030
2220 ohms and 1110 ohms. B supply resistor. Used in 900 and 950 Series A. C. receivers.



66397
4.4 ohms and .5 ohms. Filament resistor. Used in 950 Series battery receivers.

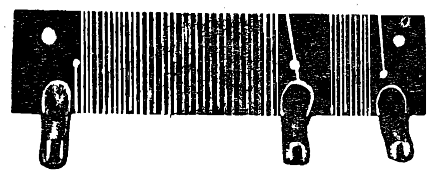


37559
58 ohms. Filament resistor. Used in 500 Series battery receivers.

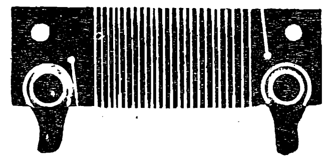


37727
5100 ohms. 1 A. F. grid bias. Used in 500 and 700 Series A. C. receivers.

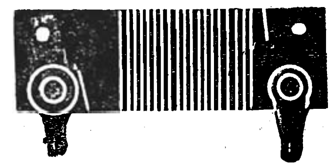
61833
7000 ohms. Series plate resistor Used in 900 Series A. C.



66375
2300 ohms and 1000 ohms. Detector filament shunt resistor. Used in 950 Series D. C. and R100C receivers.

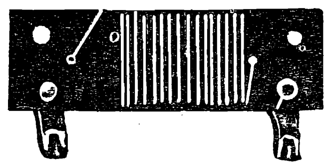


35733
1000 ohms. Grid resistor. Used in 1st R. F. of 500 Series A. C. and all R. F. of 500 Series battery.

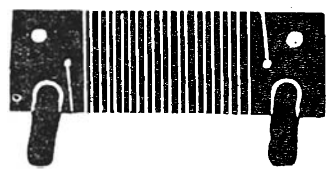


37726
1700 ohms. R. F. grid bias. Used in 500 and 700 Series A. C. receivers.

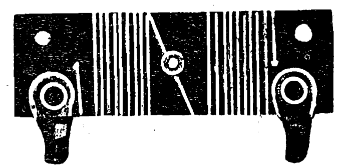
61839
850 ohms and 2400 ohms. A. F. grid bias. Used in 900, 950 and R-100 Series A. C.



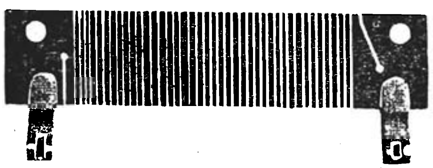
66372
2500 ohms. Detector plate resistor. Used in 950 Series D. C. receiver.



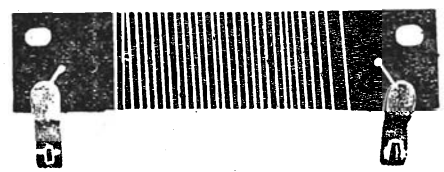
37763
1000 ohms. 2nd and 3rd R. F. grid resistor. Used in 500 Series A. C.



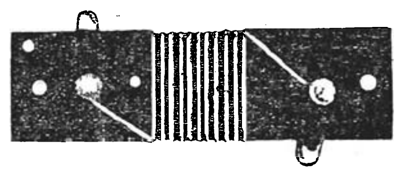
37629
20 ohms. Center tap. Used in 700 Series A. C. receivers.



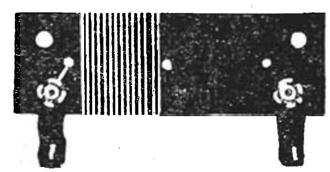
66755
2750 ohms. B supply resistor. Used in R-100-A and E.
66810
1110 ohms. Screen Grid supply resistor. Used in R-100-B
66811
2220 ohms. B supply resistor. Used in R-100-B.



66952
32 ohms. Pilot light shunt resistor. Used in R-100-C.



37558
58 ohms. Filament resistor. Used in 900 Series battery receivers.



61830
800 ohms R. F. grid bias. Used in 900 Series A. C.

A-F. Transformer Data

STEWART-WARNER CORP.

STEWART-WARNER AUDIO-TRANSFORMER DATA

Model of Receiver	Circuit in Which Used	Trans-former Finish	Approxi-mate Turns Ratio	*Approximate Resistance Primary	*Approximate Resistance Secon-dary	**Color Code of Wires Primary	**Color Code of Wires Secondary	Part Num-ber	Price	Substitute Trans-formers
300 310 325 330 335 340 345 350 355 360	Both Audio Stages	Brown	3 to 1	800 ohms	3900 ohms	Soldering Lugs Used		30657	$3.50	38967 38977 61914 66566 66903
520 525	Both Audio Stages	Black	3 to 1	2100 ohms	8000 ohms	Plate—White B+ —Red	Grid—Green C— Blue	35134	5.00	61914 66566 38977 38967 66903
705 710	First Audio	Black	2 to 1	2800 ohms	7500 ohms	Plate—White B+ —Red	Grid—Green C— Black	36944	5.00	38967 38977 61914 66566 66903
	Second Audio	Black	3 to 1	210C ohms	8000 ohms	Plate—White B+ —Red	Grid—Green C— Blue	35134	5.00	38967 38977 61914 66903 66566
530 535	Both Audio Stages	Black	3 to 1	2100 ohms	8000 ohms	Plate—White B+ —Red	Grid —Green Ground—Blue	35134	5.00	38967 66903 38977 66566 61914
	Output	Black	1 to 1	400 ohms	600 ohms	Plate—Slate or Orange B+ —Black	Output{Green Black	37598	5 00	38976
715 720	First Audio	Black	2 to 1	2800 ohms	7500 ohms	Plate—White B+ —Red	Grid —Green Ground—Black	36944	5.00	38967 66903 38977 66566 61914
	Second Audio	Black	3 to 1	2100 ohms	8000 ohms	Plate—White B+ —Red	Grid —Green Ground—Blue	35134	5 00	38967 66903 38977 66566 61914
	Output	Black	1 to 1	400 ohms	600 ohms	Plate—Slate or Orange B+ —Black	Output{Green Black	37598	5 00	38976
750	First Audio	Black	3 to 1	2100 ohms	8000 ohms	Plate—White B+ —Red	Grid —Green Ground—Blue	35134	5.00	38967 66903 38977 66566 61914
	Input Push-Pull	Black	1.5 to 1	2800 ohms	3200 and 3400 ohms	Plate—Orange B+ —Red	Grid #1—Blue Grid #2—Green Ground—White	60085	6.00	39978
	Output Push-Pull	Black	1 to 1.2	600 and 600 ohms	350 ohms	Plate #1—White with Black Tracer Plate #2—Red with Black Tracer B+—White with Red Tracer	Out-put {1. White with Brown Tracer 2. White with Green Tracer	60086	6.00	39977
801 811 Series A	First Audio	Silver	3 to 1	2100 ohms	8000 ohms	Plate—White B+ —Red	Grid —Green Ground—Blue	38967	5.00	38977 61914 66903 66566
	Second Audio	Silver	3 to 1	2100 ohms	8000 ohms	Plate—White B+ —Red	Grid —Green Ground—Blue	38977	5.00	38967 61914 66903 66566
	Output	Silver	1 to 1	400 ohms	600 ohms	Plate—Slate or Orange B+ —Black	Output{Green Black	38976	5.00	37598

*Resistance values given here are only approximate. They will vary widely with date of manufacture and material used. Where two resistance values are given they apply to both halves of a winding. The outer winding always has the higher resistance.
**The color code given applies only to the cotton insulation of the terminal wire and not to the color of the spaghetti or cambric tubing around the wire.

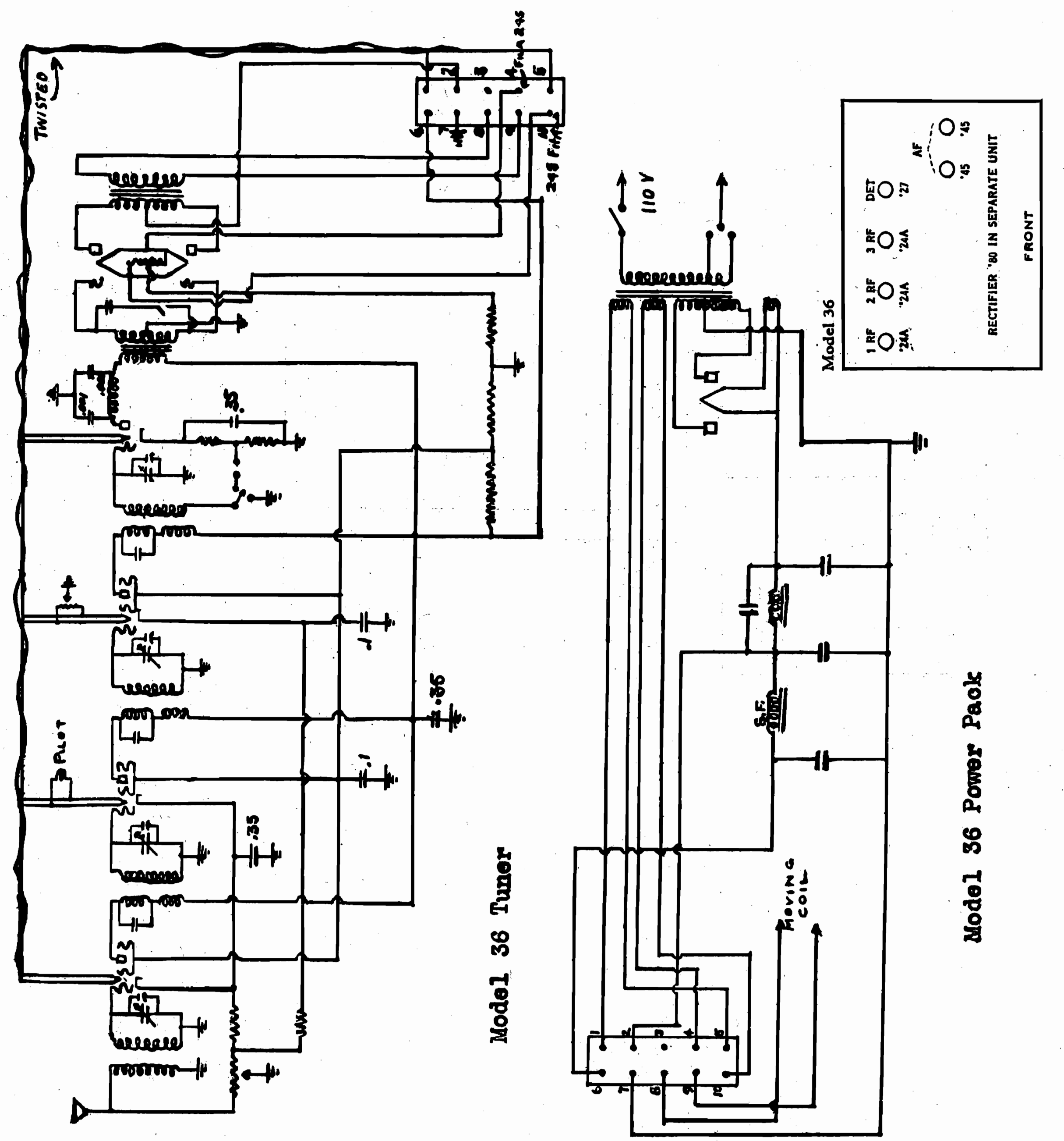
STEWART-WARNER AUDIO-TRANSFORMER DATA

Model of Receiver	Circuit in Which Used	Trans-former Finish	Approxi-mate Turns Ratio	*Approximate Resistance Primary	*Approximate Resistance Secon-dary	**Color Code of Wires Primary	**Color Code of Wires Secondary	Part Num-ber	Price	Substitute Trans-formers
801 806 811 Series B.	First Audio	Silver	3 to 1	2100 ohms	8000 ohms	Plate—White B+ —Red	Grid —Green Ground}—Blue Or C—	38977	$5 00	38967 61914 66903 66566
	Input Push-Pull	Silver	1.5 to 1	2800 ohms	3200 and 3400 ohms	Plate—Orange B+ —Red	Grid #1 —Blue Grid #2 —Green Ground}—White Or C—	39978	6 00	
	Output Push-Pull	Silver	1 to 1.2	600 and 600 ohms	350 ohms	Plate #1—White with Black Tracer Plate #2—Red with Black Tracer B+ —White with Red Tracer	Out-put {1. White with Brown Tracer 2. White with Green Tracer	39977	6 00	
900 910 930	First Audio	Brown	3.5 to 1	2200 ohms	9000 ohms	Plate—White B+ —Red	Grid —Green Ground—Blue	61914	5.00	66566 66903
	Input Push-Pull	Brown	2.25 to 1	1500 ohms	4000 and 5000 ohms	Plate—White B+ —Red	Grid #1—Blue Grid #2—Green Ground—Orange	61915	5.00	66105 66749
	Output Push-Pull	Brown	1 to 16	280 and 380 ohms	2.6 ohms	Plate #1—White Plate #2—Red B+ —Orange	Output{Blue Green	61916	5.00	66754
950 960 990	Input Push-Pull	Brown	2.25 to 1	1500 ohms	9000 ohms	Plate—White B+ —Red	Grid —Green Ground—Blue	66105	5 00	61915 66749
	Output Push-Pull	Brown	1 to 16	280 and 340 ohms	2.6 ohms	Plate #1—White Plate #2—Red B+ —Orange	Output{Blue Green	61916	5 00	66754
970	First Audio	Brown	3.5 to 1	2200 ohms	9000 ohms	Plate—White B+ —Red	Grid—Green Fil —Blue	61914	5 00	66566 66903
	Input Push-Pull	Brown	2.25 to 1	1600 ohms	4200 and 5000 ohms	Plate—White B+ —Red	Grid #1—Blue Fil #1—Orange Grid #2—Green Fil #2—Black	62397	5.00	66907
	Output Push-Pull	Brown	1 to 16	280 and 340 ohms	2.6 ohms	Plate #1—White Plate #2—Red B+ —Orange	Output{Blue Green	61916	5.00	66754
980	First Audio	Brown	3.5 to 1	2200 ohms	9000 ohms	Plate—White B+ —Red	Grid—Green C— —Blue	66566	5.00	61914 66903
	Input Push-Pull	Brown	2.25 to 1	1500 ohms	4000 and 5000 ohms	Plate—White B+ —Red	Grid #1—Blue Grid #2—Green C— —Orange	61915	5.00	66105 66749
	Output Push-Pull	Brown	1 to 16	280 and 340 ohms	2.6 ohms	Plate #1—White Plate #2—Red B+ —Orange	Output{Blue Green	61916	5.00	66754
R100A R100B R100E	Input Push-Pull	Gold	2.25 to 1	1500 ohms	4000 and 5000 ohms	Plate—White B+ —Red	Grid #1—Blue Grid #2—Green Ground—Orange	66749	3.75	61915 66105
	Output Push-Pull	Gold	1 to 16	280 and 340 ohms	2.6 ohms	Plate #1—White Plate #2—Red B+ —Orange	Output{Blue Green	66754	3.75	61916
R100C	1AF to 2AF Coupl'g Choke	Gold	....	1200 ohms		....	....	66896	3.00	
	First Audio	Gold	3.5 to 1	2200 ohms	9000 ohms	Plate—White B+ —Red	Grid —Green Ground—Blue	66903	3.50	61914 66566
	Input Push-Pull	Gold	2.25 to 1	1600 ohms	4200 and 5000 ohms	Plate—White B+ —Red	Grid #1—Blue Fil #1—Orange Grid #2—Green Fil #2—Black	66907	3.75	62397
	Output Push-Pull	Gold	1 to 12.5	200 and 260 ohms	2.3 ohms	Plate #1—Red Plate #2—White B+ —Orange	Output{Blue Green	66950	3.75	....

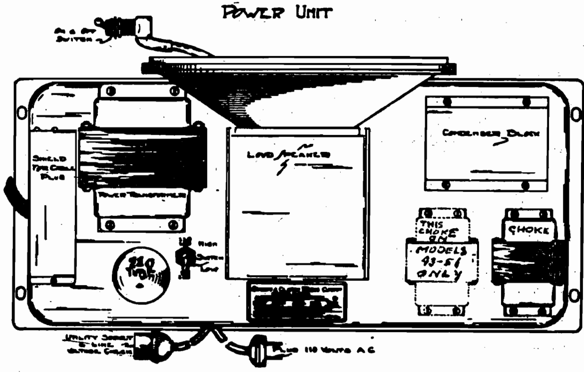
*Resistance values given here are only approximate. They will vary widely with date of manufacture and material used. Where two resistance values are given they apply to both halves of a winding. The outer winding always has the higher resistance.
**The color code given applies only to the cotton insulation of the terminal wire and not to the color of the spaghetti or cambric tubing around the wire.

STORY & CLARK RADIO CORP.

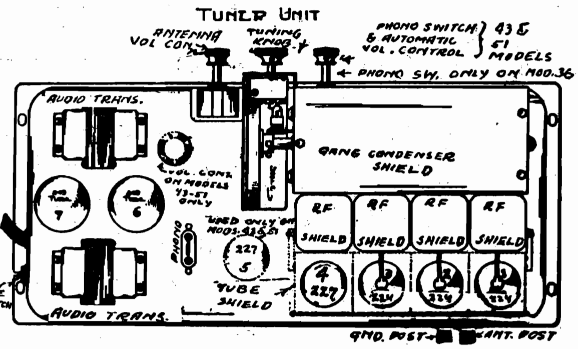
MODEL 36



POWER UNIT

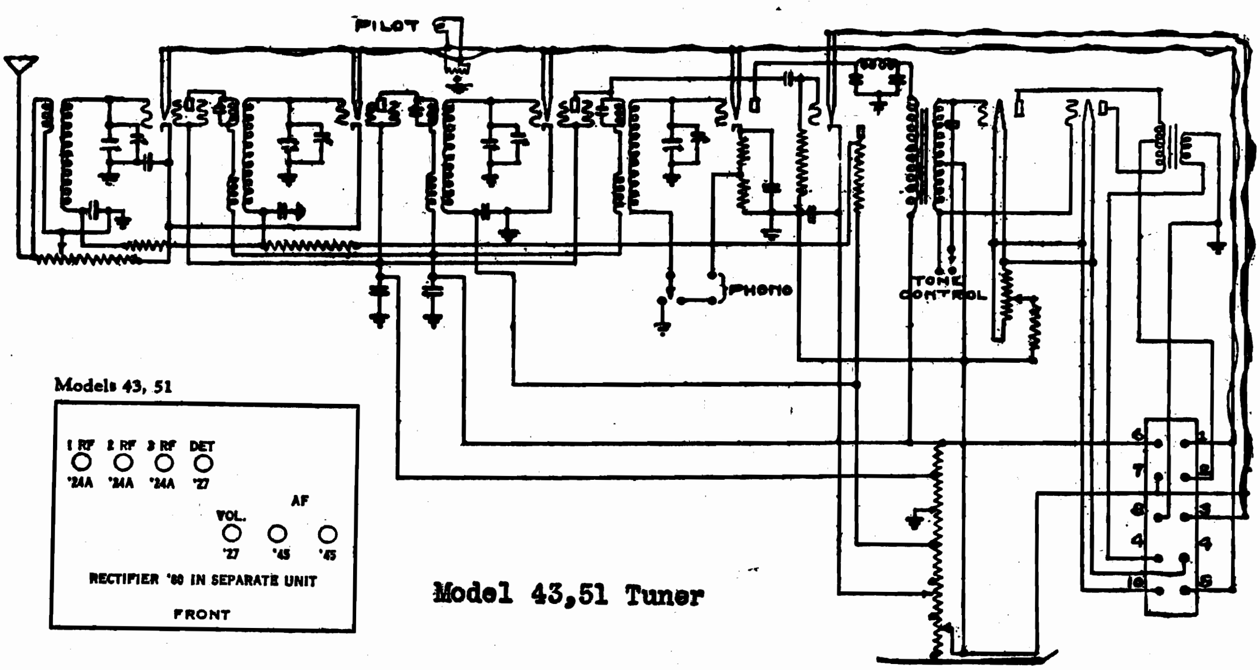


TUNER UNIT

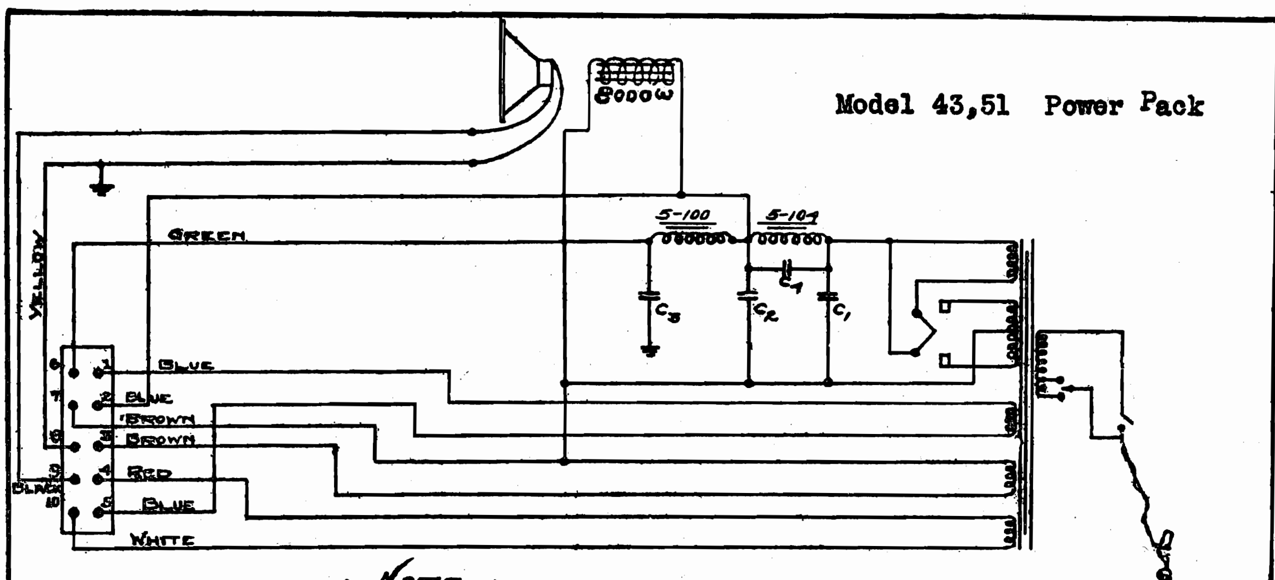


MODELS 43,51

STORY & CLARK RADIO CORP.



Model 43,51 Tuner



Model 43,51 Power Pack

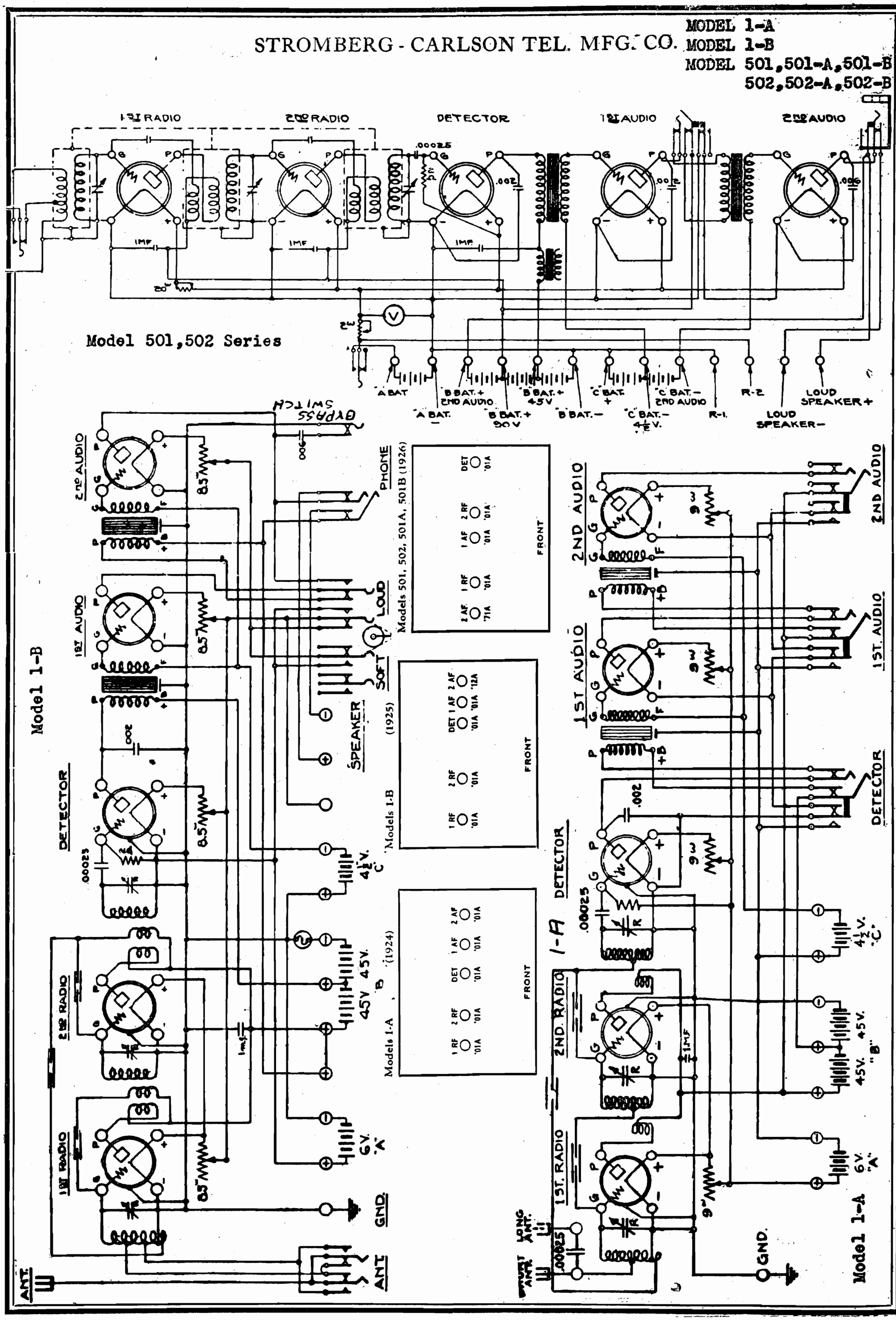
— NOTE —

COLORED LEADS ARE CABLE CONNECTIONS FROM POWER PACK TO R.F. UNIT.
C_1-2 MFD, C_2-2 MFD, C_3-3 MFD C_4-.16 MFD.

FOR 25 CYCLE SUPPLY, LOW POTENTIAL SIDE OF C_3 RETURNS TO -B, AS C_2 + C_1. ALSO CONDENSER C_4 HAS A TOTAL CAPACITY OF 3 MF

STORY & CLARK RADIO CORP.
173 N. MICHIGAN AVE
CHICAGO, USA

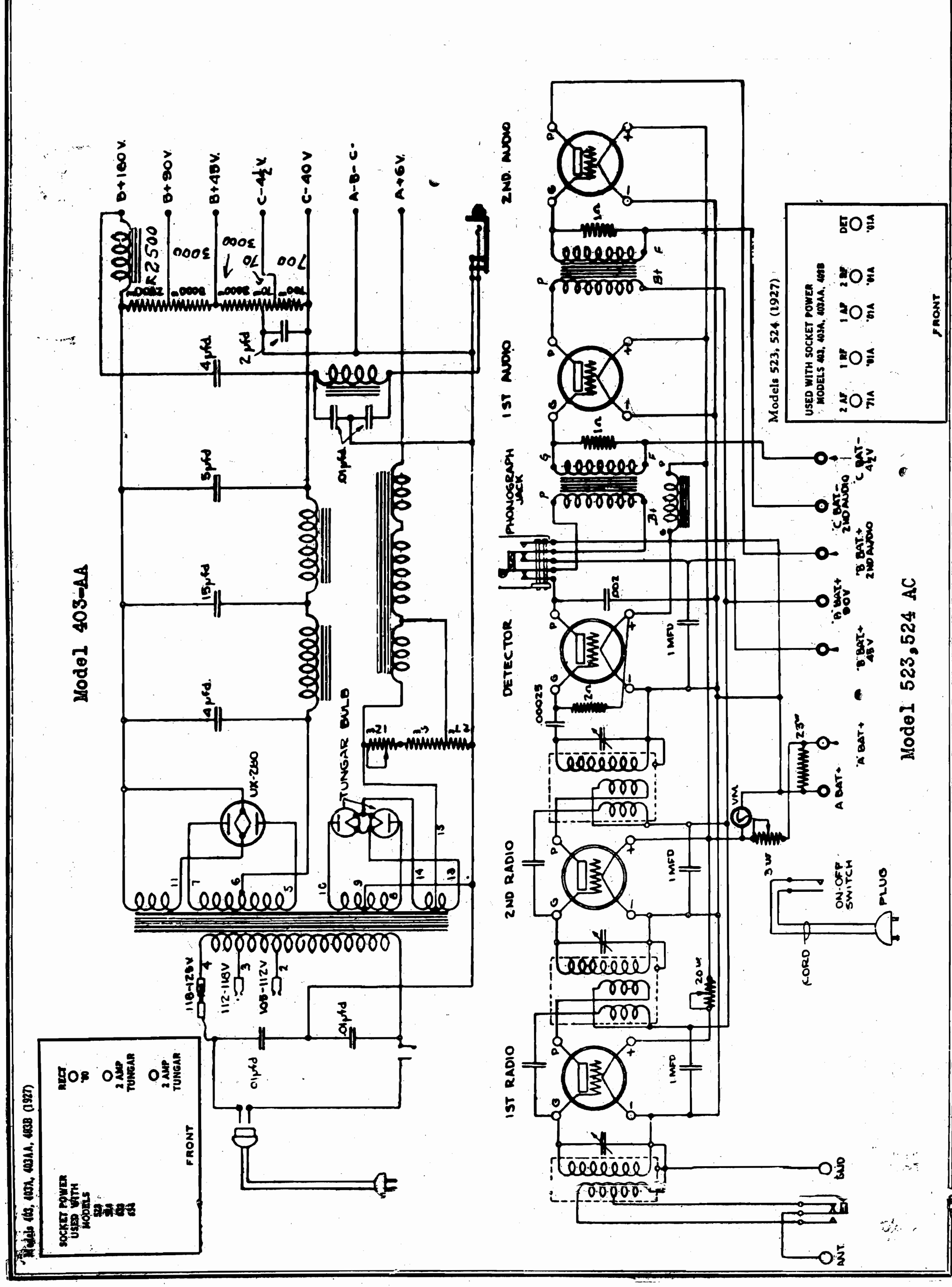
DATE	6-13-30
DRAWN	2988
CHECKED	
APPROVED	



STROMBERG - CARLSON TEL. MFG. CO.
MODEL 1-A
MODEL 1-B
MODEL 501,501-A,501-B
502,502-A,502-B
1ST RADIO
2ND RADIO
DETECTOR
1ST AUDIO
2ND AUDIO
Model 501,502 Series
A BAT
A BAT. −
B BAT. + 2ND AUDIO
B BAT. + 90 V
B BAT. + 45 V
B BAT. −
C BAT. +
C BAT. − 4½ V.
C BAT. − 2ND AUDIO
R-1
R-2
LOUD SPEAKER −
LOUD SPEAKER +
BYPASS SWITCH
PHONE
LOUD
SOFT
SPEAKER
Model 1-B
Models 501, 502, 501A, 501B (1926)
Models 1-B (1925)
Models 1-A (1924)
FRONT
GND.
ANT.
LONG ANT.
SHORT ANT.
Model 1-A

MODEL 403-AA
MODEL 523,524 AC

STROMBERG - CARLSON TEL. MFG. CO.



STROMBERG-CARLSON TEL. MFG. CO.

MODEL 403, 403-A
MODEL 403-B
MODEL 301-A

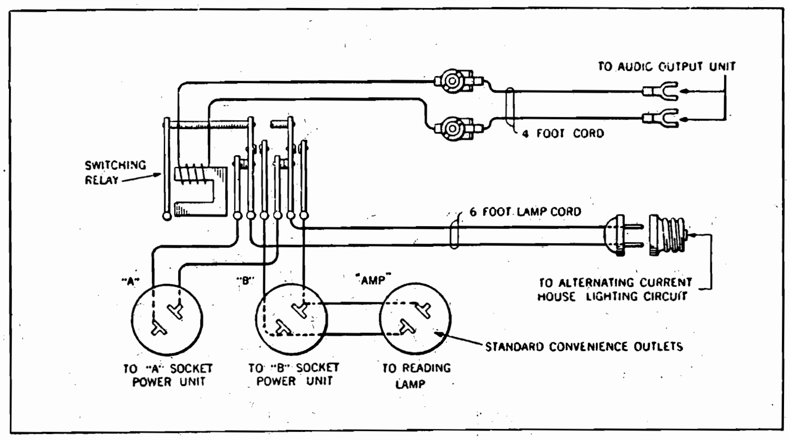
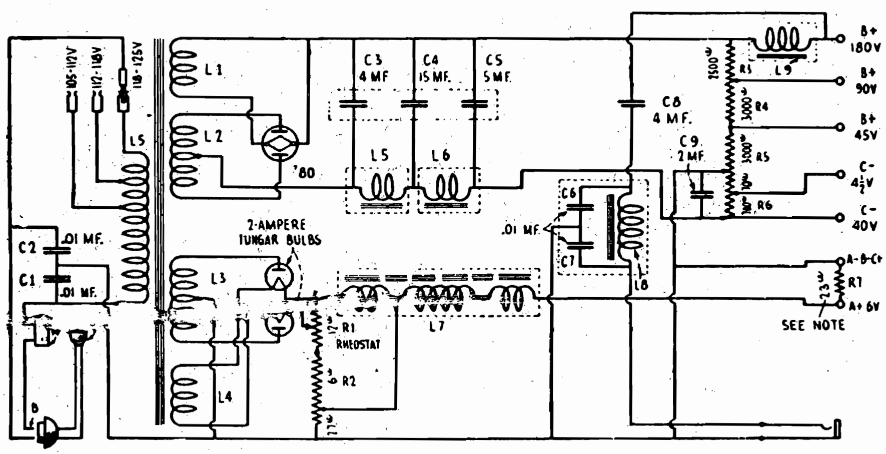
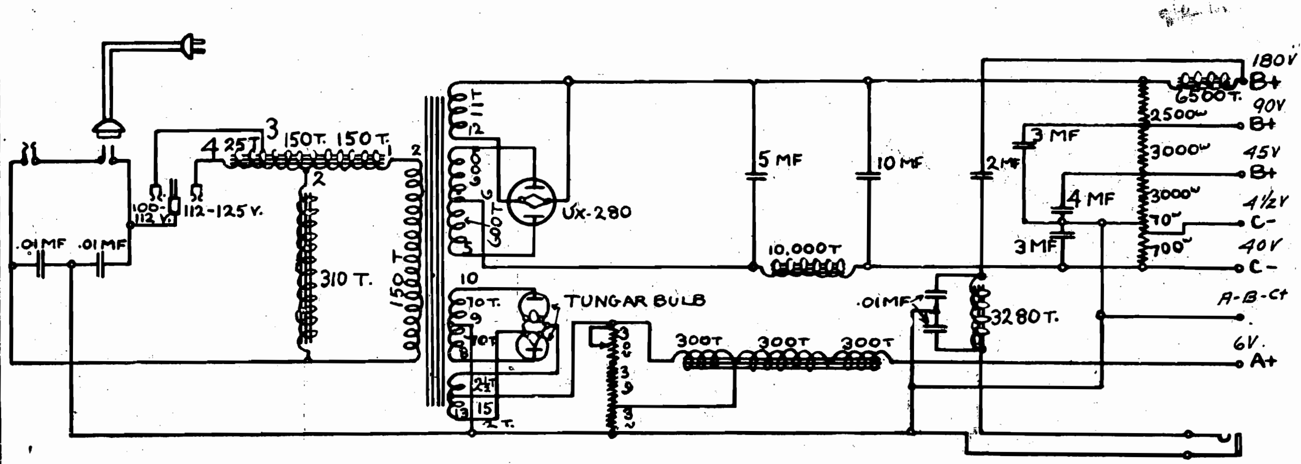


Diagram of Connections in No. 301-A Power Switching Relay



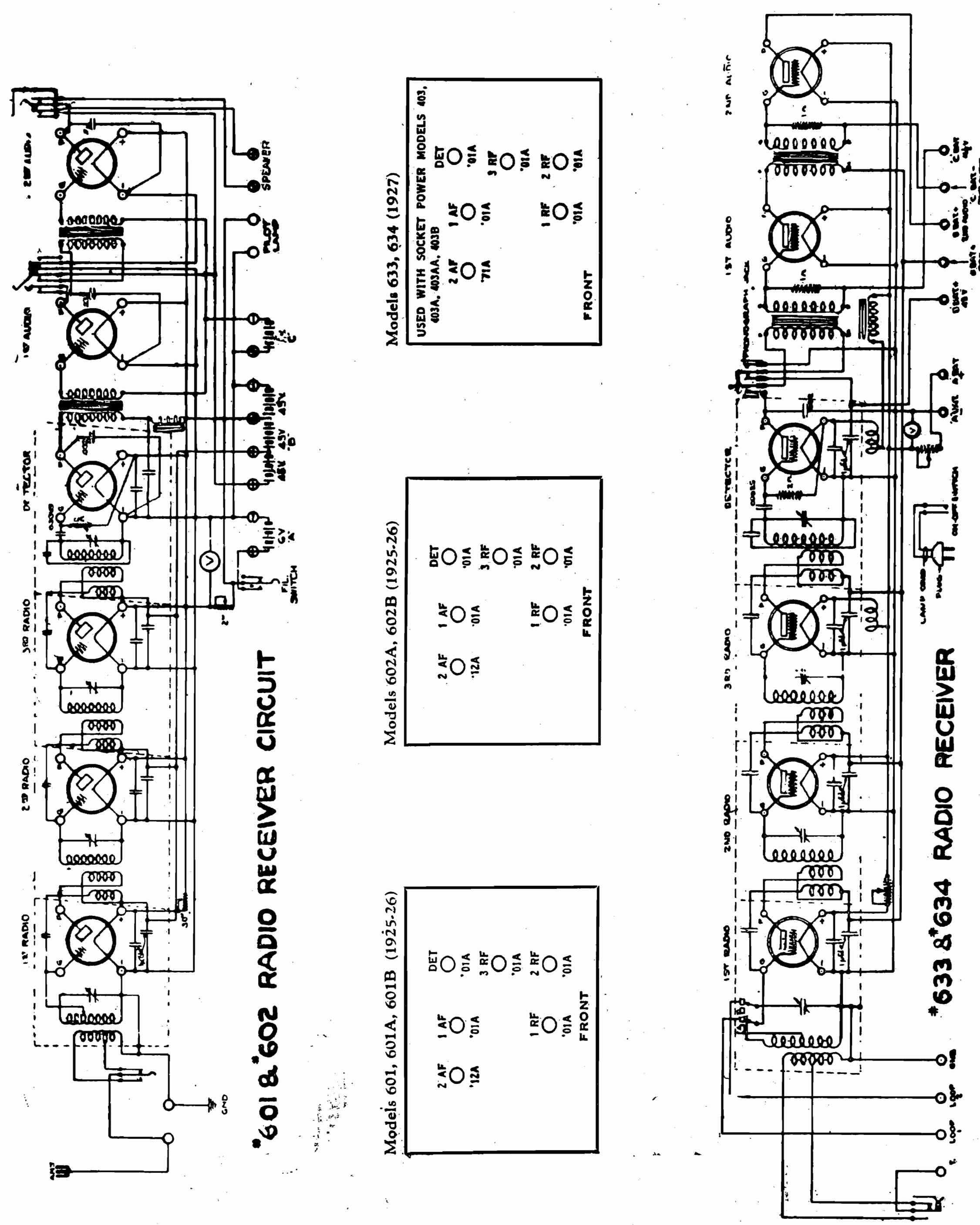
Model 403, 403-A



Model 403-B

MODEL 601,602
MODEL 633,634

STROMBERG-CARLSON TEL. MFG. CO.



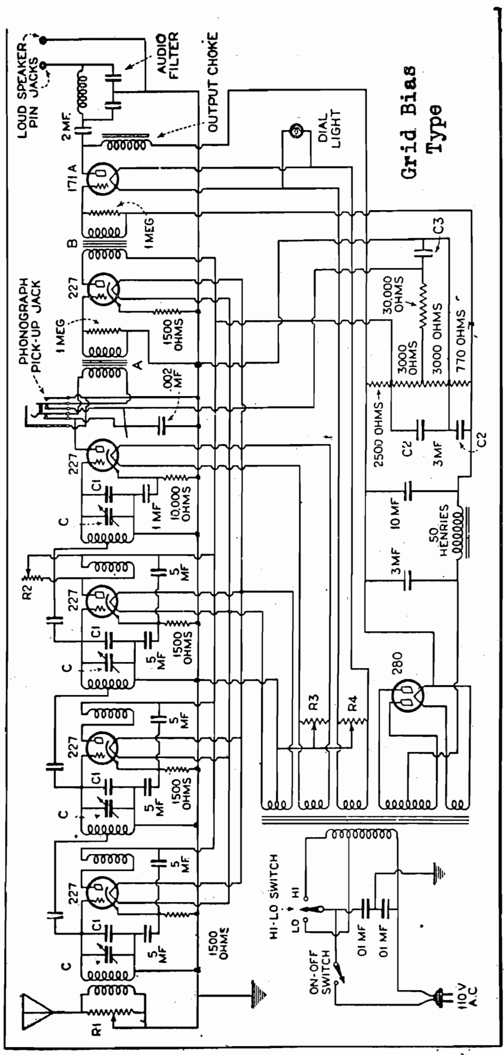
MODEL 635,636 AC
Two Types

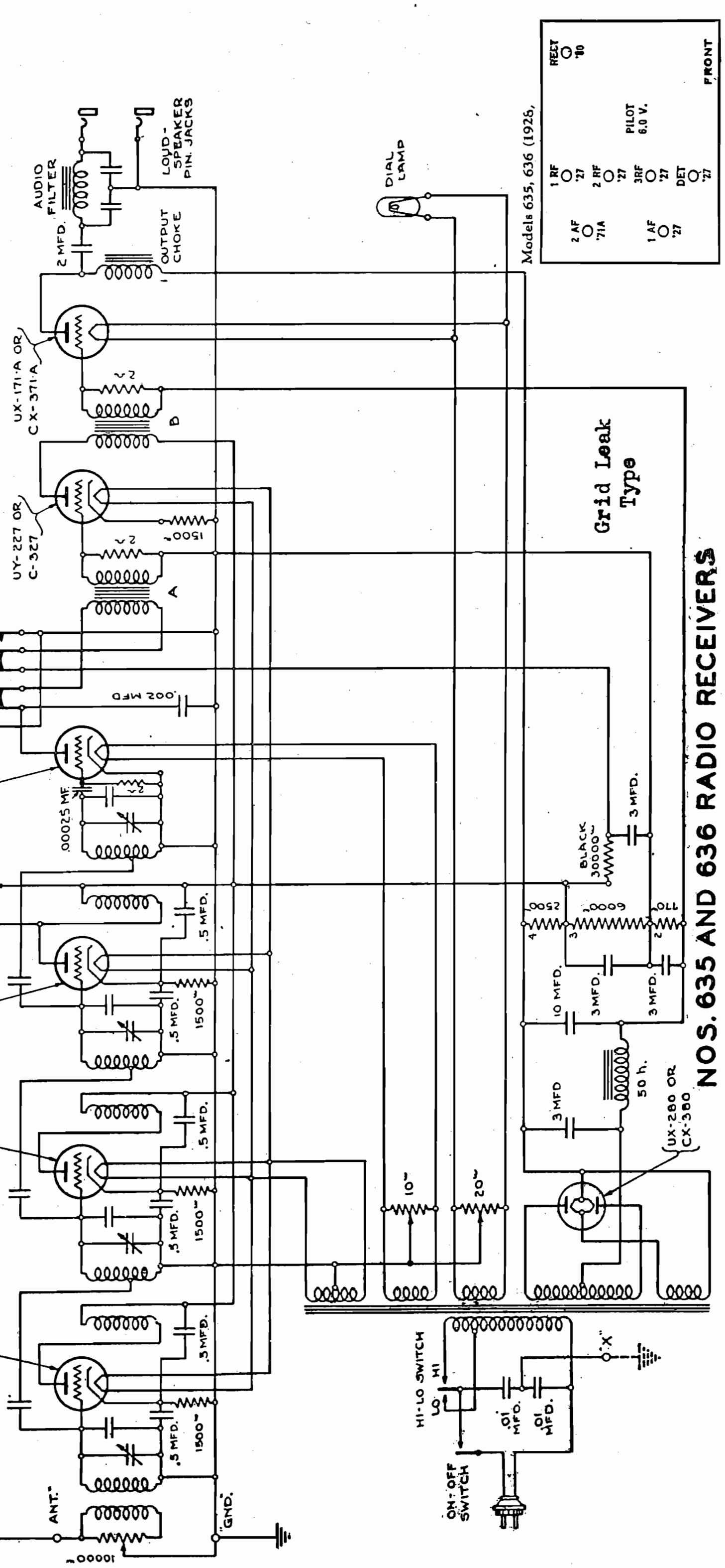
STROMBERG - CARLSON TEL. MFG. CO.

The difference between the two types is to be found in the detector circuit. In one of the types, type 1, the detector tube secures its bias via a cathode resistor. In the other type, the detector circuit is equipped with a grid leak and condenser.

STROMBERG-CARLSON—Models 635-636
Line Voltage 115—High Volt Tap—Volume Control Full

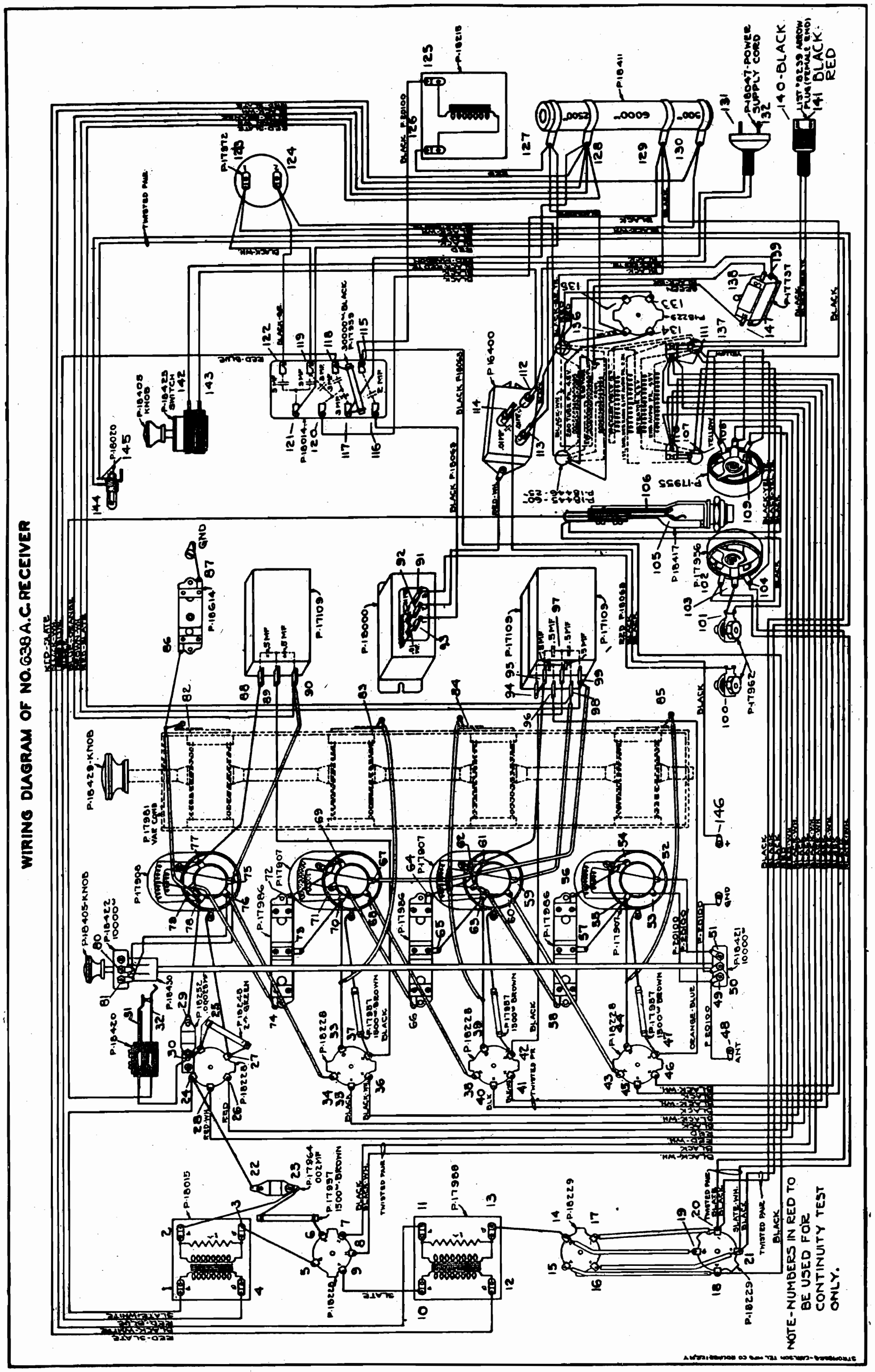
Tube No. in Order	Type of Tube	Position of Tube 1st R.F., Det., Etc.	Readings, Plug in Socket of Set: Tube Out A Volts	Tube Out B Volts	Tube in Tester A Volts	Tube in Tester B Volts	Tube in Tester C Volts	Cathode Volts	Normal Plate M.A.	Plate M.A. Grid Test	Plate M.A. Change
1	227	1st.R.F.	2.35	102	2.25	92	5.0	-	3.5	6.8	3.3
2	227	2nd.R.F.	2.35	102	2.25	92	5.0	-	3.5	6.8	3.3
3	227	3rd.R.F.	2.35	102	2.25	92	5.0	-	3.5	6.8	3.3
4	227	Detector	2.35	90	2.20	32	-	-	2.0	2.1	0.1
5	227	1st.A.F.	2.35	100	2.25	84	4.0	-	3.2	6.3	3.1
6	171	2nd.A.F.	4.73	219	4.70	164	34.5	-	16.0	20.0	4.0
7	280	Rectifier	4.90	-	4.65	-	-	-	19.5	-	-
8											
9											
10											





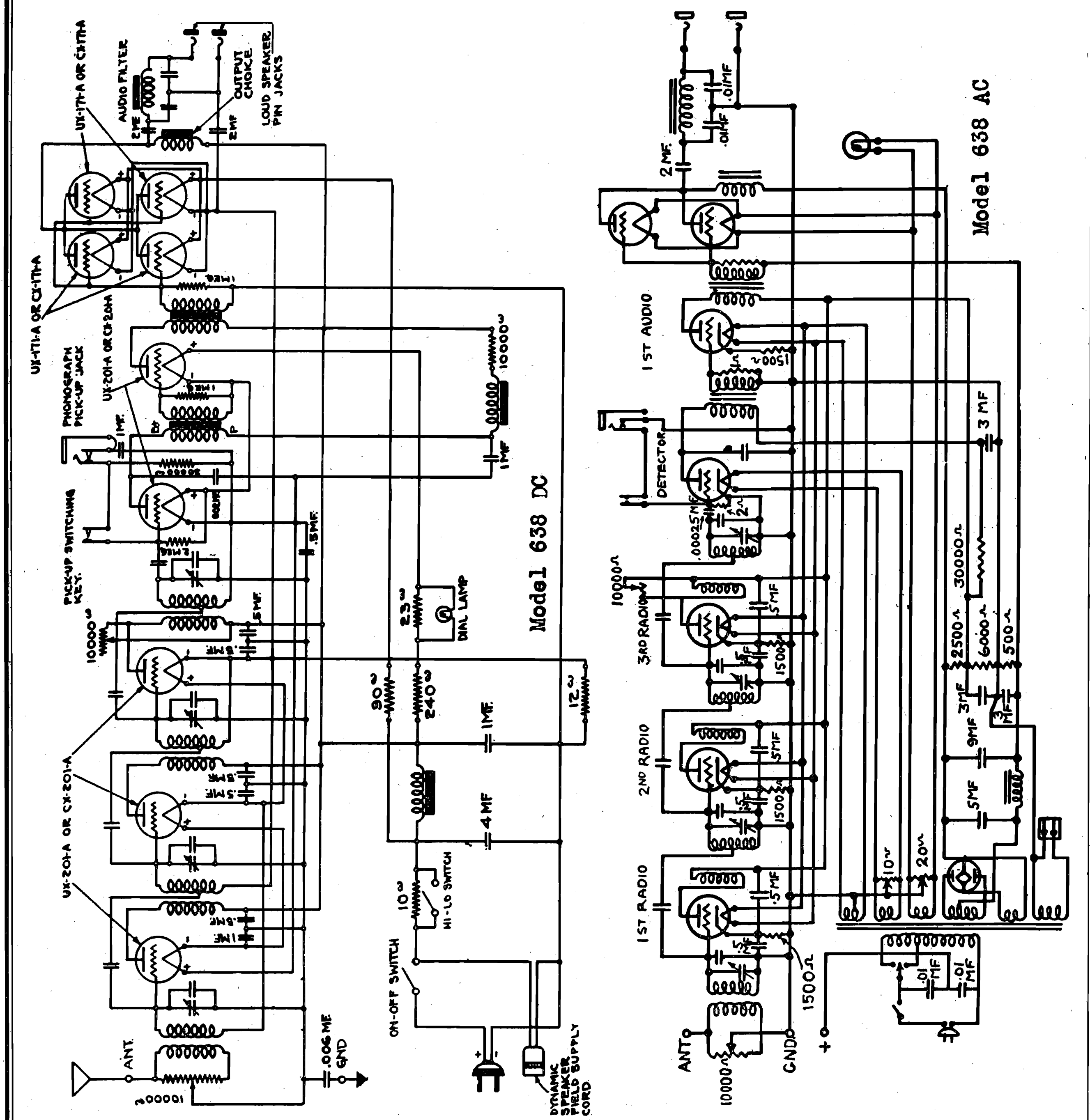
MODEL 638 AC
Chassis Wiring

STROMBERG - CARLSON TEL. MFG. CO

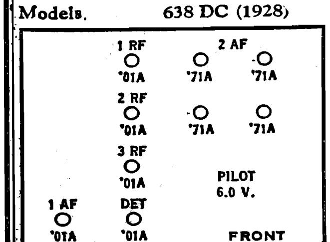


STROMBERG - CARLSON TEL. MFG. CO.

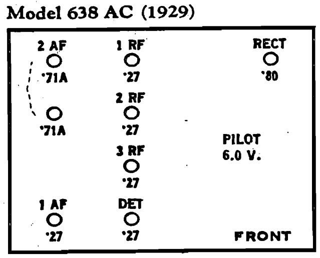
MODEL 638 AC
MODEL 638 DC



Models. 638 DC (1928)



Model 638 AC (1929)



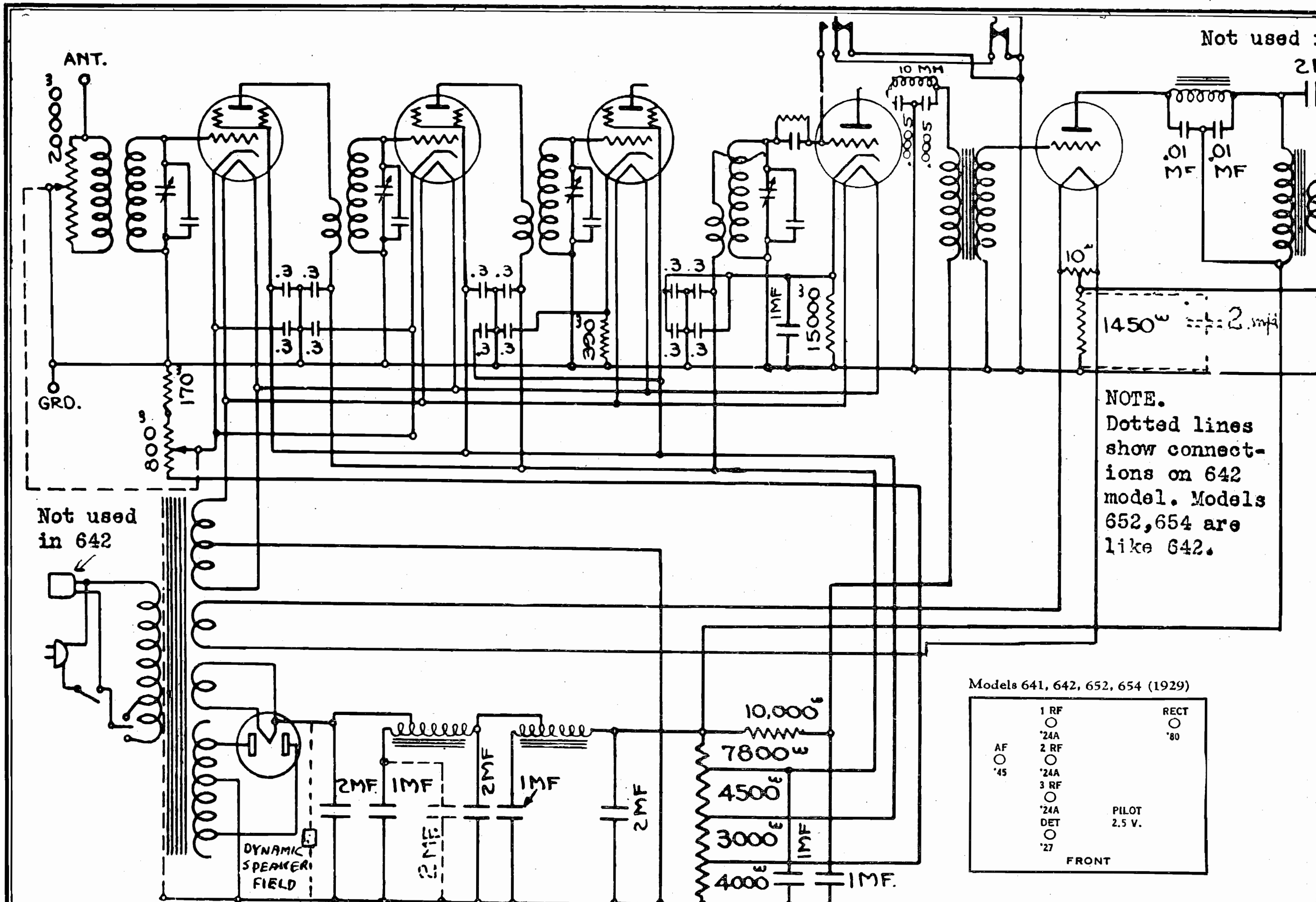
Model 638 Line 117 V. Vol. Maximum

Tube Type	Stage	Fil Volts	Plate Volts	Grid Volts	Plate Ma.
'27	1 RF	2.1	90	4.	2.5
'27	2 RF	2.1	90	4.	2.8
'27	3 RF	2.1	90	4.	3.5
'27	Det.	2.	35	-	2.
'27	1 AF	2.	80	4.	3.5
'71A	2 AF	4.4	155	30.	22.
'71A	2 AF	4.4	155	30.	22.
'80	Rec.	4.4	---	-	37.*

* Per Anode

STROMBERG - CARLSON TEL. MFG. CO.

MODEL 641, 642, 652, 654
Schematic, Voltage Socket



Tube No. in order (1)	Type of tube (2)	Position of tube 1st RF Det etc (3)	Tube out: A volts (4)	Tube out: B volts (5)	Tube in tester: A volts (6)	Tube in tester: B volts (7)	C volts control grid (8)	Cathode-heater volts (9)	Normal plate M A (10)	Plate M A grid test (11)	Plate change M A (12)	Screen grid volts (13)
1	224	1st RF	2.45	140	2.24	136	3.5	3.5	1.5	4	2.6	[illegible]
2	224	2nd RF	2.45	140	2.24	136	3.5	3.5	1.5	4	2.5	55
3	224	3rd RF	2.45	140	2.24	138	3.5	3.5	1.5	4	2.5	53
	227	Det.	2.45	278	2.24	248	3	3	1.8	-	-	-
	245	Amp.	2.45	355	2.24	238	35		30	32	2	-

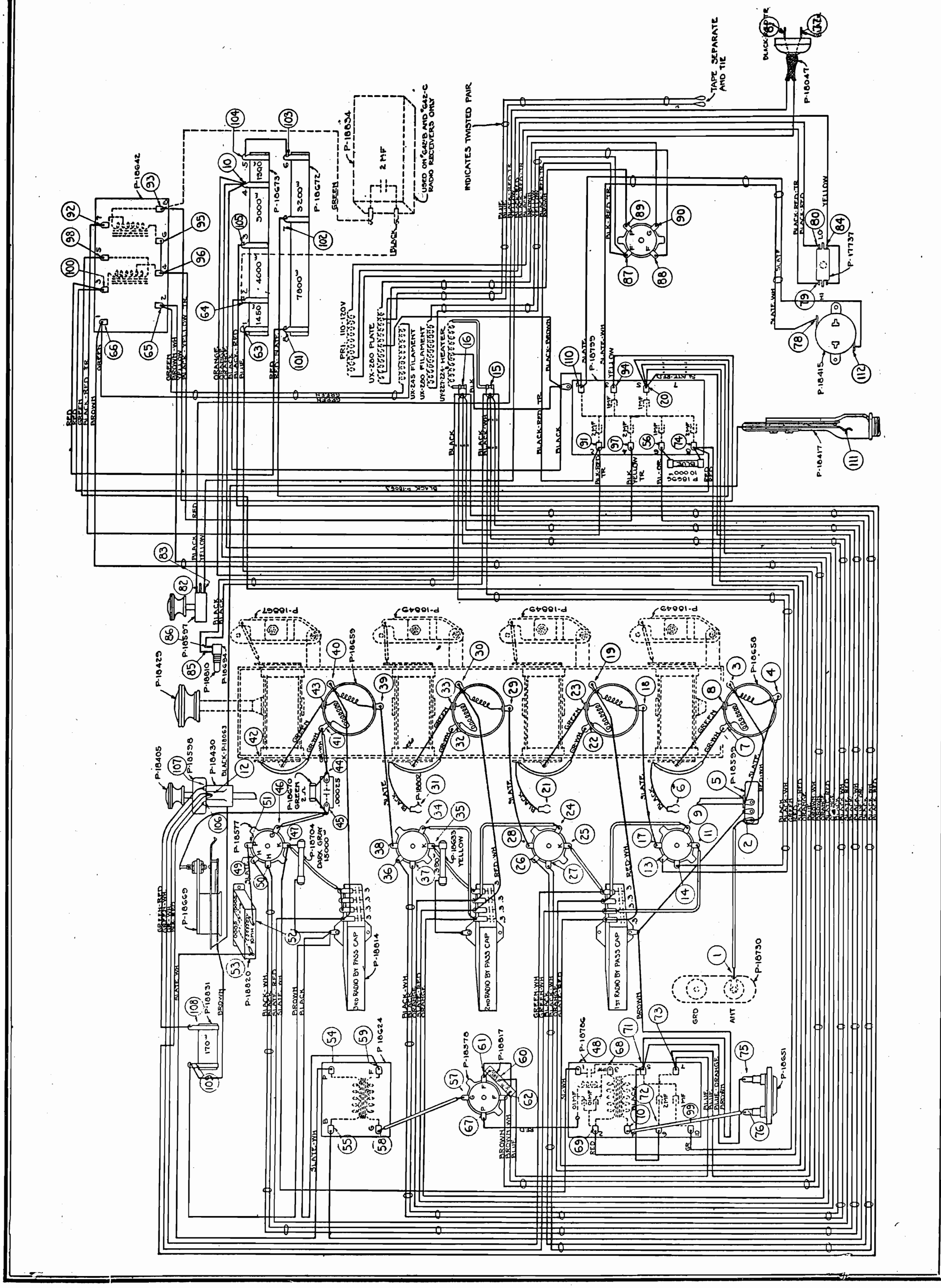
Readings plug in socket of set

Line Voltage 114—
-Set on High Volt Tap-
Control Position Max

Receiver Code No.	Voltage	Frequencies
641-A	105–125	60 Cycles
641-B	105–125	25–60 Cycles
641-C	210–250	25–60 Cycles

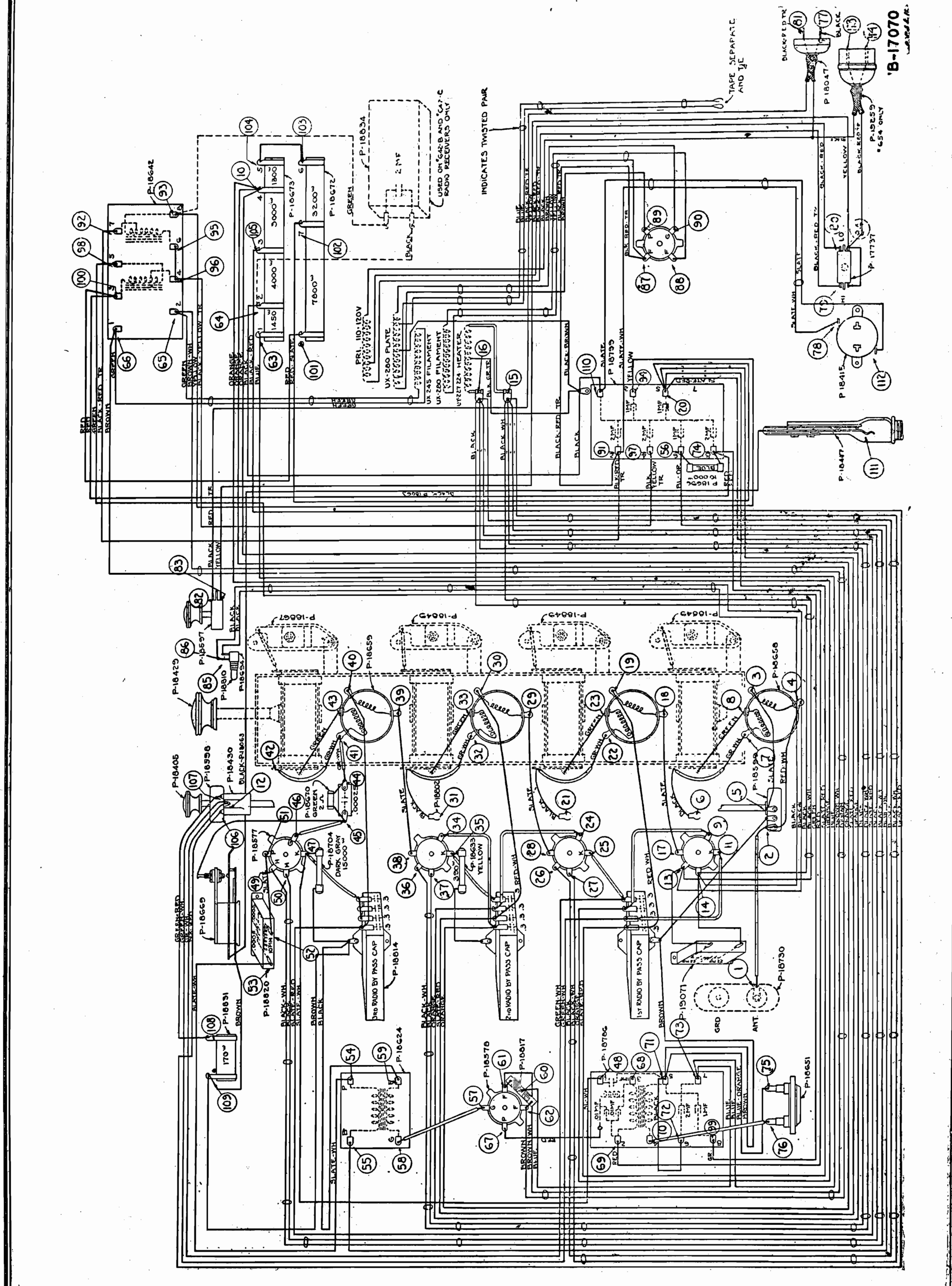
STROMBERG - CARLSON TEL. MFG. CO.

MODEL 642
Chassis Wiring



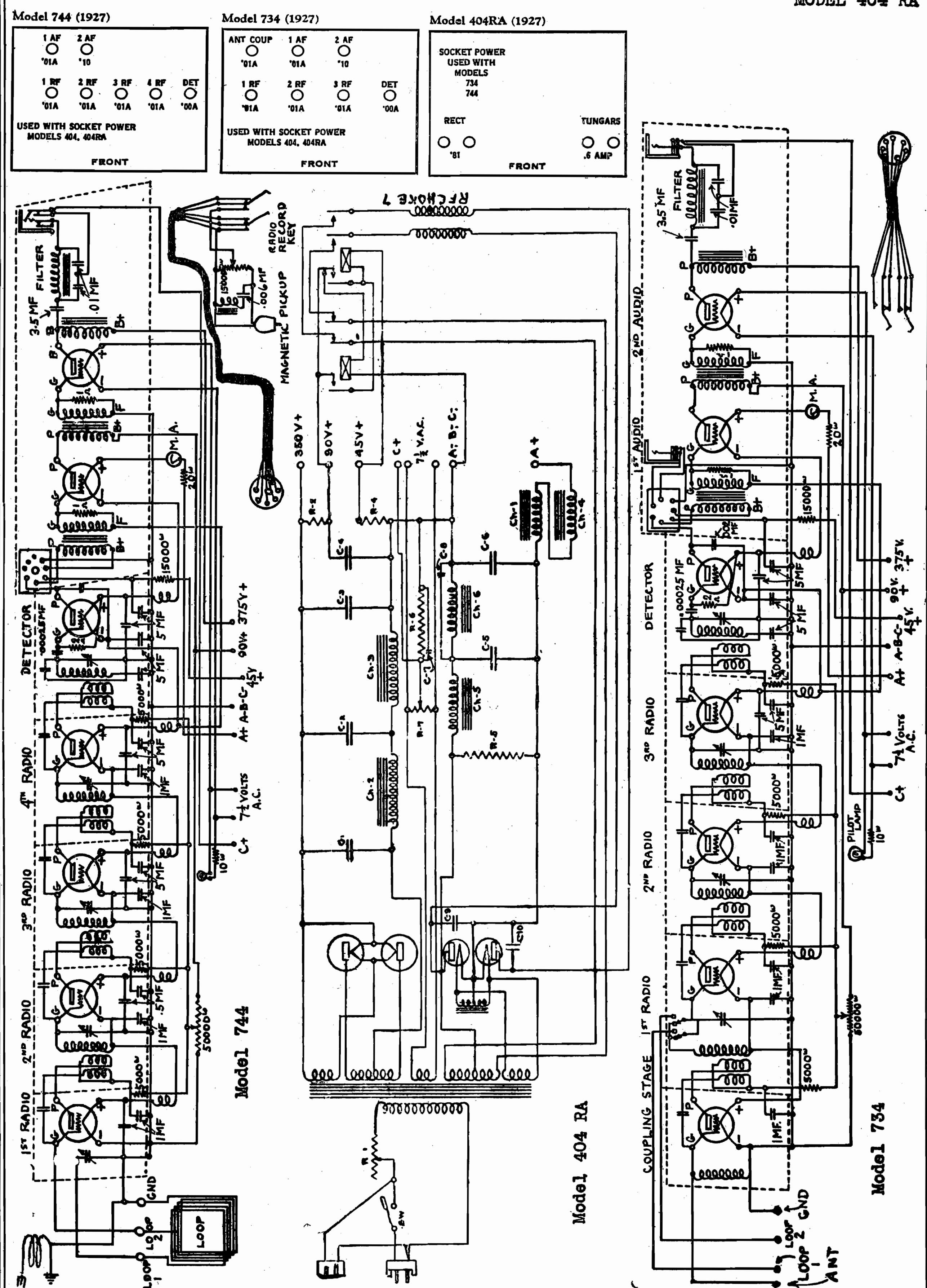
MODEL 652, 654
Chassis Wiring

STROMBERG - CARLSON TEL. MFG. CO.



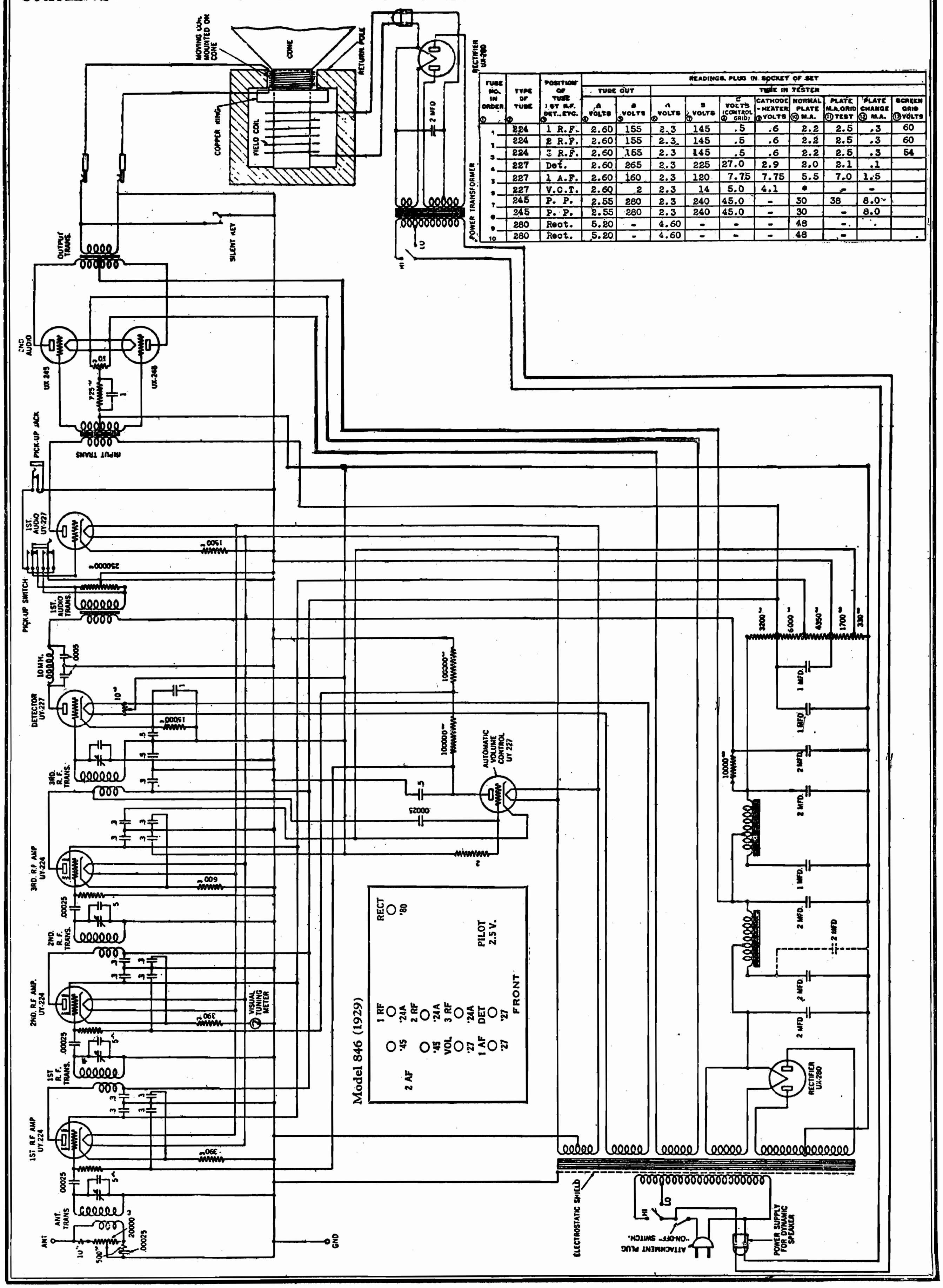
STROMBERG - CARLSON TEL. MFG. CO.

MODEL 734
MODEL 744
MODEL 404 RA



MODEL 846 AC
Schematic

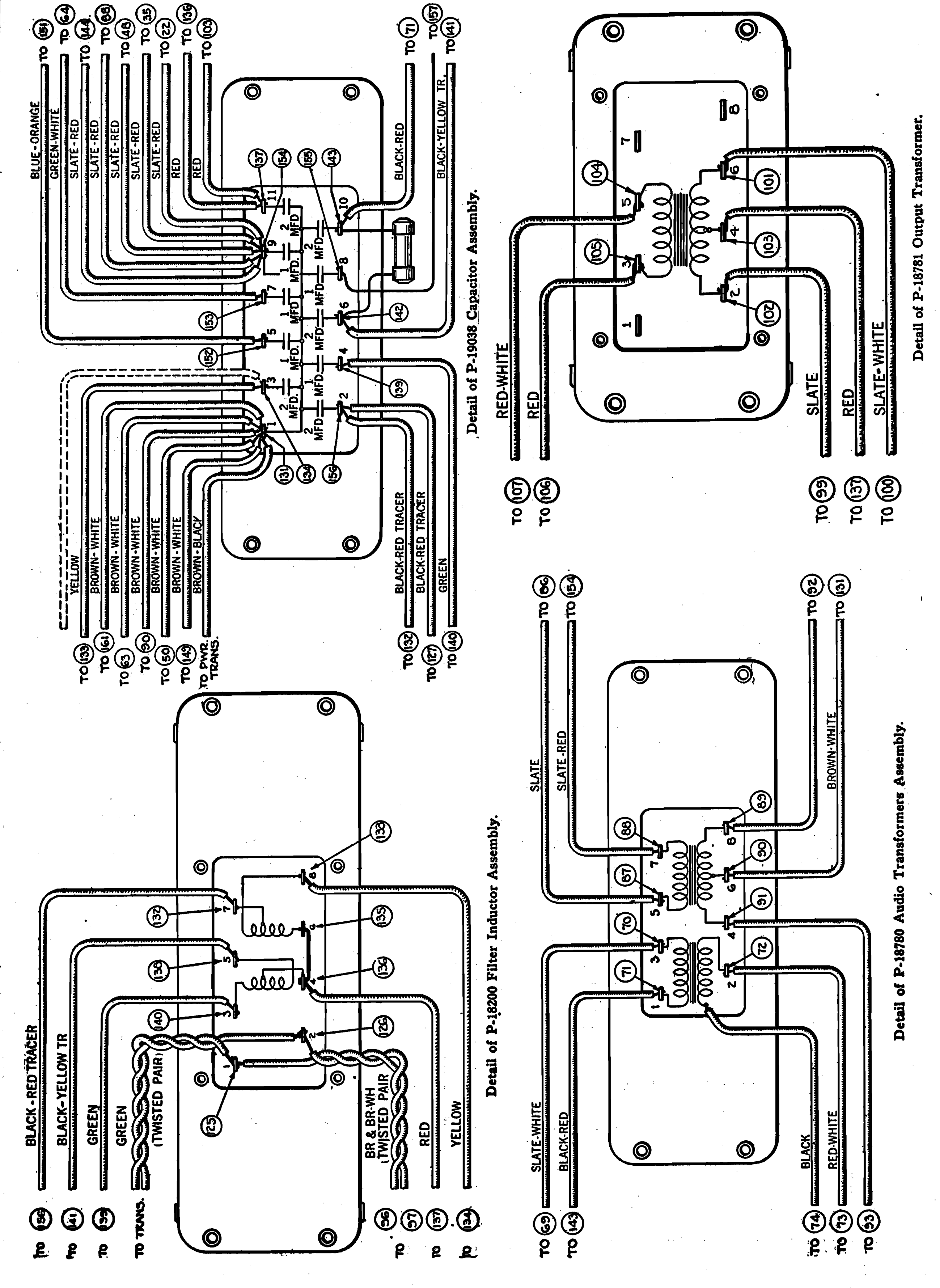
STROMBERG - CARLSON TEL. MFG. CO.



TUBE NO. IN ORDER ①	TYPE OF TUBE ②	POSITION OF TUBE 1 ST R.F. DET., ETC. ③	READINGS, PLUG IN SOCKET OF SET: TUBE OUT: A VOLTS ④	TUBE OUT: B VOLTS ⑤	TUBE IN TESTER: A VOLTS ⑥	B VOLTS ⑦	C VOLTS (CONTROL GRID) ⑧	CATHODE-HEATER VOLTS ⑨	NORMAL PLATE M.A. ⑩	PLATE M.A. GRID TEST ⑪	PLATE CHANGE M.A. ⑫	SCREEN GRID VOLTS ⑬
1	224	1 R.F.	2.60	155	2.3	145	.5	.6	2.2	2.5	.3	60
2	224	2 R.F.	2.60	155	2.3	145	.5	.6	2.2	2.5	.3	60
3	224	3 R.F.	2.60	155	2.3	145	.5	.6	2.2	2.5	.3	54
4	227	Det.	2.60	265	2.3	225	27.0	2.9	2.0	2.1	.1	
5	227	1 A.F.	2.60	160	2.3	120	7.75	7.75	5.5	7.0	1.5	
6	227	V.C.T.	2.60	2	2.3	14	5.0	4.1	*	-	-	
7	245	P. P.	2.55	280	2.3	240	45.0	-	30	38	8.0	
8	245	P. P.	2.55	280	2.3	240	45.0	-	30	-	8.0	
9	280	Rect.	5.20	-	4.60	-	-	-	48	-		
10	280	Rect.	5.20	-	4.60	-	-	-	48	-		

MODEL 846
Internal Wiring

STROMBERG - CARLSON TEL. MFG. CO.



Detail of P-19038 Capacitor Assembly.

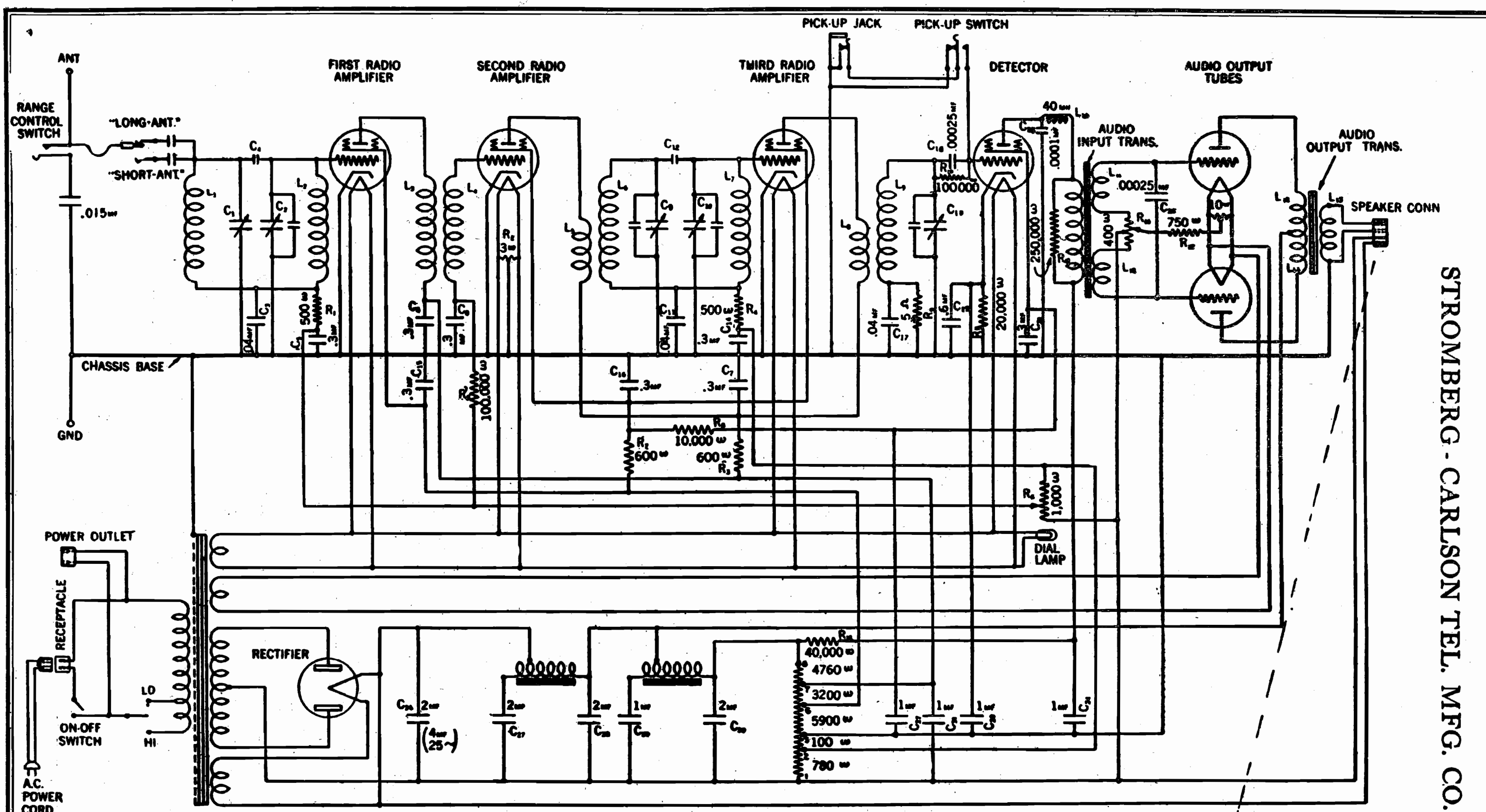
Detail of P-18781 Output Transformer.

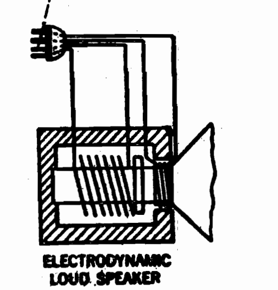
Detail of P-18200 Filter Inductor Assembly.

Detail of P-18780 Audio Transformers Assembly.

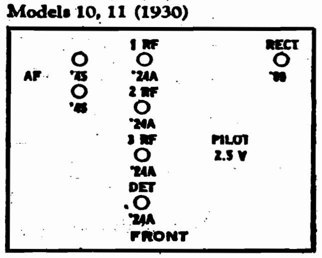
STROMBERG - CARLSON TEL. MFG. CO.

MODEL 10-11
Schematic





Models 10, 11 (1930)

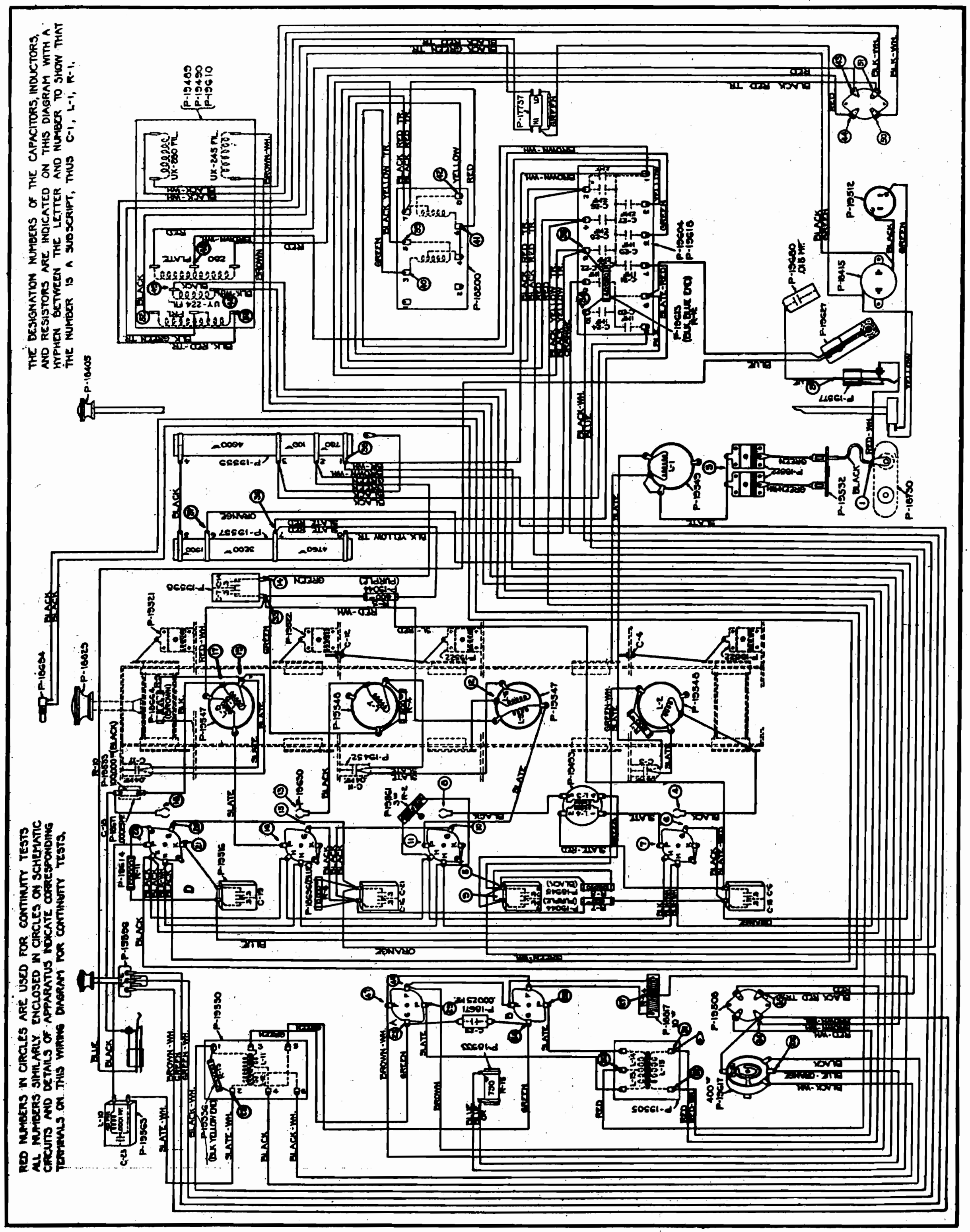


STROMBERG-CARLSON—Models 10 and 11
Line Voltage 120—Voltage Tap High

			Meter Readings with Jewell Test Plug in Socket of Set								
			Operating Voltages				Milliamperes				
Tube No. in Order Tested (1)	Type of Tube (2)	Position of Tube in Set (3)	Filament or Heater (4)	Plate or Anode (5)	Control Grid—Space (6) or +	Normal Grid—Screen (7) or +	Cathode to Heater (8)	Screen or "L. H. '80 Plate (9)	Plate R. H. '80 Plate (10)	Tube Test (11)	Plate Current Change (12)
1	224	1 R.F.	2.4	135	2.5	80					
2	224	2 R.F.	2.4	135	2.5	80					
3	224	3 R.F.	2.4	135	2.5	80					
4	224	Det.	2.4	200	-	75					
5	245	PP-AF	2.4	235	-	45					
6	245	PP-AF	2.4	235	-	45					
7	280	Rect.	4.8	-	-	-					

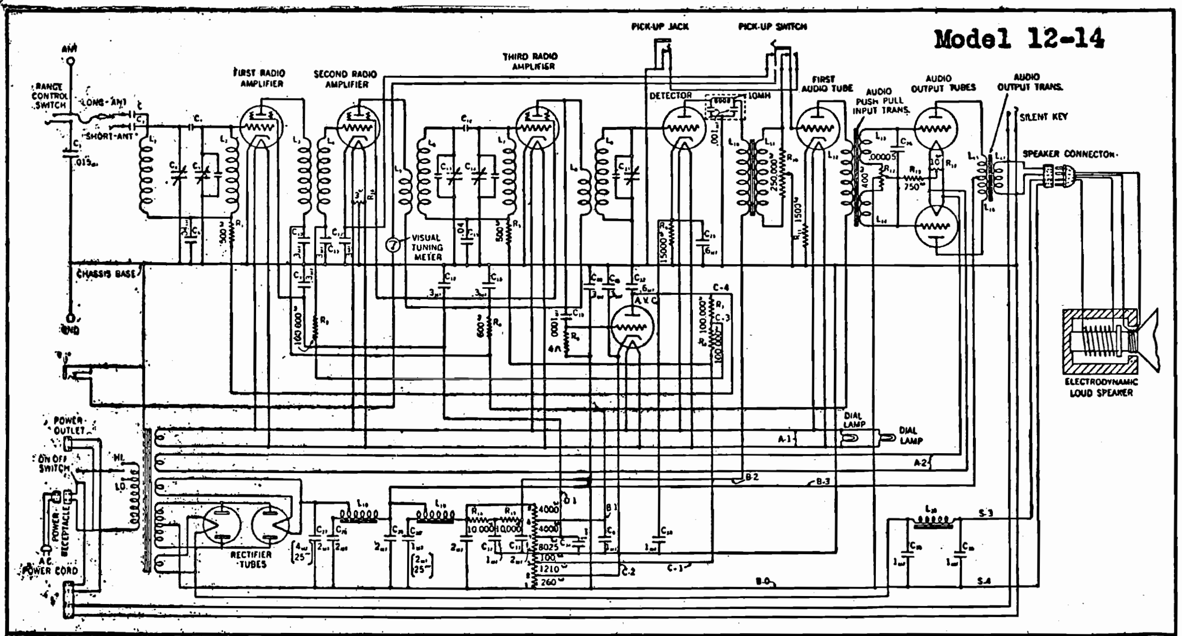
MODEL 10-11
Chassis Wiring

STROMBERG - CARLSON TEL. MFG. CO.



MODEL 12-14
Schematic, Pickup

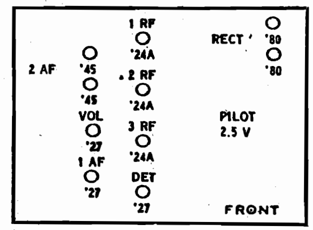
STROMBERG - CARLSON TEL. MFG. CO.

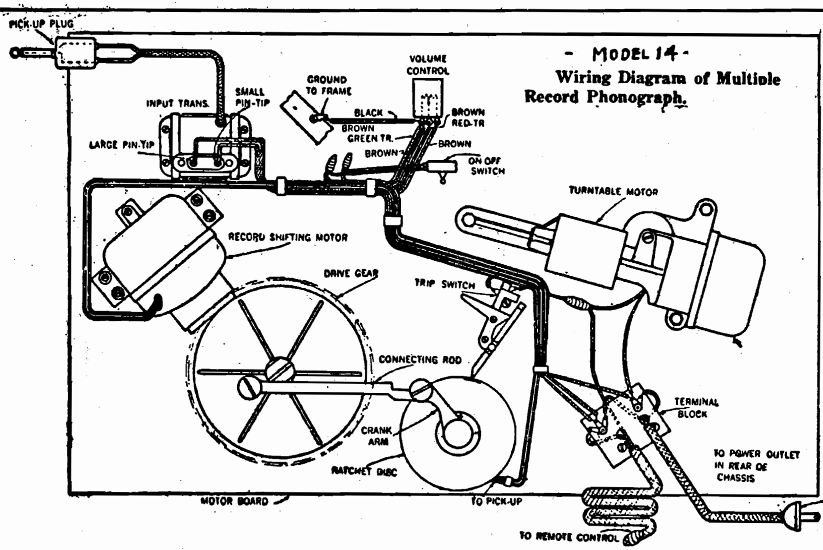


STROMBERG-CARLSON—Models 12 and 14
Line Voltage 120—Voltage Tap High

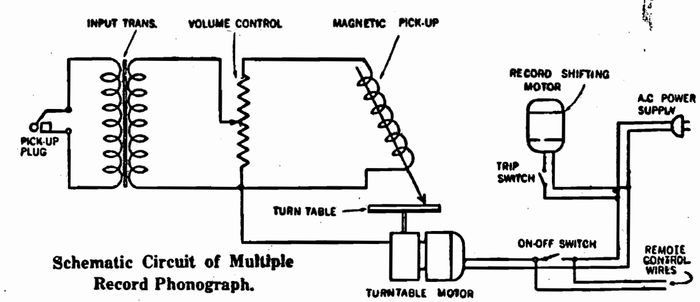
			METER READINGS WITH JEWELL TEST PLUG IN SOCKET OF SET									
			OPERATING VOLTAGES					MILLIAMPERES				
TUBE NO IN ORDER TESTED (1)	TYPE OF TUBE (2)	POSITION OF TUBE IN SET (3)	FILAMENT OR HEATER (4)	PLATE OR ANODE (5)	CONTROL GRID—SPACE (6) GD +	NORMAL GRID—SCREEN (7) GD +	CATHODE TO HEATER (8)	SCREEN GD L. H. 80 PLATE (9)	PLATE R H '80 PLATE (10)	TUBE TEST (11)	PLATE CURRENT CHANGE (12)	(13)
1	224	1 R.F.	2.4	135	3.0*	85						
2	224	2 R.F.	2.4	135	3.0*	85						
3	224	3 R.F.	2.4	135	3.0*	85						
4	227	Det.	2.4	195	-	25						
5	227	1 A.F.	2.4	115	-	4.5						
6	245	PP-AF	2.4	245	-	45						
7	245	PP-AF	2.4	115	-	45						
8	280	Rect.	4.8	-	-	-						
9	280	Rect.	4.8	-	-	-						
10												

Models 12, 14 (1930)





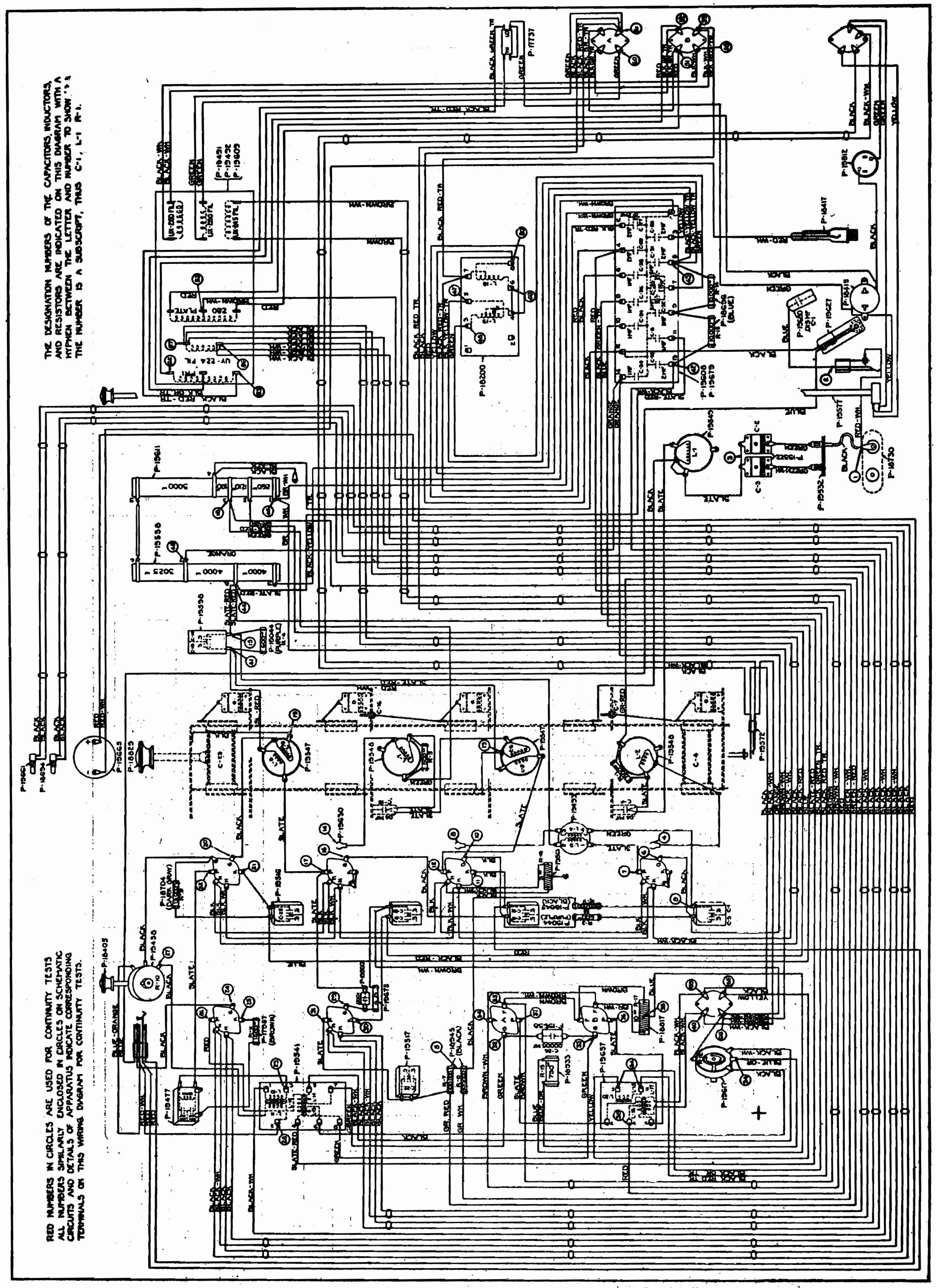
Wiring Diagram of Multiple Record Phonograph.



Schematic Circuit of Multiple Record Phonograph.

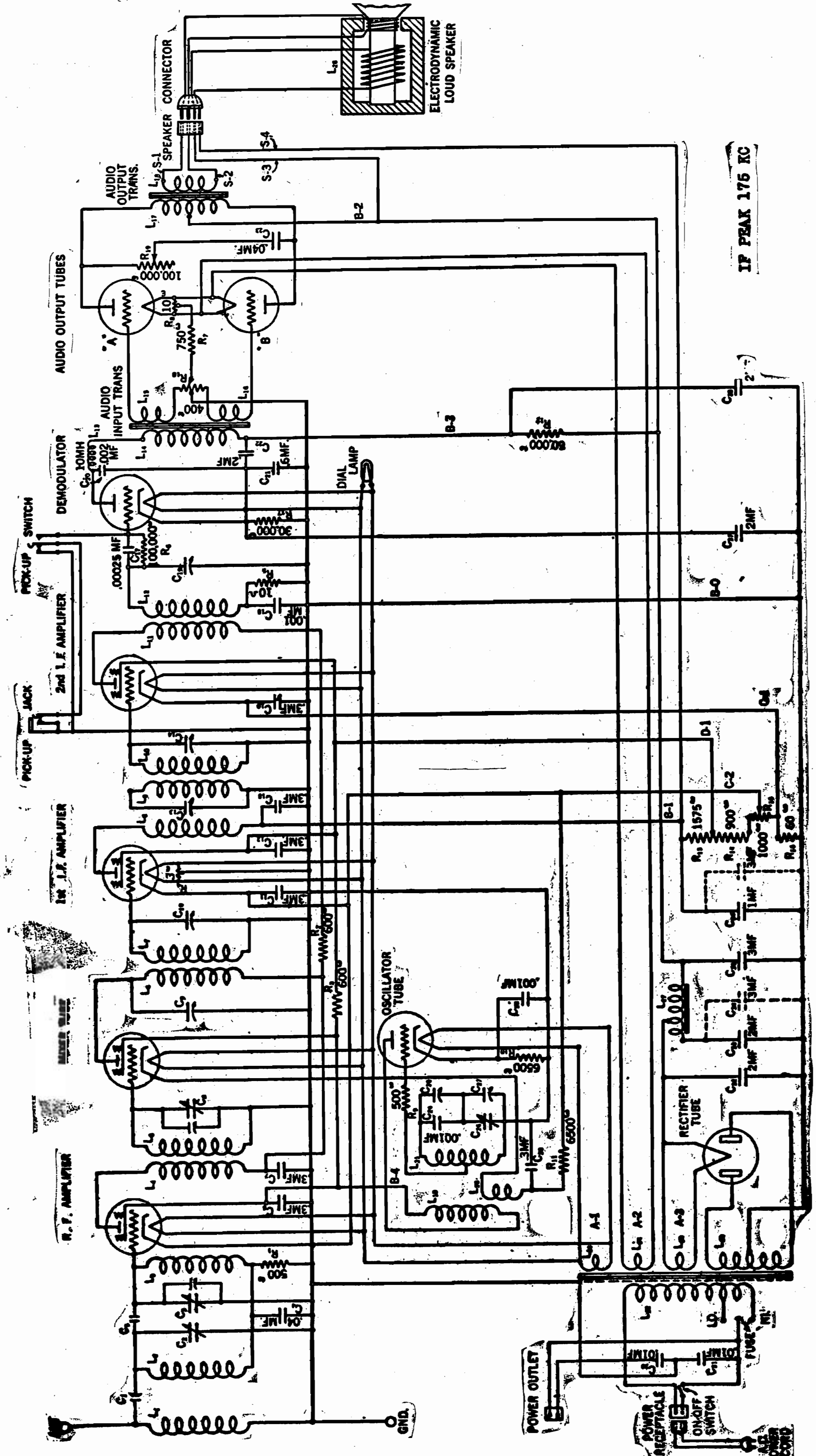
STROMBERG - CARLSON TEL. MFG. CO.

MODEL 12-14
Chassis Wiring



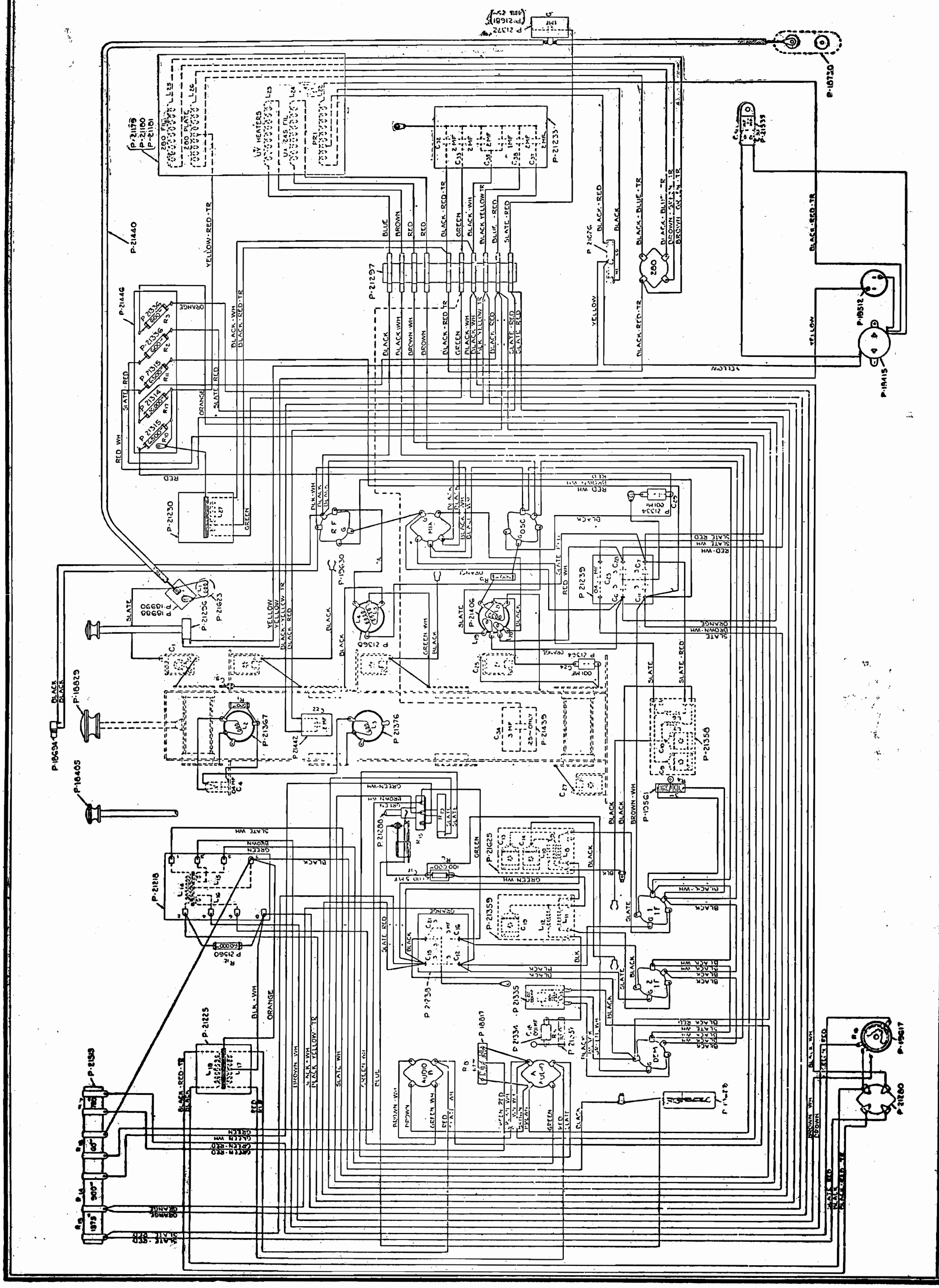
MODEL 19,20 AC
Schematic

STROMBERG CARLSON TEL. MFG. CO.



MODEL 19, 20 AC
Chassis Wiring

STROMBERG - CARLSON TEL. MFG. CO.



MODEL 19,20 AC
Voltage
Electrical Values

STROMBERG - CARLSON TEL. MFG CO.

INDUCTANCES

L1	.9	millihenry
L2	215.	microhenry
L3	215.	microhenry
L4	5.5	millihenry
L5	215.	microhenry
L6	5.5	millihenry
L7	5.5	millihenry
L8	5.5	millihenry
L9	5.5	millihenry
L10	5.5	millihenry
L11	5.5	millihenry
L12	5.5	millihenry
L19	15.	microhenry
L20	5.5	microhenry
L21	172.	microhenry

RESISTANCES

No.	Value	Body	Tip	Dot
R1	500	Green	Blk	Brn
R2	600	Blue	Blk	Brn
R3	600	Blue	Blk	Brn
R4	3	(Wire wound)		
R5	10 megs	Brn	Blk	Blue
R6	100,000	Brn	Blk	Green
R7	750	(Wire wound)		
R8	10	(Wire wound)		
R9	500	Green	Blk	Brn
R10	6,500	Blue	Green	Red
R11	6,500	Blue	Green	Red
R12	60,000	Blue	Blk	Orange
R13	1,575	(Wire wound)		
R14	900	(Wire wound)		
R15	1,000	(Wire wound)		
R16	60	(Wire wound)		
R17	30,000	Orange	Blk	Orange
R18	400	(Wire wound)		
R19	100,000	Carbon potentiometer		

CONDENSERS

C2	.0004	mfd	max.
C3	.0004	mfd	max.
C4	.04	mfd	
C5	.000001	mfd	app.
C6	.3	mfd	
C7	.3	mfd	
C8	.0004	mfd	max.
C11	.3	mfd	
C12	.3	mfd	
C15	.3	mfd	
C16	.3	mfd	
C17	.00025	mfd	
C18	.001	mfd	
C20	.002	mfd	
C21	.6	mfd	
C22	.2	mfd	
C23	.04	mfd	
C24	.001	mfd	
C26	.0004	mfd	max.
C28	.3	mfd	
C29	.001	mfd	
C30	.01	mfd	
C31	.01	mfd	
C32	2.	mfd	
C33	2.	mfd	
C34	3.	mfd	
C35	3.	mfd	
C36	1.	mfd	
C36	4.	mfd	(25 cy.)
C37	1.	mfd	
C38	1.	mfd	

TABLE 4.

Normal Voltage Readings

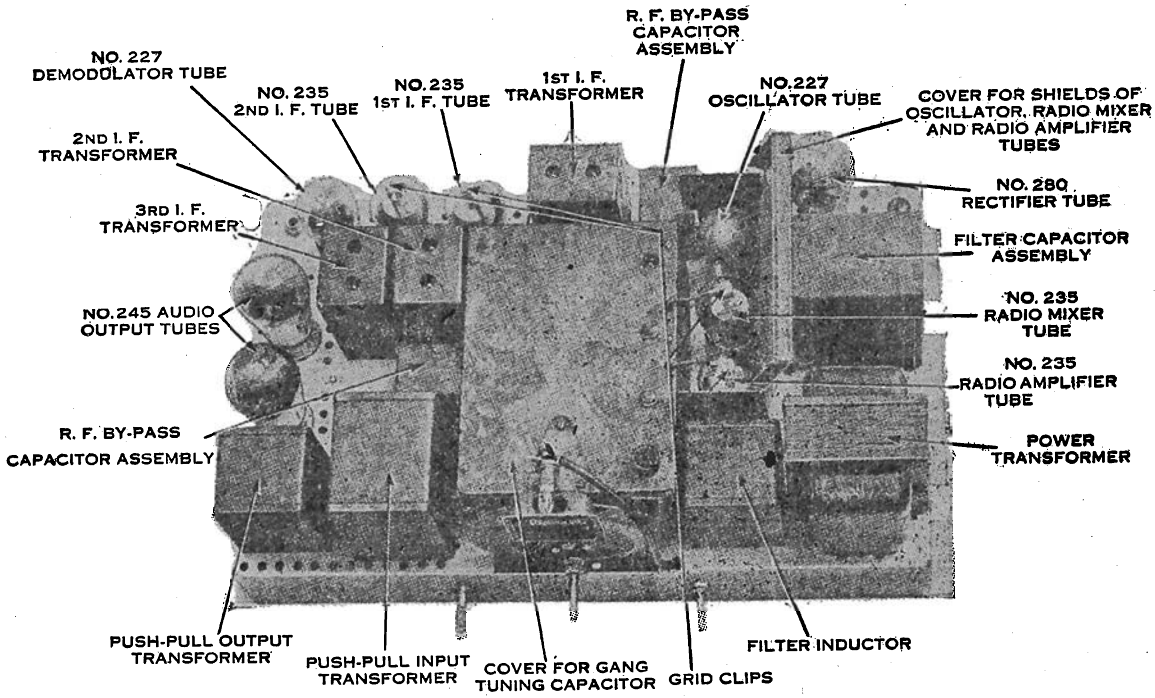
(Be sure to make these readings with the Meter and Scale indicated, otherwise the results will not agree with those tabulated. Alternating voltages are indicated by italics)

Voltage	Meter	Scale	Where Measured	Approx. Value in Volts
Heater Voltage Nos. 227 & 235 Tubes	A.C.	0-4	Across Heater Terminals of Sockets	*2.4*
Filament Voltage No. 245 Tubes	A.C.	0-4	Across Filament Terminals of Audio Output Sockets	*2.4*
Filament Voltage No. 280 Tube	A.C.	0-8	Across Filament Terminals of Rectifier Socket	*4.8*
Plate Voltage Radio Amplifiers	D.C.	0-250	Between Plate Terminal of R. F. Amplifier Socket (+) and Chassis Base (−)	150-170
Plate Voltage Mixer Tube	D.C.	0-250	Between Plate Terminal Mixer Tube Socket (+) and Chassis Base (−)	150-170
Plate Voltage Oscillator	D.C.	0-250	Between Plate Terminal of Oscillator Socket (+) and Chassis Base (−)	85-90
Plate Voltage I.F. Tubes	D.C.	0-250	Between Plate Terminals of I. F. Amplifier Sockets (+) and Chassis Base (−)	150-170
Plate Voltage Demodulator	D.C.	0-250	Between Plate Terminal of Demodulator Socket (+) and Chassis Base (−)	190-215
Plate Voltage Audio Output Tubes	D.C.	0-250	Between Plate Terminals Audio Output Socket (+) and 10 ohm Mid Tap Resistor R_4(−)	250
Control Grid Voltage R.F Amplifier	D.C.	0-10	Between Control Grid Clip of R. F. Amplifier Tube (−) and Cathode (+) of R. F. Amplifier Tube	3
Control Grid Voltage Mixer Tube	D.C.	0-250	Between Control Grid Clip Mixer Tube (−) and Cathode (+) of Mixer Tube	10-12
Control Grid Voltage 1st I.F. Amplifier	D.C.	0-10	Between Control Grid Clip 1st I. F. Tube (−) to Cathode (+) of 1st I. F. Tube	3
Control Grid Voltage 2nd I.F. Tube	D.C.	0-10	Between Control Grid Clip 2nd I. F. Tube (−) to Cathode (+) of 2nd I. F. Tube	3
Grid Voltage Oscillator	D.C.	0-250	Across 6500 ohm Resistor R_{10}	10-15
Grid Voltage Demodulator	D.C.	0-250	Across 30,000 ohm Resistor R_{17}	20-25
Grid Voltage Audio Tubes	D.C.	0-250	Between Grids of Audio Tubes (−) to Mid Tap 10 ohm Resistor R_4 (+)	45-50*
Screen Voltage Radio Amplifier Mixer 1st & 2nd I.F. Tubes	D.C.	0-250	Between Screen Terminals of Tubes (+) to Chassis Base (−)	80-90*
B Voltage R.F. Amplifier and Mixer Tube	D.C.	0-250	Between Tube Side of 600 ohm Resistor R_2 and Chassis Base	150-170*
B Voltage 1st & 2nd I.F. and Mixer Tubes	D.C.	0-250	Between "High" Side of Voltage Divider and Chassis Base	150-170*
B Voltage Audio Tubes	D.C.	0-250	Between Mid Tap of Audio Output Transformer (+) and Chassis Base (−)	300
C Voltage Audio Output Tubes	D.C.	0-250	Across 750 ohm Biasing Resistor R_7	50
Speaker Field Voltage	D.C.	0-250	Across Small Pins of Speaker Connector Socket	150-170
Plate Voltage A.C. Pere Anode No. 280 Rectifier	A.C.	See Remarks	Between P Terminals No. 280 Rectifier Socket and Chassis Base	*325-350†*

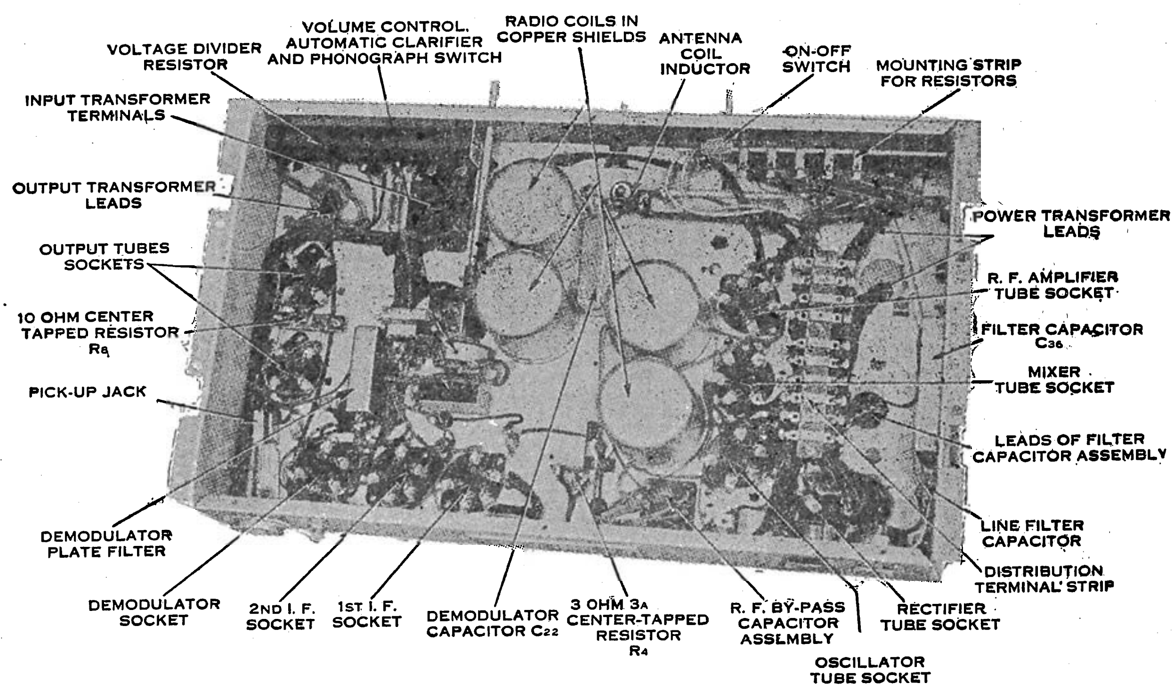
*These voltage vary with dial setting and position of volume control.
Cannot be measured on Weston Model 528 Meter unless multiplier is used.

STROMBERG - CARLSON TEL. MFG. CO.

MODEL 19,20 AC
Chassis Views



Top View of Chassis with Tubes in Place and Shields Removed.

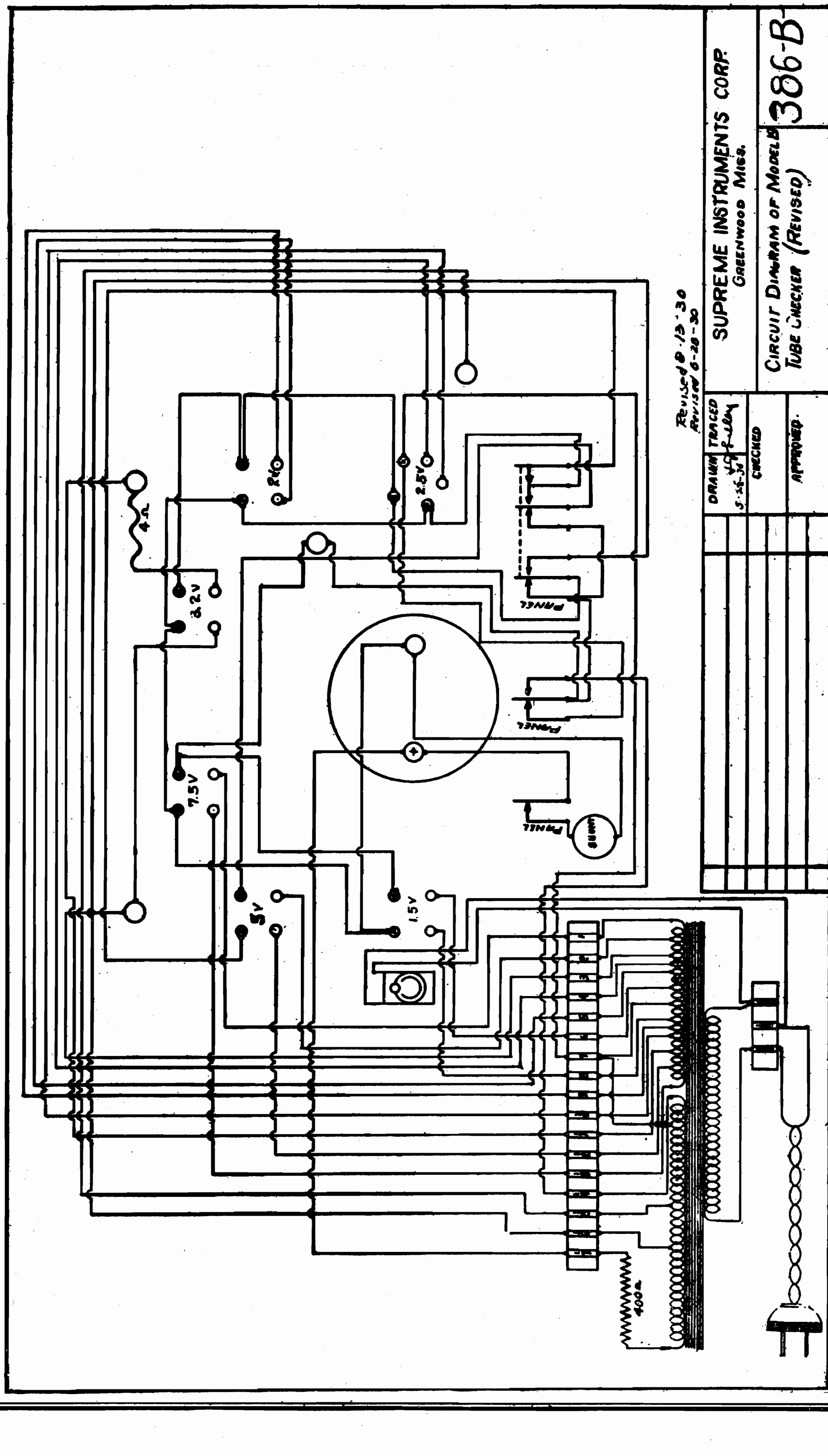


Bottom View of Chassis with Cover Removed.

The hum adjuster is next to the speaker connector receptacle which is at the rear left of the chassis looking at the chassis from the front. The fuse box is to the front of the rectifier tube socket looking at the chassis from the front. The two outlets near the rectifier tube socket are the power input and power output, the latter being nearest to the name and serial number plate. The pickup jack is to the rear of the audio output tubes.

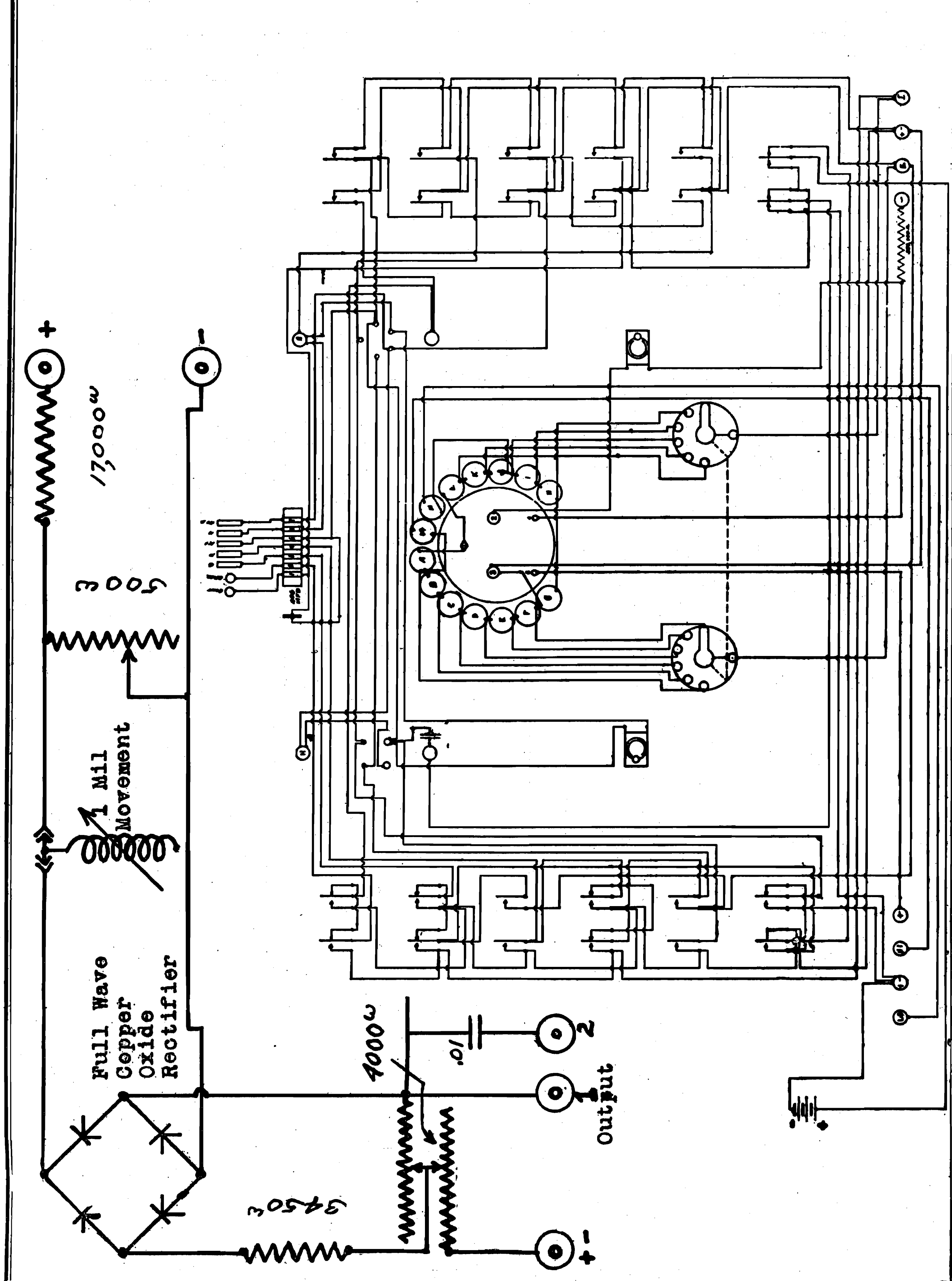
SUPREME INSTRUMENTS CORP.

MODEL 19
Revised
Tube Checker



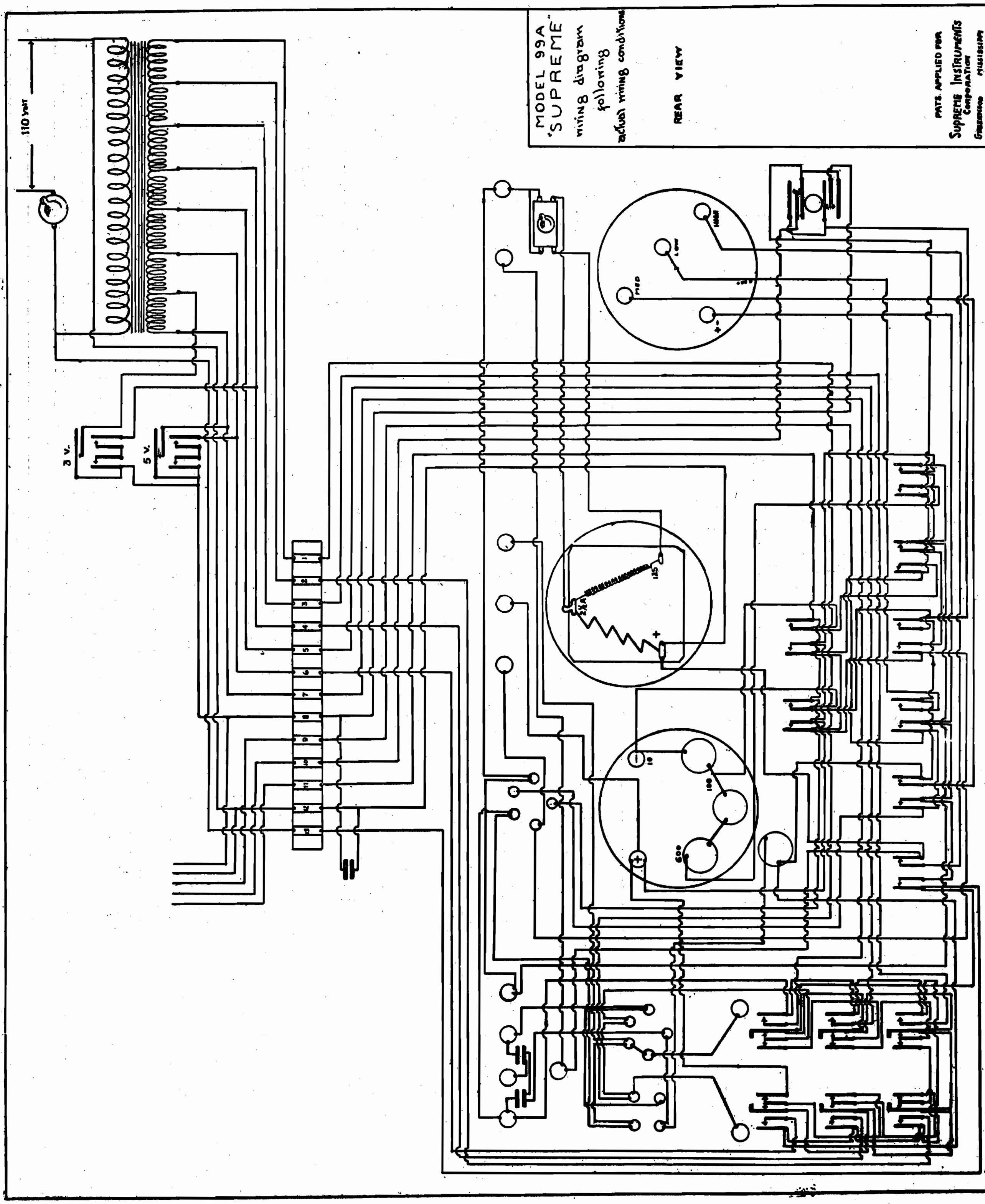
MODEL 90 Analyzer
MODEL Output Meter

SUPREME INSTRUMENTS CORP.



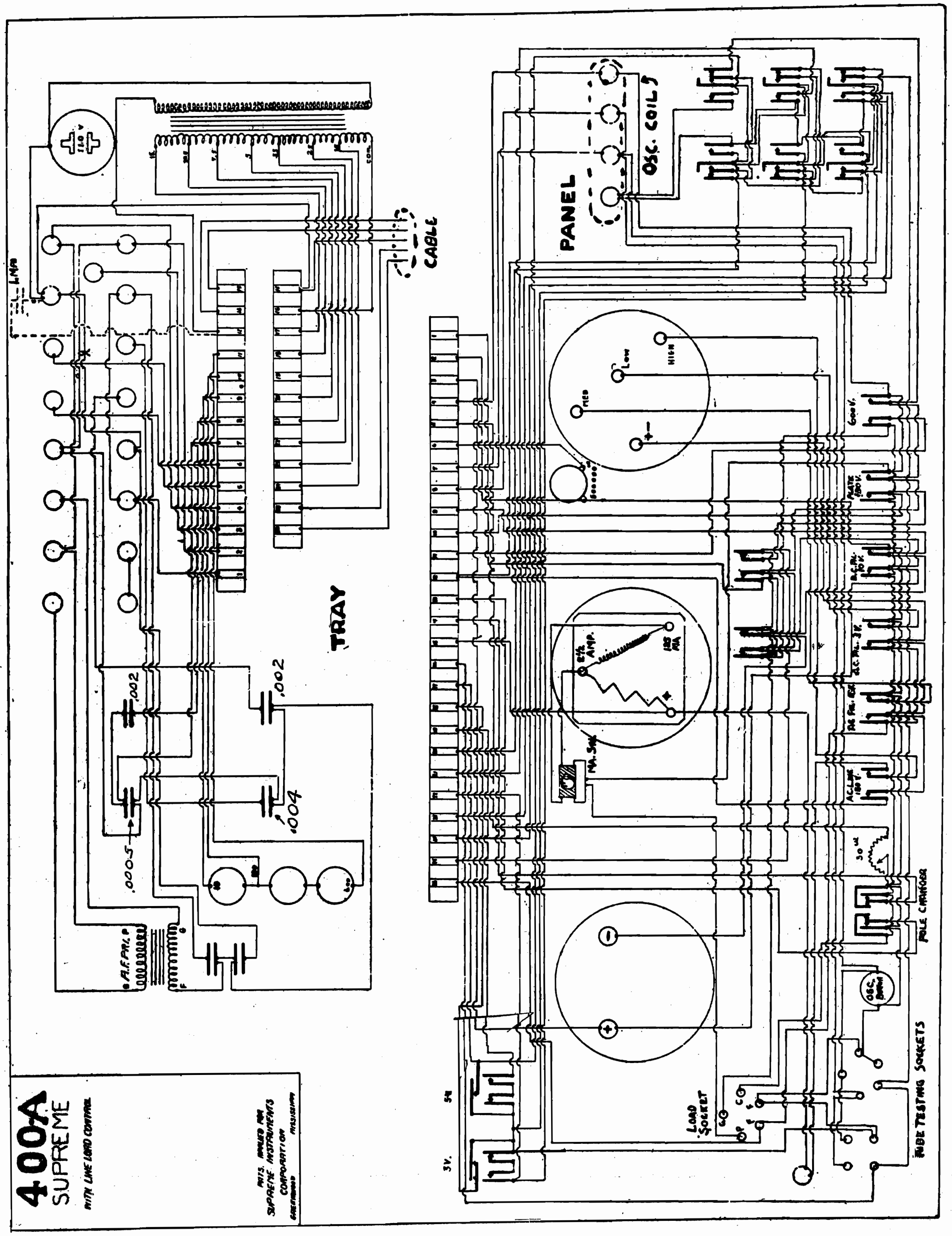
MODEL 99-A Analyzer

SUPREME INSTRUMENTS CORP.



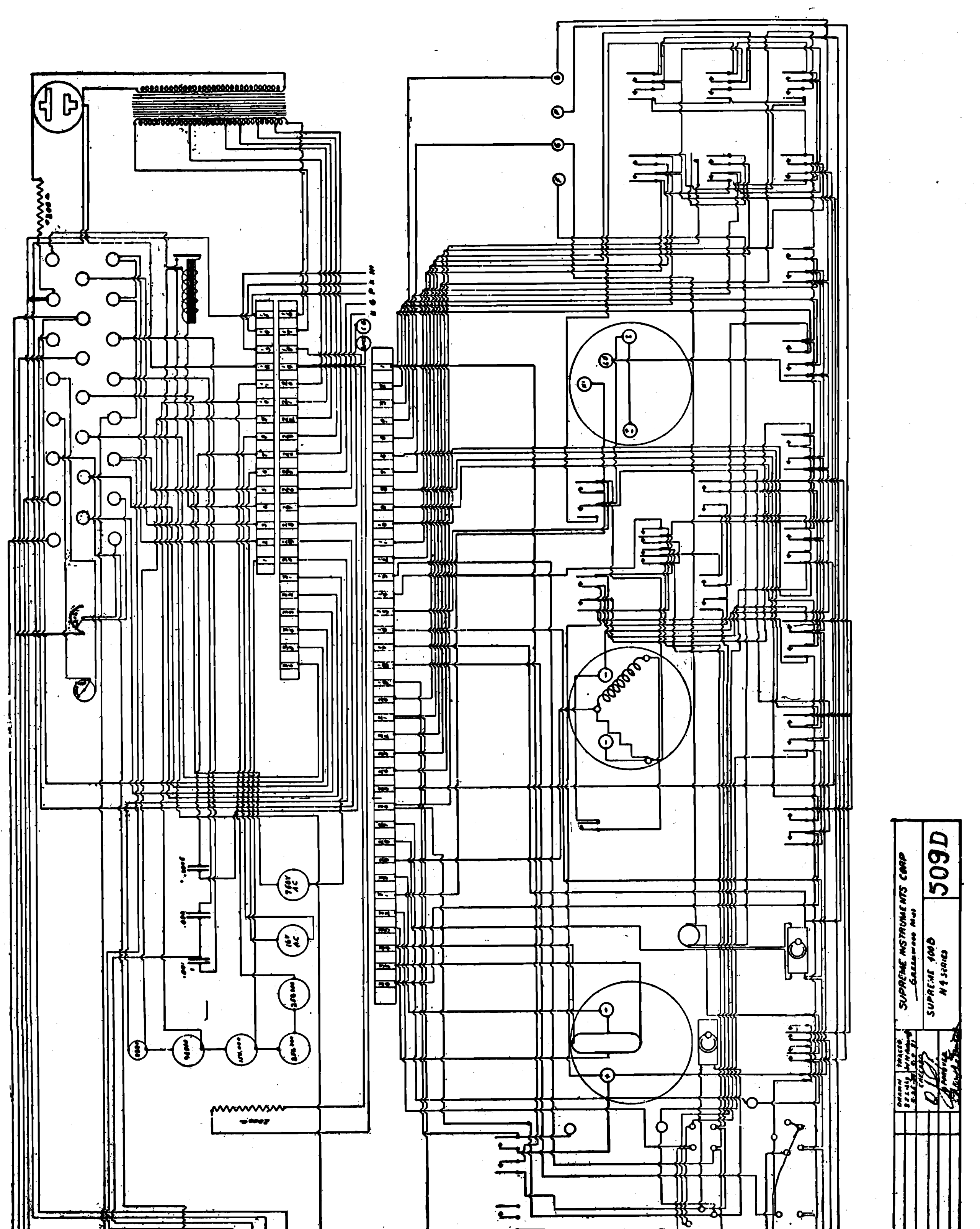
MODEL 400-A
Diagnometer

SUPREME INSTRUMENTS CORP.



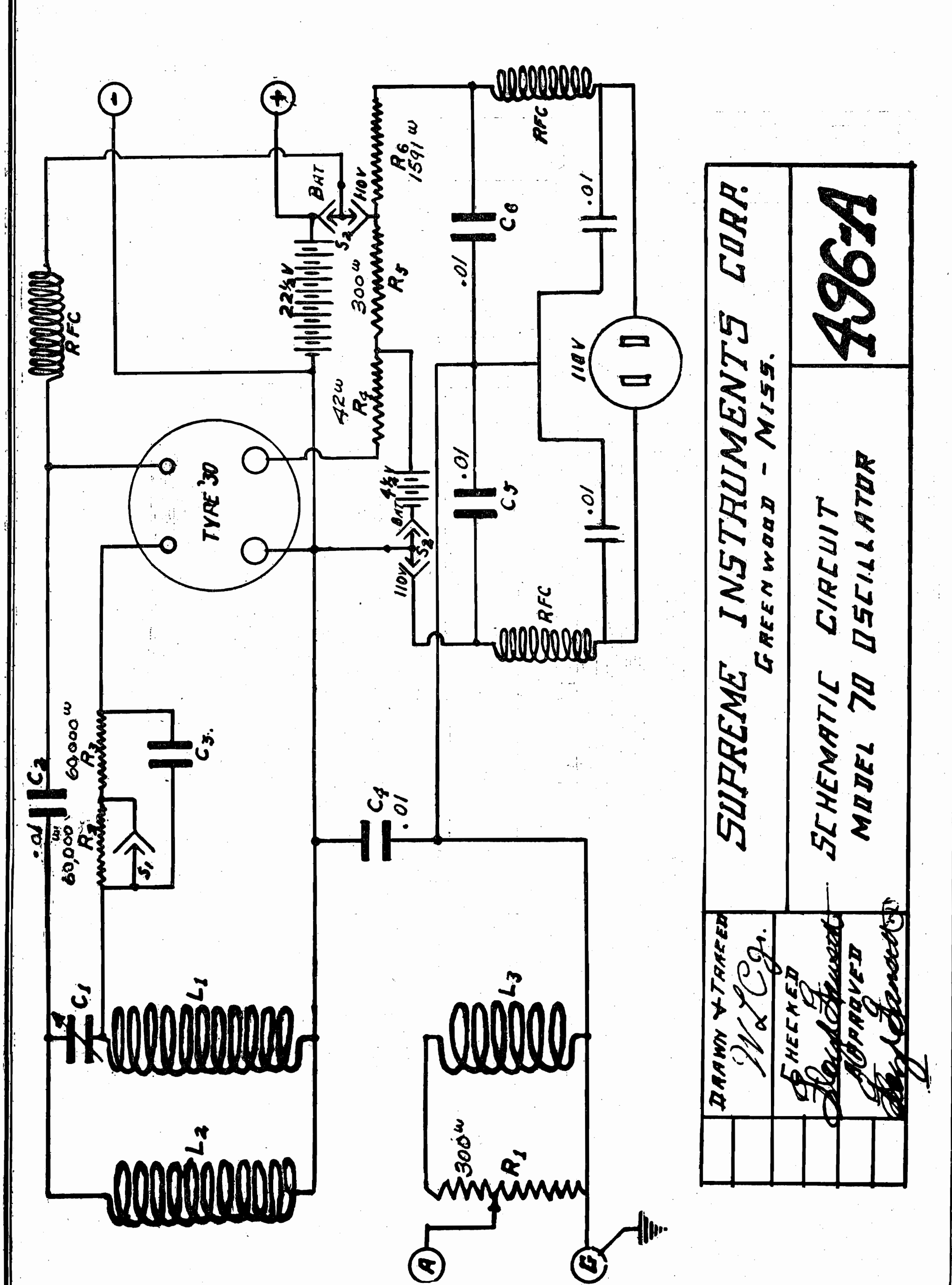
SUPREME INSTRUMENTS CORP.

**MODEL 400-B
#4 Series
Diagnometer**



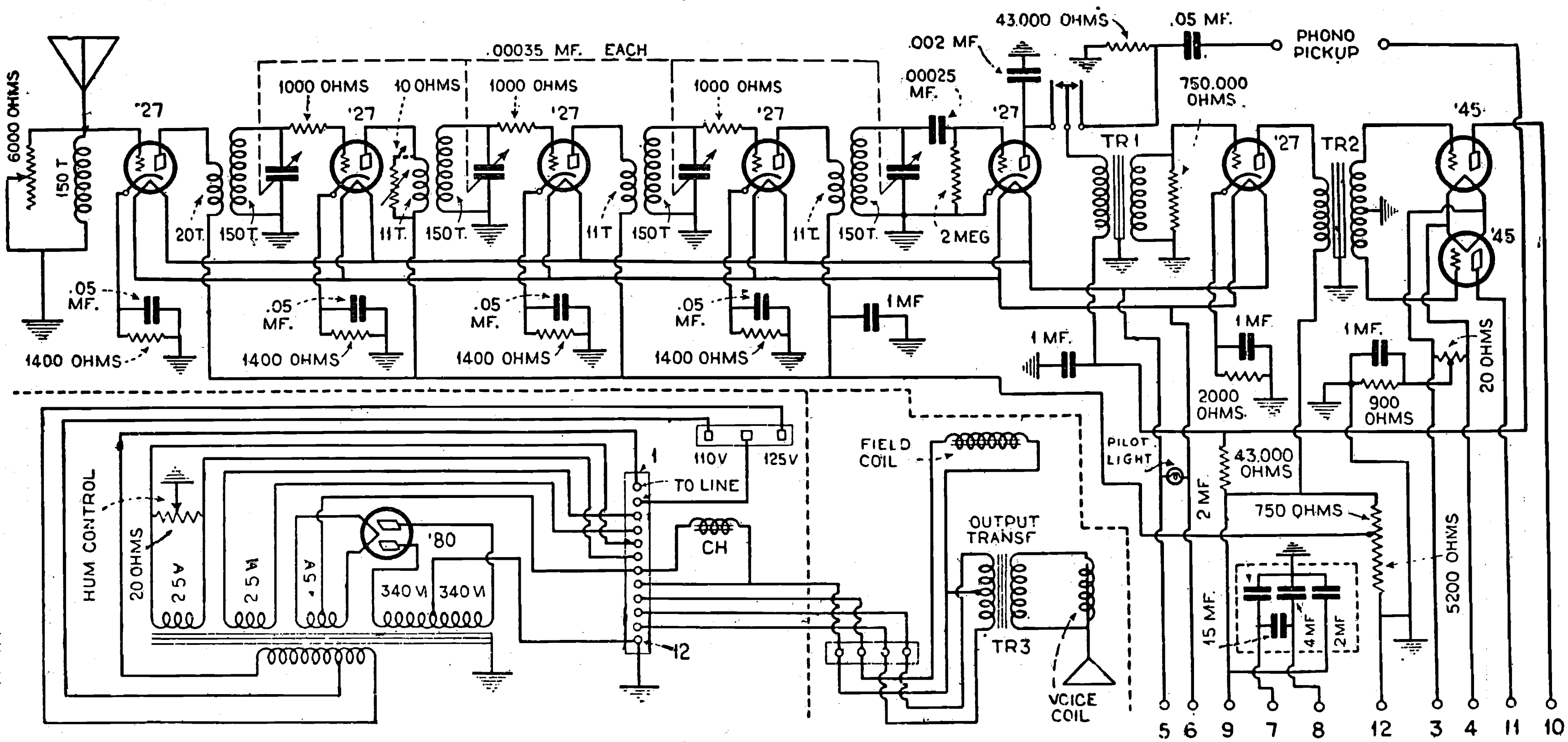
MODEL 70 Oscillator

SUPREME INSTRUMENTS CORP.



TEMPLE CORPORATION

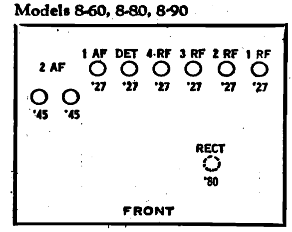
MODEL 8-60,8-80,8-90



TEMPLE—Models 860-880-890
Line Voltage 112—Volume Control Position Max

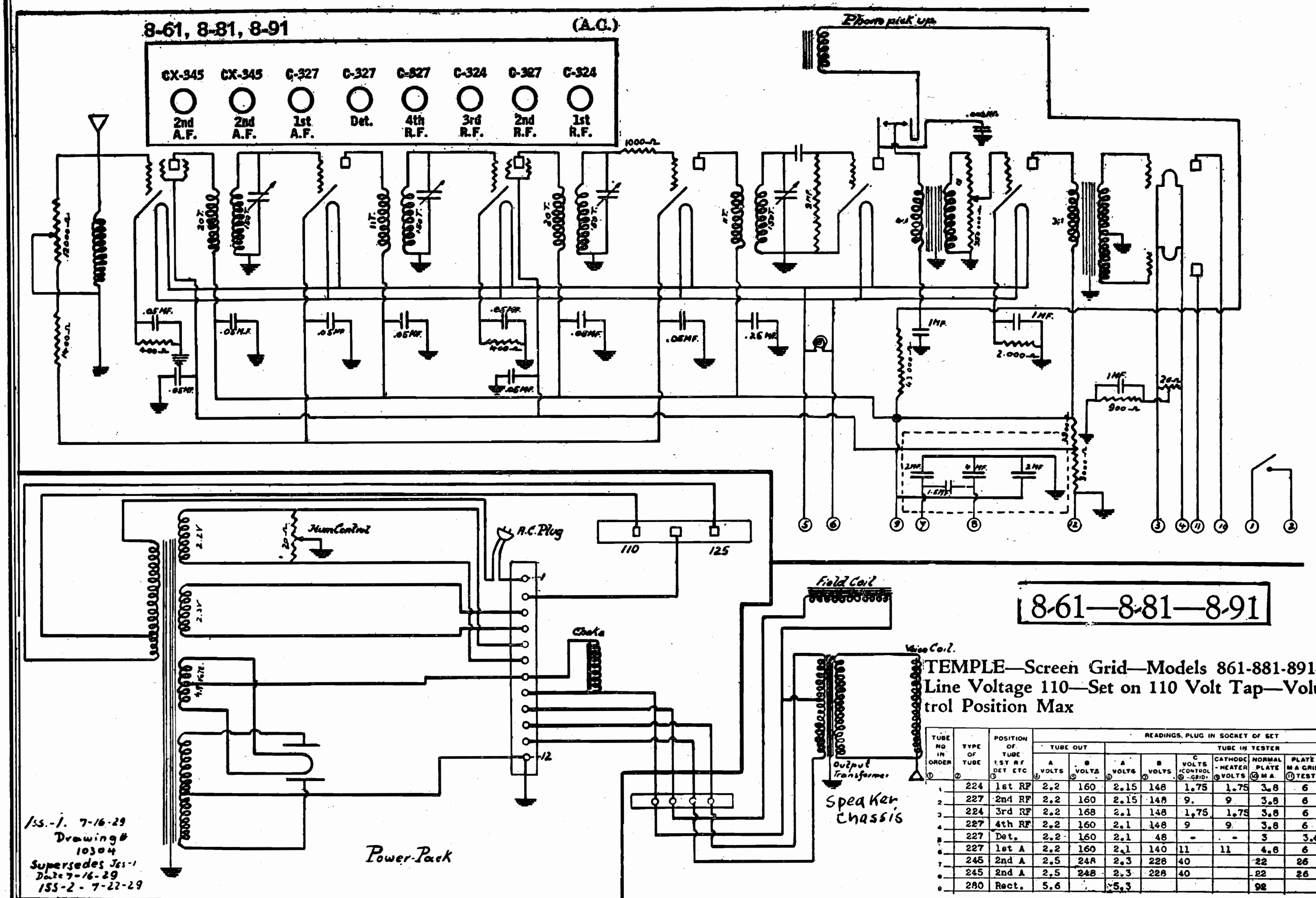
Tube No in Order ①	Type of Tube ②	Position of Tube 1st RF Det. Etc ③	Tube Out: A Volts ④	Tube Out: B Volts ⑤	Tube in Tester: A Volts ⑥	Tube in Tester: B Volts ⑦	Tube in Tester: C Volts (Control Grid) ⑧	Tube in Tester: Cathode-Heater Volts ⑨	Tube in Tester: Normal Plate M.A ⑩	Tube in Tester: Plate M.A Grid Test ⑪	Tube in Tester: Plate Change M.A ⑫	Tube in Tester: Screen Grid Volts ⑬
1	227	1st RF	2.10	136	2.05	124	7		4.8	6.9	2.7	
2	227	2nd RF	2.10	136	2.00	122	6		4.6	6.8	2.2	
3	227	3rd RF	2.15	138	2.00	122	7		4.7	6.8	2.1	
4	227	4th RF	2.15	136	2.05	121	7		5.	7.2	2.2	
5	227	Det.	2.15	140	2.10	48	0		2.5	3.0	.5	
6	227	1st A	2.15	164	2.10	140	8		4.2	5.8	1.6	
7	245	2nd A	2.45	260	2.25	240	43		26.	32.	6.	
8	245	2nd A	2.40	256	2.25	240	44		22.	28.	6	
9	280	Rect.	5.4	AC	4.8	AC	0		100	0	0	
10												

Models 8-60, 8-80, 8-90



MODEL 8-61, 8-81, 8-91

TEMPLE CORPORATION



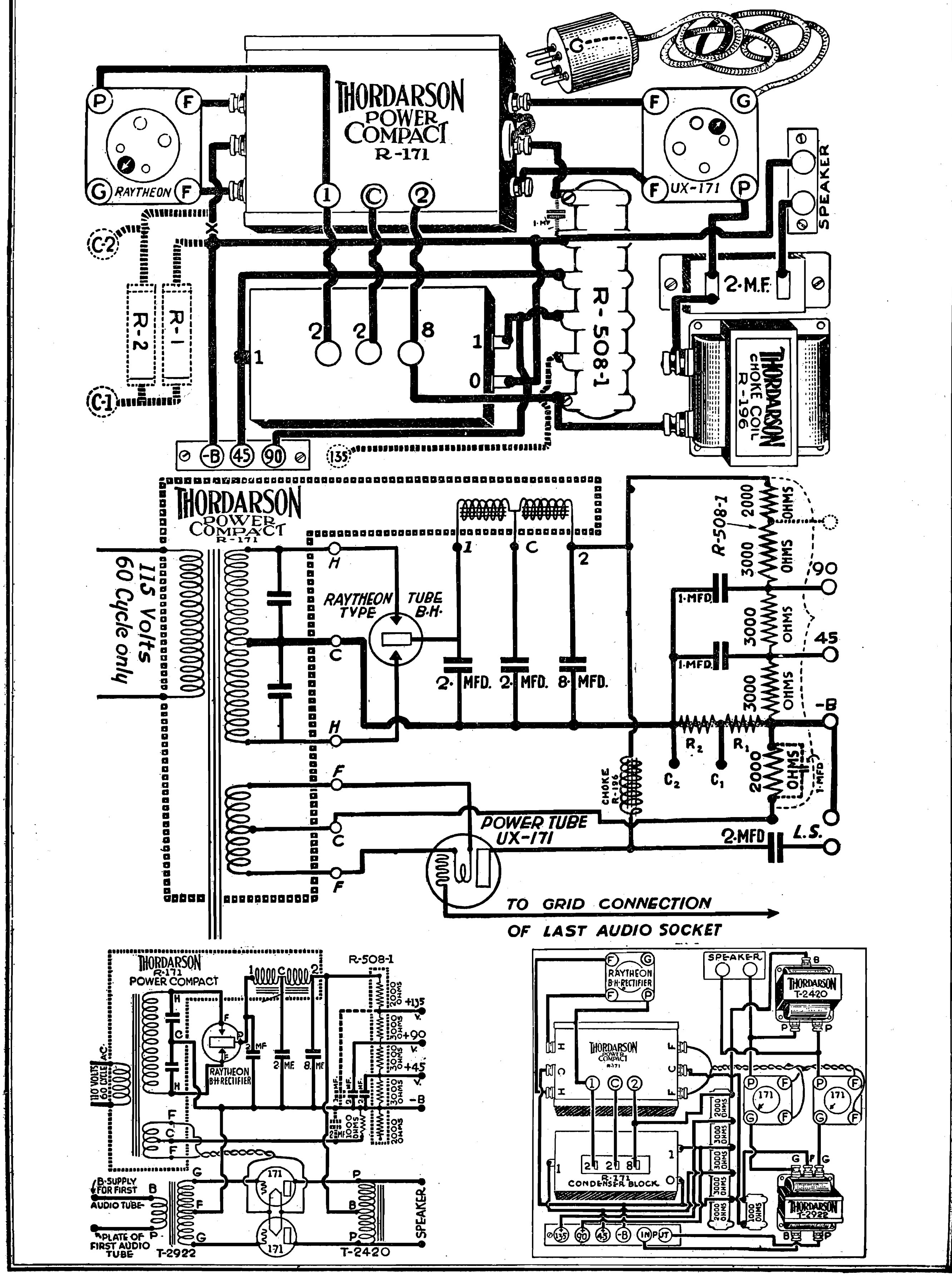
8-61—8-81—8-91

TEMPLE—Screen Grid—Models 861-881-891
Line Voltage 110—Set on 110 Volt Tap—Volume Control Position Max

Tube No in Order (1)	Type of Tube (2)	Position of Tube 1st RF Det Etc (3)	Readings, Plug in Socket of Set — Tube Out: A Volts (4)	B Volts (5)	Tube in Tester: A Volts (6)	B Volts (7)	C Volts (Control-Grid) (8)	Cathode-Heater Volts (9)	Normal Plate M A (10)	Plate M A Grid Test (11)	Plate Change M A (12)	Screen Grid Volts (13)
1	224	1st RF	2.2	160	2.15	148	1.75	1.75	3.8	6	2.2	72
2	227	2nd RF	2.2	160	2.15	148	9.	9	3.8	6	2.2	
3	224	3rd RF	2.2	168	2.1	148	1.75	1.75	3.8	6	2.2	72
4	227	4th RF	2.2	160	2.1	148	9	9	3.8	6	2.2	
5	227	Det.	2.2	160	2.1	48	-	-	3	3.4	.4	
6	227	1st A	2.2	160	2.1	140	11	11	4.8	6	1.2	
7	245	2nd A	2.5	248	2.3	228	40		22	26	4	
8	245	2nd A	2.5	248	2.3	228	40		22	26	4	
9	280	Rect.	5.6		5.3				92			

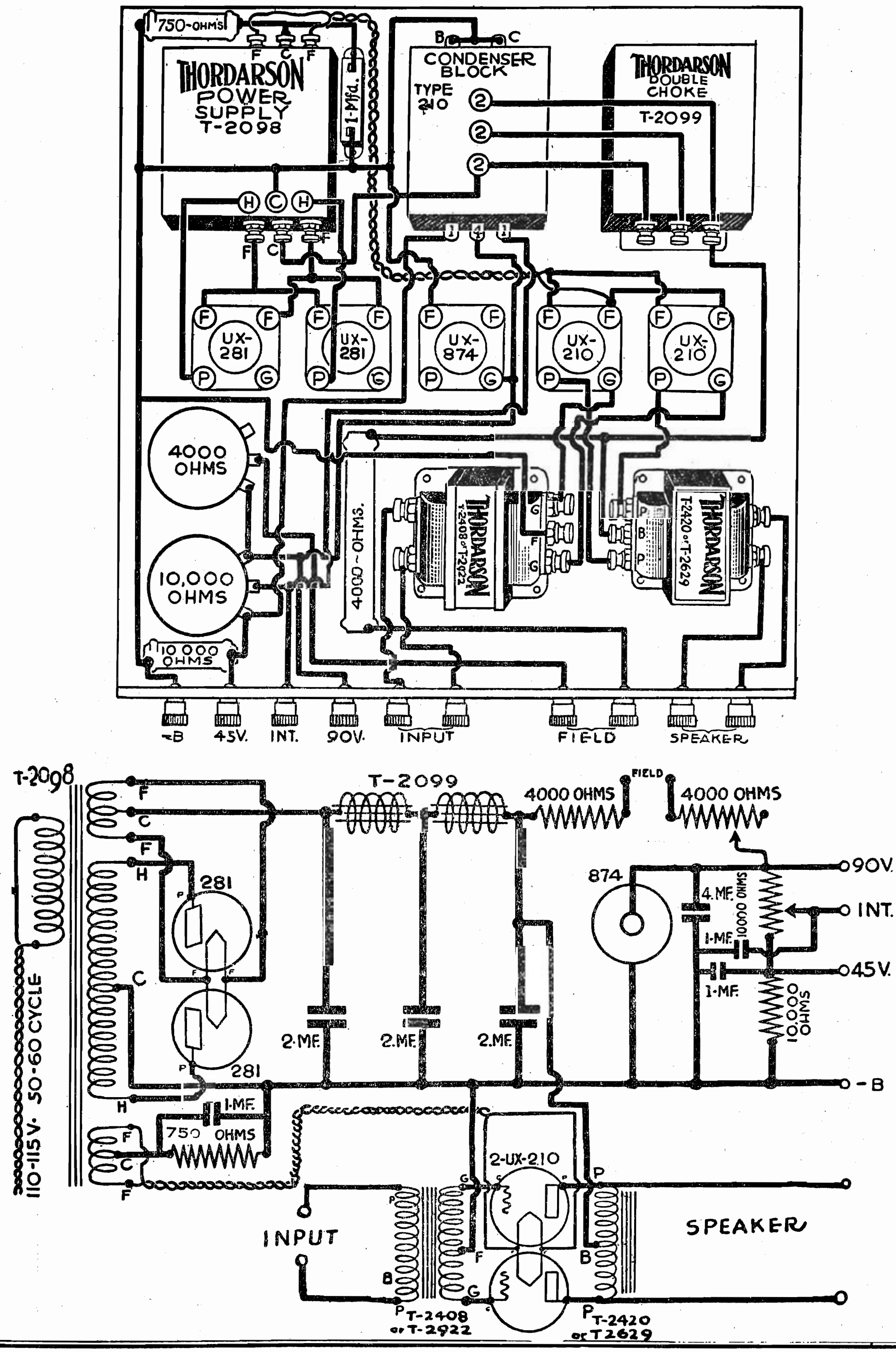
THORDARSON ELECTRIC MFG. CO.

MODEL R-171
MODEL PP-171



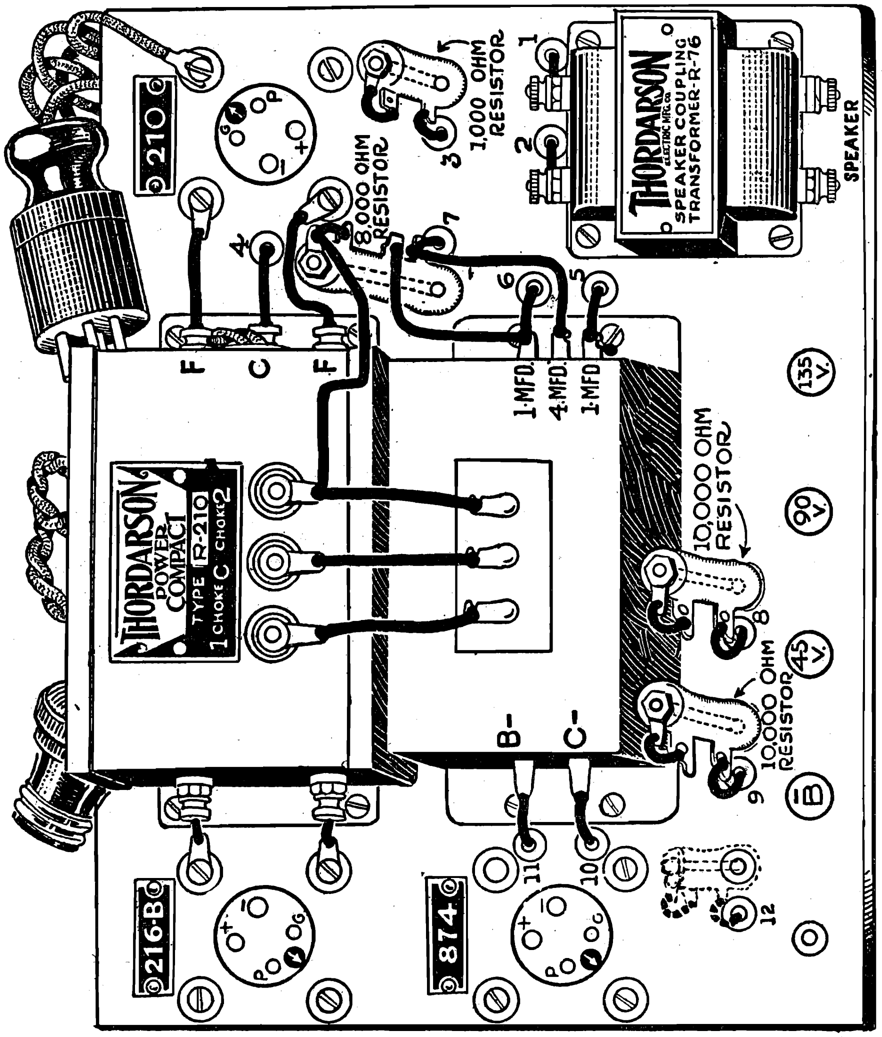
MODEL 210
Power Amplifier

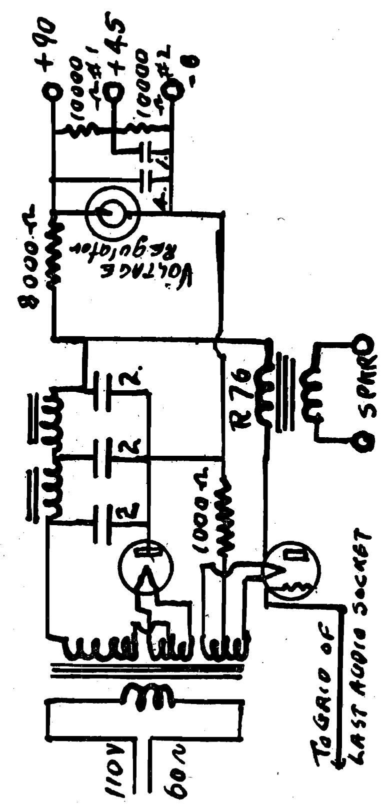
THORDARSON ELECTRIC MFG. CO.

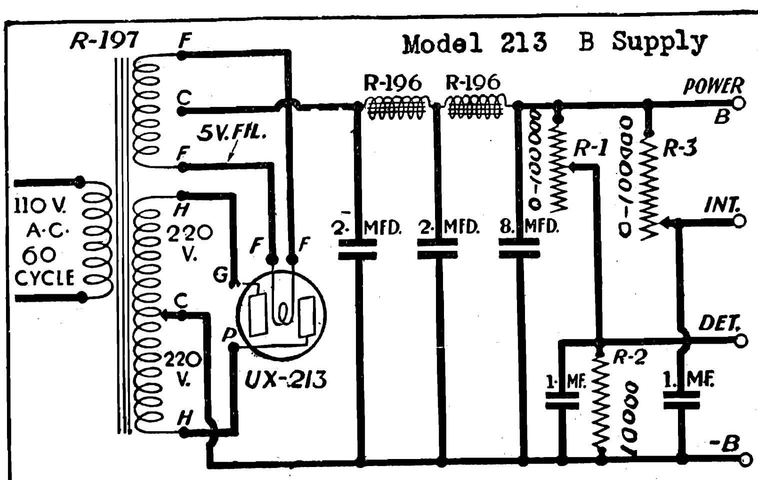


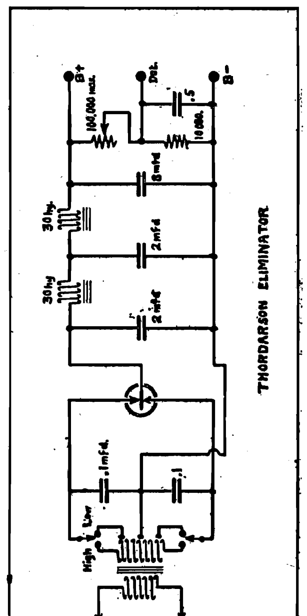
THORDARSON ELECTRIC MFG. CO.

MODEL R-210
MODEL 213
MODEL Eliminator



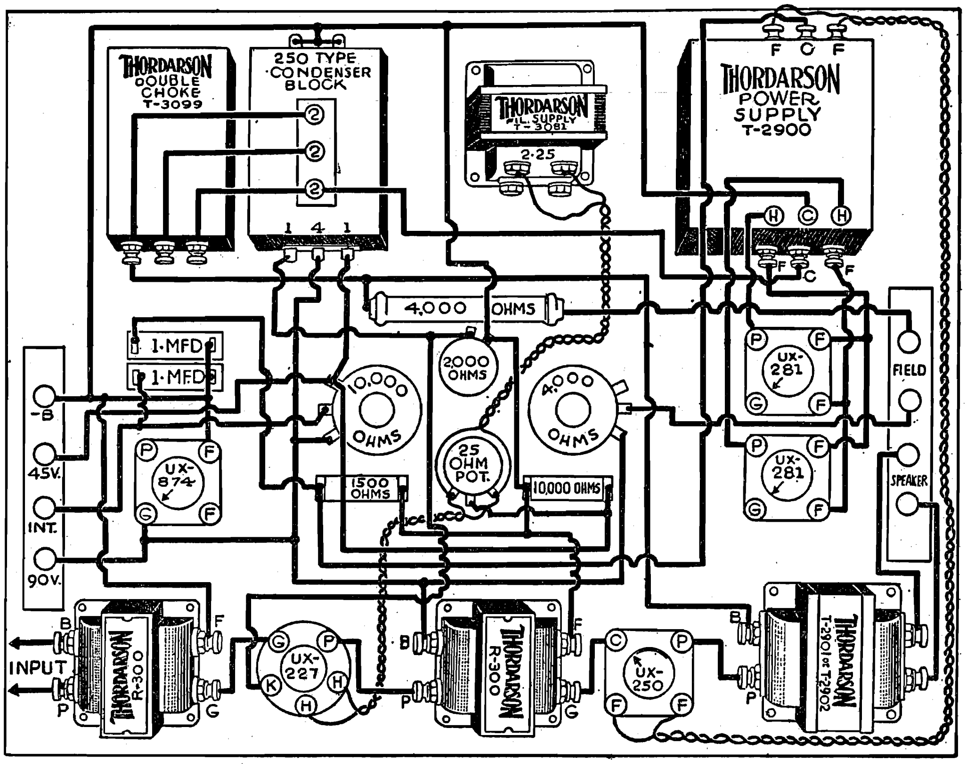


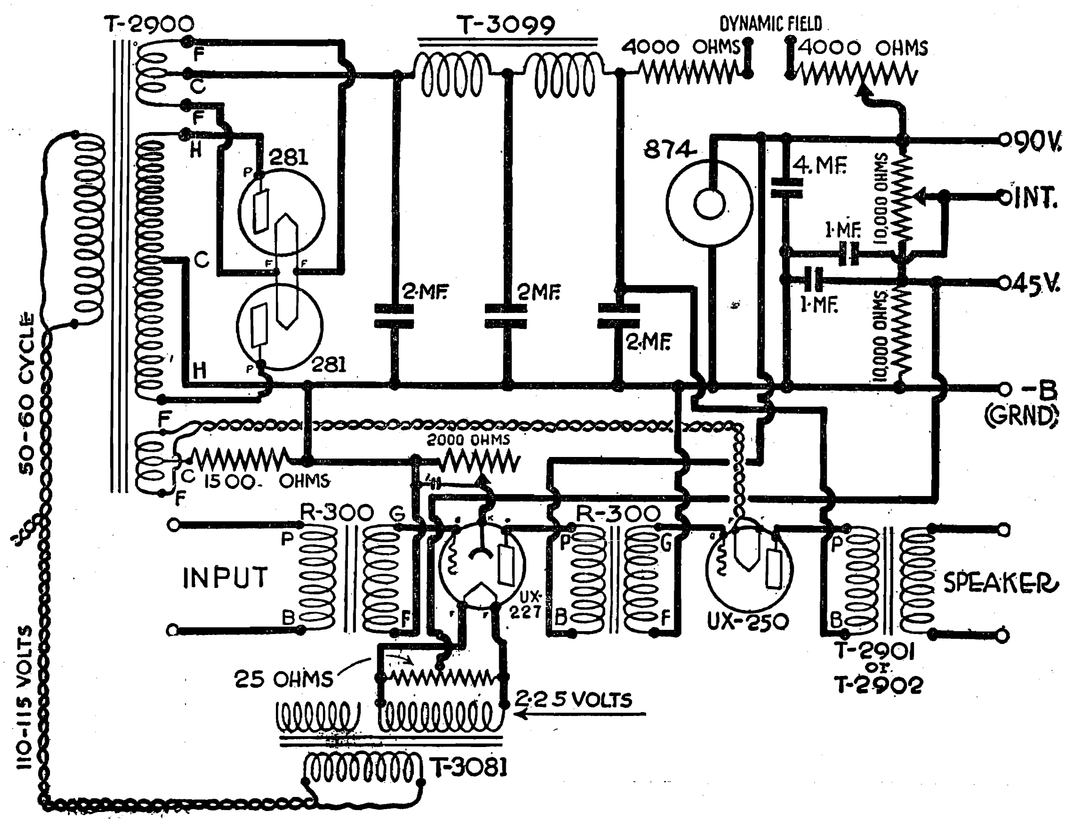




MODEL 250
Power Amplifier

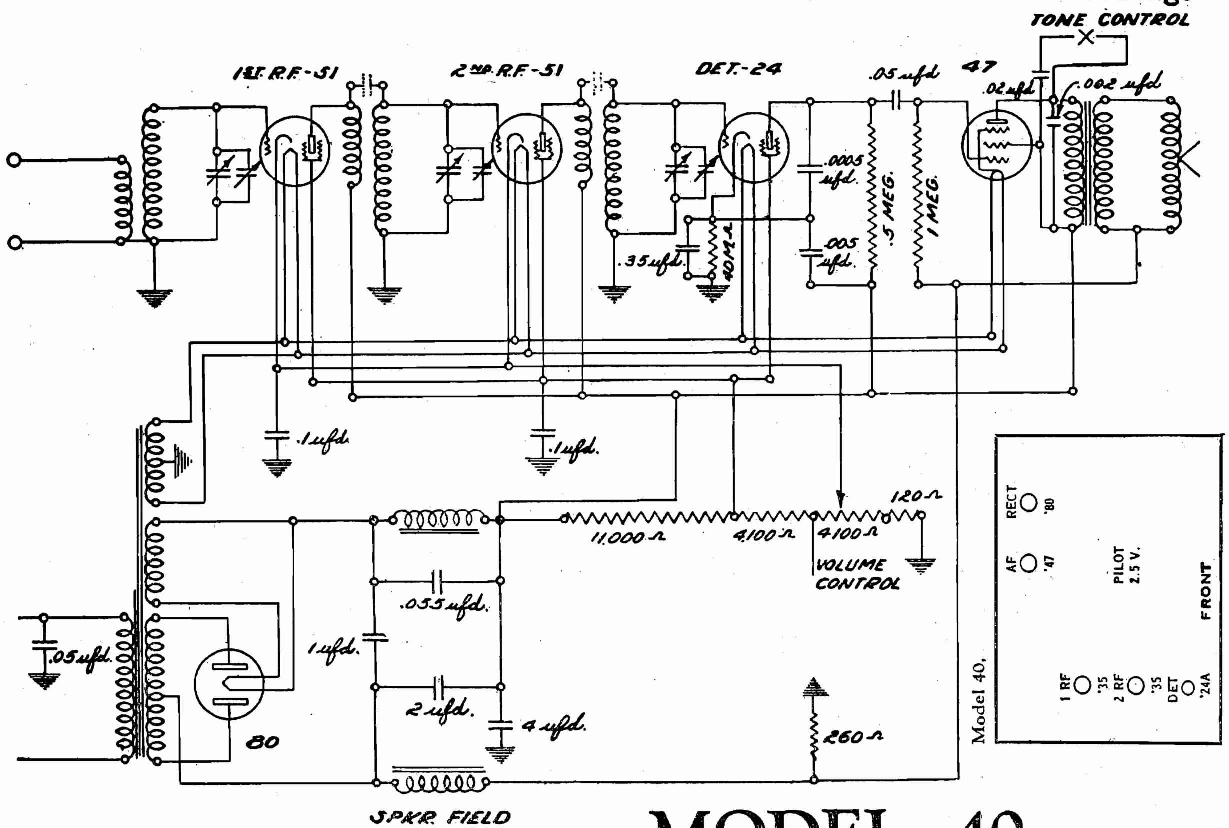
THORDARSON ELECTRIC MFG. CO.





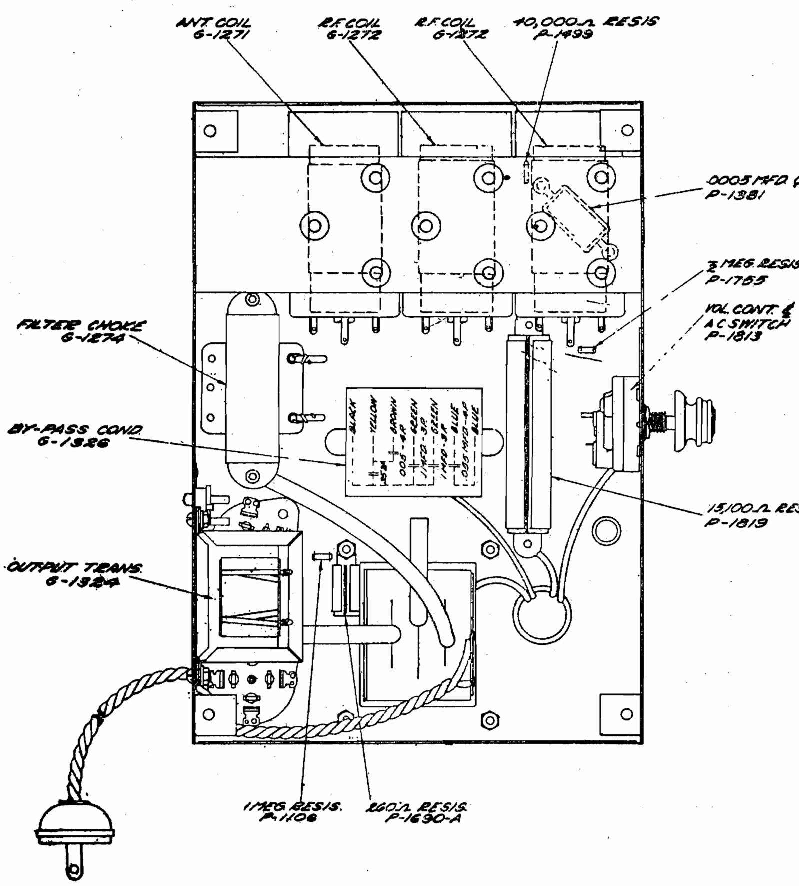
MODEL 40
Schematic
Voltage

TRANSFORMER CORP. OF AMERICA



6-2-31

MODEL 40



VOLTAGE ANALYSIS

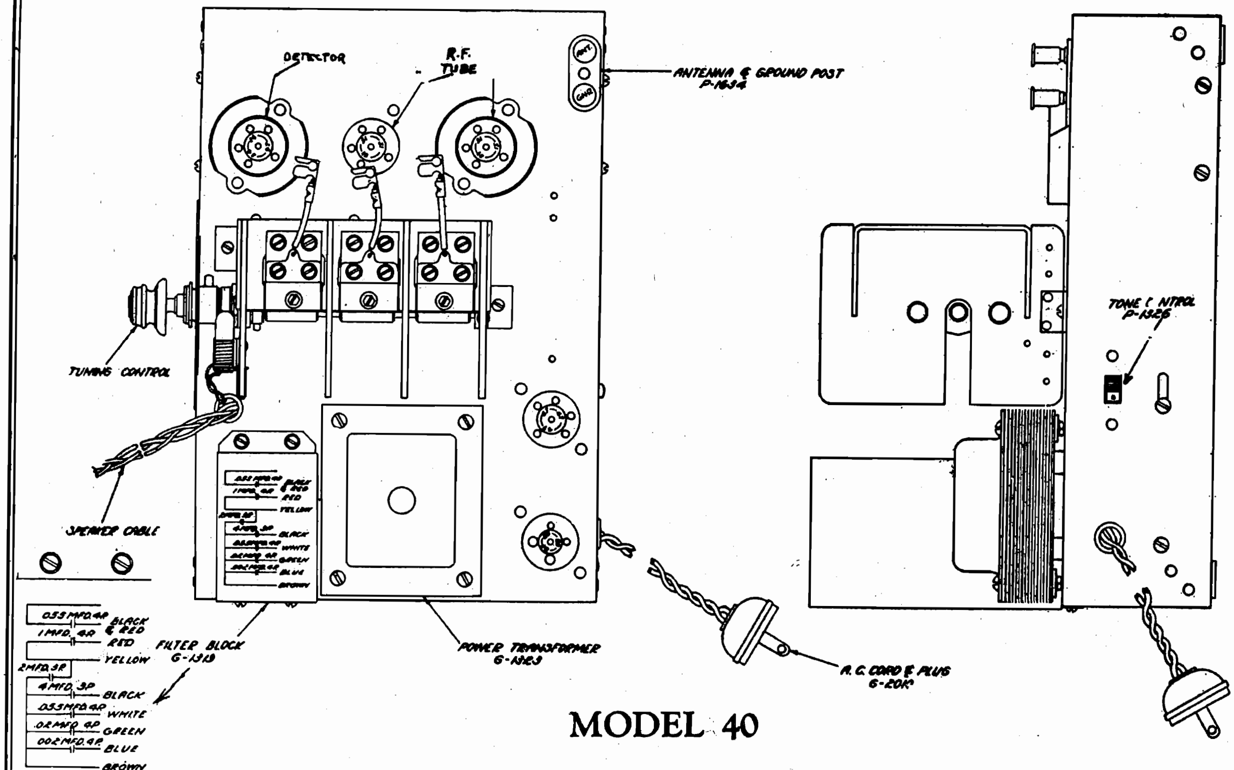
READINGS TAKEN WITH WESTON MODEL 565 ANALYZER MODEL 40

No.	Stage	Type Tube	Fil. Volts	Plate Volts	Cont. Grid Volts	Cath. Volts	S. G. Volts	Ip. Normal
1	1st R. F.	C. L. 51	2.1	225	2.1	2	75	5
2	2nd R. F.	C. L. 51	2.1	230	2.2	2	75	4.5
3	Det.	C. L. 24	2.1	160	7	7.5	75	.02
4	Output	C. L. 47	2.1	215	5*	0	225	26.5
5	Rect.	C. L. 80	4.8	280				†30

*Reading dependent upon resistance of meter.
†Reading taken for one anode only: 60 milliamperes would be about correct.
Volume control position full. Line voltage 115—60 cycle.

MODEL 40
Chassis
Data

TRANSFORMER CORP. OF AMERICA



MODEL 40

MODEL 40 CONTINUITY TEST TABLES

(Using 10-volt scale 1,000 ohms per volt: meter with 6-volt battery)

Circuit Tested	From	To	Reading	Your Reading
Ant. coil pri.	Ant. post	Ground	6.	
Ant. coil sec.	Grid 1st tube	Ground	6.	
1st R. F. Plate ckt.	Plate of tube	Brown lead of filter pack	6.	
1st R. F. Screen ckt.	Screen prong	Center lead Voltage divider	6.	
1st R. F. Cathode ckt.	Cath. prong	Center tap Volume Control "ON"	6.	
2nd R. F. Grid ckt.	Grid Clip	Ground	6.	
2nd R. F. Plate ckt.	Plate prong	Brown lead of filter pack	6.	
2nd R. F. Screen ckt.	Screen prong	Center tap Voltage divider	6.	
2nd R. F. Cathode ckt.	Cathode prong	Center tap Volume Control "ON"	6.	
Det. Grid ckt.	Gird Clip	Ground	6.	
Det. Plate ckt.	Plate prong	Brown lead of filter pack	6.	
Det. Screen ckt	Screen prong	Center Voltage divider	6.	
Det. Cathode ckt.	Cathode prong	Ground	1.4	
P. Z. cont. grid	Grid prong	Sec output trans. black lead	(slight deflection)	
P. Z. space chg. grid ckt.	S. C. Grid Prong	Brown lead of filter pack	6.	
P. Z. Plate ckt.	Plate prong	Brown lead of filter pack	5.7	
Output Sec.	One side	Other side	5.9	
Pri Power Trans.	Across A. C. Plug	Switch on	5.9	
Hi volts Sec.	Across 280 plate prongs		5 6	
Speaker field	Red wire	Green Wire	5.4	
Speaker voice coil	Green wire	Black	6.	
Filter Choke	Across red leads		5.6	
Voltage divider	Ground	Brown lead of filter pack	2.2	

RESISTANCE TABLE MODEL 40

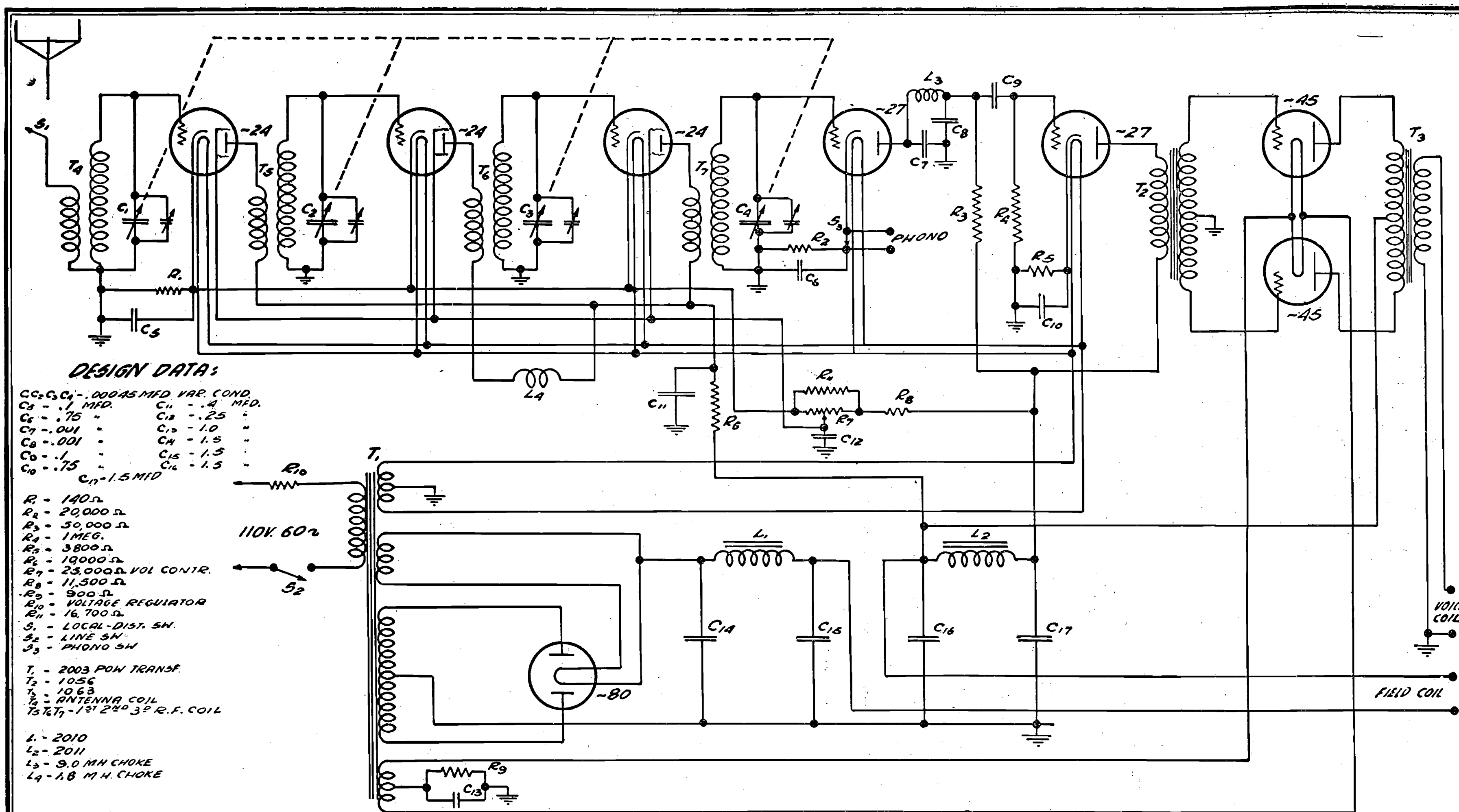
(Using 10-volt range meter 1,000 ohms per volt and 6-volt battery)

Item	Color Code*	From	To	Reading	Your Reading	Resistance in Ohms
Det. Cath. Resistor	Yel., Blk., Or.	Det. Cath.	Gnd.	1.3		40,000
Pent. Grid Resistor	Br. Blk. Green	Pent Grid	Spkr. Field	Slight Deflection		1,000,000
Wire Wound	Black	VoiceCoil,Black	Gnd.	5.9		260
Voltage Divider, Short End	Black	Volume Cont. Green Lead	S. G. Ckt.	4.2		4,100
Voltage Divider, Long End	Black	Plate	S. G. Ckt.	3.		11,000
Det. Plate Resistor	Gr., Blk., Yellow	Det. Plate	Pent. Space Chg. Grid.	.1		500,000
Vol. Control "on"		Gnd.	R. F. Cathode	4.2		4,100

*Color code: read body color first, tip second and dot last.

TRANSFORMER CORP. OF AMERICA

MODEL AC 51,53,55
Schematic
Voltage



DESIGN DATA:

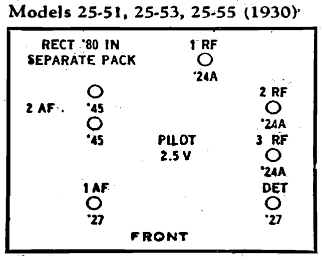
$C_1C_2C_3C_4$ - .00045 MFD VAR. COND.
C_5 - .1 MFD.
C_6 - .75 "
C_7 - .001 "
C_8 - .001 "
C_9 - .1 "
C_{10} - .75 "
C_{11} - .4 MFD.
C_{12} - .25 "
C_{13} - 1.0 "
C_{14} - 1.5 "
C_{15} - 1.5 "
C_{16} - 1.5 "
C_{17} - 1.5 MFD

R_1 - 140 Ω
R_2 - 20,000 Ω
R_3 - 50,000 Ω
R_4 - 1 MEG.
R_5 - 3800 Ω
R_6 - 10,000 Ω
R_7 - 25,000 Ω VOL CONTR.
R_8 - 11,500 Ω
R_9 - 900 Ω
R_{10} - VOLTAGE REGULATOR
R_{11} - 16,700 Ω
S_1 - LOCAL-DIST. SW.
S_2 - LINE SW
S_3 - PHONO SW

T_1 - 2003 POW TRANSF.
T_2 - 1056
T_3 - 1063
T_4 - ANTENNA COIL
$T_5T_6T_7$ - 1ST 2ND 3RD R.F. COIL

L_1 - 2010
L_2 - 2011
L_3 - 9.0 MH. CHOKE
L_4 - 1.8 MH. CHOKE

Models 25-51, 25-53, 25-55 (1930)



CLARION—Models 51, 53, 55.
Line Voltage 125—Volume Control Full On

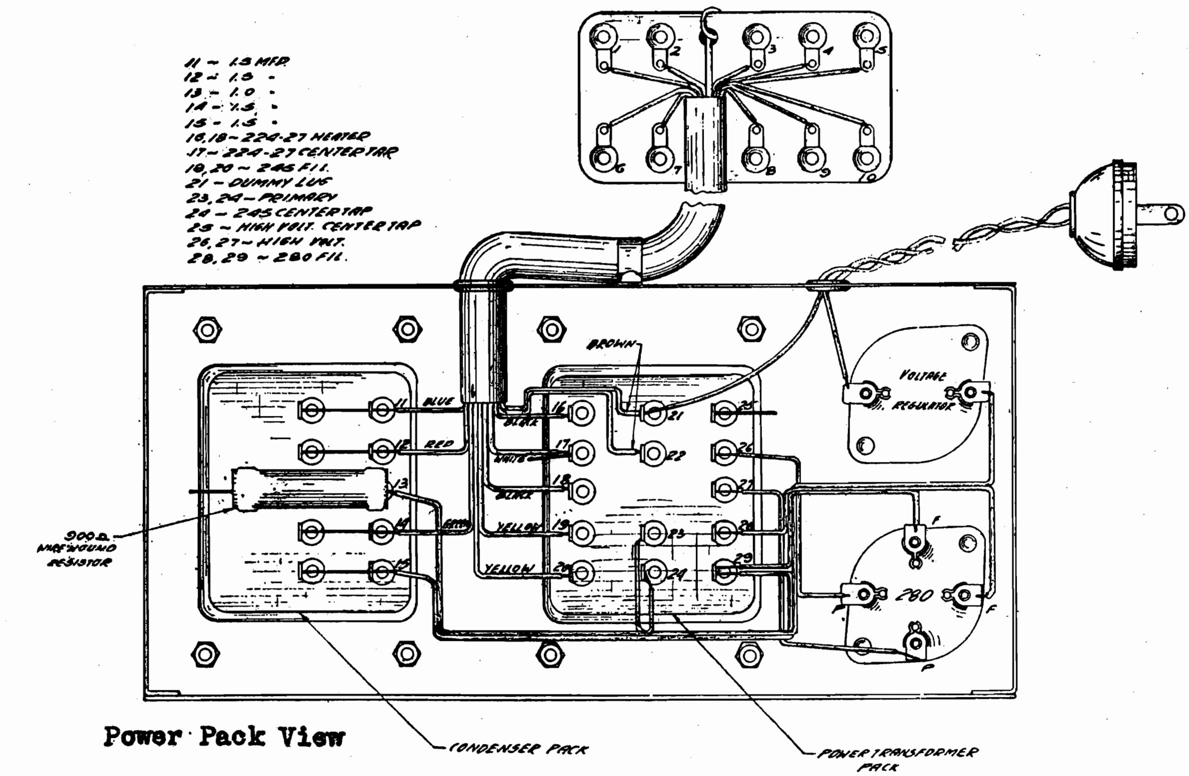
Tube No. in Order Tested (1)	Type of Tube (2)	Position of Tube in Set (3)	Operating Voltages: Filament or Heater (4)	Operating Voltages: Plate or Anode (5)	Operating Voltages: Control Grid—Space (6) GD +	Operating Voltages: Normal Grid—Screen (7) GD +	Operating Voltages: Cathode to Heater (9)	Milliamperes: Screen GD L H 80 Plate (9)	Milliamperes: Plate R H 80 Plate (10)	Milliamperes: Tube Test (11)	Milliamperes: Plate Current Change (12)
1	224	1 R.F.	2.47	158	3	84	3	-	3.1	6.5	3.4
2	224	2 R.F.	2.47	158	3	84	3	-	3.8	7.8	4.0
3	224	3 R.F.	2.47	156	3	84	3	-	3.5	7.9	4.4
4	227	Det.	2.47	157	-	12.6	13.5	-	.8	.85	.05
5	227	1 A.F.	2.48	198	-	1.0	16	-	4.2	4.9	.7
6	245	PP-AF	2.55	227	-	42	-	-	22	26	4
7	245	PP-AF	2.55	225	-	42	-	-	27	32	5
8	280	Rect.	5.3	-	-	-	-	41	41	-	-

Line Voltage 105

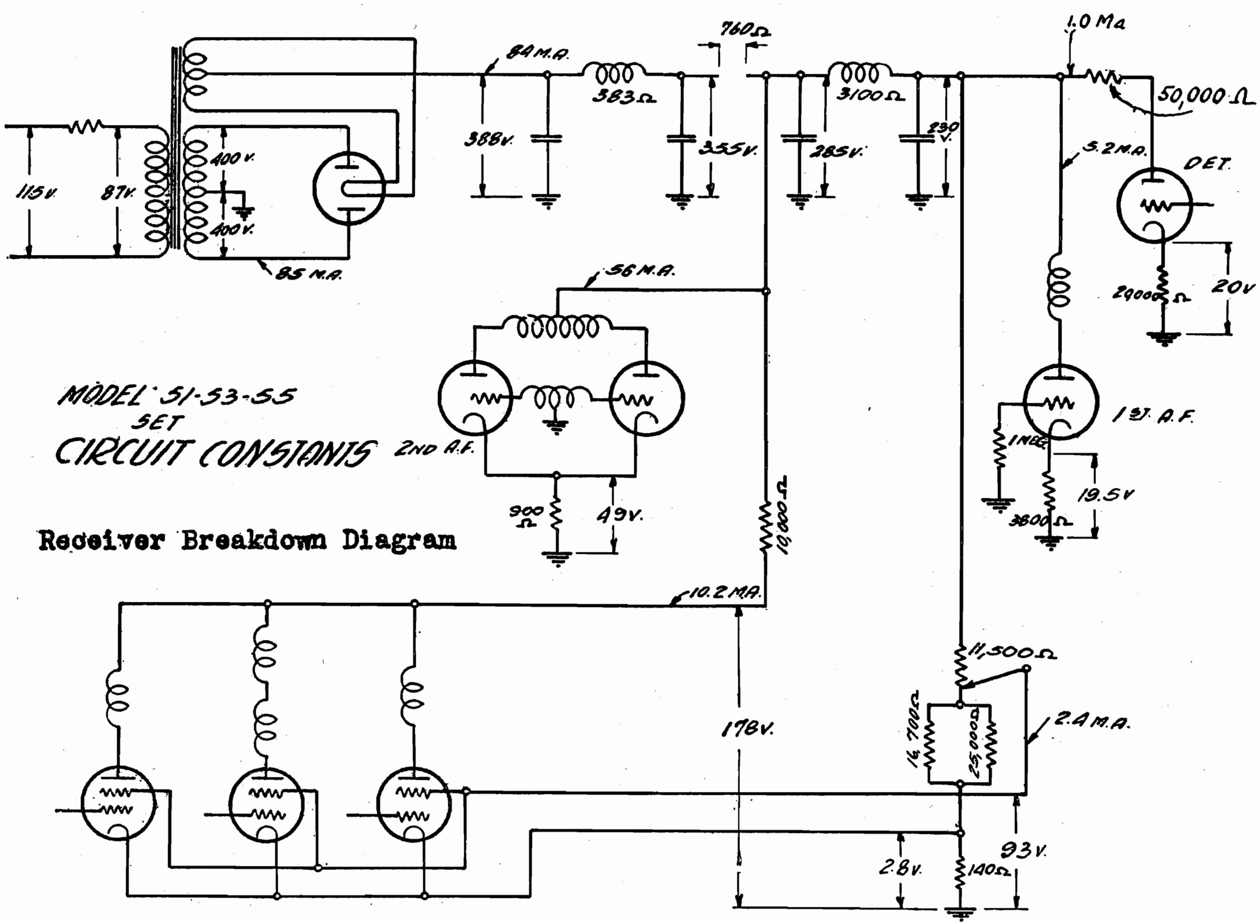
Tube No. in Order Tested (1)	Type of Tube (2)	Position of Tube in Set (3)	Operating Voltages: Filament or Heater (4)	Operating Voltages: Plate or Anode (5)	Operating Voltages: Control Grid—Space (6) GD +	Operating Voltages: Normal Grid—Screen (7) GD +	Operating Voltages: Cathode to Heater (9)	Milliamperes: Screen GD L H 80 Plate (9)	Milliamperes: Plate R H 80 Plate (10)	Milliamperes: Tube Test (11)	Milliamperes: Plate Current Change (12)
1	224	1 R.F.	2.09	146	2.43	87.5	2.43	-	2.72	5.55	2.83
2	224	2 R.F.	2.09	151	2.43	85.5	2.43	-	2.55	5.65	3.10
3	224	3 R.F.	2.09	151	2.43	87.5	2.43	-	2.75	5.8	2.92
4	227	Det.	2.09	134	-	12.2	13.15	-	.58	.78	.20
5	227	1 A.F.	2.14	170	-	1.22	13.6	-	3.31	4.08	.77
6	245	PP-AF	2.14	195	-	37.5	-	-	20.4	24.3	3.9
7	245	PP-AF	2.14	195	-	37.5	-	-	23.4	27.2	3.8
8	280	Rect.	4.51	-	-	-	-	35	35	-	-

MODEL AC 51,53,55
Power Pack View
Receiver Breakdown

TRANSFORMER CORP. OF AMERICA



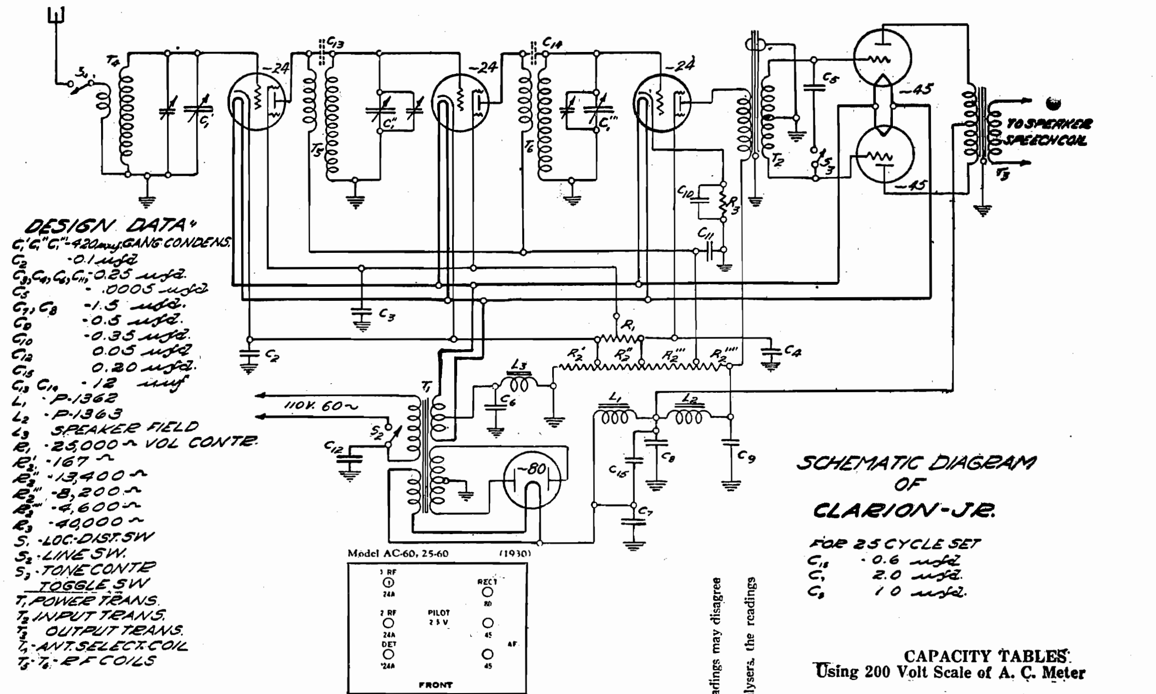
Power Pack View



Receiver Breakdown Diagram

TRANSFORMER CORP. OF AMERICA ®

MODEL AC-60, 25-60
Schematic
Voltage Data



Line Volts—105 Volts

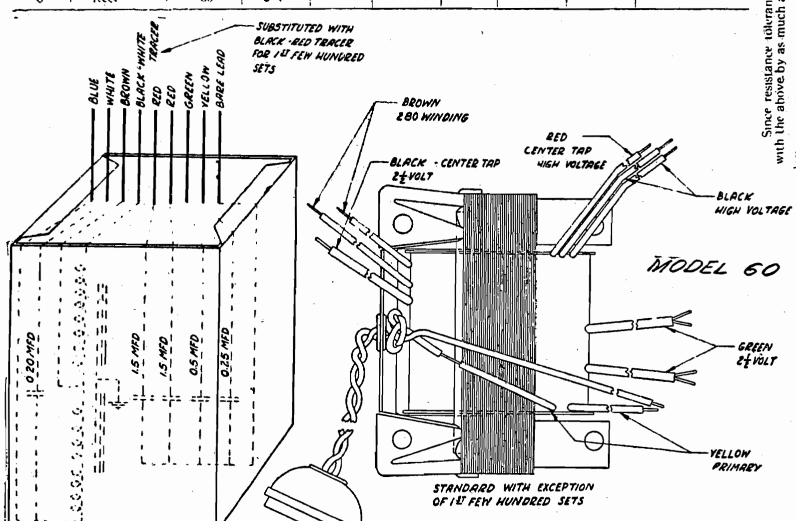
No	Stage	Type Tube	A Volts	B Volts	Cont. Grid Volts	Cath. Volts	Ip' Norm.	Ip" G.D.	Ip"-Ip (Diff)	SG Volts
1	1st r f	'24	2 05	165	2 6	44	2 1	3 6	1 5	76
2	2nd r f	'24	2 05	165	2 6	44	2 3	3 8	1 5	76
3	Det	'24	2 06	196	*7 0	*26	*0 2	*1 3	*1 1	*70
4	AF	45	2 15	230	45 0		28	82	4 0	
5	AF	45	2 15	230	45 0		25	29	4 0	
6	Rect	80	4 6							

Line Volts—125 Volts

No	Stage	Type Tube	A Volts	B Volts	Cont Grid Volts	Cath. Volts	Ip Norm	Ip" G.D	Ip"-Ip (Diff)	SG Volts
1	1st r f	'24	2 55	197	3 1	50	2 7	4 7	2 0	97
2	2nd r f	'24	2 55	197	3 1	50	3 0	5 0	2 0	97
3	Det	'24	2 55	250	*8	*32	*0 2	*1 6	*1 4	*86
4	AF	45	2 65	276	52		35	40	5 0	
5	AF	45	2 65	276	52		31	35	5 0	
6	Rect	80	5 4							

Since resistance tolerances in the set are plus or minus 10% and tubes may vary 10 to 20% your readings may disagree with the above by as much as 20% in rare cases.

*Because of high resistance in the cathode circuit of this tube, together with the circuit used in most analysers, the readings marked with an asterisk may vary over 100% when using different meter scales.



60 CYCLE FILTER BLOCK

60 CYCLE POWER TRANSFORMER

CAPACITY TABLES
Using 200 Volt Scale of A. C. Meter
(107 Volt 60 Cycle Line)

No.	Capacity	Reading	Your Reading	Part No.
C-2	0 10	45 0		G-1136
C-3	0 25	70.0		G-1136
C-11	0 35	87 0		G-1136
C-10	0 35	86 0		G-1108
C-4	0 25	78 0		G-1108
C-12	0 05	20 0		G-1108
C-15	0 20	67 0		G-1106
C-7	1 5	105 0		G-1106
C-8	1 5	105 0		G-1106
C-9	0 5	95 0		G-1106
C-6	0 25	75 0		G-1106

25 Cycle Filter Pack Readings on
107 Volt 30 Cycle

C-15	0 6	85 0		G-1132
C-7	2 0	103 0		G-1132
C-8	1 5	102 0		G-1132
C-9	1 0	97 0		G-1132
C-6	0 25	44 0		G-1132

Note Above capacity values are for latest specifications. Previous production to Nov. 1st, 1930, will give higher values.

RESISTANCE TABLES
Using 6 Volt Battery with 0-10 Voltmeter
(1000 Ohms Per Volt)

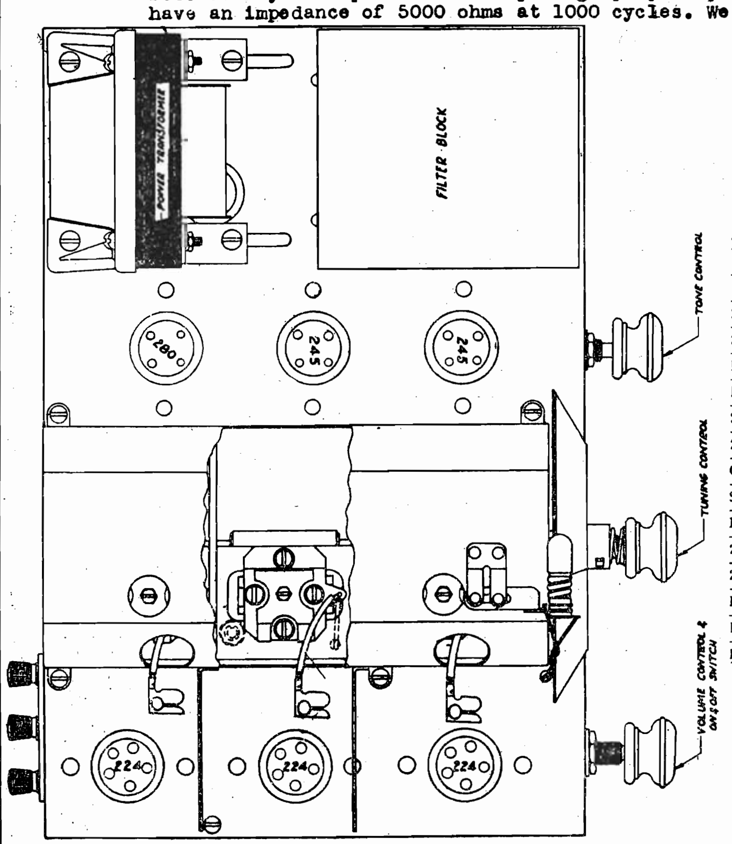
Item tested	From	To	Reads	Your Reading	Resistance (ohms)
Voltage Divider with volume control connected across taps 1-2	Ground	Tap 1	6.0		167
	Ground	Tap 2	3.3		8900
	Ground	Tap 3	2.2		17000
	Ground	Tap 4	1.9		21600
Det. Bias resist.	Ground	Det. cath. prong	1.2		40000
Volume control	Across volume control (disconnected)		1.8		25000
L. 1. filter choke	Center Tap Output Trans.	280 fil. prong	5.9		225
L. 2. filter choke	Center Tap Output Trans.	Plt. prong det.	5.0		2000

L. 1. and L. 2. for 25 cycle same as above

MODEL AC-60,25-60
Chassis View
Continuity Test

TRANSFORMER CORP. OF AMERICA

In some A.C. 60 models a phonograph jack was provided through which phonograph records may be reproduced. The phonograph pickup to be used with the set should have an impedance of 5000 ohms at 1000 cycles. We recommend Audak, Webster, Toman.

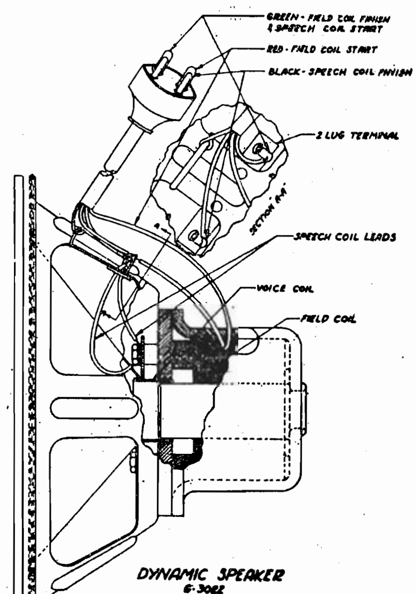


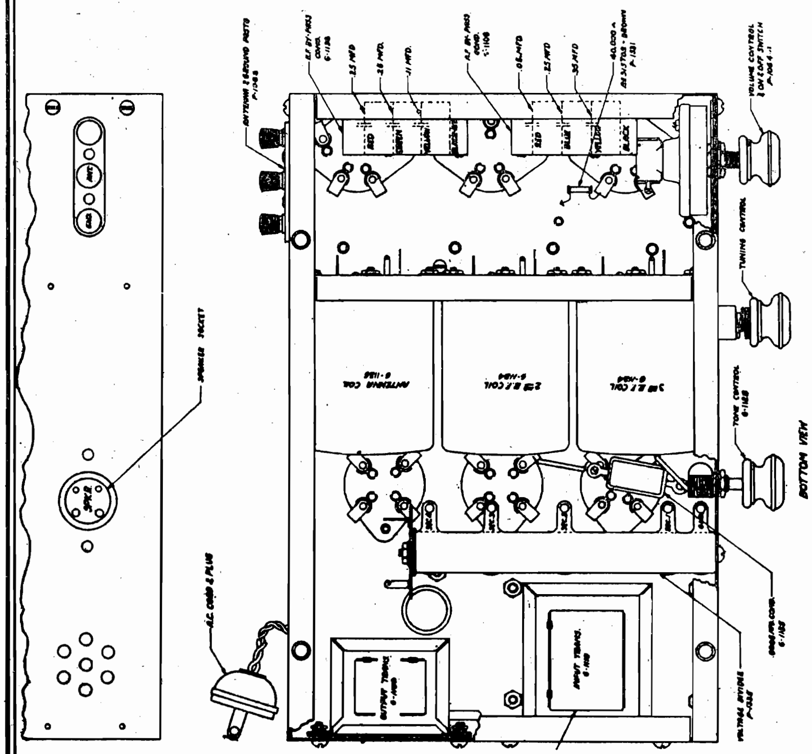
Model A. C. 60 receivers are designed for operation on 105 to 125 volt 50 to 60 cycle alternating current. The models 25-60 are to be operated on 105 to 125 volts 25 to 40 cycle alternating current only.

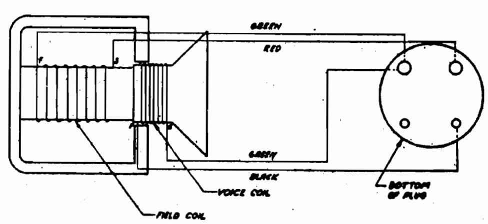
CONTINUITY TEST TABLES

Using 6 Volt Battery with 0-10 Voltmeter (1000 Ohms Per Volt)

Circuit Tested	From	To	Reads
Antenna coil	Blank binding post	Ground	6.0
1st r. f. grid ckt.	Grid cap 1st r. f.	Ground	6.0
1st r. f. plate ckt.	Plate prong at socket	3rd tap divider	6.0
2nd r. f. grid ckt.	Grid cap 2nd r. f.	Ground	6.0
2nd r. f. plate ckt.	Plt. prong at socket	3rd tap divider	6.0
Det. plt. ckt.	Plt. prong det. socket	4th tap divider	3.4
Det. grid ckt.	Grid cap det.	Ground	6.0
245 grid ckt.	Alternate grids	Ground	4.3-4.5
245 plt. ckt.	Alternate plates	Center tap output trans.	5.9
Output trans. sec.	Green lead spkr. socket	Ground	6.0
Speaker field	Spkr. socket	Ground	5.6
Pri. power trans.	Across AC line plug (switch on)		6.0
280 fil. sec.	Across 280 socket filament prongs		6.0
245-224 fil. sec.	Across 245 socket filament prongs		6.0
High voltage sec.	Across 280 plate prongs		5.8
L. 1, filter choke	Center tap output trans.	280 fil. prong	5.9
L. 2. filter choke	Center tap output trans.	Det. socket plate prong	5.0



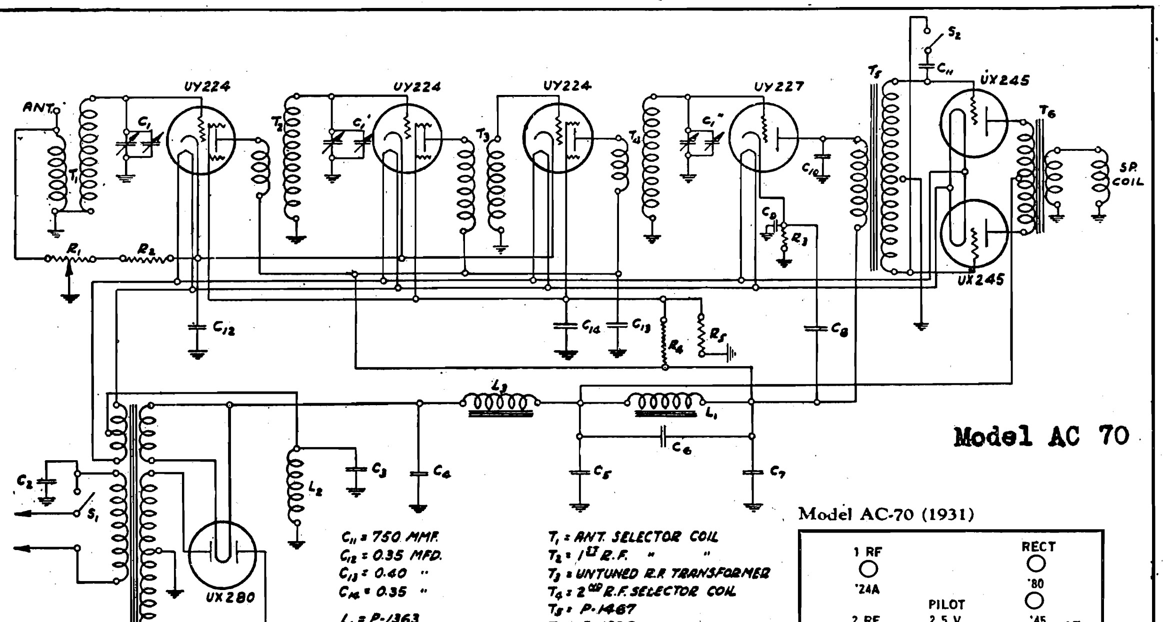




CIRCUIT OF DYNAMIC REPRODUCER

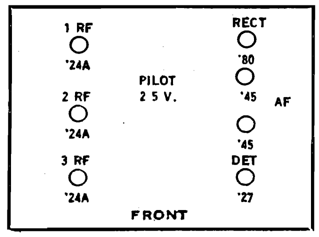
TRANSFORMER CORP. OF AMERICA

MODEL 61 AC
MODEL 70 AC



Model AC 70

Model AC-70 (1931)



C_{11} = 750 MMF.
C_{12} = 0.35 MFD.
C_{13} = 0.40 "
C_{14} = 0.35 "

L_1 = P-1363
L_2 = SPEAKER FIELD
L_3 = P-1362

T_1 = ANT. SELECTOR COIL
T_2 = 1ST R.F. " "
T_3 = UNTUNED R.F. TRANSFORMER
T_4 = 2ND R.F. SELECTOR COIL
T_5 = P-1467
T_6 = P-1328
T_7 = P-1325

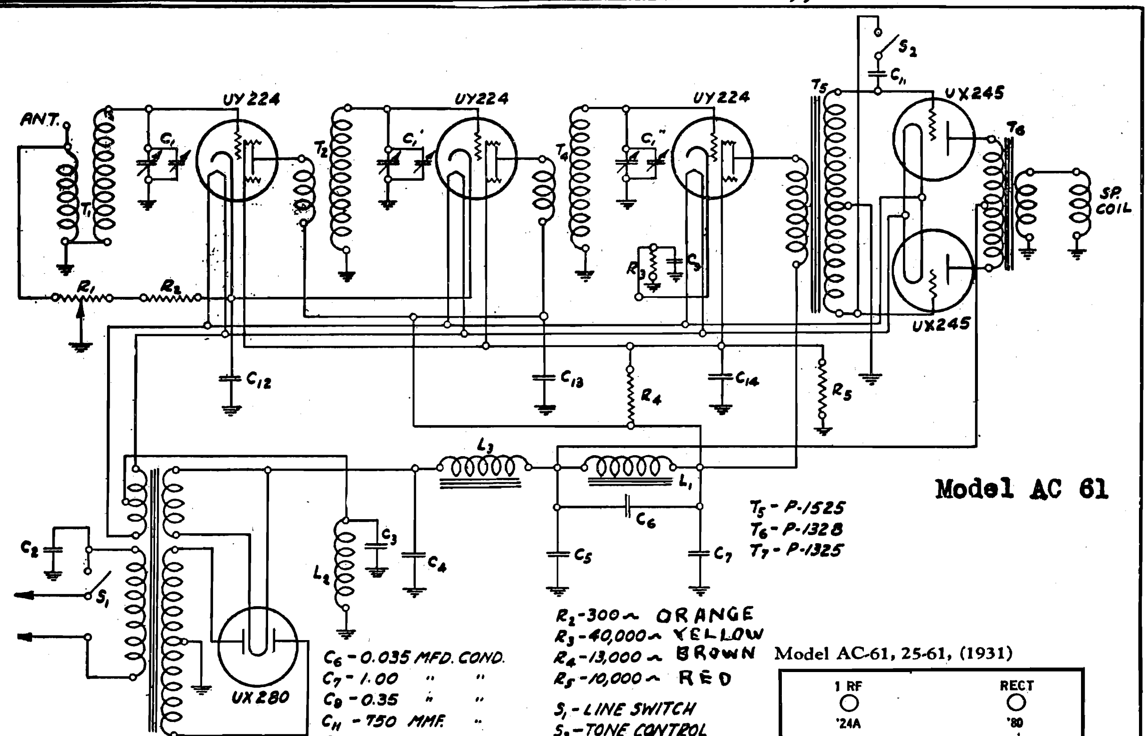
DESIGN DATA:

C_1-C_1'-C_1'' = .410 MFD. 3 GANG VARIABLE CONDENSER.
C_2 = 0.05 MFD.
C_3 = 0.35 "
C_4 = 1.50 "
C_5 = 1.50 "
C_6 = 0.035 MFD.
C_7 = 1.0 "
C_8 = 0.05 "
C_9 = 0.35 "
C_{10} = 750 MMF.

R_1 = VOL. CONT., 12,000 ~
R_2 = 200 ~ BLUE
R_3 = 20,000 ~ RED-BLACK END
R_4 = 13,000 ~ BROWN
R_5 = 10,000 ~ RED

S_1 = LINE SWITCH
S_2 = TONE CONT. SWITCH

DRAWN BY: ℔ CHECKED: [illegible] APPROVED: W.B.C. DATE: 1-13-31



Model AC 61

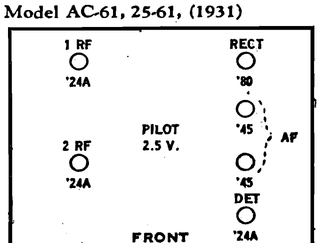
T_5 - P-1525
T_6 - P-1328
T_7 - P-1325

R_2 - 300 ~ ORANGE
R_3 - 40,000 ~ YELLOW
R_4 - 13,000 ~ BROWN
R_5 - 10,000 ~ RED

S_1 - LINE SWITCH
S_2 - TONE CONTROL SWITCH

T_1 - ANT. SELECTOR COIL
T_2 - 1ST R.F. SELECTOR COIL
T_4 - 2ND R.F. " COIL

Model AC-61, 25-61, (1931)



C_6 - 0.035 MFD. COND.
C_7 - 1.00 " "
C_9 - 0.35 " "
C_{11} - 750 MMF. "
C_{12} - 0.11 MFD. "
C_{13} - 0.25 " "
C_{14} - 0.25 " "

L_1 - P-1363
L_2 - SPEAKER FIELD
L_3 - P-1362

R_1 - VOL. CONT. 12,000 ~

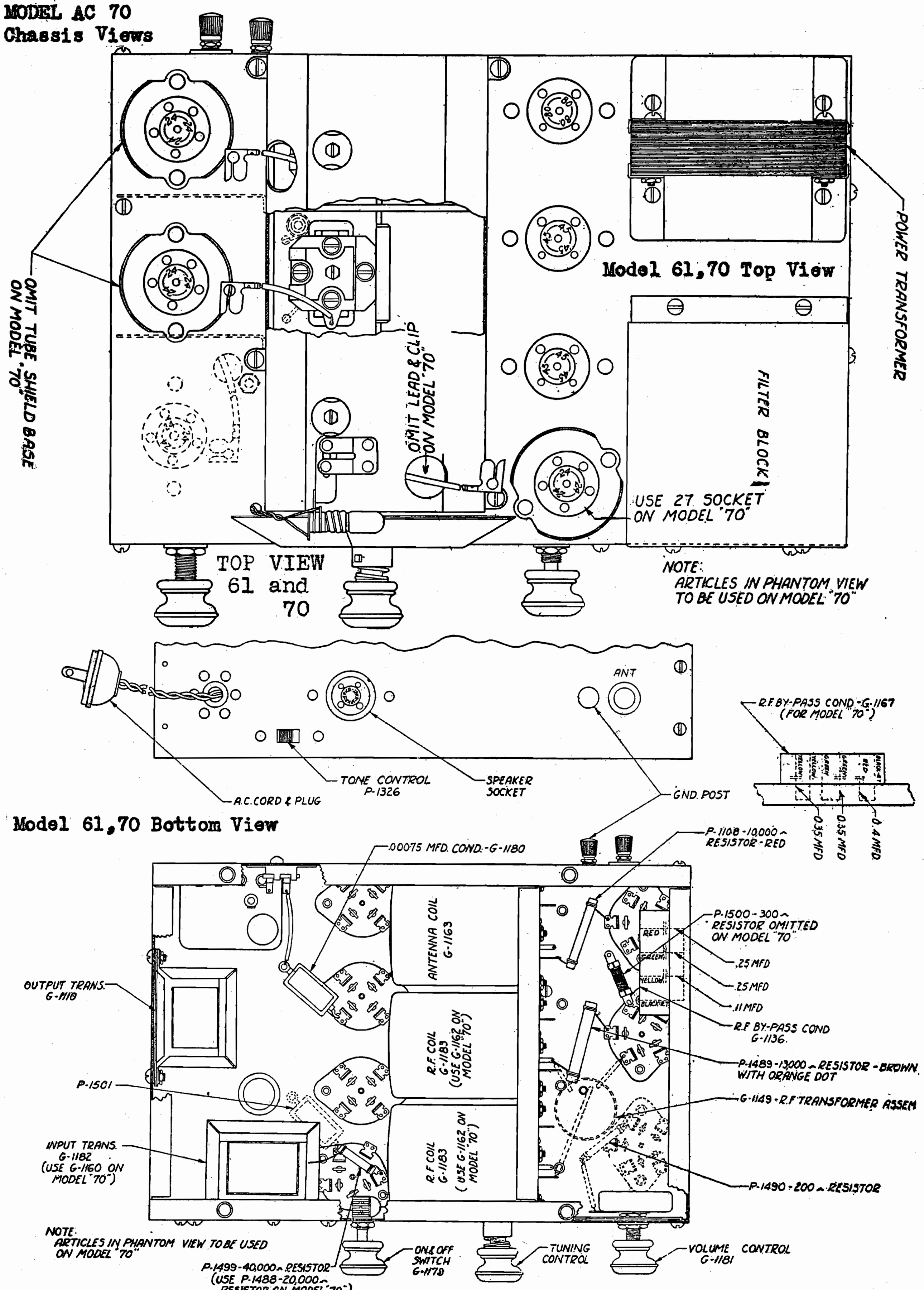
DESIGN DATA:

C_1, C_1', C_1'' - 410 MMF. 3 GANG VARIABLE CONDENSER
C_2 - 0.05 MFD. COND.
C_3 - 0.35 " "
C_4 - 1.50 " "
C_5 - 1.50 " "

DRAWN BY: ℔ CHECKED: APPROVED: W.B.C. DATE: 1-14-31

MODEL AC 61
Chassis Views
MODEL AC 70
Chassis Views

TRANSFORMER CORP. OF AMERICA



TRANSFORMER CORP. OF AMERICA

MODEL AC 61
Voltage - Data
MODEL AC 70
Voltage - Data

NOTE.. Continuity test is made with 6 volt battery, 10 volt meter rated at 1000 ohms per volt.

READINGS TAKEN WITH WESTON MODEL 565 ANALYSER
Model 61 Line 115 Volts

No.	Stage	Type Tube	A Volts	B Volts	Cont. Grid Volts	Cath. Volts	Ip' Norm.	SG Volts
1	1st r. f.	224	2.40	260	3.2	50.0	4.3	100.0
2	2nd r. f.	224	2.35	260	3.2	50.0	4.3	100.0
3	Det.	224	2.40	260	8 0	42.0	0.200	100 0
	AF	245	2.42	290	53.0		34.0	
5	AF	245	2.43	290	53 0		34.0	
6	Rect.	280	5.00					

115 Volts { 280 Fil. to Gnd.—320 Volts D.C.
L1 & L2 Center tap to Gnd. 300 Volts D.C.
End of Choke L2 to Gnd. 260 Volts D.C.

Model 70 Line 115 Volts

No.	Stage	Type Tube	A Volts	B Volts	Cont. Grid Volts	Cath. Volts	Ip' Norm.	SG Volts
1	1st r. f.	224	2.37	250	3.0	50.0	4.0	90
2	2nd r. f.	224	2.30	250	3.0	50.0	4.0	90
3	3rd r. f.	224	2.30	250	3.0	50 0	4.0	90
4	Det.	227	2.38	250	20.0	33 0	1 00	
5	AF	245	2.42	290	53 0		34 0	
6	AF	245	2 43	290	53.0		34 0	
7	Rect.	280	5.00					

115 Volts { 280 Fil. to Gnd.—320 Volts D.C.
L1 & L2 Center tap to Gnd.—300 Volts D.C.
End of Choke L2 to Gnd. 250 Volts D.C.

Note: Since Resistance tolerances in the set are plus or minus 10%, and tubes may vary over 20%, your readings may disagree with the above by plus or minus 30%.

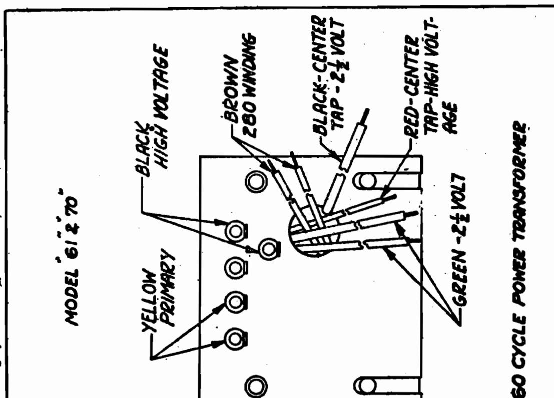
CAPACITY TABLES
Using 200 Volt Scale of A. C. Meter Included in Weston No. 565 Analyser

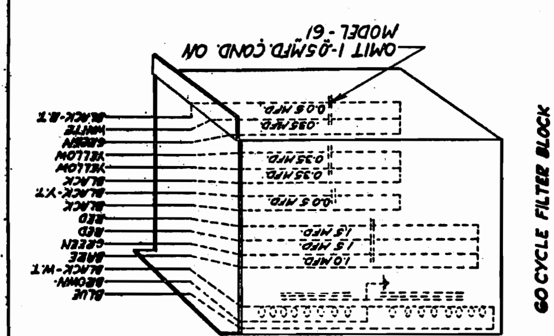
MODEL 61
(115 Volt 60 Cycle Line)

No.	Capacity	Reading	Your Reading
C-2	0 05	20 0	
C-3	0 35	95 0	
C-4	1 50	115 0	
C-5	1 50	115 0	
C-6	035	30 0	
C-7	1 0	110.0	
C-9	35	92 0	
C-12	11	45.0	
C-13	25	86 0	
C-14	25	80 0	

MODEL 70
(115 Volt 60 Cycles)

C-2	0.05	28.0
C-3	.35	95 0
C-4	1 50	115 0
C-5	1 50	115.0
C-6	035	25.0
C-7	1.0	112 0
C-8	05	30.0
C-9	35	92.0
C-12	35	92.0
C-13	.40	97.0
C-14	.35	92.0



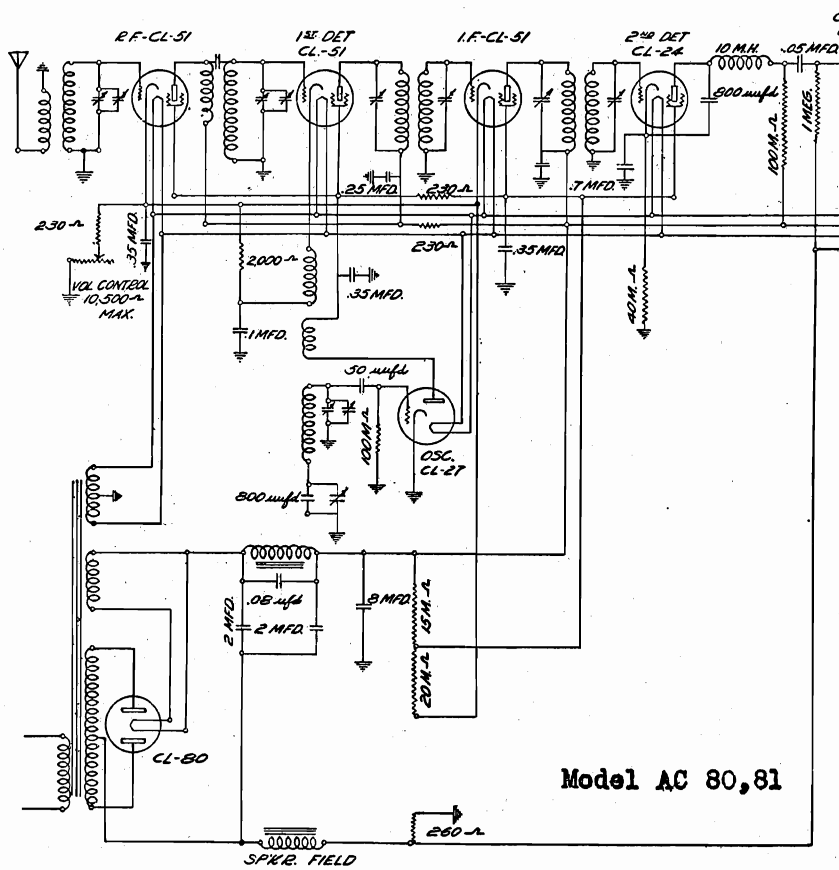


CONTINUITY TEST TABLES
Models 61 and 70

Circuit Tested	From	To	Reads 61	Reads 70
Antenna coil	Antenna post	Ground	6 0	6.0
1st r. f. grid ckt.	Grid cap 1st r. f.	Ground	6 0	6 0
1st r. f. plate ckt.	Plate prong at skt.	Upper term. input trans.	6 0	6,0
1st r. f. screen ckt.	Screen prong at skt.	B+ on r. f. trans. pri.	2 6	2 6
2nd r. f. grid ckt.	Grid cap 2nd r. f.	Ground	6 0	6 0
2nd r. f. plate ckt.	Plate prong at skt.	Upper term. input trans.	6.0	6 0
2nd r. f. screen ckt.	Screen prong at skt.	B+ on r. f. trans. pri.	2.6	2 6
3rd r. f. grid ckt.	Grid cap 3rd r. f.	Ground		6 0
3rd r. f. plate ckt.	Plate prong at skt.	Upper term. input trans.		6 0
3rd r. f. screen ckt.	Screen prong at skt.	B+ on r. f trans. pri.		2.6
Det. grid ckt.	Grid cap or prong	Ground	6 0	6 0
Det. plate ckt.	Plate prong at skt.	Opposite term. input trans.	4 0	5 1
Det. screen ckt.	Screen prong at skt.	B+ on r. f. trans. pri.	2 6	
Any screen grid	Screen prong skt.	Ground	3.0	3.0
245 grid ckt.	Alternate grids	Ground	4 7–4 9	4 3–4.2
245 plate ckt	Alternate plates	Center tap output trans.	5.8	5 8
Output trans. sec.	Green lead spkr. skt.	Ground	6.0	6.0
Speaker field	Across green and red leads spkr. plug		5.6	5 6
Spkr. voice coil	Across green and black leads speaker		6.0	6.0
280 fil. sec.	Across fil. terms. 280 socket		6.0	6.0
245 and 224 fil. sec.	Across fil. terms. 245 socket		6.0	6 0
Pri. power trans.	Across AC line plug (switch on)		6.0	6 0
High voltage sec.	Across 280 plate terms.		5.8	5 8
L1 filter choke	Center tap output trans.	Upper term. input trans.	5.9	5.9
L3 filter choke	Center tap output trans.	280 fil. terms.	5.1	5.1

MODEL AC 80,81,90, 90-A, 91.
Schematic

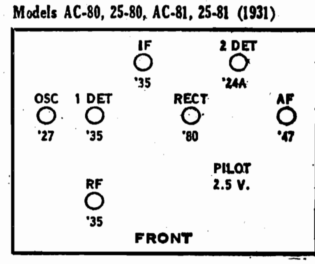
TRANSFORMER CORP. OF AMERICA

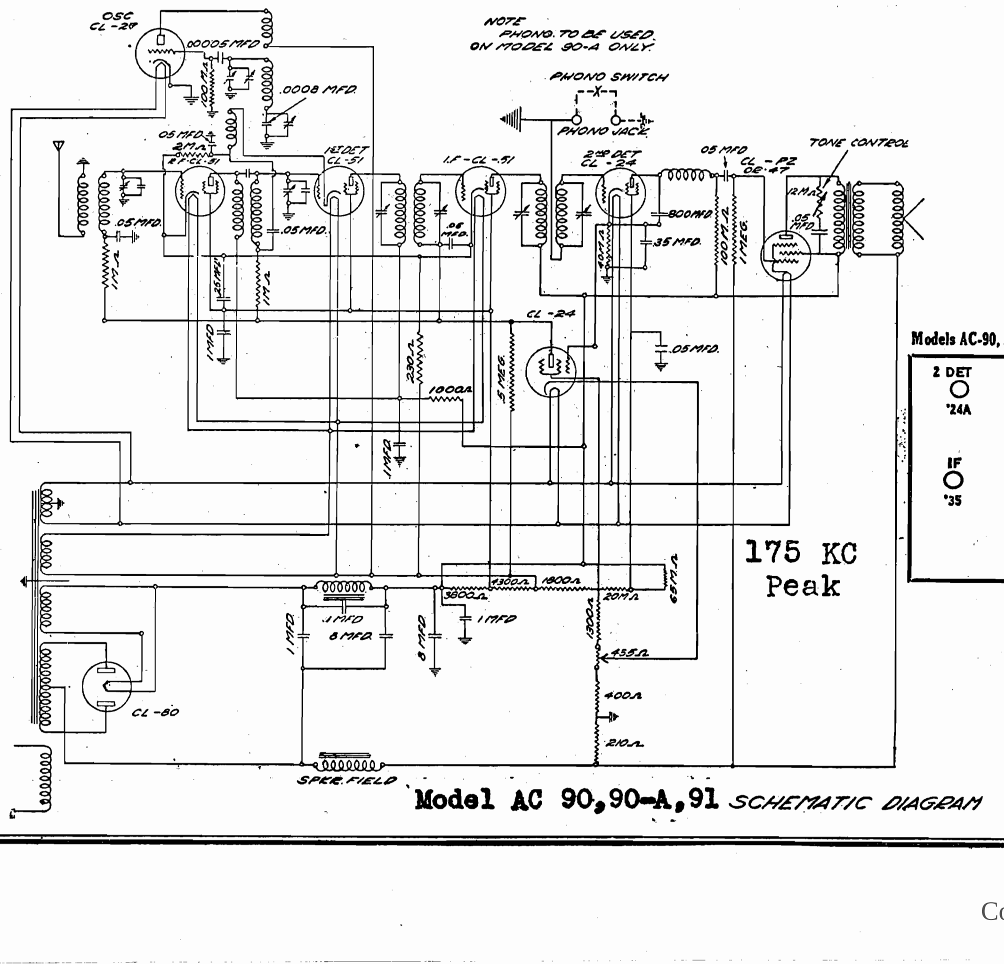


Model AC 80,81

175 KC Peak

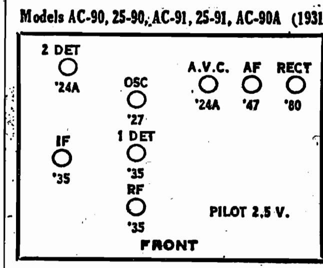
Models AC-80, 25-80, AC-81, 25-81 (1931)





175 KC Peak

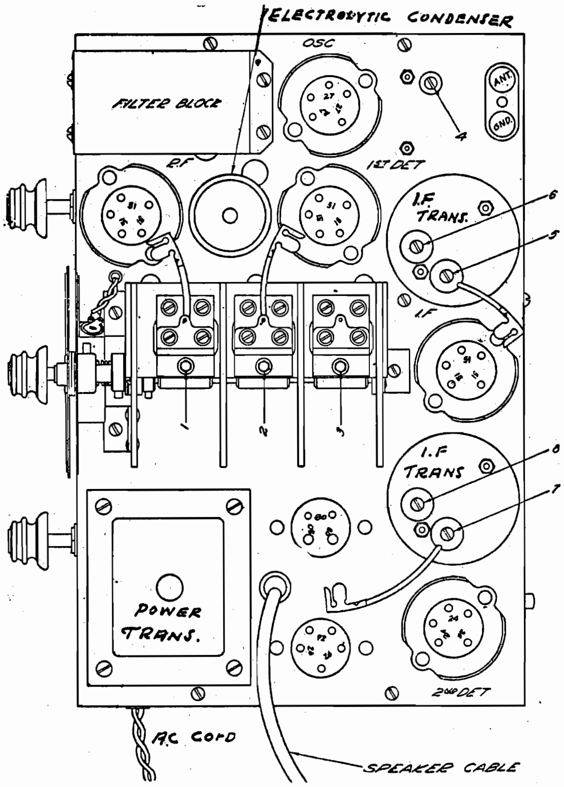
Models AC-90, 25-90, AC-91, 25-91, AC-90A (1931)

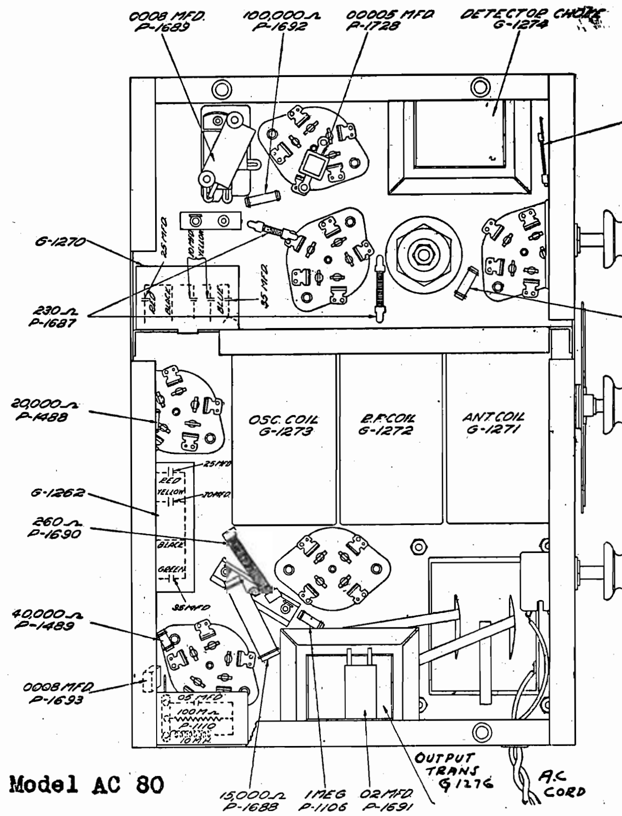


Model AC 90,90-A,91 *SCHEMATIC DIAGRAM*

TRANSFORMER CORP. OF AMERICA

MODEL AC 80, 81, 90, 90-A, 91
Chassis Views

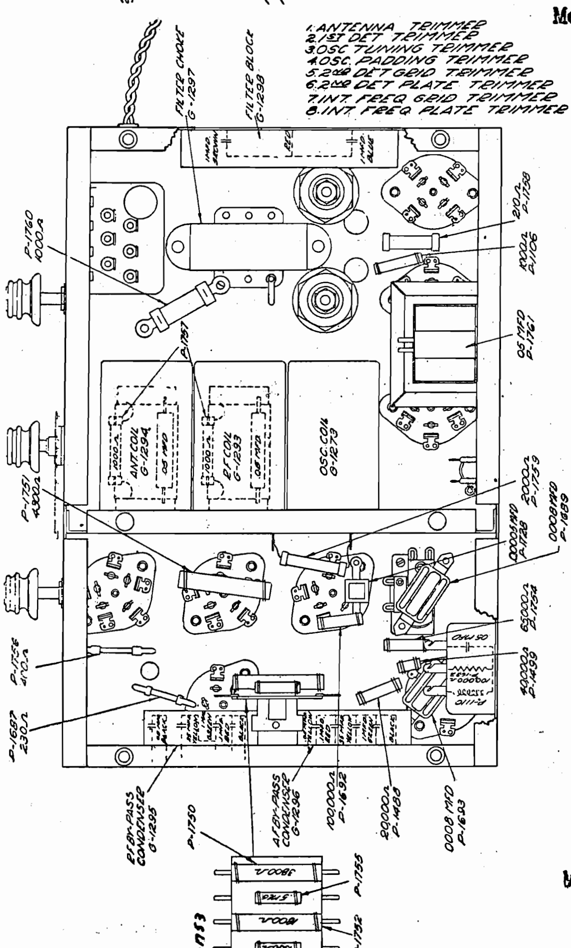


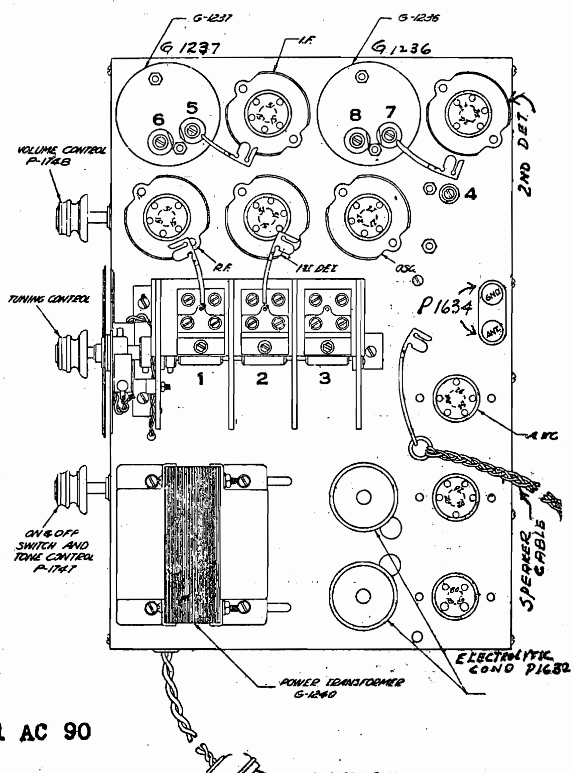


Model AC 80

1. ANTENNA TRIMMER
2. 1ST DET TRIMMER
3. OSC. TUNING TRIMMER
4. OSC. PADDING TRIMMER
5. 2ND DET GRID TRIMMER
6. 2ND DET PLATE TRIMMER
7. INT. FREQ GRID TRIMMER
8. INT. FREQ PLATE TRIMMER

NOTE
FOR MODEL 90A USE G-1237 IN PLACE OF G-1236, WHICH INCLUDES PHONO SWITCH ALSO USE P-1749 IN PLACE OF P-1743.



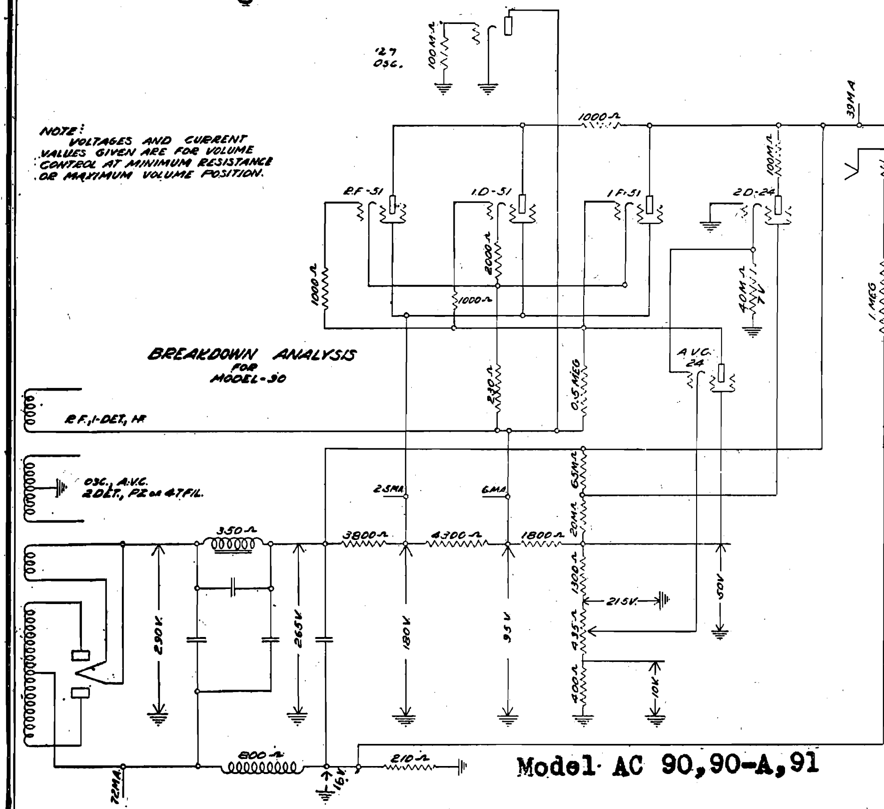


Model AC 90

MODEL AC 80,81,80, 90-A,91
Voltage Breakdown Diagrams

TRANSFORMER CORP. OF AMERICA

NOTE: VOLTAGES AND CURRENT VALUES GIVEN ARE FOR VOLUME CONTROL AT MINIMUM RESISTANCE OR MAXIMUM VOLUME POSITION.



Model AC 90,90-A,91

READINGS TAKEN WITH WESTON MODEL 565 ANALYSER
MODEL 90

No.	Stage	Type Tube	A Volts	B Volts	Cont. Grid Volts	Cath. Volts	Ip' Norm.	SG Volts
1	r f	CL-51	2 2	160	9	2 0	2 8	77
2	1st det	CL-51	2 2	168	7 6	4 9	2 0	77
3	Osc	CL-27	2 2	125	None	None	9 5	
4	I F	CL-51	2 2	163	0 6	2 0	2 0	77
5	2nd det.	CL-24	2 2	178	6 8	9 0	25	90
6	A V.C	CL-24	2 2	25	4 6	4 5	None	40
7	A F	CL-PZ	2 2	260	16 5		36	260
8	Rect	CL-80	4 6	350			72	

Volume control position Full. Line Voltage 115-60 cycle.

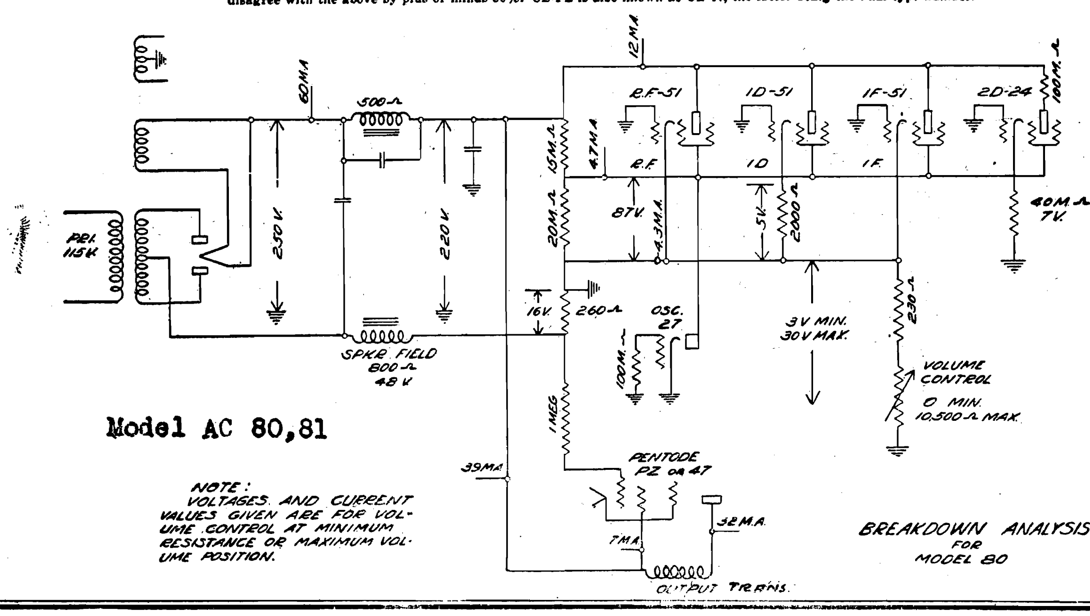
NOTE Filaments and cathodes of R.F., I.F., and first detector are 95 volts positive with respect to ground on the model 90

READINGS TAKEN WITH WESTON MODEL 565 ANALYSER
MODEL 80

No.	Stage	Type Tube	A Volts	B Volts	Cont. Grid Volts	Cath. Volts	Ip' Norm.	SG Volts
1	r. f.	CL-51	2 2	233	3	3	5	66
2	1st Det.	CL-51	2 2	233	7	7	2.3	73
3	Osc.	CL-27	2 2	80	0	0	4	0
4	I.F.	CL-51	2 2	233	3	3	5	77
5	2nd det.	CL-24	2 2	162	6 2	7.2	5	73
6	Output	CL-PZ	2 2	228	15	0	27	233
7	Rect	CL-80	4 8	300	0	0	50	0

Volume control position Full Line Voltage 115

Note: Since resistance tolerances in the sets are plus or minus 10%, and tubes may vary over 20%, your readings may disagree with the above by plus or minus 30%. CL-PZ is also known as CL-47, the latter being the final type number.

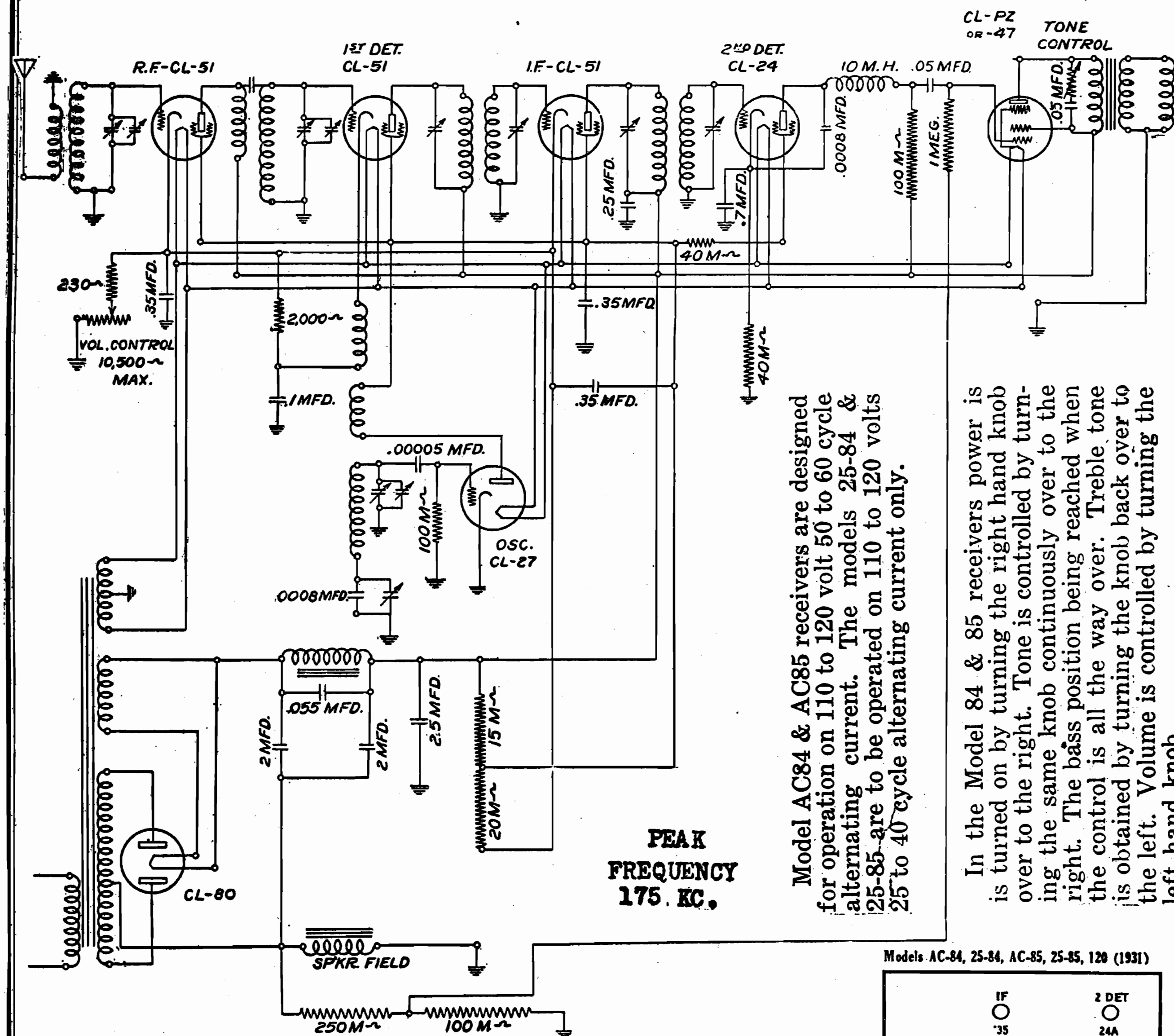


Model AC 80,81

NOTE: VOLTAGES AND CURRENT VALUES GIVEN ARE FOR VOLUME CONTROL AT MINIMUM RESISTANCE OR MAXIMUM VOLUME POSITION.

TRANSFORMER CORP. OF AMERICA

MODEL AC84, 85
Schematic
Voltage

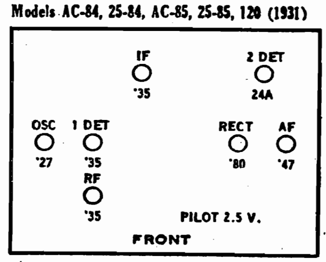


PEAK FREQUENCY 175. KC.

Model AC84 & AC85 receivers are designed for operation on 110 to 120 volt 50 to 60 cycle alternating current. The models 25-84 & 25-85 are to be operated on 110 to 120 volts 25 to 40 cycle alternating current only.

In the Model 84 & 85 receivers power is is turned on by turning the right hand knob over to the right. Tone is controlled by turning the same knob continuously over to the right. The bass position being reached when the control is all the way over. Treble tone is obtained by turning the knob back over to the left. Volume is controlled by turning the left hand knob.

Models AC-84, 25-84, AC-85, 25-85, 120 (1931)



READINGS TAKEN WITH WESTON MODEL 565 ANALYSER

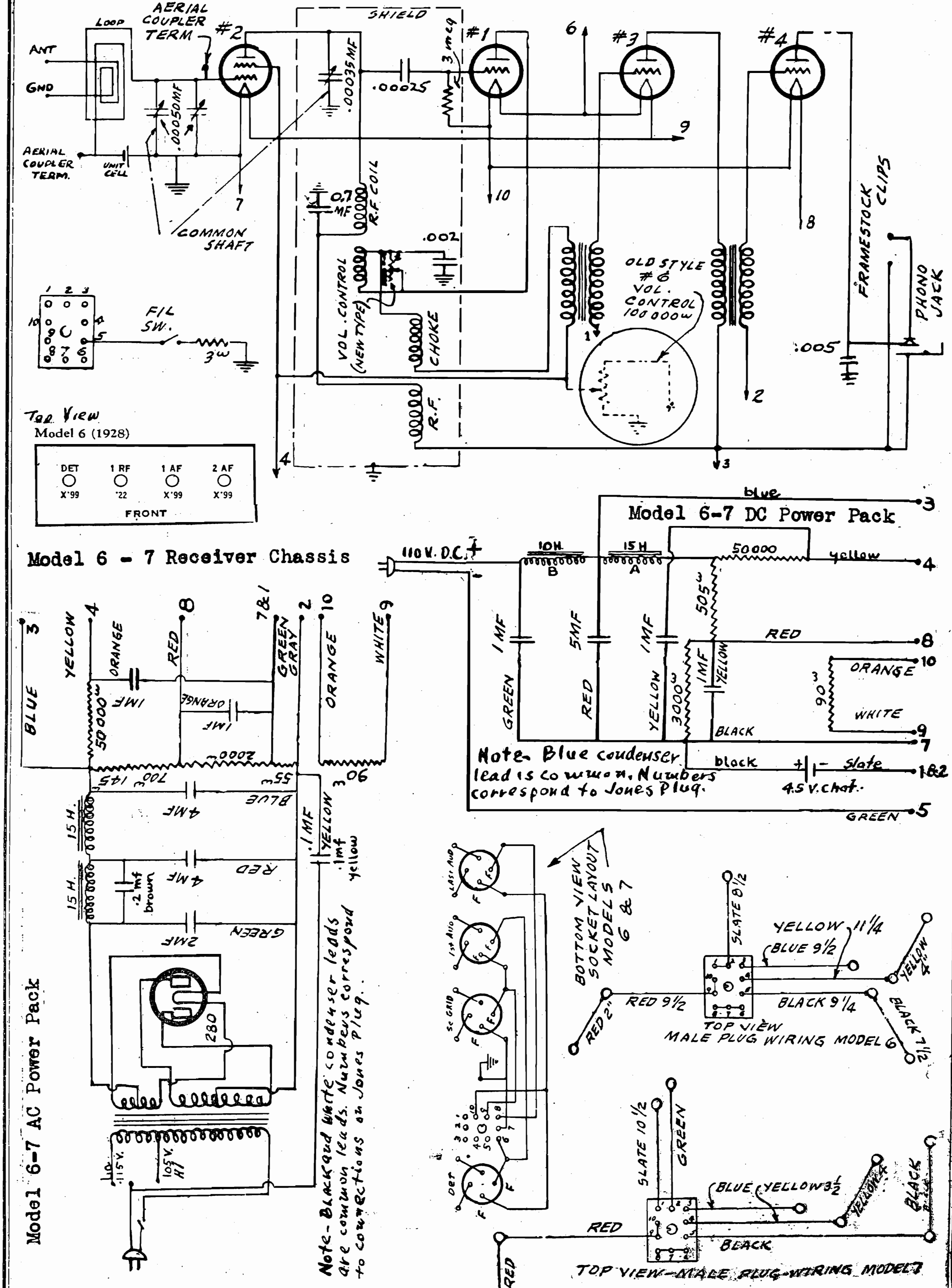
No.	Stage	Type Tube	A Volts	B Volts	Cont. Grid Volts	Cath. Volts	Ip Norm.	SG Volts
1	r. f.	51	2.1	255	3.5	3.5	3.5	.78
2	1st Det.	51	2.1	240	10.	10.	2	108
3	Osc.	27	2.1	135	0	0	6.	0
4	I. F.	51	2.1	250	3.5	3.5	3.5	77
5	2nd det.	24	2.2	190	6.0	6.0	[illegible].2	68
6	Output	47	2.2	228	14.	0	25	255
7	Rect.	80	4.4		0	.0		0

Volume control position Full   Line Voltage 115

Note: Since resistance tolerances in the sets are plus or minus 10%, and tubes may vary over 20%, your readings may disagree with the above by plus or minus 30%.

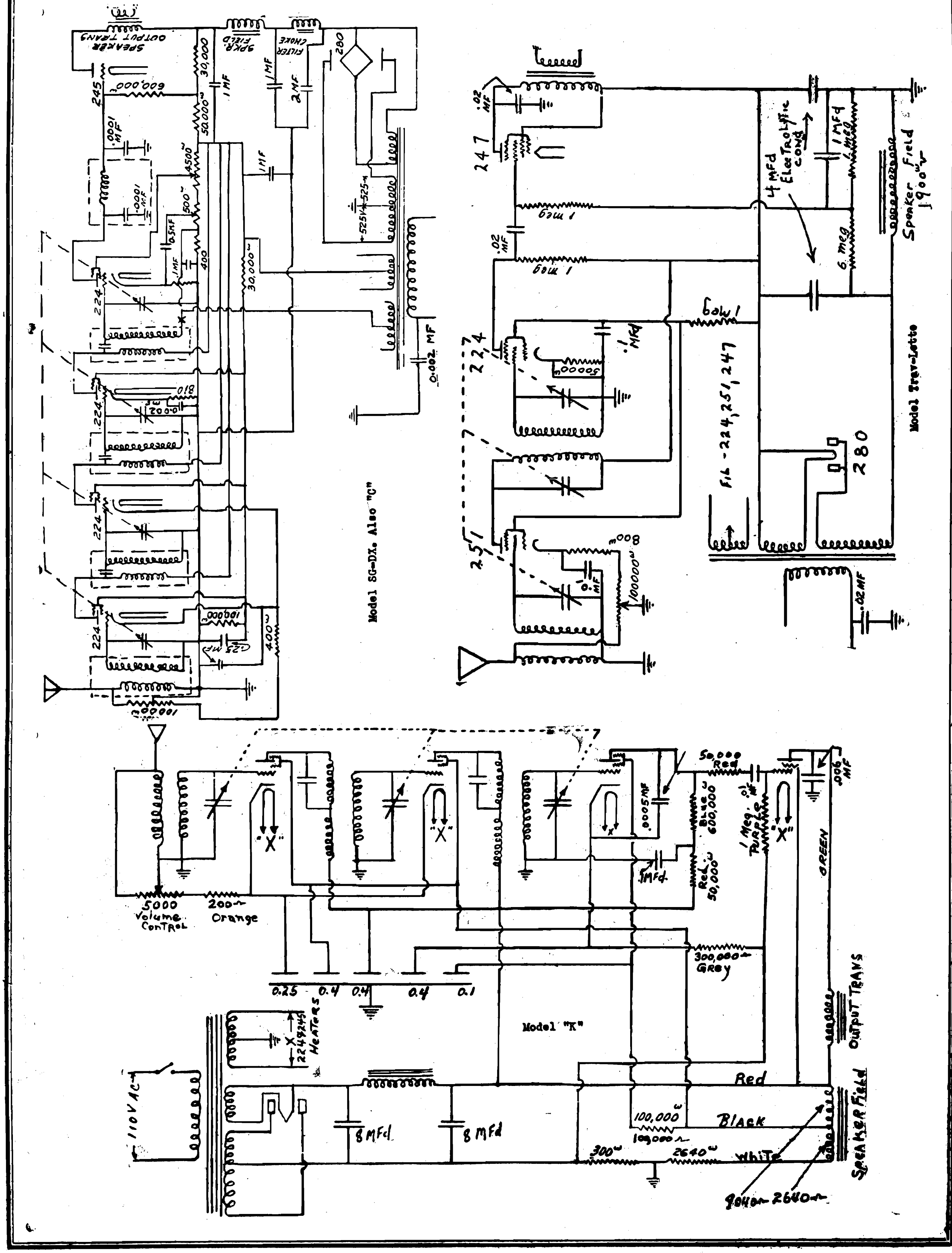
MODEL 6,7

TRAV-LER RADIO & TELEVISION CORP.



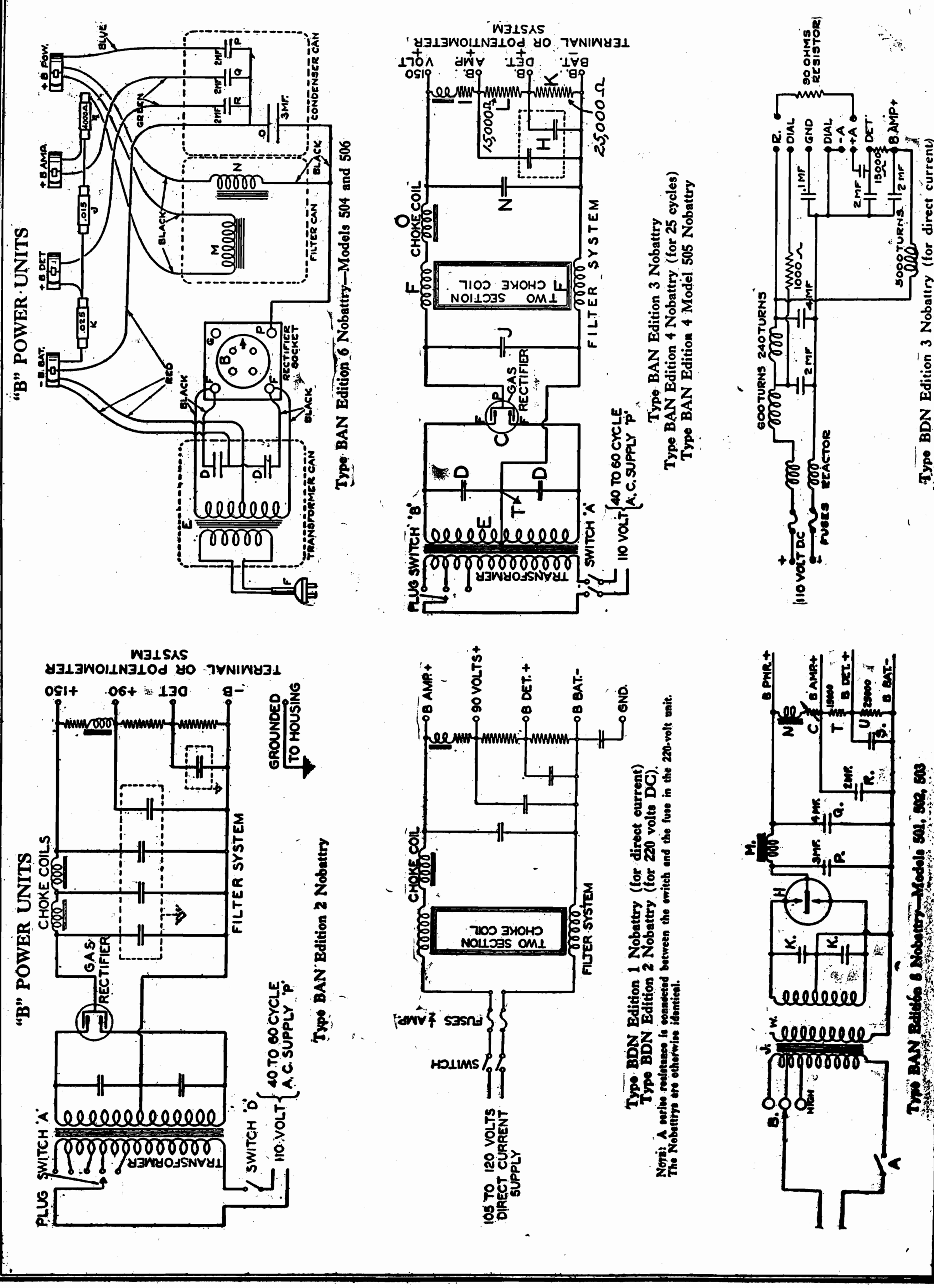
MODEL SG-DX
MODEL "C"
MODEL "K"
MODEL Trav-Lette

TRAV-LER RADIO & TELEVISION CORP.



UNITED AMERICAN BOSCH CORP.

MODEL BAN
"B" Power Units



"B" POWER UNITS

Type BAN Edition 6 Nobattry—Models 504 and 506

Type BAN Edition 3 Nobattry
Type BAN Edition 4 Nobattry (for 25 cycles)
Type BAN Edition 4 Model 505 Nobattry

Type BDN Edition 3 Nobattry (for direct current)

"B" POWER UNITS

Type BAN Edition 2 Nobattry

Type BDN Edition 1 Nobattry (for direct current)
Type BDN Edition 2 Nobattry (for 220 volts DC).

NOTE: A series resistance is connected between the switch and the fuse in the 220-volt unit. The Nobattrys are otherwise identical.

Type BAN Edition 5 Nobattry—Models 501, 502, 503

MODEL 5 AC
Schematic
Voltage

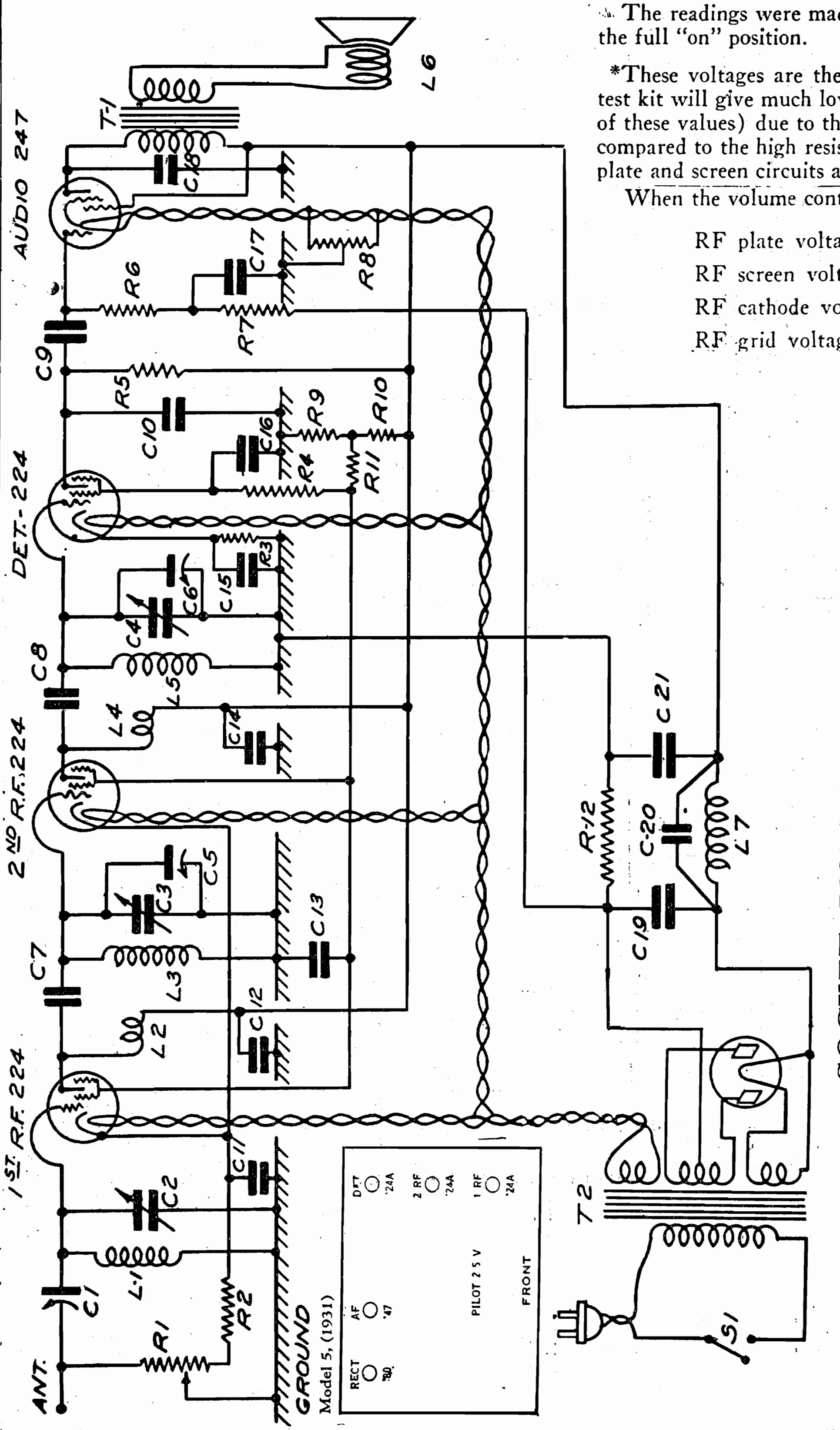
UNITED AMERICAN BOSCH CORP.

The readings were made with the volume control in the full "on" position.

*These voltages are the correct values. The average test kit will give much lower readings, (as low as 1/10 of these values) due to the low resistance of the meters compared to the high resistance included in the detector plate and screen circuits and the audio grid circuit.

When the volume control is reduced the

RF plate voltage remains constant
RF screen voltage increases
RF cathode voltage increases
RF grid voltage increases



SOCKET VOLTAGES

Stage	Tube	Fil.	Plate	Screen	Cathode	Grid	Plate MA
1st RF	224	2.3	250	90	2.5	2.5	4.5
2nd RF	224	2.3	250	90	2.5	2.5	4.5
Det.	224	2.3	*150	*20	3.0	1.5	.5
Audio	247	2.3	250	250	.....	*16	32
Rect.	280	4.8	Plate current of each plate—20				

UNITED AMERICAN BOSCH CORP.

MODEL 5 AC
Electrical Values

NOMENCLATURE

C 1—Antenna Trimmer Condenser
C 2—Tuning Condenser
C 3—Tuning Condenser
C 4—Tuning Condenser
C 5—Alignment Condenser
C 6—Alignment Condenser
C 7—Coupling Capacity
C 8—Coupling Capacity
C 9—Audio Coupling Condenser .006 mfd.
C 10—Det. plate By-pass .0001 mfd.
C 11—RF Cathode By-pass .05 mfd.
C 12—RF Plate By-pass .05 mfd.
C 13—RF Screen By-pass .25 mfd.
C 14—RF Plate By-pass .05 mfd.
C 15—Det. Cathode By-pass 1.00 mfd.
C 16—Det. Screen By-pass .25 mfd.
C 17—Audio Grid By-pass .01 mfd.
C 18—Audio Plate By-pass .01 mfd.
C 19—Filter Condenser 4. mfd.
C 20—Field Condenser .08 mfd.
C 21—Filter Condenser 4. mfd.
R 1—Volume Control 10,000 ohms
R 2—RF Cathode Resistor 300 ohms
R 3—Det. Cathode Resistor 50,000 ohms
R 4—Det. Screen Resistor 2 megohms
R 5—Det. Plate Resistor 1 megohm
R 6—Audio Grid Resistor ½ megohm
R 7—Audio Grid Resistor 100,000 ohms
R 8—Mid Tap Resistor
R 9—Divider Resistor 50,000 ohms
R 10—Screen Resistor 50,000 ohms
R 11—Screen Resistor 10,000 ohms
R 12—Audio Bias Resistor 400 ohms
L 1—Antenna Coil
L 2—Primary } of RF Coil
L 3—Secondary } of RF Coil
L 4—Primary } of RF Coil
L 5—Secondary } of RF Coil
L 6—Speaker Moving Coil
L 7—Speaker Field Coil

T 1—Audio Output Transformer
T 2—Power Transformer

Filter Condenser

The three leads from the main filter condenser are connected as follows:

Black —to center tap of 280 plate winding
Green—to filament terminal of 280 socket
Red —to +B connection on terminal strip

By-pass Condenser Assembly

The condensers incorporated in this unit are identified as follows:

1.0 mfd.	Green Leads
.01 mfd.	Green and White Leads
.05 mfd.	Black Leads
.25 mfd.	Red Leads

Resistors

300 ohms—Orange, Black, Brown
400 ohms—Yellow, Black, Brown
10,000 ohms—Blue, Yellow
50,000 ohms—Green, White
100,000 ohms—Blue, White
½ megohm—Gray
1 megohm—Black
2 megohm—Black, White

Power Transformer

Six leads are brought out of the transformer winding on the side next to the terminal strip. Three are located on the opposite side. The transformer is connected as follows:

Primary Winding—Stranded wires, terminal strip side

224 and 247 filaments—Heavy wires, terminal strip side

280 filament—Small wires, terminal strip side

280 plates—Two leads nearest front of set, opposite side

280 center tap—Lead nearest back of set, opposite side

The trimmer condenser mounted on the loud speaker must be adjusted for maximum volume.

Some types of the 247 Pentode operate normally with a blue glow. This action does not, therefore, denote that the tube is defective due to gas.

It is very important that no tube is removed from its socket with the receiver "on" as to do this will damage the receiver or the Pentode tube.

Make sure that the lead from the top of each 224 tube to the variable condenser follows closely along the metal partition between the tubes. Oscillation may occur if this lead lies too close to the tube itself.

MODEL 16
MODEL 27
MODEL 35
MODEL 46

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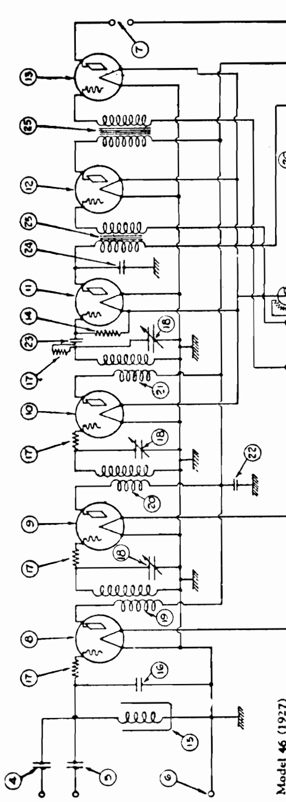
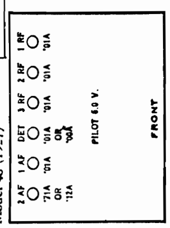
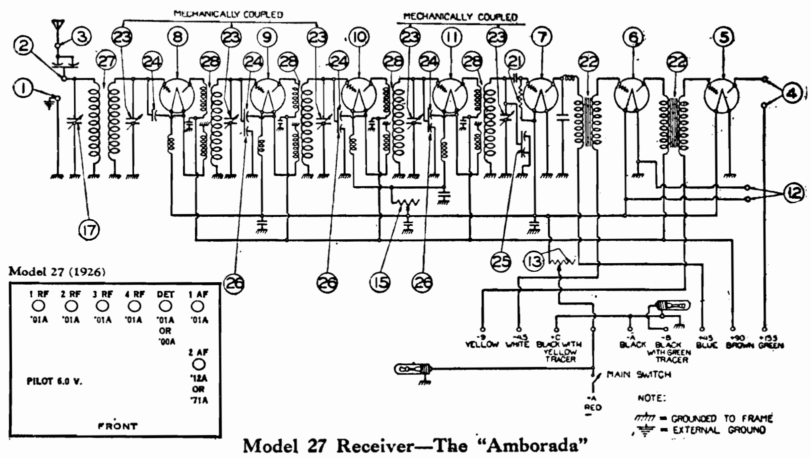
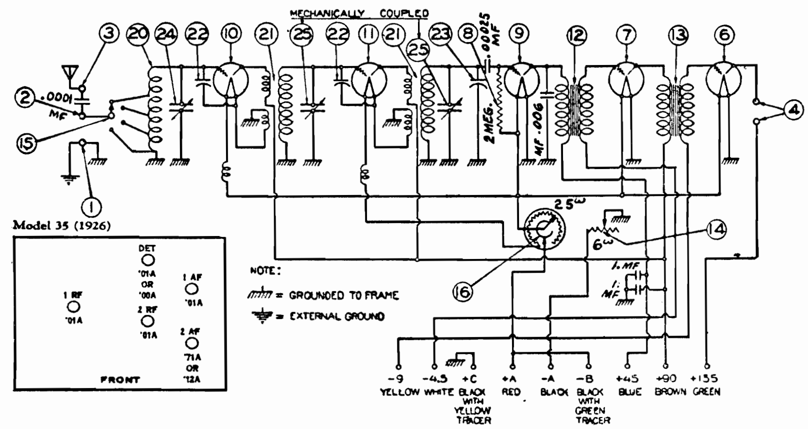




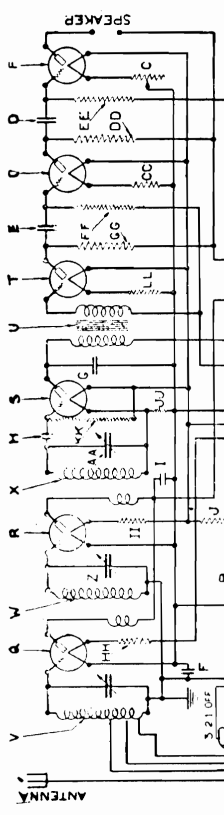
Model 46—The "Little Six"

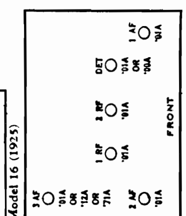


Model 27 Receiver—The "Amborada"



Model 35—"Cruiser"
"Royal Cruiser"
"Imperial Cruiser"





Model 16 Receiver—The "Amborola"

Table of Voltmeter Readings

Receiver	Circuit	Radio Frequency Stages 1	2	3	4	Detector Stage	Audio Stages 1	2	3
Model 16	Filament	5	5	—	—	5	5	5	5
	Plate	90	90	—	—	45	50	50	100
	Grid	2-4	2-4	—	—	0	1	Slight Movement of Needle	
Model 27	Filament	5	5	5	5	5	5	5	—
	Plate	90	90	90	90	45	80	100	—
	Grid	5	5	5	5	0	1	3	—
Model 35	Filament	5	5	—	—	5	5	5	—
	Plate	90	90	—	—	45	80	100	—
	Grid	5	5	—	—	0	1	3	—
Model 46	Filament	5	5	5	—	5	5	5	—
	Plate	90	90	90	—	45	80	100	—
	Grid	3	3	3	—	0	1	3	—

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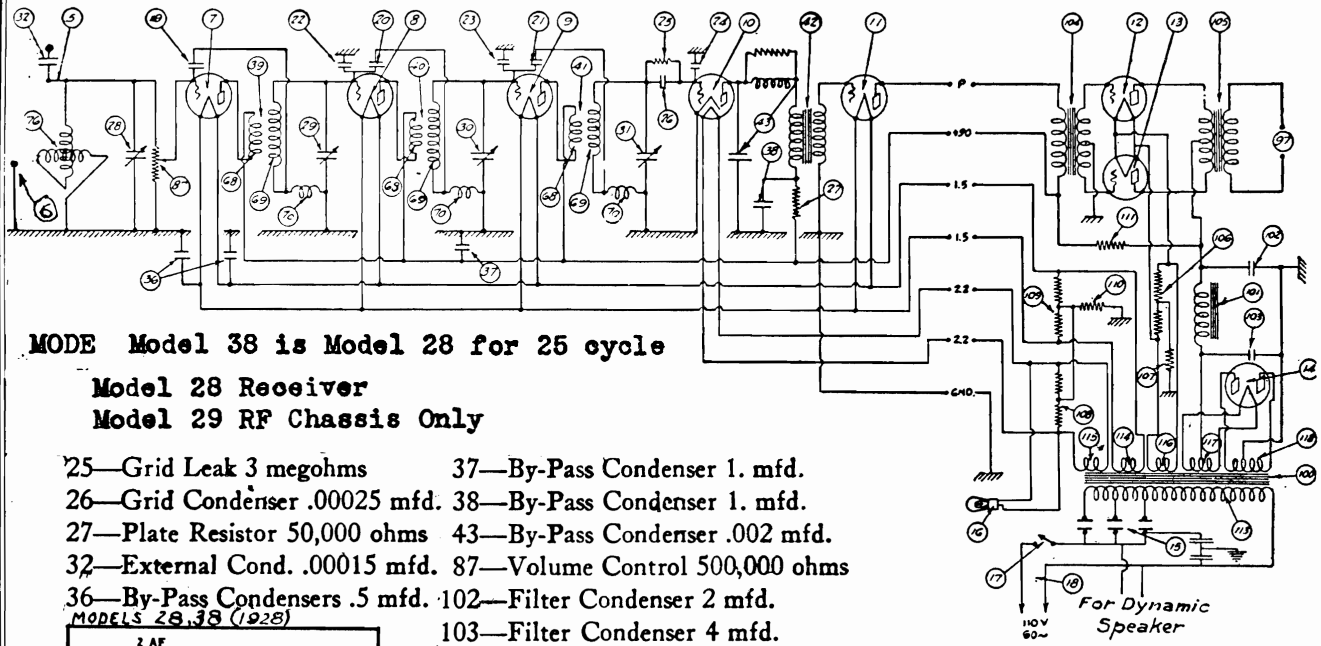
MODEL 28 AC
Two Types
MODEL 29 AC
RF Chasses

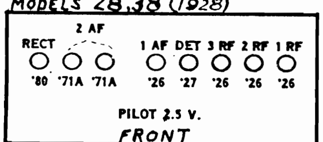


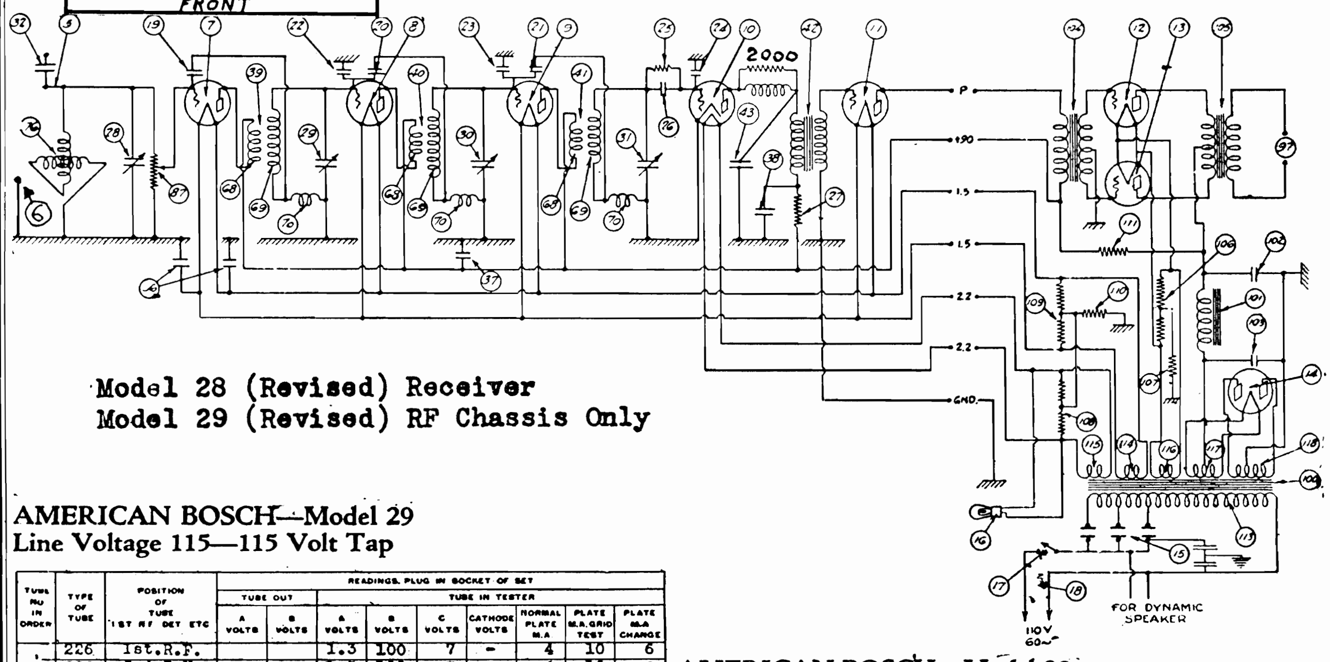
MODE Model 38 is Model 28 for 25 cycle

Model 28 Receiver
Model 29 RF Chassis Only

25—Grid Leak 3 megohms
26—Grid Condenser .00025 mfd.
27—Plate Resistor 50,000 ohms
32—External Cond. .00015 mfd.
36—By-Pass Condensers .5 mfd.
37—By-Pass Condenser 1. mfd.
38—By-Pass Condenser 1. mfd.
43—By-Pass Condenser .002 mfd.
87—Volume Control 500,000 ohms
102—Filter Condenser 2 mfd.
103—Filter Condenser 4 mfd.
107—Bias Resistor 1500 ohms
110—Bias Resistor 300 ohms
111—"B" Resistor 5000 ohms

MODELS 28, 38 (1928)





Model 28 (Revised) Receiver
Model 29 (Revised) RF Chassis Only

AMERICAN BOSCH—Model 29
Line Voltage 115—115 Volt Tap

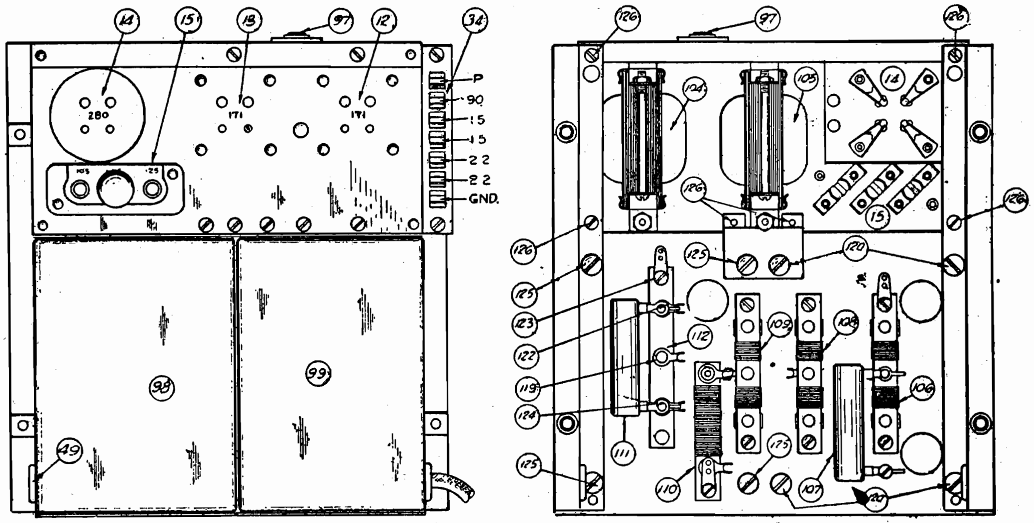
Tube No. in Order	Type of Tube	Position of Tube 1st RF Det Etc	Readings, Plug in Socket of Set: Tube Out: A Volts	Tube Out: B Volts	Tube in Tester: A Volts	B Volts	C Volts	Cathode Volts	Normal Plate M.A	Plate M.A. Grid Test	Plate M.A Change
1	226	1st.R.F.			1.3	100	7	-	4	10	6
2	226	2nd.R.F.			1.3	100	7	-	4	10	6
3	226	3rd.R.F.			1.3	100	7	-	4	10	6
4	227	Detector			2.3	45	-	-	2	2	0.0
5	226	1st.A.F.			1.3	100	7	-	3	6.5	3.5
6	210	2nd.A.F.			7.3	400	30	-	20	23	3
7	281	Rectifier			7.3	-	-	-	28	-	-
8	281	Rectifier			7.3	-	-	-	28	-	-
9											
10											

AMERICAN BOSCH—Model 28
Line Voltage 115—115 Volt Tap

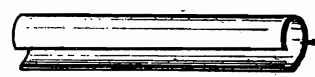
Tube No. in Order	Type of Tube	Position of Tube 1st. R.F., Det., Etc.	Readings, Plug in Socket of Set: Tube Out: A Volts	Tube Out: B Volts	Tube in Tester: A Volts	B Volts	C Volts	Cathode Volts	Normal Plate M.A.	Plate M.A. Grid Test	Plate M.A Change
1	226	1st.R.F.			1.3	100	7	-	4	10	6
2	226	2nd.R.F.			1.3	100	7	-	4	10	6
3	226	3rd.R.F.			1.3	100	7	-	4	10	6
4	227	Detector			2.3	45	-	-	2	2	0.0
5	226	1st.A.F.			1.3	100	7	-	3	6.5	3.5
6	171	2nd.A.F.			5.0	150	35	-	10	14	4
7	171	2nd.A.F.			5.0	150	35	-	10	14	4
8	280	Rectifier			5.0	-	-	-	18	-	-

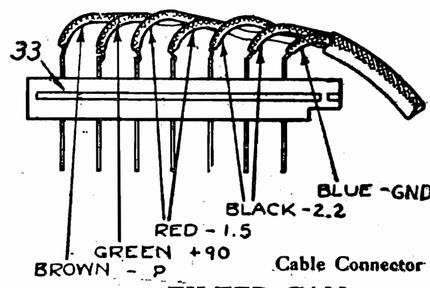
MODEL 28
Power Pack
Chassis - Data

UNITED AMERICAN BOSCH CORP.



Model 28 Power Pack. Top and Bottom View





Cable Connector Plug

POWER TRANSFORMER

The power transformer "100" is enclosed in the transformer can "98." Since the transformer is completely sealed, it is necessary to replace the entire unit.

The transformer has a single primary winding and five secondary windings, two of which have center taps. The colors of these leads, together with their points of attachment to the resistors and other parts, are given in the following paragraphs.

1.5 Volt Winding "114": Supplies filament current for RF and 1st AF tubes (7, 8, 9, 11). The two leads from this winding are *red* and connect to the two end terminals of resistor "109."

2.2 Volt Winding "115": Supplies filament current for the detector tube and dial lamp (10 and 16). The two leads from this winding are *black* and connect to the two end terminals of resistor "108."

5 Volt Winding "116": Supplies filament current for the two push-pull stages (11 and 12). The two leads from this winding are *blue* and connect to the two end terminals of resistor "106."

Single Brown Lead (Primary Lead) **Cotton Covered:** To one of the main switch "17" leads.

Twisted Leads (Primary Taps): Black with red tracer—to tap switch (15). "105" tap. Black—to tap switch (15), "115" tap. Black with yellow tracer—to tap switch (15), "125" tap.

Brown Twisted Leads (Plate Winding "118"): To plate contacts (small holes) of socket "14."

Brown Cable (Filament Winding "117"): To filament contacts (large holes) of socket "14."

Single Black Lead: To terminal "119" of strip "112." This lead is the center tap of rectifier filament winding "117."

Single Green Lead: To ground connection. This lead is the center tap of the rectifier plate winding "118."

FILTER CAN

The Filter Can "99" contains the two filter condensers "102" and "103," and the filter choke coil "101." These three units are sealed in the can, making it necessary to replace the entire filter can if any of these units become defective.

There are five leads from the filter can, connected as follows:

Black Fabric Covered Wires: These leads come from the choke coil "101" and connect to terminals "119" and "122" of terminal strip "112." These two leads are interchangeable.

Black Lead: This lead comes from filter condenser "103" and connects to terminal "119."

Blue Lead: This lead comes from filter condensers "102" and "103" and connects to ground terminal "123."

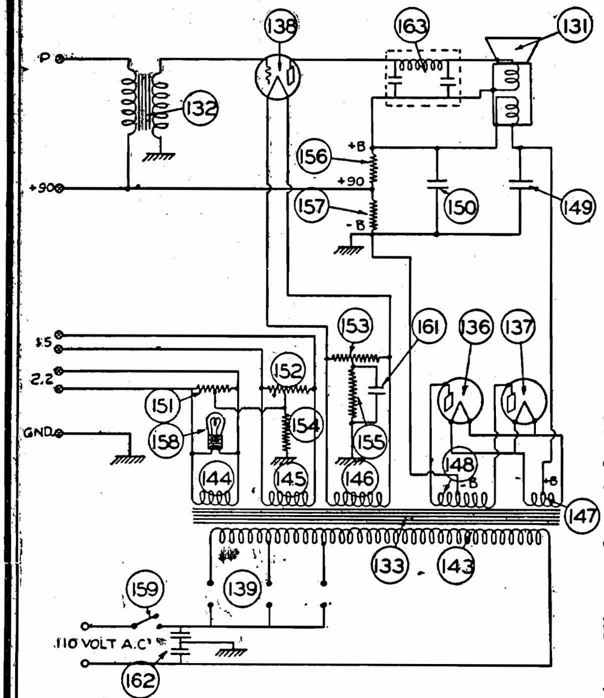
Red Lead: This lead comes from filter condenser "102" and connects to terminal "122."

Filter Can Replacement

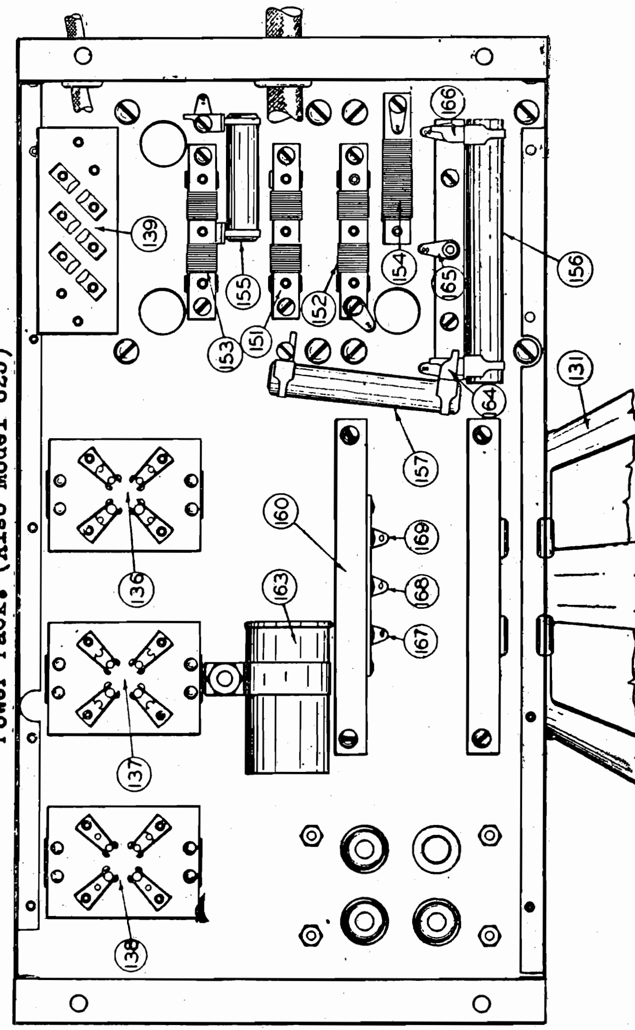
1. Unsolder the five leads of the filter can at their point of connection to the terminal strips.
2. Remove the 4 holding screws "125."
3. Mount the new can in place.
4. Connect the wires as indicated in the preceding paragraph.

UNITED AMERICAN BOSCH CORP.

MODEL 29 AC, 825
Power Pack
Chassis - Schematic

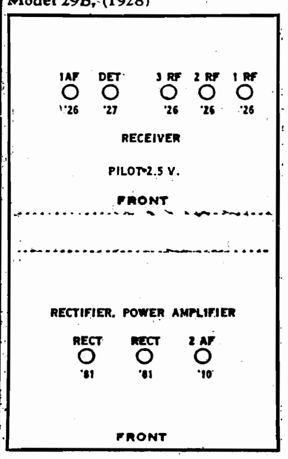


Model 825 Super Dynamic Power Pack. Used with Model 28 Chassis only to form Model 29 Receiver.

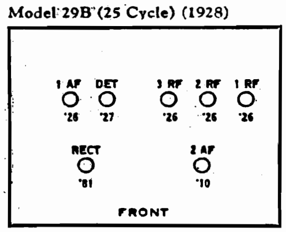


Bottom View of Model 29 Dynamic Power Pack. (Also Model 825)

Model 29B, (1928)



Model 29B (25 Cycle) (1928)



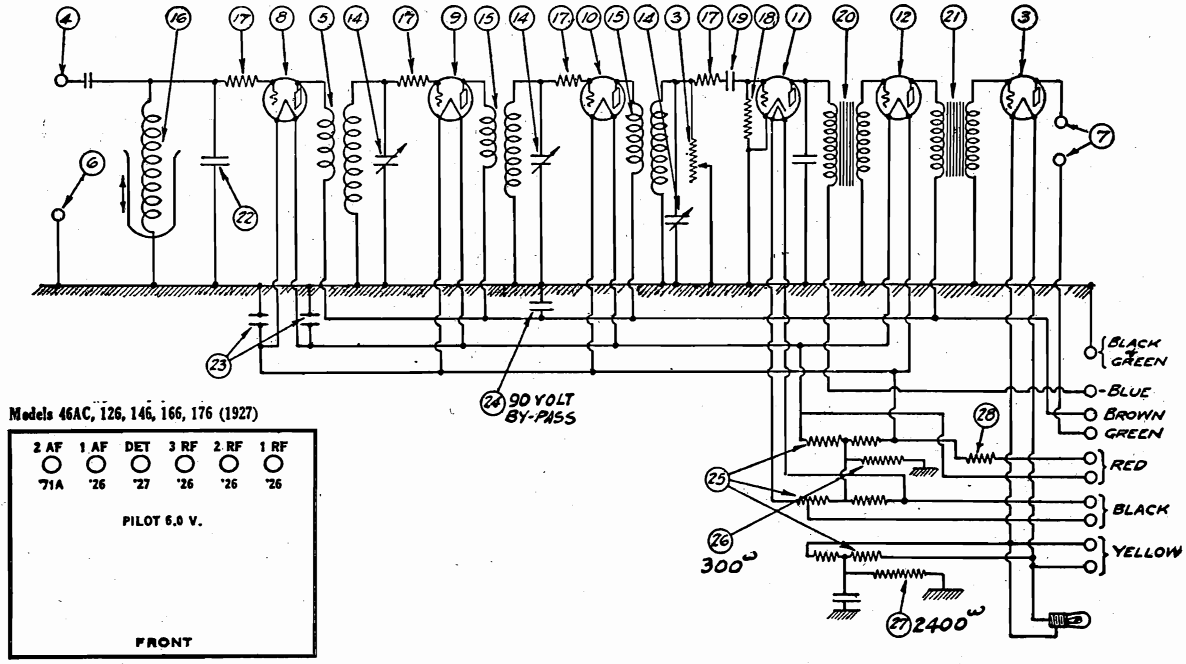
MODEL 825 POWER PACK

157—Plate Resistor 10,000 ohms
161—By-Pass Condenser 1. mfd.
162—Buffer Condensers
163—Filter
149—Filter Condenser 4 mfd.
150—Filter Condenser 2 mfd.
154—Bias Resistor 500 ohms
155—Bias Resistor 2000 ohms
156—Plate Resistor 10,000 ohms

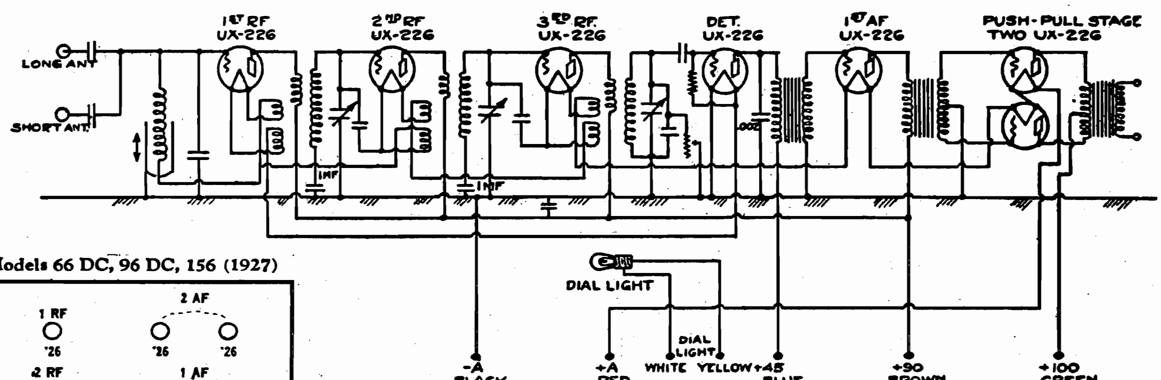
	CHASSIS					MODEL 28		MODEL 29
	1 AF.	DET	3 RF	2 RF	1 RF	PUSH-PULL		POWER
A Volts	1.3	2.3	1.3	1.3	1.3	5	5	7.5
B Volts	100	45	100	100	100	150	150	400
C Volts	7	—	7	7	7	35	35	30
Plate M. A.	3	2	4	4	4	10	10	20
Tube Test	—	—	10	10	10	35	35	—

**MODEL AC 46,126,146,
166,176
MODEL DC 96,156**

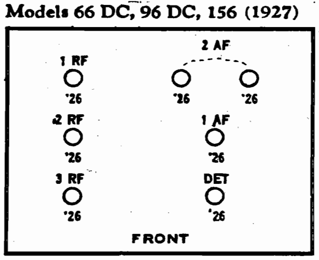
UNITED AMERICAN BOSCH CORP.



Models 126, 146, 166, 176, 46AC (AC operation)



Models 66 DC, 96 DC, 156 (1927)

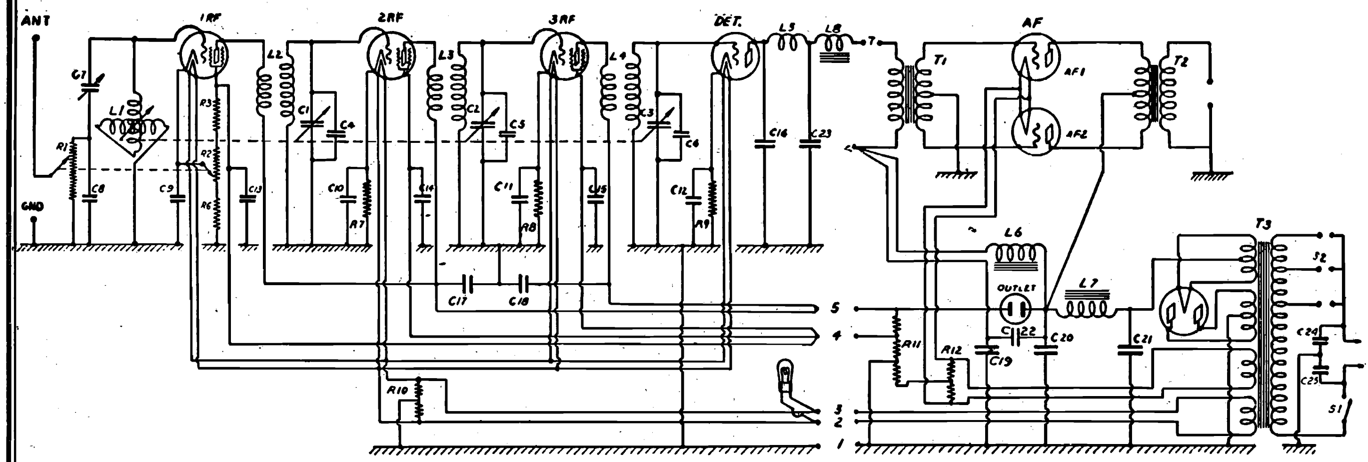


Model 96DC 110 Volt "Cruiser"

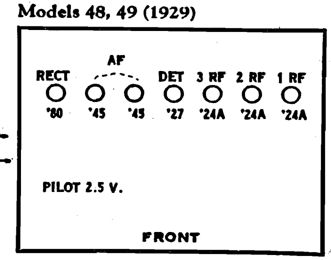
Model 156 Receiver "Cruiser"

Receiver	Circuit	Radio Frequency Stage 1	2	3	4	Det. Stage	Audio Stages 1	2 (Push Pull Stage)	3
96 DC 110V	Filament	1.4	1.4	1.4	—	1.4	1.4	1.4	1.4
66 DC 110V	Plate	95	100	95	—	45	80	75	75
156	Grid	—0.2	0.2	1.8	—	0	1.2	2.2	2.2
126, 146, 166,	Filament	*1.4	*1.4	*1.4	—	*2.3	*1.4	*5	—
176 (Little Six	Plate	90	90	90	—	45	70	130	—
AC Chassis)	Grid	3	3	3	—	0	1	8 to 9	—

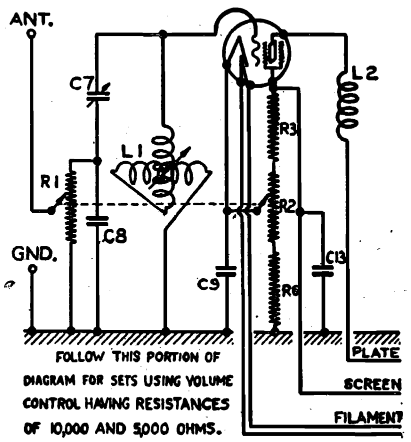
UNITED AMERICAN BOSCH CORP.



Models 48, 49 (1929)



Model 48 Receiver (Model 49 for 25 Cycle Operation)



FOLLOW THIS PORTION OF DIAGRAM FOR SETS USING VOLUME CONTROL HAVING RESISTANCES OF 10,000 AND 5000 OHMS.

L1—Variometer
L2—2nd RF Coil
L3—3rd RF Coil
L4—Detector Coil
L5—Detector Plate Choke
L6—Small Filter Choke
L7—Large Filter Choke

S1—Off and On Switch
S2—Voltage Tap Switch

C1—2nd RF Tuning Condenser
C2—3rd RF Tuning Condenser
C3—Detector Tuning Condenser
C4—2nd RF Alignment Condenser
C5—3rd RF Alignment Condenser
C6—Detector Alignment Condenser

C7—Antenna Tuning Condenser
C8—Antenna Condenser .001 mfd.
C9—1st RF Cathode By-Pass Condenser .5 mfd.
C10—2nd RF Cathode By-Pass Condenser .5 mfd.
C11—3rd RF Cathode By-Pass Condenser .5 mfd.
C12—Detector Cathode By-Pass Condenser 1 mfd.
C13—1st RF Screen By-Pass Condenser .5 mfd.
C14—2nd RF Screen By-Pass Condenser .5 mfd.
C15—3rd RF Screen By-Pass Condenser .5 mfd.
C16—Detector Plate By-Pass Condenser .001 mfd.
C17—1st and 2nd RF Plate By-Pass Condenser .5 mfd.
C18—3rd RF Plate By-Pass Condenser .5 mfd.
C19—Filter Condenser 1 mfd.
C20—Filter Condenser 2 mfd
C21—Filter Condenser 4 mfd.
C22—By-Pass Condenser {60 cycles .05 mfd. / 25 cycles .2 mfd.}
C23—Detector Plate By-Pass Condenser .001 mfd

T1—Audo Input Transformer
T2—Audio Output Transformer
T3—Power Transformer

R1—Volume Control {10,000 / 10,000} ohms (Antenna)
R2—Volume Control {50,000 / 5,000} ohms
R3—1st RF Screen Resistor 25,000 ohms
R4—2nd RF Grid Resistor 500 ohms
R5—3rd RF Grid Resistor 500 ohms
R6—1st RF Bias Resistor 1500 ohms
R7—2nd RF Bias Resistor 1500 ohms
R8—3rd RF Bias Resistor 1500 ohms
R9—Detector Bias Resistor 15,000 ohms
R10—RF Center Tap Resistor
R11—Voltage Divider Resistor
R12—Audio Center Tap Resistor

BOSCH—Model 48-60 Cycle
Line Voltage 112—Volume Control Position Full On

Tube No in Order (1)	Type of Tube (2)	Position of Tube 1st RF Det. etc. (3)	Readings, Plug in Socket of Set: Tube Out: A Volts (4)	B Volts (5)	Tube in Tester: A Volts (6)	B Volts (7)	C Volts (Control Grid) (8)	Cathode-Heater Volts (9)	Normal Plate M.A (10)	Plate M.A Grid Test (11)	Plate Change M A (12)	Screen Grid Volts (13)
1	224	1st RF	-	-	2.4	175	2.5	2.5	2.6	3.5	.9	70
2	224	2nd RF	-	-	2.4	175	2.5	2.5	2.6	3.5	.9	70
3	224	3rd RF	-	-	2.4	175	2.5	2.5	2.6	3.5	.9	70
4	227	Det.	-	-	2.4	280	27	27	2	-	-	-
5	245	Aud.	-	-	2.4	250	45	-	30	50	20	-
6	245	Aud.	-	-	2.4	250	45	-	30	50	20	-
7	280	Rect.	-	-	4.8	-	-	-	100	-	-	-

BOSCH—Model 49-25 Cycle
Line Voltage 112—Volume Control Position Full On

Tube No in Order (1)	Type of Tube (2)	Position of Tube 1st RF Det. etc. (3)	Readings Plug in Socket of Set: Tube Out: A Volts (4)	B Volts (5)	Tube in Tester: A Volts (6)	B Volts (7)	C Volts (Control Grid) (8)	Cathode-Heater Volts (9)	Normal Plate M A (10)	Plate M A Grid Test (11)	Plate Change M A (12)	Screen Grid Volts (13)
1	224	1st RF	-	-	2.4	150	1.8	1.8	2.5	6	3.5	70
2	224	2nd RF	-	-	2.4	150	1.8	1.8	2.5	6	3.5	70
3	224	3rd RF	-	-	2.4	150	1.8	1.8	2.5	6	3.5	70
4	227	Det.	-	-	2.4	250	27	27	2	-	-	-
5	245	Aud.	-	-	2.4	200	42	-	30	50	20	-
6	245	Aud.	-	-	2.4	200	42	-	30	50	20	-
7	280	Rect.	-	-	4.8	-	-	-	100			

MODEL 48,49 AC
Chassis Views

UNITED AMERICAN BOSCH CORP.

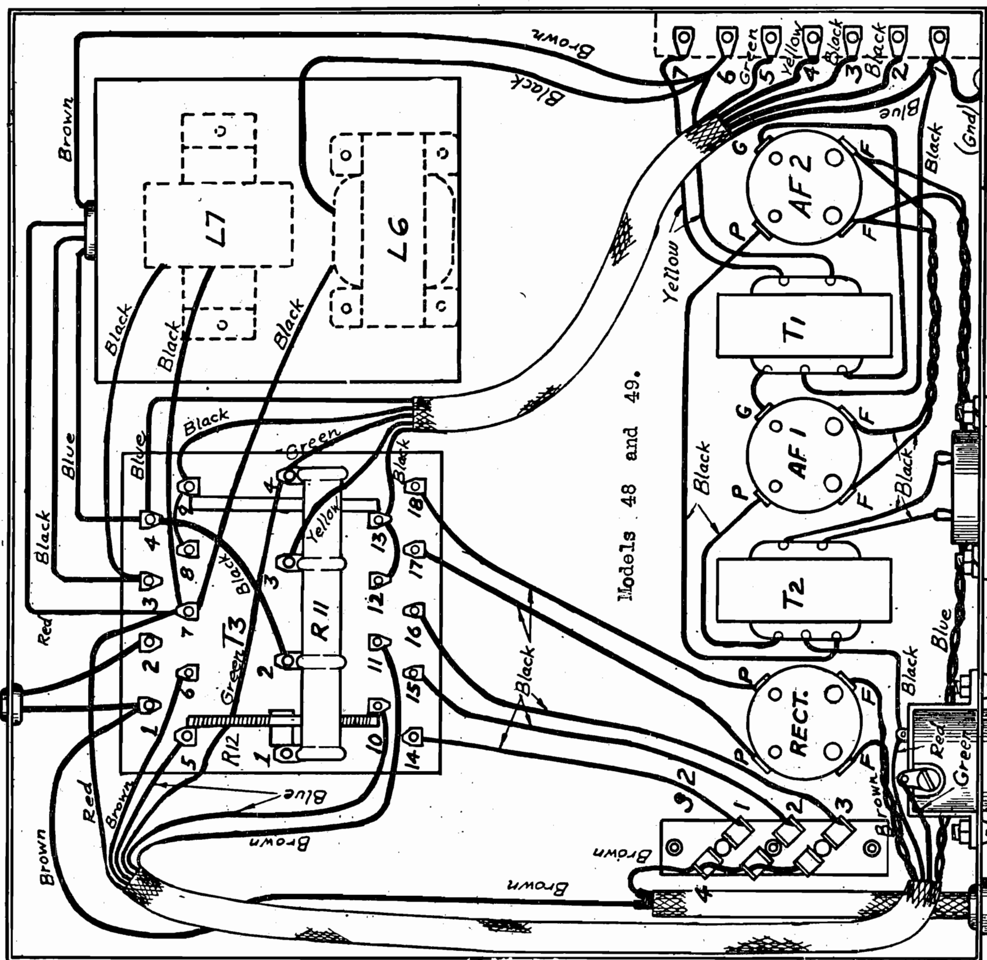


Diagram Showing Actual Wiring of Power Pack

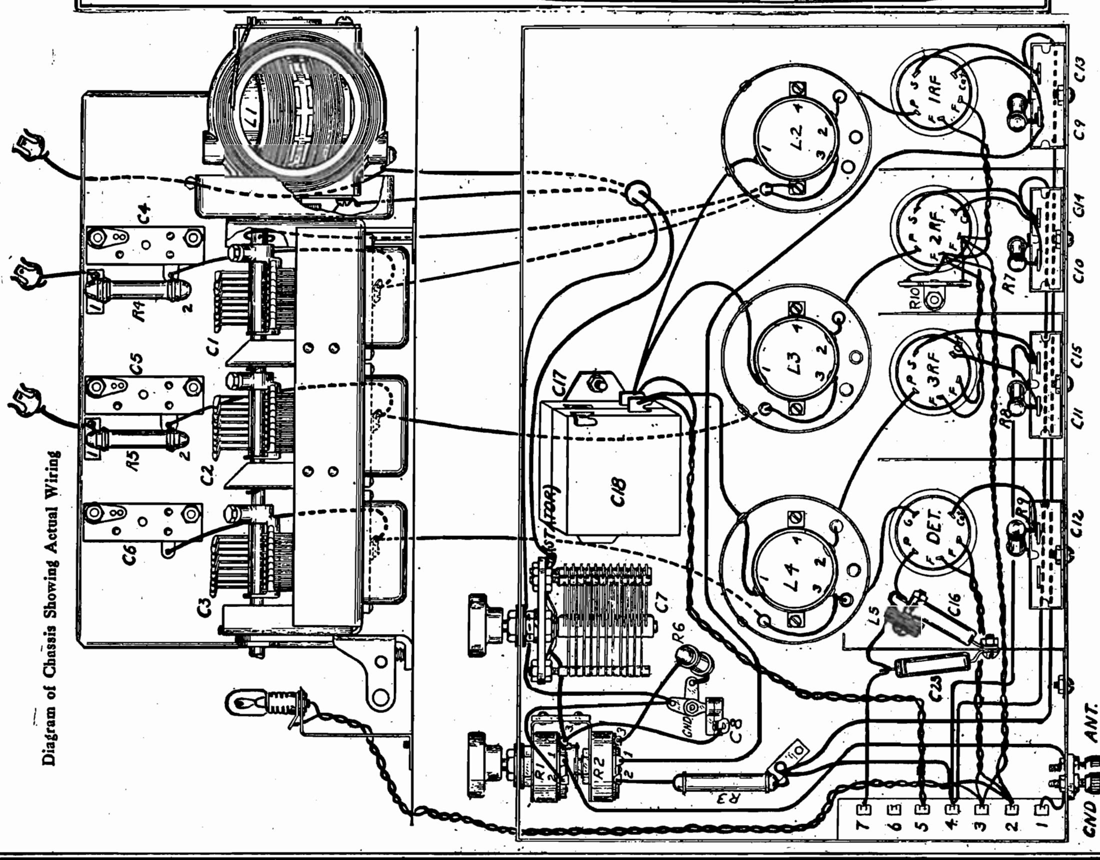
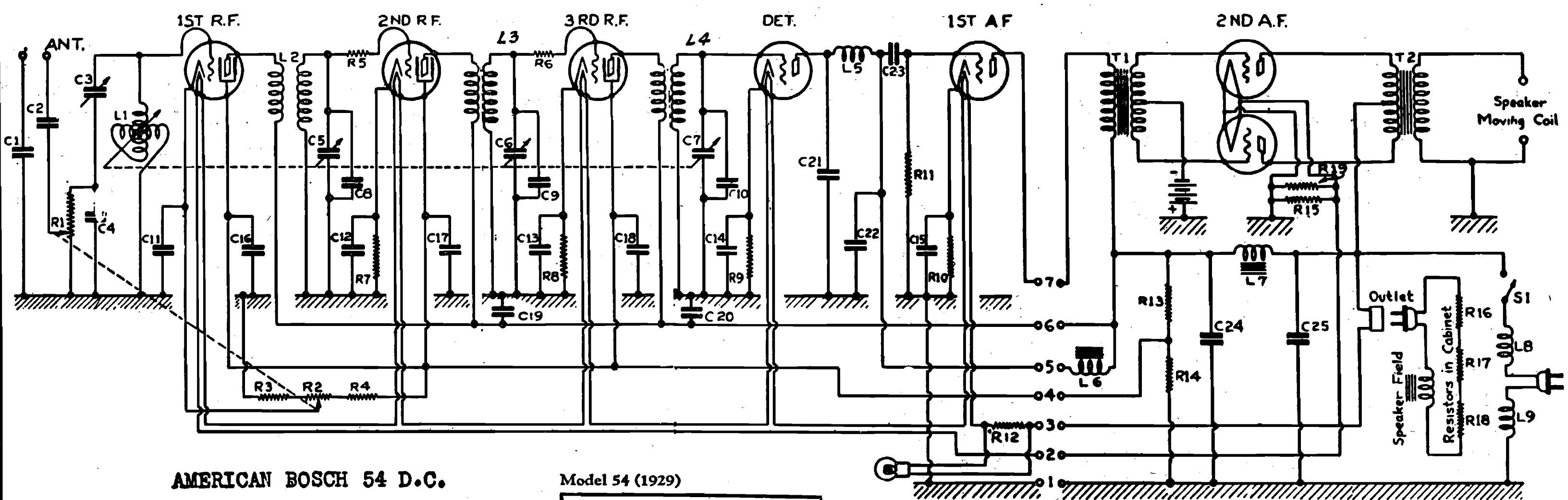


Diagram of Chassis Showing Actual Wiring

NOTE: This diagram applies to sets having dual volume control of 10,000 and 5,000 ohms.

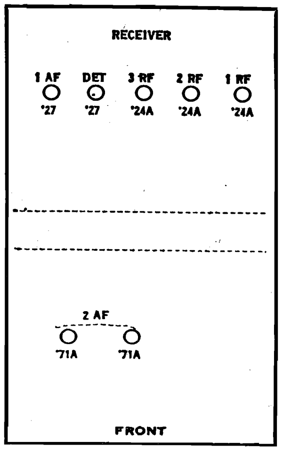
UNITED AMERICAN BOSCH CORP.

MODEL 54 DC
Schematic
Voltage



AMERICAN BOSCH 54 D.C.

Model 54 (1929)



Variometer: Variometer tuning of the first radio frequency stage is employed, thus assuring equal sensitivity on both high and low wave lengths. The variometer (shown at L1 on the schematic wiring diagram) is geared directly to the condenser gang and needs no separate control. Correct operation on any length of antenna is provided by the trimming condenser C3, which is operated by the "Clarifier" control.

Volume Control: The Volume Control is also located in the first radio frequency stage and consists of two resistance units operated by a single shaft. One resistance is used as a potentiometer in the antenna circuit and the other as a potentiometer to vary the grid voltage of the 1st RF tube. This type of control gives smooth variation in volume on either distant or local stations and at the same time maintains the exceptional quality of reproduction.

Reference to the schematic diagram will show that the entire radio frequency amplifier is properly designed and by-passed. Thorough shielding has been applied to the entire receiver to utilize the large gain of which the screen grid tubes are capable, and to eliminate the slightest possibility of oscillation.

R 6—3rd R. F. grid resistor 250 ohms
R 7—2nd R. F. bias resistor 1500 ohms
R 8—3rd R. F. bias resistor 1500 ohms
R 9—Detector bias resistor 40,000 ohms
R10—1st A. F. bias resistor 1500 ohms
R11—1st A. F. grid resistor 1 megohm
R12—Dial light resistor .75 ohms
R13—Voltage divider resistor 25000 ohms
R14—voltage divider resistor 15000 ohms
R15—2nd A. F. filament resistor 5 ohms
R16—Filament resistor 20 ohms
R17—Filament resistor 20 ohms
R18—Filament resistor 20 ohms
R19—2nd A. F. filament resistor 22 ohms

TP—Terminal plate
S 1—Main switch

T 1—Audio input transformer
T 2—Audio output transformer

C12—2nd R. F. cathode by-pass condenser .5 mfd.
C13—3rd R. F. cathode by-pass condenser .5 mfd.
C14—Detector cathode by-pass condenser 1. mfd.
C15—1st A. F. cathode by-pass condenser 1. mfd.
C16—1st R. F. screen by-pass condenser .5 mfd.
C17—2nd R. F. screen by-pass condenser .5 mfd.
C18—3rd R. F. screen by-pass condenser .5 mfd.
C19—Plate by-pass condenser .5 mfd.
C20—Plate by-pass condenser .5 mfd
C21—Detector plate by-pass condenser .001 mfd.
C22—Detector plate by-pass condenser .001 mfd
C23—1st A. F. coupling condenser .005 mfd.
C24—Filter condenser 4. mfd.
C25—Filter condenser 4. mfd.

R 1—Volume control 5000 ohms
R 2—Volume control 5000 ohms
R 3—Screen resistor 500 ohms
R 4—Screen resistor 25000 ohms
R 5—2nd R. F. grid resistor 250 ohms

L 1—Variometer
L 2—2nd R. F. coil
L 3—3rd R. F. coil
L 4—Detector coil
L 5—Detector choke coil
L 6—Detector filter choke
L 7—Main filter choke
L 8—Line filter choke
L 9—Line filter choke

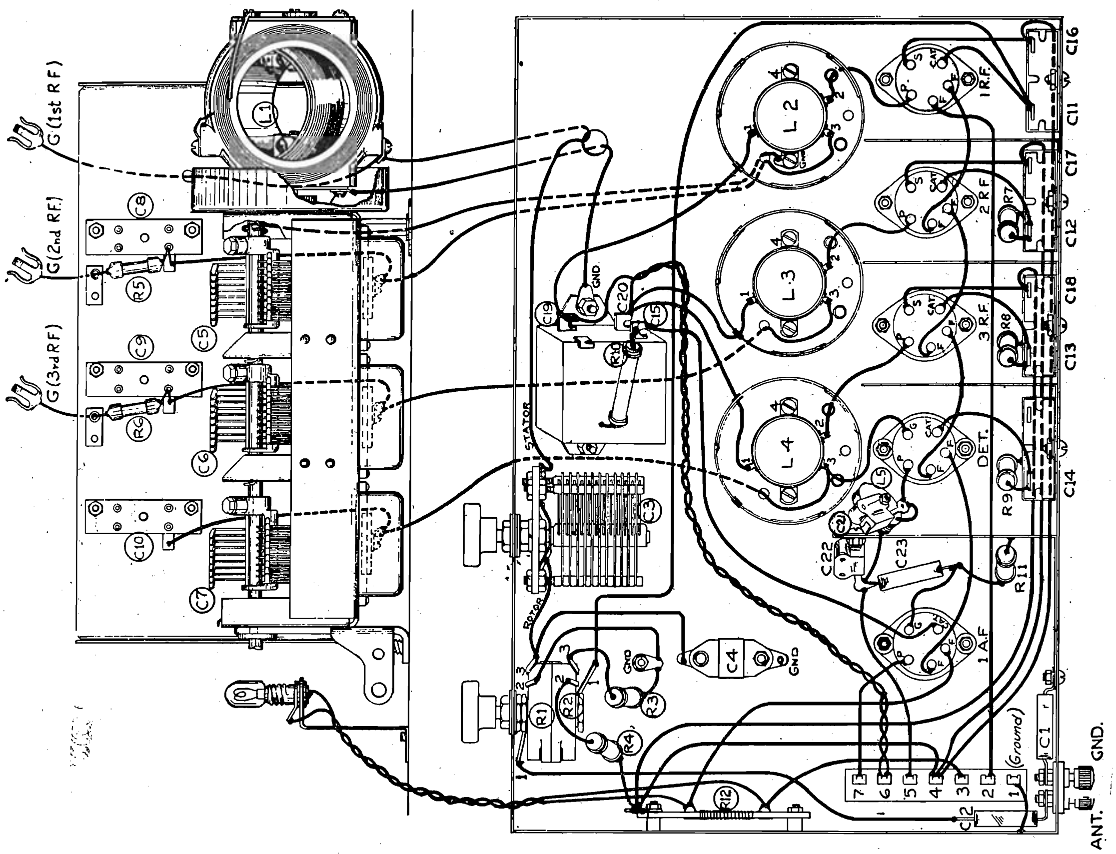
C 1—Ground condenser .005
C 2—Antenna condenser .001
C 3—Trimming condenser
C 4—Antenna condenser .00025 mfd.
C 5—2nd R. F. tuning condenser
C 6—3rd R. F. Tuning condenser
C 7—Detector tuning condenser
C 8—2nd R. F. alignment condenser
C 9—3rd R. F. alignment condenser
C10—Detector alignment condenser
C11—1st R. F. cathode by-pass condenser .5 mfd.

*Variable

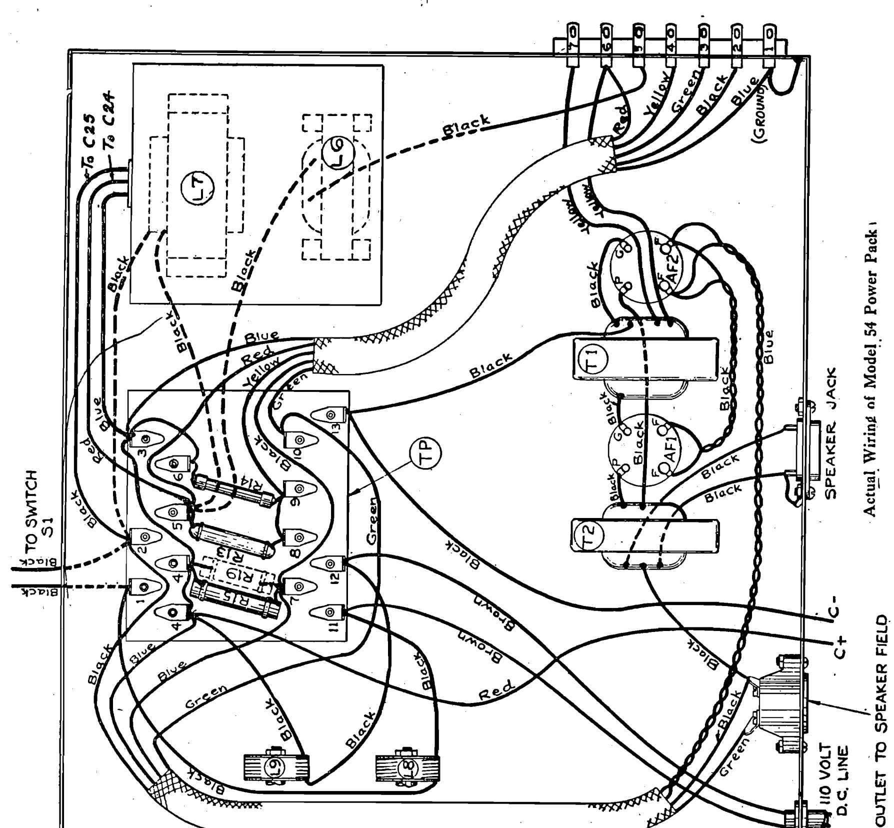
TUBE NO IN ORDER ①	TYPE OF TUBE ②	POSITION OF TUBE 1ST RF DET ETC. ③	READINGS PLUG IN SOCKET OF SET									
			TUBE OUT		TUBE IN TESTER							
			A VOLTS ④	B VOLTS ⑤	A VOLTS ⑥	B VOLTS ⑦	C VOLTS (CONTROL GRID) ⑧	CATHODE-HEATER VOLTS ⑨	NORMAL PLATE M.A. ⑩	PLATE M.A GRID TEST ⑪	PLATE CHANGE M.A. ⑫	SCREEN GRID VOLTS ⑬
1	224	1 R.F.	-	-	2.3	100		-	1	2	-	25
2	224	2 R.F.	-	-	2.3	100	1	-	1	2	-	25
3	224	3 R.F.	-	-	2.3	100	1	-	1	2	-	25
4	227	Det.	-	-	2.3	100	10	-	1.5	2.5	-	-
5	227	1 A.F.	-	-	2.3	95	4	-	3.5	5	-	-
6	171A	2 A.F.	-	-	5	110	22.5	-	12	24	-	-
7	171A	2 A.F.	-	-	5	110	22.5	-	12	24	-	-
8	-	-	-	-	-	-	-	-			-	-
9	-	-	-	-	-	-	-	-			-	-
10	-	-	-	-	-	-	-	-			-	-

MODEL 54 DC
Chassis Views

UNITED AMERICAN BOSCH CORP.



Actual Wiring of Model 54 Chassis



Actual Wiring of Model 54 Power Pack

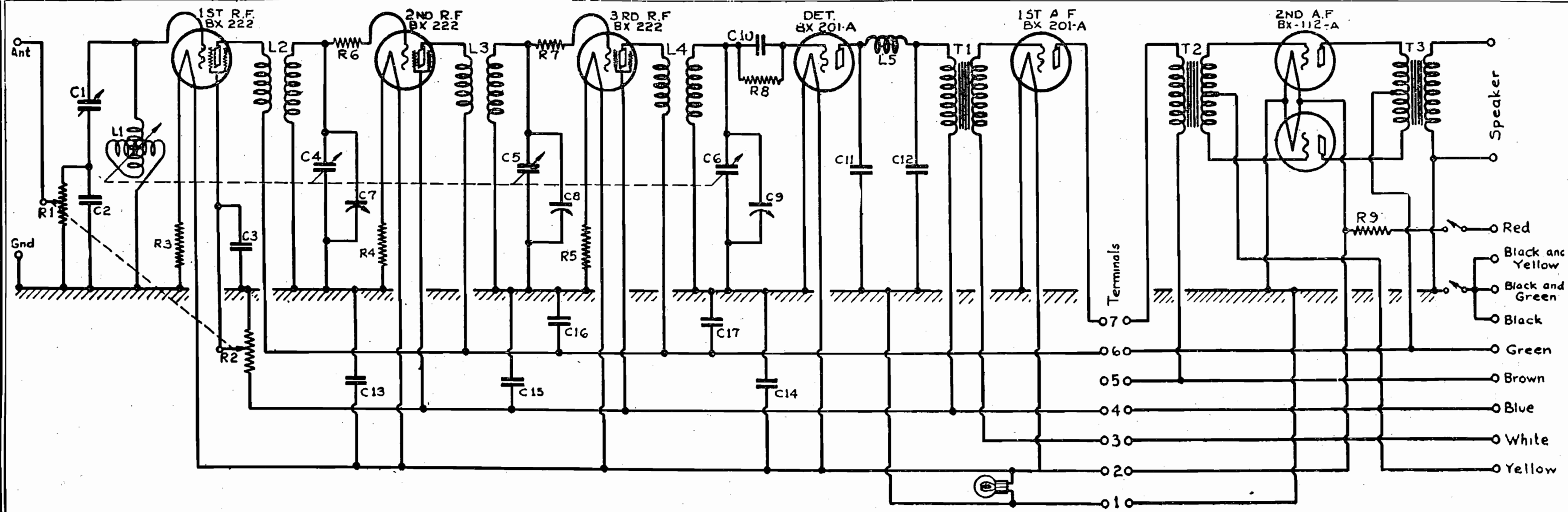
Note: Do not attempt to switch the receiver "on" until all tubes are in place, and aerial and ground are connected.

Connect the ground wire *only* to the terminal provided. *Do not* connect it to any other portion of the chassis.

Loud Speaker: The speaker used with the model 54 Bosch receiver is an electrodynamic type similar to the Bosch models 619 and 620 except that it embodies a special field winding having a resistance of 4 ohms.

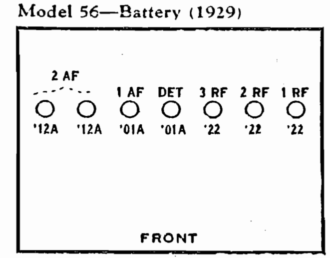
MODEL 56 Battery
Schematic
Parts List

UNITED AMERICAN BOSCH CORP.



C1.	Trimming Condenser	
C2.	Antenna Condenser .00025 mf.	
C3.	Screen By-pass Condenser .5 mf.	
C4.	2nd RF Tuning Condenser	
C5.	3rd RF Tuning Condenser	
C6.	Detector Tuning Condenser	
C7.	2nd RF Alignment Condenser	
C8.	3rd RF Alignment Condenser	
C9.	Detector Alignment Condenser	
C10.	Grid Condenser .00025 mf.	
C11.	Detector By-pass Condenser .001 mf.	
C12.	Detector By-pass Condenser .001 mf.	
C13.	Filament By-pass Condenser .5 mf.	
C14.	Filament By-pass Condenser .5 mf.	
C15.	Screen By-pass Condenser .5 mf.	
C16.	Plate By-pass Condenser .5 mf.	
C17.	Plate By-pass Condenser .5 mf.	
R1.	Volume Control (Antenna) 10,000 ohms	
R2.	Volume Control (Screen) 50,000 ohms	
R3.	Filament Resistor 12.8 ohms	
R4.	Filament Resistor 12.8 ohms	
R5.	Filament Resistor 12.8 ohms	
R6.	2nd RF Grid Resistor 250 ohms	
R7.	3rd RF Grid Resistor 250 ohms	
R8.	Grid Leak 2 meg.	
R9.	Main Filament Resistor .55 ohms	
T1.	1st Audio Transformer	
T2.	2nd Audio Input Transformer	
T3.	2nd Audio Output Transformer	
L1.	Variometer	
L2.	2nd RF Coil	
L3.	3rd RF Coil	
L4.	Detector Coil	
L5.	Detector Choke Coil	

Model 56—Battery (1929)



The table model is known as the model 56 and is to be used with the Bosch model 616 speaker. The console model (model 56AB) consists of the table model used in conjunction with the AB console. A type 612 speaker is used in the console.

Model 56 Battery Operated

MODEL 56 Battery Chassis Views Voltage

UNITED AMERICAN BOSCH CORP.

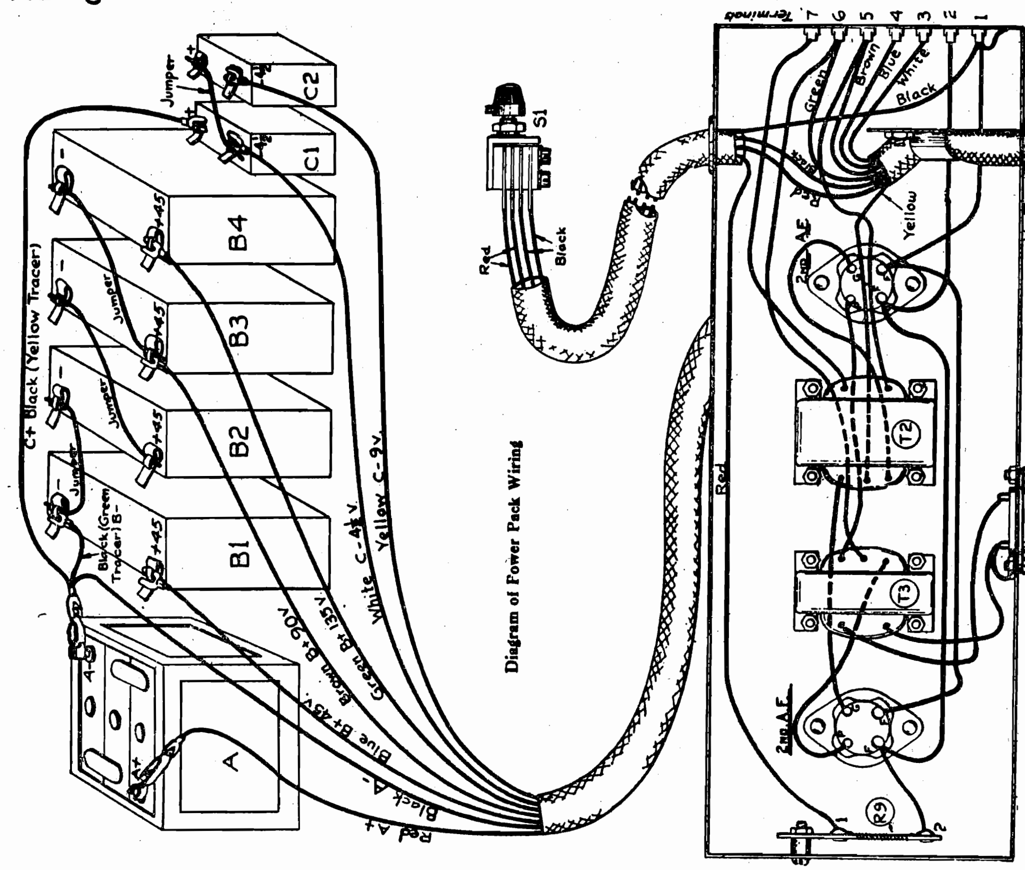
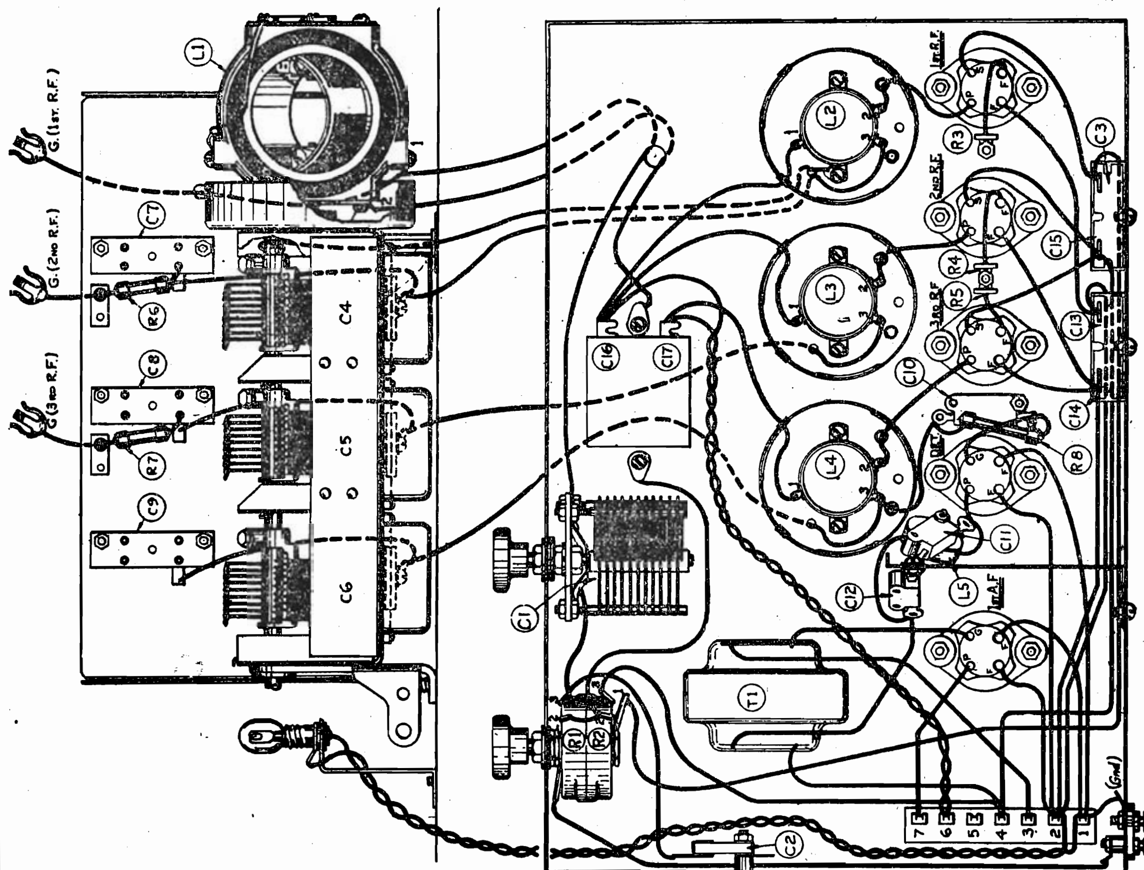


Diagram of Power Pack Wiring

BOSCH—Model 56
All readings taken with tubes in sockets

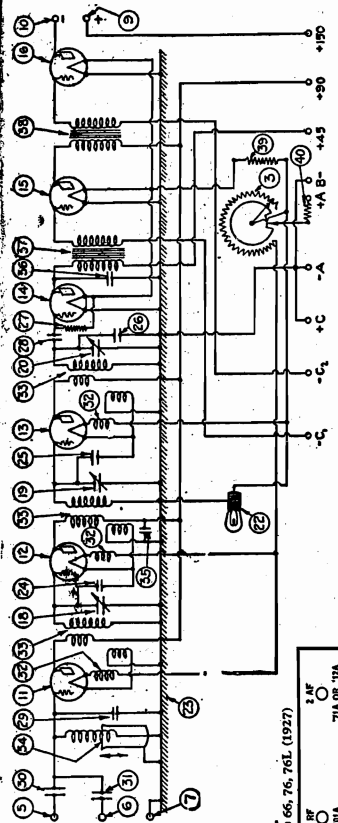
TUBE NO IN ORDER (1)	TYPE OF TUBE (2)	POSITION OF TUBE 1ST RF DET. ETC (3)	TUBE OUT: A VOLTS (4)	TUBE OUT: B VOLTS (5)	TUBE IN TESTER: A VOLTS (6)	B VOLTS (7)	C VOLTS (CONTROL GRID) (8)	CATHODE-HEATER VOLTS (9)	NORMAL PLATE M.A. (10)	PLATE M.A. GRID TEST (11)	PLATE CHANGE M.A. (12)	SCREEN GRID VOLTS (13)
1	222	1 R.F.	-	-	3.2	135	1.7	-	1.5	-	-	45
2	222	2 R.F.	-	-	3.2	135	1.7	-	1.5	-	-	45
3	222	3 R.F.	-	-	3.2	135	1.7	-	1.5	-	-	45
4	201A	Det.	-	-	5	45	-	-	1.5	-	-	-
5	201A	1 A.F.	-	-	5	90	4.5	-	2.5	-	-	-
6	112A	2 A.F.	-	-	5	135	9	-	7	-	-	-
7	112A	2 A.F.	-	-	5	135	9	-	7	-	-	-

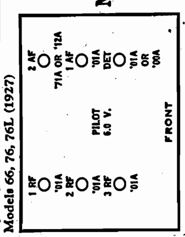
READINGS, PLUG IN SOCKET OF SET



UNITED AMERICAN BOSCH CORP.

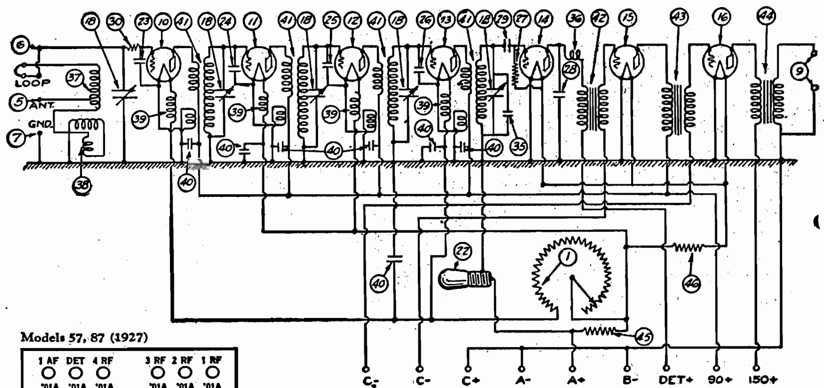
MODEL 57, 87
MODEL 66, 76, 76-L
MODEL 66AC, 96, 116, 136. AC
MODEL 107 AC

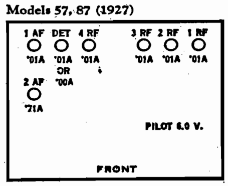




Models 66, 76, 76L (1927)

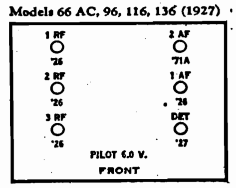
Models 66, 76, and 76L Receivers—The "Cruiser"



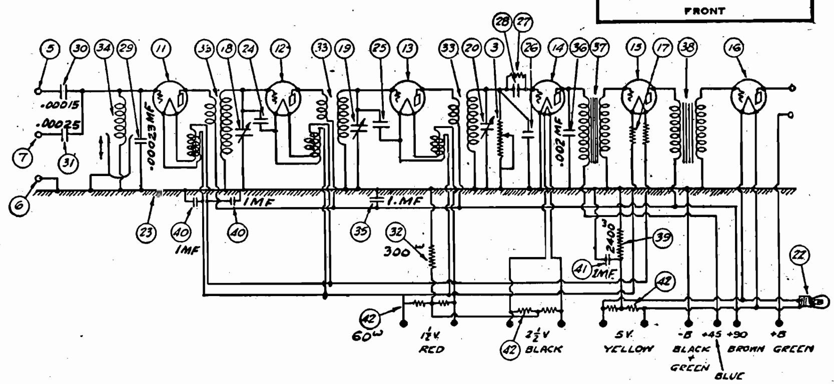


Models 57, 87 (1927)

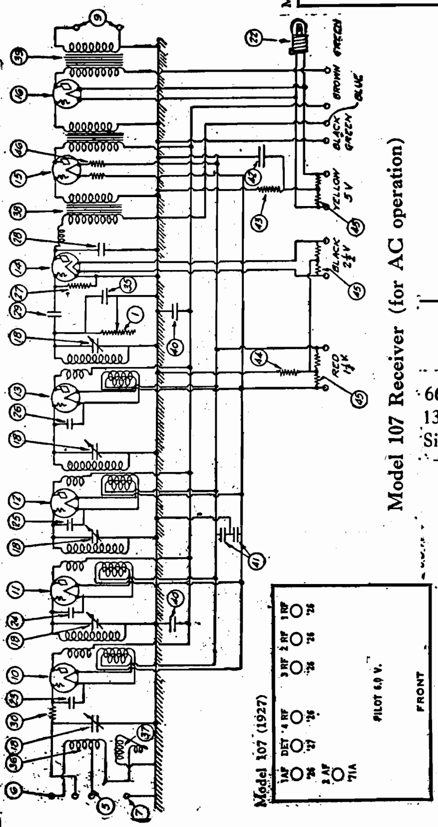
Models 57 and 87 Receivers



Models 66 AC, 96, 116, 136 (1927)



Models 66AC, 96, 116, 136 Receivers (for AC operation)
"CRUISER"



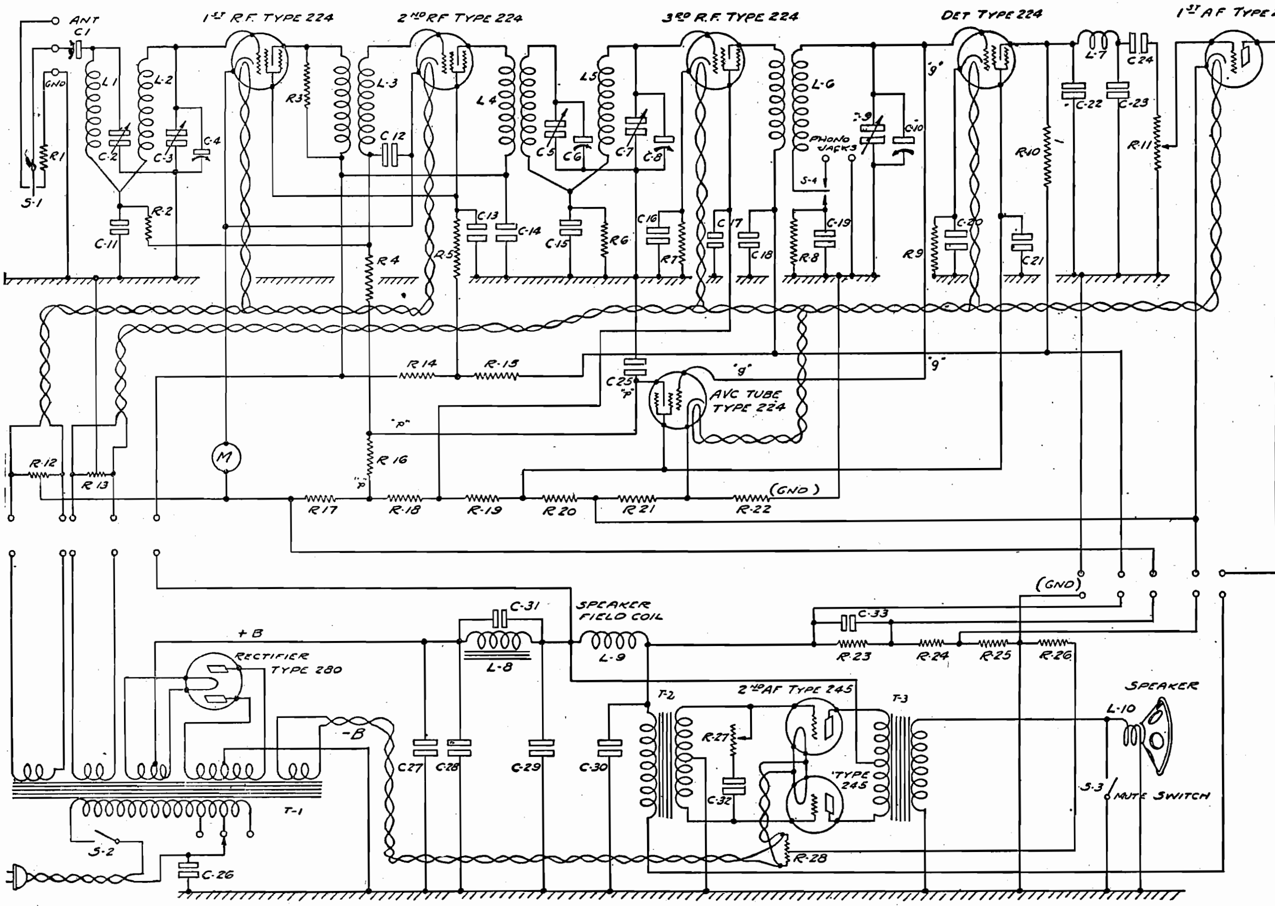
Model 107 (1927)

Model 107 Receiver (for AC operation)

Receiver	Circuit	Radio Frequency Stages 1	2	3	4	Detector Stage	Audio Stages 1	2	3
66AC, 96, 116, 136, (Regular AC Six Tube Chassis)	Filament	*1.4	*1.4	*1.4	—	*2.3	*1.4	*5	—
	Plate	90	90	90	—	45	70	130	—
	Grid	5	5	5	—	0	1	8 to 9	—
Model {57 87	Filament	5	5	5	5	5	5	5	
	Plate	90	90	90	90	45	80	100	
	Grid	3	5	5	5	0	1	3	
Model {66 76	Filament	5	5	5	—	5	5	5	
	Plate	90	90	90	—	45	80	100	
	Grid	5	5	5	—	0	1	3	
107 (Seven Tube AC Chassis)	Filament	*1.4	*1.4	*1.4	*1.4	*2.3	*1.4	*5	
	Plate	90	90	90	90	45	70	130	
	Grid	3	5	5	5	0	1	8 to 9	

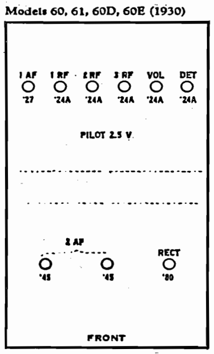
MODEL 60,60-D, 60-E,61
Schematic
Voltage
Parts List

UNITED AMERICAN BOSCH CORP.



Schematic Diagram of Model 60 Receiver.

Models 60, 61, 60D, 60E (1930)

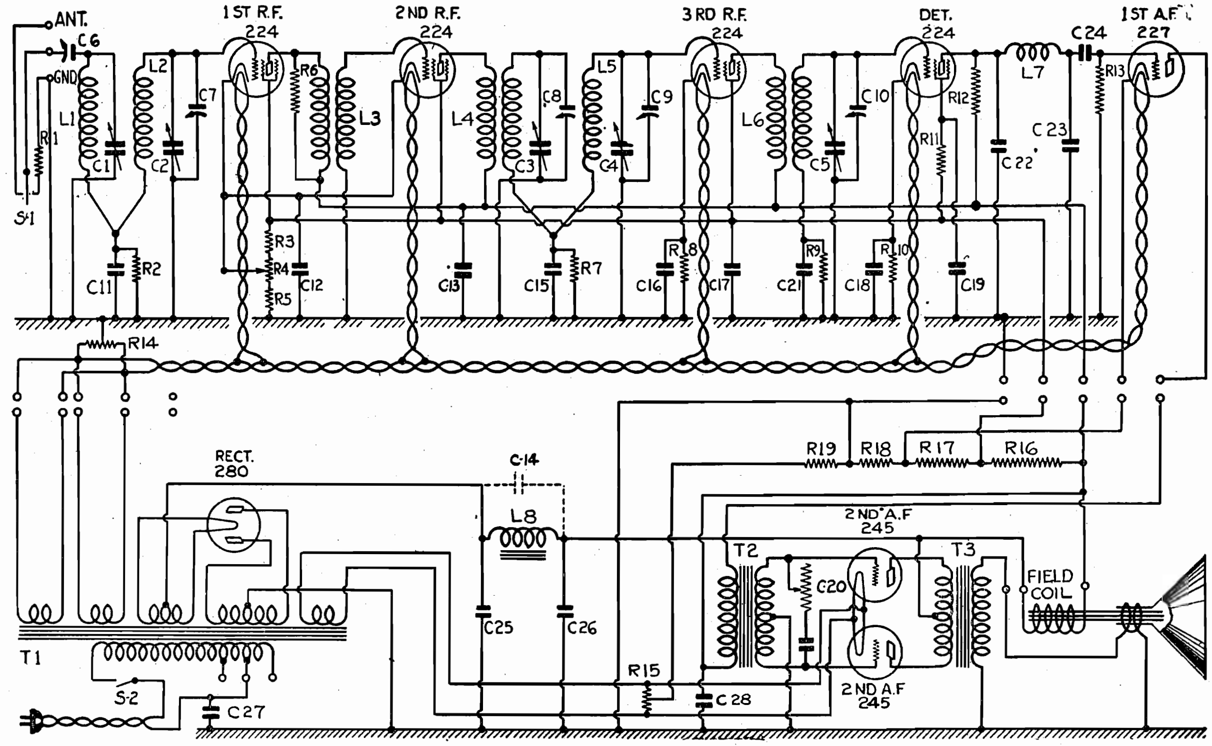


L1—1st RF Coil
L2—1st RF Coil
L3—2nd RF Coil (untuned)
L4—3rd RF Coil
L5—3rd RF Coil
L6—Detector Coil
L7—Detector Plate Choke
L8—Power Pack Filter Choke
L9—Speaker Field Coil
L10—Speaker Voice Coil
T1—Main Power Transformer
T2—Audio Input Transformer
T3—Audio Output Transformer
C1—Antenna Trimmer Condenser
C2—1st RF Tuning Condenser
C3—1st RF Tuning Condenser
C4—1st RF Alignment Condenser
C5—3rd RF Tuning Condenser
C6—3rd RF Alignment Condenser
C7—3rd RF Tuning Condenser
C8—3rd RF Alignment Condenser
C9—Detector Tuning Condenser
C10—Detector Alignment Condenser
C11—1st RF Coupling Condenser .04 mfd
C12—2nd RF Grid Return Condenser .5 mfd.
C13—1st and 2nd RF Screen Condenser .25 mfd.
C14—1st and 2nd RF Plate Condenser .25 mfd.
C15—3rd RF Coupling Condenser .04 mfd.
C16—3rd RF Cathode Condenser .5 mfd.
C17—3rd RF Screen Condenser .5 mfd.
C18—3rd RF Plate Condenser .5 mfd.
C19—Detector Grid Return Condenser .04 mfd.
C20—Detector Cathode Condenser 1. mfd.
C21—Detector Screen Condenser .5 mfd.
C22—Detector Plate By-pass Condenser .0001 mfd.
C23—Detector Plate By-pass Condenser .0001 mfd.
C24—Audio Coupling Condenser .006 mfd.
C25—AVC Plate By-pass Condenser .006 mfd.
C26—Buffer Condenser .1 mfd.
C27—Power Pack Filter Condenser 2. mfd.
C28—Power Pack Filter Condenser 2. mfd.
C29—Power Pack Filter Condenser 4. mfd.
C30—Power Pack Filter Condenser 2. mfd.
C31—Filter Choke Tuning Condenser .075 mfd.
C32—Tone Control Condenser .006 mfd.
C33—By-pass Condenser 2. mfd.

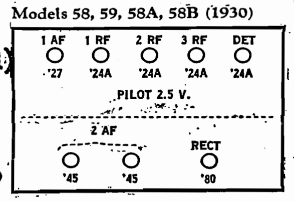
R1—Antenna Resistance 500 ohms
R2—1st RF de-coupling Resistor 1000 ohms
R3—Untuned Coil Resistor 50,000 ohms
R4—1st and 2nd RF Grid Resistor .5 meg.
R5—1st and 2nd RF Screen Resistor 18,000 ohms
R6—3rd RF de-coupling Resistor 1,000 ohms
R7—3rd RF Bias Resistor 1,000 ohms
R8—Detector Grid Resistor 1,000 ohms
R9—Detector Bias Resistor 50,000 ohms
R10—Detector Plate Resistor .5 meg.
R11—Volume Control .5 meg.
R12—1st and 2nd RF Center Tap Resistor
R13—Center Tap Resistor
R14—1st and 2nd RF Screen Resistor 20,000 ohms
R15—Resistor 10,000 ohms
R16—AVC Resistor .5 megohms
R17—Resistor 900 ohms
R18—3rd RF Screen Resistor 5,000 ohms
R19—AVC and Detector Screen Resistor 25,000 ohms
R20—Resistor 5,000 ohms
R21—1st AF Bias Resistor 2,000 ohms
R22—AVC Bias Resistor 2,000 ohms
R23—Voltage Divider Resistor 1,300 ohms
R24—Voltage Divider Resistor 2,380 ohms
R25—Voltage Divider Resistor 160 ohms
R26—2nd Audio Bias Resistor 950 ohms
R27—Tone Selector Resistor .5 megohm
R28—2nd Audio Center Tap Resistor

UNITED AMERICAN BOSCH CORP.

MODEL 58 AC
Schematic
Voltage
Parts List



Models 58, 59, 58A, 58B (1930)



L 1 -1st RF Coil
L 2 -1st RF Coil
L 3 -2nd RF Coil (untuned)
L 4 -3rd RF Coil
L 5 -3rd RF Coil
L 6 -Detector Coil
L 7 -Detector Plate Choke
L 8 -Filter Choke
T 1 -Main Power Transformer
T 2 -Audio Input Transformer
T 3 -Audio Output Transformer
C 1 -1st RF Tuning Condenser
C 2 -1st RF Tuning Condenser
C 3 -3rd RF Tuning Condenser
C 4 -3rd RF Tuning Condenser
C 5 -Detector Tuning Condenser
C 6 -Antenna Trimming Condenser
C 7 -1st RF Alignment Condenser
C 8 -3rd RF Alignment Condenser
C 9 -3rd RF Alignment Condenser
C10 -Detector Alignment Condenser
C11 -1st RF Coupling Condenser .04 mfd.
C12 -Cathode By-pass Condenser .5 mfd.
C13 -Plate By-pass Condenser .5 mfd.
C14 -Filter Condenser .2 mfd. (25 cycle only)
C15 -3rd RF Coupling Condenser .04 mfd.
C16 -Cathode By-pass Condenser .5 mfd.
C17 -Screen By-pass Condenser .5 mfd.
C18 -Detector Cathode By-pass Condenser 1.mfd.
C19 -Detector Screen By-pass Condenser .5 mfd
C20 -Tone Control Condenser .006 mfd.
C21 -Detector Condenser .04 mfd.
C22 -Detector Plate By-pass Condenser .0001
C23 -Detector Plate By-pass Condenser .0001
C24 -Audio Coupling Condenser .006 mfd.
C25 -Power Pack Filter Condenser 2 mfd.
C26 -Power Pack Filter Condenser 2 mfd.
C27 -Buffer Condenser 1 mfd
C28 -Audio By-pass Condenser 4 mfd.

R 1 -Antenna Resistor 500 ohms
R 2 -De-coupling Resistor 1,000 ohms
R 3 -Screen Resistor 20,000 ohms
R 4 -Volume Control 3,000 ohms
R 5 -Screen Resistor 250 ohms
R 6 -Untuned Transformer Resistor .1 megohm
R 7 -3rd RF de-coupling Resistor 1,000 ohms
R 8 -3rd RF Cathode Resistor 1,000 ohms
R 9 -Detector Grid Resistor 1,000 ohms
R10 -Detector Cathode Resistor 50,000 ohms
R11 -Detector Screen Resistor 1 megohm
R12 -Detector Plate Resistor .25 megohm
R13 -1st Audio Grid Resistor 2 megohms
R14 -Center Tap Resistor (chassis)
R15 -Center Tap Resistor (power pack)
R16 -Screen Supply Resistor 2,050 ohms
R17 -Audio Cathode Resistor 1,950 ohms
R18 -Divider Resistor 180 ohms
R19 -Audio Bias Resistor 950 ohms
R20 -Tone Control 5 megohm

Line Voltage 115—Voltage Tap 115
Volume Control Full On
*Not true readings due to resistors in circuit.

Tube No. in Order Tested (1)	Type of Tube (2)	Position of Tube in Set (3)	Meter Readings with Jewell Test Plug In — Operating Voltages: Filament or Heater (4)	Plate or Anode (5)	Control Grid—Space Gd + (6)	Normal Grid—Screen Gd + (7)	Cathode to Heater (8)	Mill: Screen Gd L. H. '80 Plate (9)	Plate R. H. '80 Plate (10)
1	224	1 R.F.	2.2	170	2.2	75	-	-	3
2	224	2 R.F.	2.2	170	2.2	75	-	-	3
3	224	3 R.F.	2.2	170	2.2	75	-	-	3
4	224	Det.	2.2	30*	1.5	10*	-	-	.1*
5	227	1 A.F.	2.2	150	-	8	-	-	5
6	245	PP-AF	2.4	250	-	50	-	-	30
7	245	PP-AF	2.4	250	-	50	-	-	30
8	280	Rect.	5.0	-	-	-	-	-	-

MODEL 62 DC
Electrical Values
Voltage

UNITED AMERICAN BOSCH CORP.

R 1 -Antenna Resistor 500 ohms
R 2 -De-coupling Resistor 1,000 ohms
R 3 -Resistor 20,000 ohms
R 4 -Volume Control 3,000 ohms
R 5 -Resistor 150 ohms
R 6 -Untuned Transformer Resistor .1 meg.
R 7 -De-coupling Resistor 1,000 ohms
R 8 -3rd RF Cathode Resistor 600 ohms
R 9 -Resistor 1,000 ohms
R10 -Detector Cathode Resistor 50,000 ohms
R11 -Detector Screen Resistor 1 meg.
R12 -Detector Plate Resistor .5 meg.
R13 -1st Audio Grid Resistor 2 meg.
R14 -Filament Resistor 1.8 ohms
R15- Filament Resistor 18 ohms
R16 -Filament Resistor 18 ohms
R17 -Filament Resistor 18 ohms
R18 -Tone Selector Resistor .5 meg.
R19 -Voltage Divider Resistor 1,400 ohms
R20 -Voltage Divider Resistor 2,600 ohms
R21 -Voltage Divider Resistor 250 ohms

C 1 -1st RF tuning Condenser
C 2 -1st RF Tuning Condenser
C 3 -3rd RF Tuning Condenser
C 4 -3rd RF Tuning Condenser
C 5 -Detector Tuning Condenser
C 6 -Antenna Trimming Condenser
C 7 -1st RF Alignment Condenser
C 8 -3rd RF Alignment Condenser
C 9 -3rd RF Alignment Condenser
C10 -Detector Alignment Condenser
C11 -1st RF Coupling Condenser .04 mfd.

C12 -Cathode By-pass Condenser .5 mfd.
C13 -Plate By-pass Condenser .5 mfd.
C14 -Screen By-Pass Condenser .5 mfd.
C15 -3rd RF Coupling Condenser .04 mfd
C16 -3rd RF Cathode Condenser .5 mfd.
C17 -Detector Condenser .04 mfd.
C18 -Detector Cathode Condenser 1. mfd.
C19 -Detector Screen Condenser .5 mfd.
C20 -Detector Plate By-pass Condenser .0001 mfd
C21 -Detector Plate By-pass Condenser .0001 mfd.
C22 -Audio Coupling Condenser .006 mfd.
C23 -Ground Condenser .006 mfd.
C24 -Filter Condenser 4 mfd.
C25 -Filter Condenser 4 mfd.
C26 -Tone Selector Condenser .002 mfd.

S 1 -Local-Long Distance Switch
S 2 -Off and On Switch

B 1 -"C" Battery -22½ volts

T 1 -Audio Input Transformer
T 2 -Audio Output Transformer

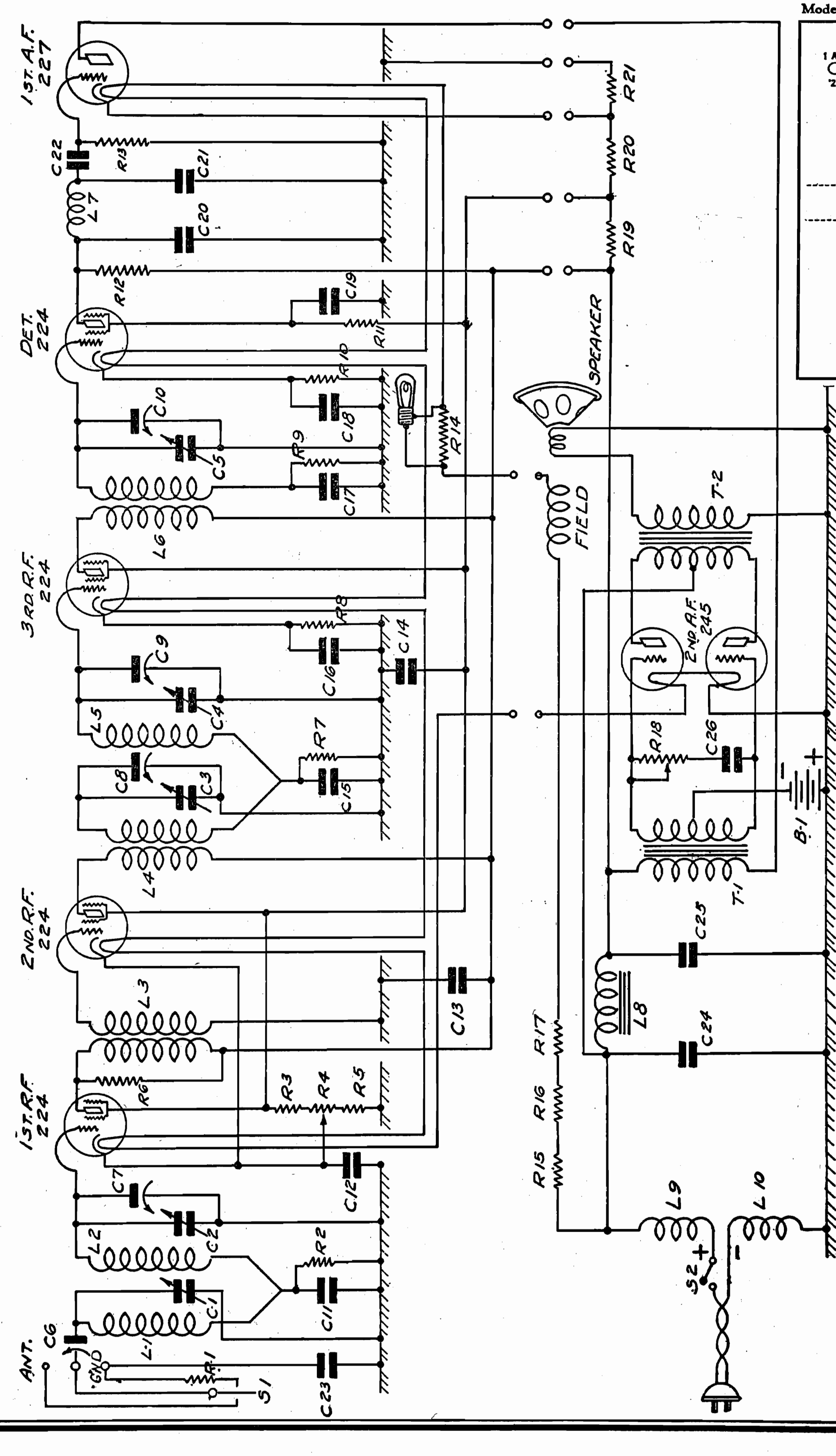
L 1 -1st RF Coil
L 2 -1st RF Coil
L 3 -Untuned Transformer
L 4 -3rd RF Coil
L 5 -3rd RF Coil
L 6 -Detector Coil
L 7 -Detector Plate Choke
L 8 -Filter Choke
L 9 -Filter Choke
L10 -Filter Choke

SOCKET VOLTAGES - MODEL 62

STAGE	Tube	Plate	Screen	Grid.	Fil.	Plate MA.
1st RF.................	224	100	60	10	2.1	1.5
2nd RF.................	224	100	60	9	2.1	1.5
3rd RF.................	224	100	60	8	2.1	1.5
Detector...............	224	30	15	*	2.1	*
1st AF.................	227	85	-	8	2.1	2.5
2nd AF.................	245	105	-	20	2.1	8
2nd AF.................	245	105	-	20	2.1	8

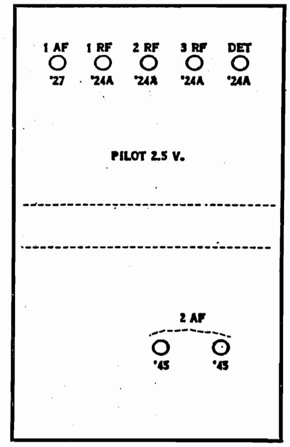
UNITED AMERICAN BOSCH CORP.

MODEL 62 DC
Schematic
Socket



Schematic Diagram of Model 62 Receivers

Model 62C (110 V. DC) (1930)



For Resistor Color Code See Model 63

MODEL 63 DC
Values
Resistor Code
Voltage

UNITED AMERICAN BOSCH CORP.

Model 63 Receiver

R 1—Antenna Resistor 500 ohms
R 2—De-coupling Resistor 1,000 ohms
R 3—Untuned Transformer Resistor 50,000 ohms
R 4—De-coupling Resistor 1,000 ohms
R 5—3rd RF Cathode Resistor 600 ohms
R 6—Detector Resistor 1,000 ohms
R 7—Detector Cathode Resistor 50,000 ohms
R 8—Detector Plate Resistor .5 meg.
R 9—Volume Control .5 meg.
R10—1st and 2nd RF Bias Resistor 1 meg.
R11—Bias Control Resistor 1 meg.
R12—Filament Resistor 1.8 ohms
R13—AVC Screen Resistor 20,000 ohms
R14—Voltage Divider Resistor 150 ohms
R15—Voltage Divider Resistor 900 ohms
R16—Voltage Divider Resistor 5,000 ohms
R17—Voltage Divider Resistor 20,000 ohms
R18—Filament Resistor 18 ohms
R19—Filament Resistor 18 ohms
R20—Filament Resistor 18 ohms
R21—Tone Control Resistor .5 meg.
R22—Voltage Divider Resistor 1,400 ohms
R23—Voltage Divider Resistor 2,600 ohms
R24—Voltage Divider Resistor 250 ohms

C 1—1st RF Tuning Condenser
C 2—1st RF Tuning Condenser
C 3—3rd RF Tuning Condenser
C 4—3rd RF Tuning Condenser
C 5—Detector Tuning Condenser
C 6—Antenna Trimmer Condenser
C 7—1st RF Alignment Condenser
C 8—3rd RF Alignment Condenser
C 9—3rd RF Alignment Condenser
C10—Detector Alignment Condenser
C11—Ground Series Condenser .0001 mfd.
C12—1st RF Coupling Condenser .04 mfd.
C13—2nd RF Condenser .5 mfd.
C14—Cathode By-pass Condenser .5 mfd.
C15—3rd RF Coupling Condenser .04 mfd.
C16—3rd RF Cathode Condenser .5 mfd.
C17—Detector Condenser .04 mfd.
C18—Detector Cathode Condenser 1 mfd.
C19—Detector Plate Condenser 1 mfd.
C20—Detector Plate Condenser .0001 mfd.
C21—Detector Plate Condenser .0001 mfd.
C22—Audio Coupling Condenser .006 mfd.
C23—Plate By Pass Condenser .25 mfd.
C24—Screen By Pass Condenser .25 mfd.
C25—Plate By Pass Condenser .5 mfd.
C26—AVC Plate By Pass Condenser .006 mfd.
C27—AVC Screen Condenser .5 mfd.
C28—Filter Condenser 4 mfd.
C29—Filter Condenser 4 mfd.
C30—Tone Control Condenser .006 mfd.

T 1—Input Transformer
T 2—Output Transformer

B 1—AVC Plate Battery 22½ volts
B 2—2nd Audio "C" Battery 22½ volts

S 1—Local Distance Switch
S 2—Phono Switch
S 3—Main Switch
S 4—Mute Switch

The resistors used in the Models 62 and 63 receivers are marked in colors as a means of identification. The complete color code is as follows:

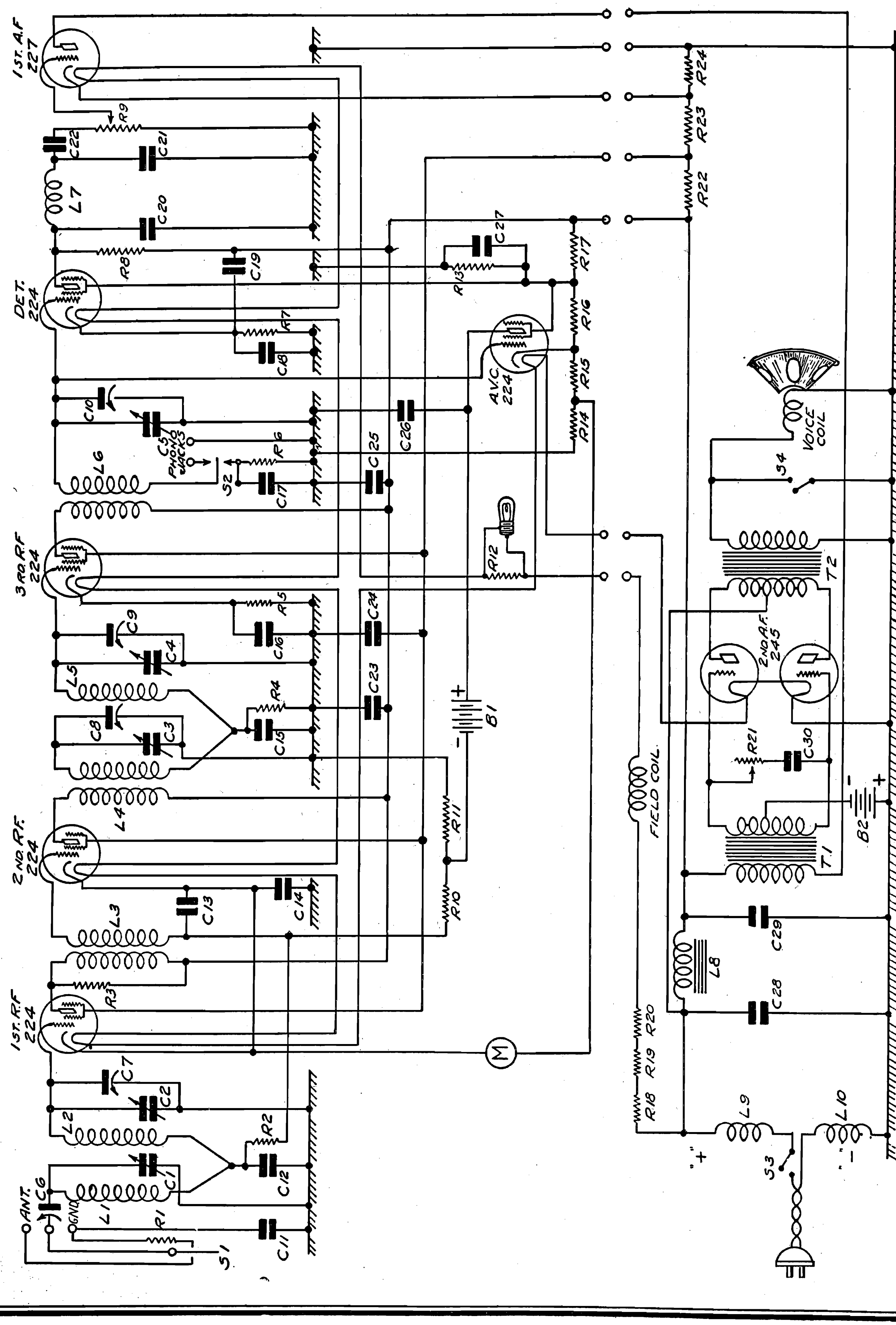
150 ohms — Red-black
250 ohms — White
500 ohms — Yellow
600 ohms — Blue-black
900 ohms — Black-brown
1,000 ohms — White-red
2,000 ohms — Brown-yellow
2,500 ohms — White-brown
5,000 ohms — Black-yellow
10,000 ohms — Blue-yellow
18,000 ohms — White-gray
20,000 ohms — Green-yellow
25,000 ohms — Blue
50,000 ohms — Green-white
.1 megohm — Blue-white
.25 megohms — Brown
.5 megohms — Grey
1. megohm — Black
2. megohms — Black-white

SOCKET VOLTAGES - MODEL 63

Stage	Tube	Plate	Screen	Grid.	Fil.	Plate MA.
1st RF	224	100	60	1	2.1	1.5
2nd RF	224	100	60	1	2.1	1.5
3rd RF	224	100	60	1	2.1	1.5
AVC	224	10	20	3	2.1	*
Detector	224	30	15	1	2.1	*
1st AF	227	85	-	8	2.1	2.5
2nd AF	245	105	-	20	2.1	8
2nd AF	245	105	-	20	2.1	8

UNITED AMERICAN BOSCH CORP

MODEL 63 DC
Schematic



Schematic Diagram of Model 63 Receivers

MODEL 73,74
Parts List
Voltage - Data

UNITED AMERICAN BOSCH CORP.

NOMENCLATURE

Resistors

R1 Volume Control 10,000 ohms
R2 2750 ohms) Tapped unit
R3 250 ohms)
R4 Cathode Resistor 750 ohms
R5 Cathode Resistor 25,000 ohms
R6 50,000 ohms
R7 Tone Control 50,000 ohms
R8 Plate Supply Resistor 5,000 ohms
R9 Plate Supply Resistor 10,000 ohms
R10 Screen Supply Resistor 750 ohms
R11 Cathode Resistor 25,000 ohms
R12 Screen Supply Resistor 30,000 ohms
R13 Audio Bias Resistor 800 ohms
R14 Center Tap Resistor 4.1 ohms

C14 Cathode By-pass .05 mfd.
C15 Screen By-pass .05 mfd.
C16 Plate By-pass .05 mfd.
C17 Cathode By-pass .05 mfd.
C18 Screen By-pass .05 mfd.
C19 Plate By-pass .05 mfd.
C20 Det. Cathode By-pass 1.0 mfd.
C21 Filter Condenser 2.mfd.)top
C22 Filter Condenser 2.mfd.)unit
C23 Filter Condenser 4.mfd.
C24 Audio Bias By-pass .05 mfd.
C25 Buffer Condenser .1 mfd.

Condensers

C1 Antenna Trimmer Condenser
C2 Coupling Capacity
C3 Coupling Capacity
C4 Coupling Capacity
C5 Tuning Condenser
C6 Tuning Condenser
C7 Tuning Condenser
C8 Tuning Condenser
C9 Alignment Condenser
C10 Alignment Condenser
C11 Alignment Condenser
C12 Det. Plate By-pass .005 mfd.
C13 Tone Control Condenser .05 mfd.

Coils and Inductances

L1 Antenna Coil
L2 2nd RF primary
L3 2nd RF secondary
L4 3rd RF primary
L5 3rd RF secondary
L6 Det. coil primary
L7 Det. coil secondary
L8 Degenerative choke
L9 Det. Plate choke
L10 Tone Control choke
L11 Filter choke
L12 Speaker Field
L13 Speaker Voice Coil

Transformers

T1 Audio Input Transformer
T2 Audio Output Transformer
T3 Main Power Transformer

Switches

S1 Main Switch

Model 73 and 74 Voltage Readings

Stage	Tube	Plate	Screen	Cathode	Grid	Fil.	Plate Current
1st RF	224	240	90	44	3	2.2	4
2nd RF	224	240	90	44	3	2.2	4
3rd RF	224	240	90	44	3	2.2	4
Det.	227	250	....	20	25	2.2	1
Audio	245	230	....	....	44	2.3	25
Audio	245	230	....	....	44	2.3	25
Rect.	280	......	....	....	....	4.8	30-30

MAIN POWER TRANSFORMER "T3"

No. 1. Start of Primary Wind
No. 3. 110 Volt Tap
No. 4. Center Tap of 280 Plate Winding
No. 6. Filament Supply Winding
No. 7. 120 Volt Tap
No. 9. Filament Supply Winding

Filament Supply to 280 tube are heavy wires direct from winding.

Plate Supply to 280 tube are stranded wires direct from winding.

If the transformer is perfect the following readings will be obtained:

Primary Winding
1 to 3—full reading
1 to 7—full reading

Filament Supply Sec.
6 to 9—full reading

280 Filament Winding
F to F of 280 socket—full reading

280 Plate Winding
P to P of 280 socket—350 ohms

280 Center Tap
4 to P of 280 socket—175 ohms

AUDIO INPUT TRANSFORMER "T1"

This is a special unit having a ratio of 6 to 1. Under no circumstances may it be replaced by any other type of tranfsormer, nor may it be used as a replacement in receivers of other models. It may be identified by the mounting for the small choke coil.

COIL TEST:

Circuit Test—From 1 to 2—full reading
From 3 to 4—full reading

A reading from 1 or 2 to either 3 or 4 denotes a defective (short circuited) coil. In this case the primary coil may be replaced. It is very important that it is replaced exactly in the center of the secondary, and that the wire on which it is mounted is perfectly straight.

The coupling units (C2, C3 and C4) are not ordinary condensers, but are formed of the capacity between the plate end (1) of the primary winding and the small brass plate which is connected to the grid terminal 2.

As volume is decreased,
1st and 2nd RF { Grid voltage increases. Screen voltage increases. Plate current decreases. Plate voltage increases.

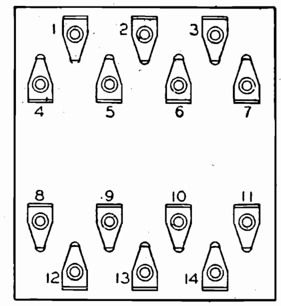


Fig. 4
Terminal Plate of Main Power Transformer T3

If the transformer is perfect the following readings will be obtained:

Primary Winding
1500 ohms (See T1, pages 5 and 6)

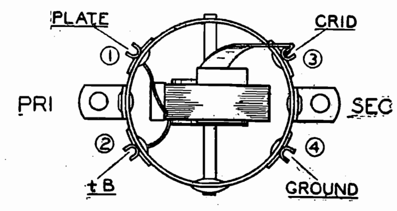
Secondary Winding
(each half) 4000 ohms

AUDIO OUTPUT TRANSFORMER "T2"

This unit may be identified by the low resistance heavy secondary winding terminating at "1" and "2."

Primary Winding
(each half) 200 ohms

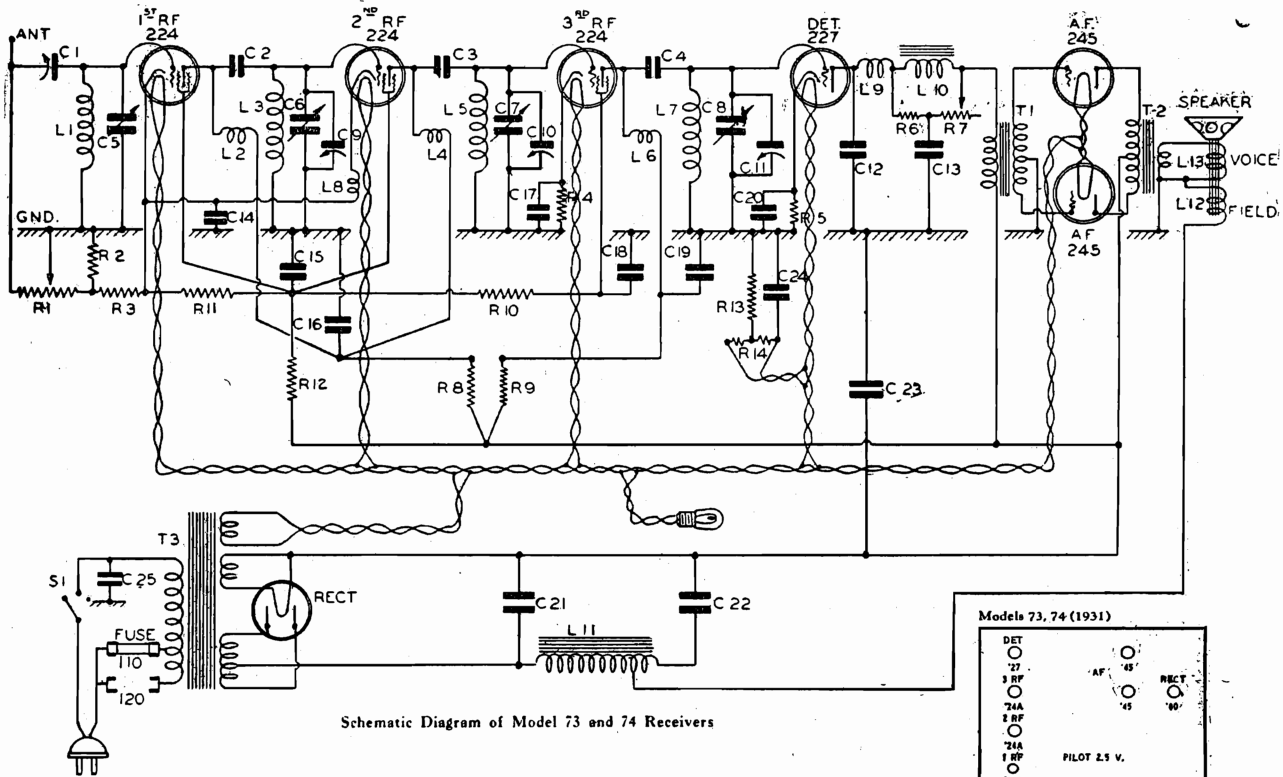
Secondary Winding
full reading



Top View of Coil

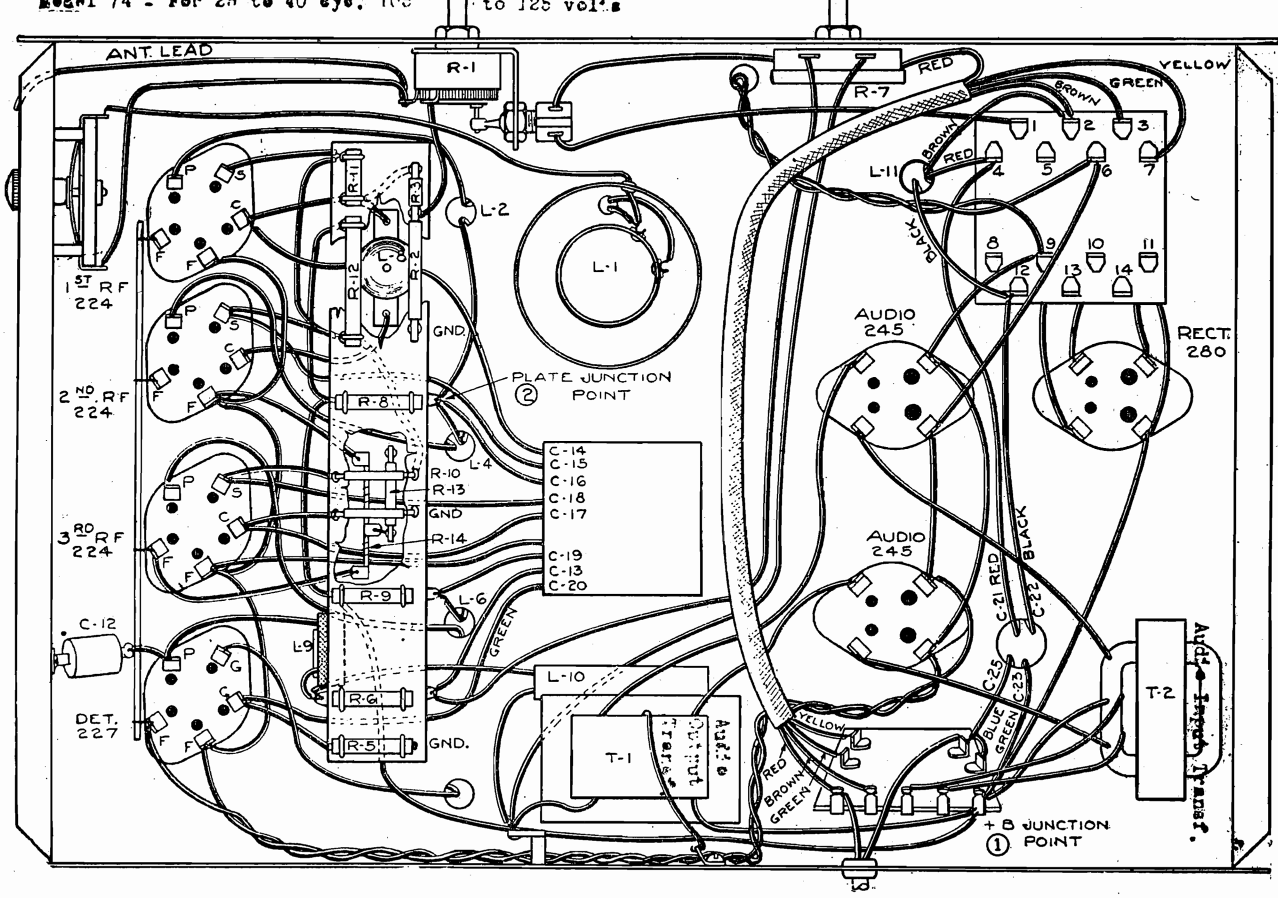
UNITED AMERICAN BOSCH CORP.

MODEL 73, 74
Schematic
Chassis



Schematic Diagram of Model 73 and 74 Receivers

Model 73 - For 50 to 60 cys. 105 to 125 volts
Model 74 - For 25 to 40 cys. 105 to 125 volts



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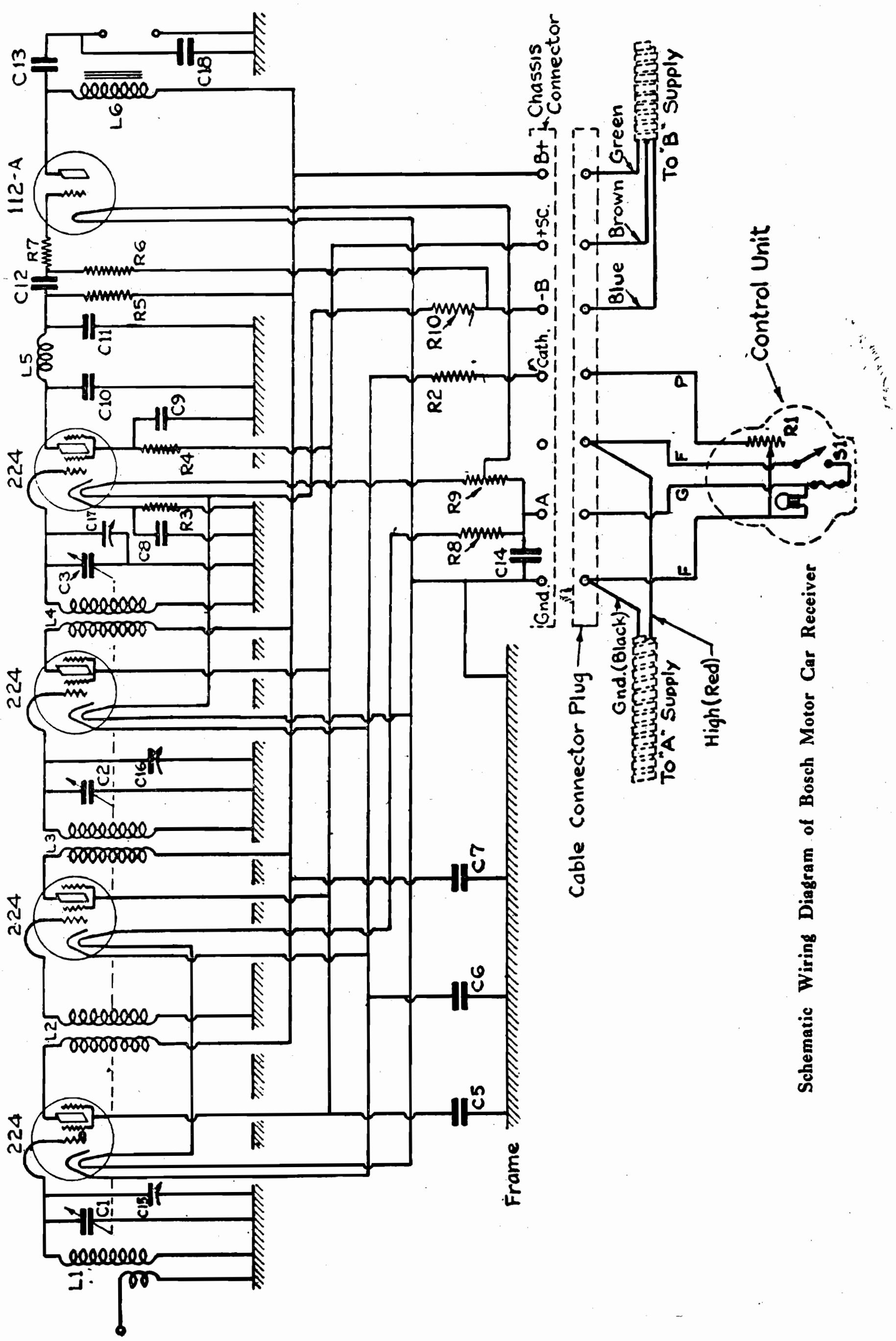
MODEL 80
SCHEMATIC
VOLTAGE



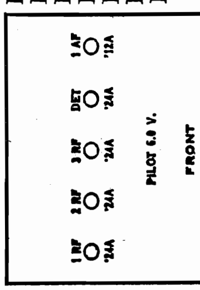
Schematic Wiring Diagram of Bosch Motor Car Receiver

L-1—1st RF Coil
L-2—2nd RF Coil
L-3—3rd RF Coil
L-4—Detector Coil
L-5—Detector Choke
L-6—Output Choke
R-1—Volume Control 18,000 ohms
R-2—1st RF Bias Resistor 500 ohms
R-3—Detector Bias Resistor 25,000 ohms
R-4—Detector Screen Resistor 500,000 ohms
R-5—Detector Plate Resistor 500,000 ohms
R-6—Audio Grid Resistor 2 meg.
R-7—Series Grid Resistor 250,000 ohms
R-8—Filament Resistor 1.3 ohms
R-9—Filament Resistor 1.1 ohms
R-10—Audio Bias Resistor 900 ohms
C-1—1st RF Tuning Condenser
C-2—2nd RF Tuning Condenser
C-3—3rd RF Tuning Condenser
C-5—Screen By-pass Condenser .5mf.
C-6—Cathode By-pass Condenser .5mf.
C-7—Plate By-pass Condenser 1.mf.
C-8—Detector Cathode Condenser .5mf.
C-9—Detector Screen Condenser .5mf.
C-10—Detector Plate Condenser .0001mf.
C-11—Detector Plate Condenser .0001mf.
C-12—Coupling Condenser .002mf.
C-13—Output Condenser 1.mf.
C-14—Filament By-pass Condenser
C-15—1st RF Alignment Condenser
C-16—3rd RF Alignment Condenser
C-17—Det. Alignment Condenser
C-18—Speaker Condenser

TABLE OF SOCKET VOLTAGES

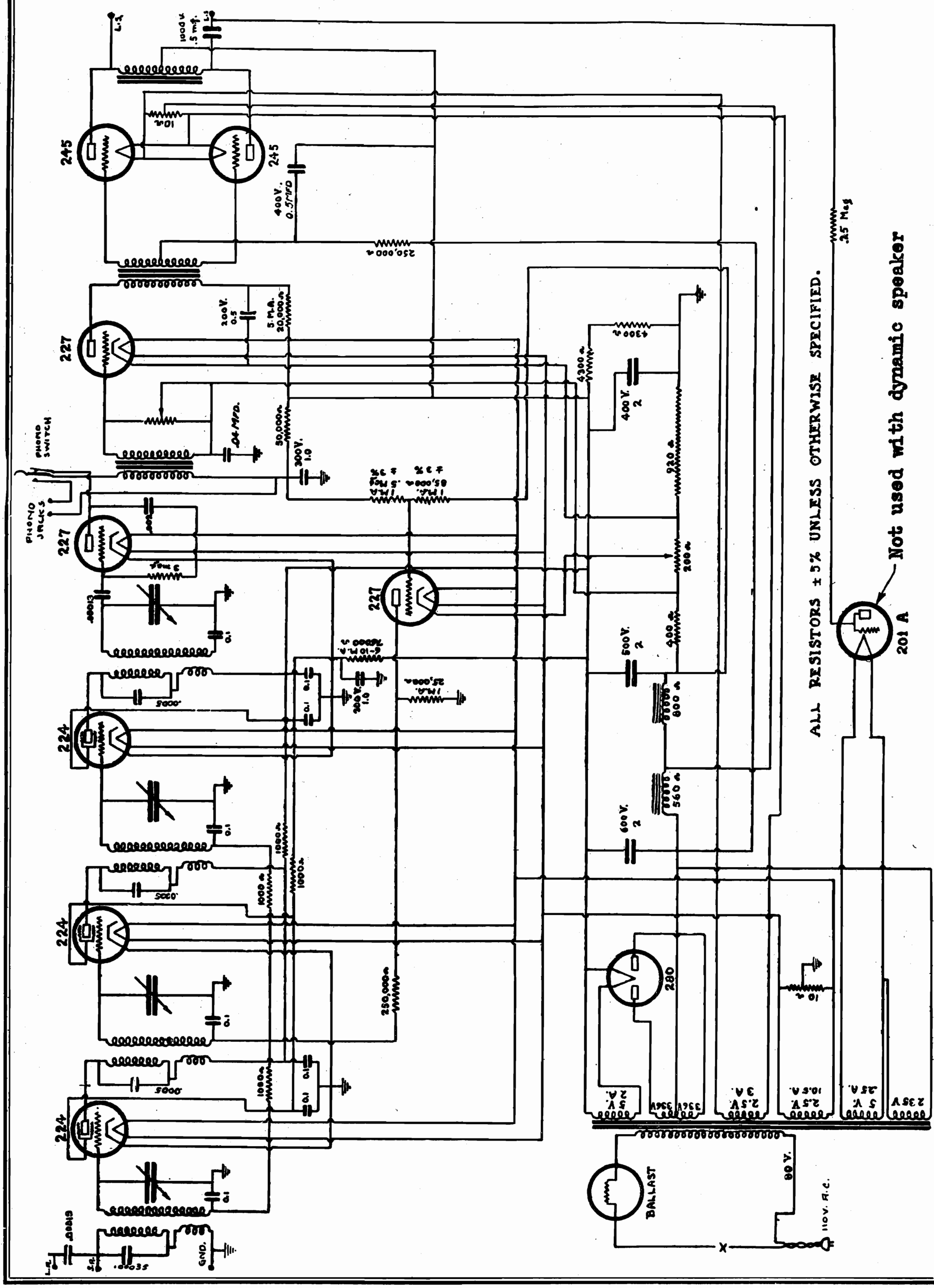
STAGE	TUBE	FIL.	PLATE	SCREEN	GRID	PLATE M.A. Normal	PLATE M.A. Test
1st RF	224	2.0	170	75	3.5	3.0	5.00
2nd RF	224	2.0	170	75	3.5	3.0	5.00
3rd RF	224	2.0	170	75	3.5	3.0	5.00
Det.	224	2.0	50	15	1.0		
Audio	112-A	4.8	165		0.1	6.5	9

Models 80, 84 (1930)



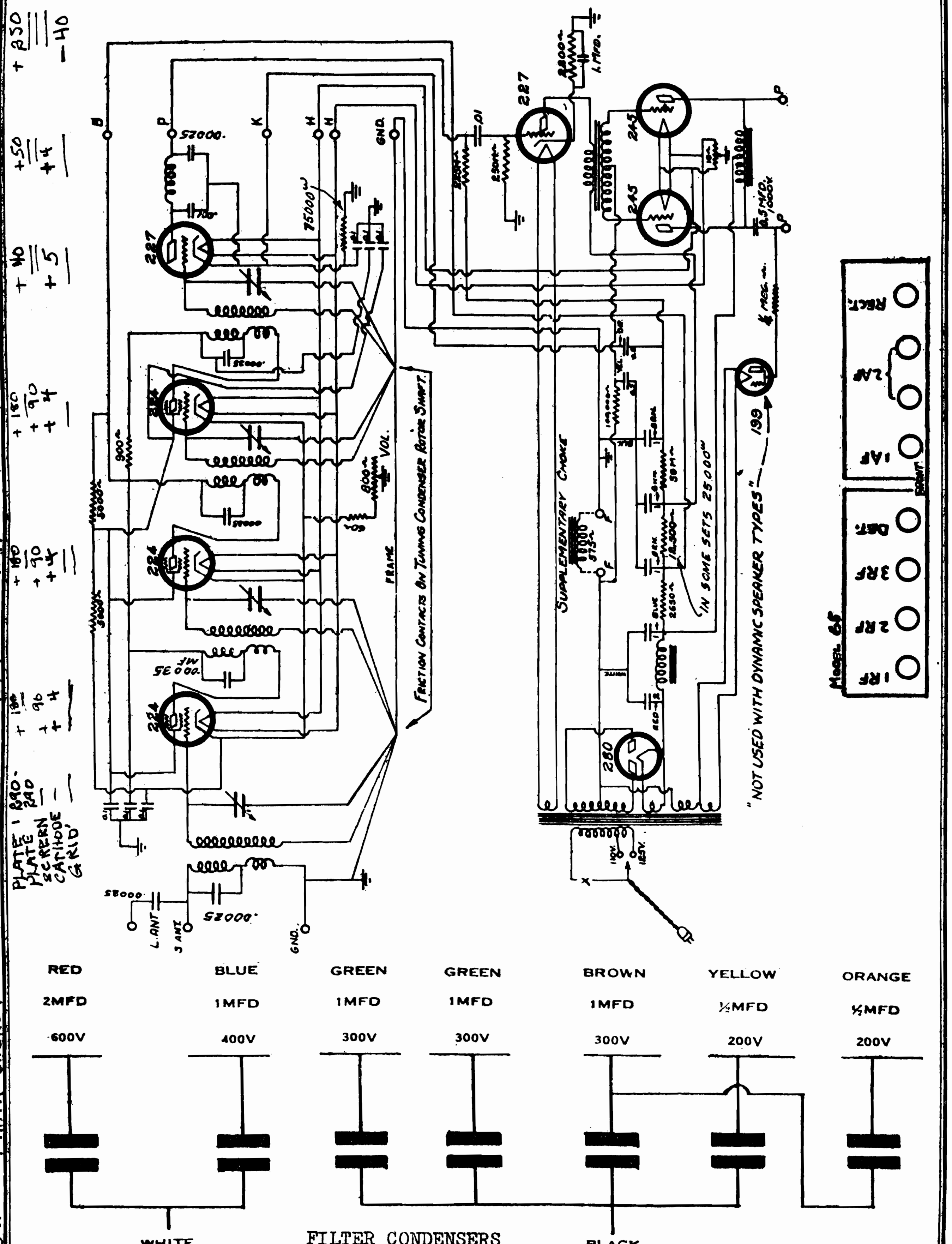
UNITED REPRODUCERS CORP.

MODEL 20 Series



UNITED REPRODUCERS CORP

MODEL 65
Schematic

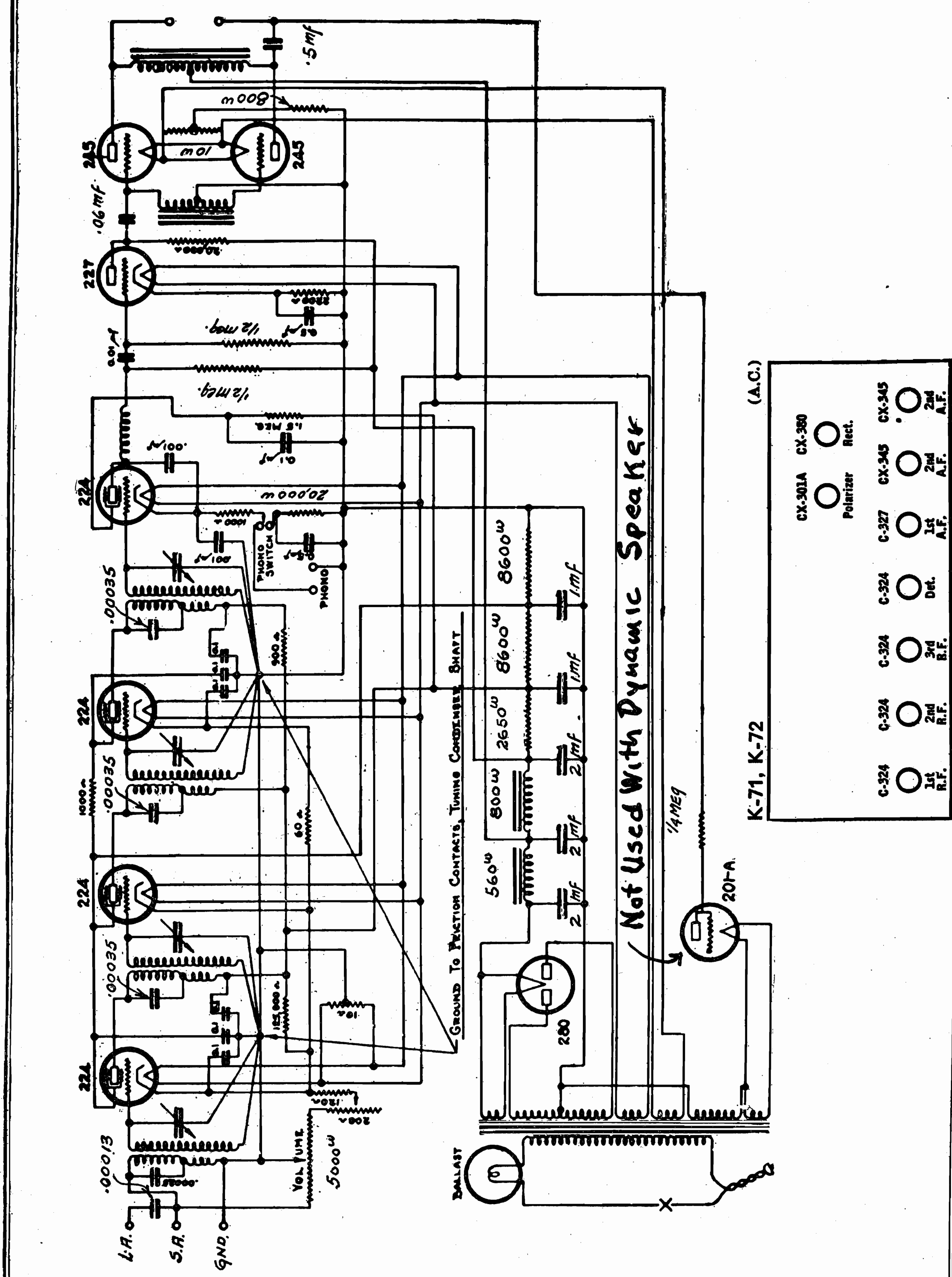


FILTER CONDENSERS

SOCKET VOLTAGES ON TUBES VOL-CONTROL ON FULL NO SIG.
LINE VOLTAGE 115 volts MEASURER WITH 1000 ohms per volt meter
80 Rect. 24 A 1st RF 24 A 2nd RF 24 A 3rd RF 27 Det. 27 audio 45's output
PLATE 890 — PLATE 240 — SCREEN CATHODE GRID
+180 +90 +4 | +180 +90 +4 | +180 +90 +4 | +40 +5 | +50 +4 | +250 −40
RANGE TO USE ON METER FROM SOCKET TO GND.
PLATE 500 V 250 volt
SCREEN 500 V
CATHODE 8 volt

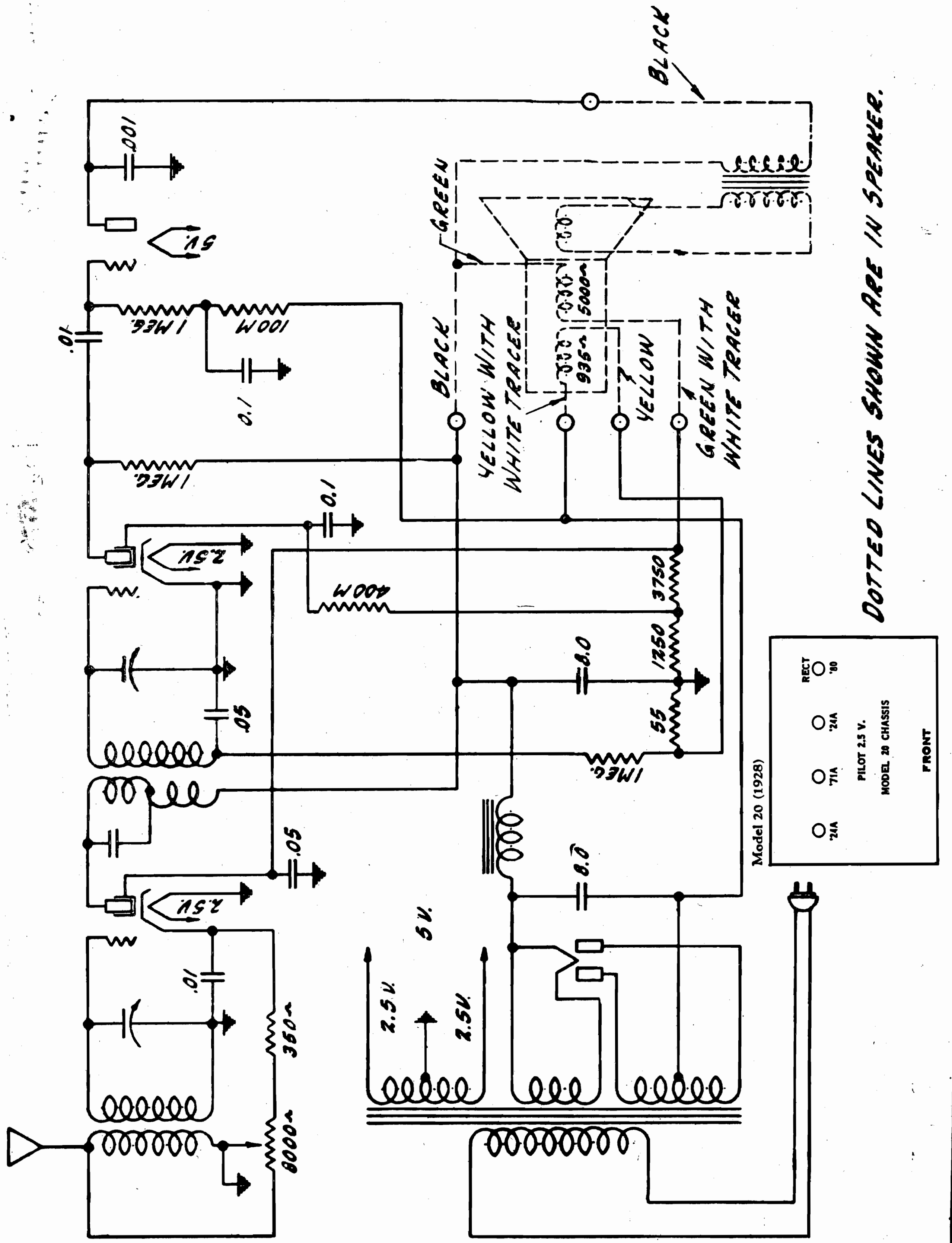
MODEL 70 Series
(71,72)

UNITED REPRODUCERS CORP.



MODEL 20
Schematic

U. S. RADIO & TELEVISION CORP.



MODEL 20
Voltage - Data

U. S. RADIO & TELEVISION CORP.

No. 20 CHASSIS—VOLTAGES AT SOCKETS—VOLUME CONTROL AT MAXIMUM LINE VOLTAGE. 115—PLUG IN SOCKET OF RECEIVER—TUBE IN TEST SET

Type of Tube	Position of Tube	Function	"A" Volts	"B" Volts	Control Grid "C" Volts	Screen Volts	Screen Current MA	Cathode Volts	Plate MA	Grid Test MA
224	1	1st Radio	2.5	196	2.2	85	1.4	2.2	5.	7.1
224	2	Detector	2.5	95(1)	2.3(2)	17(3)	.015		.1	.2
171A	3	1st Audio	5.1	191	43. (4)				18.	20.
280	4	Rectifier	5.1						23. Per Plate	

(1) (3) Computed value. Reading with voltmeter will be lower.
(2) This voltage read across 55 ohm section of shunt resistor.
(4) This voltage read across 935 ohm section of speaker field and 55 ohm section of shunt resistor.

Tuning Condenser Alignment

The tuning condensers are aligned at the factory with oscillators and output meters and the receiver will not normally lose its alignment unless mishandled or tampered with. When the condenser is out of alignment one or more of the stages are not in resonance and the receiver may tune broadly, lack volume at certain parts of the broadcast band, or tune in a signal at two or more points of the dial.

The chassis should be grounded but the antenna disconnected. In case a strong enough signal is not being received from the oscillator, connect a five or six foot length of wire to the antenna post and run it over towards the oscillator.

First set the oscillator for a signal of 1,400 K.C. Then carefully tune to resonance by turning the tuning condenser rotor slowly back and forth until maximum output is obtained. Now adjust the trimmer condensers to resonance. Adjust the volume control until the pointer of the output meter is at about half scale. The oscillator signal should not be too great in intensity as distortion will be introduced. The trimmer condensers are adjusted by raising or lowering the center screw. Turn the screws down until the volume starts to drop. Then adjust the trimmers to resonance, raising or lowering the screws until maximum deflection is obtained. Adjustment may be made with a metal screw driver as the rotor is at ground potential.

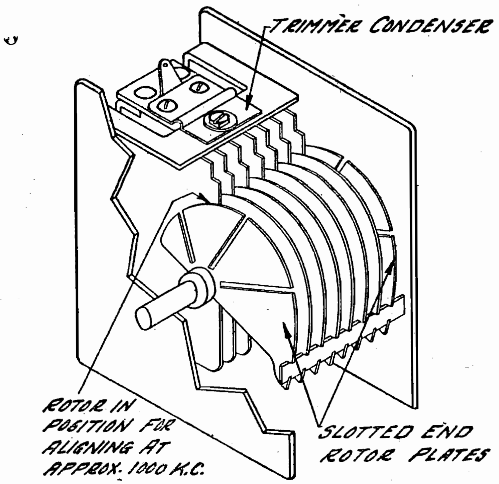
An important point to remember in adjusting the trimmer condenser is that the screws should not be turned completely down. If they are screwed in too tightly the capacity of the trimmer condenser which is added to the capacity of the tuning condenser will be so high that the receiver cannot be tuned to a high frequency signal.

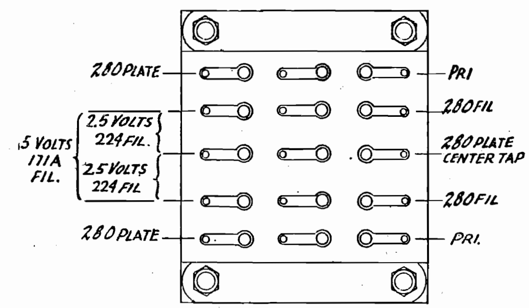
After the trimmer condensers have been adjusted at 1,400 K.C., they should not be changed in any way when aligning the tuning condensers at different frequencies as explained below.

Next set the oscillator for a signal of 1,000 K.C. Then turn the tuning condenser rotor carefully until maximum deflection is obtained on output meter. The second slotted section of the rotor will be approximately half way in mesh with the stator as shown in Fig. 3. Bend this section of the two end rotor plates of the first section of the tuning condenser in or out until maximum reading is obtained on the output meter. Follow the same procedure with section two of the tuning condenser. The corresponding slotted section on both ends of any rotor section should be bent in or out about the same amount for each adjustment.

After each material adjustment of a slotted rotor plate section, the tuning or setting of rotor for resonance should be checked. In other words, after every bending turn the tuning knob back and forth until maximum deflection of output meter is obtained before proceeding to make the next adjustment.

Next tune in a signal at 750 K.C. Follow the same procedure. Lastly, tune in a signal at 600 K.C. and again follow the same procedure. The condenser will then be properly aligned.





CENTER ROW OF LUGS USED AS WIRING TERMINALS ONLY

Power Transformer Terminals

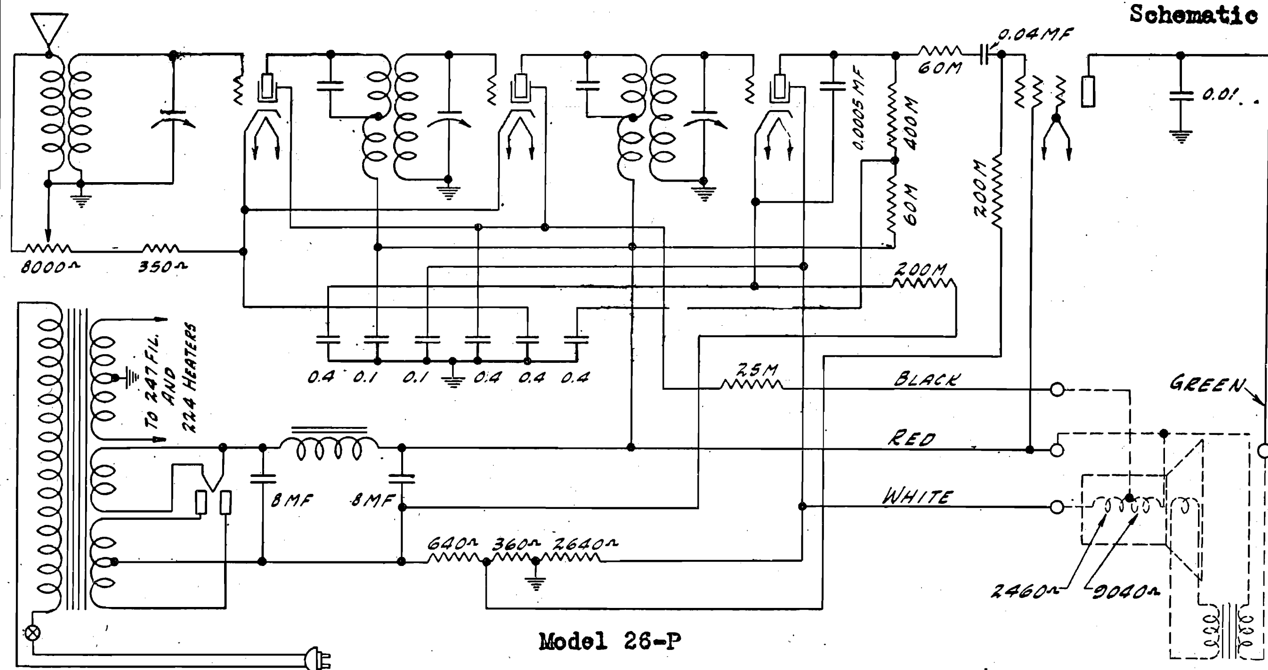
Electrodynamic Speaker

An especially designed electrodynamic speaker is supplied with the No. 20 chassis. The field of this speaker is energized by the power system of the chassis and is a part of the power system. For that reason no other speaker should be used with the No. 20 chassis than the one supplied with it.

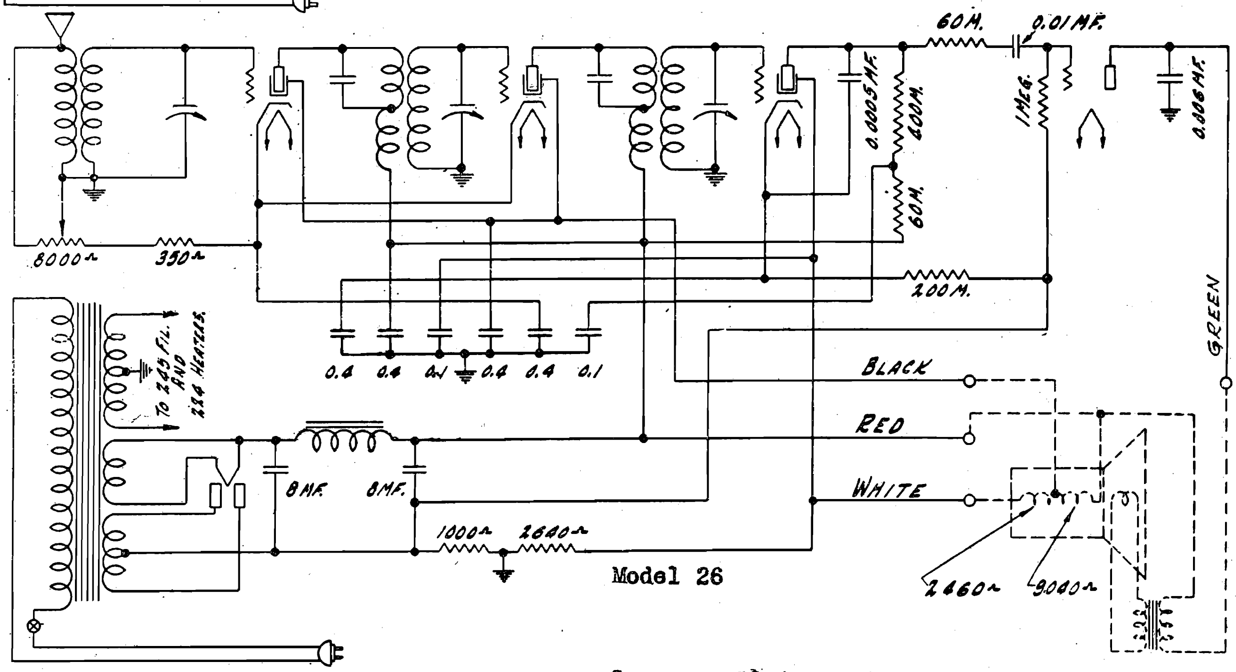
Care should be taken in servicing the No. 20 receiver not to reverse the leads to one of the field sections as the fields will then "buck" and low signal strength will result. The field winding also acts as a filter choke.

U. S. RADIO & TELEVISION CORP.

MODEL 26 Schematic
MODEL 26-P Schematic



Model 26-P



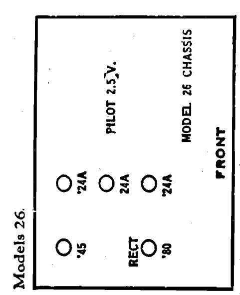
Model 26

Type	Function	A	B	C	Screen	Plate Crnt.	
224	1st RF	2.2	245	2.5	80	2.9 ma	
224	2nd RF	2.2	245	2.5	80	2.9	
224	Det	2.2	130	3.	40	.25	Model 26
245	Audio	2.35	245	50.		28.	
280	Rect.	4.6				25.*	

* Per anode. Line voltage 115 . V.C.Max.

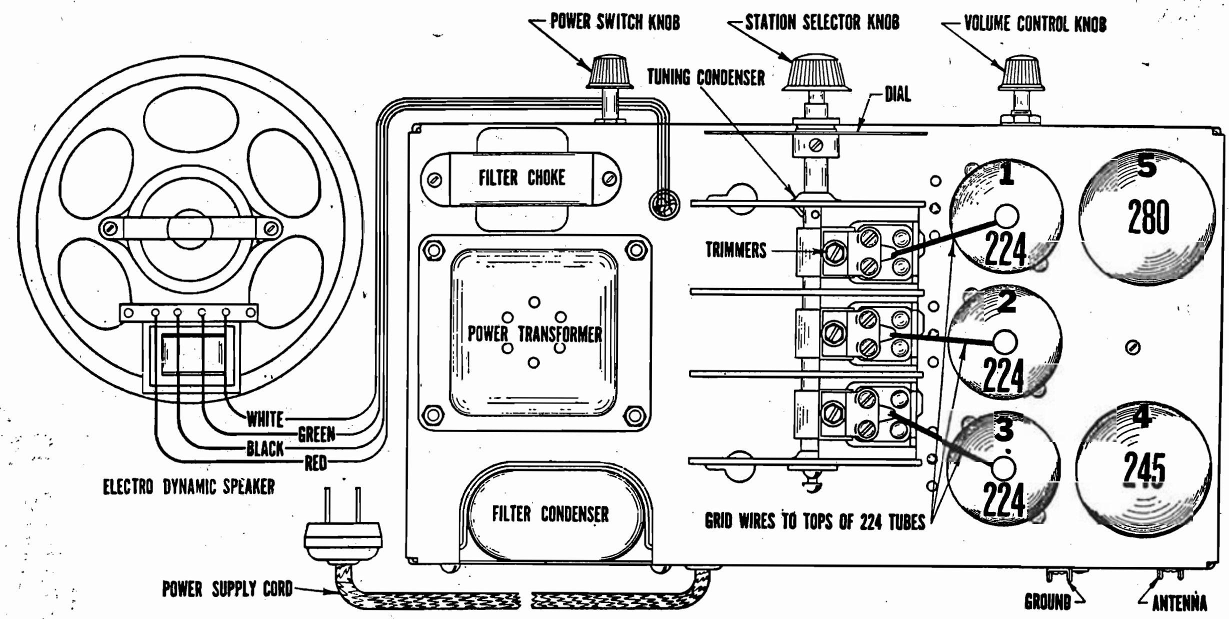
Type	Function	A	B	C	Screen	Plate Crnt.	
224	1st RF	2.2	250	2.	55."	2.1	
224	2nd RF	2.2	250	2.	55."	2.1	
224	Det.	2.2	130	2.8	40."	.25	Model 26-P
247	Audio	2.3	238	18.**	250	27.	
280	Rect.	4.65				28. *	

** Read across 360 ohms section of shunt resistor.
" Read with 250,000 ohm meter.



MODEL 26 Chassis
MODEL 26-P Parts List

U. S. RADIO & TELEVISION CORP.



--Top View of No. 26 Chassis showing Tube Sequence and Speaker Connections

No. 26P Chassis Replacement Parts (Supplementing No. 26 List)

The following parts are used in addition to the parts listed for the No. 26 chassis.

Part No.	*Description*	*No. Used in Set*	*List Price Each*
2757	Tube Socket—247	1	.35
705	25,000 ohm Series Resistor, Carbon	1	.50
1358	.04 Mfd. Coupling Condenser	1	.60
1751	200,000 ohm Grid Leak Resistor, Carbon	1	.50
2303A	Shunt Resistor, 640—360—2640 ohms	1	.60
2767	Resistor & Condenser Panel Assembly complete	1	3.00
2678	8 Mfd. Electrolytic Condenser Unit complete, Dry type	2	2.25
2752	Chassis Cover Plate for Electrolytic Condensers	1	.15
2691	Mounting Plate for Electrolytic Condensers	1	.15
2763	Electrolytic Condenser Assembly complete, 2 Units and Mounting Plate	1	4.65
2756	Power Transformer, 115 Volt, 60 Cycles	1	7.50
2768	Chassis Harness	1	1.00
2771	Bottom Plate	1	.40
2758	Baffle Mtg. D.C. Electrodynamic Speaker for No. 26P Chassis	1	8.50
2796	Transformer for Speaker	1	3.50

The following parts listed for the No. 26 Chassis *are not* used in the No. 26P Chassis:

685	Tube Socket—245	1	.35
1612	.006 Mfd. Audio Plate By-pass Condenser	1	.80
2266	1 Megohm Grid Leak Resistor	1	.45
2303	Shunt Resistor, 1000—2640 ohms	1	.60
2316	Resistor & Condenser Panel Assy. complete	1	3.00
1942	8 Mfd. Electrolytic Condenser Unit	2	2.50
2223	Mounting Clamp for Electrolytic Condensers	1	.20
2328	Metal Cap for Electrolytic Condensers	1	.15
2251	Power Transformer, 115 Volts, 60 Cycles	1	7.50
2238	Cover Plate for Power Transformer	1	.30
2318	Chassis Harness	1	1.20
2467	Baffle Mtg. D.C. Electrodynamic Speaker No. 26 Chassis	1	8.50
2555	Transformer for Speaker	1	3.50

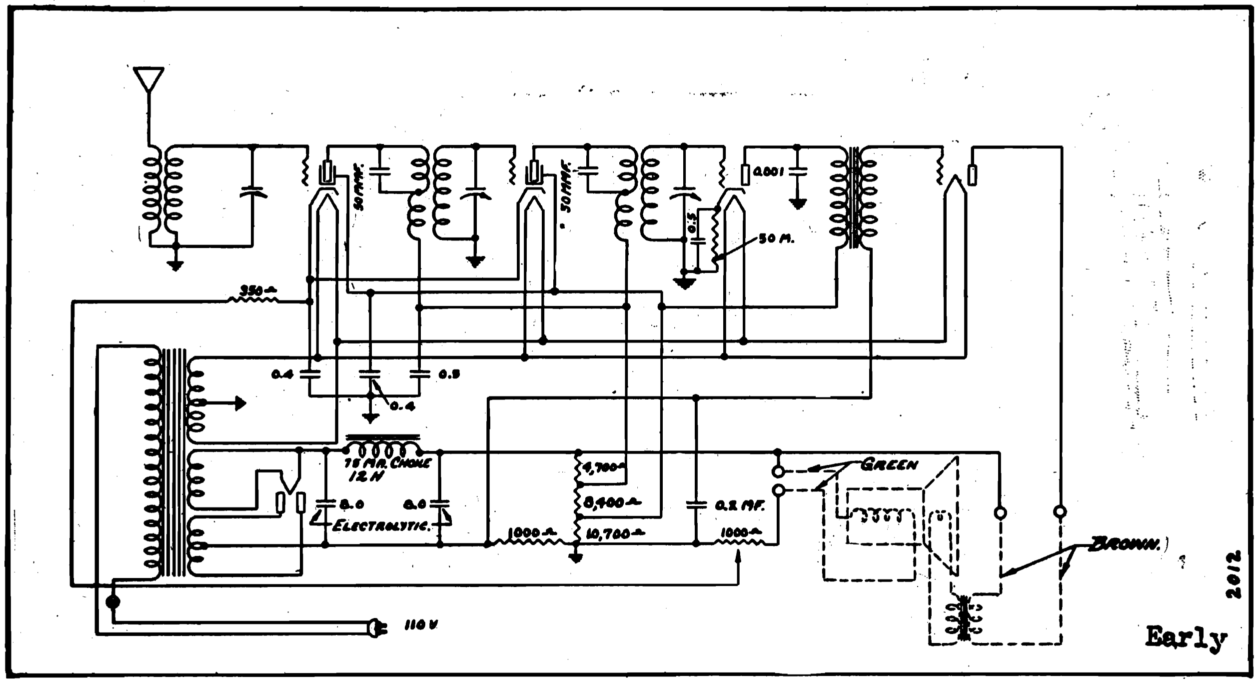
Making Pentode Current and Voltage Readings

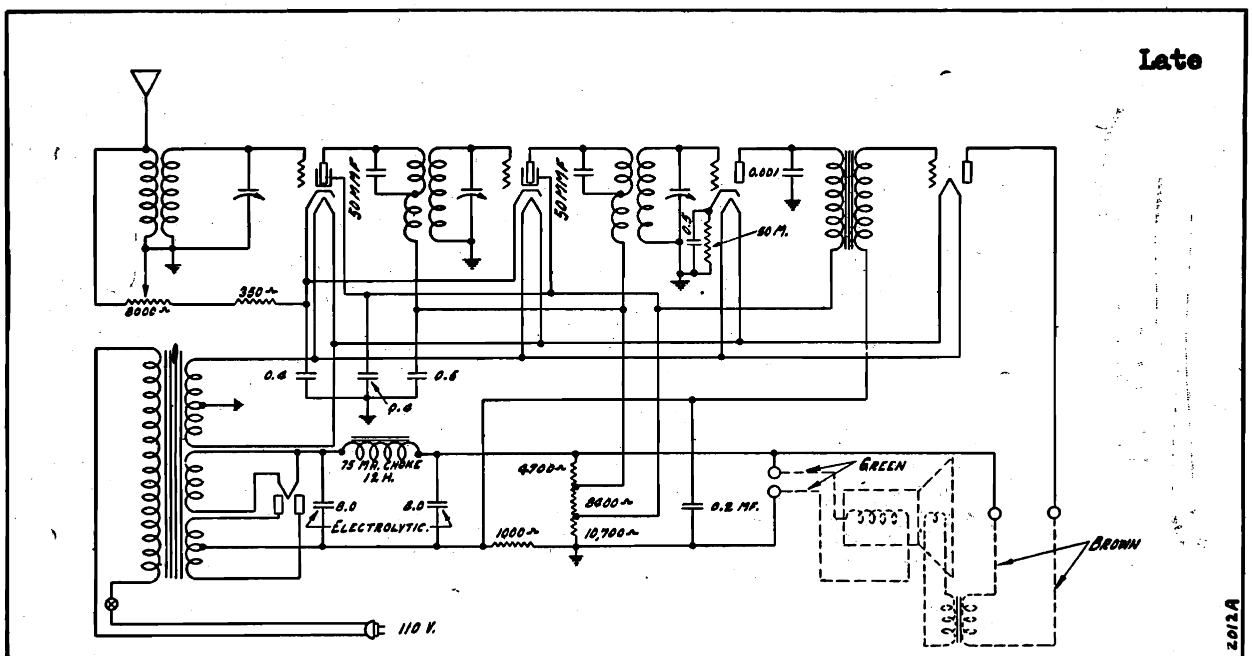
Reading	Terminals	Meter
A Volts	Across filament terminals	0-4 A.C. Voltmeter
B Volts	Plate terminal to subpanel	0-300 D.C. Voltmeter
C Volts	Across 360 ohm resistor	0-50 D.C. Voltmeter
Screen Volts	Screen grid terminal to subpanel	0-300 D.C. Voltmeter
Screen M.A.	Insert milliameter in screen grid line	0-25 D.C. Milliameter
Plate M.A.	Insert milliameter in plate line	0-50 D.C. Milliameter

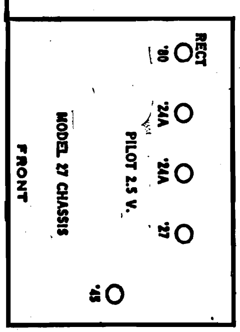
CAUTION:—Never operate the Pentode tube under any circumstances without plate voltage. This condition may arise if one of the speaker leads is disconnected opening the line to the primary of the output transformer. Without plate voltage the screen grid will become white hot due to the excessive current flowing through it and may become distorted or may evolve gas. Care should be taken, therefore, in servicing the No. 26P chassis or conducting experiments with the Pentode never to have this condition arise.

U. S. RADIO & TELEVISION CORP.

MODEL 27 (Early) Schematic
MODEL 27 (Late) Schematic







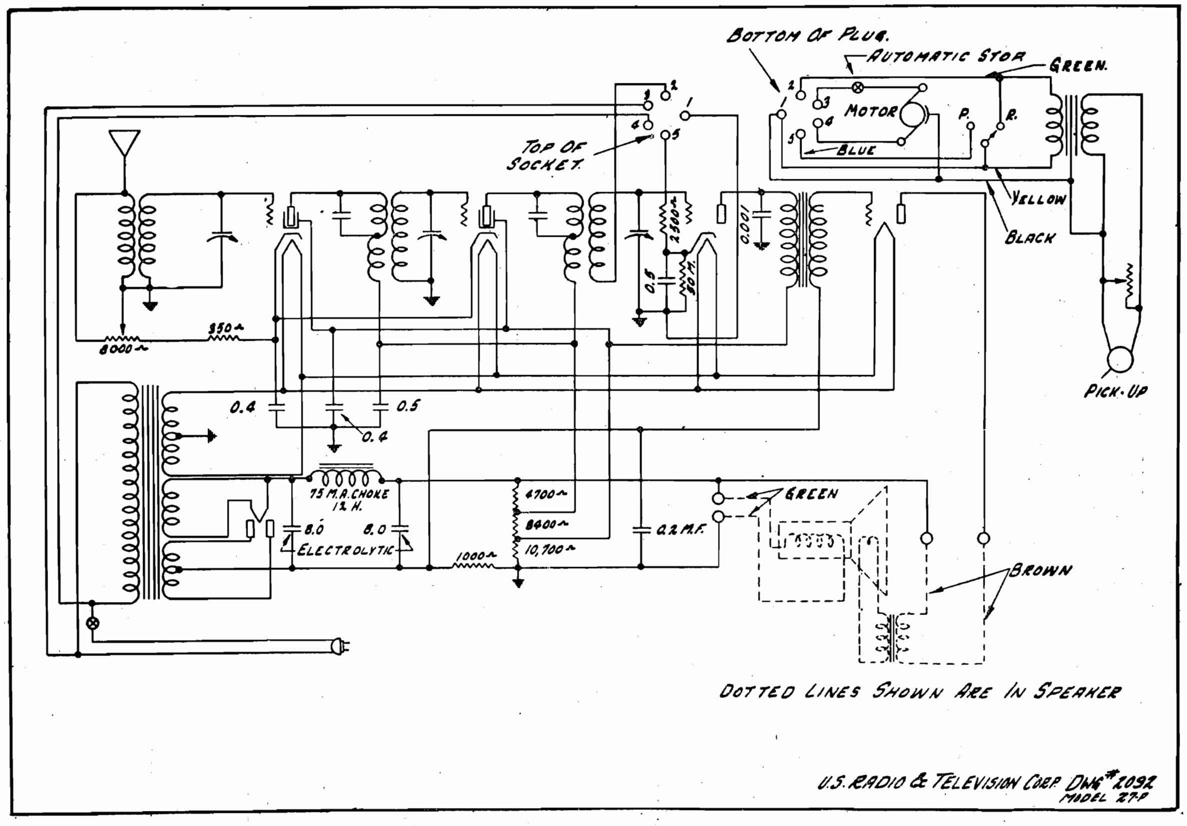
Model Apex 27 Series (1929)

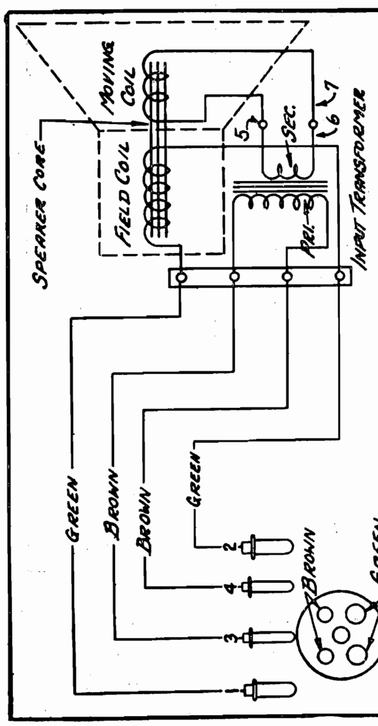
VOLTAGES AT SOCKETS — VOLUME CONTROL AT MAXIMUM — LINE VOLTAGE, 115 — PLUG IN SOCKET OF RECEIVER — TUBE IN TEST SET

Type of Tube	Position of Tube	Function	"A" Volts	"B" Volts	Control Grid "C" Volts	Screen Volts	Screen Current MA	Cathode Volts	Plate MA	Grid Test MA
224	1	1st Radio	2.25	160	2.5	80	.6	2.5	3.	5.1
224	2	2nd Radio	2.25	160	2.5	80	.6	2.5	3.	5.1
227	3	Detector	2.25	70	8.5			8.5	.1	.2
245	4	Audio	2.35	238	44.				19.	22.
280	5	Rectifier	4.8						26.5 per Plate	

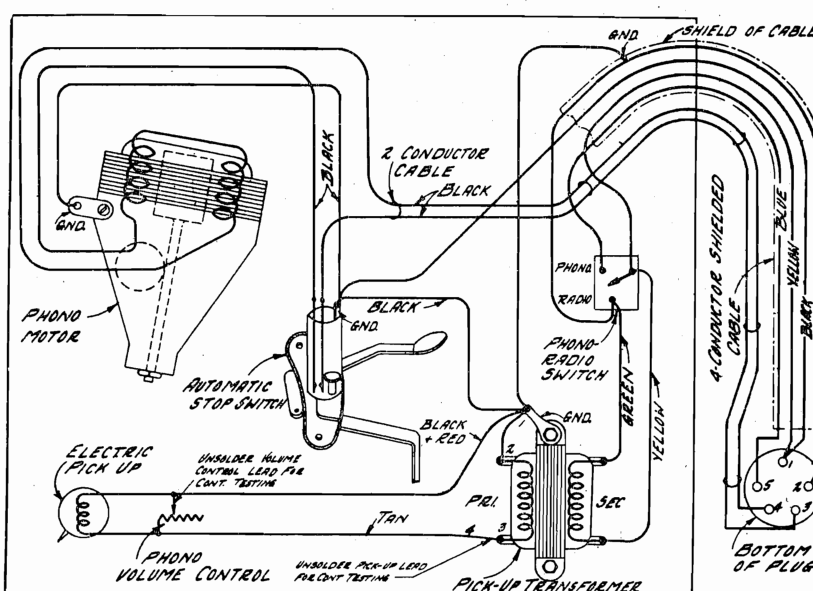
MODEL 27-P
Schematic
Motor Board
Schematic

U. S. RADIO & TELEVISION CORP.





Electrodynamic Speaker and Connections



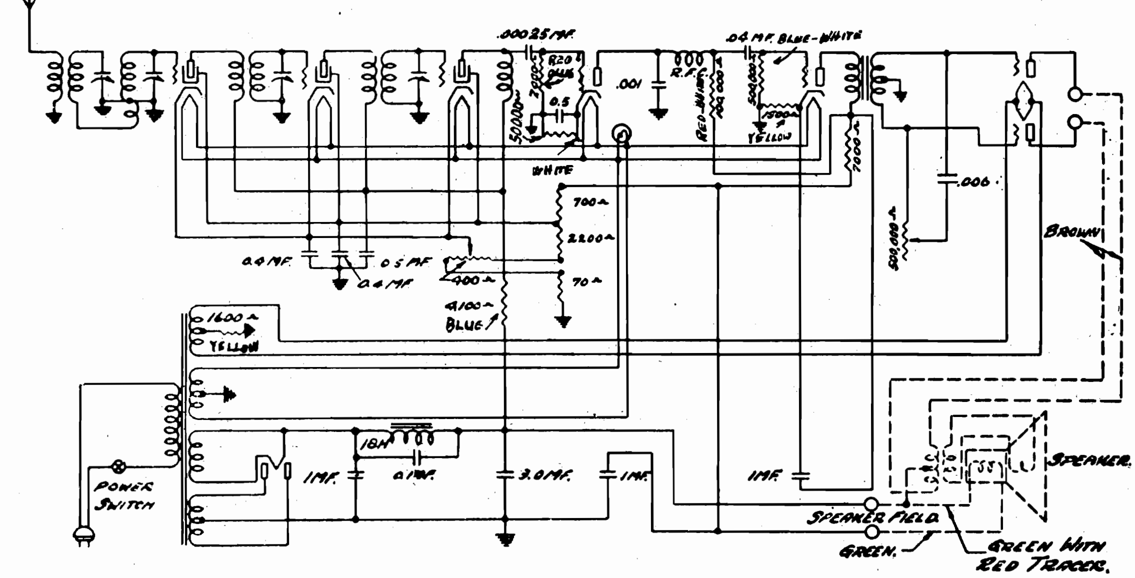
Wiring Diagram, Model 27P Motor Board

2075

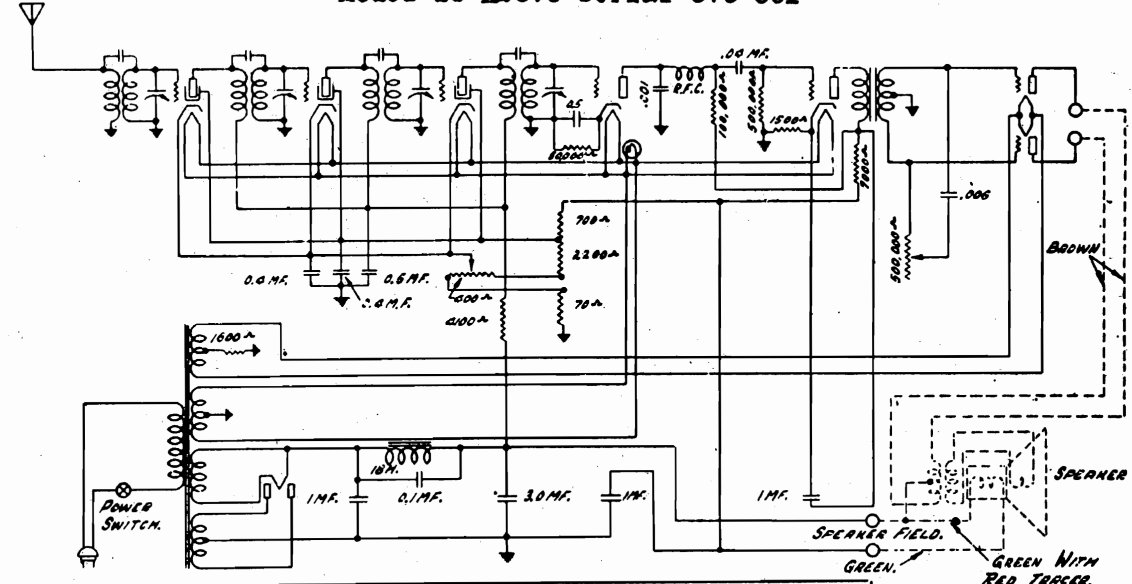
U. S. RADIO & TELEVISION CORP.

MODEL 28 (Early)
MODEL 28 (Late)
Schematics
Voltage

Model 28 Below serial 373 601



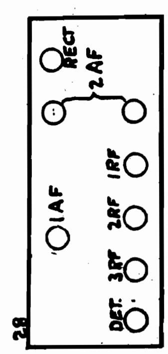
Model 28 Above serial 373 601



DOTTED LINES SHOWN ARE IN SPEAKER.

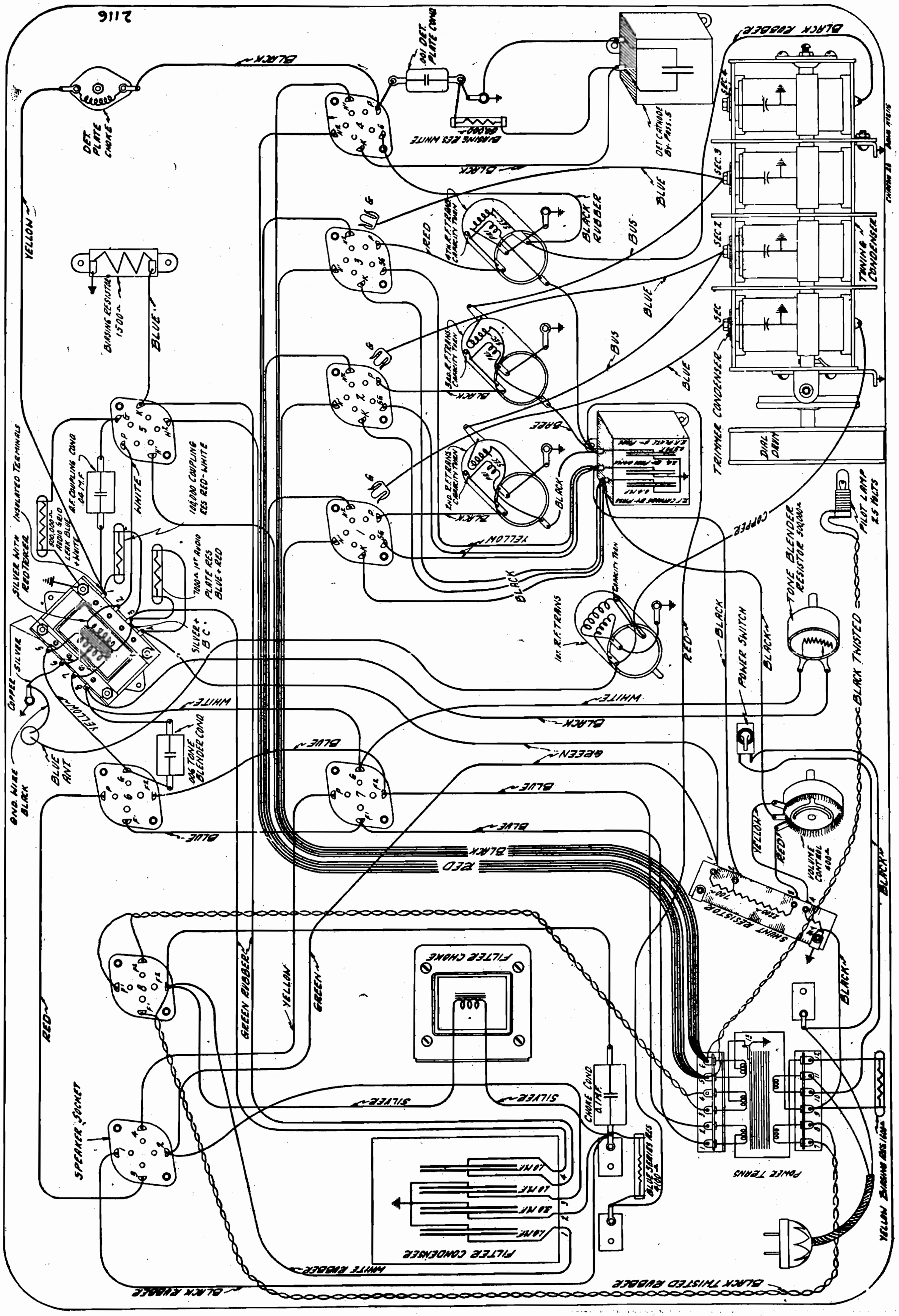
VOLTAGES AT SOCKETS — VOLUME CONTROL AT MAXIMUM — LINE VOLTAGE, 115 — PLUG IN SOCKET OF RECEIVER — TUBE IN TEST SET

Type of Tube	Position of Tube	Function	"A" Volts	"B" Volts	Control Grid "C" Volts	Screen Volts	Screen Current MA	Cathode Volts	Plate MA	Grid Test MA
224	1	1st Radio	2.25	180	3.0	90	.6	3.0	3.4	5.8
224	2	2nd Radio	2.25	180	3.0	90	.6	3.0	3.4	5.8
224	3	3rd Radio	2.25	180	3.0	90	.6	3.0	3.4	5.8
227	4	Detector	2.25	60	8			8	.2	.3
227	5	1st Audio	2.25	90	6			6	3.5	4.5
245	6	2nd Audio	2.35	185	40				12.5	15.0
245	7	2nd Audio	2.35	185	40				12.5	15.0
280	8	Rectifier	5.0						38 Per Plate	



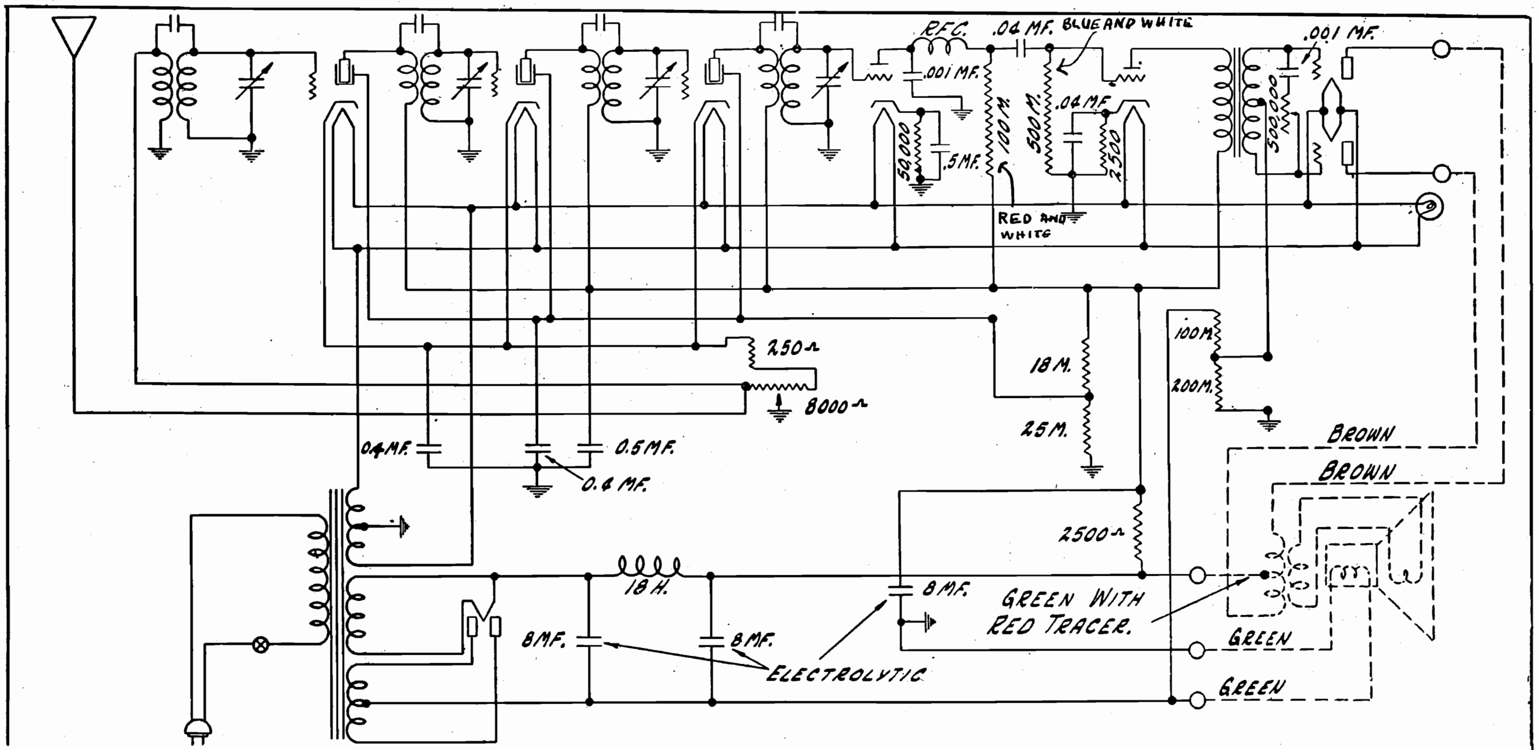
MODEL 28
Chassis

U. S. RADIO & TELEVISION CORP.



MODEL 29

U. S. RADIO & TELEVISION CORP.

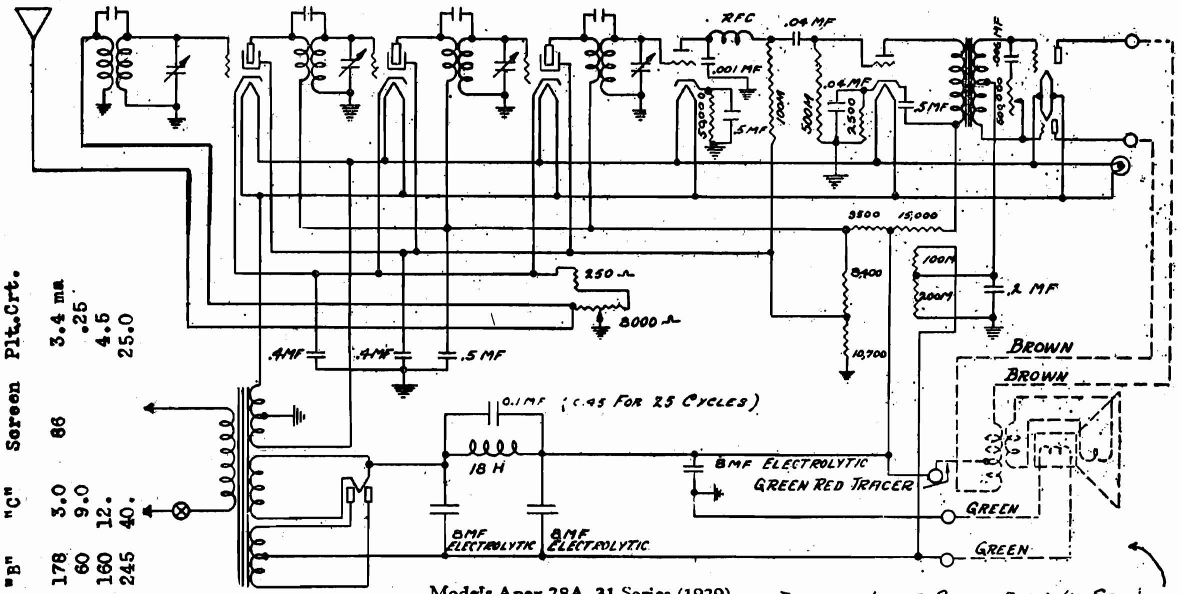


No. 29 CHASSIS—VOLTAGES AT SOCKETS—VOLUME CONTROL AT MAXIMUM LINE VOLTAGE, 115—PLUG IN SOCKET OF RECEIVER—TUBE IN TEST SET

Type of Tube	Position of Tube	Function	"A" Volts	"B" Volts	Control Grid "C" Volts	Screen Volts	Screen Current MA	Cathode Volts	Plate MA	Grid Test MA
224	1	1st Radio	2.25	205	3.	90	.55	3.	3.4	6.3
224	2	2nd Radio	2.25	205	3.	90	.55	3.	3.4	6.3
224	3	3rd Radio	2.25	205	3.	90	.55	3.	3.4	6.3
227	4	Detector	2.25	140	13.			13.	.35	.45
227	5	1st Audio	2.25	190	13.			13.	5.3	6.5
245	6	2nd Audio	2.35	255	43.				26.	31.
245	7	2nd Audio	2.35	255	43.				26.	31.
280	8	Rectifier	4.9						37. Per Plate	

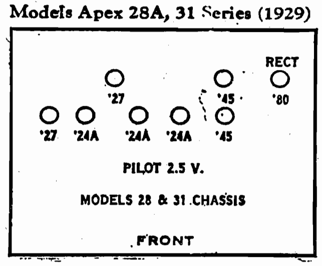
U. S. RADIO & TELEVISION CORP.

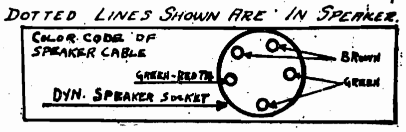
MODEL Apex 31
MODEL 31-R



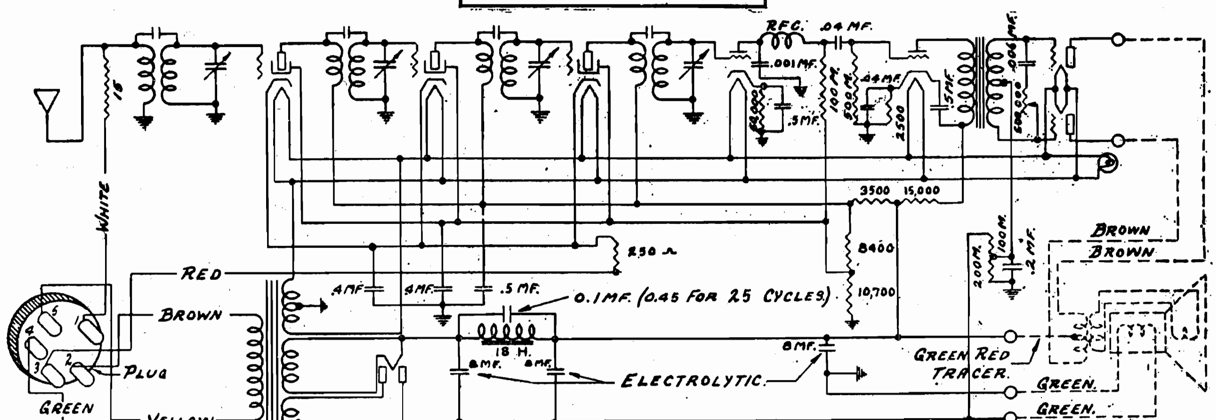
Tube	"A"	"B"	"C"	Screen	Plt.Crt.
All RF	2.25	178	3.0	86	3.4 ma
Det.	2.25	60	9.0		.25
1AF	2.25	160	12.		4.5
PPAF	2.35	245	40.		25.0

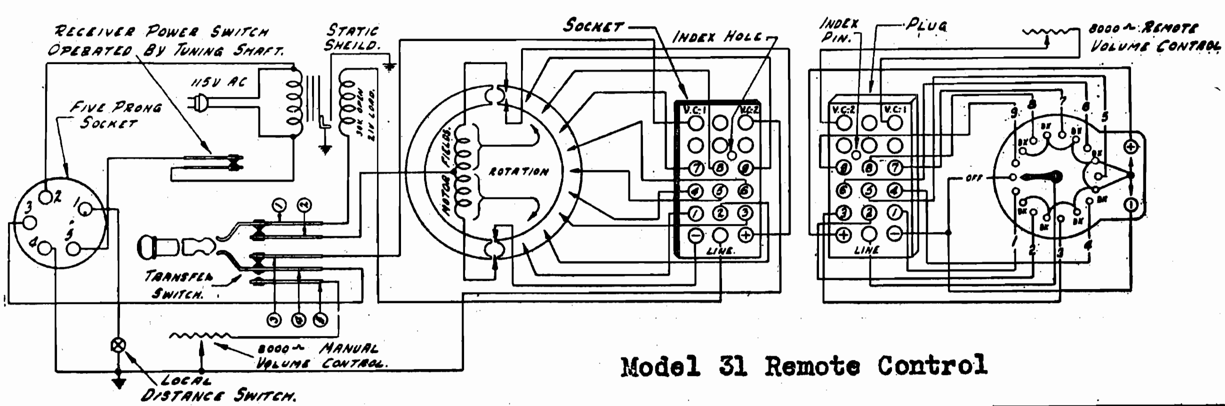
Models Apex 28A, 31 Series (1929)





Model Apex 31

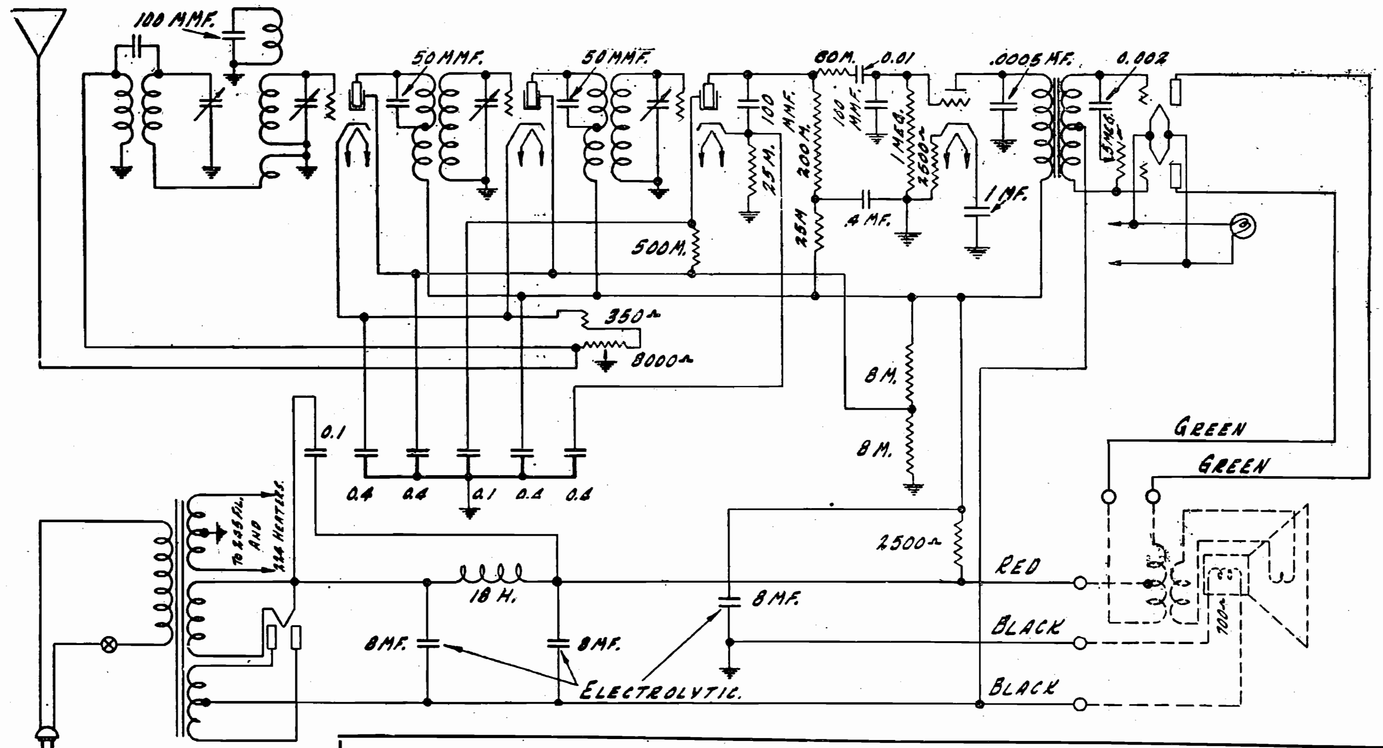




Model 31 Remote Control

MODEL 32 Series

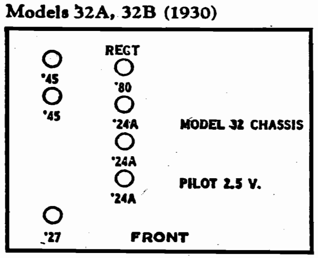
U. S. RADIO & TELEVISION CORP.



No. 32 CHASSIS—VOLTAGES AT SOCKETS—VOLUME CONTROL AT MAXIMUM LINE VOLTAGE, 115—PLUG IN SOCKET OF RECEIVER—TUBE IN TEXT SET

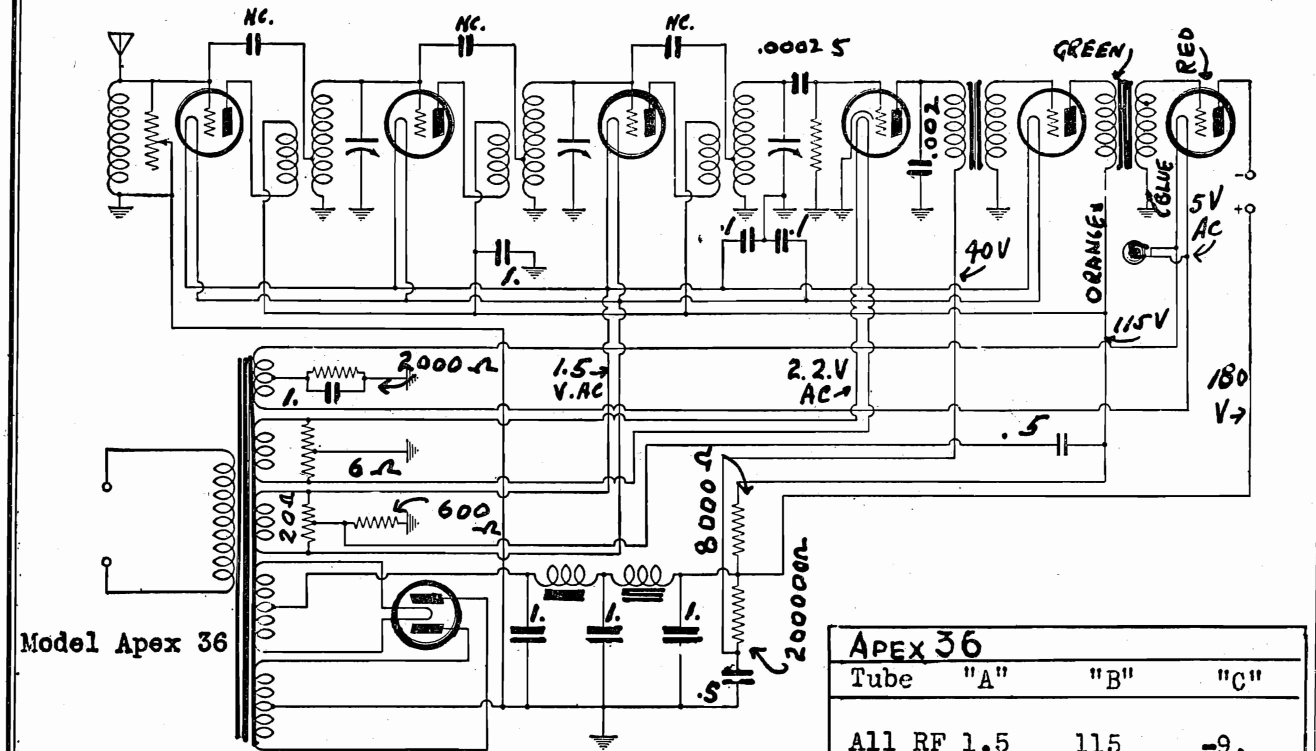
Type of Tube	Position of Tube	Function	"A" Volts	"B" Volts	Control Grid "C" Volts	Screen Volts	Screen Current MA	Cathode Volts	Plate MA	Grid Test MA
224	1	1st Radio	2.3	198	3.	88	.9	3.	3.5	6.
224	2	2nd Radio	2.3	198	3.	88	.9	3.	3.5	6.
224	3	Detector	2.3	150	6.	45	.1	6.	.25	.4
227	4	1st Audio	2.3	180	12.5			12.5	5.	6.1
245	5	2nd Audio	2.4	255	55.				26.	31.
245	6	2nd Audio	2.4	255	55.				26.	31.
280	7	Rectifier	5.						36. Per Plate	

Models 32A, 32B (1930)



U. S. RADIO & TELEVISION CORP.

MODEL Apex 36
MODEL Apex 37

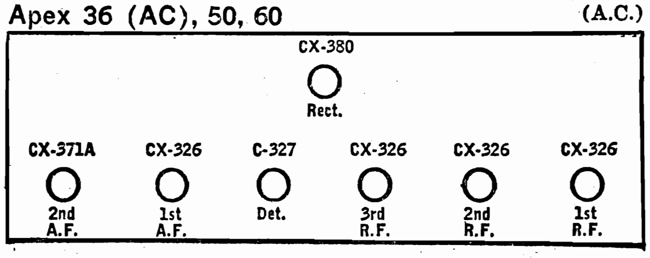


Model Apex 36

Apex 36			
Tube	"A"	"B"	"C"
All RF	1.5	115	-9.
Det	2.2	26	-
1AF	1.5	105	-9.
2AF	4.9	182	-37.
Rect	4.9		

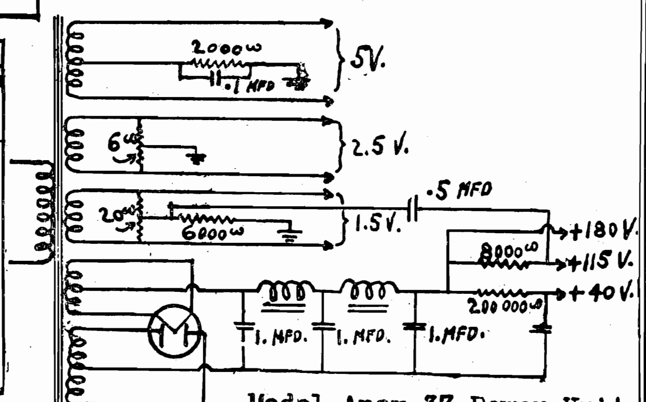
Speaker terminals shorted
Line voltage 115 volts

Apex 36 (AC), 50, 60 (A.C.)

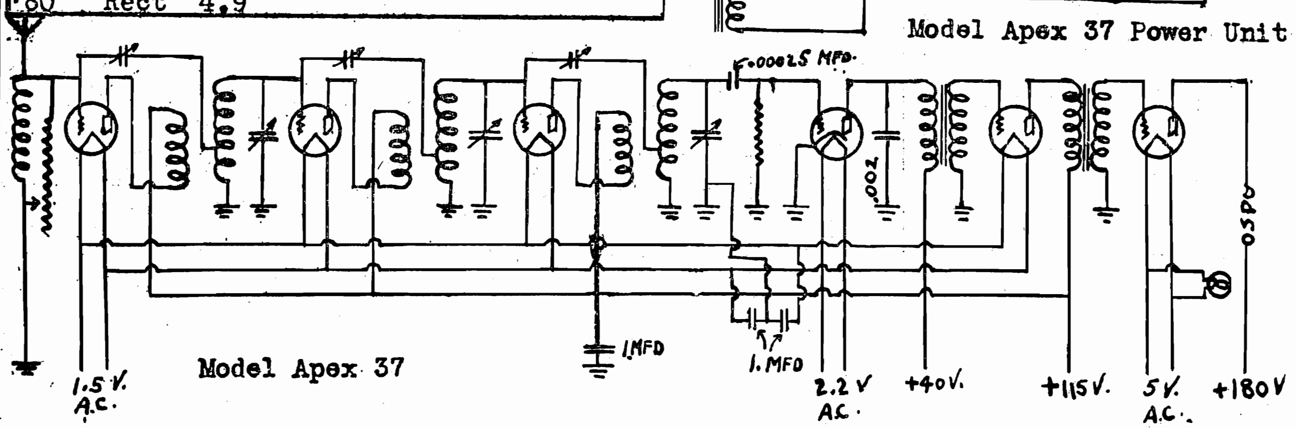


Model 37. Line-115 V. (L.S.Coil shorted.

Tube Type	Stage	Fil. Volts	Plate Volts	Grid Volts	Plate Ma.
'26	1 RF	1.5	115	9.	5.5
'26	2 RF	1.5	115	9.	5.5
'26	3 RF	1.5	115	9.	5.5
'27	Det.	2.2	25	---	1.5
'26	1 AF	1.49	105	9.	5.
'71-A	2 AF	5.	180	36.	20.
'71-A	2 AF	5.	180	36.	20.
'80	Rect	4.9			



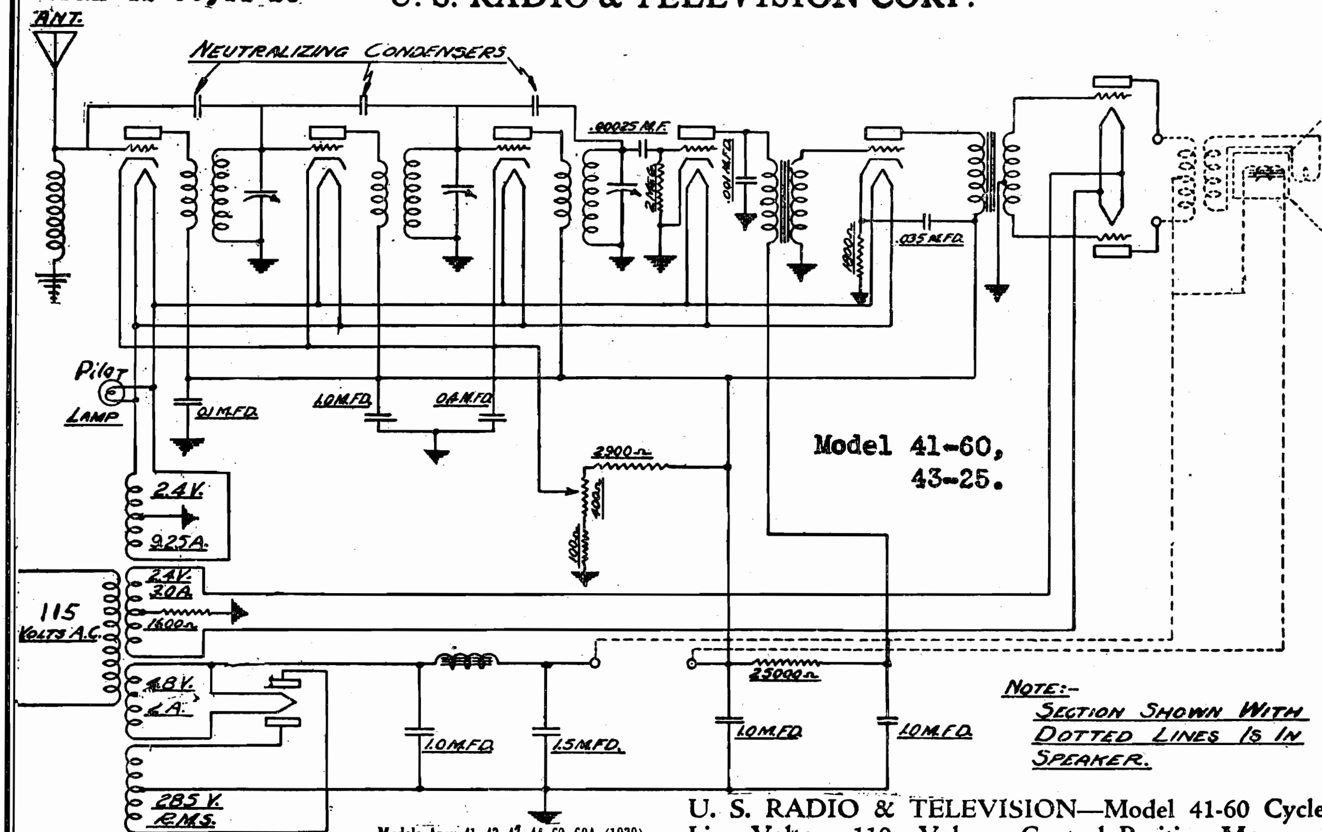
Model Apex 37 Power Unit



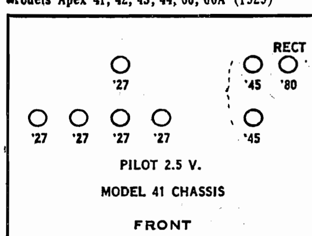
Model Apex 37

MODEL 41-60, 43-25
MODEL 42-60, 44-25

U. S. RADIO & TELEVISION CORP.

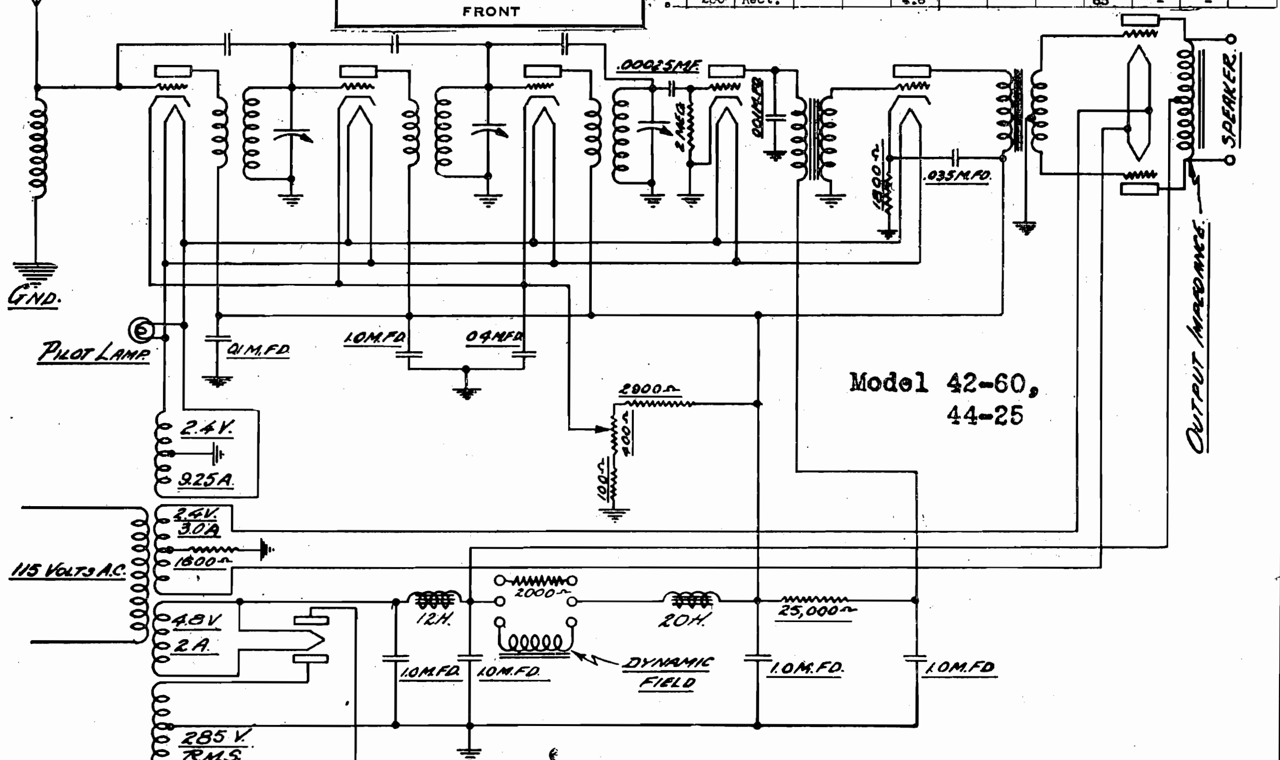


Models Apex 41, 42, 43, 44, 60, 60A (1929)



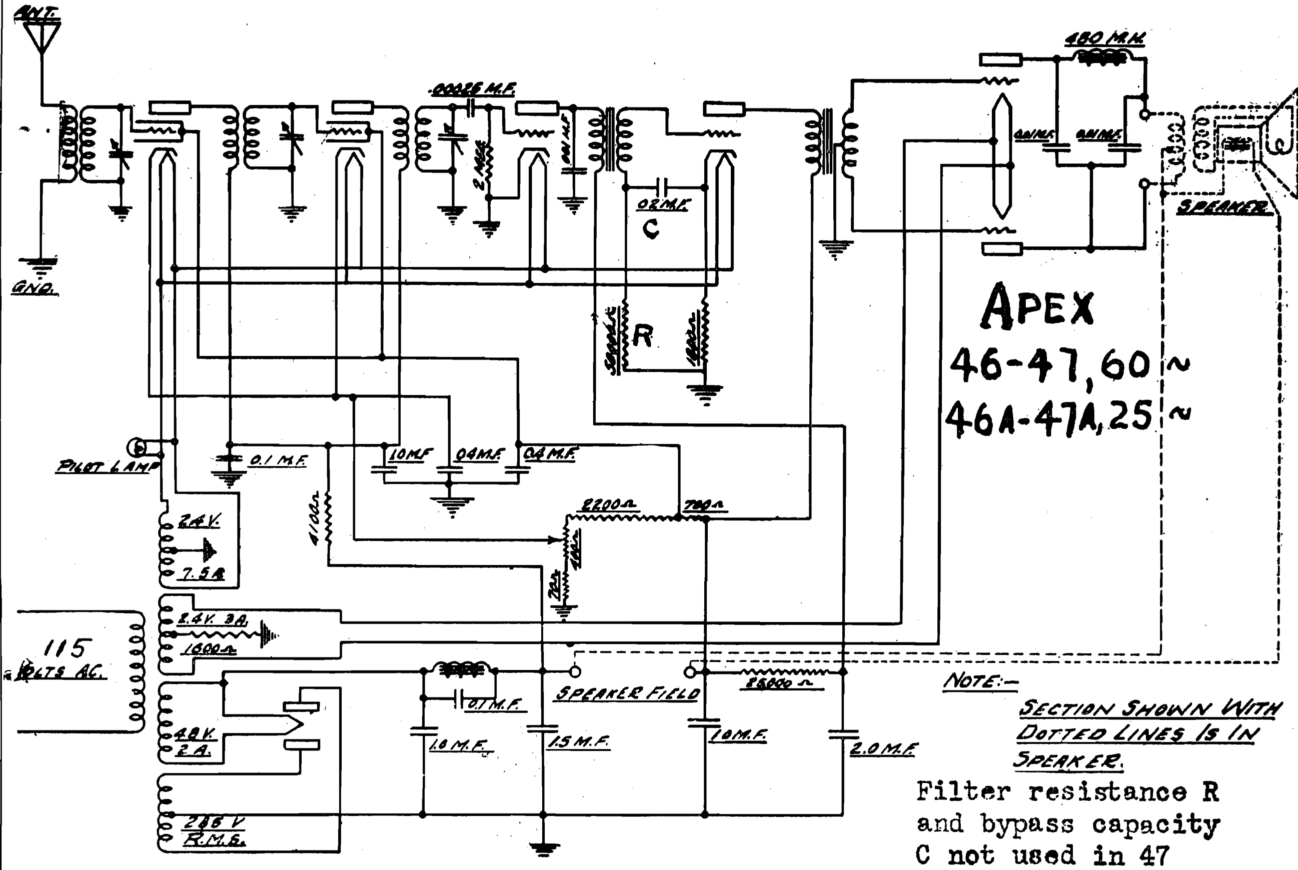
U. S. RADIO & TELEVISION—Model 41-60 Cycle
Line Voltage 110—Volume Control Position Max

① Tube No in Order	② Type of Tube	③ Position of Tube 1st RF Det. etc	Readings, Plug in Socket of Set — Tube Out: ④ A Volts	⑤ B Volts	Tube in Tester: ⑥ A Volts	⑦ B Volts	⑧ C Volts (Control Grid)	⑨ Cathode-Heater Volts	⑩ Normal Plate M A	⑪ Plate M A Grid Test	⑫ Plate Change M A.	⑬ Screen Grid Volts
1	227	1st RF	2.3	100	2.25	100	4	4	4.6	9	4.4	
2	227	2nd RF	2.3	100	2.25	100	4.	4	4.6	9	4.4	
3	227	3rd RF	2.35	100	2.25	100	4	4	4.6	9	4.4	
4	227	Det.	2.35	100	2.25	40	-	-	2.4	-	-	
5	227	1st A	2.35	100	2.25	92	5	5	2.4	4	1.6	
6	245	2nd A	2.3	200	2.25	180	37		11.6	14	2.4	
7	245	2nd A	2.3	200	2.25	180	37		11.6	14	2.4	
8	280	Rect.			4.6				65	-	-	



MODEL 46,47 Apex
MODEL 46-A,47-A Apex

U. S. RADIO & TELEVISION CORP.



NOTE:—
SECTION SHOWN WITH DOTTED LINES IS IN SPEAKER.

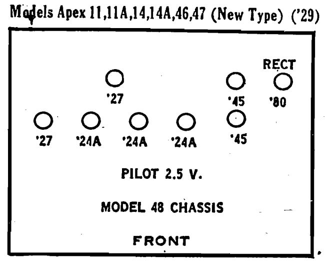
Filter resistance R and bypass capacity C not used in 47 and 47A

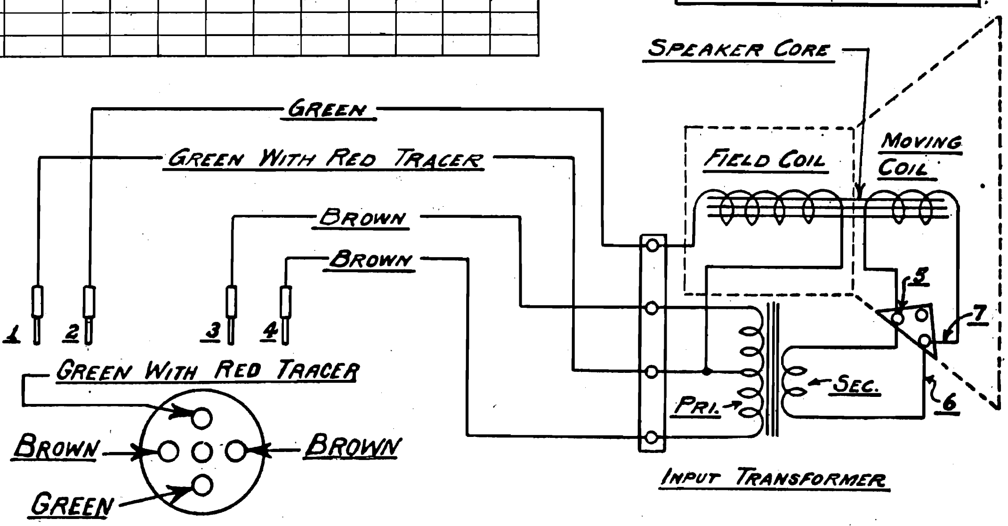
46 and 46-A

U. S. RADIO & TELEVISION—Models 47 and 47A

TUBE NO IN ORDER TESTED (1)	TYPE OF TUBE (2)	POSITION OF TUBE IN SET (3)	METER READINGS WITH JEWELL TEST PLUG IN SOCKET OF SET — OPERATING VOLTAGES: FILAMENT OR HEATER (4)	PLATE OR ANODE (5)	CONTROL GRID—SPACE GD+ (6)	NORMAL GRID—SCREEN GD+ (7)	CATHODE TO HEATER (8)	MILLIAMPERES: SCREEN GD L. H. '80 PLATE (9)	PLATE R. H. '80 PLATE (10)	TUBE TEST (11)	PLATE CURRENT CHANGE (12)	(13)
1	224	1 R.F.	2.36	173	2.72	86	2.72	.87	3.0			
2	224	2. R.F	2.31	173	2.72	86	2.72	.21	3.0			
3	227	Dot.	2.28	38	-	0	-	-	2.8			
4	227	1 A.F.	2.28	100	-	6.1	-	-	3.25			
5	245	2 A.F.	2.29	169	-	38	-	-	11.3			
6	245	2 A.F.	2.29	169	-	38	-	-	11.3			
7	280	Rect.	4.61	-	-	-	-	34.5	34.5			
8												
9												
10												

Models Apex 11,11A,14,14A,46,47 (New Type) ('29)



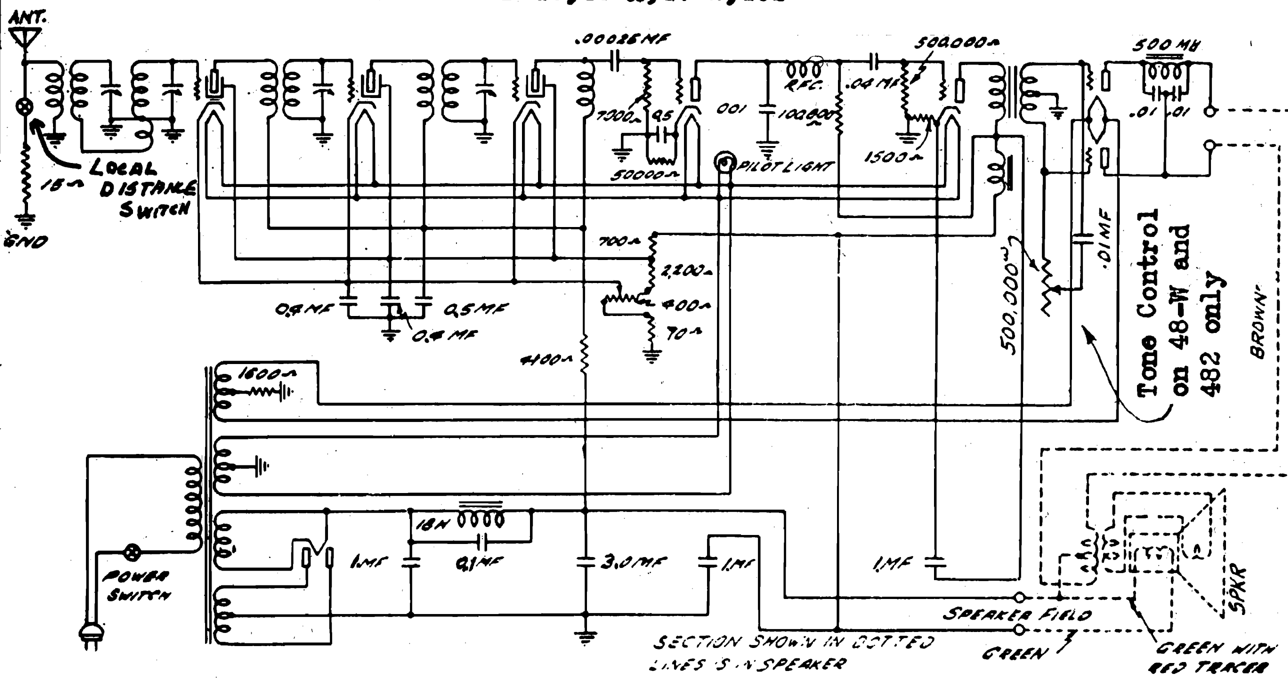


—*Electrodynamic Speaker and Connections*

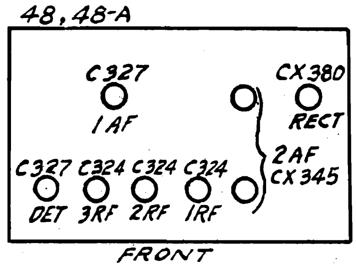
MODEL 48, 48-A, 48-W, 482.

U. S. RADIO & TELEVISION CORP.

Model 48, 48-A, 48-W, 482

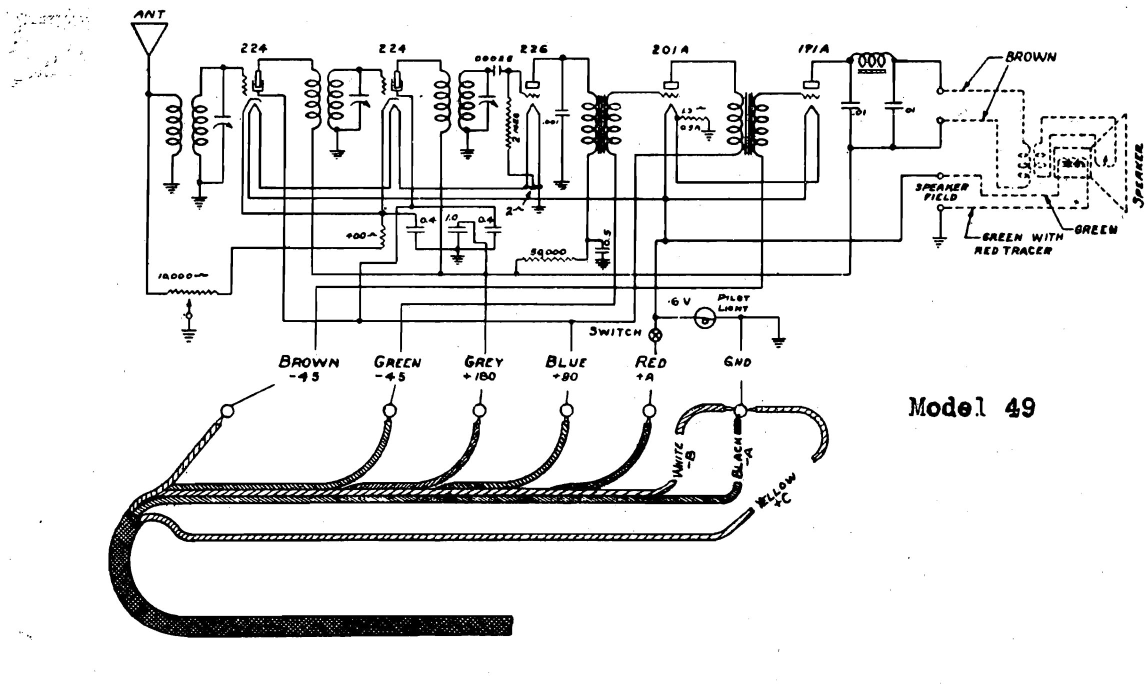


48, 48-A



U. S. RADIO & TELEVISION—Models 48-48A
Line Voltage 115—Volume Control Maximum

Tube No. in Order Tested (1)	Type of Tube (2)	Position of Tube in Set (3)	Meter Readings with Jewell Test Plug in Socket of Set — Operating Voltages: Filament or Heater (4)	Plate or Anode (5)	Control Grid—Space GD + (6)	Normal Grid—Screen GD + (7)	Cathode to Heater (8)	Milliamperes: Screen GD L H 80 Plate (9)	Plate R H 80 Plate (10)	Tube Test (11)	Plate Current Change (12)
1	224	1 R.F.	2.4	181	3.4	90	3.4	.25	4		
2	224	2 R.F.	2.4	181	3.4	90	3.4	.25	4		
3	224	3 R.F.	2.4	181	3.4	90	3.4	.25	4		
4	227	Det.	2.38	75	-	9.0	9.0	-	.2		
5	227	1 A.F.	2.39	105	-	6.0	6.0	-	4.3		
6	245	2 A.F.	2.45	187	-	41	-	-	12		
7	245	2 A.F.	2.45	187	-	41	-	-	12		
8	280	Rect.	5	-	-	-	-	38	38		



Model 49

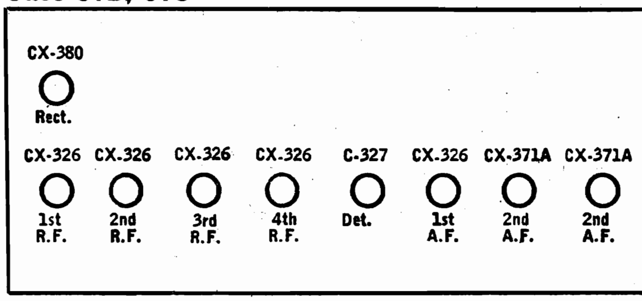
U. S. RADIO & TELEVISION CORP.

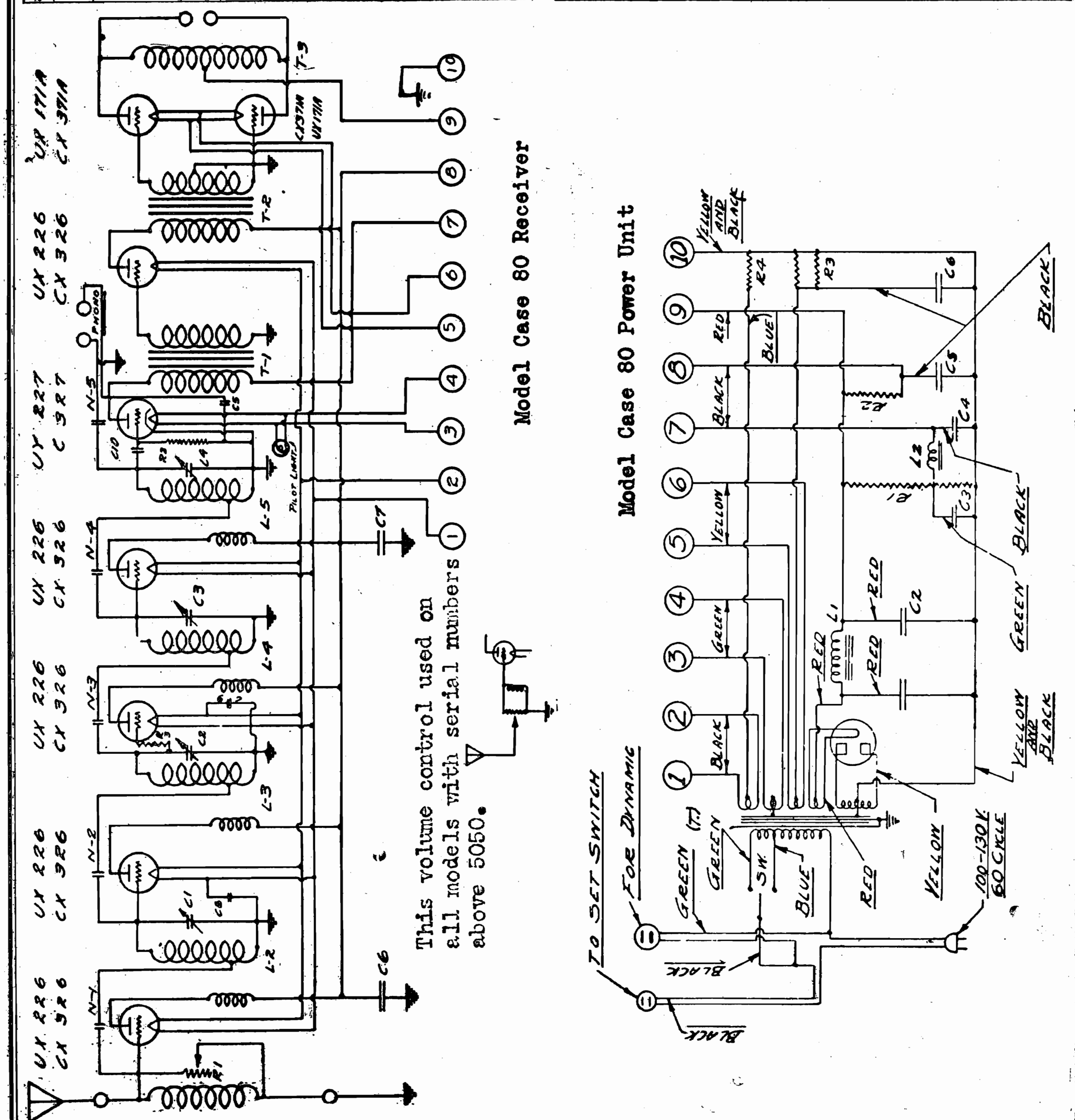
MODEL 80
Schematic

CASE 80-81 —Line Voltage 115
On Some Models There Will Be a Cathode Voltage of Approximately 27 Volts—Others 0

TUBE NO. IN ORDER	TYPE OF TUBE	POSITION OF TUBE 1ST R.F. DET. ETC	READINGS, PLUG IN SOCKET OF SET — TUBE OUT: A VOLTS	TUBE OUT: B VOLTS	TUBE IN TESTER: A VOLTS	B VOLTS	C VOLTS	CATHODE VOLTS	NORMAL PLATE M.A.	PLATE M.A. GRID TEST	PLATE M.A CHANGE
1	226	1st.R.F.			1.25	110	8.5	-	3.3	6.3	3.0
2	226	2nd.R.F.			1.25	110	8.5	-	3.3	6.3	3.0
3	226	3rd.R.F.			1.25	110	8.5	-	3.3	6.3	3.0
4	226	4th.R.F.			1.25	110	8.5	-	3.3	6.3	3.0
5	227	Detector			2.00	27	0.0	0.0	1.4	1.4	0.0
6	226	1st.A.F.			1.27	110	7.8	-	2.7	5.7	3.0
7	171A	2nd.A.F.			4.80	165	37.0	-	17.0	19.5	2.5
8	280	Rectifier			4.90	-	-	-	24.0	-	-
9											
10											

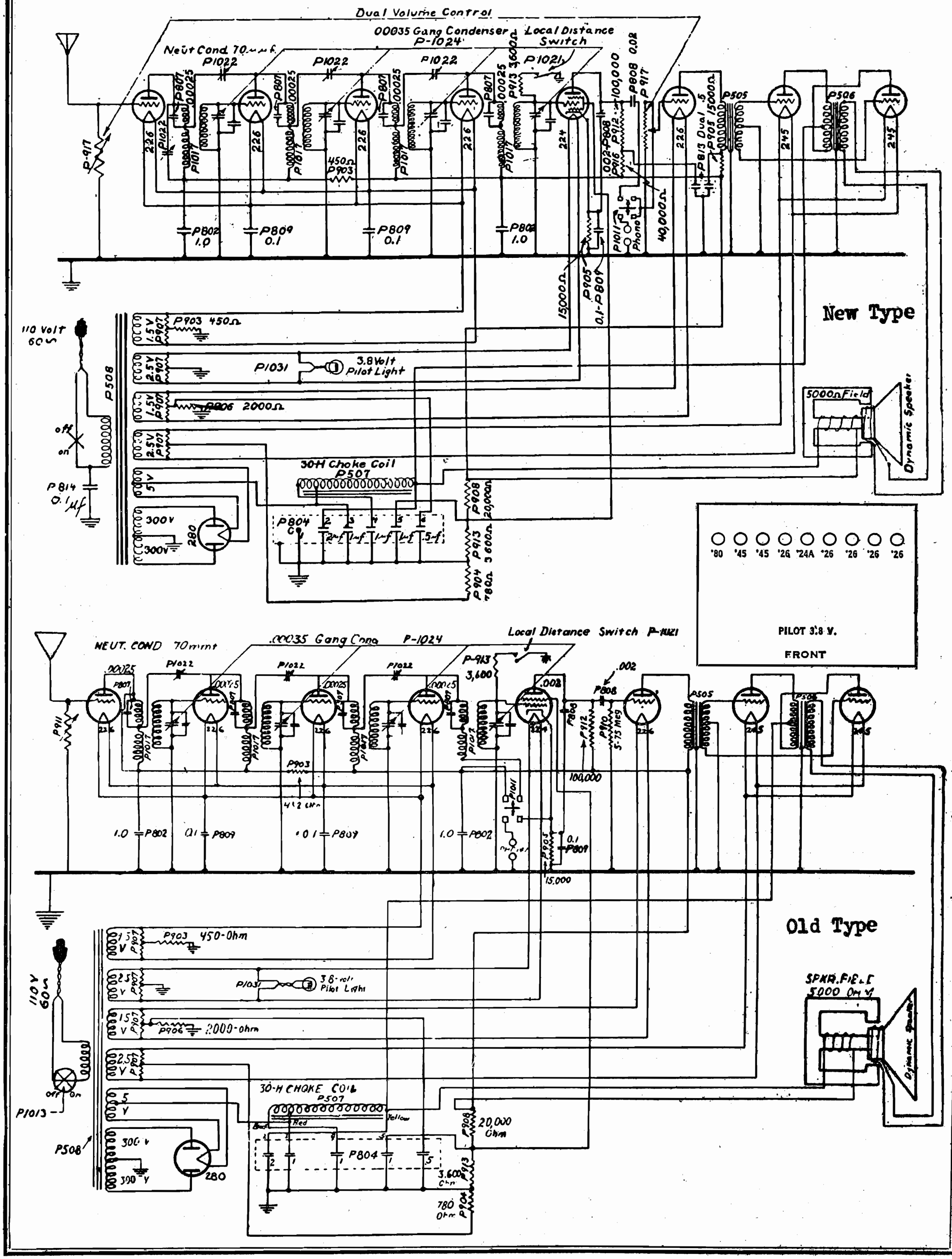
Case 81B, 81C (A.C.)





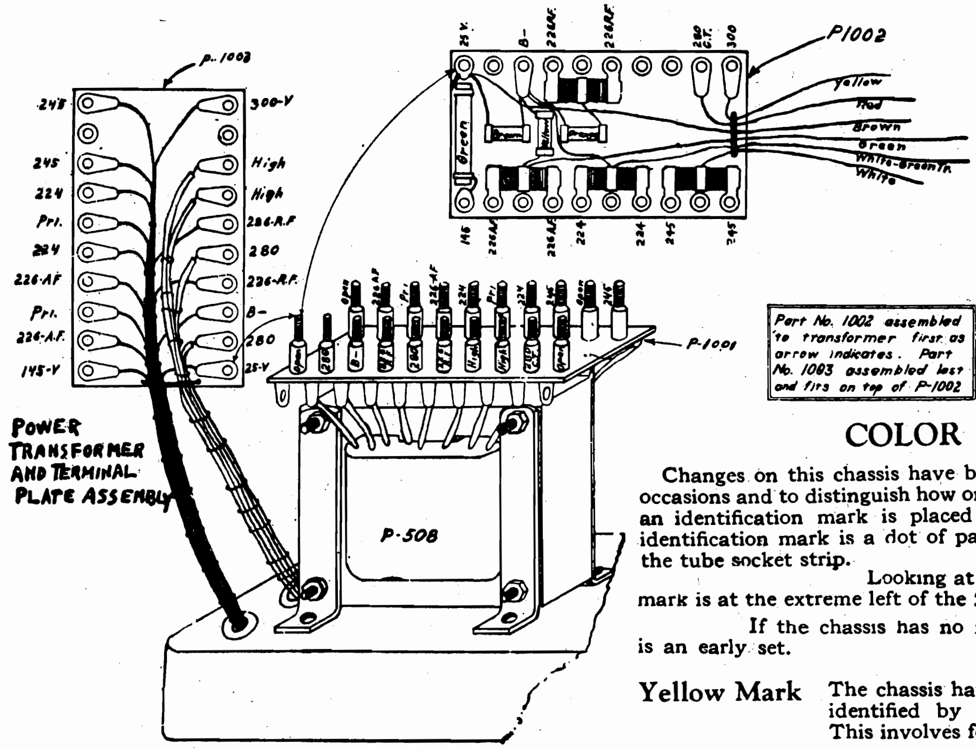
MODEL C,CG
Schematic
1st & 2nd Types

WELLS-GARDNER & CO.



MODEL C,CG
Voltage - Data
1st & 2nd Types

WELLS - GARDNER & CO.



OPERATING VOLTAGES

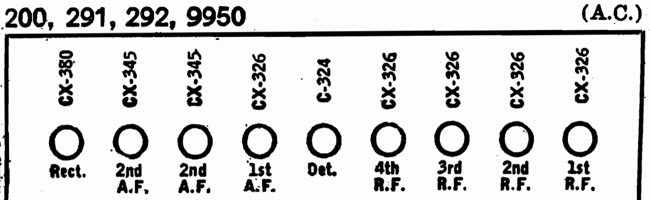
Type of Tube	Position of Tube	"A" Volts	"B" Volts	Control Grid ("C") Volts	Screen Volts	Screen Current	Cathode Volts	Normal Ma.	Grid Test Ma.
		TUBE IN TEST SET							
226	1st R.F.	1.35	116	8.5				4.7	8.7
226	2nd R.F.	1.35	116	8.5				4.7	8.7
226	3rd R.F.	1.35	116	8.5				4.7	8.7
226	4th R.F.	1.35	116	8.5				4.7	8.7
224	Det.	2.2	80	1.3	15		—	—	—
226	1st A.F.	1.4	110	1.0 ← READING LOW DUE TO RESISTANCE COUPLING				4.0	5.0
245	2nd A.F.	2.2	232	42				27	32
245	2nd A.F.	2.2	232	42				27	32
280	Rect.	4.6						84	

Line Voltage During Test—115 Volts.

REVISION OF OPERATING VOLTAGES

Type of Tube	Position of Tube	"A" Volts	"B" Volts	Control Grid ("C") Volts	Screen Volts	Screen Current	Cathode Volts	Normal Ma.	Grid Test Ma.
		TUBE IN TEST SET							
224	Det.	2.2	75	1.3	15				
226	1st.A.F.	1.4	77	1.0				4	5

200, 291, 292, 9950 (A.C.)



COLOR CODE

Changes on this chassis have been made on several different occasions and to distinguish how one chassis differs from another, an identification mark is placed on each one changed. This identification mark is a dot of paint found on the end rivet of the tube socket strip.

Looking at the chassis from the back the mark is at the extreme left of the 226 tube socket

If the chassis has no mark it is understood that it is an early set.

Yellow Mark The chassis having the first changes may be identified by the yellow indicating mark. This involves four changes.

1. A "dual volume control" in place of the single type. The new volume control is made in two sections, with five lugs. The section nearest the chassis, having two lugs, operates exactly the same as the single volume control. The section behind the first, having three lugs, is placed in the first audio circuit to reduce the audio amplification and operates in tandem with the antenna volume control.

2. An interchange of position of the two audio transformers The re-arrangement of the audio transformers has not altered their connections in the circuit.

3. An addition of a "dual half microfarad condenser" and two carbon resistors in the "B" circuit of the detector and first audio tubes. The 40,000 ohm black resistor with one section of the dual condenser is placed in the detector circuit (224) and the 15,000 ohm blue resistor with the other section of the dual condenser is placed in the first audio circuit (226). You will note that the yellow and blue leads in the cable connecting to the terminal strip have been interchanged.

4. A change in the location of the grounding of No. 1 lug on the condenser block. This lug is now grounded to the condenser case with a short piece of bare wire.

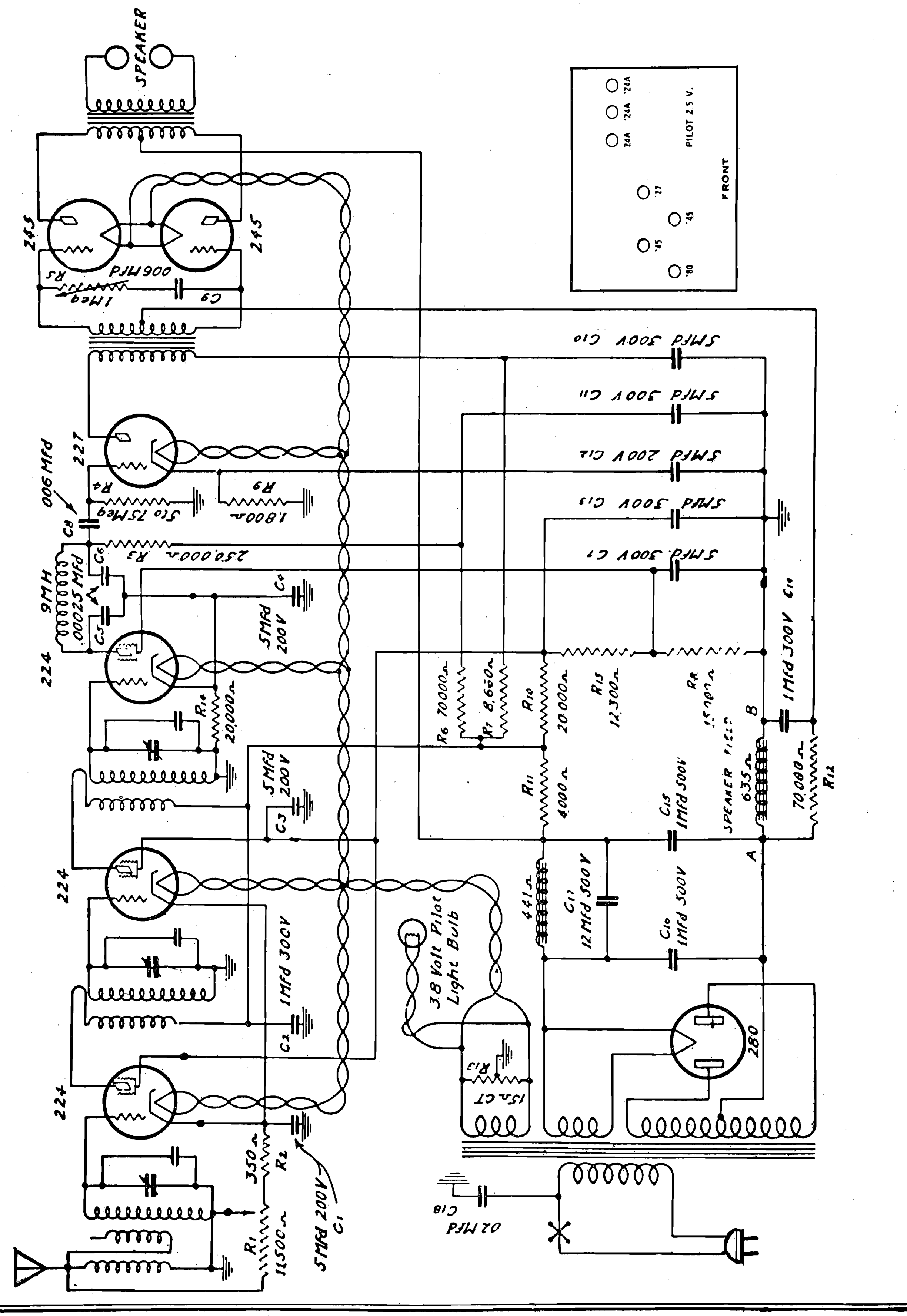
Red Mark (Serial Number 39,000-42,999) All chassis having a red mark on the rivet of the tube socket strip have all of the changes mentioned above and in addition, have a one-tenth microfarad condenser connected from ground to one side of the 110 volt line A peculiarity that may be experienced by the addition of this condenser is a loud hum on every station tuned in only when the antenna wire coming from the set is connected to ground. This can be eliminated by reversing the plug in the socket. Also be sure your antenna is not grounded, either by some other set being connected to your aerial or through any other means.

Green Mark (Serial Number 43,000 and up) All Chassis with a green mark on the rivet of the tube socket strip contain the above changes and in addition have a change in the "combination phonograph switch" circuit. This changed circuit makes use of only the audio system of the set for phonograph reproduction, whereas the original circuit included the detector tube

The Phonograph, Radio, On, and Off positions of the switch are the same as in the early sets. To obtain maximum volume and best tone quality a pick-up coupling transformer should be used to match the pick-up used.

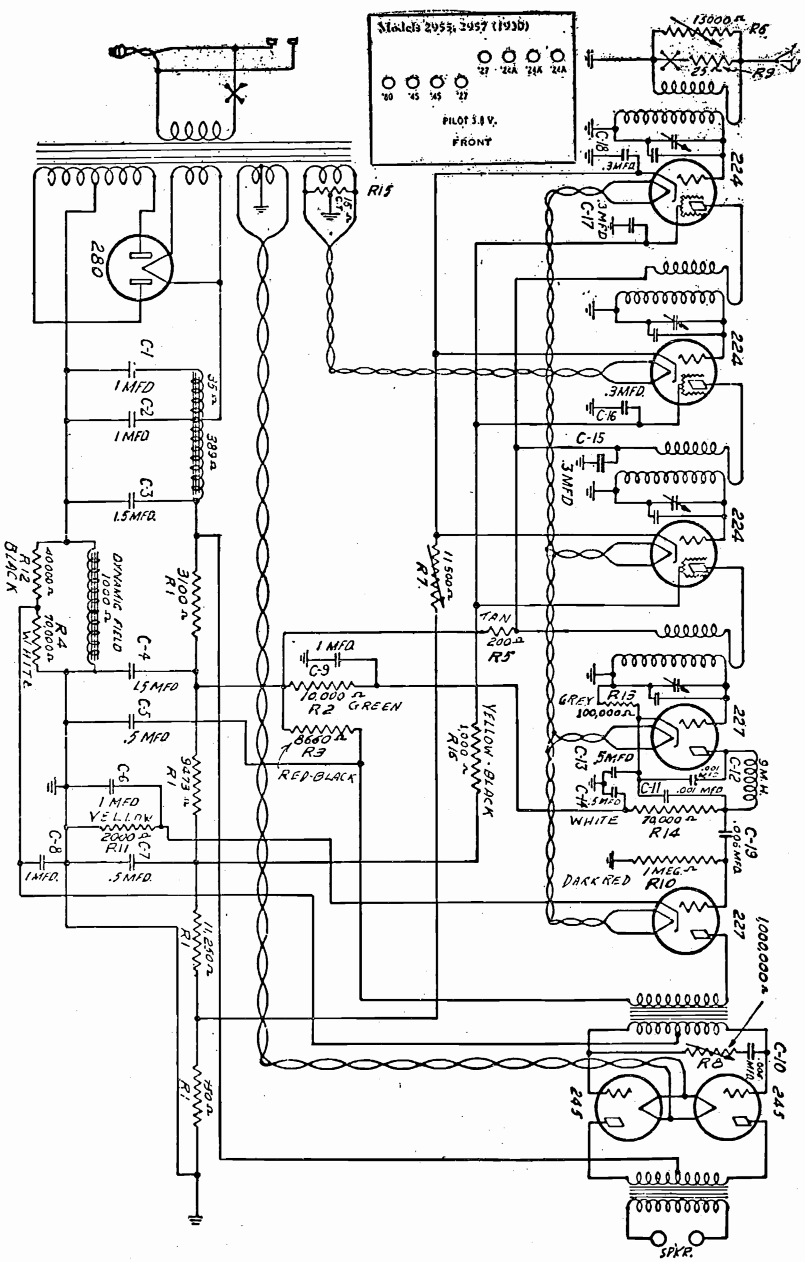
MODEL 72
Schematic

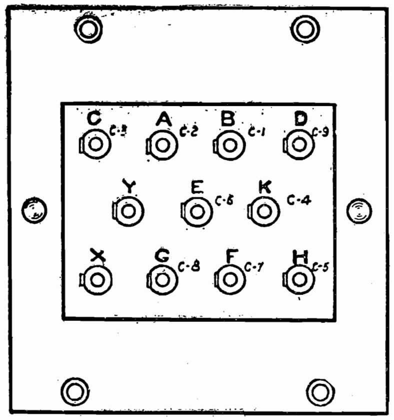
WELLS - GARDNER & CO.



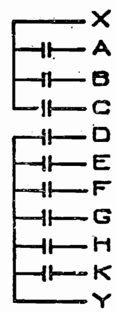
MODEL 80, 82 AC
60 cycle
Schematic
Data

WELLS - GARDNER & CO.





CAPACITY		
CODE	60 CYCLE	25 CYCLE
A	1.0 MF. C-2	
B	1.0 MF. C-1	2.5 MF. C-1
C	1.5 MF. C-3	4. MF. C-3
D	1.0 MF. C-9	1.0 MF. C-9
E	1.0 MF. C-6	1.0 MF. C-6
F	0.5 MF. C-7	0.5 MF. C-7
G	1.0 MF. C-8	1.5 MF. C-8
H	0.5 MF. C-5	0.5 MF. C-5
K	1.5 MF. C-4	2.0 MF. C-4
X	COMMON	COMMON
Y	COMMON	COMMON



Filter Condenser (60 and 25 cycle receivers).

FIXED CONDENSERS

Condensers C1 to C9 inclusive are in the filter block. C1, C2, C3, C4, and C7 are in the main filter circuits. C5 bypasses R3, which is the 8,660 ohm resistor in the first audio plate circuit. C6 by-passes R11, the cathode bias resistor on the first audio stage. C8 by-passes the grid bias on the 245 tubes, (obtained through R4 and R12) and C9 bypasses the 10,000 ohm resistor R2 in the detector plate circuit.

C10 and C19 are located on the resistor-condenser terminal strip (See Fig. 4) and are both .006 mfd. moulded condensers. C10 is in the tone control circuit, while C19 is the coupling condenser in the resistance coupled amplifier.

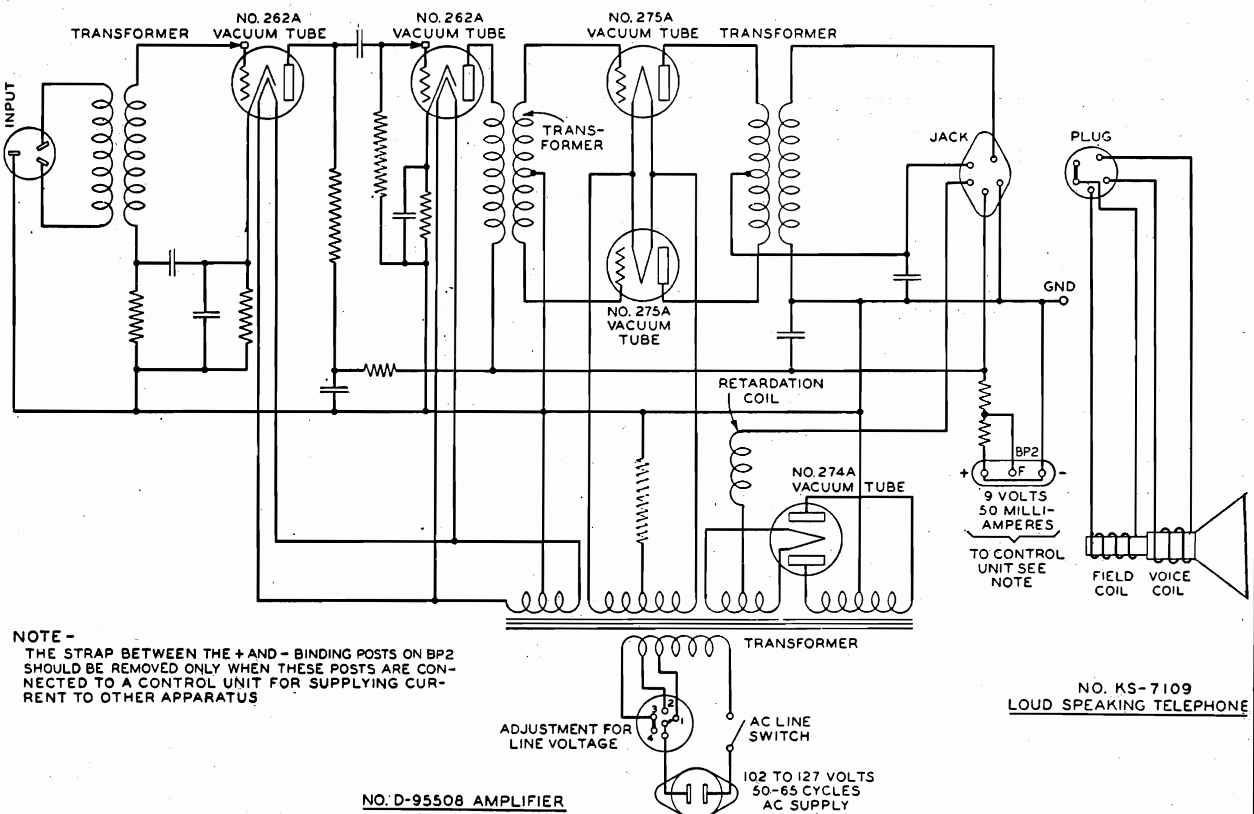
C11 and C12 are .001 mfd. moulded condensers, and are used in the detector plate circuit filter. C13 and C14 are the two units in the dual ½ mfd. by-pass condenser.

C15, C16 and C18 are located in the triple 3 mfd. condenser case. C17 is a single .3 mfd. condenser, and is mounted alongside of the triple .3 mfd. condenser case.

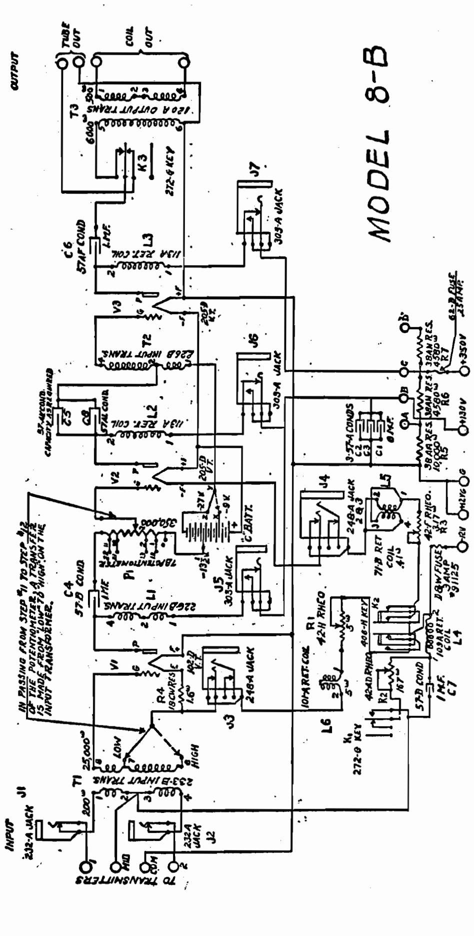
Code Fig. 1	Stock No.	Capacity
C1 to C9 inclusive	80S18	9 Mfds. total. Filter block.
C10 and C19	80S22	.006 Mfd. White paint spot.
C11 and C12	80S21	.001 Mfd. Grey paint spot.
C13 and C14	80S26	Dual .5 Mfd. Metal case.
C15, C16, C18	80S17	Triple .3 Mfd. Metal case.
C17	80S20	.3 Mfd. Metal case.

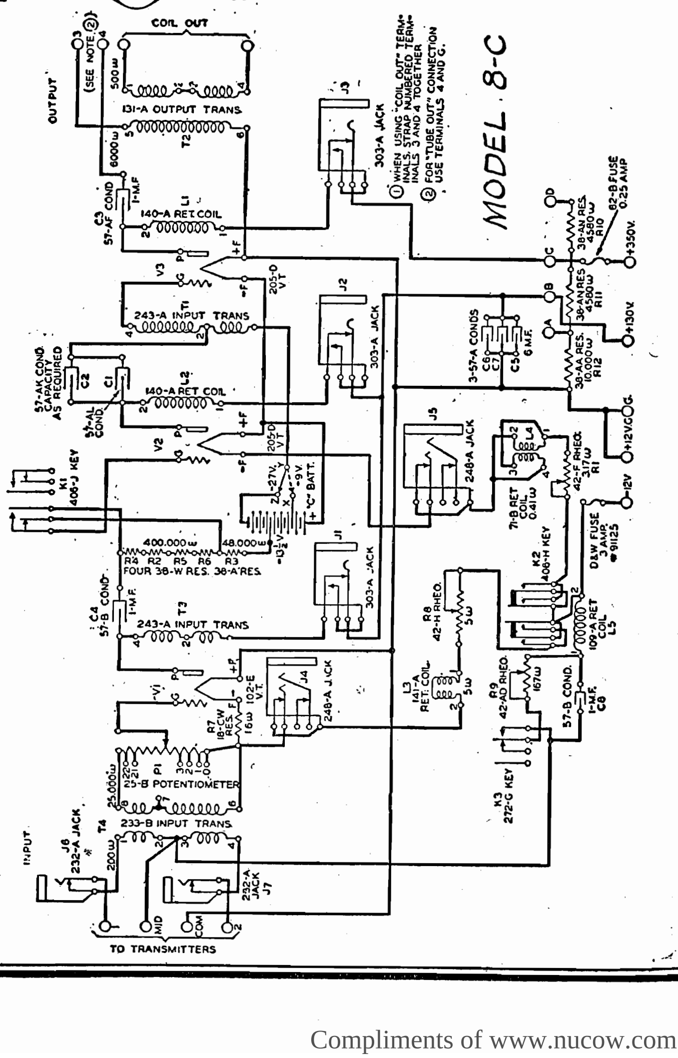
MODEL D-95508
MODEL 8-B
MODEL 8-C

WESTERN ELECTRIC CO.



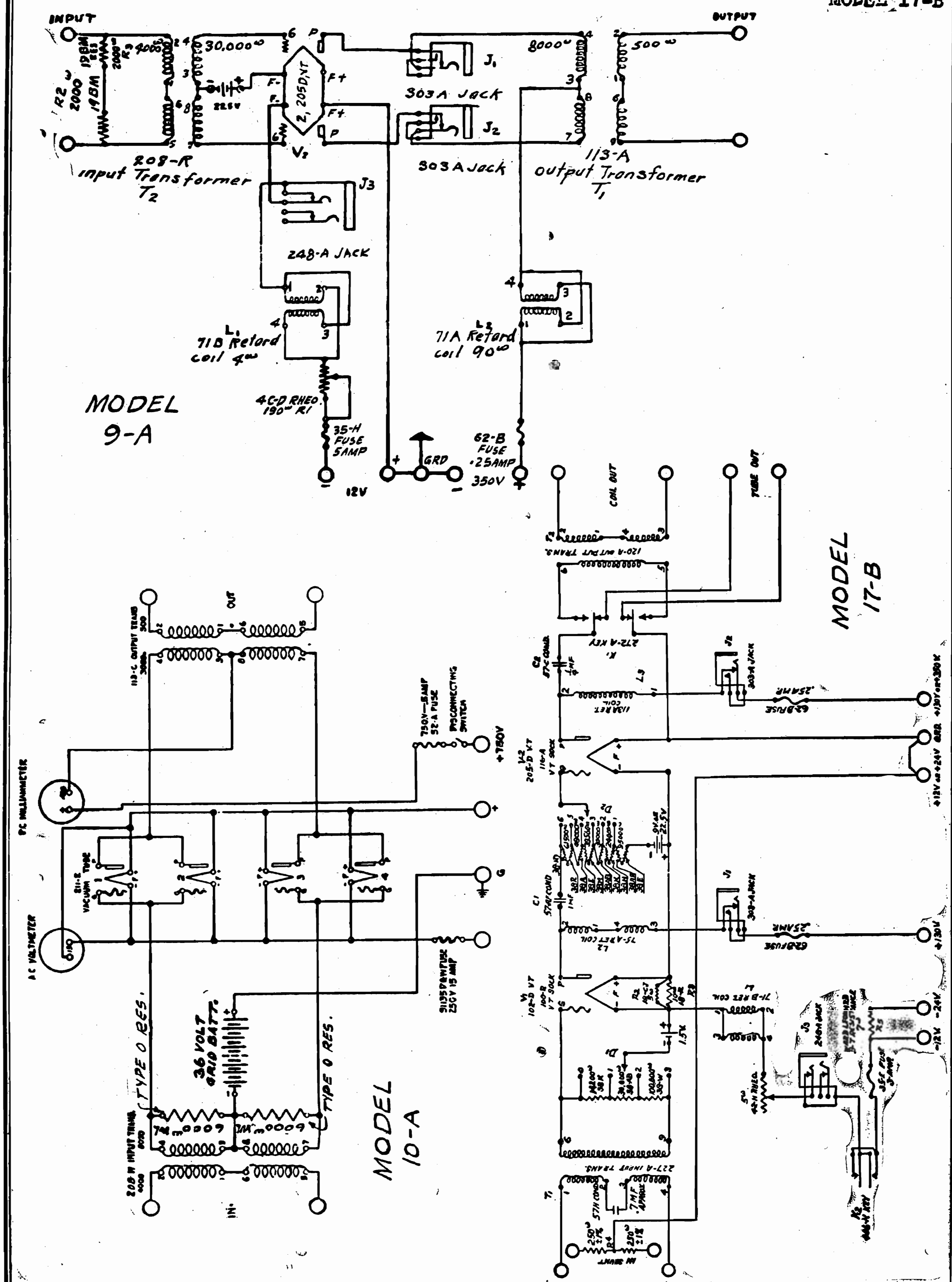
NOTE - THE STRAP BETWEEN THE + AND - BINDING POSTS ON BP2 SHOULD BE REMOVED ONLY WHEN THESE POSTS ARE CONNECTED TO A CONTROL UNIT FOR SUPPLYING CURRENT TO OTHER APPARATUS





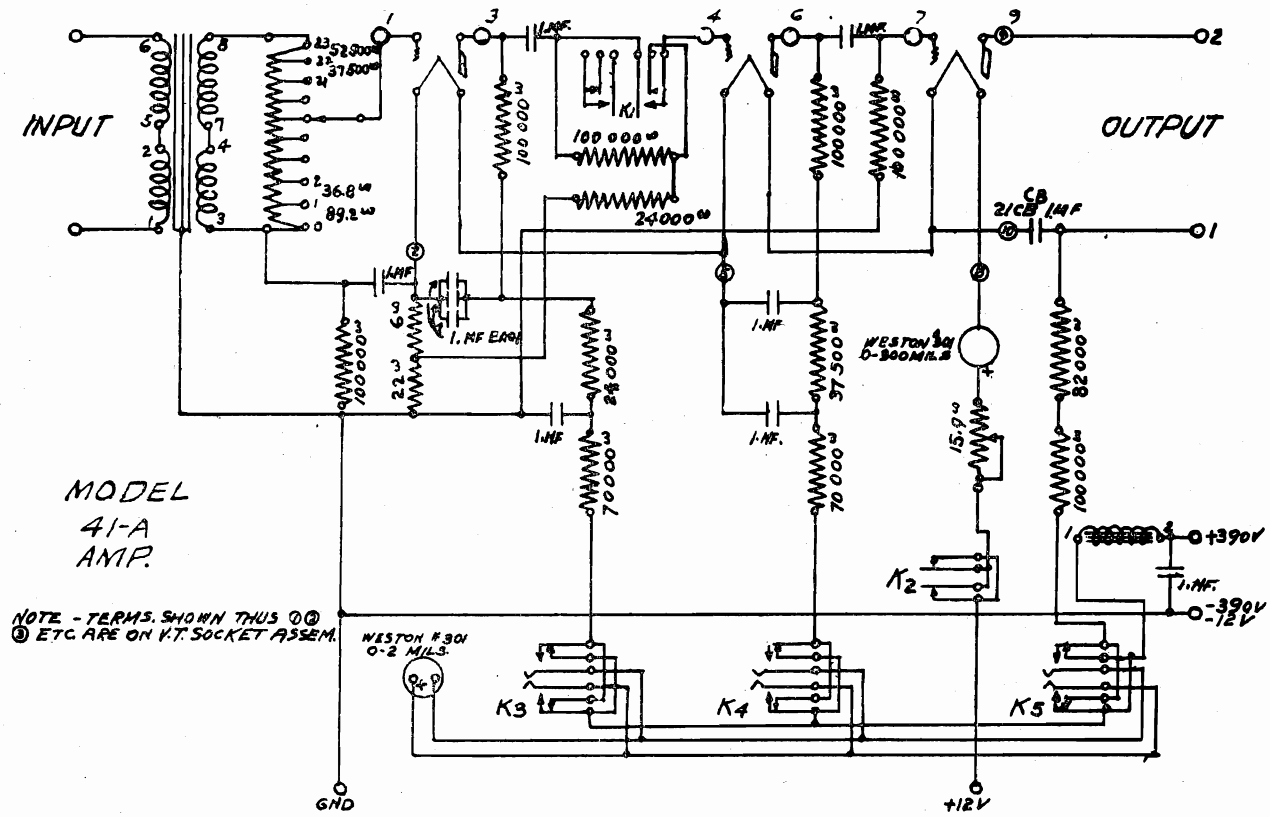
WESTERN ELECTRIC CO.

MODEL 9-A
MODEL 10-A
MODEL 17-B

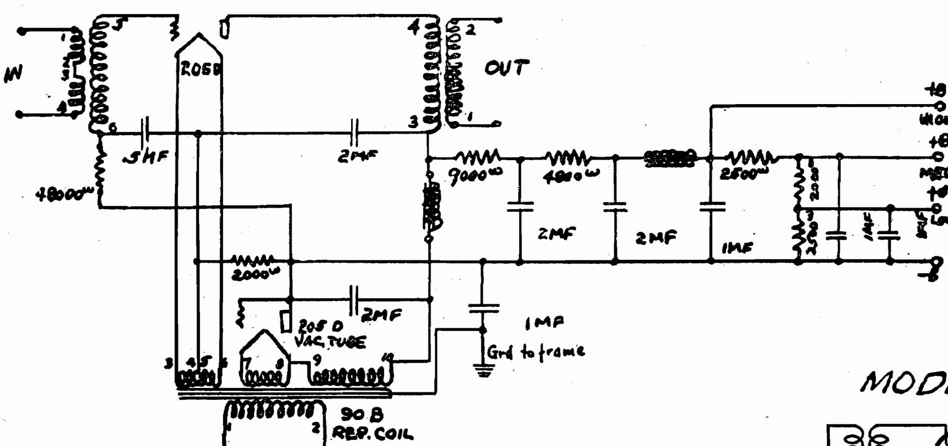


WESTERN ELECTRIC CO.

MODEL 41-A
MODEL 45-A
MODEL 25-B

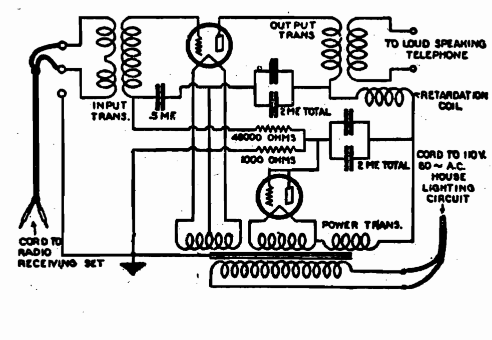


MODEL 41-A AMP.



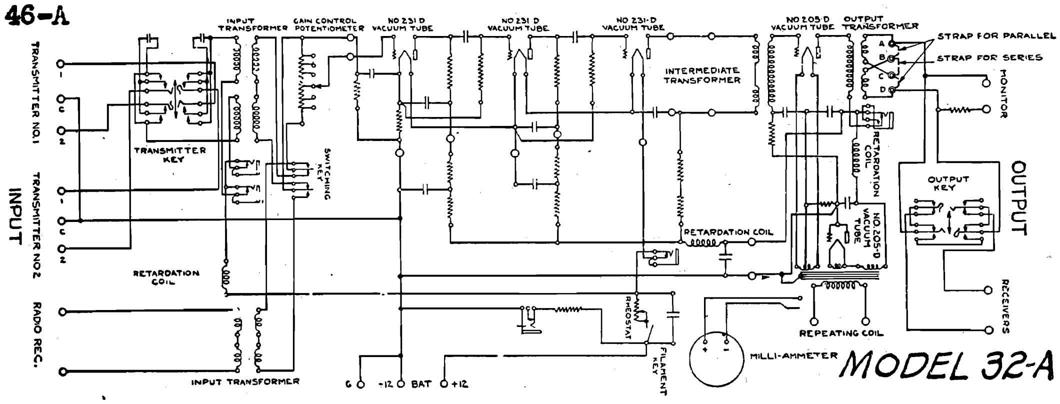
MODEL 45-A

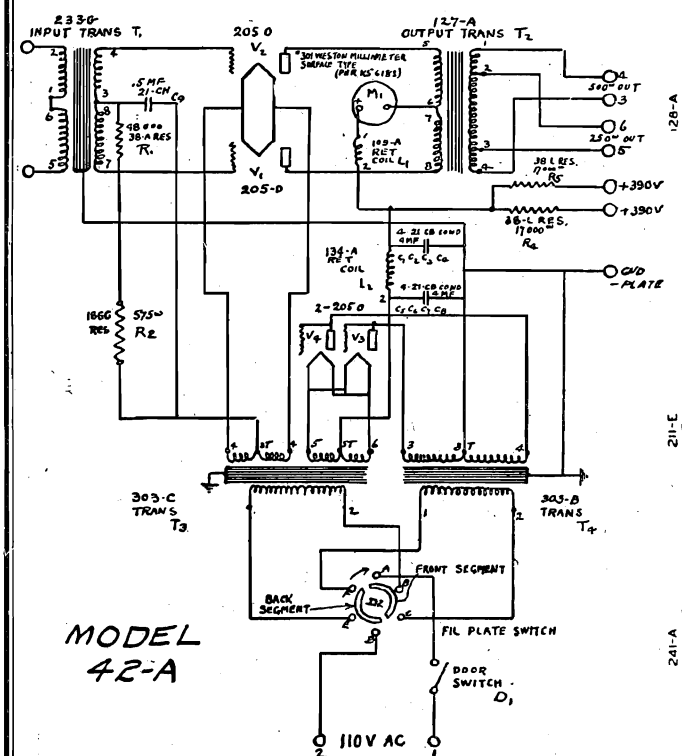
MODEL 25-B

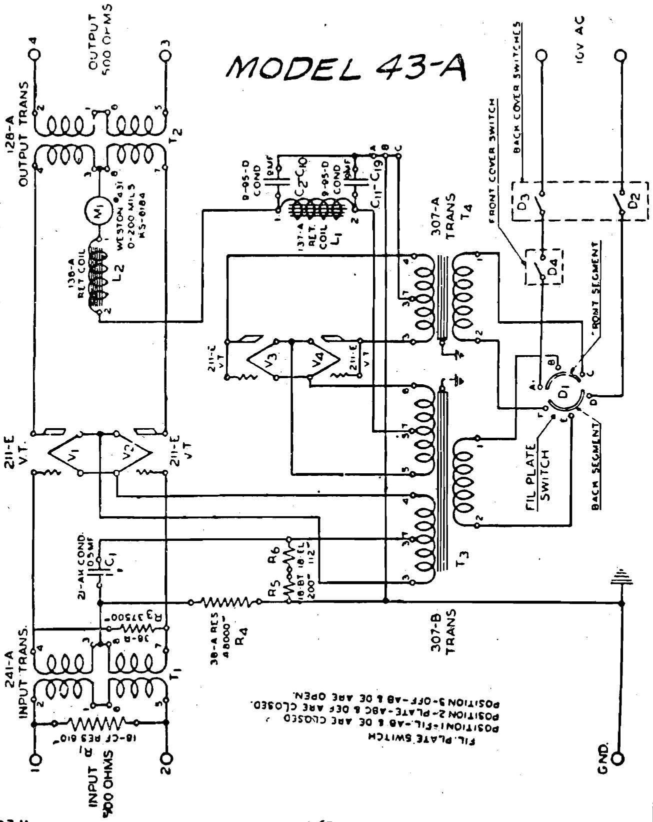


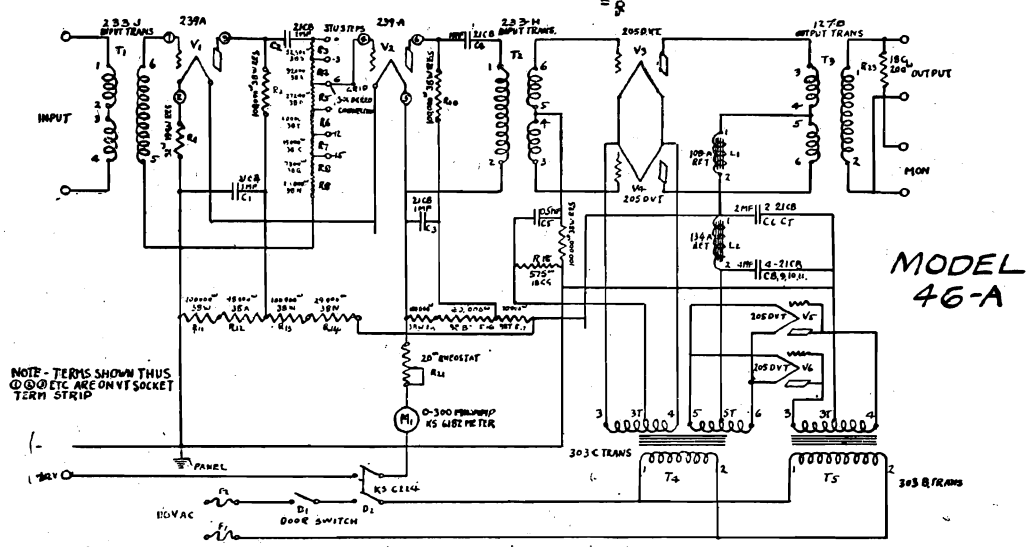
MODEL 32-A
MODEL 42-A
MODEL 43-A
MODEL 46-A

WESTERN ELECTRIC CO.



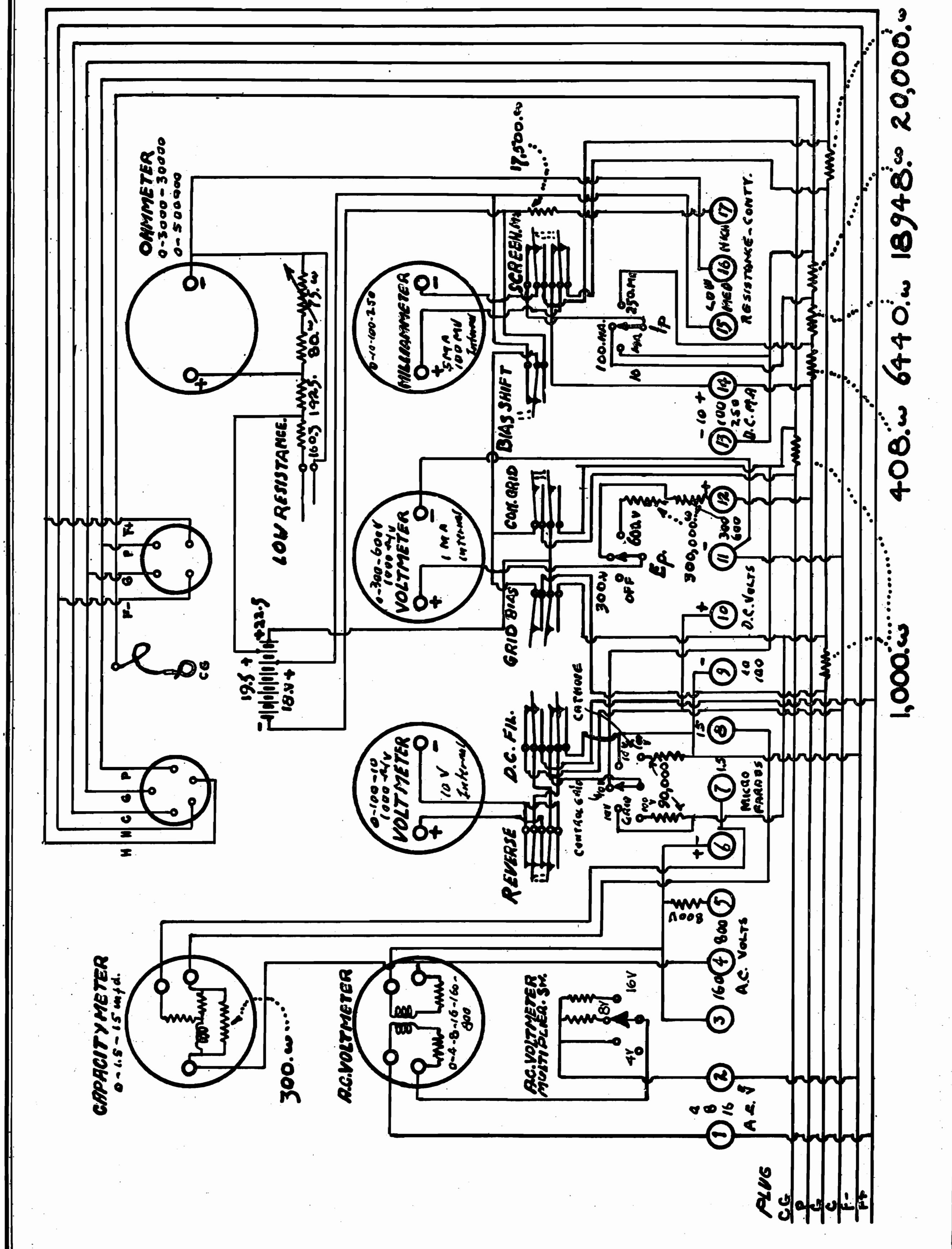






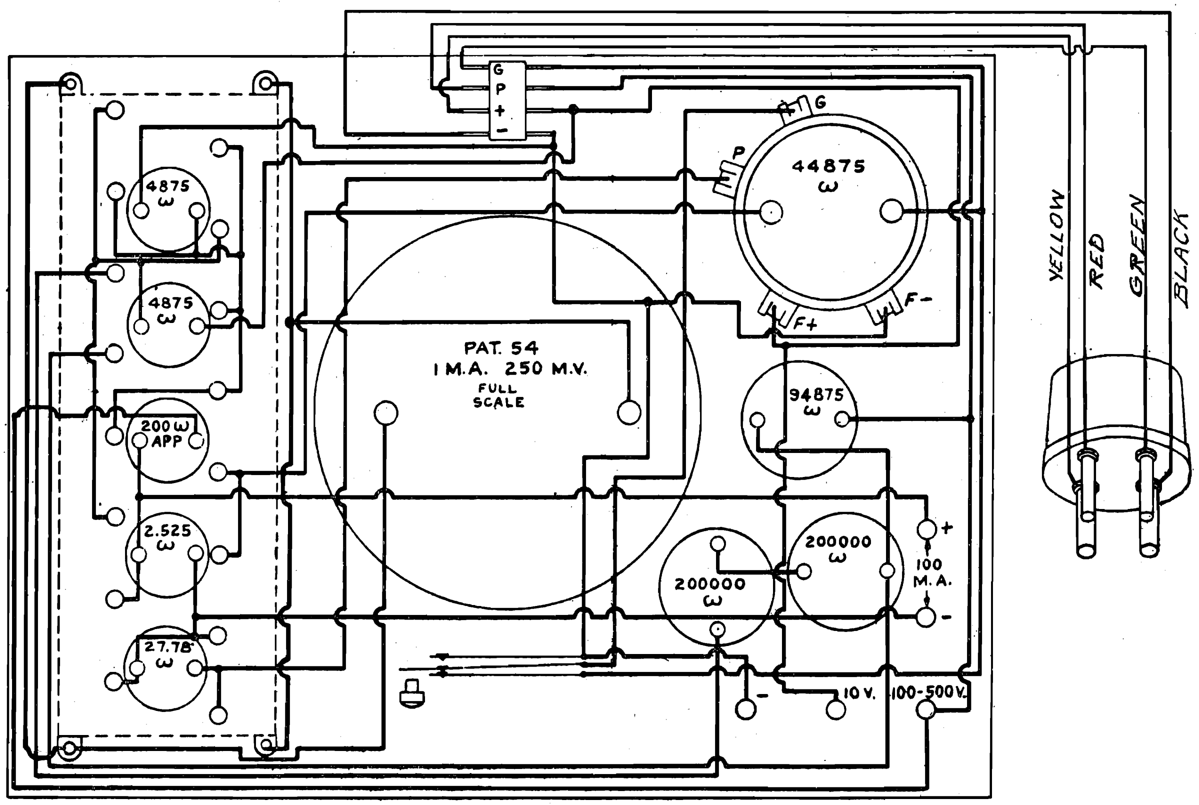
WESTON ELECTRICAL INSTRUM'T CORP.

MODEL Jewell
Test Panel

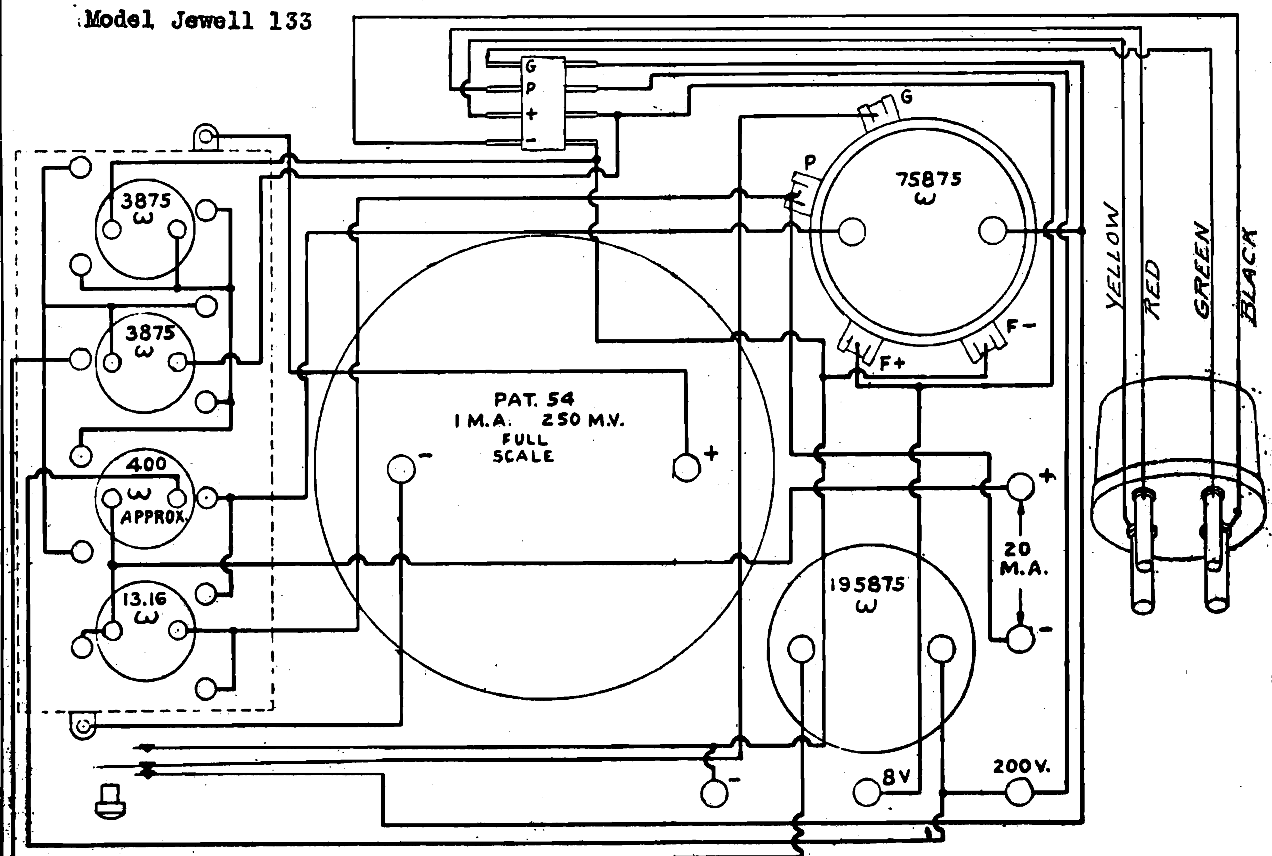


MODEL Jewell 133
MODEL Jewell 133-A

WESTON ELECTRICAL INSTRUM'T CORP.



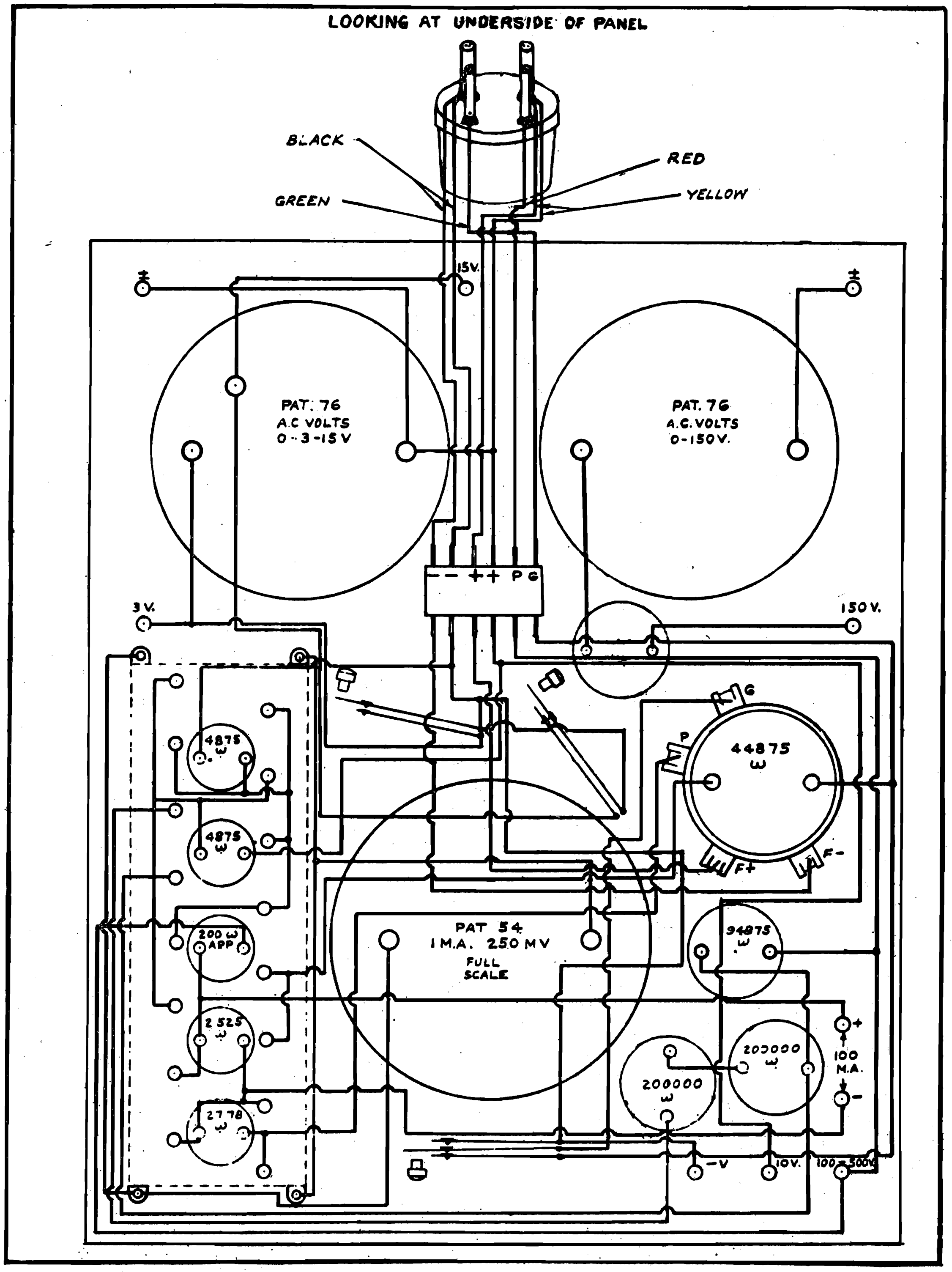
Model Jewell 133



Model Jewell 133-A

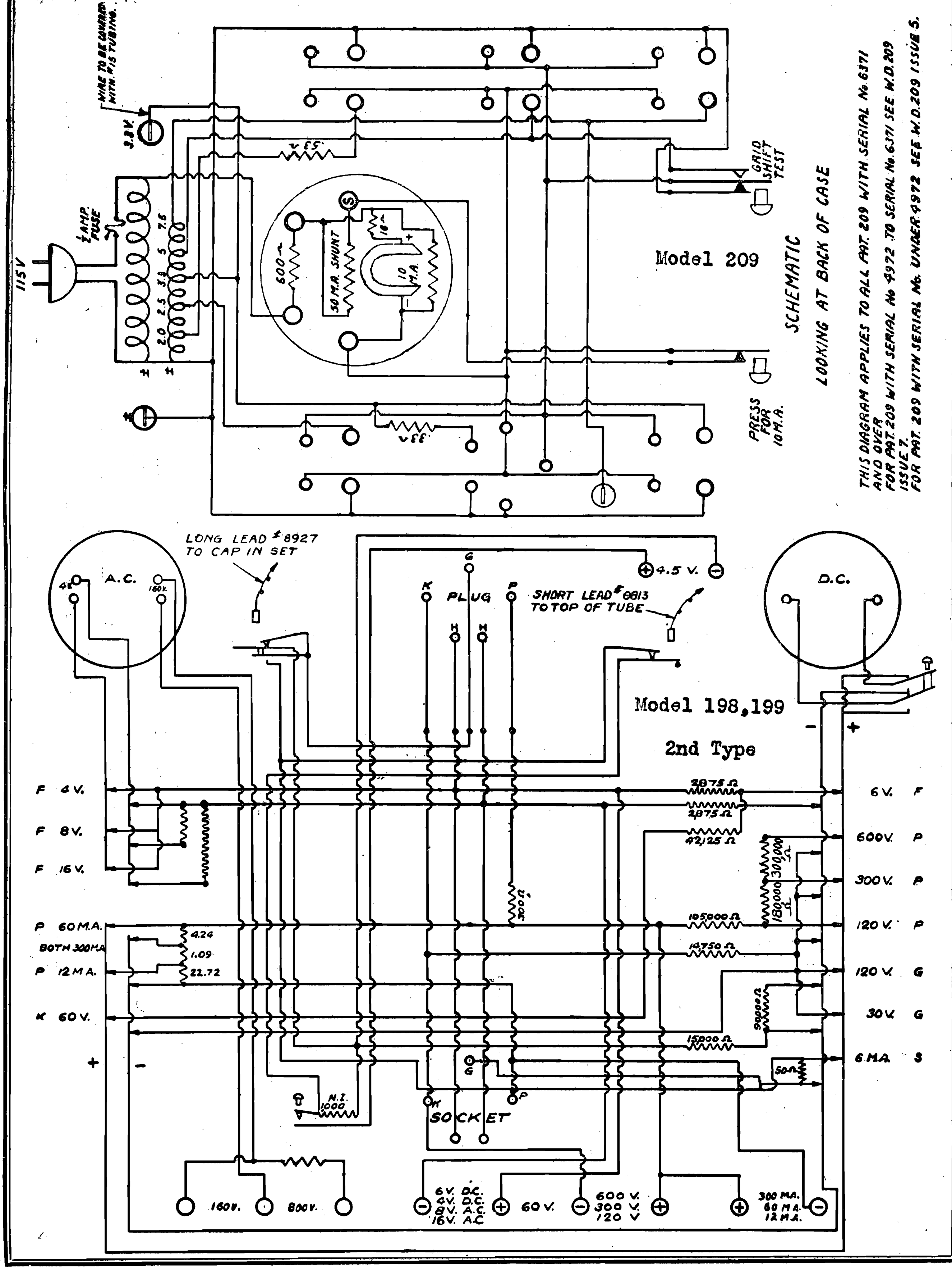
MODEL Jewell 137

WESTON ELECTRICAL INSTRUM'T CORP.



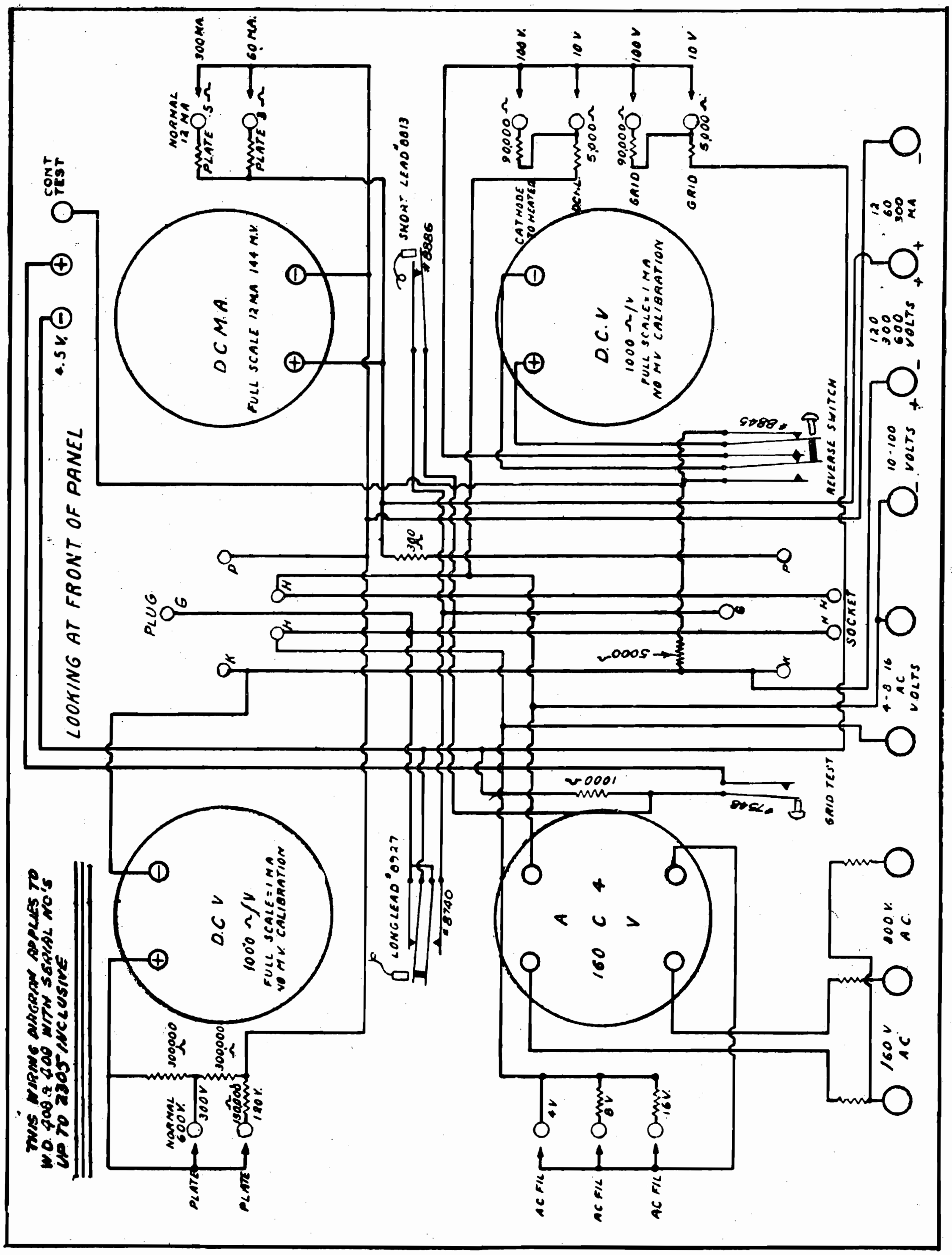
MODEL Jewell 198,199 2nd Type
MODEL Jewell 209

WESTON ELECTRICAL INSTRUM'T CORP.



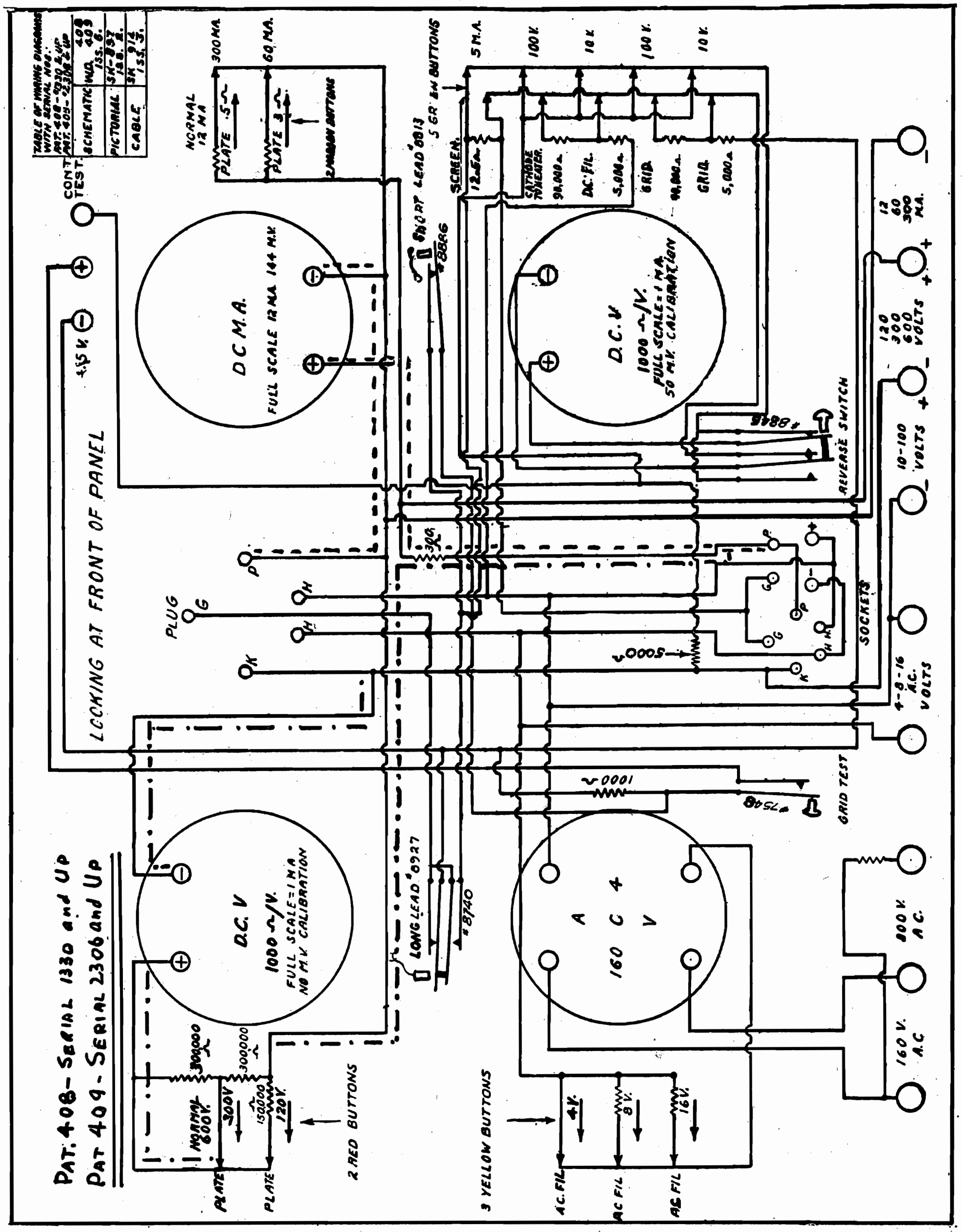
WESTON ELECTRICAL INSTRUM'T CORP.

MODEL Jewell
408,409
1st Type



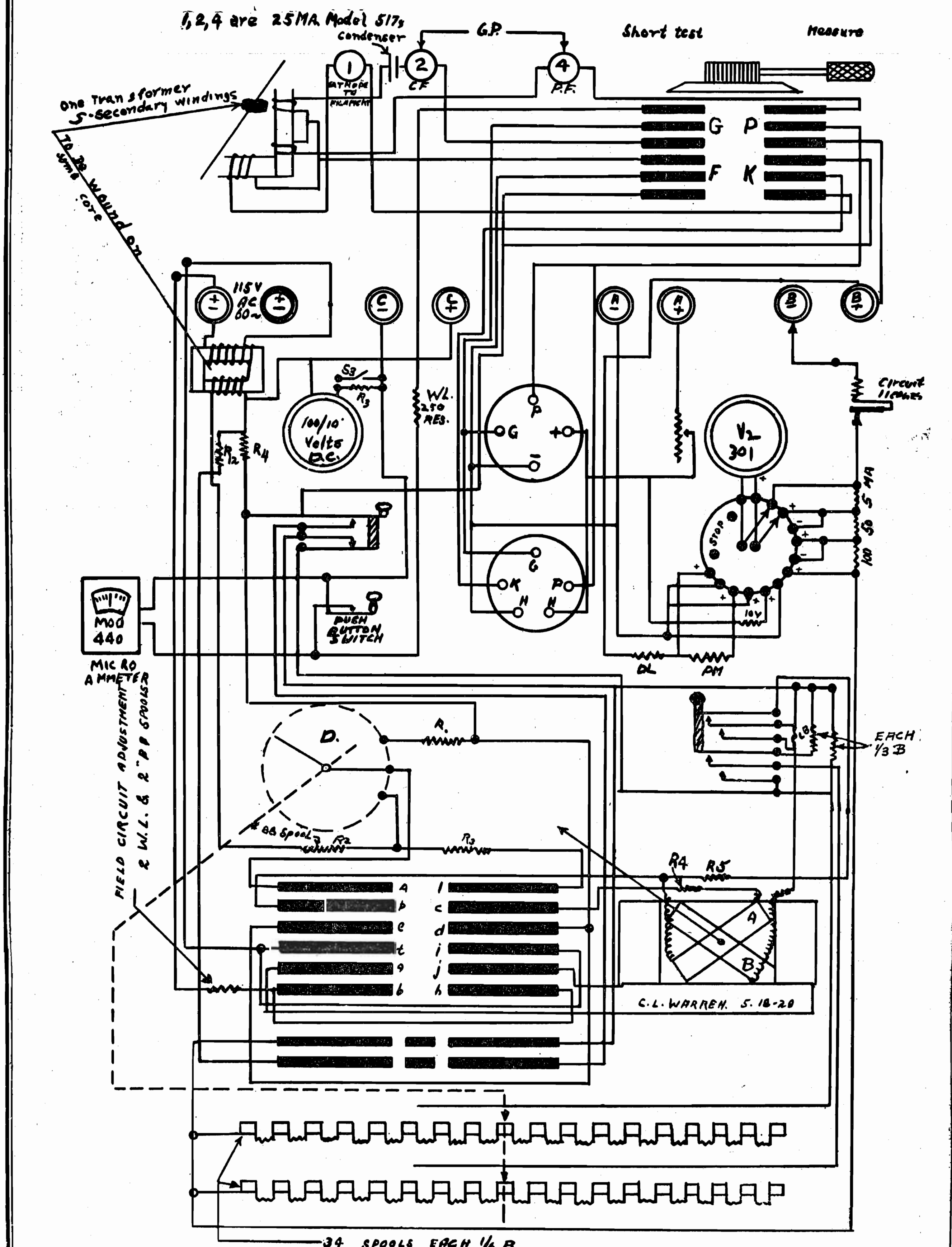
MODEL Jewell 408,409 2nd Type

WESTON ELECTRICAL INSTRUM'T CORP.



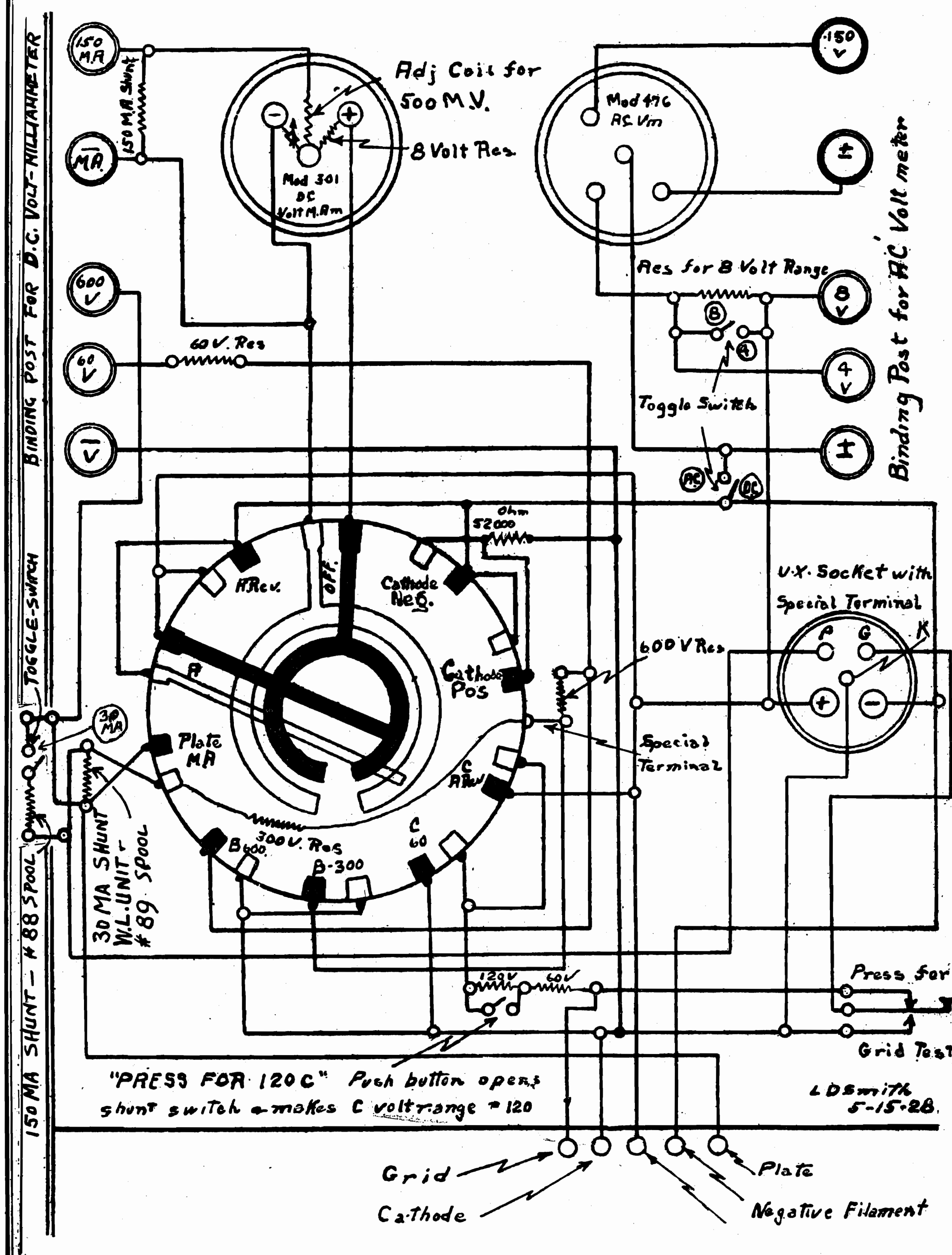
MODEL Weston.
526. Type 7

WESTON ELECTRICAL INSTRUM'T CORP.



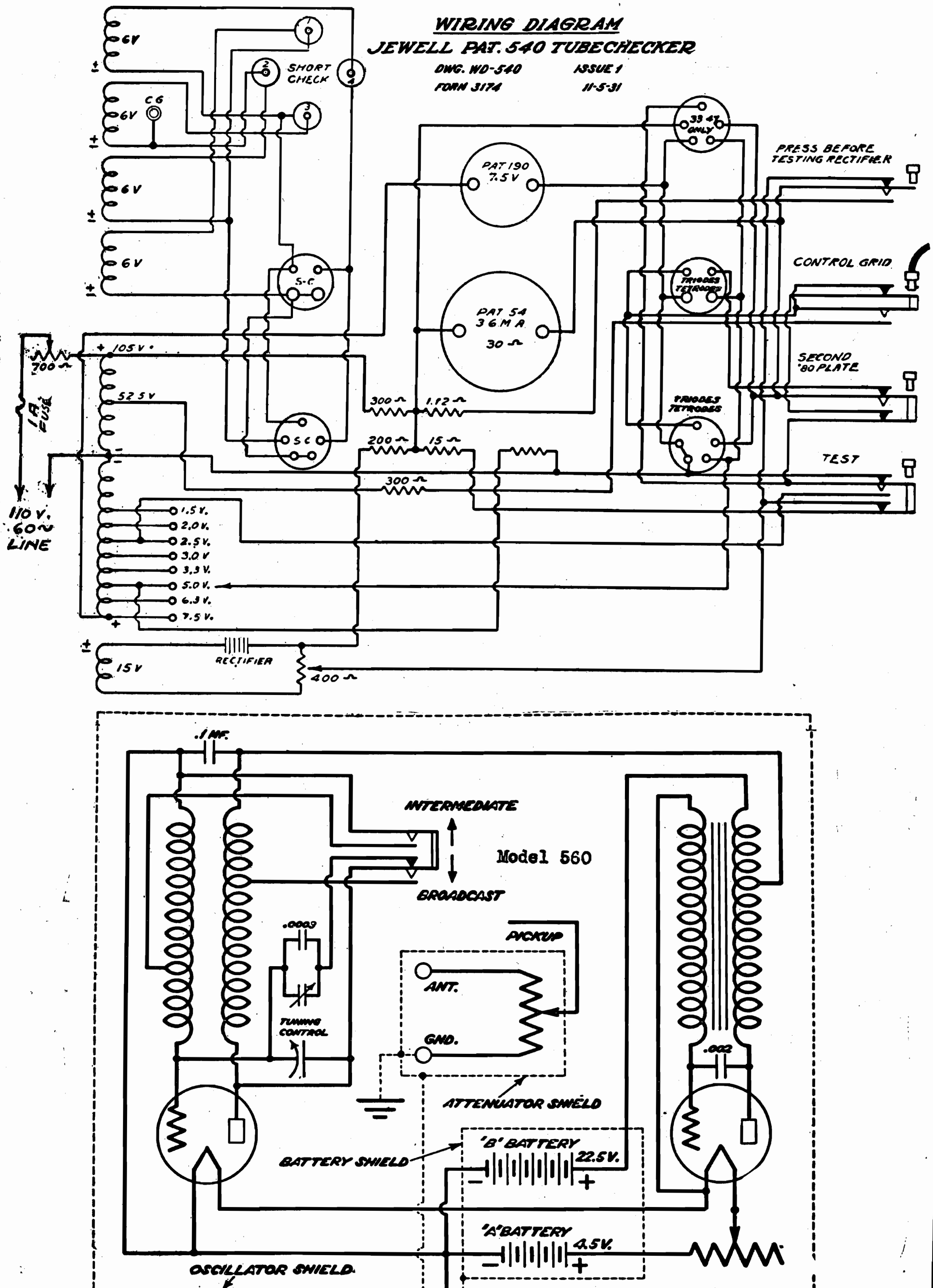
MODEL Weston
537

WESTON ELECTRICAL INSTRUM'T CORP.



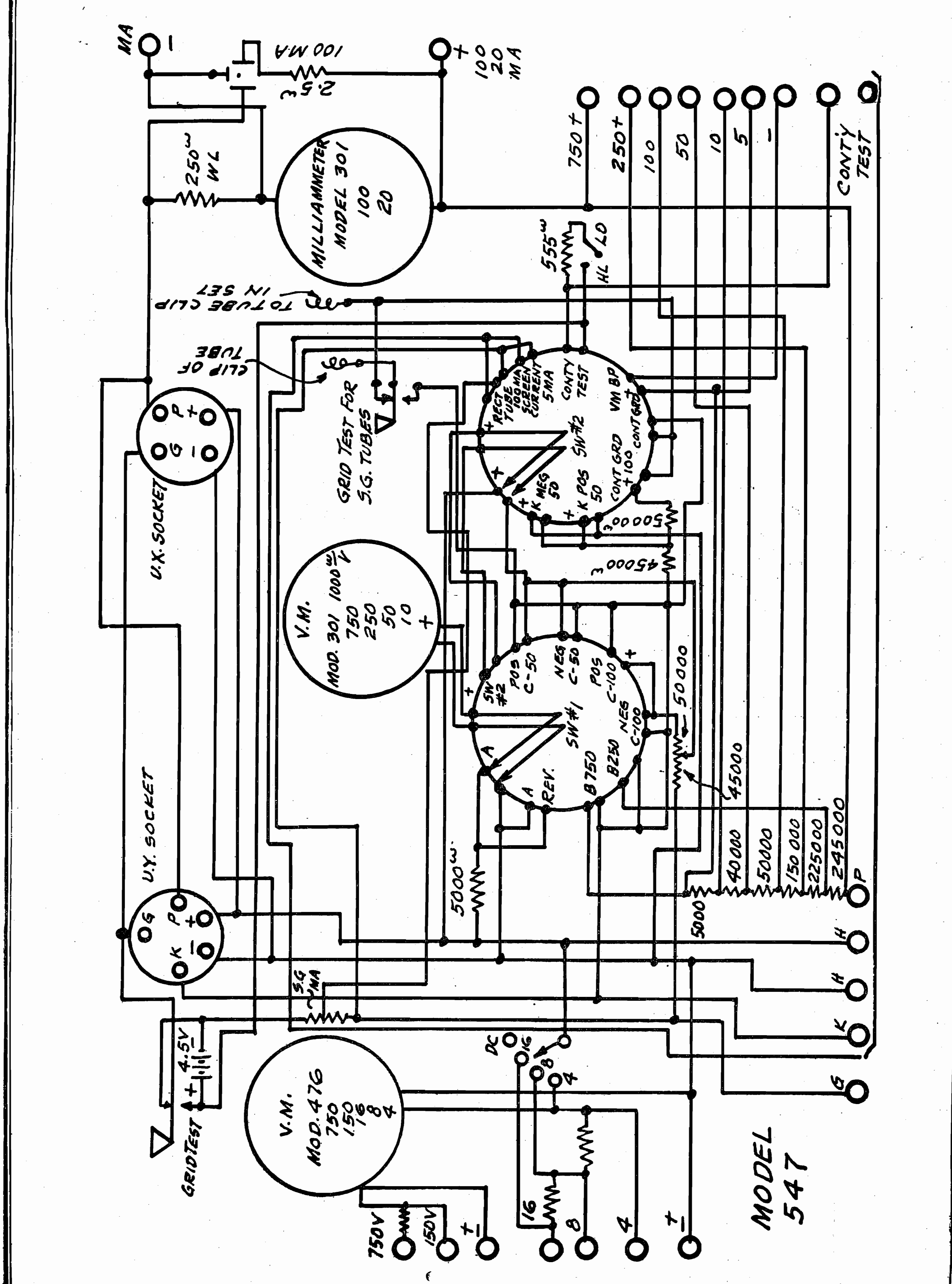
WESTON ELECTRICAL INSTRUM'T CORP.

MODEL Jewell 540
MODEL Jewell 560

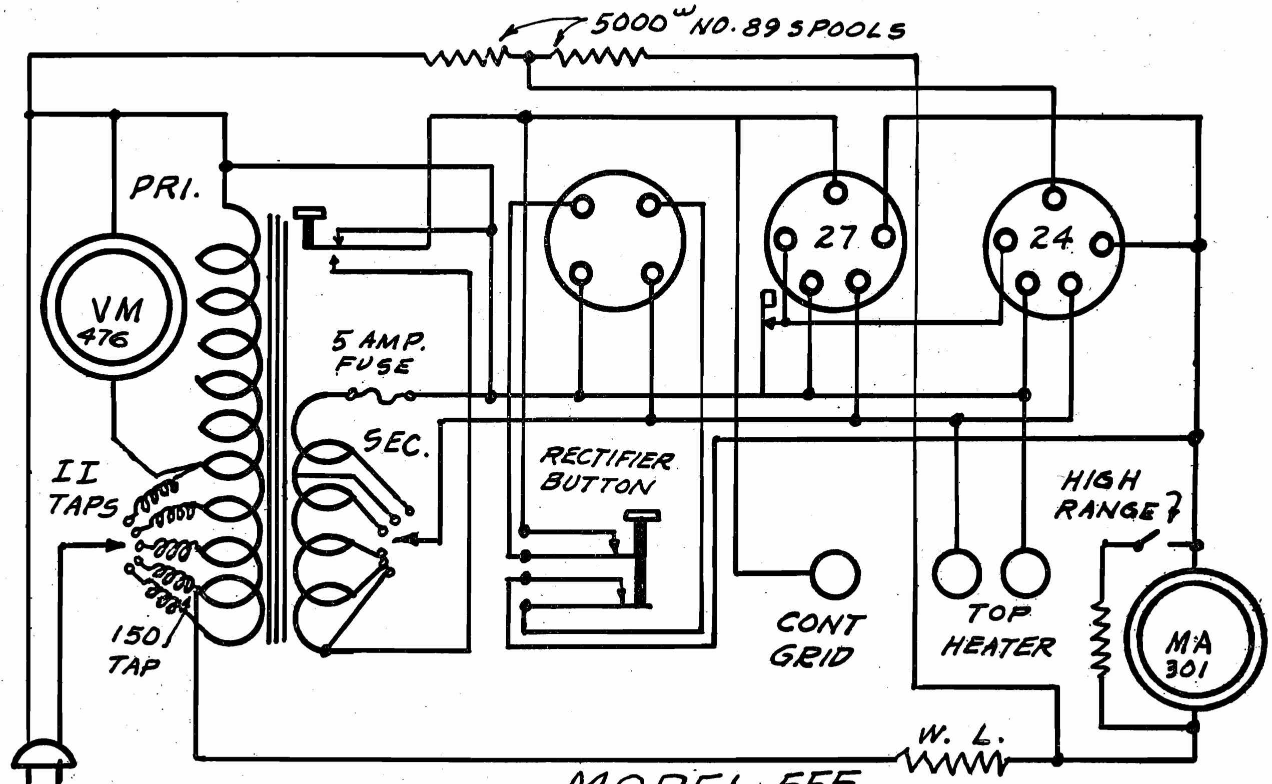


MODEL Weston
547

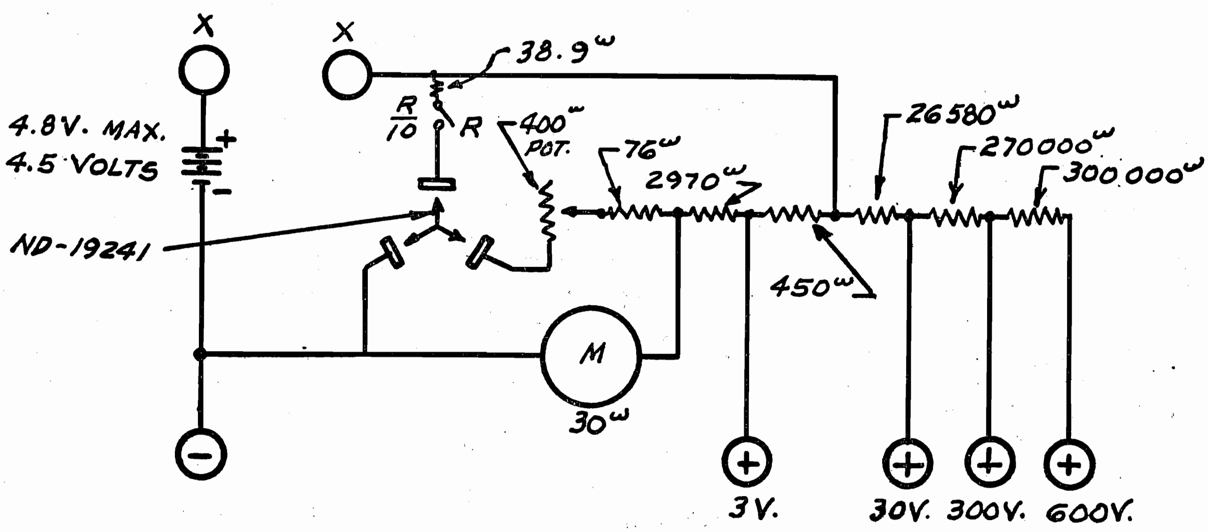
WESTON ELECTRICAL INSTRUM'T CORP.



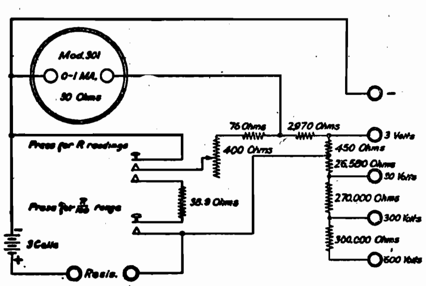
MODEL Weston 555
MODEL Weston 564 WESTON ELECTRICAL INSTRUM'T CORP.



MODEL 555



MODEL 564 OHMMETER & VOLTMETER

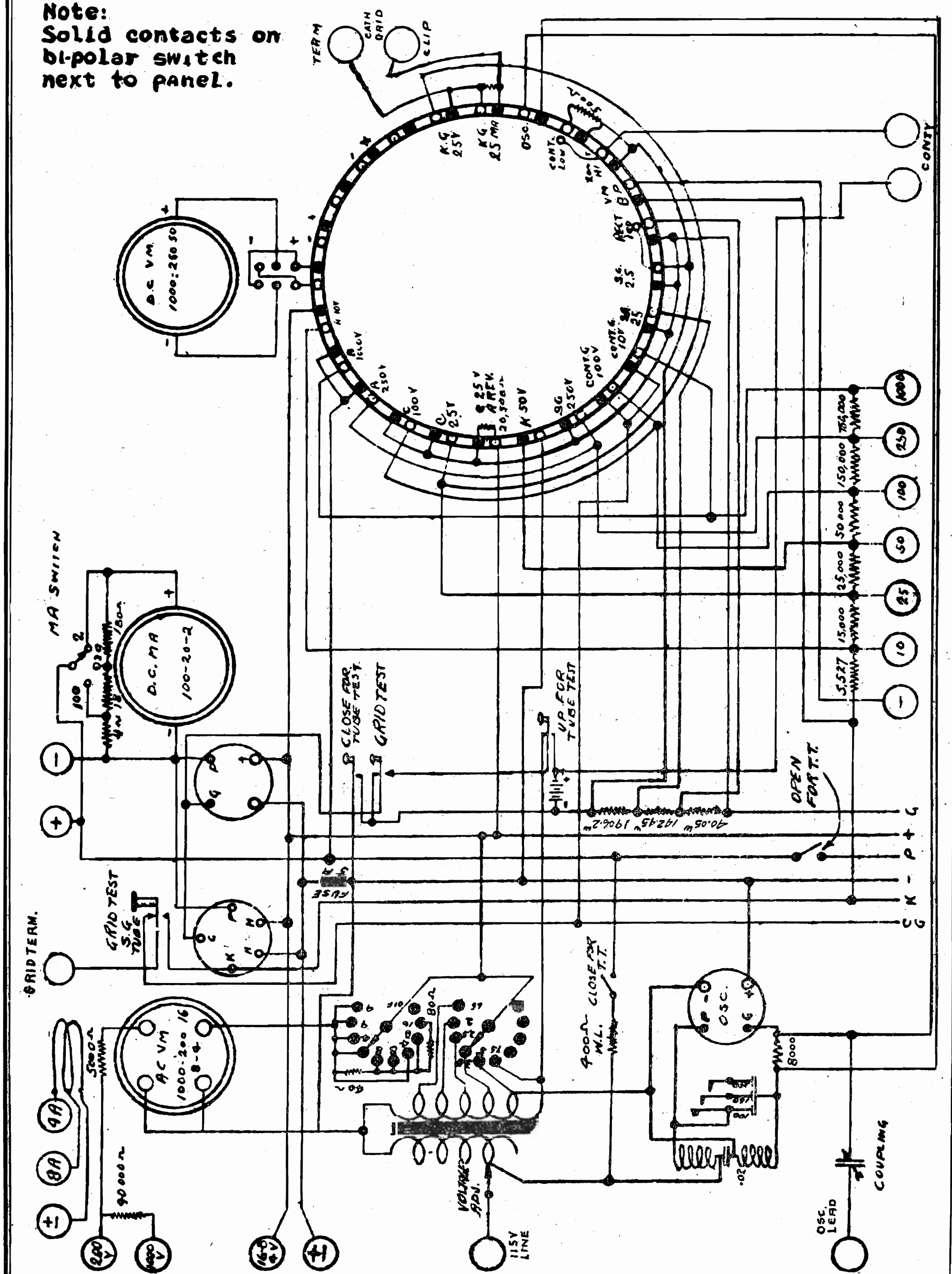


Schematic diagram of the Weston Model 564 Volt-Ohmmeter. Note the connections of the toggle switches in the center

MODEL Weston 565

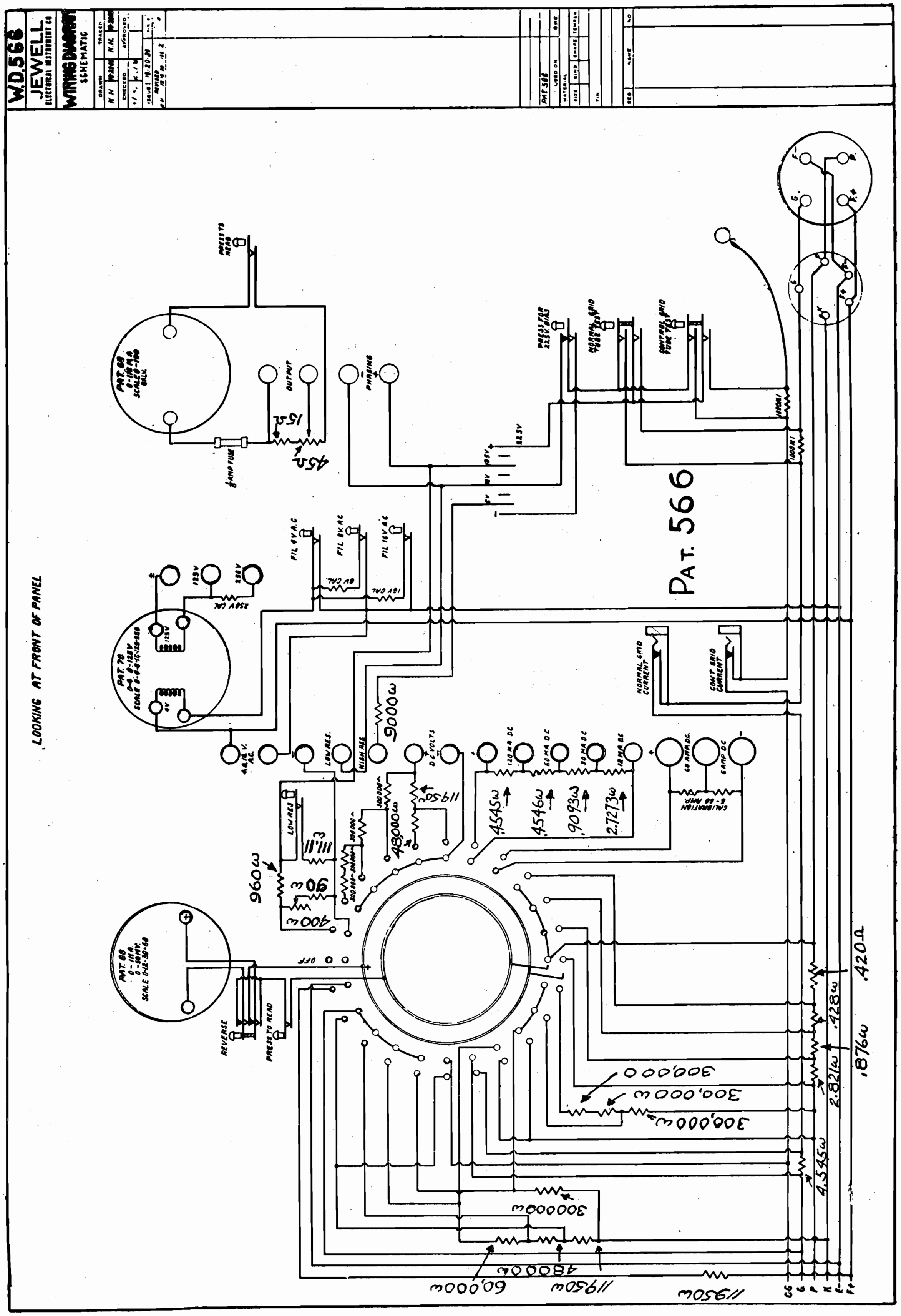
WESTON ELECTRICAL INSTRUM'T CORP.

Note:
Solid contacts on bi-polar switch next to panel.



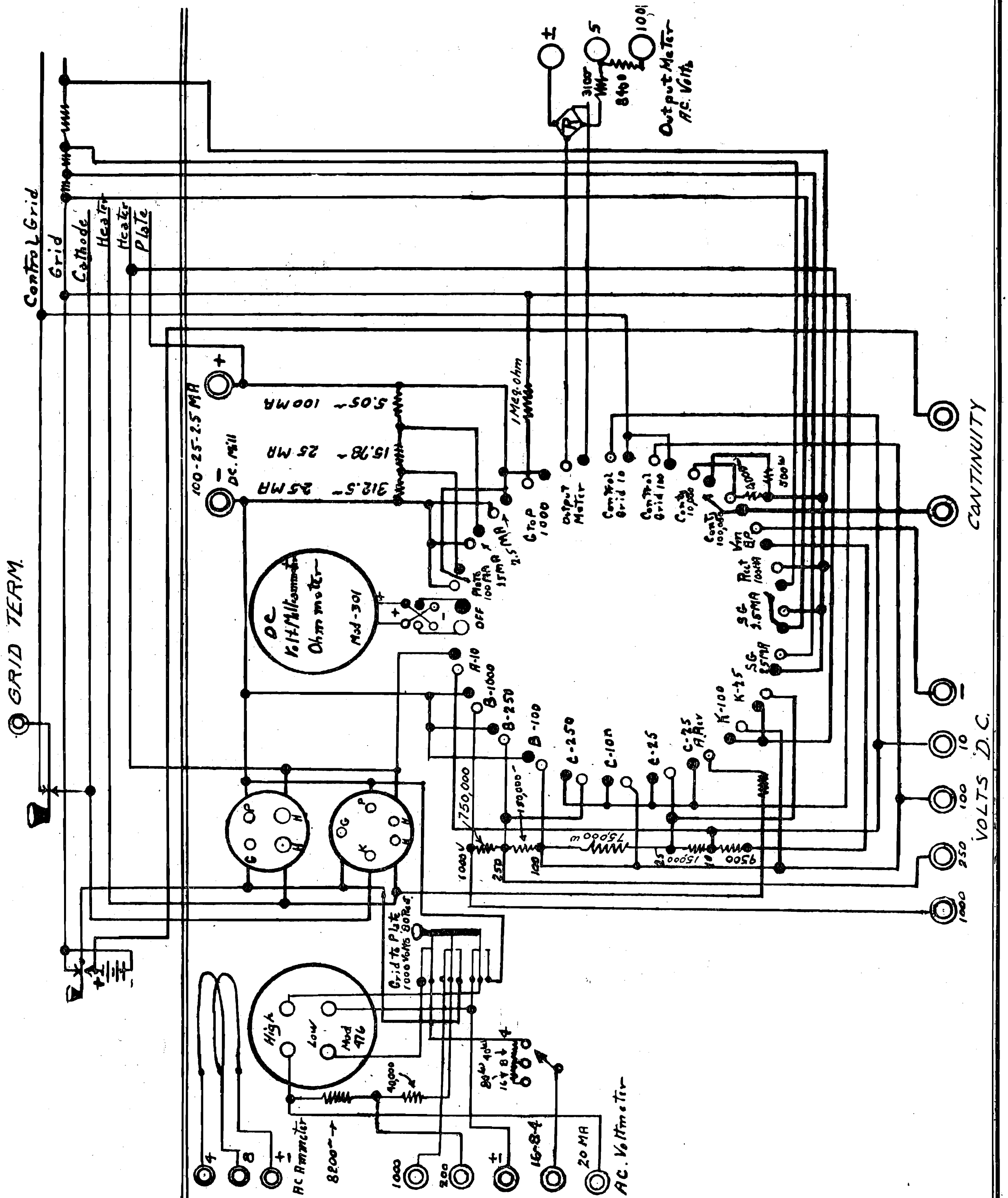
WESTON ELECTRICAL INSTRUM'T CORP.

MODEL Jewell
W D 566



MODEL Weston 566

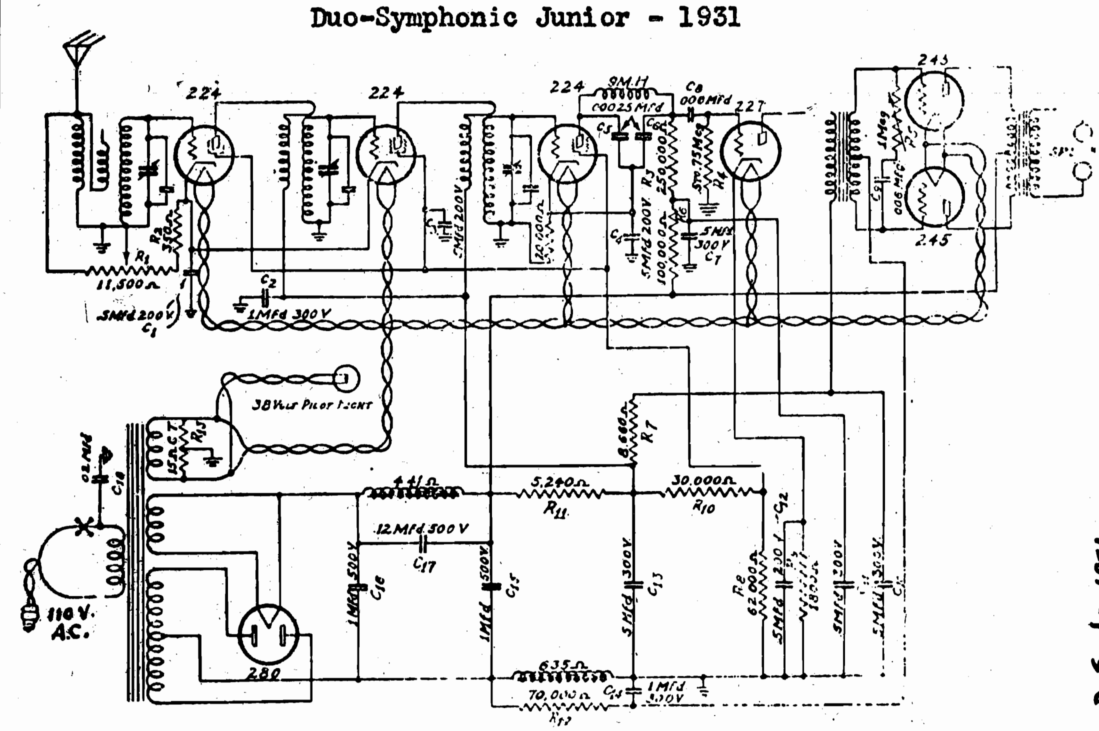
WESTON ELECTRICAL INSTRUM'T CORP.



MODEL Duo-Symphonic Junior 1931
MODEL Great Duo-Symphonic

WHOLESALE RADIO SERVICE CO., INC.

Duo-Symphonic Junior - 1931

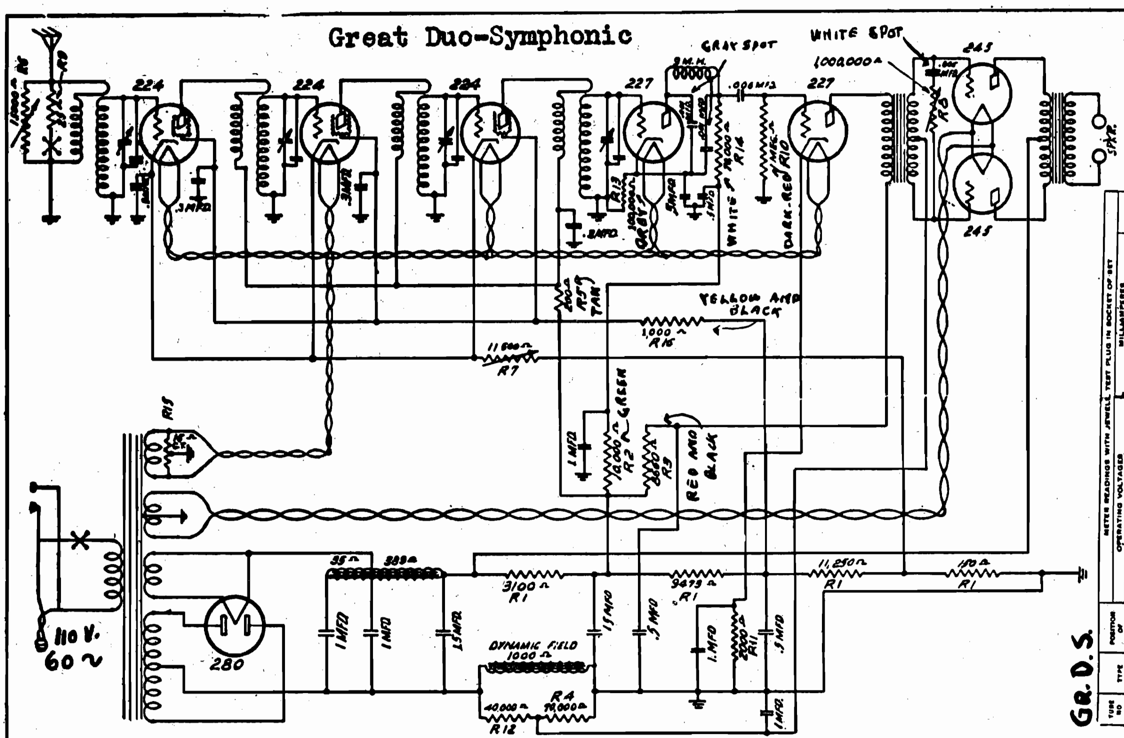


Line Voltage 120. Vol. Cntrl Full

D. S. JR 1931

Tube No. in Order Tested	Type of Tube	Position of Tube in Set	Filament or Heater	Plate or Anode	Control Grid-Space G0+	Normal Grid-Screen G0+	Cathode to Heater	Screen Grid L.R. Plate	Plate L.R. Plate	Tube Test	Plate Current Change
1	224	1 R.F.	2.3	183	3	93	3				
2	224	2 R.F.	2.3	183	3	93	3				
3	227	Det.	2.3	140	-	50	-				
4	227	1 A.F.	2.3	135	-	9	-				
5	245	PP-AF	2.3	250	-	50	-				
6	245	PP-AF	2.3	250	-	50	-				
7	280	Rect.	4.8	-	-	-	-				

Great Duo-Symphonic

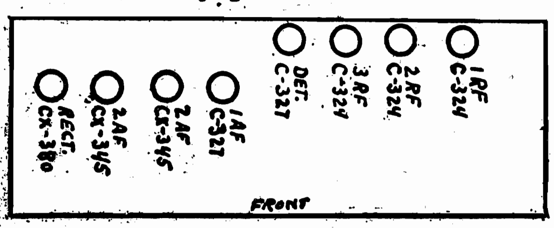


Line Voltage 117. Vol. Cntrl Full

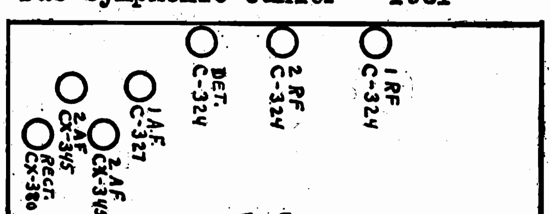
GR. D. S.

Tube No. in Order Tested	Type of Tube	Position of Tube in Set	Filament or Heater	Plate or Anode	Control Grid-Space G0+	Normal Grid-Screen G0+	Cathode to Heater	Screen Grid L.R. Plate	Plate B.R. Plate	Tube Test	Plate Current Change
1	224	1 R.F.	2.3	199	3.2	93	3.2				
2	224	2 R.F.	2.3	199	3.2	93	3.2				
3	224	3 R.F.	2.3	199	3.2	93	3.2				
4	227	Det.	2.3	112	-	16.2	16.2				
5	227	1 A.F.	2.4	139	-	-	9.8				
6	245	PP-AF	2.4	285	-	53	-				
7	245	PP-AF	2.4	285	-	53	-				
8	280	Rect.	4.8	-	-	-	-				

Great Duo-Symphonic

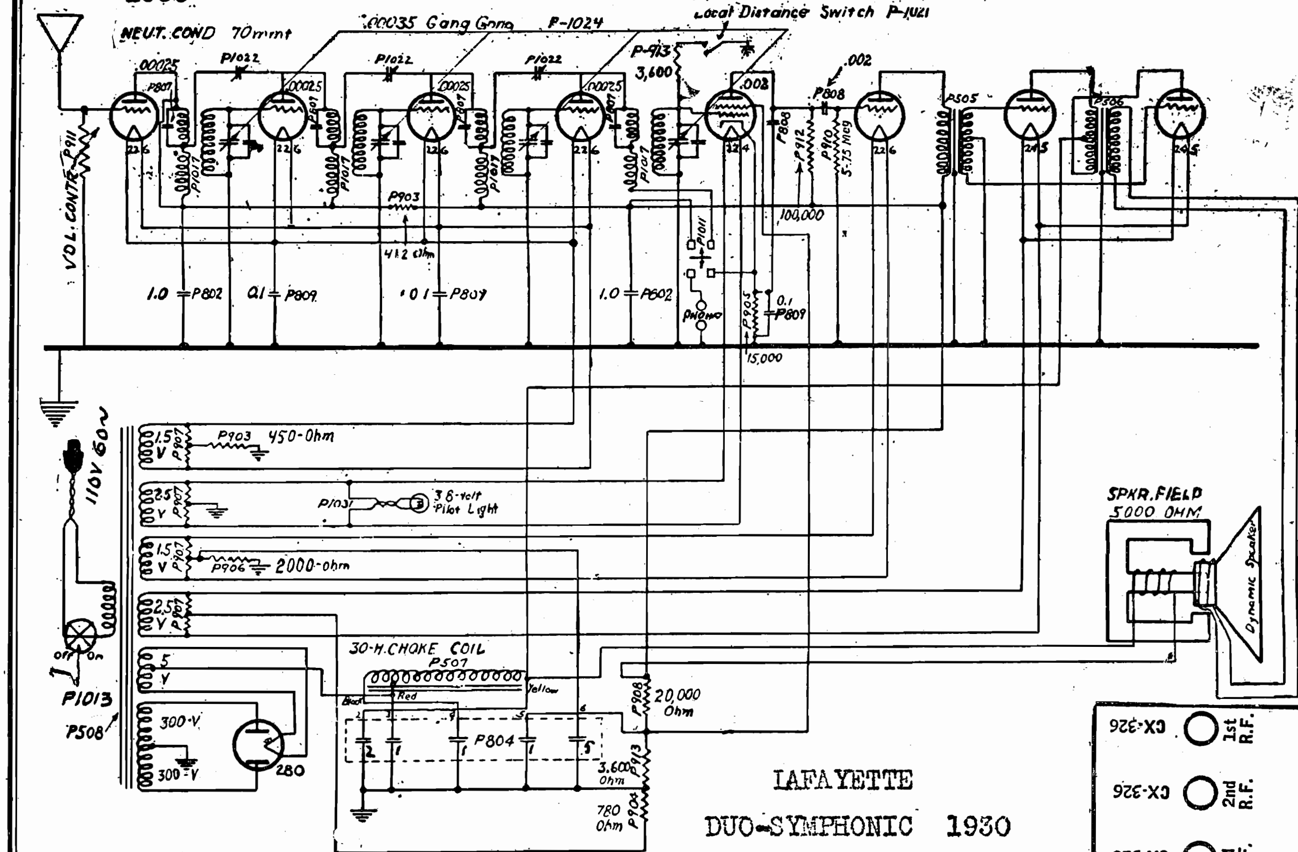


Duo-Symphonic Junior - 1931



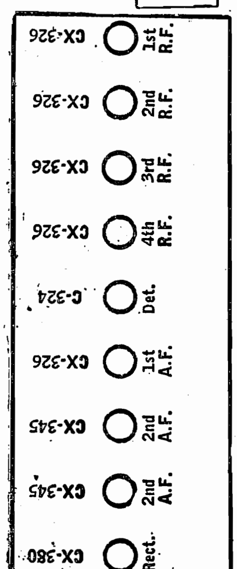
MODEL Duo-Symphonic 1930

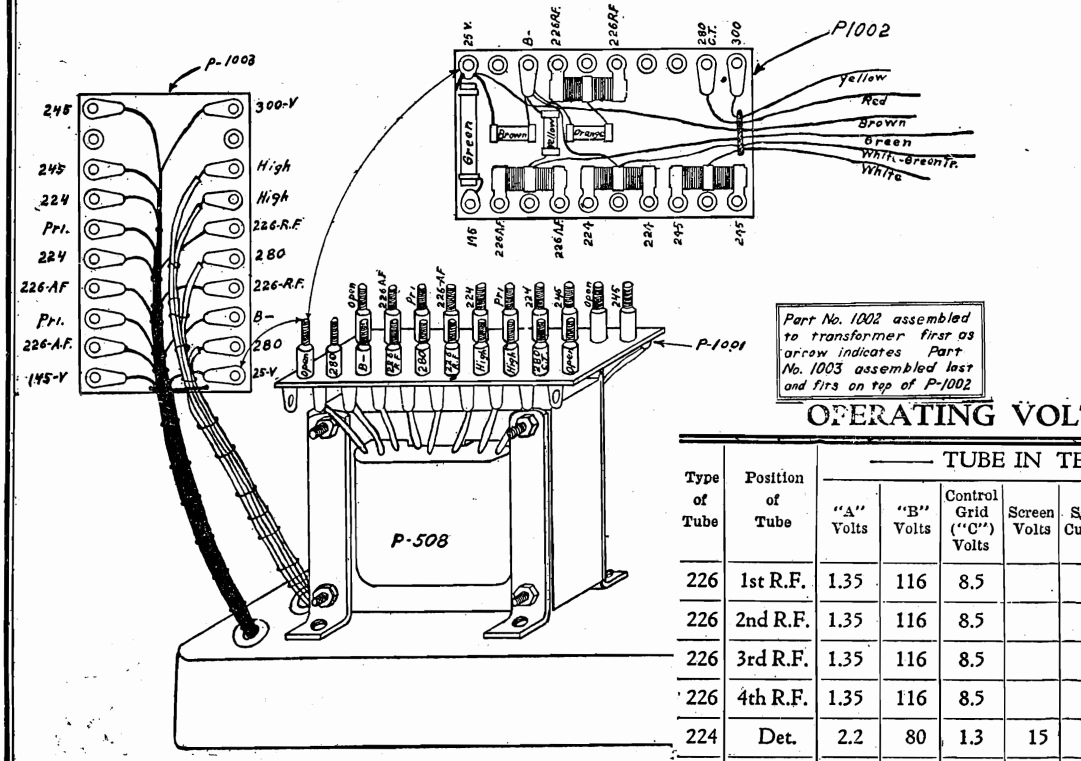
WHOLESALE RADIO SERVICE CO., INC.



LAFAYETTE

DUO-SYMPHONIC 1930





Part No. 1002 assembled to transformer first as arrow indicates Part No. 1003 assembled last and fits on top of P-1002

Power Transformer and Terminal Plate Assembly.

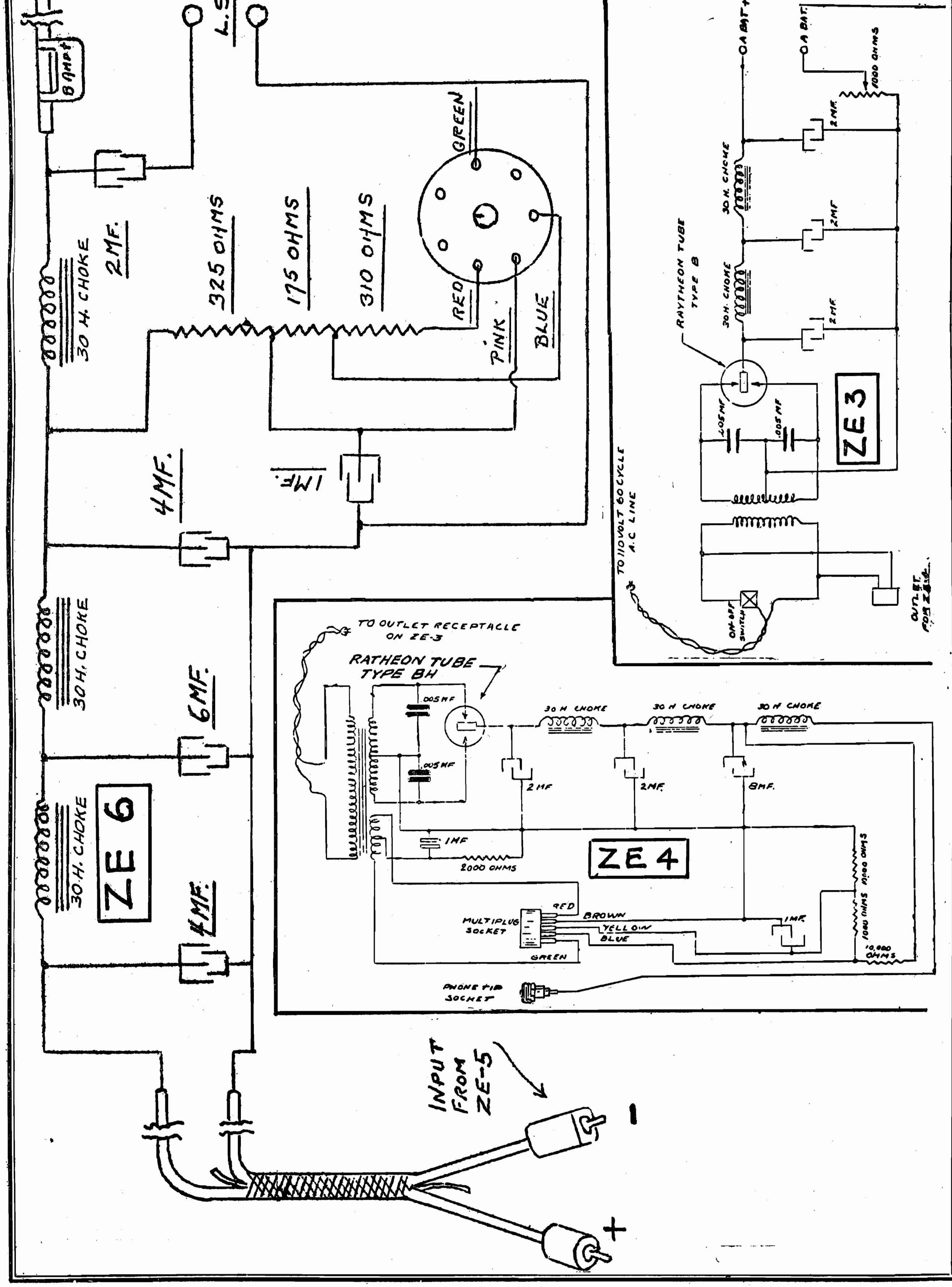
OPERATING VOLTAGES

Type of Tube	Position of Tube	"A" Volts	"B" Volts	Control Grid ("C") Volts	Screen Volts	Screen Current	Cathode Volts	Normal Ma.	Grid Test Ma.
		TUBE IN TEST SET							
226	1st R.F.	1.35	116	8.5				4.7	8.7
226	2nd R.F.	1.35	116	8.5				4.7	8.7
226	3rd R.F.	1.35	116	8.5				4.7	8.7
226	4th R.F.	1.35	116	8.5				4.7	8.7
224	Det.	2.2	80	1.3	15		—	—	—
226	1st A.F.	1.4	110	1.0	LOW READING DUE TO RESISTANCE COUPLING			~~4.0~~	5.0
245	2nd A.F.	2.2	232	42				27	32
245	2nd A.F.	2.2	232	42				27	32
280	Rect.	4.6						84	

Line Voltage During Test—115 Volts.

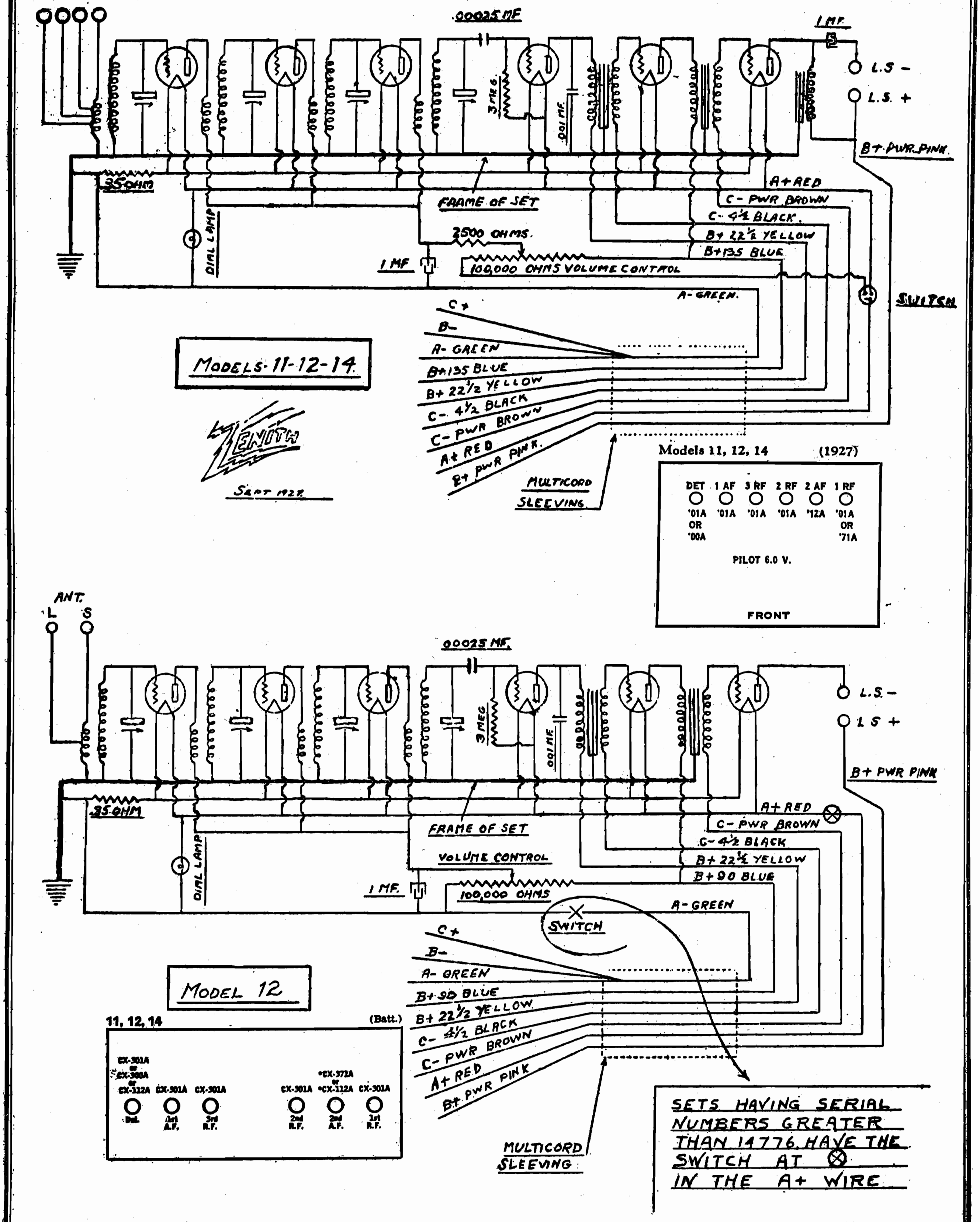
ZENITH RADIO CORP.

MODEL ZE-3
MODEL ZE-4
MODEL ZE-6



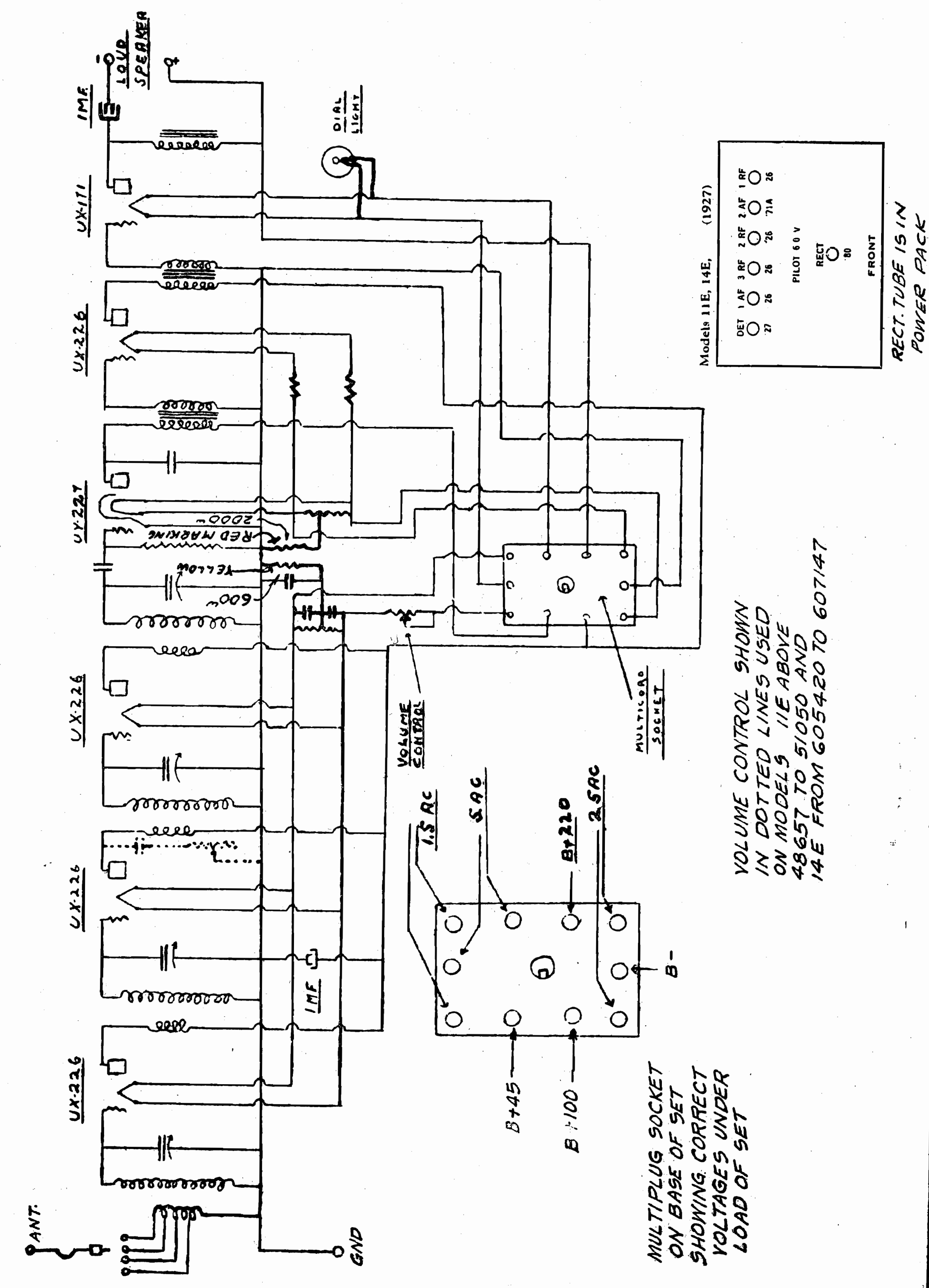
MODEL 11,12,14
1st Type
Receiver Schematic
MODEL 12
2nd Type
Receiver Schematic

ZENITH RADIO CORP.



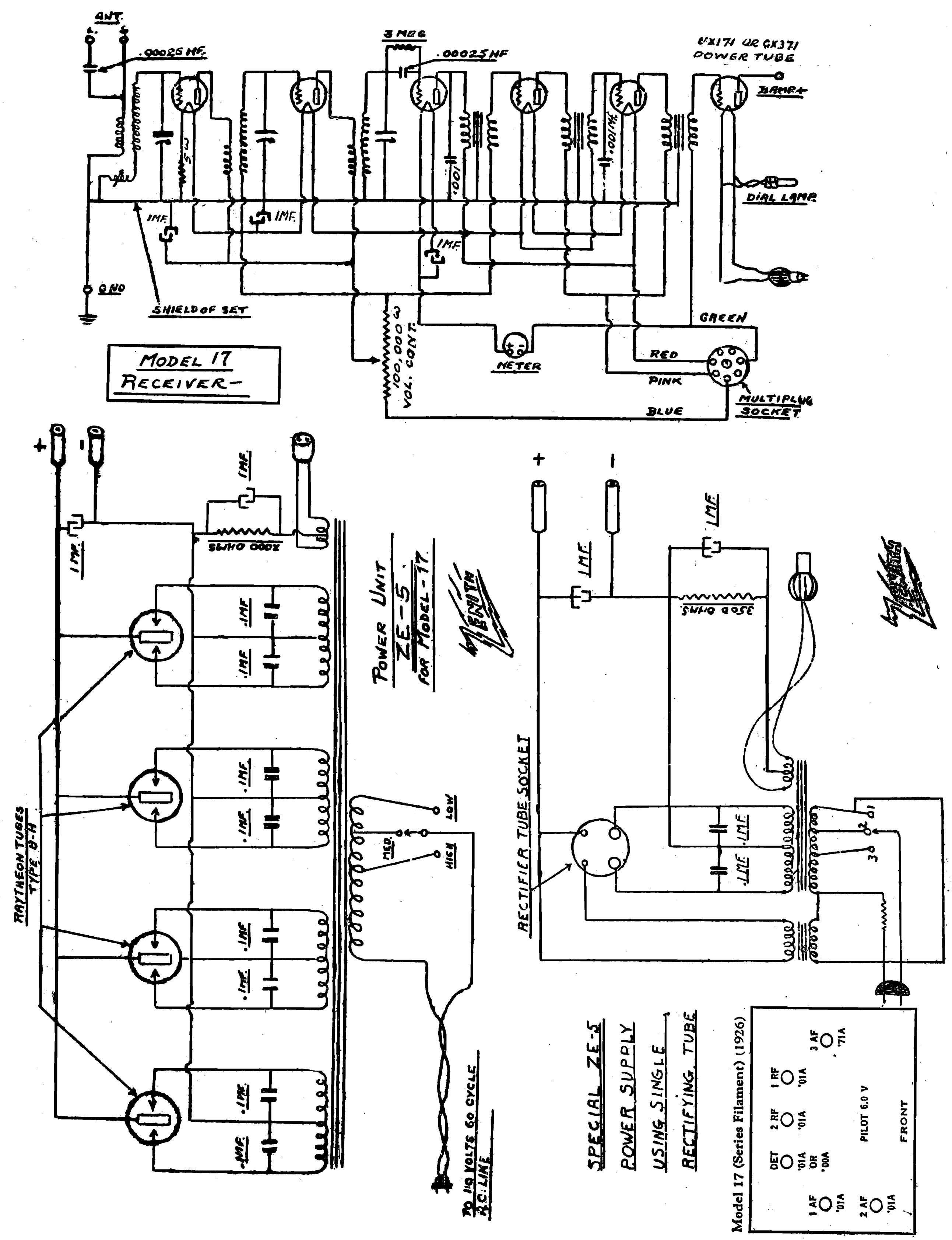
ZENITH RADIO CORP

MODEL 11-E,14-E
Receiver Schematic



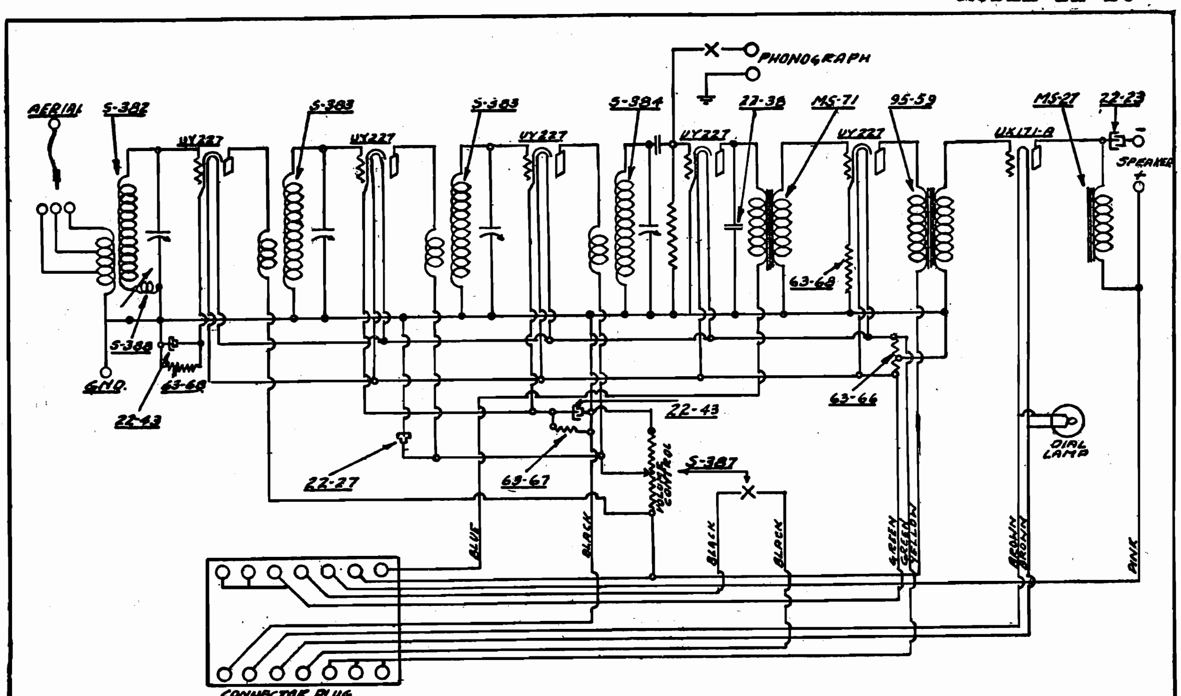
MODEL 17 Schematic
MODEL ZE-5 Power Units

ZENITH RADIO CORP.

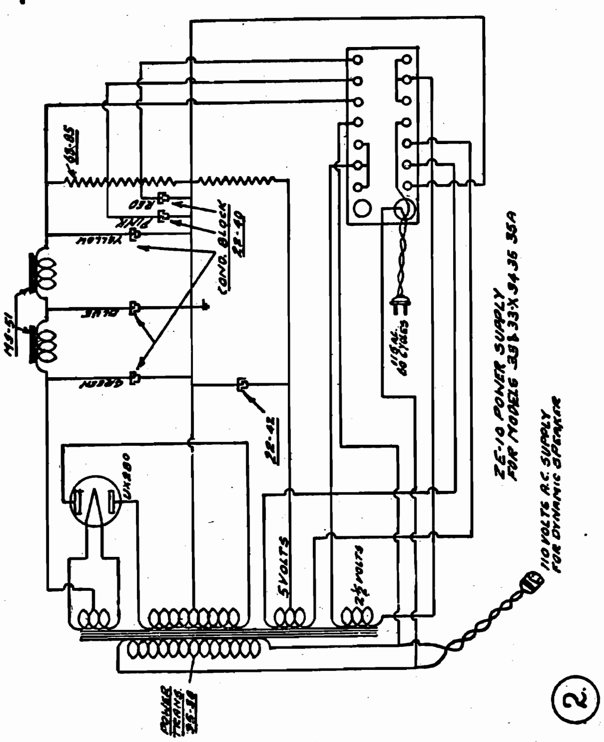


ZENITH RADIO CORP.

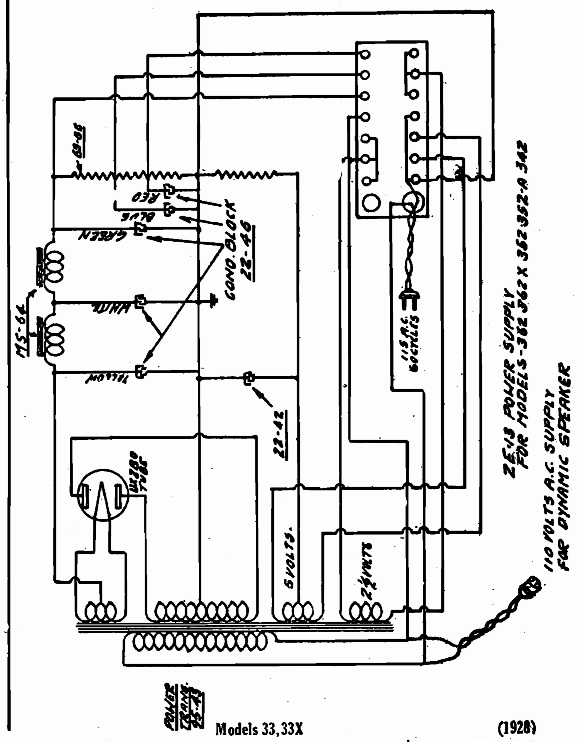
MODEL 33-X, 362-X
MODEL ZE-10
MODEL ZE-13



WIRING DIAGRAM
MODELS 33X362X
6 TUBE ELECTRIC SET



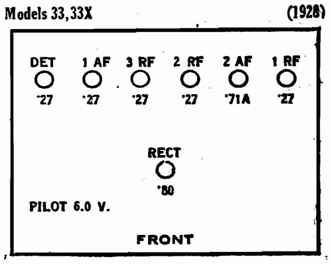
(2)



ZENITH—Models 33X-362X
Line Voltage 115

TUBE NO IN ORDER	TYPE OF TUBE	POSITION OF TUBE 1ST R.F. DET..ETC.	READINGS, PLUG IN SOCKET OF SET — TUBE OUT: A VOLTS	TUBE OUT: B VOLTS	TUBE IN TESTER: A VOLTS	B VOLTS	C VOLTS	CATHODE VOLTS	NORMAL PLATE M.A.	PLATE M.A GRID TEST	PLATE M.A CHANGE
	227	1st. R.F.			2.05	102	6	-	2.9	4.1	1.2
	227	2nd. R.F.			2.05	102	5	-	3.8	6.8	3.0
	227	3rd. R.F.			2.05	102	5	-	3.8	6.8	3.0
	227	Detector			2.00	40	0	-	2.3	2.5	0.2
	227	1st. A.F.			2.05	94	5	-	2.6	3.7	1.1
	171A	2nd. A.F.			4.90	170	35	-	17.0	18.0	1.0
	280	Rectifier			4.90	-	-	-	20.0	-	-

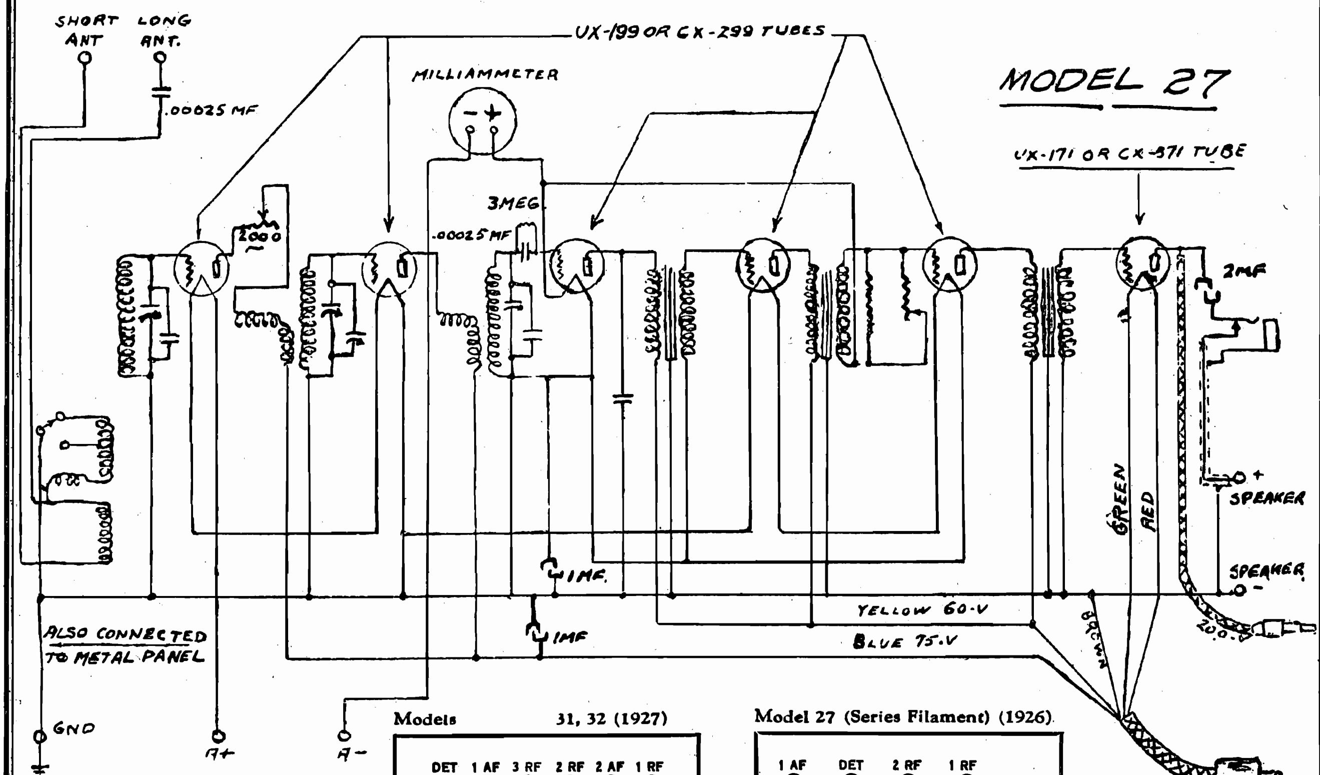
Models 33,33X (1928)

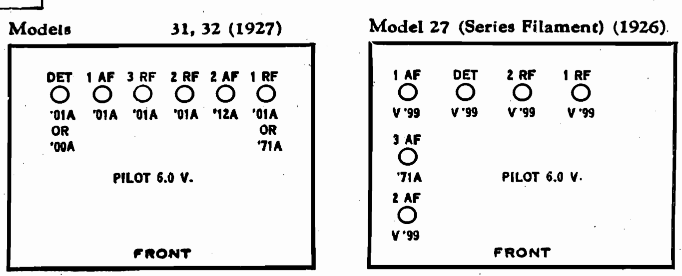


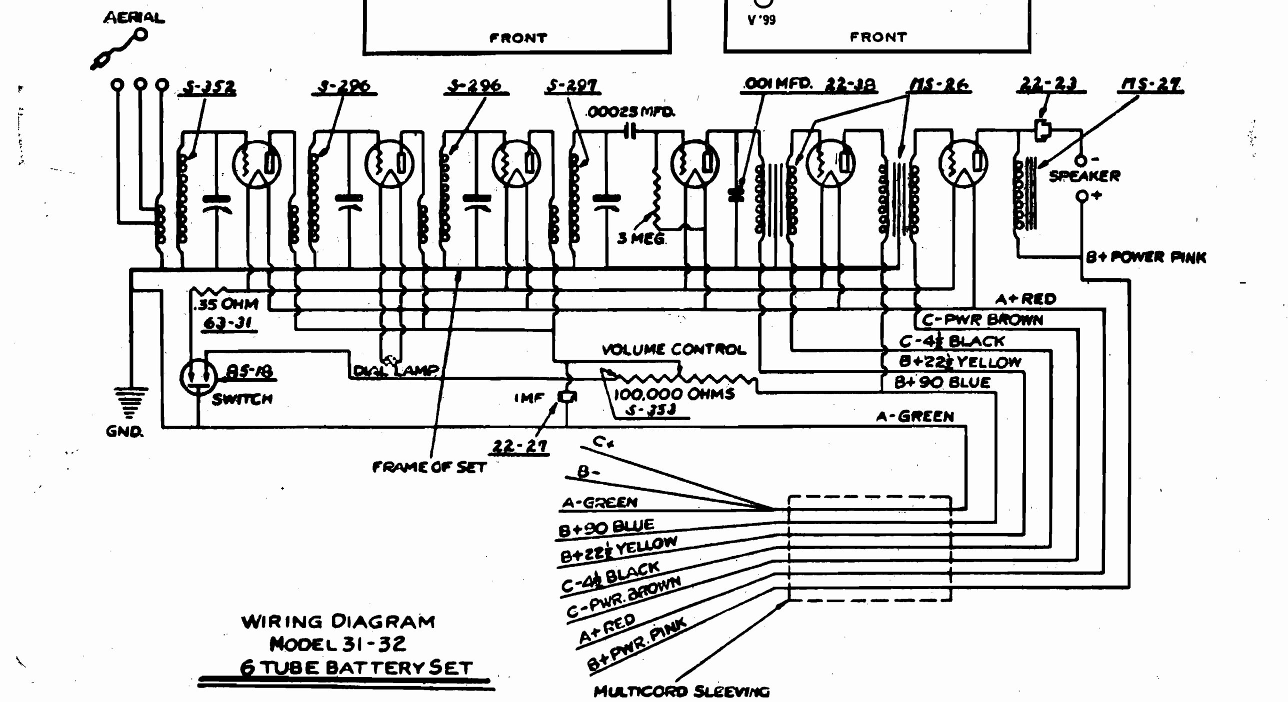
CX-380 used in separate power unit.

MODEL Super-Zenith 27
MODEL 31,32 Battery

ZENITH RADIO CORP.

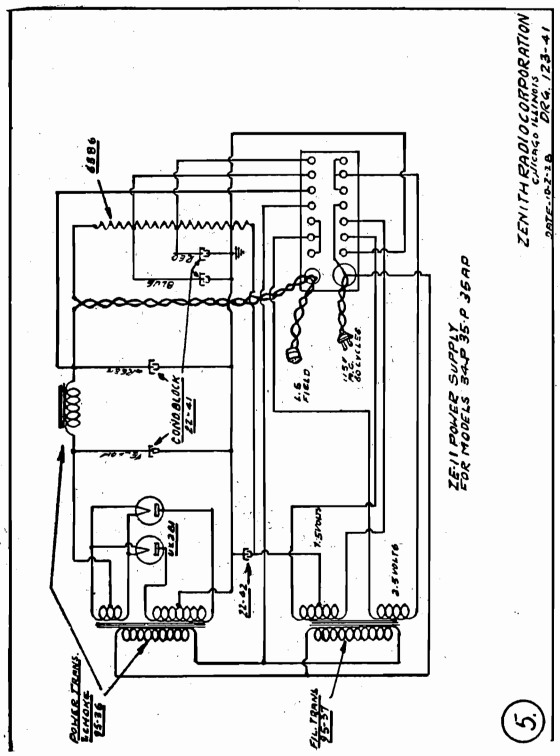


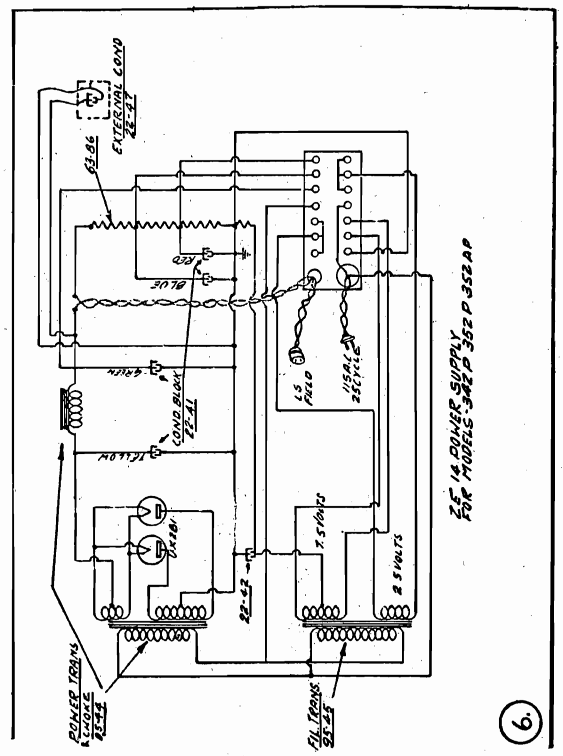


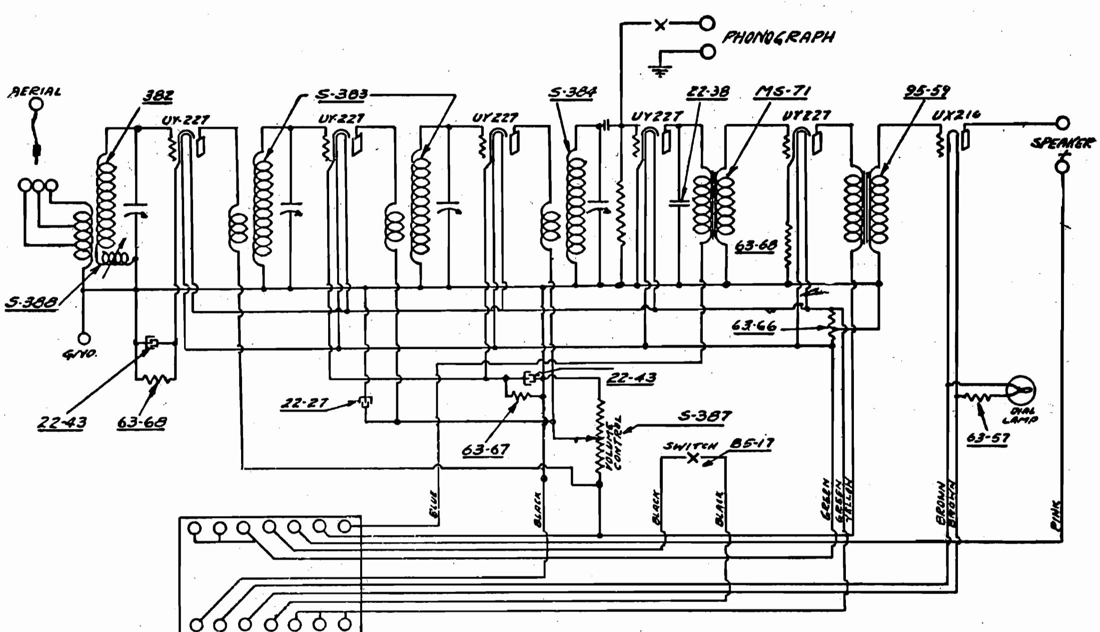


ZENITH RADIO CORP.

MODEL 34-P, 342-P
MODEL ZE-11
MODEL ZE-14





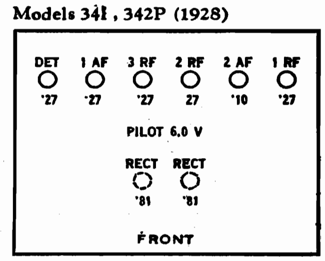


WIRING DIAGRAM
MODELS 34P-342P
6 TUBE ELECTRIC SET

ZENITH—Models 34P-342P
Line Voltage 115

TUBE NO IN ORDER	TYPE OF TUBE	POSITION OF TUBE 1ST RF DET ETC	READINGS PLUG & SOCKET OF SET — TUBE OUT: A VOLTS	TUBE OUT: B VOLTS	TUBE IN TESTER: A VOLTS	B VOLTS	C VOLTS	CATHODE VOLTS	NORMAL PLATE MA	PLATE M.A GRID TEST	PLATE MA CHANGE
	227	1st. R.F.			2.05	90	5.5	-	2.7	4	1.3
	227	2nd. R.F.			2.05	92	5.0	-	3.5	6.5	3.0
	227	3rd. R.F.			2.05	92	5.0	-	3.5	6.5	3.0
	227	Detector			2.00	40	0.0	-	2.2	2.2	0.0
	227	1st. A.F.			2.05	84	5.0	-	2.4	3.6	1.2
	210	2nd. A.F.			7.40	400	34.0	-	23	25	2.0
	281	Rectifier			7.25	-	-	-	42	-	-
	281	Rectifier			7.25	-	-	-	42	-	-

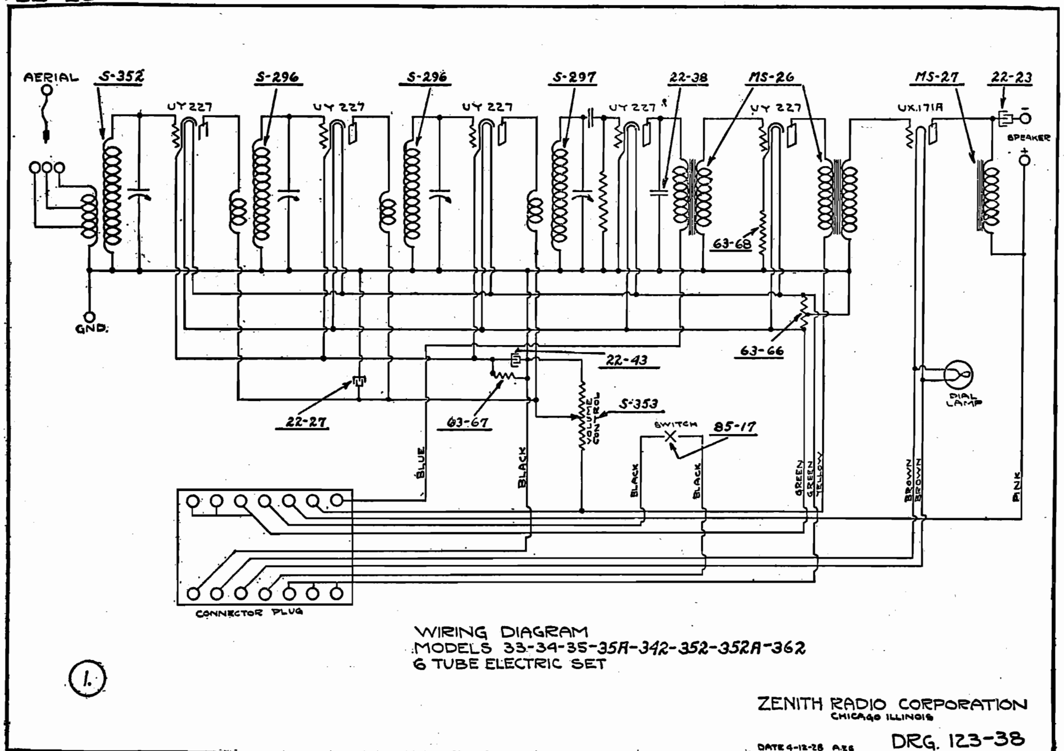
Models 341, 342P (1928)

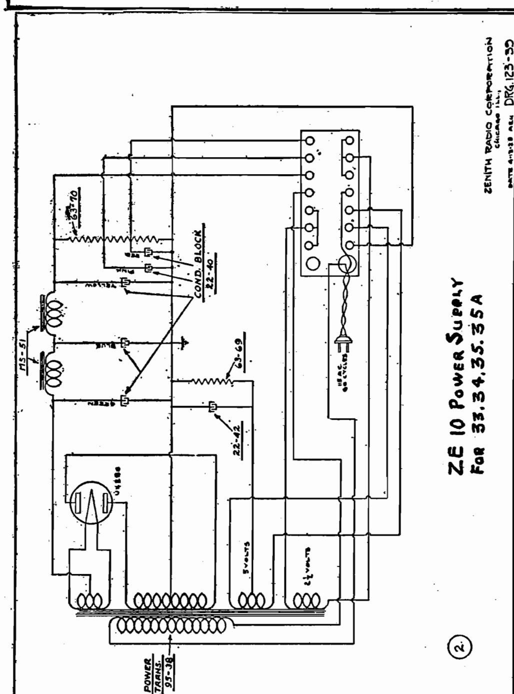


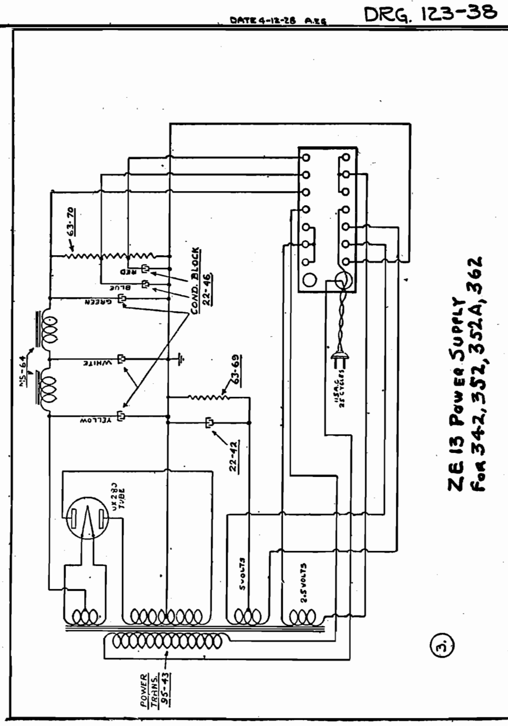
2 CX-381's used in separate power units.

MODELS 33,34,35,35-A,342, 352,352-A,362
MODELS ZE-10
MODEL ZE-13

ZENITH RADIO CORP.



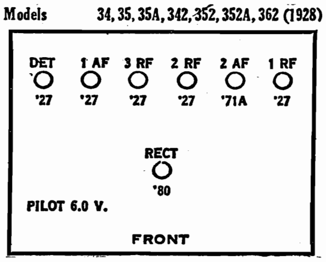




ZENITH—Models 33-34-35-35A-342-352-352A-362 Line Voltage 115—Volume Control Full for R. F. and Center for A. F. on All Models

TUBE NO. IN ORDER	TYPE OF TUBE	POSITION OF TUBE 1ST. R.F., DET., ETC.	READINGS, PLUG IN SOCKET OF SET — TUBE OUT: A VOLTS	TUBE OUT: B VOLTS	TUBE IN TESTER: A VOLTS	TUBE IN TESTER: B VOLTS	TUBE IN TESTER: C VOLTS	TUBE IN TESTER: CATHODE VOLTS	TUBE IN TESTER: NORMAL PLATE M.A.	TUBE IN TESTER: PLATE M.A. GRID TEST	TUBE IN TESTER: PLATE M.A CHANGE
1	227	1st. R.F.			2.0	110	6	-	3.2	6.2	3.0
2	227	2nd. R.F.			2.0	110	6	-	3.2	6.2	3.0
3	227	3rd. R.F.			2.0	110	6	-	3.2	6.2	3.0
4	227	Detector			2.0	45	0	-	3.2	3.4	.2
5	227	1st. A.F.			2.0	105	6	-	3.2	4.5	1.3
6	171A	2nd. A.F.			4.75	180	40	-	15.0	16.0	1.0
7	280	Rectifier			4.9	-	-	-	22.0	-	-

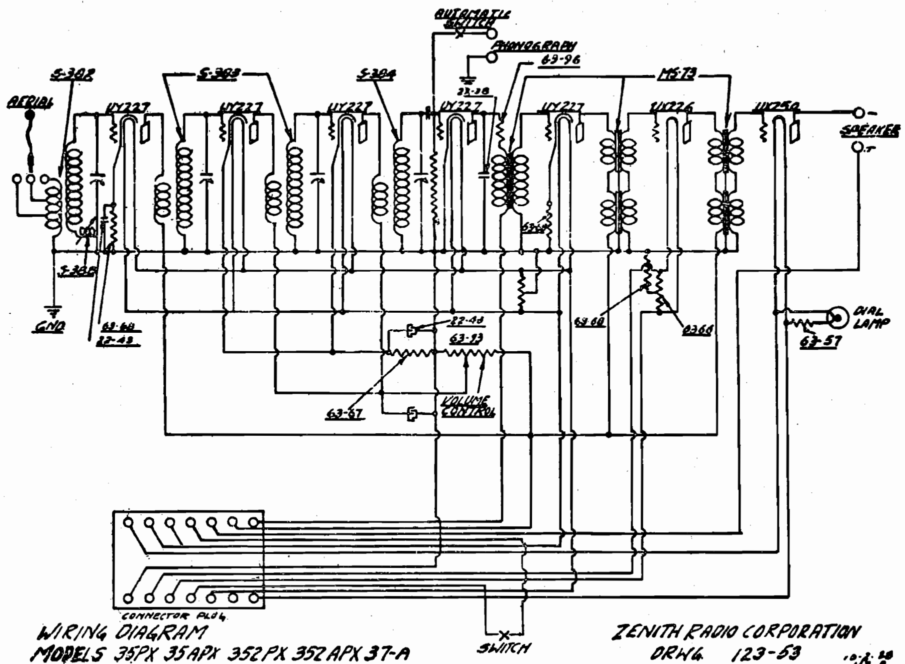
Models 34, 35, 35A, 342, 352, 352A, 362 (1928)



CX-380 used in separate power unit.

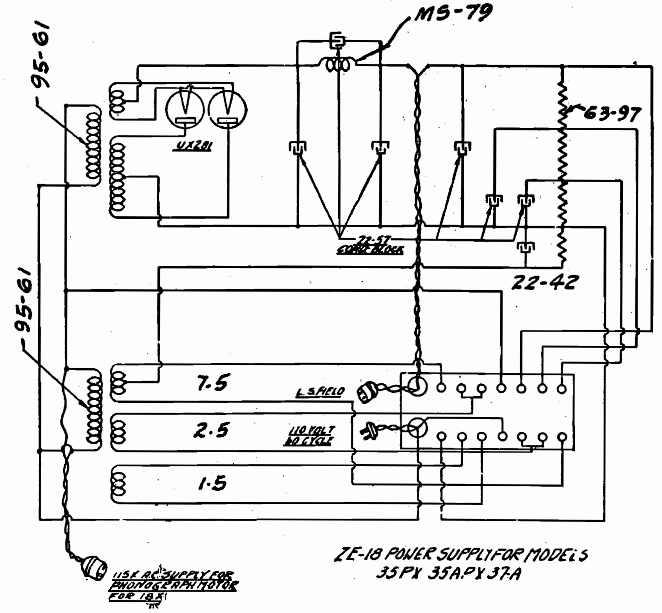
ZENITH RADIO CORP.

MODEL 37-A
MODELS 35-PX, 35-APX, 352-PX, 352-APX
MODEL ZE-18

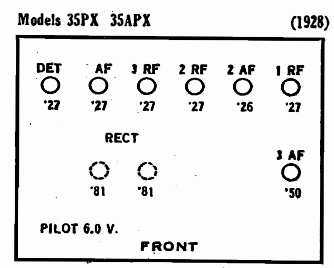


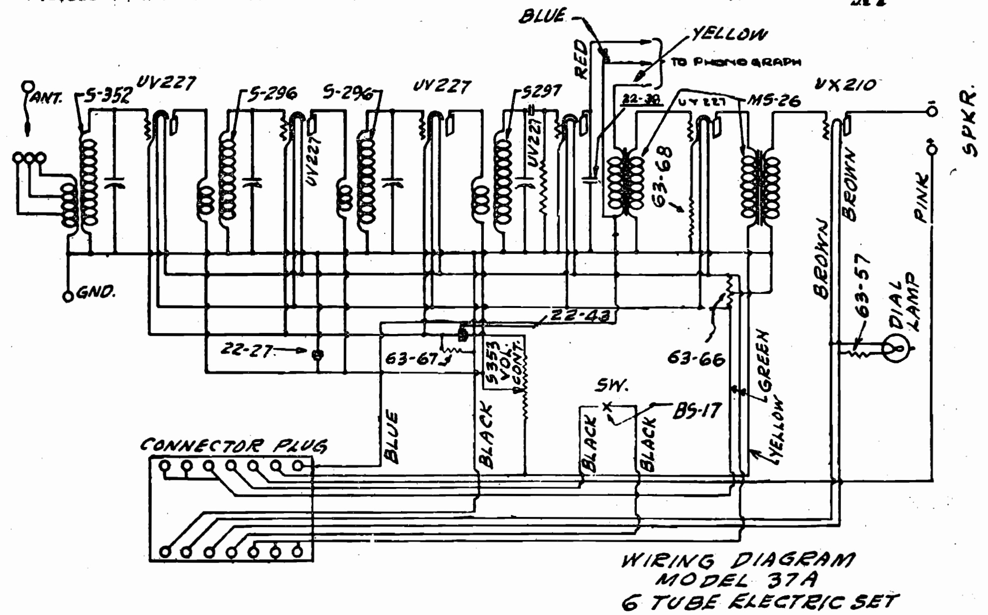
WIRING DIAGRAM
MODELS 35PX 35APX 352PX 352APX 37-A

ZENITH RADIO CORPORATION
DRWG. 123-53



ZE-18 POWER SUPPLY FOR MODELS 35PX 35APX 37-A





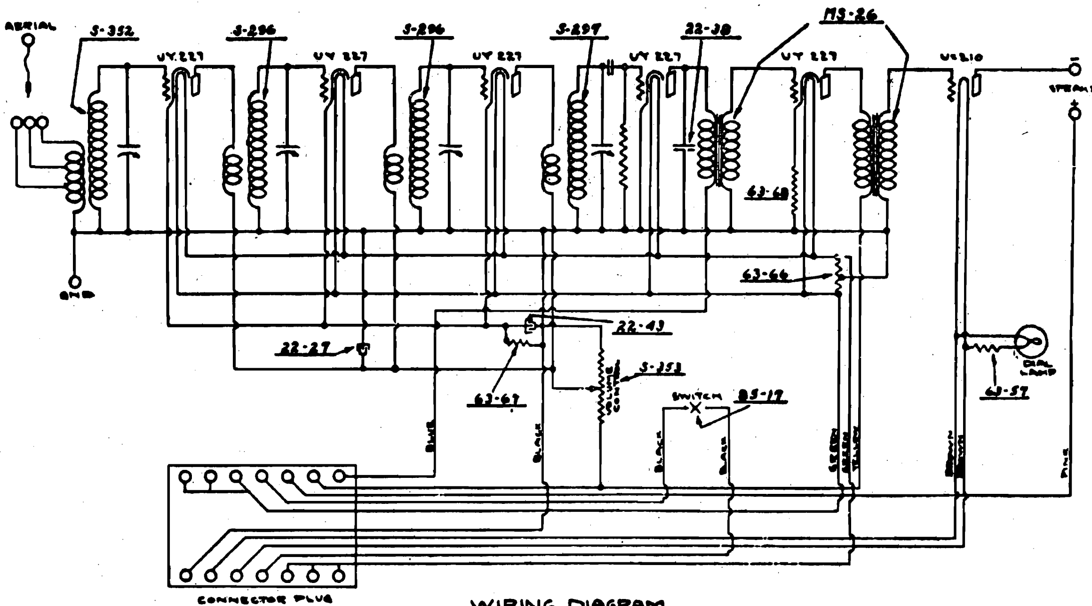
WIRING DIAGRAM
MODEL 37A
6 TUBE ELECTRIC SET

ZENITH—Models 35PX-35APX-352PX-352APX-37A
Line Voltage 115

TUBE NO. IN ORDER	TYPE OF TUBE	POSITION OF TUBE 1ST R.F. DET..ETC.	READINGS. PLUG IN SOCKET OF SET: TUBE OUT: A VOLTS	TUBE OUT: B VOLTS	TUBE IN TESTER: A VOLTS	B VOLTS	C VOLTS	CATHODE VOLTS	NORMAL PLATE M.A	PLATE M.A GRID TEST	PLATE M.A CHANGE
1	227	1st. R.F.			2.1	104	6	-	3.3	4.6	1.3
2	227	2nd. R.F.			2.1	104	5	-	4.6	7.6	3.0
3	227	3rd. R.F.			2.1	104	5	-	4.6	7.6	3.0
4	227	Detector			2.05	24	0	-	1.3	1.4	.1
5	227	1st. A.F.			2.1	85	5	-	2.7	3.6	.9
6	226	2nd. A.F.			1.4	85	5.5	-	2.8	3.8	1.0
7	250	3rd. A.F.			7.1	335	54	-	35.0	36	1.0
8	281	Rectifier			7.0	-	-	-	45.0	-	-
9	281	Rectifier			7.0	-	-	-	45.0	-	-
10											

MODEL 35-P,35-AP,352-P,352-AP
MODEL ZE-11 for 35-P,35-AP,37-A
MODEL ZE-14 for 352-P,352-AP

ZENITH RADIO CORP.

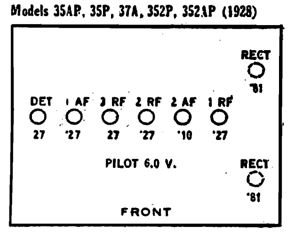


WIRING DIAGRAM
MODELS 35P-35AP-352P-352AP
6 TUBE ELECTRIC SET

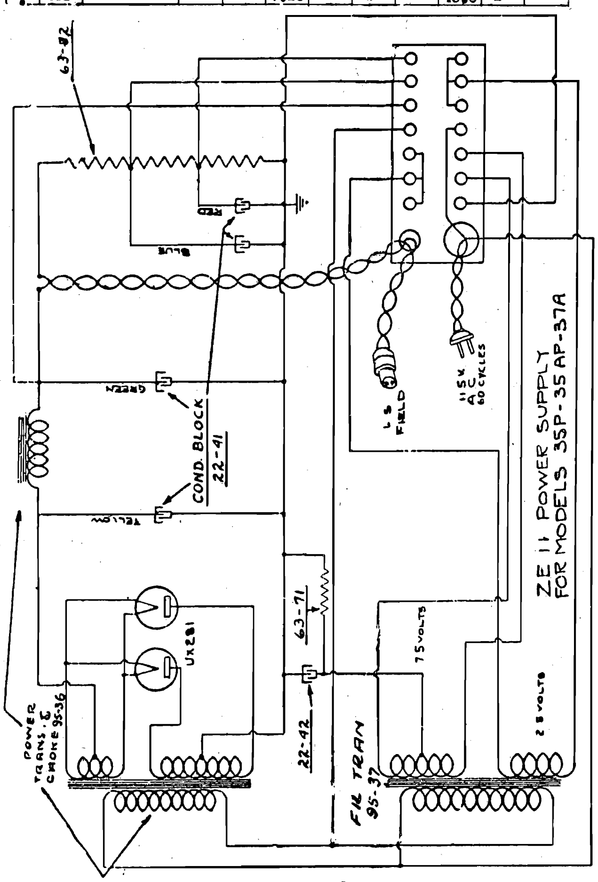
ZENITH—Models 35P-35AP-37A-352P-352AP
Line Voltage 115

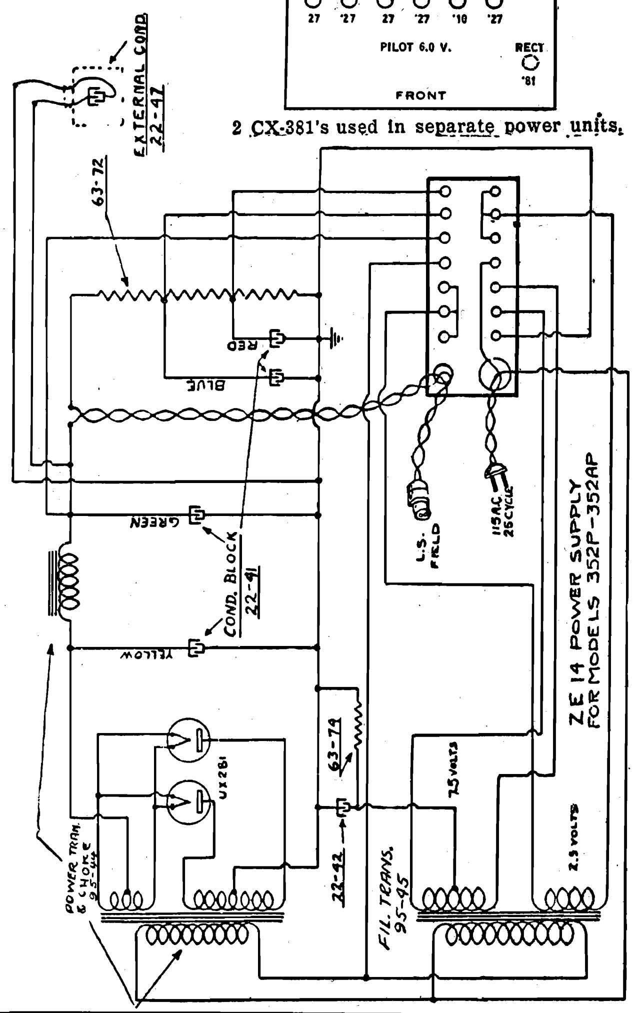
TUBE NO IN ORDER	TYPE OF TUBE	POSITION OF TUBE 1ST RF DET ETC	READINGS PLUG IN SOCKET OF SET: TUBE OUT: A VOLTS	TUBE OUT: B VOLTS	TUBE IN TESTER: A VOLTS	B VOLTS	C VOLTS	CATHODE VOLTS	NORMAL PLATE MA	PLATE MA GRID TEST	PLATE MA CHANGE
1	227	1st. R.F.			2.0	100	6	-	3.0	6.0	3.0
2	227	2nd. R.F.			2.0	100	6	-	3.0	6.0	3.0
3	227	3rd. R.F.			2.0	100	6	-	3.0	6.0	3.0
4	227	DETECTOR			2.0	42	0	-	3.0	3.2	0.2
5	227	1st. A.F.			2.0	100	6	-	3.0	4.0	1.0
6	210	2nd. A.F.			7.2	400	32	-	20.0	22.0	2.0
7	281				7.25	-	-	-	45.0	-	-
8	281				7.25	-	-	-	45.0	-	-

Models 35AP, 35P, 37A, 352P, 352AP (1928)



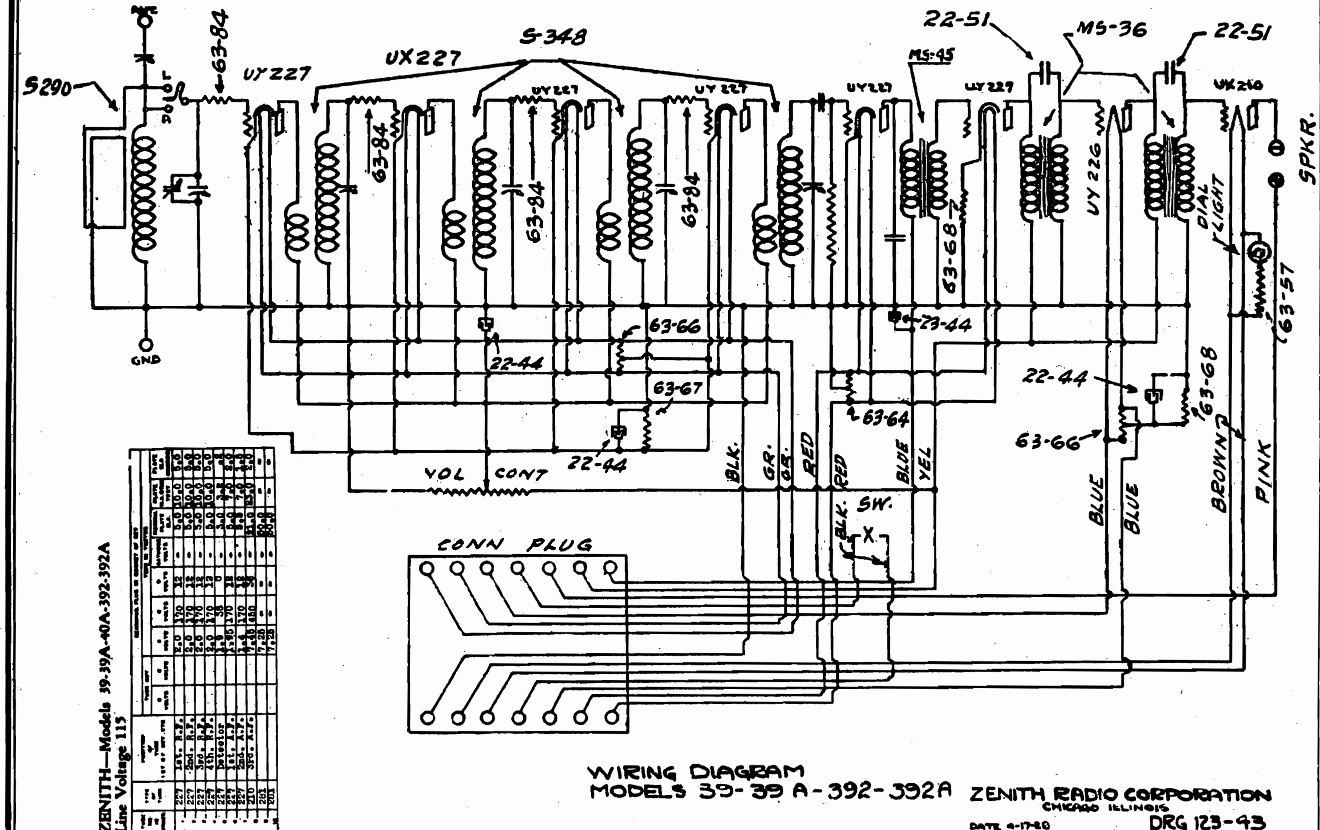
2 CX-381's used in separate power units.





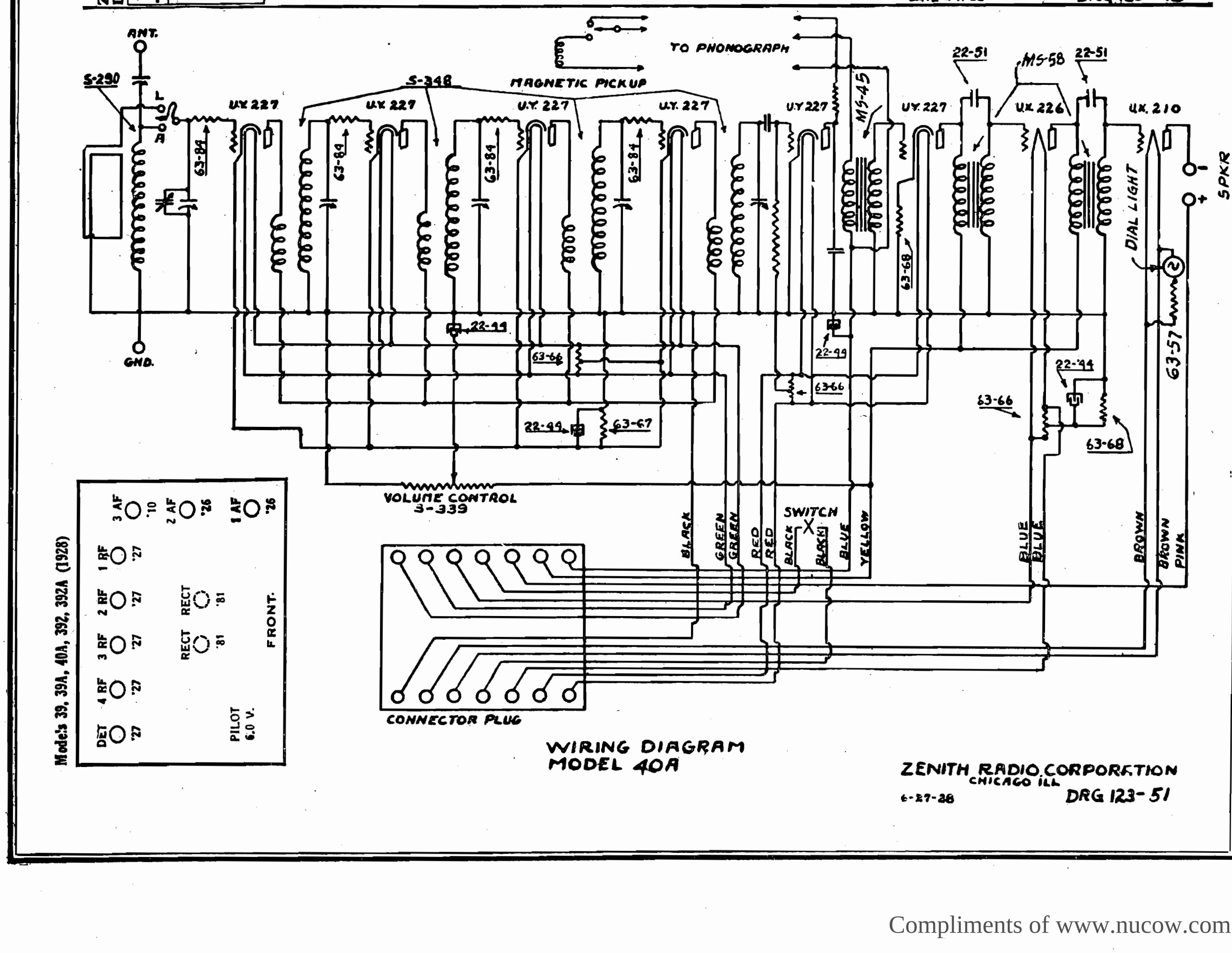
ZENITH RADIO CORP.

MODELS 39, 39-A, 392, 392-A
Receiver Schematic
MODEL 40-A
Receiver Schematic



ZENITH—Models 39-39A-40A-392-392A
Line Voltage 115

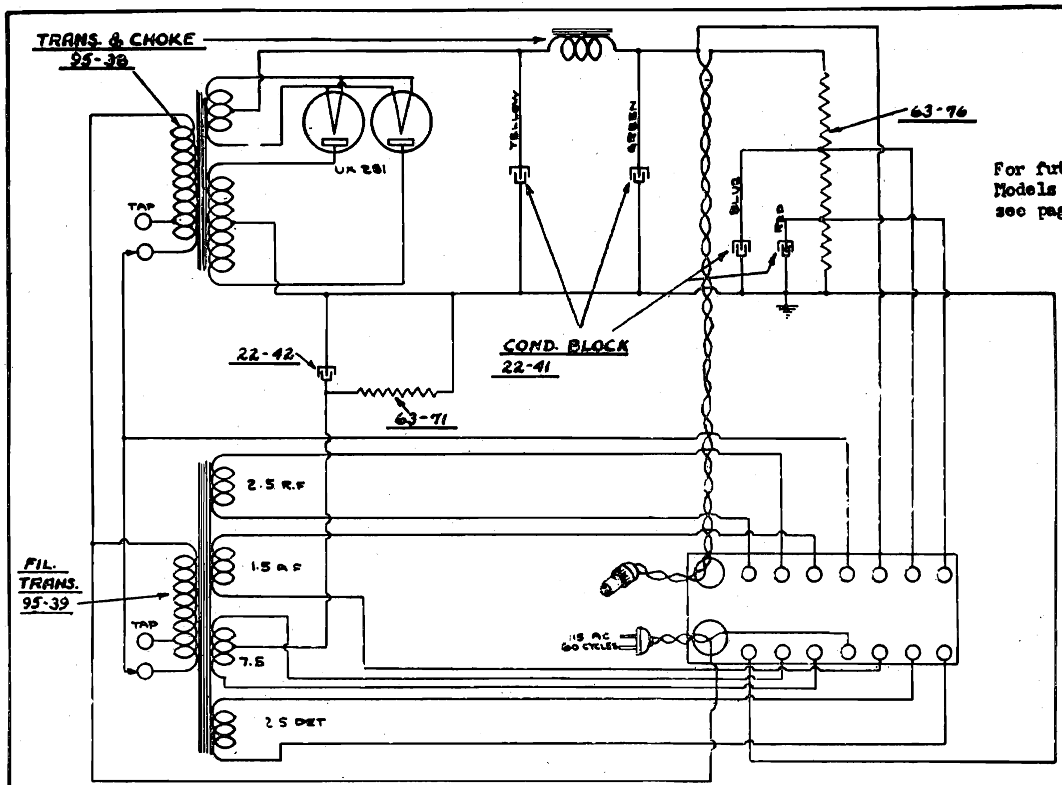
.	227	1st. R.F.			2.0	170	12	-	5.0	10.0	5.0
.	227	2nd. R.F.			2.0	170	12	-	5.0	10.0	5.0
.	227	3rd. R.F.			2.0	170	12	-	5.0	10.0	5.0
.	227	4th. R.F.			2.0	170	12	-	5.0	10.0	5.0
.	227	Detector			1.9	38	0	-	3.0	3.8	[illegible]
.	227	1st. A.F.			1.95	170	18	-	6.0	4.0	8.0
.	226	2nd. A.F.			1.4	170	18	-	[illegible]	7.0	[illegible]
.	210	3rd. A.F.			7.15	450	[illegible]	-	21.0	25.0	[illegible]
.	281				7.28	-	-	-	80.0	-	-
.	281				7.28	-	-	-	80.0	-	-



WIRING DIAGRAM
MODEL 40A

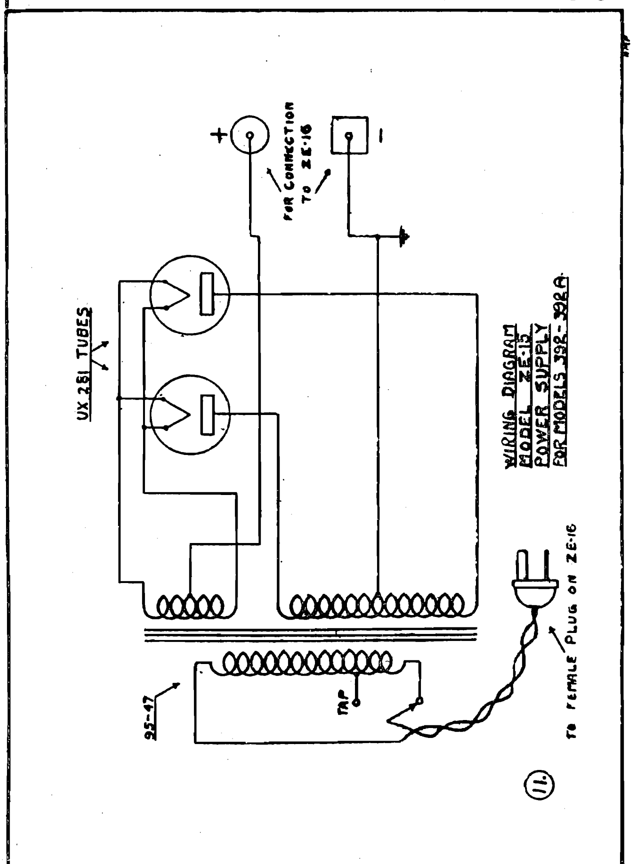
ZENITH RADIO CORPORATION
CHICAGO ILL
6-27-28
DRG 123-51

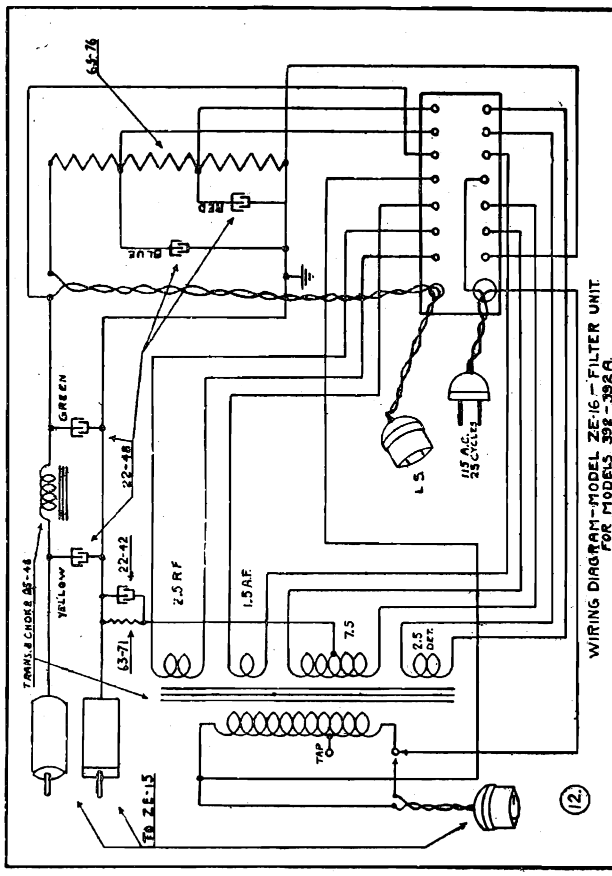
MODEL ZE-12 for 39,39-A,40-A
MODEL ZE-15 for 392,392-A ZENITH RADIO CORP.
MODEL ZE-16 Filter for above



For further data on Models 39, 39-A, 40-A see page 674.

ZE 12 POWER SUPPLY
FOR MODELS 39—39 A—40 A

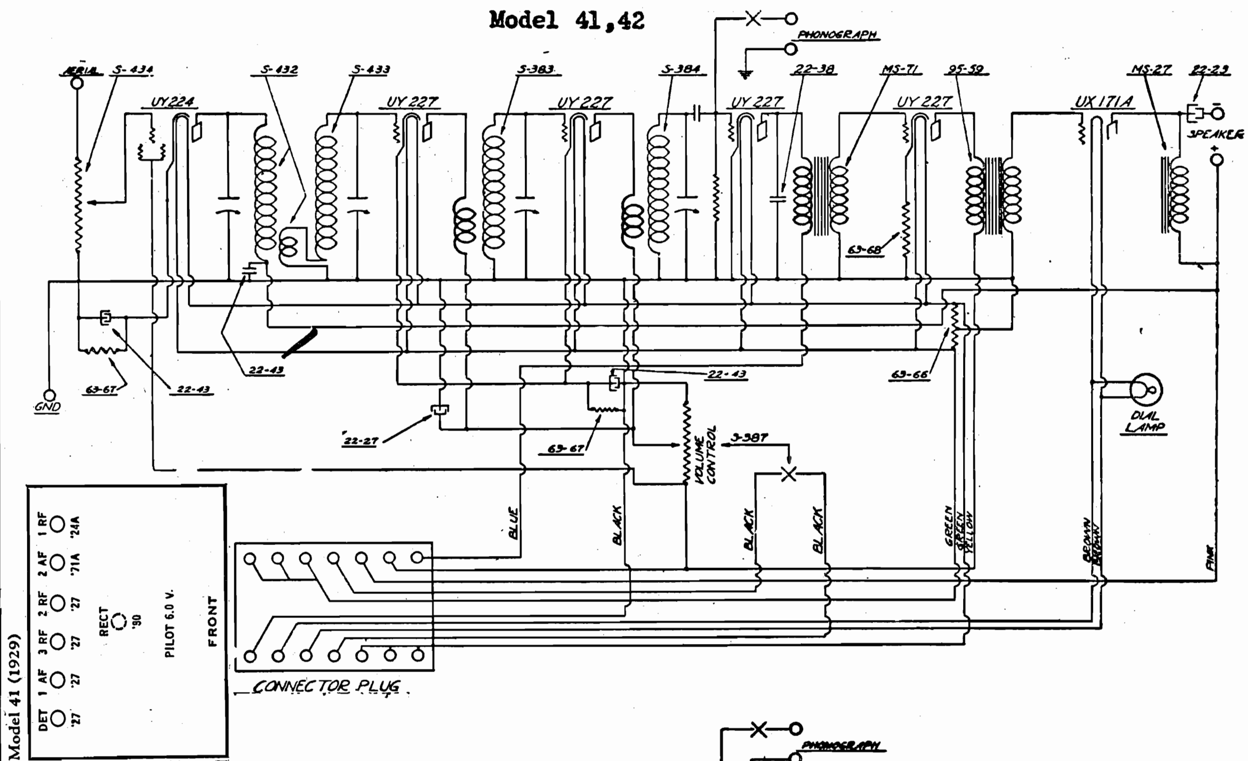


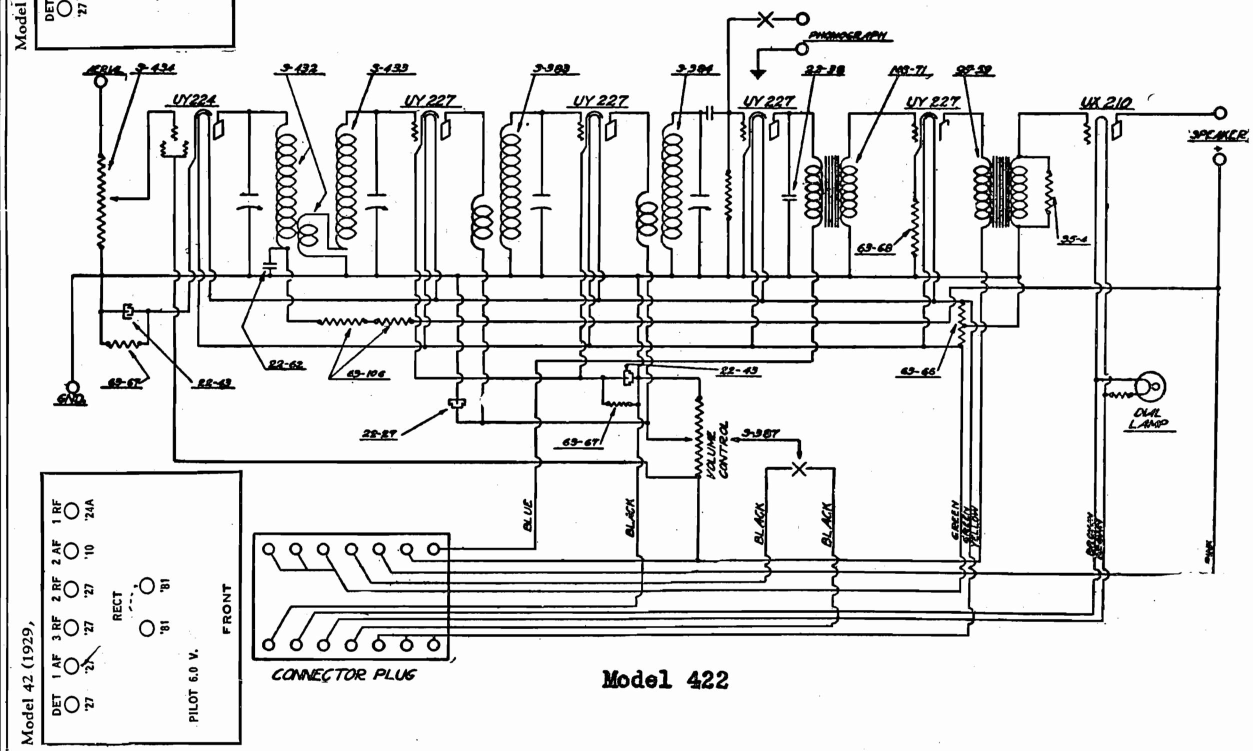


ZENITH RADIO CORP

MODEL 41, 42
MODEL 422

Model 41, 42





Model 422

ZENITH—MODEL 42

Type Tube	Position of Tube	"A" Vts.	"B" Vts.	"C" Vts.	Plate MA.	Screen Grid	Cath. Volts
'24	1 R. F.	1.90	214	3	3.4	94	+2.2
'27	2 R. F.	1.90	80	4	3.5		+4
'27	3 R. F.	1.90	85	4	3.5		+4
'27	Det.	1.90	35		2.2		
'27	1 Aud.	1.96	78	4	2.5		+4
'10	2 Aud.	6.9	420	31	20		
'81	Rect.	6.9			45		
'81					45		

LV—115. Volume Control Max.

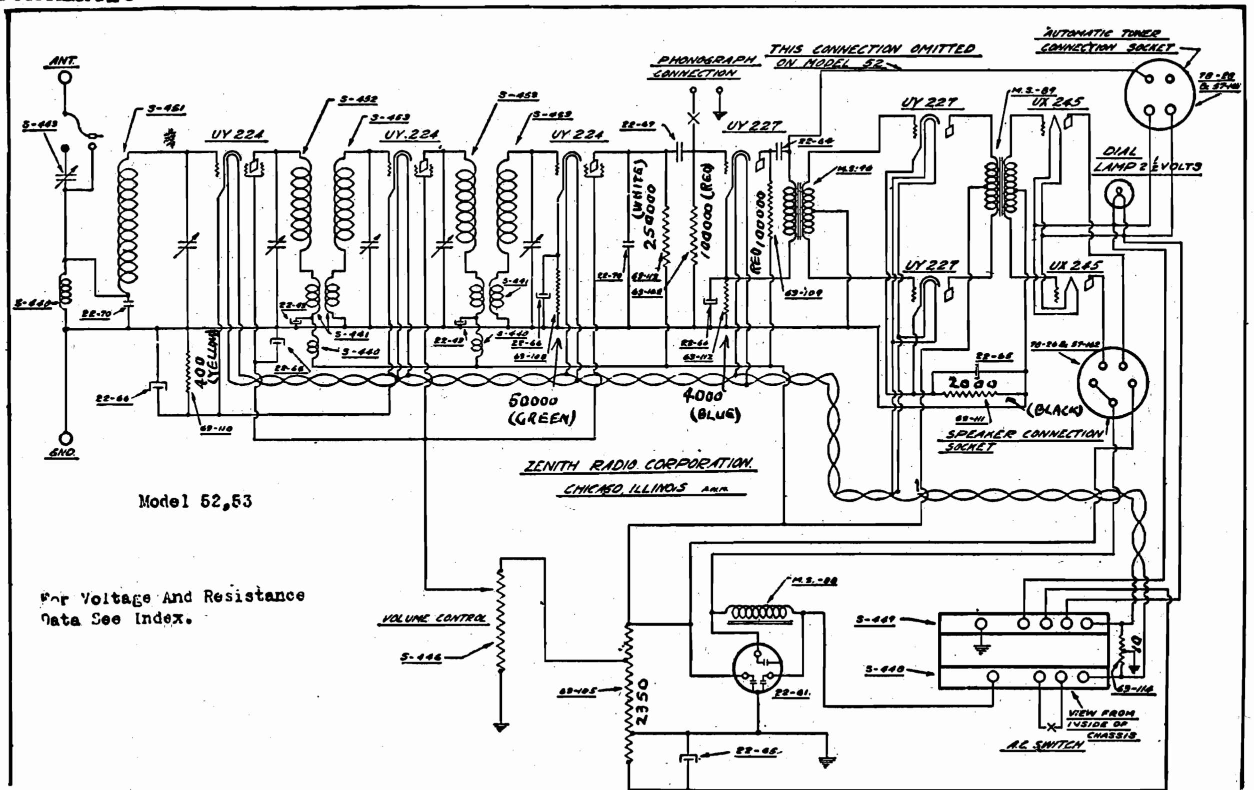
ZENITH—MODEL 41

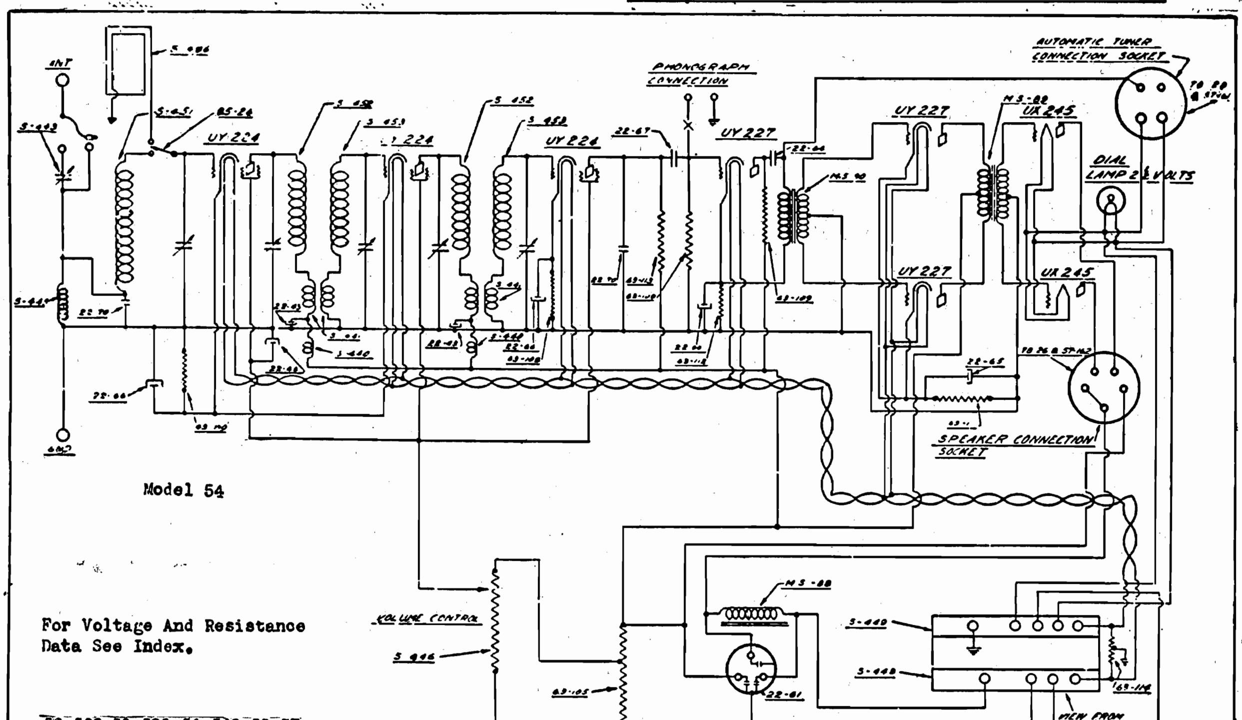
Type Tube	Position of Tube	"A" Vts.	"B" Vts.	"C" Vts.	Plate MA.	Screen Grid	Cath. Volts
'24	1 R. F.	1.95	200	2	3	98	+2
'27	2 R. F.	2	95	4.5	4		+4.5
'27	3 R. F.	2	95	4.5	4		+4.5
'27	Det.	1.95	38		2.1		
'27	1 Aud.	2	89	4.5	3		+4.5
'71A	2 Aud.	4.2	145	29	14.5		
'80	Rect.	4.1			17.8		

LV—110. Volume Control Max.

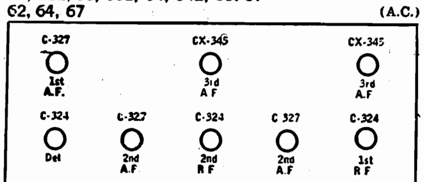
MODEL 52,53
MODEL 54
Schematic

ZENITH RADIO CORP.





52, 522, 53, 532, 54, 542, 55, 57
62, 64, 67 (A.C.)

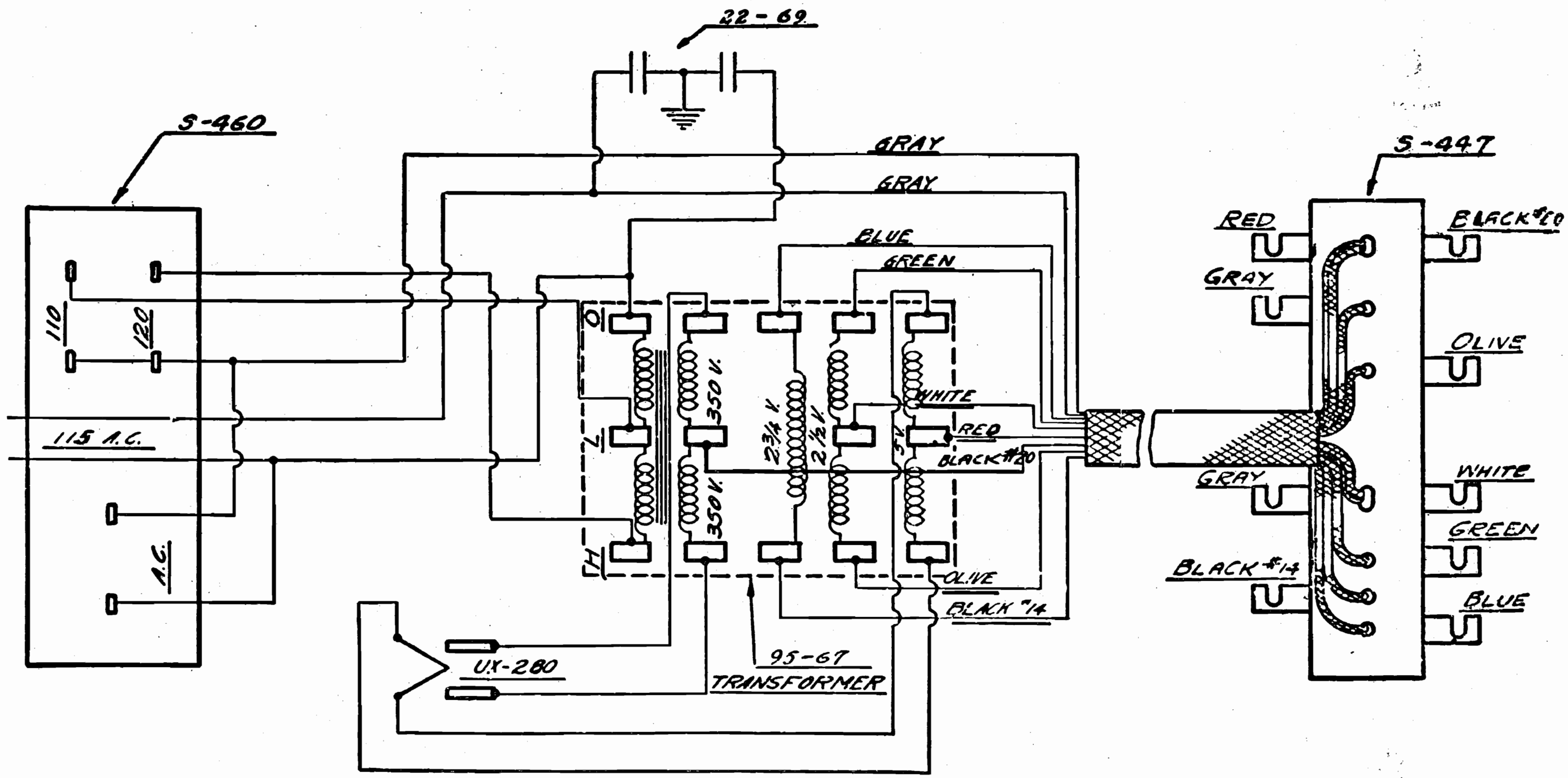


2 CX-381's in separate power unit

ZENITH RADIO CORPORATION
CHICAGO, ILLINOIS
MODEL 54

ZENITH RADIO CORP.

MODEL 52,53,54,55
Voltage - Resistors
MODEL ZE-50
Power Unit



ZENITH—Models 52-53-54-55
Line Voltage 115—Set on 120 Volt Tap—Volume Control Position Full On
*The screen grid voltage on the detector tube is actually 50 volts but an electrostatic voltmeter would be needed to show true voltage.

Tube No in Order (1)	Type of Tube (2)	Position of Tube 1st RF Det Etc (3)	Readings, Plug in Socket of Set. Tube Out: A Volts (4)	Tube Out: B Volts (5)	Tube in Tester: A Volts (6)	B Volts (7)	C Volts (Control Grid) (8)	Cathode-Heater Volts (9)	Normal Plate M.A (10)	Plate M.A Grid Test (11)	Plate Change M.A. (12)	Screen Grid Volts (13)
1	224	1st RF	-	-	2.4	175	1	2	1.6	2.8	-	50
2	224	2nd RF	-	-	2.4	175	1	2	1.6	4	-	50
3	224	Det.	-	-	2.4	90	5	5	0	0	-	*
4	227	1st AF	-	-	2.4	55	2	2	1	1.2	-	-
5	227	2nd AF	-	-	2.4	143	14	14	4.3	5.7	-	-
6	227	2nd AF	-	-	2.4	143	14	14	4.3	5.7	-	-
7	245	3rd AF	-	-	2.2	248	45	-	24	28	-	-
8	245	3rd AF	-	-	2.2	248	45	-	24	28	-	-
9	280	Rect.	-	-	4.7	-	-	-	100	-	-	-
10												

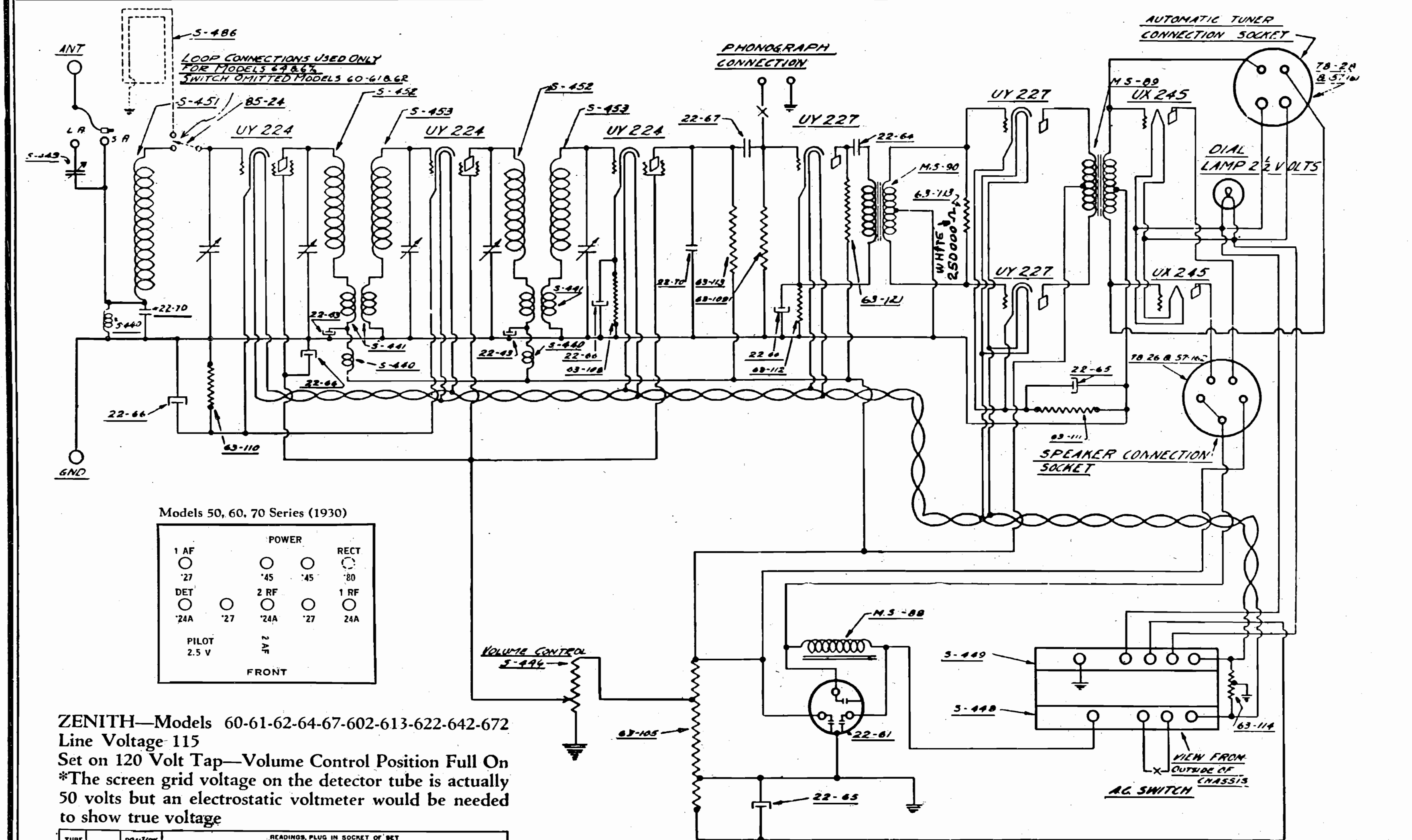
Color Code of Resistors in 50 Series

63-101	50000 ohms	Green
63-109	100000 ohms	Red
63-110	400 ohms	Yellow
63-111	2000 ohms	Black
63-112	4000 ohms	Blue
63-118	250000 ohms	White
63-121	100000 ohms	Pink

The voltage divider 63-105 has a total resistance of 6000 ohms tapped at 850 ohms from one end and 2800 ohms from the other end. The remaining section has a resistance of 2350 ohms. Mershon filter units are used.

MODEL 60,61,62,64,67,602,
613,622,642,672
Schematic - Voltage

ZENITH RADIO CORP.

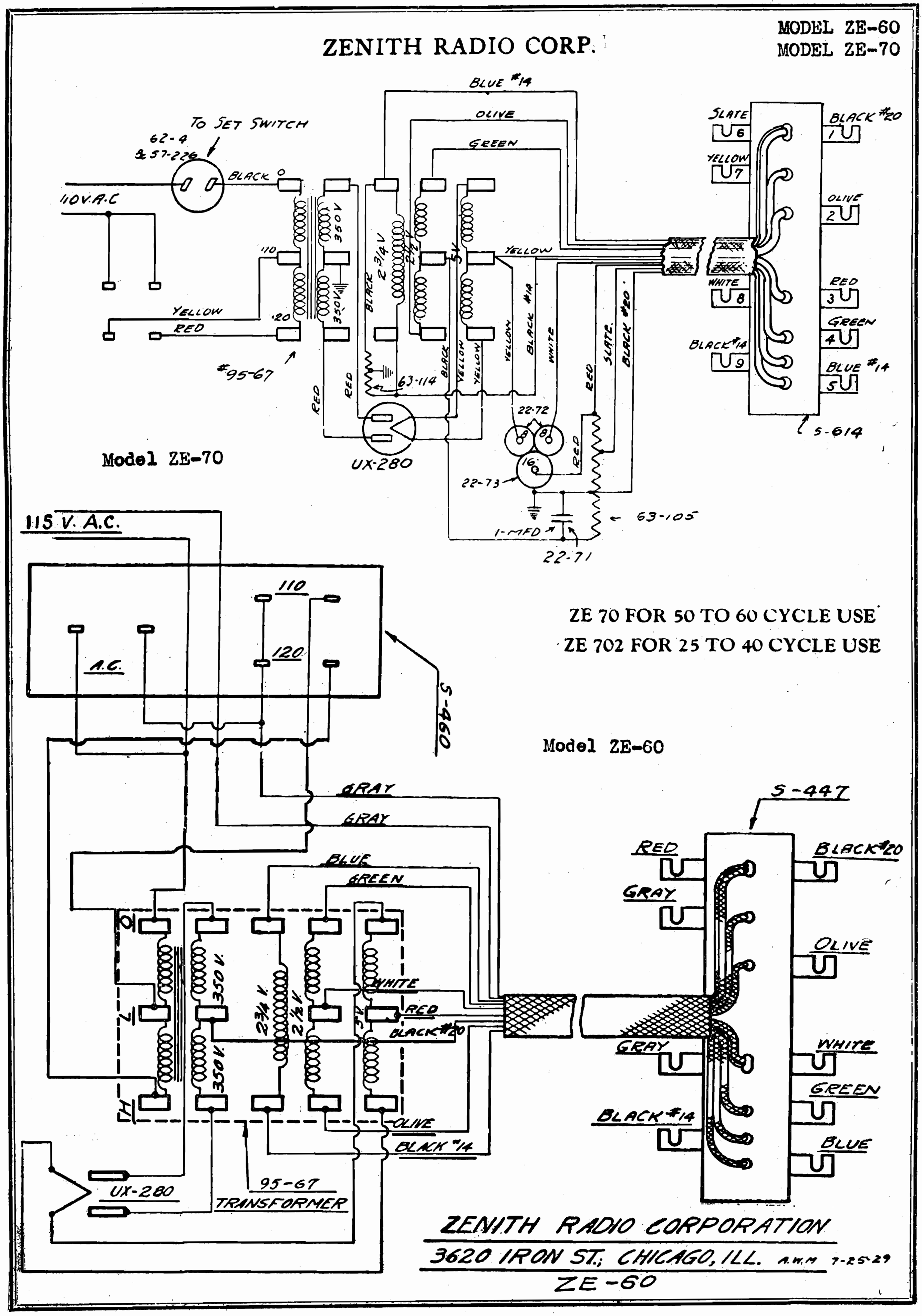


ZENITH—Models 60-61-62-64-67-602-613-622-642-672
Line Voltage 115
Set on 120 Volt Tap—Volume Control Position Full On
*The screen grid voltage on the detector tube is actually 50 volts but an electrostatic voltmeter would be needed to show true voltage

			READINGS, PLUG IN SOCKET OF SET									
			TUBE CUT		TUBE IN TESTER							
① TUBE NO. IN ORDER	② TYPE OF TUBE	③ POSITION OF TUBE 1ST R.F DET., ETC	④ A VOLTS	⑤ B VOLTS	⑥ A VOLTS	⑦ B VOLTS	⑧ C VOLTS (CONTROL GRID)	⑨ CATHODE-HEATER VOLTS	⑩ NORMAL PLATE M.A.	⑪ PLATE M.A. GRID TEST	⑫ PLATE CHANGE M.A.	⑬ SCREEN GRID VOLTS
1	224	1 R.F.	—	—	2.4	175	1	2	1.6	2.8	1.2	50
2	224	2 R.F.	—	—	2.4	175	1	2	1.6	4	2.4	50
3	224	Det.	—	—	2.4	90	5	5	0	0	0	*
4	227	1 A.F.	—	-	2.4	55	2	2	1	1.2	.2	-
5	227	2 A.F.	—	-	2.4	143	14	14	4.3	5.7	1.4	-
6	227	2 A.F.	—	-	2.4	143	14	14	4.3	5.7	1.4	-
7	245	3 A.F.	—	-	2.2	248	45	-	24	28	4	-
8	245	3 A.F.	—	-	2.2	248	45	-	24	28	4	-
9	280	Rect.	-	-	4.7	-	-	-	100	-	-	-
10	—	—	-	-	-	-	-	-	-	-	-	-

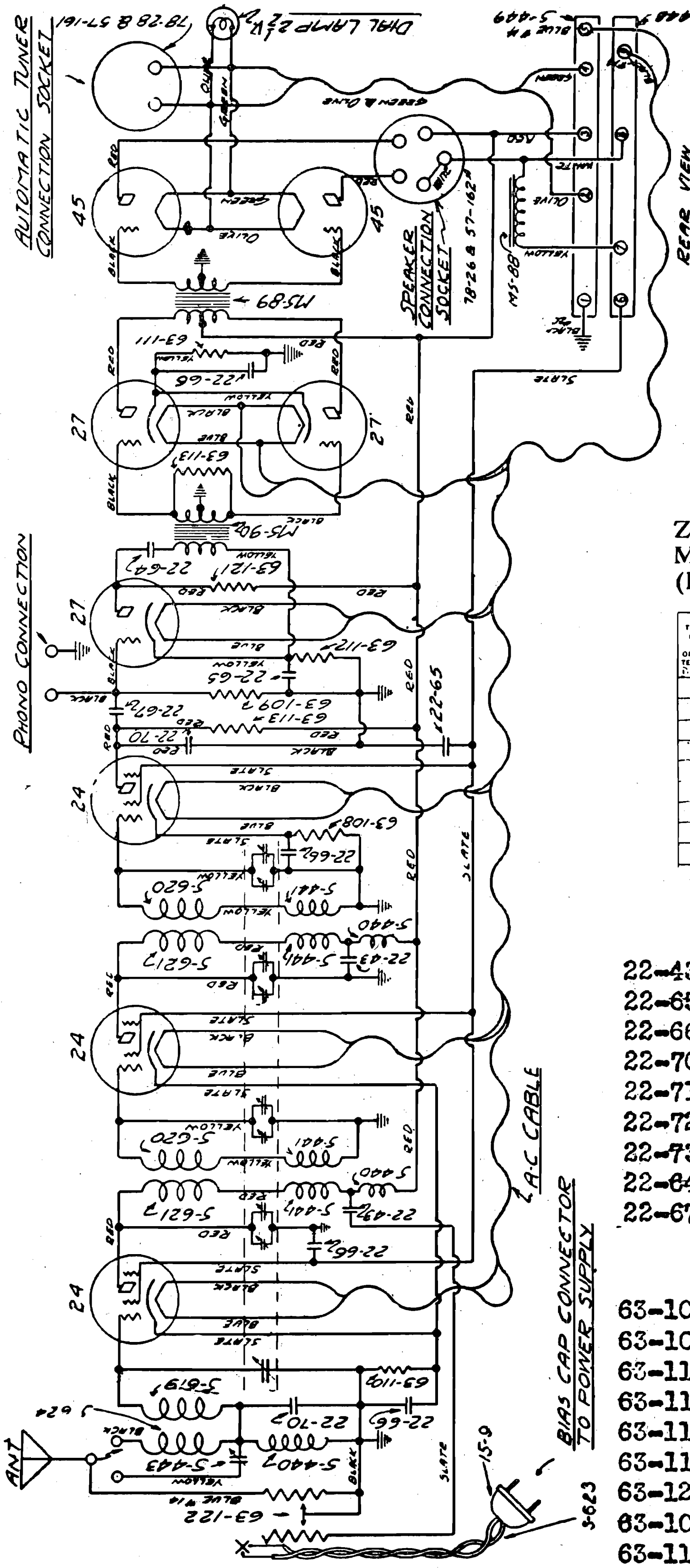
SINGLE VOLUME CONTROL
MODELS 60, 61, 62, 602, 612 AND 622 WITHOUT LOOP
MODELS 64, 67, 642 AND 672 WITH LOOP

For wiring diagram of power supply ZE 60 used with the Series 60 receivers see index

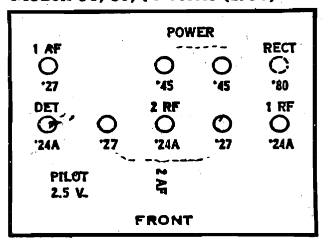

ZENITH RADIO CORP.
MODEL ZE-60
MODEL ZE-70
BLUE #14
OLIVE
GREEN
TO SET SWITCH
62-4
& 57-226
BLACK
110V.A.C
110
120
YELLOW
RED
350 V
350V
BLACK
2 1/4 V
2 1/2 V
5V
#95-67
63-114
UX-280
22-72
22-73
22-71
1-MFD
63-105
SLATE
YELLOW
WHITE
BLACK #14
BLACK #20
OLIVE
RED
GREEN
BLUE #14
S-614
Model ZE-70
115 V. A.C.
A.C.
110
120
S-460
ZE 70 FOR 50 TO 60 CYCLE USE
ZE 702 FOR 25 TO 40 CYCLE USE
Model ZE-60
GRAY
GRAY
BLUE
GREEN
WHITE
RED
BLACK #20
OLIVE
BLACK #14
350 V.
2 1/4 V.
2 1/2 V.
3V.
95-67
TRANSFORMER
UX-280
S-447
RED
GRAY
BLACK #20
OLIVE
GRAY
WHITE
GREEN
BLACK #14
BLUE
ZENITH RADIO CORPORATION
3620 IRON ST.; CHICAGO, ILL. A.W.M. 7-25-29
ZE-60

MODEL 71,72,73,77,712,
722,732,777
Schematic - Voltage
Electrical Values

ZENITH RADIO CORP.



Models 50, 60, 70 Series (1930)



For wiring diagram of the power pack ZE-70 and ZE-702 for series 70 receivers see Index

ZENITH—Models 71, 72, 73 and 77—60 Cycle
Models 712, 722, 732 and 777—25 Cycle
(Fuse in 110 Volt Clips—Line Volts 110)

TUBE NO IN ORDER TESTED (1)	TYPE OF TUBE (2)	POSITION OF TUBE IN SET (3)	METER READINGS WITH JEWELL TEST PLUG IN SOCKET OF SET: OPERATING VOLTAGES: FILAMENT OR HEATER (4)	PLATE OR ANODE (5)	CONTROL GRID—SPACE GD+ (6)	NORMAL GRID—SCREEN GD+ (7)	CATHODE TO HEATER (8)	MILLIAMPERES: SCREEN GD L. H. 60 PLATE (9)	PLATE R. H. 60 PLATE (10)	TUBE TEST (11)	PLATE CURRENT CHANGE (12)
1	224	1 R.F.	2.5	185	2	55	2.5	-	2.5		
2	224	2 R.F.	2.5	185	2	55	2.5	-	3.0		
3	224	Det.	2.5	100	-	5	5	-	.1		
4	227	1 A.F.	2.5	65	-	25	5	-	1.5		
5	227	PP-2nd	2.5	160	-	13	13	-	3.4		
6	227	PP-2nd	2.5	160	-	13	13	-	3.4		
7	245	PP-PWR	2.3	260	-	52	-	-	38		
8	245	PP-PWR	2.3	260	-	52	-	-	38		
9	280	Rect.	5.0	-	-	-	-	-	-		

CONDENSER SPECIFICATIONS

22-43	.25 mf	(2)
22-65	1.	(double)
22-66	.2	(quadruple)
22-70	.001	(2)
22-71	1.	
22-72	8.	(2)
22-73	16.	
22-64	.03	
22-67	.15	

RESISTOR SPECIFICATIONS

63-108	50000 ohms	Green
63-109	100000 ohms	Red
63-110	400 ohms	Yellow
63-111	2000 ohms	Black
63-112	4000 ohms	Blue
63-113	250000 ohms	White
63-121	100000 ohms	Pink
63-105	voltage divider	
63-114	10 ohms	Center Tap

ZENITH RADIO CORP.

MODEL 70
Tone Control
Installation

INSTALLATION OF TONE CONTROL ON MODEL 70 SERIES

Remove variable condenser shield. Unsolder lead from lower terminal on rocking stator and pull this lead through the base to under side of chassis.

Turn chassis up side down; remove the two machine screws from rear side of coil assembly base on the first R. F. coil can only

With chassis inverted, multicord terminal strip facing the operator, remove the one machine screw from right hand end of chassis which is screwed through the chassis frame and into the R. F. coil assembly base.

Unsolder the two remaining leads, coming from the first R. F. coil can; the one at the antenna choke terminal; the other at the S. A. tip jack; also the copper shielding on lead going through 1st R. F. coil can.

The R. F. coil assembly base may now be forced back about one-half inch and this will permit the 1st R. F. coil can and its bas to be lifted upward from the chassis.

Measure off a point midway between the volume control shaft and the rocking stator shaft centers; and 15/16" from chassis bottom (base plate removed.)

Center punch and drill a .378" dia. hole to take the 500,000 ohm variable resistor tone control shaft, and mount so soldering terminals on same point toward, and are next to the volume control.

Be sure the Textolite Insulating Strip is attached to the back of the tone control unit to prevent the terminals from shorting out when the R. F. coil can is again installed.

Mount the .01 mfd. fixed condenser by soldering one of its terminals directly to one of the outside terminals of the six point audio transformer; be sure to get the secondary side, or grid of the 245 output tube.

This condenser will be self-supporting.

Wire from the remaining .01 fixed condenser terminal to any-one of the two terminals on the variable resistance tone control unit

Wire from the remaining terminal on this unit to the other side of the same secondary winding direct on six point audio transformer, or grid of the other 245 output tube.

Technically speaking this produces a series circuit consisting of a .01 mfd. fixed condenser and a 500,000 ohm variable resistor in shunt to the secondary circuit of the six point audio transformer, or from grid to grid of the 245 output tubes.

Run your two twisted leads through the slot in the R. F. coil assembly base, behind and to the right of the 1st R.F. socket (still viewing the chassis as before - inverted.)

Press the Textolite Insulating Strip on the back of the tone control unit into place and inspect to see that no terminals are shorted.

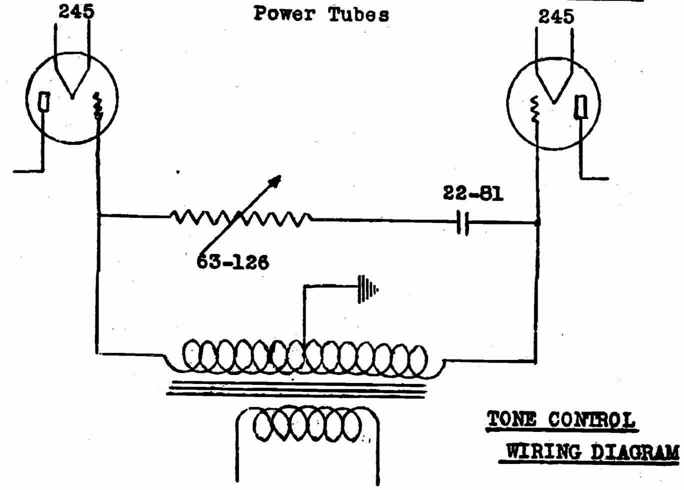
Replace the 1st R.F. coil can and base by first threading through the leads in the assembly base and work the coil can base into place.

Insert the two screws you removed from this point on the base Force the coil assembly base back into position, and insert the machi screw into same through chassis end.

Resolder all leads previously removed and put condenser shiel in place. Be sure to resolder the copper shielding on the lead from 1st R.F. coil can previously unsoldered.

Turning tone control knob clockwise produces the treble effec and counter-clockwise the bass.

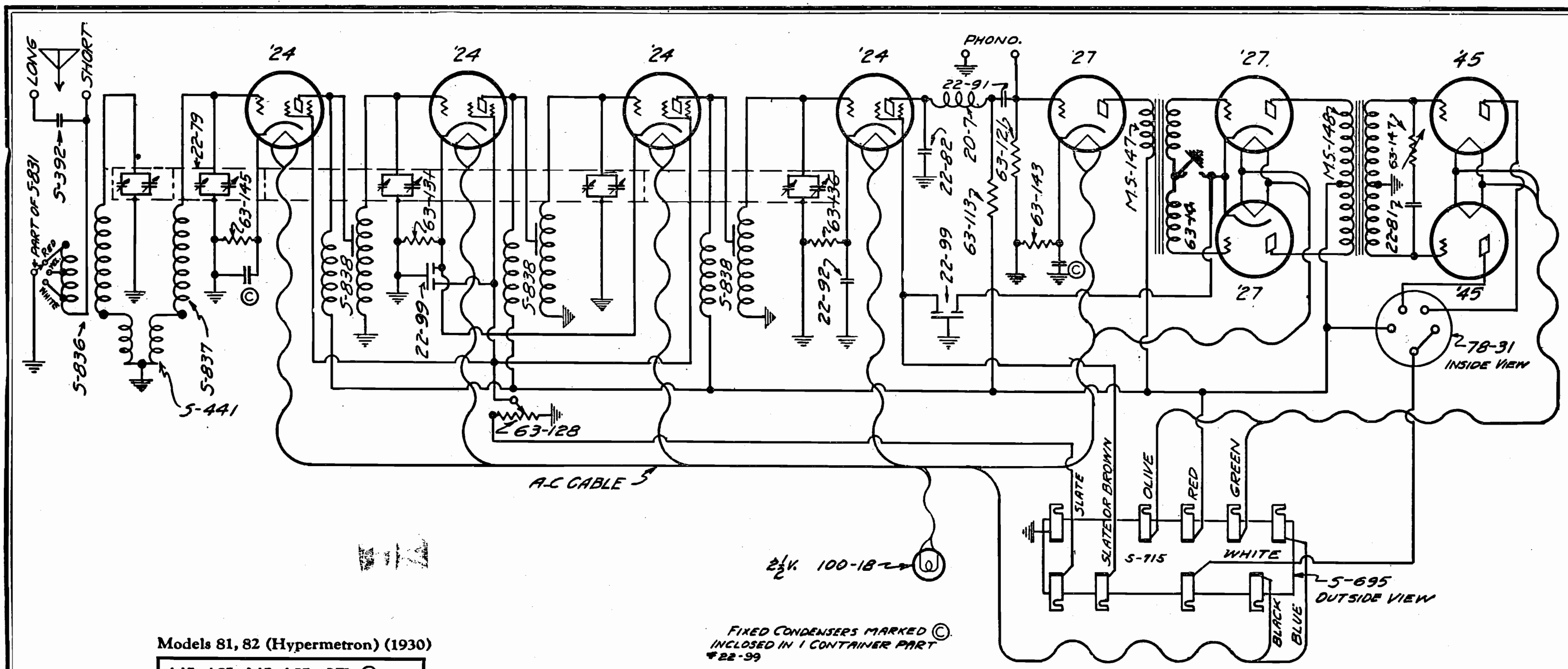
A small tone control escutcheon plate will be included and should be mounted on the cabinet panel to read correctly, the cabinet panel having been drilled with a 5/8" hole 1 1/16" from base centrally located between the resonance and volume controls.



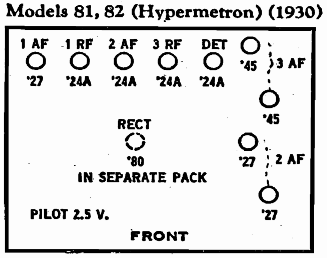
TONE CONTROL
WIRING DIAGRAM

MODEL 80 Hypermetron Schematic

ZENITH RADIO CORP.



Models 81, 82 (Hypermetron) (1930)



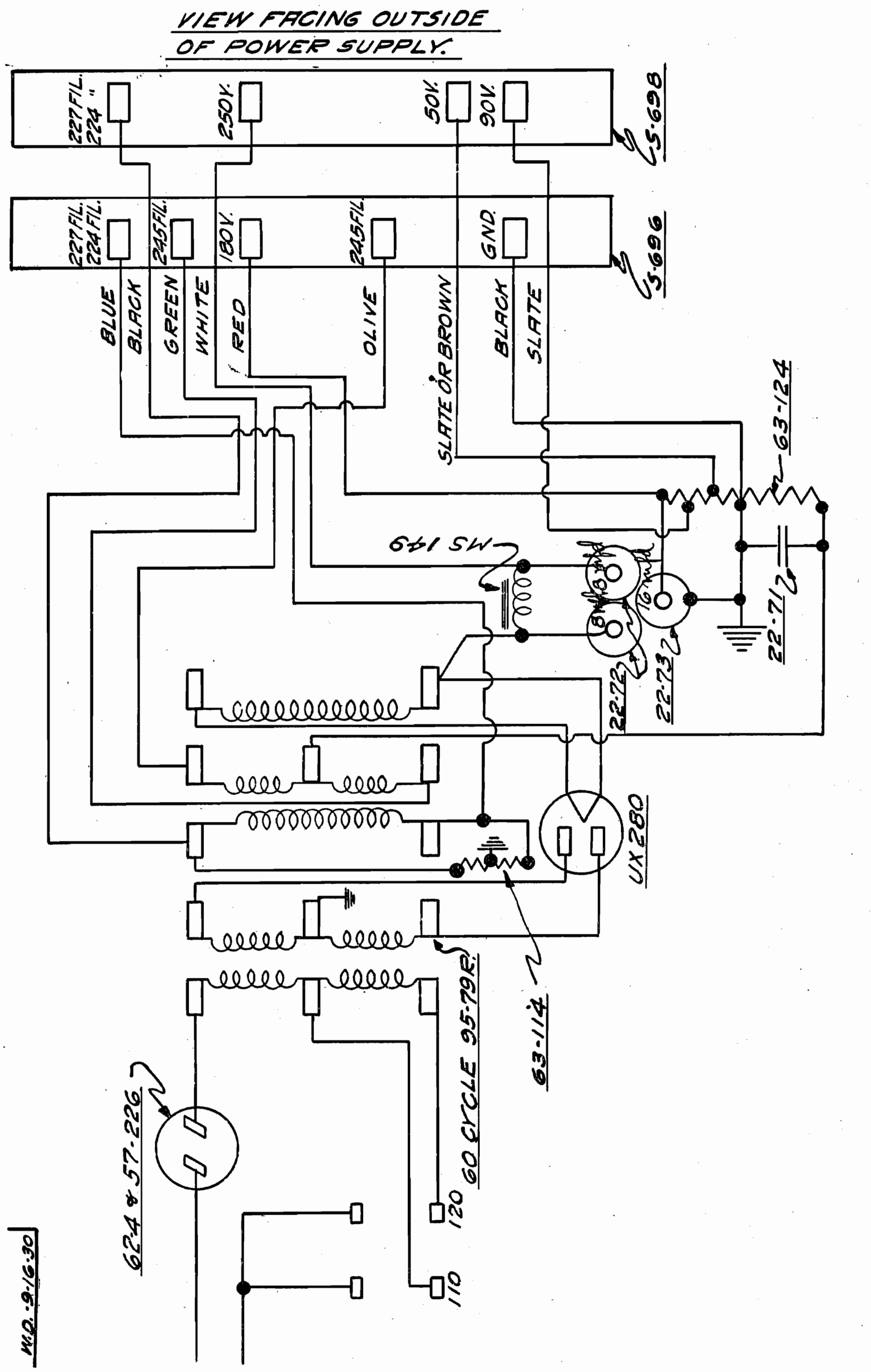
COLOR CODE		
SIZE	COLOR	USED FOR
#20	RED	+180. R.F. & A.F. PLATE LEAD.
#20	WHITE	+250 FILTER CHOKE.
#20	YELLOW	AUDIO CATHODES.
#20	SLATE	SCREENS & CATHODES R.F.
#20	BLACK	AUDIO GRID LEADS, GR'D COMMON.
#20	GREEN & OLIVE	POWER FILA'S. & PILOT LIGHT.
#14	BLACK	224 & 227 FILAMENTS.
#14	BLUE	" " "
#20	BROWN OR SLATE	224 DET. SCREEN.

MODELS 82, 89 (60 cycle) and 822, 892 (25 cycle) ZENITH HYPER METRON RECEIVERS.

Models **82** and **89** Zenith Receivers operate on 105 to 125 volts, 50 to 60 cycle alternating current. Models 822 and 892 operate on 105 to 125 volts, 25 to 40 cycle alternating current (A. C.) The power supply ZE80 is used on 50 to 60 cycle current. The power suppl, ZE**802** is used on 25 to 40 cycle current

ZENITH RADIO CORP.

MODEL ZE-80
Schematic
Parts List



POWER SUPPLY - ZE 80

22-71	1. mf Condenser	(Power Bias)	1.10
22-72	8. " "	(Electrolytic)	2.50
22-73	16. " "	(Electrolytic)	5.50
Note:	16 mf Condenser can be identified by Blue marking on anode		
63-114	10 Ohm Center Tap Resistor		.40
63-124	10,450 " Voltage Divider		1.60
57-226	Bias Plate		.04
57-242	Bias Socket & Guide Plate		.01

78-32	Four Prong Socket for Rectifier		.15
95-79	Power Transformer	(60 Cycle)	9.00
95-93	Power Transformer	(25 Cycle)	13.50
136-2	2 Amp Fuse		.10
S-696	Terminal Strip Assem	(Five)	.70
S-698	Terminal Strip Assem	(Four)	.70
S-700	Fuse Receptacle & A.C. Outlet Plate		.20
MS-149	Power Choke		3.50

MODEL 80 Hypermetron
Parts List

ZENITH RADIO CORP.

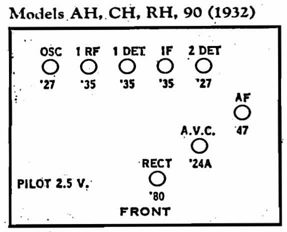
HYPERMETRON

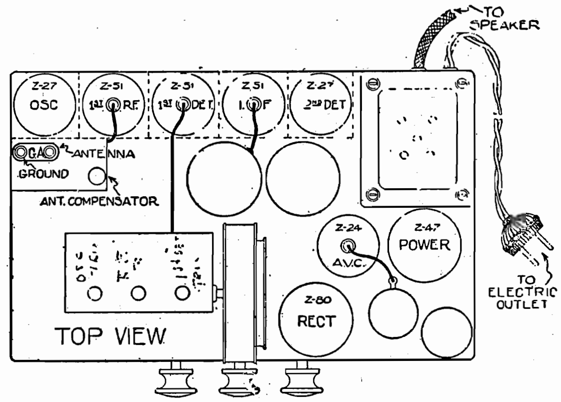
Variable Condenser Assembly

22-79	Five Gang Variable Condenser..........................	20.00
S-829	Dial Drum Assembly....................................	1.50
26-21	Calibrated Dial Strip.................................	.20
S-703	Dial Lamp Bracket.....................................	.45
100-18	2½ Volt Dial Lamp.....................................	.25
11-2	Dial Control Cable....................................	.05
80-70	Dial Control Cable Tension Spring.....................	.01
	Fixed Condensers	
22-81	Single .01 mf Condenser.........(Tone Control Cond.)	.85
22-82	Single .001 " " ....(Detector Plate)....	.30
22-91	Single .03 " " ....(Audio Coupling)....	.50
22-92	Single .5 " " ....(Det. Cathode Bypass	.75
22-99	Dual .1 " " ....(2nd RF & Det.Bypass	.75
S-392	Antenna Series Condenser..............................	.10
	Resistors	
63-113	250M Ohm Resistor........(Red,Green End,Yellow Dot)..	.35
63-121	100M " " ....(Pink)......................	.35
63-131	400 " " ....(Yellow,Black End, Brown Dot	.35
63-136	50M " " ....(Green, Black End, Orange Do	.35
63-143	4M " " ....(Yellow, Black End, Red Dot)	.35
63-145	800 " " ....(Gray, Black End, Brown Dot)	.35
63-146	2000 " " ....(Red, Black End, Red Dot)...	.35
	R.F.Coils	
S-441	R. F. Coupling Coil...................................	1.00
S-836	Preselector Coil....................(Coil Only).....	1.40
S-837	1st R. F. Coil......................(" ").....	1.00
S-838	2nd, 3rd R. F. & Det. Coils.........(" ").....	1.00
20-7	Detector Choke..	.50
20-8	R. F. Choke...	.50
	Shields & Bases	
4-87	Tube Shield Can Base..................................	.05
126-62	Coil " " "	.05
126-59	R. F. Coil Shield Can.................................	.25
126-61	Tube Shield Can.......................................	.20
MS-153	Variable Condenser Shield.............................	.75
	Miscellaneous	
44-4	Phono Connector Base..................................	.30
78-30	Five Prong Floating Socket............................	.20
78-31	Five Prong Stationary Socket..........................	.20
78-32	Four Prong Stationary Socket..........................	.20
57-161	UY Socket Guide Plate.................................	.01
57-242	Four & Five Prong Socket Guide Plates.................	.03
63-128	Volume Control..	1.50
63-147	Tone Control..	1.25
85-26	Three Point Switch Base Less Shaft....................	.45
143-9	Three Point Switch Bushing with Contact Arm...........	.35
117-31	Three Point Switch Lever Arm..........................	.01
S-695	Multicord & Terminal Plate Assembly...................	2.00
S-715	Multicord Terminal Plate Only.........................	.50
52-23	Multicord only..	1.25
MS-147	1st Stage Push Pull Transformer...(5 Lead)............	5.50
MS-148	2nd Stage Push Pull Transformer...(6 Lead)............	5.50

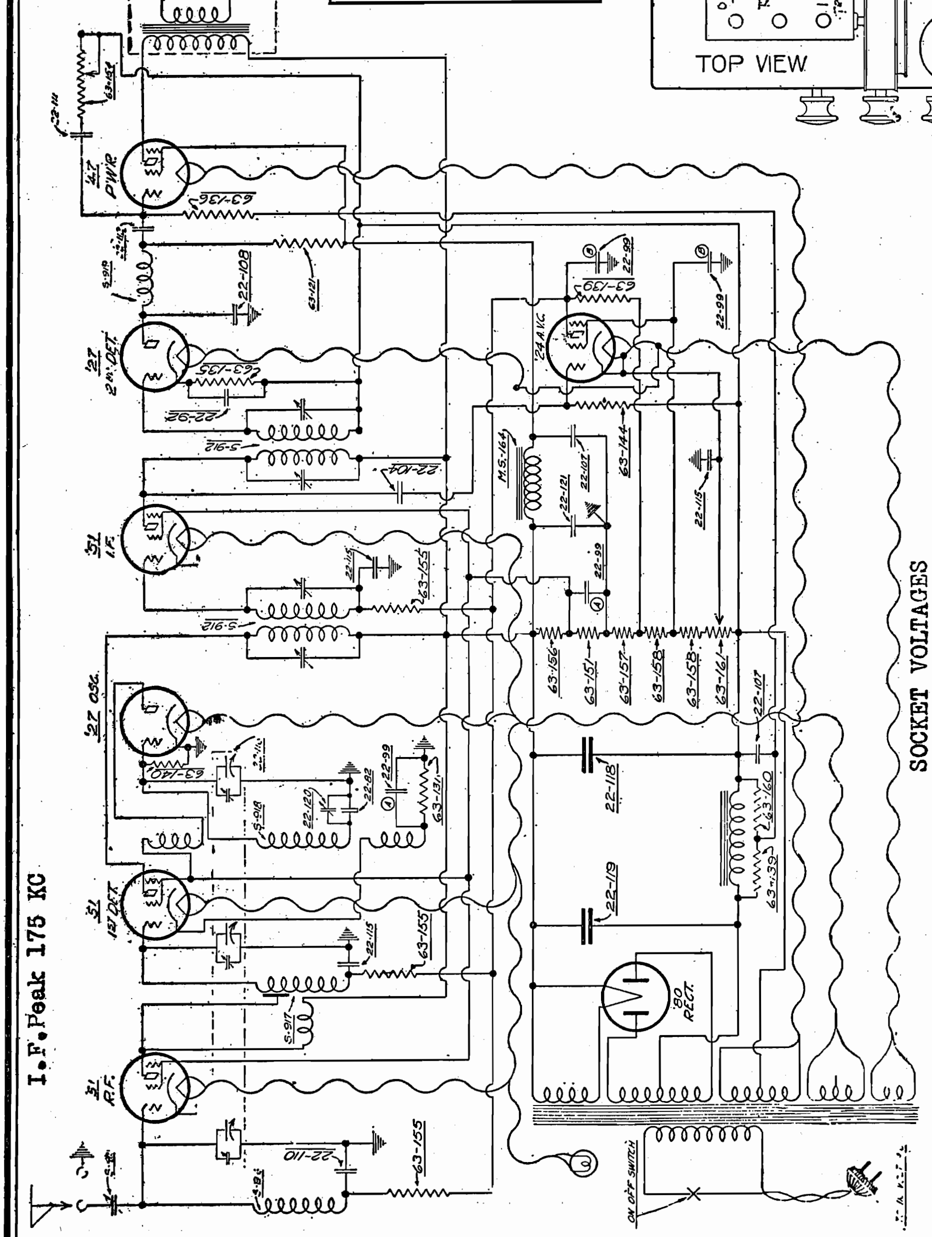
ZENITH RADIO CORP.

MODEL AH,CH,RH
Schematic
Voltage - Chassis





I.F. Peak 175 KC



SOCKET VOLTAGES

Type	Position	Fil. Volts	Plate Volts	Control Grid Volts	Cathode Volts	Plate M.A.	S.G. Volts
Z51	R. F.	2.25	170	—.4	0	4.5	64
Z51	1st Det.	2.25	165	—1.5	1.5	3.	62
Z27	Osc.	2.1	55	0	0	4.5	0
Z51	I. F.	2.3	180	—5.6	0	.75	80
Z27	2nd Det.	2.15	160	—14.5	8.5	.80	0
Z47	Power	2.3	250	—15	0	28.	250
Z24	A. V. C.	2.1	8	—.5	0	0	40
Z80	Rect.	4.7	0	0	0	34. ca.	0

Voltage readings taken with a Weston type 566 tester. Manual volume control in maximum position and antenna and ground disconnected. Line voltage 112.

MODELS AH,CH,RH
Parts List
Servicing Data.

ZENITH RADIO CORP.

I-F. ADJUSTMENT

The intermediate transformers employed between the 1st detector and I. F. tube and between the I. F. tube and 2nd detector have been accurately peaked to 175 kilocycles on a temperature controlled crystal oscillator before leaving the factory and unless the service man has an oscillator which is accurately calibrated at 175 kilocycles and feels that the intermediates are at fault, their adjustment should never be changed. However, in cases where it is necessary the test oscillator is first set to 175 kilocycles and coupled to the grid terminal of the first detector through a .00025 mf. fixed series condenser. The ground lead of the test oscillator is connected to the ground post of the receiver. (Indicated at point "A" in figure 2.) For this operation the oscillator tube of the receiver should be removed. Do not connect the test oscillator direct to grid of the first detector tube without the series condenser being in the grid lead, since by so doing, the bias resistor will be shorted out. Four adjusting screws are provided under the chassis (see figure 3). These verniers tune the plate circuit of the first detector, grid and plate circuits of the I. F. stage and grid circuit of the 2nd detector. (See wiring diagram.) Beginning at the second detector grid vernier, each adjusting screw is, in turn, set for maximum output. For best results the verniers should be gone over twice in the same rotation, always keeping the output from the test oscillator at the weakest possible strength.

BALANCING CHASSIS

Every Zenette Superheterodyne is carefully balanced on laboratory equipment before the set leaves the factory and should not require further attention. However, in the event that some part of the receiver has been changed or the adjustments shifted by mishandling it may be done as follows: Procure an oscillator which is calibrated to 1500 and 550 kilocycles. It is necessary that it be accurate, otherwise the receiver dial cannot be set properly. It will be best to remove the chassis from the cabinet for this operation in order to reach the oscillator padding condenser adjustment. (See figure 4.) The test oscillator should be coupled to the antenna and ground posts of the receiver by the two leads now being furnished by the manufacturers of commercial oscillators. Although very good results may be had simply by judging audibility from the speaker, a more accurate method is to employ an output meter attached to the speaker transformer.

Before balancing any Zenette Superheterodyne the tuning condenser gang should be turned to maximum mesh position, namely the 550 kilocycle end of the scale. When the condenser is turned as far as it will go in this direction the dial index light must point to a position one division or channel beyond the 550 kilocycle line on the dial. If this condition does not already exist the index bracket should be adjusted up or down as the case may be.

The test oscillator should first be set to exactly 1500 kilocycles and attached to the antenna and ground posts, after which the receiver dial is also set to the 1500 kilocycle marking. With the manual volume control set to maximum volume, the oscillator trimmer (see figure 3) is adjusted to give maximum response in the speaker or greatest deflection of the output meter, if one is used. This vernier is extremely sharp and, therefore, great care should be used in its adjustment. The first detector section is next (see figure 3). This is the right hand section from the front. Its trimmer must also be varied for maximum response.

It will be noted that the center section of the condenser gang does not have a vernier adjustment. This is provided by the antenna compensating condenser. This section will automatically resonate by adjusting the antenna compensator after the set is connected to the aerial which is to be permanently employed. It is done by tuning to a very weak station at between 1500 and 1300 kilocycles on the dial and turning the manual volume control to the position of maximum volume. The compensator knob varies the capacity of a small series condenser and should be turned for greatest signal strength by turning first to the right and then to the left and allowed to stay at a point of maximum volume.

After making the above adjustment at 1500 kilocycles it will be necessary to then set the test oscillator at 550 kilocycles. Tune the set to 550 kilocycles and rock the receiver dial back and forth over the test oscillator signal at the same time adjusting the oscillator padder condenser (see figure 4). An adjustment of the padder will be found which gives maximum output. When this has been done it is necessary to go back to 1500 kilocycles on both the test oscillator and the dial and readjust the oscillator vernier if necessary.

In case a test oscillator is not available the service man may use a weak station on the low frequency end and another station on the high frequency end with the manual volume control in the maximum position.

RESISTORS

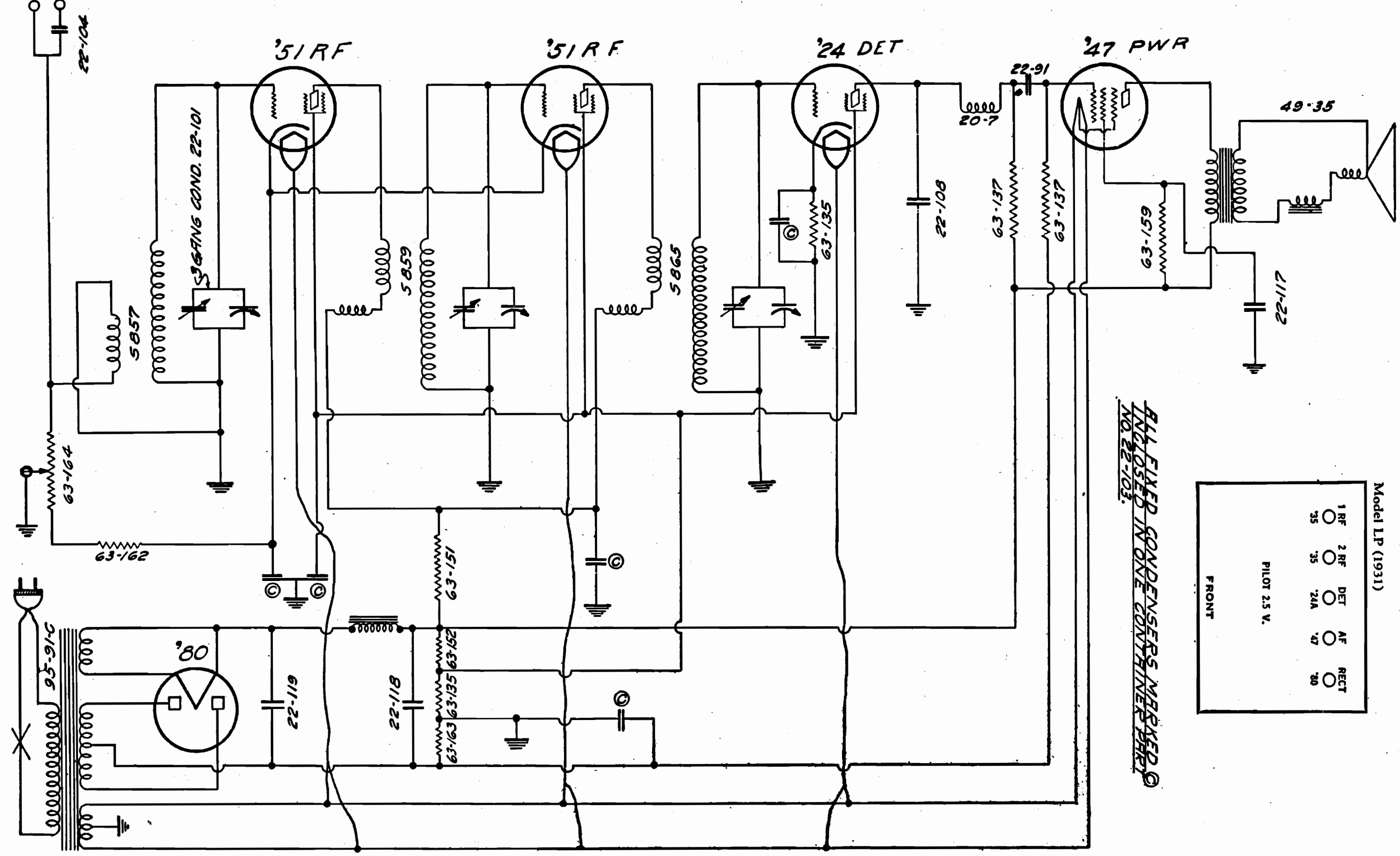
No.	PART			DESCRIPTION
63-121	100M	ohm	Detector Plate	Brown, black end, yellow dot.
63-131	400	ohm	1st Det. Cathode	Yellow, black end, brown dot.
63-135	25M	ohm		Red, green end, orange dot
63-136	50M	ohm	Power Tube Grid	Green, black end, orange dot
63-139	500M	ohm	A. V. C. Plate	Green, black end, yellow dot
63-140	1 meg.	ohm	Osc. Grid	Brown, black end, green dot
63-144	3 meg.	ohm	A. V. C. Grid	Orange, black end, green dot.
63-151	15M	ohm	Voltage Divider	Brown, green end, orange dot.
63-155	1M	ohm	R. F. 1st Det. I. F.	Brown, black end, red dot
63-156	10M	ohm	Voltage Divider	Brown, black end, orange dot
63-157	100	ohm	Voltage Divider	Brown, black end, brown dot
63-158	1700	ohm	Voltage Divider	Brown, purple end, red dot
63-160	100M	ohm	Power Tube Bias	Brown, black end, yellow dot,

CONDENSERS

No.	PART		
22-82	.001	mf	
22-92	.5	mf	
22-99	.1	mf	(Dual)
22-104	.0001	mf	
22-107	.5	mf	
22-108	.001	mf	
22-110	.1	mf	
22-111	.03	mf	
22-112	.1	mf	
22-115	1	mf	
22-118	6.	mf	Electrolytic L.V.
22-119	6.	mf	Electrolytic H.V.
22-121	8.	mf	

ZENITH RADIO CORP.

MODEL LP
Schematic
Parts List



Resistors				
63-135	25M	ohm	resistor	(Red, Green end, Orange Dot)
63-137	250M	"	"	(" " " Yellow ")
63-151	15M	"	"	(Brown " Orange ")
63-152	43M	"	"	(Yellow Orange " ")
63-159	4M	"	"	(" Black end Red ")
63-162	100	"	"	(Flat wire wound black ")
63-163	320	"	"	" " " Red ")

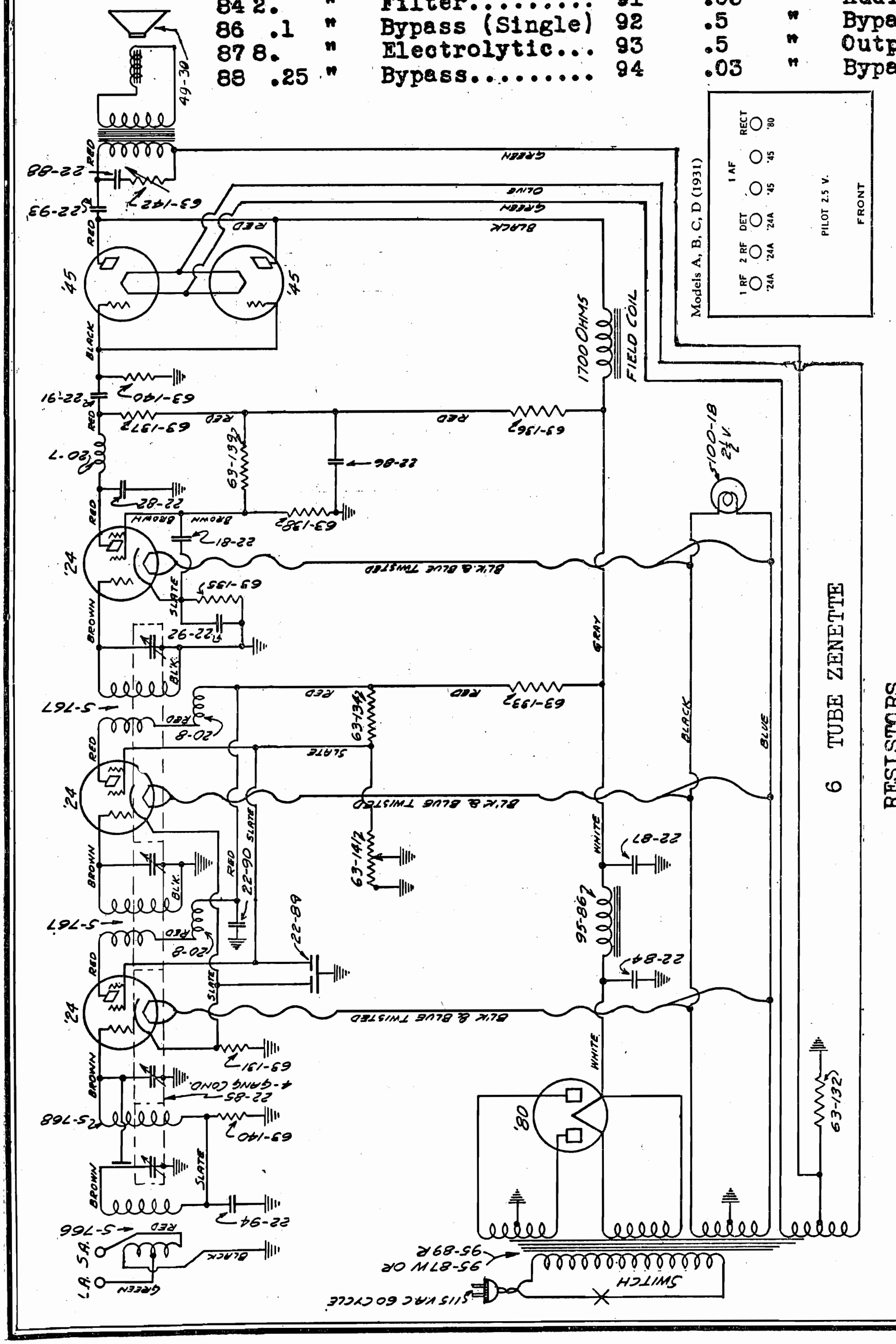
Fixed Condensers	
22-91	.03 mfd. condenser
S-392	Antenna series condenser
22-103	Five section bypass condenser
22-108	.002 mfd. condenser
22-117	.5 " (bypass)
22-118	6. " (electrolytic low voltage)
22-119	6. " (" high ")

MODEL 6 Tube Zenette
Chassis A,B,C,D (2004)
Schematic, Parts List

ZENITH RADIO CORP.

CONDENSERS

22-81	.01 mf	Bypass.........	89	.1	"	Bypass (Double)
82	.001"	"	90	.1	"	Bypass (Single(
84	2. "	Filter.........	91	.03	"	Audio Coupling.
86	.1 "	Bypass (Single)	92	.5	"	Bypass.........
87	8. "	Electrolytic...	93	.5	"	Output.........
88	.25 "	Bypass.........	94	.03	"	Bypass.........



RESISTORS

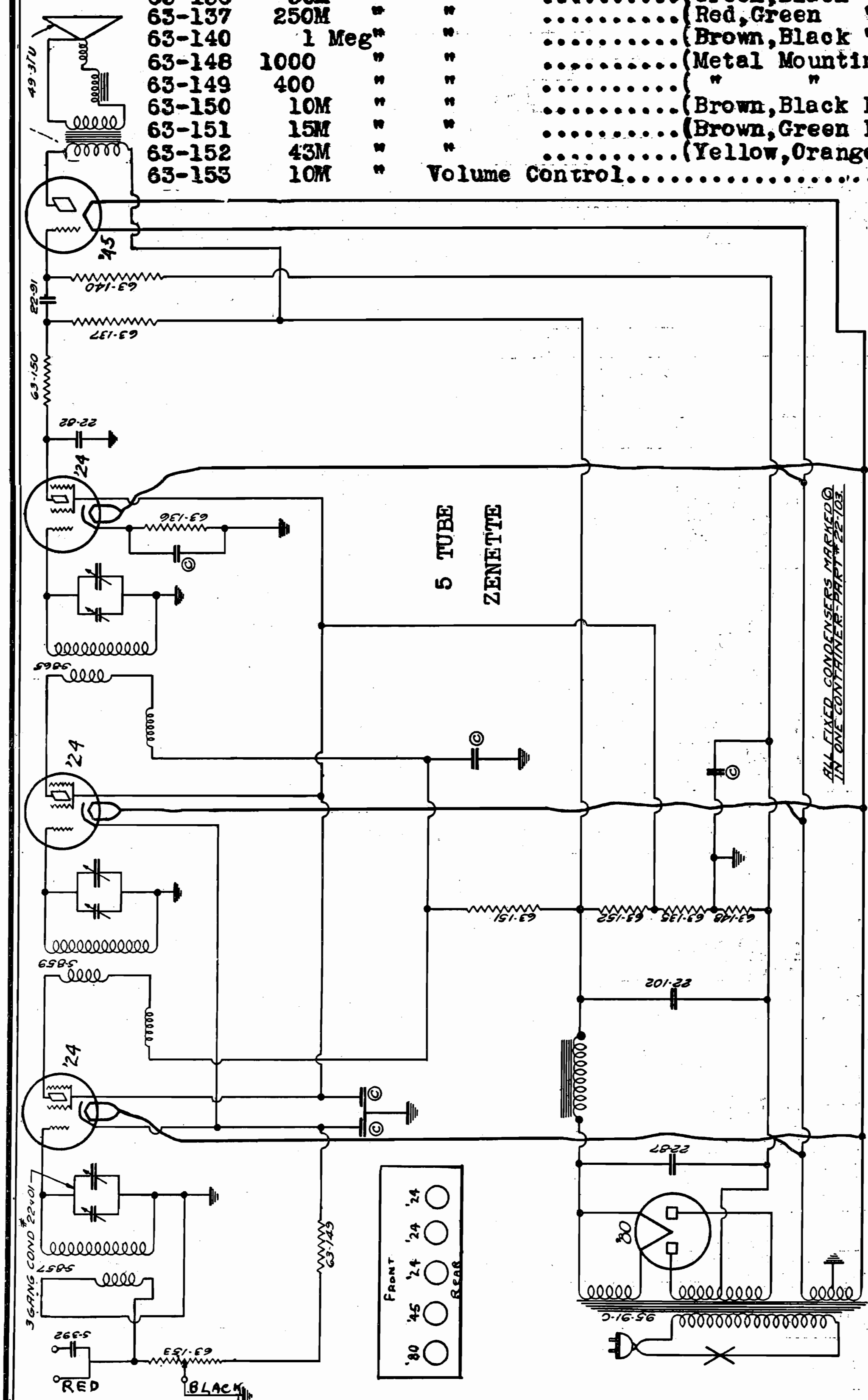
63-131	400 ohm	(Yellow Brown Dot)......	137	250M	"	(Red Yellow Dot)......
132	900 "	(White " ")......	138	350M	"	(Orange Yellow")......
133	25M "	(Red Orange")Large	139	500M	"	(Green Yellow")......
134	35M "	(Orange)........	140	1 Meg	"	(Brown)......
135	25M "	(Red Orange Dot)Small	141	50M	"	Volume Control........
136	50M "	(Green)........	142	50M	"	Tone Control........

ZENITH RADIO CORP.

MODEL 5 Tube Zenette
Type 2009-C
Schematic

Resistors

63-135	25M	Ohm Resistor..........	(Red, Green End, Orange Dot).
63-136	50M	" "	(Green, Black " " ").
63-137	250M	" "	(Red, Green " Yellow ").
63-140	1 Meg"	"	(Brown, Black " Green ").
63-148	1000	" "	(Metal Mounting-Large).....
63-149	400	" "	(" " -Small).....
63-150	10M	" "	(Brown, Black End, Orange Dot
63-151	15M	" "	(Brown, Green End " ")
63-152	43M	" "	(Yellow, Orange End" ")
63-153	10M	" Volume Control..........	

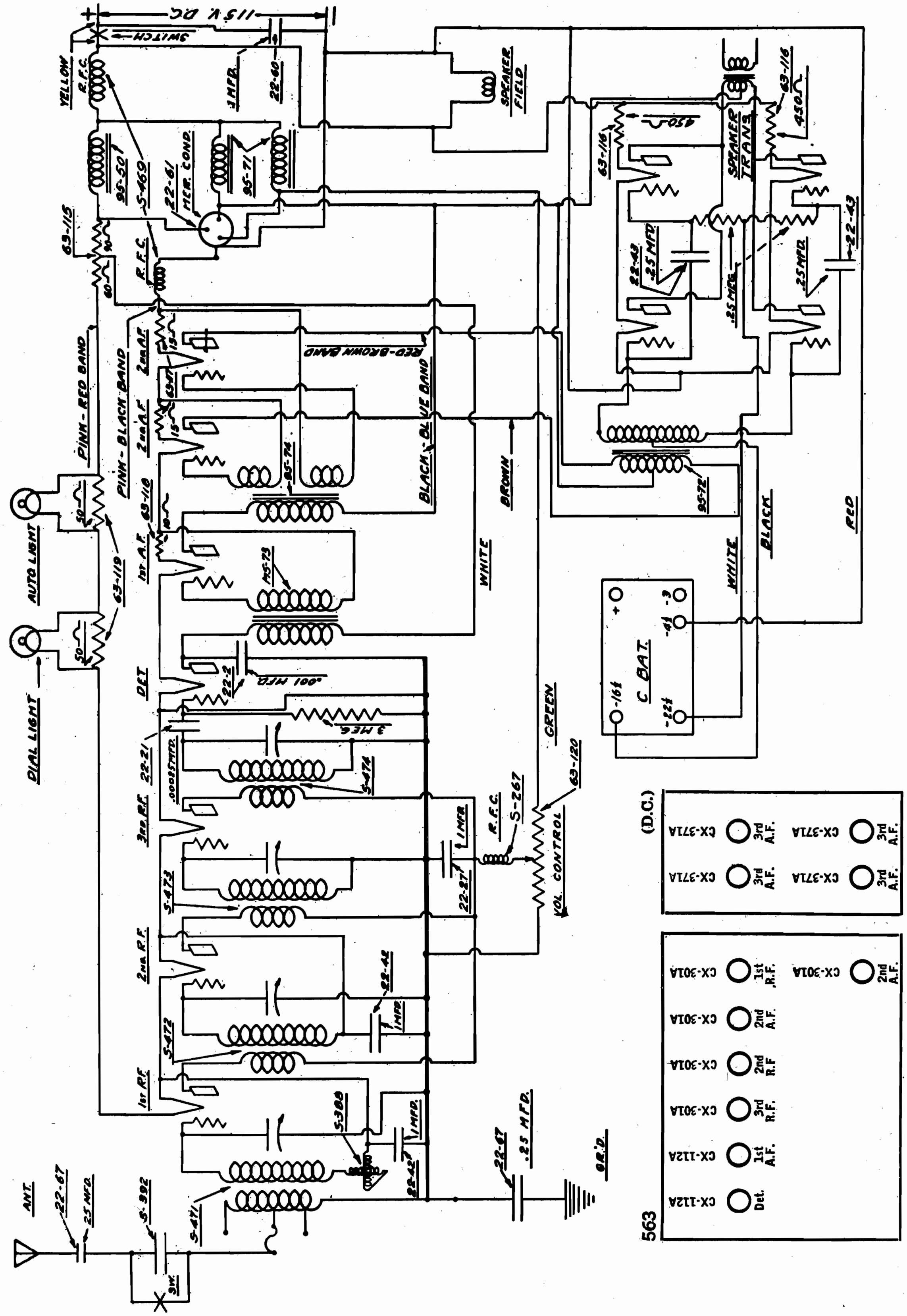


Fixed Condensers

22-82 .001 mf Condenser..........(Detector Plate)..........
22-87 8. " " ....(Electrolytic High Voltage)
22-102 8. " " ....(Electrolytic Low Voltage).
Note: High voltage condenser identified by red dot on anode
22-91 .02 mf Condenser..........(Audio Coupling)..........
22-100 .08 " " ....(Filter Condenser)..........
22-103 Five Section Bypass Condenser..........
S-392 Antenna Series Condenser..........

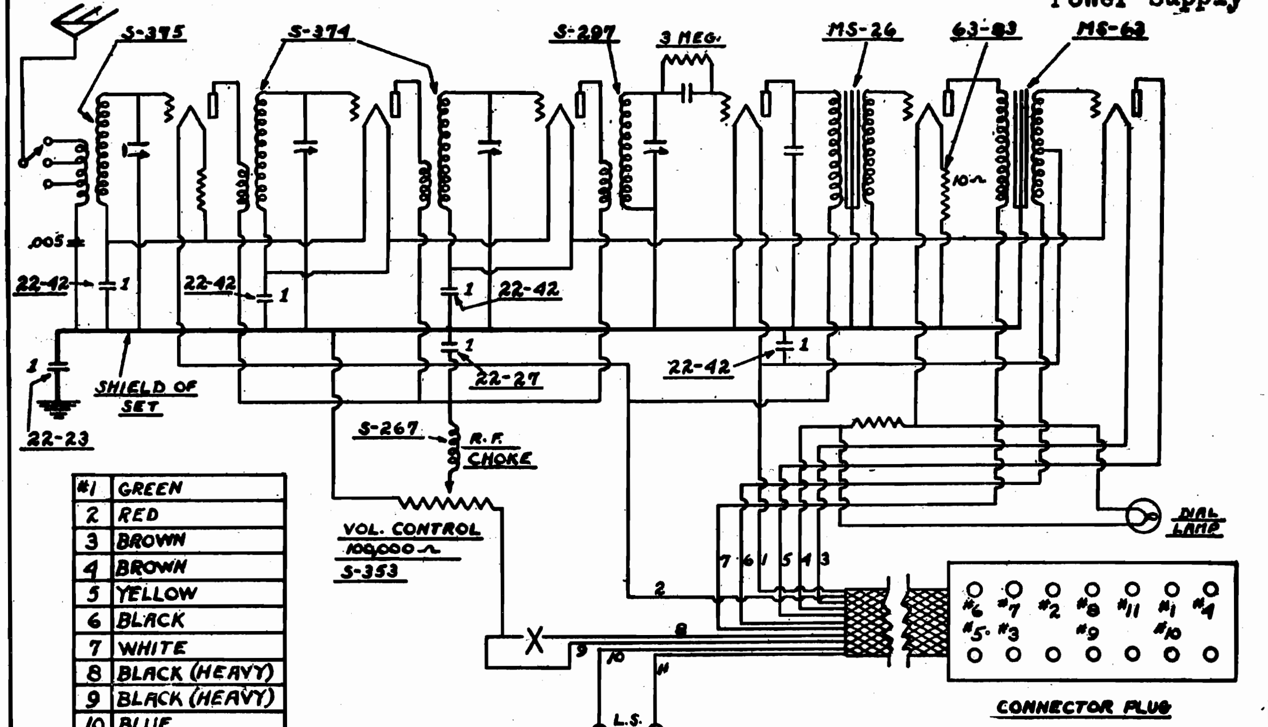
MODEL 563 DC
Schematic

ZENITH RADIO CORP.



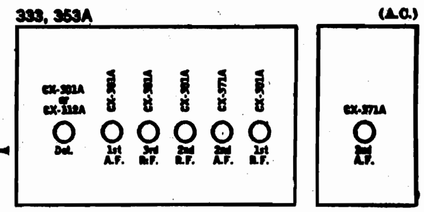
ZENITH RADIO CORP.

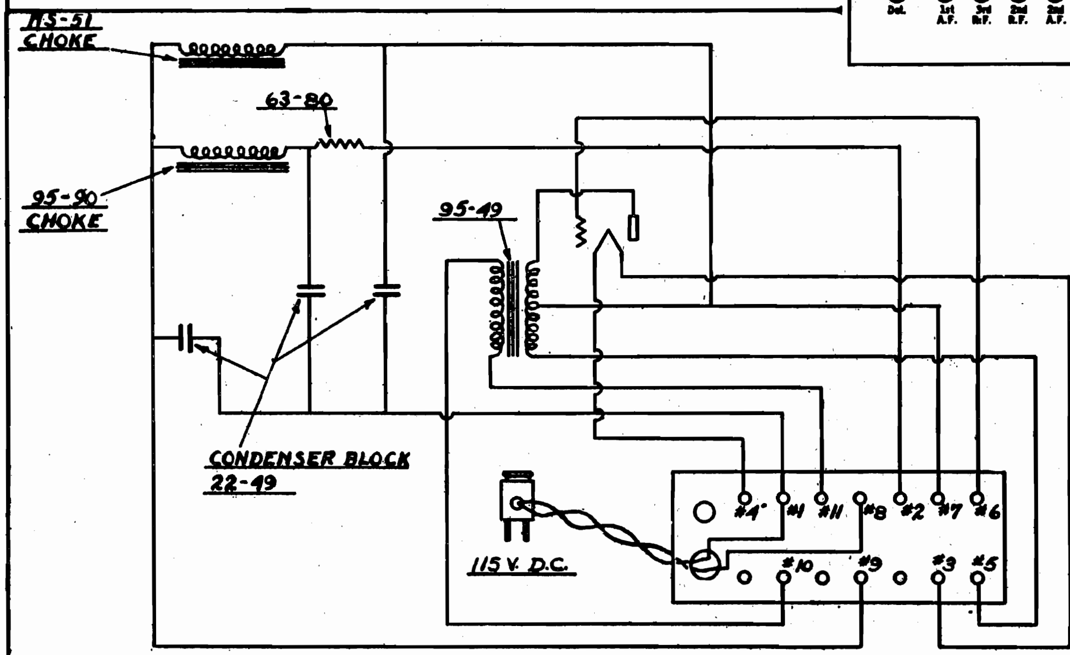
MODEL 333-353A
Schematic
MODEL ZE 17
Power Supply



#1	GREEN
2	RED
3	BROWN
4	BROWN
5	YELLOW
6	BLACK
7	WHITE
8	BLACK (HEAVY)
9	BLACK (HEAVY)
10	BLUE
11	BLUE

WIRING DIAGRAM
MODEL 333-353A
6 TUBE D.C. SET.





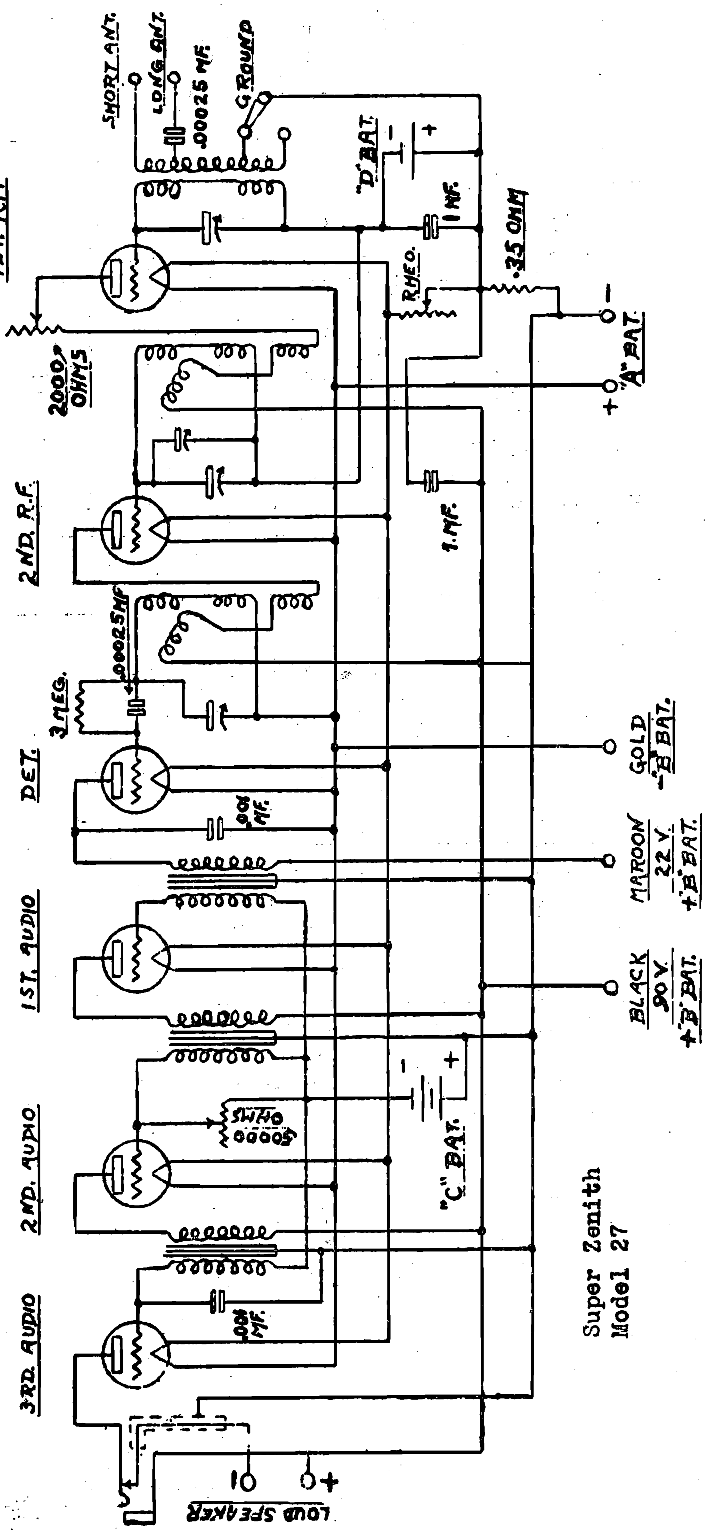
WIRING DIAGRAM
MODEL ZE 17
POWER SUPPLY FOR
MODELS 333-353A

ZENITH RADIO CORPORATION
CHICAGO ILL.

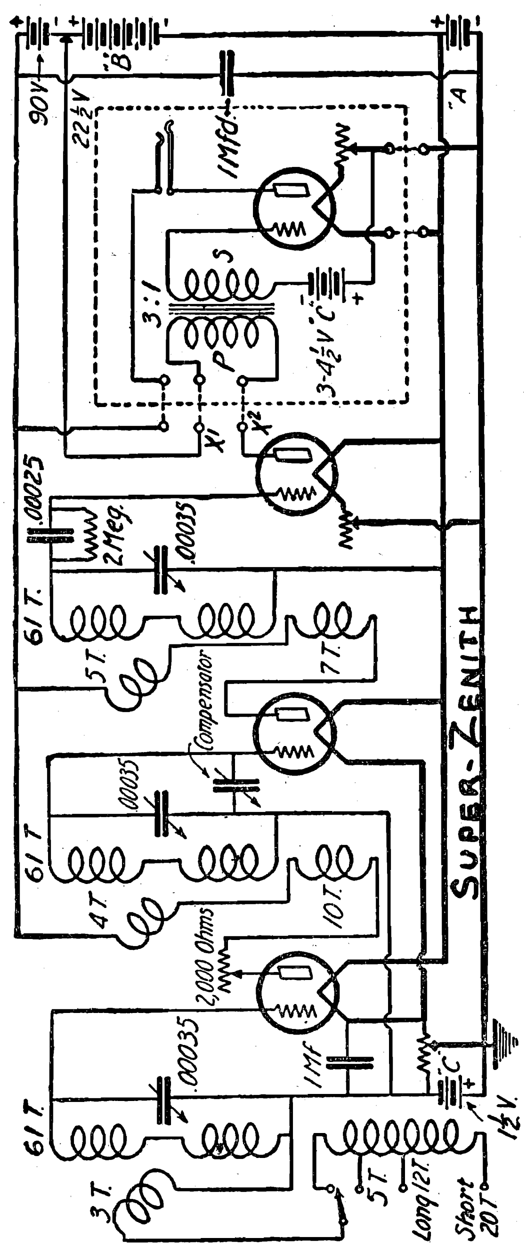
6-7-28 DRG. 123-48

MODEL 27
Super Zenith
MODEL Super Zenith

ZENITH RADIO CORP.

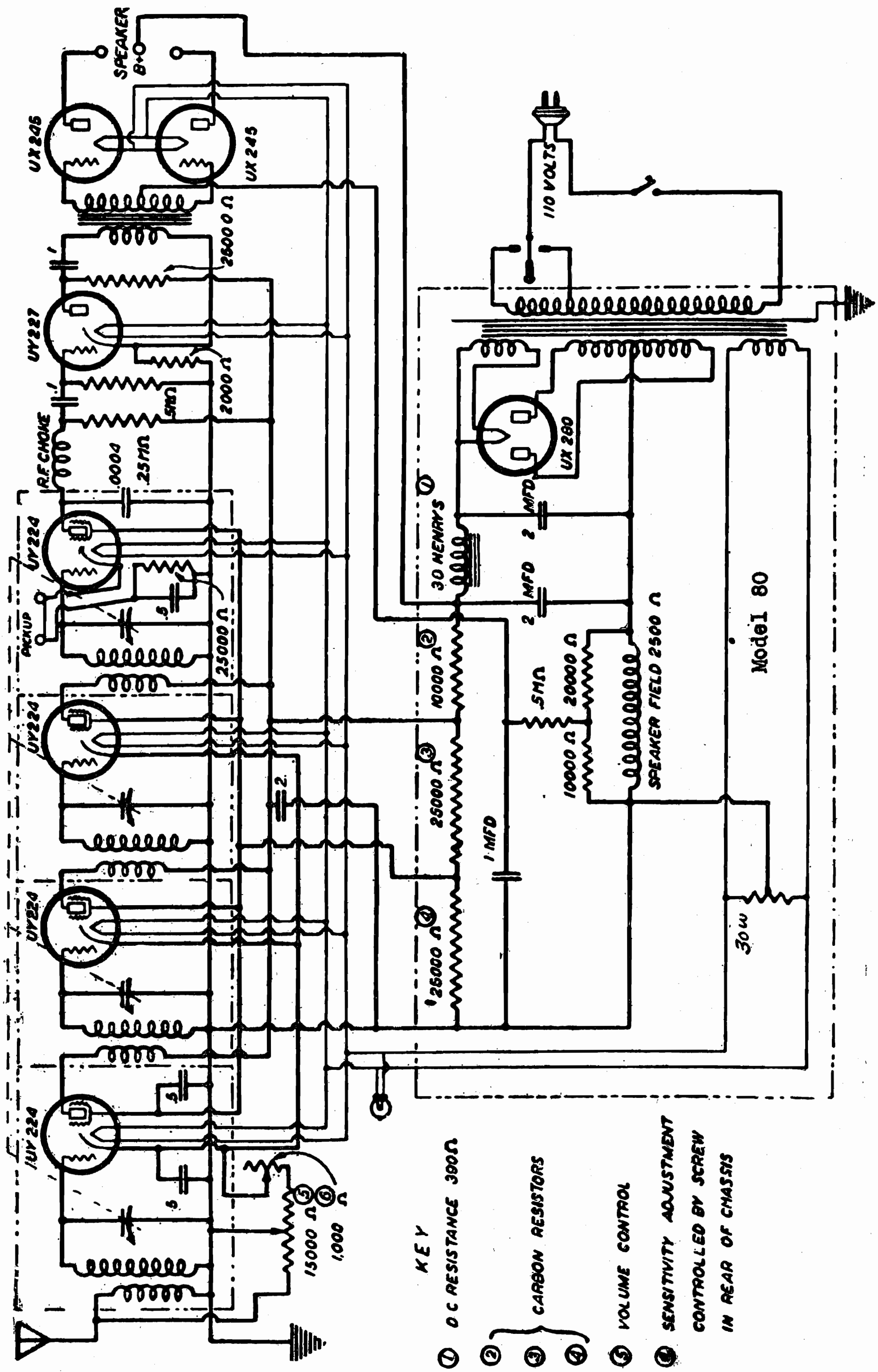


Super Zenith
Model 27



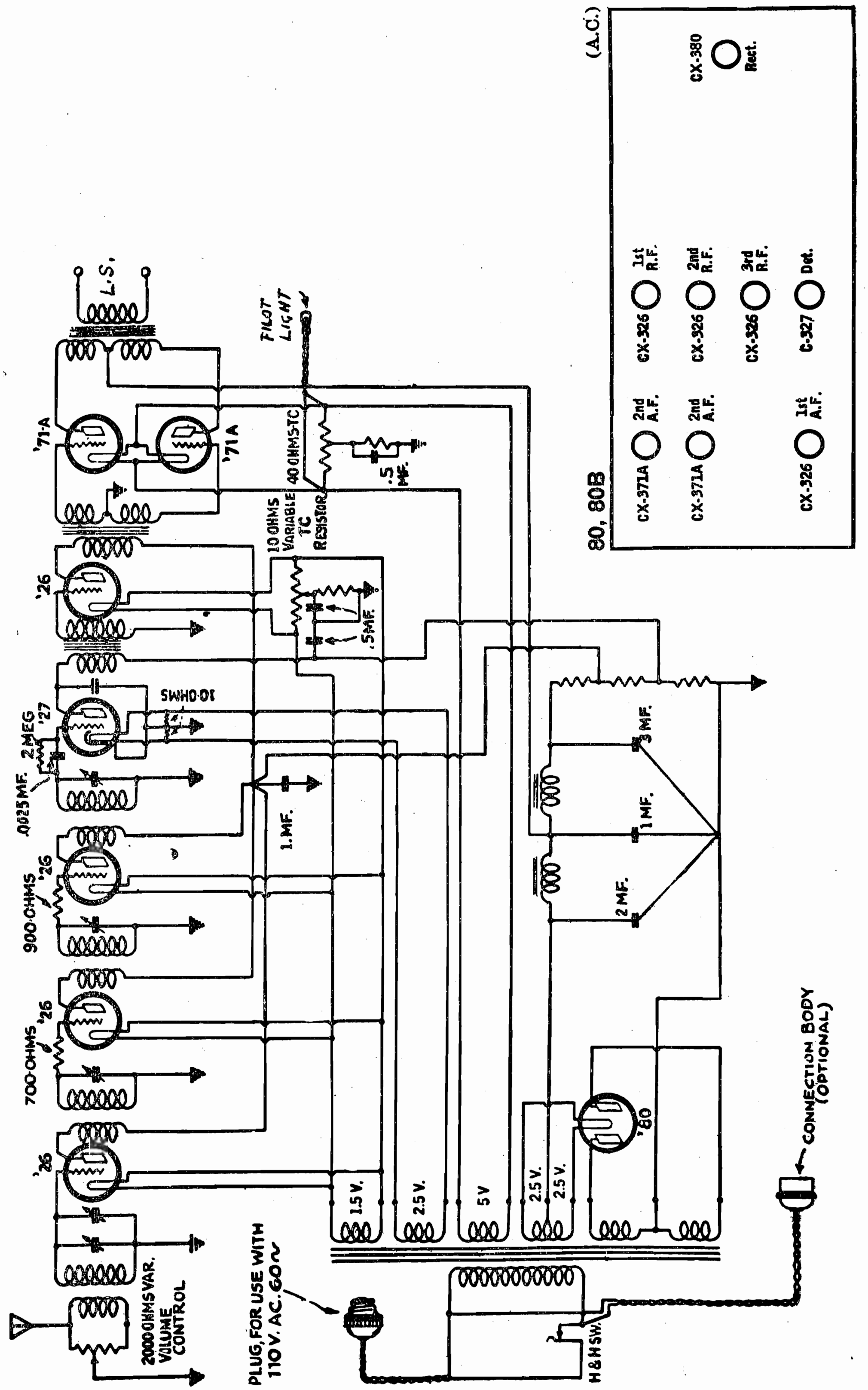
Super Zenith

NATHANIEL BALDWIN & CO.



BUCKINGHAM RADIO CORPORATION

MODEL 80

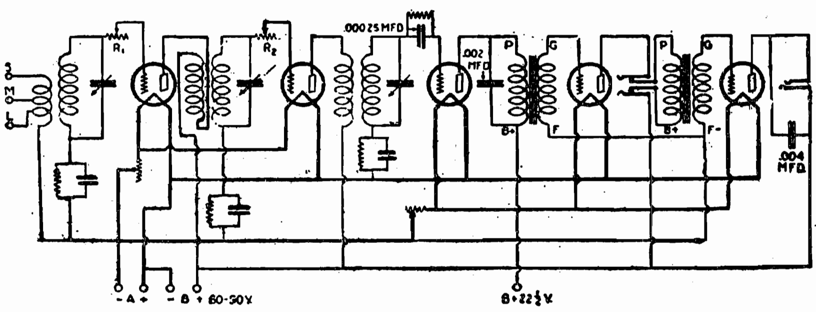


Buckingham 80 Average readings.

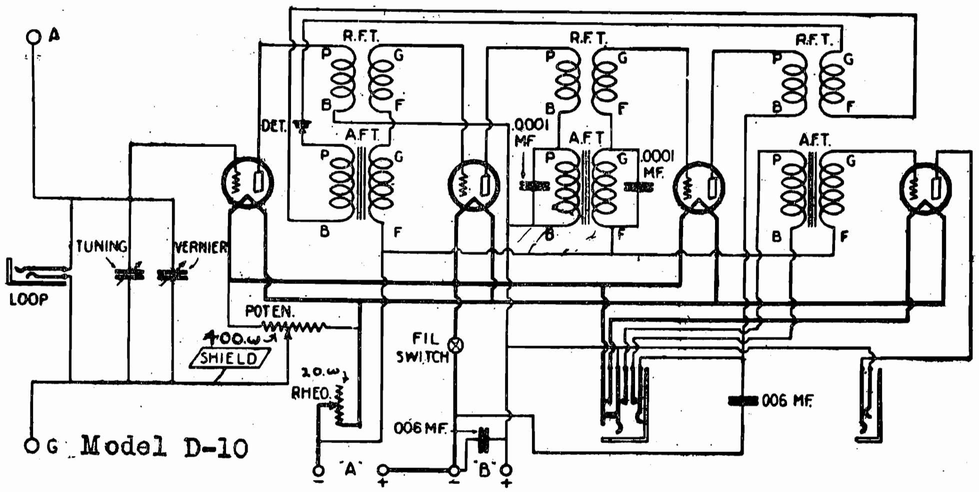
	1 RF	2 RF	3 RF	Det.	1 AF	2 AF
Fil. volts	1.25	1.25	1.25	2.25	1.25	5
Bias volts	9.	9	9.		9	45
Plate volts	125	125	125	45	125	180
Plate current (ma)	4	4	4	4	4	20

DEFOREST RADIO CORPORATION

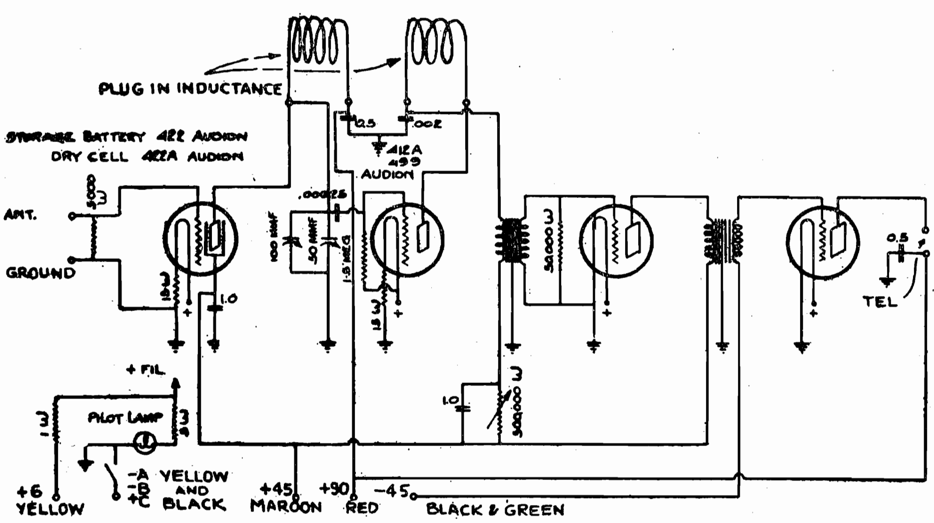
MODEL F-5
MODEL D-10
MODEL CS-5
MODEL D-17



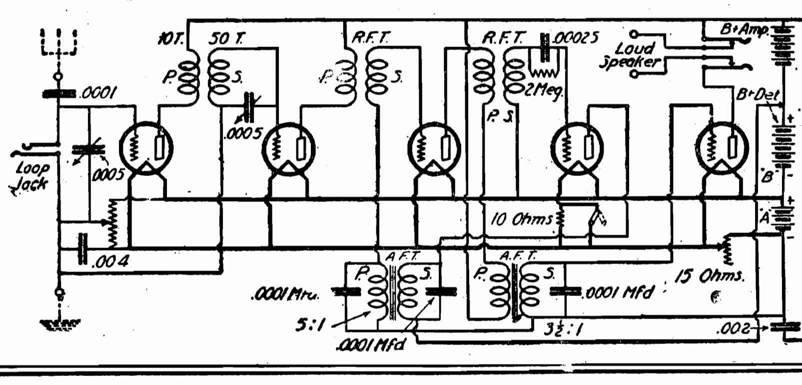
Model F-5



Model D-10



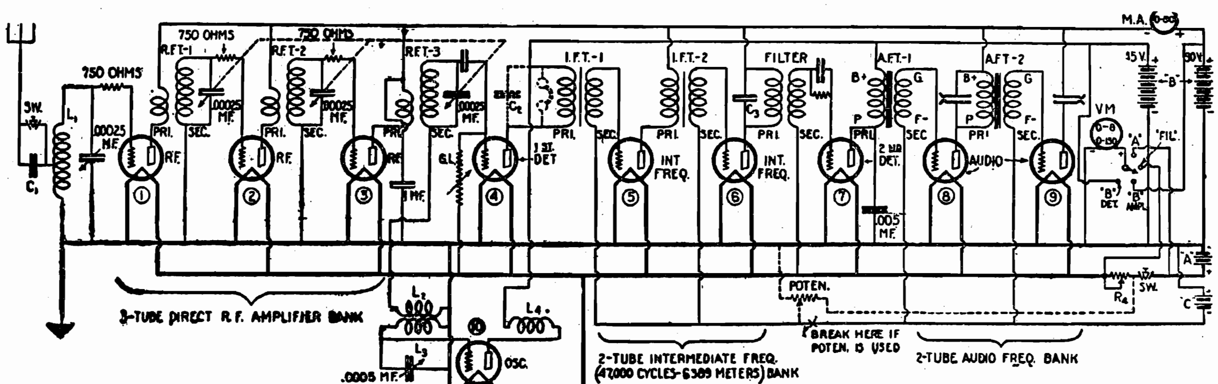
Model CS-5



Model D-17

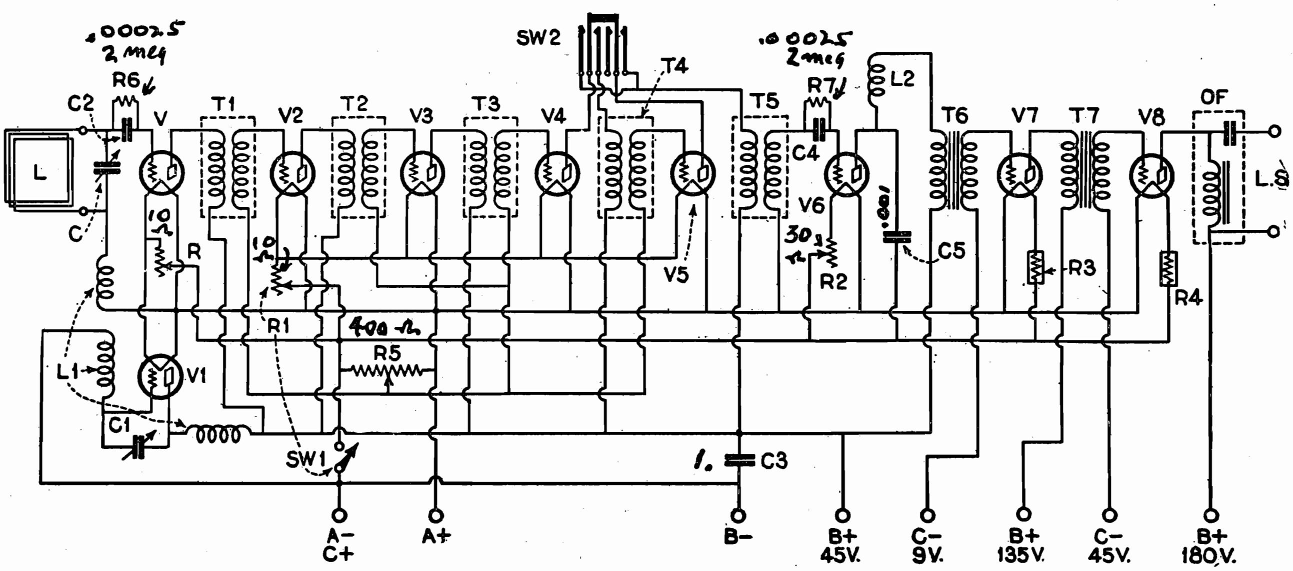
EXPERIMENTERS INFORMATION SERVICE
RADIART LABORATORIES

Model Navy C-10



The Experimenters' Information Service Navy Model C-10 super-heterodyne designed for a wave-length range from 600 meters down to 50 meters, the band being covered through the expedient of interchangeable coils.

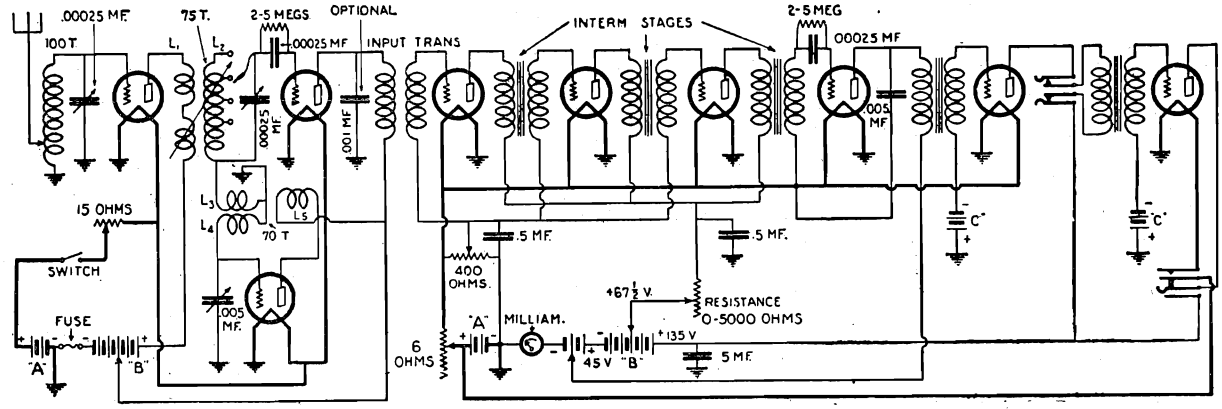
Model Magnaformer 9-8



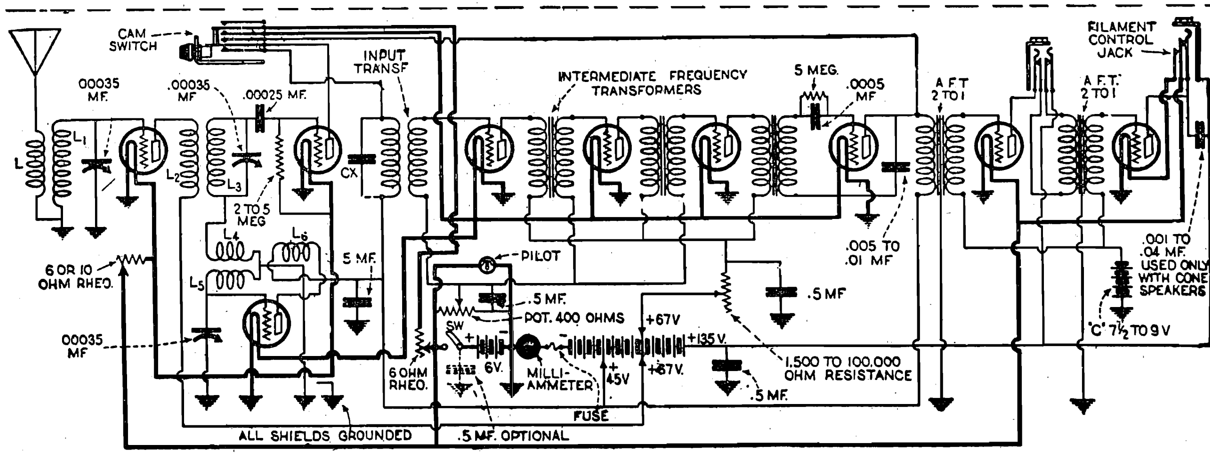
Schematic diagram of the Magnaformer 9-8 Receiver. By means of the cam switch SW2 one stage of I.F. amplification can be cut out. This switch is mounted on the front panel of the receiver, below the drum dials.

FARRAND

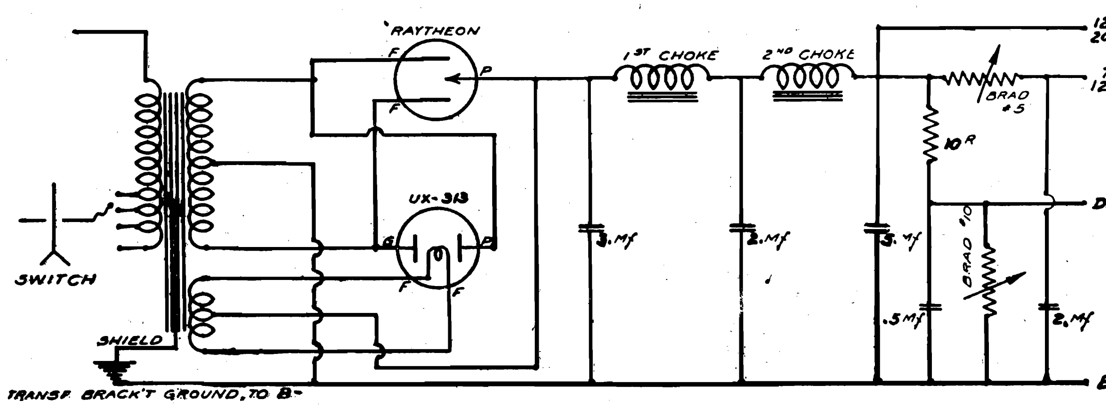
FENWAY



Model Fenway Superheterodyne

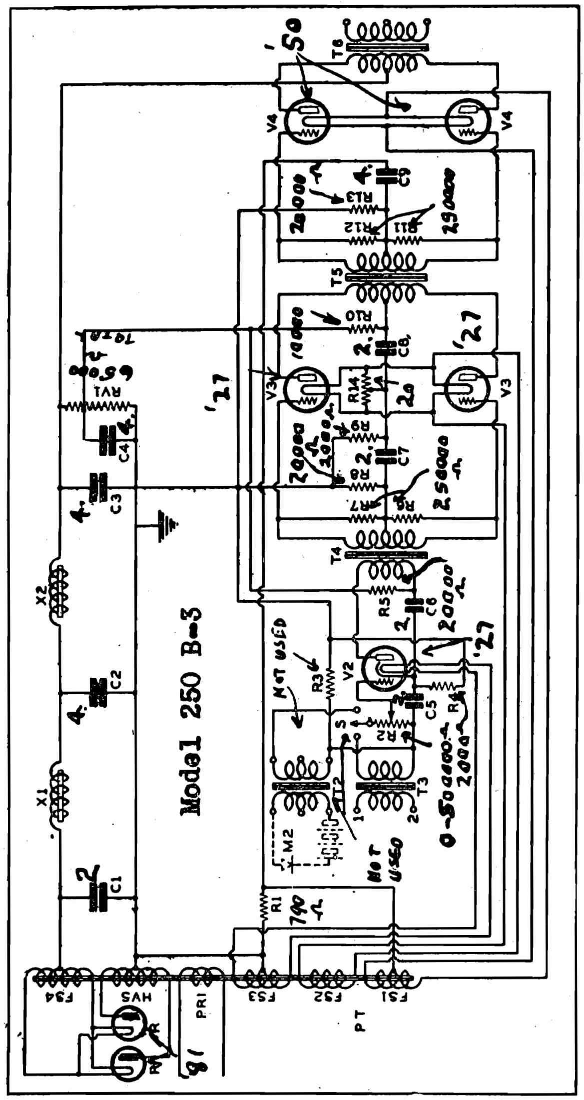


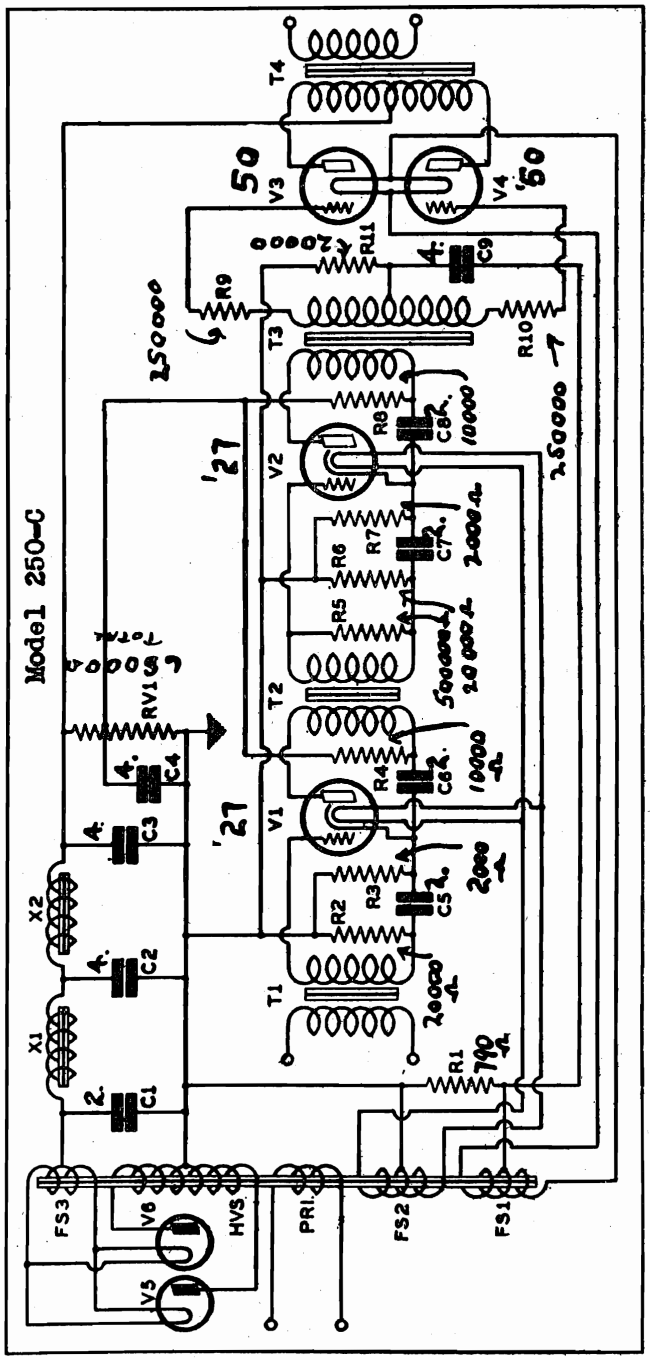
Model Fenway Superheterodyne

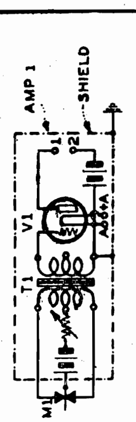


SCHEMATIC DIAGRAM

FERRANTI, INC.



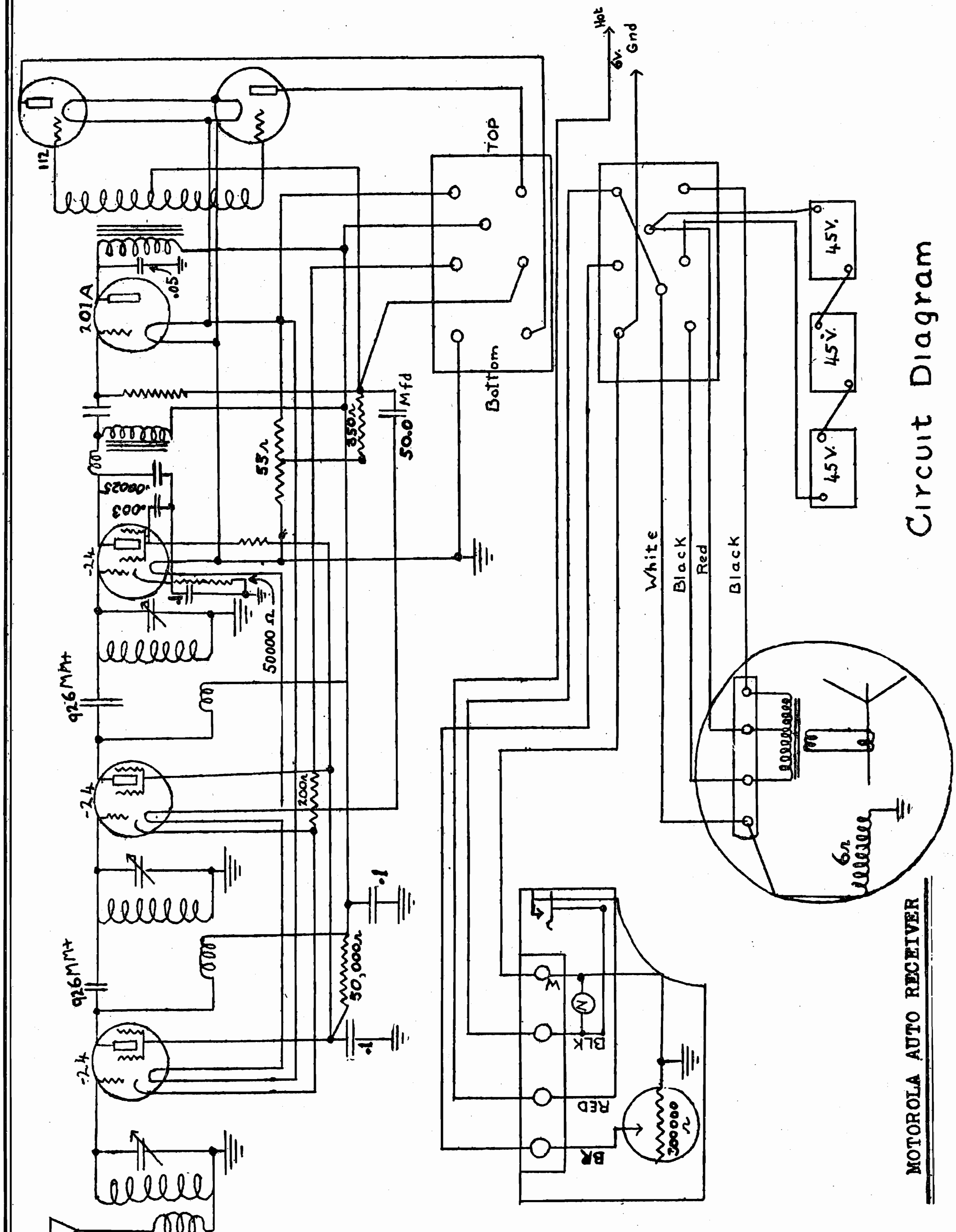




This microphone amplifier is sometimes used with the 250-B3 power amplifier. In such event the parts marked "Not Used" are in operation. These parts are normally omitted from the 250-B3 unit.

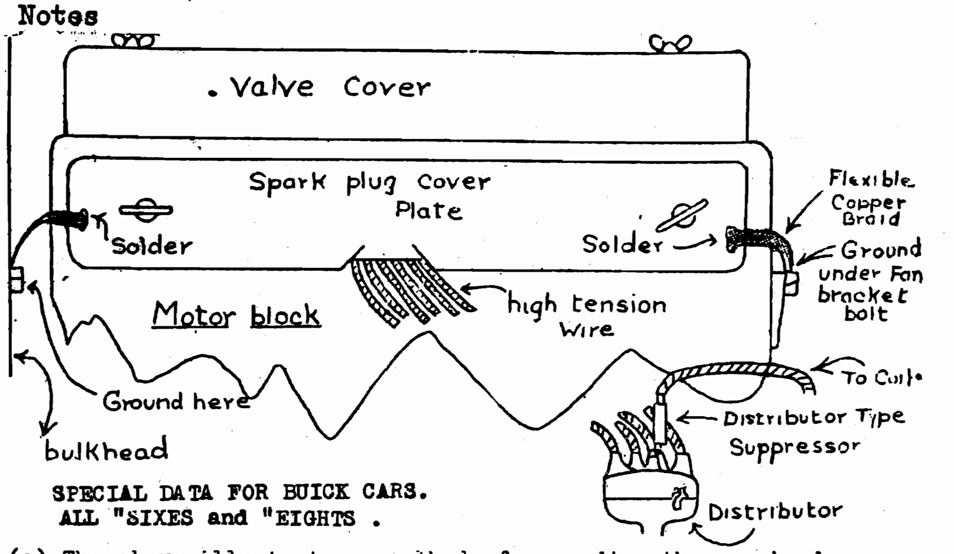
GALVIN MFG. CO.

MODEL Motorola Auto Receiver



MODEL Motorola Auto Receiver Notes

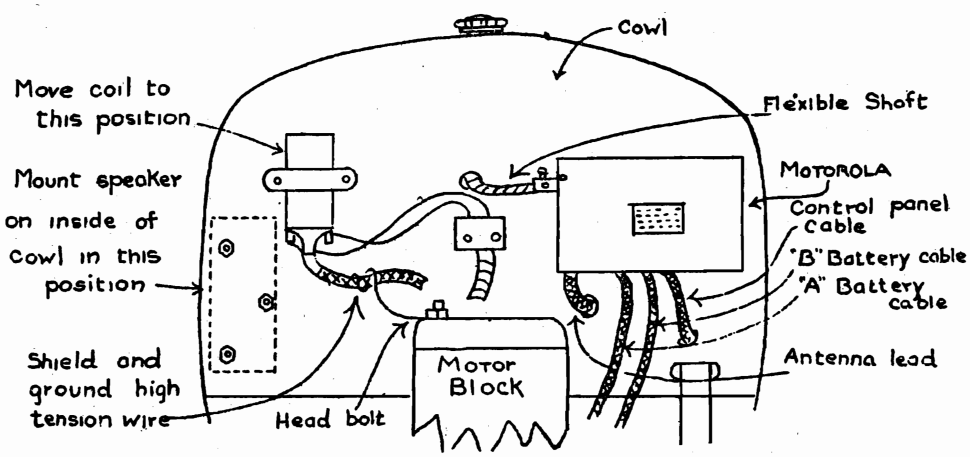
GALVIN MFG. CO.



SPECIAL DATA FOR BUICK CARS.
ALL "SIXES and "EIGHTS .

(a) The above illustrates a method of grounding the spark plug cover plate found on all Buick cars. Do not be misled by the fact that this plate is apparently grounded by the two aluminum wing nuts holding it to side of motor, <u>for this is in no way</u> a ground for the type of current radiating from spark plugs which cause radio interference. Soldering flexible jumpers to this cover plate and grounding same under motor or chassis bolts will in every case help eliminate motor noise in radio reception.

(b) As a further help on the new model Buick Eights, it will be found advisable to solder copper bonds to all the control shafts passing through bulkhead and grounding these to bulkhead. By "control shafts" we mean choke rods, carburetor heat control, motor temperature indicator, etc.



SPECIAL DATA FOR MODEL "A" FORD CARS

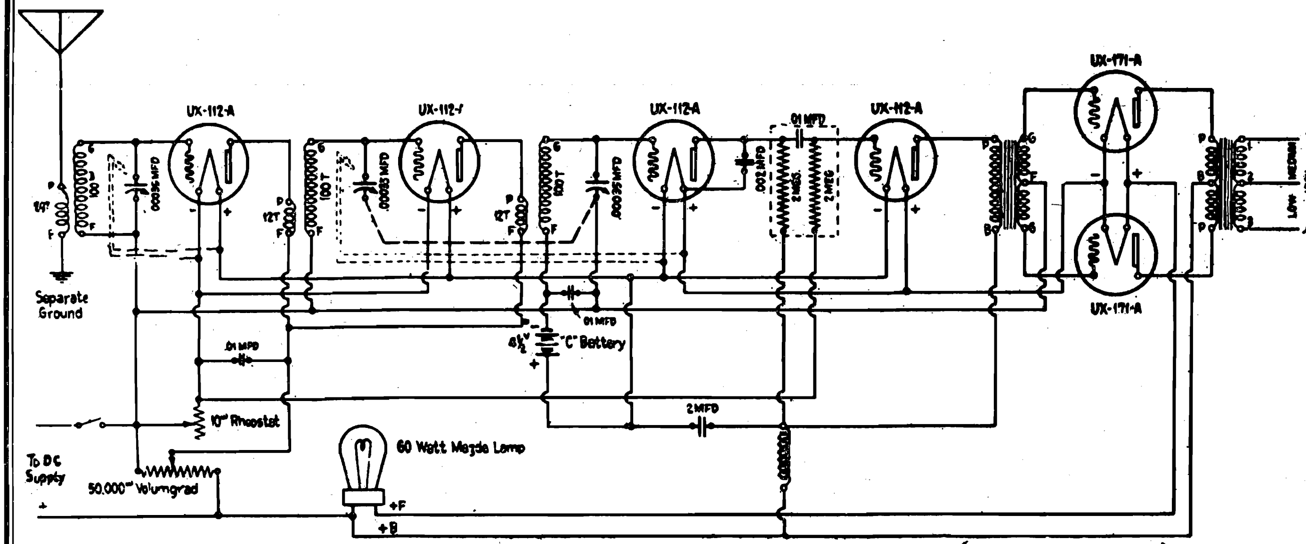
The above illustrates the proper mounting of a Motorola receiver on a Model "A" Ford car. On inspection you will note that it is necessary to move the ignition coil over to side of cowl. This is done for two reasons, one to make room for the flexible shaft to pass through cowl and the other to help in elimination of motor noise.

It is advisable to shield the high tension lead from coil to distributor and ground this shielding to motor block as per diagram.

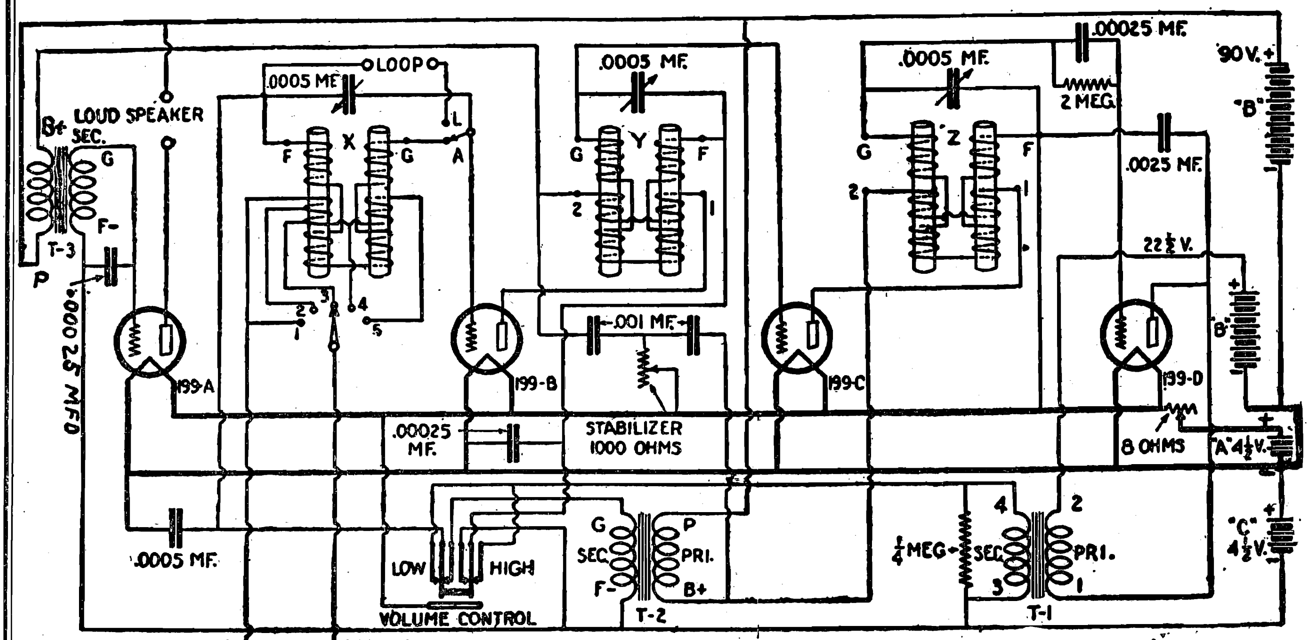
The speaker will be found to mount best on the inside of cowl to the right side of car above foot board.

Different cars will have different types of antennae and their capacities with respect to the frame of the car will be different, therefore it will be necessary to phase the antenna with the set. Remove the four screws holding the set lid in place, turning the set on and tuning to a very weak station. Adjust with a screw driver the small trimming condenser, to the maximum signal obtainable. If operation is satisfactory to this point, the volume should be turned all the way on, the station selector knob turned to a point where no signal is received, the motor of car started and there should be no motor noise noticeable.

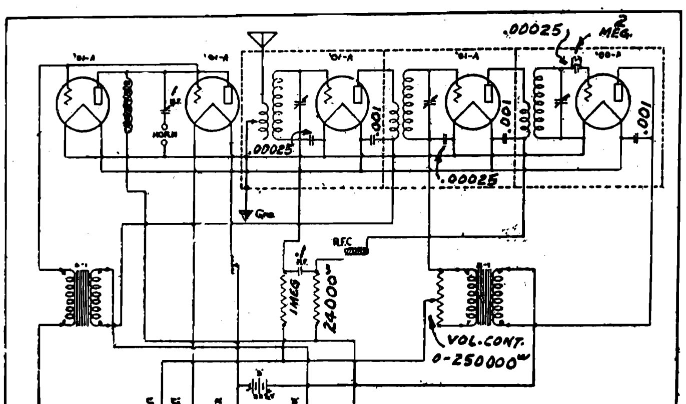
DAVID GRIMES, INC.



GRIMES 110 Volt D.C. - ("NEW YORKER")

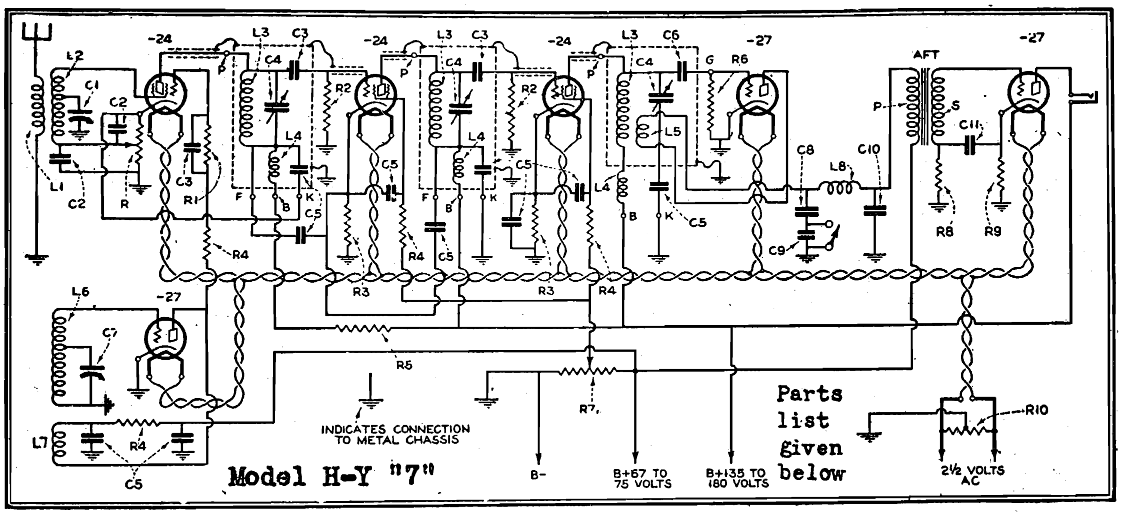


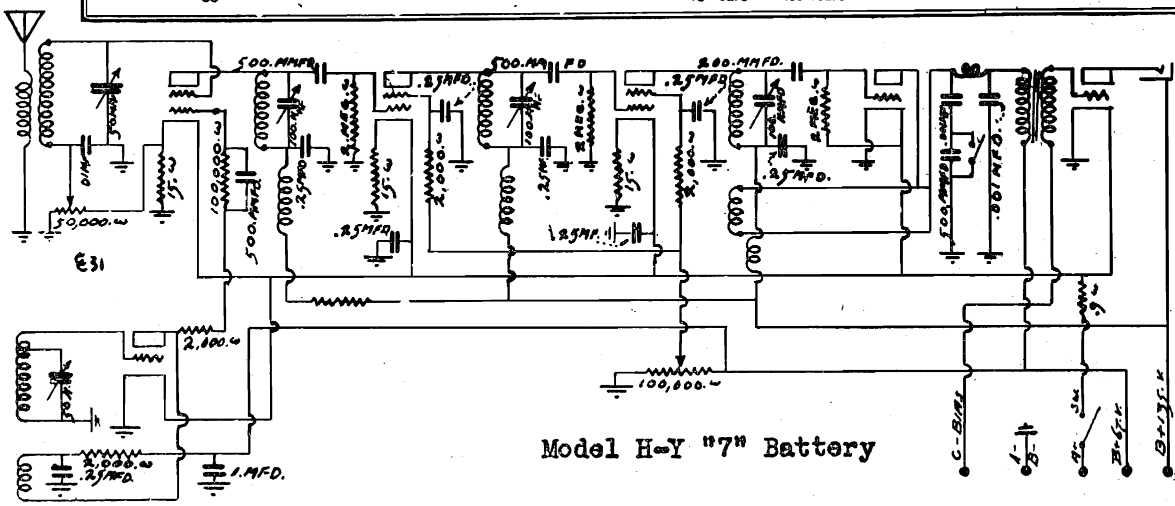
GRIMES Type 4-DL Inverse Duplex (Reflex) Circuit

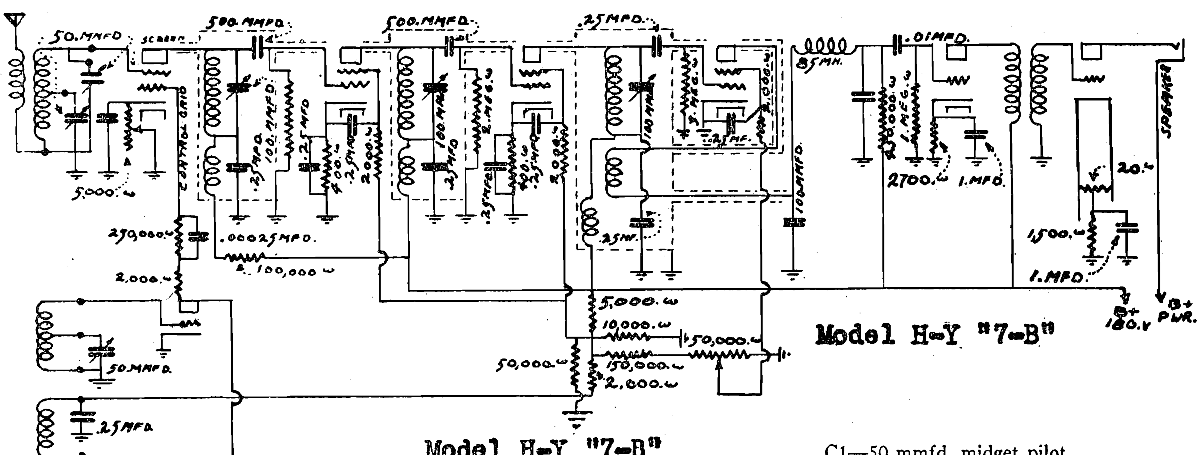


GRIMES 1927 R.G.S. Inverse Duplex.

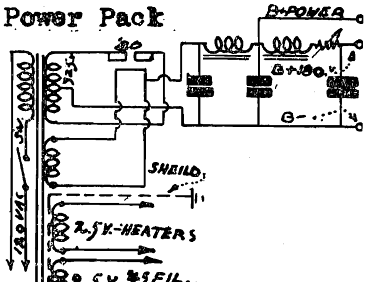
HATRY & YOUNG







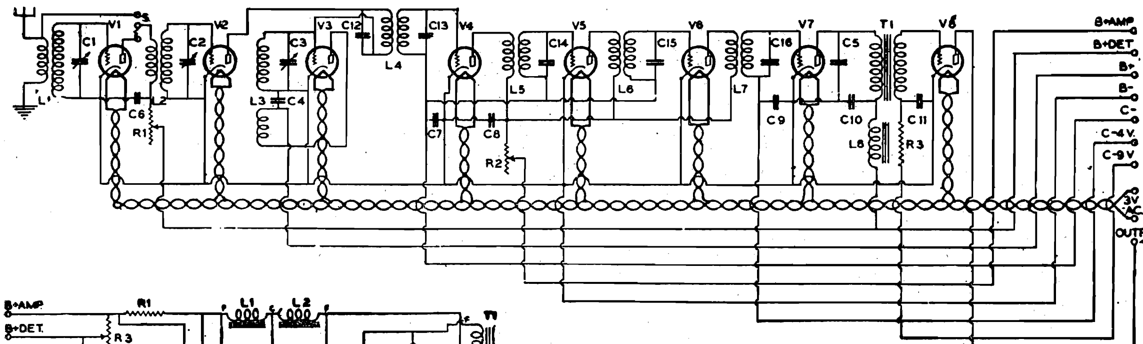
Model H-Y "7-B" Power Pack

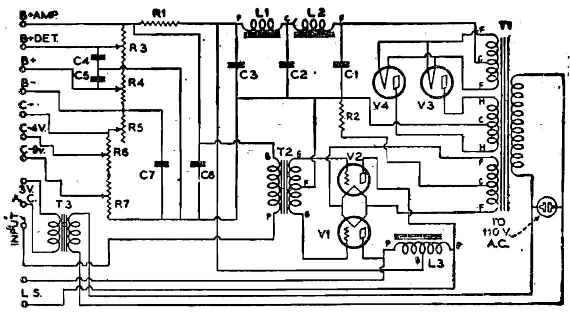


R1—100,000-ohm Durham metallic leak.
R2—2-megohm Durham metallic leak.
R3—400-ohm Electrad suppressor resistance.
R4—2,000-ohm Electrad suppressor resistance.
R5—25,000-ohm Durham metallic.
R6—3-megohm Durham metallic.
R7—25,000-ohm Electrad royalty potentiometer.
R8—50,000-ohm Durham metallic.
R9—2,250-ohm Durham metallic.
R10—10-ohm centre-tapped Yaxley.

C1—50 mmfd. midget pilot.
C2—.01 mfd. Sangamo fixed condenser.
C3—.0005 mfd. Sangamo fixed condenser.
C4—1.00 mmfd. Hammarlund equalizer, range with L3 about 1650-1475 kc.
C5—.25 mfd. Sprague midget fixed condenser.
C6—.0002 mfd. Sangamo fixed condenser.
C7—Same as C1.
C8—.00015 Sangamo.
C9—.00005 mfd. Sangamo.
C10—.001 mfd. Sangamo.
C11—1 mfd. Flechtheim.
R—5,000-ohm Electrad royalty potentiometer.

R. E. LACAULT

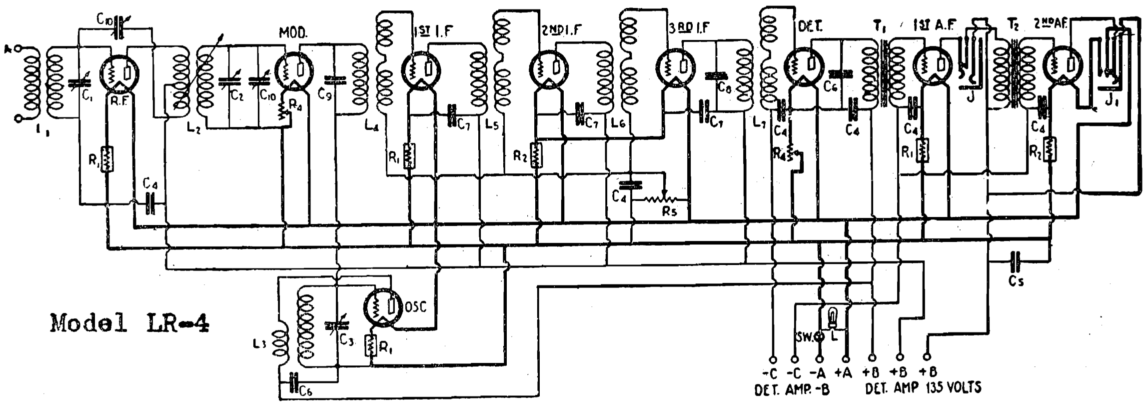




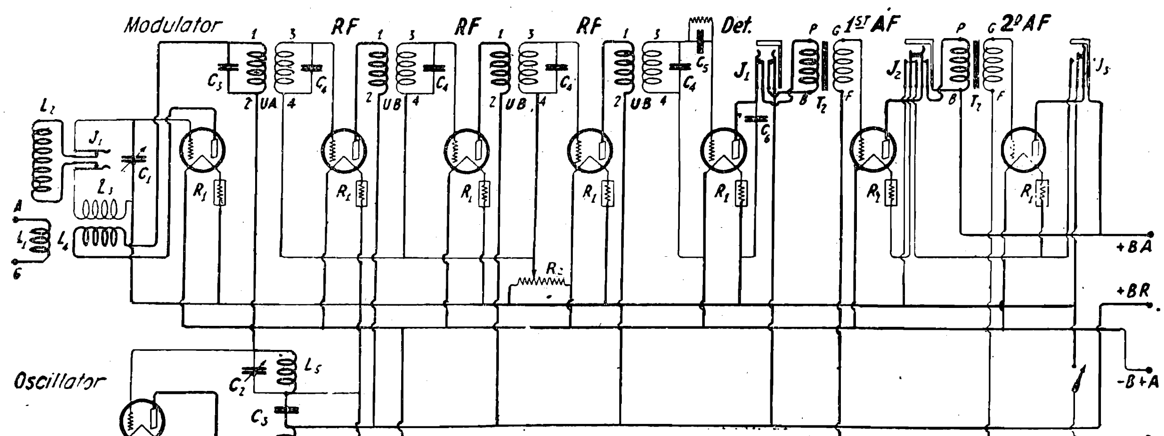
Model All-Wave Electric 9

C1, C2 and C3—Variable condensers, 0005 mfd.;
L1 to L7—R.E.L. plug-in coils;
L8—Audio-frequency choke;
T1—Audio-frequency transformer;
R1 and R2—Variable resistors;
C4—Fixed condenser, .001 mfd.;
C5—Fixed condenser, .002 mfd.;
C6 to C9—By-pass condensers, .5 mfd., 100 volts;
C10 and C11—By-pass condensers, 1. mfd., 400 volts;
C12 to C16—Fixed condensers, .00025 mfd.;
V1 to V8—Heated cathode a.c. tubes;
R3—Fixed resistor, 100,000 ohms;
1 Front panel;
1 Sub-base panel;
10 Binding posts;
2 Stage shields;
8 Coil sockets;
8 Tube sockets;
1 Drum dial;
1 Grid-leak mounting;
2 Condenser extension shafts;
2 Tip jack and plugs;

The parts required for building the amplifier-power unit are as follows:
T1—Full-wave, power transformer;
T2—Push-pull, audio-frequency transformer;
T3—Filament transformer;
L1 and L2—Audio-frequency chokes;
L3—Center-tapped, audio-frequency choke;
C1, C2 and C3—Filter condensers, 2 mfd., 1,000 volts;
R1—Fixed resistor, 4,000 ohms, 50 watts;
R2—Fixed resistor, 750 ohms, 25 watts;
R3 and R4—Variable resistors, 10,000 ohms;
R5—Rheostat, 60 ohms;
R6 and R7—Variable resistors, 500 ohms;
C4 to C7—Fixed condensers, 1 mfd., 400 volts;
V1 and V2—Power tubes, '10 type;
V3 and V4—Rectifier tubes, '81 type;
4 Tube sockets;
12 Binding posts;
1 Front panel;
1 Sub-base panel;
1 110-volt receptacle.

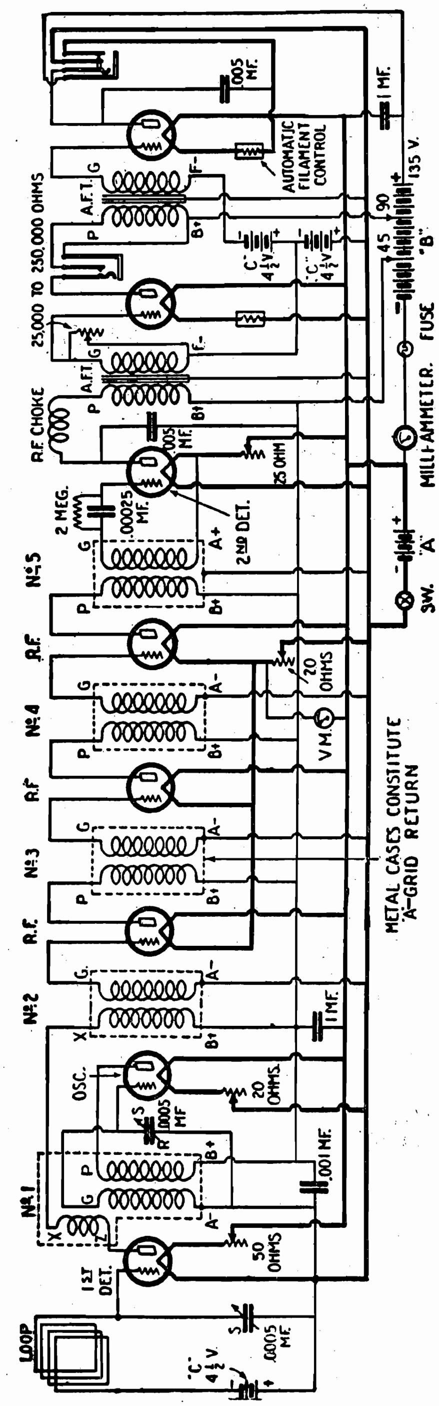


Model LR-4

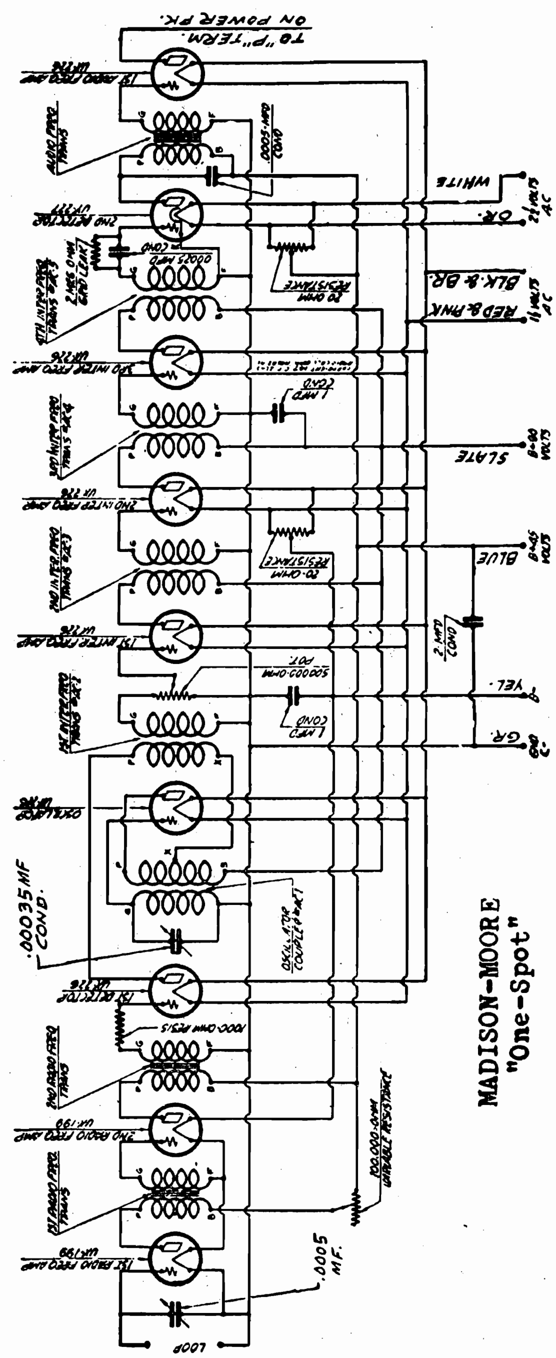


Model L-2 Ultradyne
(Improved)

MADISON-MOORE



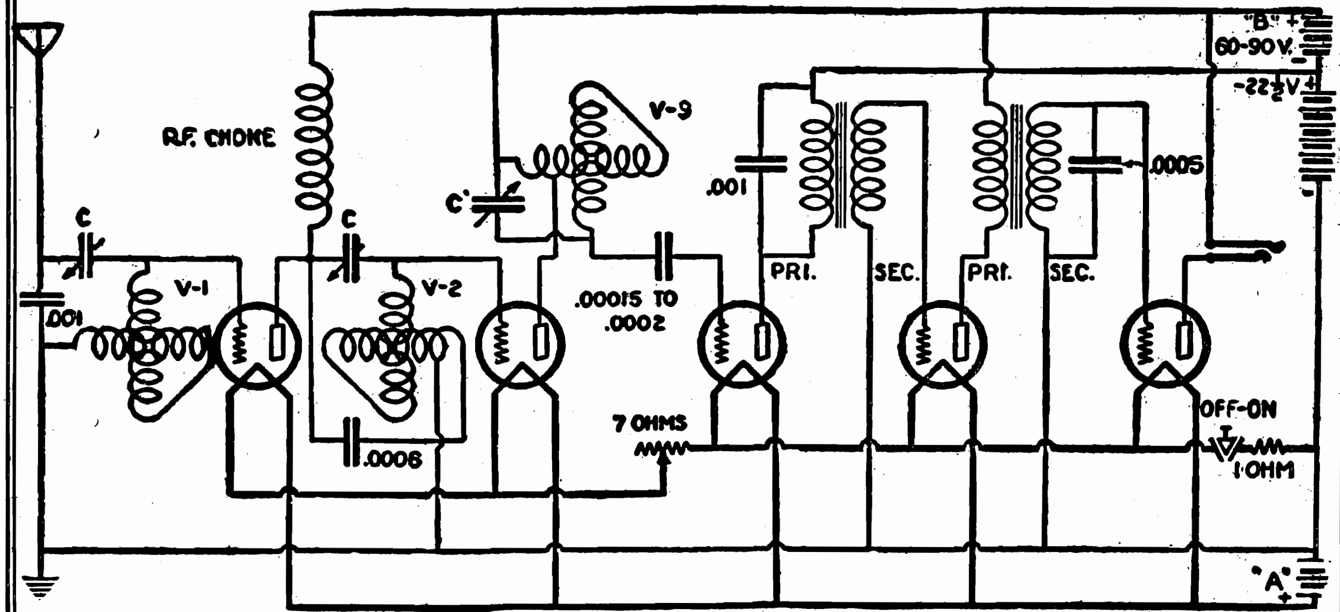
Madison Moore Super-heterodyne



MADISON-MOORE
"One-Spot"

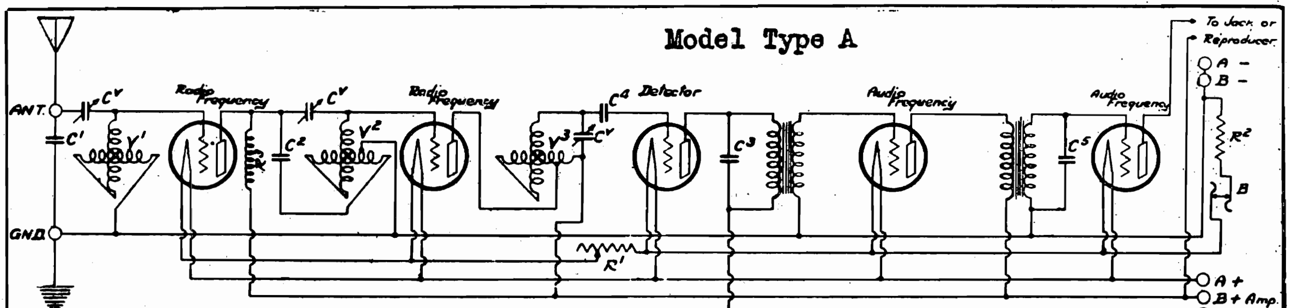
THE MAGNAVOX CO.

MODEL "One Dial"
MODEL "A"
MODEL "D"



Model "One Dial"

Model Type A

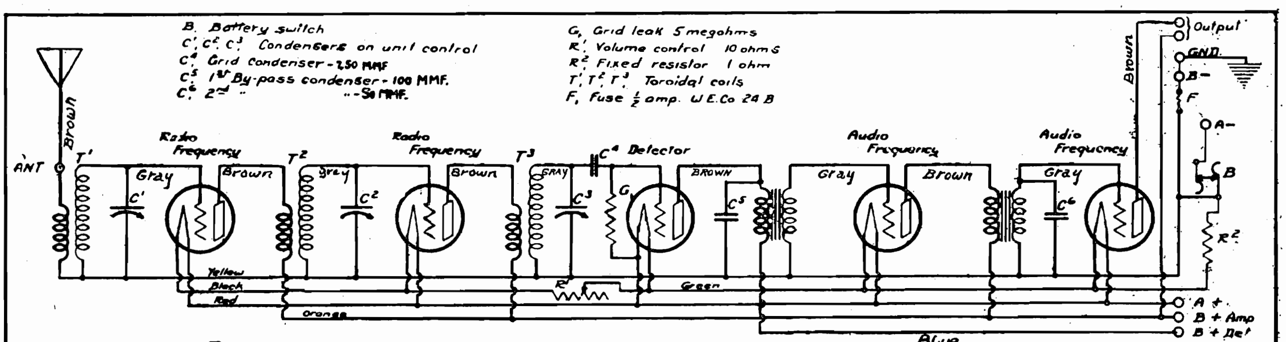


B Battery switch
C^1 Antenna coupling condenser, approximate 1000 M.M.F.
C^2 Second " " " 600 "
C^3 1st Audio by-pass " " 1000 "
C^4 Grid condenser " 150-200 M.M.F
C^6 2nd Audio by-pass condenser " 500 M.M.F.

C^V Variable ratio condenser approx 10-150 MMF
R^1 Volume control, approximate 7 ohms
R^2 Fixed resistor " 1 ohm
R^3 Radio frequency choke
V^1, V^2, V^3 Variometers on unit control.

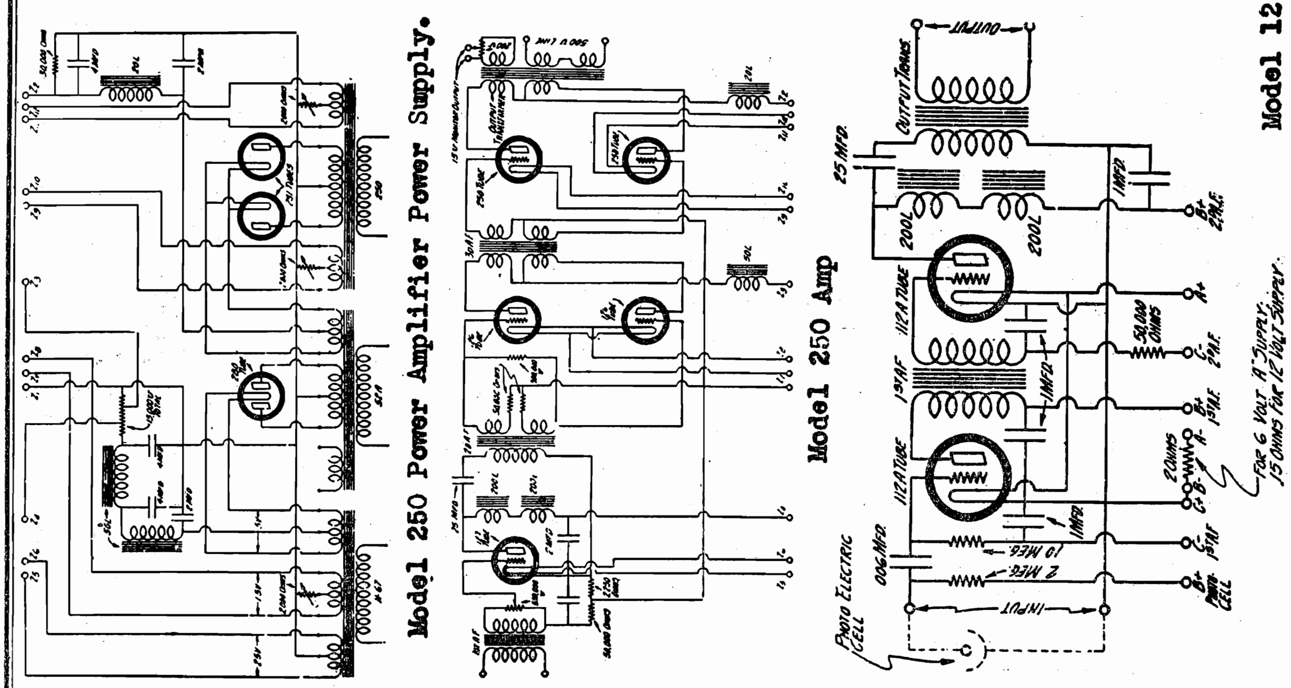
B. Battery switch
C^1, C^2, C^3 Condensers on unit control
C^4 Grid condenser - 250 MMF
C^5 1st By-pass condenser - 100 MMF.
C^6 2nd " " - 50 MMF.

G, Grid leak 5 megohms
R^1 Volume control 10 ohms
R^2 Fixed resistor 1 ohm
T^1, T^2, T^3 Toroidal coils
F, Fuse ½ amp. W.E.Co 24 B



Model Type D

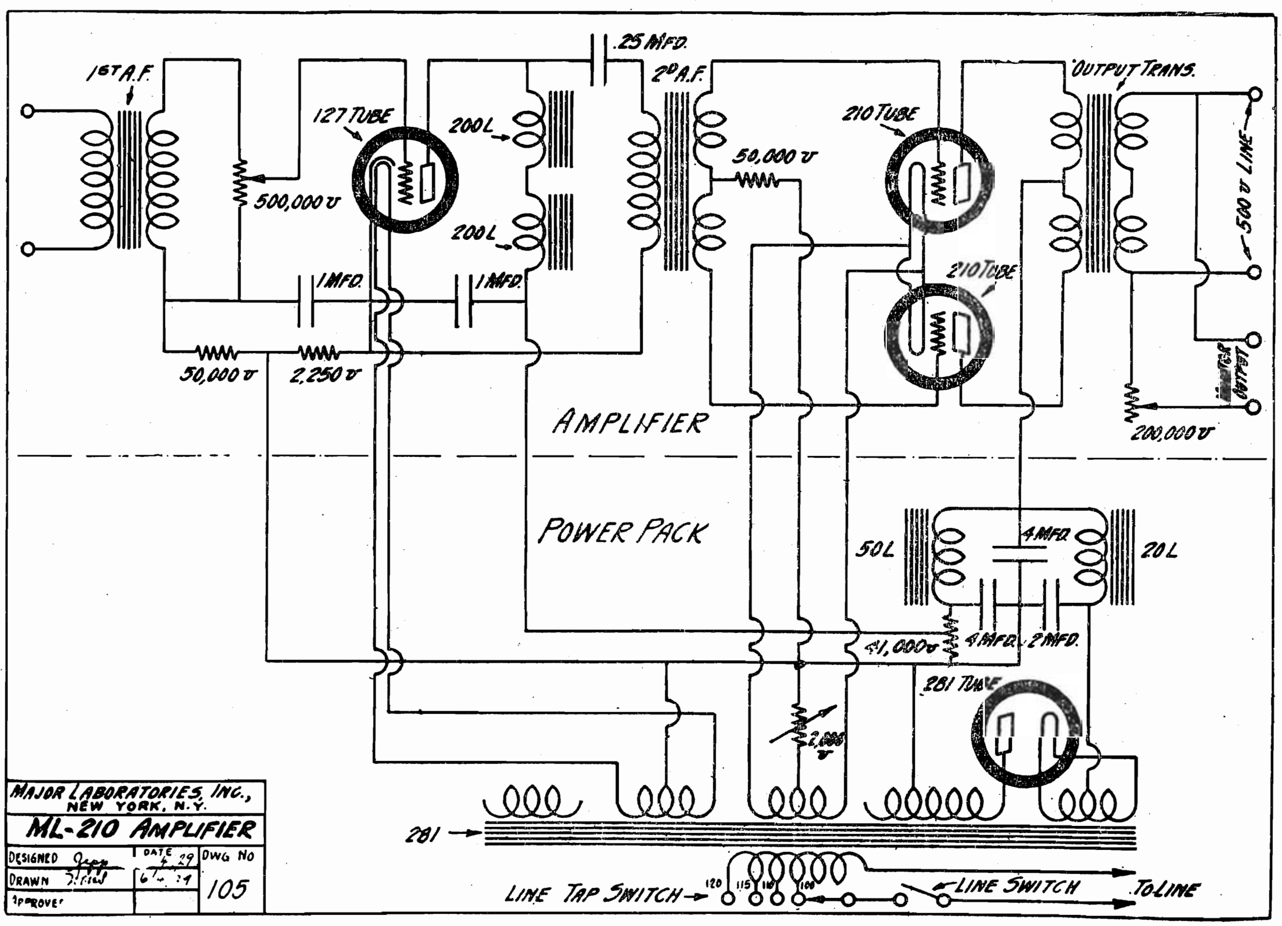
MAJOR LABORATORIES



Model 250 Power Amplifier Power Supply.

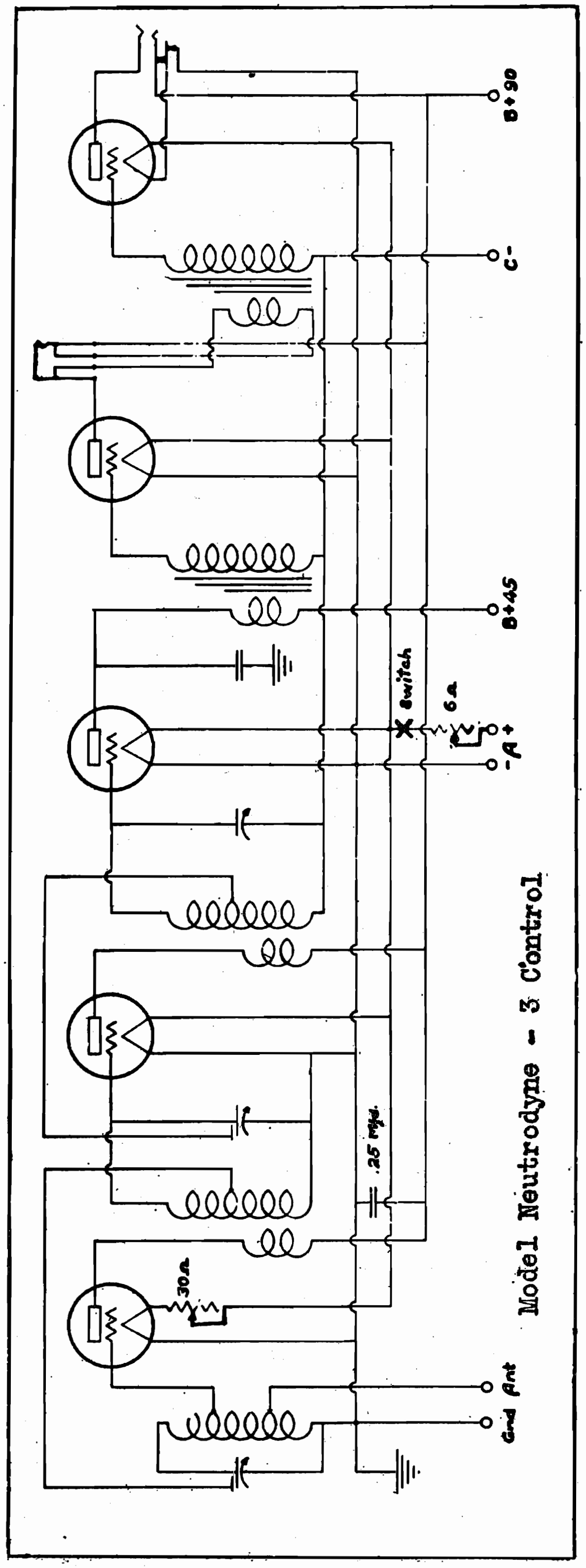
Model 250 Amp

Model 12

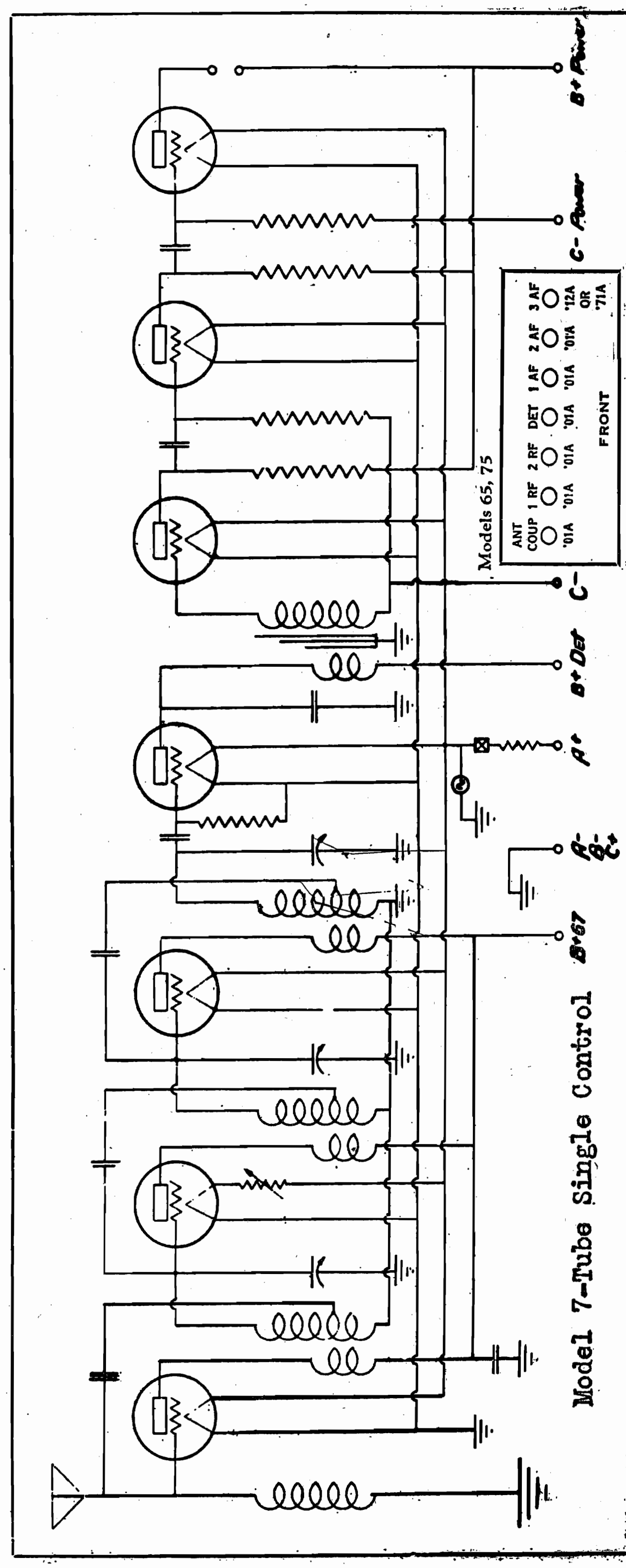


WILLIAM J. MURDOCK CO.

MODEL Neutrodyne
3 Control
MODEL 7 Tube
Single Control



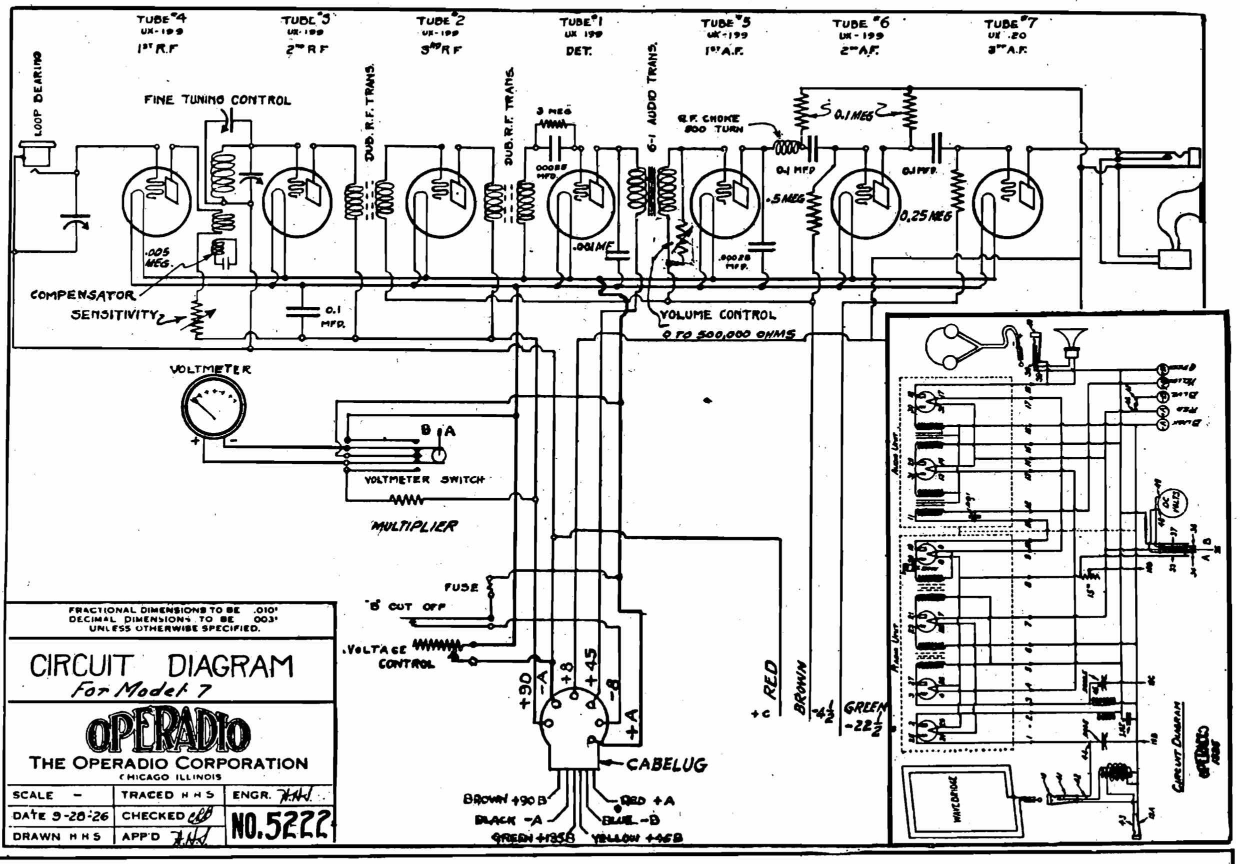
Model Neutrodyne - 3 Control

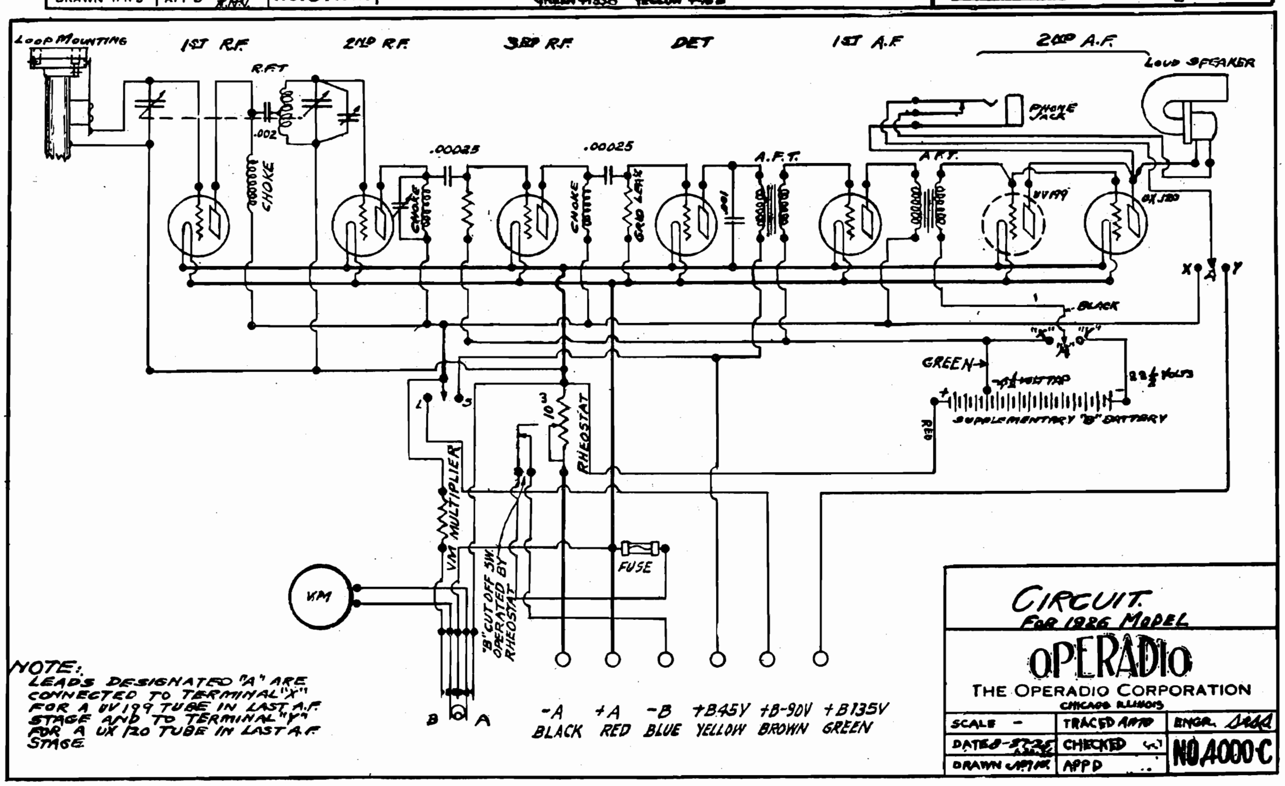


Model 7-Tube Single Control

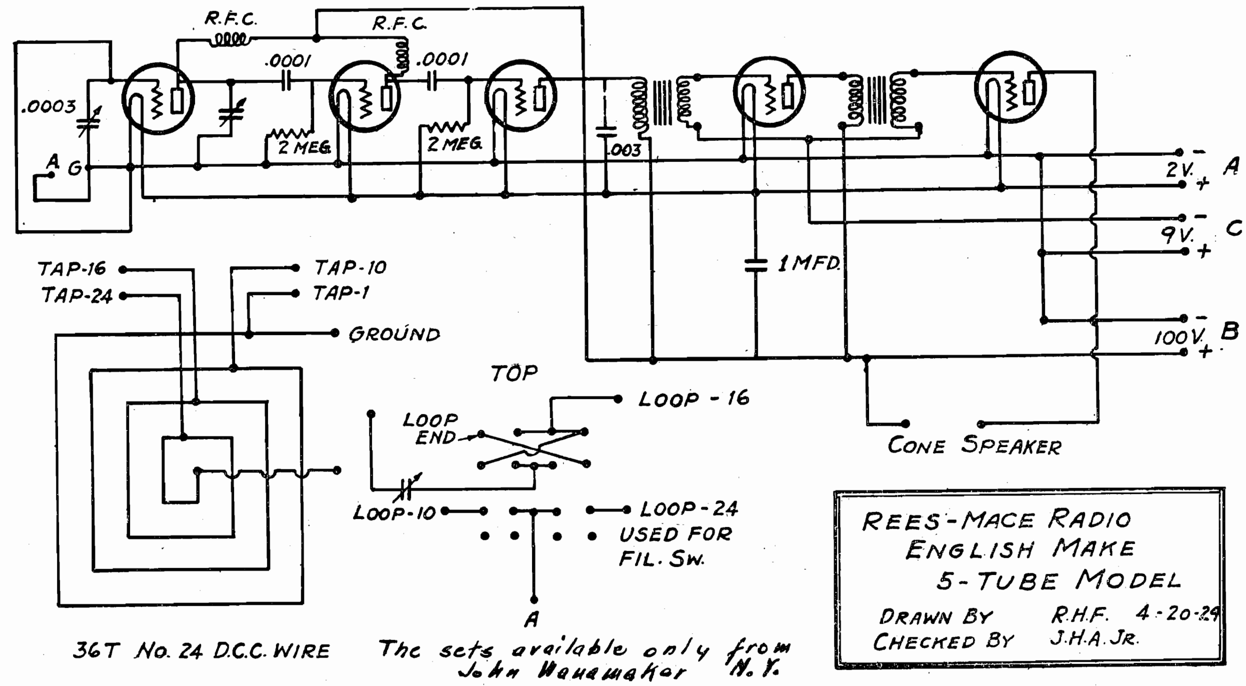
OPERADIO CORP.

MODEL 1925
MODEL 1926
MODEL 7

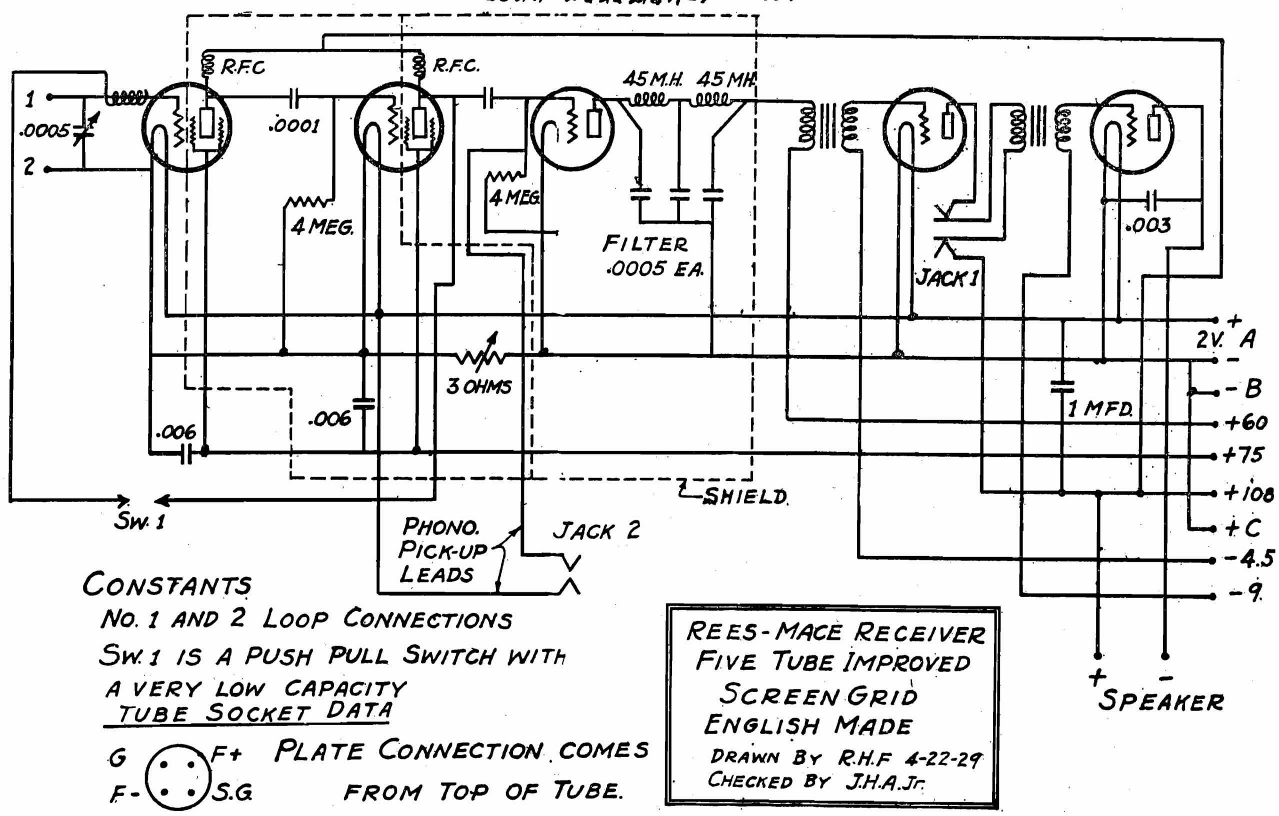




REES-MACE

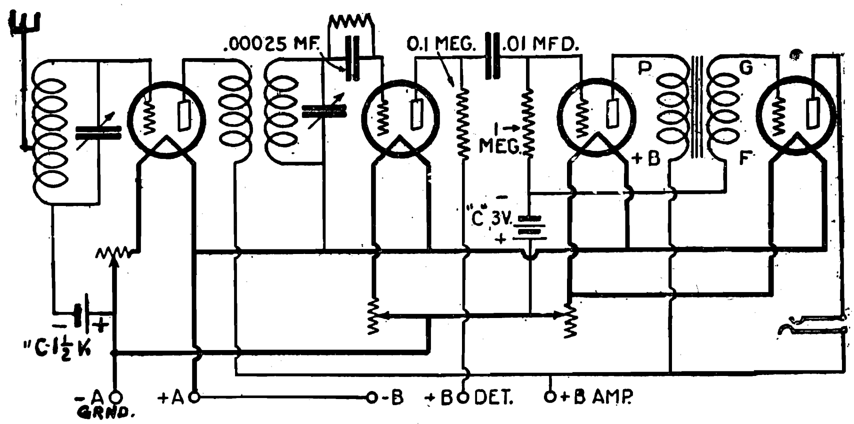


R.F.C.
R.F.C.
.0001
.0001
.0003
A G
2 MEG.
2 MEG.
.003
2V. A
9V. C
100V. B
1 MFD.
TAP-16
TAP-24
TAP-10
TAP-1
GROUND
TOP
LOOP-16
LOOP END
LOOP-10
LOOP-24
USED FOR FIL. SW.
A
CONE SPEAKER
36T No. 24 D.C.C. WIRE
The sets available only from John Wanamaker N.Y.
REES-MACE RADIO
ENGLISH MAKE
5-TUBE MODEL
DRAWN BY R.H.F. 4-20-29
CHECKED BY J.H.A. JR.

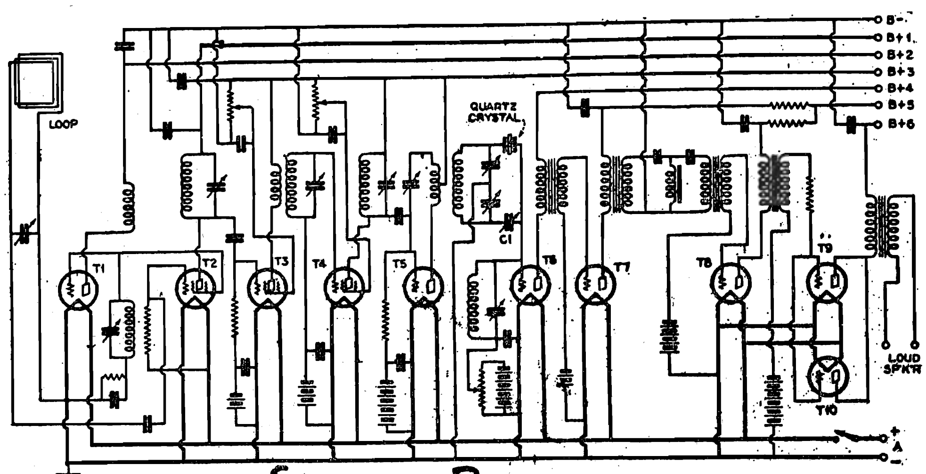


R.F.C
R.F.C.
45 M.H.
45 MH.
1
2
.0005
.0001
4 MEG.
4 MEG.
FILTER
.0005 EA.
JACK 1
.003
2V. A
-B
+60
+75
+108
+C
-4.5
-9
3 OHMS
.006
.006
1 MFD.
SHIELD
SW. 1
PHONO. PICK-UP LEADS
JACK 2
SPEAKER
CONSTANTS
NO. 1 AND 2 LOOP CONNECTIONS
SW. 1 IS A PUSH PULL SWITCH WITH
A VERY LOW CAPACITY
TUBE SOCKET DATA
G F+
F- S.G
PLATE CONNECTION COMES FROM TOP OF TUBE.
REES-MACE RECEIVER
FIVE TUBE IMPROVED
SCREEN GRID
ENGLISH MADE
DRAWN BY R.H.F 4-22-29
CHECKED BY J.H.A. Jr.

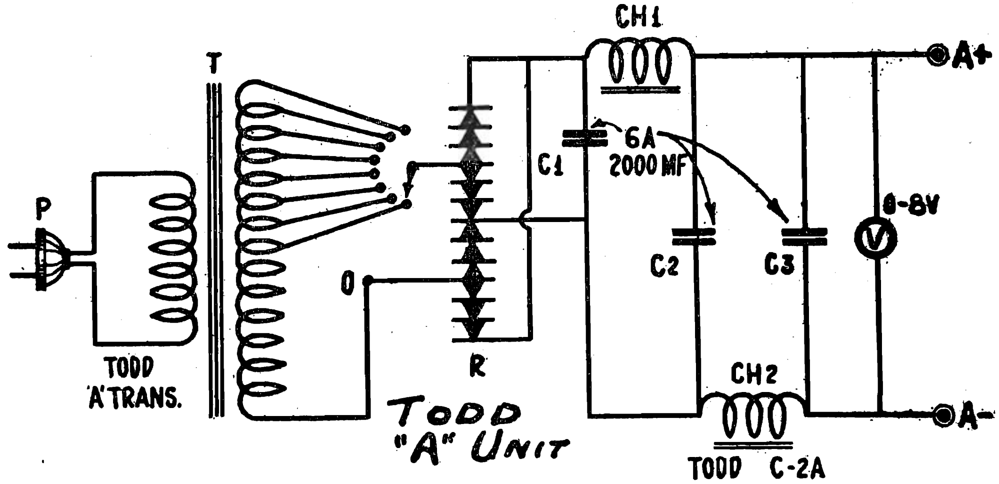
M. B. SLEEPER
STENODE RADIOSTAT
TODD ELECTRIC COMPANY



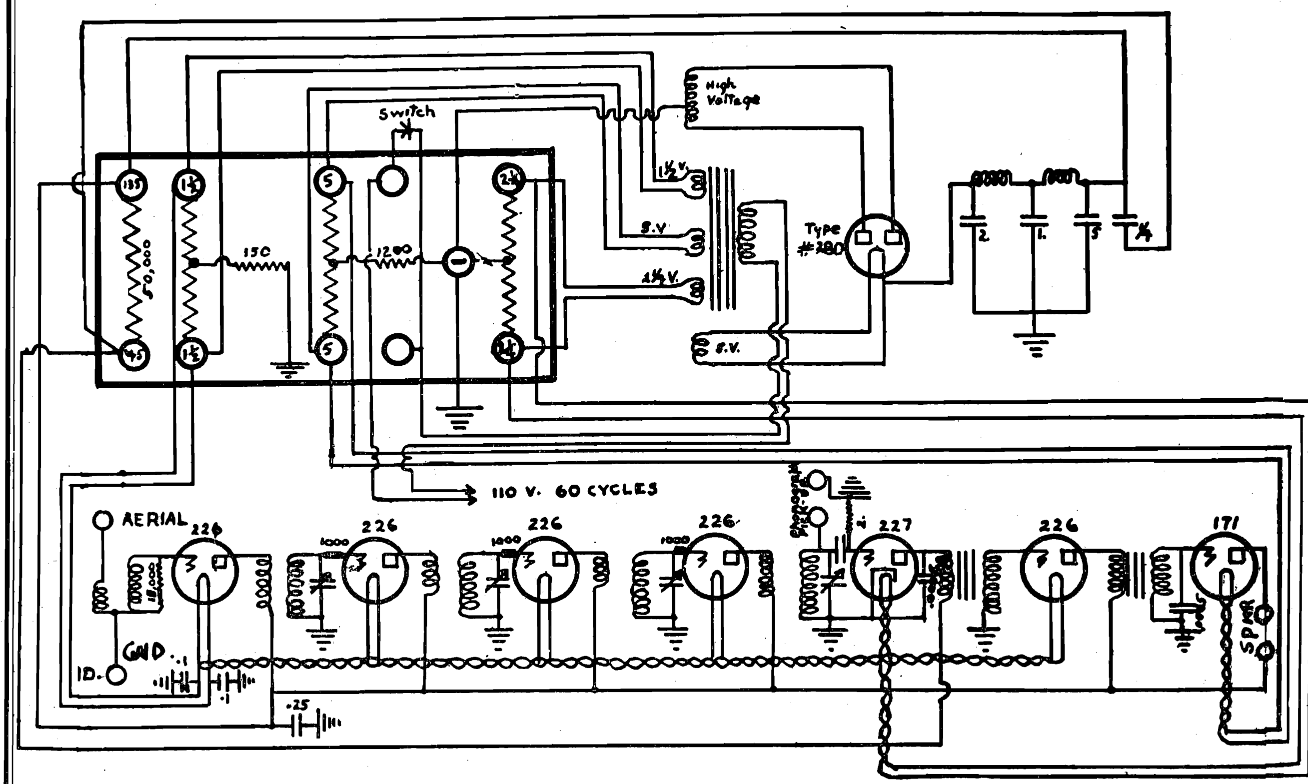
Sleeper RX-1 Receiving Circuit.



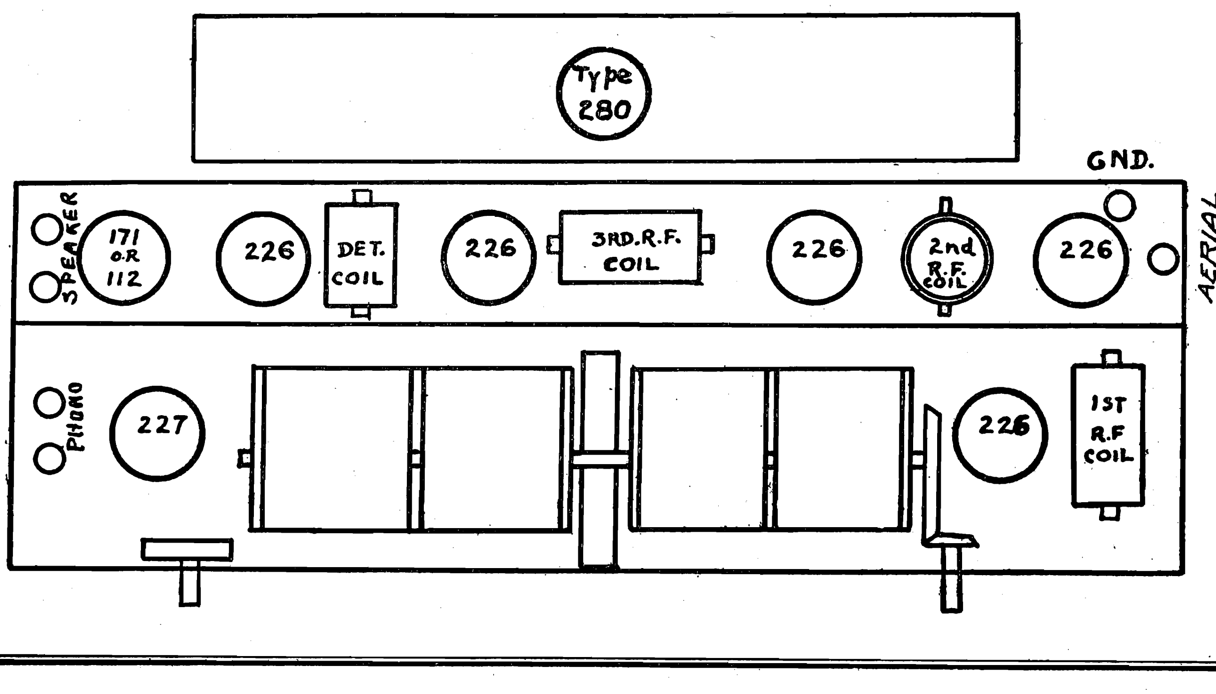
STENODE RADIOSTAT



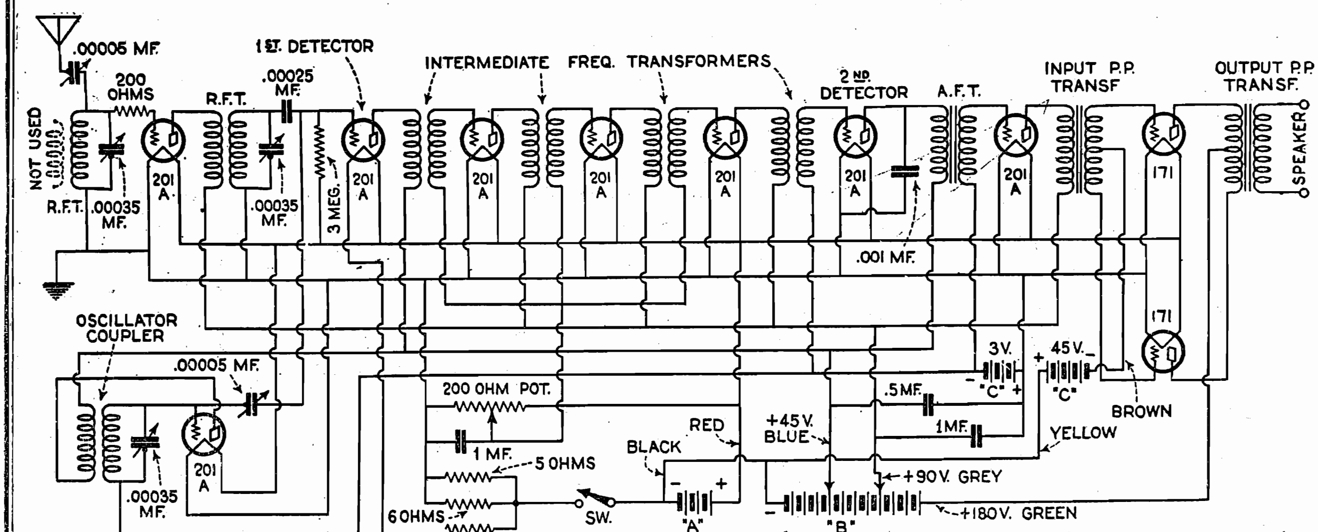
STANDARD RADIO CORP.



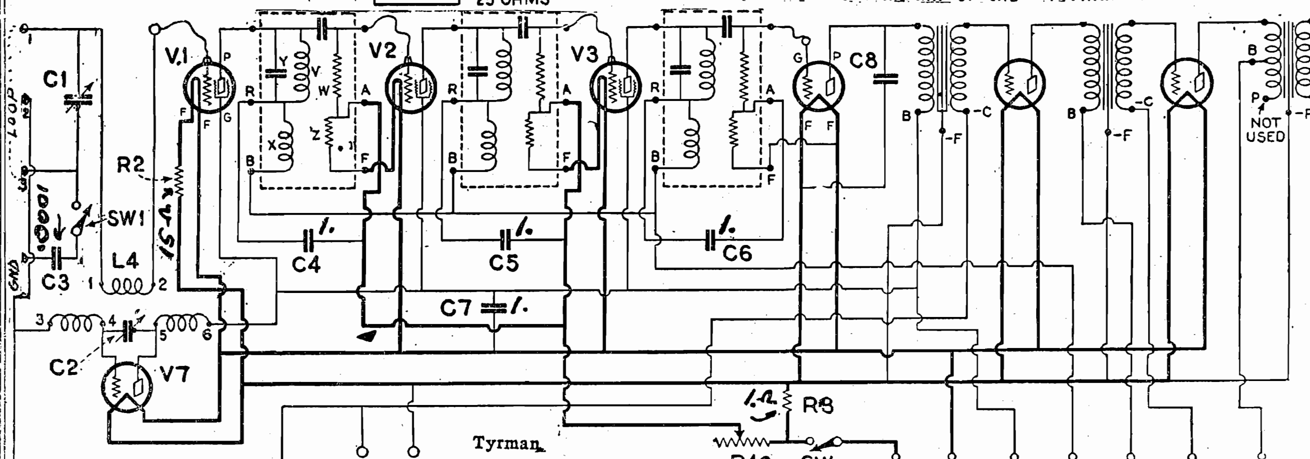
Standardyne A C Model 29
50 to 60 cycles - 100 to 120 volts



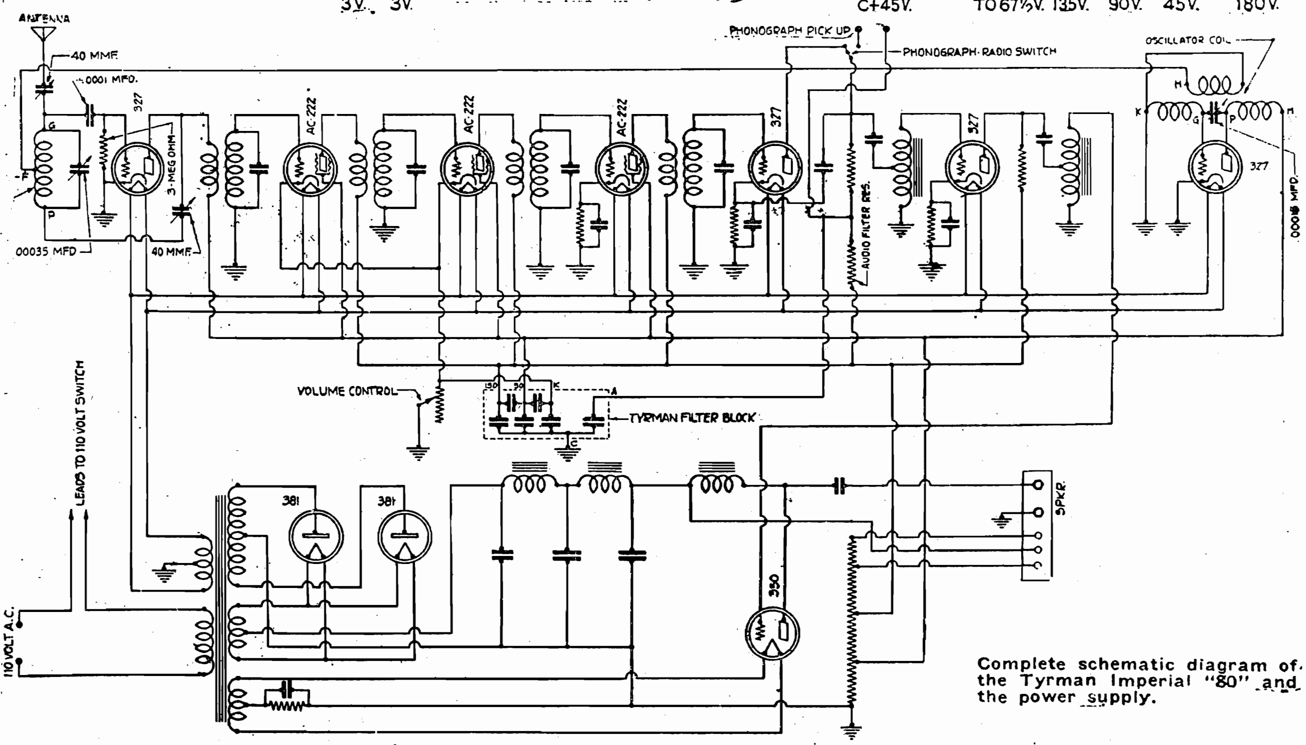
TYRMAN ELECTRIC CORP.



Schematic diagram of the "Tyrman Ten" receiver.



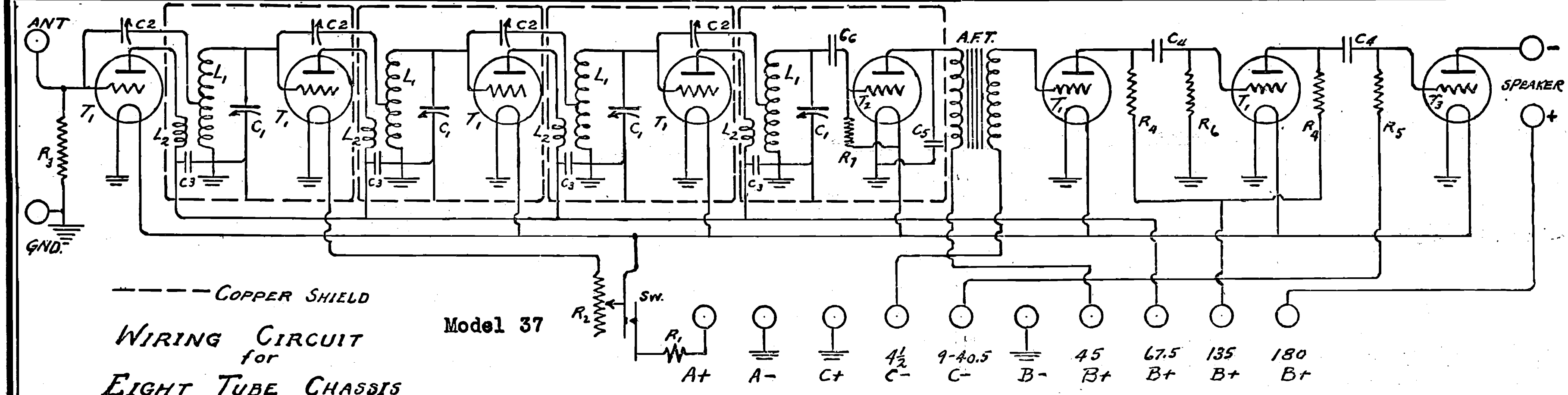
Tyrman Shielded-Grid Seven.



Complete schematic diagram of the Tyrman Imperial "80" and the power supply.

MODEL 17
MODEL 37
Schematic

U. S. ELECTRIC CORP.

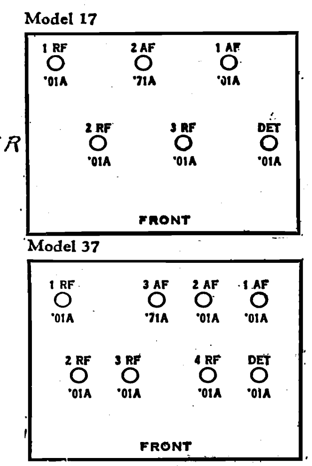


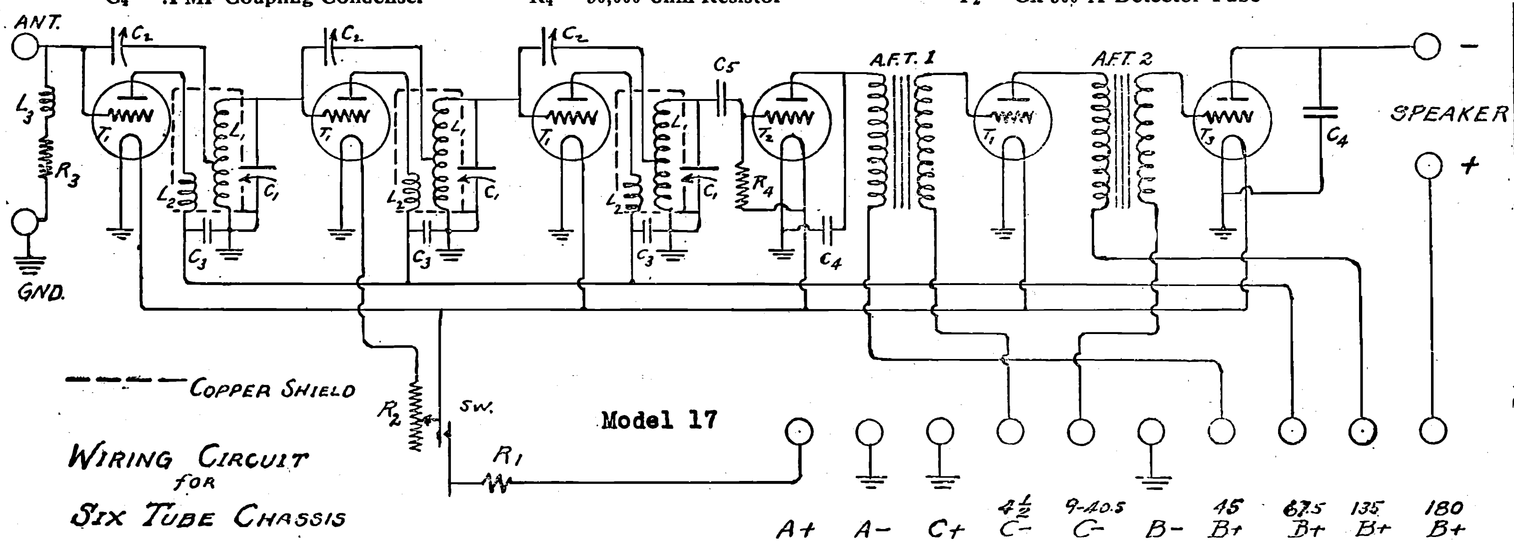
---- COPPER SHIELD

WIRING CIRCUIT for EIGHT TUBE CHASSIS

EIGHT TUBE CHASSIS

L1 — Secondary of R. F. Transformer
L2 — Primary of R. F. Transformer
C1 — 500 MMF Variable Condenser
C2 — Neutrodon Condenser
C3 — 1. MF By Pass Condenser
C4 — .1 MF Coupling Condenser
C5 — .002 MF By Pass Condenser
C6 — .00025 MF Grid Condenser
R1 — Fil: Resistance Unit, 2.35 AMP
R2 — 25 ohm Rheostat-Switch
R3 — 5000 ohm Resister
R4 — 50,000 ohm Resistor
R5 — 100,000 ohm Resistor
R6 — 500,000 ohm Resistor
R7 — 2 Meg ohm Grid Leak
A.F.T. — Audio Transformer
T1 — Cx 301-A Vacuum Tube
T2 — Cx 300-A Detector Tube
T3 — CX 112 or CX 371 Power Tube
Ant — Antenna Post
Gnd — Ground Post
Sw — Switch





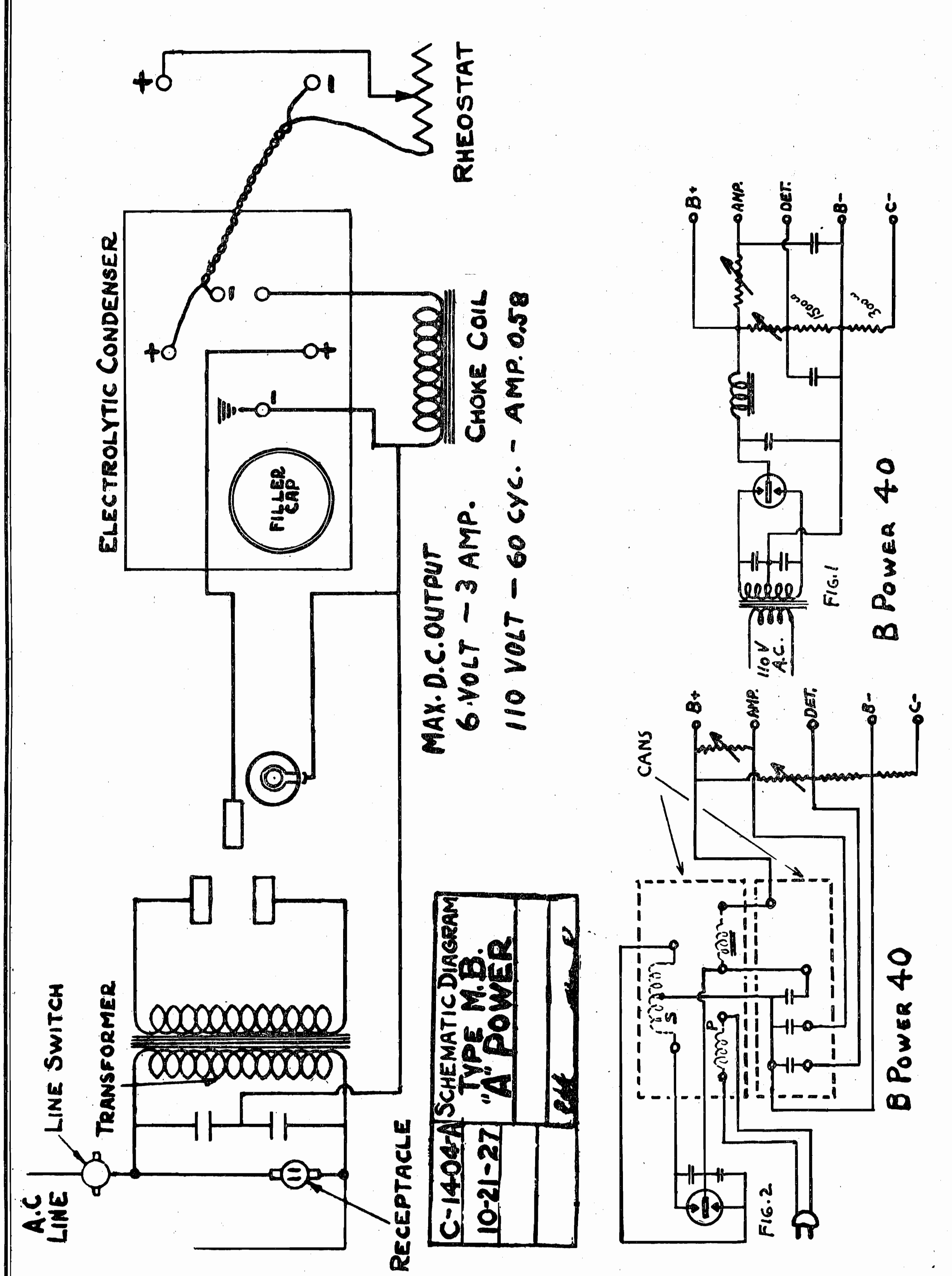
---- COPPER SHIELD

WIRING CIRCUIT FOR SIX TUBE CHASSIS

SIX TUBE CHASSIS

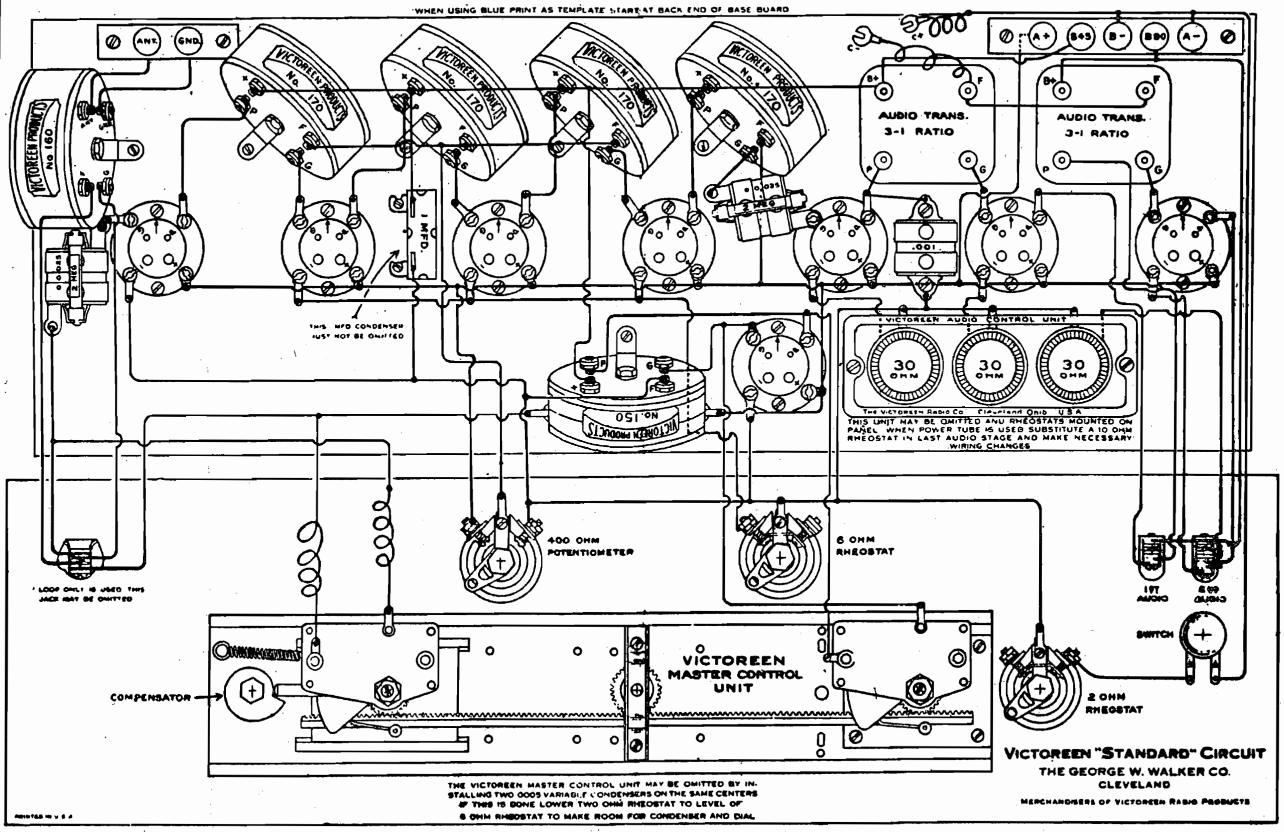
L1 — Secondary of R. F. Transformer
L2 — Primary of R. F. Transformer
L3 — Antenna Choke Coil
C1 — 350MMF Variable Air Condenser
C2 — Neutrodon Condenser
C3 — 1. MF. By Pass Condenser
C4 — .002 MF By Pass Condenser
C5 — .00025 MF Grid Condenser
R1 — Fil. Resistance Unit, 1.85 Amp.
R2 — 25 ohm Rheostat Switch
R3 — 350 ohm Resistor
R4 — 2 Meg ohm Grid Leak
A.F.T.1 — 1st Audio Transformer
A.F.T.2 — 2nd Audio Transformer
T1 — Cx 301-A Vacuum Tube
T2 — Cx 300-A Detector Tube
T3 — CX 112 or CX 371 Power Tube
Sw — Switch
Ant — Antenna Post.
Gnd — Ground Post

VALLEY ELECTRIC CO.

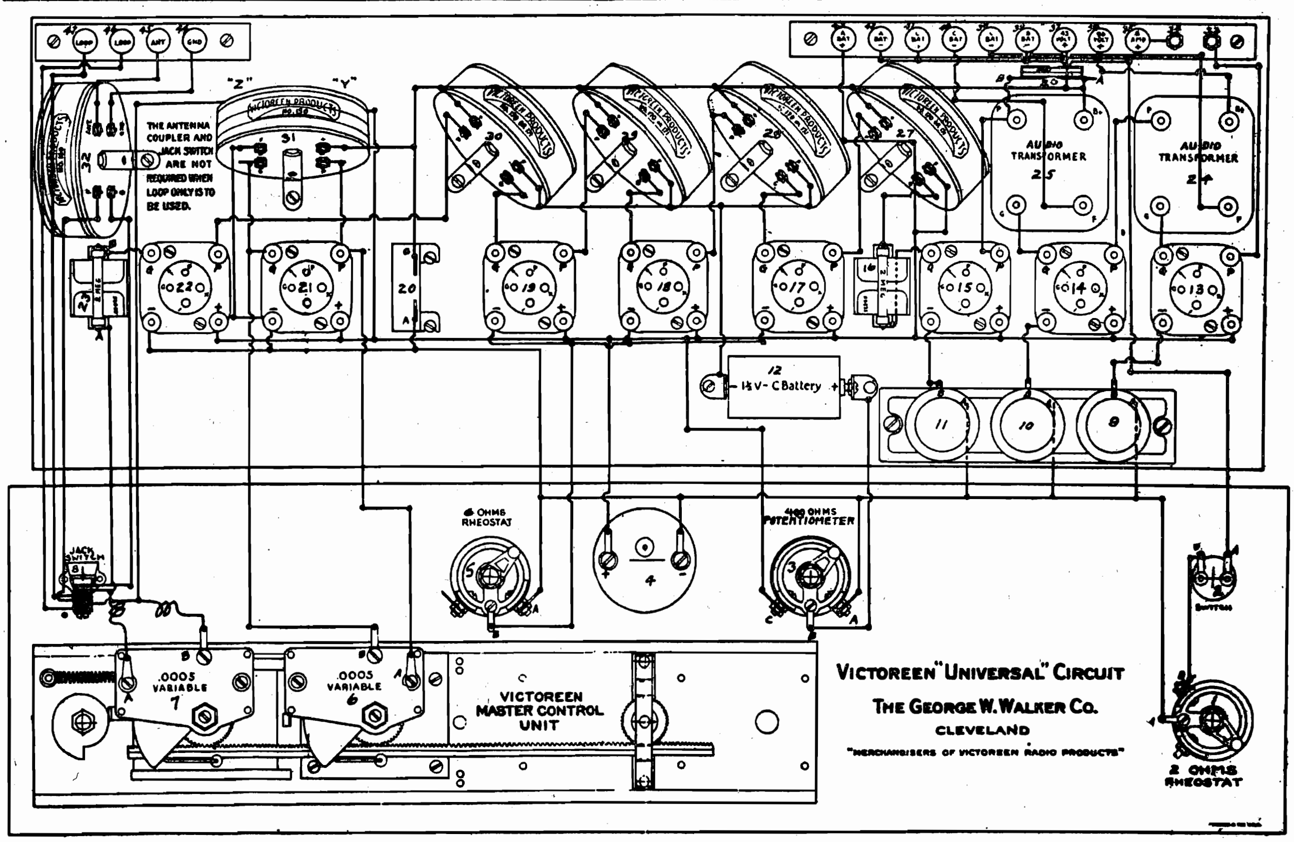


GEORGE W. WALKER CO.

MODEL Victoreen "Standard"
MODEL Victoreen "Universal"

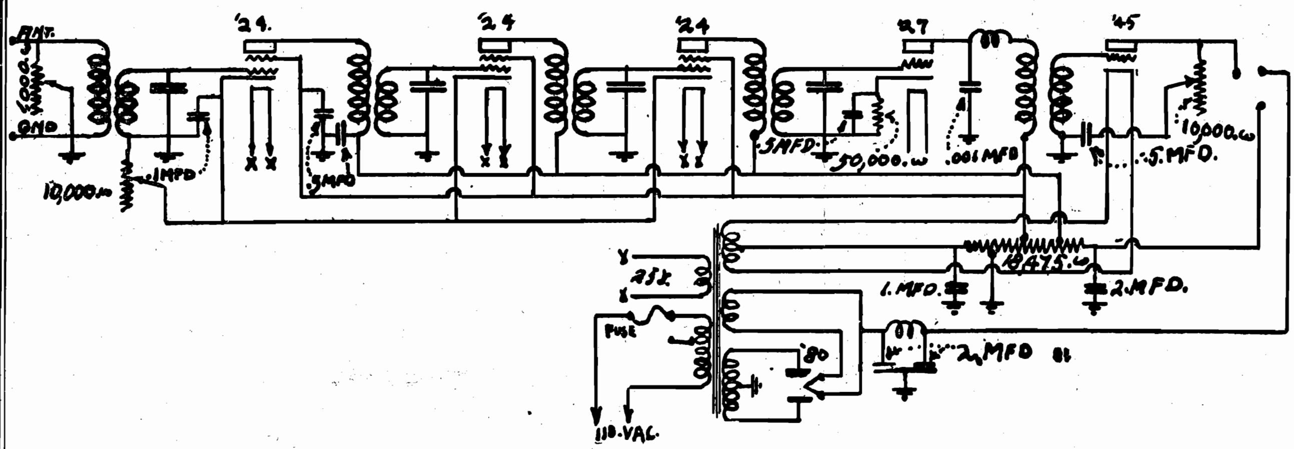


VICTOREEN "STANDARD" CIRCUIT
THE GEORGE W. WALKER CO.
CLEVELAND
MERCHANDISERS OF VICTOREEN RADIO PRODUCTS



VICTOREEN "UNIVERSAL" CIRCUIT
THE GEORGE W. WALKER CO.
CLEVELAND
"MERCHANDISERS OF VICTOREEN RADIO PRODUCTS"

ZANEY-GILL CORP.



SWITCH & VOLUME

The switch and volume control are located on the lower right hand knob which, when turned completely to the left, will act as a switch. To increase volume gradually turn to the right until desired output is gained, being careful to see that the tuning indicator is directly on the station signal.

The lower left hand knob operates VITATONE and tone control. The principle of VITATONE is supplying the backward notes with vitality and bringing them to the proper required impetus so that all reception carries *breadth* as well as the other registers. A further use of VITATONE is the elimination of line noises and static, which also can be accomplished by turning the knob completely to the right. This latter feature is exceptionally desirable for distance reception.

HINTS NECESSARY FOR BETTER RADIO RECEPTION

Use only standard high grade tubes. Cheap tubes will result in poor reception, poor tone and break downs at inopportune moments.

FUSE

Should there be a short in the wiring or a defective tube installed in the set, the fuse, which is located on the right hand side of the chassis assembly, will be blown. This can be replaced by an ordinary 3 amp. automobile type fuse. There are two positions to install the fuse, the two rear clips being used for 110 volts and the two front clips being used where excessive voltages rises as high as 130 volts.

In case of any unusual disturbances in the set, do not attempt to operate same until advised by an experienced service man.

If set does not light, inspect plug connections to wall, also fuse.

If set lights and does not play, inspect speaker terminal and see if it is plugged into the holes marked speaker at the rear of the chassis.

Also, have tubes tested for probable filament shorts.

In all cases, do not attempt to repair the set yourself. Call a competent service man, otherwise your guarantee will be nullified and void.

CAUTION: Before attempting to install or operate, ascertain if this receiver corresponds with the voltage and the cycles of your power supply. The voltage and cycle reading is marked plainly on the license plate. ("Check Same"). Information on the above figures can be ascertained by calling your local power company. In localities where extreme fluctuations of voltages occur, we recommend that a separate voltage compensator be used to maintain a steady power supply.

ANTENNA & GROUND

The quality and amount of reception depends on the correct use of both aerial and ground. In congested areas where several broadcasting stations are in operation, it is not necessary to have an outdoor aerial. Set can be operated on from 3 to 15 feet of aerial for all local reception. In outlying territories or where your relativity to a broadcasting station permits, an aerial of from 25 to 150 feet may be used properly insulated and with correct lead-ins.

A very important feature in connecting a radio is to have a good ground as close to the receiving set as possible. A poor ground is a producer of noises, fading and generally poor reception. Both aerial and ground should be inspected every six months for loose connections or broken strands.

Aerial and ground connections are marked on the binding posts at the back of the chassis.

TUBES

The equipment for this radio consists of 3-224, 1-227, 1-280 and 1-245.

CAUTION: Do not insert or remove tubes from sockets while current is turned on.